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Technical Compliance Statement

No. ACS-E12338

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.

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

Product : LCD Monitor

Brand Name	Model No.
NEC	L460UB
	V462-TM (C)

Test Standards :	
EN 55022: 2010 (Class B) AS/NZS CISPR 22: 2009	Limits and methods of measurement of radio disturbance characteristics of information technology equipment
EN 61000-3-2: 2006+A1: 2009+A2: 2009	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: 2010	Information technology equipment-Immunity characteristics limits and methods of measurement
	IEC 61000-4-2: 2008 Electrostatic discharge
	IEC 61000-4-3: 2010 RF Field Strength susceptibility
	IEC 61000-4-4: 2004+A1: 2010 Electrical Fast transients
	IEC 61000-4-5: 2005 Surge
	IEC 61000-4-6: 2008 Conducted Susceptibility
	IEC 61000-4-8: 2009 Magnetic field immunity
	IEC 61000-4-11: 2004 Dips / Voltage Interruption Variation

Stamp only for EMC Dept. Report

Signature: _____

Ken Lu
Manager

Date : Jun.14, 2012



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.

EMC TEST REPORT

for

TPV Electronics (FuJian) Co., Ltd.

LCD Monitor

Brand Name	Model No.
NEC	L460UB
	V462-TM (C)

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-E12338
Date of Test : May.13~Jun.12, 2012
Date of Report : Jun.14, 2012

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TEST REPORT VERIFICATION

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

EUT Description : LCD Monitor

(A) Model No. & Brand Name	Brand Name	Model No.
	NEC	L460UB
		V462-TM (C)

(B) Power Supply : AC 100V-240V, 50/60Hz

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

Measurement Standard Used:

AS/NZS CISPR 22: 2009, EN 55022: 2010 (Class B)
 EN 61000-3-2: 2006+A1: 2009+A2: 2009, EN 61000-3-3: 2008
 EN 55024: 2010
 (IEC 61000-4-2: 2008, IEC 61000-4-3: 2010, IEC 61000-4-4: 2004+A1: 2010,
 IEC 61000-4-5: 2005, IEC 61000-4-6: 2008, 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. This report contains data that are not covered by the NVLAP accreditation. Also, this report shows that the EUT is technically compliant with the EN 55022 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.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

Date of Test : May.13~ Jun.12,2012 Report of date: Jun.14, 2012

Prepared by : Selina Liu
 Selina Liu / Assistant

Reviewed by : Jack Zhong
 Jack Zhong / Assistant Manager



Approved & Authorized Signer :

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	Results	Remark	
Conducted disturbance at mains terminals	EN 55022: 2010	PASS	Meets Class B Minimum passing margin is 14.01dB at 0.23955MHz	
Conducted disturbance at telecommunication port	EN 55022: 2010	PASS	Meets Class B Minimum passing margin is 19.41dB at 12.21MHz	
Radiated disturbance (30-1000MHz)	EN 55022: 2010	PASS	Meets Class B Minimum passing margin is 4.14dB at 148.340MHz	
Radiated disturbance (1-6GHz)	EN 55022: 2010	PASS	Meets Class B Minimum passing margin is 12.26dB at 1925.256MHz	
Harmonic current emissions	EN 61000-3-2: 2006+A1: 2009+A2: 2009	PASS	Meets the Class D requirement	
Voltage fluctuations & flicker	EN 61000-3-3: 2008	PASS	Meets the requirement	
IMMUNITY (EN 55024: 2010)				
Description of Test Item	Basic Standard	Results	Performance Criteria	Observation Criteria
Electrostatic discharge (ESD)	IEC 61000-4-2: 2008	PASS	B	A & B
Radio-frequency,Continuous radiated disturbance	IEC 61000-4-3: 2010	PASS	A	A
Electrical fast transient (EFT)	IEC 61000-4-4: 2004+A1: 2010	PASS	B	B
Surge (Input a.c. power port)	IEC 61000-4-5: 2005	PASS	B	A
Surge(Telecommunication port)		PASS	B	B
Radio-frequency,Continuous conducted disturbance	IEC 61000-4-6: 2008	PASS	A	A
Power frequency magnetic field	IEC 61000-4-8: 2009	PASS	A	A
Voltage dips, >95% reduction	IEC 61000-4-11: 2004	PASS	B	A
Voltage dips, 30% reduction		PASS	C	B
Voltage interruptions		PASS	C	B

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

Description : LCD Monitor

Model Number & Brand Name	:	Brand Name	Model No.
		NEC	L460UB
			V462-TM (C)

Test Model Number : L460UB

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

Max Resolution : 1920*1080@60Hz

Max Work Frequency : 148.5MHz

Panel : Manufacturer : SAMSUNG; M/N: LTI460HN04

Power Cord : Unshielded, Detachable, 3m (3 pins)

DVI Cable : Shielded, Detachable, 1.8m (Bonded two ferrite cores)

VGA Cable : Shielded, Detachable, 4m (Bonded two ferrite cores)

Display Cable : Shielded, Detachable, 1.8m

HDMI Cable : Shielded, Detachable, 1.8m

Audio Cable : Shielded, Detachable, 1.8m

Power Cord : Unshielded, Detachable, 1.5m (3 pins)

DVI Cable : Shielded, Detachable, 1.5m (Bonded two ferrite cores)

Display Cable : Shielded, Detachable, 1.5m

VGA Cable : Shielded, Detachable, 1.5m

HDMI Cable : Shielded, Detachable, 1.5m

Audio Cable : Shielded, Detachable, 1.5m

Remote Commander : Manufacturer: NEC, M/N: N/A

Speaker : 12Ω,10W

Date of Test : May.13~Jun.12, 2012

Date of Receipt : May.13, 2012

Sample Type : Prototype production

N/A is an abbreviation for Not Applicable.

2.2. Tested Supporting System Details

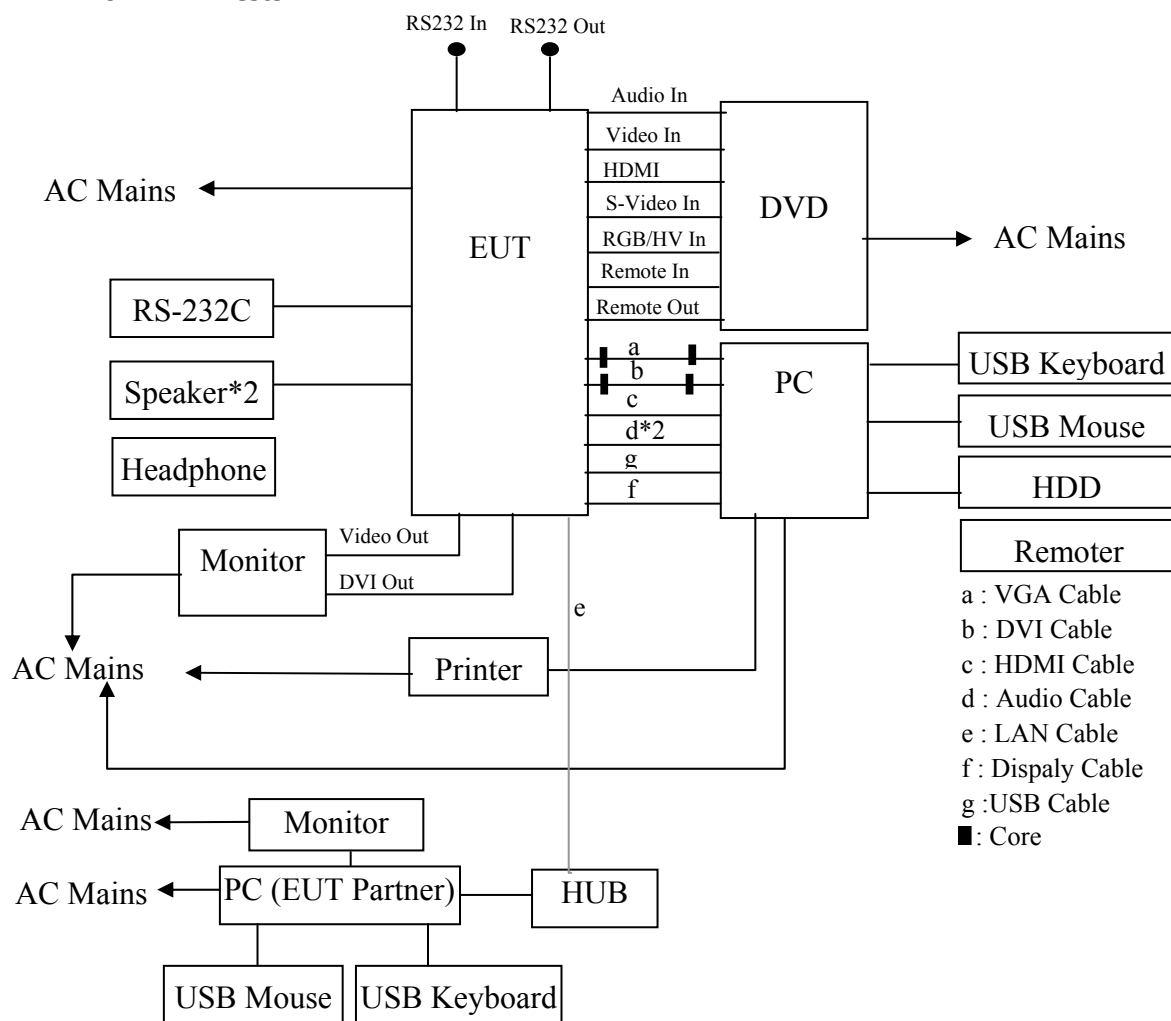
No.	Description	ACS No.	Manufacturer	Model	Serial Number	Approved type
1.	Personal Computer	Test PC N	DELL	Studio 540	J14XK2X	☒ FCC DoC ☒ BSMI ID:R33002
		Power Cord: Unshielded, Detachable, 1.8m Display Card: HD3650 (DVI+Display+HDMI)				
2.	USB Keyboard	ACS-EMC- K03R	DELL	SK-8115	CN-ODJ313-7161 6-711-04WJ	☒ FCC DoC ☒ BSMI ID: T3A002
		Power Cord: shielded, Undetachable, 2.0m				
3.	USB Mouse	ACS-EMC-M03R	DELL	M056UO	512023253	☒ FCC DoC ☒ BSMI ID: R41108
		Power Cord: shielded, Undetachable, 1.8m				
4.	Printer	ACS-EMC-PT04	HP	C9079A	N/A	☒ FCC DoC ☒ BSMI ID: R33001
		USB Cable: Shielded, Detachabled, 1.8m Power Cord: Unshielded, Detachabled, 1.8m Power Adapter: HP, M/N: 0957-2119, BSMI ID: R33030, DC Cable: Unshielded, Detachabled, 1.5m				
5.	HDD	ACS-EMC-HDD01	Terasys	F12-UF	A0100215-53900 31	☒ FCC DoC ☒ BSMI ID: 4912A022
		USB Cable: Shielded, Detachable, 1.8m				
6.	DVD Player	ACS-EMC-DVD01	DENON	DVD-3910	4098400342E	☐ FCC ID ☐ BSMI ID
		Data Cable: Shielded, Detachabled, 1.8m Power Cord: Unshielded, Detachabled , 1.8m				
7.	Headphone	ACS-EMC-EP01	OVANN	OV880V	N/A	☐ FCC ID ☐ BSMI ID
		Cable: Shielded, Undetachabled, 4.0m				
8.	Monitor	ACS-EMC-LM05R	DELL	2407WFPb	CN-0YY528-466 33-764-1TCS	☒ FCC DoC ☒ BSMI ID: R43002
		Power Cord: Unshielded, Detachable, 1.8m VGA Cable: Shielded, Detachable, 2.0m (with two cores) DVI Cable: Shielded, Detachable, 2.0m (with two cores)				

【PC system which transmitting 】

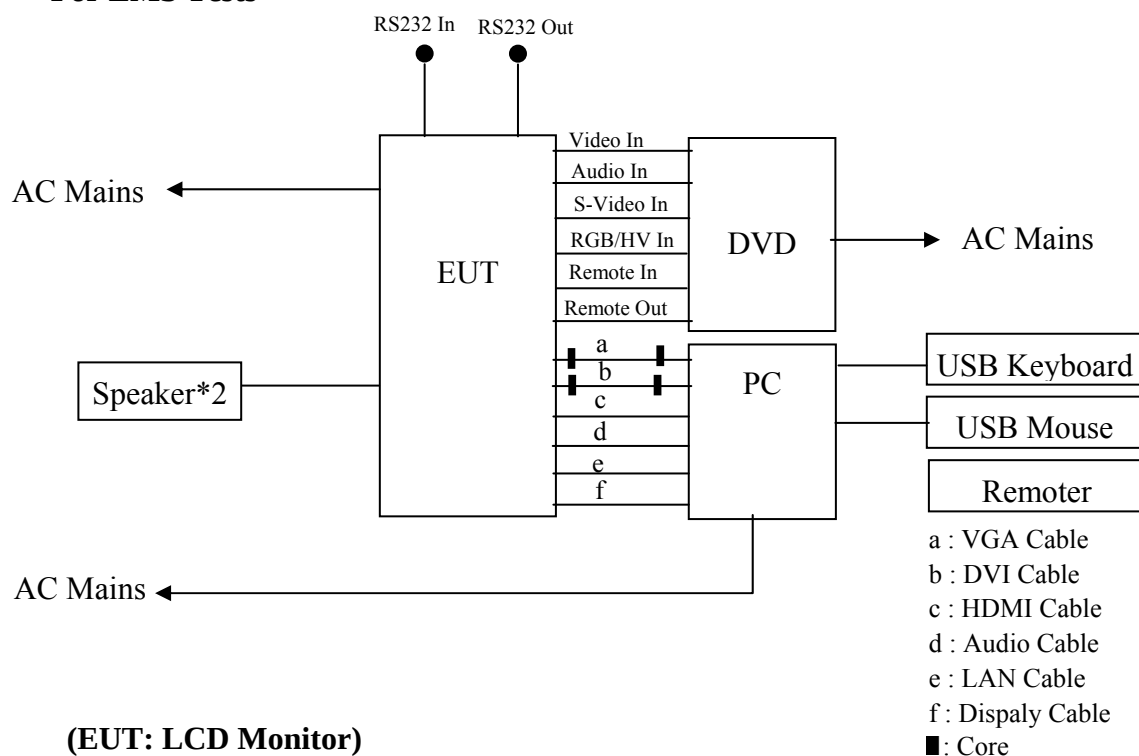
No.	Description	ACS No.	Manufacturer	Model	Serial Number	Approved type
1.	Personal Computer	Test PC N	DELL	Studio 540	J14XK2X	☒ FCC DoC ☒ BSMI ID:R33002
		Power Cord: Unshielded, Detachable, 1.8m LAN Cable: Unshielded, Detachable, 10m Display Card: HD3650 (DVI+Display+HDMI)				
2.	USB Keyboard	ACS-EMC- K02R	DELL	SK-8115	CN-ORH656-658 90-686-007J	☒ FCC DoC ☒ BSMI ID: T3A002
		Power Cord: shielded, Undetachable, 2.0m				
3.	USB Mouse	ACS-EMC-M02R	DELL	M056UO	512024264	☒ FCC DoC ☒ BSMI ID: R41108
		Power Cord: shielded, Undetachable, 1.8m				
4.	Monitor	ACS-EMC-LM04R	DELL	1907FPt	CN-009759-71618 -6AP-ACPP	☒ FCC DoC ☒ BSMI ID: R3A002
		Power Cord: Unshielded, Detachable, 1.8m VGA Cable: Shielded, Detachable, 2.0m				
5.	HUB	ACS-EMC-DL01	D-Link	DGS-1008D	B2C6468500621	☒ FCC DoC ☐ BSMI ID
		Data Cable: Shielded, Detachabled, 1.8m Adapter: M/N: RL48-07V51000, DC Cable: Unshielded, Detachabled , 1.0m				

2.3. Block Diagram of connection between EUT and simulators

For EMI Tests



For EMS Tests



2.4. 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	: Certificated by FCC, USA Registration Number: 90454 Valid Date: Feb.22, 2015
3m & 10m Anechoic Chamber	: Certificated by FCC, USA Registration Number: 794232 Valid Date: Dec.30, 2012
EMC Lab.	: Certificated by DAkkS, Germany Registration No: D-PL-12151-01-01 Valid Date: Feb.01, 2014
	Accredited by NVLAP, USA NVLAP Code: 200372-0 Valid Date: Mar.31, 2013

2.5. Measurement Uncertainty

(95% confidence levels, k=2)

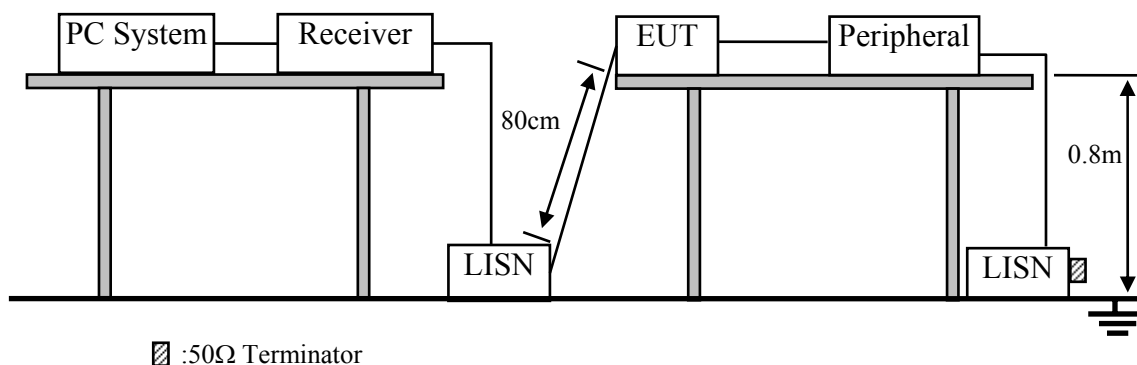
Test Item	Uncertainty
Uncertainty for Conduction emission test in No. 2 Conduction	3.2 dB
Uncertainty for Radiation Emission test in 10m chamber (Distance: 10m)	3.6dB (30~200MHz, Polarize: H)
	3.8dB (30~200MHz, Polarize: V)
	3.8dB (200M~1GHz, Polarize: H)
	3.8dB (200M~1GHz, Polarize: V)
Uncertainty for Radiation Emission test in 10m chamber (1GHz-18GHz)	3.1dB (Distance: 3m Polarize: V)
	3.7dB (Distance: 3m Polarize: H)
Uncertainty for SVSWR in 10m Chamber	2.4 dB (Distance: 3m Polarize: V)
	2.4 dB (Distance: 3m Polarize: H)
Uncertainty for Flicker test	0.06%
Uncertainty for Harmonic test	1.8%
Uncertainty for C/S Test	1.36dB (Using CDN test)
	3.20 (Using EM clamp test)
Uncertainty for R/S Test	1.64dB (80MHz~200MHz)
	1.66dB(200MHz~1000MHz)
Uncertainty for test site temperature and humidity	0.6°C
	3%

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	ESHS20	836600/006	May.08, 12	1 Year
2	L.I.S.N.#1	Rohde & Schwarz	ENV4200	100041	Aug.01, 11	1 Year
3	L.I.S.N.#2	Kyoritsu	KNW-407	8-1628-5	May.08, 12	1 Year
4	Terminator	Hubersuhner	50Ω	No. 1	May.08, 12	1 Year
5	Terminator	Hubersuhner	50Ω	No. 2	May.08, 12	1 Year
6	RF Cable	Fujikura	3D-2W	No.2	May.08, 12	1 Year
7	Coaxial Switch	Anritsu	MP59B	6200298346	May.08, 12	1 Year
8	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100340	May.08, 12	1 Year

3.2. Block Diagram of Test Setup



3.3. Test Standard

EN 55022: 2010, Class B

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	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Notes: 1. * Decreasing linearly with logarithm of frequency.

2. 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 : L460UB

Serial Number : N/A

3.5.2. Support Equipment : 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 DVI / VGA / HDMI / Display 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. The PC system was running the program “1kHz signal playing” and sending sound to EUT.
- 3.6.5. DVD 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 of the interface cables were changed according to EN 55022 Class B 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 results are reported and test results for Conducted Disturbance Test 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.)

The EUT with the following test modes were tested and selected (mode 3 & 6 & 9~15) to read Q.P values, all the test results are listed in next pages.

EUT: LCD Monitor

Model No. : L460UB

Test Date: Man.17, 2012

Temperature: 25.5℃

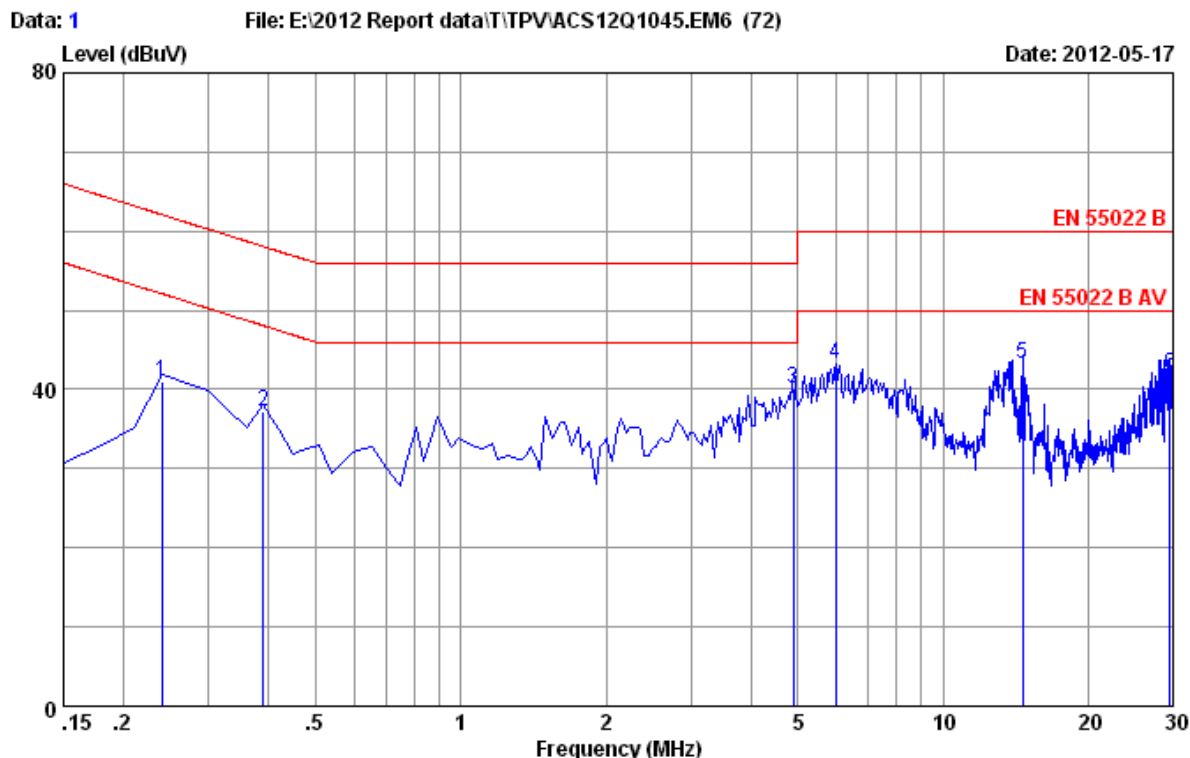
Humidity: 55%

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

No.	Test Mode	Input Port	Resolution & Frequency
1.	PC Mode	DVI	640*480/60Hz
2.			1280*1024/75Hz
3.			1920*1080/60Hz
4.		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.		VGA Panel is Vertical	1080*1920/60Hz
12.	DVD Player	S-Video In	
13.		RGB / AV	
14.		Video In	
15.		HDMI: 1080P	

Test result is presented in the report as below

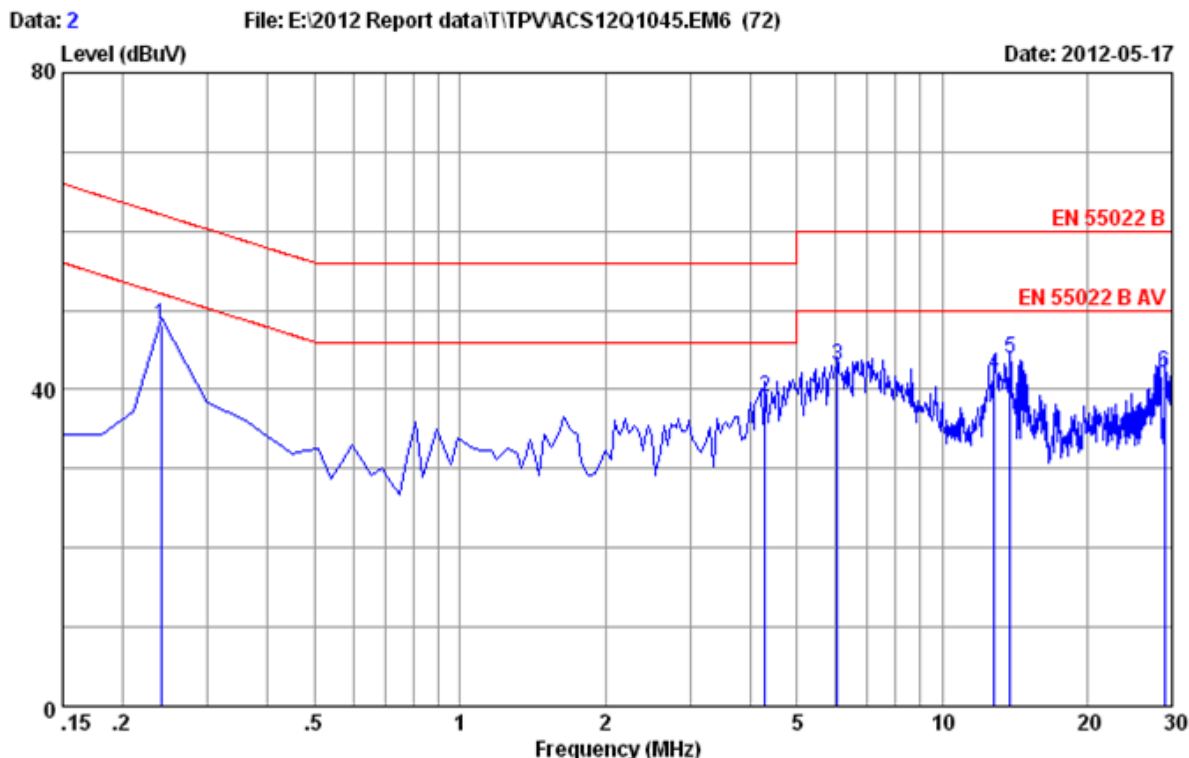
No.	Test Mode	Input Port	Resolution & Frequency
1.	PC Mode	VGA	1920*1080/60Hz



Site no :Audix No.2 Conduction Data No :1
 Dis./Lisn **: 11 ENV4200 L1 LISN phase:LINE
 Limit :EN 55022 B
 Env./Ins. :25.5°C/55% Engineer :Abner
 EUT :LCD Monitor M/N:L460UB
 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	0.23955	9.96	9.98	20.98	40.92	62.11	21.19	QP
2	0.38880	9.89	9.97	17.26	37.12	58.09	20.97	QP
3	4.896	9.85	9.86	20.30	40.01	56.00	15.99	QP
4	6.001	9.89	9.90	23.50	43.29	60.00	16.71	QP
5	14.657	9.99	10.21	23.12	43.32	60.00	16.68	QP
6	29.552	10.05	10.48	21.42	41.95	60.00	18.05	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.



Site no :Audix No.2 Conduction Data No :2
 Dis./Lisn **: 11 ENV4200 N LISN phase:NEUTRAL
 Limit :EN 55022 B
 Env./Ins. :25.5°C/55% Engineer :Abner
 EUT :LCD Monitor M/N:L460UB
 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	0.23955	9.96	9.98	28.16	48.10	62.11	14.01	QP
2	4.299	9.83	9.88	19.21	38.92	56.00	17.08	QP
3	6.060	9.84	9.90	23.32	43.06	60.00	16.94	QP
4	12.836	9.89	10.16	21.82	41.87	60.00	18.13	QP
5	13.851	9.90	10.19	23.77	43.86	60.00	16.14	QP
6	28.985	10.04	10.48	21.70	42.22	60.00	17.78	QP

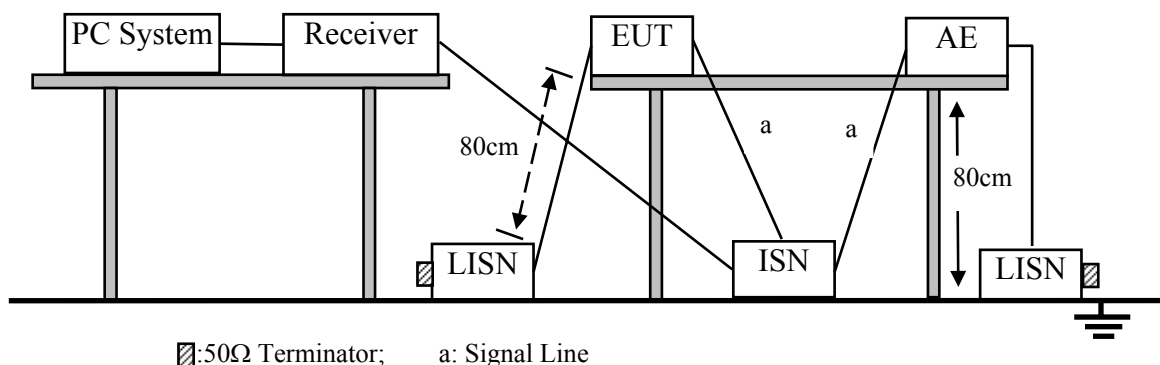
Remarks: 1.Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)+Reading.
 2.If the average limit is met when using a quasi-peak detector.
 the EUT shall be deemed to meet both limits and measurement
 with average detector is unnecessary.

4. CONDUCTED DISTURBANCE AT TELECOMMUNICATION PORTS TEST

4.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESHS20	836600/006	May.08, 12	1 Year
2.	L.I.S.N.	Rohde & Schwarz	ENV4200	100041	Aug.01, 11	1 Year
3.	Terminator	EMCO	50Ω	No. 1	May.08, 12	1 Year
4.	Terminator	EMCO	50Ω	No. 2	May.08, 12	1 Year
5.	RF Cable	Fujikura	3D-2W	No. 2	May.08, 12	1 Year
6.	Current Probe	Rohde & Schwarz	EZ-17	833335/009	Nov.05,11	1 Year
7.	Single Balanced Telecom Pair ISN	FCC	FCC-TLISN-T2-02	20534	Oct.31,11	1 Year
8.	Two Balanced Telecom Pairs ISN	FCC	FCC-TLISN-T4-02	20535	Oct.31,11	1 Year
9.	Four Balanced Telecom Pairs ISN	FCC	FCC-TLISN-T8-02	20412	May.08, 12	1 Year
10.	Coaxial Switch	Anritsu	MP59B	6200298346	May.08, 12	1 Year
11.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100340	May.08, 12	1 Year

4.2. Block Diagram of Test Setup



4.3. Test Standard

EN 55022: 2010

4.4. Conducted Disturbance at Telecommunication Ports Limit

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150kHz ~ 500kHz	84~74	74~64
500kHz ~ 30MHz	74	64

Notes: 1. * Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

4.5. EUT Configuration on Test

The following equipments are installed on Conducted Emission Test to meet EN 55022 Class B requirement and operating in a manner that tends to maximize its emission characteristics in a normal application. The configuration of EUT and its simulators were the same as those used in conducted test. Please refer to Section 3.5.

4.6. Operating Condition of EUT

Same as Conducted Emission test that is listed in Section 3.6. except the test set up replaced by Section 4.2.

4.7. 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). The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N.#2). This provided a 50-ohm coupling impedance for the EUT (Please refer to the block diagram of the test setup and photographs). 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 of the interface cables were changed according to EN 55022: 2010 on Conducted Disturbance test. And connected to the telecommunication ports through ISN. Both sides of telecommunication line are investigated to find out the maximum conducted emission according to EN 55022 regulations during conducted disturbance test.

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

The frequency range from 150kHz to 30MHz is checked. The test result are reported on Section 4.8.

4.8. Conducted Disturbance at Telecommunication Ports Test Results

PASS.

The EUT with the following test modes were tested and to read Q.P values, all the test results are listed in next pages.

EUT: LCD Monitor

Model No. : L460UB

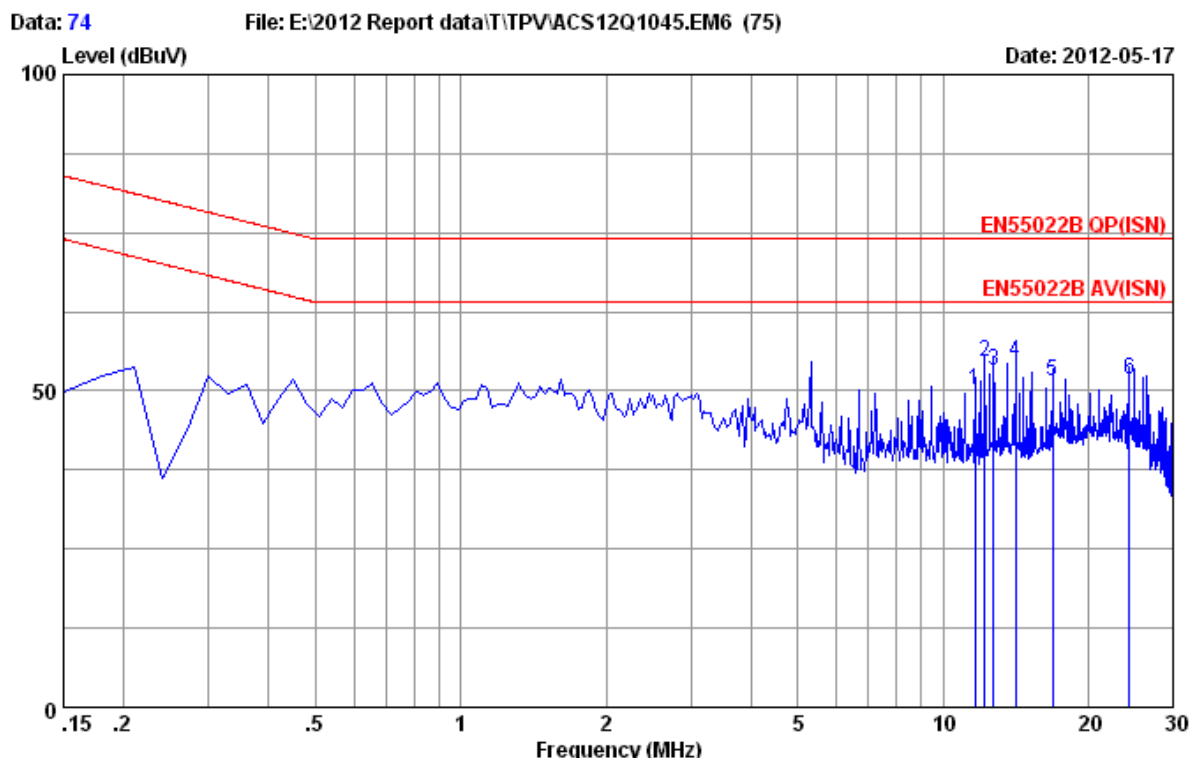
Test Date: May.17, 2012

Temperature: 23.3℃

Humidity: 44%

The details of test modes are as follows :

No.	Test Mode
1.	LAN 100Mbps



Site no :Audix No.2 Conduction Data No :74
 Dis./Lish **: 11 ISN T8 LISN phase:
 Limit :EN55022B QP (ISN)
 Env./Ins. :23.3°C/44% Engineer :Abner
 EUT :LCD Monitor M/N:L460UB
 Power Rating :AC 230V/50Hz
 Test Mode :LAN MODE
 LAN:100Mbps

No	Freq (MHz)	ISN Factor (dB)	Cable loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	11.64	9.33	10.13	30.64	50.10	74.00	23.90	QP
2	12.21	9.33	10.14	35.12	54.59	74.00	19.41	QP
3	12.75	9.32	10.16	33.70	53.18	74.00	20.82	QP
4	14.15	9.32	10.20	34.98	54.50	74.00	19.50	QP
5	16.90	9.32	10.24	31.85	51.41	74.00	22.59	QP
6	24.36	9.33	10.41	32.15	51.89	74.00	22.11	QP

Remarks: 1.Emission Level=ISN 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.

5. RADIATED DISTURBANCE TEST

5.1. Test Equipments

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

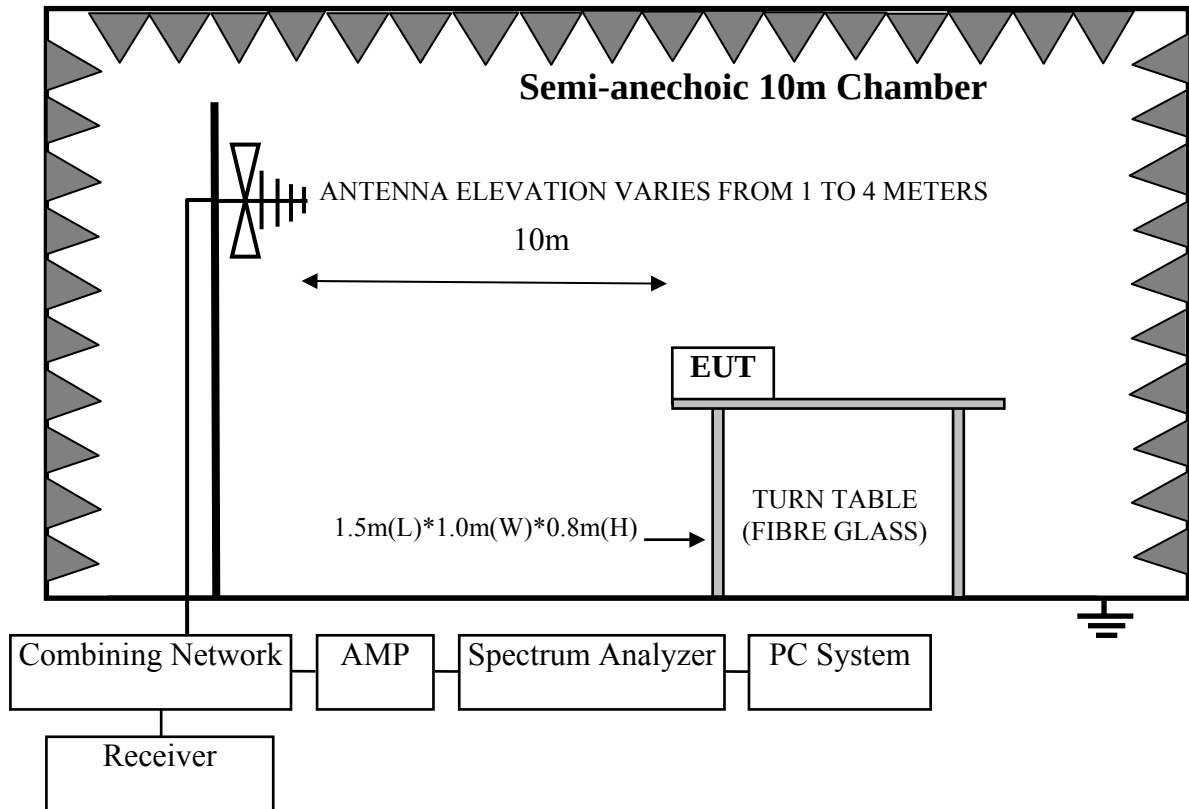
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	10m Chamber	AUDIX	N/A	N/A	Nov.28,11	1 Year
2	EMC Analyzer	Agilent	E7405A	MY42000131	Oct.31, 11	1 Year
3	EMC Analyzer	Agilent	E7405A	MY45116588	Oct.31, 11	1 Year
4	Test Receiver	Rohde & Schwarz	ESCI	100842	May.08, 12	1 Year
5	Amplifier	Agilent	8447D	2944A10684	May.08, 12	1 Year
6	Amplifier	Agilent	8447D	2944A11140	May.08, 12	1 Year
7	Bilog Antenna	Schaffner	CBL6112D	25238	June.30, 11	1 Year
8	Bilog Antenna	Schaffner	CBL6112D	25237	Aug.28, 11	1 Year
9	RF Cable	MIYAZAKI	CFD400-NL	10m Chamber No.1	May.08, 12	1 Year
10	RF Cable	MIYAZAKI	CFD400-NL	10m Chamber No.2	May.08, 12	1 Year
11	Coaxial Switch	Anritsu	MP59B	M73989	May.08, 12	1 Year
12	Coaxial Switch	Anritsu	MP59B	6200766905	May.08, 12	1 Year
13	Coaxial Switch	Anritsu	MP59B	6200313662	May.08, 12	1 Year

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

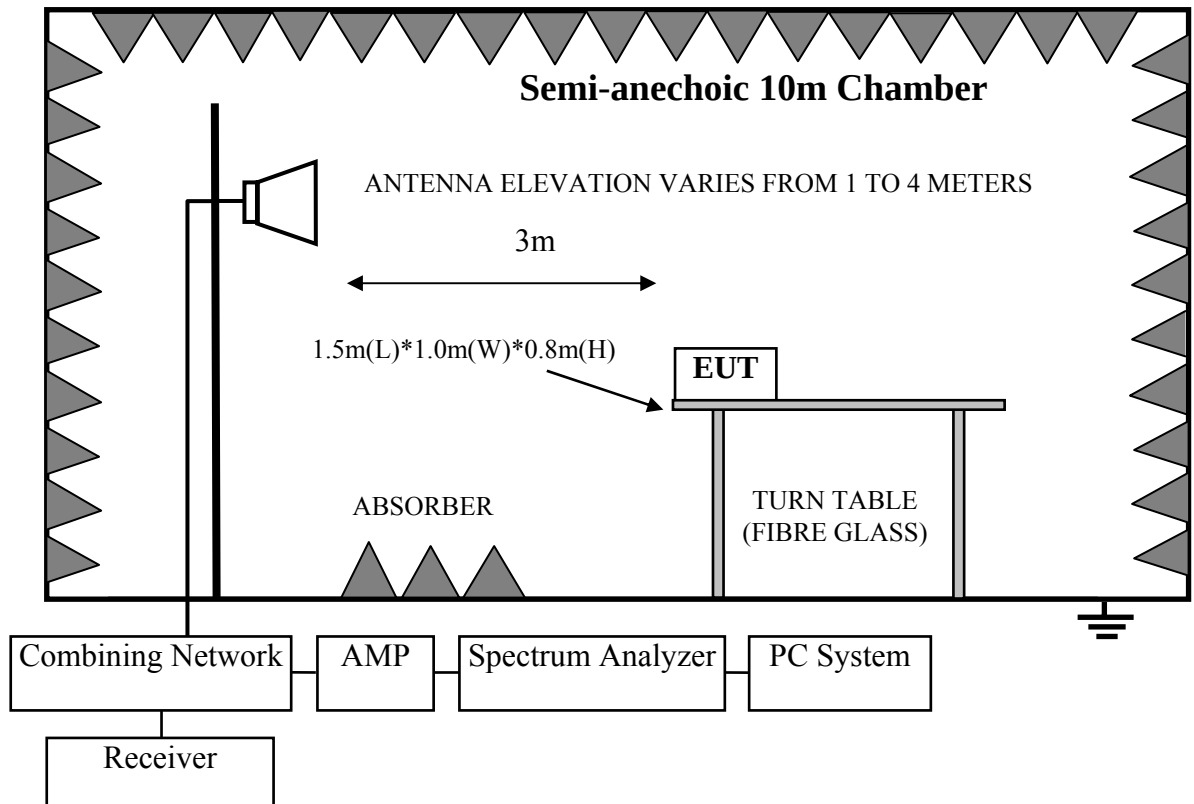
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum Analyzer	Agilent	E7405A	MY45116588	Oct.31, 11	1 Year
2	Horn Antenna	EMCO	3115	9607-4877	July.01, 11	1 Year
3	Amplifier	Agilent	8449B	3008A00863	May.08, 12	1 Year
4	RF Cable	Hubersuhner	SUCOFLEX106	77980/6	May.08, 12	1 Year
5	RF Cable	Hubersuhner	SUCOFLEX106	77977/6	May.08, 12	1 Year

5.2. Block Diagram of Test Setup

5.2.1. In Anechoic Chamber Test Setup Diagram for 30MHz~1000MHz



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



5.3. Test Standard

EN 55022: 2010, Class B

5.4. Radiated Disturbance Limit

All emanations from a Class B 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	30
230 ~ 1000	10	37
1000~3000	3	70(Peak) 50(Average)
3000~6000	3	74(Peak) 54(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 instrument antenna and the closed point of any part of the E.U.T..

5.5. EUT Configuration on Test

The configurations of EUT are listed in Section 3.5.

5.6. Operating Condition of EUT

Same as Conducted Emission test that is listed in Section 3.6. except the test set up replaced by Section 5.2.

5.7. 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 & 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 the interface cables were changed according to EN 55022 Class B 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 and all final readings of measurement were with Peak and Average detector, measurement distance was 3m at semi-anechoic chamber. The portion of the test volume that was obstructed by absorber placed on the floor (30cm maximum).

Finally, selected operating situations at Anechoic Chamber measurement, all the test results are listed in section 5.8.

5.8. Radiated Disturbance Test Results

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

EUT: LCD Monitor Model No. : L460UB

The EUT with the following test modes were tested and selected (mode 3 & 6 & 9 ~15) to read Q.P values, all the test results are listed in next pages.

Test Date: May.13, 2012 Temperature: 24℃ Humidity: 56%

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

No.	Test Mode	Input Port	Resolution & Frequency
1.	PC Mode	DVI	640*480/60Hz
2.			1280*1024/75Hz
3.			1920*1080/60Hz
4.		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.		VGA Panel is Vertical	1080*1920/60Hz
12.	DVD Player	S-Video In	
13.		RGB / AV	
14.		Video In	
15.		HDMI: 1080P	

Test result is presented in the report as below

No.	Test Mode	Input Port	Resolution & Frequency
1.	PC Mode	VGA	1920*1080/60Hz

For frequency range 1GHz~6GHz

The EUT with below test mode were measured within Anechoic Chamber and the test results listed in next pages

Test Date: May.13, 2012 Temperature: 24℃ Humidity: 56%

The EUT was pre-tested under following test modes, and test mode 2 was the worst cases for final test.

No.	Input Port	Resolution & Frequency
1.	DVI	1920*1080/60Hz
2.	VGA	1920*1080/60Hz
3.	Display	1920*1080/60Hz
4.	HDMI	1920*1080/60Hz
5.	VGA Panel is Vertical	1920*1080/60Hz

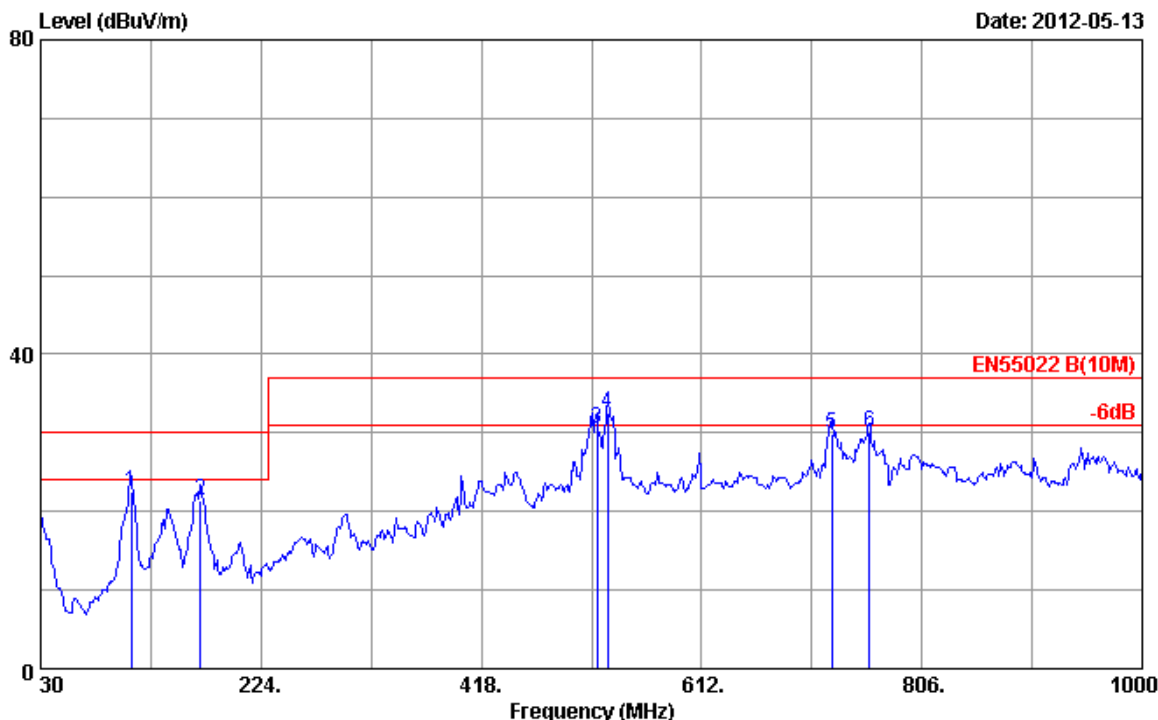
Test result is presented in the report as below

No.	Input Port	Resolution & Frequency
1.	VGA	1920*1080/60Hz

Data: 2

File: E:\2012 Report Data\T\TPV\ACS12Q1045.EM6 (96)

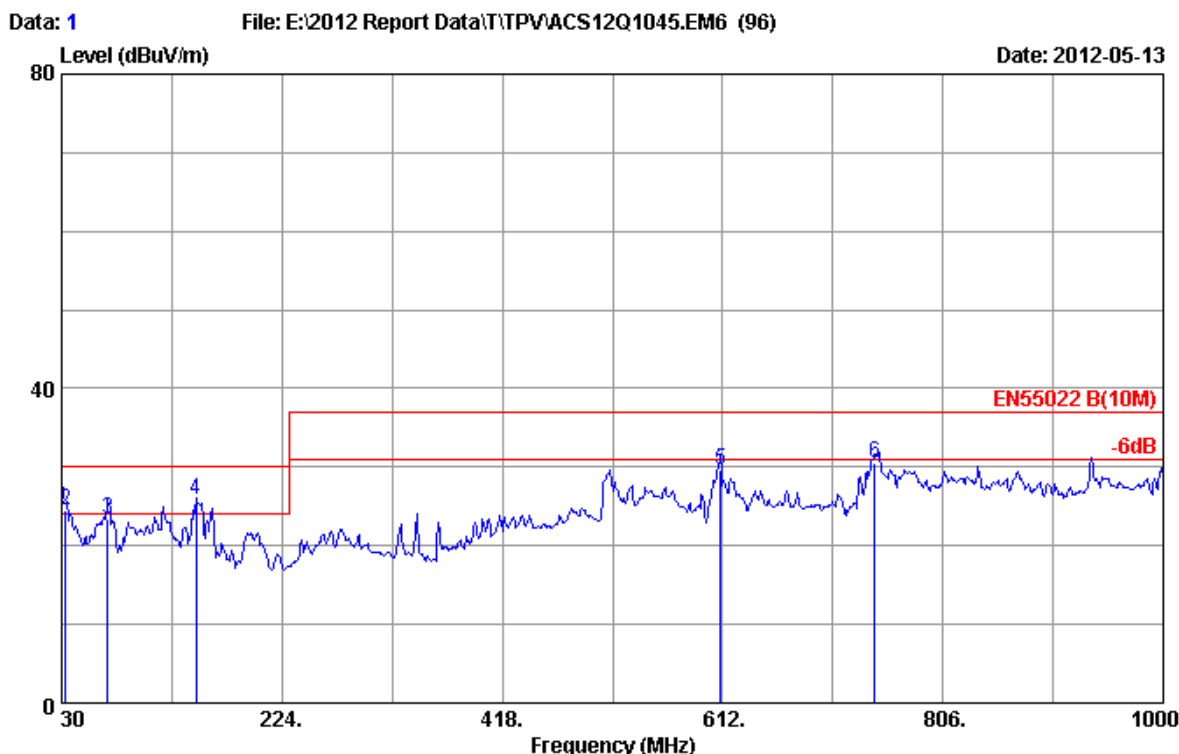
Date: 2012-05-13



Site no. : 10m Chamber Data no. : 2
 Dis. / Ant. : 10m 11 CBL6112D 25238 Ant. pol. : HORIZONTAL
 Limit : EN55022 B(10M)
 Env. / Ins. : 24°C/56% Engineer : FANS
 EUT : LCD Monitor M/N:L460UB
 Power rating : AC 230V/50Hz
 Test Mode : Running 'H' Pattern And 1KHz Playing
 VGA:1920*1080@60Hz

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission			
					Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	109.540	11.60	0.82	10.04	22.46	30.00	7.54	QP
2	170.650	9.35	1.04	11.02	21.41	30.00	8.59	QP
3	519.850	17.30	1.87	11.28	30.45	37.00	6.55	QP
4	529.550	17.60	1.90	13.09	32.59	37.00	4.41	QP
5	726.460	19.19	2.24	8.50	29.93	37.00	7.07	QP
6	759.440	19.10	2.32	8.77	30.19	37.00	6.81	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 529.550MHz with corrected signal level of 32.59dB μ V/m (Limit is 37.00dB μ V/m) when the antenna was at horizontal polarization and at 2.0m high and the turn table was at 45°.
 4. 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.



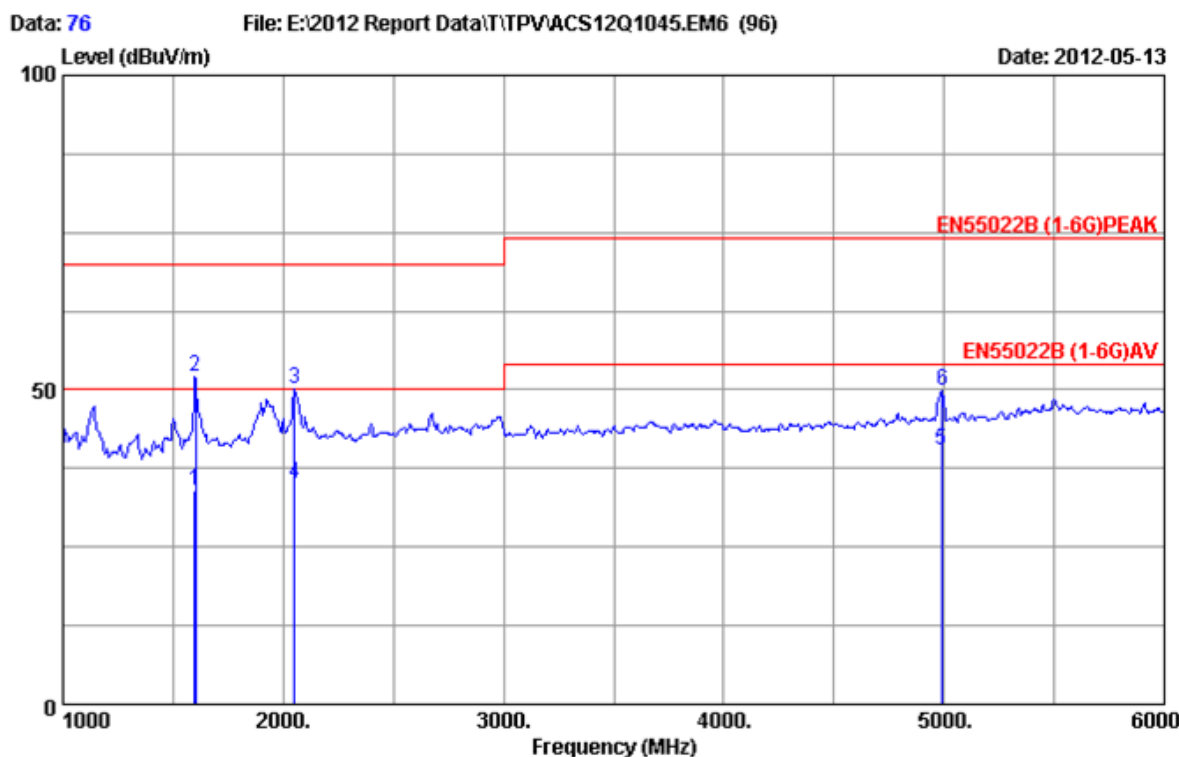
Site no. : 10m Chamber Data no. : 1
 Dis. / Ant. : 10m 11 CBL6112D 25237 Ant. pol. : VERTICAL
 Limit : EN55022 B(10M)
 Env. / Ins. : 24°C/56% Engineer : FANS
 EUT : LCD Monitor M/N:L460UB
 Power rating : AC 230V/50Hz
 Test Mode : Running 'H' Pattern And 1KHz Playing
 VGA:1920*1080@60Hz

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	30.056	19.60	0.55	5.00	25.15	30.00	4.85	QP
2	33.840	17.20	0.57	6.80	24.57	30.00	5.43	QP
3	70.767	7.65	0.79	15.00	23.44	30.00	6.56	QP
4	148.340	11.30	1.14	13.42	25.86	30.00	4.14	QP
5	610.060	18.90	2.57	8.15	29.62	37.00	7.38	QP
6	745.860	19.68	2.87	8.03	30.58	37.00	6.42	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 148.340 MHz with corrected signal level of 25.86dBuV/m (Limit is 30.00dBuV/m) when the antenna was at vertical polarization and at 1.0m high and the turn table was at 45°.

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



Site no. : 10m Chamber Data no. : 76
 Dis. / Ant. : 3m 2011 3115 NEW Ant. pol. : HORIZONTAL
 Limit : EN55022B (1-6G)PEAK
 Env. / Ins. : 24°C/56% Engineer : FANS
 EUT : LCD Monitor M/N:L460UB
 Power Rating : AC 230V/50Hz
 Test Mode : Running 'H' Pattern And 1KHz Playing
 VGA:1920*1080@60Hz

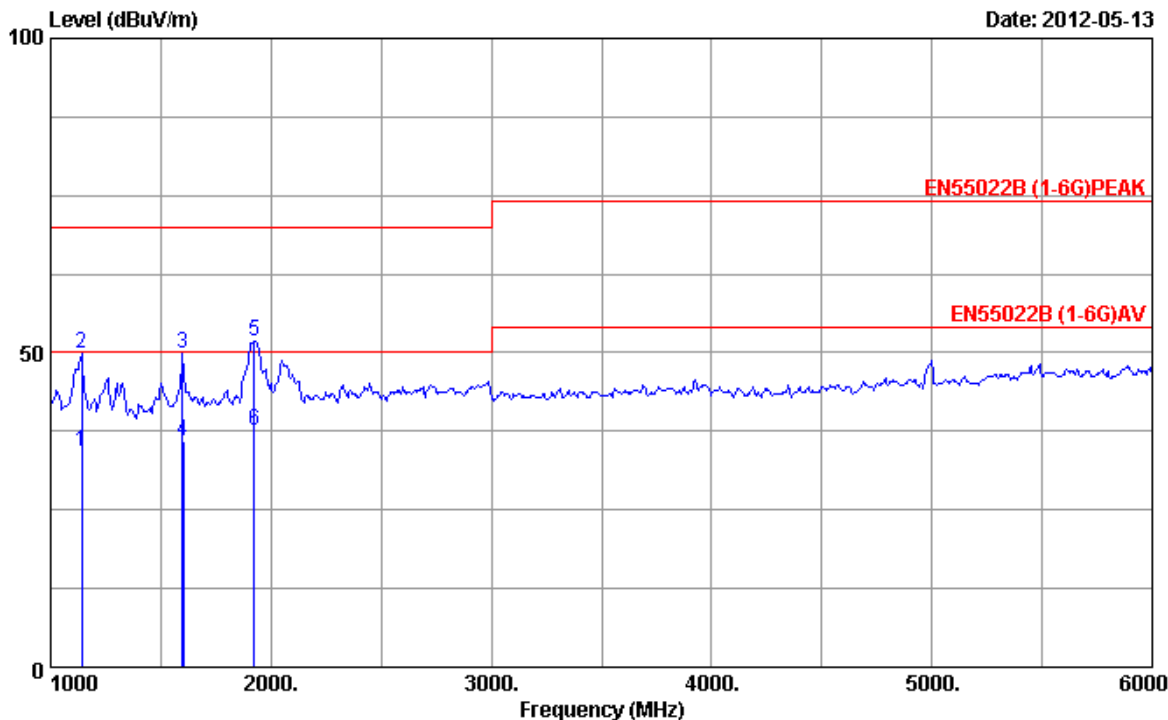
No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dBuV)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dB)	Margin (dB)	Remark
1	1600.052	25.98	1.45	34.60	41.15	33.98	50.00	16.02	Average
2	1600.640	25.98	1.45	34.60	59.18	52.01	70.00	17.99	Peak
3	2050.145	27.56	2.08	34.41	54.86	50.09	70.00	19.91	Peak
4	2050.851	27.56	2.08	34.41	39.95	35.18	50.00	14.82	Average
5	4990.050	33.00	3.40	34.60	38.46	40.26	54.00	13.74	Average
6	4990.846	33.00	3.40	34.60	48.00	49.80	74.00	24.20	Peak

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

Data: 75

File: E:\2012 Report Data\TPV\ACS12Q1045.EM6 (96)

Date: 2012-05-13



Site no. : 10m Chamber Data no. : 75
 Dis. / Ant. : 3m 2011 3115 NEW Ant. pol. : VERTICAL
 Limit : EN55022B (1-6G)PEAK
 Env. / Ins. : 24°C/56% Engineer : FANS
 EUT : LCD Monitor M/N:L460UB
 Power Rating : AC 230V/50Hz
 Test Mode : Running 'H' Pattern And 1KHz Playing
 VGA:1920*1080@60Hz

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dBuV)	Reading (dBuV/m)	Emission Level (dBuV/m)	Limits (dB)	Margin (dB)	Remark
1	1140.185	23.86	0.77	34.83	44.36	34.16	50.00	15.84	Average
2	1140.245	23.86	0.77	34.83	59.92	49.72	70.00	20.28	Peak
3	1600.140	25.98	1.45	34.60	57.08	49.91	70.00	20.09	Peak
4	1600.255	25.98	1.45	34.60	43.02	35.85	50.00	14.15	Average
5	1925.045	27.18	1.93	34.44	57.12	51.79	70.00	18.21	Peak
6	1925.256	27.18	1.93	34.44	43.07	37.74	50.00	12.26	Average

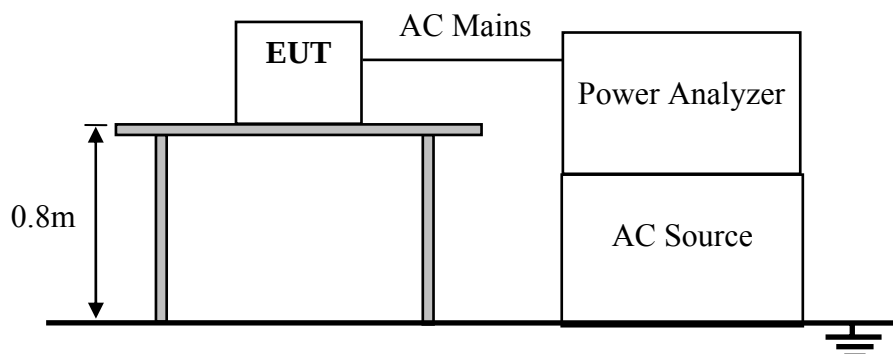
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 - Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.

6. HARMONIC CURRENT TEST

6.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Compliance Test System	California Instruments	5001ix	58481	Nov.05, 11	1 Year
2.	Compliance Test System	California Instruments	PACS-1	72627	Nov.05, 11	1 Year

6.2. Block Diagram of Test Setup



6.3. Test Standard

EN 61000-3-2: 2006+A1: 2009+A2: 2009; Class D

6.4. Limits of Harmonic Current

Limits for Class D Equipment		
Harmonic order (n)	Maximum permissible harmonic current per watt (mA/W)	Maximum permissible harmonic current (A)
3	3.4	0.23
5	1.9	1.14
7	1.0	0.77
9	0.5	0.40
11	0.35	0.33
13	0.30	0.21
15 ≤ n ≤ 39 (odd harmonic only)	3.85/n	0.15 × 15/n

Remark: if the EUT Power level is below 75 Watts and therefore has no defined limits.

6.5. EUT Configuration on Test

The configurations of EUT are listed in Section 3.5.

6.6. Operating Condition of EUT

Same as Conducted Emission test that is listed in Section 3.6. except the test set up replaced by Section 6.2.

6.7. Test Procedure

The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the maximum harmonic components under normal operating conditions for each successive harmonic component in turn. The correspondent test program of test instrument to measure the current harmonics emanated from EUT is chosen. The measure time shall be not less than the necessary for the EUT to be exercised.

6.8. Test Results

PASS.

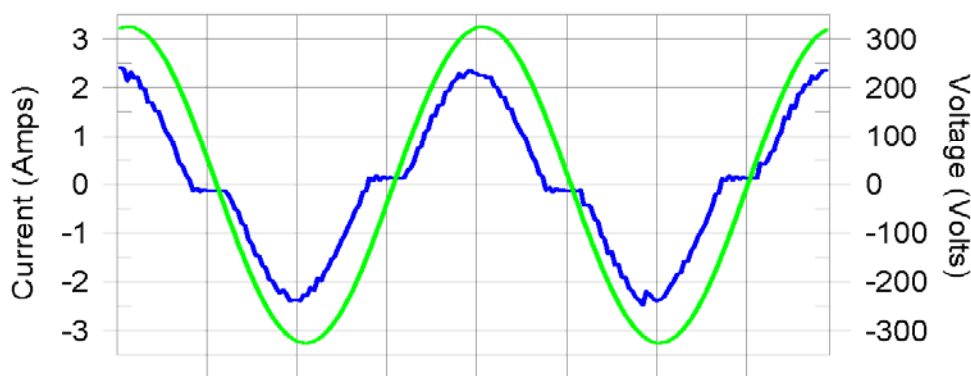
The EUT was tested and all the test results are listed in next pages.

Harmonics – Class-D per Ed. 3.2 (2009)(Run time)

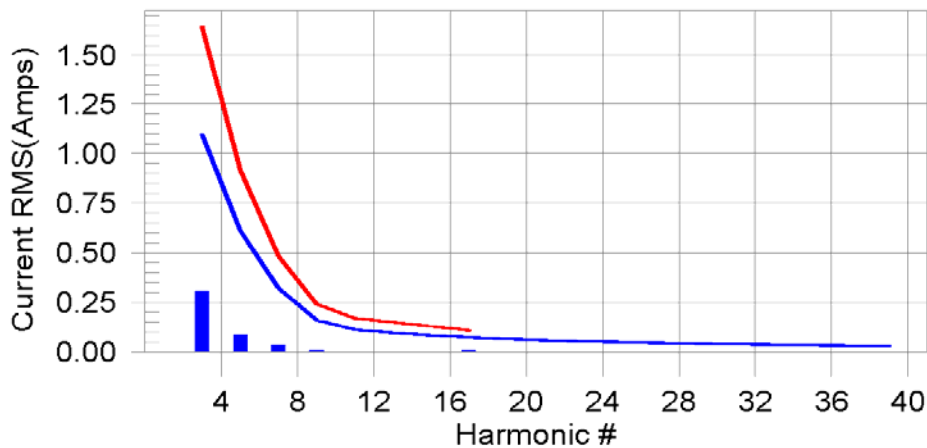
EUT: LCD Monitor M/N:L460UB
 Test category: Class-D per Ed. 3.2 (2009) (European limits)
 Test date: 2012-6-12 Start time: 19:42:28 End time: 19:45:20
 Test duration (min): 2.5 Data file name: H-000172.cts_data
 Comment: DVD Playing
 Customer: TPV

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 27.84% of the limit.

Current Test Result Summary (Run time)

EUT: LCD Monitor M/N:L460UB **Tested by:** Mark
Test category: Class-D per Ed. 3.2 (2009) (European limits) **Test Margin:** 100
Test date: 2012-6-12 **Start time:** 19:42:28 **End time:** 19:45:20
Test duration (min): 2.5 **Data file name:** H-000172.cts_data
Comment: DVD Playing
Customer: TPV

Test Result: Pass **Source qualification:** Normal
THC(A): 0.32 **I-THD(%):** 22.43 **POHC(A):** 0.000 **POHC Limit(A):** 0.138
Highest parameter values during test:
V_RMS (Volts): 229.99 **Frequency(Hz):** 50.00
I_Peak (Amps): 2.645 **I_RMS (Amps):** 1.461
I_Fund (Amps): 1.431 **Crest Factor:** 1.815
Power (Watts): 322.0 **Power Factor:** 0.958

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.000						
3	0.305	1.095	27.8	0.306	1.642	18.64	Pass
4	0.000						
5	0.087	0.612	14.3	0.088	0.918	9.58	Pass
6	0.000						
7	0.035	0.322	10.8	0.036	0.483	7.38	Pass
8	0.000						
9	0.009	0.161	5.4	0.009	0.241	3.92	Pass
10	0.000						
11	0.007	0.113	0.0	0.000	0.170	0.00	Pass
12	0.000						
13	0.006	0.097	0.0	0.000	0.000	0.00	Pass
14	0.000						
15	0.004	0.084	0.0	0.000	0.000	0.00	Pass
16	0.000						
17	0.011	0.074	14.5	0.011	0.109	10.48	Pass
18	0.000						
19	0.007	0.065	0.0	0.000	0.000	0.00	Pass
20	0.000						
21	0.005	0.059	0.0	0.000	0.000	0.00	Pass
22	0.000						
23	0.003	0.054	0.0	0.000	0.000	0.00	Pass
24	0.000						
25	0.001	0.050	0.0	0.000	0.000	0.00	Pass
26	0.000						
27	0.006	0.046	0.0	0.000	0.000	0.00	Pass
28	0.000						
29	0.005	0.043	0.0	0.000	0.000	0.00	Pass
30	0.000						
31	0.004	0.040	0.0	0.000	0.000	0.00	Pass
32	0.000						
33	0.004	0.037	0.0	0.000	0.000	0.00	Pass
34	0.000						
35	0.003	0.035	0.0	0.000	0.000	0.00	Pass
36	0.000						
37	0.005	0.033	0.0	0.000	0.000	0.00	Pass
38	0.000						
39	0.005	0.032	0.0	0.000	0.000	0.00	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:L460UB **Tested by:** Mark
Test category: Class-D per Ed. 3.2 (2009) (European limits) **Test Margin:** 100
Test date: 2012-6-12 **Start time:** 19:42:28 **End time:** 19:45:20
Test duration (min): 2.5 **Data file name:** H-000172.cts_data
Comment: DVD Playing
Customer: TPV

Test Result: Pass **Source qualification:** Normal

Highest parameter values during test:

Voltage (Vrms): 229.99	Frequency(Hz): 50.00
I_Peak (Amps): 2.645	I_RMS (Amps): 1.461
I_Fund (Amps): 1.431	Crest Factor: 1.815
Power (Watts): 322.0	Power Factor: 0.958

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.083	0.460	18.11	OK
3	0.485	2.070	23.45	OK
4	0.053	0.460	11.61	OK
5	0.047	0.920	5.10	OK
6	0.026	0.460	5.65	OK
7	0.036	0.690	5.28	OK
8	0.020	0.460	4.34	OK
9	0.014	0.460	3.06	OK
10	0.010	0.460	2.07	OK
11	0.010	0.230	4.47	OK
12	0.012	0.230	5.42	OK
13	0.015	0.230	6.71	OK
14	0.009	0.230	3.98	OK
15	0.009	0.230	3.96	OK
16	0.010	0.230	4.28	OK
17	0.008	0.230	3.52	OK
18	0.010	0.230	4.29	OK
19	0.010	0.230	4.28	OK
20	0.008	0.230	3.62	OK
21	0.010	0.230	4.49	OK
22	0.005	0.230	2.08	OK
23	0.007	0.230	2.98	OK
24	0.005	0.230	2.17	OK
25	0.006	0.230	2.50	OK
26	0.004	0.230	1.79	OK
27	0.011	0.230	4.80	OK
28	0.004	0.230	1.65	OK
29	0.010	0.230	4.18	OK
30	0.003	0.230	1.49	OK
31	0.006	0.230	2.47	OK
32	0.004	0.230	1.74	OK
33	0.007	0.230	2.98	OK
34	0.004	0.230	1.70	OK
35	0.008	0.230	3.27	OK
36	0.003	0.230	1.38	OK
37	0.006	0.230	2.64	OK
38	0.004	0.230	1.58	OK
39	0.010	0.230	4.28	OK
40	0.004	0.230	1.64	OK

Harmonics – Class-D per Ed. 3.2 (2009)(Run time)

EUT: LCD Monitor M/N:L460UB

Test category: Class-D per Ed. 3.2 (2009) (European limits)

Test date: 2012-6-12

Test duration (min): 2.5

Comment: Running "H" Pattern And 1KHz Playing

Customer: TPV

Tested by: Mark

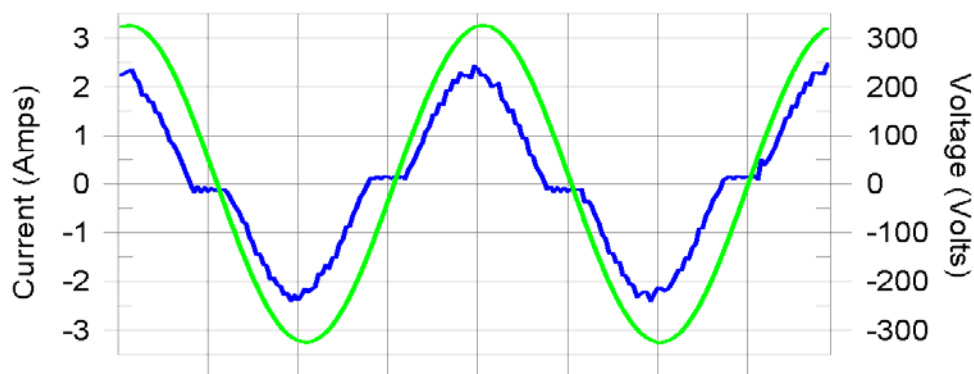
Test Margin: 100

End time: 20:24:59

Data file name: H-000175.cts_data

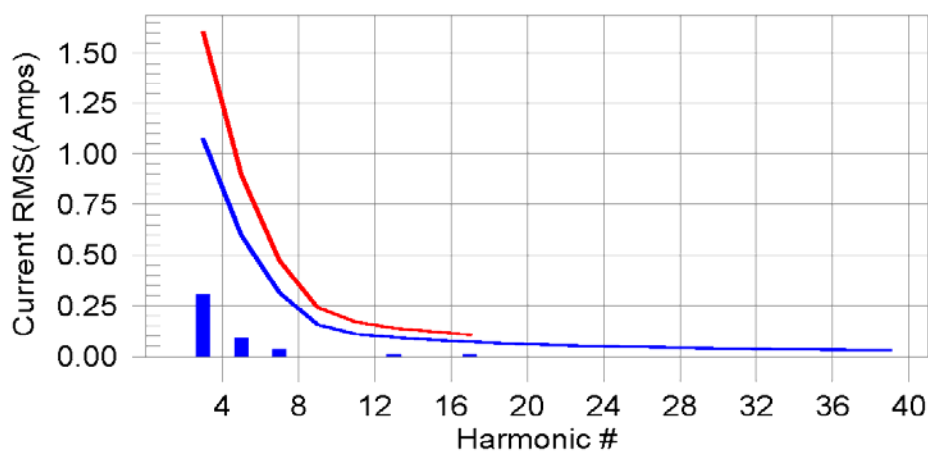
Test Result: Pass Source qualification: Normal

Current & voltage waveforms



Harmonics and Class D limit line

European Limits



Test result: Pass Worst harmonic was #3 with 28.40% of the limit.

Current Test Result Summary (Run time)

EUT: LCD Monitor M/N:L460UB
 Test category: Class-D per Ed. 3.2 (2009) (European limits)
 Test date: 2012-6-12 Start time: 20:22:07 End time: 20:24:59
 Test duration (min): 2.5 Data file name: H-000175.cts_data
 Comment: Running "H" Pattern And 1KHz Playing
 Customer: TPV

Test Result: Pass Source qualification: Normal
 THCA: 0.32 I-THD(%): 22.84 POHC(A): 0.000 POHC Limit(A): 0.135
 Highest parameter values during test:
 V_RMS (Volts): 230.00 Frequency(Hz): 50.00
 I_Peak (Amps): 2.650 I_RMS (Amps): 1.432
 I_Fund (Amps): 1.421 Crest Factor: 1.851
 Power (Watts): 315.0 Power Factor: 0.957

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.000						
3	0.304	1.071	28.4	0.305	1.606	19.01	Pass
4	0.000						
5	0.087	0.598	14.5	0.088	0.898	9.79	Pass
6	0.000						
7	0.033	0.315	10.6	0.034	0.472	7.22	Pass
8	0.000						
9	0.006	0.157	0.0	0.000	0.241	0.00	Pass
10	0.000						
11	0.005	0.110	0.0	0.000	0.170	0.00	Pass
12	0.000						
13	0.009	0.094	9.3	0.009	0.140	6.73	Pass
14	0.000						
15	0.007	0.082	0.0	0.000	0.000	0.00	Pass
16	0.000						
17	0.011	0.072	15.8	0.012	0.107	11.40	Pass
18	0.000						
19	0.007	0.064	0.0	0.000	0.000	0.00	Pass
20	0.000						
21	0.004	0.058	0.0	0.000	0.000	0.00	Pass
22	0.000						
23	0.001	0.053	0.0	0.000	0.000	0.00	Pass
24	0.000						
25	0.002	0.049	0.0	0.000	0.000	0.00	Pass
26	0.000						
27	0.007	0.045	0.0	0.000	0.000	0.00	Pass
28	0.000						
29	0.005	0.042	0.0	0.000	0.000	0.00	Pass
30	0.000						
31	0.002	0.039	0.0	0.000	0.000	0.00	Pass
32	0.000						
33	0.004	0.037	0.0	0.000	0.000	0.00	Pass
34	0.000						
35	0.004	0.035	0.0	0.000	0.000	0.00	Pass
36	0.000						
37	0.005	0.033	0.0	0.000	0.000	0.00	Pass
38	0.000						
39	0.004	0.031	0.0	0.000	0.000	0.00	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:L460UB **Tested by:** Mark
Test category: Class-D per Ed. 3.2 (2009) (European limits) **Test Margin:** 100
Test date: 2012-6-12 **Start time:** 20:22:07 **End time:** 20:24:59
Test duration (min): 2.5 **Data file name:** H-000175.cts_data
Comment: Running "H" Pattern And 1KHz Playing
Customer: TPV

Test Result: Pass **Source qualification:** Normal

Highest parameter values during test:

Voltage (Vrms): 230.00	Frequency(Hz): 50.00
I_Peak (Amps): 2.650	I_RMS (Amps): 1.432
I_Fund (Amps): 1.421	Crest Factor: 1.851
Power (Watts): 315.0	Power Factor: 0.957

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.085	0.460	18.48	OK
3	0.483	2.069	23.32	OK
4	0.052	0.460	11.27	OK
5	0.046	0.920	5.02	OK
6	0.026	0.460	5.71	OK
7	0.035	0.690	5.12	OK
8	0.018	0.460	3.98	OK
9	0.014	0.460	3.03	OK
10	0.009	0.460	1.99	OK
11	0.010	0.230	4.17	OK
12	0.012	0.230	5.10	OK
13	0.016	0.230	6.95	OK
14	0.009	0.230	3.87	OK
15	0.010	0.230	4.19	OK
16	0.010	0.230	4.16	OK
17	0.009	0.230	4.04	OK
18	0.010	0.230	4.23	OK
19	0.010	0.230	4.28	OK
20	0.007	0.230	3.24	OK
21	0.010	0.230	4.16	OK
22	0.004	0.230	1.84	OK
23	0.006	0.230	2.42	OK
24	0.005	0.230	2.07	OK
25	0.005	0.230	2.38	OK
26	0.004	0.230	1.63	OK
27	0.012	0.230	5.40	OK
28	0.004	0.230	1.69	OK
29	0.010	0.230	4.28	OK
30	0.004	0.230	1.60	OK
31	0.005	0.230	1.98	OK
32	0.003	0.230	1.46	OK
33	0.007	0.230	3.22	OK
34	0.003	0.230	1.51	OK
35	0.009	0.230	3.77	OK
36	0.004	0.230	1.53	OK
37	0.007	0.230	2.89	OK
38	0.004	0.230	1.53	OK
39	0.009	0.230	3.95	OK
40	0.004	0.230	1.73	OK

7. VOLTAGE FLUCTUATIONS & FLICKER TEST

7.1. Test Equipment

Same as Section 6.1.

7.2. Block Diagram of Test Setup

Same as Section 6.2.

7.3. Test Standard

EN 61000-3-3: 2008

7.4. Limits of Voltage Fluctuation and Flick

Test Item	Limit	Note
P_{st}	1.0	P_{st} means Short-term flicker indicator
P_{lt}	0.65	P_{lt} means long-term flicker indicator
T_{dt}	0.2	T_{dt} means maximum time that dt exceeds 3%
$d_{max}(\%)$	4%	d_{max} means maximum relative voltage change.
$d_c(\%)$	3.3%	d_c means relative steady-state voltage change.

7.5. EUT Configuration on Test

The configurations of EUT are listed in Section 3.5.

7.6. Operating Condition of EUT

Same as Section 6.6.

7.7. Test Procedure

The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the most unfavorable sequence of voltage changes under normal conditions. During the flick measurement, the measure time shall include that part of whole operation changes. The observation period for short-term flicker indicator is 10 minutes and the observation period for long-term flicker indicator is 2 hours.

7.8. Test Results

PASS.

Please refer to the following page.

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

EUT: LCD Monitor M/N:L460UB

Tested by: Mark

Test category: All parameters (European limits)

Test Margin: 100

Test date: 2012-6-12

Start time: 19:56:23

End time: 20:06:44

Test duration (min): 10

Data file name: F-000173.cts_data

Comment: DVD Playing

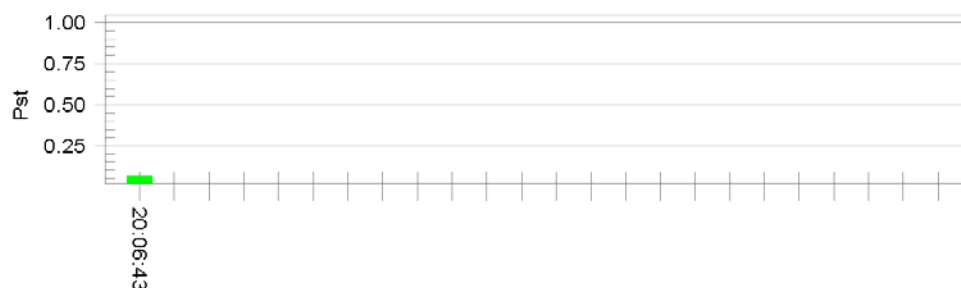
Customer: TPV

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): 229.45

Highest dt (%): 0.00

Time(mS) > dt: 0.0

Highest dc (%): 0.00

Highest dmax (%): 0.00

Highest Pst (10 min. period): 0.064

Highest Plt (2 hr. period): 0.028

Test limit (%): 3.30 Pass

Test limit (mS): 500.0 Pass

Test limit (%): 3.30 Pass

Test limit (%): 4.00 Pass

Test limit: 1.000 Pass

Test limit: 0.650 Pass

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

EUT: LCD Monitor M/N:L460UB
 Test category: All parameters (European limits)
 Test date: 2012-6-12 Start time: 20:07:44
 Test duration (min): 10 Data file name: F-000174.cts_data
 Comment: Running "H" Pattern And 1KHz Playing
 Customer: TPV

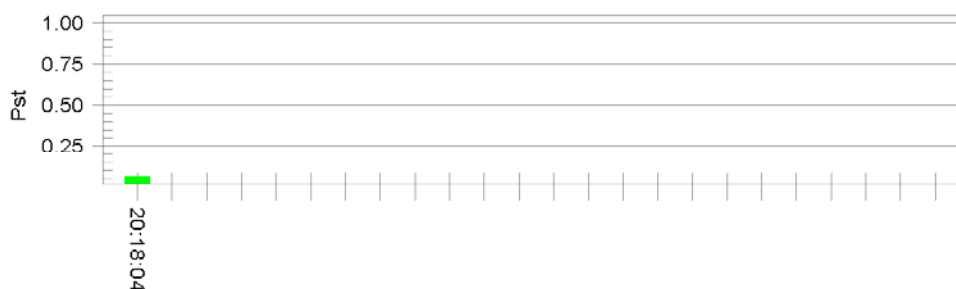
Tested by: Mark
 Test Margin: 100
 End time: 20:18:05

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): 229.38
 Highest dt (%): 0.00
 Time(mS) > dt: 0.0
 Highest dc (%): 0.00
 Highest dmax (%): 0.00
 Highest Pst (10 min. period): 0.064
 Highest Plt (2 hr. period): 0.028

Test limit (%):	3.30	Pass
Test limit (mS):	500.0	Pass
Test limit (%):	3.30	Pass
Test limit (%):	4.00	Pass
Test limit:	1.000	Pass
Test limit:	0.650	Pass

8. 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 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

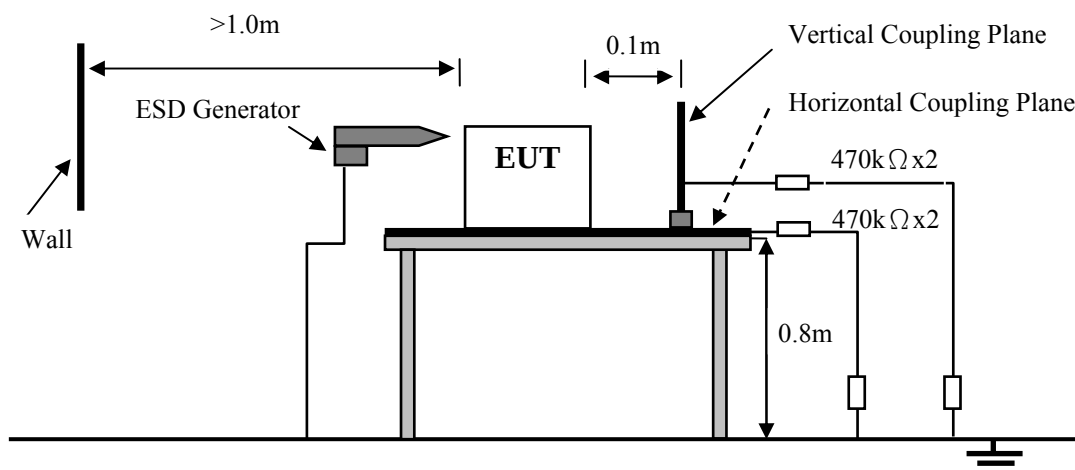
Failures which are not self-recovered after removal of the external disturbance, but which can be recovered to normal operation by reset or reboot are permissible.

9. ELECTROSTATIC DISCHARGE IMMUNITY TEST

9.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	ESD Tester	EM Test	Dito	V0503100053	Dec.03,11	1 Year

9.2. Block Diagram of Test Setup



9.3. Test Standard

EN 55024: 2010 (IEC 61000-4-2: 2008)

(Severity Level 1 & 2 & 3 for Air Discharge at 2 kV & 4 kV & 8kV,
Severity Level 1 & 2 for Contact Discharge at 2 kV & 4kV)

9.4. Severity Levels and Performance Criterion

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

9.5. EUT Configuration

The configurations of EUT are listed in Section 3.5.

9.6. Operating Condition of EUT

Same as Conducted Emission test that is listed in Section 3.6. except the test set up replaced by Section 9.2.

9.7. Test Procedure

9.7.1. 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

9.7.2. Contact Discharge:

All the procedure was same as Section 9.7.1. 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.

9.7.3. 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.

9.7.4. 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.

9.8. 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.

Applicant	: TPV Electronics (FuJian) Co., Ltd.	Test Date	: May.18, 2012
EUT	: LCD Monitor	Temperature	: 23±1℃
M/N	: L460UB	Humidity	: 46±1%
Test Voltage	: AC 230V/50Hz	Test Mode	: Running “H” Pattern And 1KHz Playing
Test Engineer	: Gurden	Pressure	: 101±1KPa
Required Performance	: B	Actual Performance	: A & B

Air Discharge: ±2kV ±4kV ±8kV # For Air Discharge each Point Positive 10 times and negative 10 times discharge.

Contact Discharge: ±2kV ±4kV # 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)
			Required	Observation	
±2	Contact	4,5,6,7,8,10	B	A	Pass
±4	Contact	4,5,6,7,8,10	B	B	Pass
±2	Air	1,2,3,6,7,8,9	B	A	Pass
±4	Air	1,2,3,6,7,8,9	B	A	Pass
±8	Air	1,2,3,6,7,8,9	B	B	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>	AC Port / LCD Screen	<u>8</u>	USB Port / S-Video port
<u>2</u>	Buttons / Slots	<u>9</u>	Speakers
<u>3</u>	Audio in / earphone port	<u>10</u>	RGB / AV port
<u>4</u>	LAN	<u>11</u>	RS232
<u>5</u>	Metal / Screws	<u>12</u>	Audio in3 port
<u>6</u>	VGA / DVI Port	<u>13</u>	
<u>7</u>	HDMI / DP Port	<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.

When Testing “B” Means the monitor will twinkle during test, recover to normal when stop.

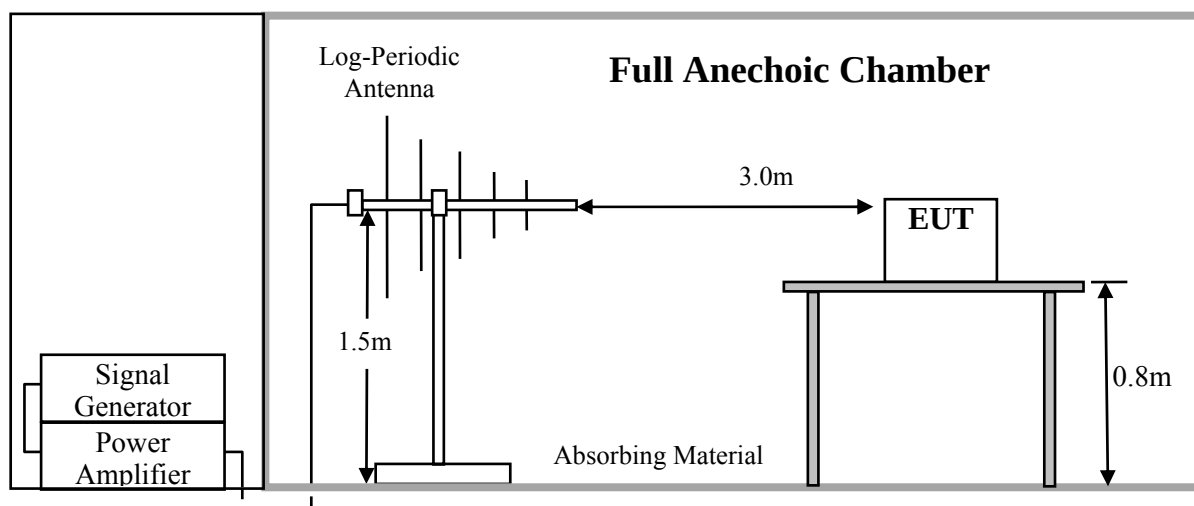
Discharge was considered on Contact and Air and Horizontal Coupling Plane (HCP) and Vertical Coupling Plane (VCP).

10. RF FIELD STRENGTH SUSCEPTIBILITY TEST

10.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	2#Chamber	AUDIX	N/A	N/A	Apr.20.12	1Year
2.	Signal Generator	Agilent	N5181A	MY49061013	Nov.05,11	1Year
3.	Amplifier	A&R	100W/1000M1	17028	NCR	NCR
4.	Power Meter	Anritsu	ML2487A	6K00002472	May.08, 12	1Year
5.	Power Sensor	Anritsu	MA2491A	032516	May.08, 12	1Year
6.	Log-periodic Antenna	A&R	AT1080	16512	NCR	NCR

10.2. Block Diagram of Test Setup



10.3. Test Standard

EN 55024: 2010 (IEC 61000-4-3: 2010)
(Severity Level: 2 at 3V / m)

10.4. Test Severity Level and Performance Criterion

Severity Level	Test Field Strength V/m	Performance Criteria
1.	1	A
2.	3	
3.	10	
X.	Special	

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

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 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:

Test conditions	
Frequency	80MHz-1GHz
Frequency increments step	1% of momentary used
Test level	3V/m (unmodulated)
Dwell time	3s
Test signal	80% amplitude modulated by 1kHz sinusoidal audio signal

10.8. 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.

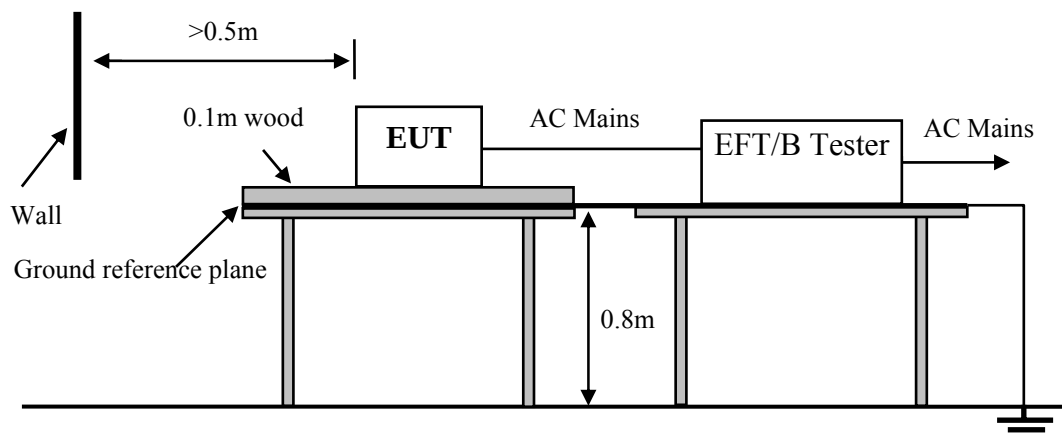
Applicant : TPV Electronics (FuJian) Co., Ltd. EUT : LCD Monitor M/N : L460UB Test Voltage : AC 230V/50Hz Test Engineer : Mark Required Performance : A	Test Date : Jun.10, 2012 Temperature : 25±0.5℃ Humidity : 36±1% Pressure : 100.2±1KPa Test Mode : Running “H” Pattern And 1KHz Playing Actual Performance : A																																			
Modulation: ☒ AM ☐ Pulse ☐ none 1 kHz 80%																																				
Frequency Rang :80 MHz -1000MHz																																				
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2" style="text-align: center;">Horizontal</th> <th colspan="2" style="text-align: center;">Vertical</th> <th style="text-align: center;">Result</th> </tr> <tr> <th style="width: 20%;"></th> <th style="width: 20%;">Required</th> <th style="width: 20%;">Observation</th> <th style="width: 20%;">Required</th> <th style="width: 20%;">Observation</th> <th style="width: 20%;">(Pass / Fail)</th> </tr> <tr> <td style="text-align: center;">Front</td> <td style="text-align: center;">A</td> <td style="text-align: center;">A</td> <td style="text-align: center;">A</td> <td style="text-align: center;">A</td> <td style="text-align: center;">Pass</td> </tr> <tr> <td style="text-align: center;">Right</td> <td style="text-align: center;">A</td> <td style="text-align: center;">A</td> <td style="text-align: center;">A</td> <td style="text-align: center;">A</td> <td style="text-align: center;">Pass</td> </tr> <tr> <td style="text-align: center;">Rear</td> <td style="text-align: center;">A</td> <td style="text-align: center;">A</td> <td style="text-align: center;">A</td> <td style="text-align: center;">A</td> <td style="text-align: center;">Pass</td> </tr> <tr> <td style="text-align: center;">Left</td> <td style="text-align: center;">A</td> <td style="text-align: center;">A</td> <td style="text-align: center;">A</td> <td style="text-align: center;">A</td> <td style="text-align: center;">Pass</td> </tr> </table>	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
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																															
Remark: No function loss																																				

11. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

11.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Burst Tester	TESEQ	NSG3025	28017	Aug.01, 11	1 Year

11.2. Block Diagram of Test Setup



11.3. Test Standard

EN 55024: 2010 (IEC 61000-4-4: 2004+A1: 2010)
(Severity Level 2 at 1kV)

11.4. Severity Levels and Performance Criterion

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

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

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.

11.7.1. 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.

11.7.2. 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 and similar networks.)

11.7.3. For DC input and DC output power ports:

It's unnecessary to test.

11.8. 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.

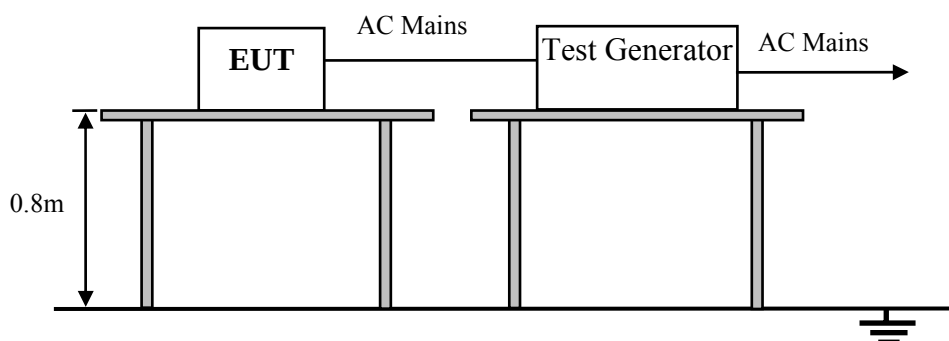
Applicant : TPV Electronics (FuJian) Co., Ltd. EUT : LCD Monitor M/N : L460UB Test Voltage : AC 230V/50Hz Test Engineer : Gurden Required Performance : B	Test Date : May.18.2012 Temperature : 23±1℃ Humidity : 46±1% Test Mode : Running “H” Pattern And 1KHz Playing & DVD Playing Pressure : 101±1KPa Actual Performance : B				
Repetition Frequency : <u>5 kHz / 100 kHz</u> Burst Duration : <u>15ms</u> Burst Period: <u>300ms</u>					
Inject Time(s): <u>120s</u> Inject Method: <u>Direct</u> Inject Line: ☒ AC Mains ☐ DC Supply ☒ Signal					
Line	Test Voltage	Performance			Result (Pass/Fail)
		Required	Observation(+)	Observation(-)	
L	0.5/1kV	B	B	B	Pass
N	0.5/1kV	B	B	B	Pass
PE	0.5/1kV	B	B	B	Pass
L N	0.5/1kV	B	B	B	Pass
L PE	0.5/1kV	B	B	B	Pass
N PE	0.5/1kV	B	B	B	Pass
L N PE	0.5/1kV	B	B	B	Pass
Signal Line	0.5kV	B	B	B	Pass
Remark: When Testing “B” Means the monitor will twinkle during test, recover to normal when stop.					

12. SURGE TEST

12.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Surge Tester	HAEFELY	PSURGE4.1	083519-12	May.08, 12	1 Year
2.	Surge Tester	KeyTek	ECAT	209174	May.08, 12	1 Year

12.2. Block Diagram of Test Setup



12.3. Test Standard

EN 55024: 2010 (IEC 61000-4-5: 2005)

(Severity Level: Line to Line was Level 2 at 1kV)

12.4. Severity Levels and Performance Criterion

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

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) Set up the EUT and test generator as shown on Section 12.2.
- 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.

12.8. 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.

Applicant	: TPV Electronics (FuJian) Co., Ltd.	Test Date	: May.18.2012
EUT	: LCD Monitor	Temperature	: $23 \pm 1^{\circ}\text{C}$
M/N	: L460UB	Humidity	: $46 \pm 1\%$
Power Supply	: AC 230V/50Hz	Test Mode	: Running "H" Pattern And 1KHz Playing
Test Engineer	: Gurden	Pressure	: $101 \pm 1\text{KPa}$
Required Performance	: B	Actual Performance	: A&B

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	B	B	B	B	B				Pass
	90°	B	B	B	B	B	B				Pass
	180°	B	B	B	B	B	B				Pass
	270°	B	B	B	B	B	B				Pass
L-PE	0°	B	B	B	B	B	B	B	B	B	Pass
	90°	B	B	B	B	B	B	B	B	B	Pass
	180°	B	B	B	B	B	B	B	B	B	Pass
	270°	B	B	B	B	B	B	B	B	B	Pass
N-PE	0°	B	B	B	B	B	B	B	B	B	Pass
	90°	B	B	B	B	B	B	B	B	B	Pass
	180°	B	B	B	B	B	B	B	B	B	Pass
	270°	B	B	B	B	B	B	B	B	B	Pass
Signal Line					B	B	B				Pass

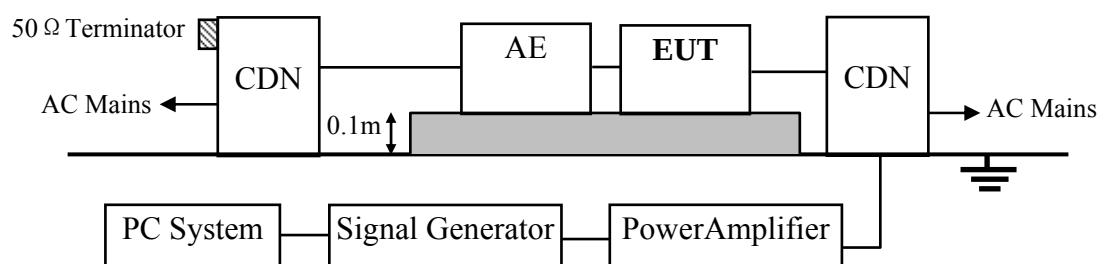
Remark: When Testing "B" Means the monitor will twinkle during test, recover to normal when stop.

13. INJECTED CURRENTS SUSCEPTIBILITY TEST

13.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Signal Generator	Agilent	N5181A	MY49061013	Nov.05,11	1 Year
2.	Amplifier	AR	25A250A	19152	NCR	NCR
3.	Amplifier	AR	100A250	19368	NCR	NCR
4.	Power meter	HP	436A	2016A07891	May.08, 12	1Year
5.	Power sensor	Agilent	8482B	MY41090514	Nov.26, 11	1 Year
6.	CDN	FCC	FCC-801-M3-25	107	May.08, 12	1 Year
7.	CDN	FCC	FCC-801-M3-25	07045	May.08, 12	1 Year
8.	PC	N/A	N/A	N/A	N/A	N/A
9.	Attenuator	Weinschel	40-6-34	LJ092	May.08, 12	1 Year
10.	RF Cable	MICABLE	A04-07-07-2M	09111340	NCR	NCR
11.	RF Cable	STORM	MFR-57500	90-195-2MTR	NCR	NCR

13.2. Block Diagram of Test Setup



13.3. Test Standard

EN 55024: 2010 (IEC 61000-4-6: 2008)

(Severity Level 2 at 3V (r.m.s.) and frequency is from 0.15MHz to 80MHz)

13.4. Severity Levels and Performance Criterion

Severity Level	Voltage Level (e.m.f.) V	Performance criterion
1	1	A
2	3	
3	10	
X	Special	

13.5. EUT Configuration

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

- 1) Set up the EUT, CDN and test generators as shown on Section 13.2.
- 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 10 and 30 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.

13.8. 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.

Applicant	: TPV Electronics (FuJian) Co., Ltd.	Test Date	: Jun.10.2012		
EUT	: LCD Monitor	Temperature	: 25±0.5℃		
M/N	: L460UB	Humidity	: 36±1%		
Power Supply	: AC 230V/50Hz	Test Mode	: Running “H” Pattern And 1KHz Playing		
Test Engineer	: Mark	Pressure	: 100.2±0.5KPa		
Required Performance	: A	Actual Performance	: A		

Frequency Range (MHz)	Injected Position	Voltage Level (e.m.f.)	Required	Observation	Result (Pass / Fail)
0.15 ~ 20	AC Mains	3V	A	A	PASS
20 ~ 80	AC Mains	3V	A	A	PASS

Modulation Signal: 1kHz 80% AM

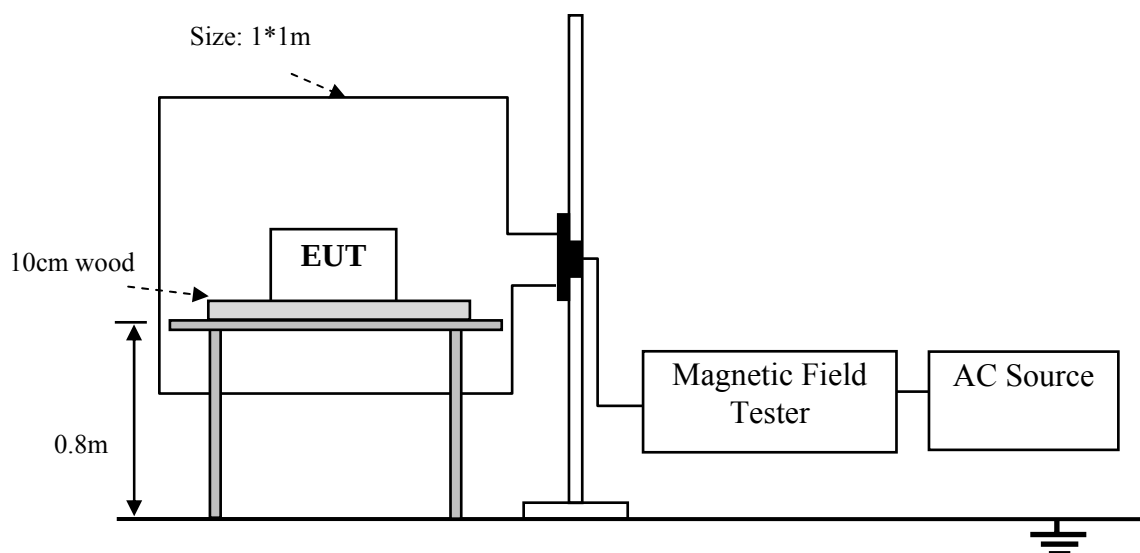
Remark:

14. MAGNETIC FIELD IMMUNITY TEST

14.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Magnetic Field Tester	HEAFELY	MATM00.1	083858-10	May.08, 12	1 Year

14.2. Block Diagram of Test Setup



14.3. Test Standard

EN 55024: 2010 (IEC 61000-4-8: 2009)
(Severity Level 1 at 1A/m)

14.4. Severity Levels and Performance Criterion

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

14.5. EUT Configuration on Test

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

The EUT was subjected to the test magnetic field by using the induction coil of standard dimensions (1m*1m) and shown in Section 14.2. The induction coil was then rotated by 90° in order to expose the EUT to the test field with different orientations.

14.8. 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.

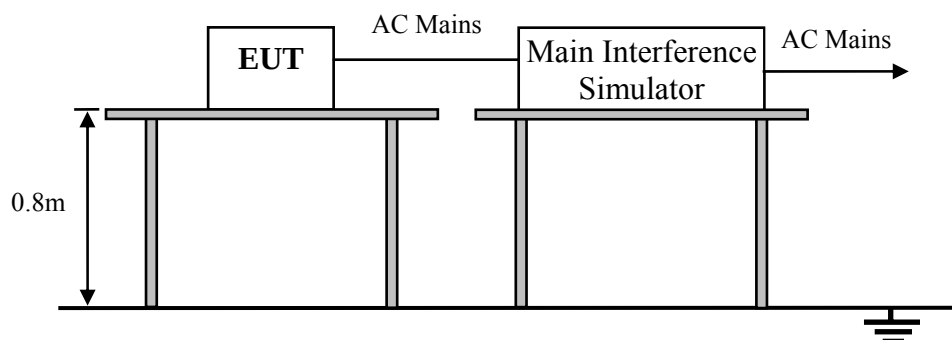
Applicant	:	TPV Electronics (FuJian) Co., Ltd.	Test Date	:	Jun.10.2012
EUT	:	LCD Monitor	Temperature	:	25±1℃
M/N	:	L460UB	Humidity	:	35±1%
Test Voltage	:	AC 230V/50Hz	Test Mode	:	Running “H” Pattern And 1KHz Playing
Test Engineer	:	Mark	Pressure	:	100.2±0.5KPa
Required Performance	:	A	Actual Performance	:	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: No function loss.					

15. VOLTAGE DIPS AND INTERRUPTIONS TEST

15.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Main Interference Simulator	HAEFELY	PLINE 1610	083690-05	May.08, 12	1 Year

15.2. Block Diagram of Test Setup



15.3. Test Standard

EN 55024: 2010 (IEC 61000-4-11: 2004)

15.4. Severity Levels and Performance Criterion

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

15.5. EUT Configuration

The configurations of EUT are listed in Section 3.5.

15.6. Operating Condition of EUT

Same as Conducted Emission test that is listed in Section 3.6. except the test set up replaced by Section 15.2.

15.7. Test Procedure

- 1) The EUT and test generator were setup as shown on Section 15.2.
- 2) The interruption is introduced at selected phase angles with specified duration.
- 3) Record any degradation of performance.

15.8. 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.

Applicant	: TPV Electronics (FuJian) Co., Ltd.	Test Date	: Jun.10.2012
EUT	: LCD Monitor	Temperature	: 25±1℃
M/N	: L460UB	Humidity	: 35±1%
Power Supply	: AC 120V/50Hz ; AC 230V/50Hz	Test Mode	: Running “H” Pattern And 1KHz Playing
Test Engineer	: Mark	Pressure	: 100.1±0.5KPa
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	B	PASS
0	100	250P	0° -360°	C	B	PASS

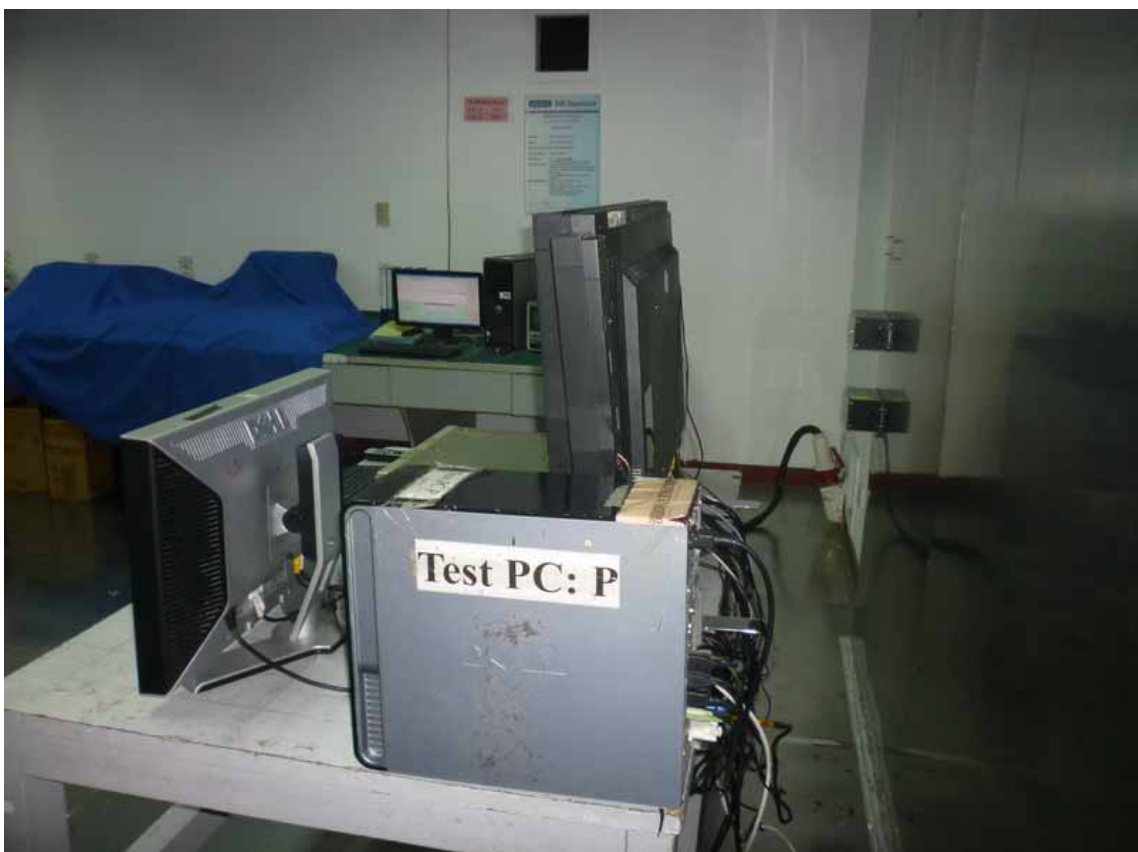
Note 1: U_T is the rated voltage for the equipment.

Note 2: The frequency of the test voltage shall be within ±2% of the rated frequency, the output voltage shall be within ±5% of the rated voltage.

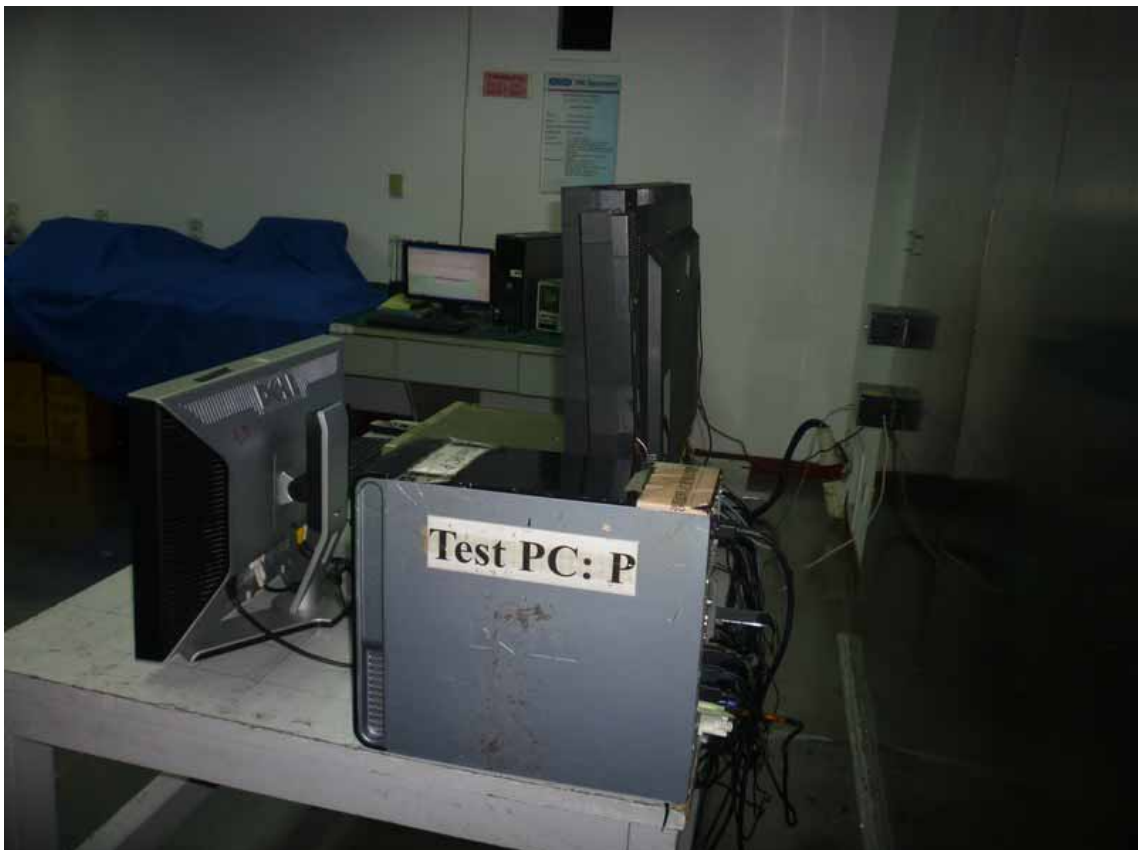
Remark: When Testing “B” Means the monitor will twinkle during test, recover to normal when stop.

16. PHOTOGRAPHS

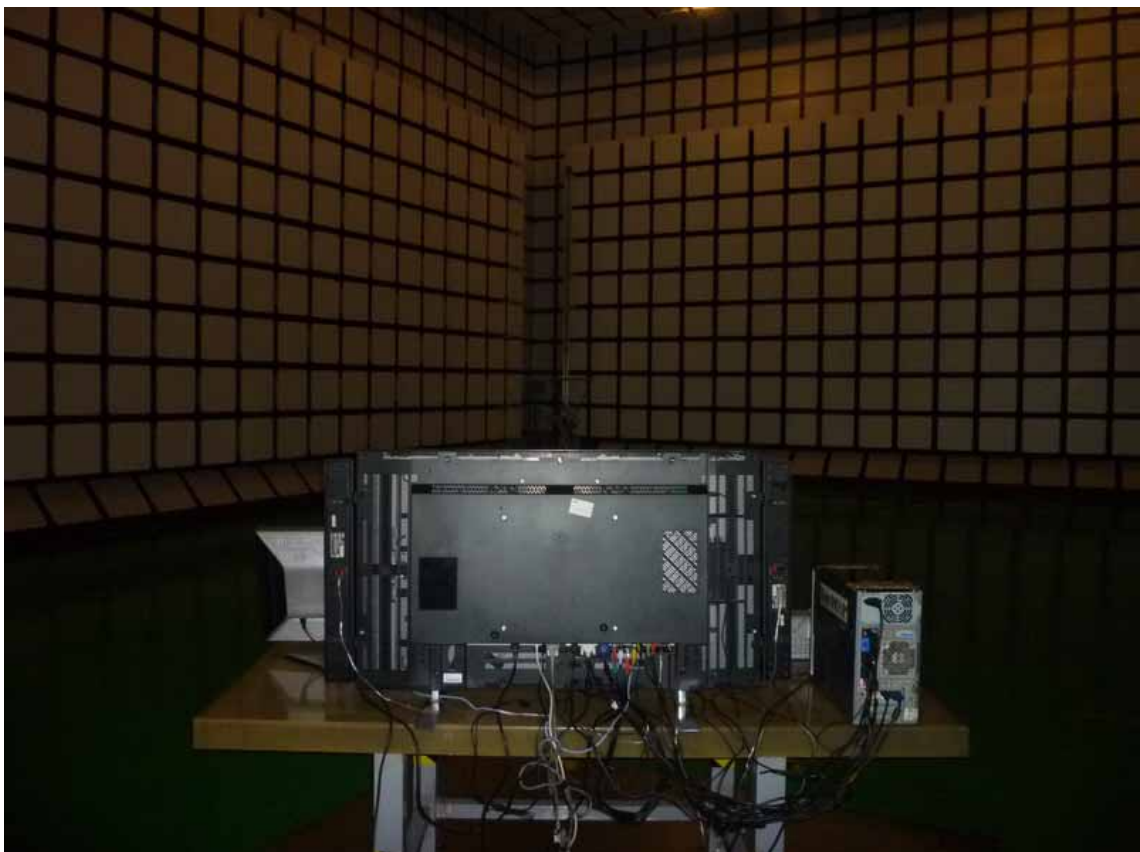
16.1. Photos of Power Line Conducted Emission Test



16.2. Photos of Conducted Disturbance at Telecommunication Ports Test



16.3.Photos of Radiated Emission Test (In Anechoic Chamber)



The Worst Resolution: Horizontal Panel VGA, 1920*1080@60Hz



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



16.4. Photo of Harmonic / Flicker Test



16.5.Photos of Electrostatic Discharge Immunity Test



16.6.Photo of RF Strength Susceptibility Test



16.7.Photo of Electrical Fast Transient/Burst Immunity Test



Signal Line



16.8.Photo of Surge Test



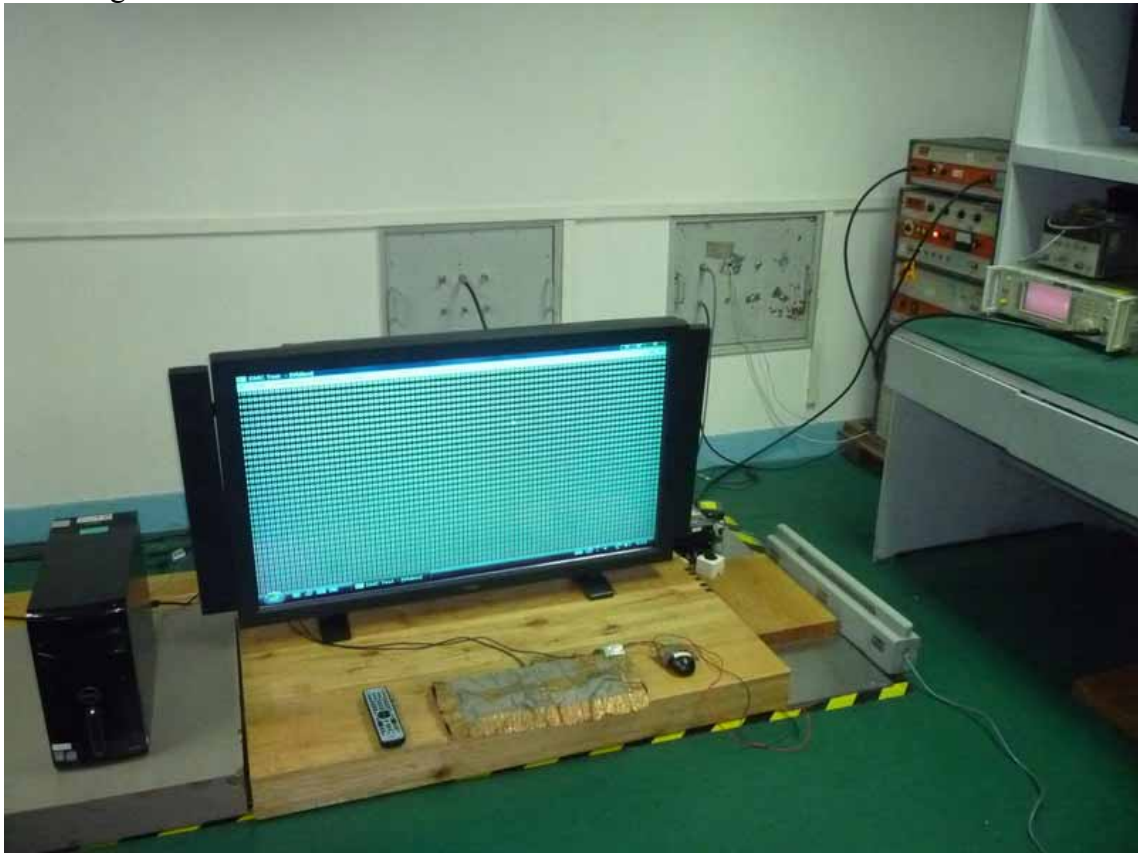
Signal Line



16.9. Photo of Injected Currents Susceptibility Test



Signal Line



16.10. Photo of Magnetic Field Test



16.11. Photo of Voltage Dips and interruptions test

