



Changes implemented in TCO Certified Displays 5.1

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A.2.2 Video reproduction

A.2.2.1 Motion blur

TCO Development has changed the criteria and test method from **Response time** in Version 5.0 to **Motion blur** in Version 5.1. The purpose of this change is that whilst the level of the criterion remains the same the test method better evaluates the visual experience of motion blur by the human eye.

The new test method takes the “sample and hold” characteristics of the LCD technology into consideration and will benefit displays which reduce this phenomenon. The test method is to a certain extent harmonized with the work done in the International Committee for Display Metrology.

The following text has been added and also the test method in the B part of Version 5.1 is completely different (please see the B-part of the criteria document to see the change):

Background

It has been recognised for some time now that LCD displays will introduce blur in the images when showing moving objects. Motion blur reduces readability and can cause eyestrain. There are two effects that contribute to the motion blur, slow response time and that the picture elements hold their light intensity until they are changed. The latter is referred to as sample-and-hold.

Definition

Motion blur is the perceptual effect that appears when the eyes are tracking a moving object on a display with too slow pixel updating and too long hold-time for the speed of the object. It shows itself as blurring or a reduction of the edge sharpness.

Applicability

Media FPDs.

Mandate: The mean value over all transitions between the grey levels 0, 63, 127, 191 and 255 of the blur edge time (BET) shall be $BET_{mean} \leq 25ms$

The following information shall be submitted with the application to TCO Development:

A copy of a test report from a test laboratory approved by TCO Development.

A.6.1 Product description

The product description to be completed in the A.6.1 template is modified and now includes the following information to be given:

Brand Owner and TCO Certificate holder

A.6.2 Organisation

A.6.2.1 Environmental management system certification

TCO Development has decided to change requirement A.6.2.1 Environmental management system from requiring an ISO14001 certificate from the brand owner back to requiring the certificate from the manufacturing plant. This will make the requirement clearer.

The mandate change was implemented from 1 July 2009 to:

Mandate:

Each *manufacturing plant* must be certified in accordance with ISO 14001, or EMAS registered. If the product is manufactured by a third party, it is this company that shall be certified or registered.

If the *manufacturing plant* does not have an ISO 14001 certificate or EMAS registration at the time of application, the *manufacturing plant* is given a 12-month grace period to obtain ISO14001 certification or EMAS registration.

The following information shall be submitted to an approved eco-verifier:

1. A document showing the names and addresses of the manufacturing plants.
2. Copy of the ISO 14001 certificate or EMAS registration or, when not available, an estimated date of certification/registration.
3. A written guarantee that the certificate/registration is valid and that the mandate above is fulfilled, signed by the responsible person at the applicant company.

The following information shall be submitted with the application to TCO Development:

A copy of a verification report from an eco-verifier approved by TCO Development.

A.6.2.2 Social responsibility

The following list is added to the A part and the valid choice shall be marked and verified by the eco reviewer

- Option (to be verified):
- 1. GRI Sustainability Reporting Guidelines
 - 2. Global Compact: Communication on Progress report
 - 3. Member of the Electronic Industry Citizenship Coalition
 - 4. SA8000 certified
 - 5. Own work

Date of report/verification documents sent in:.....

We hereby guarantee that the above mandate is fulfilled.

..... Product brand name	..... Model name(s) or "All products"
..... Signature	..... Name and title in block capitals
..... Date (Declaration valid 1 year from date)	..... Brand Owner Company

B.6.2.2 Social responsibility

Signatures of reports

The following text is added to the B-part of version 5.1 of the TCO Display standard:

“To ensure that the document(s) sent in are really implemented and used, the report/certificate/membership or other document used as verification of this requirement must have a signature by a person at the brand owner company (approved to sign such documents by the brand owner company). All documents must also be dated to ensure that the documentation is up-to-date. The document(s) sent in by the brand owner is valid and verifies requirement A.6.2.2 one year from the signature date”

B.6.3 Climate

B.6.3.1 Energy consumption – FPD

For climate criteria the text under the B-part of version 5.1 of the TCO Display standard is changed to the following:

The “Power supply efficiency requirement”

If the product has an Energy Star certificate, the TCO accepted test laboratory can base the test report on this certificate to show compliance with the Energy Star “Power supply efficiency requirement”. For products without Energy Star certificate the “Power supply efficiency requirement” may be tested by any laboratory accredited according to ISO 17025 and considered acting as a third party.

Test conditions, Supply Voltage

If the product has an Energy Star certificate TCO Development only require that one of the voltages is tested at a laboratory accepted by TCO Development. Other supply voltages may be verified through the existing Energy Star certificate. For products without Energy Star certificate all supply voltages must be tested at a laboratory accepted by TCO Development. The Supply Voltage shall be recorded in the test report.

The “Power management requirements”

The TCO accepted test laboratory can base the test report on a declaration from the manufacturer that the Energy Star “Power management requirements” are fulfilled.

B.6.3.2 Energy consumption – external power supply

The “Power supply efficiency requirement”

If the product has an Energy Star certificate, the TCO accepted test laboratory can base the test report on this certificate to show compliance with the Energy Star “Power supply efficiency requirement”. For products without Energy Star certificate the “Power supply efficiency requirement” may be tested by any laboratory accredited according to ISO 17025 and considered acting as a third party.

Test conditions, Supply Voltage

If the product has an Energy Star certificate TCO Development only require that one of the voltages is tested at a laboratory accepted by TCO Development. Other supply voltages may be verified through the existing Energy Star certificate. For products without Energy Star certificate all supply voltages must be tested at a laboratory accepted by TCO Development. The Supply Voltage shall be recorded in the test report.

A.6.4 Environmentally hazardous substances

A.6.4.1 Cadmium (Cd), mercury (Hg), lead (Pb) and hexavalent chromium (CrVI)

The table to be completed in the A.6.4.1 template is modified to include Lamp Length. Removed are categories Average and Min mg Hg/lamp content and the text (>3,5 mg Hg/lamp not allowed) under Max.

Mercury lamp supplier:	Lamp ID code:	Lamp length (mm)	Max. mg Hg/lamp:

B.6.4.1 Cadmium (Cd), mercury (Hg), lead (Pb) and hexavalent chromium (CrVI)

The following clarification is added to the B-part of the standard:

“Note that 3,5 mg Hg/lamp is the maximum level allowed per lamp and not an average level calculated on a batch of lamps. **This concerns lamps < 500 mm in length. For lamps between 500 mm and 1500 mm in length 5 mg Hg is allowed and for lamps over 1500 mm in length 13 mg Hg is allowed.**”

Note: That this is the **maximum** allowed content – **not the average**.

B.6.4.5 Information regarding plastics and flame retarding agents

The following text is added to the B-part of version 5.1 of the TCO Display standard:

“PWB laminates contained in LCD panels shall be listed if the conditions set out by the mandate are met.”

B.6.5 Product lifetime

B.6.5.1 Warranty and spare parts

The following text is added to the B-part of version 5.1 of the TCO Display standard:

“Regarding spare parts:

1. If a part of a product is broken (eg bezel, stand) the end user shall not need to replace the whole product, only the broken part. The broken part shall be possible to replace with an equivalent part (this part does not have to be identical to the broken part).

2. If the cost of replacing the broken part (eg panel) is not economically reasonable for the end user, it is acceptable to replace the whole product.”

The following text is added to the definitions under the A-part:

“*Spare parts* are those parts which have the potential to fail during the normal use of the product. Product parts whose life cycle usually exceeds the average usual life of the product need not be provisioned as spare parts.”

A written guarantee can be valid for more than one model or all products from the manufacturer. See below for example on template (changes from TCO Certified Displays 5.0 in yellow):

We hereby guarantee that the above mandate is fulfilled.

..... Product brand name	..... Model name(s) or "All products"
..... Signature	..... Name and title in block capitals
..... Date (Declaration valid 1 year from date)	..... Brand Owner Company

A.6.6 Preparation for recycling

A.6.6.5 Take back system

The following table is added to the A part and the valid choice shall be marked and verified by the eco reviewer.

The requirement can be fulfilled by one of three options (to be verified):

- 1. Product only sold on markets with WEEE legislation or similar
- 2. World-wide product take back*
- 3. One additional market lacking WEEE legislation where product take back is offered*
Name of market.....

To fulfil the requirement a short description on how the system actually works should be sent in, preferably also a link to the website in question.

A written guarantee can be valid for more than one model or all products from the manufacturer. See below for example on template (changes from TCO Certified Displays 5.0 in yellow):

We hereby guarantee that the above mandate is fulfilled.

..... Product brand name	..... Model name(s) or "All products"
..... Signature	..... Name and title in block capitals
..... Date (Declaration valid 1 year from date)	..... Brand Owner Company

A.6.7 Product packaging

A.6.7.1 Hazardous substances in product packaging

A written guarantee can be valid for more than one model or all products from the manufacturer. See below for example on template (changes from TCO Certified Displays 5.0 in yellow):

We hereby guarantee that the above mandate is fulfilled.

..... Product brand name	..... Model name(s) or "All products"
..... Signature	..... Name and title in block capitals
..... Date (Declaration valid 1 year from date)	..... Brand Owner Company

A.6.7.2 Preparation for recycling of product packaging material

A written guarantee can be valid for more than one model or all products from the manufacturer. See below for example on template (changes from TCO Certified Displays 5.0 in yellow):

We hereby guarantee that the above mandate is fulfilled.

..... Product brand name	..... Model name(s) or "All products"
..... Signature	..... Name and title in block capitals
..... Date (Declaration valid 1 year from date)	..... Brand Owner Company