FCC TEST REPORT

for

47 CFR Part 15 Subpart C

Equipment : 802.11 b/g WLAN Access Port

Trade Name : Symbol

Model No. : WSAP-5100 /WSAP-5110

FCC ID : H9PWSAP5100BG

IC ID : 1594D-WSAP5100BG

Filing Type : Certification

Applicant : Universal Scientific Industrial Co., Ltd.
141, Lane 351, Taiping Road, Sec. 1, Tsao Tuen,
Nan-Tou, Taiwan

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

Report Issue Date: Apr. 08, 2005

Original Report Issue Date	Description
Aug. 12, 2004	Product 802.11 a/b/g modify 802.11 b/g and Change FCC ID.

Certificate No. : FR531710-01

CERTIFICATE OF COMPLIANCE

for

47 CFR Part 15 Subpart C

Equipment	:	**802.11 b/g WLAN Access Port**
Trade Name	:	**Symbol**
Model No.	:	**WSAP-5100 /WSAP-5110**
FCC ID	:	**H9PWSAP5100BG**
IC ID	:	**1594D-WSAP5100BG**
Filing Type	:	**Certification**
Applicant	:	**Universal Scientific Industrial Co., Ltd.**
		141, Lane 351, Taiping Road, Sec. 1, Tsao Tuen, Nan-Tou, Taiwan

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. 03, 2004 at **SPORTON International Inc.** LAB.

Daniel Lee 4/1/2005

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

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

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	: 802.11 b/g WLAN Access Port
Trade Name	: Symbol
Model No.	: WSAP-5100 /WSAP-5110
FCC ID	: H9PWSAP5100BG
IC ID	: 1594D-WSAP5100BG
Power Supply Type	: Power Over Ethenet (48V)

1.4 Feature of Equipment under Test

Product Feature & Specification				
1. Host/Radio Interface	Power Over Ethernet/Wireless LAN Access Port			
2. Housing Type	Plastic Housing for WSAP-5110 Metallic Housing for WSAP-5100			
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 o f Channels	11 Ch			
6. Carrier Frequency of each channel	2412+ m*5 MHz,m=1~11			
7. Channel Spacing	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. Main Board Version	Plastic Housing		Cypress Mercury Abracon	
	Metallic Housing		Mercury TXC-33.3MHz	
13. Function Type	Transmitter		Transceiver	V
14. Power Rating (DC/AC , Voltage)	Power Over Ethernet (48V) (Symbol WS 2000)			
15. Duty Cycle	100%			

1.5 Antenna List

Antenna List	Antenna Type	Peak Gain (dBi)	Cable Loss (dB)	Net Gain (dBi)	Frequency Range (GHz)	Application	Housing Type	Connector Type	Serial No.
Antenna 1	Integral	2 / 3.8	0	2 / 3.8	2.4 ~ 2.5	11b/g;	Plastic	NA	NA
Antenna 2	Sector Panel	11.2	2.7	8.5	2.4 ~ 2.5	11 b/g	Metallic	RP-BNC	ML-2499-11 PNA2-01
Antenna 3	Dipole	2	0	2	2.4 ~ 2.5	11 b/g	Metallic	RP-BNC	ML-2499-AP A2-01
Antenna 4	Dipole Array	4.6	1.3	3.3	2.4 ~ 2.5	11 b/g	Metallic	RP-BNC	ML-2499-HP A3-01
Antenna 5	YAGI	14.2	1.3	12.9	2.4 ~ 2.5	11 b/g	Metallic	N-Type	ML-2499-BY GA2-01

1.6 Power Table

	802.11b	802.11g
Antenna 1	20.3 dBm	21.5 dBm
Antenna 2	18.1 dBm	20.8 dBm
Antenna 3	18.1 dBm	19.9 dBm
Antenna 4	18.1 dBm	21.5 dBm
Antenna 5	15.5 dBm	19.7 dBm

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 and EUT for EMI test.

c. The EUT can operate on 11 channels for 802.11b/g and 13 channels for 802.11a(as listed in section 1.4).

d. The following test modes were tested for conduction test:

Plastic housing /WSAP5110

Mode 1: 802.11g link mode

Metallic housing WSAP5100

Mode 2: 802.11g link mode

e. The following test modes were tested for radiation test:

Refer to testing matrix.

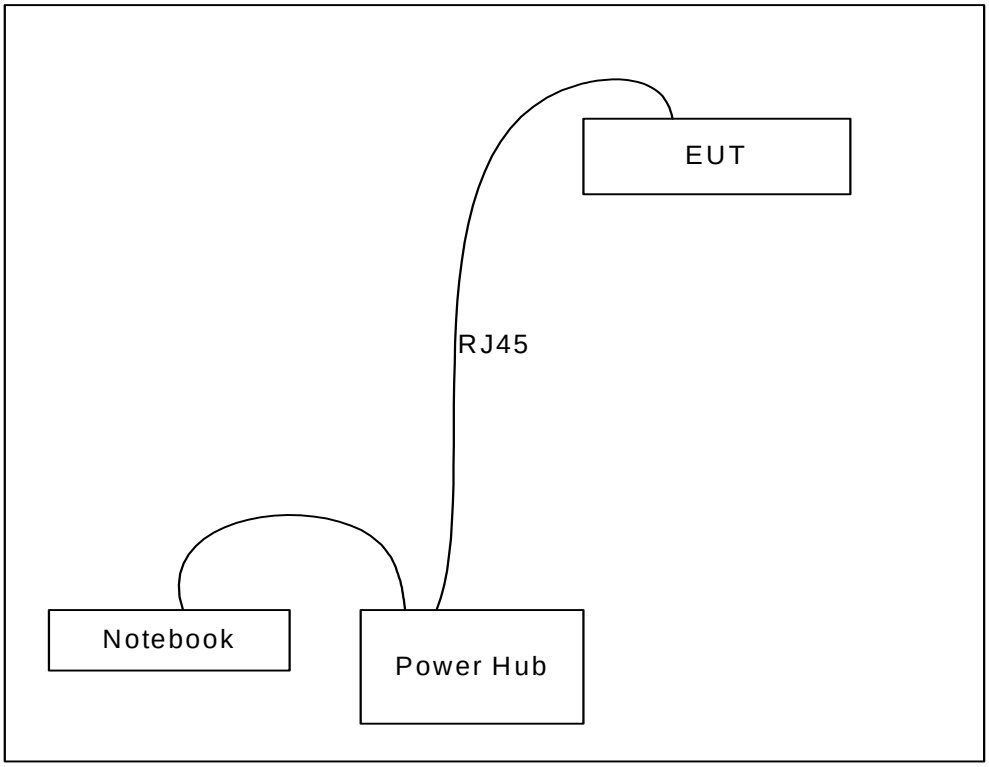
Antenna List	11b TX Ch 1/6/11 /above 1 GHz	11b TX Ch 6 /below 1 GHz	11g TX Ch 1/ 6/11 /above 1 GHz	11g TX Ch 6 /below 1 GHz
Antenna 1	Y	Y	Y	Y
Antenna 2	Y		Y	
Antenna 3	Y		Y	
Antenna 4	Y		Y	
Antenna 5	Y	Y	Y	Y

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

2.2 Description of Test System

Item	Asset	Model Name	Power Cord	S/N
1	Notebook (DELL)	PP05L	N/A	SP0005

2.3 Connection Diagram of Test System



Power Hub: Symbol WS 2000

3 Operation of Equipment under Test

The following programs 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, 03CH03-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 10 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：

5.2.4.1 Antenna 1

- Temperature : 25.5C
- Relative Humidity : 53%
- Application: 802.11b

Channel	Frequency (MHz)	6dB Emission bandwidth (MHz)	Limits (MHz)	Plot Ref. No.
01	2412	11.52	>0.5	Antenna 1-1
06	2437	11.52	>0.5	Antenna 1-2
11	2462	11.52	>0.5	Antenna 1-3

- Application: 802.11g

Channel	Frequency (MHz)	6dB Emission bandwidth (MHz)	Limits (MHz)	Plot Ref. No.
01	2412	16.44	>0.5	Antenna 1-4
06	2437	16.44	>0.5	Antenna 1-5
11	2462	16.44	>0.5	Antenna 1-6

▪

5.2.4.2 Antenna 2

- Temperature : 25.5C
- Relative Humidity : 53%
- Application: 802.11b

Channel	Frequency (MHz)	6dB Emission bandwidth (MHz)	Limits (MHz)	Plot Ref. No.
01	2412	11.6	>0.5	Antenna 2-1
06	2437	11.6	>0.5	Antenna 2-2
11	2462	11.6	>0.5	Antenna 2-3

- Application: 802.11g

Channel	Frequency (MHz)	6dB Emission bandwidth (MHz)	Limits (MHz)	Plot Ref. No.
01	2412	16.52	>0.5	Antenna 2-4
06	2437	16.44	>0.5	Antenna 2-5
11	2462	16.52	>0.5	Antenna 2-6

5.2.4.3 Antenna 3

- Temperature : 25.5C
- Relative Humidity : 53%
- Application: 802.11b

Channel	Frequency (MHz)	6dB Emission bandwidth (MHz)	Limits (MHz)	Plot Ref. No.
01	2412	11.2	>0.5	Antenna 3-1
06	2437	11.6	>0.5	Antenna 3-2
11	2462	11.6	>0.5	Antenna 3-3

- Application: 802.11g

Channel	Frequency (MHz)	6dB Emission bandwidth (MHz)	Limits (MHz)	Plot Ref. No.
01	2412	16.48	>0.5	Antenna 3-4
06	2437	16.48	>0.5	Antenna 3-5
11	2462	16.48	>0.5	Antenna 3-6

5.2.4.4 Antenna 4

- Temperature : 25.5C
- Relative Humidity : 53%
- Application: 802.11b

Channel	Frequency (MHz)	6dB Emission bandwidth (MHz)	Limits (MHz)	Plot Ref. No.
01	2412	11.6	>0.5	Antenna 4-1
06	2437	11.6	>0.5	Antenna 4-2
11	2462	11.6	>0.5	Antenna 4-3

- Application: 802.11g

Channel	Frequency (MHz)	6dB Emission bandwidth (MHz)	Limits (MHz)	Plot Ref. No.
01	2412	16.52	>0.5	Antenna 4-4
06	2437	16.48	>0.5	Antenna 4-5
11	2462	16.48	>0.5	Antenna 4-6

5.2.4.5 Antenna 5

- Temperature : 25.5C
- Relative Humidity : 53%
- Application: 802.11b

Channel	Frequency (MHz)	6dB Emission bandwidth (MHz)	Limits (MHz)	Plot Ref. No.
01	2412	12.92	>0.5	Antenna 5-1
06	2437	12.28	>0.5	Antenna 5-2
11	2462	11.6	>0.5	Antenna 5-3

- Application: 802.11g

Channel	Frequency (MHz)	6dB Emission bandwidth (MHz)	Limits (MHz)	Plot Ref. No.
01	2412	16.52	>0.5	Antenna 5-4
06	2437	16.44	>0.5	Antenna 5-5
11	2462	16.44	>0.5	Antenna 5-6

5.2.5 Test Data

5.2.5.1 Antenna 1

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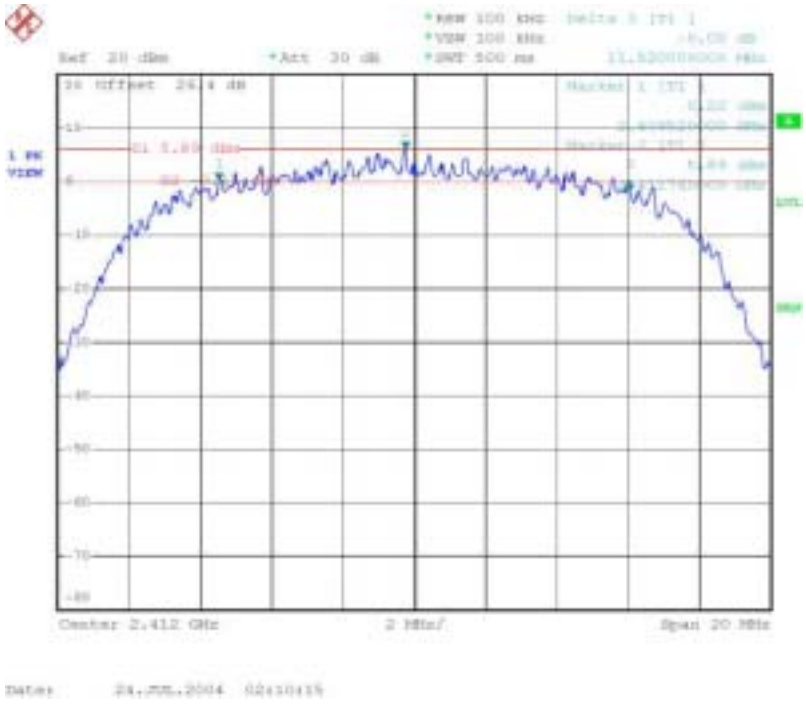

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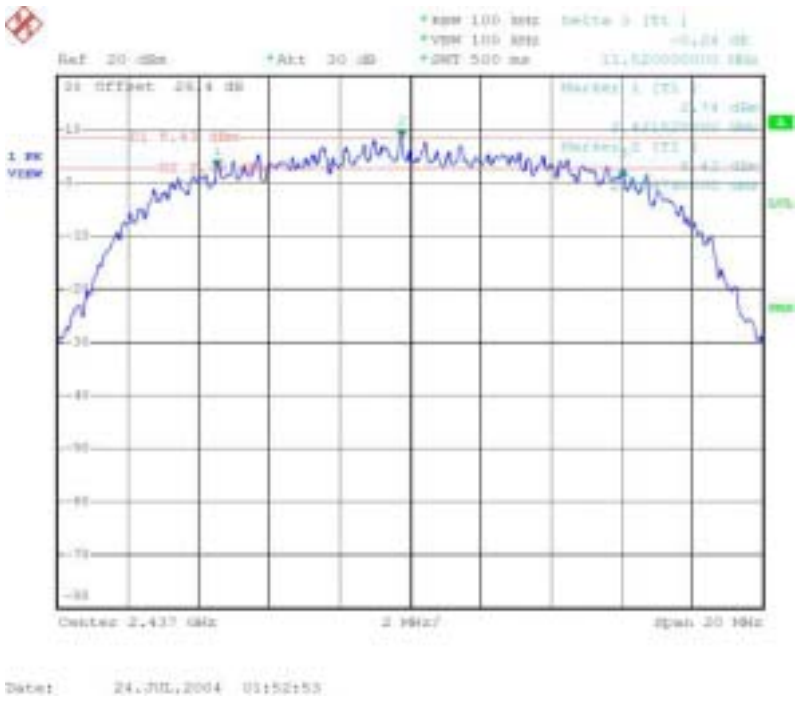

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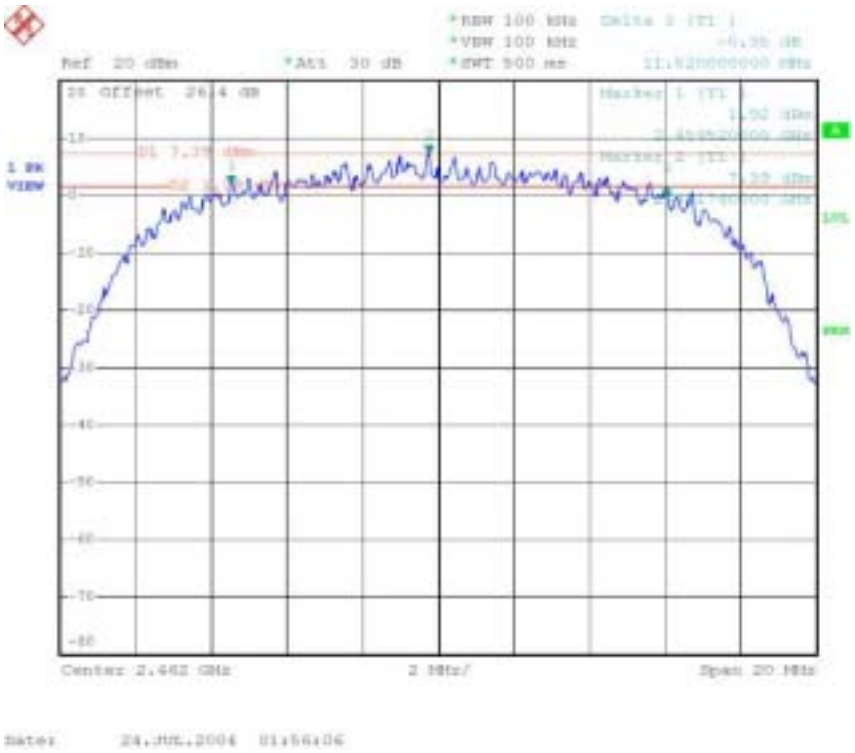
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2 MHz/
Span 20 MHz
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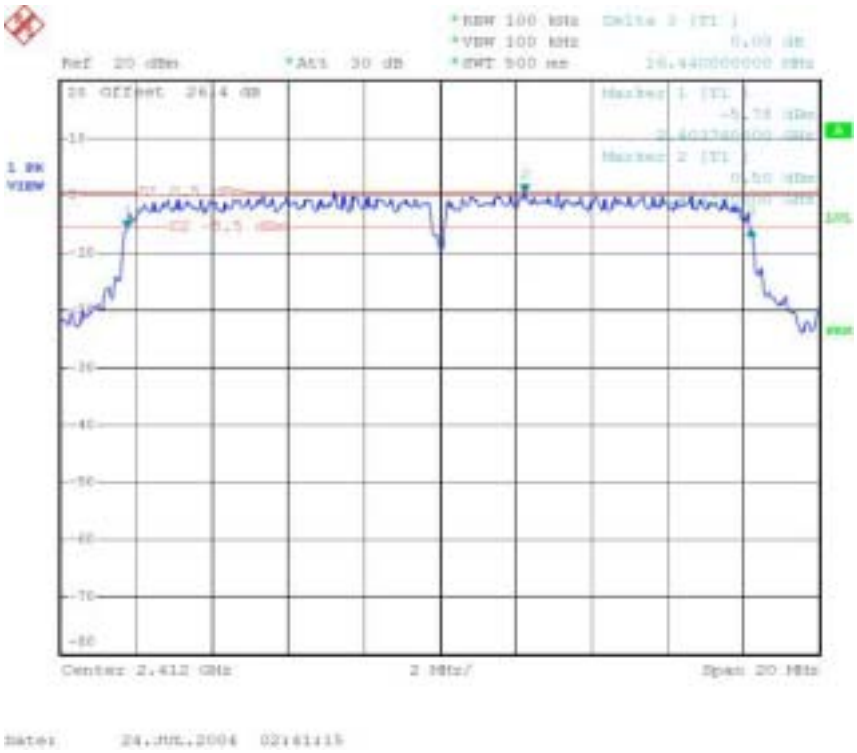
1-4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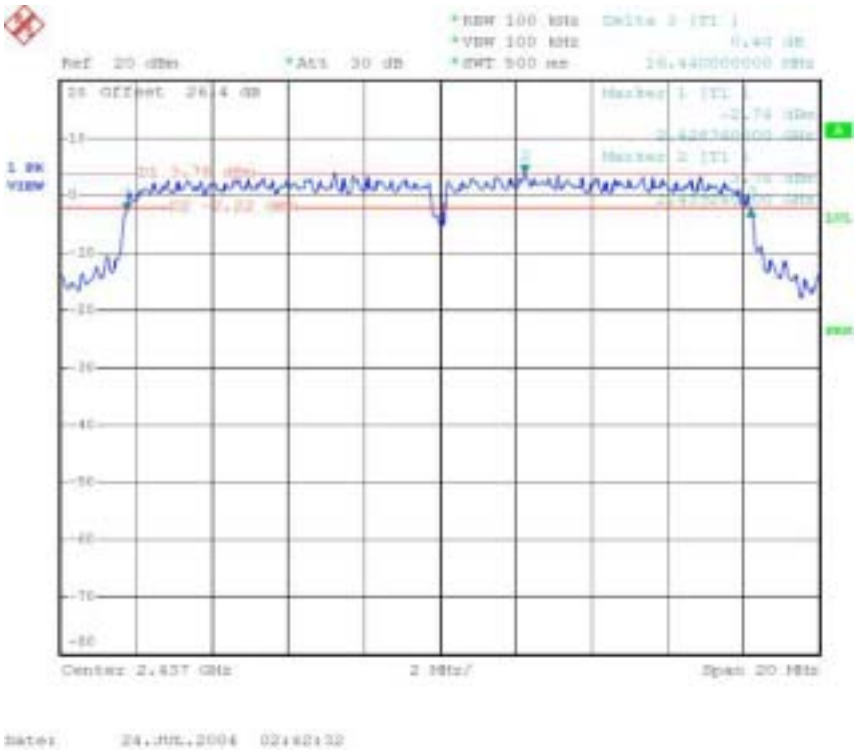
1-5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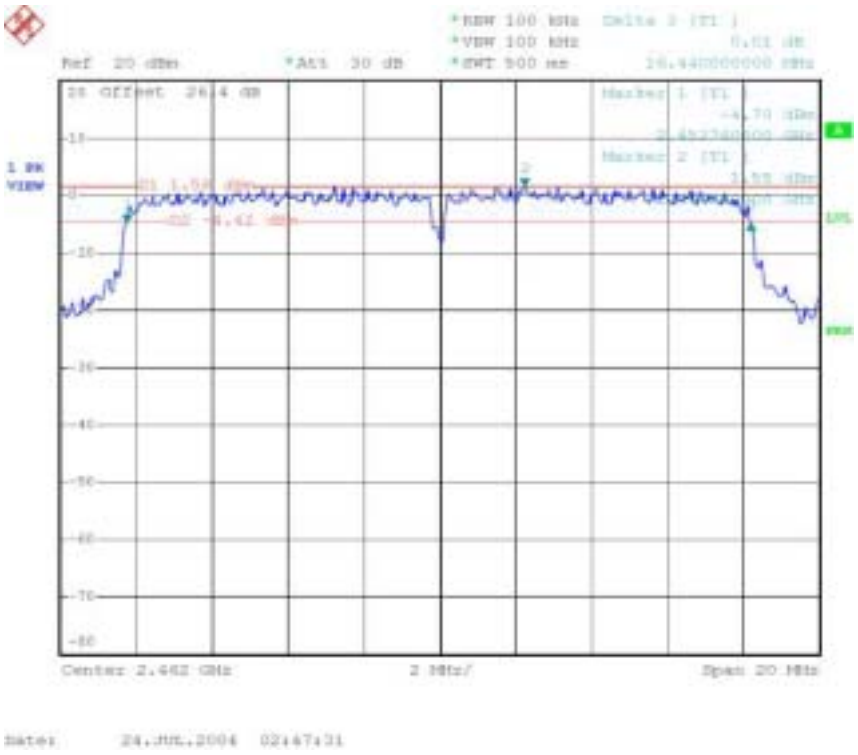
1-6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*VBW 100 kHz
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*Att 30 dB
*SWT 500 ms
10 Offset 26.4 dB
1 PK
VIEW
Center 2.462 GHz
2 MHz/
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5.2.5.2 Antenna 2

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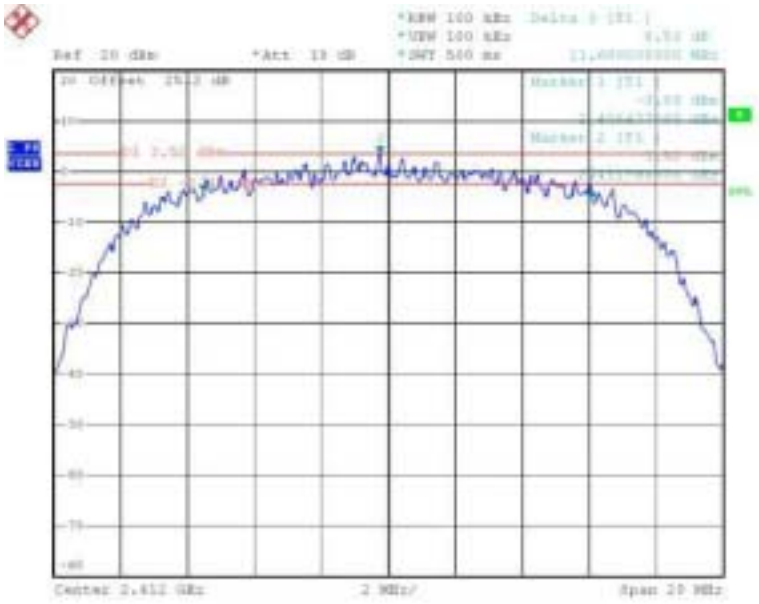

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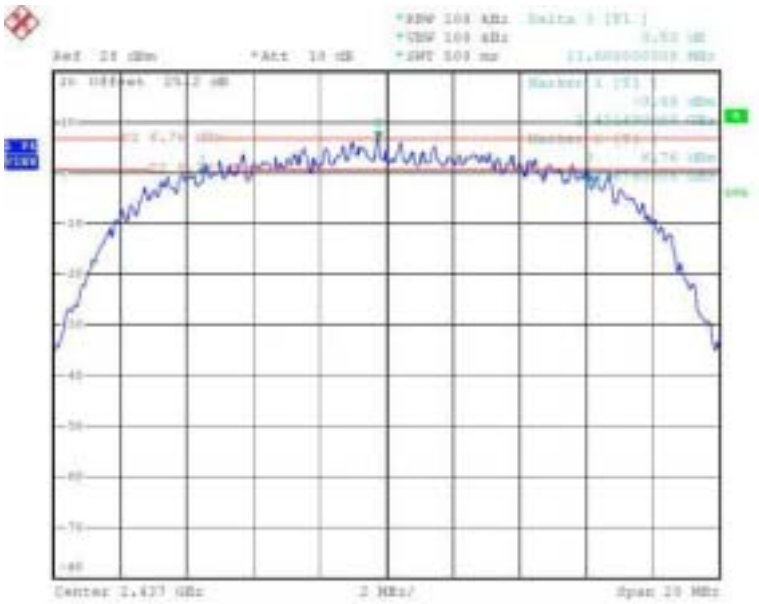

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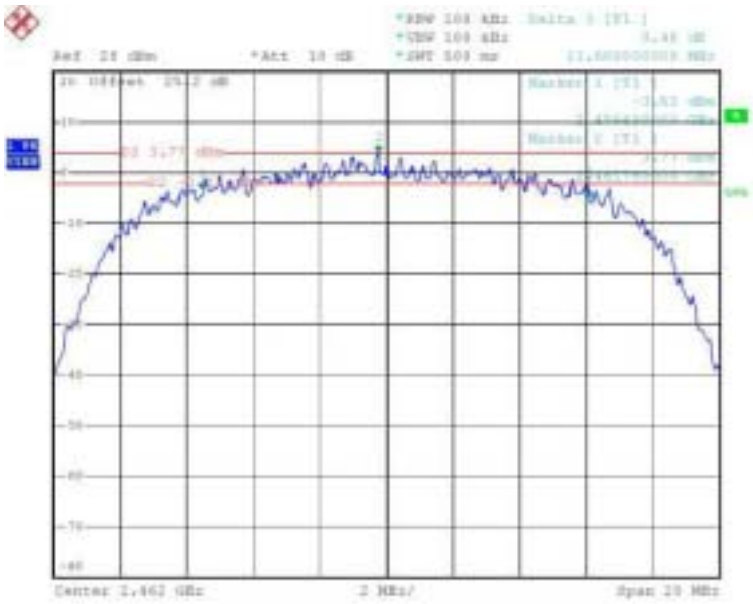

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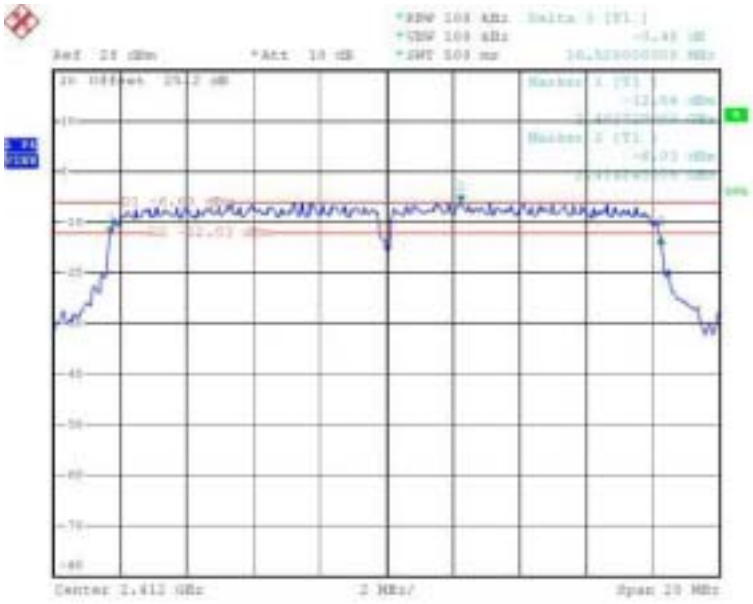

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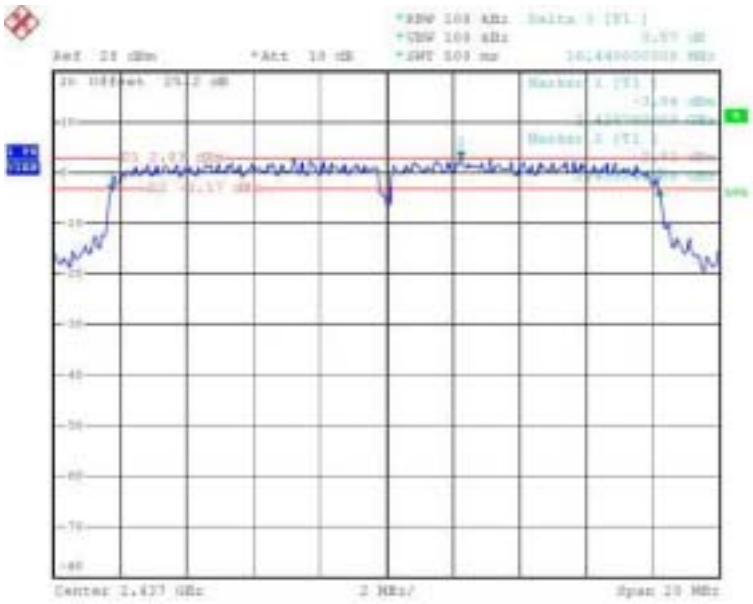

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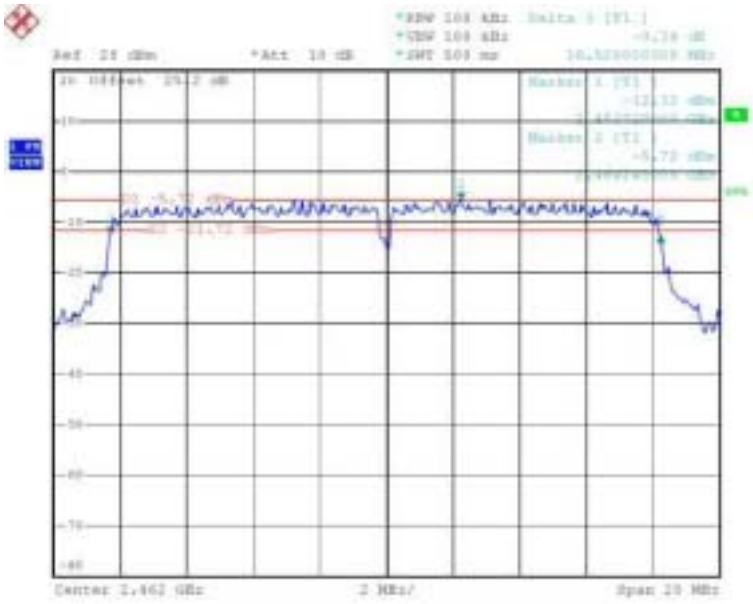

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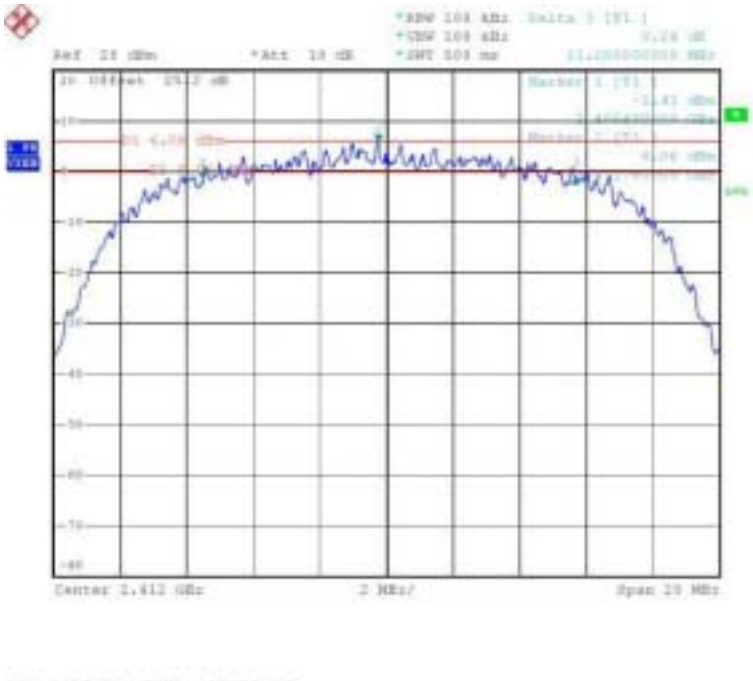

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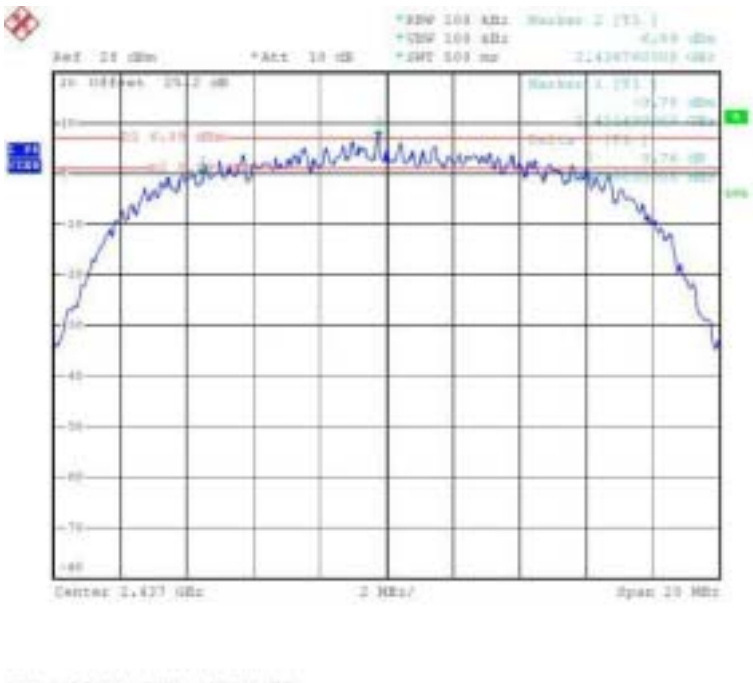

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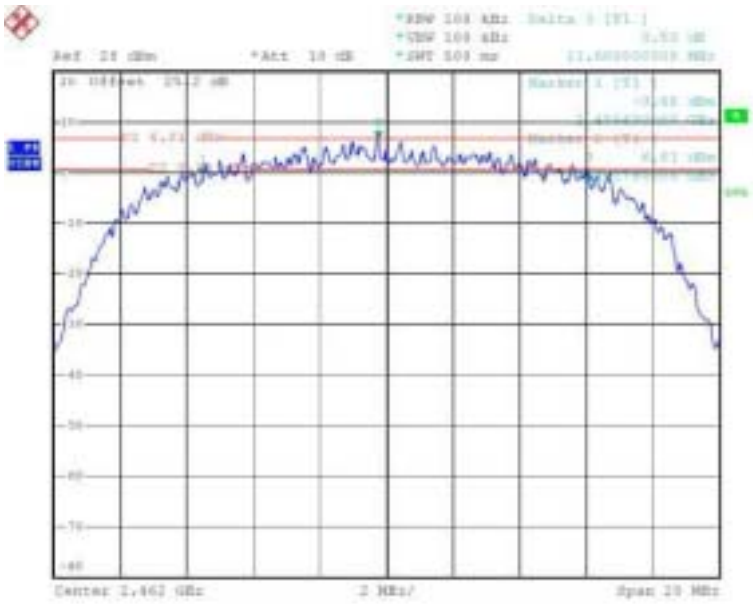

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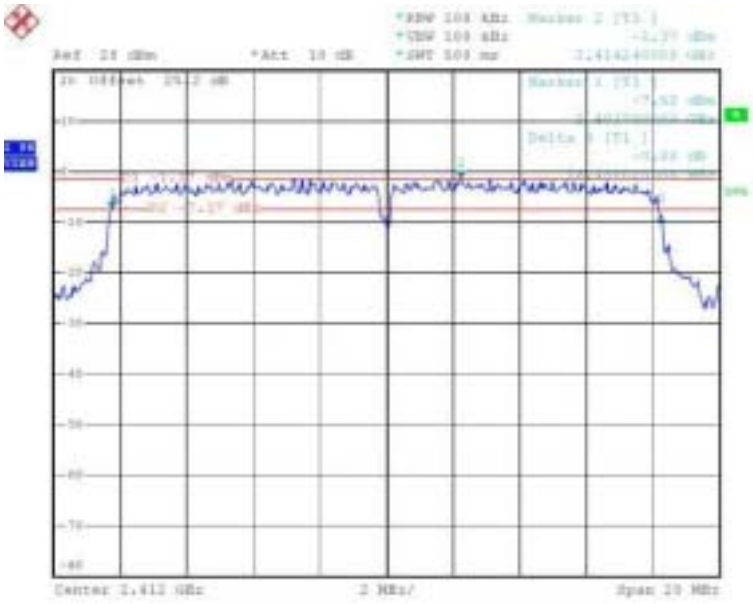

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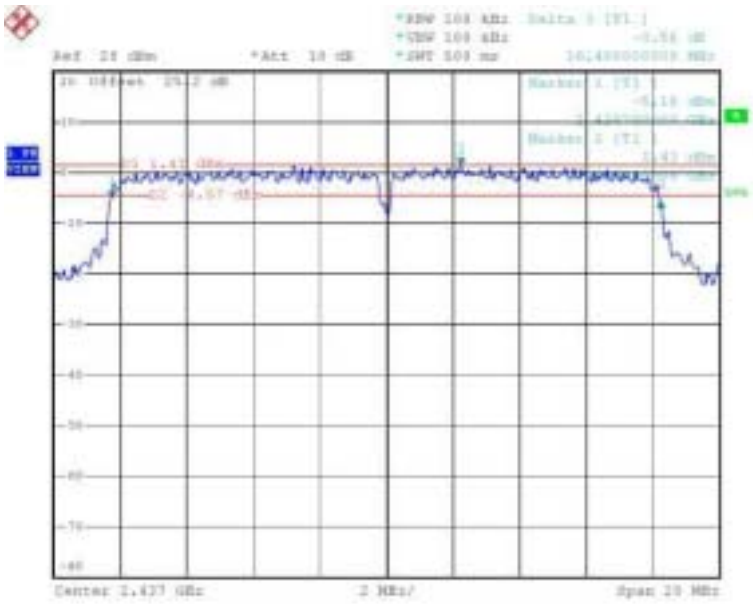

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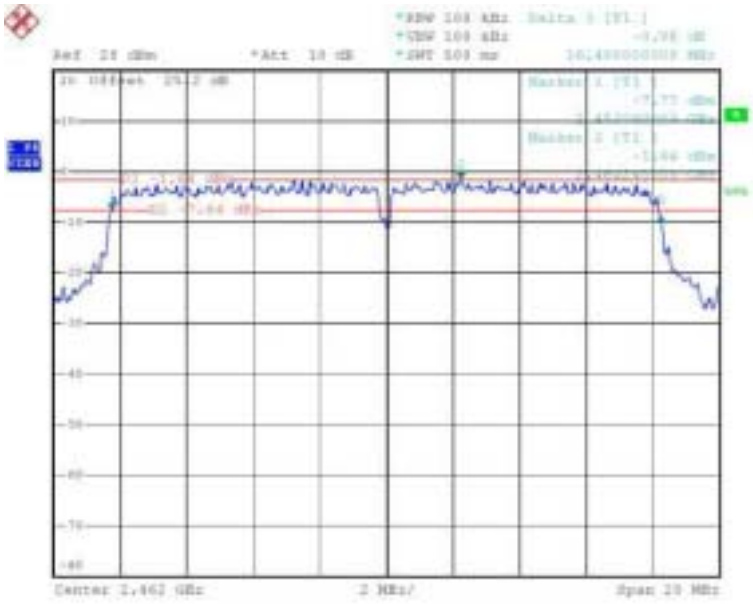

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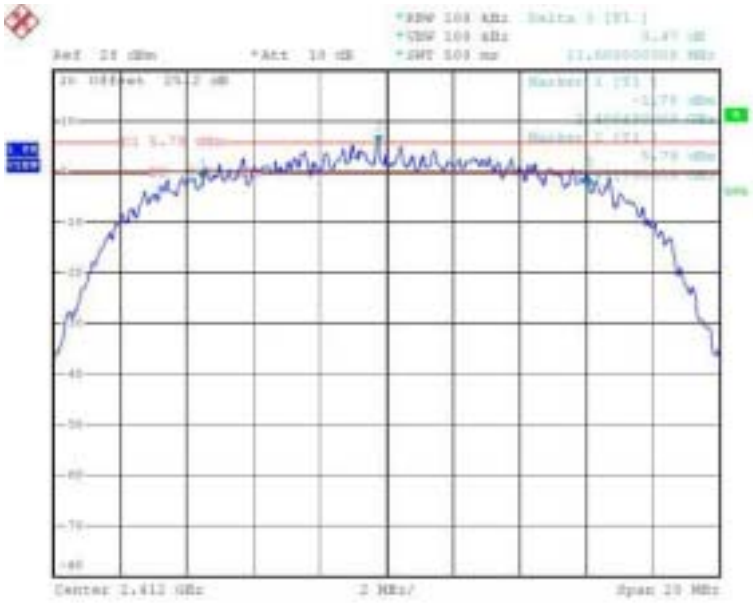

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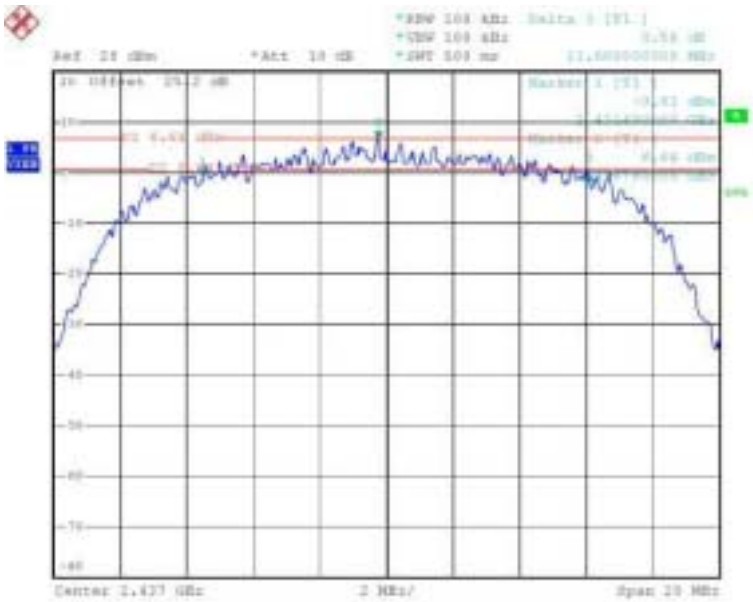

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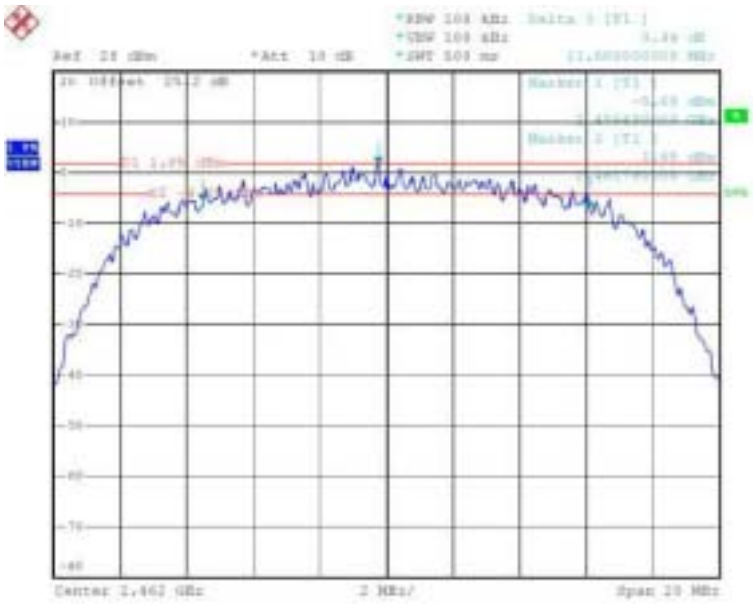

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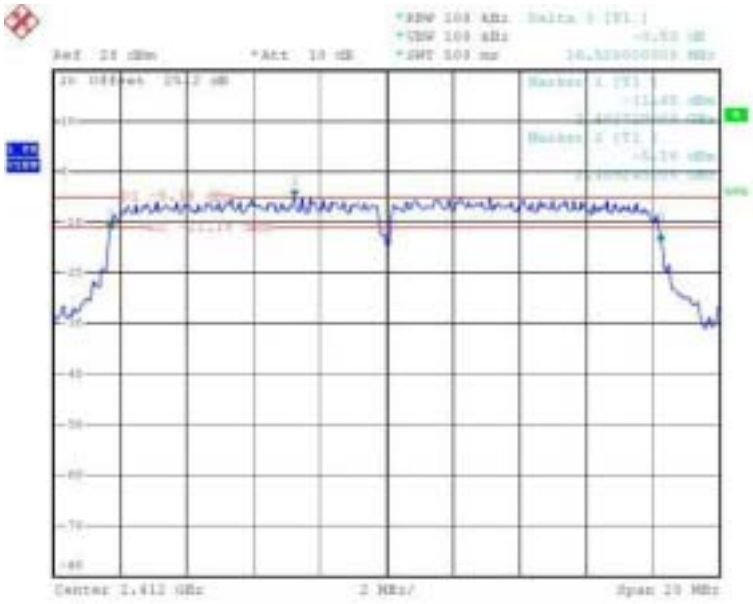

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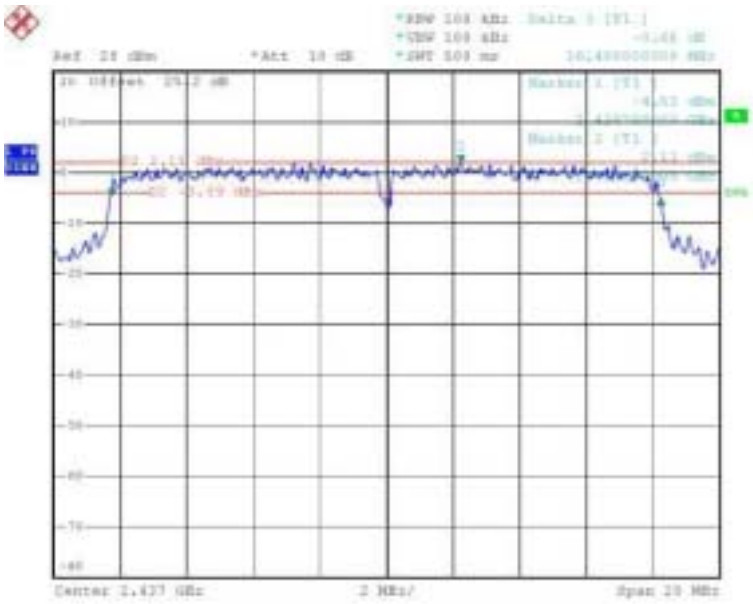

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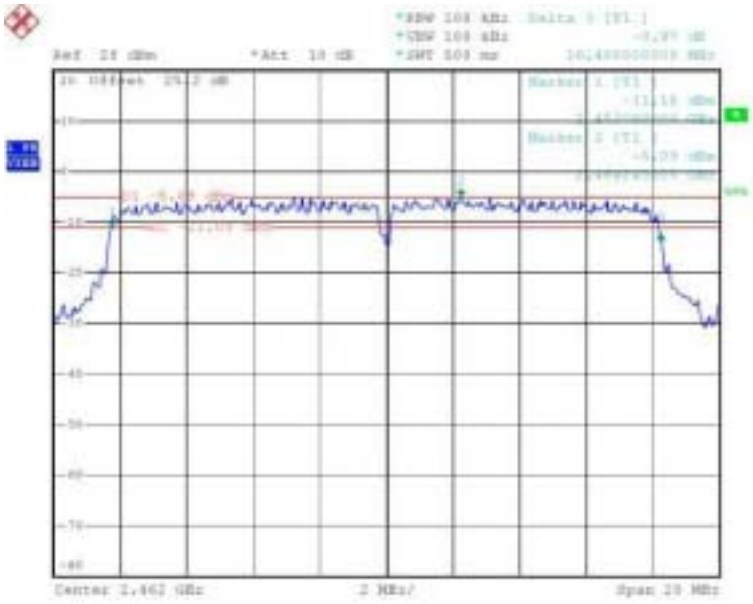

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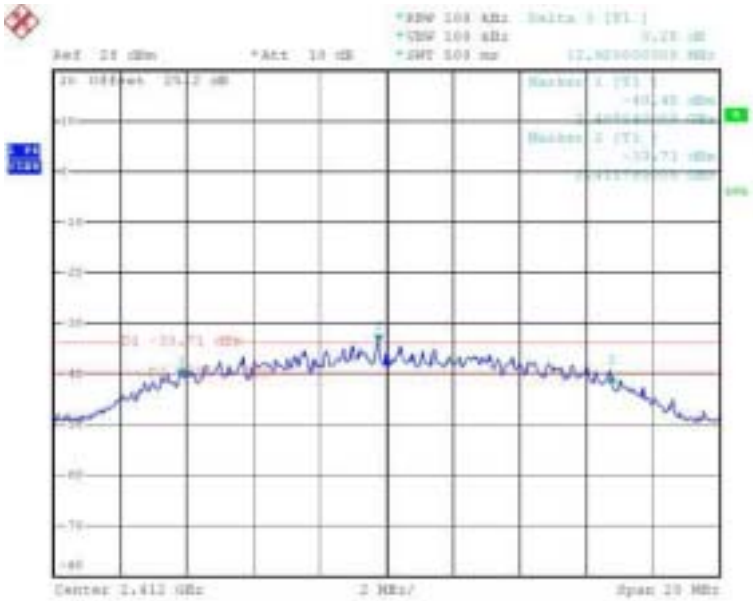

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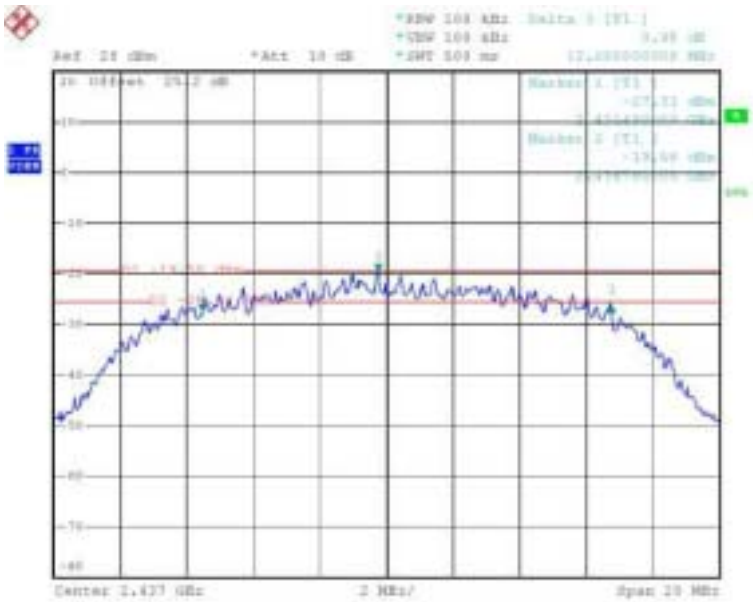

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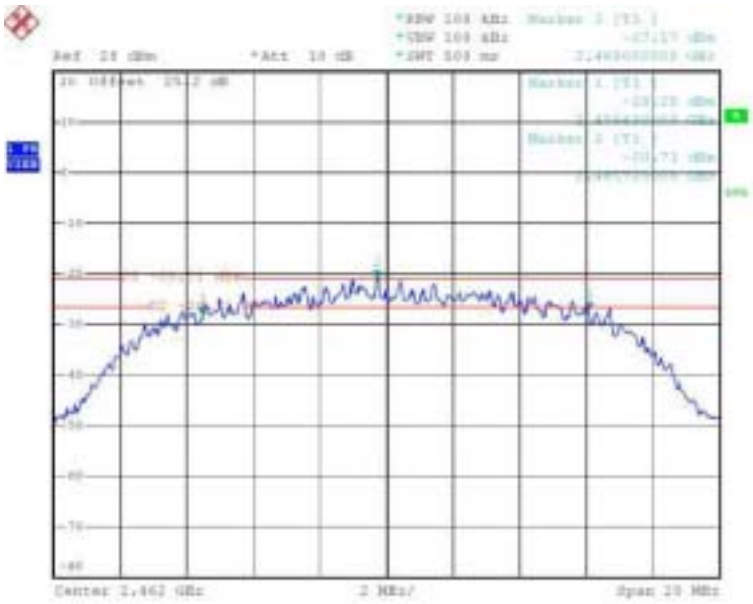

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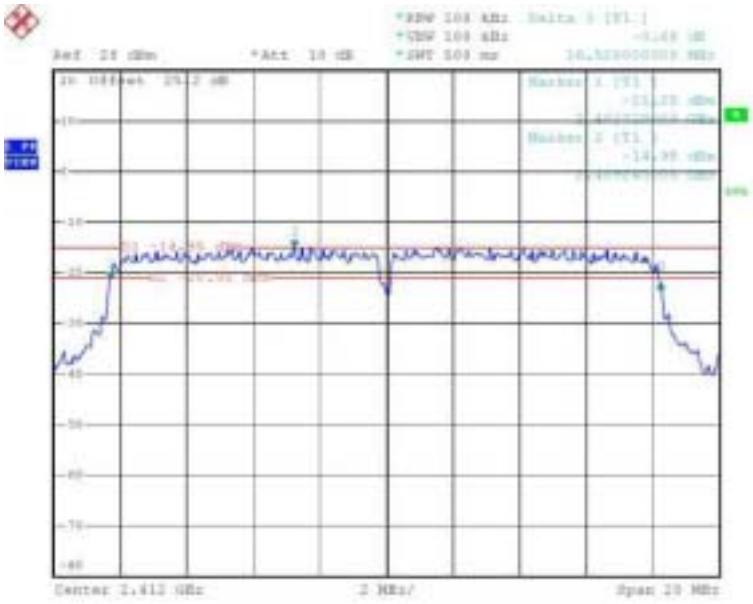
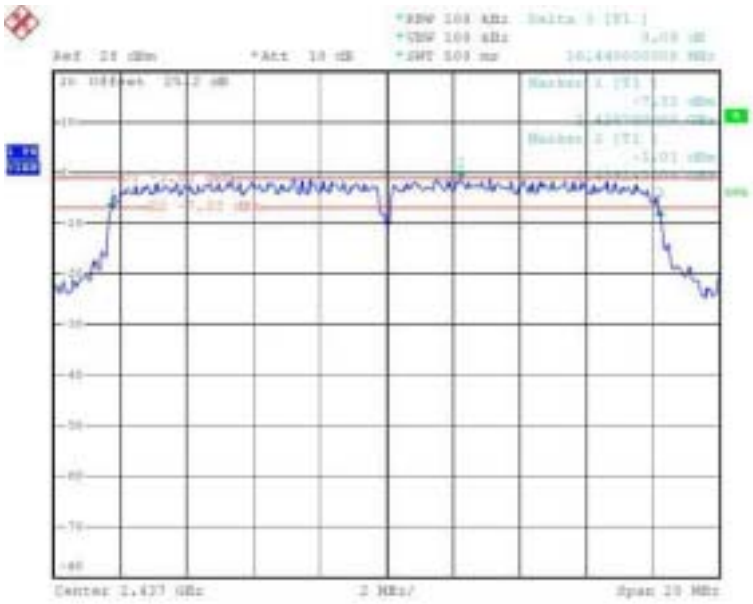
5-4



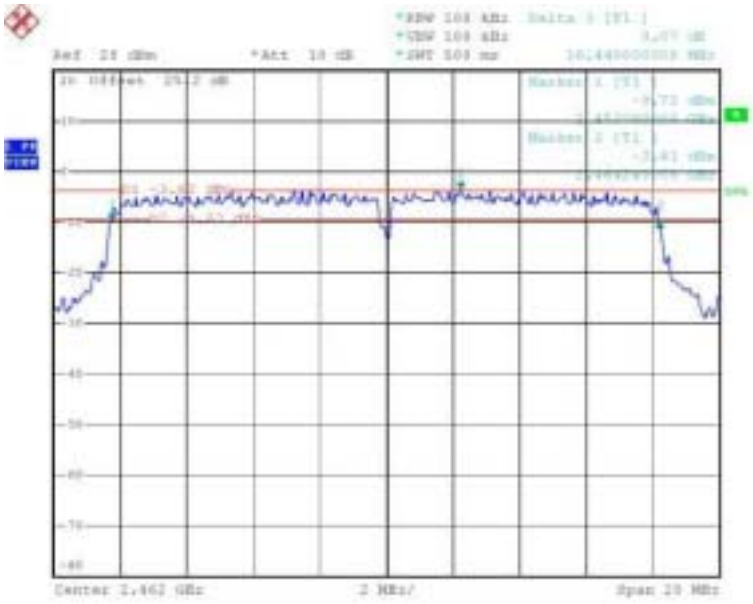
Date: 26.JUL.2004 17:24:41

5-5



Date: 26.JUL.2004 17:25:57

5-6



Date: 26.JUL.2004 17:27:07

5.3 Power Spectral Density

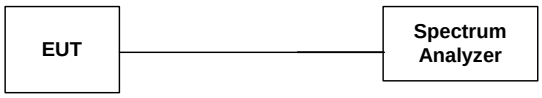
5.3.1 Measuring Instruments：

As described in chapter 10 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：

5.3.4.1 Antenna 1

- Temperature : 25.5C
- Relative Humidity : 53%
- Application: 802.11b

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)	Plot Ref. No.
01	2412	-8.59	8	Antenna 1-1
06	2437	-6.50	8	Antenna 1-2
11	2462	-7.50	8	Antenna 1-3

- Application: 802.11g

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)	Plot Ref. No.
01	2412	-21.09	8	Antenna 1-4
06	2437	-17.16	8	Antenna 1-5
11	2462	-19.82	8	Antenna 1-6

5.3.4.2 Antenna 2

- Temperature : 25.5C
- Relative Humidity : 53%
- Application: 802.11b

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)	Plot Ref. No.
01	2412	-11.09	8	Antenna 2-1
06	2437	-7.83	8	Antenna 2-2
11	2462	-10.8	8	Antenna 2-3

- Application: 802.11g

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)	Plot Ref. No.
01	2412	-27.52	8	Antenna 2-4
06	2437	-18.51	8	Antenna 2-5
11	2462	-27.11	8	Antenna 2-6

5.3.4.3 Antenna 3

- Temperature : 25.5C
- Relative Humidity : 53%
- Application: 802.11b

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)	Plot Ref. No.
01	2412	-8.36	8	Antenna 3-1
06	2437	-7.5	8	Antenna 3-2
11	2462	-7.65	8	Antenna 3-3

- Application: 802.11g

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)	Plot Ref. No.
01	2412	-23.22	8	Antenna 3-4
06	2437	-20.42	8	Antenna 3-5
11	2462	-23.6	8	Antenna 3-6

5.3.4.4 Antenna 4

- Temperature : 25.5C
- Relative Humidity : 53%
- Application: 802.11b

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)	Plot Ref. No.
01	2412	-8.99	8	Antenna 4-1
06	2437	-8.18	8	Antenna 4-2
11	2462	-13.21	8	Antenna 4-3

- Application: 802.11g

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)	Plot Ref. No.
01	2412	-24.86	8	Antenna 4-4
06	2437	-17.13	8	Antenna 4-5
11	2462	-24.7	8	Antenna 4-6

5.3.4.5 Antenna 5

- Temperature : 25.5C
- Relative Humidity : 53%
- Application: 802.11b

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)	Plot Ref. No.
01	2412	-14.54	8	Antenna 5-1
06	2437	-11.73	8	Antenna 5-2
11	2462	-14.37	8	Antenna 5-3

- Application: 802.11g

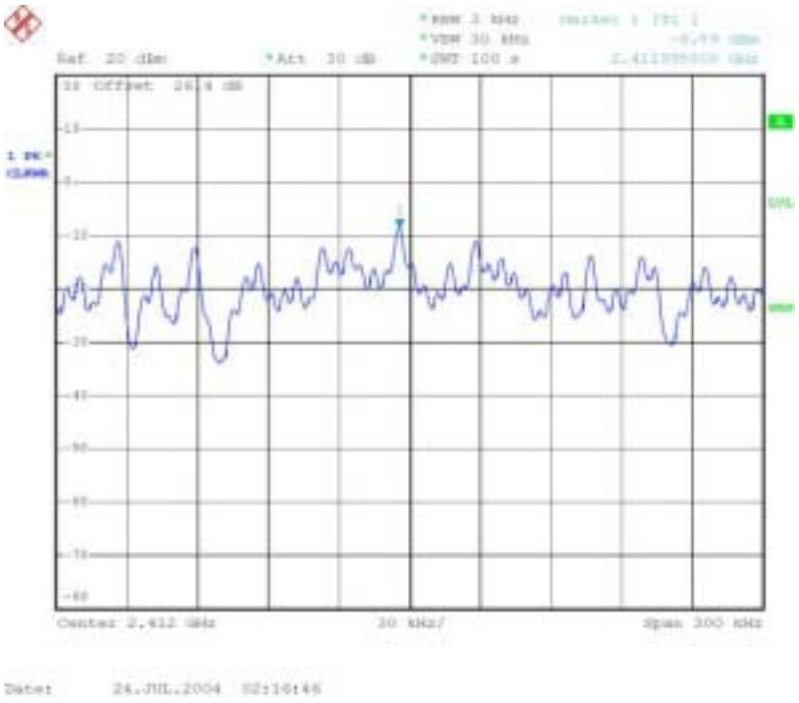
Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limits (dBm)	Plot Ref. No.
01	2412	-23.25	8	Antenna 5-4
06	2437	-10.64	8	Antenna 5-5
11	2462	-23.02	8	Antenna 5-6

-

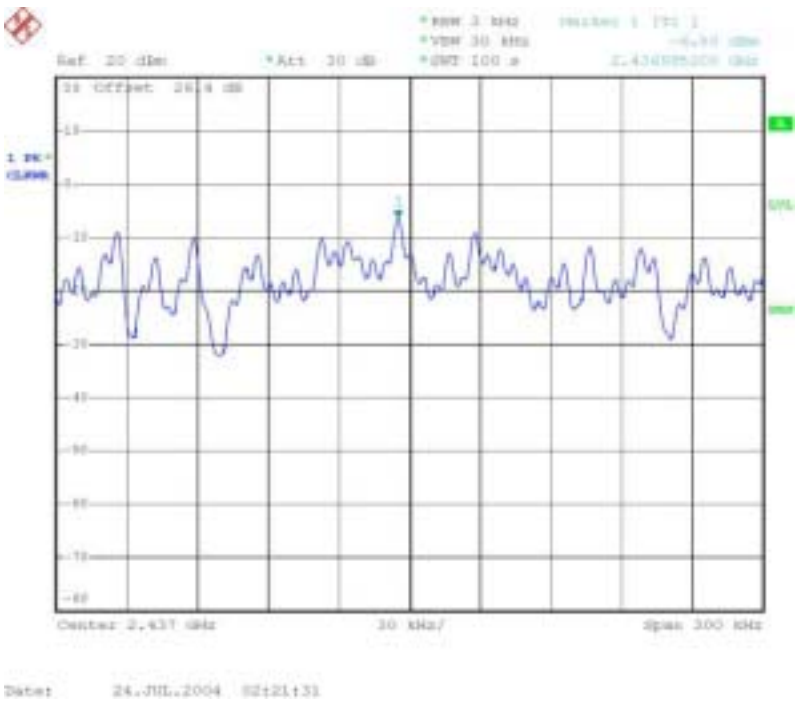
5.3.5 Power Spectral Density

5.3.5.1 Antenna 1

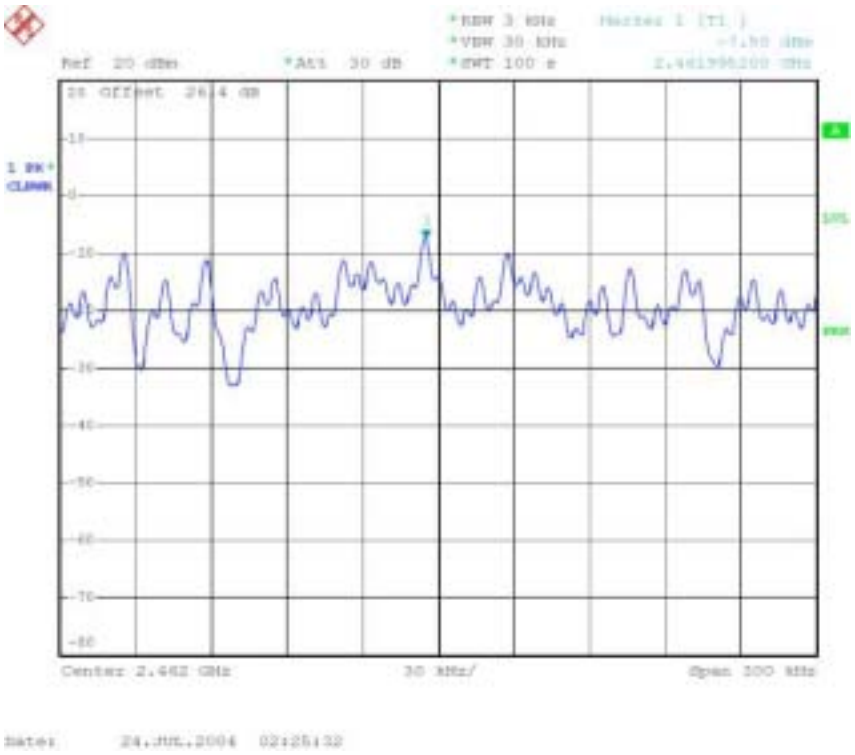
1-1



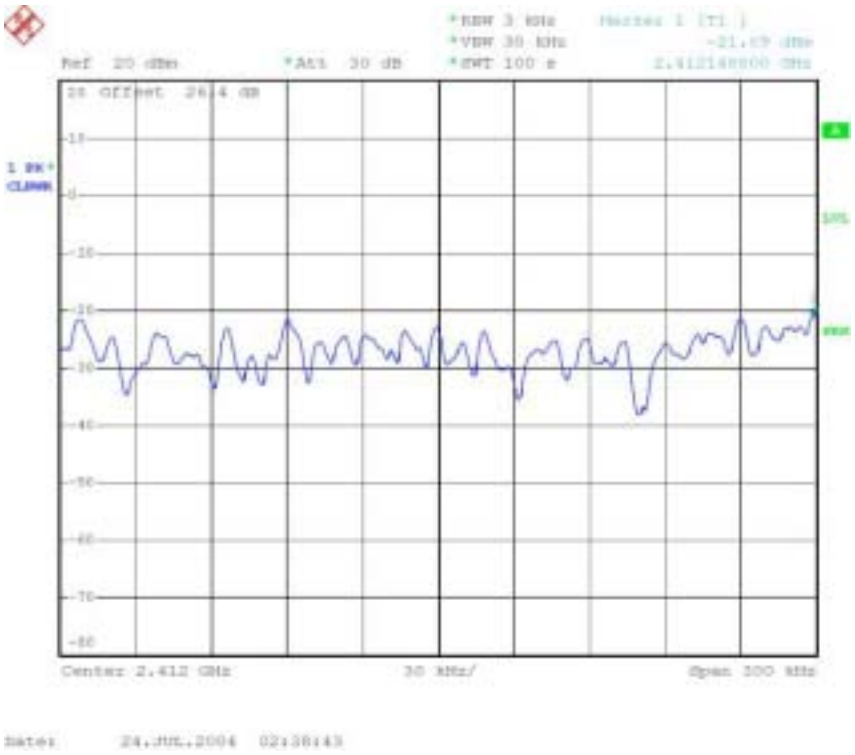
1-2



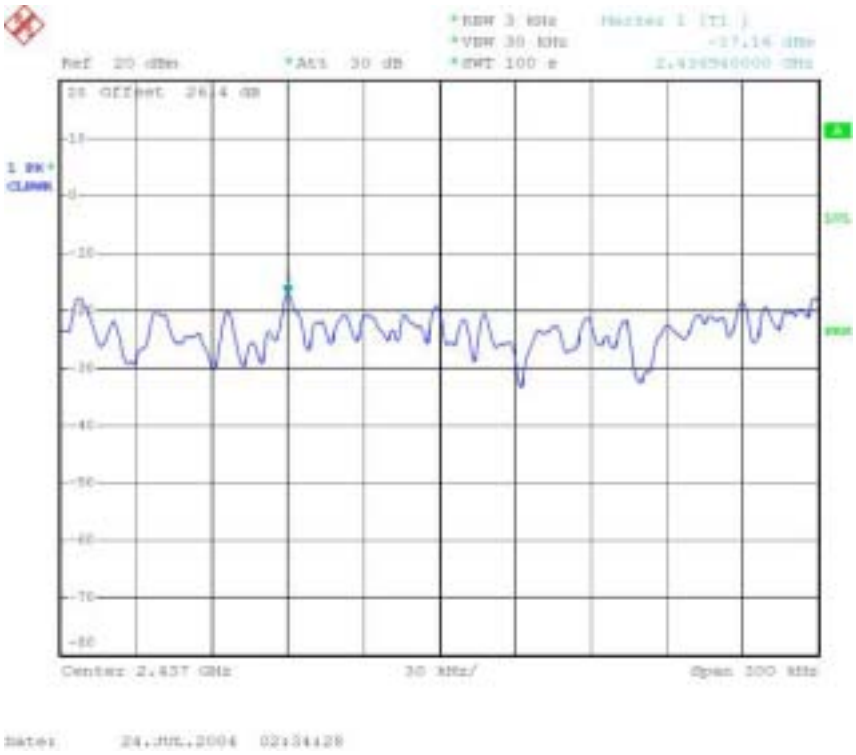
1-3


*RBW 3 kHz
*VBW 30 kHz
*SWT 100 s
Ref 20 dBm
*Att 30 dB
Offset 26.4 dB
1 PK
CLRWR
Center 2.462 GHz
30 kHz/
Span 300 kHz
Date: 24.JUL.2004 02:25:32

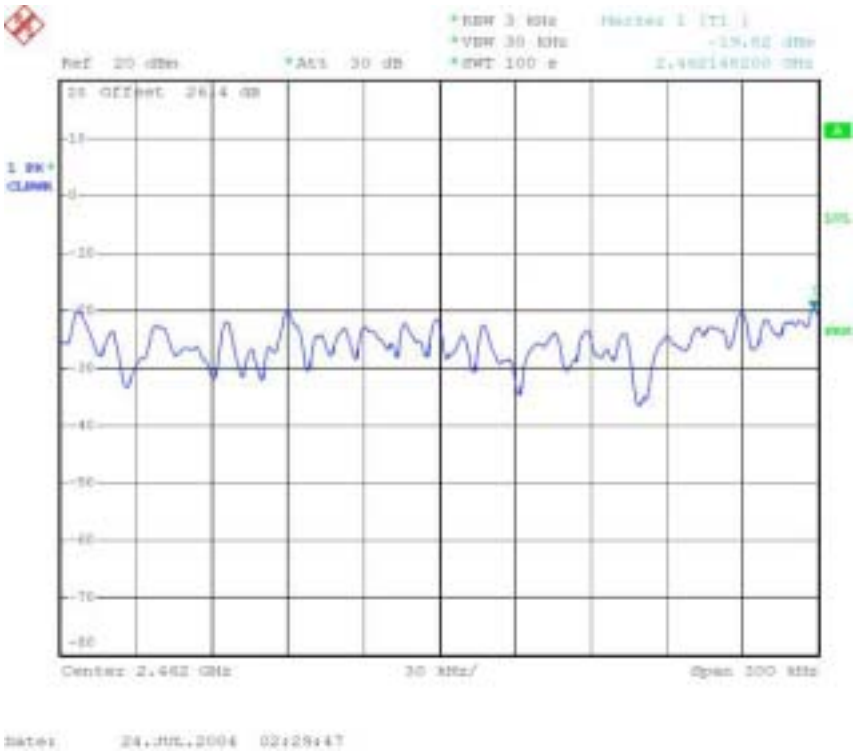
1-4


*RBW 3 kHz
*VBW 30 kHz
*SWT 100 s
Ref 20 dBm
*Att 30 dB
Offset 26.4 dB
1 PK
CLRWR
Center 2.412 GHz
30 kHz/
Span 300 kHz
Date: 24.JUL.2004 02:38:43

1-5

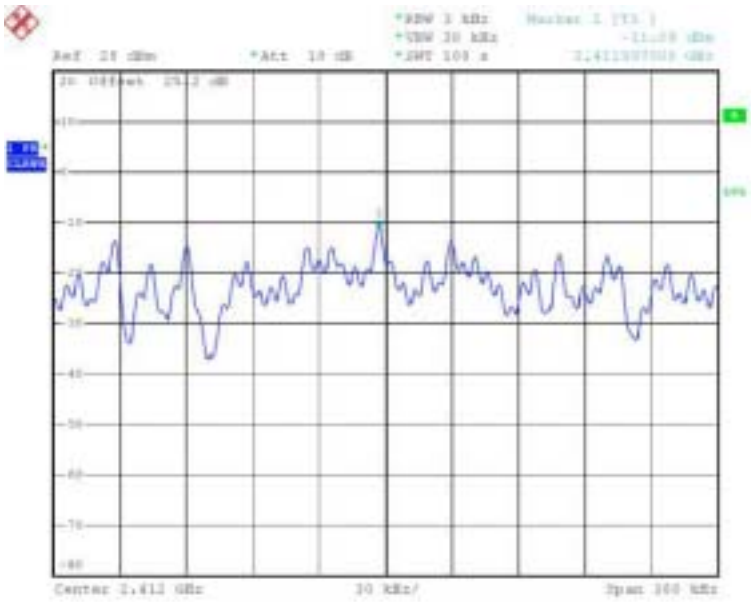

*RBW 3 kHz
*VBW 30 kHz
*SWT 100 s
Ref 20 dBm
*Att 30 dB
Offset 26.4 dB
1 PK
CLRWR
Center 2.437 GHz
30 kHz/
Span 300 kHz
Date: 24.JUN.2004 02:34:28

1-6


*RBW 3 kHz
*VBW 30 kHz
*SWT 100 s
Ref 20 dBm
*Att 30 dB
Offset 26.4 dB
1 PK
CLRWR
Center 2.462 GHz
30 kHz/
Span 300 kHz
Date: 24.JUN.2004 02:29:47

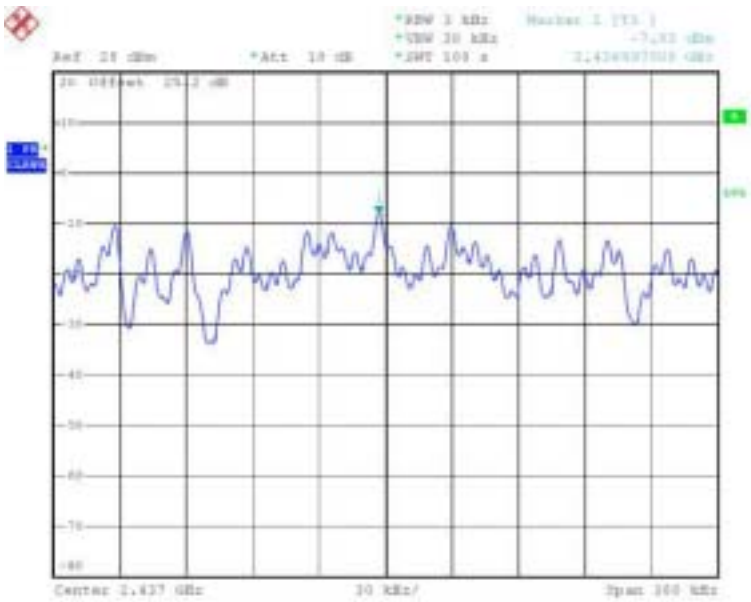
5.3.5.2 Antenna 2

2-1



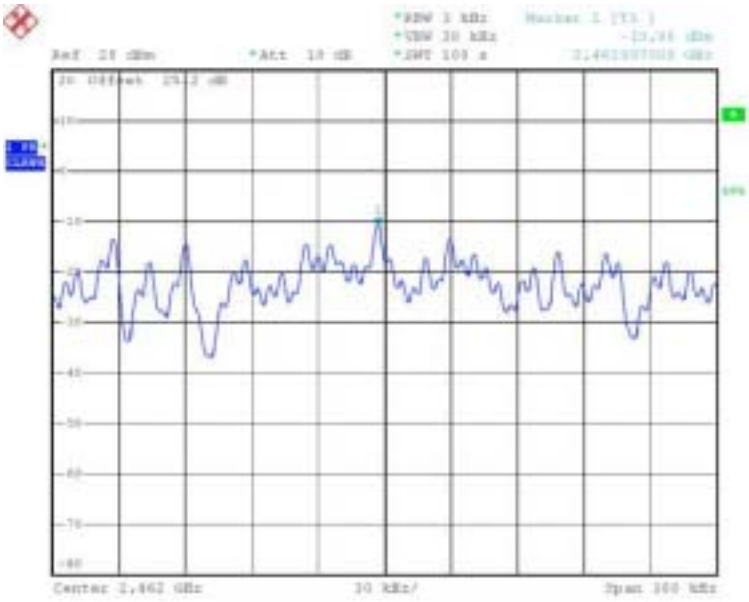
Date: 26.JUL.2004 16:01:53

2-2



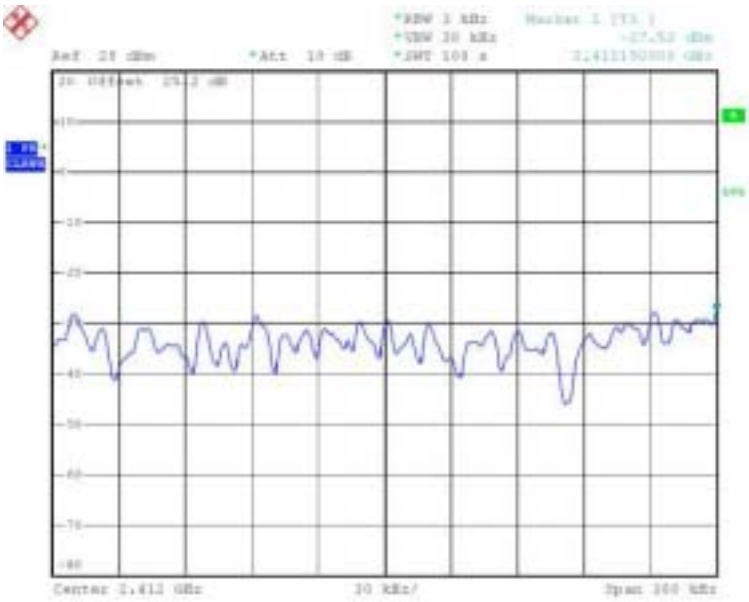
Date: 26.JUL.2004 16:08:53

2-3



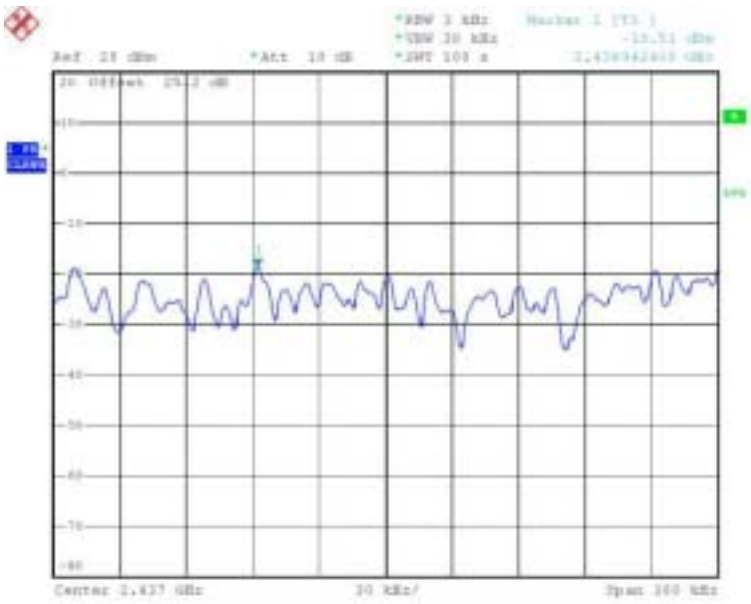
Date: 26.JUL.2004 16:12:55

2-4



Date: 26.JUL.2004 16:28:17

2-5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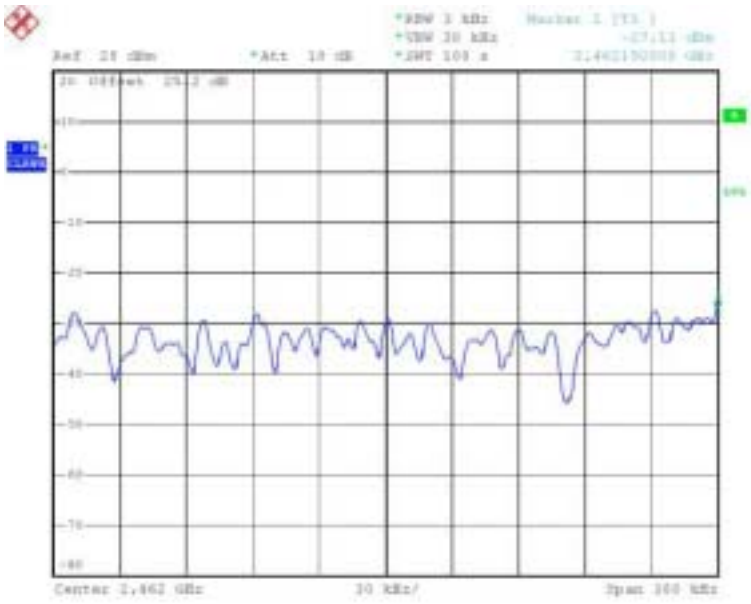
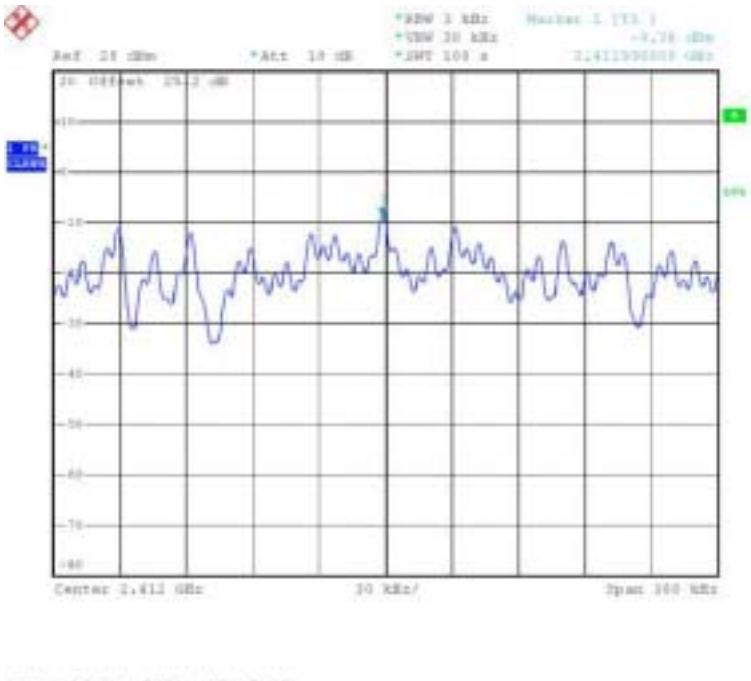
*Att 10 dB
Center 2.437 GHz
10 kHz/
Span 100 kHz
Date: 26.JUL.2004 16:22:44

2-6

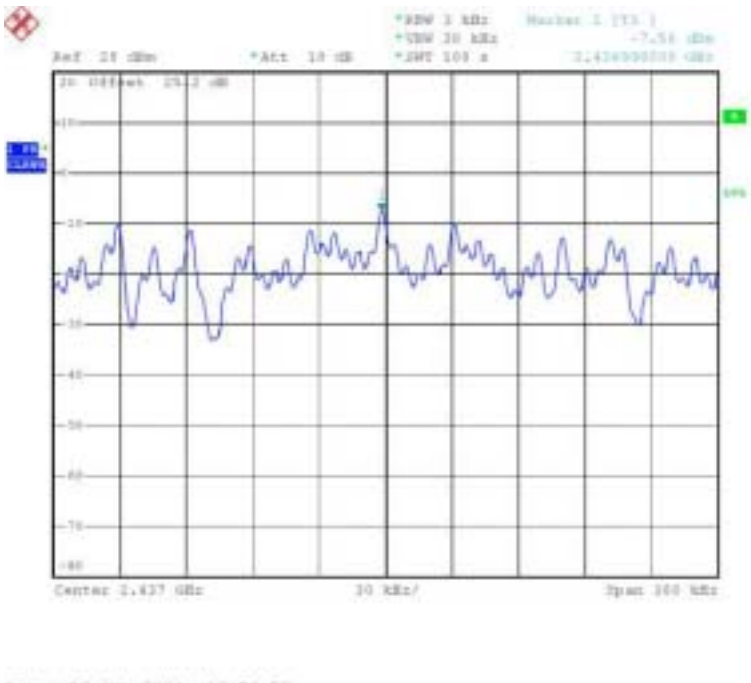

Ref 29 dBm
*Att 10 dB
Center 2.462 GHz
10 kHz/
Span 100 kHz
Date: 26.JUL.2004 16:17:56

5.3.5.3 Antenna 3

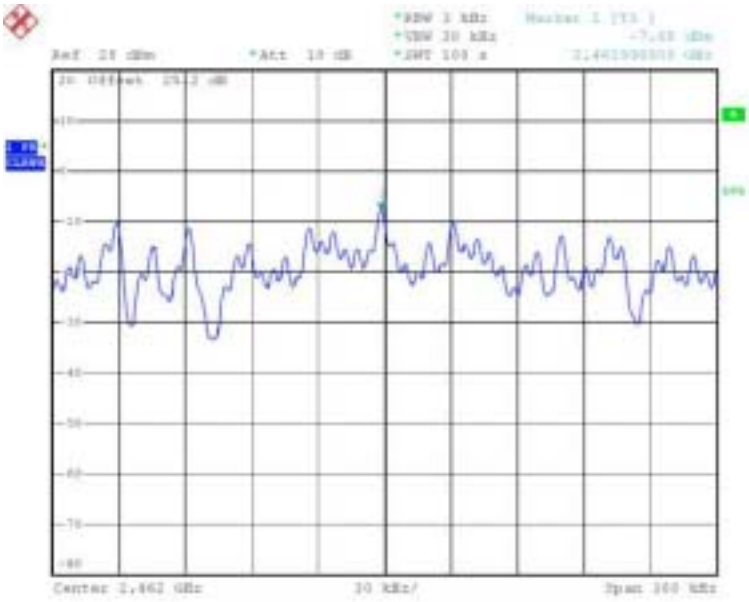
3-1



3-2



3-3



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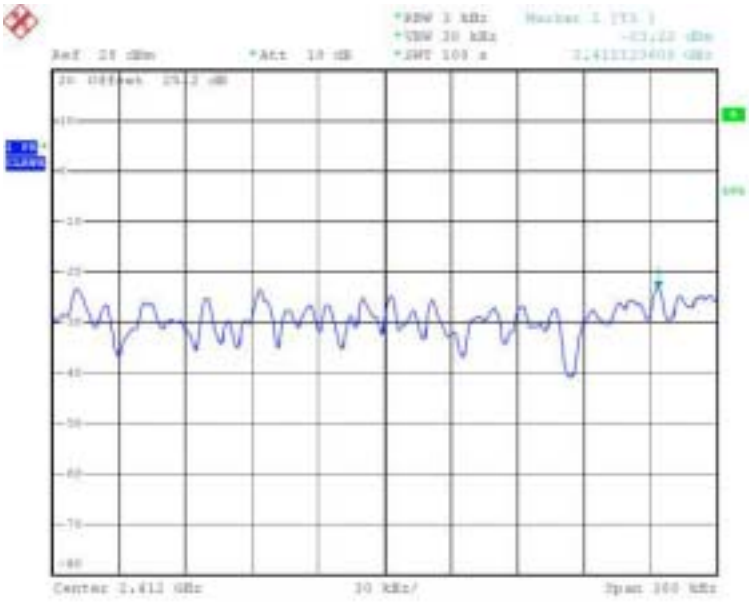
3-4



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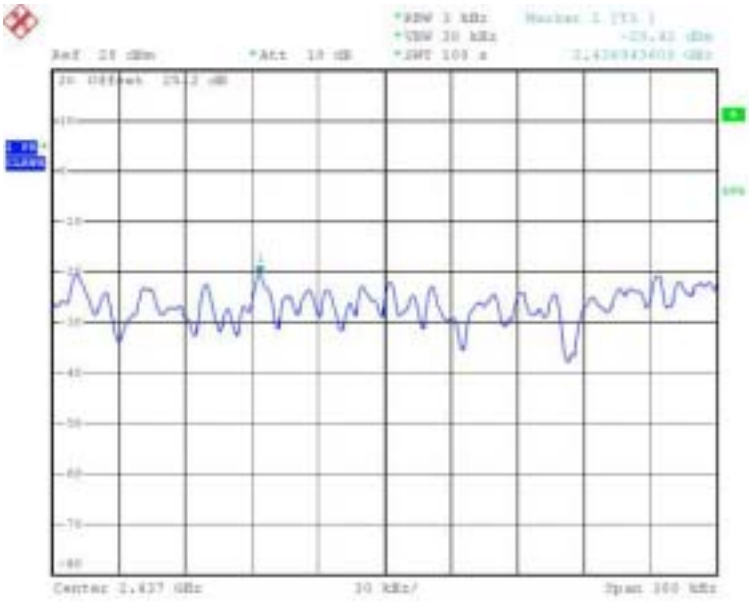
3-5



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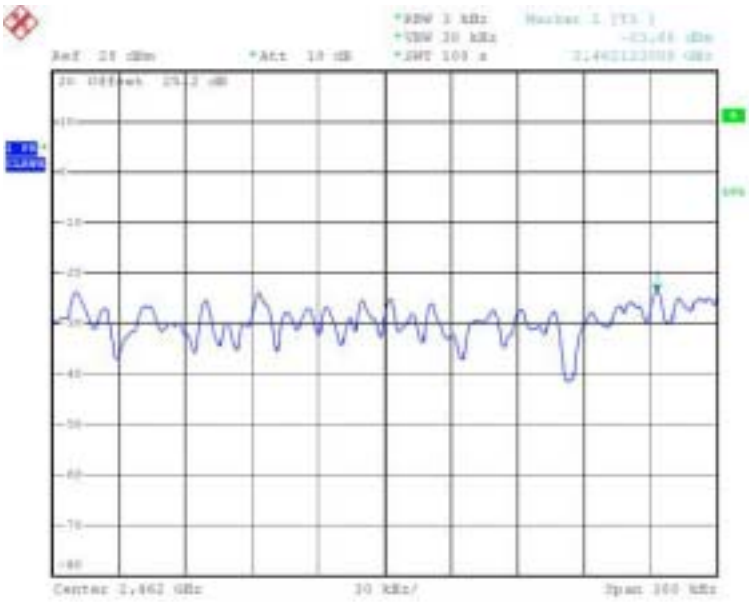
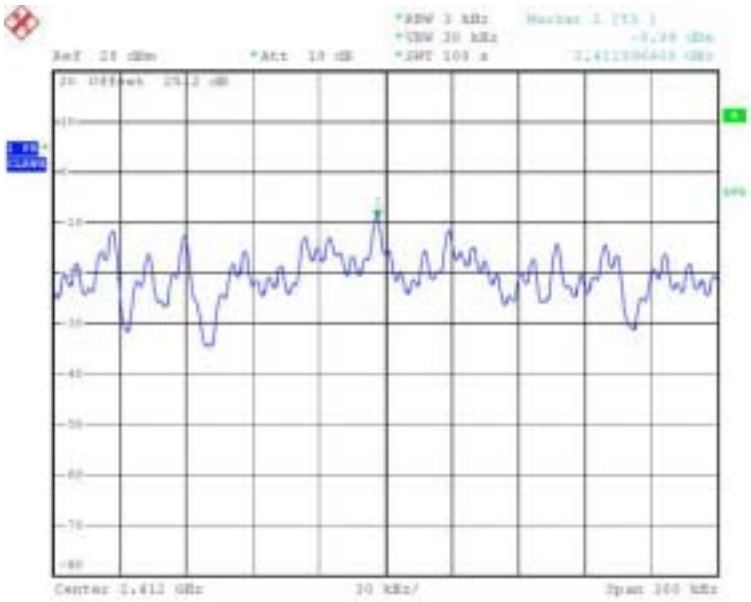
3-6



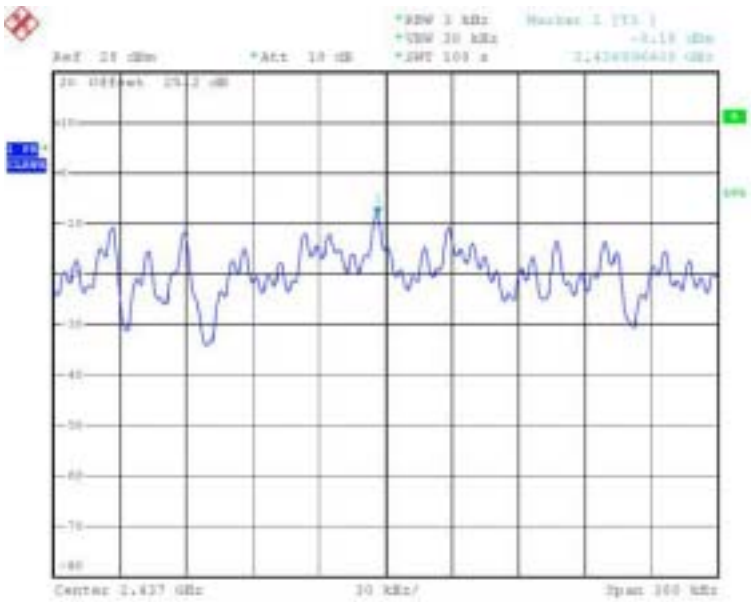
Date: 26.JUL.2004 13:59:36

5.3.5.4 Antenna 4

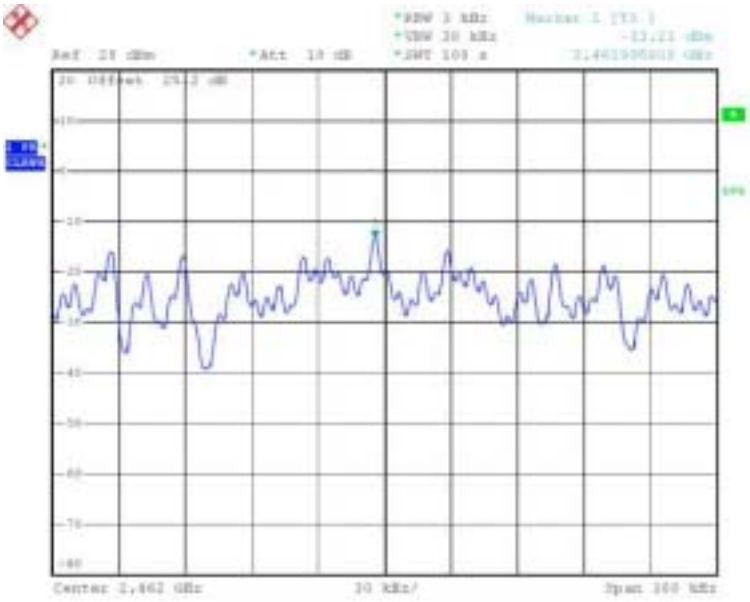
4-1



4-2

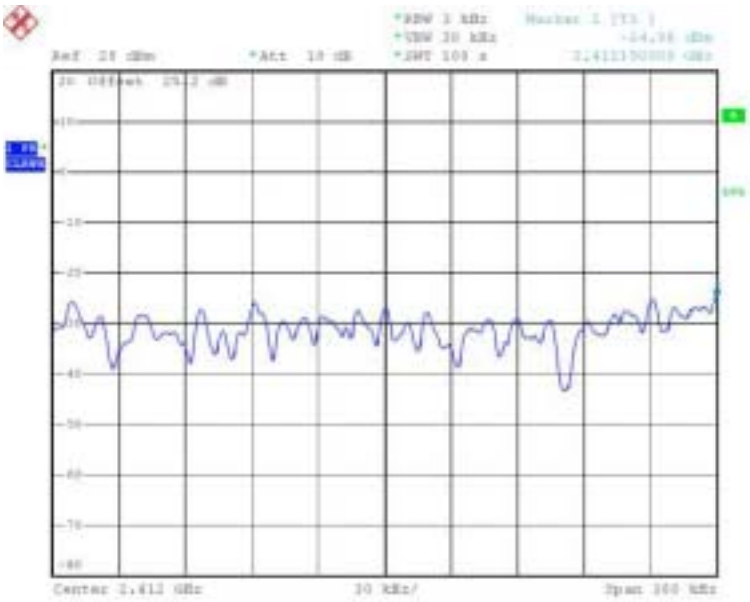


4-3



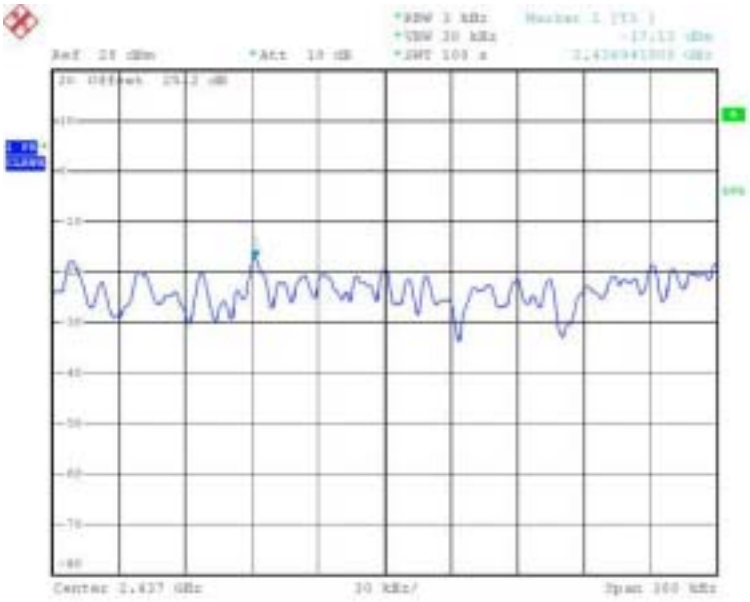
Date: 26.JUL.2004 18:16:11

4-4



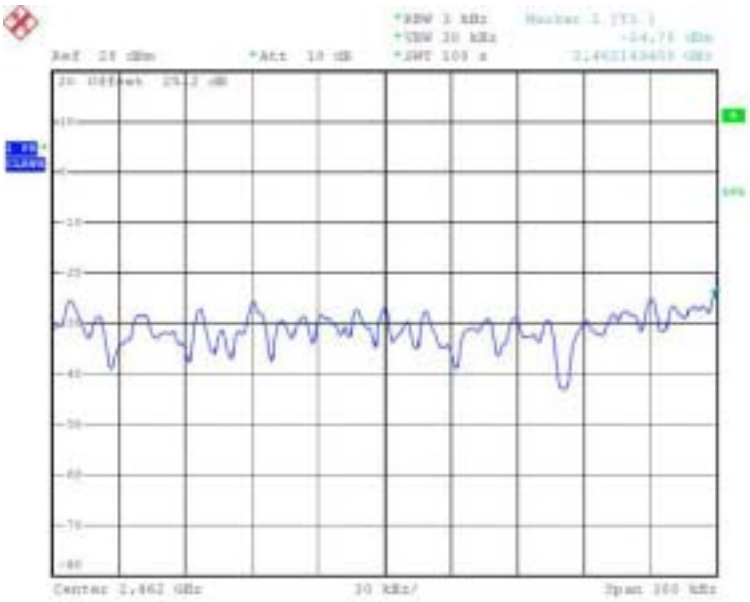
Date: 26.JUL.2004 17:53:49

4-5



Date: 26.JUL.2004 17:57:41

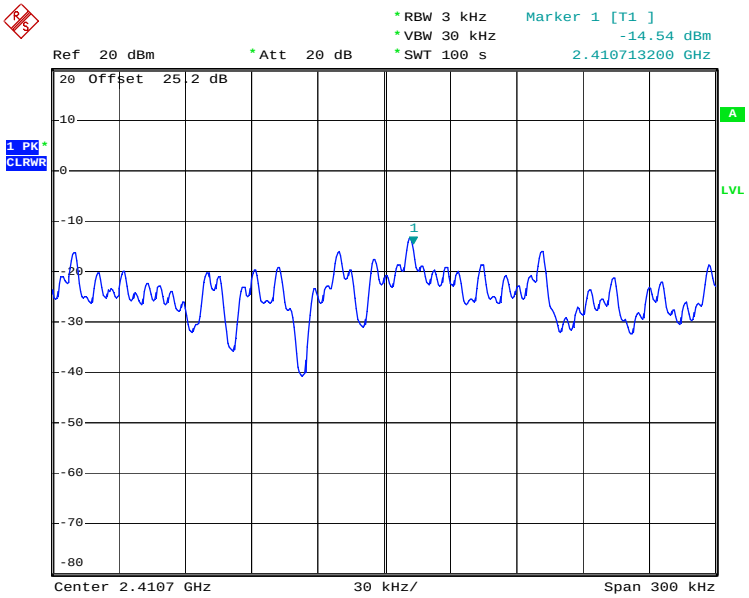
4-6



Date: 26.JUL.2004 18:01:34

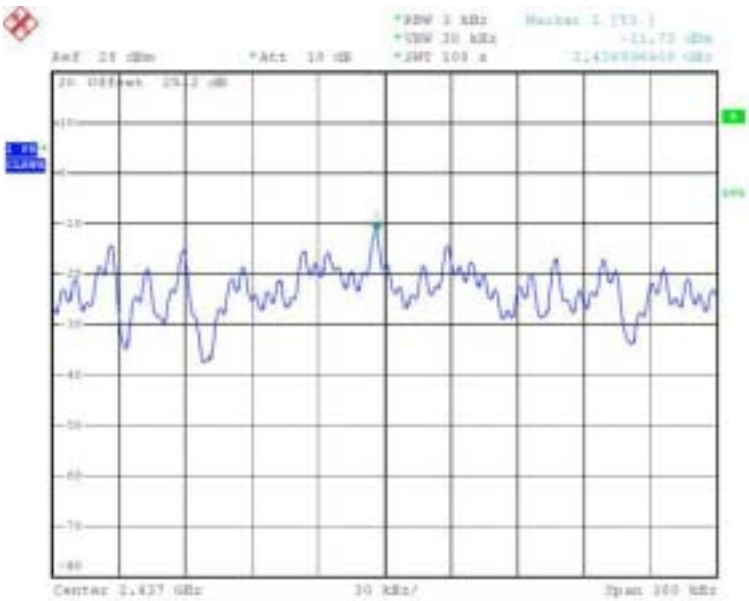
5.3.5.5 Antenna 5

5-1



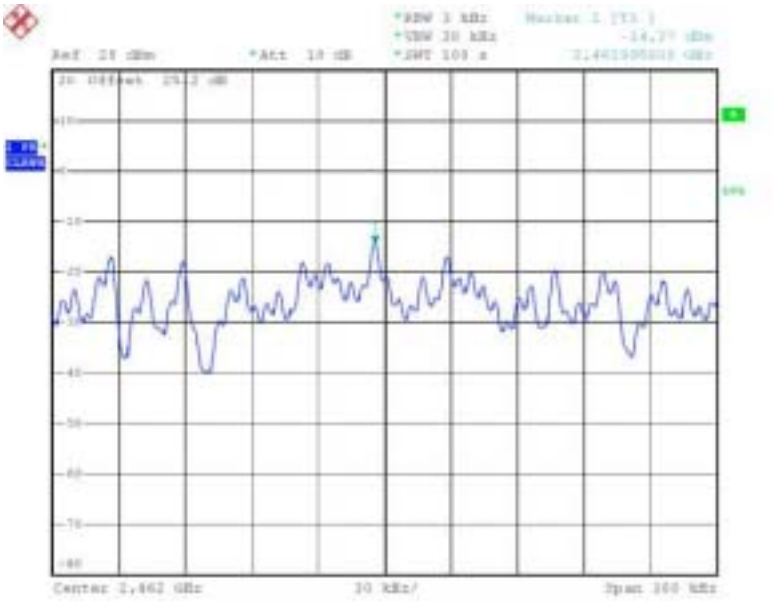
Date: 2.AUG.2004 15:14:37

5-2

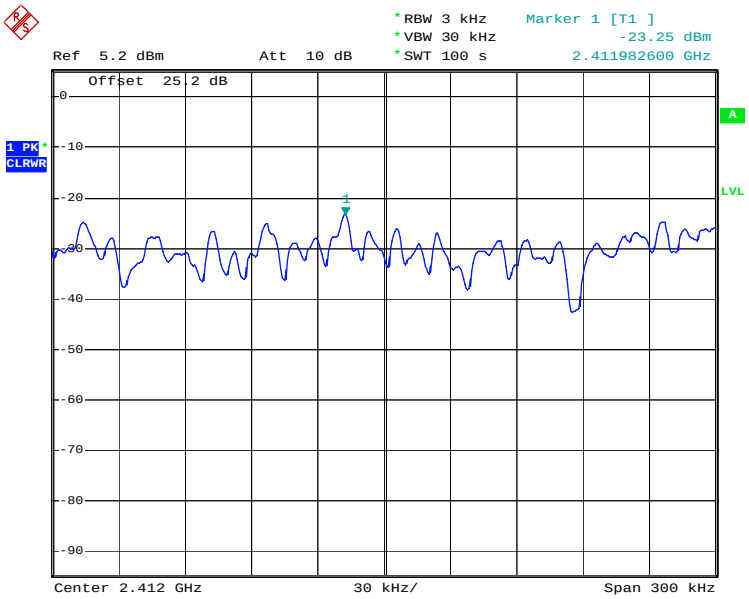


Date: 26.JUL.2004 18:28:33

5-3

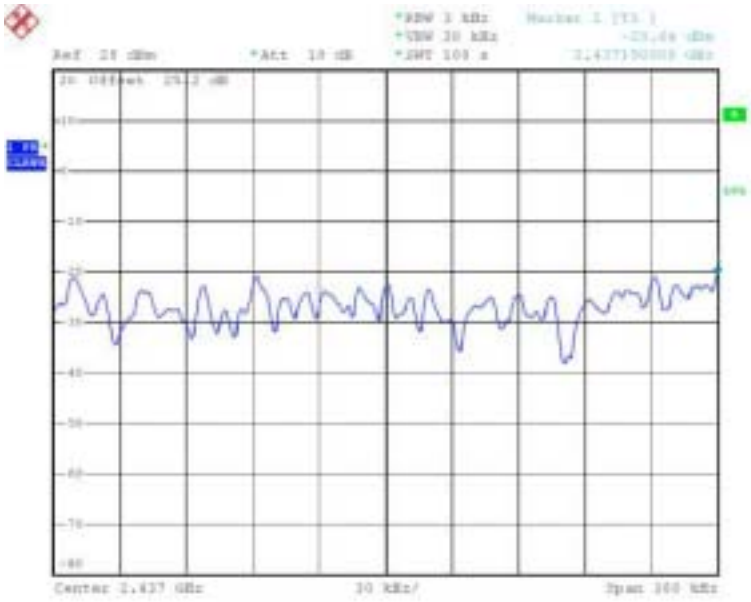


5-4



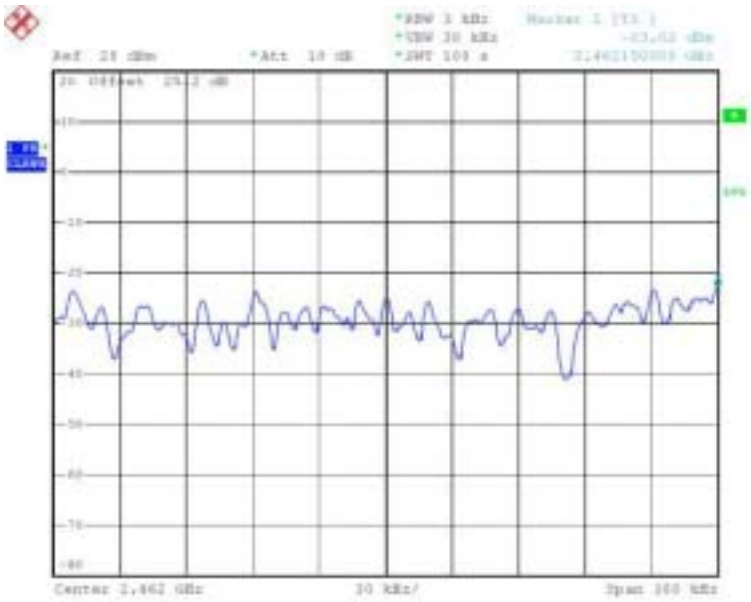
Date: 2.AUG.2004 10:54:03

5-5



Date: 26.JUL.2004 17:37:11

5-6



Date: 26.JUL.2004 17:41:08

5.4 Band Edges Measurement

5.4.1 Measuring Instruments：

As described in chapter 10 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

5.4.3.1 Antenna 1

802.11b CH01 (Vertical)

		Frequency (MHz)	Over Limit (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Remark	Ant Pos (cm)	Table Pos (deg)
1	!	2390	-2.41	51.59	54	64.2	28.4	44.34	3.33	Average	0	0
2		2390	-13.89	60.11	74	72.72	28.4	44.34	3.33	Peak	0	0
3	X	2412		112.4		125	28.41	44.34	3.35	Peak	0	0
4	X	2412		105.1		117.7	28.41	44.34	3.32	Average	0	0
5		2484	-20.16	53.84	74	66.27	28.48	44.31	3.4	Peak	-	-
6		2484	-11.31	42.69	54	55.12	28.48	44.31	3.4	Average	0	0

802.11b CH11 (Vertical)

		Frequency (MHz)	Over Limit (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Remark	Ant Pos (cm)	Table Pos (deg)
1		2390	-16.64	57.36	74	69.97	28.4	44.34	3.33	Peak	-	-
2		2390	-7.85	46.15	54	58.76	28.4	44.34	3.33	Average	0	0
3	X	2462		111.3		123.77	28.47	44.32	3.38	Peak	-	-
4	X	2462		103.05		115.52	28.47	44.32	3.38	Average	-	-
5		2483.5	-2.69	51.31	54	63.74	28.48	44.31	3.4	Average	0	0
6		2483.5	-10.7	63.3	74	75.73	28.48	44.31	3.4	Peak	-	-

802.11g CH01 (Vertical)

		Frequency (MHz)	Over Limit (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Remark	Ant Pos (cm)	Table Pos (deg)
1	!	2390	-3.85	70.15	74	82.77	28.4	44.34	3.32	Peak	0	0
2	!	2390	-1.13	52.87	54	65.49	28.4	44.34	3.32	Average	0	0
3	X	2410		101.93		114.54	28.41	44.34	3.32	Peak	0	0
4	X	2410		92.48		105.09	28.41	44.34	3.32	Average	0	0
5		2483.5	-17.43	36.57	54	49.02	28.48	44.31	3.38	Average	0	0
6		2483.5	-21.68	52.32	74	64.77	28.48	44.31	3.38	Peak	0	0

802.11g CH11 (Vertical)

		Frequency (MHz)	Over Limit (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Remark	Ant Pos (cm)	Table Pos (deg)
1		2390	-14.13	39.87	54	52.49	28.4	44.34	3.32	Average	0	0
2		2390	-23.17	50.83	74	63.45	28.4	44.34	3.32	Peak	0	0
3	X	2463		109.82		122.3	28.47	44.31	3.36	Peak	0	0
4	X	2463		100.65		113.13	28.47	44.31	3.36	Average	0	0
5	!	2483.5	-1.63	52.37	54	64.82	28.48	44.31	3.38	Average	0	0
6	!	2483.5	-4.56	69.44	74	81.89	28.48	44.31	3.38	Peak	0	0

5.4.3.2 Antenna 2

802.11b CH01 (Vertical)

		Frequency (MHz)	Over Limit (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Remark	Ant Pos (cm)	Table Pos (deg)
1	!	2390	-2.05	51.95	54	64.56	28.4	44.34	3.33	Average	0	0
2		2390	-10.95	63.05	74	75.66	28.4	44.34	3.33	Peak	0	0
3	X	2412		112.02		124.6	28.41	44.34	3.35	Peak	0	0
4	X	2412		103.87		116.45	28.41	44.34	3.35	Average	0	0
5		2483.5	-14.45	39.55	54	51.98	28.48	44.31	3.4	Average	0	0
6		2483.5	-20.94	53.06	74	65.49	28.48	44.31	3.4	Peak	0	0

802.11b CH11 (Vertical)

		Frequency (MHz)	Over Limit (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Remark	Ant Pos (cm)	Table Pos (deg)
1		2390	-13.75	40.25	54	52.86	28.4	44.34	3.33	Average	0	0
2		2390	-23.13	50.87	74	63.48	28.4	44.34	3.33	Peak	-	-
3	X	2462		103.9		116.37	28.47	44.32	3.38	Average	0	0
4	X	2462		112.08		124.55	28.47	44.32	3.38	Peak	0	0
5	!	2483.5	-1.6	52.4	54	64.83	28.48	44.31	3.4	Average	0	0
6		2483.5	-9.93	64.07	74	76.5	28.48	44.31	3.4	Peak	0	0

802.11g CH01 (Vertical)

		Frequency (MHz)	Over Limit (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Remark	Ant Pos (cm)	Table Pos (deg)
1	!	2390	-1.06	52.94	54	65.55	28.4	44.34	3.33	Average	0	0
2	!	2390	-3.87	70.13	74	82.74	28.4	44.34	3.33	Peak	0	0
3	X	2414		107.21		119.79	28.41	44.34	3.35	Peak	-	-
4	X	2414		97.11		109.69	28.41	44.34	3.35	Average	0	0
5		2483.5	-22.24	51.76	74	64.19	28.48	44.31	3.4	Peak	-	-
6		2483.5	-13.13	40.87	54	53.3	28.48	44.31	3.4	Average	0	0

802.11g CH11 (Vertical)

		Frequency (MHz)	Over Limit (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Remark	Ant Pos (cm)	Table Pos (deg)
1		2390	-15.08	38.92	54	51.53	28.4	44.34	3.33	Average	0	0
2		2390	-21.94	52.06	74	64.67	28.4	44.34	3.33	Peak	0	0
3	X	2462		106.34		118.81	28.47	44.32	3.38	Peak	-	-
4	X	2462		96.68		109.15	28.47	44.32	3.38	Average	0	0
5		2483.5	-6.1	67.9	74	80.33	28.48	44.31	3.4	Peak	0	0
6	!	2483.5	-1.67	52.33	54	64.76	28.48	44.31	3.4	Average	0	0

5.4.3.3 Antenna 3

802.11b CH01 (Vertical)

		Frequency (MHz)	Over Limit (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Remark	Ant Pos (cm)	Table Pos (deg)
1	!	2390	-2.6	51.4	54	64.01	28.4	44.34	3.33	Average	100	82
2		2390	-10.44	63.56	74	76.17	28.4	44.34	3.33	Peak	-	-
3	X	2412		111.38		123.96	28.41	44.34	3.35	Peak	-	-
4	X	2412		103.38		115.96	28.41	44.34	3.35	Average	100	81
5		2483.5	-22.01	51.99	74	64.42	28.48	44.31	3.4	Peak	-	-
6		2483.5	-13.88	40.12	54	52.55	28.48	44.31	3.4	Average	100	82

802.11b CH11 (Vertical)

		Frequency (MHz)	Over Limit (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Remark	Ant Pos (cm)	Table Pos (deg)
1		2390	-22.72	51.28	74	63.89	28.4	44.34	3.33	Peak	-	-
2		2390	-13.85	40.15	54	52.76	28.4	44.34	3.33	Average	0	0
3	X	2462		103.18		115.65	28.47	44.32	3.38	Average	0	0
4	X	2462		111.03		123.5	28.47	44.32	3.38	Peak	0	0
5	!	2483.5	-2.97	51.03	54	63.46	28.48	44.31	3.4	Average	100	258
6		2483.5	-10.99	63.01	74	75.44	28.48	44.31	3.4	Peak	0	0

802.11g CH01 (Vertical)

		Frequency (MHz)	Over Limit (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Remark	Ant Pos (cm)	Table Pos (deg)
1	!	2390	-1.25	52.75	54	65.36	28.4	44.34	3.33	Average	162	194
2	!	2390	-4.46	69.54	74	82.15	28.4	44.34	3.33	Peak	-	-
3	X	2414.68		98.22		110.8	28.41	44.34	3.35	Average	156	231
4	X	2414.68		107.61		120.19	28.41	44.34	3.35	Peak	-	-
5		2483.5	-24.63	49.37	74	61.8	28.48	44.31	3.4	Peak	-	-
6		2483.5	-15.55	38.45	54	50.88	28.48	44.31	3.4	Average	-	-

802.11g CH11 (Vertical)

		Frequency (MHz)	Over Limit (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Remark	Ant Pos (cm)	Table Pos (deg)
1		2390	-24.12	49.88	74	62.49	28.4	44.34	3.33	Peak	-	-
2		2390	-14.17	39.83	54	52.44	28.4	44.34	3.33	Average	0	0
3	X	2464		107.37		119.84	28.47	44.32	3.38	Peak	0	0
4	X	2464		97.94		110.41	28.47	44.32	3.38	Average	0	0
5	!	2483.5	-5.33	68.67	74	81.1	28.48	44.31	3.4	Peak	0	0
6	!	2483.5	-1.25	52.75	54	65.18	28.48	44.31	3.4	Average	110	84

5.4.3.4 Antenna 4

802.11b CH01 (Vertical)

		Frequency (MHz)	Over Limit (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Remark	Ant Pos (cm)	Table Pos (deg)
1	!	2390	-0.19	73.81	74	86.42	28.4	44.34	3.33	Peak	-	-
2	!	2390	-3.13	50.87	54	63.48	28.4	44.34	3.33	Average	100	0
3	X	2414		111.87		124.45	28.41	44.34	3.35	Peak	-	-
4	X	2414		103.27		115.85	28.41	44.34	3.35	Average	100	0
5		2494	-18.94	55.06	74	67.47	28.5	44.3	3.39	Peak	-	-
6		2494	-13.5	40.5	54	52.91	28.5	44.3	3.39	Average	100	0

802.11b CH11 (Vertical)

		Frequency (MHz)	Over Limit (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Remark	Ant Pos (cm)	Table Pos (deg)
1		2364	-20.96	53.04	74	65.73	28.36	44.36	3.31	Peak	-	-
2		2364	-14.93	39.07	54	51.76	28.36	44.36	3.31	Average	100	20
3	X	2462		107.74		120.21	28.47	44.32	3.38	Peak	-	-
4	X	2462		99.16		111.63	28.47	44.32	3.38	Average	100	20
5		2483.5	-11.28	62.72	74	75.15	28.48	44.31	3.4	Peak	-	-
6	!	2483.5	-3.77	50.23	54	62.66	28.48	44.31	3.4	Average	100	20

802.11g CH01 (Vertical)

		Frequency (MHz)	Over Limit (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Remark	Ant Pos (cm)	Table Pos (deg)
1	!	2390	-5.29	68.71	74	81.32	28.4	44.34	3.33	Peak	0	0
2	!	2390	-2.43	51.57	54	64.18	28.4	44.34	3.33	Average	100	331
3	X	2414.24		107.82		120.4	28.41	44.34	3.35	Peak	0	0
4	X	2414.24		98.26		110.84	28.41	44.34	3.35	Average	0	0
5		2483.5	-24.19	49.81	74	62.24	28.48	44.31	3.4	Peak	-	-
6		2483.5	-15.52	38.48	54	50.91	28.48	44.31	3.4	Average	0	0

802.11g CH11 (Vertical)

		Frequency (MHz)	Over Limit (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Remark	Ant Pos (cm)	Table Pos (deg)
1		2390	-23.41	50.59	74	63.2	28.4	44.34	3.33	Peak	-	-
2		2390	-15.13	38.87	54	51.48	28.4	44.34	3.33	Average	0	0
3	X	2468.49		97.73		110.2	28.47	44.32	3.38	Average	0	0
4	X	2468.49		106.77		119.24	28.47	44.32	3.38	Peak	0	0
5	!	2483.5	-0.89	53.11	54	65.54	28.48	44.31	3.4	Average	0	0
6		2483.5	-7.07	66.93	74	79.36	28.48	44.31	3.4	Peak	0	0

5.4.3.5 Antenna 5

802.11b CH01 (Vertical)

		Frequency (MHz)	Over Limit (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Remark	Ant Pos (cm)	Table Pos (deg)
1	!	2390	-2.05	51.95	54	64.56	28.4	44.34	3.33	Average	0	0
2		2390	-10.24	63.76	74	76.37	28.4	44.34	3.33	Peak	0	0
3	X	2414		111.82		124.4	28.41	44.34	3.35	Peak	-	-
4	X	2414		104.15		116.73	28.41	44.34	3.35	Average	0	0
5		2483.5	-11.12	42.88	54	55.31	28.48	44.31	3.4	Average	0	0
6		2483.5	-18.32	55.68	74	68.11	28.48	44.31	3.4	Peak	0	0

802.11b CH11 (Vertical)

		Frequency (MHz)	Over Limit (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Remark	Ant Pos (cm)	Table Pos (deg)
1		2390	-13	41	54	53.61	28.4	44.34	3.33	Average	0	0
2		2390	-20.25	53.75	74	66.36	28.4	44.34	3.33	Peak	0	0
3	X	2462		111.16		123.63	28.47	44.32	3.38	Peak	-	-
4	X	2462		104.01		116.48	28.47	44.32	3.38	Average	0	0
5	!	2483.5	-2.38	51.62	54	64.05	28.48	44.31	3.4	Average	0	0
6		2483.5	-10.33	63.67	74	76.1	28.48	44.31	3.4	Peak	0	0

802.11g CH01 (Vertical)

		Frequency (MHz)	Over Limit (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Remark	Ant Pos (cm)	Table Pos (deg)
1		2390	-9.29	64.71	74	77.32	28.4	44.34	3.33	Peak	0	0
2	!	2390	-1.48	52.52	54	65.13	28.4	44.34	3.33	Average	100	0
3	X	2413.32		113.05		125.63	28.41	44.34	3.35	Peak	0	0
4	X	2413.32		104.89		117.47	28.41	44.34	3.35	Average	0	0
5		2483.5	-9.81	44.19	54	56.62	28.48	44.31	3.4	Average	0	0
6		2483.5	-16.88	57.12	74	69.55	28.48	44.31	3.4	Peak	0	0

802.11g CH11 (Vertical)

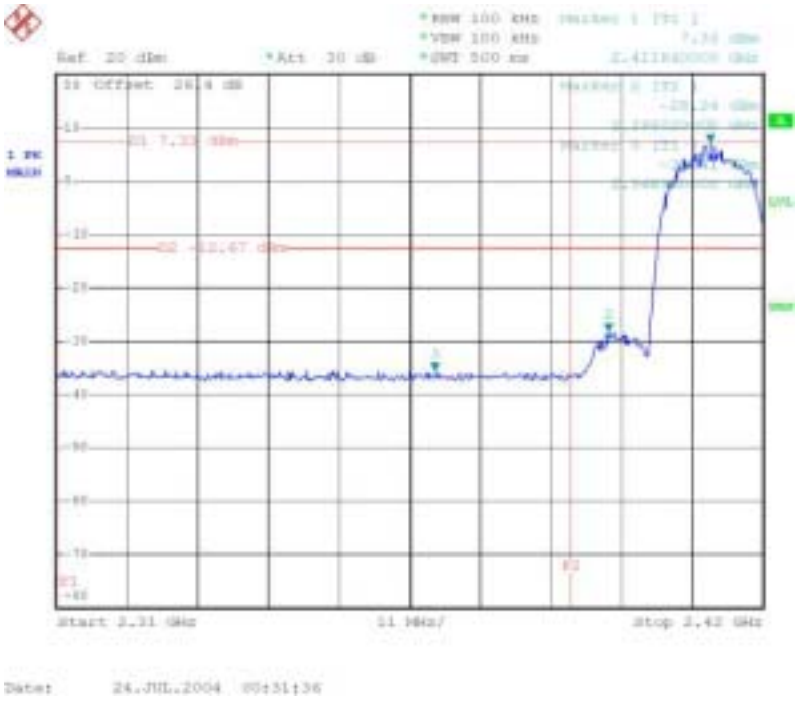
		Frequency (MHz)	Over Limit (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Remark	Ant Pos (cm)	Table Pos (deg)
1		2388	-12.52	41.48	54	54.11	28.4	44.34	3.31	Average	0	0
2		2388	-21.19	52.81	74	65.44	28.4	44.34	3.31	Peak	-	-
3	X	2464		106.08		118.56	28.47	44.31	3.36	Peak	-	-
4	X	2464		95.89		108.37	28.47	44.31	3.36	Average	0	0
5	!	2483.5	-1.65	52.35	54	64.8	28.48	44.31	3.38	Average	0	0
6		2483.5	-6.19	67.81	74	80.26	28.48	44.31	3.38	Peak	0	0

5.4.4 Test Data

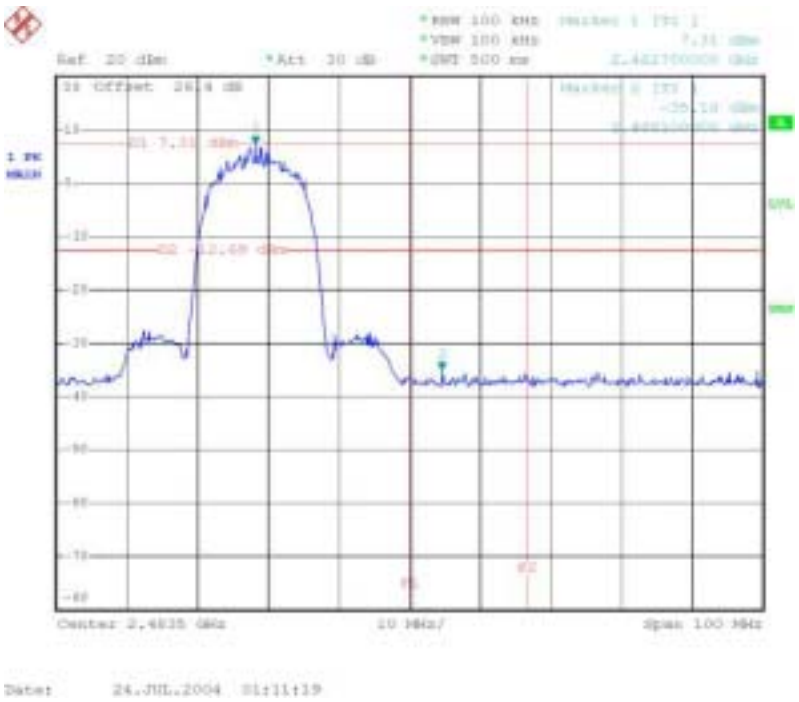
5.4.4.1 Antenna 1

802.11b

1-1

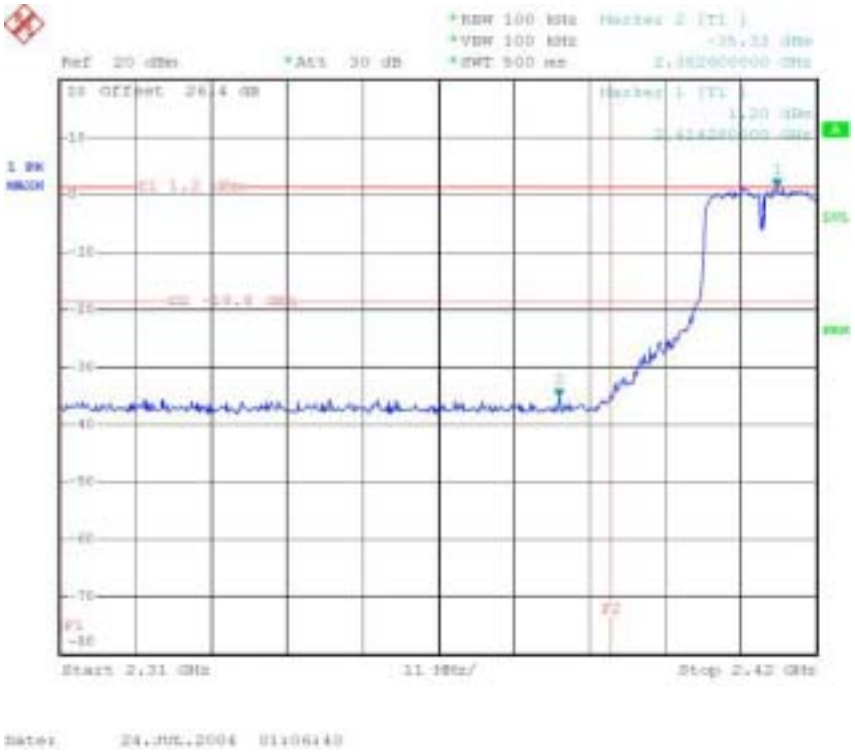


1-3

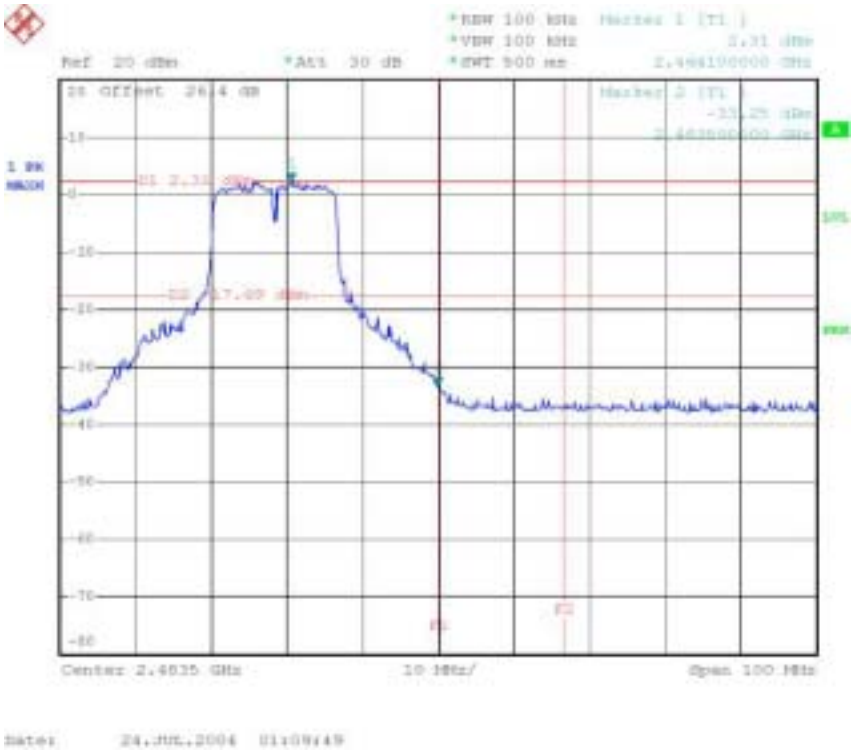


802.11g

1-4



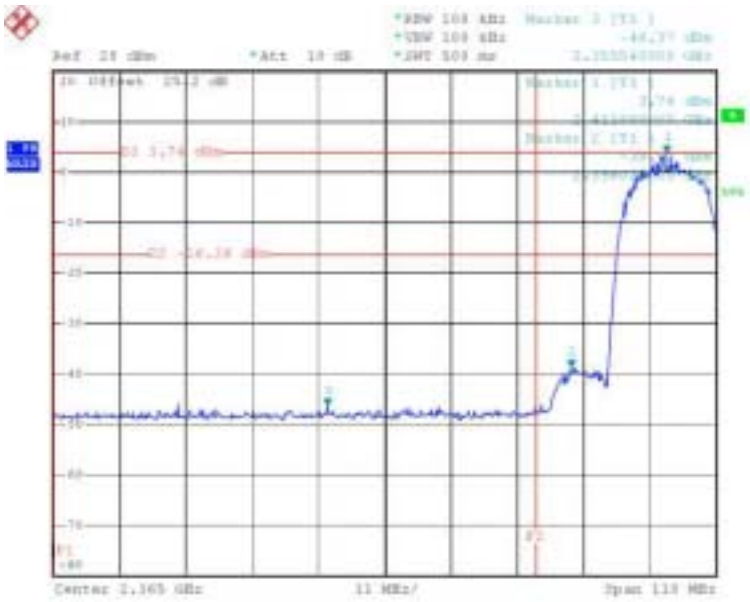
1-6



5.4.4.2 Antenna 2

802.11b

2-1



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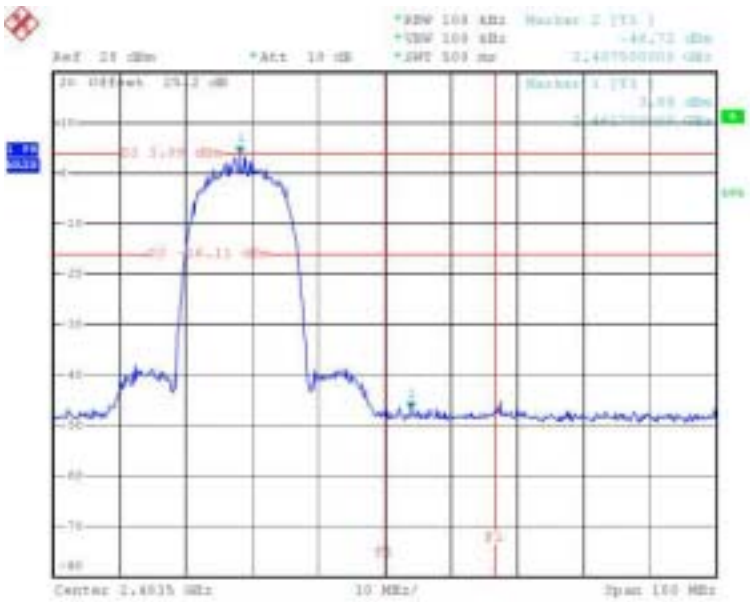
2-2



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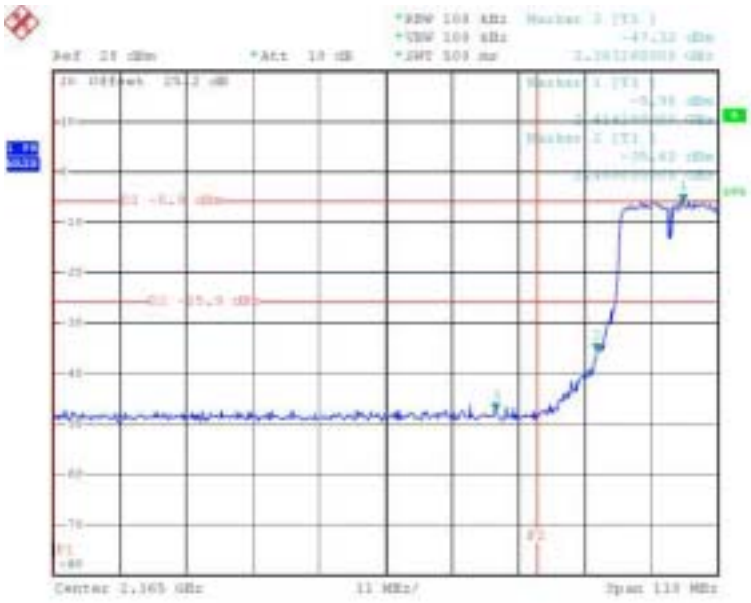
802.11g

2-3



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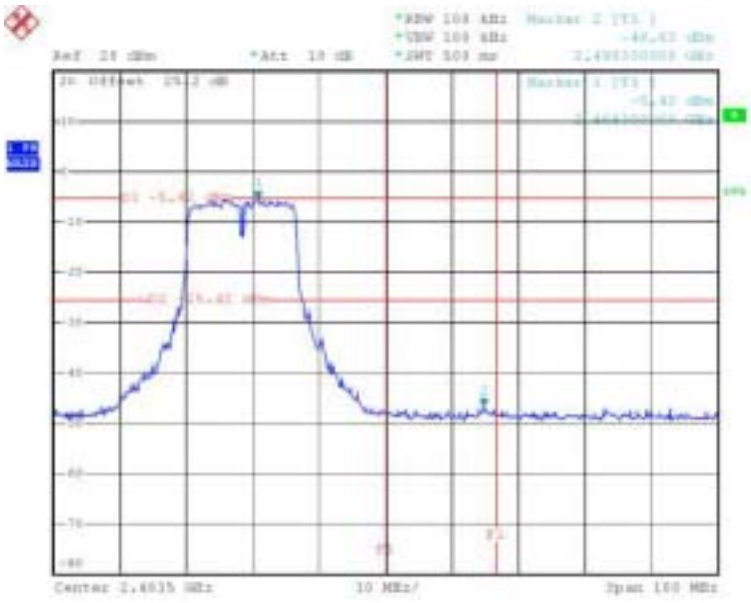
2-4



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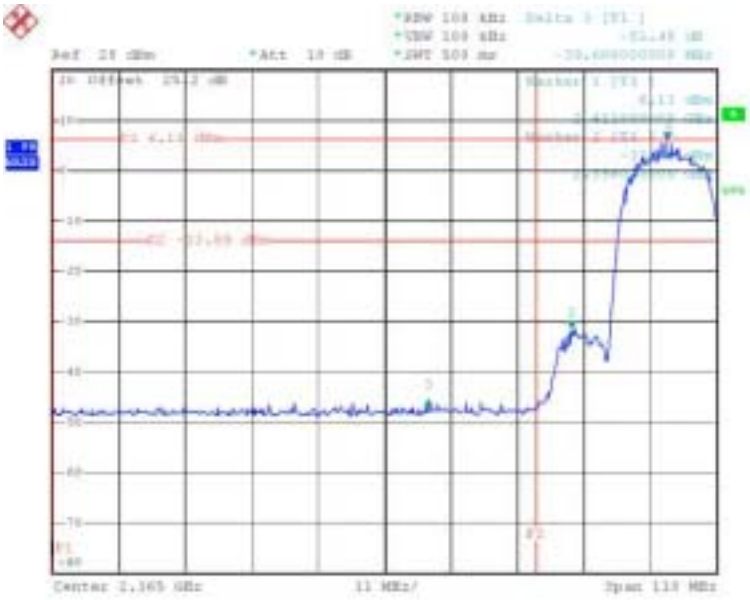
5.4.4.3 Antenna 3

802.11b

3-1



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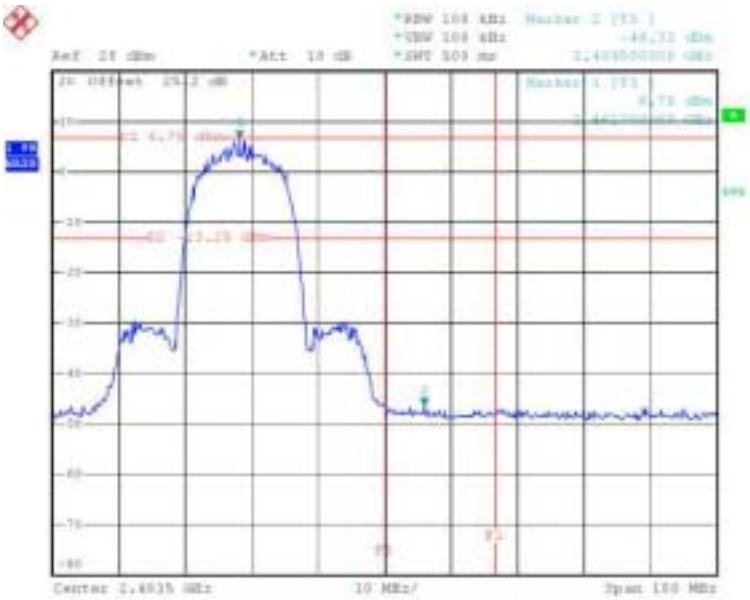
3-2



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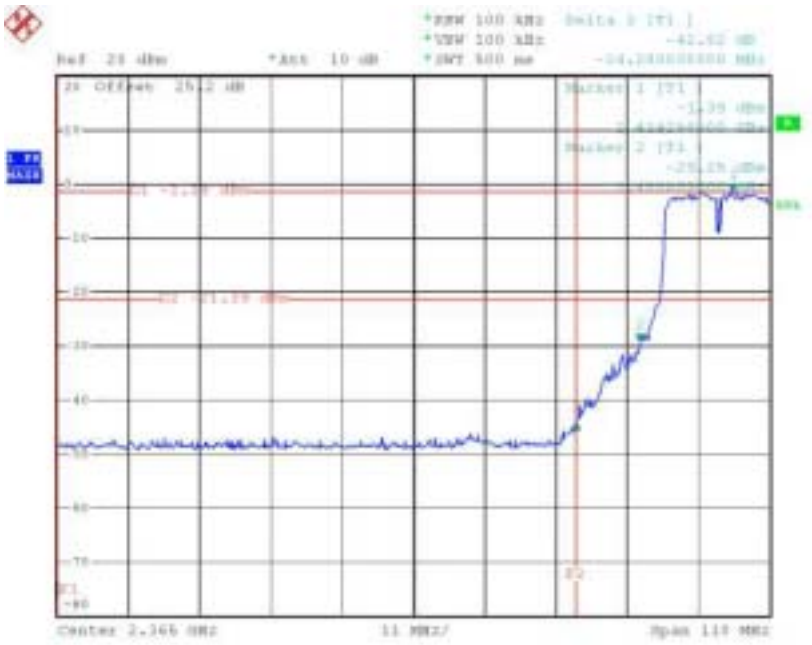
802.11g

3-3



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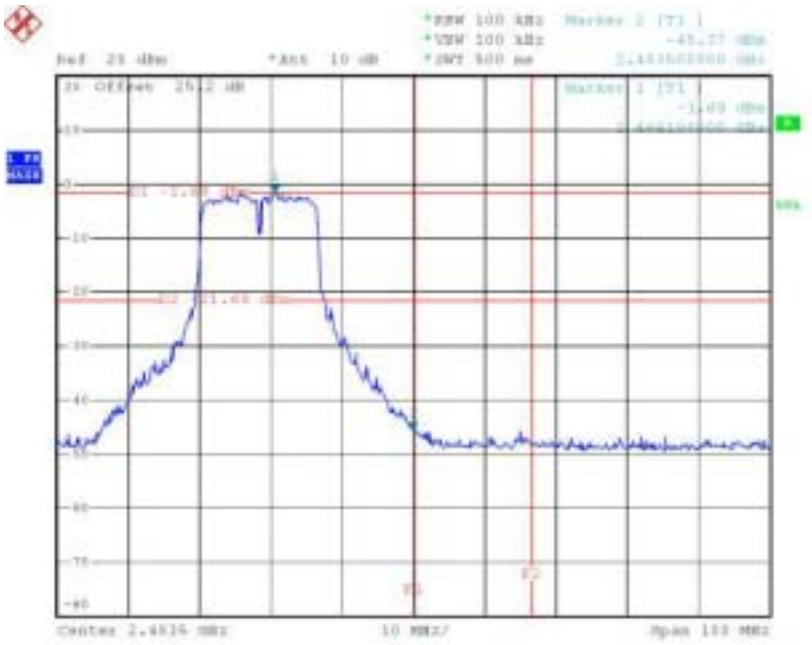
3-4



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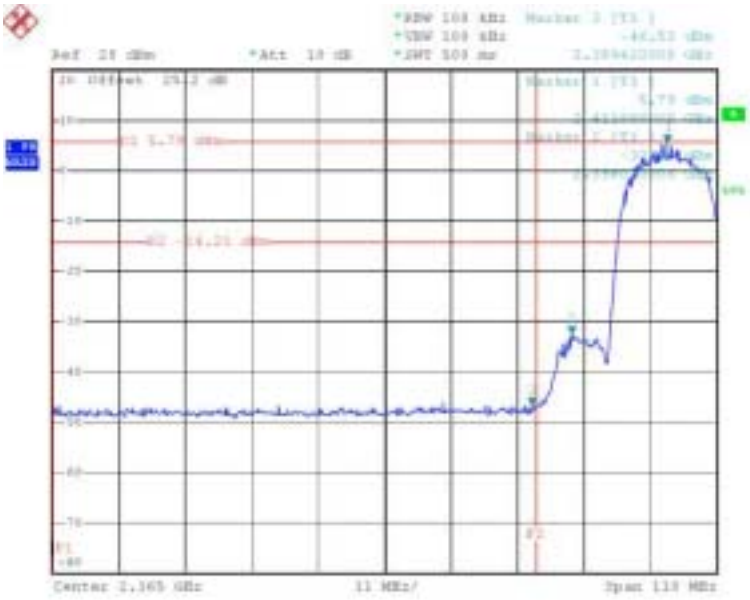
5.4.4.4 Antenna 4

802.11b

4-1



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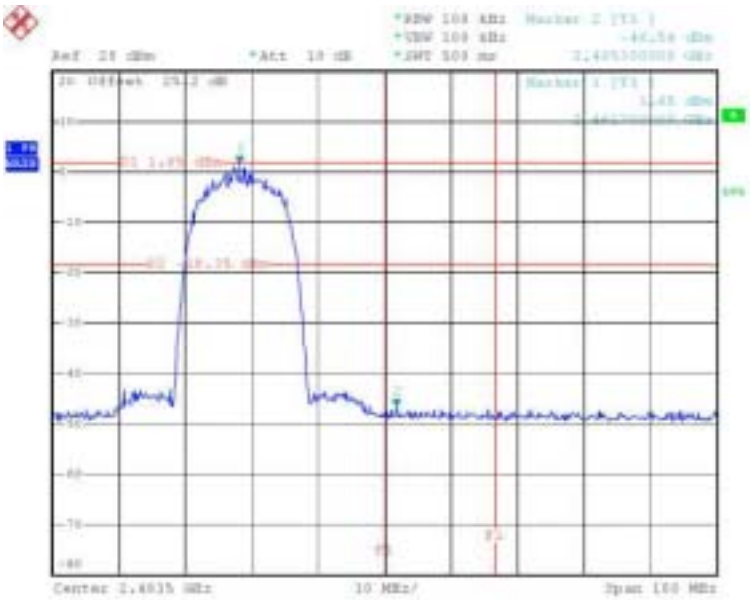
4-2



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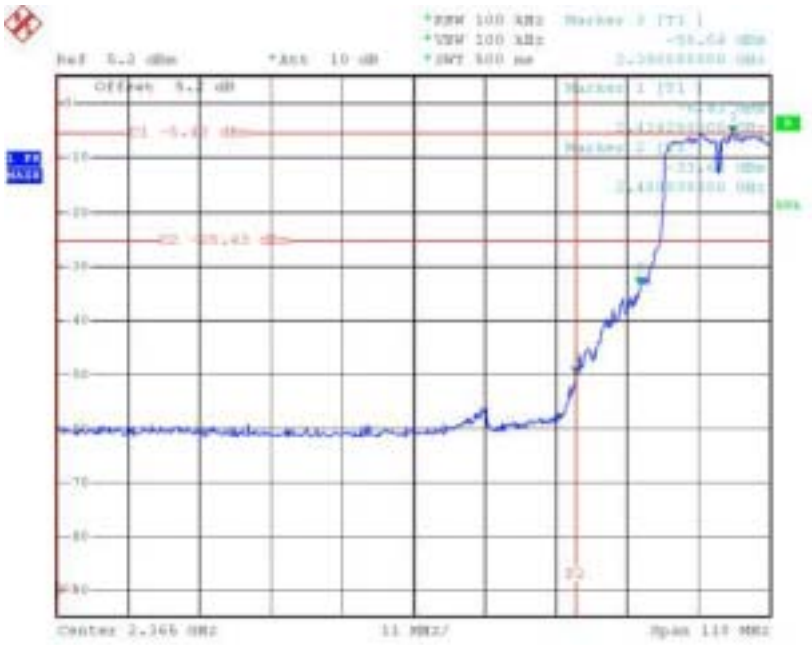
802.11g

4-3



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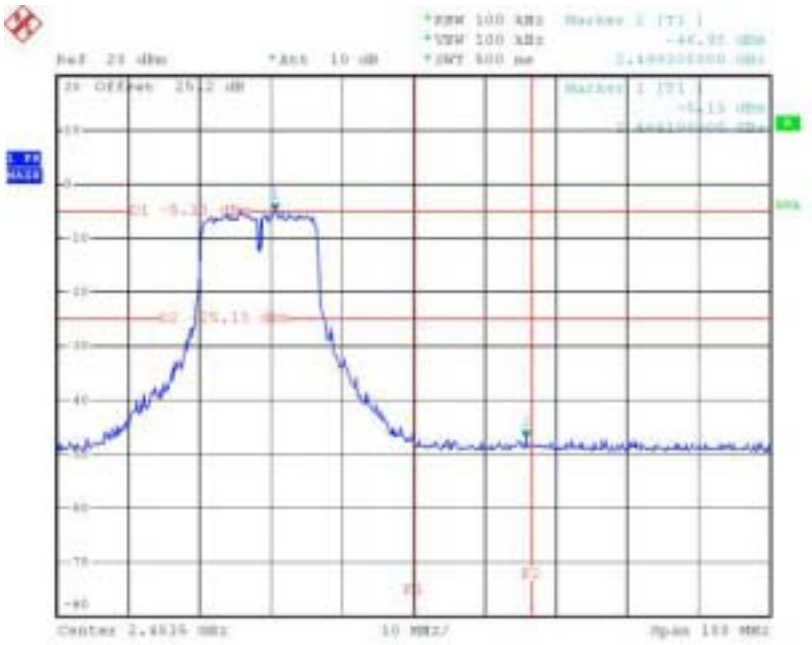
4-4



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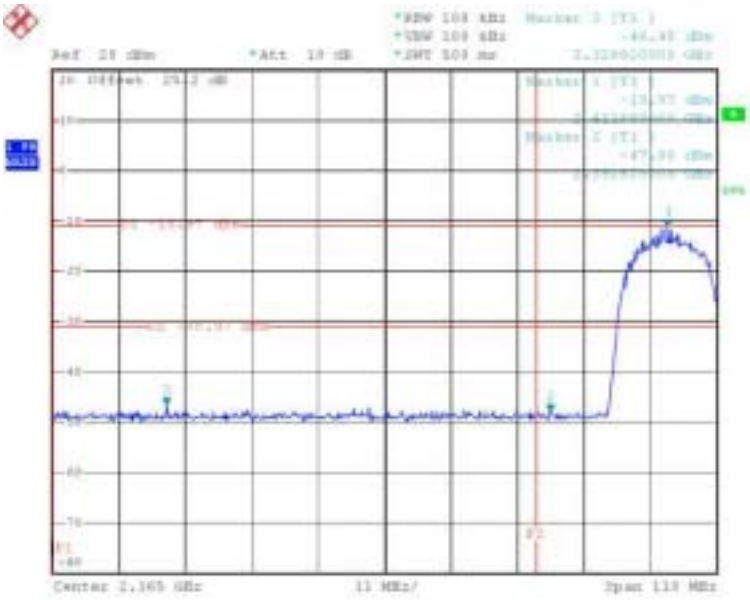
5.4.4.5 Antenna 5

802.11b

5-1



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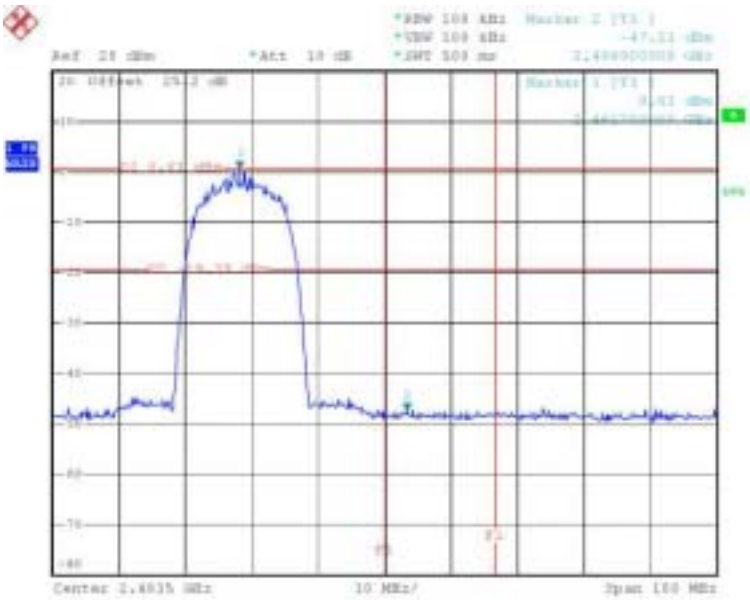
5-2



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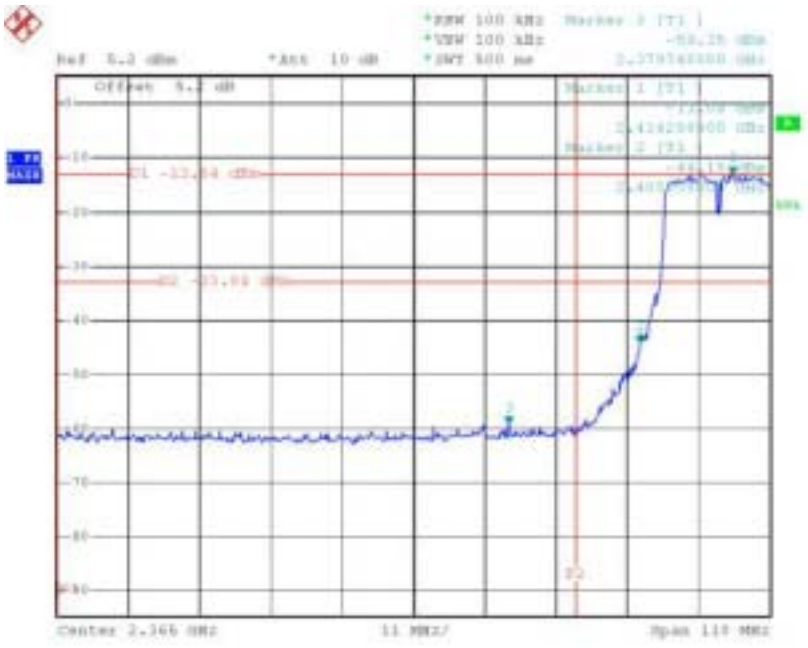
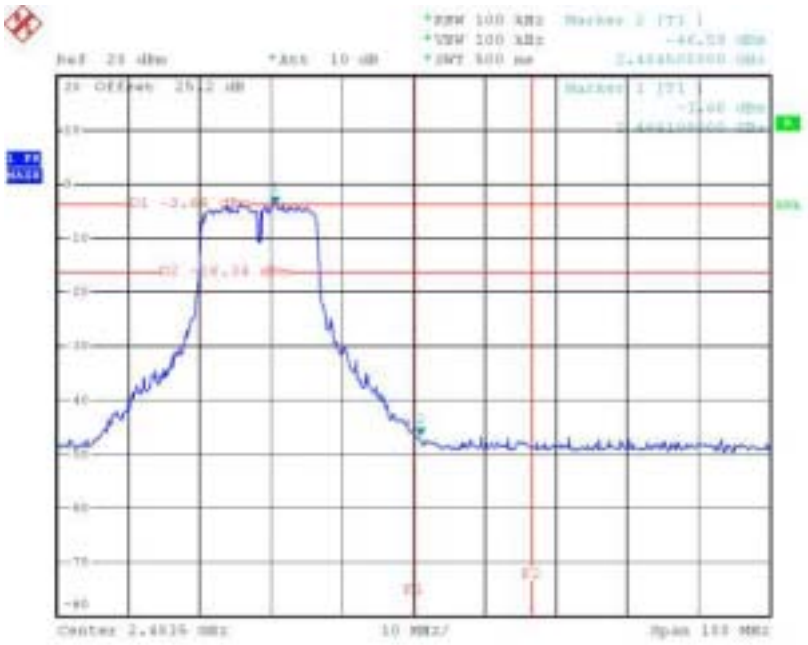
802.11g

5-3



Date: 26.JUL.2004 17:00:48

5-4



Date: 26.JUL.2004 17:14:28

5.5 Peak Output Power

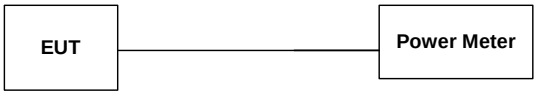
5.5.1 Measuring Instruments：

As described in chapter 10 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：

5.5.4.1 Antenna 1

- Temperature : 25.5°C
- Relative Humidity : 53 %
- Application: 802.11b

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (dBm)
01	2412	17.30	30 dBm
06	2437	19.40	30 dBm
11	2462	20.28	30 dBm

- Application: 802.11g

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (dBm)
01	2412	19.47	30 dBm
06	2437	21.52	30 dBm
11	2462	20.39	30 dBm

- Limit= 30 dBm

5.5.4.2 Antenna 2

- Temperature : 25.5°C
- Relative Humidity : 53 %
- Application: 802.11b

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (dBm)
01	2412	14.71	27.5 dBm
06	2437	18.09	27.5 dBm
11	2462	15.32	27.5 dBm

- Application: 802.11g

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (dBm)
01	2412	13.8	27.5 dBm
06	2437	20.8	27.5 dBm
11	2462	14.6	27.5 dBm

Limit= 30-(8.5-6)=27.5 dBm

5.5.4.3 Antenna 3

- Temperature : 25.5°C
- Relative Humidity : 53 %
- Application: 802.11b

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (dBm)
01	2412	17.07	30 dBm
06	2437	18.11	30 dBm
11	2462	18.14	30 dBm

- Application: 802.11g

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (dBm)
01	2412	17.75	30 dBm
06	2437	19.89	30 dBm
11	2462	17.85	30 dBm

Limit= 30 dBm

5.5.4.4 Antenna 4

- Temperature : 25.5°C
- Relative Humidity : 53 %
- Application: 802.11b

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (dBm)
01	2412	16.95	30 dBm
06	2437	18.05	30 dBm
11	2462	13.34	30 dBm

- Application: 802.11g

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (dBm)
01	2412	16.1	30 dBm
06	2437	21.5	30 dBm
11	2462	16.9	30 dBm

Limit= 30 dBm

5.5.4.5 Antenna 5

- Temperature : 25.5°C
- Relative Humidity : 53 %
- Application: 802.11b

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (dBm)
01	2412	13.3	23.1 dBm
06	2437	15.52	23.1 dBm
11	2462	12.93	23.1 dBm

- Application: 802.11g

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (dBm)
01	2412	16.26	23.1 dBm
06	2437	19.73	23.1 dBm
11	2462	10.72	23.1 dBm

Limit= 30-(12.9-6)=23.1 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

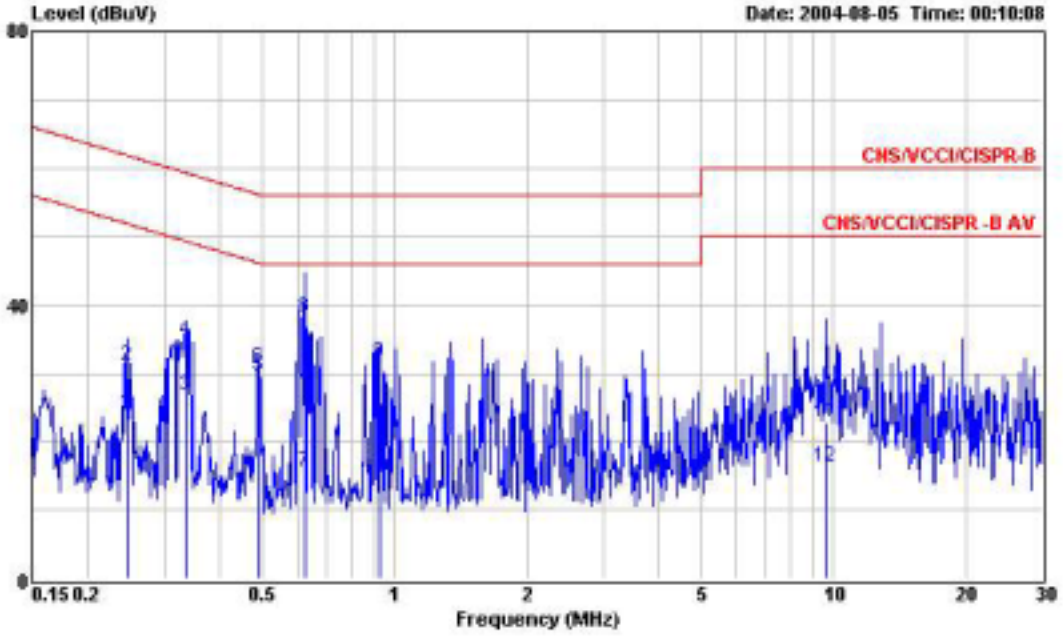
a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
b. Connect EUT to the power port of the line impedance stabilization network (LISN).
c. All the support units are connect to the other LISN.
d. The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

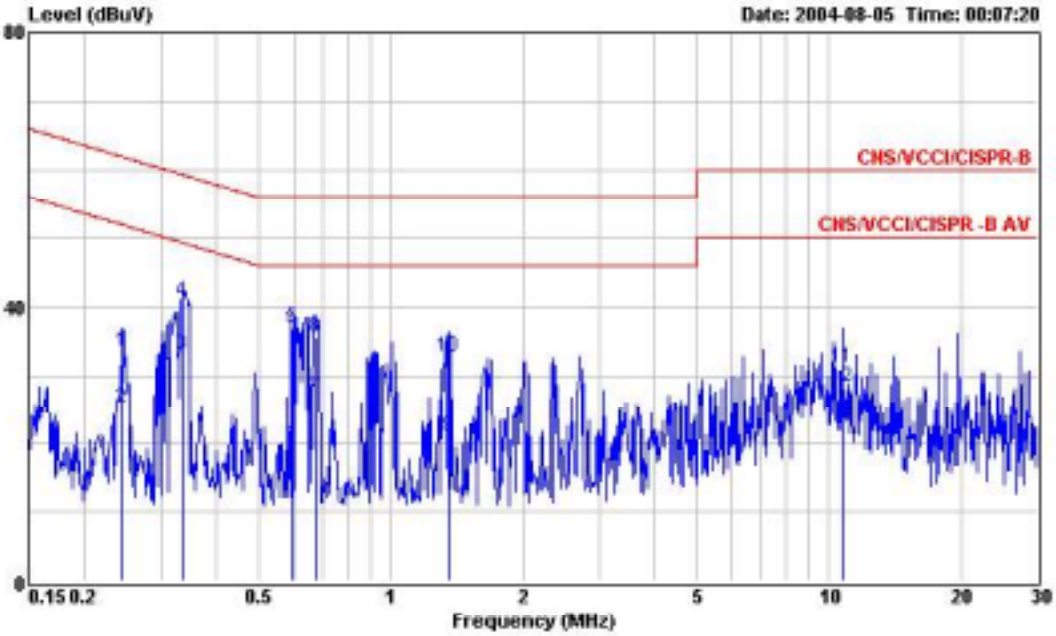
- Test Mode : Mode 1
- Temperature : 25.5°C
- Relative Humidity : 53 %

■ 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 : 802.11a/b/g Access Point
Power : 120Vac/60Hz
Model : WASP-5110
Memo : 802.11 g link mode

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.247	24.42	-27.44	51.86	24.30	0.10	0.02	Average
2	0.247	31.28	-30.58	61.86	31.16	0.10	0.02	QP
3	0.336	26.70	-22.60	49.30	26.58	0.10	0.02	Average
4	0.336	34.79	-24.51	59.30	34.67	0.10	0.02	QP
5	0.489	29.71	-16.47	46.18	29.58	0.10	0.03	Average
6	0.489	30.85	-25.33	56.18	30.72	0.10	0.03	QP
7	0.627	15.48	-30.52	46.00	15.35	0.10	0.03	Average
8	0.627	38.25	-17.75	56.00	38.12	0.10	0.03	QP
9	0.923	31.60	-24.40	56.00	31.46	0.10	0.04	QP
10	0.923	14.68	-31.32	46.00	14.54	0.10	0.04	Average
11	9.600	22.78	-37.22	60.00	22.48	0.20	0.10	QP
12	9.600	16.31	-33.69	50.00	16.01	0.20	0.10	Average



Site : CO01-HY
Condition : CNS/VCCI/CISPR-B 2003 2001/008 NEUTRAL
EUT : 802.11a/b/g Access Point
Power : 120Vac/60Hz
Model : WASP-5110
Memo : 802.11 g link mode

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.244	33.58	-28.38	61.96	33.46	0.10	0.02	QP
2	0.244	25.28	-26.68	51.96	25.16	0.10	0.02	Average
3	0.336	33.09	-16.21	49.30	32.97	0.10	0.02	Average
4	0.336	40.69	-18.61	59.30	40.57	0.10	0.02	QP
5	0.595	36.87	-19.13	56.00	36.74	0.10	0.03	QP
6	0.595	19.53	-26.47	46.00	19.40	0.10	0.03	Average
7	0.672	26.77	-19.23	46.00	26.63	0.10	0.04	Average
8	0.672	35.56	-20.44	56.00	35.42	0.10	0.04	QP
9	1.350	21.08	-24.92	46.00	20.92	0.10	0.06	Average
10	1.350	32.72	-23.28	56.00	32.56	0.10	0.06	QP
11	10.730	31.27	-28.73	60.00	30.95	0.22	0.10	QP
12	10.730	28.37	-21.63	50.00	28.05	0.22	0.10	Average

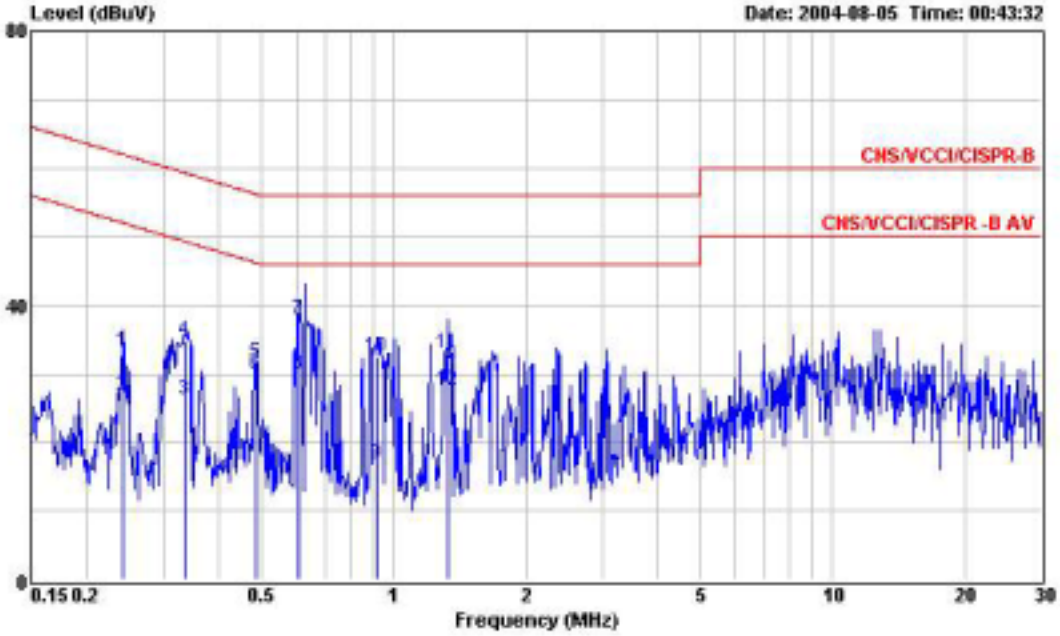
Test Engineer : _____

Jay

6.3.2 Frequency Range of Test : 150kHz to 30 MHz

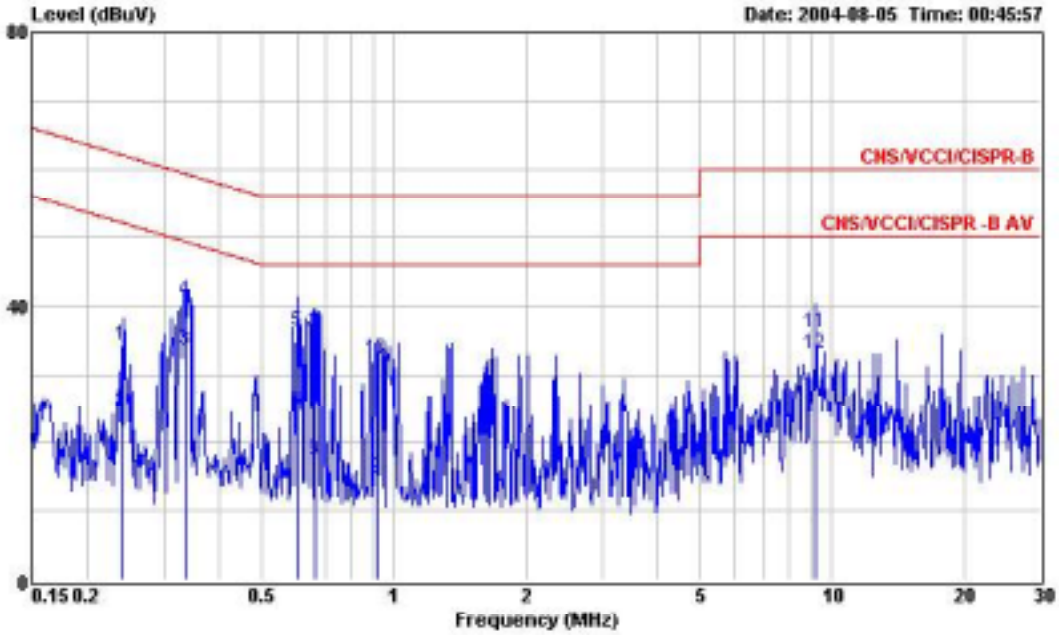
- Test Mode : Mode 2
- Temperature : 25.5°C
- Relative Humidity : 53 %

■ 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 : 802.11a/b/g Access Point
Power : 120Vac/60Hz
Model : WASP-5100
Memo : 802.11 g link mode

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.242	33.16	-28.87	62.03	33.04	0.10	0.02	QP
2	0.242	26.67	-25.36	52.03	26.55	0.10	0.02	Average
3	0.334	26.26	-23.09	49.35	26.14	0.10	0.02	Average
4	0.334	34.77	-24.58	59.35	34.65	0.10	0.02	QP
5	0.486	31.67	-24.57	56.24	31.54	0.10	0.03	QP
6	0.486	29.79	-16.45	46.24	29.66	0.10	0.03	Average
7	0.607	37.89	-18.11	56.00	37.76	0.10	0.03	QP
8	0.607	29.93	-16.07	46.00	29.80	0.10	0.03	Average
9	0.914	16.83	-29.17	46.00	16.69	0.10	0.04	Average
10	0.914	32.50	-23.50	56.00	32.36	0.10	0.04	QP
11	1.330	32.95	-23.05	56.00	32.79	0.10	0.06	QP
12	1.330	27.46	-18.54	46.00	27.30	0.10	0.06	Average



Site : CO01-HY
Condition : CNS/VCCI/CISPR-B 2003 2001/008 NEUTRAL
EUT : 802.11a/b/g Access Point
Power : 120Vac/60Hz
Model : WASP-5100
Memo : 802.11 g link mode

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.240	34.22	-27.88	62.10	34.10	0.10	0.02	QP
2	0.240	24.43	-27.67	52.10	24.31	0.10	0.02	Average
3	0.336	33.49	-15.81	49.30	33.37	0.10	0.02	Average
4	0.336	40.79	-18.51	59.30	40.67	0.10	0.02	QP
5	0.601	36.29	-19.71	56.00	36.16	0.10	0.03	QP
6	0.601	24.67	-21.33	46.00	24.54	0.10	0.03	Average
7	0.658	35.97	-20.03	56.00	35.83	0.10	0.04	QP
8	0.658	17.34	-28.66	46.00	17.20	0.10	0.04	Average
9	0.918	14.68	-31.32	46.00	14.54	0.10	0.04	Average
10	0.918	32.30	-23.70	56.00	32.16	0.10	0.04	QP
11	9.200	36.05	-23.95	60.00	35.75	0.20	0.10	QP
12	9.200	32.94	-17.06	50.00	32.64	0.20	0.10	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

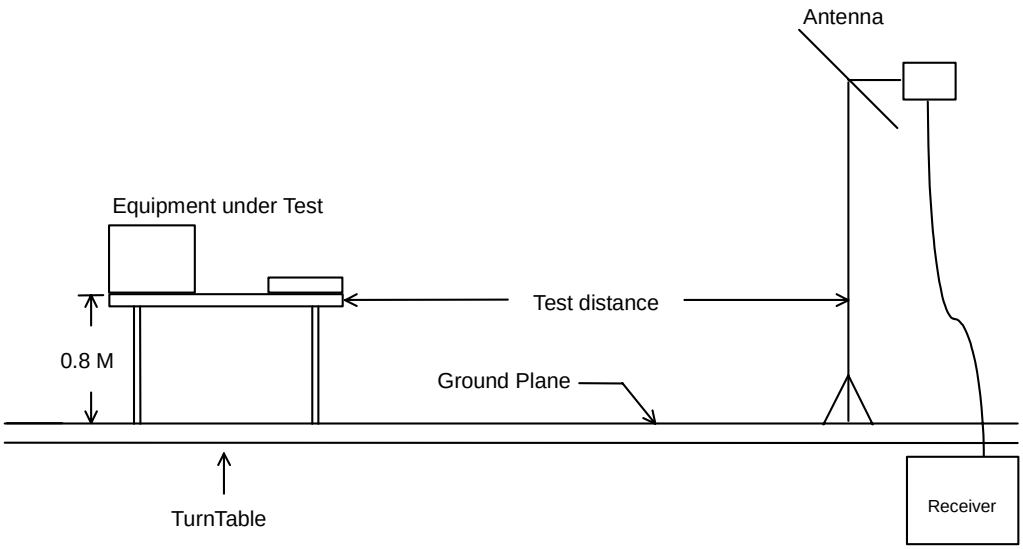
7.1. Major Measuring Instruments

● Amplifier	(MITEQ AFS44)
RF Gain	40 dB
Signal Input	100 MHz to 26.5 GHz
● Spectrum analyzer	(HP 8447D)
RF Gain	30 dB
Signal Input	100 kHz to 1.3 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



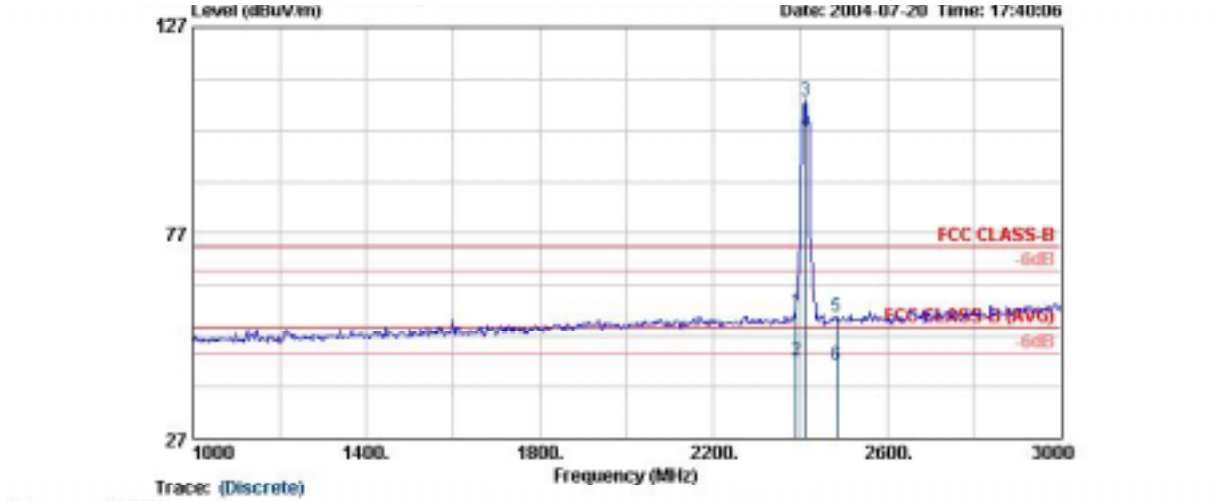
7.4. Test Result of Radiated Emission

7.4.1 Antenna 1

Test Mode: 802.11b TX CH01

- Test Distance : 3 m
- Temperature : 25.3 °C
- Relative Humidity :53.5 %
- 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.

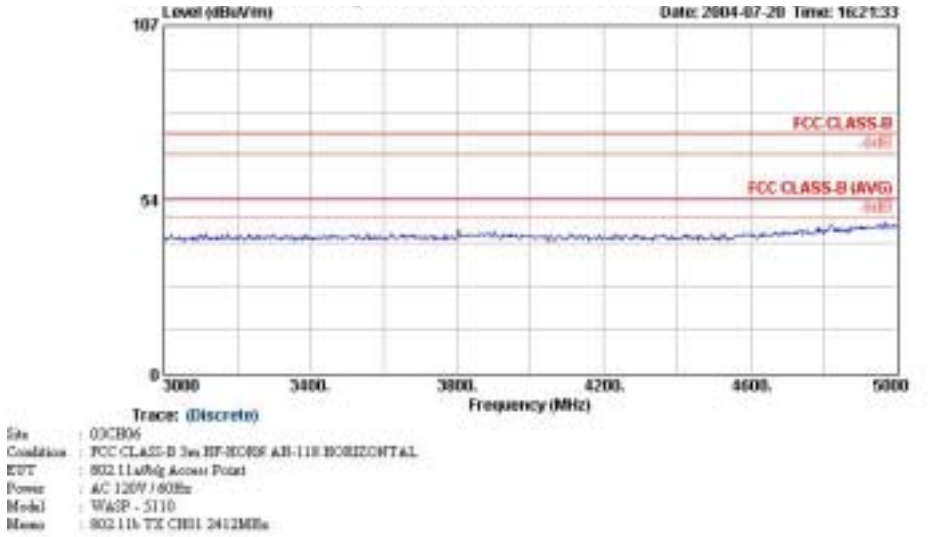


Site : 03CH06
Condition : FCC CLASS-B 3m HF-HORN AH-118 HORIZONTAL
EUT : 802.11a/b/g Access Point
Power : AC 120V / 60Hz
Model : WASP - 5110
Memo : 802.11b TX CH01 2412MHz

	Freq	Level	Over Limit	Limit Line	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB		cm	deg
1	2390.00	57.94	-16.06	74.00	28.40	44.34	3.33	Peak	0	0
2	2390.00	46.09	-7.91	54.00	28.40	44.34	3.33	Average	0	0
3 @	2412.30	109.17			28.41	44.34	3.35	Peak	0	0
4 @	2412.30	101.61			28.41	44.34	3.35	Average	0	0
5	2483.50	56.83	-17.17	74.00	28.48	44.31	3.40	Peak	---	---
6	2483.50	44.92	-9.08	54.00	28.48	44.31	3.40	Average	0	0

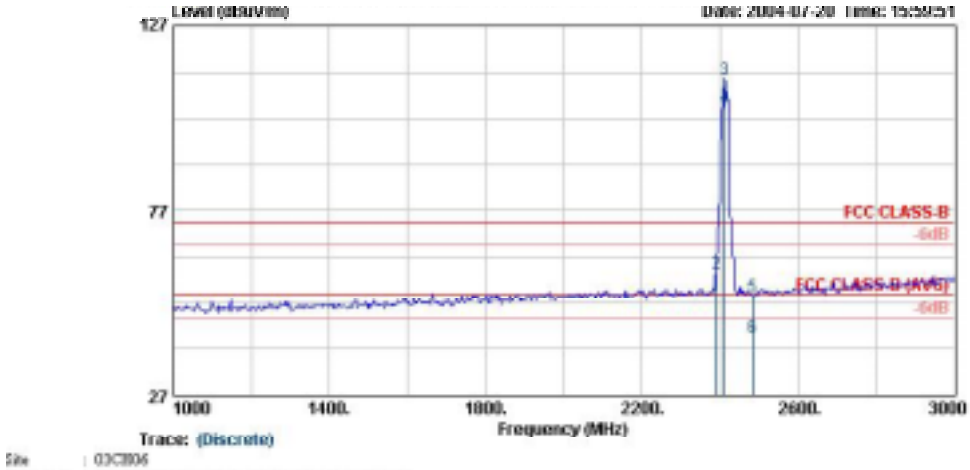
Remark:

The “X” represent a fundamental frequency.



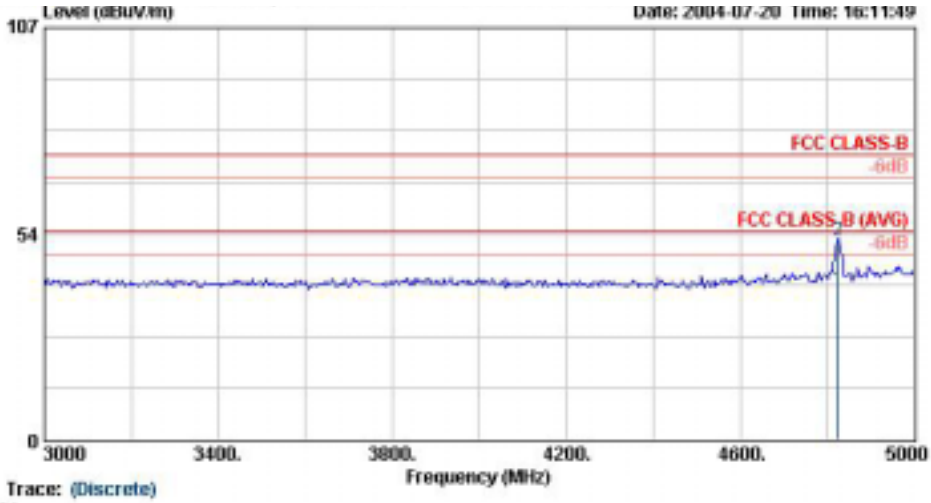
Remark:

The “X” represent a fundamental frequency.



		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	!	2390.00	-2.41	51.59	54.00	28.40	44.34	3.33	Average	0	0
2		2390.00	-13.89	60.11	74.00	28.40	44.34	3.33	Peak	0	0
3	X	2412.00		112.43		28.41	44.34	3.35	Peak	0	0
4	@	2412.00		105.11		28.41	44.34	3.32	Average	0	0
5		2483.50	-20.16	53.84	74.00	28.43	44.31	3.40	Peak	---	---
6		2483.50	-11.31	42.69	54.00	28.43	44.31	3.40	Average	0	0

Remark: The “X” represent a fundamental frequency.



Site : 03CH06
Condition : FCC CLASS-B 3m HF-HORN AH-118 VERTICAL
EUT : 802.11a/b/g Access Point
Power : AC 120V / 60Hz
Model : WASP - 5110
Memo : 802.11b TX CH01 2412MHz

	Freq	Level	Over Limit	Limit Line	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB		cm	deg
1	4824.00	39.06	-14.94	54.00	32.36	45.56	4.76	Average	0	0
2	4824.00	51.58	-22.42	74.00	32.36	45.56	4.76	Peak	0	0

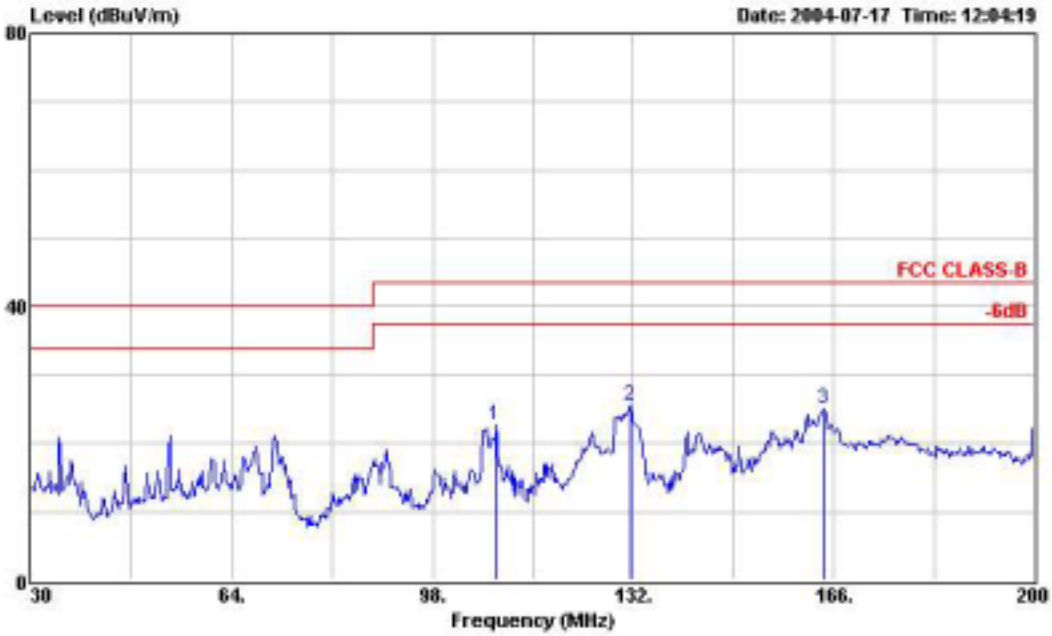
Remark:

Frequency from 5GHz to 25GHz, the emission emitted by the EUT is too low to be measured.

Test Mode: 802.11b TX CH06

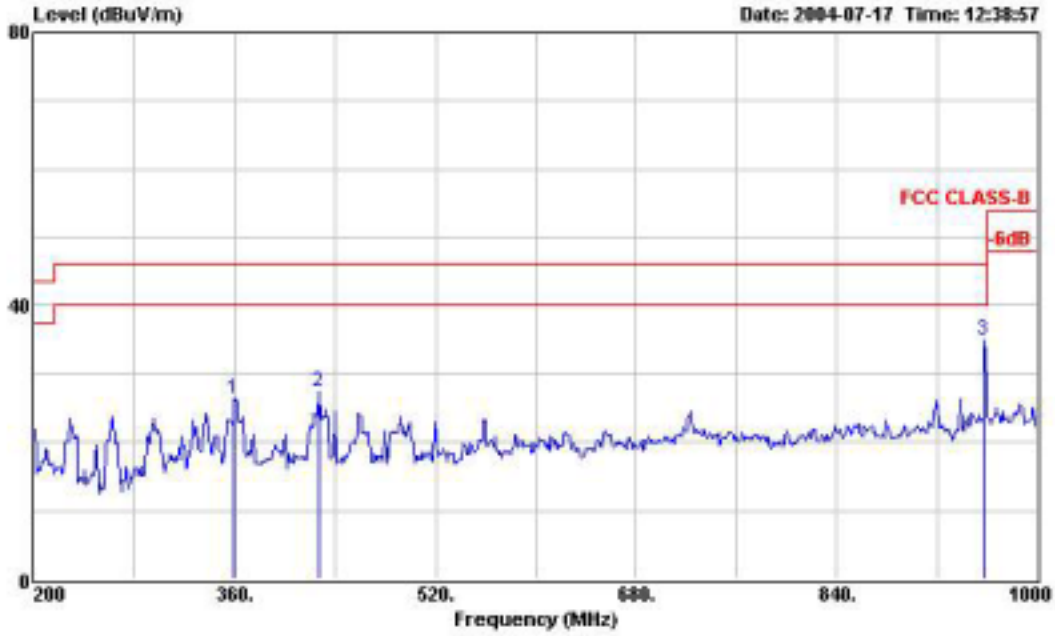
- Test Distance : 3 m
- Temperature : 25.3 °C
- Relative Humidity :53.5 %
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

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



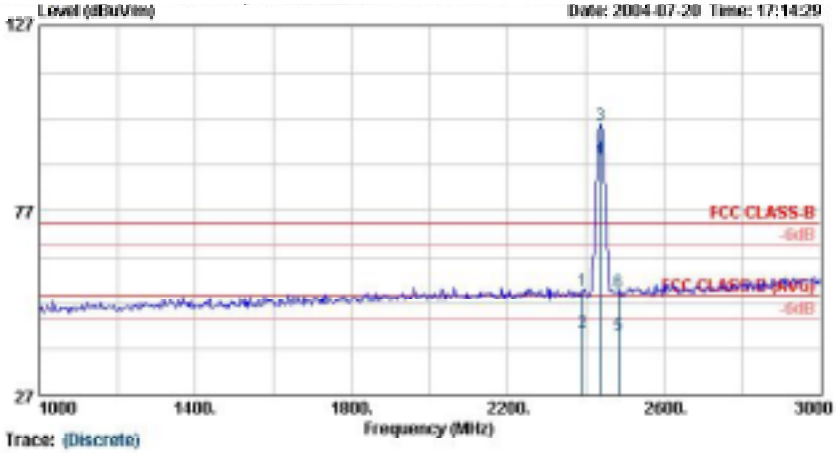
Site : 03CH03-HY
Condition : FCC CLASS-B 3m BIC-9124--301 HORIZONTAL
EUT : 802.11a/b/g Access Point
Power : AC 120V / 60Hz
Model : WASP-5110
Memo : 11b TX CH06 2437MHz
: WS2000

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	108.710	22.65	-20.85	43.50	38.32	10.35	1.86	27.88	Peak	---	---
2	131.660	25.62	-17.88	43.50	39.96	11.43	2.07	27.84	Peak	---	---
3	164.470	25.03	-18.47	43.50	37.54	12.94	2.32	27.77	Peak	---	---



Site : 03CH03-HY
Condition : FCC CLASS-B 3m LOG-9111-221 HORIZONTAL
EUT : 802.11a/b/g Access Point
Power : AC 120V / 60Hz
Model : WASP-5110
Memo : 11b TX CH06 2437MHz
: WS2000

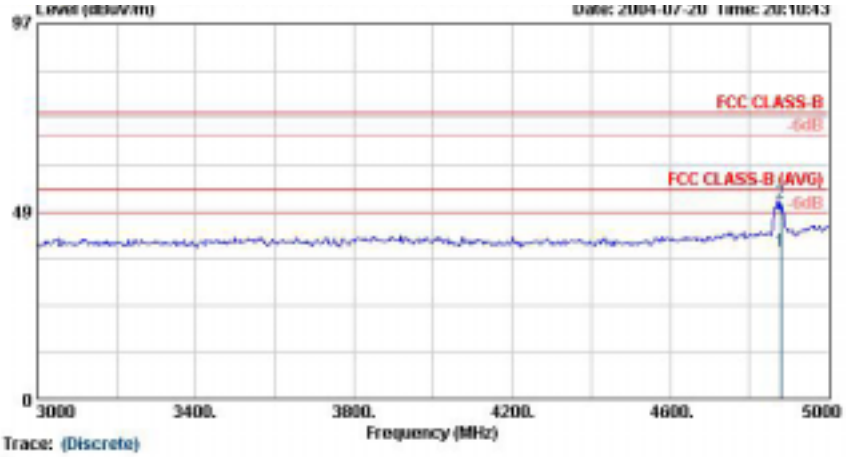
	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	359.200	26.43	-19.57	46.00	35.46	15.23	3.34	27.60	Peak	---	---
2	426.400	27.41	-18.59	46.00	35.66	16.18	3.60	28.03	Peak	---	---
3	957.600	34.86	-11.14	46.00	35.55	21.90	5.65	28.24	Peak	---	---



Site : 03CH06
Condition : FCC CLASS-B 3m HF-HORN AH-118 HORIZONTAL
EUT : 802.11a/b/g Access Point
Power : AC 120V / 60Hz
Model : WASP - 5110
Memo : 802.11b TX CH06 2437MHz

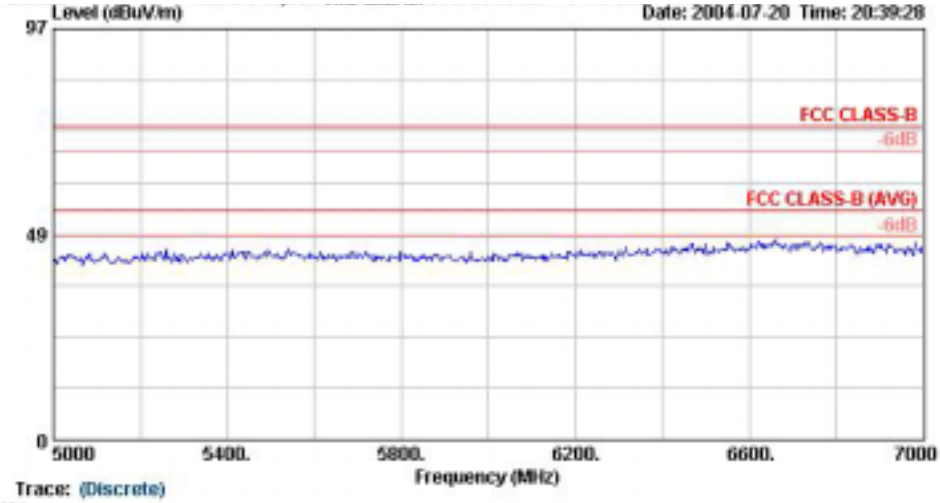
		Freq	Level	Over Limit	Limit Line	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
		MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB		cm	deg
1		2390.00	55.71	-18.29	74.00	28.40	44.34	3.33	Peak	---	---
2		2390.00	44.15	-9.85	54.00	28.40	44.34	3.33	Average	---	---
3	X	2437.00	100.21			28.45	44.32	3.37	Peak	---	---
4	@	2437.00	91.15			28.45	44.32	3.37	Average	---	---
5		2483.50	43.48	-10.52	54.00	28.48	44.31	3.40	Average	---	---
6		2483.50	55.12	-18.88	74.00	28.48	44.31	3.40	Peak	---	---

Remark: The “X” represent a fundamental frequency.



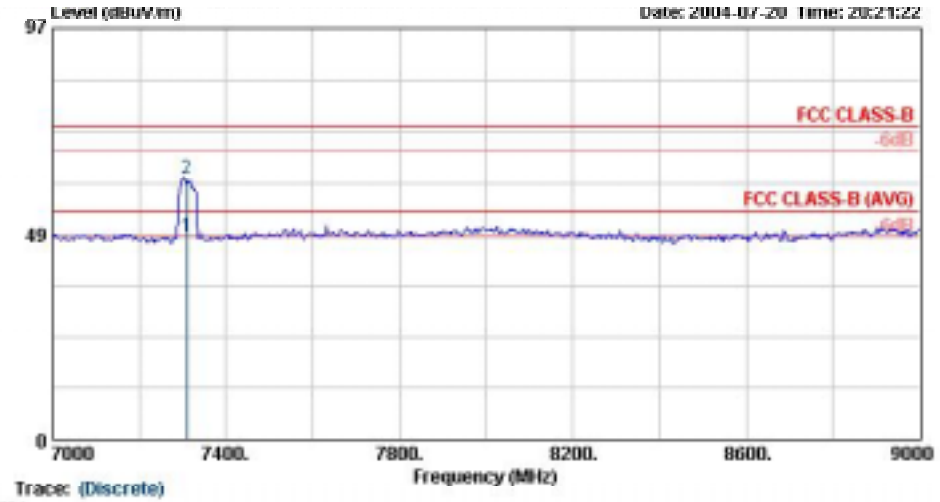
Site : 03CH06
Condition : FCC CLASS-B 3m HF-HORN AH-118 HORIZONTAL
EUT : 802.11a/b/g Access Point
Power : AC 120V / 60Hz
Model : WASP - 5110
Memo : 802.11b TX CH06 2437MHz

	Freq	Level	Over Limit	Limit Line	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB		cm	deg
1	4879.00	38.05	-15.95	54.00	32.70	45.60	4.80	Average	0	0
2	4879.00	50.92	-23.08	74.00	32.70	45.60	4.80	Peak	0	0



Trace: (Discrete)

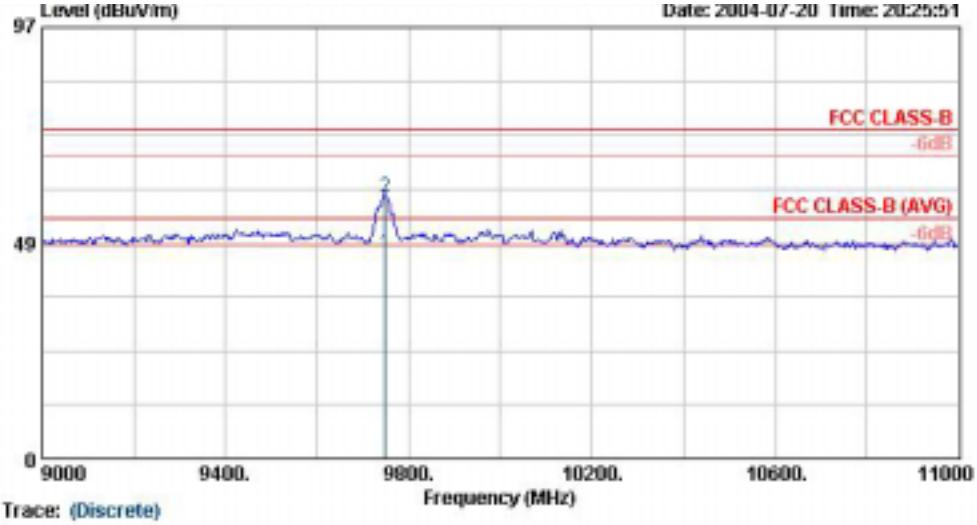
Site : 03CH06
Condition : FCC CLASS-B 3m HF-HORN AH-118 HORIZONTAL
EUT : 802.11a/b/g Access Point
Power : AC 120V / 60Hz
Model : WASP - 5110
Memo : 802.11b TX CH06 2437MHz



Trace: (Discrete)

Site : 03CH06
Condition : FCC CLASS-B 3m HF-HORN AH-118 HORIZONTAL
EUT : 802.11a/b/g Access Point
Power : AC 120V / 60Hz
Model : WASP - 5110
Memo : 802.11b TX CH06 2437MHz

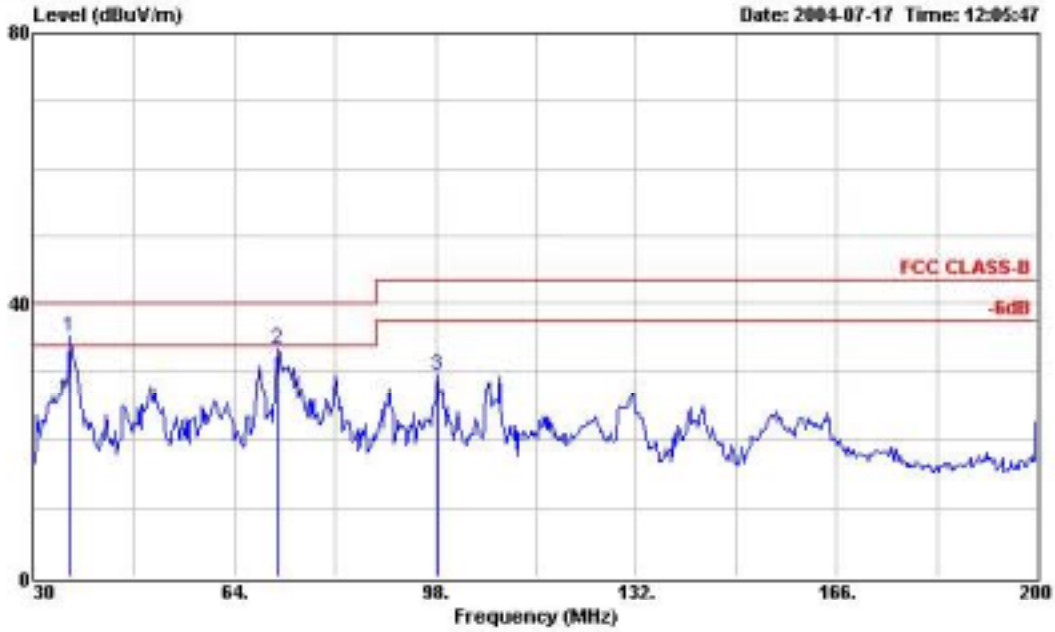
	Freq	Level	Over Limit	Limit Line	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB		cm	deg
1	7310.00	47.93	-6.07	54.00	35.51	46.24	6.20	Average	0	0
2	7310.00	61.59	-12.41	74.00	35.51	46.24	6.20	Peak	0	0



Trace: (Discrete)

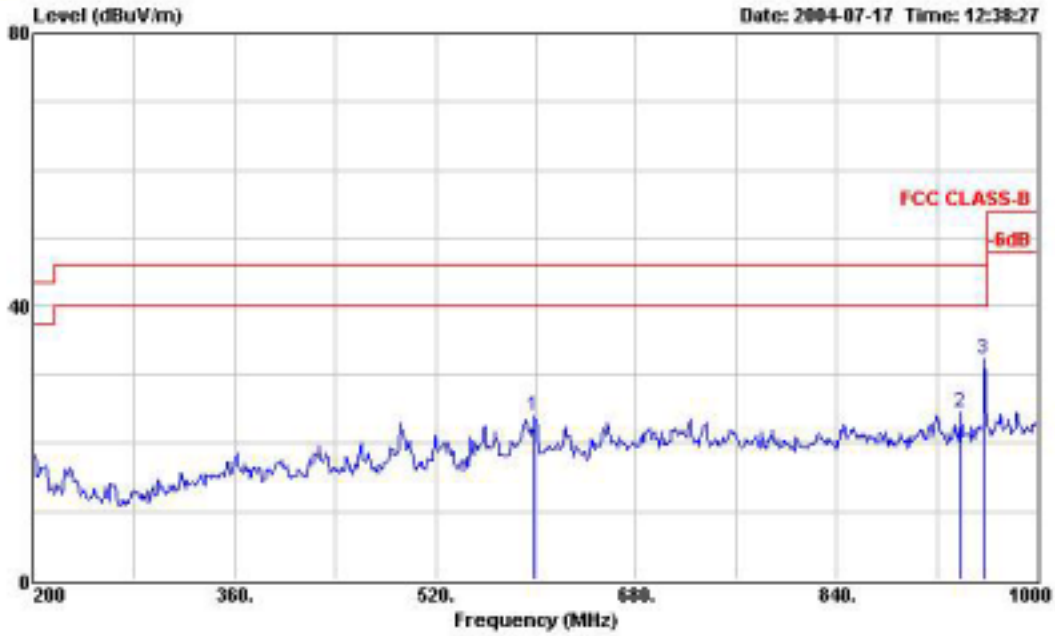
Site : 03CH06
Condition : FCC CLASS-B 3m HF-HORN AH-118 HORIZONTAL
EUT : 802.11a/b/g Access Point
Power : AC 120V / 60Hz
Model : WASP - 5110
Memo : 802.11b TX CH06 2437MHz

	Freq	Level	Over Limit	Limit Line	Antenna Factor	Preamp Factor	Cable Loss	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB		cm	deg
1	9748.00	46.20	-7.80	54.00	38.26	44.45	7.91	Average	0	0
2	9748.00	58.86	-15.14	74.00	38.26	44.45	7.91	Peak	0	0



Site : 03CH03-HY
Condition : FCC CLASS-B 3m BIC-9124--301 VERTICAL
EUT : 802.11a/b/g Access Point
Power : AC 120V / 60Hz
Model : WASP-5110
Memo : 11b TX CH06 2437MHz
: WS2000

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1 !	35.950	35.05	-4.95	40.00	49.32	12.73	1.03	28.03	Peak	105	313
2	71.310	33.23	-6.77	40.00	50.81	8.96	1.42	27.96	Peak	---	---
3	98.340	29.34	-14.16	43.50	45.84	9.65	1.75	27.90	Peak	---	---



Site : 03CH03-HY
Condition : FCC CLASS-B 3m LOG-9111-221 VERTICAL
EUT : 802.11a/b/g Access Point
Power : AC 120V / 60Hz
Model : WASP-5110
Memo : 11b TX CH06 2437MHz
: WS2000

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	599.200	23.91	-22.09	46.00	29.36	18.98	4.37	28.80	Peak	---	---
2	938.400	24.38	-21.62	46.00	25.53	21.66	5.45	28.26	Peak	---	---
3	957.600	32.39	-13.61	46.00	33.08	21.90	5.65	28.24	Peak	---	---