FCC TEST REPORT

CATEGORY	:	Portable
PRODUCT NAME	:	Wireless 27MHz Full-Size 5-button Rechargeable Optical Mouse
FCC ID.	:	O3L-AMW10
BRAND NAME	:	Paten
MODEL NAME	:	AMW10
APPLICANT	:	**Paten Wireless Technology Inc.** 8F, No. 407, Zui Kuang RD., NeiHu District, Taipei 114, Taiwan R.O.C.
MANUFACTURER	:	**Paten Wireless Technology Inc.** DaBanDe, DaNing, Human, DongGuan, GuangDong, China
ISSUED BY	:	**SPORTON INTERNATIONAL INC.** 6F, No. 106, Sec. 1, Hsin Tai Wu Rd., Hsi Chih, Taipei Hsien, Taiwan, R.O.C.

Statements:

The test result in this report refers exclusively to the 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 could not be used by the applicant to claim the product endorsement by NVLAP or any agency of U.S. government.

The test equipment used to perform the test are calibrated and traceable to NML/ROC or NIST/USA.

Lab Code: 200079-0

Table of Contents

History of this test report

Original Report Issue Date: Aug. 22, 2005

Report No.: FR581112

■ No additional attachment.

☐ Additional attachment were issued as following record:

Attachment No.	Issue Date	Description

CERTIFICATE OF COMPLIANCE

with

47 CFR FCC Part 15 Subpart C (Section 15.227)

PRODUCT NAME	:	Wireless 27MHz Full-Size 5-button Rechargeable Optical Mouse
BRAND NAME	:	Paten
MODEL NAME	:	AMW10
APPLICANT	:	**Paten Wireless Technology Inc.** 8F, No. 407, Zui Kuang RD., NeiHu District, Taipei 114, Taiwan R.O.C.
MANUFACTURER	:	**Paten Wireless Technology Inc.** DaBanDe, DaNing, Human, DongGuan, GuangDong, China

I **HEREBY** CERTIFY THAT:

The measurements shown in this test report were made in accordance with the procedures given in ANSI C63.4 - 2003 and all test are performed according to 47 CFR FCC Part 15. Testing was carried out on Aug. 18, 2005 at SPORTON International Inc. LAB.

Wayne Hsu / Supervisor
Sporton International Inc.

1. General Description of Equipment under Test

1.1. Applicant

Paten Wireless Technology Inc.
8F, No. 407, Zui Kuang RD., NeiHu District, Taipei 114, Taiwan R.O.C.

1.2. Manufacturer

Paten Wireless Technology Inc.
DaBanDe, DaNing, Human, DongGuan, GuangDong, China

1.3. Basic Description of Equipment under Test

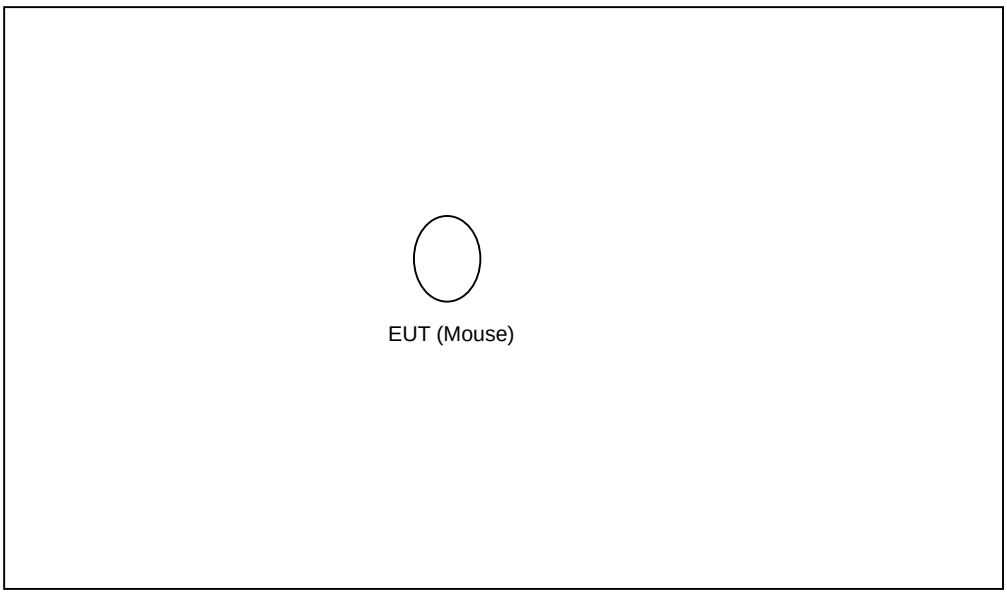
This product is a wireless optical mouse with FSK modulation solution. The radio technical data has been listed on section " Features of Equipment under Test ". This report is for the transmitter part only.

1.4. Features of Equipment under Test

Items	Description
Type of Modulation	FSK
Number of Channels	1
Frequency Band	27.045 MHz
Antenna Type	Integral Antenna / 1dBi
Testing Duty Cycle	100.00%
Power Rating (DC/AC, Voltage)	3V dc from Battery
Temperature Range (Operating)	0 ~ 55 ℃

2. Test Configuration of the Equipment under Test

2.1. Connection Diagram of Test System



2.2. The Test Mode Description

1. The used peripherals as well as the configuration fulfill the requirements of ANSI C63.4: 2003. The configuration is operated in a manner, which tends to maximize its emission characteristics in a typical application.
2. 3 meters measurement distance was used in this test report.

2.3. Description of Test Supporting Units

The EUT was tested alone.

3. General Information of Test

3.1. Test Facility

Test Site Location : No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiag, Tao Yuan Hsien, Taiwan, R.O.C.
: TEL 886-3-327-3456
: FAX 886-3-318-0055

Test Site No : 03CH03-HY, TH01-HY

3.2. Test Conditions

Normal Voltage : 3V dc from Batteries

Normal Temperature : 20℃

3.3. Standards for Methods of Measurement

Here is the list of the standards followed in this test report.
ANSI C63.4-2003
47 CFR Part 15 Subpart C (Section 15.227)

3.4. Frequency Range Investigated

Radiated emission test: from 9 kHz to 10th carrier harmonic.

3.5. Test Distance

The test distance of radiated emission (30MHz~1GHz) test from antenna to EUT is 3 M.

3.6. Test Software

During testing, there is no supporting test software.

4. List of Measurements

4.1. Summary of the Test Results

Applied Standard: 47CFR FCC Part 15 Subpart C			
Paragraph	**FCC Section**	**Description of Test**	**Result**
5.1	15.227(a)	Maximum Field Strength of Fundamental	Pass
5.2	15.215 of FCC	20dB Spectrum Bandwidth	Pass
5.3	15.207	AC Power Line Conducted Emission	NA
5.4	15.227(b)	Spurious Radiated Emission	Pass
5.5	15.203	Antenna Requirement	Pass

5. Test Result

5.1. Test of Maximum Carrier Field Strength

5.1.1. Applicable Standard

Section 15.227(a): The field strength of any emission within this band shall not exceed 10,000 micro-volts/meter at 3 meters. The emission limit in this paragraph is based on measurement instrumentation employing an average detector.

5.1.2. Measuring Instruments

Item 1~12 of the table on section 6.

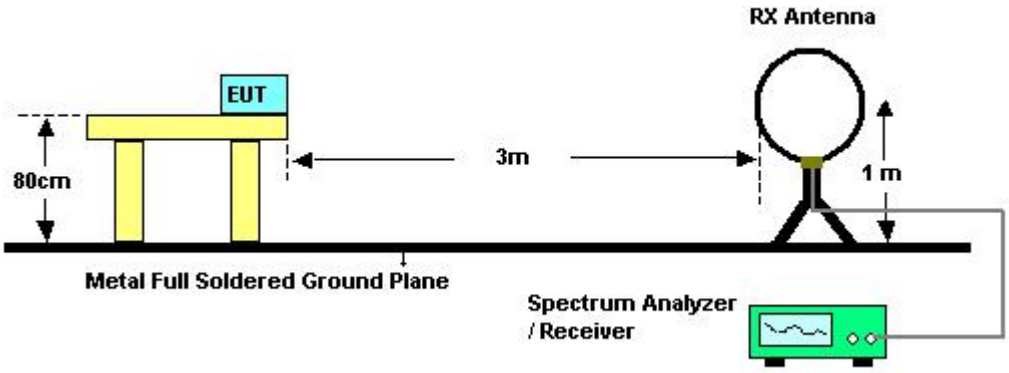
5.1.3. Description of Major Test Instruments Setting

- Test Receiver : (R&S ESCS 30)
  Attenuation : Auto
  Center Frequency : Carrier Frequency of EUT
  IF Bandwidth : 9 KHz

5.1.4. Test Procedures

1. Configure the EUT according to ANSI C63.4-2003.
2. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emission field strength of both horizontal and vertical polarization.
4. For carrier field strength emission, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. For carrier field strength emission, use 9kHz RBW of Receiver for reading under average and peak detector.

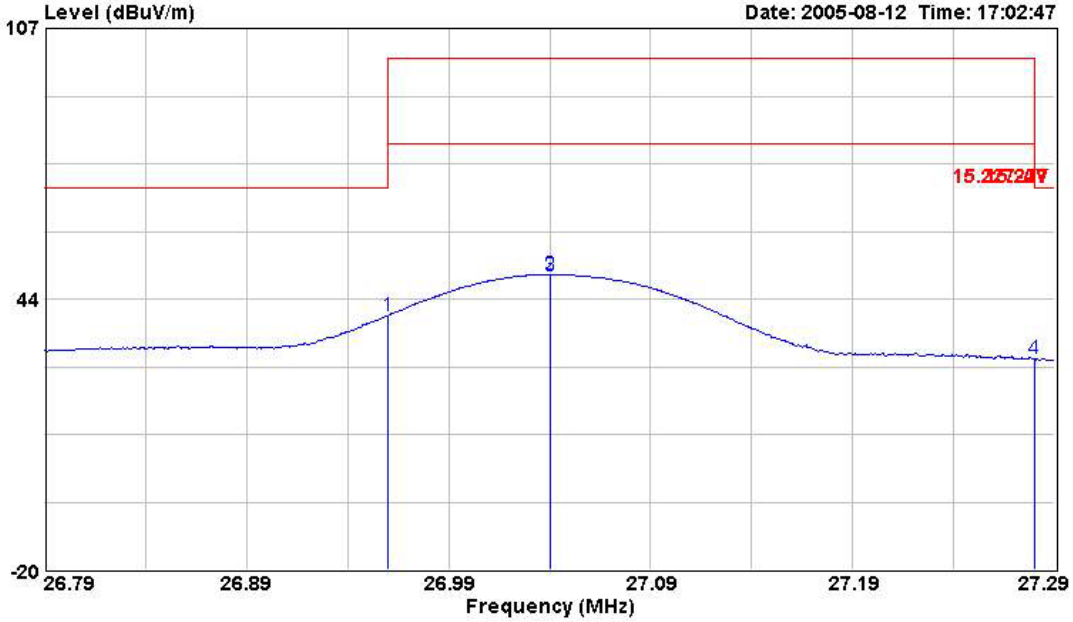
5.1.5 Test Setup Layout



5.1.5. Test Result

Test Site	03CH03-HY
Temperature	25℃
Humidity	60%
Test Engineer	Edison Lu

Channel 1 , 27.045MHz



	Freq	Level	Over Limit	Read Level	Limit Line	Cable Loss	Antenna Factor	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB/m	dB		cm	deg
1 @	26.960	39.67	-29.87	54.14	69.54	0.52	15.17	30.17	Peak	---	---
2	27.040	49.29	-50.71	63.88	100.00	0.52	15.05	30.17	Peak	---	---
3	27.040	48.91	-31.09	63.50	80.00	0.52	15.05	30.17	Average	---	---
4	27.280	29.44	-40.10	44.15	69.54	0.52	14.93	30.17	Peak	---	---

5.2. 20dB Spectrum Bandwidth Measurement

5.2.1. Applicable Standard

Section 15.215: Intentional radiators must be designed to ensure that the 20 dB bandwidth of the emissions in the specific band (26.96~27.28MHz).

In ANSI C63.4-2003, the resolution bandwidth of the measuring instrument shall be set to a value greater than 5% of the bandwidth requirements. When no bandwidth requirements are specified, the minimum resolution band-width of the measuring instrument is given in the following:

Fundamental Freq.	Minimum Resolution Bandwidth
9 kHz to 30 MHz	1 kHz
30 to 1000 MHz	10 kHz
1000 MHz to 40 GHz	100 kHz

5.2.2. Measuring Instruments

Please refer to section 6 in this report.

5.2.3. Major Test Instruments Setting

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth
RB	1 kHz (20dB Bandwidth)
VB	1 kHz (20dB Bandwidth)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

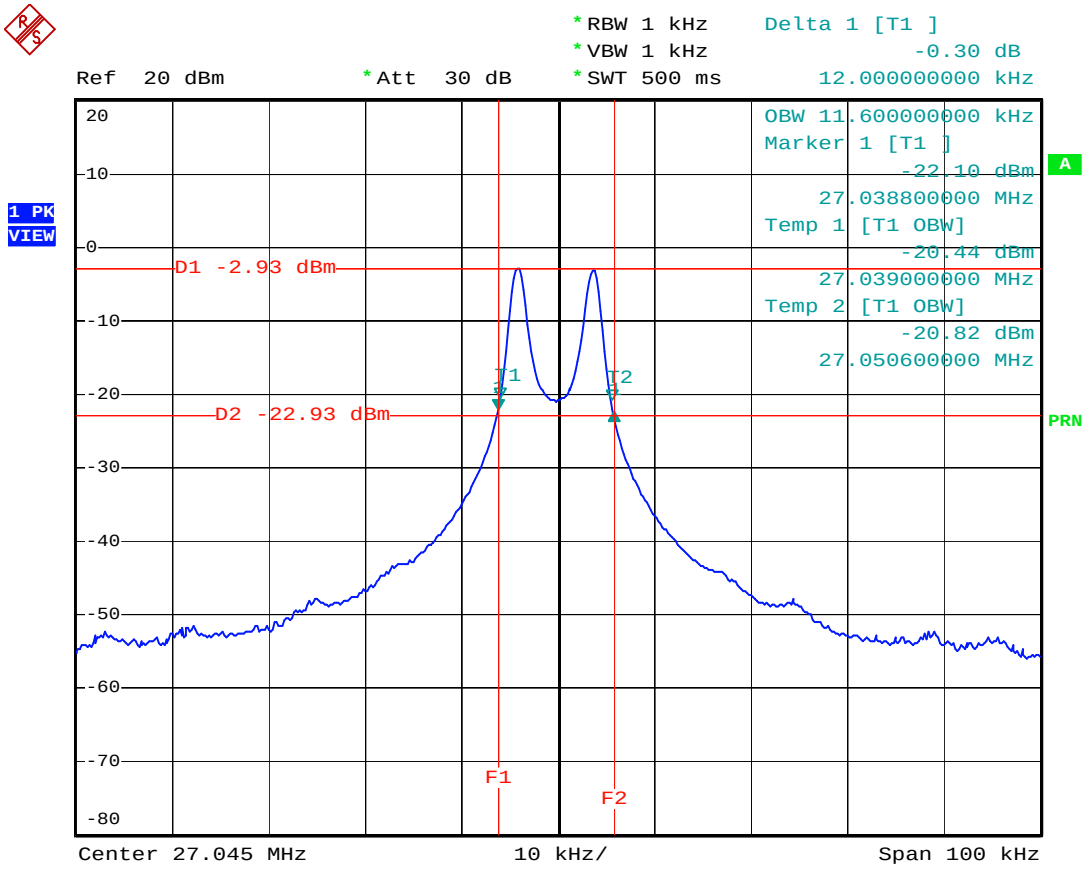
5.2.4. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyser in peak hold mode.
2. The resolution bandwidth of 1 kHz and the video bandwidth of 1 kHz were utilised for 20 dB bandwidth measurement.

5.2.5. Test Setup Layout

5.1.6 Test Result

- Temperature: 25°C
- Relative Humidity: 60%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Eason Lu



Date: 13.AUG.2005 10:08:47

Frequency (MHz)	20dB Bandwidth (kHz)	99% Occupied BW (kHz)	Fequency range MHz (20dB Down) fL > 26.96 MHz	Fequency range MHz (20dB Down) fH < 27.28 MHz
27.0450	12.0000	11.60	27.0388	27.0508

Note:
Correct Factor = Antenna Factor + Cable Loss - Preamp Factor.
Read Level = Level of Receiver or Spectrum.
Level = Read Level + Correct Factor.

5.3. Test of AC Power Line Conducted Emission

5.3.1. Applicable Standard

Section 15.207: For a Low-power Radio-frequency Device which is designed to be connected to the AC power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed below limits table.

Frequency (MHz)	QP Limit (dBuV)	AV Limit (dBuV)
0.15~0.5	66~56	56~46
0.5~5	56	46
5~30	60	50

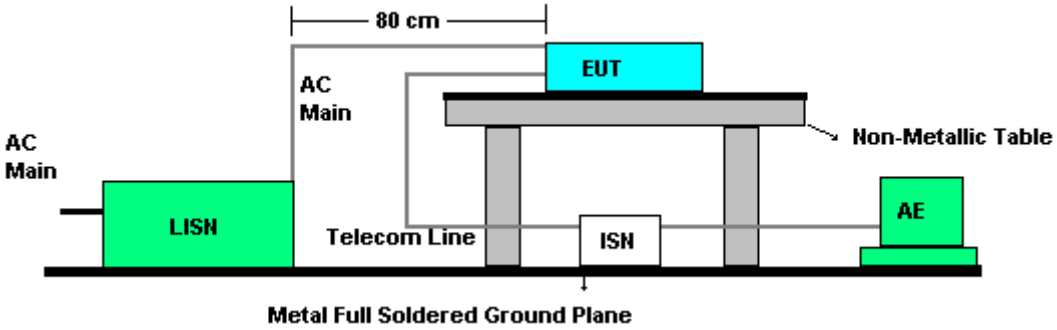
5.3.2. Description of Major Test Instruments Setting

- Test Receiver : R&S ESCS 30
  Attenuation : 10 dB
  Start Frequency : 0.15 MHz
  Stop Frequency : 30 MHz
  IF Bandwidth : 9 KHz

5.3.3. Test Procedures

1. Configure the EUT according to ANSI C63.4-2003.
2. The EUT has to be placed 0.4 meter far from the conducting wall of the shielding room and at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN)
4. All the support units are connected to the other LISNs. The LISN should provides 50uH/50ohms coupling impedance.
5. The frequency range from 150 KHz to 30 MHz was searched.
6. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
7. The measurement has to be done between each power line and ground at the power terminal for each RF channel. Only one RF channel has to be investigated since this test is independent with the RF channel selection.

5.3.4. Test Setup Layout



5.3.5. Test Result of Conducted Emission

The transmitter is battery powered; there is no need to do this testing.

5.4. Test of Spurious Radiated Emission

5.4.1. Applicable Standard

Section 15.227(b): The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in Section 15.209.

5.4.2. Measuring Instruments

Please reference item 1~12 in chapter 6 for the instruments used for testing.

5.4.3. Description of Major Test Instruments Setting

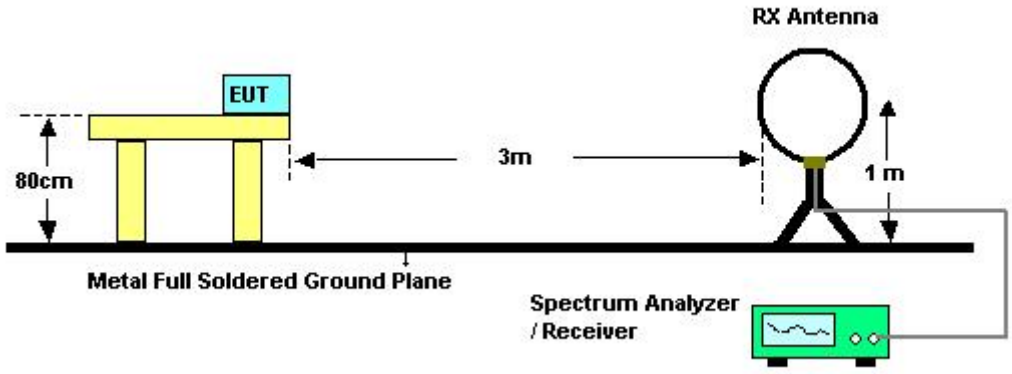
- Test Receiver : FSP 40
  Attenuation : Auto
  Start Frequency : 30 MHz
  Stop Frequency : 10th carrier harmonic
  RB : 120 KHz for QP or PK

5.4.4. Test Procedures

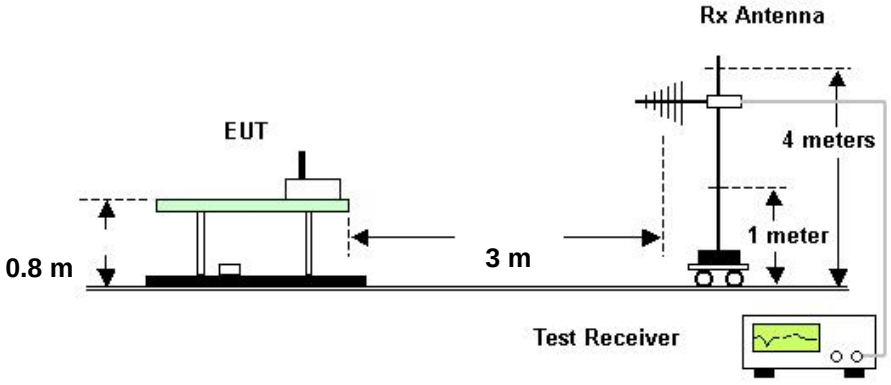
1. Configure the EUT according to ANSI C63.4-2003.
2. The EUT was placed on the top of the turn table 0.8 meter above ground.
3. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed meters far away from the turn table.
4. Power on the EUT and all the supporting units.
5. The turn table was rotated by 360 degrees to determine the position of the highest radiation.
6. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emission field strength of both horizontal and vertical polarization.
7. For each suspected emission, the antenna tower was scan (from 1 M to 4 M) and then the turn table was rotated (from 0 degree to 360 degrees) to find the maximum reading.
8. Set the test-receiver system to peak or quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.

5.4.5. Test Setup Layout

For radiated emissions below 30MHz



For radiated emissions above 30MHz



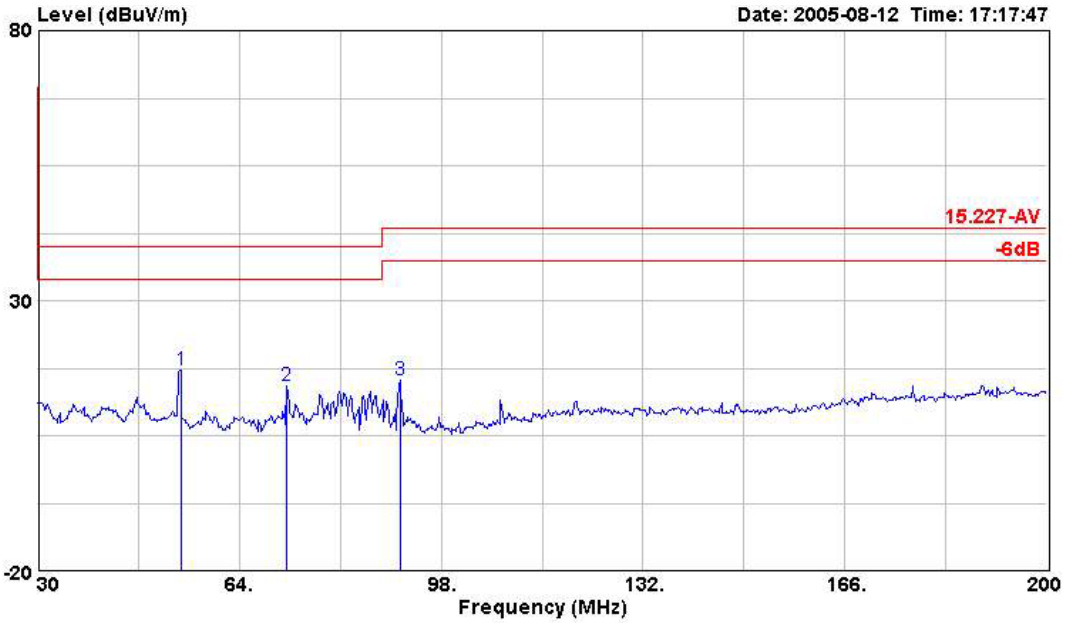
5.4.6. Test Criteria

All test results complied with the requirements of the section 15.227(b). Measurement Uncertainty is 2.26dB.

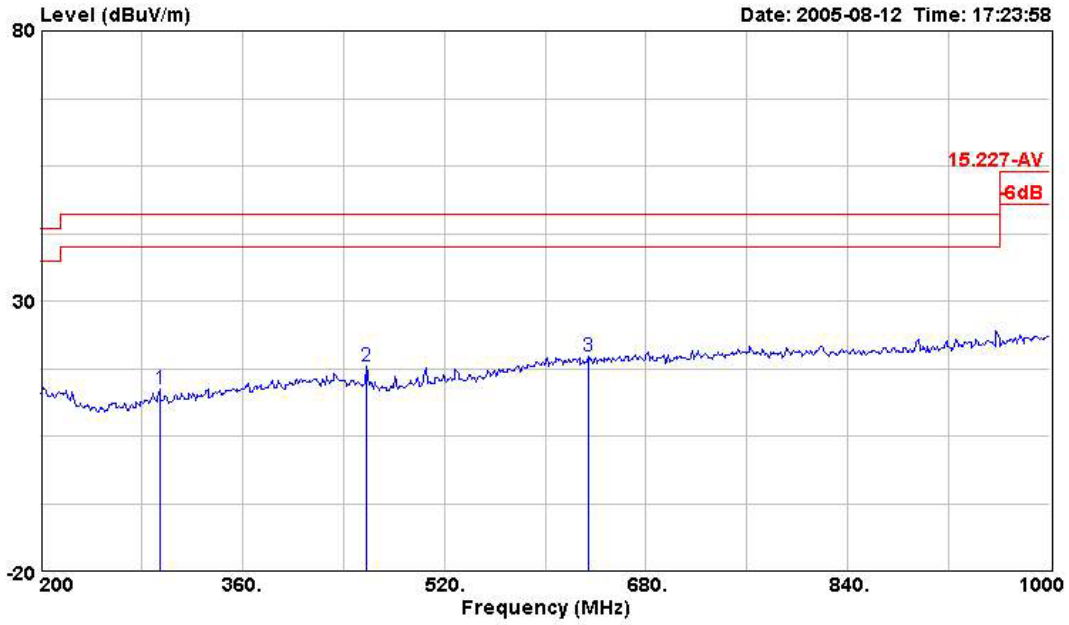
5.4.7. Test Results

- Temperature: 25°C
- Relative Humidity: 60%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Vic

(A) Polarization: Horizontal

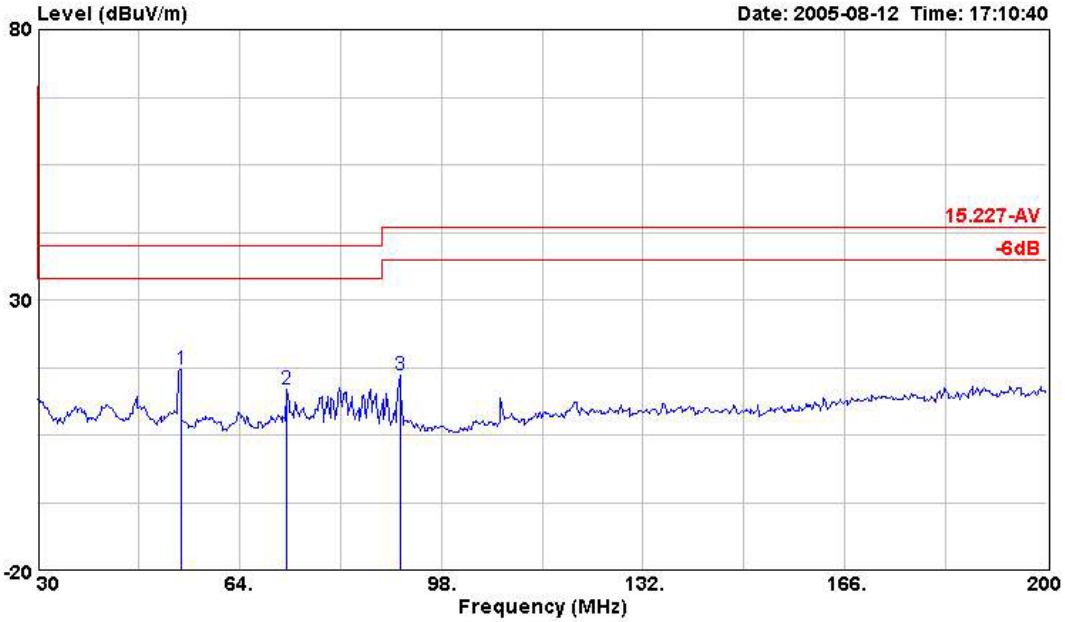


	Freq	Level	Over Limit	Read Level	Limit Line	Cable Loss	Antenna Factor	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB/m	dB		cm	deg
1 @	54.140	17.21	-22.79	35.72	40.00	0.72	11.02	30.25	Peak	---	---
2 @	71.990	14.23	-25.77	33.96	40.00	0.85	9.74	30.32	Peak	---	---
3 @	91.030	15.40	-28.10	35.43	43.50	0.91	8.55	29.49	Peak	---	---

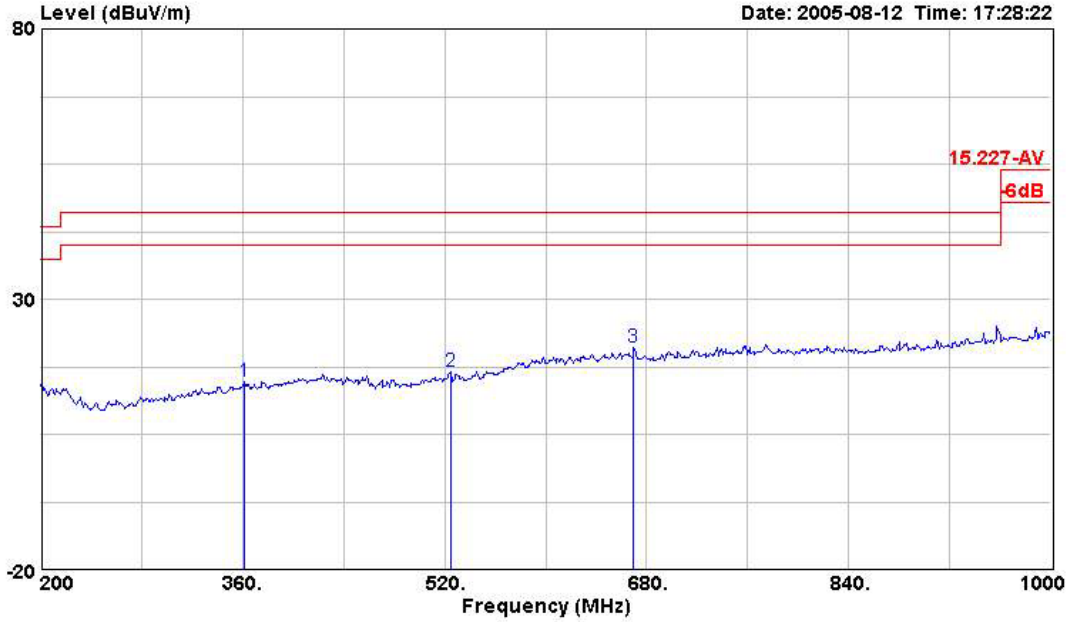


	Freq	Level	Over Limit	Read Level	Limit Line	Cable Loss	Antenna Factor	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB/m	dB		cm	deg
1	294.400	13.74	-32.26	28.97	46.00	1.68	13.65	30.57	Peak	---	---
2 @	458.400	17.80	-28.20	30.56	46.00	2.13	16.33	31.22	Peak	---	---
3 @	634.400	19.79	-26.21	27.50	46.00	2.46	20.50	30.68	Peak	---	---

(B) Polarization: Vertical



	Freq	Level	Over Limit	Read Level	Limit Line	Cable Loss	Antenna Factor	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB/m	dB		cm	deg
1 @	54.140	17.15	-22.85	35.66	40.00	0.72	11.02	30.25	Peak	---	---
2 @	71.990	13.45	-26.55	33.18	40.00	0.85	9.74	30.32	Peak	---	---
3 @	91.030	15.96	-27.54	35.99	43.50	0.91	8.55	29.49	Peak	---	---

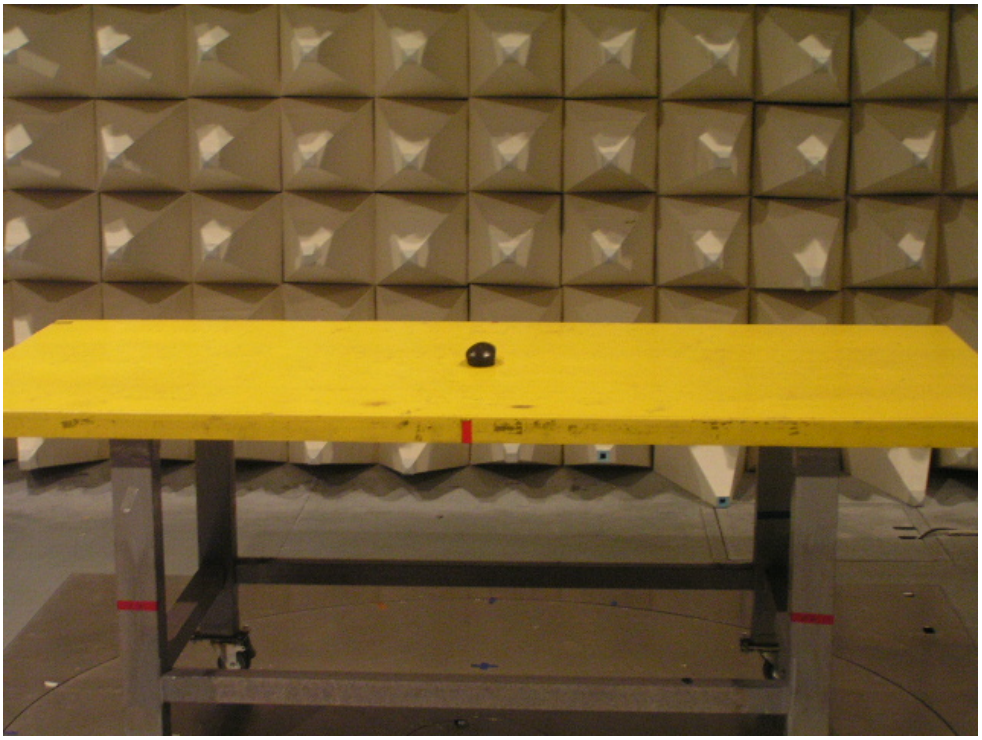


	Freq	Level	Over Limit	Read Level	Limit Line	Cable Loss	Antenna Factor	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB/m	dB		cm	deg
1	361.600	14.81	-31.19	28.07	46.00	1.81	15.64	30.72	Peak	---	---
2 @	524.800	16.65	-29.35	28.29	46.00	2.21	17.08	30.93	Peak	---	---
3 @	669.600	21.18	-24.82	28.60	46.00	2.52	20.61	30.55	Peak	---	---

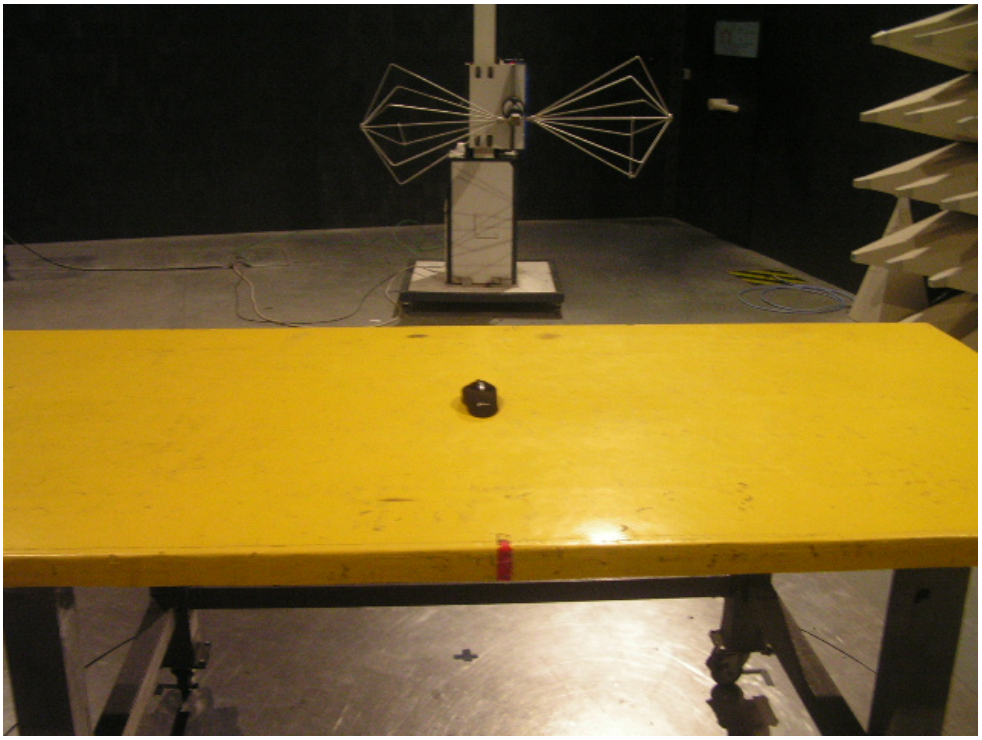
Note:
Emission level (dBuV/m) = 20 log Emission level (uV/m)
Corrected Reading: Probe Factor + Cable Loss + Read Level - Preamp Factor = Level
The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);
Limit line = specific limits (dBuV) + distance extrapolation factor.

5.4.8. Photographs of Radiated Emission Test Configuration

FRONT VIEW



REAR VIEW



5.5. Antenna Requirements

5.5.1. Standard Applicable

Section 15.203: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

5.5.2. Antenna Connected Construction

There is no connector for Integral antenna.

5.5.3. Test Criteria

All test results complied with the requirements of section 15.203.

6. List of Measuring Equipments Used

Items	Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
1	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz~1GHz 3m	Jun. 16, 2005	Radiation (03CH03-HY)
2	Spectrum Analyzer	R&S	FSP40	100004	9KHZ~4GHz	Aug. 31, 2004	Radiation (03CH03-HY)
3	Amplifier	Schaffner	CPA9231A	18667	9KHz – 2GHz	Jan. 04, 2005	Radiation (03CH03-HY)
4	Biconical Antenna	SCHWARZBECK	VHBB 9124	301	30MHz –200MHz	Jul. 22, 2005	Radiation (03CH03-HY)
5	Log Antenna	SCHWARZBECK	VUSLP 9111	221	200MHz -1GHz	Jul. 22, 2005	Radiation (03CH03-HY)
6	RF Cable-R03m	Jye Bao	RG142	CB021	30MHz~1GHz	Dec. 02, 2004	Radiation (03CH03-HY)
7	Amplifier	MITEQ	AFS44	879984	1GHz~26.5GHz	Mar. 25, 2005	Radiation (03CH03-HY)
8	Horn Antenna	COMPOWER	AH-118	10092	1GHz – 18GHz	Feb. 18, 2005	Radiation (03CH03-HY)
9	Turn Table	HD	DS 420	420/650/00	0 ~ 360 degree	N/A	Radiation (03CH03-HY)
10	Antenna Mast	HD	MA 240	240/560/00	1 m - 4 m	N/A	Radiation (03CH03-HY)
11	Horn Antenna	Schwarzbeck	BBHA9170	154	15GHz~40GHz	Jun. 09, 2004*	Radiation (03CH03-HY)
12	RF Cable-HIGH	SUHNER	SUCOFLES 106	SN30094/6	1GHz~26.5GHz	Mar. 05, 2005	Radiation (03CH03-HY)
13	Loop Antenna	R&S	HFH2-Z2	860004/001	9kHz ~ 30MHz	May 24, 2004*	Radiation (03CH03-HY)

※ Calibration Interval of instruments listed above is one year.
*Calibration Interval of instruments listed above is two year.

Items	Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
1	Spectrum Analyzer	R&S	FSP40	100004	9KHZ~4GHz	Aug. 31, 2004	Conducted (TH01-HY)
2	Power Meter	R&S	NRVS	100444	DC ~ 40GHz	Jul. 06, 2005	Conducted (TH01-HY)
3	Power Sensor	R&S	NRV-Z55	100049	DC ~ 40GHz	Jul. 06, 2005	Conducted (TH01-HY)
4	Power Sensor	R&S	NRV-Z32	100057	30MHz ~ 6GHz	Apr. 28, 2005	Conducted (TH01-HY)
5	AC Power Source	HPC	HPA-500W	HPA-9100024	AC 0 – 300V	Apr. 21, 2005	Conducted (TH01-HY)
6	DC Power Source	G.W.	GPC-6030D	C671845	DC 1V – 60V	Dec. 28, 2004	Conducted (TH01-HY)
7	Temp. and Humidity Chamber	KSON	THS-C3L	612	N/A	Oct. 01, 2004	Conducted (TH01-HY)
8	RF CABLE-1m	Jye Bao	RG142	CB034-1m	20MHz – 7GHz	Jan. 01, 2005	Conducted (TH01-HY)
9	RF CABLE-2m	Jye Bao	RG142	CB035-2m	20MHz – 1GHz	Jan. 01, 2005	Conducted (TH01-HY)
10	Data Generator	Tektronix	J310345	J310345	400Mbps	Dec. 21, 2004	Conducted (TH01-HY)
11	OscilloScope	Tektronix	TDS1012	C038520	100MHz-1Gs/s	Jan. 02, 2005	Conducted (TH01-HY)

※ Calibration Interval of instruments listed above is one year.

7. Company Profile

SPORTON Lab. was established in 1986 with one shielded room: the first private EMI test facility, offering local manufacturers an alternative EMI test familial apart from ERSO. In 1988, one 3M and 10M/3M open area test site were setup and also obtained official accreditation from FCC, VCCI and NEMKO. In 1993, a Safety laboratory was founded and obtained accreditation from UL of USA, CSA of Canada and TUV (Rhineland & PS) of Germany. In 1995, one EMC lab, including EMI and EMS test facilities was setup. In 1997, SPORTON Group has provided financial expense to relocate the headquarter to Orient Scientific Park in Taipei Hsien to offer more comprehensive, more qualified and better service to local suppliers and manufactures. In 1999, Safety Group and Component Group were setup. In 2001, SPORTON has established 3M/10M chamber in Hwa Ya Technology Park.

7.1. Certificate of Accreditation

Taiwan	BSMI, CNLA, DGT
USA	FCC, NVLAP, UL
EU	Nemko, TUV
Japan	VCCI
Canada	Industry Canada

7.2. Test Location

SHIJR	ADD：	6Fl., No. 106, Sec. 1, Shintai 5th Rd., Shijr City, Taipei, Taiwan 221, R.O.C.
	TEL：	02-2696-2468
	FAX：	02-2696-2255
HWA YA	ADD：	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
	TEL：	03-327-3456
	FAX：	03-318-0055
LINKOU	ADD：	No. 30-2, Dingfu Tsuen, Linkou Shiang, Taipei, Taiwan 244, R.O.C
	TEL：	02-2601-1640
	FAX：	02-2601-1695
DUNGHU	ADD：	No. 3, Lane 238, Kangle St., Neihu Chiu, Taipei, Taiwan 114, R.O.C.
	TEL：	02-2631-4739
	FAX：	02-2631-9740
JUNGHE	ADD：	7Fl., No. 758, Jungjeng Rd., Junghe City, Taipei, Taiwan 235, R.O.C.
	TEL：	02-8227-2020
	FAX：	02-8227-2626
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