



## **FCC 47 CFR PART 15 SUBPART B & IC ICES-003**

### **TEST REPORT**

**For**

**Optical Mouse**

**Model: M870P, M871P, M859P**

**Trade Name: EMPREX**

*Issued to*

**BEHAVIOR TECH COMPUTER CORP.**

**20F, 98, Sec. 1, Hsin Tai Wu Rd., Hsichih,  
Taipei Hsien 221, Taiwan, R.O.C.**

*Issued by*

**Compliance Certification Services Inc.**

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# 1 TEST RESULT CERTIFICATION

**Applicant:** BEHAVIOR TECH COMPUTER CORP.  
20F, 98, Sec. 1, Hsin Tai Wu Rd., Hsichih,  
Taipei Hsien 221, Taiwan, R.O.C.

**Manufacturer:** BEHAVIOR TECH COMPUTER CORP.  
20F, 98, Sec. 1, Hsin Tai Wu Rd., Hsichih,  
Taipei Hsien 221, Taiwan, R.O.C.

**Equipment Under Test:** Optical Mouse

**Trade Name:** EMPREX

**Model:** M870P, M871P, M859P

**Detailed EUT Description:** See Item 2 of this report

**Date of Test:** November 22, 2006 ~ January 15, 2007

Applicable Standard	Class / Limit	Test Result
FCC Part 15 Subpart B, IC ICES-003	Class B	No non-compliance noted
Deviation from Applicable Standard		
None		

The above equipment was tested by Compliance Certification Services Inc. for compliance with the requirements set forth in the FCC Part 15, Subpart B, and Industry Canada ICES-003. The measurement procedures were according to ANSI C63.4: 2003. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment are within the compliance requirements.

**Approved by:**

Gavin Lim  
Section Manager  
Compliance Certification Services Inc.

**Reviewed by:**

Amanda Wu  
Section Manager  
Compliance Certification Services Inc.



## 2 EUT DESCRIPTION

<b>Product</b>	Optical Mouse
<b>Trade Name</b>	EMPREX
<b>Model</b>	M870P, M871P, M859P
<b>Model Discrepancy</b>	All the specification is identical except they come with different layout, model numbers, and external appearance. The detail description, please refer to the external photos.
<b>Housing Type</b>	Plastic
<b>Power Supply</b>	Powered from host device via USB cable



### 3 TEST METHODOLOGY

#### 3.1 EUT SYSTEM OPERATION

Software Used During the Test	
Operating System	Windows XP
File Name	EMCTEST.EXE
Program Sequence	<ol style="list-style-type: none"><li>1. EMI test program (file name: EMCTEST) was loaded and executed in "Windows XP" mode.</li><li>2. The detect signal was sent to EUT.</li><li>3. Data was sent to the monitor, filling the screen with upper case of "H" patterns.</li><li>4. Test program sequentially all related I/O's of Host PC include EUT and sent "H" patterns to all applicable output ports of Host PC.</li><li>5. Repeat 2 to 4.</li></ol>
RF Management Software	DOS/TEST MODE SETUP

*Remark: Test program is self-repeating throughout the test.*

#### 3.2 DECISION OF FINAL TEST MODE

The EUT (model: M870P, M871P, M859P) had been tested under operating condition.

1. The following test modes were scanned during the preliminary test:

**Mode 1**

**Operating for model: M870P**

**Mode 2**

**Operating for model: M871P**

**Mode 3**

**Operating for model: M859P**

2. After the preliminary scan, the following test mode was found to produce the highest emission level.

**Mode 1, 2,3** for all testing

Then, the EUT configuration and cable configuration of the above highest emission mode was chosen for all final test items.



## 4 INSTRUMENT AND CALIBRATION

### 4.1 MEASURING INSTRUMENT CALIBRATION

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

### 4.2 TEST AND MEASUREMENT EQUIPMENT

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

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

#### Equipment Used for Emission Measurement

Open Area Test Site # 5				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	ADVANTEST	R3132	91700456	09/03/2007
EMI Test Receiver	R&S	ESVS10	846285/016	06/06/2007
Bilog Antenna	Sunol Sciences	JB1	A031905	04/07/2007
Turn Table	CCS	CC-T-1F	N/A	N.C.R
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R
Controller	CCS	CC-C-1F	04	N.C.R
RF Switch	ANRITSU	MP59B	10877	N.C.R
Site NSA	CCS	N/A	N/A	11/24/2007
Test S/W	LabVIEW 6.1 (CCS OATS EMI SW V2.4)			

**Remark:** The measurement uncertainty is less than +/- 4.5206dB, which is evaluated as per the NAMAS NIS 81 and CISPR/A/291/CDV.

Open Area Test Site # 2				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	ADVANTEST	R3261A	N/A	N.C.R
EMI Test Receiver	R&S	ESVS10	834468/006	04/06/2007
Pre-Amplifier	HP	8447D	2944A08780	07/16/2007
Bilog Antenna	Sunol Sciences	JB1	A031605	04/14/2007
Turn Table	EMCO	2081-1.21	9709-1885	N.C.R
Antenna Tower	EMCO	2075-2	9707-2060	N.C.R
Controller	EMCO	2090	9709-1256	N.C.R
RF Switch	ANRITSU	MP59B	M76890	N.C.R
Site NSA	CCS	N/A	N/A	08/11/2007
Test S/W	LabVIEW 6.1 (CCS OATS EMI SW V2.6)			

**Remark:** The measurement uncertainty is less than +/- 4.5143dB, which is evaluated as per the NAMAS NIS 81 and CISPR/A/291/CDV.



Powerline Conducted Emission Test Site				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI TEST RECEIVER 9kHz-30MHz	ROHDE & SCHWARZ	ESHS30	828144/003	10/31/2007
TWO-LINE V-NETWORK 9kHz-30MHz	SCHAFFNER	NNB41	03/10013	06/14/2007
LISN 10kHz-100MHz	EMCO	3825/2	9106-1809	03/20/2007
ISN 9kHz-30MHz	FCC	FCC-TLISN-T4	20167	09/15/2007
Test S/W	LABVIEW (V 6.1)			

**Remark:** The measurement uncertainty is less than +/- 2.81dB, which is evaluated as per the NAMAS NIS 81 and CISPR/A/291/CDV.

Powerline Conducted Emission Test Site # 4				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI Test Receiver	R&S	ESCS30	847793/012	02/12/2007
Pulse Limiter	R&S	ESH3-Z2	100230	10/24/2007
LISN	FCC	FCC-LISN-50/250-16-2-07	06013	10/08/2007
LISN	R&S	ENV 4200	830326/016	03/28/2007
Spectrum Analyzer	ADVANTEST	R3261AN	31720234	N.C.R
ISN	FCC	FCC-TLISN-T4	20065	05/07/2007
Current Probe	FCC	F-35	506	05/07/2007
Voltage Probe	FCC	F-CVP-1	91	05/07/2007
Test S/W	LabVIEW 6.1 (CCS Conduction Test SW Version_01)			

**Note:** The measurement uncertainty is less than +/- 3.4600dB, which is evaluated as per the NAMAS NIS 81 and CISPR/A/291/CDV.



## **5 FACILITIES AND ACCREDITATIONS**

### **5.1 FACILITIES**

All measurement facilities used to collect the measurement data are located at

☐ No.199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.

Tel: 886-2-2217-0894 / Fax: 886-2-2217-1029

☒ No.11, Wugong 6th Rd., Wugu Industrial Park, Taipei Hsien 248, Taiwan

Tel: 886-2-2299-9720 / Fax: 886-2-2298-4045

☒ No.81-1, Lane 210, Bade 2nd Rd., Luchu Hsiang, Taoyuan Hsien 338, Taiwan








Tel: 886-3-324-0332 / Fax: 886-3-324-5235

The measurement facilities are constructed in conformance with the requirements of CISPR 16-1, ANSI C63.4 and other equivalent standards.



## 5.2 TABLE OF ACCREDITATIONS AND LISTINGS

The test facilities used to perform Electromagnetic compatibility tests are registered or accredited by the organizations listed in the following table which includes the recognized scope specifically.

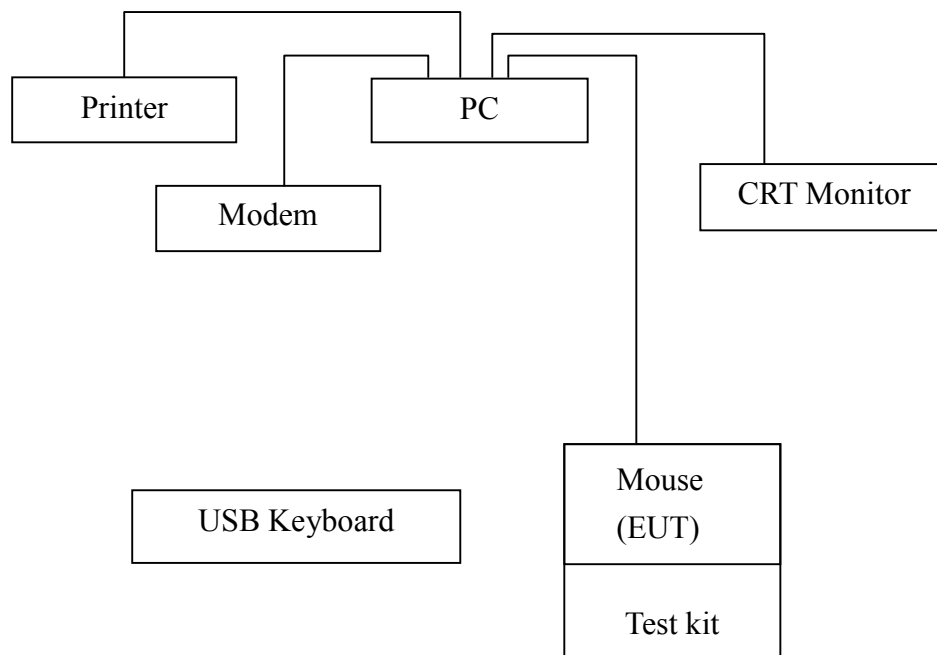
Country	Agency	Scope of Accreditation	Logo
USA	A2LA	EN 55011, EN 55014-1/2, CISPR 11, CISPR 14-1/2, EN 55022, EN 55015, CISPR 22, CISPR 15, AS/NZS 3548, VCCI V3 (2001), CFR 47, FCC Part 15/18, CNS 13783-1, CNS 13439, CNS 13438, CNS 13803, CNS 14115, EN 55024, IEC 801-2, IEC 801-3, IEC 801-4, IEC/EN 61000-3-2, IEC/EN 61000-3-3, IEC/EN 61000-4-2/3/4/5/6/8/11, EN 50081-1/ EN 61000-6-3, EN 50081-2/EN 61000-6-4, EN 50081-2/EN 61000-6-1: 2001	 0824-01
USA	FCC	3/10 meter Open Area Test Sites (93105, 90471) / 3M Semi Anechoic Chamber (965860) to perform FCC Part 15/18 measurements	 93105, 90471 965860
Japan	VCCI	3/10 meter Open Area Test Sites to perform conducted/radiated measurements	 R-393/1066/725/879 C-402/747/912
Norway	NEMKO	EN 50081-1/2, EN 50082-1/2, IEC 61000-6-1/2, EN 50091-2, EN 50130-4, EN 55011, EN 55013, EN 55014-1/2, EN 55015, EN 55022, EN 55024, EN 61000-3-2/3, EN 61326-1, IEC 61000-4-2/3/4/5/6/8/11, EN 60601-1-2, EN 300 328, EN 300 422-2, EN 301 419-1, EN 301 489-01/03/07/08/09/17, EN 301 419-2/3, EN 300 454-2, EN 301 357-2	 ELA 124a ELA 124b ELA 124c
Taiwan	TAF	EN 300 328, EN 300 220-1, EN 300 220-2, EN 300 220-3, 47 CFR FCC Part 15 Subpart C, EN 61000-3-2, EN 61000-3-3, CNS 13439, CNS 13783-1, CNS 14115, CNS 13438, AS/NZS CISPR 22, CNS 13022-1, IEC 61000-4-2/3/4/5/6/8/11, CNS 13022-2/3	 0363
Taiwan	BSMI	CNS 13438, CNS 13783-1, CNS 13439, CNS 14115	 SL2-IS-E-0014 SL2-IN-E-0014 SL2-A1-E-0014 SL2-R1-E-0014 SL2-R2-E-0014 SL2-L1-E-0014
Canada	Industry Canada	3/10 meter Open Area Test Sites (IC 3991-3, IC 3991-4) / 3M Semi Anechoic Chamber (IC 6106) to perform RSS 212 Issue 1	 IC 3991-3 IC 3991-4 IC 6106

\* No part of this report may be used to claim or imply product endorsement by A2LA or any agency of the US Government.

## 6 SETUP OF EQUIPMENT UNDER TEST

### 6.1 SETUP DIAGRAM

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



### 6.2 SUPPORT EQUIPMENT

No	Equipment	Brand	Model	Serial No.	FCC ID	Data Cable	Power Cord
1.	PC	HP	PL926AV	SGH528048P	FCC DoC	N/A	Unshielded, 1.8m
2.	PC	DELL	Dimemson 4600	BRBV91S	FCC DoC	N/A	Unshielded, 1.8m
3.	CRT Monitor	Samsung	959NF	AQ19H2RT706139P	FCC DoC	Shielded, 1.8m with two cores	Unshielded, 1.8m
4.	CRT Monitor	Dell	E773S	MY-0C2627-47603-431	FCC DoC	Shielded, 1.8m with two cores	Unshielded, 1.8m
5.	USB Keyboard	Compaq	KU-9978	B463AOAGALT097	FCC DoC	Shielded, 1.8m	N/A
6	USB Keyboard	Compaq	KB-0133	N/A	FCC DoC	Shielded, 1.8m	N/A
7	Printer	EPSON	STYLUS C60	DR3K039633	FCC DoC	Shielded, 1.8m	Unshielded, 1.8m
8.	Printer	EPSON	STYLUS C60	DR3K042012	FCC DoC	Shielded, 1.8m	Unshielded, 1.8m
9.	Modem	Hayes	231AA	A08431083982	BFJ9D93108US	Shielded, 1.2m	Unshielded, 1.8m
10	Test kit	N/A	N/A	N/A	N/A	N/A	N/A

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



## 7 LINE CONDUCTED & RADIATED EMISSION TEST

### 7.1 LIMIT

#### Maximum permissible level of Line Conducted Emission

Frequency (MHZ)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

**Remark:** The lower limit shall apply at the transition frequency.

#### Maximum permissible level of Radiated Emission measured at 10 meter

Frequency (MHZ)	Class A (dBuV/m) Quasi-peak	Class B (dBuV/m) Quasi-peak
30 – 230	40	30
230 - 1000	47	37

#### Maximum permissible level of Radiated Emission measured at 3 meter

Frequency (MHZ)	Class A (dBuV/m)		Class B (dBuV/m)	
	Average	Peak	Average	Peak
Above 1000	59.3	79.3	53.9	73.9

**Remark:** The lower limit shall apply at the transition frequency.

#### Maximum permissible level of Radiated Emission measured at 3 meter

Frequency (MHz)	Field Strength ( $\mu$ V/m at 3-meter) Average	Field Strength (dBuV/m at 3-meter) Average
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

**Remark:** The lower limit shall apply at the transition frequency.



## **7.2 TEST PROCEDURE OF LINE CONDUCTED EMISSION**

### **Procedure of Preliminary Test**

- The EUT was set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- Support equipment, if needed, was placed as per ANSI C63.4.
- All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- The test equipment EUT installed received AC power, 120VAC/60Hz, through a Line Impedance Stabilization Network (LISN), which supplied power source and was grounded to the ground plane.
- All support equipment received power from a second LISN.
- The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a EMI Test Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to the Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Receiver.
- The Receiver scanned from 150kHz to 30MHz for emissions in each of the test modes.
- During the above scans, the emissions were maximized by cable manipulation.
- The test mode(s) described in Item 3.2 were scanned during the preliminary test.
- After the preliminary scan, we found the test mode described in Item 3.2 producing the highest emission level.
- The EUT configuration and cable configuration of the above highest emission level were recorded for reference of the final test.

### **Procedure of Final Test**

- EUT and support equipment were set up on the test bench as per step 10 of the preliminary test.
- A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.
- The test data of the worst-case condition(s) was recorded.



## **7.3 TEST PROCEDURE OF RADIATED EMISSION**

### **Procedure of Preliminary Test**

- The equipment was set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane. When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- Support equipment, if needed, was placed as per ANSI C63.4.
- All I/O cables were positioned to simulate typical usage as per ANSI C63.4.
- The EUT received AC power source, 120VAC/60Hz, from the outlet socket under the turntable. All support equipment received power from another socket under the turntable.
- The antenna was placed at 10 meter away from the EUT as stated in ANSI C63.4. The antenna connected to the Spectrum Analyzer via a cable and at times a pre-amplifier would be used.
- The Analyzer / Receiver quickly scanned from 30MHz to 40GHz maximum, if any. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.
- The test mode(s) described in Item 3.2 were scanned during the preliminary test:
- After the preliminary scan, we found the test mode described in Item 3.2 producing the highest emission level.
- The EUT and cable configuration, antenna position, polarization and turntable position of the above highest emission level were recorded for the final test.

### **Procedure of Final Test**

- EUT and support equipment were set up on the turntable as per step 8 of the preliminary test.
- The Analyzer / Receiver scanned from 30MHz to 40GHz maximum, if any. Emissions were scanned and measured rotating the EUT to 360 degrees, varying cable placement and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.
- Recorded at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and only Q.P. reading is presented.
- The test data of the worst case condition(s) was recorded.



## 7.4 TEST RESULTS

### Powerline Conducted Emission

**Operation Mode:** Mode 1**Test Date:** November 22, 2006**Temperature:** 25°C**Tested by:** Nan Tsai**Humidity:** 55% RH

Frequency (MHz)	QP Reading (dBuV)	AV Reading (dBuV)	Corr. factor (dB)	QP Result (dBuV)	AV Result (dBuV)	QP Limit (dBuV)	AV Limit (dBuV)	QP Margin (dB)	AV Margin (dB)	Note
0.240	34.670	34.290	0.100	34.770	34.390	62.096	52.096	-27.326	-17.706	L1
0.600	35.890	35.290	0.100	35.990	35.390	56.000	46.000	-20.010	-10.610	L1
0.721	36.230	35.220	0.100	36.330	35.320	56.000	46.000	-19.670	-10.680	L1
1.082	33.560	33.040	0.100	33.660	33.140	56.000	46.000	-22.340	-12.860	L1
2.771	30.870	30.280	0.100	30.970	30.380	56.000	46.000	-25.030	-15.620	L1
13.752	38.260	36.780	0.775	39.035	37.555	60.000	50.000	-20.965	-12.445	L1
0.240	36.040	35.060	0.100	36.140	35.160	62.096	52.096	-25.956	-16.936	L2
0.360	33.130	32.580	0.100	33.230	32.680	58.729	48.729	-25.499	-16.049	L2
0.600	34.120	33.440	0.100	34.220	33.540	56.000	46.000	-21.780	-12.460	L2
0.721	35.380	35.210	0.100	35.480	35.310	56.000	46.000	-20.520	-10.690	L2
5.543	30.930	29.320	0.254	31.184	29.574	60.000	50.000	-28.816	-20.426	L2
9.837	31.120	28.770	0.684	31.804	29.454	60.000	50.000	-28.196	-20.546	L2

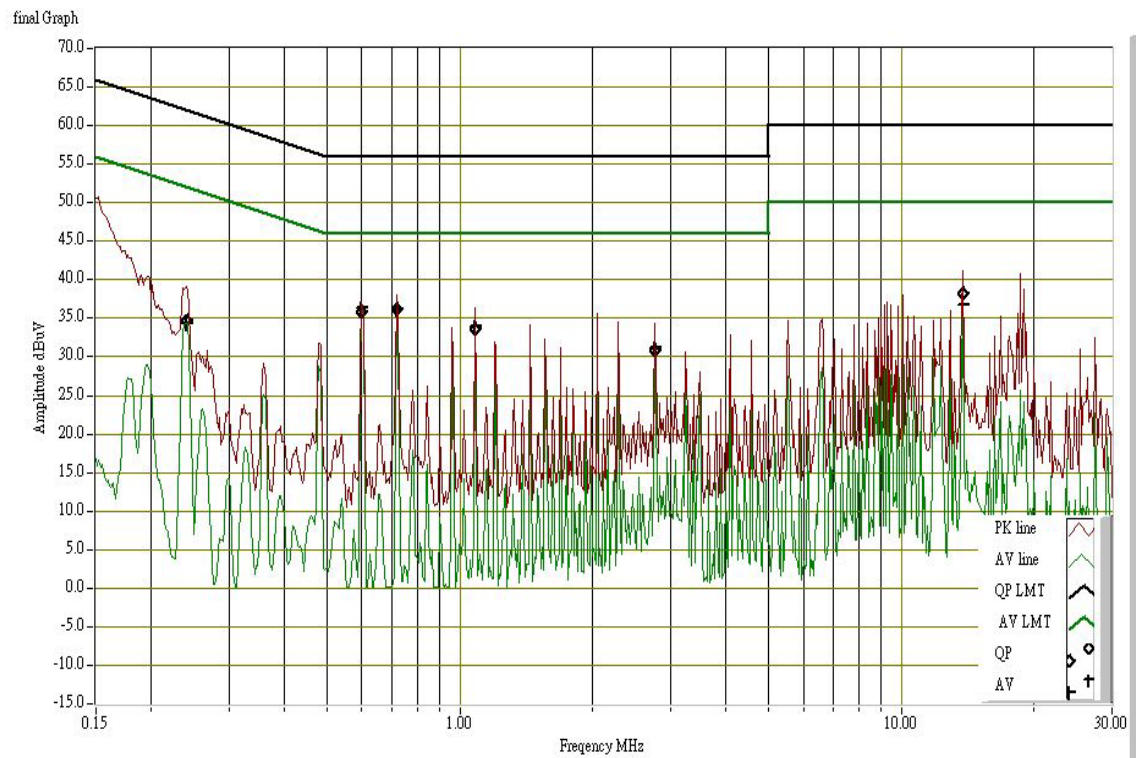
**Remark:**

1. Measuring frequencies from 0.15 MHz to 30MHz.
2. The emissions measured in frequency range from 0.15 MHz to 30MHz were made with an instrument using Quasi-peak detector and average detector.
3. The IF bandwidth of SPA between 0.15MHz to 30MHz was 10kHz; the IF bandwidth of Test Receiver between 0.15MHz to 30MHz was 9kHz;
4. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line)

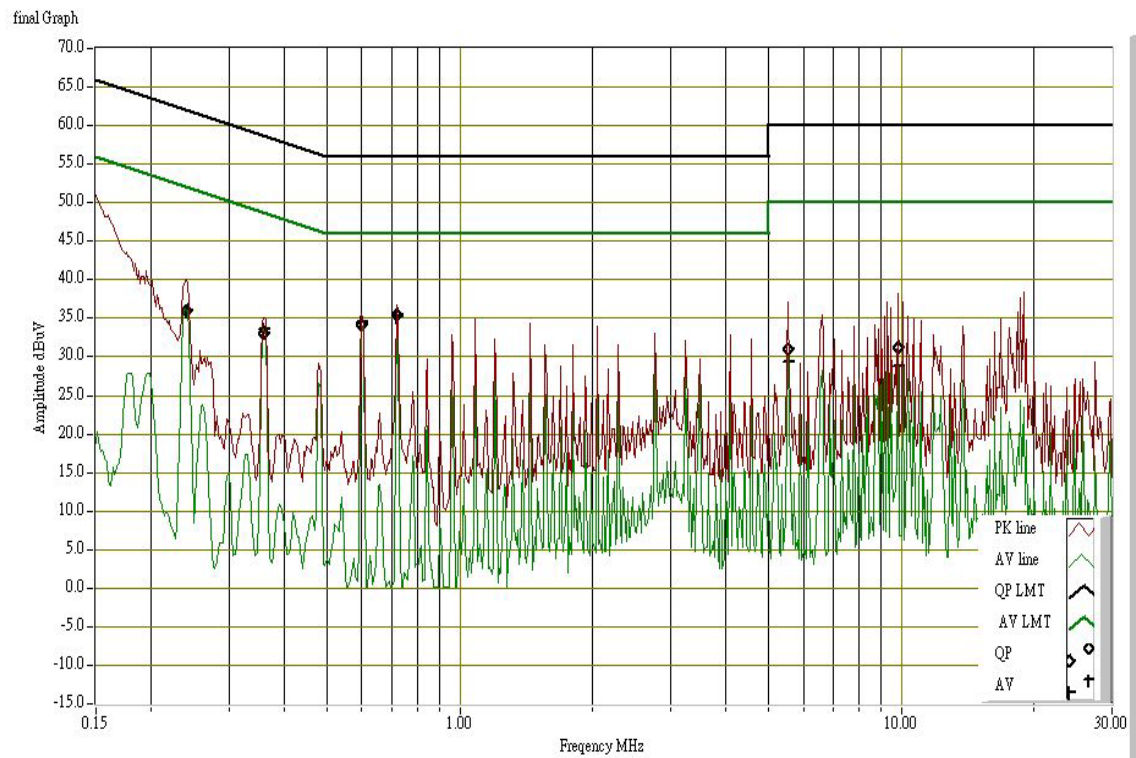


## Test Plots

### Conducted emissions (Line 1)



### Conducted emissions (Line 2)





**Operation Mode:** Mode 2**Test Date:** January 15, 2007**Temperature:** 25°C**Tested by:** Ivan Tsai**Humidity:** 55% RH**Test Site:** 4

Frequency (MHz)	QP Reading (dBuV)	AV Reading (dBuV)	Corr. factor (dB)	QP Result (dBuV)	AV Result (dBuV)	QP Limit (dBuV)	AV Limit (dBuV)	QP Margin (dB)	AV Margin (dB)	Note
0.238	40.000	39.310	0.100	4.100	39.410	62.166	52.166	-22.066	-12.756	L1
0.595	40.270	39.770	0.100	40.370	39.870	56.000	46.000	-15.630	-6.130	L1
0.715	40.470	39.960	0.100	40.570	40.060	56.000	46.000	-15.430	-5.940	L1
1.074	42.100	41.350	0.100	42.200	41.450	56.000	46.000	-13.800	-4.550	L1
1.677	36.750	36.650	0.100	36.850	36.750	56.000	46.000	-19.150	-9.250	L1
13.638	32.190	29.420	0.773	32.963	30.193	60.000	50.000	-27.037	-19.807	L1
0.238	43.300	42.930	0.100	43.400	43.030	62.166	52.166	-18.766	-9.136	L2
0.595	40.550	40.010	0.100	40.650	40.110	56.000	46.000	-15.350	-5.890	L2
0.715	41.030	40.520	0.100	41.130	40.620	56.000	46.000	-14.870	-5.380	L2
1.074	40.930	40.440	0.100	41.030	40.540	56.000	46.000	-14.970	-5.460	L2
2.031	39.960	39.410	0.100	40.060	39.510	56.000	46.000	-15.940	-6.490	L2
2.271	33.110	31.940	0.100	33.210	32.040	56.000	46.000	-22.790	-13.960	L2

**Remark:**

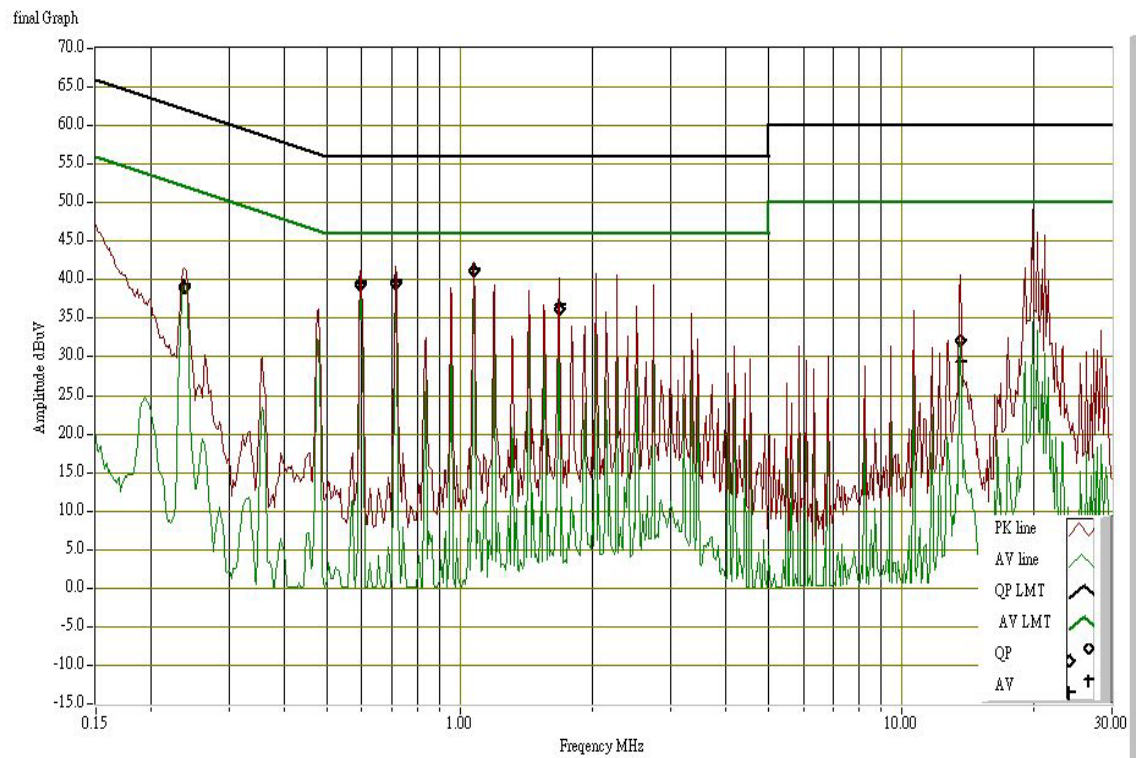
1. Measuring frequencies from 0.15 MHz to 30MHz.
2. The emissions measured in frequency range from 0.15 MHz to 30MHz were made with an instrument using Quasi-peak detector and average detector.
3. The IF bandwidth of SPA between 0.15MHz to 30MHz was 10kHz; the IF bandwidth of Test Receiver between 0.15MHz to 30MHz was 9kHz;
4. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line)



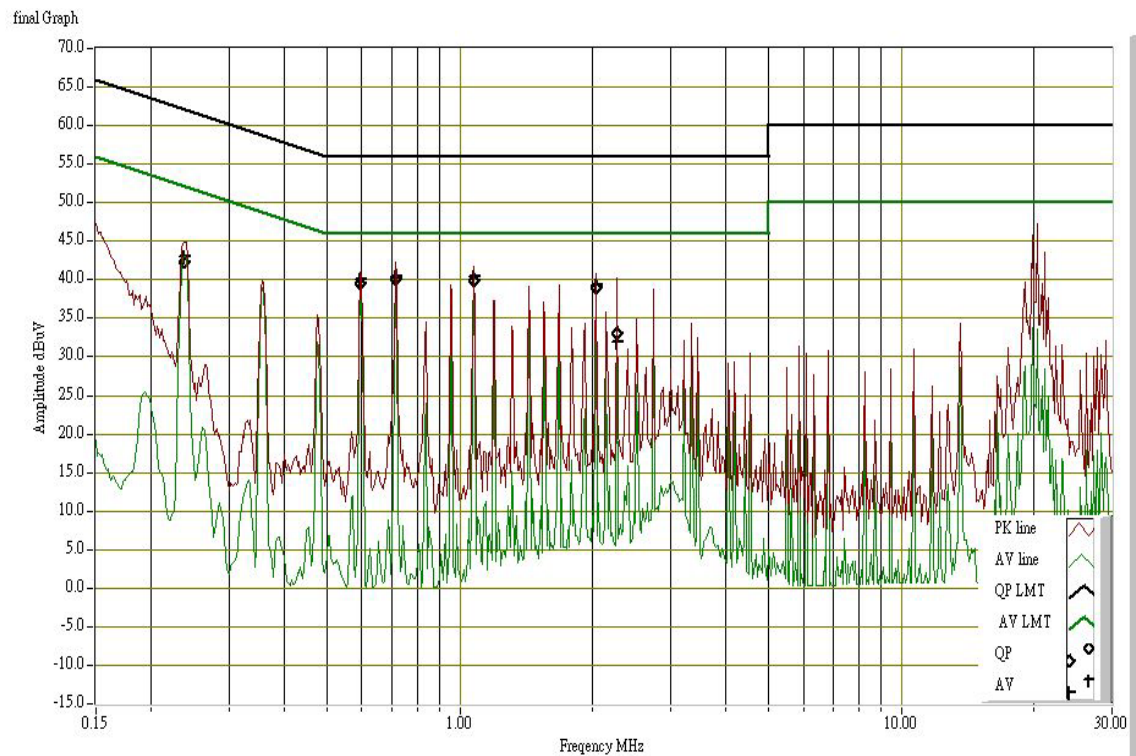


## Test Plots

### Conducted emissions (Line 1)



### Conducted emissions (Line 2)



**Operation Mode:** Mode 3**Test Date:** January 15, 2007**Temperature:** 25°C**Tested by:** Ivan Tsai**Humidity:** 55% RH**Test Site:** 4

Frequency (MHz)	QP Reading (dBuV)	AV Reading (dBuV)	Corr. factor (dB)	QP Result (dBuV)	AV Result (dBuV)	QP Limit (dBuV)	AV Limit (dBuV)	QP Margin (dB)	AV Margin (dB)	Note
0.238	39.920	39.210	0.100	40.020	39.310	62.166	52.166	-22.146	-12.856	L1
0.595	39.850	39.820	0.100	39.950	39.920	56.000	46.000	-16.050	-6.080	L1
0.715	40.070	39.620	0.100	40.170	39.720	56.000	46.000	-15.830	-6.280	L1
1.074	40.880	40.850	0.100	40.980	40.950	56.000	46.000	-15.020	-5.050	L1
1.677	34.820	34.160	0.100	34.920	34.260	56.000	46.000	-21.080	-11.740	L1
13.530	19.190	15.480	0.771	19.961	16.251	60.000	50.000	-40.039	-33.749	L1
0.238	43.560	43.120	0.100	43.660	43.220	62.166	52.166	-18.506	-8.946	L2
0.595	40.530	40.010	0.100	40.630	40.110	56.000	46.000	-15.370	-5.890	L2
0.715	40.950	40.420	0.100	41.050	40.520	56.000	46.000	-14.950	-5.480	L2
1.074	40.920	40.590	0.100	41.020	40.690	56.000	46.000	-14.980	-5.310	L2
1.430	34.610	34.080	0.100	34.710	34.180	56.000	46.000	-21.290	-11.820	L2
2.271	32.790	32.400	0.100	32.890	32.500	56.000	46.000	-23.110	-13.500	L2

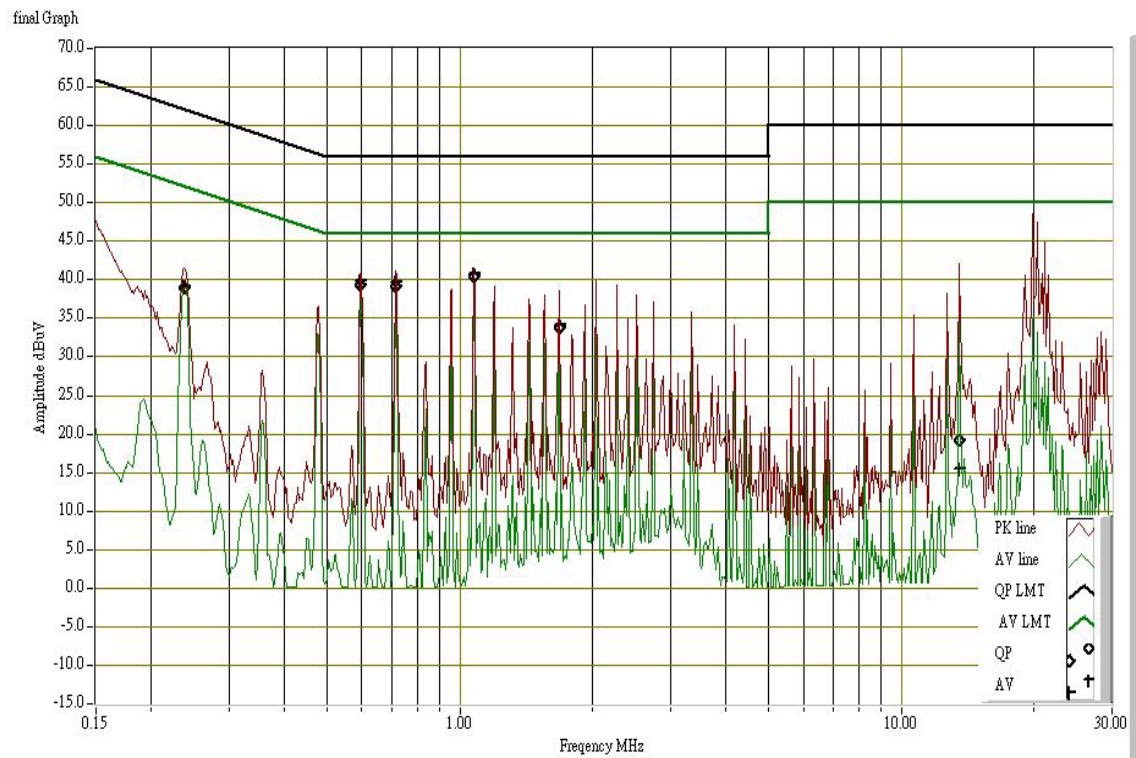
**Remark:**

1. Measuring frequencies from 0.15 MHz to 30MHz.
2. The emissions measured in frequency range from 0.15 MHz to 30MHz were made with an instrument using Quasi-peak detector and average detector.
3. The IF bandwidth of SPA between 0.15MHz to 30MHz was 10kHz; the IF bandwidth of Test Receiver between 0.15MHz to 30MHz was 9kHz;
4. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line)

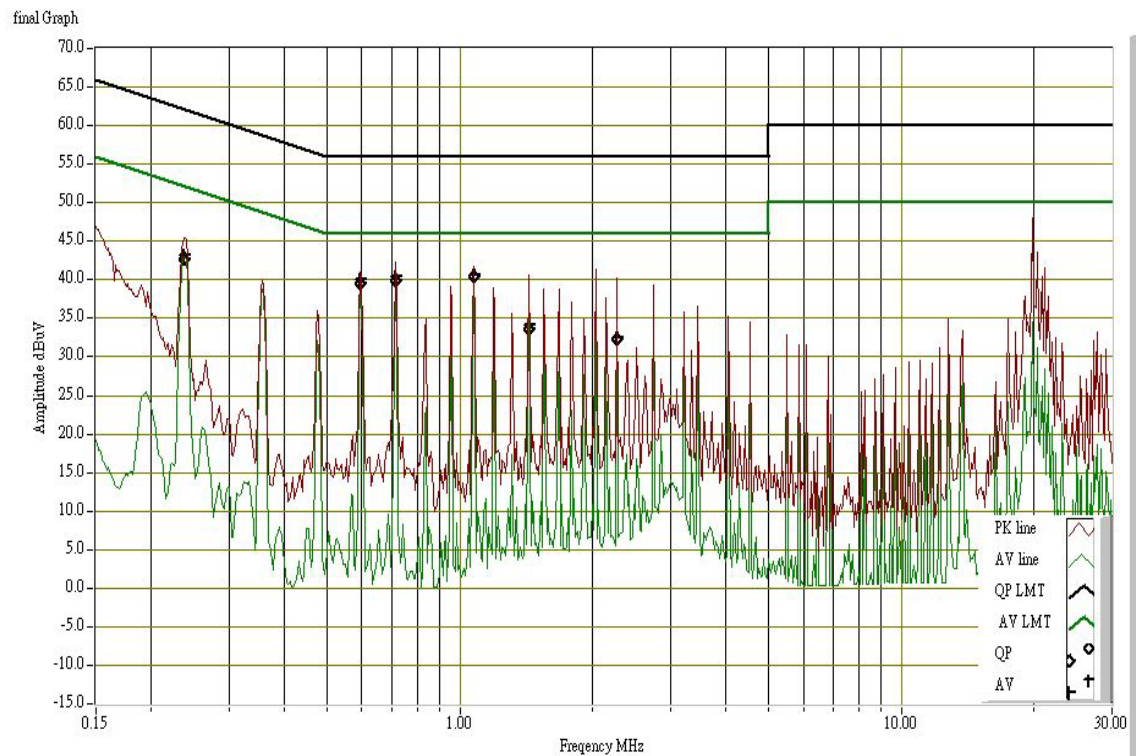


## Test Plots

### Conducted emissions (Line 1)



### Conducted emissions (Line 2)





## Radiated Emission

**Operation Mode:** Mode 1

**Test Date:** November 23, 2006

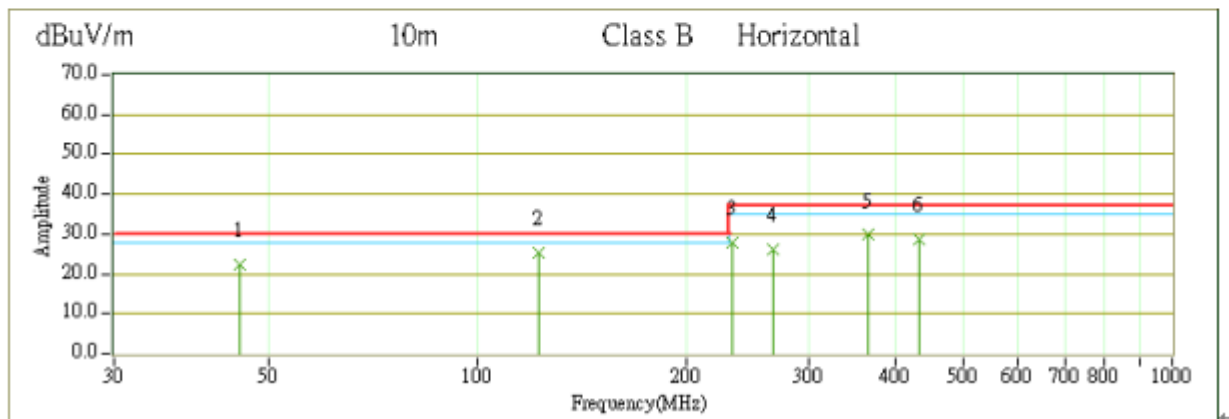
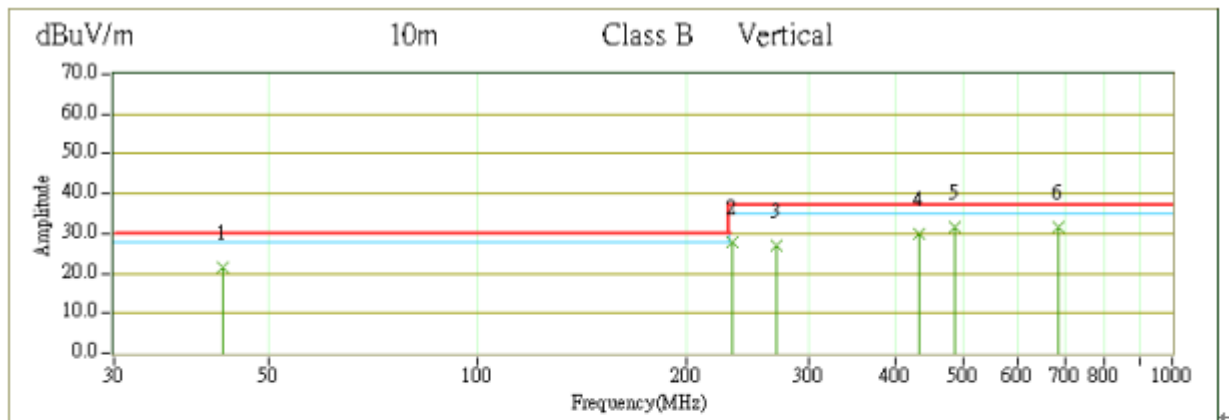
**Temperature:** 32°C

**Tested by:** Ivan Tsai

**Humidity:** 54% RH

**Polarity:** Ver. / Hor.

**Test Site:** 5





Frequency (MHz)	Ant.Pol. (H/V)	Detector Mode (PK/QP)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit 10m (dBuV/m)	Margin (dB)
43.13	V	Peak	8.21	13.27	21.48	30.00	-8.52
233.19	V	Peak	13.76	14.13	27.89	37.00	-9.11
270.05	V	Peak	10.77	16.20	26.97	37.00	-10.03
433.19	V	Peak	9.57	20.30	29.87	37.00	-7.13
487.28	V	QP	5.89	21.84	27.73	37.00	-9.27
686.83	V	QP	2.12	25.34	27.46	37.00	-9.54
45.43	H	Peak	10.54	11.81	22.35	30.00	-7.65
122.63	H	QP	5.43	16.03	21.46	30.00	-8.54
233.17	H	Peak	13.79	14.12	27.91	37.00	-9.09
266.65	H	Peak	10.27	16.00	26.27	37.00	-10.73
364.25	H	Peak	11.23	18.51	29.74	37.00	-7.26
432.57	H	Peak	8.20	20.28	28.48	37.00	-8.52

**Remark:**

1. *Measuring frequencies from 30 MHz to the 1GHz.*
2. *Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak detector mode.*
3. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
4. *The IF bandwidth of SPA between 30MHz to 1GHz was 100kHz.*



**Operation Mode:** Mode 2

**Test Date:** December 19, 2006

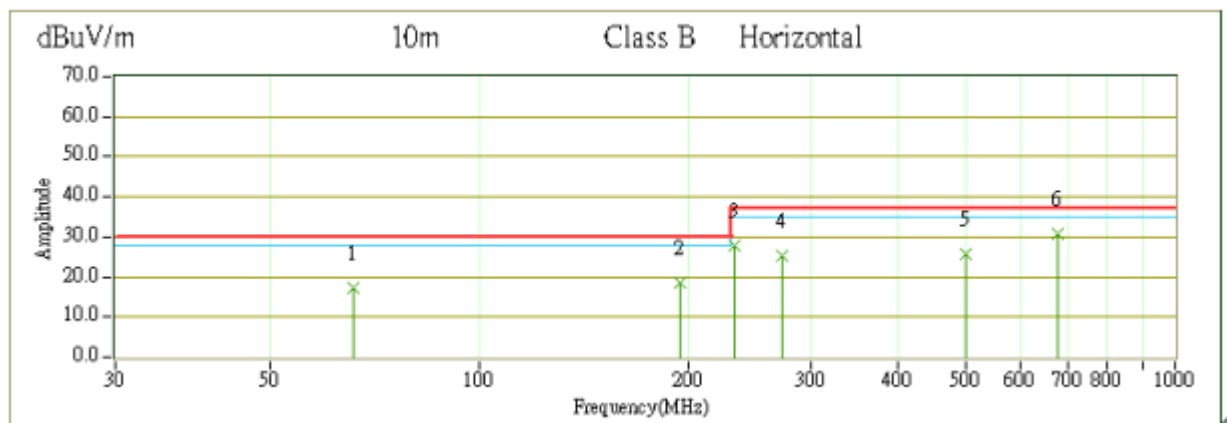
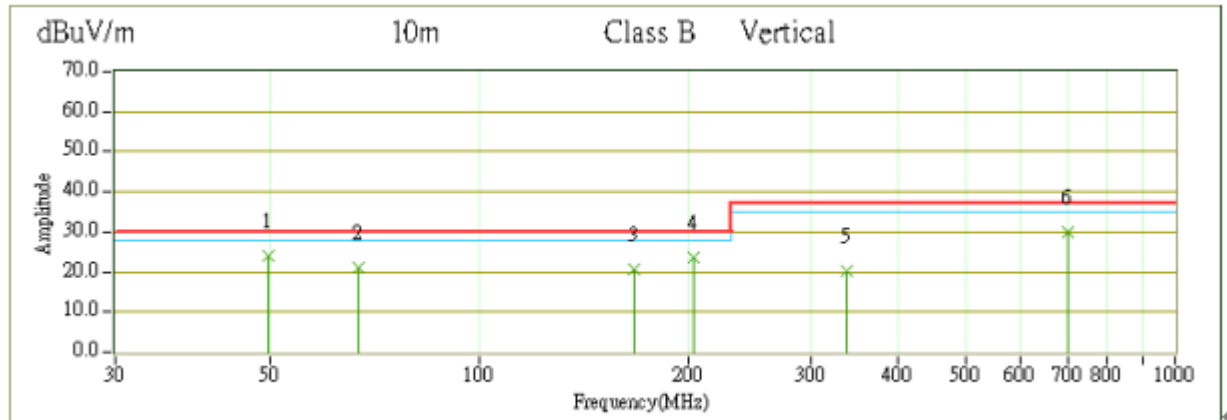
**Temperature:** 26°C

**Tested by:** Ivan Tsai

**Humidity:** 55 % RH

**Polarity:** Ver. / Hor.

**Test Site:** 2





Frequency (MHz)	Ant.Pol. (H/V)	Detector Mode (PK/QP)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit 10m (dBuV/m)	Margin (dB)
49.80	V	Peak	13.97	9.90	23.87	30.00	-6.13
67.19	V	Peak	11.36	9.79	21.15	30.00	-8.85
166.59	V	Peak	5.95	14.60	20.55	30.00	-9.45
203.77	V	Peak	7.89	15.76	23.65	30.00	-6.35
337.60	V	Peak	1.40	18.95	20.35	37.00	-16.65
699.53	V	Peak	2.11	27.79	29.90	37.00	-7.10
65.87	H	Peak	7.45	9.65	17.10	30.00	-12.90
194.76	H	Peak	3.17	15.53	18.70	30.00	-11.30
233.24	H	Peak	12.99	14.86	27.85	37.00	-9.15
272.09	H	Peak	8.29	17.21	25.50	37.00	-11.50
501.21	H	Peak	2.14	23.73	25.87	37.00	-11.13
677.01	H	Peak	3.65	27.25	30.90	37.00	-6.10

**Remark:**

1. *Measuring frequencies from 30 MHz to the 1GHz.*
2. *Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak detector mode.*
3. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
4. *The IF bandwidth of SPA between 30MHz to 1GHz was 100kHz.*



**Operation Mode:** Mode 3

**Test Date:** December 26, 2006

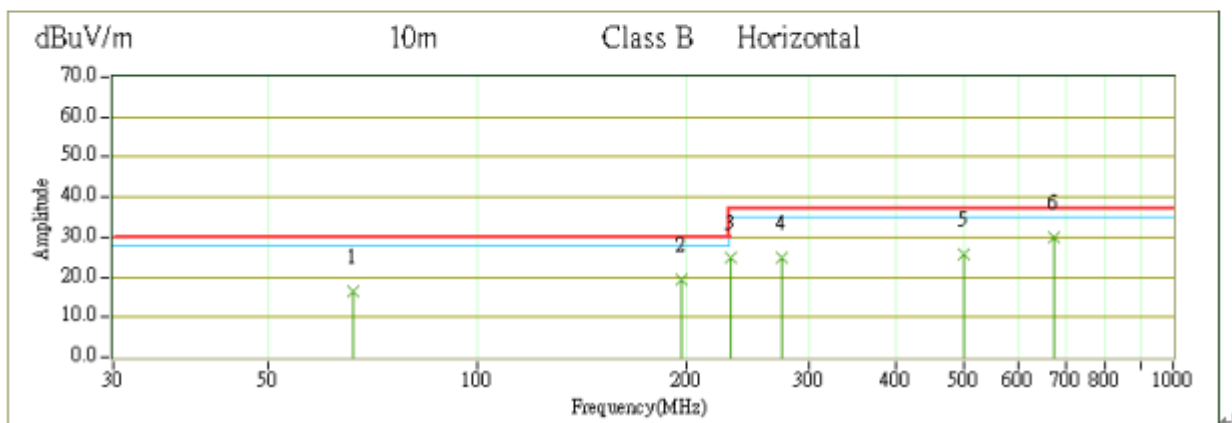
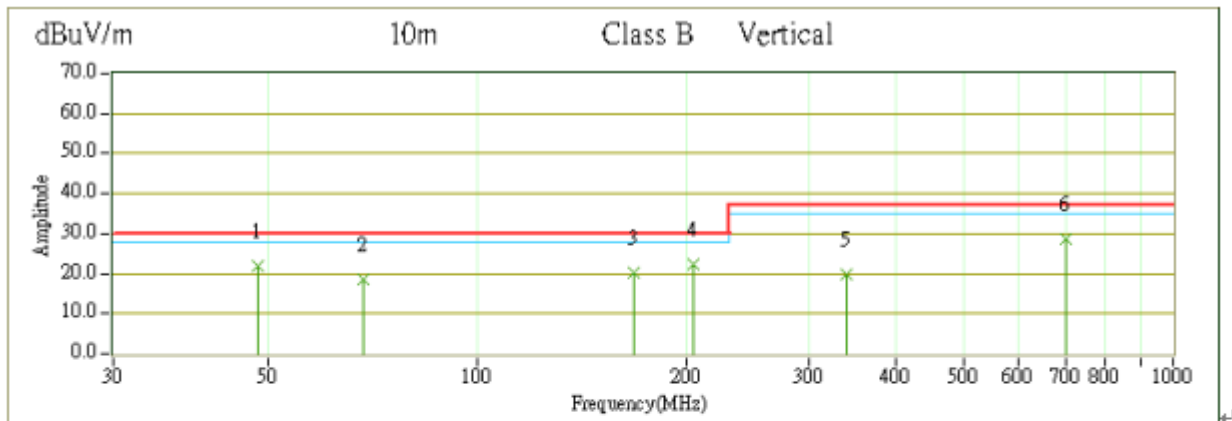
**Temperature:** 31C

**Tested by:** Ivan Tsai

**Humidity:** 56% RH

**Polarity:** Ver. / Hor.

**Test Site:** 2







Frequency (MHz)	Ant.Pol. (H/V)	Detector Mode (PK/QP)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit 10m (dBuV/m)	Margin (dB)
48.32	V	Peak	11.40	10.51	21.91	30.00	-8.09
68.52	V	Peak	8.20	10.27	18.47	30.00	-11.53
168.20	V	Peak	5.80	14.49	20.29	30.00	-9.71
204.61	V	Peak	7.40	14.92	22.32	30.00	-7.68
338.61	V	Peak	1.30	18.68	19.98	37.00	-17.02
699.83	V	Peak	1.90	26.80	28.70	37.00	-8.30
66.41	H	Peak	6.40	10.08	16.48	30.00	-13.52
196.83	H	Peak	4.30	14.96	19.26	30.00	-10.74
231.17	H	Peak	10.60	14.40	25.00	37.00	-12.00
273.48	H	Peak	8.15	16.71	24.86	37.00	-12.14
500.25	H	Peak	2.40	23.21	25.61	37.00	-11.39
675.50	H	Peak	3.40	26.51	29.91	37.00	-7.09

**Remark:**

1. *Measuring frequencies from 30 MHz to the 1GHz.*
2. *Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak detector mode.*
3. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
4. *The IF bandwidth of SPA between 30MHz to 1GHz was 100kHz.*