FCC TEST REPORT

for

47 CFR Part 15 Subpart C

Equipment	**: 802.11b USB Wireless LAN Dongle**
Trade Name	**: SOLOMON**
Model No.	**: SCWi375u**
FCC ID	**: NIT--SCWI375U**
Filing Type	**: Certification**
Applicant	**: SOLOMON Technology Corp.** No. 42, Sing Zhong Rd., Nei Hu Dist., Taipei, Taiwan, 114 R.O.C.

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SPORTON International Inc.

6F, No.106, Sec. 1, Hsin Tai Wu Rd., Hsi Chih, Taipei Hsien, Taiwan, R.O.C.

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History of this test report

Original Report Issue Date: Aug. 28, 2004

■ No additional attachment.

☐ Additional attachment were issued as following record:

Attachment No.	Issue Date	Description

Certificate No. : F481313

CERTIFICATE OF COMPLIANCE

for

47 CFR Part 15 Subpart C

Equipment	**: 802.11b USB Wireless LAN Dongle**
Trade Name	**: SOLOMON**
Model No.	**: SCWi375u**
FCC ID	**: NIT--SCWI375U**
Filing Type	**: Certification**
Applicant	**: SOLOMON Technology Corp.** No. 42, Sing Zhong Rd., Nei Hu Dist., Taipei, Taiwan, 114 R.O.C.

I **HEREBY** CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.4 - 2001** and the equipment under test was ***passed*** all test items required in FCC Part 15 subpart C, relative to the equipment under test. Testing was carried out on Aug. 27, 2004 at **SPORTON International Inc.** LAB.

Daniel Lee 8/30/2004

Daniel Lee
Manager

SPORTON International Inc.

6F, No.106, Sec. 1, Hsin Tai Wu Rd., Hsi Chih, Taipei Hsien, Taiwan, R.O.C.

1. General Description of Equipment under Test

1.1. Applicant

SOLOMON Technology Corp.
No. 42, Sing Zhong Rd., Nei Hu Dist., Taipei, Taiwan, 114 R.O.C.

1.2 Manufacturer

SOLOMON Technology Corp.
No. 42, Sing Zhong Rd., Nei Hu Dist., Taipei, Taiwan, 114 R.O.C.

1.3 Basic Description of Equipment under Test

Equipment	: 802.11b USB Wireless LAN Dongle
Trade Name	: SOLOMON
Model No.	: SCWi375u
FCC ID	: NIT--SCWI375U
Power Supply Type	: DC 5V

1.4 Feature of Equipment under Test

Product Feature & Specification				
1. Host/Radio Interface	USB			
2. Modulation Type/Data Rate	IEEE 802.11b: DBPSK(1Mbps), DQPSK(2Mbps), CCK(5.5/11Mbps)			
3. Freq.Range/Carrier Freqs.	2400 MHz ~ 2483.5 MHz			
4. Number o f Channels	USA/Canada: 11	V	European: 13	
	Japan: 13, 14		Other:	
5. Carrier Frequency of each channel	2400 MHz~2483.5MHz			
6. Channel Spacing	5 MHz			
7. Maximum Output Power to Antenna (Normal condition)	IEEE 802.11b: 10.2 dBm			
8. Type of Antenna Connector	N/A			
9. Antenna Type	Chip Antenna			
10. Antenna Gain	1.5 dBi			
11. Function Type	Transmitter		Transceiver	V
12. Power Rating (DC/AC , Voltage)	DC 5V			
13. Duty Cycle	100%			

2 Test Configuration of Equipment under Test

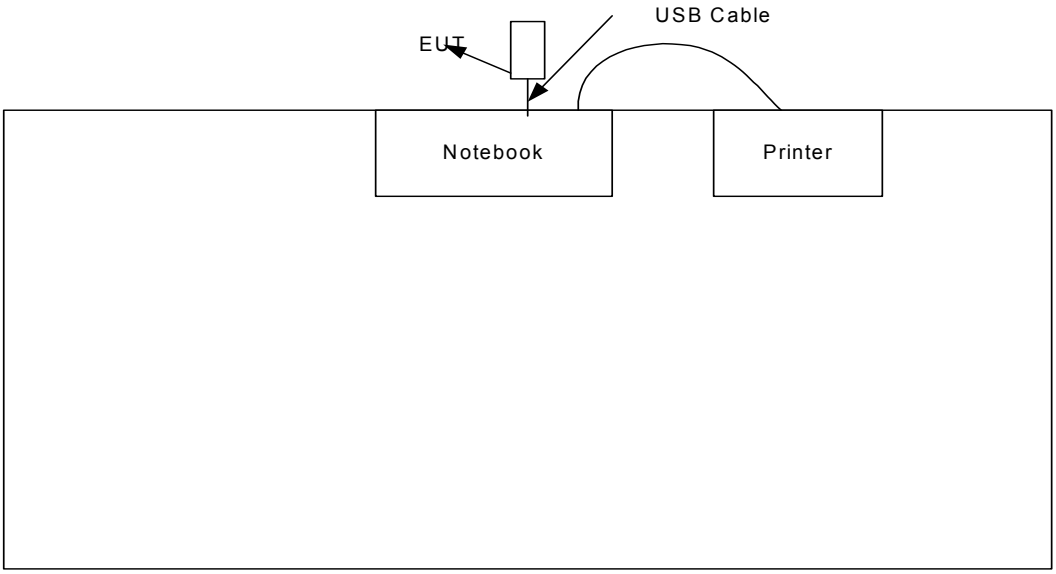
2.1 Test Manner

a. The EUT has been associated with peripherals pursuant to ANSI C63.4-2001 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.
b. The complete test system included DELL Notebook, EPSON Printer and EUT for EMI test.
c. The EUT can operate on eleven channels from 2412MHz to 2462MHz. (as listed in section 1.4).
d. The following test modes were tested for conduction test:
   Mode 1: Link mode
   The following test modes were tested for radiation test:
   Mode 1: 802.11b TX CH01 (2412MHz)
   Mode 2: 802.11b TX CH06 (2437MHz)
   Mode 3: 802.11b TX CH11 (2462MHz)
e. Frequency range investigated: conduction 150 kHz to 30 MHz, radiation 30 MHz to 25000MHz.

2.2 Description of Test System

Item	Asset	Model Name	Power Cord	S/N
1.	Notebook (DELL)	PP05L	N/A	SP0005
2.	Printer (EPSON)	STYLUS COLRO 680	Shielded, 1.35m	SP0017

2.3 Connection Diagram of Test System



3 Operation of Equipment under Test

Two executive programs, EMCTEST.EXE under WIN 2000, which generates a complete line of continuously repeating " H" pattern were used as the test software.

The programs were executed as follows :

a. Turn on the power of all equipment.
b. The PC reads the test program from the hard disk drive and runs it.
c. The PC sends " H" messages to the monitor, and the monitor displays " H" patterns on the screen.
d. The PC sends " H" messages to the internal hard disk, and the Hard Disk reads and writes the message.
e. Repeat the steps from b to d.

At the same time, the following programs were executed:

one self test program ”MRP.exe” 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 C63.4-2001

4.3 Test in Compliance with

47 CFR Part 15 Subpart C

4.4 Frequency Range Investigated

a. Conduction: from 150 kHz to 30 MHz
b. Radiation: from 30 MHz to 25000 MHz

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	Description of Test	Result
15.207	Conducted Emission	Pass
15.247(a)(2)	6dB Bandwidth	Pass
15.247(b)	Maximum Peak Output Power	Pass
15.209(a)	Radiated Emission	Pass
15.247 (c)	100kHz Bandwidth of Frequency Band Edges	Pass
15.247(d)	Power Spectral Density	Pass
15.203 15.247(b)(4)	Antenna Requirement	Pass
1.1307 2.1091	RF Exposure	Pass

5.2 6dB Bandwidth

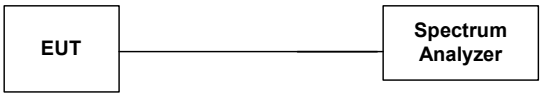
5.2.1 Measuring Instruments：

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：



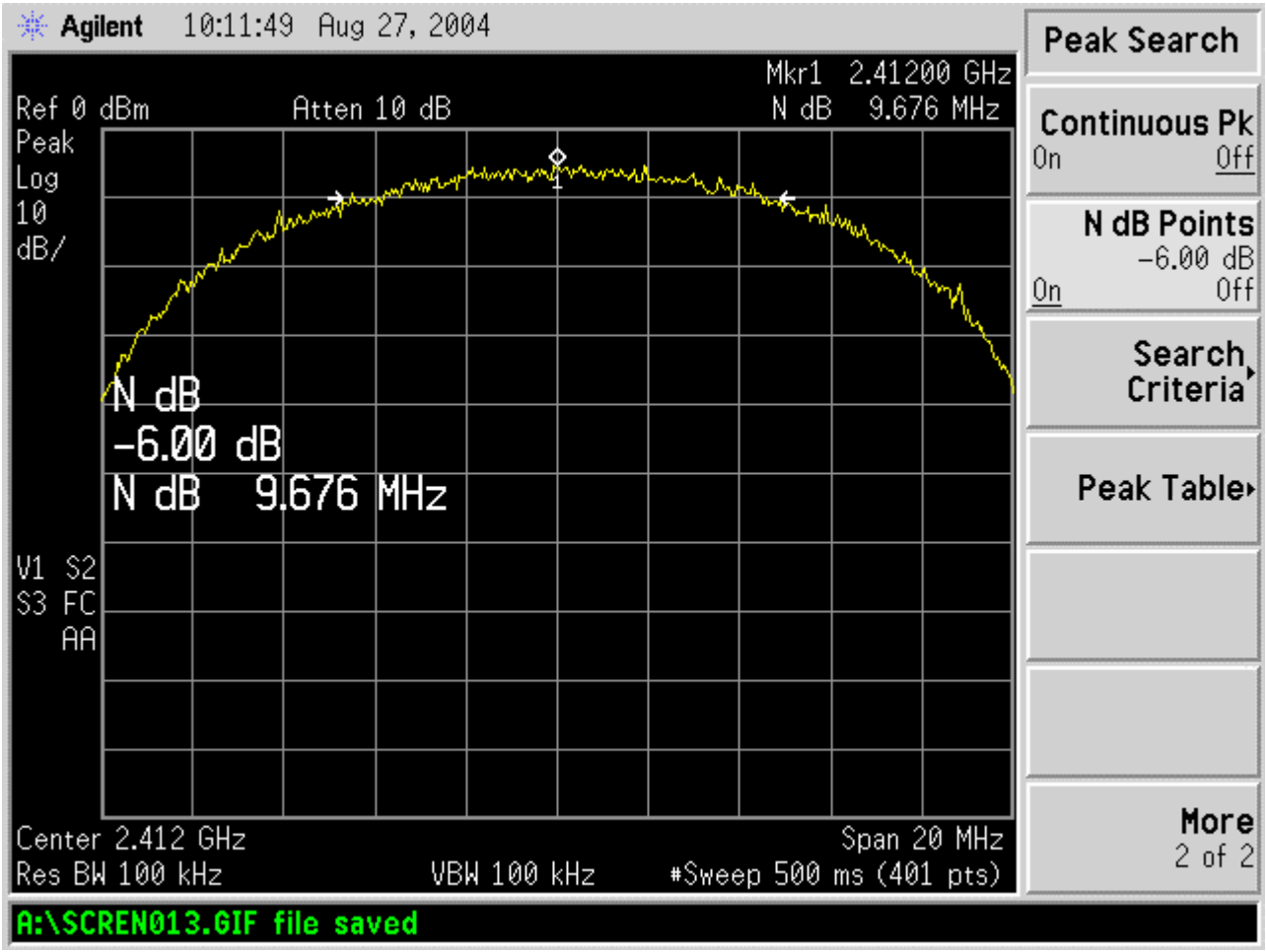
5.2.4 Test Result：

- Mode 1~3 : 802.11b
- Temperature : 26°C
- Relative Humidity : 53%

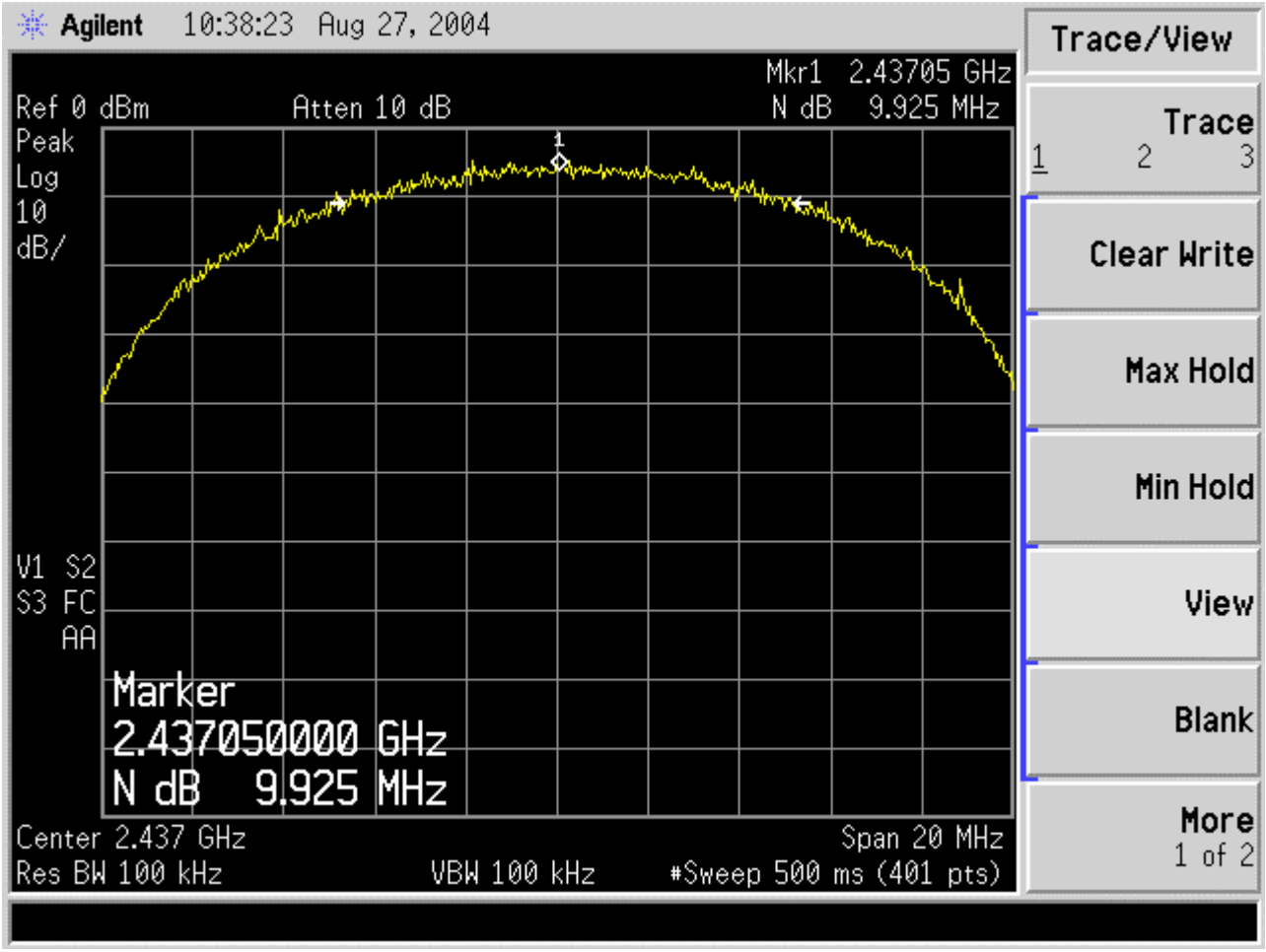
Channel	Frequency (MHz)	6dB Emission bandwidth (MHz)	Limits (MHz)	Plot Ref. No.
01	2412	9.68	0.5	Mode 1
06	2437	9.93	0.5	Mode 2
11	2462	10.02	0.5	Mode 3

5.2.6 6dB Bandwidth

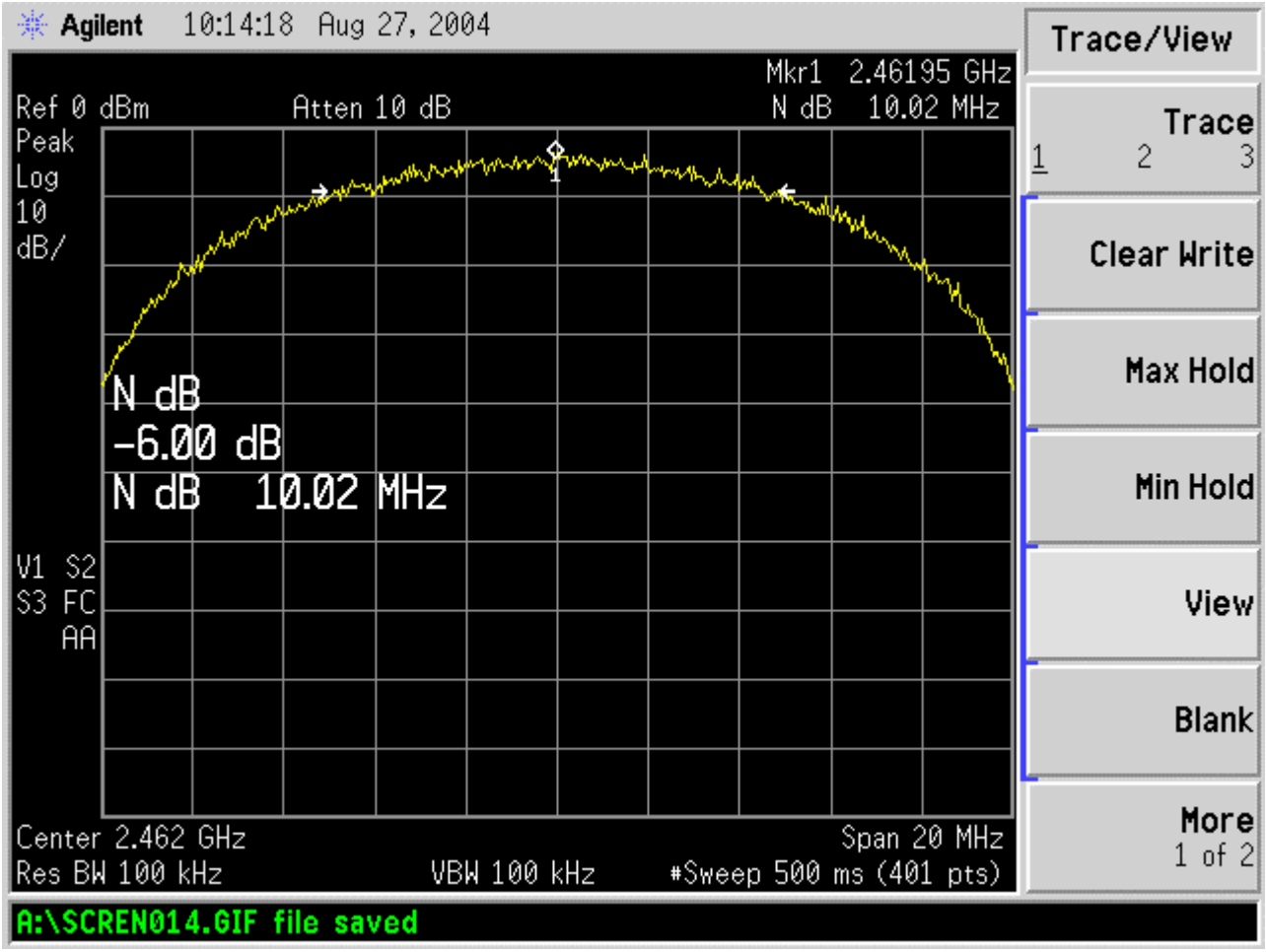
Mode 1 : 802.11b Tx CH01 (2412MHz)



Mode 2 : 802.11b Tx CH06 (2437MHz)



Mode 3 : 802.11b Tx CH11(2462MHz)



5.3 Power Spectral Density

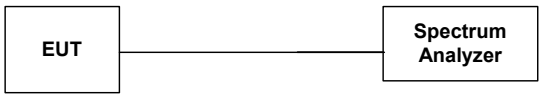
5.3.1 Measuring Instruments：

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：



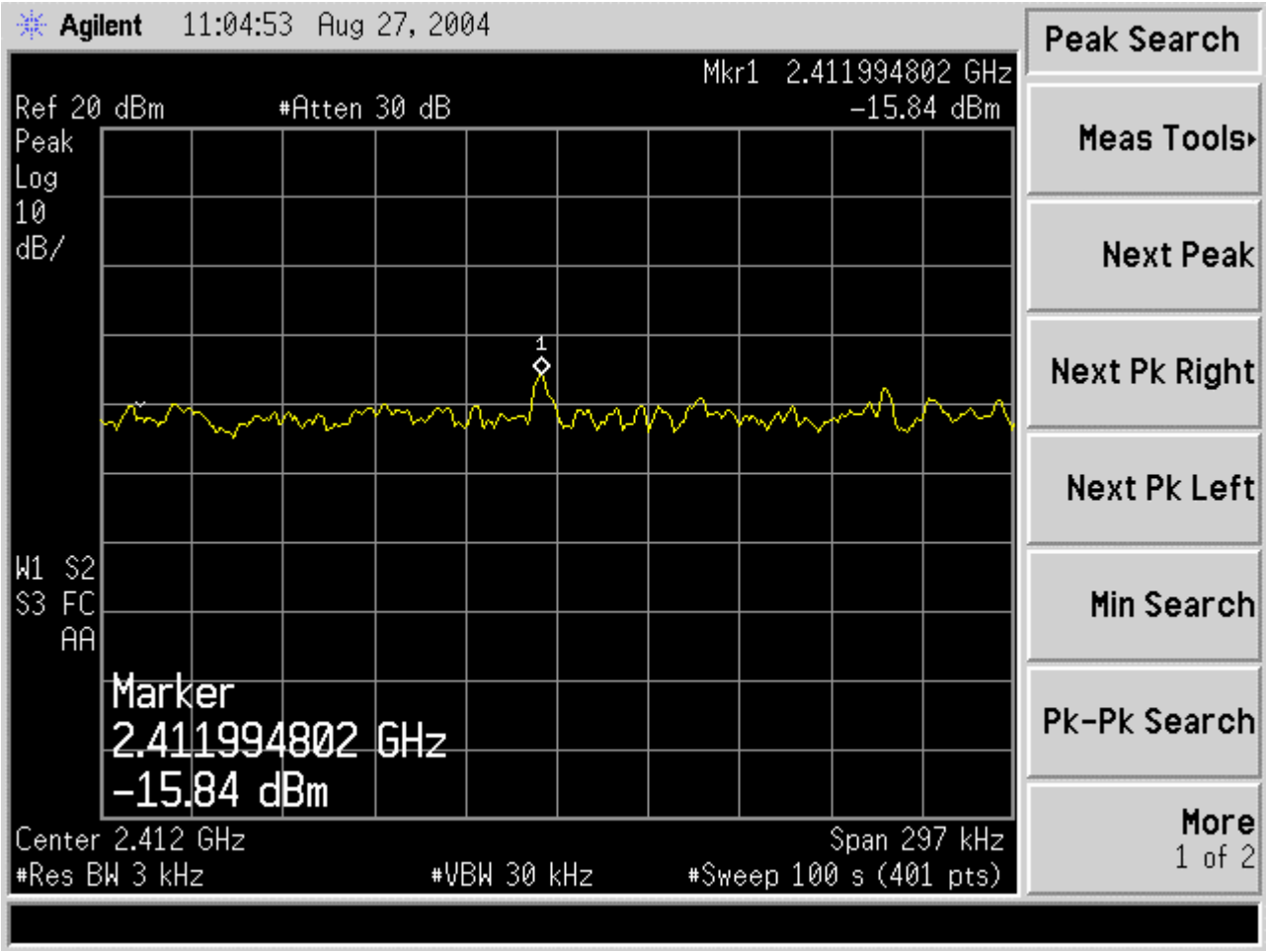
5.3.4 Test Result：

- Mode 1~3: 802.11b
- Temperature : 26°C,
- Relative Humidity : 53%

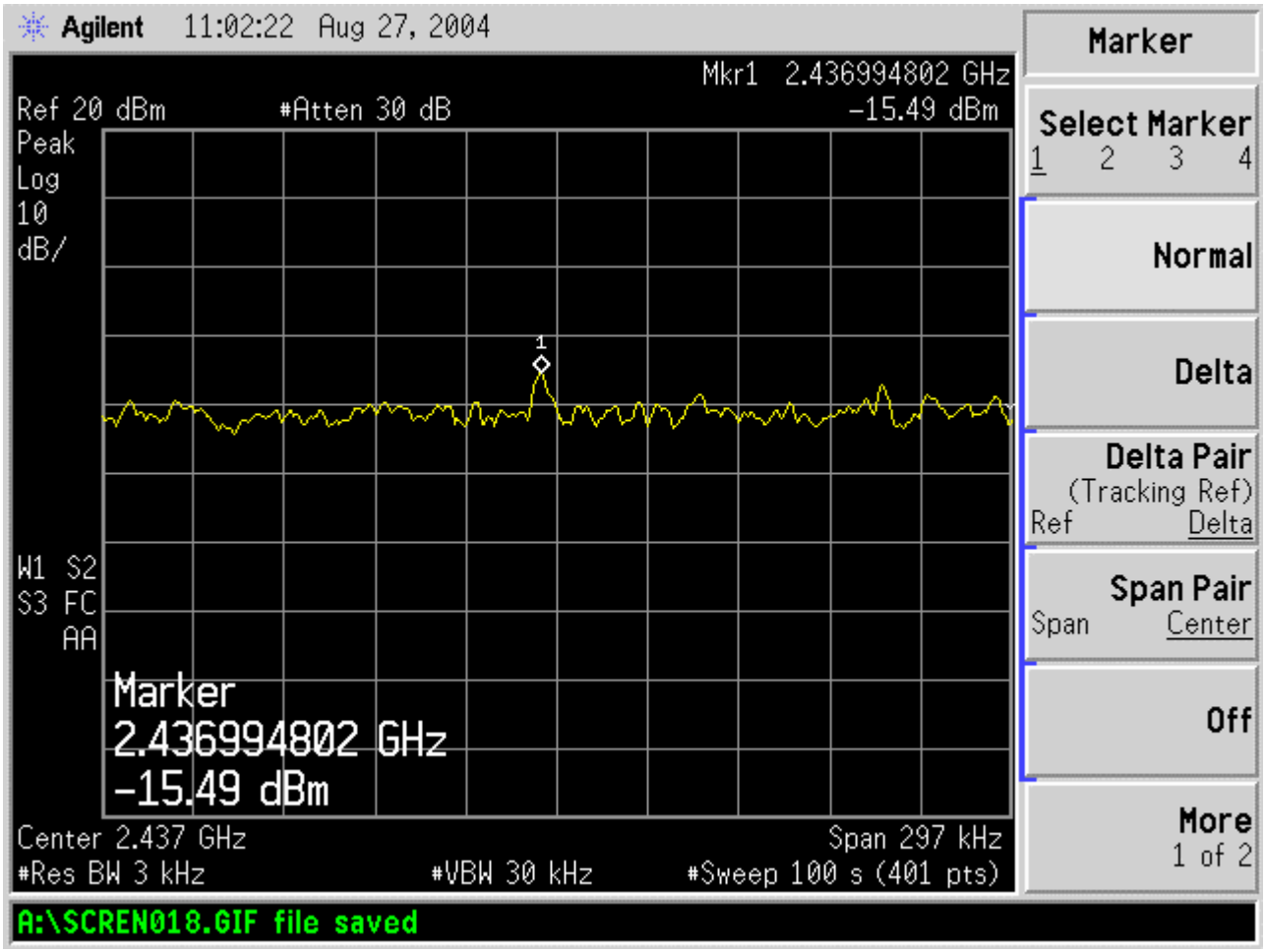
Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)	Plot Ref. No.
01	2412	-15.84	8	Mode 1
06	2437	-15.49	8	Mode 2
11	2462	-14.16	8	Mode 3

5.3.5 Power Spectral Density

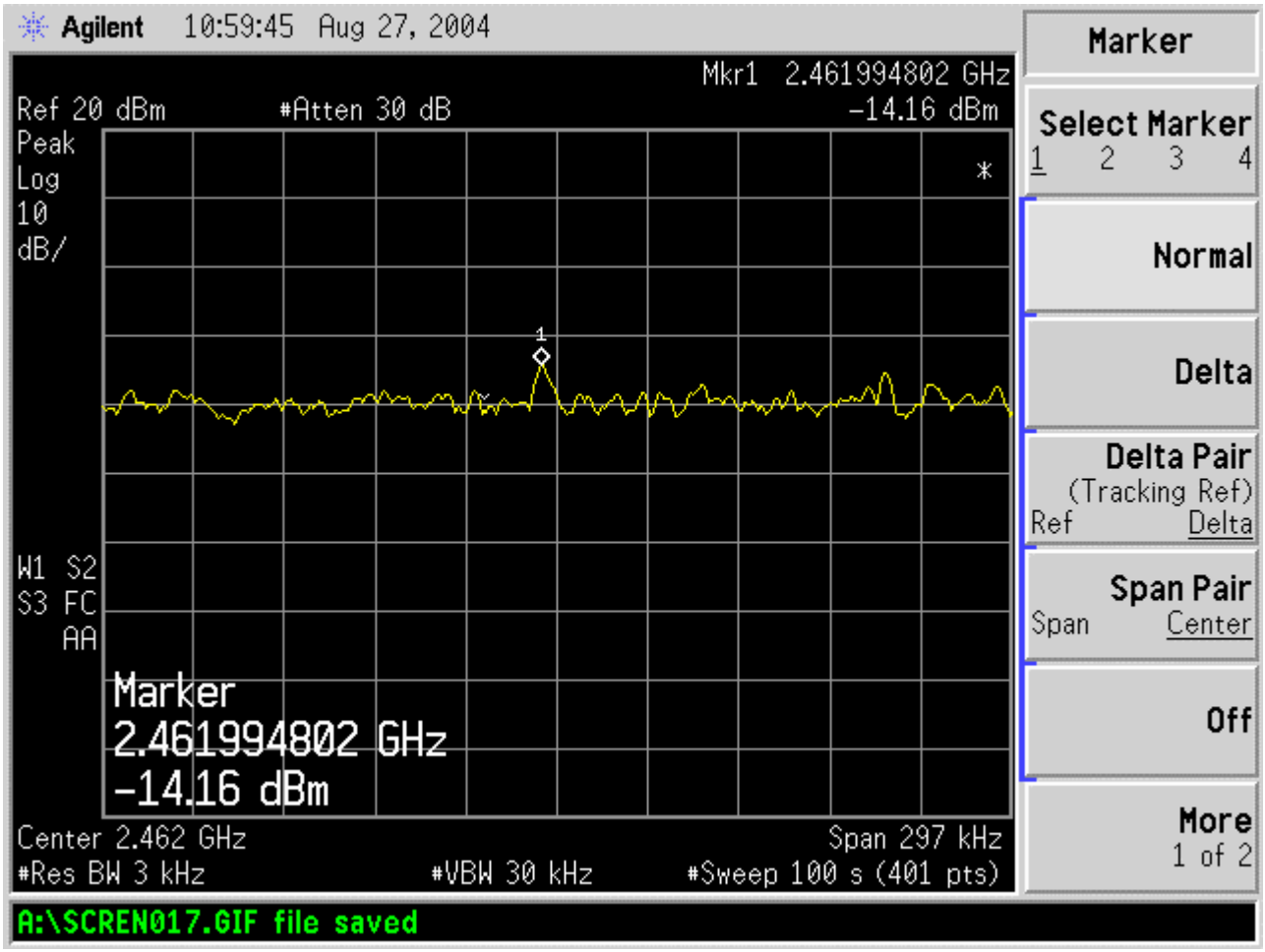
Mode 1 : 802.11b Tx CH01(2412MHz)



Mode 2 : 802.11b Tx CH06 (2437MHz)



Mode 3 : 802.11b Tx CH11 (2462MHz)



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：

- Mode 1 and 3 : 802.11b
- Temperature : 26°C,
- Relative Humidity : 53%

- Test Result in lower band (Channel 1) : PASS
- Test Result in higher band (Channel 11) : PASS

5.4.4 Note on Band Edge Emission

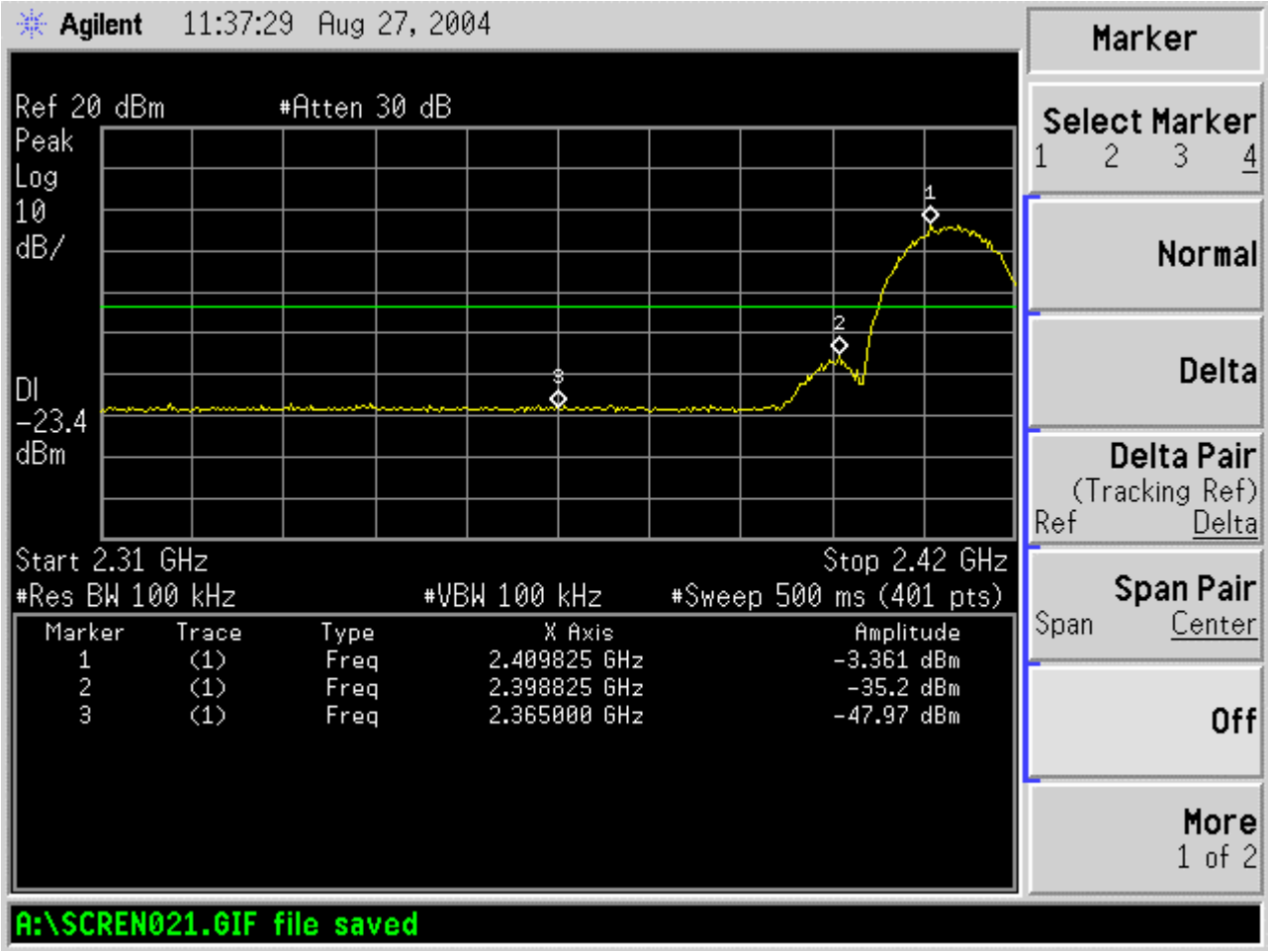
The band edge emission shows 31.84 dB delta between carrier maximum power and local maximum emission in the restricted band (2.390GHz).

The band edge emission shows 47.48 dB delta between carrier maximum power and local maximum emission in the restricted band (2.4835GHz)

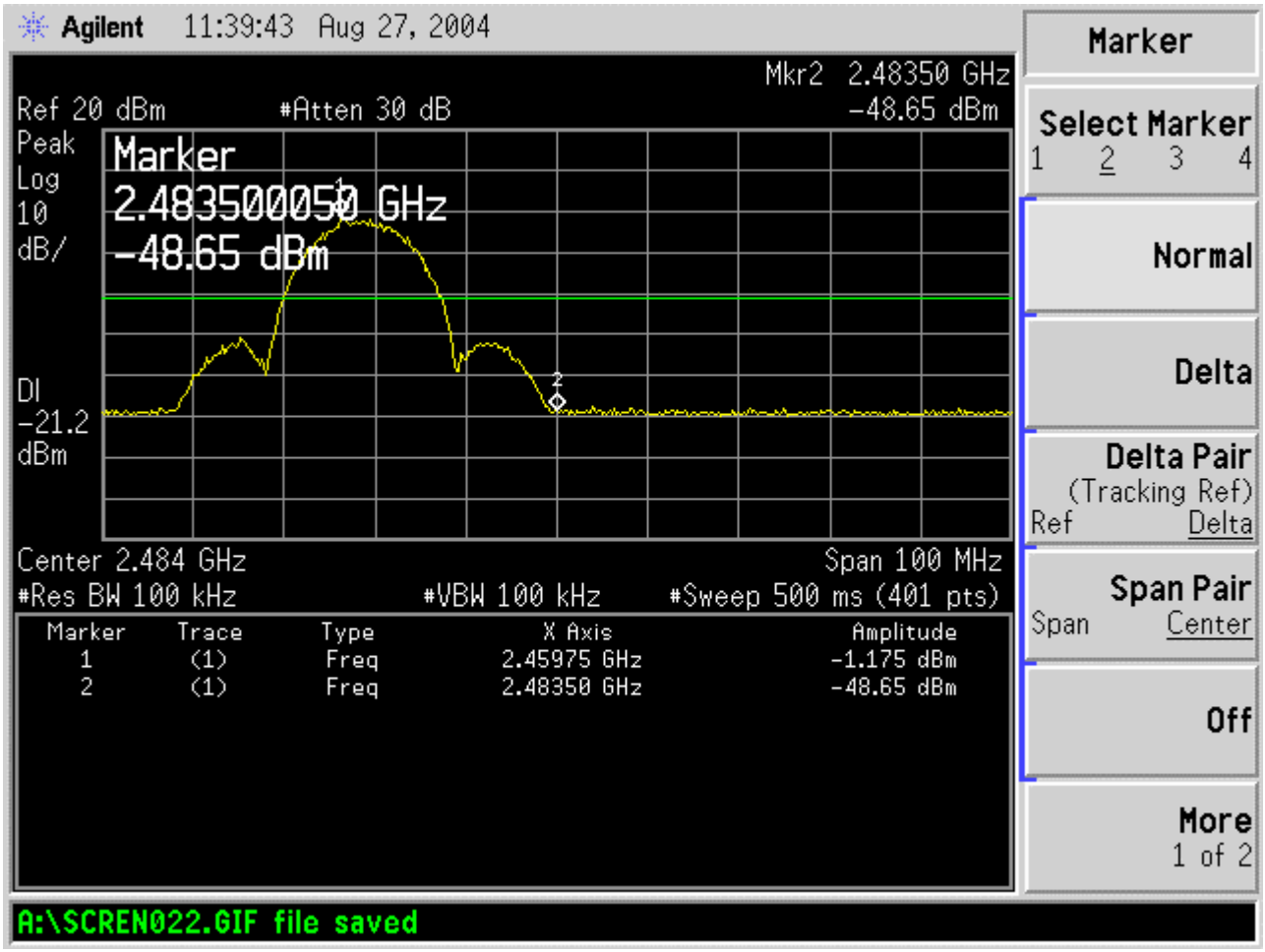
Channel	Polarity	The emission of carrier power strength	Frequency	The emission of band edge power strength	Limit	Margin	Remark	Result
		(dBμV/m)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)		
01	H	77.44	2398.82	45.6	74	-28.4	Peak	Pass
	H	70.38	2398.82	38.54	54	-15.46	Average	Pass
	V	77.44	2398.82	45.6	74	-28.4	Peak	Pass
	V	70.38	2398.82	38.54	54	-15.46	Average	Pass
11	H	81.77	2483.50	34.29	74	-39.71	Peak	Pass
	H	73.97	2483.50	26.49	54	-27.51	Average	Pass
	V	81.31	2483.50	33.83	74	-40.17	Peak	Pass
	V	75.03	2483.50	27.55	54	-26.45	Average	Pass

5.4.7 20dB Band Edge

Mode1 : 802.11b Tx CH01 (2412MHz)



Mode 3 : 802.11b Tx CH11 (2462MHz)



5.5 Peak Output Power

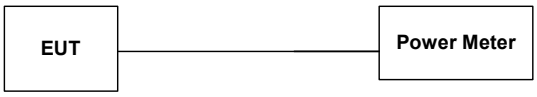
5.5.1 Measuring Instruments：

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：

- Mode 1~3 : 802.11b
- Temperature : 26°C
- Relative Humidity : 53 %

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (Watt/dBm)
01	2412	10.2	1W/30 dBm
06	2437	10.1	1W/30 dBm
11	2462	10.1	1W/30 dBm

6. Test of Conducted Emission

Conducted emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 kHz and return leads of the EUT according to the methods defined in ANSI C63.4-2001 Section 3.1. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

6.1. Major Measuring Instruments

● Test Receiver	(R&S ESCS 30)
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

6.2. Test Procedures

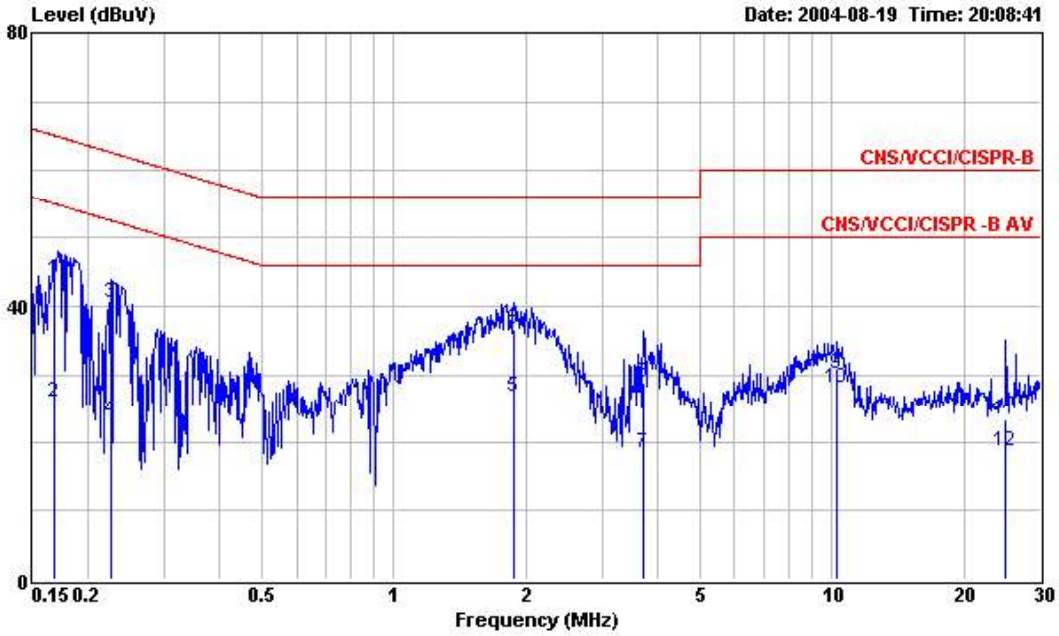
a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
b. Connect EUT to the power port of the line impedance stabilization network (LISN).
c. All the support units are connect to the other LISN.
d. The 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.

6.3. Test Result of Conducted Emission

6.3.1 Frequency Range of Test : 150kHz to 30 MHz

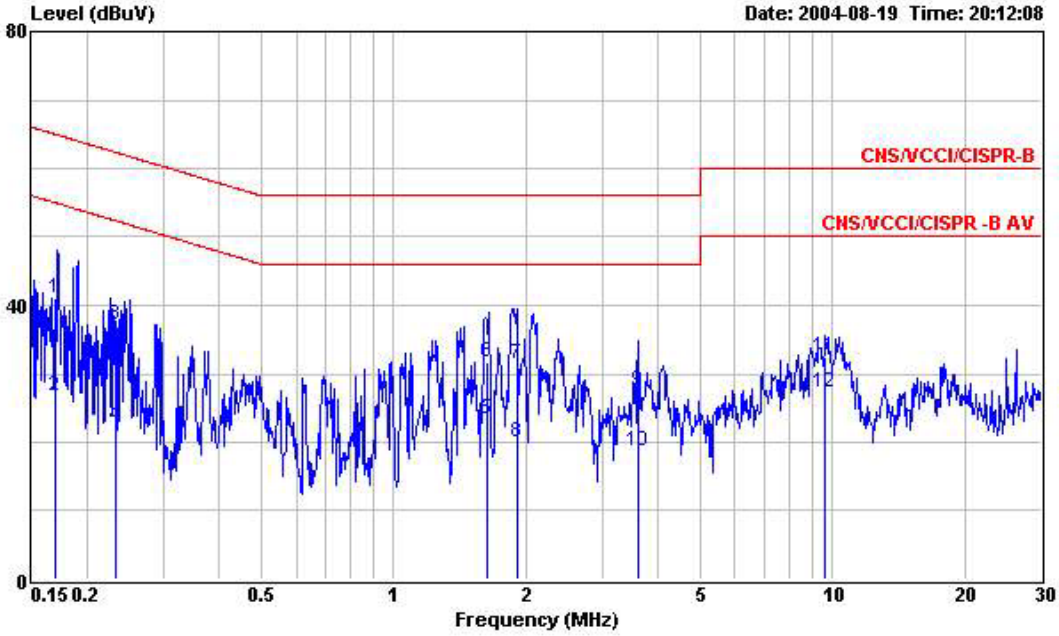
- Test Mode : Mode 1
- Temperature : 26°C
- Relative Humidity : 53 %

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



Site : CO01-HY
Condition : CNS/VCCI/CISPR-B 2003 2001/008 LINE
EUT : 802.11b USB Dongle
Power : 120Vac/60Hz
Model : SC Wi311b
Memo : Rx Mode

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.168	43.92	-21.15	65.07	43.79	0.10	0.03	QP
2	0.168	25.90	-29.17	55.07	25.77	0.10	0.03	Average
3	0.227	40.53	-22.03	62.56	40.40	0.10	0.03	QP
4	0.227	23.37	-29.19	52.56	23.24	0.10	0.03	Average
5	1.880	26.76	-19.24	46.00	26.59	0.10	0.07	Average
6	1.880	36.57	-19.43	56.00	36.40	0.10	0.07	QP
7	3.720	18.53	-27.47	46.00	18.34	0.10	0.09	Average
8	3.720	28.82	-27.18	56.00	28.63	0.10	0.09	QP
9	10.230	30.09	-29.91	60.00	29.76	0.20	0.13	QP
10	10.230	27.99	-22.01	50.00	27.66	0.20	0.13	Average
11	24.920	23.35	-36.65	60.00	22.63	0.49	0.23	QP
12	24.920	18.61	-31.39	50.00	17.89	0.49	0.23	Average



Site : CO01-HY
Condition : CNS/VCCI/CISPR-B 2003 2001/008 NEUTRAL
EUT : 802.11b USB Dongle
Power : 120Vac/60Hz
Model : SCWi311b
Memo : Rx Mode

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.170	40.96	-24.00	64.96	40.83	0.10	0.03	QP
2	0.170	26.80	-38.16	64.96	26.67	0.10	0.03	Average
3	0.233	37.09	-25.25	62.34	36.96	0.10	0.03	QP
4	0.233	22.34	-40.00	62.34	22.21	0.10	0.03	Average
5	1.640	23.42	-32.58	56.00	23.25	0.10	0.07	Average
6	1.640	31.71	-24.29	56.00	31.54	0.10	0.07	QP
7	1.910	31.31	-24.69	56.00	31.14	0.10	0.07	QP
8	1.910	20.00	-36.00	56.00	19.83	0.10	0.07	Average
9	3.620	27.52	-28.48	56.00	27.24	0.19	0.09	QP
10	3.620	18.76	-37.24	56.00	18.48	0.19	0.09	Average
11	9.650	32.40	-27.60	60.00	32.07	0.20	0.13	QP
12	9.650	27.30	-32.70	60.00	26.97	0.20	0.13	Average

Test Engineer : _____

Jay

7. Test of Radiated Emission

Radiated emissions from 30 MHz to 25 GHz were measured according to the methods defined in ANSI C63.4-2001. The EUT was placed, 0.8 meter above the ground plane, as shown in section 5.6.3. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions

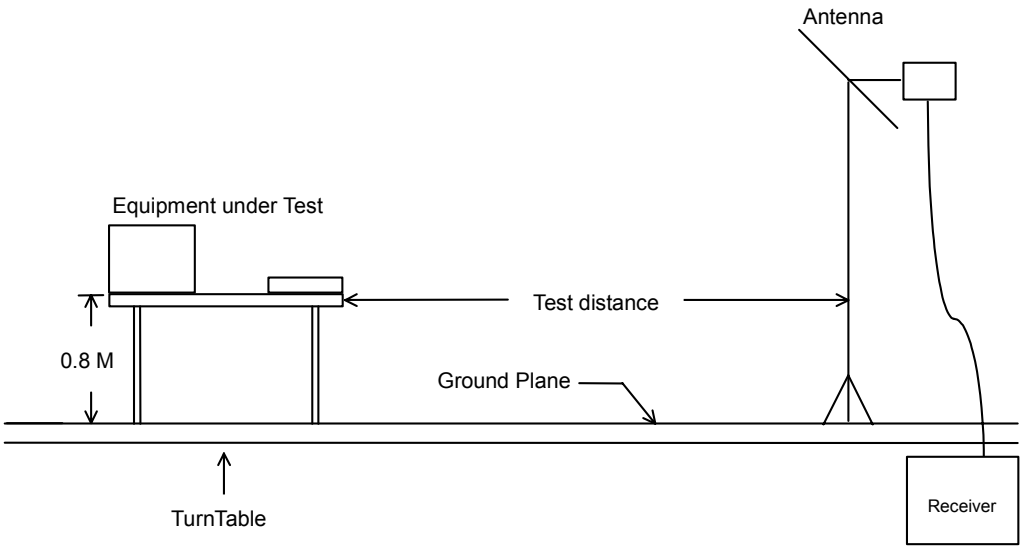
7.1. Major Measuring Instruments

● Amplifier	(MITEQ AFS44)
RF Gain	40 dB
Signal Input	100 MHz to 26.5 GHz
● Amplifier	(PA-103)
RF Gain	30 dB
Signal Input	100 MHz to 1 GHz
● Spectrum analyzer	(R&S FSP40)
Attenuation	10 dB
Start Frequency	1 GHz
Stop Frequency	25 GHz
Resolution Bandwidth	1 MHz
Video Bandwidth	1 MHz
Signal Input	9 kHz to 40 GHz
● Spectrum analyzer	(R&S FSP40)
Attenuation	10 dB
Start Frequency	30MHz
Stop Frequency	1 GHz
Resolution Bandwidth	120 KHz
Video Bandwidth	300KHz
Signal Input	9 kHz to 40 GHz

7.2. Test Procedures

1. The EUT was placed on a rotatable table top 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. 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.
5. 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.
6. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
7. 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.
8. 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.

7.3. Typical Test Setup Layout of Radiated Emission

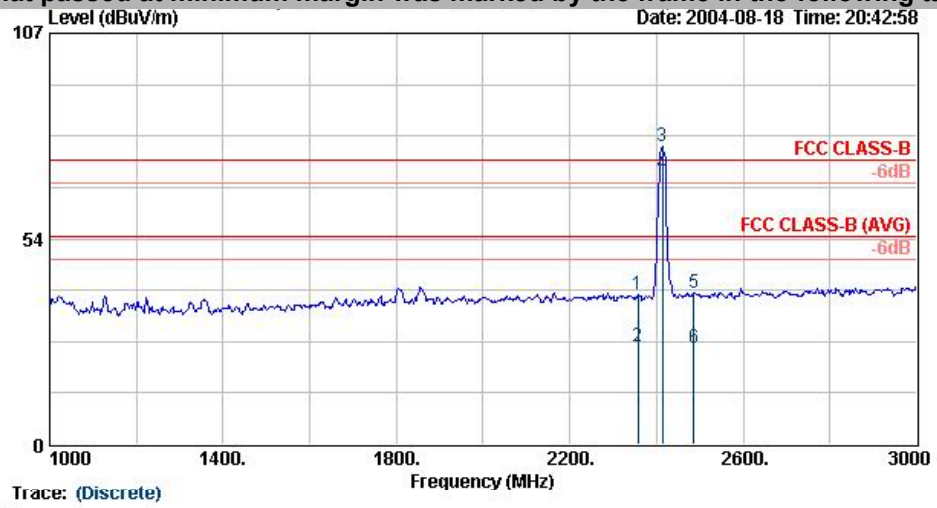


7.4. Test Result of Radiated Emission

7.4.1 Test Mode: Mode 1 (802.11b TX CH01)

- Test Distance : 3 m
- Temperature : 26 °C
- Relative Humidity :53 %
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

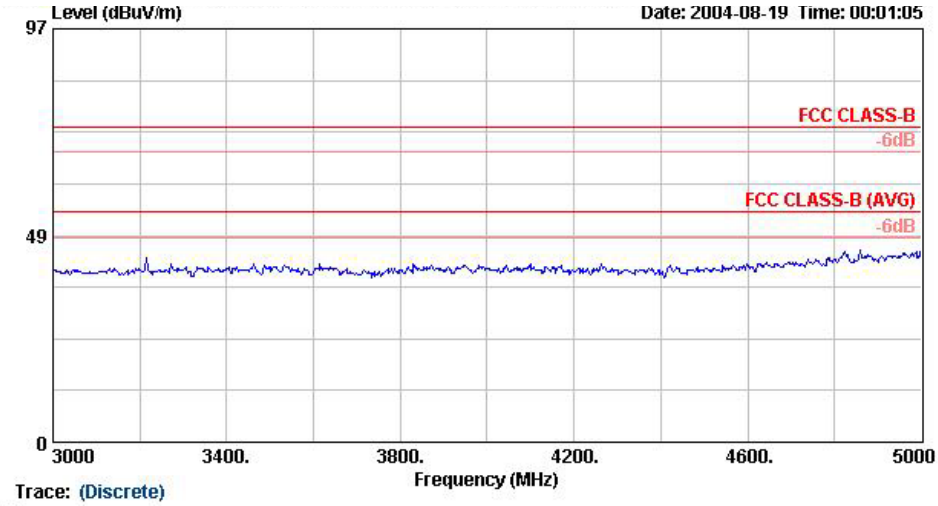
The test that passed at minimum margin was marked by the frame in the following table.



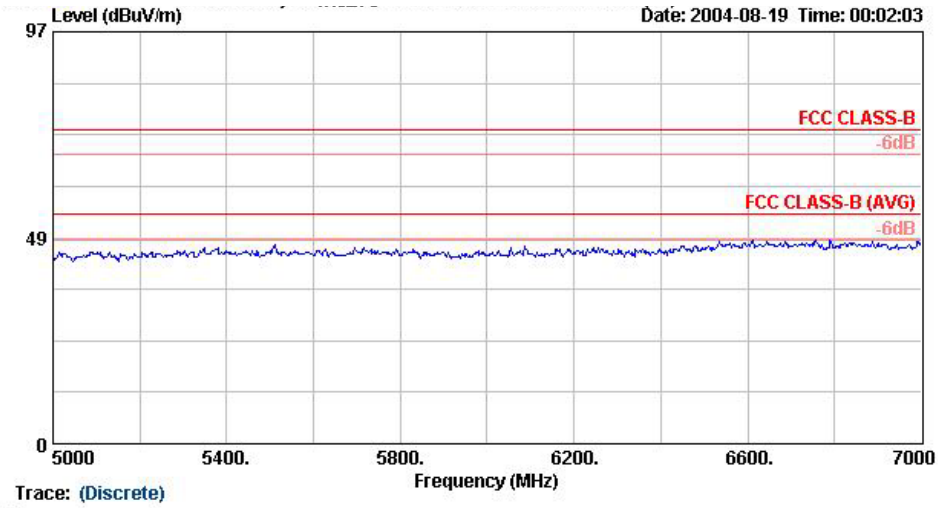
Site : 03CH06
Condition : FCC CLASS-B 3m HF-HORN AH-118 HORIZONTAL 114cm 164deg
EUT : 802.11b USB WLAN Dongle
Power : 120Vac/60Hz
Model : SCWi311b
Memo : 802.11b TX CH01 2412MHz

	Freq	Over Limit	Level	Limit Line	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dB	dBuV/m	dBuV/m	dB/m	dB	dB		cm	deg
1 @	2358.00	-35.20	38.80	74.00	28.36	44.36	3.29	Peak	---	---
2 @	2358.00	-28.41	25.59	54.00	28.36	44.36	3.29	Average	---	---
3 @	2414.00		77.44		28.41	44.33	3.32	Peak	---	---
4 @	2414.00		70.38		28.41	44.33	3.32	Average	---	---
5 @	2486.00	-34.72	39.28	74.00	28.48	44.31	3.38	Peak	---	---
6 @	2486.00	-28.82	25.18	54.00	28.48	44.31	3.38	Average	---	---

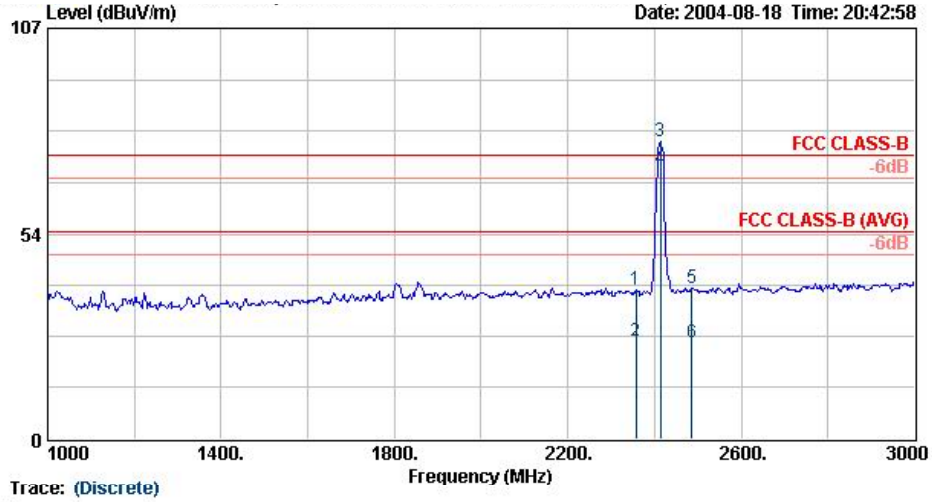
Remark: #3 and #4 Fundamental Signal.



Site : 03CH06
Condition : FCC CLASS-B 3m HF-HORN AH-118 HORIZONTAL 114cm 360deg
EUT : 802.11b USB WLAN Dongle
Power : 120Vac/60Hz
Model : SCWi311b
Memo : 802.11b TX CH01 2412MHz



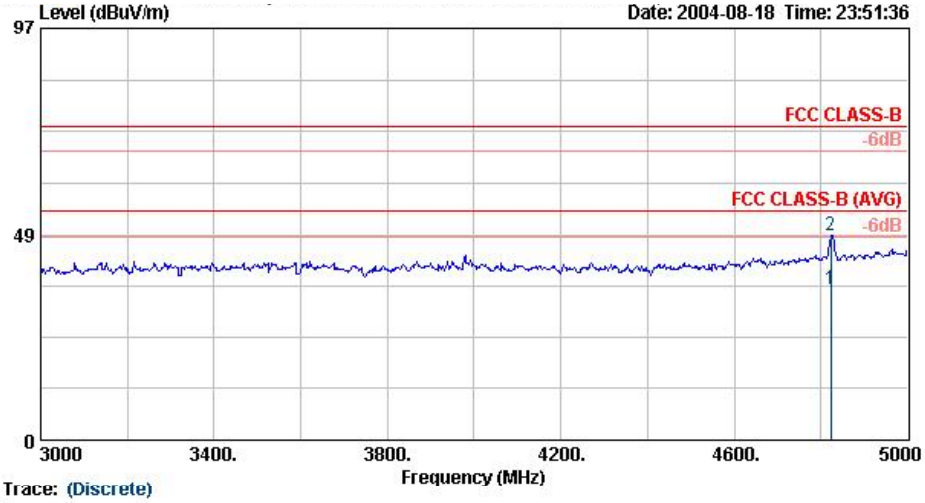
Site : 03CH06
Condition : FCC CLASS-B 3m HF-HORN AH-118 HORIZONTAL 114cm 0deg
EUT : 802.11b USB WLAN Dongle
Power : 120Vac/60Hz
Model : SCWi311b
Memo : 802.11b TX CH01 2412MHz



Site : 03CH06
Condition : FCC CLASS-B 3m HF-HORN AH-118 VERTICAL 114cm 164deg
EUT : 802.11b USB WLAN Dongle
Power : 120Vac/60Hz
Model : SCWi311b
Memo : 802.11b TX CH01 2412MHz

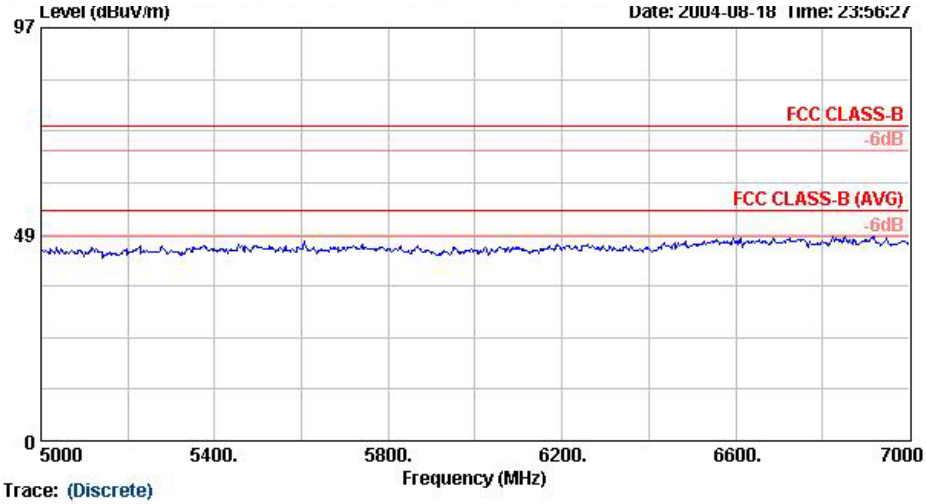
	Freq	Over Limit	Level	Limit Line	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dB	dBuV/m	dBuV/m	dB/m	dB	dB		cm	deg
1 @	2358.00	-35.20	38.80	74.00	28.36	44.36	3.29	Peak	---	---
2 @	2358.00	-28.41	25.59	54.00	28.36	44.36	3.29	Average	---	---
3 @	2414.00		77.44		28.41	44.33	3.32	Peak	---	---
4 @	2414.00		70.38		28.41	44.33	3.32	Average	---	---
5 @	2486.00	-34.72	39.28	74.00	28.48	44.31	3.38	Peak	---	---
6 @	2486.00	-28.82	25.18	54.00	28.48	44.31	3.38	Average	---	---

Remark: #3 and #4 Fundamental Signal.



Site : 03CH06
Condition : FCC CLASS-B 3m HF-HORN AH-118 VERTICAL 157cm 0deg
EUT : 802.11b USB WLAN Dongle
Power : 120Vac/60Hz
Model : SCWi311b
Memo : 802.11b TX CH01 2412MHz

	Freq	Over Limit	Level	Limit Line	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dB	dBuV/m	dBuV/m	dB/m	dB	dB		cm	deg
1 @	4822.00	-18.27	35.73	54.00	32.36	45.56	4.77	Average	---	---
2 @	4822.00	-25.54	48.46	74.00	32.36	45.56	4.77	Peak	---	---



Site : 03CH06
Condition : FCC CLASS-B 3m HF-HORN AH-118 VERTICAL 114cm 0deg
EUT : 802.11b USB WLAN Dongle
Power : 120Vac/60Hz
Model : SCWi311b
Memo : 802.11b TX CH01 2412MHz

Remark:

Frequency from 7GHz to 25GHz, the emission emitted by the EUT is too low to be measured.

■ Field strength of fundamental and harmonics

Frequency (MHz)	Polarity	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Preamp Factor (dB)	Limits (dBuV/m)	Emission (dBuV/m)	Margin (dB)	Detect Mode
2414.000	H	28.41	3.32	45.71	44.33	-	77.44	-	Peak
2414.000	H	28.41	3.32	38.65	44.33	-	70.38	-	AV
2414.000	V	28.41	3.32	45.71	44.33	-	77.44	-	Peak
2414.000	V	28.41	3.32	38.65	44.33	-	70.38	-	AV
4822.000	V	32.36	4.77	11.33	45.56	74.00	48.46	-25.54	Peak
4822.000	V	32.36	4.77	-1.40	45.56	54.00	35.73	-18.27	AV
4824.000	H	-	-	-	-	-	-	-	AV/Peak
7236.000	V/H	-	-	-	-	-	-	-	AV/Peak
9648.000	V/H	-	-	-	-	-	-	-	AV/Peak
12060.000	V/H	-	-	-	-	-	-	-	AV/Peak
14472.000	V/H	-	-	-	-	-	-	-	AV/Peak
16884.000	V/H	-	-	-	-	-	-	-	AV/Peak
19296.000	V/H	-	-	-	-	-	-	-	AV/Peak
21708.000	V/H	-	-	-	-	-	-	-	AV/Peak
24120.000	V/H	-	-	-	-	-	-	-	AV/Peak

Remark:

1. The emission emitted by the EUT is too low to be measured except the emission listed above,
2. Reading = Reading on SA-Preamp Factor

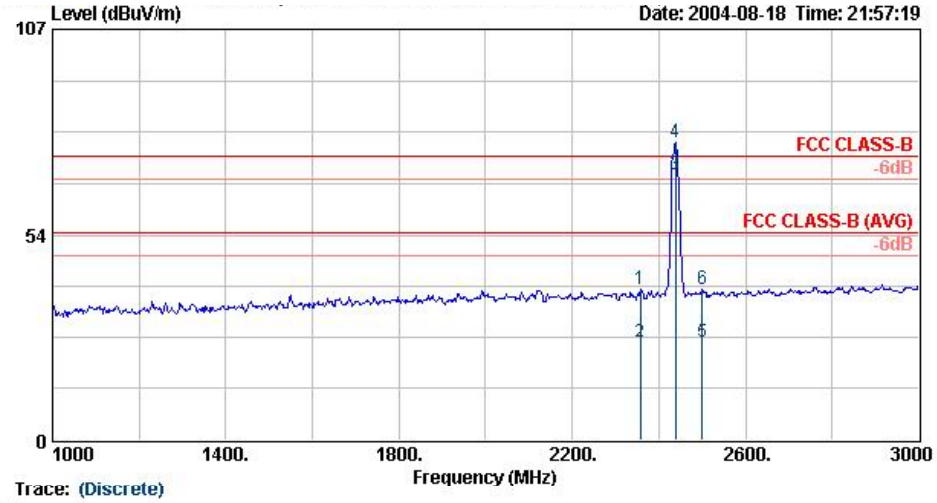
Test Engineer : _____

Jay

7.4.2 Test Mode: Mode 2 (802.11b TX CH06)

- Test Distance : 3 m
- Temperature : 26 °C
- Relative Humidity :53 %
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

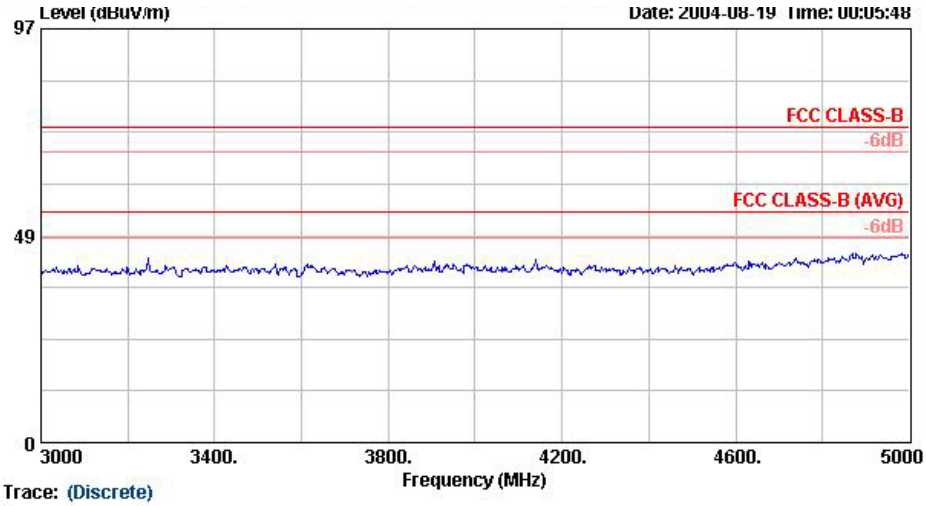
■ The test that passed at minimum margin was marked by the frame in the following table.



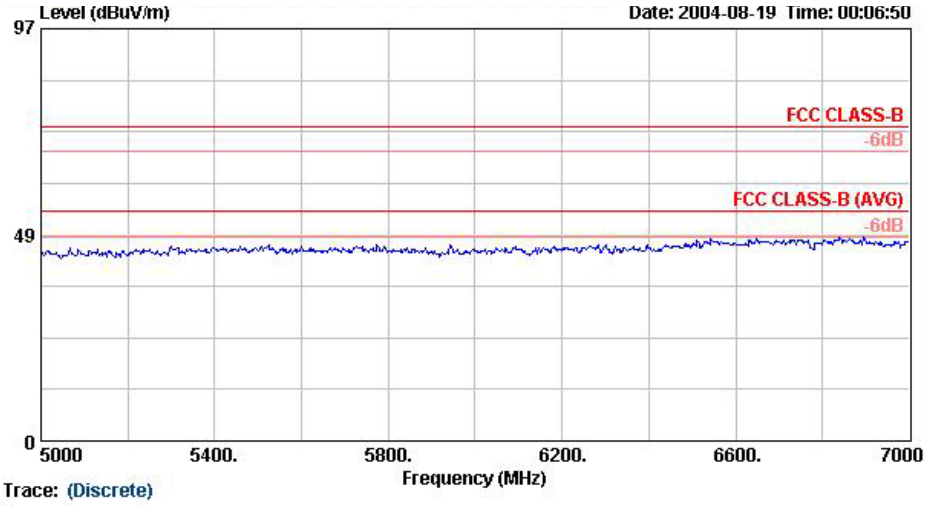
Site : 03CH06
Condition : FCC CLASS-B 3m HF-HORN AH-118 HORIZONTAL 0cm 0deg
EUT : 802.11b USB WLAN Dongle
Power : 120Vac/60Hz
Model : SCWi311b
Memo : 802.11b TX CH06 2437MHz

	Freq	Over Limit	Level	Limit Line	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dB	dBuV/m	dBuV/m	dB/m	dB	dB		cm	deg
1 @	2358.00	-34.70	39.30	74.00	28.36	44.36	3.29	Peak	---	---
2 @	2358.00	-28.49	25.51	54.00	28.36	44.36	3.29	Average	---	---
3 @	2438.00		69.13		28.45	44.32	3.34	Average	---	---
4 @	2438.00		77.39		28.45	44.32	3.34	Peak	---	---
5 @	2500.00	-28.61	25.39	54.00	28.50	44.30	3.39	Average	---	---
6 @	2500.00	-34.77	39.23	74.00	28.50	44.30	3.39	Peak	---	---

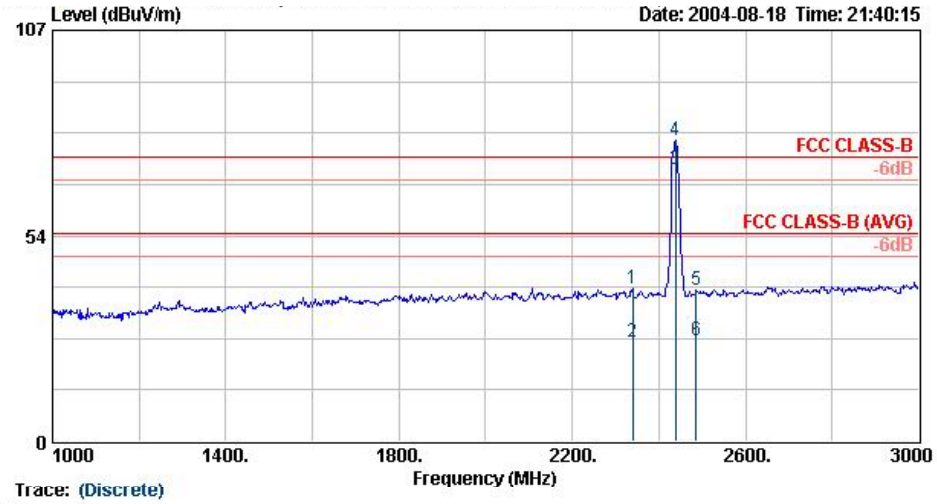
Remark: #3 and #4 Fundamental Signal.



Site : 03CH06
Condition : FCC CLASS-B 3m HF-HORN AH-118 HORIZONTAL 114cm 360deg
EUT : 802.11b USB WLAN Dongle
Power : 120Vac/60Hz
Model : SCWi311b
Memo : 802.11b TX CH06 2437MHz



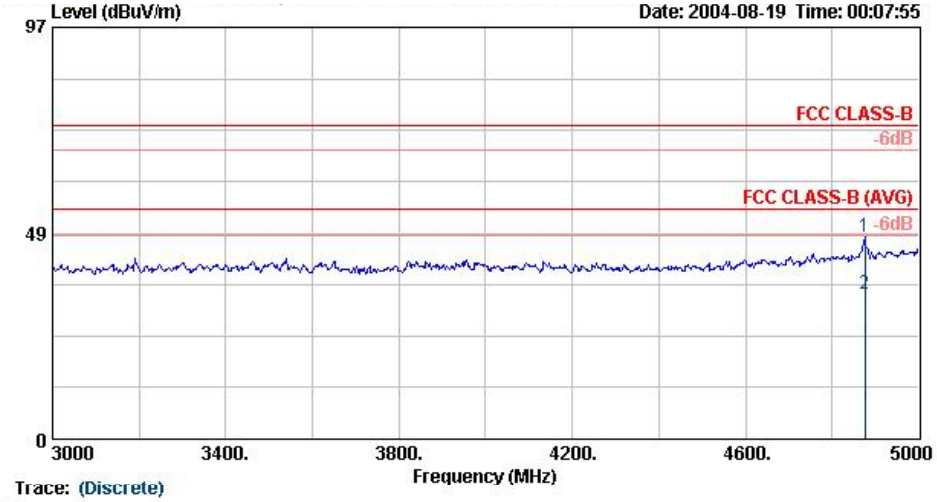
Site : 03CH06
Condition : FCC CLASS-B 3m HF-HORN AH-118 HORIZONTAL 114cm 0deg
EUT : 802.11b USB WLAN Dongle
Power : 120Vac/60Hz
Model : SCWi311b
Memo : 802.11b TX CH06 2437MHz



Site : 03CH06
Condition : FCC CLASS-B 3m HF-HORN AH-118 VERTICAL 207cm 360deg
EUT : 802.11b USB WLAN Dongle
Power : 120Vac/60Hz
Model : SCWi311b
Memo : 802.11b TX CH06 2437MHz

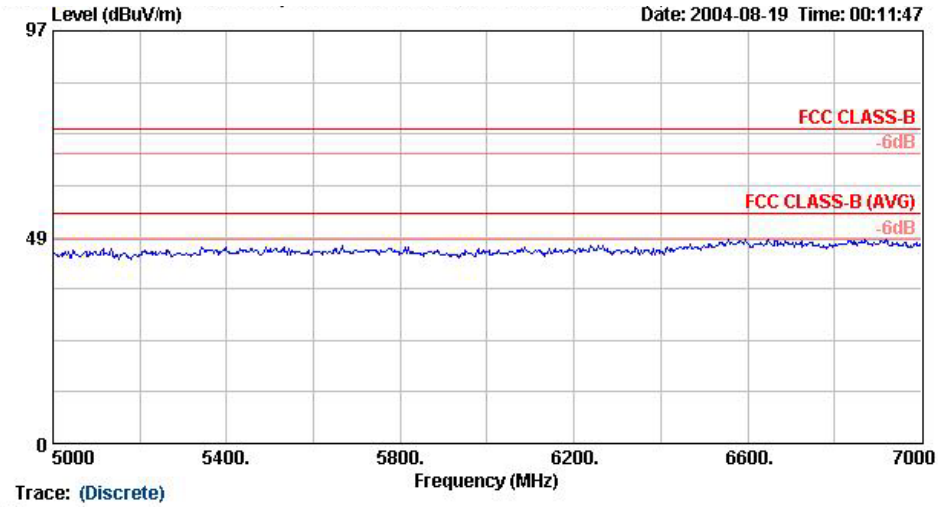
	Freq	Over Limit	Level	Limit Line	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dB	dBuV/m	dBuV/m	dB/m	dB	dB		cm	deg
1 @	2340.00	-34.31	39.69	74.00	28.34	44.36	3.29	Peak	---	---
2 @	2340.00	-28.32	25.68	54.00	28.34	44.36	3.29	Average	---	---
3 @	2438.00		70.90		28.45	44.32	3.34	Average	---	---
4 @	2438.00		78.44		28.45	44.32	3.34	Peak	---	---
5 @	2486.00	-34.51	39.49	74.00	28.48	44.31	3.38	Peak	---	---
6 @	2486.00	-27.66	26.34	54.00	28.48	44.31	3.38	Average	---	---

Remark: #3 and #4 Fundamental Signal.



Site : 03CH06
Condition : FCC CLASS-B 3m HF-HORN AH-118 VERTICAL 114cm 360deg
EUT : 802.11b USB WLAN Dongle
Power : 120Vac/60Hz
Model : SCWi311b
Memo : 802.11b TX CH06 2437MHz

	Freq	Over Limit	Level	Limit Line	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dB	dBuV/m	dBuV/m	dB/m	dB	dB		cm	deg
1 @	4876.00	-26.44	47.56	74.00	32.70	45.60	4.81	Peak	---	---
2 @	4876.00	-19.91	34.09	54.00	32.70	45.60	4.81	Average	---	---



Site : 03CH06
Condition : FCC CLASS-B 3m HF-HORN AH-118 VERTICAL 114cm 360deg
EUT : 802.11b USB WLAN Dongle
Power : 120Vac/60Hz
Model : SCWi311b
Memo : 802.11b TX CH06 2437MHz

Remark:

Frequency from 7GHz to 25GHz, the emission emitted by the EUT is too low to be measured.

Field strength of fundamental and harmonics

Frequency (MHz)	Polarity	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Preamp Factor (dB)	Limits (dBuV/m)	Emission (dBuV/m)	Margin (dB)	Detect Mode
2438.000	H	28.45	3.34	45.60	44.32	-	77.39	-	Peak
2438.000	H	28.45	3.34	37.34	44.32	-	69.13	-	AV
2438.000	V	28.45	3.34	46.61	44.32	-	78.40	-	Peak
2438.000	V	28.45	3.34	39.11	44.32	-	70.90	-	AV
4876.000	V	32.70	4.81	10.05	45.60	74.00	47.56	-26.44	Peak
4876.000	V	32.70	4.81	-3.42	45.60	54.00	34.09	-19.91	AV
4874.000	H	-	-	-	-	-	-	-	AV/Peak
7311.000	V/H	-	-	-	-	-	-	-	AV/Peak
9748.000	V/H	-	-	-	-	-	-	-	AV/Peak
12185.000	V/H	-	-	-	-	-	-	-	AV/Peak
14622.000	V/H	-	-	-	-	-	-	-	AV/Peak
17059.000	V/H	-	-	-	-	-	-	-	AV/Peak
19496.000	V/H	-	-	-	-	-	-	-	AV/Peak
21933.000	V/H	-	-	-	-	-	-	-	AV/Peak
24370.000	V/H	-	-	-	-	-	-	-	AV/Peak

Remark:

1. The emission emitted by the EUT is too low to be measured except the emission listed above,
2. Reading = Reading on SA-Preamp Factor

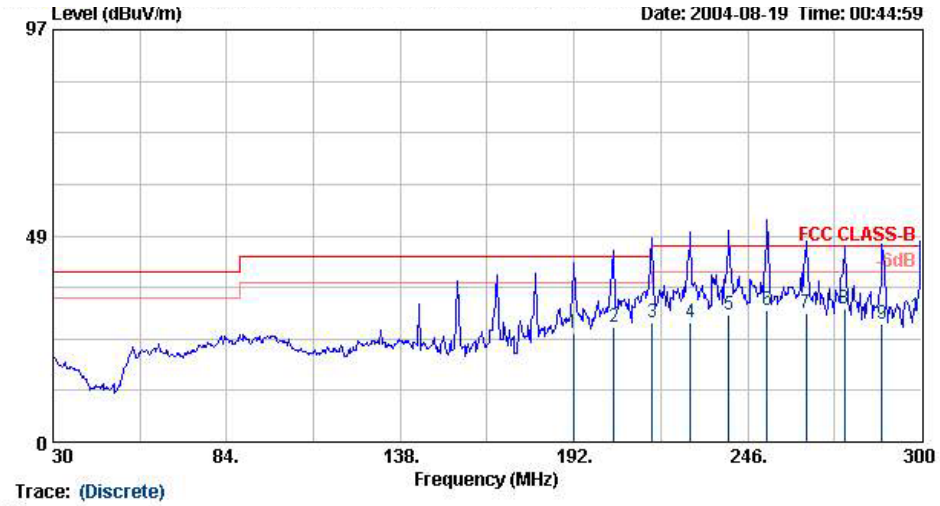
Test Engineer : _____

Jay

7.4.3 Test Mode: Mode 3 (802.11b TX CH11)

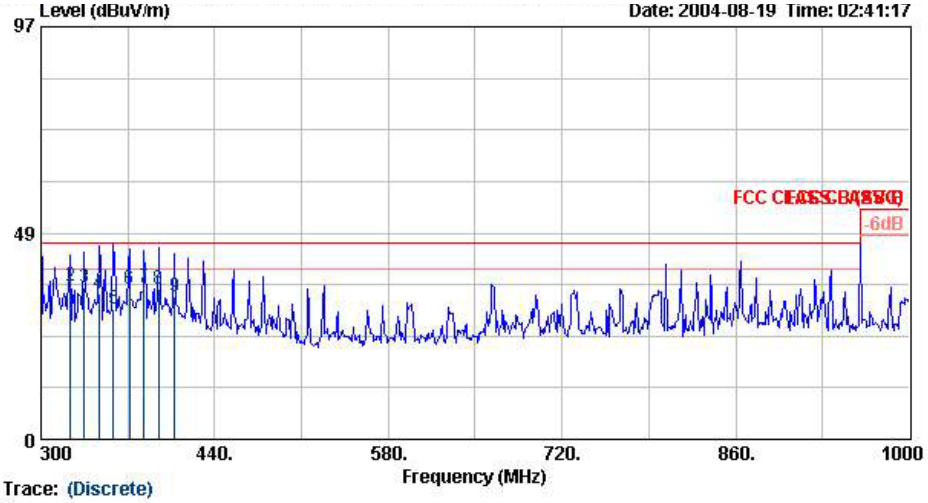
- Test Distance : 3 m
- Temperature : 23 °C
- Relative Humidity :51 %
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

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



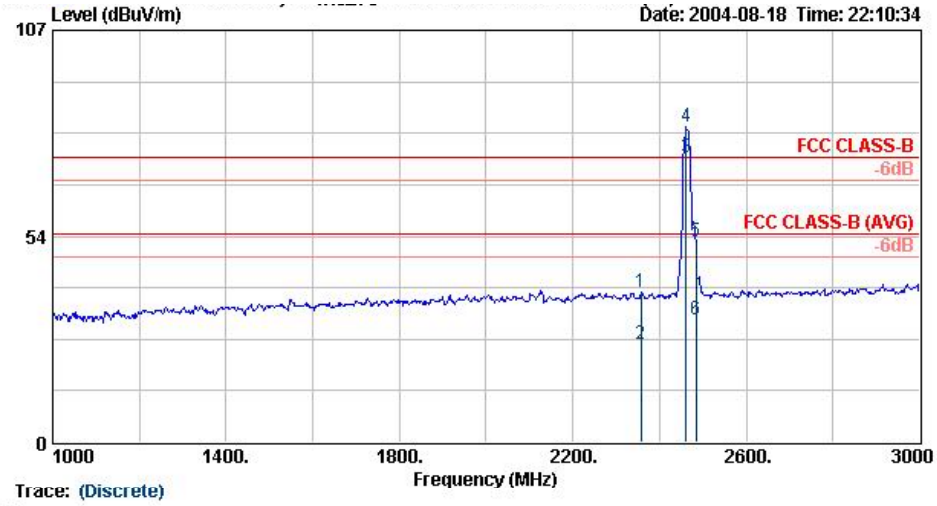
Site : 03CH06
Condition : FCC CLASS-B 3m BI LOG 2004 0629 HORIZONTAL 308cm 65deg
EUT : 802.11b USB WLAN Dongle
Power : 120Vac/60Hz
Model : SCWi311b
Memo : 802.11b TX CH11 2462MHz

	Freq	Over Limit	Level	Limit Line	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dB	dBuV/m	dBuV/m	dB/m	dB	dB		cm	deg
1	191.73	-18.06	25.44	43.50	8.37	31.98	1.21	QP	308	65
2	204.42	-16.44	27.06	43.50	8.70	32.00	1.25	QP	---	---
3	216.30	-18.02	27.98	46.00	8.58	31.86	1.29	QP	---	---
4	228.18	-17.82	28.18	46.00	9.38	31.80	1.33	QP	---	---
5	240.06	-15.93	30.07	46.00	10.91	31.77	1.37	QP	---	---
6	251.94	-14.95	31.05	46.00	12.18	31.84	1.40	QP	---	---
7	264.09	-15.67	30.33	46.00	12.74	31.91	1.43	QP	---	---
8	275.97	-14.69	31.31	46.00	12.50	31.97	1.45	QP	---	---
9	287.85	-18.29	27.71	46.00	12.72	31.96	1.47	QP	---	---
10	300.00	-16.29	29.71	46.00	13.00	31.91	1.50	QP	---	---



Site : 03CH06
Condition : FCC CLASS-B 3m BI LOG 2004 0629 HORIZONTAL 114cm 360deg
EUT : 802.11b USB WLAN Dongle
Power : 120Vac/60Hz
Model : SCWi311b
Memo : 802.11b TX CH11 2462MHz

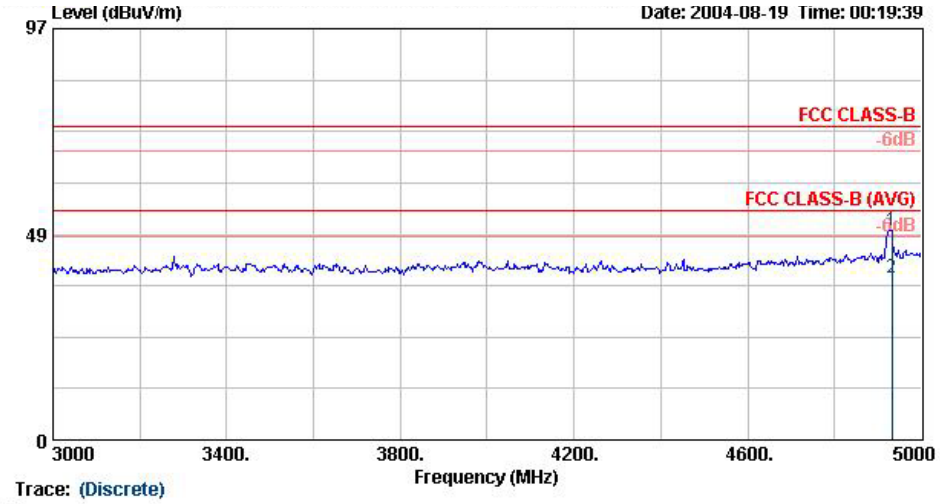
	Freq	Over Limit	Level	Limit Line	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dB	dBuV/m	dBuV/m	dB/m	dB	dB		cm	deg
1	300.00	-8.40	37.60	46.00	13.00	31.91	1.50	QP	0	0
2	323.80	-10.04	35.96	46.00	13.76	32.21	1.58	QP	0	0
3	335.00	-10.39	35.61	46.00	13.92	31.89	1.61	QP	0	0
4	346.90	-11.65	34.35	46.00	14.25	31.66	1.65	QP	0	0
5	358.10	-15.20	30.80	46.00	14.63	31.48	1.69	QP	0	0
6	371.40	-10.65	35.35	46.00	14.90	31.43	1.73	QP	0	0
7	383.30	-10.44	35.56	46.00	15.21	31.43	1.77	QP	0	0
8	394.50	-10.59	35.41	46.00	15.60	31.48	1.81	QP	0	0
9	407.80	-12.29	33.71	46.00	16.26	31.84	1.84	QP	0	0



Site : 03CH06
Condition : FCC CLASS-B 3m HF-HORN AH-118 HORIZONTAL 161cm 0deg
EUT : 802.11b USB WLAN Dongle
Power : 120Vac/60Hz
Model : SCWi311b
Memo : 802.11b TX CH11 2462MHz

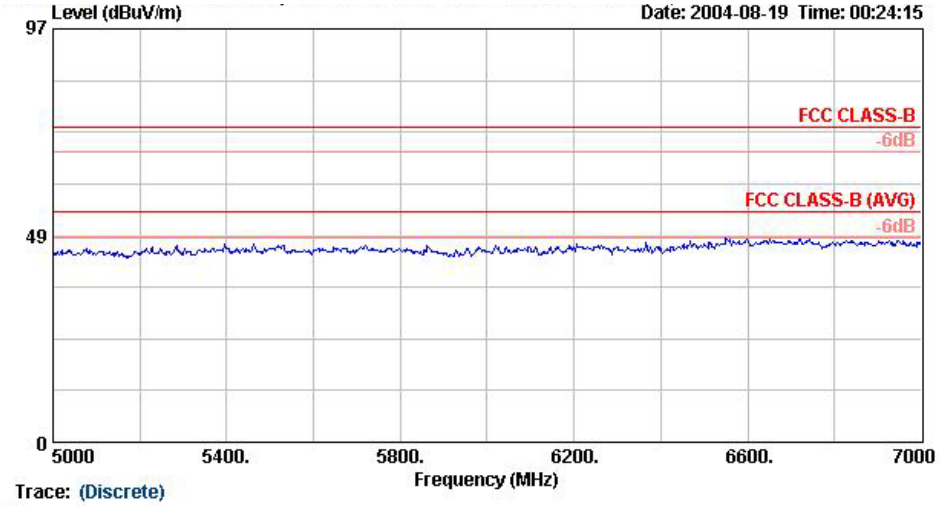
	Freq	Over Limit	Level	Limit Line	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dB	dBuV/m	dBuV/m	dB/m	dB	dB		cm	deg
1 @	2358.00	-34.96	39.04	74.00	28.36	44.36	3.29	Peak	---	---
2 @	2358.00	-28.54	25.46	54.00	28.36	44.36	3.29	Average	---	---
3 @	2462.00		73.97		28.47	44.32	3.36	Average	---	---
4 @	2462.00		81.77		28.47	44.32	3.36	Peak	---	---
5 @	2483.50	-22.05	51.95	74.00	28.48	44.31	3.38	Peak	---	---
6 @	2483.50	-22.32	31.68	54.00	28.48	44.31	3.38	Average	---	---

Remark: #3 and #4 Fundamental Signal.

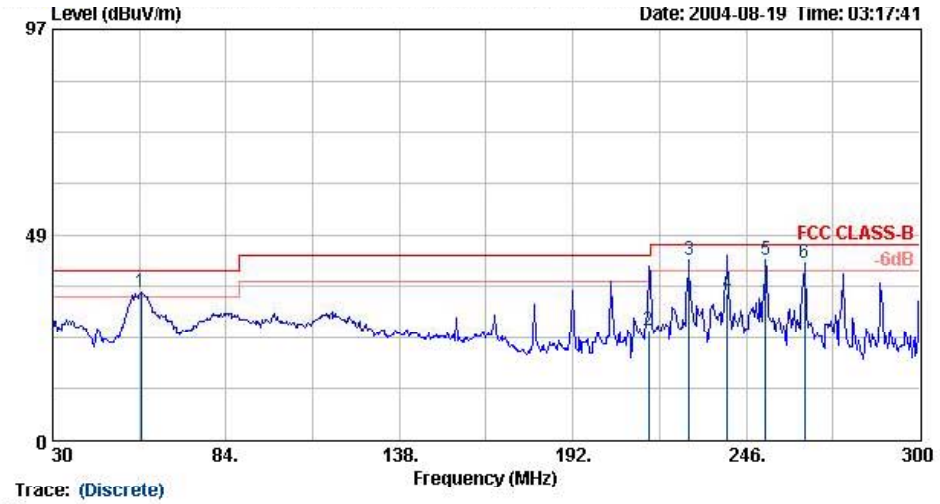


Site : 03CH06
Condition : FCC CLASS-B 3m HF-HORN AH-118 HORIZONTAL 114cm 360deg
EUT : 802.11b USB WLAN Dongle
Power : 120Vac/60Hz
Model : SCWi311b
Memo : 802.11b TX CH11 2462MHz

	Freq	Over Limit	Level	Limit Line	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dB	dBuV/m	dBuV/m	dB/m	dB	dB		cm	deg
1 @	4932.00	-24.57	49.43	74.00	33.04	45.64	4.85	Peak	---	---
2 @	4932.00	-15.81	38.19	54.00	33.04	45.64	4.85	Average	---	---

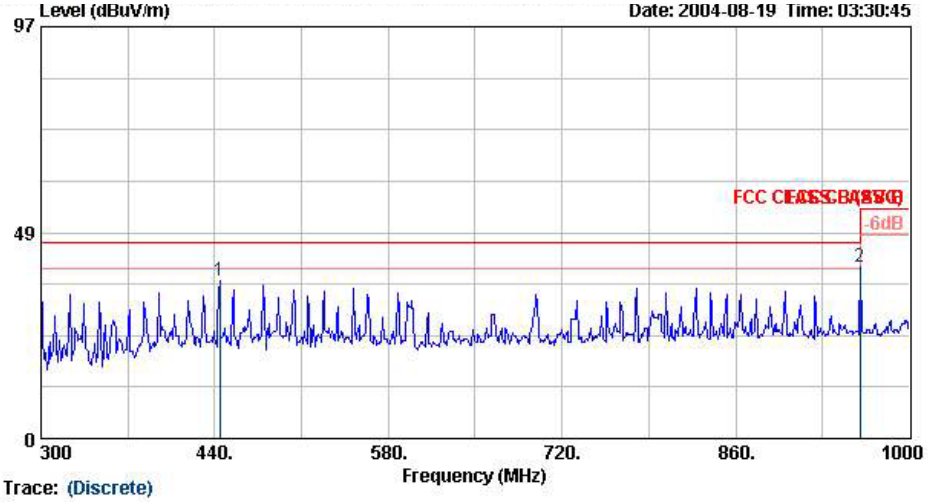


Site : 03CH06
Condition : FCC CLASS-B 3m HF-HORN AH-118 HORIZONTAL 114cm 360deg
EUT : 802.11b USB WLAN Dongle
Power : 120Vac/60Hz
Model : SCWi311b
Memo : 802.11b TX CH11 2462MHz



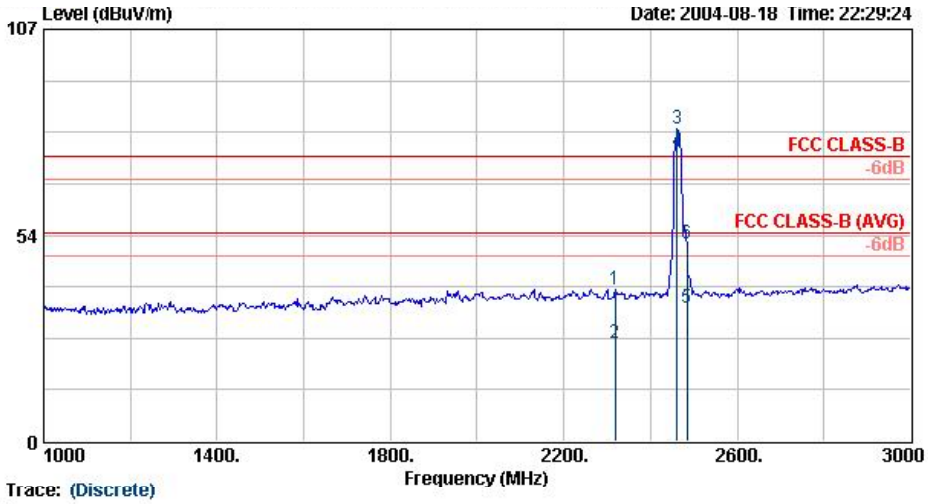
Site : 03CH06
Condition : FCC CLASS-B 3m BI LOG 2004 0629 VERTICAL 291cm 2deg
EUT : 802.11b USB WLAN Dongle
Power : 120Vac/60Hz
Model : SCWi311b
Memo : 802.11b TX CH11 2462MHz

	Freq	Over Limit	Level	Limit Line	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dB	dBuV/m	dBuV/m	dB/m	dB	dB		cm	deg
1 !	57.54	-5.05	34.95	40.00	5.75	32.46	0.64	Peak	0	0
2	215.48	-17.50	26.00	43.50	8.60	31.88	1.29	QP	0	0
3 @	228.18	-3.56	42.44	46.00	9.38	31.80	1.33	Peak	0	0
4	240.06	-11.34	34.66	46.00	10.91	31.77	1.37	QP	0	0
5 @	251.94	-3.33	42.67	46.00	12.18	31.84	1.40	Peak	0	0
6 @	264.09	-4.26	41.74	46.00	12.74	31.91	1.43	Peak	0	0



Site : 03CH06
Condition : FCC CLASS-B 3m BI LOG 2004 0629 VERTICAL 207cm 0deg
EUT : 802.11b USB WLAN Dongle
Power : 120Vac/60Hz
Model : SCWi311b
Memo : 802.11b TX CH11 2462MHz

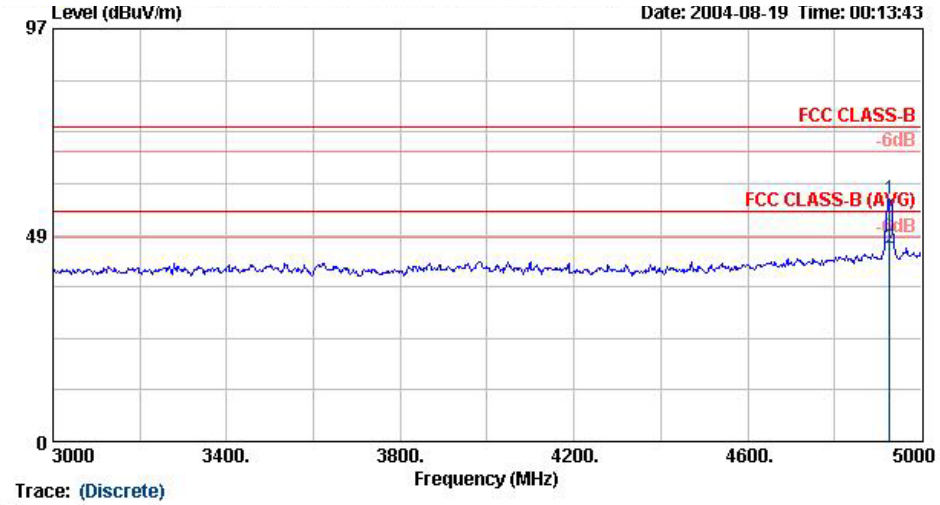
	Freq	Over Limit	Level	Limit Line	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dB	dBuV/m	dBuV/m	dB/m	dB	dB		cm	deg
1	444.20	-8.76	37.24	46.00	16.34	31.81	1.91	Peak	207	0
2	960.10	-13.61	40.39	54.00	20.88	30.88	3.15	Peak	207	0



Site : 03CH06
Condition : FCC CLASS-B 3m HF-HORN AH-118 VERTICAL 185cm 31deg
EUT : 802.11b USB WLAN Dongle
Power : 120Vac/60Hz
Model : SCWi311b
Memo : 802.11b TX CH11 2462MHz

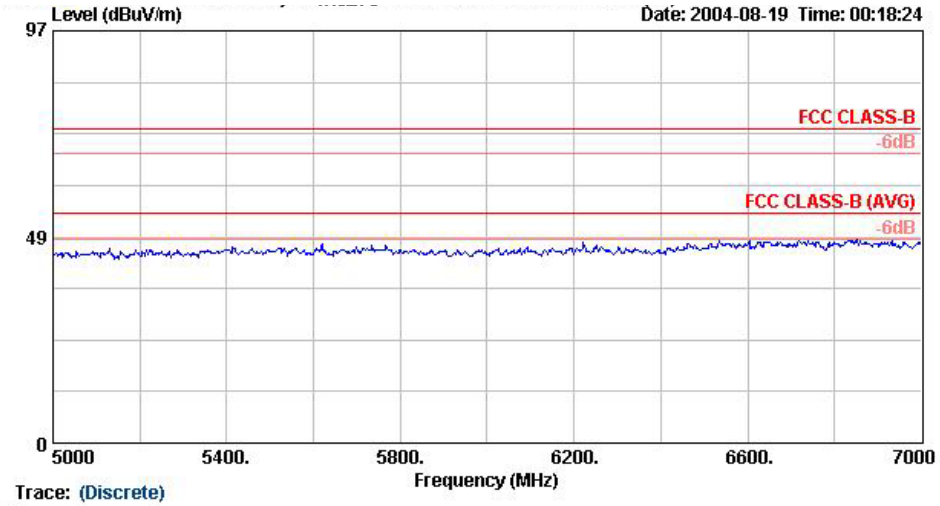
	Freq	Over Limit	Level	Limit Line	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dB	dBuV/m	dBuV/m	dB/m	dB	dB		cm	deg
1 @	2318.00	-34.78	39.22	74.00	28.33	44.37	3.27	Peak	---	---
2 @	2318.00	-28.57	25.43	54.00	28.33	44.37	3.27	Average	---	---
3 @	2462.00		81.31		28.47	44.32	3.36	Peak	---	---
4 @	2462.00		75.03		28.48	44.31	3.38	Average	---	---
5 @	2483.50	-19.48	34.52	54.00	28.48	44.31	3.38	Average	---	---
6 @	2483.50	-22.76	51.24	74.00	28.48	44.31	3.38	Peak	---	---

Remark: #3 and #4 Fundamental Signal.



Site : 03CH06
Condition : FCC CLASS-B 3m HF-HORN AH-118 VERTICAL 114cm 0deg
EUT : 802.11b USB WLAN Dongle
Power : 120Vac/60Hz
Model : SCWi311b
Memo : 802.11b TX CH11 2462MHz

	Freq	Over Limit	Level	Limit Line	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dB	dBuV/m	dBuV/m	dB/m	dB	dB		cm	deg
1 @	4926.00	-17.08	56.92	74.00	33.04	45.64	4.85	Peak	---	---
2 @	4926.00	-8.39	45.61	54.00	33.04	45.64	4.85	Average	---	---



Site : 03CH06
Condition : FCC CLASS-B 3m HF-HORN AH-118 VERTICAL 114cm 0deg
EUT : 802.11b USB WLAN Dongle
Power : 120Vac/60Hz
Model : SCWi311b
Memo : 802.11b TX CH11 2462MHz

Remark:

Frequency from 7GHz to 25GHz, the emission emitted by the EUT is too low to be measured.

■ Field strength of fundamental and harmonics

Frequency (MHz)	Polarity	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Preamp Factor (dB)	Limits (dBuV/m)	Emission (dBuV/m)	Margin (dB)	Detect Mode
2462.000	H	28.47	3.36	49.94	44.32	-	81.77	-	Peak
2462.000	H	28.47	3.36	42.14	44.32	-	73.97	-	AV
2462.000	V	28.47	3.36	49.48	44.32	-	81.31	-	Peak
2462.000	V	28.48	3.38	43.17	44.31	-	75.03	-	AV
4932.000	H	33.04	4.85	11.54	45.64	74.00	49.43	-24.57	Peak
4932.000	H	33.04	4.85	0.30	45.64	54.00	38.19	-15.81	AV
4926.000	V	33.04	4.85	19.03	45.64	74.00	56.92	-17.08	Peak
4926.000	V	33.04	4.85	7.72	45.64	54.00	45.61	-8.39	AV
7386.000	V/H	-	-	-	-	-	-	-	AV/Peak
9848.000	V/H	-	-	-	-	-	-	-	AV/Peak
12310.000	V/H	-	-	-	-	-	-	-	AV/Peak
14772.000	V/H	-	-	-	-	-	-	-	AV/Peak
17234.000	V/H	-	-	-	-	-	-	-	AV/Peak
19696.000	V/H	-	-	-	-	-	-	-	AV/Peak
22158.000	V/H	-	-	-	-	-	-	-	AV/Peak
24620.000	V/H	-	-	-	-	-	-	-	AV/Peak

Remark:
1. The emission emitted by the EUT is too low to be measured except the emission listed above,
2. Reading = Reading on SA-Preamp Factor

Test Engineer : _____
Jay

8. Antenna Requirements

The EUT use a chip antenna without connector. It is considered to meet antenna requirement of FCC.

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 a chip antenna without connector.

9. RF Exposure

No Evaluation Required if power is below this threshold:

F (GHz)	MW	dBm
2.48	24.19	13.84

Maximum measured transmitter power for the EUT:

Pout (dBm)
10.2

Threshold for no SAR evaluation is 13.84 dBm.

Trnasmitter power is 10.2 dBm

Conclustion: No SAR evaluation required since Transmitter Pout is below FCC threshole.

10. List of Measuring Equipments Used

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
EMC Receiver	R&S	ESCS 30	100132	9 KHz – 2.75 GHz	Jun. 23, 2004	Jun. 23, 2005	Conduction (CO01-HY)
LISN	MessTec	NNB-2/16Z	2001/008	9 KHz – 30 MHz	May 03, 2004	May 03, 2005	Conduction (CO01-HY)
LISN (Support Unit)	MessTec	NNB-2/16Z	2001/009	9 KHz – 30 MHz	Apr. 19, 2004	Apr. 19, 2005	Conduction (CO01-HY)
EMI Filter	LINDGREN	LRE-2060	1004	< 450 Hz	N/A	N/A	Conduction (CO01-HY)
EMI Filter	LINDGREN	N6006	201052	0 ~ 60 Hz	N/A	N/A	Conduction (CO01-HY)
RF Cable-CON	Suhner Switzerland	RG223/U	CB029	9KHz~30MHz	Dec. 24, 2003	Dec. 24, 2004	Conduction (CO01-HY)
Spectrum analyzer	R&S	FSP40	100057	9KHz-40GHz	Feb. 26, 2004	Feb. 26, 2005	Radiation (03CH06-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2885	30MHz -2GHz	Dec. 18, 2003	Dec. 18, 2004	Radiation (03CH06-HY)
Horn Antenna	Com-Power	AH118	071025	1G-18G	Feb. 11, 2004	Feb. 11, 2005	Radiation (03CH06-HY)
PreAmplifier	Com-Power	PA-103	161055	1MHz - 1000MHz	Apr. 26, 2004	Apr. 26, 2005	Radiation (03CH06-HY)
HF Amplifier	MITEQ	AFS44	973248	0.1G - 26.5G	May 20, 2004	May 20, 2005	Radiation (03CH06-HY)

11. 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 **Receiver VSWR Γ1=** **LISN VSWR Γ2=** **Uncertainty=20log(1-Γ1*Γ2)**	+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 Receiver VSWR Γ1= 0.20 Antenna VSWR Γ2= 0.23 Uncertainty=20log(1-Γ1*Γ2)	+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**				

$U=\sqrt{\{(0.3/2)^2 +(2^2+1.5^2+0.2^2)/3+(0.2)^2/2\}}=1.66$