SLOVENSKI STANDARD

SIST EN 61966-2-4:2007

januar 2007

Večpredstavnostni sistemi in oprema - Meritve in upravljanje barv - 2-4. del: Upravljanje barv - Razširjena lestvica v YCC barvnem prostoru za video aplikacije - xvYCC (IEC 61966-2-4:2006)

(istoveten EN 61966-2-4:2006)

Multimedia systems and equipment - Colour measurement and management - Part 2-4: Colour management - Extended-gamut YCC colour space for video applications - xvYCC (IEC 61966-2-4:2006)

iTeh STANDARD PREVIEW (standards.iteh.ai)

<u>SIST EN 61966-2-4:2007</u> https://standards.iteh.ai/catalog/standards/sist/dc7dc52b-4fdf-42bd-8e31-6cd7540c2b35/sist-en-61966-2-4-2007

ICS 17.180.20; 33.160.60

Referenčna številka SIST EN 61966-2-4:2007(en)

iTeh STANDARD PREVIEW (standards.iteh.ai)

EUROPEAN STANDARD

EN 61966-2-4

NORME FUROPÉENNE **EUROPÄISCHE NORM**

September 2006

ICS 33.160.40

English version

Multimedia systems and equipment -Colour measurement and management Part 2-4: Colour management -Extended-gamut YCC colour space for video applications **xvYCC**

(IEC 61966-2-4:2006)

Mesure et gestion de la couleur dans les systèmes et appareils multimedia Partie 2-4: Gestion de la couleur -Extension de gamme de l'espace chromatique YCC ppureh STANDARD pfür Videpanwendungen applications vidéo -

Multimediasysteme und -geräte -Farbmessung und Farbmanagement Teil 2-4: Farbmanagement -Erweiterter YCC-Farbraum **xvYCC** (standards.iteh(IEO)61966-2-4:2006)

xvYCC (CEI 61966-2-4:2006)

SIST EN 61966-2-4:2007

https://standards.iteh.ai/catalog/standards/sist/dc7dc52b-4fdf-42bd-8e31-

This European Standard was approved by CENELEC on 2006-09-017. CENELEC 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 Central Secretariat or to any CENELEC member.

This European Standard exists in two official versions (English and German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization Comité Européen de Normalisation Electrotechnique Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of the International Standard IEC 61966-2-4:2006, prepared by IEC TC 100, Audio, video and multimedia systems and equipment, was submitted to the formal vote and was approved by CENELEC as EN 61966-2-4 on 2006-09-01 without any modification.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement

(dop) 2007-06-01

latest date by which the national standards conflicting with the EN have to be withdrawn

(dow) 2009-09-01

Endorsement notice

The text of the International Standard IEC 61966-2-4:2006 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 61966-2-1

NOTE Harmonized as EN 61966-2-1:2000 + A1:2003 (not modified).

iTeh STANDARD PREVIEW

IEC 61966-2-2

NOTE Harmonized as EN 61966-2-2:2003 (not modified).

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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.

NOTE Where an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	EN/HD	<u>Year</u>
IEC 60050-845	1987	International Electrotechnical Vocabulary (IEV) Chapter 845: Lighting	-	-
ITU-R Recommendation BT.601-5	1995	Studio encoding parameters of digital television for standard 4:3 and wide-screen 16:9 aspect ratios	-	-
ITU-R Recommendation BT.709-5	2002	Parameter values for the HDTV standards for production and international programme exchange	-	-

iTeh STANDARD PREVIEW (standards.iteh.ai)

iTeh STANDARD PREVIEW (standards.iteh.ai)

INTERNATIONAL STANDARD

IEC 61966-2-4

First edition 2006-01

Multimedia systems and equipment – Colour measurement and management –

Part 2-4:
Colour management –
Textended-gamut YCC colour space
for video applications – xvYCC
(standards.iteh.ai)

<u>SIST EN 61966-2-4:2007</u> https://standards.iteh.ai/catalog/standards/sist/dc7dc52b-4fdf-42bd-8e31-6cd7540c2b35/sist-en-61966-2-4-2007

© IEC 2006 — Copyright - all rights reserved

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

International Electrotechnical Commission, 3, rue de Varembé, PO Box 131, CH-1211 Geneva 20, Switzerland Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch



PRICE CODE

R

CONTENTS

FΟ	REWO	RD	3			
IN٦	RODU	CTION	5			
1	Scope	······································	6			
2	Norma	ative references	6			
3	Terms and definitions					
4	Colori	Colorimetric parameters and related characteristics				
	4.1	Primary colours and reference white	7			
	4.2	Opto-electronic transfer characteristics	7			
	4.3	YCC (luma-chroma-chroma) encoding methods	8			
	4.4	Digital quantization methods	8			
5	Encod	ling transformations	9			
	5.1	Introduction	9			
		Transformation from xvYCC values to CIE 1931 XYZ values				
	5.3	Transformation from CIE 1931 XYZ values to xvYCC values	11			
An	nex A (i	informative) Compression of specular components of Y' signals	13			
An	nex B (i	informative) Default transformation from 16-bit scRGB values to xvYCC values.	14			
An	nex C (informative) xvYCC/ITU-R BT 709 and sYCC/sRGB compatibility	16			
Bib	liograp	hySIST EN 61966-2-4:2007 https://standards.iteh.ai/catalog/standards/sist/dc7dc52b-4fdf-42bd-8e31-	18			
Fig	ure A.1	- Example of the specular compression method	13			
Fig	ure C.1	- Relationship between ITU-R BT.709 and sRGB	16			
Fig	ure C.2	2 – Relationship between xvYCC and sYCC	17			
Tal	ole 1 –	CIE chromaticities for reference primary colours and reference white	7			

INTERNATIONAL ELECTROTECHNICAL COMMISSION

MULTIMEDIA SYSTEMS AND EQUIPMENT – COLOUR MEASUREMENT AND MANAGEMENT –

Part 2-4: Colour management – Extended-gamut YCC colour space for video applications – xvYCC

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.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 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.

International Standard IEC 61966-2-4 has been prepared by IEC technical committee 100: Audio, video and multimedia systems and equipment.

The text of this standard is based on the following documents:

CDV	Report on voting	
100/967/CDV	100/1026/RVC	

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

IEC 61966 consists of the following parts, under the general title *Multimedia systems and* equipment – Colour measurement and management:

- Part 2-1: Colour management Default RGB colour space sRGB
- Part 2-2: Colour management Extended RGB colour space scRGB
- Part 2-4: Colour management Extended-gamut YCC colour space for video applications xvYCC
- Part 2-5: Colour management Optional RGB colour space opRGB (under consideration)
- Part 3: Equipment using cathode ray tubes
- Part 4: Equipment using liquid crystal display panels
- Part 5: Equipment using plasma display panels
- Part 6: Front projection displays
- Part 7-1: Colour printers Reflective prints RGB inputs
- Part 7-2: Colour printers Reflective prints CMYK inputs (proposed work item)
- Part 8: Multimedia colour scanners
- Part 9: Digital cameras
- Part 10: Quality assessment (proposed work item)
- Part 11: Quality assessment Impaired video in network systems (proposed work item)

iTeh STANDARD PREVIEW

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the ISC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

reconfirmed; <u>SIST EN 61966-2-42007</u>

https://standards.iteh.ai/catalog/standards/sist/dc7dc52b-4fdf-42bd-8e31-

• withdrawn; 6cd7540c2b35/sist-en-61966-2-4-2007

- · replaced by a revised edition, or
- · amended.

A bilingual version of this publication may be issued at a later date.

INTRODUCTION

After the publication of IEC 61966-2-1, Amendment 1, the sYCC colour encoding was used to capture, store and print extended colour gamut for still image applications. Users received pleasant benefit by exchanging and reproducing wide-gamut colour images.

Recently, various kinds of displays that are capable of producing a wider gamut of colour than the conventional CRT-based displays are emerging. However, most of the current video contents that are displayed on conventional displays, are rendered for the sRGB-gamut. Users of wide-gamut displays could benefit from wide-gamut colour images by video colour encoding that supports a larger colour gamut.

This standard defines the "extended-gamut YCC colour space for video applications". It is based on the current implementation of YCC colour encoding that is used in the video industry (namely ITU-R BT.709-5) and extends its definition to the wider gamut of colour range.

iTeh STANDARD PREVIEW (standards.iteh.ai)