

## FCC TEST REPORT

for

802.11 b/g SPI Card

MODEL: WLC700GC

Test Report Number:

SZ071011B02-RP

Issued for

**CHUNG NAM ELECTRONICS CO., LTD**

**20/F, Chung Nam Building, No. 1 Lockhart Road, Wanchai, Hong Kong**

Issued by:

**COMPLIANCE CERTIFICATION SERVICES (SHENZHEN) INC.**

**NO. 5, JINAO INDUSTRIAL PARK, NO. 35 JUKENG ROAD,**

**DASHUIKENG VILLAGE, GUANLAN TOWN, BAOAN**

**DISTRICT, SHENZHEN, CHINA**

**TEL: 86-755-28055000**

**FAX: 86-755-28055221**

**Issued Date: November 09, 2007**



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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	November 09, 2007	Initial Issue	ALL	Clinton Kao



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# 1 TEST CERTIFICATION

**Product:** 802.11 b/g SPI Card  
**Model:** WLC700GC  
**Brand:** N/A  
**Tested:** October 11-November 09, 2007  
**Applicant:** CHUNG NAM ELECTRONICS CO., LTD  
 20/F, Chung Nam Building, No. 1 Lockhart Road, Wanchai, Hong Kong  
**Manufacturer:** CHUNG NAM ELECTRONICS CO., LTD  
 20/F, Chung Nam Building, No. 1 Lockhart Road, Wanchai, Hong Kong

APPLICABLE STANDARDS			
Standard	Test Type	Standard	Test Type
15.207(a)	Power Line Conducted Emissions	15.247(d) 15.209(a)	● Spurious Emissions ● Conducted Measurement ● Radiated Emissions
15.247(a)(2)	6dB Bandwidth Measurement	15.247(b)(3) 15.247(b)(4)	Peak Power Measurement
15.247(d)	Band Edges Measurement	15.247(e)	Peak Power Spectral Density

DEVIATION FROM APPLICABLE STANDARD
None

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.

**Approved by:**

**Reviewed by:**

Clinton Kao  
 Manager  
 Compliance Certification Service Inc.

Vincent Yao  
 Assistant manager  
 Compliance Certification Service Inc.



## 2 TEST RESULT SUMMARY

APPLICABLE STANDARDS			
Standard	Test Type	Result	Remark
15.247(a)(2)	6dB Bandwidth Measurement	Pass	Meet the requirement of limit.
15.247(b)(3) 15.247(b)(4)	Peak Power Measurement	Pass	Meet the requirement of limit.
15.247(d)	Band Edges Measurement	Pass	Meet the requirement of limit.
15.247(e)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.247(d) 15.209(a)	<ul style="list-style-type: none"><li>● Spurious Emissions</li><li>● Conducted Measurement</li><li>● Radiated Emissions</li></ul>	Pass	Meet the requirement of limit.
15.207(a)	Power line Conducted Emissions	Pass	Meet the requirement of limit.

Note: 1. The test result judgment is decided by the limit of test standard  
2. The information of measurement uncertainty is available upon the customer's request.



### 3 EUT DESCRIPTION

<b>Product</b>	802.11 b/g SPI Card
<b>Trade Name</b>	N/A
<b>Model Number</b>	WLC700GC
<b>Model Discrepancy</b>	N/A
<b>Serial Number</b>	N/A
<b>Frequency Range</b>	IEEE 802.11b mode: 2412 ~ 2462 MHz IEEE 802.11g mode: 2412 ~ 2462 MHz
<b>Transmit Power</b>	IEEE 802.11b mode: 10.03dBm IEEE 802.11g mode: 11.65dBm
<b>Modulation Technique</b>	802.11b: DSSS (CCK; DQPSK; DBPSK) 802.11g: OFDM
<b>Transmit Data Rate</b>	802.11b: 11Mbps(CCK) with fall back rates of 5.5, 2, and 1Mbps 802.11g: 54Mbps with fall back rates of 48/36/24/18/12/9/6 Mbps (OFDM)
<b>Number of Channels</b>	IEEE 802.11b/g :11 Channels
<b>Antenna Specification</b>	Chip antenna with 2dBi gain (Max)

**Note:** 1. The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.

2. This submittal(s) (test report) is intended for FCC ID: Q72WLC700GC filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.



## **4 TEST METHODOLOGY**

### **4.1. DESCRIPTION OF TEST MODES**

The EUT has been tested under operating condition.

Software used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

IEEE802.11b: Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with 11Mbps highest data rate (worst case) are chosen for the final testing.

IEEE802.11g: Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with 6Mbps data rate (the worst case) are chosen for the final testing.



## 5 SETUP OF EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Equipment	Model No.	Serial No.	FCC ID	Trade Name	Data Cable	Power Cord
1	Notebook	SATALLITEA100	Y6317320Q	DoC	TOSHIBA	N/A	Unshielded 1.8m

**Note:**

- 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.

### 5.2. CONFIGURATION OF SYSTEM UNDER TEST

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



## 6 FACILITIES AND ACCREDITATIONS

### 6.1. FACILITIES

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

**No. 5, Jinao industrial park, No.35 Jukeng Road, Dashuikeng Village, Guanlan Town, Baoan District, Shenzhen, China**

The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

### 6.2. ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

<b>USA</b>	FCC
<b>Japan</b>	VCCI
<b>Canada</b>	INDUSTRY CANADA,
<b>Taiwan</b>	TAF,BSMI

Copies of granted accreditation certificates are available for downloading from our web site, <http://www.ccsemc.com>.

### 6.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in ETR 028:

Measurement	Frequency		Uncertainty
<b>Conducted emissions</b>	9kHz~30MHz		± 3.5863
<b>Radiated emissions</b>	Horizontal	30MHz ~ 200MHz	± 4.7685
		200MHz ~1000MHz	± 4.9330
	Vertical	30MHz ~ 200MHz	± 5.0411
		200MHz ~1000MHz	± 4.9262

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



## 7 LIMITS AND RESULTS

### 7.1. POWER LINE CONDUCTED EMISSIONS MEASUREMENT

#### 7.1.1. LIMITS OF CONDUCTED EMISSIONS MEASUREMENT

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 µH/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 (dBµV)	
	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

**NOTE:**

- (1) The lower limit shall apply at the transition frequencies.
- (2) The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
- (3) All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

### TEST INSTRUMENTS

Conducted Emission Test Site G				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
ESCI EMI TEST RECEIV.ESCI	ROHDE&SCHWARZ	1166.5950 03	100088	02/05/2008
LISN	EMCO	3825/2	1371	02/05/2008
LISN	EMCO	3825/2	8901-1459	02/05/2008

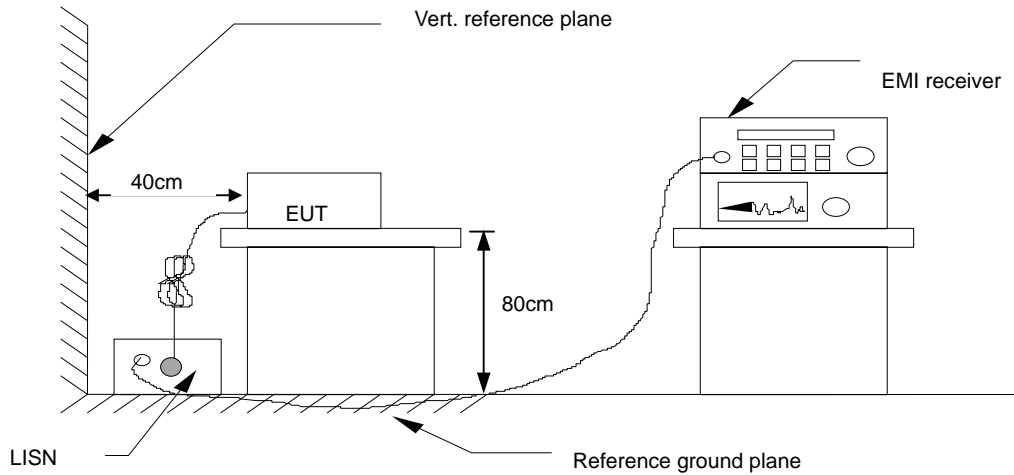
- NOTE:**
- 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
  - 2. N.C.R = No Calibration Request.



**7.1.2. TEST PROCEDURES** (please refer to measurement standard)

- The EUT and Support equipment, if needed, was placed on a non-conducted table, which is 0.8m above the ground plane and 0.4m away from the conducted wall.
- The test equipment EUT installed received AC main power, through a Line Impedance Stabilization Network (LISN), which supplied power source and was grounded to the ground plane. All support equipment power received from a second LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- The EUT test program was started. Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.
- The frequency range from 150 kHz to 30 MHz was searched. The test data of the worst-case condition(s) was recorded. Emission levels under limit 20dB were not recorded.

**7.1.3. TEST SETUP**



- For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

**7.1.4. Data Sample:**

Freq. (MHz)	Peak Raw (dBuV)	Q.P. Raw (dBuV)	Average Raw (dBuV)	Q.P. Limit (dBuV)	Average Limit (dBuV)	Q.P. Margin (dB)	Average Margin (dB)	Note
XX	38.10	36.01	31.18	60.00	50.00	-23.99	-18.82	L1

Frequency (MHz) = Emission frequency in MHz  
 Reading (dBuV) = Uncorrected Analyzer/Receiver reading  
 Correction factor (dB) = Insertion loss of LISN  
 Limit (dBuV) = Limit stated in standard  
 Margin (dB) = Reading (dBuV) – Limit (dBuV)  
 Note = Current carrying line of reading



7.1.5. TEST RESULTS

<b>Model No.</b>	WLC700GC	<b>Test Mode</b>	Normal Link
<b>Environmental Conditions</b>	25deg.C,43% RH, 991 hPa	<b>6dB BANDWIDTH</b>	9 kHz
<b>Tested by:</b>	Tom Gan		

FREQ MHz	PEAK RAW dBuV	Q.P. RAW dBuV	AVG RAW dBuV	Q.P. Limit dBuV	AVG Limit dBuV	Q.P. Margin dB	AVG Margin dB	NOTE
0.324	43.40	---	---	61.02	51.02	---	-7.62	L1
0.691	32.49	---	---	56.00	46.00	---	-13.51	L1
1.095	34.06	---	---	56.00	46.00	---	-11.94	L1
3.330	27.26	---	---	56.00	46.00	---	-18.74	L1
11.691	40.50	---	---	60.00	50.00	---	-9.50	L1
13.791	42.12	---	---	60.00	50.00	---	-7.88	L1
0.316	44.43	---	---	61.23	51.23	---	-6.80	L2
0.505	34.60	---	---	56.00	46.00	---	-11.40	L2
1.010	34.20	---	---	56.00	46.00	---	-11.80	L2
3.322	28.42	---	---	56.00	46.00	---	-17.58	L2
9.863	39.98	---	---	60.00	50.00	---	-10.02	L2
13.791	37.39	---	---	60.00	50.00	---	-12.61	L2

REMARKS: L1 = Line One (Live Line) / L2 = Line Two (Neutral Line)



## 7.2. SPURIOUS EMISSIONS MEASUREMENT

### 7.2.1. LIMITS OF CONDUCTED EMISSIONS MEASUREMENT

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)).

### 7.2.2. TEST INSTRUMENTS

Conducted Emissions Test Site				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	US44300399	02/05/2008

### 7.2.3. TEST PROCEDURE (please refer to measurement standard)

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.



### 7.2.4. TEST RESULTS

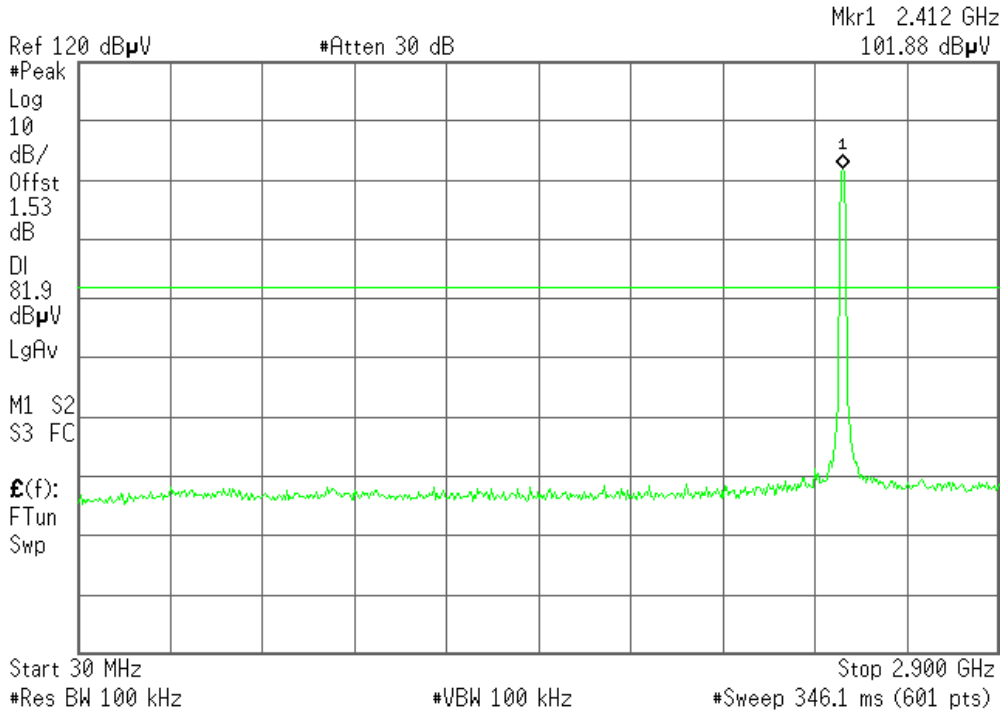
#### Test Plot (IEEE 802.11b mode)

#### CH Low

#### 30MHz ~ 2.9GHz

Agilent 11:43:18 Oct 30, 2007

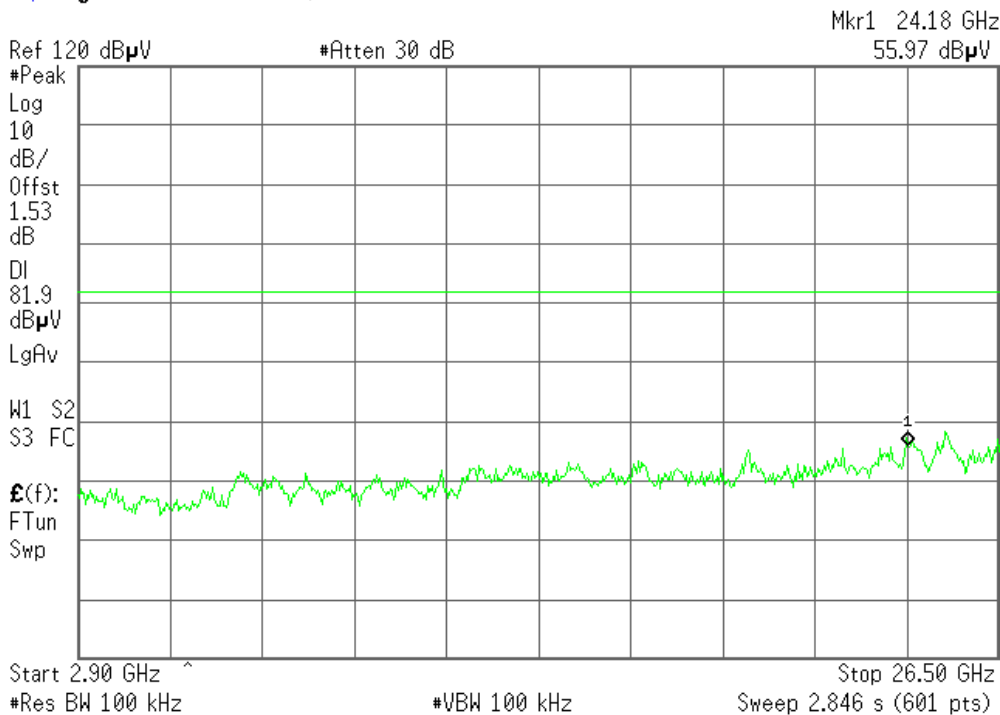
R T



#### 2.9GHz ~ 26.5GHz

Agilent 11:45:47 Oct 30, 2007

R T





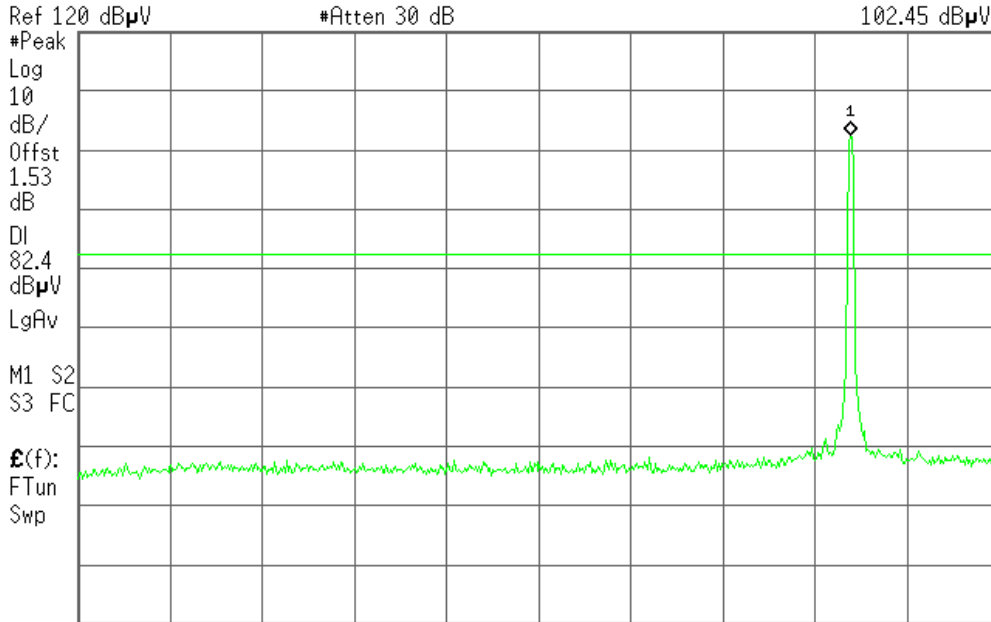
**CH Mid**

**30MHz ~ 2.9GHz**

\* Agilent 11:48:00 Oct 30, 2007

R T

Mkr1 2.436 GHz  
102.45 dBμV



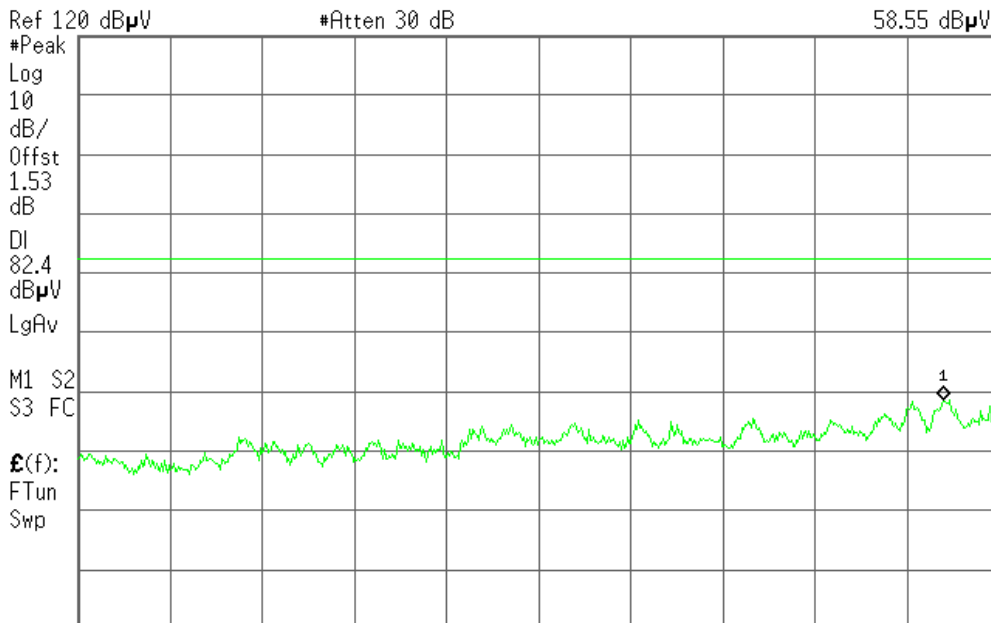
Start 30 MHz Stop 2.900 GHz  
#Res BW 100 kHz #VBW 100 kHz Sweep 346.1 ms (601 pts)

**2.9GHz ~ 26.5GHz**

\* Agilent 11:49:51 Oct 30, 2007

R T

Mkr1 25.08 GHz  
58.55 dBμV



Start 2.90 GHz Stop 26.50 GHz  
#Res BW 100 kHz #VBW 100 kHz Sweep 2.846 s (601 pts)





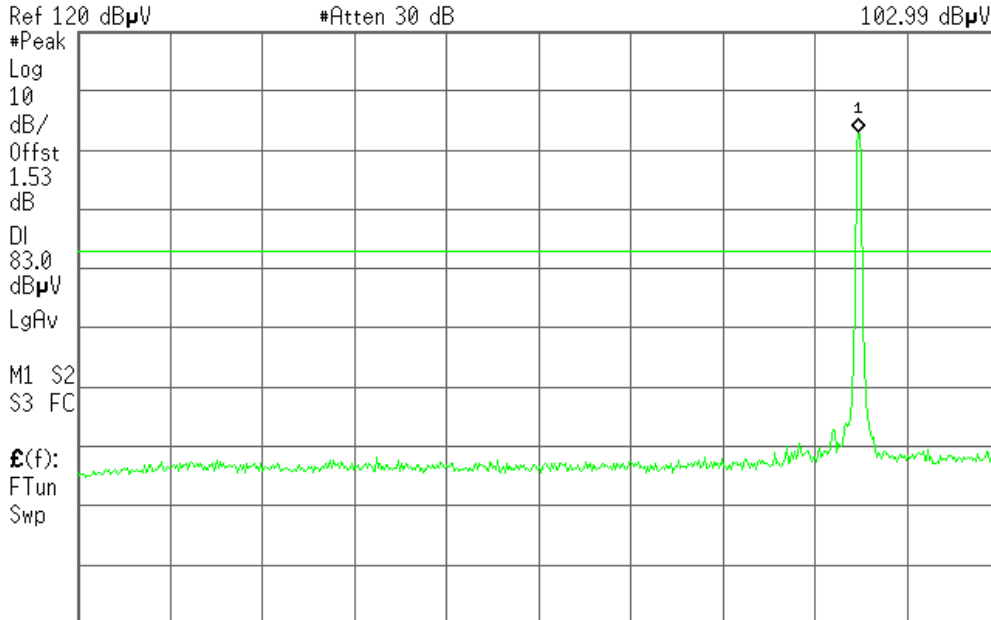
**CH High**

**30MHz ~ 2.9GHz**

\* Agilent 11:52:21 Oct 30, 2007

R T

Mkr1 2.460 GHz  
102.99 dB $\mu$ V



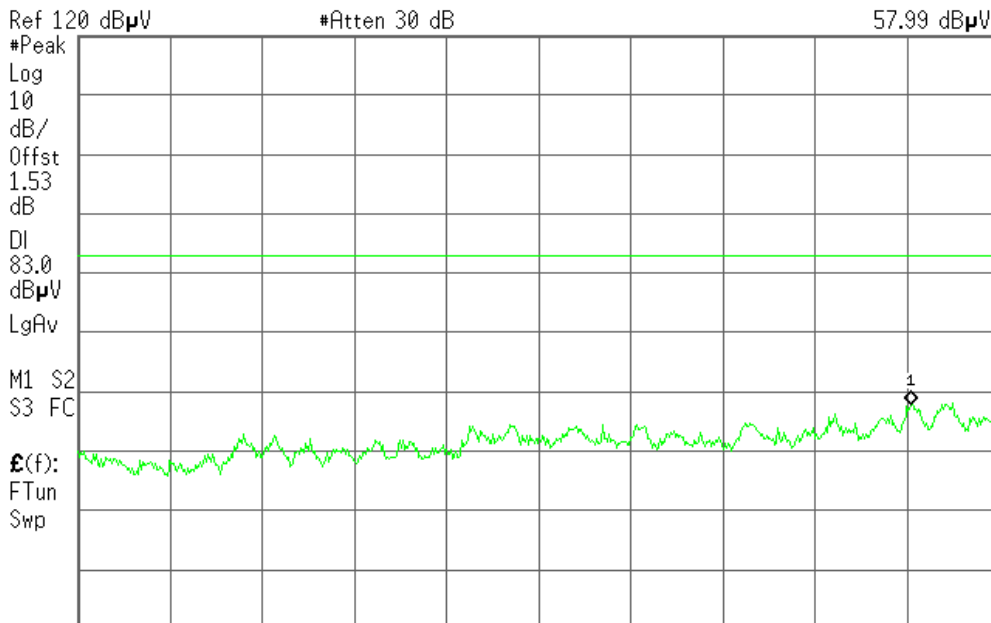
Start 30 MHz Stop 2.900 GHz  
#Res BW 100 kHz #VBW 100 kHz Sweep 346.1 ms (601 pts)

**2.9GHz ~ 26.5GHz**

\* Agilent 11:54:03 Oct 30, 2007

R T

Mkr1 24.26 GHz  
57.99 dB $\mu$ V



Start 2.90 GHz Stop 26.50 GHz  
#Res BW 100 kHz #VBW 100 kHz Sweep 2.846 s (601 pts)



**Test Plot (IEEE 802.11g mode)**

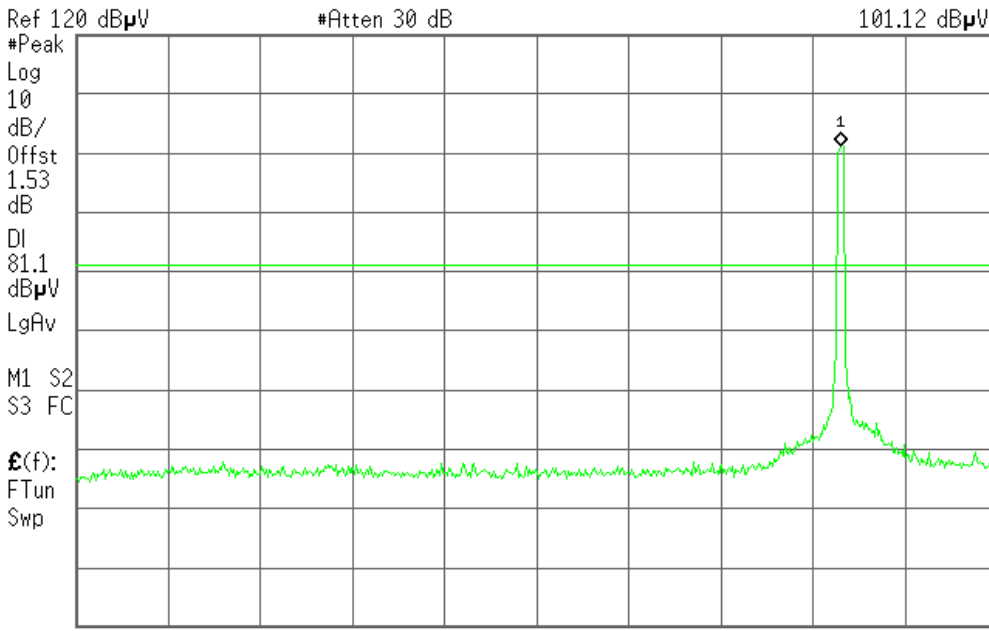
**CH Low**

**30MHz ~ 2.9GHz**

Agilent 11:57:21 Oct 30, 2007

R T

Mkr1 2.412 GHz  
101.12 dBμV



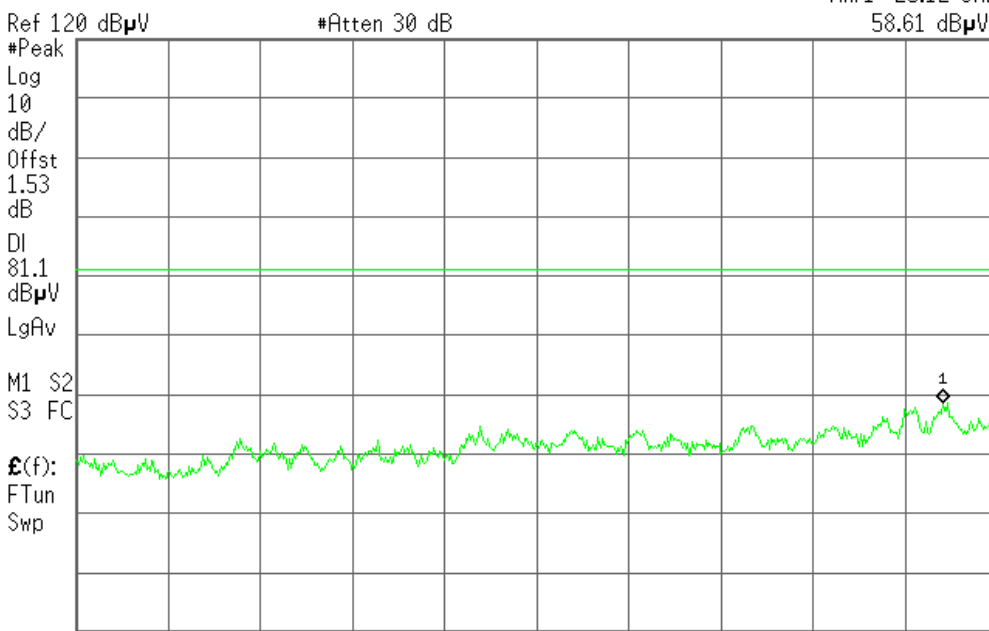
Start 30 MHz #Res BW 100 kHz #VBW 100 kHz Stop 2.900 GHz Sweep 346.1 ms (601 pts)

**2.9GHz ~ 26.5GHz**

Agilent 11:58:06 Oct 30, 2007

R T

Mkr1 25.12 GHz  
58.61 dBμV



Start 2.90 GHz #Res BW 100 kHz #VBW 100 kHz Stop 26.50 GHz Sweep 2.846 s (601 pts)



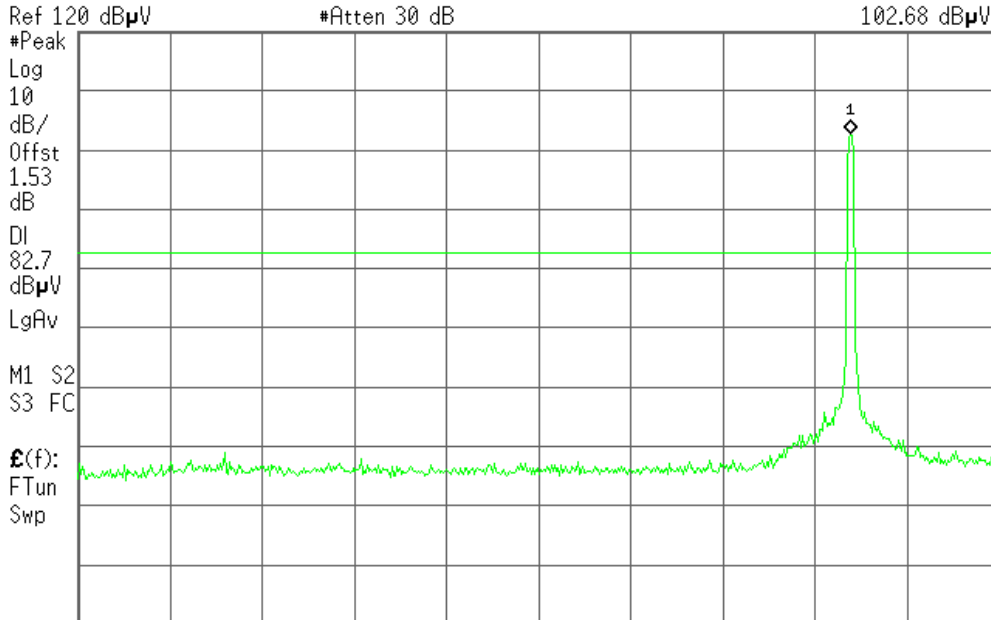
**CH Mid**

**30MHz ~ 2.9GHz**

\* Agilent 11:56:27 Oct 30, 2007

R T

Mkr1 2.436 GHz  
102.68 dBμV



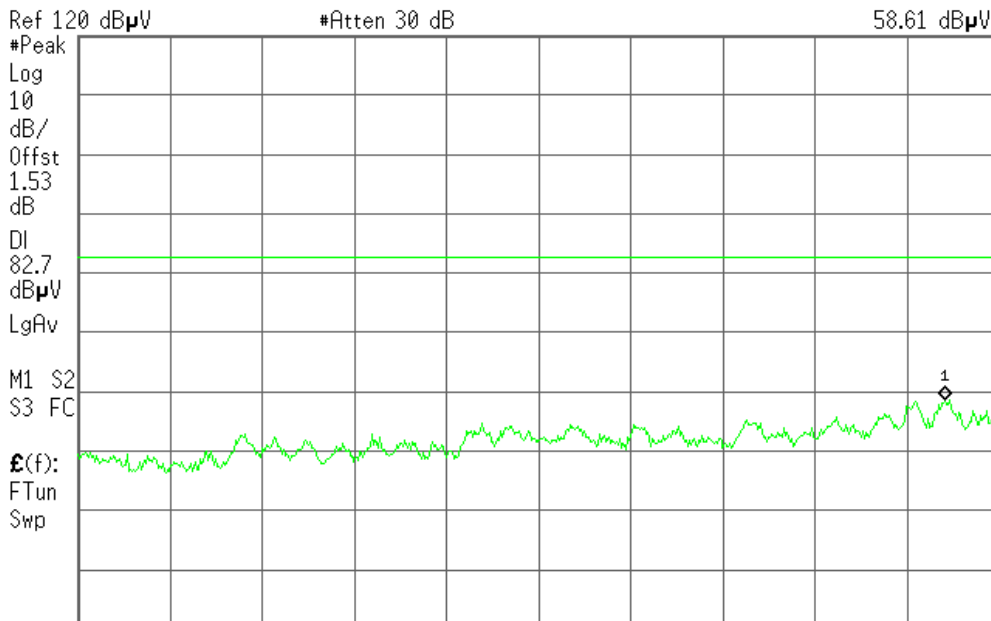
Start 30 MHz Stop 2.900 GHz  
#Res BW 100 kHz #VBW 100 kHz Sweep 346.1 ms (601 pts)

**2.9GHz ~ 26.5GHz**

\* Agilent 11:59:18 Oct 30, 2007

R T

Mkr1 25.12 GHz  
58.61 dBμV



Start 2.90 GHz Stop 26.50 GHz  
#Res BW 100 kHz #VBW 100 kHz Sweep 2.846 s (601 pts)



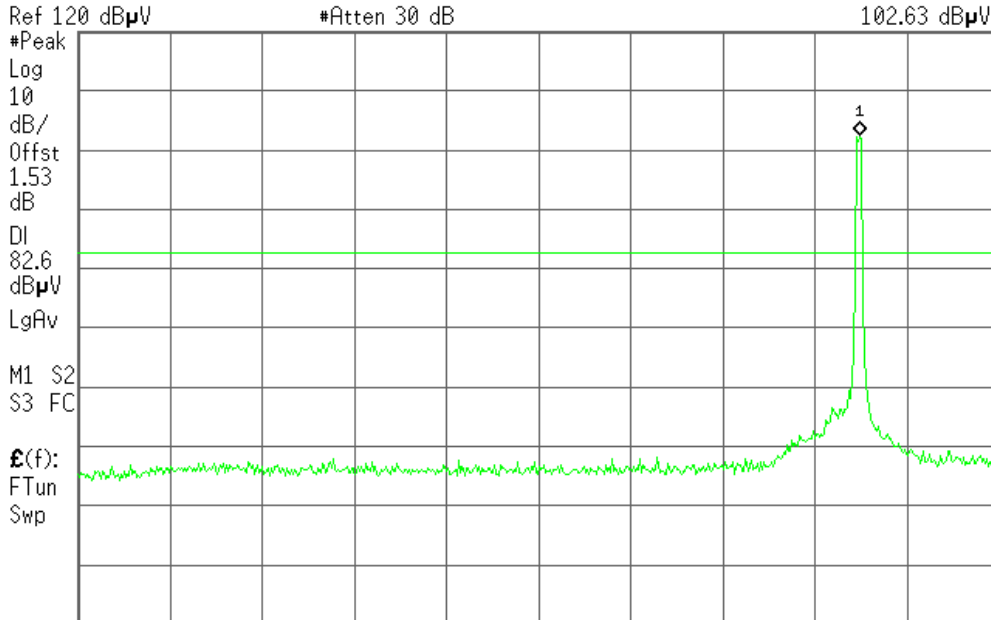
**CH High**

**30MHz ~ 2.9GHz**

\* Agilent 12:01:08 Oct 30, 2007

R T

Mkr1 2.465 GHz  
102.63 dBμV



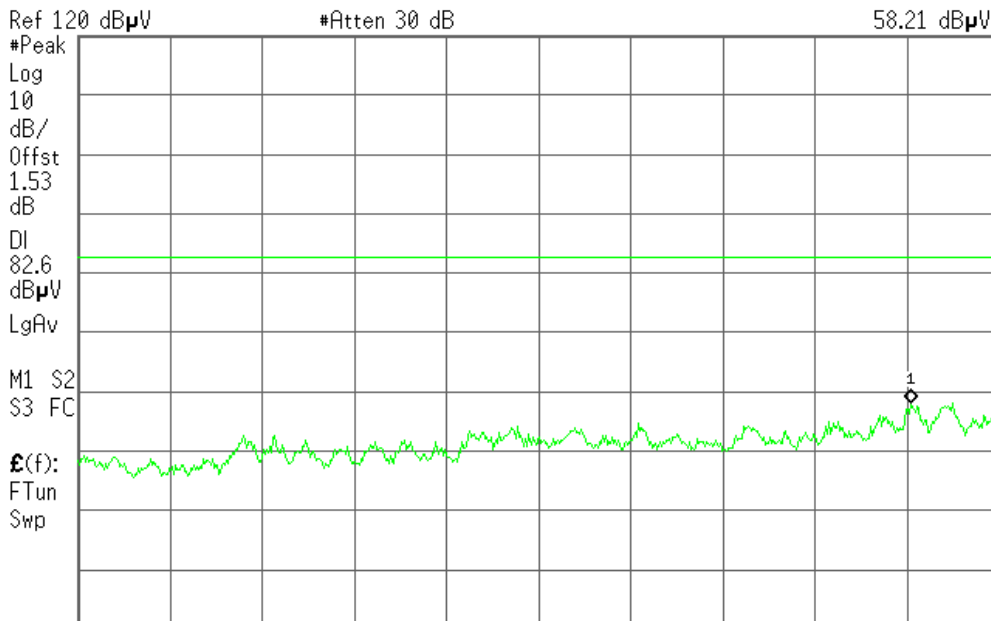
Start 30 MHz Stop 2.900 GHz  
#Res BW 100 kHz #VBW 100 kHz Sweep 346.1 ms (601 pts)

**2.9GHz ~ 26.5GHz**

\* Agilent 12:01:50 Oct 30, 2007

R T

Mkr1 24.26 GHz  
58.21 dBμV



Start 2.90 GHz Stop 26.50 GHz  
#Res BW 100 kHz #VBW 100 kHz Sweep 2.846 s (601 pts)



7.2.5. RADIATED EMISSIONS

7.2.5.1. LIMITS OF RADIATED EMISSIONS MEASUREMENT

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 (µV/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 (µV/m at 3-meter)	Field Strength (dBµV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

**NOTE:** (1) The lower limit shall apply at the transition frequencies.  
(2) Emission level (dBuV/m) = 20 log Emission level (uV/m).



7.2.5.2. TEST INSTRUMENTS

966 RF CHAMBER 2				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
PSA Spectrum Analyzer	Agilent	E4446A	US44300399	02/05/2008
EMI Test Receiver	R&S	ESCI	1166.5950 03	01/13/2008
Pre-Amplifier	MITEQ	N/A	AFS42-00102650-4 2-10P-42	02/14/2008
Bilog Antenna	SCHWAZBECK	CBL6143	5082	06/09/2008
Turn Table	EMCO	2081-1.21	N/A	N.C.R
Antenna Tower	CT	N/A	N/A	N.C.R
Controller	CT	N/A	N/A	N.C.R
RF Comm. Test set	HP	8920B	US36142090	N.C.R
Site NSA	C&C	N/A	N/A	06/09/2008
Horn Antenna	TRC	N/A	N/A	03/04/2008

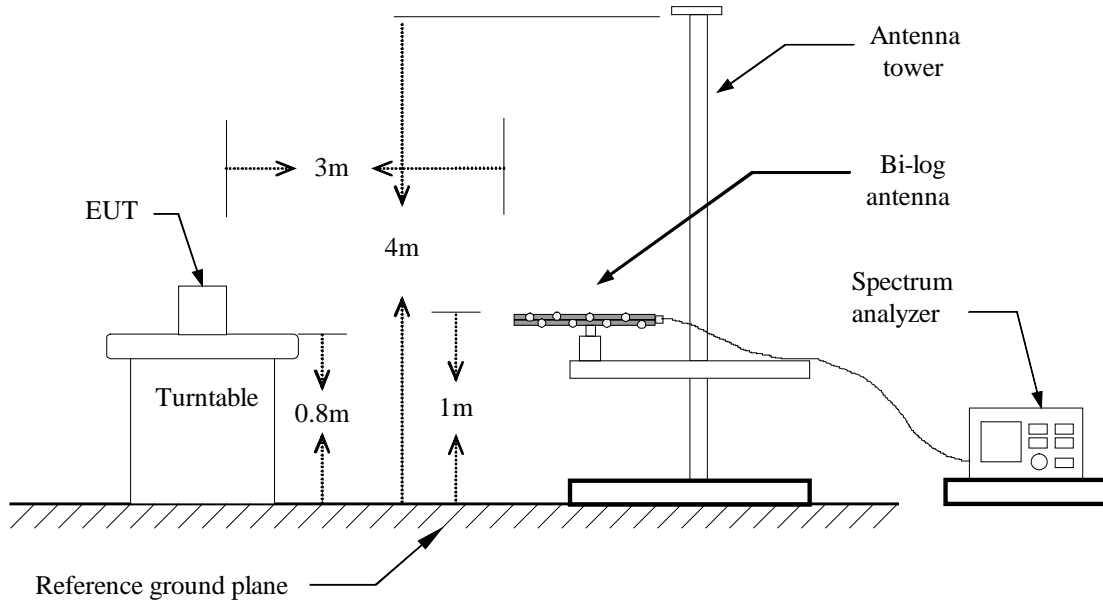
- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.  
 2. The FCC Site Registration number is 101879.  
 4. N.C.R = No Calibration Required.

7.2.5.3. TEST PROCEDURE (please refer to measurement standard)

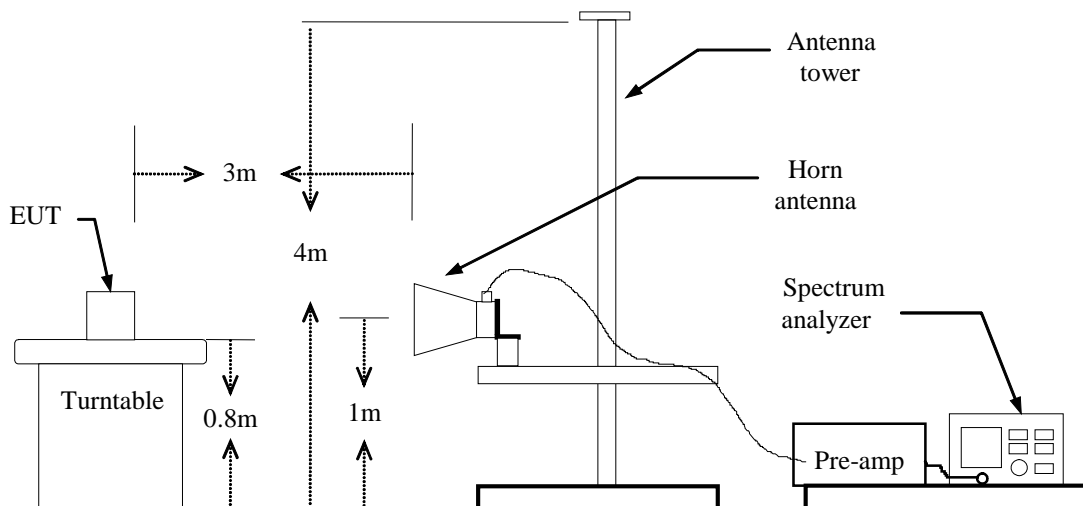
- The EUT is placed on a turntable, which is 0.8m above ground plane.
- The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
- Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 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
- Repeat above procedures until the measurements for all frequencies are complete.

**7.2.5.4. TEST SETUP**

**Below 1 GHz**



**Above 1 GHz**



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.



7.2.5.5. Data Sample:

**Below 1 GHz**

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Remark) (dBuV)	Correction Factor (dB/m)	Result (Remark) (dBuV/m)	Limit (Peak) (dBuV/m)	Margin (dB)	Remark
xxx	V	12.12	10.21	22.33	40.00	-17.67	Peak

**Above 1 GHz**

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
xxx	V	65.45	63.00	-11.12	54.33	51.88	74.00	54.00	-2.12	AVG

- Frequency (MHz) = Emission frequency in MHz
- Ant.Pol. (H/V) = Antenna polarization
- Reading (dBuV) = Uncorrected Analyzer / Receiver reading
- Correction Factor (dB/m) = Antenna factor + Cable loss – Amplifier gain
- Result (dBuV/m) = Reading (dBuV) + Correction Factor (dB/m)
- Limit (dBuV/m) = Limit stated in standard
- Margin (dB) = Remark Result (dBuV/m) – Limit (dBuV/m)
- Peak = Peak Reading
- QP = Quasi-peak Reading
- AVG = Average Reading





7.2.5.6. TEST RESULTS

**Below 1 GHz**

Operation Mode: Normal Link

Test Date: November 05, 2007

Temperature: 26°C

Tested by: Tom Gan

Humidity: 50 % RH

Polarity: Ver. / Hor.

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit 3m (dBuV/m)	Safe Margin (dB)
70.950	V	Peak	51.95	-17.52	34.43	40.00	-5.57
94.350	V	Peak	54.32	-15.73	38.59	43.50	-4.91
124.500	V	Peak	56.19	-16.66	39.53	43.50	-3.97
261.300	V	Peak	54.90	-12.14	42.76	46.00	-3.24
412.000	V	Peak	45.01	-8.48	36.53	46.00	-9.47
619.666	V	Peak	47.34	-5.39	41.95	46.00	-4.05
70.050	H	Peak	53.60	-17.60	36.00	40.00	-4.00
95.250	H	Peak	53.82	-15.68	38.14	43.50	-5.36
121.800	H	Peak	54.94	-16.68	38.26	43.50	-5.24
261.300	H	Peak	54.94	-12.14	42.80	46.00	-3.20
365.333	H	Peak	50.91	-9.10	41.81	46.00	-4.19
589.333	H	Peak	44.52	-5.84	38.68	46.00	-7.32

**REMARKS:**

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).



**Above 1 GHz**

**Operation Mode:** TX / IEEE 802.11b / CH Low

**Test Date:** November 06, 2007

**Temperature:** 26°C

**Tested by:** Tom Gan

**Humidity:** 50% 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
1326.666	V	59.36	---	-10.37	48.99	---	74.00	54.00	-5.01	Peak
1860.000	V	57.36	---	-8.01	49.35	---	74.00	54.00	-4.65	Peak
2123.333	V	59.12	56.27	-6.97	52.15	49.30	74.00	54.00	-4.70	AVG.
4825.000	V	47.34	---	0.68	48.02	---	74.00	54.00	-5.98	Peak
N/A										
1333.333	H	59.67	---	-10.34	49.33	---	74.00	54.00	-4.67	Peak
1863.333	H	56.47	---	-8.00	48.47	---	74.00	54.00	-5.53	Peak
2133.333	H	59.28	52.89	-6.93	52.35	45.96	74.00	54.00	-8.04	AVG.
4825.000	H	46.93	---	0.68	47.61	---	74.00	54.00	-6.39	Peak
N/A										

**REMARKS:**

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 or as required by the applicant.
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

Test Date: November 06, 2007

Temperature: 26°C

Tested by: Tom Gan

Humidity: 50% 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
1330.000	V	60.42	---	-10.36	50.06	---	74.00	54.00	-3.94	Peak
1676.666	V	57.04	---	-8.73	48.31	---	74.00	54.00	-5.69	Peak
2123.333	V	59.97	58.17	-6.97	53.00	51.20	74.00	54.00	-2.80	AVG.
4700.000	V	49.39	---	0.46	49.85	---	74.00	54.00	-4.15	Peak
N/A										
1333.333	H	61.26	---	-10.34	50.92	---	74.00	54.00	-3.08	Peak
1386.666	H	59.70	---	-10.04	49.66	---	74.00	54.00	-4.34	Peak
2130.000	H	60.14	55.22	-6.95	53.19	48.27	74.00	54.00	-5.73	AVG.
4875.000	H	46.33	---	0.77	47.10	---	74.00	54.00	-6.90	Peak
N/A										

REMARKS:

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 or as required by the applicant.
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  
Temperature: 26°C  
Humidity: 50 % RH

Test Date: November 06, 2007  
Tested by: Tom Gan  
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
1326.666	V	61.76	---	-10.37	51.39	---	74.00	54.00	-2.61	Peak
1863.333	V	57.59	---	-8.00	49.59	---	74.00	54.00	-4.41	Peak
2663.333	V	54.31	---	-5.03	49.28	---	74.00	54.00	-4.72	Peak
4925.000	V	49.22	---	0.85	50.07	---	74.00	54.00	-3.93	Peak
N/A										
1080.000	H	61.83	---	-11.73	50.10	---	74.00	54.00	-3.90	Peak
1496.666	H	60.41	---	-9.44	50.97	---	74.00	54.00	-3.03	Peak
1860.000	H	54.58	---	-8.01	46.57	---	74.00	54.00	-7.43	Peak
4925.000	H	56.89	50.38	0.85	57.74	51.23	74.00	54.00	-2.77	AVG.
N/A										

REMARKS:

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 or as required by the applicant.
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: November 06, 2007

Temperature: 26°C

Tested by: Tom Gan

Humidity: 50 % 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
1353.333	V	60.39	---	-10.23	50.16	---	74.00	54.00	-3.84	Peak
1863.333	V	57.19	---	-8.00	49.19	---	74.00	54.00	-4.81	Peak
2130.000	V	59.50	54.59	-6.95	52.55	47.64	74.00	54.00	-6.36	AVG.
4800.000	V	46.29	---	0.64	46.93	---	74.00	54.00	-7.07	Peak
N/A										
1326.666	H	59.22	---	-10.37	48.85	---	74.00	54.00	-5.15	Peak
1353.333	H	60.83	---	-10.23	50.60	---	74.00	54.00	-3.40	Peak
2123.333	H	58.62	---	-6.97	51.65	---	74.00	54.00	-2.35	Peak
4791.666	H	46.63	---	0.62	47.25	---	74.00	54.00	-6.75	Peak
N/A										

REMARKS:

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 or as required by the applicant.
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: November 06, 2007

Temperature: 26°C

Tested by: Tom Gan

Humidity: 50 % 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
1326.666	V	61.95	---	-10.37	51.58	---	74.00	54.00	-2.42	Peak
1863.333	V	56.27	---	-8.00	48.27	---	74.00	54.00	-5.73	Peak
2123.333	V	60.54	55.32	-6.97	53.57	48.35	74.00	54.00	-5.65	AVG.
4933.333	V	47.23	---	0.87	48.10	---	74.00	54.00	-5.90	Peak
N/A										
1500.000	H	60.78	---	-9.42	51.36	---	74.00	54.00	-2.64	Peak
1670.000	H	55.35	---	-8.75	46.60	---	74.00	54.00	-7.40	Peak
2433.333	H	54.15	---	-8.00	46.15	---	74.00	54.00	-7.85	Peak
4875.000	H	49.69	---	0.77	50.46	---	74.00	54.00	-3.54	Peak
N/A										

REMARKS:

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 or as required by the applicant.
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

Test Date: November 06, 2007

Temperature: 26°C

Tested by: Tom Gan

Humidity: 50 % 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
1496.666	V	60.87	---	-9.44	51.43	---	74.00	54.00	-2.57	Peak
1860.000	V	53.82	---	-8.01	45.81	---	74.00	54.00	-8.19	Peak
2123.333	V	52.87	---	-6.97	45.90	---	74.00	54.00	-8.10	Peak
4925.000	V	52.21	50.38	0.85	53.06	51.23	74.00	54.00	-2.77	AVG.
N/A										
1496.666	H	59.39	---	-9.44	49.95	---	74.00	54.00	-4.05	Peak
1726.667	H	57.61	---	-8.53	49.08	---	74.00	54.00	-4.92	Peak
2740.000	H	49.93	---	-4.81	45.12	---	74.00	54.00	-8.88	Peak
4816.666	H	51.79	48.86	0.66	52.45	49.52	74.00	54.00	-4.48	AVG.
N/A										

REMARKS:

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 or as required by the applicant.
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).

**7.3. 6dB BANDWIDTH MEASUREMENT**

**7.3.1. LIMITS**

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 6 dB bandwidth shall be at least 500 kHz.

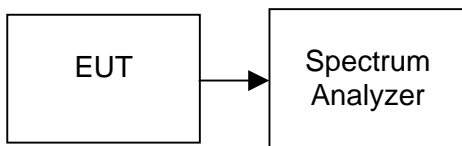
**7.3.2. TEST INSTRUMENTS**

Conducted Emissions Test Site				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	US44300399	02/05/2008

**7.3.3. TEST PROCEDURES** (please refer to measurement standard)

1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW = 100kHz, VBW = RBW, Span = 20MHz, Sweep = auto.
4. Mark the peak frequency and -6dB (upper and lower) frequency.
5. Repeat until all the rest channels are investigated.

**7.3.4. TEST SETUP**







7.3.5. TEST RESULTS

No non-compliance noted

Test Data

Test mode: IEEE 802.11b

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
Low	2412	13030	>500	PASS
Mid	2437	13030		PASS
High	2462	13070		PASS

Test Data

Test mode: IEEE 802.11g

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
Low	2412	16400	>500	PASS
Mid	2437	16400		PASS
High	2462	16400		PASS



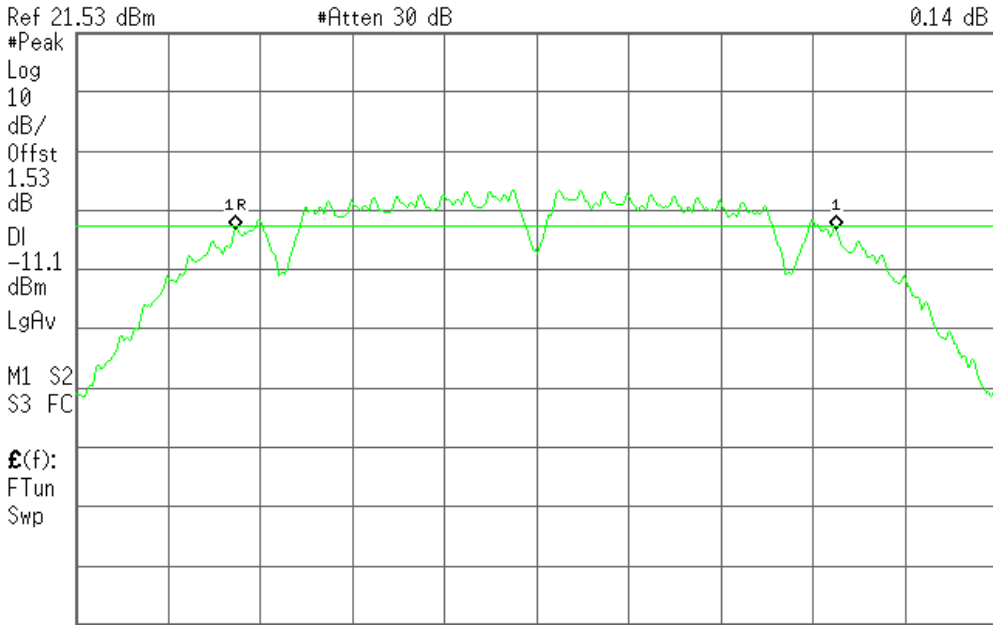
**Test Plot (IEEE 802.11b mode)**

**6dB Bandwidth (CH Low)**

Agilent 11:03:37 Oct 30, 2007

R T

Mkr1 13.03 MHz  
0.14 dB



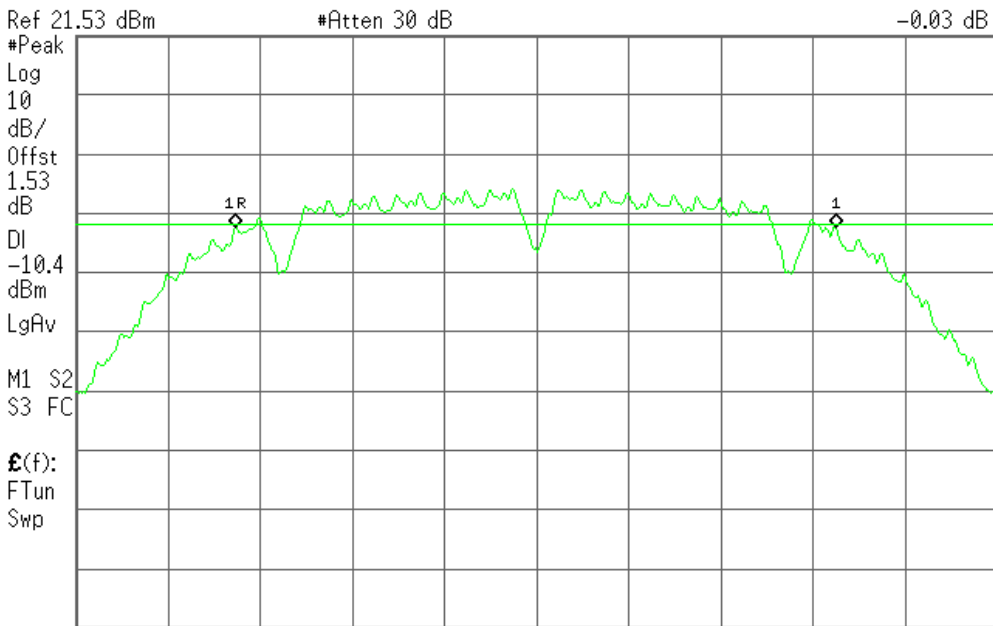
Center 2.412 00 GHz Span 20 MHz  
#Res BW 100 kHz VBW 100 kHz Sweep 2.44 ms (601 pts)

**6dB Bandwidth (CH Mid)**

Agilent 11:06:02 Oct 30, 2007

R T

Mkr1 13.03 MHz  
-0.03 dB



Center 2.437 00 GHz Span 20 MHz  
#Res BW 100 kHz VBW 100 kHz Sweep 2.44 ms (601 pts)



### 6dB Bandwidth (CH High)

Agilent 11:08:02 Oct 30, 2007

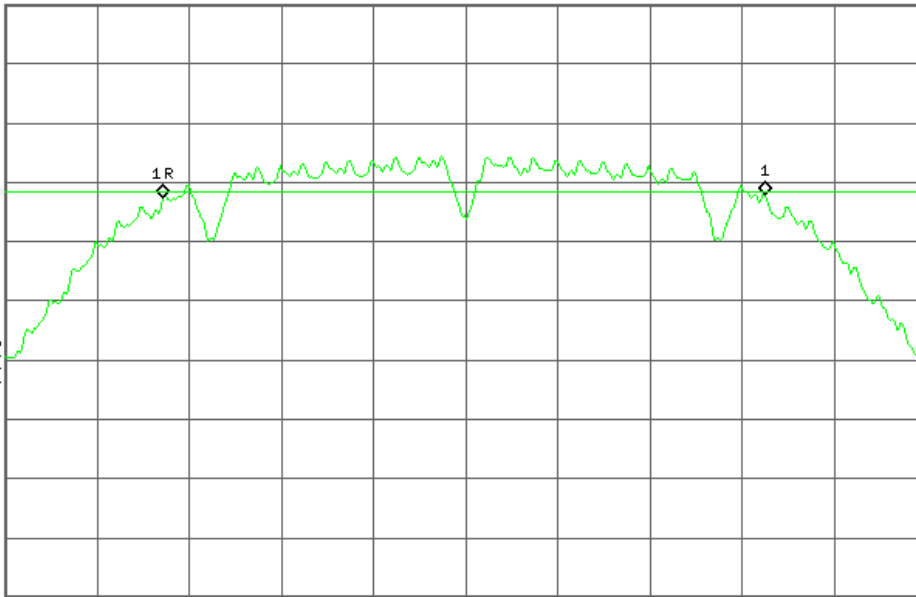
R T

Mkr1 13.07 MHz  
0.38 dB

Ref 21.53 dBm

#Atten 30 dB

#Peak  
Log  
10  
dB/  
Offst  
1.53  
dB  
DI  
-10.1  
dBm  
LgRv  
M1 S2  
S3 FC  
E(f):  
FTun  
Swp



Center 2.462 00 GHz

Span 20 MHz

#Res BW 100 kHz

VBW 100 kHz

Sweep 2.44 ms (601 pts)



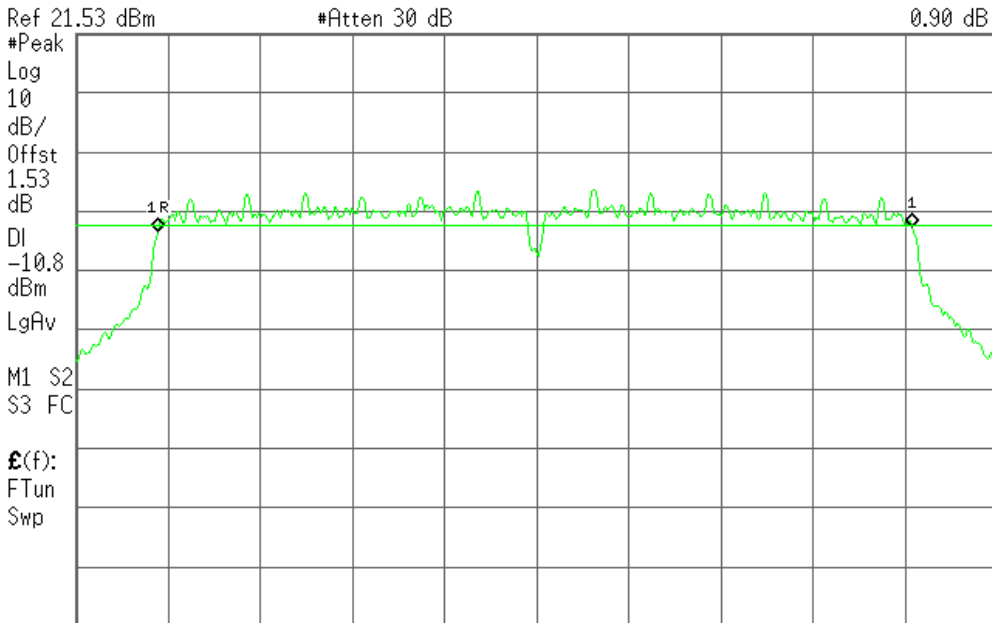
### Test Plot (IEEE 802.11g mode)

#### 6dB Bandwidth (CH Low)

Agilent 11:22:08 Oct 30, 2007

R T

Mkr1 16.40 MHz  
0.90 dB



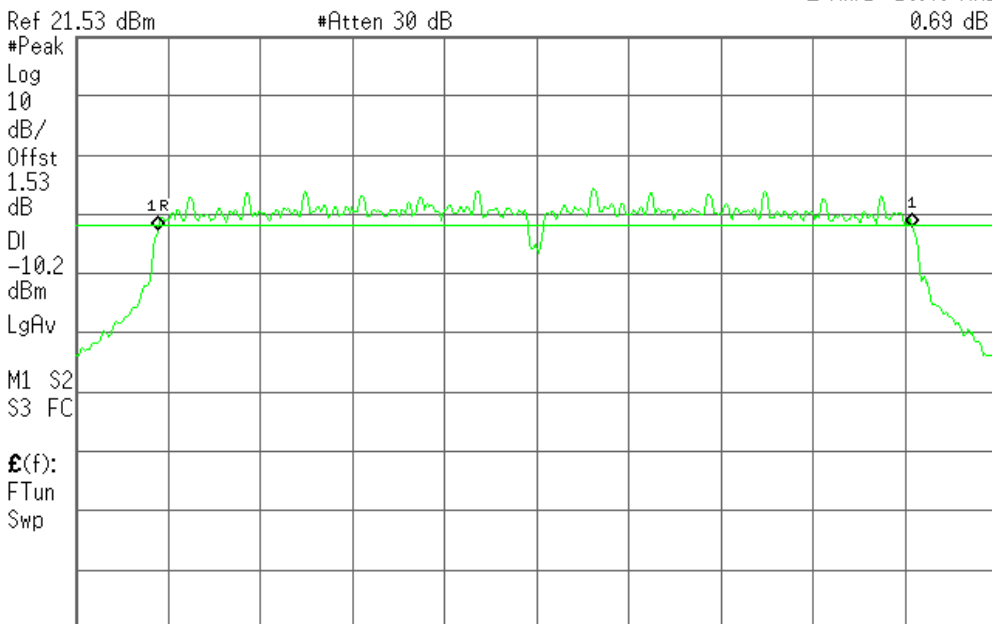
Center 2.412 00 GHz Span 20 MHz  
#Res BW 100 kHz VBW 100 kHz Sweep 2.44 ms (601 pts)

#### 6dB Bandwidth (CH Mid)

Agilent 11:19:06 Oct 30, 2007

R T

Mkr1 16.40 MHz  
0.69 dB



Center 2.437 00 GHz Span 20 MHz  
#Res BW 100 kHz VBW 100 kHz Sweep 2.44 ms (601 pts)

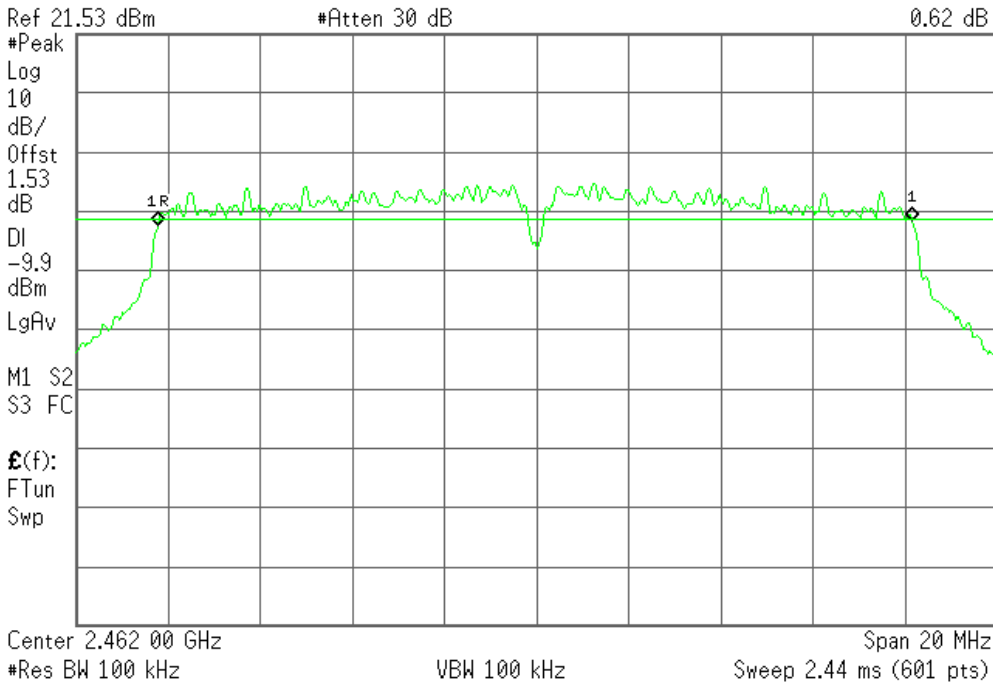


### 6dB Bandwidth (CH High)

Agilent 11:16:00 Oct 30, 2007

R T

Mkr1 16.40 MHz  
0.62 dB





### 7.4. PEAK OUTPUT POWER

#### 7.4.1. LIMITS

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.

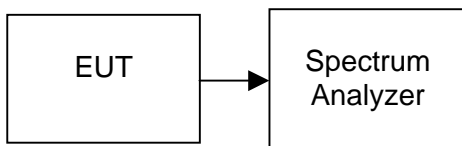
#### 7.4.2. TEST INSTRUMENTS

Conducted Emissions Test Site				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	US44300399	02/05/2008

#### 7.4.3. TEST PROCEDURES (please refer to measurement standard)

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

#### 7.4.4. TEST SETUP





7.4.5. 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	8.73	0.00746	1	PASS
Mid	2437	9.38	0.00867		PASS
High	2462	10.03	0.01007		PASS

Test mode: IEEE 802.11g

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	10.62	0.01153	1	PASS
Mid	2437	11.27	0.01340		PASS
High	2462	11.65	0.01462		PASS



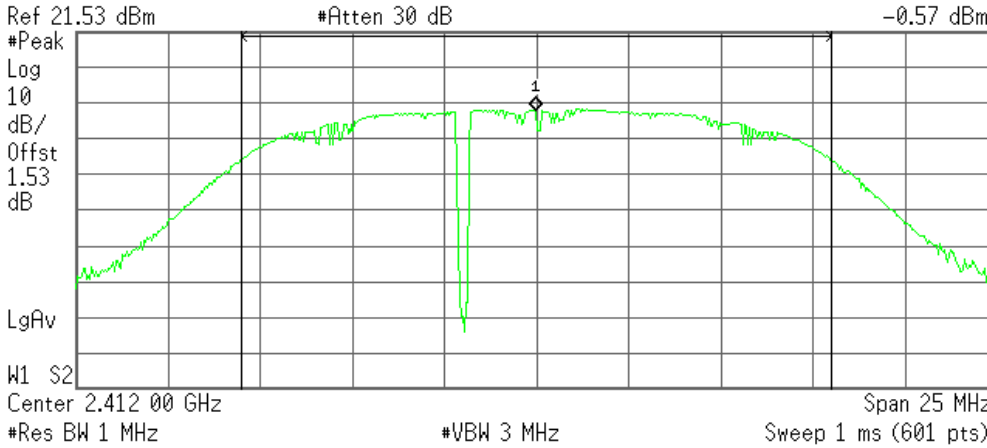
Test Plot (IEEE 802.11b mode)

Peak power (CH Low)

Agilent 19:23:38 Oct 29, 2007

R T

Mkr1 2.412 00 GHz -0.57 dBm



Channel Power

8.73 dBm /16.0000 MHz

Power Spectral Density

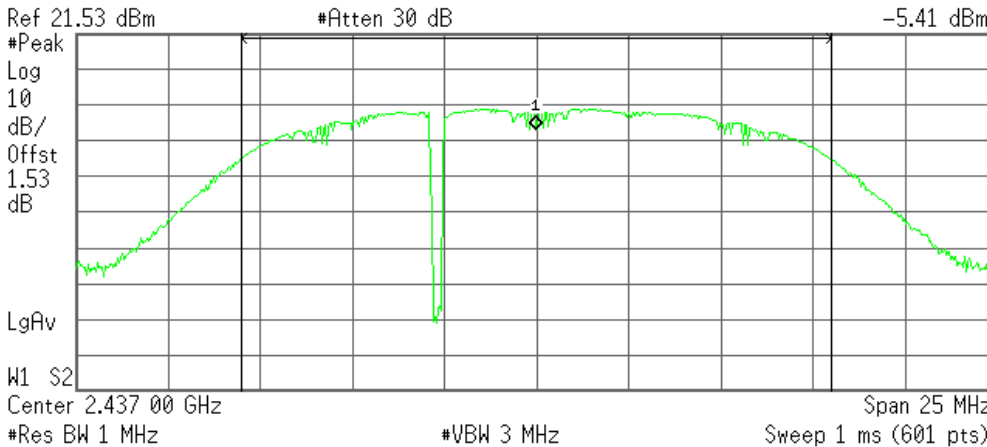
-63.31 dBm/Hz

Peak power (CH Mid)

Agilent 19:23:05 Oct 29, 2007

R T

Mkr1 2.437 00 GHz -5.41 dBm



Channel Power

9.38 dBm /16.0000 MHz

Power Spectral Density

-62.66 dBm/Hz



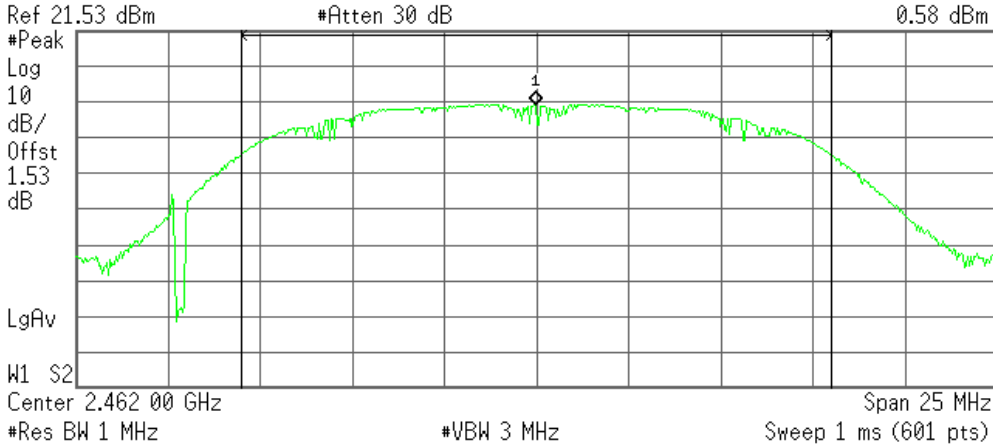


### Peak power (CH High)

Agilent 19:24:30 Oct 29, 2007

R T

Mkr1 2.462 00 GHz  
0.58 dBm



Channel Power

10.03 dBm /16.0000 MHz

Power Spectral Density

-62.01 dBm/Hz



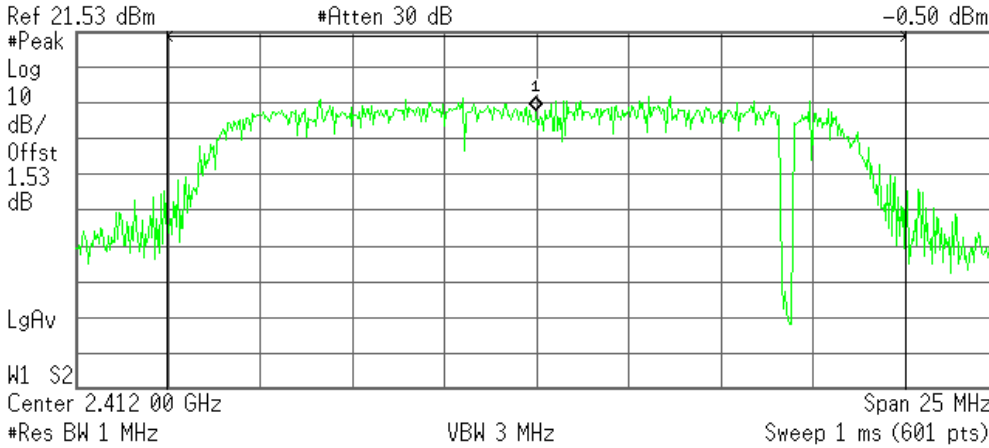
**Test Plot (IEEE 802.11g mode)**

**Peak power (CH Low)**

Agilent 19:20:56 Oct 29, 2007

R T

Mkr1 2.412 00 GHz  
-0.50 dBm



**Channel Power**

10.62 dBm /20.0000 MHz

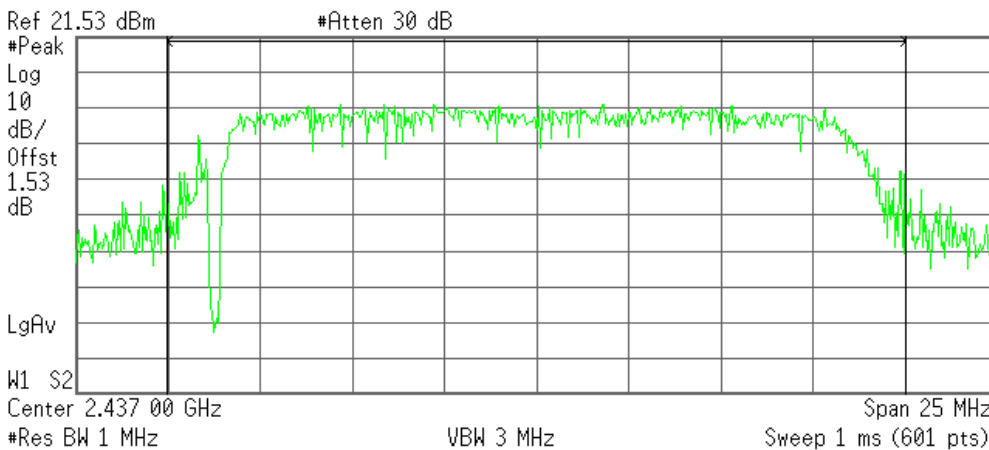
**Power Spectral Density**

-62.39 dBm/Hz

**Peak power (CH Mid)**

Agilent 19:20:10 Oct 29, 2007

R T



**Channel Power**

11.27 dBm /20.0000 MHz

**Power Spectral Density**

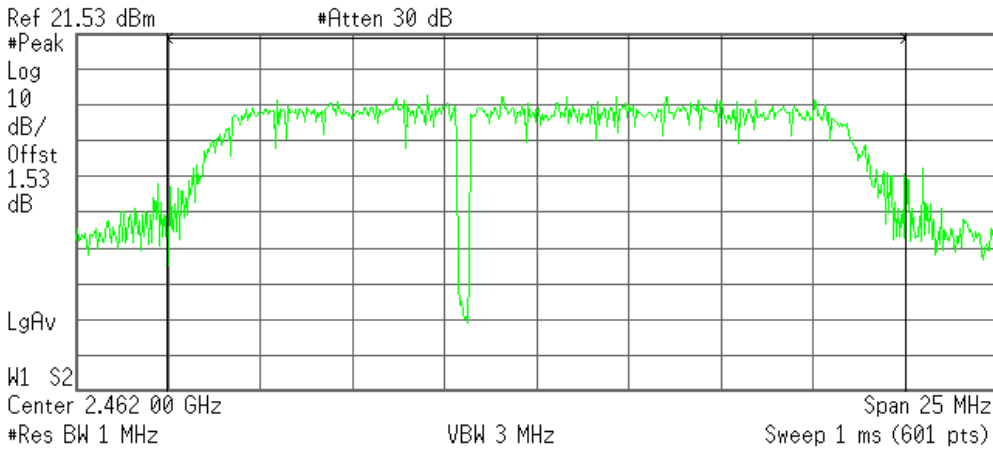
-61.74 dBm/Hz



### Peak power (CH High)

Agilent 19:19:34 Oct 29, 2007

R T



Channel Power

11.65 dBm /20.0000 MHz

Power Spectral Density

-61.36 dBm/Hz



**7.5. BAND EDGES MEASUREMENT:**

**7.5.1. LIMITS**

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)).

**7.5.2. TEST INSTRUMENTS**

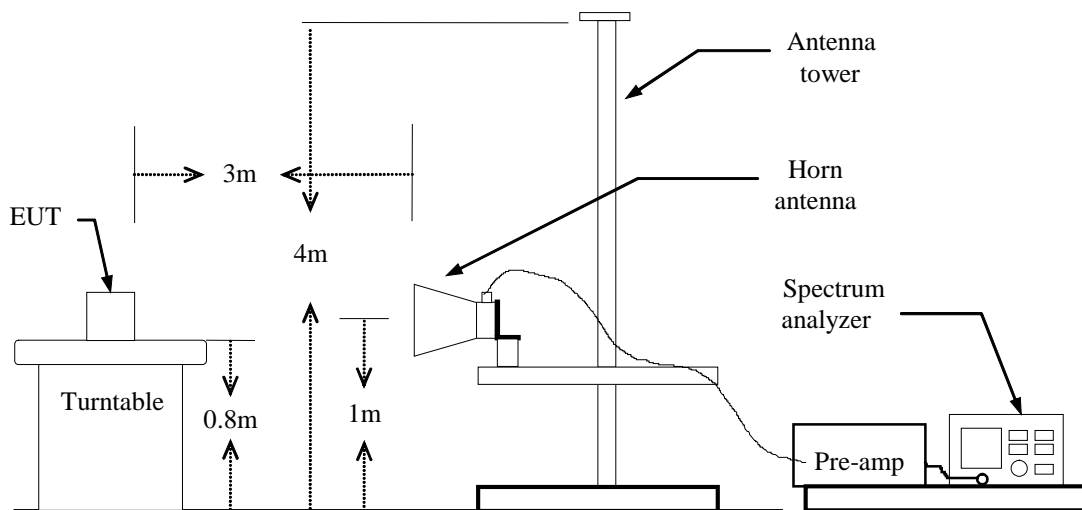
966 RF CHAMBER 2				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
PSA Spectrum Analyzer	Agilent	E4446A	US44300399	02/05/2008
EMI Test Receiver	R&S	ESCI	1166.5950 03	01/13/2008
Pre-Amplifier	MITEQ	N/A	AFS42-00102650-4 2-10P-42	02/14/2008
Bilog Antenna	SCHWAZBECK	CBL6143	5082	06/09/2008
Turn Table	EMCO	2081-1.21	N/A	N.C.R
Antenna Tower	CT	N/A	N/A	N.C.R
Controller	CT	N/A	N/A	N.C.R
RF Comm. Test set	HP	8920B	US36142090	N.C.R
Site NSA	C&C	N/A	N/A	06/09/2008
Horn Antenna	TRC	N/A	N/A	03/04/2008

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.  
2. The FCC Site Registration number is 101879.  
4. N.C.R = No Calibration Required.

**7.5.3. TEST PROCEDURES** (please refer to measurement standard)

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

**7.5.4. TEST SETUP**





### 7.5.5. TEST RESULTS

#### Test Plot (IEEE 802.11b mode)

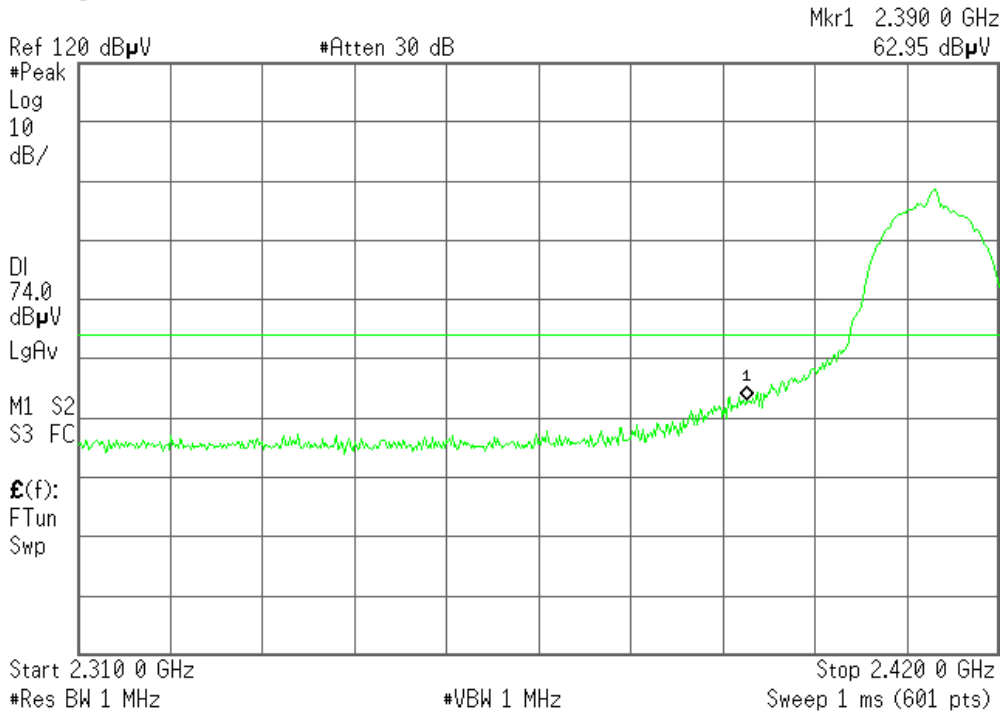
#### Band Edges (CH Low)

Detector mode: Peak

Polarity: Vertical

Agilent 17:50:23 Oct 29, 2007

R T

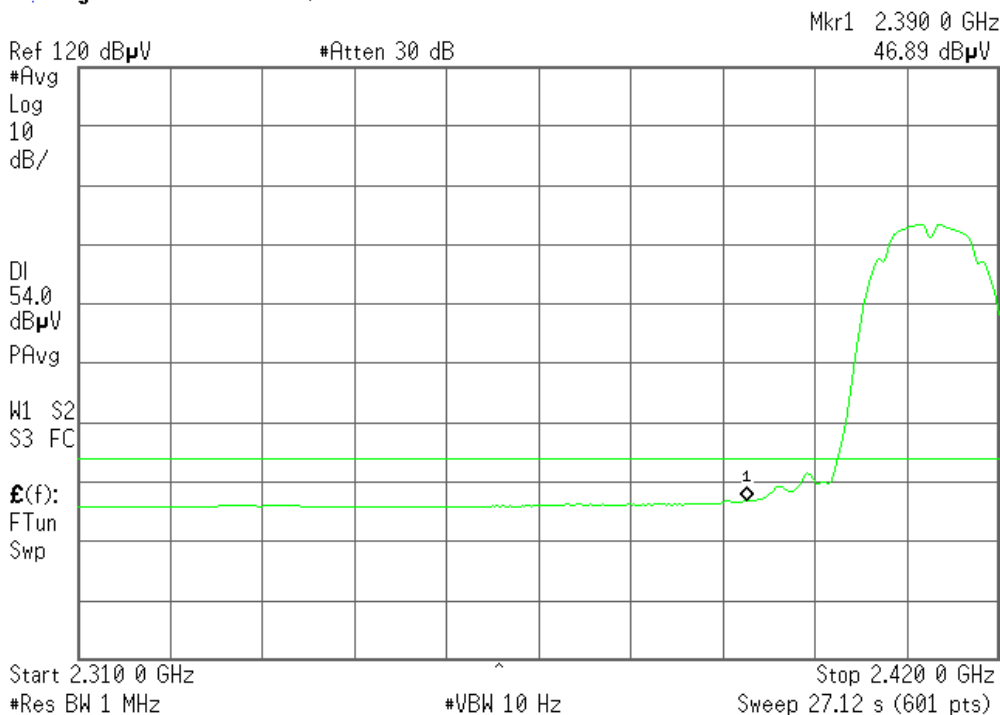


Detector mode: Average

Polarity: Vertical

Agilent 17:49:25 Oct 29, 2007

R T





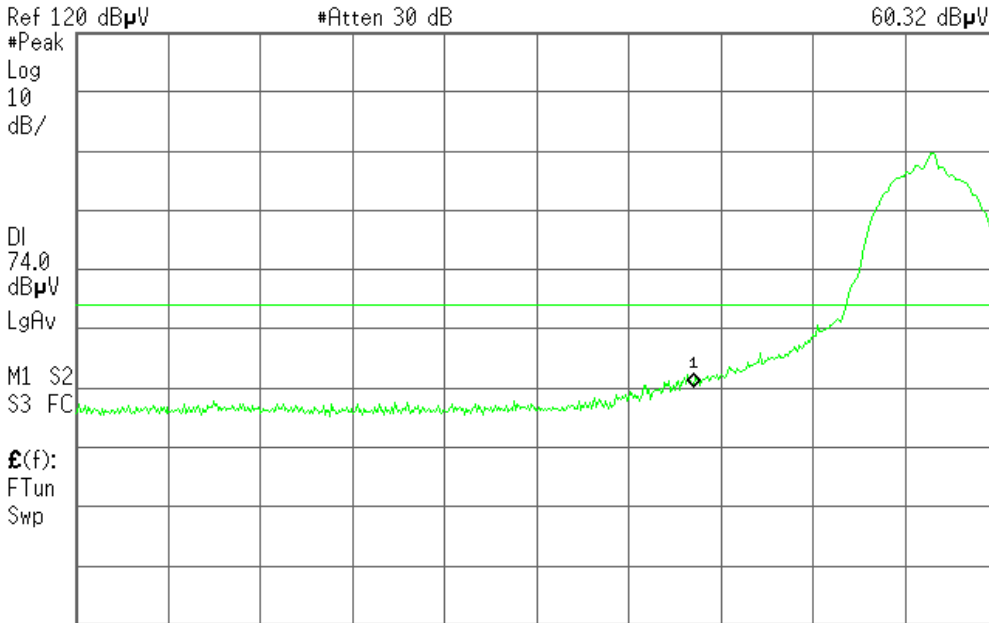
Detector mode: Peak

Polarity: Horizontal

Agilent 17:26:25 Oct 29, 2007

R T

Mkr1 2.383 7 GHz  
60.32 dBμV



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

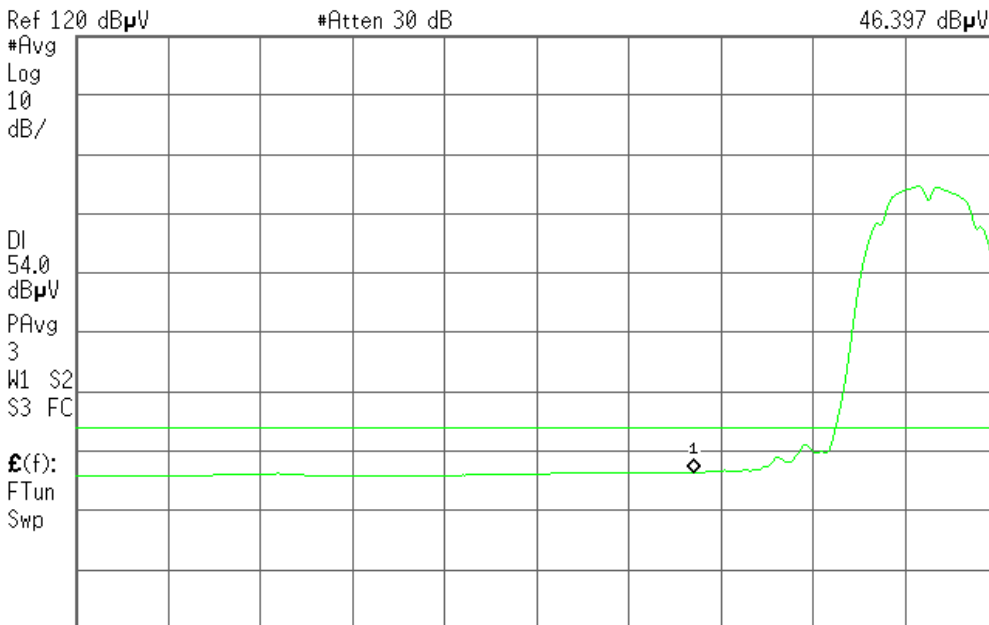
Detector mode: Average

Polarity: Horizontal

Agilent 17:29:03 Oct 29, 2007

R T

Mkr1 2.383 7 GHz  
46.397 dBμV



Start 2.310 0 GHz #Res BW 1 MHz #VBW 10 Hz Stop 2.420 0 GHz Sweep 27.12 s (601 pts)



### Band Edges (CH High)

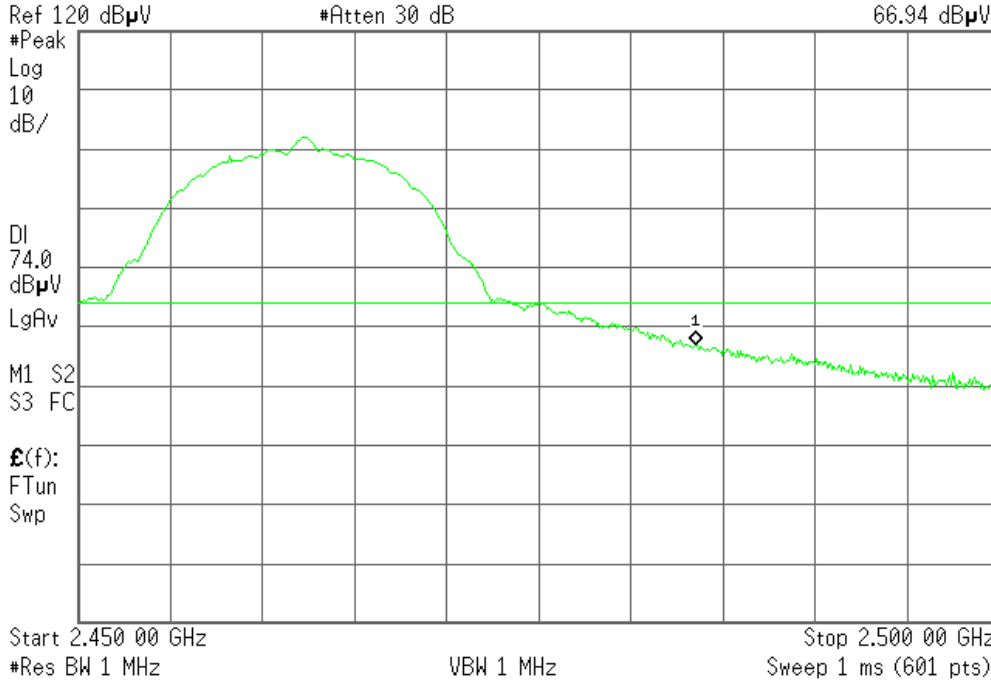
Detector mode: Peak

Polarity: Vertical

Agilent 17:40:26 Oct 29, 2007

R T

Mkr1 2.483 50 GHz  
66.94 dB $\mu$ V



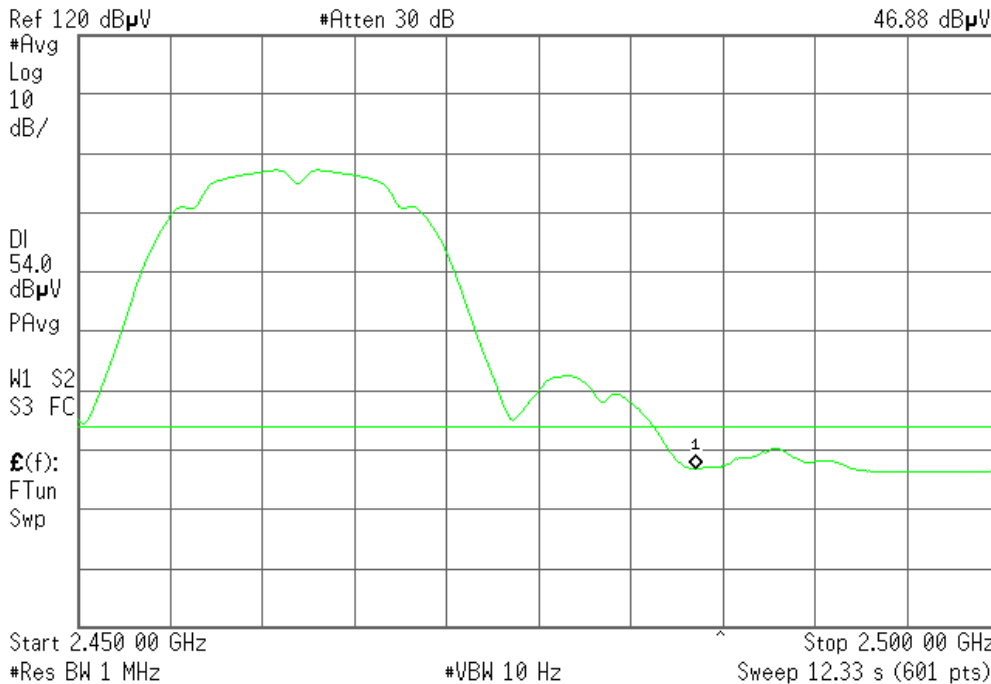
Detector mode: Average

Polarity: Vertical

Agilent 17:41:44 Oct 29, 2007

R T

Mkr1 2.483 50 GHz  
46.88 dB $\mu$ V







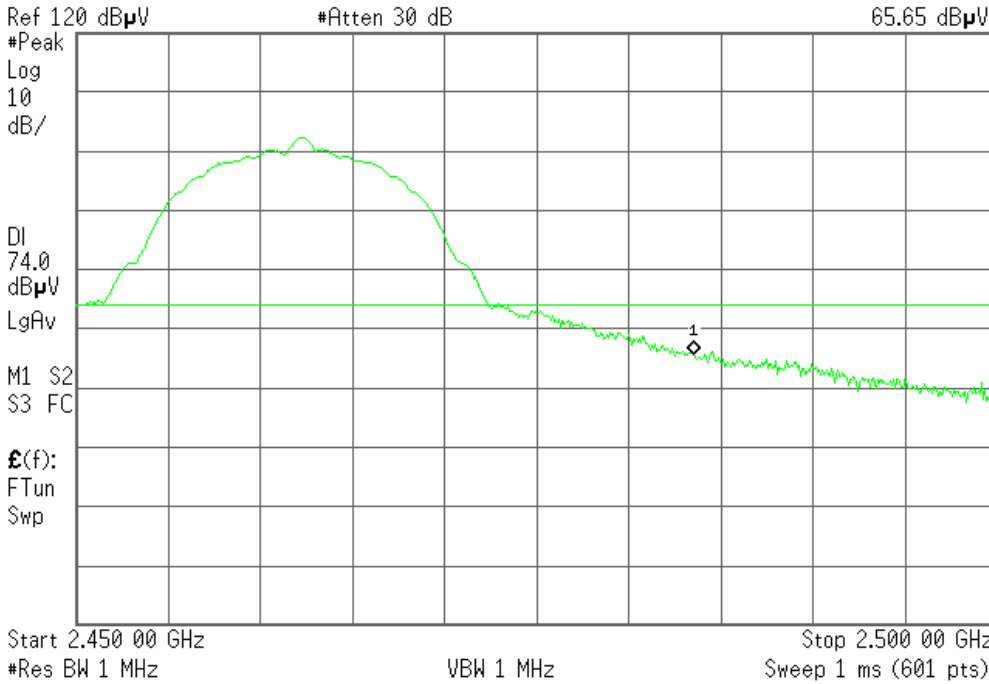
Detector mode: Peak

Polarity: Horizontal

Agilent 17:35:36 Oct 29, 2007

R T

Mkr1 2.483 50 GHz  
65.65 dBμV



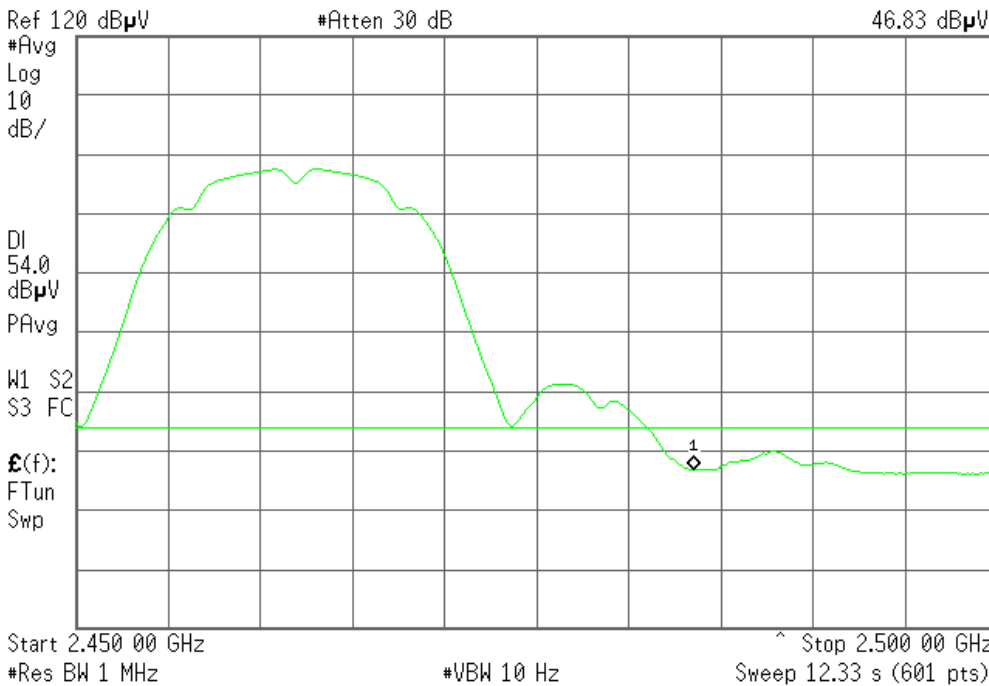
Detector mode: Average

Polarity: Horizontal

Agilent 17:21:45 Oct 29, 2007

R T

Mkr1 2.483 50 GHz  
46.83 dBμV





Test Plot (IEEE 802.11g mode)

Band Edges (CH Low)

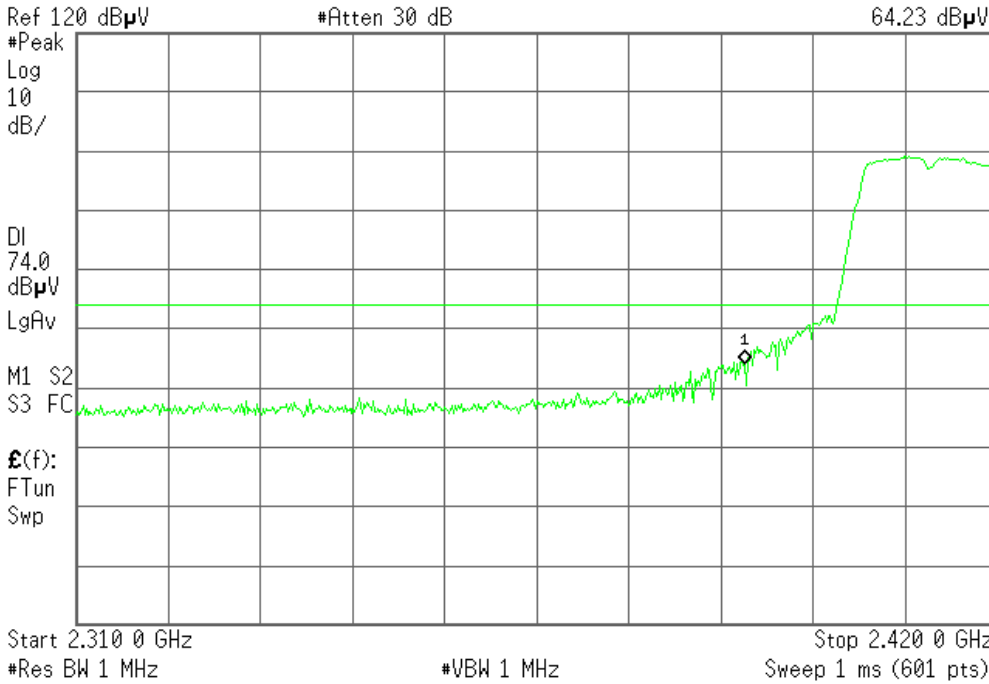
Detector mode: Peak

Polarity: Vertical

Agilent 17:47:00 Oct 29, 2007

R T

Mkr1 2.390 0 GHz  
64.23 dBμV



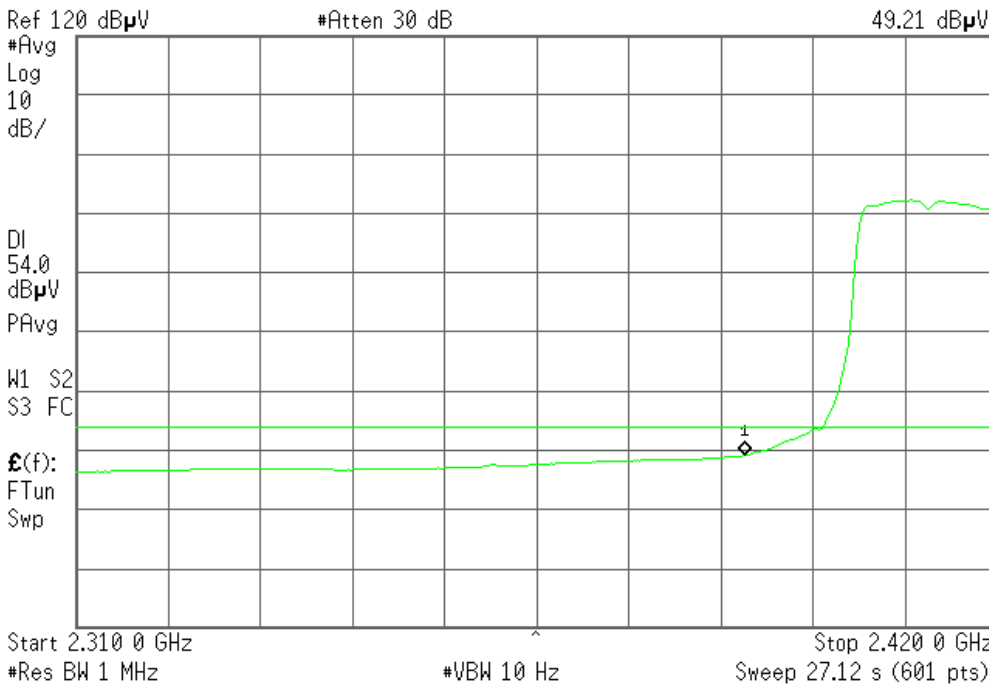
Detector mode: Average

Polarity: Vertical

Agilent 17:48:04 Oct 29, 2007

R T

Mkr1 2.390 0 GHz  
49.21 dBμV





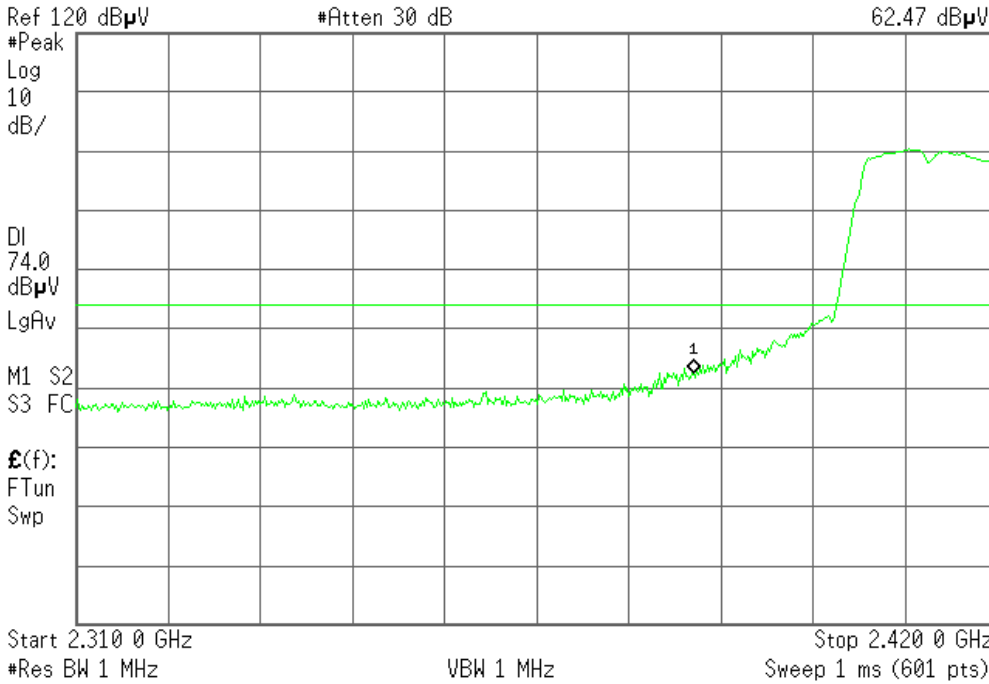
Detector mode: Peak

Polarity: Horizontal

Agilent 17:33:02 Oct 29, 2007

R T

Mkr1 2.383 7 GHz  
62.47 dBμV



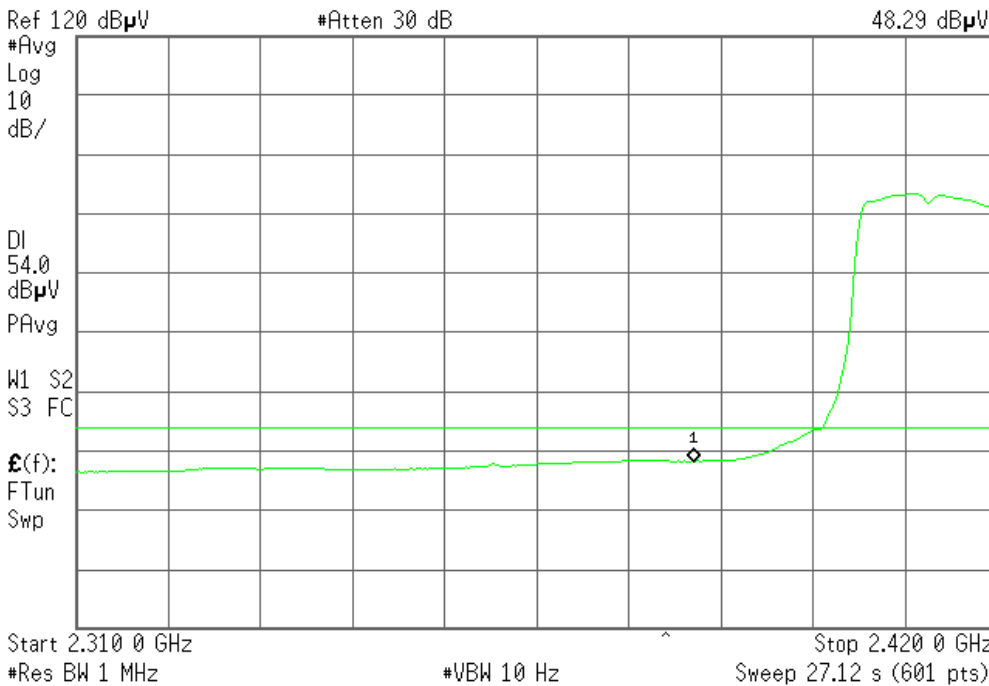
Detector mode: Average

Polarity: Horizontal

Agilent 17:31:56 Oct 29, 2007

R T

Mkr1 2.383 7 GHz  
48.29 dBμV





### Band Edges (CH High)

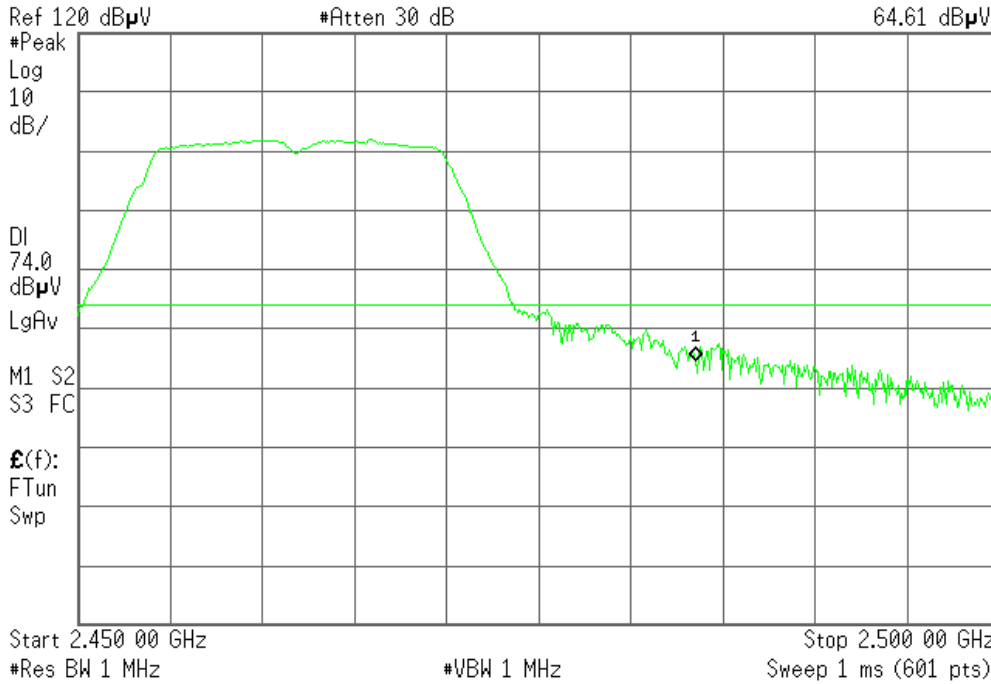
Detector mode: Peak

Polarity: Vertical

Agilent 17:45:23 Oct 29, 2007

R T

Mkr1 2.483 50 GHz  
64.61 dBμV



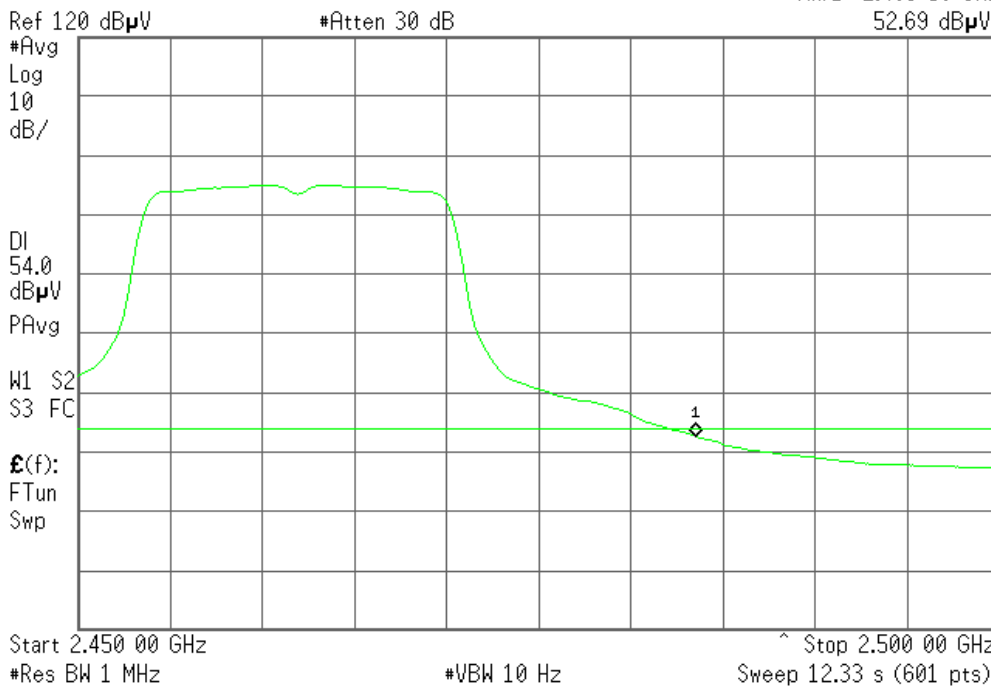
Detector mode: Average

Polarity: Vertical

Agilent 17:44:27 Oct 29, 2007

R T

Mkr1 2.483 50 GHz  
52.69 dBμV





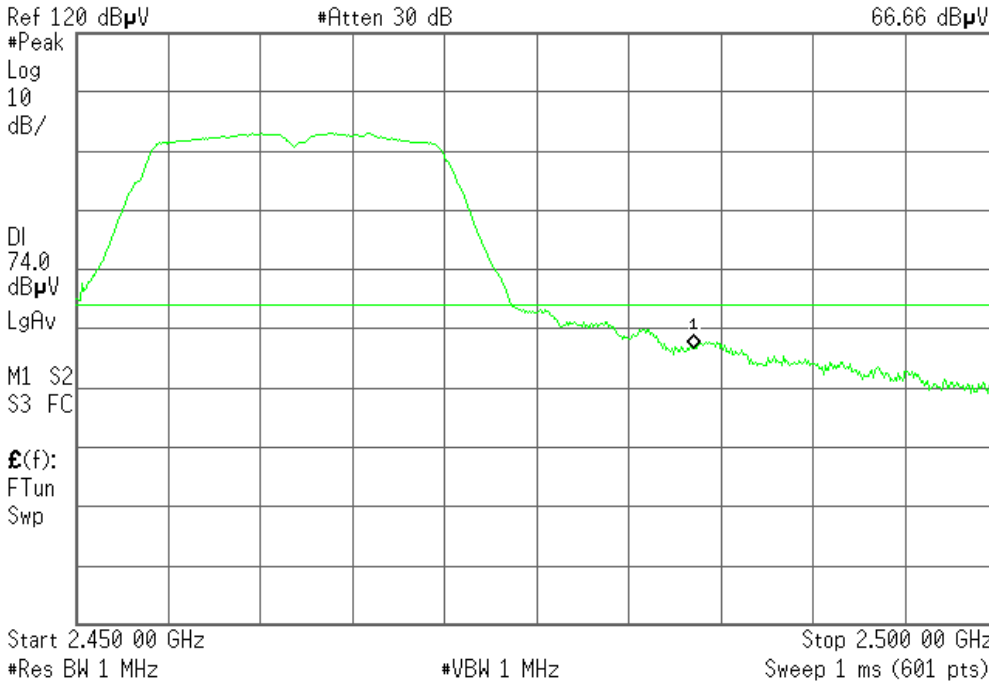
Detector mode: Peak

Polarity: Horizontal

Agilent 17:18:36 Oct 29, 2007

R T

Mkr1 2.483 50 GHz  
66.66 dB $\mu$ V



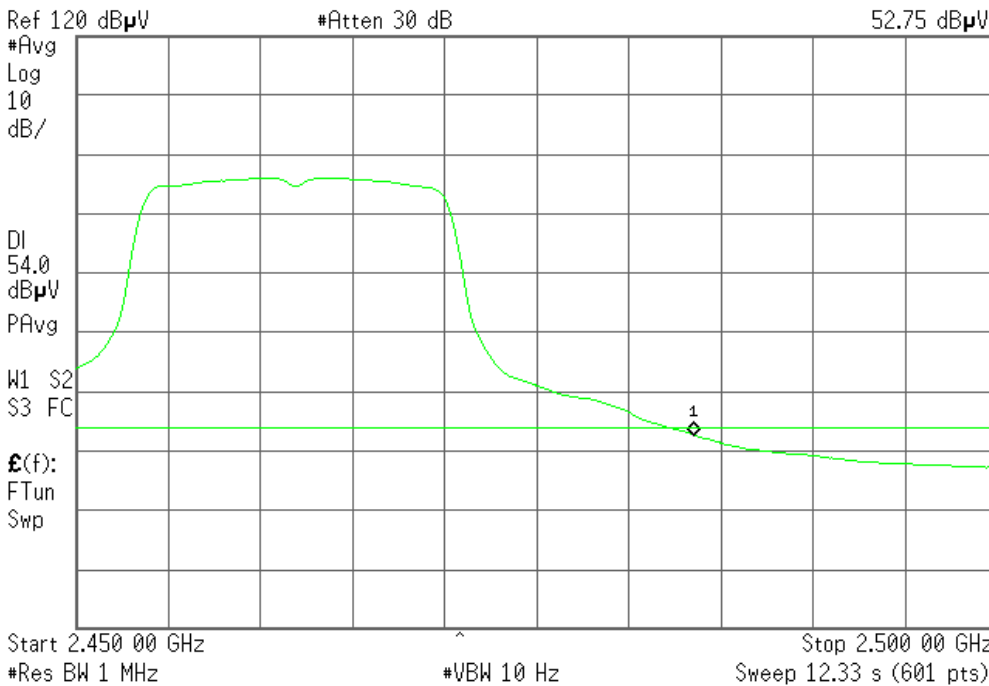
Detector mode: Average

Polarity: Horizontal

Agilent 17:20:11 Oct 29, 2007

R T

Mkr1 2.483 50 GHz  
52.75 dB $\mu$ V



**7.6. PEAK POWER SPECTRAL DENSITY MEASUREMENT**

**7.6.1. LIMITS**

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.

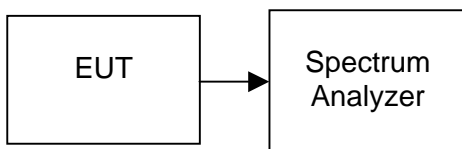
**7.6.2. TEST INSTRUMENTS**

Conducted Emissions Test Site				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	US44300399	02/05/2008

**7.6.3. TEST PROCEDURES** (please refer to measurement standard)

1. Place the EUT on the table and set it in transmitting mode.  
Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set the spectrum analyzer as RBW = 3kHz, VBW = 10kHz, Span = 300kHz, Sweep=100s
3. Record the max. reading.
4. Repeat the above procedure until the measurements for all frequencies are completed.

**7.6.4. TEST SETUP**



r



**7.6.5. TEST RESULTS**

*No non-compliance noted*

**Test Data**

**Test mode: IEEE 802.11b**

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Test Result
Low	2412	-29.47	8.00	PASS
Mid	2437	-28.66		PASS
High	2462	-28.25		PASS

**Test Data**

**Test mode: IEEE 802.11g**

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Test Result
Low	2412	-24.88	8.00	PASS
Mid	2437	-22.70		PASS
High	2462	-24.30		PASS



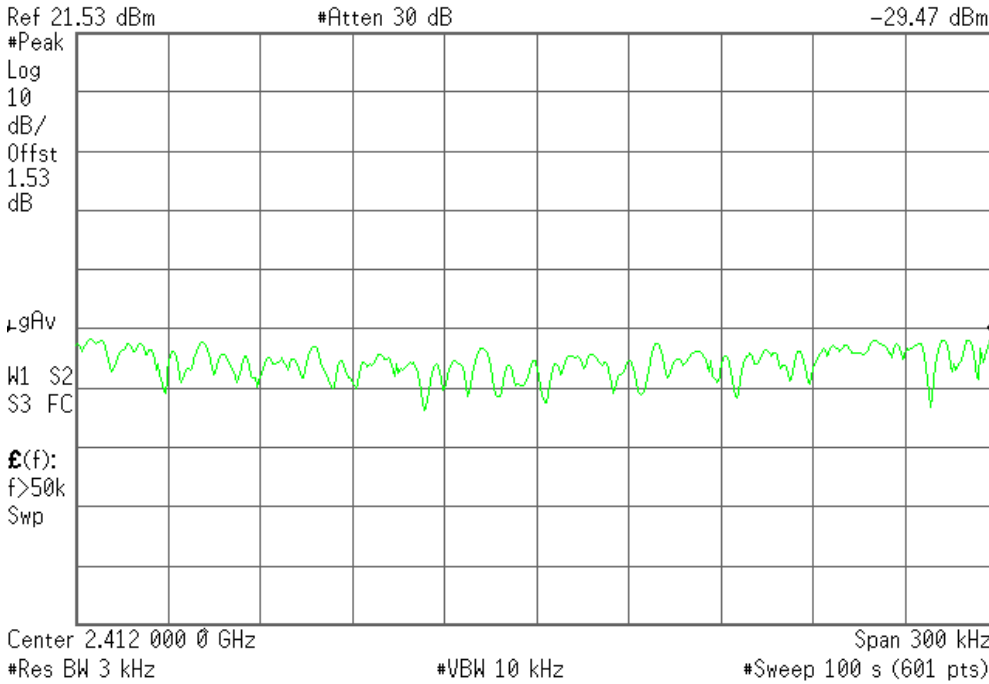
**Test Plot (IEEE 802.11b mode)**

**PPSD (CH Low)**

Agilent 11:38:57 Oct 30, 2007

R T

Mkr1 2.412 149 0 GHz  
-29.47 dBm

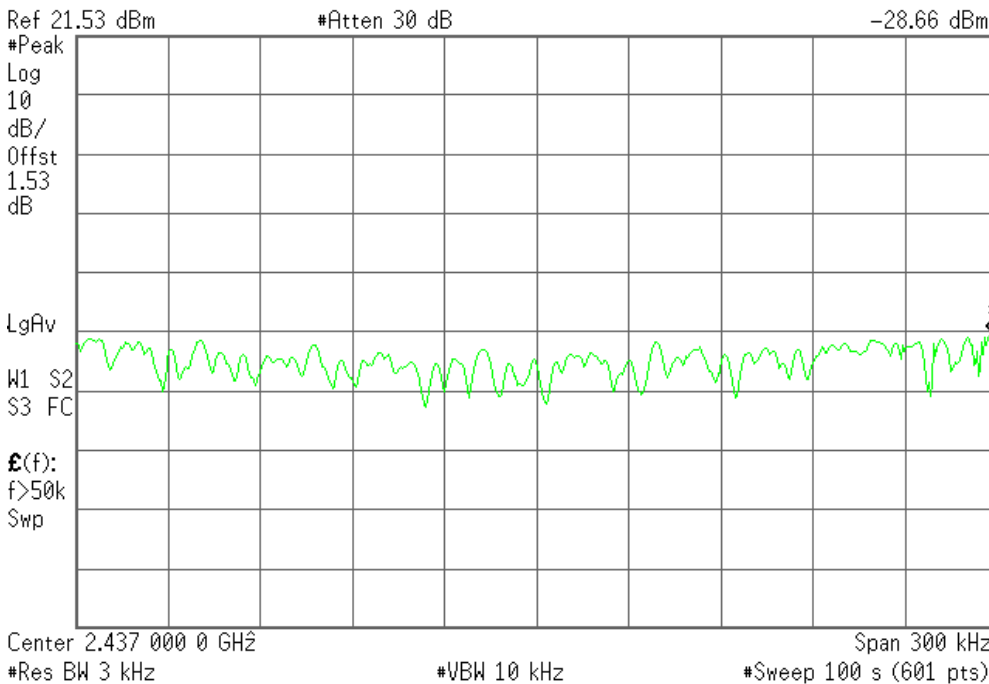


**PPSD (CH Mid)**

Agilent 11:36:36 Oct 30, 2007

R T

Mkr1 2.437 148 5 GHz  
-28.66 dBm







### PPSD (CH High)

Agilent 11:34:24 Oct 30, 2007

R T

Mkr1 2.462 147 7 GHz  
-28.25 dBm

Ref 21.53 dBm

#Atten 30 dB

#Peak

Log

10

dB/

Offst

1.53

dB

LgAv

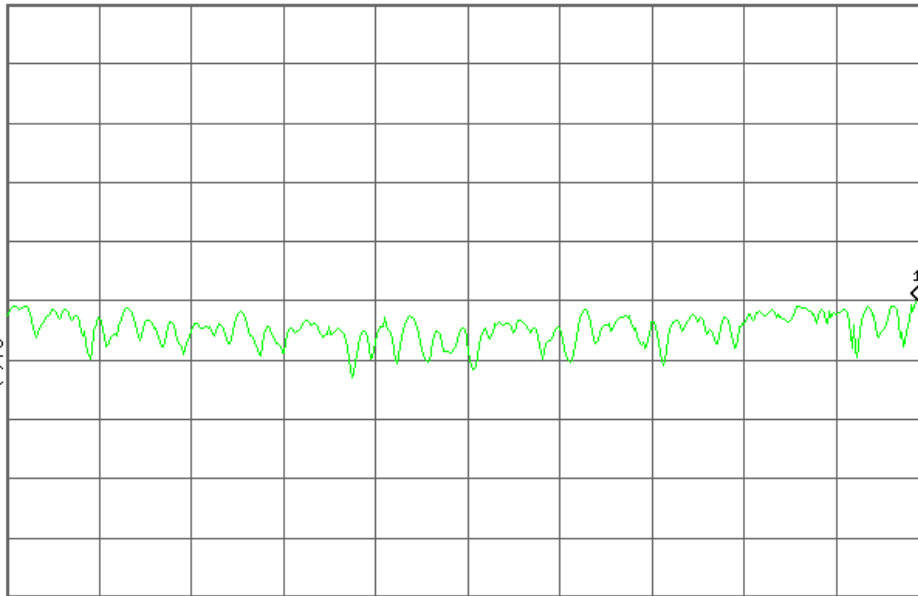
W1 S2

S3 FC

$\mathcal{E}(f)$ :

f>50k

Swp



Center 2.462 000 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)



**Test Plot (IEEE 802.11g mode)**

**PPSD (CH Low)**

Agilent 11:26:31 Oct 30, 2007

R T

Mkr1 2.411 981 9 GHz  
-24.88 dBm

Ref 21.53 dBm

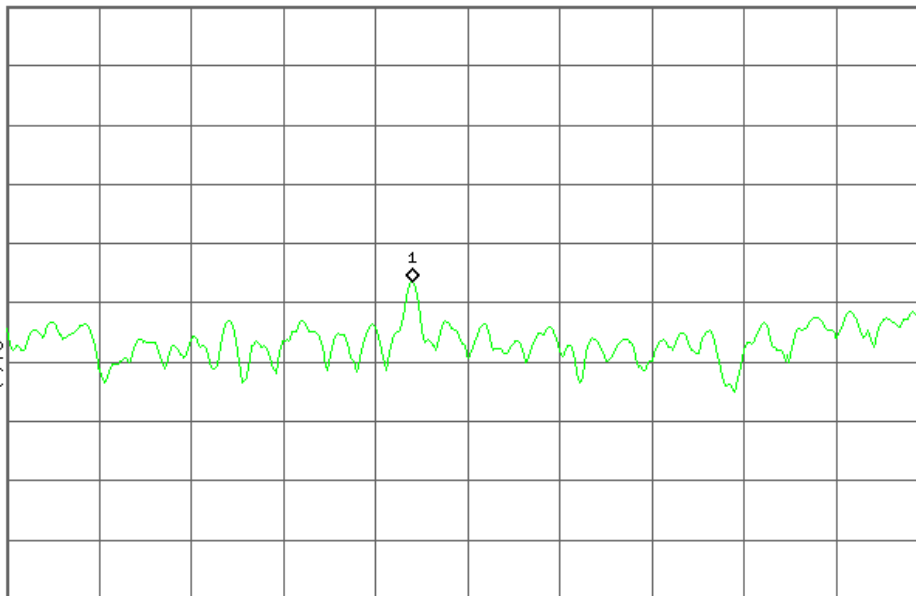
#Atten 30 dB

#Peak  
Log  
10  
dB/  
Offst  
1.53  
dB

LgAv

W1 S2  
S3 FC

E(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 11:28:52 Oct 30, 2007

R T

Mkr1 2.436 981 4 GHz  
-22.70 dBm

Ref 21.53 dBm

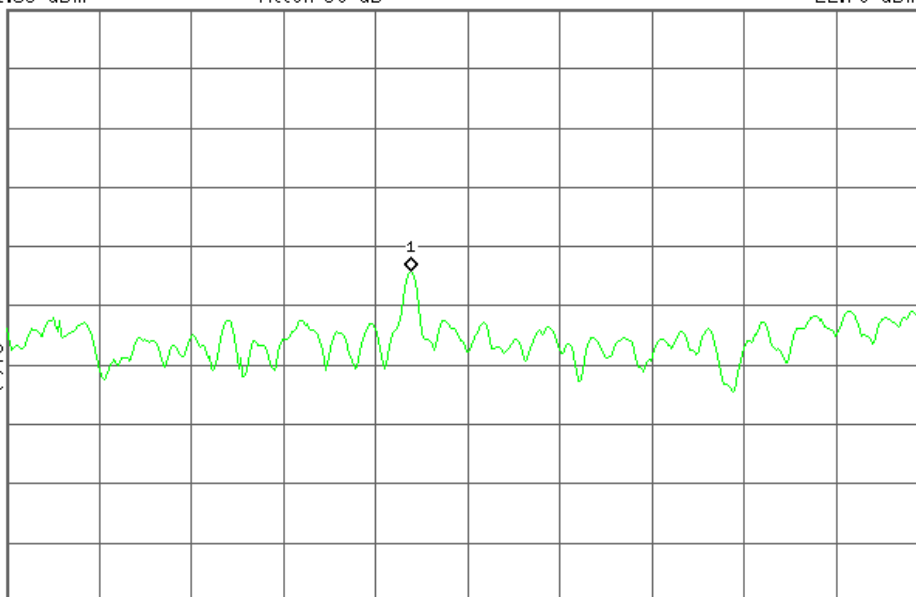
#Atten 30 dB

#Peak  
Log  
10  
dB/  
Offst  
1.53  
dB

LgAv

W1 S2  
S3 FC

E(f):  
f>50k  
Swp



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 11:31:17 Oct 30, 2007

R T

Mkr1 2.461 980 9 GHz  
-24.30 dBm

Ref 21.53 dBm

#Atten 30 dB

#Peak

Log

10

dB/

Offst

1.53

dB

LgAv

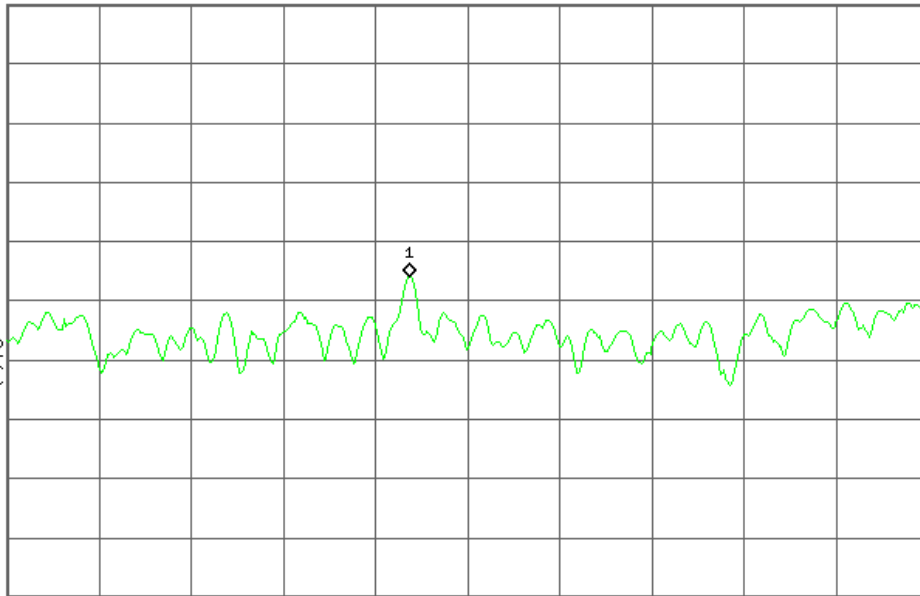
W1 S2

S3 FC

E(f):

f>50k

Swp



Center 2.462 000 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)

## **APPENDIX I PHOTOGRAPHS OF THE TEST CONFIGURATION**

### **Radiated Emissions Setup Photos**



**Power Line Conducted Emissions Setup Photos**

