

**Multimedia systems and equipment - Colour
measurement and management - Part 12-1: Metadata for
identification of colour gamut (Gamut ID)**

EESTI STANDARDI EESSÕNA

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**Multimedia systems and equipment -
Colour measurement and management -
Part 12-1: Metadata for identification of colour gamut (Gamut ID)
(IEC 61966-12-1:2011)**

Systèmes et appareils multimédia -
Mesure et gestion de la couleur -
Partie 12-1: Métadonnées d'identification
de gamme de couleurs (Gamut ID)
(CEI 61966-12-1:2011)

Multimediasysteme und -geräte -
Farbmessung und Farbmanagement -
Teil 12-1: Metadaten für die
Kennzeichnung des Farbumfangs
(Gamut-ID)
(IEC 61966-12-1:2011)

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

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Foreword

The text of document 100/1757/FDIS, future edition 1 of IEC 61966-12-1, prepared by technical area 2, Colour measurement and management, of IEC TC 100, Audio, video and multimedia systems and equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61966-12-1 on 2011-02-16.

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The following dates were fixed:

- | | | |
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| – latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement | (dop) | 2011-11-16 |
| – latest date by which the national standards conflicting with the EN have to be withdrawn | (dow) | 2014-02-16 |

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61966-12-1:2011 was approved by CENELEC as a European Standard without any modification.

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 When 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>	<u>EN/HD</u>	<u>Year</u>
IEC 60050-845	1987	International Electrotechnical Vocabulary (IEV) - Chapter 845: Lighting	-	-
IEC 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	EN 61966-2-4	2006
ISO 15076-1	2005	Image technology colour management - Architecture, profile format and data structure - Part 1: Based on ICC.1:2004-10	-	-
ISO 22028-1	2004	Photography and graphic technology - Extended colour encodings for digital image storage, manipulation and interchange - Part 1: Architecture and requirements	-	-
ITU-R BT.709-5	2002	Parameter values for the HDTV standards for production and international programme exchange	-	-
CIE 15	2004	Colorimetry	-	-
SMPTE 274M	2005	SMPTE Standard for Television - 1920 x 1080 Image Sample Structure, Digital Representation and Digital Timing Reference Sequences for Multiple Picture Rates	-	-

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INTRODUCTION

New technologies in capturing and displaying wide-gamut colour images enable a new market of wide-gamut video colour content creation. Recent video standards for wide gamut colour space encoding such as IEC 61966-2-4 (xvYCC) were established in order to be able to distribute content with a colour gamut that is extended with respect to classical colour gamuts such as defined by colorimetry standards ITU-R BT.601 (standard definition television) and ITU-R BT.709 (high definition television). With the increasing popularity of wide gamut and high dynamic range content and displays, the variety of colour gamuts of displays is expected to increase. This issue can be an obstacle for adopting wide-gamut video colour content in professional content creation since the compatibility of the content to the employed displays as well as the compatibility among different displays is not ensured. The term display includes here any video colour reproduction equipment, such as direct view displays and projectors. Thanks to improvements of technology, the variety of colour gamut and colour reproduction capacities of displays increases while the colour gamut and the colour encoding rules of existing colour space encoding standards are fixed.

To address this issue, the IEC standard Gamut ID (IEC 61966-12-1) specifies a colour gamut metadata scheme for video systems including information for colour reproduction. This metadata can amend a video content or a display. More specifically, improvements can be achieved if the wide-gamut colour content is created with the knowledge of the display colour gamut as well as if the colour reproduction in the display is done with the knowledge of the colour gamut of the pictorial content.

This standard enables video systems defining their own colour gamut. This standard defines necessary metadata that allows managing inhomogeneous video systems with different colour gamuts. This standard generalizes existing colour space encoding standards having a fixed colour gamut.

MULTIMEDIA SYSTEMS AND EQUIPMENT – COLOUR MEASUREMENT AND MANAGEMENT –

Part 12-1: Metadata for identification of colour gamut (Gamut ID)

1 Scope

This part of IEC 61966 defines the colour gamut metadata scheme for video systems and similar applications.

The metadata can be associated with wide gamut video colour content or to a piece of equipment to display the content.

When associated with content, the colour gamut metadata defines the gamut for which the content was created. It can be used by the display for controlled colour reproduction even if the display's colour gamut is different from that of the content.

When associated with a display, the colour gamut metadata defines the display colour gamut. It can be used during content creation to enable improved colour reproduction.

The colour gamut metadata may cover associated colour encoding information, which includes all information required for a controlled colour reproduction, when such information is not provided by the colour encoding specification.

The colour gamut metadata scheme provides scalable solutions. For example, more flexible solutions will be used for the professional use, while much simpler solutions will be used for consumer use with easier product implementation.

This part of IEC 61966 only defines the colour gamut metadata scheme. Vendor-specific solutions for creation and end-use of this metadata are allowed.

2 Normative references

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.

IEC 60050(845):1987, *International electrotechnical vocabulary – Chapter 845: Lighting*

IEC 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*

ISO 15076-1:2005 *Image technology colour management – Architecture, profile format and data structure – Part 1: Based on ICC.1:2004-10*

ISO 22028-1:2004, *Photography and graphic technology – Extended colour encodings for digital image storage, manipulation and interchange – Part 1: Architecture and requirements*

ITU-R BT.709-5:2002, *Parameter values for the HDTV standards for production and international programme exchange*

CIE 15:2004, Colorimetry

SMPTE 274M:2005, *SMPTE Standard for Television - 1920 x 1080 Image Sample Structure, Digital Representation and Digital Timing Reference Sequences for Multiple Picture Rates*

3 Terms and definitions

For the purposes of this document, the following terms and definitions as well as the terms and definitions of colour space, illuminance, luminance, tristimulus, and other related lighting terms of IEC 60050(845) apply.

3.1 content

video content in production, post-production or consumption

3.2 gamut

a solid in a colour space

3.3 gamut boundary description

description of the boundary of a colour gamut

3.4 radiometrically-linear colour space coordinates

colour space coordinates that are linear with respect to image radiance

4 Abbreviations

GBD	Gamut Boundary Description
LSB	Least Significant Bit
MSB	Most Significant Bit
GI	Gamut Instance
GH	Gamut Hull
GC	Gamut Component

5 Overview

This standard specifies metadata called “Gamut ID metadata” providing information on an actual colour gamut.

The Gamut ID metadata contains four parts and its format is summarized in Table 1.

Table 1 – Format of Gamut ID metadata

Byte # hex	Metadata content
0h0000	Header of Gamut ID metadata
ID_G	Description of gamut geometry
ID_E	Description of colour reproduction

Clause 6 specifies the header of Gamut ID metadata.

Clauses 7 and 8 specify the description of gamut geometry that corresponds to one of three profiles as listed below: