



IEC 62722-2-1

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# INTERNATIONAL STANDARD



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**Luminaire performance –  
Part 2-1: Particular requirements – LED luminaires**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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# INTERNATIONAL ELECTROTECHNICAL COMMISSION

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## LUMINAIRE PERFORMANCE –

### Part 2-1: Particular requirements – LED luminaires

#### 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.
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- 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.

**This commented version (CMV) of the official standard IEC 62722-2-1:2023 edition 2.0 allows the user to identify the changes made to the previous IEC 62722-2-1:2014 edition 1.0. Furthermore, comments from IEC SC 34D experts are provided to explain the reasons of the most relevant changes, or to clarify any part of the content.**

**A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text. Experts' comments are identified by a blue-background number. Mouse over a number to display a pop-up note with the comment.**

**This publication contains the CMV and the official standard. The full list of comments is available at the end of the CMV.**

IEC 62722-2-1 has been prepared by subcommittee 34D: Luminaires, of IEC technical committee 34: Lighting. It is an International Standard.

This second edition cancels and replaces the first edition published in 2014. This edition constitutes a technical revision.

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

- a) alignment with IEC 62717:2014, IEC 62717:2014/AMD1:2015 and IEC 62717:2014/AMD2:2019;
- b) clarification of temperature requirements for the maintenance test, in 10.2 and Annex A;
- c) introduction of a new Annex C on methods for calculation and measurements of parameters for extension of electric and photometric data.

The text of this International Standard is based on the following documents:

Draft	Report on voting
34D/1680/FDIS	34D/1687/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/standardsdev/publications](http://www.iec.ch/standardsdev/publications).

A list of all parts in the IEC 62722 series, published under the general title *Luminaire performance* can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under [webstore.iec.ch](http://webstore.iec.ch) in the data related to the specific document. At this date, the document will be

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

**IMPORTANT – The "colour inside" logo on the cover page of this document indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.**

## INTRODUCTION

~~This standard is the conversion of IEC PAS 62722-2-1 into a full IEC performance standard for LED luminaires for general lighting applications.~~ This document acknowledges the need for relevant tests for luminaires using ~~this new source of~~ LED as an electrical light source **1**. This document is seen in close context with the publication of simultaneously developed performance standards for luminaires in general and for LED modules. This document does not consider luminaires designed for LED lamps, which are covered in IEC 62722-1. Changes in LED luminaires standards have an impact on LED module standards and vice versa, due to the behaviour of LED. Therefore, for the development of this document, the mutual consultancy of experts of both products has taken place.

The provisions in this document represent the technical knowledge of experts from the fields of the semiconductor (LED chip) industry and of the traditional electrical light sources and luminaires.

As this document has been simultaneously developed and edited with the standard for LED modules (IEC 62717), where appropriate, the compliance of the LED modules with the provisions of IEC 62717 can be transferred to the whole luminaire.

## LUMINAIRE PERFORMANCE –

### Part 2-1: Particular requirements – LED luminaires

#### 1 Scope

This part of IEC 62722 specifies the performance requirements for LED luminaires, together with the test methods and conditions, ~~required to show compliance with this standard~~. It applies to LED luminaires for general lighting purposes.

Semi-luminaires are not covered under the scope of this document.

For some types of luminaires (e.g. decorative or household) the provision of performance data under the scope of this document is not appropriate. **2**

In this document, the following types of LED luminaires are distinguished.

- Type A – Luminaires using LED modules where compliance with IEC 62717<sup>4</sup> ~~has been proven~~ is given.
- Type B – Luminaires using LED modules where compliance with IEC 62717<sup>4</sup> ~~has not been proven~~ is not given.
- ~~– Type C – Luminaires using a LED lamp and covered in IEC 62722-1.~~

Luminaires using an LED lamp are covered in IEC 62722-1 and are not within the scope of this document. **3**

The requirements of this document ~~only~~ relate to type testing.

~~This standard does not cover Type C luminaires.~~

~~This standard does not cover LED luminaires that intentionally produce coloured light, neither does it cover luminaires using OLEDs (organic LEDs).~~

~~These performance requirements are additional to the requirements in IEC 62722-1, Clauses 1 to 9, except where in this Part 2-1 alternative methods of measurement or limits are specified. **4**~~

~~As this standard has been simultaneously developed and edited with the standard for LED modules, where appropriate the compliance of the LED modules to the provisions of IEC 62717 may be transferred to the whole luminaire.~~

This document covers LED luminaires using LED modules, based on inorganic LED technology that produces white light. It does not cover luminaires using light sources based on OLED technology (organic LED technology). **5**

The lifetime of LED luminaires is in most cases much longer than the practical test times. Consequently, the verification of manufacturer's lifetime claims ~~cannot be made in a sufficiently confident way. For that reason the acceptance or rejection of a manufacturer's life time claim, past 25 % of rated life (with a maximum of 6 000 h), **6**~~ is out of the scope of this document.

<sup>4</sup>~~To be published.~~

Instead of lifetime validation, this document has opted for lumen maintenance categories at a defined finite test time. Therefore, the category number does not imply a prediction of achievable lifetime. The categories are lumen-depreciation character categories showing behaviour in agreement with the manufacturer's information which is provided before the test is started.

~~In order to validate a life time claim, an extrapolation of test data is needed. A general method of projecting measurement data beyond limited test time is under consideration.~~

~~For explanation of recommended life time metrics see IEC 62717, Annex C.~~

~~It may be expected that LED luminaires which comply with this standard will start and operate satisfactorily at voltages between 92 % and 106 % of rated supply voltage and at an ambient air temperature within the declared range of the manufacturer.~~

~~Evaluation of LOR (light output ratio) for LED luminaire is under consideration.~~

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60598-1:2020, *Luminaires – Part 1: General requirements and tests*

IEC 60598-2-3:2002, *Luminaires – Part 2-3: Particular requirements – Luminaires for road and street lighting*

IEC 60598-2-5:2015, *Luminaires – Part 2-5: Particular requirements – Floodlights*

IEC 62031:2018, *LED modules for general lighting – Safety specifications*

~~IEC 62504, *General lighting – LEDs and LED modules – Terms and definitions*~~

IEC 62717:2014, *LED modules for general lighting – Performance requirements*

IEC 62717:2014/AMD1:2015

IEC 62717:2014/AMD2:2019

IEC 62722-1, *Luminaire performance – Part 1: General requirements*



# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



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**Luminaire performance –  
Part 2-1: Particular requirements – LED luminaires**

**Performance des luminaires –  
Partie 2-1: Exigences particulières – Luminaires à LED**

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## LUMINAIRE PERFORMANCE –

### Part 2-1: Particular requirements – LED luminaires

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## LUMINAIRE PERFORMANCE –

### Part 2-1: Particular requirements – LED luminaires

#### 1 Scope

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Semi-luminaires are not covered under the scope of this document.

For some types of luminaires (e.g. decorative or household) the provision of performance data under the scope of this document is not appropriate.

In this document, the following types of LED luminaires are distinguished.

- Type A – Luminaires using LED modules where compliance with IEC 62717 is given.
- Type B – Luminaires using LED modules where compliance with IEC 62717 is not given.

Luminaires using an LED lamp are covered in IEC 62722-1 and are not within the scope of this document.

The requirements of this document relate to type testing.

This document covers LED luminaires using LED modules, based on inorganic LED technology that produces white light. It does not cover luminaires using light sources based on OLED technology (organic LED technology).

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IEC 60598-2-5:2015, *Luminaires – Part 2-5: Particular requirements – Floodlights*

IEC 62031:2018, *LED modules for general lighting – Safety specifications*

IEC 62717:2014, *LED modules for general lighting – Performance requirements*

IEC 62717:2014/AMD1:2015

IEC 62717:2014/AMD2:2019

IEC 62722-1, *Luminaire performance – Part 1: General requirements*



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# COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

## PERFORMANCE DES LUMINAIRES –

### Partie 2-1: Exigences particulières – Luminaires à LED

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L'IEC 62722-2-1 a été établie par le sous-comité 34D: Luminaires, du comité d'études 34 de l'IEC: Eclairage. Il s'agit d'une Norme internationale.

Cette deuxième édition annule et remplace la première édition parue en 2014. Cette édition constitue une révision technique.

Cette édition inclut les modifications techniques majeures suivantes par rapport à l'édition précédente:

- a) alignement sur l'IEC 62717:2014, l'IEC 62717:2014/AMD1:2015 et l'IEC 62717:2014/AMD2:2019;
- b) clarification des exigences de température pour l'essai de conservation en 10.2 et à l'Annexe A;
- c) introduction d'une nouvelle Annexe C sur les méthodes de calcul et les mesurages des paramètres pour la transposition des données électriques et photométriques.

Le texte de cette Norme internationale est issu des documents suivants:

Projet	Rapport de vote
34D/1680/FDIS	34D/1687/RVD

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à son approbation.

La langue employée pour l'élaboration de cette Norme internationale est l'anglais.

Le présent document a été rédigé selon les Directives ISO/IEC, Partie 2, il a été développé selon les Directives ISO/IEC, Partie 1 et les Directives ISO/IEC, Supplément IEC, disponibles sous [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). Les principaux types de documents développés par l'IEC sont décrits plus en détail sous [www.iec.ch/standardsdev/publications](http://www.iec.ch/standardsdev/publications).

Une liste de toutes les parties de la série IEC 62722, publiées sous le titre général *Performance des luminaires*, se trouve sur le site web de l'IEC.

Le comité a décidé que le contenu de ce document ne sera pas modifié avant la date de stabilité indiquée sur le site web de l'IEC sous [webstore.iec.ch](http://webstore.iec.ch) dans les données relatives au document recherché. A cette date, le document sera

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## INTRODUCTION

Le présent document reconnaît le besoin d'élaborer des essais appropriés pour les luminaires qui utilisent des LED comme source de lumière électrique. Le présent document est envisagé dans le cadre de la publication des normes de performance relatives aux luminaires en général et aux modules de LED établies simultanément. Le présent document ne couvre pas les luminaires conçus pour les lampes à LED, qui sont traités dans l'IEC 62722-1. Du fait du comportement des LED, les modifications apportées aux normes relatives aux luminaires à LED ont une incidence sur normes relatives aux modules de LED, et inversement. Par conséquent, le présent document a été élaboré en étroite collaboration avec les experts des deux produits.

Les dispositions du présent document reflètent l'état des connaissances techniques des experts dans les domaines de l'industrie des semiconducteurs (puces LED) et des sources de lumière électrique et des luminaires classiques.

Dans la mesure où le présent document a été élaboré et publié en même temps que la norme relative aux modules de LED (l'IEC 62717), le cas échéant, la conformité des modules de LED aux dispositions de l'IEC 62717 peut être transposée à l'ensemble du luminaire.

## PERFORMANCE DES LUMINAIRES –

### Partie 2-1: Exigences particulières – Luminaires à LED

#### 1 Domaine d'application

La présente partie de l'IEC 62722 spécifie les exigences de performance relatives aux luminaires à LED, ainsi que les méthodes et conditions d'essai. Elle s'applique aux luminaires à LED destinés à l'éclairage général.

Les semi-luminaires ne relèvent pas du domaine d'application du présent document.

Pour certains types de luminaires (décoratifs ou domestiques, par exemple), la fourniture des données de performance couvertes par le domaine d'application du présent document n'est pas pertinente.

Dans le présent document, les types de luminaires à LED suivants sont spécifiés.

- Luminaires de type A qui utilisent des modules de LED pour lesquels la conformité à l'IEC 62717 est établie.
- Luminaires de type B qui utilisent des modules de LED pour lesquels la conformité à l'IEC 62717 n'est pas établie.

Les luminaires qui utilisent une lampe à LED sont couverts par l'IEC 62722-1 et ne relève pas du domaine d'application du présent document.

Les exigences du présent document s'appliquent aux essais de type.

Le présent document traite des luminaires à LED constitués de modules de LED qui reposent sur la technologie LED inorganique qui émet de la lumière blanche. Il ne traite pas des luminaires qui utilisent des sources de lumière qui reposent sur la technologie OLED (technologie LED organique).

La durée de vie des luminaires à LED est dans la plupart des cas beaucoup plus longue que les durées appliquées lors des essais pratiques. Par conséquent, la vérification de la durée de vie déclarée par le fabricant ne relève pas du domaine d'application du présent document.

Ainsi, au lieu d'étudier la validation de la durée de vie, le présent document tient compte des catégories de conservation du flux lumineux pendant une durée d'essai limitée définie. Par conséquent, le numéro de catégorie n'implique nullement une prévision de la durée de vie réalisable. Les catégories prennent en compte les caractéristiques de dépréciation du flux lumineux, qui représentent le comportement conformément aux informations fournies par le fabricant avant de démarrer l'essai.

#### 2 Références normatives

Les documents suivants sont cités dans le texte de sorte qu'ils constituent, pour tout ou partie de leur contenu, des exigences du présent document. Pour les références datées, seule l'édition citée s'applique. Pour les références non datées, la dernière édition du document de référence s'applique (y compris les éventuels amendements).

IEC 60598-1:2020, *Luminaires – Partie 1: Exigences générales et essais*

IEC 60598-2-3:2002, *Luminaires – Partie 2-3: Règles particulières – Luminaires d'éclairage public*

IEC 60598-2-5:2015, *Luminaires – Partie 2-5: Exigences particulières – Projecteurs*

IEC 62031:2018, *Modules à LED pour éclairage général – Spécifications de sécurité*

IEC 62717:2014, *Modules de LED pour éclairage général – Exigences de performance*

IEC 62717:2014/AMD1:2015

IEC 62717:2014/AMD2:2019

IEC 62722-1, *Performance des luminaires – Partie 1: Exigences générales*