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ANALYSIS REPORT

Report number:	**091113-03**
Customer:	Joker AG/ SA Industriezone CH-3210 Kerzers
Test item:	CyberClean LC-Displays of the manufacturer • Samsung • Auo (Acer) • LG/ Philips • IBM
Contract date:	2009-11-04
Sample arrival date:	2009-11-13
Test period:	2009-11-13 to 2009-12-23

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Geschäftsführer:
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Amtsgericht Mönchengladbach HRB 12304
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1. Task

We were assigned of testing the CyberClean if it changes the surface properties of the LC displays or if CyberClean can be used as a cleaning material for LC displays. In these investigations the CyberClean should be compared with a microfibre cloth moistened with water or ethanol.

2. Sampling

Three laptops and one spare LC display of four different manufacturers were arbitrarily chosen. Only the LC displays were investigated.

- Samsung P35
- Acer Aspire 5110 (LCD manufacturer Auo)
- LG/ Philips LP150X2
- IMB Thinkpad 770E/ 770ED

3. Materials and Methods [nA]

The Cyber Clean „Home & Office Use" (yellow) was utilised.

For the cleaning without Cyber Clean, a commercially available microfibre cloth was used. The cloth was washed with a commercially available detergent (Tandil liquid) to remove a possibly existing finish.

A mask was designed to separate the displays into three different areas, cf. the foto documentation. The first area (left side) was used to test the CyberClean, the second area (middle) was used for cleaning with the microfibre cloth moistened with water; and the third area (right side) was used for cleaning with the microfibre cloth moistened with ethanol. Each area measures 17 cm by 7.2 cm, corresponding to an area of 122.4 cm².

The CyberClean was kneaded onto the display. Then we waited for 1 minute before we removed the CyberClean. Afterwards the surface was optically examined.

The micorfibre clothwas moistened with either water or ethanol. We wiped with the moistened cloth slowly and with a gentle pressure over the display surface. Then we wiped the display dry. Afterwards the surface was optically examined.

Finally, the CycberClean was centrally arranged on the display of the IBM laptop and the laptop was closed. The CyberClean remained for 24 h between display and keyboard of the laptop. With this test, we wanted to simulate a „worst case" scenario.

Key:
[A] accredited method
[nA] non-accredited method
[F] contracting out
[F_a] contracting out to an accredited laboratory
[U] subcontracting to an accredited laboratory

4. Results[1]

4.1 LC display Samsung

The Samsung display is a matt display. CyberClean „Home & Office Use" remains visible residues on the display surface. These residues could easily be removed by a microfibre cloth. The display surface was not harmed, but there was no cleaning effect either – the display was even significantly filthier after the use of CyberClean.

The cleaning of the display with micorfibre cloth shows similar results for water an ethanol: The display surface was not harmed. For each case a good cleaning effect was achieved.

4.2 LC display Auo (laptop Acer)

The Auo display is a shiny/ reflective display. CyberClean „Home & Office Use" causes no modifications or changes of the display surface. A good cleaning effect was achieved.
The cleaning of the display with micorfibre cloth shows similar results for water an ethanol: The display surface was not harmed. For each case a good cleaning effect was achieved.

4.3 LC display LG/ Philips

The LG display is a matt display. CyberClean „Home & Office Use" causes no modifications or changes of the display surface. A moderate cleaning effect was achieved.

The cleaning of the display with micorfibre cloth shows similar results for water an ethanol: The display surface was not harmed. For each case a good cleaning effect was achieved.

4.4 LC display IBM (Thinkpad)

The IBM display is a matt display. CyberClean „Home & Office Use" causes no modifications or changes of the display surface. A moderate cleaning effect was achieved.

The cleaning of the display with micorfibre cloth shows similar results for water an ethanol: The display surface was not harmed. For each case a moderate cleaning effect was achieved.

The „worst case" scenario shows no changes of the display surface after 24 h, though the CyberClean was squeezed deeply into the keyboard. It could only be removed with difficulties. Some keys were ripped out in the process.

Mönchengladbach, 2009-12-23

(Dr. Andreas Winkens VDI)
- managing director -

(Dr. rer.nat. Karen Schomberg)
- head of laboratory -

[1] The results solely refer to the tested samples.

Assessment and recommendation[1]

to Report No. 091113-03

For different displays, first and foremost an IBM display, CyberClean caused no harm to the display surface if used as cleaning material.

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Mönchengladbach, 2009-12-23

(Dr. Andreas Winkens VDI)
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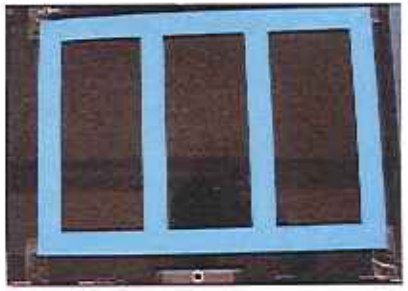
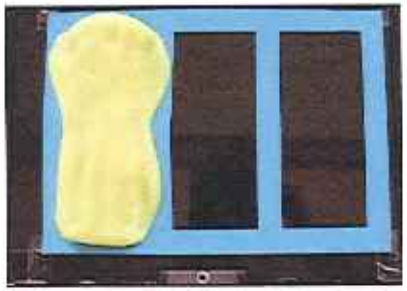
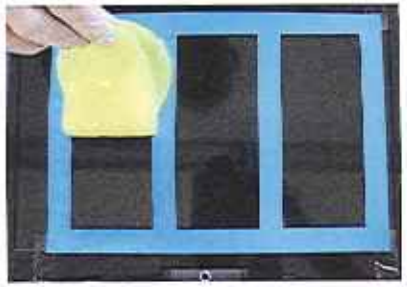
[redacted]

[1] The assessment and recommendation are exclusively based on the presented test item.

Test procedure


LC display test - Samsung

Joker CyberClean
- 1 minute treatment

100 % water
- hearty moist cleaning with a microfibre cloth
- then dry wiping

100 % Ethanol
- hearty moist cleaning with a microfibre cloth
- then dry wiping

Comparison Samsung:

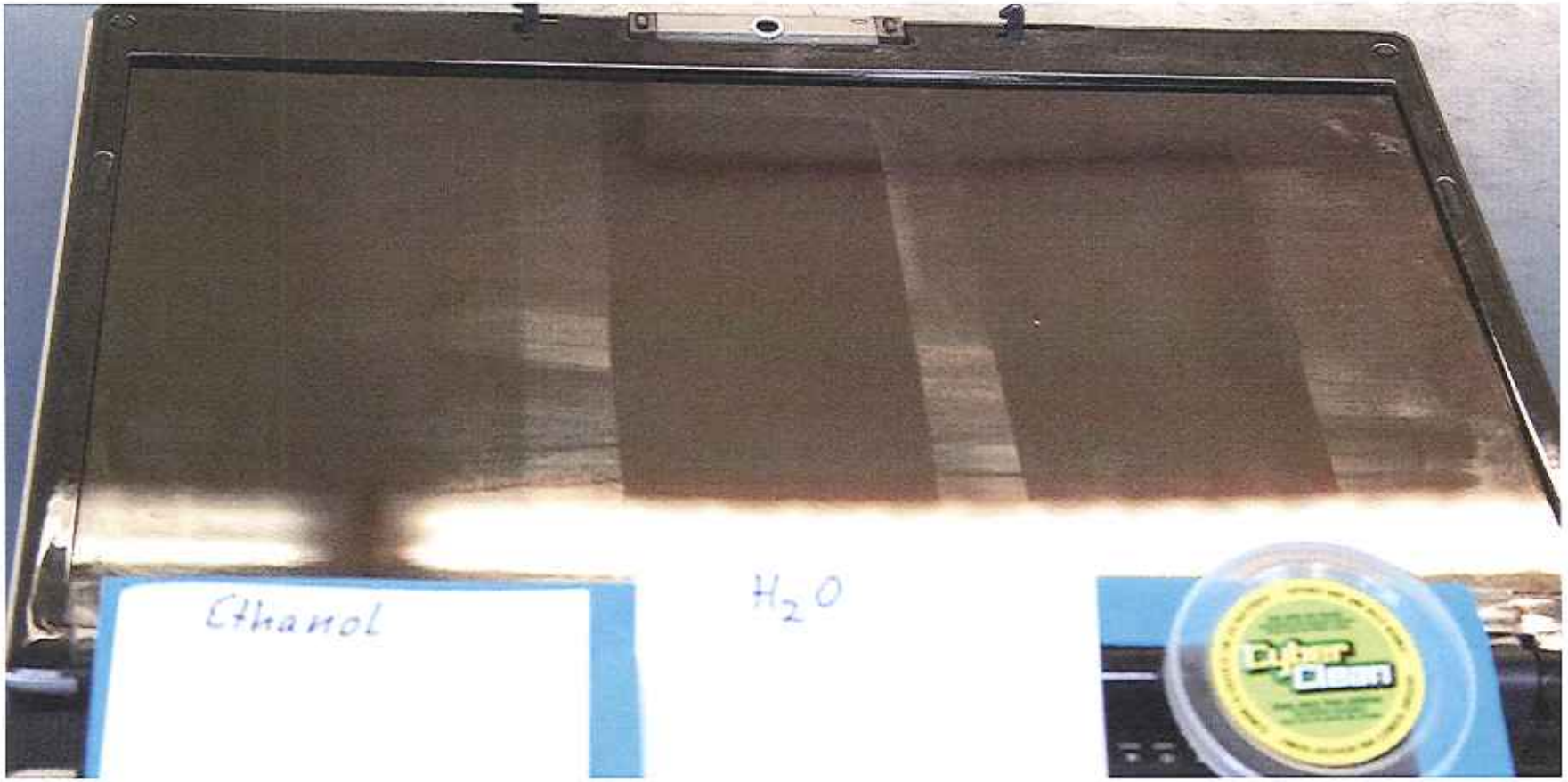
LC display test – Acer/ Auo

Joker CyberClean
- 1 minute treatment

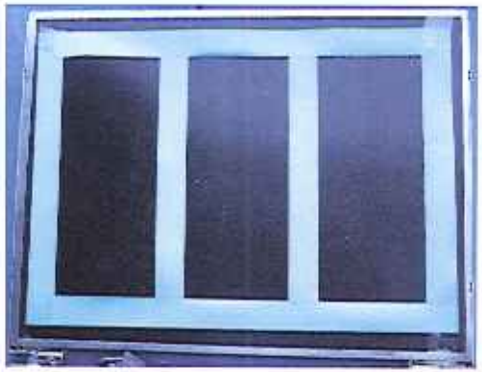
100 % water
- hearty moist cleaning with a microfibre cloth
- then dry wiping

100 % Ethanol
- hearty moist cleaning with a microfibre cloth
- then dry wiping

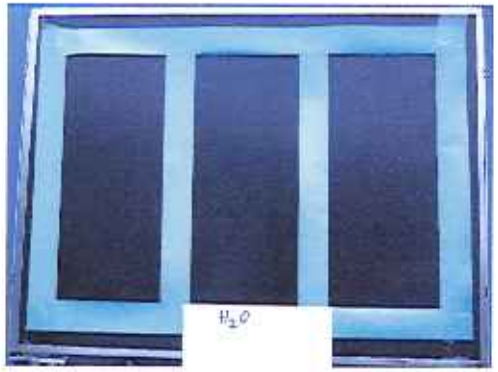
Comparison Acer/ Auo:



LC display test – LG/ Philips



Joker CyberClean
- 1 minute treatment



100 % water
- hearty moist cleaning with a microfibre cloth
- then dry wiping

100 % Ethanol
- hearty moist cleaning with a microfibre cloth
- then dry wiping

Comparison LG- Philips:

LC display test - IBM

Joker CyberClean
- 1 minute treatment

100 % water
- hearty moist cleaning with a microfibre cloth
- then dry wiping

100 % Ethanol
- hearty moist cleaning with a microfibre cloth
- then dry wiping

Comparison IBM: