

EUROPEAN STANDARD

EN 60810

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2015

ICS 29.140.99

Supersedes EN 60810:2003

English Version

**Lamps for road vehicles - Performance requirements
(IEC 60810:2014)**

Lampes pour véhicules routiers - Exigences de
performances
(IEC 60810:2014)

Lampen für Straßenfahrzeuge - Anforderungen an die
Arbeitsweise
(IEC 60810:2014)

This European Standard was approved by CENELEC on 2015-01-20. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Foreword

The text of document 34A/1797/FDIS, future edition 4 of IEC 60810, prepared by SC 34A "Lamps", of IEC/TC 34 "Lamps and related equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60810:2015.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2015-10-20
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2018-01-20

This document supersedes EN 60810:2003.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 60810:2014 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60068-2-20	NOTE	Harmonized as EN 60068-2-20.
IEC 60068-2-47	NOTE	Harmonized as EN 60068-2-47.
IEC 60682	NOTE	Harmonized as EN 60682.

Annex ZA

(normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050	series	International electrotechnical vocabulary	-	-
IEC 60061-1	-	Lamp caps and holders together with gauges for the control of interchangeability and safety - Part 1: Lamp caps	EN 60061-1	-
IEC 60068-2-6	1995	Environmental testing - Part 2: Tests - Test Fc: Vibration (sinusoidal)	EN 60068-2-6	1995
IEC 60068-2-14	-	Environmental testing - Part 2-14: Tests - Test N: Change of temperature	EN 60068-2-14	-
IEC 60068-2-43	-	Environmental testing - Part 2-43: Tests - Test Kd: Hydrogen sulphide test for contacts and connections	EN 60068-2-43	-
IEC 60068-2-60	-	Environmental testing - Part 2: Tests - Test Ke: Flowing mixed gas corrosion test	EN 60068-2-60	-
IEC 60410	1973	Sampling plans and procedures for inspection by attributes	-	-
IEC 60809	2014	Lamps for road vehicles - Dimensional, electrical and luminous requirements	EN 60809	2015
CISPR 25	-	Vehicles, boats and internal combustion engines - Radio disturbance characteristics - Limits and methods of measurement for the protection of on-board receivers	EN 55025	-

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
UNECE 1958 Agreement	-	Agreement concerning the adoption of uniform technical prescription for wheeled vehicles, equipment and parts which can be fitted and/or be used on wheeled vehicles and the conditions for reciprocal recognition of approvals granted on the basis of these prescriptions	-	-
UNECE 38	-	1958 Agreement, Addendum 37: Regulation No. 38: Uniform provisions concerning the approval of rear fog lamps for power-driven vehicles and their trailers	-	-
UNECE 48	-	1958 Agreement, Addendum 47: Regulation No. 48: Uniform provisions concerning the approval of vehicles with regard to the installation of lighting and light-signalling devices	-	-
UNECE 101	-	1958 Agreement, Addendum 100: Regulation No. 101: Uniform provisions concerning the approval of passenger cars powered by an internal combustion engine only, or powered by a hybrid electric power train with regard to the measurement of the emission of carbon dioxide and fuel consumption and/or the measurement of electric energy consumption and electric range, and of categories M ₁ and N ₁ vehicles powered by an electric power train only with regard to the measurement of electric energy consumption and electric range	-	-
UNECE 123	-	1958 Agreement, Addendum 122: Regulation No. 123: Uniform provisions concerning the approval of adaptive front lighting systems (AFS) for motor vehicles	-	-
UNECE 128	-	1958 Agreement, Addendum 127: Regulation No. 128: Uniform provisions concerning the approval of light emitting diode (LED) light sources for use in approved lamp units on power-driven vehicles and their trailers	-	-
JESD22-A100D	-	Cycled temperature humidity bias life test	-	-
JESD22-A101C	-	Steady-state temperature humidity bias life test	-	-
JESD22-A104D	-	Temperature cycling	-	-
JESD22-A105C	-	Power and temperature cycling	-	-
JESD22-A106B	-	Thermal shock	-	-
JESD22-A108D	-	Temperature, bias, and operating life	-	-
JESD22-A113F	-	Preconditioning of plastic surface mount devices prior to reliability testing	-	-

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
JESD22-A115C	-	Electrostatic discharge (ESD) sensitivity testing machine model (MM)	-	-
JESD22-B101B	-	External visual	-	-
JESD22-B103B	-	Vibration, variable frequency	-	-
JESD22-B106D	-	Resistance to solder shock for through-hole mounted devices	-	-
JESD22-B110B	-	Mechanical shock - Component and subassembly	-	-
JESD51-50	2012-04	Overview of methodologies for the thermal measurement of single- and multi-chip, single- and multi-pn-junction light-emitting diodes (LEDs)	-	-
JESD51-51	2012-04	Implementation of the electrical test method for the measurement of real thermal resistance and impedance of light-emitting diodes with exposed cooling surface	-	-
JESD51-52	2012-04	Guidelines for combining CIE 127-2007 total flux measurements with thermal measurements of LEDs with exposed cooling surface	-	-
JESD51-53	2012-05	Terms, definitions and units glossary for LED thermal testing	-	-
IPC/ECA J-STD-002C	-	Solderability tests for component leads, terminations, lugs, terminals and wires	-	-
ANSI/ESDA/JEDEC JS-001	2012	JEDEC/ESDA joint standard for electrostatic discharge sensitivity test - Human body model (HBM) - Component level	-	-



IEC 60810

Edition 4.0 2014-12

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Lamps for road vehicles – Performance requirements

Lampes pour véhicules routiers – Exigences de performances



THIS PUBLICATION IS COPYRIGHT PROTECTED
Copyright © 2014 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

IEC Central Office
 3, rue de Varembe
 CH-1211 Geneva 20
 Switzerland

Tel.: +41 22 919 02 11
 Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

IEC Catalogue - webstore.iec.ch/catalogue

The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

IEC publications search - www.iec.ch/searchpub

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and also once a month by email.

Electropedia - www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing more than 30 000 terms and definitions in English and French, with equivalent terms in 14 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary

More than 55 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

IEC Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: csc@iec.ch.

A propos de l'IEC

La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications IEC

Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Catalogue IEC - webstore.iec.ch/catalogue

Application autonome pour consulter tous les renseignements bibliographiques sur les Normes internationales, Spécifications techniques, Rapports techniques et autres documents de l'IEC. Disponible pour PC, Mac OS, tablettes Android et iPad.

Recherche de publications IEC - www.iec.ch/searchpub

La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études,...). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

IEC Just Published - webstore.iec.ch/justpublished

Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et aussi une fois par mois par email.

Electropedia - www.electropedia.org

Le premier dictionnaire en ligne de termes électroniques et électriques. Il contient plus de 30 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans 14 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

Glossaire IEC - std.iec.ch/glossary

Plus de 55 000 entrées terminologiques électrotechniques, en anglais et en français, extraites des articles Termes et Définitions des publications IEC parues depuis 2002. Plus certaines entrées antérieures extraites des publications des CE 37, 77, 86 et CISPR de l'IEC.

Service Clients - webstore.iec.ch/csc

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: csc@iec.ch.



IEC 60810

Edition 4.0 2014-12

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Lamps for road vehicles – Performance requirements

Lampes pour véhicules routiers – Exigences de performances

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX

XB

ICS 29.140.99

ISBN 978-2-8322-1967-6

Warning! Make sure that you obtained this publication from an authorized distributor. Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.
--

CONTENTS

FOREWORD	7
1 Scope	9
2 Normative references	9
3 Terms and definitions	11
4 Requirements and test conditions for filament lamps	14
4.1 Basic function and interchangeability	14
4.2 Torsion strength	14
4.3 Characteristic life T	15
4.4 Life B3	15
4.5 Luminous flux maintenance	15
4.6 Resistance to vibration and shock	15
4.7 Glass-bulb strength	16
5 Filament lamp data	16
6 Requirements and test conditions for discharge lamps	19
6.1 Basic function and interchangeability	19
6.2 Mechanical strength	20
6.2.1 Bulb-to-cap connection	20
6.2.2 Cable-to-cap connection (if any)	20
6.3 Characteristic life T	20
6.4 Life B3	20
6.5 Luminous flux maintenance	20
6.6 Resistance to vibration and shock	20
6.7 Discharge lamps with integrated starting device	20
6.8 Discharge lamps with integrated starting device and integrated ballast	20
7 Requirements and test conditions for LED light sources	21
7.1 Basic function and interchangeability	21
7.2 UV radiation	22
7.3 Luminous flux and colour maintenance	22
7.4 Resistance to vibration and shock	23
7.5 Electromagnetic compatibility	23
7.6 Powered thermal cycling test	23
8 Requirements and test conditions for LED packages	25
8.1 LED package stress test qualification	25
8.2 Test samples	25
8.2.1 Lot requirements	25
8.2.2 Production requirements	25
8.2.3 Pre- and post-stress test requirements	26
8.2.4 Assembly of LED packages on test boards	26
8.2.5 Moisture pre-conditioning (MP)	26
8.2.6 Thermal resistance (TR) test	26
8.3 Definition of failure criteria	26
8.4 Choice between test conditions	27
8.5 Criteria for passing qualification/requalification	27
8.6 Qualification test definition	27
8.6.1 Pre- and post- electrical and photometric test	27

8.6.2	Pre- and post- external visual (EV) test	27
8.6.3	High temperature operating life (HTOL) test	27
8.6.4	Temperature cycling (TMCL) test	28
8.6.5	Wet high temperature operating life (WHTOL) test	28
8.6.6	Power temperature cycling (PTMCL) test	28
8.6.7	Electrostatic discharge, human body model (ESD-HBM) test	29
8.6.8	Electrostatic discharge, machine model (ESD-MM) test	29
8.6.9	Destructive physical analysis (DPA) test	29
8.6.10	Physical dimensions (PD) test	29
8.6.11	Vibrations variable frequency (VVF) test	29
8.6.12	Mechanical shock (MS) test	29
8.6.13	Resistance to soldering heat (RSH-TTW) test	29
8.6.14	Resistance to soldering heat (RSH-reflow) test	30
8.6.15	Solderability (SO) test	30
8.6.16	Thermal shock (TMSK) test	30
8.6.17	Hydrogen sulphide (H ₂ S) test	30
8.6.18	Pulsed operating life (PLT) test	30
8.6.19	Dew (DEW) test	31
8.6.20	Flowing mixed gas corrosion (FMGC) test	31
Annex A	(normative) Life test conditions for filament lamps	32
A.1	Ageing	32
A.2	Test voltage	32
A.3	Operating position and operating conditions	32
A.4	Switching cycle	32
A.4.1	Single-filament lamps	32
A.4.2	Dual-filament lamps for headlamps	33
A.4.3	Dual-filament lamps for light signalling equipment	33
A.5	Luminous flux and colour maintenance	33
Annex B	(normative) Vibration tests	34
B.1	General	34
B.2	Test conditions	35
B.2.1	General	35
B.2.2	Mounting (see IEC 60068-2-47)	35
B.2.3	Measuring points	35
B.2.4	Control point	35
B.2.5	Conditioning	35
B.2.6	Axis of vibration	35
B.2.7	WBR test – Basic motion	36
B.3	Test conditions	36
B.3.1	General	36
B.3.2	Narrowband random vibration tests	36
B.3.3	Wideband random vibration tests	37
Annex C	(normative) Glass-bulb strength test	39
C.1	General	39
C.2	Test equipment and procedure	39
C.2.1	Principle of the test equipment (see Figure C.1)	39
C.2.2	Test conditions	39
C.2.3	Requirements for plates	40

C.3	Requirements	40
C.4	Evaluation.....	40
C.4.1	General	40
C.4.2	Assessment based on attributes	40
C.4.3	Assessment based on variables.....	41
Annex D (normative)	Life and luminous flux maintenance test conditions for discharge lamps.....	42
D.1	Ageing	42
D.2	Test circuit and test voltage	42
D.3	Burning position and operating conditions	42
D.4	Switching cycle	42
D.5	Luminous flux maintenance.....	43
Annex E (normative)	Bulb deflection test.....	44
E.1	General.....	44
E.2	Test set-up and procedure	44
E.3	Requirement	44
Annex F (informative)	Guidance for equipment design	45
F.1	Pinch temperature limit	45
F.2	Solder temperature limit.....	45
F.3	Maximum filament lamp outline	45
F.4	Maximum surge voltage	45
F.5	Recommended instructions for use and handling of halogen filament lamps.....	45
F.6	Recommended instructions for use and handling of discharge lamps	46
Annex G (informative)	Information for ballast design	51
Annex H (informative)	Symbols	52
H.1	General.....	52
H.2	Symbol indicating that lamps operate at high temperatures.....	52
H.3	Symbol indicating that care should be taken to avoid touching the bulb.....	52
H.4	Symbol indicating that the use of protective gloves is advised.....	52
H.5	Symbol indicating that lamps with scratched or otherwise damaged bulbs should not be used.....	52
H.6	Symbol indicating that before handling, the lamp shall be switched off.....	52
H.7	Symbol indicating that the use of eye protection is advised	53
H.8	Symbol indicating that during operation, the lamp emits UV-radiation	53
H.9	Symbol indicating that the lamp shall be operated only in a luminaire with a protective shield.....	53
H.10	Symbol indicating dangerous voltage	53
Annex I (normative)	Luminous flux maintenance test conditions for LED light sources	54
I.1	Ageing	54
I.2	Test voltage	54
I.3	Operating conditions	54
I.3.1	Test rack	54
I.3.2	LED light sources with integrated thermal management.....	54
I.3.3	LED light sources with external thermal management	54
I.4	Switching cycle	55
I.4.1	Single-function LED light sources	55
I.4.2	Dual-function LED light sources for headlamps.....	55
I.4.3	Multiple-function LED light sources for light signalling equipment	55

I.5	Luminous flux maintenance measurements	56
I.6	Colour measurement.....	56
Annex J (normative)	Destructive physical analysis for LED packages	57
J.1	Description	57
J.2	Equipment	57
J.3	Procedure	57
J.4	Failure criteria.....	57
Annex K (informative)	Communication sheet LED package testing	58
Annex L (normative)	Re-testing matrix for LED package testing	61
Bibliography		62
Figure 1	– Examples of LED packages	12
Figure 2	– Example for an LED module without integrated heatsink	13
Figure 3	– Example for an LED module with integrated heatsink	13
Figure 4	– Example for a replaceable LED light source	13
Figure 5	– Example for a non-replaceable LED light source	14
Figure 6	– Position of the centre of gravity (shaded areas).....	21
Figure 7	– Extract from IEC 60068-2-14 Test Nb, showing the temperature cycle profile	24
Figure B.1	– Recommended equipment layout for vibration testing	38
Figure C.1	– Diagrammatic sketch of the principle of the test equipment.....	39
Figure E.1	– Sketch of the test set-up	44
Figure F.1	– Voltage surges for 12 V filament lamps – Maximum tolerable duration for a voltage surge as a function of its height	46
Figure F.2	– Maximum filament lamp outlines H1	47
Figure F.3	– Maximum filament lamp outlines H2	48
Figure F.4	– Maximum filament lamp outlines H3	49
Figure F.5	– Maximum filament lamp outlines P21W, PY21W, P21/4W and P21/5W	50
Table 1	– Conditions of compliance for life B3	15
Table 2	– Conditions of compliance for the vibration test	16
Table 3	– Rated life values for continuous operation	17
Table 4	– Rated luminous flux-maintenance values for continuous operation	19
Table 5	– Minimum $L_{70-B_{10}}$ values for standardised LED light sources	22
Table 6	– Typical “on”-times for the different functions per 100 000 km drive distance, based on an average speed of 33,6 km/h ^a	22
Table 7	– Example for product data	23
Table 8	– Temperature classes for the powered thermal cycling test.....	24
Table B.1	– Vibration test on motor vehicle lamps – Test conditions	36
Table B.2	– Vibration test on motor vehicle lamps – Standard test conditions	36
Table B.3	– Vibration test on motor vehicle lamps – Heavy-duty test conditions	37
Table B.4	– Vibration test on motor vehicle lamps – Standard test conditions	37
Table C.1	– Compression strength	40
Table C.2	– Inspection by attributes – Double sampling plan	40

Table C.3 – Inspection by variables – "S" method of assessment.....	41
Table D.1 – Switching cycle	42
Table G.1 – Open circuit voltage.....	51
Table I.1 – Examples for possible product data.....	55
Table L.1 – Retesting matrix	61

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**LAMPS FOR ROAD VEHICLES –
PERFORMANCE REQUIREMENTS****FOREWORD**

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60810 has been prepared by subcommittee 34A: Lamps, of IEC technical committee 34: Lamps and related equipment.

This fourth edition cancels and replaces the third edition, published in 2003, its Amendments 1 (2008) and 2 (2013). This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) introduction of new gas discharge light sources;
- b) introduction of requirements for non-replaceable filament lamps;
- c) introduction of requirements and test conditions for LED packages.

The text of this standard is based on the following documents:

FDIS	Report on voting
34A/1797/FDIS	34A/1818/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

LAMPS FOR ROAD VEHICLES – PERFORMANCE REQUIREMENTS

1 Scope

This International Standard is applicable to lamps (filament lamps, discharge lamps and LED light sources) to be used in headlamps, fog-lamps and signalling lamps for road vehicles. It is especially applicable to those lamps which are listed in IEC 60809. However, the standard may also be used for other lamps falling under the scope of this standard.

It specifies requirements and test methods for the measurement of performance characteristics such as lamp life, luminous flux maintenance, torsion strength, glass bulb strength and resistance to vibration and shock. Moreover, information on temperature limits, maximum lamp outlines and maximum tolerable voltage surges is given for the guidance of lighting and electrical equipment design.

For some of the requirements given in this standard, reference is made to data given in tables. For lamps not listed in such tables, the relevant data are supplied by the lamp manufacturer or responsible vendor.

The performance requirements are additional to the basic requirements specified in IEC 60809. They are, however, not intended to be used by authorities for legal type-approval purposes.

NOTE 1 In the various vocabularies and standards, different terms are used for "incandescent lamp" (IEC 60050-845:1987, 845-07-04) and "discharge lamp" (IEC 60050-845:1987, 845-07-17). In this standard, "filament lamp" and "discharge lamp" are used. However, where only "lamp" is written both types are meant, unless the context clearly shows that it applies to one type only.

NOTE 2 This standard does not apply to luminaires.

NOTE 3 In this standard, the term LED light source is used, in other standards the term LED lamps can be used to describe similar products.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60050 (all parts), *International Electrotechnical Vocabulary* (available at <http://www.electropedia.org/>)

IEC 60061-1, *Lamp caps and holders together with gauges for the control of interchangeability and safety – Part 1: Lamp caps*

IEC 60068-2-6:1995, *Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)*

IEC 60068-2-14, *Environmental testing – Part 2-14: Tests – Test N: Change of temperature*

IEC 60068-2-43, *Environmental testing – Part 2-43: Tests – Test Kd: Hydrogen sulphide test for contacts and connections*

IEC 60068-2-60, *Environmental testing – Part 2: Tests – Test Ke: Flowing mixed gas corrosion test*

IEC 60410:1973, *Sampling plans and procedures for inspection by attributes*

IEC 60809:2014, *Lamps for road vehicles*

CISPR 25, *Vehicles, boats and internal combustion engines – Radio disturbance characteristics – Limits and methods of measurement for the protection of on-board receivers*

United Nations, *Agreement concerning the adoption of uniform technical prescription for wheeled vehicles, equipment and parts which can be fitted and/or be used on wheeled vehicles and the conditions for reciprocal recognition of approvals granted on the basis of these prescriptions.*¹

Available from Internet: www.unece.org/trans/main/wp29/wp29regs.html (website checked 2014-08-19)

Addendum 37: Regulation No. 38, *Uniform provisions concerning the approval of rear fog lamps for power-driven vehicles and their trailers*

Addendum 47: Regulation No 48, *Uniform provisions concerning the approval of vehicles with regard to the installation of lighting and light-signalling devices*

Addendum 122: Regulation No. 123, *Uniform provisions concerning the approval of adaptive front-lighting systems (AFS) for motor vehicles*

Addendum 100: Regulation No. 101, *Uniform provisions concerning the approval of passenger cars powered by an internal combustion engine only, or powered by a hybrid electric power train with regard to the measurement of the emission of carbon dioxide and fuel consumption and/or the measurement of electric energy consumption and electric range, and of categories M1 and N1 vehicles powered by an electric power train only with regard to the measurement of electric energy consumption and electric range*

Addendum 127: Regulation No. 128, *Uniform provisions concerning the approval of light emitting diode (LED) light sources for use in approved lamp units on power-driven*

JESD22-A100D, *Cycled temperature humidity bias life test*

JESD22-A101C, *Steady-state temperature humidity bias life test*

JESD22-A104D, *Temperature cycling*

JESD22-A105C, *Power and temperature cycling*

JESD22-A106B, *Thermal shock*

JESD22-A108D, *Temperature, bias, and operating life*

JESD22-A113F, *Preconditioning of plastic surface mount devices prior to reliability testing*

JESD22-A115C, *Electrostatic discharge (ESD) sensitivity testing machine model (MM)*

JESD22-B101B, *External visual*

JESD22-B103B, *Vibration, variable frequency*

JESD22-B110B, *Mechanical shock*

JESD22-B106D, *Resistance to solder shock for through-hole mounted devices*

¹ Also known as *The 1958 Agreement*. In the text of this standard the regulations under this agreement are referred to as, for example, UN Regulation 37 or R37.

JESD51-50:2012-04, *Overview of methodologies for the thermal measurement of single- and multi-chip, single- and multi-pn-junction light-emitting diodes (LEDs)*

JESD51-51:2012-04, *Implementation of the electrical test method for the measurement of real thermal resistance and impedance of light-emitting diodes with exposed cooling surface*

JESD51-52:2012-04, *Guidelines for combining CIE 127-2007 total flux measurements with thermal measurements of leds with exposed cooling surface*

JESD51-53:2012-05, *Terms, definitions and units glossary for LED thermal testing*

ANSI/IPC/ECA J-STD-002C, *Solderability tests for component leads, terminations, lugs, terminals and wires*

ANSI/ESDA/JEDEC JS-001-2012, *Joint JEDEC/ESDA standard for electrostatic discharge sensitivity testing human body model (HBM) – component level*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN