CE

VERIFICATION OF COMPLIANCE

This Verification of Compliance is hereby issued to the product designated below.

Product	Panel PC with Touch Screen
Model	POC-S175
Trade name	ADVANTECH
Applicant	Advantech Co., Ltd. No. 1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 114, Taiwan, R.O.C.
Applicable Standard(s)	EN 60601-1-2: 2001 EN 55011: 1998 + A1: 1999 EN 61000-3-3: 1994 + A1: 2001 IEC 61000-4-2: 1995 + A1: 1998 + A2: 2000; IEC 61000-4-3: 2002 + A1: 2000 + A2: 2001; IEC 61000-4-4: 1995 + A1: 2000; IEC 61000-4-5: 1995 + A1: 2000; IEC 61000-4-6: 1996 + A1: 2000; IEC 61000-4-8: 1993 + A1: 2000; IEC 61000-4-11: 1994 + A1: 2000
Report No.	51118101-E1
Test Laboratory	Compliance Certification Services Inc. No. 81-1, Lane 210, Bade Rd., 2, Luchu Hsiang, Taoyuan Hsien, Taiwan, R.O.C. Tel: +886-3-3240332/ Fax: +886-3-3245235

This device has been tested and found to comply with the stated standard(s), which is(are) required by the Council Directive of 89/336/EEC and Amendment Directive of 93/42/EEC. The test results are indicated in the test report and are applicable only to the tested sample identified in the report.

Kurt Chen

Kurt Chen / Director of Linkou Laboratory
Date: January 9, 2006

EMC UPDATE TEST REPORT

For

Advantech Co., Ltd.

Panel PC with Touch Screen

Model: POC-S175

Trade Name: ADVANTECH

Revision: 01

Description of Rev. 01:

1. Applicant adds one CPU, one Main Board for new appearance, one Battery and upgrades standard version to re-test.
   (Please refer to have ** mark items on this report)
2. Other information, please refer to the 41109204 and this test report.

Approved by: ***Reviewed by:***

Kurt Chen
Director of Linkou Laboratory
Compliance Certification Services Inc.

Susan Su
Section Manager of Linkou Laboratory
Compliance Certification Services Inc.

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TABLE OF CONTENTS

1 TEST RESULT CERTIFICATION

Applicant:	**Advantech Co., Ltd.** No. 1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 114, Taiwan, R.O.C.
Manufacturer:	**Advantech Co., Ltd.** No. 1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 114, Taiwan, R.O.C.
Equipment Under Test:	Panel PC with Touch Screen
Trade Name:	ADVANTECH
Model:	POC-S175
Detailed EUT Description:	See Item 2 of this report
Date of Test:	December 15, 2005 ~ January 7, 2006

Applicable Standard	Class/Limit/Criterion	Test Result
EN 60601-1-2: 2001, including		
EN 55011: 1998 + A1: 1999	Class B	No non-compliance noted
EN 61000-3-2: 2000	Class A/B/C/D	N/A
EN 61000-3-3: 1994 + A1: 2001	Limit	No non-compliance noted
IEC 61000-4-2: 1995 + A1: 1998 + A2: 2000	See Item 9 of this report	No non-compliance noted
IEC 61000-4-3: 2002 + A1: 2000 + A2: 2001	See Item 10 of this report	No non-compliance noted
IEC 61000-4-4: 1995 + A1: 2000	See Item 11 of this report	No non-compliance noted
IEC 61000-4-5: 1995 + A1: 2000	See Item 12 of this report	No non-compliance noted
IEC 61000-4-6: 1996 + A1: 2000	See Item 13 of this report	No non-compliance noted
IEC 61000-4-8: 1993 + A1: 2000	See Item 14 of this report	No non-compliance noted
IEC 61000-4-11: 1994 + A1: 2000	See Item 15 of this report	No non-compliance noted
Deviation from Applicable Standard		
None		

The above equipment was tested by Compliance Certification Services Inc. for compliance with the requirements set forth in the EMC Directive 93/42/EEC and the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

2 EUT DESCRIPTION

Product	Panel PC with Touch Screen		
Trade Name	ADVANTECH		
Model	POC-S175		
Housing Type	Plastic		
EUT Power Rating	DCV from Power Adapter		
Power Adapter Manufacturer	SINPRO	**Model**	MPU50-108
			PCM80PS24
Power Adapter Power Rating	**For MPU50-108** I/P: 100-240VAC, 47-63Hz O/P: DC 11-13V, 2.08A **For PCM80PS24** I/P: 100-240VAC, 50-60Hz, 1.1-0.45A O/P: DC 24V, 3.33A		
AC Power Cord Type	Unshielded, 1.8m (Detachable)		
DC Power Cable Type	Unshielded, 1.2m (Non-detachable) with a core		
CPU Manufacturer	Intel	**Model**	Celeron-M 600MHz
		**	Pentium M-1.4GHz
OSC/Clock Frequencies	100MHz		
Memory Capacity		**Installed**	256MB
LCD Panel Manufacturer	AUO	**Model**	G170EG01
Main Board Manufacturer	Adventech	**Model**	PCM-9896
		**	PCM-9686S
HDD Manufacturer	Fujitsu	**Model**	MHT2020AT (20GB)
****Battery Manufacturer**	SAMAUNG	**Model**	ICR18650-22 (2200mAH)

I/O Port of EUT

I/O Port Type	Q'TY	TESTED WITH
1). Serial Port	2	2
2). PS/2 Keyboard / Mouse Port	1	1
3). LAN Port	1	1
4). USB Port	2	2

3 TEST METHODOLOGY

3.1 DECISION OF FINAL TEST MODE

1. The following test mode(s) were scanned during the preliminary test:

Mode	Resolution	CPU	Memory	Main Board	LCD Panel	Power Adapter
1	1280 × 1024	Intel / Pentium-M 1.4GHz	256MB	ADVENTECH / PCM-9686S	AUO / M170EG01	SINPRO / PCM80PS24
2	1024 × 768					
3	800 × 600					

2. After preliminary scan, found mode 1 producing the highest emission level, used this mode for all final test.

4 SETUP OF EQUIPMENT UNDER TEST

Setup Diagram

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

Support Equipment

No.	Equipment	Model No.	Serial No.	FCC ID	Trade Name	Data Cable	Power Cord
1.	Monitor	959NF	AQ19H2RT706123Z	FCC DoC	SAMSUNG	Shielded, 1.8m with two cores	Unshielded, 1.8m
2.	Modem	DM-1414	304012263	IFAXDM1414	ACEEX	Unshielded, 1.8m with a core	Unshielded, 1.8m
3.	PS/2 Keyboard	Y-SP29	SYU30272820	FCC DoC	Logitech	Shielded, 1.8m	N/A
4.	Mouse	M-MM43	LZE94052771	FCC DoC	Logitech	Shielded, 1.8m	N/A
5.	USB 2.0 External HDD	F12-UF	A0100214-39t0001	FCC DoC	TeraSys	Shielded, 1.8m	N/A
6.	USB 2.0 External HDD	F12-UF	A0100214-43b0010	FCC DoC	TeraSys	Shielded, 1.8m	N/A
7.	Multimedia Earphone	Axis-301	N/A	FCC DoC	Labtec	Unshielded, 2.0m	N/A
8.	Notebook PC (Remote)	COMPAQ NC 4010	CNU5191L58	FCC DoC	HP	LAN Cable: Unshielded, 10m with a core	AC I/P: Unshielded, .1.8m DC O/P: Unshielded, 1.8m with a core

Note: *All the above equipment/cables were placed in worse case positions to maximize emission signals during emission test.*

Grounding: *Grounding was in accordance with the manufacturer's requirements and conditions for the intended use.*

5 FACILITIES AND ACCREDITATIONS

5.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the IEC 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

5.2 TEST AND MEASUREMENT EQUIPMENT

The following list contains measurement equipment used for testing. The equipment conforms to the requirement of CISPR 16-1, ANSI C63.2 and other required standards.

Calibration of all test and measurement, including any accessories that may effect such calibration, is checked frequently to ensure the accuracy. Adjustments are made and correction factors are applied in accordance with the instructions contained in the respective manual.

Equipment Used for Emission Measurement

Conducted Emission Test Site # 4				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
EMI Test Receiver	R&S	ESCS30	847793/012	12/27/2006
LISN	EMCO	3825/2	9003-1628	07/28/2006
LISN	R&S	ENV 4200	830326/016	03/30/2006

Note: *The measurement uncertainty is less than +/- 2.83dB, which is evaluated as per the NAMAS NIS 81 and CISPR/A/291/CDV.*

Open Area Test Site # 5				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	ADVANTEST	R3132	91700456	N.C.R
EMI Test Receiver	R&S	ESVS10	846285/016	06/07/2006
Bilog Antenna	Sunol Sciences	JB1	A031905	04/15/2006
Turn Table	CCS	CC-T-1F	N/A	N.C.R
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R
Controller	CCS	CC-C-1F	04	N.C.R
RF Switch	ANRITSU	MP59B	10877	N.C.R
Site NSA	CCS	N/A	N/A	12/09/2006

Note: *The measurement uncertainty is less than +/- 3.36dB, which is evaluated as per the NAMAS NIS 81 and CISPR/A/291/CDV.*

Power Harmonic & Voltage Fluctuation/Flicker Measurement (EN 61000-3-2&-3-3)				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
HARMONICS SYSTEM	EMC-PARTNER	HARMONICS-1 000	094	11/22/2006

Equipment Used for Immunity Measurement

ESD Test Site (IEC/EN 61000-4-2)				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
ESD Generator	SCHAFFNER	NSG438	170	04/19/2006

Radiated Electromagnetic Field Immunity Test Site (IEC/EN 61000-4-3) (80-1000MHz)				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
S.G.	R&S	SMY02	100094	08/09/2006
Power Meter	R&S	NRVD	837794/029	08/09/2006
Power Sensor	R&S	URV5-Z2	835640/015	08/09/2006
Power Sensor	R&S	URV5-Z2	835640/016	08/09/2006
Power Amplifier	ar	150W1000	300300	N.C.R

Radiated Electromagnetic Field Immunity Test Site (IEC/EN 61000-4-3) (1400-2500MHz)				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
S.G.	Agilnet	8648C	4108A05772	07/29/2006
Power Meter	BOONTON	4232A	98501	07/08/2006
Power Amplifier	ar	150W1000M3	306730	N.C.R
Power Amplifier	ar	30S1G3M1	306722	N.C.R
RF Test Sys Ctrlr	ar	SC1000M3	306666	N.C.R
Bilog Antenna	ar	AT1080	306709	N.C.R
Horn Antenna	ar	AT4002	306750	N.C.R

Fast Transients/Burst Test Site (IEC/EN 61000-4-4)				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
EMC TEST SYSTEM	EMC-PARTNER	TRANSIENT-2000	754	09/07/2006
Clamp	HAEFELY TRENCH	093 506.1	080 421.13	N.C.R

Surge Immunity Test Site (IEC/EN 61000-4-5)				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Surge Tester	HAEFELY TRENCH	PSUGER 4010	583 334-71	08/30/2006

CS Test Site (IEC/EN 61000-4-6)				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
S.G.	R&S	SMY02	100094	08/09/2006
Power Meter	R&S	NRVD	837794/029	08/09/2006
Power Sensor	R&S	URV5-Z2	835640/015	08/09/2006
Power Sensor	R&S	URV5-Z2	835640/016	08/09/2006
Power Amplifier	ar	500A100A	300299	N.C.R
CDN	Lüthi	801-M3	1879	03/04/2006
CDN	FRANKONIA	CDN-M2	A3002010	08/02/2006
CDN	SCHAFFNER	T400	16906	12/29/2006

Power Frequency Magnetic Field Immunity Test Site (IEC/EN 61000-4-8)				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
TRIAX ELF Magnetic Field Meter	F.W.BELL	4090	9711	11/27/2006
Clamp Meter	National	300K	11-5980 K	11/22/2006
Magnetic Field Tester	HAEFELY TRENCH	MAG 100.1	080 938-01	N.C.R

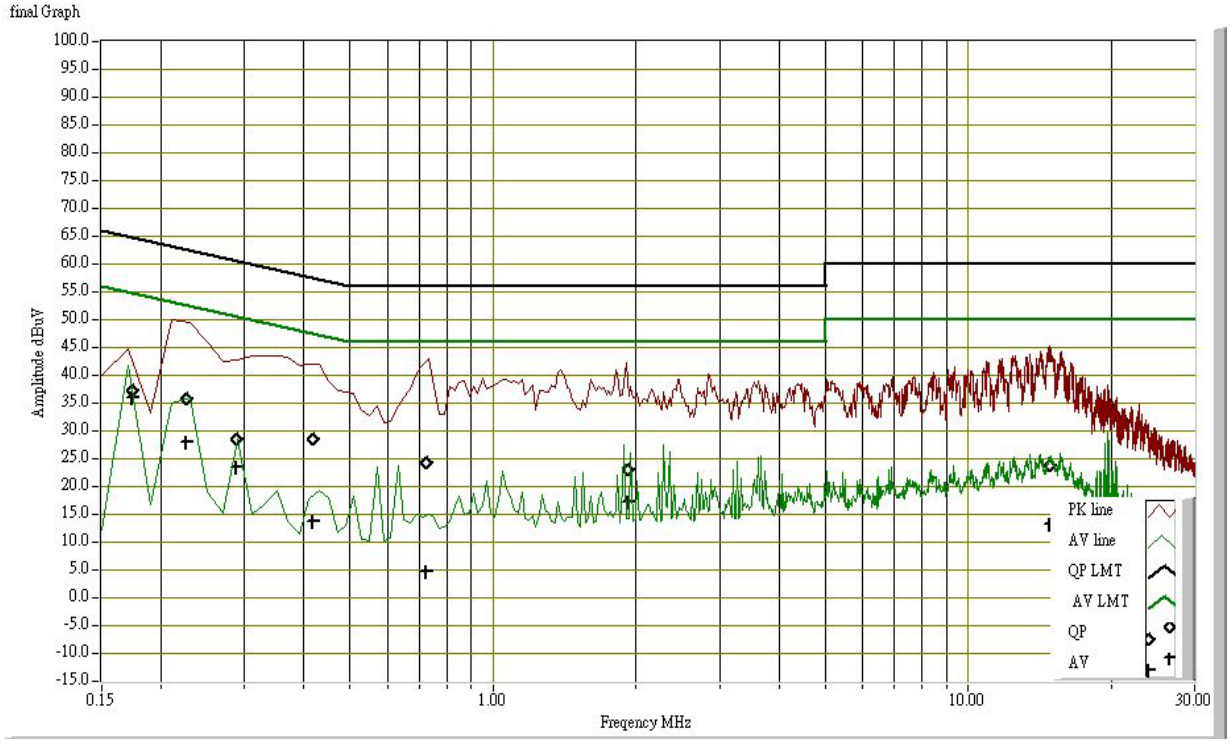
Voltage Dips/Short Interruption and Voltage Variation Immunity Test Site (IEC/EN 61000-4-11)				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Dips/Interruption and Variations Simulator	HAEFELY TRENCH	PLINE 1610	080 344-05	04/10/2006

6 TEST RESULTS

Line Conducted Emission

CCS Conduction Test 4

Job No.:51118101
Date:2006/1/4 Time:PM 05:50 Temp.(℃)/Hum.(%):20℃ / 59 %
Tested by: Tony Tsai
Standard:EN 55022 Class B Power Source:230 Vac / 50Hz Measured Line:L1
Company:ADVANTECH
Product : Panel PC with Touch Screen
Model :POC-S175

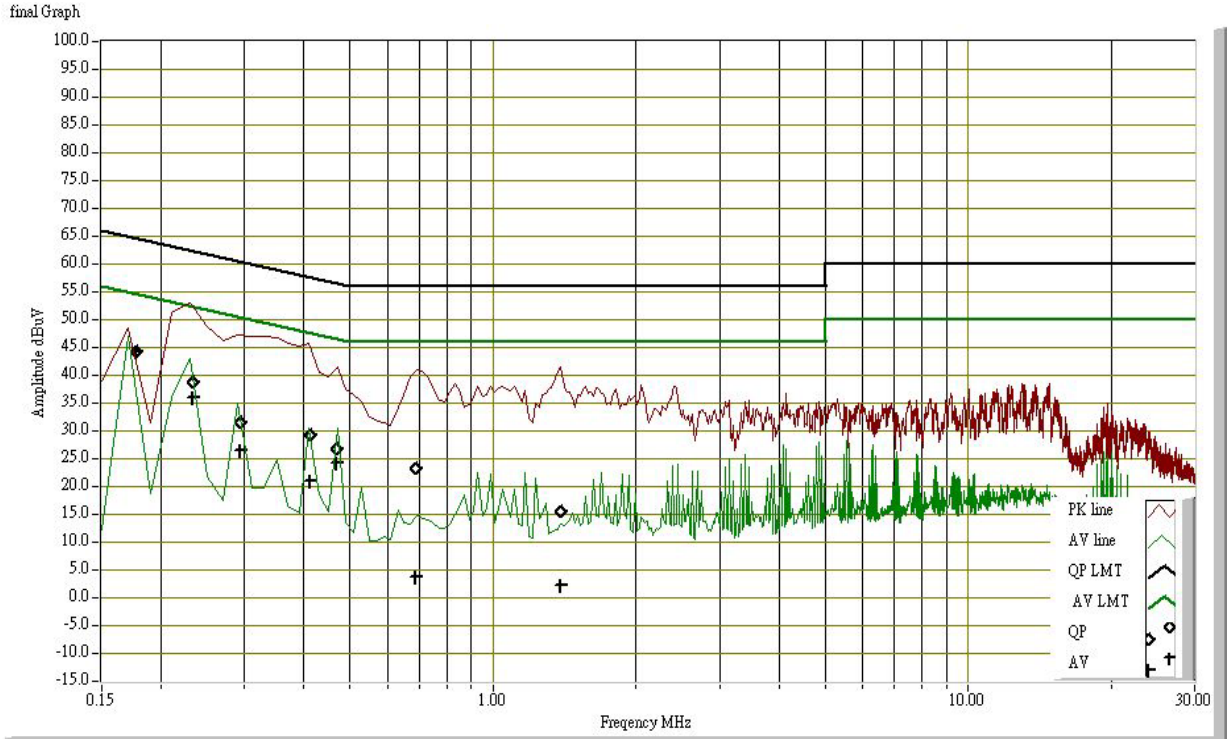


Freq. (MHz)	QP Reading (dBuV)	AV Reading (dBuV)	Corr. Factor (dBuV)	QP Result (dBuV)	AV Result (dBuV)	QP Limit (dBuV)	AV Limit (dBuV)	QP Margin (dBuV)	AV Margin (dBuV)	Remark
0.174	37.270	35.910	10.200	47.470	46.110	64.771	54.771	-17.301	-8.661	PASS
0.226	35.710	28.070	10.200	45.910	38.270	62.595	52.595	-16.685	-14.325	PASS
0.289	28.560	23.380	10.200	38.760	33.580	60.561	50.561	-21.801	-16.981	PASS
0.416	28.480	13.860	10.216	38.696	24.076	57.527	47.527	-18.831	-23.451	PASS
0.722	24.160	4.720	10.256	34.416	14.976	56.000	46.000	-21.584	-31.024	PASS
1.920	22.940	17.220	10.200	33.140	27.420	56.000	46.000	-22.860	-18.580	PASS
14.886	23.630	13.130	11.589	35.219	24.719	60.000	50.000	-24.781	-25.281	PASS

L1 = Line One (Live Line)

CCS Conduction Test 4

Job No.:51229107
Date:2006/1/4 Time:PM 06:01 Temp.(℃)/Hum.(%):20℃ / 59 %
Tested by: Tony Tsai
Standard:EN 55022 Class B Power Source:230 Vac / 50Hz Measured Line:L2
Company:ADVANTECH
Product : Panel PC with Touch Screen
Model :POC-S175



Freq. (MHz)	QP Reading (dBuV)	AV Reading (dBuV)	Corr. Factor (dBuV)	QP Result (dBuV)	AV Result (dBuV)	QP Limit (dBuV)	AV Limit (dBuV)	QP Margin (dBuV)	AV Margin (dBuV)	Remark
0.177	44.310	42.130	10.200	54.510	52.330	64.633	54.633	-10.123	-2.303	PASS
0.234	38.850	36.120	10.200	49.050	46.320	62.313	52.313	-13.263	-5.993	PASS
0.294	31.590	26.420	10.200	41.790	36.620	60.416	50.416	-18.626	-13.796	PASS
0.411	29.310	20.930	10.389	39.699	31.319	57.620	47.620	-17.921	-16.301	PASS
0.469	26.640	24.330	10.331	36.971	34.661	56.536	46.536	-19.565	-11.875	PASS
0.686	23.210	3.780	10.337	33.547	14.117	56.000	46.000	-22.453	-31.883	PASS
1.385	15.380	2.180	10.400	25.780	12.580	56.000	46.000	-30.220	-33.420	PASS

L2 = Line Two (Neutral Line)

Radiated Emission (A)

Model: POC-S175 **Test Mode:** Mode 1

Temperature: 15°C **Humidity:** 58% RH

Detector Function: Quasi-peak. **Antenna:** Vertical at 10m

Tested by: Harry Wang **Test Results:** Pass

(The chart below shows the highest readings taken from the final data)

Freq. (MHz)	Raw Data (dBuV)	Corr. Factor (dB/m)	Emiss. Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
54.84	15.33	9.01	24.34	30.00	-5.66
192.54	11.35	14.55	25.91	30.00	-4.09
233.31	20.23	13.70	33.93	37.00	-3.07
263.82	7.47	15.44	22.91	37.00	-14.09
333.00	13.54	17.56	31.09	37.00	-5.91
356.40	9.37	18.24	27.61	37.00	-9.39
403.80	6.70	19.33	26.03	37.00	-10.97
495.40	4.43	22.26	26.69	37.00	-10.31
501.40	1.09	22.43	23.52	37.00	-13.48
538.60	0.82	23.09	23.91	37.00	-13.09
588.60	3.61	23.76	27.37	37.00	-9.62
831.40	4.63	27.84	32.48	37.00	-4.52
927.40	2.81	29.11	31.92	37.00	-5.08
991.00	3.58	30.68	34.26	37.00	-2.74

Radiated Emission (B)

Model: POC-S175 **Test Mode:** Mode 1

Temperature: 15°C **Humidity:** 58% RH

Detector Function: Quasi-peak. **Antenna:** Horizontal at 10m

Tested by: Harry Wang **Test Results:** Pass

(The chart below shows the highest readings taken from the final data)

Freq. (MHz)	Raw Data (dBuV)	Corr. Factor (dB/m)	Emiss. Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
66.47	9.96	9.35	19.30	30.00	-10.70
168.50	9.87	14.03	23.90	30.00	-6.10
233.00	18.80	13.68	32.48	37.00	-4.52
316.60	9.42	17.03	26.45	37.00	-10.55
333.40	15.34	17.57	32.91	37.00	-4.09
448.80	8.70	20.86	29.56	37.00	-7.44
561.40	7.19	23.44	30.62	37.00	-6.37
599.20	7.09	23.89	30.98	37.00	-6.02
626.60	5.66	24.38	30.04	37.00	-6.96
830.20	3.73	27.81	31.53	37.00	-5.47
875.00	5.50	28.70	34.20	37.00	-2.80
963.70	2.69	29.69	32.38	37.00	-4.62

7 POWER HARMONICS TEST

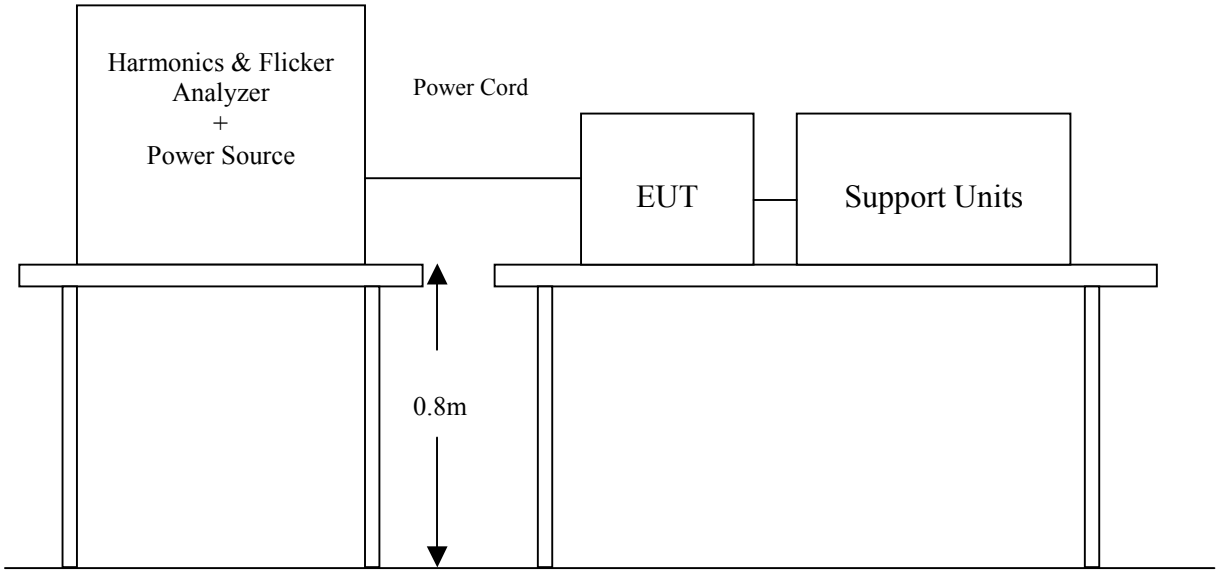
Port : AC mains
Basic Standard : EN 61000-3-2 (2000)
Limits : ☐ CLASS A ; ☐ CLASS B; ☐ CLASS C ; ☐ CLASS D
Tested by : N/A
Temperature : N/A
Humidity : N/A

Limit:

Limits for Class A equipment	
Harmonics Order n	Max. permissible harmonics current A
Odd harmonics	
3	2.30
5	1.14
7	0.77
9	0.40
11	0.33
13	0.21
15<=n<=39	0.15x15/n
Even harmonics	
2	1.08
4	0.43
6	0.30
8<=n<=40	0.23x8/n

Limits for Class D equipment		
Harmonics Order n	Max. permissible harmonics current per watt mA/W	Max. permissible harmonics current A
Odd Harmonics only		
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
13	0.30	0.21
15<=n<=39	3.85/n	0.15x15/n

Block Diagram of Test Setup:



Test Procedure:

a. The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the maximum harmonic components under normal operating conditions for each successive harmonic component in turn.

b. The correspondent test program of test instrument to measure the current harmonics emanated from EUT is chosen. The measure time shall be not less than the time necessary for the EUT to be exercised.

Test Result : (See Appendix II for details)

EUT max Power : 74.73W

Note: *According to clause 7 of EN 61000-3-2: 2000, equipment with a rated power of 75W or less, no limits apply.*

8 POWER VOLTAGE FLUCTUATION / FLICKER TEST

Port : AC mains

Basic Standard : EN 61000-3-3 (1995 + A1: 2001)

Limits : §5 of EN 61000-3-3

Tested by : Bill Cheng

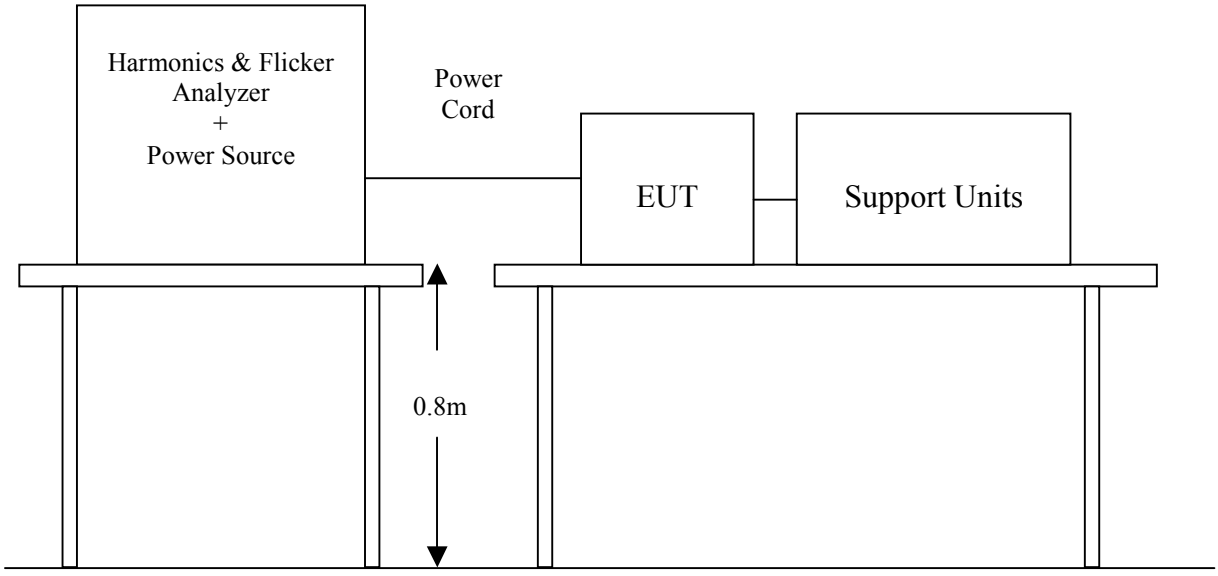
Temperature : 24°C

Humidity : 54%

Limit:

TEST ITEM	LIMIT	REMARK
P_{st}	1.0	P_{st} means short-term flicker indicator.
P_{lt}	0.65	P_{lt} means long-term flicker indicator.
T_{dt} (ms)	500	T_{dt} means maximum time that dt exceeds 3 %.
d_{max} (%)	4%	d_{max} means maximum relative voltage change.
dc (%)	3.3%	dc means relative steady-state voltage change

Block Diagram of Test Setup:



Test Procedure:

a. The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the most unfavorable sequence of voltage changes under normal operating conditions.

b. During the flick measurement, the measure time shall include that part of whole operation cycle in which the EUT produce the most unfavorable sequence of voltage changes. The observation period for short-term flicker indicator is 10 minutes and the observation period for long-term flicker indicator is 2 hours.

Test Result: (See Appendix II for details)

Continue

Test Parameter	Measurement Value	Limit	Result
P_{st}	0.073	1.0	Pass
P_{lt}	0.073	0.65	Pass
T_{dt} (ms)	0	500	Pass
d_{max} (%)	0%	4%	Pass
dc (%)	0.05%	3.3%	Pass

Manual Switch

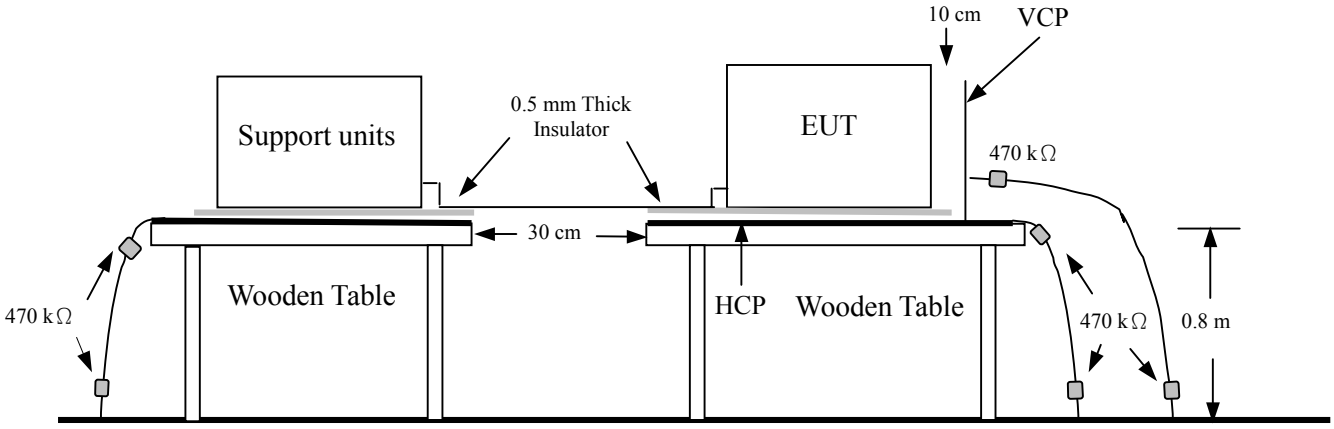
Test Parameter	Measurement Value	Limit	Result
P_{st}	0.073	1.0	Pass
P_{lt}	0.073	0.65	Pass
T_{dt} (ms)	0	500	Pass
d_{max} (%)	0%	4%	Pass
dc (%)	0.08%	3.3%	Pass

9 ELECTROSTATIC DISCHARGE (ESD) IMMUNITY TEST

Port	:	Enclosure
Basic Standard	:	IEC/EN 61000-4-2
Test Level	:	± 8 kV (Air Discharge) ± 6 kV (Contact Discharge) ± 6 V (Indirect Discharge)
Performance Criterion	:	The Equipment or System shall be able to provide the essential performance and remain safe.
Tested by	:	Harry Wang
Temperature	:	22°C
Humidity	:	56% RH
Pressure	:	1010mbar

Block Diagram of Test Setup:

(The 470 k ohm resistors are installed per standard requirement.)



Ground Reference Plane

Test Procedure:

The electrostatic discharges were applied as follows:

Amount of Discharges	Voltage	Coupling	Result (Pass/Fail)
≧10 / Point	± 8 kV	Air Discharge	Pass
≧10 / Point	± 6 kV	Contact Discharge	Pass
≧10 / Point	± 6 kV	Indirect Discharge HCP	Pass
≧10 / Point	± 6 kV	Indirect Discharge VCP (Front)	Pass
≧10 / Point	± 6 kV	Indirect Discharge VCP (Left)	Pass
≧10 / Point	± 6 kV	Indirect Discharge VCP (Right)	Pass

****For the tested points to EUT, please refer to attached page.***
(Blue Arrow Mark For Contact Discharge And Red Arrow Mark For Air Discharge)

Observation: No any function degraded during the tests.

Compliance Criteria:

Under the test conditions specified in 36.202, the EQUIPMENT or SYSTEM shall be able to provide the ESSENTIAL PERFORMANCE and remain safe. The following DEGRADATIONS associated with ESSENTIAL PERFORMANCE and safety shall not be allowed:

- Component failures
- Changes in programmable parameters
- Reset to factory defaults (manufacturer's presets)
- Chang of operating mode
- False alarms
- Cessation or interruption of any intended operation, even if accompanied by an alarm
- Initiation of any unintended operation, including unintended or uncontrolled motion, even if accompanied by an alarm
- Error of a displayed numerical value sufficiently large to affect diagnosis or treatment
- Noise on a waveform in which the noise is indistinguishable from physiologically-produced signals or the noise interferes with interpretation of physiologically-produced signals
- Artefact or distortion in an image in which the artefact is indistinguishable from physiologically-produced signals or the distortion interferes with interpretation of physiologically-produced signals
- Failure of automatic diagnosis or treatment EQUIPMENT and SYSTEMS to diagnose or treat, even if accompanied by an alarm.

For EQUIPMENT and SYSTEMS with multiple FUNCTIONS, the criteria apply to each FUNCTION, parameter and channel.
The EQUIPMENT or SYSTEM may exhibit DEGRADATION of performance (e.g. deviation from manufacturer's specifications) that does not affect ESSENTIAL PERFORMANCE or safety.

The Tested Points of EUT

Photo 1 of 3

Photo 2 of 3

Photo 3 of 3

10 RADIATED ELECTROMAGNETIC FIELD IMMUNITY TEST

Port : Enclosure

Basic Standard : IEC/EN 61000-4-3

Requirements : 10 V/m / with 80% AM. 1kHz Modulation. (Customer Requested)

Performance Criterion : The Equipment or System shall be able to provide the essential performance and remain safe.

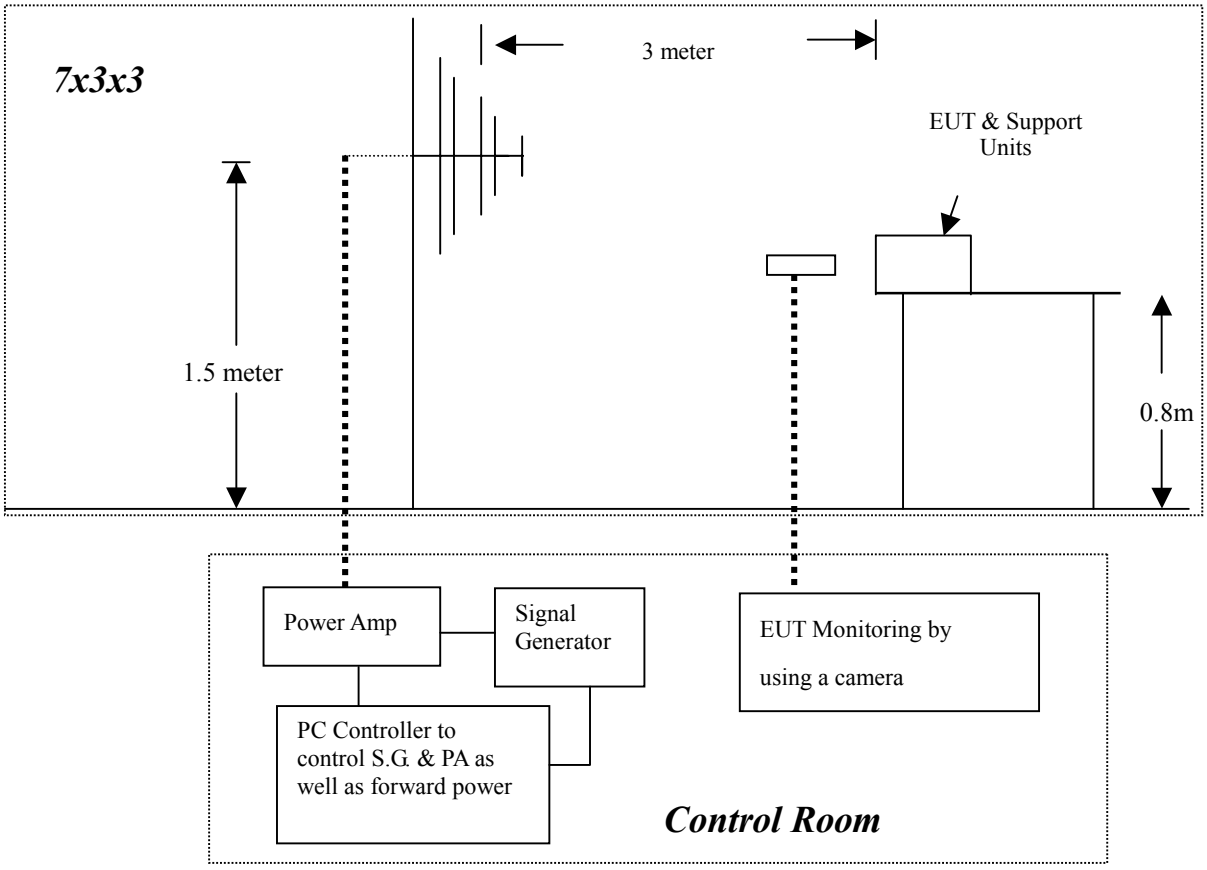
Tested by : Harry Wang

Temperature : 21°C

Humidity : 57% RH

Pressure : 1010mbar

Block Diagram of Test Setup:



Test Procedure:

Frequency Range 80MHz ~ 2500MHz
Steps : 1 % of fundamental
Dwell Time : 3 sec

Range (MHz)	Field	Modulation	Polarity	Position	Result (Pass/Fail)
80-2500	10V/m	Yes	H	0	Pass
80-2500	10V/m	Yes	V	0	Pass
80-2500	10V/m	Yes	H	90	Pass
80-2500	10V/m	Yes	V	90	Pass
80-2500	10V/m	Yes	H	180	Pass
80-2500	10V/m	Yes	V	180	Pass
80-2500	10V/m	Yes	H	270	Pass
80-2500	10V/m	Yes	V	270	Pass

Observation: No any function degraded during the tests.

Compliance Criteria:

Under the test conditions specified in 36.202, the EQUIPMENT or SYSTEM shall be able to provide the ESSENTIAL PERFORMANCE and remain safe. The following DEGRADATIONS associated with ESSENTIAL PERFORMANCE and safety shall not be allowed:

- Component failures
- Changes in programmable parameters
- Reset to factory defaults (manufacturer's presets)
- Chang of operating mode
- False alarms
- Cessation or interruption of any intended operation, even if accompanied by an alarm
- Initiation of any unintended operation, including unintended or uncontrolled motion, even if accompanied by an alarm
- Error of a displayed numerical value sufficiently large to affect diagnosis or treatment
- Noise on a waveform in which the noise is indistinguishable from physiologically-produced signals or the noise interferes with interpretation of physiologically-produced signals
- Artefact or distortion in an image in which the artefact is indistinguishable from physiologically-produced signals or the distortion interferes with interpretation of physiologically-produced signals
- Failure of automatic diagnosis or treatment EQUIPMENT and SYSTEMS to diagnose or treat, even if accompanied by an alarm.

For EQUIPMENT and SYSTEMS with multiple FUNCTIONS, the criteria apply to each FUNCTION, parameter and channel.
The EQUIPMENT or SYSTEM may exhibit DEGRADATION of performance (e.g. deviation from manufacturer's specifications) that does not affect ESSENTIAL PERFORMANCE or safety.

11 FAST TRANSIENTS/BURST IMMUNITY TEST

Port : On Power Supply Line and LAN Cable

Basic Standard : IEC/EN 61000-4-4

Requirements : ± 2 kV for Power Supply Line

± 1 kV for LAN Cable

Performance Criterion : The Equipment or System shall be able to provide the essential performance and remain safe.

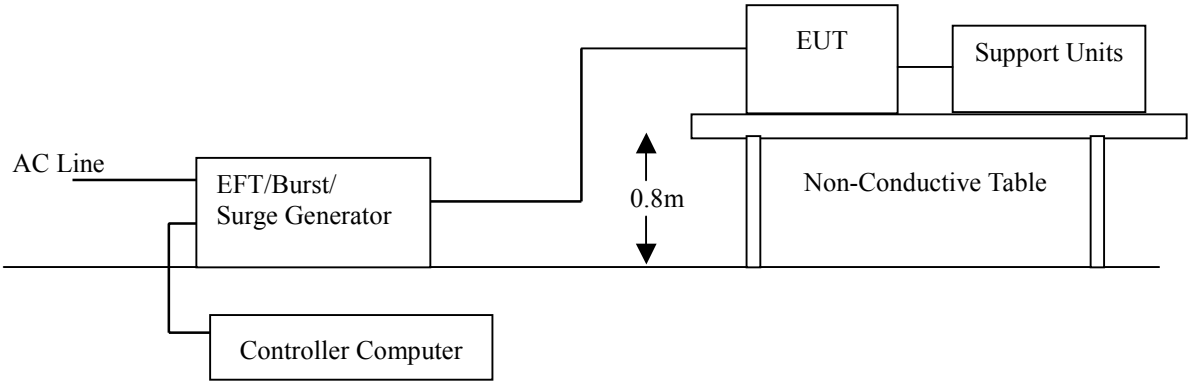
Tested by : Harry Wang

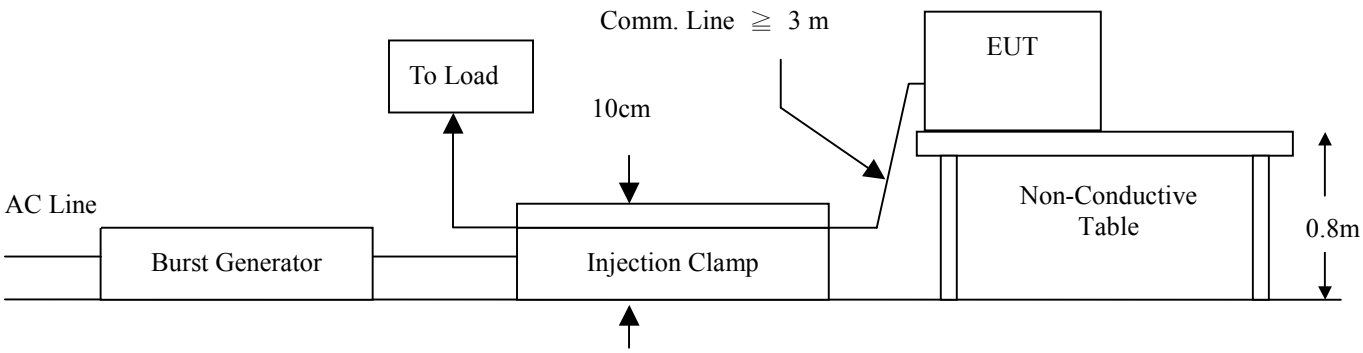
Temperature : 22°C

Humidity : 56% RH

Pressure : 1011mbar

Block Diagram of Test Setup:





Test Procedure:

Impulse Frequency : 5kHz
Tr/Th : 5/50ns
Burst Duration : 15ms
Burst Period : 3Hz

Inject Line	Voltage kV	Inject Method	Result (Pass/Fail)
L	± 2	Direct	Pass
N	± 2	Direct	Pass
PE	± 2	Direct	Pass
L + N	± 2	Direct	Pass
L + PE	± 2	Direct	Pass
N + PE	± 2	Direct	Pass
L + N + PE	± 2	Direct	Pass
RJ 45 Port (LAN Cable)	± 1	Clamp	Pass

Observation: No any function degraded during the tests.

Compliance Criteria:

Under the test conditions specified in 36.202, the EQUIPMENT or SYSTEM shall be able to provide the ESSENTIAL PERFORMANCE and remain safe. The following DEGRADATIONS associated with ESSENTIAL PERFORMANCE and safety shall not be allowed:

- Component failures
- Changes in programmable parameters
- Reset to factory defaults (manufacturer's presets)
- Chang of operating mode
- False alarms
- Cessation or interruption of any intended operation, even if accompanied by an alarm
- Initiation of any unintended operation, including unintended or uncontrolled motion, even if accompanied by an alarm
- Error of a displayed numerical value sufficiently large to affect diagnosis or treatment
- Noise on a waveform in which the noise is indistinguishable from physiologically-produced signals or the noise interferes with interpretation of physiologically-produced signals
- Artefact or distortion in an image in which the artefact is indistinguishable from physiologically-produced signals or the distortion interferes with interpretation of physiologically-produced signals
- Failure of automatic diagnosis or treatment EQUIPMENT and SYSTEMS to diagnose or treat, even if accompanied by an alarm.

For EQUIPMENT and SYSTEMS with multiple FUNCTIONS, the criteria apply to each FUNCTION, parameter and channel.
The EQUIPMENT or SYSTEM may exhibit DEGRADATION of performance (e.g. deviation from manufacturer's specifications) that does not affect ESSENTIAL PERFORMANCE or safety.

12 SURGE IMMUNITY TEST

Port : Power Cord

Basic Standard : IEC/EN 61000-4-5

Requirements : ± 1 kV (Line to Line)

± 2 kV (Line to Ground)

Performance Criteria : The Equipment or System shall be able to provide the essential performance and remain safe.

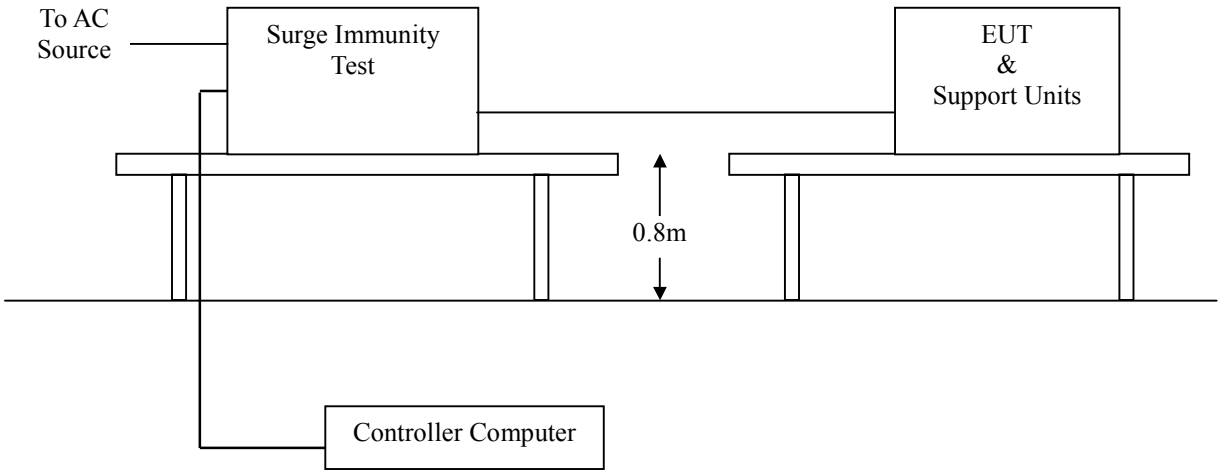
Tested by : Harry Wang

Temperature : 22°C

Humidity : 56% RH

Pressure : 1011mbar

Block Diagram of Test Setup:



Test Procedure:

Voltage Waveform : 1.2/50 *u*s
Current Waveform : 8/20 *u*s
Polarity : Positive/Negative
Phase angle : 0^o, 90^o, 270^o
Number of Test : 5

Coupling Line	Voltage (kV)	Polarity	Coupling Method	Result (Pass/Fail)
L1-L2	1	Positive	Capacitive	Pass
L1-PE	2	Positive	Capacitive	Pass
L2-PE	2	Positive	Capacitive	Pass
L1-L2	1	Negative	Capacitive	Pass
L1-PE	2	Negative	Capacitive	Pass
L2-PE	2	Negative	Capacitive	Pass

Observation: No any function degraded during the tests.

Compliance Criteria:

Under the test conditions specified in 36.202, the EQUIPMENT or SYSTEM shall be able to provide the ESSENTIAL PERFORMANCE and remain safe. The following DEGRADATIONS associated with ESSENTIAL PERFORMANCE and safety shall not be allowed:

- Component failures
- Changes in programmable parameters
- Reset to factory defaults (manufacturer's presets)
- Chang of operating mode
- False alarms
- Cessation or interruption of any intended operation, even if accompanied by an alarm
- Initiation of any unintended operation, including unintended or uncontrolled motion, even if accompanied by an alarm
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- Failure of automatic diagnosis or treatment EQUIPMENT and SYSTEMS to diagnose or treat, even if accompanied by an alarm.

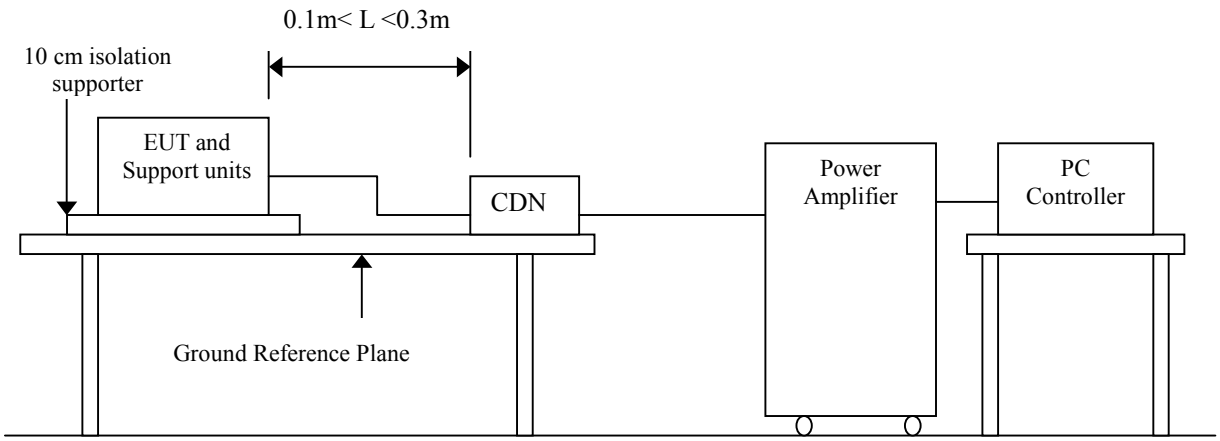
For EQUIPMENT and SYSTEMS with multiple FUNCTIONS, the criteria apply to each FUNCTION, parameter and channel.

The EQUIPMENT or SYSTEM may exhibit DEGRADATION of performance (e.g. deviation from manufacturer's specifications) that does not affect ESSENTIAL PERFORMANCE or safety.

13 CONDUCTED DISTRBANCE/INDUCED RADIO-FREQUENCY FIELD IMMUNITY TEST

Port	:	AC Port
Basic Standard	:	IEC/EN 61000-4-6
Requirements	:	10V with 80% AM. 1kHz Modulation. (Customer Requested)
Injection Method	:	CDN-M2 for Power Cord CDN-T4 for LAN Cable
Performance Criterion	:	The Equipment or System shall be able to provide the essential performance and remain safe.
Tested by	:	Harry Wang
Temperature	:	22°C
Humidity	:	56% RH
Pressure	:	1010mbar

Block Diagram of Test Setup:



Test Procedure:

Frequency Range : 0.15MHz-80MHz
Frequency Step : 1% of fundamental
Dwell Time : 3 sec

Range (MHz)	Field	Modulation	Result (Pass/Fail)
0.15-80	10V	Yes	Pass

Observation: No any function degraded during the tests.

Compliance Criteria:

Under the test conditions specified in 36.202, the EQUIPMENT or SYSTEM shall be able to provide the ESSENTIAL PERFORMANCE and remain safe. The following DEGRADATIONS associated with ESSENTIAL PERFORMANCE and safety shall not be allowed:

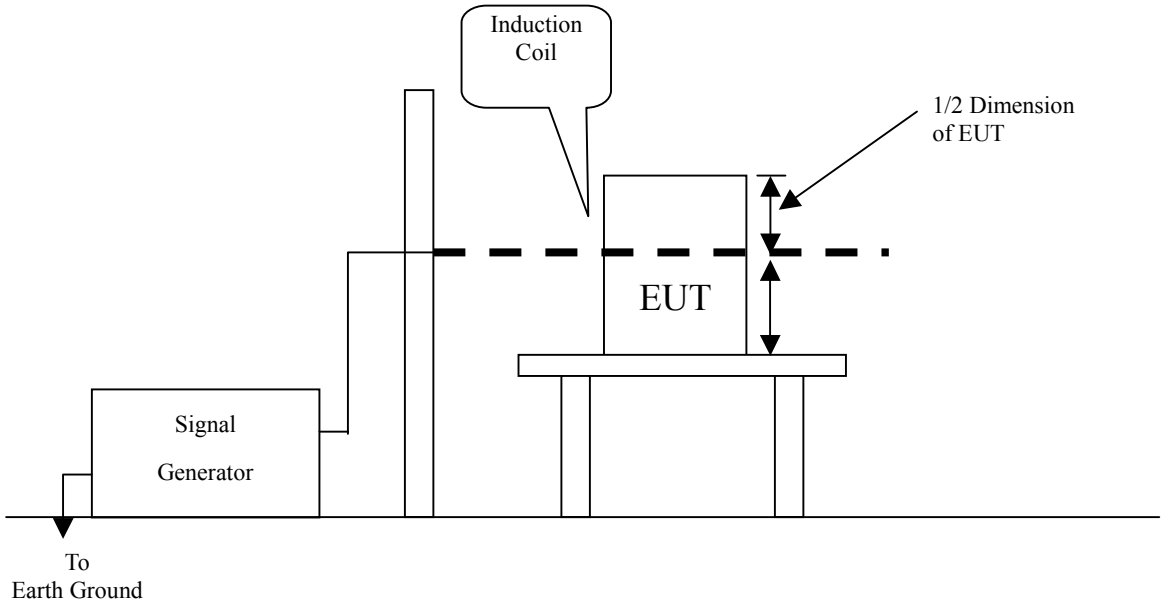
- Component failures
- Changes in programmable parameters
- Reset to factory defaults (manufacturer's presets)
- Chang of operating mode
- False alarms
- Cessation or interruption of any intended operation, even if accompanied by an alarm
- Initiation of any unintended operation, including unintended or uncontrolled motion, even if accompanied by an alarm
- Error of a displayed numerical value sufficiently large to affect diagnosis or treatment
- Noise on a waveform in which the noise is indistinguishable from physiologically-produced signals or the noise interferes with interpretation of physiologically-produced signals
- Artefact or distortion in an image in which the artefact is indistinguishable from physiologically-produced signals or the distortion interferes with interpretation of physiologically-produced signals
- Failure of automatic diagnosis or treatment EQUIPMENT and SYSTEMS to diagnose or treat, even if accompanied by an alarm.

For EQUIPMENT and SYSTEMS with multiple FUNCTIONS, the criteria apply to each FUNCTION, parameter and channel.
The EQUIPMENT or SYSTEM may exhibit DEGRADATION of performance (e.g. deviation from manufacturer's specifications) that does not affect ESSENTIAL PERFORMANCE or safety.

14 POWER FREQUENCY MAGNETIC FIELD IMMUNITY TEST

Port	:	Enclosure
Basic Standard	:	IEC/EN 61000-4-8
Requirements	:	3 A/m
Performance Criterion	:	The Equipment or System shall be able to provide the essential performance and remain safe.
Tested by	:	Harry Wang
Temperature	:	22°C
Humidity	:	56% RH
Pressure	:	1010mbar

Block Diagram of Test Setup:



Test Procedure:

Field Strength : 3A/m
Power Freq. : 50Hz
Orientation : X, Y, Z

Orientation	Field	Result (Pass/Fail)	Remark
X	3A/m	Pass	
Y	3A/m	Pass	
Z	3A/m	Pass	

Observation: No any function degraded during the tests.

Compliance Criteria:

Under the test conditions specified in 36.202, the EQUIPMENT or SYSTEM shall be able to provide the ESSENTIAL PERFORMANCE and remain safe. The following DEGRADATIONS associated with ESSENTIAL PERFORMANCE and safety shall not be allowed:

- Component failures
- Changes in programmable parameters
- Reset to factory defaults (manufacturer's presets)
- Chang of operating mode
- False alarms
- Cessation or interruption of any intended operation, even if accompanied by an alarm
- Initiation of any unintended operation, including unintended or uncontrolled motion, even if accompanied by an alarm
- Error of a displayed numerical value sufficiently large to affect diagnosis or treatment
- Noise on a waveform in which the noise is indistinguishable from physiologically-produced signals or the noise interferes with interpretation of physiologically-produced signals
- Artefact or distortion in an image in which the artefact is indistinguishable from physiologically-produced signals or the distortion interferes with interpretation of physiologically-produced signals
- Failure of automatic diagnosis or treatment EQUIPMENT and SYSTEMS to diagnose or treat, even if accompanied by an alarm.

For EQUIPMENT and SYSTEMS with multiple FUNCTIONS, the criteria apply to each FUNCTION, parameter and channel.
The EQUIPMENT or SYSTEM may exhibit DEGRADATION of performance (e.g. deviation from manufacturer's specifications) that does not affect ESSENTIAL PERFORMANCE or safety.

15 VOLTAGE DIPS / SHORT INTERRUPTIONS

Port : AC mains

Basic Standard : IEC/EN 61000-4-11

Requirement : PHASE ANGLE 0, 45, 90, 135, 180, 225, 270, 315 degrees

	Test Level % U_T	Reduction (%)	Duration (periods)
Voltage Dips	<5	>95	0.5
	40	60	5
	70	30	25

	Test Level % U_T	Reduction (%)	Duration (periods)
Voltage Interceptions	<5	>95	250

Test Interval : Min. 10 sec.

Performance Criteria : The Equipment or System shall be able to provide the essential performance and remain safe.

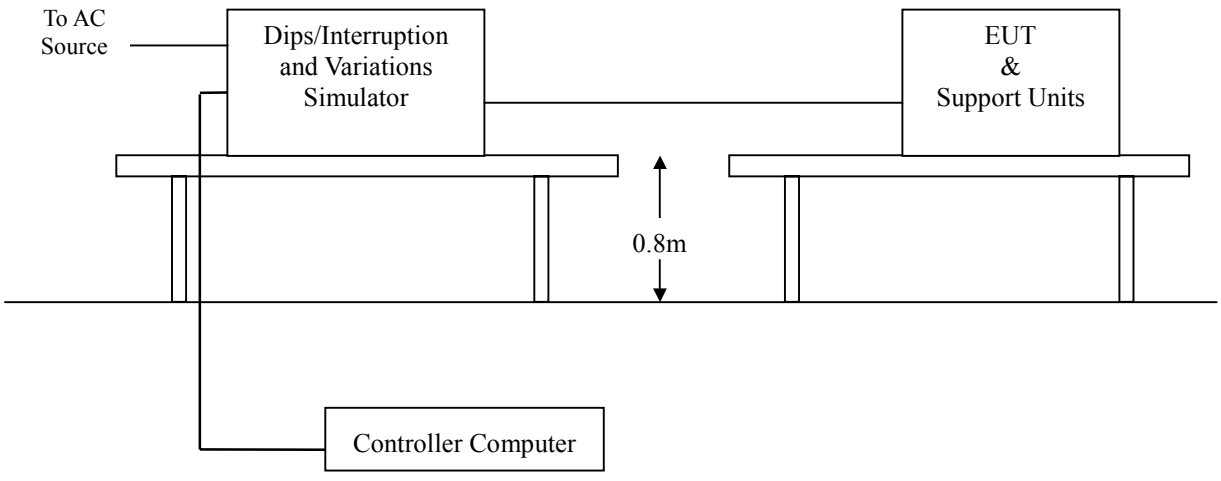
Tested by : Harry Wang

Temperature : 22°C

Humidity : 56% RH

Pressure : 1010mbar

Block Diagram of Test Setup:



Test Procedure:

The duration with a sequence of three dips/interruptions with interval of 10 s minimum (Between each test event)

Voltage Dips:

Test Level % U_T	Reduction (%)	Duration (periods)	Observation	Result
0	100	0.5	Normal	PASS
40	60	5	Normal	PASS
70	30	25	Normal	PASS

Voltage Interruptions:

Test Level % U_T	Reduction (%)	Duration (periods)	Observation	Result
0	100	250	EUT shut down but can be recovered by manual, as the events disappear.	PASS

Note:

1. Normal - No any functions degrade during and after the test.
2. For Voltage Interruption, EQUIPMENT and SYSTEMS are allowed a deviation from the requirements of 36.202.1 j) at the IMMUNITY TEST LEVEL specified in Table 211, provided the EQUIPMENT or SYSTEM remains safe, experiences no component failures and is restorable to the pre-test state with OPERATOR intervention. Determination of compliance is based upon performance of the EQUIPMENT or SYSTEM during and after application of the test sequence.

Observation: No any function degraded during the tests.

Compliance Criteria:

Under the test conditions specified in 36.202, the EQUIPMENT or SYSTEM shall be able to provide the ESSENTIAL PERFORMANCE and remain safe. The following DEGRADATIONS associated with ESSENTIAL PERFORMANCE and safety shall not be allowed:

- Component failures
- Changes in programmable parameters
- Reset to factory defaults (manufacturer's presets)
- Chang of operating mode
- False alarms
- Cessation or interruption of any intended operation, even if accompanied by an alarm
- Initiation of any unintended operation, including unintended or uncontrolled motion, even if accompanied by an alarm
- Error of a displayed numerical value sufficiently large to affect diagnosis or treatment
- Noise on a waveform in which the noise is indistinguishable from physiologically-produced signals or the noise interferes with interpretation of physiologically-produced signals
- Artefact or distortion in an image in which the artefact is indistinguishable from physiologically-produced signals or the distortion interferes with interpretation of physiologically-produced signals
- Failure of automatic diagnosis or treatment EQUIPMENT and SYSTEMS to diagnose or treat, even if accompanied by an alarm.

For EQUIPMENT and SYSTEMS with multiple FUNCTIONS, the criteria apply to each FUNCTION, parameter and channel.

The EQUIPMENT or SYSTEM may exhibit DEGRADATION of performance (e.g. deviation from manufacturer's specifications) that does not affect ESSENTIAL PERFORMANCE or safety.

APPENDIX I - PHOTOGRAPHS OF TEST SETUP

LINE CONDUCTED EMISSION TEST (EN 55011)

RADIATED EMISSION TEST (EN 55011)

POWER HARMONIC & VOLTAGE FLUCTUATION / FLICKER TEST

ELECTROSTATIC DISCHARGE TEST

RADIATED ELECTROMAGNETIC FIELD TEST

FAST TRANSIENTS/BURST TEST

SURGE IMMUNITY TEST

CONDUCTED DISTURBANCE, INDUCED BY RADIO-FREQUENCY FIELDS TEST

POWER FREQUENCY MAGNETIC FIELD IMMUNITY TEST

VOLTAGE DIPS / INTERRUPTION TEST

APPENDIX II – TEST RESULT OF EN 61000-3-3

ADVANTECH Date : 2005/12/15 下午 07:2 V4.10

File :

Operator : BILL CHENG
EUT : Panel PC with Touchscreen
Model No : POC-S175
Remarks TEMP:24 HUMD:54 (Continue)

Urms = 230.1V Freq = 49.987 Range: 50 A
Irms = 0.293A Ipk = 0.586A cf = 2.000
P = 60.13W S = 67.41VA pf = 0.892

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

LIN (Line Impedance Network) : SLIN 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

Plt = 0.073

	Pst	dmax [%]	dc [%]	dt>Lim [ms]	Fail
1	0.073	0.000	0.050	0.000	

ADVANTECH Date : 2005/12/15 下午 07:3 V4.10

File :

Operator : BILL CHENG
EUT : Panel PC with Touchscreen
Model No : POC-S175
Remarks TEMP:24 HUMD:54 (Manual Switch)

Urms = 230.1V Freq = 49.987 Range: 50 A
Irms = 0.293A Ipk = 0.635A cf = 2.167
P = 58.90W S = 67.41VA pf = 0.874

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

LIN (Line Impedance Network) : SLIN 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

Plt = 0.073

	Pst	dmax [%]	dc [%]	dt>Lim [ms]	Fail
1	0.073	0.000	0.080	0.000	