CE Test Report

Product Name ： 55” Dual-Sided LCD Signage Display

Model No. ： DF-55*, DS-55* (*=A-Z or 0-9)

Applicant ： Associated Industries China, Inc.

Address ： 5F-1, No.3-1, Park Street, Nangang District, Taipei, Taiwan

Date of Receipt ： 2014/02/07

Report No. ： 1430275R-ITCEP01V00

Issued Date ： 2015/06/17

Report Version ： V1.0

Testing Laboratory
3024

CE

Declaration of Conformity

The following products is herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the laws of the Member States relating to Electromagnetic Compatibility Directive (2004/108/EC). The listed standard as below were applied:

The following Equipment:

Product	:	55" Dual-Sided LCD Signage Display
Trade Name	:	neovo
Model Number	:	DF-55*, DS-55* (*=A-Z or 0-9)

This product is herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the laws of the Member States relating to Electromagnetic Compatibility Directive (2004/108/EC). For the evaluation regarding EMC, the following standards were applied:

Emission:

EN 55022: 2010/AC: 2011 Class A	:	Emission standard
EN 61000-3-2: 2014 Class A	:	Limits for harmonic current emission
EN 61000-3-3: 2013	:	Limitation of voltage fluctuation and flicker in low-voltage supply system

Immunity:

EN 55024: 2010	:	Immunity standard

The following importer/manufacturer is responsible for this declaration:

Company Name : _____

Company Address : _____

Telephone : _____ Facsimile: _____

Person is responsible for marking this declaration:

_____ _____

Name (Full Name) Position/ Title

_____ _____

Date Legal Signature

QuieTek
a DEKRA company

Report No: 1560394R-ITCEP01V00

CE

Statement of Conformity

The certifies that the following designated product

Product	:	55" Dual-Sided LCD Signage Display
Trade Name	:	neovo
Model Number	:	DF-55*, DS-55* (*=A-Z or 0-9)
Company Name	:	Associated Industries China, Inc.

This product is herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the laws of the Member States relating to Electromagnetic Compatibility Directive (2004/108/EC).For the evaluation regarding EMC, the following standards were applied:

Emission:

EN 55022: 2010/AC: 2011 Class A	: Emission standard
EN 61000-3-2: 2014 Class A	: Limits for harmonic current emission
EN 61000-3-3: 2013	: Limitation of voltage fluctuation and flicker in low-voltage supply system

Immunity:

EN 55024: 2010	: Immunity standard

TEST LABORATORY

Arthur Liu / Deputy Manager

The verification 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.

QuieTek Corporation / No.75-1, Wang-Yeh Valley, Yung-Hsing, Chiung-Lin, Hsin-Chu County, Taiwan, R.O.C.
Tel: 886-3-5928858, Fax: 886-3-5928859, E-mail: service@quietek.com

Test Report Certification

Issued Date : 2015/06/17
Report No. : 1560394R-ITCEP01V00

Product Name	:	55” Dual-Sided LCD Signage Display
Applicant	:	Associated Industries China, Inc.
Address	:	5F-1, No.3-1, Park Street, Nangang District, Taipei, Taiwan
Manufacturer	:	1. AU Optronics (Longke) Corporation 2. TOPFLY CORPORATION
Model No.	:	DF-55*, DS-55* (*=A-Z or 0-9)
EUT Voltage	:	AC 100-240V, 50/60Hz
Trade Name	:	neovo
Applicable Standard	:	EN 55022: 2010/AC: 2011 Class A EN 61000-3-2: 2014 EN 61000-3-3: 2013 EN 55024: 2010
Test Result	:	Complied
Performed Location	:	Hsinchu EMC Laboratory N0. 75-2, 3rd Lin, Wangye Keng, Yonghxing Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan TEL:+886-3-592-8858 / FAX:+886-3-592-8859

Documented By : Carol Tsai

(Carol Tsai / Engineering Adm. Specialist)

Reviewed By : Eden Chen

(Eden Chen / Engineer)

Approved By : Arthur Liu

(Arthur Liu / Deputy Manager)

Laboratory Information

We , **QuieTek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted (audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scopes:

Taiwan R.O.C.	**:**	**BSMI, NCC, TAF**
Germany	**:**	**TUV Rheinland**
Norway	**:**	**DNV**
USA	**:**	**FCC**
Japan	**:**	**VCCI**

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site : http://www.quietek.com/english/about/certificates.aspx?bval=5
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : http://www.quietek.com/index_en.aspx
If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

HsinChu Testing Laboratory :
No.75-2, 3rd Lin, Wangye Keng, Yonghxing Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan
TEL:+886-3-592-8858 / FAX:+886-3-592-8859 E-Mail : service@quietek.com

LinKou Testing Laboratory :
No. 5, Ruei-Shu Valley, Ruei-Ping Tsuen, Lin-Kou Shiang, Taipei, Taiwan
TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789 E-Mail : service@quietek.com

TABLE OF CONTENTS

1. General Information

1.1. EUT Description

Product Name	55” Dual-Sided LCD Signage Display
Trade Name	neovo
Model No.	DF-55*, DS-55* (*=A-Z or 0-9)

Component	
PSU (Mode 1)	AUO, P550HVF04.0 I/P: AC 110V~240V 50~60Hz 2.5A
Power Line (Mode 1)	Non-Shielded, 3.8m

Note:

1. This EUT is a 55” Dual-Sided LCD Signage Display.
2. The model number DF-55*, DS-55*; * = A-Z or 0-9.

Model No.	Description
DF-55	Dual-side with Full Size Stand
DS-55	Dual-side without Stand

1.2. Mode of Operation

QuieTek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Pre-Test Mode	
Mode 1: HDMI (DS-55) Mode 2: HDMI (DF-55)	
Final Test Mode	
Emission	Mode 1: HDMI (DS-55) Mode 2: HDMI (DF-55)
Immunity	Mode 1: HDMI (DS-55) Mode 2: HDMI (DF-55)

1.3. Tested System Details

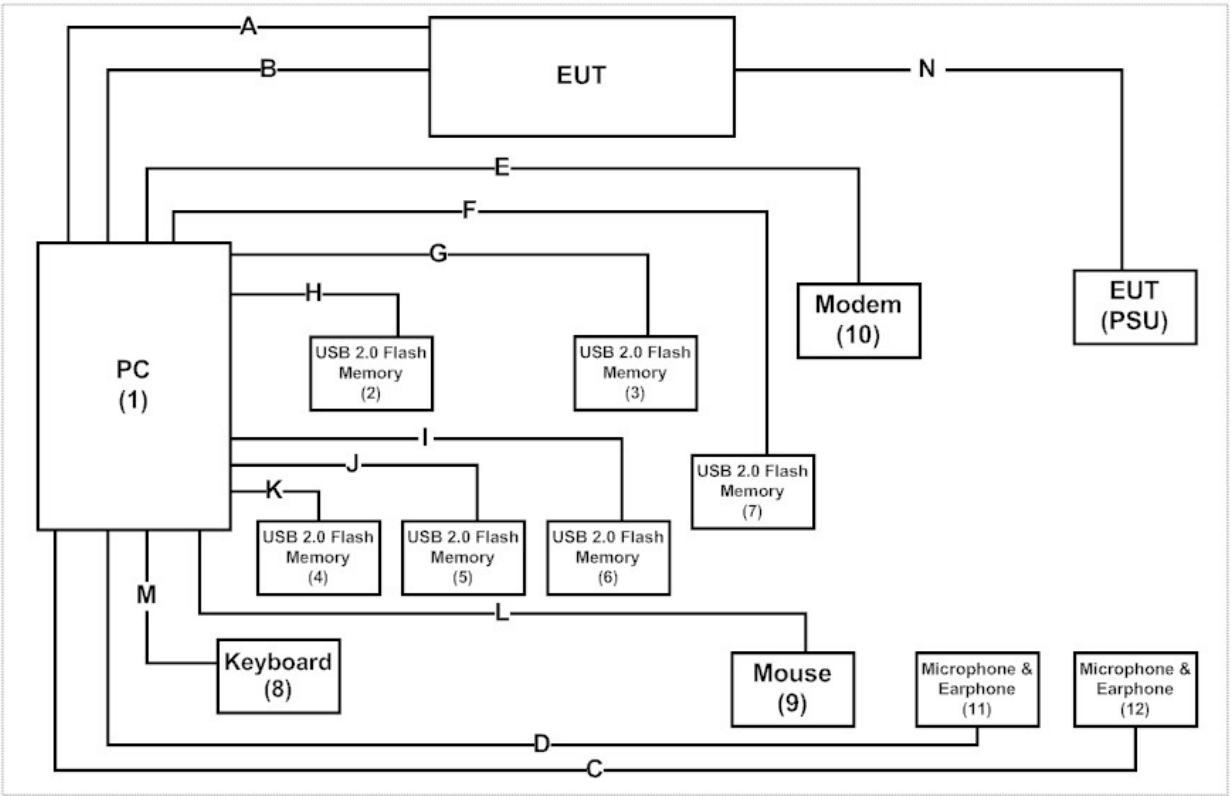
The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Test Mode		Mode 1: HDMI (DS-55)			
Product		Manufacturer	Model No.	Serial No.	Power Cord
1	PC	DELL	DCSM	00144-562-218-245	Non-Shielded, 1.8m
2	USB 2.0 Flash Memory	Apacer	AH223	N/A	--
3	USB 2.0 Flash Memory	Apacer	AH223	N/A	--
4	USB 2.0 Flash Memory	Apacer	AH223	N/A	--
5	USB 2.0 Flash Memory	Apacer	AH223	N/A	--
6	USB 2.0 Flash Memory	Apacer	AH223	N/A	--
7	USB 2.0 Flash Memory	Apacer	AH223	N/A	--
8	Keyboard	Logitech	Y-SM46	SY525U17991	--
9	Mouse	Logitech	M-SBF83	HCA52200076	--
10	Modem	ACEEX	DM-1414	0102027535	Non-Shielded, 1.6m
11	Microphone & Earphone	Fujiei	SBZ-38	N/A	--
12	Microphone & Earphone	Fujiei	SBZ-38	N/A	--

Test Mode		Mode 2: HDMI (DF-55)			
Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Microphone & Earphone	Fujiei	SBZ-38	N/A	--
2	Microphone & Earphone	Fujiei	SBZ-38	N/A	--
3	Modem	ACEEX	DM-1414	0102027535	Non-Shielded, 1.6m
4	PC	DELL	DCSM	00144-562-218-245	Non-Shielded, 1.8m
5	USB 2.0 Flash Memory	Apacer	AH223	N/A	--
6	USB 2.0 Flash Memory	Apacer	AH223	N/A	--
7	USB 2.0 Flash Memory	Apacer	AH223	N/A	--
8	USB 2.0 Flash Memory	Apacer	AH223	N/A	--
9	USB 2.0 Flash Memory	Apacer	AH223	N/A	--
10	USB 2.0 Flash Memory	Apacer	AH223	N/A	--
11	Keyboard	Logitech	Y-SM46	SY525U17991	--
12	Mouse	Logitech	M-SBF83	HCA52200076	--

1.4. Configuration of Tested System

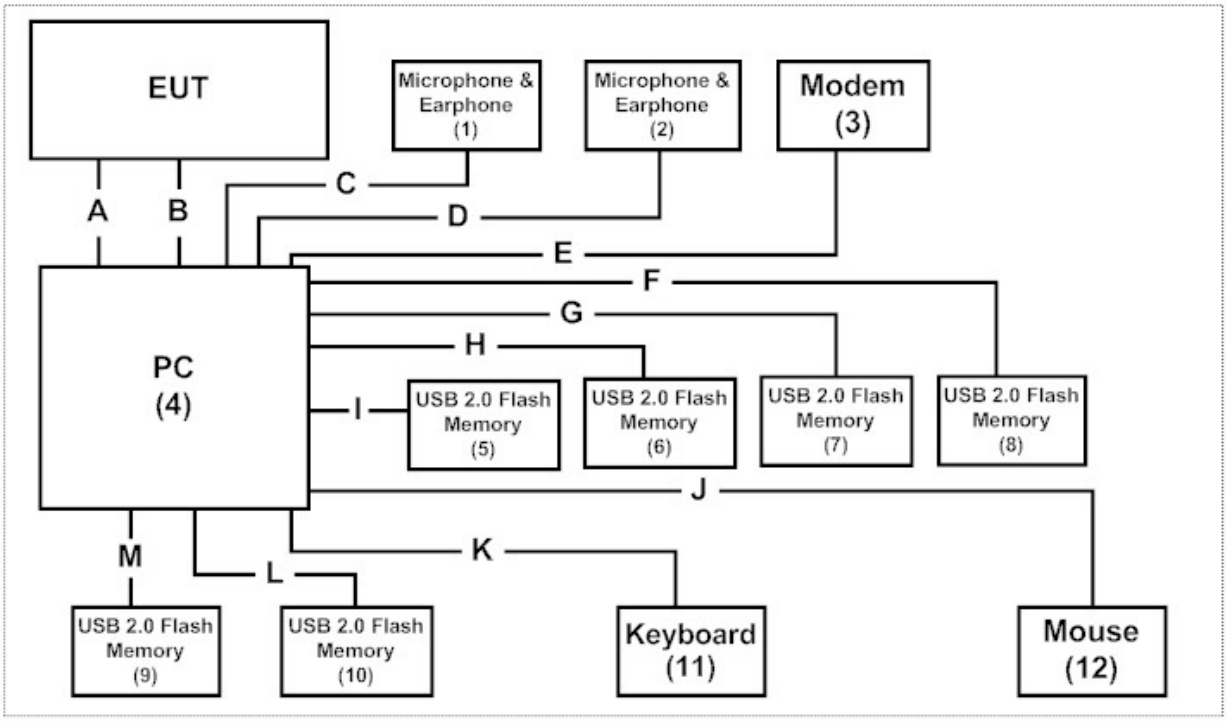
Test Mode	Mode 1: HDMI (DS-55)
Connection Diagram	



Signal Cable Type		Signal cable Description
A	HDMI Cable	Shielded, 1.9m
B	HDMI to DVI Cable	Shielded, 1.9m
C	Microphone & Earphone Cable	Non-Shielded, 1.9m
D	Microphone & Earphone Cable	Non-Shielded, 1.9m
E	Modem Cable	Shielded, 1.2m
F	USB 2.0 Flash Memory Cable	Shielded, 0.9m
G	USB 2.0 Flash Memory Cable	Shielded, 0.9m
H	USB 2.0 Flash Memory Cable	Shielded, 0.9m
I	USB 2.0 Flash Memory Cable	Shielded, 0.9m
J	USB 2.0 Flash Memory Cable	Shielded, 0.9m
K	USB 2.0 Flash Memory Cable	Shielded, 0.9m
L	Mouse Cable	Shielded, 1.8m
M	Keyboard Cable	Shielded, 1.4m
N	Power Cable	Shielded, 3.8m

Test Mode	Mode 2: HDMI (DF-55)

Connection Diagram



Signal Cable Type		Signal cable Description
A	HDMI Cable	Shielded, 1.9m
B	HDMI to DVI Cable	Shielded, 1.9m
C	Microphone & Earphone Cable	Non-Shielded, 1.9m
D	Microphone & Earphone Cable	Non-Shielded, 1.9m
E	Modem Cable	Shielded, 1.2m
F	USB 2.0 Flash Memory Cable	Shielded, 0.9m
G	USB 2.0 Flash Memory Cable	Shielded, 0.9m
H	USB 2.0 Flash Memory Cable	Shielded, 0.9m
I	USB 2.0 Flash Memory Cable	Shielded, 0.9m
J	Mouse Cable	Shielded, 1.8m
K	Keyboard Cable	Shielded, 1.4m
L	USB 2.0 Flash Memory Cable	Shielded, 0.9m
M	USB 2.0 Flash Memory Cable	Shielded, 0.9m

1.5. EUT Exercise Software

1	Test system is in accord with EUT user manual (refer to 1.4 configuration of tested system)
2	Turn on the power of all equipment.
3	Notebook reads data from disk.
4	Notebook sends “H” pattern to monitor.

2. Technical Test

2.1. Summary of Test Result

☒ No deviations from the test standards

☐ Deviations from the test standards as below description:

Emission			
Performed Item	Normative References	Test Performed	Deviation
Conducted Emission	EN 55022: 2010/AC: 2011	Yes	No
Impedance Stabilization Network	EN 55022: 2010/AC: 2011	No	No
Radiated Emission	EN 55022: 2010/AC: 2011	Yes	No
Power Harmonics	EN 61000-3-2: 2014	Yes	No
Voltage Fluctuation and Flicker	EN 61000-3-3: 2013	Yes	No

Immunity			
Performed Item	Normative References	Test Performed	Deviation
Electrostatic Discharge	IEC 61000-4-2 Ed. 2.0: 2008	Yes	No
Radiated susceptibility	IEC 61000-4-3 Ed. 3.2: 2010	Yes	No
Electrical fast transient/burst	IEC 61000-4-4 Ed. 3.0: 2012	Yes	No
Surge	IEC 61000-4-5 Ed. 3.0: 2014	Yes	No
Conducted susceptibility	IEC 61000-4-6 Ed. 4.0: 2013	Yes	No
Power frequency magnetic field	IEC 61000-4-8 Ed. 2.0: 2009	Yes	No
Voltage dips and interruption	IEC 61000-4-11 Ed. 2.0: 2004	Yes	No

2.2. List of Test Equipment

Conducted Emission / SR2

Instrument	Manufacturer	Model No.	Serial No.	Next Cal. Date
Artificial Mains Network	R&S	ENV4200	848411/010	2015/02/09
Coaxial Cable	Harbour	RG-400	SR2	2014/08/14
LISN	R&S	ENV216	100092	2014/08/08
Test Receiver	R&S	ESCS 30	825442/014	2014/07/30
Quietek EMI system	Quietek	Version 2.2	SR2	N/A

Radiated Emission / Site1 (Under 1GHz)(Mode 1)

Instrument	Manufacturer	Model No.	Serial No.	Next Cal. Date
Bilog Antenna	Schaffner	CBL6112B	2915	2014/08/14
Spectrum Analyzer	Advantest	R3162C	91700283	2014/10/28
Test Receiver	R&S	ESCS 30	100122	2015/02/20
Coaxial Switch	Anritsu	MP59B	6200410245	2014/08/14
Coaxial Cable	Suhner	RG-214U	Site1	2014/08/14
Quietek EMI system	Quietek	Version 2.2	Site1	N/A

Radiated Emission / Site2 (Under 1GHz)(Mode 2)

Instrument	Manufacturer	Model No.	Serial No.	Next Cal. Date
Bilog Antenna	Schaffner	CBL6112B	2891	2014/08/14
Spectrum Analyzer	Advantest	R3162	121200166	2015/02/10
Test Receiver	R&S	ESCS 30	836858/023	2015/02/25
Coaxial Switch	Anritsu	MP59B	6200410246	2014/03/31
Coaxial Cable	Suhner	RG-214U	Site2-1	2014/03/31
Quietek EMI system	Quietek	Version 2.2	Site2	N/A

Radiated Emission / CB1 (Above 1GHz)

Instrument	Manufacturer	Model No.	Serial No.	Next Cal. Date
k Type Cable	Huber Suhner	Sucoflex 102	25623/2	2015/02/10
Double Ridged Guide Horn Antenna	Schwarzback	BBHA 9120	D743	2015/02/12
Pre-Amplifier	MITEQ	JS41-00104000-58-5P	1438359	2014/04/21
PSA Series Spectrum analyzer	Agilent	E4440A	MY46187335	2015/01/12
Quietek EMI system	Quietek	Version 2.2	CB1	N/A

Power Harmonics / SR1

Instrument	Manufacturer	Model No.	Serial No.	Next Cal. Date
EMC Emission Tester	EMC PARTNER	Harmonics-1000-1P	109	2015/03/17

Voltage Fluctuation and Flicker / SR1

Instrument	Manufacturer	Model No.	Serial No.	Next Cal. Date
EMC Emission Tester	EMC PARTNER	Harmonics-1000-1P	109	2015/03/17

Electrostatic Discharge / SR1

Instrument	Manufacturer	Model No.	Serial No.	Next Cal. Date
Electrostatic Simulator Discharge	NoiseKen	ESS-2002	ESS04Z3759	2014/06/25
Horizontal Coupling Plane (HCP)	QuieTek	HCP AL50	N/A	N/A
Vertical Coupling Plane (VCP)	QuieTek	VCP AL50	N/A	N/A

Radiated susceptibility / CB1

Instrument	Manufacturer	Model No.	Serial No.	Next Cal. Date
Field strength Meter	WG	EMR-20C	080938-05	2014/08/19
Power Sensor	Boonton	51011-EMC	31507	2014/07/28
Power Sensor	Boonton	51011-EMC	34359	2014/07/28
RF Power Meter	Boonton	4232A	42201	2014/07/28
Signal Generator	R&S	SML03	103300	2014/04/24
Bilog Antenna	FRANKONIA	BTA-M	06001M	N/A
Horn Antenna	Schwarzbeck	BBHA 9120E	286	N/A
Directional Coupler	WERLATONE	C6021	28565	N/A
Directional Coupler	WERLATONE	C6187	28590	N/A
Power Amplifier	FRANKONIA	FLH200B	1022	N/A
Power Amplifier	FRANKONIA	FLG-50C	1009	N/A

Electrical fast transient / Burst / SR1

Instrument	Manufacturer	Model No.	Serial No.	Next Cal. Date
Clamper	HAEFELY	093 506.1	083 593-23	2014/07/25
EMC Immunity Tester	EMC-PARTNER	Transient-2000	984	2015/01/23

Surge / SR1

Instrument	Manufacturer	Model No.	Serial No.	Next Cal. Date
Coupling Network	EM TEST	CNV 504	0503-05	2014/12/12
Ultra Compact Generator	EM TEST	UCS 500-M4	1198-34	2014/07/25

Conducted susceptibility / SR4 (Mode 1)

Instrument	Manufacturer	Model No.	Serial No.	Next Cal. Date
Attenuator	Schaffner	INA2070-1	2112	N/A
CDN	Schaffner	CDN M016	16337	2015/02/21
CDN	Schaffner	CDN T400	16905	2015/02/23
CDN	COM-POWER	CDN T8	711899	2015/02/20
Immunity Injection Clamp	Schaffner	KEMZ801	15928	2015/02/24
RF-Synthesizer/Amplifier	Schaffner	NSG 2070-1	1112	2015/02/20

Conducted susceptibility / SR1 (Mode 2)

Instrument	Manufacturer	Model No.	Serial No.	Next Cal. Date
Attenuator	Schaffner	INA2070-1	2112	N/A
CDN	Schaffner	CDN M016	16337	2015/02/21
CDN	Schaffner	CDN T400	16905	2015/02/23
CDN	COM-POWER	CDN T8	711899	2015/02/20
Immunity Injection Clamp	Schaffner	KEMZ801	15928	2015/02/24
RF-Synthesizer/Amplifier	Schaffner	NSG 2070-1	1112	2015/02/20

Power frequency magnetic field / SR1

Instrument	Manufacturer	Model No.	Serial No.	Next Cal. Date
Magnetic Field Testing	Haefely	MAG100	080 938-05	2014/10/23
Triaxial ELF Magnetic Field Meter	F.B.BELL	4090	9852	2014/09/11

Voltage dips and interruption / SR1

Instrument	Manufacturer	Model No.	Serial No.	Next Cal. Date
Ultra Compact Generator	EM TEST	UCS 500-M4	1198-34	2014/07/25
EMC Immunity Tester	EMC-PARTNER	Transient-2000	984	2015/01/23

2.3. Measurement Uncertainty

Conducted Emission

The measurement uncertainty is evaluated as ± 2.26 dB.

Radiated Emission (Under 1GHz)

The measurement uncertainty is evaluated as ± 3.43 dB.

Radiated Emission (Above 1GHz)

The measurement uncertainty is evaluated as ± 3.65 dB.

Harmonic Current Emission

The measurement uncertainty is evaluated as 0.1%.

Voltage Fluctuation and Flicker

The measurement uncertainty is evaluated as ±4%.

Electrostatic Discharge

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025: 1999[2], the requirements for measurement uncertainty in ESD testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant ESD standards. The immunity test signal from the ESD system meet the required specifications in IEC 61000-4-2 through the calibration report with the calibrated uncertainty for the waveform of voltage and timing as being 1.63 %*10^{-10} and 2.76%.

Radiated susceptibility

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025: 1999[2], the requirements for measurement uncertainty in RS testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant RS standards. The immunity test signal from the RS system meet the required specifications in IEC 61000-4-3 through the calibration for the uniform field strength and monitoring for the test level with the uncertainty evaluation report for the electrical filed strength as being 2.72 dB.

Electrical fast transient/burst

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025: 1999[2], the requirements for measurement uncertainty in EFT/Burst testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant EFT/Burst standards. The immunity test signal from the EFT/Burst system meet the required specifications in IEC 61000-4-4 through the calibration report with the calibrated uncertainty for the waveform of voltage, frequency and timing as being 1.63 %, 2.8 x 10^{-10} and 2.76%.

Surge

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025: 1999[2], the requirements for measurement uncertainty in Surge testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant Surge standards. The immunity test signal from the Surge system meet the required specifications in IEC 61000-4-5 through the calibration report with the calibrated uncertainty for the waveform of voltage and timing as being 1.63 % and 2.76%.

Conducted susceptibility

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025: 1999[2], the requirements for measurement uncertainty in CS testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant CS standards. The immunity test signal from the CS system meet the required specifications in IEC 61000-4-6 through the calibration for unmodulated signal and monitoring for the test level with the uncertainty evaluation report for the injected modulated signal level through CDN and EM Clamp/Direct Injection as being 3.72 dB and 2.78 dB.

Power frequency magnetic field

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025: 1999[2], the requirements for measurement uncertainty in PFM testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant PFM standards. The immunity test signal from the PFM system meet the required specifications in IEC 61000-4-8 through the calibration report with the calibrated uncertainty for the Gauss Meter to verify the output level of magnetic field strength as being 2 %.

Voltage dips and interruption

As what is concluded in the document from Note2 of clause 5.4.6.2 of ISO/IEC 17025: 1999[2], the requirements for measurement uncertainty in DIP testing are deemed to have been satisfied, and the testing is reported in accordance with the relevant DIP standards. The immunity test signal from the DIP system meet the required specifications in IEC 61000-4-11 through the calibration report with the calibrated uncertainty for the waveform of voltage and timing as being 1.63 % and 2.76%.

2.4. Test Environment

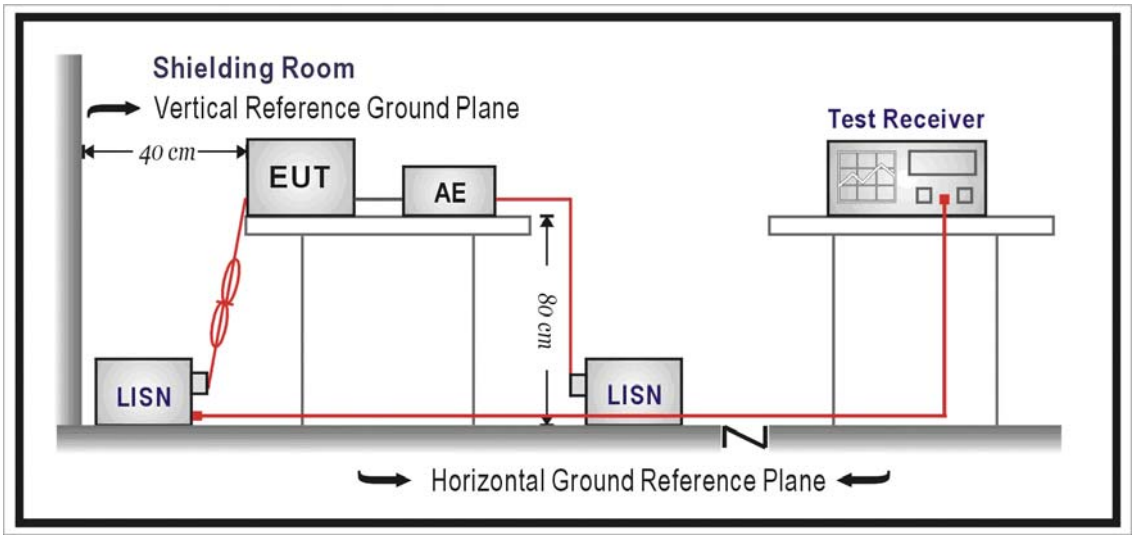
Performed Item	Items	Required	Actual
Conducted Emission	Temperature (°C)	15-35	25
	Humidity (%RH)	25-75	50
	Barometric pressure (mbar)	860-1060	950-1000
Radiated Emission	Temperature (°C)	15-35	25
	Humidity (%RH)	25-75	65
	Barometric pressure (mbar)	860-1060	950-1000
Power Harmonics	Temperature (°C)	15-35	25
	Humidity (%RH)	25-75	65
	Barometric pressure (mbar)	860-1060	950-1000
Voltage Fluctuation and Flicker	Temperature (°C)	15-35	25
	Humidity (%RH)	25-75	65
	Barometric pressure (mbar)	860-1060	950-1000
Electrostatic Discharge	Temperature (°C)	15-35	23
	Humidity (%RH)	30-60	45
	Barometric pressure (mbar)	860-1060	950-1000
Radiated susceptibility	Temperature (°C)	15-35	23
	Humidity (%RH)	25-75	50
	Barometric pressure (mbar)	860-1060	950-1000
Electrical fast transient/burst	Temperature (°C)	15-35	23
	Humidity (%RH)	25-75	50
	Barometric pressure (mbar)	860-1060	950-1000
Surge	Temperature (°C)	15-35	23
	Humidity (%RH)	10-75	50
	Barometric pressure (mbar)	860-1060	950-1000
Conducted susceptibility	Temperature (°C)	15-35	23
	Humidity (%RH)	25-75	50
	Barometric pressure (mbar)	860-1060	950-1000
Power frequency magnetic field	Temperature (°C)	15-35	23
	Humidity (%RH)	25-75	50
	Barometric pressure (mbar)	860-1060	950-1000
Voltage dips and interruption	Temperature (°C)	15-35	23
	Humidity (%RH)	25-75	50
	Barometric pressure (mbar)	860-1060	950-1000

3. Conducted Emission (Main Terminals)

3.1. Test Specification

According to EMC Standard : EN 55022

3.2. Test Setup



3.3. Limit

Limits		
Frequency (MHz)	QP (dBuV)	AV (dBuV)
0.15 - 0.50	79	66
0.50-5.0	73	60
5.0 - 30	73	60

Remarks: In the above table, the tighter limit applies at the band edges.

3.4. Test Procedure

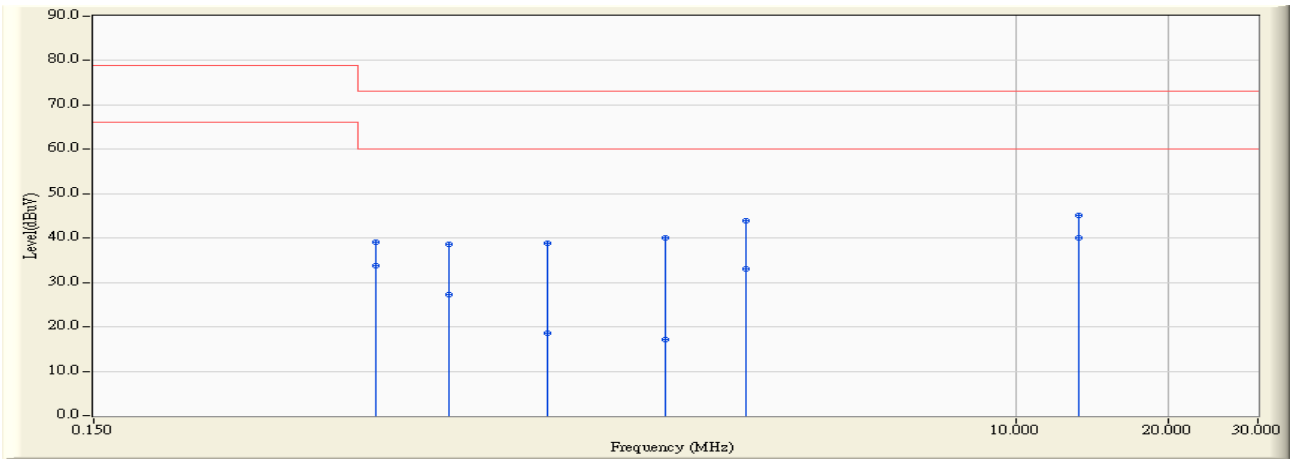
The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination.
(Please refers to the block diagram of the test setup and photographs.)
Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed on conducted measurement.
Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

3.5. Deviation from Test Standard

No deviation.

3.6. Test Result

Site : SR2	**Time : 2014/03/19 - 11:59**
Limit : CISPR_A_00M_QP	**Margin : 13**
Probe : SR2_LISN(16A)-4_0809 - Line1	**Power : AC 230V/50Hz**
EUT : 55” Dual-Sided LCD Signage Display	**Note : Mode 1: HDMI (DS-55)**

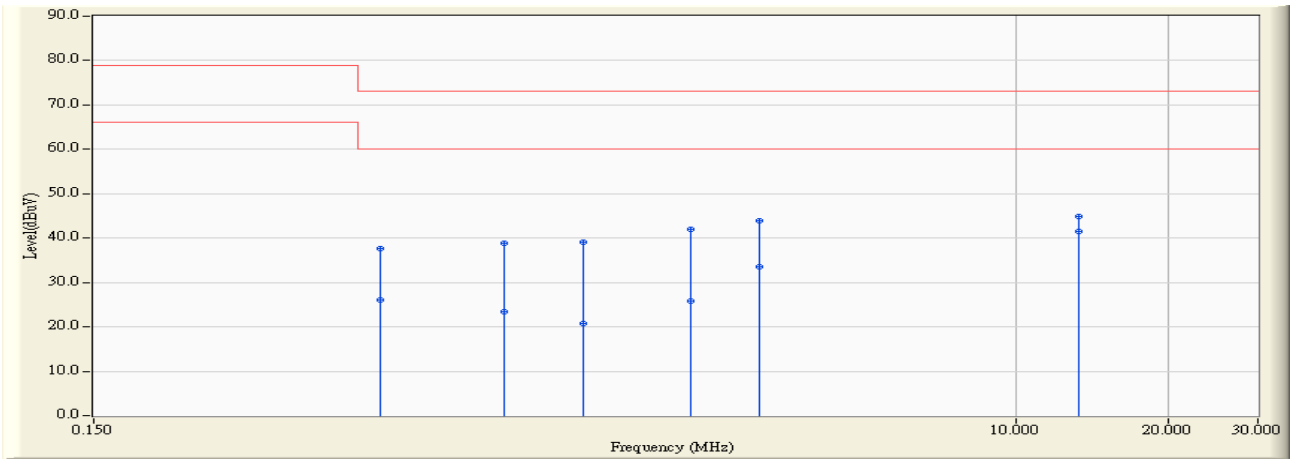


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.541	9.680	29.480	39.160	-33.840	73.000	QUASIPEAK
2		0.541	9.680	24.130	33.810	-26.190	60.000	AVERAGE
3		0.755	9.727	28.850	38.577	-34.423	73.000	QUASIPEAK
4		0.755	9.727	17.460	27.187	-32.813	60.000	AVERAGE
5		1.181	9.782	29.130	38.912	-34.088	73.000	QUASIPEAK
6		1.181	9.782	8.820	18.602	-41.398	60.000	AVERAGE
7		2.021	9.791	30.280	40.071	-32.929	73.000	QUASIPEAK
8		2.021	9.791	7.400	17.191	-42.809	60.000	AVERAGE
9		2.927	9.830	34.170	44.000	-29.000	73.000	QUASIPEAK
10		2.927	9.830	23.330	33.160	-26.840	60.000	AVERAGE
11		13.298	10.149	35.040	45.189	-27.811	73.000	QUASIPEAK
12	*	13.298	10.149	29.820	39.969	-20.031	60.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : SR2	**Time : 2014/03/19 - 12:00**
Limit : CISPR_A_00M_QP	**Margin : 13**
Probe : SR2_LISN(16A)-4_0809 - Line2	**Power : AC 230V/50Hz**
EUT : 55” Dual-Sided LCD Signage Display	**Note : Mode 1: HDMI (DS-55)**

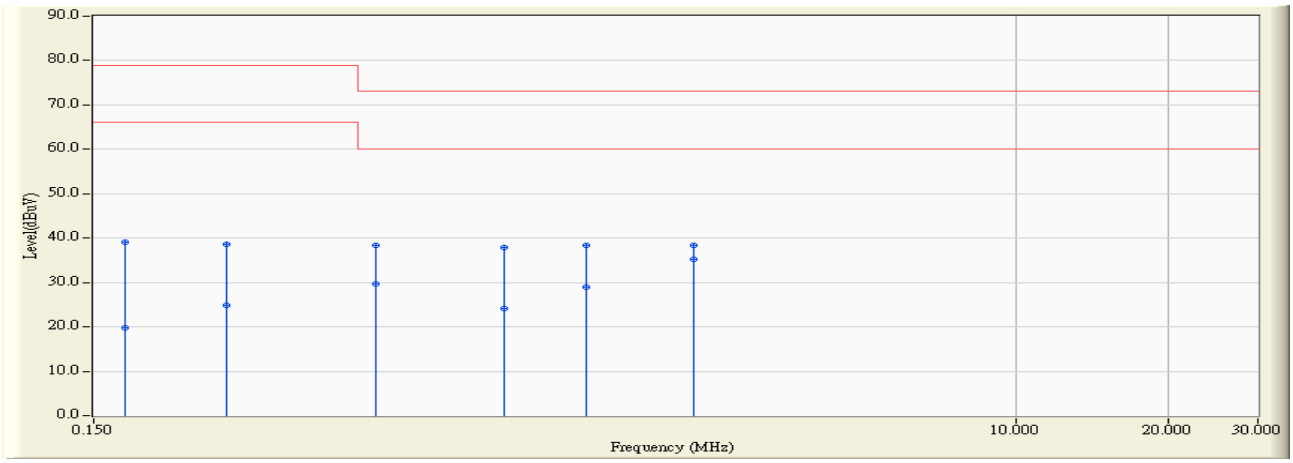


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.552	9.683	27.980	37.663	-35.337	73.000	QUASIPEAK
2		0.552	9.683	16.400	26.083	-33.917	60.000	AVERAGE
3		0.970	9.774	29.120	38.893	-34.107	73.000	QUASIPEAK
4		0.970	9.774	13.570	23.343	-36.657	60.000	AVERAGE
5		1.396	9.784	29.230	39.014	-33.986	73.000	QUASIPEAK
6		1.396	9.784	11.070	20.854	-39.146	60.000	AVERAGE
7		2.275	9.799	32.240	42.039	-30.961	73.000	QUASIPEAK
8		2.275	9.799	16.130	25.929	-34.071	60.000	AVERAGE
9		3.111	9.827	34.190	44.017	-28.983	73.000	QUASIPEAK
10		3.111	9.827	23.810	33.637	-26.363	60.000	AVERAGE
11		13.291	10.195	34.680	44.875	-28.125	73.000	QUASIPEAK
12	*	13.291	10.195	31.220	41.415	-18.585	60.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : SR2	**Time : 2014/03/19 - 10:10**
Limit : CISPR_A_00M_QP	**Margin : 13**
Probe : SR2_LISN(16A)-4_0809 - Line1	**Power : AC 230V/50Hz**
EUT : 55” Dual-Sided LCD Signage Display	**Note : Mode 2: HDMI (DF-55)**

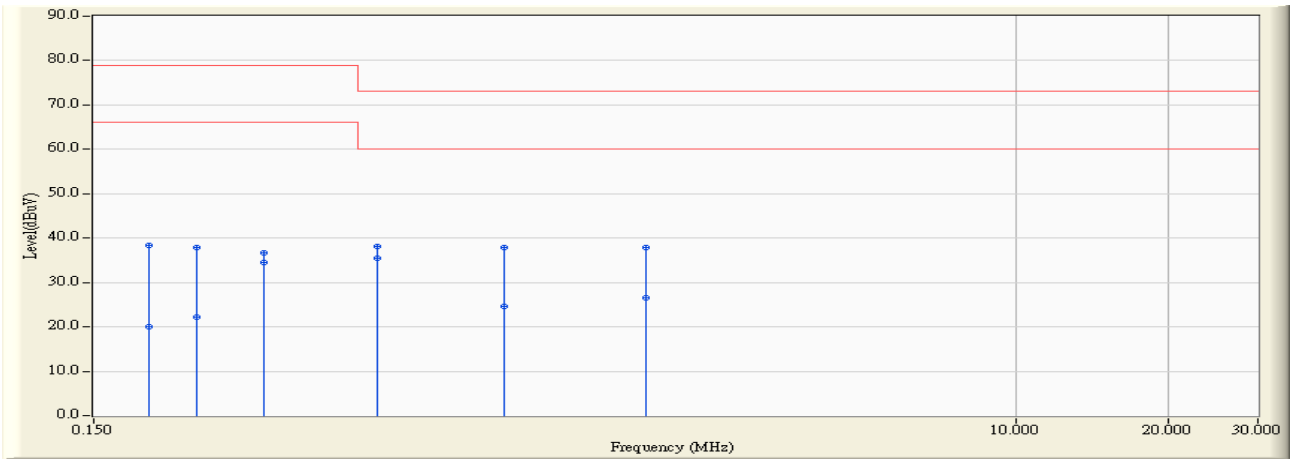


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.173	9.670	29.320	38.990	-40.010	79.000	QUASIPEAK
2		0.173	9.670	10.100	19.770	-46.230	66.000	AVERAGE
3		0.275	9.670	29.010	38.680	-40.320	79.000	QUASIPEAK
4		0.275	9.670	15.220	24.890	-41.110	66.000	AVERAGE
5		0.541	9.680	28.620	38.300	-34.700	73.000	QUASIPEAK
6		0.541	9.680	19.960	29.640	-30.360	60.000	AVERAGE
7		0.974	9.775	28.150	37.924	-35.076	73.000	QUASIPEAK
8		0.974	9.775	14.370	24.144	-35.856	60.000	AVERAGE
9		1.416	9.784	28.500	38.284	-34.716	73.000	QUASIPEAK
10		1.416	9.784	19.050	28.834	-31.166	60.000	AVERAGE
11		2.298	9.803	28.630	38.433	-34.567	73.000	QUASIPEAK
12	*	2.298	9.803	25.320	35.123	-24.877	60.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : SR2	**Time : 2014/03/19 - 10:12**
Limit : CISPR_A_00M_QP	**Margin : 13**
Probe : SR2_LISN(16A)-4_0809 - Line2	**Power : AC 230V/50Hz**
EUT : 55” Dual-Sided LCD Signage Display	**Note : Mode 2: HDMI (DF-55)**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.193	9.668	28.600	38.268	-40.732	79.000	QUASIPEAK
2		0.193	9.668	10.300	19.968	-46.032	66.000	AVERAGE
3		0.240	9.670	28.140	37.810	-41.190	79.000	QUASIPEAK
4		0.240	9.670	12.470	22.140	-43.860	66.000	AVERAGE
5		0.326	9.670	26.910	36.580	-42.420	79.000	QUASIPEAK
6		0.326	9.670	24.910	34.580	-31.420	66.000	AVERAGE
7		0.545	9.681	28.380	38.061	-34.939	73.000	QUASIPEAK
8	*	0.545	9.681	25.820	35.501	-24.499	60.000	AVERAGE
9		0.974	9.775	28.150	37.924	-35.076	73.000	QUASIPEAK
10		0.974	9.775	14.900	24.674	-35.326	60.000	AVERAGE
11		1.853	9.789	28.140	37.929	-35.071	73.000	QUASIPEAK
12		1.853	9.789	16.740	26.529	-33.471	60.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

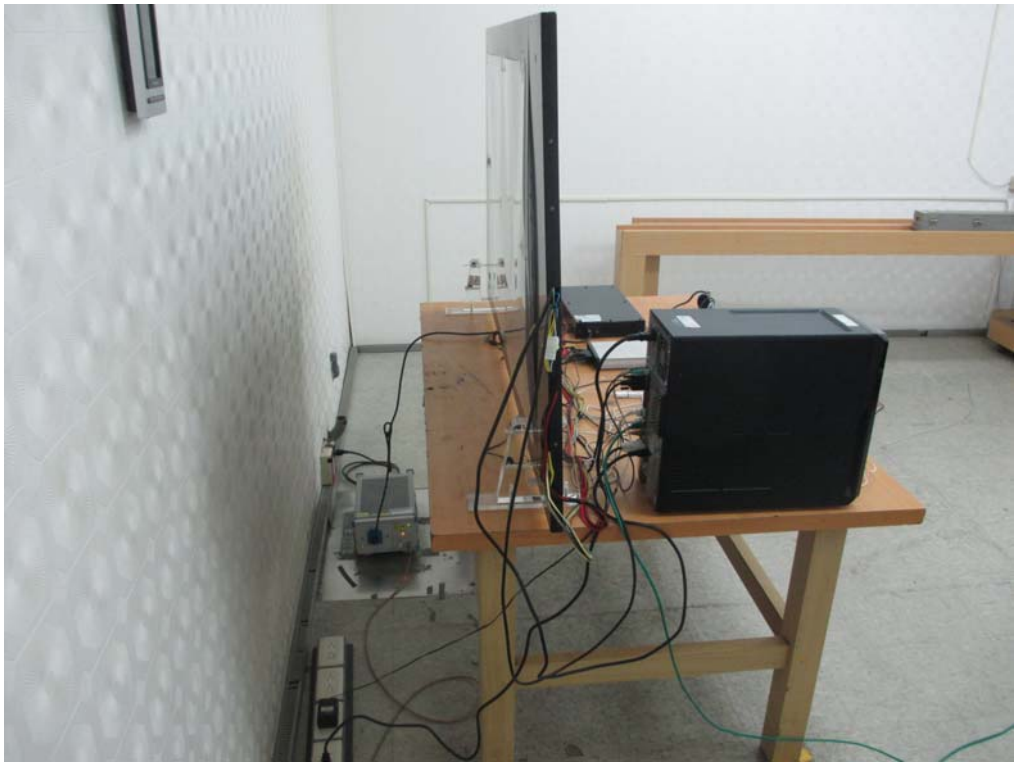
3.7. Test Photograph

Test Mode : Mode 1: HDMI (DS-55)

Description : Front View of Conducted Emission Test Setup

Test Mode : Mode 1: HDMI (DS-55)

Description : Back View of Conducted Emission Test Setup



Test Mode : Mode 2: HDMI (DF-55)

Description : Front View of Conducted Emission Test Setup

Test Mode : Mode 2: HDMI (DF-55)

Description : Back View of Conducted Emission Test Setup

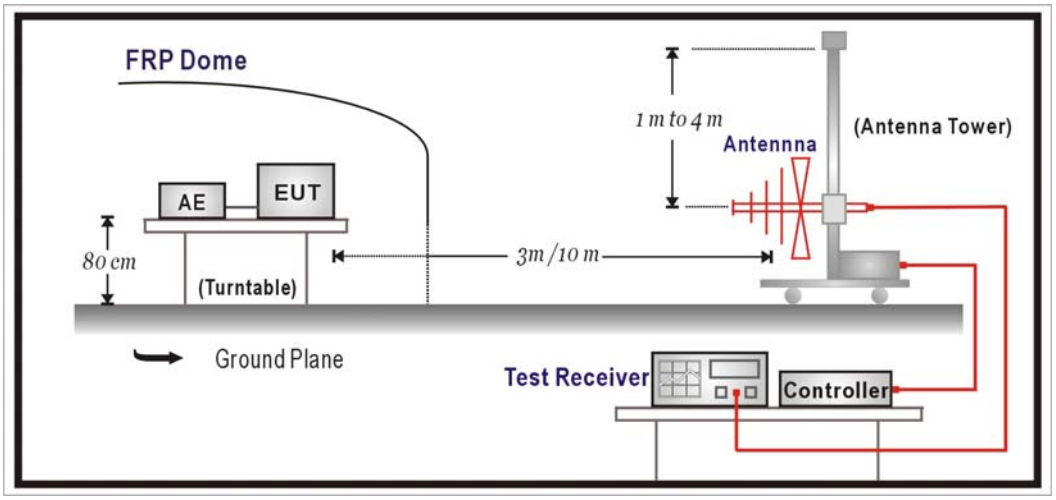
4. Radiated Emission

4.1. Test Specification

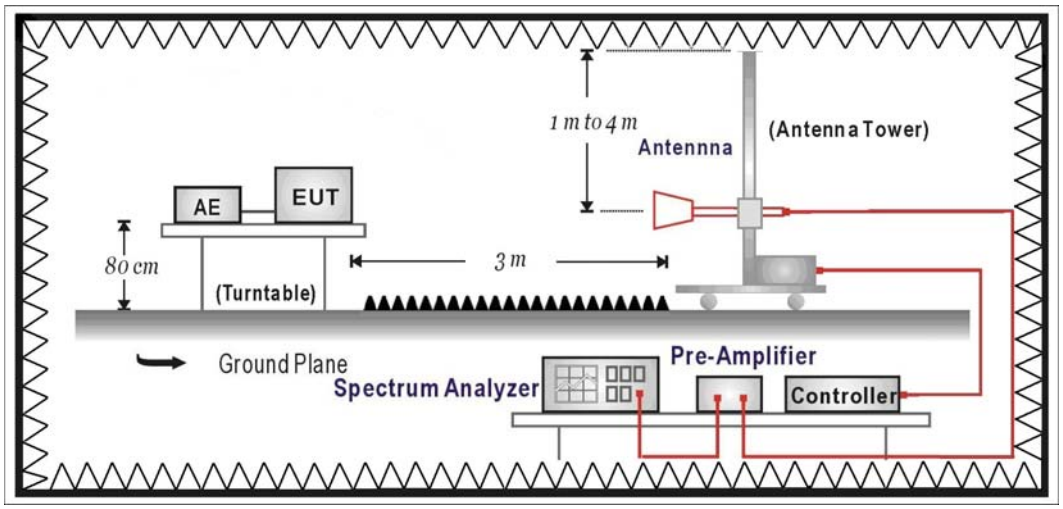
According to EMC Standard : EN 55022

4.2. Test Setup

Under 1GHz Test Setup



Above 1GHz Test Setup



4.3. Limit

Limits		
Frequency (MHz)	Distance (m)	dBuV/m
30 – 230	10	40
230 – 1000	10	47

Limits			
Frequency (MHz)	Distance (m)	Peak (dBuV/m)	Average (dBuV/m)
1000 – 3000	3	76	56
3000 – 6000	3	80	60

Remark:

1. The tighter limit shall apply at the edge between two frequency bands.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
3. RF Voltage (dBuV/m) = 20 log RF Voltage (uV/m)

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5^{th} harmonic of the highest frequency or 6 GHz, whichever is lower

4.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 10 meters. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.
All cable leaving the table-top EUT for a connection outsidethe test site (for example, mains cable, telephone lines, connections to auxiliary equipment located outside the test area) shall be fitted with ferrite clamps placed on the floor at the point where the cable reached the floor.

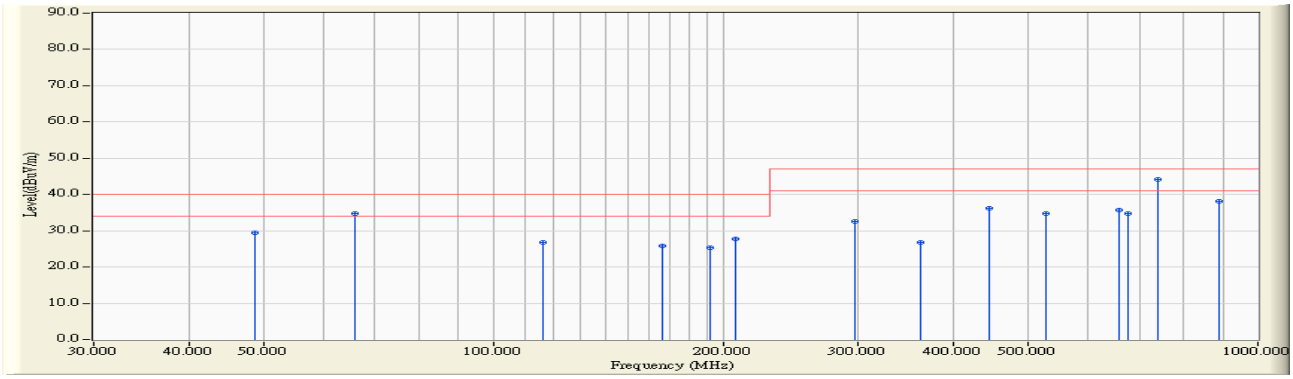
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated on radiated measurement.
Radiated emissions were invested over the frequency range from 30MHz to1GHz using a receiver bandwidth of 120kHz. Radiated was performed at an antenna to EUT distance of 10 meters.
Radiated emissions were invested over the frequency range from 1GHz to 6GHz using a receiver bandwidth of 1MHz. Radiated was performed at an antenna to EUT distance of 3 meters.

4.5. Deviation from Test Standard

No deviation.

4.6. Test Result

Site : Site1	**Time : 2014/02/07 - 14:41**
Limit : CISPR_A_10M_QP	**Margin : 6**
Probe : SITE1_10M-3_0815 - HORIZONTAL	**Power : AC 230V/50Hz**
EUT : 55” Dual-Sided LCD Signage Display	**Note : Mode 1: HDMI (DS-55)**

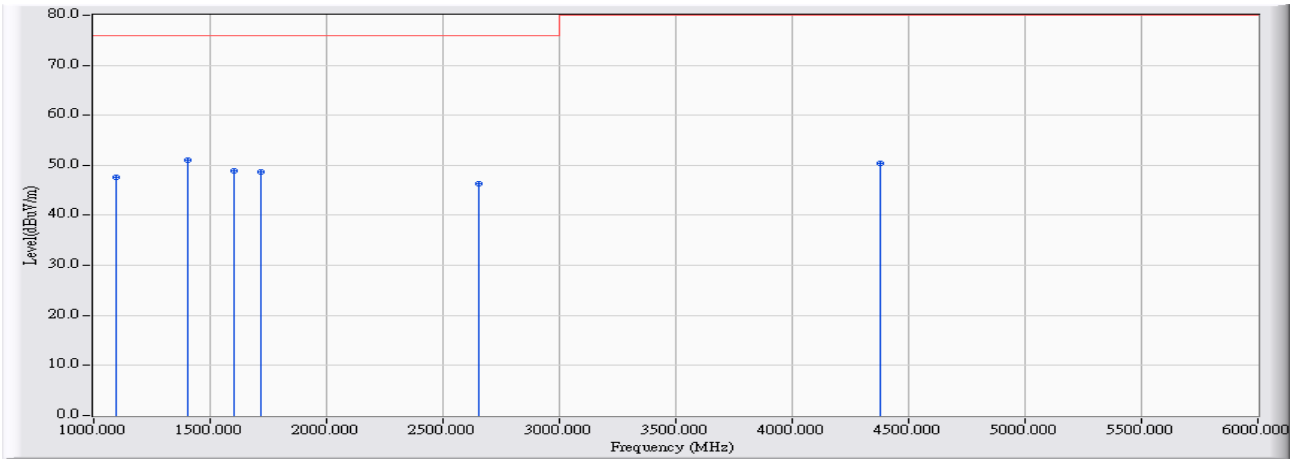


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		48.700	9.372	20.050	29.422	-10.578	40.000	QUASIPEAK
2		65.875	8.729	25.910	34.640	-5.360	40.000	QUASIPEAK
3		116.300	14.572	12.220	26.792	-13.208	40.000	QUASIPEAK
4		166.000	12.877	13.020	25.897	-14.103	40.000	QUASIPEAK
5		192.000	12.608	12.610	25.218	-14.782	40.000	QUASIPEAK
6		207.125	13.168	14.600	27.769	-12.231	40.000	QUASIPEAK
7		296.525	17.856	14.800	32.656	-14.344	47.000	QUASIPEAK
8		362.425	19.988	6.800	26.789	-20.211	47.000	QUASIPEAK
9		444.800	22.175	14.000	36.175	-10.825	47.000	QUASIPEAK
10		527.150	23.907	10.900	34.807	-12.193	47.000	QUASIPEAK
11		658.975	25.908	9.800	35.708	-11.292	47.000	QUASIPEAK
12		675.400	26.060	8.700	34.760	-12.240	47.000	QUASIPEAK
13	*	741.325	26.976	17.300	44.275	-2.725	47.000	QUASIPEAK
14		889.525	28.827	9.300	38.127	-8.873	47.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : CB1	**Time : 2014/03/22 - 10:00**
Limit : CISPR_22_A_3M_PK	**Margin : 0**
Probe : CB1_CISPR_22_B(above1G)-1_0901 - HORIZONTAL	**Power : AC 230V/50Hz**
EUT : 55” Dual-Sided LCD Signage Display	**Note : Mode 1: HDMI (DS-55)**

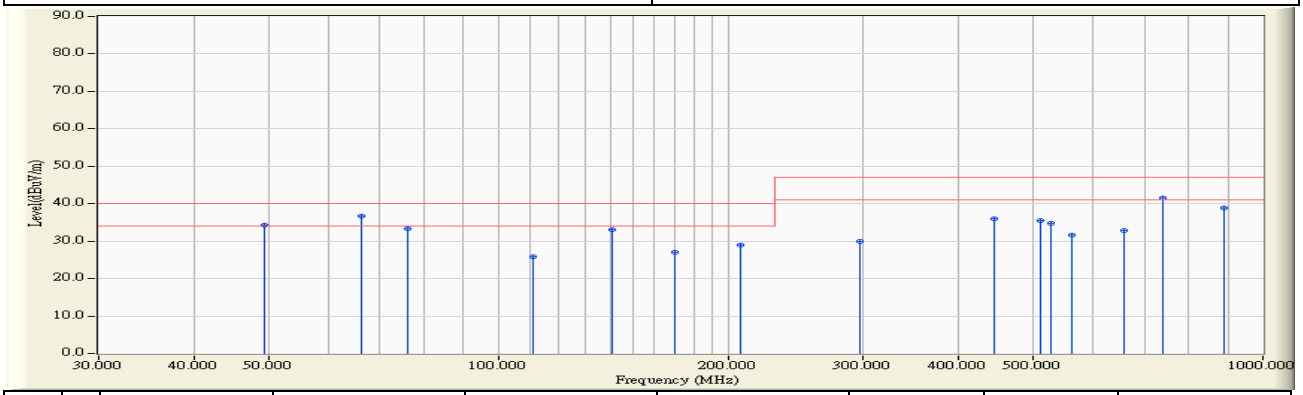


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		1095.000	-9.153	56.715	47.562	-28.438	76.000	PEAK
2	*	1405.000	-7.982	58.949	50.967	-25.033	76.000	PEAK
3		1600.000	-7.466	56.451	48.985	-27.015	76.000	PEAK
4		1720.000	-7.277	55.923	48.646	-27.354	76.000	PEAK
5		2655.000	-4.781	51.061	46.280	-29.720	76.000	PEAK
6		4375.000	-0.208	50.659	50.451	-29.549	80.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site1	**Time : 2014/02/07 - 14:57**
Limit : CISPR_A_10M_QP	**Margin : 6**
Probe : SITE1_10M-3_0815 - VERTICAL	**Power : AC 230V/50Hz**
EUT : 55” Dual-Sided LCD Signage Display	**Note : Mode 1: HDMI (DS-55)**

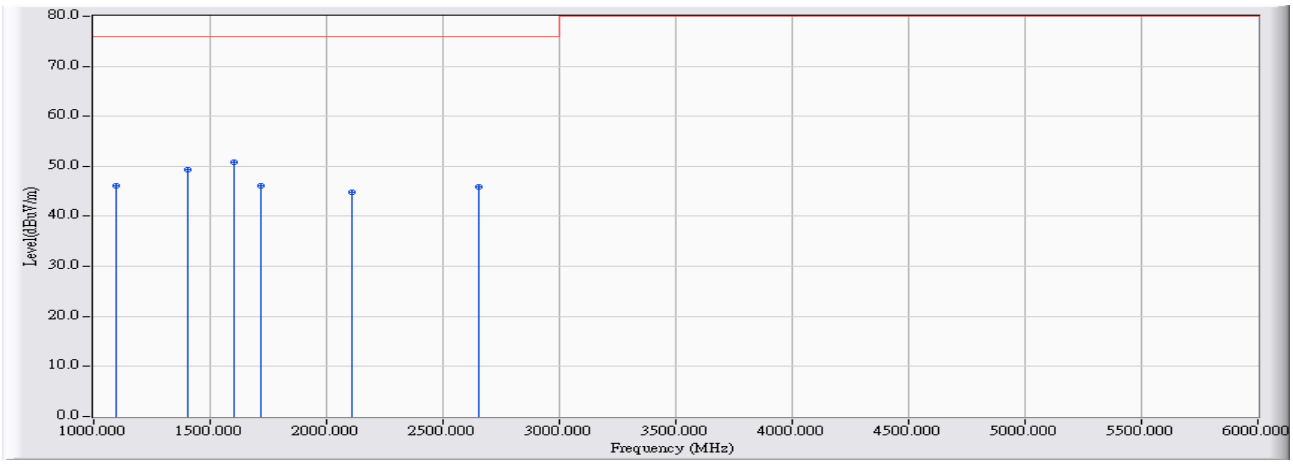


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		49.375	9.138	25.200	34.338	-5.662	40.000	QUASIPEAK
2	*	66.250	8.778	27.910	36.689	-3.311	40.000	QUASIPEAK
3		76.000	9.250	24.150	33.400	-6.600	40.000	QUASIPEAK
4		111.150	14.072	11.850	25.923	-14.077	40.000	QUASIPEAK
5		140.750	14.180	18.960	33.140	-6.860	40.000	QUASIPEAK
6		170.000	12.795	14.170	26.965	-13.035	40.000	QUASIPEAK
7		207.125	13.168	15.800	28.969	-11.031	40.000	QUASIPEAK
8		296.525	17.856	12.000	29.856	-17.144	47.000	QUASIPEAK
9		444.800	22.175	13.700	35.875	-11.125	47.000	QUASIPEAK
10		510.700	23.579	11.800	35.378	-11.622	47.000	QUASIPEAK
11		527.150	23.907	10.800	34.707	-12.293	47.000	QUASIPEAK
12		563.400	24.630	6.900	31.530	-15.470	47.000	QUASIPEAK
13		658.975	25.908	6.900	32.808	-14.192	47.000	QUASIPEAK
14		741.325	26.976	14.500	41.475	-5.525	47.000	QUASIPEAK
15		889.575	28.827	9.900	38.728	-8.272	47.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : CB1	**Time : 2014/03/22 - 10:38**
Limit : CISPR_22_A_3M_PK	**Margin : 0**
Probe : CB1_CISPR_22_B(above1G)-1_0901 - VERTICAL	**Power : AC 230V/50Hz**
EUT : 55” Dual-Sided LCD Signage Display	**Note : Mode 1: HDMI (DS-55)**

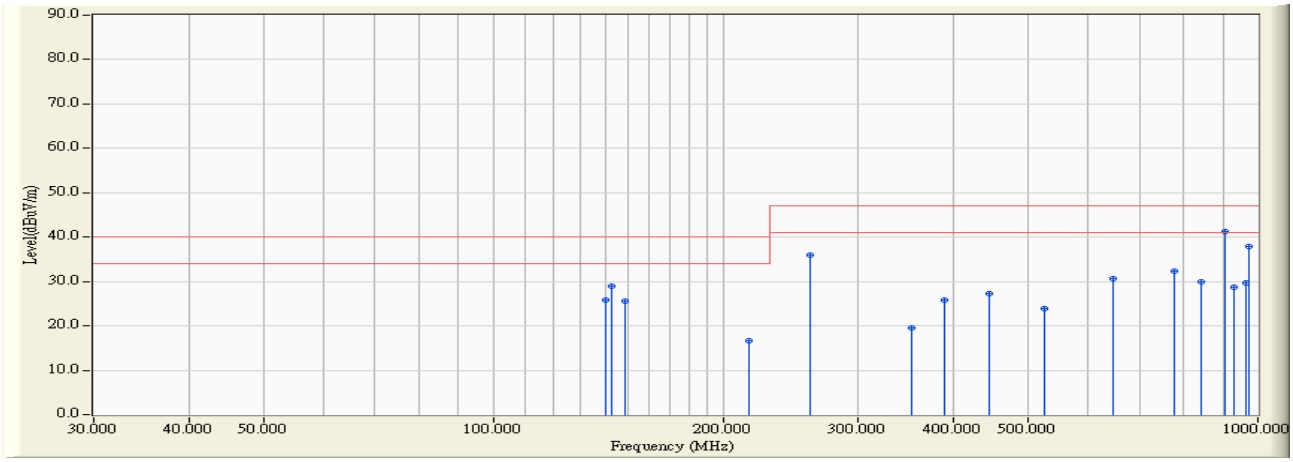


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		1095.000	-9.153	55.250	46.097	-29.903	76.000	PEAK
2		1405.000	-7.982	57.332	49.350	-26.650	76.000	PEAK
3	*	1600.000	-7.466	58.372	50.906	-25.094	76.000	PEAK
4		1720.000	-7.277	53.418	46.141	-29.859	76.000	PEAK
5		2110.000	-6.521	51.354	44.833	-31.167	76.000	PEAK
6		2655.000	-4.781	50.645	45.864	-30.136	76.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site2	**Time : 2014/02/17 - 15:03**
Limit : CISPR_A_10M_QP	**Margin : 6**
Probe : Site2_10M-4_0815 - HORIZONTAL	**Power : AC 230V/50Hz**
EUT : 55” Dual-Sided LCD Signage Display	**Note : Mode 2: HDMI (DF-55)**

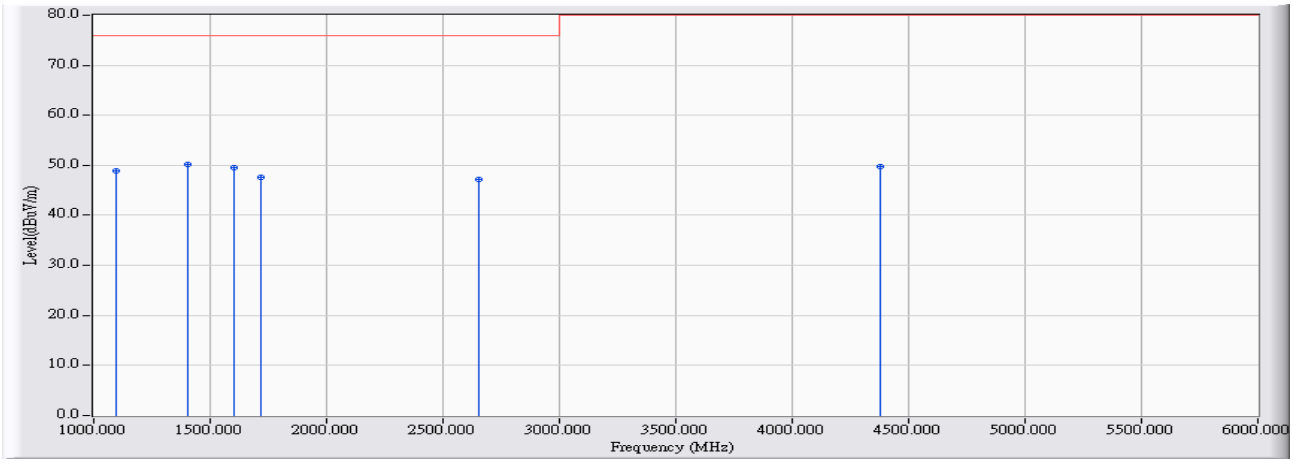


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		140.000	13.165	12.680	25.845	-14.155	40.000	QUASIPEAK
2		142.900	13.042	15.910	28.952	-11.048	40.000	QUASIPEAK
3		148.950	12.770	12.850	25.621	-14.379	40.000	QUASIPEAK
4		216.000	13.036	3.710	16.746	-23.254	40.000	QUASIPEAK
5		259.200	15.546	20.320	35.866	-11.134	47.000	QUASIPEAK
6		352.825	18.204	1.240	19.444	-27.556	47.000	QUASIPEAK
7		388.800	19.177	6.750	25.927	-21.073	47.000	QUASIPEAK
8		444.975	20.449	6.920	27.369	-19.631	47.000	QUASIPEAK
9		525.575	22.073	1.790	23.863	-23.137	47.000	QUASIPEAK
10		648.000	23.926	6.780	30.706	-16.294	47.000	QUASIPEAK
11		777.600	25.372	7.020	32.391	-14.609	47.000	QUASIPEAK
12		842.450	26.012	3.980	29.992	-17.008	47.000	QUASIPEAK
13	*	907.200	26.668	14.600	41.268	-5.732	47.000	QUASIPEAK
14		928.800	26.994	1.700	28.694	-18.306	47.000	QUASIPEAK
15		964.825	27.540	2.060	29.599	-17.401	47.000	QUASIPEAK
16		972.000	27.648	10.240	37.888	-9.112	47.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : CB1	**Time : 2014/03/22 - 11:22**
Limit : CISPR_22_A_3M_PK	**Margin : 0**
Probe : CB1_CISPR_22_B(above1G)-1_0901 - HORIZONTAL	**Power : AC 230V/50Hz**
EUT : 55” Dual-Sided LCD Signage Display	**Note : Mode 2: HDMI (DF-55)**

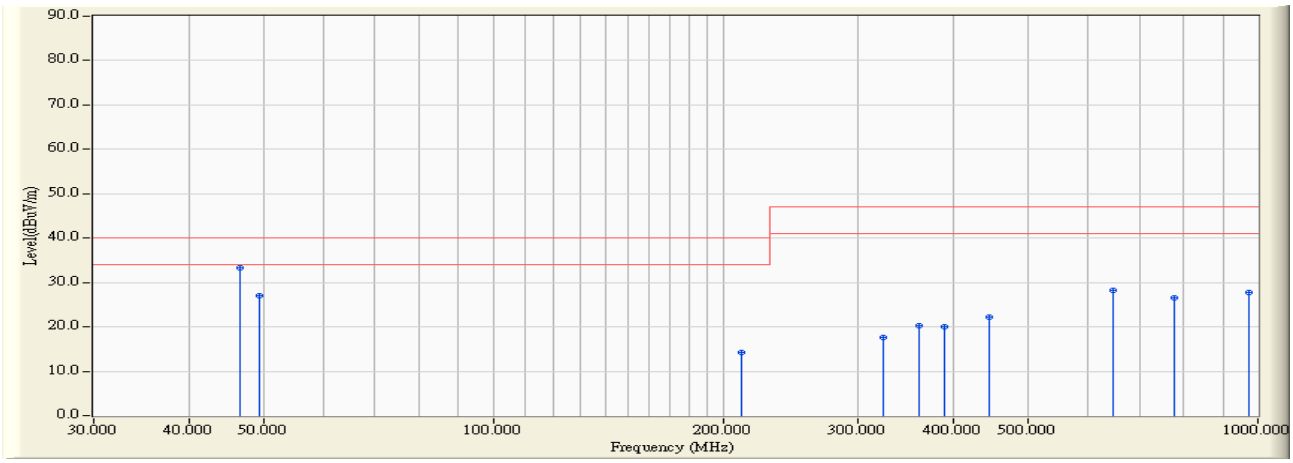


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		1095.000	-9.153	58.015	48.862	-27.138	76.000	PEAK
2	*	1405.000	-7.982	58.149	50.167	-25.833	76.000	PEAK
3		1600.000	-7.466	56.951	49.485	-26.515	76.000	PEAK
4		1720.000	-7.277	54.823	47.546	-28.454	76.000	PEAK
5		2655.000	-4.781	51.961	47.180	-28.820	76.000	PEAK
6		4375.000	-0.208	50.059	49.851	-30.149	80.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site2	**Time : 2014/02/17 - 14:36**
Limit : CISPR_A_10M_QP	**Margin : 6**
Probe : Site2_10M-4_0815 - VERTICAL	**Power : AC 230V/50Hz**
EUT : 55” Dual-Sided LCD Signage Display	**Note : Mode 2: HDMI (DF-55)**

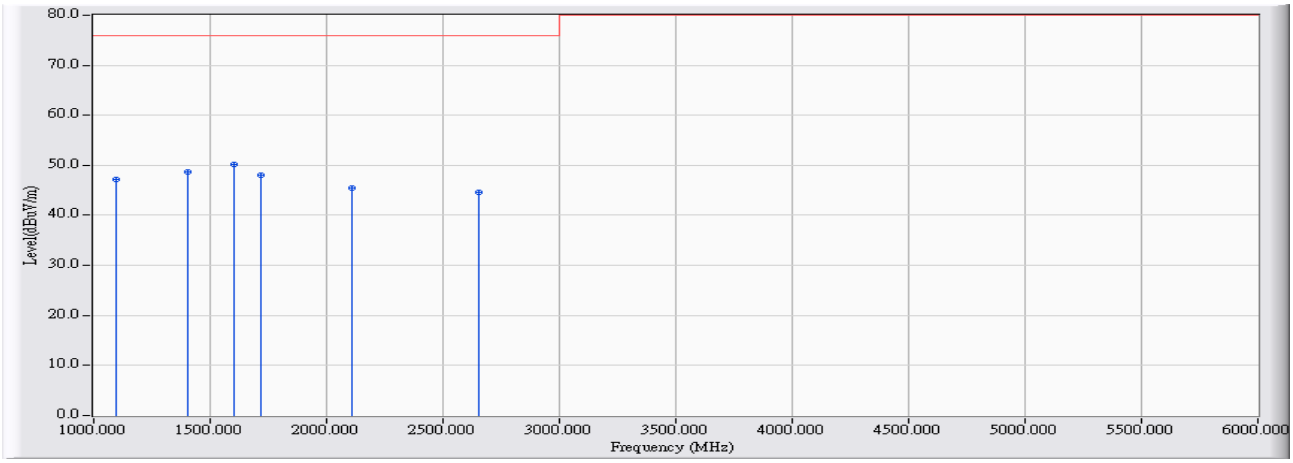


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	46.675	10.164	23.040	33.203	-6.797	40.000	QUASIPEAK
2		49.500	8.802	18.310	27.111	-12.889	40.000	QUASIPEAK
3		211.000	12.707	1.610	14.317	-25.683	40.000	QUASIPEAK
4		324.000	17.424	0.270	17.694	-29.306	47.000	QUASIPEAK
5		360.000	18.398	1.860	20.258	-26.742	47.000	QUASIPEAK
6		388.800	19.177	0.890	20.067	-26.933	47.000	QUASIPEAK
7		444.975	20.449	1.720	22.169	-24.831	47.000	QUASIPEAK
8		648.000	23.926	4.320	28.246	-18.754	47.000	QUASIPEAK
9		777.600	25.372	1.280	26.651	-20.349	47.000	QUASIPEAK
10		972.000	27.648	0.180	27.828	-19.172	47.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : CB1	**Time : 2014/03/22 - 11:59**
Limit : CISPR_22_A_3M_PK	**Margin : 0**
Probe : CB1_CISPR_22_B(above1G)-1_0901 - VERTICAL	**Power : AC 230V/50Hz**
EUT : 55” Dual-Sided LCD Signage Display	**Note : Mode 2: HDMI (DF-55)**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		1095.000	-9.153	56.350	47.197	-28.803	76.000	PEAK
2		1405.000	-7.982	56.732	48.750	-27.250	76.000	PEAK
3	*	1600.000	-7.466	57.672	50.206	-25.794	76.000	PEAK
4		1720.000	-7.277	55.318	48.041	-27.959	76.000	PEAK
5		2110.000	-6.521	52.054	45.533	-30.467	76.000	PEAK
6		2655.000	-4.781	49.445	44.664	-31.336	76.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

4.7. Test Photograph

Test Mode : Mode 1: HDMI (DS-55)

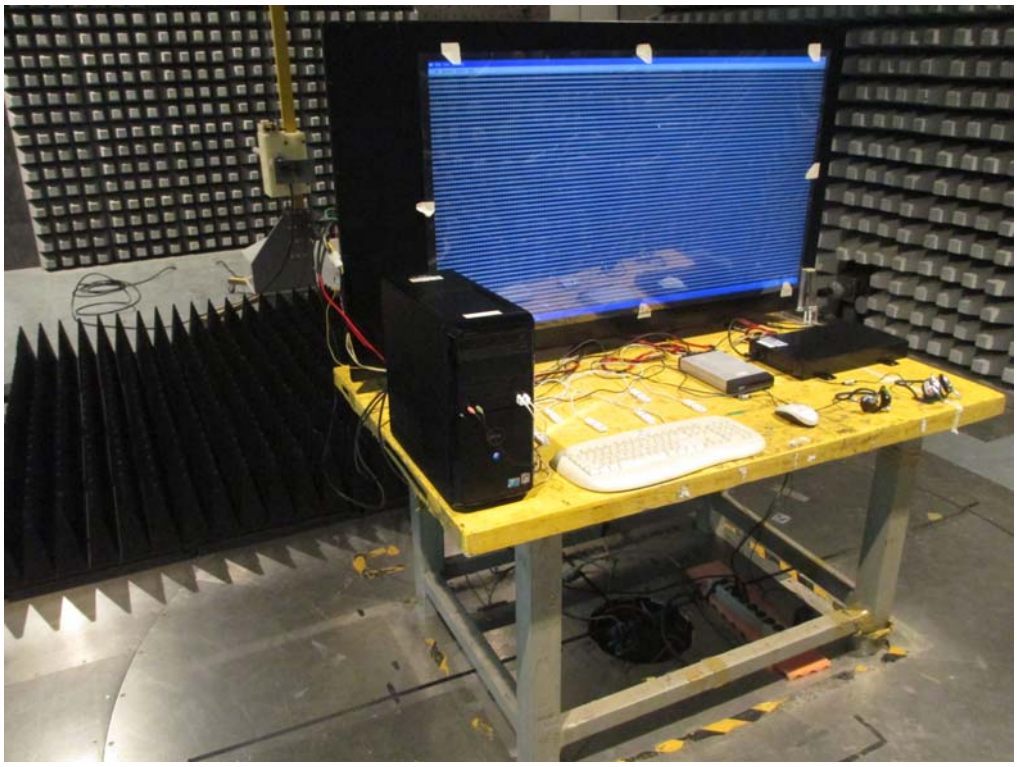
Description : Front View of Radiated Emission Test Setup

Test Mode : Mode 1: HDMI (DS-55)

Description : Back View of Radiated Emission Test Setup

Test Mode : Mode 1: HDMI (DS-55)

Description : Front View of Radiated Emission Test Setup (Horn)



Test Mode : Mode 1: HDMI (DS-55)

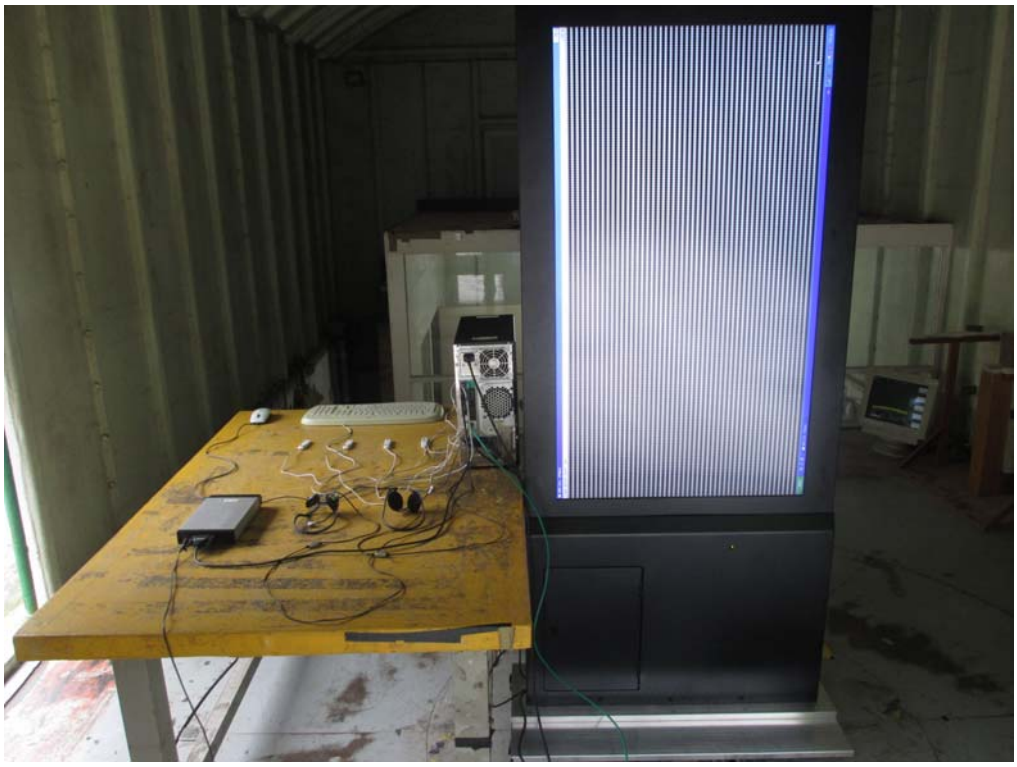
Description : Back View of Radiated Emission Test Setup (Horn)

Test Mode : Mode 2: HDMI (DF-55)

Description : Front View of Radiated Emission Test Setup

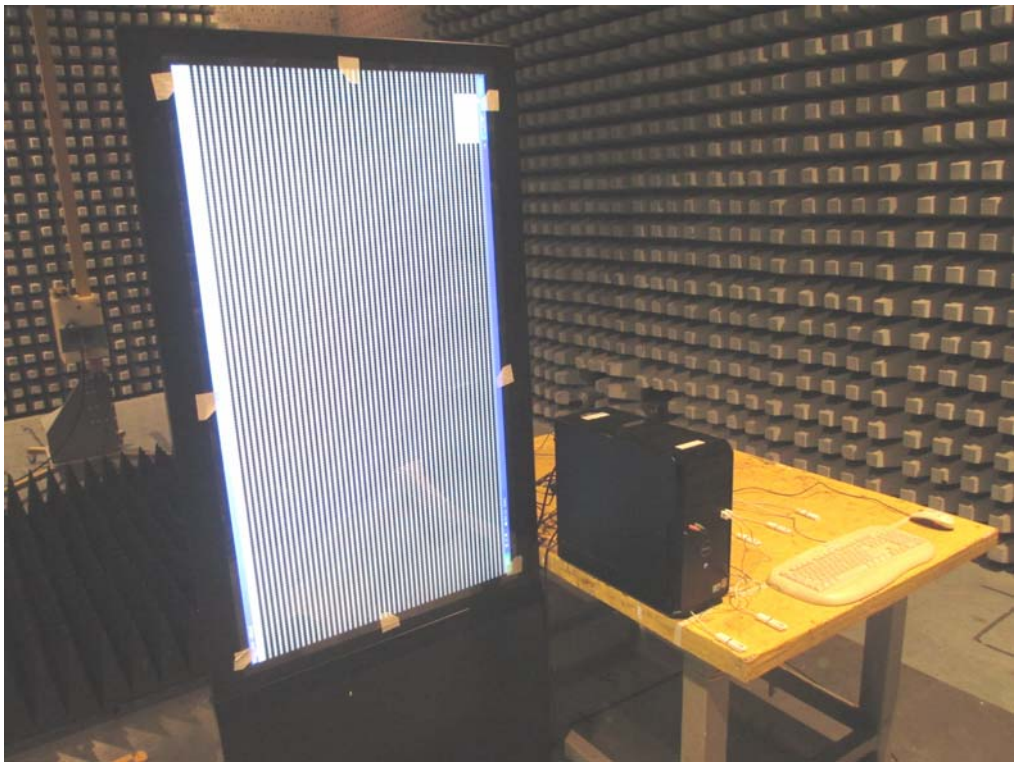
Test Mode : Mode 2: HDMI (DF-55)

Description : Back View of Radiated Emission Test Setup



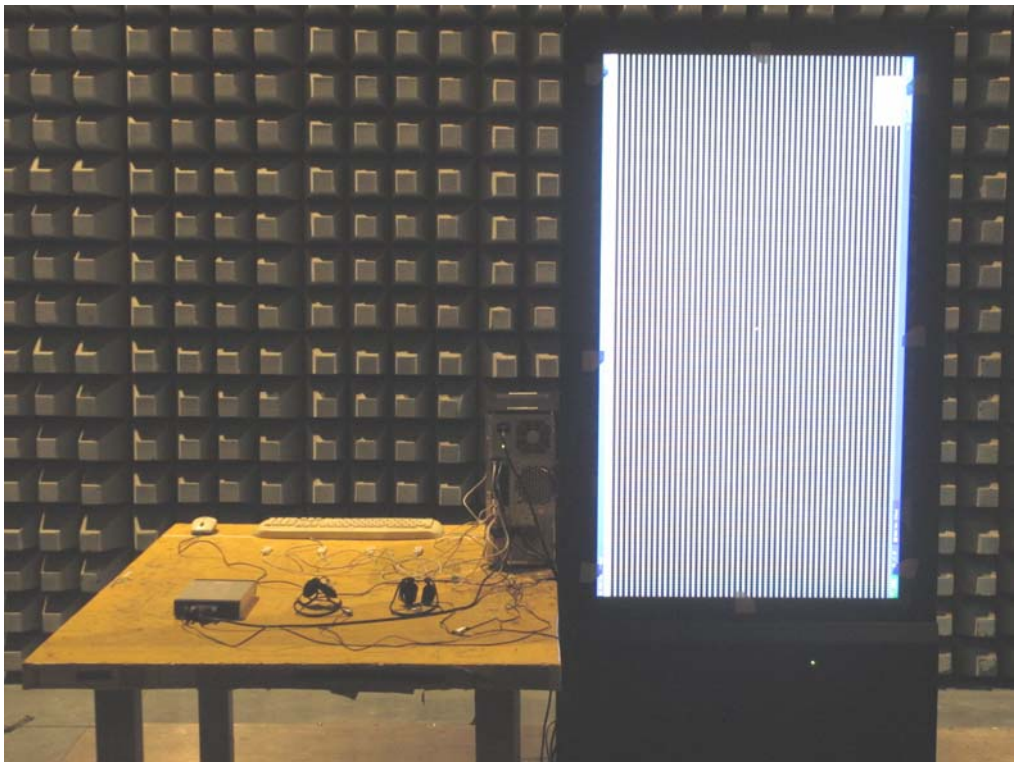
Test Mode : Mode 2: HDMI (DF-55)

Description : Front View of Radiated Emission Test Setup (Horn)



Test Mode : Mode 2: HDMI (DF-55)

Description : Back View of Radiated Emission Test Setup (Horn)

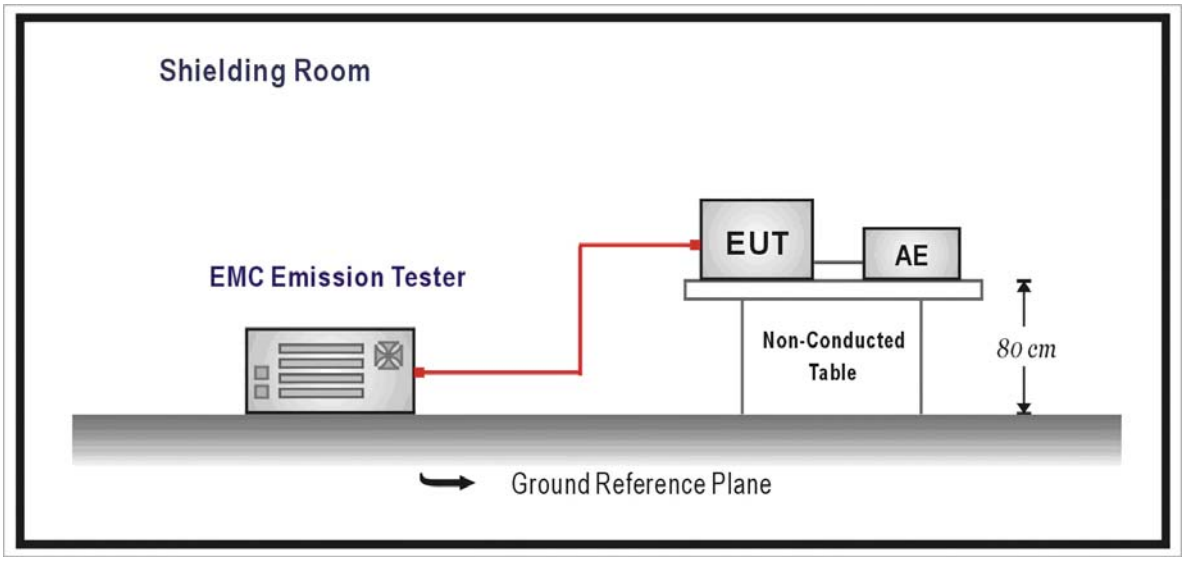


5. Harmonic Current Emission

5.1. Test Specification

According to EMC Standard : EN 61000-3-2

5.2. Test Setup



5.3. Limit

(a) Limits of Class A Harmonics Currents

Harmonics Order n	Maximum Permissible harmonic current A	Harmonics Order n	Maximum Permissible harmonic current A
Odd harmonics		Even harmonics	
3	2.30	2	1.08
5	1.14	4	0.43
7	0.77	6	0.30
9	0.40	8 ≤ n ≤ 40	0.23 * 8/n
11	0.33		
13	0.21		
15 ≤ n ≤ 39	0.15 * 15/n		

(b) Limits of Class B Harmonics Currents

For Class B equipment, the harmonic of the input current shall not exceed the maximum permissible values given in table that is the limit of Class A multiplied by a factor of 1.5.

(c) Limits of Class C Harmonics Currents

Harmonics Order n	Maximum Permissible harmonic current Expressed as a percentage of the input current at the fundamental frequency %
2	2
3	30 · λ*
5	10
7	7
9	5
11 ≤ n ≤ 39 (odd harmonics only)	3
∗λ is the circuit power factor	

(d) Limits of Class D Harmonics Currents

Harmonics Order n	Maximum Permissible harmonic current per watt mA/W	Maximum Permissible harmonic current A
3	3.4	2.30
5	1.9	1.14
7	1.0	0.77
9	0.5	0.40
11	0.35	0.33
11 ≤ n ≤ 39 (odd harmonics only)	3.85/n	See limit of Class A

5.4. Test Procedure

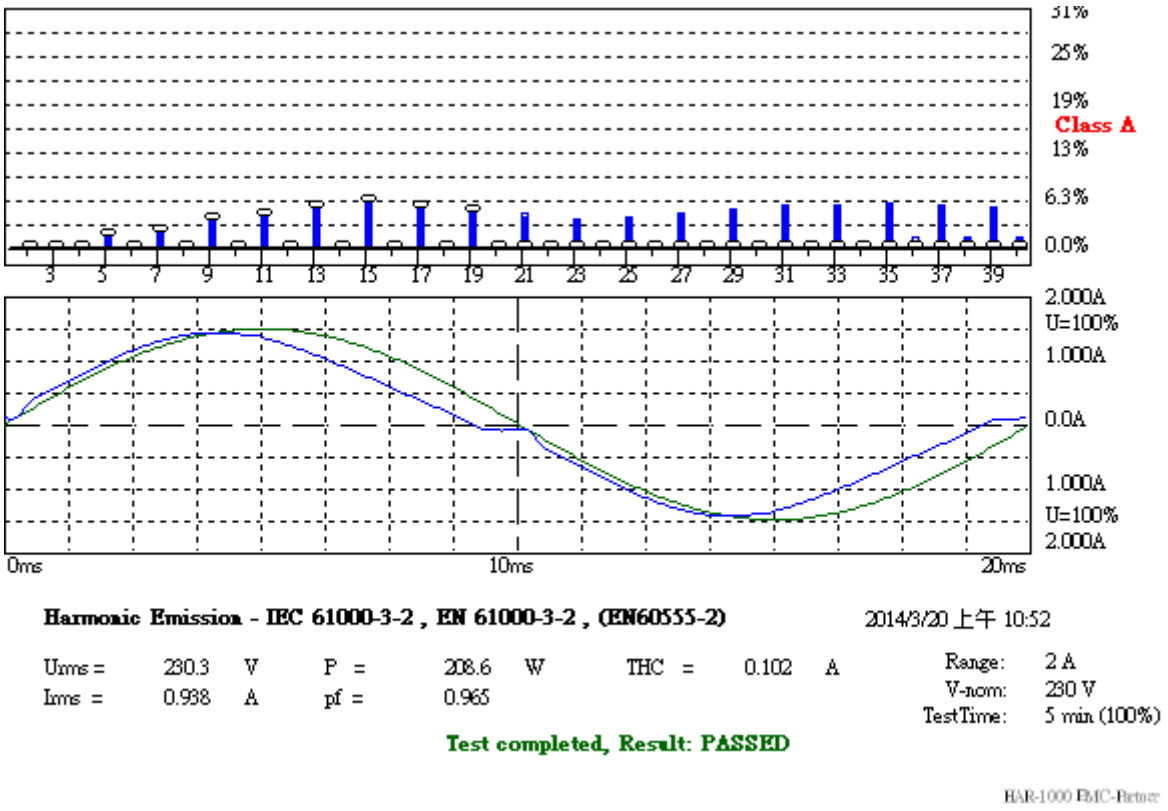
The EUT is supplied in series with power analyzer from a power source having the same normal voltage and frequency as the rated supply voltage and the equipment under test. And the rated voltage at the supply voltage of EUT of 0.94 times and 1.06 times shall be performed.

5.5. Deviation from Test Standard

No deviation.

5.6. Test Result

Product	55” Dual-Sided LCD Signage Display		
Test Item	Power Harmonics		
Test Mode	Mode 1: HDMI (DS-55)		
Date of Test	2014/03/20	Test Site	SR1



Full Bar : Actual Values

Empty Bar : Maximum Values

Blue : Current , Green : Voltage , Red : Failed

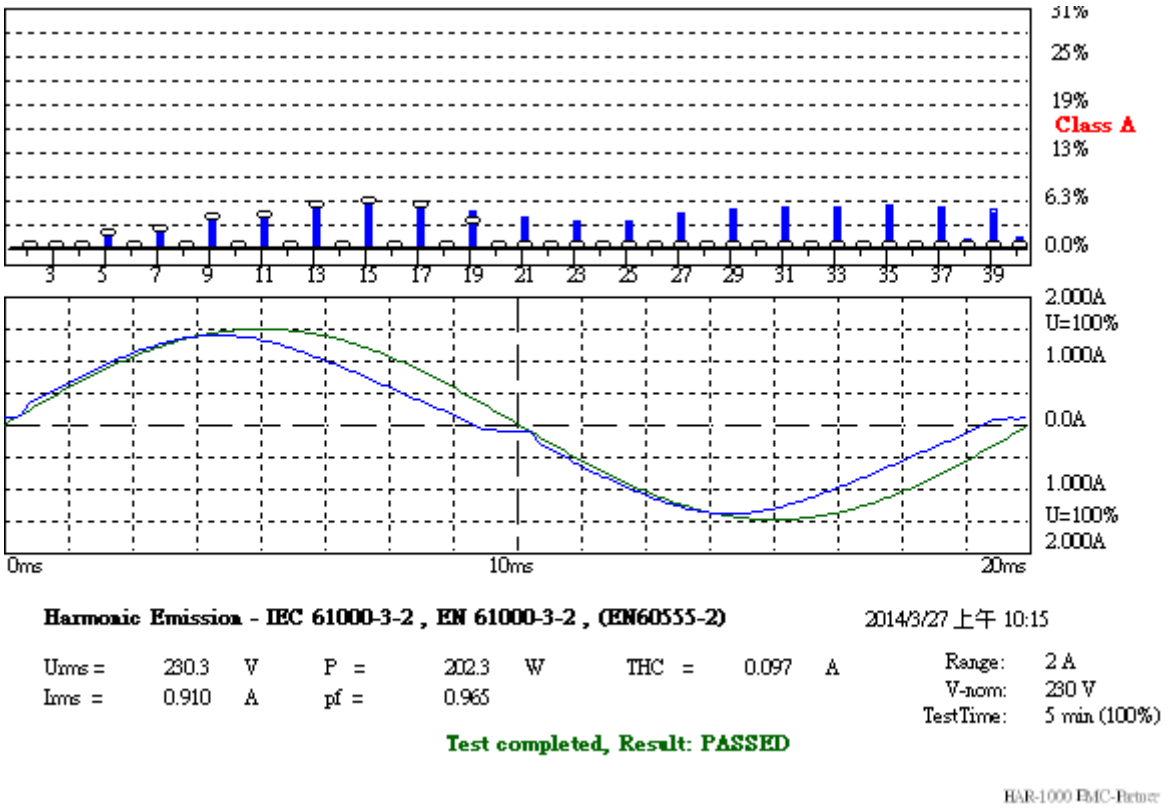
Urms =	230.3V	Freq =	49.987	Range:	2 A
Irms =	0.938A	Ipk =	1.438A	cf =	1.533
P =	208.6W	S =	216.1VA	pf =	0.965
THDi =	10.9 %	THDu =	0.10 %	Class A	

Test - Time : 5min (100 %)

Test completed, Result: PASSED

Order	Freq. [Hz]	Iavg [A]	Iavg%L [%]	Imax [A]	Imax%L [%]	Limit [A]	Status
1	50	0.9354		0.9380			
2	100	0.0000	0.0000	0.0012	0.1130	1.0800	
3	150	0.0935	4.0647	0.0936	4.0708	2.3000	
4	200	0.0000	0.0000	0.0004	0.0852	0.4300	
5	250	0.0200	1.7511	0.0200	1.7561	1.1400	
6	300	0.0000	0.0000	0.0002	0.0814	0.3000	
7	350	0.0186	2.4099	0.0189	2.4573	0.7700	
8	400	0.0000	0.0000	0.0002	0.1061	0.2300	
9	450	0.0153	3.8362	0.0154	3.8452	0.4000	
10	500	0.0000	0.0000	0.0002	0.1327	0.1840	
11	550	0.0140	4.2408	0.0142	4.2910	0.3300	
12	600	0.0000	0.0000	0.0002	0.1592	0.1533	
13	650	0.0114	5.4479	0.0116	5.5222	0.2100	
14	700	0.0000	0.0000	0.0002	0.1858	0.1314	
15	750	0.0092	6.1274	0.0093	6.1849	0.1500	
16	800	0.0000	0.0000	0.0002	0.2123	0.1150	
17	850	0.0073	5.5324	0.0073	5.5339	0.1324	
18	900	0.0000	0.0000	0.0002	0.2388	0.1022	
19	950	0.0057	4.7998	0.0059	4.9479	0.1184	
20	1000	0.0000	0.0000	0.0002	0.2654	0.0920	
21	1050	0.0000	0.0000	0.0044	4.1016	0.1071	
22	1100	0.0000	0.0000	0.0002	0.2919	0.0836	
23	1150	0.0000	0.0000	0.0035	3.6187	0.0978	
24	1200	0.0000	0.0000	0.0002	0.3184	0.0767	
25	1250	0.0000	0.0000	0.0033	3.6621	0.0900	
26	1300	0.0000	0.0000	0.0004	0.5175	0.0708	
27	1350	0.0000	0.0000	0.0037	4.3945	0.0833	
28	1400	0.0000	0.0000	0.0004	0.5573	0.0657	
29	1450	0.0000	0.0000	0.0038	4.8774	0.0776	
30	1500	0.0000	0.0000	0.0004	0.5971	0.0613	
31	1550	0.0000	0.0000	0.0038	5.2138	0.0726	
32	1600	0.0000	0.0000	0.0004	0.6369	0.0575	
33	1650	0.0000	0.0000	0.0038	5.5501	0.0682	
34	1700	0.0000	0.0000	0.0004	0.6767	0.0541	
35	1750	0.0000	0.0000	0.0037	5.6966	0.0643	
36	1800	0.0000	0.0000	0.0005	0.9553	0.0511	
37	1850	0.0000	0.0000	0.0033	5.4199	0.0608	
38	1900	0.0000	0.0000	0.0005	1.0084	0.0484	
39	1950	0.0000	0.0000	0.0029	5.0781	0.0577	
40	2000	0.0000	0.0000	0.0005	1.0615	0.0460	

Product	55” Dual-Sided LCD Signage Display		
Test Item	Power Harmonics		
Test Mode	Mode 2: HDMI (DF-55)		
Date of Test	2014/03/27	Test Site	SR1



Full Bar : Actual Values

Empty Bar : Maximum Values

Blue : Current , Green : Voltage , Red : Failed

Urms =	230.3V	Freq =	49.987	Range:	2 A
Irms =	0.910A	Ipk =	1.396A	cf =	1.533
P =	202.3W	S =	209.6VA	pf =	0.965
THDi =	10.8 %	THDu =	0.10 %	Class A	

Test - Time : 5min (100 %)

Test completed, Result: PASSED

Order	Freq. [Hz]	Iavg [A]	Iavg%L [%]	Imax [A]	Imax%L [%]	Limit [A]	Status
1	50	0.9082		0.9127			
2	100	0.0000	0.0000	0.0011	0.1017	1.0800	
3	150	0.0894	3.8889	0.0897	3.9009	2.3000	
4	200	0.0000	0.0000	0.0002	0.0568	0.4300	
5	250	0.0189	1.6562	0.0192	1.6811	1.1400	
6	300	0.0000	0.0000	0.0002	0.0814	0.3000	
7	350	0.0182	2.3592	0.0187	2.4256	0.7700	
8	400	0.0000	0.0000	0.0002	0.1061	0.2300	
9	450	0.0147	3.6681	0.0148	3.6926	0.4000	
10	500	0.0000	0.0000	0.0002	0.1327	0.1840	
11	550	0.0134	4.0632	0.0135	4.1060	0.3300	
12	600	0.0000	0.0000	0.0002	0.1592	0.1533	
13	650	0.0110	5.2524	0.0111	5.2897	0.2100	
14	700	0.0000	0.0000	0.0002	0.1858	0.1314	
15	750	0.0088	5.8622	0.0089	5.9408	0.1500	
16	800	0.0000	0.0000	0.0002	0.2123	0.1150	
17	850	0.0069	5.1861	0.0070	5.2572	0.1324	
18	900	0.0000	0.0000	0.0002	0.2388	0.1022	
19	950	0.0037	3.1509	0.0055	4.6387	0.1184	
20	1000	0.0000	0.0000	0.0002	0.2654	0.0920	
21	1050	0.0000	0.0000	0.0040	3.7598	0.1071	
22	1100	0.0000	0.0000	0.0002	0.2919	0.0836	
23	1150	0.0000	0.0000	0.0033	3.3691	0.0978	
24	1200	0.0000	0.0000	0.0002	0.3184	0.0767	
25	1250	0.0000	0.0000	0.0031	3.3908	0.0900	
26	1300	0.0000	0.0000	0.0002	0.3450	0.0708	
27	1350	0.0000	0.0000	0.0034	4.1016	0.0833	
28	1400	0.0000	0.0000	0.0002	0.3715	0.0657	
29	1450	0.0000	0.0000	0.0037	4.7201	0.0776	
30	1500	0.0000	0.0000	0.0002	0.3981	0.0613	
31	1550	0.0000	0.0000	0.0037	5.0456	0.0726	
32	1600	0.0000	0.0000	0.0004	0.6369	0.0575	
33	1650	0.0000	0.0000	0.0034	5.0130	0.0682	
34	1700	0.0000	0.0000	0.0004	0.6767	0.0541	
35	1750	0.0000	0.0000	0.0033	5.1270	0.0643	
36	1800	0.0000	0.0000	0.0004	0.7165	0.0511	
37	1850	0.0000	0.0000	0.0031	5.0184	0.0608	
38	1900	0.0000	0.0000	0.0004	0.7563	0.0484	
39	1950	0.0000	0.0000	0.0028	4.8665	0.0577	
40	2000	0.0000	0.0000	0.0005	1.0615	0.0460	

5.7. Test Photograph

Test Mode : Mode 1: HDMI (DS-55)

Description : Power Harmonics Test Setup

Test Mode : Mode 2: HDMI (DF-55)

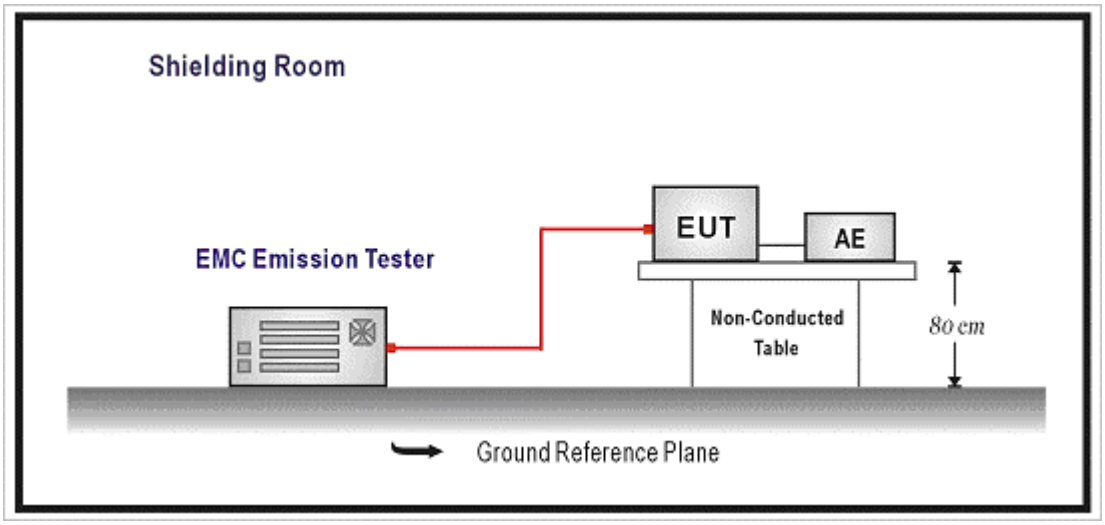
Description : Power Harmonics Test Setup

6. Voltage Fluctuation and Flicker

6.1. Test Specification

According to EMC Standard : EN 61000-3-3

6.2. Test Setup



6.3. Limit

The following limits apply:

- the value of P_{st} shall not be greater than 1.0;
- the value of P_{lt} shall not be greater than 0.65;
- the value of d(t) during a voltage change shall not exceed 3.3 % for more than 500 ms;
- the relative steady-state voltage change, d_c, shall not exceed 3.3 %;
- the maximum relative voltage change, d_{max}, shall not exceed;

a) 4 % without additional conditions;

b) 6 % for equipment which is:

- switched manually, or
- switched automatically more frequently than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds), or manual restart, after a power supply interruption.

NOTE The cycling frequency will be further limited by the P_{st} and P_{1t} limit.

For example: a d_{max} of 6%producing a rectangular voltage change characteristic twice per hour will give a P_{1t} of about 0.65.

c) 7 % for equipment which is:

- attended whilst in use (for example: hair dryers, vacuum cleaners, kitchen equipment such as mixers, garden equipment such as lawn mowers, portable tools such as electric drills), or
- switched on automatically, or is intended to be switched on manually, no more than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds) or manual restart, after a power supply interruption.

P_{st} and P_{1t} requirements shall not be applied to voltage changes caused by manual switching.

6.4. Test Procedure

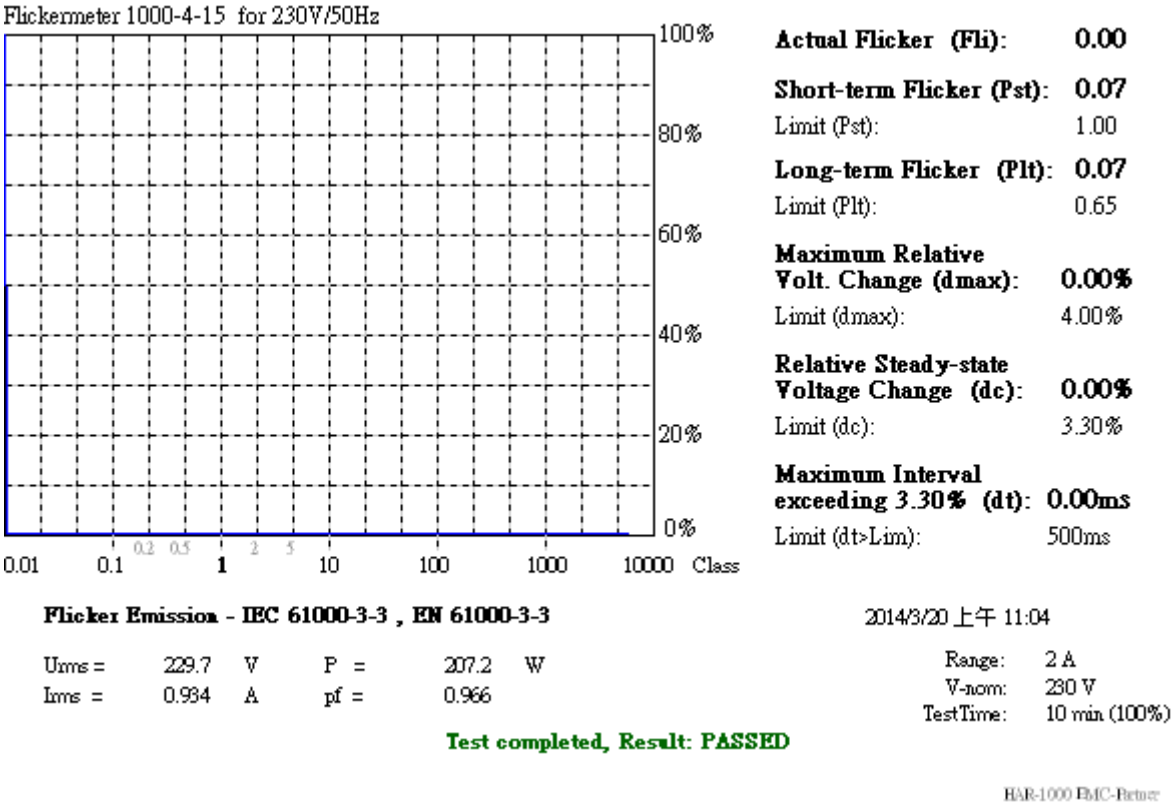
The EUT is supplied in series with power analyzer from a power source having the same normal voltage and frequency as the rated supply voltage and the equipment under test. And the rated voltage at the supply voltage of EUT of 0.94 times and 1.06 times shall be performed.

6.5. Deviation from Test Standard

No deviation.

6.6. Test Result

Product	55” Dual-Sided LCD Signage Display		
Test Item	Voltage Fluctuation and Flicker		
Test Mode	Mode 1: HDMI (DS-55)		
Date of Test	2014/03/20	Test Site	SR1



Full Bar : Actual Values
Empty Bar : Maximum Values
Circles : Average Values
Blue : Current , Green : Voltage , Red : Failed

Urms =	229.7V	Freq =	49.987	Range:	2 A
Irms =	0.934A	Ipk =	1.437A	cf =	1.539
P =	207.2W	S =	214.5VA	pf =	0.966

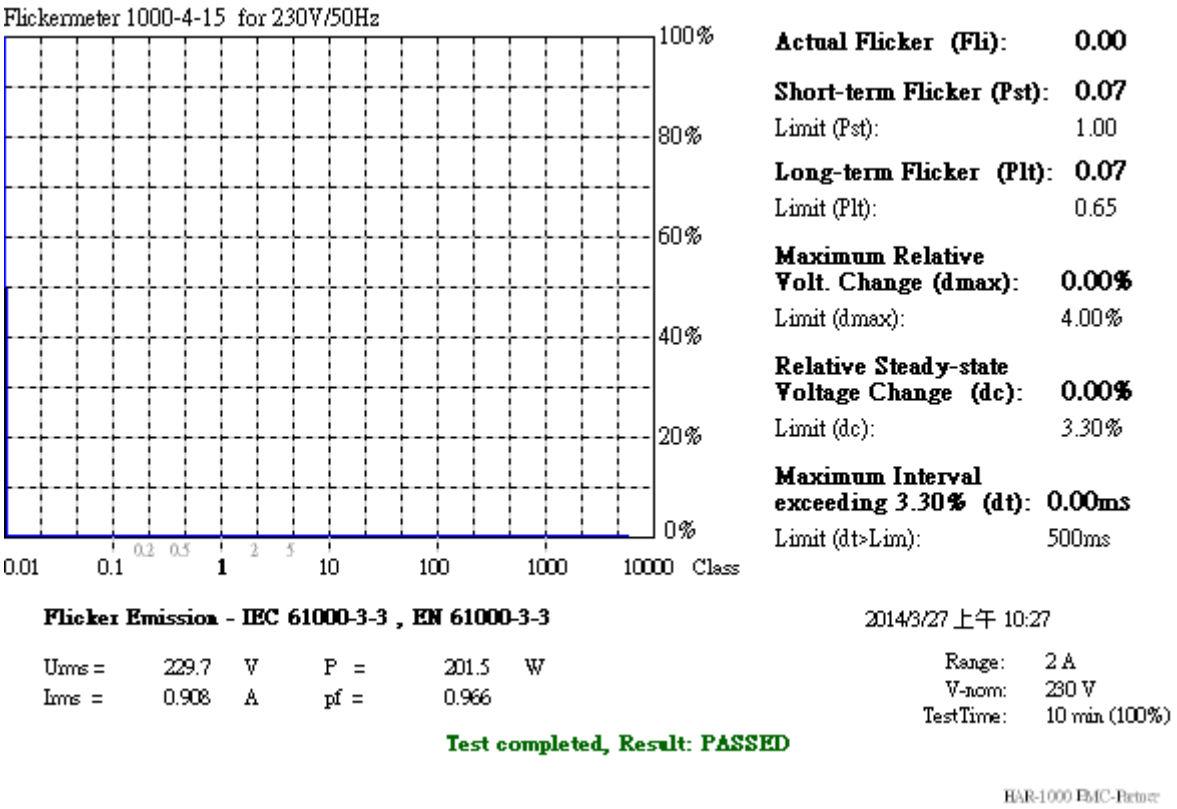
Test - Time : 1 x 10min = 10min (100 %)

LIN (Line Impedance Network) : L: 0.24ohm +j0.15ohm N: 0.16ohm +j0.10ohm

Limits :	Plt :	0.65	Pst :	1.00
	dmax :	4.00 %	dc :	3.30 %
	dtLim:	3.30 %	dt>Lim:	500ms

Test completed, Result: PASSED

Product	55” Dual-Sided LCD Signage Display		
Test Item	Voltage Fluctuation and Flicker		
Test Mode	Mode 2: HDMI (DF-55)		
Date of Test	2014/03/27	Test Site	SR1



Full Bar : Actual Values
Empty Bar : Maximum Values
Circles : Average Values
Blue : Current , Green : Voltage , Red : Failed

Urms = 229.7V Freq = 50.013 Range: 2 A
Irms = 0.908A Ipk = 1.395A cf = 1.535
P = 201.5W S = 208.6VA pf = 0.966

Test - Time : 1 x 10min = 10min (100 %)

LIN (Line Impedance Network) : L: 0.24ohm +j0.15ohm N: 0.16ohm +j0.10ohm

Limits : Plt : 0.65 Pst : 1.00
dmax : 4.00 % dc : 3.30 %
dtLim: 3.30 % dt>Lim: 500ms

Test completed, Result: PASSED

6.7. Test Photograph

Test Mode : Mode 1: HDMI (DS-55)

Description : Voltage Fluctuation and Flicker Test Setup

Test Mode : Mode 2: HDMI (DF-55)

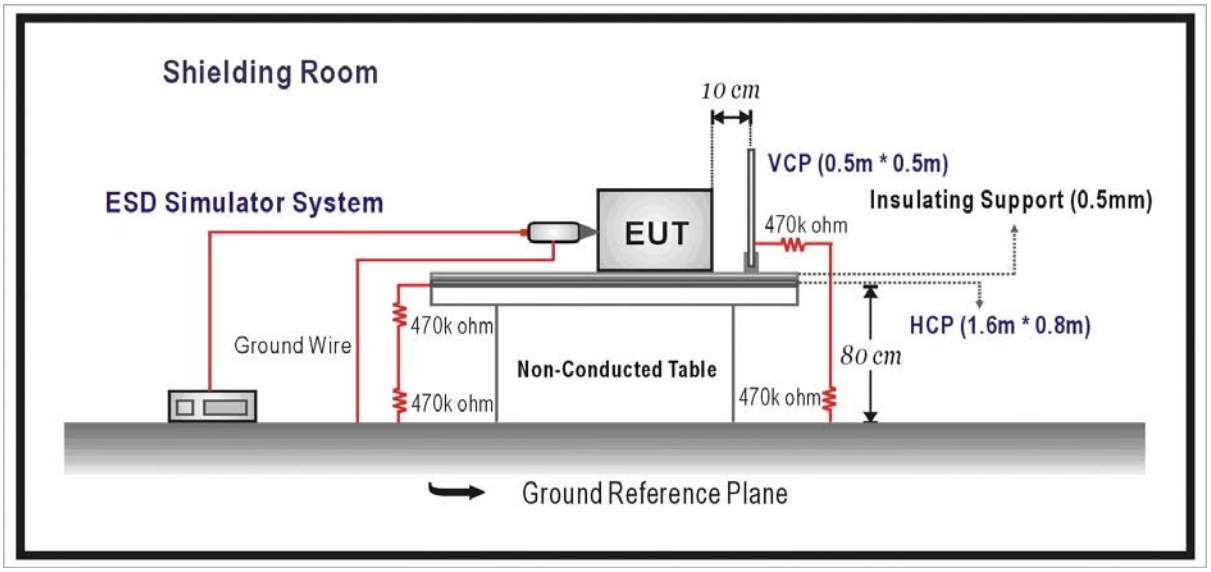
Description : Voltage Fluctuation and Flicker Test Setup

7. Electrostatic Discharge

7.1. Test Specification

According to Standard : IEC 61000-4-2

7.2. Test Setup



7.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Enclosure Port				
	Electrostatic Discharge	kV(Charge Voltage)	±8 Air Discharge ±4 Contact Discharge	B

7.4. Test Procedure

Direct application of discharges to the EUT:

Contact discharge was applied only to conductive surfaces of the EUT.

Air discharges were applied only to non-conductive surfaces of the EUT.

During the test, it was performed with single discharges. For the single discharge time between successive single discharges will be keep longer 1 second. It was at least ten single discharges with positive and negative at the same selected point.

The selected point, which was performed with electrostatic discharge, was marked on the red label of the EUT.

Indirect application of discharges to the EUT:

Vertical Coupling Plane (VCP):

The coupling plane, of dimensions 0.5m x 0.5m, is placed parallel to, and positioned at a distance 0.1m from, the EUT, with the Discharge Electrode touching the coupling plane.

The four faces of the EUT will be performed with electrostatic discharge. It was at least ten single discharges with positive and negative at the same selected point.

Horizontal Coupling Plane (HCP):

The coupling plane is placed under to the EUT. The generator shall be positioned vertically at a distance of 0.1m from the EUT, with the Discharge Electrode touching the coupling plane.

The four faces of the EUT will be performed with electrostatic discharge. It was at least ten single discharges with positive and negative at the same selected point.

7.5. Deviation from Test Standard

No deviation.

7.6. Test Result

Product	55” Dual-Sided LCD Signage Display		
Test Item	Electrostatic Discharge		
Test Mode	Mode 1: HDMI (DS-55)		
Date of Test	2014/03/27	Test Site	SR1

Item	Amount of Discharge	Voltage	Required Criteria	Complied To Criteria (A,B,C)	Results
Air Discharge	10	+8	B	A	Pass
	10	-8	B	A	Pass
Contact Discharge	25	+4	B	A	Pass
	25	-4	B	A	Pass
Indirect Discharge	25	+4	B	A	Pass
(HCP)	25	-4	B	A	Pass
Indirect Discharge	25	+4	B	A	Pass
(VCP Front)	25	-4	B	A	Pass
Indirect Discharge	25	+4	B	A	Pass
(VCP Left)	25	-4	B	A	Pass
Indirect Discharge	25	+4	B	A	Pass
(VCP Back)	25	-4	B	A	Pass
Indirect Discharge	25	+4	B	A	Pass
(VCP Right)	25	-4	B	A	Pass

NR: No Requirement

☒ Meet criteria A: Operate as intended during and after the test

☐ Meet criteria B: Operate as intended after the test

☐ Meet criteria C: Loss/Error of function

☐ Additional Information

☐ EUT stopped operation and could / could not be reset by operator at ____ kV.

☒ No false alarms or other malfunctions were observed during or after the test.

Remark:

The Contact discharges were applied-at least total 200 discharges at a minimum of four test points.

Product	55” Dual-Sided LCD Signage Display		
Test Item	Electrostatic Discharge		
Test Mode	Mode 2: HDMI (DF-55)		
Date of Test	2014/03/27	Test Site	SR1

Item	Amount of Discharge	Voltage	Required Criteria	Complied To Criteria (A,B,C)	Results
Air Discharge	10	+8	B	A	Pass
	10	-8	B	A	Pass
Contact Discharge	25	+4	B	A	Pass
	25	-4	B	A	Pass
Indirect Discharge	25	+4	B	A	Pass
(HCP)	25	-4	B	A	Pass
Indirect Discharge	25	+4	B	A	Pass
(VCP Front)	25	-4	B	A	Pass
Indirect Discharge	25	+4	B	A	Pass
(VCP Left)	25	-4	B	A	Pass
Indirect Discharge	25	+4	B	A	Pass
(VCP Back)	25	-4	B	A	Pass
Indirect Discharge	25	+4	B	A	Pass
(VCP Right)	25	-4	B	A	Pass

NR: No Requirement

☒ Meet criteria A: Operate as intended during and after the test

☐ Meet criteria B: Operate as intended after the test

☐ Meet criteria C: Loss/Error of function

☐ Additional Information

☐ EUT stopped operation and could / could not be reset by operator at ____ kV.

☒ No false alarms or other malfunctions were observed during or after the test.

Remark:

The Contact discharges were applied-at least total 200 discharges at a minimum of four test points.

7.7. Test Photograph

Test Mode : Mode 1: HDMI (DS-55)

Description : Electrostatic Discharge (ESD) Test Setup

Test Mode : Mode 2: HDMI (DF-55)

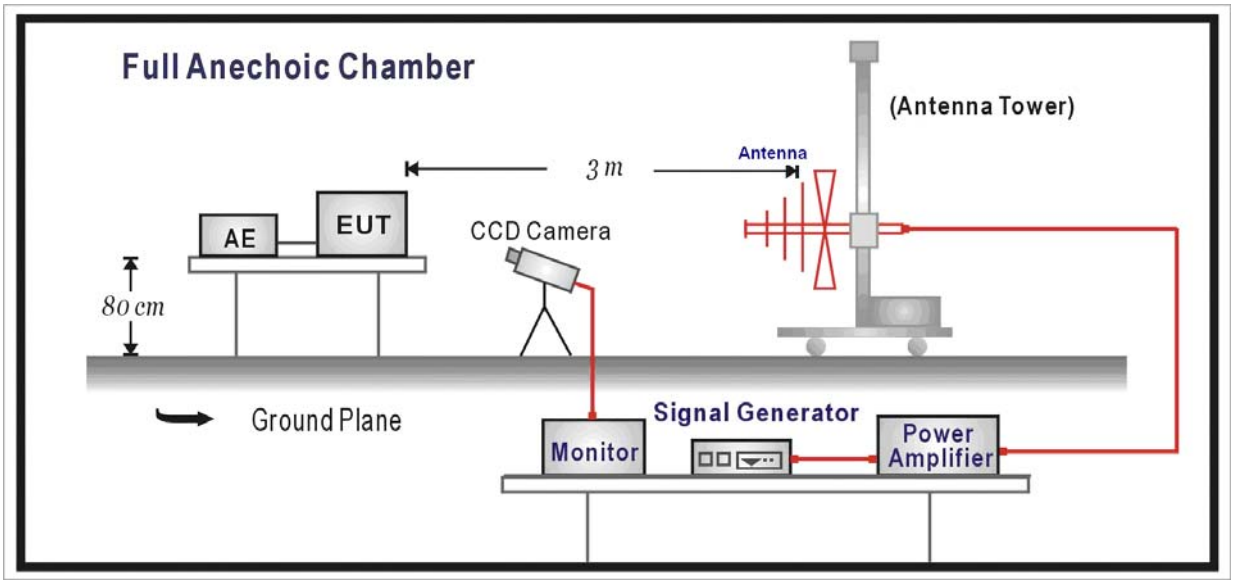
Description : Electrostatic Discharge (ESD) Test Setup

8. Radiated Susceptibility

8.1. Test Specification

According to Standard : IEC 61000-4-3

8.2. Test Setup



8.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Enclosure Port				
	Radio-Frequency Electromagnetic Field Amplitude Modulated	MHz V/m(Un-modulated, rms) % AM (1kHz)	80-1000 3 80	A

8.4. Test Procedure

The EUT and load, which are placed on a table that is 0.8 meter above ground, are placed with one coincident with the calibration plane such that the distance from antenna to the EUT was 3 meters.
Both horizontal and vertical polarization of the antenna and four sides of the EUT are set on measurement.
In order to judge the EUT performance, a CCD camera is used to monitor EUT screen.

All the scanning conditions are as follows:

	Condition of Test	Remarks
1.	Field Strength	3 V/m Level 2
2.	Radiated Signal	AM 80% Modulated with 1kHz
3.	Scanning Frequency	80MHz - 1000MHz
4	Dwell Time	3 Seconds
5.	Frequency step size Δf :	1%

8.5. Deviation from Test Standard

No deviation.

8.6. Test Result

Product	55” Dual-Sided LCD Signage Display		
Test Item	Radiated susceptibility		
Test Mode	Mode 1: HDMI (DS-55)		
Date of Test	2014/03/22	Test Site	CB1

Frequency (MHz)	Position (Angle)	Polarity (H or V)	Field Strength (V/m)	Required Criteria	Complied To Criteria (A,B,C)	Results
80-1000	0	H	3	A	A	Pass
80-1000	0	V	3	A	A	Pass
80-1000	90	H	3	A	A	Pass
80-1000	90	V	3	A	A	Pass
80-1000	180	H	3	A	A	Pass
80-1000	180	V	3	A	A	Pass
80-1000	270	H	3	A	A	Pass
80-1000	270	V	3	A	A	Pass

☒ Meet criteria A : Operate as intended during and after the test
☐ Meet criteria B : Operate as intended after the test
☐ Meet criteria C : Loss/Error of function
☐ Additional Information
- ☐ EUT stopped operation and could / could not be reset by operator at _____ V/m at frequency _____MHz.
- ☒ No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

Product	55” Dual-Sided LCD Signage Display		
Test Item	Radiated susceptibility		
Test Mode	Mode 2: HDMI (DF-55)		
Date of Test	2014/03/22	Test Site	CB1

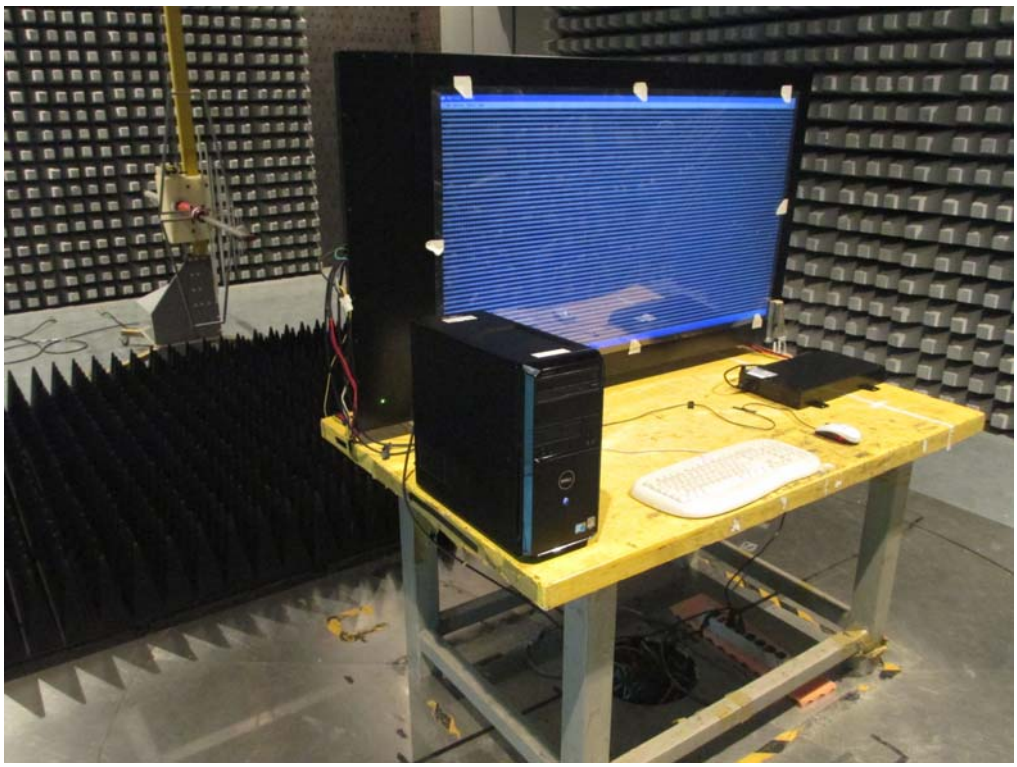
Frequency (MHz)	Position (Angle)	Polarity (H or V)	Field Strength (V/m)	Required Criteria	Complied To Criteria (A,B,C)	Results
80-1000	0	H	3	A	A	Pass
80-1000	0	V	3	A	A	Pass
80-1000	90	H	3	A	A	Pass
80-1000	90	V	3	A	A	Pass
80-1000	180	H	3	A	A	Pass
80-1000	180	V	3	A	A	Pass
80-1000	270	H	3	A	A	Pass
80-1000	270	V	3	A	A	Pass

☒ Meet criteria A : Operate as intended during and after the test
☐ Meet criteria B : Operate as intended after the test
☐ Meet criteria C : Loss/Error of function
☐ Additional Information
- ☐ EUT stopped operation and could / could not be reset by operator at _____ V/m at frequency _____MHz.
- ☒ No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

8.7. Test Photograph

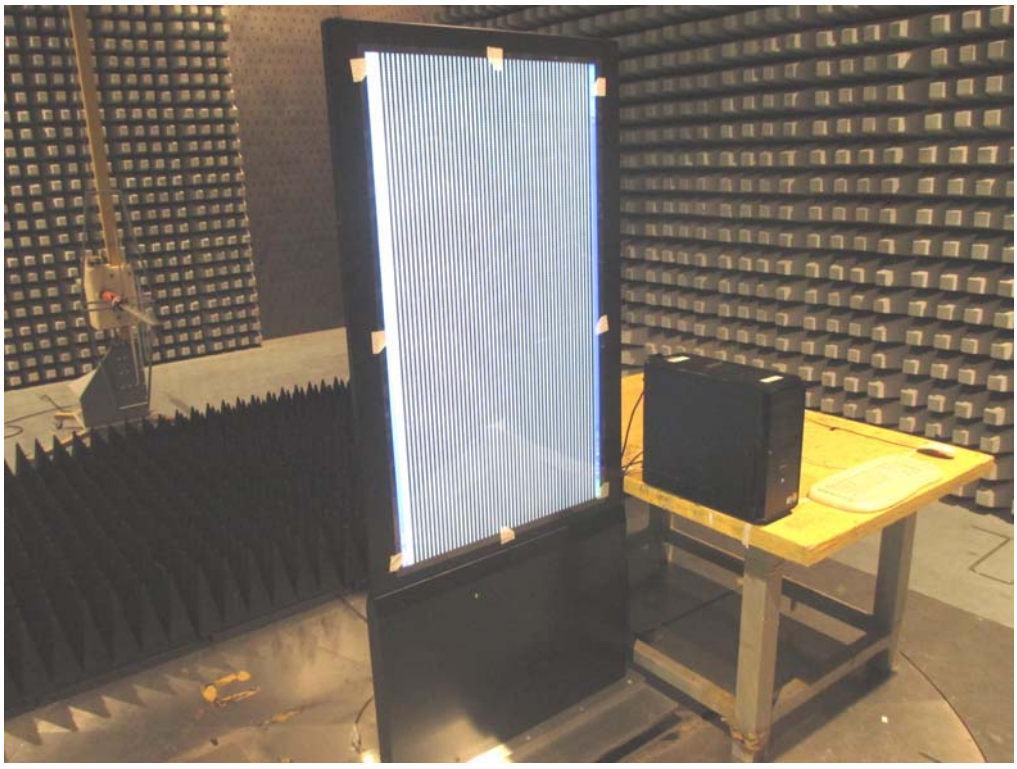
Test Mode : Mode 1: HDMI (DS-55)

Description : Radiated Susceptibility (RS) Test Setup



Test Mode : Mode 2: HDMI (DF-55)

Description : Radiated Susceptibility (RS) Test Setup

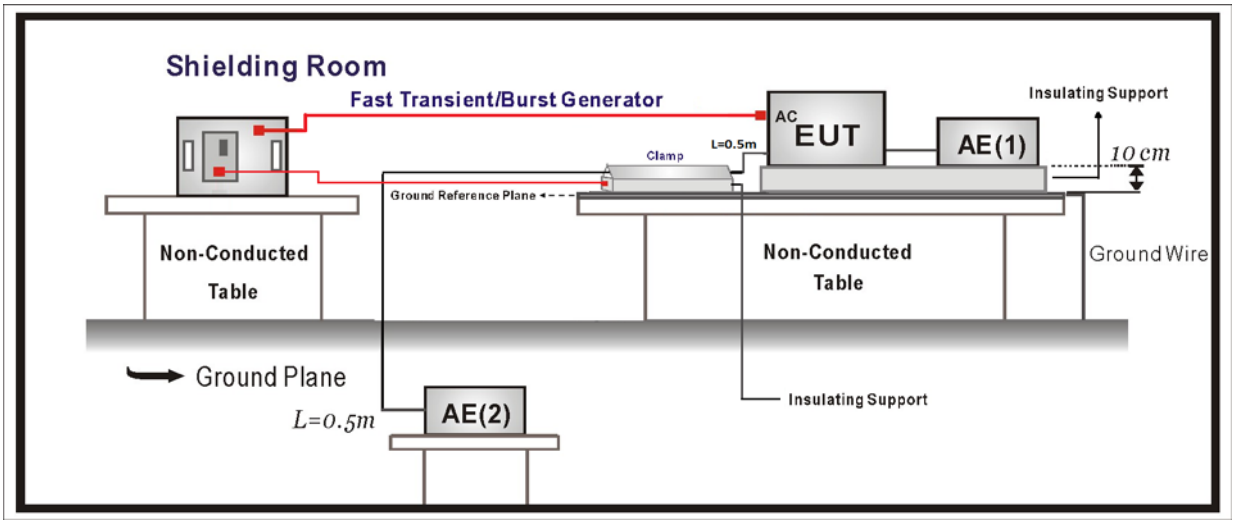


9. Electrical Fast Transient/Burst

9.1. Test Specification

According to Standard : IEC 61000-4-4

9.2. Test Setup



9.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
I/O and communication ports (See 1)				
	Fast Transients Common Mode	kV (Peak) Tr/Th ns Rep. Frequency kHz	±0.5 5/50 5	B
Input DC Power Ports				
	Fast Transients Common Mode	kV (Peak) Tr/Th ns Rep. Frequency kHz	±0.5 5/50 5	B
Input AC Power Ports				
	Fast Transients Common Mode	kV (Peak) Tr/Th ns Rep. Frequency kHz	±1 5/50 5	B

Note:

1) For xDSL equipment, the repetition frequency for EFT testing shall be 100 kHz.

9.4. Test Procedure

The EUT is placed on a table that is 0.8 meter height. A ground reference plane is placed on the table, and uses a 0.1m insulation between the EUT and ground reference plane.
The minimum area of the ground reference plane is 1m*1m, and 0.65mm thick min, and projected beyond the EUT by at least 0.1m on all sides.

Test on I/O and communication ports:
The EFT interference signal is through a coupling clamp device couples to the signal and control lines of the EUT with burst noise for 1minute.

Test on power supply ports:
The EUT is connected to the power mains through a coupling device that directly couples the EFT/B interference signal.
Each of the Line and Neutral conductors is impressed with burst noise for 1 minute.

The length of the signal and power lines between the coupling device and the EUT is 0.5m.

9.5. Deviation from Test Standard

No deviation.

9.6. Test Result

Product	55” Dual-Sided LCD Signage Display		
Test Item	Electrical fast transient/burst		
Test Mode	Mode 1: HDMI (DS-55)		
Date of Test	2014/03/23	Test Site	SR1

Inject Line	Polarity	Voltage kV	Inject Time (Second)	Inject Method	Required Criteria	Complied to Criteria	Result
L	±	1	60	Direct	B	A	Pass
N	±	1	60	Direct	B	A	Pass
PE	±	1	60	Direct	B	A	Pass
L+N	±	1	60	Direct	B	A	Pass
L+PE	±	1	60	Direct	B	A	Pass
N+PE	±	1	60	Direct	B	A	Pass
L+N+PE	±	1	60	Direct	B	A	Pass
Power Line	±	0.5	60	Clamp	B	A	Pass

☒ Meet criteria A : Operate as intended during and after the test

☐ Meet criteria B : Operate as intended after the test

☐ Meet criteria C : Loss/Error of function

☐ Additional Information

☐ EUT stopped operation and could / could not be reset by operator at _____ kV of Line _____.

☒ No false alarms or other malfunctions were observed during or after the test.

Product	55” Dual-Sided LCD Signage Display		
Test Item	Electrical fast transient/burst		
Test Mode	Mode 2: HDMI (DF-55)		
Date of Test	2014/03/23	Test Site	SR1

Inject Line	Polarity	Voltage kV	Inject Time (Second)	Inject Method	Required Criteria	Complied to Criteria	Result
L	±	1	60	Direct	B	A	Pass
N	±	1	60	Direct	B	A	Pass
PE	±	1	60	Direct	B	A	Pass
L+N	±	1	60	Direct	B	A	Pass
L+PE	±	1	60	Direct	B	A	Pass
N+PE	±	1	60	Direct	B	A	Pass
L+N+PE	±	1	60	Direct	B	A	Pass

☒ Meet criteria A : Operate as intended during and after the test
☐ Meet criteria B : Operate as intended after the test
☐ Meet criteria C : Loss/Error of function
☐ Additional Information
☐ EUT stopped operation and could / could not be reset by operator at _____ kV of Line _____.
☒ No false alarms or other malfunctions were observed during or after the test.

9.7. Test Photograph

Test Mode : Mode 1: HDMI (DS-55)

Description : Electrical Fast Transient/Burst (EFT/B) Test Setup

Test Mode : Mode 1: HDMI (DS-55)

Description : Electrical Fast Transient/Burst (EFT/B) Test Setup-Clamp (Power Line)

Test Mode　: Mode 2: HDMI (DF-55)

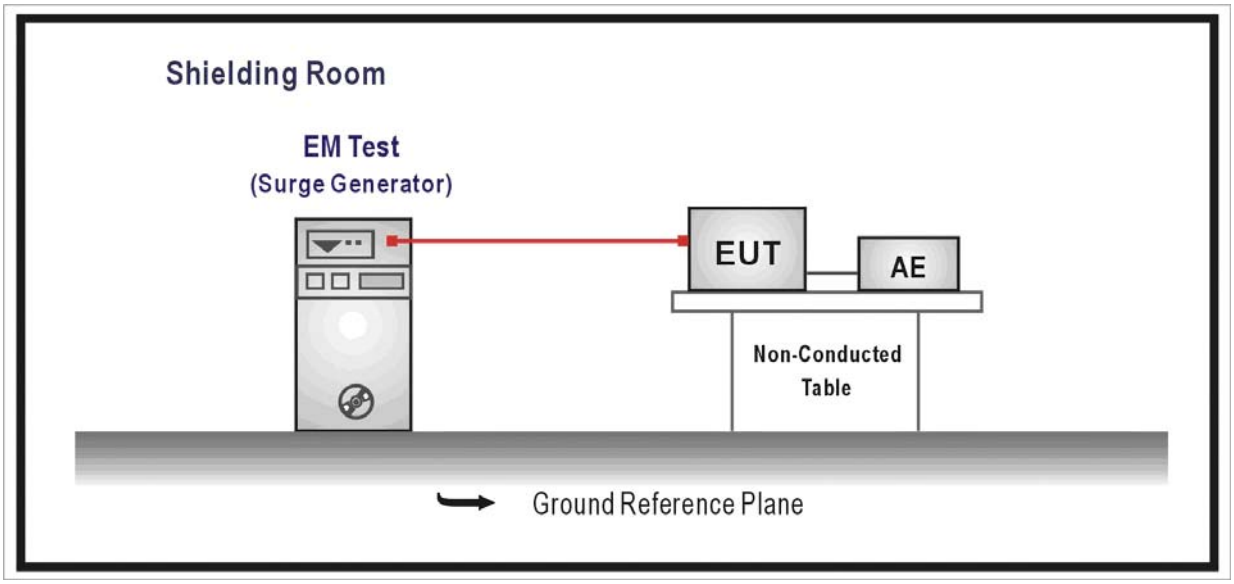
Description　: Electrical Fast Transient/Burst (EFT/B) Test Setup

10. Surge

10.1. Test Specification

According to Standard : IEC 61000-4-5

10.2. Test Setup



10.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Signal Ports and Telecommunication Ports(See 1) and 2) and 3) and 4))				
	Surges Line to Ground	Tr/Th us kV	10/700 ± 1	C
Input DC Power Ports				
	Surges Line to Ground	Tr/Th us kV	1.2/50 (8/20) ± 0.5	B
AC Input and AC Output Power Ports				
	Surges Line to Line Line to Ground	Tr/Th us kV kV	1.2/50 (8/20) ± 1 ± 2	B

Notes:

1) Applicable only to ports which according to the manufacturer's may directly to outdoor Cables.
2) Where normal functioning cannot be achieved because of the impact of the CDN on the EUT, no immunity test shall be required.
3) For ports where primary protection is intended, surges are applied at voltages up to 4 kV with the primary protectors fitted. Otherwise the 1 kV test level is applied without primary protection in place.
4) Where the coupling network for the 10/700 μs waveform affects the functioning of high speed data ports, the test shall be carried out using a 1,2/50 (8/20) μs waveform and appropriate coupling network.

10.4. Test Procedure

The EUT and its load are placed on a table that is 0.8 meter above a metal ground plane measured 1m*1m min. and 0.65mm thick min. And projected beyond the EUT by at least 0.1m on all sides. The length of power cord between the coupling device and the EUT shall be 2m or less.

For Input and Output AC Power or DC Input and DC Output Power Ports:

The EUT is connected to the power mains through a coupling device that directly couples the Surge interference signal.

The surge noise shall be applied synchronized to the voltage phase at 0^0, 90^0, 180^0, 270^0 and the peak value of the a.c. voltage wave. (Positive and negative)

Each of Line-Earth and Line-Line is impressed with a sequence of five surge voltages with interval of 1 min.

10.5. Deviation from Test Standard

No deviation.

10.6. Test Result

Product	55” Dual-Sided LCD Signage Display		
Test Item	Surge		
Test Mode	Mode 1: HDMI (DS-55)		
Date of Test	2014/03/27	Test Site	SR1

Inject Line	Polarity	Angle	Voltage kV	Time Interval (Second)	Inject Method	Required Criteria	Complied to Criteria	Result
L-N	±	0	1	60	Direct	B	A	Pass
L-N	±	90	1	60	Direct	B	A	Pass
L-N	±	180	1	60	Direct	B	A	Pass
L-N	±	270	1	60	Direct	B	A	Pass
L-PE	±	0	2	60	Direct	B	A	Pass
L-PE	±	90	2	60	Direct	B	A	Pass
L-PE	±	180	2	60	Direct	B	A	Pass
L-PE	±	270	2	60	Direct	B	A	Pass
N-PE	±	0	2	60	Direct	B	A	Pass
N-PE	±	90	2	60	Direct	B	A	Pass
N-PE	±	180	2	60	Direct	B	A	Pass
N-PE	±	270	2	60	Direct	B	A	Pass

☒ Meet criteria A : Operate as intended during and after the test
☐ Meet criteria B : Operate as intended after the test
☐ Meet criteria C : Loss/Error of function
☐ Additional Information
- ☐ EUT stopped operation and could / could not be reset by operator at _____ kV of Line _____.
- ☒ No false alarms or other malfunctions were observed during or after the test.

Product	55” Dual-Sided LCD Signage Display		
Test Item	Surge		
Test Mode	Mode 2: HDMI (DF-55)		
Date of Test	2014/03/27	Test Site	SR1

Inject Line	Polarity	Angle	Voltage kV	Time Interval (Second)	Inject Method	Required Criteria	Complied to Criteria	Result
L-N	±	0	1	60	Direct	B	A	Pass
L-N	±	90	1	60	Direct	B	A	Pass
L-N	±	180	1	60	Direct	B	A	Pass
L-N	±	270	1	60	Direct	B	A	Pass
L-PE	±	0	2	60	Direct	B	A	Pass
L-PE	±	90	2	60	Direct	B	A	Pass
L-PE	±	180	2	60	Direct	B	A	Pass
L-PE	±	270	2	60	Direct	B	A	Pass
N-PE	±	0	2	60	Direct	B	A	Pass
N-PE	±	90	2	60	Direct	B	A	Pass
N-PE	±	180	2	60	Direct	B	A	Pass
N-PE	±	270	2	60	Direct	B	A	Pass

☒ Meet criteria A : Operate as intended during and after the test
☐ Meet criteria B : Operate as intended after the test
☐ Meet criteria C : Loss/Error of function
☐ Additional Information
☐ EUT stopped operation and could / could not be reset by operator at _____ kV of Line _____.
☒ No false alarms or other malfunctions were observed during or after the test.

10.7. Test Photograph

Test Mode : Mode 1: HDMI (DS-55)

Description : Surge Test Setup

Test Mode : Mode 2: HDMI (DF-55)

Description : Surge Test Setup

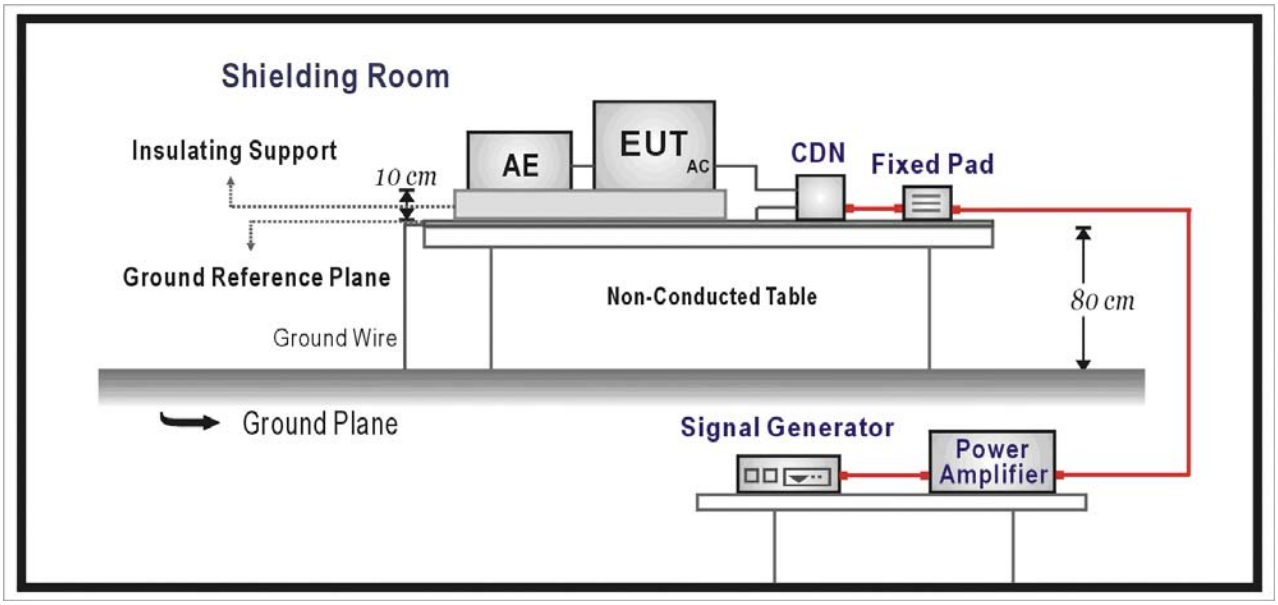
11. Conducted Susceptibility

11.1. Test Specification

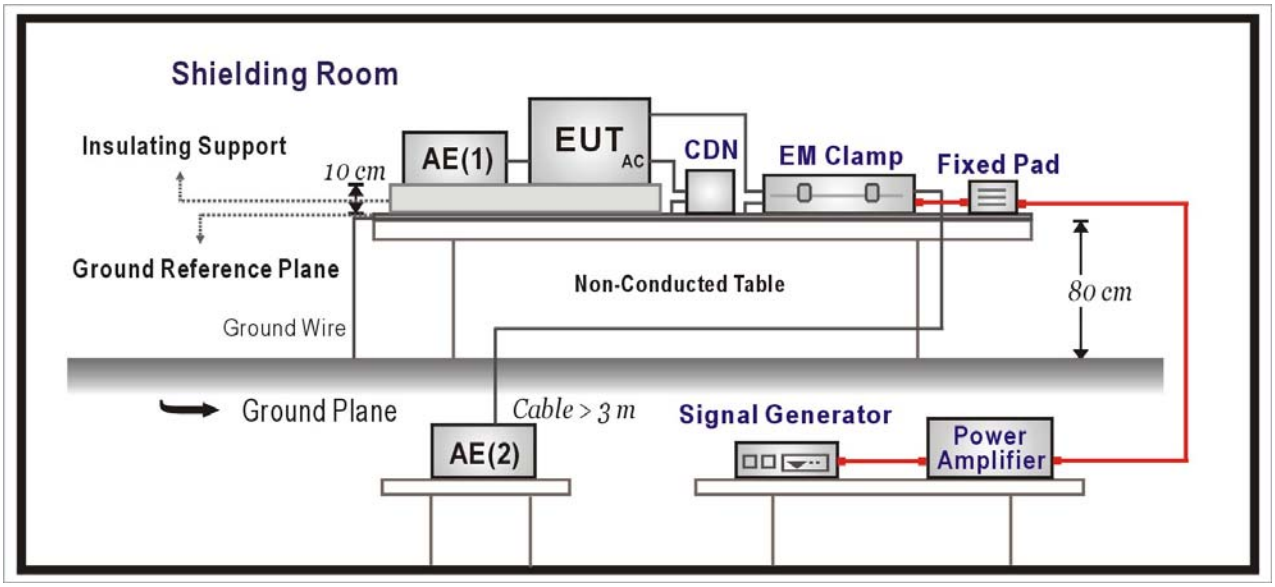
According to Standard : IEC 61000-4-6

11.2. Test Setup

CDN Test Mode



EM Clamp Test Mode



11.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Signal Ports and Telecommunication Ports				
	Radio-Frequency Continuous Conducted	MHz V (rms, Un-modulated) % AM (1kHz)	0.15-80 3 80	A
Input DC Power Ports				
	Radio-Frequency Continuous Conducted	MHz V (rms, Un-modulated) % AM (1kHz)	0.15-80 3 80	A
Input AC Power Ports				
	Radio-Frequency Continuous Conducted	MHz V (rms, Un-modulated) % AM (1kHz)	0.15-80 3 80	A

11.4. Test Procedure

The EUT are placed on a table that is 0.8 meter height, and a Ground reference plane on the table, EUT are placed upon table and use a 10cm insulation between the EUT and Ground reference plane.

For Signal Ports and Telecommunication Ports

The disturbance signal is through a coupling and decoupling networks (CDN) or EM-clamp device couples to the signal and Telecommunication lines of the EUT.

For Input DC and AC Power Ports

The EUT is connected to the power mains through a coupling and decoupling networks for power supply lines. And directly couples the disturbances signal into EUT.

Used CDN-M2 for two wires or CDN-M3 for three wires.

All the scanning conditions are as follows:

	Condition of Test	Remarks
1.	Field Strength	130dBuV(3V) Level 2
2.	Radiated Signal	AM 80% Modulated with 1kHz
3.	Scanning Frequency	0.15MHz – 80MHz
4	Dwell Time	3 Seconds
5.	Frequency step size Δf :	1%

11.5. Deviation from Test Standard

No deviation.

11.6. Test Result

Product	55” Dual-Sided LCD Signage Display		
Test Item	Conducted susceptibility		
Test Mode	Mode 1: HDMI (DS-55)		
Date of Test	2014/03/24	Test Site	SR4

Frequency Range (MHz)	Voltage Applied (V)	Inject Method	Tested Port of EUT	Required Criteria	Performance Criteria Complied To	Result
0.15~80	3	CDN	AC IN	A	A	Pass
0.15~80	3	Clamp	Power Line	A	A	Pass

☒ Meet criteria A : Operate as intended during and after the test
☐ Meet criteria B : Operate as intended after the test
☐ Meet criteria C : Loss/Error of function
☐ Additional Information
- ☐ EUT stopped operation and could / could not be reset by operator at _____ dBuV(V) at frequency _____MHz.
- ☒ No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

Product	55” Dual-Sided LCD Signage Display		
Test Item	Conducted susceptibility		
Test Mode	Mode 2: HDMI (DF-55)		
Date of Test	2014/03/24	Test Site	SR1

Frequency Range (MHz)	Voltage Applied (V)	Inject Method	Tested Port of EUT	Required Criteria	Performance Criteria Complied To	Result
0.15~80	3	CDN	AC IN	A	A	Pass

☒ Meet criteria A : Operate as intended during and after the test

☐ Meet criteria B : Operate as intended after the test

☐ Meet criteria C : Loss/Error of function

☐ Additional Information

☐ EUT stopped operation and could / could not be reset by operator at _____ dBuV(V) at frequency _____MHz.

☒ No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

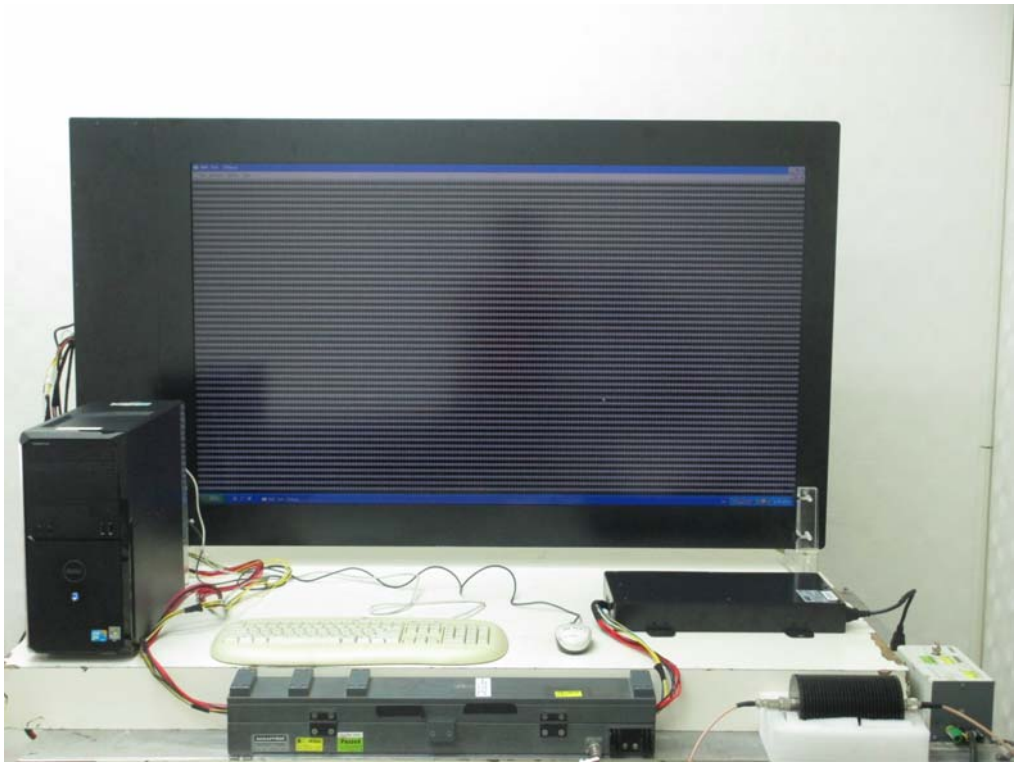
11.7. Test Photograph

Test Mode : Mode 1: HDMI (DS-55)

Description : Conducted Susceptibility (CS) Test Setup

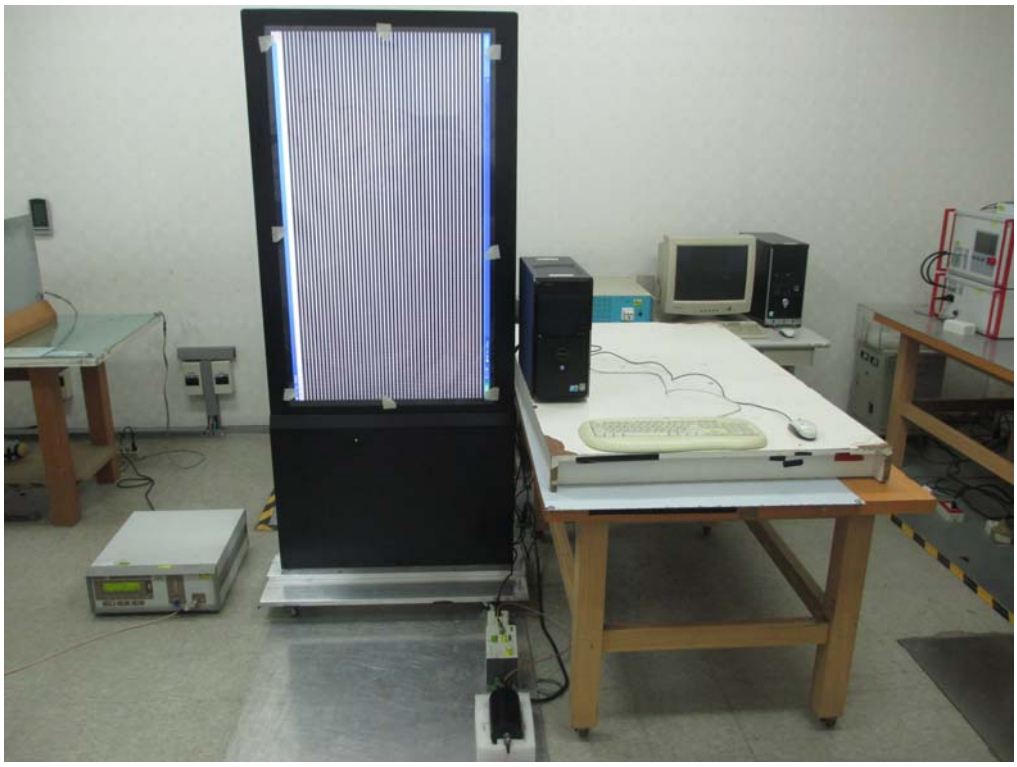
Test Mode : Mode 1: HDMI (DS-55)

Description : Conducted Susceptibility (CS) Test Setup- Clamp (LAN Cable)



Test Mode : Mode 2: HDMI (DF-55)

Description : Conducted Susceptibility (CS) Test Setup

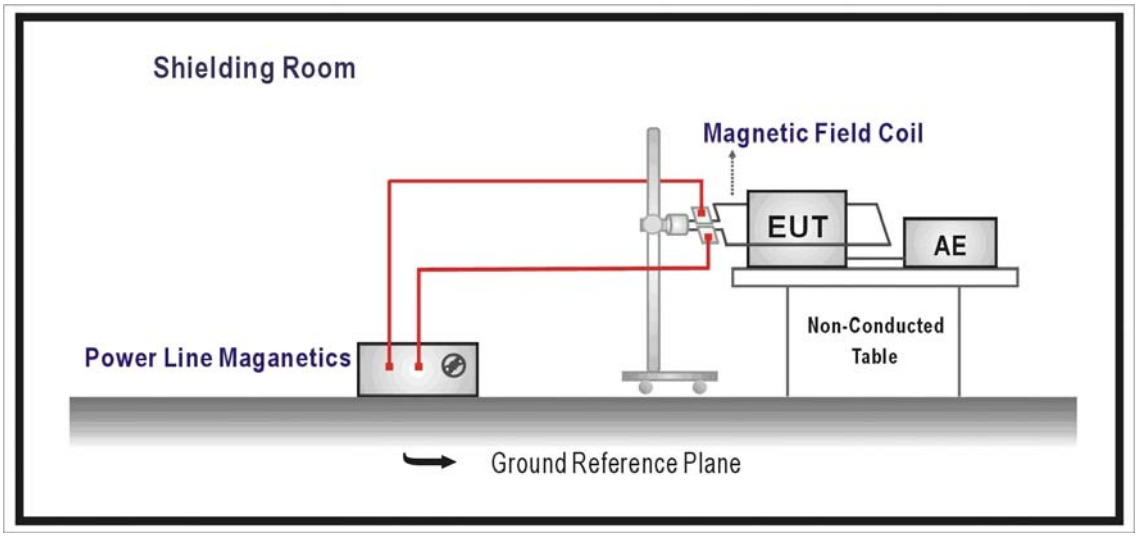


12. Power Frequency Magnetic Field

12.1. Test Specification

According to Standard : IEC 61000-4-8

12.2. Test Setup



12.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Enclosure Port				
	Power-Frequency Magnetic Field	Hz A/m (r.m.s.)	50 1	A

12.4. Test Procedure

The EUT and its load are placed on a table which is 0.8 meter above a metal ground plane measured at least 1m*1m min. The test magnetic field shall be placed at central of the induction coil.

The test magnetic Field shall be applied 1 minute by the immersion method to the EUT. And the induction coil shall be rotated by 90° in order to expose the EUT to the test field with different orientation (X, Y, Z Orientations).

12.5. Deviation from Test Standard

No deviation.

12.6. Test Result

Product	55” Dual-Sided LCD Signage Display		
Test Item	Power frequency magnetic field		
Test Mode	Mode 1: HDMI (DS-55)		
Date of Test	2014/03/25	Test Site	SR1

Polarization	Frequency (Hz)	Magnetic Strength (A/m)	Required Performance Criteria	Performance Criteria Complied To	Test Result
X Orientation	50	1	A	A	Pass
Y Orientation	50	1	A	A	Pass
Z Orientation	50	1	A	A	Pass

☒ Meet criteria A : Operate as intended during and after the test
☐ Meet criteria B : Operate as intended after the test
☐ Meet criteria C : Loss/Error of function
☐ Additional Information
  ☐ EUT stopped operation and could / could not be reset by operator at _____ A/m.
  ☒ No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

Product	55” Dual-Sided LCD Signage Display		
Test Item	Power frequency magnetic field		
Test Mode	Mode 2: HDMI (DF-55)		
Date of Test	2014/03/25	Test Site	SR1

Polarization	Frequency (Hz)	Magnetic Strength (A/m)	Required Performance Criteria	Performance Criteria Complied To	Test Result
X Orientation	50	1	A	A	Pass
Y Orientation	50	1	A	A	Pass
Z Orientation	50	1	A	A	Pass

☒ Meet criteria A : Operate as intended during and after the test
☐ Meet criteria B : Operate as intended after the test
☐ Meet criteria C : Loss/Error of function
☐ Additional Information
- ☐ EUT stopped operation and could / could not be reset by operator at _____ A/m.
- ☒ No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

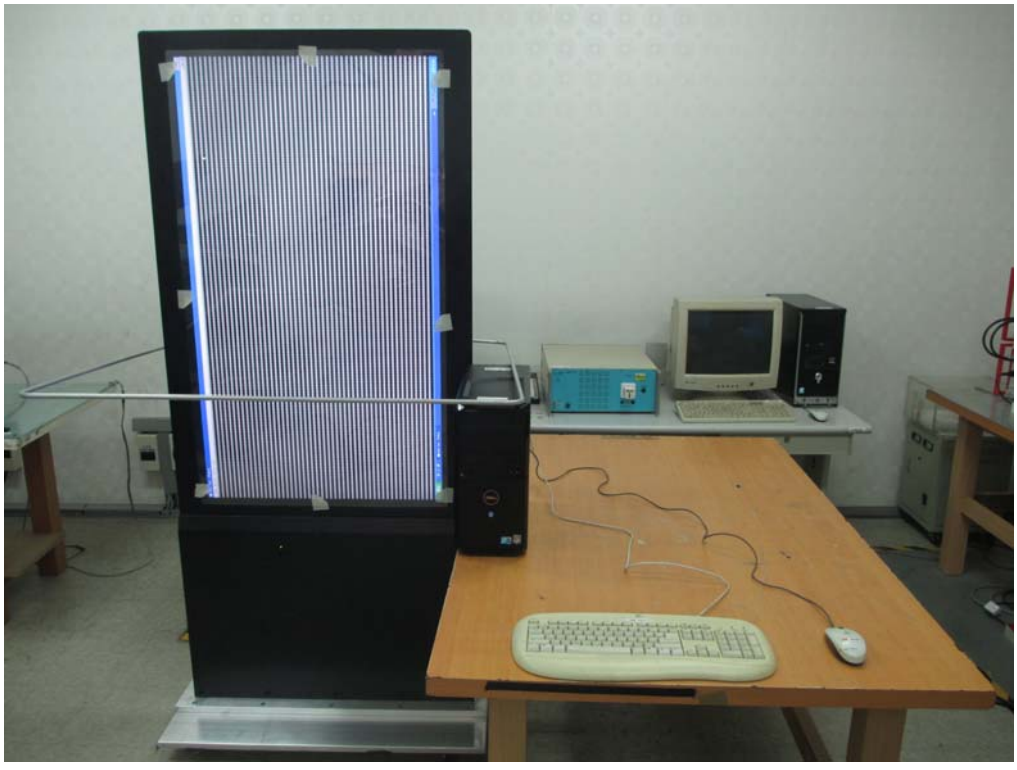
12.7. Test Photograph

Test Mode : Mode 1: HDMI (DS-55)

Description : Power Frequency Magnetic Field Test Setup

Test Mode : Mode 2: HDMI (DF-55)

Description : Power Frequency Magnetic Field Test Setup

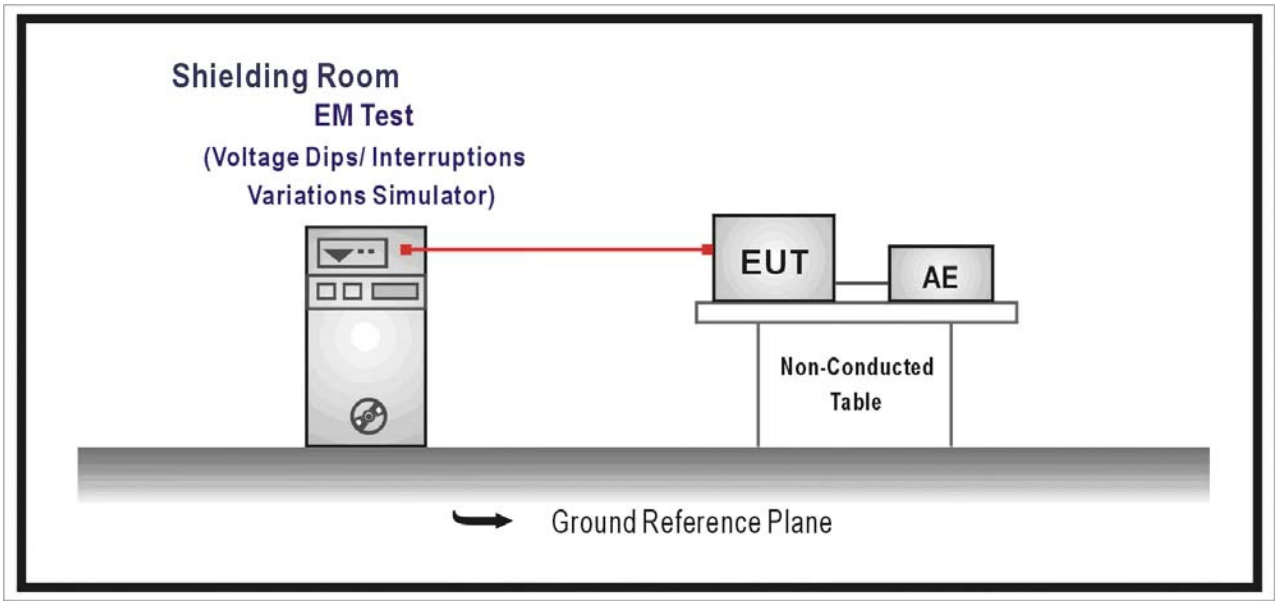


13. Voltage Dips and Interruption

13.1. Test Specification

According to Standard : IEC 61000-4-11

13.2. Test Setup



13.3. Limit

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Input AC Power Ports				
	Voltage Dips	% Reduction Period	30 25	C
		% Reduction Period	>95 0.5	B
	Voltage Interruptions	% Reduction Period	>95 250	C

13.4. Test Procedure

The EUT and its load are placed on a table which is 0.8 meter above a metal ground plane measured 1m*1m min. And 0.65mm thick min. And projected beyond the EUT by at least 0.1m on all sides. The power cord shall be used the shortest power cord as specified by the manufacturer.

For Voltage Dips/ Interruptions test:

The selection of test voltage is based on the rated power range. If the operation range is large than 20% of lower power range, both end of specified voltage shall be tested. Otherwise, the typical voltage specification is selected as test voltage.

The EUT is connected to the power mains through a coupling device that directly couples to the Voltage Dips and Interruption Generator.

The EUT shall be tested for 30% voltage dip of supplied voltage and duration 25 Periods, for 95% voltage dip of supplied voltage and duration 0.5 Periods with a sequence of three voltage dips with intervals of 10 seconds, and for 95% voltage interruption of supplied voltage and duration 250 Periods with a sequence of three voltage interruptions with intervals of 10 seconds.

Voltage phase shifting are shall occur at 0^0, 45^0, 90^0 ,135^0 ,180^0 ,225^0, 270^0 ,315^0 of the voltage.

13.5. Deviation from Test Standard

No deviation.

13.6. Test Result

Product	55” Dual-Sided LCD Signage Display		
Test Item	Voltage dips and interruption		
Test Mode	Mode 1: HDMI (DS-55)		
Date of Test	2014/03/26	Test Site	SR1

AC 100V/ 50Hz

Voltage Dips and Interruption Reduction(%)	Angle	Test Duration (Periods)	Required Performance Criteria	Performance Criteria Complied To	Test Result
30	0	25	C	A	Pass
30	45	25	C	A	Pass
30	90	25	C	A	Pass
30	135	25	C	A	Pass
30	180	25	C	A	Pass
30	225	25	C	A	Pass
30	270	25	C	A	Pass
30	315	25	C	A	Pass
>95	0	0.5	B	A	Pass
>95	45	0.5	B	A	Pass
>95	90	0.5	B	A	Pass
>95	135	0.5	B	A	Pass
>95	180	0.5	B	A	Pass
>95	225	0.5	B	A	Pass
>95	270	0.5	B	A	Pass
>95	315	0.5	B	A	Pass
>95	0	250	C	B	Pass
>95	45	250	C	B	Pass
>95	90	250	C	B	Pass
>95	135	250	C	B	Pass
>95	180	250	C	B	Pass
>95	225	250	C	B	Pass
>95	270	250	C	B	Pass
>95	315	250	C	B	Pass

☒ Meet criteria A : Operate as intended during and after the test

☒ Meet criteria B : Operate as intended after the test

☐ Meet criteria C : Loss/Error of function

☐ Additional Information

- ☐ The nominal voltage of EUT is 230V.
- ☐ EUT stopped operation and could / could not be reset by operator at _____.
- ☒ No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

Product	55” Dual-Sided LCD Signage Display		
Test Item	Voltage dips and interruption		
Test Mode	Mode 1: HDMI (DS-55)		
Date of Test	2010/03/26	Test Site	SR1

AC 240V/ 50Hz

Voltage Dips and Interruption Reduction(%)	Angle	Test Duration (Periods)	Required Performance Criteria	Performance Criteria Complied To	Test Result
30	0	25	C	A	Pass
30	45	25	C	A	Pass
30	90	25	C	A	Pass
30	135	25	C	A	Pass
30	180	25	C	A	Pass
30	225	25	C	A	Pass
30	270	25	C	A	Pass
30	315	25	C	A	Pass
>95	0	0.5	B	A	Pass
>95	45	0.5	B	A	Pass
>95	90	0.5	B	A	Pass
>95	135	0.5	B	A	Pass
>95	180	0.5	B	A	Pass
>95	225	0.5	B	A	Pass
>95	270	0.5	B	A	Pass
>95	315	0.5	B	A	Pass
>95	0	250	C	B	Pass
>95	45	250	C	B	Pass
>95	90	250	C	B	Pass
>95	135	250	C	B	Pass
>95	180	250	C	B	Pass
>95	225	250	C	B	Pass
>95	270	250	C	B	Pass
>95	315	250	C	B	Pass

☒ Meet criteria A : Operate as intended during and after the test

☒ Meet criteria B : Operate as intended after the test

☐ Meet criteria C : Loss/Error of function

☐ Additional Information

- ☐ The nominal voltage of EUT is 230V.
- ☐ EUT stopped operation and could / could not be reset by operator at _____.
- ☒ No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

Product	55” Dual-Sided LCD Signage Display		
Test Item	Voltage dips and interruption		
Test Mode	Mode 2: HDMI (DF-55)		
Date of Test	2014/03/26	Test Site	SR1

AC 100V/ 50Hz

Voltage Dips and Interruption Reduction(%)	Angle	Test Duration (Periods)	Required Performance Criteria	Performance Criteria Complied To	Test Result
30	0	25	C	A	Pass
30	45	25	C	A	Pass
30	90	25	C	A	Pass
30	135	25	C	A	Pass
30	180	25	C	A	Pass
30	225	25	C	A	Pass
30	270	25	C	A	Pass
30	315	25	C	A	Pass
>95	0	0.5	B	A	Pass
>95	45	0.5	B	A	Pass
>95	90	0.5	B	A	Pass
>95	135	0.5	B	A	Pass
>95	180	0.5	B	A	Pass
>95	225	0.5	B	A	Pass
>95	270	0.5	B	A	Pass
>95	315	0.5	B	A	Pass
>95	0	250	C	B	Pass
>95	45	250	C	B	Pass
>95	90	250	C	B	Pass
>95	135	250	C	B	Pass
>95	180	250	C	B	Pass
>95	225	250	C	B	Pass
>95	270	250	C	B	Pass
>95	315	250	C	B	Pass

☒ Meet criteria A : Operate as intended during and after the test

☒ Meet criteria B : Operate as intended after the test

☐ Meet criteria C : Loss/Error of function

☐ Additional Information

- ☐ The nominal voltage of EUT is 230V.
- ☐ EUT stopped operation and could / could not be reset by operator at _____.
- ☒ No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

Product	55” Dual-Sided LCD Signage Display		
Test Item	Voltage dips and interruption		
Test Mode	Mode 2: HDMI (DF-55)		
Date of Test	2014/03/26	Test Site	SR1

AC 240V/ 50Hz

Voltage Dips and Interruption Reduction(%)	Angle	Test Duration (Periods)	Required Performance Criteria	Performance Criteria Complied To	Test Result
30	0	25	C	A	Pass
30	45	25	C	A	Pass
30	90	25	C	A	Pass
30	135	25	C	A	Pass
30	180	25	C	A	Pass
30	225	25	C	A	Pass
30	270	25	C	A	Pass
30	315	25	C	A	Pass
>95	0	0.5	B	A	Pass
>95	45	0.5	B	A	Pass
>95	90	0.5	B	A	Pass
>95	135	0.5	B	A	Pass
>95	180	0.5	B	A	Pass
>95	225	0.5	B	A	Pass
>95	270	0.5	B	A	Pass
>95	315	0.5	B	A	Pass
>95	0	250	C	B	Pass
>95	45	250	C	B	Pass
>95	90	250	C	B	Pass
>95	135	250	C	B	Pass
>95	180	250	C	B	Pass
>95	225	250	C	B	Pass
>95	270	250	C	B	Pass
>95	315	250	C	B	Pass

☒ Meet criteria A : Operate as intended during and after the test

☒ Meet criteria B : Operate as intended after the test

☐ Meet criteria C : Loss/Error of function

☐ Additional Information

- ☐ The nominal voltage of EUT is 230V.
- ☐ EUT stopped operation and could / could not be reset by operator at _____.
- ☒ No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

13.7. Test Photograph

Test Mode : Mode 1: HDMI (DS-55)

Description : Voltage Dips and Interruption Test Setup

Test Mode : Mode 2: HDMI (DF-55)

Description : Voltage Dips and Interruption Test Setup

14. Attachment

➢ EUT Photograph

(1) EUT Photo (M/N: DS-55)

(2) EUT Photo

(3) EUT Photo (M/N: DF-55)

(4) EUT Photo