



**FCC 47 CFR PART 15 SUBPART C**

**TEST REPORT**

**For**

**Pocket PC**

**Model: P560**

**Trade Name: Mio DigiWalker, Mitac**

*Issued to*

**MITAC International Corp.  
6TH FL., NO.187, TIDING BLVD., SEC. 2,  
NEI-HU, TAIPEI, TAIWAN, R.O.C.**

*Issued by*



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# 1. TEST RESULT CERTIFICATION

**Applicant:** MITAC International Corp.  
 6TH FL., NO.187, TIDING BLVD., SEC. 2,  
 NEI-HU, TAIPEI, TAIWAN, R.O.C.

**Equipment Under Test:** Pocket PC

**Trade Name:** Mio DigiWalker, Mitac

**Model:** P560

**Date of Test:** August 7 ~ September 20, 2007

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR Part 15 Subpart C	No non-compliance noted
Deviation from Applicable Standard	
The Powerline Conducted Emissions was tested at Compliance Certification Services. (Linkou Lab.) The test equipments were listed in page 8 and the test data were recorded in page 96~97.	

### 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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Rex Lai  
 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>	Pocket PC
<b>Trade Name</b>	Mio DigiWalker, Mitac
<b>Model Number</b>	P560
<b>Model Discrepancy</b>	N/A
<b>Power Supply</b>	<p>1. Power Adapter: Model: PSAA05R-050 I/P: AC 100-240V, 0.3A, 50-60Hz O/P: DC 5V, 1A Max</p> <p>2. Car Charger: Model: G12PCL-535-B031 I/P: 12/24V(800mA) O/P: 5V, 1A</p> <p>3. Powered from host device via USB cable</p> <p>4. Rechargeable Li-ion Battery Model: E4MT071352B12 Rating: 3.7V, 1350mAh</p>
<b>Frequency Range</b>	IEEE 802.11b / g: 2412 ~ 2462 MHz Bluetooth: 2402 ~ 2480 MHz
<b>Transmit Power</b>	IEEE 802.11b: 13.67 dBm IEEE 802.11g: 12.57 dBm Bluetooth: -0.10 dBm
<b>Modulation Technique</b>	IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g: DSSS (CCK, DQPSK, DBPSK) + OFDM (QPSK, BPSK, 16-QAM, 64-QAM) Bluetooth: GFSK for 1Mbps; $\pi/4$ -DQPSK for 2Mbps; 8DPSK for 3Mbps
<b>Transmit Data Rate</b>	IEEE 802.11b: 11, 5.5, 2, 1 Mbps IEEE 802.11g: 54, 48, 36, 24, 18, 12, 11, 9, 6, 5.5, 2, 1 Mbps Bluetooth: 1, 2, 3Mbps
<b>Number of Channels</b>	IEEE 802.11b / g: 11 Channels Bluetooth: 79 Channels
<b>Channels Spacing</b>	IEEE 802.11b / g: 5MHz Bluetooth: 1MHz
<b>Antenna Specification</b>	IEEE 802.11b/g: 2.57 dBi Bluetooth: 2.57 dBi
<b>Antenna Designation</b>	IEEE 802.11b/g: PIFA Antenna Bluetooth: PIFA Antenna

**Remark:**

1. The sample selected for test was production product and was provided by manufacturer.
2. This submittal(s) (test report) is intended for FCC ID: **P4Q-P560** 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 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	( <sup>2</sup> )
13.36 - 13.41	322 - 335.4		

<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: P560) 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 and power line conducted emissions below 30MHz, which worst case was in normal link mode with USB charging cable. The USB port has no data transferring function, therefore no data transferring was done through the USB cable during the charging stage. This is the worst case scenario, therefore USB charging cable is used during all the test.

During the preliminary test, GFSK,  $\pi/4$ -QPSK & 8DPSK with DH1 were pre-tested and found that 8DPSK emits the highest output power. Then the tests were carried on with DH1 compare to DH3 & DH5 and found that 8DPSK with DH5 emit the highest output power, and therefore had been tested under operating condition.

Condition A (WLAN operation): Channel Low (2412MHz) 、 Mid (2437MHz) and High (2462MHz) with 11Mbps higher data rate were chosen for the final testing.

Condition B (Bluetooth operation): Channel Low (2402MHz) 、 Mid (2441MHz) and High (2480MHz) with 8DPSK and DH5 were chosen for radiated emission testing only

Condition C (Co-located operation): Bluetooth with Channel High (2480MHz), 8DPSK and DH5 were found to emits the highest output power during condition B and therefore had been co-located with WLAN Channel Low (2412MHz), Mid (2437MHz) and High (2462MHz) with 11Mbps data rate for the final testing.

The field strength of spurious emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (Y axis) and the worst case was recorded.



## 4. INSTRUMENT CALIBRATION

### 4.1 MEASURING 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.

### 4.2 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	01/30/2008
Power Meter	Agilent	E4416A	GB41291611	03/20/2008
Power Sensor	Agilent	E9327A	US40441097	06/07/2008

3M Semi Anechoic Chamber				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	US42510252	08/01/2008
Test Receiver	Rohde&Schwarz	ESCI	100064	11/13/2007
Switch Controller	TRC	Switch Controller	SC94050010	05/04/2008
4 Port Switch	TRC	4 Port Switch	SC94050020	05/04/2008
Horn-Antenna	TRC	HA-0502	06	06/05/2008
Horn-Antenna	TRC	HA-0801	04	05/04/2008
Horn-Antenna	TRC	HA-1201A	01	07/09/2008
Horn-Antenna	TRC	HA-1301A	01	07/17/2008
Bilog- Antenna	Sunol Sciences	JB3	A030205	03/29/2008
Turn Table	Max-Full	MFT-120S	T120S940302	N.C.R.
Antenna Tower	Max-Full	MFA-430	A440940302	N.C.R.
Controller	Max-Full	MF-CM886	CC-C-1F-13	N.C.R.
Site NSA	CCS	N/A	FCC: 965860 IC: IC 6106	09/25/2008
Test S/W	LABVIEW (V 6.1)			

*Remark: The measurement uncertainty is less than +/-2.0065dB (30MHz ~ 1GHz), +/-3.0958dB (Above 1GHz) which is evaluated as per the NAMAS NIS 81 and CISPR/A/291/CDV.*

Conducted Emission Room #1				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI Test Receiver	SCHAFFNER	SCR 3501	410	12/12/2007
LISN	FCC	FCC-LISN-50/250-16-2-07	06013	10/08/2007
LISN	FCC	FCC-LISN-50/250-16-2-07	06012	10/08/2007
Test S/W	LabVIEW 6.1 (CCS Conduction Test SW Version_01)			

*Remark: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.*



## 5. FACILITIES AND ACCREDITATIONS

### 5.1 FACILITIES

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

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

Tel: 886-2-2217-0894 / Fax: 886-2-2217-1029

No.11, Wugong 6th Rd., Wugu Industrial Park, Taipei Hsien 248, Taiwan

Tel: 886-2-2299-9720 / Fax: 886-2-2298-4045

No.81-1, Lane 210, Bade 2nd Rd., Luchu Hsiang, Taoyuan Hsien 338, Taiwan

Tel: 886-3-324-0332 / Fax: 886-3-324-5235

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 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	A2LA	EN 55011, EN 55014-1/2, CISPR 11, CISPR 14-1/2, EN 55022, EN 55015, CISPR 22, CISPR 15, AS/NZS 3548, VCCI V3 (2001), CFR 47, FCC Part 15/18, CNS 13783-1, CNS 13439, CNS 13438, CNS 13803, CNS 14115, EN 55024, IEC 801-2, IEC 801-3, IEC 801-4, IEC/EN 61000-3-2, IEC/EN 61000-3-3, IEC/EN 61000-4-2/3/4/5/6/8/11, EN 50081-1/ EN 61000-6-3, EN 50081-2/EN 61000-6-4, EN 50081-2/EN 61000-6-1: 2001	 ACCREDITED No. 0824-01
USA	FCC	3/10 meter Open Area Test Sites (93105, 90471) / 3M Semi Anechoic Chamber (965860) to perform FCC Part 15/18 measurements	 93105, 90471 965860
Japan	VCCI	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, 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	TAF	EN 300 328, EN 300 220-1, EN 300 220-2, EN 300 220-3, 47 CFR FCC Part 15 Subpart C, EN 61000-3-2, EN 61000-3-3, CNS 13439, CNS 13783-1, CNS 14115, CNS 13438, AS/NZS CISPR 22, CNS 13022-1, IEC 61000-4-2/3/4/5/6/8/11, CNS 13022-2/3	 Testing Laboratory 0363
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	3/10 meter Open Area Test Sites (IC 2324C-3, IC 2324C-5) / 3M Semi Anechoic Chamber (IC 6106)	 IC 2324C-3 IC 2324C-5 IC 6106

\* No part of this report may be used to claim or imply product endorsement by A2LA or any agency of the US Government.



## 6. SETUP OF EQUIPMENT UNDER TEST

### 6.1 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix I 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.	Universal Radio Communication Tester	R&S	CMU200	1100.000.8.02	N/A	N/A	Unshielded, 1.8m

**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

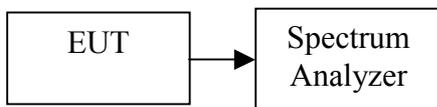
### CONDITION A: WLAN

#### 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 = 100 kHz, VBW = RBW, Span = 50 MHz, 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

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Result
Low	2412	8670	>500	PASS
Mid	2437	9420		PASS
High	2462	11170		PASS

##### Test mode: IEEE 802.11g

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Result
Low	2412	16420	>500	PASS
Mid	2437	16250		PASS
High	2462	16500		PASS



**Test Plot**

**IEEE 802.11b**

**6dB Bandwidth (CH Low)**

Agilent 12:04:18 Aug 11, 2007

R T

6dB BW, b Mode Low Ch.

Δ Mkr1 8.67 MHz

Ref 20 dBm

Atten 20 dB

-1.26 dB

#Peak

Log

10

dB/

Offst

10.5

dB

DI

-5.2

dBm

LgAv

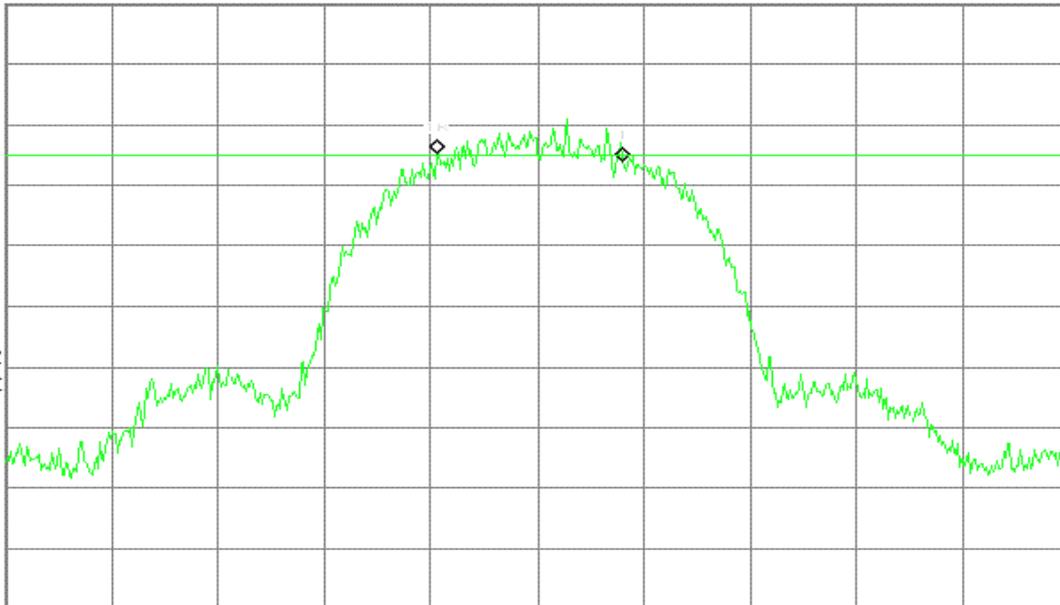
V1 S2

S3 FC

□(f):

FTun

Swp



Center 2.412 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)

**6dB Bandwidth (CH Mid)**

Agilent 12:10:02 Aug 11, 2007

R T

6dB BW, b Mode Mid Ch.

Δ Mkr1 9.42 MHz

Ref 20 dBm

Atten 20 dB

-0.73 dB

#Peak

Log

10

dB/

Offst

10.5

dB

DI

-4.8

dBm

LgAv

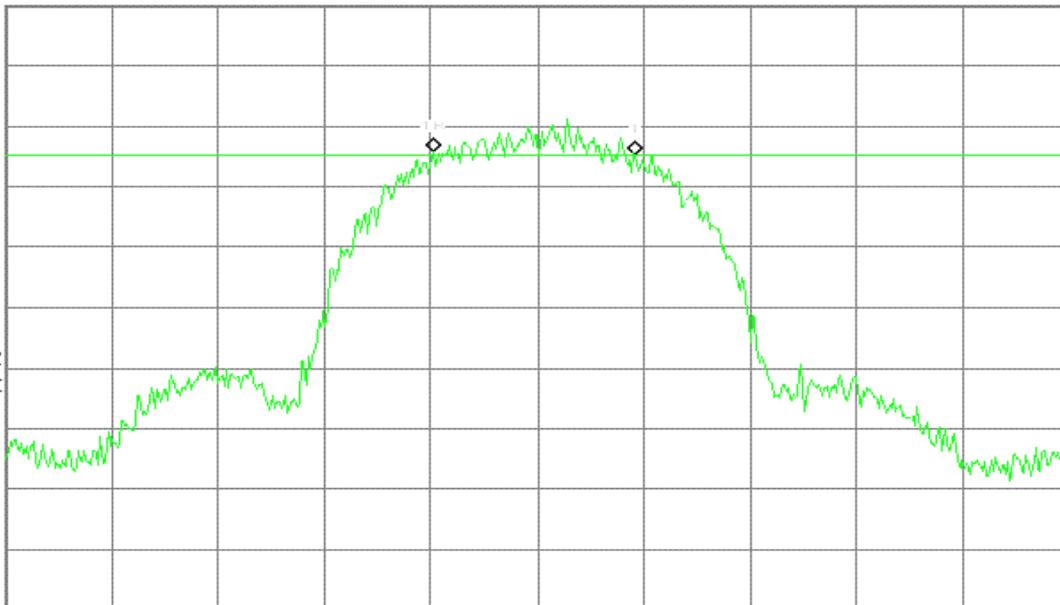
V1 S2

S3 FC

□(f):

FTun

Swp



Center 2.437 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)



### 6dB Bandwidth (CH High)

Agilent 12:18:37 Aug 11, 2007

R T

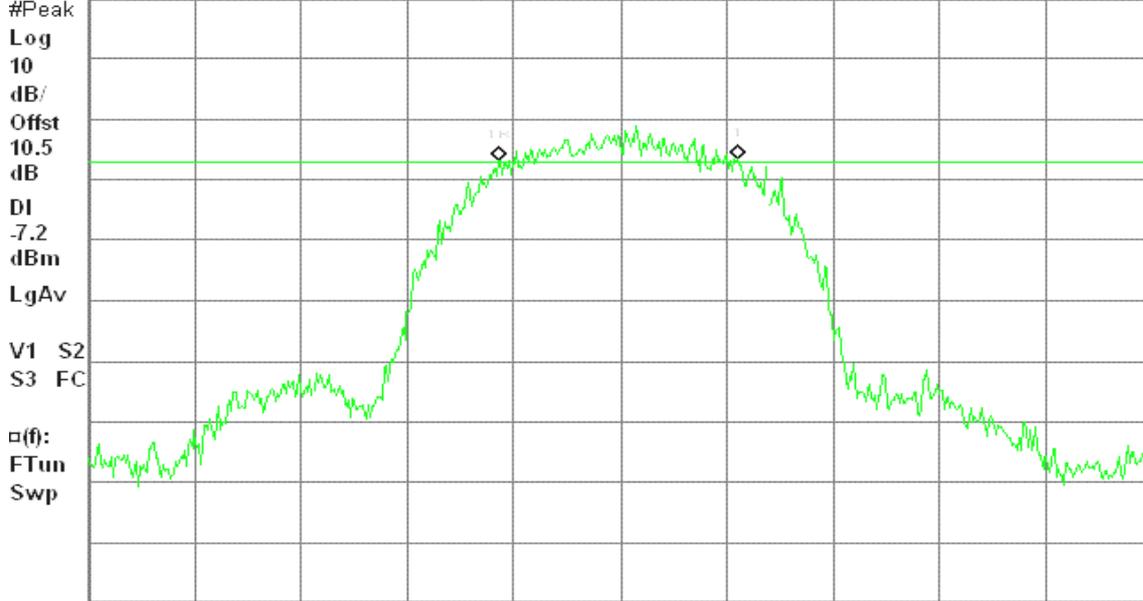
6dB BW, b Mode High Ch.

Δ Mkr1 11.17 MHz

Ref 20 dBm

Atten 20 dB

0.05 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

### 6dB Bandwidth (CH Low)

Agilent 15:19:06 Aug 11, 2007

R T

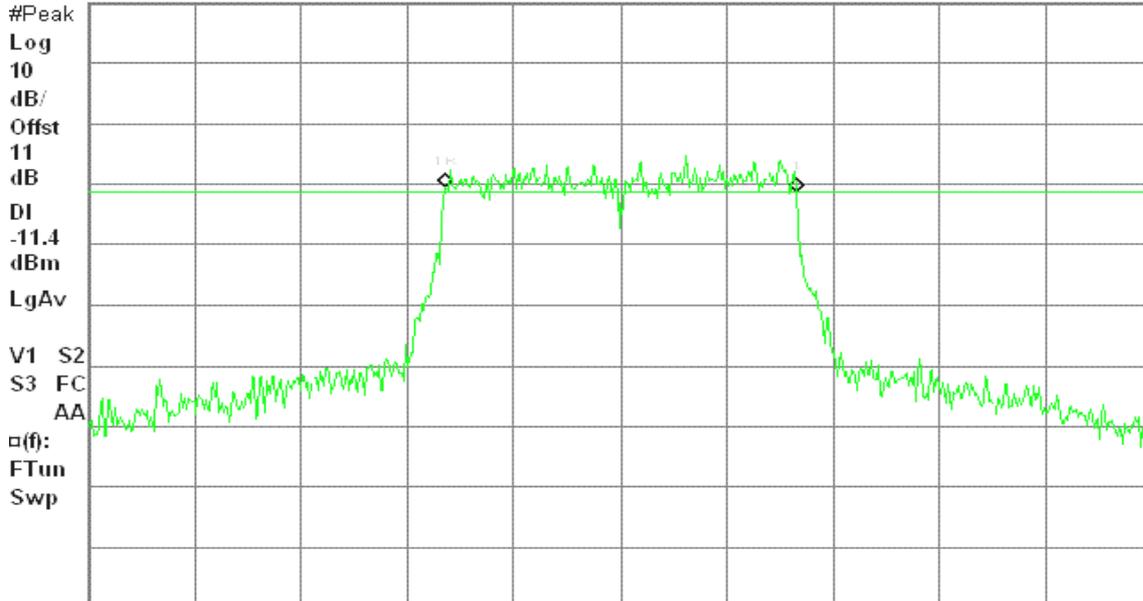
6dB BW, g Mode Low Ch.

Δ Mkr1 16.42 MHz

Ref 20 dBm

Atten 20 dB

-0.83 dB



Center 2.412 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)



### 6dB Bandwidth (CH Mid)

Agilent 14:10:52 Aug 11, 2007

R T

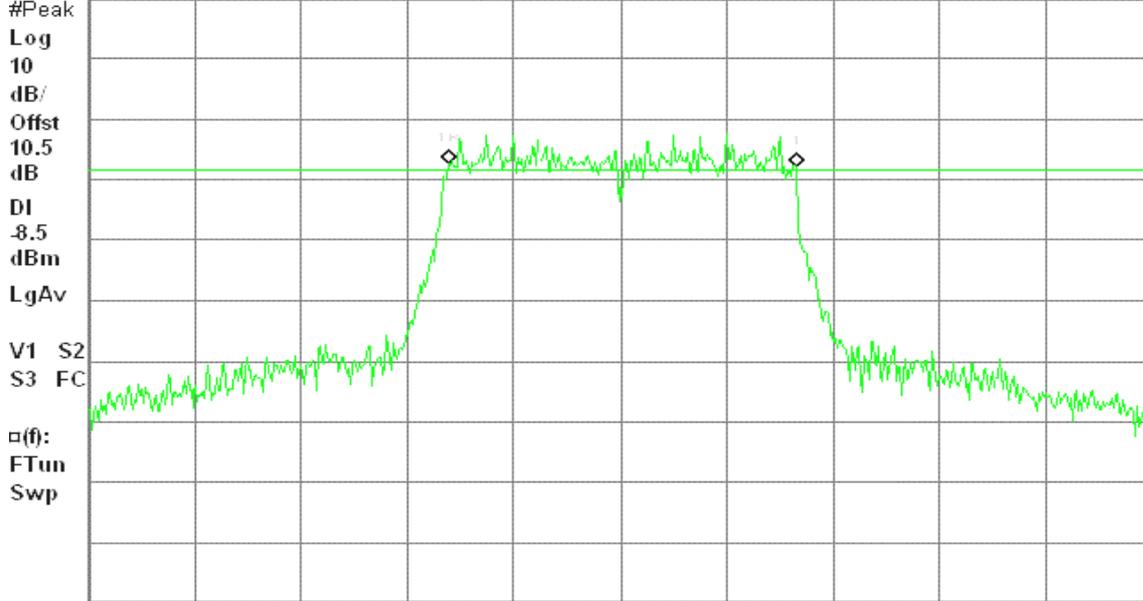
6dB BW, g Mode Mid Ch.

Δ Mkr1 16.25 MHz

Ref 20 dBm

Atten 20 dB

-0.44 dB



Center 2.437 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)

### 6dB Bandwidth (CH High)

Agilent 12:25:17 Aug 11, 2007

R T

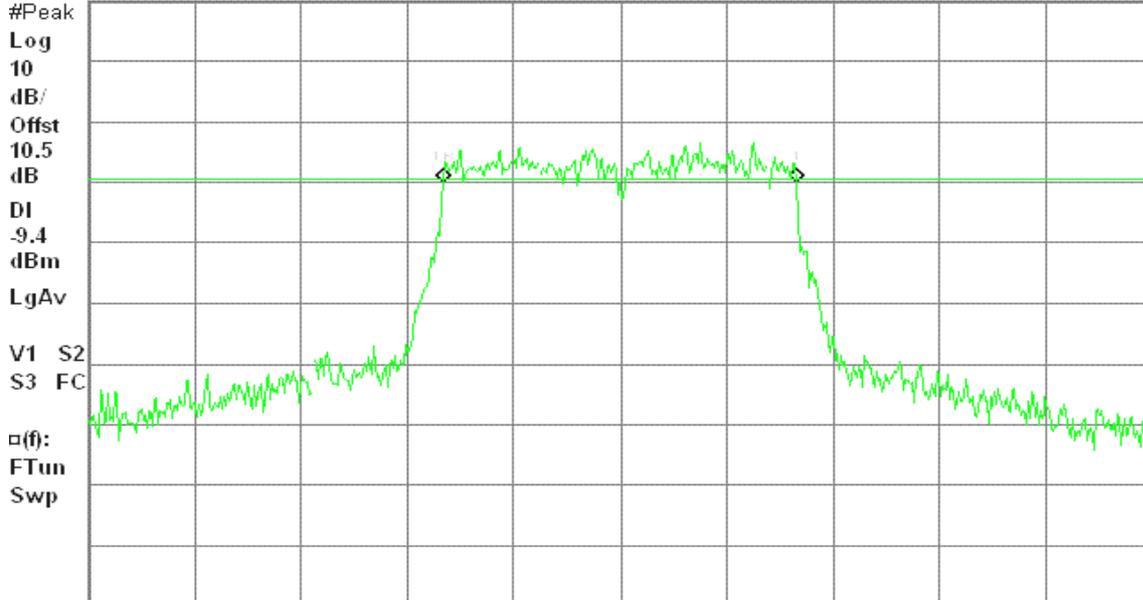
6dB BW, g Mode High Ch.

Δ Mkr1 16.50 MHz

Ref 20 dBm

Atten 20 dB

0.15 dB



Center 2.462 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)



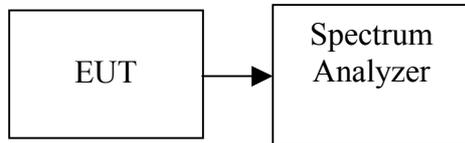
## 7.2 PEAK POWER

### 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**

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	13.14	0.02061	1.00	PASS
Mid	2437	13.67	0.02328		PASS
High	2462	12.28	0.01690		PASS

##### **Test mode: IEEE 802.11g**

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	11.05	0.01274	1.00	PASS
Mid	2437	12.57	0.01807		PASS
High	2462	11.89	0.01545		PASS



**Test Plot**

**IEEE 802.11b**

**Peak Power (CH Low)**

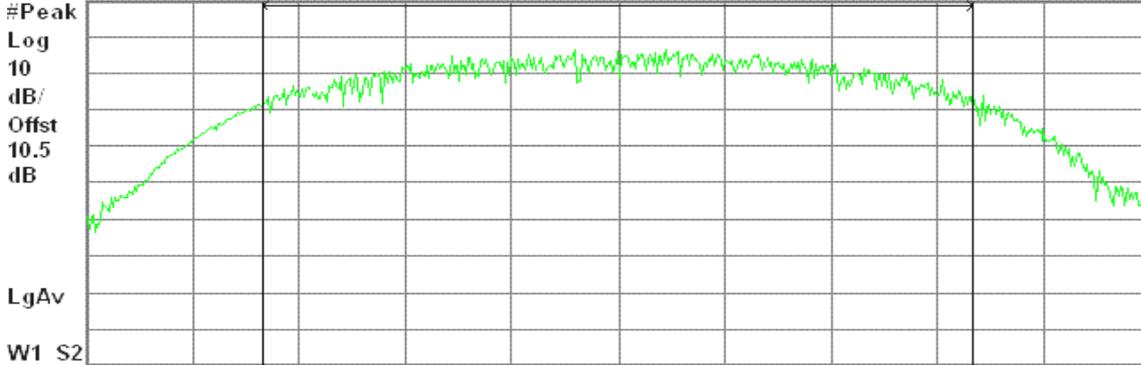
Agilent 12:05:16 Aug 11, 2007

R T

Peak Output Power, b Mode Low Ch.

Ref 20 dBm

Atten 20 dB



Center 2.412 00 GHz

Span 23.2 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

13.14 dBm / 15.4690 MHz

-58.76 dBm/Hz

**Peak Power (CH Mid)**

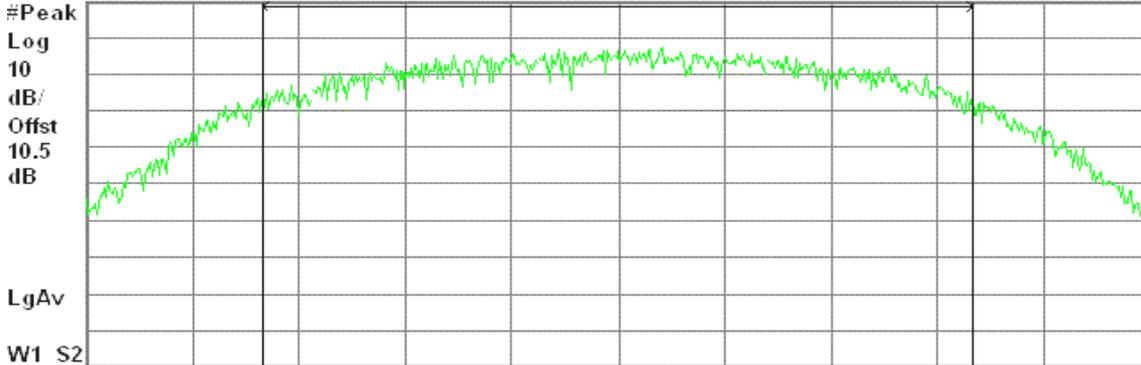
Agilent 12:10:53 Aug 11, 2007

R T

Peak Output Power, b Mode Mid Ch.

Ref 20 dBm

Atten 20 dB



Center 2.437 00 GHz

Span 23.2 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

13.67 dBm / 15.4690 MHz

-58.22 dBm/Hz



### Peak Power (CH High)

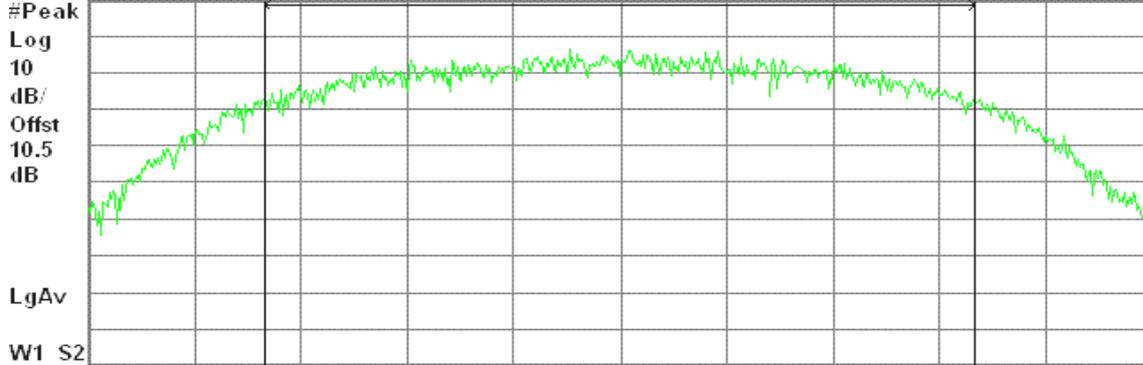
Agilent 12:19:24 Aug 11, 2007

R T

Peak Output Power, b Mode High Ch.

Ref 20 dBm

Atten 20 dB



Center 2.462 00 GHz

Span 23.15 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

12.28 dBm / 15.4330 MHz

-59.61 dBm/Hz

### IEEE 802.11g

#### Peak Power (CH Low)

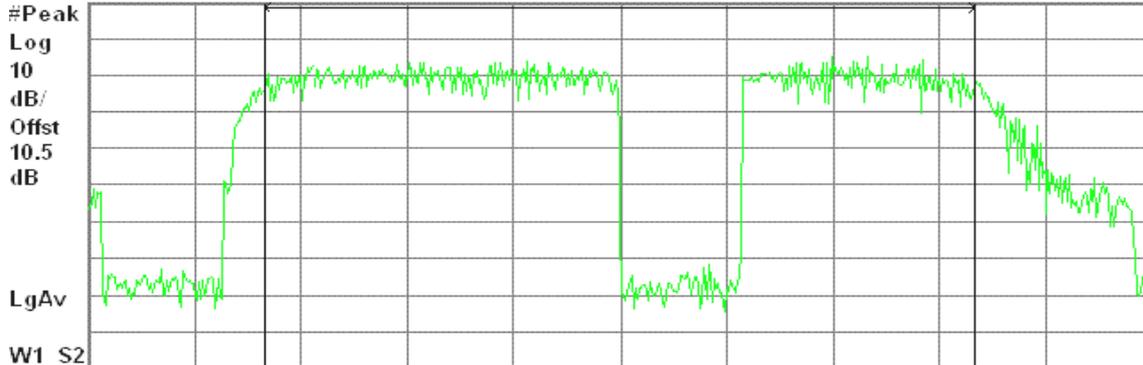
Agilent 14:18:08 Aug 11, 2007

R T

Peak Output Power, g Mode Low Ch.

Ref 20 dBm

Atten 20 dB



Center 2.412 00 GHz

Span 24.73 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

11.05 dBm / 16.4890 MHz

-61.12 dBm/Hz



### Peak Power (CH Mid)

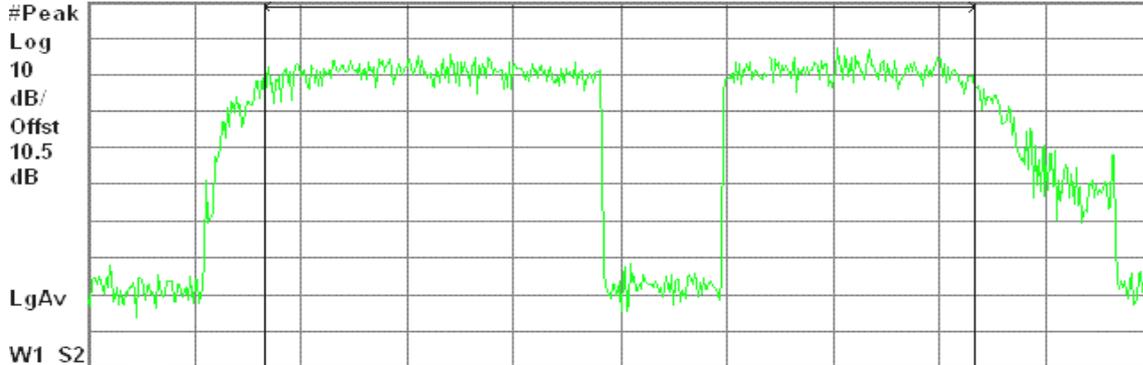
Agilent 14:11:54 Aug 11, 2007

R T

Peak Output Power, g Mode Mid Ch.

Ref 20 dBm

Atten 20 dB



Center 2.437 00 GHz

Span 24.67 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

12.57 dBm / 16.4460 MHz

-59.59 dBm/Hz

### Peak Power (CH High)

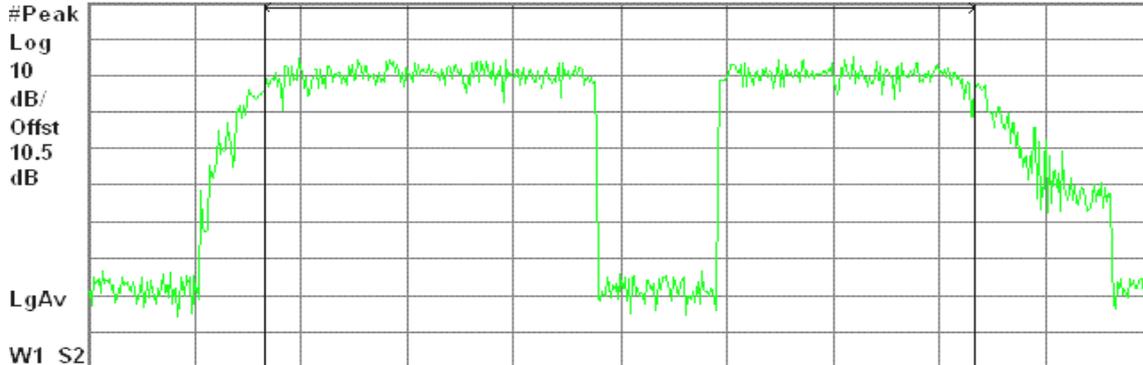
Agilent 12:26:49 Aug 11, 2007

R T

Peak Output Power, g Mode High Ch.

Ref 20 dBm

Atten 20 dB



Center 2.462 00 GHz

Span 24.73 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

11.89 dBm / 16.4900 MHz

-60.28 dBm/Hz

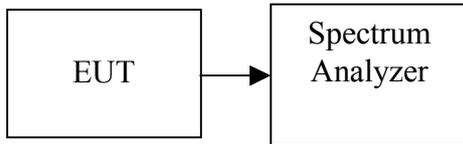


### 7.3 AVERAGE POWER

#### 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)
Low	2412	10.27
Mid	2437	10.77
High	2462	9.49

##### **Test mode: IEEE 802.11g mode**

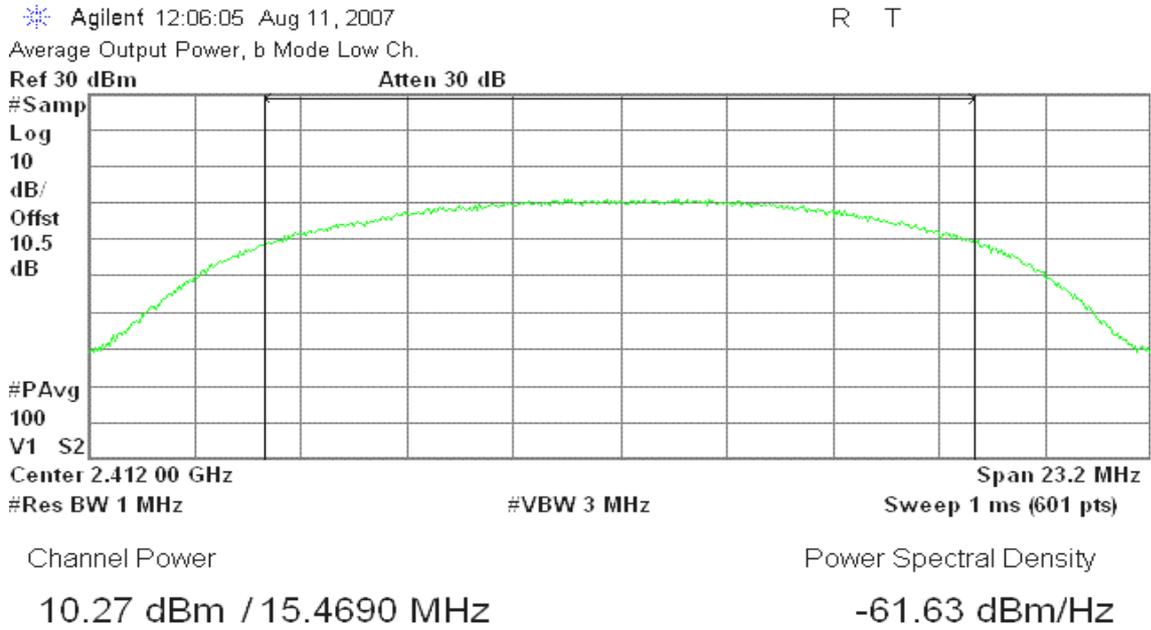
Channel	Frequency (MHz)	Output Power (dBm)
Low	2412	7.90
Mid	2437	7.68
High	2462	6.74



**Test Plot**

**IEEE 802.11b**

**CH Low**



**CH Mid**



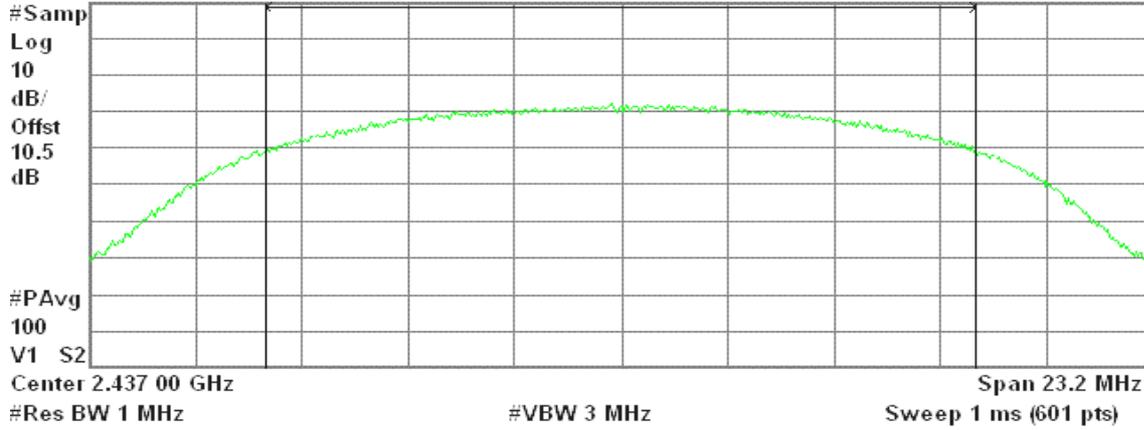
Agilent 12:12:26 Aug 11, 2007

R T

Average Output Power , b Mode Mid Ch.

Ref 30 dBm

Atten 30 dB



Channel Power

10.77 dBm / 15.4690 MHz

Power Spectral Density

-61.12 dBm/Hz



### CH High

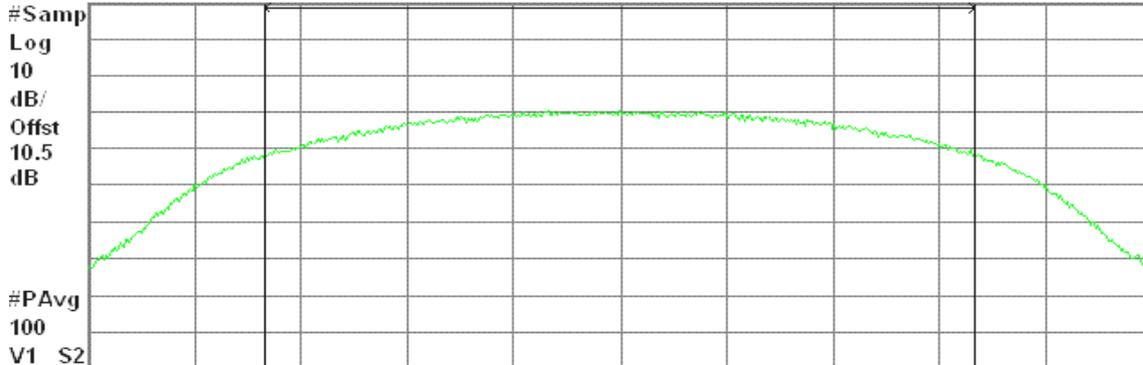
Agilent 12:20:11 Aug 11, 2007

R T

Average Output Power , b Mode High Ch.

Ref 30 dBm

Atten 30 dB



Center 2.462 00 GHz

Span 23.15 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

9.49 dBm / 15.4330 MHz

-62.39 dBm/Hz

### IEEE 802.11g

#### CH Low

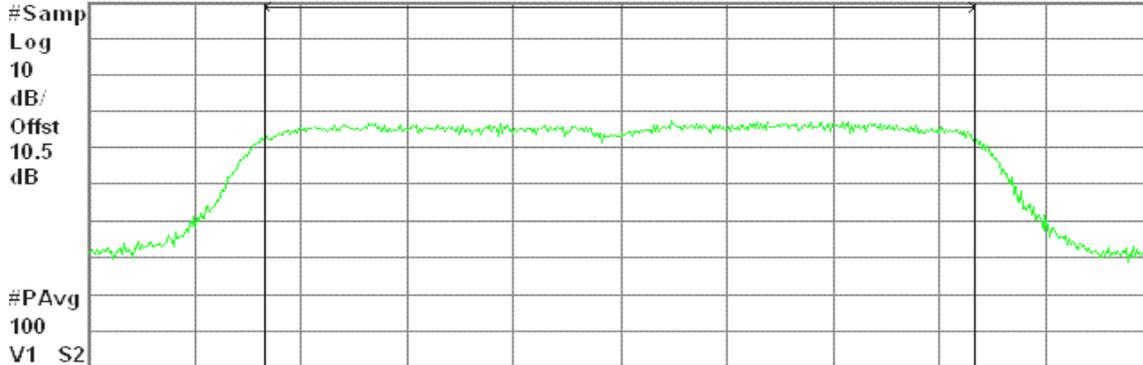
Agilent 14:18:54 Aug 11, 2007

R T

Average Output Power , g Mode Low Ch.

Ref 30 dBm

Atten 30 dB



Center 2.412 00 GHz

Span 24.73 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

7.90 dBm / 16.4890 MHz

-64.27 dBm/Hz



### CH Mid

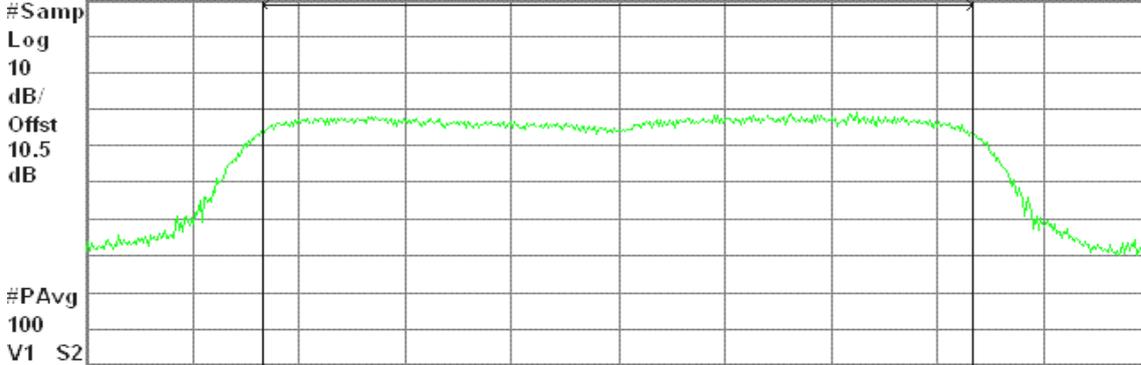
Agilent 14:12:44 Aug 11, 2007

R T

Average Output Power, g Mode Mid Ch.

Ref 30 dBm

Atten 30 dB



Center 2.437 00 GHz

Span 24.67 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

7.68 dBm / 16.4460 MHz

-64.48 dBm/Hz

### CH High

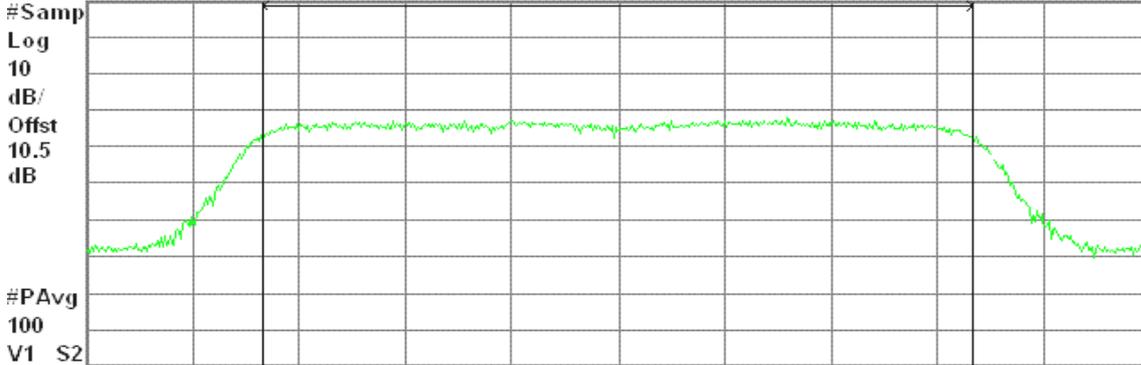
Agilent 12:27:42 Aug 11, 2007

R T

Average Output Power, g Mode High Ch.

Ref 30 dBm

Atten 30 dB



Center 2.462 00 GHz

Span 24.73 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Channel Power

Power Spectral Density

6.74 dBm / 16.4900 MHz

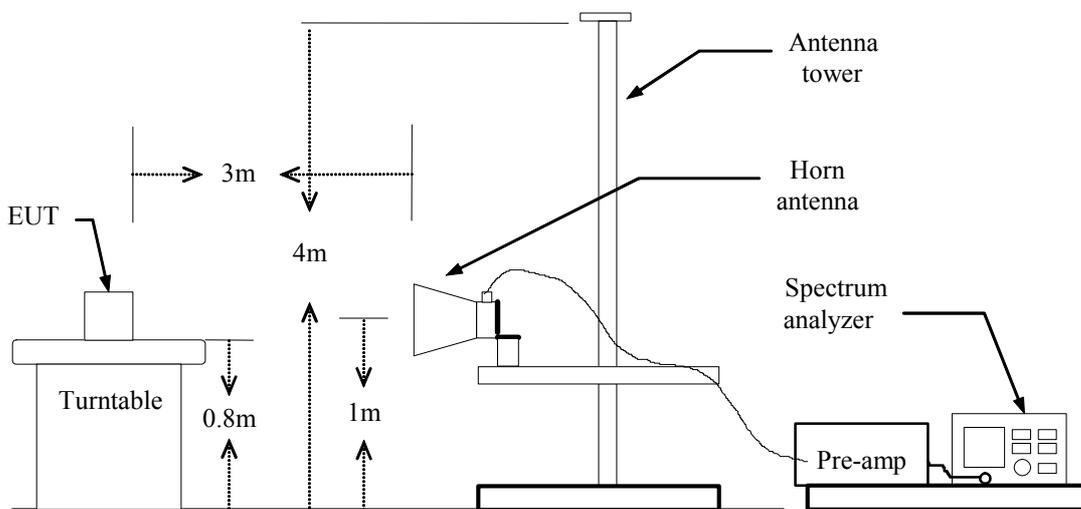
-65.43 dBm/Hz

## 7.4 BAND 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 / CH Low)

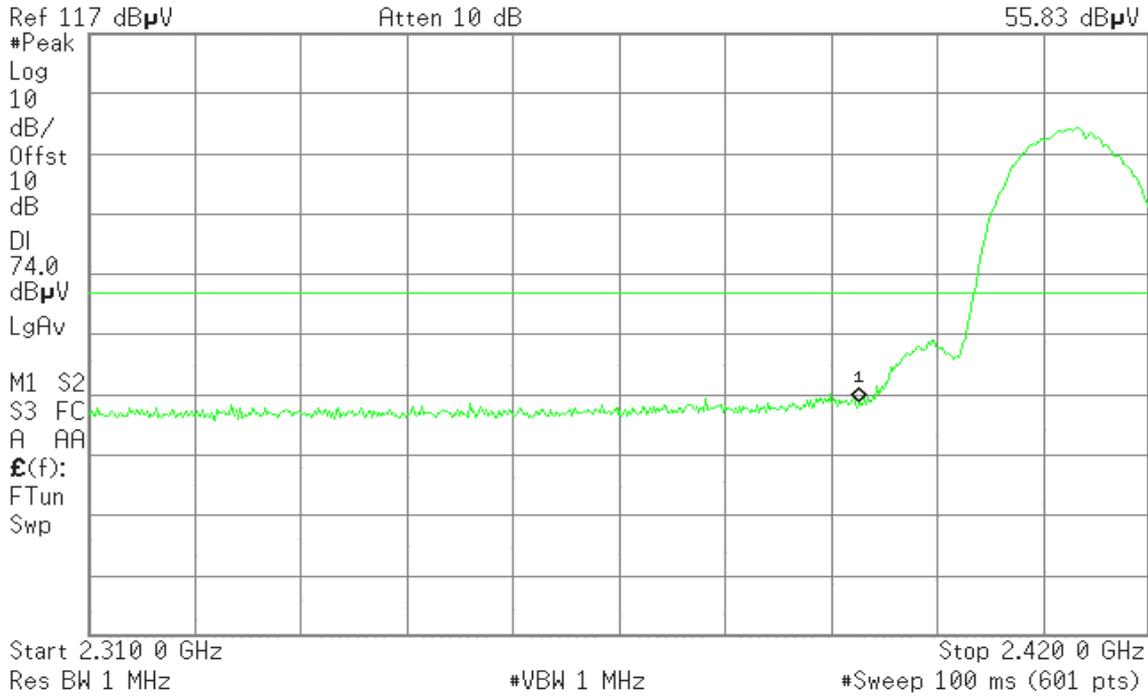
Detector mode: Peak

Polarity: Vertical

Agilent 11:05:19 Aug 11, 2007

R T

Mkr1 2.390 0 GHz  
55.83 dBμV



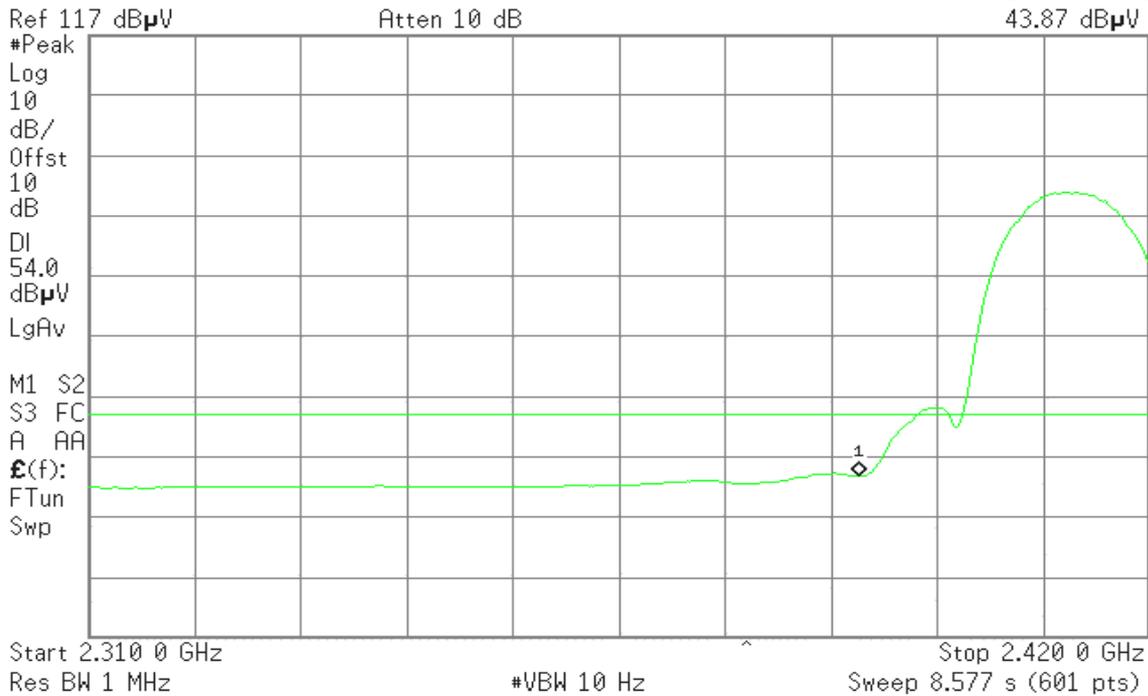
Detector mode: Average

Polarity: Vertical

Agilent 11:04:59 Aug 11, 2007

R L

Mkr1 2.390 0 GHz  
43.87 dBμV





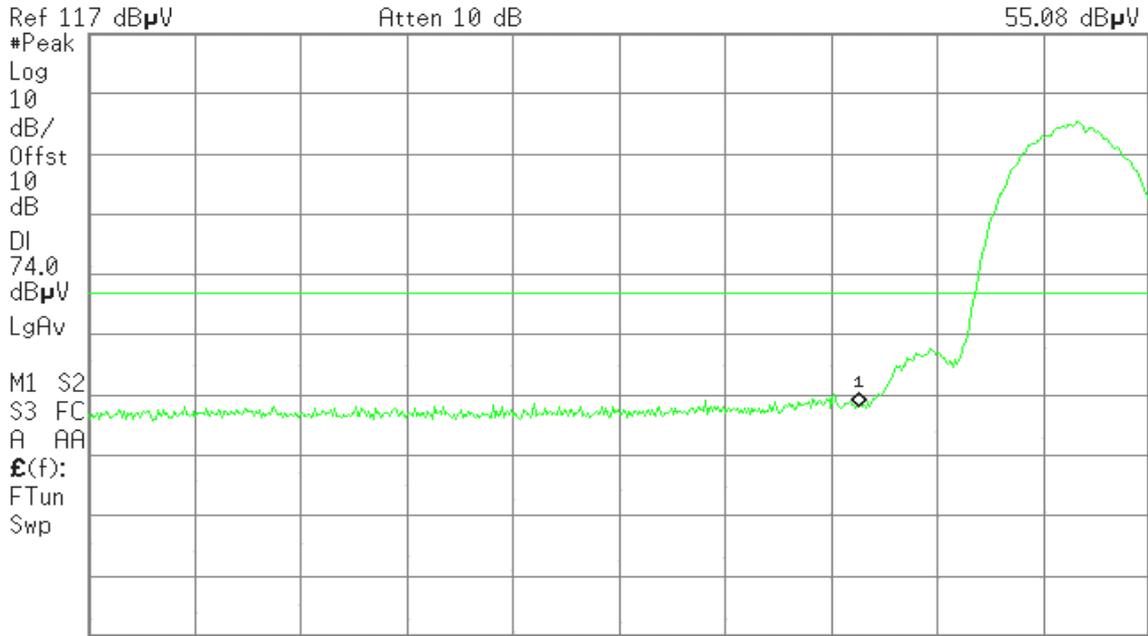
Detector mode: Peak

Polarity: Horizontal

Agilent 11:10:32 Aug 11, 2007

R T

Mkr1 2.390 0 GHz  
55.08 dBμV



Start 2.310 0 GHz Stop 2.420 0 GHz  
Res BW 1 MHz #VBW 1 MHz #Sweep 100 ms (601 pts)

Detector mode: Average

Polarity: Horizontal

Agilent 11:10:11 Aug 11, 2007

R T

Mkr1 2.390 0 GHz  
43.40 dBμV



Start 2.310 0 GHz Stop 2.420 0 GHz  
Res BW 1 MHz #VBW 10 Hz Sweep 8.577 s (601 pts)



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

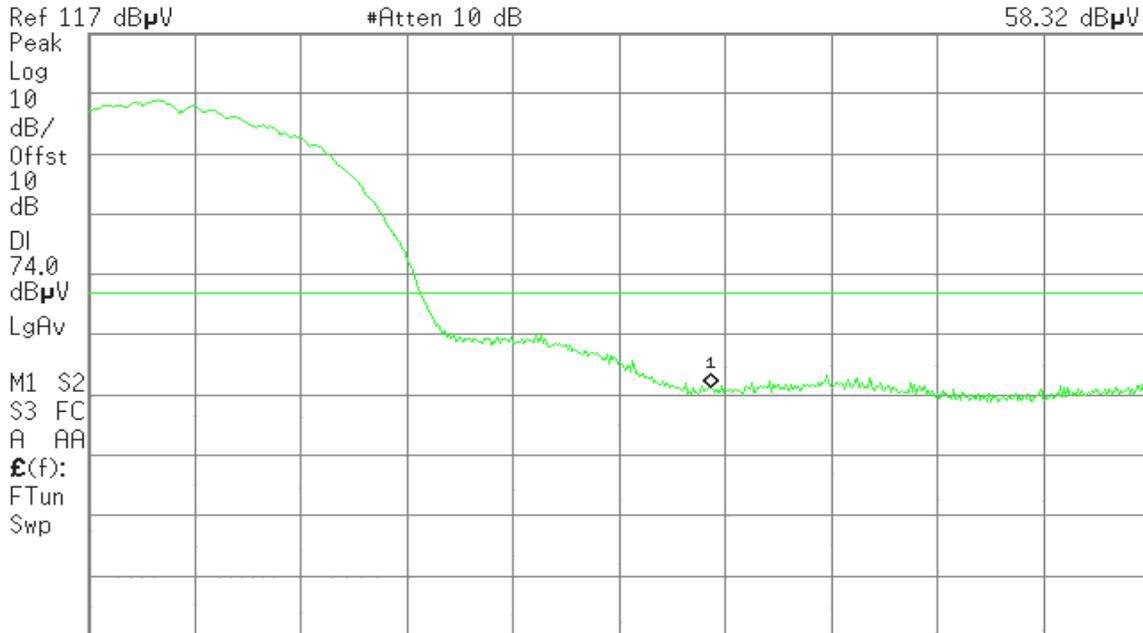
Detector mode: Peak

Polarity: Vertical

Agilent 17:39:23 Aug 10, 2007

T

Mkr1 2.483 50 GHz  
58.32 dB $\mu$ V



Start 2.460 00 GHz #Res BW 1 MHz #VBW 1 MHz Stop 2.500 00 GHz #Sweep 100 ms (601 pts)

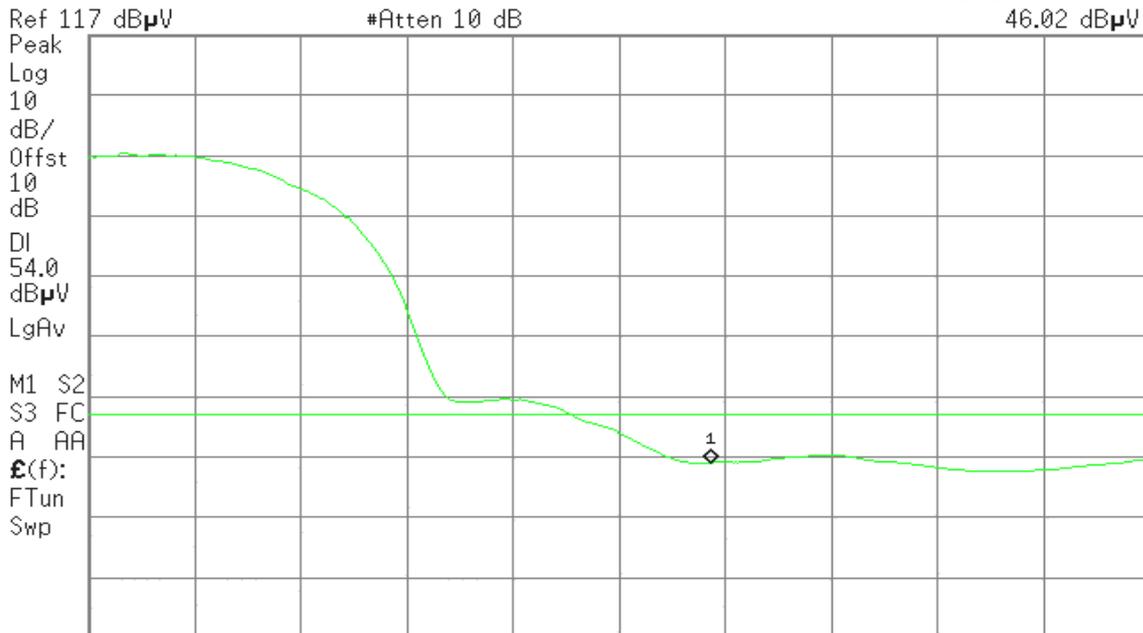
Detector mode: Average

Polarity: Vertical

Agilent 17:39:03 Aug 10, 2007

T

Mkr1 2.483 50 GHz  
46.02 dB $\mu$ V



Start 2.460 00 GHz #Res BW 1 MHz #VBW 10 Hz Stop 2.500 00 GHz Sweep 3.119 s (601 pts)



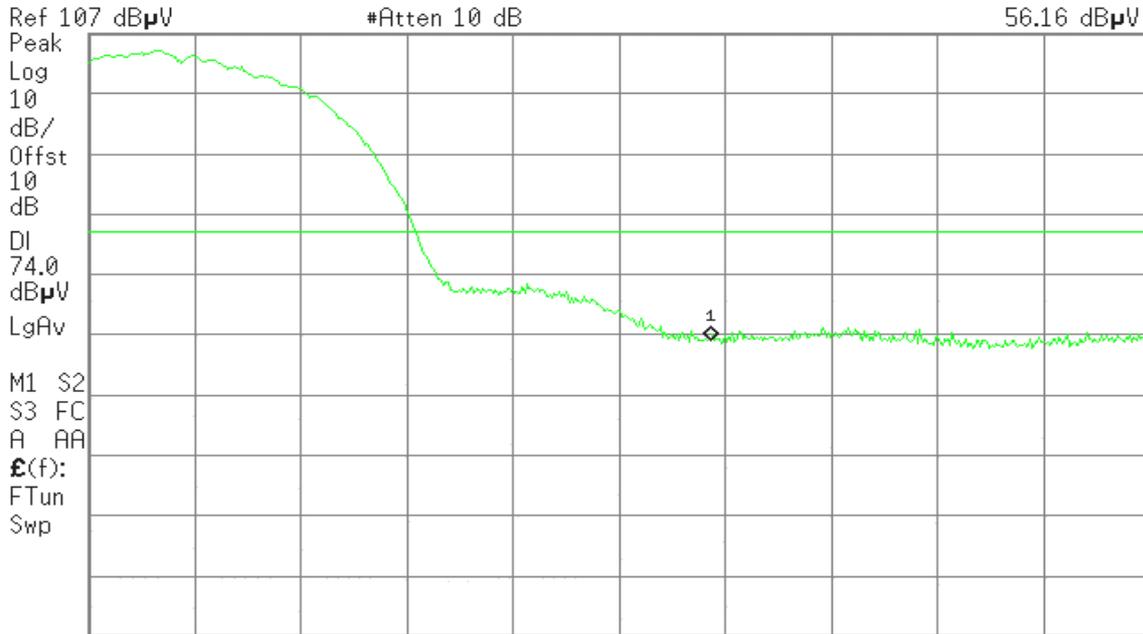
Detector mode: Peak

Polarity: Horizontal

Agilent 17:34:46 Aug 10, 2007

T

Mkr1 2.483 50 GHz  
56.16 dBμV



Start 2.460 00 GHz Stop 2.500 00 GHz  
#Res BW 1 MHz #VBW 1 MHz #Sweep 100 ms (601 pts)

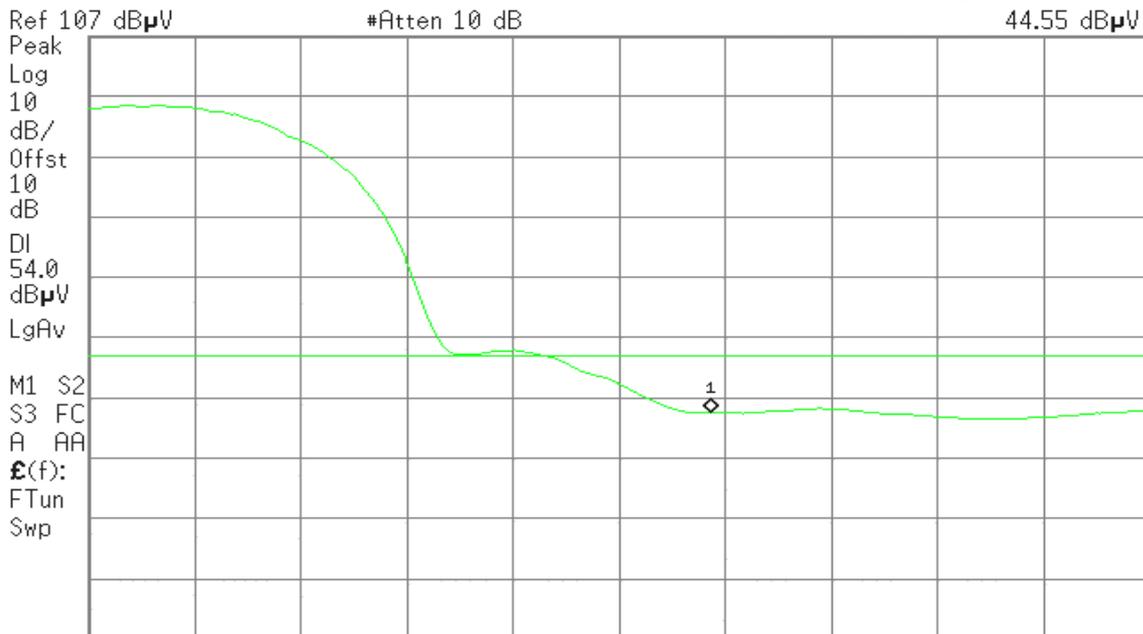
Detector mode: Average

Polarity: Horizontal

Agilent 17:34:22 Aug 10, 2007

T

Mkr1 2.483 50 GHz  
44.55 dBμV



Start 2.460 00 GHz Stop 2.500 00 GHz  
#Res BW 1 MHz #VBW 10 Hz Sweep 3.119 s (601 pts)



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

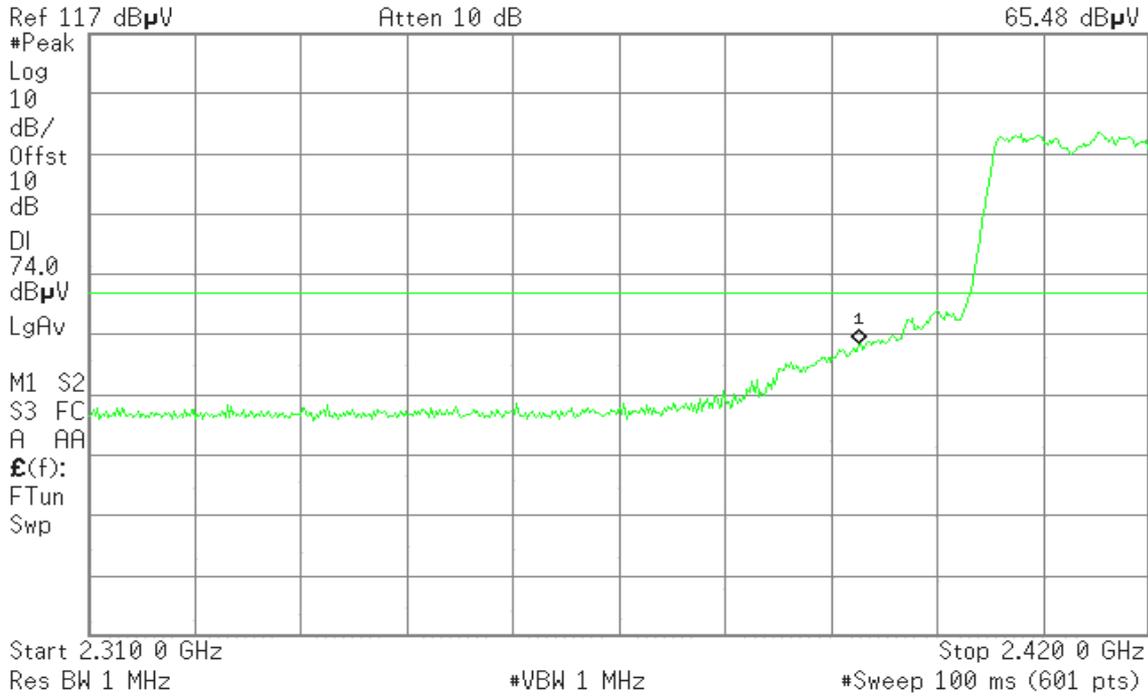
Detector mode: Peak

Polarity: Vertical

Agilent 11:18:49 Aug 11, 2007

R T

Mkr1 2.390 0 GHz  
65.48 dB $\mu$ V



Detector mode: Average

Polarity: Vertical

Agilent 11:18:23 Aug 11, 2007

R T

Mkr1 2.390 0 GHz  
47.07 dB $\mu$ V





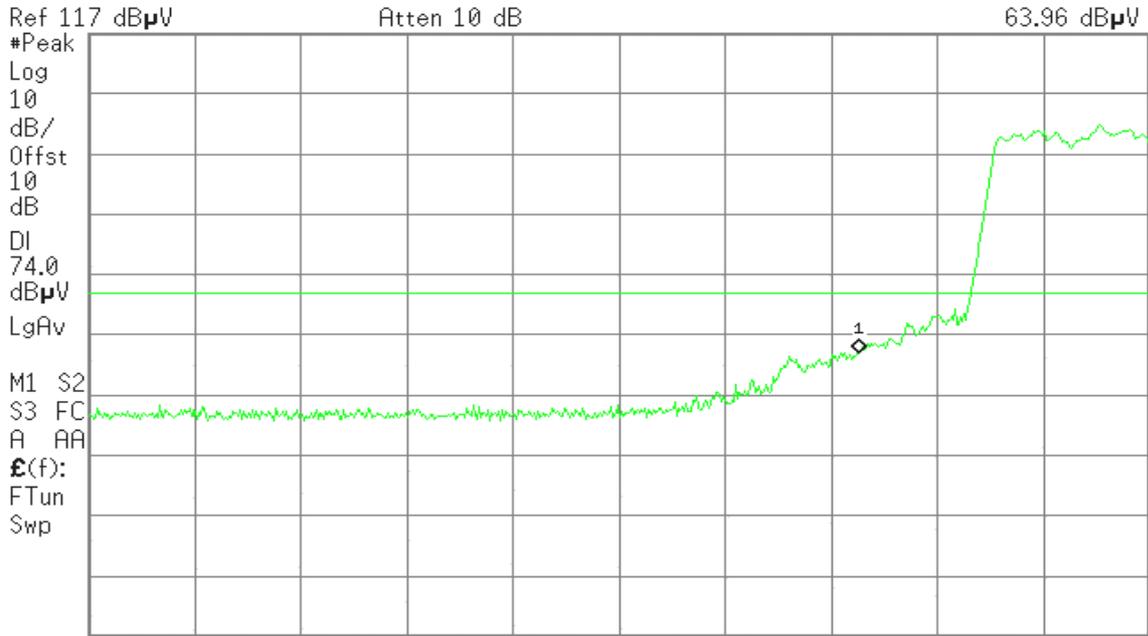
Detector mode: Peak

Polarity: Horizontal

Agilent 11:15:05 Aug 11, 2007

R T

Mkr1 2.390 0 GHz  
63.96 dBμV



Start 2.310 0 GHz      Stop 2.420 0 GHz  
Res BW 1 MHz      #VBW 1 MHz      #Sweep 100 ms (601 pts)

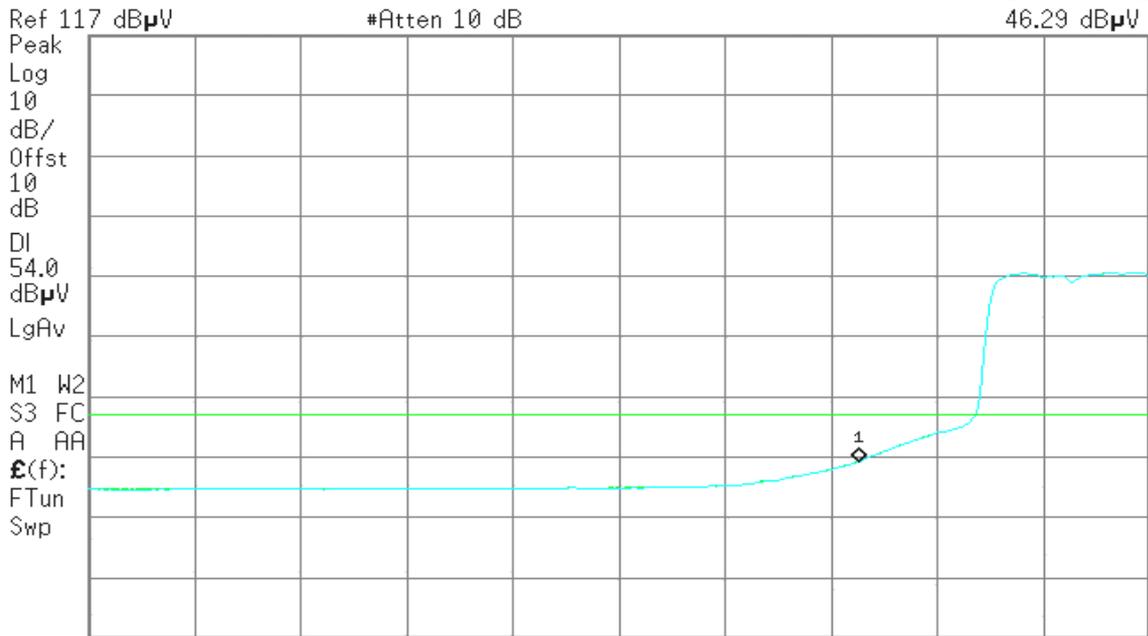
Detector mode: Average

Polarity: Horizontal

Agilent 11:57:36 Aug 11, 2007

R T

Mkr1 2.390 0 GHz  
46.29 dBμV



Start 2.310 0 GHz      Stop 2.420 0 GHz  
#Res BW 1 MHz      #VBW 10 Hz      Sweep 8.577 s (601 pts)



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

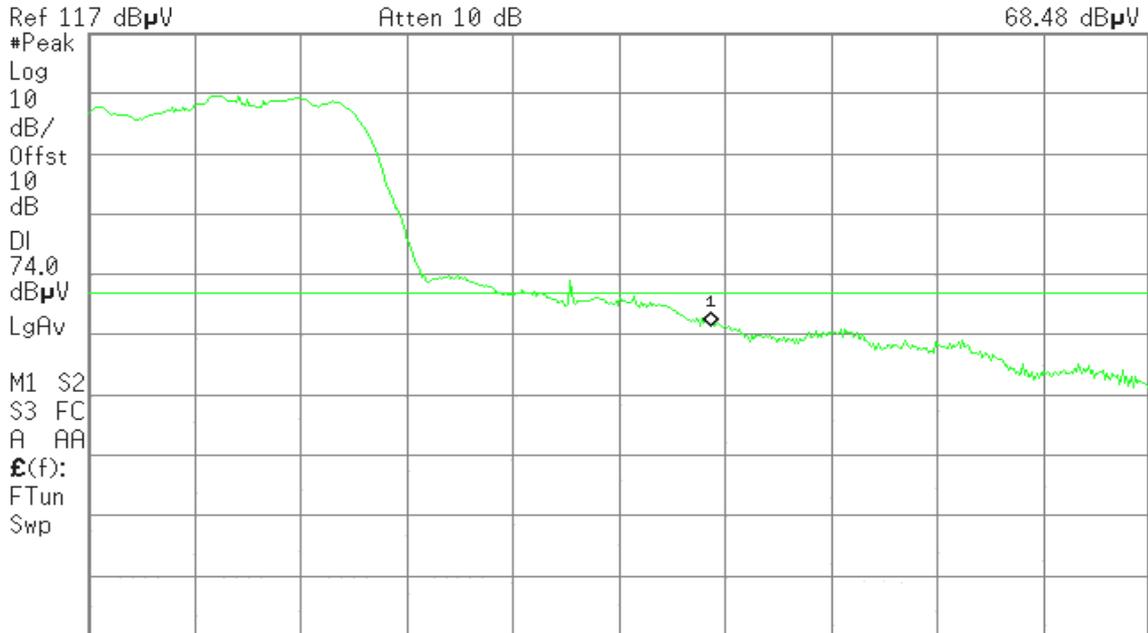
Detector mode: Peak

Polarity: Vertical

Agilent 11:25:01 Aug 11, 2007

R T

Mkr1 2.483 50 GHz  
68.48 dB $\mu$ V



Start 2.460 00 GHz      Stop 2.500 00 GHz  
#Res BW 1 MHz      #VBW 1 MHz      #Sweep 100 ms (601 pts)

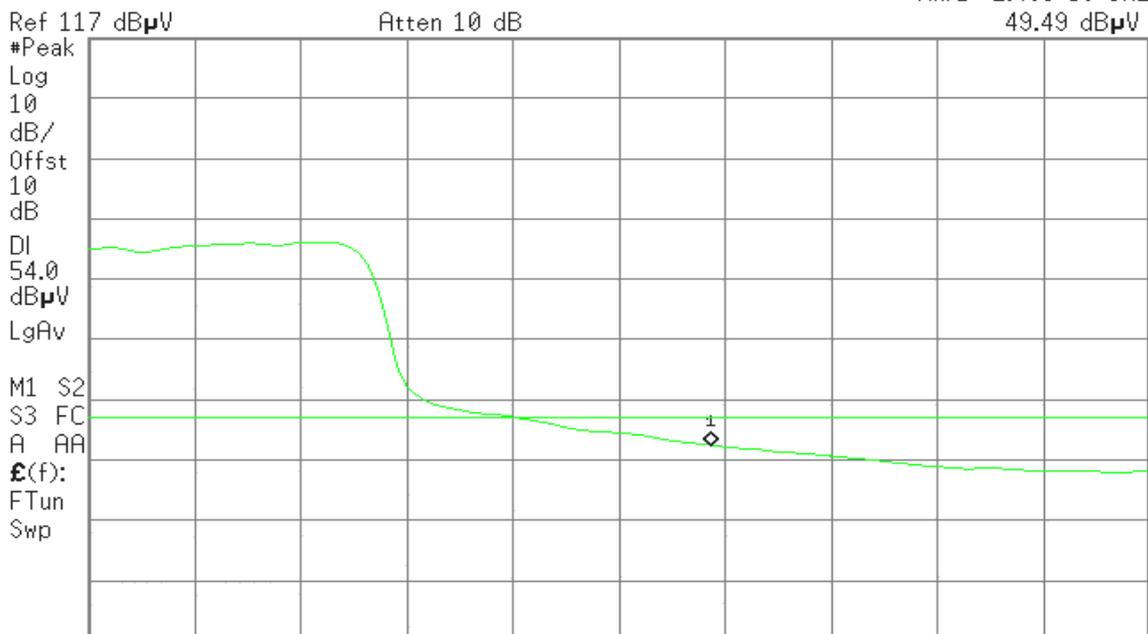
Detector mode: Average

Polarity: Vertical

Agilent 11:24:43 Aug 11, 2007

R T

Mkr1 2.483 50 GHz  
49.49 dB $\mu$ V



Start 2.460 00 GHz      Stop 2.500 00 GHz  
#Res BW 1 MHz      #VBW 10 Hz      Sweep 3.119 s (601 pts)



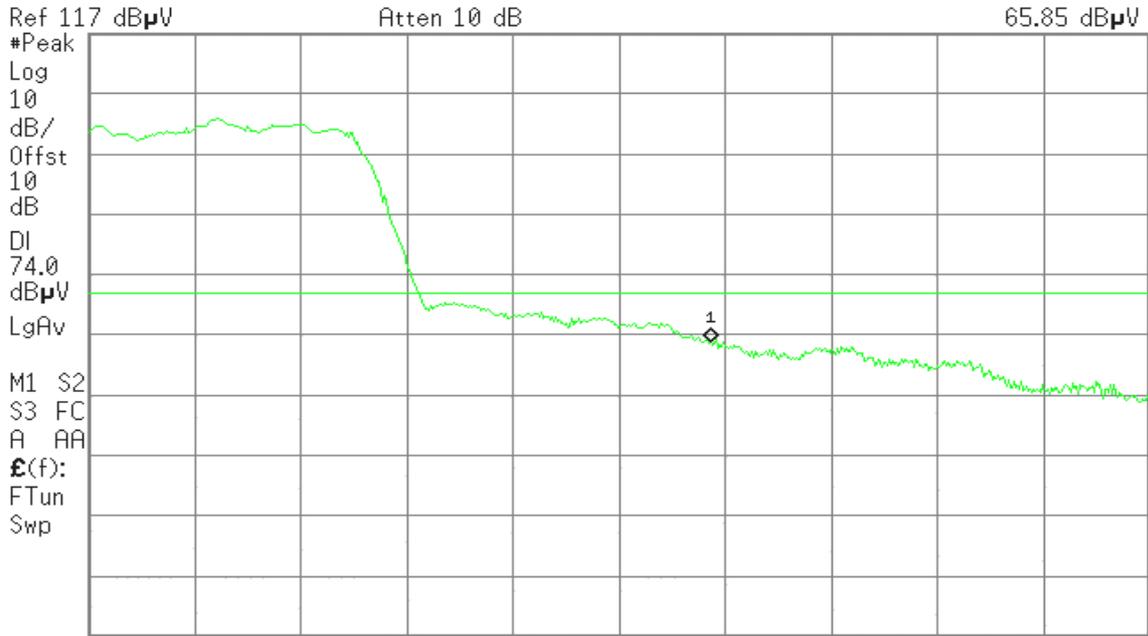
Detector mode: Peak

Polarity: Horizontal

Agilent 11:28:46 Aug 11, 2007

R T

Mkr1 2.483 50 GHz  
65.85 dBμV



Start 2.460 00 GHz Stop 2.500 00 GHz  
#Res BW 1 MHz #VBW 1 MHz #Sweep 100 ms (601 pts)

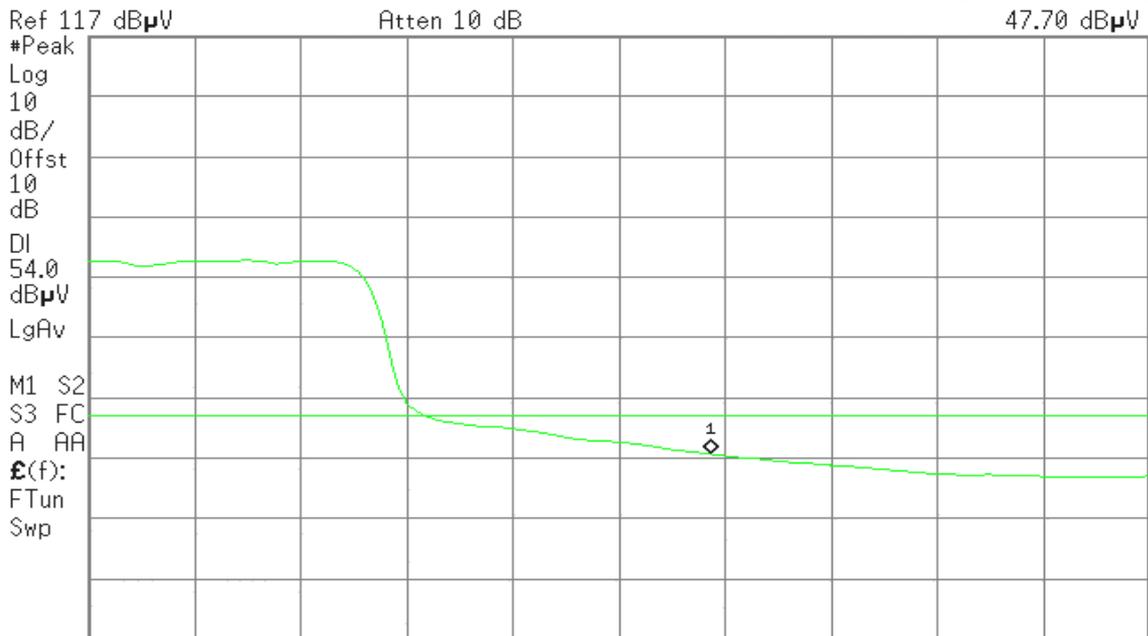
Detector mode: Average

Polarity: Horizontal

Agilent 11:28:25 Aug 11, 2007

R T

Mkr1 2.483 50 GHz  
47.70 dBμV



Start 2.460 00 GHz Stop 2.500 00 GHz  
#Res BW 1 MHz #VBW 10 Hz Sweep 3.119 s (601 pts)

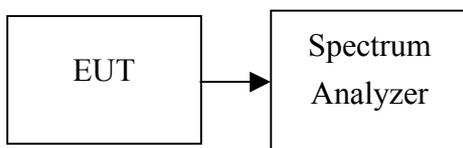


## 7.5 PEAK POWER SPECTRAL DENSITY

### 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 = 3 kHz, VBW = 10 kHz, Span = 300 kHz, Sweep = 100 s
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

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-12.42	8.00	PASS
Mid	2437	-11.99		PASS
High	2462	-13.02		PASS

##### Test mode: IEEE 802.11g

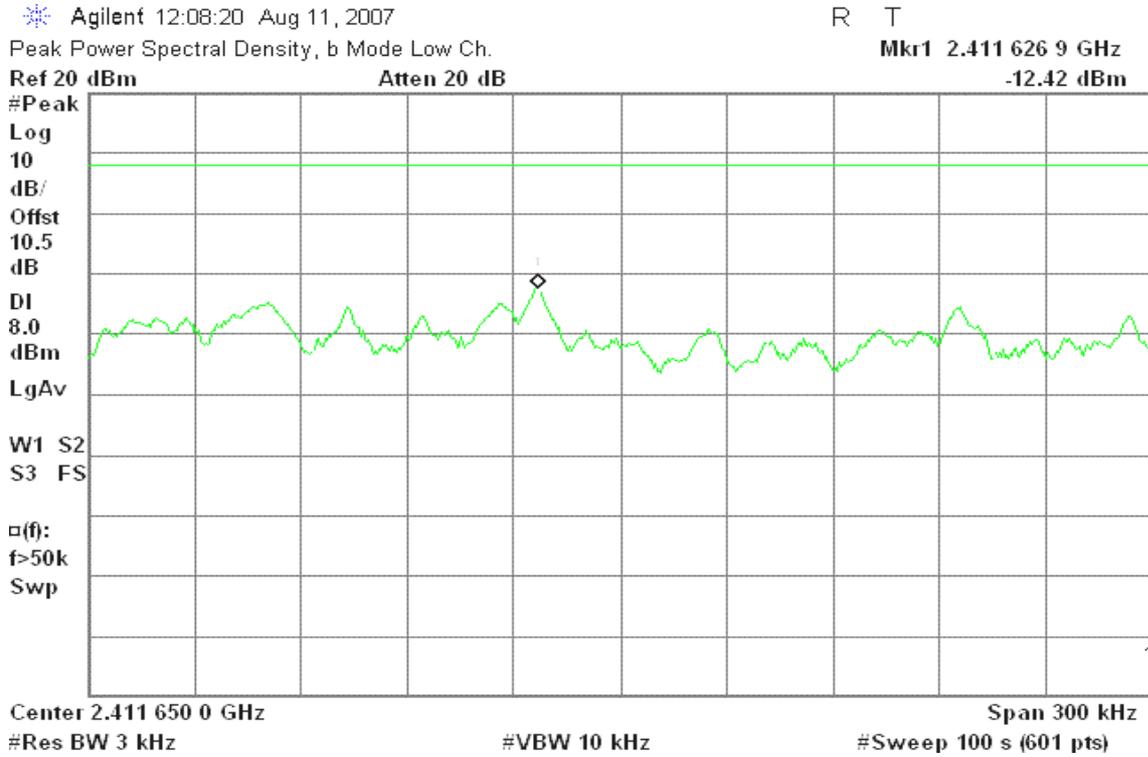
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-16.60	8.00	PASS
Mid	2437	-14.16		PASS
High	2462	-14.00		PASS



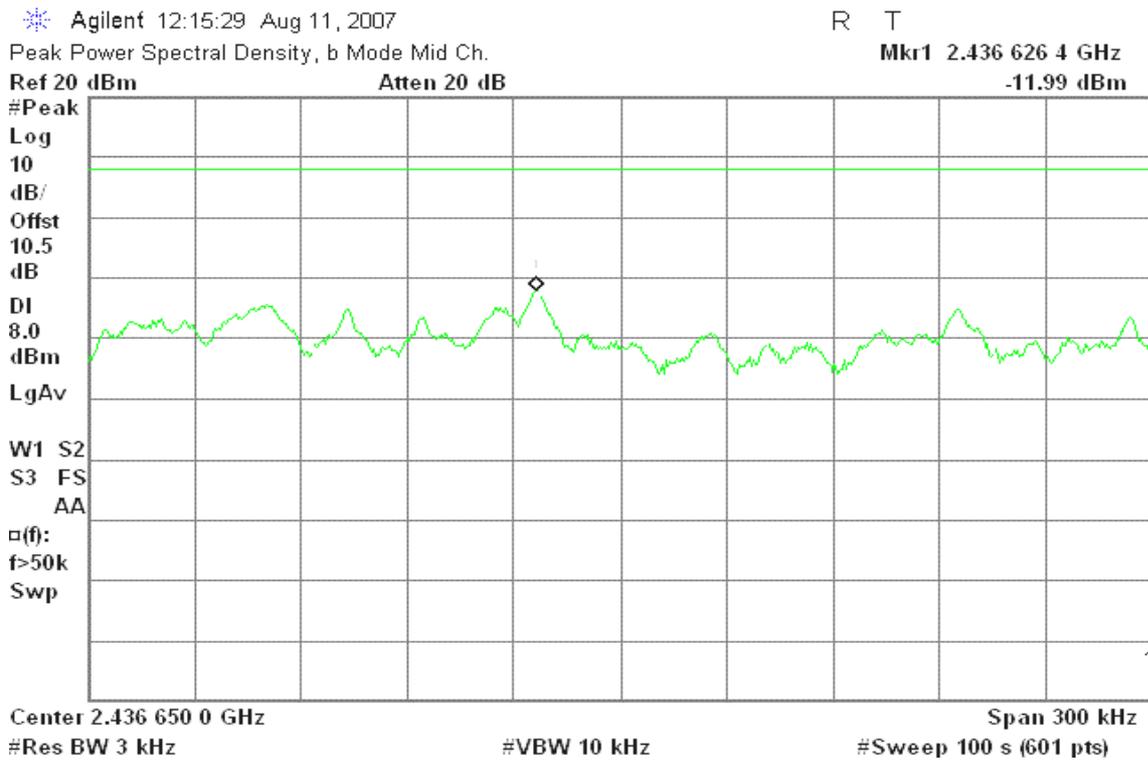
**Test Plot**

**IEEE 802.11b**

**PPSD (CH Low)**



**PPSD (CH Mid)**





### PPSD (CH High)

Agilent 12:22:56 Aug 11, 2007

R L

Peak Power Spectral Density, b Mode High Ch.

Mkr1 2.461 623 1 GHz

Ref 20 dBm

Atten 20 dB

-13.02 dBm

#Peak

Log

10

dB/

Offst

10.5

dB

DI

8.0

dBm

LgAv

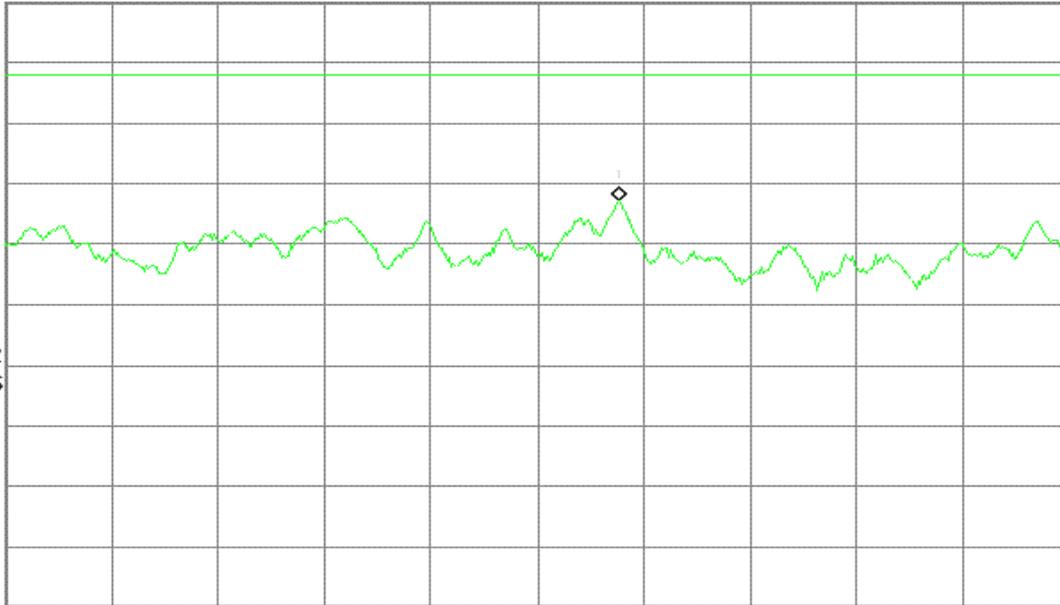
W1 S2

S3 FS

□(f):

f>50k

Swp



Center 2.461 600 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)

### IEEE 802.11g

### PPSD (CH Low)

Agilent 14:21:23 Aug 11, 2007

R T

Peak Power Spectral Density, g Mode Low Ch.

Mkr1 2.411 987 4 GHz

Ref 20 dBm

Atten 20 dB

-16.60 dBm

#Peak

Log

10

dB/

Offst

10.5

dB

DI

8.0

dBm

LgAv

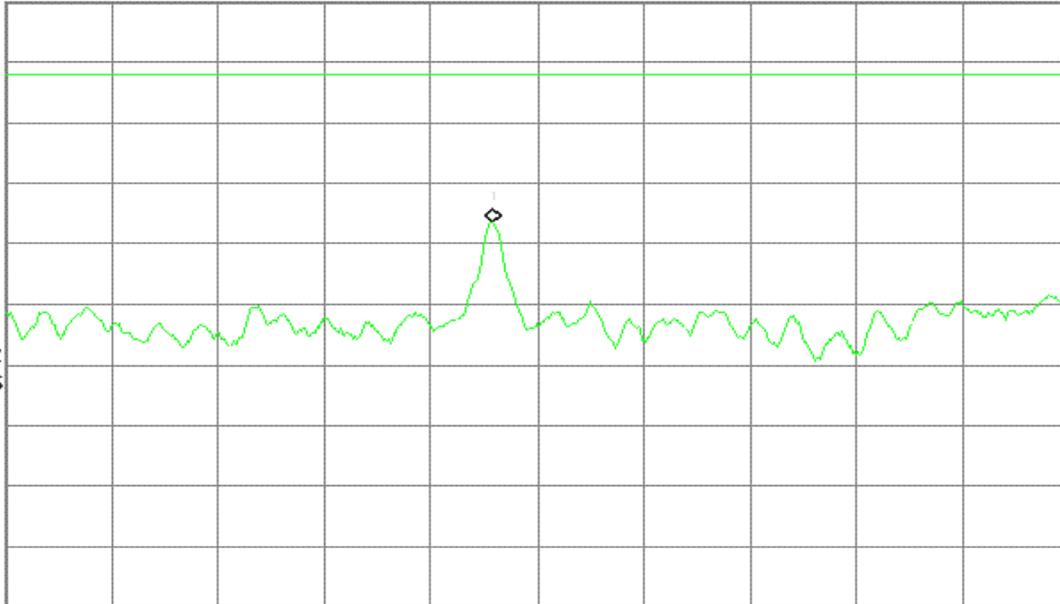
W1 S2

S3 FS

□(f):

f>50k

Swp



Center 2.412 000 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)



### PPSD (CH Mid)

Agilent 14:15:16 Aug 11, 2007

R T

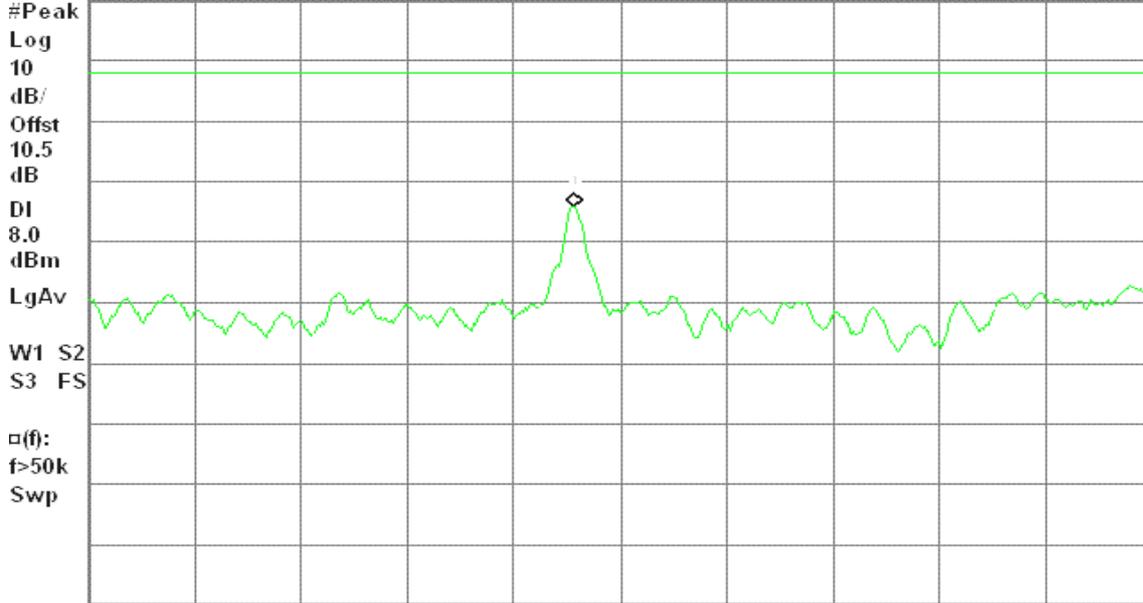
Peak Power Spectral Density, g Mode Mid Ch.

Mkr1 2.436 986 9 GHz

Ref 20 dBm

Atten 20 dB

-14.16 dBm



Center 2.437 000 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)

### PPSD (CH High)

Agilent 12:33:15 Aug 11, 2007

R T

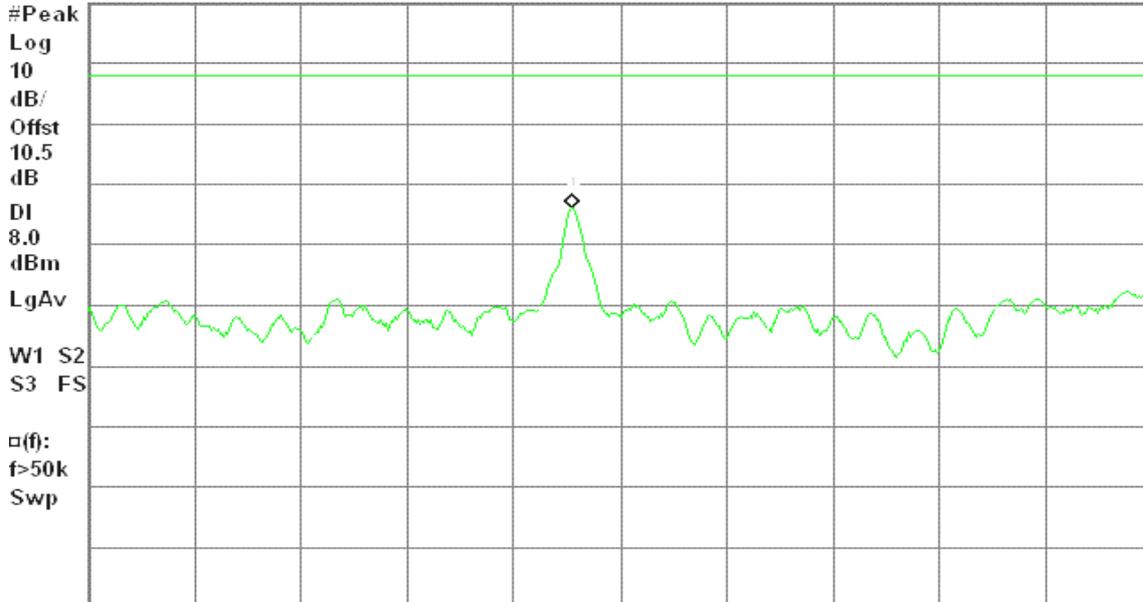
Peak Power Spectral Density, g Mode High Ch.

Mkr1 2.461 986 4 GHz

Ref 20 dBm

Atten 20 dB

-14.00 dBm



Center 2.462 000 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)



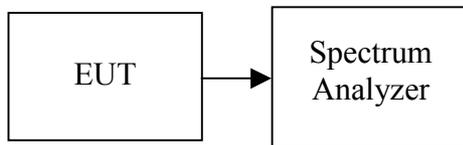
## 7.6 SPURIOUS EMISSIONS

### 7.6.1 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 100 kHz.

Measurements are made over the 13GHz to 26GHz range with the transmitter set to the lowest, middle, and highest channels.

#### TEST RESULTS

*No non-compliance noted*



**Test Plot**

**IEEE 802.11b**

**CH Low**

Agilent 12:09:17 Aug 11, 2007

R T

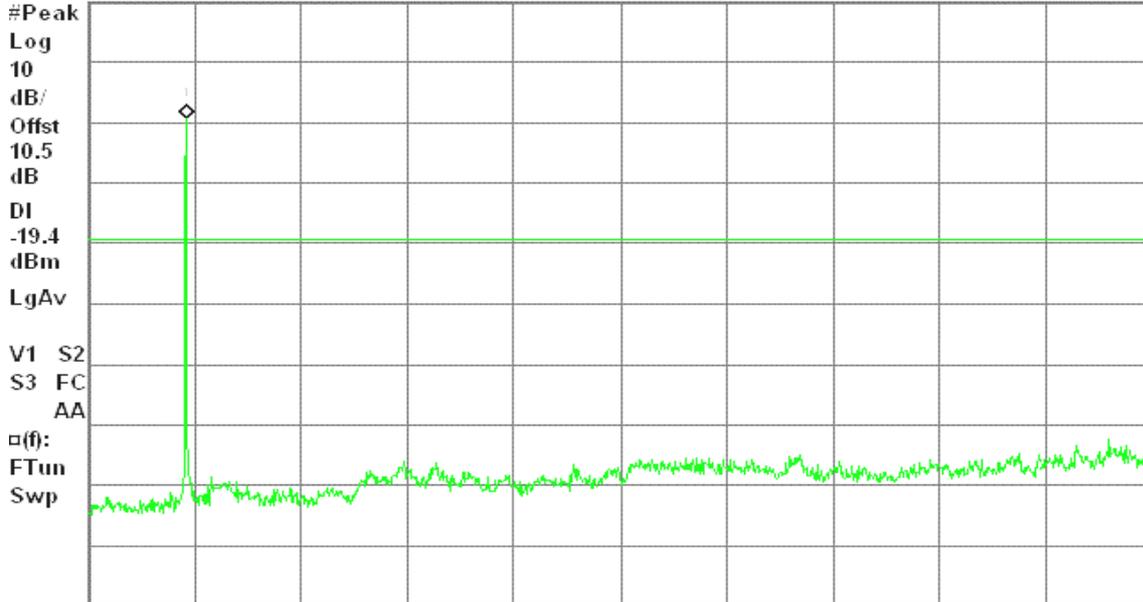
Spurious, b Mode Low Ch.

Mkr1 2.42 GHz

Ref 20 dBm

Atten 20 dB

0.56 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)

**CH Mid**

Agilent 12:17:29 Aug 11, 2007

R T

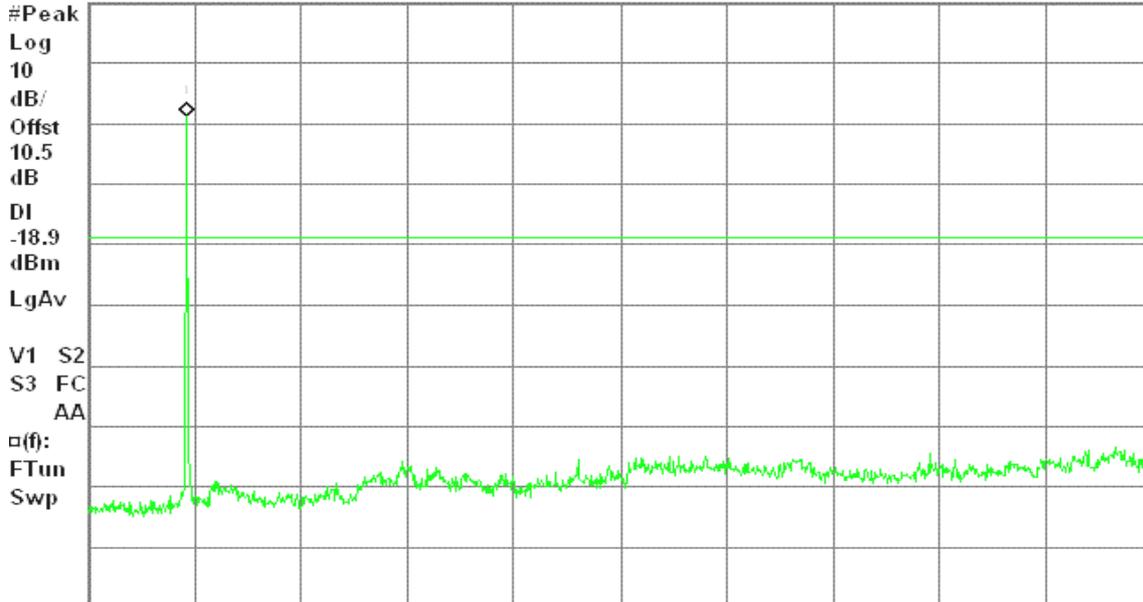
Spurious, b Mode Mid Ch.

Mkr1 2.45 GHz

Ref 20 dBm

Atten 20 dB

1.12 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)



### CH High

Agilent 12:24:22 Aug 11, 2007

R T

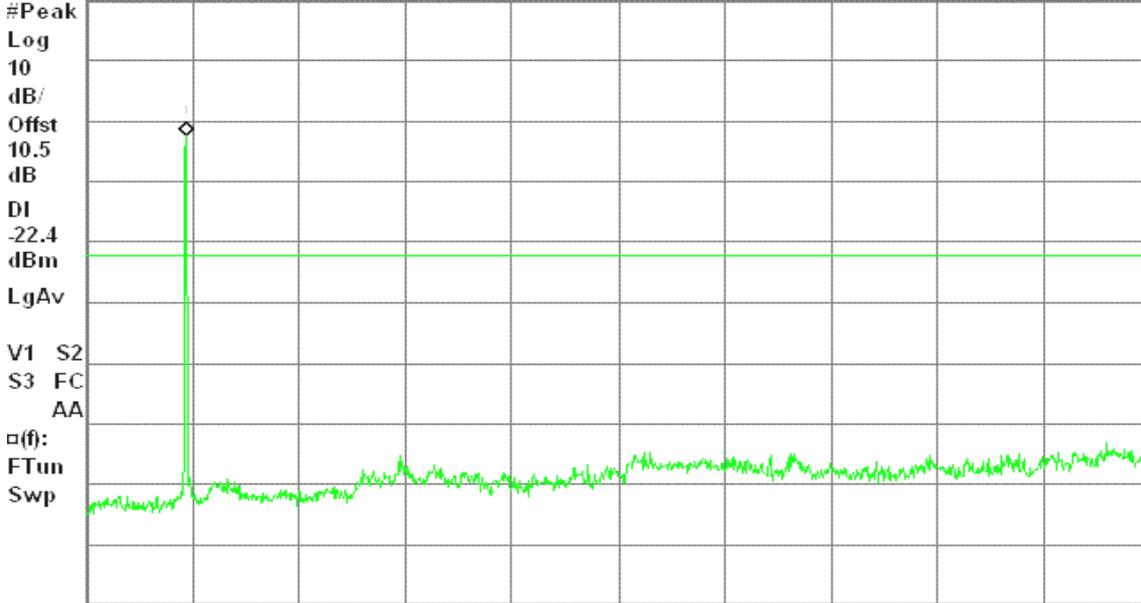
Spurious, b Mode High Ch.

Mkr1 2.47 GHz

Ref 20 dBm

Atten 20 dB

-2.38 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)

### IEEE 802.11g

### CH Low

Agilent 14:22:59 Aug 11, 2007

R T

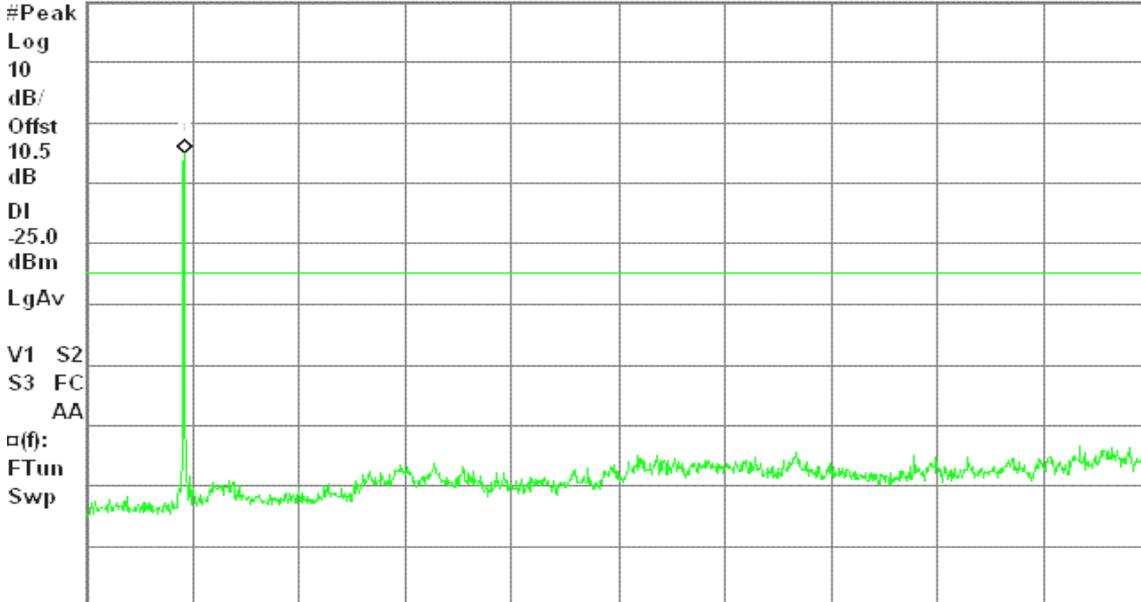
Spurious, g Mode Low Ch.

Mkr1 2.42 GHz

Ref 20 dBm

Atten 20 dB

-5.00 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)



### CH Mid

Agilent 14:16:19 Aug 11, 2007

R T

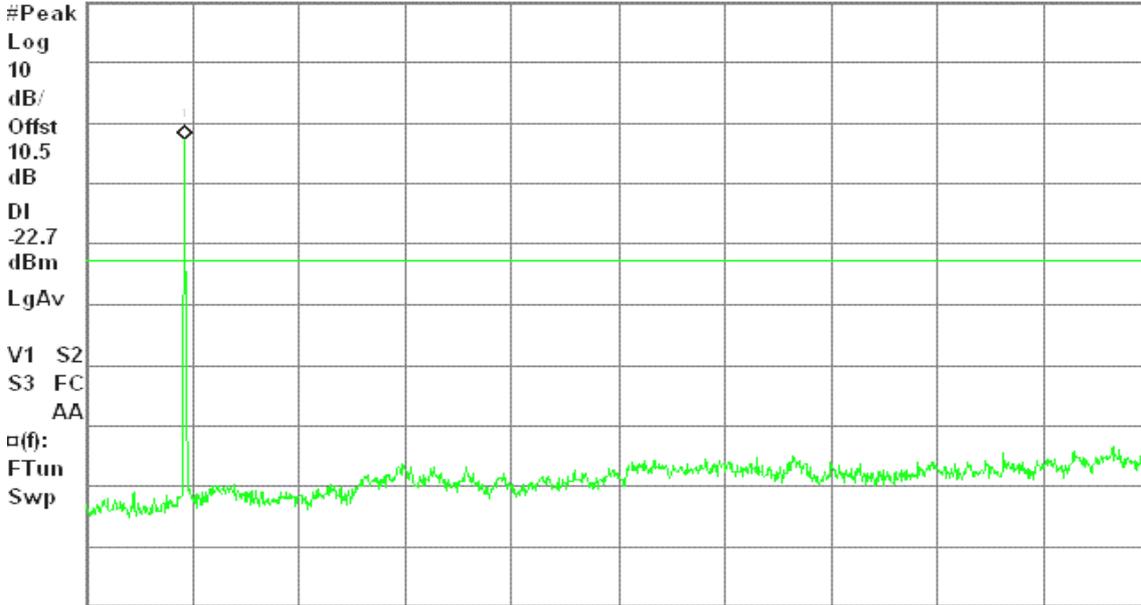
Spurious, g Mode Mid Ch.

Mkr1 2.45 GHz

Ref 20 dBm

Atten 20 dB

-2.74 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)

### CH High

Agilent 14:09:34 Aug 11, 2007

R T

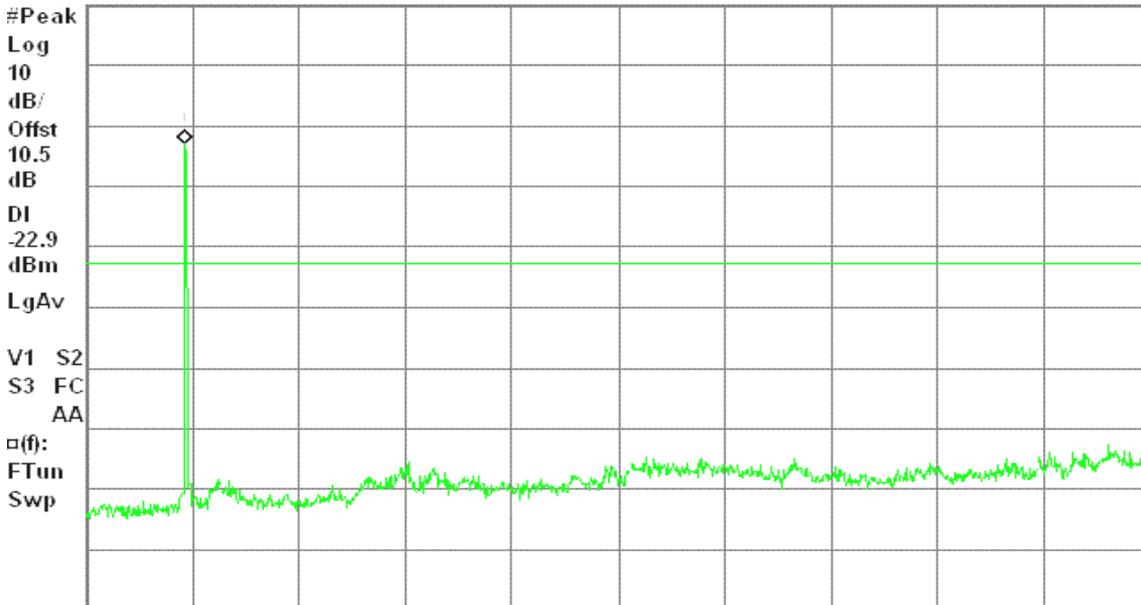
Spurious, g Mode High Ch.

Mkr1 2.45 GHz

Ref 20 dBm

Atten 20 dB

-2.89 dBm



Center 13.02 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)



### 7.6.2 RADIATED EMISSIONS

#### LIMIT

1. According to §15.209(a), 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 ( $\mu\text{V/m}$ )	Measurement Distance (m)
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

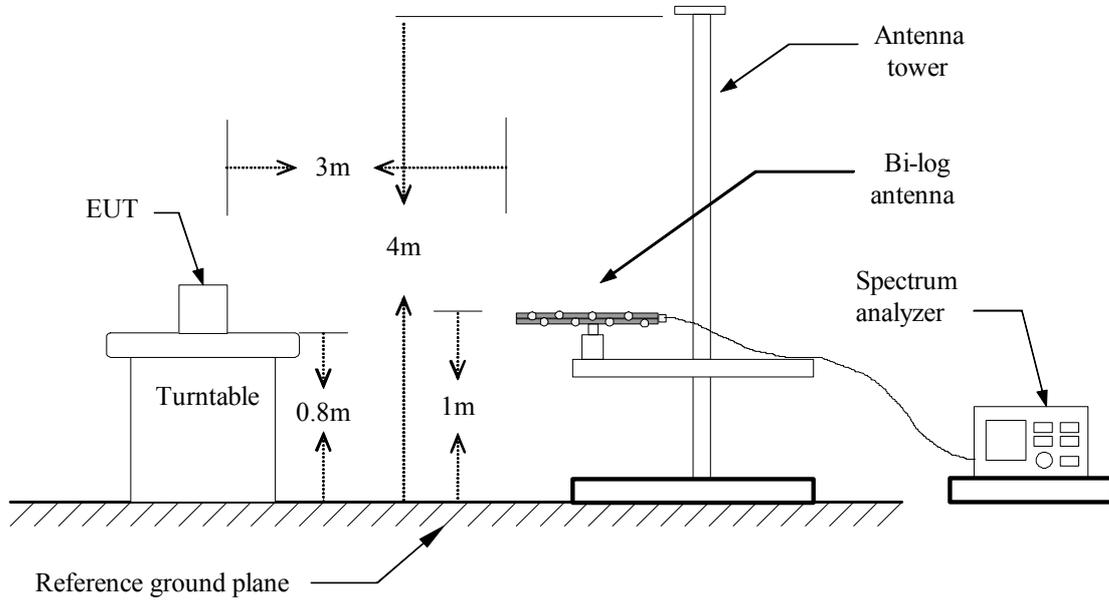
*Remark: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of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

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

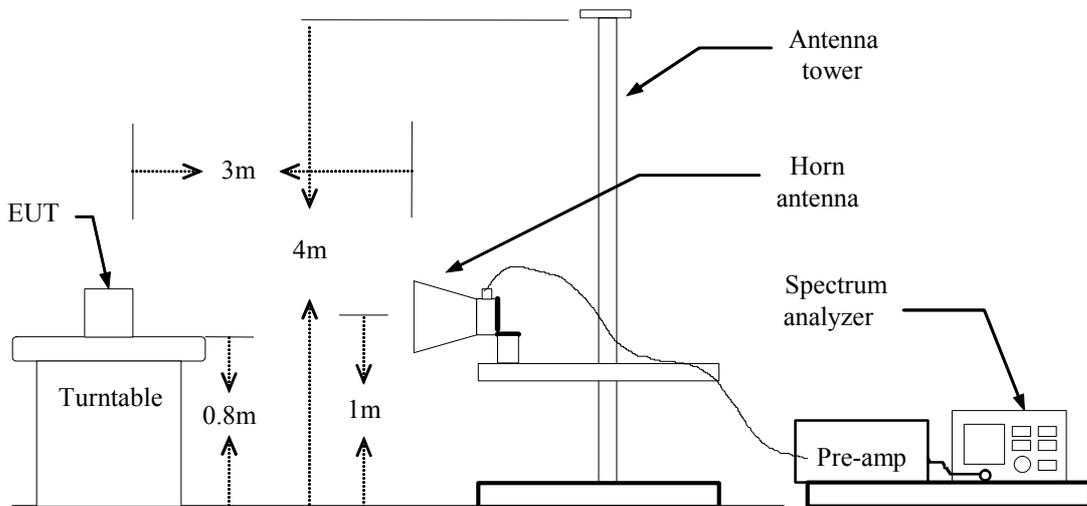
Frequency (MHz)	Field Strength ( $\mu\text{V/m}$ at 3-meter)	Field Strength (dB $\mu\text{V/m}$ at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

### 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**

No non-compliance noted

**Above 1 GHz**

Operation Mode: TX / IEEE 802.11b / CH Low

Test Date: August 11, 2007

Temperature: 25°C

Tested by: Steven Young

Humidity: 55 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
4825.00	V	49.78	---	0.55	50.33	---	74.00	54.00	-3.67	Peak
N/A										
4825.00	H	45.77	---	0.55	46.32	---	74.00	54.00	-7.68	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
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. 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.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).





Operation Mode: TX / IEEE 802.11b / CH High

Test Date: August 11, 2007

Temperature: 25°C

Tested by: Steven Young

Humidity: 55 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
4925.00	V	47.61	---	0.65	48.26	---	74.00	54.00	-5.74	Peak
N/A										
4925.00	H	45.50	---	0.65	46.15	---	74.00	54.00	-7.85	Peak
N/A										

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
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. 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.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / IEEE 802.11g / CH Low

Test Date: August 11, 2007

Temperature: 25°C

Tested by: Steven Young

Humidity: 55 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
N/A										
7241.67	H	44.68	---	3.54	48.22	---	74.00	54.00	-5.78	Peak
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
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. 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.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / IEEE 802.11g / CH Mid

Test Date: August 11, 2007

Temperature: 25°C

Tested by: Steven Young

Humidity: 55 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
N/A										
7308.33	H	45.17	---	3.41	48.58	---	74.00	54.00	-5.42	Peak
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
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. 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.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).





## CONDITION B: BLUETOOTH

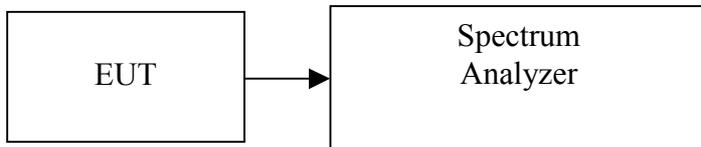
### 7.7 PEAK POWER

#### LIMIT

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

1. According to §15.247(a)(1), Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.
2. 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.
3. 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

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2402	-2.60	0.00055	1	PASS
Mid	2441	-2.10	0.00062		PASS
High	2480	-0.10	0.00098		PASS

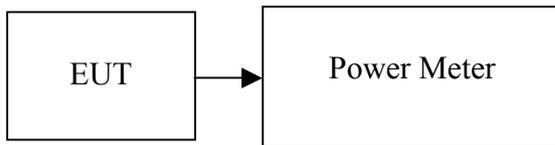


## 7.8 AVERAGE POWER

### LIMIT

None; for reporting purposes only.

### Test Configuration



### TEST PROCEDURE

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

### TEST RESULTS

*No non-compliance noted.*

#### Test Data

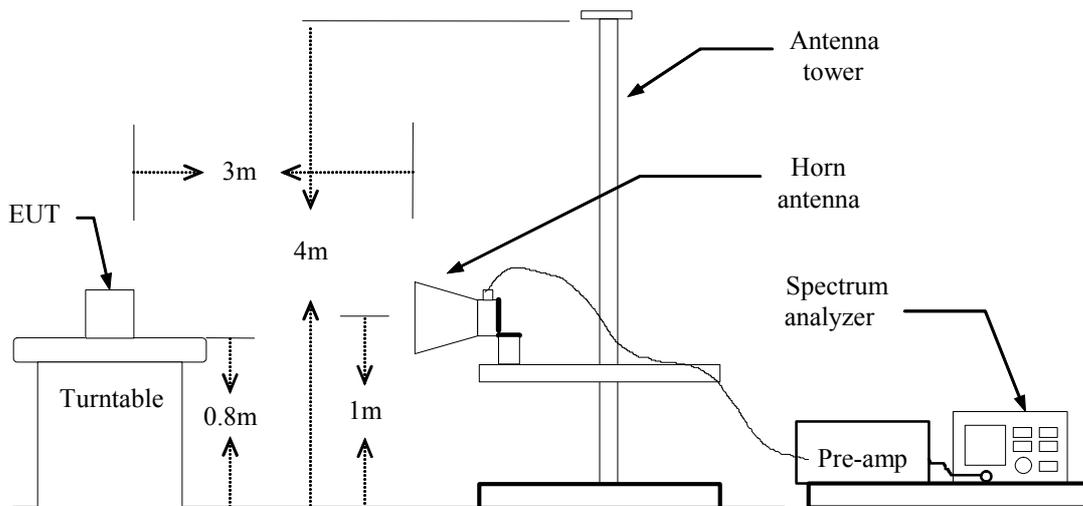
Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)
Low	2402	-2.97	0.00050
Mid	2441	-2.41	0.00057
High	2480	-0.62	0.00087

## 7.9 BAND 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:
  - (c) PEAK: RBW=VBW=1MHz / Sweep=AUTO
  - (d) 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 (Bluetooth / CH High)

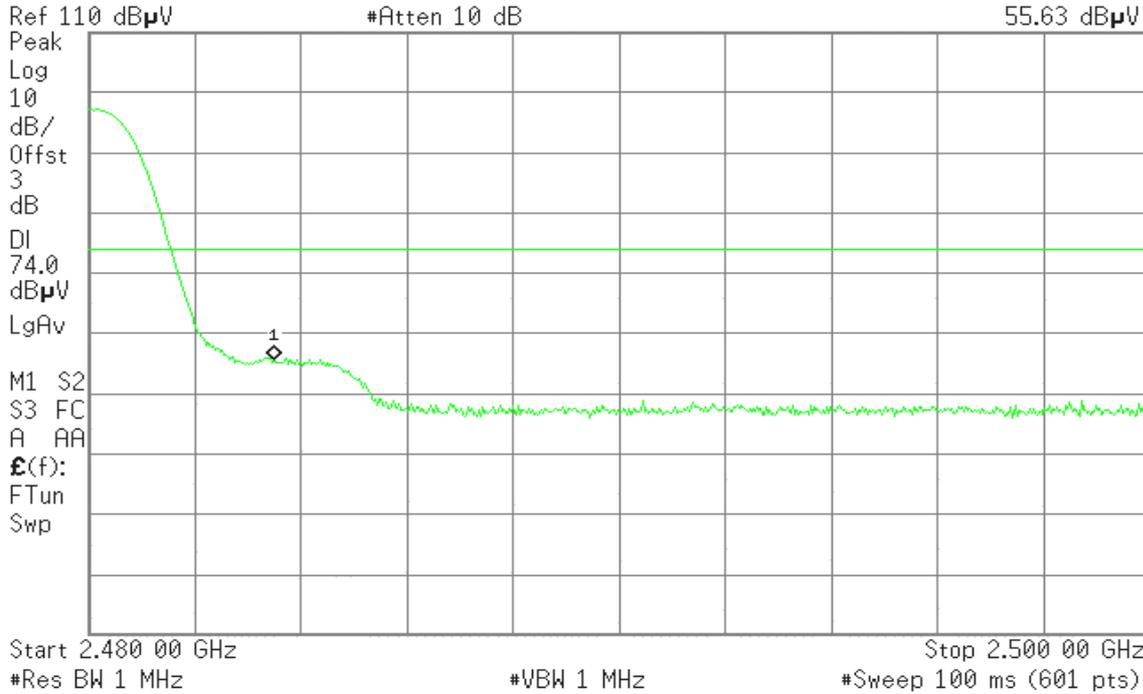
Detector mode: Peak

Polarity: Vertical

Agilent 14:19:01 Aug 10, 2007

R T

Mkr1 2.483 50 GHz  
55.63 dB $\mu$ V



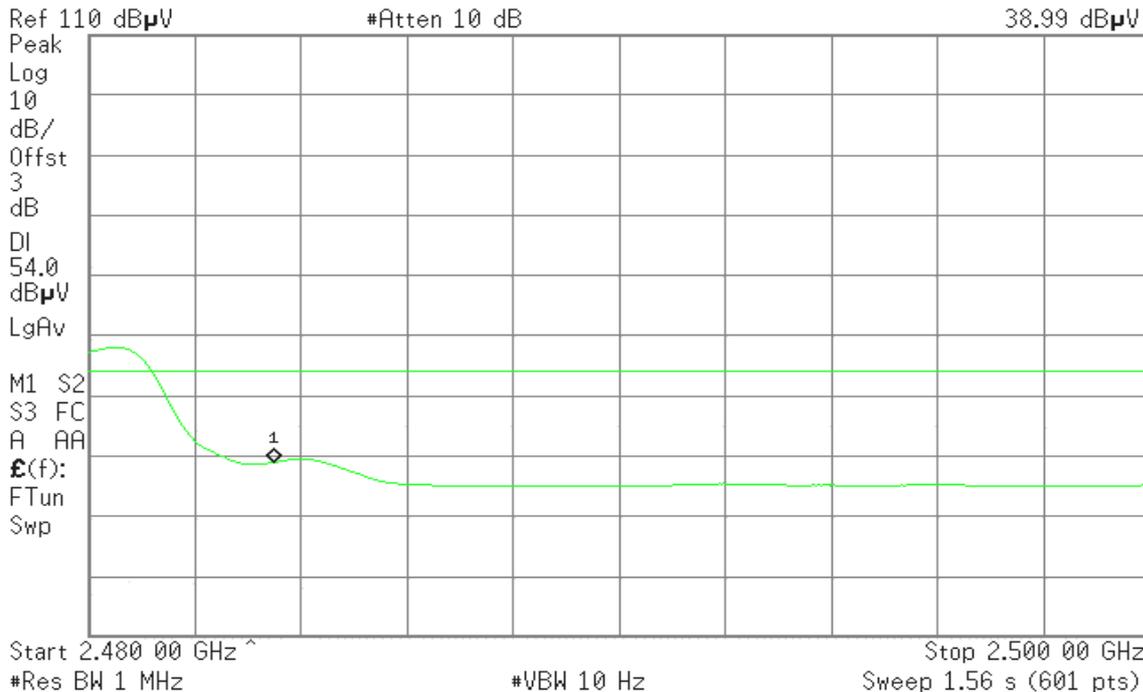
Detector mode: Average

Polarity: Vertical

Agilent 14:18:37 Aug 10, 2007

R T

Mkr1 2.483 50 GHz  
38.99 dB $\mu$ V





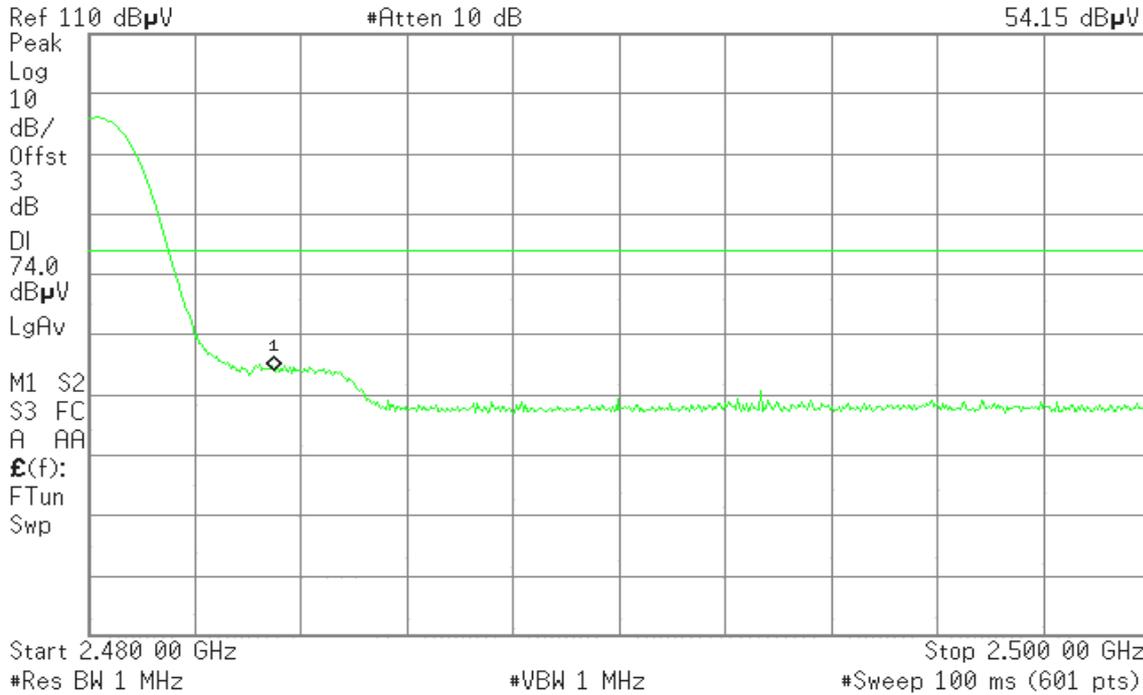
Detector mode: Peak

Polarity: Horizontal

Agilent 14:21:39 Aug 10, 2007

R T

Mkr1 2.483 50 GHz  
54.15 dBµV



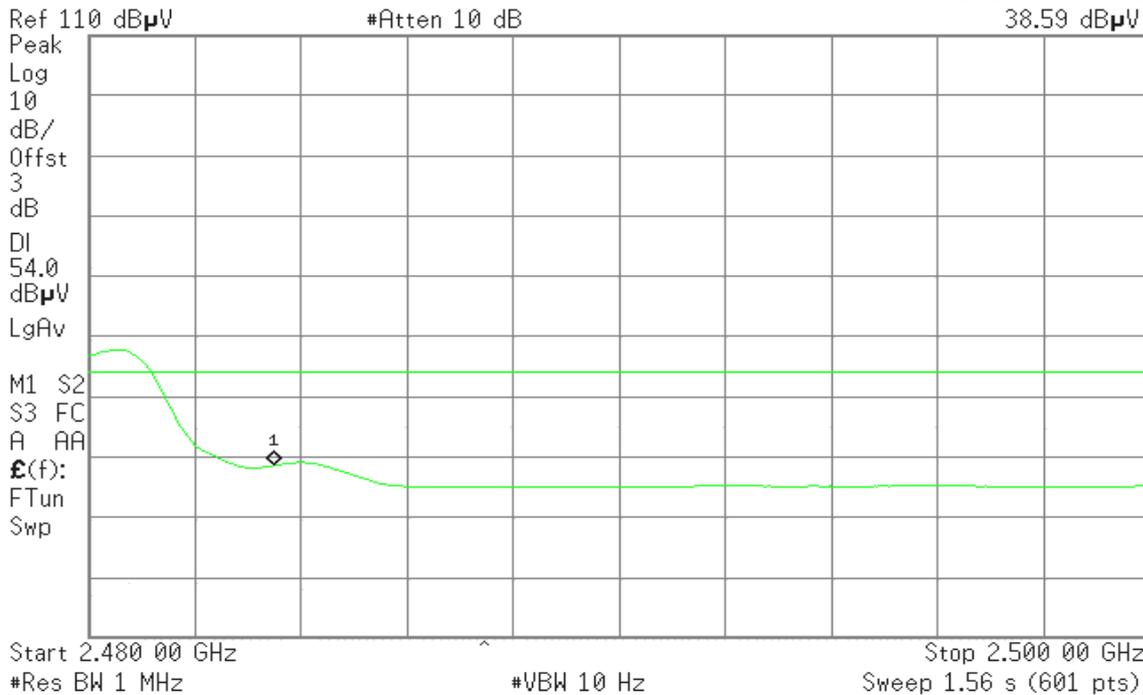
Detector mode: Average

Polarity: Horizontal

Agilent 14:21:58 Aug 10, 2007

R T

Mkr1 2.483 50 GHz  
38.59 dBµV



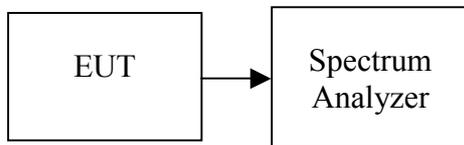


## 7.10 PEAK POWER SPECTRAL DENSITY

### 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.
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 = 3kHz, VBW = 10kHz, Span = 300kHz, Sweep=100s
4. Record the max. reading.
5. Repeat the above procedure until the measurements for all frequencies are completed.

### TEST RESULTS

*No non-compliance noted*

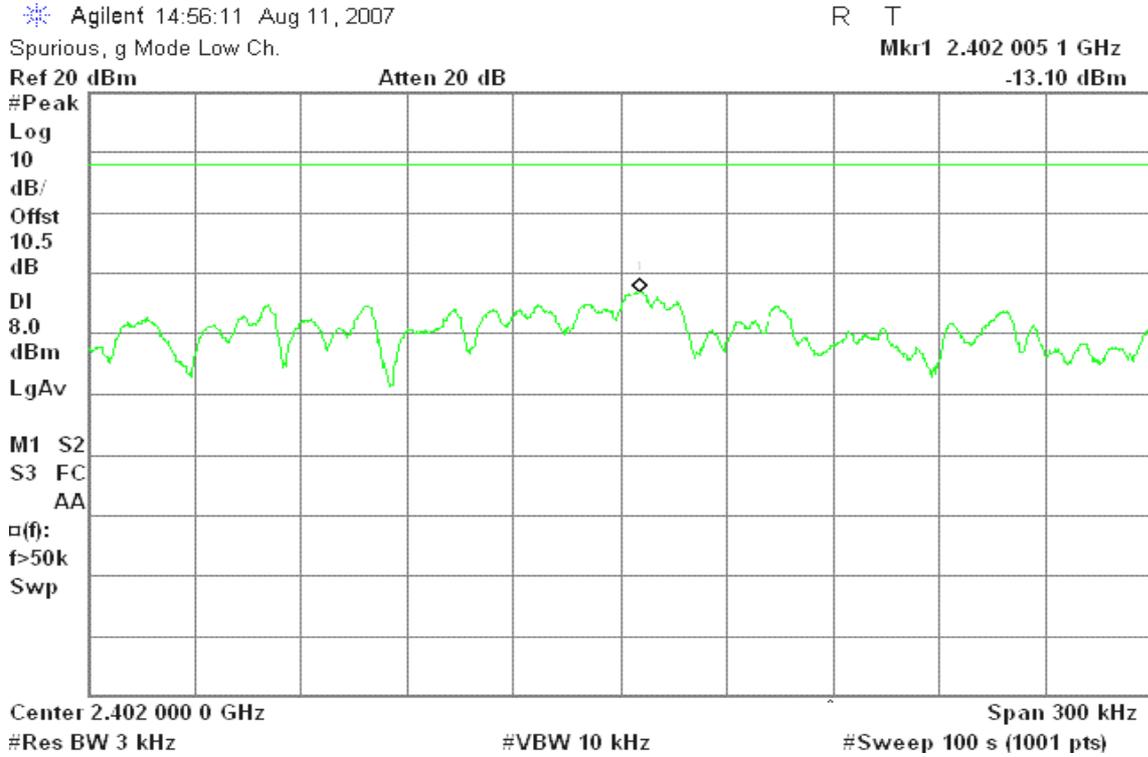
#### Test Data

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2402	-13.10	8.00	PASS
Mid	2441	-12.91		PASS
High	2480	-14.24		PASS

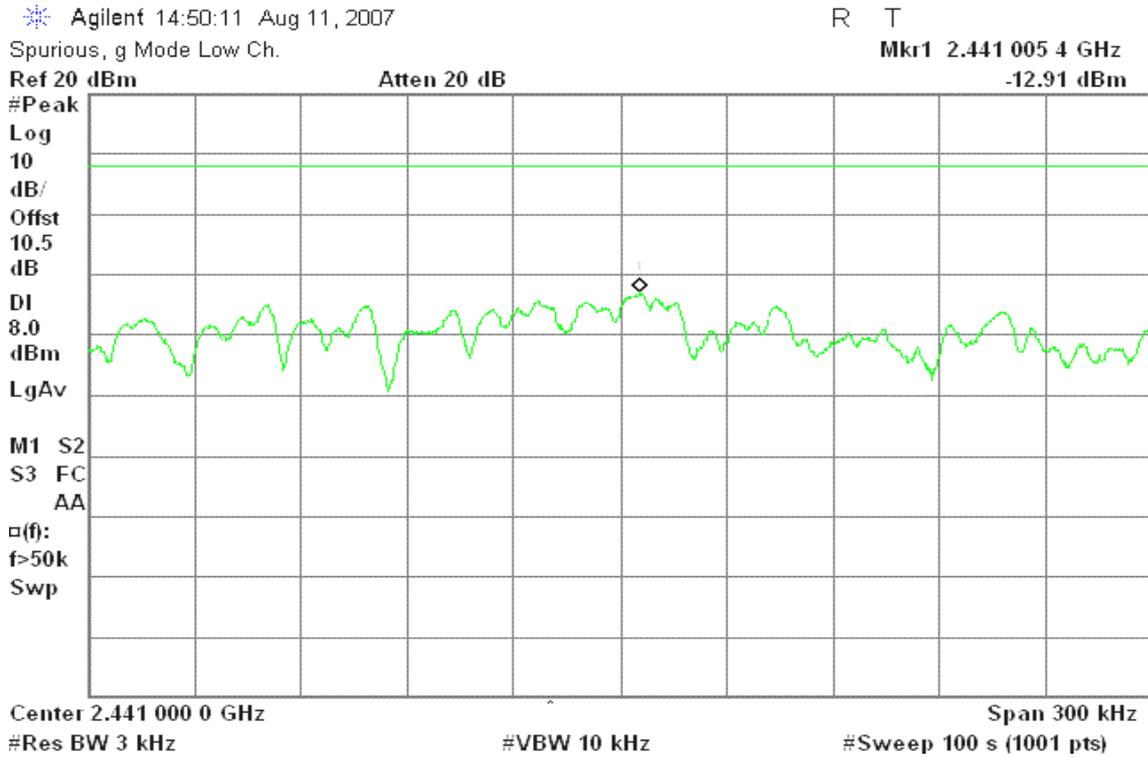


Test Plot

PPSD (CH Low)



PPSD (CH Mid)





### PPSD (CH High)

Agilent 14:52:40 Aug 11, 2007

R T

Spurious, g Mode Low Ch.

Mkr1 2.480 005 1 GHz

Ref 20 dBm

Atten 20 dB

-14.24 dBm

#Peak

Log

10

dB/

Offst

10.5

dB

Dl

8.0

dBm

LgAv

M1 S2

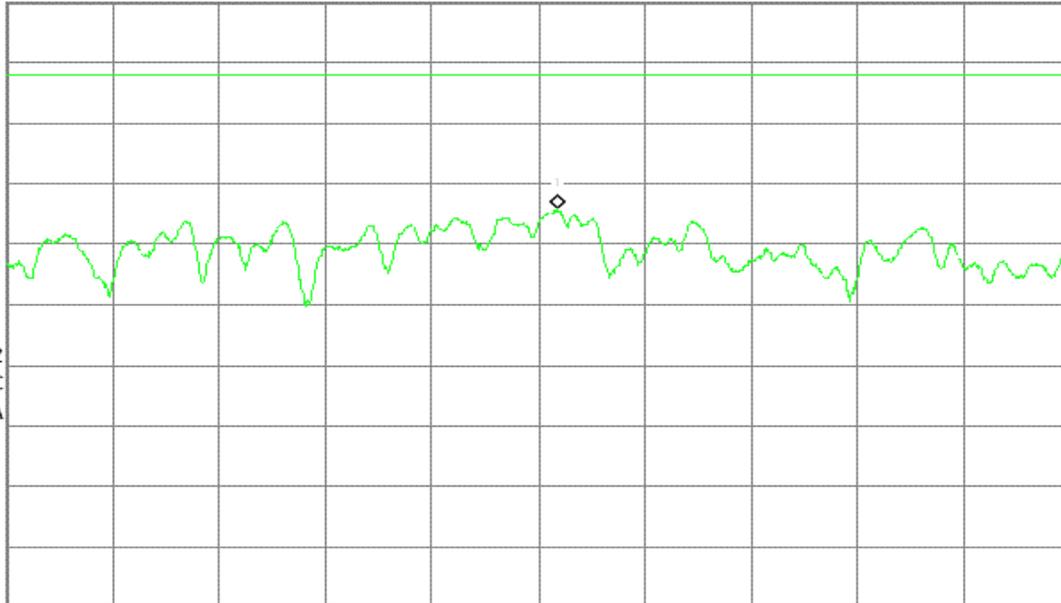
S3 FC

AA

□(f):

f>50k

Swp



Center 2.480 000 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (1001 pts)

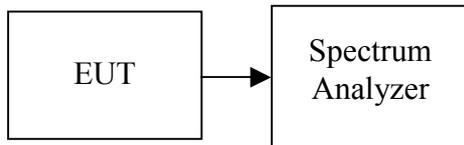


## 7.11 FREQUENCY SEPARATION

### LIMIT

According to §15.247(a)(1), Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

### Test Configuration



### TEST PROCEDURE

1. Place the EUT on the table and set it in 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 center frequency of spectrum analyzer = middle of hopping channel.
4. Set the spectrum analyzer as RBW = 10kHz, VBW = 30kHz, Span = 1.5MHz, Sweep = auto.
5. Max hold, mark 3 peaks of hopping channel and record the 3 peaks frequency.

### TEST RESULTS

*No non-compliance noted*

#### Test Data

Channel Separation (MHz)	20dB Bandwidth (kHz)	Channel Separation Limit	Result
1.00	937	> 20dB Bandwidth	Pass



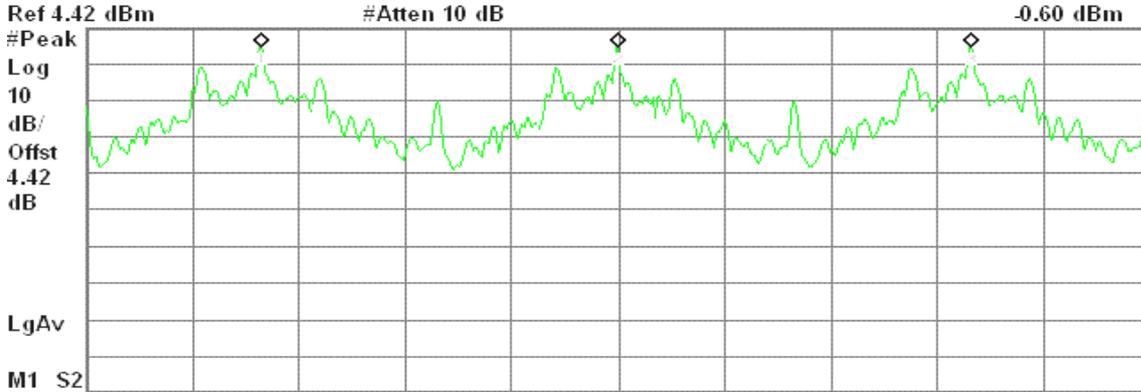
Test Plot

Measurement of Channel Separation

Agilent 18:22:00 Aug 15, 2007

R T

Mkr3 2.441 995 GHz



M1 S2  
 Center 2.441 000 GHz Span 3 MHz  
 #Res BW 10 kHz #VBW 10 kHz Sweep 36.2 ms (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.439 995 GHz	-0.60 dBm
2	(1)	Freq	2.440 995 GHz	-0.61 dBm
3	(1)	Freq	2.441 995 GHz	-0.60 dBm

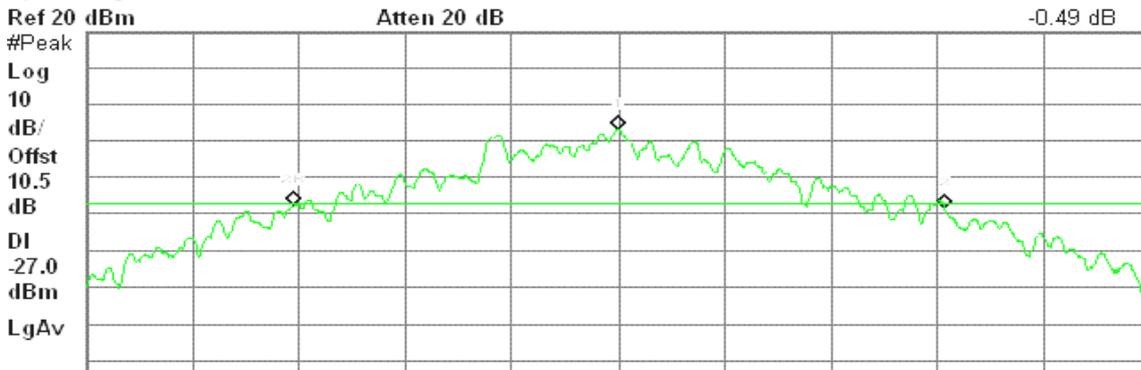
Measurement of 20dB Bandwidth

Agilent 14:40:36 Aug 11, 2007

R T

Δ Mkr2 937 kHz

Spurious, g Mode Low Ch.



V1 S2  
 Center 2.480 000 GHz Span 1.5 MHz  
 #Res BW 10 kHz #VBW 30 kHz Sweep 14.4 ms (1001 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.479 998 GHz	-6.98 dBm
2R	(1)	Freq	2.479 527 GHz	-27.83 dBm
2Δ	(1)	Freq	937 kHz	-0.49 dB

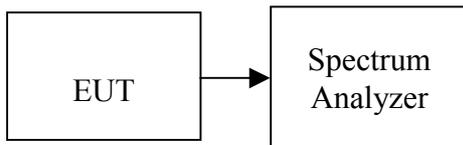


## 7.12 NUMBER OF HOPPING FREQUENCY

### LIMIT

According to §15.247(a)(1)(ii), Frequency hopping systems operating in the 2400MHz-2483.5 MHz bands shall use at least 75 hopping frequencies.

### Test Configuration



### TEST PROCEDURE

1. Place the EUT on the table and set it in 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 spectrum analyzer Start=2400MHz, Stop = 2441.5MHz, Sweep = auto and Start=2441.5MHz, Stop = 2483.5MHz, Sweep = auto.
4. Set the spectrum analyzer as RBW, VBW=510kHz.
5. Max hold, view and count how many channel in the band.

### TEST RESULTS

*No non-compliance noted*

### Test Data

Result (No. of CH)	Limit (No. of CH)	Result
79	>75	PASS



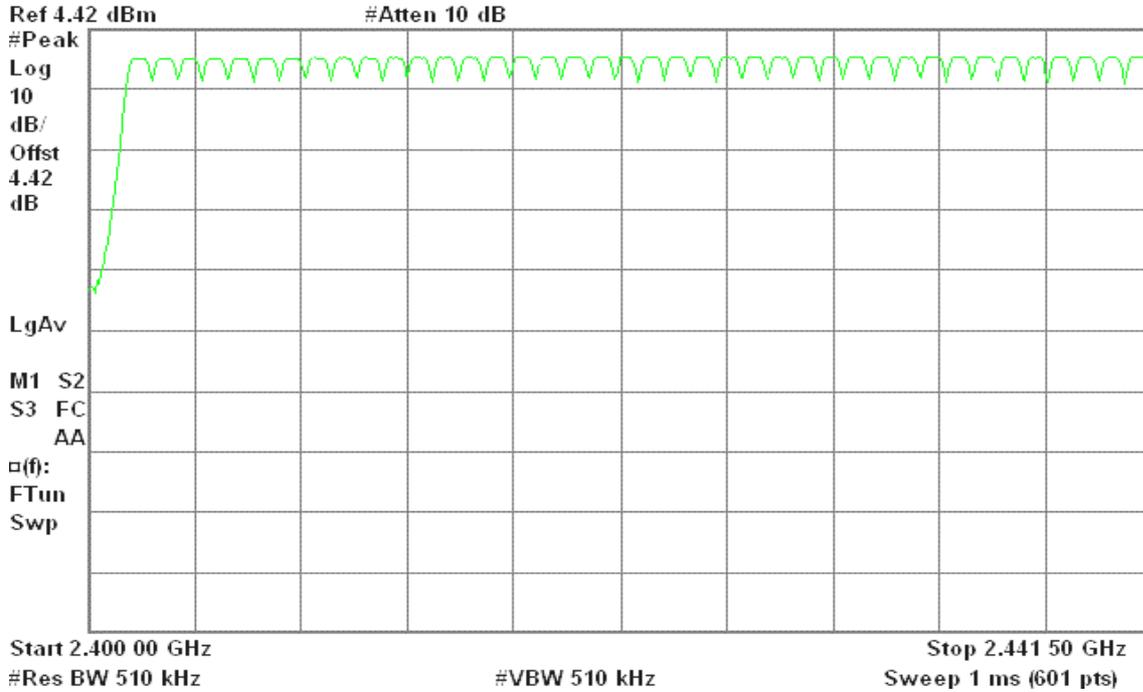
**Test Plot**

**Channel Number**

**2.4 GHz – 2.4415 GHz**

Agilent 18:01:55 Aug 15, 2007

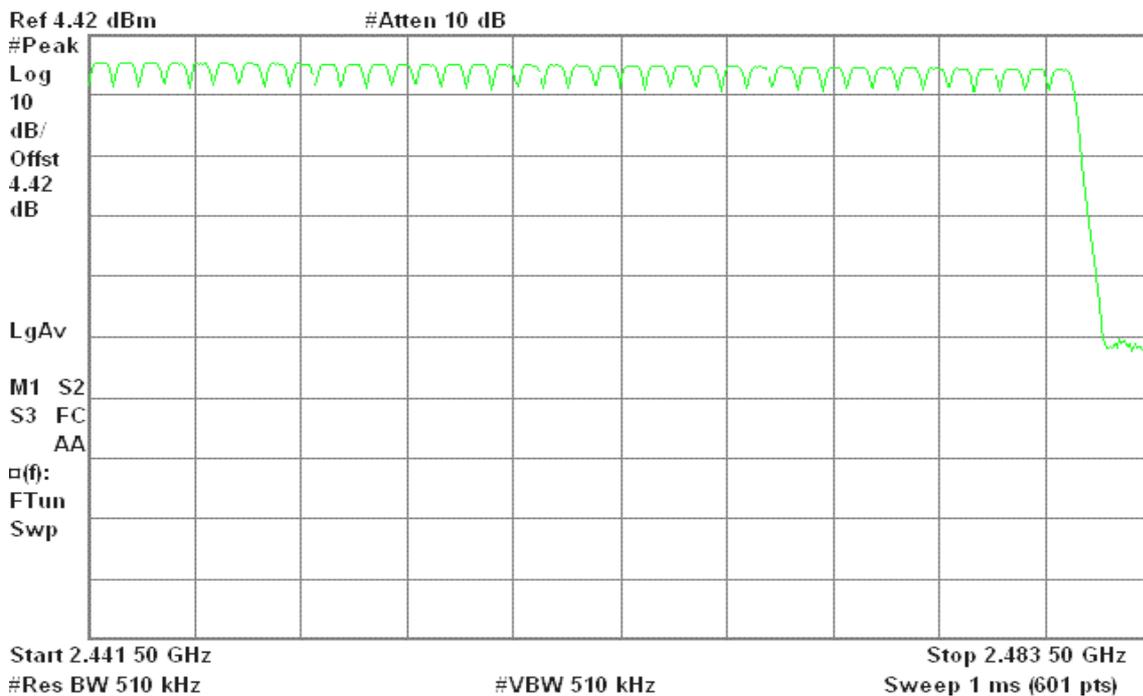
R T



**2.4415 GHz – 2.4835 GHz**

Agilent 18:05:01 Aug 15, 2007

R T

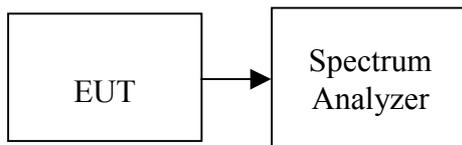


## 7.13 TIME OF OCCUPANCY (DWELL TIME)

### LIMIT

According to §15.247(a)(1)(iii), Frequency hopping systems operating in the 2400MHz-2483.5 MHz bands. The average time of occupancy on any channels shall not greater than 0.4 s within a period 0.4 s multiplied by the number of hopping channels employed.

### Test Configuration



### TEST PROCEDURE

1. Place the EUT on the table and set it in 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 center frequency of spectrum analyzer = operating frequency.
4. Set the spectrum analyzer as RBW, VBW=1MHz, Span = 0Hz, Sweep = auto.
5. Repeat above procedures until all frequency measured were complete.



### TEST RESULTS

*No non-compliance noted*

#### Test Data

##### DH 1

CH Low:  $0.3901 * (1600/2)/79 * 31.6 = 124.832$  (ms)

CH Mid:  $0.3901 * (1600/2)/79 * 31.6 = 124.832$  (ms)

CH High:  $0.4041 * (1600/2)/79 * 31.6 = 129.312$  (ms)

CH	Pulse Time (ms)	Total of Dwell (ms)	Period Time (s)	Limit (ms)	Result
Low	0.3901	124.832	31.600	400.000	PASS
Mid	0.3901	124.832	31.600		PASS
High	0.4041	129.312	31.600		PASS

##### DH 3

CH Low:  $1.658 * (1600/4)/79 * 31.6 = 265.280$  (ms)

CH Mid:  $1.644 * (1600/4)/79 * 31.6 = 263.040$  (ms)

CH High:  $1.644 * (1600/4)/79 * 31.6 = 263.040$  (ms)

CH	Pulse Time (ms)	Total of Dwell (ms)	Period Time (s)	Limit (ms)	Result
Low	1.658	265.280	31.600	400.000	PASS
Mid	1.644	263.040	31.600		PASS
High	1.644	263.040	31.600		PASS

##### DH 5

CH Low:  $2.898 * (1600/6)/79 * 31.6 = 309.120$  (ms)

CH Mid:  $2.898 * (1600/6)/79 * 31.6 = 309.120$  (ms)

CH High:  $2.884 * (1600/6)/79 * 31.6 = 307.627$  (ms)

CH	Pulse Time (ms)	Total of Dwell (ms)	Period Time (s)	Limit (ms)	Result
Low	2.898	309.120	31.600	400.000	PASS
Mid	2.898	309.120	31.600		PASS
High	2.884	307.627	31.600		PASS



**Test Plot**

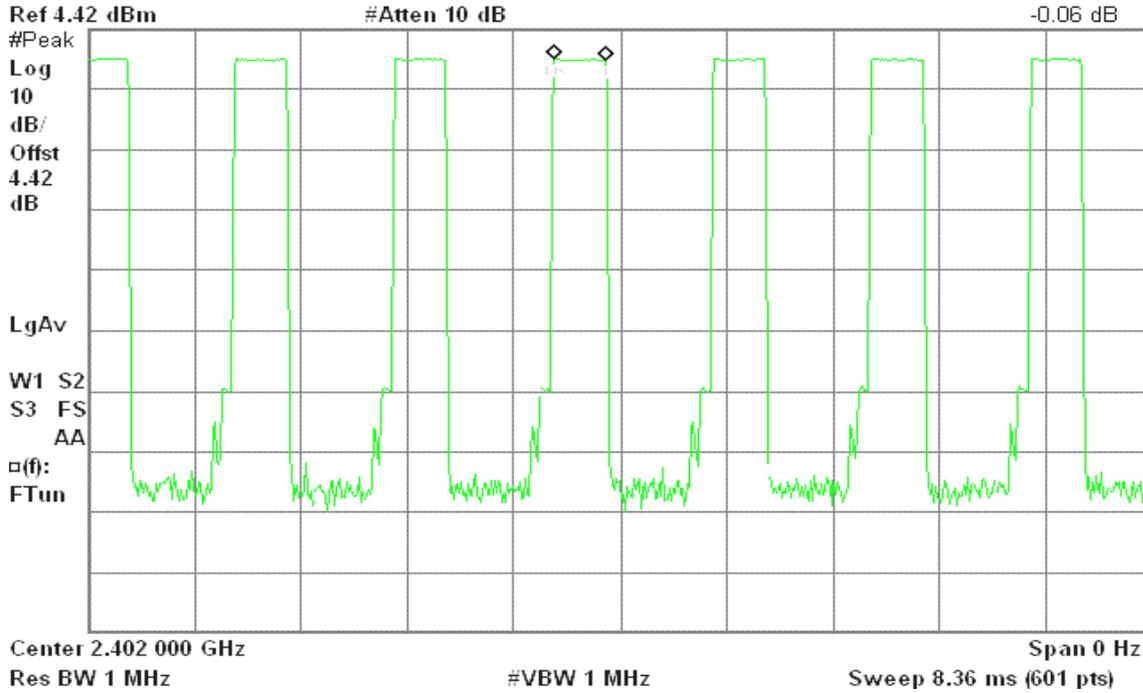
**DH 1**

**(CH Low)**

Agilent 17:45:19 Aug 15, 2007

R T

Δ Mkr1 390.1 μs  
-0.06 dB

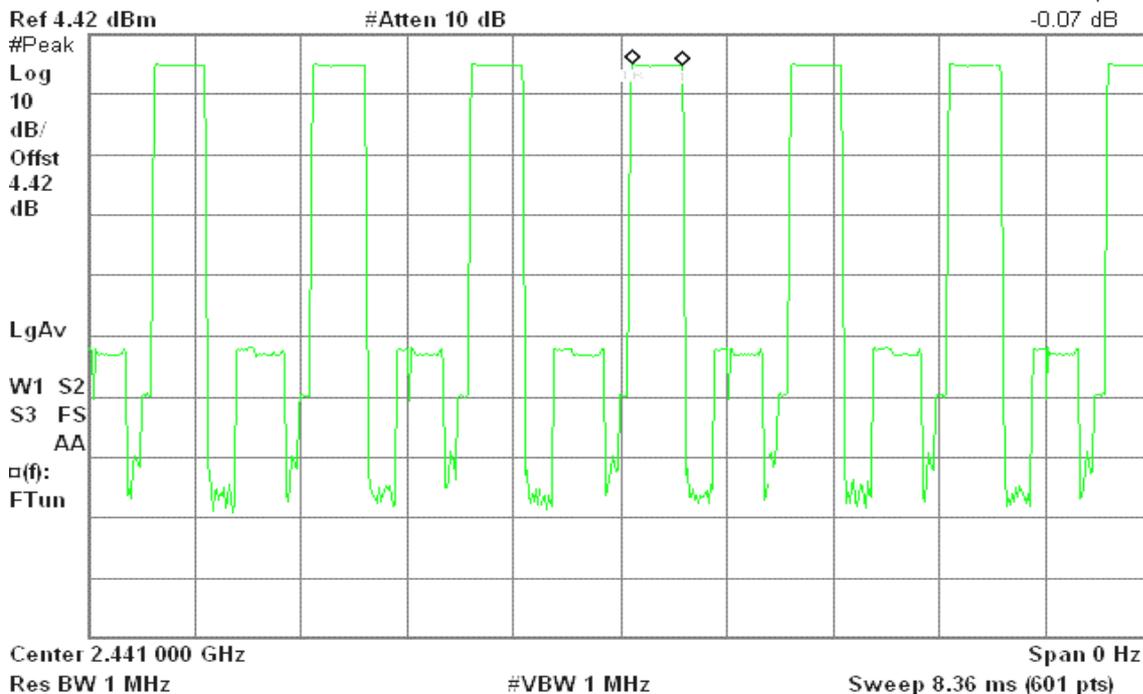


**(CH Mid)**

Agilent 17:48:35 Aug 15, 2007

R T

Δ Mkr1 390.1 μs  
-0.07 dB



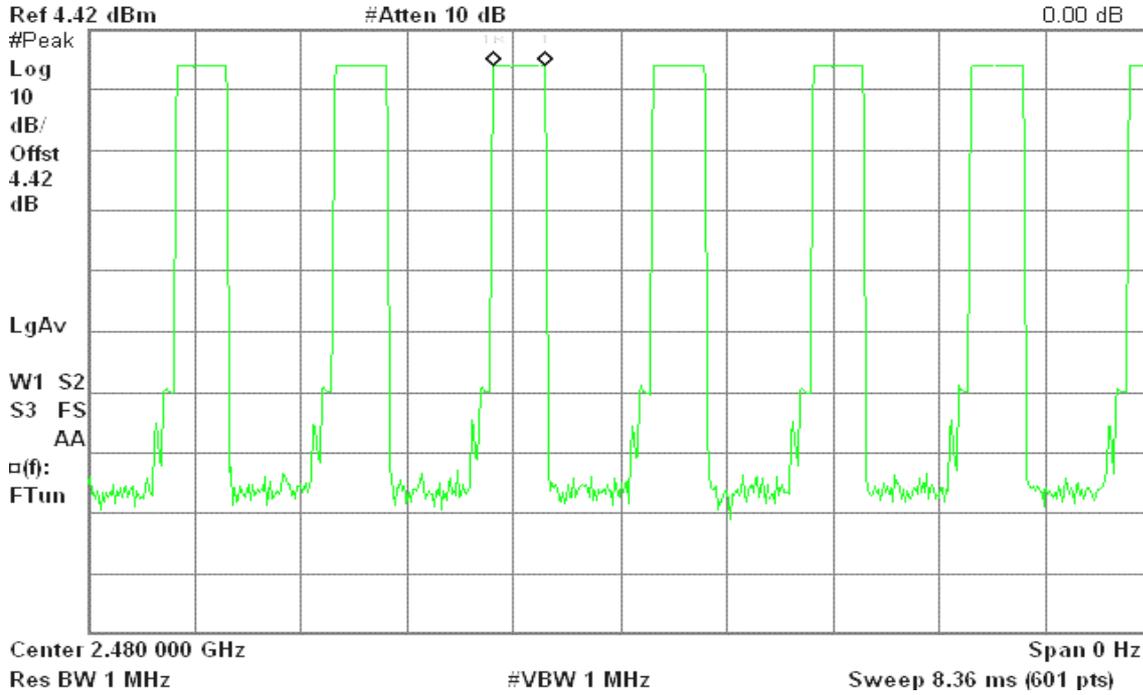


**(CH High)**

Agilent 17:58:41 Aug 15, 2007

R T

Δ Mkr1 404.1 μs  
0.00 dB



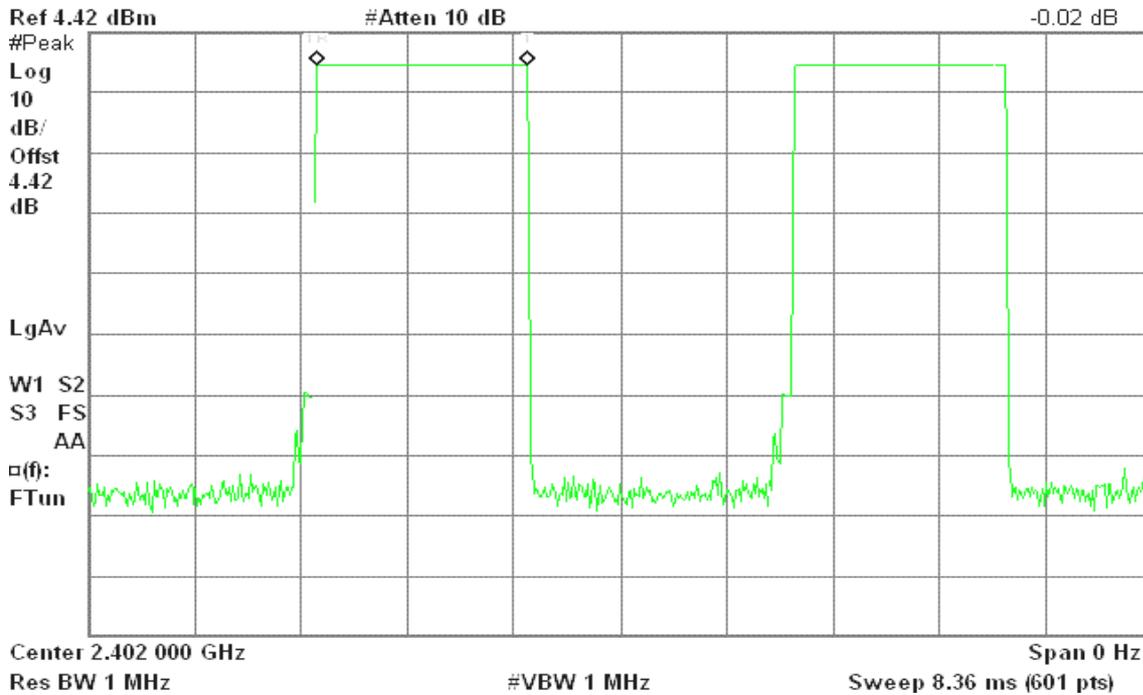
**DH 3**

**(CH Low)**

Agilent 17:46:09 Aug 15, 2007

R T

Δ Mkr1 1.658 ms  
-0.02 dB



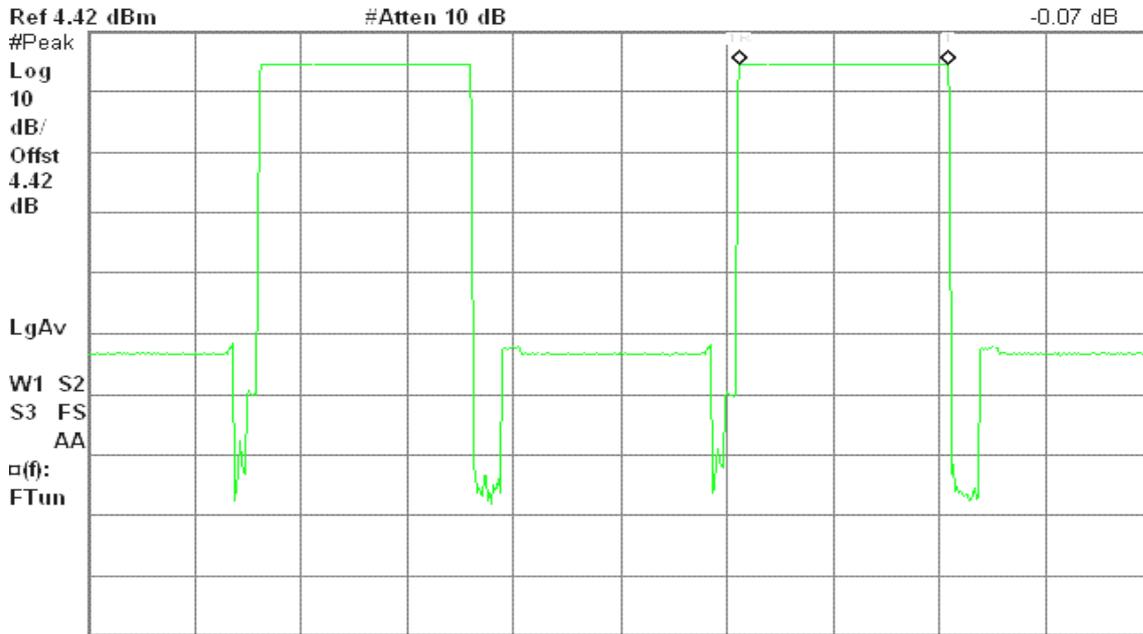


(CH Mid)

Agilent 17:51:25 Aug 15, 2007

R T

Δ Mkr1 1.644 ms  
-0.07 dB



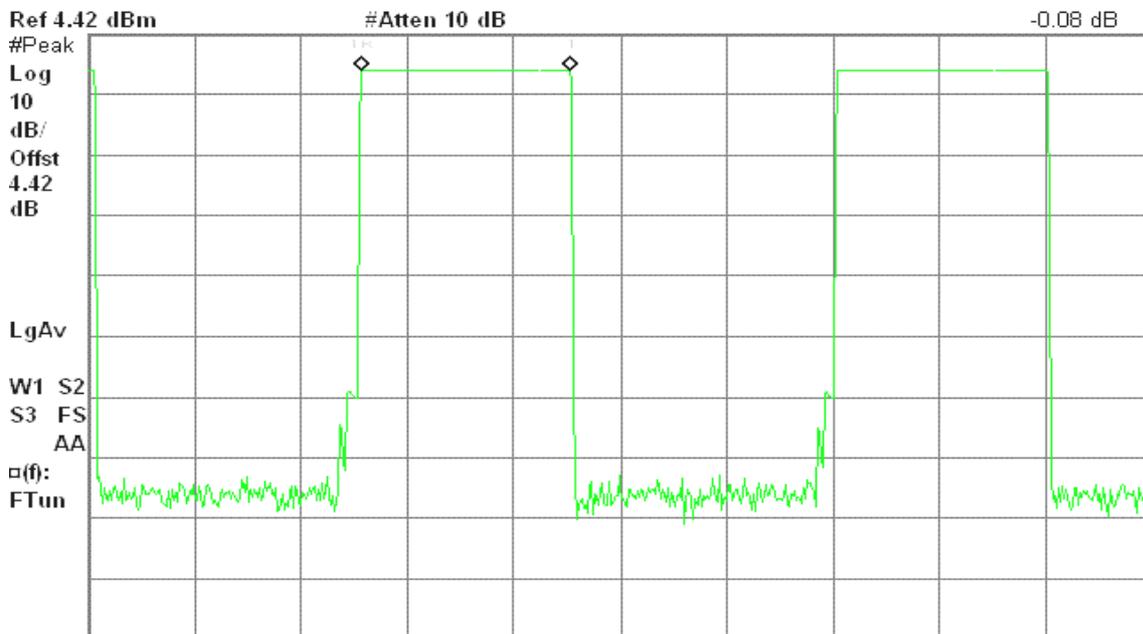
Center 2.441 000 GHz Span 0 Hz  
Res BW 1 MHz #VBW 1 MHz Sweep 8.36 ms (601 pts)

(CH High)

Agilent 17:58:17 Aug 15, 2007

R T

Δ Mkr1 1.644 ms  
-0.08 dB



Center 2.480 000 GHz Span 0 Hz  
Res BW 1 MHz #VBW 1 MHz Sweep 8.36 ms (601 pts)



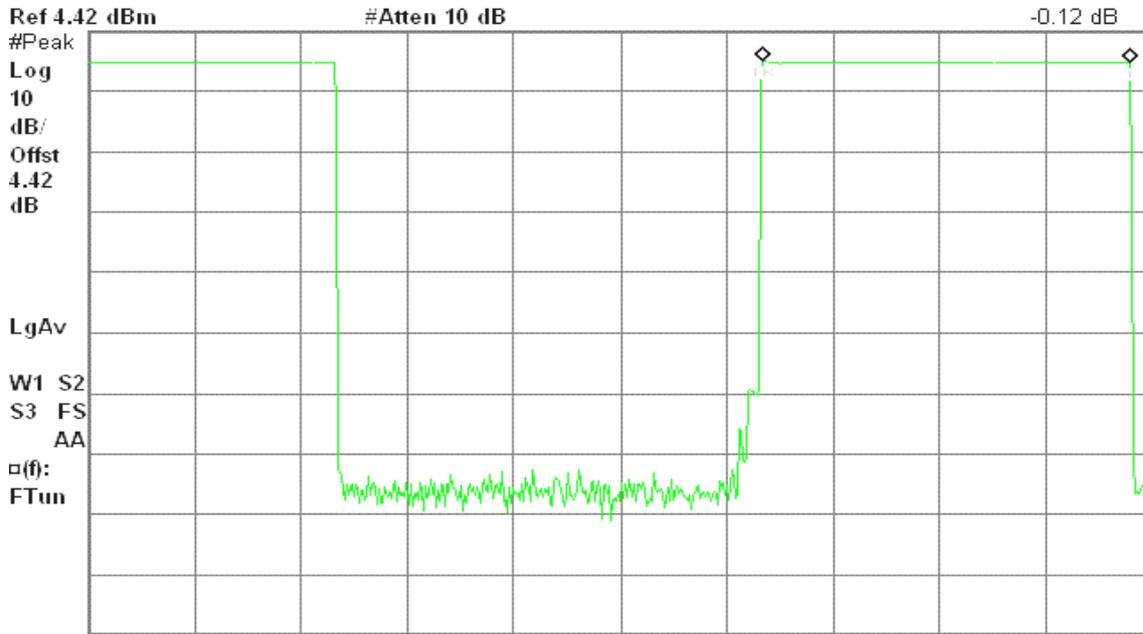
**DH 5**

**(CH Low)**

Agilent 17:46:50 Aug 15, 2007

R T

Δ Mkr1 2.898 ms  
-0.12 dB

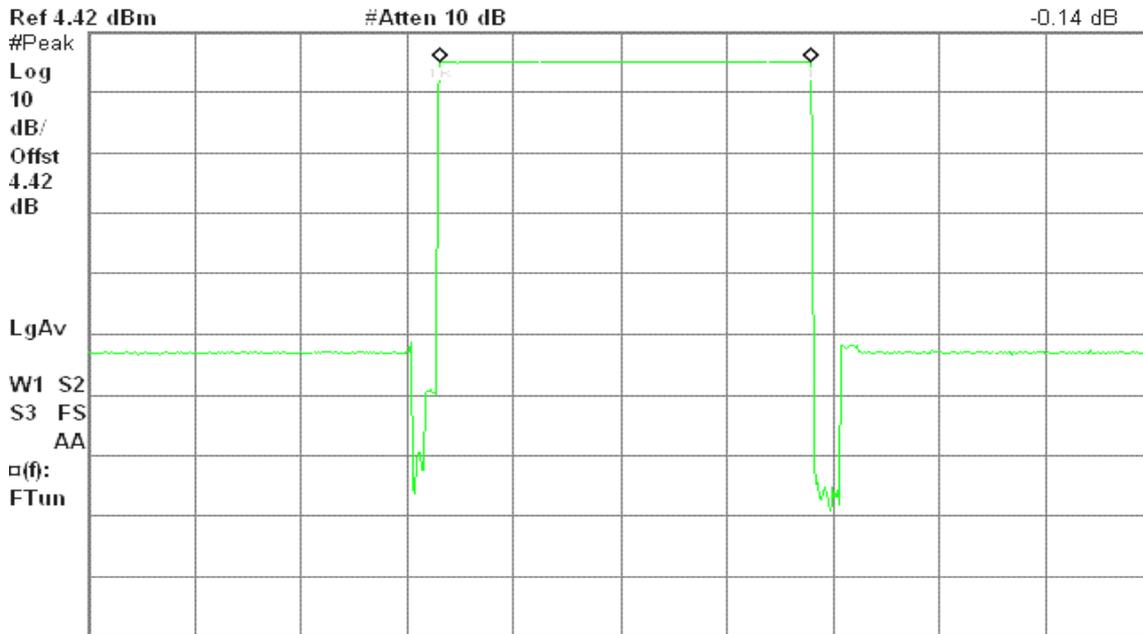


**(CH Mid)**

Agilent 17:56:49 Aug 15, 2007

R T

Δ Mkr1 2.898 ms  
-0.14 dB



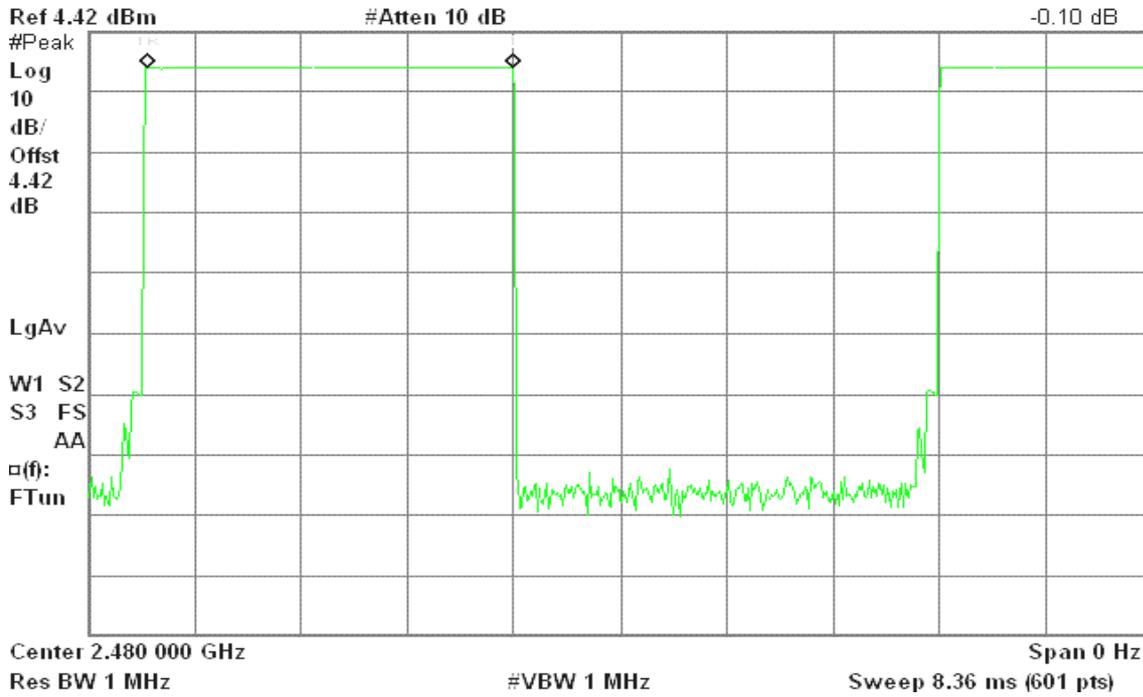


(CH High)

Agilent 17:57:52 Aug 15, 2007

R T

Δ Mkr1 2.884 ms  
-0.10 dB





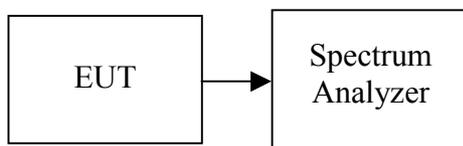
## 7.14 SPURIOUS EMISSIONS

### 7.14.1 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 100 kHz.

Measurements are made over the 30MHz to 26GHz range with the transmitter set to the lowest, middle, and highest channels.

#### TEST RESULTS

*No non-compliance noted*



### Test Plot

#### CH Low

Agilent 14:59:47 Aug 11, 2007

R T

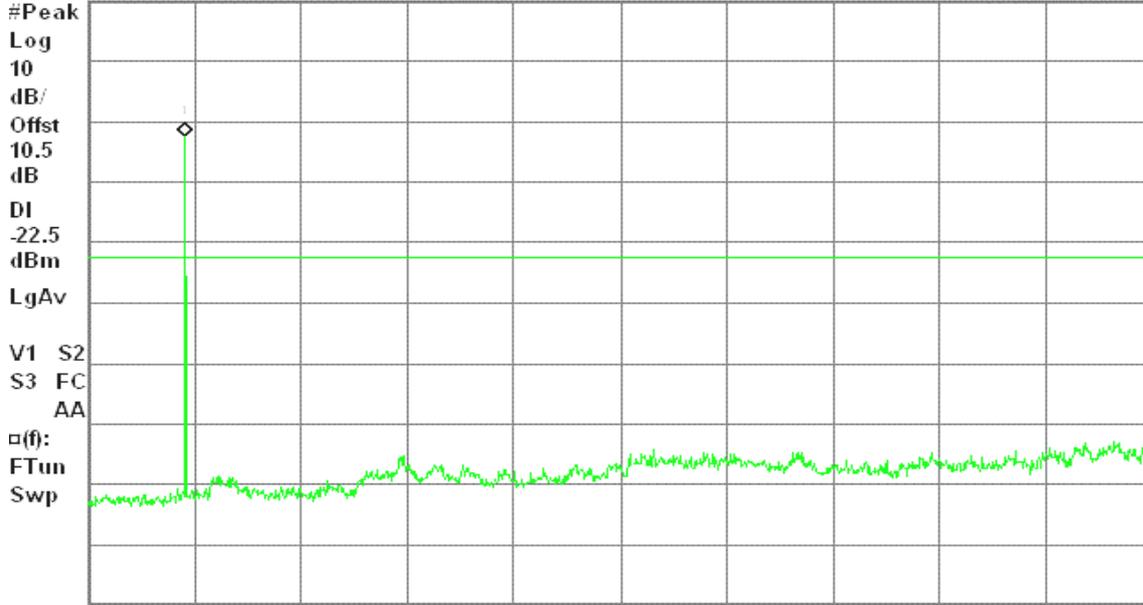
Spurious, g Mode Low Ch.

Mkr1 2.39 GHz

Ref 20 dBm

Atten 20 dB

-2.55 dBm



Start 30 MHz

Stop 26.00 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)

#### CH Mid

Agilent 15:01:04 Aug 11, 2007

R T

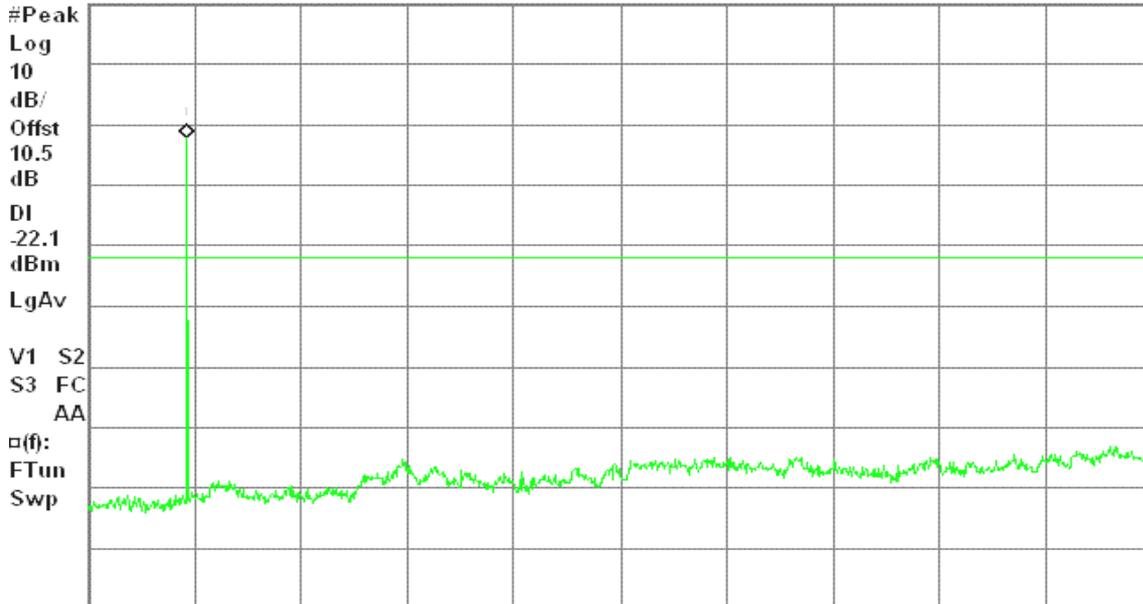
Spurious, g Mode Low Ch.

Mkr1 2.45 GHz

Ref 20 dBm

Atten 20 dB

-2.14 dBm



Start 30 MHz

Stop 26.00 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)



### CH High

Agilent 15:02:39 Aug 11, 2007

R T

Spurious, g Mode Low Ch.

Mkr1 2.47 GHz

Ref 20 dBm

Atten 20 dB

-2.21 dBm

#Peak

Log

10

dB/

Offst

10.5

dB

DI

-22.2

dBm

LgAv

V1 S2

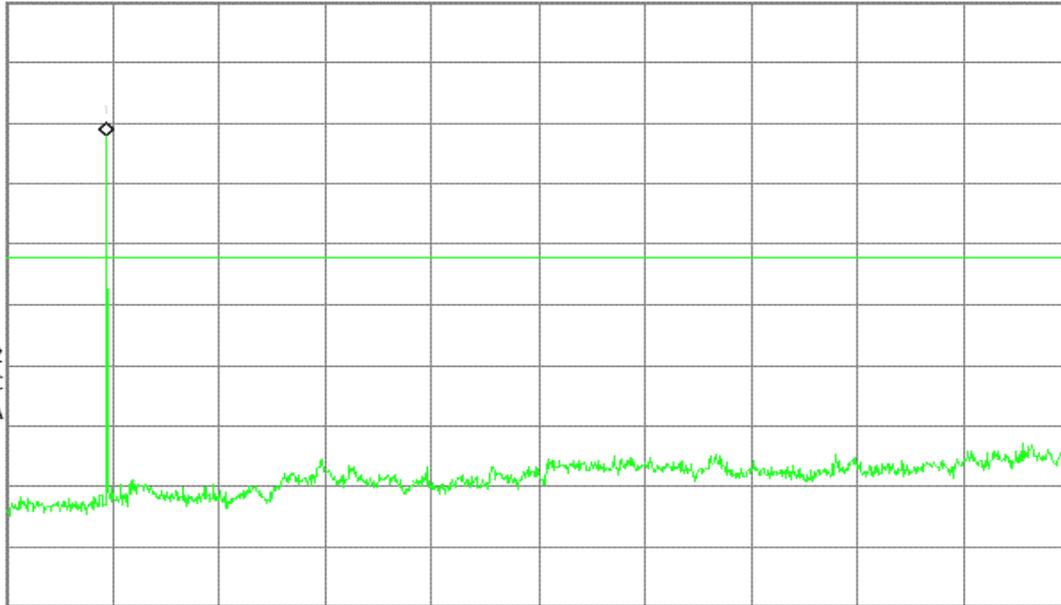
S3 FC

AA

□(f):

FTun

Swp



Start 30 MHz

Stop 26.00 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)



### 7.14.2 RADIATED EMISSIONS

#### LIMIT

1. According to §15.209(a), 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 ( $\mu\text{V/m}$ )	Measurement Distance (m)
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

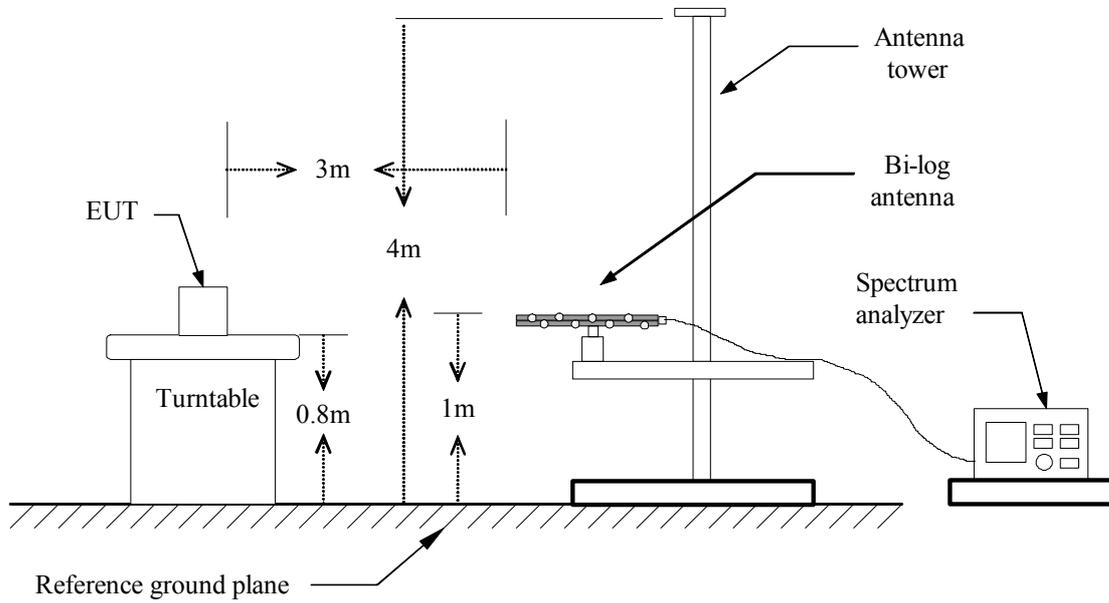
*Remark: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of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

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

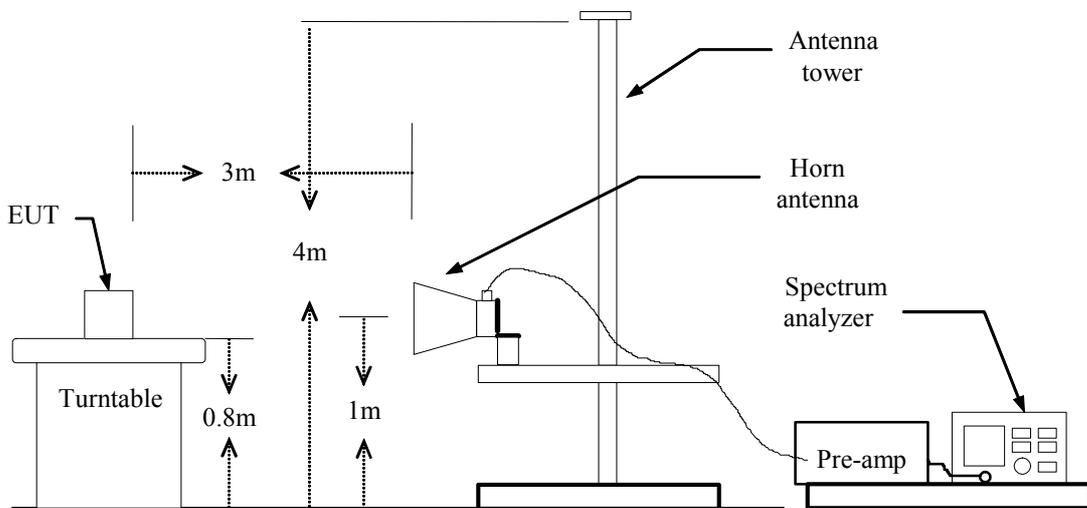
Frequency (MHz)	Field Strength ( $\mu\text{V/m}$ at 3-meter)	Field Strength (dB $\mu\text{V/m}$ at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

### 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

No non-compliance noted

Above 1 GHz

Operation Mode: TX / Bluetooth / 2402 MHz

Test Date: August 10, 2007

Temperature: 25°C

Tested by: Steven Young

Humidity: 55 % RH

Polarity: Ver. / Hor.

Table with 11 columns: Frequency (MHz), Ant.Pol. (H/V), Reading (Peak) (dBuV), Reading (Average) (dBuV), Correction Factor (dB/m), Result (Peak) (dBuV/m), Result (Average) (dBuV/m), Limit (Peak) (dBuV/m), Limit (Average) (dBuV/m), Margin (dB), Remark. Rows include data for frequencies 1066.67, 1133.33, 1200.00 and N/A entries.

Remark:

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
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. 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.
6. Margin (dB) = Remark result (dBuV/m) - Average limit (dBuV/m).



Operation Mode: TX / Bluetooth / 2441 MHz

Test Date: August 10, 2007

Temperature: 25°C

Tested by: Steven Young

Humidity: 55 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1066.67	V	55.97	---	-10.68	45.29	---	74.00	54.00	-8.71	Peak
1133.33	V	56.34	---	-10.57	45.77	---	74.00	54.00	-8.23	Peak
1200.00	V	58.10	---	-10.46	47.64	---	74.00	54.00	-6.36	Peak
N/A										
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
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. 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.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / Bluetooth / 2480 MHz

Test Date: August 10, 2007

Temperature: 25°C

Tested by: Steven Young

Humidity: 55 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1066.67	V	56.66	---	-10.68	45.98	---	74.00	54.00	-8.02	Peak
1133.33	V	55.85	---	-10.57	45.28	---	74.00	54.00	-8.72	Peak
1200.00	V	57.81	---	-10.46	47.35	---	74.00	54.00	-6.65	Peak
N/A										
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
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. 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.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).

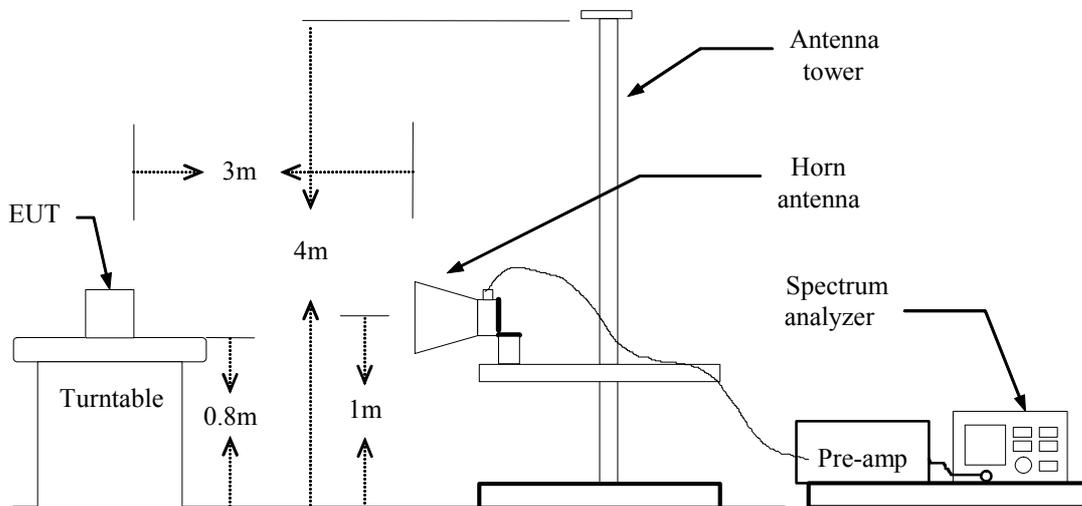
## CONDITION C: CO-LOCATION (WLAN + BLUETOOTH)

### 7.15 BAND 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:
  - (e) PEAK: RBW=VBW=1MHz / Sweep=AUTO
  - (f) 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.



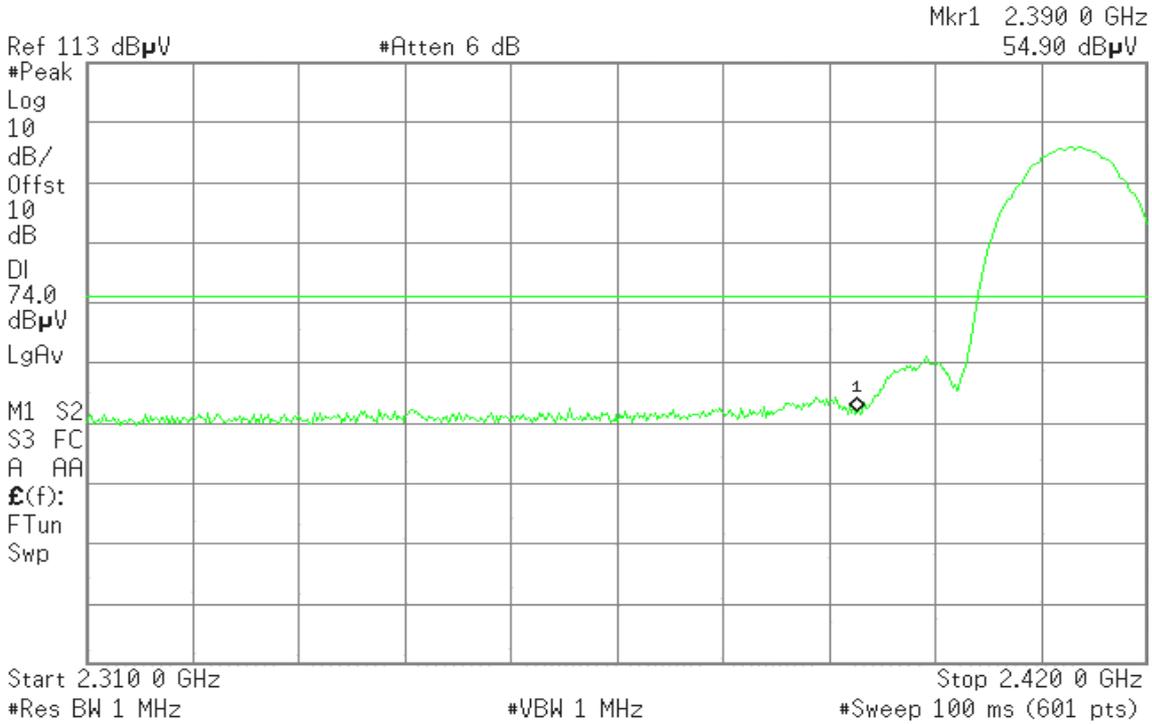
**Band Edges (IEEE 802.11b / CH Low + BT / CH High)**

**Detector mode: Peak**

**Polarity: Vertical**

Agilent 16:11:18 Sep 20, 2007

T

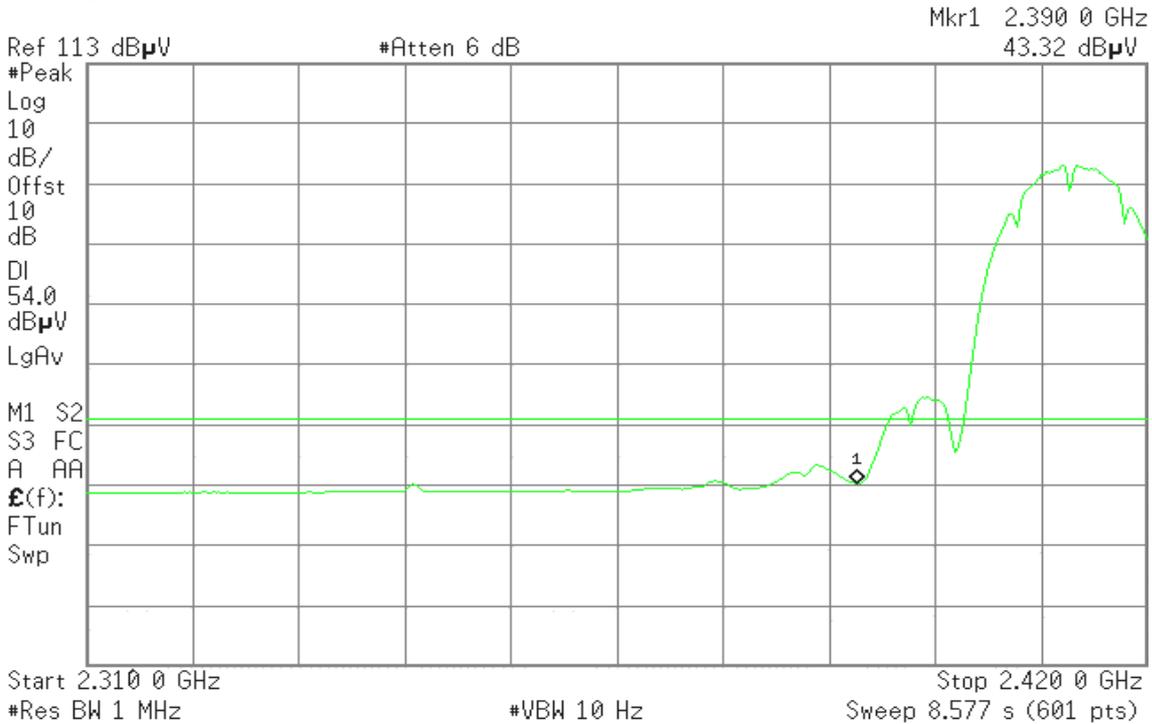


**Detector mode: Average**

**Polarity: Vertical**

Agilent 16:10:51 Sep 20, 2007

T





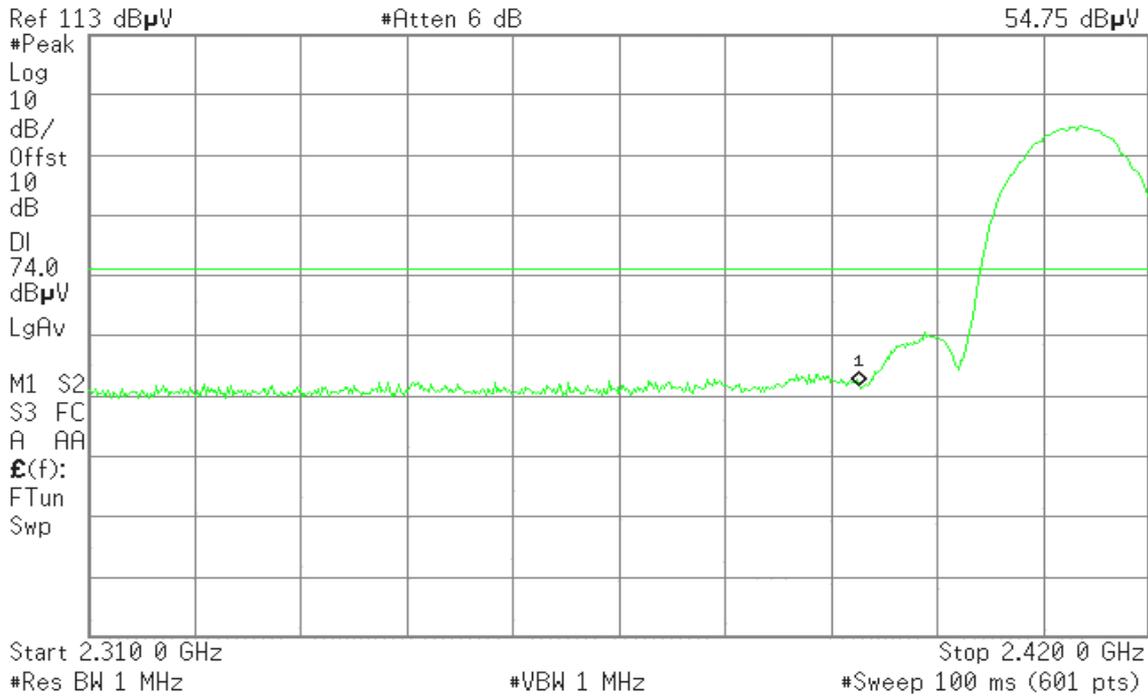
Detector mode: Peak

Polarity: Horizontal

Agilent 16:17:38 Sep 20, 2007

T

Mkr1 2.390 0 GHz  
54.75 dBμV



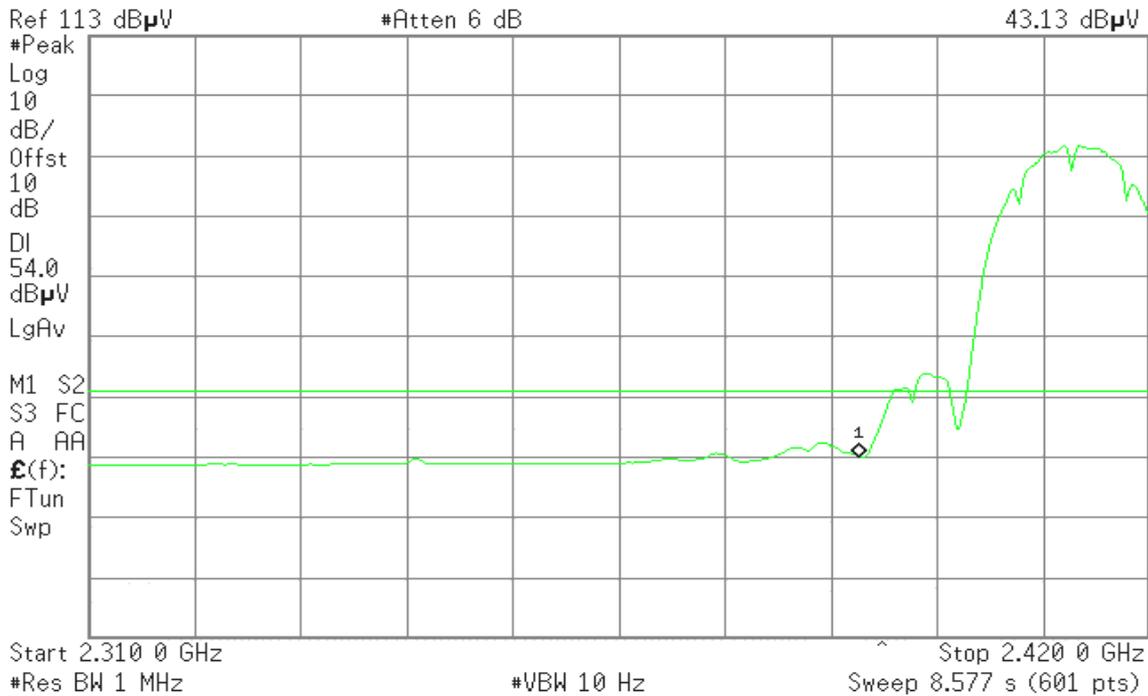
Detector mode: Average

Polarity: Horizontal

Agilent 16:18:13 Sep 20, 2007

T

Mkr1 2.390 0 GHz  
43.13 dBμV





### Band Edges (IEEE 802.11b / CH High + BT / CH High)

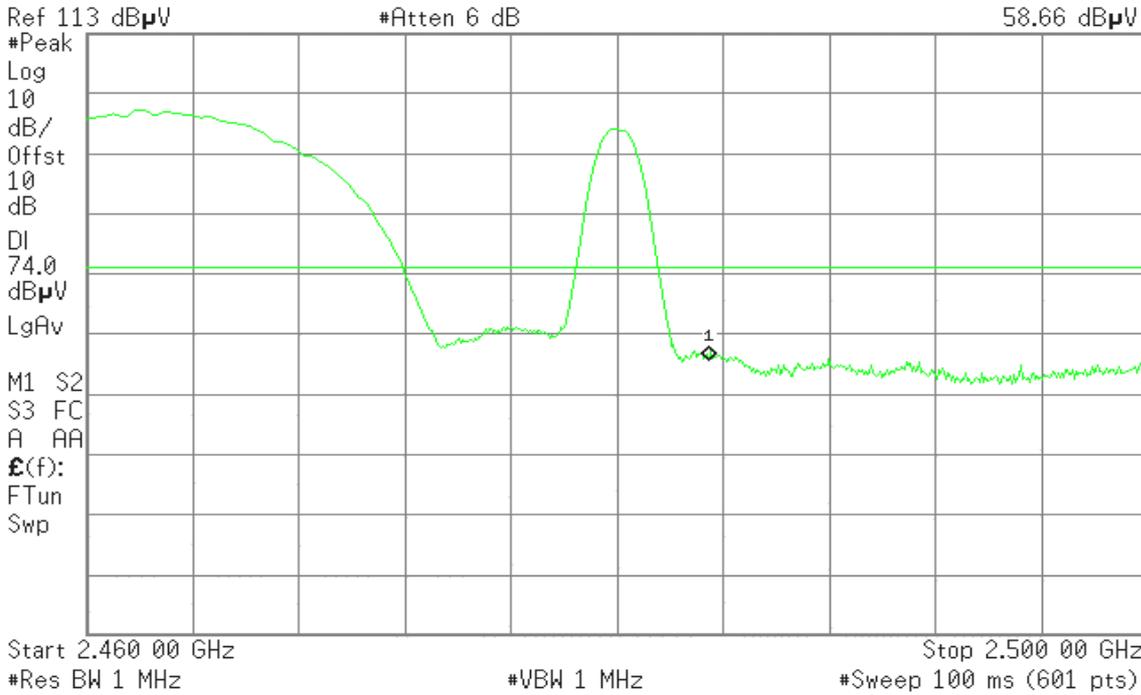
Detector mode: Peak

Polarity: Vertical

Agilent 16:30:34 Sep 20, 2007

T

Mkr1 2.483 50 GHz  
58.66 dB $\mu$ V



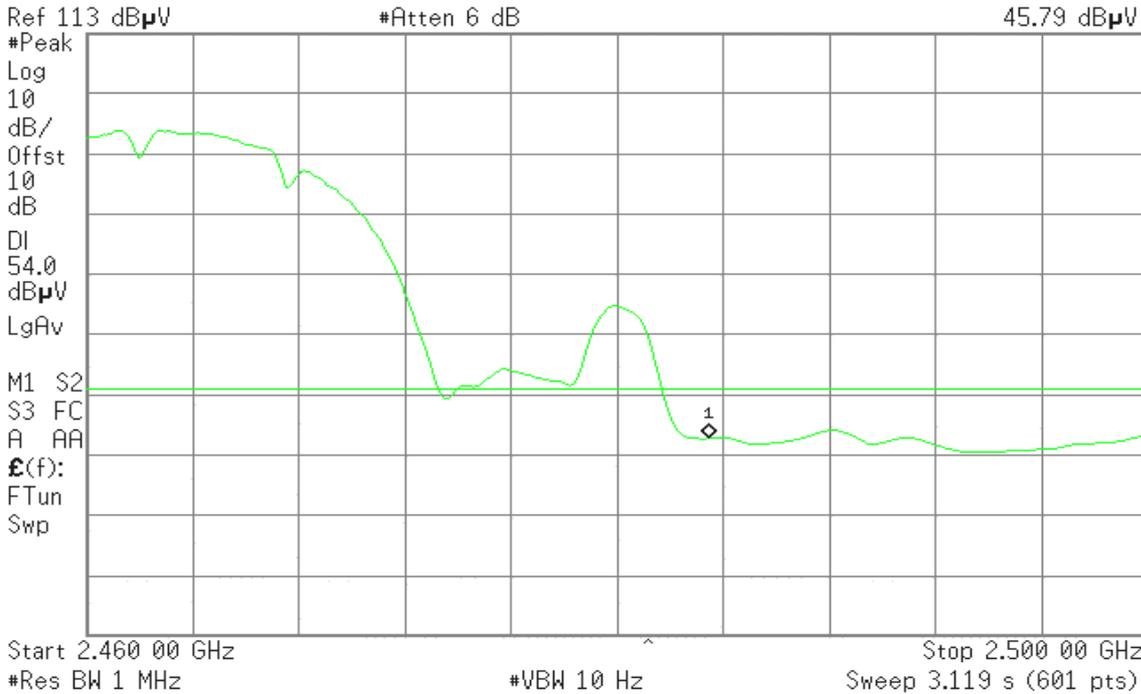
Detector mode: Average

Polarity: Vertical

Agilent 16:30:51 Sep 20, 2007

T

Mkr1 2.483 50 GHz  
45.79 dB $\mu$ V





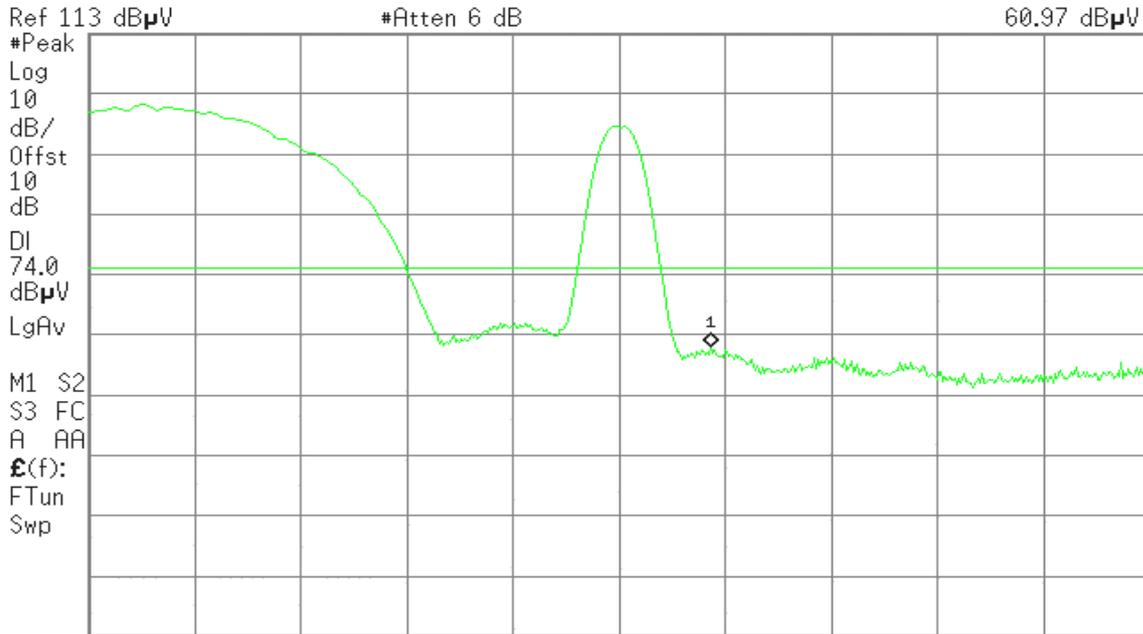
Detector mode: Peak

Polarity: Horizontal

Agilent 16:23:05 Sep 20, 2007

T

Mkr1 2.483 50 GHz  
60.97 dBμV



Start 2.460 00 GHz Stop 2.500 00 GHz  
#Res BW 1 MHz #VBW 1 MHz #Sweep 100 ms (601 pts)

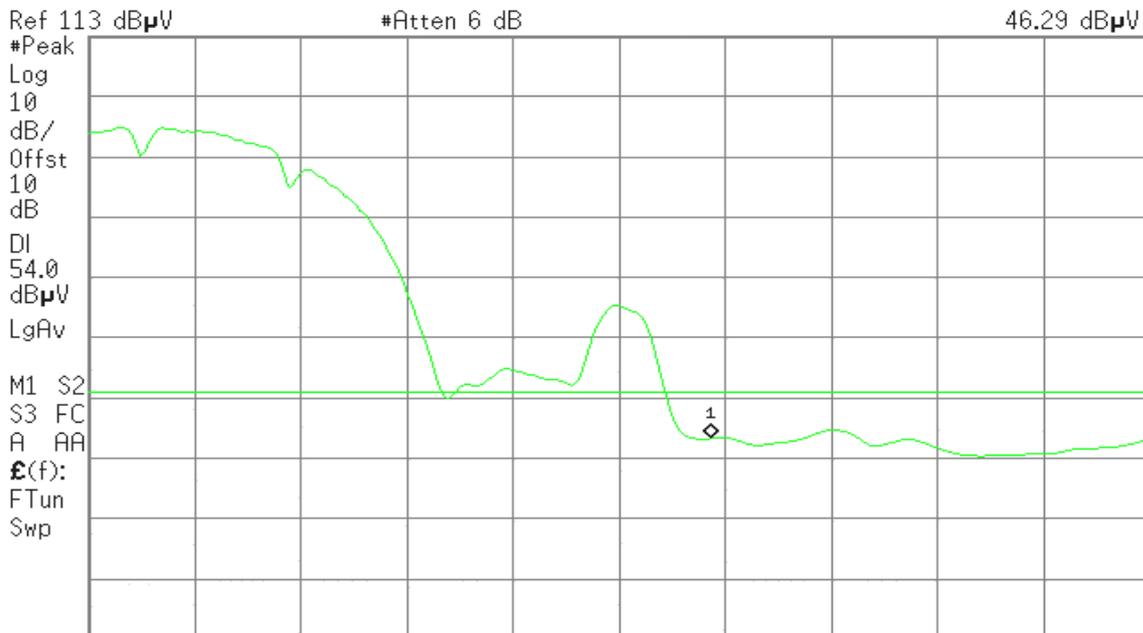
Detector mode: Average

Polarity: Horizontal

Agilent 16:22:42 Sep 20, 2007

T

Mkr1 2.483 50 GHz  
46.29 dBμV



Start 2.460 00 GHz Stop 2.500 00 GHz  
#Res BW 1 MHz #VBW 10 Hz Sweep 3.119 s (601 pts)



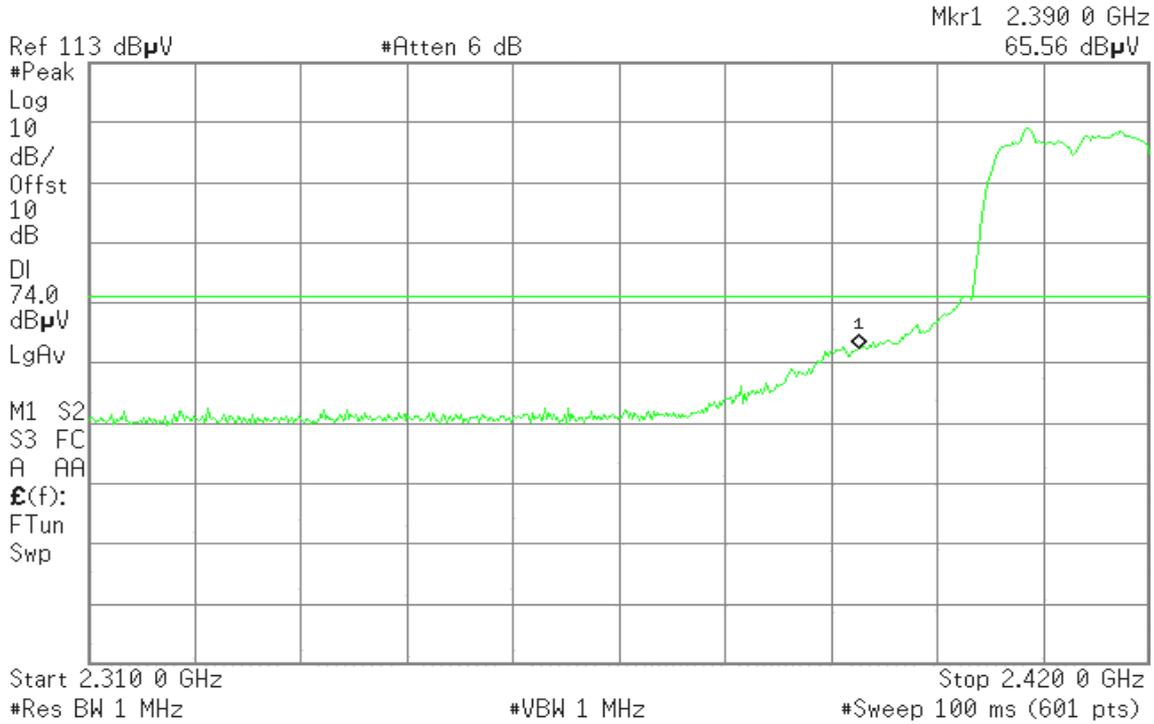
### Band Edges (IEEE 802.11g / CH Low + BT / CH High)

Detector mode: Peak

Polarity: Vertical

Agilent 16:13:17 Sep 20, 2007

T

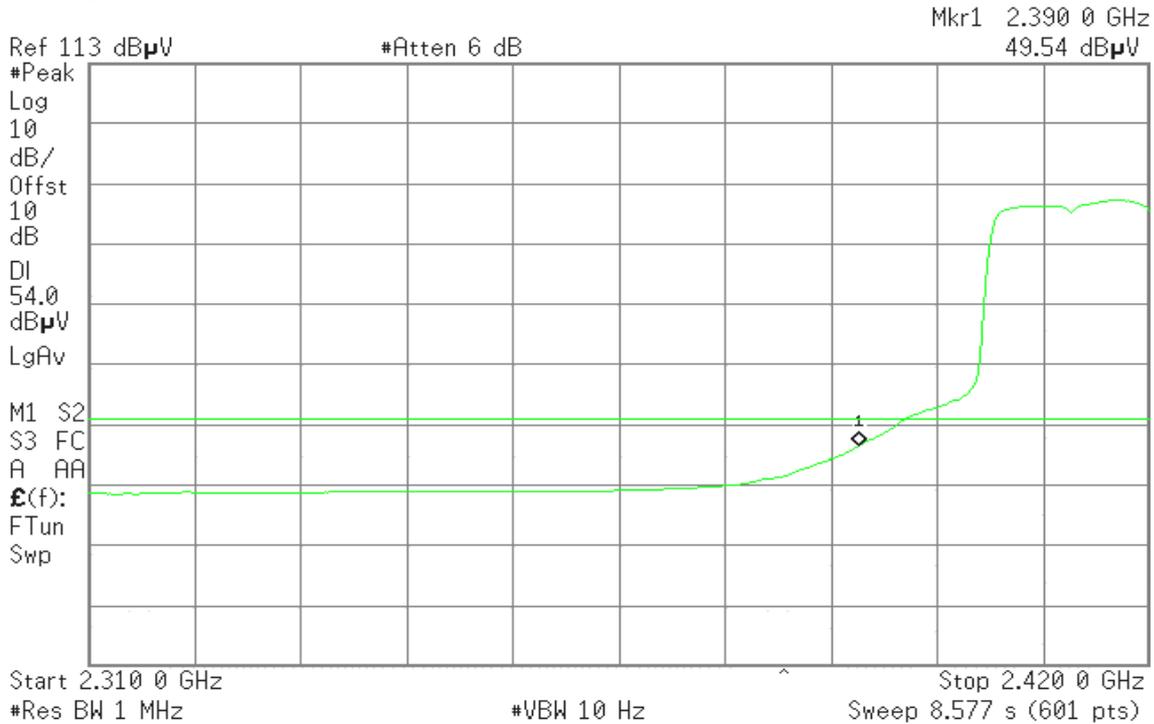


Detector mode: Average

Polarity: Vertical

Agilent 16:12:56 Sep 20, 2007

T





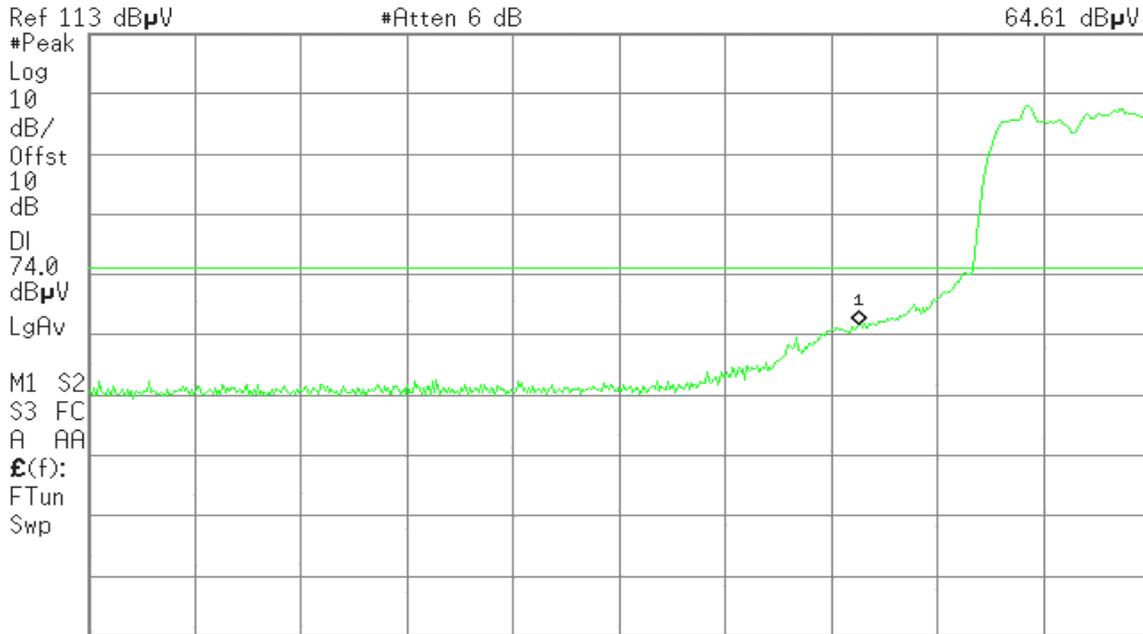
Detector mode: Peak

Polarity: Horizontal

Agilent 16:16:53 Sep 20, 2007

T

Mkr1 2.390 0 GHz  
64.61 dBµV



Start 2.310 0 GHz Stop 2.420 0 GHz  
#Res BW 1 MHz #VBW 1 MHz #Sweep 100 ms (601 pts)

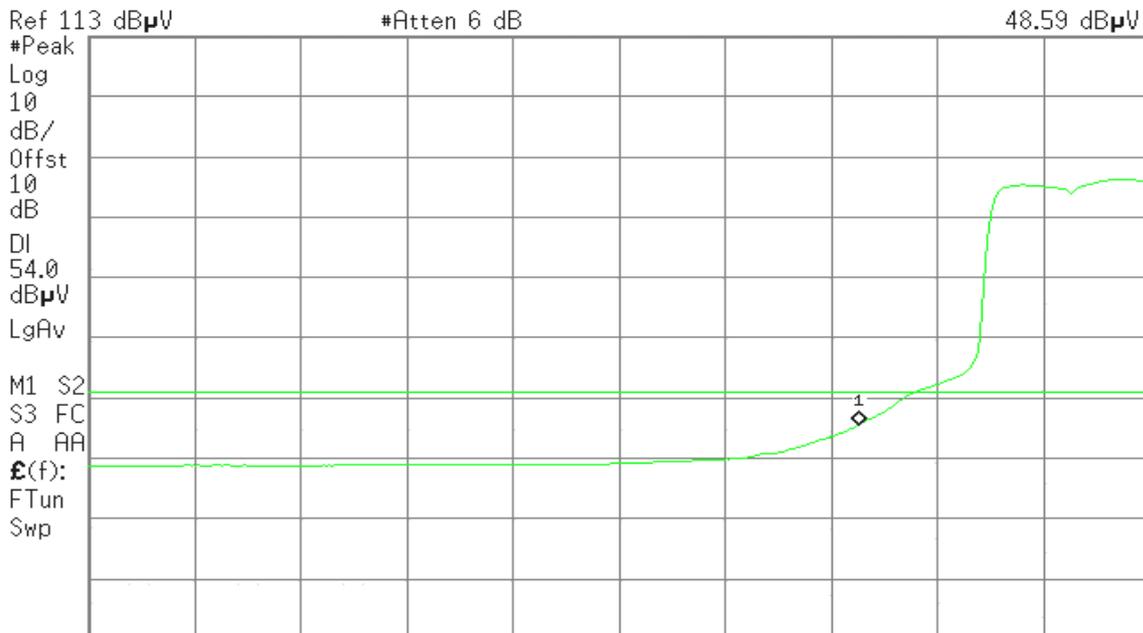
Detector mode: Average

Polarity: Horizontal

Agilent 16:16:35 Sep 20, 2007

T

Mkr1 2.390 0 GHz  
48.59 dBµV



Start 2.310 0 GHz Stop 2.420 0 GHz  
#Res BW 1 MHz #VBW 10 Hz Sweep 8.577 s (601 pts)



### Band Edges (IEEE 802.11g / CH High + BT / CH High)

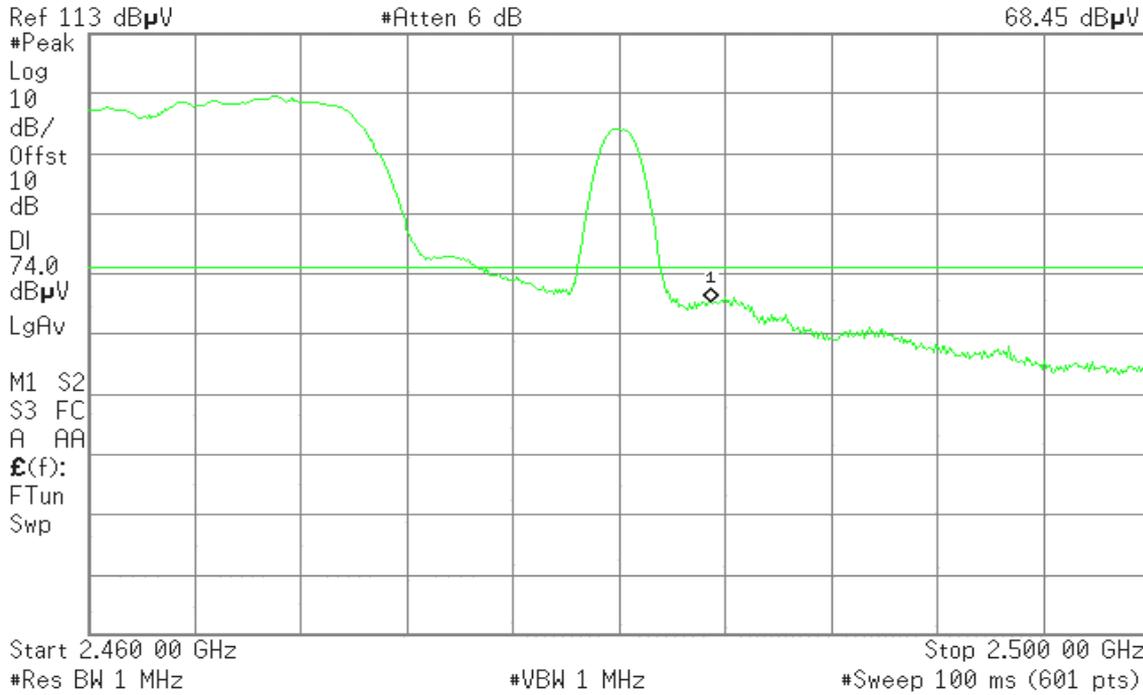
Detector mode: Peak

Polarity: Vertical

Agilent 16:29:47 Sep 20, 2007

T

Mkr1 2.483 50 GHz  
68.45 dB $\mu$ V



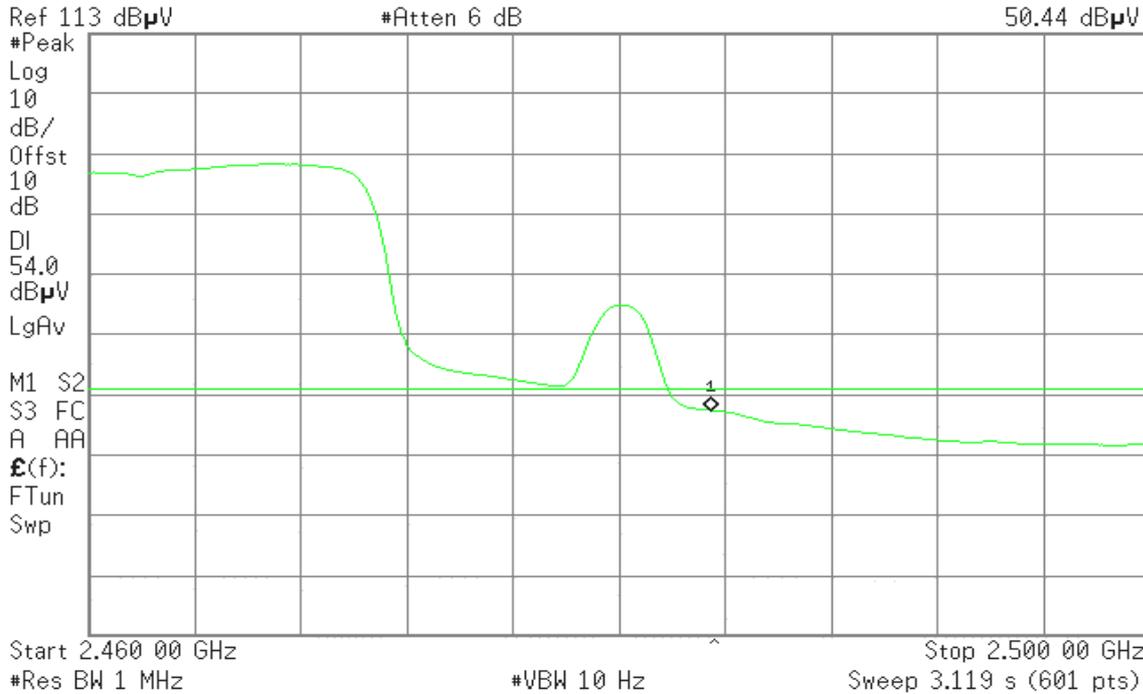
Detector mode: Average

Polarity: Vertical

Agilent 16:29:27 Sep 20, 2007

T

Mkr1 2.483 50 GHz  
50.44 dB $\mu$ V





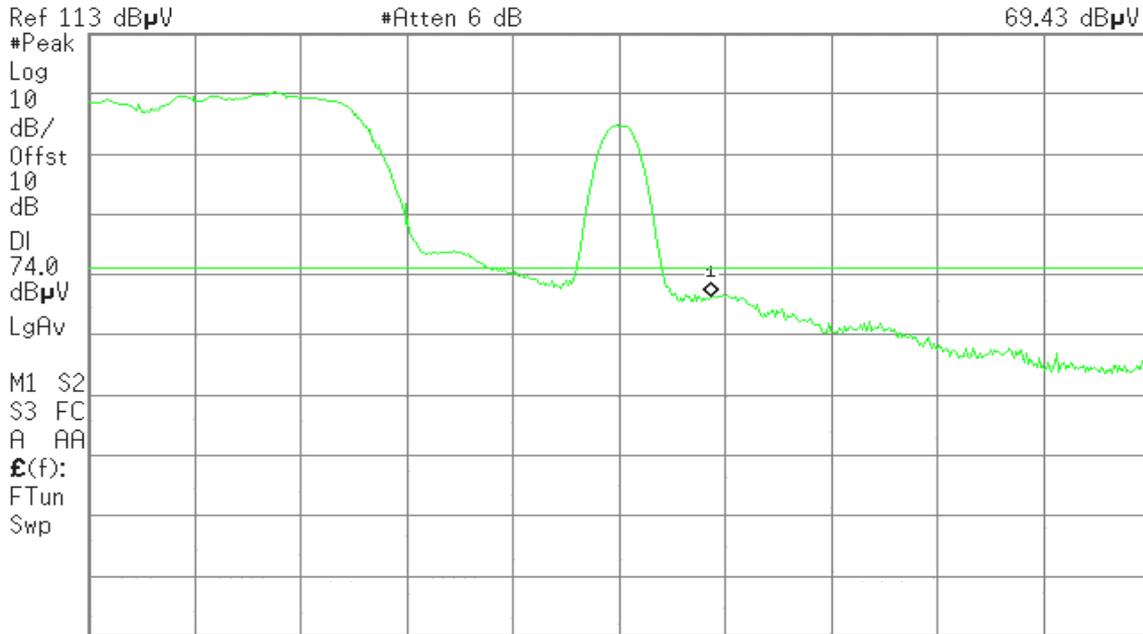
Detector mode: Peak

Polarity: Horizontal

Agilent 16:24:06 Sep 20, 2007

L

Mkr1 2.483 50 GHz  
69.43 dBμV



Start 2.460 00 GHz Stop 2.500 00 GHz  
#Res BW 1 MHz #VBW 1 MHz #Sweep 100 ms (601 pts)

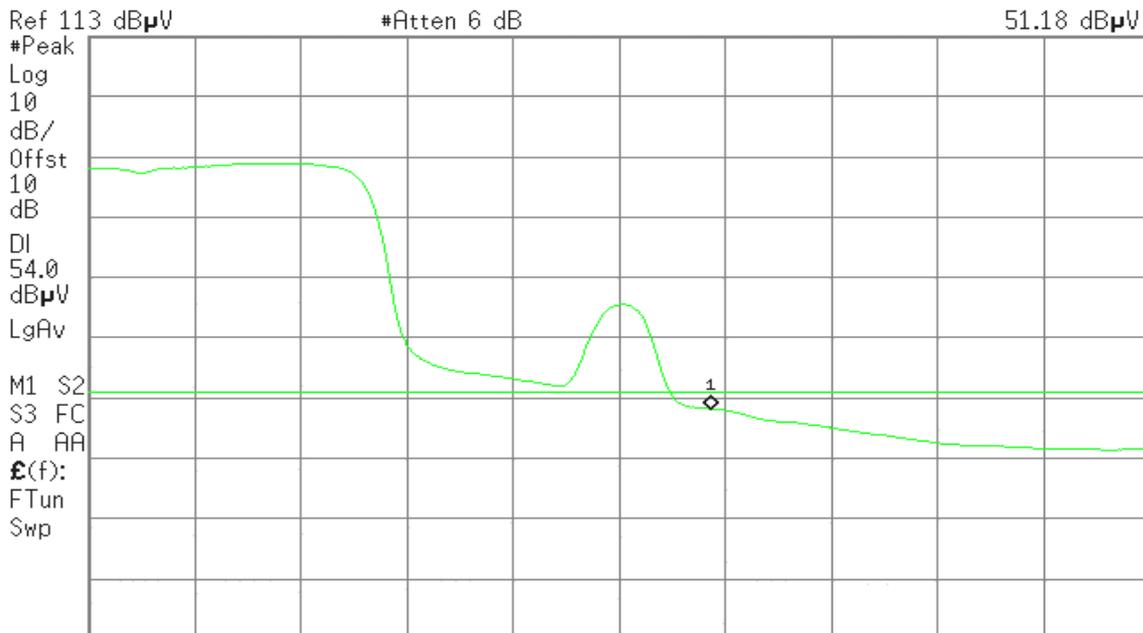
Detector mode: Average

Polarity: Horizontal

Agilent 16:24:29 Sep 20, 2007

T

Mkr1 2.483 50 GHz  
51.18 dBμV



Start 2.460 00 GHz Stop 2.500 00 GHz  
#Res BW 1 MHz #VBW 10 Hz Sweep 3.119 s (601 pts)



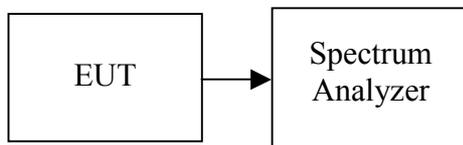
## 7.16 SPURIOUS EMISSIONS

### 7.16.1 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 100 kHz.

Measurements are made over the 30MHz to 26GHz range with the transmitter set to the lowest, middle, and highest channels.

#### TEST RESULTS

*No non-compliance noted*

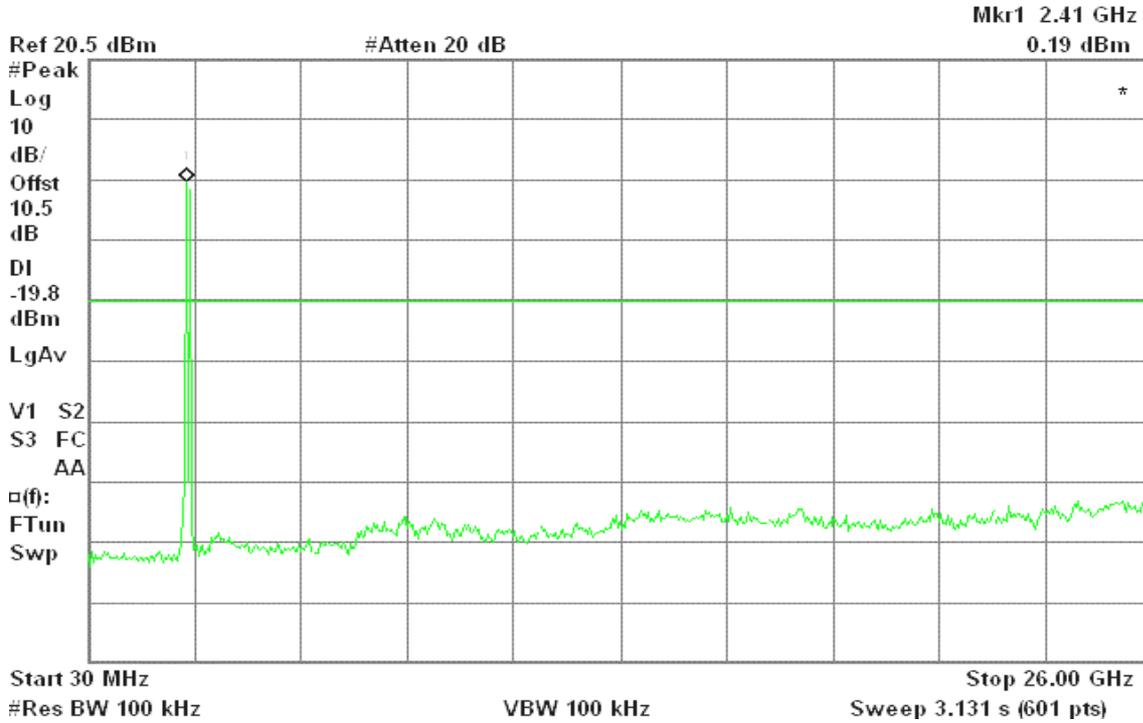


Test Plot

IEEE 802.11b / CH Low + BT / CH High

Agilent 11:54:03 Sep 28, 2007

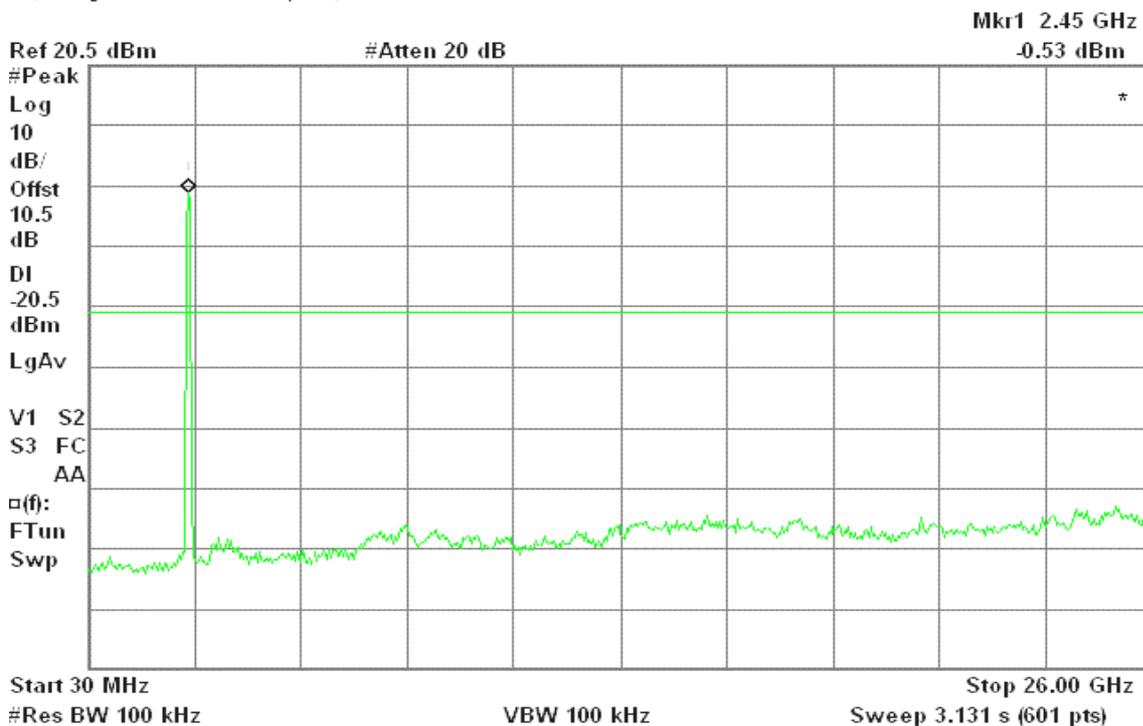
R T



IEEE 802.11b / CH Mid + BT / CH High

Agilent 11:54:53 Sep 28, 2007

R T

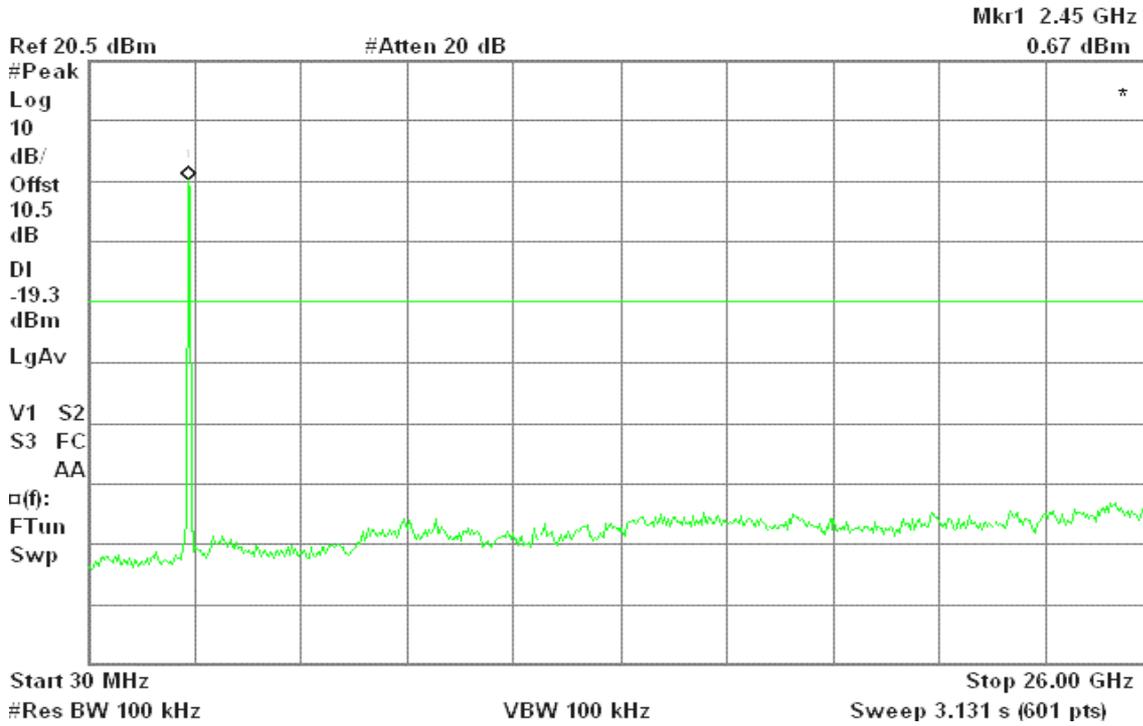




### IEEE 802.11b / CH High + BT / CH High

Agilent 11:55:43 Sep 28, 2007

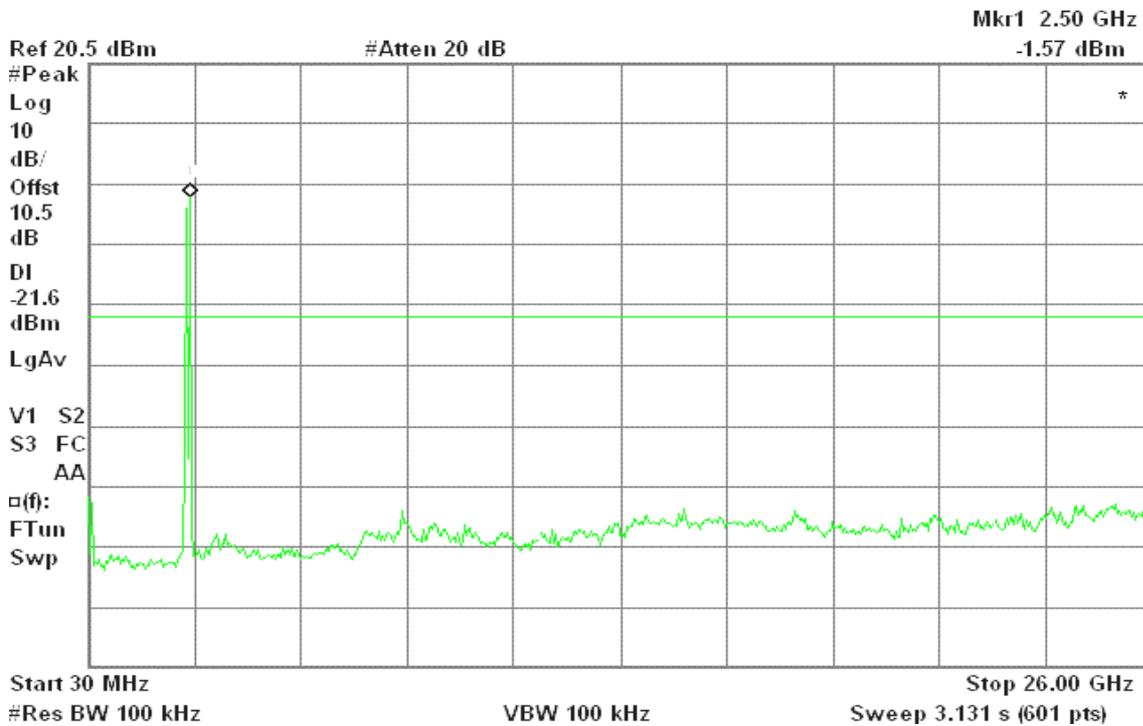
R T



### IEEE 802.11g / CH Low + BT / CH High

Agilent 11:56:54 Sep 28, 2007

R T

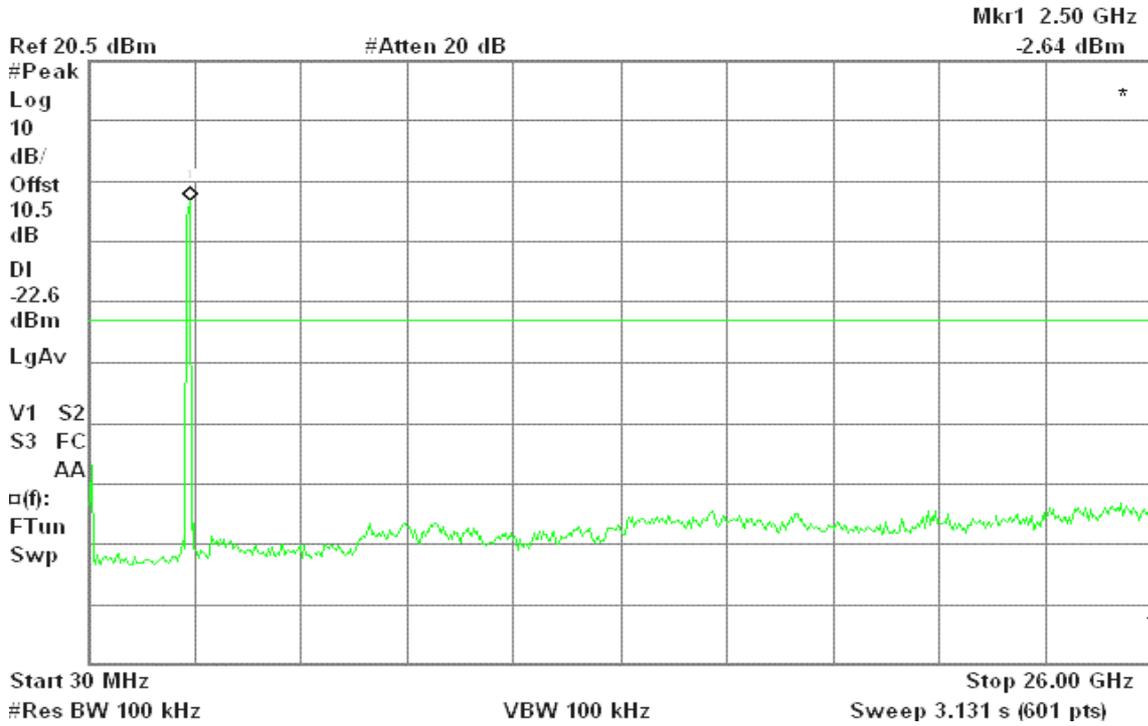




### IEEE 802.11g / CH Mid + BT / CH High

Agilent 11:57:43 Sep 28, 2007

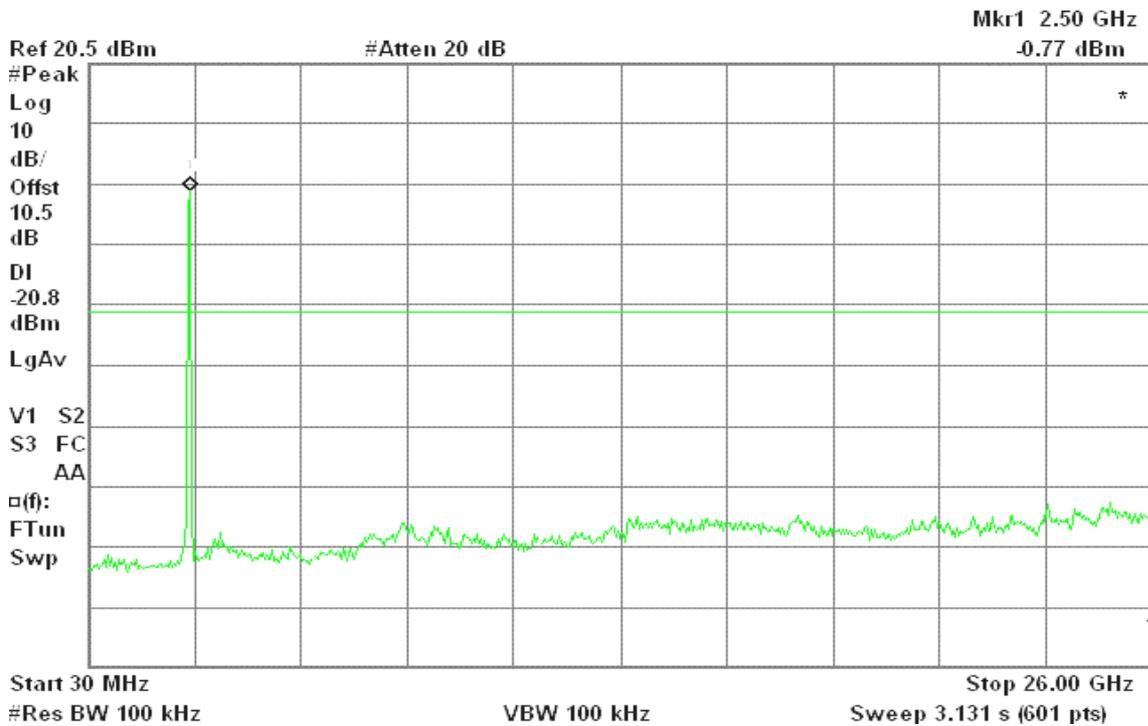
R T



### IEEE 802.11g / CH High + BT / CH High

Agilent 11:58:28 Sep 28, 2007

R T





### 7.16.2 RADIATED EMISSIONS

#### LIMIT

1. According to §15.209(a), 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 ( $\mu\text{V/m}$ )	Measurement Distance (m)
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

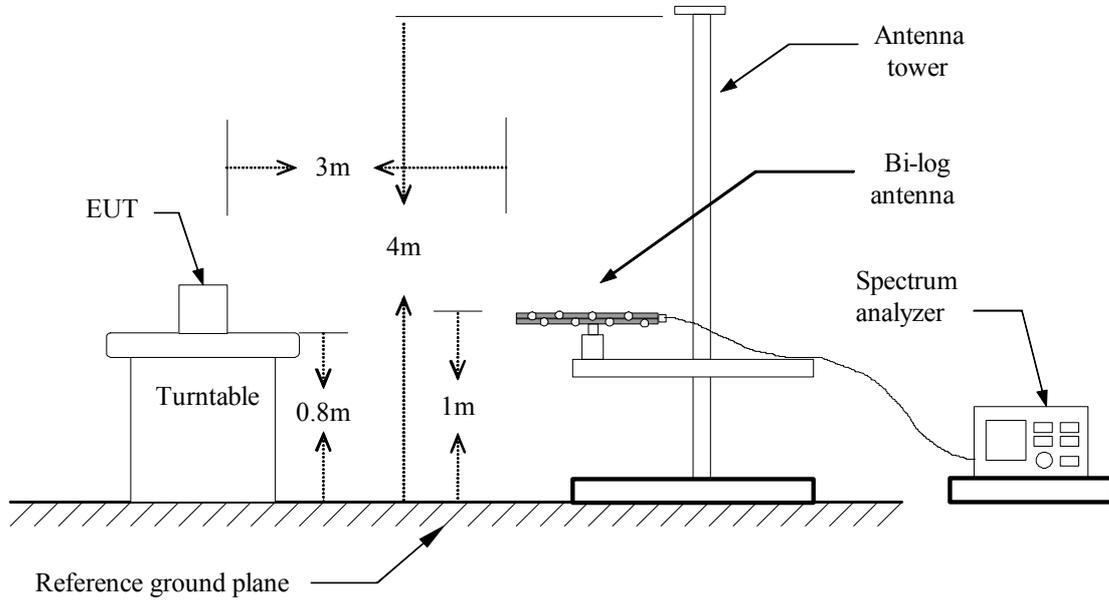
*Remark: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of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

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

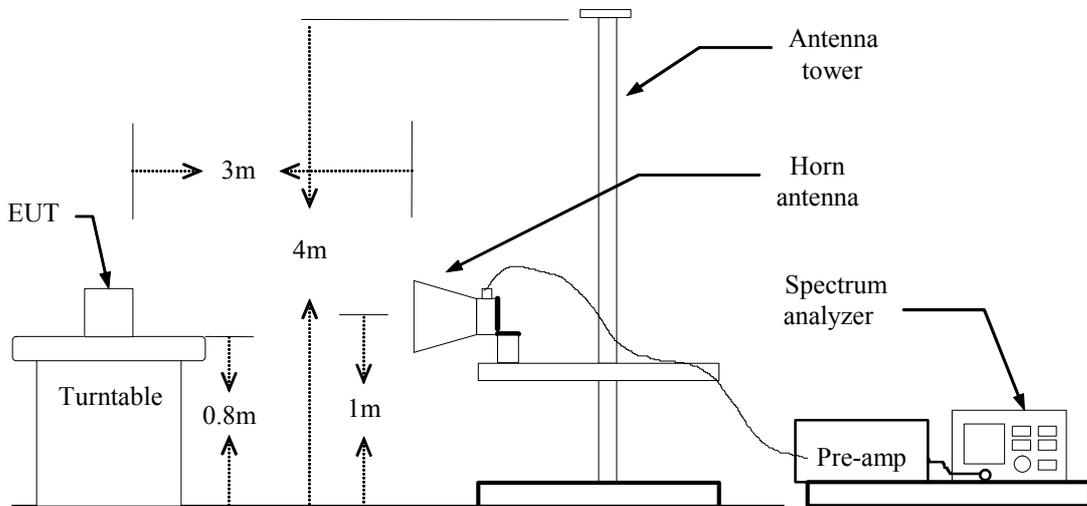
Frequency (MHz)	Field Strength ( $\mu\text{V/m}$ at 3-meter)	Field Strength (dB $\mu\text{V/m}$ at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

### 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

No non-compliance noted

#### Below 1GHz

Operation Mode: Normal Link

Test Date: August 11, 2007

Temperature: 25°C

Tested by: Steven Young

Humidity: 55% RH

Polarity: Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
144.78	V	46.17	-13.88	32.30	43.50	-11.20	Peak
191.67	V	45.02	-14.69	30.33	43.50	-13.17	Peak
240.17	V	39.43	-14.62	24.81	46.00	-21.19	Peak
666.97	V	37.63	-4.89	32.74	46.00	-13.26	Peak
744.57	V	31.94	-4.18	27.76	46.00	-18.24	Peak
791.45	V	33.33	-3.20	30.12	46.00	-15.88	Peak
144.78	H	44.64	-13.88	30.77	43.50	-12.73	Peak
191.67	H	45.02	-14.69	30.33	43.50	-13.17	Peak
304.83	H	40.01	-12.17	27.85	46.00	-18.15	Peak
666.97	H	39.43	-4.89	34.54	46.00	-11.46	Peak
791.45	H	34.58	-3.20	31.38	46.00	-14.62	Peak
912.70	H	31.38	-1.80	29.58	46.00	-16.42	Peak

**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/quasi-peak detector mode.
3. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit or as required by the applicant.
4. 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.
5. Margin (dB) = Remark result (dBuV/m) – Quasi-peak limit (dBuV/m).



Operation Mode: TX / IEEE 802.11b / CH Low +  
BT / CH High

Test Date: September 20, 2007

Temperature: 25°C

Tested by: Steven Young

Humidity: 55 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1616.67	V	59.13	---	-8.81	50.31	---	74.00	54.00	-3.69	Peak
4825.00	V	46.35	---	0.55	46.90	---	74.00	54.00	-7.10	Peak
N/A										
1720.00	H	57.95	---	-7.79	50.17	---	74.00	54.00	-3.83	Peak
4825.00	H	44.49	---	0.55	45.04	---	74.00	54.00	-8.96	Peak
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
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. 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.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / IEEE 802.11b / CH Mid + BT / CH High

Test Date: September 20, 2007

Temperature: 25°C

Tested by: Steven Young

Humidity: 55 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1420.00	V	60.27	---	-10.10	50.16	---	74.00	54.00	-3.84	Peak
4875.00	V	46.07	---	0.60	46.67	---	74.00	54.00	-7.33	Peak
4958.33	V	44.47	---	0.68	45.15	---	74.00	54.00	-8.85	Peak
N/A										
1586.67	H	60.00	---	-9.11	50.88	---	74.00	54.00	-3.12	Peak
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
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. 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.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / IEEE 802.11b / CH High +  
BT / CH High

Test Date: September 20, 2007

Temperature: 25°C

Tested by: Steven Young

Humidity: 55 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1350.00	V	60.48	---	-10.22	50.26	---	74.00	54.00	-3.74	Peak
4925.00	V	45.23	---	0.65	45.89	---	74.00	54.00	-8.11	Peak
N/A										
1720.00	H	59.12	---	-7.79	51.33	---	74.00	54.00	-2.67	Peak
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
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. 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.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / IEEE 802.11g / CH Low  
+ BT / CH High

Test Date: September 20, 2007

Temperature: 25°C

Tested by: Steven Young

Humidity: 55 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1640.00	V	59.36	---	-8.58	50.78	---	74.00	54.00	-3.22	Peak
N/A										
1593.33	H	59.25	---	-9.05	50.20	---	74.00	54.00	-3.80	Peak
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
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. 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.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / IEEE 802.11g / CH Mid + BT / CH High

Test Date: September 20, 2007

Temperature: 25°C

Tested by: Steven Young

Humidity: 55 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1600.00	V	60.14	---	-8.98	51.16	---	74.00	54.00	-2.84	Peak
N/A										
1613.33	H	59.64	---	-8.85	50.80	---	74.00	54.00	-3.20	Peak
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
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. 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.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / IEEE 802.11g / CH High  
+ BT / CH High

Test Date: September 20, 2007

Temperature: 25°C

Tested by: Steven Young

Humidity: 55 % RH

Polarity: Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1550.00	V	60.36	---	-9.48	50.88	---	74.00	54.00	-3.12	Peak
3283.33	V	44.75	---	-2.09	42.66	---	74.00	54.00	-11.34	Peak
N/A										
1663.33	H	59.92	---	-8.35	51.57	---	74.00	54.00	-2.43	Peak
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
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. 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.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



## 7.17 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.

### Test Configuration

See test photographs attached in Appendix II 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 7, 2007**Temperature:** 28°C**Tested by:** Arno Hsieh**Humidity:** 54% RH

Freq. (MHz)	QP Reading (dBuV)	AV Reading (dBuV)	Corr. factor (dB)	QP Result (dBuV)	AV Result (dBuV)	QP Limit (dBuV)	AV Limit (dBuV)	QP Margin (dB)	AV Margin (dB)	Note
0.37	39.91	23.80	0.20	40.11	24.00	58.50	48.50	-18.39	-24.50	L1
0.53	44.10	29.53	0.10	44.20	29.63	56.00	46.00	-11.80	-16.37	L1
0.85	42.45	26.95	0.10	42.55	27.05	56.00	46.00	-13.45	-18.95	L1
1.13	42.71	28.35	0.11	42.82	28.46	56.00	46.00	-13.18	-17.54	L1
2.05	36.83	23.89	0.20	37.03	24.09	56.00	46.00	-18.97	-21.91	L1
30.00	29.90	20.77	1.90	31.80	22.67	60.00	50.00	-28.20	-27.33	L1
0.17	42.71	27.32	0.20	42.91	27.52	64.96	54.96	-22.05	-27.44	L2
0.53	42.60	26.68	0.10	42.70	26.78	56.00	46.00	-13.30	-19.22	L2
0.79	37.69	21.76	0.10	37.79	21.86	56.00	46.00	-18.21	-24.14	L2
1.63	35.85	22.81	0.16	36.01	22.97	56.00	46.00	-19.99	-23.03	L2
2.63	35.83	22.00	0.20	36.03	22.20	56.00	46.00	-19.97	-23.80	L2
7.53	35.95	22.61	0.47	36.42	23.08	60.00	50.00	-23.58	-26.92	L2

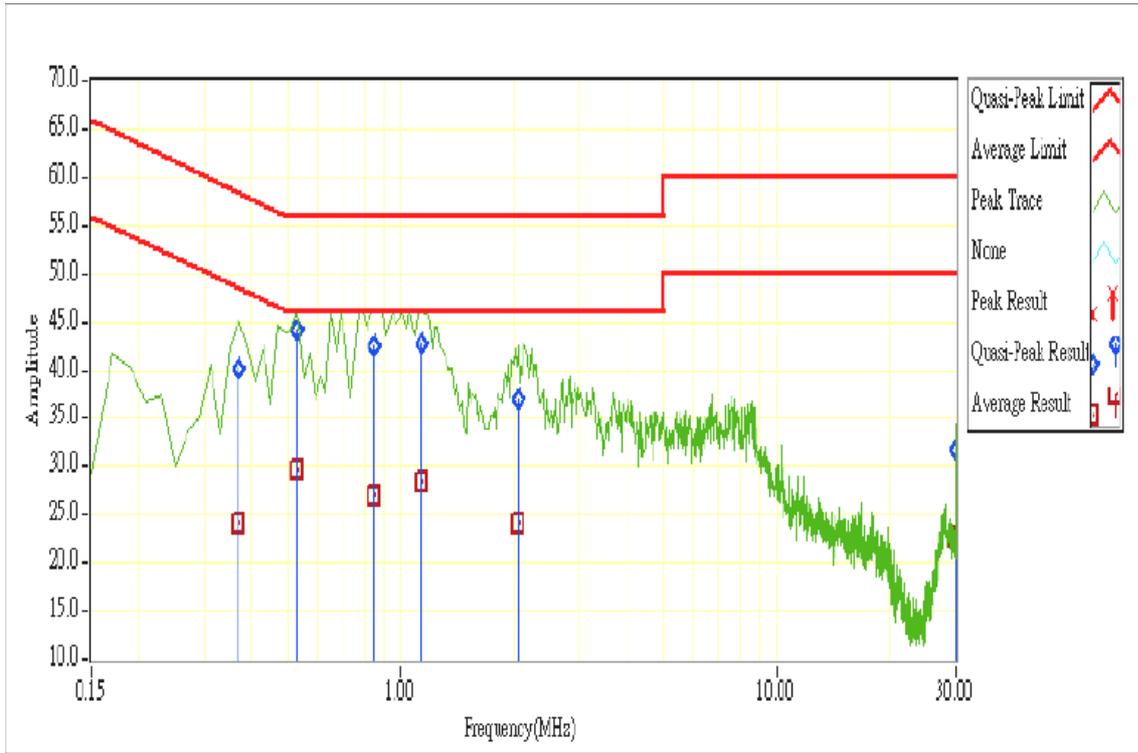
***Remark:***

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 and 30MHz was 10kHz; the IF bandwidth of Test Receiver between 0.15MHz and 30MHz was 9kHz;*
4. *L1 = Line One (Live Line) / L2 = Line Two (Neutral Line)*



### Test Plots

#### Conducted emissions (Line 1)



#### Conducted emissions (Line 2)

