

FCC TEST REPORT

CATEGORY : Portable

PRODUCT NAME : Labtec Wireless Optical Mouse Plus

FCC ID. : O3L-PT-04-MU

BRAND NAME : Labtec

MODEL NAME : M-RBM118

APPLICANT : **Paten Wireless Technology Inc.**

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

MANUFACTURER : **Paten Wireless Technology Co., Ltd.**

DaBanDe, DaNing, Human, DongGuan, GuangDong, China

ISSUED BY : **SPORTON INTERNATIONAL INC.**

6F, No. 106, Sec. 1, Hsin Tai Wu Rd., His 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 CNLA, 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.



1190
ILAC MRA



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History of this test report

Original Report Issue Date: July 21, 2005

Report No.: FR571209

☒ No additional attachment.

☐ Additional attachment were issued as following record:

| Attachment No. | Issue Date | Description |
|----------------|------------|-------------|
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CERTIFICATE OF COMPLIANCE

with

47 CFR FCC Part 15 Subpart C (Section 15.227)

PRODUCT NAME : Labtec Wireless Optical Mouse Plus

BRAND NAME : Labtec

MODEL NAME : M-RBM118

APPLICANT : **Paten Wireless Technology Inc.**

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

MANUFACTURER : **Paten Wireless Technology Co., Ltd.**

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 July 20, 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 Co., Ltd.

DaBanDe, DaNing, Human, DongGuan, GuangDong, China

1.3. Basic Description of Equipment under Test

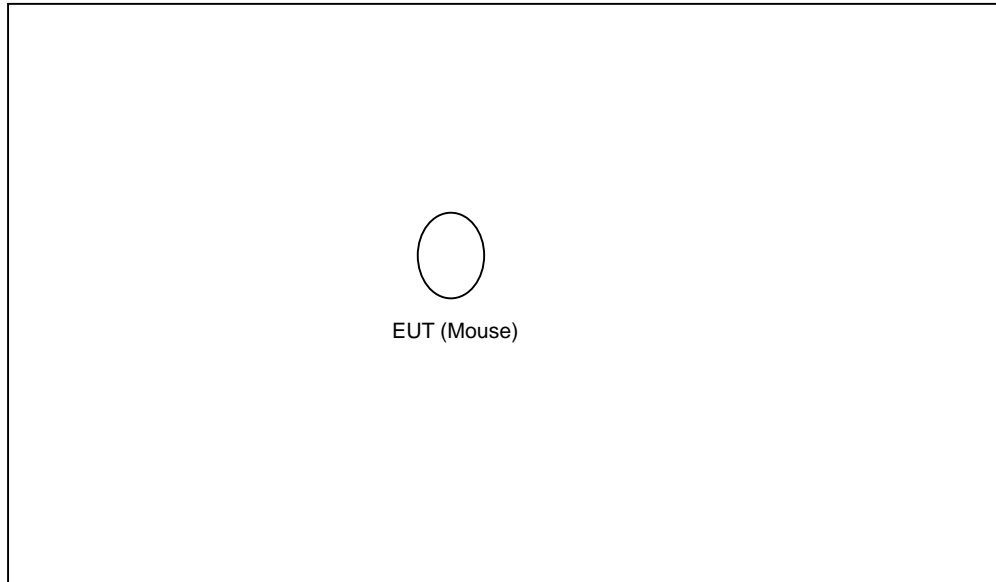
This product is a wireless optical mouse with FSK modulation solution. The radio technical data has been listed on section "Features of Equipment under Test". This report is for the transmitter part only.

1.4. Features of Equipment under Test

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

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.

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 : 3V dc from Battery

Normal Temperature : 20°C

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 30 MHz 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 | 15.207 | 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 1~12 of the table on section 6.

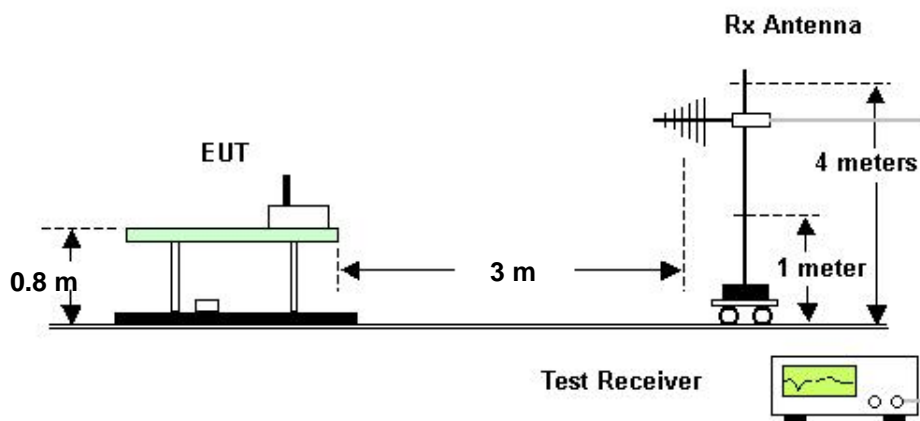
5.1.3. Description of Major Test Instruments Setting

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

5.1.4. Test Procedures

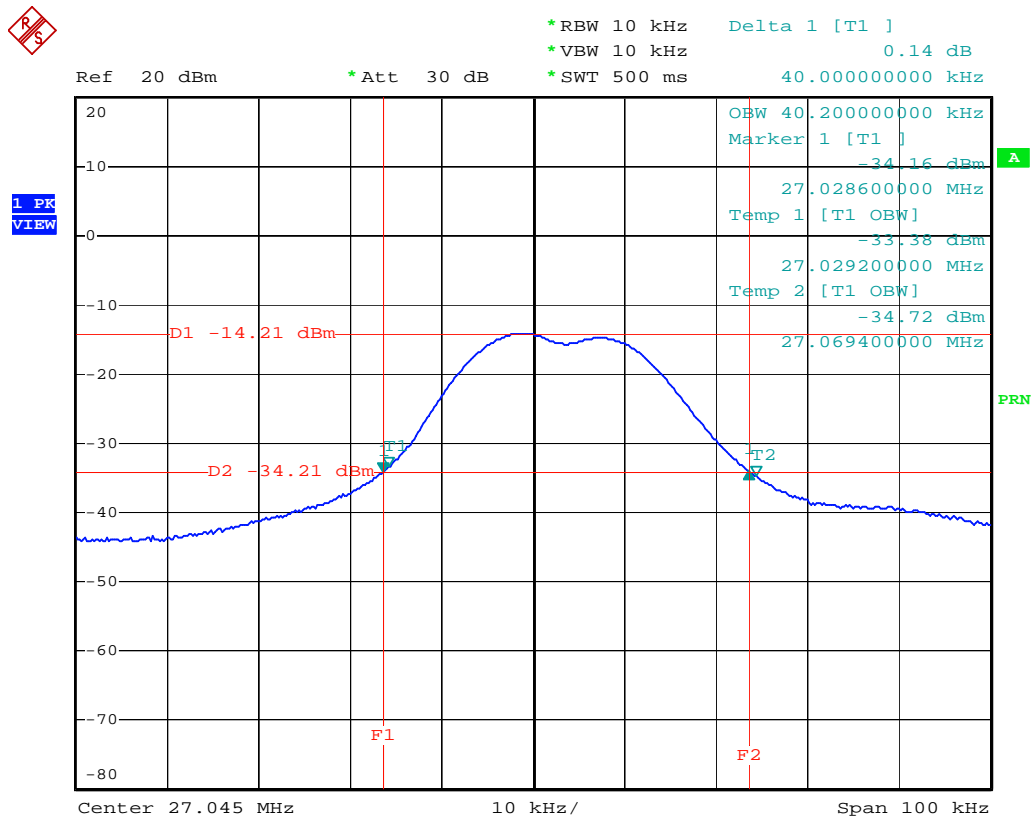
1. Configure the EUT according to ANSI C63.4-2003.
2. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emission field strength of 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



5.1.6 Test Result

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



Date: 16.JUL.2005 01:02:23

| Frequency (MHz) | 20dB Bandwidth (kHz) | 99% Occupied BW (kHz) | Frequency range MHz (20dB Down) fL > 26.96 MHz | Frequency range MHz (20dB Down) fH < 27.28 MHz |
|----------------------|-------------------------|--------------------------|--|--|
| 27.0450 | 40.0000 | 40.20 | 27.0286 | 27.0686 |

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. 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 |

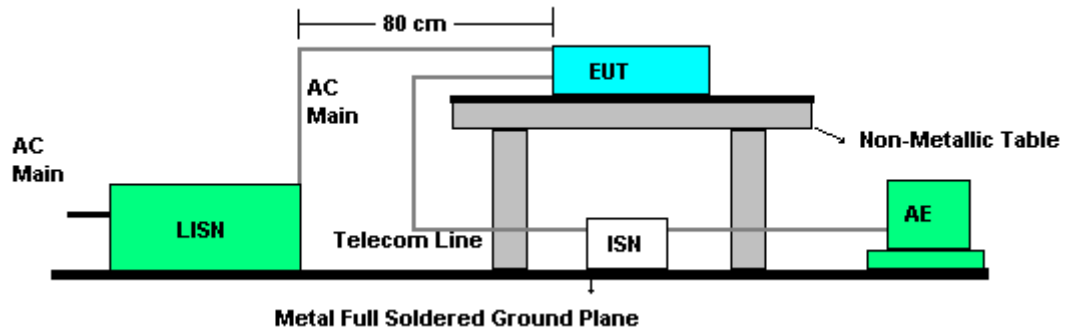
5.2.2. Description of Major Test Instruments Setting

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

5.2.3. 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.

5.2.4. Test Setup Layout





5.2.5. 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 1~12 in chapter 6 for the instruments used for testing.

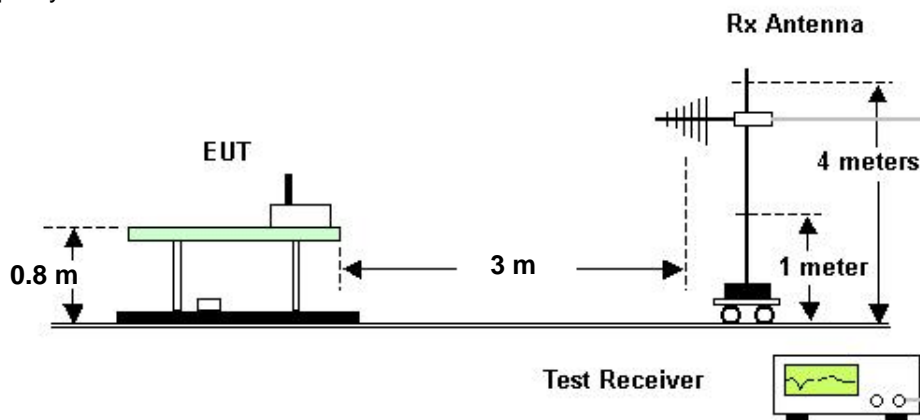
5.3.3. Description of Major Test Instruments Setting

- 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

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.

5.3.5. Test Setup Layout





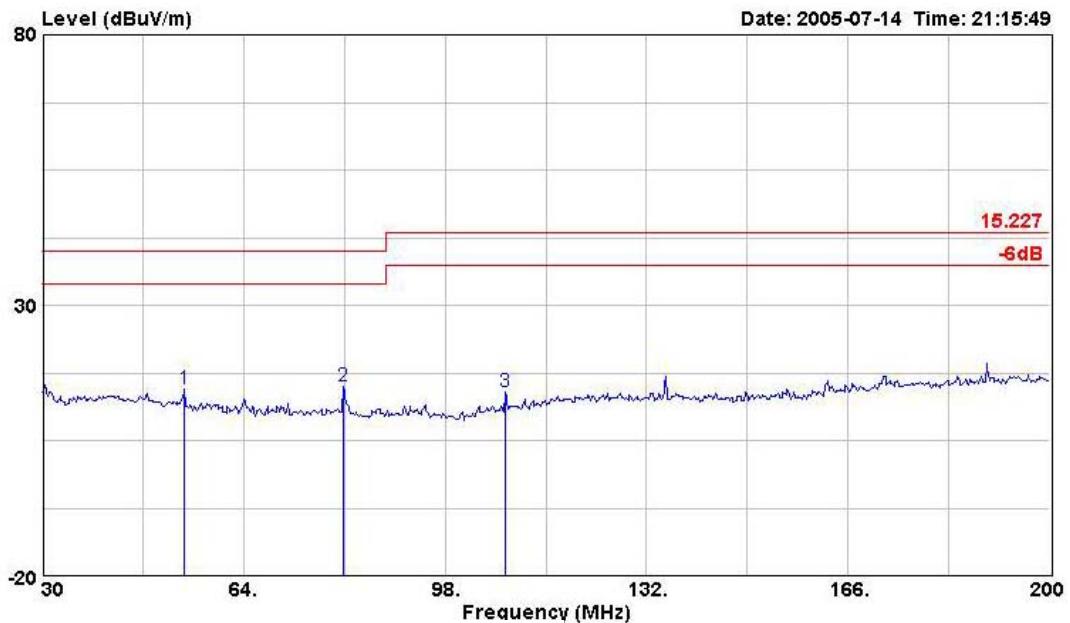
5.3.6. Test Criteria

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

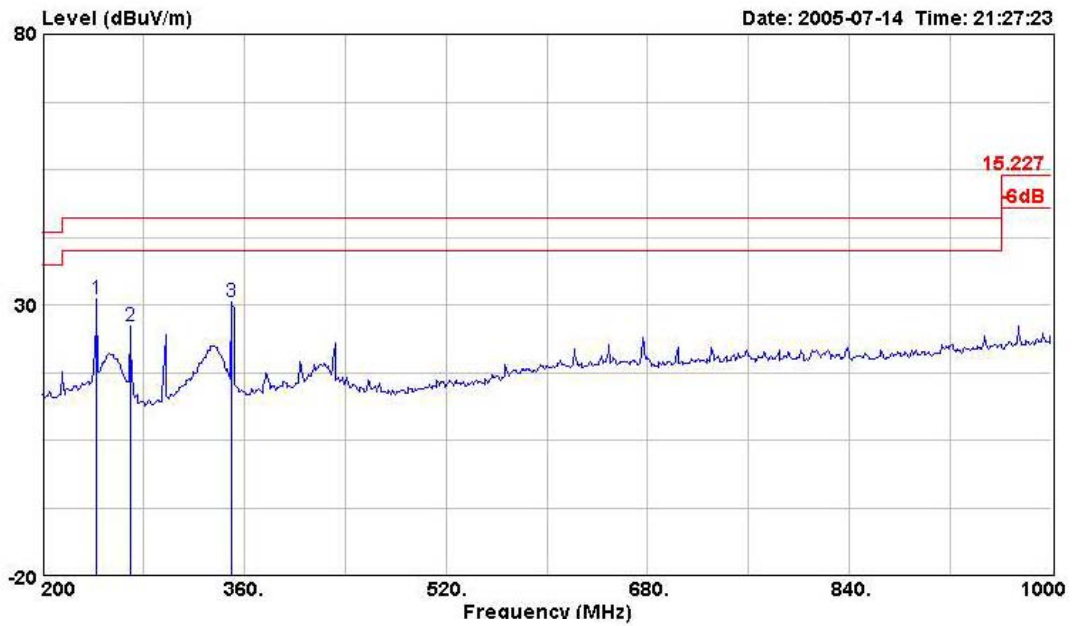
5.3.7. Test Results

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

(A) Polarization: Horizontal

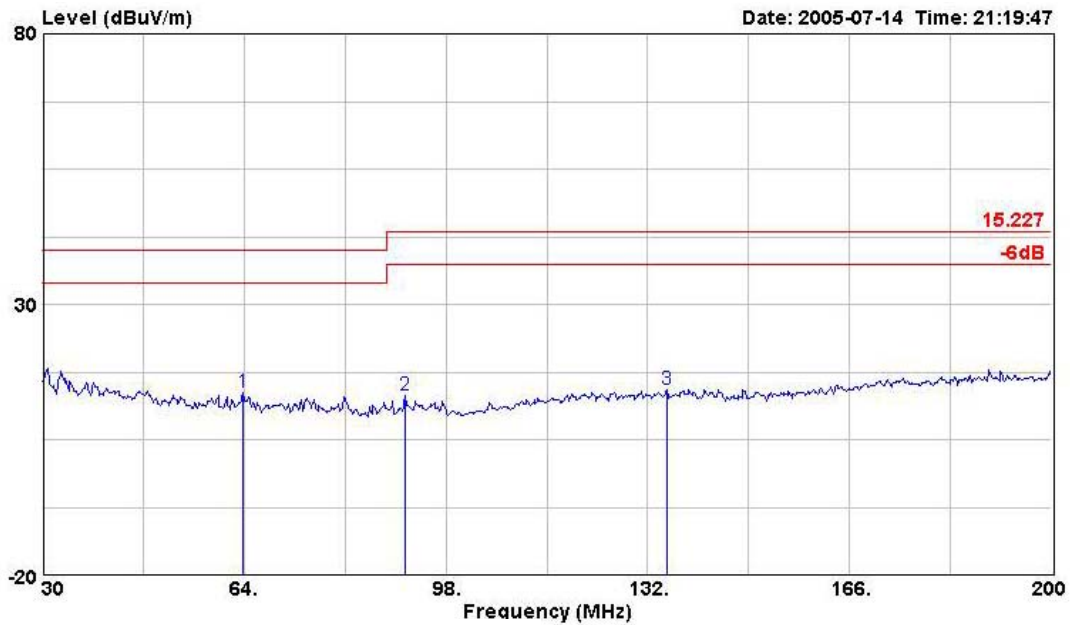


| | Freq | Level | Over | Read | Limit | | Cable | Preamp | | Ant | Table |
|---|---------|--------|--------|-------|--------|--------|-------|--------|--------|-----|-------|
| | MHz | dBuV/m | Limit | Level | Line | Factor | Loss | Factor | Remark | Pos | Pos |
| | | | dB | dBuV | dBuV/m | dB | dB | dB | | cm | deg |
| 1 | 54.050 | 14.61 | -25.39 | 33.10 | 40.00 | -18.49 | 0.72 | 30.25 | Peak | --- | --- |
| 2 | 80.830 | 14.91 | -25.09 | 34.61 | 40.00 | -19.70 | 0.88 | 29.99 | Peak | --- | --- |
| 3 | 108.130 | 14.04 | -29.46 | 33.22 | 43.50 | -19.18 | 1.01 | 30.36 | Peak | --- | --- |

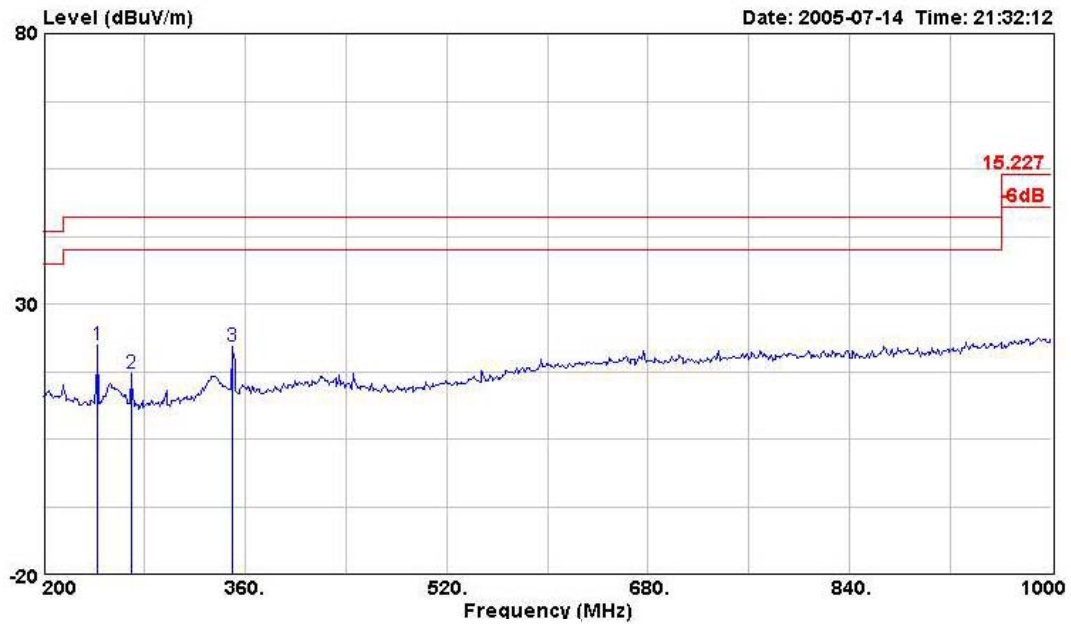


| | Freq | Level | Over Limit | Read Level | Limit Line | Factor | Cable Loss | Preamp Factor | Remark | Ant Pos | Table Pos |
|---|---------|--------|---------------|---------------|---------------|--------|---------------|------------------|--------|------------|--------------|
| | MHz | dBuV/m | dB | dBuV | dBuV/m | dB | dB | dB | | cm | deg |
| 1 | 243.200 | 31.09 | -14.91 | 47.77 | 46.00 | -16.68 | 1.54 | 31.03 | Peak | --- | --- |
| 2 | 269.600 | 25.94 | -20.06 | 42.63 | 46.00 | -16.69 | 1.63 | 31.21 | Peak | --- | --- |
| 3 | 349.600 | 30.61 | -15.39 | 44.36 | 46.00 | -13.75 | 1.79 | 30.84 | Peak | --- | --- |

(B) Polarization: Vertical



| | Freq | Level | Over | Read | Limit | | Cable | Preamp | | Ant | Table |
|---|---------|--------|--------|-------|--------|--------|-------|--------|--------|-----|-------|
| | MHz | dBuV/m | Limit | Level | Line | Factor | Loss | Factor | Remark | Pos | Pos |
| | | | dB | dBuV | dBuV/m | dB | dB | dB | | cm | deg |
| 1 | 63.850 | 13.74 | -26.26 | 33.24 | 40.00 | -19.50 | 0.81 | 30.54 | Peak | --- | --- |
| 2 | 91.150 | 13.12 | -30.38 | 33.14 | 43.50 | -20.02 | 0.91 | 29.49 | Peak | --- | --- |
| 3 | 135.250 | 14.32 | -29.18 | 31.42 | 43.50 | -17.10 | 1.16 | 30.74 | Peak | --- | --- |



| | Freq | Level | Over | Read | Limit | | Cable | Preamp | | Ant | Table |
|---|---------|--------|--------|-------|--------|--------|-------|--------|--------|-----|-------|
| | MHz | dBuV/m | Limit | Level | Line | Factor | Loss | Factor | Remark | Pos | Pos |
| | MHz | dBuV/m | dB | dBuV | dBuV/m | dB | dB | dB | | cm | deg |
| 1 | 243.200 | 22.33 | -23.67 | 39.01 | 46.00 | -16.68 | 1.54 | 31.03 | Peak | --- | --- |
| 2 | 269.600 | 17.23 | -28.77 | 33.92 | 46.00 | -16.69 | 1.63 | 31.21 | Peak | --- | --- |
| 3 | 349.600 | 22.12 | -23.88 | 35.87 | 46.00 | -13.75 | 1.79 | 30.84 | Peak | --- | --- |

Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m)

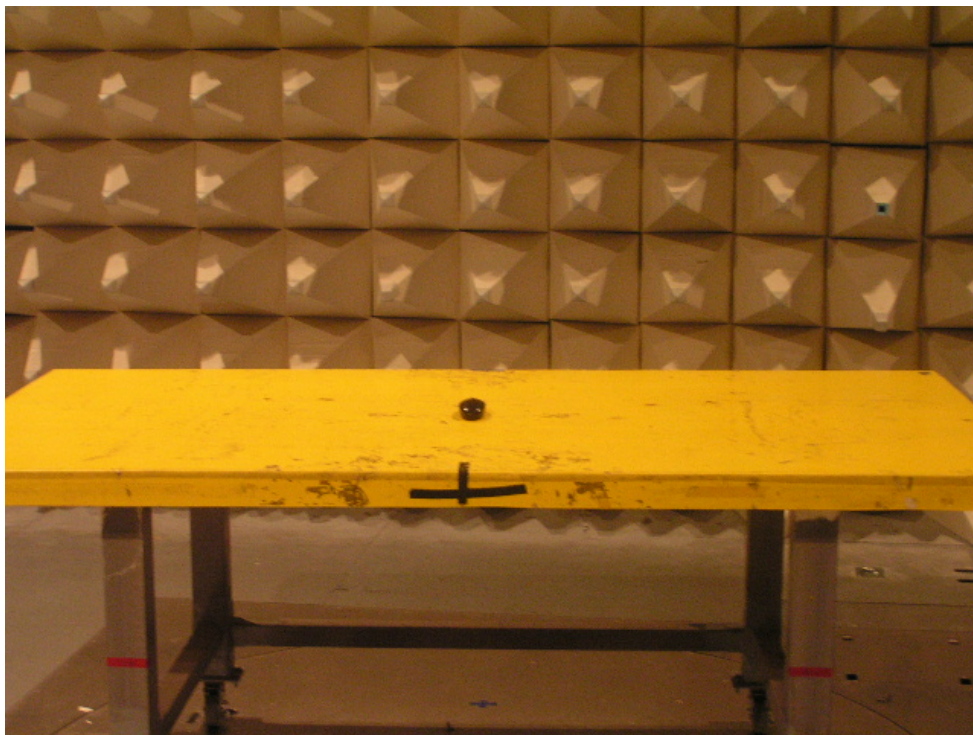
Corrected Reading: Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

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 Integrated 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 | 3m Semi Anechoic Chamber | SIDT FRANKONIA | SAC-3M | 03CH03-HY | 30MHz~1GHz 3m | Jun. 20, 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. 23, 2004 | Radiation (03CH03-HY) |
| 5 | Log Antenna | SCHWARZBECK | VUSLP 9111 | 221 | 200MHz -1GHz | Jul. 23, 2004 | 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. 08, 2005 | Radiation (03CH03-HY) |
| 12 | RF Cable-HIGH | SUHNER | SUCOFLES 106 | SN30094/6 | 1GHz~26.5GHz | Mar. 05, 2005 | Radiation (03CH03-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 facility 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 2 nd Rd., Taipei 114, Taiwan, R.O.C. TEL : 02-2794-8886 FAX : 02-2794-9777 |