

FCC TEST REPORT

CATEGORY : Mobile
PRODUCT NAME : RF2.4GHz Wireless Gamepad
FCC ID. : TCGPADXBO900D-H
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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HISTORY OF THIS TEST REPORT

Received Date: May 13, 2005

Test Date: June 14, 2005

Original Report Issue Date: June 16, 2005

Report No.: FR551320-01

☒ 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

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 hand held master powered by battery. The other is the slave which can be plugged on the XBOX host. This report is for the slave part.

1.4. Features of Equipment under Test

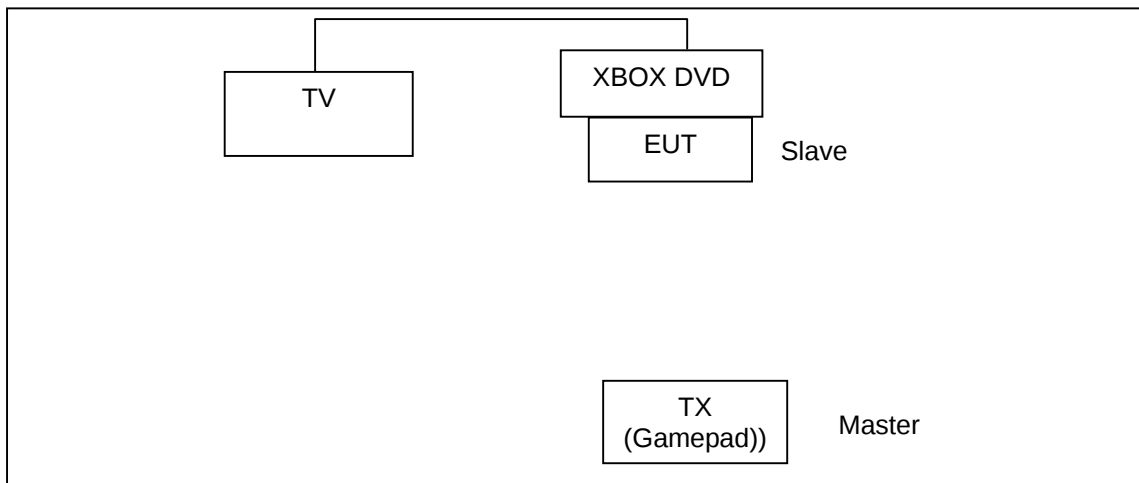
Items	Description
Type of Modulation	GFSK
Number of Channels	95
Frequency Band	2401.056 MHz ~ 2482.272 MHz
Carrier Frequency	See section 1.5 for details
Antenna Type	PCB Antenna
Testing Duty Cycle	100.00%
Test Power Source	DC 5.0 from host
Temperature Range (Operating)	0 ~ 50 °C

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 Conduction 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 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

Support unit	Brand	Model No.	FCC ID
TV	JVC	TM-1700PN	DoC
XBOX DVD	Microsoft	R60-00133	DoC

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 / CO04-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	15.207	AC Power Line Conducted Emission	Pass
5.3	15.249(d)	Spurious Radiated Emission	Pass
5.4	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 (MHz)	Field Strength of Fundamental (millivolts/meter)	Unwanted Emission (microvolts/meter)
2400-2483.5	50	500
5725-5875	50	500

5.1.2. Measuring Instruments

Item 6~19 of the table on section 6.

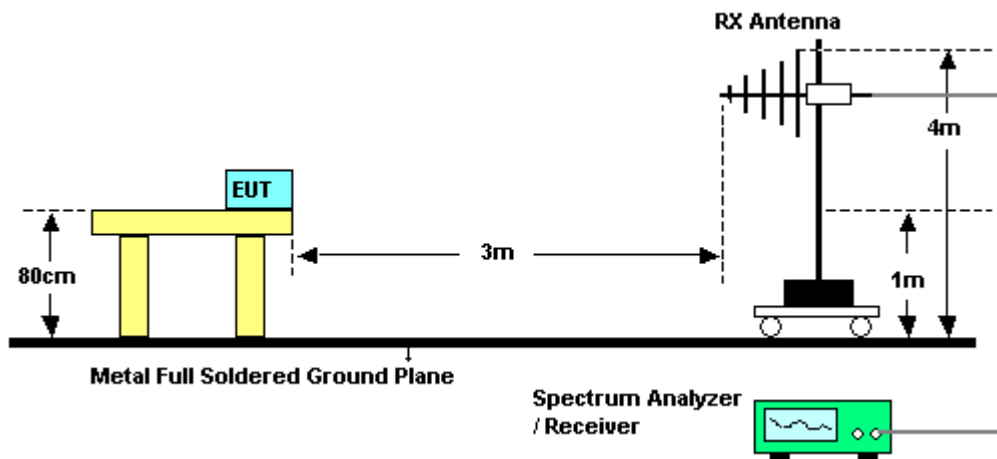
5.1.3. Description of Major Test Instruments Setting

- 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 C63.4-2003.
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 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 AC Power Line Conducted Emission

5.2.1. Applicable Standard

Section 15.207: For a Low-power Radio-frequency Device 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. Measuring Instruments

Please reference item 1~5 in chapter 6 for the instruments used for testing.

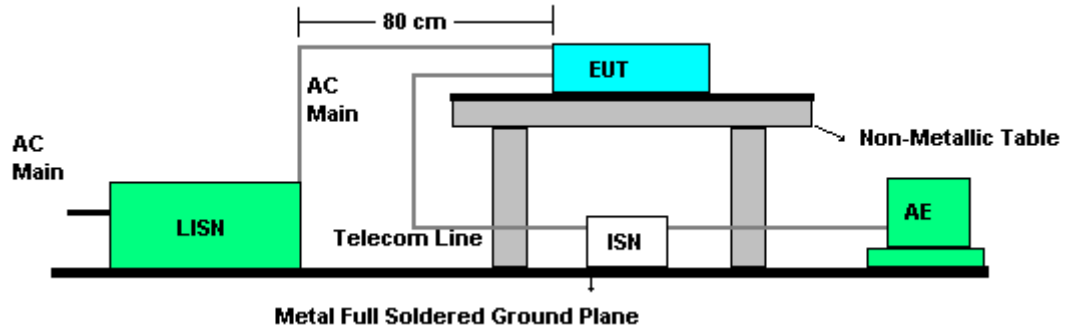
5.2.3. Description of Major Test Instruments Setting

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

5.2.4. 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 provide 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.

5.2.5. Test Setup Layout



5.2.6. Test Criteria

All test results complied with the requirements of Section 15.207. Measurement Uncertainty is 2.54dB.

5.2.7. Test Result of Conducted Emission for CH 94 / 2482 MHz

- Temperature: 19°C
- Relative Humidity: 60%
- Test Engineer: Sky Wu

Line to Ground

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.2053260	35.31	-28.08	63.39	35.04	0.06	0.21	QP
2	0.2053260	28.36	-25.03	53.39	28.09	0.06	0.21	Average
3	0.9197050	25.09	-30.91	56.00	24.32	0.11	0.66	QP
4	0.9197050	24.74	-21.26	46.00	23.97	0.11	0.66	Average
5	1.535	26.11	-29.89	56.00	25.62	0.11	0.38	QP
6	1.535	25.77	-20.23	46.00	25.28	0.11	0.38	Average
7	5.114	27.90	-32.10	60.00	27.43	0.21	0.26	QP
8	5.114	26.76	-23.24	50.00	26.29	0.21	0.26	Average
9	11.501	12.02	-37.98	50.00	10.97	0.21	0.84	Average
10	11.501	17.98	-42.02	60.00	16.93	0.21	0.84	QP
11	23.218	24.51	-25.49	50.00	23.81	0.31	0.39	Average
12	23.218	28.25	-31.75	60.00	27.55	0.31	0.39	QP

Neutral to Ground

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.2068420	35.59	-27.74	63.33	35.27	0.11	0.21	QP
2	0.2068420	28.66	-24.67	53.33	28.34	0.11	0.21	Average
3	0.3589320	22.88	-35.87	58.75	22.48	0.11	0.29	QP
4	0.3589320	5.39	-43.36	48.75	4.99	0.11	0.29	Average
5	0.9220240	17.81	-38.19	56.00	16.92	0.23	0.66	QP
6	0.9220240	16.70	-29.30	46.00	15.81	0.23	0.66	Average
7	2.660	18.84	-37.16	56.00	18.36	0.23	0.25	QP
8	2.660	17.70	-28.30	46.00	17.22	0.23	0.25	Average
9	6.344	27.32	-32.68	60.00	26.80	0.28	0.24	QP
10	6.344	22.44	-27.56	50.00	21.92	0.28	0.24	Average
11	14.320	24.81	-25.19	50.00	23.37	0.33	1.11	Average
12	14.320	27.67	-32.33	60.00	26.23	0.33	1.11	QP

Note:

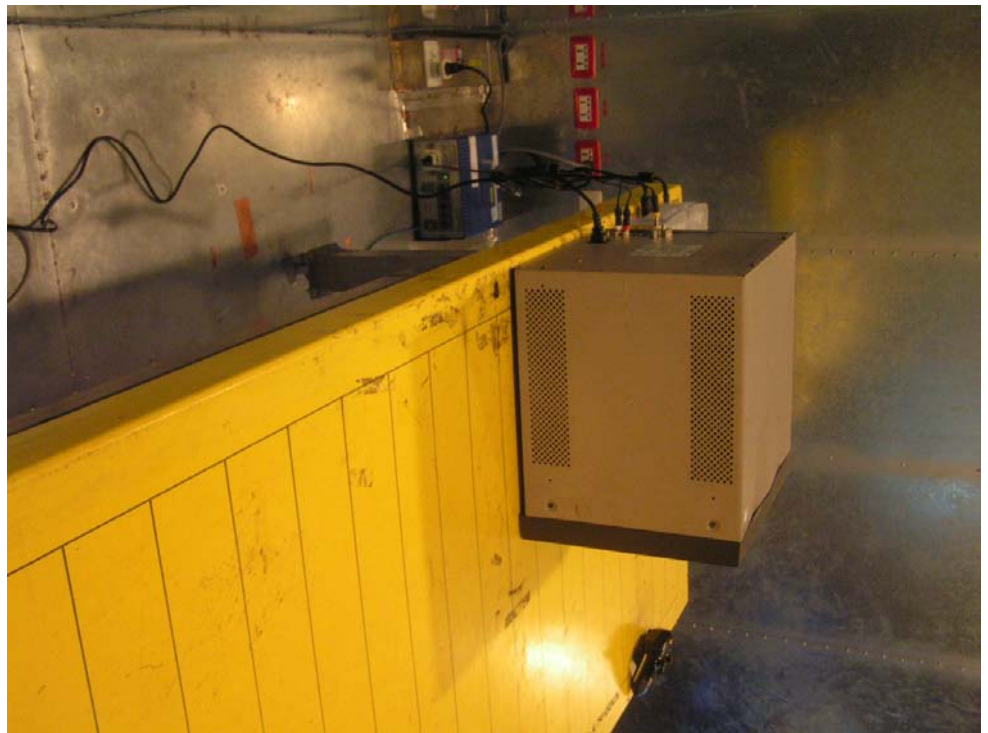
Corrected Reading: Probe (LISN / ISN) Factor + Cable Loss + Read Level = Level.

5.2.8. Photographs of Conducted Emission Test Configuration

FRONT VIEW



REAR VIEW



5.3. Test of Spurious Radiated Emission

5.3.1. 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.

5.3.2. Measuring Instruments

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

5.3.3. 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

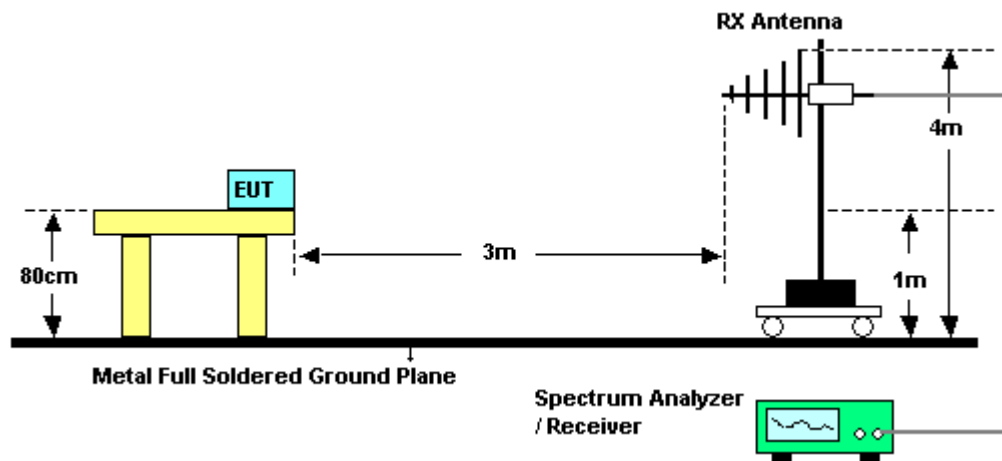
5.3.4. Test Procedures

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.

5.3.5. Test Setup Layout



5.3.6. Test Criteria

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

5.3.7. 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	133.190	24.99	-18.51	42.14	43.50	-17.15	1.15	30.72	Peak
2	144.070	27.42	-16.08	44.56	43.50	-17.14	1.18	30.64	Peak
3	192.350	29.44	-14.06	43.35	43.50	-13.91	1.29	30.37	Peak
1 @	227.200	40.45	-5.55	55.89	46.00	-15.44	1.45	30.92	Peak
2 @	263.200	38.02	-7.98	54.19	46.00	-16.17	1.62	30.48	Peak
3	428.800	34.76	-11.24	46.81	46.00	-12.05	2.01	30.64	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 @	32.720	29.02	-10.98	46.44	40.00	-17.42	0.56	30.39	Peak
2	59.070	28.55	-11.45	47.58	40.00	-19.03	0.75	30.35	Peak
3	133.190	23.87	-19.63	41.02	43.50	-17.15	1.15	30.72	Peak
1 @	263.200	38.96	-7.04	55.13	46.00	-16.17	1.62	30.48	Peak
2	599.200	32.80	-13.20	41.13	46.00	-8.33	2.40	31.09	Peak
3	749.600	34.37	-11.63	40.72	46.00	-6.35	2.79	30.43	Peak

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

Results for the radiated measurement below 30MHz, no emissions found and caused by the EUT.

5.3.8. 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 Limit	Read Level	Limit Line	Factor	Cable Loss	Preamp 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 Limit	Read Level	Limit Line	Factor	Cable Loss	Preamp 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

5.3.9. 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

(B) 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

5.3.10. 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

(C) 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	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 Limit	Read Level	Limit Line	Factor	Cable Loss	Preamp 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

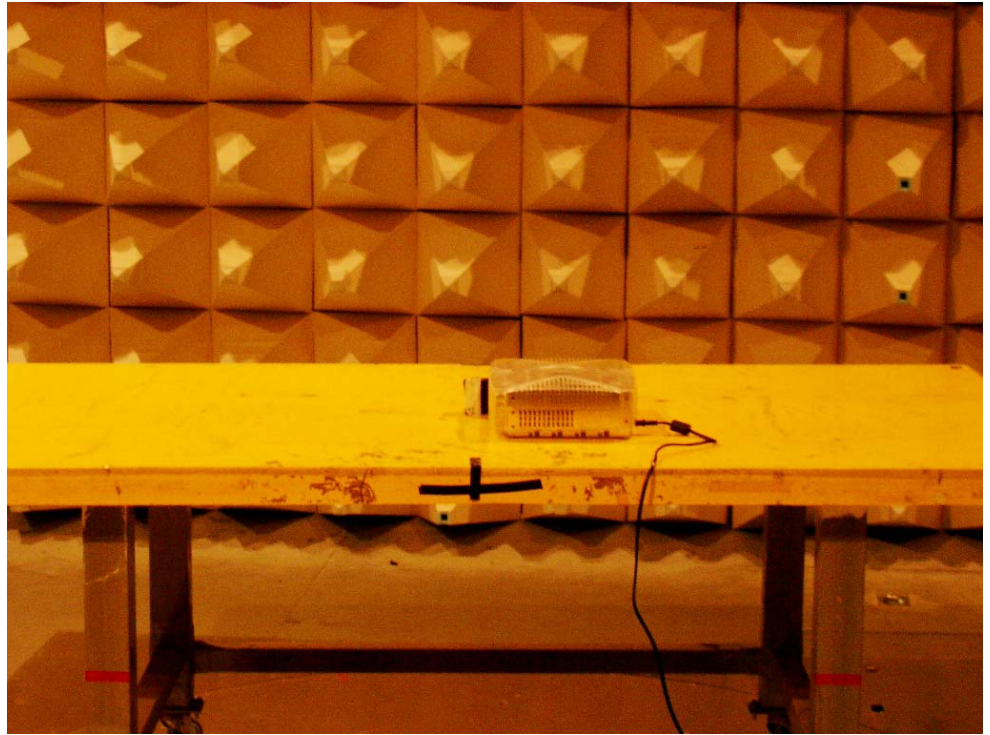
Note:

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

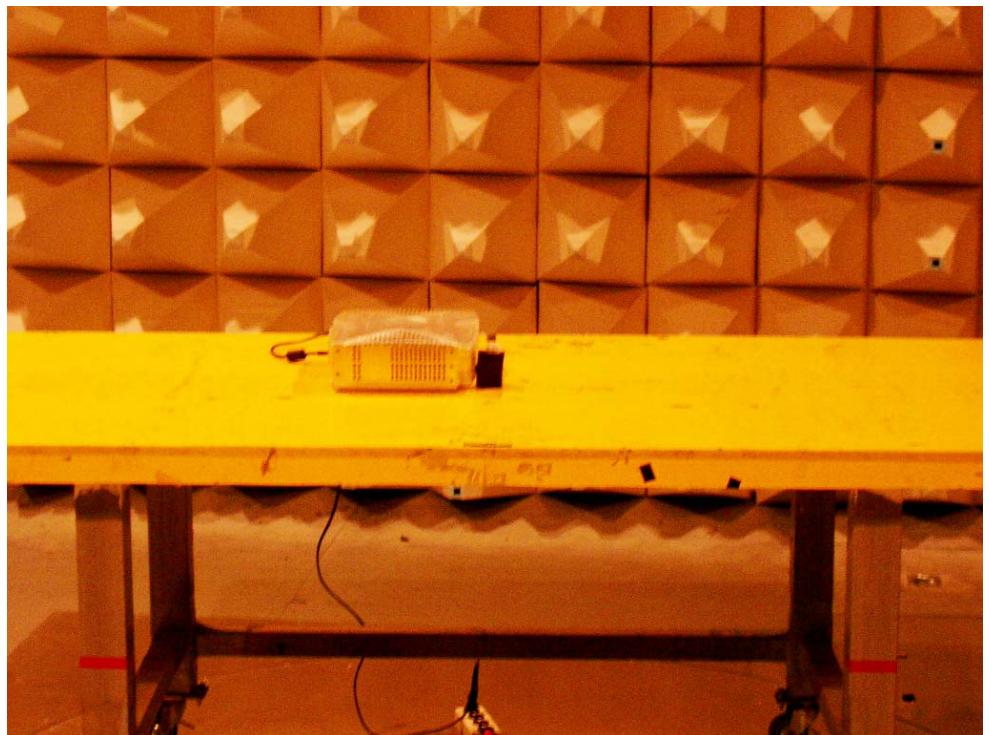
Corrected Reading: Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

5.3.11. 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 antenna 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	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 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. 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

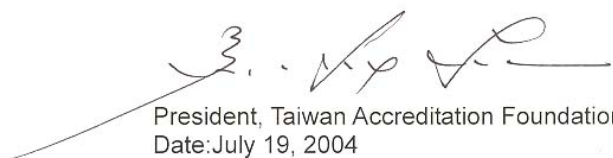
8. CNLA Certificate of Accreditation

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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