



SPORTON LAB.

Certificate No: **AI8N2608**

CERTIFICATE

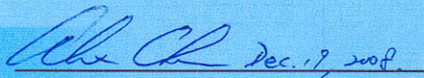


● **EQUIPMENT : Power Supply**
MODEL NO. : PW408X-XXX
APPLICANT : SMART CABLING & TRANSMISSION CORP.
10F, No. 493, Chung-Cheng Rd., Hsin Tien City,
Taipei 231 Taiwan R.O.C.



I HEREBY CERTIFY THAT:

THE MEASUREMENTS SHOWN IN THIS TEST REPORT WERE MADE IN ACCORDANCE WITH THE PROCEDURES GIVEN IN **AS/NZS CISPR 22**.
THE EQUIPMENT WAS PASSED THE TEST PERFORMED ACCORDING TO **AS/NZS CISPR 22:2006 Class B**.
THE TESTING WAS COMPLETED ON **Dec. 17, 2008** AT SPORTON INTERNATIONAL INC. LAB.


Alex Chen Dec. 17, 2008

Alex Chen
Manager



C-tick EMI TEST REPORT

According to

AS/NZS CISPR 22:2006 Class B

Equipment : Power Supply

Model No. : PW408X-XXX

Applicant : **SMART CABLING & TRANSMISSION CORP.**
10F, No. 493, Chung-Cheng Rd., Hsin Tien City,
Taipei 231 Taiwan R.O.C.

- The test result refers exclusively to the test presented test model / sample.
- Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.
- **Certificate or Test Report must not be used by the applicant to claim the product in this test report endorsement by TAF.**

SPORTON International Inc.

6F, No. 106, Sec. 1, Hsin Tai Wu Rd., Hsi Chih, Taipei Hsien, Taiwan, R.O.C.



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CERTIFICATE OF COMPLIANCE

According to

AS/NZS CISPR 22:2006 Class B

Equipment : Power Supply

Model No. : PW408X-XXX

Applicant : **SMART CABLING & TRANSMISSION CORP.**
10F, No. 493, Chung-Cheng Rd., Hsin Tien City,
Taipei 231 Taiwan R.O.C.

I **HEREBY** CERTIFY THAT:

The measurements shown in this test report were made in accordance with the procedures given in **AS/NZS CISPR 22:2006 Class B**. The energy emitted by this equipment was **passed** both Radiated and Conducted Emissions **Class B** limits.

The test was carried out on Dec. 17, 2008 at **SPORTON International Inc.** LAB.


Dec. 18, 2008

Alex Chen
Manager

SPORTON International Inc.

6F, No. 106, Sec. 1, Hsin Tai Wu Rd., Hsi Chih, Taipei Hsien, Taiwan, R.O.C.



1. General Description of Equipment under Test

1.1. Applicant

SMART CABLING & TRANSMISSION CORP.
10F, No. 493, Chung-Cheng Rd., Hsin Tien City,
Taipei 231 Taiwan R.O.C.

1.2. Manufacturer

Same as 1.1

1.3. Basic Description of Equipment under Test

Equipment : Power Supply
Model No. : PW408X-XXX
Trade Name : SMART CABLING & TRANSMISSION CORP.
Power Cablex4 : Non-Shielded, 1.0 m
Power Supply Type : Switching
AC Power Cord : Non-Shielded, 1.8 m, 2 pin

1.4. Feature of Equipment under Test

Please refer to user manual.



2. Test Configuration of Equipment under Test

2.1. Test Manner

a. During testing, the interface cables and equipment positions were varied according to AS/NZS CISPR 22.

b. The complete test system included SPORTON Load and EUT for EMI test.

c. The following modes were performed for EMI test:

Mode 1. DC 12V

Mode 2. DC 24V

For conduction test, cause "mode 1" generated the worst test result, it was reported as final data.

For radiation test, cause "mode 2" generated the worst test result, it was reported as final data.

d. Frequency range investigated: Conduction 150 KHz to 30 MHz, Radiation 30 MHz to 1,000MHz.

2.2. Description of Test System

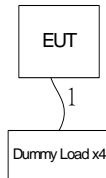
Support Unit 1. -- Load (SPORTON)

Spec. : FULL LOAD

Serial No. : SP1063



2.3. Connection Diagram of Test System



1. These power cables are connected from EUT to the support unit 1.



3. Test Software

No test software was used during testing.



4. General Information of Test

4.1. Test Facility

Test Site Location : No. 3, Lane 238, Kang Lo Street, Nei Hwu District,
Taipei 11424, Taiwan, R.O.C.
TEL : 886-2-2631-4739
FAX : 886-2-2631-9740
Test Site No : CO01-NH, OS02-NH

4.2. Test Voltage

AC 230V / 50Hz

4.3. Measurement Procedure

EMI Test (conduction and radiation) : AS/NZS CISPR 22 Class B.

4.4. Test in Compliance with

EMI Test (conduction and radiation) : AS/NZS CISPR 22 Class B.

4.5. Frequency Range Investigated

- a. Conducted emission test: from 150 kHz to 30 MHz
- b. Radiated emission test: from 30 MHz to 1,000 MHz

4.6. Test Distance

The test distance of radiated emission test from antenna to EUT is 10 M.



5. Test of Conducted Powerline

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 kHz and return leads of the EUT according to the methods defined in AS/NZS CISPR 22. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown in section 5.3. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position producing maximum conducted emissions.

5.1. Description of Major Test Instruments

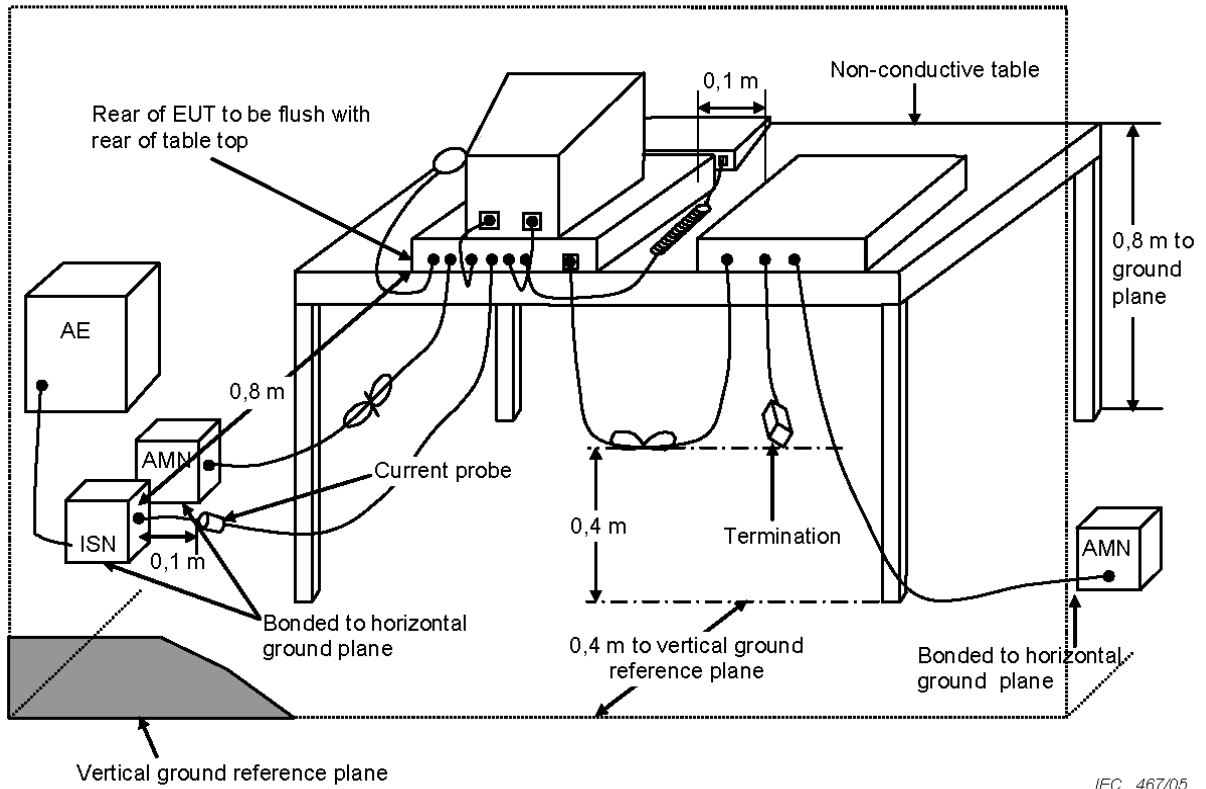
● Test Receiver	(R&S ESCS 30)
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

5.2. Test Procedures

- a. The EUT was placed on a desk 0.8 meters height from the metal ground plane and 0.4 meter from the conducting wall of the shielding room and it was kept at least 0.8 meters from any other grounded conducting surface.
- b. Connect EUT to the power mains through a line impedance stabilization network (LISN).
- c. Connect Telecommunication port to ISN (Impedance Stabilization Network).
- d. All the support units are connect to the other LISN.
- e. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- f. The CISPR states that a 50 ohm , 50 microhenry LISN should be used.
- g. Both sides of AC line were checked for maximum conducted interference.
- h. The frequency range from 150 kHz to 30 MHz was searched.
- i. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.



5.3. Typical Test Setup Layout of Conducted Powerline



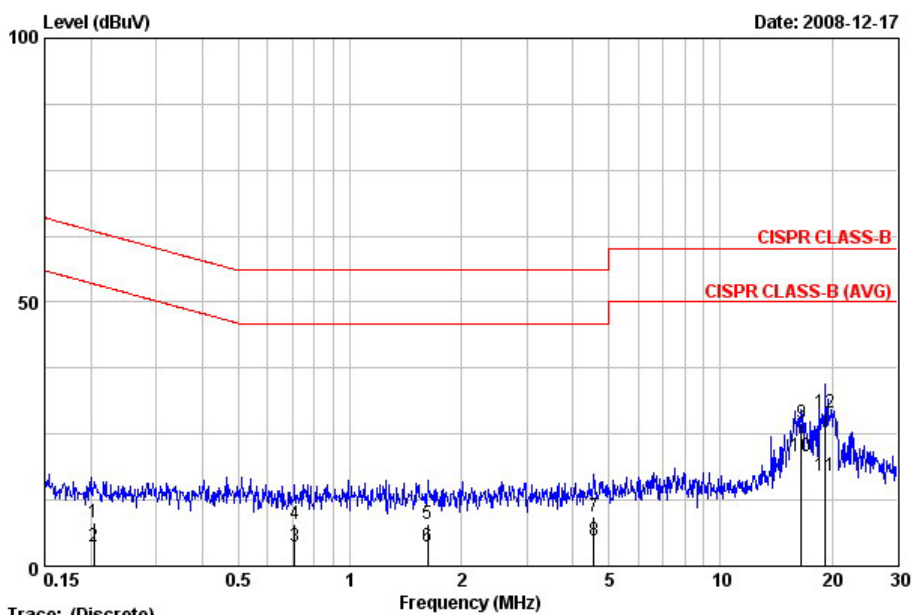


5.4. Test Result of AC Powerline Conducted Emission

5.4.1 Test Mode: Mode 1

- Frequency Range of Test: from 0.15 MHz to 30 MHz
- Temperature: 20 °C
- Relative Humidity: 51 %
- Corrected Reading (dBuV) = LISN Factor + Cable Loss + Read Level = Level
- All emissions not reported here are more than 10 dB below the prescribed limit.

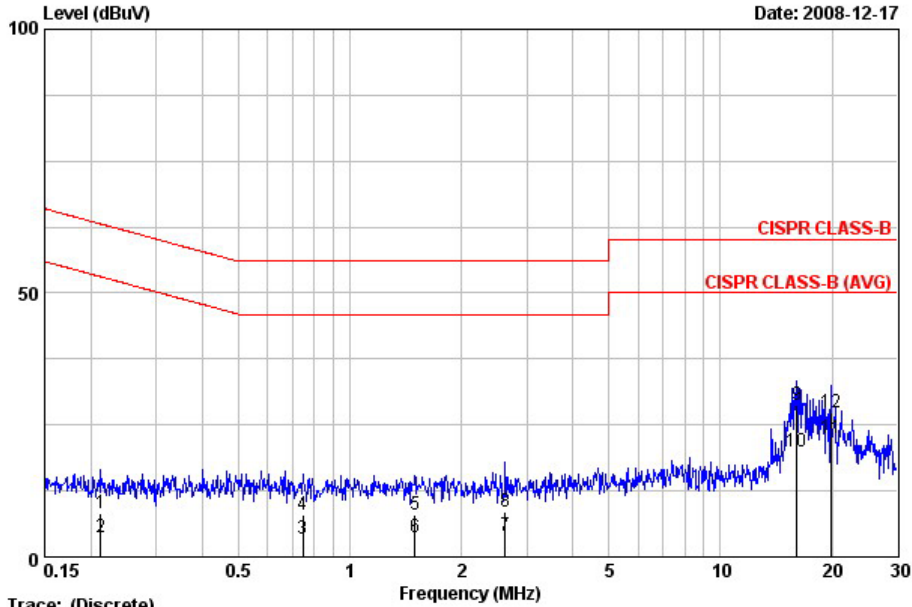
■ The test was passed at the minimum margin that marked by the frame in the following table.



Trace: (Discrete)

Site : C001-NH
 Condition : CISPR CLASS-B LISN-NSLK8127-971126 LINE
 Input : Power Supply
 Power : AC 230V
 memo : 12V DC
 memo :
 memo :
 memo :

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.204	8.16	-55.29	63.45	8.12	0.04	0.00	QP
2	0.204	3.65	-49.80	53.45	3.61	0.04	0.00	AVERAGE
3	0.708	3.64	-42.36	46.00	3.53	0.05	0.06	AVERAGE
4	0.708	8.09	-47.91	56.00	7.98	0.05	0.06	QP
5	1.619	8.02	-47.98	56.00	7.86	0.06	0.10	QP
6	1.619	3.65	-42.35	46.00	3.49	0.06	0.10	AVERAGE
7	4.549	9.40	-46.60	56.00	9.17	0.12	0.11	QP
8	4.549	4.70	-41.30	46.00	4.47	0.12	0.11	AVERAGE
9	16.573	27.02	-32.98	60.00	26.44	0.38	0.20	QP
10	16.573	20.76	-29.24	50.00	20.18	0.38	0.20	AVERAGE
11	19.224	17.15	-32.85	50.00	16.52	0.43	0.20	AVERAGE
12	19.224	29.13	-30.87	60.00	28.50	0.43	0.20	QP



Trace: (Discrete)
 Site : CO01-NH
 Condition : CISPR CLASS-B LISN-NSLK8127-971126 NEUTRAL
 eut : Power Supply
 power : AC 230V
 memo : 12V DC
 memo :
 memo :
 memo :

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.213	8.30	-54.80	63.10	8.27	0.03	0.00	QP
2	0.213	3.81	-49.29	53.10	3.78	0.03	0.00	AVERAGE
3	0.747	3.54	-42.46	46.00	3.43	0.04	0.07	AVERAGE
4	0.747	7.96	-48.04	56.00	7.85	0.04	0.07	QP
5	1.495	8.00	-48.00	56.00	7.85	0.05	0.10	QP
6	1.495	3.67	-42.33	46.00	3.52	0.05	0.10	AVERAGE
7	2.622	4.07	-41.93	46.00	3.90	0.07	0.10	AVERAGE
8	2.622	8.52	-47.48	56.00	8.35	0.07	0.10	QP
9	16.055	28.74	-31.26	60.00	28.28	0.26	0.20	QP
10	16.055	19.90	-30.10	50.00	19.44	0.26	0.20	AVERAGE
11	19.845	22.60	-27.40	50.00	22.10	0.30	0.20	AVERAGE
12	19.845	27.26	-32.74	60.00	26.76	0.30	0.20	QP

Test Engineer : Eddie
 Eddie Lee



5.5. Photographs of Conducted Powerline Test Configuration

- The photographs show the configuration that generates the maximum emission.

FRONT VIEW



REAR VIEW





6. Test of Radiated Emission

Radiated emissions from 30 MHz to 1000 MHz were measured with a bandwidth of 120 kHz according to the methods defines in AS/NZS CISPR 22. The EUT was placed on a nonmetallic stand, 0.8 meter above the ground plane, as shown in section 6.3. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions.

6.1. Major Measuring Instruments

- Amplifier (HP 8447D)
 - RF Gain 25 dB
 - Signal Input 0.1 MHz - 1.3 GHz

- Test Receiver (R&S ESCI)
 - Resolution Bandwidth 120 kHz
 - Frequency Band 9 kHz - 3 GHz
 - Quasi-Peak Detector ON for Quasi-Peak Mode
OFF for Peak Mode

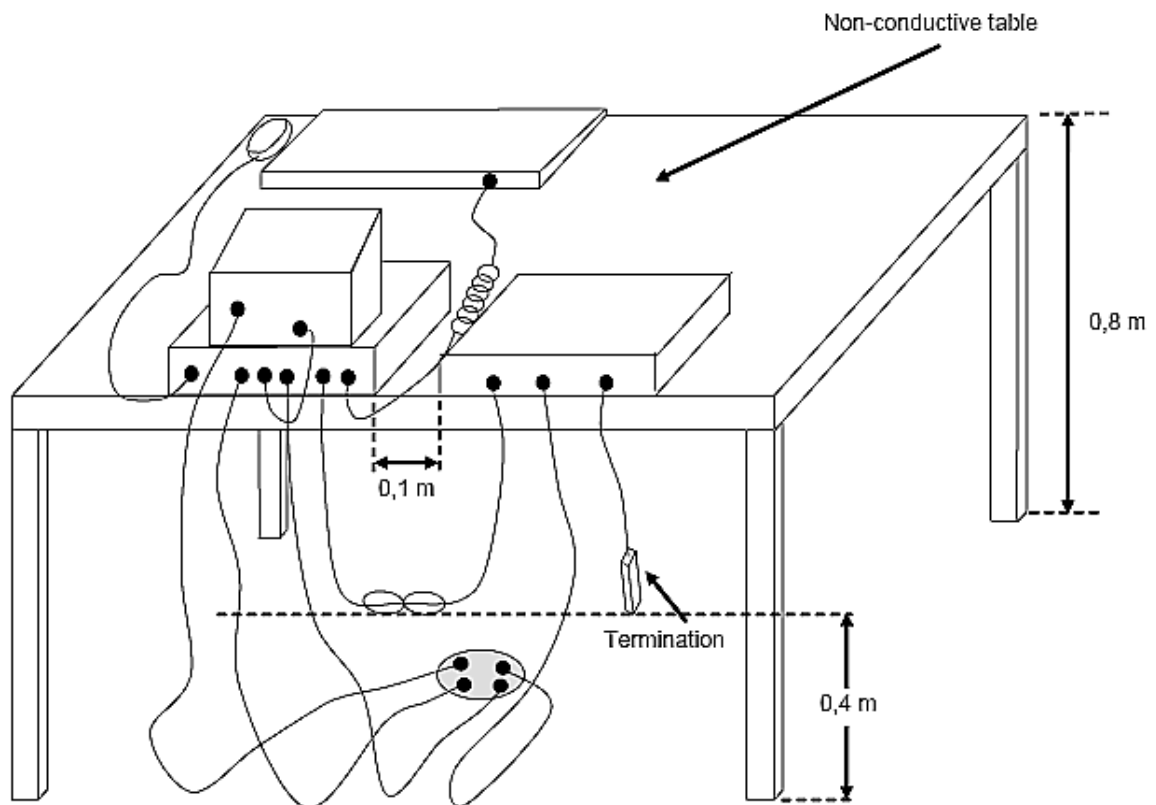


6.2. Test Procedures

- a. The EUT was placed on a rotatable table top 0.8 meter above ground.
- b. The EUT was set 10 meters from the interference-receiving antenna which was mounted on the top of a variable height antenna tower.
- c. The table was rotated 360 degrees to determine the position of the highest radiation.
- d. The antenna is a half wave dipole and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
- e. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
- f. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.



6.3. Typical Test Setup Layout of Radiated Emission



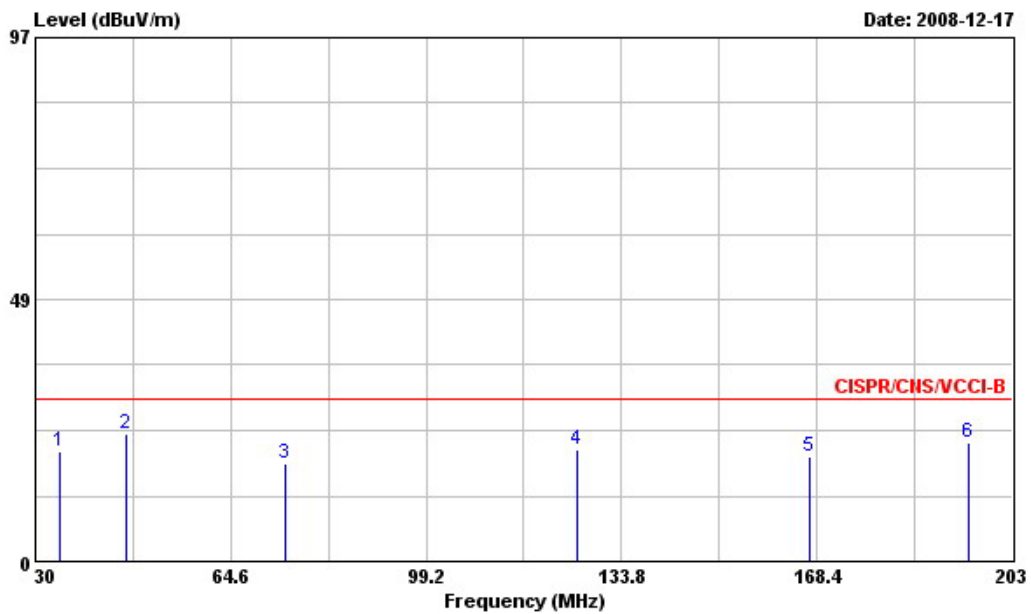


6.4. Test Result of Radiated Emission

6.4.1 Test Mode: Mode 2

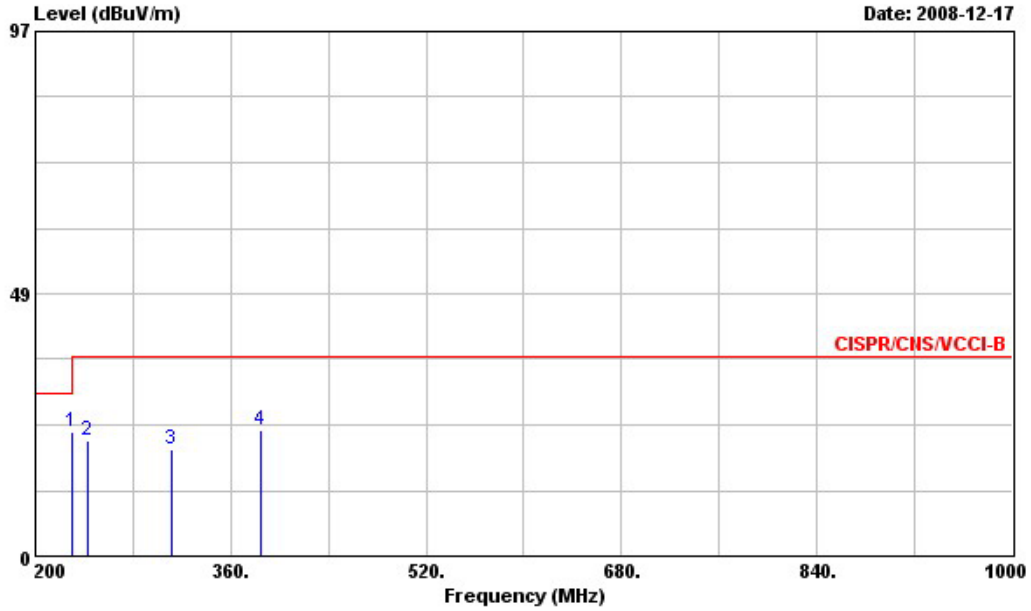
- Frequency Range of Test: from 30 MHz to 1,000 MHz
- Temperature: 20 °C
- Relative Humidity: 50 %
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

The test was passed at the minimum margin that marked by the frame in the following test record



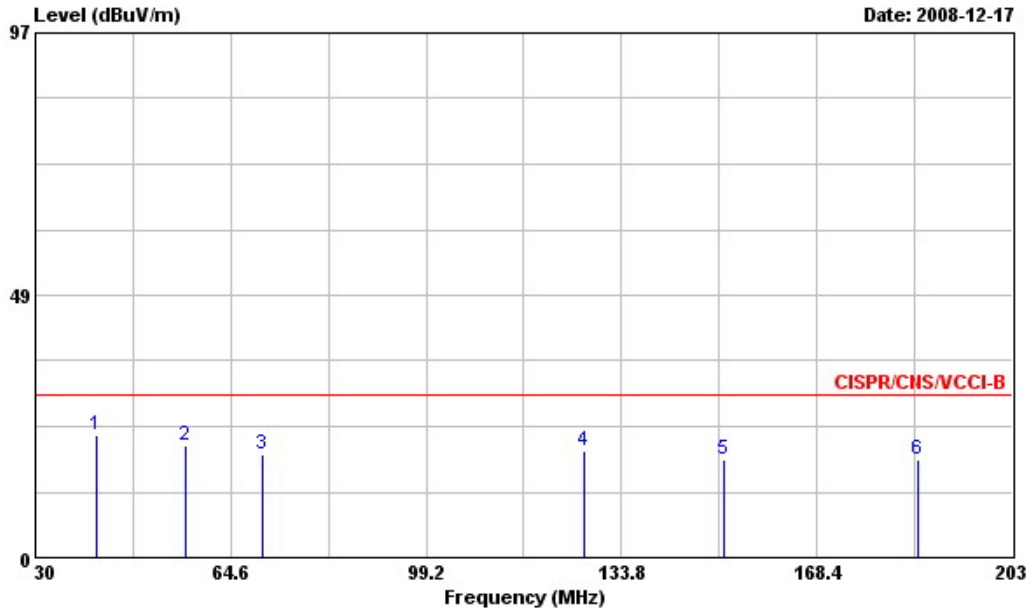
Site : OS02-NH
 Condition : CISPR/CNS/VCCI-B 10m OS02-ANT-12-20-2007 VERTICAL
 EUT : POWER SUPPLY
 POWER : 230VAC
 MEMO : 24VDC

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Remark	Ant	Table
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor		Pos	Pos
			dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	34.330	20.49	-9.51	30.00	35.06	15.97	0.86	31.40	Peak	---	---
2	46.090	23.69	-6.31	30.00	43.61	10.49	0.99	31.40	Peak	100	360
3	74.290	18.00	-12.00	30.00	41.43	6.63	1.24	31.30	Peak	---	---
4	126.020	20.85	-9.15	30.00	38.57	11.81	1.57	31.10	Peak	---	---
5	167.020	19.35	-10.65	30.00	38.87	9.59	1.83	30.94	Peak	---	---
6	195.220	21.84	-8.16	30.00	41.53	9.17	1.96	30.82	Peak	---	---



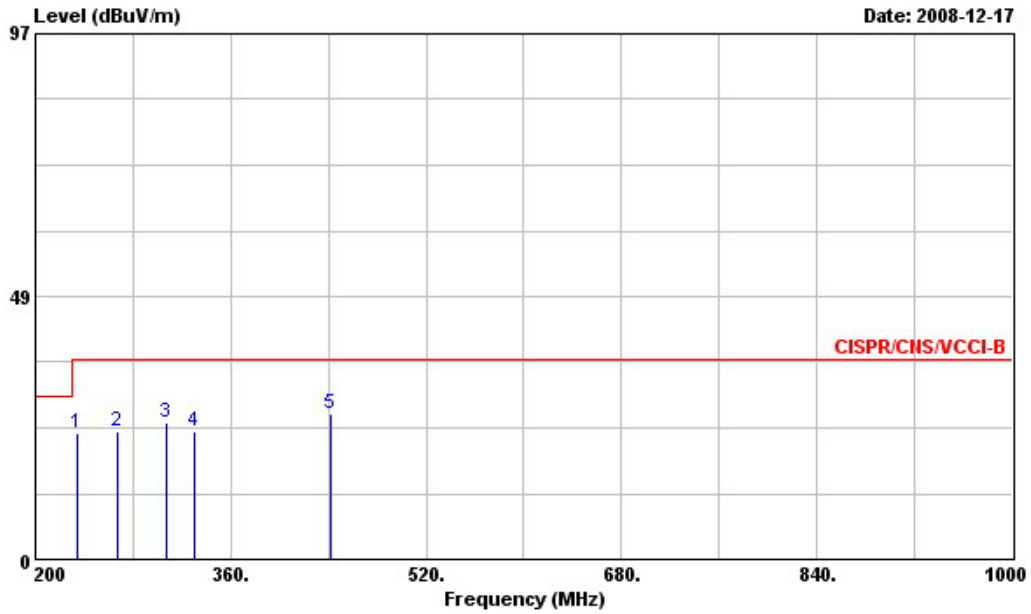
Site : OS02-NH
 Condition : CISPR/CNS/VCCI-B 10m OS02-ANT-12-20-2007 VERTICAL
 EUT : POWER SUPPLY
 POWER : 230VAC
 MEMO : 24VDC

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	230.400	23.03	-13.97	37.00	40.56	11.06	2.15	30.74	Peak	---	---
2	243.200	21.42	-15.58	37.00	38.11	11.81	2.21	30.71	Peak	---	---
3	312.000	19.58	-17.42	37.00	34.10	13.58	2.57	30.67	Peak	---	---
4	384.000	23.44	-13.56	37.00	36.54	15.13	2.87	31.10	Peak	---	---



Site : OS02-NH
 Condition : CISPR/CNS/VCCI-B 10m OS02-ANT-12-20-2007 HORIZONTAL
 EUT : POWER SUPPLY
 POWER : 230VAC
 MEMO : 24VDC

Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	40.900	22.59	-7.41	30.00	39.35	13.70	0.94	31.40 Peak	---	---
2	56.640	20.84	-9.16	30.00	44.00	7.13	1.08	31.37 Peak	---	---
3	70.310	18.97	-11.03	30.00	42.68	6.40	1.21	31.32 Peak	---	---
4	127.230	19.72	-10.28	30.00	37.46	11.77	1.58	31.09 Peak	---	---
5	151.970	18.03	-11.97	30.00	37.16	10.12	1.74	30.99 Peak	---	---
6	186.220	18.11	-11.89	30.00	37.94	9.12	1.91	30.86 Peak	---	---



Site : OS02-NH
 Condition : CISPR/CNS/VCCI-B 10m OS02-ANT-12-20-2007 HORIZONTAL
 EUT : POWER SUPPLY
 POWER : 230VAC
 MEMO : 24VDC

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	234.400	23.13	-13.87	37.00	40.40	11.29	2.17	30.73	Peak	---	---
2	267.200	23.66	-13.34	37.00	39.39	12.60	2.34	30.67	Peak	---	---
3	307.200	25.09	-11.91	37.00	39.70	13.48	2.55	30.64	Peak	---	---
4	330.400	23.71	-13.29	37.00	37.85	13.98	2.66	30.78	Peak	---	---
5	442.400	26.83	-10.17	37.00	38.70	16.34	3.11	31.32	Peak	---	---

Test Engineer: Chas
 Chas Yeh



6.5. Photographs of Radiated Emission Test Configuration

- The photographs show the configuration that generates the maximum emission.

FRONT VIEW



REAR VIEW





7. List of Measuring Equipment Used

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Receiver	R&S	ESCS 30	100357	9 kHz - 2.75 GHz	Nov. 13, 2008	Conduction (CO01-NH)
LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	8127-477	9kHz – 30MHz	Nov. 26, 2008	Conduction (CO01-NH)
LISN	KYORITSU	KNW-407	8-1010-15	9kHz – 30MHz	Dec.20, 2007	Conduction (CO01-NH)
Power Filter	CORCOM	MR12030	N/A	30A*2	N/A	Conduction (CO01-NH)
RF Cable-CON	Suhner Switzerland	RG223/U	CB004	9kHz – 30MHz	Dec. 15, 2008	Conduction (CO01-NH)
Open Area Test Site	SPORTON	OATS-10	OS02-NH	30 MHz - 1 GHz 10m, 3m	Jan. 05, 2008	Radiation (OS02-NH)
Amplifier	HP	8447D	2944A07523	0.1 MHz - 1.3 GHz	Apr. 17, 2008	Radiation (OS02-NH)
Receiver	R&S	ESCI	100497	9 kHz – 3 GHz	Jan. 09, 2008	Radiation (OS02-NH)
Bilog Antenna	CHASE	CBL6122B	2884	30 MHz - 2 GHz	Dec. 20, 2007	Radiation (OS02-NH)
Turn Table	EMCO	2080	9508-1805	0 - 360 degree	N/A	Radiation (OS02-NH)
Antenna Mast	ETS	2075-2	2385	1 m - 4 m	N/A	Radiation (OS02-NH)
RF Cable-R10m	MIYAZAKI	5DFB	CB002	30 MHz - 1 GHz	Sep. 18, 2008	Radiation (OS02-NH)

※ Calibration Interval of instruments listed above is one year.



8. Uncertainty of Test Site

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Contribution	Uncertainty of x_i		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.20	Normal(k=2)	0.10
Cable loss	0.19	Normal(k=2)	0.10
AMN insertion loss	2.50	Rectangular	0.63
Receiver Spec	1.50	Rectangular	0.43
Site imperfection	1.75	Rectangular	1.01
Mismatch	+0.44/-0.46	U-shape	0.32
combined standard uncertainty Uc(y)	1.31		
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	2.62		

Uncertainty of Radiated Emission Measurement (30MHz ~ 1000MHz)

Contribution	Uncertainty of x_i		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.27	Normal(k=2)	0.14
Antenna factor calibration	0.92	Normal(k=2)	0.46
Cable loss calibration	0.16	Normal(k=2)	0.08
Pre Amplifier Gain calibration	0.17	Normal(k=2)	0.09
RCV/SPA specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site imperfection	1.99	Rectangular	1.15
Mismatch	+0.50/-0.54	U-shaped	0.37
combined standard uncertainty Uc(y)	1.52		
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	3.04		



APPENDIX A. Photographs of EUT

