

FCC TEST REPORT

Authorized under **D**eclaration of **C**onformity

according to

47 CFR, Part 2, Part 15 and CISPR PUB. 22

Equipment : Wireless Print Server

Model No. : TEW-P1U1P

Filing Type : Declaration of Conformity

Applicant : **TRENDware International Inc**
3135 Kashiwa St., Torrance, CA90505 U.S.A.

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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

Authorized under **D**eclaration of **C**onformity

according to

47 CFR, Part 2, Part 15 and CISPR PUB. 22

Equipment : Wireless Print Server

Model No. : TEW-P1U1P

Applicant : **TRENDware International Inc**
3135 Kashiwa St., Torrance, CA90505 U.S.A.

I **HEREBY** CERTIFY THAT:

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.4 - 1992** and the energy emitted by this equipment was **passed CISPR PUB. 22 and FCC Part 15** in both radiated and conducted emission class B limits. Testing was carried out on Mar. 31, 2003 at **SPORTON International Inc. LAB.**

 Alex Chen July 30, 2003

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

TRENDware International Inc
3135 Kashiwa St., Torrance, CA90505 U.S.A.

1.2 Manufacturer

Same as 1.1

1.3 Basic Description of Equipment under Test

Equipment : Wireless Print Server
Model No. : TEW-P1U1P
Trade Name : TRENDware
TP Cable : Non-Shielded, 1m
USB Cable : Shielded, 1.8m
Printer Cable : Shielded, 1m
Power Supply Type : Linear
AC Power Input : Wall-Mount, 2pin
DC Power Cable : Non-Shielded, 1.8m

1.4 Feature of Equipment under Test

1. CPU	RDC R1610C-100MHz
2. CODE SIZE	512 Kbytes, AM29LV400-BT-70
3. SDRAM	512 K bytes, IS42S16100-7T
4. PHY	Davicom DM9161
5. USB	UHC124
6. LAN Port	One RJ45 STP Port
7. Printer Port	One parallel port
8. USB Port	One USB ports
9. Power Adapter	12V 800mA (Merry King / MW48-1200800)
10. LEDs	Indicate LAN link with active – Green LED Indicate WLAN link with active – Yellow LED Indicate system status – Green LED Indicate system error – Red LED
11. ICE Support	Can Connect to JTAG interface for S/W Development
13. PCB Spec.	114.5mm x 80.6mm, one side design, 4 layer.
14. PCMCIA module	Prism3.0
15. GAL	ATF-16V8C-7 for decoded address.
16. CPLD	ALTERA EPM3032A for Printer controller

2. Test Configuration of Equipment under Test

2.1 Test Manner

- a. The EUT has been associated with Personal Computer and peripherals pursuant to ANSI C63.4-1992 and configuration operated in a manner which tended to maximize its emission characteristics in a typical application.
- b. The complete test system included remote TOSHIBA Notebook, COMPAQ PC, SYNCO Monitor, Genuine PS/2 Keyboard, LOGITECH PS/2 Mouse, HP Printer, ACEEX Modem, EPSON Printer and EUT for EMI test.
- c. The following test mode was performed:
Mode 1: LAN: 100Mbps
Mode 2: LAN: 10Mbps
- d. Frequency range investigated: conduction 150 KHz to 30 MHz, radiation 30 MHz to 1000MHz.

2.2 Description of Test System

Support Unit 1. –Personal Computer (COMPAQ)-for local workstation

FCC ID	: N/A
Model No.	: Evo D380mx
Power Supply Type	: Switching
Power Cord	: Non-Shielded
Serial No.	: SP0036
Remark	: This support device was tested to comply with FCC standards and authorized under a declaration of conformity.

Support Unit 2. -- Monitor (SYNCO) -for local workstation

FCC ID	: N/A
Model No.	: GM-768
Power Supply Type	: Switching
Power Cord	: Non-Shielded
Serial No.	: SP0051
Data Cable	: Shielded, 1.5m
Remark	: This support device was tested to comply with FCC standards and authorized under a declaration of conformity.

Support Unit 3. – PS/2 Keyboard (Genuine) -for local workstation

FCC ID : N/A
Model No. : K288
Serial No. : SP0054
Data Cable : Shielded, 1.3m
Remark : This support device was tested to comply with FCC standards and authorized under a declaration of conformity.

Support Unit 4. – PS/2 Mouse (LOGITECH) -for local workstation

FCC ID : DZL211029
Model No. : M-S34
Serial No. : SP0041
Data Cable : Shielded, 1.7m

Support Unit 5. -- Printer (HP) -for local workstation

FCC ID : B94C2642X
Model No. : DJ 400
Power Supply Type : Linear
Power Cord : Non-Shielded
Serial No. : SP0048
Data Cable : Shielded, 360 degree via metal backshells, 1.8m

Support Unit 6. -- Modem (ACEEX) -for local workstation

FCC ID : IFAXDM1414
Model No. : DM1414
Power Supply Type : Linear
Power Cord : Non-Shielded
Serial No. : SP0015
Data Cable : Shielded, 1.15m

Support Unit 7. -- Printer (HP) -for local workstation

FCC ID : N/A
Model No. : 610C
Power Supply Type : Linear
Power Cord : Non-Shielded
Serial No. : SP0254
Data Cable : Shielded, 360 degree via metal backshells, 1m
Remark : This support device was tested to comply with FCC standards and authorized under a declaration of conformity.

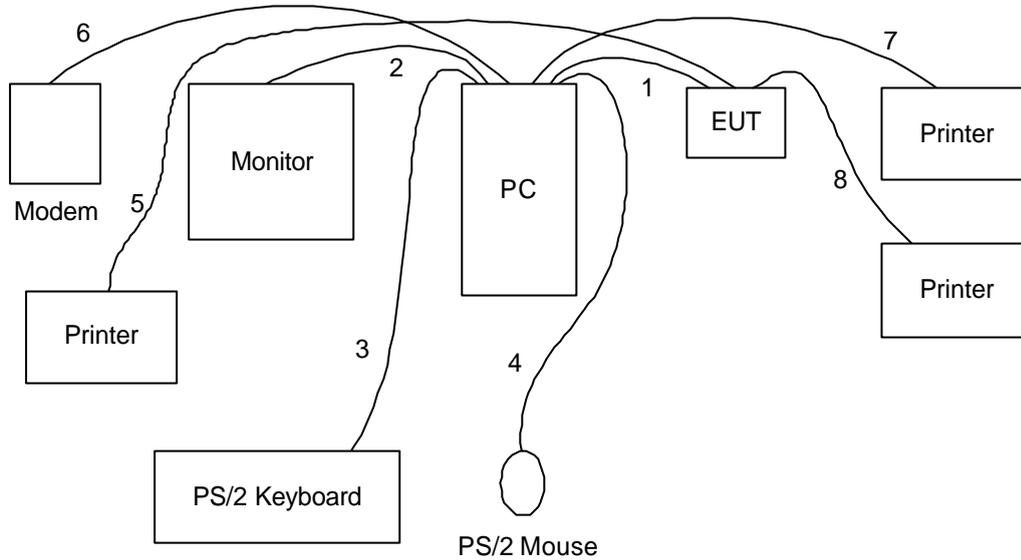
Support Unit 8. -- Printer (EPSON) -for local workstation

FCC ID : N/A
Model No. : C61
Power Supply Type : Linear
Power Cord : Non-Shielded
Serial No. : SP0257
Data Cable : Shielded, 360 degree via metal backshells, 1.8m
Remark : This support device was tested to comply with FCC standards and authorized under a declaration of conformity.

Support Unit 9. – Notebook (TOSHIBA) -for remote workstation

FCC ID : N/A
Model No. : PS111T-00CMV
Power Supply Type : Switching
Power Cord : Non-Shielded
Serial No. : SP0036
Remark : This support device was tested to comply with FCC standards and authorized under a declaration of conformity.

2.3 Connection Diagram of Test System



1. The TP cable is connected from PC to the EUT.
2. The I/O cable is connected from PC to the support unit 2.
3. The I/O cable is connected from PC to the support unit 3.
4. The I/O cable is connected from PC to the support unit 4.
5. The Printer cable is connected from EUT to the support unit 5.
6. The I/O cable is connected from PC to the support unit 6.
7. The I/O cable is connected from PC to the support unit 7.
8. The USB cable is connected from EUT to the support unit 8.

3. Test Software

An executive program, EMITEST.EXE under WIN XP, which generates a complete line of continuously repeating "H" pattern was used as the test software.

The program was executed as follows:

- a. Turn on the power of all equipment.
- b. The PC reads the test program from the hard disk drive and runs it.
- c. The PC sends "H" messages to the monitor, and the monitor displays "H" patterns on the screen.
- d. The PC sends "H" messages to the printer, then the printer prints them on the paper.
- e. The PC sends "H" messages to the modem.
- f. The PC sends "H" messages to the internal Hard Disk, and the Hard Disk reads and writes the message.
- g. Repeat the steps from c to f.

At the same time, the following programs were executed:

- Executed "Ping.exe" to link with the EUT to print data.
- Executed "ETHERPEEK" to ping remote notebook.

4. General Information of Test

4.1 Test Facility

Test Site Location : No. 30-2, Lin 6, Diing-Fwu Tsuen, Lin-Kou-Hsiang,
Taipei Hsien, Taiwan, R.O.C.
TEL : 886-2-2601-1640
FAX : 886-2-2601-1695
Test Site No. : CO01-LK, OS04-LK

4.2 Test Voltage

110V/60Hz

4.3 Standard for Methods of Measurement

ANSI C63.4-1992

4.4 Test in Compliance with

CISPR PUB. 22 and FCC Part 15

4.5 Frequency Range Investigated

- a. Conduction: from 150 kHz to 30 MHz
- b. Radiation: from 30 MHz to 1000 MHz

4.6 Test Distance

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

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 ANSI C63.4-1992 Section 3.1. 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 produced maximum conducted emissions.

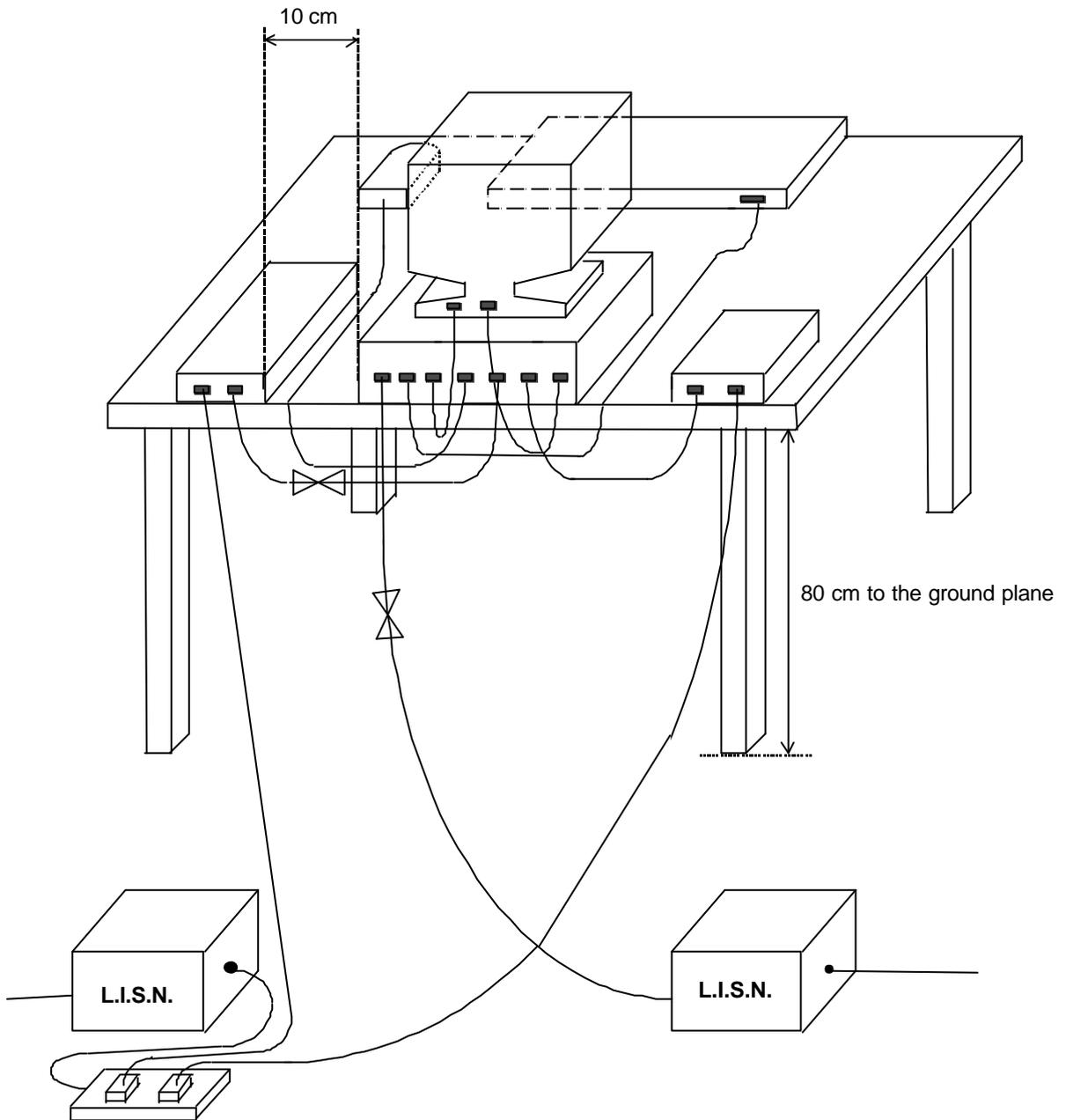
5.1 Major Measuring Instruments

- EMC Analyzer (HP 8591EM)
 - Attenuation 10 dB
 - Start Frequency 0.15 MHz
 - Stop Frequency 30 MHz
 - IF Bandwidth 9KHz

5.2 Test Procedures

- a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- b. Connect EUT to the power mains through a line impedance stabilization network (LISN).
- c. All the support units are connect to the other LISN.
- d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- e. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
- f. Both sides of AC line were checked for maximum conducted interference.
- g. The frequency range from 150 kHz to 30 MHz was searched.
- h. 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: 25 °C
- Relative Humidity: 70 %
- Test Date: Mar. 31, 2003
- All emissions not reported here are more than 10 dB below the prescribed limit.

The test was passed at the minimum margin that marked under gray area in the following table

Frequency (MHz)	Line or Neutral	Meter Reading		Limits		Margin	
		Q.P. (dBuV)	A.V. (dBuV)	Q.P. (dBuV)	A.V. (dBuV)	Q.P. (dB)	A.V. (dB)
0.221	L	45.30	16.10	62.78	52.78	-17.5	-36.7
0.345	L	41.00	30.50	59.08	49.08	-18.1	-18.6
0.455	L	38.60	13.60	56.78	46.78	-18.2	-33.2
4.780	L	33.60	31.50	56.00	46.00	-22.4	-14.5
14.984	L	34.00	31.80	60.00	50.00	-26.0	-18.2
17.693	L	32.80	25.60	60.00	50.00	-27.2	-24.4
0.214	N	46.60	16.50	63.05	53.05	-16.4	-36.5
0.359	N	42.50	14.60	58.75	48.75	-16.3	-34.2
0.397	N	42.20	14.10	57.92	47.92	-15.7	-33.8
4.934	N	36.70	34.60	56.00	46.00	-19.3	-11.4
14.644	N	32.40	29.80	60.00	50.00	-27.6	-20.2
18.622	N	27.20	19.30	60.00	50.00	-32.8	-30.7

Test Engineer: Neil
Neil Huang

5.4.2 Test Mode: Mode 2

- Frequency Range of Test: from 0.15 MHz to 30 MHz
- Temperature: 25 °C
- Relative Humidity: 70 %
- Test Date: Mar. 31, 2003
- All emissions not reported here are more than 10 dB below the prescribed limit.

The test was passed at the minimum margin that marked under gray area in the following table

Frequency (MHz)	Line or Neutral	Meter Reading		Limits		Margin	
		Q.P. (dBuV)	A.V. (dBuV)	Q.P. (dBuV)	A.V. (dBuV)	Q.P. (dB)	A.V. (dB)
0.175	L	45.80	16.40	64.72	54.72	-18.9	-38.3
0.265	L	40.20	14.90	61.27	51.27	-21.1	-36.4
0.381	L	37.20	13.70	58.26	48.26	-21.1	-34.6
4.471	L	28.60	23.50	56.00	46.00	-27.4	-22.5
15.173	L	32.00	23.90	60.00	50.00	-28.0	-26.1
19.657	L	30.00	16.90	60.00	50.00	-30.0	-33.1
0.181	N	46.00	16.20	64.44	54.44	-18.4	-38.2
0.344	N	40.90	32.50	59.11	49.11	-18.2	-16.6
0.504	N	39.10	12.90	56.00	46.00	-16.9	-33.1
4.474	N	31.50	28.70	56.00	46.00	-24.5	-17.3
15.015	N	28.10	20.30	60.00	50.00	-31.9	-29.7
19.168	N	25.20	15.40	60.00	50.00	-34.8	-34.6

Test Engineer: Neil
Neil Huang

5.5 Photographs of Conducted Powerline Test Configuration

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

FRONT VIEW



REAR VIEW



SIDE 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 ANSI C63.4-1992. 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

- Spectrum Analyzer (HP 8560E)
 - Attenuation 10 dB
 - Start Frequency 30 MHz
 - Stop Frequency 1000 MHz
 - Resolution Bandwidth 120 KHz
 - Signal Input 30 MHz – 2.9 GHz

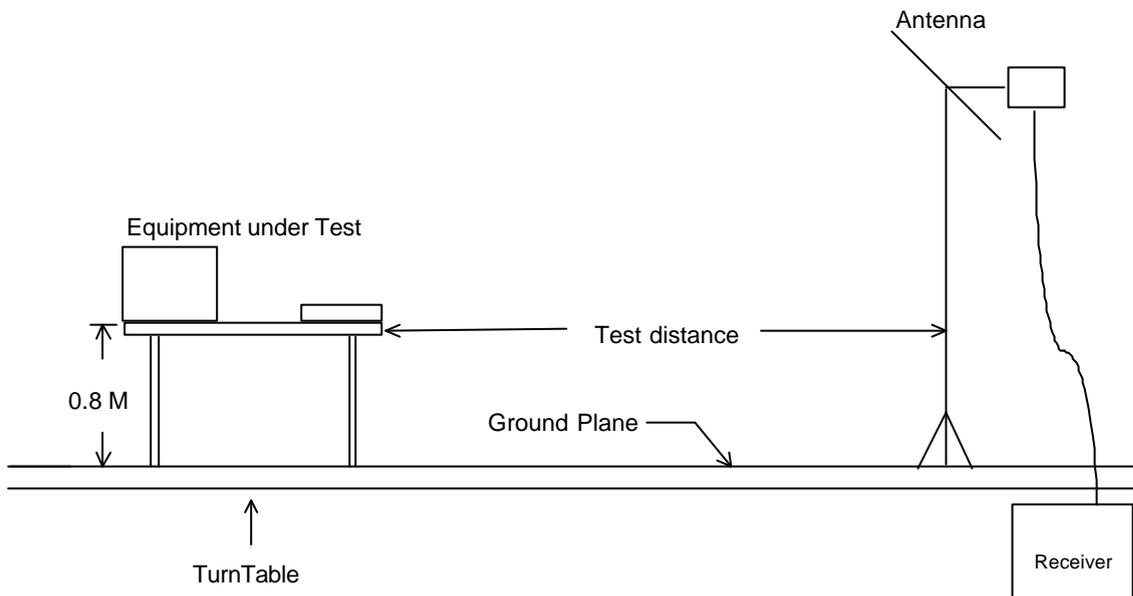
- Test Receiver (HP 8546A)
 - Resolution Bandwidth 120 KHz
 - Frequency Band 9 K – 6.5 GHz
 - Quasi-Peak Detector ON for Quasi-Peak Mode
OFF for Peak Mode

- Amplifier (HP 87405A)
 - RF Gain 25 dB
 - Signal Input 10 MHz – 3 GHz

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

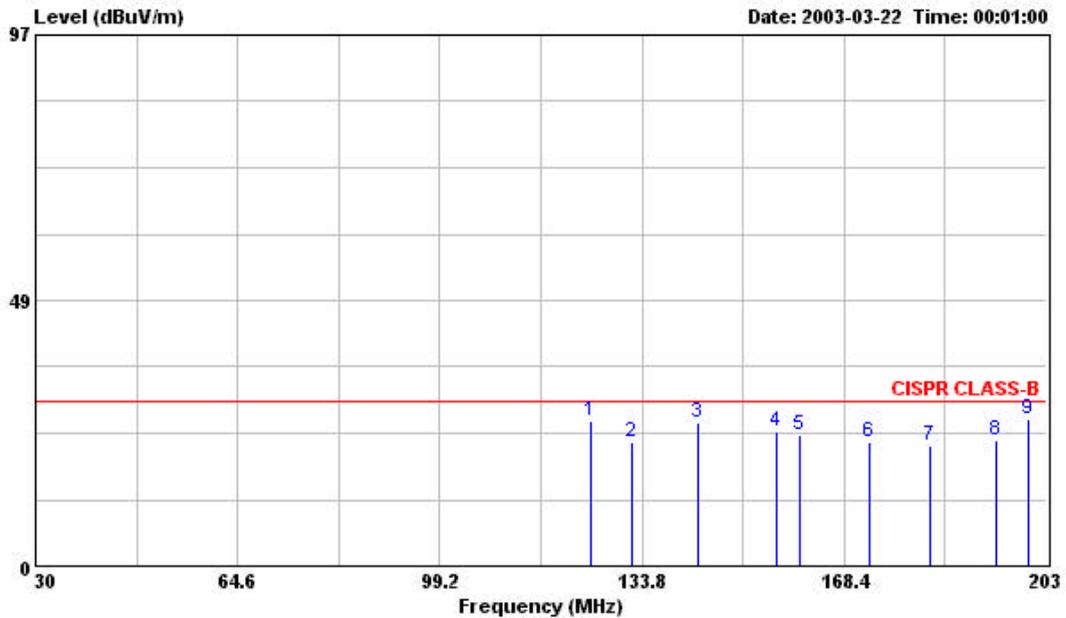


6.4 Test Result of Radiated Emission

6.4.1 Test Mode: Mode 1

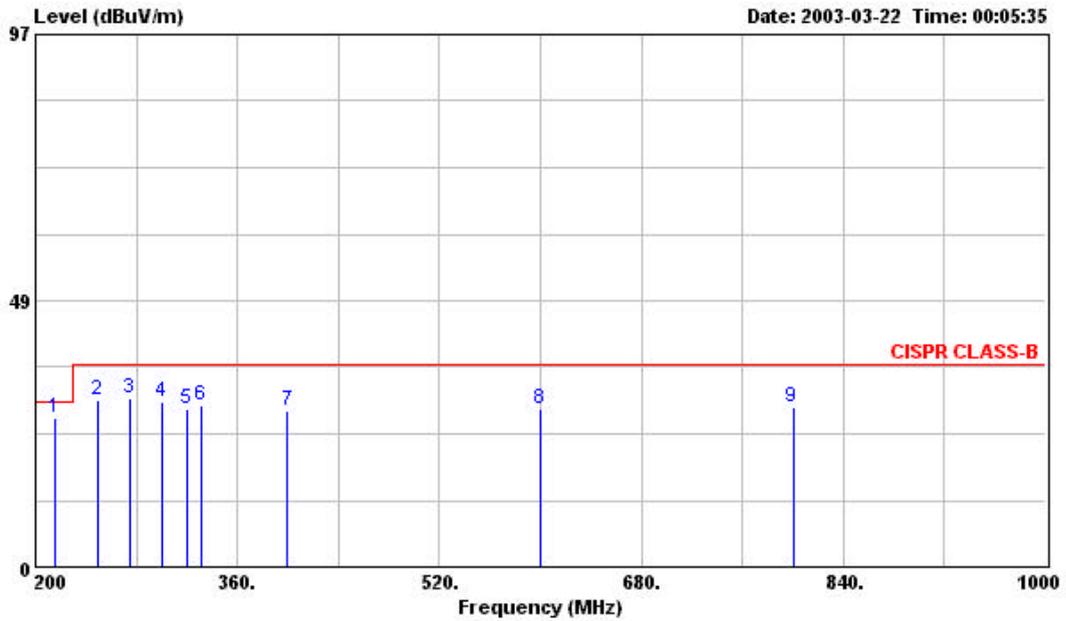
- Frequency Range of Test: from 30 MHz to 1000 MHz
- Test Distance: 10M
- Temperature: 23°C
- Relative Humidity: 62 %
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

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



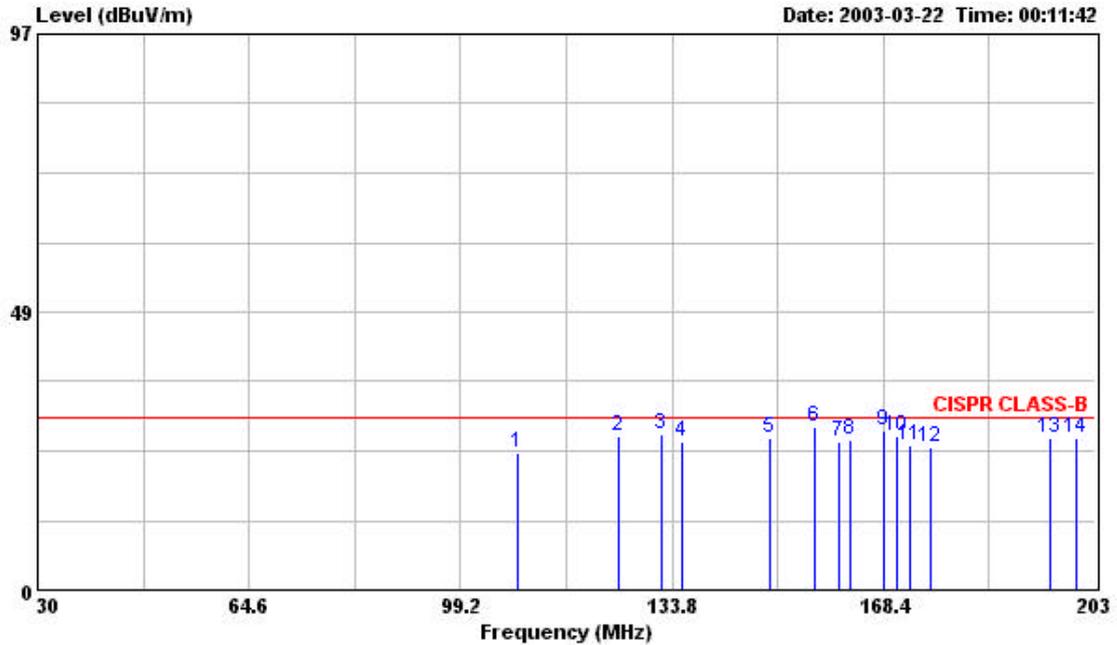
Site : OS04-LK
 Condition : CISPR CLASS-B 10m CHASE2288 HORIZONTAL
 EUT :
 POWER : 110VAC
 MODE : LINK:100M (STP)
 MEMO :

	Freq	Level	Over Limit	Limit Line	ReadAntenna	Cable	Preamp	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	125.000	26.43	-3.57	30.00	38.63	11.60	1.20	25.00 Peak	---	---
2	132.070	22.76	-7.24	30.00	35.45	11.09	1.22	25.00 Peak	---	---
3	143.320	26.07	-3.93	30.00	39.48	10.25	1.34	25.00 Peak	---	---
4	156.980	24.58	-5.42	30.00	38.58	9.52	1.47	24.99 Peak	---	---
5	160.960	23.78	-6.22	30.00	37.90	9.36	1.50	24.98 Peak	---	---
6	172.730	22.57	-7.43	30.00	37.14	8.88	1.50	24.95 Peak	---	---
7	183.110	22.12	-7.88	30.00	36.83	8.72	1.50	24.93 Peak	---	---
8	194.350	23.03	-6.97	30.00	37.67	8.77	1.50	24.91 Peak	---	---
9	200.000	26.98	-3.02	30.00	41.58	8.80	1.50	24.90 QP	---	---



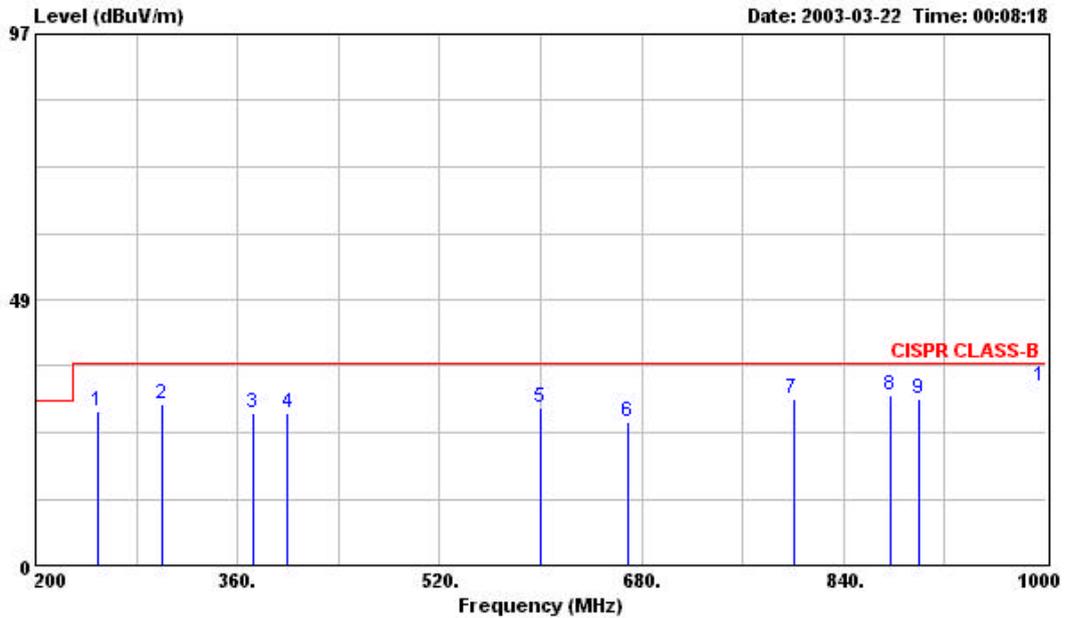
Site : OS04-LK
 Condition : CISPR CLASS-B 10m CHASE2288 HORIZONTAL
 EUT :
 POWER : 110VAC
 MODE : LINK:100M (STP)
 MEMO :

	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	216.000	27.12	-2.88	30.00	40.54	9.85	1.66	24.93	QP	---	---
2	250.000	30.53	-6.47	37.00	41.78	12.00	1.75	25.00	Peak	---	---
3	275.000	30.76	-6.24	37.00	41.47	12.46	1.78	24.95	Peak	---	---
4	300.000	30.15	-6.85	37.00	40.35	12.90	1.80	24.90	Peak	---	---
5	320.000	28.88	-8.12	37.00	38.33	13.47	2.00	24.92	Peak	---	---
6	332.000	29.49	-7.51	37.00	38.51	13.79	2.12	24.93	Peak	---	---
7	400.000	28.58	-8.42	37.00	35.68	15.70	2.20	25.00	Peak	---	---
8	600.000	28.73	-8.27	37.00	32.33	18.60	2.80	25.00	Peak	---	---
9	800.000	29.00	-8.00	37.00	30.00	20.30	3.70	25.00	Peak	---	---



Site : OS04-LK
 Condition : CISPR CLASS-B 10m CHASE2288 VERTICAL
 EUT :
 POWER : 110VAC
 MODE : LINK:100M (STP)
 MEMO :

	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	108.700	23.91	-6.09	30.00	36.80	10.91	1.20	25.00	QP	---	---
2	125.000	26.88	-3.12	30.00	39.08	11.60	1.20	25.00	QP	---	---
3	132.200	27.11	-2.89	30.00	39.80	11.09	1.22	25.00	QP	---	---
4	135.400	25.91	-4.09	30.00	38.86	10.79	1.26	25.00	QP	---	---
5	149.700	26.48	-3.52	30.00	40.23	9.86	1.39	25.00	Peak	---	---
6 @	157.000	28.46	-1.54	30.00	42.46	9.52	1.47	24.99	QP	100	158
7	161.130	26.02	-3.98	30.00	40.14	9.36	1.50	24.98	QP	---	---
8	162.830	26.08	-3.92	30.00	40.27	9.28	1.50	24.97	QP	---	---
9	168.450	27.95	-2.05	30.00	42.37	9.04	1.50	24.96	QP	---	---
10	170.500	26.72	-3.28	30.00	41.22	8.96	1.50	24.96	QP	---	---
11	172.850	25.33	-4.67	30.00	39.90	8.88	1.50	24.95	QP	---	---
12	176.000	24.88	-5.12	30.00	39.56	8.77	1.50	24.95	QP	---	---
13	195.730	26.37	-3.63	30.00	41.00	8.78	1.50	24.91	Peak	---	---
14	200.000	26.54	-3.46	30.00	41.14	8.80	1.50	24.90	QP	---	---



Site : OS04-LK
 Condition : CISPR CLASS-B 10m CHASE2288 VERTICAL
 EUT :
 POWER : 110VAC
 MODE : LINK:100M (STP)
 MEMO :

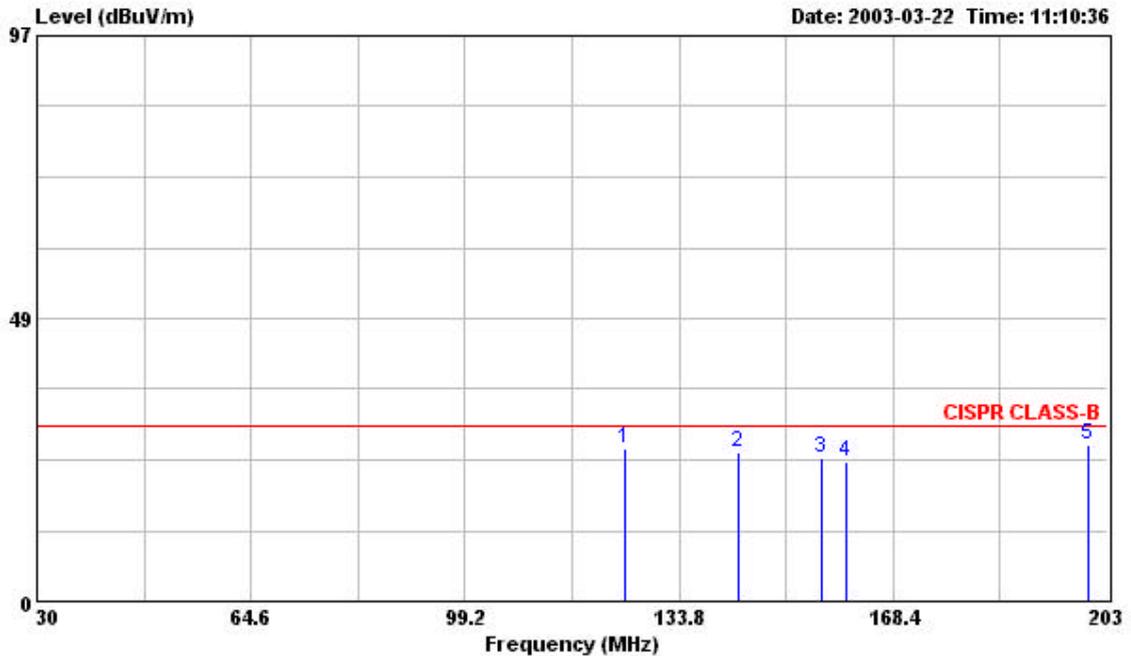
	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	250.000	28.08	-8.92	37.00	39.33	12.00	1.75	25.00	Peak	---	---
2	300.000	29.48	-7.52	37.00	39.68	12.90	1.80	24.90	Peak	---	---
3	372.800	27.89	-9.11	37.00	35.68	14.93	2.25	24.97	Peak	---	---
4	400.000	27.76	-9.24	37.00	34.86	15.70	2.20	25.00	Peak	---	---
5	600.000	28.73	-8.27	37.00	32.33	18.60	2.80	25.00	Peak	---	---
6	668.800	26.27	-10.73	37.00	29.17	18.98	3.19	25.07	Peak	---	---
7	800.000	30.50	-6.50	37.00	31.50	20.30	3.70	25.00	Peak	---	---
8	876.800	30.88	-6.12	37.00	31.84	20.45	3.59	25.00	Peak	---	---
9	900.000	30.35	-6.65	37.00	31.35	20.50	3.50	25.00	Peak	---	---
10	1000.000	32.60	-4.40	37.00	32.00	21.60	4.00	25.00	Peak	---	---

Test Engineer: Benny Lee
 Benny Lee

6.4.2 Test Mode: Mode 2

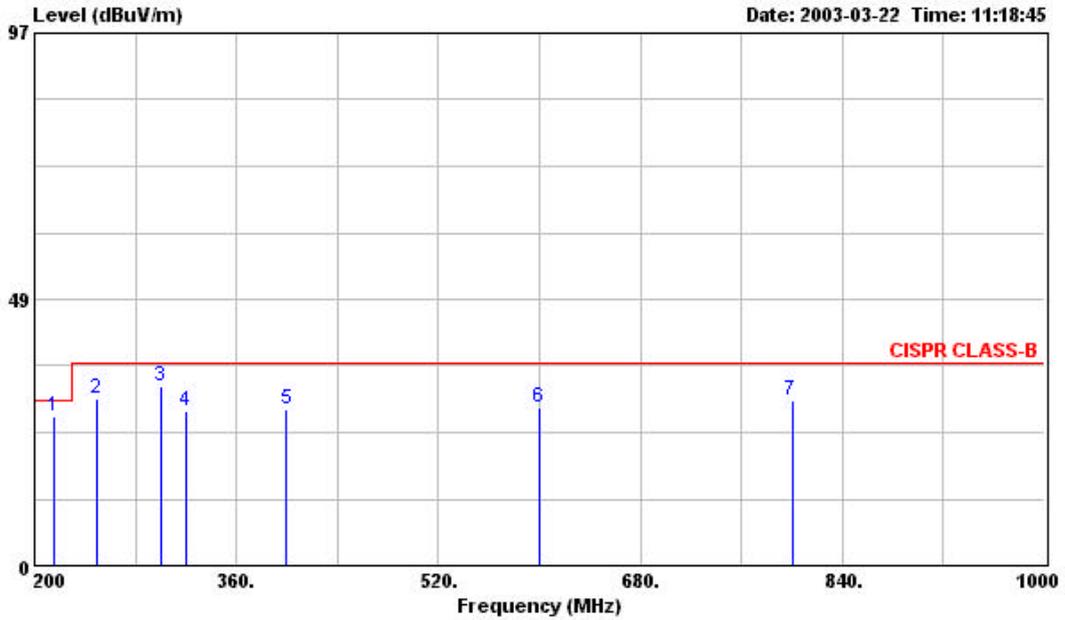
- Frequency Range of Test: from 30 MHz to 1000 MHz
- Test Distance: 10M
- Temperature: 23°C
- Relative Humidity: 62 %
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

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



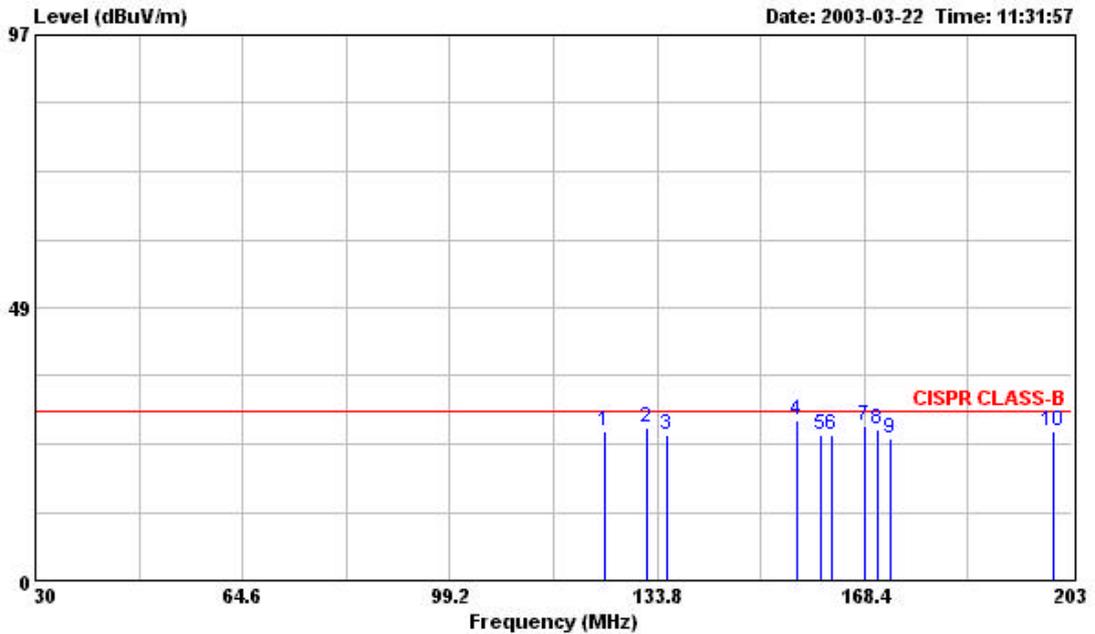
Site : OS04-LK
 Condition : CISPR CLASS-B 10m CHASE2288 HORIZONTAL
 EUT :
 POWER : 110VAC
 MODE : LINK:10M (STP)
 MEMO :

	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	125.000	26.25	-3.75	30.00	38.45	11.60	1.20	25.00	Peak	---	---
2	143.320	25.69	-4.31	30.00	39.10	10.25	1.34	25.00	Peak	---	---
3	156.980	24.58	-5.42	30.00	38.58	9.52	1.47	24.99	Peak	---	---
4	160.960	23.78	-6.22	30.00	37.90	9.36	1.50	24.98	Peak	---	---
5	200.000	26.98	-3.02	30.00	41.58	8.80	1.50	24.90	QP	---	---



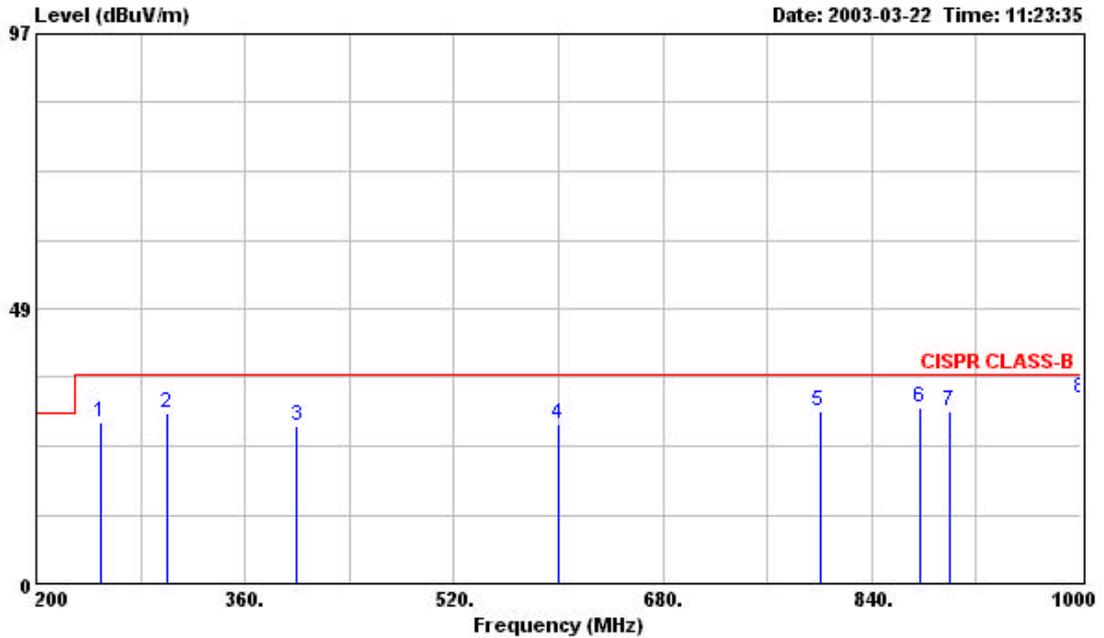
Site : OS04-LK
 Condition : CISPR CLASS-B 10m CHASE2288 HORIZONTAL
 EUT :
 POWER : 110VAC
 MODE : LINK:10M (STP)
 MEMO :

	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	216.000	27.08	-2.92	30.00	40.50	9.85	1.66	24.93	QP	---	---
2	250.000	30.53	-6.47	37.00	41.78	12.00	1.75	25.00	Peak	---	---
3	300.000	32.50	-4.50	37.00	42.70	12.90	1.80	24.90	Peak	---	---
4	320.000	28.20	-8.80	37.00	37.65	13.47	2.00	24.92	Peak	---	---
5	400.000	28.58	-8.42	37.00	35.68	15.70	2.20	25.00	Peak	---	---
6	600.000	28.73	-8.27	37.00	32.33	18.60	2.80	25.00	Peak	---	---
7	800.000	30.20	-6.80	37.00	31.20	20.30	3.70	25.00	Peak	---	---



Site : OSO4-LK
 Condition : CISPR CLASS-B 10m CHASE2288 VERTICAL
 EUT :
 POWER : 110VAC
 MODE : LINK:10M (STP)
 MEMO :

Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Remark	Ant	Table
MHz	dBuV/m	dB	dBuV/m	dBuV	Loss	Factor		Pos	Pos
					dB	dB		cm	deg
1	125.000	26.60	-3.40	30.00	38.80	11.60	1.20 25.00 QP	---	---
2	132.200	27.05	-2.95	30.00	39.74	11.09	1.22 25.00 QP	---	---
3	135.400	25.91	-4.09	30.00	38.86	10.79	1.26 25.00 QP	---	---
4 @	157.000	28.35	-1.65	30.00	42.35	9.52	1.47 24.99 QP	100	188
5	161.130	26.02	-3.98	30.00	40.14	9.36	1.50 24.98 QP	---	---
6	162.830	25.98	-4.02	30.00	40.17	9.28	1.50 24.97 QP	---	---
7	168.450	27.34	-2.66	30.00	41.76	9.04	1.50 24.96 QP	---	---
8	170.500	26.72	-3.28	30.00	41.22	8.96	1.50 24.96 QP	---	---
9	172.850	25.33	-4.67	30.00	39.90	8.88	1.50 24.95 QP	---	---
10	200.000	26.54	-3.46	30.00	41.14	8.80	1.50 24.90 QP	---	---



Site : OSO4-LK
 Condition : CISPR CLASS-B 10m CHASE2288 VERTICAL
 EUT :
 POWER : 110VAC
 MODE : LINK:10M (STP)
 MEMO :

	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	250.000	28.30	-8.70	37.00	39.55	12.00	1.75	25.00	Peak	---	---
2	300.000	30.10	-6.90	37.00	40.30	12.90	1.80	24.90	Peak	---	---
3	400.000	27.76	-9.24	37.00	34.86	15.70	2.20	25.00	Peak	---	---
4	600.000	28.29	-8.71	37.00	31.89	18.60	2.80	25.00	Peak	---	---
5	800.000	30.50	-6.50	37.00	31.50	20.30	3.70	25.00	Peak	---	---
6	876.800	30.88	-6.12	37.00	31.84	20.45	3.59	25.00	Peak	---	---
7	900.000	30.35	-6.65	37.00	31.35	20.50	3.50	25.00	Peak	---	---
8	1000.000	32.60	-4.40	37.00	32.00	21.60	4.00	25.00	Peak	---	---

Test Engineer: Benny Lee
 Benny Lee

6.5 Photographs of Radiated Emission Test Configuration

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

FRONT VIEW



REAR VIEW



7. Antenna Factor & Cable Loss

Frequency (MHz)	Antenna Factor (dB)	Cable Loss (dB)
30	17.8	0.50
35	15.1	0.50
40	12.7	0.70
45	10.2	0.70
50	6.6	0.80
55	6.0	0.80
60	5.4	0.80
65	5.1	0.80
70	4.8	0.80
75	5.8	0.89
80	6.8	1.00
85	7.7	1.00
90	8.6	1.00
95	9.6	1.10
100	10.4	1.20
110	11.0	1.20
115	11.6	1.20
130	11.2	1.20
140	10.5	1.30
150	9.8	1.40
160	9.4	1.50
170	9.0	1.50
180	8.7	1.50
190	8.8	1.50
200	8.8	1.50
220	10.2	1.70
240	11.4	1.80
260	12.2	1.70
280	12.6	1.80
300	12.9	1.80
320	13.5	2.00
340	14.0	2.20
360	14.6	2.28
380	15.1	2.24
400	15.7	2.20
450	16.6	2.50
500	17.5	3.30
550	18.1	2.70
600	18.6	2.80
650	18.9	3.00
700	19.1	3.50
750	19.7	3.30
800	20.3	3.70
850	20.4	3.70
900	20.5	3.50
950	21.0	3.70
1000	21.6	4.00

8. List of Measuring Equipment Used

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Analyzer	HP	8591EM	3710A01187	9KHz ~ 1.8GHz	Sep. 23, 2002	Conduction (CO01-LK)
LISN	Telemeter	NNB-2/16Z	98009	9KHz ~ 30MHz	Dec. 17, 2002	Conduction (CO01-LK)
LISN	Telemeter	NNB-2/16Z	98087	9KHz ~ 30MHz	Dec. 17, 2002	Conduction (CO01-LK)
Conduction Cable	Suhner Switzerland	RG223/U	CB017	9KHz~30MHz	Jan. 08, 2003	Conduction (CO01-LK)
50 ohm BNC type Terminal	NOBLE	50ohm	TM002	50 ohm	May 16, 2002	Conduction (CO01-LK)
Open Area Test Site	SPORTON	OATS-10	OS04-LK	30MHz~1GHz 10m,3m	Aug. 03, 2002	Radiation (OS04-LK)
Spectrum Analyzer	HP	8560E	3728A03190	30MHz ~ 2.9GHz	Nov. 04, 2002	Radiation (OS04-LK)
Amplifier	HP	87405A	3207A01437	10MHz ~ 3GHz	Aug. 12, 2002	Radiation (OS04-LK)
Receiver	HP	8546A	3325A00108	9 K ~ 6.5 GHz	Dec. 28, 2002	Radiation (OS04-LK)
Bilog Antenna	CHASE	CBL6112B	2288	30MHz -2GHz	Jun. 22, 2002	Radiation (OS04-LK)
Turn Table	EMCO	2080	9711-2021	0 ~ 360 degree	N/A	Radiation (OS04-LK)
Antenna Mast	EMCO	2075	9711-2115	1 m- 4 m	N/A	Radiation (OS04-LK)
RF Cable-R10m	BELDEN	RG8/U	CB011	30MHz~1GHz	Jan. 06, 2003	Radiation (OS04-LK)
RF Cable-R03m	BELDEN	RG8/U	CB012	30MHz~1GHz	Jan. 06, 2003	Radiation (OS04-LK)

Calibration Interval of instruments listed above is one year.

9. Uncertainty of Test Site

Uncertainty of Conducted Emission Measurement

Contribution	Probability Distribution	150KHz – 30MHz
Cable and I/P attenuator calibration	normal(k=2)	±0.3
RCV/SPA specification	rectangular	±2.5
LISN coupling specification	rectangular	±1.5
Transducer factor frequency interpolation	rectangular	±0.2
Mismatch Receiver VSWR $\Gamma_1=0.09$ LISN VSWR $\Gamma_2=0.33$ Uncertainty= $20\log(1-\Gamma_1*\Gamma_2)$	U-shaped	0.2
combined standard uncertainty Ue(y)	normal	±1.7
Measuring uncertainty for a level of confidence of 95% U=2Ue(y)	normal (k=2)	±3.4

$$U = \{(0.3/2)^2 + (2.5^2 + 1.5^2 + 0.2^2)/3 + (0.2)^2/2\}^{1/2} = 1.7$$

Uncertainty of Radiated Emission Measurement

Contribution	Probability Distribution	3m	10m
Antenna factor calibration	normal(k=2)	±1.6	±1.6
cable loss calibration	normal(k=2)	±0.3	±0.3
RCV/SPA specification	rectangular	±2.5	±2.5
Antenna Directivity	rectangular	±3	±0.5
Antenna Factor V.S. Height	rectangular	±2	±2
Antenna Factor Interpolation for Frequency	rectangular	±0.25	±0.25
site imperfection	rectangular	±2	±2
Mismatch Receiver VSWR $\Gamma_1=0.09$ Antenna VSWR $\Gamma_2=0.67$ Uncertainty= $20\log(1-\Gamma_1*\Gamma_2)$	U-shaped	±0.54	±0.54
combined standard uncertainty Ue(y)	normal	±2.9	±2.4
Measuring uncertainty for a level of confidence of 95% U=2Ue(y)	normal (k=2)	±5.8	±4.8

$$U = \{(1.6/2)^2 + (0.3/2)^2 + (3^2 + 0.5^2 + 2^2 + 0.25^2 + 2^2)/3 + (0.54)^2/2\}^{1/2} = 2.4 \text{ for 10m test distance}$$

$$U = \{(1.6/2)^2 + (0.3/2)^2 + (3^2 + 3^2 + 2^2 + 0.25^2 + 2^2)/3 + (0.54)^2/2\}^{1/2} = 2.9 \text{ for 3m test distance}$$

10. Certificate of NVLAP Accreditation

United States Department of Commerce
National Institute of Standards and Technology

NVLAP[®]

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NVLAP-01C (06-01)

APPENDIX A. Photographs of EUT







