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BSI Standards Publication

Aerospace series – LED colour and brightness ranking

National foreword

This British Standard is the UK implementation of EN 4706:2019.

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A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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English Version

Aerospace series - LED colour and brightness ranking

Série aérospatiale - Classement de couleur et brillance des LED

Luft- und Raumfahrt - LED Farb- und Helligkeitsklassifizierung

This European Standard was approved by CEN on 6 August 2018.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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Contents

European foreword

This document (EN 4706:2019) 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 Standard has received the approval of the National Associations and the Official Services of the member countries of ASD, 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of an identical text or by endorsement, at the latest by December 2019, and conflicting national standards shall be withdrawn at the latest by December 2019.

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Introduction

The chromaticity coordinates and brightness of LEDs of the same type have variations caused by the manufacturing process; this applies to white LEDs and coloured (monochrome) LEDs. Therefore LEDs have to be selected by the manufacturer into “Colour ranks”. Also the brightness of LEDs has certain variations, therefore the LEDs are also selected into “Brightness ranks”.

The step width of these ranking systems depends on the manufacturer and the LED type. For certain applications, e.g. inside an aircraft cabin, a high quality light is demanded, so a manufacturer independent standardization is desirable.

The purpose of this standard is to provide a simple classification system to enable the end user to define lighting colour accuracy.

The decimal sign in this document is a comma.

1 Scope

This document defines selection ranks for LED Luminaires, and LEDs including OLEDs for the use in aircraft lighting. The size of these ranks is defined by the use of grades. This European Standard is valid for photopic light levels only.

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 60050-845:1987, *International electrotechnical vocabulary — Chapter 845: Lighting*

CIE 013.3:1995, *Method of measuring and specifying colour rendering properties of light sources* [1)]

D. L. MacAdam, *Specification of small chromaticity differences* [2)]

3 Terms and definitions

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

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

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
Light Emitting Diode
LED
solid state device embodying a p-n junction, emitting optical radiation when excited by an electric current

3.2
Organic Light Emitting Diode
OLED
organic solid state device embodying a p-n junction, emitting optical radiation when excited by an electric current

3.3
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)

1) Published by International Commission on Illumination (CIE), Kegelgasse 27, A-1030 Vienna, Austria.

2) Published in the Journal of the Optical Society of America, vol 32, No. 5, May 1942, pp 247-274, and in vol 1, No. 1, Jan. 1943, pp 18-26.