

INTERNATIONAL STANDARD

**Multimedia systems and equipment – Colour measurement and management –
Part 5: Equipment using plasma display panels**

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IEC 61966-5:2008

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IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland
Email: inmail@iec.ch
Web: www.iec.ch

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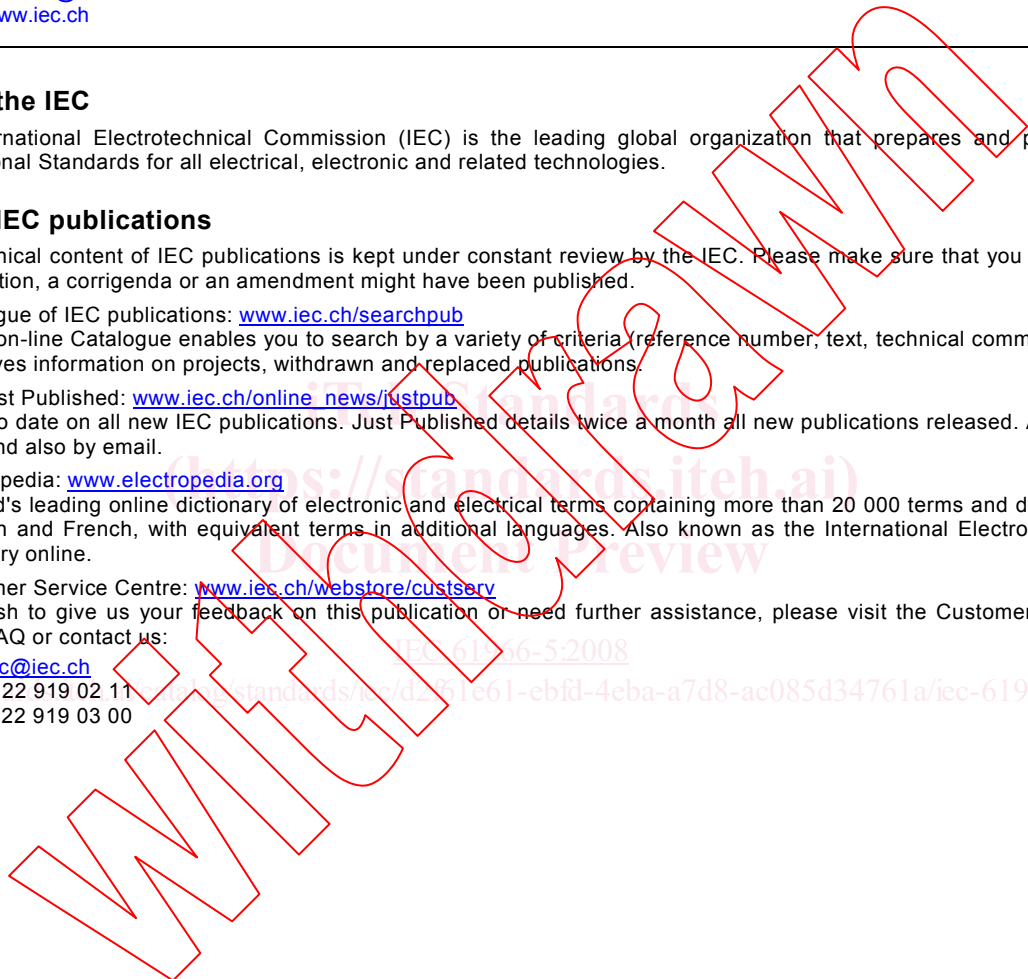
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**MULTIMEDIA SYSTEMS AND EQUIPMENT –
COLOUR MEASUREMENT AND MANAGEMENT –**

Part 5: Equipment using plasma display panels

FOREWORD

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International Standard IEC 61966-5 has been prepared by technical area 2: Colour measurement and management of IEC technical committee 100: Audio, video and multimedia systems and equipment.

This second edition cancels and replaces the first edition published in 2000. This edition includes the following significant technical changes with respect to the previous edition: Annex A has been deleted as it is no longer relevant.

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

| | |
|--------------|------------------|
| CDV | Report on voting |
| 100/1295/CDV | 100/1387/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.

A list of all parts of the IEC 61966 series, 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 publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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

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INTRODUCTION

A series of methods and parameters for colour measurements and management for use in multimedia systems and equipment is applicable to the assessment of colour production and reproduction. This part of IEC 61966 deals with equipment using plasma display panels (PDP) to display colour images for use in multimedia applications.

The methods of measurement standardized in this part of IEC 61966 are designed to make possible the objective performance assessment and characterization of colour reproduction of PDP displays which accept red – green – blue analogue or digital signals from electrical input terminals and output colour images on PDP display screens. For PDP displays to which analogue signals are applicable, the corresponding digital signals are taken into account. The measured results are intended to be used for the purpose of equipment specific colour control in order to enable colour management in open multimedia systems.

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MULTIMEDIA SYSTEMS AND EQUIPMENT – COLOUR MEASUREMENT AND MANAGEMENT –

Part 5: Equipment using plasma display panels

1 Scope

This part of IEC 61966 defines input test signals, measurement conditions, methods of measurement and reporting of the measured data, to be used for colour characterization and colour management of plasma display panels in multimedia systems.

Colour control within equipment is outside the scope of this International Standard. It does not specify limiting values for various parameters.

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 (IEV) – Chapter 845: Lighting/ CIE 17.4:1987, International Lighting Vocabulary (joint IEC/CIE publication)*

IEC 61966-3:2000, *Multimedia systems and equipment – Colour measurement and management – Part 3: Equipment using cathode ray tubes*

ISO 5-4:1995, *Photography – Density measurements – Part 4: Geometric conditions for reflection density*

ISO 9241-8:1997, *Ergonomic requirements for office work with visual display terminals (VDTs) – Part 8: Requirements for displayed colours*

ISO/CIE 10526:1999, *CIE standard illuminants for colorimetry*

ISO/CIE 10527:1991, *CIE standard colorimetric observers*

CIE 15:2004, *Colorimetry*

3 Terms and definitions

For the purpose of this part of IEC 61966, the definitions of IEC 60050-845/CIE 17.4, as well as the following definitions, apply.

3.1

background

image on a screen of the PDP display other than the interested area of a colour patch

3.2

colour control

effort to convert equipment dependent colour image data to equipment independent data for a specific colour space including tone characteristics

3.3

colour patch, test area

square colour image on a screen of the PDP display subject to be measured for colour reproduction, in which input data for the red, green and blue channels are kept constant within the image area

3.4

CRT

colorimetrically well-controlled equipment using cathode ray tubes to present colour images with digital inputs for reference

3.5

PDP display

any multimedia equipment using plasma display panels to present colour images

3.6

effective screen height

vertical dimension of the effective screen area

3.7

effective screen area

area where a picture can be produced

3.8

normalized (image) signal

input signal normalized by its full scale value, whose level is of interest in calculation and evaluation of colour control function within PDP display, see also equation (1)

3.9

uncertainty (of measurement)

parameter, associated with the result of a measurement, that characterizes the dispersion of the values that could reasonably be attributed to the particular quantity subject to measurement

NOTE See also [16]¹.

¹ Figures in square brackets refer to the bibliography

4 Letters and symbols

The notations consistently adopted in this part of IEC 61966 are summarized below.

| | |
|-------|--|
| A | display area ratio |
| N | number of bits in digital data for each channel |
| M | maximum integer for non-negative N -bit system; $M = 2^{N-1}$ |
| D_R | digital data applied to red channel |
| D_G | digital data applied to green channel |
| D_B | digital data applied to blue channel |
| R | normalized input level to red channel |
| G | normalized input level to green channel |
| B | normalized input level to blue channel |
| X | one of measured raw data using spectroradiometers and colorimeters corresponding to tristimulus values |
| Y | one of measured raw data using spectroradiometers and colorimeters corresponding to tristimulus values in candela per square metre |
| Z | one of measured raw data using spectroradiometers and colorimeters corresponding to tristimulus values |
| R' | linearized data for red channel taking into account the tone characteristics of the channel |
| G' | linearized data for green channel taking into account the tone characteristics of the channel |
| B' | linearized data for blue channel taking into account the tone characteristics of the channel |
| X' | one of the tristimulus values normalized by Y_n (candela per square metre) for peak white |
| Y' | one of the tristimulus values normalized by Y_n (candela per square metre) for peak white |
| Z' | one of the tristimulus values normalized by Y_n (candela per square metre) for peak white |

5 Conditions

5.1 Environmental conditions

All measurements specified in this standard shall be carried out in a dark room. Particular attention should be paid to reflected illumination caused by the ambient objects (desktop, wall, etc.) and to direct illumination from light-emitting indicators of measuring instruments.

A 1 h warm-up time should precede the measurements in 7.2, 9.2, 10.2, 11.2 and 14.2, if not specified by the manufacturer of the equipment.

The mains voltage and frequency shall be at the rated values specified by the manufacturer of a PDP display. When the mains voltage fluctuates, a regulated power supply should be used to maintain the supply voltage within $\pm 5\%$ of the rated value.