



## **FCC 47 CFR PART 15 SUBPART C**

### **TEST REPORT**

**For**

**WLAN 11a+b/g Access Point**

**Model: RBT-1002**

**Trade Name: ENTERASYS**

*Issued to*

**ENTERASYS NETWORKS  
50 MINUTEMAN ROAD, ANDOVER, Massachusetts,  
United States**

*Issued by*

**Compliance Certification Services Inc.  
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## 1. TEST RESULT CERTIFICATION

**Applicant:** ENTERASYS NETWORKS  
50 MINUTEMAN ROAD, ANDOVER, Massachusetts,  
United States

**Equipment Under Test:** WLAN 11a+b/g Access Point

**Trade Name:** ENTERASYS

**Model:** RBT-1002

**Date of Test:** July 11 ~ August 17, 2005

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR Part 15 Subpart C	No non-compliance noted

### We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4: 2003 and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209, 15.247.

The test results of this report relate only to the tested sample EUT identified in this report.

*Approved by:*

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Gavin Lim  
Section Manager  
Compliance Certification Services Inc.

*Reviewed by:*

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Amanda Wu  
Section Manager  
Compliance Certification Services Inc.



## 2. EUT DESCRIPTION

<b>Product</b>	WLAN 11a+b/g Access Point
<b>Trade Name</b>	ENTERASYS
<b>Model Number</b>	RBT-1002
<b>Model Discrepancy</b>	N/A
<b>Power Supply</b>	DELTA / ADP-15KB I/P: 100-240V, 0.5A, 50-60Hz O/P: 5.1V, 3.0A
<b>Frequency Range</b>	IEEE 802.11a Base mode: 5.745~5.825 GHz IEEE 802.11b/g Base mode: 2.412~2.462 GHz
<b>Transmit Power</b>	IEEE 802.11a Base mode: 20.42 dBm IEEE 802.11b Base mode: 19.68 dBm IEEE 802.11g Base mode: 19.83 dBm
<b>Modulation Technique</b>	IEEE 802.11a: OFDM (QPSK, BPSK, 16-QAM, 64-QAM) IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g: DSSS (CCK, DQPSK, DBPSK) + OFDM (QPSK, BPSK, 16-QAM, 64-QAM)
<b>Transmit Data Rate</b>	IEEE 802.11a: 54, 48, 36, 24, 18, 12, 9, 6 Mbps IEEE 802.11b: 11, 5.5, 2, 1 Mbps IEEE 802.11g: 54, 48, 36, 24, 18, 12, 11, 9, 6, 5.5, 2, 1Mbps
<b>Number of Channels</b>	IEEE 802.11a Base mode: 5 Channels IEEE 802.11b/g Base mode: 11 Channels
<b>Enclosure Material Type:</b>	Top cover (Plastic), Base(metal)
<b>Antenna Specification</b>	Trade name / Model name: Accton / EWP6021E-ZZ Antenna Type: dual-band one feeder antenna Antenna Gain: IEEE 802.11a: 5dBi IEEE 802.11b/g: 2dBi

**Remark:** The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.

This submittal(s) (test report) is intended for FCC ID: QXO-RBT1002 filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.



### **3. TEST METHODOLOGY**

The tests documented in this report were performed in accordance with ANSI C63.4 and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, 15.207, 15.209 and 15.247.

#### **3.1 EUT CONFIGURATION**

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

#### **3.2 EUT EXERCISE**

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

#### **3.3 GENERAL TEST PROCEDURES**

##### **Conducted Emissions**

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

##### **Radiated Emissions**

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4.



### 3.4 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

- (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
<sup>1</sup> 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	( <sup>2</sup> )
13.36 - 13.41			

<sup>1</sup> Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

<sup>2</sup> Above 38.6

- (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

### 3.5 DESCRIPTION OF TEST MODES

The EUT (model: RBT-1002) had been tested under operating condition.

Software used to control the EUT for staying in continuous transmitting mode was programmed.

After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz, which worst case was in normal link mode only.

IEEE802.11a Base mode:

Channel Low(5745MHz), Channel Mid(5785MHz) and Channel High(5825MHz) with 6Mbps data rate were chosen for full testing.

IEEE802.11b Base mode:

Channel Low(2412MHz), Channel Mid(2437MHz) and Channel High(2462MHz) with 11Mbps data rate were chosen for full testing.

IEEE802.11g Base mode:

Channel Low(2412MHz), Channel Mid(2437MHz) and Channel High(2462MHz) with 6Mbps data rate were chosen for full testing.



## 4. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

### 4.1 MEASUREMENT EQUIPMENT USED

#### Equipment Used for Emissions Measurement

**Remark:** Each piece of equipment is scheduled for calibration once a year.

Conducted Emissions Test Site				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY43360131	01/10/2006

Open Area Test Site # 3				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI Test Receiver	R&S	ESVS20	838804/004	01/08/2006
Spectrum Analyzer	R&S	FSP30	100112	09/23/2005
Spectrum Analyzer	Agilent	E4446A	MY43360131	01/10/2006
Pre-Amplifier	MITEC	AFS42-00102650	924206	N.C.R.
Pre-Amplifier	MITEC	AMF-6F-260400	945377	N.C.R.
Bilog Antenna	SCHWAZBECK	VULB9163	145	07/05/2006
Horn Antenna	EMCO	3115	00022250	04/18/2006
Horn Antenna	EMCO	3116	2487	12/08/2005
Turn Table	EMCO	2081-1.21	9709-1885	N.C.R.
Antenna Tower	EMCO	2075-2	9707-2060	N.C.R.
Controller	EMCO	2090	9709-1256	N.C.R.
RF Switch	ANRITSU	MP59B	M53867	N.C.R.
Site NSA	C&C	N/A	N/A	09/06/2005

**Remark:** The measurement uncertainty is less than +/- 2.16dB, which is evaluated as per the NAMAS NIS 81 and CISPR/A/291/CDV.

Powerline Conducted Emissions Test Site				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI TEST RECEIVER 9kHz-30MHz	ROHDE & SCHWARZ	ESHS30	828144/003	09/24/2005
TWO-LINE V-NETWORK 9kHz-30MHz	SCHAFFNER	NNB41	03/10013	06/11/2006
LISN 10kHz-100MHz	EMCO	3825/2	9106-1809	02/17/2006
Test S/W	LABVIEW (V 6.1)			

**Remark:** The measurement uncertainty is less than +/- 2.81dB, which is evaluated as per the NAMAS NIS 81 and CISPR/A/291/CDV.



## **5. FACILITIES AND ACCREDITATIONS**

### **5.1 FACILITIES**

All measurement facilities used to collect the measurement data are located at

☒ No. 81-1, Lane 210, Bade Rd. 2, Luchu Hsiang, Taoyuan Hsien, Taiwan, R.O.C.

☐ No. 199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

### **5.2 EQUIPMENT**

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.








All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

### **5.3 LABORATORY ACCREDITATIONS AND LISTING**

The test facilities used to perform radiated and conducted emissions tests are accredited by National Voluntary Laboratory Accreditation Program for the specific scope of accreditation under Lab Code: 200600-0 to perform Electromagnetic Interference tests according to FCC PART 15 AND CISPR 22 requirements. No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government. In addition, the test facilities are listed with Federal Communications Commission (Registration no: 93105 and 90471).



## 5.4 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	NVLAP*	EN 55011, EN 55014-1, AS/NZS 1044, CNS 13783-1, EN 55022, CNS 13438, EN 61000-3-2, EN 61000-3-3, ANSI C63.4, FCC OST/MP-5, AS/NZS CISPR 22, IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-11	 200600-0
USA	FCC	3/10 meter Open Area Test Sites to perform FCC Part 15/18 measurements	 93105, 90471
Japan	VCCI	4 3/10 meter Open Area Test Sites to perform conducted/radiated measurements	 R-393/1066/725/879 C-402/747/912
Norway	NEMKO	EN 50081-1/2, EN 50082-1/2, IEC 61000-6-1/2, EN 50091-2, EN 50130-4, EN 55011, EN 55013, EN 55014-1/2, EN 55015, EN 55022, EN 55024, EN 61000-3-2/3, EN 61326-1, IEC 61000-4-2/3/4/5/6/8/11, EN 60601-1-2, EN 300 328-2, EN 300 422-2, EN 301 419-1, EN 301 489-01/03/07/08/09/17, EN 301 419-2/3, EN 300 454-2, EN 301 357-2	 ELA 124a ELA 124b ELA 124c
Taiwan	CNLA	EN 300 328-1/2, EN 300 220-1/2/3, EN 300 440-1/2, EN 61000-3-2, EN 61000-3-3, 47 CFR FCC Part 15 Subpart C/D/E, EN 55013, CNS 13439, EN 55014-1, CNS 13783-1, EN 55022, CNS 13438, CISPR 22, AS/NZS 3548, EN 61000-4-2/3/4/5/6/8/11, ENV 50204, IEEE Std 1528, FCC OET Bulletin, 65+Supplement C, EN50360, EN50361, EN50371, RSS102	 0363 ILAC MRA
Taiwan	BSMI	CNS 13438, CNS 13783-1, CNS 13439, CNS 14115	 SL2-IS-E-0014 SL2-IN-E-0014 SL2-A1-E-0014 SL2-R1-E-0014 SL2-R2-E-0014 SL2-L1-E-0014
Canada	Industry Canada	RSS212, Issue 1	 IC 3991-3 IC 3991-4

\* No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government.

\* Australia: MRA of NVLAP AS/NZS 4771 & AS/NZS 4268.



## 6. SETUP OF EQUIPMENT UNDER TEST

### 6.1 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

### 6.2 SUPPORT EQUIPMENT

No.	Device Type	Brand	Model	Series No.	FCC ID	Data Cable	Power Cord
1.	Notebook PC (remote)	IBM	2672 (X31)	99PBTKB	FCC DoC	N/A	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core

**Remark:**

- 1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.*
- 2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.*



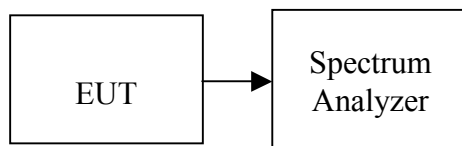
## 7. FCC PART 15.247 REQUIREMENTS

### 7.16dB BANDWIDTH

#### LIMIT

According to §15.247(a)(2), systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6dB bandwidth shall be at least 500 kHz.

#### Test Configuration



#### TEST PROCEDURE

1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW = 100kHz, VBW = RBW, Span = Base mode: 50MHz / Turbo mode: 50MHz, Sweep = auto.
4. Mark the peak frequency and -6dB (upper and lower) frequency.
5. Repeat until all the rest channels are investigated.

**TEST RESULTS***No non-compliance noted***Test Data****Test mode: IEEE 802.11b mode**

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
Low	2412	12000	>500	PASS
Mid	2437	11750		PASS
High	2462	12670		PASS

**Test mode: IEEE 802.11g mode**

Channel	Frequency (MHz)		Bandwidth (kHz)	Limit (kHz)	Test Result
Low	Base mode	2412	16500	>500	PASS
Mid		2437	16500		PASS
High		2462	16500		PASS

**Test mode: IEEE 802.11a mode**

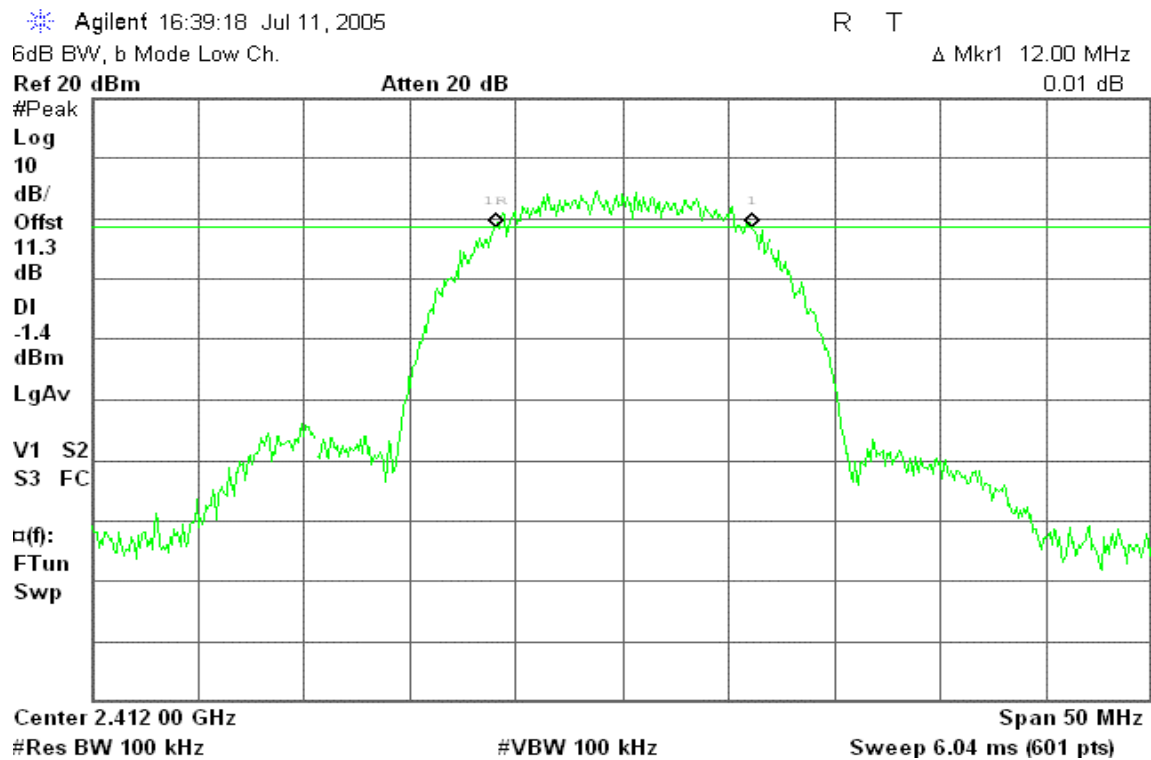
Channel	Frequency (MHz)		Bandwidth (kHz)	Limit (kHz)	Test Result
Low	Base mode	5745	16500	>500	PASS
Mid		5785	16500		PASS
High		5825	16500		PASS



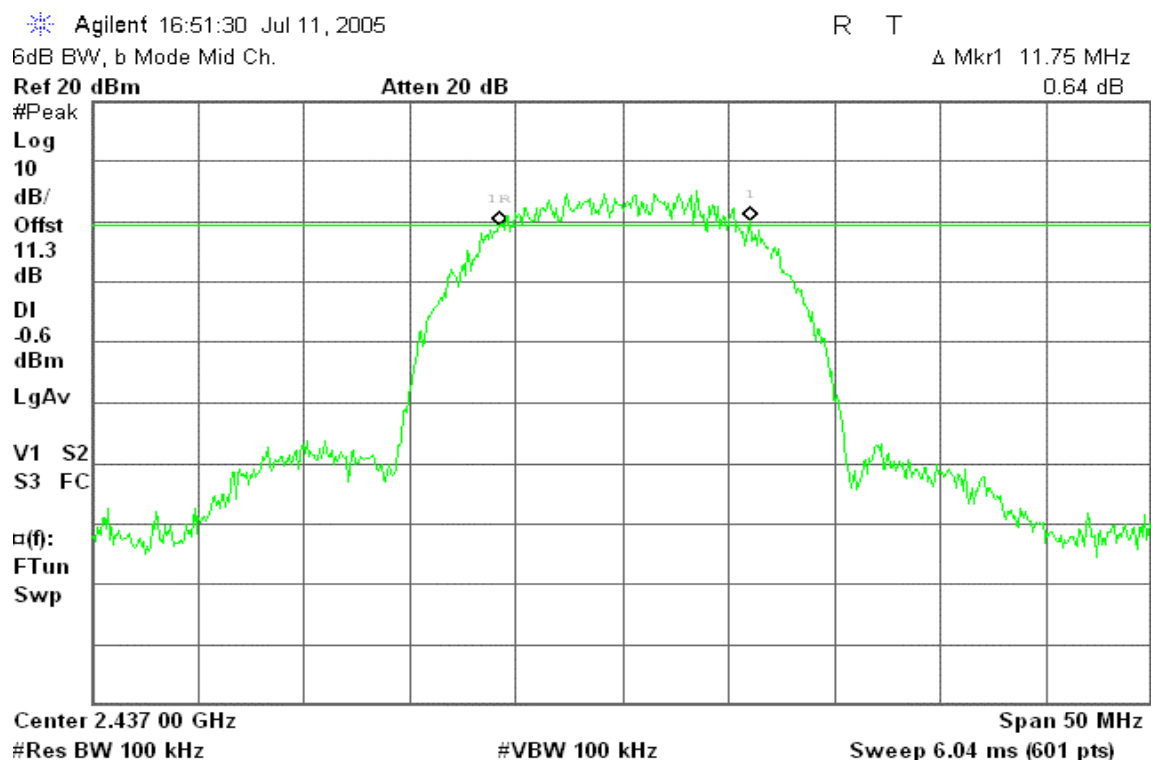
## Test Plot

### IEEE 802.11b Base mode

#### CH Low



#### CH Mid





## CH High

Agilent 17:02:58 Jul 11, 2005

R T

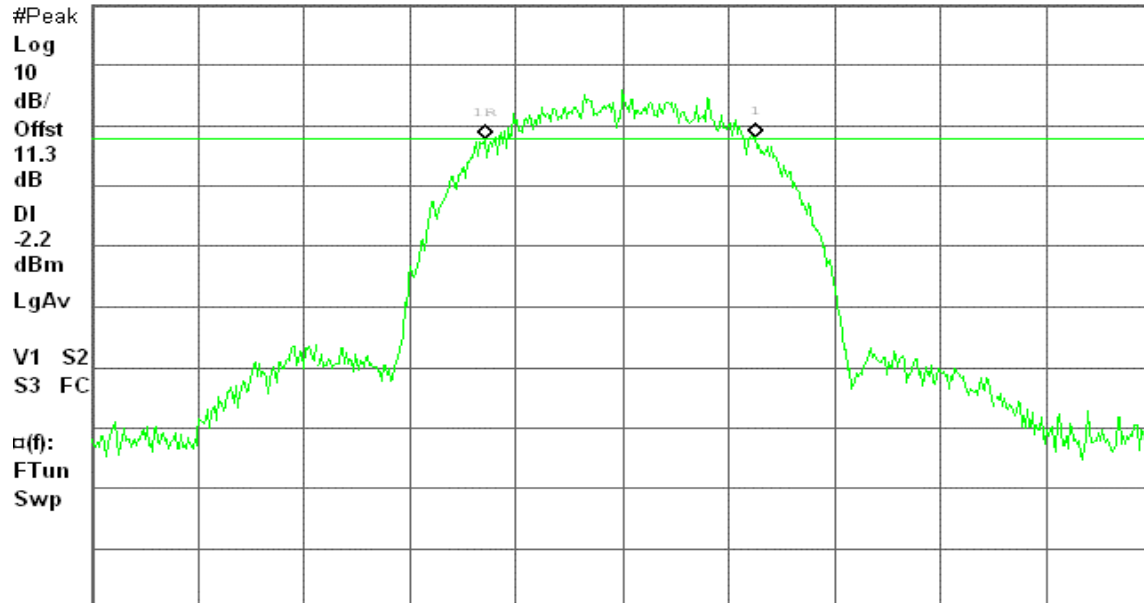
6dB BW, b Mode High Ch.

$\Delta$  Mkr1 12.67 MHz

Ref 20 dBm

Atten 20 dB

0.14 dB



Center 2.462 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)

## IEEE 802.11g Base mode

### CH Low

Agilent 17:20:05 Jul 11, 2005

R T

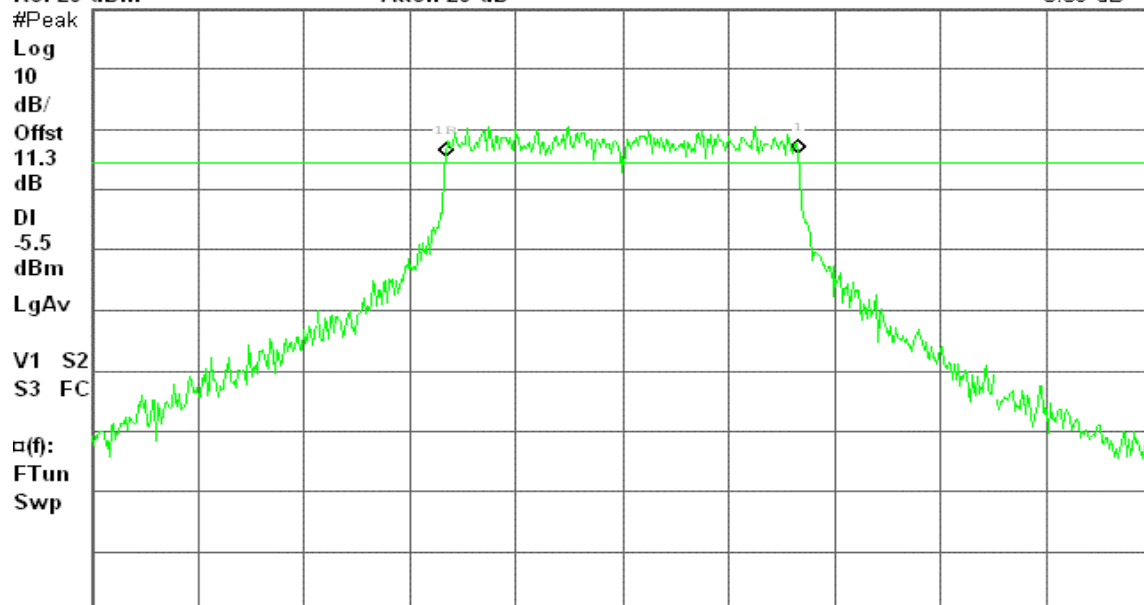
6dB BW, g Mode Low Ch.

$\Delta$  Mkr1 16.50 MHz

Ref 20 dBm

Atten 20 dB

0.39 dB



Center 2.412 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)



## CH Mid

Agilent 17:28:27 Jul 11, 2005

R T

6dB BW, g Mode Mid Ch.

$\Delta$  Mkr1 16.50 MHz

Ref 20 dBm

Atten 20 dB

-0.01 dB

#Peak

Log

10

dB/

Offst

11.3

dB

DI

-4.1

dBm

LgAv

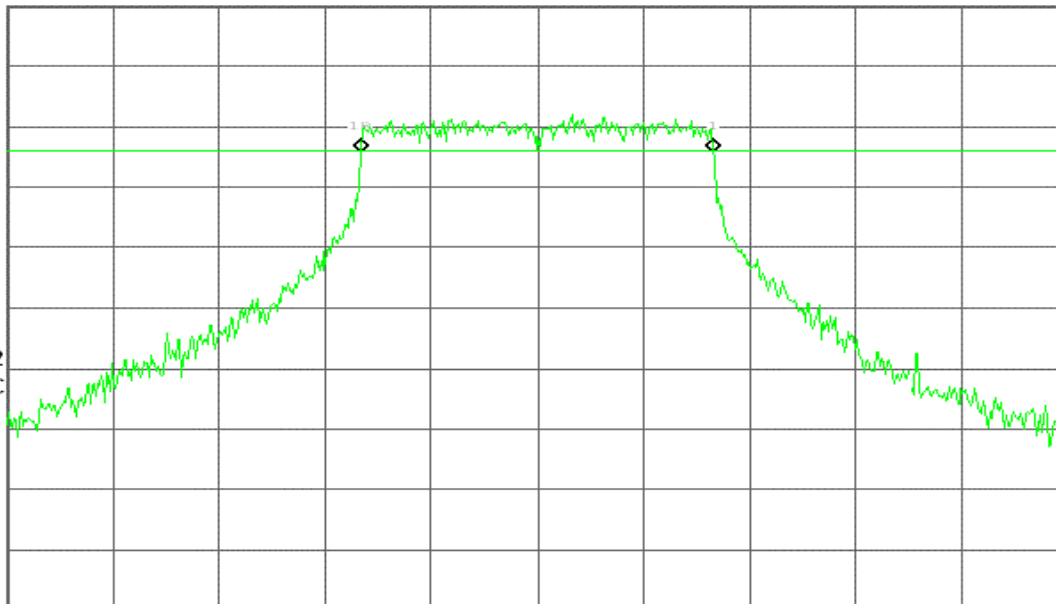
V1 S2

S3 FC

$\alpha(f)$ :

FTun

Swp



Center 2.437 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)

## CH High

Agilent 17:35:43 Jul 11, 2005

R T

6dB BW, g Mode High Ch.

$\Delta$  Mkr1 16.50 MHz

Ref 20 dBm

Atten 20 dB

2.45 dB

#Peak

Log

10

dB/

Offst

11.3

dB

DI

-4.6

dBm

LgAv

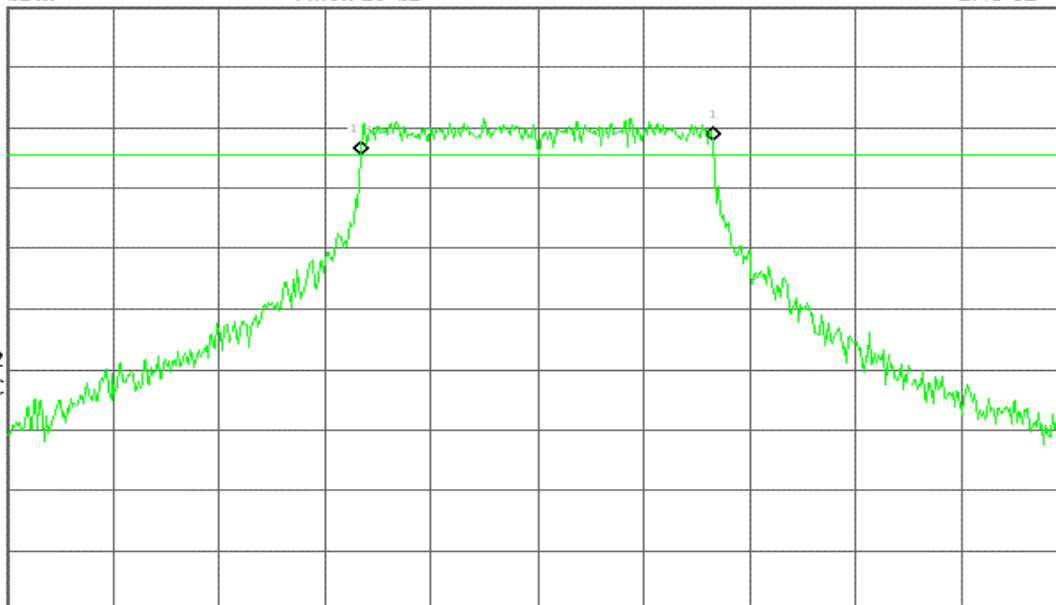
V1 S2

S3 FC

$\alpha(f)$ :

FTun

Swp



Center 2.462 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)



## IEEE 802.11a Base mode

### CH Low

Agilent 20:10:34 Jul 13, 2005

R T

6dB BW, a Mode Low Ch.

$\Delta$  Mkr1 16.50 MHz

Ref 20 dBm

Atten 20 dB

-0.83 dB

#Peak

Log

10

dB/

Offst

11.3

dB

DI

-3.7

dBm

LgAv

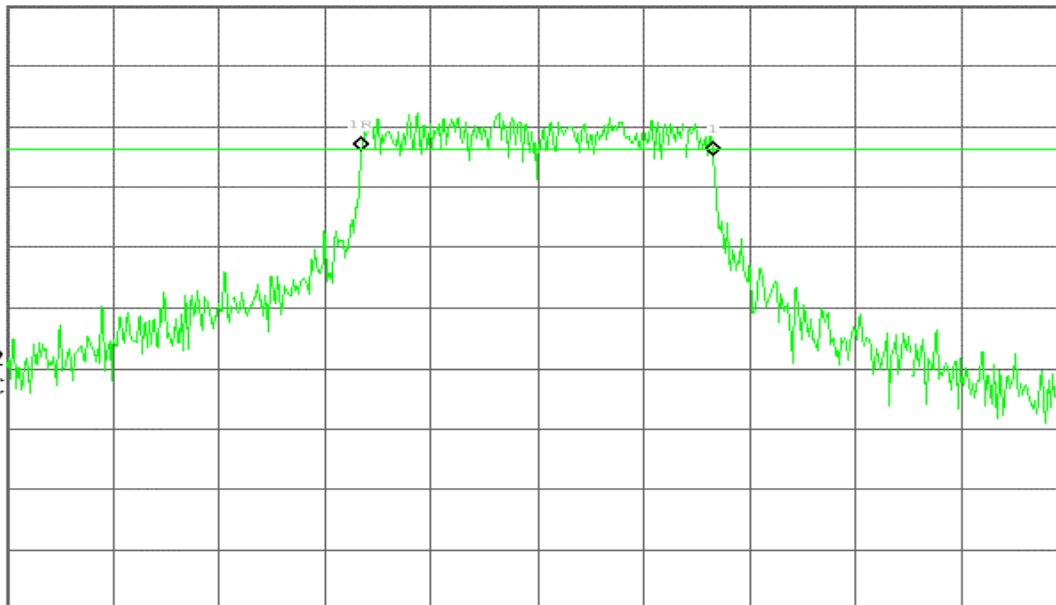
V1 S2

S3 FC

$\alpha(f)$ :

FTun

Swp



Center 5.745 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)

### CH Mid

Agilent 20:21:08 Jul 13, 2005

R T

6dB BW, a Mode Mid Ch.

$\Delta$  Mkr1 16.50 MHz

Ref 20 dBm

Atten 20 dB

-1.66 dB

#Peak

Log

10

dB/

Offst

11.3

dB

DI

-3.9

dBm

LgAv

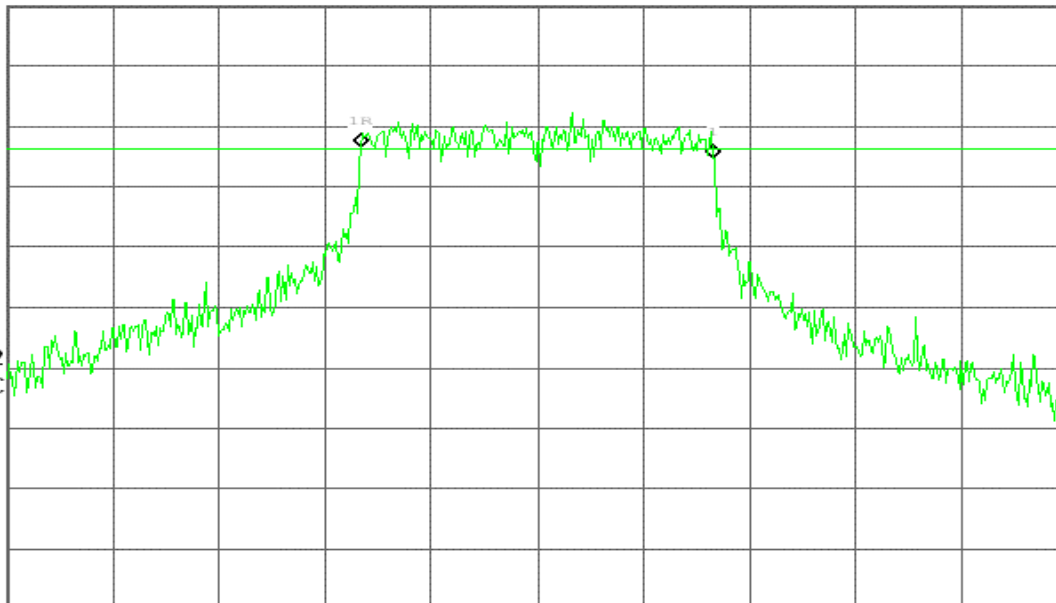
V1 S2

S3 FC

$\alpha(f)$ :

FTun

Swp



Center 5.785 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)



**CH High**

Agilent 20:27:51 Jul 13, 2005

R T

6dB BW, a Mode High Ch.

$\Delta$  Mkr1 16.50 MHz

Ref 20 dBm

**Atten 20 dB**

4.01 dB

#Peak

Log

10

**dB/**

Offst  
14.311.3  
dB

DL

50

dBm

 $1.9\Delta v$ 

LGAV

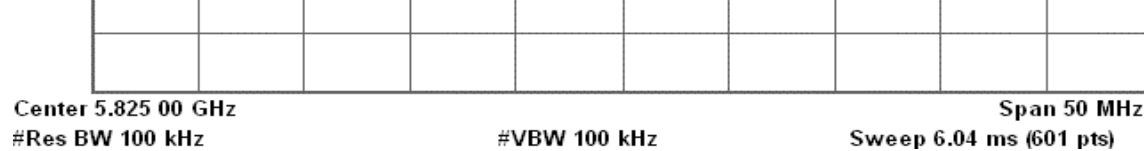
V1 9

S3 F

**□(f):**

FTun

Swp





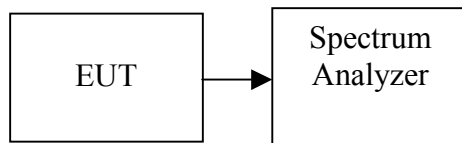
## 7.2 PEAK POWER

### LIMIT

The maximum peak output power of the intentional radiator shall not exceed the following:

1. According to §15.247(b)(3), for systems using digital modulation in the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz: 1 Watt.
2. According to §15.247(b)(4), the conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### Test Configuration



### TEST PROCEDURE

The transmitter output is connected to the Spectrum analyzer. The Spectrum analyzer is set to the peak power detection.

**TEST RESULTS***No non-compliance noted.***Test Data****Test mode: IEEE 802.11b mode**

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	19.38	0.08670	1	PASS
Mid	2437	19.27	0.08453		PASS
High	2462	19.68	0.09290		PASS

**Test mode: IEEE 802.11g mode**

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	18.84	0.07656	1	PASS
Mid	2437	19.53	0.08974		PASS
High	2462	19.83	0.09616		PASS

**Test mode: IEEE 802.11a mode**

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	5745	20.42	0.11015	1	PASS
Mid	5785	19.79	0.09528		PASS
High	5825	19.40	0.08710		PASS



## Test Plot

### IEEE 802.11b Base mode

#### CH Low

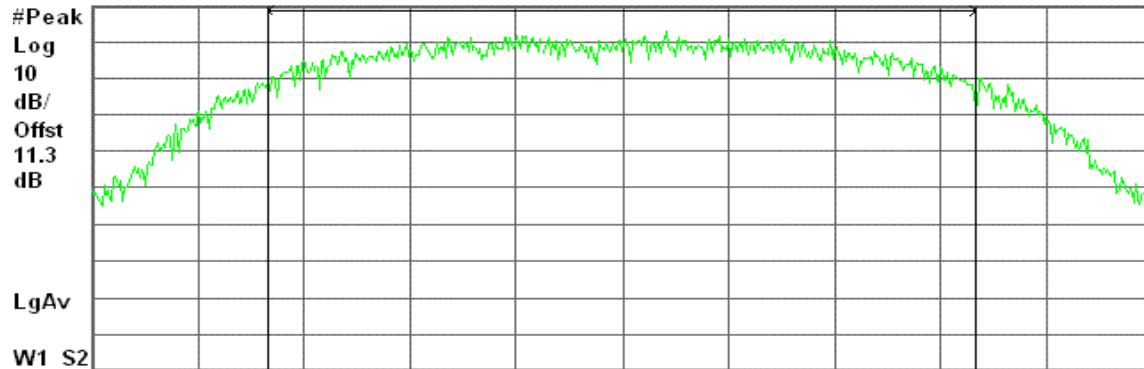
Agilent 16:41:57 Jul 11, 2005

R T

Peak Output Power (DTS), b Mode Low Ch.

Ref 20 dBm

Atten 20 dB



Center 2.412 00 GHz

Span 23.15 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

19.38 dBm / 15.4320 MHz

-52.50 dBm/Hz

#### CH Mid

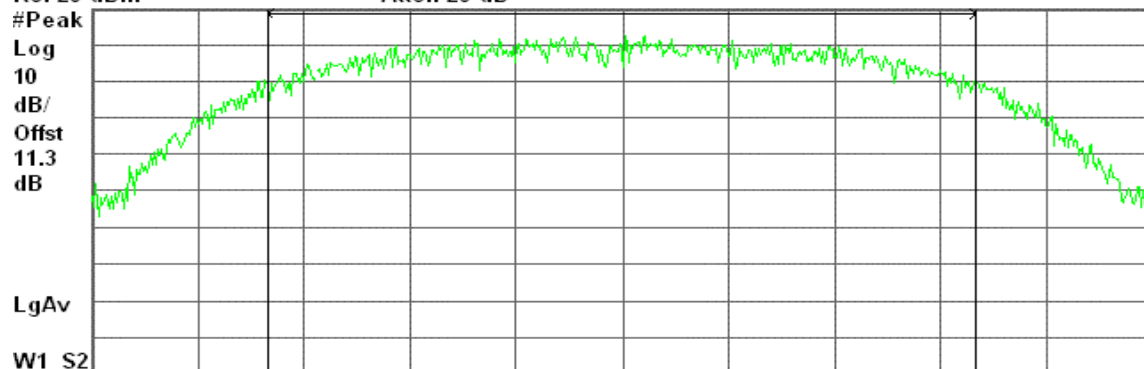
Agilent 16:52:35 Jul 11, 2005

R T

Peak Output Power (DTS), b Mode Mid Ch.

Ref 20 dBm

Atten 20 dB



Center 2.437 00 GHz

Span 23.15 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

19.27 dBm / 15.4350 MHz

-52.62 dBm/Hz



## CH High

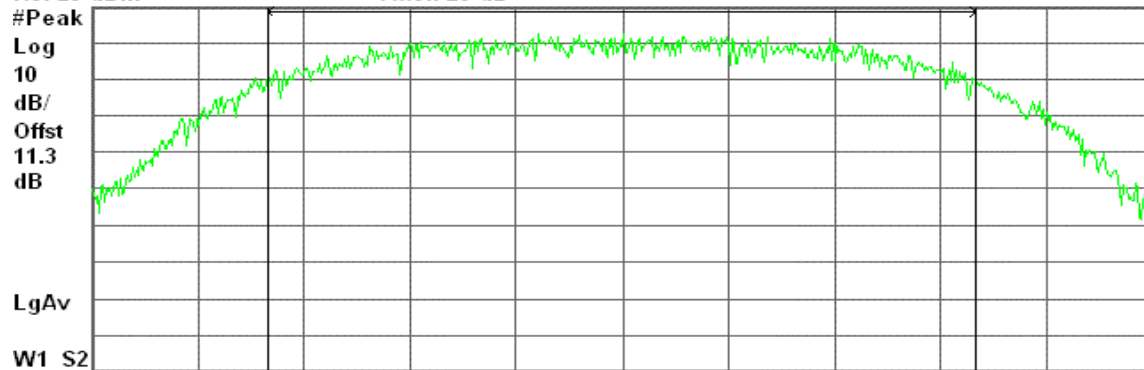
Agilent 17:04:59 Jul 11, 2005

R T

Peak Output Power (DTS), b Mode High Ch.

Ref 20 dBm

Atten 20 dB



Center 2.462 00 GHz

Span 23 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

19.68 dBm / 15.3320 MHz

-52.17 dBm/Hz

## IEEE 802.11g Base mode

### CH Low

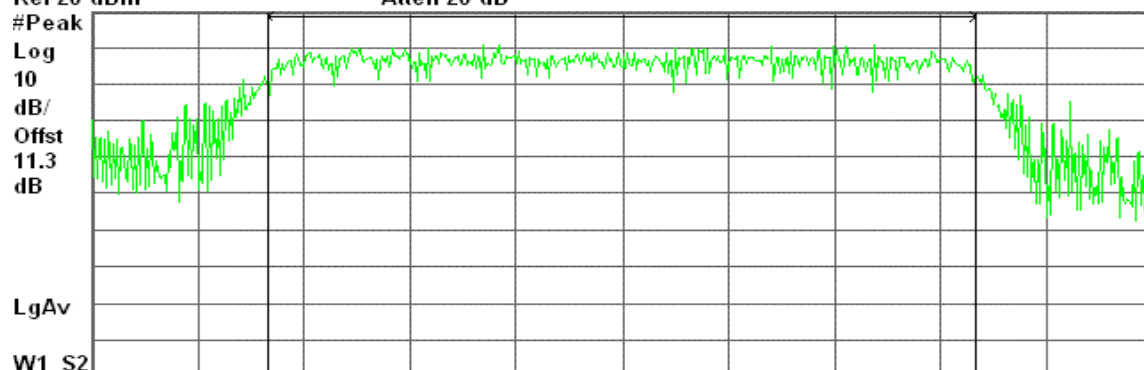
Agilent 17:22:14 Jul 11, 2005

R T

Peak Output Power (DTS), g Mode Low Ch.

Ref 20 dBm

Atten 20 dB



Center 2.412 00 GHz

Span 25.12 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

18.84 dBm / 16.7460 MHz

-53.40 dBm/Hz



## CH Mid

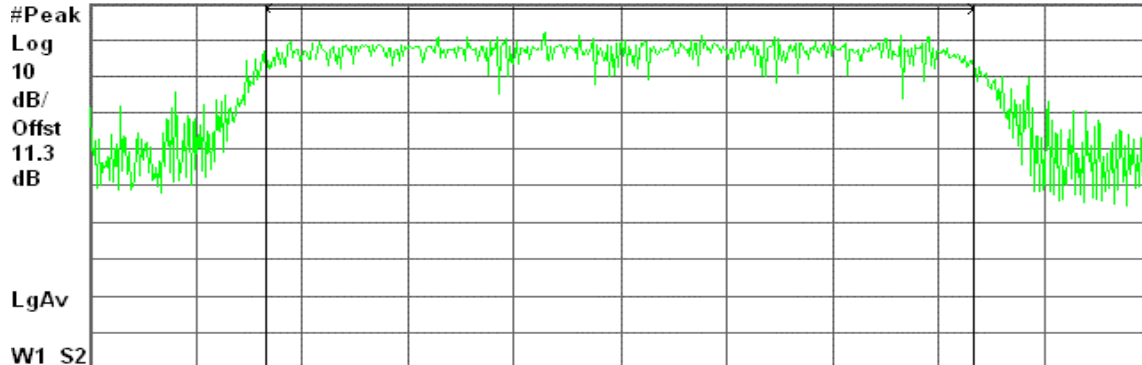
Agilent 17:30:06 Jul 11, 2005

R T

Peak Output Power (DTS), g Mode Mid Ch.

Ref 20 dBm

Atten 20 dB



Center 2.437 00 GHz

Span 25.11 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

19.53 dBm / 16.7390 MHz

-52.70 dBm/Hz

## CH High

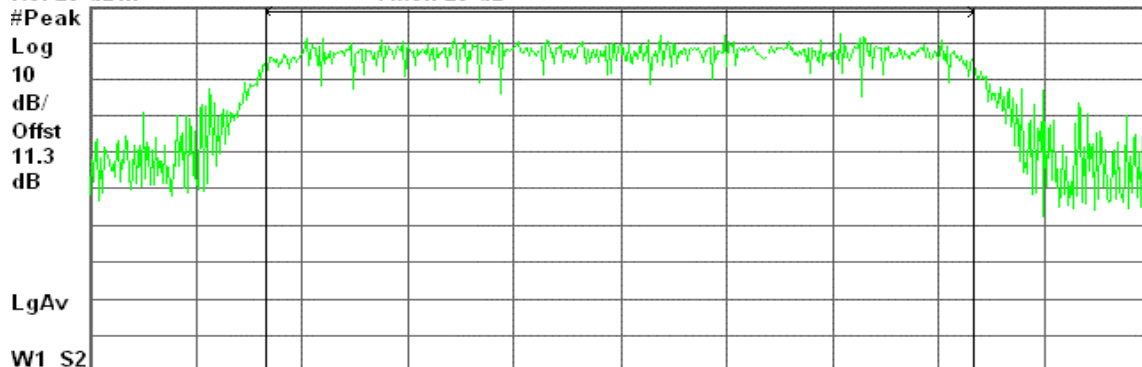
Agilent 17:37:06 Jul 11, 2005

R T

Peak Output Power (DTS), g Mode High Ch.

Ref 20 dBm

Atten 20 dB



Center 2.462 00 GHz

Span 25.08 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

19.83 dBm / 16.7220 MHz

-52.40 dBm/Hz



## IEEE 802.11a Base mode

### CH Low

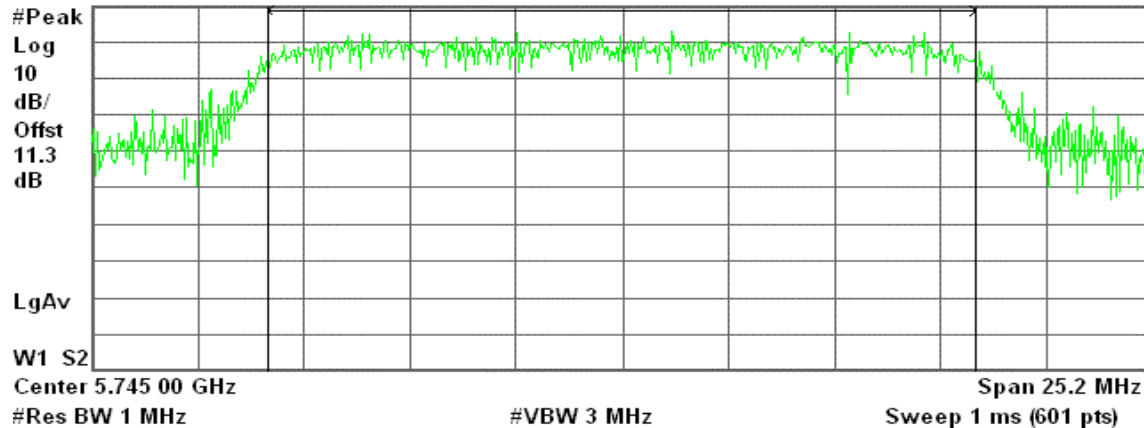
Agilent 20:13:05 Jul 13, 2005

R T

Peak Output Power, a Mode Low Ch.

Ref 20 dBm

Atten 20 dB



Channel Power

Power Spectral Density

20.42 dBm / 16.8030 MHz

-51.83 dBm/Hz

### CH Mid

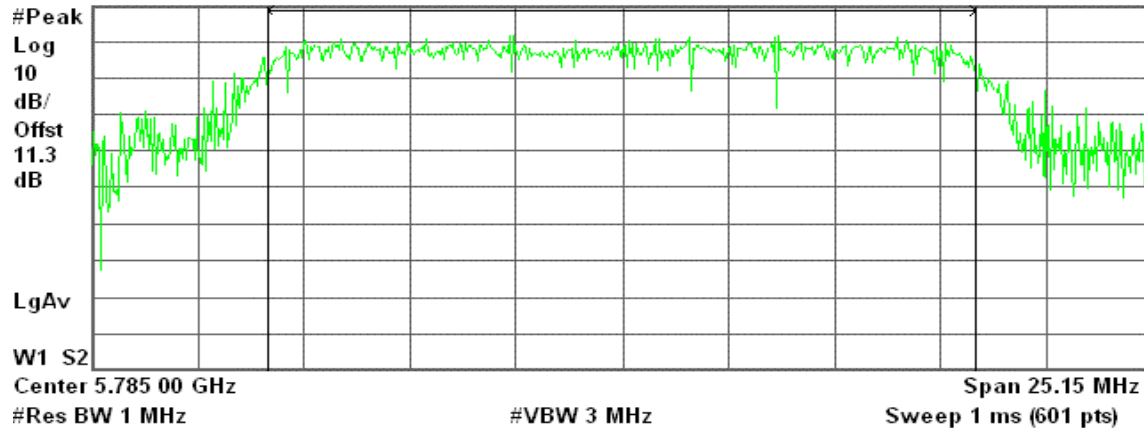
Agilent 20:22:09 Jul 13, 2005

R T

Peak Output Power, a Mode Mid Ch.

Ref 20 dBm

Atten 20 dB



Channel Power

Power Spectral Density

19.79 dBm / 16.7680 MHz

-52.46 dBm/Hz



## CH High

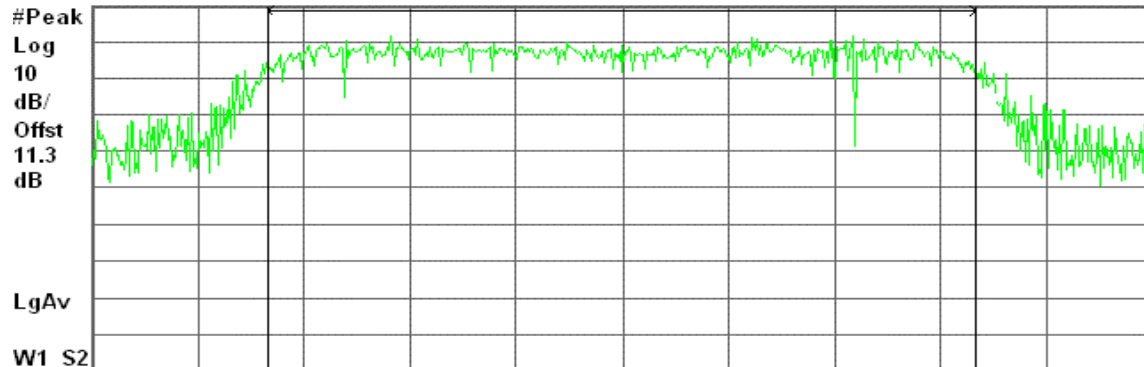
Agilent 20:28:48 Jul 13, 2005

R T

Peak Output Power, a Mode High Ch.

Ref 20 dBm

Atten 20 dB



Center 5.825 00 GHz

Span 25.23 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

19.40 dBm / 16.8190 MHz

-52.86 dBm/Hz



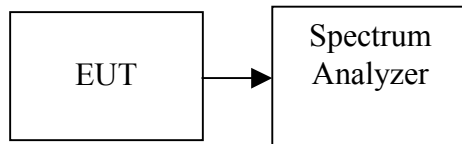


## **7.3 AVERAGE POWER**

### **LIMIT**

None; for reporting purposes only.

### **Test Configuration**



### **TEST PROCEDURE**

The transmitter output is connected to the Spectrum analyzer. The Spectrum analyzer is set to the average power detection.

**TEST RESULTS**

*No non-compliance noted.*

**Test Data****Test mode: IEEE 802.11b mode**

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)
Low	2412	16.28	0.04246
Mid	2437	16.22	0.04188
High	2462	16.68	0.04656

**Test mode: IEEE 802.11g mode**

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)
Low	2412	15.55	0.03589
Mid	2437	16.35	0.04315
High	2462	16.16	0.04130

**Test mode: IEEE 802.11a mode**

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)
Low	5745	16.85	0.04842
Mid	5785	15.93	0.03917
High	5825	15.16	0.03281



## Test Plot

### IEEE 802.11b

#### CH Low

Agilent 17:11:37 Jul 11, 2005

R T

Average Output Power, b Mode Low Ch.

Ref 30 dBm

Atten 30 dB

#Samp

Log

10

dB/

Offst

11.3

dB

#PAvg

100

V1 S2

Center 2.412 00 GHz

#Res BW 1 MHz

#VBW 3 MHz

Span 23.15 MHz

Sweep 1 ms (601 pts)

Channel Power

16.28 dBm / 15.4320 MHz

Power Spectral Density

-55.61 dBm/Hz

#### CH Mid

Agilent 16:53:52 Jul 11, 2005

R T

Peak Output Power, b Mode Mid Ch.

Ref 30 dBm

Atten 30 dB

#Samp

Log

10

dB/

Offst

11.3

dB

#PAvg

100

V1 S2

Center 2.437 00 GHz

#Res BW 1 MHz

#VBW 3 MHz

Span 23.15 MHz

Sweep 1 ms (601 pts)

Channel Power

16.22 dBm / 15.4350 MHz

Power Spectral Density

-55.66 dBm/Hz



## CH High

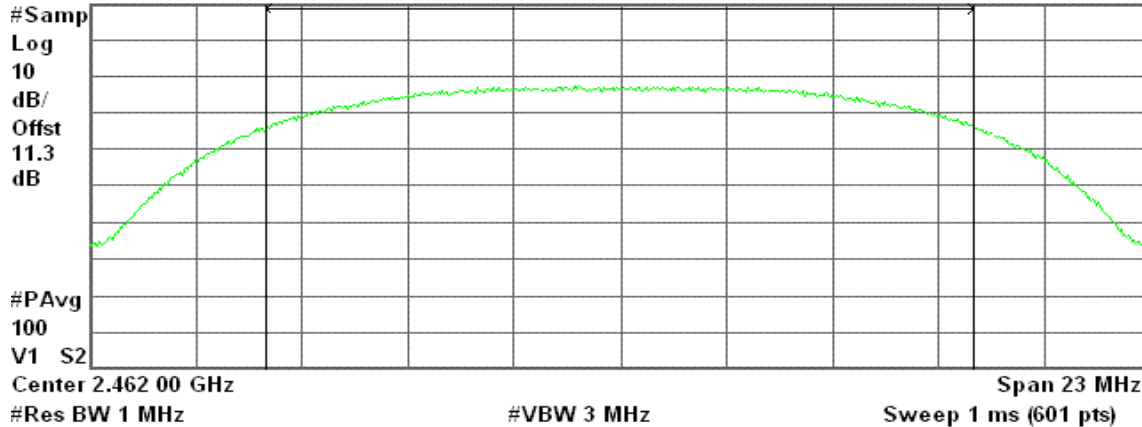
Agilent 17:05:40 Jul 11, 2005

R T

Average Output Power, b Mode High Ch.

Ref 30 dBm

Atten 30 dB



Channel Power

16.68 dBm / 15.3320 MHz

Power Spectral Density

-55.18 dBm/Hz

## IEEE 802.11g

### CH Low

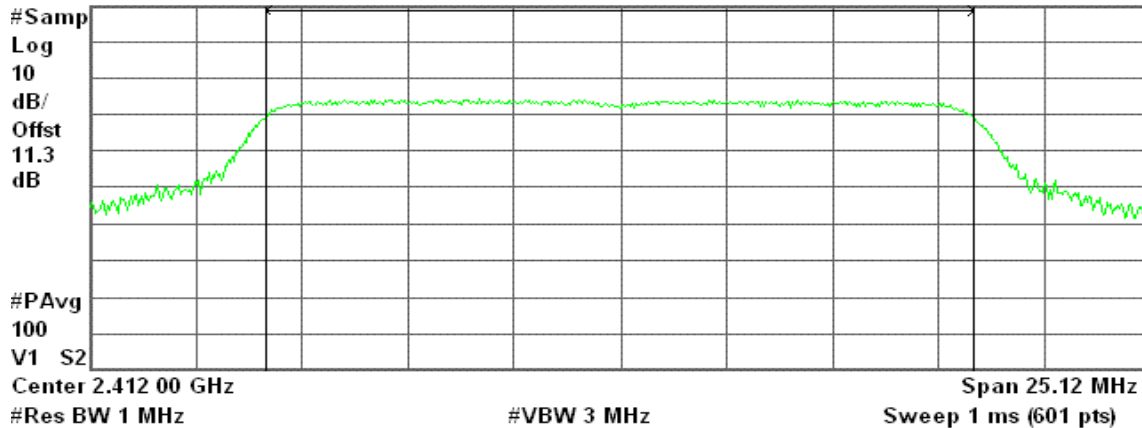
Agilent 17:23:19 Jul 11, 2005

R T

Peak Output Power, g Mode Low Ch.

Ref 30 dBm

Atten 30 dB



Channel Power

15.55 dBm / 16.7460 MHz

Power Spectral Density

-56.69 dBm/Hz



## CH Mid

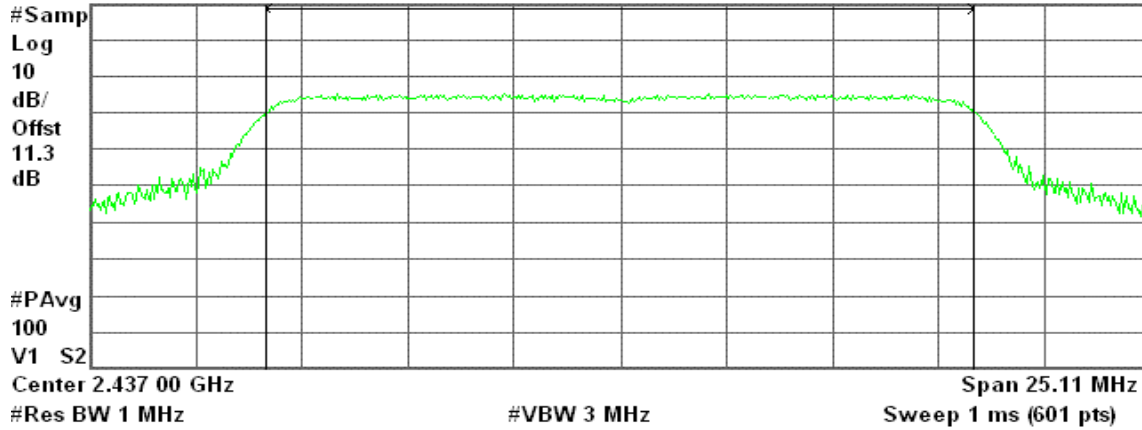
Agilent 17:31:08 Jul 11, 2005

R T

Peak Output Power, g Mode Mid Ch.

Ref 30 dBm

Atten 30 dB



Channel Power

Power Spectral Density

16.35 dBm / 16.7390 MHz

-55.88 dBm/Hz

## CH High

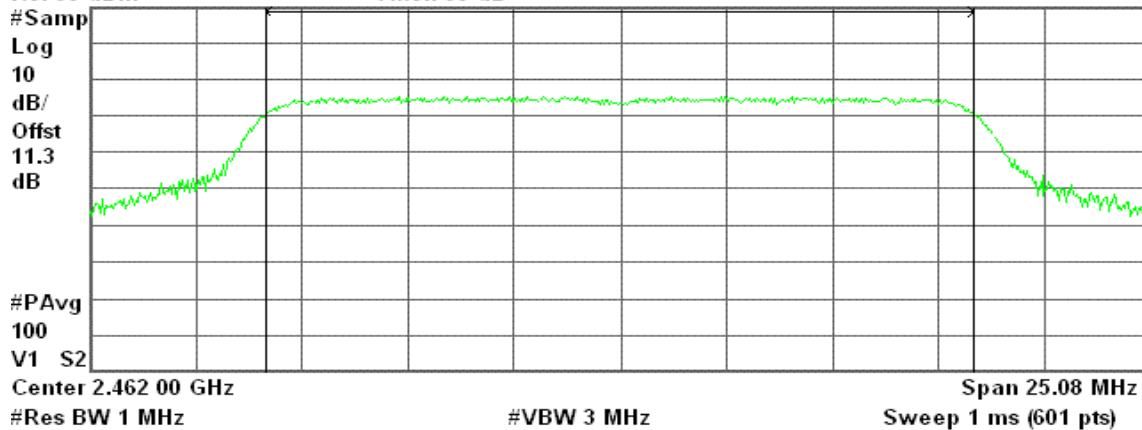
Agilent 17:37:49 Jul 11, 2005

R T

Average Output Power, g Mode High Ch.

Ref 30 dBm

Atten 30 dB



Channel Power

Power Spectral Density

16.16 dBm / 16.7220 MHz

-56.07 dBm/Hz



## IEEE 802.11a Base mode

### CH Low

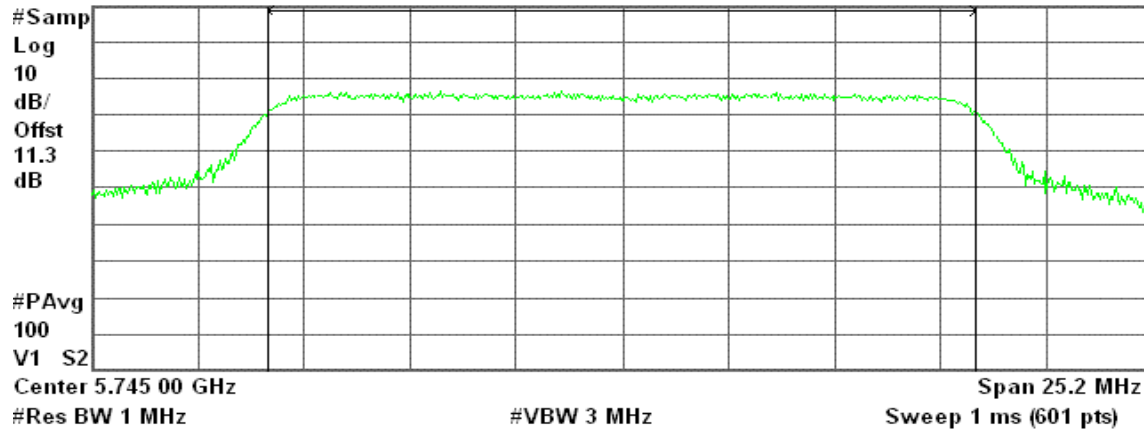
Agilent 20:13:48 Jul 13, 2005

R T

Average Output Power, a Mode Low Ch.

Ref 30 dBm

Atten 30 dB



Channel Power

Power Spectral Density

16.85 dBm / 16.8030 MHz

-55.41 dBm/Hz

### CH Mid

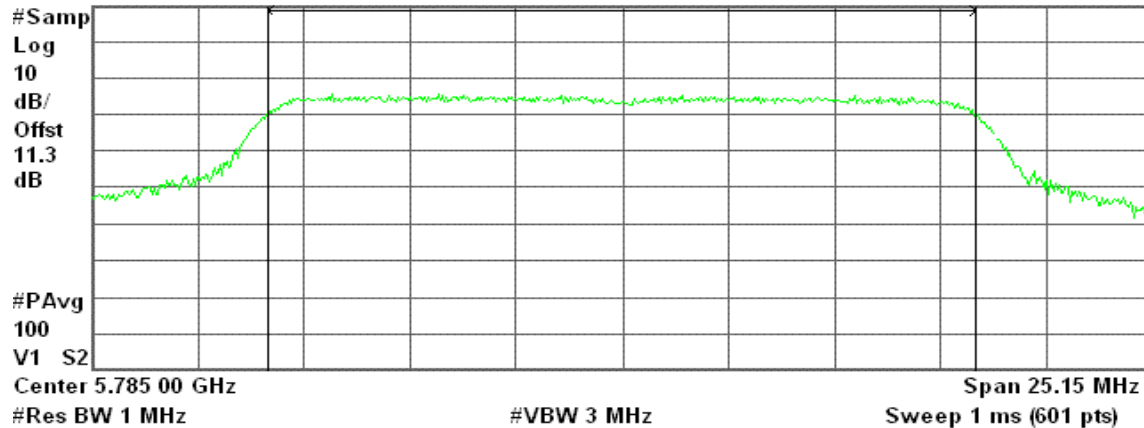
Agilent 20:22:53 Jul 13, 2005

R T

Average Output Power, a Mode Mid Ch.

Ref 30 dBm

Atten 30 dB



Channel Power

Power Spectral Density

15.93 dBm / 16.7680 MHz

-56.31 dBm/Hz



## CH High

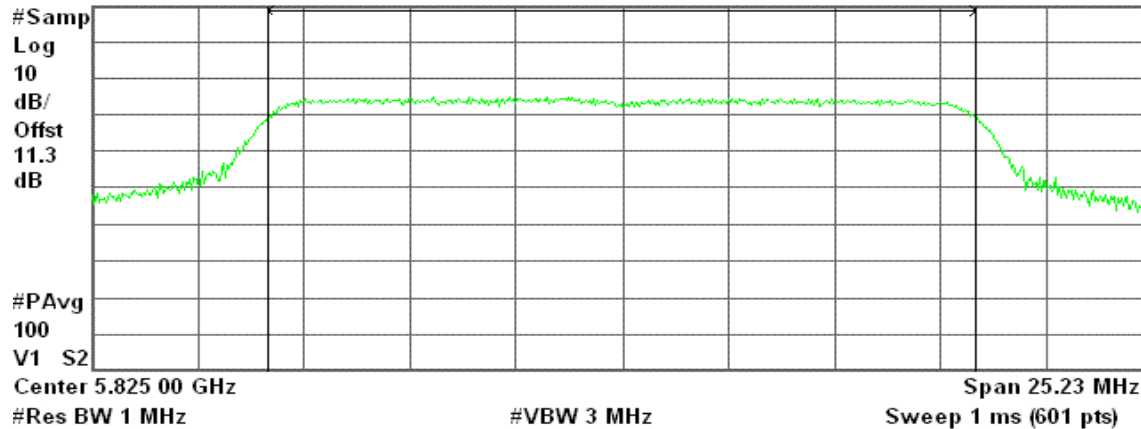
Agilent 20:29:27 Jul 13, 2005

R T

Average Output Power, a Mode High Ch.

Ref 30 dBm

Atten 30 dB



Channel Power

15.16 dBm / 16.8190 MHz

Power Spectral Density

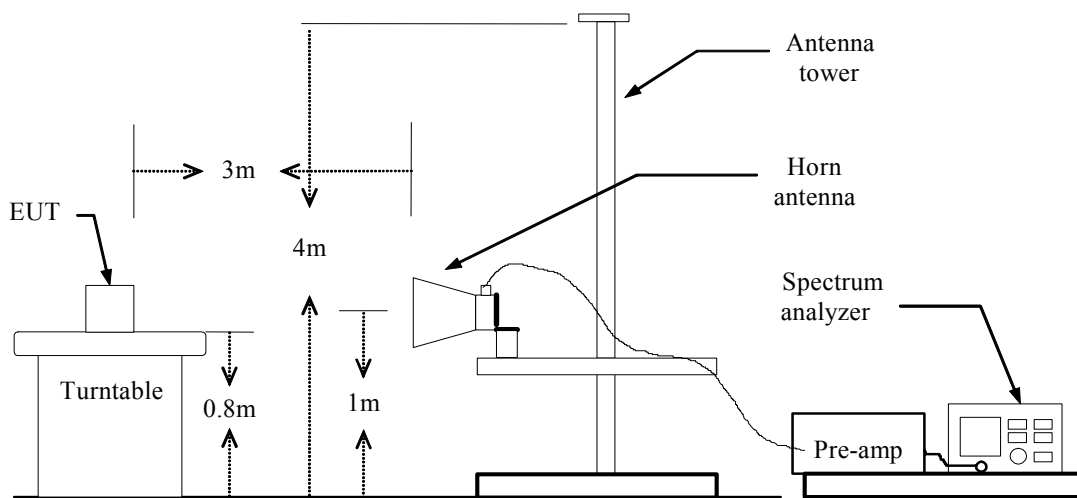
-57.10 dBm/Hz

## 7.4BAND EDGES MEASUREMENT

### LIMIT

According to §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in 15.209(a) (see Section 15.205(c)).

### Test Configuration



### TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above the ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
  - (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
  - (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
5. Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.

### TEST RESULTS

Refer to attach spectrum analyzer data chart.





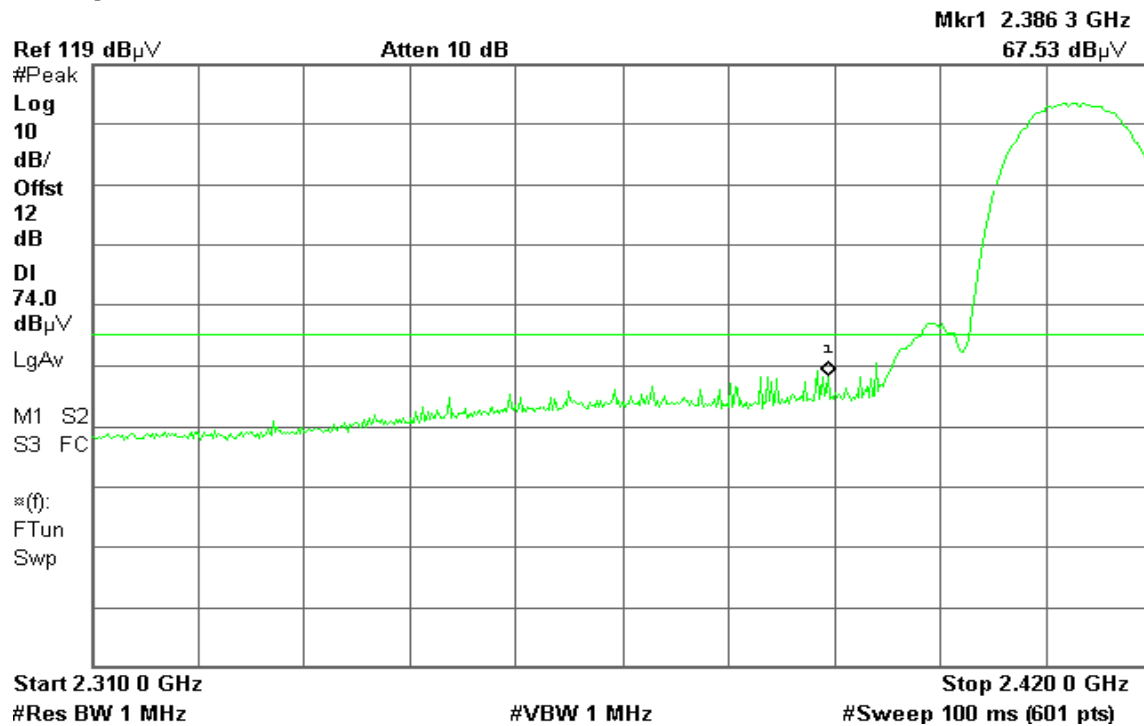
## Band Edges (IEEE 802.11b Base mode / CH Low)

Detector mode: Peak

Polarity: Vertical

Agilent 15:22:21 Jul 11, 2005

T

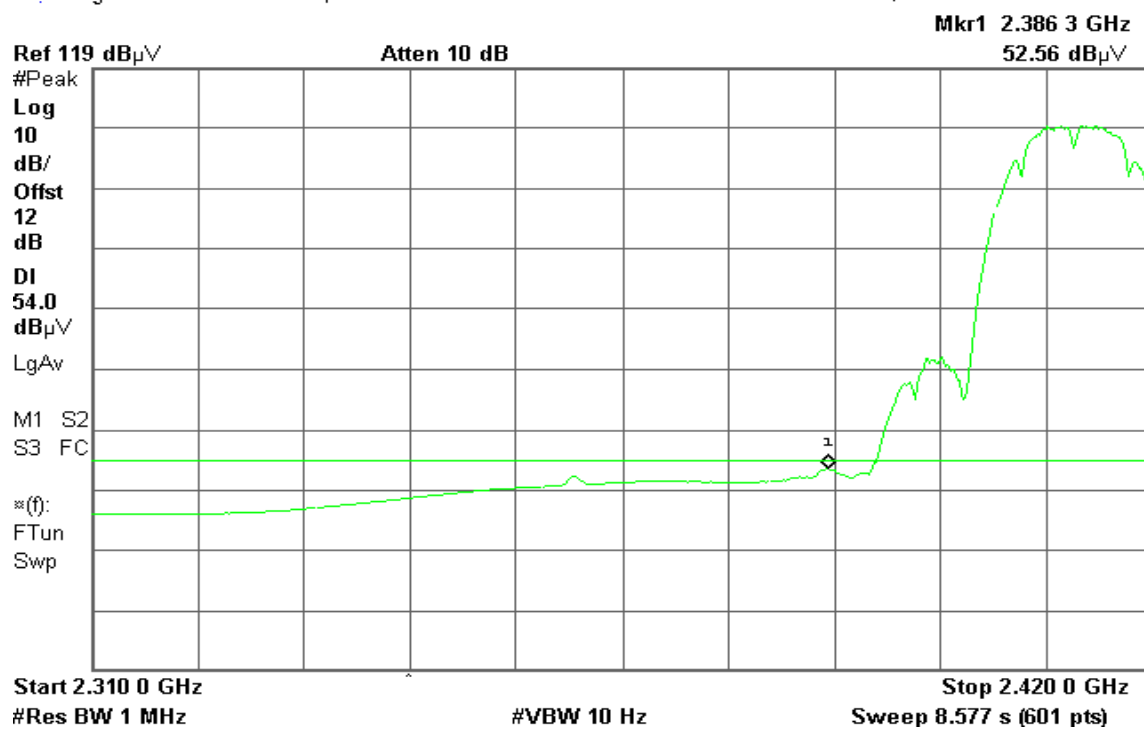


Detector mode: Average

Polarity: Vertical

Agilent 15:20:59 Jul 11, 2005

T



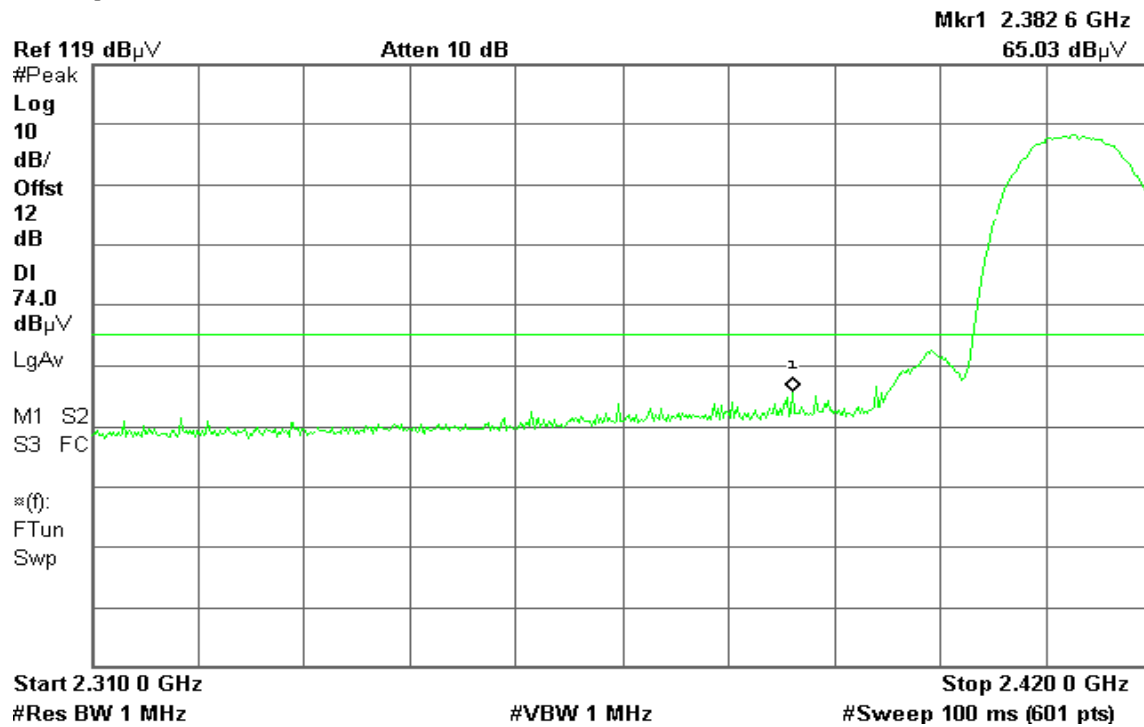


Detector mode: Peak

Polarity: Horizontal

Agilent 15:25:59 Jul 11, 2005

T

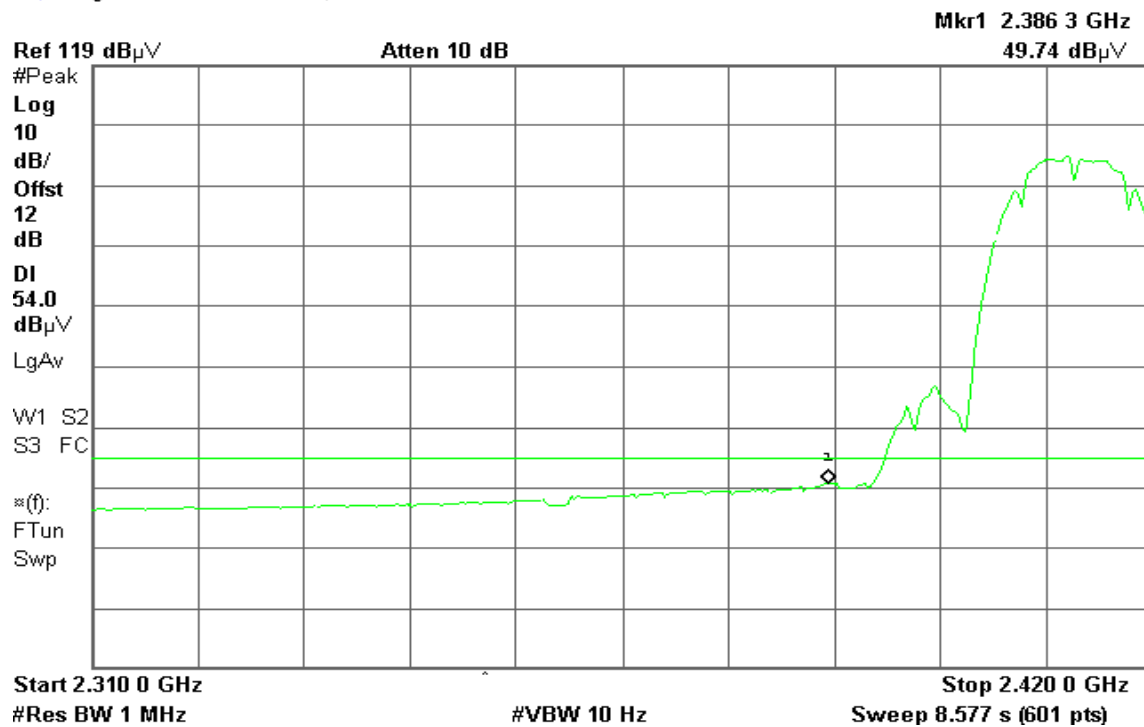


Detector mode: Average

Polarity: Horizontal

Agilent 15:25:17 Jul 11, 2005

T





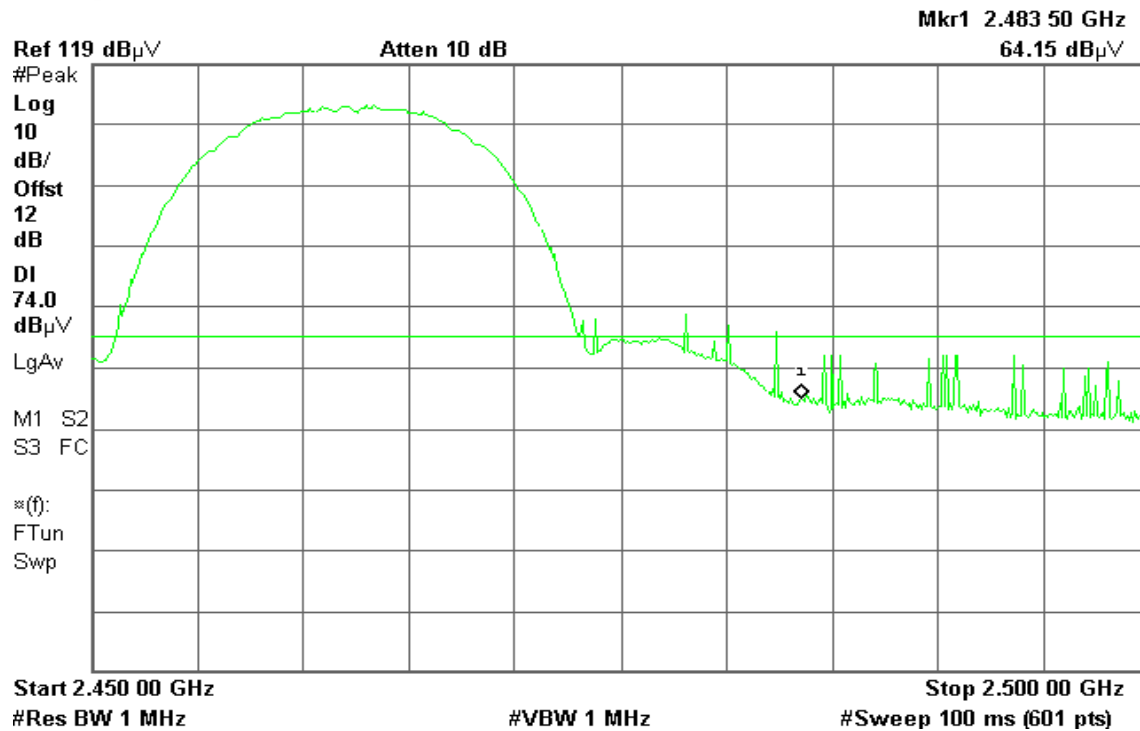
## Band Edges (IEEE 802.11b Base mode / CH High)

Detector mode: Peak

Polarity: Vertical

Agilent 15:37:29 Jul 11, 2005

T

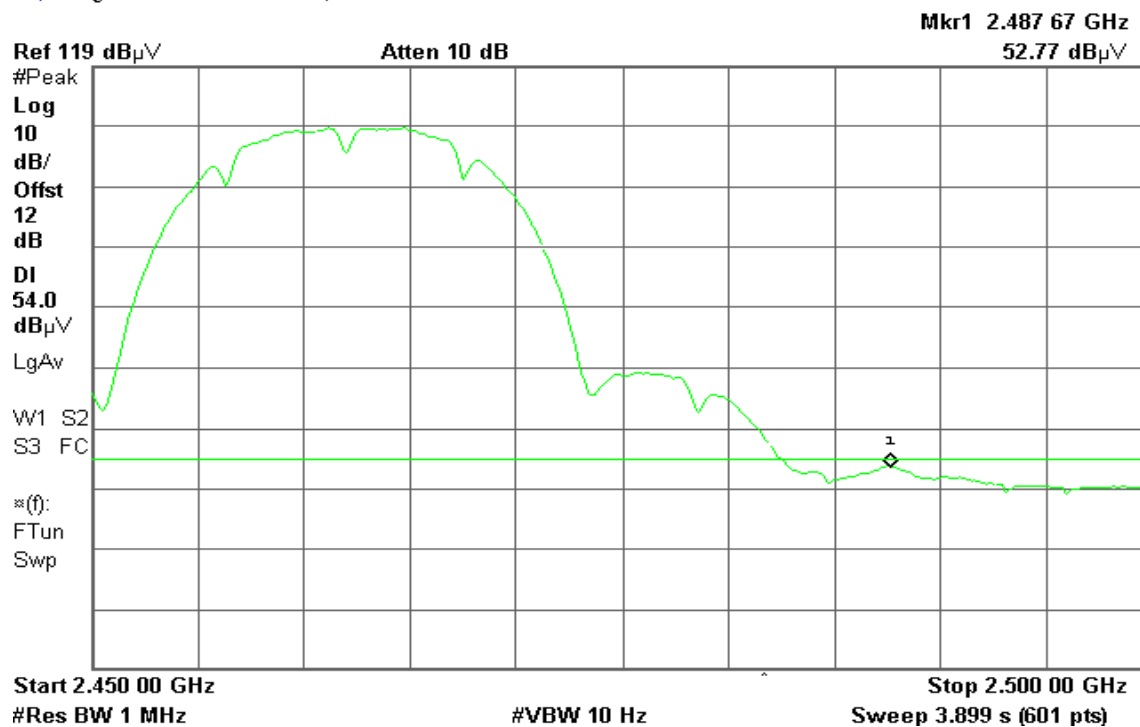


Detector mode: Average

Polarity: Vertical

Agilent 15:34:17 Jul 11, 2005

T





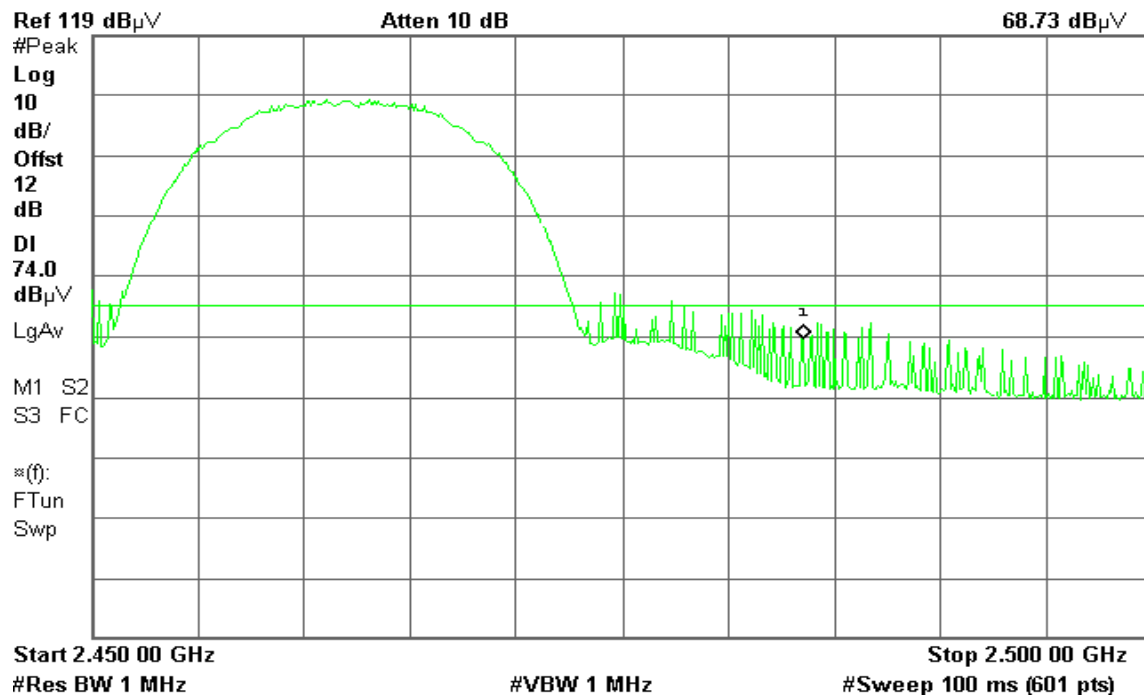
Detector mode: Peak

Polarity: Horizontal

Agilent 15:31:31 Jul 11, 2005

T

Mkr1 2.483 50 GHz  
68.73 dB $\mu$ V



Detector mode: Average

Polarity: Horizontal

Agilent 15:30:17 Jul 11, 2005

T

Mkr1 2.483 50 GHz  
49.01 dB $\mu$ V





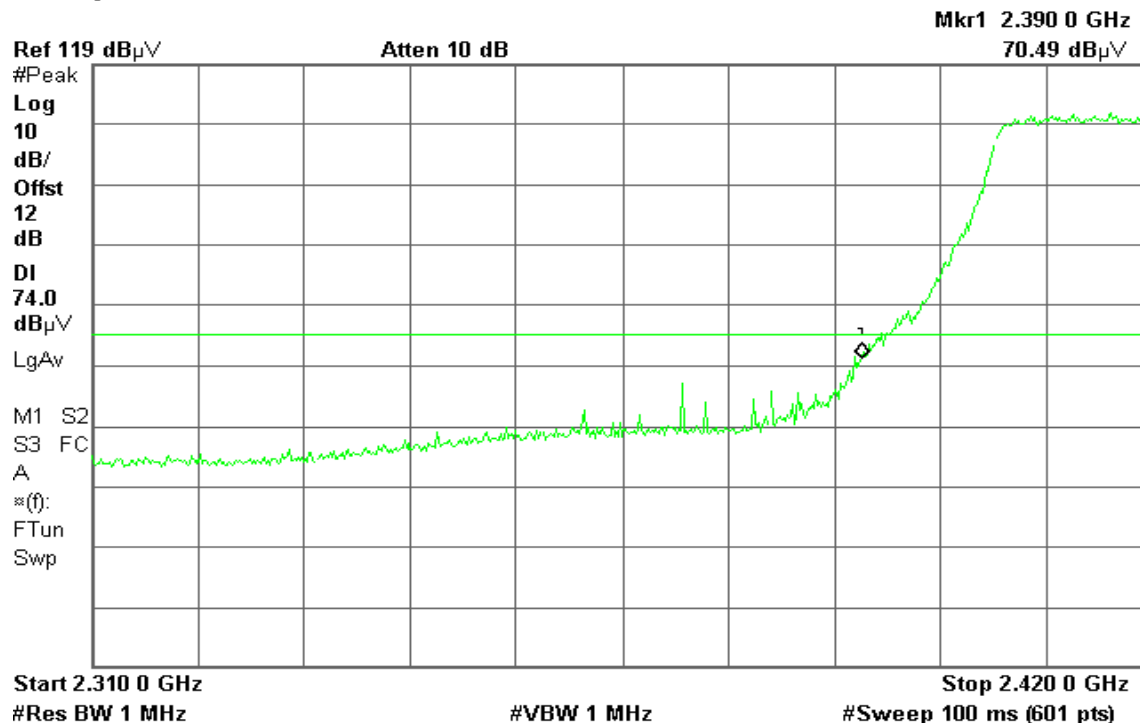
## Band Edges (IEEE 802.11g Base mode / CH Low)

Detector mode: Peak

Polarity: Vertical

Agilent 15:43:54 Jul 11, 2005

T

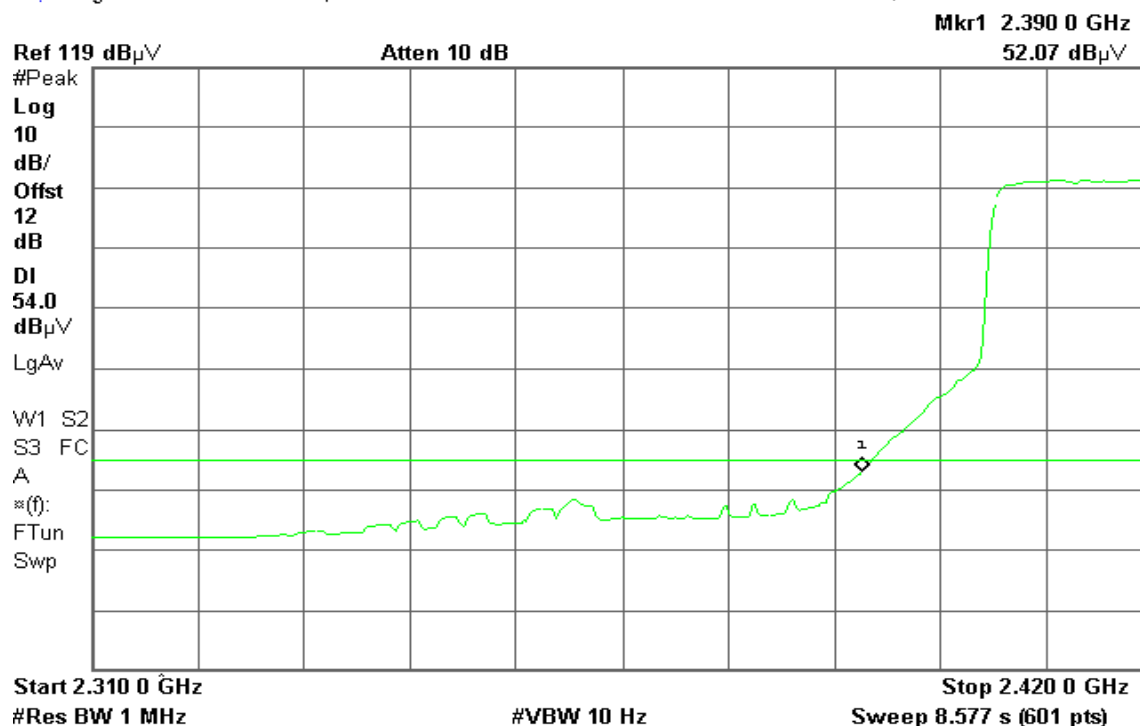


Detector mode: Average

Polarity: Vertical

Agilent 15:43:30 Jul 11, 2005

T



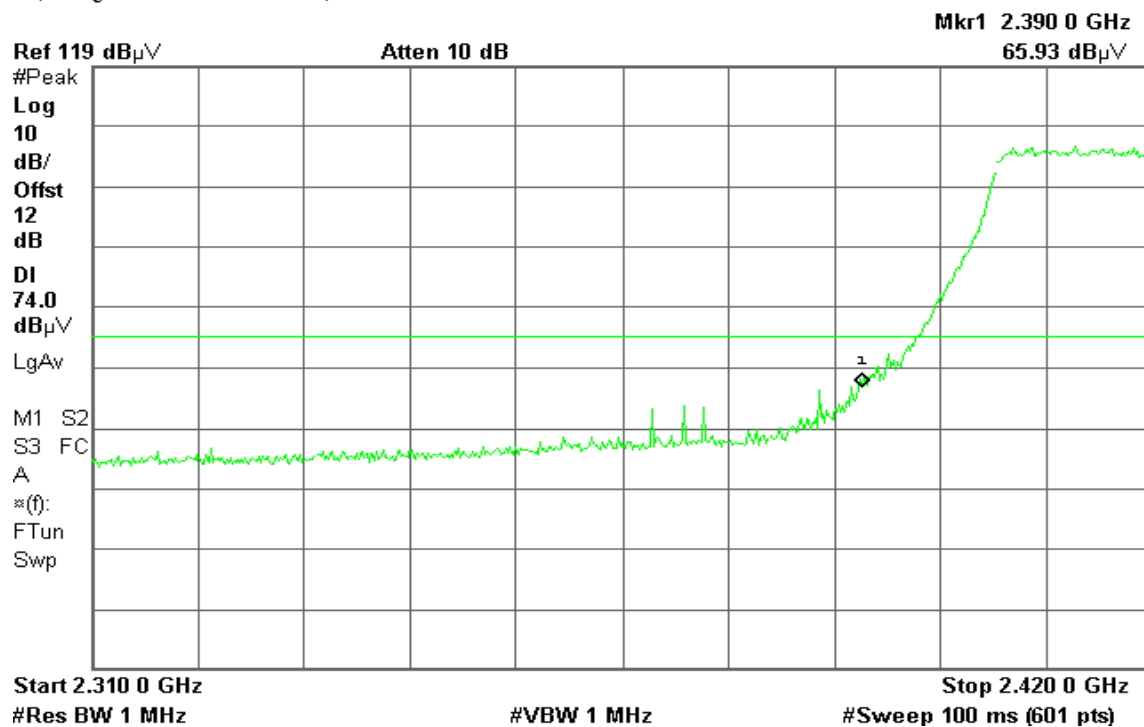


Detector mode: Peak

Polarity: Horizontal

Agilent 15:46:46 Jul 11, 2005

T

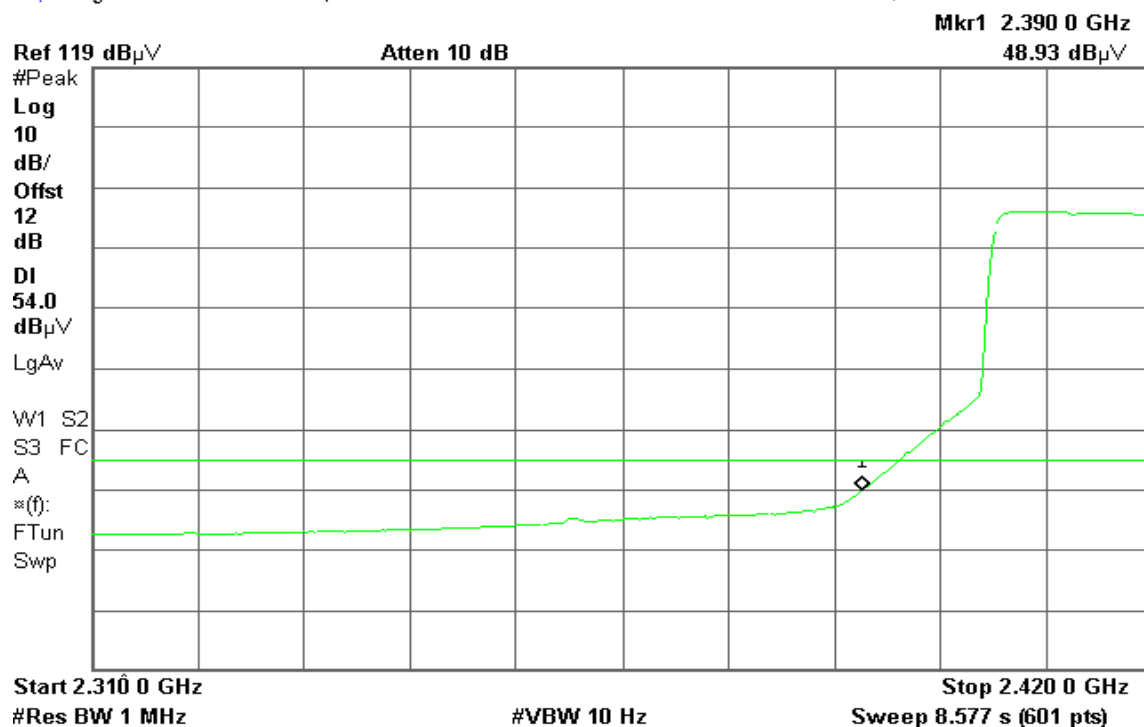


Detector mode: Average

Polarity: Horizontal

Agilent 15:46:22 Jul 11, 2005

T





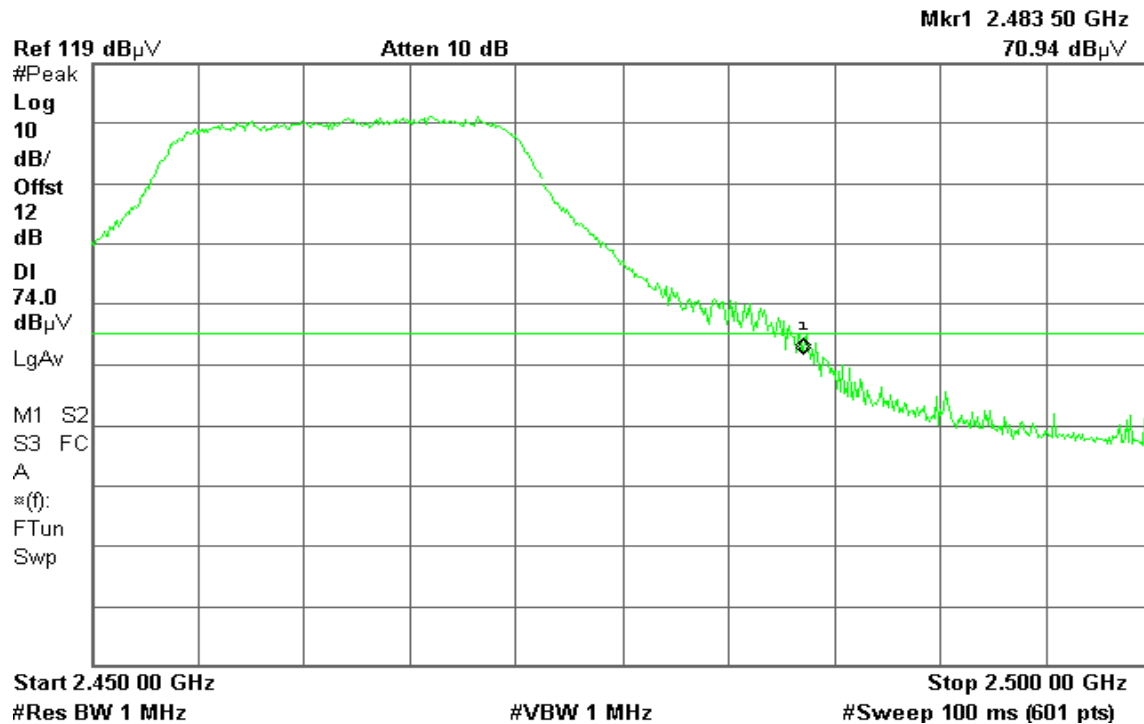
## Band Edges (IEEE 802.11g Base mode / CH High)

Detector mode: Peak

Polarity: Vertical

Agilent 15:52:37 Jul 11, 2005

T

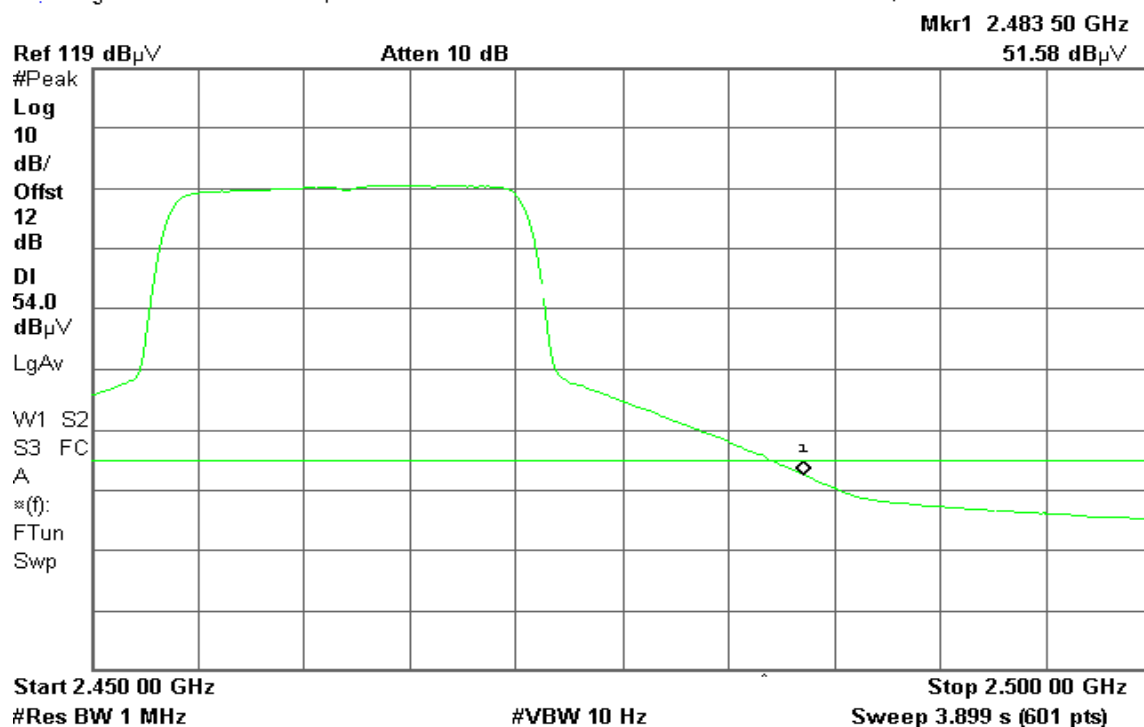


Detector mode: Average

Polarity: Vertical

Agilent 15:52:12 Jul 11, 2005

T



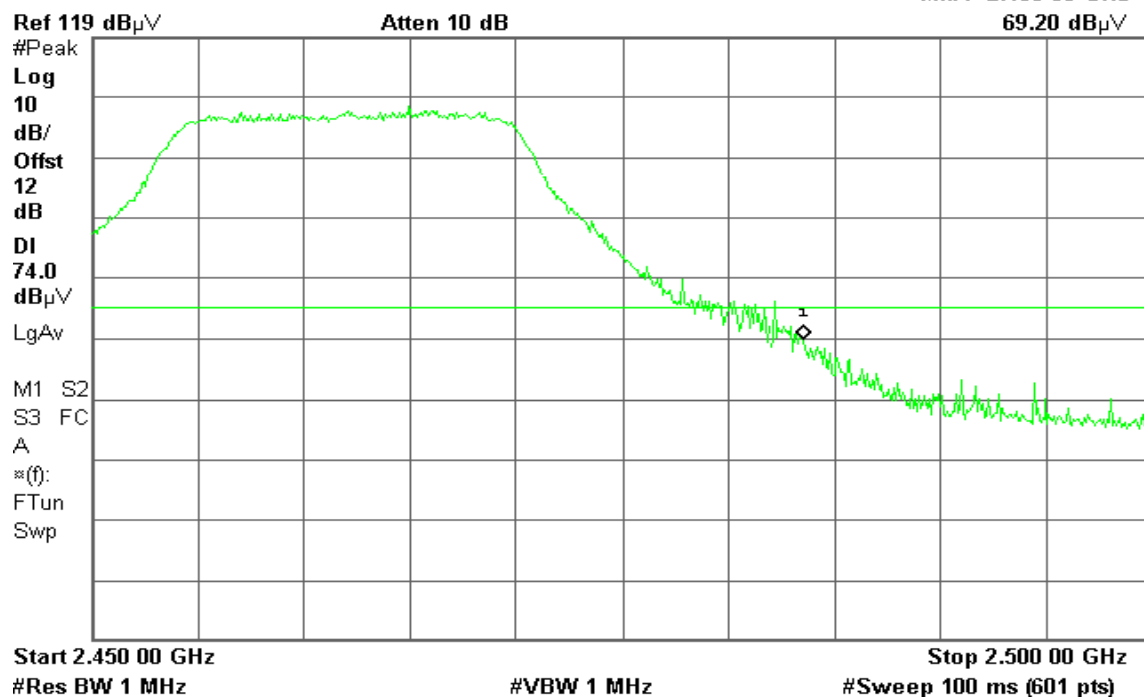


Detector mode: Peak

Polarity: Horizontal

Agilent 15:55:26 Jul 11, 2005

T

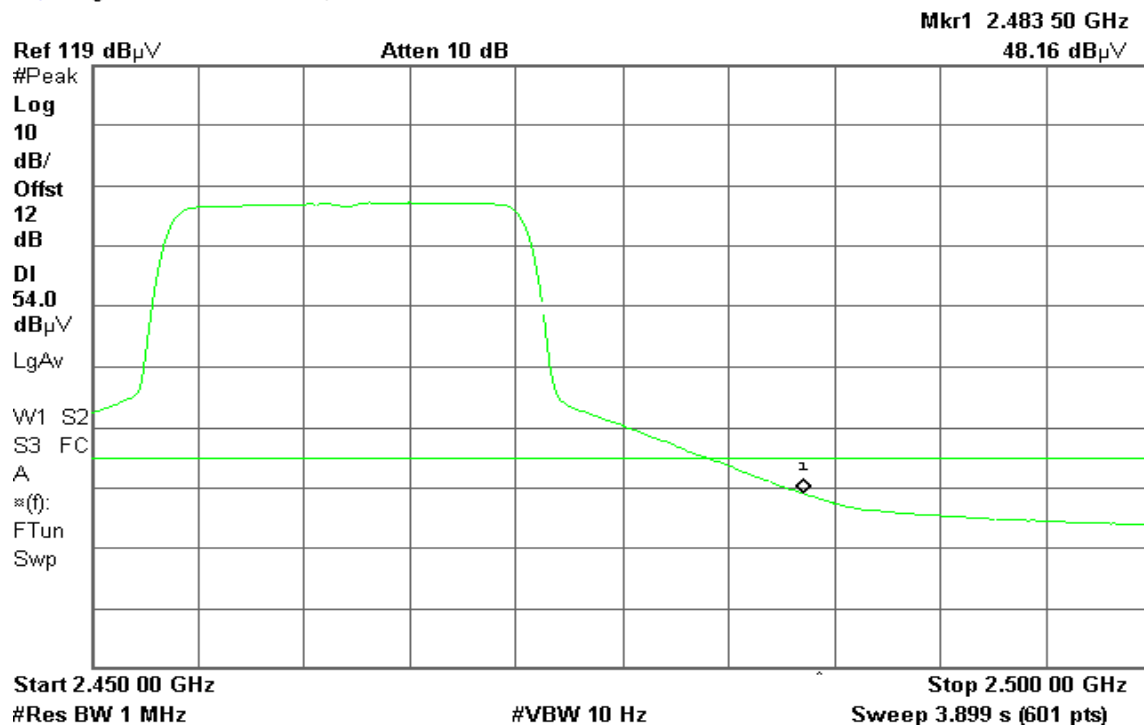


Detector mode: Average

Polarity: Horizontal

Agilent 15:55:02 Jul 11, 2005

T





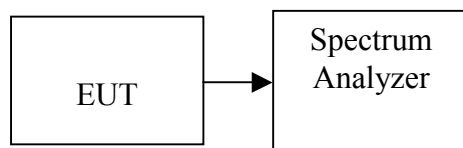


## **7.5 PEAK POWER SPECTRAL DENSITY**

### **LIMIT**

1. According to §15.247(e), for digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.
2. According to §15.247(f), the digital modulation operation of the hybrid system, with the frequency hopping turned off, shall comply with the power density requirements of paragraph (d) of this section.

### **Test Configuration**



### **TEST PROCEDURE**

1. Place the EUT on the table and set it in transmitting mode.  
Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set the spectrum analyzer as RBW = 3kHz, VBW = 10kHz, Span = 300kHz, Sweep=300s.
3. Record the max. reading.
4. Repeat the above procedure until the measurements for all frequencies are completed.

**TEST RESULTS***No non-compliance noted***Test Data****Test mode: IEEE 802.11b mode**

Channel	Frequency	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-6.72	8.00	PASS
Mid	2437	-4.81		PASS
High	2462	-3.74		PASS

**Test mode: IEEE 802.11g mode**

Channel	Frequency		PPSD (dBm)	Limit (dBm)	Result
Low	Base mode	2412	-6.01	8.00	PASS
Mid		2437	-4.59		PASS
High		2462	-4.26		PASS

**Test mode: IEEE 802.11a mode**

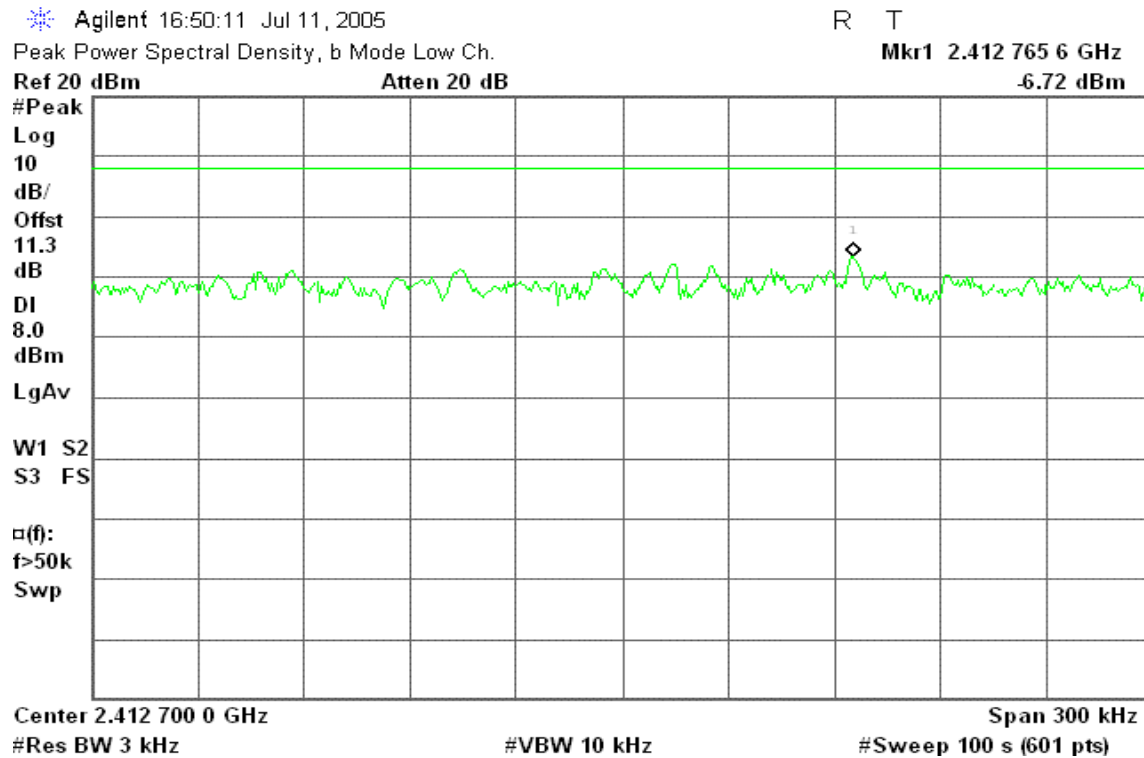
Channel	Frequency		PPSD (dBm)	Limit (dBm)	Result
Low	Base mode	5745	-3.15	8	PASS
Mid		5785	-4.19		PASS
High		5825	-6.86		PASS



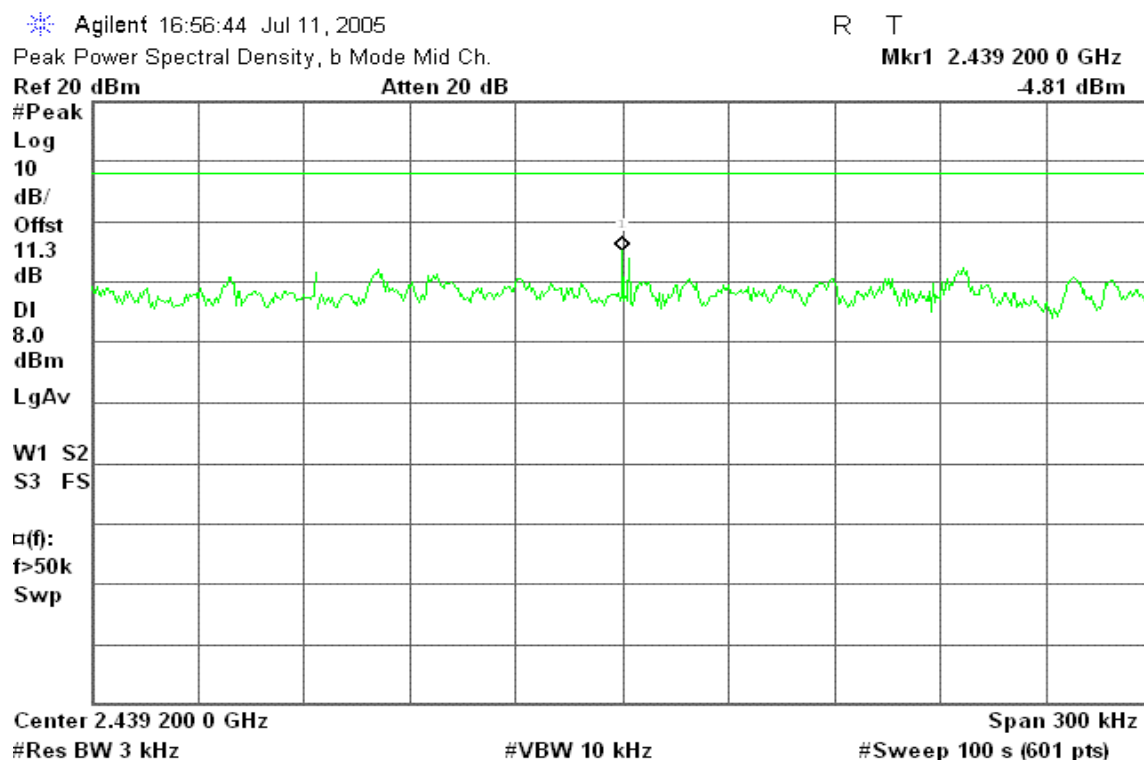
## Test Plot

### IEEE 802.11b Base mode

#### CH Low



#### CH Mid





## CH High

Agilent 17:08:34 Jul 11, 2005

R T

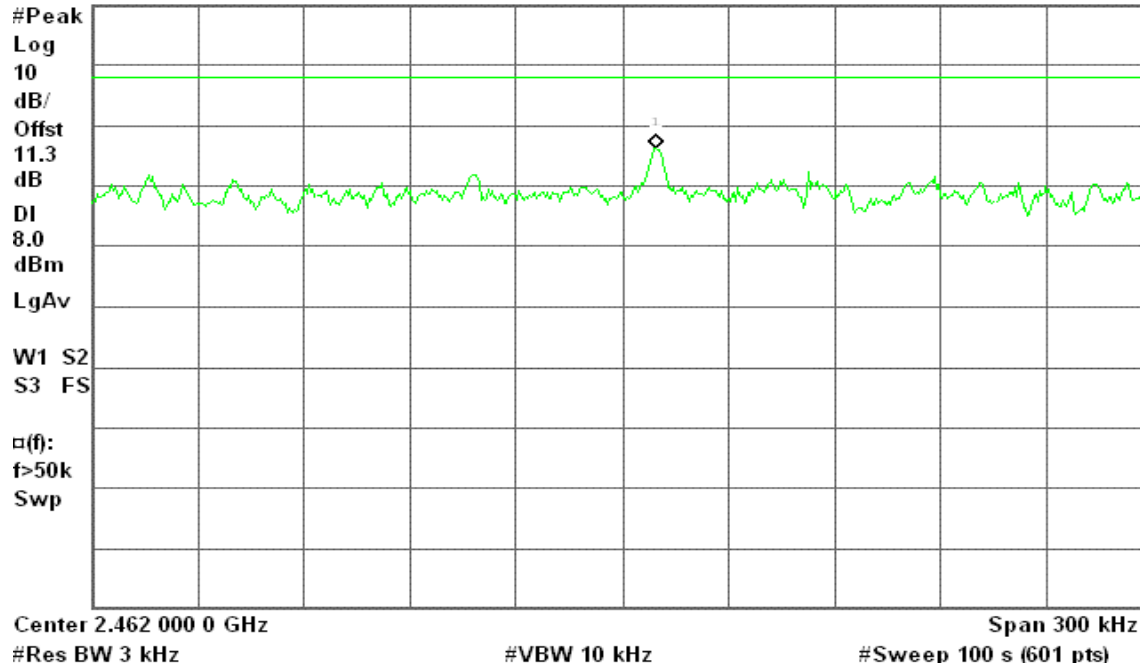
Peak Power Spectral Density, b Mode High Ch.

Mkr1 2.462 009 5 GHz

Ref 20 dBm

Atten 20 dB

-3.74 dBm



## IEEE 802.11g Base mode

### CH Low

Agilent 17:25:45 Jul 11, 2005

R T

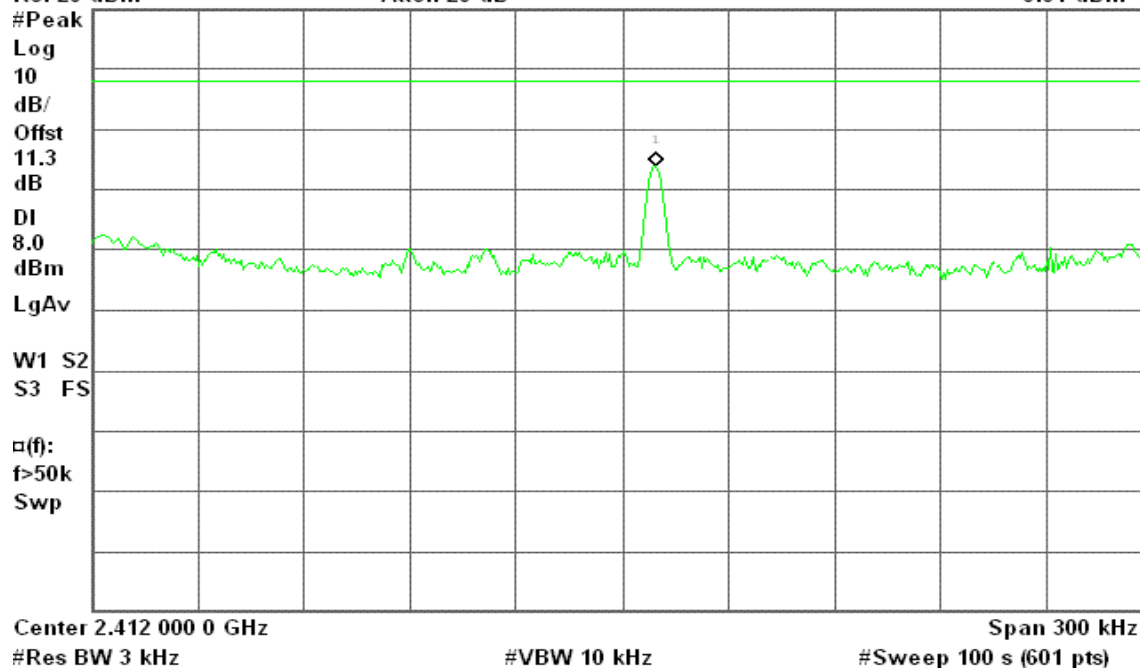
Peak Power Spectral Density, g Mode Low Ch.

Mkr1 2.412 009 5 GHz

Ref 20 dBm

Atten 20 dB

-6.01 dBm





## CH Mid

Agilent 17:33:29 Jul 11, 2005

R T

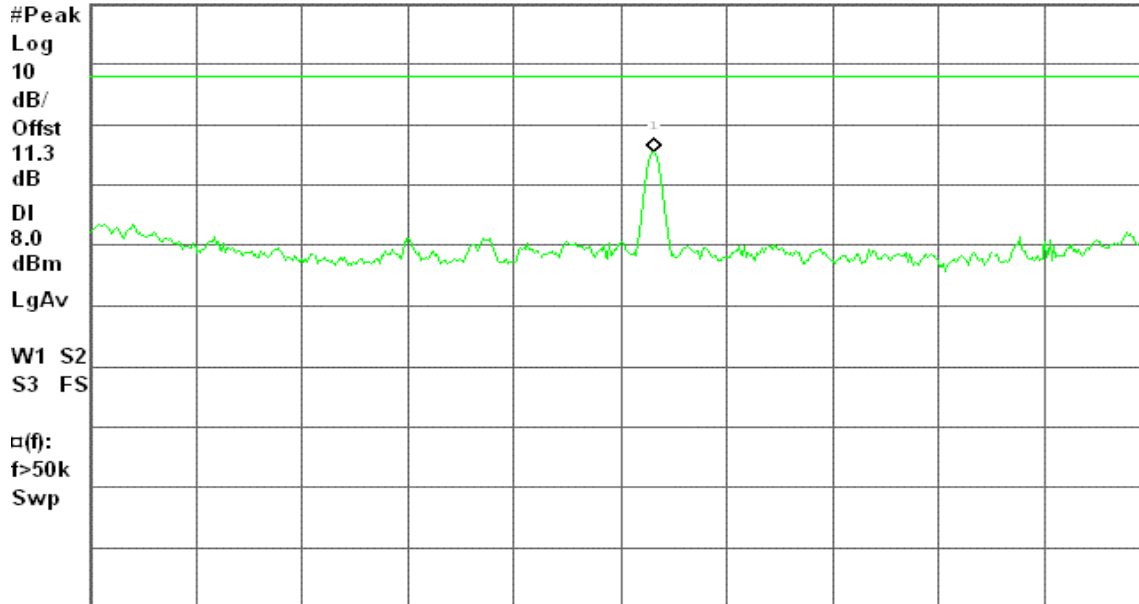
Peak Power Spectral Density, g Mode Mid Ch.

Mkr1 2.437 009 5 GHz

Ref 20 dBm

Atten 20 dB

-4.59 dBm



Center 2.437 000 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)

## CH High

Agilent 17:40:35 Jul 11, 2005

R T

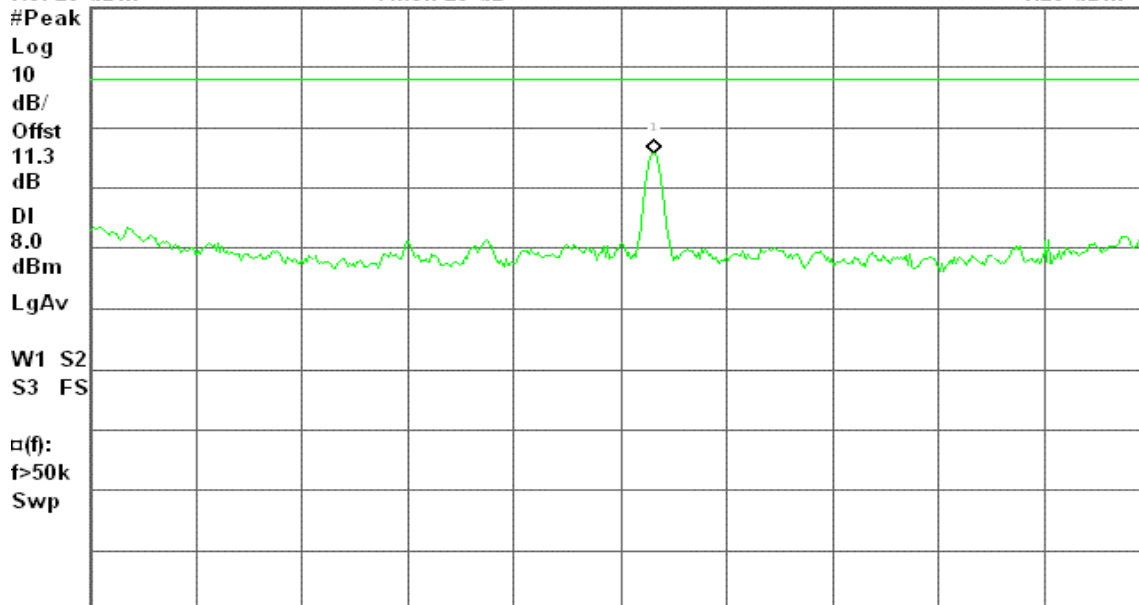
Peak Power Spectral Density, g Mode High Ch.

Mkr1 2.462 009 5 GHz

Ref 20 dBm

Atten 20 dB

-4.26 dBm



Center 2.462 000 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)



## IEEE 802.11a Base mode

### CH Low

Agilent 20:16:09 Jul 13, 2005

R T

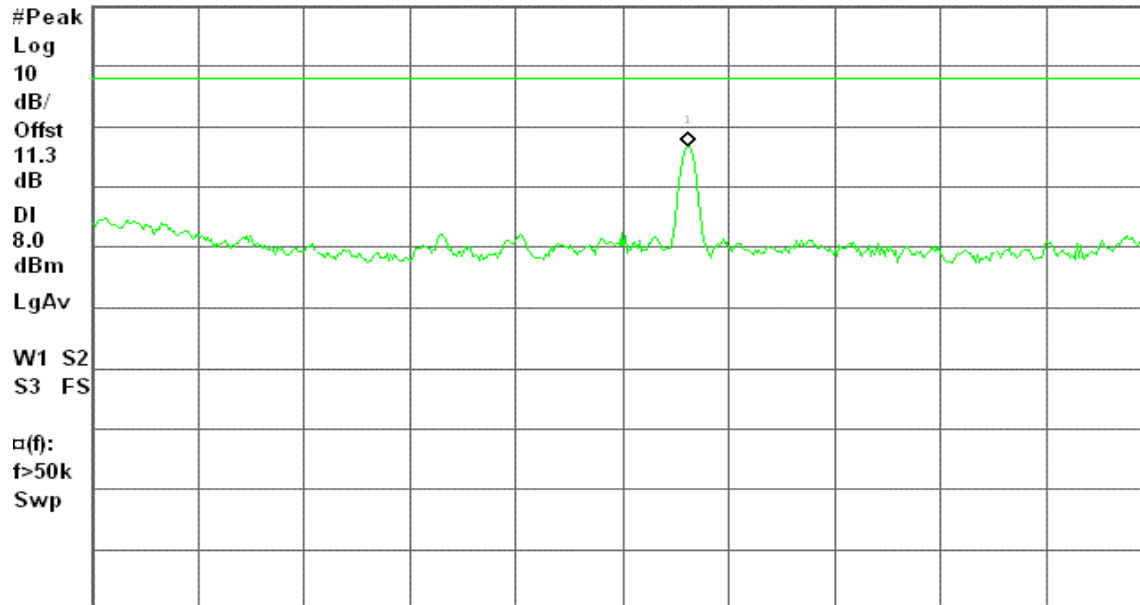
Peak Power Spectral Density, a Mode Low Ch.

Mkr1 5.745 018 6 GHz

Ref 20 dBm

Atten 20 dB

-3.15 dBm



Center 5.745 000 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)

### CH Mid

Agilent 20:25:11 Jul 13, 2005

R T

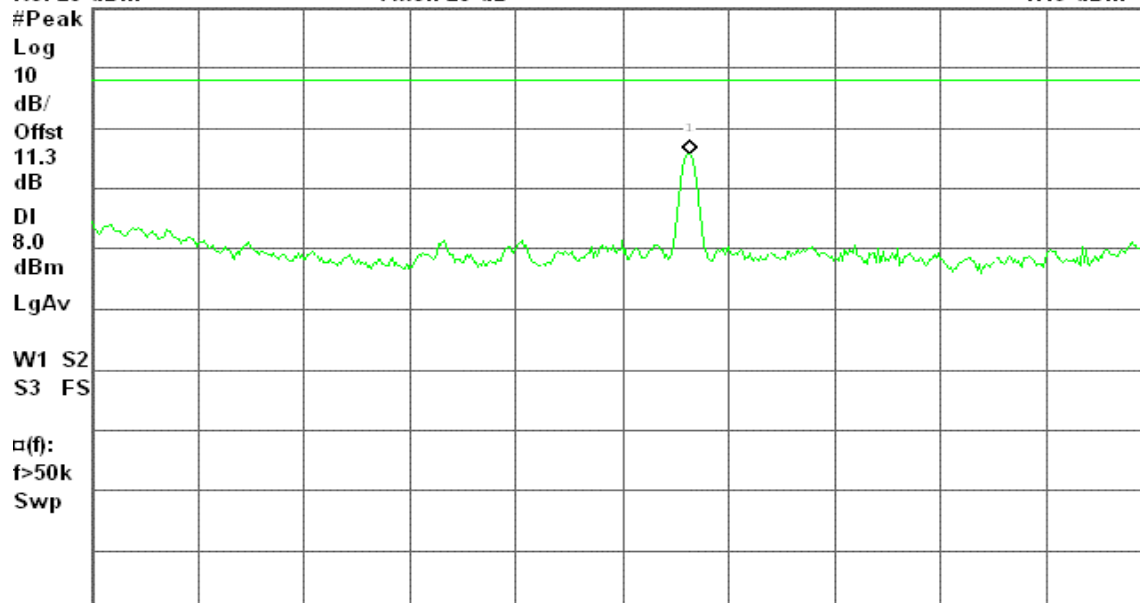
Peak Power Spectral Density, a Mode Mid Ch.

Mkr1 5.785 019 1 GHz

Ref 20 dBm

Atten 20 dB

-4.19 dBm



Center 5.785 000 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)



## CH High

Agilent 20:31:49 Jul 13, 2005

R T

Peak Power Spectral Density, a Mode High Ch.

Mkr1 5.825 018 6 GHz

Ref 20 dBm

Atten 20 dB

-6.86 dBm

#Peak

Log

10

dB/

Offst

11.3

dB

DI

8.0

dBm

LgAv

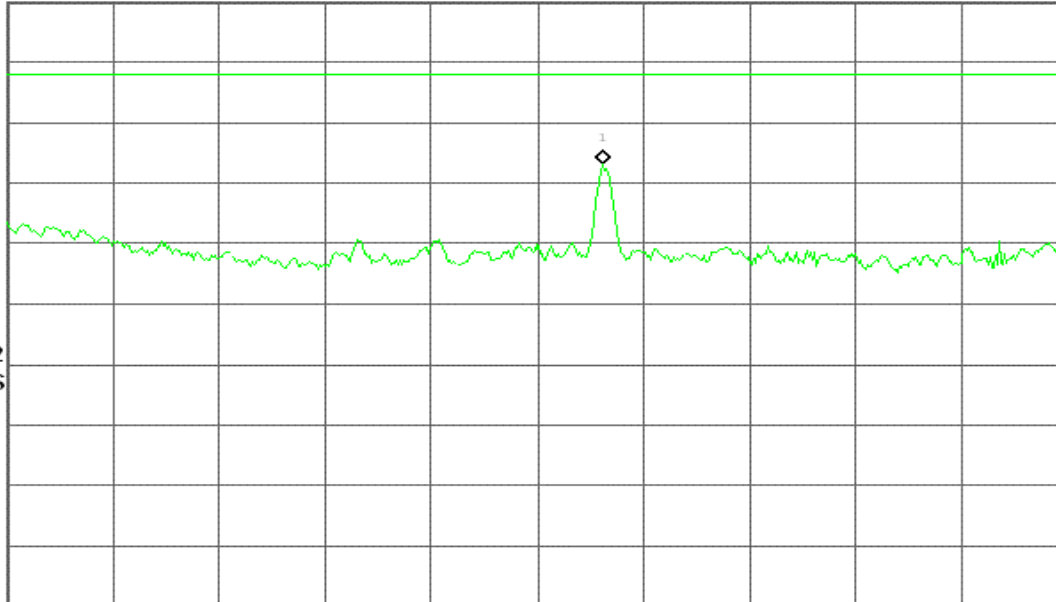
W1 S2

S3 FS

$\alpha(f)$ :

f>50k

Swp



Center 5.825 000 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)



## 7.6 RADIO FREQUENCY EXPOSURE

### LIMIT

According to §15.247(i), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See § 1.1307(b)(1) of this chapter.

### EUT Specification

<b>EUT</b>	WLAN 11a+b/g Access Point
<b>Frequency band (Operating)</b>	<input checked="" type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz <input type="checkbox"/> WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz <input type="checkbox"/> WLAN: 5.745GHz ~ 5.825GHz <input type="checkbox"/> Others
<b>Device category</b>	<input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>20cm separation) <input type="checkbox"/> Others
<b>Exposure classification</b>	<input checked="" type="checkbox"/> Occupational/Controlled exposure (S = 5mW/cm <sup>2</sup> ) <input type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm <sup>2</sup> )
<b>Antenna diversity</b>	<input type="checkbox"/> Single antenna <input checked="" type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input checked="" type="checkbox"/> Tx/Rx diversity
<b>Max. output power</b>	IEEE 802.11b: 19.68 dBm (92.90mW) IEEE 802.11g: 19.83 dBm (96.16mW)
<b>Antenna gain (Max)</b>	IEEE 802.11b/g mode: 2 dBi (Numeric gain: 1.58)
<b>Evaluation applied</b>	<input checked="" type="checkbox"/> MPE Evaluation <input type="checkbox"/> SAR Evaluation

### ***Remark:***

- The maximum output power is 19.83dBm (96.16mW) at 2462MHz (with 1.58 numeric antenna gain.)*
- DTS device is not subject to routine RF evaluation; MPE estimate is used to justify the compliance.*
- For mobile or fixed location transmitters, no SAR consideration applied. The maximum power density is 1.0 mW/cm<sup>2</sup> even if the calculation indicates that the power density would be larger.*

### **TEST RESULTS**

*No non-compliance noted.*



**Calculation**

$$\text{Given } E = \frac{\sqrt{30 \times P \times G}}{d} \quad \& \quad S = \frac{E^2}{3770}$$

Where  $E$  = Field strength in Volts / meter

$P$  = Power in Watts

$G$  = Numeric antenna gain

$d$  = Distance in meters

$S$  = Power density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{3770 d^2}$$

Changing to units of mW and cm, using:

$$P \text{ (mW)} = P \text{ (W)} / 1000 \text{ and}$$

$$d \text{ (cm)} = d \text{ (m)} / 100$$

Yields

$$S = \frac{30 \times (P/1000) \times G}{3770 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2} \quad \text{Equation 1}$$

Where  $d$  = Distance in cm

$P$  = Power in mW

$G$  = Numeric antenna gain

$S$  = Power density in mW / cm<sup>2</sup>

**Maximum Permissible Exposure**

EUT output power = 161.44mW

Numeric antenna gain = 1.58

Substituting the MPE safe distance using  $d = 20$  cm into Equation 1:

Yields

$$S = 0.000199 \times P \times G$$

Where  $P$  = Power in mW

$G$  = Numeric antenna gain

$S$  = Power density in mW / cm<sup>2</sup>

$$\rightarrow \text{Power density} = 0.03023 \text{ mW} / \text{cm}^2$$

(For mobile or fixed location transmitters, the maximum power density is 1.0 mW/cm<sup>2</sup> even if the calculation indicates that the power density would be larger.)

**EUT Specification**

<b>EUT</b>	WLAN 11a+b/g Access Point
<b>Frequency band (Operating)</b>	<input type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz <input type="checkbox"/> WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz <input checked="" type="checkbox"/> WLAN: 5.745GHz ~ 5.825GHz <input type="checkbox"/> Others
<b>Device category</b>	<input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>20cm separation) <input type="checkbox"/> Others
<b>Exposure classification</b>	<input checked="" type="checkbox"/> Occupational/Controlled exposure (S = 5mW/cm <sup>2</sup> ) <input type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm <sup>2</sup> )
<b>Antenna diversity</b>	<input type="checkbox"/> Single antenna <input checked="" type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input checked="" type="checkbox"/> Tx/Rx diversity
<b>Max. output power</b>	IEEE 802.11a Base mode: 20.42 dBm (110.15mW)
<b>Antenna gain (Max)</b>	IEEE 802.11a: 5 dBi (Numeric gain: 3.16)
<b>Evaluation applied</b>	<input checked="" type="checkbox"/> MPE Evaluation <input type="checkbox"/> SAR Evaluation
<b>Remark:</b> 1. The maximum output power is <u>20.42dBm (110.15mW)</u> at <u>5745MHz</u> (with <u>3.16 numeric antenna gain.</u> ) 2. DTS device is not subject to routine RF evaluation; MPE estimate is used to justify the compliance.	

**TEST RESULTS**

No non-compliance noted.

**Calculation**

$$\text{Given } E = \frac{\sqrt{30 \times P \times G}}{d} \quad \& \quad S = \frac{E^2}{3770}$$

Where  $E$  = Field strength in Volts / meter

$P$  = Power in Watts

$G$  = Numeric antenna gain

$d$  = Distance in meters

$S$  = Power density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{3770 d^2}$$

Changing to units of mW and cm, using:

$$P \text{ (mW)} = P \text{ (W)} / 1000 \text{ and}$$

$$d \text{ (cm)} = d \text{ (m)} / 100$$

Yields

$$S = \frac{30 \times (P/1000) \times G}{3770 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2} \quad \text{Equation 1}$$

Where  $d$  = Distance in cm

$P$  = Power in mW

$G$  = Numeric antenna gain

$S$  = Power density in mW / cm<sup>2</sup>

**Maximum Permissible Exposure**

EUT output power = 118.30mW

Antenna gain = 3.16 (Numeric gain)

Substituting the MPE safe distance using  $d = 20$  cm into Equation 1:

Yields

$$S = 0.000199 \times P \times G$$

Where  $P$  = Power in mW

$G$  = Numeric antenna gain

$S$  = Power density in mW / cm<sup>2</sup>

$$\rightarrow \text{Power density} = 0.069266 \text{ mW / cm}^2$$

(For mobile or fixed location transmitters, the maximum power density is 1.0 mW/cm<sup>2</sup> even if the calculation indicates that the power density would be larger.)



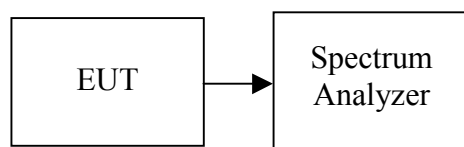
## 7.7 SPURIOUS EMISSIONS

### 7.7.1 Conducted Measurement

#### LIMIT

According to §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in 15.209(a) (see Section 15.205(c)).

#### Test Configuration



#### TEST PROCEDURE

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

Measurements are made over the 30MHz to 26GHz range for IEEE802.11b/g, 30MHz to 40GHz range for IEEE802.11a with the transmitter set to the lowest, middle, and highest channels.

#### TEST RESULTS

*No non-compliance noted.*



## Test Plot

### IEEE 802.11b Base mode / CH Low

30MHz ~ 26GHz

Agilent 16:47:51 Jul 11, 2005

R T

Spurious, b Mode Low Ch.

Mkr1 2.42 GHz

Ref 20 dBm

Atten 20 dB

4.24 dBm

#Peak

Log

10

dB/

Offst

11.3

dB

DI

-15.8

dBm

LgAv

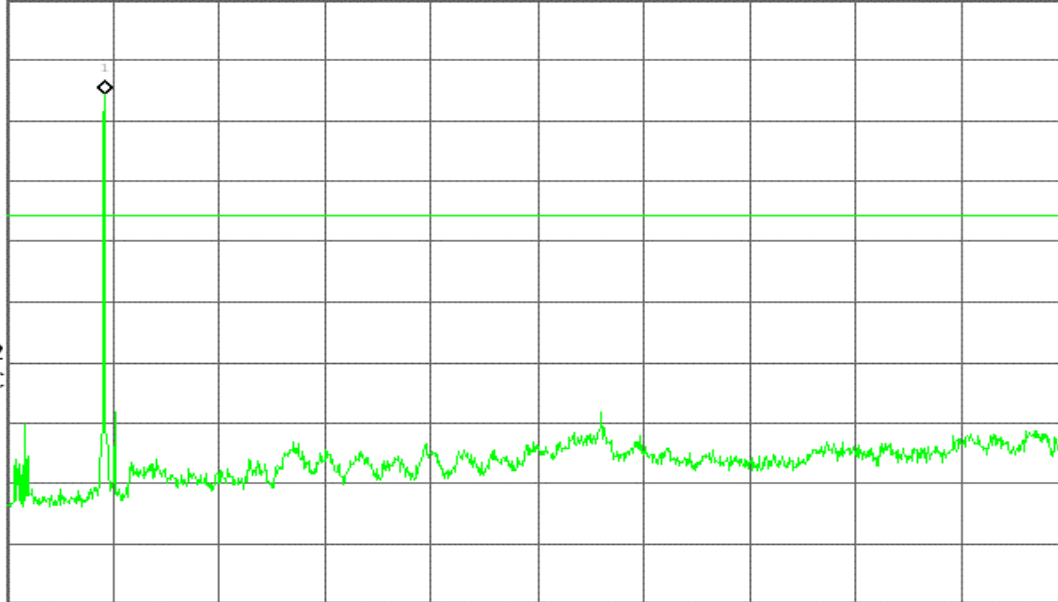
V1 S2

S3 FC

□(f):

FTun

Swp



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 2.482 s (1001 pts)

### IEEE 802.11b Base mode / CH Mid

30MHz ~ 26GHz

Agilent 16:57:59 Jul 11, 2005

R T

Spurious, b Mode Mid Ch.

Mkr1 2.45 GHz

Ref 20 dBm

Atten 20 dB

4.38 dBm

#Peak

Log

10

dB/

Offst

11.3

dB

DI

-15.6

dBm

LgAv

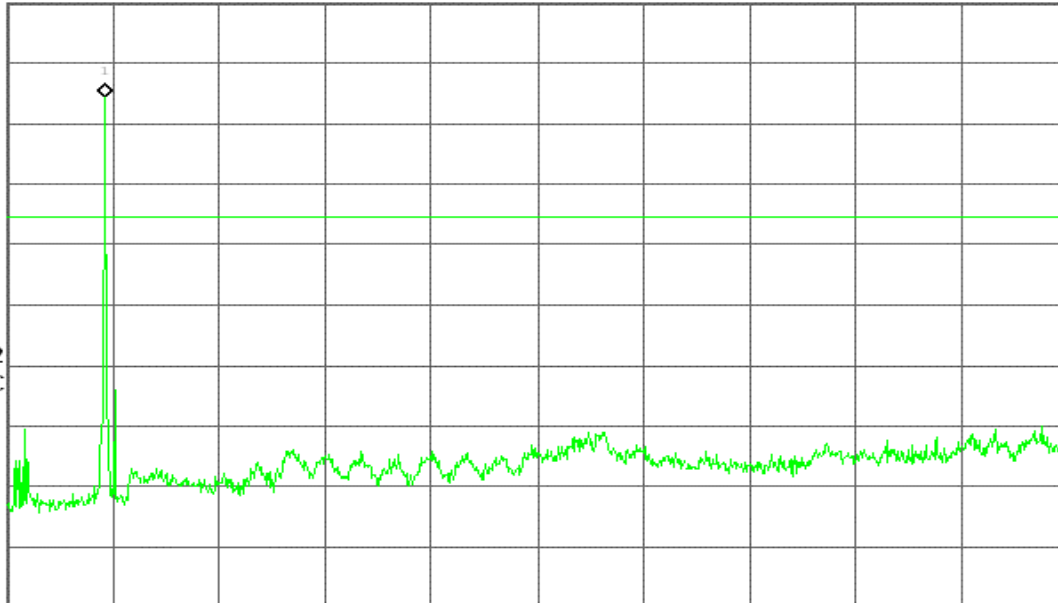
V1 S2

S3 FC

□(f):

FTun

Swp



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 2.482 s (1001 pts)



## IEEE 802.11b Base mode / CH High

30MHz ~ 26GHz

Agilent 17:10:02 Jul 11, 2005

R T

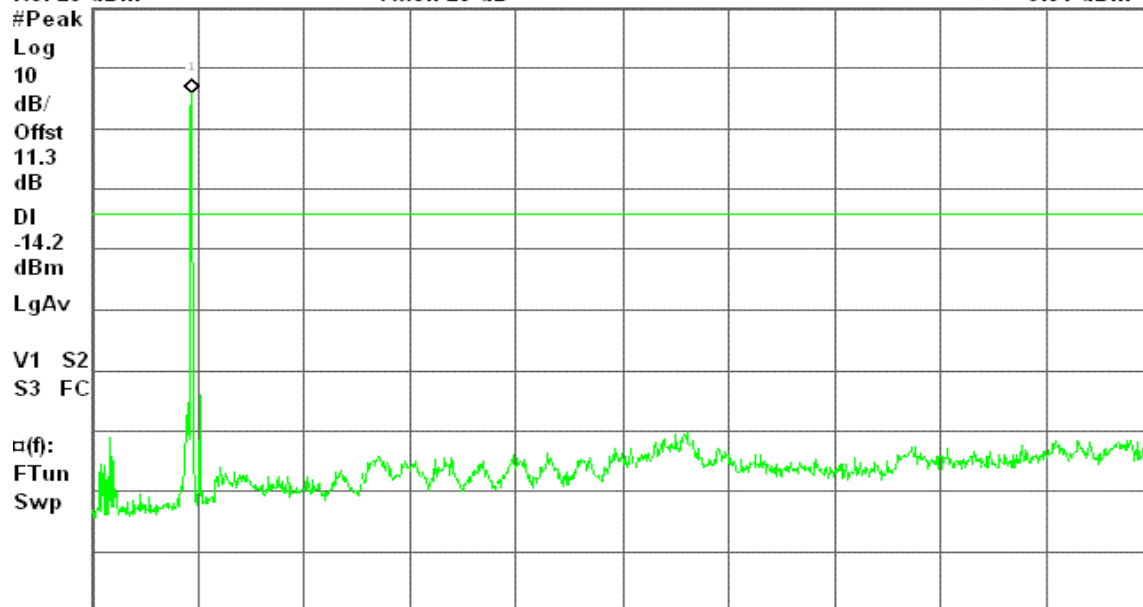
Spurious, b Mode High Ch.

Mkr1 2.47 GHz

Ref 20 dBm

Atten 20 dB

5.81 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 2.482 s (1001 pts)

## IEEE 802.11g Base mode / CH Low

30MHz ~ 26GHz

Agilent 17:26:52 Jul 11, 2005

R T

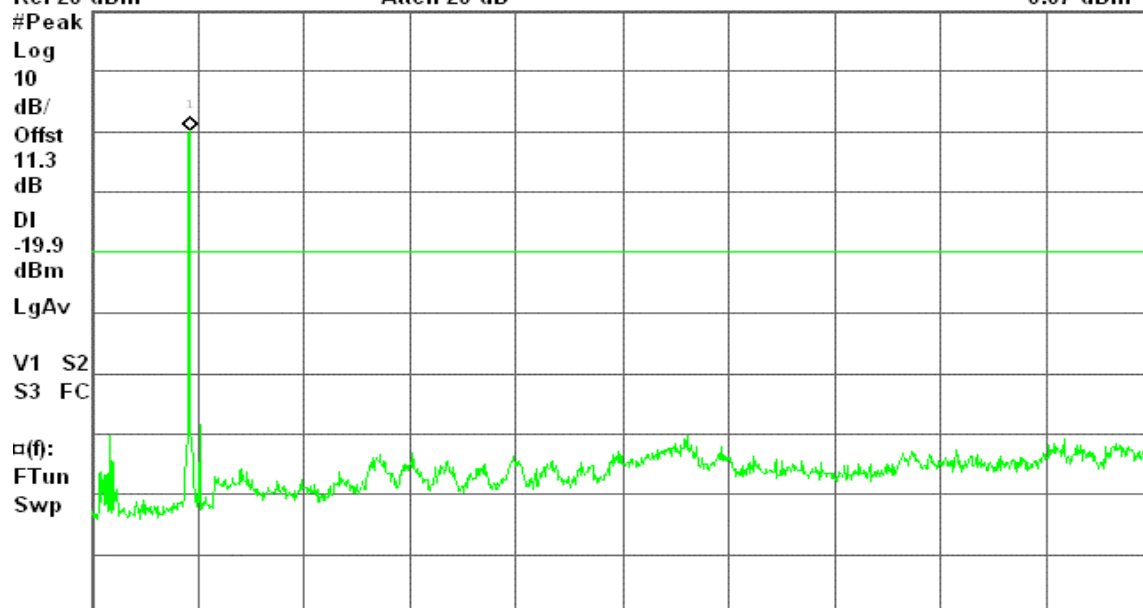
Spurious, g Mode Low Ch.

Mkr1 2.42 GHz

Ref 20 dBm

Atten 20 dB

0.07 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 2.482 s (1001 pts)

**IEEE 802.11g Base mode / CH Mid****30MHz ~ 26GHz**

✱ Agilent 17:34:35 Jul 11, 2005

R T

Spurious, g Mode Mid Ch.

Mkr1 2.45 GHz

Ref 20 dBm

Atten 20 dB

1.69 dBm

#Peak

Log

10

dB/

Offst

11.3

dB

DI

-18.3

dBm

LgAv

V1 S2

S3 FC

□(f):

FTun

Swp

Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 2.482 s (1001 pts)

**IEEE 802.11g Base mode / CH High****30MHz ~ 26GHz**

✱ Agilent 17:41:47 Jul 11, 2005

R T

Spurious, g Mode High Ch.

Mkr1 2.47 GHz

Ref 20 dBm

Atten 20 dB

5.11 dBm

#Peak

Log

10

dB/

Offst

11.3

dB

DI

-14.9

dBm

LgAv

V1 S2

S3 FC

□(f):

FTun

Swp

Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 2.482 s (1001 pts)



## IEEE 802.11a Base mode / CH Low

### 30MHz ~ 40GHz

Agilent 20:17:42 Jul 13, 2005

R T

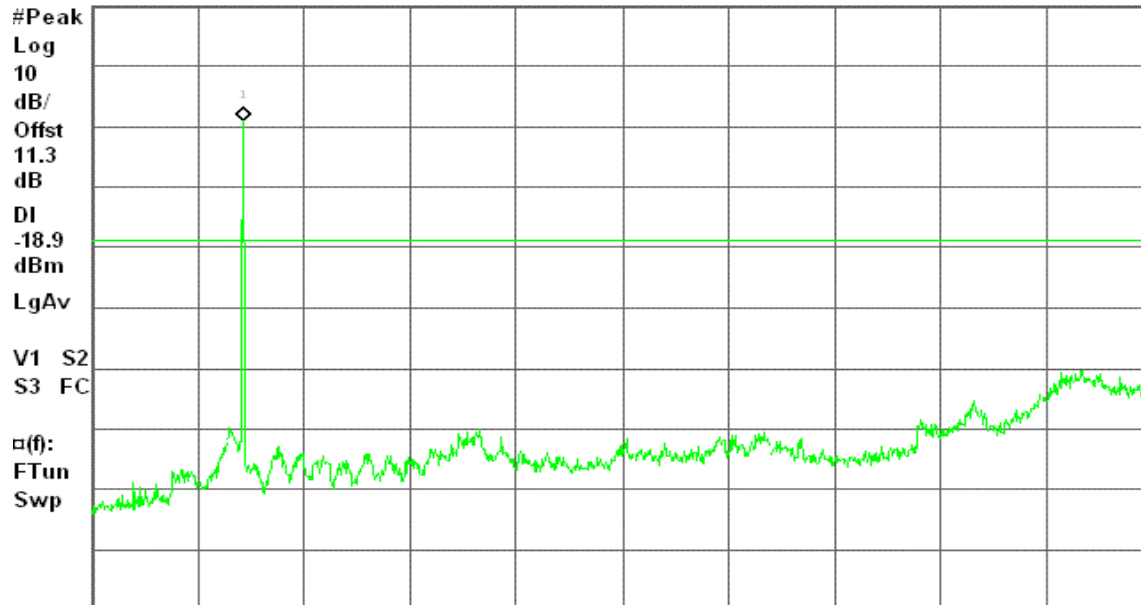
Bandege/Spurious, a Mode Low Ch.

Mkr1 5.75 GHz

Ref 20 dBm

Atten 20 dB

1.07 dBm



Center 20.02 GHz

Span 39.97 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 3.82 s (1001 pts)

## IEEE 802.11a Base mode / CH Mid

### 30MHz ~ 40GHz

Agilent 20:26:35 Jul 13, 2005

R T

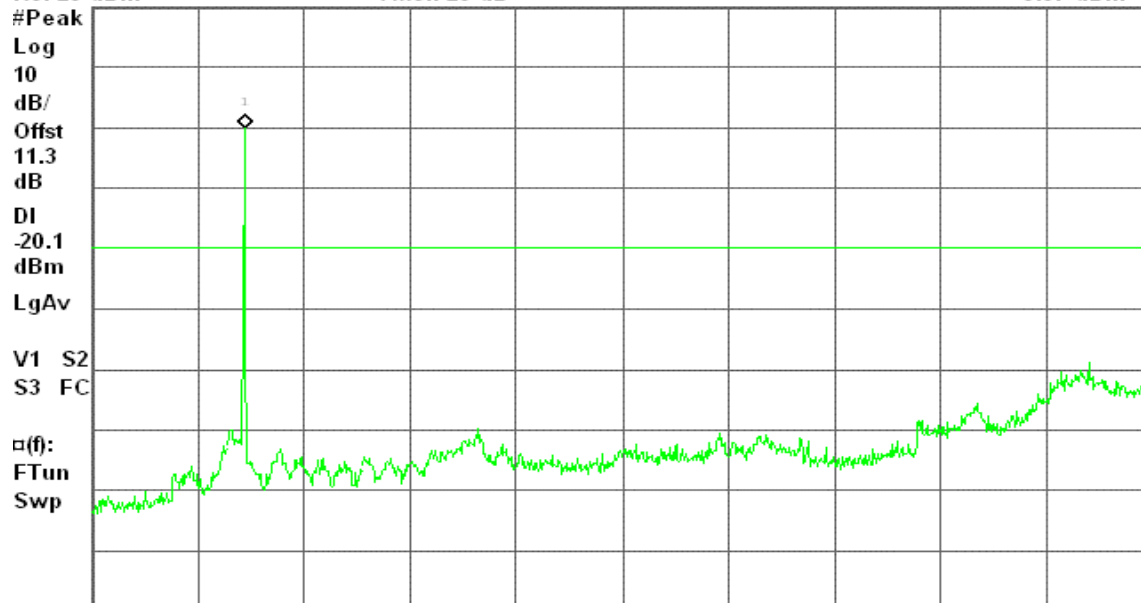
Spurious, a Mode Mid Ch.

Mkr1 5.79 GHz

Ref 20 dBm

Atten 20 dB

-0.07 dBm



Center 20.02 GHz

Span 39.97 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 3.82 s (1001 pts)





## IEEE 802.11a Base mode / CH High

30MHz ~ 40GHz

Agilent 20:32:48 Jul 13, 2005

R T

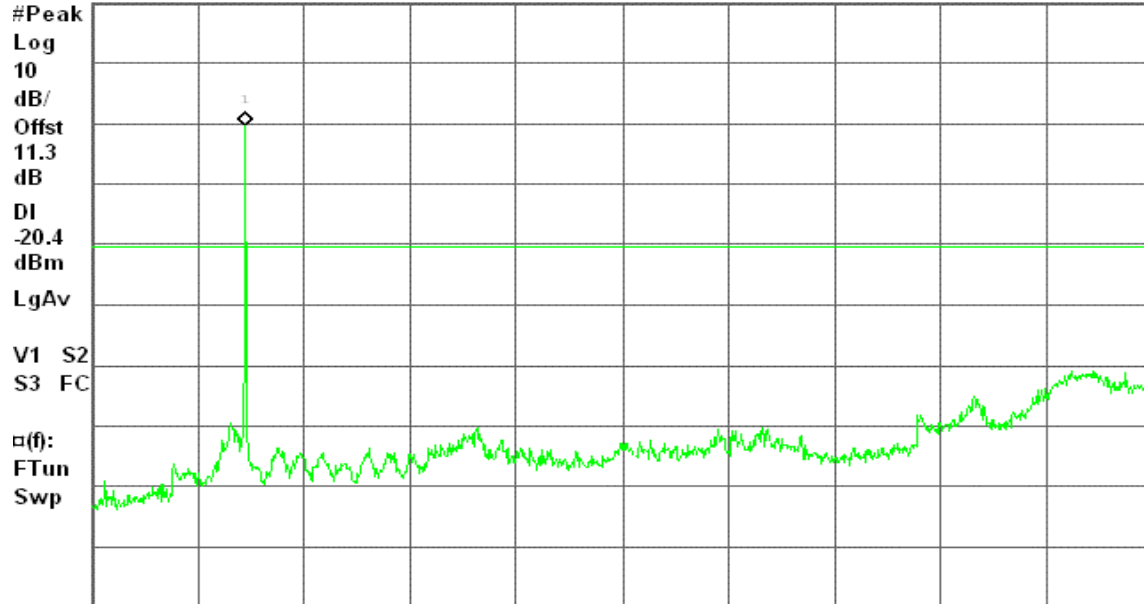
Spurious, a Mode High Ch.

Mkr1 5.83 GHz

Ref 20 dBm

Atten 20 dB

-0.38 dBm



Center 20.02 GHz

Span 39.97 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 3.82 s (1001 pts)



## 7.7.2 Radiated Emissions

### LIMIT

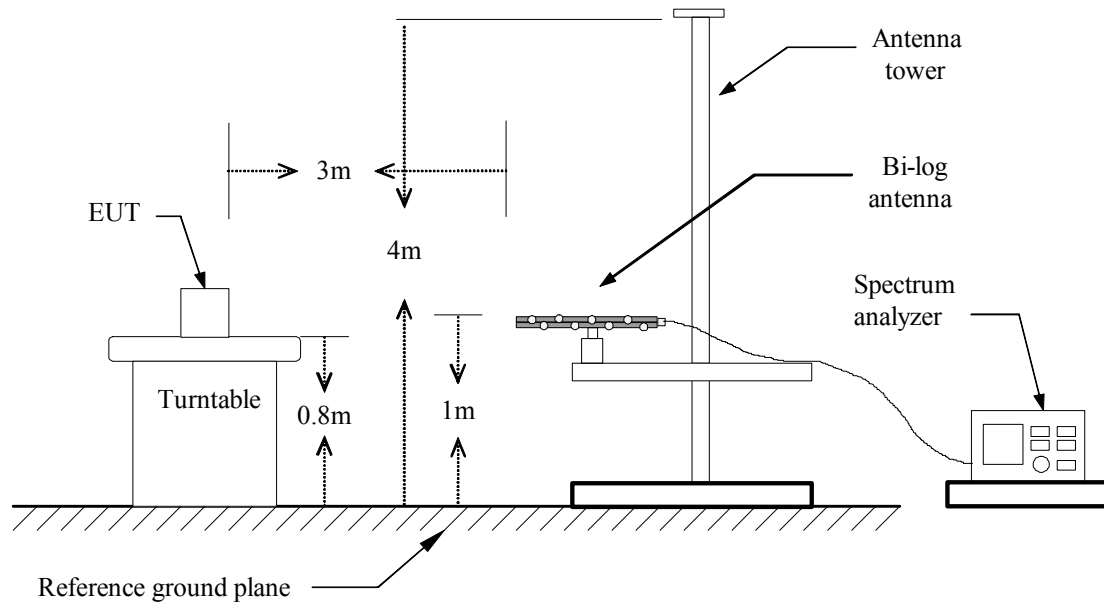
1. Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (mV/m)	Measurement Distance (m)
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

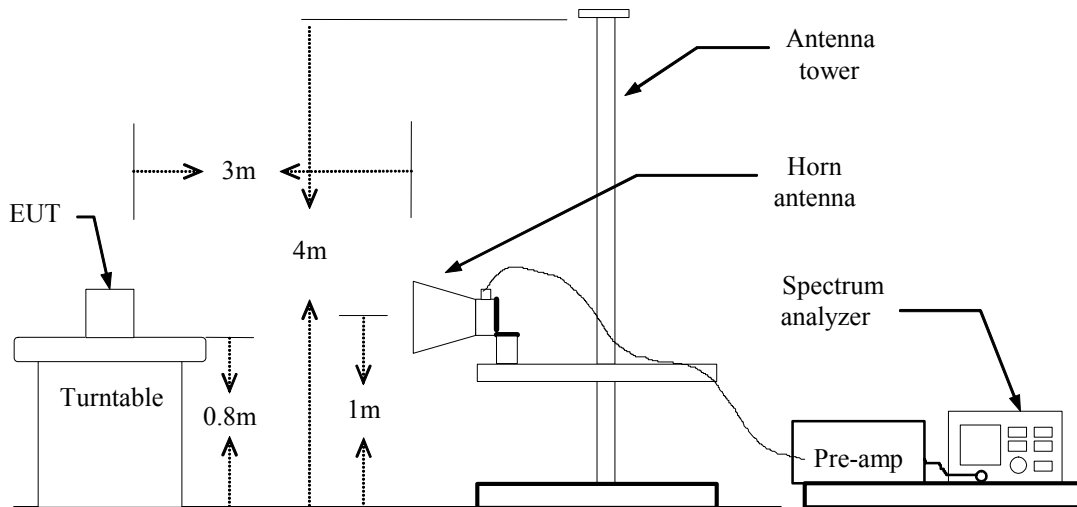
**Remark:** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections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

2. In the above emission table, the tighter limit applies at the band edges.

Frequency (MHz)	Field Strength ( $\mu$ V/m at 3-meter)	Field Strength (dB $\mu$ V/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

**Test Configuration****Below 1 GHz**

## Above 1 GHz



## TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:

Below 1GHz:

RBW=100kHz / VBW=300kHz / Sweep=AUTO

Above 1GHz:

(a) PEAK: RBW=VBW=1MHz / Sweep=AUTO

(b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO

7. Repeat above procedures until the measurements for all frequencies are complete.



## **TEST RESULTS**

### **Below 1 GHz**

**Operation Mode:** Normal Link**Test Date:** August 16, 2004**Temperature:** 31°C**Tested by:** Rex Lai**Humidity:** 47% RH**Polarity:** Ver. / Hor.

<b>Freq. (MHz)</b>	<b>Ant.Pol. H/V</b>	<b>Detector Mode (PK/QP)</b>	<b>Reading (dBuV)</b>	<b>Factor (dB)</b>	<b>Actual FS (dBuV/m)</b>	<b>Limit 3m (dBuV/m)</b>	<b>Safe Margin (dB)</b>
292.35	V	Peak	16.40	15.60	32.00	46.00	-14.00
319.82	V	Peak	18.20	16.10	34.30	46.00	-11.70
480.80	V	Peak	15.60	19.70	35.30	46.00	-10.70
491.13	V	Peak	8.20	20.50	28.70	46.00	-17.30
769.00	V	Peak	10.30	25.70	36.00	46.00	-10.00
879.81	V	Peak	9.80	23.50	33.30	46.00	-12.70
285.12	H	Peak	17.20	15.10	32.30	46.00	-13.70
294.15	H	Peak	13.60	15.70	29.30	46.00	-16.70
320.00	H	Peak	13.40	16.10	29.50	46.00	-16.50
486.67	H	Peak	10.80	20.20	31.00	46.00	-15.00
769.00	H	Peak	9.60	25.70	35.30	46.00	-10.70
885.00	H	Peak	7.30	23.40	30.70	46.00	-15.30

**Remark:**

1. Measuring frequencies from 30 MHz to the 1GHz.
2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak detector mode.
3. Measurements above show only up to 6 maximum emissions noted, or would be lesser; with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. The IF bandwidth of SPA between 30MHz to 1GHz was 100kHz.

**Above 1 GHz****Operation Mode:** Tx / IEEE 802.11b Base mode / CH Low **Test Date:** August 16, 2005**Temperature:** 31°C **Tested by:** Rex Lai**Humidity:** 55% RH **Polarity:** Ver. / Hor.

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Remark
					Peak (dBuV/m)	AV (dBuV/m)				
4824.00	V	46.98	---	-4.73	42.25	---	74.00	54.00	-11.75	Peak
N/A										
4824.00	H	47.56	---	-4.73	42.83	---	74.00	54.00	-11.17	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
5. Spectrum setting:
  - a. Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.
  - b. AV Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep time = Auto.

**Operation Mode:** Tx / IEEE 802.11b Base mode / CH Mid **Test Date:** August 16, 2005**Temperature:** 31°C**Tested by:** Rex Lai**Humidity:** 55% RH**Polarity:** Ver. / Hor.

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Remark
					Peak (dBuV/m)	AV (dBuV/m)				
4874.00	V	47.50	---	-4.66	42.84	---	74.00	54.00	-11.16	Peak
N/A										
4874.00	H	47.16	---	-4.66	42.50	---	74.00	54.00	-11.50	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
5. Spectrum setting:
  - a. Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.
  - b. AV Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep time = Auto.

**Operation Mode:** Tx / IEEE 802.11b Base mode / CH High **Test Date:** August 16, 2005**Temperature:** 31°C**Tested by:** Rex Lai**Humidity:** 55% RH**Polarity:** Ver. / Hor.

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Remark
					Peak (dBuV/m)	AV (dBuV/m)				
4924.00	V	47.26	---	-4.59	42.67	---	74.00	54.00	-11.33	Peak
N/A										
4924.00	H	47.77	---	-4.59	43.18	---	74.00	54.00	-10.82	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
5. Spectrum setting:
  - a. Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.
  - b. AV Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep time = Auto.



**Operation Mode:** Tx / IEEE 802.11g Base mode / CH Low **Test Date:** August 16, 2005**Temperature:** 31°C**Tested by:** Rex Lai**Humidity:** 55% RH**Polarity:** Ver. / Hor.

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Remark
					Peak (dBuV/m)	AV (dBuV/m)				
4824.00	V	47.39	---	-4.73	42.66	---	74.00	54.00	-11.34	Peak
N/A										
4824.00	H	47.51	---	-4.73	42.78	---	74.00	54.00	-11.22	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
5. Spectrum setting:
  - a. Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.
  - b. AV Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep time = Auto.

**Operation Mode:** Tx / IEEE 802.11g Base mode / CH Mid **Test Date:** August 16, 2005**Temperature:** 31°C**Tested by:** Rex Lai**Humidity:** 55% RH**Polarity:** Ver. / Hor.

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Remark
					Peak (dBuV/m)	AV (dBuV/m)				
4874.00	V	47.66	---	-4.66	43.00	---	74.00	54.00	-11.00	Peak
N/A										
4874.00	H	47.66	---	-4.66	43.00	---	74.00	54.00	-11.00	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
5. Spectrum setting:
  - a. Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.
  - b. AV Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep time = Auto.

**Operation Mode:** Tx / IEEE 802.11g Base mode / CH High **Test Date:** August 16, 2005**Temperature:** 31°C**Tested by:** Rex Lai**Humidity:** 55% RH**Polarity:** Ver. / Hor.

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Remark
					Peak (dBuV/m)	AV (dBuV/m)				
4924.00	V	47.61	---	-4.59	43.02	---	74.00	54.00	-10.98	Peak
N/A										
4924.00	H	47.67	---	-4.59	43.08	---	74.00	54.00	-10.92	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
5. Spectrum setting:
  - a. Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.
  - b. AV Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep time = Auto.

**Operation Mode:** Tx / IEEE 802.11a Base mode / CH Low **Test Date:** August 16, 2005**Temperature:** 31°C**Tested by:** Rex Lai**Humidity:** 55% RH**Polarity:** Ver. / Hor.

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Remark
					Peak (dBuV/m)	AV (dBuV/m)				
11491.00	V	49.69	38.19	9.62	59.31	47.81	74.00	54.00	-6.19	Average
17238.00	V	49.60	38.02	11.95	61.55	49.97	74.00	54.00	-4.03	Average
N/A										
11490.00	H	50.70	38.90	9.62	60.32	48.52	74.00	54.00	-5.48	Average
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
5. Spectrum setting:
  - a. Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.
  - b. AV Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep time = Auto.

**Operation Mode:** Tx / IEEE 802.11a Base mode / CH Mid **Test Date:** August 16, 2005**Temperature:** 31°C**Tested by:** Rex Lai**Humidity:** 55% RH**Polarity:** Ver. / Hor.

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Remark
					Peak (dBuV/m)	AV (dBuV/m)				
11570.00	V	49.65	37.20	9.49	59.14	46.69	74.00	54.00	-7.31	Average
17358.00	V	49.22	38.10	12.87	62.09	50.97	74.00	54.00	-3.03	Average
N/A										
17357.00	H	51.26	40.44	12.87	64.13	53.31	74.00	54.00	-0.69	Average
11571.00	H	52.27	40.27	9.49	61.76	49.76	74.00	54.00	-4.24	Average
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
5. Spectrum setting:
  - a. Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.
  - b. AV Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep time = Auto.

**Operation Mode:** Tx / IEEE 802.11a Base mode / CH High **Test Date:** August 16, 2005**Temperature:** 31°C**Tested by:** Rex Lai**Humidity:** 55% RH**Polarity:** Ver. / Hor.

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Remark
					Peak (dBuV/m)	AV (dBuV/m)				
11651.00	V	52.44	41.21	9.35	61.79	50.56	74.00	54.00	-3.44	Average
17474.00	V	48.66	37.41	13.79	62.45	51.20	74.00	54.00	-2.80	Average
N/A										
17477.00	H	52.95	40.09	13.79	66.74	53.88	74.00	54.00	-0.12	Average
11651.00	H	52.07	41.03	9.35	61.42	50.38	74.00	54.00	-3.62	Average
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
5. Spectrum setting:
  - a. Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.
  - b. AV Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, Sweep time = Auto.



## 7.8 POWERLINE CONDUCTED EMISSIONS

### LIMIT

According to §15.207(a), except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50  $\mu$ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency Range (MHz)	Limits (dB $\mu$ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

\* Decreases with the logarithm of the frequency.

### MEASUREMENT EQUIPMENT USED

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI TEST RECEIVER 9kHz-30MHz	ROHDE & SCHWARZ	ESHS30	828144/003	09/24/2005
TWO-LINE V-NETWORK 9kHz-30MHz	SCHAFFNER	NNB41	03/10013	06/11/2006
LISN 10kHz-100MHz	EMCO	3825/2	9106-1809	02/17/2006

**Remark:** Each piece of equipment is scheduled for calibration once a year.

### Test Configuration

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

### TEST PROCEDURE

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.



## **TEST RESULTS**

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

### **Test Data**

**Operation Mode:** Normal Link      **Test Date:** August 17, 2005  
**Temperature:** 25°C      **Tested by:** Bruce Chen  
**Humidity:** 55% RH

Freq. (MHz)	QP Reading	AV Reading	Corr. factor	QP Result	AV Result	QP Limit	AV Limit	QP Margin	AV Margin	Note
0.170	45.940	40.320	0.160	46.100	40.480	64.960	54.960	-18.860	-14.480	L1
0.346	30.350	28.550	0.100	30.450	28.650	59.058	49.058	-28.608	-20.408	L1
0.698	25.460	18.530	0.100	25.560	18.630	56.000	46.000	-30.440	-27.370	L1
0.859	31.110	24.450	0.100	31.210	24.550	56.000	46.000	-24.790	-21.450	L1
1.040	35.220	28.390	0.100	35.320	28.490	56.000	46.000	-20.680	-17.510	L1
27.497	24.070	20.350	1.300	25.370	21.650	60.000	50.000	-34.630	-28.350	L1
0.169	15.640	6.130	0.162	15.802	6.292	65.009	55.009	-49.207	-48.717	L2
0.338	12.170	11.590	0.100	12.270	11.690	59.252	49.252	-46.982	-37.562	L2
0.687	9.470	8.320	0.100	9.570	8.420	56.000	46.000	-46.430	-37.580	L2
0.859	11.180	1.100	0.100	11.280	1.200	56.000	46.000	-44.720	-44.800	L2
1.023	9.250	5.750	0.100	9.350	5.850	56.000	46.000	-46.650	-40.150	L2
27.497	25.150	21.500	1.300	26.450	22.800	60.000	50.000	-33.550	-27.200	L2

### ***Remark:***

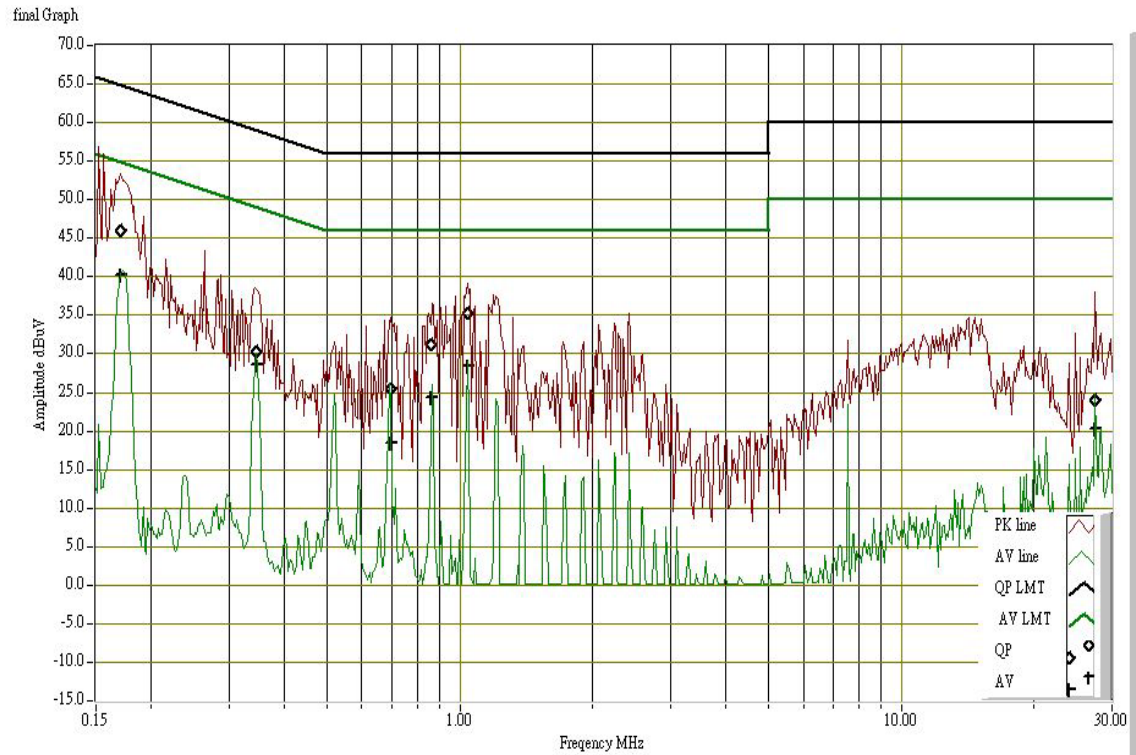
- 1. Measuring frequencies from 0.15 MHz to 30MHz.*
- 2. The emissions measured in frequency range from 0.15 MHz to 30MHz were made with an instrument using Quasi-peak detector and average detector.*
- 3. The IF bandwidth of SPA between 0.15MHz to 30MHz was 10kHz; the IF bandwidth of Test Receiver between 0.15MHz to 30MHz was 9kHz.*
- 4. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line)*





## Test Plots

### Conducted emissions (Line 1)



### Conducted emissions (Line 2)

