FCC / IC TEST REPORT

for

47 CFR Part 15 Subpart C and RSS-210

Equipment : 802.11b/g WLAN Radio Port-210

Trade Name : HP (Hewlett Packard) ProCurve

Model No. : RSVLC-0502

FCC ID : B94RSVLC-0502

IC ID : 466F-RSVLC502

Filing Type : Certification

Applicant : Hewlett-Packard ProCurve Networking
8000 Foothills Boulevard Roseville, CA 95747-5502
USA

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- The data shown in this test report were carried out on Nov. 18, 2005 at **Sporton International Inc. LAB.**
- Report No.: FR5O2016C-R2-A, Report Version: Rev. 01.

Daniel Lee

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SAR / EMC Director

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History of this test report

Report Issue Date: Nov. 25, 2005

Report No.	Description

1. General Description of Equipment under Test

1.1. Applicant

Hewlett-Packard ProCurve Networking
8000 Foothills Boulevard Roseville, CA 95747-5502 USA

1.2 Manufacturer

Universal Scientific Industrial Co., Ltd.
140, Lane 351, Taiping Road, Sec. 1, Tsao, Tuen, Nan_Tou, Taiwan

1.3 Basic Description of Equipment under Test

Equipment	: 802.11b/g WLAN Radio Port-210
Trade Name	: HP (Hewlett Packard) ProCurve
Model No.	: RSVLC-0502
FCC ID	: B94RSVLC-0502
IC ID	: 466F-RSVLC502
Power Supply Type	: PoE

1.4 Feature of Equipment under Test

Product Feature & Specification				
1. Host/Radio Interface	802.11b/g WLAN Radio Port-210			
2. Housing Type	Plastic Housing for RSVLC-0502			
3. Modulation Type/Data Rate	OFDM:54/48/36/24/18/12/9/6Mbps CCK:11/5Mbps DQPSK:2Mbps DBPSK:1Mbps			
4. Freq.Range/Carrier Freqs.	2400~2483.5MHz;			
5. Number of Channels	802.11g/b: 11			
6. Carrier Frequency of each channel	802.11g/b: 2412+ (m-1)*5, m=1~11			
7. Channel Spacing	802.11g/b: 5MHz			
8. Maximum Output Power to Antenna (Normal condition)	Refer to power table 1.6			
9. Type of Antenna Connector	Refer to Antenna list 1.5			
10. Antenna Type				
11. Antenna Gain				
12. Function Type	Transmitter		Transceiver	V
13. Power Rating (DC/AC , Voltage)	Power Over Ethernet (48V)			
14. Duty Cycle	100%			

1.5 Antenna List

Antenna List	Antenna Type	Model Name	Peak Gain (dBi)	Cable Loss (dB)	Net Gain (dBi)	Frequency Range (GHz)	Application	Housing Type	Connector Type	Serial No.
Antenna 1	Integral	Integral	2	0	2	2.4 ~ 2.5	11b/g	Plastic	NA	NA

1.6 Power Table

Antenna List	802.11b	802.11g	802.11a/band 1	802.11a/band 2	802.11a/band 3
Antenna 1	19.45 dBm	20.55 dBm	N A	N A	N A

2 Test Configuration of Equipment under Test

2.1 Test Manner

a. The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.
b. The complete test system refers to section 2.2 and EUT for EMI test.
c. The following test modes were tested for conduction test:
   Mode 1: Ping mode
d. Radiation and conducted test refer to Test Matrix:

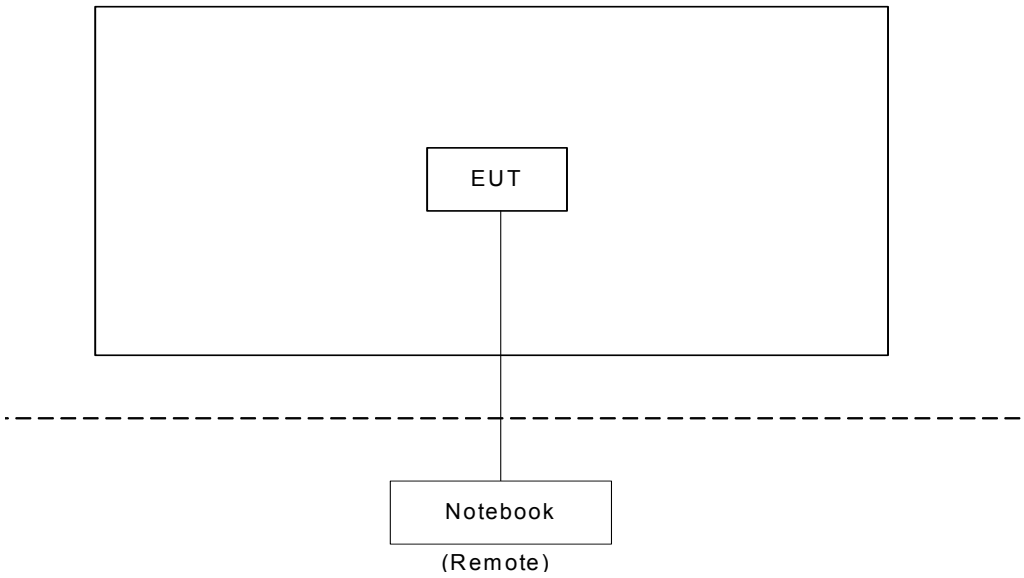
Mode Ref. No.	1	2	3	4	5	6
Mode No. / Antenna	802.11b Tx Ch1	802.11b Tx Ch6	802.11b Tx Ch11	802.11g Tx Ch1	802.11g Tx Ch6	802.11g Tx Ch11
Antenna 1	Y	Y	Y	Y	Y	Y

e. Frequency range investigated: conduction 150 kHz to 30 MHz, radiation 30 MHz to 25000MHz for 802.11b/g.

2.2 Description of Test System

Item	Asset	Model Name	Power Cord
1.	Notebook (DELL)	D400	N/A
2.	UTP Cable	N/A	Non-shielded, 13m

2.3 Connection Diagram of Test System



3 Operation of Equipment under Test

During the test, the following programs on WINXP were executed:
one self test program ”WinLEO Version 00.33” to keep transmitting signals.

4 General Information of Test

Test Site Location	:	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL : 886-3-327-3456 FAX : 886-3-318-0055
Test Site No	:	CO01-HY, 03CH06-HY

4.1 Test Voltage

110V/ 60Hz

4.2 Standard for Methods of Measurement

ANSI C63.4-2003

4.3 Test in Compliance with

47 CFR Part 15 Subpart C and RSS-210

4.4 Frequency Range Investigated

a. Conduction: from 150 kHz to 30 MHz
b. Radiation: from 30 MHz to 25000 MHz for 802.11b/g

4.5 Test Distance

The test distance of radiated emission from antenna to EUT is 3 m.

5 Report of Measurements and Examinations

5.1 List of Measurements and Examinations

FCC Rule	IC Rule	Description of Test	Result
15.207	6.6 & 7.4	Conducted Emission	Pass
15.247(a)(2)	Amendment 1	6dB Bandwidth	Pass
15.247(b)	6.2.2(o)(a3) & Amendment 1	Maximum Peak Output Power	Pass
15.209(a)	6.2.2 (o)(e1)	Radiated Emission	Pass
15.247 (c)	6.2.2 (o)(e1)	100kHz Bandwidth of Frequency Band Edges	Pass
15.247(d)	§ 6.2.2 (o) (b) & Amendment 1	Power Spectral Density	Pass
15.203 15.247(b)(4)	6.2.2 (o)(e2) & 6.2.2 (o)(a3)	Antenna Requirement	Pass

5.2 6dB Bandwidth

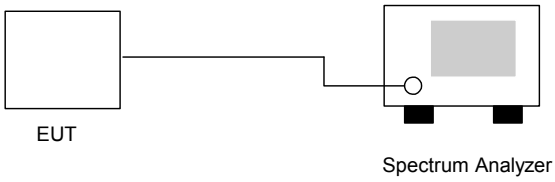
5.2.1 Measuring Instruments：

As described in chapter 9 of this test report.

5.2.2 Test Procedure：

1. The transmitter output was connected to the spectrum analyzer directly.
2. Set RBW of spectrum analyzer to 100kHz and VBW to 100kHz.
3. The 6 dB bandwidth is defined as the frequency range where the power is higher than the peak power minus 6dB.

5.2.3 Test Setup Layout：



5.2.4 Test Result：

- Temperature : 24℃
- Relative Humidity :52%

➢ Application: 802.11b

Channel	Frequency (MHz)	6dB Emission bandwidth (MHz)	Limits (MHz)	Mode Ref. No.
01	2412	11.08	>0.5	1
06	2437	11.08	>0.5	2
11	2462	11.08	>0.5	3

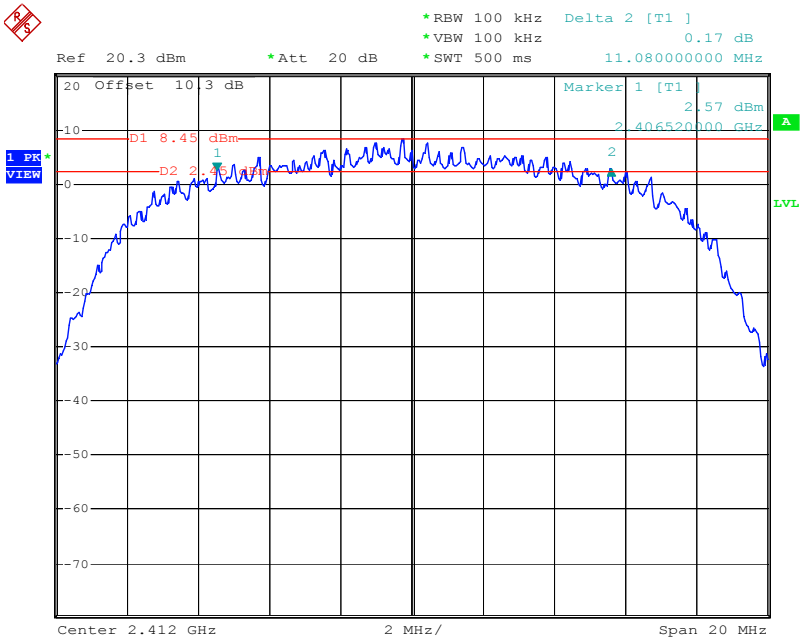
➢ Application: 802.11g

Channel	Frequency (MHz)	6dB Emission bandwidth (MHz)	Limits (MHz)	Mode Ref. No.
01	2412	16.36	>0.5	4
06	2437	16.36	>0.5	5
11	2462	16.40	>0.5	6

5.2.5 Test Data

Mode Ref. No.

1



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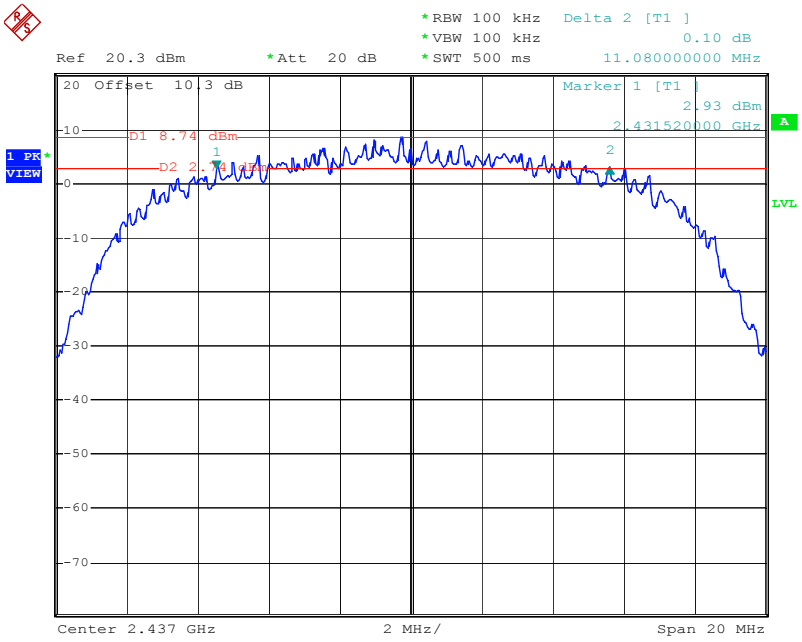

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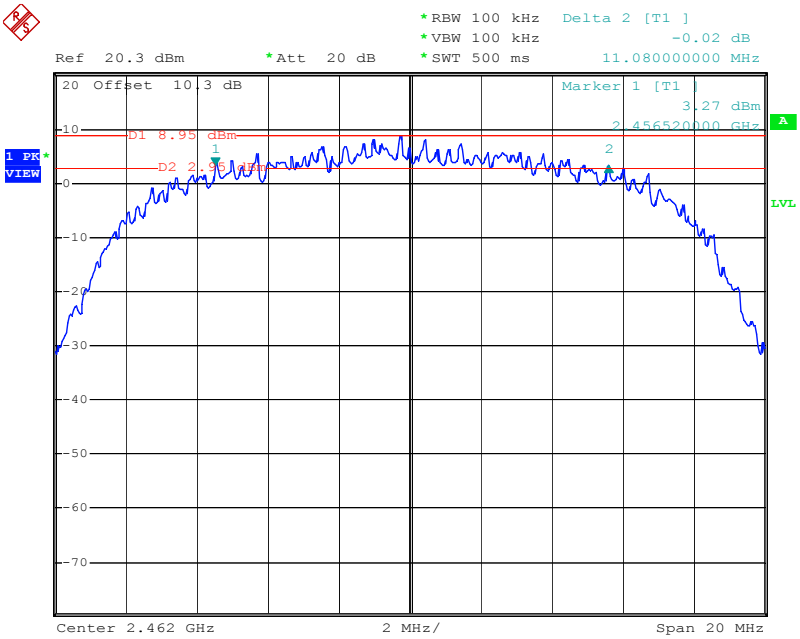

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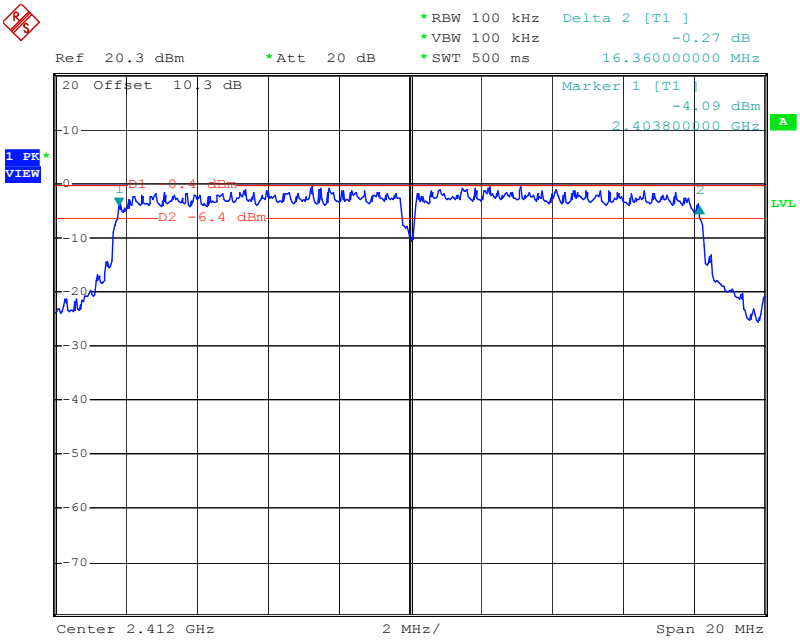

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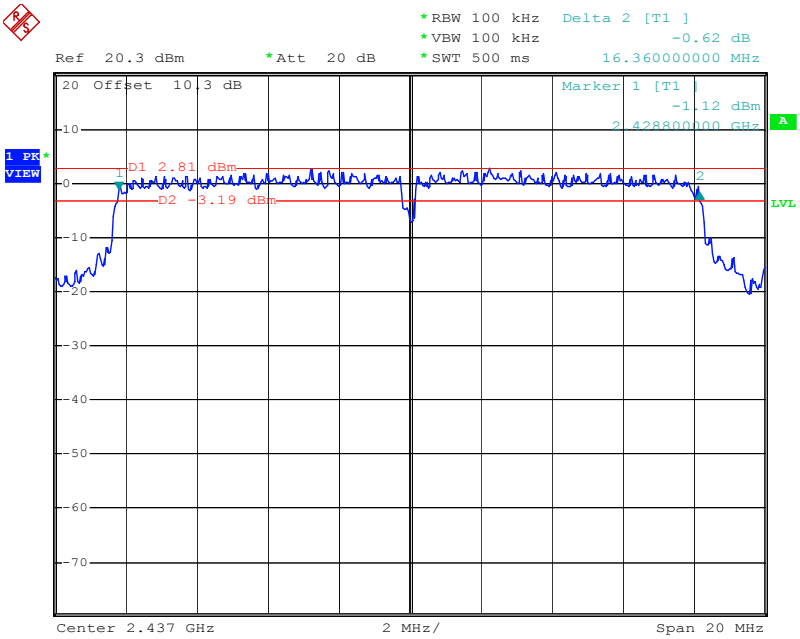

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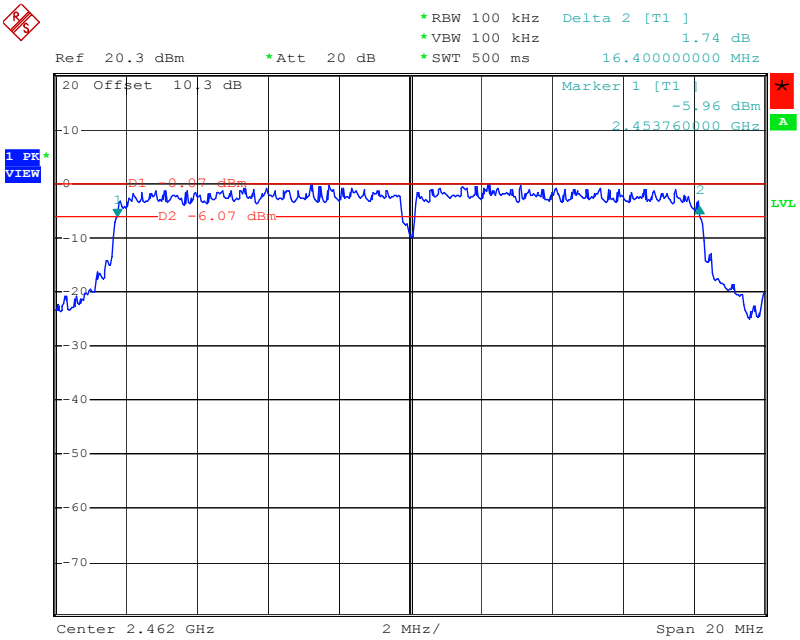


Date: 17.NOV.2005 12:25:56

5.3 Power Spectral Density

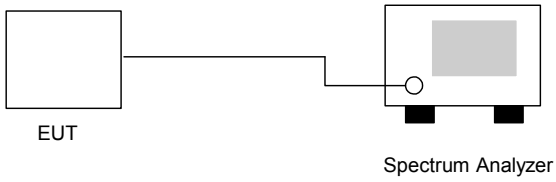
5.3.1 Measuring Instruments：

As described in chapter 9 of this test report.

5.3.2 Test Procedure：

1. The transmitter output was connected to spectrum analyzer directly.
2. The spectrum analyzer's resolution bandwidth was set at 3kHz RBW and 30kHz VBW as that of the fundamental frequency. Set the sweep time=span/3kHz.
3. The power spectral density was measured and recorded.
4. The sweep time is allowed to be longer than span/3kHz for a full response of the mixer in the spectrum analyzer.

5.3.3 Test Setup Layout：



5.3.4 Test Result：

- Temperature : 24℃
- Relative Humidity :52%

➢ Application: 802.11b

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)	Mode Ref. No.
01	2412	-5.52	8	1
06	2437	-5.15	8	2
11	2462	-4.98	8	3

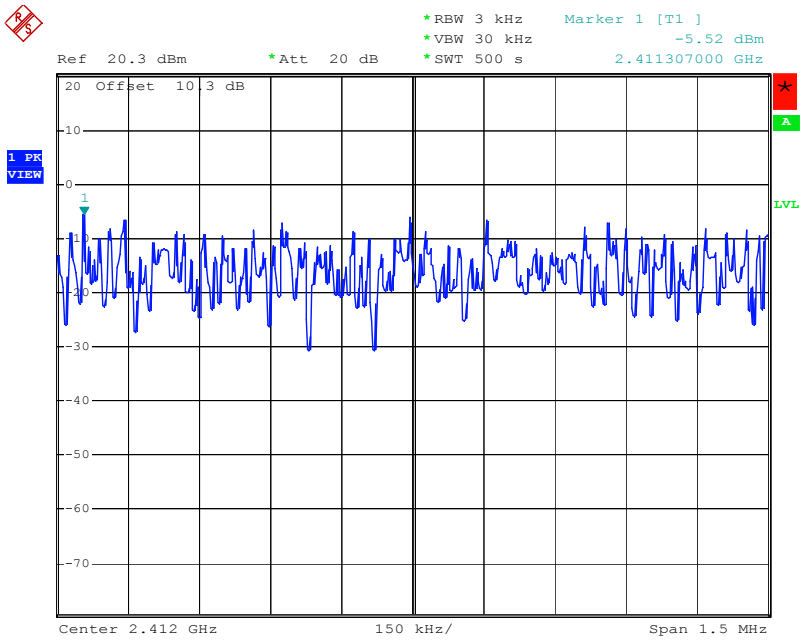
➢ Application: 802.11g

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)	Mode Ref. No.
01	2412	-14.83	8	4
06	2437	-12.42	8	5
11	2462	-15.04	8	6

5.3.5 Power Spectral Density

Mode Ref. No.

1



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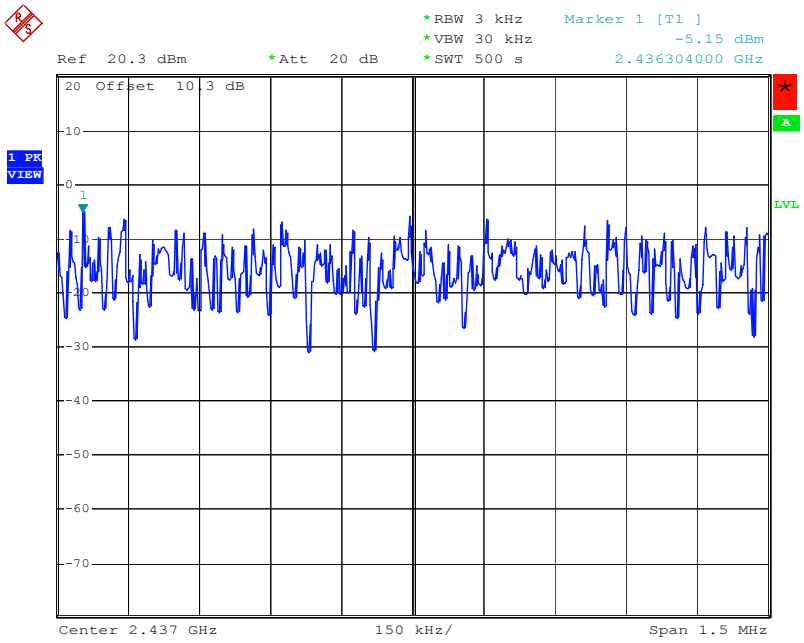

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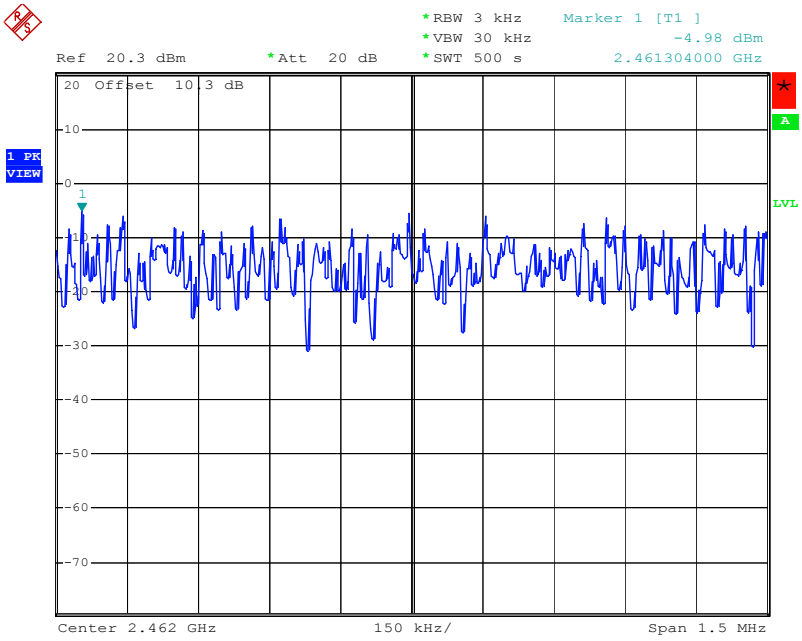

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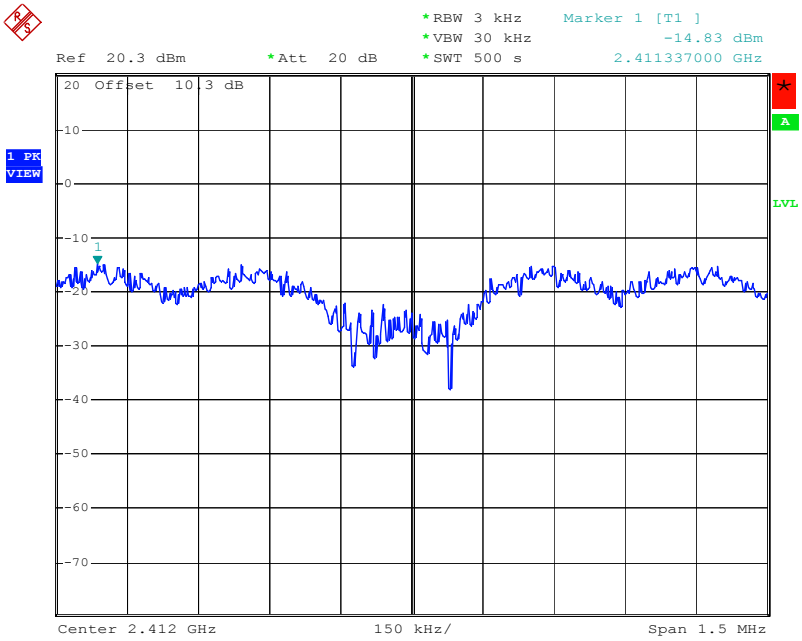

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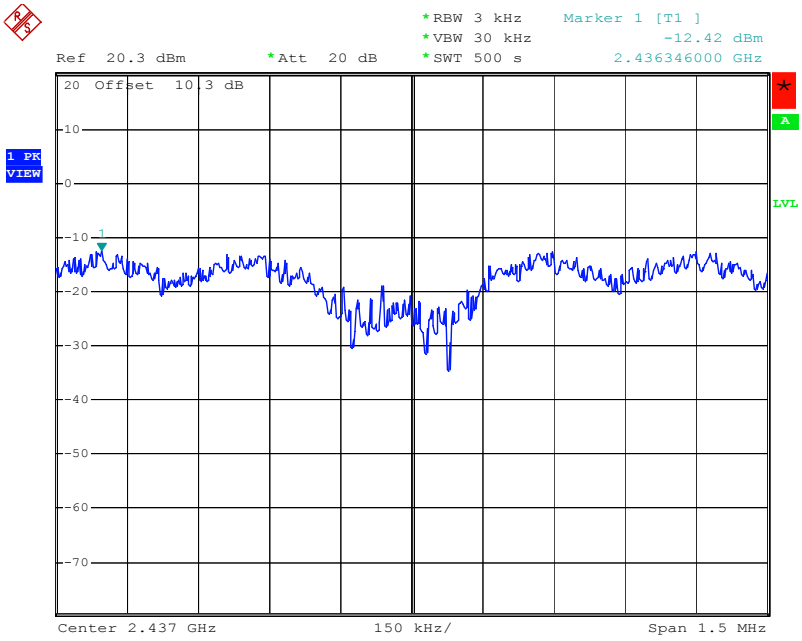

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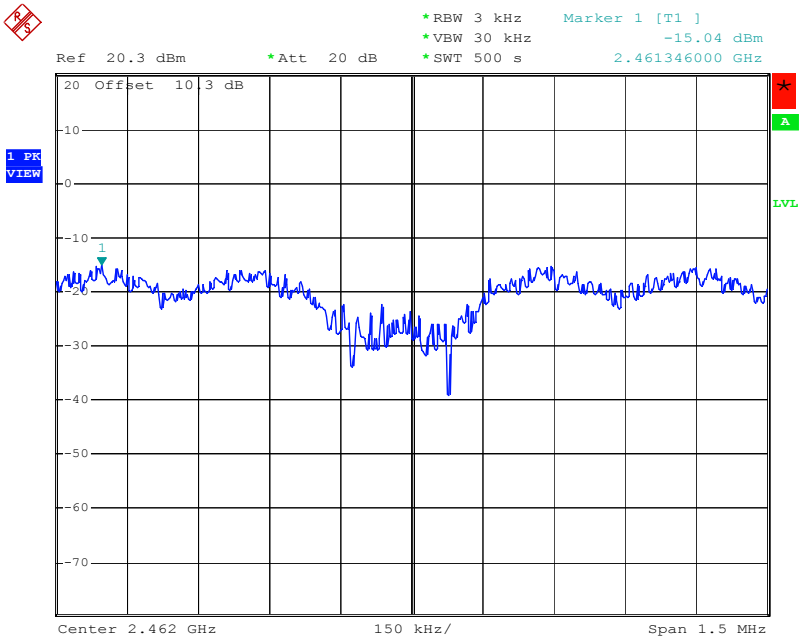


Date: 17.NOV.2005 12:26:59

5.4 Band Edges Measurement

5.4.1 Measuring Instruments：

As described in chapter 9 of this test report.

5.4.2 Test Procedure：

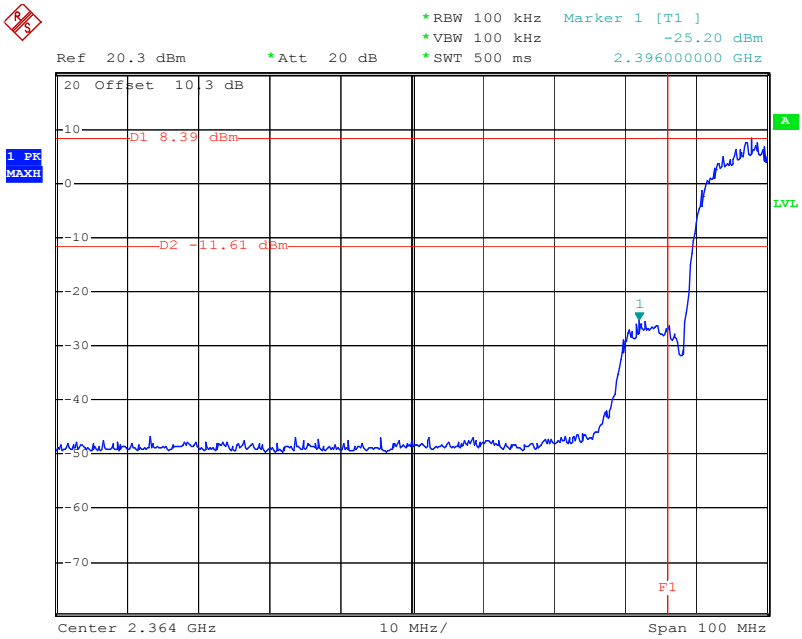
1. The transmitter output was connected to the spectrum analyzer via a low lose cable.
2. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 100 kHz bandwidth from band edge.
3. The band edges was measured and recorded.

5.4.3 Test Result for Restricted Band

- Temperature : 24℃
- Relative Humidity :52%

Test Result Mode		Verdict
▪ Test Result in 802.11b	:	PASS
▪ Test Result in 802.11g	:	PASS

5.4.4 Test Data



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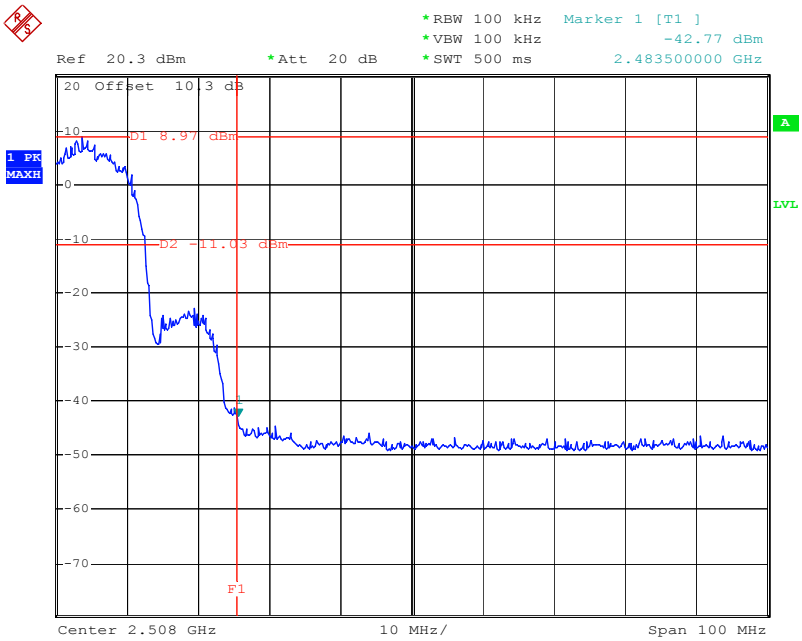

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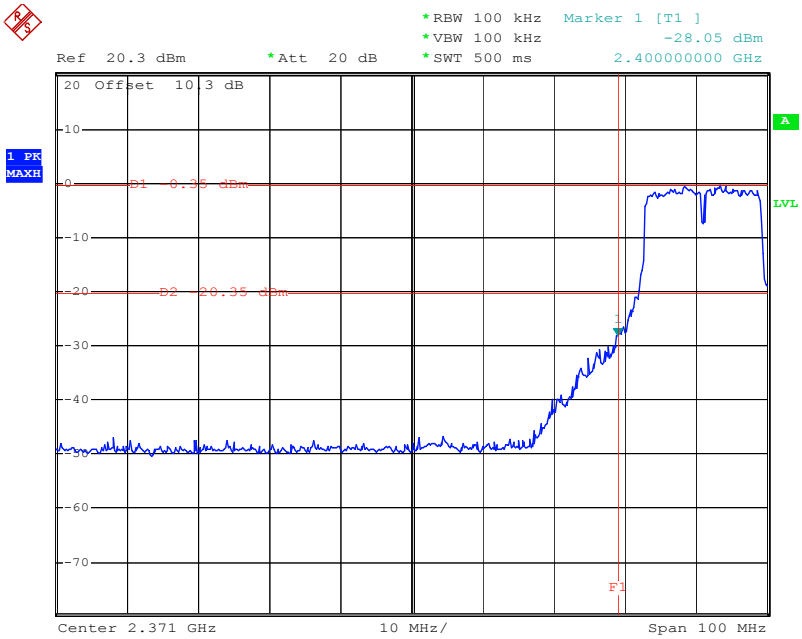

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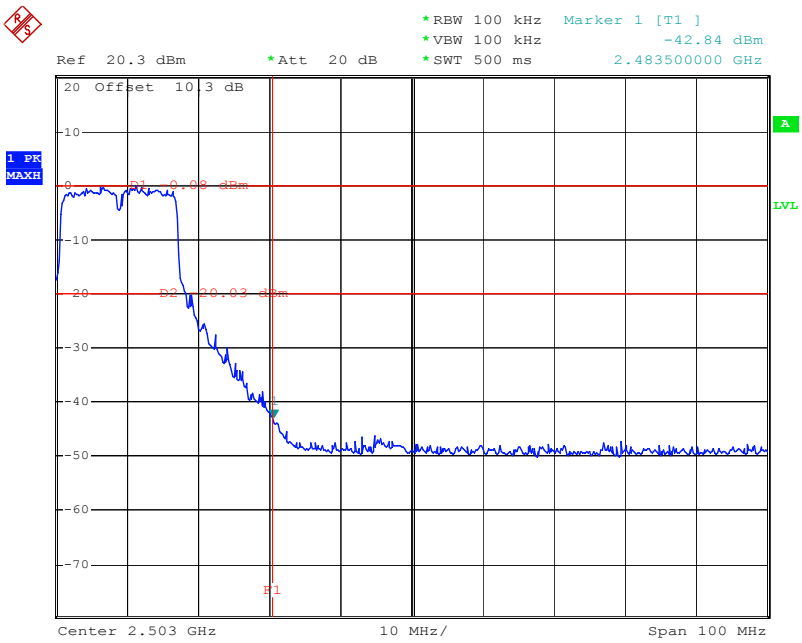


Date: 17.NOV.2005 12:26:34

5.5 Peak Output Power

5.5.1 Measuring Instruments：

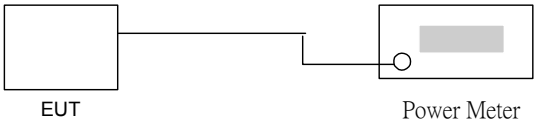
As described in chapter 9 of this test report.

5.5.2 Test Procedure：

The antenna port（RF output）of the EUT was connected to the input（RF input）of a power meter.

The power is equal to the reading level on power meter plus cable loss at the EUT antenna terminal.

5.5.3 Test Setup Layout：



5.5.4 Test Result：

- Temperature : 24℃
- Relative Humidity :52%

➢ Application: 802.11b

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (dBm)
01	2412	19.12	30 dBm
06	2437	18.86	30 dBm
11	2462	19.46	30 dBm

➢ Application: 802.11g

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (dBm)
01	2412	18.51	30 dBm
06	2437	20.55	30 dBm
11	2462	18.73	30 dBm

Limit= 30 dBm

6. Test of Conducted Emission

As described in chapter 9 of this test report.

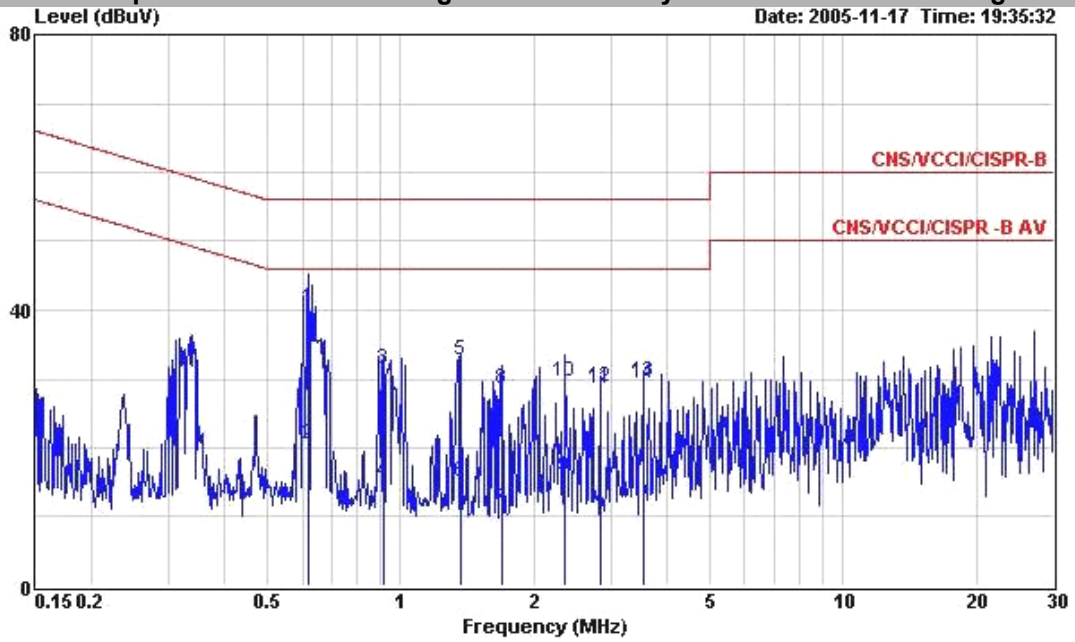
6.1. Test Procedures

a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
b. Connect EUT to the power port of a line impedance stabilization network (LISN).
c. All the support units are connected to the other LISN.
d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
e. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
f. Both sides of AC line were checked for maximum conducted interference.
g. The frequency range from 150 kHz to 30 MHz was searched.
h. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

6.2. Test Data

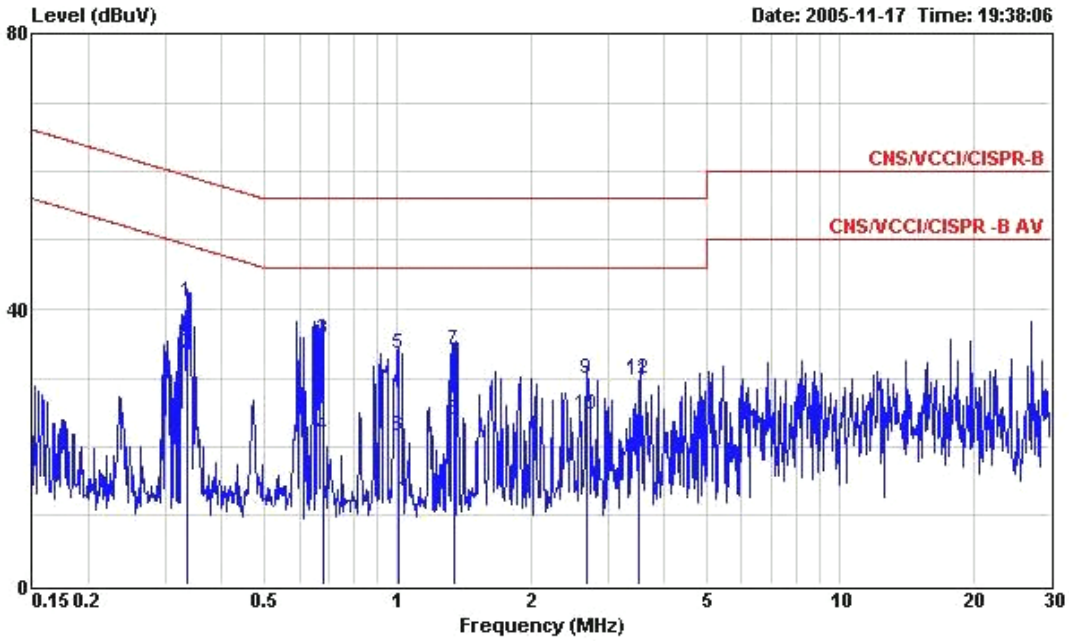
- Frequency Range of Test : 150kHz to 30 MHz
- Test Mode : Mode 1
- Temperature : 24℃
- Relative Humidity : 52%
- Test Enginner : Jay

■ The test that passed at minimum margin was marked by the frame in the following table.



Site : CO01-HY
Condition : CNS/VCCI/CISPR-B 2001/004 200505 LINE
EUT : 802.11b/g WLAN Radio Port-210
Power : 120V/60Hz
Model : FD5O2016
Memo : PING MODE
Memo : RSVLC-0502
Memo :

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.621	40.35	-15.65	56.00	40.22	0.08	0.05	QP
2	0.621	20.40	-25.60	46.00	20.27	0.08	0.05	Average
3	0.918	31.40	-24.60	56.00	31.23	0.11	0.06	QP
4	0.918	15.06	-30.94	46.00	14.89	0.11	0.06	Average
5	1.370	32.81	-23.19	56.00	32.63	0.11	0.07	QP
6	1.370	14.99	-31.01	46.00	14.81	0.11	0.07	Average
7	1.700	11.18	-34.82	46.00	10.99	0.11	0.08	Average
8	1.700	28.69	-27.31	56.00	28.50	0.11	0.08	QP
9	2.360	15.84	-30.16	46.00	15.61	0.13	0.10	Average
10	2.360	29.61	-26.39	56.00	29.38	0.13	0.10	QP
11	2.821	28.52	-17.48	46.00	28.24	0.16	0.12	Average
12	2.821	28.81	-27.19	56.00	28.53	0.16	0.12	QP
13	3.528	29.70	-16.30	46.00	29.36	0.19	0.15	Average
14	3.528	29.39	-26.61	56.00	29.05	0.19	0.15	QP



Site : CO01-HY
Condition : CNS/VCCI/CISPR-B 2001/004 200505 NEUTRAL
EUT : 802.11b/g WLAN Radio Port-210
Power : 120V/60Hz
Model : FD5O2016
Memo : PING MODE
Memo : RSVLC-0502
Memo :

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.336	41.08	-18.22	59.30	40.93	0.11	0.04	QP
2	0.336	33.61	-15.69	49.30	33.46	0.11	0.04	Average
3	0.679	35.71	-20.29	56.00	35.48	0.18	0.05	QP
4	0.679	21.62	-24.38	46.00	21.39	0.18	0.05	Average
5	1.005	33.60	-22.40	56.00	33.31	0.23	0.06	QP
6	1.005	21.50	-24.50	46.00	21.21	0.23	0.06	Average
7	1.340	34.01	-21.99	56.00	33.71	0.23	0.07	QP
8	1.340	23.94	-22.06	46.00	23.64	0.23	0.07	Average
9	2.675	29.85	-26.15	56.00	29.51	0.23	0.11	QP
10	2.675	24.70	-21.30	46.00	24.36	0.23	0.11	Average
11	3.527	29.67	-26.33	56.00	29.29	0.23	0.15	QP
12	3.527	29.89	-16.11	46.00	29.51	0.23	0.15	Average

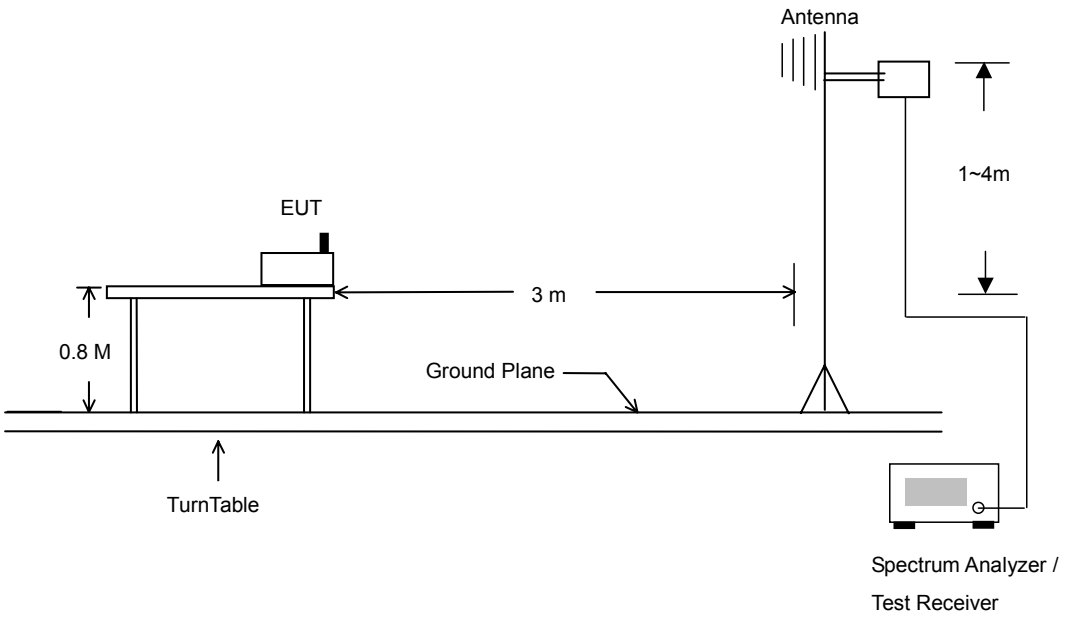
7. Test of Radiated Emission

As described in chapter 9 of this test report.

7.1. Test Procedures

a. The EUT was placed on a rotatable table top 0.8 meter above ground.
b. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
c. The table was rotated 360 degrees to determine the position of the highest radiation.
d. The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
e. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
f. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
g. For testing below 1GHz, If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the quasi-peak method and reported.
h. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average 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.

7.2. Typical Test Setup Layout of Radiated Emission



7.3. Test Data

7.3.1 Test Mode : Mode 1

- Temperature : 26℃
- Relative Humidity :53%
- Test Enginner : Jay
- Polarization : Horizontal

■ The test that passed at minimum margin was marked by the frame in the following table.

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	2390.00	67.88	-6.12	74.00	68.59	30.48	4.26	35.46	100	0	Peak
2 @	2390.00	46.81	-7.19	54.00	47.52	30.48	4.26	35.46	100	28	Average
3 @	2412.00	109.84			110.57	30.47	4.26	35.46	100	0	Peak
4 @	2412.00	102.28			103.00	30.47	4.26	35.46	100	28	Average
5 @	2483.50	50.82	-23.18	74.00	51.55	30.41	4.36	35.51	100	0	Peak
6 @	2483.50	40.62	-13.38	54.00	41.36	30.41	4.36	35.51	100	28	Average

Remark: #3 and #4 Fundamental Signal

- Polarization : Vertical

■ The test that passed at minimum margin was marked by the frame in the following table.

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	2390.00	72.45	-1.55	74.00	73.16	30.48	4.26	35.46	200	0	Peak
2 @	2390.00	52.48	-1.52	54.00	53.19	30.48	4.26	35.46	100	86	Average
3 @	2412.00	113.79			114.52	30.47	4.26	35.46	200	0	Peak
4 @	2412.00	105.48			106.20	30.47	4.26	35.46	100	86	Average
5 @	2483.50	53.51	-20.49	74.00	54.25	30.41	4.36	35.51	200	0	Peak
6 @	2483.50	42.96	-11.04	54.00	43.70	30.41	4.36	35.51	100	86	Average

Remark: #3 and #4 Fundamental Signal

7.3.2 Test Mode : Mode 2

- Temperature : 26℃
- Relative Humidity :53%
- Test Enginner : Jay
- Polarization : Horizontal

■ The test that passed at minimum margin was marked by the frame in the following table.

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	166.89	34.69	-8.81	43.50	53.05	9.88	3.19	31.43	400	0	Peak
2 @	199.83	32.77	-10.73	43.50	50.67	9.93	3.51	31.34	400	0	Peak
3 @	233.58	32.24	-13.76	46.00	49.18	10.51	3.79	31.23	400	0	Peak

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	434.40	40.36	-5.64	46.00	49.49	16.40	5.26	30.79	100	0	Peak
2 @	500.90	36.16	-9.84	46.00	43.82	17.10	5.77	30.52	100	0	Peak
3 @	880.30	37.40	-8.60	46.00	39.73	20.32	7.85	30.51	100	0	Peak

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	2358.00	52.45	-21.55	74.00	53.16	30.51	4.20	35.42	100	201	Peak
2 @	2358.00	41.54	-12.46	54.00	42.25	30.51	4.20	35.42	100	201	Average
3 @	2438.00	108.09			108.83	30.44	4.29	35.47	100	201	Peak
4 @	2438.00	100.56			101.30	30.44	4.29	35.47	100	201	Average
5 @	2483.50	50.28	-23.72	74.00	51.02	30.41	4.36	35.51	100	201	Peak
6 @	2483.50	39.94	-14.06	54.00	40.68	30.41	4.36	35.51	100	201	Average

Remark: #3 and #4 Fundamental Signal

- Polarization : Vertical

■ The test that passed at minimum margin was marked by the frame in the following table.

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	33.24	29.09	-10.91	40.00	41.50	17.73	1.43	31.58	400	0	Peak
2 @	161.49	30.22	-13.28	43.50	48.46	10.23	3.12	31.60	400	0	Peak
3 @	225.48	27.51	-18.49	46.00	45.09	9.93	3.72	31.23	400	0	Peak

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	708.80	32.32	-13.68	46.00	36.58	19.29	6.96	30.51	100	0	Peak
2 @	796.30	32.53	-13.47	46.00	33.44	21.79	7.44	30.14	100	0	Peak
3 @	934.90	32.87	-13.13	46.00	33.79	21.00	8.22	30.14	100	0	Peak

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	2388.00	52.25	-21.75	74.00	52.98	30.48	4.23	35.44	100	188	Peak
2 @	2388.00	41.52	-12.48	54.00	42.24	30.48	4.23	35.44	100	188	Average
3 @	2438.00	110.33			111.07	30.44	4.29	35.47	100	188	Peak
4 @	2438.00	102.46			103.20	30.44	4.29	35.47	100	188	Average
5 @	2483.50	53.77	-20.23	74.00	54.51	30.41	4.36	35.51	100	188	Peak
6 @	2483.50	43.62	-10.38	54.00	44.36	30.41	4.36	35.51	100	188	Average

Remark: #3 and #4 Fundamental Signal

7.3.3 Test Mode : Mode 3

- Temperature : 26℃
- Relative Humidity :53%
- Test Enginner : Jay
- Polarization : Horizontal

■ The test that passed at minimum margin was marked by the frame in the following table.

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	2390.00	52.21	-21.79	74.00	52.92	30.48	4.26	35.46	100	0	Peak
2 @	2390.00	41.84	-12.16	54.00	42.55	30.48	4.26	35.46	100	61	Average
3 @	2462.00	108.48			109.22	30.43	4.33	35.49	100	0	Peak
4 @	2462.00	101.16			101.90	30.43	4.33	35.49	100	61	Average
5 @	2483.50	59.79	-14.21	74.00	60.53	30.41	4.36	35.51	100	0	Peak
6 @	2483.50	47.08	-6.92	54.00	47.82	30.41	4.36	35.51	100	61	Average

Remark: #3 and #4 Fundamental Signal

- Polarization : Vertical

■ The test that passed at minimum margin was marked by the frame in the following table.

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	2390.00	53.50	-20.50	74.00	54.21	30.48	4.26	35.46	200	0	Peak
2 @	2390.00	42.95	-11.05	54.00	43.66	30.48	4.26	35.46	100	358	Average
3 @	2462.00	113.41			114.15	30.43	4.33	35.49	200	0	Peak
4 @	2462.00	104.86			105.60	30.43	4.33	35.49	100	358	Average
5 @	2483.50	67.29	-6.71	74.00	68.03	30.41	4.36	35.51	200	0	Peak
6 @	2483.50	52.42	-1.58	54.00	53.16	30.41	4.36	35.51	100	358	Average

Remark: #3 and #4 Fundamental Signal

7.3.4 Test Mode : Mode 4

- Temperature : 26℃
- Relative Humidity :53%
- Test Enginner : Jay
- Polarization : Horizontal

■ The test that passed at minimum margin was marked by the frame in the following table.

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	2390.00	67.48	-6.52	74.00	68.19	30.48	4.26	35.46	100	0	Peak
2 @	2390.00	47.49	-6.51	54.00	48.20	30.48	4.26	35.46	100	27	Average
3 @	2412.00	104.80			105.53	30.47	4.26	35.46	100	0	Peak
4 @	2412.00	96.26			96.98	30.47	4.26	35.46	100	27	Average
5 @	2483.50	50.02	-23.98	74.00	50.76	30.41	4.36	35.51	100	0	Peak
6 @	2483.50	39.71	-14.29	54.00	40.45	30.41	4.36	35.51	100	27	Average

Remark: #3 and #4 Fundamental Signal

- Polarization : Vertical

■ The test that passed at minimum margin was marked by the frame in the following table.

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	2390.00	52.64	-1.36	54.00	53.35	30.48	4.26	35.46	100	85	Average
2 @	2390.00	72.14	-1.86	74.00	72.85	30.48	4.26	35.46	200	0	Peak
3 @	2412.00	107.57			108.30	30.47	4.26	35.46	200	0	Peak
4 @	2412.00	99.38			100.10	30.47	4.26	35.46	100	85	Average
5 @	2483.50	52.15	-21.85	74.00	52.89	30.41	4.36	35.51	200	0	Peak
6 @	2483.50	40.97	-13.03	54.00	41.71	30.41	4.36	35.51	100	85	Average

Remark: #3 and #4 Fundamental Signal

7.3.5 Test Mode : Mode 5

- Temperature : 26℃
- Relative Humidity :53%
- Test Enginner : Jay
- Polarization : Horizontal

■ The test that passed at minimum margin was marked by the frame in the following table.

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	166.89	34.96	-8.54	43.50	53.32	9.88	3.19	31.43	400	0	Peak
2 @	199.83	31.13	-12.37	43.50	49.03	9.93	3.51	31.34	400	0	Peak
3 @	233.58	32.85	-13.15	46.00	49.78	10.51	3.79	31.23	400	0	Peak

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	365.80	36.01	-9.99	46.00	47.18	14.87	4.81	30.85	100	0	Peak
2 @	434.40	40.58	-5.42	46.00	49.71	16.40	5.26	30.79	100	0	Peak
3 @	880.30	38.39	-7.61	46.00	40.72	20.32	7.85	30.51	100	0	Peak

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	2334.00	51.55	-22.45	74.00	52.25	30.54	4.17	35.40	100	28	Peak
2 @	2334.00	39.51	-14.49	54.00	40.21	30.54	4.17	35.40	100	63	Average
3 @	2441.00	103.01			103.73	30.44	4.33	35.49	100	28	Peak
4 @	2441.00	95.24			95.97	30.44	4.33	35.49	100	63	Average
5 @	2483.50	51.12	-22.88	74.00	51.85	30.41	4.36	35.51	100	28	Peak
6 @	2483.50	39.79	-14.21	54.00	40.53	30.41	4.36	35.51	100	63	Average

Remark: #3 and #4 Fundamental Signal

- Polarization : Vertical

■ The test that passed at minimum margin was marked by the frame in the following table.

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	31.89	28.69	-11.31	40.00	40.78	18.07	1.39	31.55	400	0	Peak
2 @	161.49	30.14	-13.36	43.50	48.38	10.23	3.12	31.60	400	0	Peak
3 @	225.48	27.69	-18.31	46.00	45.27	9.93	3.72	31.23	400	0	Peak

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	612.90	31.41	-14.59	46.00	37.75	18.08	6.42	30.85	100	0	Peak
2 @	644.40	33.15	-12.85	46.00	38.68	18.42	6.61	30.56	100	0	Peak
3 @	708.80	33.28	-12.72	46.00	37.54	19.29	6.96	30.51	100	0	Peak

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	2388.00	53.65	-20.35	74.00	54.38	30.48	4.23	35.44	100	352	Peak
2 @	2388.00	41.66	-12.34	54.00	42.38	30.48	4.23	35.44	118	264	Average
3 @	2441.00	110.19			110.92	30.44	4.33	35.49	100	352	Peak
4 @	2441.00	101.17			101.90	30.44	4.33	35.49	118	264	Average
5 @	2483.50	54.04	-19.96	74.00	54.78	30.41	4.36	35.51	100	352	Peak
6 @	2483.50	41.02	-12.98	54.00	41.76	30.41	4.36	35.51	118	264	Average

Remark: #3 and #4 Fundamental Signal

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	4874.00	53.53	-20.47	74.00	50.00	33.39	6.30	36.16	200	360	Peak
2 @	4874.00	42.42	-11.58	54.00	38.89	33.39	6.30	36.16	100	267	Average

7.3.6 Test Mode : Mode 6

- Temperature : 26℃
- Relative Humidity :53%
- Test Enginner : Jay
- Polarization : Horizontal

■ The test that passed at minimum margin was marked by the frame in the following table.

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	2390.00	51.31	-22.69	74.00	52.03	30.48	4.26	35.46	100	0	Peak
2 @	2390.00	40.61	-13.39	54.00	41.32	30.48	4.26	35.46	100	60	Average
3 @	2462.00	103.43			104.17	30.43	4.33	35.49	100	0	Peak
4 @	2462.00	95.09			95.83	30.43	4.33	35.49	100	60	Average
5 @	2483.50	62.19	-11.81	74.00	62.93	30.41	4.36	35.51	100	0	Peak
6 @	2483.50	46.36	-7.64	54.00	47.10	30.41	4.36	35.51	100	60	Average

Remark: #3 and #4 Fundamental Signal

- Polarization : Vertical

■ The test that passed at minimum margin was marked by the frame in the following table.

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	2390.00	52.40	-21.60	74.00	53.11	30.48	4.26	35.46	200	0	Peak
2 @	2390.00	41.12	-12.88	54.00	41.83	30.48	4.26	35.46	100	357	Average
3 @	2462.00	107.61			108.35	30.43	4.33	35.49	200	0	Peak
4 @	2462.00	99.46			100.20	30.43	4.33	35.49	100	357	Average
5 @	2483.50	69.62	-4.38	74.00	70.35	30.41	4.36	35.51	200	0	Peak
6 @	2483.50	52.89	-1.11	54.00	53.63	30.41	4.36	35.51	100	357	Average

Remark: #3 and #4 Fundamental Signal

Remark:

1. **There is no more obvious emission except listed above.**
2. **All the emissions except listed above are 20 dB below FCC limit.**

8. Antenna Requirements

8.1. Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no other antenna except assembled by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi.

8.2. Antenna Connected Construction

The antenna used in this product is embedded antenna without connector and it is considered to meet antenna requirement of FCC.

8.3. Antenna Gain

The antenna gain of EUT is less than 6dBi. Therefore, it is not necessany to reduce maximum peak output power limit.

9. List of Measuring Equipments Used

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
EMC Receiver	R&S	ESCS 30	100174	9kHz – 2.75GHz	Oct. 19, 2005	Oct. 19, 2006	Conduction (CO01-HY)
LISN	MessTec	NNB-2/16Z	2001/009	9kHz – 30MHz	Apr. 26, 2005	Apr. 26, 2006	Conduction (CO01-HY)
LISN (Support Unit)	MessTec	NNB-2/16Z	2001/004	9kHz – 30MHz	Apr. 20, 2005	Apr. 20, 2006	Conduction (CO01-HY)
EMI Filter	LINDGREN	LRE-2060	1004	< 450Hz	N/A	N/A	Conduction (CO01-HY)
EMI Filter	LINDGREN	N6006	201052	0 – 60Hz	N/A	N/A	Conduction (CO01-HY)
RF Cable-CON	Suhner Switzerland	RG223/U	CB029	9kHz – 30MHz	Dec. 23, 2004	Dec. 23, 2005	Conduction (CO01-HY)
Spectrum analyzer	Agilent	E4408B	MY44211030	9KHz-26.5GHz	Jul. 25, 2005	Jul. 24, 2006	Radiation (03CH06-HY)
Receiver	R&S	ESCS30	100356	9KHz-2.75GHz	Jun. 28, 2005	Jun. 27, 2006	Radiation (03CH06-HY)
Controller	CT	SC100	N/A	N/A	N/A	N/A	Radiation (03CH06-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2885	30MHz -2GHz	Nov. 22, 2004	Nov. 22, 2005	Radiation (03CH06-HY)
Horn Antenna	Com-Power	AH118	071025	1G-18G	Feb. 22, 2005	Feb. 22, 2006	Radiation (03CH06-HY)
SHF-EHF Horn	SCHWARZBECK	BBHA 9170	9170-249	14G - 40G	Jul. 21, 2005	Jul. 20, 2006	Radiation (03CH06-HY)
HF Amplifier	MITEQ	AFS44	973248	0.1G - 26.5G	Dec. 17, 2004	Dec. 17, 2005	Radiation (03CH06-HY)
Amplifier	MITEQ	AMF-6F	997165	26G - 40G	Jul. 21, 2005	Jul. 20, 2006	Radiation (03CH06-HY)
Turn Table	HD	DS 420	420/650/00	0 ~ 360 degree	N/A	N/A	Radiation (03CH06-HY)
Antenna Mast	HD	MA 240	240/560/00	1 m - 4 m	N/A	N/A	Radiation (03CH06-HY)

10. Uncertainty Measurement

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Contribution	Uncertainty of x_i		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.10	Normal(k=2)	0.05
Cable loss	0.10	Normal(k=2)	0.05
AMN insertion loss	2.50	Rectangular	0.63
Receiver Spec	1.50	Rectangular	0.43
Site imperfection	1.39	Rectangular	0.80
Mismatch	+0.34/-0.35	U-shape	0.24
combined standard uncertainty Uc(y)	**1.13**		
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	**2.26**		

Uncertainty of Radiated Emission Measurement (30MHz ~ 1000MHz)

Contribution	Uncertainty of x_i		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.41	Normal(k=2)	0.21
Antenna factor calibration	0.83	Normal(k=2)	0.42
Cable loss calibration	0.25	Normal(k=2)	0.13
Pre Amplifier Gain calibration	0.27	Normal(k=2)	0.14
RCV/SPA specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site imperfection	1.43	Rectangular	0.83
Mismatch	+0.39/-0.41	U-shaped	0.28
combined standard uncertainty Uc(y)	**1.27**		
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	**2.54**		

Uncertainty of Radiated Emission Measurement (1GHz ~ 40GHz)

Contribution	Uncertainty of x_i		$u(x_i)$	Ci	$Ci*u(x_i)$
	dB	Probability Distribution			
Receiver reading	±0.10	Normal(k=1)	0.10	1	0.10
Antenna factor calibration	±1.70	Normal(k=2)	0.85	1	0.85
Cable loss calibration	±0.50	Normal(k=2)	0.25	1	0.25
Receiver Correction	±2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	±1.50	Rectangular	0.87	1	0.87
Site imperfection	±2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR Γ1= 0.197 Antenna VSWR Γ2= 0.194 Uncertainty=20log(1-Γ1*Γ2*Γ3)	+0.34/-0.35	U-shaped	0.244	1	0.244
Combined standard uncertainty Uc(y)	**2.36**				
Measuring uncertainty for a level of confidence of 95% U=2Ue(y)	**4.72**				