

BS EN 61988-2-3:2009



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Plasma display panels —

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

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The UK participation in its preparation was entrusted to Technical Committee EPL/47, Semiconductors.

A list of organizations represented on this committee can be obtained on request to its secretary.

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**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)

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CENELEC

European Committee for Electrotechnical Standardization
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Europäisches Komitee für Elektrotechnische Normung

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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with the EN have to be withdrawn (dow) 2012-09-01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.

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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

4 Standard measuring conditions

4.1 Environmental conditions

Measurements shall be carried out under the standard environmental conditions, e.g. at a temperature of $25\text{ °C} \pm 3\text{ °C}$, a relative humidity of 25 % to 85 % and pressure of 86 kPa to 106 kPa. When different environmental conditions are used, it shall be noted on the report.

4.2 Lighting conditions

The following dark-room conditions shall be used for all measurements. Illuminance shall be less than 1 lx anywhere on the screen of the PDP module. When this illuminance significantly affects the measurement of the black level, the background subtraction method shall be used. In case of a different illuminance or if the background subtraction method is used, it shall be noted on the report.

4.3 Set-up conditions

Standard set-up conditions are given below. Each condition shall be noted on the specification form whenever any measurement is carried out under conditions that differ from the standard set-up conditions.

4.3.1 Adjustment of PDP modules

For contrast adjustable PDP module, set the maximum contrast under the standard measuring environmental conditions (see 4.1), measurements shall be started when the PDP module achieves stability.

4.3.2 Warm-up condition of PDP modules

Measurements shall be started after warm-up when the PDP module achieves stability. The warm-up time shall be longer than 30 min with signal input set at 15 % grey level on full screen without gamma correction. Measurements shall be started after the above warm-up when the PDP module achieves stability, unless other specified measuring methods are used. When different warm-up conditions are used, they shall be noted on the report.

4.3.3 Conditions of measuring and driving equipment

- a) The light measuring device shall be aligned perpendicular to the area to be measured on the screen of the PDP module.
- b) The standard measuring distance ℓ_{X0} is $2,5 V$, where V is the screen height or the short side length of the screen. The measuring distance shall be between $1,6 V$ and $2,8 V$. The measuring distance shall be noted on the report (see Figure 1).
- c) The light measuring device shall be set at a proper aperture angle less than or equal to 2° and shall measure an area of at least 500 pixels which has an extent less than 10 % of the screen height. This area corresponds to a circular measurement area of at least 26 lines in diameter in the case of a display panel having a square pixel consisting of 3 subpixels. The measuring distance and the aperture angle may be adjusted to achieve a viewing area greater than 500 pixels which has an extent less than 10 % of the screen height if setting the above aperture angle is difficult. Such deviations from standard conditions shall be noted on the report.
- d) The standard field frequency of the driving signal equipment shall be 60 Hz, unless the module is intended to be used at a significantly different frequency. In any case, the field frequency used shall be noted on the report.
- e) In case of visual inspection, the inspector shall observe the area to be measured on the screen of the colour plasma display module from the same position of light measuring devices.