ICS 17.180.20 SLOVENSKÁ TECHNICKÁ NORMA Marec 2017

STN	**Kolorimetria. Časť 5: Farebný priestor CIE 1976 L*u*v* a u', v' diagram s rovnomernou stupnicou farebnosti (ISO/CIE 11664-5: 2016).**	**STN EN ISO 11664-5** 67 2060

Colorimetry - Part 5: CIE 1976 L*u*v* Colour space and u, v uniform chromaticity scale diagram (ISO/CIE 11664-5:2016)

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 02/17

Obsahuje: EN ISO 11664-5:2016, ISO/CIE 11664-5:2016

Oznámením tejto normy sa ruší
STN EN ISO 11664-5 (67 2060) zo septembra 2011

124415

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 11664-5

September 2016

ICS 17.180.20

Supersedes EN ISO 11664-5:2011

English Version

Colorimetry - Part 5: CIE 1976 L*u*v* Colour space and u', v' uniform chromaticity scale diagram (ISO/CIE 11664-5:2016)

Colorimétrie - Partie 5: Espace chromatique L*u*v* et diagramme de chromaticité uniforme u', v' CIE 1976 (ISO/CIE 11664-5:2016)

Farbmetrik - Teil 5: CIE 1976 L*u*v* Farbenraum und gleichabständige u', v' Farbtafel (ISO/CIE 11664-5:2016)

This European Standard was approved by CEN on 1 July 2016.

CEN 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 CEN 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 CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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

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

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

Ref. No. EN ISO 11664-5:2016 E

Contents

Page

European foreword

This document (EN ISO 11664-5:2016) has been prepared by Technical Committee ISO/TC 274 "Light and lighting" in collaboration with Technical Committee CEN/TC 139 “Paints and varnishes” the secretariat of which is held by DIN.

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 March 2017, and conflicting national standards shall be withdrawn at the latest by March 2017.

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

This document supersedes EN ISO 11664-5:2011.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO/CIE 11664-5:2016 has been approved by CEN as EN ISO 11664-5:2016 without any modification.

INTERNATIONAL STANDARD

ISO/CIE 11664-5

First edition
2016-09-01

Colorimetry —

Part 5: CIE 1976 L*u*v* colour space and u', v' uniform chromaticity scale diagram

Colorimétrie —

*Partie 5: Espace chromatique L*u*v* et diagramme de chromaticité uniforme u', v' CIE 1976*

Reference number
ISO/CIE 11664-5:2016(E)

COPYRIGHT PROTECTED DOCUMENT

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

CIE Central Bureau
Babenbergerstraße 9/9A
A-1010 Vienna, Austria
Tel. +43 1 714 3187

ciecb@cie.co.at
www.cie.co.at

Contents

Page

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/TC 274, *Light and lighting*.

This first edition of ISO/CIE 11664-5 cancels and replaces ISO 11664-5:2009, of which it constitutes a minor revision. (ISO 11664-5:2009 was prepared by CIE Technical Committee TC 1-57 of Division 1.)

ISO 11664 consists of the following parts, under the general title *Colorimetry*:

— *Part 1: CIE standard colorimetric observers*

— *Part 2: CIE standard illuminants*

— *Part 3: CIE tristimulus values*

— *Part 4: CIE 1976 L*a*b* Colour space*

ISO/CIE 11664 consists of the following parts, under the general title *Colorimetry*:

— *Part 5: CIE 1976 L*u*v* colour space and u′, v′ uniform chromaticity scale diagram*

— *Part 6: CIEDE2000 Colour-difference formula*

Introduction

The three-dimensional colour space produced by plotting CIE tristimulus values (*X*, *Y*, *Z*) in rectangular coordinates is not visually uniform nor is the (x,y,Y) space nor the two-dimensional CIE x,y chromaticity diagram. Equal distances in these spaces and diagrams do not represent equally perceptible differences between colour stimuli. For this reason, in 1976, the CIE introduced and recommended two new spaces (known as CIELAB and CIELUV) whose coordinates are non-linear functions of *X*, *Y* and *Z*. The recommendation was put forward in an attempt to unify the then very diverse practice in uniform colour spaces and associated colour difference formulae.[2][8] Both these more-nearly uniform colour spaces have become well accepted and widely used. Numerical values representing approximately the relative magnitude of colour differences can be described by simple Euclidean distances in the spaces or by more sophisticated formulae that improve the correlation with the relative perceived size of differences. The purpose of this part of ISO/CIE 11664 is to define procedures for calculating the coordinates of the CIE 1976 L*u*v* (CIELUV) colour space and the Euclidean colour difference values based on these coordinates. This part of ISO/CIE 11664 also defines a related chromaticity diagram that is a projection of the CIE x,y chromaticity diagram maintaining straight lines of dominant and complementary wavelengths. This part of ISO/CIE 11664 does not cover the alternative uniform colour space, CIELAB,[5] nor does it cover more sophisticated colour difference formulae based on CIELAB, such as the CMC formula,[3] the CIE 94 formula,[1] the DIN 99 formula,[4] and the CIEDE2000 formula.[6]

INTERNATIONAL STANDARD **ISO/CIE 11664-5:2016(E)**

Colorimetry —

Part 5:
CIE 1976 L*u*v* colour space and u', v' uniform chromaticity scale diagram

1 Scope

This part of ISO/CIE 11664 specifies the method of calculating the coordinates of the CIE 1976 L*u*v* colour space including correlates of lightness, chroma, saturation and hue. It includes two methods for calculating Euclidean distances in this space to represent the relative perceived magnitude of colour differences. It also specifies the method of calculating the coordinates of the u′,v′ uniform chromaticity scale diagram.

This part of ISO/CIE 11664 is applicable to tristimulus values calculated using the colour-matching functions of the CIE 1931 standard colorimetric system or the CIE 1964 standard colorimetric system. This part of ISO/CIE 11664 may be used for the specification of colour stimuli perceived as belonging to a reflecting or transmitting object, where a three-dimensional space more uniform than tristimulus space is required. This includes self-luminous displays, like cathode ray tubes, if they are being used to simulate reflecting or transmitting objects and if the stimuli are appropriately normalized. This part of ISO/CIE 11664, as a whole, does not apply to colour stimuli perceived as belonging to an area that appears to be emitting light as a primary light source or that appears to be specularly reflecting such light. Only the u′,v′ uniform chromaticity scale diagram defined in 4.1 and the correlates of hue and saturation defined in 4.3 apply to such colour stimuli.

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.

ISO 11664–1/CIE S 014-1, *Colorimetry — Part 1: CIE standard colorimetric observers*

ISO 11664–2/CIE S 014-1, *Colorimetry — Part 2: CIE standard illuminants*

CIE S 017, *ILV: International Lighting Vocabulary*