FCC Test Report

for

Labtec Wireless Laser Mouse

Trade Name	**: Logitech, Labtec**
Model No.	**: M-RCB129**
FCC ID	**: O3L-PT2005-MF**
Report No.	**: RF-J76-0603-111**
Date of Receipt	**: April 3, 2006**
Date of Report	**: April 7, 2006**

Prepared for

Paten Wireless Technology Inc.

8F, No.407, ZuiKuang Road, Neihu, Taipei, Taiwan

Prepared by

Central Research Technology Co.

EMC Test Laboratory

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NVLAP LAB CODE 200575-0

Certification of Compliance

Equipment under Test	**:** Labtec Wireless Laser Mouse
Model No.	**:** M-RCB129
FCC ID	**:** O3L-PT2005-MF
Manufacturer	**:** Paten Wireless Technology Co, Ltd.
Applicant	**:** Paten Wireless Technology Inc.
Address	**:** 8F, No.407, ZuiKuang Road, Neihu, Taipei, Taiwan
Date of Testing	**:** April 6~7, 2006
Applicable Standards	**:** 47 CFR part 15, Subpart C
Deviation	**:** N/A
Condition of Test Sample	**:** Prototype

We, **Central Research Technology Co**., hereby certify that one sample of the designated product was tested in our facility during the period mentioned above. The test records, data evaluation and Equipment Under Test (EUT) configurations shown in the present report are true and accurate representation of the measurements of the sample's RF characteristics under the conditions herein specified.

The test results show that the EUT as described in the present report is in compliance with the requirements set forth in the standards mentioned above and apply to the tested sample identified in the present report only. The test report shall not be reproduced, except in its entirety, without the written approval of Central Research Technology Co.

PREPARED BY	:	Cathy Chen (Cathy Chen/RF Engineer)	**DATE :**	Apr. 7, 2006
CHECKED BY	:	Sam Chien (Sam Chien/Technical Manager)	**DATE :**	April 7, 2006
APPROVED BY	:	J. Y. Shih (Tsun-Yu Shih/Laboratory Head)	**DATE :**	April 7, 2006

Contents

1 General Description

1.1 General Description of EUT

Equipment under Test : Labtec Wireless Laser Mouse

Model No. : M-RCB129

Power in : TX 3Vdc

Test Voltage : TX 3Vdc(Two batteries)

Applicant : Paten Wireless Technology Inc.

Manufacturer : Paten Wireless Technology Co, Ltd.

1.2 Characteristic of EUT

Channel Numbers : 1

Frequency Range : 27.045MHz

Function Modulation: FSK

The EUT is used to transmit control command only. Please refer to the user's manual for the details.

1.3 Test Methodology

For this EUT, the radiated emissions measurement performed according to the procedures illustrated in ANSI C63.4 and other required were illustrated in separate sections of this test report for detail.

1.4 Requirement for Compliance

(1) Field strength of Fundametal

According to 15.227(a),The field strength of any emission within this band shall not exceed 10,000 microvolts/meter at 3 meters. The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in Section 15.35 for limiting peak emissions apply.

(2) Radiation emission

According to 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.

(3) Radiated emission limits, general requirements.

Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	**Field Strength (uV/m)**	**Measurement Distance (m)**
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

(4) Restricted Band

Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
[2]1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(2)
13.36 - 13.41			

[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

[2] Above 38.6

1.5 Layout of Setup

EUT

(Transmitter)

The Support Units

No.	Unit	Model No./ Serial No.	FCC ID	Trade Name	Power Cord	Supported by lab.
NA	*	*	*	*	*	*

Connecting Cables :

No.	Cable	Length	Shielded	Core	Shielded Backshell	Supported by lab.	Note
NA	*	*	*	*	*	*	*

Justification:

For both conducted and radiated emission below 1GHz, the system was configured for typical fashion as a customer could use it normally.

For radiated emission, measurement of radiated emission from digital circuit is performed with normal transmitting.

1.6 Test Facility

Test Room	Type of Test Room	Descriptions
☑ TR1	10m semi-anechoic chamber (23m×14m×9m)	Complying with the NSA requirements in documents CISPR 22 and ANSI C63.4. for the radiated emission measurement.
☐ TR4	Shielding Room (5m×3m×3m)	For the RF conducted emission measurement.

1.7 Measurement Uncertainty

All the measurement uncertainty evaluation procedures in this report are base on ETSI TR 100 028-1, 100 028-2,and ETSI TR 102 273-3. The assessed measurement uncertainties are:

Test Item	Measurement Uncertainty
Radiated Emission	Horizontal 4.05dB；Vertical 4.08dB

2 Field Strength of fundamental

Result: Pass

2.1 Applied Standard

According to 15.227(a), The field strength of any emission within this band shall not exceed 10,000 microvolts/meter at 3 meters. The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in Section 15.35 for limiting peak emissions apply.

2.2 Measurement Procedure

a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

b. If the EUT is tabletop equipment, it was placed on a wooden table with a height of 0.8 meters above the reference ground plane in the semi-anechoic chamber. If the EUT is floor-standing equipment, it was placed on a non-conducted support with a height of 12 millimeters above the reference ground plane in the semi-anechoic chamber.

c. The EUT was set 3m away from the interference receiving antenna.

d. Rapidly sweep the signal in the test frequency range by using the spectrum through the Maximum-peak detector.

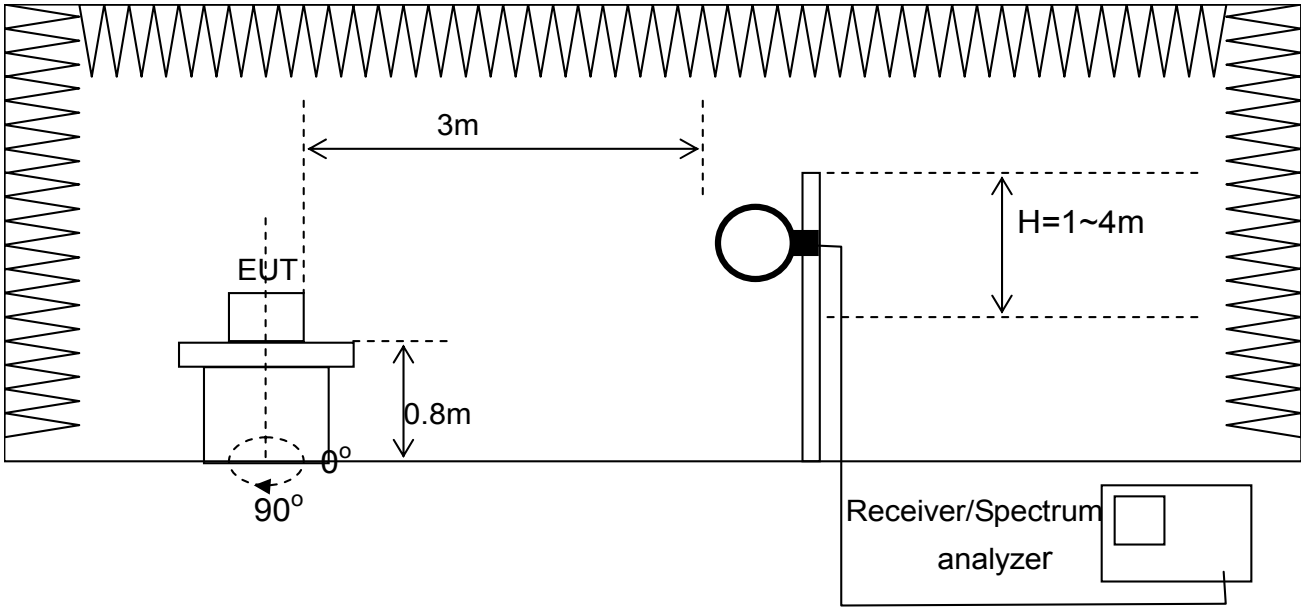
e. Rotate the EUT from 0° to 360° and position the receiving loop antenna at 1 meters above the reference ground plane to determine the fundamental frequency and compare the maximum level with the required limit.

f. Finely turn the turntable and the antenna is be positioned with its plane vertical at the specified distance from the EUT and rotated about its vertical axis for maximum response and recorded position of fundamental frequency found from step e.

g. Record the frequency and polarization of the receiving antenna and compare the maximum level with the required limit.

h. Change the receiving antenna to another polarization to measure Field Strength of fundamental by following step e. to g. again.

2.3 Test Configuration



2.4 Test Instruments

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Cal.	Calibration Due Date
Semi-anechoic Chamber	ETS.LINDGREN	TR1/ **17627-B**	April 12,2005	April 12,2006
Spectrum Analyzer	R&S	FSP40/ **100031**	June 6,2005	June 6,2006
Antenna	EMCO	6502/ **00042960**	January 6,2006	January 6,2007

Note:

1. The calibrations are traceable to NML/ROC.
2. NCR : No Calibration Required.

Instrument Setting

RBW	VBW	Detector	Trace	Comment
100KHz	300KHz	Peak	Maxhold	Peak
100KHz	10Hz	Peak	Maxhold	Average

Climatic Condition

Ambient Temperature：24°C; Relative Humidity ：55%

2.5 Test Data

Field Strength of Fundament

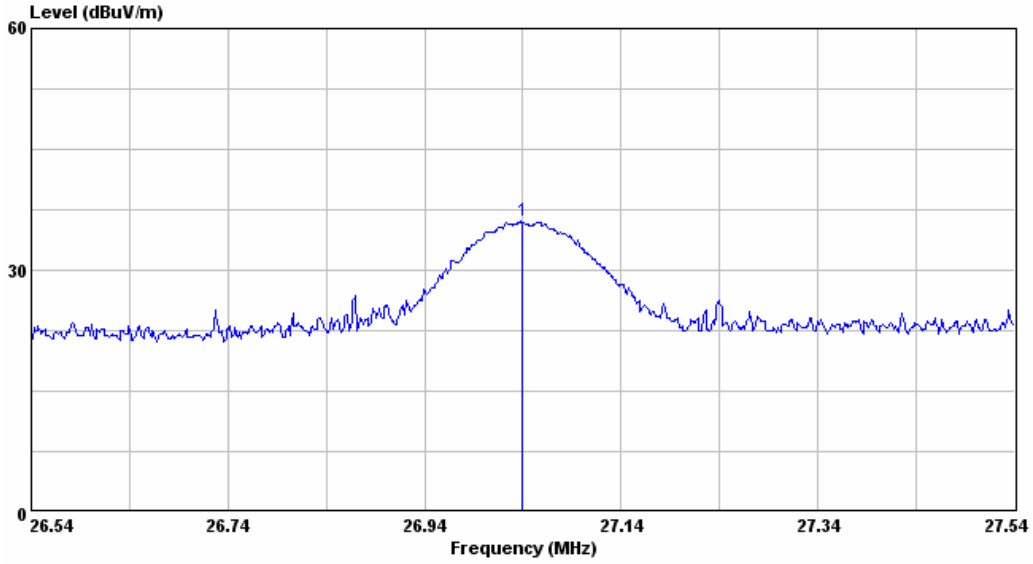
Test Mode : **Conutious Transmitting**
Test Distance : 3m **Tester** : Jim

Frequency (MHz)	Polarization	Reading Data (dBuV)		Correction Factor (dB/m)	Output Field Strength (dBμV/m)		Limit (dBμV/m)		Margin (dB)	
		PK	AV		PK	AV	PK	AV	PK	AV
27.04	V	48.18	45.92	-12.12	36.06	33.80	100	80	63.94	46.20
27.04	H	54.40	51.32	-12.12	42.28	39.20	100	80	57.72	40.80

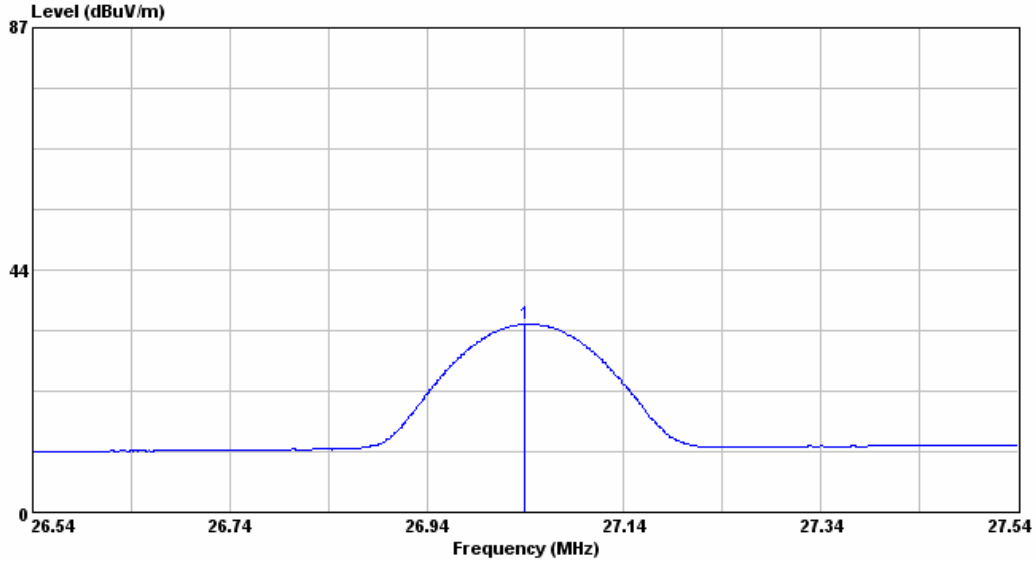
Note：

1. Correction Factor (dB/m) = Cable Loss + Antenna Factor
2. Output Field Strength (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Output Field Strength

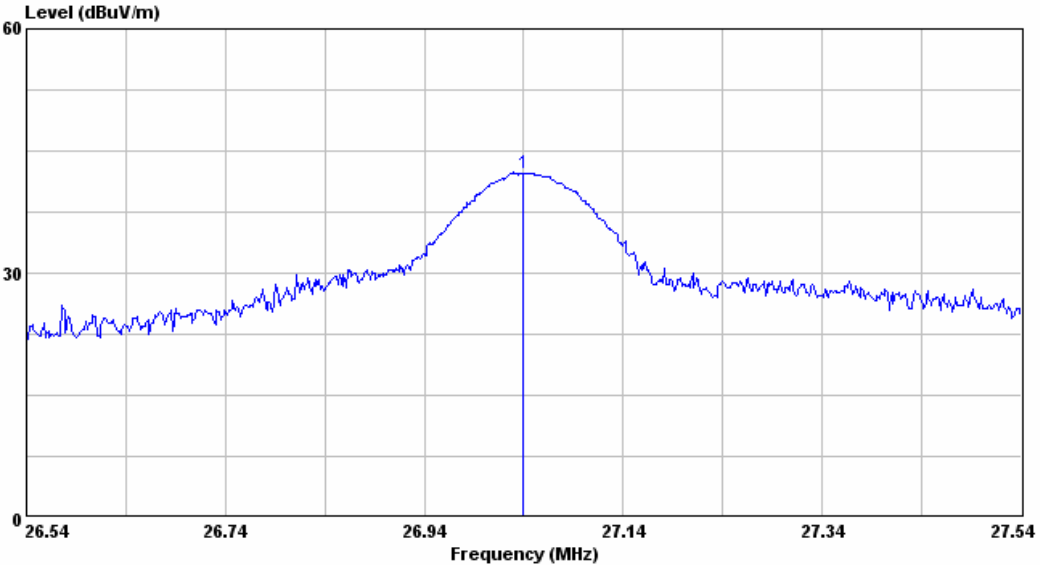
V Polarization, PK



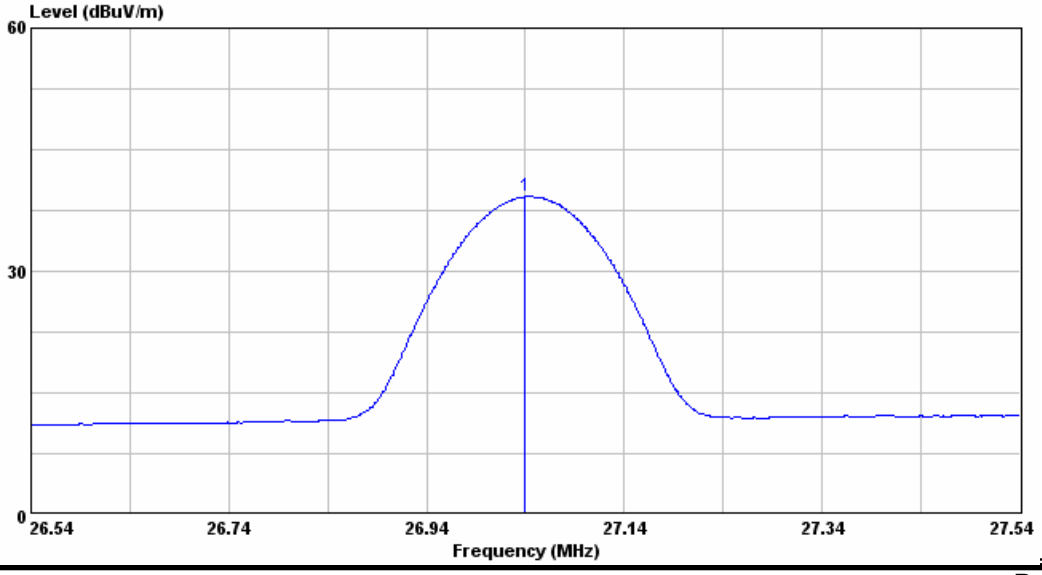
V Polarization, AV



H Polarization, PK



H Polarization, AV



3 Radiated Emission

Result: Pass

3.1 Applied Standard

According to 15.231(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

Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

3.2 Measurement Procedure

a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

b. If the EUT is tabletop equipment, it was placed on a wooden table with a height of 0.8 meters above the reference ground plane in the semi-anechoic chamber. If the EUT is floor-standing equipment, it was placed on a non-conducted support with a height of 12 millimeters above the reference ground plane in the semi-anechoic chamber.

c. The EUT was set 3m away from the interference receiving antenna.

d. For measurement of frequency below 30MHz, use the loop antenna. For measurement of frequency 30MHz~1000MHz, use the ultra broadband and ultralog antenna.

e. Rapidly sweep the signal in the test frequency range by using the spectrum through the Maximum-peak detector.

f. Rotate the EUT from 0° to 360° and position the receiving antenna at heights from 1 to 4 meters above the reference ground plane continuously to determine the emission frequency and frequencies associated with higher emission levels and record them.

g. Then measure each frequency found from step f. by using the spectrum with rotating the EUT and positioning the receiving antenna height to determine the maximum level.

h. Finely tune the antenna and turntable around the recorded position of each frequency found from step g.

i. For measurement of frequency below 1000MHz, set the receiver detector to be Quasi-Peak per CISPR 16-1 to find out the maximum level occurred.

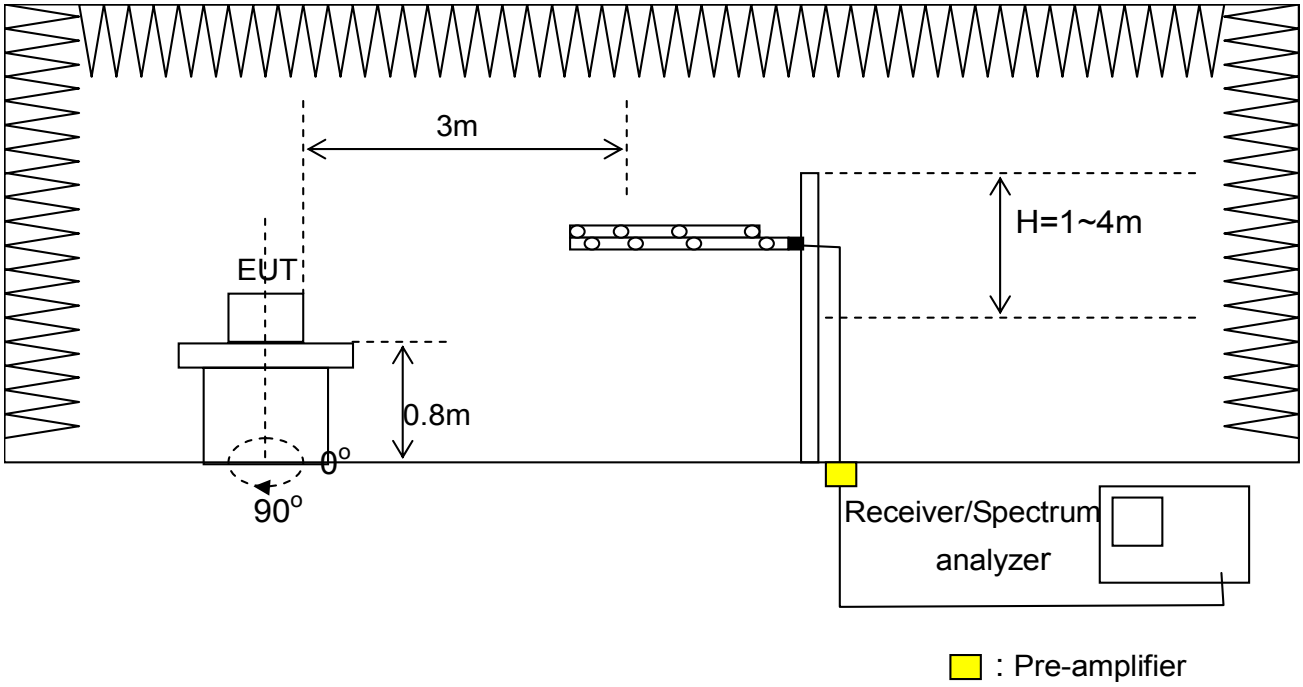
j. For measurement of frequency above 1000MHz, set the spectrum detector to be Peak or Average to find out the maximum level occurred, if any.

k. Record the frequency and polarization of the receiving antenna and compare the maximum level with the required limit.

l. Change the receiving antenna to another polarization to measure radiated emission by following step e. to k. again.

m. If the peak emission level measured from step e. is 10dB lower than the limit specified, then the emission values presented will be the peak value only. Otherwise, accurate Q.P. value will be measured and presented.

3.3 Test Configuration



3.4 Test Instruments

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Cal.	Calibration Due Date
Semi-anechoic Chamber	ETS.LINDGREN	TR1/ **17627-B**	April 12,2005	April 12,2006
Test Receiver	R&S	ESCS30/ **836858/020**	July 30,2005	July 30,2006
Antenna	EMCO	6502/ **00042960**	January 6,2006	January 6,2007
Antenna	R&S	HL562/ **360543/006**	December 10,2005	December 10,2006
Pre-amplifier	Mini Circuit	ZKL-2/ **001**	April 11,2005	April 11,2006

Note:

1. The calibrations are traceable to NML/ROC.
2. NCR : No Calibration Required.

Instrument Setting

RBW	VBW	Detector	Trace	Comment
120kHz	N/A	Quasi-Peak	Maxhold	

Climatic Condition

Ambient Temperature：24°C; Relative Humidity ：55%

3.5 Test Data

Test Mode : **Continuous Transmitting**

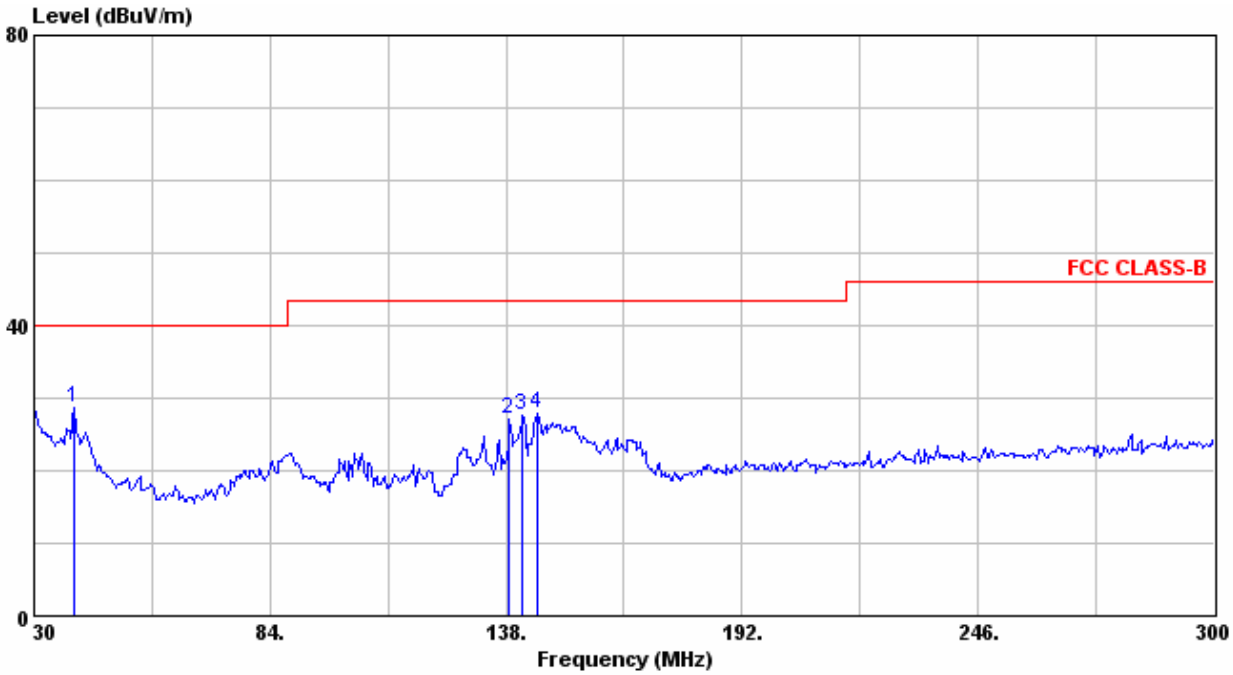
Test Distance : 3m **Tester** : Jim

Polarization : Vertical **Frequency Range** : 27MHz~300MHz

	Freq. (MHz)	Reading Data (dBuV)	Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	39.18	46.24	-17.45	28.79	40.00	11.21
2	138.81	48.41	-21.32	27.09	43.50	16.41
3	141.78	48.55	-21.03	27.52	43.50	15.98
4	145.02	48.68	-20.68	28.00	43.50	15.50

Note：

1. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission Level



Test Mode : **Continuous Transmitting**

Test Distance :3m **Tester** : Jim

Polarization :Horizontal **Frequency Range** : 27MHz~300MHz

	Freq. (MHz)	Reading Data (dBuV)	Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	54.30	43.72	-21.45	22.27	40.00	17.73
2	138.81	43.05	-21.32	21.73	43.50	21.77
3	141.78	43.03	-21.03	22.00	43.50	21.50

Note：

1. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission Level