



NSAI
Standards

Irish Standard
I.S. EN 61988-2-3:2009

Plasma display panels -- Part 2-3:
Measuring methods - Image quality:
defects and degradation (IEC 61988-2
-3:2009 (EQV))

I.S. EN 61988-2-3:2009

Incorporating amendments/corrigenda issued since publication:

| | | |
|---|--|---|
| <i>This document replaces:</i> | <i>This document is based on:</i> EN 61988-2-3:2009 | <i>Published:</i> 6 November, 2009 |
| This document was published under the authority of the NSAI and comes into effect on: 9 February, 2010 | | ICS number: 31.260 |
| NSAI 1 Swift Square, Northwood, Santry Dublin 9 | T +353 1 807 3800 F +353 1 807 3838 E standards@nsai.ie W NSAI.ie | Sales: T +353 1 857 6730 F +353 1 857 6729 W standards.ie |
| Údarás um Chaighdeáin Náisiúnta na hÉireann | | |

**Plasma display panels -
Part 2-3: Measuring methods -
Image quality: defects and degradation
(IEC 61988-2-3:2009)**

Panneaux d'affichage à plasma -
Partie 2-3: Méthodes de mesure -
Qualité d'image: défauts
et dégradation
(CEI 61988-2-3:2009)

Plasmabildschirme -
Teil 2-3: Messverfahren -
Bildqualität: Defekte
und Bildverschlechterung
(IEC 61988-2-3:2009)

This European Standard was approved by CENELEC on 2009-09-01. 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 three official versions (English, French, 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, Bulgaria, 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: Avenue Marnix 17, B - 1000 Brussels

I.S. EN 61988-2-3:2009

EN 61988-2-3:2009

- 2 -

Foreword

The text of document 110/180/FDIS, future edition 1 of IEC 61988-2-3, prepared by IEC TC 110, Flat panel display devices, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61988-2-3 on 2009-09-01.

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) 2010-06-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2012-09-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61988-2-3:2009 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 61966-5 | NOTE Harmonized as EN 61966-5:2009 (not modified). |
| IEC 61988-2-2 | NOTE Harmonized as EN 61988-2-2:2003 (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 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 60068-1 | 1988 | Environmental testing - Part 1: General and guidance | EN 60068-1 ¹⁾ | 1994 |
| IEC 60107-1 | 1997 | Methods of measurement on receivers for television broadcast transmissions - Part 1: General considerations - Measurements at radio and video frequencies | EN 60107-1 | 1997 |
| IEC 61988-1 | - ²⁾ | Plasma display panels - Part 1: Terminology and letter symbols | EN 61988-1 | 2003 ³⁾ |
| IEC 61988-2-1 | 2002 | Plasma display panels - Part 2-1: Measuring methods - Optical | EN 61988-2-1 | 2002 |
| CIE 15 | 2004 | Colorimetry | - | - |

¹⁾ EN 60068-1 includes A1:1992 to IEC 60068-1 + corr. October 1988.

²⁾ Undated reference.

³⁾ Valid edition at date of issue.

This page is intentionally left BLANK.

CONTENTS

| | |
|---|----|
| FOREWORD..... | 4 |
| 1 Scope..... | 6 |
| 2 Normative references | 6 |
| 3 Terms and definitions | 6 |
| 4 Standard measuring conditions..... | 7 |
| 4.1 Environmental conditions | 7 |
| 4.2 Lighting conditions | 7 |
| 4.3 Set-up conditions | 7 |
| 4.3.1 Adjustment of PDP modules | 7 |
| 4.3.2 Warm-up condition of PDP modules | 7 |
| 4.3.3 Conditions of measuring and driving equipment..... | 7 |
| 5 Measuring methods | 8 |
| 5.1 Cell defects | 8 |
| 5.1.1 Purpose..... | 8 |
| 5.1.2 Measuring equipment | 8 |
| 5.1.3 Measuring layout | 8 |
| 5.1.4 Division of display zone | 8 |
| 5.1.5 Classification of cell defects | 9 |
| 5.1.6 Luminance levels of defective cells..... | 9 |
| 5.1.7 Measuring procedure..... | 11 |
| 5.2 Image sticking | 12 |
| 5.2.1 Purpose..... | 12 |
| 5.2.2 Measuring equipment | 12 |
| 5.2.3 Specification of image sticking..... | 13 |
| 5.2.4 Measuring procedure..... | 13 |
| 5.3 Luminance lifetime | 15 |
| 5.3.1 Purpose..... | 15 |
| 5.3.2 Measuring equipment | 16 |
| 5.3.3 Measuring procedure..... | 16 |
| Annex A (informative) Luminance lifetime estimation | 18 |
| Bibliography..... | 23 |
| Figure 1 – Measuring system and its arrangement..... | 8 |
| Figure 2 – Example of display zone | 9 |
| Figure 3 – Dark defect on green screen and its luminance level..... | 10 |
| Figure 4 – Bright defect on white screen and its luminance level..... | 10 |
| Figure 5 – Bright defect on black screen and its luminance level..... | 10 |
| Figure 6 – Bright defect on other colour screen and its luminance level | 11 |
| Figure 7 – Image sticking pattern | 13 |
| Figure 8 – Image sticking measuring position..... | 14 |
| Figure 9 – Stabilization of luminance lifetime measurement | 16 |
| Figure 10 – Example of luminance lifetime measurement..... | 17 |
| Figure A.1 – An example of luminance degradation under different luminance conditions | 19 |

| | |
|---|----|
| Figure A.2 – The luminance degradation on $\log t$ axis | 19 |
| Figure A.3 – The luminance degradation on $L(t)$ vs. $t^{1/2}$ axis (an example of straight line) | 21 |
| Figure A.4 – The luminance degradation on $L(t)$ vs. $t^{1/2}$ axis | 21 |
| Figure A.5 – Flow of luminance lifetime estimation..... | 22 |
| | |
| Table 1 – Input signal for cell defect observation | 12 |
| Table 2 – An example record of cell defects..... | 12 |
| Table 3 – Example of image sticking coefficient measurement (full screen red) | 15 |

INTERNATIONAL ELECTROTECHNICAL COMMISSION

PLASMA DISPLAY PANELS –**Part 2-3: Measuring methods –
Image quality: defects and degradation**

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 61988-2-3 has been prepared by IEC technical committee 110: Flat panel display devices.

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

| | |
|--------------|------------------|
| FDIS | Report on voting |
| 110/180/FDIS | 110/188/RVD |

Full information on the voting for the approval on 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 the parts in the IEC 61988 series, under the general title *Plasma display panels*, 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.

PLASMA DISPLAY PANELS –

Part 2-3: Measuring methods – Image quality: defects and degradation

1 Scope

This part of IEC 61988 determines the measuring methods for defects and degradation of colour plasma display (PDP) module in the following areas:

- a) cell defects;
- b) image sticking;
- c) luminance lifetime.

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 60068-1:1988, *Environmental testing – Part 1: General and guidance*

IEC 60107-1:1997, *Methods of measurement on receivers for television broadcast transmissions – Part 1: General considerations – Measurements at radio and video frequencies*

IEC 61988-1, *Plasma display panels – Part 1: Terminology and letter symbols*

IEC 61988-2-1:2002, *Plasma display panels – Part 2-1: Measuring methods – Optical*

CIE 15:2004, *Colorimetry, 3rd Edition (ISBN 978 3 901906 33 6)*

3 Terms and definitions

For the purposes of this document, most of the terms and definitions used, comply with IEC 61988-1, IEC 60068-1 and IEC 60107-1, and the followings apply.

3.1

cell defect

cell showing a dark defect or a bright defect, or an unstable cell

3.2

defect luminance ratio

percentage of luminance difference from the full screen white-level luminance of each colour

3.3

unstable cell

cell that changes luminance in an uncontrollable way

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

-
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
 - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-