



# Eye Comfort

key performance parameters of user-friendly displays

2 PfG 2552 / 12.15

08.09.16

By Martin Eichenseder

# Eye Comfort

## The situation

### Augenbrennen vorm Monitor

Welche Beschwerden gehen Ihres Wissens nach mit Bildschirmarbeit einher?

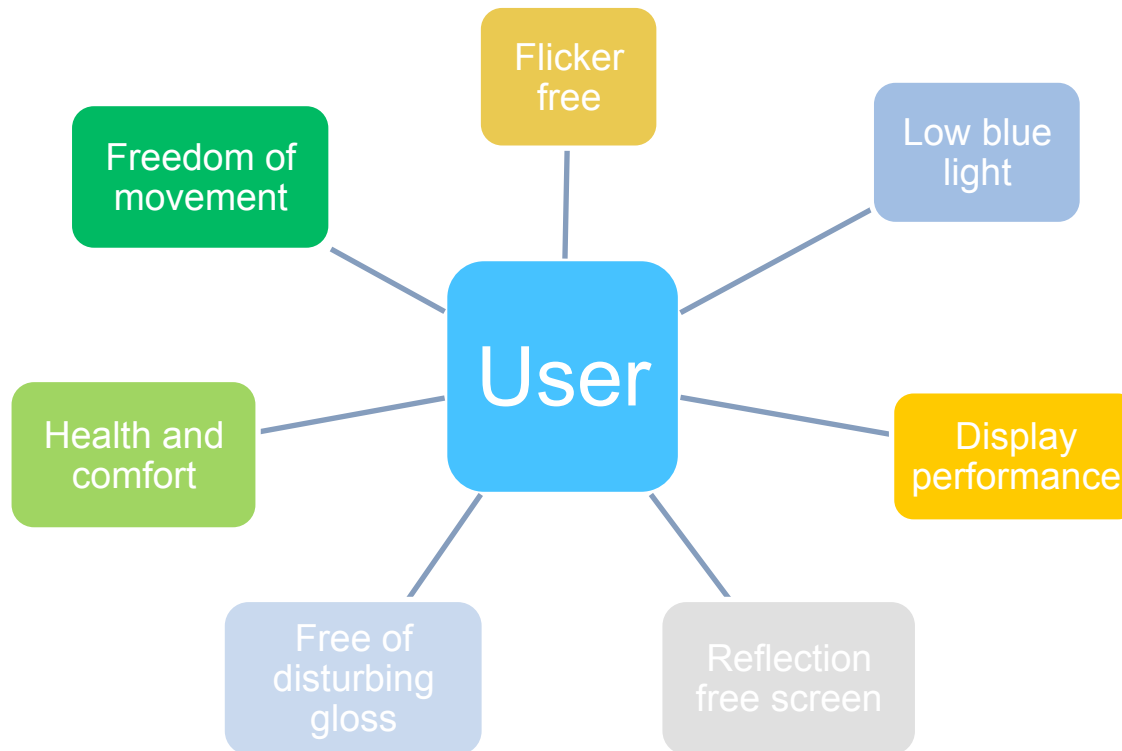


Quelle: TNS Emnid, Befragungszeitraum 11.03.2009/N = 202 • Grafik: djd/AMO • Foto: fotolia.com



# Eye Comfort

## What is TÜV Rheinland's Eye Comfort based on?



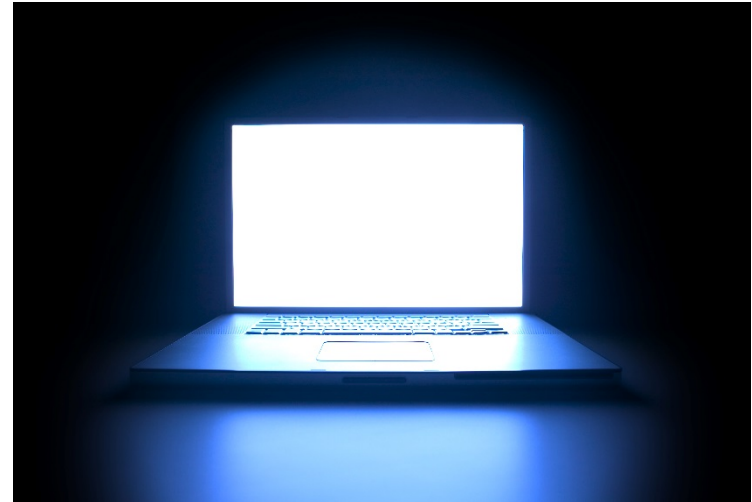
# Eye Comfort

## Reflection free screens and no disturbing gloss

- Reflections can be very disturbing for the user. Only products with
  - reflection class I/I (test report)

and

- gloss below 20
  - of surfaces in the direct view of the primary user or no disturbing reflections under work place lighting of 500 Lux [B].



# Eye Comfort

## Freedom of movement and display adjustability

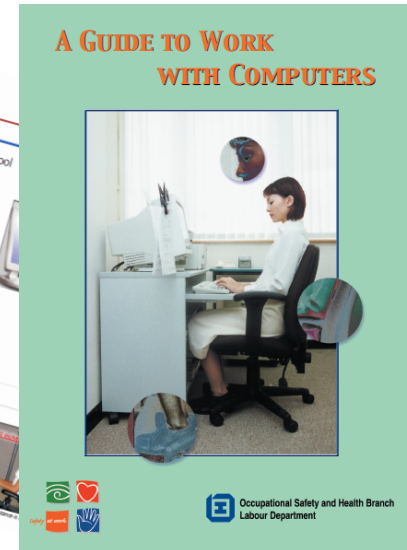
- In real life situations users move sideways and up-down.
- Depending on the panel type used, the angular dependence can be disturbing.
- Tilt must be adjustable for displays with a weight below 3 kg
- Height must be adjustable for monitors below 24 in



# Eye Comfort

## Health and comfort

- The purpose of this clause is to make information about improving the work place easily accessible to the buyer of the product.
- The user manual can be printed, on CD or online.
- The existence of the required content is checked according to specified additional requirements (safety requirements of UM according UM checklist).



# Eye Comfort

## Free of flicker

- 2PFG 1797 Flicker Free pass test report

Produkte  
Monitore

TÜVRheinland®

Prüfbericht-Nr.: 37064128 001      Prüfungs-Nr.: 064000022      Seite 1 von 7  
Test Report No.:      Order No.:      Page 1 of 7

Kunden-Referenz-Nr.: N/A      Kunden-Referenz-Nr.: N/A  
Client Reference No.:      Client Reference No.:

Auftraggeber: LENOVO (BEIJING) LIMITED      Auftraggeber: LENOVO (BEIJING) LIMITED  
Client:      Client:      No. 6 Chang Yi Road, Shanghai Information Industry Base, Minshan District, Beijing 100088 P.R. China

Prüfgegenstand: LCD Monitor      Prüfgegenstand: LCD Monitor  
Test Item:

Bezeichnung / Typ-Nr.: X5A      Bezeichnung / Typ-Nr.: X5A  
Identifier / Type No.:

Auftragsinhalt: Eye comfort appraisal      Auftragsinhalt: Eye comfort appraisal  
Order content:

Prüfgrundlage: 2 PFG 058012-15 Eye Comfort - Evaluation      Prüfgrundlage: 2 PFG 058012-15 Eye Comfort - Evaluation  
Test specification:

Wareneingangsdatum: 30.11.2016      Wareneingangsdatum: 30.11.2016  
Date of receipt:

Prüfmuster-Nr.: A000285028-012      Prüfmuster-Nr.: A000285028-012  
Test sample No.:

Prüfzeitraum: 03.12.2016 - 07.12.2016      Prüfzeitraum: 03.12.2016 - 07.12.2016  
Testing period:

Ort der Prüfung: TÜV Rheinland (Shenzhen) Co., Ltd.      Ort der Prüfung: TÜV Rheinland (Shenzhen) Co., Ltd.  
Place of testing:

Prüflaboratorium: TÜV Rheinland (Shenzhen) Co., Ltd.      Prüflaboratorium: TÜV Rheinland (Shenzhen) Co., Ltd.  
Testing laboratory:

Prüfresultat: Pass      Prüfresultat: Pass  
Test result:

geprüft von / tested by:      kontrolliert von / reviewed by:

IS 12:2016	ISO 9001:2015	ISO 14001:2015	ISO 45001:2018	ISO 19011:2011	ISO 15189:2013	ISO 17025:2017	ISO 17020:2017	ISO 17021:2017	ISO 17022:2017	ISO 17023:2017	ISO 17024:2017	ISO 17025:2017	ISO 17020:2017	ISO 17021:2017	ISO 17022:2017	ISO 17023:2017	ISO 17024:2017
2016	2015	2015	2018	2011	2013	2017	2017	2017	2017	2017	2017	2017	2017	2017	2017	2017	2017

Other: The tests performed with LCD panel: LAGT0MR05141 (LST)  
There are two alternative constructions for the model:

Bezeichnung	Material	Material	Material	Material	Material	Material	Material	Material	Material	Material	Material	Material	Material	Material	Material	Material	Material
Construction 1	2016	2015	2015	2018	2011	2013	2017	2017	2017	2017	2017	2017	2017	2017	2017	2017	2017
Construction 2	2016	2015	2015	2018	2011	2013	2017	2017	2017	2017	2017	2017	2017	2017	2017	2017	2017

This report is for the tests of construction A. Only the Port A used for the tests.

Zustand des Prüfgegenstandes bei Anlieferung: Prüfmuster vollständig und unbeschädigt  
Condition of the test item at delivery: Test item complete and undamaged

Legende:  
+ = vorhanden / present      - = nicht vorhanden / not present  
\* = analysiert / analyzed      - = nicht analysiert / not analyzed  
# = geprüft / tested      - = nicht geprüft / not tested  
P = Pass / Bestanden / Passed      N = Fail / Nicht Bestanden / Failed

Dieser Prüfbericht bezieht sich nur auf das in der Prüfbeschreibung und dem Auftrag angegebene Prüfobjekt.  
This test report only refers to the test sample, without permission of the test center the test report is not permitted to be  
reproduced in electronic form. The test report does not extend to any test item.

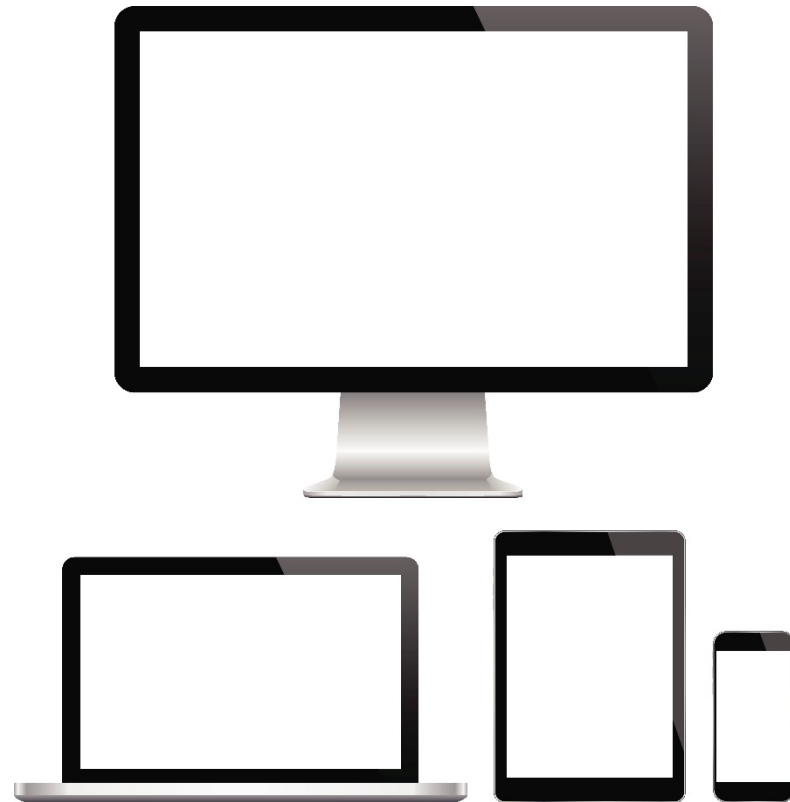
TÜV Rheinland (Shenzhen) Co., Ltd. Bei der TÜV - Prüf - Stelle, Building 1, Canteen Technology Building, No. 4 Longshan 2 Road,  
Nanshan District, Shenzhen, P.R. China.



# Eye Comfort

## Display performance

- GS Mark or
- Ergo-mark or
- 'ISO 9241-307/308/309' mark






# Eye Comfort

## Low blue light

- 2PFG 2383 Low Blue Light Content pass test report

Produkte  
Products

 TÜVRheinland®

Prüfer-Nr.: 17064122-001      Auftrags-Nr.: 16405023      Seite 1 von 7  
Test Report No.:      Order No.:      Page 1 of 7

Kunden-Referenz-Nr.: N/A      Kunden-Referenz-Nr.: N/A      Auftragsdatum: 30.11.2015  
Client Reference No.:      Client Reference No.:      Order date:

Auftraggeber: SENCIVO (BEIJING) LIMITED      No. 5, Chuang Ye Road, Shanghai Information Industry Base, Haidian District, Beijing 100085, P.R. China  
Client:

Prüfgegenstand: LCD Monitor  
Test item:

Bezeichnung / Typ-Nr.: X15A  
Identification / Type No.:

Auftragsinhalt: Filter eye comfort approval  
Order content:

Prüfungstage: 2 PFG 2383/15 Eye Comfort-Evaluation  
Test specification:

Wareneingangdatum: 30.11.2015  
Date of receipt:

Prüfmuster-Nr.: A00028035-002  
Test sample No.:

Prüfzeitraum: 03.12.2015 - 07.12.2015  
Testing period:

Ort der Prüfung: TÜV Rheinland (Shanghai) Co., Ltd.  
Place of testing:

Prüflaboratorium: TÜV Rheinland (Shanghai) Co., Ltd.  
Testing laboratory:

Prüfingenieur: Pass  
Test result:

geprüft von / tested by:      kontrolliert von / reviewed by:

16.12.2015      16.12.2015

Druck	Reviz	Prüfung	Prüfung	Prüfung	Prüfung
Date	Issue	Issue	Issue	Issue	Issue

Sonstige / Other: The tests performed with LCD panel: LAG70VR951A1 (L&T)  
There are two alternative constructions for the model:

Item	ACDC input	Main board	Base	View	Other feature
Construction A	30Vdc, 4.5A	ACDC-CONV-020	11001220	11001220	Without camera
Construction B	30Vdc, 4.5A	ACDC-CONV-020	11001220	11001220	With camera

This report is for the tests of construction A. Display Port is used for the tests.

Zustand des Prüfgegenstandes bei Anlieferung: (Prüfzustand vollständig und unbeschädigt)  
Condition of the test item at delivery: (Test item complete and undamaged)

Legende: \* = bestanden / passed      \*\* = nicht bestanden / failed  
Mark = eingetragenes Prüfobjekt / Registered test object      Prüf = Prüfobjekt / Test object

Über: (Prüfobjekt) beschriftet mit dem Hersteller-Namen und dem Typen-Namen. (Prüfobjekt) ist mit dem Hersteller-Namen und dem Typen-Namen beschriftet.  
The test report only relates to the test item. (Without permission of the test center the test report is not permitted to be disclosed in another way.)

TÜV Rheinland (Shanghai) Co., Ltd.      No. 5, Chuang Ye Road, Shanghai Information Industry Base, Haidian District, Beijing 100085, P.R. China



# Eye Comfort

## Market acceptance

ID No. 0000049065: LENOVO (BEIJING) LIMITED

LCD Monitor



Eye Comfort

www.tuv.com  
ID 0000049065

Lenovo™



Test Summary: | [Eye Comfort](#)

### Consumer Information

- Safe with tested quality;
- Low Blue-light content tested;
- No noticeable flicker for reduced eye tiredness;
- No disturbing reflections distracting from the monitor;
- Reflection class I/I, also with GS Mark or TÜV Ergonomic Mark;
- Low viewing angel dependency for accurate colors and freedom of user movement;

# Eye Comfort

## Contact

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