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

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

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

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Contents

Page

European foreword ... 3
Introduction ... 4
1 Scope ... 5
2 Normative references ... 5
3 Terms and definitions ... 5
4 Classification references ... 7
4.1 General ... 7
4.2 Reference temperature ... 7
4.3 Reference chromaticity coordinates ... 8
5 Classification categories ... 8
5.1 Luminous flux classification ... 8
5.2 Chromaticity classification ... 9
6 Labelling of the luminaire ... 9
7 Operating the light unit ... 10
7.1 General ... 10
7.2 Installation orientation ... 10
7.3 Temperature settings ... 11
7.4 Power supply ... 11
8 Light measurement ... 11
8.1 General ... 11
8.2 Measurement method ... 11
8.3 Measurement devices ... 11
8.4 Determination of the start value ... 12
Annex A (normative) MacAdam ellipses and interpolation ... 13
A.1 General ... 13
A.2 Example ... 14
Bibliography ... 18

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of an identical text or by endorsement, at the latest by May 2023, and conflicting national standards shall be withdrawn at the latest by May 2023.

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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*