

# FCC TEST REPORT

**CATEGORY** : Portable

**PRODUCT NAME** : RF2.4GHz Wireless Gamepad

**FCC ID.** : TCGPADXBO900D-D

**FILING TYPE** : Certification

**BRAND NAME** : Maxwise

**MODEL NAME** : XBOXO900D

**APPLICANT** : **Griffin International Companies**  
6230 Bury Drive, Eden Prairie, MN 55346-1718

**MANUFACTURER** : **Maxwise Production Enterprise Limited**  
No. 28, Bai Shui Jing Stree, Zhongshan City, 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.

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Certificate or Test Report could not be used by the applicant to claim the product endorsement by CNLA and any agency of U.S. government.

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



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ILAC MRA



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## HISTORY OF THIS TEST REPORT

Received Date: May 13, 2005

Test Date: June 14, 2005

Original Report Issue Date: June 16, 2005

Report No.: FR551320

☒ 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

**PRODUCT NAME** : RF2.4GHz Wireless Gamepad

**BRAND NAME** : Maxwise

**MODEL NAME** : XBOXO900D

**APPLICANT** : **Griffin International Companies**

6230 Bury Drive, Eden Prairie, MN 55346-1718

**MANUFACTURER** : **Maxwise Production Enterprise Limited**

No. 28, Bai Shui Jing Stree, Zhongshan City, 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 Subpart C. Testing was carried out on June 14, 2005 at SPORTON International Inc. LAB.



Wayne Hsu / Supervisor  
Sporton International Inc.

## 1. General Description of Equipment under Test

### 1.1. Applicant

**Griffin International Companies**

6230 Bury Drive, Eden Prairie, MN 55346-1718

### 1.2. Manufacturer

**Maxwise Production Enterprise Limited**

No. 28, Bai Shui Jing Stree, Zhongshan City, Guangdong, China

### 1.3. Basic Description of Equipment under Test

This product is a 2.4GHz Wireless Gamepad. The technical data has been listed on section " Features of Equipment under Test ". There are 2 units for the whole set. One is the master which is a handheld Gamepad. The other is slave which is plugged on the XBOX host. This report is for the Gamepad part.

### 1.4. Features of Equipment under Test

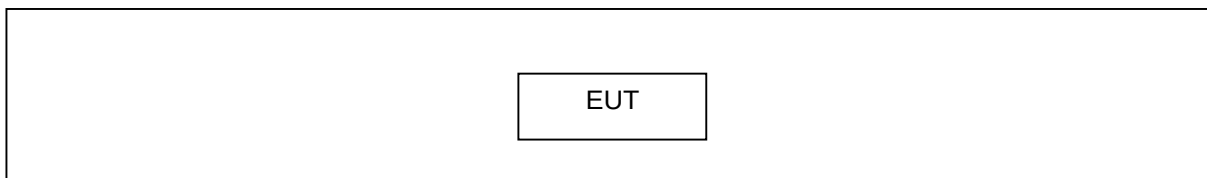
| Items                         | Description                 |
|-------------------------------|-----------------------------|
| Type of Modulation            | GFSK                        |
| Number of Channels            | 95                          |
| Frequency Band                | 2401.056 MHz ~ 2482.272 MHz |
| Carrier Frequency             | See section 1.5 for details |
| Antenna Type                  | PCB Antenna                 |
| Testing Duty Cycle            | 100.00%                     |
| Test Power Source             | DC 6.0V from battery        |
| Temperature Range (Operating) | 0 ~ 50 °C                   |

### 1.5. Table for Carrier Frequencies

| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---------|-----------------|---------|-----------------|---------|-----------------|---------|-----------------|
| 00      | 2401.056        | 26      | 2423.520        | 52      | 2445.984        | 78      | 2468.448        |
| 01      | 2401.920        | 27      | 2424.384        | 53      | 2446.848        | 79      | 2469.312        |
| 02      | 2402.784        | 28      | 2425.248        | 54      | 2447.712        | 80      | 2470.176        |
| 03      | 2403.648        | 29      | 2426.112        | 55      | 2448.576        | 81      | 2471.040        |
| 04      | 2404.512        | 30      | 2426.976        | 56      | 2449.440        | 82      | 2471.904        |
| 05      | 2405.376        | 31      | 2427.840        | 57      | 2450.304        | 83      | 2472.768        |
| 06      | 2406.240        | 32      | 2428.704        | 58      | 2451.168        | 84      | 2473.632        |
| 07      | 2407.104        | 33      | 2429.568        | 59      | 2452.032        | 85      | 2474.496        |
| 08      | 2407.968        | 34      | 2430.432        | 60      | 2452.896        | 86      | 2475.360        |
| 09      | 2408.832        | 35      | 2431.296        | 61      | 2453.760        | 87      | 2476.224        |
| 10      | 2409.696        | 36      | 2432.160        | 62      | 2454.624        | 88      | 2477.088        |
| 11      | 2410.560        | 37      | 2433.024        | 63      | 2455.488        | 89      | 2477.952        |
| 12      | 2411.424        | 38      | 2433.888        | 64      | 2456.352        | 90      | 2478.816        |
| 13      | 2412.288        | 39      | 2434.752        | 65      | 2457.216        | 91      | 2479.680        |
| 14      | 2413.152        | 40      | 2435.616        | 66      | 2458.080        | 92      | 2480.544        |
| 15      | 2414.016        | 41      | 2436.480        | 67      | 2458.944        | 93      | 2481.408        |
| 16      | 2414.880        | 42      | 2437.344        | 68      | 2459.808        | 94      | 2482.272        |
| 17      | 2415.744        | 43      | 2438.208        | 69      | 2460.672        |         |                 |
| 18      | 2416.608        | 44      | 2439.072        | 70      | 2461.536        |         |                 |
| 19      | 2417.472        | 45      | 2439.936        | 71      | 2462.400        |         |                 |
| 20      | 2418.336        | 46      | 2440.800        | 72      | 2463.264        |         |                 |
| 21      | 2419.200        | 47      | 2441.664        | 73      | 2464.128        |         |                 |
| 22      | 2420.064        | 48      | 2442.528        | 74      | 2464.992        |         |                 |
| 23      | 2420.928        | 49      | 2443.392        | 75      | 2465.856        |         |                 |
| 24      | 2421.792        | 50      | 2444.256        | 76      | 2466.720        |         |                 |
| 25      | 2422.656        | 51      | 2445.120        | 77      | 2467.584        |         |                 |

## 2. Test Configuration of the Equipment under Test

### 2.1. Connection Diagram of Test System



### 2.2. The Test Mode Description

1. According to ANSI C63.4-2003: Frequency range of EUT is more than 10 MHz, we have to test the lowest, middle and highest channels of EUT.
2. Spurious emission below 1GHz is independent of channel selection and there will be no effect on test results so only channel 41 with GFSK modulation was tested.
3. The EUT is powered by battery so it is not required to test conduction test.

### 2.3. Description of Test Supporting Units

There is no supporting unit for the test.

### 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. Standards for Methods of Measurement

Here is the list of the standards followed in this test report.

**ANSI C63.4-2003**

**47 CFR FCC Part 15 Subpart C**

#### 3.3. Frequency Range Investigated

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

#### 3.4. Test Distance

The test distance of radiated emission (9kHz~1GHz) test from antenna to EUT is 3 M.

The test distance of radiated emission (1GHz~10th carrier harmonic) test from antenna to EUT is 3 M.

#### 3.5. Test Software

During testing, there is no test software for the test.



## 4. List of Measurements

### 4.1. Summary of the Test Results

| Applied Standard: 47 CFR FCC Part 15 Subpart C |           |                                       |        |
|------------------------------------------------|-----------|---------------------------------------|--------|
| Paragraph                                      | FCC Rule  | Description of Test                   | Result |
| 5.1                                            | 15.249(a) | Maximum Field Strength of Fundamental | Pass   |
| 5.2                                            | 15.249(d) | Spurious Radiated Emission            | Pass   |
| 5.3                                            | 15.203    | Antenna Requirement                   | Pass   |

## 5. Test Result

### 5.1. Test of Maximum Field Strength of Fundamental

#### 5.1.1. Applicable Standard

Section 15.249(a): The field strength of emissions within these bands specified at a distance of 3 meters (measurement instrumentation employing an average detector) shall comply with the following table. The peak field strength of any emission shall not exceed the maximum permitted average limits specified in the table by more than 20 dB under any condition of modulation

| Fundamental Frequency<br>(MHz) | Field Strength of Fundamental<br>(millivolts/meter) | Unwanted Emission<br>(microvolts/meter) |
|--------------------------------|-----------------------------------------------------|-----------------------------------------|
| 2400-2483.5                    | 50                                                  | 500                                     |
| 5725-5875                      | 50                                                  | 500                                     |

#### 5.1.2. Measuring Instruments

Item 6~17 of the table on section 6.

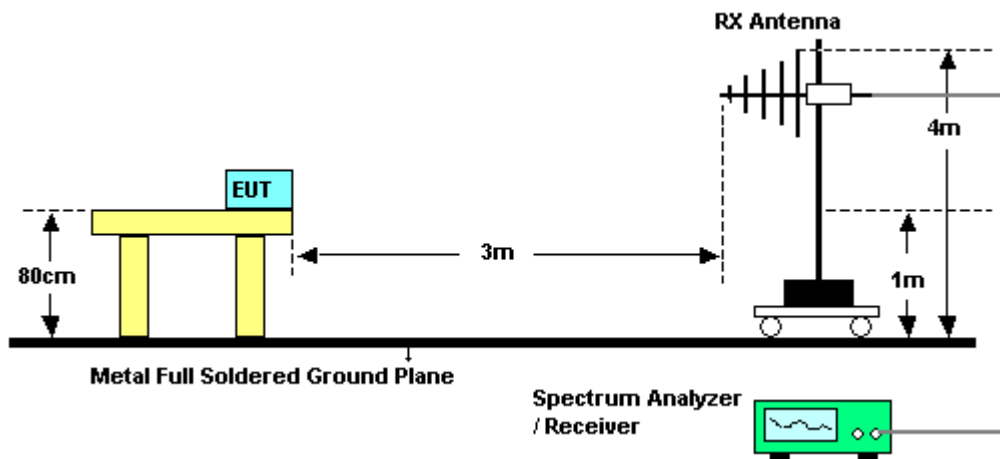
#### 5.1.3. Description of Major Test Instruments Setting

- Spectrum Analyzer : R&S FSP40 (Radiated Measurement)
  - Attenuation : Auto
  - Center Frequency : Carrier Frequency
  - Span Frequency : Suitable for observe
  - RB : 1 MHz for PK value / 1 MHz for AV value
  - VB : 1 MHz for PK value / 10 Hz for AV value
  - Detector : Peak
  - Trace : Max Hold
  - Sweep Time : Auto

#### 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 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.

#### 5.1.5. Test Setup Layout



#### 5.1.6. Test Criteria

All test results complied with the requirements of Section 15.249(a). Measurement Uncertainty is 2.26dB.

#### 5.1.7. Test Result

- Temperature: 19°C
- Relative Humidity: 60%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Ted Chiu

| Frequency ( MHz ) | Level ( dBuV/m ) | Over Limit ( dB ) | Limit Line ( dBuV/m ) | Read Level ( dBuV/m ) | Detector |
|-------------------|------------------|-------------------|-----------------------|-----------------------|----------|
| 2401.056          | 72.29            | 18.29             | 94.00                 | 42.17                 | Average  |
| 2401.056          | 93.29            | 19.29             | 104.00                | 63.17                 | Peak     |
| 2441.664          | 69.86            | 15.86             | 94.00                 | 39.63                 | Average  |
| 2441.664          | 90.86            | 16.86             | 104.00                | 60.63                 | Peak     |
| 2482.272          | 69.29            | 15.29             | 94.00                 | 38.98                 | Average  |
| 2482.272          | 90.56            | 16.26             | 104.00                | 59.95                 | Peak     |

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 Spurious Radiated Emission

### 5.2.1. Applicable Standard

Section 15.249(d): Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

### 5.2.2. Measuring Instruments

Please reference item 6~19 in chapter 6 for the instruments used for testing.

### 5.2.3. Description of Major Test Instruments Setting

- Spectrum Analyzer : R&S FSP40
  - Attenuation : Auto
  - Start Frequency : 1000 MHz
  - Stop Frequency : 10th carrier harmonic
  - RB / VB : 1 MHz / 1MHz for Peak
  - RB / VB : 1 MHz / 10Hz for Average
- Test Receiver : R&S ESCS 30
  - Attenuation : Auto
  - Start Frequency : 9 kHz
  - Stop Frequency : 1000 MHz
  - RB : 120 KHz for QP or PK

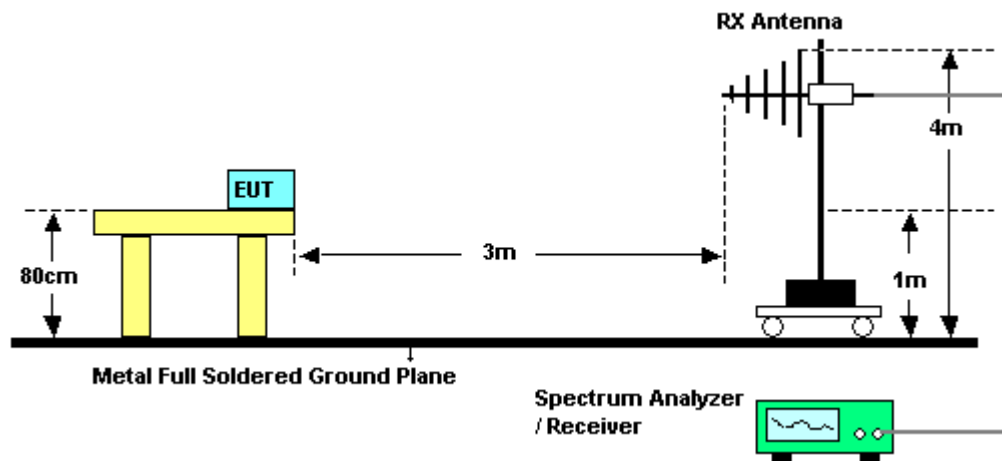
### 5.2.4. Test Procedures

1. Configure the EUT according to ANSI C63.4-2003.
2. The EUT was placed on the top of the turntable 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 3 meters far away from the turntable.
4. Power on the EUT and all the supporting units.
5. The turntable 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 turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
8. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
9. For emission above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
10. If the emission level of the EUT in peak mode was 3 dB lower than the average 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 for below 1GHz and average method for above the 1GHz. the reported.

11. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB higher than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

#### 5.2.5. Test Setup Layout



#### 5.2.6. Test Criteria

All test results complied with the requirements of Section 15.249(d). Measurement Uncertainty is 2.26dB.

5.2.7. Test Results for CH 41 / 2441 (for emission below 1GHz)

- Temperature: 19°C
- Relative Humidity: 60%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Ted Chiu

**(A) Polarization: Horizontal**

|   | Freq    | Level  | Over Limit | Read Level | Limit Line | Factor | Cable Loss | Preamp Factor | Remark |
|---|---------|--------|------------|------------|------------|--------|------------|---------------|--------|
|   | MHz     | dBuV/m | dB         | dBuV       | dBuV/m     | dB     | dB         | dB            |        |
| 1 | 63.830  | 7.96   | -32.04     | 27.46      | 40.00      | -19.50 | 0.81       | 30.54         | Peak   |
| 2 | 126.900 | 10.12  | -33.38     | 27.33      | 43.50      | -17.21 | 1.12       | 30.58         | Peak   |
| 3 | 165.830 | 11.48  | -32.02     | 27.13      | 43.50      | -15.65 | 1.28       | 30.16         | Peak   |
| 1 | 304.000 | 17.23  | -28.77     | 32.21      | 46.00      | -14.98 | 1.68       | 30.58         | Peak   |
| 2 | 358.400 | 28.83  | -17.17     | 42.17      | 46.00      | -13.34 | 1.81       | 30.72         | Peak   |
| 3 | 467.200 | 18.63  | -27.37     | 31.51      | 46.00      | -12.88 | 2.13       | 31.27         | Peak   |

**(B) Polarization: Vertical**

|   | Freq    | Level  | Over Limit | Read Level | Limit Line | Factor | Cable Loss | Preamp Factor | Remark |
|---|---------|--------|------------|------------|------------|--------|------------|---------------|--------|
|   | MHz     | dBuV/m | dB         | dBuV       | dBuV/m     | dB     | dB         | dB            |        |
| 1 | 62.980  | 11.09  | -28.91     | 30.50      | 40.00      | -19.41 | 0.79       | 30.49         | Peak   |
| 2 | 94.260  | 9.83   | -33.67     | 29.81      | 43.50      | -19.98 | 0.93       | 29.63         | Peak   |
| 3 | 110.580 | 11.28  | -32.22     | 30.01      | 43.50      | -18.73 | 1.04       | 30.29         | Peak   |
| 1 | 358.400 | 17.95  | -28.05     | 31.29      | 46.00      | -13.34 | 1.81       | 30.72         | Peak   |
| 2 | 467.200 | 22.17  | -23.83     | 35.05      | 46.00      | -12.88 | 2.13       | 31.27         | Peak   |
| 3 | 608.800 | 21.38  | -24.62     | 29.52      | 46.00      | -8.14  | 2.42       | 30.98         | 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.

5.2.8. Test Results for CH 00 / 2401 (for emission above 1GHz)

- Temperature: 19°C
- Relative Humidity: 60%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Ted Chiu

**(A) Polarization: Horizontal**

|   | Freq      | Level  | Over<br>Limit | Read<br>Level | Limit<br>Line | Factor | Cable<br>Loss | Preamp<br>Factor | Remark  |
|---|-----------|--------|---------------|---------------|---------------|--------|---------------|------------------|---------|
|   | MHz       | dBuV/m | dB            | dBuV          | dBuV/m        | dB     | dB            | dB               |         |
| 1 | 4804.000  | 66.23  | -7.77         | 72.09         | 74.00         | -5.87  | 2.84          | 41.80            | PEAK    |
| 2 | 4804.000  | 45.23  | -8.77         | 51.10         | 54.00         | -5.87  | 2.84          | 41.80            | Average |
| 3 | 7201.760  | 66.60  | -7.40         | 69.32         | 74.00         | -2.72  | 3.61          | 42.23            | PEAK    |
| 4 | 9604.360  | 56.54  | -17.46        | 53.23         | 74.00         | 3.31   | 4.01          | 38.99            | PEAK    |
| 5 | 12006.780 | 58.81  | -15.19        | 54.47         | 74.00         | 4.33   | 4.62          | 39.59            | PEAK    |
| 6 | 12006.780 | 37.81  | -16.19        | 33.48         | 54.00         | 4.33   | 4.62          | 39.59            | Average |

**(B) Polarization: Vertical**

|   | Freq      | Level  | Over<br>Limit | Read<br>Level | Limit<br>Line | Factor | Cable<br>Loss | Preamp<br>Factor | Remark  |
|---|-----------|--------|---------------|---------------|---------------|--------|---------------|------------------|---------|
|   | MHz       | dBuV/m | dB            | dBuV          | dBuV/m        | dB     | dB            | dB               |         |
| 1 | 4804.000  | 65.89  | -8.11         | 71.76         | 74.00         | -5.87  | 2.84          | 41.80            | PEAK    |
| 2 | 4804.000  | 44.89  | -9.11         | 50.76         | 54.00         | -5.87  | 2.84          | 41.80            | Average |
| 3 | 7204.180  | 65.82  | -8.18         | 68.54         | 74.00         | -2.72  | 3.61          | 42.23            | PEAK    |
| 4 | 9602.680  | 59.59  | -14.41        | 56.28         | 74.00         | 3.31   | 4.01          | 38.99            | PEAK    |
| 5 | 12067.440 | 52.47  | -21.53        | 48.19         | 74.00         | 4.29   | 4.63          | 39.58            | PEAK    |
| 6 | 12067.440 | 31.47  | -22.53        | 27.18         | 54.00         | 4.29   | 4.63          | 39.58            | Average |

Note:

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

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

If spurious emissions are in non-restriction bands, these emissions comply with 20dB down of fundamental emissions

5.2.9. Test Results for CH 41 / 2441 (for emission above 1GHz)

- Temperature: 19°C
- Relative Humidity: 60%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Ted Chiu

**(A) Polarization: Horizontal**

|   | Freq      | Level  | Over Limit | Read Level | Limit Line | Factor | Cable Loss | Preamp Factor | Remark  |
|---|-----------|--------|------------|------------|------------|--------|------------|---------------|---------|
|   | MHz       | dBuV/m | dB         | dBuV       | dBuV/m     | dB     | dB         | dB            |         |
| 1 | 4882.400  | 67.59  | -6.41      | 73.32      | 74.00      | -5.72  | 2.87       | 41.80         | PEAK    |
| 2 | 4882.400  | 46.59  | -7.41      | 52.31      | 54.00      | -5.72  | 2.87       | 41.80         | Average |
| 3 | 7325.920  | 63.60  | -10.40     | 65.87      | 74.00      | -2.27  | 3.65       | 42.11         | PEAK    |
| 4 | 7325.920  | 42.60  | -11.40     | 44.87      | 54.00      | -2.27  | 3.65       | 42.11         | Average |
| 5 | 9768.000  | 57.17  | -16.83     | 53.62      | 74.00      | 3.55   | 3.99       | 39.04         | PEAK    |
| 6 | 12212.000 | 55.68  | -18.32     | 51.46      | 74.00      | 4.22   | 4.69       | 39.55         | PEAK    |
| 7 | 12212.000 | 34.68  | -19.32     | 30.46      | 54.00      | 4.22   | 4.69       | 39.55         | Average |

**(B) Polarization: Vertical**

|   | Freq      | Level  | Over Limit | Read Level | Limit Line | Factor | Cable Loss | Preamp Factor | Remark  |
|---|-----------|--------|------------|------------|------------|--------|------------|---------------|---------|
|   | MHz       | dBuV/m | dB         | dBuV       | dBuV/m     | dB     | dB         | dB            |         |
| 1 | 4883.560  | 67.32  | -6.68      | 73.04      | 74.00      | -5.72  | 2.87       | 41.80         | PEAK    |
| 2 | 4883.560  | 46.32  | -7.68      | 52.04      | 54.00      | -5.72  | 2.87       | 41.80         | Average |
| 3 | 7325.800  | 62.79  | -11.21     | 65.06      | 74.00      | -2.27  | 3.65       | 42.11         | PEAK    |
| 4 | 7325.800  | 41.79  | -12.21     | 44.06      | 54.00      | -2.27  | 3.65       | 42.11         | Average |
| 5 | 9764.000  | 59.35  | -14.65     | 55.80      | 74.00      | 3.55   | 3.99       | 39.04         | PEAK    |
| 6 | 12208.000 | 56.52  | -17.48     | 52.28      | 74.00      | 4.24   | 4.69       | 39.55         | PEAK    |
| 7 | 12208.000 | 42.59  | -11.41     | 38.35      | 54.00      | 4.24   | 4.69       | 39.55         | Average |

Note:

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

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



5.2.10. Test Results for CH 94 / 2482 (for emission above 1GHz)

- Temperature: 19°C
- Relative Humidity: 60%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Ted Chiu

**(A) Polarization: Horizontal**

|   | Freq      | Level  | Over<br>Limit | Read<br>Level | Limit<br>Line | Factor | Cable<br>Loss | Preamp<br>Factor | Remark  |
|---|-----------|--------|---------------|---------------|---------------|--------|---------------|------------------|---------|
|   | MHz       | dBuV/m | dB            | dBuV          | dBuV/m        | dB     | dB            | dB               |         |
| 1 | 4965.320  | 65.94  | -8.06         | 71.49         | 74.00         | -5.55  | 2.91          | 41.80            | PEAK    |
| 2 | 4965.320  | 44.94  | -9.06         | 50.49         | 54.00         | -5.55  | 2.91          | 41.80            | Average |
| 3 | 7447.880  | 67.49  | -6.51         | 69.31         | 74.00         | -1.82  | 3.69          | 41.99            | PEAK    |
| 4 | 7447.880  | 46.49  | -7.51         | 48.31         | 54.00         | -1.82  | 3.69          | 41.99            | Average |
| 5 | 9930.280  | 57.75  | -16.25        | 53.98         | 74.00         | 3.77   | 3.98          | 39.09            | PEAK    |
| 6 | 12412.000 | 55.30  | -18.70        | 51.15         | 74.00         | 4.15   | 4.77          | 39.51            | PEAK    |
| 7 | 12412.000 | 34.30  | -19.70        | 30.15         | 54.00         | 4.15   | 4.77          | 39.51            | Average |

**(B) Polarization: Vertical**

|   | Freq      | Level  | Over<br>Limit | Read<br>Level | Limit<br>Line | Factor | Cable<br>Loss | Preamp<br>Factor | Remark  |
|---|-----------|--------|---------------|---------------|---------------|--------|---------------|------------------|---------|
|   | MHz       | dBuV/m | dB            | dBuV          | dBuV/m        | dB     | dB            | dB               |         |
| 1 | 4965.160  | 67.26  | -6.74         | 72.81         | 74.00         | -5.55  | 2.91          | 41.80            | PEAK    |
| 2 | 4965.160  | 46.26  | -7.74         | 51.81         | 54.00         | -5.55  | 2.91          | 41.80            | Average |
| 3 | 7448.040  | 63.43  | -10.57        | 65.25         | 74.00         | -1.82  | 3.69          | 41.99            | PEAK    |
| 4 | 7448.040  | 42.43  | -11.57        | 44.25         | 54.00         | -1.82  | 3.69          | 41.99            | Average |
| 5 | 9928.000  | 57.57  | -16.43        | 53.81         | 74.00         | 3.77   | 3.98          | 39.09            | PEAK    |
| 6 | 12412.000 | 54.19  | -19.81        | 50.05         | 74.00         | 4.15   | 4.77          | 39.51            | PEAK    |
| 7 | 12412.000 | 33.19  | -20.81        | 29.04         | 54.00         | 4.15   | 4.77          | 39.51            | Average |

Note:

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

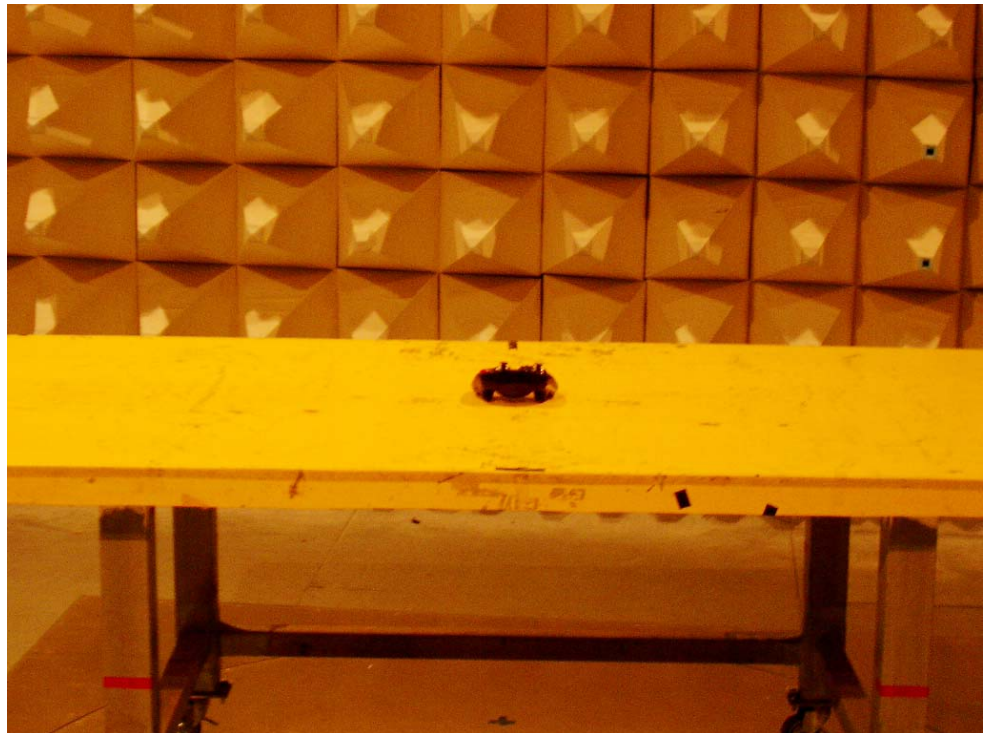
Corrected Reading: Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

5.2.11. Photographs of Radiated Emission Test Configuration

FRONT VIEW



REAR VIEW





### **5.3. Antenna Requirements**

#### **5.3.1. 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.

#### **5.3.2. Antenna Connected Construction**

There is no antenna connector for PCB Antenna.

#### **5.3.3. 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     | EMC Receiver             | R&S            | ESCS 30        | 100174      | 9kHz ~ 2.75GHz     | Feb. 16, 2005    | Conduction (CO04-HY)  |
| 2     | LISN                     | MessTec        | NNB-2/16Z      | 2001/004    | 9kHz ~ 30MHz       | Apr. 20, 2005    | Conduction (CO04-HY)  |
| 3     | LISN (Support Unit)      | MessTec        | NNB-2/16Z      | 99041       | 9kHz ~ 30MHz       | May. 05, 2005    | Conduction (CO04-HY)  |
| 4     | RF Cable-CON             | UTIFLEX        | 3102-26886-4   | CB049       | 9kHz ~ 30MHz       | Apr. 20, 2005    | Conduction (CO04-HY)  |
| 5     | EMI Filter               | LINDGREN       | LRE-2030       | 2651        | < 450 Hz           | N/A              | Conduction (CO04-HY)  |
| 6     | 3m Semi Anechoic Chamber | SIDT FRANKONIA | SAC-3M         | 03CH03-HY   | 30MHz ~ 1GHz<br>3m | Jun. 21, 2004    | Radiation (03CH03-HY) |
| 7     | Spectrum analyzer        | R&S            | FSP40          | 100004      | 9KHZ ~ 40GHz       | Aug. 31, 2004    | Radiation (03CH03-HY) |
| 8     | Amplifier                | SCHAFFNER      | CPA9231A       | 18667       | 9KHz ~ 2GHz        | Jan. 10, 2005    | Radiation (03CH03-HY) |
| 9     | Amplifier                | MITEQ          | AFS44-00102650 | 849984      | 100MHz ~ 26.5GHz   | Mar. 25, 2005    | Radiation (03CH03-HY) |
| 10    | Amplifier                | MITEQ          | AMF-6F-260400  | 923364      | 26.5GHz ~ 40GHz    | Mar. 25, 2005    | Radiation (03CH03-HY) |
| 11    | Loop Antenna             | R&S            | HFH2-Z2        | 860004/001  | 9kHz ~ 30MHz       | May 03, 2005*    | Radiation (03CH03-HY) |
| 12    | Biconical Antenna        | SCHWARZBECK    | VHBB 9124      | 301         | 30MHz ~ 200MHz     | Jul. 28, 2004    | Radiation (03CH03-HY) |
| 13    | Log Antenna              | SCHWARZBECK    | VUSLP 9111     | 221         | 200MHz ~ 1GHz      | Jul. 28, 2004    | Radiation (03CH03-HY) |
| 14    | Horn Antenna             | EMCO           | 3115           | 6741        | 1GHz ~ 18GHz       | Apr. 22, 2005    | Radiation (03CH03-HY) |
| 15    | Horn Antenna             | SCHWARZBECK    | BBHA9170       | BBHA9170154 | 15GHz ~ 40GHz      | Jun. 08, 2005*   | Radiation (03CH03-HY) |
| 16    | RF Cable-R03m            | Jye Bao        | RG142          | CB021       | 30MHz ~ 1GHz       | Feb. 22, 2005    | Radiation (03CH03-HY) |
| 17    | RF Cable-HIGH            | SUHNER         | SUCOFLEX 106   | 03CH03-HY   | 1GHz ~ 40GHz       | Dec.01, 2004     | Radiation (03CH03-HY) |
| 18    | Turn Table               | HD             | DS 420         | 420/650/00  | 0 ~ 360 degree     | N/A              | Radiation (03CH03-HY) |
| 19    | 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.

## 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.<br>TEL : 02-2696-2468<br>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.<br>TEL : 03-327-3456<br>FAX : 03-318-0055 |
| LINKOU | ADD : No. 30-2, Dingfu Tsuen, Linkou Shiang, Taipei, Taiwan 244, R.O.C<br>TEL : 02-2601-1640<br>FAX : 02-2601-1695                               |
| DUNGHU | ADD : No. 3, Lane 238, Kangle St., Neihu Chiu, Taipei, Taiwan 114, R.O.C.<br>TEL : 02-2631-4739<br>FAX : 02-2631-9740                            |
| JUNGHE | ADD : 7Fl., No. 758, Jungjeng Rd., Junghe City, Taipei, Taiwan 235, R.O.C.<br>TEL : 02-8227-2020<br>FAX : 02-8227-2626                           |
| NEIHU  | ADD : 4Fl., No. 339, Hsin Hu 2 <sup>nd</sup> Rd., Taipei 114, Taiwan, R.O.C.<br>TEL : 02-2794-8886<br>FAX : 02-2794-9777                         |

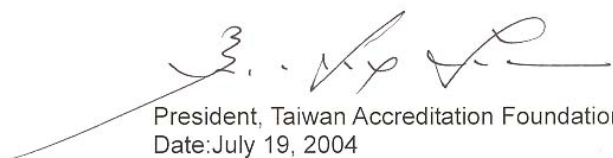
## 8. CNLA Certificate of Accreditation

Test Lab. : Sporton International Inc.  
Accreditation Number : 1190  
Originally Accredited : 2003/12/15  
Effective Period : 2003/12/15~2006/12/14  
Accredited Scope : 47 CFR FCC Part 15 Subpart C (9kHz~40GHz)



Taiwan Accreditation Foundation  
Chinese National Laboratory Accreditation  
Certificate of Accreditation

Accreditation Criteria: ISO 17025  
Accreditation Number: 1190  
Organization/Laboratory: EMC & Wireless Communications Laboratory, Sporton International Inc.  
Originally Accredited: December 15, 2003  
Effective Period: December 15, 2003 To December 14, 2006  
Accredited Scope: Electrical Testing Field, 7 items, details shown in the following pages.  
Specific Accreditation Program: Recognition and Approval of Designated Laboratory for Commodities Inspection

  
President, Taiwan Accreditation Foundation  
Date: July 19, 2004

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