

This is a preview - click here to buy the full publication



IEC 61966-5

Edition 2.0 2008-11

INTERNATIONAL STANDARD

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

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

PRICE CODE



ICS 33.160.60; 35.180; 31.120

ISBN 978-2-88910-591-5

CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references	7
3 Terms and definitions	7
4 Letters and symbols	9
5 Conditions	9
5.1 Environmental conditions	9
5.2 Conditions of measurements	10
5.3 Input digital data	11
6 Measurement equipment	12
6.1 Spectroradiometer.....	12
6.2 Colorimeter	13
7 Spectral characteristics and intensity of the primaries and white	13
7.1 Characteristics to be measured	13
7.2 Measurement conditions.....	13
7.3 Method of measurement.....	14
7.4 Presentation of results	14
8 Basic colorimetric characteristics.....	15
8.1 Characteristics to be measured	15
8.2 Method of calculation	15
8.3 Presentation of results	16
9 Tone characteristics	16
9.1 Characteristics to be measured	16
9.2 Measurement conditions.....	17
9.3 Method of measurement.....	17
9.4 Presentation of results	18
10 Inter-channel dependency	20
10.1 Characteristics to be measured	20
10.2 Measurement conditions.....	20
10.3 Method of measurement.....	21
10.4 Presentation of results	22
11 Spatial non-uniformity.....	24
11.1 Characteristics to be measured	24
11.2 Measurement conditions.....	24
11.3 Method of measurement.....	24
11.4 Presentation of results	25
12 Temporal stability	26
12.1 Short-term stability	26
12.1.1 Characteristics to be measured	26
12.1.2 Measurement conditions.....	26
12.1.3 Method of measurement.....	26
12.1.4 Presentation of results.....	27
12.2 Mid-term stability.....	28
12.2.1 Characteristics to be measured	28

12.2.2	Measurement conditions	28
12.2.3	Method of measurement	28
12.2.4	Presentation of results	28
13	Surface reflection	29
13.1	Characteristics to be measured	29
13.2	Measurement conditions	29
13.3	Method of measurement	30
13.4	Presentation of results	30
14	Display area ratio characteristics	31
14.1	Characteristics to be measured	31
14.2	Measurement conditions	31
14.3	Method of measurement	31
14.4	Presentation of results	32
	Bibliography	33
	Figure 1 – Equipment arrangement for non-contact measurements	10
	Figure 2 – Equipment arrangement for contact measurements	11
	Figure 3 – Size of a colour patch	11
	Figure 4 – An example of the spectral radiance distributions $r(\lambda)$, $g(\lambda)$, $b(\lambda)$	14
	Figure 5 – Measured points and interpolated curves	18
	Figure 6 – Measurement points for spatial non-uniformity	24
	Figure 7 – Example plots for short-term stability	27
	Figure 8 – Example plots for mid-term stability	29
	Figure 9 – Equipment arrangement	30
	Figure 10 – Specification of a white patch	32
	Figure 11 – Example plots for the display area ratio characteristics	32
	Table 1 – Input data for peak primaries and peak white	14
	Table 2 – Example of reporting form for colours in maximum excitations	15
	Table 3 – Example of reporting form	16
	Table 4 – An example set of basic normalized data for tone characteristics	19
	Table 5 – Digital inputs to generate colour patches for measurement of inter-channel dependency	21
	Table 6 – Example of normalized tristimulus values (the matrix A)	23
	Table 7 – Example of reporting form	26
	Table 8 – Example of reporting form	30

INTERNATIONAL ELECTROTECHNICAL COMMISSION

MULTIMEDIA SYSTEMS AND EQUIPMENT – COLOUR MEASUREMENT AND MANAGEMENT –

Part 5: Equipment using plasma display panels

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 61966-5 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.

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.

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*