Aerospace series - Thermal drift of LED luminaires - Classification and measuring methods

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 4828:2022 sisaldab Euroopa standardi EN 4828:2022 ingliskeelset teksti.	This Estonian standard EVS-EN 4828:2022 consists of the English text of the European standard EN 4828:2022.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 30.11.2022.	Date of Availability of the European standard is 30.11.2022.
Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.	The standard is available from the Estonian Centre for Standardisation and Accreditation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

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English Version

Aerospace series - Thermal drift of LED luminaires - Classification and measuring methods

Série aérospatiale - Dérive thermique des luminaires à LED - Classification et méthodes de mesure

Luft- und Raumfahrt - Thermische Drift von LED Leuchten - Klassifizierung und Messmethoden

This European Standard was approved by CEN on 22 August 2022.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 4828:2022) has been prepared by the Aerospace and Defence Industries Association of Europe — Standardization (ASD-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this document has received the approval of the National Associations and the Official Services of the member countries of ASD-STAN, prior to its presentation to CEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2023, and conflicting national standards shall be withdrawn at the latest by May 2023.

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

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

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Introduction

Since LEDs are very susceptible to thermal changes, the chromaticity and luminous flux of an LED luminaire are affected by both its own and its ambient temperature. Variations in temperature can result in variations of luminous flux and chromaticity that in turn can negatively influence the quality of illumination. An example of this is visible differences in chromaticity and luminance of adjacent luminaires.

These differences depend on the utilized LED types and can be compensated to a certain extent by electronic means within the device.

By introducing a measurement method, the functional link between temperature variation and thermal drift of chromaticity and luminous flux in aircraft applications can be quantified. The aim of this method is to ensure a homogenous appearance of LED light units by considering thermal effects.

1 Scope

This document defines terms and specifies measuring methods and settings for the classification of the thermal behaviour of LED and OLED luminaires in the aircraft cabin regarding chromaticity and brightness characteristics. This document is intended for luminaires that are designed to provide photopic vison.

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.

EN 13032-4, *Light and lighting — Measurement and presentation of photometric data of lamps and luminaires — Part 4: LED lamps, modules and luminaires*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp/

— IEC Electropedia: available at https://www.electropedia.org/

3.1
chromaticity
colour valences that only differ in luminance

3.2
chromaticity coordinate
two-dimensional data representation of the colour in the corresponding colour space, e.g. *x* and *y* for the CIE 1931

[SOURCE: EN 4706:2019, 3.6]

3.3
CIE 1931 colour space
description of a two-dimensional colour space for light colours

Note 1 to entry: In the CIE 1931 diagram the colour coordinates *x* and *y* describe the chromaticity locus in the diagram. For this document the CIE 1931 2° observer is applicable.

Note 2 to entry: CIE 015 provides more information about the CIE 1931 colour space.

[SOURCE: EN 4706:2019, 3.5]

3.4
colour space
description model to define colours in a two-dimensional (colour without intensity, e.g. xy space CIE 1931) or three-dimensional space, (colour and intensity, e.g. Yxy CIE 1931)

[SOURCE: EN 4706:2019, 3.3]