

FCC TEST REPORT

CATEGORY : Portable

PRODUCT NAME : RF2.4GHz Wireless Gamepad

FCC ID. : Q2VPADPS2900D-D

FILING TYPE : Certification

BRAND NAME : Datel, Psyolone, Maxwise, Titan

MODEL NAME : PS21A0MIE3, PS2800D, PS2900D, PS2350D, PSY935, PSY960, PYP27,PPO28, PPR26, PSS12, PSY970, PSY973, COK01

APPLICANT : **Maxwise Production Enterprise Limited**
No. 28, Bai Shui Jing Street, Zhongshan City, Guangdong, China

MANUFACTURER : **Eternal Manufacturing Ltd.**
No. 2, Fu Zhong Street, Ban Fu Town, 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 16, 2005

Test Date: June 29, 2005

Original Report Issue Date: June 30, 2005

Report No.: FR551329

☒ 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 : Datel, Psyolone, Maxwise, Titan

MODEL NAME : PS21A0MIE3, PS2800D, PS2900D, PS2350D, PSY935,
PSY960, PYP27,PPO28, PPR26, PSS12, PSY970, PSY973,
COK01

APPLICANT : **Maxwise Production Enterprise Limited**
No. 28, Bai Shui Jing Street, Zhongshan City, Guangdong,
China

MANUFACTURER : **Eternal Manufacturing Ltd.**
No. 2, Fu Zhong Street, Ban Fu Town, 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 29, 2005 at SPORTON International Inc. LAB.



Wayne Hsu / Supervisor
Sporton International Inc.

1. General Description of Equipment under Test

1.1. Applicant

Maxwise Production Enterprise Limited

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

1.2. Manufacturer

Eternal Manufacturing Ltd.

No. 2, Fu Zhong Street, Ban Fu Town, 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 PS2 host. This report is for the Gamepad part.

1.4. Features of Equipment under Test

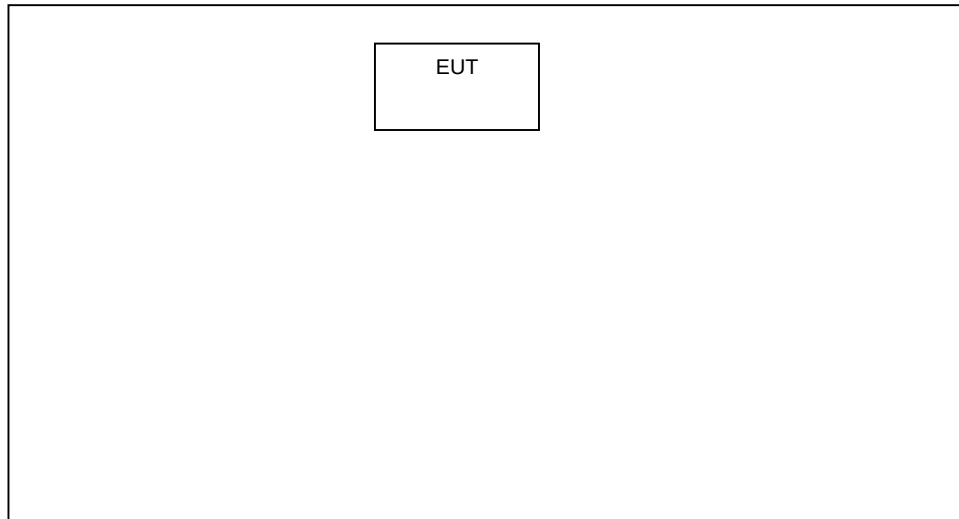
Items	Description
Type of Modulation	GFSK
Number of Channels	87
Frequency Band	2404.512MHz ~ 2478.816MHz
Carrier Frequency	See section 1.5 for details
Antenna Type	PCB Antenna
Testing Duty Cycle	100.00%
Test Power Source	DC 6.0V from battery
Temperature Range (Operating)	0 ~ 50 °C

1.5. Table for Carrier Frequencies

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
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		
14	2413.152	40	2435.616	66	2458.080		
15	2414.016	41	2436.480	67	2458.944		
16	2414.880	42	2437.344	68	2459.808		
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		
26	2423.520	52	2445.984	78	2468.448		
27	2424.384	53	2446.848	79	2469.312		
28	2425.248	54	2447.712	80	2470.176		
29	2426.112	55	2448.576	81	2471.040		

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 47 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. Field Strength of Fundamental Emissions Measurement

5.1.1. Applicable Standard

47 CFR FCC Part 15 Subpart C, 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.

Frequency Band (MHz)	Fundamental Emissions Limit (dBuV/m) at 3m
2400-2483.5	94
5725-5875	94

5.1.2. Measuring Instruments

Refer to section 6 in this report.

5.1.3. Major Test Instruments Setting

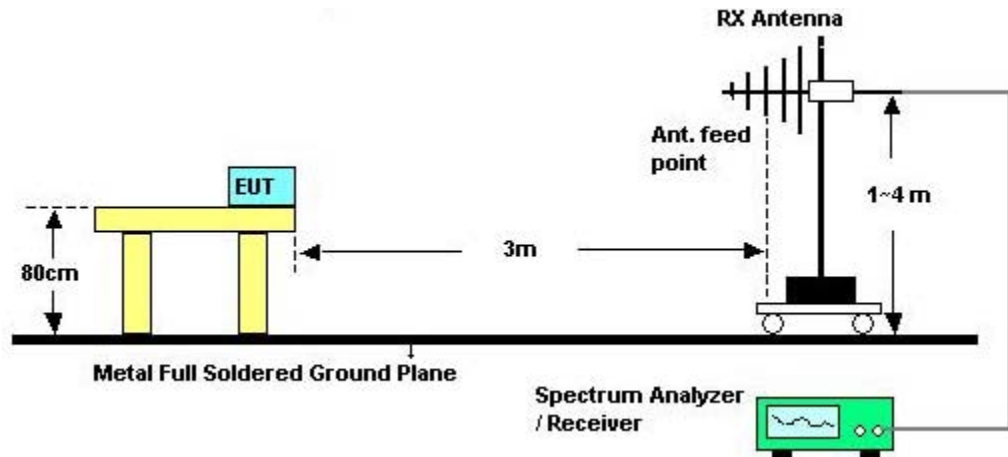
Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	1.5MHz
RB	1 MHz Peak / 1MHz Average
VB	1 MHz Peak / 10Hz Average
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

5.1.4. Test Procedures

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 receiving antenna mounted on the top of a height-variable 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 broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, 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 Fundamental emissions, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
6. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the

average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.

5.1.5. Test Setup Layout



5.1.6. Test Deviation

The measurement uncertainty is 2.54dB. Test methods have no deviation with original standard.

5.1.7. Test Mode(s)

Measurements have been done on 3 channels: low (channel 04, 2404.512MHz), middle (channel 47, 2441.664MHz) and high (Channel 90, 2478.816MHz) channels. Since the 2.4GHz external antennas are all in the same type, so only one antenna with highest gain has to be tested. So, there are 2 test modes for emissions above 1GHz:

5.1.8. Calculation of Voltage Levels

Measurements are reported in units of dB relative to one microvolt per metre (dBμV/m).

The field strength was calculated automatically by the software using all the pre-stored calibration data. The method of calculation is shown below:

$E = V + AF - G + L$ Where:

E = Radiated Field Strength in dBμV/m.

V = EMI Receiver Voltage in dBμV. (measured value)

AF = Antenna Factor in dB(m⁻¹). (stored as a data array)

G = Preamplifier Gain in dB. (stored as a data array)

L = Cable insertion loss in dB. (stored as a data array of Insertion Loss versus frequency)

Level = Read Level + Factor.

Factor = AF - G + L.

When pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds.

So duty factor is show below:

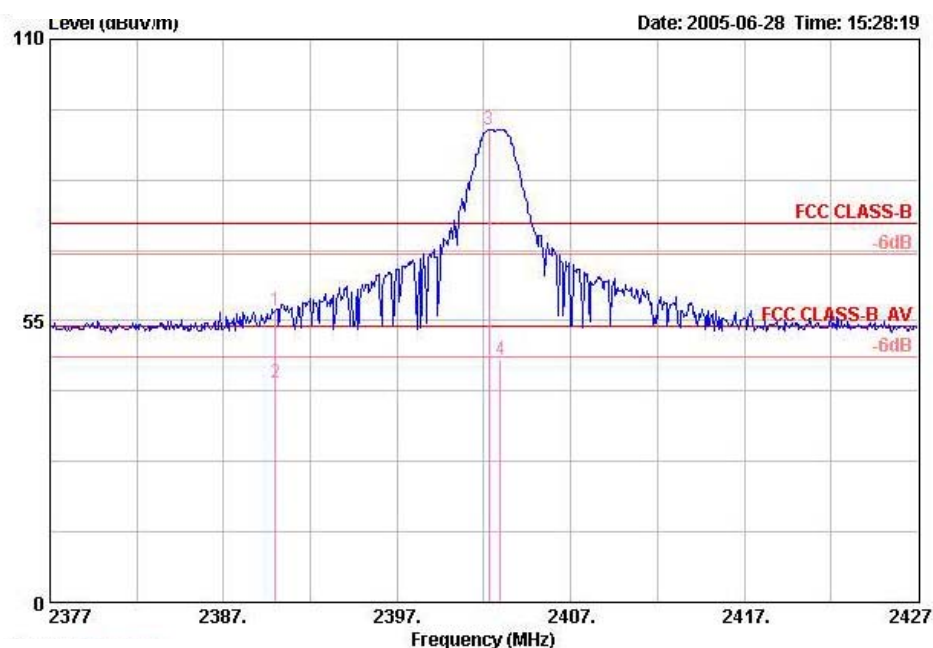
duty factor = $20 \times \log_{10}(\text{duty cycle}) = -6.9\text{dB}$

Average value = Peak value + duty factor

5.1.9. Test Result

Test Site	03CH03-HY 参考
Temperature	19°C
Humidity	60%
Test Engineer	Ted Chiu

(Channel 01, 2404.512MHz) / Maximum Polarization :



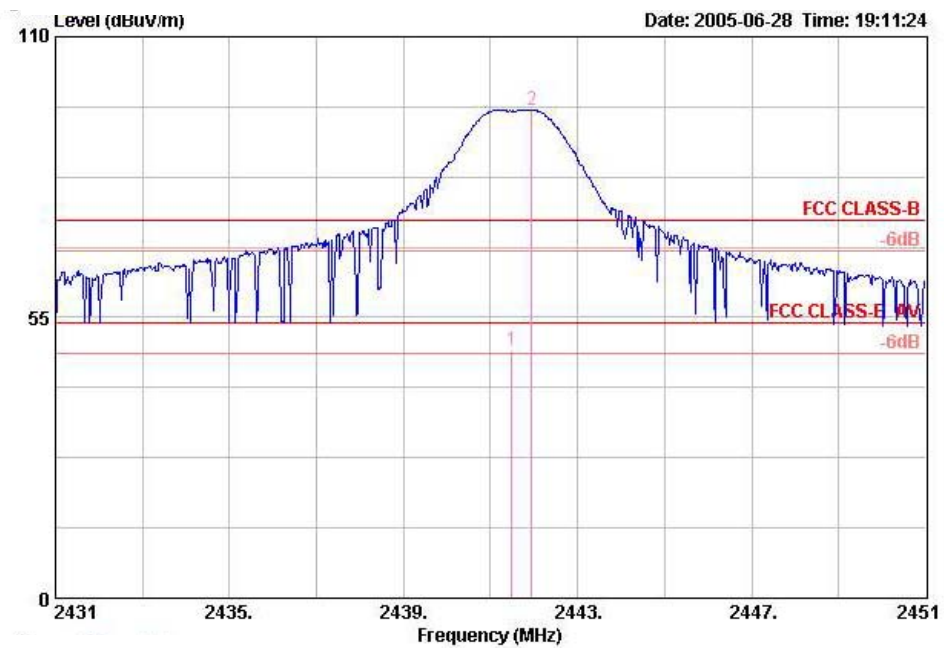
	Freq	Level	Over	Limit	Antenna	Cable	Preamp	Read		
	MHz	dBuV/m	Limit		Line	Loss	Factor	Level	Pol/Phase	Remark
			dB		dB/m	dB	dB	dBuV		
1 @	2390.000	56.94	-17.06	74.00	28.13	2.00	0.00	26.81	HORIZONTAL	PEAK
2 @	2390.000	42.89	-11.11	54.00	28.13	2.00	0.00	12.76	HORIZONTAL	AVERAGE
3 @	2402.300	92.31	18.31	74.00	28.13	2.00	0.00	62.18	HORIZONTAL	Peak
4 @	2402.960	47.45	-6.55	54.00	28.18	2.00	0.00	17.27	HORIZONTAL	AVERAGE

Remark:

Item 1, 2 are Band Edge Emissions.

Item 3, 4 are Field Strength of Fundamental Emissions.

(Channel 47, 2441.664MHz) / Maximum Polarization :

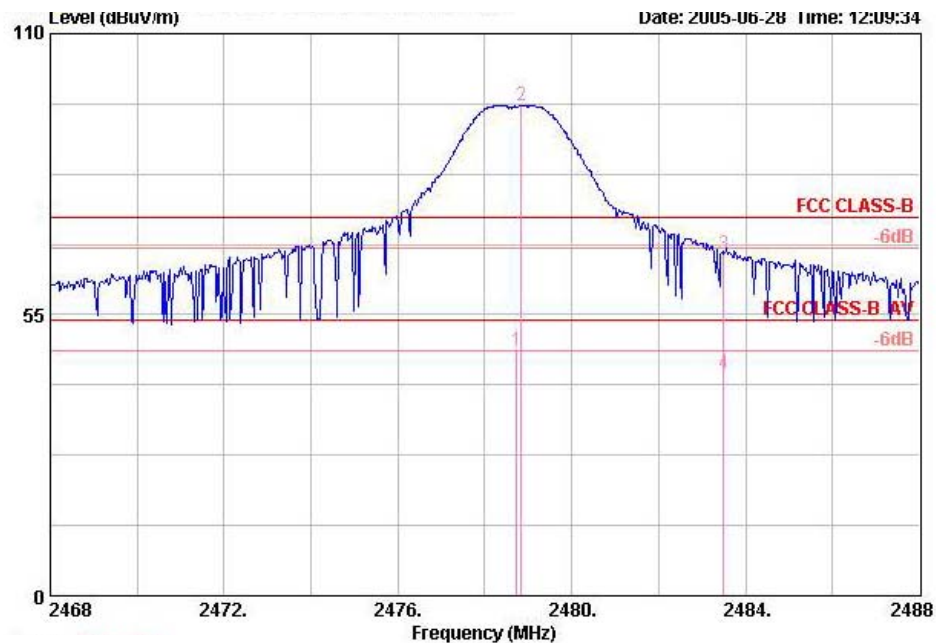


	Freq	Level	Over Limit	Limit	Antenna Line Factor	Cable Loss	Preamp Factor	Read Level	Pol/Phase	Remark
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		
1 @	2441.480	48.62	-5.38	54.00	28.27	2.02	0.00	18.33	HORIZONTAL	AVERAGE
2 @	2441.940	95.61	21.61	74.00	28.27	2.02	0.00	65.32	HORIZONTAL	Peak

Remark:

Item 1, 2 are Band Edge Emissions.

(Channel 90, 2478.816MHz)/ Maximum Polarization :



	Freq	Level	Over	Limit	Antenna	Cable	Preamp	Read		Remark
	MHz	dBuV/m	Limit	Line	Factor	Loss	Factor	Level	Pol/Phase	
			dB	dBuV/m	dB/m	dB	dB	dBuV		
1 !	2478.740	48.10	-5.90	54.00	28.36	2.04	0.00	17.71	VERTICAL	AVERAGE
2 @	2478.840	95.82	21.82	74.00	28.36	2.04	0.00	65.42	VERTICAL	Peak
3	2483.500	66.92	-7.08	74.00	28.36	2.04	0.00	36.52	VERTICAL	PEAK
4	2483.500	43.43	-10.57	54.00	28.36	2.04	0.00	13.03	VERTICAL	AVERAGE

Remark:

Item 3, 4 are Band Edge Emissions.

Item 1, 2 are Field Strength of Fundamental Emissions

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 1~14 in chapter 6 for the instruments used for testing.

5.2.3. Description of Major Test Instruments Setting

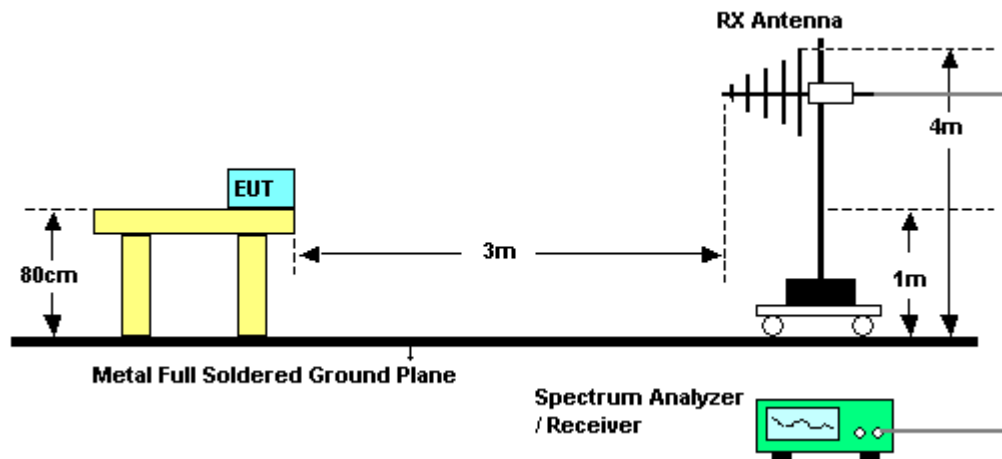
- Spectrum Analyzer : R&S FSP40
 - Attenuation : Auto
 - Start Frequency : 1000 MHz
 - Stop Frequency : 10th carrier harmonic
 - RB / VB : 1 MHz / 1MHz for Peak
 - RB / VB : 1 MHz / 10Hz for Average
- Test Receiver : R&S ESCS 30
 - Attenuation : Auto
 - Start Frequency : 9 kHz
 - Stop Frequency : 1000 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. Results of Bandedge Emissions

Please refer to section 5.1 of test result.

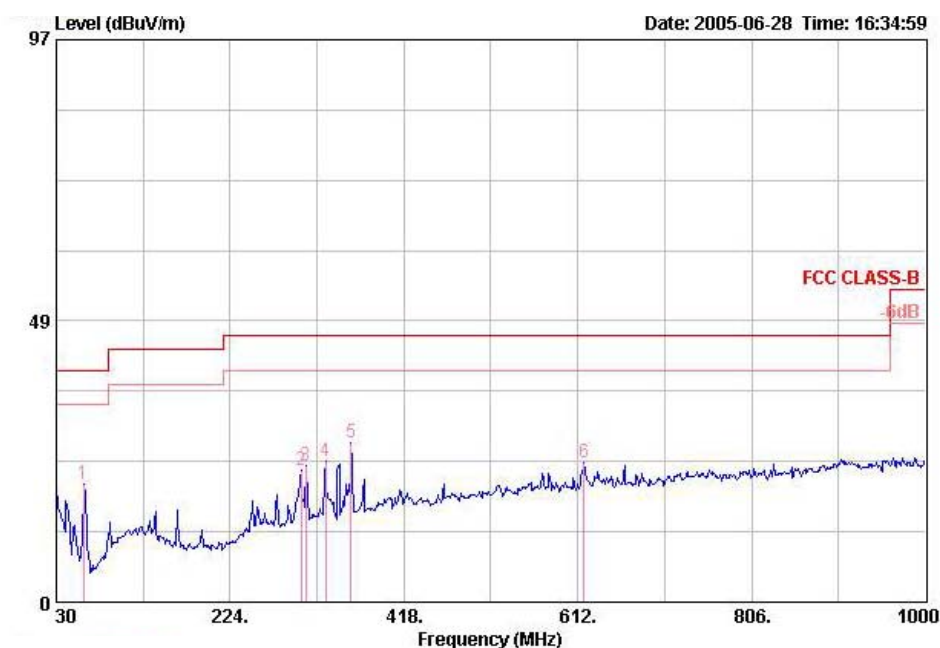
5.2.7. Test Criteria

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

5.2.8. Test Results for CH 90 / 2478.816 MHz (for emission below 1GHz)

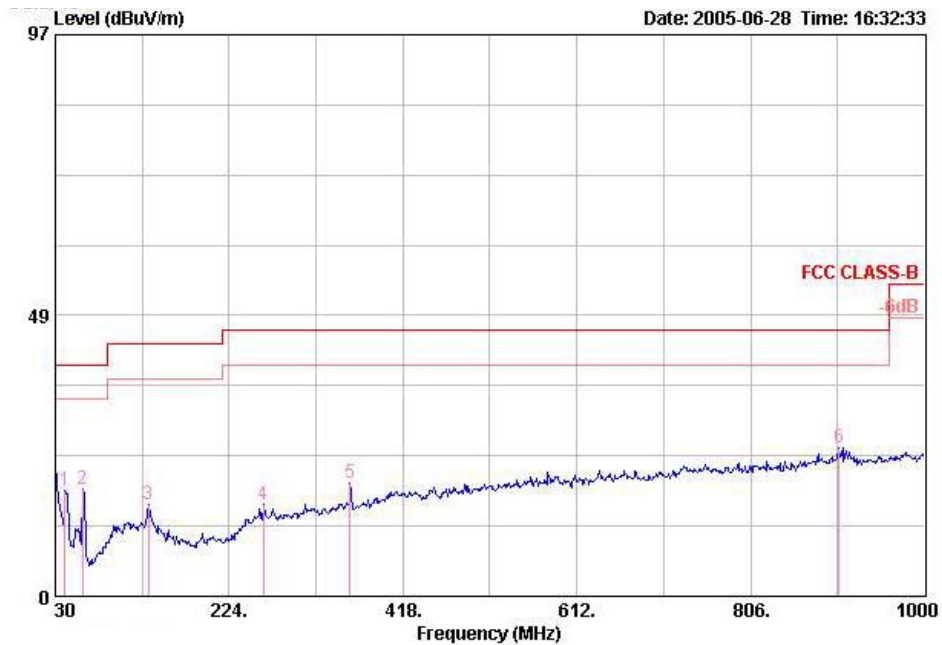
- Temperature: 19°C
- Relative Humidity: 60%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Ted Chiu

(A) Polarization: Horizontal



	Freq	Level	Over	Limit	Antenna	Cable	Preamp	Read		
	MHz	dBuV/m	Limit	Line	Factor	Loss	Factor	Level	Pol/Phase	Remark
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		
1 @	60.070	20.30	-19.70	40.00	5.30	0.65	29.87	44.22	HORIZONTAL	Peak
2 @	303.540	22.78	-23.22	46.00	13.15	1.38	30.21	38.47	HORIZONTAL	Peak
3 @	308.390	23.39	-22.61	46.00	13.33	1.39	30.26	38.94	HORIZONTAL	Peak
4 @	330.700	24.27	-21.73	46.00	13.87	1.43	30.50	39.47	HORIZONTAL	Peak
5 @	358.830	27.40	-18.60	46.00	14.76	1.50	30.57	41.71	HORIZONTAL	Peak
6 @	618.790	23.96	-22.04	46.00	18.71	1.96	30.67	33.97	HORIZONTAL	Peak

(B) Polarization: Vertical



	Freq	Level	Over	Limit	Antenna	Cable	Preamp	Read		
	MHz	dBuV/m	Limit	Line	Factor	Loss	Factor	Level	Pol/Phase	Remark
			dB	dBuV/m	dB/m	dB	dB	dBuV		
1 @	40.670	18.26	-21.74	40.00	11.90	0.54	29.81	35.63	VERTICAL	Peak
2 @	60.070	18.61	-21.39	40.00	5.30	0.65	29.87	42.53	VERTICAL	Peak
3 @	133.790	15.93	-27.57	43.50	11.48	0.91	30.03	33.57	VERTICAL	Peak
4 @	261.830	15.77	-30.23	46.00	12.94	1.28	30.07	31.62	VERTICAL	Peak
5 @	358.830	19.47	-26.53	46.00	14.76	1.50	30.57	33.78	VERTICAL	Peak
6 @	904.940	25.65	-20.35	46.00	20.55	2.42	28.77	31.45	VERTICAL	Peak

Note:

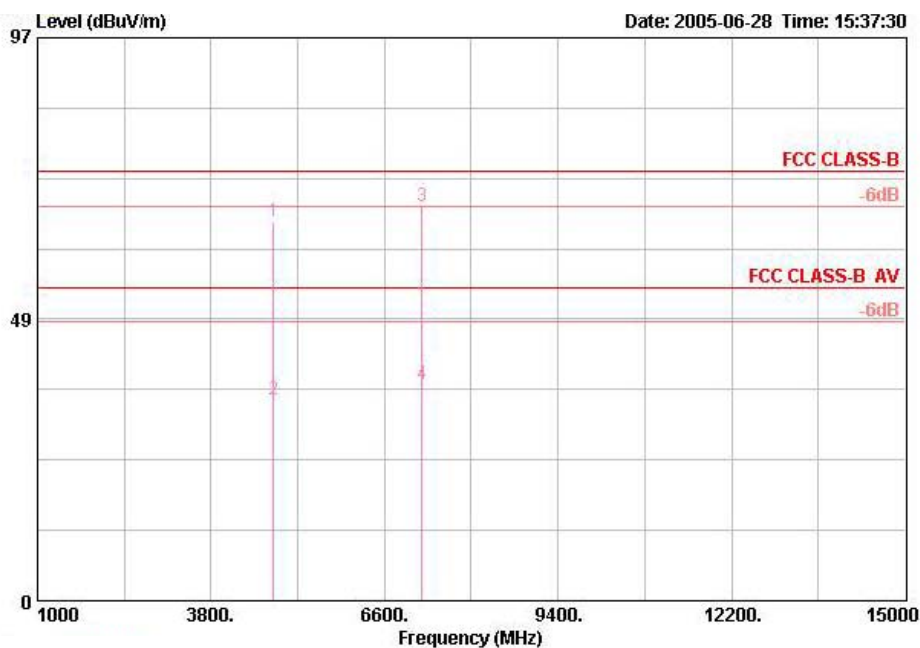
Emission level (dBuV/m) = 20 log Emission level (uV/m)

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

5.2.9. Test Results for CH 04 / 2404.512 MHz (for emission above 1GHz)

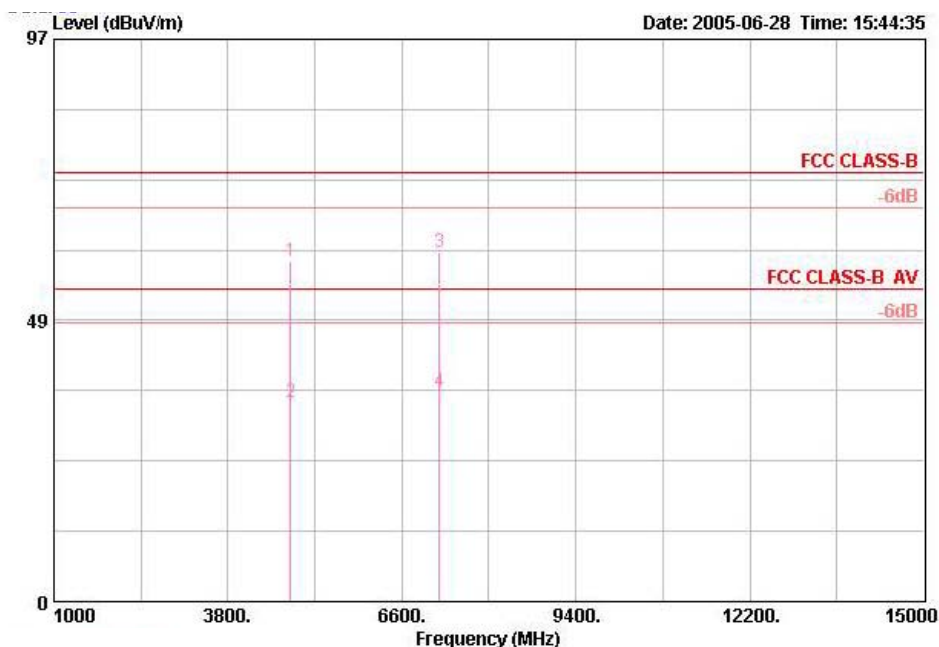
- Temperature: 19°C
- Relative Humidity: 60%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Ted Chiu

(A) Polarization: Horizontal



	Freq	Level	Over Limit	Limit	Antenna Line Factor	Cable Loss	Preamp Factor	Read Level	Pol/Phase	Remark
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		
1 @	4804.540	65.34	-8.66	74.00	33.18	3.20	35.10	64.06	HORIZONTAL	PEAK
2 @	4805.230	34.74	-19.26	54.00	33.18	3.20	35.10	33.45	HORIZONTAL	AVERAGE
3 @	7206.760	67.90	-6.10	74.00	36.00	4.39	35.28	62.80	HORIZONTAL	PEAK
4 @	7207.790	37.34	-16.66	54.00	36.00	4.39	35.28	32.24	HORIZONTAL	AVERAGE

(B) Polarization: Vertical



	Freq	Level	Over	Limit	Antenna	Cable	Preamp	Read		
	MHz	dBuV/m	Limit	Line	Factor	Loss	Factor	Level	Pol/Phase	Remark
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		
1 @	4806.100	58.60	-15.40	74.00	33.18	3.20	35.10	57.31	VERTICAL	PEAK
2 @	4806.100	34.40	-19.60	54.00	33.18	3.20	35.10	33.11	VERTICAL	Average
3 @	7206.970	60.37	-13.63	74.00	36.00	4.39	35.28	55.27	VERTICAL	PEAK
4 @	7207.400	36.30	-17.70	54.00	36.00	4.39	35.28	31.20	VERTICAL	Average

Note:

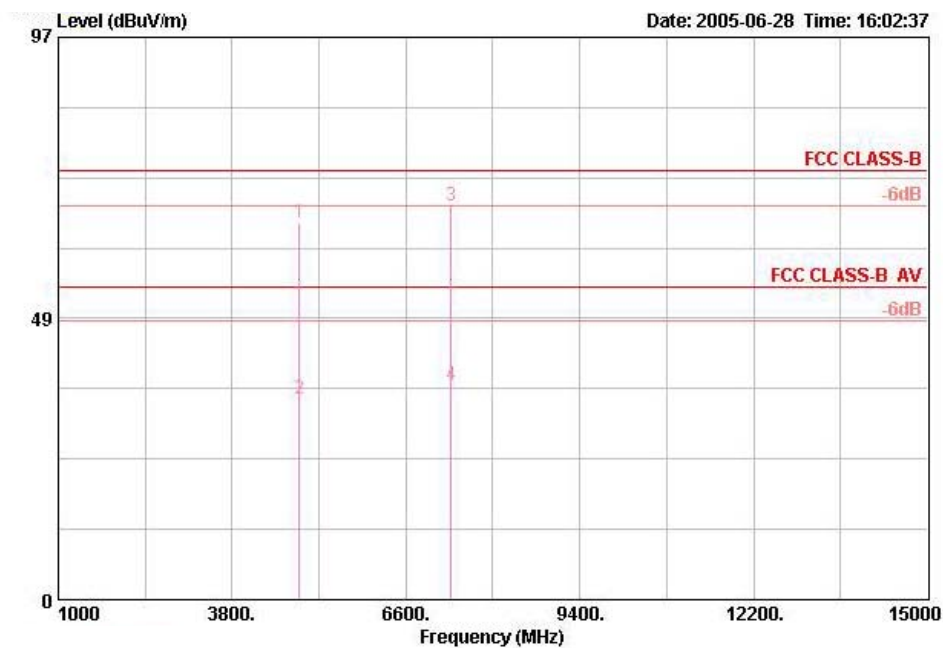
Emission level (dBuV/m) = 20 log Emission level (uV/m)

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

5.2.10. Test Results for CH 47 / 2441.664 MHz (for emission above 1GHz)

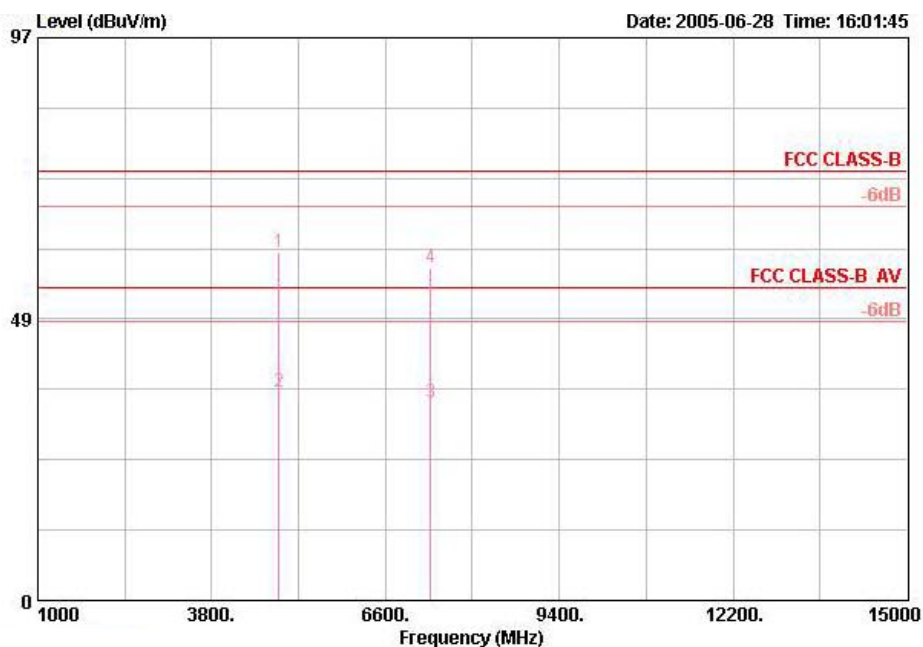
- Temperature: 19°C
- Relative Humidity: 60%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Ted Chiu

(A) Polarization: Horizontal



	Freq	Level	Over Limit	LimitAntenna Line Factor	Cable Loss	Preamp Factor	Read Level	Pol/Phase	Remark
	MHz	dBuV/m	dB	dBuV/m	dB	dB	dBuV		
1 @	4882.800	65.00	-9.00	74.00	33.33	3.23	35.10	63.53	HORIZONTAL Peak
2 @	4882.800	34.50	-19.50	54.00	33.33	3.23	35.10	33.03	HORIZONTAL Average
3 @	7322.480	68.00	-6.00	74.00	36.29	4.44	35.33	62.60	HORIZONTAL Peak
4 @	7322.480	37.00	-17.00	54.00	36.29	4.44	35.33	31.60	HORIZONTAL Average

(B) Polarization: Vertical



	Freq	Level	Over Limit	Limit	Antenna Line Factor	Cable Loss	Preamp Factor	Read Level	Pol/Phase	Remark
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		
1 @	4883.400	60.00	-14.00	74.00	33.33	3.23	35.10	58.53	VERTICAL	Peak
2 @	4883.400	36.00	-18.00	54.00	33.33	3.23	35.10	34.53	VERTICAL	Average
3 @	7323.100	34.10	-19.90	54.00	36.29	4.44	35.33	28.70	VERTICAL	Average
4 @	7323.100	57.40	-16.60	74.00	36.29	4.44	35.33	52.00	VERTICAL	Peak

Note:

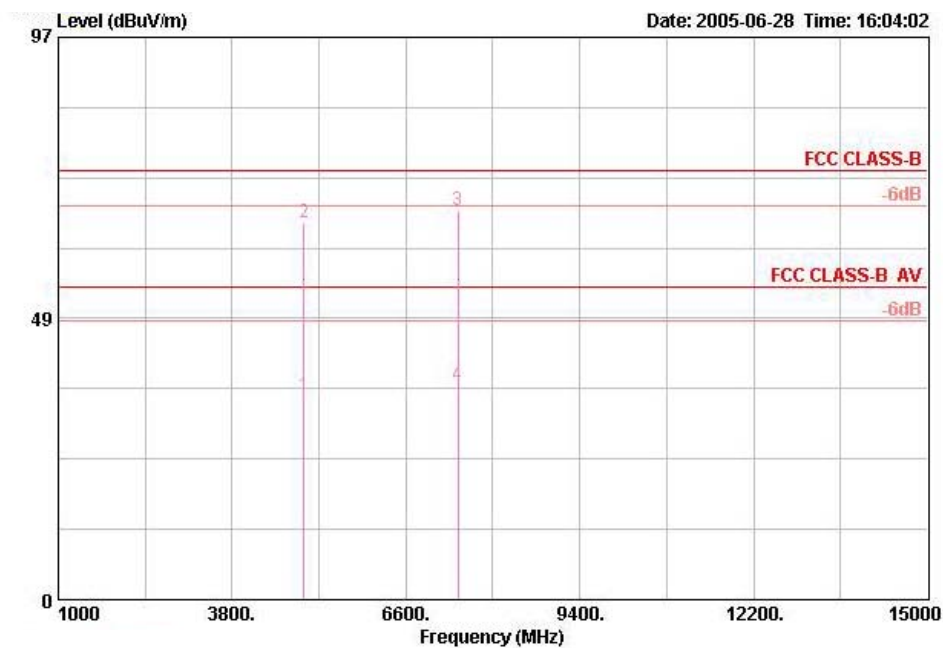
Emission level (dBuV/m) = 20 log Emission level (uV/m)

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

5.2.11. Test Results for CH 90 / 2478.816 MHz (for emission above 1GHz)

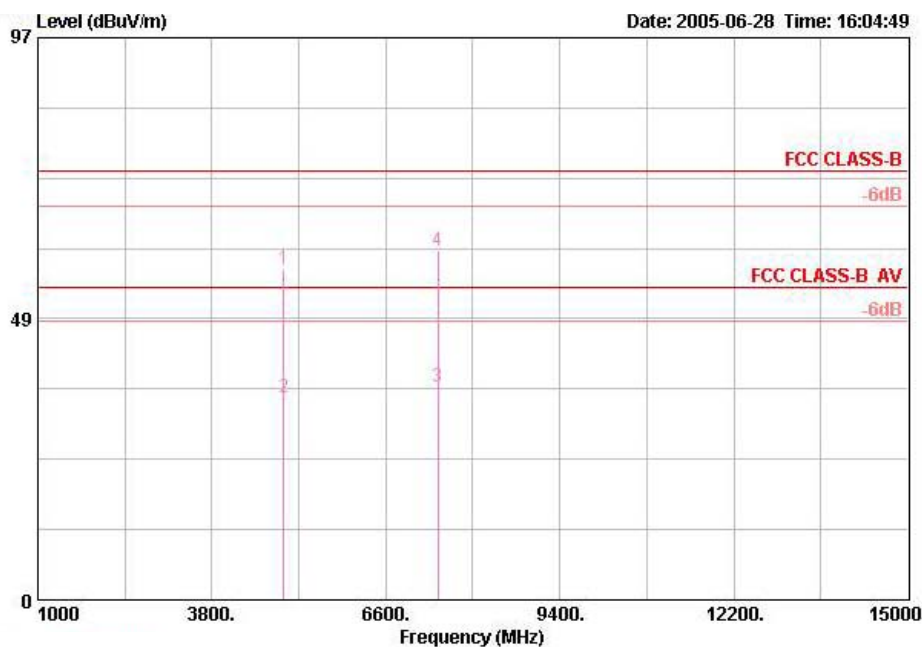
- Temperature: 19°C
- Relative Humidity: 60%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Ted Chiu

(A) Polarization: Horizontal



	Freq	Level	Over Limit	LimitAntenna Line Factor	Cable Loss	Preamp Factor	Read Level	Pol/Phase	Remark
	MHz	dBuV/m	dB	dBuV/m	dB	dB	dBuV		
1 @	4958.300	35.20	-18.80	54.00	33.52	3.25	35.10	33.53	HORIZONTAL Average
2 @	4958.300	65.10	-8.90	74.00	33.52	3.25	35.10	63.43	HORIZONTAL Peak
3 @	7437.000	67.20	-6.80	74.00	36.58	4.50	35.37	61.49	HORIZONTAL Peak
4 @	7437.000	37.00	-17.00	54.00	36.58	4.50	35.37	31.29	HORIZONTAL Average

(B) Polarization: Vertical



	Freq	Level	Over	Limit	Antenna	Cable	Preamp	Read		
	MHz	dBuV/m	Limit	Line	Factor	Loss	Factor	Level	Pol/Phase	Remark
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		
1 @	4958.200	57.00	-17.00	74.00	33.52	3.25	35.10	55.33	VERTICAL	Peak
2 @	4958.200	34.80	-19.20	54.00	33.52	3.25	35.10	33.13	VERTICAL	Average
3 @	7437.000	36.80	-17.20	54.00	36.58	4.50	35.37	31.09	VERTICAL	Average
4 @	7437.000	60.20	-13.80	74.00	36.58	4.50	35.37	54.49	VERTICAL	Peak

Note:

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

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

5.2.12. 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	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 ~ 40GHz	Aug. 31, 2004	Radiation (03CH03-HY)
3	Amplifier	SCHAFFNER	CPA9231A	18667	9KHz ~ 2GHz	Jan. 10, 2005	Radiation (03CH03-HY)
4	Amplifier	MITEQ	AFS44-00102650	849984	100MHz ~ 26.5GHz	Mar. 25, 2005	Radiation (03CH03-HY)
5	Amplifier	MITEQ	AMF-6F-260400	923364	26.5GHz ~ 40GHz	Mar. 25, 2005	Radiation (03CH03-HY)
6	Loop Antenna	R&S	HFH2-Z2	860004/001	9kHz ~ 30MHz	May 03, 2005*	Radiation (03CH03-HY)
7	Biconical Antenna	SCHWARZBECK	VHBB 9124	301	30MHz ~ 200MHz	Jul. 28, 2004	Radiation (03CH03-HY)
8	Log Antenna	SCHWARZBECK	VUSLP 9111	221	200MHz ~ 1GHz	Jul. 28, 2004	Radiation (03CH03-HY)
9	Horn Antenna	EMCO	3115	6741	1GHz ~ 18GHz	Apr. 22, 2005	Radiation (03CH03-HY)
10	Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	15GHz ~ 40GHz	Jun. 08, 2005*	Radiation (03CH03-HY)
11	RF Cable-R03m	Jye Bao	RG142	CB021	30MHz ~ 1GHz	Feb. 22, 2005	Radiation (03CH03-HY)
12	RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	1GHz ~ 40GHz	Dec.01, 2004	Radiation (03CH03-HY)
13	Turn Table	HD	DS 420	420/650/00	0 ~ 360 degree	N/A	Radiation (03CH03-HY)
14	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 years.

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

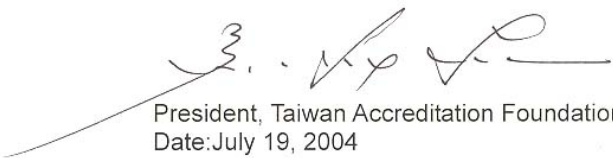
8. CNLA Certificate of Accreditation

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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