

EMC TEST REPORT

for

TPV Electronics (Fujian) Co., Ltd.

LCD Monitor

Brand Name	Model No.
NEC	L460NZ

Prepared for : TPV Electronics (Fujian) Co., Ltd.

Shangzheng, Yuan Hong Road, Fuqing City, Fujian Province,
P.R.China

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Report Number : ACS-E10797

Date of Test : Sep.19~27, 2010

Date of Report : Oct.11, 2010



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TEST REPORT DECLARATION

Applicant : TPV Electronics (Fujian) Co., Ltd.

EUT Description : LCD Monitor

(A) Brand Name & :

Brand Name

Model No.

Model No.

NEC

L460NZ

(B) Serial No. : N/A

(C) Power Supply : AC 100-240V; 50/60Hz.

(D) Test Voltage : AC 230V/50Hz

Measurement Standard Used:

AS/NZS CISPR 22: 2009, EN55022: 2006+A1: 2007(Class A)

EN61000-3-2: 2006, EN61000-3-3: 2008

EN55024: 1998+A1:2001+A2:2003

(IEC 61000-4-2: 2008, IEC 61000-4-3: 2006+A1: 2007,

IEC 61000-4-4: 2004+Cor 1: 2006+ Cor 2: 2007, IEC 61000-4-5: 2005,

IEC 61000-4-6: 2003+A1:2004+A2:2006, IEC 61000-4-8: 2009, IEC 61000-4-11: 2004)

The device described above is tested by Audix Technology (Shenzhen) Co., Ltd. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The test results are contained in this test report and Audix Technology (Shenzhen) Co., Ltd. is assumed full responsibility for the accuracy and completeness of test. Also, this report shows that the EUT is technically compliant with the EN 55022, EN 61000-3-2, EN 61000-3-3 and EN 55024 requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Audix Technology (Shenzhen) Co., Ltd.

Date of Test :

Sep.19~ 27, 2010

Prepared by :

Selina Liu

Selina Liu / Assistant

Reviewer :

Jack Zhong

Jack Zhong / Assistant Manager

Approved & Authorized Signer :

AUDIX

信華科技(深圳)有限公司

Audix Technology (Shenzhen) Co., Ltd.

EMC 部門報告專用章

Stamp only for EMC Dept. Report

Signature:

Ken Lu

Ken Lu / Manager

1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION				
Description of Test Item	Standard	Limits	Results	Remarks
Conducted disturbance at mains terminals	EN55022: 2006+A1: 2007	Class A	PASS	Minimum passing margin is 31.77dB at 5.062MHz
Conducted disturbance at telecommunication port	EN55022: 2006+A1: 2007	Class A	N/A	Meets the requirements
Radiated disturbance	EN55022: 2006+A1: 2007	Class A	PASS	Minimum passing margin is 12.09dB at 80.440MHz
Harmonic current emissions	EN61000-3-2: 2006	Class D	PASS	Meets the requirements
Voltage fluctuations & flicker	EN 61000-3-3:2008	Section 5	PASS	Meets the requirements
IMMUNITY (EN 55024: 1998+A1:2001+A2: 2003)				
Description of Test Item	Basic Standard	Performance Criteria	Results	Remarks
Electrostatic discharge (ESD)	IEC 61000-4-2: 2008	B	PASS	Meets the requirements
Radio-frequency, Continuous radiated disturbance	IEC 61000-4-3: 2006+A1: 2007	A	PASS	Meets the requirements
Electrical fast transient (EFT)	IEC 61000-4-4:2004+Cor 1: 2006+Cor 2: 2007	B	PASS	Meets the requirements
Surge (Input a.c. power ports)	IEC 61000-4-5: 2005	B	PASS	Meets the requirements
Surge (Telecommunication ports)		B	N/A	Meets the requirements
Radio-frequency, Continuous conducted disturbance	IEC 61000-4-6: 2003+A1: 2004+A2: 2006	A	PASS	Meets the requirements
Power frequency magnetic field	IEC 61000-4-8: 2009	A	PASS	Meets the requirements
Voltage dips, >95% reduction	IEC 61000-4-11: 2004	B	PASS	Meets the requirements
Voltage dips, 30% reduction		C	PASS	
Voltage interruptions		C	PASS	
N/A is an abbreviation for Not Applicable.				

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

Description	:	LCD Monitor	
Brand Name & Model No.	:	Brand Name	Model No.
		NEC	L460NZ
Applicant	:	TPV Electronics (Fujian) Co., Ltd. Shangzheng, Yuan Hong Road, Fuqing City, Fujian Province, P.R. China	
Remote Control	:	Manufacturer: NEC	
Max. Resolution	:	1920*1080@60Hz	
Max. Work Frequency	:	148.5MHz	
Panel	:	Manufacturer :SAMSUNG; M/N: LTI460AA05	
Power Cord	:	Unshielded, Detachable, 3.0m (3pins)	
D-Sub Cable	:	Shielded, Detachable, 4.0m (Bond two ferrite cores)	
DVI Cable	:	Shielded, Detachable, 1.8m (Bond two ferrite cores)	
Audio Cable	:	Shielded, Detachable, 1.8m	
Display Cable	:	Shielded, Detachable, 1.8m (Bond two ferrite cores)	
HDMI Cable	:	Shielded, Detachable, 1.8m	
Date of Test	:	Sep.19~27, 2010	
Date of Receipt	:	Sep.16, 2010	
Sample Type	:	Prototype production	

2.2. Tested Supporting System Details

2.2.1. PERSONAL COMPUTER

EMC CODE	:	Test PC N
M/N	:	Studio 540
S/N	:	J14XK2X
Manufacturer	:	DELL
Power cord	:	Unshielded, Detachable, 1.8m
FCC ID	:	By DoC
BSMI ID	:	R33002
Display Card	:	HD3650 (Display port+DVI+HDMI)

2.2.2. USB KEYBOARD

EMC CODE	:	ACS-EMC-K01R
M/N	:	SK-8115
S/N	:	CN-ODJ313-71616-711-0J73
Manufacturer	:	DELL
Data Cable	:	Shielded, Undetachable, 2.0m
FCC ID	:	By DoC
BSMI ID	:	T3A002

2.2.3. USB MOUSE

EMC CODE	:	ACS-EMC-M01R
M/N	:	M056UO
S/N	:	512022645
Manufacturer	:	Dell
Data Cable	:	Shielded, Undetachable, 1.8m
FCC ID	:	By DoC
BSMI ID	:	R41108

2.2.4. HDD

EMC CODE	:	ACS-EMC-HDD01
M/N	:	F12-UF
S/N	:	A0100215-5390031
Manufacturer	:	Terasys
Data Cable	:	Shielded, Detachable, 1.8m
FCC ID	:	By DoC
BSMI ID	:	4912A022

2.2.5.Modem #1

EMC CODE	:	ACS-EMC-MD01
M/N	:	1414
S/N	:	980013578
Manufacturer	:	ACEEX
Data Cable	:	Shielded, Detachable, 1.5m
Power Adaptor	:	Unshielded, Detachable, 1.6m Add one core
Adaptor Manufacturer	:	TGL
Adaptor Model No	:	MDE130100TH
FCC ID	:	IFAXDM1414

2.2.6.Modem #2

EMC CODE	:	ACS-EMC-MD02
M/N	:	1414
S/N	:	980013578
Manufacturer	:	ACEEX
Data Cable	:	Shielded, Detachable, 1.5m
Power Adaptor	:	Unshielded, Detachable, 1.6m Add one core
Adaptor Manufacturer	:	TGL
Adaptor Model No	:	MDE130100TH
FCC ID	:	IFAXDM1414

2.2.7.Printer

EMC CODE	:	ACS-EMC-PT04
M/N	:	C9079A
Manufacturer	:	HP
USB Cable	:	Shielded, Detachable, 1.8m
Power Cord	:	Unshielded, Detachable, 1.8m
FCC ID	:	By DoC
BSMI ID	:	R33001
Power Adaptor	:	Manufacturer: HP M/N: 0957-2119 BSMI ID: R33030 DC Cable: Unshielded, Detachable, 1.5m

2.2.8.Headphone

EMC CODE	:	ACS-EMC-EP01
M/N	:	OV880V
Manufacturer	:	OVANN
Data Cable	:	Shielded, Undetachabled, 4.0m

2.2.9.DVD

EMC CODE	:	ACS-EMC-DVD02
M/N	:	DV-410v-G
S/N	:	TAXZT5
Manufacturer	:	PIONEER
Data Cable	:	N/A
Power cord	:	Unshielded, Detachabled , 1.5m

2.2.10.TV

EMC CODE	:	ACS-EMC-TV01T
M/N	:	1419A
Manufacturer	:	TCL
Power cord	:	Unshielded, Undetachabled, 1.8m

2.2.11.Cables

AV Cable	:	Shielded, Detachabled, 1.8m
Pb/Pr/Y Cable	:	Shielded, Detachabled, 1.8m
S-Video Cable	:	Shielded, Detachabled, 1.8m
RS232 Cable	:	Shielded, Detachabled, 1.8m
LAN Cable	:	Shielded, Detachabled, 2.0m

2.3. Test Facility

Site Description

Name of Firm : Audix Technology (Shenzhen) Co., Ltd.
No. 6, Ke Feng Rd., 52 Block, Shenzhen
Science & Industrial Park, Nantou,
Shenzhen, Guangdong, China

3m Anechoic Chamber : Mar.31, 2009 File on Federal
Communication Commission
Registration Number: 90454

3m & 10m Anechoic Chamber : Dec.30, 2009 File on Federal
Communication Commission
Registration Number: 794232

EMC Lab. : Accredited by DATech, German
Registration Number: DAT-P-091/99-01
Feb.02, 2009

Accredited by NVLAP, USA
NVLAP Code: 200372-0
Apr.01, 2010

2.4. Measurement Uncertainty (95% confidence levels, k=2)

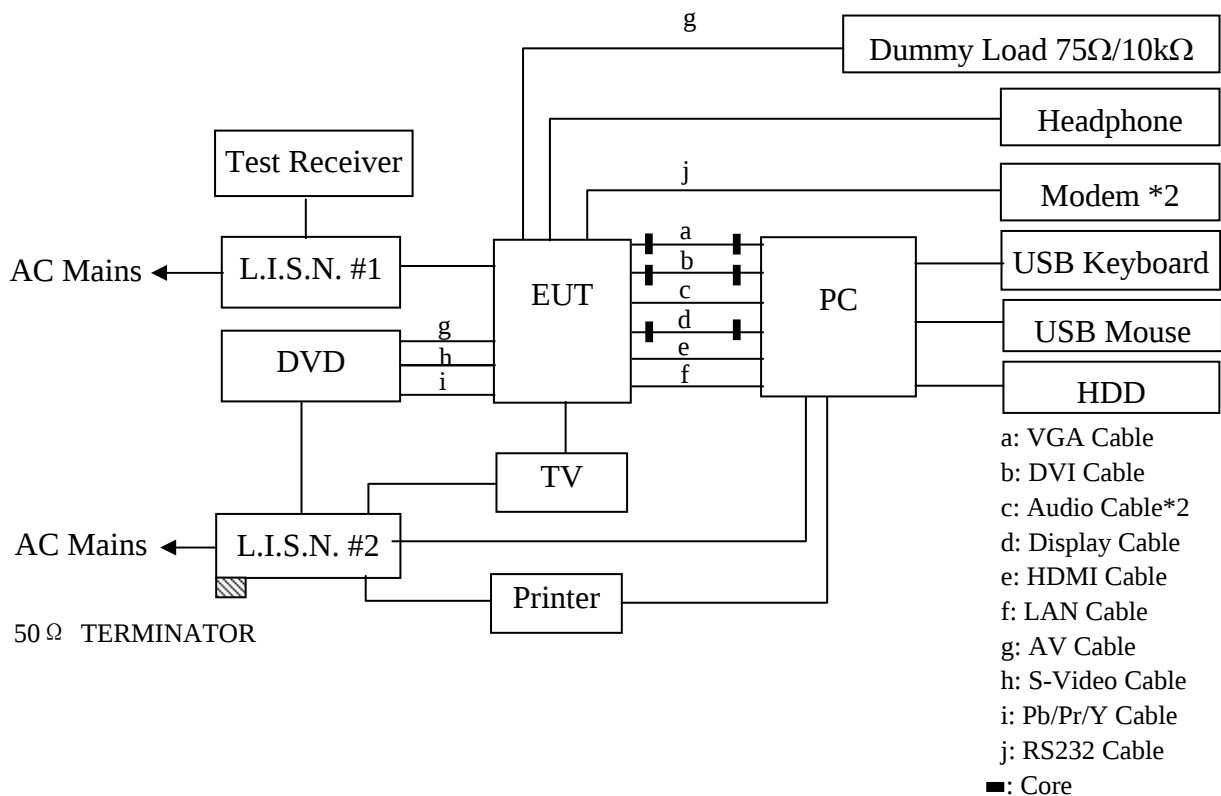
Test Item	Uncertainty
Uncertainty for Conduction emission test in No. 2 Conduction	3.48 dB
Uncertainty for Radiation Emission test in 10m chamber (Distance: 10m)	4.86 dB (30~200MHz, Polarize: H)
	4.98dB (30~200MHz, Polarize: V)
	4.98dB (200M~1GHz, Polarize: H)
	4.98dB (200M~1GHz, Polarize: V)
Uncertainty for Radiation Emission test in 10m chamber (1GHz-18GHz)	3.12 dB (Distance: 3m Polarize: V)
	3.74 dB (Distance: 3m Polarize: H)
Uncertainty for SVSWR in 10m Chamber	2.42 dB (Distance: 3m Polarize: V)
	2.44 dB (Distance: 3m Polarize: H)
Uncertainty for Flicker test	0.26%
Uncertainty for Harmonic test	3.6%
Uncertainty for C/S Test	1.36dB (Using CDN test)
	3.20 (Using EM clamp test)
Uncertainty for R/S Test	1.73 dB (80MHz~200MHz)
	1.72 dB(200MHz~1000MHz)
Uncertainty for test site temperature and humidity	0.3°C
	2%

3. CONDUCTED DISTURBANCE AT MAINS TERMINALS TEST

3.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Test Receiver	Rohde & Schwarz	ESCI	100843	Mar.30, 10	1 Year
2	L.I.S.N.#1	Rohde & Schwarz	ENV4200	100041	May.08, 10	1 Year
3	L.I.S.N.#2	Kyoritsu	KNW-407	8-1628-5	May.08, 10	1 Year
4	Terminator	Hubersuhner	50Ω	No. 2	May.08, 10	1 Year
5	RF Cable	Fujikura	3D-2W	LISN Cable 2#	May.08, 10	1 Year
6	Coaxial Switch	Anritsu	MP59B	6200298346	May.08, 10	1 Year
7	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100340	May.08, 10	1 Year

3.2. Block Diagram of Test Setup



(EUT: LCD Monitor)

3.3. Test Standard

EN55022: 2006+A1: 2007, Class A

3.4. Power Line Conducted Disturbance at Mains Terminals Limit

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150kHz ~ 500kHz	79	66
500kHz ~ 30MHz	73	60

Notes: 1. The lower limit shall apply at the transition frequencies.

3.5.EUT Configuration on Test

The following equipments are installed on Conducted Emission Test to meet EN 55022 requirement and operating in a manner which tends to maximize its emission characteristics in a normal application.

3.5.1.LCD Monitor (EUT)

Model Number : L460NZ
Serial Number : N/A

3.5.2.Support Equipments : As Tested Supporting System Detail, in Section 2.2.

3.6.Operating Condition of EUT

3.6.1.Setup the EUT and simulator as shown as Section 3.2.

3.6.2.Turned on the power of all equipment.

3.6.3.PC system ran the Self-test program “EMC Test.exe” by windows XP and sent “H” Character to LCD Monitor (EUT) through VGA / DVI card, the Screen of EUT displayed and filled with “H” pattern (font size of character "H" is 10; character color is black, background color is white).

3.6.4.During the test the EUT displayed “H” pattern and 1kHz signal playing from the PC through D-Sub / DVI / HDMI / Display / Audio cable. The Test Mode refers to 3.8 (Running “H” Pattern And 1kHz Signal Playing 1920*1080 60Hz) and measured it.

3.6.5.AV IN / S-Video In / Pr/Pb/Y Mode: The DVD player played DVD Disk and sent “DVD 1kHz Signal Playing” image to the LCD Monitor (EUT).

3.6.6.The other peripheral devices were driven and operated in turn during all testing.

3.7.Test Procedure

The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power connected to the power mains through a line impedance stabilization network (L.I.S.N.#1). This provided a 50-ohm coupling impedance for the EUT (Please refer to the block diagram of the test setup and photographs). The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N.#2). Both sides of power line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipments and all the interface cables were changed according to EN 55022 Class A on conducted Disturbance test.

The bandwidth of test receiver (R & S ESCI) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked. The test result is reported on Section 3.8.

3.8. Conducted Disturbance at Mains Terminals Test Results

PASS. (All emissions not reported below are too low against the prescribed limits.)

EUT: LCD Monitor

Model No.: L460NZ

Test Date: Sep.25, 2010

Temperature: 29.5℃

Humidity: 55%

The EUT was pre-tested under following test modes, and test mode 6 was the worst cases for final test.

EUT Setting type: Desktop and Tower

Test Mode.	Input Port	Resolution & Frequency
1.	DVI	640*480/60Hz
2.		1280*1024/75Hz
3.		1920*1080/60Hz
4.	D-Sub (VGA)	640*480/60Hz
5.		1280*1024/75Hz
6.		1920*1080/60Hz
7.	Display	640*480/60Hz
8.		1280*1024/75Hz
9.		1920*1080/60Hz
10.	HDMI	1920*1080/60Hz
11.	AV In	
12.	S-Video In	
13.	Pr/Pb/Y	

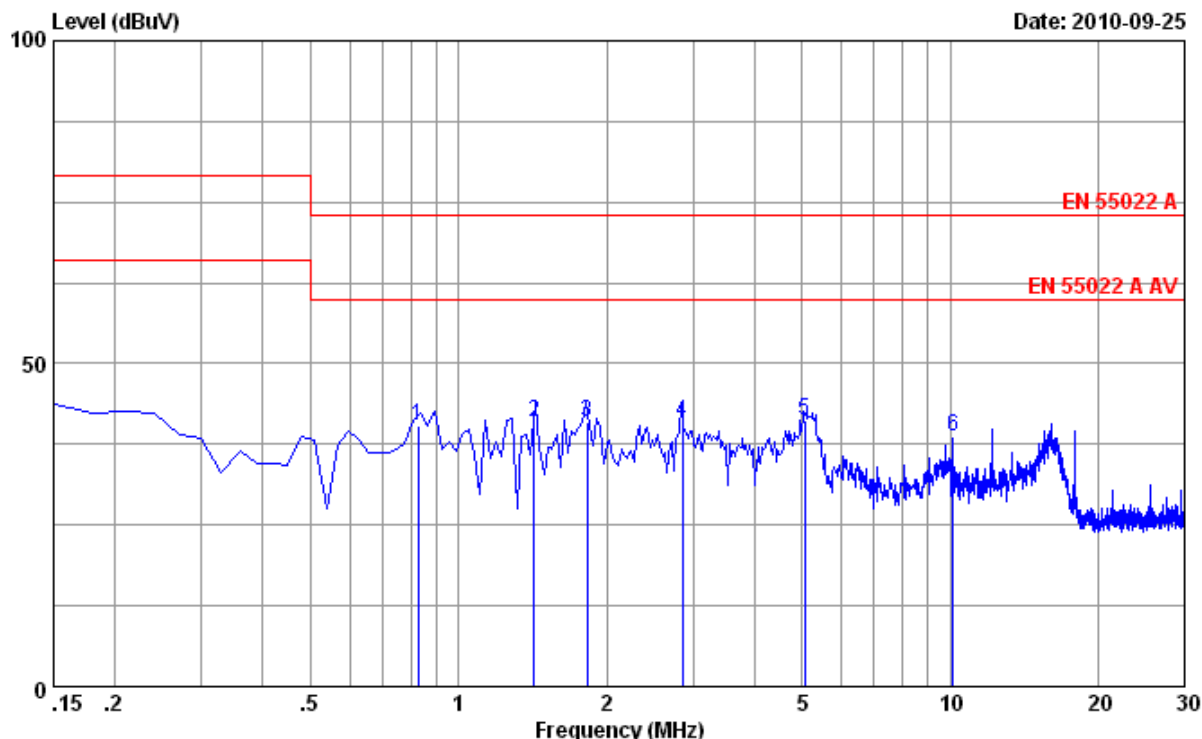
Test result is presented in the report as below.

Test Result	Input Port	Resolution & Frequency
1.	VGA (D-Sub)	1920*1080/60Hz

Data: 11

File: E:\2010 Report data\T\TPV\ACS10Q1740.EM6 (136)

Date: 2010-09-25



Site no :Audix No.2 Conduction Data No :11
Dis./Ant. :** 2010 ENV4200 LISN phase:LINE
Limit :EN 55022 A
Env./Ins. :29.5°C/55% Engineer :Jolly_Xu
EUT :LCD Monitor M/N:L460NZ
Power Rating :AC 230V/50Hz
Test Mode :Running "H" Pattern And 1KHz Playing
VGA:1920*1080@60Hz

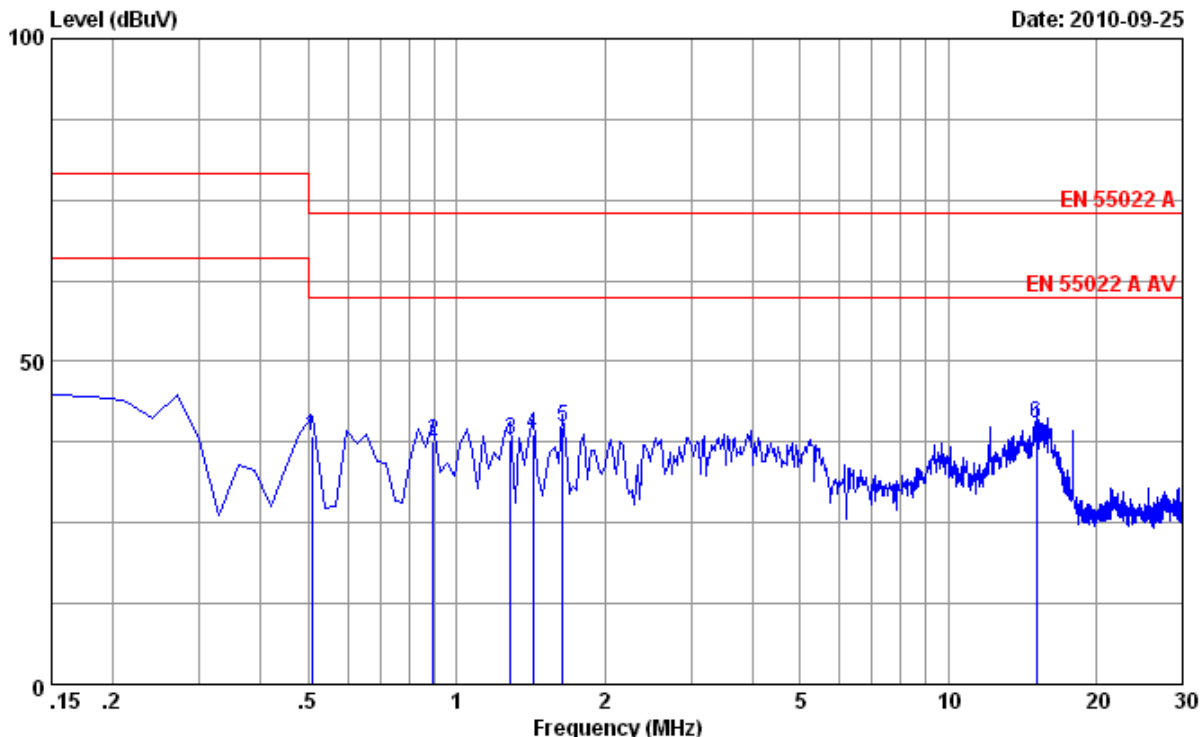
No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.82600	10.15	9.89	20.49	40.53	73.00	32.47	QP
2	1.425	10.20	9.91	20.79	40.90	73.00	32.10	QP
3	1.825	10.20	9.93	20.79	40.92	73.00	32.08	QP
4	2.856	10.21	9.96	20.81	40.98	73.00	32.02	QP
5	5.062	10.23	9.99	21.01	41.23	73.00	31.77	QP
6	10.125	10.38	10.19	18.11	38.68	73.00	34.32	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)+Reading.
2.If the average limit is met when using a quasi-peak detector.
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.

Data: 12

File: E:\2010 Report data\T\TPV\ACS10Q1740.EM6 (136)

Date: 2010-09-25



Site no :Audix No.2 Conduction
Dis./Ant. :** 2010 ENV4200
Limit :EN 55022 A
Env./Ins. :29.5°C/55%
EUT :LCD Monitor M/N:L460NZ
Power Rating :AC 230V/50Hz
Test Mode :Running "H" Pattern And 1KHz Playing
VGA:1920*1080@60Hz

Data No :12
LISN phase:NEUTRAL
Engineer :Jolly_Xu

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBUV)	Emission Level (dBUV)	Limits (dBUV)	Margin (dB)	Remark
1	0.50700	10.19	9.88	18.40	38.47	73.00	34.53	QP
2	0.89500	10.20	9.89	17.63	37.72	73.00	35.28	QP
3	1.287	10.26	9.91	17.61	37.78	73.00	35.22	QP
4	1.433	10.27	9.91	18.51	38.69	73.00	34.31	QP
5	1.642	10.28	9.92	19.62	39.82	73.00	33.18	QP
6	15.125	10.57	10.44	19.30	40.31	73.00	32.69	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)+Reading.
2.If the average limit is met when using a quasi-peak detector.
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.

4. RADIATED DISTURBANCE TEST

4.1. Test Equipment

The following test equipments are used during the radiated emission measurement:

4.1.1. For frequency range 30MHz~1000MHz (At Anechoic Chamber)

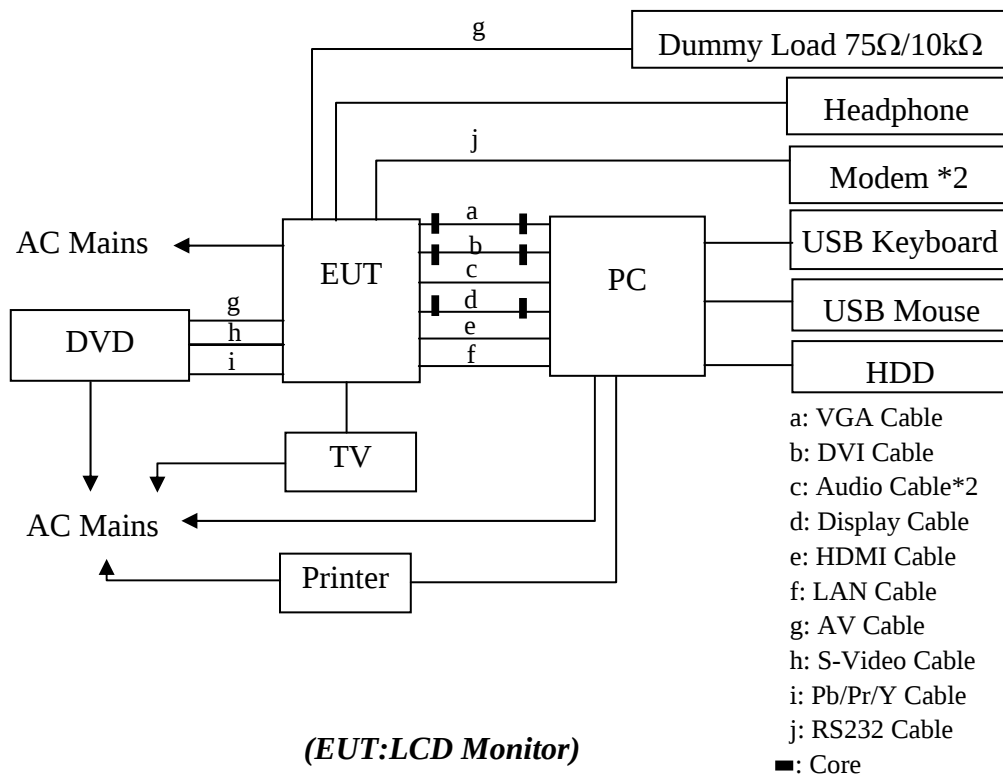
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	10m Chamber	AUDIX	N/A	N/A	Dec.05,09	1 Year
2	EMC Analyzer	Agilent	E7405A	MY42000131	May.08, 10	1 Year
3	EMC Analyzer	Agilent	E7405A	MY45116588	May.08, 10	1 Year
4	Test Receiver	Rohde & Schwarz	ESCI	100842	May.08, 10	1 Year
5	Amplifier	Agilent	8447D	2944A10684	May.08, 10	1 Year
6	Amplifier	Agilent	8447D	2944A11140	May.08, 10	1 Year
7	Bilog Antenna	Schaffner	CBL6112D	25238	Mar.27, 10	1 Year
8	Bilog Antenna	Schaffner	CBL6112D	25237	Mar.27, 10	1 Year
9	RF Cable	MIYAZAKI	8D-FB	10m Chamber No.1	May.08, 10	1 Year
10	RF Cable	MIYAZAKI	8D-FB	10m Chamber No.2	May.08, 10	1 Year
11	Coaxial Switch	Anritsu	MP59B	6200766906	May.08, 10	1 Year
12	Coaxial Switch	Anritsu	MP59B	6200766905	May.08, 10	1 Year
13	Coaxial Switch	Anritsu	MP59B	6200313662	May.08, 10	1 Year

4.1.2. For frequency range 1GHz~6GHz (At Anechoic Chamber)

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum Analyzer	Agilent	E7405A	MY45116588	May.08, 10	1 Year
2	Horn Antenna	EMCO	3115	9607-4877	Nov.25, 09	1.5 Year
3	Amplifier	Agilent	8449B	3008A00863	May.08, 10	1 Year
4	RF Cable	Hubersuhner	SUCOFLEX102	28620/2	May.08, 10	1 Year
5	RF Cable	Hubersuhner	SUCOFLEX102	29091/2	May.08, 10	1 Year

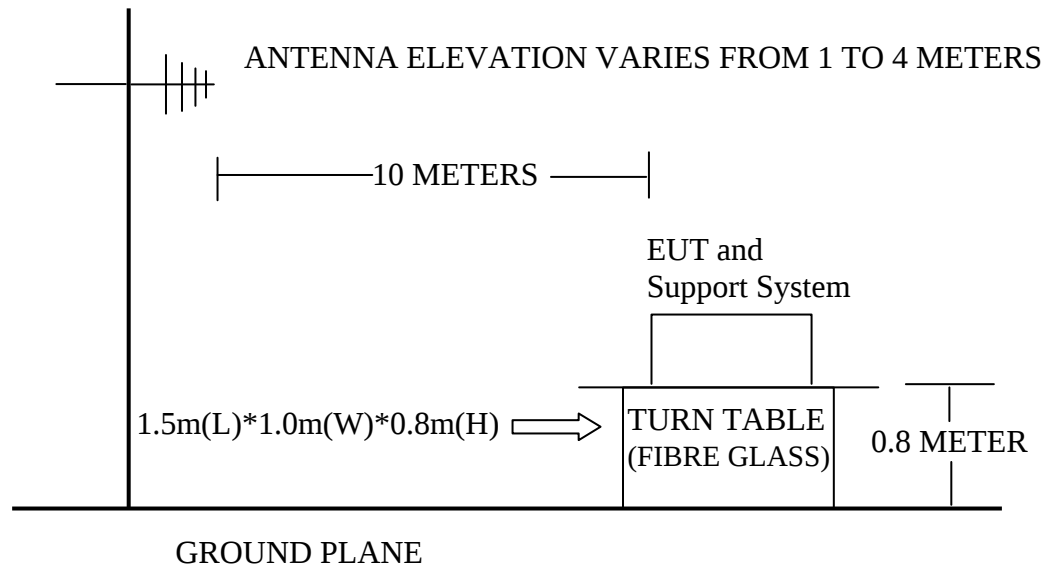
4.2. Block Diagram of Test Setup

4.2.1. Block Diagram of connection between EUT and simulators



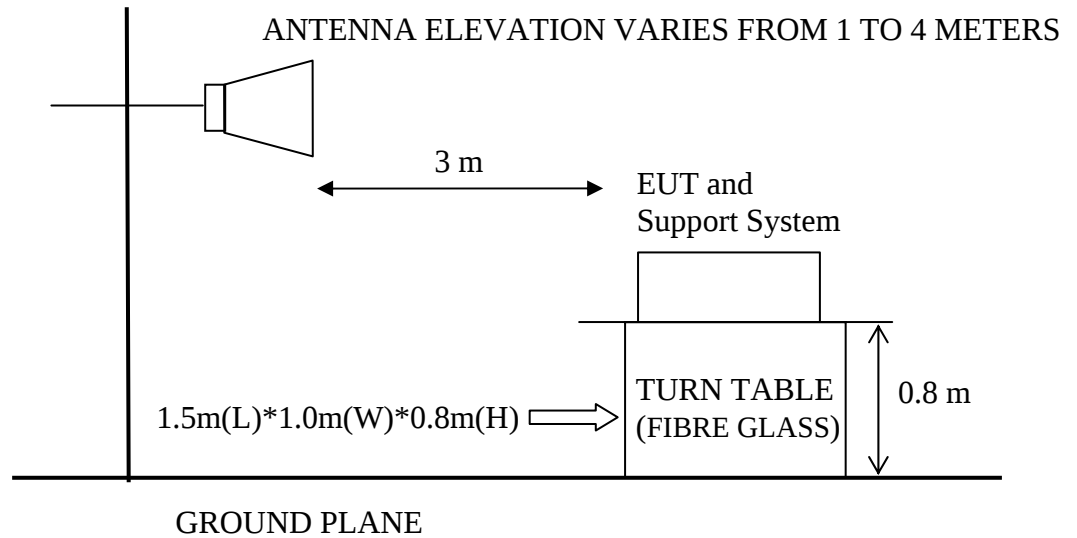
4.2.2. In Anechoic Chamber Test Setup Diagram

ANTENNA TOWER



4.2.3. In Anechoic (10m) Chamber Test Setup Diagram for 1-6GHz

ANTENNA TOWER



4.3. Test Standard

EN55022: 2006+A1: 2007, Class A

4.4.Radiated Disturbance Limit

All emanations from a Class A computing devices or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMITS (dB μ V/m)
30 ~ 230	10	40
230 ~ 1000	10	47
1000~3000	3	76(Peak) 56(Average)
3000~6000	3	80(Peak) 60(Average)

- Note:
- (1) Emission level = Antenna Factor + Cable Loss + Reading
Emission level = Antenna Factor -Amp Factor +Cable Loss + Reading
(above 1000MHz)
 - (2) The lower limit shall apply at the transition frequencies.
 - (3) Distance refers to the distance in meters between the test antenna and the closed point of any part of the EUT.

4.5.EUT Configuration on Test

The EN 55022 Class A regulations test method must be used to find the maximum emission during Radiated Disturbance test. The configuration of EUT is same as used in Conducted Disturbance test. Please refer to Section 3.5.

4.6.Operating Condition of EUT

- 4.6.1.Setup the EUT and simulator as shown as Section 4.2.
- 4.6.2.Turned on the power of all equipment.
- 4.6.3.PC system ran the Self-test program “EMC Test.exe” by windows XP and sent “H” Character to LCD Monitor (EUT) through VGA / DVI card, the Screen of EUT displayed and filled with “H” pattern (font size of character "H" is 10; character color is black, background color is white).
- 4.6.4.During the test the EUT displayed “H” pattern and 1kHz signal playing from the PC through D-Sub / DVI / HDMI / Display / Audio cable. The Test Mode refers to 4.7 (Running “H” Pattern And 1kHz Signal Playing 1920*1080 60Hz) and measured it.
- 4.6.5.AV IN / S-Video In / Pr/Pb/Y Mode: The DVD player played DVD Disk and sent “DVD 1kHz Signal Playing” image to the LCD Monitor (EUT).
- 4.6.6.The other peripheral devices were driven and operated in turn during all testing.

4.7.Test Procedure

The EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber. An antenna was located 3m and 10m from the EUT on an adjustable mast. A pre-scan was first performed in order to find prominent radiated emissions. For final emissions measurements at each frequency of interest, the EUT were rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to EN 55022 Class A on Radiated Disturbance test.

The bandwidth setting on the test receiver (R&S TEST RECEIVER ESCI) is 120 kHz.

The resolution bandwidth of the Agilent Spectrum Analyzer E7405A was set at 1MHz. (For above 1GHz)

The frequency range from 30MHz to 1000MHz was pre-scanned with a peak detector and all final readings of measurement from Test Receiver are Quasi-Peak values.

The frequency range from 1GHz to 6GHz was checked with peak and average detector, measurement distance is 3m in 10m chamber.

Finally, selected operating situations at Anechoic Chamber measurement, all the test results are listed in section 4.8.

4.8. Radiated Emission Measurement Result

PASSED.

For frequency range 30MHz~1000MHz

EUT: LCD Monitor Model No.: L460NZ

Test Date: Sep.27, 2010 Temperature: 24℃ Humidity: 56%

The EUT was pre-tested under following test modes, and test mode 6 was the worst cases for final test.

EUT Setting type: Desktop and Tower

Test Mode.	Input Port	Resolution & Frequency
1.	DVI	640*480/60Hz
2.		1280*1024/75Hz
3.		1920*1080/60Hz
4.	D-Sub (VGA)	640*480/60Hz
5.		1280*1024/75Hz
6.		1920*1080/60Hz
7.	Display	640*480/60Hz
8.		1280*1024/75Hz
9.		1920*1080/60Hz
10.	HDMI	1920*1080/60Hz
11.	AV In	
12.	S-Video In	
13.	Pr/Pb/Y	

Test result is presented in the report as below.

Test Result	Input Port	Resolution & Frequency
1.	VGA (D-Sub)	1920*1080/60Hz

For frequency range 1GHz~6GHz

For frequency range 1GHz~6GHz, EUT with below test mode 1 was measured within Anechoic Chamber and the test results listed in next pages.

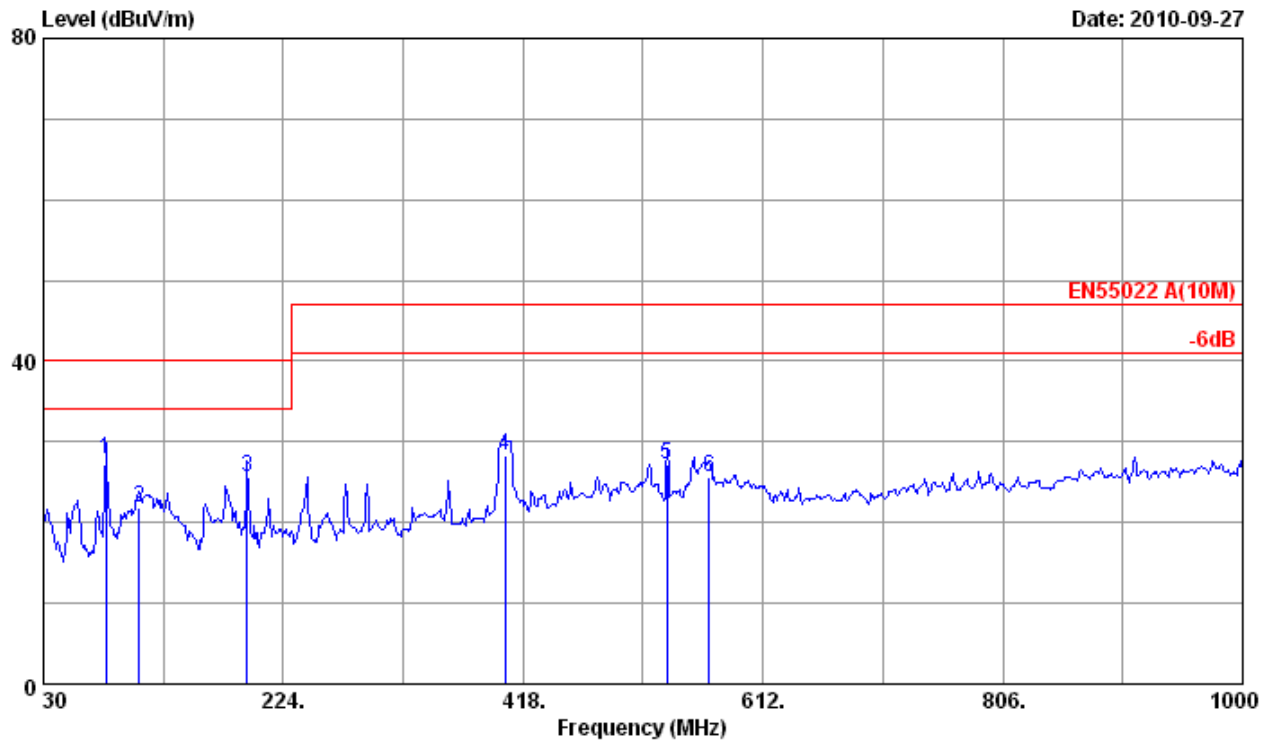
Test Date: Sep.26, 2010 Temperature : 24℃ Humidity : 56%

Test Result	Input Port	Resolution & Frequency
1.	VGA (D-Sub)	1920*1080/60Hz

Data: 74

File: D:\2010 Repot Data\T\TPV\10m\ACS10Q1740.EM6 (164)

Date: 2010-09-27



Site no. : 10m Chamber Test Site Data No. : 74
Dis. / Ant. : 10m 10 CBL6112D 25238 Ant. pol. : HORIZONTAL
Limit : EN55022 A(10M)
Env. / Ins. : 24°C/56% Engineer : Frank_Li
EUT : LCD Monitor M/N:L460NZ
Power Rating : AC 230V/50Hz
Test Mode : Running "H" Pattern And 1KHz Playing
VGA:1920*1080@60Hz

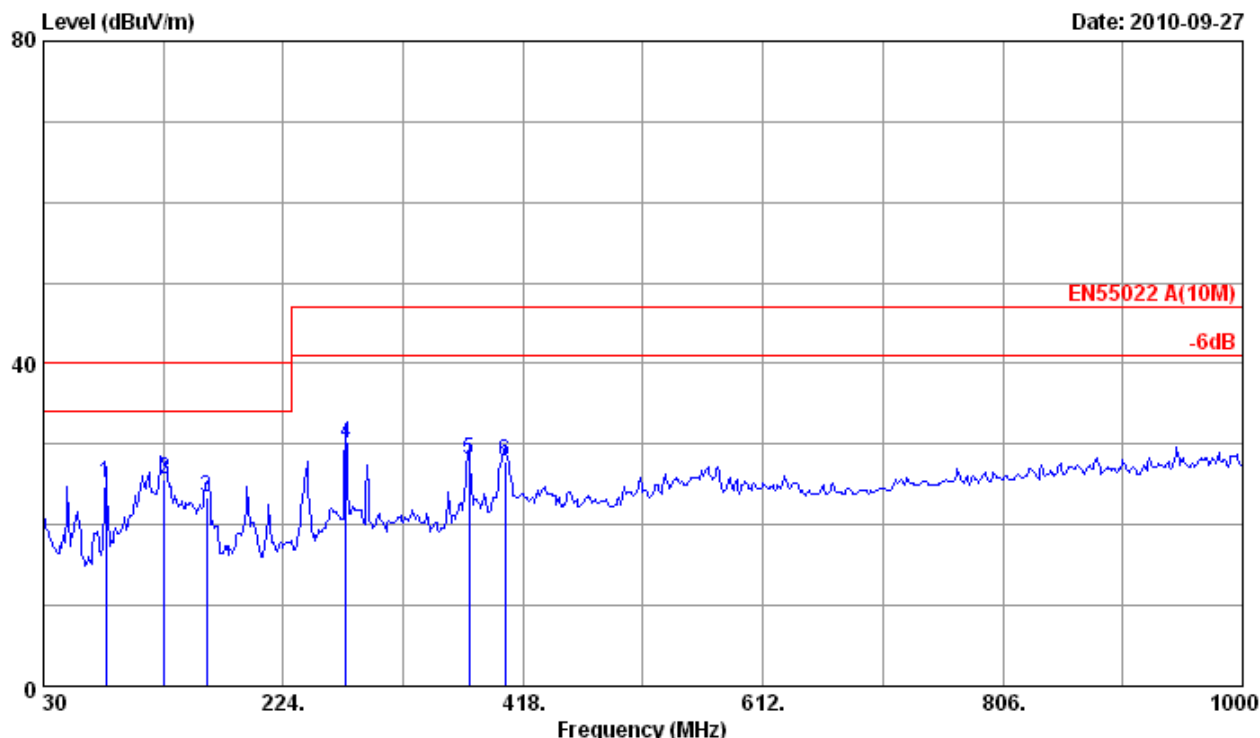
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	80.440	7.05	0.91	19.95	27.91	40.00	12.09	QP
2	107.600	11.58	1.17	9.11	21.86	40.00	18.14	QP
3	194.900	9.20	1.61	14.91	25.72	40.00	14.28	QP
4	403.450	15.75	2.70	9.81	28.26	47.00	18.74	QP
5	534.400	17.98	3.15	6.15	27.28	47.00	19.72	QP
6	568.350	18.62	3.23	3.82	25.67	47.00	21.33	QP

- Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.
3. The worst emission was detected at 80.440MHz with corrected signal level of 27.91dB μ V/m (Limit is 40.00dB μ V/m) when the antenna was at horizontal polarization and at 2.0m high and the turntable was at 153°.
4. 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

Data: 73

File: D:\2010 Repot Data\T\TPV\10m\ACS10Q1740.EM6 (164)

Date: 2010-09-27



Site no. : 10m Chamber Test Site Data No. : 73
Dis. / Ant. : 10m 10 CBL6112D 25237 Ant. pol. : VERTICAL
Limit : EN55022 A(10M)
Env. / Ins. : 24°C/56% Engineer : Frank_Li
EUT : LCD Monitor M/N:L460NZ
Power Rating : AC 230V/50Hz
Test Mode : Running "H" Pattern And 1KHz Playing
VGA:1920*1080@60Hz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	80.440	6.95	1.27	17.03	25.25	40.00	14.75	QP
2	127.970	12.38	1.67	11.54	25.59	40.00	14.41	QP
3	161.920	10.00	1.95	11.56	23.51	40.00	16.49	QP
4	274.440	12.69	2.86	14.55	30.10	47.00	16.90	QP
5	374.350	14.78	3.52	9.83	28.13	47.00	18.87	QP
6	403.450	15.85	3.70	8.21	27.76	47.00	19.24	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.

2. The emission levels that are 20dB below the official limit are not reported.

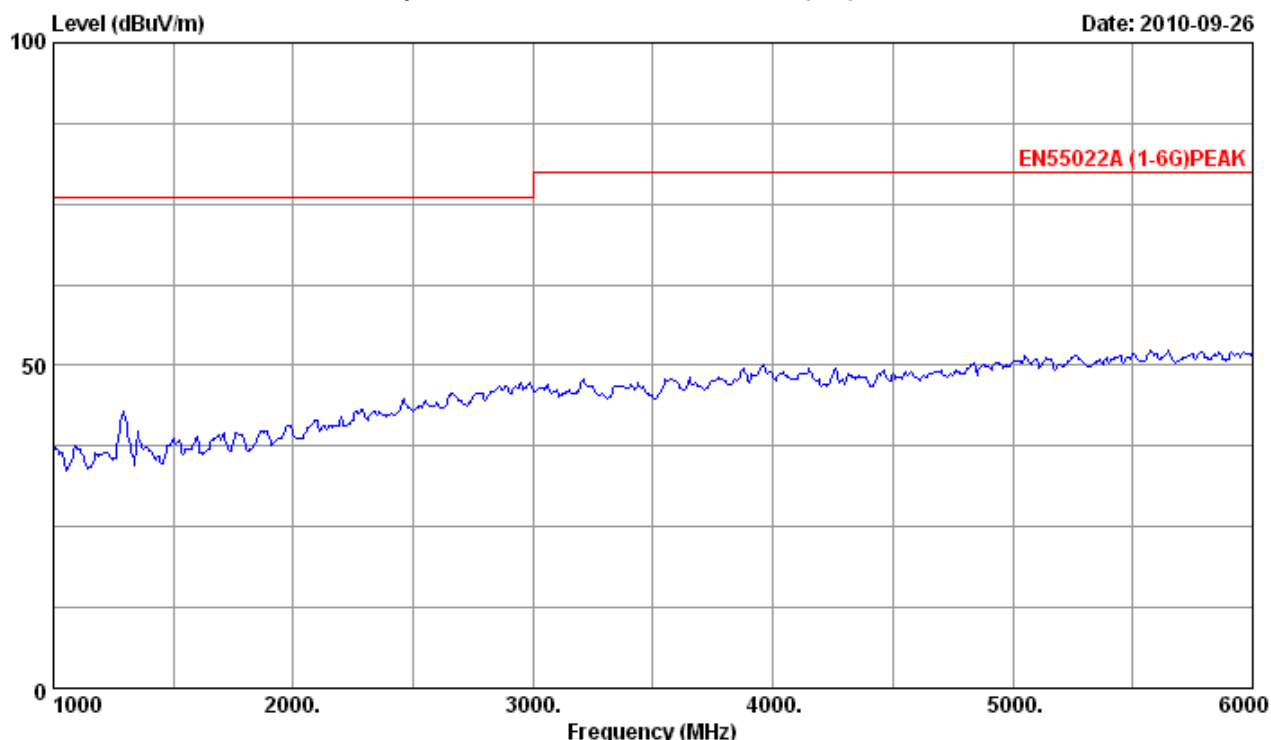
3. The worst emission was detected at 127.970 MHz with corrected signal level of 25.59dB μ V/m (Limit is 40.00dB μ V/m) when the antenna was at vertical polarization and at 1.0m high and the turntable was at 323°.

4. 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna

Data: 1

File: D:\2010 Repot Data\T\TPV\10m\ACS10Q1740.EM6 (164)

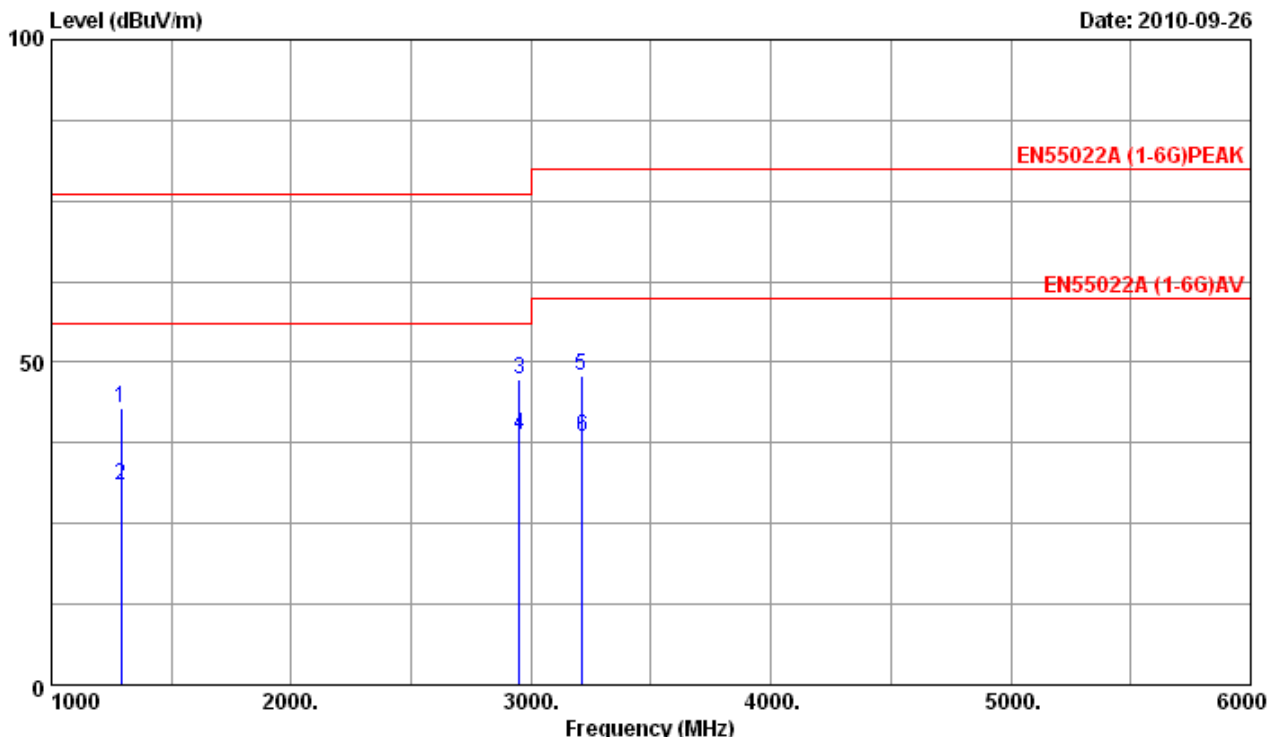
Date: 2010-09-26



Site no.	: 10m Chamber Test Site	Data No.	: 1
Dis. / Ant.	: 3m 2009 3115 ANT	Ant. pol.	: HORIZONTAL
Limit	: EN55022A (1-6G)PEAK		
Env. / Ins.	: 24°C/56%	Engineer	: Frank_Li
EUT	: LCD Monitor M/N:L460NZ		
Power Rating	: AC 230V/50Hz		
Test Mode	: Running "H" Pattern And 1KHz Playing		
	VGA:1920*1080@60Hz		

Data: 2 File: D:\2010 Repot Data\T\TPV\10m\ACS10Q1740.EM6 (164)

Date: 2010-09-26



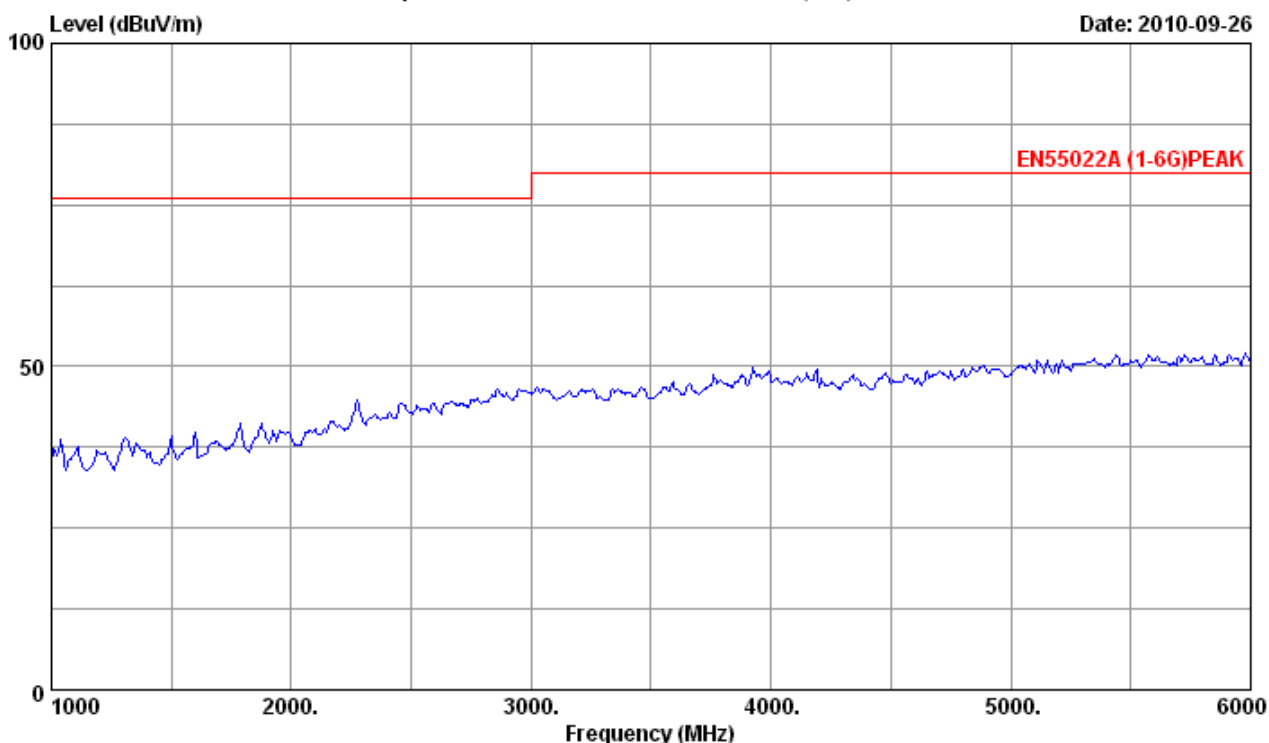
Site no. : 10m Chamber Test Site Data No. : 2
Dis. / Ant. : 3m 2009 3115 ANT Ant. pol. : HORIZONTAL
Limit : EN55022A (1-6G) PEAK
Env. / Ins. : 24°C/56% Engineer : Frank_Li
EUT : LCD Monitor M/N:L460NZ
Power Rating : AC 230V/50Hz
Test Mode : Running "H" Pattern And 1KHz Playing
VGA:1920*1080@60Hz

	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	1290.000	25.28	4.35	34.66	47.88	42.85	76.00	33.15	Peak
2	1290.470	25.28	4.35	34.66	36.07	31.04	56.00	24.96	Average
3	2950.000	30.74	6.62	33.71	43.61	47.26	76.00	28.74	Peak
4	2951.870	30.74	6.64	33.70	34.96	38.64	56.00	17.36	Average
5	3210.000	31.07	6.86	33.68	43.69	47.94	80.00	32.06	Peak
6	3214.530	31.07	6.86	33.68	34.15	38.40	60.00	21.60	Average

Remarks: 1. Emission Level=Antenna Factor+Cable Loss-Amp Factor+Reading.
2. The emission levels that are 20dB below the official limit are not reported.

Data: 3 File: D:\2010 Repot Data\T\TPV\10m\ACS10Q1740.EM6 (164)

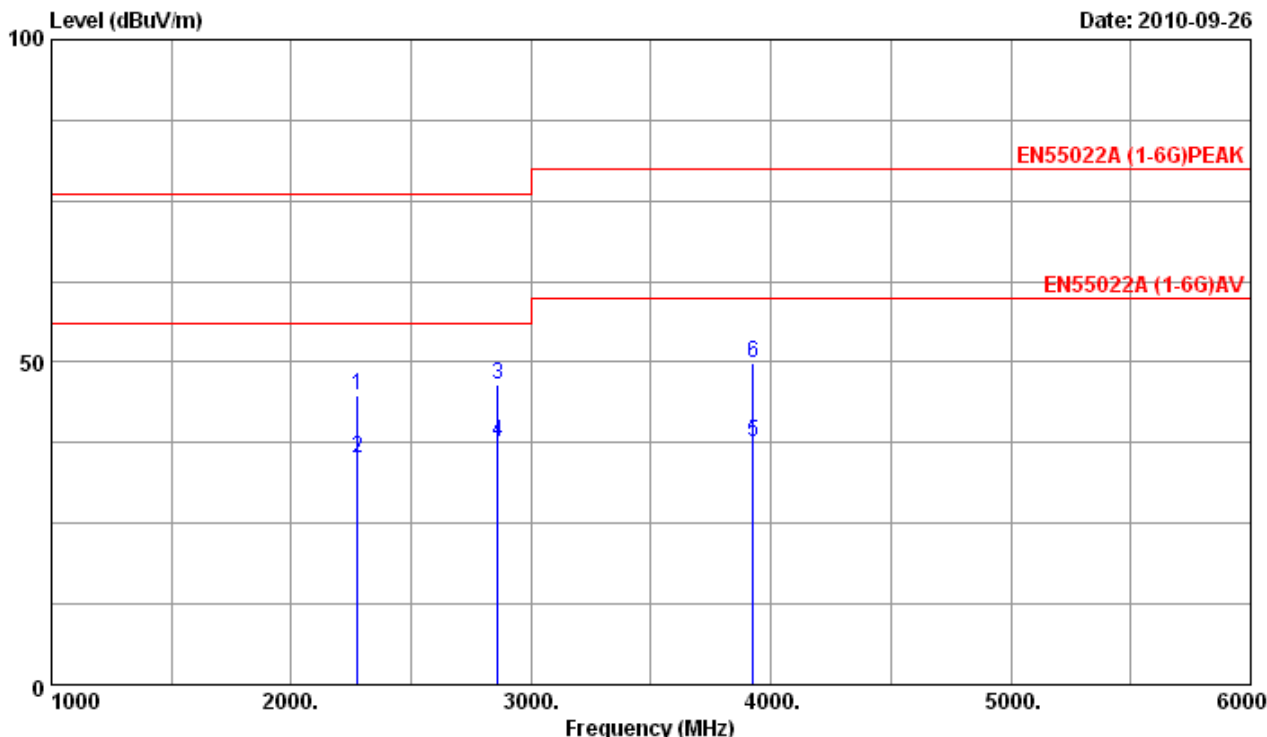
Date: 2010-09-26



Site no.	: 10m Chamber Test Site	Data No.	: 3
Dis. / Ant.	: 3m 2009 3115 ANT	Ant. pol.	: VERTICAL
Limit	: EN55022A (1-6G)PEAK		
Env. / Ins.	: 24°C/56%	Engineer	: Frank_Li
EUT	: LCD Monitor M/N:L460NZ		
Power Rating	: AC 230V/50Hz		
Test Mode	: Running "H" Pattern And 1KHz Playing		
	VGA:1920*1080@60Hz		

Data: 4 File: D:\2010 Repot Data\T\TPV\10m\ACS10Q1740.EM6 (164)

Date: 2010-09-26



Site no. : 10m Chamber Test Site Data No. : 4
Dis. / Ant. : 3m 2009 3115 ANT Ant. pol. : VERTICAL
Limit : EN55022A (1-6G) PEAK
Env. / Ins. : 24°C/56% Engineer : Frank_Li
EUT : LCD Monitor M/N:L460NZ
Power Rating : AC 230V/50Hz
Test Mode : Running "H" Pattern And 1KHz Playing
VGA:1920*1080@60Hz

	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2275.000	27.96	5.71	33.77	44.93	44.83	76.00	31.17	Peak
2	2275.470	27.96	5.71	33.77	35.27	35.17	56.00	20.83	Average
3	2860.000	30.42	6.49	33.71	43.31	46.51	76.00	29.49	Peak
4	2860.460	30.42	6.52	33.71	34.24	37.47	56.00	18.53	Average
5	3924.760	33.11	7.42	33.61	30.82	37.74	60.00	22.26	Average
6	3925.000	33.11	7.42	33.61	42.91	49.83	80.00	30.17	Peak

Remarks: 1. Emission Level=Antenna Factor+Cable Loss-Amp Factor+Reading.
2. The emission levels that are 20dB below the official limit are not reported.

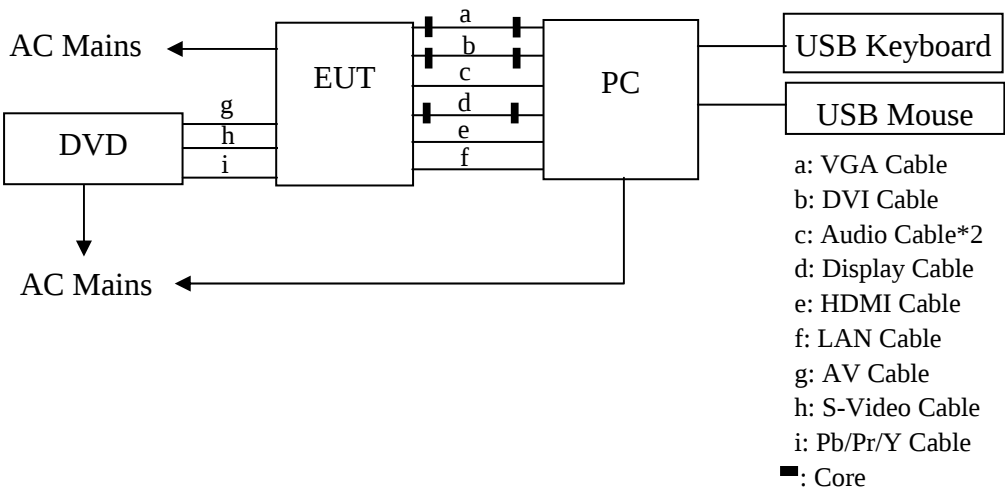
5. HARMONIC CURRENT TEST

5.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Compliance Test System	California Instruments	5001ix	58481	Dec.18, 09	1 Year
2.	Compliance Test System	California Instruments	PACS-1	72627	Dec.18, 09	1 Year

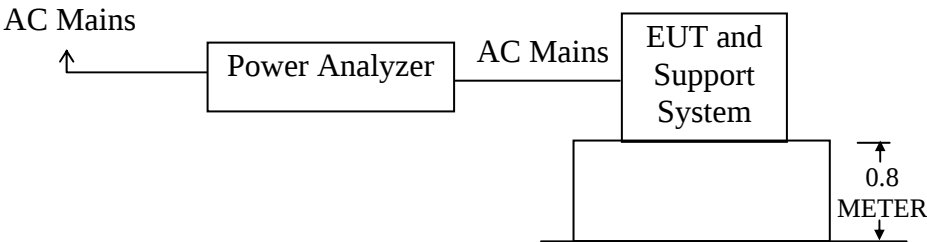
5.2. Block Diagram of Test Setup

5.2.1. Block Diagram of connection between EUT and simulation



(EUT: LCD Monitor)

5.2.2. Block Diagram of Test Setup



(EUT: LCD Monitor)

5.3. Test Standard

EN61000-3-2: 2006; Class D

5.4. Operating Condition of EUT

Same as Section 3.6. except the test setup replaced by Section 5.2.

5.5. Test Results

PASS.

The EUT was tested and all the test results are listed in next page.

Harmonics – Class-D per Ed. 3.0 (2005-11)(Run time)

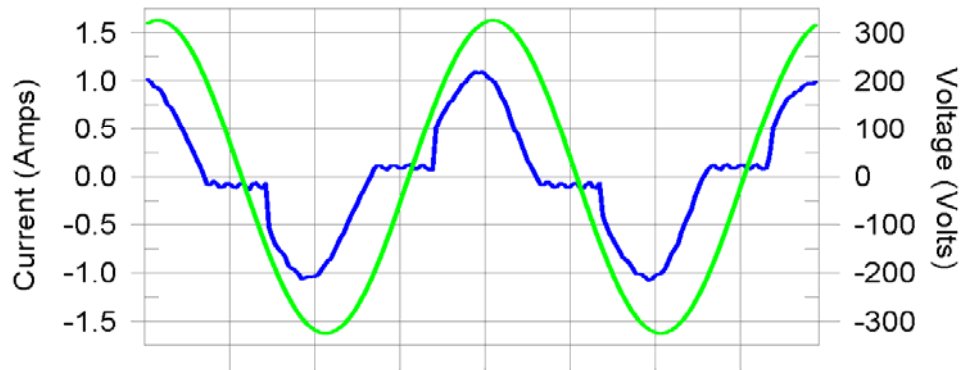
EUT: LCD Monitor M/N:L460NZ
Test category: Class-D per Ed. 3.0 (2005-11) (European limits)
Test date: 2010-9-19 Start time: 23:11:54 End time: 23:14:45
Test duration (min): 2.5 Data file name: H-000013.cts_data
Comment: Running "H" Pattern And 1KHz Playing
Customer: TPV

Tested by: Jolly_Xu

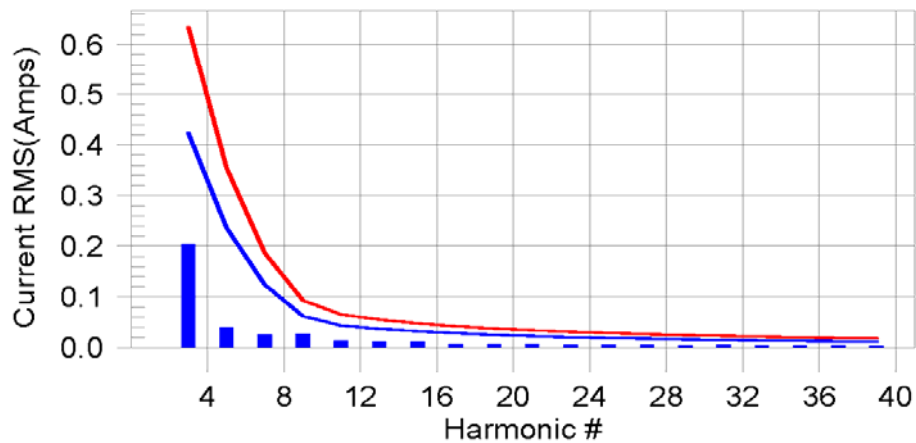
Test Margin: 100

Test Result: Pass Source qualification: Normal

Current & voltage waveforms



Harmonics and Class D limit line European Limits



Test result: Pass Worst harmonic was #3 with 48.13% of the limit.

Current Test Result Summary (Run time)

EUT: LCD Monitor M/N:L460NZ Tested by: Jolly_Xu
 Test category: Class-D per Ed. 3.0 (2005-11) (European limits) Test Margin: 100
 Test date: 2010-9-19 Start time: 23:11:54 End time: 23:14:45
 Test duration (min): 2.5 Data file name: H-000013.cts_data
 Comment: Running "H" Pattern And 1KHz Playing
 Customer: TPV

Test Result: Pass Source qualification: Normal
 THC(A): 0.21 I-THD(%): 37.48 POHC(A): 0.016 POHC Limit(A): 0.054
 Highest parameter values during test:

V_RMS (Volts): 230.00	Frequency(Hz): 50.00
I_Peak (Amps): 1.137	I_RMS (Amps): 0.612
I_Fund (Amps): 0.573	Crest Factor: 1.860
Power (Watts): 124.5	Power Factor: 0.885

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.000						
3	0.203	0.423	48.0	0.204	0.635	32.11	Pass
4	0.000						
5	0.040	0.237	17.0	0.040	0.355	11.36	Pass
6	0.000						
7	0.025	0.125	19.7	0.025	0.187	13.26	Pass
8	0.000						
9	0.027	0.062	44.1	0.028	0.093	29.59	Pass
10	0.000						
11	0.015	0.044	33.7	0.015	0.065	22.64	Pass
12	0.000						
13	0.012	0.037	33.4	0.013	0.055	22.81	Pass
14	0.000						
15	0.013	0.032	38.8	0.013	0.048	26.37	Pass
16	0.000						
17	0.007	0.029	25.6	0.007	0.042	17.54	Pass
18	0.000						
19	0.008	0.025	31.1	0.008	0.038	21.01	Pass
20	0.000						
21	0.008	0.023	33.2	0.008	0.034	22.45	Pass
22	0.000						
23	0.005	0.021	24.7	0.005	0.031	16.72	Pass
24	0.000						
25	0.006	0.019	31.4	0.006	0.029	21.50	Pass
26	0.000						
27	0.005	0.018	30.6	0.006	0.027	22.20	Pass
28	0.000						
29	0.004	0.017	26.6	0.005	0.025	19.36	Pass
30	0.000						
31	0.005	0.015	33.1	0.005	0.023	23.67	Pass
32	0.000						
33	0.004	0.014	29.2	0.005	0.022	20.77	Pass
34	0.000						
35	0.004	0.014	26.9	0.004	0.021	18.52	Pass
36	0.000						
37	0.004	0.013	33.6	0.004	0.019	22.70	Pass
38	0.000						
39	0.003	0.012	27.4	0.003	0.018	18.66	Pass
40	0.000						

Note: Dynamic limits were applied for this test. The highest harmonics values in the above table may not occur at the same window as the maximum harmonics/limit ratio.

Voltage Source Verification Data (Run time)

EUT: LCD Monitor M/N:L460NZ
Test category: Class-D per Ed. 3.0 (2005-11) (European limits)
Test date: 2010-9-19 Start time: 23:11:54 End time: 23:14:45
Test duration (min): 2.5 Data file name: H-000013.cts_data
Comment: Running "H" Pattern And 1KHz Playing
Customer: TPV

Tested by: Jolly_Xu

Test Margin: 100

Test Result: Pass Source qualification: Normal

Highest parameter values during test:

Voltage (Vrms): 230.00 Frequency(Hz): 50.00
I_Peak (Amps): 1.137 I_RMS (Amps): 0.612
I_Fund (Amps): 0.573 Crest Factor: 1.860
Power (Watts): 124.5 Power Factor: 0.885

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.081	0.460	17.60	OK
3	0.459	2.070	22.17	OK
4	0.050	0.460	10.85	OK
5	0.042	0.920	4.62	OK
6	0.024	0.460	5.19	OK
7	0.032	0.690	4.69	OK
8	0.018	0.460	3.96	OK
9	0.020	0.460	4.40	OK
10	0.008	0.460	1.71	OK
11	0.011	0.230	4.98	OK
12	0.009	0.230	3.92	OK
13	0.014	0.230	6.17	OK
14	0.008	0.230	3.57	OK
15	0.009	0.230	3.73	OK
16	0.008	0.230	3.51	OK
17	0.007	0.230	3.26	OK
18	0.008	0.230	3.52	OK
19	0.008	0.230	3.67	OK
20	0.007	0.230	2.98	OK
21	0.011	0.230	4.62	OK
22	0.003	0.230	1.25	OK
23	0.005	0.230	2.22	OK
24	0.003	0.230	1.31	OK
25	0.007	0.230	3.06	OK
26	0.002	0.230	0.85	OK
27	0.006	0.230	2.50	OK
28	0.002	0.230	0.85	OK
29	0.003	0.230	1.34	OK
30	0.002	0.230	1.04	OK
31	0.007	0.230	2.87	OK
32	0.002	0.230	0.80	OK
33	0.006	0.230	2.64	OK
34	0.002	0.230	0.95	OK
35	0.004	0.230	1.75	OK
36	0.002	0.230	0.66	OK
37	0.008	0.230	3.39	OK
38	0.001	0.230	0.55	OK
39	0.006	0.230	2.58	OK
40	0.003	0.230	1.17	OK

6. VOLTAGE FLUCTUATIONS & FLICKER TEST

6.1. Test Equipment

Same as Section 5.1.

6.2. Block Diagram of Test Setup

Same as Section 5.2.

6.3. Test Standard

EN61000-3-3: 2008

6.4. Operating Condition of EUT

Same as Section 5.4.

6.5. Test Results

PASS.

Please refer to the following page.

Flicker Test Summary per EN/IEC61000-3-3 (Run time)

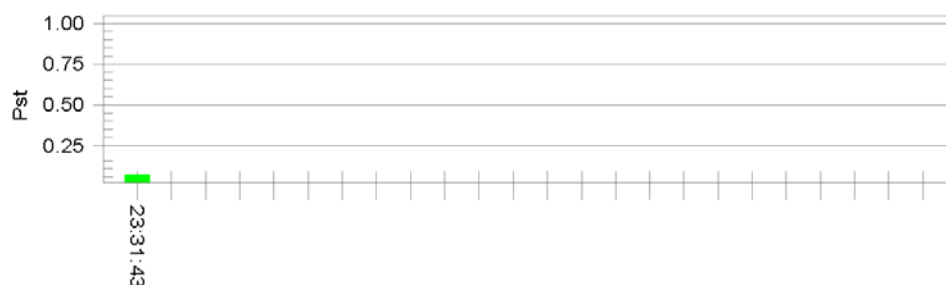
EUT: LCD Monitor M/N:L460NZ		Tested by: Jolly_Xu
Test category: All parameters (European limits)		Test Margin: 100
Test date: 2010-9-19	Start time: 23:21:23	End time: 23:31:44
Test duration (min): 10	Data file name: F-000015.cts_data	
Comment: Running "H" Pattern And 1KHz Playing		
Customer: TPV		

Test Result: Pass

Status: Test Completed

Pst and limit line

European Limits



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt):	229.92		
Highest dt (%):	0.00	Test limit (%):	3.30 Pass
Time(mS) > dt:	0.0	Test limit (mS):	500.0 Pass
Highest dc (%):	0.00	Test limit (%):	3.30 Pass
Highest dmax (%):	0.00	Test limit (%):	4.00 Pass
Highest Pst (10 min. period):	0.064	Test limit:	1.000 Pass
Highest Plt (2 hr. period):	0.028	Test limit:	0.650 Pass

7. IMMUNITY PERFORMANCE CRITERIA

Performance Level

The test results shall be classified in terms of the loss of function or degradation of performance of the equipment under test, relative to a performance level by its manufacturer or the requestor of the test, or the agreed between the manufacturer and the purchaser of the product.

Definition related to the performance level:

1. Based on the used product standard
2. Based on the declaration of the manufacturer, requestor or purchaser

Performance criterion A

When seen from the normal viewing distance, the EUT shall operate with no change beyond the manufacturer's specification, in flicker, colour, focus and jitter (except for the power frequency magnetic field test).

Power frequency magnetic field test

For CRT monitors, the following also applies:

The jitter shall be measured using a measuring microscope as specified in 6.6.14 of ISO 9241-3.

The jitter (in mm) shall not exceed the value $\frac{(\text{character height in mm} + 0,3) \times 2,5}{33,3}$ when the CRT monitor is immersed in a continuous magnetic field of 1A/m (r.m.s.) at one of the power frequencies of 50Hz.

Alternatively, a field of 50A/m may be applied, and a transparent graduated mask used to assess the jitter. In that case, the jitter shall not exceed 50 times the value in the above formula.

NOTE-This test level is used to simplify the measurement of jitter. Lesser values of the test level may be used if non-linearity is experienced, due to, for example, saturation of screening material.

The EUT shall be tested in two positions, both perpendicular to the magnetic field.

Performance criterion B

Screen disturbances during the application of the test are permissible.

Performance criterion C

Failures which are not self-recovered after removal of the external disturbance, but which can be recovered to normal operation by reset or reboot are permissible.

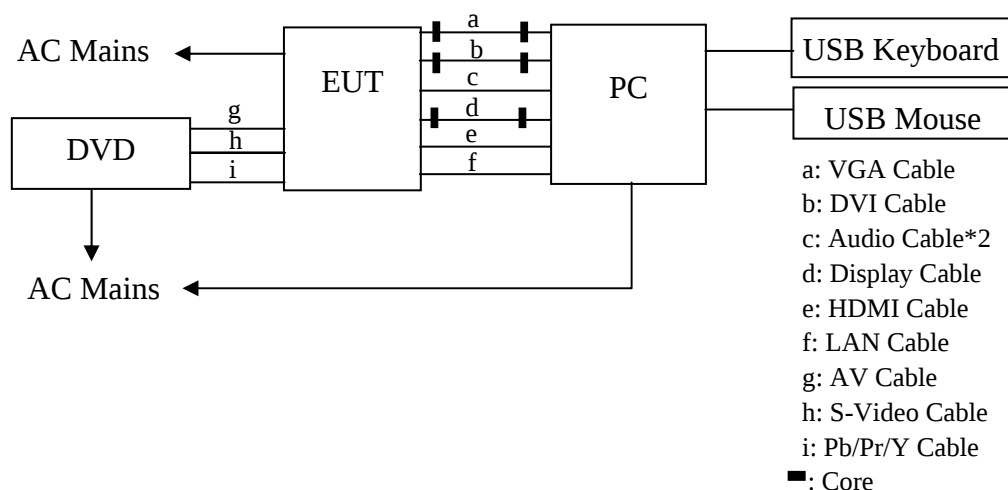
8. ELECTROSTATIC DISCHARGE IMMUNITY TEST

8.1.Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	ESD Tester	EM Test	Dito	V0503100053	Dec.17, 09	1 Year

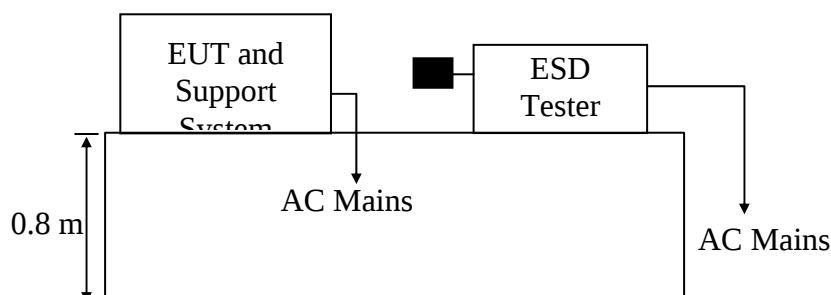
8.2.Block Diagram of Test Setup

8.2.1.Block Diagram of EUT Test Setup



(EUT: LCD Monitor)

8.2.2.Block Diagram of ESD Test Setup



Remark: ■ is Discharge Electrode

(EUT: LCD Monitor)

8.3.Test Standard

EN 55024: 1998+A1: 2001+A2: 2003 (IEC 61000-4-2: 2008)
 (Severity Level 1&2&3 for Air Discharge at 2kV&4kV&8kV,
 Severity Level 1&2 for Contact Discharge at 2kV&4kV)

8.4. Severity Levels and Performance Criterion

8.4.1. Severity level

Level	Test Voltage Contact Discharge (kV)	Test Voltage Air Discharge (kV)
1.	2	2
2.	4	4
3.	6	8
4.	8	15
X	Special	Special

8.4.2. Performance criterion: **B**

8.5. EUT Configuration

The configurations of EUT are listed in Section 3.5.

8.6. Operating Condition of EUT

Same as radiated test that is listed in Section 4.6. except the test set up replaced by Section 8.2.

8.7. Test Procedure

8.7.1. Air Discharge:

The test was applied on non-conductive surfaces of EUT. The round discharge tip of the discharge electrode was approached as fast as possible to touch the EUT. After each discharge, the discharge electrode was removed from the EUT. The generator was re-triggered for a new single discharge and repeated 20 times for each pre-selected test point. This procedure was repeated until all the air discharge completed

8.7.2. Contact Discharge:

All the procedure was same as Section 8.7.1. except that the generator was re-triggered for a new single discharge and repeated 50 times for each pre-selected test point. The tip of the discharge electrode was touching the EUT before the discharge switch was operated.

8.7.3. Indirect discharge for horizontal coupling plane

At least 20 single discharges were applied to the horizontal coupling plane, at points on each side of the EUT. The discharge electrode positions vertically at a distance of 0.1m from the EUT and with the discharge electrode touching the coupling plane.

8.7.4. Indirect discharge for vertical coupling plane

At least 20 single discharges were applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, was placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges were applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

8.8. Test Results

PASS.

The EUT was tested and all the test results are listed in next page.

Electrostatic Discharge Test Results

Audix Technology (Shenzhen) Co., Ltd.

Date: 10/11/2010

Applicant	: TPV Electronics (Fujian) Co., Ltd.	Test Date	: Sep.21, 2010
EUT	: LCD Monitor	Temperature	: 24 °C
M/N	: L460NZ	Humidity	: 45%
Test Voltage	: AC 230V/50Hz	Test Mode	: As section 3.6
Test Engineer	: Chris	Pressure	: 101.6KPa
Required Performance	: B	Actual Performance	: A

Air Discharge: $\pm 2\text{kV}$ $\pm 4\text{kV}$ $\pm 8\text{kV}$ # For Air Discharge each Point Positive 10 times and negative 10 times discharge.

Contact Discharge: $\pm 2\text{kV}$ $\pm 4\text{kV}$ # For Contact Discharge each point positive 25 times and negative 25 times discharge

For the time interval between successive single discharges an initial value of one second.

Discharge Voltage (kV)	Type of discharge	Dischargeable Points	Performance		Result (Pass/Fail)
			Require	Observation	
± 2	Contact	3,4,5,6,8,9,10	B	A	Pass
± 4	Contact	3,4,5,6,8,9,10	B	A	Pass
± 2	Air	1,2,7,11	B	A	Pass
± 4	Air	1,2,7,11	B	A	Pass
± 8	Air	1,2,7,11	B	A	Pass
± 2	HCP-Bottom	Edge of the HCP	B	A	Pass
± 2	VCP-Front	Center of the VCP	B	A	Pass
± 2	VCP-Left	Center of the VCP	B	A	Pass
± 2	VCP-Back	Center of the VCP	B	A	Pass
± 2	VCP-Right	Center of the VCP	B	A	Pass
± 4	HCP-Bottom	Edge of the HCP	B	A	Pass
± 4	VCP-Front	Center of the VCP	B	A	Pass
± 4	VCP-Left	Center of the VCP	B	A	Pass
± 4	VCP-Back	Center of the VCP	B	A	Pass
± 4	VCP-Right	Center of the VCP	B	A	Pass

Discharge Points Description

<u>1</u>	LCD	<u>8</u>	AV Port
<u>2</u>	Slots	<u>9</u>	S-Video
<u>3</u>	Metal Plane	<u>10</u>	LAN Port
<u>4</u>	Screws	<u>11</u>	Buttons
<u>5</u>	VGA & DVI & HDMI & DP	<u>12</u>	
<u>6</u>	RS232	<u>13</u>	
<u>7</u>	Audio In / Out	<u>14</u>	

Remark : After discharge to the ungrounded part of EUT, it needs the bleeder resistor to remove the charge prior to next ESD pulse.

Test Equipment: dito

Discharge should be considered on Contact and Air and Horizontal Coupling Plane (HCP) and Vertical Coupling Plane (VCP)

Reviewer:

Jack zhong

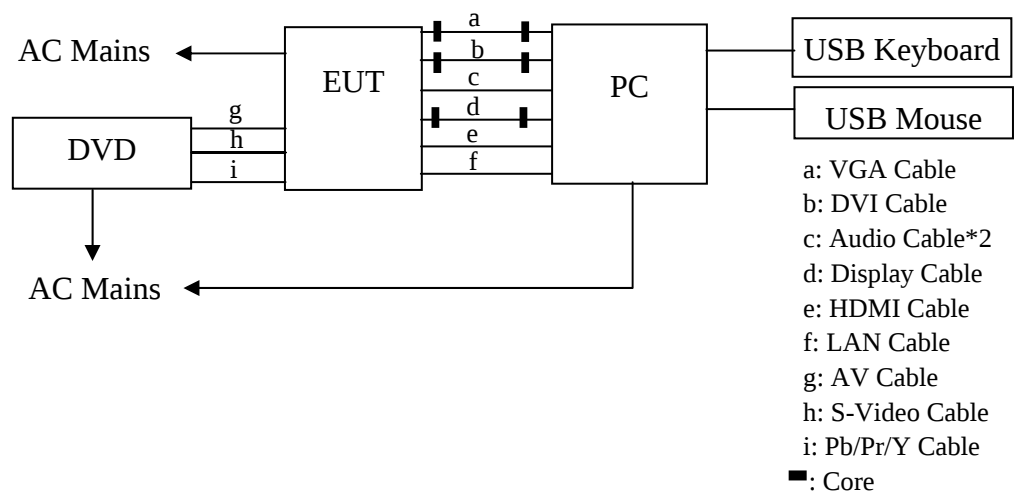
9. RF FIELD STRENGTH SUSCEPTIBILITY TEST

9.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	2#Chamber	AUDIX	N/A	N/A	Dec.09.09	1Year
2.	Signal Generator	Agilent	N5181A	MY49061013	Dec.17, 09	1Year
3.	Amplifier	A&R	100W/1000M1	17028	NCR	NCR
4.	Isotropic Field Monitor	A&R	FM7004	0325983	NCR	NCR
5.	Isotropic Field Probe	A&R	FL7006	0325736	Nov.05, 08	2 Year
6.	Laser Probe Interface	A&R	FL7000	325430	NCR	NCR
7.	Power Meter	Anritsu	ML2487A	6K00002472	May.08, 10	1Year
8.	Power Sensor	Anritsu	MA2491A	032516	May.08, 10	1Year
9.	Log-periodic Antenna	A&R	AT1080	16512	NCR	NCR

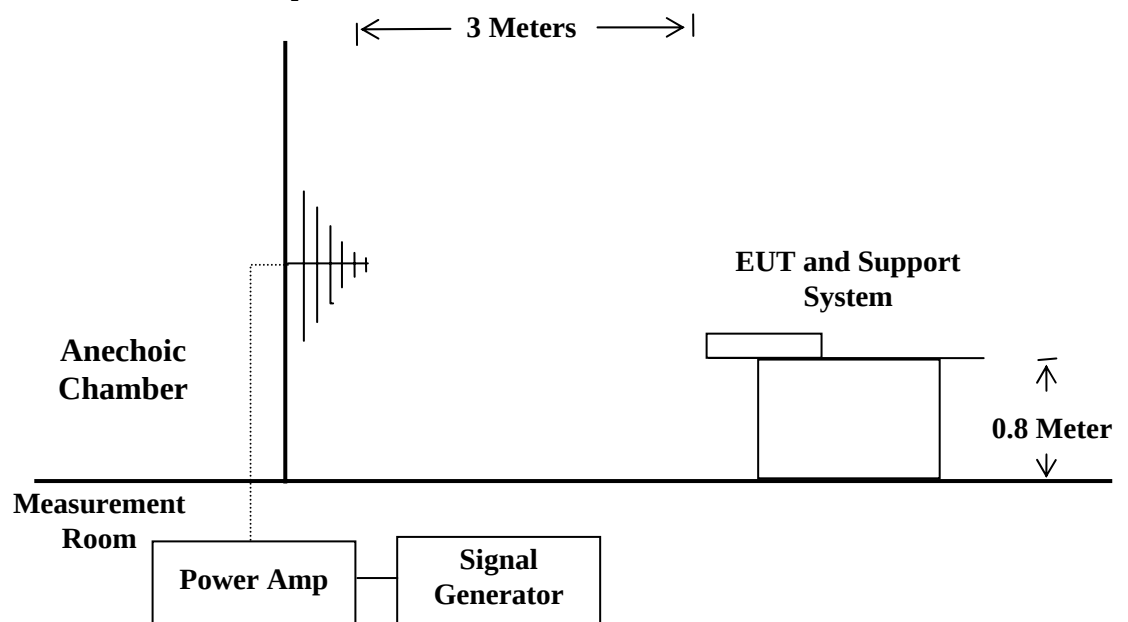
9.2. Block Diagram of Test Setup

9.2.1. Block Diagram of the EUT



(EUT: LCD Monitor)

9.2.2. R/S Test Setup



9.3. Test Standard

EN 55024: 1998+A1:2001+A2: 2003 (IEC 61000-4-3: 2006+A1: 2007)
(Severity Level: 2 at 3V / m)

9.4. Severity Levels and Performance Criterion

9.4.1. Severity level

Level	Test Field Strength V/m
1.	1
2.	3
3.	10
X	Special

9.4.2. Performance criterion: A

9.5. EUT Configuration

The configurations of EUT are listed in Section 3.5.

9.6. Operating Condition of EUT

Same as radiated test that is listed in Section 4.6. except the test set up replaced by Section 9.2.

9.7. Test Procedure

Testing was performed in a fully anechoic chamber as recommended by IEC 61000-4-3. The EUT was placed on an 80 cm high non-conductive table located in the area of field uniformity. The radiating antenna was placed 3m in front of the EUT and Support system, and dwell time of the radiated interference was controlled by an automated, computer-controlled system. The signal source was stepped through the applicable frequency range at a rate no faster than 1% of the fundamental. The signal was amplitude modulated 80% over the frequency range 80 MHz to 1GHz at a level of 3 V/m. The dwell time was set at 3.0 s. Field presence was monitored during testing via a field probe placed in close proximity to the EUT. Throughout testing, the EUT was closely monitored for signs of susceptibility. The test was performed with the antennae oriented in both a horizontal and vertical polarization.

All the scanning conditions are as follows:

Condition of Test	Remarks
1. Test Fielded Strength	3 V/m (Severity Level 2)
2. Radiated Signal	80% amplitude modulated with a 1kHz sine wave
3. Scanning Frequency	80 - 1000 MHz
4. Sweeping time of radiated	0.0015 decade/s
5. Dwell Time	3.0 Sec.

9.8. Test Results

PASS.

The EUT was tested and all the test results are listed in next page.

RF Field Strength Susceptibility Test Results

Audix Technology (Shenzhen) Co., Ltd.

Date: 10/11/2010

Applicant	: TPV Electronics (Fujian) Co., Ltd.	Test Date	: Sep.19, 2010	
EUT	: LCD Monitor	Temperature	: 28 °C	
M/N	: L460NZ	Humidity	: 48 %	
Test Engineer	: Jolly	Pressure	: 101.8KPa	
Test Voltage	: AC 230V/50Hz	Test Mode	: As section 3.6	
Frequency Range	: 80 MHz -1000MHz	Field Strength	: 3 V/m	
Required Performance	: A	Actual Performance	: A	
Modulation: ☒ AM ☐ Pulse ☐ none 1 kHz 80%				
Frequency Rang 1: 80 MHz -1000MHz				
Steps	1%			
	Horizontal		Vertical	Result
	Required	Observation	Required	Observation (Pass / Fail)
Front	A	A	A	A Pass
Right	A	A	A	A Pass
Rear	A	A	A	A Pass
Left	A	A	A	A Pass
Test Equipment: 1. Signal Generator: Agilent N5181A 2. Power Amplifier: A&R 500A/100; 100W/1000M. 3. Power Antenna: A&R AT-1080. 4. Field Monitor: A&R FM7004.				
Remark:				

Reviewer: Jack Zhong

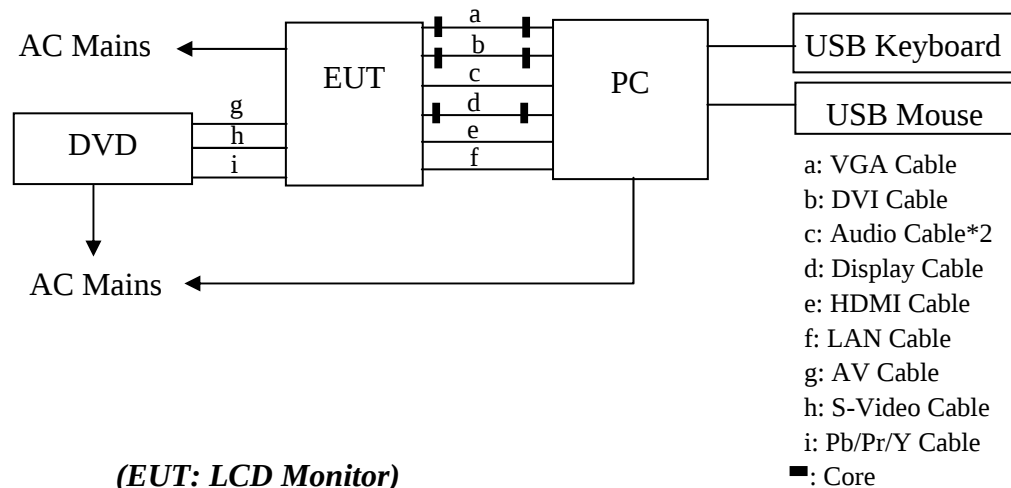
10.ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

10.1.Test Equipment

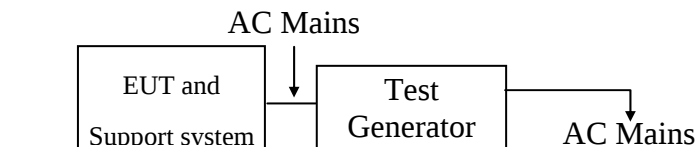
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Burst Tester	TESEQ	NSG3025	28017	Jul.24, 10	1 Year

10.2.Block Diagram of Test Setup

10.2.1. Block Diagram of the EUT



10.2.2.EFT Test Setup



10.3.Test Standard

EN 55024:1998+A1:2001+A2:2003(IEC 61000-4-4: 2004+ Cor 1:2006+ Cor 2:2007)
(Severity Level 1 at 0.5kV, Severity Level 2 at 1kV)

10.4.Severity Levels and Performance Criterion

10.4.1.Severity level

Open Circuit Output Test Voltage $\pm 10\%$		
Level	On Power Supply Lines	On I/O (Input/Output) Signal data and control lines
1.	0.5 kV	0.25 kV
2.	1 kV	0.5 kV
3.	2 kV	1 kV
4.	4 kV	2 kV
X	Special	Special

10.4.2.Performance criterion: **B**

10.5.EUT Configuration

The configurations of EUT are listed in Section 3.5.

10.6.Operating Condition of EUT

Same as Conducted Emission test that is listed in Section 3.6. except the test set up replaced by Section 10.2.

10.7.Test Procedure

The EUT and its simulators were placed on the ground reference plane and were insulated from it by a wood support $0.1\text{m} \pm 0.01\text{m}$ thick. The ground reference plane was $1\text{m} \times 1\text{m}$ metallic sheet with 0.65mm minimum thickness. This reference ground plane was project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane was more than 0.5m. All cables to the EUT was placed on the wood support, cables not subject to EFT/B was routed as far as possible from the cable under test to minimize the coupling between the cables.

10.7.1.For input and AC power ports:

The EUT was connected to the power mains by using a coupling device that couples the EFT interference signal to AC power lines. Both positive transients and negative transients of test voltage were applied during compliance test and the duration of the test can't less than 1min.

10.7.2.For signal lines and control lines ports:

Ports which are intended to be connected to telecommunication networks (e.g. public switched telecommunication networks, integrated services digital networks, local area networks (e.g. Ethernet, Token Ring) and similar networks.

10.7.3.For DC input and DC output power ports:

It's unnecessary to test.

10.8.Test Results

PASS.

The EUT was tested and all the test results are listed in next page.

Electrical Fast Transient/Burst Test Results

Audix Technology (Shenzhen) Co., Ltd.

Date: 10/11/2010

Applicant	: TPV Electronics (Fujian) Co., Ltd.	Test Date	: Sep.20, 2010		
EUT	: LCD Monitor	Temperature	: 23℃		
M/N	: L460NZ	Humidity	: 45%		
Test Engineer	: Chris	Pressure	: 101.5KPa		
Test Voltage	: AC 230V/50Hz	Test Mode	: As section 3.6		
Required Performance	: B	Actual Performance	: A		
Repetition Frequency : 5 kHz Burst Duration : 15ms Burst Period: 300ms					
Inject Time(s): 120s Inject Method: Direct					
Inject Line: ☒ AC Mains ☐ DC Supply ☒ Signal					
Line	Test Voltage	Performance			Result
		Required	Observation (+)	Observation (-)	(Pass/Fail)
L	0.5kV / 1kV	B	A	A	Pass
N	0.5kV / 1kV	B	A	A	Pass
PE	0.5kV / 1kV	B	A	A	Pass
L N	0.5kV / 1kV	B	A	A	Pass
L PE	0.5kV / 1kV	B	A	A	Pass
N PE	0.5kV / 1kV	B	A	A	Pass
L N PE	0.5kV / 1kV	B	A	A	Pass
Signal Line	0.5kV	B	A	A	Pass
Test Equipment: NSG3025					

Reviewer:

Jack zhong

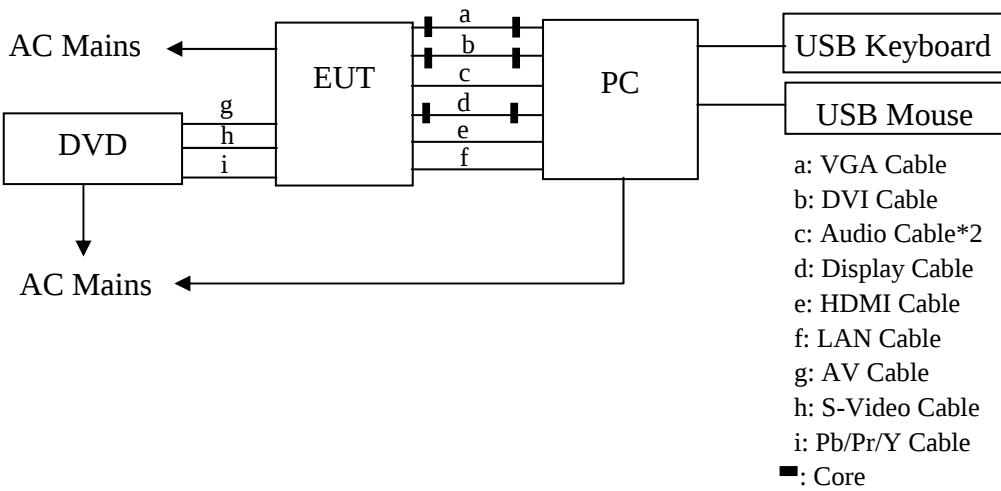
11.SURGE TEST

11.1.Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Surge Tester	HAEFELY	PSURGE4.1	083519-12	May.08, 10	1 Year

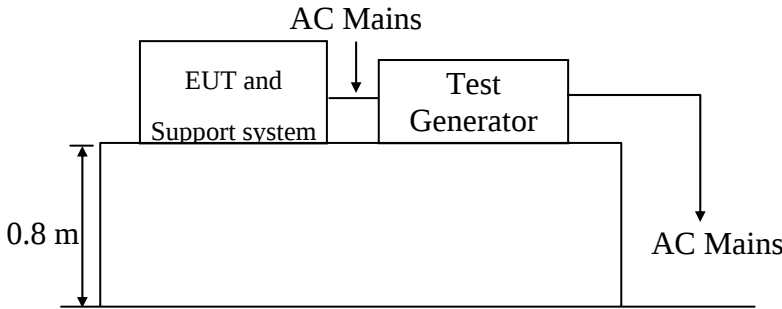
11.2.Block Diagram of Test Setup

11.2.1.Block Diagram of the EUT



(EUT: LCD Monitor)

11.2.2.Surge Test Setup



Remark: Combination wave generator and decoupling network are included in Main Interference Simulator.

11.3.Test Standard

EN 55024: 1998+A1: 2001+A2: 2003 (IEC 61000-4-5: 2005)
(Severity Level: line-to-Line were Level 2 at 1kV and Level 3 at 2kV)

11.4. Severity Levels and Performance Criterion

11.4.1. Severity level

Severity Level	Open-Circuit Test Voltage kV
1	0.5
2	1.0
3	2.0
4	4.0
*	Special

11.4.2. Performance criterion: **B**

11.5. EUT Configuration

The configurations of EUT are listed in Section 3.5.

11.6. Operating Condition of EUT

Same as Conducted Emission test that is listed in Section 3.6. except the test set up replaced by Section 11.2.

11.7. Test Procedure

- 1) Set up the EUT and test generator as shown on Section 11.2.2.
- 2) For line-to-line coupling mode, provide a 1kV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points, and for active line / neutral lines to ground are same except test level is 2kV.
- 3) At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are applied during test.
- 4) Different phase angles are done individually.
- 5) Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

11.8. Test Results

PASS.

The EUT was tested and all the test results are listed in next page.

Surge Immunity Test Results

Audix Technology (Shenzhen) Co., Ltd.

Date: 10/11/2010

Applicant	:	TPV Electronics (Fujian) Co., Ltd.	Test Date	:	Sep.20, 2010
EUT	:	LCD Monitor	Temperature	:	24 °C
M/N	:	L460NZ	Humidity	:	51 %
Test Engineer	:	Chris	Pressure	:	101.6KPa
Power Supply	:	AC 230V/50Hz	Test Mode	:	As section 3.6
Required Performance	:	B	Actual Performance	:	A

No.of pluse: ± 5 Interval:60 Seconds

Line : ☒ AC Mains ☐ DC Supply ☒ Signal

Location	Volt	500V			1kV			2kV			Result
	Phase	Performance			Performance			Performance			(Pass/Fail)
		Required	+	-	Required	+	-	Required	+	-	
L-N	0 °	B	A	A	B	A	A				Pass
	90 °	B	A	A	B	A	A				Pass
	180 °	B	A	A	B	A	A				Pass
	270 °	B	A	A	B	A	A				Pass
L-PE	0 °	B	A	A	B	A	A	B	A	A	Pass
	90 °	B	A	A	B	A	A	B	A	A	Pass
	180 °	B	A	A	B	A	A	B	A	A	Pass
	270 °	B	A	A	B	A	A	B	A	A	Pass
N-PE	0 °	B	A	A	B	A	A	B	A	A	Pass
	90 °	B	A	A	B	A	A	B	A	A	Pass
	180 °	B	A	A	B	A	A	B	A	A	Pass
	270 °	B	A	A	B	A	A	B	A	A	Pass
Signal Line											

Remark:

Test Equipment : PSURGE4.1

Reviewer:

Jack Zhong

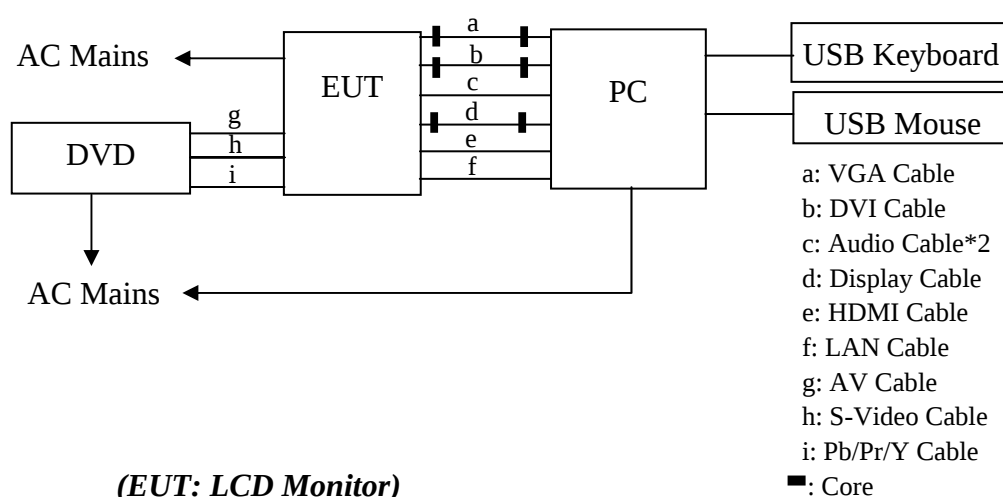
12.INJECTED CURRENTS SUSCEPTIBILITY TEST

12.1.Test Equipment

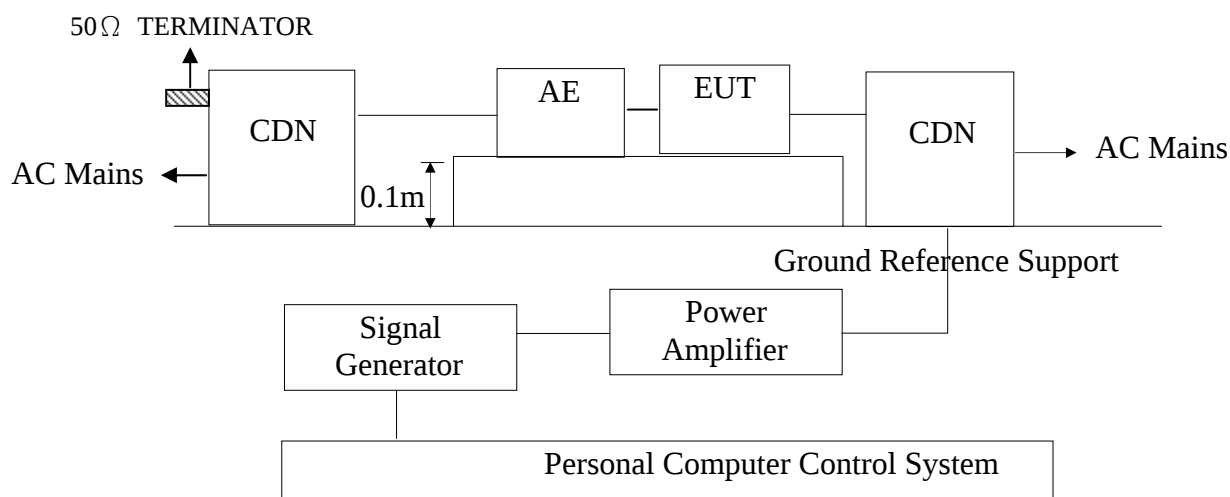
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Signal Generator	Agilent	N5181A	MY49061013	Dec.17, 09	1 Year
2.	Amplifier	AR	25A250A	19152	NCR	NCR
3.	Amplifier	AR	100A250	19368	NCR	NCR
4.	Power meter	HP	436A	2016A07891	Nov.12, 09	1Year
5.	Power sensor	Agilent	8482B	MY41090514	Nov.12, 09	1Year
6.	CDN	FCC	FCC-801-M3-25	107	May.08, 10	1 Year
7.	CDN	FCC	FCC-801-M3-25	07045	May.08, 10	1 Year
8.	PC	N/A	N/A	N/A	N/A	N/A
9.	Attenuator	Weinschel	40-6-34	LJ092	NCR	NCR
10.	RF Cable	MICABLE	A04-07-07-2M	09111340	NCR	NCR
11.	RF Cable	STORM	MFR-57500	90-195-2MTR	NCR	NCR

12.2.Block Diagram of Test Setup

12.2.1.Block Diagram of the EUT



12.2.2.Block Diagram of Test Setup



12.3.Test Standard

EN55024: 1998+A1: 2001+A2: 2003 (IEC61000-4-6: 2003+A1:2004+A2:2006)
(Severity Level 2 at 3V (r.m.f.) and frequency is from 0.15MHz to 80MHz)

12.4.Severity Levels and Performance Criterion

12.4.1.Severity level

Level	Voltage Level (e.m.f.) V
1.	1
2.	3
3.	10
X	Special

12.4.2.Performance criterion: A

12.5.EUT Configuration

The configurations of EUT are listed in Section 3.5.

12.6.Operating Condition of EUT

Same as Conducted Emission test that is listed in Section 3.6. except the test set up replaced by Section 12.2.

12.7.Test Procedure

- 1) Setup the EUT, CDN and test generators as shown on Section 12.2.2..
- 2) Let the EUT work in test mode and test it.
- 3) The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
- 4) The disturbance signal described below is injected to EUT through CDN.
- 5) The EUT operates within its operational mode(s) under intended climatic conditions after power on.
- 6) The frequency range is swept from 0.150MHz to 80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1kHz sine wave.
- 7) The rate of sweep shall not exceed 1.5×10^{-3} decades/s. Where the frequency is swept incrementally; the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.
- 8) Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

12.8.Test Results

PASS.

The EUT was tested and all the test results are listed in next page.

Injected Currents Susceptibility Test Results

Audix Technology (Shenzhen) Co., Ltd.

Date: 10/11/2010

Applicant	:	TPV Electronics (Fujian) Co., Ltd.	Test Date	:	Sep.19, 2010
EUT	:	LCD Monitor	Temperature	:	25 °C
M/N	:	L460NZ	Humidity	:	48%
Test Engineer	:	Jolly	Pressure	:	101KPa
Power Supply	:	AC 230V/50Hz	Test Mode	:	As section 3.6
Required Performance	:	A	Actual Performance	:	A

Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Required	Observation	Result (Pass / Fail)
0.15 ~ 20	AC mains	3V	A	A	PASS
20 ~ 80	AC mains	3V	A	A	PASS
0.15 ~ 20	VGA Cable	3V	A	A	PASS
20 ~ 80	VGA Cable	3V	A	A	PASS

Remark : 1. Modulation Signal:1kHz 80% AM	Remark:
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Reviewer:

Jack zhong

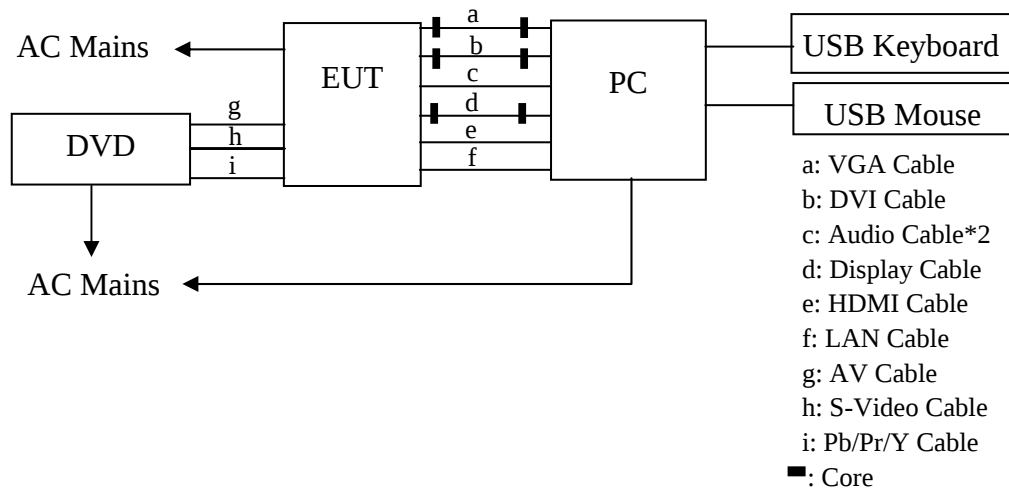
13.MAGNETIC FIELD IMMUNITY TEST

13.1.Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Magnetic Field Tester	HEAFELY	MAG100.1	083858-10	May.08, 10	1 Year

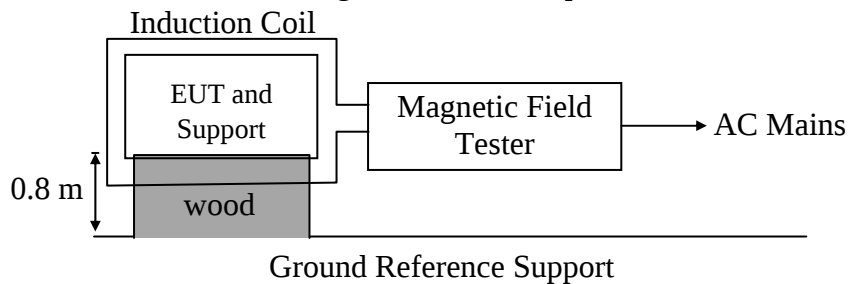
13.2.Block Diagram of Test Setup

13.2.1.Block Diagram of the EUT



(EUT: LCD Monitor)

13.2.2.Block Diagram of Test Setup



13.3.Test Standard

EN 55024: 1998+A1: 2001+A2: 2003 (IEC 61000-4-8: 2009)
(Severity Level 1 at 1A/m)

13.4. Severity Levels and Performance Criterion

13.4.1. Severity level

Level	Magnetic Field Strength A/m
1.	1
2.	3
3.	10
4.	30
5.	100
X.	Special

13.4.2. Performance criterion: A

13.5. EUT Configuration on Test

The configurations of EUT are listed in Section 3.5.

13.6. Operating Condition of EUT

Same as Conducted Emission test that is listed in Section 3.6. except the test set up replaced by Section 13.2.

13.7. Test Procedure

The EUT was subjected to the test magnetic field by using the induction coil of standard dimensions (1m*1m) and shown in Section 13.2. The induction coil was then rotated by 90° in order to expose the EUT to the test field with different orientations.

13.8. Test Results

PASS.

The EUT was tested and all the test results are listed in next page.

Magnetic Field Immunity Test Results

Audix Technology (Shenzhen) Co., Ltd.

Date: 10/11/2010

Applicant : TPV Electronics (Fujian) Co., Ltd.			Test Date : Sep.19, 2010		
EUT : LCD Monitor			Temperature : 24 °C		
M/N : L460NZ			Humidity : 45 %		
Test Engineer : Jolly			Pressure : 100.6KPa		
Test Voltage : AC 230V/50Hz			Test Mode : As section 3.6		
Required Performance : A			Actual Performance : A		
Test Level	Testing Duration	Coil Orientation	Required	Observation	Result (Pass/Fail)
1A/m	5 min / coil	X	A	A	PASS
1A/m	5 min / coil	Y	A	A	PASS
1A/m	5 min / coil	Z	A	A	PASS
Remark:			Test Equipment: MAG100.1		

Reviewer: Jack zhong

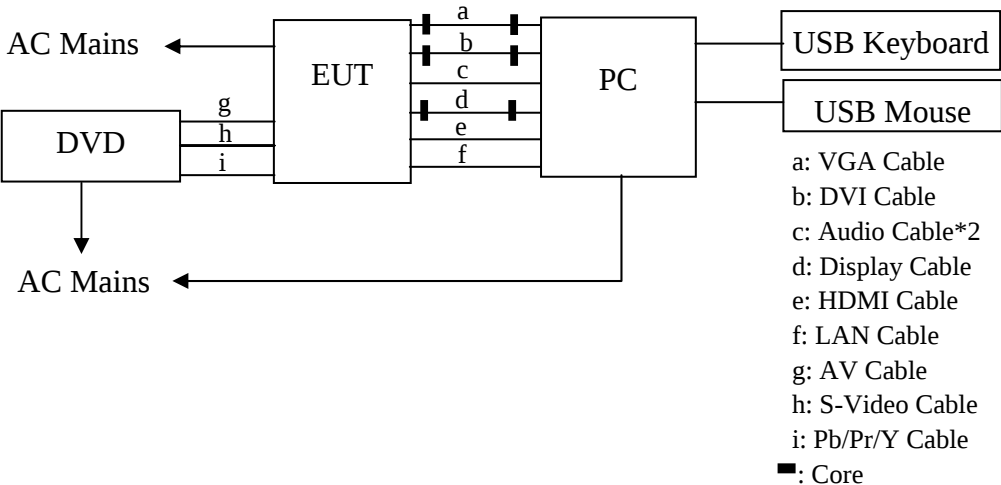
14.VOLTAGE DIPS AND INTERRUPTIONS TEST

14.1.Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Main Interference Simulator	HEAFELY	PLINE 1610	083690-05	May.08, 10	1 Year

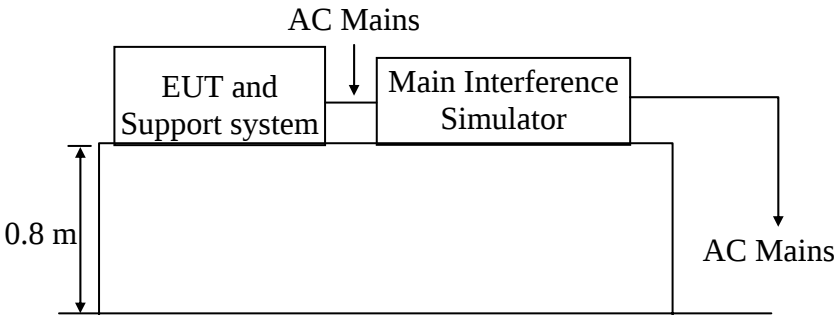
14.2.Block Diagram of Test Setup

14.2.1.Block Diagram of the EUT



(EUT: LCD Monitor)

14.2.2.Voltage Dips and Interruptions Test Setup



14.3.Test Standard

EN 55024: 1998+A1: 2001+A2: 2003 (IEC 61000-4-11: 2004)

14.4. Severity Levels and Performance Criterion

14.4.1. Severity level

Test Level %U _T	Voltage dip and short interruptions %U _T	Performance Criterion	Duration (in period)
0	100	C	250
0	100	B	0.5
70	30	C	25

14.4.2. Performance criterion: **B & C**

14.5. EUT Configuration

The configurations of EUT are listed in Section 3.5.

14.6. Operating Condition of EUT

Same as Conducted Emission test that is listed in Section 3.6. except the test set up replaced by Section 14.2.

14.7. Test Procedure

- 1) The EUT and test generator were setup as shown on Section 14.2.2.
- 2) The interruptions are introduced at selected phase angles with specified duration.
- 3) Record any degradation of performance.

14.8. Test Results

PASS.

The EUT was tested and all the test results are listed in next page.

Voltage Dips And Interruptions Test Results

Audix Technology (Shenzhen) Co., Ltd.

Date: 10/11/2010

Applicant : TPV Electronics (Fujian) Co., Ltd.			Test Date : Sep.19, 2010			
EUT : LCD Monitor			Temperature : 28 °C			
M/N : L460NZ			Humidity : 48%			
Test Engineer : Jolly			Pressure : 100.6KPa			
Power Supply : AC 120V/50Hz;AC 230V/50Hz			Test Mode : As section 3.6			
Required Performance : B&C			Actual Performance : A&B			

Test Level % U_T	Voltage Dips & Short Interruptions % U_T	Duration (in period)	Phase Angle	Required	Observation	Result
						(Pass / Fail)
0	100	0.5P	0 ° -360 °	B	A	PASS
70	30	25P	0 ° -360 °	C	A	PASS
0	100	250P	0 ° -360 °	C	B	PASS

Note 1: U_T is the rated voltage for the equipment. Note 2: The frequency of the test voltage shall be within $\pm 2\%$ of the rated frequency, the output voltage shall be within $\pm 5\%$ of the rated voltage. Remark:	Test Equipment: Main Interference Simulator: (HEAFELY PLINE 1610)
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Reviewer:

Jack zhong

15.PHOTOGRAPHS

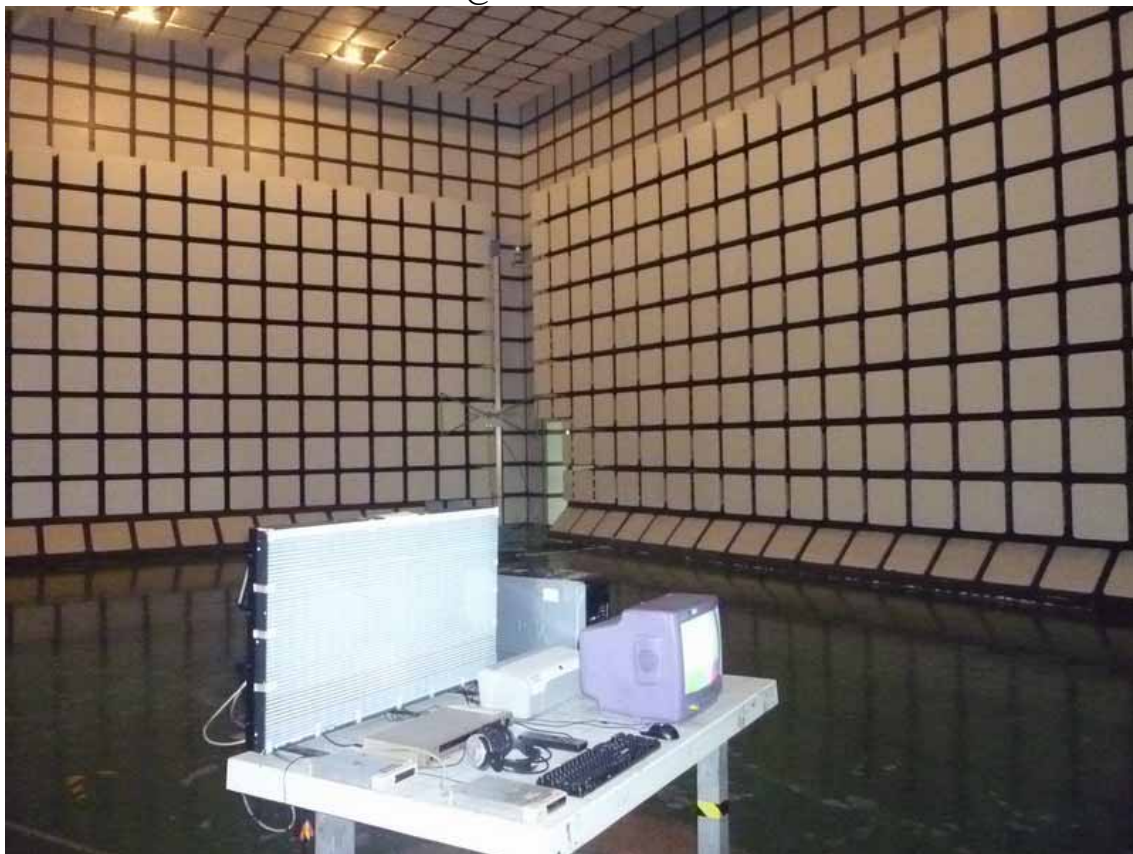
15.1.Photos of Conducted Disturbance at Mains Terminals Test



15.2.Photos of Radiated Disturbance Test (In 10m Anechoic Chamber)



The Worst Resolution: 1920*1080@60Hz



(At Anechoic 10m Chamber Test 1GHz –6GHz)



15.3.Photo of Harmonic / Flicker Test



15.4.Photos of Electrostatic Discharge Immunity Test



15.5.Photo of RF Strength Susceptibility Test



15.6.Photos of Electrical Fast Transient/Burst Immunity Test



Signal



15.7.Photos of Surge Test



15.8.Photos of Injected Currents Susceptibility Test



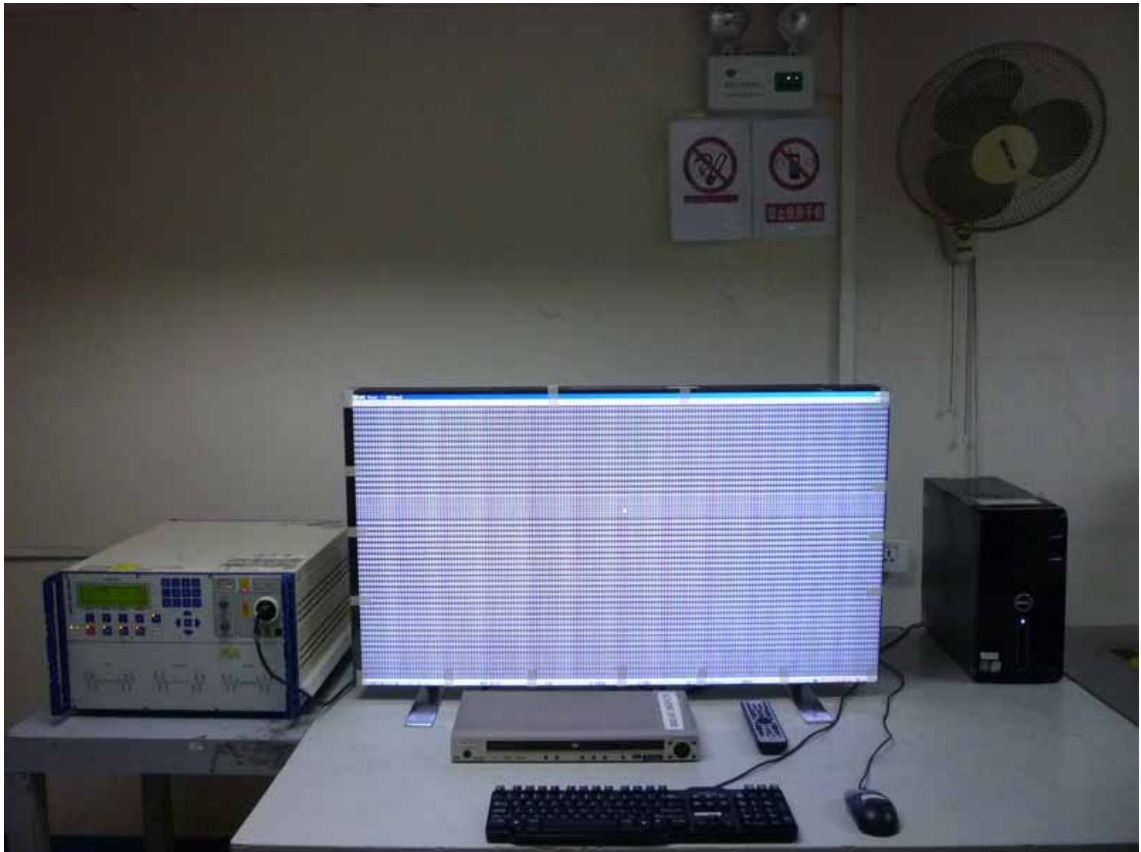
Signal



15.9.Photo of Magnetic Field Test



15.10.Photo of Voltage Dips and interruptions test





AUDIX Technology (Shenzhen) Co., Ltd.
52 Block, Shenzhen Science & Industry Park,
Nantou, Shenzhen, Guangdong, China

Tel: 0755-26639495~6-7
Fax: 86 0755-26632877

Certificate of Compliance

No. ACS-E10797

The following products have been tested by us with the listed standards and found in compliance with the council EMC directive 2004/108/EC. It is demonstrative for the compliance with this EMC Directive.

Submittor : TPV Electronics (Fujian) Co., Ltd.
Shangzheng, Yuan Hong Road, Fuqing City, Fujian
Province, P.R.China

Product : LCD Monitor

Brand Name	Model No.
NEC	L460NZ

Test Standards :	
EN 55022: 2006+A1: 2007 AS/NZS CISPR 22: 2009	Limits and methods of measurement of radio disturbance characteristics of information technology equipment
EN 61000-3-2: 2006	Electromagnetic compatibility (EMC) Part 3: Limits Section 2: Limits for harmonic current emissions (equipment input current $\leq 16A$ per phase)
EN 61000-3-3: 2008	Electromagnetic compatibility (EMC) Part 3: Limits Section 3: Limits of voltage fluctuations and flicker in Low-voltage supply systems for equipment with rated current $\leq 16A$
EN 55024: 1998+A1: 2001+A2: 2003	Information technology equipment-Immunity characteristics limits and methods of measurement
	IEC 61000-4-2: 2008 Electrostatic discharge
	IEC 61000-4-3: 2006+A1: 2007 RF Field Strength susceptibility
	IEC 61000-4-4: 2004+Cor 1: 2006+ Cor 2: 2007 Electrical Fast transients
	IEC 61000-4-5: 2005 Surge
	IEC 61000-4-6: 2003+A1: 2004+A2:2006 Conducted Susceptibility
	IEC 61000-4-8: 2009 Magnetic field immunity
	IEC 61000-4-11: 2004 Dips / Voltage Interruption Variation



信華科技(深圳)有限公司
Audix Technology (Shenzhen) Co., Ltd.
EMC 部門報告專用章

Stamp only for EMC Dept. Report

Signature: Ken Lu

Ken Lu

Manager

Date : Oct.11, 2010

The statement is based on a single evaluation of one sample of above-mentioned products. It does not
Imply an assessment of the whole production and does not permit the use of the test lab. Logo.