FCC TEST REPORT

CATEGORY	:	Portable
PRODUCT NAME	:	Cordless Portable Mini Optical Mouse
FCC ID.	:	MNLAM6500UP
FILING TYPE	:	Certification
BRAND NAME	:	ADOMAX
MODEL NAME	:	AM-6500UP
APPLICANT	:	**ADOMAX TECHNOLOGY CO., LTD** 5F/2, NO.192, CHUNG HSIN ROAD. SECTION 2, HSIN TIEN CITY, TAIPEI HSIEN, TAIWAN.
MANUFACTURER	:	**MAXLAND ELECTRONIC INDUSTRIAL CO., (ZQ) LTD.** EAST SIDE OF QIANCUN, YINGBIN ROAD, ZHAOQING, 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

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Appendix A. Photographs of EUT ..... A1 ~ A11

History of this test report

Original Report Issue Date: Sep. 16, 2005

Report No.: FR571508

■ 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	:	Cordless Portable Mini Optical Mouse
BRAND NAME	:	ADOMAX
MODEL NAME	:	AM-6500UP
APPLICANT	:	**ADOMAX TECHNOLOGY CO., LTD** 5F/2, NO.192, CHUNG HSIN ROAD. SECTION 2, HSIN TIEN CITY, TAIPEI HSIEN, TAIWAN.
MANUFACTURER	:	**MAXLAND ELECTRONIC INDUSTRIAL CO., (ZQ) LTD.** EAST SIDE OF QIANCUN, YINGBIN ROAD, ZHAOQING, 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 Sep. 16, 2005 at SPORTON International Inc. LAB.

Wayne Hsu / Supervisor
Sporton International Inc.

1. General Description of Equipment under Test

1.1. Applicant

ADOMAX TECHNOLOGY CO., LTD
5F/2, NO.192, CHUNG HSIN ROAD. SECTION 2, HSIN TIEN CITY, TAIPEI HSIEN, TAIWAN.

1.2. Manufacturer

MAXLAND ELECTRONIC INDUSTRIAL CO., (ZQ) LTD.
EAST SIDE OF QIANCUN, YINGBIN ROAD, ZHAOQING, GUANGDONG, CHINA.

1.3. Basic Description of Equipment under Test

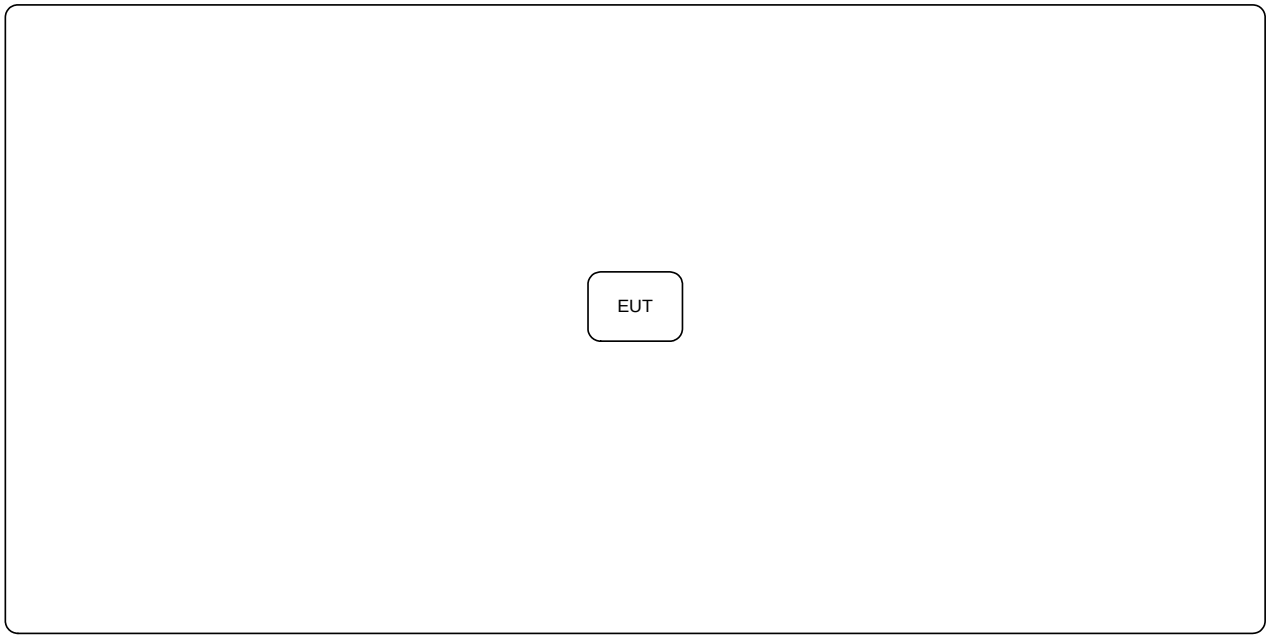
This product is a Cordless Portable Mini Optical Mouse with FSK modulation solution. The radio technical data has been listed on section " Features of Equipment under Test ".This report is for the transmitter part only.

1.4. Features of Equipment under Test

Items	Description
Type of Modulation	FSK
Number of Channels	1
Frequency Band	27.045MHz
Antenna Type / Gain	Printed Antenna / 1dBi
Testing Duty Cycle	100.00%
Power Rating (DC/AC, Voltage)	3.0V DC from Battery (for Mouse)
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.
3. AC power line conducted is not required to test. The EUT is powered by batteries.

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

3.2. Test Conditions

Normal Voltage : 3.0V DC from Battery
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 9kHz to 10th carrier harmonic.

3.5. Test Distance

The test distance of radiated emission (9kHz ~1GHz) test from antenna to EUT is 3 M.
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	15.207	AC Power Line Conducted Emission	NA
5.3	15.227(b)	Spurious Radiated Emission	Pass
5.4	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 2~15 of the table on section 6.

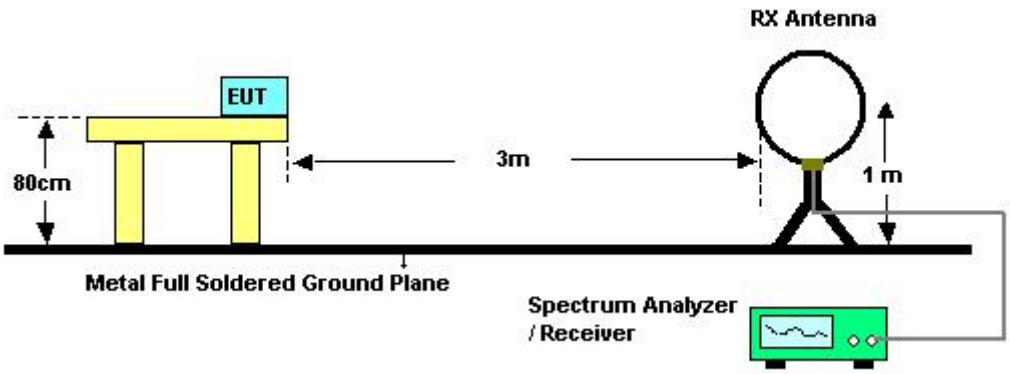
5.1.3. Description of Major Test Instruments Setting

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

5.1.4. Test Procedures

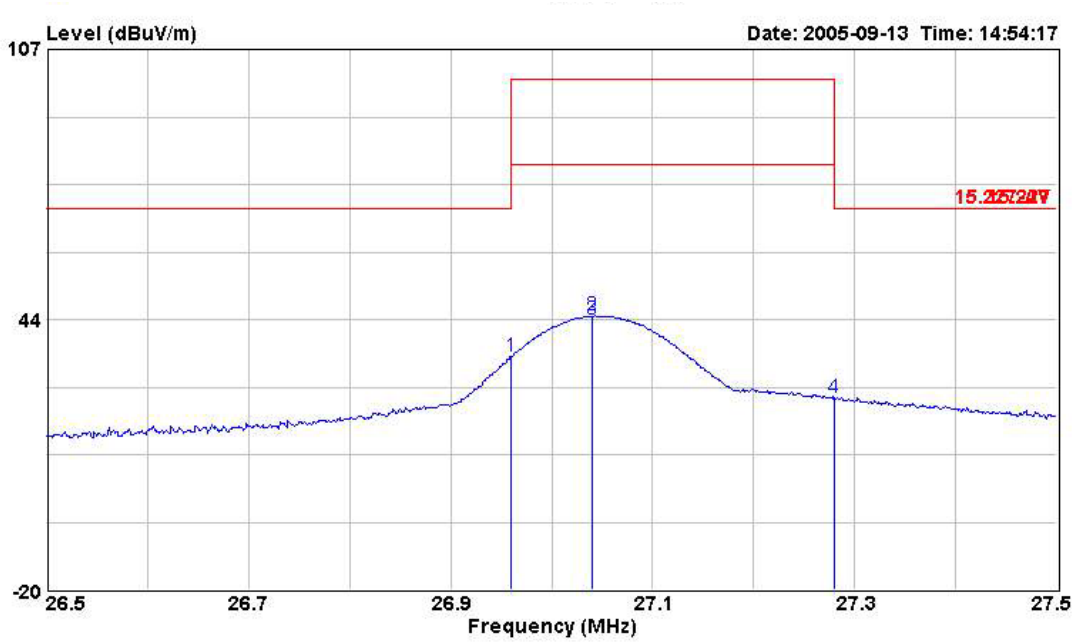
1. Configure the EUT according to ANSI C63.4.
2. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emission field strength of both 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



5.1.6. Test Result

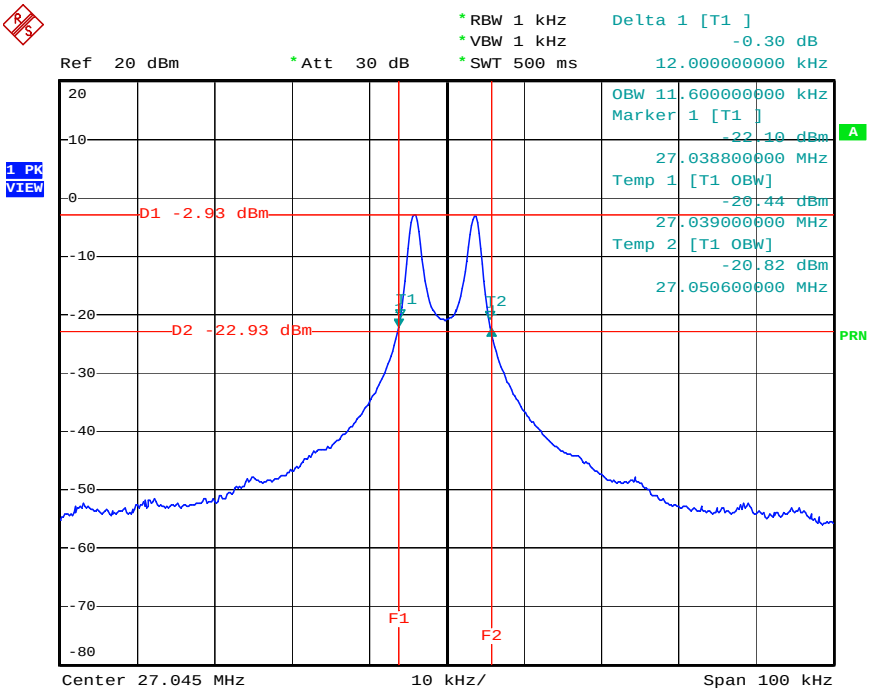
- Temperature: 27°C
- Relative Humidity: 59%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Ted Chiu



	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	34.81	-34.73	49.28	69.54	0.52	15.17	30.17	Peak	---	---
2	27.040	44.35	-55.65	58.94	100.00	0.52	15.05	30.17	Peak	---	---
3	27.040	43.58	-36.42	58.17	80.00	0.52	15.05	30.17	Average	---	---
4	27.280	25.13	-44.41	39.84	69.54	0.52	14.93	30.17	Peak	---	---

5.1.7. Bandwidth Test Result

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



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.

5.2. Test of AC Power Line Conducted Emission

5.2.1. Test Result of Conducted Emission

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

5.3. Test of Spurious Radiated Emission

5.3.1. 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.

5.3.2. Measuring Instruments

Please reference item 2~15 in chapter 6 for the instruments used for testing.

5.3.3. 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

5.3.4. Test Procedures

For radiated emissions below 30MHz

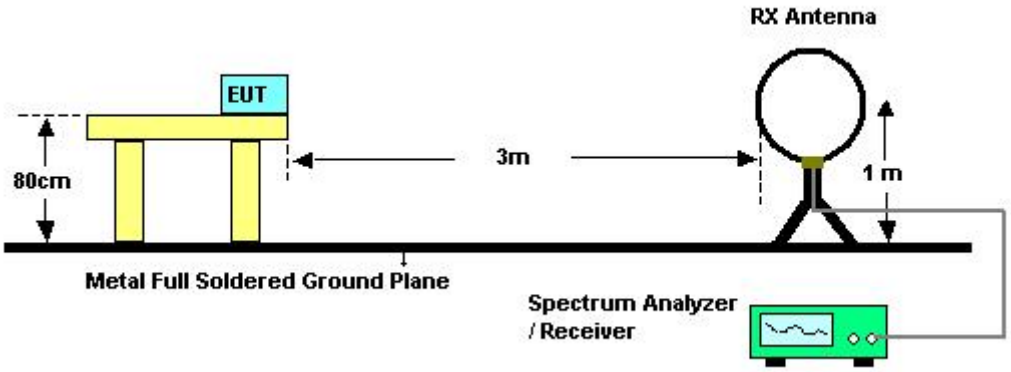
1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the loop receiving antenna mounted antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the receiving antenna was fixed at one meter above ground to find the maximum emissions field strength.
4. Set the test-receiver system to QP Detect Function with specified bandwidth under Maximum Hold Mode.

For radiated emissions above 30MHz

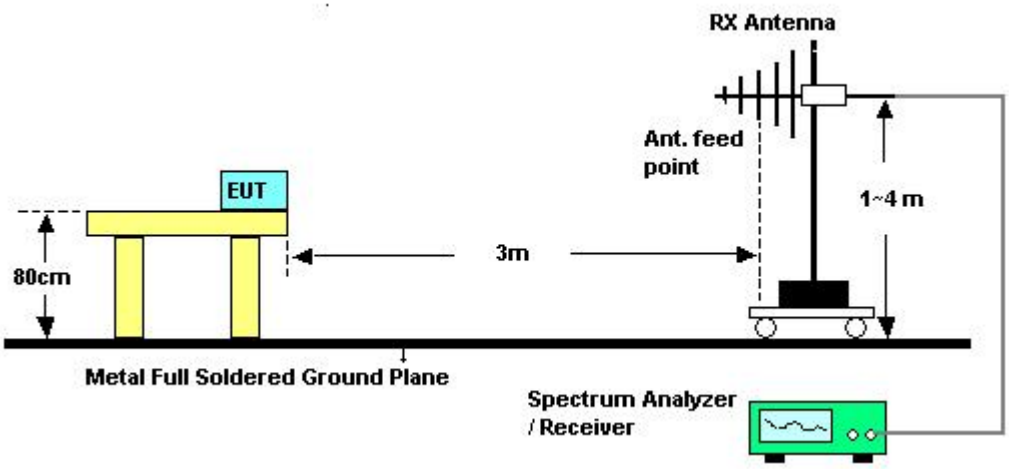
5. Configure the EUT according to ANSI C63.4-2003.
6. The EUT was placed on the top of the turn table 0.8 meter above ground.
7. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed meters far away from the turn table.
8. Power on the EUT and all the supporting units.
9. The turn table was rotated by 360 degrees to determine the position of the highest radiation.
10. 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.
11. 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.
12. Set the test-receiver system to peak or quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.

5.3.5. Test Setup Layout

For radiated emissions below 30MHz



For radiated emissions above 30MHz



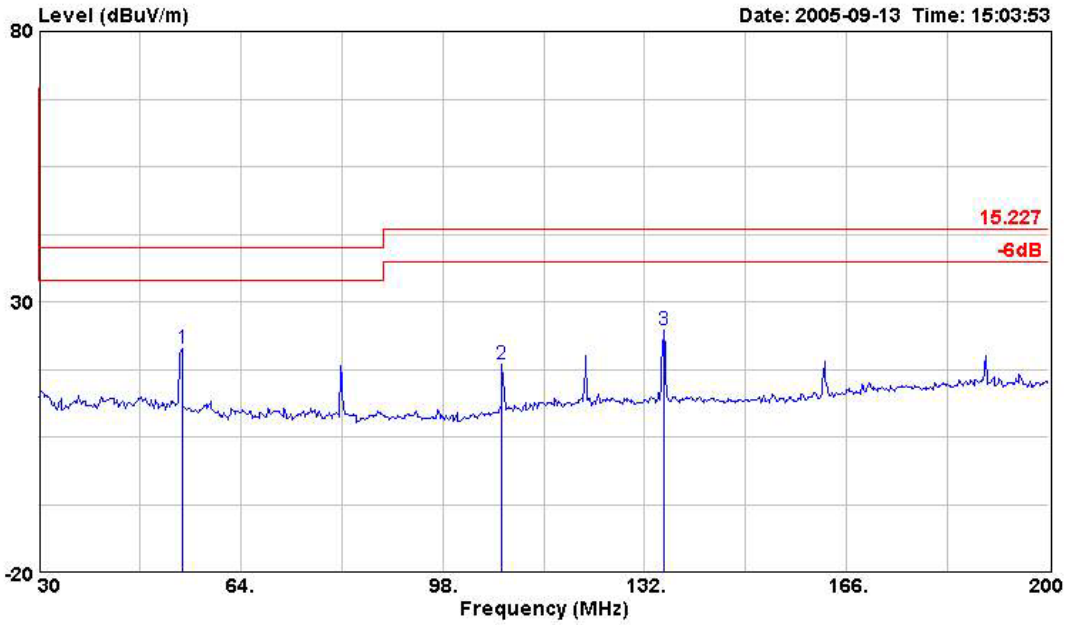
5.3.6. Test Criteria

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

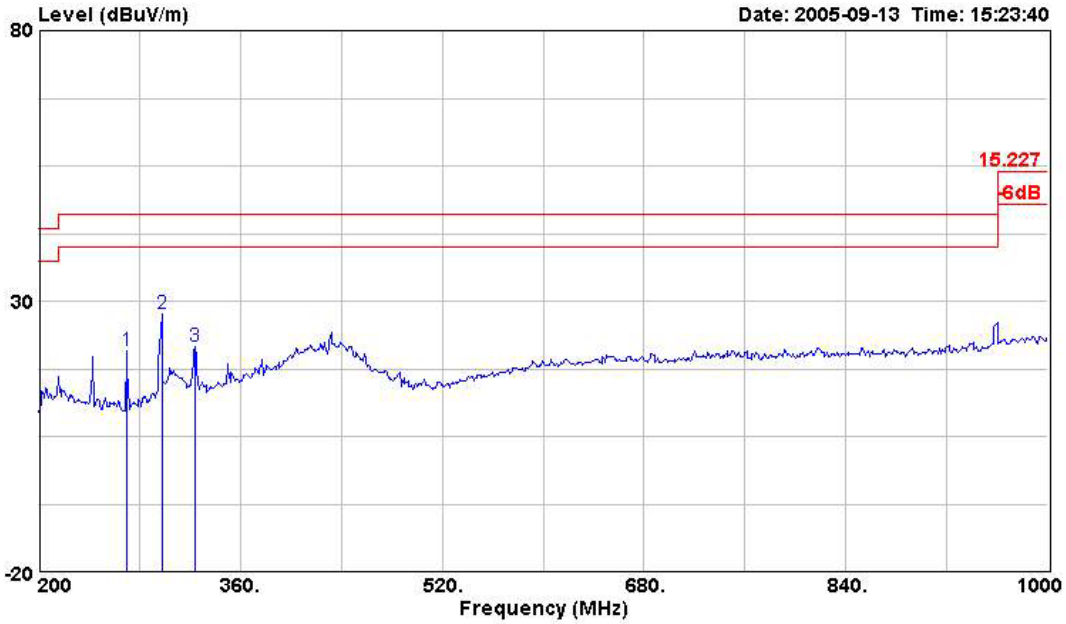
5.3.7. Test Results

- Temperature: 27°C
- Relative Humidity: 59%
- Test Engineer: Ted Chiu

(A) Polarization: Horizontal

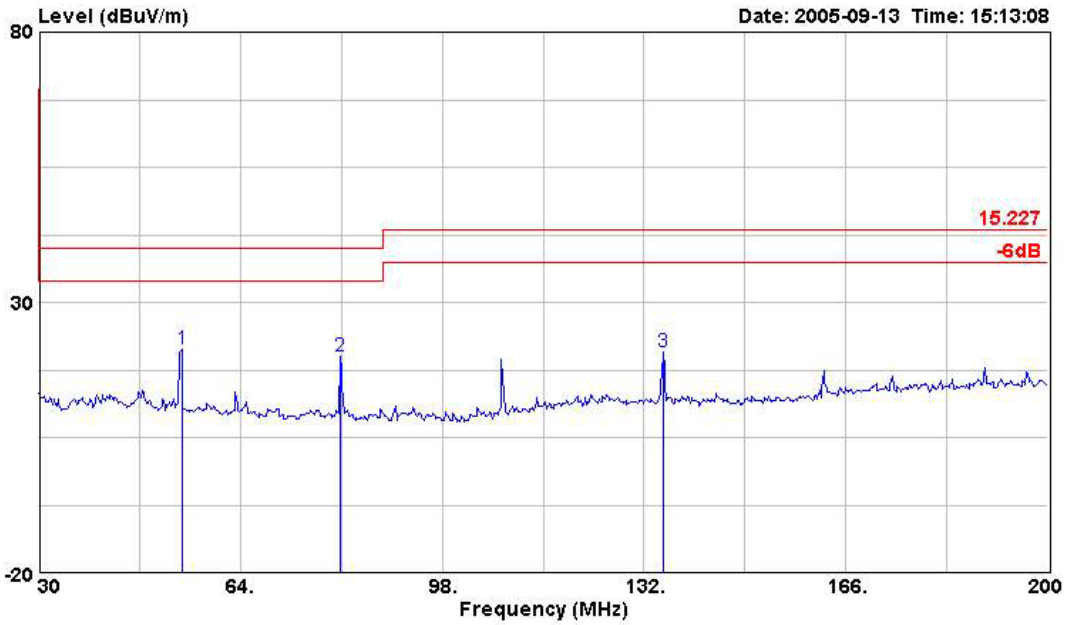


	Freq	Level	Over Limit	Read Level	Limit Line	Cable Loss	Antenna Factor	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB/m	dB		cm	deg
1 @	54.140	21.35	-18.65	39.86	40.00	0.72	11.02	30.25	Peak	---	---
2 @	108.030	18.42	-25.08	37.62	43.50	1.01	10.14	30.36	Peak	---	---
3 @	135.230	24.79	-18.71	41.89	43.50	1.16	12.47	30.74	Peak	---	---

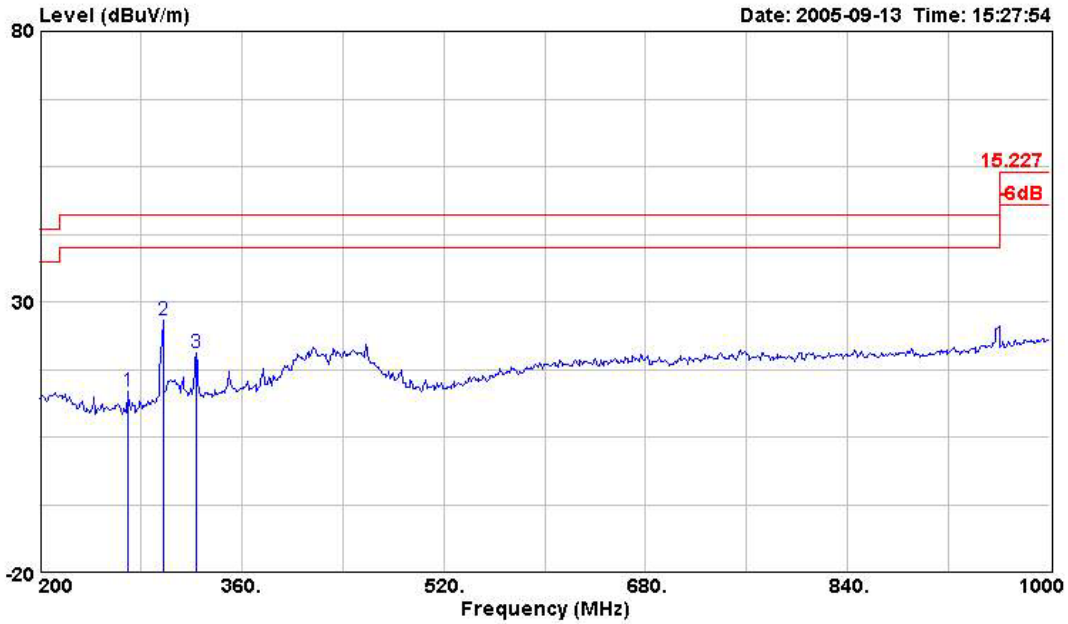


	Freq	Level	Over Limit	Read Level	Limit Line	Cable Loss	Antenna Factor	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB/m	dB		cm	deg
1 @	269.600	20.85	-25.15	37.54	46.00	1.63	12.89	31.21	Peak	---	---
2 @	297.600	27.63	-18.37	42.81	46.00	1.67	13.73	30.58	Peak	---	---
3 @	324.000	21.71	-24.29	36.08	46.00	1.76	14.54	30.66	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	21.32	-18.68	39.83	40.00	0.72	11.02	30.25	Peak	---	---
2 @	80.830	19.99	-20.01	39.69	40.00	0.88	9.41	29.99	Peak	---	---
3 @	135.230	20.76	-22.74	37.86	43.50	1.16	12.47	30.74	Peak	---	---



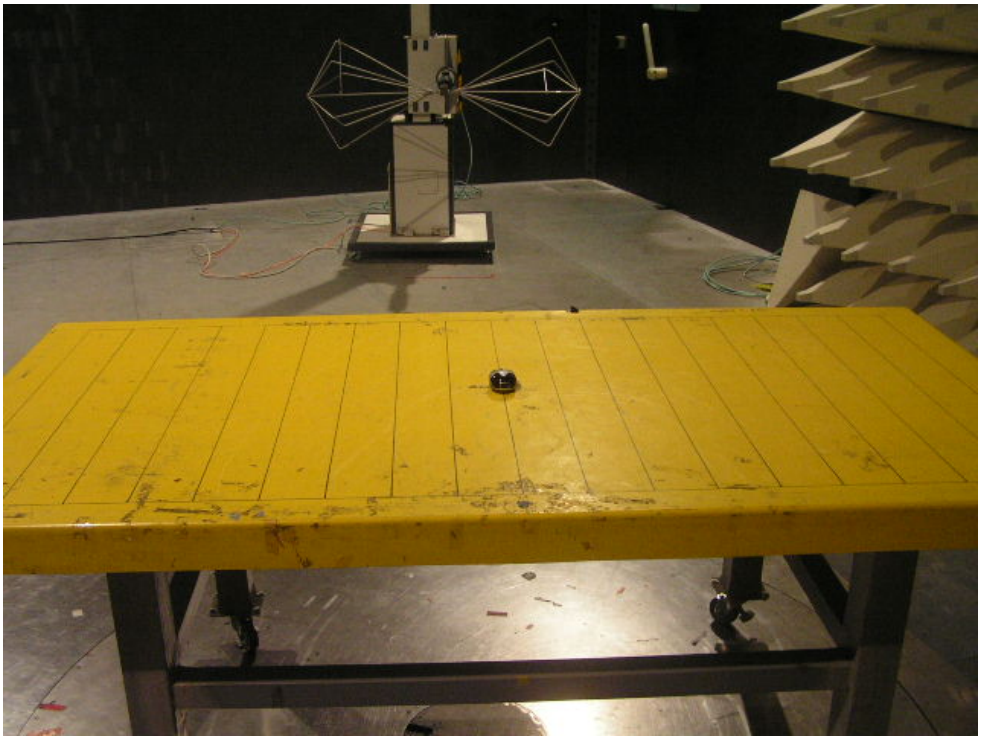
	Freq	Level	Over Limit	Read Level	Limit Line	Cable Loss	Antenna Factor	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV	dBuV/m	dB	dB/m	dB		cm	deg
1 @	269.600	13.31	-32.69	30.00	46.00	1.63	12.89	31.21	Peak	---	---
2 @	297.600	26.63	-19.37	41.81	46.00	1.67	13.73	30.58	Peak	---	---
3 @	324.000	20.54	-25.46	34.91	46.00	1.76	14.54	30.66	Peak	---	---

Note:
Emission level (dBuV/m) = 20 log Emission level (uV/m)
Corrected Reading: Probe Factor + Cable Loss + Read Level - Preamp Factor = Level
Results for the radiated measurement below 30MHz, no emissions found and caused by the EUT.
The amplitude of spurious emissions that are attenuated more than 20 dB below the permissible value need not be reported.

5.3.8. Photographs of Radiated Emission Test Configuration

FRONT VIEW

REAR VIEW



5.4. Antenna Requirements

5.4.1. 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.

5.4.2. Antenna Connected Construction

There is no connector for PCB antenna.

5.4.3. 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	Spectrum analyzer	R&S	FSP40	100116	9kHz ~ 40GHx	Jan. 28, 2005	Conducted (TH01-HY)
2	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz ~ 1GHz 3m	Jun. 16, 2005	Radiation (03CH03-HY)
3	Spectrum Analyzer	R&S	FSP40	100019	9KHZ~40GHz	Jul.21.2005	Radiation (03CH03-HY)
4	Amplifier	SCHAFFNER	CPA9231A	18667	9KHz ~ 2GHz	Jan. 10, 2005	Radiation (03CH03-HY)
5	Amplifier	Agilent	8449B	3008A02120	1GHz ~ 26.5GHz	May 31, 2005	Radiation (03CH03-HY)
6	Amplifier	MITEQ	AMF-6F-260400	923364	26.5GHz ~ 40GHz	Jan. 05, 2004*	Radiation (03CH03-HY)
7	Loop Antenna	R&S	HFH2-Z2	860004/001	9kHz ~ 30MHz	May 24, 2004*	Radiation (03CH03-HY)
8	Biconical Antenna	SCHWARZBECK	VHBB 9124	301	30MHz ~ 200MHz	Jul. 22, 2005	Radiation (03CH03-HY)
9	Log Antenna	SCHWARZBECK	VUSLP 9111	221	200MHz ~ 1GHz	Jul. 22, 2005	Radiation (03CH03-HY)
10	Horn Antenna	EMCO	3115	6741	1GHz ~ 18GHz	Apr. 22, 2005	Radiation (03CH03-HY)
11	Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	15GHz ~ 40GHz	Jun. 09, 2004*	Radiation (03CH03-HY)
12	RF Cable-R03m	Jye Bao	RG142	CB021	30MHz ~ 1GHz	Feb. 22, 2005	Radiation (03CH03-HY)
13	RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	1GHz ~ 40GHz	Dec.01, 2004	Radiation (03CH03-HY)
14	Turn Table	HD	DS 420	420/650/00	0 ~ 360 degree	N/A	Radiation (03CH03-HY)
15	Antenna Mast	HD	MA 240	240/560/00	1 m - 4 m	N/A	Radiation (03CH03-HY)

※ Calibration Interval of instruments listed above is one year.
※ * Calibration Interval of instruments listed above is two 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
NEIHU	ADD：	4Fl., No. 339, Hsin Hu 2nd Rd., Taipei 114, Taiwan, R.O.C.
	TEL：	02-2794-8886
	FAX：	02-2794-9777

8. Certificate of NVLAP Accreditation

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

SPORTON INTERNATIONAL, INC.
TAIPEI HSIEN 221
TAIWAN

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

December 31, 2005
Effective through

For the National Institute of Standards and Technology
NVLAP Lab Code: 200079-0

NVLAP-01C (06-01)