Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan, R.O.C.	**TEST REPORT**	Reference No.: A08111808 Report No.: EMCA08101404-01 Page:1 of 66 Date: Nov. 18, 2008

Product Name: Switching Adapter
GT-81082-0506.5-X.X-USB-ZZZ

Model No.: (X.X=0.1~2.5 or blank, ZZZ=AC input plug type: W2=USA, Japan, W2E=Europe, W2U=UK, W2A=Australia, W2C=China, W2K=Korea.)

Applicant: GLOBTEK, INC.
186 VETERAN DRIVE, NORTHVALE, N.J. 07647 U.S.A.

Date of Receipt: Nov. 18, 2008

Finished date of Test: Oct. 30, 2008

Applicable Standards:

Emission
EN 55022:2006, Class B
EN 61000-3-2:2006
EN 61000-3-3:1995+A1:2001+A2:2005

Immunity
EN 55024:1998+A1:2001+A2:2003
IEC 61000-4-2:2001
IEC 61000-4-3:2006
IEC 61000-4-4:2004
IEC 61000-4-5:2005
IEC 61000-4-6:2006
IEC 61000-4-8:2001
IEC 61000-4-11:2004

EUT Description: The EUT is Switching Adapter.

We, **Spectrum Research & Testing Laboratory Inc.**, hereby certify that one sample of the above was tested in our laboratory with positive results according to the above-mentioned standards. The records in the report are an accurate account of the results. Details of the results are given in the subsequent pages of this report.

Tested By : Leo Jian , Date: 11/18/2008
(Leo Jian)

Approved By : , Date: 11/18/2008
(Johnson Ho, Director)

NVLAP®
Lab Code: 200099-0

Table of Contents

1. DOCUMENT POLICY AND TEST STATEMENT

1.1 DOCUMENT POLICY

- The report shall not be reproduced except in full, without the written approval of SRT Lab, Inc.
- The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

1.2 TEST STATEMENT

- The test results in the report apply only to the unit tested by SRT Lab.
- There was no deviation from the requirements of test standards during the test.
- AC power source 230 VAC/50 Hz, was used during the test.
- The EN 61000-3-2:2006 (Harmonic test) and EN 61000-3-3:1995+A1:2001+A2:2005 (Flicker test) are not included in the scope of NVLAP logo usage.
- The EN 61000-3-2:2006(Harmonic test) and EN 61000-3-3:1995+A1:2001+A2:2005 (Flicker test) are included in the scope of NEMKO and SRT logo usage.

1.3 EUT MODIFICATION

- No modification in SRT Lab.

2. DESCRIPTION OF EUT AND TEST MODE

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Switching Adapter
MODEL NO.	GT-81082-0506.5-X.X-USB-ZZZ (X.X=0.1~2.5 or blank, ZZZ=AC input plug type: W2=USA, Japan, W2E=Europe, W2U=UK, W2A=Australia, W2C=China, W2K=Korea.)
POWER SUPPLY	Input: AC100-240V, 50/60Hz, 0.3A Output Rating: see table 1
CABLE	1.5m unshielded Power cord.
TYPE	Prototype

NOTE :

Different specifications of model numbers please see the table 1 and list as below:

MODEL	INPUT	OUTPUT		
	VAC	VDC	A Max.	W Max.
GT-81082-0506.5-X.X-USB-ZZZ	AC100-240V, 50/60Hz 0.3A	4.0 – 6.5	1.00	5.2

For more detailed information, please refer to the EUT's specification or user's manual provided by manufacturer.

2.2 DESCRIPTION OF EUT INTERNAL DEVICE

DEVICE	BRAND/MAKER	MODEL #	REMARK
N/A			

2.3 DESCRIPTION OF TEST MODE

The EUT was pre-tested and final tested under the following mode:

Mode	Voltage/Current	Loading
1	GT-81082-0506.5-2.0-USB-W2E	Half Loading
2		Full Loading
3	GT-81082-0506.5-USB-W2E	Half Loading
4		Full Loading
5	GT-81082-0506.5-1.5-USB-W2E	Half Loading
6		Full Loading
7	GT-81082-0506.5-1.3-USB-W2E	Half Loading
8		Full Loading

3. DESCRIPTION OF APPLIED STANDARDS

The EUT is a kind of ITE interface device and according to the specifications provided by the applicant, it must comply with the requirements of the following standards:

EN 55022:2006, Class B
EN 61000-3-2:2006
EN 61000-3-3:1995+A1:2001+A2:2005

EN 55024:1998+A1:2001+A2:2003
IEC 61000-4-2:2001
IEC 61000-4-3:2006
IEC 61000-4-4:2004
IEC 61000-4-5:2005
IEC 61000-4-6:2006
IEC 61000-4-8:2001
IEC 61000-4-11:2004

All tests have been performed and recorded as the above standards.

4. EMISSION TEST

4.1 CONDUCTED EMISSION TEST FOR POWER PORT

4.1.1 CONDUCTED EMISSION LIMIT

FREQUENCY (MHz)	Class A (dBμV)		Class B (dBμV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 – 0.5	79	66	66 – 56	56 – 46
0.5 – 5.0	73	60	56	46
5.0 – 30.0	73	60	60	50

NOTE:

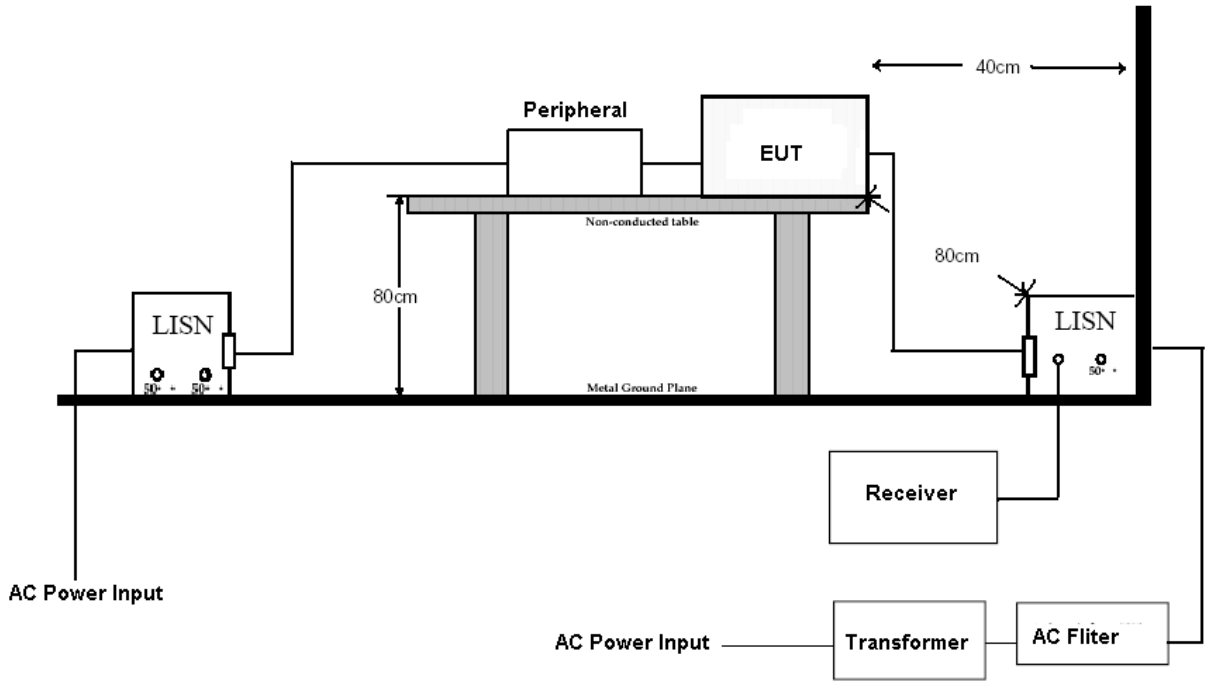
1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

4.1.2 TEST EQUIPMENT

The following test equipment was used for the test:

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
EMI TEST RECEIVER	9 kHz TO 30 MHz	ROHDE & SCHWARZ	ESHS30 / 826003/008	SEP. 2009 ETC
LISN	50 μH, 50 ohm	FCC	FCC-LISN-50-25-2 / 01017	OCT. 2008 ETC
LISN	50μH, 50 ohm	FCC	9252-50-R24-BNC / 951315	JUN. 2009 ETC
50 OHM TERMINATOR	50 ohm	HP	11593A / #2	OCT. 2008 ETC
COAXIAL CABLE	5M	TIMES	EQM-0159 / #5-5m	AUG. 2009 SRT
FILTER	2 LINE, 30A	FIL.COIL	FC-943 / 771	NCR
GROUND PLANE	2.3M (H) x 2.4M (W)	SRT	N/A	NCR
GROUND PLANE	2.4M (H) x 2.4M (W)	SRT	N/A	NCR

4.1.3 TEST SETUP



NOTE:
1. The EUT was put on a wooden table with 0.8m heights above ground plane, and 0.4m away from reference ground plane (> 2mx2m).
2. For the actual test configuration, please refer to the photos of testing.

4.1.4 TEST PROCEDURE

The EUT was tested according to the requirement of EN 55022:2006. The frequency spectrum from 0.15 MHz to 30 MHz was investigated. The LISN used was 50Ω/50μH as specified. All readings were quasi-peak and average values with 10 kHz resolution bandwidth of the test receiver. The EUT system was operated in all typical methods by users. Both lines of the power mains of EUT were measured and the cables connected to EUT and support units were moved to find the maximum emission levels for each frequency. First, find the margin or higher points at least 6 points by software, then use manual to find the maximum data. The procedure is referred on the test procedure of SRT LAB.

4.1.5 DESCRIPTION OF SUPPORT UNIT

The EUT was configured by the requirement of EN 55022:2006. All interface ports were connected to the appropriate support units via specific cables. The support units and cables are listed below.

NO	DEVICE	BRAND	MODEL #	CABLE
1	Variable Resister	N/A	N/A	NA

NOTE : For the actual test configuration, please refer to the photos of testing.

4.1.6 EUT OPERATING CONDITION

1.Setup the EUT and all peripheral devices.
2.Turn on the power of all equipment and EUT.

4.1.7 CONDUCTED EMISSION TEST RESULT AT MAINS PORTS

Temperature:	21 °C	Humidity:	61 %RH
Frequency Range:	0.15 – 30 MHz	Tested Mode:	Half Loading
Receiver Detector:	Q.P. and AV.	Tested By:	Leo Jian
Tested Date:	Oct .24.2008		
Tested Model:	GT-81082-0506.5-2.0-USB-W2E(4.5Vdc 1A)		

Power Line Measured : Line

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dBμV)		Emission Level (dBμV)		Limit (dBμV)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.192	0.30	24.74	21.66	25.04	21.96	63.93	53.93	-38.89	-31.97
1.153	0.14	12.22	8.03	12.36	8.17	56.00	46.00	-43.64	-37.83
1.428	0.15	10.06	4.52	10.21	4.67	56.00	46.00	-45.79	-41.33
5.700	0.22	7.62	4.39	7.84	4.61	60.00	50.00	-52.16	-45.39
6.116	0.22	9.94	5.64	10.16	5.86	60.00	50.00	-49.84	-44.14
25.885	0.41	5.18	1.26	5.59	1.67	60.00	50.00	-54.41	-48.33

Power Line Measured : Neutral

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dBμV)		Emission Level (dBμV)		Limit (dBμV)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1.143	0.14	17.96	10.57	18.10	10.71	56.00	46.00	-37.90	-35.29
1.418	0.15	17.16	13.68	17.31	13.83	56.00	46.00	-38.69	-32.17
1.675	0.15	9.04	2.93	9.19	3.08	56.00	46.00	-46.81	-42.92
5.650	0.22	10.52	2.39	10.74	2.61	60.00	50.00	-49.26	-47.39
6.188	0.22	14.34	11.70	14.56	11.92	60.00	50.00	-45.44	-38.08
15.677	0.27	3.70	2.36	3.97	2.63	60.00	50.00	-56.03	-47.37

NOTE :

1. Measurement uncertainty is +/-2dB
2. Emission level = Reading value + Correction factor
3. Correction Factor = Cable loss + Insertion loss of LISN
4. Margin value = Emission level - Limit
5. The emission of other frequencies were very low against the limit.
6. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.

Temperature:	21 °C	Humidity:	61 %RH
Frequency Range:	0.15 – 30 MHz	Tested Mode :	Full Loading
Receiver Detector:	Q.P. and AV.	Tested By:	Leo Jian
Tested Date:	Oct .24.2008		
Tested Model:	GT-81082-0506.5-2.0-USB-W2E(4.5Vdc 1A)		

Power Line Measured : Line

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dBμV)		Emission Level (dBμV)		Limit (dBμV)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.264	0.28	50.84	48.51	51.12	48.79	61.29	51.29	-10.16	-2.49
2.556	0.17	44.46	38.45	44.63	38.62	56.00	46.00	-11.37	-7.38
3.556	0.19	42.04	33.75	42.23	33.94	56.00	46.00	-13.77	-12.06
7.091	0.22	45.38	36.78	45.60	37.00	60.00	50.00	-14.40	-13.00
7.203	0.22	44.18	35.81	44.40	36.03	60.00	50.00	-15.60	-13.97
25.701	0.41	36.54	30.39	36.95	30.80	60.00	50.00	-23.05	-19.20

Power Line Measured : Neutral

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dBμV)		Emission Level (dBμV)		Limit (dBμV)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.270	0.28	49.48	40.90	49.76	41.18	61.10	51.10	-11.34	-9.92
0.273	0.28	48.84	41.19	49.12	41.47	61.01	51.01	-11.89	-9.54
1.230	0.14	46.12	39.84	46.26	39.98	56.00	46.00	-9.74	-6.02
7.101	0.22	45.36	36.17	45.58	36.39	60.00	50.00	-14.42	-13.61
7.131	0.22	45.96	36.27	46.18	36.49	60.00	50.00	-13.82	-13.51
24.861	0.29	36.96	30.20	37.25	30.49	60.00	50.00	-22.75	-19.51

NOTE :

1. Measurement uncertainty is +/-2dB
2. Emission level = Reading value + Correction factor
3. Correction Factor = Cable loss + Insertion loss of LISN
4. Margin value = Emission level - Limit
5. The emission of other frequencies were very low against the limit.
6. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.

Temperature:	21 °C	Humidity:	61 %RH
Frequency Range:	0.15 – 30 MHz	Tested Mode :	Half Loading
Receiver Detector:	Q.P. and AV.	Tested By:	Leo Jian
Tested Date:	Oct .24.2008		
Tested Model:	GT-81082-0506.5-USB-W2E(6.5Vdc 1A)		

Power Line Measured : Line

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dBμV)		Emission Level (dBμV)		Limit (dBμV)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.500	0.24	39.40	31.41	39.64	31.65	55.98	45.98	-16.35	-14.34
4.576	0.21	34.86	26.89	35.07	27.10	56.00	46.00	-20.93	-18.90
4.625	0.21	34.74	26.94	34.95	27.15	56.00	46.00	-21.05	-18.85
7.436	0.22	38.84	29.90	39.06	30.12	60.00	50.00	-20.94	-19.88
7.680	0.23	40.32	32.71	40.55	32.94	60.00	50.00	-19.45	-17.06
29.944	0.50	33.16	27.48	33.66	27.98	60.00	50.00	-26.34	-22.02

Power Line Measured : Neutral

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dBμV)		Emission Level (dBμV)		Limit (dBμV)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.500	0.24	35.60	30.26	35.84	30.50	55.98	45.98	-20.15	-15.49
4.061	0.20	30.64	22.75	30.84	22.95	56.00	46.00	-25.16	-23.05
4.734	0.21	31.92	23.58	32.13	23.79	56.00	46.00	-23.87	-22.21
7.081	0.22	38.38	30.04	38.60	30.26	60.00	50.00	-21.40	-19.74
7.111	0.22	38.52	30.08	38.74	30.30	60.00	50.00	-21.26	-19.70
29.555	0.31	32.86	27.27	33.17	27.58	60.00	50.00	-26.83	-22.42

NOTE :

1. Measurement uncertainty is +/-2dB
2. Emission level = Reading value + Correction factor
3. Correction Factor = Cable loss + Insertion loss of LISN
4. Margin value = Emission level - Limit
5. The emission of other frequencies were very low against the limit.
6. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.

Temperature:	21 °C	Humidity:	61 %RH
Frequency Range:	0.15 – 30 MHz	Tested Mode :	Full Loading
Receiver Detector:	Q.P. and AV.	Tested By:	Leo Jian
Tested Date:	Oct .24.2008		
Tested Model:	GT-81082-0506.5-USB-W2E(6.5Vdc 1A)		

Power Line Measured : Line

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dBμV)		Emission Level (dBμV)		Limit (dBμV)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.477	0.25	47.92	38.82	48.17	39.07	56.38	46.38	-8.20	-7.30
1.269	0.14	46.12	37.70	46.26	37.84	56.00	46.00	-9.74	-8.16
1.655	0.15	47.02	38.65	47.17	38.80	56.00	46.00	-8.83	-7.20
5.609	0.22	38.68	29.94	38.90	30.16	60.00	50.00	-21.10	-19.84
7.446	0.22	37.58	28.41	37.80	28.63	60.00	50.00	-22.20	-21.37
16.538	0.29	28.20	19.34	28.49	19.63	60.00	50.00	-31.51	-30.37

Power Line Measured : Neutral

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dBμV)		Emission Level (dBμV)		Limit (dBμV)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.480	0.25	47.72	40.19	47.97	40.44	56.32	46.32	-8.35	-5.88
0.486	0.25	45.68	40.36	45.93	40.61	56.22	46.22	-10.29	-5.61
1.309	0.15	46.48	38.82	46.63	38.97	56.00	46.00	-9.37	-7.03
5.629	0.22	38.26	29.01	38.48	29.23	60.00	50.00	-21.52	-20.77
5.639	0.22	38.22	29.19	38.44	29.41	60.00	50.00	-21.56	-20.59
15.184	0.25	28.04	20.48	28.29	20.73	60.00	50.00	-31.71	-29.27

NOTE :

1. Measurement uncertainty is +/-2dB
2. Emission level = Reading value + Correction factor
3. Correction Factor = Cable loss + Insertion loss of LISN
4. Margin value = Emission level - Limit
5. The emission of other frequencies were very low against the limit.
6. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.

Temperature:	21 °C	Humidity:	61 %RH
Frequency Range:	0.15 – 30 MHz	Tested Mode :	Half Loading
Receiver Detector:	Q.P. and AV.	Tested By:	Leo Jian
Tested Date:	Oct .24.2008		
Tested Model:	GT-81082-0506.5-1.5-USB-W2E(5Vdc 1A)		

Power Line Measured : Line

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dBμV)		Emission Level (dBμV)		Limit (dBμV)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.505	0.24	41.26	35.04	41.50	35.28	56.00	46.00	-14.50	-10.72
1.230	0.14	33.78	26.63	33.92	26.77	56.00	46.00	-22.08	-19.23
1.675	0.15	33.98	26.81	34.13	26.96	56.00	46.00	-21.87	-19.04
7.446	0.22	36.58	28.19	36.80	28.41	60.00	50.00	-23.20	-21.59
7.659	0.23	37.00	29.62	37.23	29.85	60.00	50.00	-22.77	-20.15
26.439	0.42	37.64	30.72	38.06	31.14	60.00	50.00	-21.94	-18.86

Power Line Measured : Neutral

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dBμV)		Emission Level (dBμV)		Limit (dBμV)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.471	0.25	38.42	31.05	38.67	31.30	56.48	46.48	-17.81	-15.18
0.486	0.25	39.32	32.77	39.57	33.02	56.22	46.22	-16.65	-13.20
1.119	0.14	39.30	32.23	39.44	32.37	56.00	46.00	-16.56	-13.63
7.345	0.22	36.16	27.42	36.38	27.64	60.00	50.00	-23.62	-22.36
7.720	0.23	35.80	28.02	36.03	28.25	60.00	50.00	-23.97	-21.75
25.066	0.29	28.44	22.27	28.73	22.56	60.00	50.00	-31.27	-27.44

NOTE :

1. Measurement uncertainty is +/-2dB
2. Emission level = Reading value + Correction factor
3. Correction Factor = Cable loss + Insertion loss of LISN
4. Margin value = Emission level - Limit
5. The emission of other frequencies were very low against the limit.
6. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.

Temperature:	21 °C	Humidity:	61 %RH
Frequency Range:	0.15 – 30 MHz	Tested Mode :	Full Loading
Receiver Detector:	Q.P. and AV.	Tested By:	Leo Jian
Tested Date:	Oct .24.2008		
Tested Model:	GT-81082-0506.5-1.5-USB-W2E(5Vdc 1A)		

Power Line Measured : Line

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dBμV)		Emission Level (dBμV)		Limit (dBμV)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.453	0.25	43.16	35.47	43.41	35.72	56.80	46.80	-13.39	-11.08
2.527	0.17	40.56	32.40	40.73	32.57	56.00	46.00	-15.27	-13.43
2.685	0.17	39.30	30.15	39.47	30.32	56.00	46.00	-16.53	-15.68
7.152	0.22	43.30	34.12	43.52	34.34	60.00	50.00	-16.48	-15.66
7.162	0.22	42.12	33.59	42.34	33.81	60.00	50.00	-17.66	-16.19
15.318	0.26	34.68	26.64	34.94	26.90	60.00	50.00	-25.06	-23.10

Power Line Measured : Neutral

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dBμV)		Emission Level (dBμV)		Limit (dBμV)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.447	0.25	42.20	39.99	42.45	40.24	56.92	46.92	-14.46	-6.67
0.450	0.25	41.66	32.83	41.91	33.08	56.86	46.86	-14.95	-13.78
2.645	0.17	40.06	31.21	40.23	31.38	56.00	46.00	-15.77	-14.62
6.959	0.22	41.72	32.82	41.94	33.04	60.00	50.00	-18.06	-16.96
7.203	0.22	42.16	33.44	42.38	33.66	60.00	50.00	-17.62	-16.34
15.974	0.28	32.26	23.22	32.54	23.50	60.00	50.00	-27.46	-26.50

NOTE :

1. Measurement uncertainty is +/-2dB
2. Emission level = Reading value + Correction factor
3. Correction Factor = Cable loss + Insertion loss of LISN
4. Margin value = Emission level - Limit
5. The emission of other frequencies were very low against the limit.
6. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.

Temperature:	21 °C	Humidity:	61 %RH
Frequency Range:	0.15 – 30 MHz	Tested Mode :	Half Loading
Receiver Detector:	Q.P. and AV.	Tested By:	Leo Jian
Tested Date:	Oct .24.2008		
Tested Model:	GT-81082-0506.5-1.3-USB-W2E(5.2Vdc 1A)		

Power Line Measured : Line

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dBμV)		Emission Level (dBμV)		Limit (dBμV)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.500	0.24	39.40	31.41	39.64	31.65	55.98	45.98	-16.35	-14.34
4.576	0.21	34.86	26.89	35.07	27.10	56.00	46.00	-20.93	-18.90
4.625	0.21	34.74	26.94	34.95	27.15	56.00	46.00	-21.05	-18.85
7.436	0.22	38.84	29.90	39.06	30.12	60.00	50.00	-20.94	-19.88
7.680	0.23	40.32	32.71	40.55	32.94	60.00	50.00	-19.45	-17.06
29.944	0.50	33.16	27.48	33.66	27.98	60.00	50.00	-26.34	-22.02

Power Line Measured : Neutral

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dBμV)		Emission Level (dBμV)		Limit (dBμV)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.500	0.24	35.60	30.26	35.84	30.50	55.98	45.98	-20.15	-15.49
4.061	0.20	30.64	22.75	30.84	22.95	56.00	46.00	-25.16	-23.05
4.734	0.21	31.92	23.58	32.13	23.79	56.00	46.00	-23.87	-22.21
7.081	0.22	38.38	30.04	38.60	30.26	60.00	50.00	-21.40	-19.74
7.111	0.22	38.52	30.08	38.74	30.30	60.00	50.00	-21.26	-19.70
29.555	0.31	32.86	27.27	33.17	27.58	60.00	50.00	-26.83	-22.42

NOTE :

1. Measurement uncertainty is +/-2dB
2. Emission level = Reading value + Correction factor
3. Correction Factor = Cable loss + Insertion loss of LISN
4. Margin value = Emission level - Limit
5. The emission of other frequencies were very low against the limit.
6. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.

Temperature:	21 °C	Humidity:	61 %RH
Frequency Range:	0.15 – 30 MHz	Tested Mode :	Full Loading
Receiver Detector:	Q.P. and AV.	Tested By:	Leo Jian
Tested Date:	Oct .24.2008		
Tested Model:	GT-81082-0506.5-1.3-USB-W2E(5.2Vdc 1A)		

Power Line Measured : Line

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dBμV)		Emission Level (dBμV)		Limit (dBμV)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.477	0.25	47.92	38.82	48.17	39.07	56.38	46.38	-8.20	-7.30
1.269	0.14	46.12	37.70	46.26	37.84	56.00	46.00	-9.74	-8.16
1.655	0.15	47.02	38.65	47.17	38.80	56.00	46.00	-8.83	-7.20
5.609	0.22	38.68	29.94	38.90	30.16	60.00	50.00	-21.10	-19.84
7.446	0.22	37.58	28.41	37.80	28.63	60.00	50.00	-22.20	-21.37
16.538	0.29	28.20	19.34	28.49	19.63	60.00	50.00	-31.51	-30.37

Power Line Measured : Neutral

Freq. (MHz)	Correct. Factor (dB)	Reading Value (dBμV)		Emission Level (dBμV)		Limit (dBμV)		Margin (dB)	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.480	0.25	47.72	40.19	47.97	40.44	56.32	46.32	-8.35	-5.88
0.486	0.25	45.68	40.36	45.93	40.61	56.22	46.22	-10.29	-5.61
1.309	0.15	46.48	38.82	46.63	38.97	56.00	46.00	-9.37	-7.03
5.629	0.22	38.26	29.01	38.48	29.23	60.00	50.00	-21.52	-20.77
5.639	0.22	38.22	29.19	38.44	29.41	60.00	50.00	-21.56	-20.59
15.184	0.25	28.04	20.48	28.29	20.73	60.00	50.00	-31.71	-29.27

NOTE :

1. Measurement uncertainty is +/-2dB
2. Emission level = Reading value + Correction factor
3. Correction Factor = Cable loss + Insertion loss of LISN
4. Margin value = Emission level - Limit
5. The emission of other frequencies were very low against the limit.
6. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.

4.2 RADIATED EMISSION TEST

4.2.1 RADIATED EMISSION LIMIT

EN 55022:2006 limits of radiated emission measurement for frequency below 1000 MHz

FREQUENCY (MHz)	Class A (at 10m)	Class B (at 10m)
	dBμV/m	dBμV/m
30 – 230	40	30
230 - 1000	47	37

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBμV/m) = 20 log Emission level (μV/m).

4.2.2 TEST EQUIPMENT

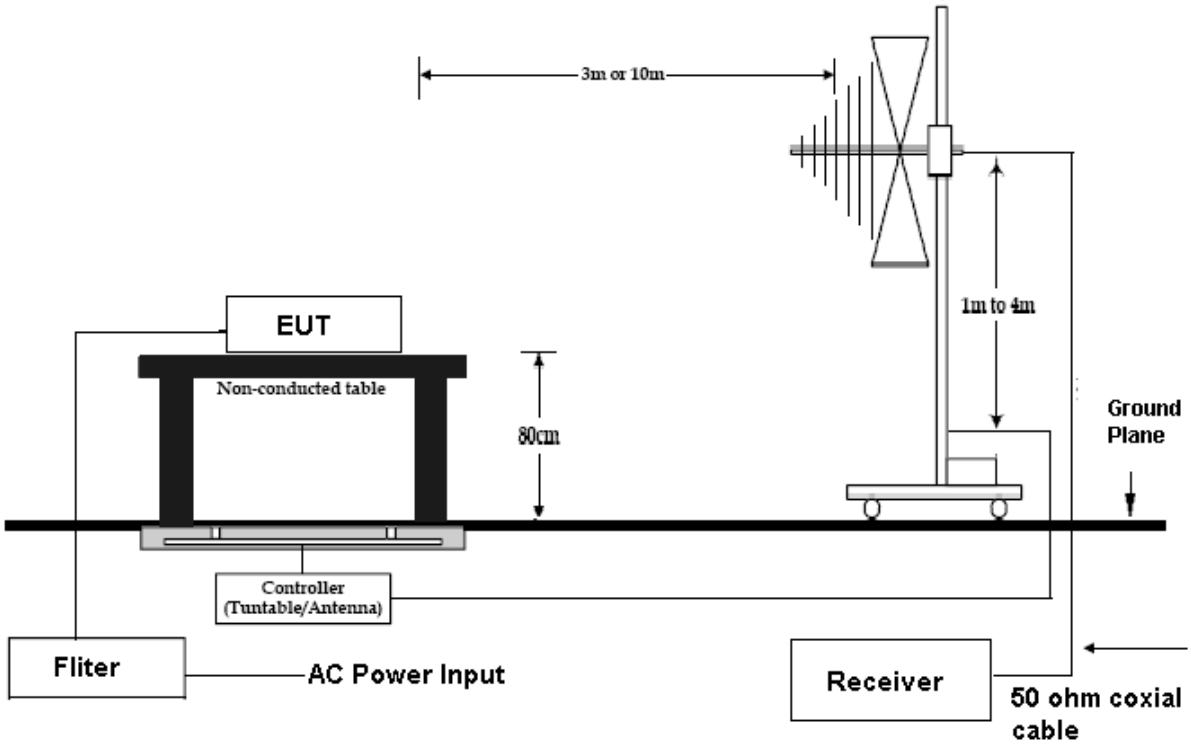
The following test equipment was used during the radiated emission test:

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
EMI TEST RECEIVER	9kHz TO 2.75 GHz	ROHDE & SCHWARZ	ESCS30 / 830245/012	OCT. 2008 ETC
BI-LOG ANTENNA	26 MHz TO 2 GHz	EMCO	3142B / 0005-1534	NOV. 2008 ETC
OATS	3 – 10 M MEASUREMENT	SRT	SRT-1	NOV. 2008 SRT
COAXIAL CABLE	25M	TIMES	J400 / #25M	AUG. 2009 ETC
FILTER	2 LINE, 30A	FIL.COIL	FC-943 / 869	NCR

NOTE:

1. The Open Area Test Site (SRT-1) is registered by FCC with No. 90957 and VCCI with No. R-2410.

4.2.3 TEST SET-UP



NOTE:

1. The EUT system was put on a wooden table with 0.8m heights above a ground plane.
2. For the actual test configuration, please refer to the photos of testing.

4.2.4 TEST PROCEDURE

The EUT was tested according to the requirement of EN 55022:2006. The frequency spectrum measured from 30 MHz to 1 GHz. All readings were quasi-peak values with 120 kHz resolution bandwidth of the test receiver. The EUT system was operated in all typical methods by users. The cables connected to EUT and support units were moved to find the maximum emission levels for each frequency. First, find the margin or higher points at least 6 points by software, then use manual to find the maximum data. The procedure is referred on the test procedure of SRT LAB.

4.2.5 DESCRIPTION OF SUPPORT UNIT

Same as section 4.1.5 of this report.

4.2.6 EUT OPERATING CONDITION

Same as section 4.1.6 of this report.

4.2.7 SUMMARY OF RADIATED EMISSION TEST RESULT

Temperature:	25 °C	Humidity:	51 %RH
Frequency Range:	30 – 1000 MHz	Measured Distance:	10m
Receiver Detector:	Q.P.	Tested Mode:	Half Loading
Tested By:	Leo Jian	Tested Date:	Oct. 28, 2008
Tested Model:	GT-81082-0506.5-2.0-USB-W2E(4.5Vdc 1A)		

Antenna Polarization:Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
124.0900	1.92	7.04	4.2	13.2	30.0	-16.8	165	3.40
182.2900	2.36	12.04	4.1	18.5	30.0	-11.5	238	3.00
261.8300	2.85	11.98	6.6	21.4	37.0	-15.6	154	1.90
336.5900	3.20	14.49	4.7	22.4	37.0	-14.6	26	1.80
507.2400	4.16	16.19	4.3	24.6	37.0	-12.4	345	1.70
793.3900	5.31	21.84	4.1	31.2	37.0	-5.8	224	1.70

Antenna Polarization:Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
96.9300	1.80	8.18	9.5	19.5	30.0	-10.5	137	1.00
189.0900	2.44	11.13	5.2	18.8	30.0	-11.2	58	1.10
221.0900	2.62	10.44	8.7	21.8	30.0	-8.2	263	1.10
528.5800	4.26	16.46	4.6	25.3	37.0	-11.7	199	1.20
599.3900	4.60	17.39	4.2	26.2	37.0	-10.8	300	1.30
706.0900	5.05	21.05	4.6	30.7	37.0	-6.3	201	1.30

NOTE :

1. Measurement uncertainty is +/-3.7dB.
2. "*": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.

Temperature:	25 °C	Humidity:	51 %RH
Frequency Range:	30 – 1000 MHz	Measured Distance:	10m
Receiver Detector:	Q.P.	Tested Mode:	Full Loading
Tested By:	Leo Jian	Tested Date:	Oct. 28, 2008
Tested Model:	GT-81082-0506.5-2.0-USB-W2E(4.5Vdc 1A)		

Antenna Polarization:Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
99.8400	1.81	8.72	4.8	15.3	30.0	-14.7	100	3.40
172.5900	2.31	10.94	5.0	18.2	30.0	-11.8	203	3.00
371.4400	3.41	15.26	4.9	23.6	37.0	-13.4	75	1.90
419.9400	3.70	15.94	3.9	23.5	37.0	-13.5	356	1.80
468.4400	3.96	16.04	4.7	24.7	37.0	-12.3	277	1.70
577.0800	4.49	17.10	4.7	26.3	37.0	-10.7	89	1.70

Antenna Polarization:Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
94.9900	1.78	7.82	4.5	14.1	30.0	-15.9	159	1.00
135.7300	2.06	8.80	4.6	15.5	30.0	-14.5	287	1.10
193.9300	2.46	10.58	7.3	20.3	30.0	-9.7	166	1.10
397.6300	3.58	15.83	4.7	24.1	37.0	-12.9	345	1.20
541.1900	4.33	16.63	4.0	25.0	37.0	-12.0	311	1.30
647.8900	4.75	19.09	4.3	28.1	37.0	-8.9	258	1.30

NOTE :

1. Measurement uncertainty is +/-3.7dB.
2. "*": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.

Temperature:	25 °C	Humidity:	51 %RH
Frequency Range:	30 – 1000 MHz	Measured Distance:	10m
Receiver Detector:	Q.P.	Tested Mode:	Half Loading
Tested By:	Leo Jian	Tested Date:	Oct. 28, 2008
Tested Model:	GT-81082-0506.5-USB-W2E(6.5Vdc 1A)		

Antenna Polarization:Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
62.9800	1.47	4.26	20.2	25.9	30.0	-4.1	193	3.40
104.6900	1.83	8.38	8.5	18.7	30.0	-11.3	272	3.00
332.6400	3.18	14.40	11.4	29.0	37.0	-8.0	185	1.90
480.0800	4.02	16.06	8.3	28.4	37.0	-8.6	356	1.80
582.9000	4.52	17.17	4.6	26.3	37.0	-10.7	89	1.70
628.4900	4.69	18.39	8.2	31.3	37.0	-5.7	136	1.70

Antenna Polarization:Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
327.7900	3.16	14.29	4.0	21.4	37.0	-15.6	147	1.00
575.1400	4.49	17.08	4.3	25.9	37.0	-11.1	286	1.10
649.8300	4.76	19.16	4.1	28.0	37.0	-9.0	290	1.10
722.5800	5.10	21.20	5.1	31.4	37.0	-5.6	309	1.20
866.1400	5.66	22.30	4.4	32.4	37.0	-4.6	170	1.30
929.1900	5.85	22.82	4.1	32.8	37.0	-4.2	33	1.30

NOTE :

1. Measurement uncertainty is +/-3.7dB.
2. "*": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.

Temperature:	25 °C	Humidity:	51 %RH
Frequency Range:	30 – 1000 MHz	Measured Distance:	10m
Receiver Detector:	Q.P.	Tested Mode:	Full Loading
Tested By:	Leo Jian	Tested Date:	Oct. 28, 2008
Tested Model:	GT-81082-0506.5-USB-W2E(6.5Vdc 1A)		

Antenna Polarization:Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
101.7800	1.82	8.77	4.5	15.1	30.0	-14.9	262	3.40
206.5400	2.52	9.84	3.8	16.2	30.0	-13.8	177	3.00
368.5300	3.39	15.20	4.0	22.6	37.0	-14.4	344	1.90
482.9900	4.03	16.06	4.5	24.6	37.0	-12.4	289	1.80
579.9900	4.50	17.13	4.1	25.7	37.0	-11.3	57	1.70
649.8300	4.76	19.16	4.6	28.5	37.0	-8.5	163	1.70

Antenna Polarization:Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
216.2400	2.59	10.24	3.8	16.6	30.0	-13.4	78	1.00
441.2800	3.82	15.98	4.7	24.5	37.0	-12.5	161	1.10
484.9300	4.04	16.07	4.1	24.2	37.0	-12.8	180	1.10
555.7400	4.39	16.82	8.3	29.5	37.0	-7.5	239	1.20
664.3800	4.84	19.70	4.1	28.6	37.0	-8.4	85	1.30
843.8300	5.55	22.16	4.7	32.4	37.0	-4.6	107	1.30

NOTE :

1. Measurement uncertainty is +/-3.7dB.
2. "*": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.

Temperature:	25 °C	Humidity:	51 %RH
Frequency Range:	30 – 1000 MHz	Measured Distance:	10m
Receiver Detector:	Q.P.	Tested Mode:	Half Loading
Tested By:	Leo Jian	Tested Date:	Oct. 28, 2008
Tested Model:	GT-81082-0506.5-1.5-USB-W2E(5Vdc 1A)		

Antenna Polarization:Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
61.0400	1.46	3.98	10.1	15.5	30.0	-14.5	282	3.40
172.5900	2.31	10.94	4.1	17.3	30.0	-12.7	185	3.00
223.0300	2.63	10.52	4.4	17.6	30.0	-12.4	316	1.90
327.7900	3.16	14.29	3.9	21.3	37.0	-15.7	233	1.80
378.2300	3.45	15.42	3.8	22.7	37.0	-14.3	54	1.70
449.0400	3.86	16.00	4.2	24.1	37.0	-12.9	178	1.70

Antenna Polarization:Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
96.9300	1.80	8.18	11.6	21.6	30.0	-8.4	99	1.00
162.8900	2.24	9.32	7.8	19.4	30.0	-10.6	164	1.10
218.1800	2.61	10.32	4.5	17.4	30.0	-12.6	348	1.10
295.7800	3.00	13.48	5.0	21.5	37.0	-15.5	260	1.20
647.8900	4.75	19.09	4.1	27.9	37.0	-9.1	77	1.30
775.9300	5.26	21.68	4.7	31.6	37.0	-5.4	186	1.30

NOTE :

1. Measurement uncertainty is +/-3.7dB.
2. "*": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.

Temperature:	25 °C	Humidity:	51 %RH
Frequency Range:	30 – 1000 MHz	Measured Distance:	10m
Receiver Detector:	Q.P.	Tested Mode:	Full Loading
Tested By:	Leo Jian	Tested Date:	Oct. 28, 2008
Tested Model:	GT-81082-0506.5-1.5-USB-W2E(5Vdc 1A)		

Antenna Polarization:Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
82.3800	1.70	8.06	4.8	14.6	30.0	-15.4	177	3.40
177.4400	2.33	11.79	4.2	18.3	30.0	-11.7	351	3.00
216.2400	2.59	10.24	4.6	17.4	30.0	-12.6	288	1.90
293.8400	2.99	13.39	4.0	20.4	37.0	-16.6	63	1.80
429.6400	3.76	15.96	4.5	24.2	37.0	-12.8	147	1.70
543.1300	4.34	16.66	4.5	25.5	37.0	-11.5	259	1.70

Antenna Polarization:Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
211.3900	2.56	10.04	7.3	19.9	30.0	-10.1	354	1.00
288.9900	2.96	13.17	10.4	26.5	37.0	-10.5	188	1.10
429.6400	3.76	15.96	6.1	25.8	37.0	-11.2	310	1.10
489.7800	4.07	16.08	5.0	25.1	37.0	-11.9	58	1.20
609.0900	4.63	17.72	4.3	26.7	37.0	-10.3	195	1.30
659.5300	4.81	19.52	4.2	28.5	37.0	-8.5	250	1.30

NOTE :

1. Measurement uncertainty is +/-3.7dB.
2. "*": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.

Temperature:	25 °C	Humidity:	51 %RH
Frequency Range:	30 – 1000 MHz	Measured Distance:	10m
Receiver Detector:	Q.P.	Tested Mode:	Half Loading
Tested By:	Leo Jian	Tested Date:	Oct. 28, 2008
Tested Model:	GT-81082-0506.5-1.3-USB-W2E(5.2Vdc 1A)		

Antenna Polarization:Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
77.5300	1.65	7.76	7.3	16.7	30.0	-13.3	258	3.40
182.2900	2.36	12.04	4.0	18.4	30.0	-11.6	146	3.00
415.0900	3.68	15.93	3.8	23.4	37.0	-13.6	332	1.90
507.2400	4.16	16.19	4.5	24.8	37.0	-12.2	78	1.80
564.4700	4.43	16.93	3.8	25.2	37.0	-11.8	263	1.70
790.4800	5.30	21.81	4.1	31.2	37.0	-5.8	277	1.70

Antenna Polarization:Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
143.4900	2.09	9.51	10.0	21.6	30.0	-8.4	184	1.00
216.2400	2.59	10.24	8.7	21.5	30.0	-8.5	60	1.10
259.8900	2.84	11.90	9.1	23.8	37.0	-13.2	138	1.10
373.3800	3.42	15.31	4.4	23.1	37.0	-13.9	196	1.20
509.1800	4.17	16.22	6.6	27.0	37.0	-10.0	244	1.30
584.8400	4.53	17.19	5.4	27.1	37.0	-9.9	88	1.30

NOTE :

1. Measurement uncertainty is +/-3.7dB.
2. "*": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.

Temperature:	25 °C	Humidity:	51 %RH
Frequency Range:	30 – 1000 MHz	Measured Distance:	10m
Receiver Detector:	Q.P.	Tested Mode:	Full Loading
Tested By:	Leo Jian	Tested Date:	Oct. 28, 2008
Tested Model:	GT-81082-0506.5-1.3-USB-W2E(5.2Vdc 1A)		

Antenna Polarization:Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
70.7400	1.57	6.50	4.7	12.8	30.0	-17.2	202	3.40
155.1300	2.19	9.15	5.1	16.4	30.0	-13.6	173	3.00
201.6900	2.49	9.64	4.6	16.7	30.0	-13.3	248	1.90
385.9900	3.50	15.57	4.2	23.3	37.0	-13.7	329	1.80
504.3300	4.14	16.15	4.0	24.3	37.0	-12.7	54	1.70
606.1800	4.62	17.62	4.6	26.8	37.0	-10.2	163	1.70

Antenna Polarization:Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
288.9900	2.96	13.17	4.5	20.6	37.0	-16.4	176	1.00
385.9900	3.50	15.57	3.9	23.0	37.0	-14.0	353	1.10
523.7300	4.24	16.40	3.9	24.5	37.0	-12.5	127	1.10
609.0900	4.63	17.72	4.0	26.4	37.0	-10.6	59	1.20
708.0300	5.06	21.07	4.0	30.1	37.0	-6.9	182	1.30
846.7400	5.56	22.18	4.9	32.6	37.0	-4.4	119	1.30

NOTE :

1. Measurement uncertainty is +/-3.7dB.
2. "*": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.

4.3 CURRENT HARMONICS TEST

4.3.1 LIMIT

For Class A Equipment

EVEN HARMONICS		ODD HARMONICS	
HARMONICS ORDER	LIMIT (Amp.)	HARMONICS ORDER	LIMIT (Amp.)
2	1.08	3	2.30
4	0.43	5	1.14
6	0.30	7	0.77
8 < n < 40	0.23 x 8 / n	9	0.40
		11	0.33
		13	0.21
		15 < n < 39	0.15 x 8 / n

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	0.15 x 15 / n

NOTE:

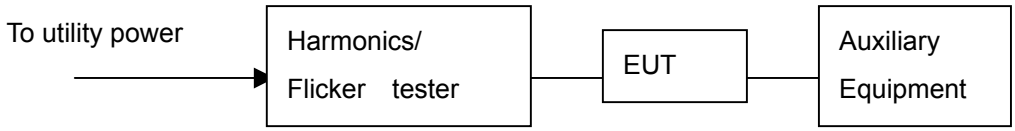
1. Class A and Class D are judged by test equipment automatically as per Section 5 of EN 61000-3-2:2006

2. The above limits for Class D equipment are for all applications having an active input power > 75 W. No limits apply for equipment whose active input power is lower than 75W.

4.3.2 TEST EQUIPMENT

EQUIPMENT / FACILITIES	MANUFACTURER	MODEL # / SERIAL #	DUE DATE OF CAL. & CAL. CENTER
Harmonic/Flicker-Test System	EMC PARTNER	HAR-1000-1P / 081	AUG. 2009 ETC

4.3.3 TEST SETUP



NOTE :
1. The EUT system was put on a wooden table with 0.8m high.
2. For the actual test configuration, please refer to the photos of testing.

4.3.4 TEST PROCEDURE

According to EN 61000-3-2:2006

4.3.5 DESCRIPTION OF SUPPORT UNIT

Same as section 4.1.5 of this report.

4.3.6 EUT OPERATING CONDITION

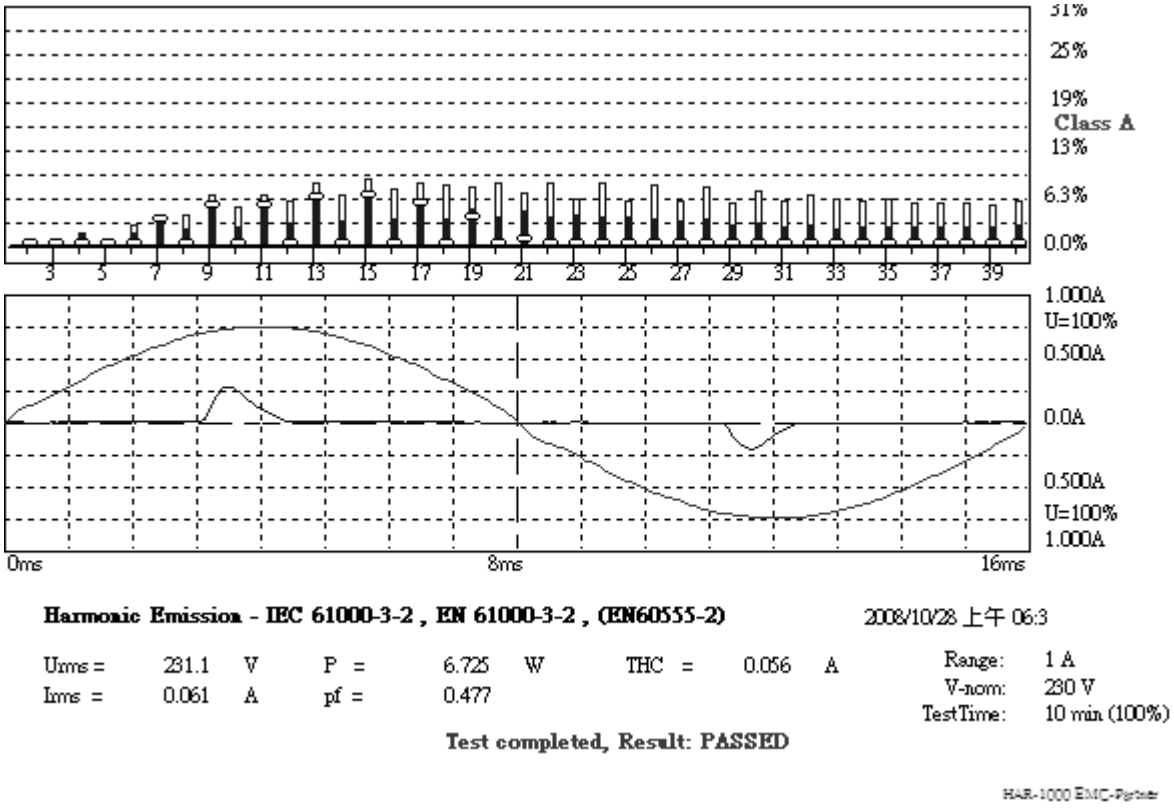
Same as section 4.1.6 of this report.

4.3.7 SUMMARY OF CURRENT HARMONICS TEST RESULT

Temperature:	25°C	Humidity:	63% RH
Fundamental Current:	0.061A	Max. Power	
Voltage:	231.1V	Consumption:	6.725W
Power Factor:	0.477	Tested Mode:	Full Loading
Tested By:	Leo Jian	Test Date:	Oct. 28, 2008
Tested Model:	GT-81082-0506.5-2.0-USB-W2E		

Maximum Reading Data:

Odd Harm. Order	Reading Data (A)	Limit (A)	Test Result
11	0.0169	0.1500	PASS

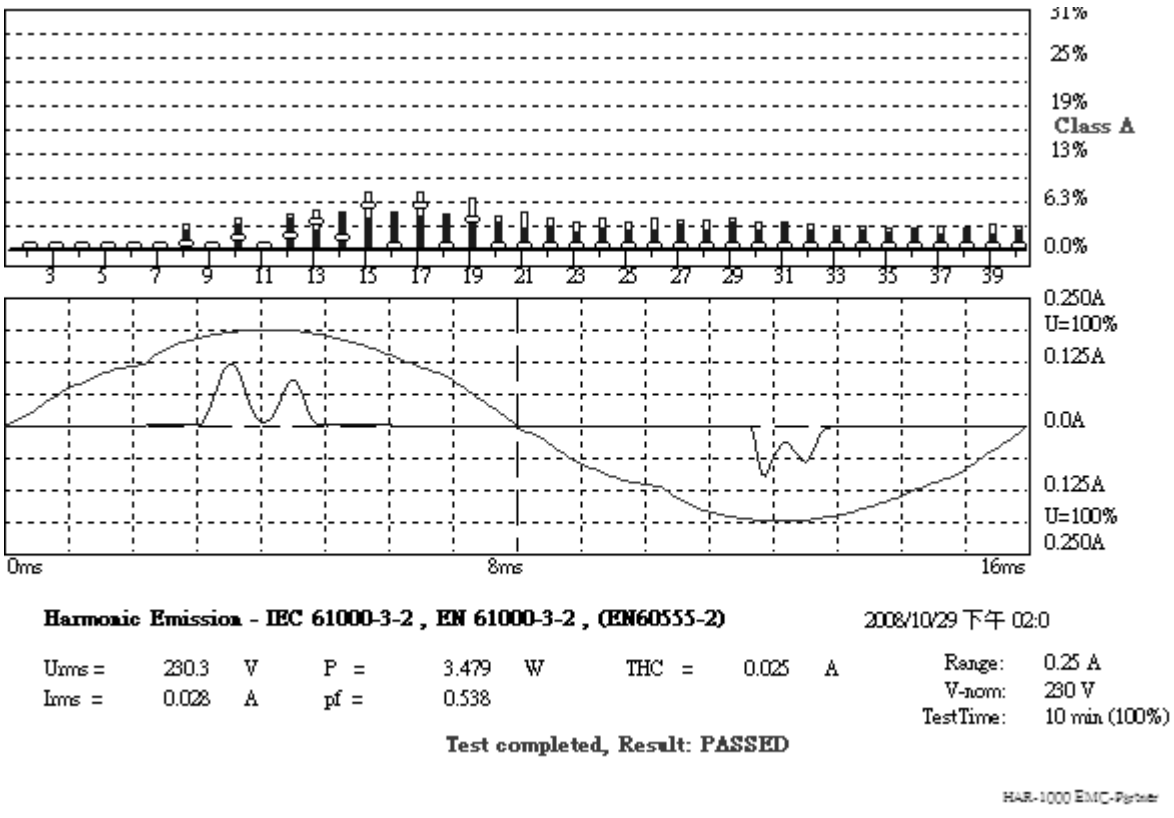


NOTE:
1. Measurement uncertainty is +/-0.003A
2. For more detail, please see the attached file back on the report file.

Temperature:	25°C	Humidity:	63% RH
Fundamental Current:	0.028A	Max. Power	
Voltage:	230.3V	Consumption:	3.479W
Power Factor:	0.538	Tested Mode:	Full Loading
Tested By:	Leo Jian	Test Date:	Oct. 28, 2008
Tested Model:	GT-81082-0506.5-2.0-USB-W2E		

Maximum Reading Data:

Odd Harm. Order	Reading Data (A)	Limit (A)	Test Result
17	0.0094	0.1324	PASS

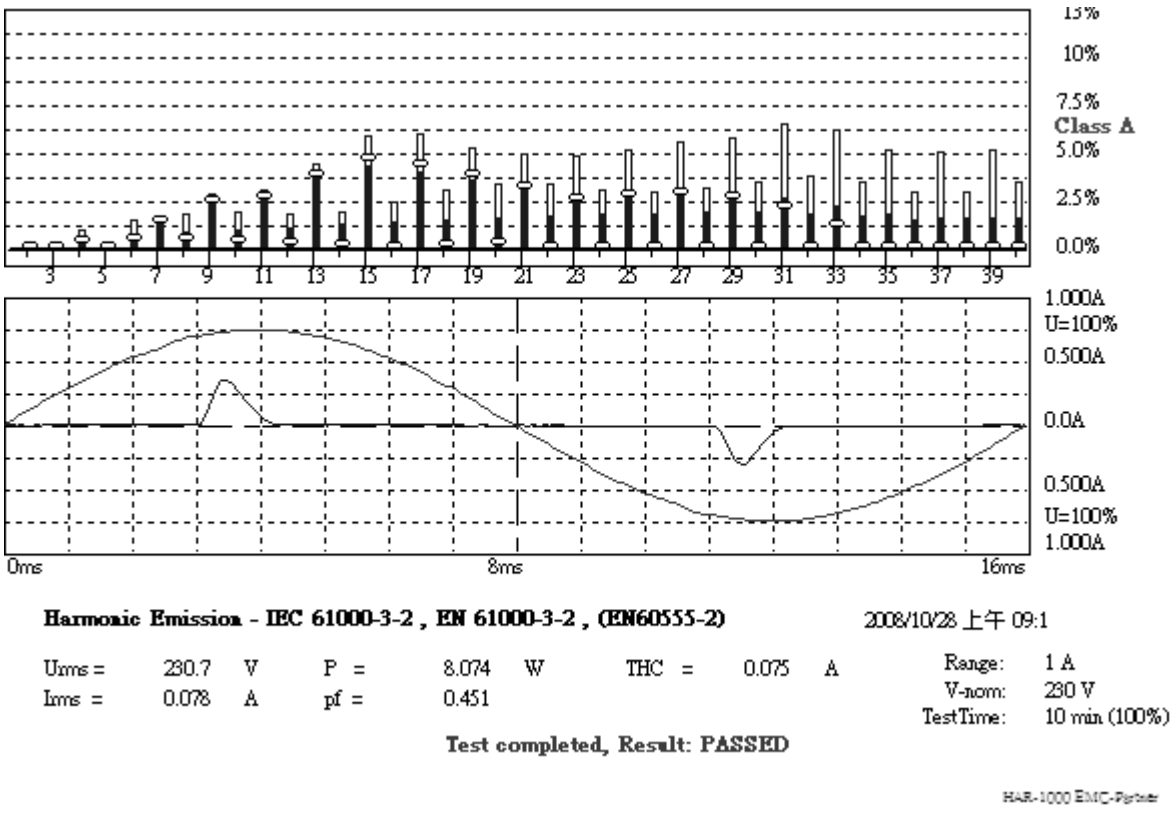


NOTE:
1. Measurement uncertainty is +/-0.003A
2. For more detail, please see the attached file back on the report file.

Temperature:	25°C	Humidity:	63% RH
Fundamental Current:	0.078A	Max. Power	
Voltage:	230.7V	Consumption:	8.074W
Power Factor:	0.451	Tested Mode:	Full Loading
Tested By:	Leo Jian	Test Date:	Oct. 28, 2008
Tested Model:	GT-81082-0506.5-1.5-USB-W2E		

Maximum Reading Data:

Odd Harm. Order	Reading Data (A)	Limit (A)	Test Result
17	0.0193	0.1836	PASS

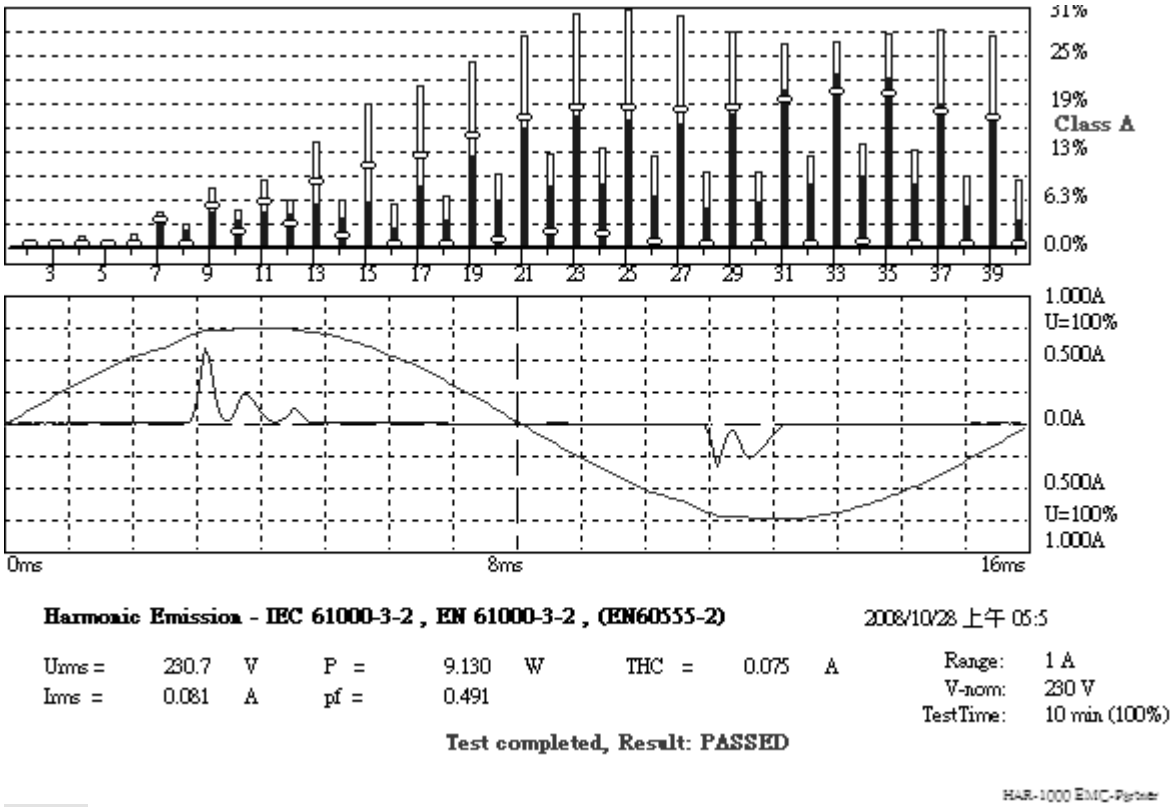


NOTE:
1. Measurement uncertainty is +/-0.003A
2. For more detail, please see the attached file back on the report file.

Temperature:	25°C	Humidity:	63% RH
Fundamental Current:	0.081A	Max. Power	
Voltage:	230.7V	Consumption:	9.130W
Power Factor:	0.491	Tested Mode:	Full Loading
Tested By:	Leo Jian	Test Date:	Oct. 28, 2008
Tested Model:	GT-81082-0506.5-1.3-USB-W2E		

Maximum Reading Data:

Odd Harm. Order	Reading Data (A)	Limit (A)	Test Result
25	0.0277	0.0900	PASS



NOTE:

1. Measurement uncertainty is +/-0.003A
2. For more detail, please see the attached file back on the report file.

4.4 VOLTAGE FLUCTUATIONS

4.4.1 LIMIT

Short-team flicker (P_{st}) : 1.0

Long-term flicker (P_{lt}) : 0.65

Relative steady-state voltage change (D_c) : ≤ 3.3%

Relative voltage change characteristic (D (t)) > 3.3% ; ($T_{D(t)}$) : ≤ 500 ms

Maximum relative voltage change (D_{max}) : ≤ 4%

TEST ITEM	LIMIT	NOTE
P_{st}	1.0	P_{st} means short-term flicker indicator.
P_{lt}	0.65	P_{lt} means long-term flicker indicator.
$T_{D(t)}$ (ms)	500	$T_{D(t)}$ means maximum time that D (t) exceeds 3.3 %.
D_{max} (%)	4%	D_{max} means maximum relative voltage change.
D_c (%)	3.3%	D_c means relative steady-state voltage change

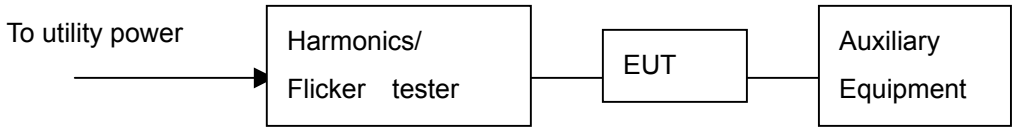
4.4.2 TEST EQUIPMENT

EQUIPMENT / FACILITIES	MANUFACTURER	MODEL # / SERIAL #	DUE DATE OF CAL. & CAL. CENTER
Harmonic/Flicker-Test System	EMC PARTNER	HAR-1000-1P / 081	AUG. 2009 ETC

4.4.3 TEST PROCEDURE

According to EN 61000-3-3:1995+A1:2001+A2:2005

4.4.4 TEST SETUP



NOTE : 1. The EUT system was put on a wooden table with 0.8m high.

2. For the actual test configuration, please refer to the photos of testing.

4.4.5 DESCRIPTION OF SUPPORT UNIT

Same as section 4.1.5 of this report.

4.4.6 EUT OPERATING CONDITION

Same as section 4.1.6 of this report.

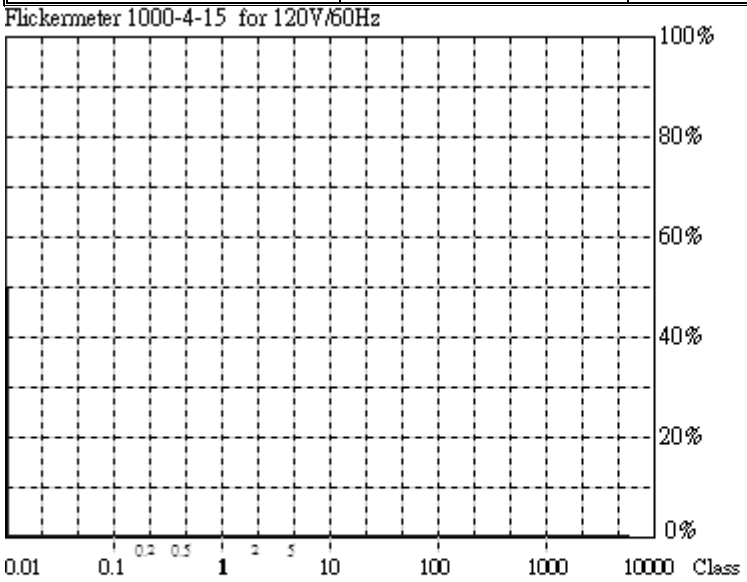
4.4.7 SUMMARY OF VOLTAGE FLUCTUATIONS TEST RESULT

Temperature:	25°C	Humidity:	63% RH
Input Voltage:	230.9Vrms	Observation	
Ampere:	0.067Ams	Period:	2Hr
Power Factor:	0.575	Tested Mode:	Full Loading
Tested By:	Leo Jian	Test Date:	Oct. 28, 2008

Tested Model: GT-81082-0506.5-2.0-USB-W2E(4.5Vdc 1A)

Test Result:

TEST PARAMETER	MEASUREMENT VALUE	LIMIT	TEST RESULT
P_{st}	0.07	1.00	PASS
P_{lt}	0.07	0.65	PASS
$T_{D(t)}$ (ms)	0	500	PASS
D_{max} (%)	0.00%	4%	PASS
D_c (%)	0.00%	3.3%	PASS



Actual Flicker (Fli): **0.00**

Short-term Flicker (Pst): **0.07**
Limit (Pst): 1.00

Long-term Flicker (Plt): **0.07**
Limit (Plt): 0.65

Maximum Relative Volt. Change (dmax): **0.00%**
Limit (dmax): 4.00%

Relative Steady-state Voltage Change (dc): **0.00%**
Limit (dc): 3.30%

Maximum Interval exceeding 3.30% (dt): **0.00ms**
Limit (dt>Lim): 500ms

Flicker Emission - IEC 61000-3-3 , EN 61000-3-3 , (EN60555-3)

2008/10/28 上午 06:5

Urms = 230.9 V P = 8.884 W
Irms = 0.067 A pf = 0.575

Range: 1 A
V-nom: 230 V
TestTime: 12 min (100%)

Test completed, Result: PASSED

HAR-1000 EMC-Partner

NOTE:
1. P_{st} means short-term flicker indicator.
2. P_{lt} means long-term flicker indicator.
3. $T_{D(t)}$ means maximum time that D(t) exceeds 3.3 %.
4. D_{max} means maximum relative voltage change.
5. D_c means relative steady-state voltage change.
6. N/A: Not applicable..
7. Measurement uncertainty:
   (1) P_{st}: +/-0.02P.U. (2) P_{lt}: +/-0.02P.U. (3). $T_{D(t)}$: +/-0.02ms (4) D_{max} :+/-0. 02%(5).$D_{c:}$ +/-0.02%.
8. For more detail, please see the attached file back on the report file.

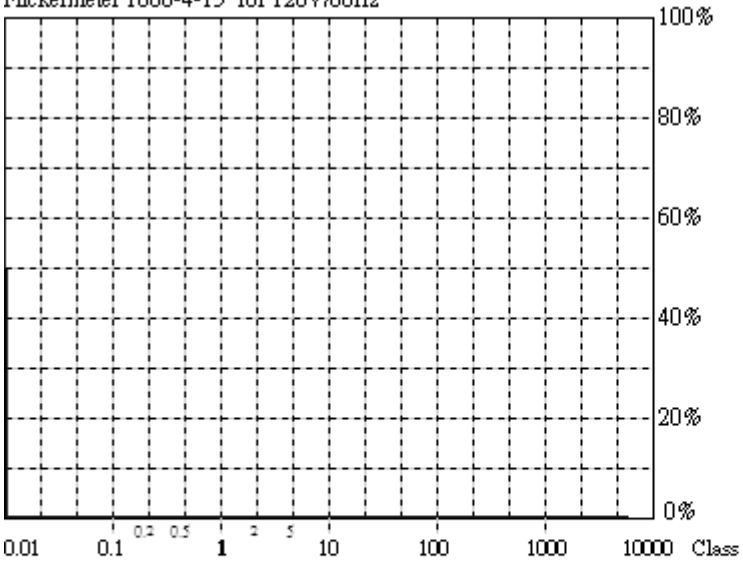
Temperature:	25°C	Humidity:	63% RH
Input Voltage:	231.1Vrms	Observation Period:	2Hr
Ampere:	0.002Ams		
Power Factor:	0.653	Tested Mode:	Full Loading
Tested By:	Leo Jian	Test Date:	Oct. 28, 2008

Tested Model: GT-81082-0506.5-USB-W2E(6.5Vdc 1A)

Test Result:

TEST PARAMETER	MEASUREMENT VALUE	LIMIT	TEST RESULT
P_{st}	0.07	1.00	PASS
P_{lt}	0.07	0.65	PASS
$T_{D(t)}$ (ms)	0	500	PASS
D_{max} (%)	0.00%	4%	PASS
D_c (%)	0.00%	3.3%	PASS

Flickermeter 1000-4-15 for 120V/60Hz



Actual Flicker (Fli):	**0.00**
Short-term Flicker (Pst):	**0.07**
Limit (Pst):	1.00
Long-term Flicker (Plt):	**0.07**
Limit (Plt):	0.65
Maximum Relative Volt. Change (dmax):	**0.00%**
Limit (dmax):	4.00%
Relative Steady-state Voltage Change (dc):	**0.00%**
Limit (dc):	3.30%
Maximum Interval exceeding 3.30% (dt):	**0.00ms**
Limit (dt>Lim):	500ms

Flicker Emission - IEC 61000-3-3 , EN 61000-3-3 , (EN60555-3)

2008/10/29 下午 02:5

Urms =	231.1	V	P =	0.295	W
Irms =	0.002	A	pf =	0.653	

Range:	0.25 A
V-nom:	230 V
TestTime:	12 min (100%)

Test completed, Result: PASSED

HAR-1000 EMC-Flicker

NOTE:

1. P_{st} means short-term flicker indicator.
2. P_{lt} means long-term flicker indicator.
3. $T_{D(t)}$ means maximum time that D(t) exceeds 3.3 %.
4. D_{max} means maximum relative voltage change.
5. D_c means relative steady-state voltage change.
6. N/A: Not applicable..
7. Measurement uncertainty:
   (1) P_{st}: +/-0.02P.U. (2) P_{lt}: +/-0.02P.U. (3). $T_{D(t)}$: +/-0.02ms (4) D_{max} :+/-0. 02%(5).$D_{c:}$ +/-0.02%.
8. For more detail, please see the attached file back on the report file.

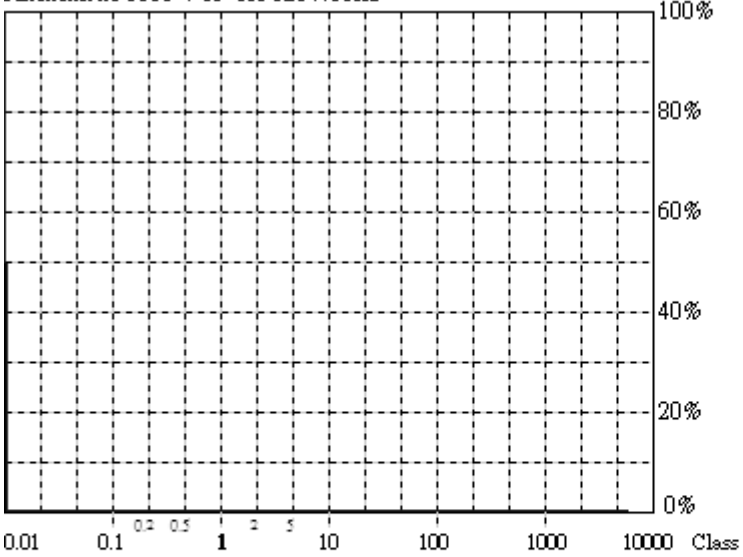
Temperature:	25°C	Humidity:	63% RH
Input Voltage:	230.7Vrms	Observation	
Ampere:	0.088Ams	Period:	2Hr
Power Factor:	0.470	Tested Mode:	Full Loading
Tested By:	Leo Jian	Test Date:	Oct. 28, 2008

Tested Model: GT-81082-0506.5-1.5-USB-W2E(5Vdc 1A)

Test Result:

TEST PARAMETER	MEASUREMENT VALUE	LIMIT	TEST RESULT
P_{st}	0.07	1.00	PASS
P_{lt}	0.07	0.65	PASS
$T_{D(t)}$ (ms)	0	500	PASS
D_{max} (%)	0.00%	4%	PASS
D_c (%)	0.08%	3.3%	PASS

Flickermeter 1000-4-15 for 120V/60Hz



Actual Flicker (Fli): 0.00

Short-term Flicker (Pst): 0.07
Limit (Pst): 1.00

Long-term Flicker (Plt): 0.07
Limit (Plt): 0.65

Maximum Relative Volt. Change (dmax): 0.00%
Limit (dmax): 4.00%

Relative Steady-state Voltage Change (dc): 0.08%
Limit (dc): 3.30%

Maximum Interval exceeding 3.30% (dt): 0.00ms
Limit (dt>Lim): 500ms

Flicker Emission - IEC 61000-3-3 , EN 61000-3-3 , (EN60555-3)

2008/10/28 上午 07:4

Urms =	230.7	V	P =	9.522	W
Irms =	0.088	A	pf =	0.470	

Range: 1 A
V-nom: 230 V
TestTime: 12 min (100%)

Test completed, Result: PASSED

HAR-1000 EMC-Partner

NOTE:
1. P_{st} means short-term flicker indicator.
2. P_{lt} means long-term flicker indicator.
3. $T_{D(t)}$ means maximum time that D(t) exceeds 3.3 %.
4. D_{max} means maximum relative voltage change.
5. D_c means relative steady-state voltage change.
6. N/A: Not applicable..
7. Measurement uncertainty:
   (1) P_{st}: +/-0.02P.U. (2) P_{lt}: +/-0.02P.U. (3). $T_{D(t)}$: +/-0.02ms (4) D_{max} :+/-0. 02%(5).$D_{c:}$ +/-0.02%.
8. For more detail, please see the attached file back on the report file.

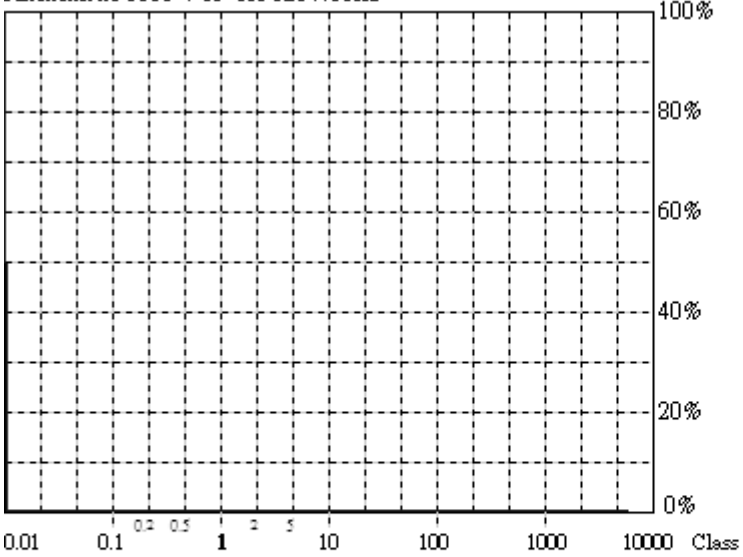
Temperature:	25°C	Humidity:	63% RH
Input Voltage:	230.5Vrms	Observation	
Ampere:	0.072Ams	Period:	2Hr
Power Factor:	0.558	Tested Mode:	Full Loading
Tested By:	Leo Jian	Test Date:	Oct. 28, 2008

Tested Model: GT-81082-0506.5-1.3-USB-W2E(5.2Vdc 1A)

Test Result:

TEST PARAMETER	MEASUREMENT VALUE	LIMIT	TEST RESULT
P_{st}	0.07	1.00	PASS
P_{lt}	0.07	0.65	PASS
$T_{D(t)}$ (ms)	0	500	PASS
D_{max} (%)	0.00%	4%	PASS
D_c (%)	0.07%	3.3%	PASS

Flickermeter 1000-4-15 for 120V/60Hz



Actual Flicker (Fli): 0.00

Short-term Flicker (Pst): 0.07
Limit (Pst): 1.00

Long-term Flicker (Plt): 0.07
Limit (Plt): 0.65

Maximum Relative Volt. Change (dmax): 0.00%
Limit (dmax): 4.00%

Relative Steady-state Voltage Change (dc): 0.07%
Limit (dc): 3.30%

Maximum Interval exceeding 3.30% (dt): 0.00ms
Limit (dt>Lim): 500ms

Flicker Emission - IEC 61000-3-3 , EN 61000-3-3 , (EN60555-3)

2008/10/28 上午 06:1

Urms =	230.5	V	P =	9.228	W
Irms =	0.072	A	pf =	0.558	

Range: auto(1.00A)
V-nom: 230 V
TestTime: 12 min (100%)

Test completed, Result: PASSED

HAR-1000 EMC-Pster

NOTE:
1. P_{st} means short-term flicker indicator.
2. P_{lt} means long-term flicker indicator.
3. $T_{D(t)}$ means maximum time that D(t) exceeds 3.3 %.
4. D_{max} means maximum relative voltage change.
5. D_c means relative steady-state voltage change.
6. N/A: Not applicable..
7. Measurement uncertainty:
(1) P_{st}: +/-0.02P.U. (2) P_{lt}: +/-0.02P.U. (3). $T_{D(t)}$: +/-0.02ms (4) D_{max} :+/-0. 02%(5).$D_{c:}$ +/-0.02%.
8. For more detail, please see the attached file back on the report file.

5. ELECTROSTATIC DISCHARGE IMMUNITY TEST

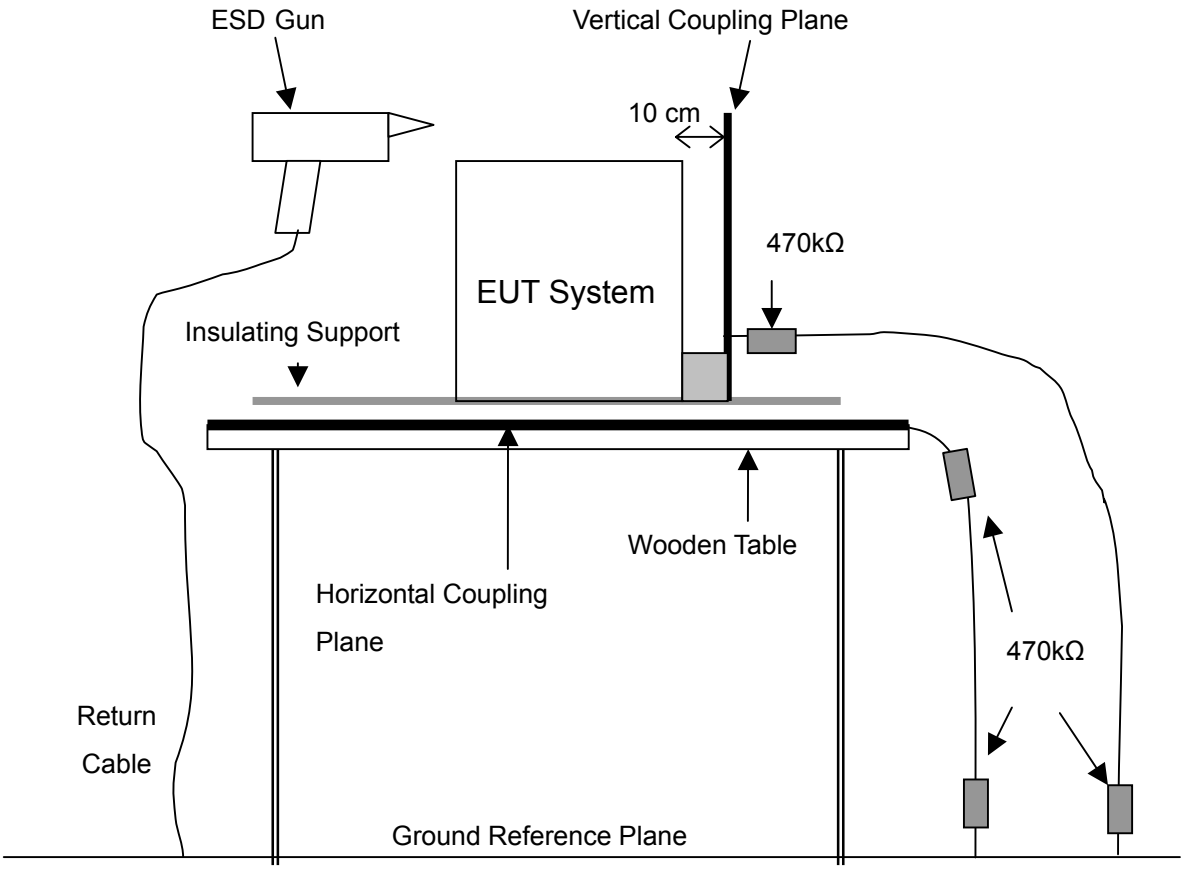
5.1 TEST EQUIPMENT

EQUIPMENT / FACILITIES	MANUFACTURER	MODEL # / SERIAL #	DUE DATE OF CAL. & CAL. CENTER
ESD SIMULATOR	NOISEKEN	ESS-100L(A)/TC-815P / 8099C02238/7099C02	NOV. 2008 ETC
HCP (1.6M x 0.8M)	SRT	WITH TWO 470k OHM CABLE	NCR
VCP (0.5M x 0.5M)	SRT	WITH TWO 470k OHM CABLE	NCR
GROUND PLANE (3.4M x 2.4m)	SRT	N/A	NCR

5.2 TEST PROCEDURE

According to IEC/EN 61000-4-2:2001

5.3 TEST SET-UP



NOTE :

1. The wooden table should be 0.8m high for table top EUT and 0.1m for floor-standing EUT.
2. For the actual test configuration, please refer to the photos of testing.
3. A distance of 1m minimum was provided between EUT and walls / other metallic structure.

5.4 DESCRIPTION OF SUPPORT UNIT

Same as section 4.1.5 of this report.

5.5 EUT OPERATING CONDITION

Same as section 4.1.6 of this report.

5.6 TEST CONDITION AND PERFORMANCE CRITERION

1. Test condition

(1) R-C Network	:	330 Ω, 150 pF
(2) Test level: Air Discharge	:	±2kV, ±4kV, ±8kV
Contact discharge	:	±2kV, ±4kV
HCP discharge :		±2kV, ±4kV
VCP discharge :		±2kV, ±4kV
(3) Discharge mode	:	Single discharge
(4) Discharge period	:	at least 1 s
(5) Discharge polarity	:	Positive and Negative
(6) Number of discharge	:	Minimum 50 times at each test point of contact discharge and at least 200 times of discharge to EUT in total. Minium 10 times at each test area of air discharge selected.

2. Standard requirement : Criterion B

3. Performance criterion

(1) Criterion A	:	Normal performance during test
(2) Criterion B	:	Temporary degradation or loss of function or performance which is self-recoverable
(3) Criterion C	:	Temporary degradation or loss of function or performance which requires operator intervention system reset

5.7 SUMMARY OF ELECTROSTATIC DISCHARGE TEST RESULT

Temperature:	19°C	Humidity:	55% RH
Tested Mode:	All	Tested By:	Leo Jian
Atmospheric Air Pressure:	101.2kPa	Tested Date:	Oct. 28, 2008

Test Result: Criterion A pass

SEVERITY LEVEL	TEST POINT	COUPLING MODE & TEST OBSERVATION			
		AIR DISCHARGE	CONTACT DISCHARGE	HCP (Front, Rear, Left,Right)	VCP (Front,Rear, Left,Right)
±2kV -±4kV	2,3			A	A
±2kV -±8kV	1	A			

NOTE:

1. Measurement uncertainty is +/-0.02KV.
2. Description of test observation:
   A: There was no change compared with initial operation during the test.

Description of test points:

1. Gaps of Case.
2. HCP. (4 Sides)
3. VCP. (4 Sides)

6. RADIATED IMMUNITY TEST

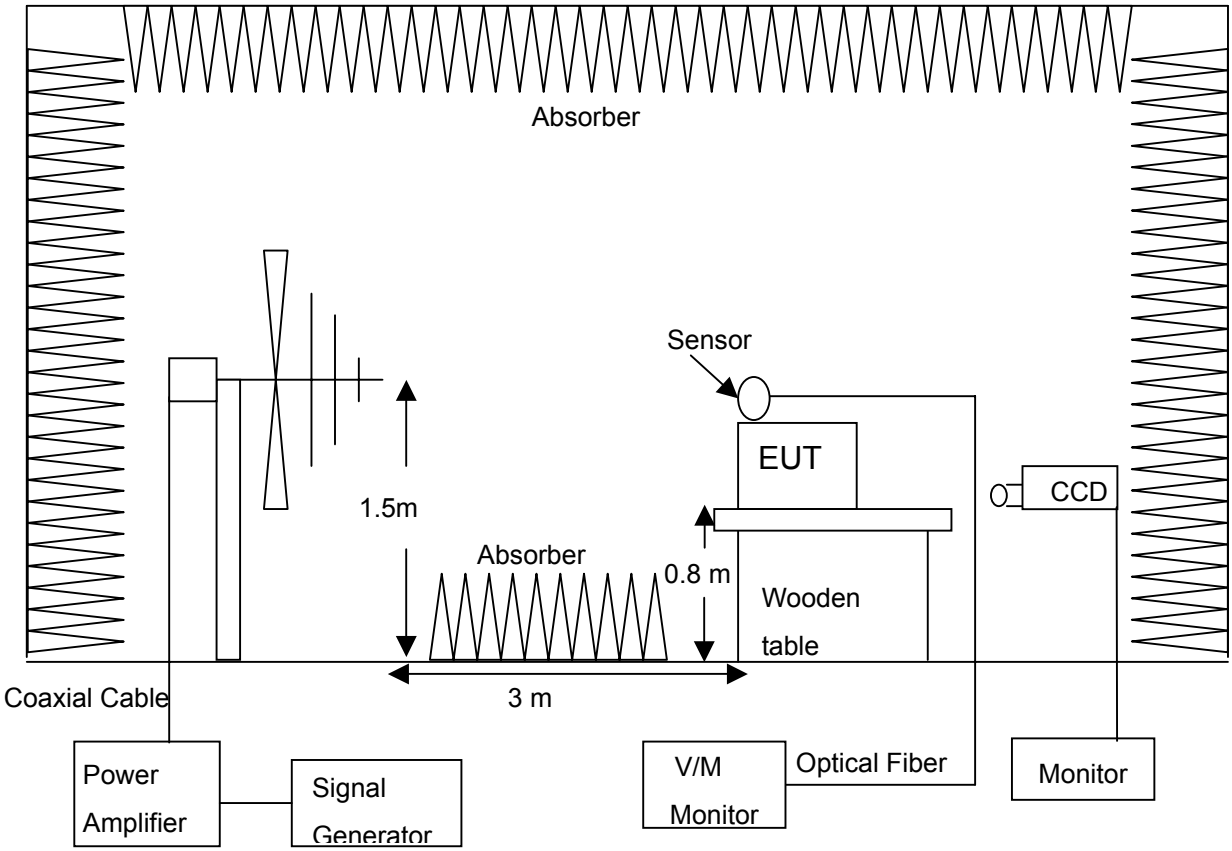
6.1 TEST EQUIPMENT

EQUIPMENT / FACILITIES	MANUFACTURER	MODEL # / SERIAL #	DUE DATE OF CAL. & CAL. CENTER
SIGNAL GENERATOR	R&S	SMY01 / 841104/019	JUL. 2009 ETC
ANTENNA	SCHAFFNER CHASE	CBL6141A / 4181	OCT. 2008 SRT
FIELD SENSOR	AMPLIFIER RESEARCH	FP2000 / 28499	MAR. 2009 ITRI
POWER AMPLIFIER	AMPLIFIER RESEARCH	100W1000M1 / 19509	NCR
AMPLIFIER	A.R.	50S1G4A / 308703	NCR
DUAL DIRECTIONAL COUPLER	A.R.	DC7420 / 308626	JUL. 2009 ETC.
ISOTROPIC "E" FIELD PROBE	A.R.	FP4080 KIT / 308105	JUL. 2009 ITRI
POWER SENSOR	BOONTON	51015(SE) / 32966	JAN. 2009 ETC
POWER SENSOR	BOONTON	51015(SE) / 32964	JAN. 2009 ETC
DUAL DIRECTIONAL COUPLER	A.R.	DC6080 / 310289	JUL. 2009 ETC
ANECHOIC CHAMBER	SRT	A05 / SRT005	NOV. 2008 SRT
ISOTROPIC FIELD MONITOR	A.R.	FM2000 / 15970	NCR
MONITOR	TAYAMA	17582430 /	NCR
CCD	TOPVIEW	N/A / 95113762	NCR
ABSORBER	ETS	N/A	NCR
COAXIAL CABLE	TIMES	LMR400 / 0.5M	AUG. 2009 SRT
COAXIAL CABLE	TIMES	LMR400 / 4M	AUG. 2009 SRT

6.2 TEST PROCEDURE

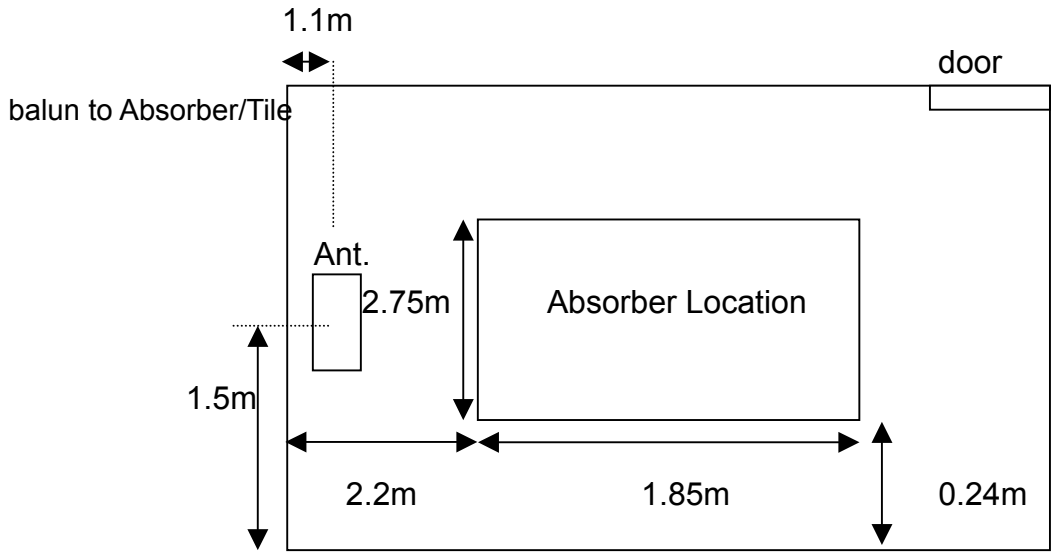
According to IEC/EN 61000-4-3:2006

6.3 TEST SETUP



NOTE :

1. The wooden table should be 0.8m high for table top EUT and 0.1m for floor-standing EUT.
2. For the actual test configuration, please refer to the photos of testing.



chamber (7m x 3m x 3m)

6.4 DESCRIPTION OF SUPPORT UNIT

Same as section 4.1.5 of this report.

6.5 EUT OPERATING CONDITION

Same as section 4.1.6 of this report.

6.6 TEST CONDITION / PERFORMANCE CRITERIA

1. Test condition
   (1) Source voltage and frequency : 230V/50Hz, single phase
   (2) Sweeping frequency : 80MHz – 1 GHz
   (3) Test level : 3V/m, the frequncy step is 1%
   (4) The four sides of EUT are tested : front, rear, left, right
   (5) Modulation : 80%AM, 1kHz Dwell time for each frequency is 3 sec.
   (6) Antenna Polarization : Horizontal and Vertical
   (7) Standard requirement : Criterion A

2. Performance criterion
   (1) Criterion A : Normal performance during test
   (2) Criterion B : Temporary degradation or loss of function or performance which is self-recoverable.
   (3) Criterion C : Temporary degradation or loss of function or performance which requires operator intervention system reset.

6.7 SUMMARY OF RADIATED IMMUNITY TEST RESULT

Temperature:	27 °C	Humidity:	54 % RH
Tested Mode:	All	Tested By:	Leo Jian
		Tested Date:	Oct. 25, 2008

Test Result : Criterion A pass

FREQUENCY	LEVEL	MODULATION	DIRECTION	TEST RESULT (CRITERION)	
				H	V
80MHz - 1GHz	3V/m	80%AM, 1kHz	FRONT	A	A
80MHz - 1GHz	3V/m	80%AM, 1kHz	REAR	A	A
80MHz - 1GHz	3V/m	80%AM, 1kHz	LEFT	A	A
80MHz - 1GHz	3V/m	80%AM, 1kHz	RIGHT	A	A

NOTE:
1. Measurement uncertainty is +/-2.7dB.
2. Description of test observation:
   A: There was no change compared with initial operation during the test.

7. ELECTRICAL FAST TRANSIENT / BURST IMMUNITY TEST

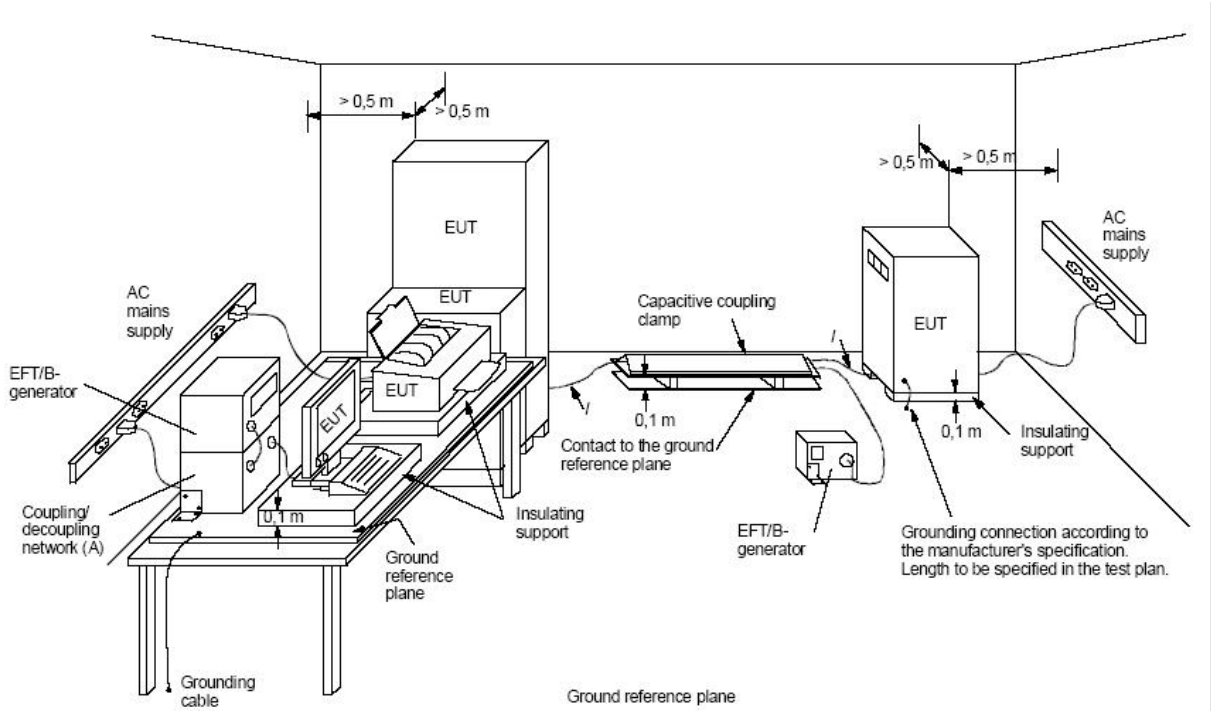
7.1 TEST EQUIPMENT

EQUIPMENT / FACILITIES	MANUFACTURER	MODEL # / SERIAL #	DUE DATE OF CAL & CAL CENTER
EFT GENERATOR	HAEFELY	PEFT-JUNIOR / 583-333-122	JUL. 2009 ETC
CLAMP	HAEFELY	TRENCH / 080421-12	NCR
GROUND PLANE 2M x 3M	SRT	N/A	NCR

7.2 TEST PROCEDURE

According to IEC/EN 61000-4-4:2004

7.3 TEST SET-UP



NOTE :

1. The EUT system was put on a wooden table with a Ground reference plane above to grounding and insulating support 0.1m for tabletop EUT.
2. Insulating support 0.1m for floor-standing EUT above ground reference plane.
3. For the actual test configuration, please refer to the photos of testing.
4. The minimum distance between the EUT and all other conductive structure was more than 0.5m.
5. The minimum distance between the coupling plates of the coupling clamps (if used) and all over conductive structures, except the ground plane beneath the coupling clamp and beneath the EUT was more than 0.5m.
6. The power cable connecting EUT was controlled under 1m.

7.4 DESCRIPTION OF SUPPORT UNIT

Same as section 4.1.5 of this report.

7.5 EUT OPERATING CONDITION

Same as section 4.1.6 of this report.

7.6 TEST CONDITION / PERFORMANCE CRITERIA

1. Test condition
   (1) Source voltage and frequency : 230V/50Hz, single phase
   (2) Pulse risetime and duration : 5ns / 50ns
   (3) Pulse repetition : 5kHz
   (4) Polarity : Positive Polarization and Negative Polarization
   (5) Burst duration and period : 15ms / 300ms
   (6) Test duration : 60sec each line
   (7) Time between test : 10Sec
   (8) Severity levels : Power Line ±1kV
   Signal/Control Line ±0.5kV
   (9) Standard requirement : Criterion B

2. Performance criterion
   (1) Criterion A : Normal performance during test
   (2) Criterion B : Temporary degradation or loss of function or performance which is self-recoverable.
   (3) Criterion C : Temporary degradation or loss of function or performance which requires operator intervention system reset.

7.7 SUMMARY OF ELECTRICAL FAST TRANSIENT / BURST TEST RESULT

Temperature:	26 °C	Humidity:	55 % RH
Tested Mode:	All	Tested By:	Leo Jian
Atmospheric Air Pressure:	101.2 kPa	Tested Date:	Oct. 26, 2008

Test Result : Criterion A pass

Voltage		0.5kV		1KV	
Polarity		+	-	+	-
Test Result	L1	A	A	A	A
	L2	A	A	A	A
	GND	A	A	A	A
	Signal/Control Line	N/A	N/A	N/A	N/A

NOTE:

1. Measurement uncertainty is +/-0.02KV
2. Description of test observation:
   A: There was no change compared with initial operation during the test.
   N/A: Not applicable, as the signal/control line used in typical is less than 3 m.

8. SURGE TEST (POWER LINE)

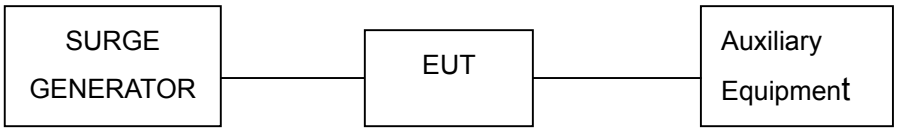
8.1 TEST EQUIPMENT

EQUIPMENT / FACILITIES	MANUFACTURER	MODEL # / SERIAL #	DUE DATE OF CAL. & CAL. CENTER
SURGE TEST	KeyTek	EMC Pro / 0010474	SEP. 2009 ETC

8.2 TEST PROCEDURE

According to IEC/EN 61000-4-5:2005

8.3 TEST SET-UP



NOTE :

1. The EUT system was put on a wooden table with 0.8m heights above ground reference plane.
2. For the actual test configuration, please refer to the photos of testing.

8.4 DESCRIPTION OF SUPPORT UNIT

Same as section 4.1.5 of this report.

8.5 EUT OPERATING CONDITION

Same as section 4.1.6 of this report.

8.6 TEST CONDITION / PERFORMANCE CRITERIA

1. Test condition

(1) Test level : Common mode : ±0.5kV, ±1kV, ±2kV
Differential mode : ±0.25kV, ±0.5kV, ±1kV

(2) Number of Pulse : 5

(3) Phase : 0°, 90°, 180°, 270°

(4) Polarity : Positive and Negative polarization

(5) Repetition : 60 s

(6) Waveform : 1.2/50 μs (open circuit)

(7) Standard requirement : Criterion B

2. Performance criterion

(1) Criterion A : Normal performance during test

(2) Criterion B : Temporary degradation or loss of function or performance which is self-recoverable

(3) Criterion C : Temporary degradation or loss of function or performance which requires operator intervention system reset

8.7 SUMMARY OF SURGE TEST RESULT

Temperature:	26 °C	Humidity:	55 % RH
Tested Mode:	All	Tested By:	Leo Jian
Atmospheric Air Pressure:	101.2 kPa	Tested Date:	Oct. 26, 2008

Test Result : Criterion A pass

Mode	Coupling	Voltage	Phase			
			0°	90°	180°	270°
Common	L + PE N + PE	+/-0.5kV	N/A	N/A	N/A	N/A
		+/-1kV	N/A	N/A	N/A	N/A
		+/-2kV	N/A	N/A	N/A	N/A
Differential	L+N	+/-0.25kV	A	A	A	A
		+/-0.5kV	A	A	A	A
		+/-1kV	A	A	A	A

NOTE:

1. Measurement uncertainty is +/-1.43V
2. Description of test observation:
   A: There was no change compared with initial operation during the test.
   N/A: Not applicable.

9. INDUCED RF FIELDS (CONDUCTED SUSCEPTIBILITY) TEST

9.1 TEST EQUIPMENT

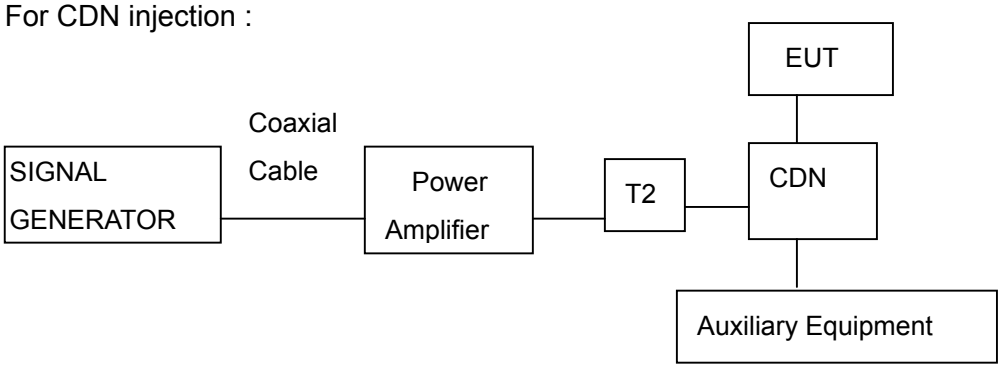
EQUIPMENT / FACILITIES	MANUFACTURER	MODEL # / SERIAL #	DUE DATE OF CAL. & CAL. CENTER	FINAL TEST BE USED
SIGNAL GENERATOR	HP	8648A / 3636A02776	SEP. 2009 ETC	√
CLAMPER-EM INJECTION	FCC	F-230I-23MM / 110	JUN. 2009 ETC	
POWER AMPLIFIER	A.R.	150A100A / 19553	NCR	√
DUAL DIRECTION COULPER	A.R.	DC2600 / 25893	NOV. 2008 ETC	√
POWER METER	BOONTON	4232A / 105302	JUL. 2009 ETC	√
POWER SENSOR	BOONTON	51011-EMC / 31181	JAN. 2009 ETC	√
POWER SENSOR	BOONTON	51011EMC / 31745	NOV. 2008 ETC	√
POWER LINE CDN	FCC	FCC-801-M2-32A / 9840	NOV. 2008 ETC	
POWER LINE CDN	FCC	FCC-801-M3-32A / 9874	JUL . 2008 ETC	√
POWER LINE CDN (for Peripheral)	COM-POWER	CDN-M2-25 / 511001	APR. 2009	
POWER LINE CDN (for Peripheral)	COM-POWER	CDN-M3-25 / 521010	APR. 2009	
T2	WA	WA45-6-33	NCR	√
COAXIAL CABLE	TIMES	J400-2m-2NP / #2M	AUG. 2009 SRT	√
COAXIAL CABLE	TIMES	LMR600 / #1M	AUG. 2009 SRT	√
COAXIAL CABLE	TIMES	LMR-400 / #2M	AUG. 2009 SRT	√
POWER LINE CDN	FCC	FCC-801-M4-32A / 9808	NOV. 2008 ETC	
SIGNAL LINE CDN	FCC	FCC-801-T2 / 9830	JUN. 2009 ETC	
SIGNAL LINE CDN	FCC	FCC-801-T4 / 9831	APR. 2009 ETC	

9.2 TEST PROCEDURE

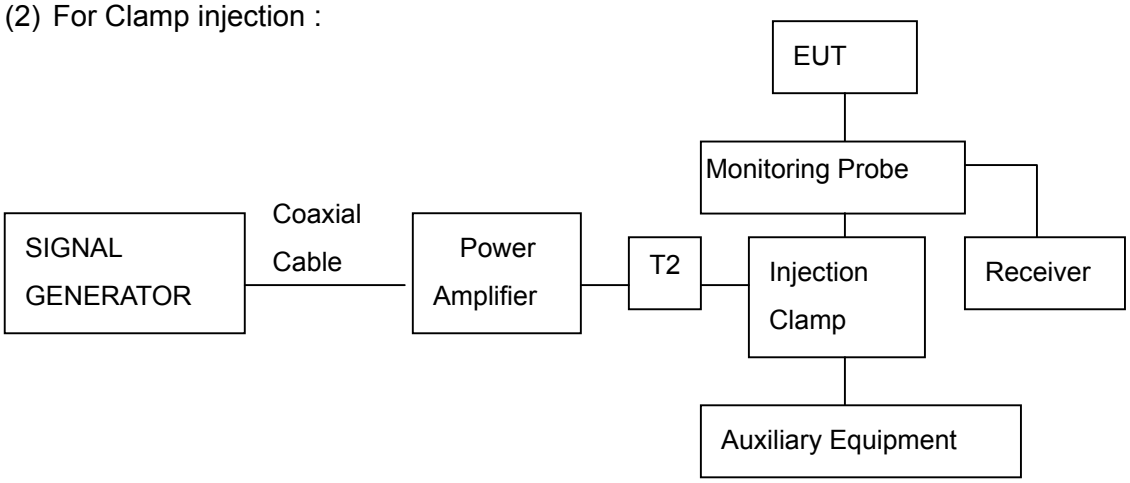
According to IEC/EN 61000-4-6:2006

9.3 TEST SET-UP

(1) For CDN injection :



(2) For Clamp injection :



NOTE :

1. The EUT system was put on a wooden table with 0.1m heights above ground.
2. For the actual test configuration, please refer to the photos of testing.
3. The distance between CDN(Clamp) and EUT was controlled between 0.1m and 0.3m.

9.4 DESCRIPTION OF SUPPORT UNIT

Same as section 4.1.5 of this report.

9.5 EUT OPERATING CONDITION

Same as section 4.1.6 of this report.

9.6 TEST CONDITION / PERFORMANCE CRITERIA

1. Test condition
   (1) Source voltage and frequency : 230 V/ 50 Hz, single phase
   (2) Sweeping frequency : 150 kHz – 80 MHz
   (3) Test level : 3 V, the frequency step is 1%
   (4) Modulation : AM 80%, 1 kHz
   (5) Dwell time for each frequency : 3 sec
   (6) Standard requirement : Criterion A

2. Performance criterion
   (1) Criterion A : Normal performance during test
   (2) Criterion B : Temporary degradation or loss of function or performance which is self-recoverable
   (3) Criterion C : Temporary degradation or loss of function or performance which requires operator intervention system reset

9.7 SUMMARY OF INDUCED RF FIELDS TEST RESULT

Temperature:	26 °C	Humidity:	55 % RH
Tested Mode:	All	Tested By:	Leo Jian
Atmospheric Air Pressure:	101.2 kPa	Tested Date:	Oct. 26, 2008

1) Power Line

Test Result : Criterion A pass

FREQUENCY	LEVEL	MODULATION	INJECTION METHOD	TEST RESULT (CRITERION)
150kHz - 80MHz	3V	80% AM, 1 kHz	M2	A

NOTE:

1. Measurement uncertainty is +/-2.7dB.
2. Description of test observation:
   A: There was no change compared with initial operation during the test.

10. POWER FREQUENCY MAGNETIC-FIELD TEST

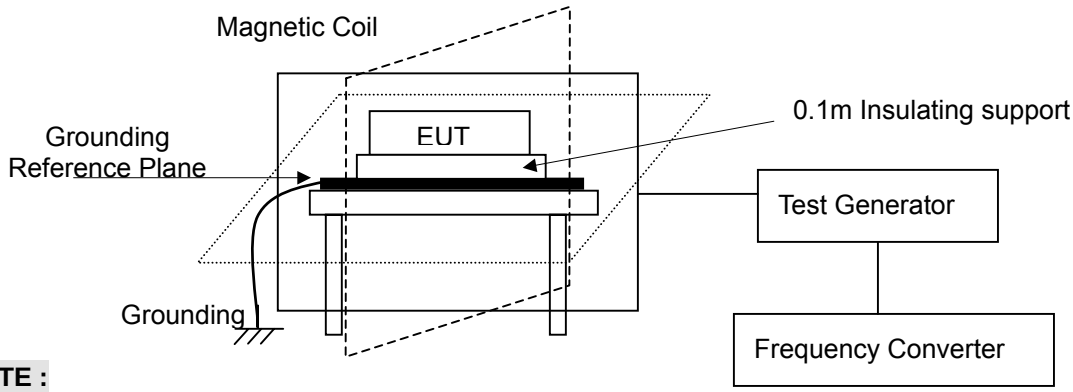
10.1 TEST EQUIPMENT

EQUIPMENT / FACILITIES	MANUFACTURER	MODEL # / SERIAL #	DUE DATE OF CAL. & CAL. CENTER
MAGNETIC FIELD TESTER	HAEFELY	MAG 100.1 / 080 015-04	DEC. 2008 SRT
MAGNETIC FIELD COIL	HAEFELY	MAG 100.1 / 080.015-04	DEC. 2008 SRT
MAGNETIC FIELD METER	F.W.BELL	4080 / 19990416	JUL. 2009 ITRI
AC POWER SOURCE	AFC	AFC-1kw / 850510	NCR

10.2 TEST PROCEDURE

According to IEC/EN 61000-4-8:2001

10.3 TEST SET-UP



NOTE :

1. The EUT system was put on a wooden table with a Ground reference plane above to grounding and insulating support 0.1m for tabletop EUT.
2. Insulating support 0.1m for floor-standing EUT above ground reference plane.
3. For the actual test configuration, please refer to the photos of testing.
4. The minimum distance between the EUT and all other conductive structure was more than 0.5m.
5. The minimum distance between the coupling plates of the coupling clamps (if used) and all over conductive structures, except the ground plane beneath the coupling clamp and beneath the EUT was more than 0.5m.
6. The power cable connecting EUT was controlled under 1m.
7. 1A/m = 12.56mG, 3A/m = 37.68mG, 10A/m = 125.6mG,

10.4 DESCRIPTION OF SUPPORT UNIT

Same as section 4.1.5 of this report.

10.5 EUT OPERATING CONDITION

Same as section 4.1.6 of this report.

10.6 TEST CONDITION / PERFORMANCE CRITERIA

1. Test condition
   (1) Test axis : X, Y and Z axes
   (2) Test time : 5 min / each axis
   (3) Field strength : 3 A/m
   (4) Standard requirement : Criterion A

2. Performance criterion
   (1) Criterion A : Normal performance during test
   (2) Criterion B : Temporary degradation or loss of function or performance which is self-recoverable
   (3) Criterion C : Temporary degradation or loss of function or performance which requires operator intervention system reset

10.7 SUMMARY OF POWER FREQUENCY MAGNETIC-FIELD TEST RESULT

Temperature:	21°C	Humidity:	59% RH
Tested Mode:	All	Tested By:	Leo Jian
Frequency of Magnetic Field:	■50Hz, □60Hz	Tested Date:	Oct. 24, 2008

Test Result : Criterion A pass

ORIENTATION	FIELD STRENGTH	TEST RESULT (CRITERION)
X	3 A/m	A
Y	3 A/m	A
Z	3 A/m	A

NOTE:

1. Measurement uncertainty is +/-0.09mG
2. Description of test observation:
   A: There was no change compared with initial operation during the test.

11. VOLTAGE DIPS, INTERRUPTS, VARIATIONS TEST

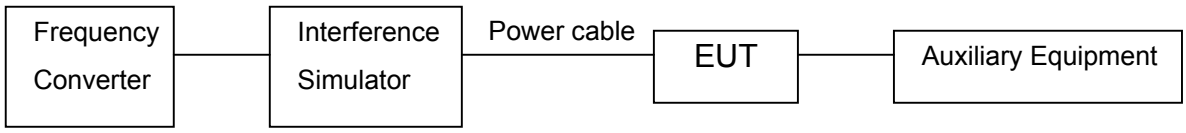
11.1 TEST EQUIPMENT

EQUIPMENT / FACILITIES	MANUFACTURER	MODEL # / SERIAL #	DUE DATE OF CAL. & CAL. CENTER
INTERFERENCE SIMULATOR	HAEFELY	PLINE 1610 / 083-732-05	JAN. 2009 ETC

11.2 TEST PROCEDURE

According to IEC/EN 61000-4-11:2004

11.3 TEST SET-UP



NOTE :

1. The EUT system was put on a wooden table with 0.8m heights above ground.
2. For the actual test configuration, please refer to the photos of testing.

11.4 DESCRIPTION OF SUPPORT UNIT

Same as section 4.1.5 of this report.

11.5 EUT OPERATING CONDITION

Same as section 4.1.6 of this report.

11.6 TEST CONDITION / PERFORMANCE CRITERIA

1. Test condition

(1) Source voltage and frequency	: 100V/50Hz, 240V/50Hz, single phase
(2) Test level	: Dip depth 95%, 0.5 period 30%, 25 period Interrupt 95%, 250 period
(3) Phase	: 0°, 180°
(4) Test duration	: 2min each phase
(5) Time between test	: 10 sec
(6) Standard requirement	: Dip 95% : Criterion B; Dip 30% : Criterion C; Interrupt > 95%: Criterion C

2. Performance criterion

(1) Criterion A	: Normal performance during test
(2) Criterion B	: Temporary degradation or loss of function or performance which is self-recoverable.
(3) Criterion C	: Temporary degradation or loss of function or performance which requires operator intervention system reset.

11.7 SUMMARY OF VOLTAGE DIPS, INTERRUPTS, VARIATIONS TEST RESULT

Temperature:	24°C	Humidity:	55% RH
Test Mode:	All	Tested By:	Leo Jian
		Tested Date:	Oct. 27, 2008

AC POWER	DIP DEPTH	INTERVAL	DIP TIME	TEST TIME	PHASE	TEST RESULT (Criterion)
100V/50Hz	> 95%	10 sec	0.5 period	2 min	0°	A
					180°	A
	30%	10 sec	25 period	2 min	0°	A
					180°	A
	> 95% (interrupt)	10 sec	250 period	2 min	0°	B
					180°	B

NOTE:
1. The power voltage range: 100V to 240V the range 140V is 140% of the lowest voltage.
2. Description of test observation:
   A: There was no change compared with initial operation during the test.
   B: The EUT reset automatically.
3. Measurement uncertainty is +/-0.12%

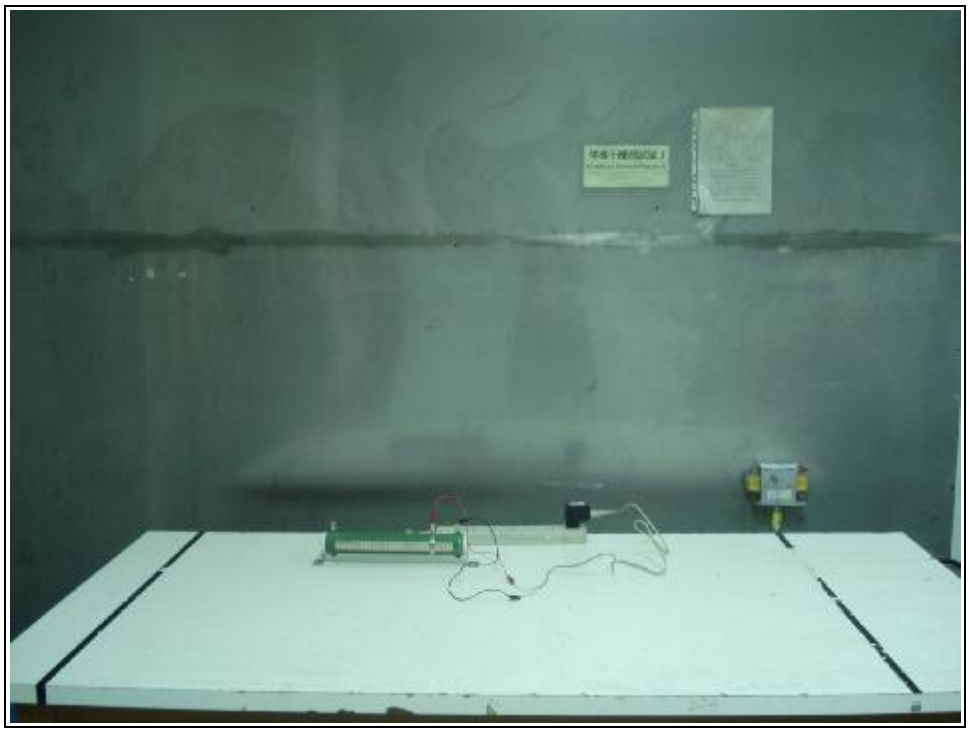
Temperature:	24°C	Humidity:	55% RH
Test Mode:	All	Tested By:	Leo Jian
		Tested Date:	Oct. 27, 2008

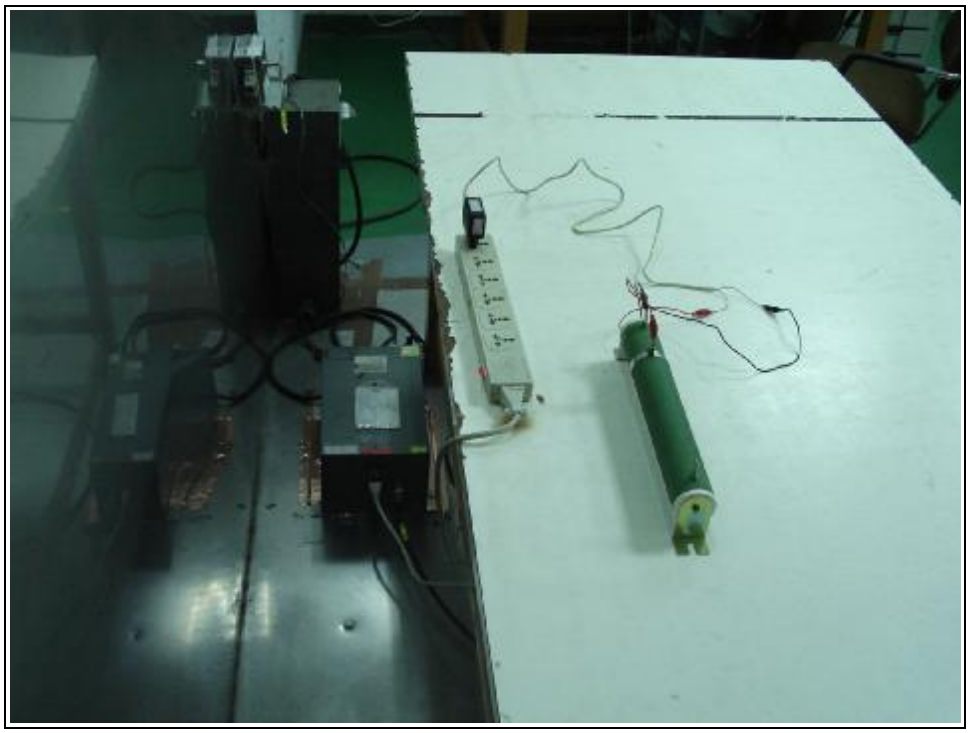
AC POWER	DIP DEPTH	INTERVAL	DIP TIME	TEST TIME	PHASE	TEST RESULT (Criterion)
240V/50Hz	> 95%	10 sec	0.5 period	2 min	0°	A
					180°	A
	30%	10 sec	25 period	2 min	0°	A
					180°	A
	> 95% (interrupt)	10 sec	250 period	2 min	0°	B
					180°	B

NOTE:
1. The power voltage range: 100V to 240V the range 140V is 140% of the lowest voltage.
2. Description of test observation:
   A: There was no change compared with initial operation during the test.
   B: The EUT reset automatically.
3. Measurement uncertainty is +/-0.12%

12. PHOTOS OF TESTING

- Conducted emission test

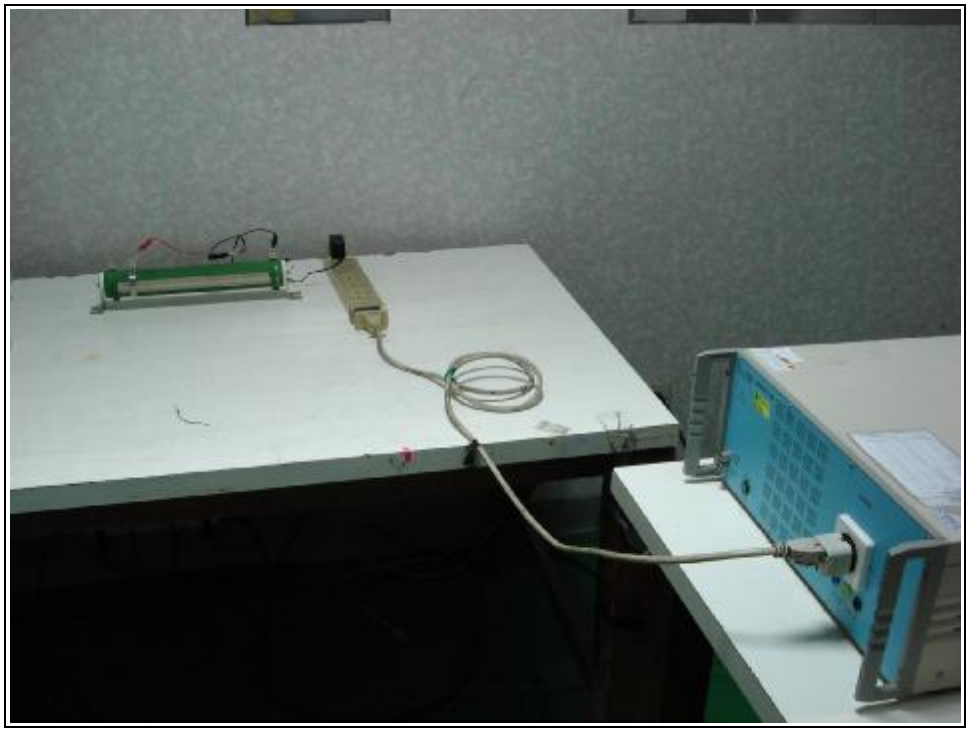




- Radiated emission test

- Harmonics test

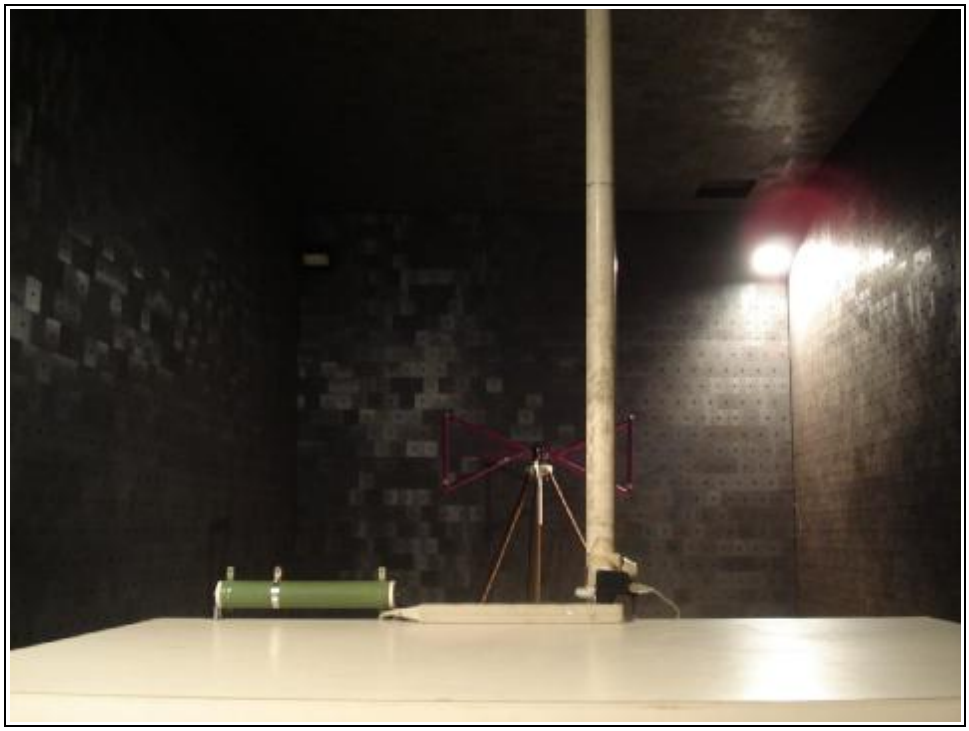
- Voltage fluctuations Flicker test



- Electrostatic discharge immunity test

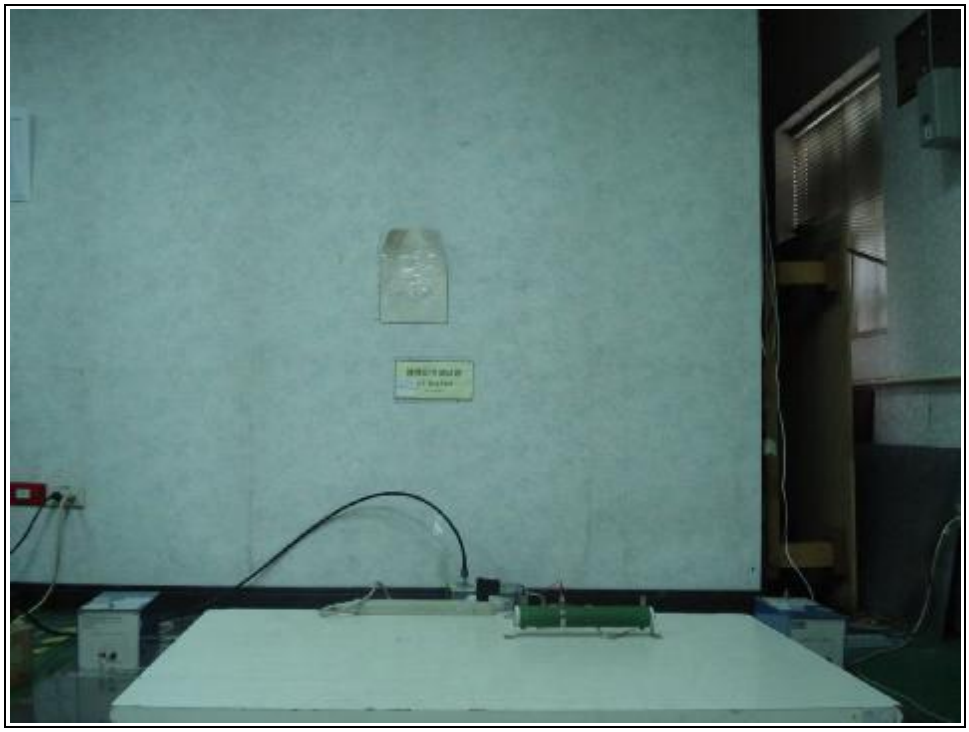
- Electrical fast transient / burst immunity test

- Radiated immunity test

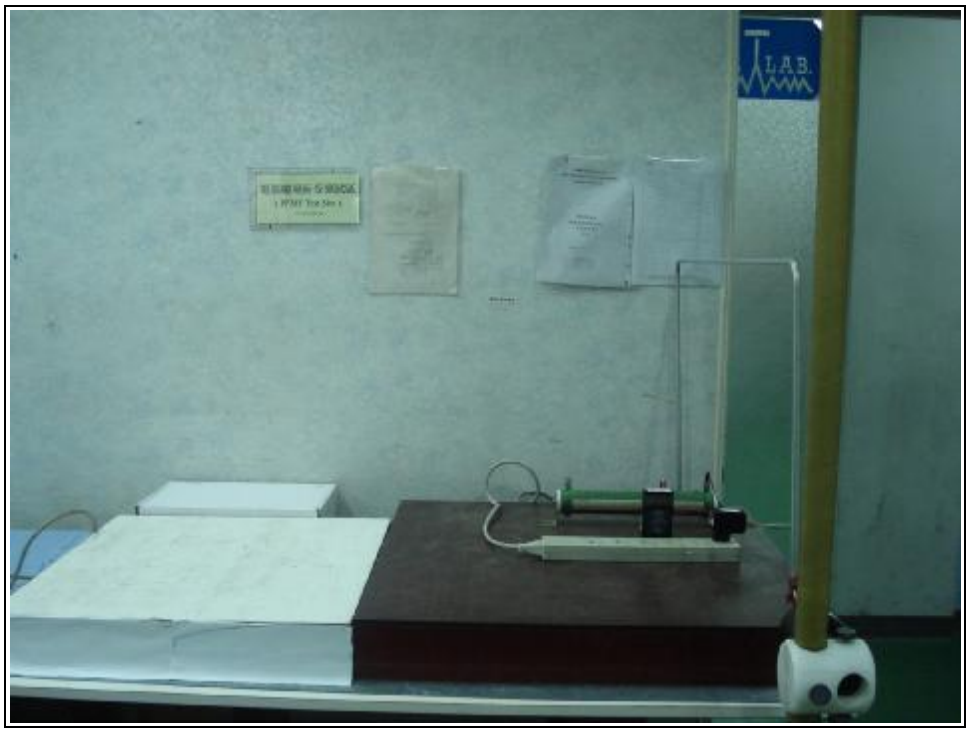


-Surge test (Power Line)

- Inducted RF fields (conducted susceptibility) test



- Power frequency magnetic-field test

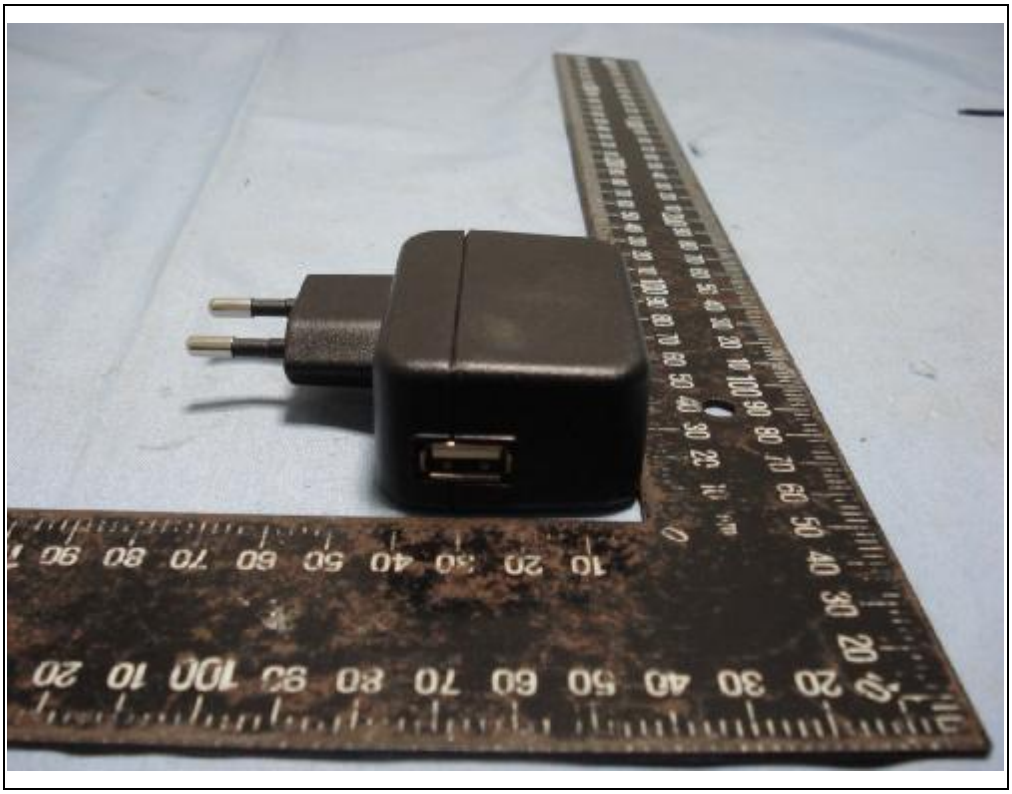


- Voltage dips, interrupts, variations test

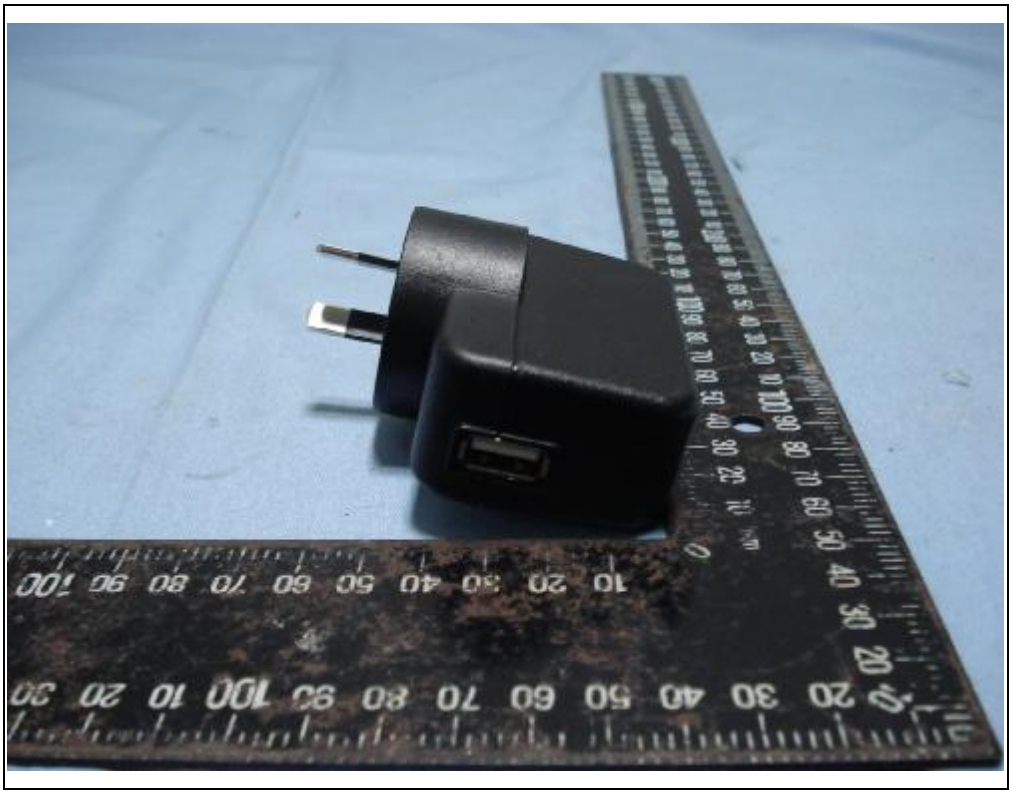
13. TERMS OF ABBREVIATION

AV.	Average detection
AZ(°)	Turn table azimuth
Correct.	Correction
EL(m)	Antenna height (meter)
EUT	Equipment Under Test
Horiz.	Horizontal direction
LISN	Line Impedance Stabilization Network
NSA	Normalized Site Attenuation
Q.P.	Quasi-peak detection
SRT Lab	Spectrum Research & Testing Laboratory, Inc.
Vert.	Vertical direction
ISN	Impedance Stabilization Network
LCL	Longitudunal Conversion Loss

PHOTOS OF EUT



PHOTOS OF EUT



PHOTOS OF EUT