

EMC TEST REPORT For

NEC DISPLAY SOLUTIONS,. LTD.

projector

Model No.: NP-M403H, NP-M323H, NP-M353WS, NP-M303WS, NP-M333XS,
NP-M403W, NP-M363W, NP-M323W, NP-M403X, NP-M363X, NP-M323X,
NP-M283X

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Date of Test : April 14, 2015 to May 08, 2015
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TEST REPORT DESCRIPTION

Applicant : NEC DISPLAY SOLUTIONS,. LTD.
 Manufacturer : NEC DISPLAY SOLUTIONS,. LTD.
 Trademark : NEC
 EUT : projector
 Model No. : NP-M403H, NP-M323H, NP-M353WS, NP-M303WS, NP-M333XS,
 NP-M403W, NP-M363W, NP-M323W, NP-M403X, NP-M363X, NP-M323X,
 NP-M283X
 Power Supply : 100 to 240VAC, 50/60Hz

Measurement Procedure Used:

EN 55022: 2010+AC: 2011
 EN 61000-3-2:2014
 EN 61000-3-3:2013
 EN 55024:2010
 (IEC 61000-4-2:2008, IEC 61000-4-3:2006+A1:2007+A2:2010, IEC61000-4-4:2012,
 IEC 61000-4-5:2005, IEC 61000-4-6:2013, IEC 61000-4-8:2009, IEC 61000-4-11:2004)

The device described above is tested by SHENZHEN EMTEK 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 measurement results are contained in this test report and SHENZHEN EMTEK CO., LTD. is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the EN55022, EN61000-3-2, EN61000-3-3 and EN55024 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of SHENZHEN EMTEK CO., LTD.

Date of Test : April 14, 2015 to May 08, 2015

Prepared by : 
 Season Ma/Editor

Reviewer : 
 Jessie Hu/Supervisor

Approved & Authorized Signer : 
 Lisa Wang/Manager

Modified Information

Version	Report No.	Revision Date	Summary
Ver.1.0	ES150413118E	/	Original Report

1. SUMMARY OF TEST RESULT

EMISSION			
Description of Test Item	Standard	Limits	Results
Conducted Disturbance at Mains Terminals	EN 55022:2010+AC: 2011	Class B	Pass
Conducted Disturbance at Telecommunication Ports	EN 55022:2010+AC: 2011	Class B	Pass
Radiated Disturbance	EN 55022:2010+AC: 2011	Class B	Pass
Harmonic Current Emissions	EN 61000-3-2:2014	Class A	N/A
Voltage Fluctuation and Flicker	EN 61000-3-3:2013	Section 5	Pass
IMMUNITY (EN 55024:2010)			
Description of Test Item	Basic Standard	Performance Criteria	Results
Electrostatic Discharge (ESD)	IEC 61000-4-2:2008	B	Pass
Radio-Frequency, Continuous Radiated Disturbance	IEC 61000-4-3:2006 +A1:2007+A2:2010	A	Pass
EFT/B Immunity	IEC61000-4-4:2012	B	Pass
Surge Immunity	IEC 61000-4-5:2005	B	Pass
Conducted RF Immunity	IEC 61000-4-6:2013	A	Pass
Power Frequency Magnetic Field	IEC 61000-4-8:2009	A	Pass
Voltage Dips, >95% Reduction	IEC 61000-4-11:2004	B	Pass
Voltage Dips, 30% Reduction		C	Pass
Voltage Interruptions		C	Pass
Note: N/A is an abbreviation for Not Applicable.			

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT	: projector
Model Number	: NP-M403H, NP-M323H, NP-M353WS, NP-M303WS, NP-M333XS, NP-M403W, NP-M363W, NP-M323W, NP-M403X, NP-M363X, NP-M323X, NP-M283X (These models are identical in circuitry and electrical, mechanical and physical construction; the only differences are the resolution, power and model number. for trading purpose. NP-M403W, NP-M363W, NP-M323W, NP-M403X, NP-M363X, NP-M323X, NP-M283X is the same PCB, We prepare NP-M403W for test. NP-M353WS, NP-M303WS, NP-M333XS, NP-M403H, NP-M323H is the same PCB, We prepare NP-M403H for test.)
Test Voltage	: AC 230V/50Hz
Applicant	: NEC DISPLAY SOLUTIONS,. LTD.
Address	: 686-1, Nishioi, Oi-Machi Ashigarakami-gun, Kanagawa 258-8533, Japan
Manufacturer	: NEC DISPLAY SOLUTIONS,. LTD.
Address	: 686-1, Nishioi, Oi-Machi Ashigarakami-gun, Kanagawa 258-8533, Japan
Factory 1	: SUZHOU SHIN-EI SANGYO CO., LTD.
Address 1	: No.158-106, 108, Huashan Road, New District Suzhou, Jiangsu, China 215011 P.R.China
Factory 2	: NEC PLATFORMS THAI CO., LTD.
Address 2	: 60/81 Moo 19 Nava Nakorn Industrial Zone, Paholyothin Road, Tambol Klong Neung, Amphur Klong Luang, Pathumthani Province, 12120 Thailand
Date of Received	: April 14, 2015
Date of Test	: April 14, 2015 to May 08, 2015

2.2. Description of Test Facility

Site Description

EMC Lab. : Accredited by CNAS, 2013.10.29
The certificate is valid until 2016.10.28
The Laboratory has been assessed and proved to be in compliance with
CNAS-CL01:2006 (identical to ISO/IEC 17025:2005)
The Certificate Registration Number Is L2291.

Accredited by TUV Rheinland Shenzhen 2010.5
The Laboratory has been assessed according to the requirements
ISO/IEC 17025.

Accredited by FCC, April 17, 2013
The Certificate Registration Number is 709623.

Accredited by Industry Canada, November 15, 2010
The Certificate Registration Number is 46405-4480.

Name of Firm : SHENZHEN EMTEK CO., LTD.
Site Location : Bldg 69, Majialong Industry Zone,
Nanshan District, Shenzhen, Guangdong, China

2.3. Description of Support Device

Notebook : Manufacturer: HP
M/N: Compaq 6515b
S/N: SS05538914
CE, FCC

2.4. Measurement Uncertainty

Test Item	Uncertainty
Conducted Emission Uncertainty	: 3.16dB(9k~150kHz Conduction 2#) 2.90dB(150k-30MHz Conduction 2#)
Radiated Emission Uncertainty (3m Chamber)	: 3.78dB (30M~1GHz Polarize: H) 4.27dB (30M~1GHz Polarize: V) 4.46dB (1~6GHz) 4.96dB (6~18GHz)
Uncertainty for Flicker test	: 0.07%
Uncertainty for Harmonic test	: 1.8%
Uncertainty for C/S Test	: 1.45(Using CDN Test) 2.37(Using EM Clamp Test)
Uncertainty for R/S Test	: 2.10dB(80MHz-200MHz) 1.76dB(200MHz-1000MHz)
Uncertainty for test site temperature and humidity	: 0.6°C 4%

3. MEASURING DEVICE AND TEST EQUIPMENT

3.1. For Conducted Emission Measurement

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	Test Receiver	Rohde & Schwarz	ESCS30	828985/018	May 17, 2014	1 Year
☒	L.I.S.N.	Schwarzbeck	NNLK8129	8129-203	May 17, 2014	1 Year
☐	L.I.S.N.	ROHDE & SCHWARZ	ESH3-Z6	100011	May 17, 2014	1 Year
☐	L.I.S.N.	ROHDE & SCHWARZ	ESH3-Z6	100253	May 17, 2014	1 Year
☒	L.I.S.N.	ROHDE & SCHWARZ	ESH3-Z5	100191	May 17, 2014	1 Year
☒	50Ω Coaxial Switch	Anritsu	MP59B	M20531	N/A	N/A
☐	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100006	May 17, 2014	1 Year
☐	Current probe	Rohde & Schwarz	EZ-17	0816.2063.02	May 17, 2014	1 Year
☒	I.S.N	Teseq GmbH	ISN T800	30327	May 17, 2014	1 Year
☐	I.S.N	Teseq GmbH	T8-CAT6	32186	May 17, 2014	1 Year

3.2. For 3m Radiated Emission Measurement

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	EMI Test Receiver	Rohde & Schwarz	ESU	1302.6005.26	May 17, 2014	1 Year
☒	Pre-Amplifier	HP	8447D	2944A07999	May 17, 2014	1 Year
☒	Bilog Antenna	Schwarzbeck	VULB9163	142	May 17, 2014	1 Year
☐	Loop Antenna	Schwarzbeck	FMZB 1519	012	May 17, 2014	1 Year
☒	Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170399	May 17, 2014	1 Year
☐	Horn Antenna	Schwarzbeck	BBHA 9120	D143	May 17, 2014	1 Year
☒	Cable	Schwarzbeck	AK9513	ACRX1	May 17, 2014	1 Year
☒	Cable	Rosenberger	N/A	FP2RX2	May 17, 2014	1 Year
☒	Cable	Schwarzbeck	AK9513	CRPX1	May 17, 2014	1 Year
☒	Cable	Schwarzbeck	AK9513	CRRX2	May 17, 2014	1 Year
☒	Pre-Amplifier	A.H.	PAM-0126	1415261	May 17, 2014	1 Year

3.3. For Harmonic Current / Flicker Measurement

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	45KVA AC Power source	Teseq	NSG 1007-45/45K VA	1305A02873	May 17, 2014	1 Year
☒	Signal conditioning Unit	Teseq	CCN 1000-3	1305A02873	May 17, 2014	1 Year
☒	Three phase impedance network	Teseq/Germany	INA2197/37A	1305A02873	May 17, 2014	1 Year
☒	Three phase impedance network	Teseq/Germany	INA 2196/75A	1305A02874	May 17, 2014	1 Year
☐	Proflin 2100 AC Switching Unit	Teseq/Germany	NSG2200-3	A22714	May 17, 2014	1 Year

3.4. For Electrostatic Discharge Immunity Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	ESD Tester	TESEQ AG	NSG 438A	130	May 17, 2014	1 Year
☒	Impulse Module	TESEQ AG	INA 4380-150pF/330Ohm	403-550/1712	May 17, 2014	1 Year

3.5. For RF Strength Susceptibility Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	Signal Generator	Agilent	N5181A	MY50145187	May 17, 2014	1 Year
☒	RF Power Meter. Dual Channel	BOONTON	4232A	10539	May 17, 2014	1 Year
☒	50ohm Diode Power Sensor	BOONTON	51011EMC	34236/34238	May 17, 2014	1 Year
☒	Field Strength Meter	DARE	RSS1006A	10I00037SO2 2	May 17, 2014	1 Year
☒	50ohm Diode Power Sensor	BOONTON	51011EMC	36164	May 17, 2014	1 Year
☒	Power Amplifier	MILMEGA	80RF1000-17 5	1059345	May 17, 2014	1 Year
☒	Power Amplifier	MILMEGA	AS0102-55	1018770	May 17, 2014	1 Year
☒	Power Amplifier	MILMEGA	AS1860-50	1059346	May 17, 2014	1 Year
☒	Log.-Per. Antenna	SCHWARZBE CK	VULP 9118E	811	May 17, 2014	1 Year
☒	Broad-Band Horn Antenna	SCHWARZBE CK	STLP 9149	9149-227	May 17, 2014	1 Year
☒	Multi-function interface system	DARE	CTR1009B	12I00250SNO 72	N/A	N/A
☒	Automatic switch group	DARE	RSW1004A	N/A	N/A	N/A

3.6. For Electrical Fast Transient / Burst Immunity Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	Burst Tester	HAEFELY	PEFT4010	080981-16	May 17, 2014	1 Year
☒	Coupling Clamp	HAEFELY	IP-4A	147147	May 17, 2014	1 Year

3.7. For Surge Immunity Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	Surge Controller	HAEFELY	Psurge 8000	174031	May 17, 2014	1 Year
☒	Impulse Module	HAEFELY	PIM 100	174124	May 17, 2014	1 Year
☒	Coupling Decoupling Filter	HAEFELY	PCD 130	172181	May 17, 2014	1 Year
☒	Coupling Module	HAEFELY	PCD122	174354	May 17, 2014	1 Year
☒	Surge Impulse Module	HAEFELY	PIM 120	174435	May 17, 2014	1 Year
☒	Coupling Module	HAEFELY	PCD 126A	174387	May 17, 2014	1 Year
☒	Impulse Module	HAEFELY	PIM 110	174391	May 17, 2014	1 Year

3.8. For Injected Current Susceptibility Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	Simulator	FRANKONIA	CIT-10	126B121012012	May 17, 2014	1 Year
☐	CDN	EMTEST	CDN-M2	5100100100	May 17, 2014	1 Year
☒	CDN	EMTEST	CDN-M3	0900-11	May 17, 2014	1 Year
☒	Injection Clamp	EMTEST	F-2031-23MM	368	May 17, 2014	1 Year
☒	Attenuator	EMTEST	ATT6	0010222A	May 17, 2014	1 Year

3.9. For Magnetic Field Immunity Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	Magnetic Field Tester	HAEFELY	MAG100	250040.1	May 17, 2014	1 Year

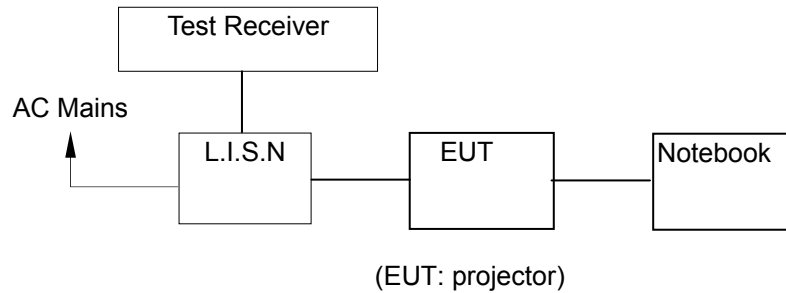
3.10. For Voltage Dips and Interruptions Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	45KVA AC Power source	Teseq	NSG 1007-45/45K VA	1305A02873	May 17, 2014	1 Year
☐	Signal conditioning Unit	Teseq	CCN 1000-3	1305A02873	May 17, 2014	1 Year
☐	Three phase impedance network	Teseq/Germany	INA2197/37A	1305A02873	May 17, 2014	1 Year
☐	Three phase impedance network	Teseq/Germany	INA 2196/75A	1305A02874	May 17, 2014	1 Year
☒	Proflin 2100 AC Switching Unit	Teseq/Germany	NSG2200-3	A22714	May 17, 2014	1 Year

4. CONDUCTED EMISSION MEASUREMENT

4.1. Block Diagram of Test Setup

4.1.1. Block diagram of EUT System



4.2. Measuring Standard

EN 55022: 2010+AC: 2011

4.3. Conducted Emission Limits (Class B)

Power Line Conducted Emission Limits

Frequency (MHz)	Limit (dB μ V)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66.0 ~ 56.0 *	56.0 ~ 46.0 *
0.50 ~ 5.00	56.0	46.0
5.00 ~ 30.00	60.0	50.0

NOTE1-The lower limit shall apply at the transition frequencies.
NOTE2-The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

Conducted Disturbance at Telecommunication Ports

Frequency (MHz)	Voltage Limit (dB μ V)		Current limits(dB μ V)	
	Quasi-peak Level	Average Level	Quasi-peak Level	Average Level
0.15 ~ 0.50	97.0 ~ 87.0	84.0 ~ 74.0	53.0 ~43.0	40.0 ~ 30.0
0.50 ~ 30.00	87.0	74.0	43.0	30.0

NOTE 1-The limits decrease linearly with the logarithm of the frequency in the range 0,15 MHz to 0,5 MHz.
NOTE 2-The current and voltage disturbance limits are derived for use with an impedance stabilization network (ISN) which presents a common mode (asymmetric mode) impedance of 150 Ω to the telecommunication port under test (conversion factor is $20 \log_{10} 150 / I = 44$ dB).

4.4. EUT Configuration on Measurement

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

EUT : projector
Model Number : NP-M403H, NP-M403W

4.5. Operating Condition of EUT

4.5.1. Setup the EUT as shown on Section 4.1.

4.5.2. Turn on the power of all equipments.

4.5.3. Let the EUT work in measuring mode (USB Play, AV in, HDMI in, VGA, Connect to PC(Ping)) and measure it.

4.6. Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and connected to the AC mains through Line Impedance Stability Network (L.I.S.N) or connected to the telecommunication port through an impedance stabilization network (ISN). L.I.S.N provided a 50ohm coupling impedance for the tested equipments AC mains port, I.S.N provided a common mode (asymmetric mode) impedance of 150 Ω to the telecommunication port under test. Both sides of AC line and telecommunication line are investigated to find out the maximum conducted emission according to the EN 55022 regulations during conducted emission measurement.

The bandwidth of the field strength meter (R&S Test Receiver ESCS30) is set at 9kHz in 150kHz~30MHz and 200Hz in 9kHz~150kHz.

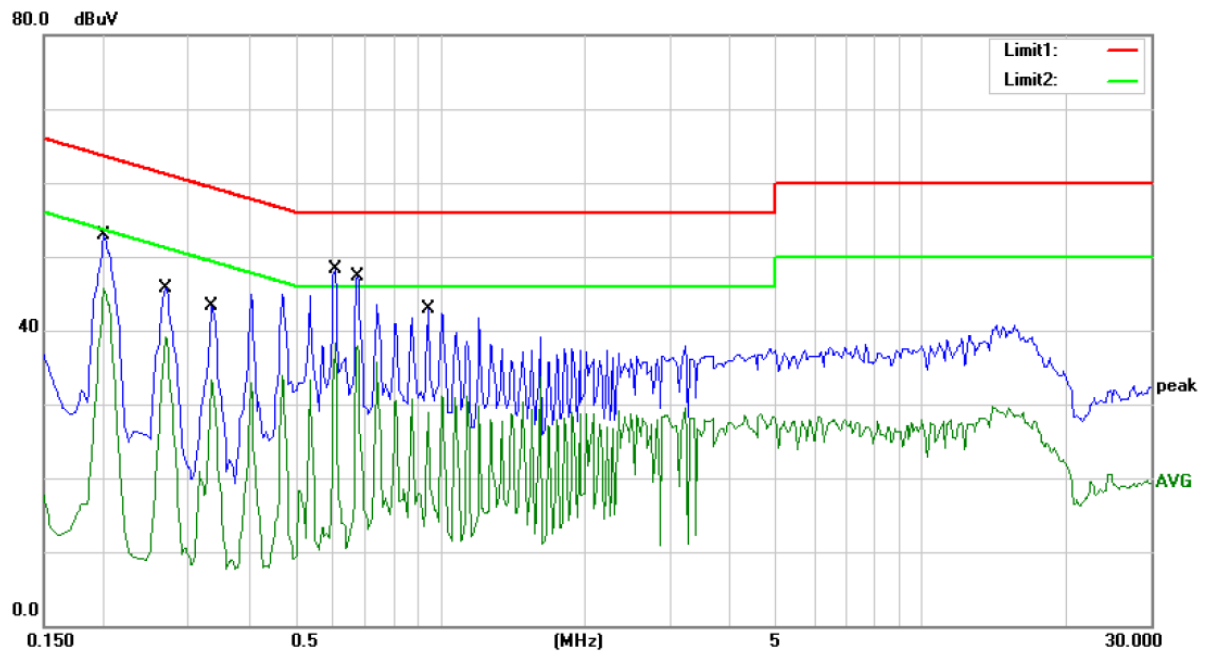
The frequency range from 150kHz to 30MHz is investigated.

4.7. Measuring Results

PASS.

Please see the attached pages.

All the modes were tested and the data of the worst modes (VGA, Connect to PC(Ping)) are attached the following pages.



Site Conduction #2

Phase: **L1**

Temperature: 26

Limit: (CE)EN55022 class B_QP

Power: AC 230V/50Hz

Humidity: 55 %

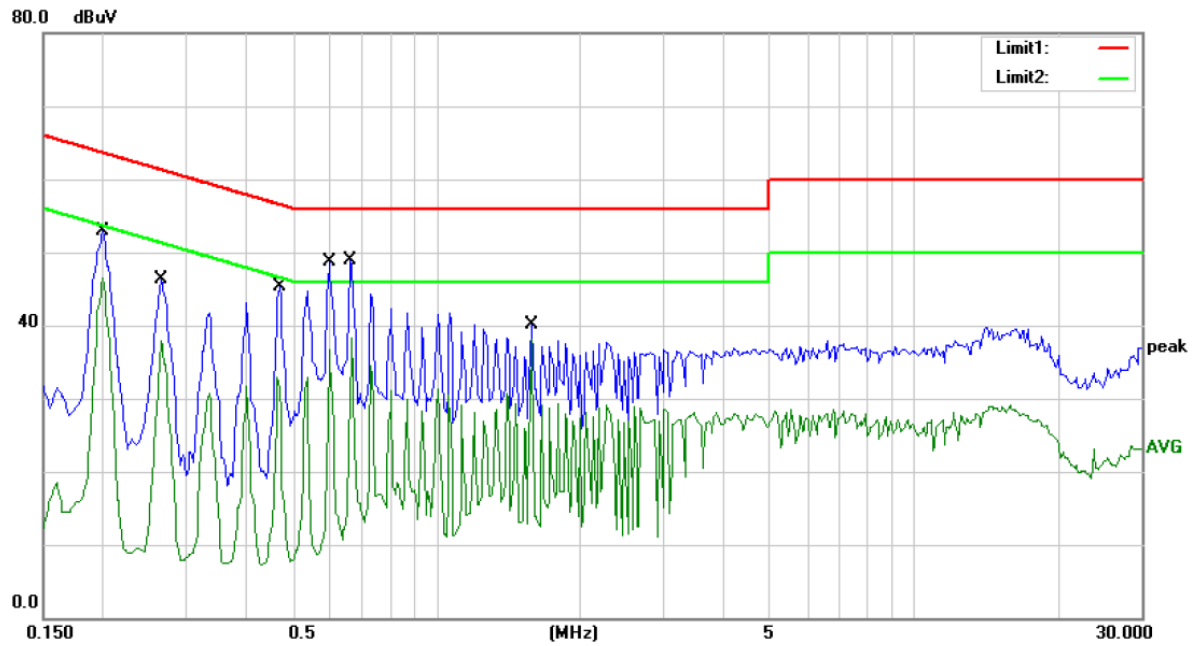
M/N: NP-M403H

Mode: VGA

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.2000	52.81	0.00	52.81	63.61	-10.80	QP	
2		0.2000	45.68	0.00	45.68	53.61	-7.93	AVG	
3		0.2700	45.72	0.00	45.72	61.12	-15.40	QP	
4		0.2700	39.06	0.00	39.06	51.12	-12.06	AVG	
5		0.3350	43.23	0.00	43.23	59.33	-16.10	QP	
6		0.3350	33.26	0.00	33.26	49.33	-16.07	AVG	
7		0.6050	48.23	0.00	48.23	56.00	-7.77	QP	
8	*	0.6050	38.40	0.00	38.40	46.00	-7.60	AVG	
9		0.6750	47.30	0.00	47.30	56.00	-8.70	QP	
10		0.6750	37.81	0.00	37.81	46.00	-8.19	AVG	
11		0.9450	42.98	0.00	42.98	56.00	-13.02	QP	
12		0.9450	31.19	0.00	31.19	46.00	-14.81	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: CH



Site Conduction #2

Phase: **N**

Temperature: 26

Limit: (CE)EN55022 class B_QP

Power: AC 230V/50Hz

Humidity: 55 %

M/N: NP-M403H

Mode: VGA

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.2000	52.95	0.00	52.95	63.61	-10.66	QP	
2		0.2000	46.45	0.00	46.45	53.61	-7.16	AVG	
3		0.2650	46.35	0.00	46.35	61.27	-14.92	QP	
4		0.2650	37.90	0.00	37.90	51.27	-13.37	AVG	
5		0.4700	45.22	0.00	45.22	56.51	-11.29	QP	
6		0.4700	32.90	0.00	32.90	46.51	-13.61	AVG	
7		0.5950	48.67	0.00	48.67	56.00	-7.33	QP	
8		0.5950	36.74	0.00	36.74	46.00	-9.26	AVG	
9	*	0.6600	48.88	0.00	48.88	56.00	-7.12	QP	
10		0.6600	38.30	0.00	38.30	46.00	-7.70	AVG	
11		1.5800	40.04	0.00	40.04	56.00	-15.96	QP	
12		1.5800	38.01	0.00	38.01	46.00	-7.99	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: CH



Site Conduction #2

Phase:

Temperature: 26

Limit: (CE)EN55022 class B TELECOM_QP

Power: AC 230V/50Hz

Humidity: 55 %

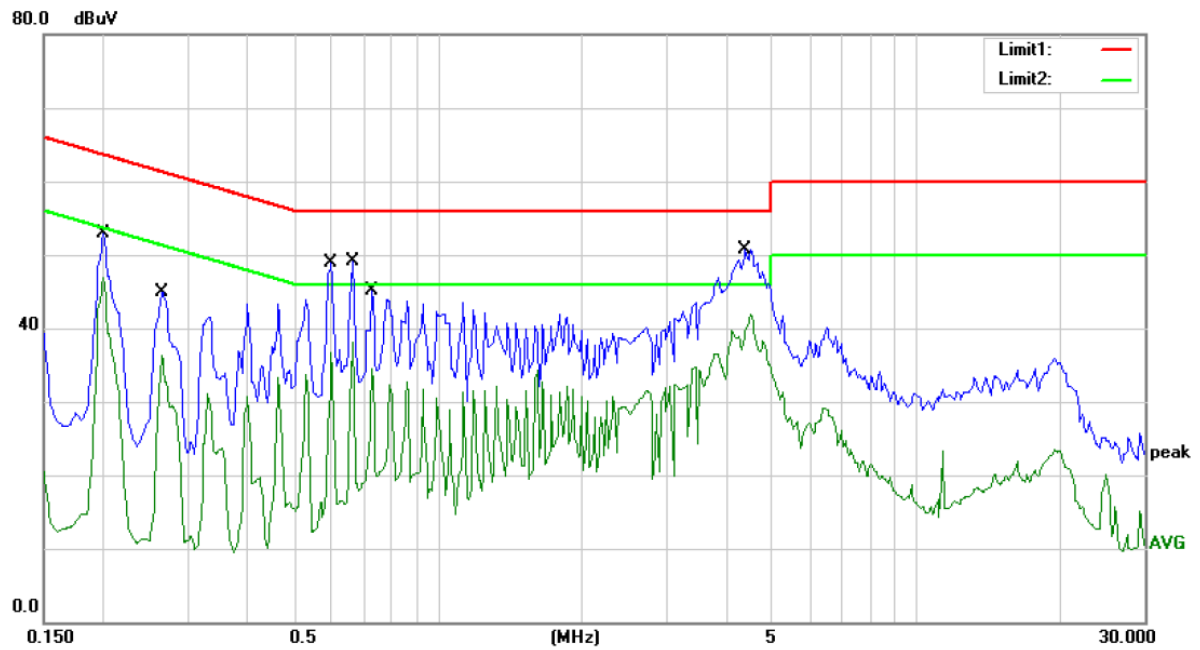
M/N: NP-M403H

Mode: Ping

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.9300	47.85	0.00	47.85	74.00	-26.15	QP	
2		0.9300	46.19	0.00	46.19	64.00	-17.81	AVG	
3		1.0250	47.09	0.00	47.09	74.00	-26.91	QP	
4	*	1.0250	46.37	0.00	46.37	64.00	-17.63	AVG	
5		1.1450	46.03	0.00	46.03	74.00	-27.97	QP	
6		1.1450	44.62	0.00	44.62	64.00	-19.38	AVG	
7		1.2650	47.31	0.00	47.31	74.00	-26.69	QP	
8		1.2650	45.94	0.00	45.94	64.00	-18.06	AVG	
9		1.6100	45.60	0.00	45.60	74.00	-28.40	QP	
10		1.6100	39.72	0.00	39.72	64.00	-24.28	AVG	
11		12.2000	46.43	0.00	46.43	74.00	-27.57	QP	
12		12.2000	45.68	0.00	45.68	64.00	-18.32	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: KK



Site Conduction #2

Phase: **L1**

Temperature: 26

Limit: (CE)EN55022classB_QP

Power: AC 230V/50Hz

Humidity: 55 %

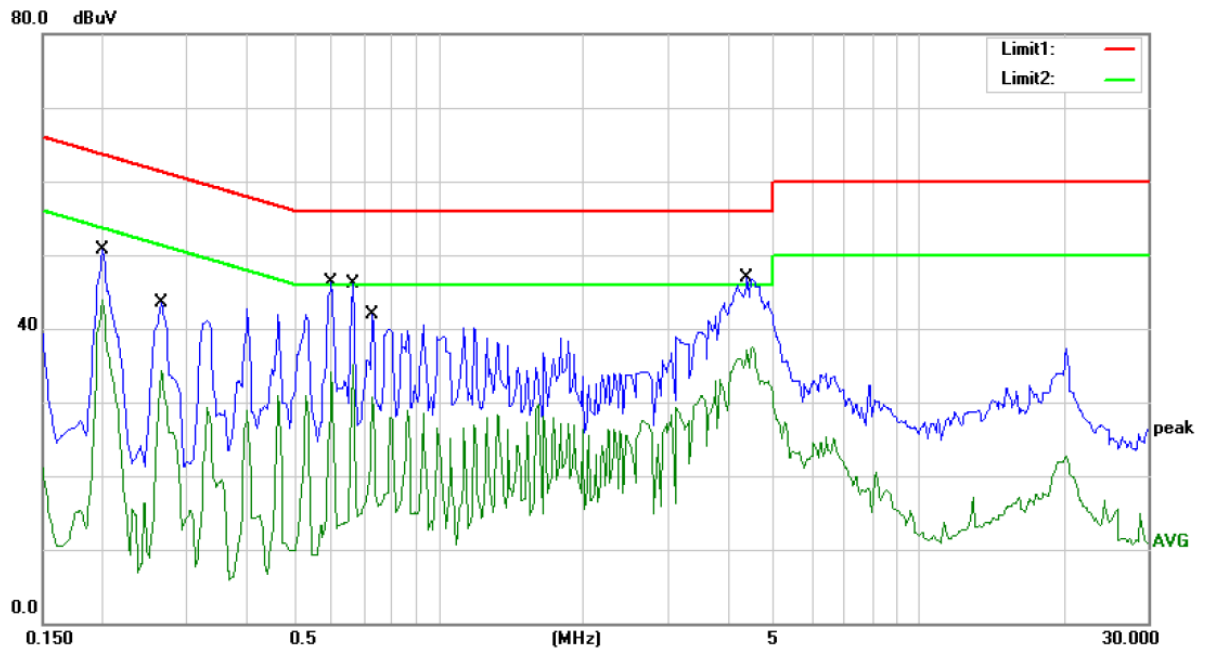
M/N: NP-M403W

Mode: VGA

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1995	52.87	0.00	52.87	63.63	-10.76	QP	
2		0.1995	46.98	0.00	46.98	53.63	-6.65	AVG	
3		0.2644	44.99	0.00	44.99	61.29	-16.30	QP	
4		0.2644	36.24	0.00	36.24	51.29	-15.05	AVG	
5		0.5980	48.95	0.00	48.95	56.00	-7.05	QP	
6		0.5980	36.77	0.00	36.77	46.00	-9.23	AVG	
7		0.6646	49.02	0.00	49.02	56.00	-6.98	QP	
8		0.6646	38.14	0.00	38.14	46.00	-7.86	AVG	
9		0.7273	45.06	0.00	45.06	56.00	-10.94	QP	
10		0.7273	34.54	0.00	34.54	46.00	-11.46	AVG	
11		4.3837	47.30	0.00	47.30	56.00	-8.70	QP	
12	*	4.3837	41.97	0.00	41.97	46.00	-4.03	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: KK



Site Conduction #2

Phase: **N**

Temperature: 26

Limit: (CE)EN55022classB_QP

Power: AC 230V/50Hz

Humidity: 55 %

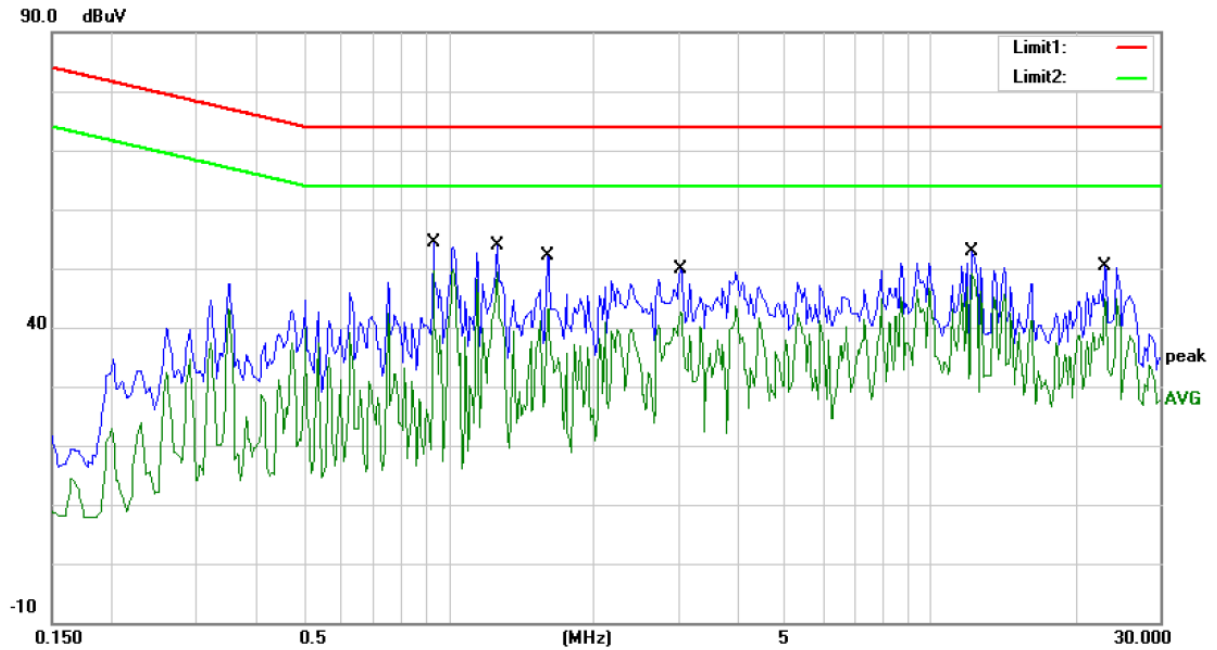
M/N: NP-M403W

Mode: VGA

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1995	50.78	0.00	50.78	63.63	-12.85	QP	
2		0.1995	43.82	0.00	43.82	53.63	-9.81	AVG	
3		0.2644	43.45	0.00	43.45	61.29	-17.84	QP	
4		0.2644	34.40	0.00	34.40	51.29	-16.89	AVG	
5		0.5980	46.34	0.00	46.34	56.00	-9.66	QP	
6		0.5980	34.04	0.00	34.04	46.00	-11.96	AVG	
7		0.6645	46.19	0.00	46.19	56.00	-9.81	QP	
8		0.6645	35.04	0.00	35.04	46.00	-10.96	AVG	
9		0.7273	41.94	0.00	41.94	56.00	-14.06	QP	
10		0.7273	30.79	0.00	30.79	46.00	-15.21	AVG	
11		4.3837	46.90	0.00	46.90	56.00	-9.10	QP	
12	*	4.3837	37.53	0.00	37.53	46.00	-8.47	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: KK



Site Conduction #2

Phase:

Temperature: 26

Limit: (CE)EN55022 class B TELECOM_QP

Power: AC 230V/50Hz

Humidity: 55 %

M/N: NP-M403W

Mode: Ping

Note:

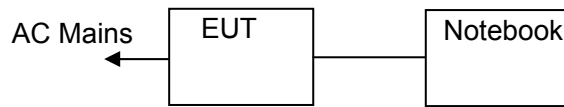
No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	Level	Factor	ment			Detector	Comment
			dBuV	dB	dBuV	dBuV	dB		
1		0.9300	54.35	0.00	54.35	74.00	-19.65	QP	
2	*	0.9300	49.69	0.00	49.69	64.00	-14.31	AVG	
3		1.2650	53.81	0.00	53.81	74.00	-20.19	QP	
4		1.2650	49.44	0.00	49.44	64.00	-14.56	AVG	
5		1.6100	52.10	0.00	52.10	74.00	-21.90	QP	
6		1.6100	43.22	0.00	43.22	64.00	-20.78	AVG	
7		3.0400	49.89	0.00	49.89	74.00	-24.11	QP	
8		3.0400	42.64	0.00	42.64	64.00	-21.36	AVG	
9		12.2000	52.93	0.00	52.93	74.00	-21.07	QP	
10		12.2000	49.18	0.00	49.18	64.00	-14.82	AVG	
11		23.1250	50.50	0.00	50.50	74.00	-23.50	QP	
12		23.1250	44.96	0.00	44.96	64.00	-19.04	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: KK

5. RADIATED EMISSION MEASUREMENT

5.1. Block Diagram of Test Setup

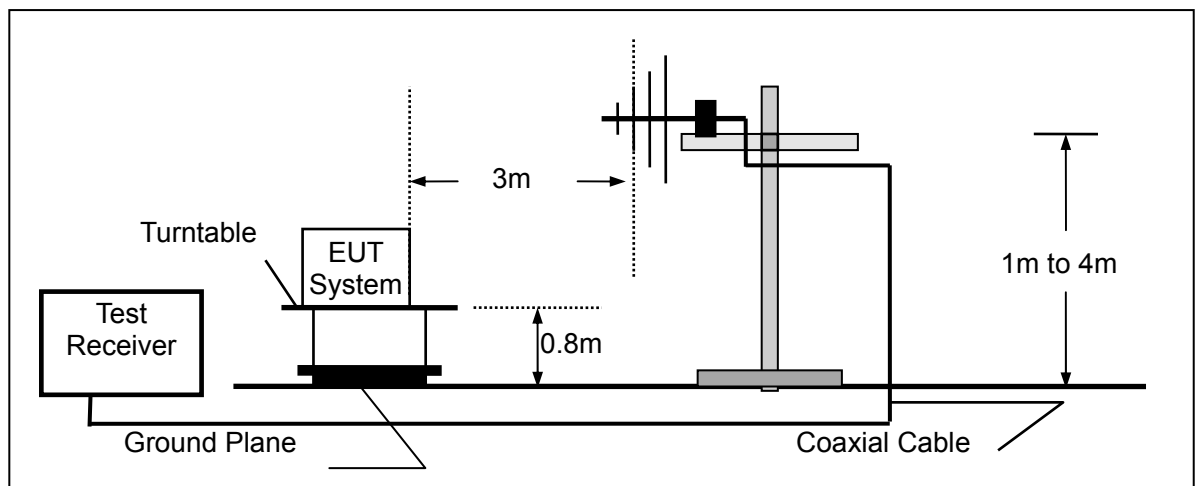
5.1.1. Block diagram of EUT System



(EUT: projector)

5.1.2. Block diagram of test setup (In chamber)

Below 1GHz:



(EUT: projector)

5.2. Measuring Standard

EN 55022: 2010+AC: 2011

5.3. Radiated Emission Limits (Class B)

All emanations from a Class B device 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 LIMIT (dB μ V/m)
30 ~ 230	3	40
230 ~ 1000	3	47

FREQUENCY (MHz)	DISTANCE (Meters)	Average Limit	Peak Limit
		(dB μ V/m)	
1000 ~ 3000	3	50	70
3000 ~ 6000	3	54	74

Note: (1) The smaller limit shall apply at the combination point 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 EUT.

5.4. EUT Configuration on Measurement

The EN 55022 regulations test method must be used to find the maximum emission during radiated emission measurement.

EUT : projector
Model Number : NP-M403H, NP-M403W

5.5. Operating Condition of EUT

5.5.1. Setup the EUT as shown on Section 5.1.

5.5.2. Turn on the power of all equipments.

5.5.3. Let the EUT work in measuring mode (USB Play, HDMI IN, AV in, VGA, Connect to PC(Ping)) and measure it.

5.6. Test Procedure

The EUT is placed on a turntable which is 0.8 meter high above the ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna that is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Bilog antenna (calibrated by Dipole Antenna) and horn antenna are used as a receiving antenna. Both horizontal and vertical polarization of the antenna is set on test.

The bandwidth of the Receiver is set at 120kHz.

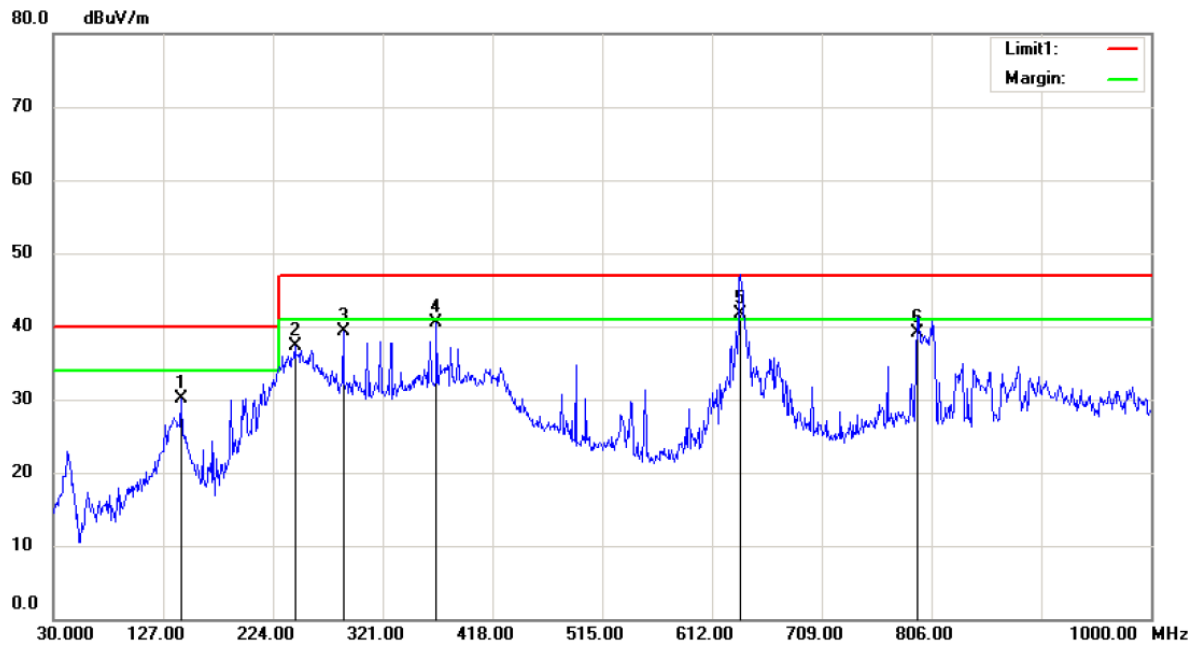
5.7. Measuring Results

PASS.

The frequency range from 30MHz to 6000MHz is investigated.

Please see the attached pages.

All the modes were tested and the data of the worst modes (VGA, Connect to PC(Ping)) are attached the following pages.



Site 3m Chamber #1

Polarization: **Horizontal**

Temperature: 22 C

Limit: (RE)EN55022 class B

Power: AC 230V/50Hz

Humidity: 50 %

M/N: NP-M403H

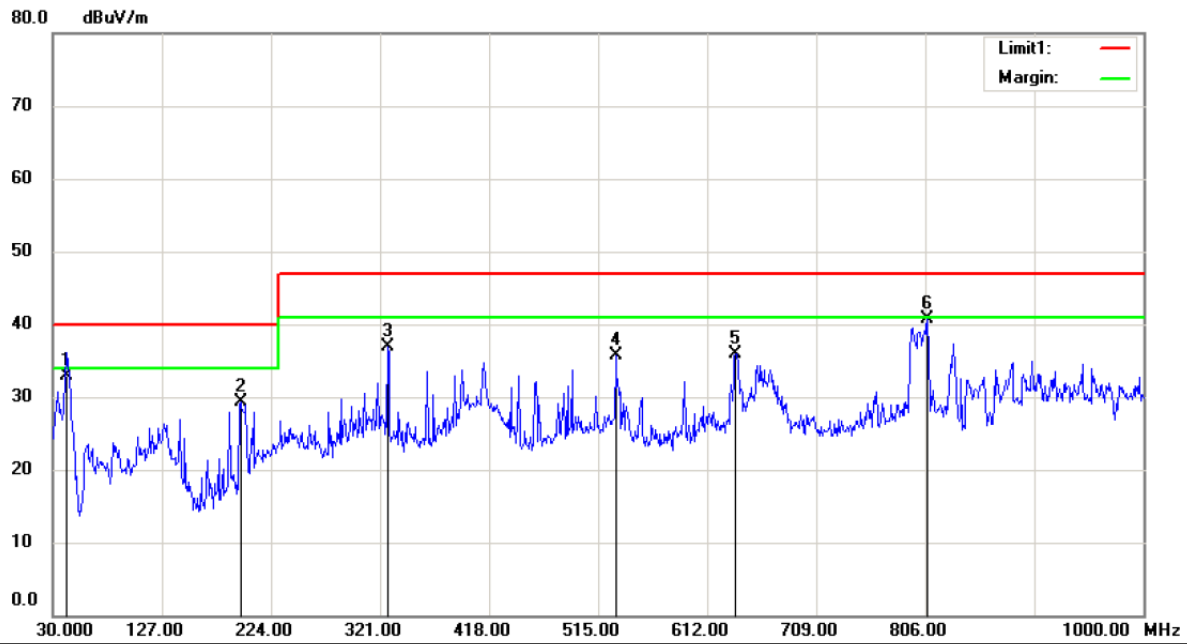
Mode:VGA

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		142.5200	47.28	-17.14	30.14	40.00	-9.86	QP		
2		243.4000	49.77	-12.41	37.36	47.00	-9.64	QP		
3		286.0800	50.20	-10.91	39.29	47.00	-7.71	QP		
4		368.5300	49.91	-9.38	40.53	47.00	-6.47	QP		
5	*	637.2200	46.94	-5.24	41.70	47.00	-5.30	QP		
6		793.3900	42.35	-3.15	39.20	47.00	-7.80	QP		

*:Maximum data x:Over limit !:over margin

Operator: KK



Site 3m Chamber #1

Polarization: **Vertical**

Temperature: 22 C

Limit: (RE)EN55022 class B

Power: AC 230V/50Hz

Humidity: 50 %

M/N: NP-M403H

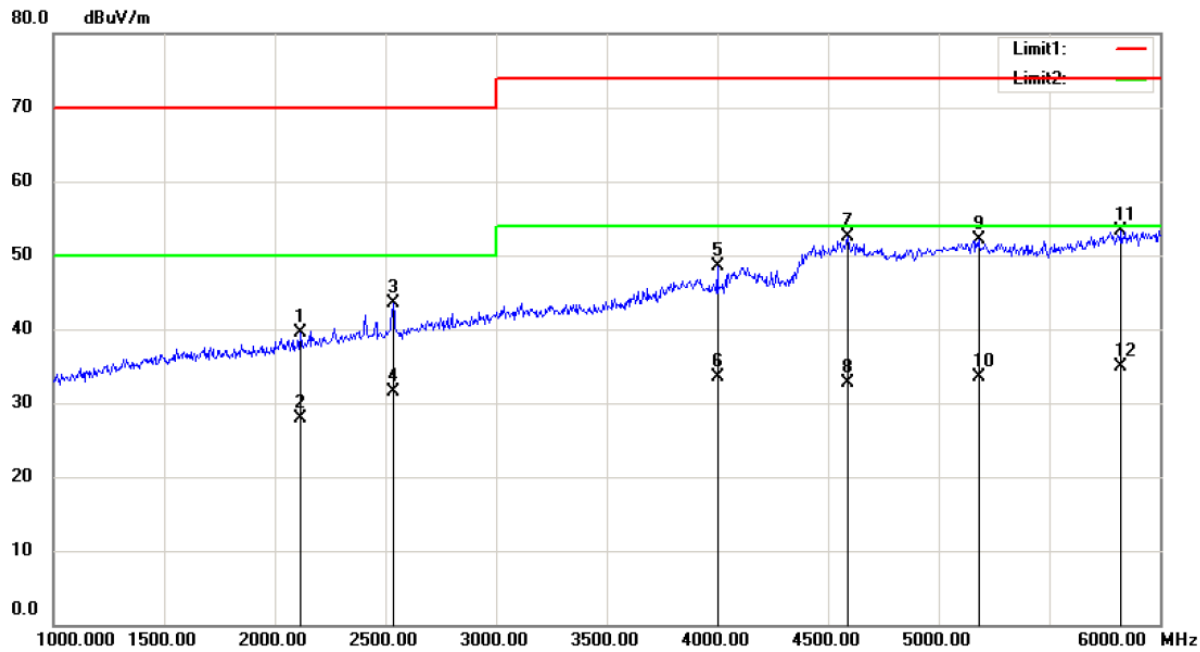
Mode:VGA

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree
1		42.6100	44.57	-11.57	33.00	40.00	-7.00	QP		
2		196.8400	44.87	-15.47	29.40	40.00	-10.60	QP		
3		327.7900	48.16	-11.35	36.81	47.00	-10.19	QP		
4		530.5200	41.63	-5.96	35.67	47.00	-11.33	QP		
5		637.2200	41.17	-5.24	35.93	47.00	-11.07	QP		
6	*	807.9400	44.19	-3.48	40.71	47.00	-6.29	QP		

*:Maximum data x:Over limit !:over margin

Operator: KK



Site 3m Chamber #1

Polarization: **Horizontal**

Temperature: 24 C

Limit: (RE)EN55022 class B_Peak

Power: AC 230V/50Hz

Humidity: 53 %

M/N: NP-M403H

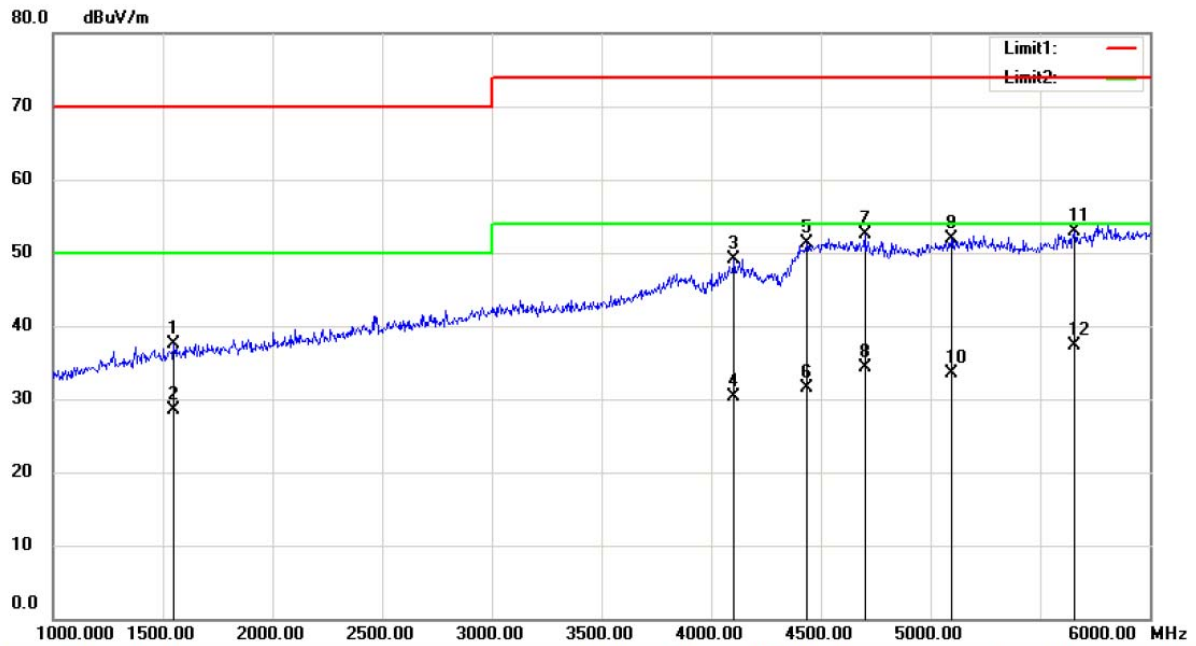
Mode: Connect to PC(Ping)

Note:

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table	
		MHz	Level	Factor	ment			Height	Degree	
			dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		2115.000	48.86	-9.42	39.44	70.00	-30.56	peak		
2		2115.000	37.25	-9.42	27.83	50.00	-22.17	AVG		
3		2535.000	51.22	-7.66	43.56	70.00	-26.44	peak		
4	*	2535.000	39.20	-7.66	31.54	50.00	-18.46	AVG		
5		4000.000	51.55	-3.07	48.48	74.00	-25.52	peak		
6		4000.000	36.60	-3.07	33.53	54.00	-20.47	AVG		
7		4590.000	53.19	-0.73	52.46	74.00	-21.54	peak		
8		4590.000	33.36	-0.73	32.63	54.00	-21.37	AVG		
9		5180.000	50.89	1.13	52.02	74.00	-21.98	peak		
10		5180.000	32.32	1.13	33.45	54.00	-20.55	AVG		
11		5825.000	50.06	3.31	53.37	74.00	-20.63	peak		
12		5825.000	31.56	3.31	34.87	54.00	-19.13	AVG		

*:Maximum data x:Over limit !:over margin

Operator: KK



Site 3m Chamber #1

Polarization: **Vertical**

Temperature: 24 C

Limit: (RE)EN55022 class B _Peak

Power: AC 230V/50Hz

Humidity: 53 %

M/N: NP-M403H

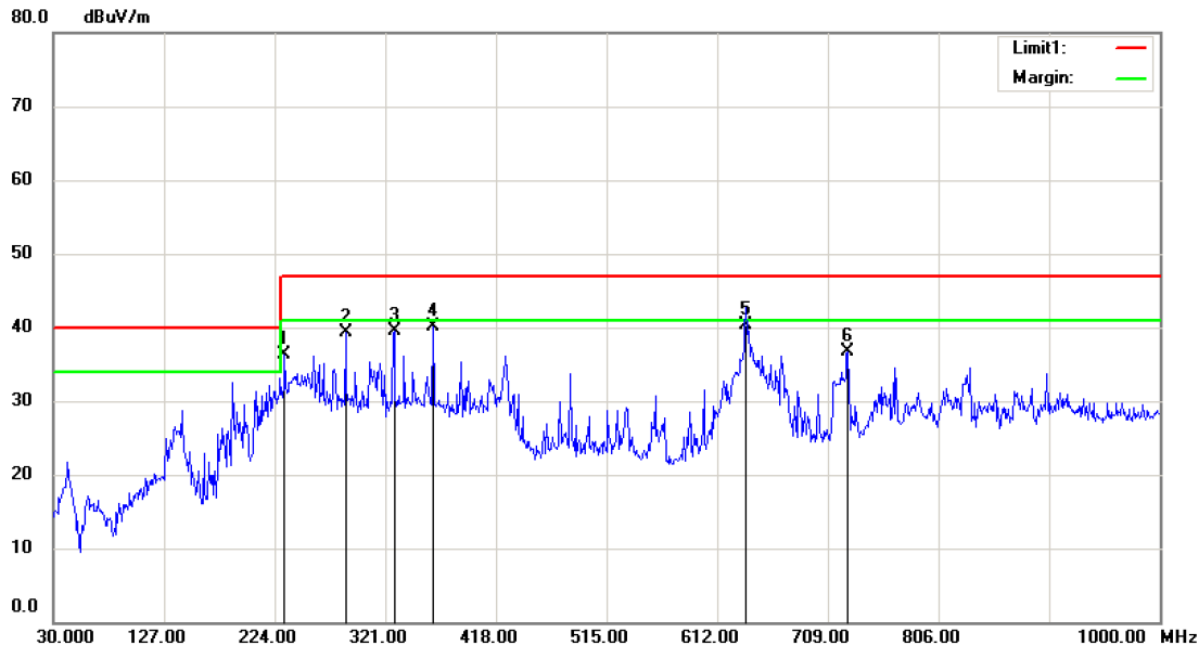
Mode: Connect to PC(Ping)

Note:

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table	
		MHz	Level	Factor	ment			Height	Degree	
			dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		1550.000	48.59	-11.07	37.52	70.00	-32.48	peak		
2		1550.000	39.60	-11.07	28.53	50.00	-21.47	AVG		
3		4105.000	51.81	-2.65	49.16	74.00	-24.84	peak		
4		4105.000	32.89	-2.65	30.24	54.00	-23.76	AVG		
5		4435.000	52.71	-1.34	51.37	74.00	-22.63	peak		
6		4435.000	32.87	-1.34	31.53	54.00	-22.47	AVG		
7		4700.000	52.86	-0.29	52.57	74.00	-21.43	peak		
8		4700.000	34.65	-0.29	34.36	54.00	-19.64	AVG		
9		5095.000	50.86	1.02	51.88	74.00	-22.12	peak		
10		5095.000	32.52	1.02	33.54	54.00	-20.46	AVG		
11		5655.000	50.44	2.37	52.81	74.00	-21.19	peak		
12	*	5655.000	34.88	2.37	37.25	54.00	-16.75	AVG		

*:Maximum data x:Over limit !:over margin

Operator: KK



Site 3m Chamber #1

Polarization: **Horizontal**

Temperature: 22 C

Limit: (RE)EN55022 class B

Power: AC 230V/50Hz

Humidity: 50 %

M/N: NP-M403W

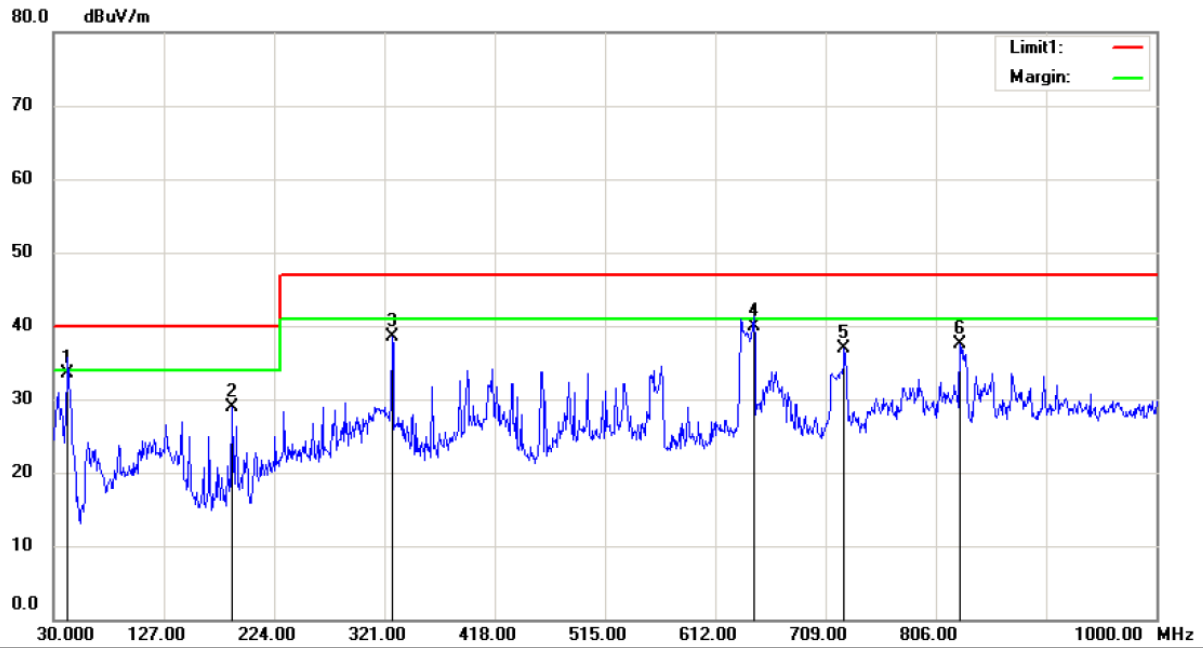
Mode: VGA

Note:

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table	
		MHz	Level	Factor	ment			Height	Degree	
			dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		232.7300	49.52	-13.28	36.24	47.00	-10.76	QP		
2		286.0800	50.21	-10.91	39.30	47.00	-7.70	QP		
3		328.7600	50.89	-11.33	39.56	47.00	-7.44	QP		
4		362.7100	49.44	-9.35	40.09	47.00	-6.91	QP		
5	*	637.2200	45.54	-5.24	40.30	47.00	-6.70	QP		
6		726.4600	42.29	-5.61	36.68	47.00	-10.32	QP		

*:Maximum data x:Over limit !:over margin

Operator: KK



Site 3m Chamber #1

Polarization: **Vertical**

Temperature: 22 C

Limit: (RE)EN55022 class B

Power: AC 230V/50Hz

Humidity: 50 %

M/N: NP-M403W

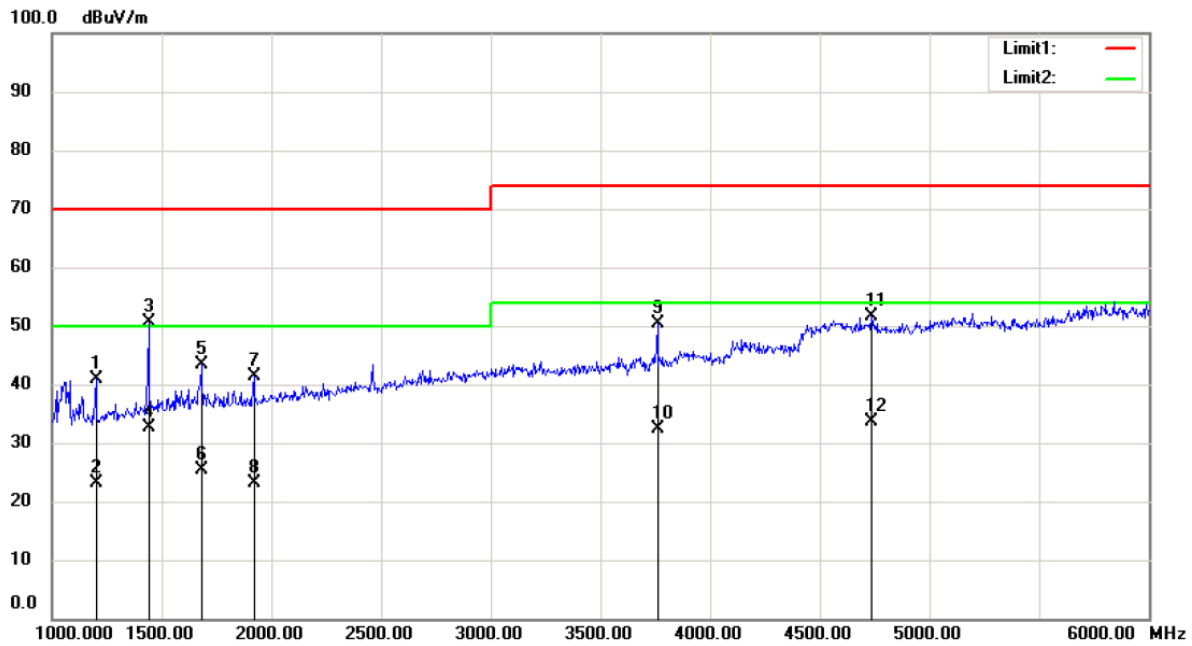
Mode:VGA

Note:

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table	
		MHz	Level	Factor	ment			Height	Degree	
			dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	*	42.6100	45.07	-11.57	33.50	40.00	-6.50	QP		
2		187.1400	45.37	-16.39	28.98	40.00	-11.02	QP		
3		327.7900	49.94	-11.35	38.59	47.00	-8.41	QP		
4		645.9500	45.04	-5.04	40.00	47.00	-7.00	QP		
5		725.4900	42.66	-5.66	37.00	47.00	-10.00	QP		
6		827.3400	40.72	-3.20	37.52	47.00	-9.48	QP		

*:Maximum data x:Over limit !:over margin

Operator: KK



Site 3m Chamber #1

Polarization: **Horizontal**

Temperature: 24 C

Limit: (RE)EN55022 class B _Peak

Power: AC 230V/50Hz

Humidity: 53 %

M/N: NP-M403W

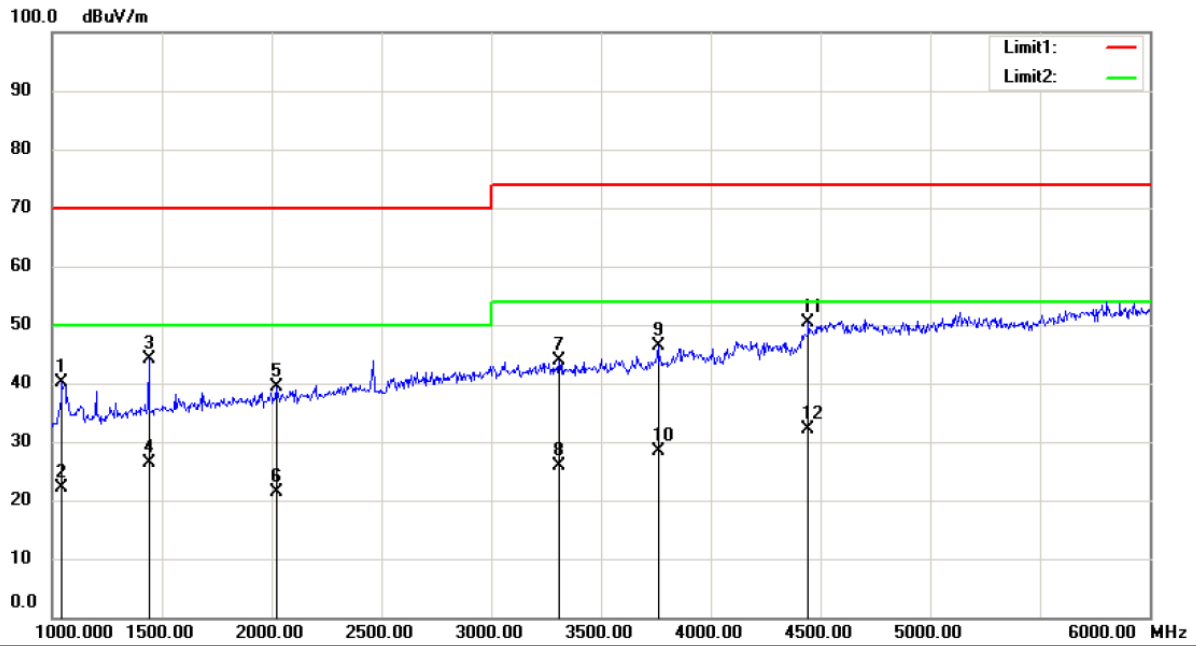
Mode:Connect to PC(Ping)

Note:

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table	
		MHz	Level	Factor	ment			Height	Degree	
			dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		1200.000	53.56	-12.76	40.80	70.00	-29.20	peak		
2		1200.000	35.86	-12.76	23.10	50.00	-26.90	AVG		
3		1440.000	62.17	-11.51	50.66	70.00	-19.34	peak		
4	*	1440.000	44.21	-11.51	32.70	50.00	-17.30	AVG		
5		1680.000	54.04	-10.74	43.30	70.00	-26.70	peak		
6		1680.000	36.14	-10.74	25.40	50.00	-24.60	AVG		
7		1920.000	51.37	-10.10	41.27	70.00	-28.73	peak		
8		1920.000	33.20	-10.10	23.10	50.00	-26.90	AVG		
9		3760.000	54.29	-4.02	50.27	74.00	-23.73	peak		
10		3760.000	36.52	-4.02	32.50	54.00	-21.50	AVG		
11		4735.000	51.87	-0.15	51.72	74.00	-22.28	peak		
12		4735.000	33.85	-0.15	33.70	54.00	-20.30	AVG		

*:Maximum data x:Over limit !:over margin

Operator: CSL



Site 3m Chamber #1

Polarization: **Vertical**

Temperature: 24 C

Limit: (RE)EN55022 class B _Peak

Power: AC 230V/50Hz

Humidity: 53 %

M/N: NP-M403W

Mode: Connect to PC(Ping)

Note:

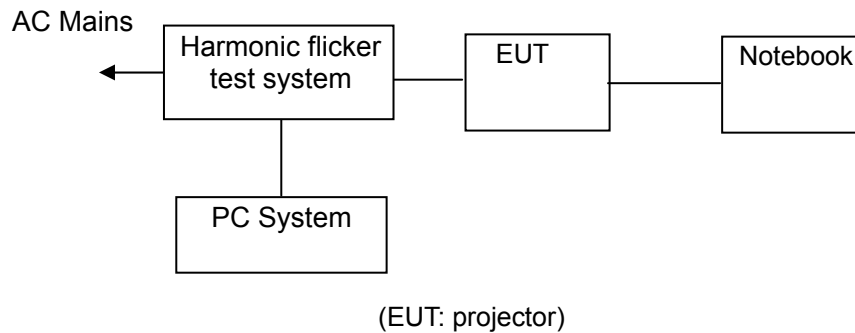
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		1045.000	53.60	-13.57	40.03	70.00	-29.97			peak
2		1045.000	35.67	-13.57	22.10	50.00	-27.90			AVG
3		1440.000	55.70	-11.51	44.19	70.00	-25.81			peak
4		1440.000	37.91	-11.51	26.40	50.00	-23.60			AVG
5		2020.000	49.27	-9.82	39.45	70.00	-30.55			peak
6		2020.000	31.12	-9.82	21.30	50.00	-28.70			AVG
7		3310.000	49.19	-5.23	43.96	74.00	-30.04			peak
8		3310.000	31.13	-5.23	25.90	54.00	-28.10			AVG
9		3760.000	50.47	-4.02	46.45	74.00	-27.55			peak
10		3760.000	32.42	-4.02	28.40	54.00	-25.60			AVG
11		4445.000	51.59	-1.30	50.29	74.00	-23.71			peak
12	*	4445.000	33.40	-1.30	32.10	54.00	-21.90			AVG

*:Maximum data x:Over limit !:over margin

Operator: CSL

6. HARMONIC CURRENT EMISSION MEASUREMENT

6.1. Block Diagram of Test Setup



6.2. Measuring Standard

EN 61000-3-2:2014 CLASS A

6.3. Operation Condition of EUT

6.3.1. Setup the EUT as shown on Section 6.1.

6.3.2. Turn on the power of all equipments.

6.3.3. Let the EUT work in measuring mode (VGA) and measure it.

6.4. Measuring Results

PASS.

Please see the attached pages.

Harmonics – Class-A per Ed. 3.2 (2009)(Run time) incl. inter-harmonics

EUT: NP-M403W

Tested by: KY

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

Test Margin: 100

Test date: 2015/4/24

Start time: 11:07:13

End time: 11:10:05

Test duration (min): 2.5

Data file name: WIN2105_H-000180.cts_data

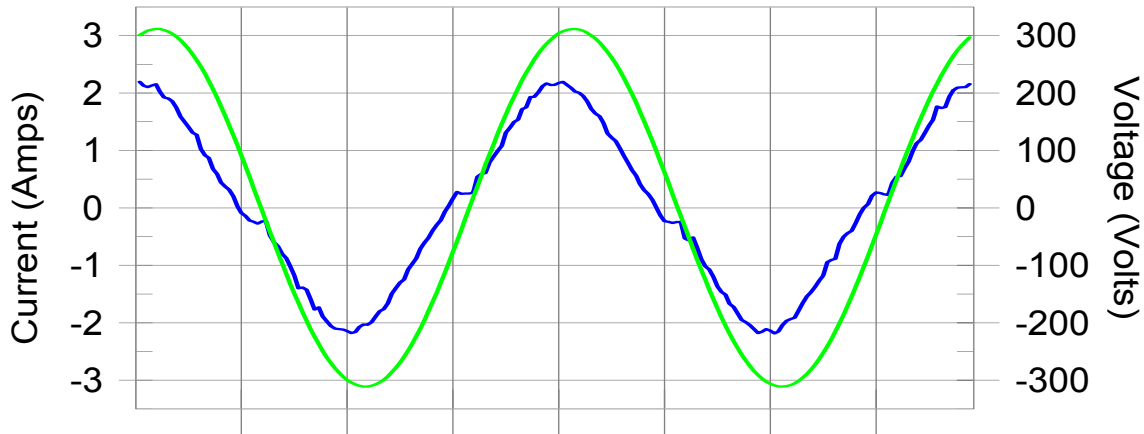
Comment: VGA

Customer: NEC

Test Result: Pass

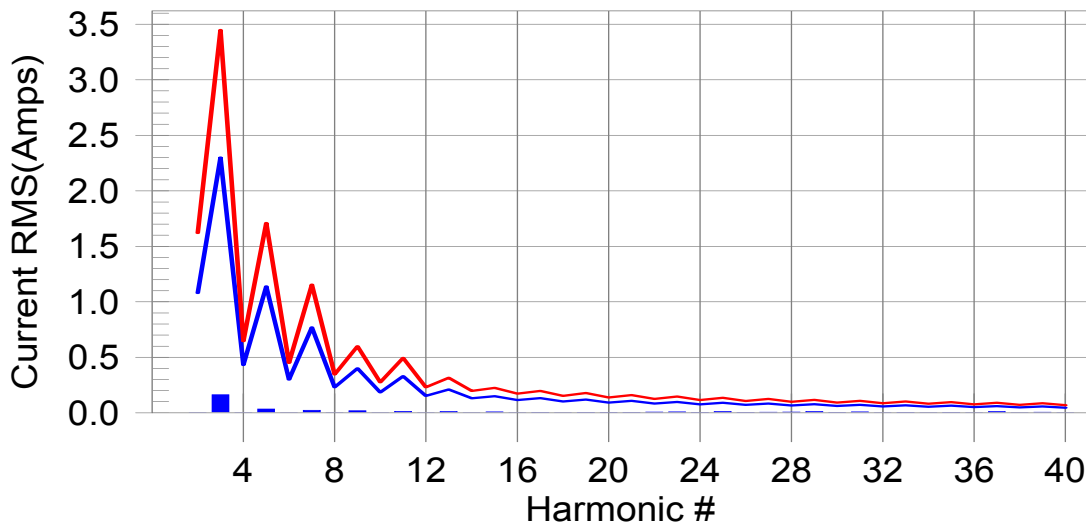
Source qualification: Normal

Current & voltage waveforms



Harmonics and Class A limit line

European Limits



Test result: Pass Worst harmonic was #37 with 18.5% of the limit.

Current Test Result Summary (Run time)

EUT: NP-M403W
 Test category: Class-A per Ed. 3.2 (2009) (European limits)
 Test date: 2015/4/24
 Test duration (min): 2.5
 Comment: VGA
 Customer: NEC

Tested by: KY
 Test Margin: 100
 End time: 11:10:05
 Data file name: WIN2105_H-000180.cts_data

Test Result: Pass
 Source qualification: Normal
 THC: 0.172 A
 I-THD: 12.6 %
 POHC(A): 0.025 A
 POHC Limit(A): 0.251 A

Highest parameter values during test:

V_RMS (Volts):	220.095	Frequency(Hz):	50.00
I_Peak (Amps):	2.262	I_RMS (Amps):	1.402
I_Fund (Amps):	1.391	Crest Factor:	1.627
Power (Watts):	297.4	Power Factor:	0.964

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.002	1.080	N/A	0.000	1.620	N/A	Pass
3	0.162	2.300	7.0	0.165	3.450	4.8	Pass
4	0.001	0.430	N/A	0.000	0.645	N/A	Pass
5	0.034	1.140	3.0	0.035	1.710	2.1	Pass
6	0.001	0.300	N/A	0.000	0.450	N/A	Pass
7	0.023	0.770	3.0	0.025	1.155	2.1	Pass
8	0.001	0.230	N/A	0.000	0.345	N/A	Pass
9	0.018	0.400	4.5	0.019	0.600	3.2	Pass
10	0.001	0.184	N/A	0.000	0.276	N/A	Pass
11	0.012	0.330	3.7	0.013	0.495	2.6	Pass
12	0.001	0.153	N/A	0.000	0.230	N/A	Pass
13	0.011	0.210	5.3	0.011	0.315	3.6	Pass
14	0.001	0.131	N/A	0.000	0.197	N/A	Pass
15	0.009	0.150	6.2	0.012	0.225	5.3	Pass
16	0.001	0.115	N/A	0.000	0.173	N/A	Pass
17	0.004	0.132	N/A	0.007	0.198	3.6	Pass
18	0.001	0.102	N/A	0.000	0.153	N/A	Pass
19	0.004	0.118	N/A	0.005	0.178	3.0	Pass
20	0.003	0.092	N/A	0.000	0.138	N/A	Pass
21	0.005	0.107	4.7	0.006	0.161	3.5	Pass
22	0.007	0.084	7.8	0.007	0.125	5.4	Pass
23	0.009	0.098	9.2	0.010	0.147	6.7	Pass
24	0.003	0.077	N/A	0.000	0.115	N/A	Pass
25	0.011	0.090	12.4	0.013	0.135	9.4	Pass
26	0.004	0.071	N/A	0.000	0.107	N/A	Pass
27	0.005	0.083	6.5	0.008	0.125	6.6	Pass
28	0.007	0.066	10.1	0.007	0.099	7.1	Pass
29	0.011	0.078	14.6	0.013	0.116	10.8	Pass
30	0.003	0.061	N/A	0.000	0.092	N/A	Pass
31	0.009	0.073	11.8	0.011	0.109	9.9	Pass
32	0.001	0.058	N/A	0.000	0.086	N/A	Pass
33	0.004	0.068	N/A	0.000	0.102	N/A	Pass
34	0.001	0.054	N/A	0.000	0.081	N/A	Pass
35	0.003	0.064	N/A	0.000	0.096	N/A	Pass
36	0.001	0.051	N/A	0.000	0.077	N/A	Pass
37	0.011	0.061	18.5	0.012	0.091	12.9	Pass
38	0.001	0.048	N/A	0.000	0.073	N/A	Pass
39	0.006	0.058	10.1	0.008	0.087	9.5	Pass
40	0.001	0.046	N/A	0.000	0.069	N/A	Pass

Voltage Source Verification Data (Run time)

EUT: NP-M403W	Tested by: KY
Test category: Class-A per Ed. 3.2 (2009) (European limits)	Test Margin: 100
Test date: 2015/4/24	Start time: 11:07:13
Test duration (min): 2.5	End time: 11:10:05
Comment: VGA	Data file name: WIN2105_H-000180.cts_data
Customer: NEC	

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

Highest parameter values during test:

Voltage (Vrms):	220.095	Frequency(Hz):	50.00
I_Peak (Amps):	2.262	I_RMS (Amps):	1.402
I_Fund (Amps):	1.391	Crest Factor:	1.627
Power (Watts):	297.4	Power Factor:	0.964

Harm#	Harmonics	V-rms	Limit	V-rms	% of Limit	Status
2		0.086		0.440	19.56	OK
3		0.125		1.980	6.30	OK
4		0.032		0.440	7.17	OK
5		0.056		0.880	6.32	OK
6		0.011		0.440	2.45	OK
7		0.048		0.660	7.21	OK
8		0.014		0.440	3.18	OK
9		0.036		0.440	8.07	OK
10		0.014		0.440	3.17	OK
11		0.031		0.220	14.25	OK
12		0.008		0.220	3.46	OK
13		0.022		0.220	9.86	OK
14		0.009		0.220	4.17	OK
15		0.019		0.220	8.82	OK
16		0.008		0.220	3.86	OK
17		0.025		0.220	11.58	OK
18		0.007		0.220	3.17	OK
19		0.027		0.220	12.40	OK
20		0.016		0.220	7.47	OK
21		0.020		0.220	8.90	OK
22		0.016		0.220	7.18	OK
23		0.030		0.220	13.83	OK
24		0.008		0.220	3.75	OK
25		0.039		0.220	17.71	OK
26		0.011		0.220	4.93	OK
27		0.021		0.220	9.68	OK
28		0.017		0.220	7.60	OK
29		0.028		0.220	12.80	OK
30		0.009		0.220	4.27	OK
31		0.020		0.220	9.18	OK
32		0.008		0.220	3.46	OK
33		0.016		0.220	7.15	OK
34		0.006		0.220	2.72	OK
35		0.015		0.220	6.80	OK
36		0.006		0.220	2.81	OK
37		0.030		0.220	13.85	OK
38		0.005		0.220	2.39	OK
39		0.019		0.220	8.64	OK
40		0.011		0.220	5.19	OK

Harmonics – Class-A per Ed. 3.2 (2009)(Run time) incl. inter-harmonics

EUT: NP-M403H

Tested by: Neo

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

Test Margin: 100

Test date: 2015/4/24

Start time: 13:41:51

End time: 13:44:44

Test duration (min): 2.5

Data file name: WIN2105_H-000391.cts_data

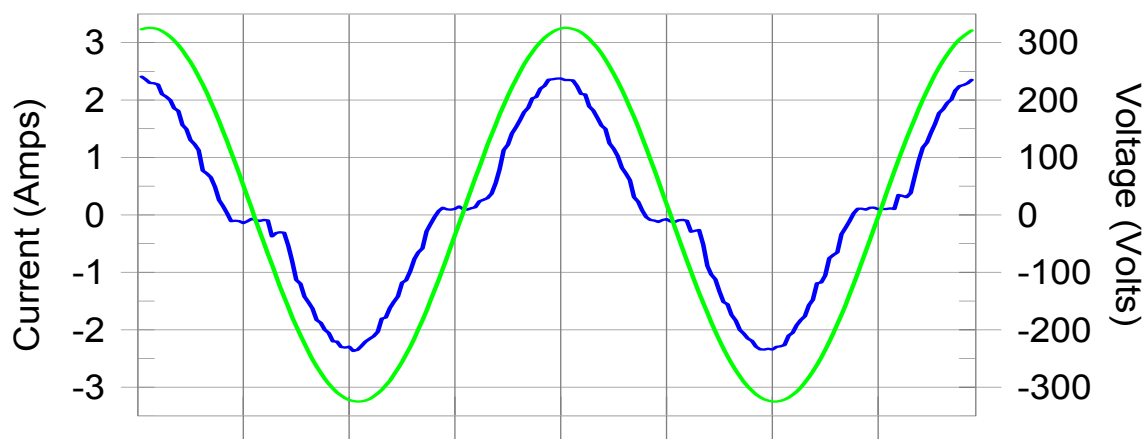
Comment: VGA

Customer: Customer

Test Result: Pass

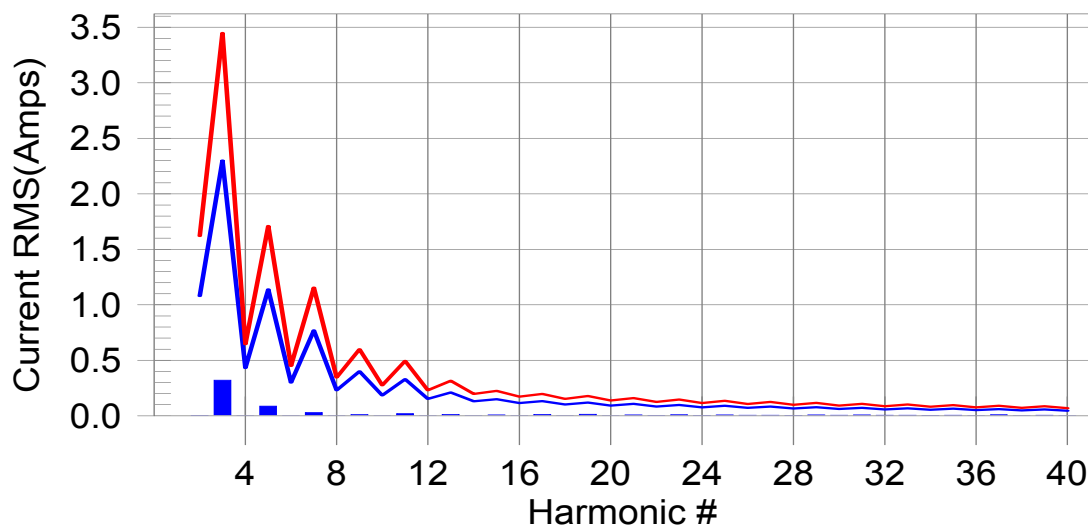
Source qualification: Normal

Current & voltage waveforms



Harmonics and Class A limit line

European Limits



Test result: Pass Worst harmonic was #37 with 16.7% of the limit.

Current Test Result Summary (Run time)

EUT: NP-M403H
 Test category: Class-A per Ed. 3.2 (2009) (European limits)
 Test date: 2015/4/24
 Test duration (min): 2.5
 Comment: VGA
 Customer: Customer

Tested by: Neo
 Test Margin: 100
 Start time: 13:41:51
 End time: 13:44:44
 Data file name: WIN2105_H-000391.cts_data

Test Result: Pass
 Source qualification: Normal
 THC: 0.338 A
 I-THD: 25.3 %
 POHC(A): 0.025 A
 POHC Limit(A): 0.251 A
 Highest parameter values during test:
 V_RMS (Volts): 230.073
 I_Peak (Amps): 2.446
 I_Fund (Amps): 1.403
 Power (Watts): 321.1
 Frequency(Hz): 50.00
 I_RMS (Amps): 1.446
 Crest Factor: 1.852
 Power Factor: 0.965

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.002	1.080	N/A	0.000	1.620	N/A	Pass
3	0.322	2.300	14.0	0.333	3.450	9.7	Pass
4	0.002	0.430	N/A	0.000	0.645	N/A	Pass
5	0.088	1.140	7.7	0.092	1.710	5.4	Pass
6	0.001	0.300	N/A	0.000	0.450	N/A	Pass
7	0.029	0.770	3.8	0.034	1.155	2.9	Pass
8	0.001	0.230	N/A	0.000	0.345	N/A	Pass
9	0.011	0.400	2.8	0.015	0.600	2.5	Pass
10	0.001	0.184	N/A	0.000	0.276	N/A	Pass
11	0.019	0.330	5.8	0.021	0.495	4.2	Pass
12	0.001	0.153	N/A	0.000	0.230	N/A	Pass
13	0.013	0.210	6.2	0.015	0.315	4.7	Pass
14	0.001	0.131	N/A	0.000	0.197	N/A	Pass
15	0.008	0.150	5.2	0.011	0.225	5.0	Pass
16	0.001	0.115	N/A	0.000	0.173	N/A	Pass
17	0.013	0.132	9.8	0.015	0.198	7.4	Pass
18	0.001	0.102	N/A	0.000	0.153	N/A	Pass
19	0.014	0.118	11.8	0.014	0.178	8.1	Pass
20	0.001	0.092	N/A	0.000	0.138	N/A	Pass
21	0.009	0.107	8.5	0.013	0.161	7.8	Pass
22	0.002	0.084	N/A	0.000	0.125	N/A	Pass
23	0.010	0.098	10.5	0.012	0.147	8.4	Pass
24	0.005	0.077	N/A	0.000	0.115	N/A	Pass
25	0.009	0.090	10.1	0.012	0.135	8.7	Pass
26	0.006	0.071	8.8	0.007	0.107	6.2	Pass
27	0.005	0.083	6.2	0.010	0.125	8.3	Pass
28	0.004	0.066	N/A	0.000	0.099	N/A	Pass
29	0.009	0.078	11.0	0.011	0.116	9.7	Pass
30	0.005	0.061	8.7	0.006	0.092	6.1	Pass
31	0.007	0.073	10.1	0.009	0.109	7.9	Pass
32	0.006	0.058	10.5	0.006	0.086	7.3	Pass
33	0.005	0.068	7.8	0.008	0.102	7.9	Pass
34	0.003	0.054	N/A	0.000	0.081	N/A	Pass
35	0.005	0.064	8.3	0.008	0.096	8.2	Pass
36	0.001	0.051	N/A	0.000	0.077	N/A	Pass
37	0.010	0.061	16.7	0.011	0.091	12.5	Pass
38	0.001	0.048	N/A	0.000	0.073	N/A	Pass
39	0.006	0.058	9.8	0.006	0.087	7.2	Pass
40	0.001	0.046	N/A	0.000	0.069	N/A	Pass

Voltage Source Verification Data (Run time)

EUT: NP-M403H
 Test category: Class-A per Ed. 3.2 (2009) (European limits)
 Test date: 2015/4/24
 Test duration (min): 2.5
 Comment: VGA
 Customer: Customer

Tested by: Neo
 Test Margin: 100
 Start time: 13:41:51
 End time: 13:44:44
 Data file name: WIN2105_H-000391.cts_data

Test Result: Pass Source qualification: Normal

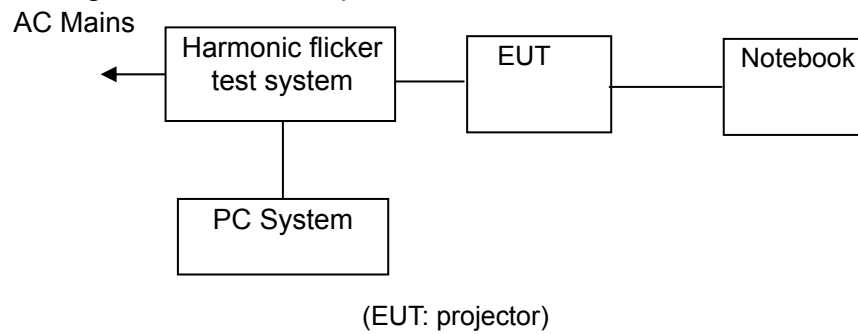
Highest parameter values during test:

Voltage (Vrms):	230.073	Frequency(Hz):	50.00
I_Peak (Amps):	2.446	I_RMS (Amps):	1.446
I_Fund (Amps):	1.403	Crest Factor:	1.852
Power (Watts):	321.1	Power Factor:	0.965

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.096	0.460	20.77	OK
3	0.124	2.070	5.98	OK
4	0.031	0.460	6.70	OK
5	0.084	0.920	9.16	OK
6	0.013	0.460	2.91	OK
7	0.057	0.690	8.27	OK
8	0.014	0.460	2.94	OK
9	0.035	0.460	7.67	OK
10	0.014	0.460	3.13	OK
11	0.035	0.230	15.17	OK
12	0.008	0.230	3.48	OK
13	0.026	0.230	11.27	OK
14	0.011	0.230	4.63	OK
15	0.019	0.230	8.24	OK
16	0.009	0.230	4.13	OK
17	0.025	0.230	10.89	OK
18	0.008	0.230	3.51	OK
19	0.029	0.230	12.58	OK
20	0.012	0.230	5.15	OK
21	0.032	0.230	13.82	OK
22	0.013	0.230	5.49	OK
23	0.029	0.230	12.66	OK
24	0.014	0.230	6.18	OK
25	0.029	0.230	12.49	OK
26	0.015	0.230	6.41	OK
27	0.024	0.230	10.25	OK
28	0.011	0.230	4.86	OK
29	0.029	0.230	12.73	OK
30	0.016	0.230	7.15	OK
31	0.028	0.230	12.04	OK
32	0.011	0.230	4.72	OK
33	0.021	0.230	9.13	OK
34	0.008	0.230	3.32	OK
35	0.016	0.230	7.14	OK
36	0.007	0.230	3.12	OK
37	0.027	0.230	11.79	OK
38	0.006	0.230	2.81	OK
39	0.017	0.230	7.24	OK
40	0.010	0.230	4.29	OK

7. VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT

7.1. Block Diagram of Test Setup



7.2. Measuring Standard

EN 61000-3-3:2013

7.3. Operation Condition of EUT

7.3.1. Setup the EUT as shown on Section 7.1.

7.3.2. Turn on the power of all equipments.

7.3.3. Let the EUT work in measuring mode (VGA) and measure it.

7.4. Measuring Results

PASS.

Please see the attached pages.

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

EUT: NP-M403W
 Test category: All parameters (European limits)
 Test date: 2015/4/24
 Test duration (min): 10
 Comment: VGA
 Customer: NEC

Tested by: YU
 Test Margin: 100
 Start time: 16:41:46
 End time: 16:52:18
 Data file name: WIN2105_F-000070.cts_data

Test Result: Pass

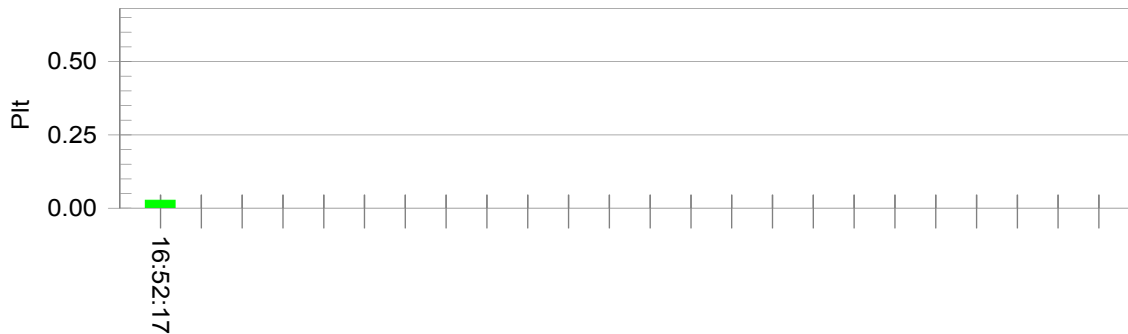
Status: Test Completed

Pst_i and limit line

European Limits



Plt and limit line



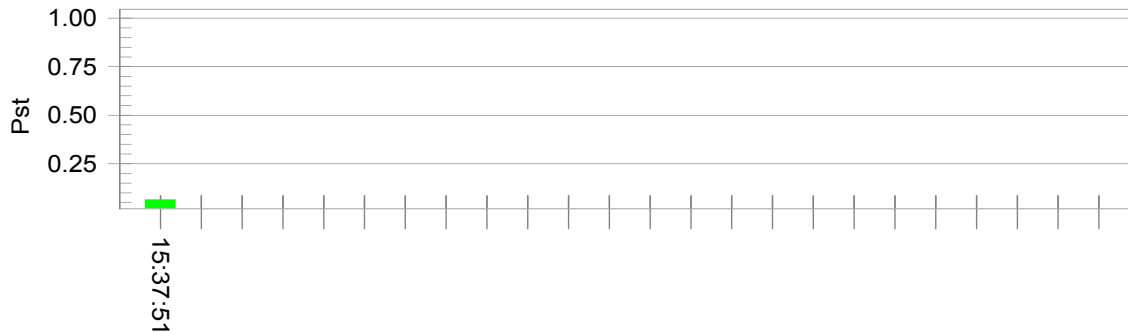
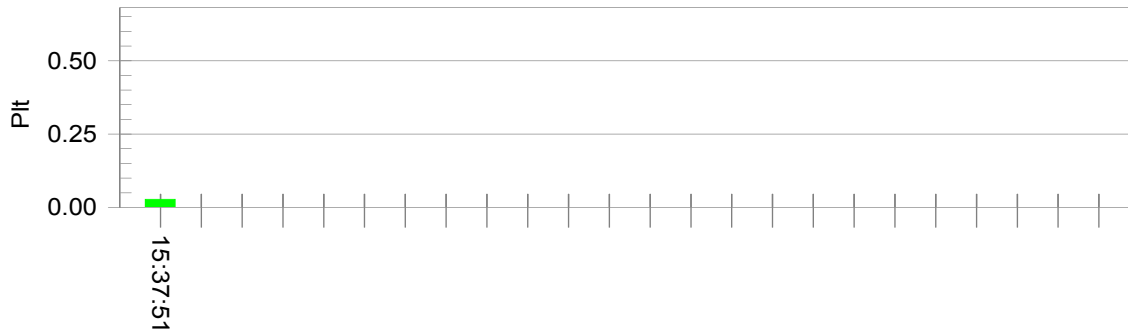
Parameter values recorded during the test:

Vrms at the end of test (Volt):	230.01		
Highest dt (%):	0.00	Test limit (%):	3.30
Tmax(mS) > dt:	0.0	Test limit (mS):	500.0
Highest dc (%):	0.00	Test limit (%):	3.30
Highest dmax (%):	0.00	Test limit (%):	4.00
Highest Pst (10 min. period):	0.064	Test limit:	1.000
Highest Plt (2 hr. period):	0.028	Test limit:	0.650

Pass
 Pass
 Pass
 Pass
 Pass

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

EUT: NP-M403H		Tested by: YU
Test category: All parameters (European limits)		Test Margin: 100
Test date: 2015/4/24	Start time: 16:27:21	End time: 16:37:53
Test duration (min): 10	Data file name: F-000029.cts_data	
Comment: VGA		
Customer: NEC		

Test Result: Pass
Status: Test Completed
Pst_i and limit line
European Limits

Plt and limit line

Parameter values recorded during the test:

Vrms at the end of test (Volt):	229.87		
Highest dt (%):	0.00	Test limit (%):	N/A
T-max (mS):	0	Test limit (mS):	500.0
Highest dc (%):	0.00	Test limit (%):	3.30
Highest dmax (%):	-0.04	Test limit (%):	4.00
Highest Pst (10 min. period):	0.064	Test limit:	1.000
Highest Plt (2 hr. period):	0.028	Test limit:	0.650

8. IMMUNITY PERFORMANCE CRITERIA DESCRIPTION

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

Criterion A:

Definition: normal performance within limits specified by the manufacturer, requestor and purchaser.

The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

Criterion B:

Definition: temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the equipment under test recovers its normal performance, without operator intervention.

After the test, the EUT shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacturer, when the EUT is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is allowed. However, no change of operating state or stored data is allowed to persist after the test. If the minimum performance level (or the permissible performance loss) is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the EUT if used as intended.

Criterion C:

Definition: temporary loss of function or degradation of performance, the correction of which requires operator intervention.

Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

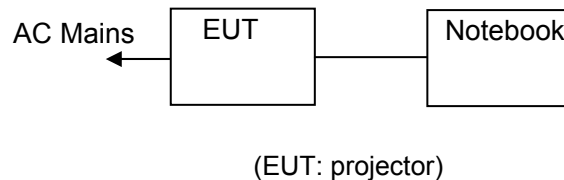
Criterion D

Definition: loss of function or degradation of performance, which is not recoverable, owing to damage to hardware or software, or loss of data.

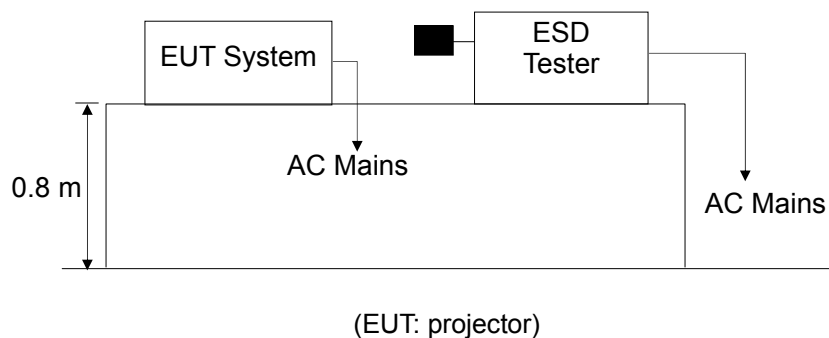
9. ELECTROSTATIC DISCHARGE IMMUNITY TEST

9.1. Block Diagram of Test Setup

9.1.1. Block diagram of EUT System



9.1.2. Block diagram of ESD test setup



9.2. Test Standard

EN 55024:2010

(IEC 61000-4-2 :2008 Severity Level: 3 / Air Discharge: $\pm 8\text{kV}$;
Level: 2 / Contact Discharge: $\pm 4\text{kV}$)

9.3. Severity Levels and Performance Criterion

9.3.1. Severity level

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

9.3.2. Performance criterion: B

9.4. Operating Condition of EUT

9.4.1. Setup the EUT as shown on Section 9.1.

9.4.2. Turn on the power of all equipments.

9.4.3. Let the EUT work in test mode (USB Play, AV in, HDMI in, VGA, Connect to PC(Ping)) and test it.

9.5. Test Procedure

9.5.1. Air Discharge:

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

9.5.2. Contact Discharge:

All the procedure shall be same as Section 9.5.1. Except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

9.5.3. Indirect discharge for horizontal coupling plane

At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit (if applicable) of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

9.5.4. Indirect discharge for vertical coupling plane

At least 10 singles discharge (in the most sensitive polarity) shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m×0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

9.6. Test Results

PASS.

Please refer to the following page.

Electrostatic Discharge Test Results

SHENZHEN EMTEK CO., LTD.

Applicant	: NEC DISPLAY SOLUTIONS,. LTD.		
EUT	: projector	Test Date	: April 24, 2015
M/N	: NP-M403H, NP-M403W	Temperature	: 24℃
Power Supply	: AC 230V/50Hz	Humidity	: 53%
Air discharge	: ± 8.0kV	Test Mode	: USB Play, AV in, HDMI in, VGA, Connect to PC(Ping)
Contact discharge	: ± 4.0kV	Criterion	: B

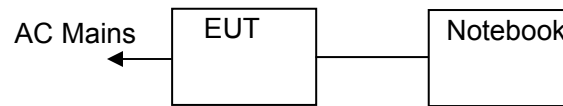
Location	Kind A-Air Discharge C-Contact Discharge	Result
Metal	C	A
Port	C	A
Port	A	A
Slot	A	A
Button	A	A
HCP	C	A
VCP of front	C	A
VCP of rear	C	A
VCP of left	C	A
VCP of right	C	A

Note:

10. RF FIELD STRENGTH SUSCEPTIBILITY TEST

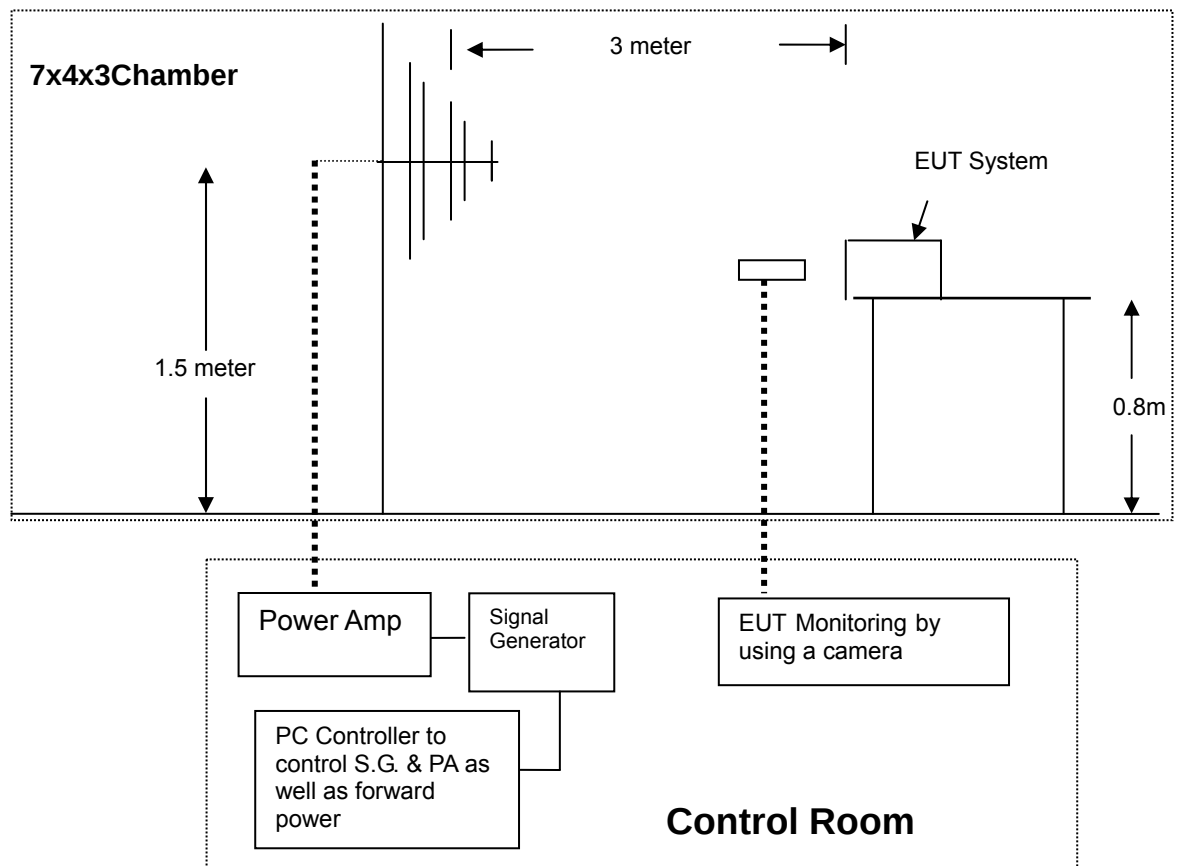
10.1. Block Diagram of Test Setup

10.1.1. Block diagram of EUT System



(EUT: projector)

10.1.2. Block diagram of RS test setup



(EUT: projector)

10.2. Test Standard

EN 55024:2010

(IEC 61000-4-3:2006+A1:2007+A2:2010, Severity Level: 3 V/m)

10.3. Severity Levels and Performance Criterion

10.3.1. Severity Levels

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

10.3.2. Performance Criterion: A

10.4. Operating Condition of EUT

10.4.1. Setup the EUT as shown on Section 10.1.

10.4.2. Turn on the power of all equipments.

10.4.3. Let the EUT work in test mode (USB Play, AV in, HDMI in, VGA, Connect to PC(Ping)) and test it.

10.5. Test Procedure

The EUT are placed on a table that is 0.8 meter high above the ground. The EUT is set 3 meters away from the transmitting antenna that is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna is set on test. Each of the four sides of the EUT must be faced this transmitting antenna and measured individually.

In order to judge the EUT performance, a CCD camera is used to monitor it.

All the scanning conditions are as following:

Condition of Test	Remark
1. Fielded Strength	3V/m (Severity Level 2)
2. Radiated Signal	Modulated
3. Scanning Frequency	80-1000MHz
4. Sweep time of radiated	0.0015 Decade/s
5. Dwell Time	1 Sec.

10.6. Test Results

PASS.

Please refer to the following page.

RF Field Strength Susceptibility Test Results

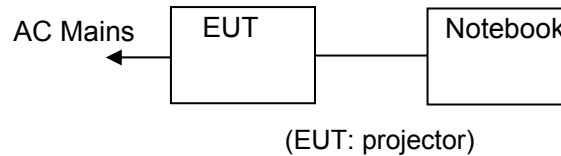
SHENZHEN EMTEK CO., LTD.

Applicant : NEC DISPLAY SOLUTIONS,. LTD.				
EUT : projector		Test Date : April 24, 2015		
M/N : NP-M403H, NP-M403W		Temperature : 22°C		
Field Strength : 3 V/m		Humidity : 50%		
Power Supply : AC 230V/50Hz		Criterion : A		
Test Mode : USB Play, AV in, HDMI in, VGA, Connect to PC(Ping)		Frequency Range : 80MHz to 1000MHz		
Modulation: ☐ None ☐ Pulse ☒ AM 1kHz 80%				
Frequency Rang 1: 80~ 1000MHz		Frequency Rang 2: N/A		
Steps	1%			
	Horizontal	Vertical	Horizontal	Vertical
Front	A	A		
Right	A	A		
Rear	A	A		
Left	A	A		
Test Equipment: 1. Signal Generator : N5181A (Agilent) 2. Power Amplifier : AS0102-55 (MILMEGA) & 80RF1000-175 (MILMEGA) & AS1860-50 (MILMEGA) 3. Log.-Per.Antenna: VULP9118E (SCHWARZBECK) 4. Broad-Band Horn Antenna: STLP 9149 (Schwarzbeck) 5. RF Power Meter. Dual Channel: 4232A (BOONTON) 6. Field Strength Meter: RSS1006A (DARE)				
Note:				

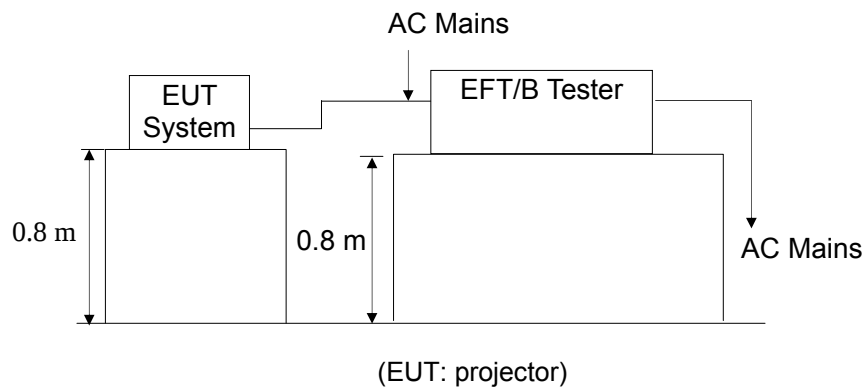
11. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

11.1. Block Diagram of Test Setup

11.1.1. Block Diagram of EUT System



11.1.2. EFT Test Setup



11.2. Test Standard

EN 55024:2010

(IEC 61000-4-4: 2004+A1:2010, Severity Level: AC Power Lines 1kV, Signal Lines 0.5kV)

11.3. Severity Levels and Performance Criterion

11.3.1. Severity level

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

11.3.2. Performance criterion: B

11.4. Operating Condition of EUT

11.4.1. Setup the EUT as shown on Section 11.1.

11.4.2. Turn on the power of all equipments.

11.4.3. Let the EUT work in test mode (USB Play, AV in, HDMI in, VGA, Connect to PC(Ping)) and test it.

11.5. Test Procedure

The EUT is put on the table that is 0.8 meter high above the ground. This reference ground plane shall 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 beneath the EUT, shall be more than 0.5m.

11.5.1. For input and output AC power ports:

The EUT is connected to the power mains by using a coupling device that couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 mins.

11.5.2. For signal lines and control lines ports:

The EUT is connected to PC, and by using a coupling device which couples the EFT interference signal to signal lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 mins.

11.5.3. For DC output line ports:

It's unnecessary to test.

11.6. Test Results

PASS.

Please refer to the following page.

Electrical Fast Transient/Burst Test Results

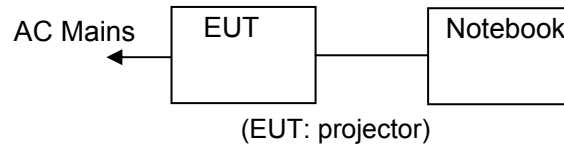
SHENZHEN EMTEK CO., LTD.

Standard: ☒ IEC 61000-4-4		Result: ☒ PASS / ☐ FAIL	
Applicant : <u>NEC DISPLAY SOLUTIONS., LTD.</u> EUT : <u>projector</u> M/N : <u>NP-M403H, NP-M403W</u> Input Voltage: <u>AC 230 V/50Hz</u> Criterion : B Ambient Condition : <u>22 °C</u> <u>50% RH</u>			
Operation Mode: USB Play, AV in, HDMI in, VGA, Connect to PC(Ping)			
Line : ☒ AC Mains ☐ DC Line		Line : ☒ Signal ☐ I/O Cable	
Coupling : ☒ Direct		Coupling : ☒ Capacitive	
Test Time : 120s			
Line	Test Voltage	Result(+)	Result(-)
L	1kV	A	A
N	1kV	A	A
PE	1kV	A	A
L、N	1kV	A	A
L、PE	1kV	A	A
N、PE	1kV	A	A
L、N、PE	1kV	A	A
Signal Line	0.5kV	A	A
Note:			

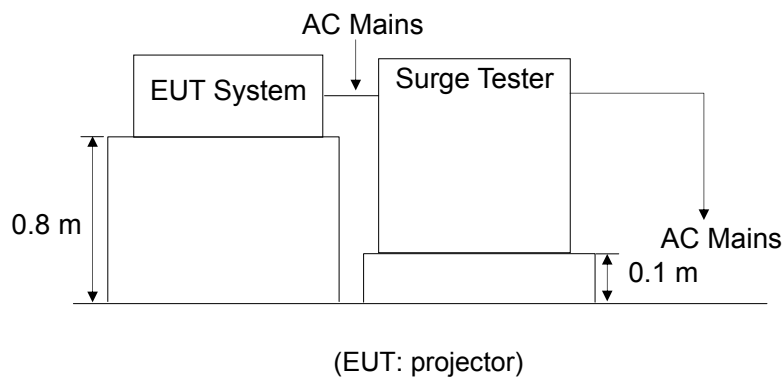
12. SURGE IMMUNITY TEST

12.1. Block Diagram of Test Setup

12.1.1. Block Diagram of EUT System



12.1.2. Surge Test Setup



12.2. Test Standard

EN 55024:2010

(IEC 61000-4-5:2005, Severity Level: Line to Line: Level 2, 1.0kV, Line to earth: Level 3, 2.0kV
Signal line: Level 2: 1.0kV.)

12.3. Severity Levels and Performance Criterion

12.3.1. Severity level

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

12.3.2. Performance criterion: B

12.4. Operating Condition of EUT

12.4.1. Setup the EUT as shown on Section 12.1.

12.4.2. Turn on the power of all equipments.

12.4.3. Let the EUT work in test mode (USB Play, AV in, HDMI in, VGA, Connect to PC(Ping)) and test it.

12.5. Test Procedure

- 1) Set up the EUT and test generator as shown on Section 12.1.2.
- 2) AC mains: For line to line coupling mode, provide a 1.0 kV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points. For line to earth coupling mode, provide a 2.0 kV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points. For signal line coupling mode, provide a 1.0 kV 10/700us voltage surge (at open-circuit condition) to EUT selected points.
- 3) At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted 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.

12.6. Test Results

PASS.

Please refer to the following page.

Surge Immunity Test Results

SHENZHEN EMTEK CO., LTD.

Applicant : NEC DISPLAY SOLUTIONS,. LTD.

EUT : projector

Test Date : April 24, 2015

M/N : NP-M403H, NP-M403W

Temperature : 24°C

Power Supply : AC 230V / 50Hz

Humidity : 53%

Test Mode : USB Play, AV in, HDMI in, VGA, Connect to PC(Ping)

Criterion : B

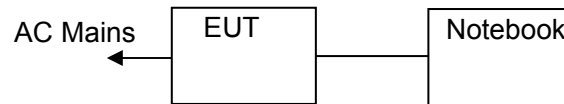
Location	Polarity	Phase Angle	Number of Pulse	Pulse Voltage (kV)	Result
L-N	+	0°	5	1.0	A
	+	90°	5	1.0	A
	+	180°	5	1.0	A
	+	270°	5	1.0	A
	-	0°	5	1.0	A
	-	90°	5	1.0	A
	-	180°	5	1.0	A
	-	270°	5	1.0	A
L-PE	+	0°	5	2.0	A
	+	90°	5	2.0	A
	+	180°	5	2.0	A
	+	270°	5	2.0	A
	-	0°	5	2.0	A
	-	90°	5	2.0	A
	-	180°	5	2.0	A
	-	270°	5	2.0	A
N-PE	+	0°	5	2.0	A
	+	90°	5	2.0	A
	+	180°	5	2.0	A
	+	270°	5	2.0	A
	-	0°	5	2.0	A
	-	90°	5	2.0	A
	-	180°	5	2.0	A
	-	270°	5	2.0	A
Signal Line	+	Random	5	1.0	A
	-	Random	5	1.0	A

Remark:

13. INJECTED CURRENTS SUSCEPTIBILITY TEST

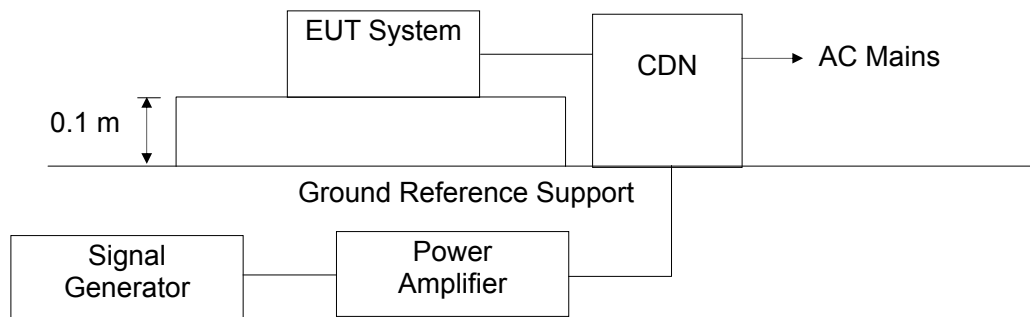
13.1. Block Diagram of Test Setup

13.1.1. Block Diagram of EUT System



(EUT: projector)

13.1.2. Block Diagram of Test Setup



(EUT: projector)

13.2. Test Standard

EN 55024:2010

(IEC 61000-4-6:2008, Severity Level: Level 2, 3V (r.m.s.), 0.15MHz ~ 80MHz)

13.3. Severity Levels and Performance Criterion

13.3.1. Severity level

Level	Field Strength V
1	1
2	3
3	10
X	Special

13.3.2. Performance criterion: A

13.4. Operating Condition of EUT

13.4.1. Setup the EUT as shown on Section 13.1.

13.4.2. Turn on the power of all equipments.

13.4.3. Let the EUT work in test mode (USB Play, AV in, HDMI in, VGA, Connect to PC(Ping)) and test it.

13.5. Test Procedure

- 1) Set up the EUT, CDN and test generators as shown on Section 13.1.2.
- 2) Let the EUT work in test mode and measure it.
- 3) The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
- 4) The EUT are placed on an insulating support 0.1m high above a ground reference plane. EM-Clamp is placed on the ground plane about 0.3m from EUT.
- 5) The disturbance signal described below is injected to EUT through CDN.
- 6) The EUT operates within its operational mode(s) under intended climatic conditions after power on.
- 7) The frequency range is swept from 150kHz to 80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1kHz sine wave.
- 8) 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.
- 9) Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

13.6. Test Results

PASS.

Please refer to the following page.

Injected Currents Susceptibility Test Results

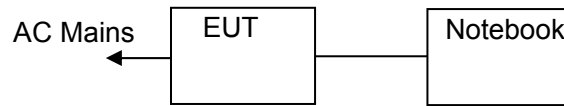
SHENZHEN EMTEK CO., LTD.

Applicant : <u>NEC DISPLAY SOLUTIONS,. LTD.</u>				
EUT : <u>projector</u>		Test Date: <u>April 24, 2015</u>		
M/N : <u>NP-M403H, NP-M403W</u>		Temperature : <u>23°C</u>		
Power Supply : <u>AC 230V / 50Hz</u>		Humidity : <u>50%</u>		
Test Engineer : <u>TZH</u>				
Test Mode: <u>USB Play, AV in, HDMI in, VGA, Connect to PC(Ping)</u>				
Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Criterion	Result
0.15 ~ 80	AC Mains	3Vrms	A	A
0.15 ~ 80	Signal Line	3Vrms	A	A
Test Mode : <u>N/A</u>				
Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Criterion	Result
Remark : 1. Modulation Signal:1kHz 80% AM Measurement Equipment : Simulator: CIT-10 CDN : ☐ CDN-M2 (SWITZERLAND EMTEST) ☒ CDN-M3 (SWITZERLAND EMTEST) ☒ EM-Clamp (SWITZERLAND EMTEST)		Note:		

14. MAGNETIC FIELD SUSCEPTIBILITY TEST

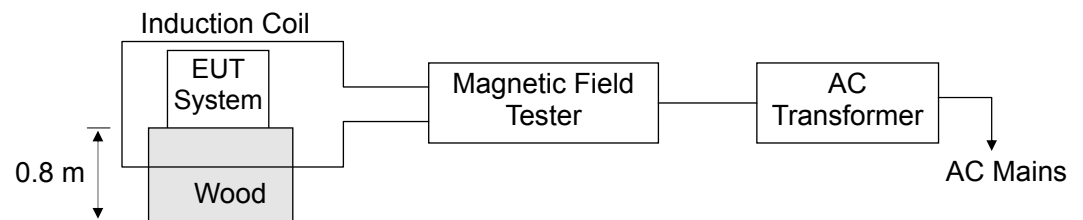
14.1. Block Diagram of Test Setup

14.1.1. Block diagram of EUT System



(EUT: projector)

14.1.2. Magnetic field test setup



(EUT: projector)

14.2. Test Standard

EN 55024:2010

(IEC 61000-4-8:2009, Severity Level: Level 1, 1 A/m)

14.3. Severity Levels and Performance Criterion

14.3.1. Severity Levels

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

14.3.2. Performance Criterion: A

14.4.Operating Condition of EUT

14.4.1.Setup the EUT as shown on Section 14.1.

14.4.2.Turn on the power of all equipments.

14.4.3.Let the EUT work in test mode (USB Play, AV in, HDMI in, VGA, Connect to PC(Ping)) and test it.

14.5.Test Procedure

The EUT is placed in the middle of a induction coil (1*1m), under which is a 1*1*0.1m (high) table, this small table is also placed on a larger table, 0.8 m above the ground. Both horizontal and vertical polarization of the induction coil is set on test, so that each side of the EUT is affected by the magnetic field. Also can reach the same aim by change the position of the EUT.

14.6.Test Results

PASS.

Please refer to the following page.

Magnetic Field Immunity Test Results

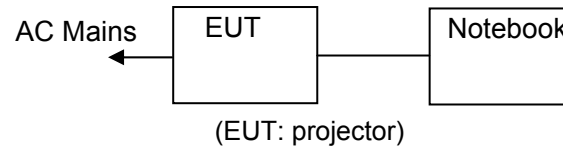
SHENZHEN EMTEK CO., LTD.

Standard: ☒ IEC 61000-4-8		Result: ☒ PASS / ☐ FAIL		
Applicant : <u>NEC DISPLAY SOLUTIONS., LTD.</u> EUT : <u>projector</u> M/N : <u>NP-M403H, NP-M403W</u> Input Voltage : <u>AC 230V/50Hz</u> Date of Test : <u>April 24, 2015</u> Test Engineer: <u>TZH</u> Ambient Condition : Temp : <u>22°C</u> Humid: <u>55%</u> Criterion: A				
Operation Mode: <u>USB Play, AV in, HDMI in, VGA, Connect to PC(Ping)</u>				
Test Level (A/m)	Testing Duration	Coil Orientation	Criterion	Result
1	5 mins	X	A	A
1	5 mins	Y	A	A
1	5 mins	Z	A	A
Operation Mode: N/A				
Test Level (A/m)	Testing Duration	Coil Orientation	Criterion	Result
Test Equipment	Magnetic Field Test: HEAFELY MAG 100.1			
Note:				

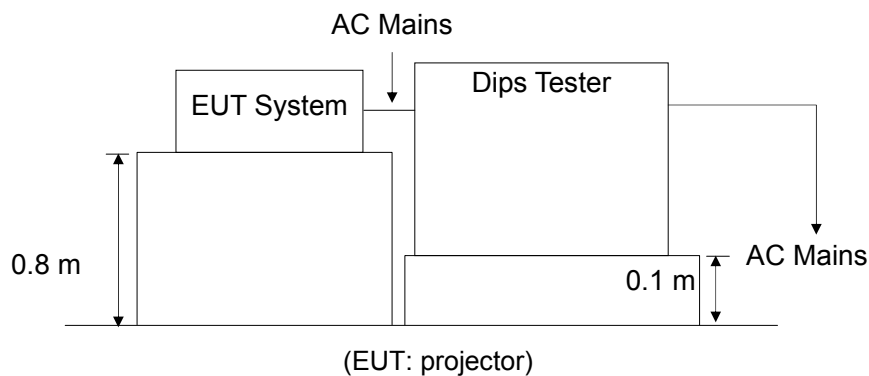
15. VOLTAGE DIPS AND INTERRUPTIONS TEST

15.1. Block Diagram of Test Setup

15.1.1. Block Diagram of EUT System



15.1.2. Dips Test Setup



15.2. Test Standard

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

15.3. Severity Levels and Performance Criterion

15.3.1. Severity level

Test Level %UT	Voltage dip and short interruptions %UT	Duration (in period)
0	100	0.5 1 5 10
70	30	25 50 *

15.3.2. Performance criterion: B&C

15.4. Operating Condition of EUT

15.4.1. Setup the EUT as shown on Section 15.1.

15.4.2. Turn on the power of all equipments.

15.4.3. Let the EUT work in test mode (USB Play, AV in, HDMI in, VGA, Connect to PC(Ping)) and test it.

15.5. Test Procedure

- 1) Set up the EUT and test generator as shown on Section 15.1.2.
- 2) The interruption is introduced at selected phase angles with specified duration.
- 3) Record any degradation of performance.

15.6. Test Results

PASS.

Please refer to the following page.

Voltage Dips and Interruptions Test Results

SHENZHEN EMTEK CO., LTD.

Applicant : NEC DISPLAY SOLUTIONS., LTD.

EUT : projector

M/N : NP-M403H, NP-M403W

Power Supply : AC 230V / 50Hz

Test Date : April 24, 2015

Temperature : 23°C

Humidity : 53%

Test Mode: USB Play, AV in, HDMI in, VGA, Connect to PC(Ping)

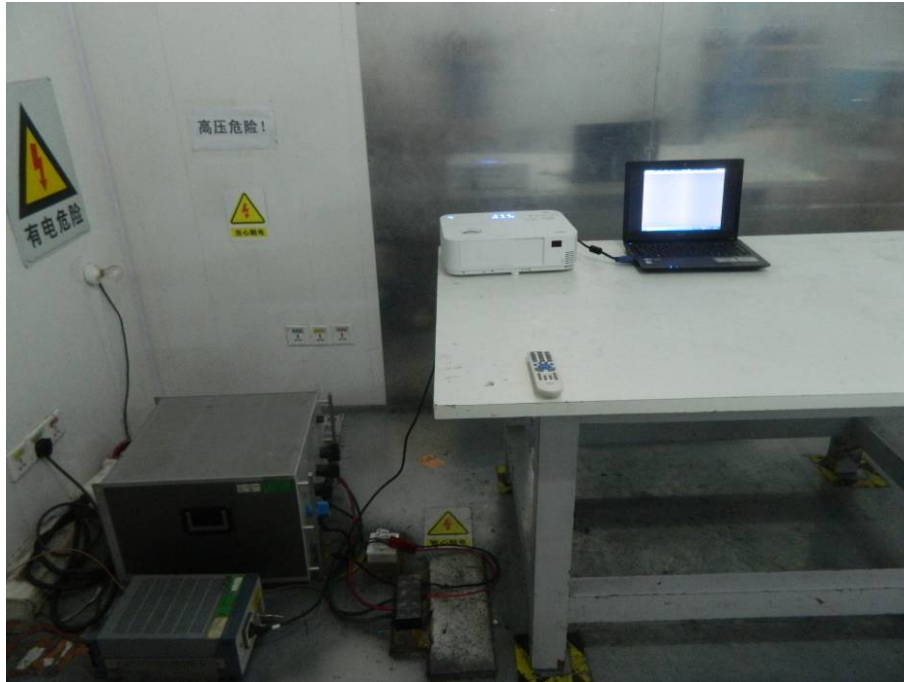
Test Level % U _T	Voltage Dips & Short Interruptions % U _T	Duration (in periods)	Criterion ☐ A ☒ B ☒ C ☐ D	Result
0	100	0.5P	B	A
70	30	25P	C	A
0	100	250P	C	C

Note: EUT Shut down, lost function. It should be recoverable by operator.

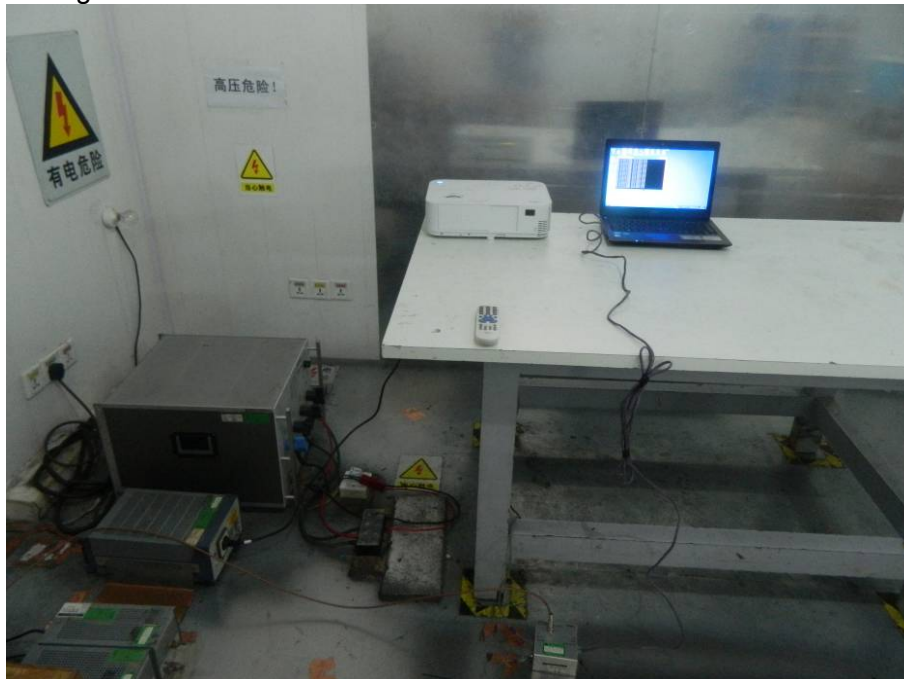
16. PHOTOGRAPHS

16.1.Photos of Conducted Emission Measurement

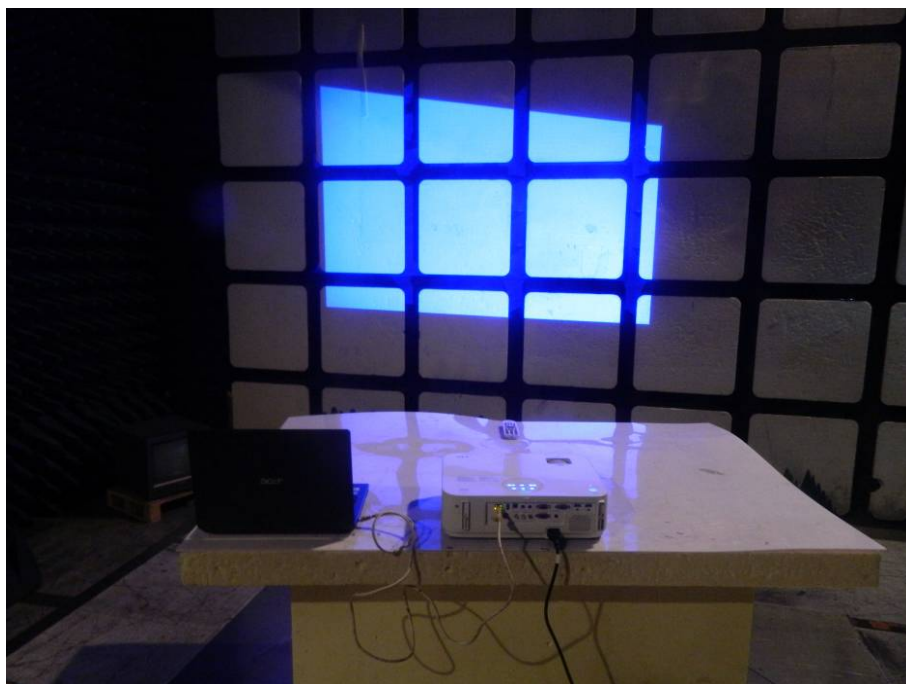
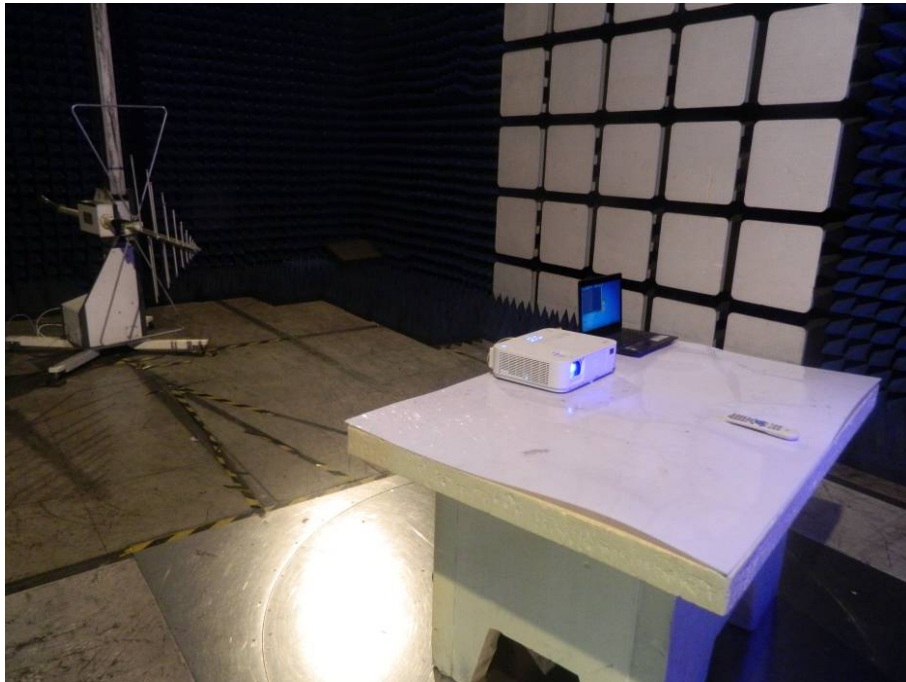
For AC Mains:



For Signal line:



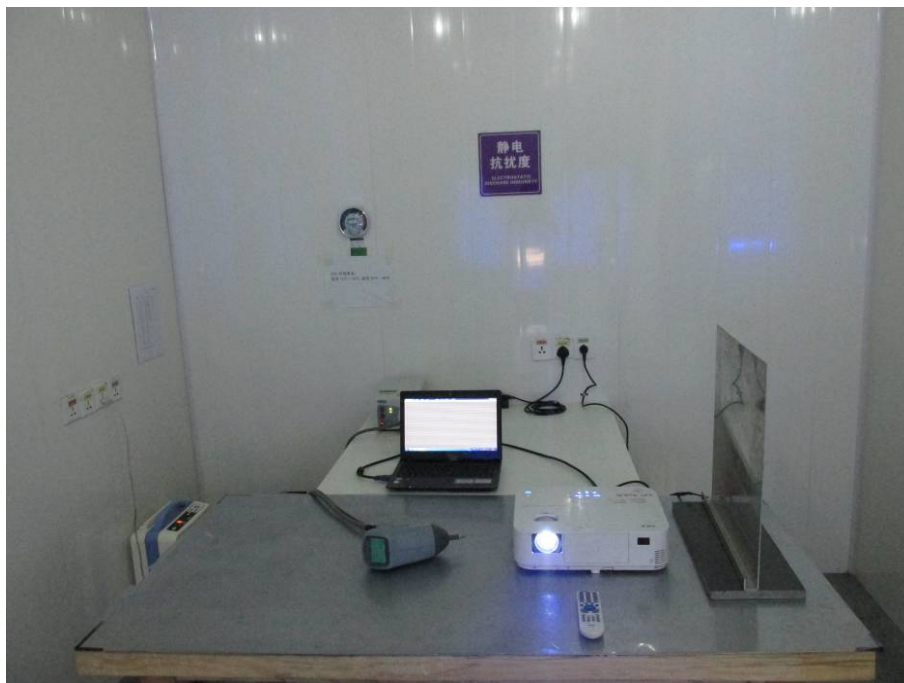
16.2.Photo of Radiation Emission Measurement



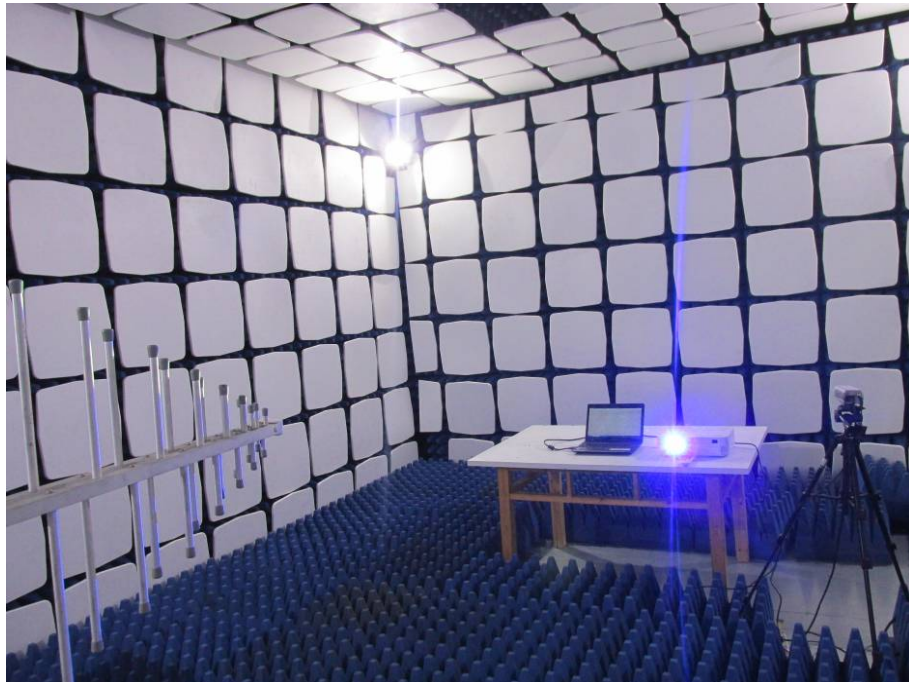
16.3.Photo of Harmonic / Flicker Measurement



16.4.Photo of Electrostatic Discharge Test

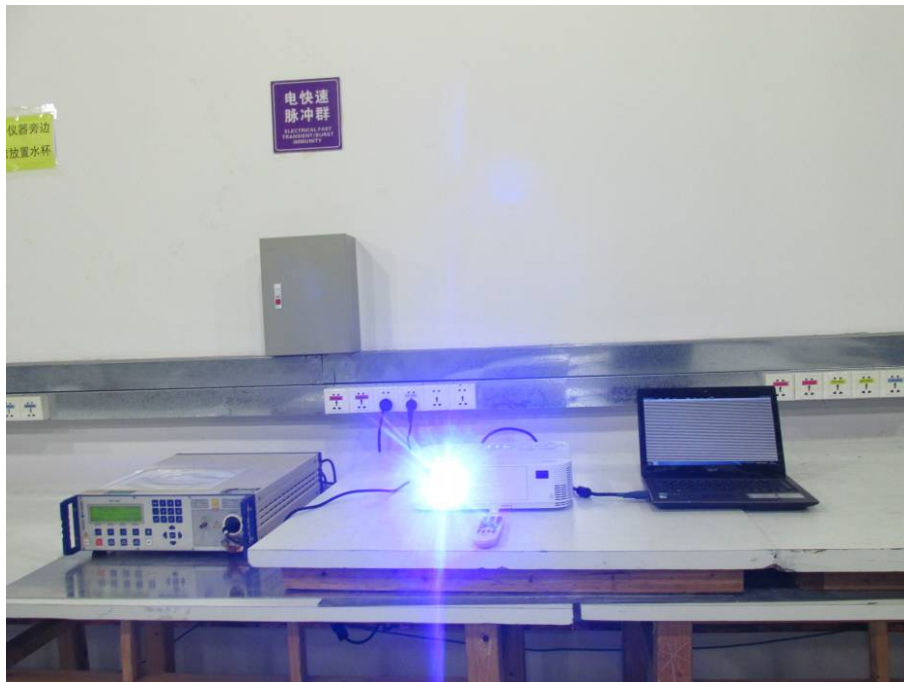


16.5.Photo of RF Field Strength Susceptibility Test

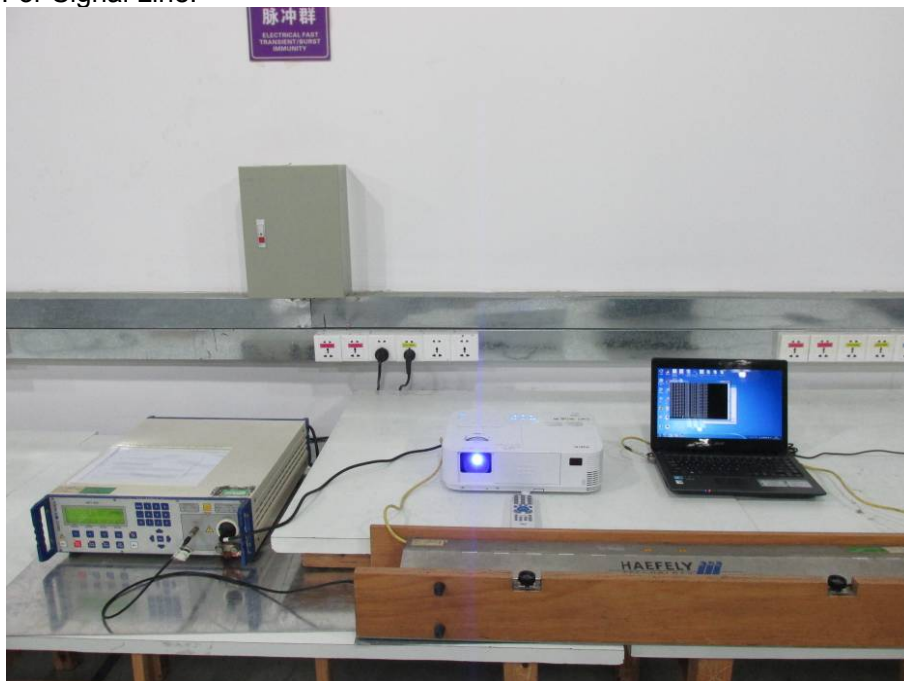


16.6.Photo of Electrical Fast Transient / Burst Test

For AC Mains:



For Signal Line:

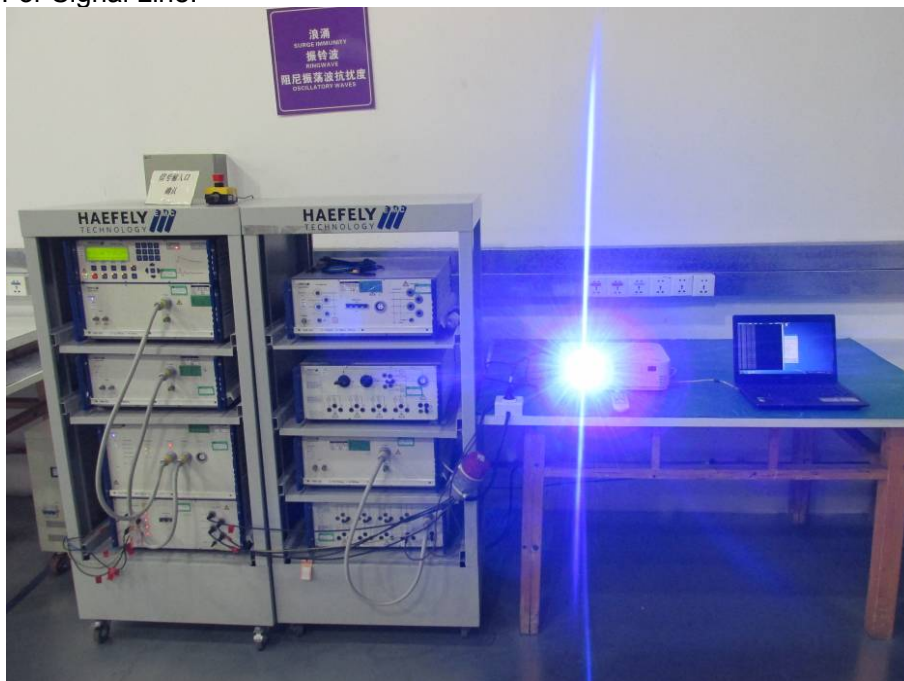


16.7.Photo of Surge Test

For AC Mains:

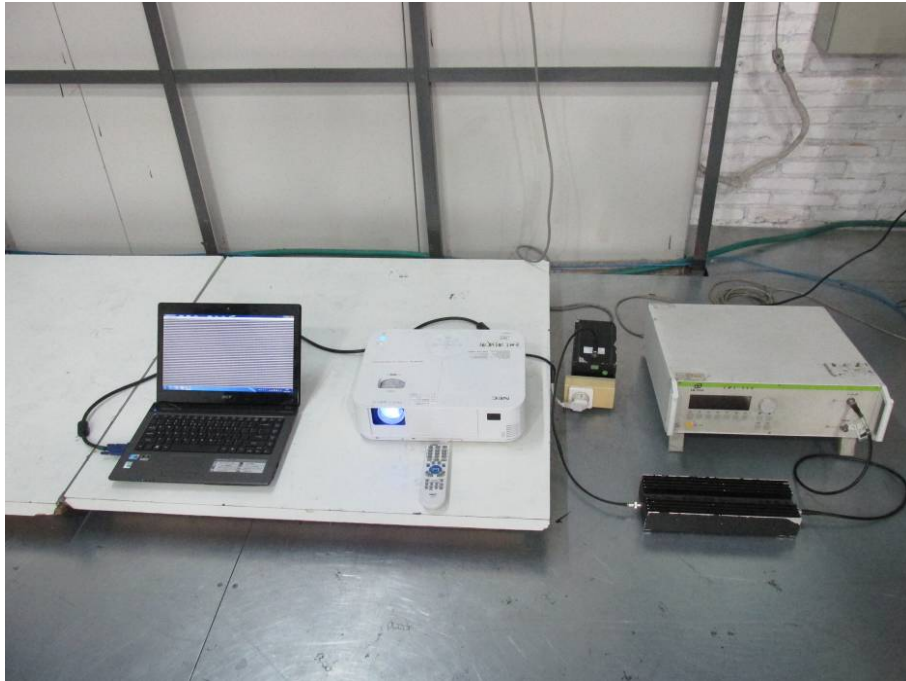


For Signal Line:

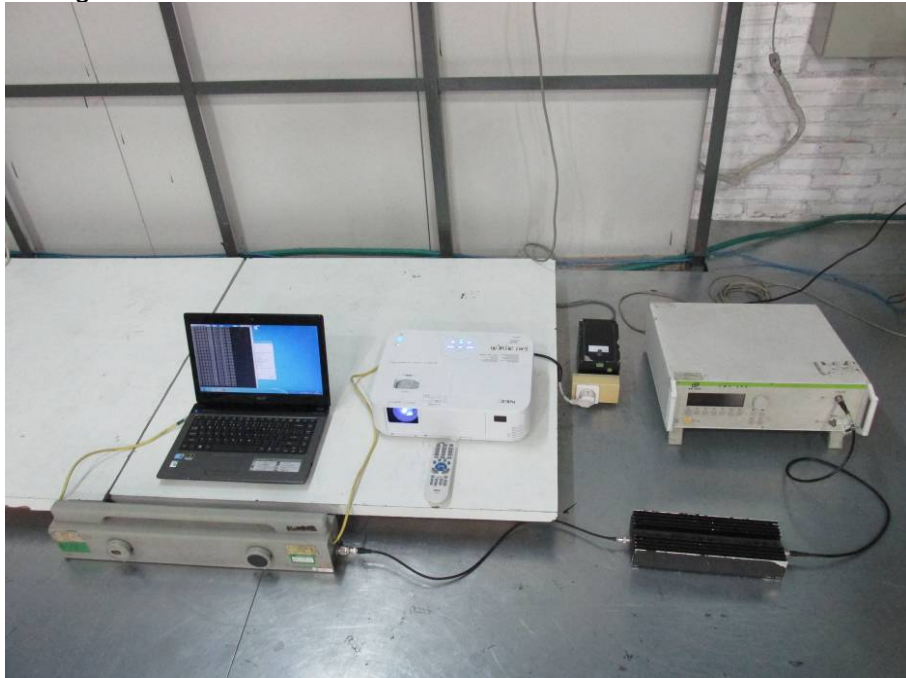


16.8.Photo of Injected Currents Susceptibility Test

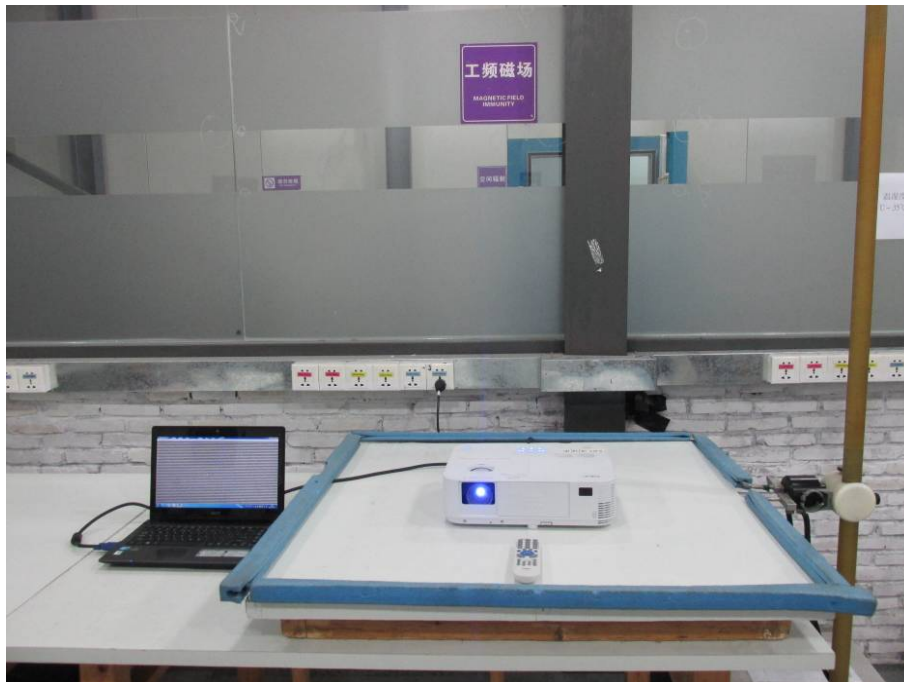
For AC Mains:



For Signal Line:



16.9.Photo of Magnetic Field Immunity Test



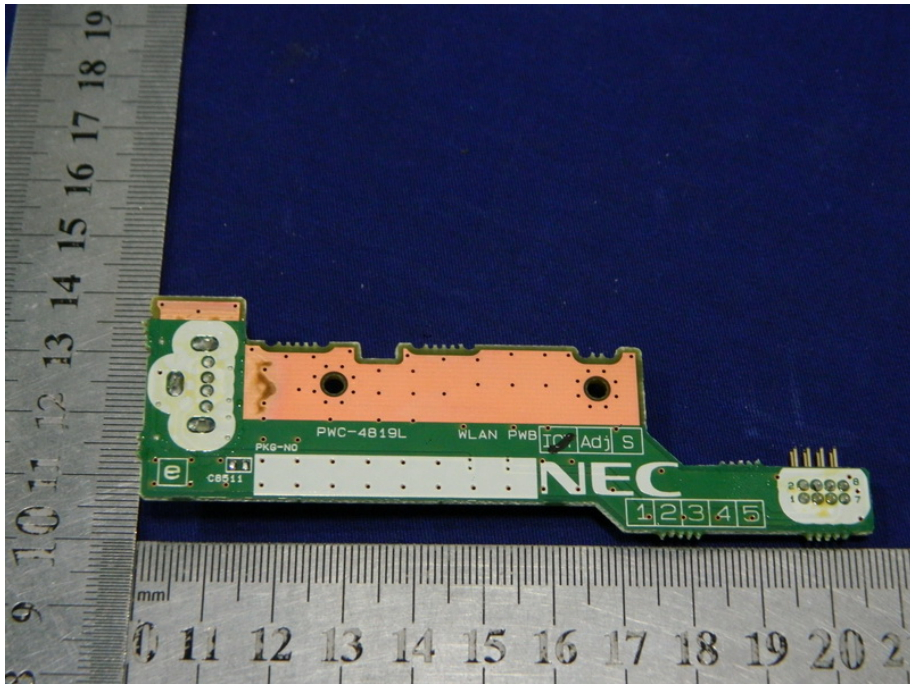
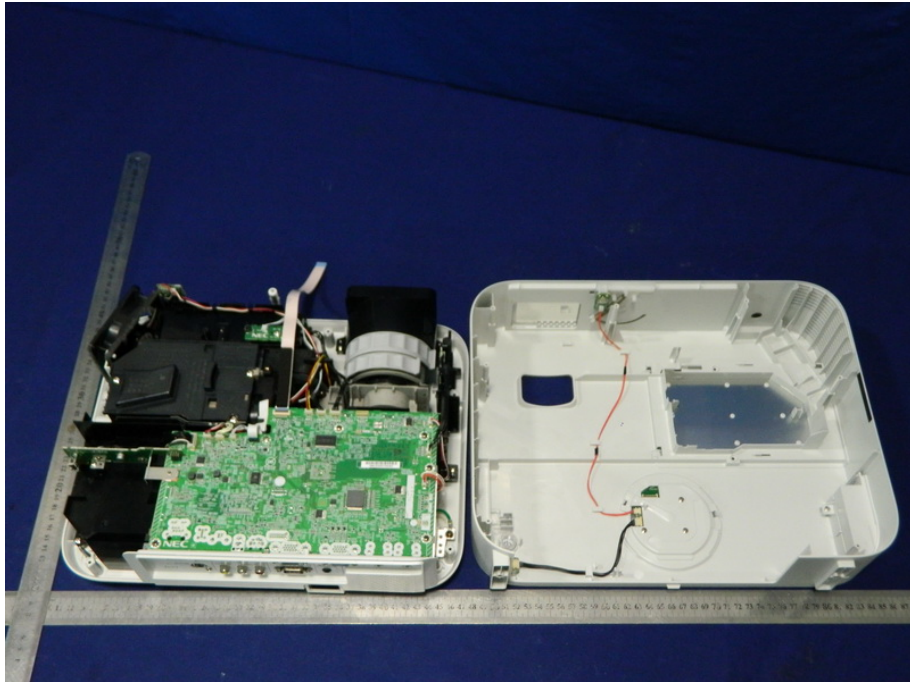
16.10.Photo of Voltage Dips and Interruption Immunity Test

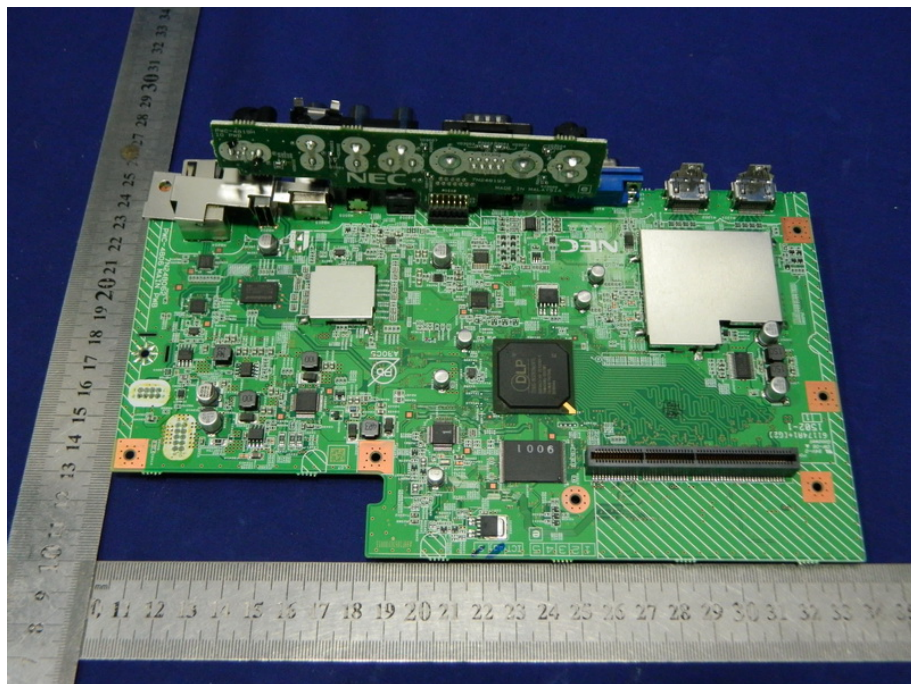
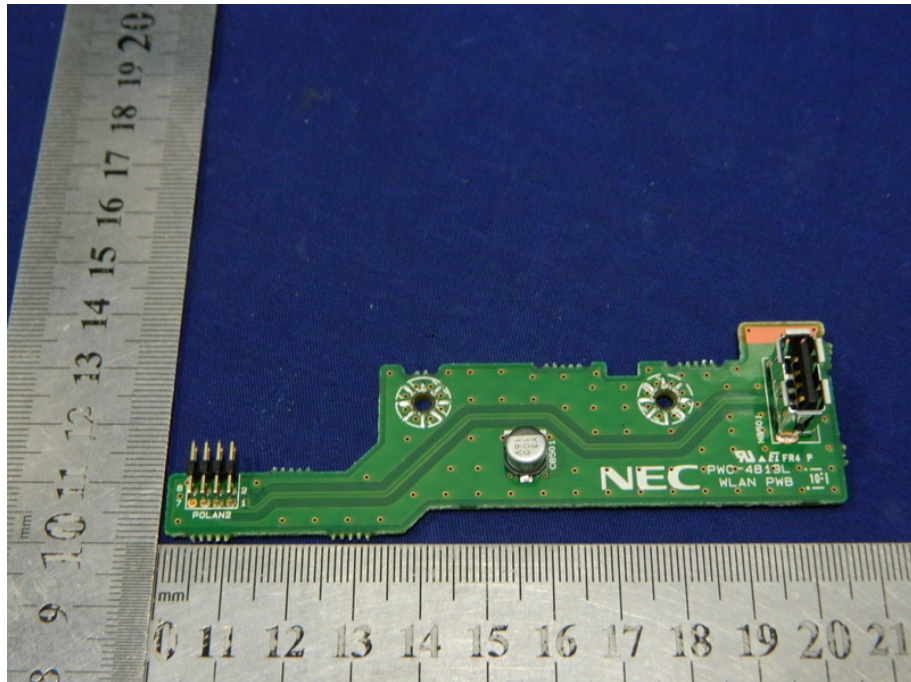


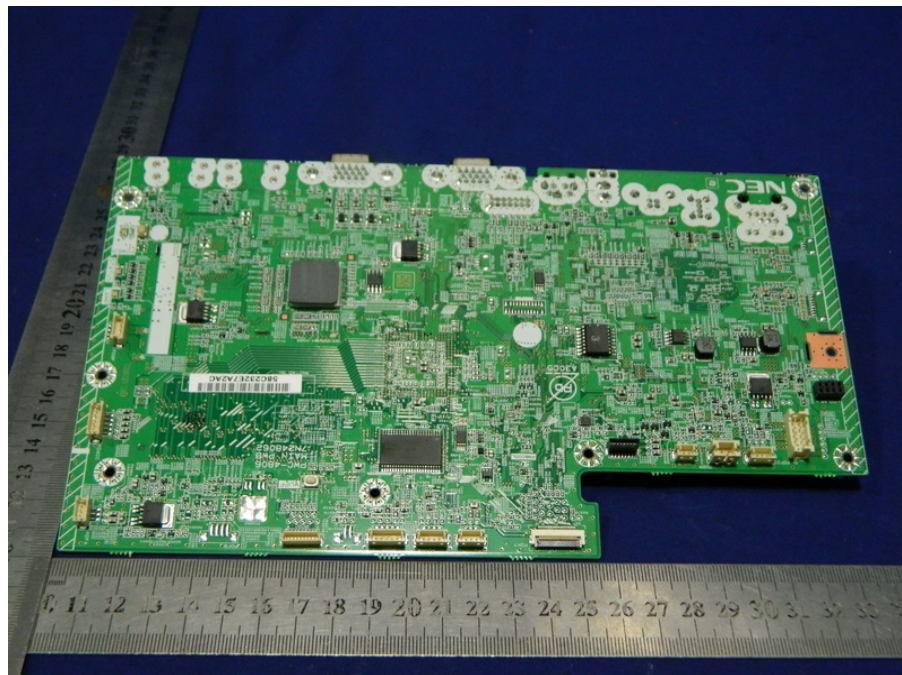
APPENDIX (Photos of EUT)

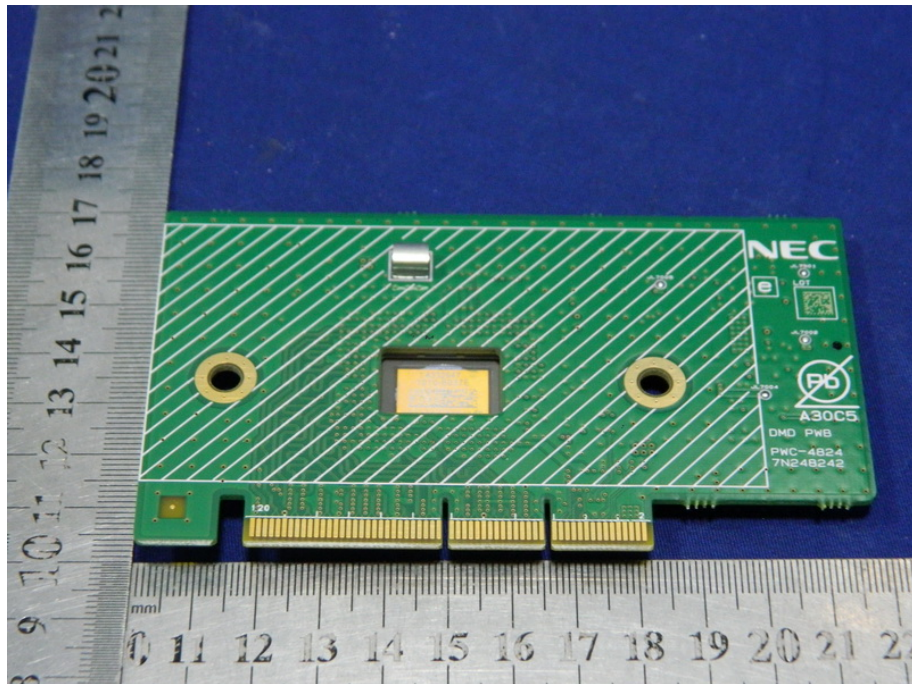
Model: NP-M403H











Model: NP-M403W



