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Multimedia systems and equipment – Colour measurement and management – Part 12-2: Simple metadata format for identification of colour gamut

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CONTENTS

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MULTIMEDIA SYSTEMS AND EQUIPMENT – COLOUR MEASUREMENT AND MANAGEMENT –

Part 12-2: Simple metadata format for identification of colour gamut

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IEC 61966-12-2 has been prepared by technical area 2: Colour measurement and management, of IEC technical committee 100: Audio, video and multimedia systems and equipment. It is an International Standard.

This second edition cancels and replaces the first edition published in 2014. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) the number of bits of metadata format has been extended in Clause 4;
b) Annex C has been added for handling HDR content.

The text of this International Standard is based on the following documents:

Draft	Report on voting
100/3847/CDV	100/4109/RVC

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts of the IEC 61966 series, published under the general title *Multimedia systems and equipment – Colour measurement and management*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

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 ITU-R BT.2100 (HDR), ITU-R BT.2020 (UHDTV) and IEC 61966-2-4 (xvYCC) were developed in order to be able to distribute content with a colour gamut that is extended with respect to classical colour gamuts such as those defined by 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 to adoption of 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 in technology, the variety of colour gamuts and colour reproduction capacities of displays are increasing while the colour gamut and the colour encoding rules of existing colour space encoding standards are fixed.

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

IEC 61966-12-1 has the capability to describe arbitrary 3D colour gamuts in a given colour space and include the full/medium profile for professional use and the simple profile for consumer use with easier product implementation. This approach is effective, but some ambiguities can occur in practical use, for example if typical CE devices are able to decode the simple profile only owing to CPU and software limitations.

In this case, even if a sender device and a receiver device are based on IEC 61966-12-1:

a) the receiver device cannot handle the Gamut ID of incoming content, if the sender device sends only a full or a medium profile;
b) the sender device should convert a full profile to a simple one for CE devices if the receiver can receive the simple profile only, but the conversion is not possible for all the cases.

Therefore, a simple Gamut ID profile standard based on this document has been developed to address this problem.

This second edition extends the number of bits of "back level ratio" in the metadata format to accommodate the wider dynamic range content and displays.

MULTIMEDIA SYSTEMS AND EQUIPMENT – COLOUR MEASUREMENT AND MANAGEMENT –

Part 12-2: Simple metadata format for identification of colour gamut

1 Scope

This part of IEC 61966-12 specifies the colour gamut metadata format for video systems intended for use in CE (consumer electronics) devices. The metadata specified in this part of IEC 61966-12 is limited to the gamut description for display types comprising the three primary additive colours, whose white and black points have the same chromaticity. It is fundamentally based on the conventional VESA-EDID format.

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

This document provides the simplest, but unambiguous solution for typical CE devices that are based on colour gamut information communication.

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, *International Electrotechnical Vocabulary – Part 845: Lighting*

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

ISO 15076-1, *Image technology colour management – Architecture, profile format and data structure – Part 1: Based on ICC.2010*