



**FCC 47 CFR PART 15 SUBPART C**

**TEST REPORT**

**FOR**

**Product Name: IEEE 802.11b/g/n Half-Mini-Card Wireless Module**

**Model : VVINWIFI**

**Trade Name: VideoHome**

**Issued to**

**VideoHome Technology Corp.  
4F-1, No.190/192, Da Tung Rd., Sec.3, Hsichih Dist, New Taipei City 221, TAIWAN**

**Issued by**

**Global Certification Corp.**

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## **APPENDIX 1**

### **PHOTOS OF TEST CONFIGURATION**

### **PHOTOS OF EUT**



## 1. GENERAL INFORMATION

**Applicant** : VideoHome Technology Corp.

**Address** : 4F-1, No. 190/192, Da Tung Rd., Sec. 3, Hsichih Dist, New Taipei City  
221, TAIWAN

**Manufacturer** : VideoHome Technology Corp.

**Address** : 4F-1, No. 190/192, Da Tung Rd., Sec. 3, Hsichih Dist, New Taipei City  
221, TAIWAN

**EUT** : IEEE 802.11b/g/n Half-Mini-Card Wireless Module

**Model Name** : VVINWIFI

**Model Differences** : N/A

Is here with confirmed to comply with the requirements set out in the FCC Rules and Regulations Part 15 Subpart C and the measurement procedures were according to ANSI C63.4-2003. The said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment are within the compliance requirements.

### FCC part 15 subpart C

Receipt Date : 12/08/2010

Final Test Date : 01/03/2011

Taipei, Taiwan

(Place)

Jan. 03, 2011

(Date)

Alex Chou / Manager

(Signature)

Designation Number: TW1030



## 1.1 DESCRIPTION OF THE TESTED SAMPLES

EUT Name : IEEE 802.11b/g/n Half-Mini-Card Wireless Module

Model Number : VVINWIFI

FCC ID : WIJVVINWIFI

Input Voltage : 5 Vdc

Power From : Outside  
Support Unit PC

Operate Frequency : Refer to the channel list as described below

Modulation Technique : QPSK. BPSK. CCK. OFDM

Number of Channels : 14

Channel spacing : ☐N/A ☒ 5 MHz

Operating Mode : ☒Simplex ☐Duplex

Antenna Type : ☒integral antenna: PCB Printing ☐a dedicated antenna

Antenna gain : 2.15dBi

Transmit Power : IEEE 802.11b mode: 16 dBm +/-1.5dBm  
IEEE 802.11g mode: 14 dBm +/-1.5dBm  
IEEE 802.11n Standard-20 MHz Channel: mode: 13 dBm +/-1.5dBm  
IEEE 802.11n Wide-40 MHz Channel: mode: 11dBm +/-1.5dBm

Modulation Technique : 802.11 g/n: OFDM  
802.11b: CCK(11, 5.5Mbps), QPSK(2Mbps), BPSK(1Mbps)

Transmit Data Rate : b:11Mbps  
g:54Mbps  
n:150Mbps

Frequency Range : 2.4 GHz ISM Bands  
2.412-2.472 GHz  
2.484 GHz



## 1.2 LIST OF MEASUREMENTS AND EXAMINATIONS

FCC Rule	Description of Test	Result
15.203	Antenna Requirement	Pass
15.207	Conducted Emission	Pass
15.209	Radiated Emission	Pass
15.247(a)(1)	Channel Carrier Frequencies Separation	Pass
15.247(a)(1)	20dB Bandwidth Measurement	Pass
15.247(a)(1)	Dwell Time	Pass
15.247(b)	Number of Hopping Channels	Pass
15.247(b)	Peak Output Power Measurement Data	Pass
15.247(b)	Band Edges Measurement Data	Pass



## 2. TEST METHODOLOGY

All testing as described bellowed were performed in accordance with ANSI C63.4:2003 and FCC CFR 47 Part 15 Subpart C.

### 2.1 GENERAL TEST PROCEDURES

#### Conducted Emissions

The EUT is placed on a wood table, which is at 0.8 m above ground plane acceding to clause 15.207 and requirements of ANSI C63.4:2003. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz are using CISPR Quasi-Peak / Average detectors.

#### Radiated Emissions

The EUT is a placed on a turn table, which is 0.8 m above ground plane. The turntable was rotated through 360 degrees to determine the position of maximum emission level. The EUT is placed at 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

### 2.2 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
10.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	( )
13.36 - 13.41			

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

<sup>2</sup> Above 38.6



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

## **2.3 DESCRIPTION OF TEST MODES**

The EUT was tested under following modes:

**Modes:**

- 1. Continuous transmitting**
- 2. Receiving**

**Channels:**

**IEEE 802.11b 2412GHz(Lowest Channel)**  
**IEEE 802.11b 2437GHz(Middle Channel)**  
**IEEE 802.11b 2462GHz(Highest Channel)**  
**IEEE 802.11g 2412GHz(Lowest Channel)**  
**IEEE 802.11g 2434GHz(Middle Channel)**  
**IEEE 802.11g 2462GHz(Highest Channel)**  
**IEEE 802.11n(20m) 2412GHz(Lowest Channel)**  
**IEEE 802.11n(20m) 2437GHz(Middle Channel)**  
**IEEE 802.11n(20m) 2462GHz(Highest Channel)**  
**IEEE 802.11n(40m) 2422GHz(Lowest Channel)**  
**IEEE 802.11n(40m) 2437GHz(Middle Channel)**  
**IEEE 802.11n(40m) 2452GHz(Highest Channel)**





## 2.4 DESCRIPTION OF THE SUPPORT EQUIPMENTS

### **Setup Diagram**

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

### **Support Equipment**

Peripherals Devices:

OUTSIDE SUPPORT EQUIPMENT							
No.	Equipment	Model	Serial No.	FCC ID/ BSMI ID	Trade name	Data Cable	Power Cord
1.	MONITOR	P243W A	833000144 43	R3A002	ACER	Shielded 1.6m	Unshielded 1.8m
2.	EAR PHONE	KTSEP211B	N/A	N/A	KT.NET	Unshielded 2.1m	N/A

**Note:** All the above equipment /cable were placed in worse case position to maximize emission signals during emission test

**Grounding:** Grounding was in accordance with the manufacturer's requirement and conditions for the intended use.



### **3. TEST AND MEASUREMENT EQUIPMENT**

#### **3.1 CALIBRATION**

The measuring equipment utilized to perform the tests documented in the report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

#### **3.2 EQUIPMENT**

The following list contains measurement equipment used for testing. The equipment conforms to the requirement of CISPR 16-1, ANSI C63.2 and. Other required standards.

Calibration of all test and measurement, including any accessories that may effect such calibration, is checked frequently to ensure the accuracy. Adjustments are made and correction factors are applied in accordance with the instructions contained in the respective.

**TABLE 1 LIST OF TEST AND MEASUREMENT EQUIPMENT**

Instrument	Manufacturer	Model No.	Serial No.	Calibration Due Date	Note
EMC Test Receiver	R&S	ESCI	100438	Apr 29, 2011	
Bilog Antenna	SUNOL	JB1	A052204	Nov 06, 2011	
Turn table	EMCO	2080	9508-1805	N/A	
Controller	EMCO	2090	9804-1328	N/A	
Amplifier	G.W	GAP-801	EF150001	Jul.18, 2011	
Amplifier	Schwarzbeck	BBV 9718	9718-008	Aug. 10, 2011	
Spectrum Analyzer	NEX1	Ns-265	5044006	Aug .07, 2011	
RF Cable	BELDEN	RG-8/U	28M-002	Nov.02, 2011	
RF Cable	Huber Suhner	SUCOFLEX 104	293864/4	Nov.13, 2011	
Thermo-Hygro meter	WISEWIND	4-IN-1	050100378	Apr. 08, 2011	
Loop Antenna	TESEO	HLA6120	26349	Sep.11, 2011	
Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-491	Aug. 05, 2011	
Wideband Peak Power Meter	Anritsu	ML2495A	0841006	Oct.03, 2011	

※ Calibration interval of instruments listed above is one year



## **4. ANTENNA REQUIREMENTS**

### **4.1 STANDARD APPLICABLE**

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247(b), if transmitting antennas of direction gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

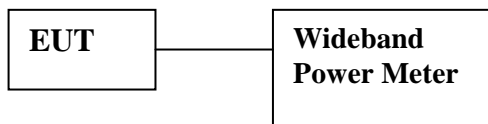
### **4.2 ANTENNA CONSTRUCTION AND DIRECTIONAL GAIN**

Antenna type: PCB Antenna  
Antenna Gain: 2.15dBi



## **5. PEAK POWER**

### **5.1 TEST SETUP**



### **5.2 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: 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 directional gain of the antenna exceeds 6 dBi.

### **5.3 TEST PROCEDURE**

1. Peak power is measured using the spectrum analyzer's internal power integration function.
2. Power is integrated over a bandwidth greater than or equal to the 99% bandwidth.

### **5.4 TEST RESULT: PASSED**



## 5.5 TEST DATA:

TEST Mode: IEEE 802.11b

Chammel	Frequency (MHz)	Output Power (dbm)	Output Power (W)	Limit (w)	Result
Low	2412	15.40	0.03467	1.00	PASS
Mid	2437	15.70	0.03715		PASS
High	2462	15.70	0.03715		PASS

TEST Mode: IEEE 802.11g

Chammel	Frequency (MHz)	Output Power (dbm)	Output Power (W)	Limit (w)	Result
Low	2412	15.85	0.03846	1.00	PASS
Mid	2437	15.55	0.03589		PASS
High	2462	15.75	0.03758		PASS

TEST Mode: IEEE 802.11n(20M)

Chammel	Frequency (MHz)	Output Power (dbm)	Output Power (W)	Limit (w)	Result
Low	2412	15.80	0.03802	1.00	PASS
Mid	2437	15.50	0.03548		PASS
High	2462	15.70	0.03715		PASS

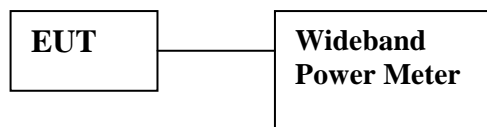
TEST Mode: IEEE 802.11n(40M)

Chammel	Frequency (MHz)	Output Power (dbm)	Output Power (W)	Limit (w)	Result
Low	2422	15.6	0.03631	1.00	PASS
Mid	2437	15.9	0.03890		PASS
High	2452	15.8	0.03802		PASS



## **6. AVERAGE POWER**

### **6.1 TEST SETUP**



### **6.2 LIMIT**

None ; for reporting purposes only.

### **6.3 TEST PROCEDURE**

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

### **6.4 TEST RESULT: PASSED**



## 6.5 TEST DATA:

TEST Mode: IEEE 802.11b

Chammel	Frequency (MHz)	Output Power (dbm)	Output Power (W)
Low	2412	13.21	0.02094
Mid	2437	11.11	0.01291
High	2462	11.82	0.01521

TEST Mode: IEEE 802.11g

Chammel	Frequency (MHz)	Output Power (dbm)	Output Power (W)
Low	2412	8.00	0.00631
Mid	2437	7.25	0.00531
High	2462	7.82	0.00605

TEST Mode: IEEE 802.11n(20M)

Chammel	Frequency (MHz)	Output Power (dbm)	Output Power (W)
Low	2412	8.77	0.00753
Mid	2437	7.89	0.00615
High	2462	8.40	0.00692

TEST Mode: IEEE 802.11n(40M)

Chammel	Frequency (MHz)	Output Power (dbm)	Output Power (W)
Low	2422	8.07	0.00641
Mid	2437	8.05	0.00638
High	2452	8.06	0.00640



## **7. SECTION 15.247 REQUIREMENTS (HARMONICS)**

### **7.1 TEST SETUP**

Refer to paragraph 7.1.

### **7.2 LIMIT**

<b>Fundamental Frequency (MHz)</b>	<b>Field Strength of Harmonics (dB<math>\mu</math>V/m at 3-meter)</b>	<b>Detector</b>
902 - 928 2400 – 2483 5725 - 5875	74	Peak
902 - 928 2400 – 2483 5725 - 5875	54	AV

### **7.3 RESULT: PASSED**





#### 7.4 TEST DATA:

##### IEEE 802.11b CHANNEL Low

##### Horizontal

mode :802.11b  
memo :TX CHL 2412

	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	4825.00	35.31	42.48	-7.17	-38.69	74.00	Peak
2	7232.50	41.27	43.83	-2.56	-32.73	74.00	Peak
3	9647.50	42.01	42.90	-0.89	-31.99	74.00	Peak

##### Vertical

mode :802.11b  
memo :TX CHL 2412

	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	4825.00	35.31	42.48	-7.17	-38.69	74.00	Peak
2	7232.50	41.27	43.83	-2.56	-32.73	74.00	Peak
3	9647.50	42.01	42.90	-0.89	-31.99	74.00	Peak



**I EEE 802.11b CHANNEL Middle**

**Horizontal**

mode : 802.11b  
memo : TX CHM 2437

	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	4877.50	35.50	42.68	-7.18	-38.50	74.00	Peak
2	7307.50	40.14	42.24	-2.10	-33.86	74.00	Peak
3	9745.00	40.89	41.65	-0.76	-33.11	74.00	Peak

**Vertical**

mode : 802.11b  
memo : TX CHM 2437

	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	4877.50	35.50	42.68	-7.18	-38.50	74.00	Peak
2	7307.50	40.14	42.24	-2.10	-33.86	74.00	Peak
3	9745.00	40.89	41.65	-0.76	-33.11	74.00	Peak



**IEEE 802.11b CHANNEL High**

**Horizontal**

mode : 802.11b  
memo : TX CHH 2462

	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	4922.50	35.79	42.98	-7.19	-38.21	74.00	Peak
2	7382.50	40.26	41.89	-1.63	-33.74	74.00	Peak
3	9850.00	40.72	41.33	-0.61	-33.28	74.00	Peak

**Vertical**

mode : 802.11b  
memo : TX CHH 2462

	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	4922.50	35.79	42.98	-7.19	-38.21	74.00	Peak
2	7382.50	40.26	41.89	-1.63	-33.74	74.00	Peak
3	9850.00	40.72	41.33	-0.61	-33.28	74.00	Peak



**IEEE 802.11g CHANNEL Low**

**Horizontal**

mode :802.11g  
memo :TX CHL 2412

	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	4825.00	35.02	42.19	-7.17	-38.98	74.00	Peak
2	7232.50	40.62	43.18	-2.56	-33.38	74.00	Peak
3	9647.50	41.43	42.32	-0.89	-32.57	74.00	Peak

**Vertical**

mode :802.11g  
memo :TX CHL 2412

	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	4825.00	35.02	42.19	-7.17	-38.98	74.00	Peak
2	7232.50	40.62	43.18	-2.56	-33.38	74.00	Peak
3	9647.50	41.43	42.32	-0.89	-32.57	74.00	Peak





**IEEE 802.11g CHANNEL Middle**

**Horizontal**

mode :802.11g  
memo :TX CHM 2437

	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	4877.50	37.69	44.87	-7.18	-36.31	74.00	Peak
2	7307.50	41.15	43.25	-2.10	-32.85	74.00	Peak
3	9745.00	40.95	41.71	-0.76	-33.05	74.00	Peak

**Vertical**

mode :802.11g  
memo :TX CHM 2437

	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	4877.50	37.69	44.87	-7.18	-36.31	74.00	Peak
2	7307.50	41.15	43.25	-2.10	-32.85	74.00	Peak
3	9745.00	40.95	41.71	-0.76	-33.05	74.00	Peak



**IEEE 802.11g CHANNEL High**

**Horizontal**

mode :802.11g  
memo :TX CHH 2462

	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	4922.50	37.12	44.31	-7.19	-36.88	74.00	Peak
2	7382.50	41.39	43.02	-1.63	-32.61	74.00	Peak
3	9850.00	42.39	43.00	-0.61	-31.61	74.00	Peak

**Vertical**

mode :802.11g  
memo :TX CHH 2462

	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	4922.50	37.12	44.31	-7.19	-36.88	74.00	Peak
2	7367.50	40.99	42.71	-1.72	-33.01	74.00	Peak
3	9850.00	42.39	43.00	-0.61	-31.61	74.00	Peak



**IEEE 802.11n(20M) CHANNEL Low**

**Horizontal**

mode : 802.11n(20)  
memo : TX CHL 2412

	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	4825.00	36.28	43.45	-7.17	-37.72	74.00	Peak
2	7232.50	40.84	43.40	-2.56	-33.16	74.00	Peak
3	9647.50	41.33	42.22	-0.89	-32.67	74.00	Peak

**Vertical**

mode : 802.11n(20)  
memo : TX CHL 2412

	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	4825.00	36.28	43.45	-7.17	-37.72	74.00	Peak
2	7232.50	40.84	43.40	-2.56	-33.16	74.00	Peak
3	9647.50	41.33	42.22	-0.89	-32.67	74.00	Peak



**IEEE 802.11n(20M) CHANNEL Middle**

**Horizontal**

mode : 802.11n(20)  
memo : TX CHM 2437

	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	4877.50	36.73	43.91	-7.18	-37.27	74.00	Peak
2	7307.50	39.47	41.57	-2.10	-34.53	74.00	Peak
3	9745.00	40.71	41.47	-0.76	-33.29	74.00	Peak

**Vertical**

mode : 802.11n(20)  
memo : TX CHM 2437

	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	4877.50	36.73	43.91	-7.18	-37.27	74.00	Peak
2	7307.50	39.47	41.57	-2.10	-34.53	74.00	Peak
3	9745.00	40.71	41.47	-0.76	-33.29	74.00	Peak





**IEEE 802.11n(20M) CHANNEL High**

**Horizontal**

mode : 802.11n(20)  
memo : TX CHH 2462

	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	4922.50	37.10	44.29	-7.19	-36.90	74.00	Peak
2	7382.50	40.99	42.62	-1.63	-33.01	74.00	Peak
3	9445.00	42.68	43.85	-1.17	-31.32	74.00	Peak

**Vertical**

mode : 802.11n(20)  
memo : TX CHH 2462

	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	4922.50	37.10	44.29	-7.19	-36.90	74.00	Peak
2	7382.50	40.99	42.62	-1.63	-33.01	74.00	Peak
3	9850.00	41.47	42.08	-0.61	-32.53	74.00	Peak



**IEEE 802.11n(40M) CHANNEL Low**

**Horizontal**

mode : 802.11n(40)  
memo : TX CHL 2422

	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	4847.50	35.94	43.11	-7.17	-38.06	74.00	Peak
2	7262.50	39.65	42.02	-2.37	-34.35	74.00	Peak
3	9685.00	41.46	42.30	-0.84	-32.54	74.00	Peak

**Vertical**

mode : 802.11n(40)  
memo : TX CHL 2422

	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	4847.50	35.94	43.11	-7.17	-38.06	74.00	Peak
2	7262.50	39.65	42.02	-2.37	-34.35	74.00	Peak
3	9685.00	41.46	42.30	-0.84	-32.54	74.00	Peak



**IEEE 802.11n(40M) CHANNEL Middle**

**Horizontal**

mode : 802.11n(40)  
memo : TX CHM 2437

	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	4877.50	35.57	42.75	-7.18	-38.43	74.00	Peak
2	7307.50	39.75	41.85	-2.10	-34.25	74.00	Peak
3	9745.00	40.91	41.67	-0.76	-33.09	74.00	Peak

**Vertical**

mode : 802.11n(40)  
memo : TX CHM 2437

	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	4877.50	35.57	42.75	-7.18	-38.43	74.00	Peak
2	7307.50	39.75	41.85	-2.10	-34.25	74.00	Peak
3	9745.00	40.91	41.67	-0.76	-33.09	74.00	Peak



**IEEE 802.11n(40M) CHANNEL High**

**Horizontal**

mode : 802.11n(40)  
memo : TX CHH 2452

	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	4907.50	36.12	43.31	-7.19	-37.88	74.00	Peak
2	7352.50	41.21	43.03	-1.82	-32.79	74.00	Peak
3	9805.00	41.41	42.08	-0.67	-32.59	74.00	Peak

**Vertical**

mode : 802.11n(40)  
memo : TX CHH 2452

	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	4907.50	36.12	43.31	-7.19	-37.88	74.00	Peak
2	7352.50	41.21	43.03	-1.82	-32.79	74.00	Peak
3	9805.00	41.41	42.08	-0.67	-32.59	74.00	Peak

**Note:**

1. Emission level = Reading level + Correction factor
2. Correction factor : Antenna factor, Cable loss, PreAmp, etc.
3. All emissions as described above were determining by rotating the EUT through three orthogonal axes to maximizing the emissions if the EUT belongs to hand-held or body-worn devices.
4. Measurements above 1000 MHz, Peak detector setting: use a 1 MHz RBW, a 3 MHz VBW.
5. Measurements above 1000 MHz, Average detector setting: 1 MHz RBW with 10 Hz VBW
6. Peak detector measurement data will represent the worst case results.



7. “---” denotes the data which is not available.





## **8. SECTION 15.205 REQUIREMENTS (BAND EDGE)**

### **8.1 TEST SETUP**

Refer to paragraph 6.1.

### **8.2 LIMIT**

Restricted Bands:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
<sup>1</sup> 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	( <sup>2</sup> )
13.36 - 13.41			

Operation within the bands:

902 - 928 MHz, 2400 - 2483.5 MHz, 5725 - 5875 MHz, and 24.0 - 24.25 GHz.

Frequency (Hz)	Field Strength ( $\mu\text{V/m}$ at 3-meter)	Field Strength (dB $\mu\text{V/m}$ at 3-meter)
1.705-30	30 (at 30-meter)	49.5
30-88	100	40
88-216	150	43
216-960	200	46
Above 960	500	54

### **8.3 RESULT: PASSED**



#### 8.4 TEST DATA:

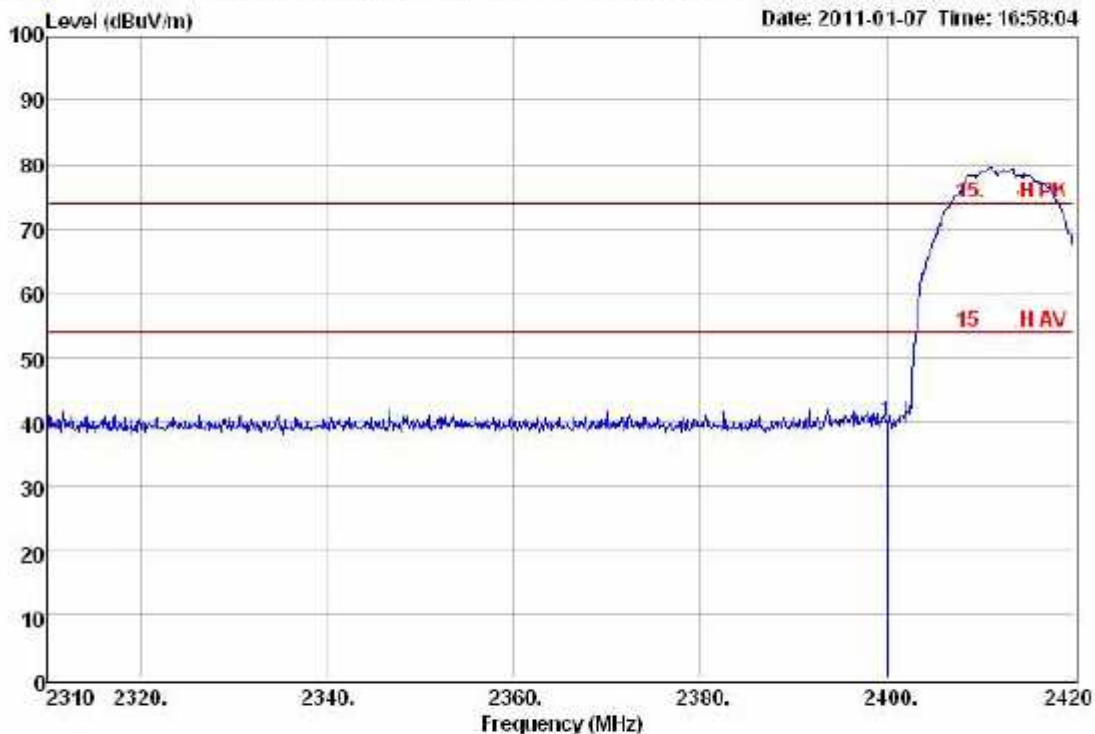
##### IEEE 802.11b CHANNEL Low – Horizontal



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**Global Certification Corp.**

Data: 9 File: C:\Documents and Settings\Administrator\桌面\客戶測試數據\翔展\0D0803.EM6 (201)

Date: 2011-01-07 Time: 16:58:04



Site : chamber  
Condition: H PK 3m BBHA 9120-080806 HORIZONTAL  
cut :  
mode : 802.11b  
memo : TX CHL

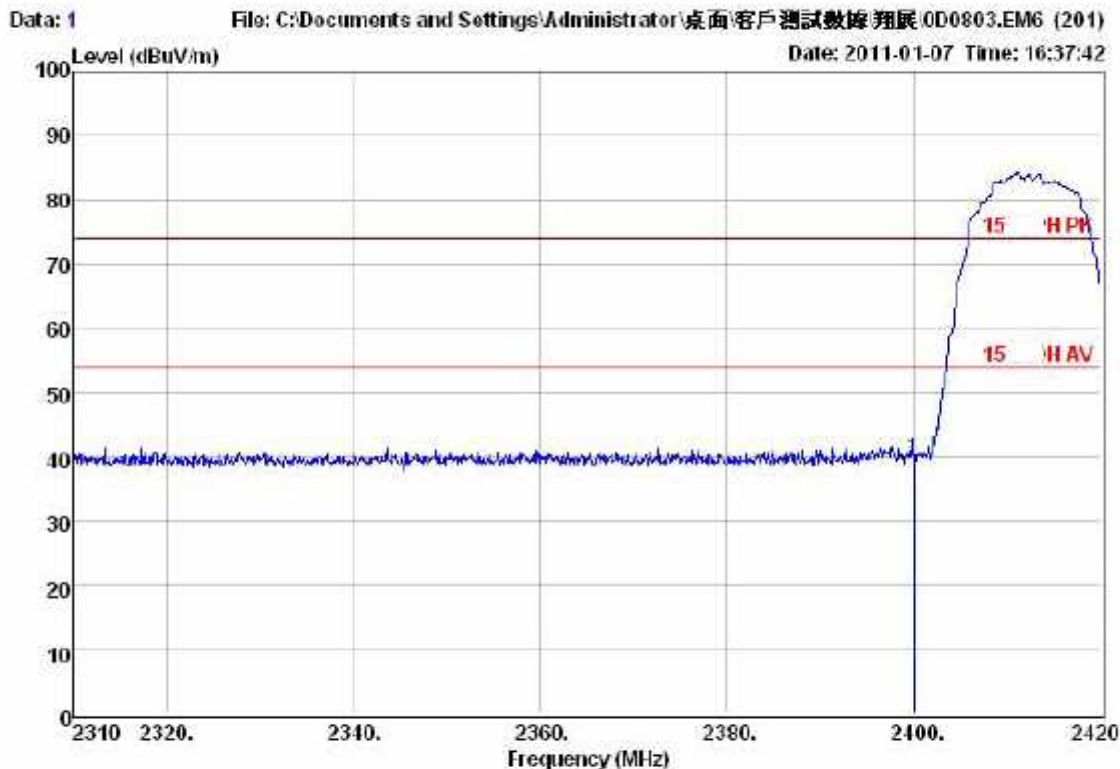
	Freq	Level	Read	Over	Limit	
	MHz	dBUV/m	Level	Limit	Line	Remark
			dBUV	dB	dBUV/m	
1	2399.98	39.84	46.30	-6.46	-34.16	74.00 Peak



**IEEE 802.11b CHANNEL Low – Vertical**



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**Global Certification Corp.**



Site : chamber  
Condition: H PK 3m BBHA 9120-080806 VERTICAL  
cut :  
mode : 802.11b  
memo : TX CHL

	Freq	Level	Read	Over	Limit	
	MHz	dBuV/m	Level	Factor	Limit	Line Remark
			dBuV	dB/m	dB	dBuV/m
1	2399.98	39.69	46.15	-6.46	-34.31	74.00 Peak



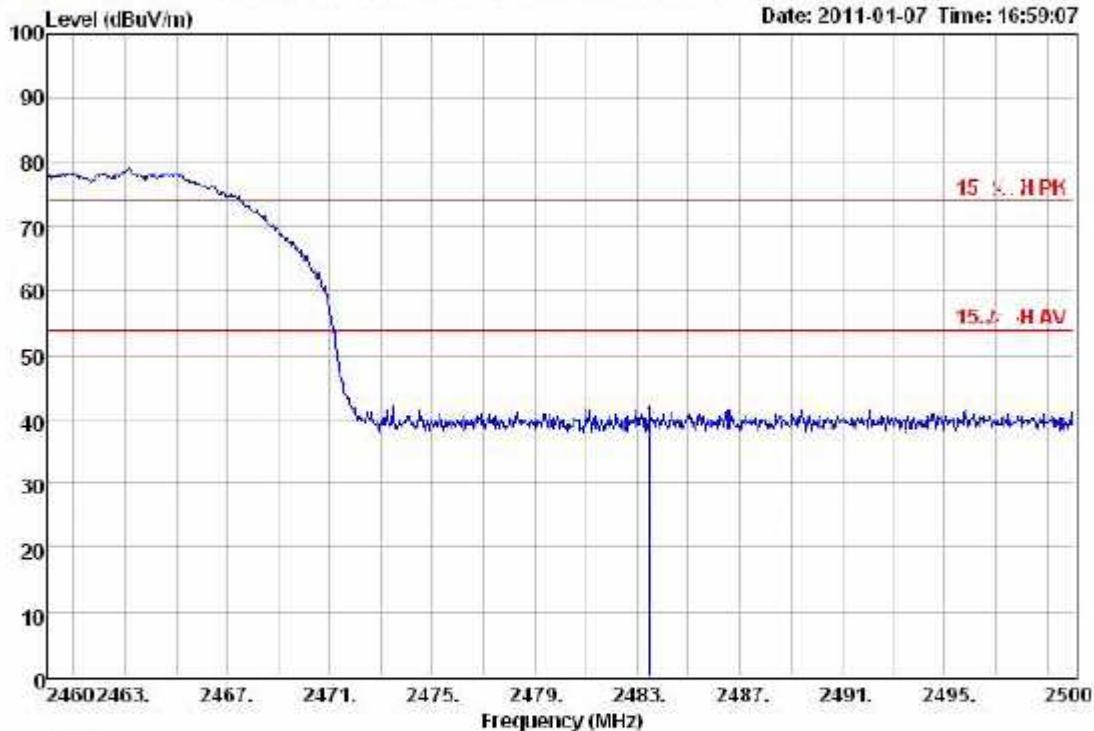


**IEEE 802.11b CHANNEL High - Horizontal**



環球認證有限公司  
**Global Certification Corp.**

Data: 10 File: C:\Documents and Settings\Administrator\桌面\客戶測試數據\翔展\0D0803.EM6 (201)  
Date: 2011-01-07 Time: 16:59:07



Site : chamber  
Condition: H PK 3m BBHA 9120-080806 HORIZONTAL  
eul :  
mode : 802.11b  
memo : TX CHH

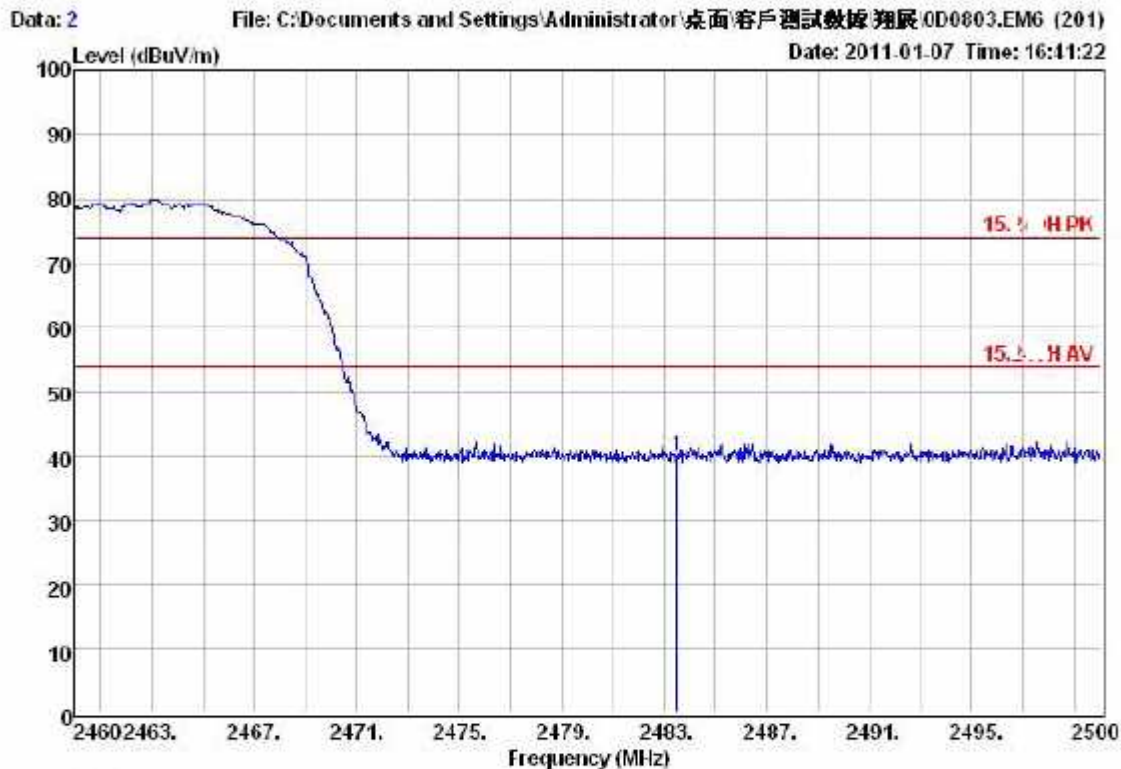
	Freq	Level	Read	Over	Limit	
	MHz	dBuV/m	Level	Factor	Limit	Line Remark
			dBuV	dB/m	dB	dBuV/m
1	2483.52	38.76	44.50	-5.74	-35.24	74.00 Peak



**IEEE 802.11b CHANNEL High - Vertical**



環球認證有限公司  
**Global Certification Corp.**



Site : chamber  
Condition: H PK 3m BBHA 9120-080806 VERTICAL  
cut :  
mode : 802.11b  
memo : TX CHH

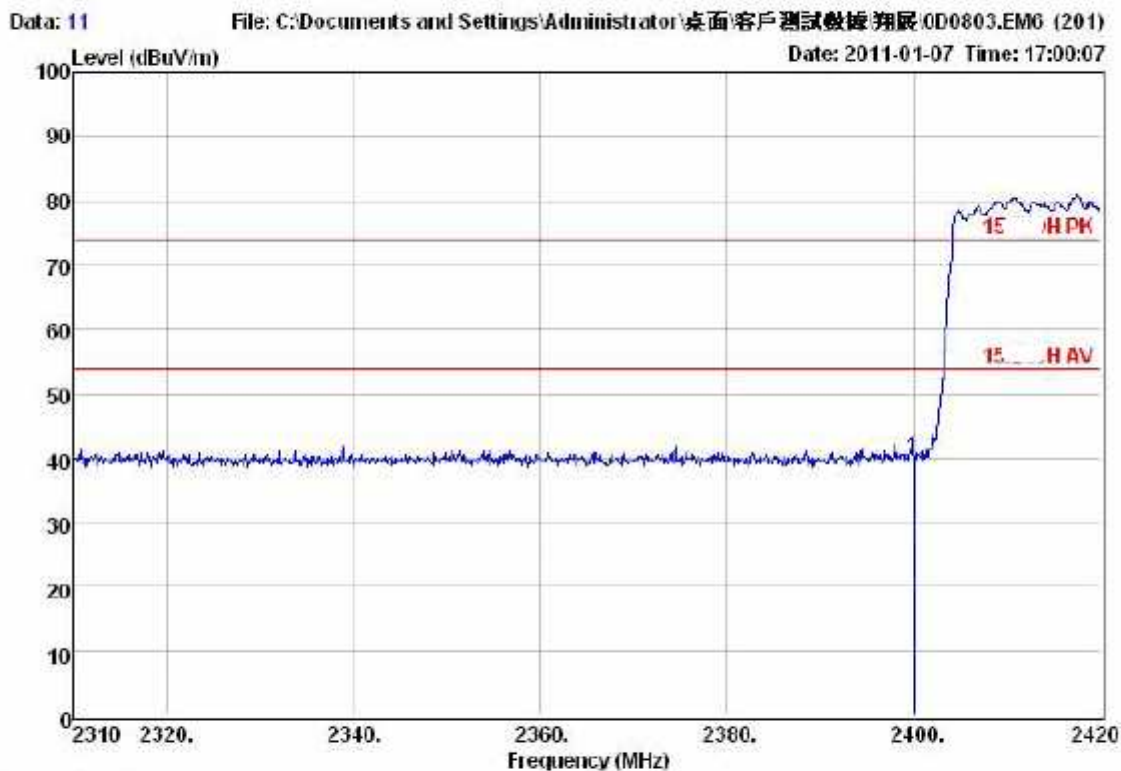
	Freq	Level	Read	Over	Limit	
	MHz	dBuV/m	Level	Factor	Limit	Line Remark
			dBuV	dB/m	dB	dBuV/m
1	2483.52	39.86	45.60	-5.74	-34.14	74.00 Peak



IEEE 802.11g CHANNEL Low – Horizontal



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**Global Certification Corp.**



Site : chamber  
Condition: PK 3m BBHA 9120-080806 HORIZONTAL  
cut :  
mode : 802.11g  
memo : TX CHL

	Freq	Level	Read	Over	Limit	
	MHz	dBuV/m	Level	Factor	Limit	Line Remark
			dBuV	dB/m	dB	dBuV/m
1	2399.98	39.92	46.38	-6.46	-34.08	74.00 Peak

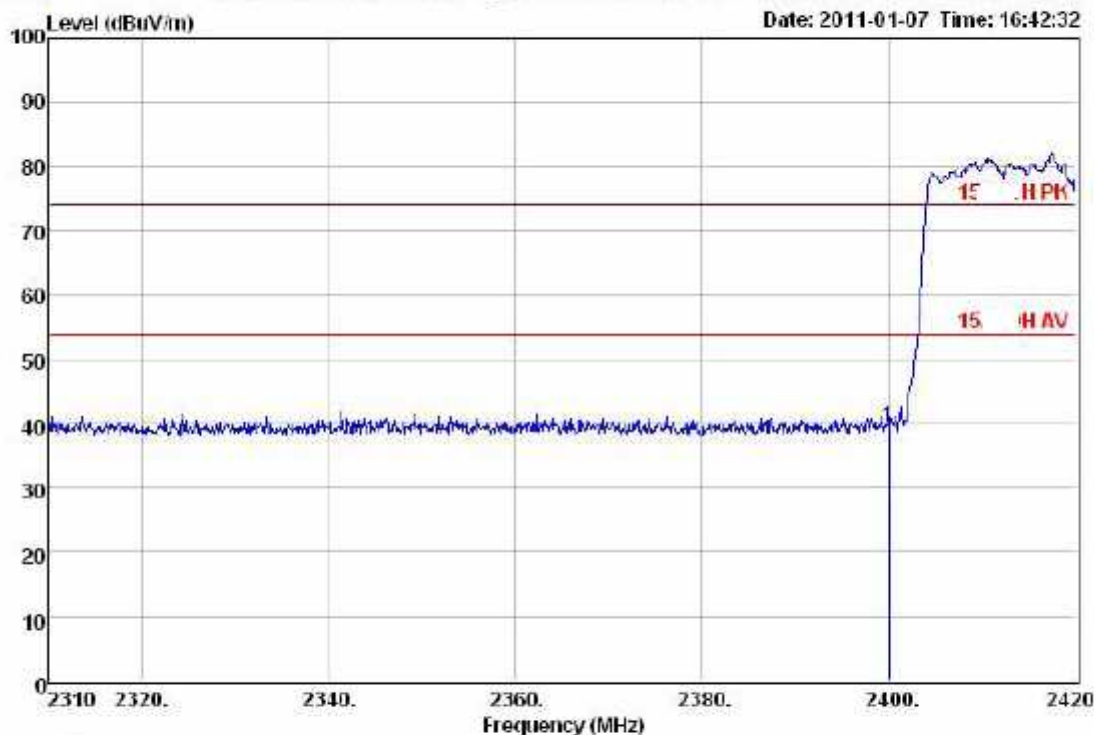


**IEEE 802.11g CHANNEL Low –Vertical**



環球認證有限公司  
**Global Certification Corp.**

Data: 3 File: C:\Documents and Settings\Administrator\桌面\客戶測試數據整理\0D0803.EM6 (201)



Site : chamber  
Condition: H PK 3m BBHA 9120-080806 VERTICAL  
Ant :  
mode : 802.11g  
memo : TX CHL

	Freq	Level	Read	Over	Limit	
	MHz	dBuV/m	Level	Factor	Limit	Line Remark
			dBuV	dB/m	dB	dBuV/m
1	2399.98	39.43	45.89	-6.46	-34.57	74.00 Peak

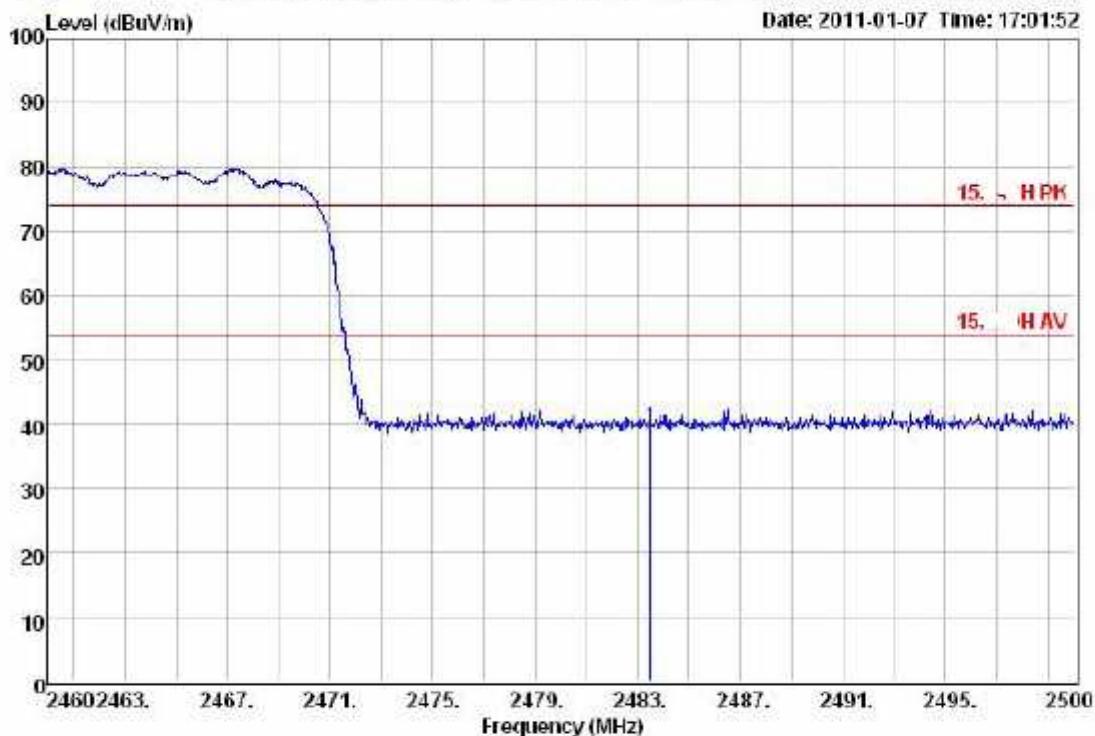


**IEEE 802.11g CHANNEL High – Horizontal**



環球認證有限公司  
**Global Certification Corp.**

Data: 12 File: C:\Documents and Settings\Administrator\桌面\客戶測試數據\翔展\0D0803.EM6 (201)  
Date: 2011-01-07 Time: 17:01:52



Site : chamber  
Condition: H PK 3m BBHA 9120-080806 HORIZONTAL  
ant :  
mode : 802.11g  
memo : TX CHH

	Freq	Level	Read	Over	Limit	
	MHz	dBuV/m	Level	Factor	Limit	Line Remark
			dBuV	dB/m	dB	dBuV/m
1	2483.52	39.47	45.21	-5.74	-34.53	74.00 Peak





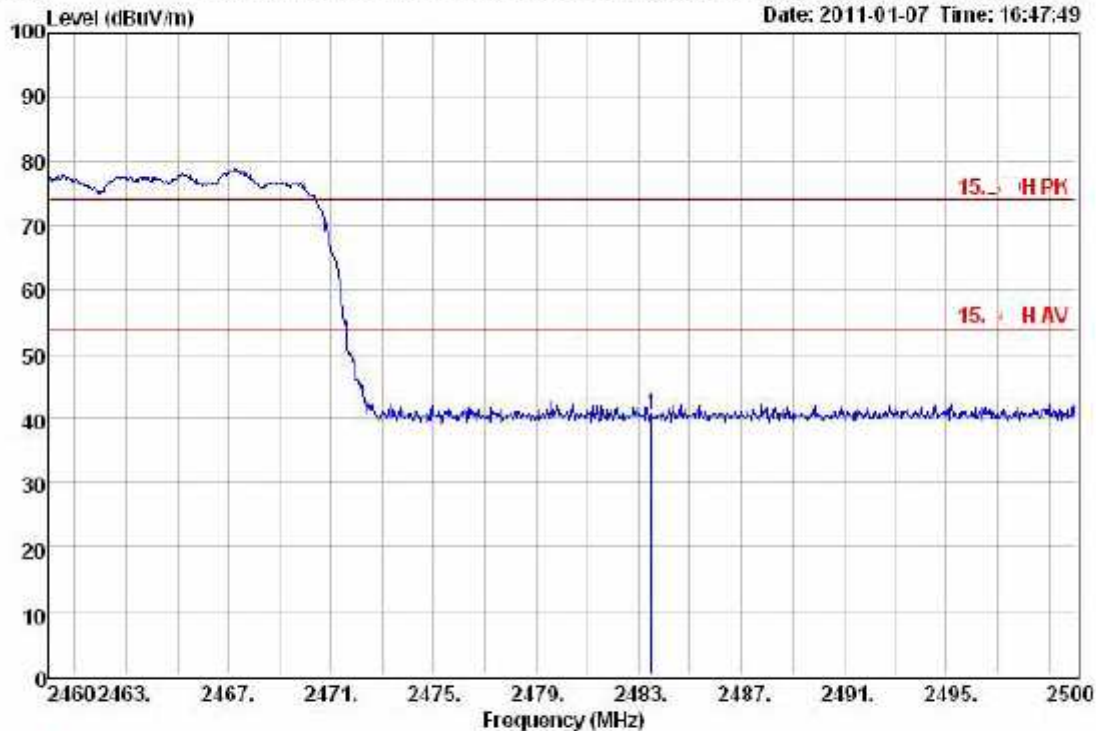
**IEEE 802.11g CHANNEL High – Vertical**



環球認證有限公司  
**Global Certification Corp.**

Data: 4 File: C:\Documents and Settings\Administrator\桌面\客戶測試數據\擴展\0D0803.EM6 (201)

Date: 2011-01-07 Time: 16:47:49



Site : chamber  
Condition: H PK 3m BBHA 9120-080806 VERTICAL  
eut :  
mode : 802.11g  
memo : TX CHH

	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	2483.52	40.62	46.36	-5.74	-33.38	74.00	Peak



**IEEE 802.11n(20M) CHANNEL Low – Horizontal**

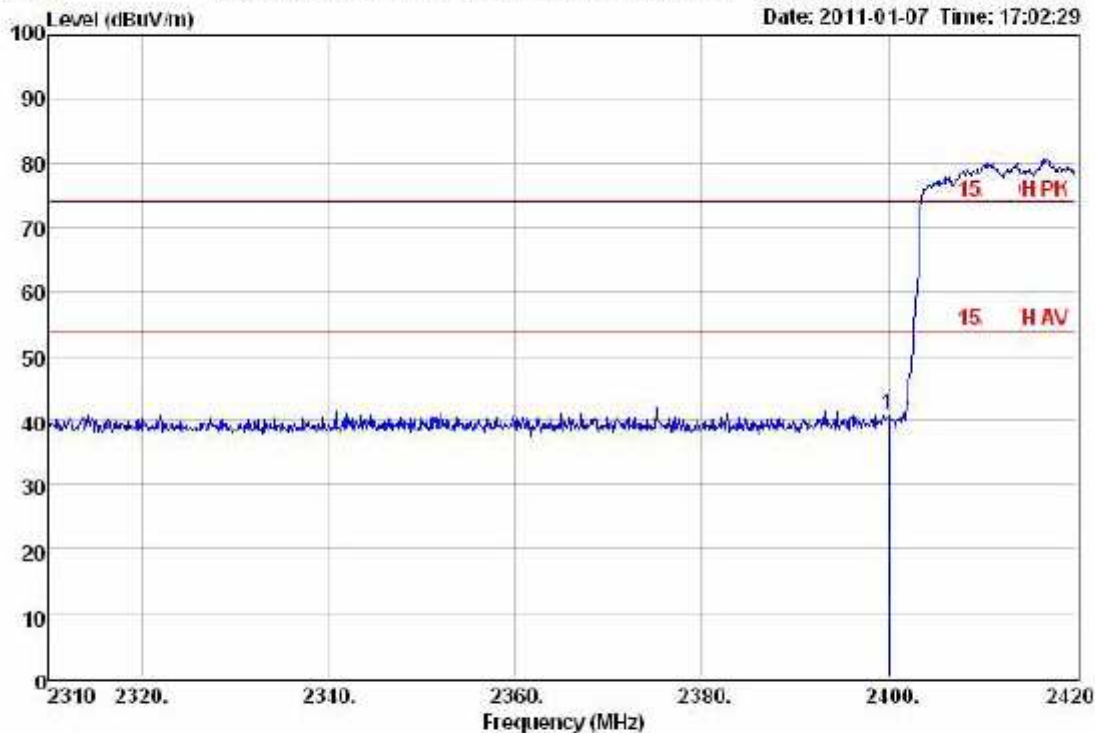


環球認證有限公司  
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Data: 13

File: C:\Documents and Settings\Administrator\桌面\客戶測試數據\雜訊\0D0803.EM6 (201)

Date: 2011-01-07 Time: 17:02:29



Site : chamber  
Condition: H PK 3m BBHA 9120-080806 HORIZONTAL  
Ant :  
mode : 802.11n(20)  
memo : TX CHL

	Freq	Level	Read		Over	Limit	
	MHz	dBuV/m	Level	Factor	Limit	Line	Remark
			dBuV	dB/m	dB	dBuV/m	
1	2399.98	40.78	47.24	-6.46	-33.22	74.00	Peak



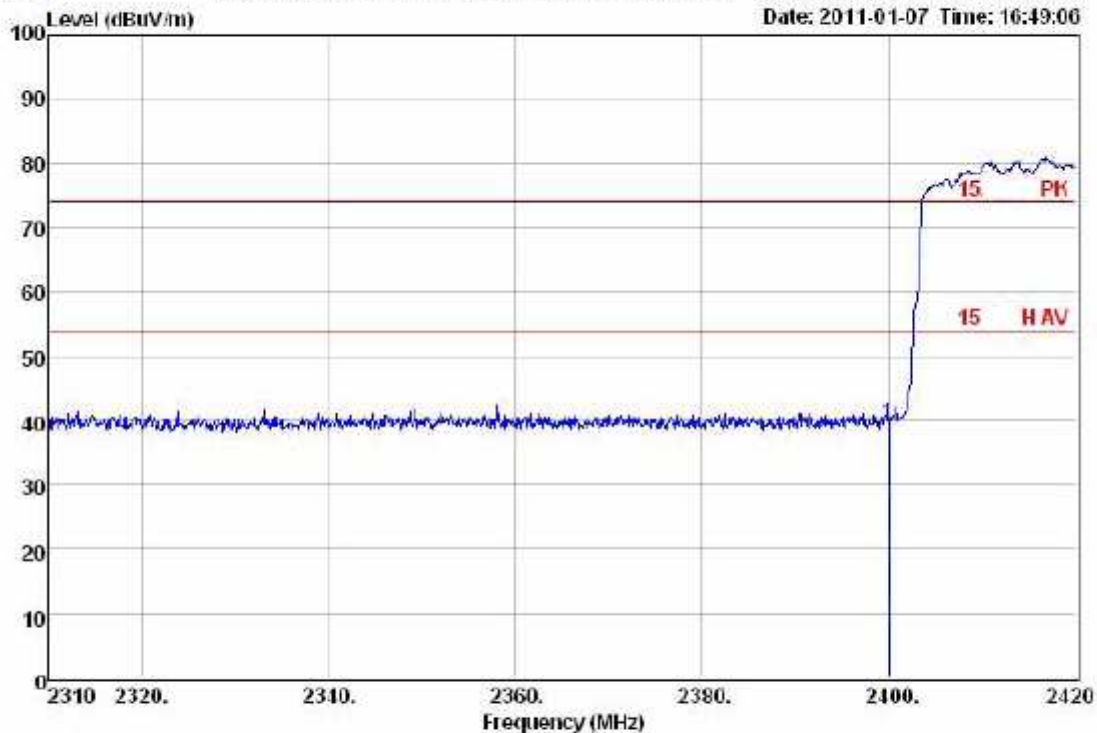
**IEEE 802.11n(20M) CHANNEL Low -Vertical**



環球認證有限公司  
**Global Certification Corp.**

Data: 5 File: C:\Documents and Settings\Administrator\桌面\客戶測試數據\擴展\0D0803.EM6 (201)

Date: 2011-01-07 Time: 16:49:06



Site : chamber  
Condition: H PK 3m BBHA 9120-080806 VERTICAL  
cut :  
mode : 802.11n(20)  
memo : TX CHL

	Freq	Level	Read	Over	Limit	
	MHz	dBuV/m	Level	Factor	Limit	Line Remark
			dBuV	dB/m	dB	dBuV/m
1	2399.98	39.32	45.78	-6.46	-34.68	74.00 Peak



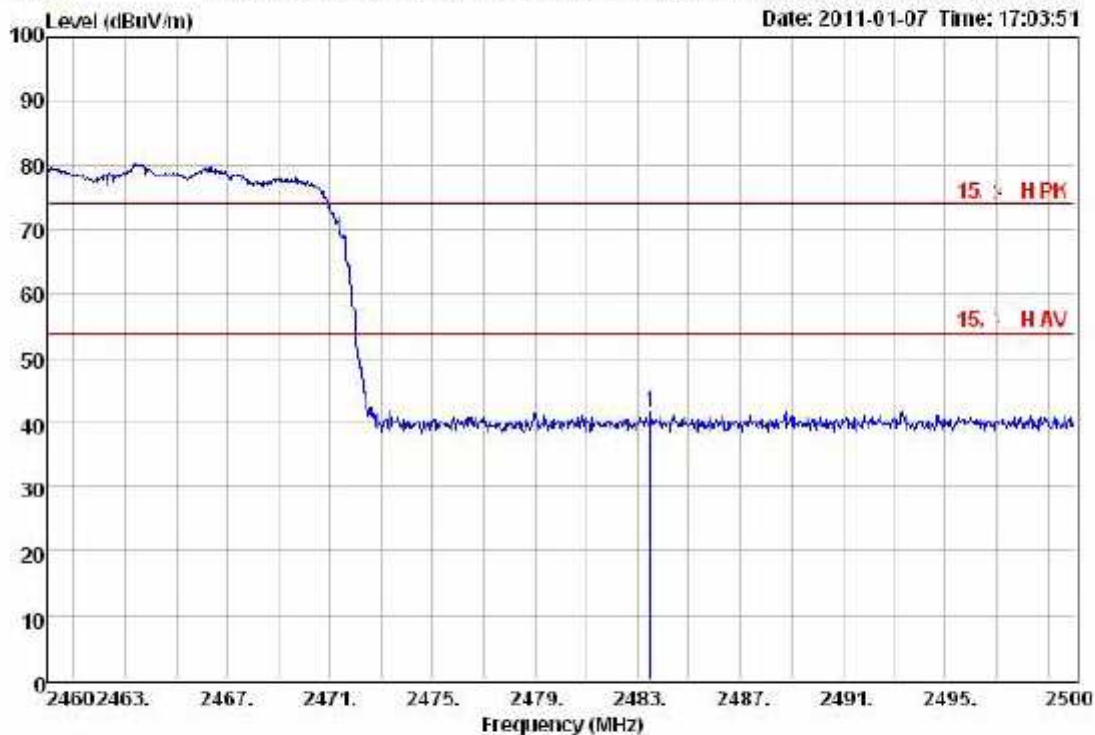


**IEEE 802.11n(20M) CHANNEL High – Horizontal**



環球認證有限公司  
**Global Certification Corp.**

Data: 14 File: C:\Documents and Settings\Administrator\桌面\客戶測試數據\翔展\0D0803.EM6 (201)  
Date: 2011-01-07 Time: 17:03:51



Site : chamber  
Condition: H PK 3m BBHA 9120-080806 HORIZONTAL  
ant :  
mode : 802.11n(20)  
memo : TX CHH

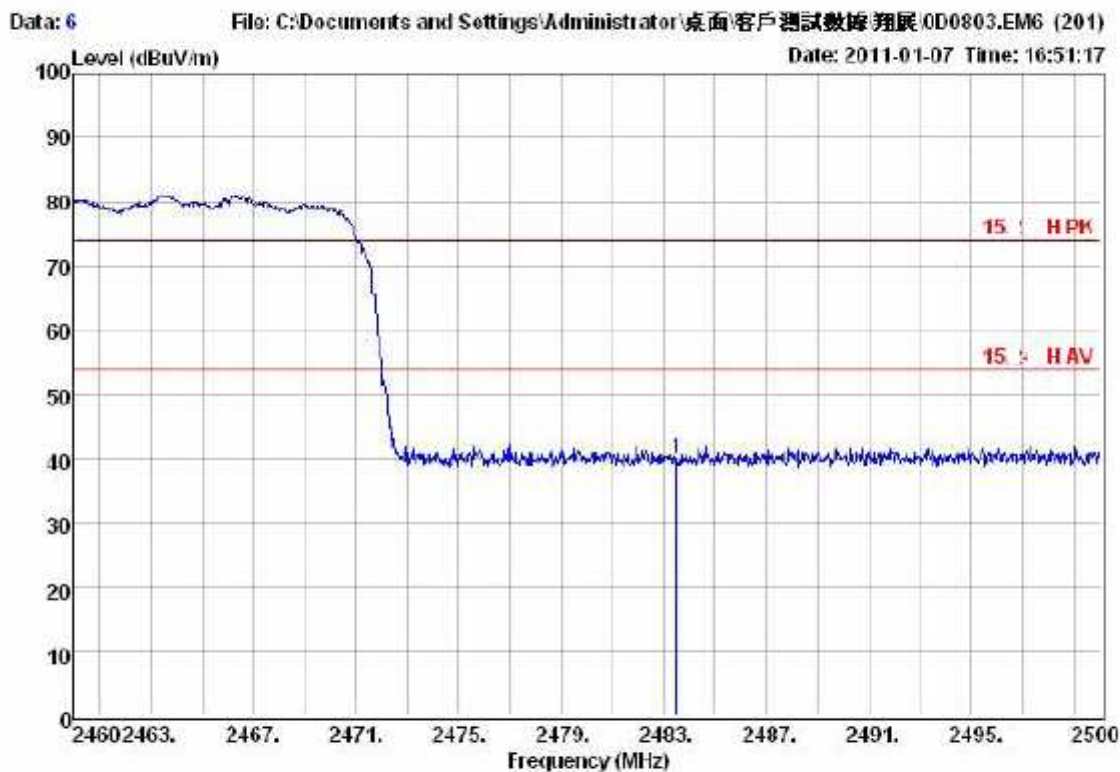
	Freq	Level	Read	Over	Limit	
	MHz	dBuV/m	Level	Factor	Limit	Line Remark
			dBuV	dB/m	dB	dBuV/m
1	2483.52	41.49	47.23	-5.74	-32.51	74.00 Peak



**IEEE 802.11n(20M) CHANNEL High -Vertical**



環球認證有限公司  
**Global Certification Corp.**



Site : chamber  
Condition: H PK 3m BBHA 9120-080806 VERTICAL  
cut :  
mode : 802.11n(20)  
memo : TX CHH

	Freq	Level	Read	Over	Limit	
	MHz	dBuV/m	Level	Factor	Limit	Line Remark
			dBuV	dB/m	dB	dBuV/m
1	2483.52	39.90	45.64	-5.74	-34.10	74.00 Peak



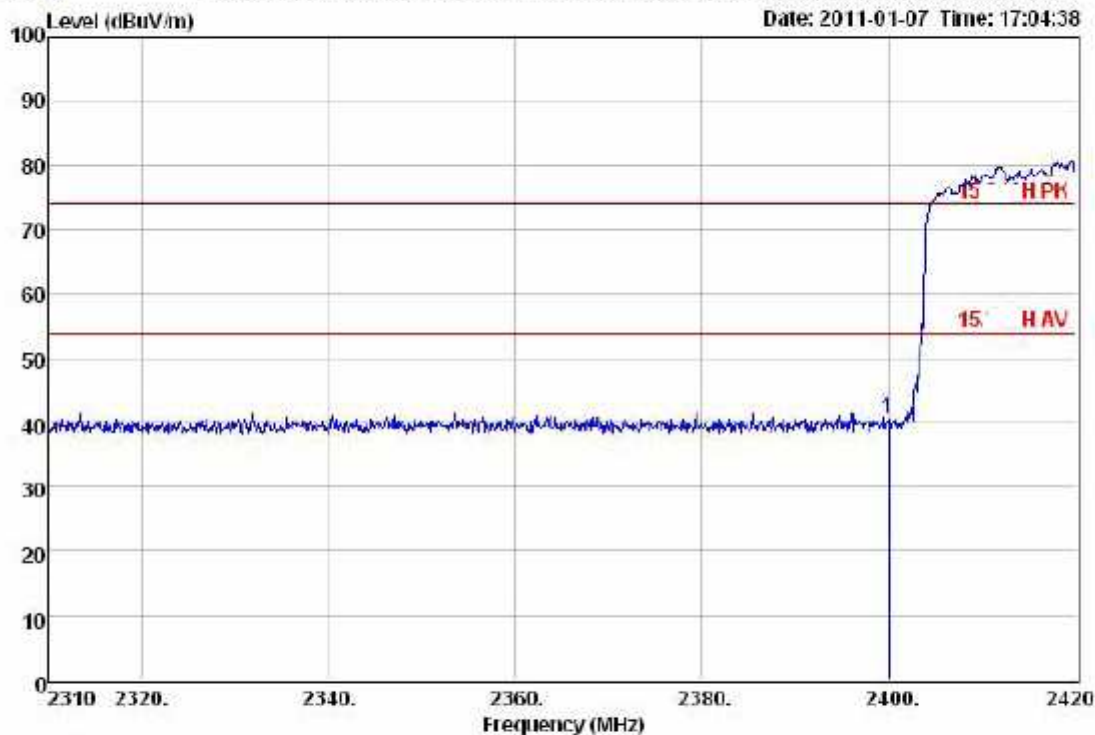
**IEEE 802.11n(40M) CHANNEL Low – Horizontal**



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**Global Certification Corp.**

Data: 15 File: C:\Documents and Settings\Administrator\桌面\客戶測試數據\翔展\0D0803.EM6 (201)

Date: 2011-01-07 Time: 17:04:38



Site : chamber  
Condition: H PK 3m BBHA 9120-080806 HORIZONTAL  
ant :  
mode : 802.11n(40)  
memo : TX CHL

	Freq	Level	Read	Over	Limit	
	MHz	dBuV/m	Level	Limit	Line	Remark
			dBuV	dB	dBuV/m	
1	2399.98	40.37	46.83	-6.46	-33.63	74.00 Peak

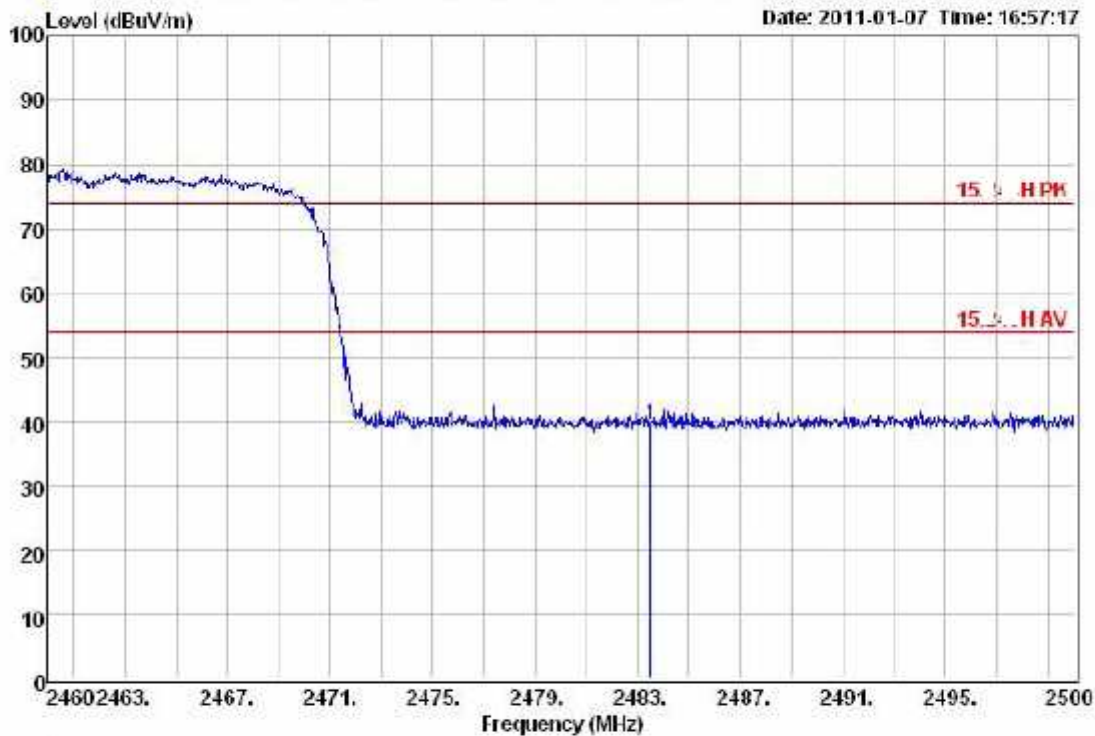


IEEE 802.11n(40M) CHANNEL Low -Vertical



環球認證有限公司  
**Global Certification Corp.**

Data: 8 File: C:\Documents and Settings\Administrator\桌面\客戶測試數據\翔展\0D0803.EM6 (201)  
Date: 2011-01-07 Time: 16:57:17



Site : chamber  
Condition: H PK 3m BBHA 9120-080806 VERTICAL  
cut :  
mode : 802.11(n40)  
memo : TX CHL

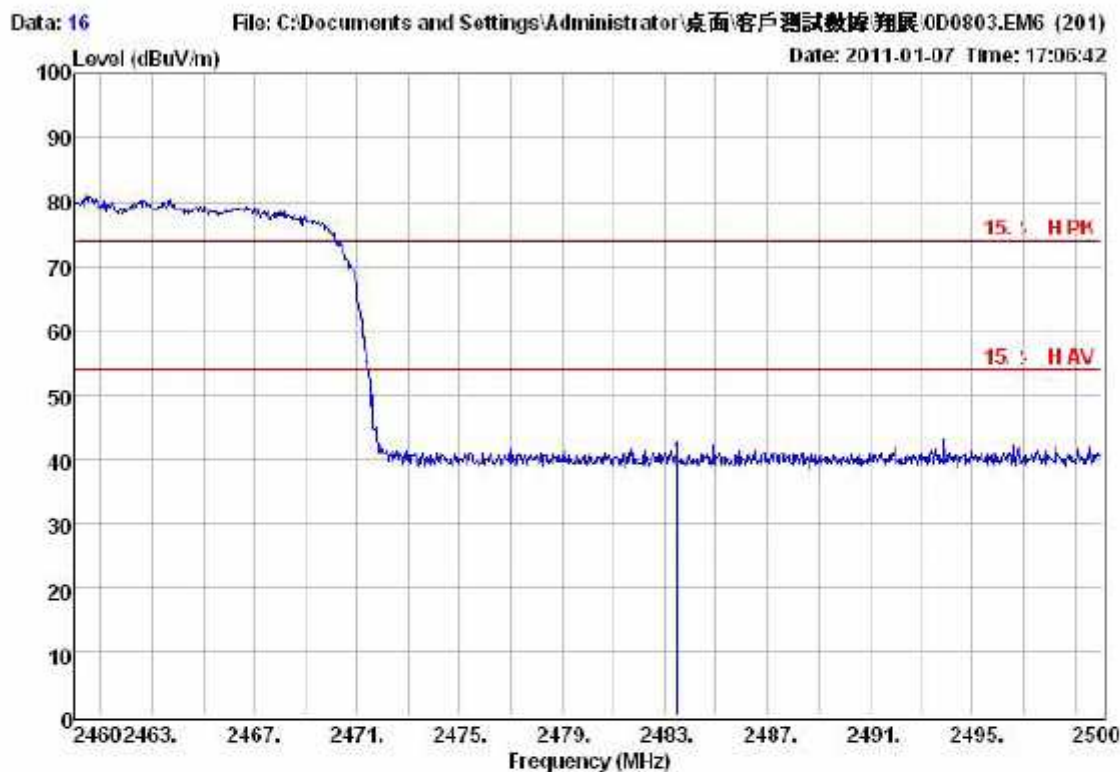
	Freq	Level	Read	Over	Limit	
	MHz	dBuV/m	Level	Factor	Limit	Line Remark
			dBuV	dB/m	dB	dBuV/m
1	2483.52	39.38	45.12	-5.74	-34.62	74.00 Peak



**IEEE 802.11n(40M) CHANNEL High – Horizontal**



環球認證有限公司  
**Global Certification Corp.**



Site : chamber  
Condition: H PK 3m BBHA 9120-080806 HORIZONTAL  
cut :  
mode : 802.11n(40)  
memo : TX CHH

	Freq	Level	Read	Over	Limit	
	MHz	dBuV/m	Level	Factor	Limit	Line Remark
			dBuV	dB/m	dB	dBuV/m
1	2483.52	39.52	45.26	-5.74	-34.48	74.00 Peak



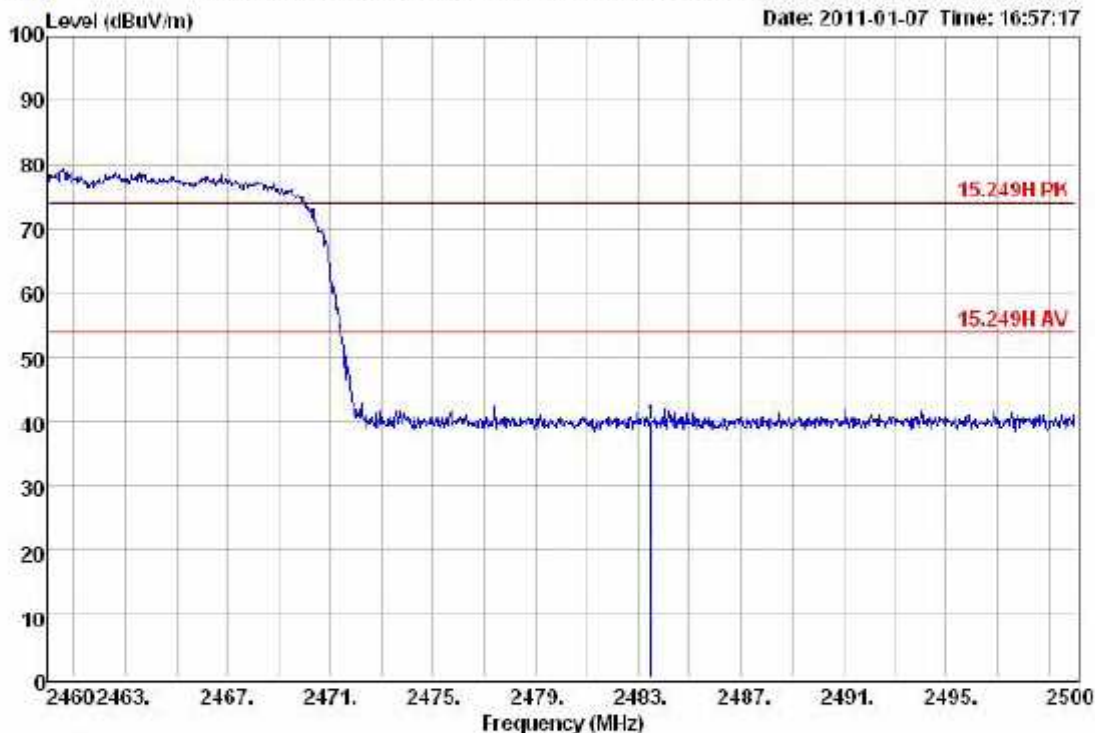


**IEEE 802.11n(40M) CHANNEL High -Vertical**



環球認證有限公司  
**Global Certification Corp.**

Data: 8 File: C:\Documents and Settings\Administrator\桌面\客戶測試數據\羅展\0D0803.EM6 (201)  
Date: 2011-01-07 Time: 16:57:17



Site : chamber  
Condition: 15.249H PK 3m BBHA 9120-080806 VERTICAL  
cut :  
mode : 802.11(n40)  
memo : TX CHH

	Freq	Level	Read	Over	Limit	
	MHz	dBuV/m	Level	Factor	Limit	Line Remark
			dBuV	dB/m	dB	dBuV/m
1	2483.52	39.38	45.12	-5.74	-34.62	74.00 Peak



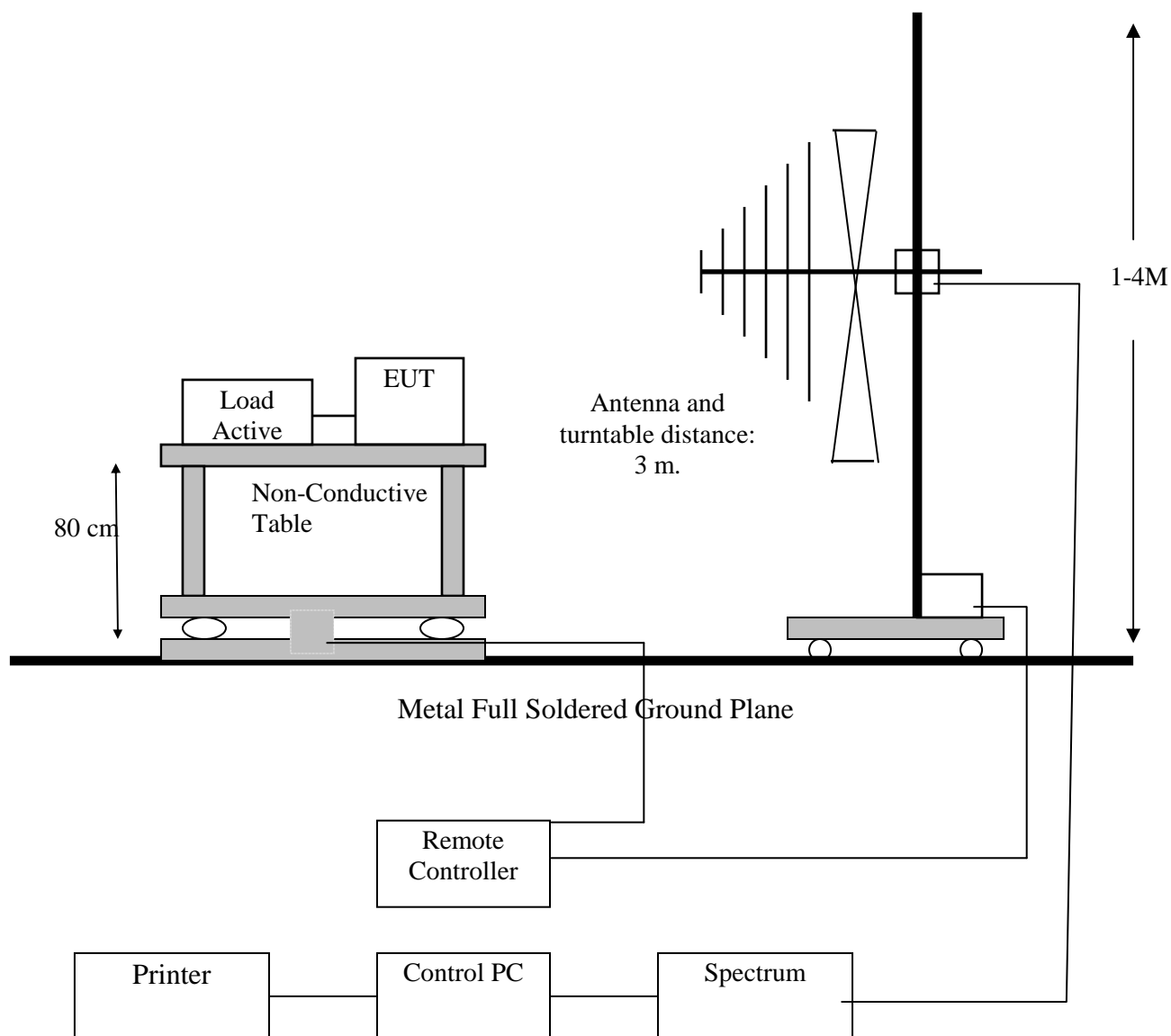
Note:

1. Emission level = Reading level + Correction factor
2. Correction factor : Antenna factor, Cable loss, PreAmp, etc.
3. All emissions as described above were determining by rotating the EUT through three orthogonal axes to maximizing the emissions if the EUT belongs to hand-held or body-worn devices.
4. Measurements above 1000 MHz, Peak detector setting: use a 1 MHz RBW, a 3 MHz VBW.
5. Measurements above 1000 MHz, Average detector setting: 1 MHz RBW with 10 Hz VBW.
6. Peak detector measurement data will represent the worst case results.



## 9. SECTION 15.209 REQUIREMENTS (GENERAL RADIATED EMISSION)

### 9.1 TEST SETUP







## 9.2 LIMIT

The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in section 15.209 as below.

Frequency (MHz)	Field Strength (mV/m)	Measurement Distance (m)
1.705-30	30	30
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500*	3

*\*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.*

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

Frequency (Hz)	Field Strength ( $\mu$ V/m at 3-meter)	Field Strength (dB $\mu$ V/m at 3-meter)
1.705-30	30 (at 30-meter)	49.5
30-88	100	40
88-216	150	43
216-960	200	46
Above 960	500	54



### **9.3 TEST PROCEDURE**

1. The EUT was placed on a turntable, which was 0.8m above ground plane.
2. The turntable was rotated for 360 degrees to determine the position of maximum emission level.
3. EUT was set at 3m away from the receiving antenna, which was 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 maximized by changing the polarization of receiving antenna, both horizontal and vertical.
6. Repeated above procedures until the measurements for all frequencies are completed.

### **9.4 RESULT: PASSED**



## 9.5 TEST DATA:

All frequencies not described in this test report and within the range of the general radiated emission limits are not detectable significantly. The table as below is representing worst emissions found.

Highest Channel (worst emissions found) - Horizontal

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	161.73	34.65	-3.56	31.09	43.00	-11.91	Peak
2	333.86	38.84	0.43	39.27	46.00	-6.73	Peak
3	384.66	31.45	1.78	33.23	46.00	-12.77	Peak
4	481.93	26.33	4.29	30.62	46.00	-15.38	Peak
5	704.82	26.42	9.69	36.11	46.00	-9.89	Peak
6	956.81	14.36	15.51	29.87	46.00	-16.13	Peak

Highest Channel(worst emissions found)- - Vertical

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1 !	155.52	41.19	-3.35	37.84	43.00	-5.16	Peak
2 !	178.53	43.83	-4.20	39.63	43.00	-3.37	Peak
3	415.67	32.26	2.55	34.81	46.00	-11.19	Peak
4	551.70	27.88	6.24	34.12	46.00	-11.88	Peak
5	902.20	25.52	13.83	39.35	46.00	-6.65	Peak
6	927.63	22.24	14.64	36.88	46.00	-9.12	Peak

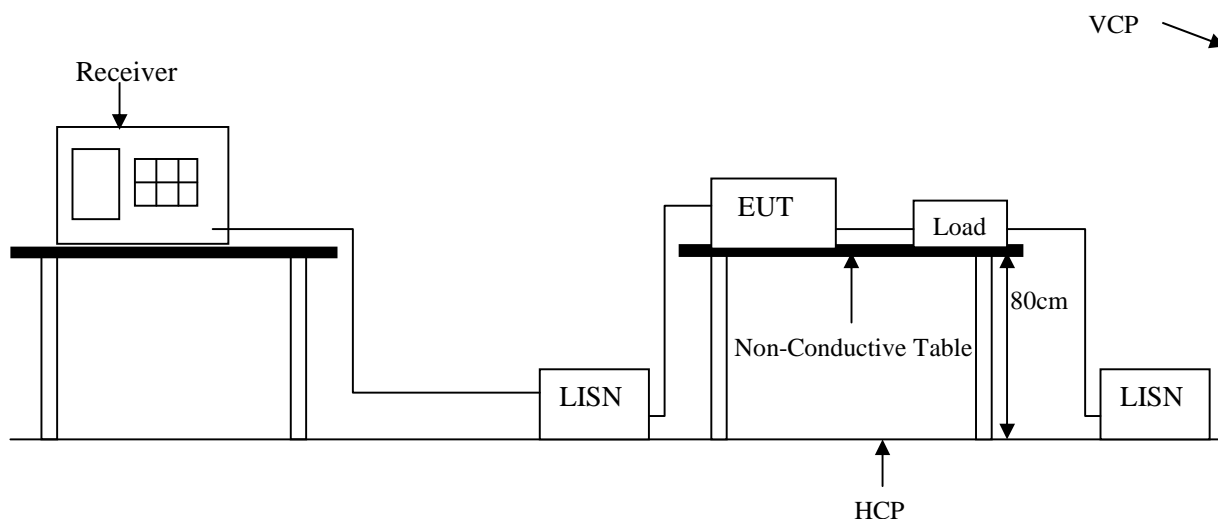


Note:

1. Emission level = Reading level + Correction factor
2. Correction factor : Antenna factor, Cable loss, PreAmp, etc.
3. All emissions as described above were determining by rotating the EUT through three orthogonal axes to maximizing the emissions if the EUT belongs to hand-held or body-worn devices.
4. Measurements from 9 kHz to 150 kHz, Peak detector setting: 100 Hz RBW
5. Measurements from 150 kHz to 30MHz, Peak detector setting: 10 kHz RBW
6. Measurements from 30 MHz to 1000 MHz, Peak detector setting: 100 kHz RBW
7. Measurements from 9 kHz to 150 kHz, CISPR Quasi-Peak detector: 200 Hz RBW
8. Measurements from 150 kHz to 30MHz, CISPR Quasi-Peak detector: 9 kHz RBW
9. Measurements from 30 MHz to 1000 MHz, CISPR Quasi-Peak detector: 120 kHz RBW
10. Peak detector measurement data will represent the worst case results.

## 10. SECTION 15.207 REQUIREMENTS (POWERLINE CONDUCTED EMISSIONS)

### 10.1 TEST SETUP



### 10.2 TEST SETUP

### 10.3 LIMIT

Frequency range (MHz)	CLASS A		CLASS B	
	QP dB(uV)	Average dB(uV)	QP dB(uV)	Average dB(uV)
0.15-0.5	79 dBuV	66 dBuV	66 - 56 dBuV	56 - 46 dBuV
0.5-5.0	73 dBuV	60 dBuV	56 dBuV	46 dBuV
5.0-30.0	73 dBuV	60 dBuV	60 dBuV	50 dBuV

Remark: In the above table, the tighter limit applies at the band edges.

### 10.4 TEST PROCEDURE

The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). It provides a 50 ohm / 50  $\mu$ H coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50 ohm / 50  $\mu$ H coupling impedance with 50 ohm termination. (Please refer to the block diagram of the test setup and photograph.)

Both sides of AC line are checked for the maximum conducted emission interference. In order to find the maximum emissions, the relating positions of equipment and all of the interference cables must be changed according to EN 55022 regulations: The measurement procedure on conducted emission interference.

The resolution bandwidth of the field strength meter is set at 9 KHz.



## **10.5 TEST SPECIFICATION**

According to PART15.207



## 10.6 RESULT: PASSED

## 10.7 TEST DATA:

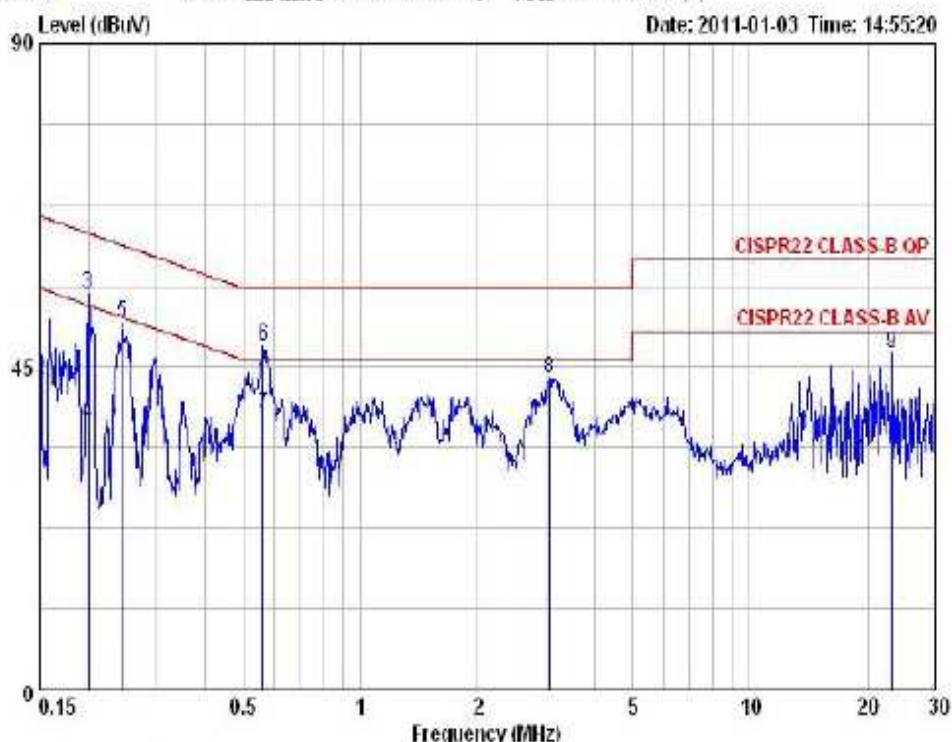


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No. 106, Shiang Chang Rd., Sec. 2,  
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TEL: 886-2-26426992 FAX: 886-2-26487450  
WebSite: <http://www.gcc.tw>

Data: 3

File: C:\測試數據\CONTEST\2011年一月份\0D0803\EM6 (4)



Site : Conducted  
Condition : CISPR22 CLASS-B OP CON-LISN 99 LINE  
: RBW:9KHz VBW:300KHz SWT:Auto  
EUT : Please refer to page 1 of report  
MODEL : Please refer to page 1 of report  
MEMO :

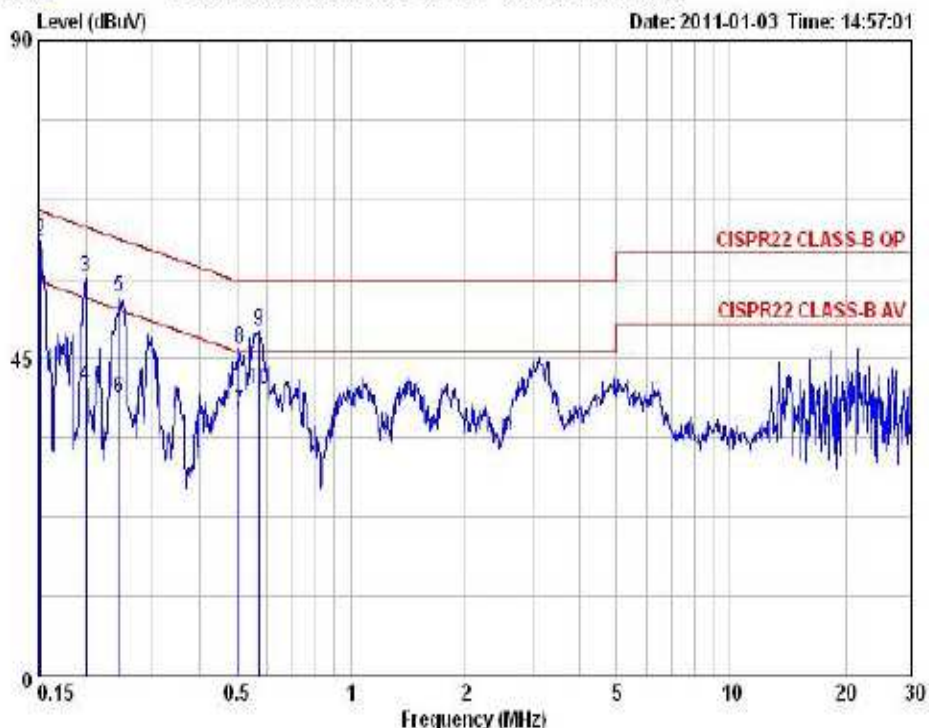
	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.15	47.18	10.25	57.43	66.00	-8.57	Peak
2	0.15	32.98	10.25	43.23	56.00	-12.77	Average
3	0.20	44.80	10.24	55.04	63.62	-8.58	Peak
4	0.20	26.86	10.24	37.10	53.62	-16.52	Average
5	0.25	40.80	10.24	51.04	61.91	-10.87	Peak
6	0.56	37.66	10.25	47.91	56.00	-8.09	Peak
7	0.56	28.20	10.25	38.45	46.00	-7.55	Average
8	3.06	33.14	10.25	43.39	56.00	-12.61	Peak
9	23.14	36.63	10.20	46.83	60.00	-13.17	Peak





Data: 4

File: C:\測試數據\CON TEST\2011年一月份\0D0803.EW6 (4)



Site : Conducted

Condition : CISPR22 CLASS-B OP CON-LISN 99 NEUTRAL

: RBW:9KHz VBW:300KHz SWT:Auto

EUT : Please refer to page 1 of report

MODEL : Please refer to page 1 of report

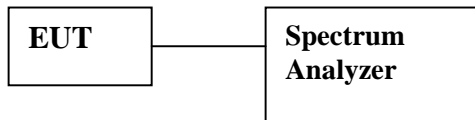
MEMO :

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.15	33.51	11.15	44.66	55.91	-11.25	Average
2	0.15	50.60	11.15	61.75	65.91	-4.16	Peak
3	0.20	45.38	11.14	56.52	63.62	-7.10	Peak
4	0.20	30.08	11.14	41.22	53.62	-12.40	Average
5	0.25	42.55	11.14	53.69	61.91	-8.22	Peak
6	0.25	28.30	11.14	39.44	51.91	-12.47	Average
7	0.51	26.24	11.13	37.37	46.00	-8.63	Average
8	0.51	35.37	11.13	46.50	56.00	-9.50	Peak
9	0.57	37.79	11.13	48.92	56.00	-7.08	Peak
10	0.57	29.39	11.13	40.52	46.00	-5.48	Average



## **11. 6DB BANKWIDTH**

### **11.1 TEST SETUP**



### **11.2 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 – 5820 MHz bands . The minimum 6dB bandwidth shall be least 500 kHz

### **11.3 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 RF cable from the antenna port to the spectrum.
3. Set the spectrum analyzer as RBW = 100kHz , VBW = RBW , Span = Base mode , Sweep = auto.
4. Mark the peak frequency and -6dB (upper and lower) frequency.
5. Repeat until all the rest channels are investigated.

### **11.4 TEST RESULT: PASSED**



**11.5 TEST DATA:**

**Test mode: IEEE 802.11b**

Channd	Frequency(MHz)	6dB Bandwidth(MHz)	Limit(kHz)	Result
Low	2412	9.53	>500	PASS
Mid	2437	9.09		PASS
High	2462	9.82		PASS

**Test mode: IEEE 802.11g**

Channd	Frequency(MHz)	6dB Bandwidth(MHz)	Limit(kHz)	Result
Low	2412	16.51	>500	PASS
Mid	2437	16.51		PASS
High	2462	16.51		PASS

**Test mode: IEEE 802.11n(20M)**

Channd	Frequency(MHz)	6dB Bandwidth(MHz)	Limit(kHz)	Result
Low	2412	17.60	>500	PASS
Mid	2437	17.60		PASS
High	2462	17.60		PASS

**Test mode: IEEE 802.11n(40M)**

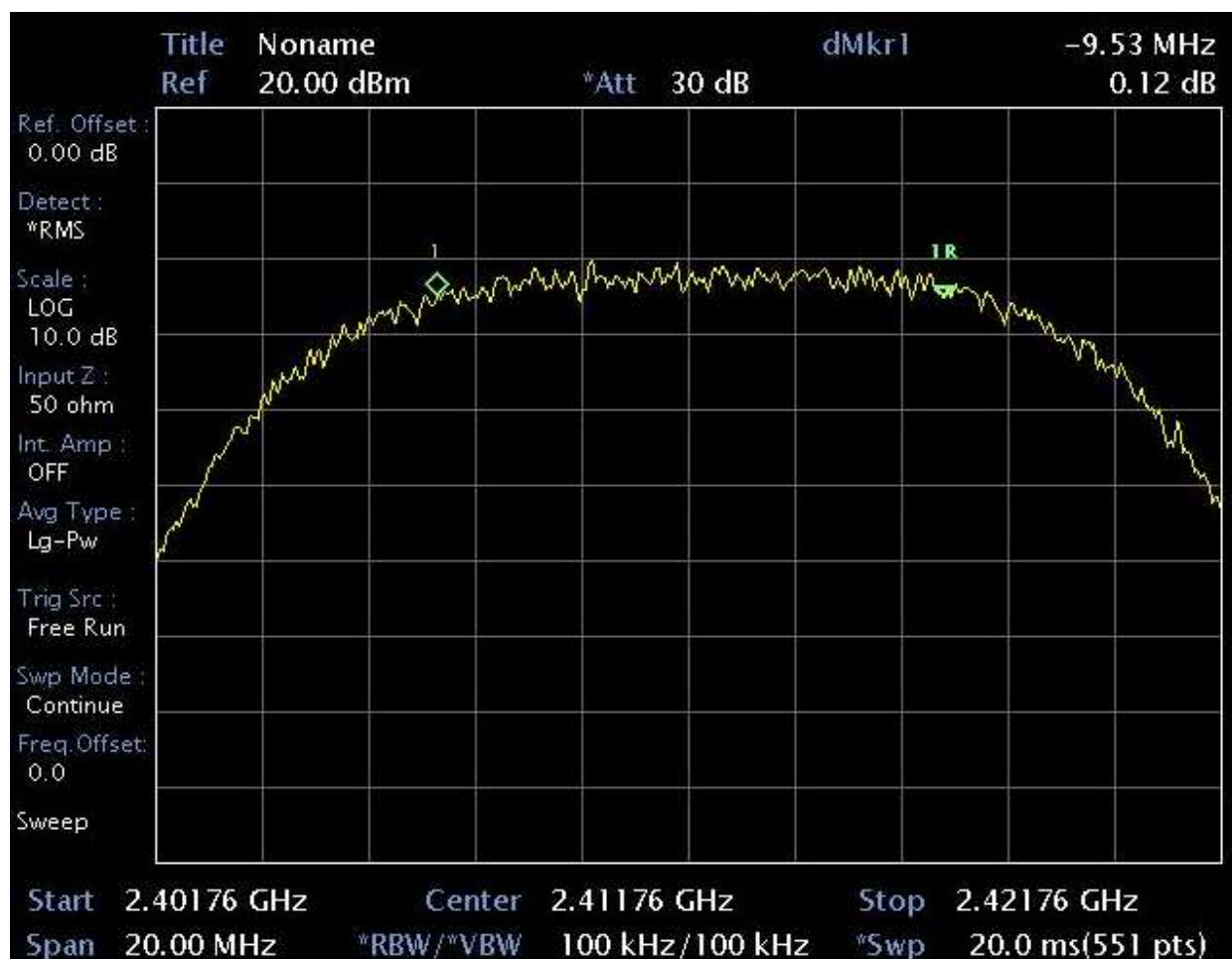
Channd	Frequency(MHz)	6dB Bandwidth(MHz)	Limit(kHz)	Result
Low	2422	35.91	>500	PASS
Mid	2437	35.27		PASS
High	2452	35.27		PASS



Test Plot

IEEE 802.11b mode

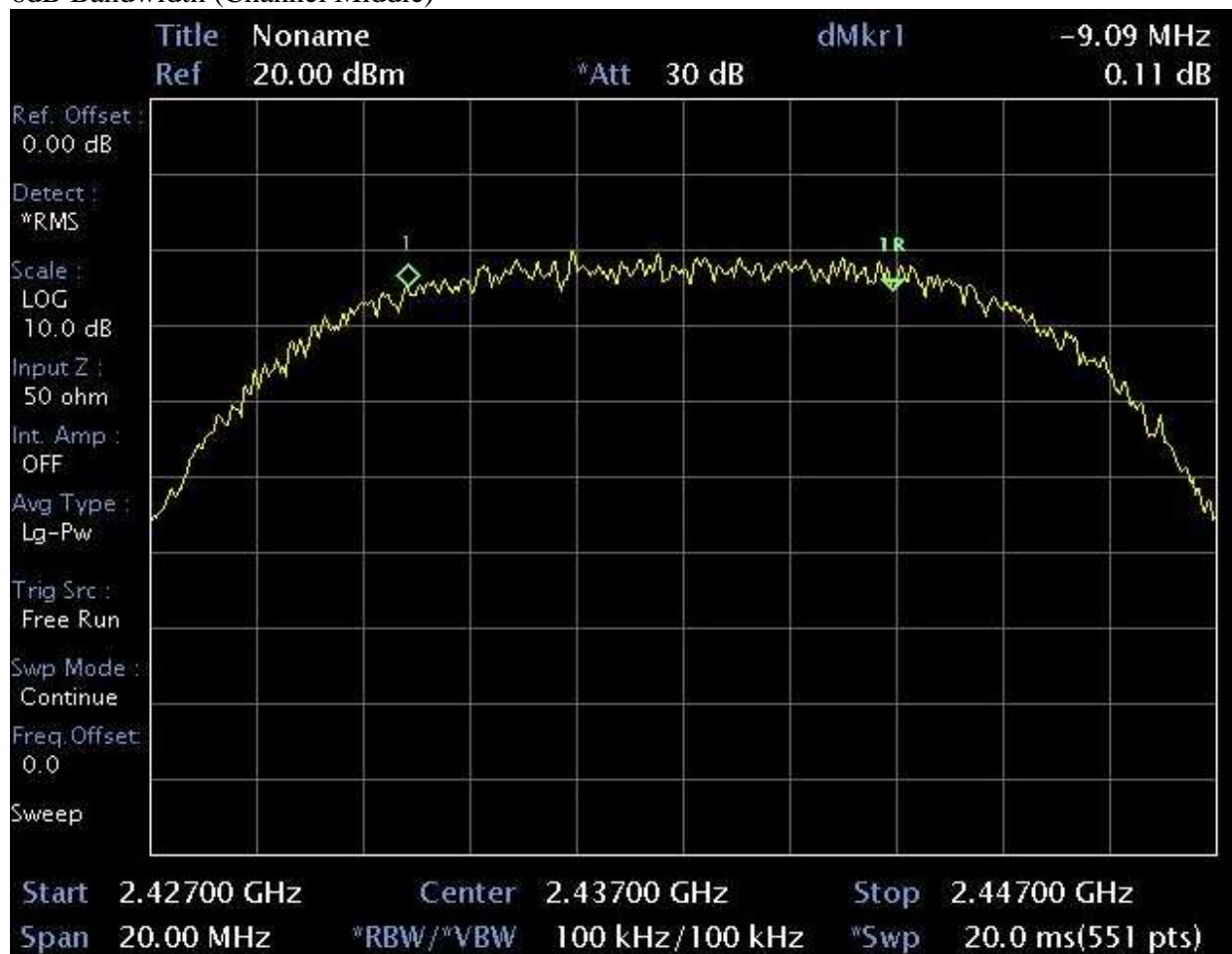
6dB Bandwidth (Channel Low)





IEEE 802.11b mode

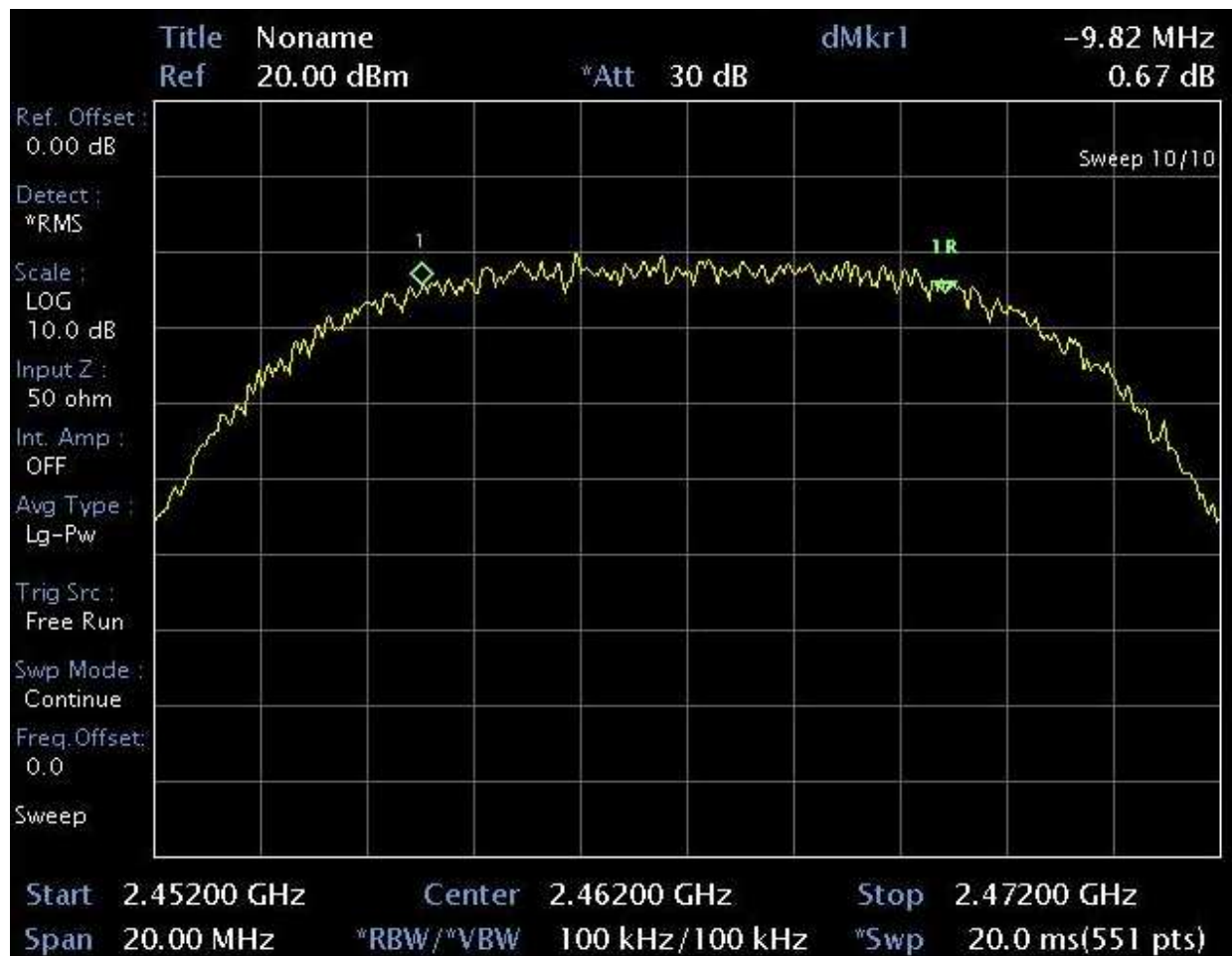
6dB Bandwidth (Channel Middle)





IEEE 802.11b mode

6dB Bandwidth (Channel High)

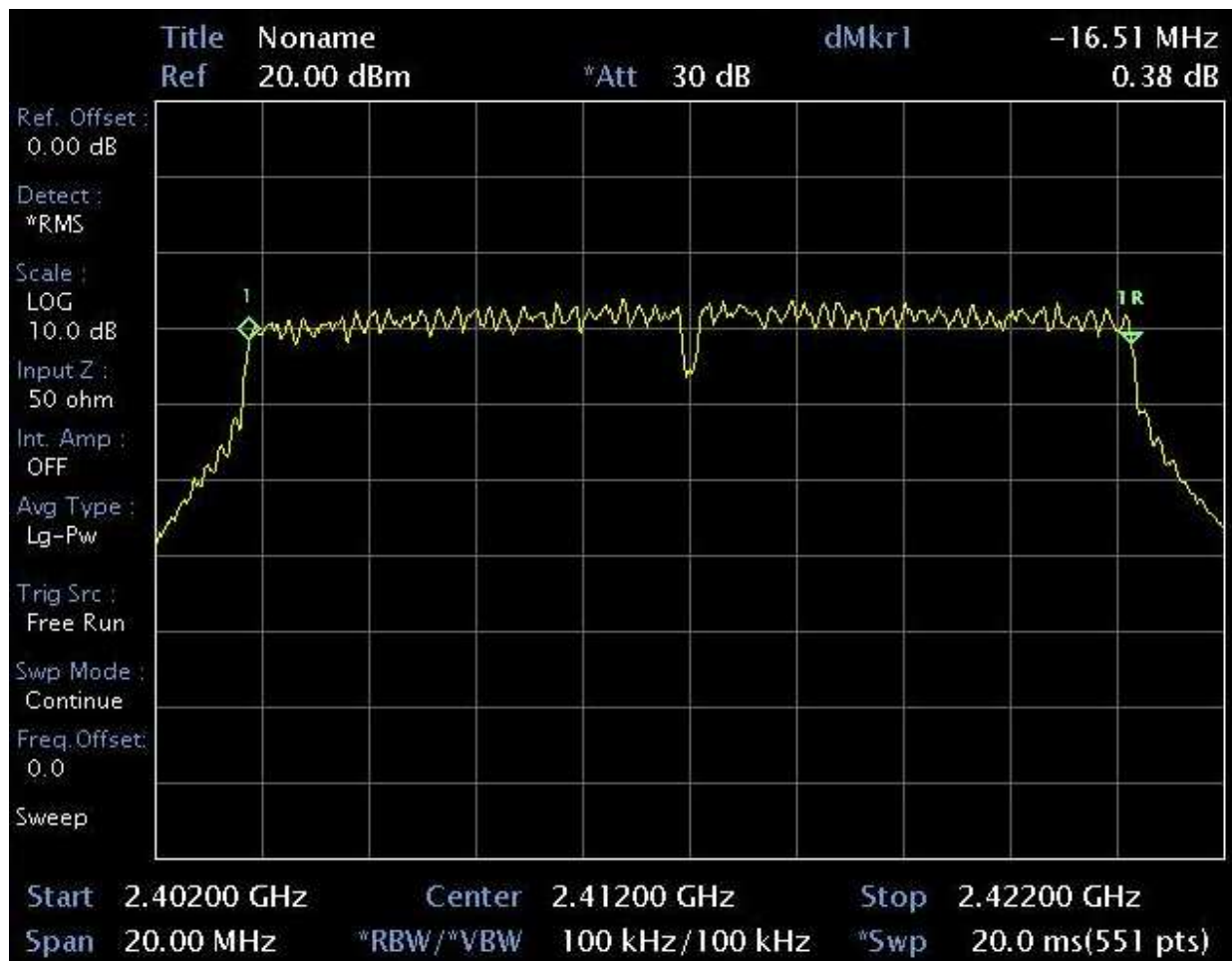






IEEE 802.11g mode

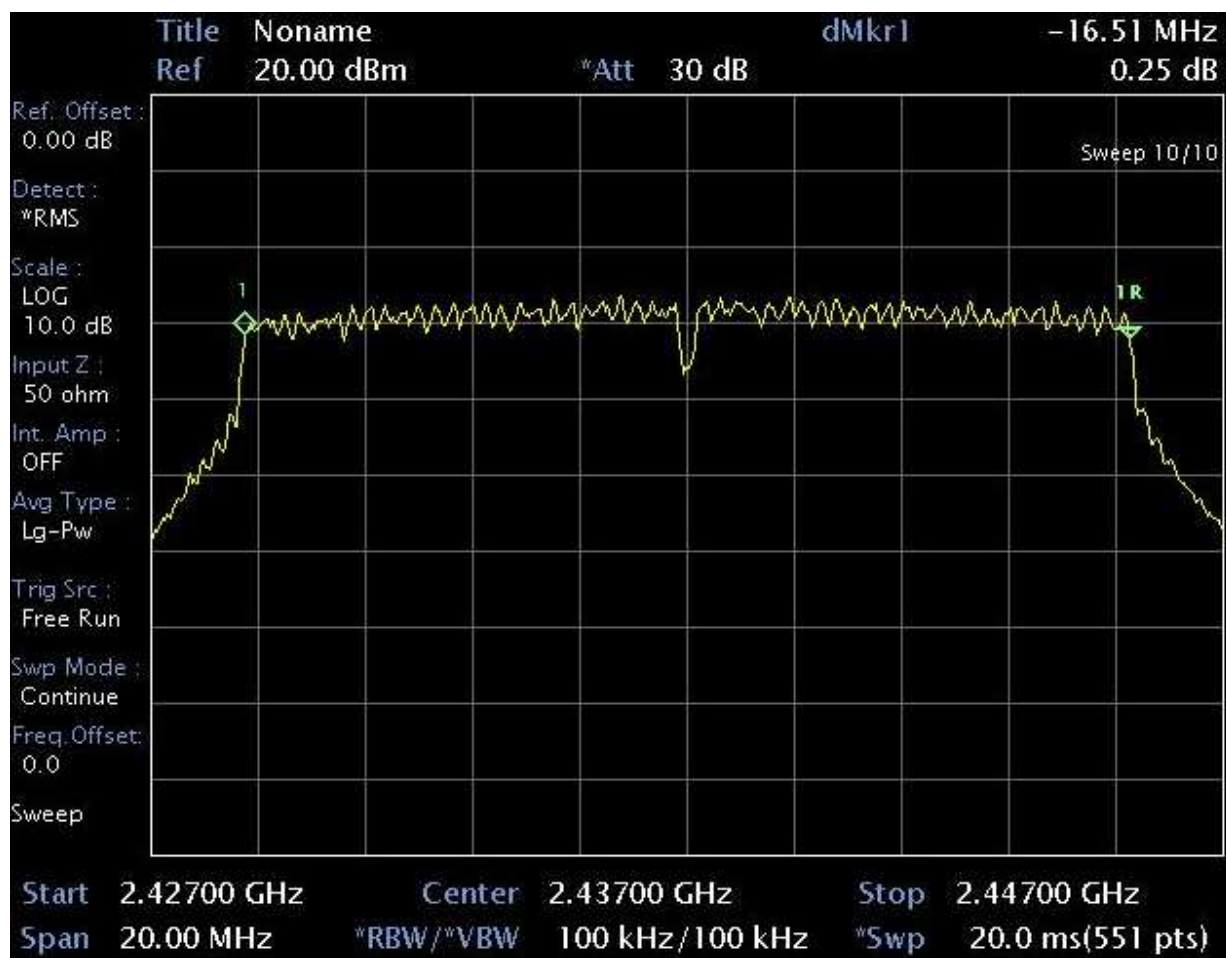
6dB Bandwidth (Channel Low)





IEEE 802.11g mode

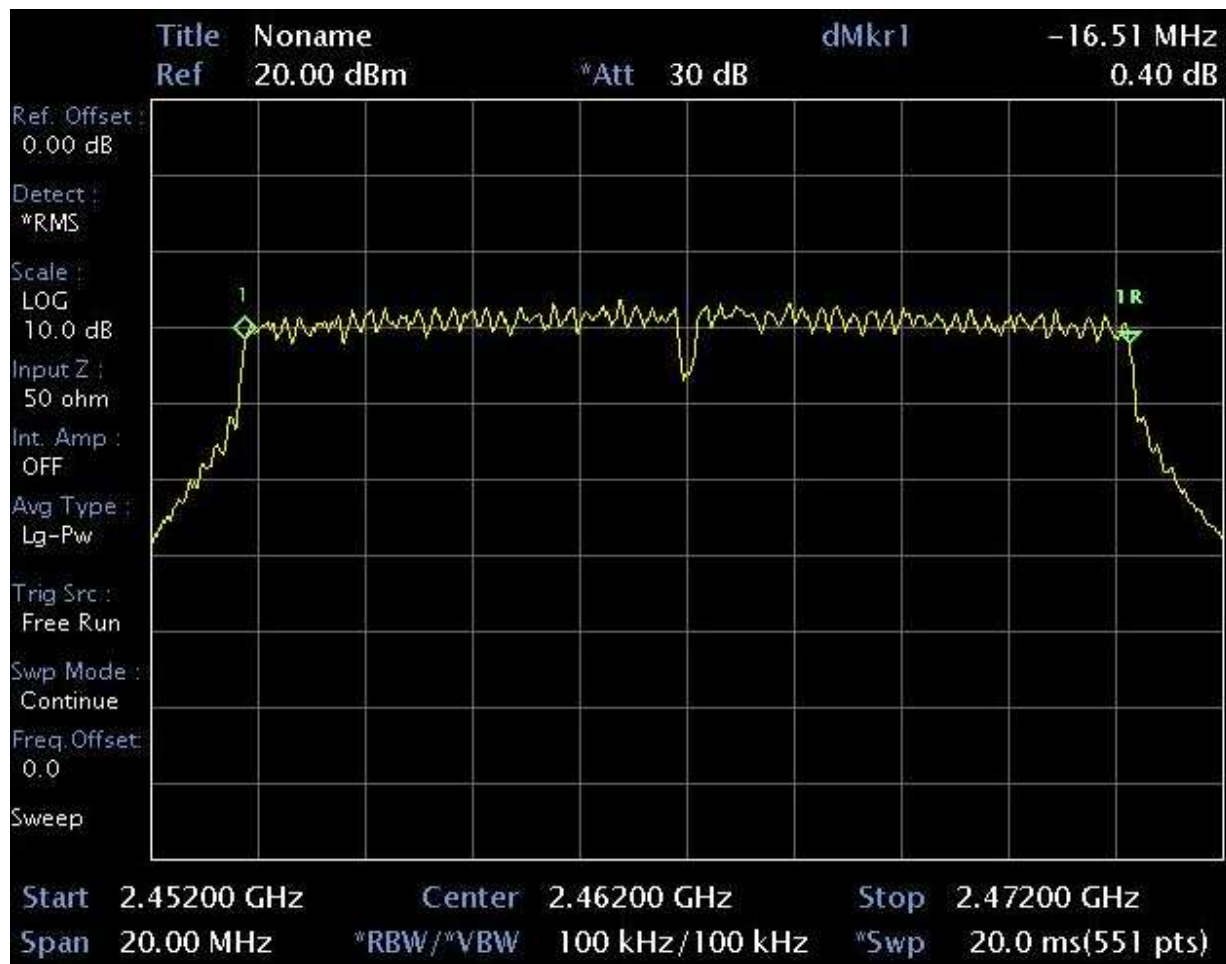
6dB Bandwidth (Channel Middle)





IEEE 802.11g mode

6dB Bandwidth (Channel High)





IEEE 802.11n(20M) mode

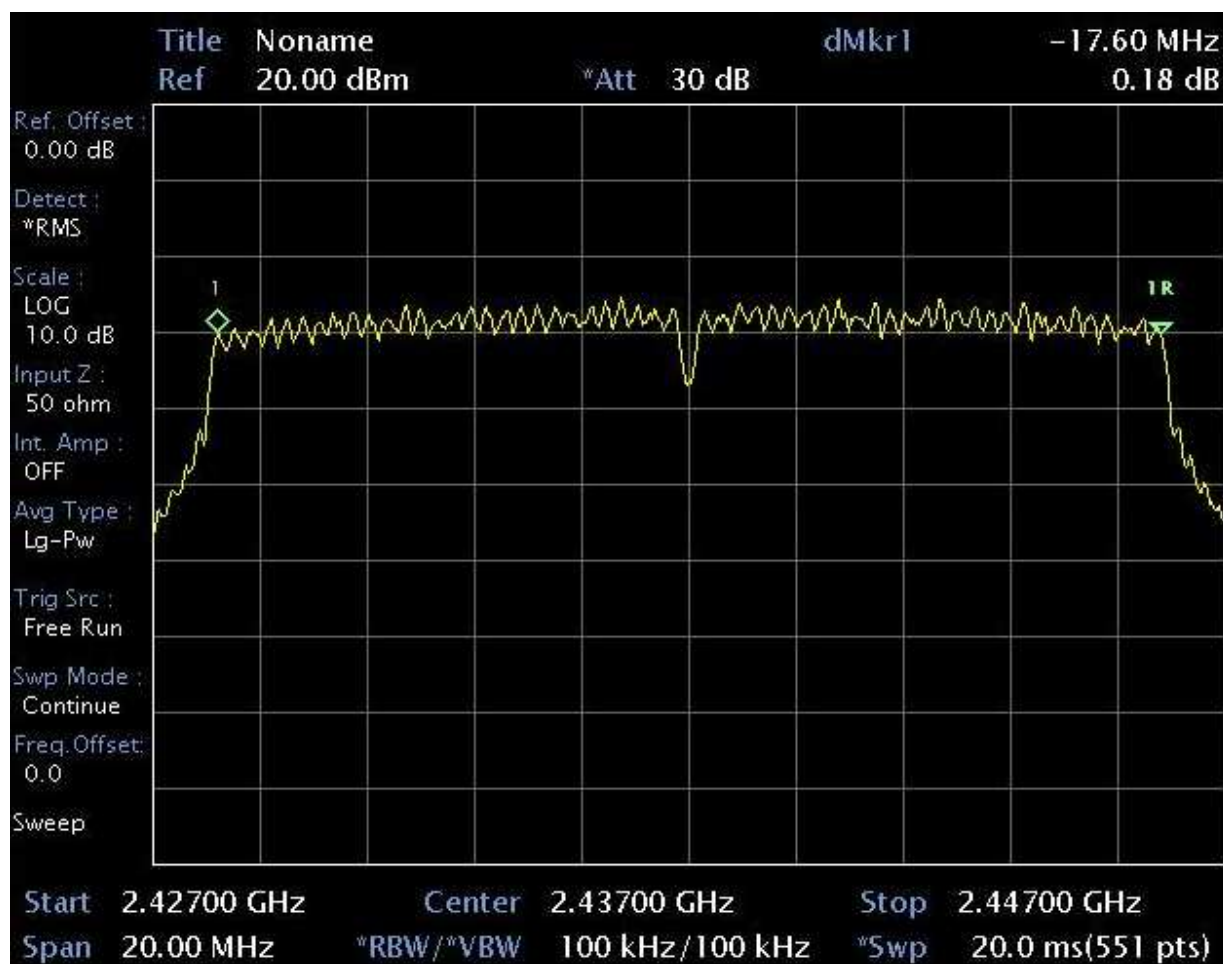
6dB Bandwidth (Channel Low)





IEEE 802.11n(20M) mode

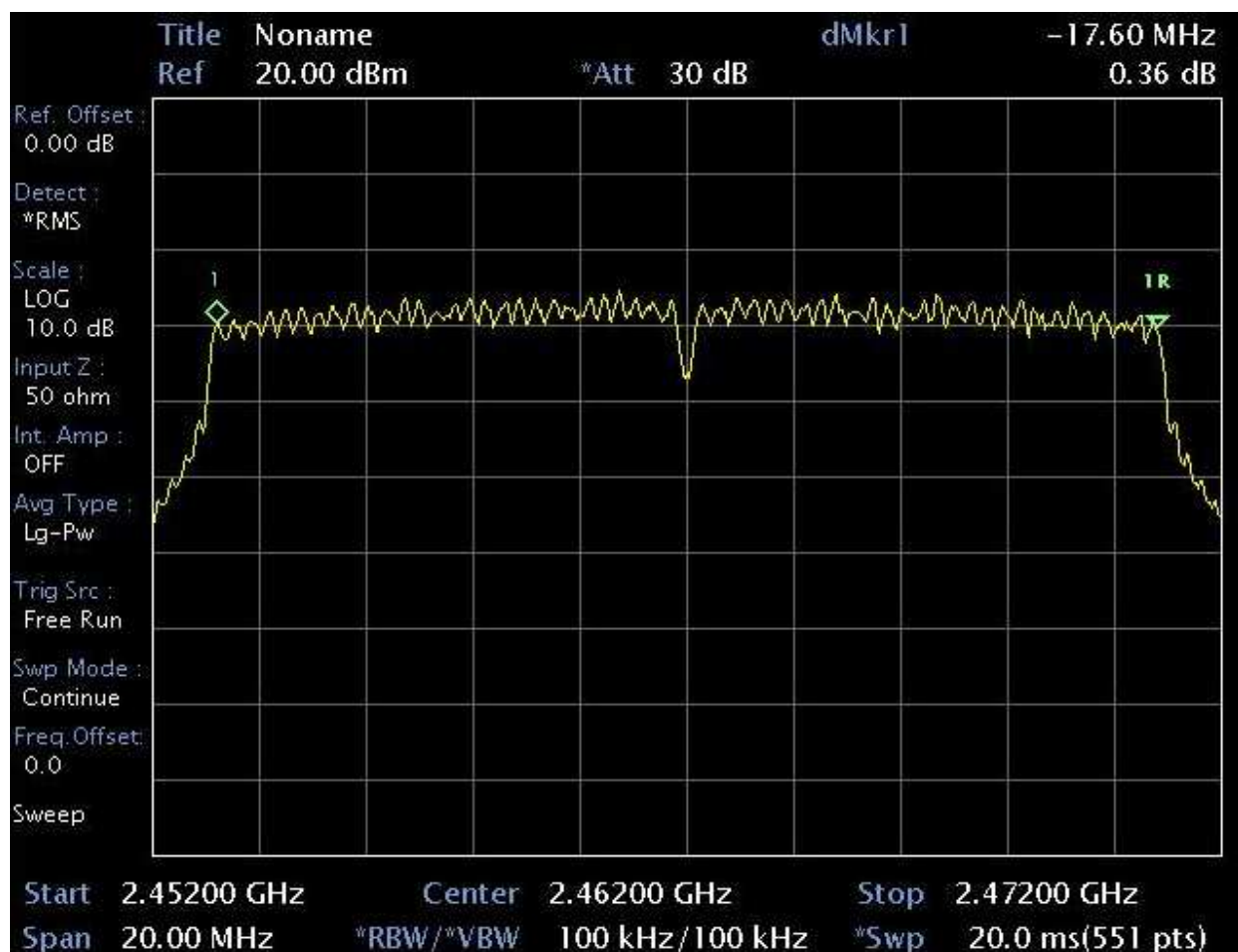
6dB Bandwidth (Channel Middle)





IEEE 802.11n(20M) mode

6dB Bandwidth (Channel High)







IEEE 802.11n(40M) mode

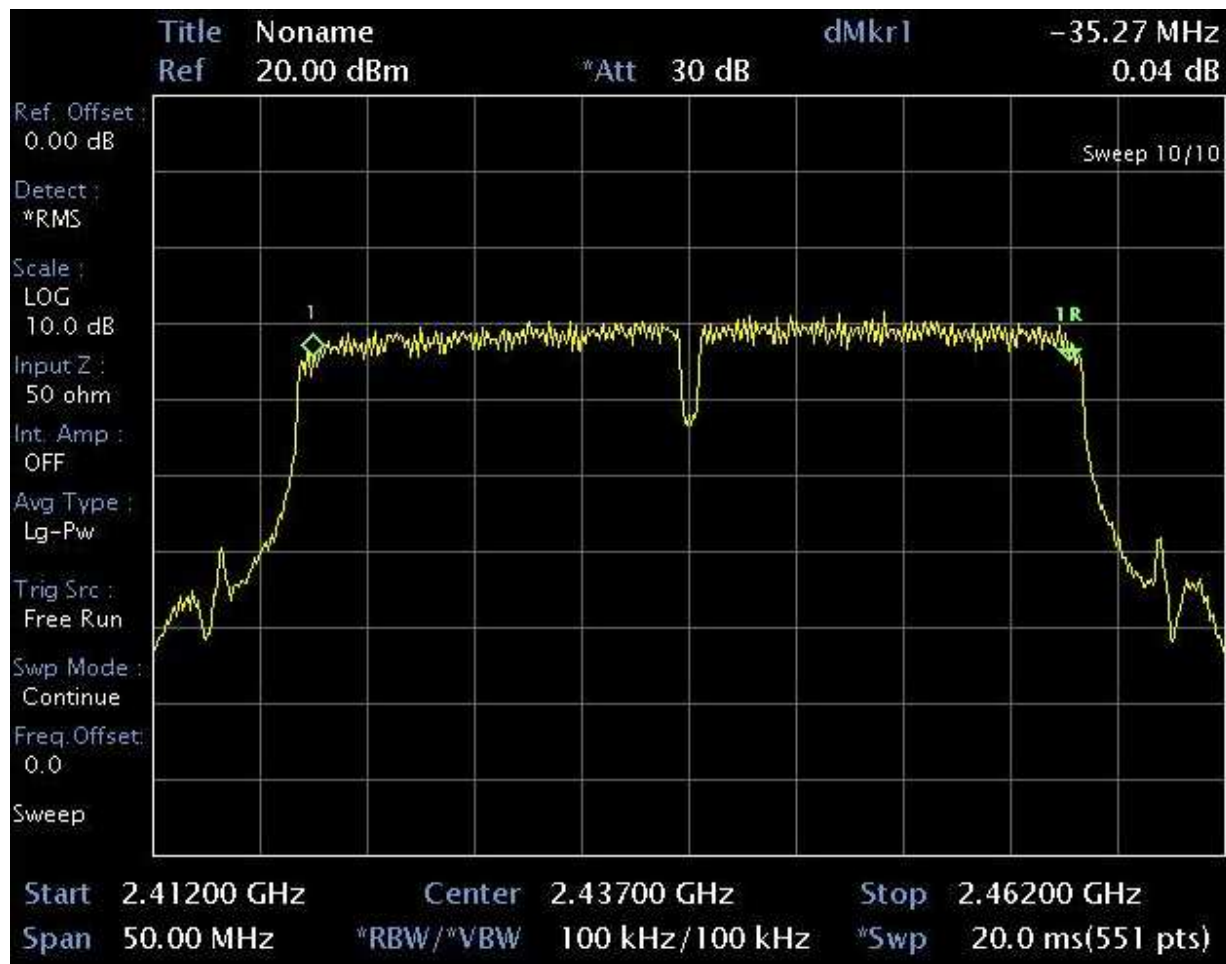
6dB Bandwidth (Channel Low)





IEEE 802.11n(40M) mode

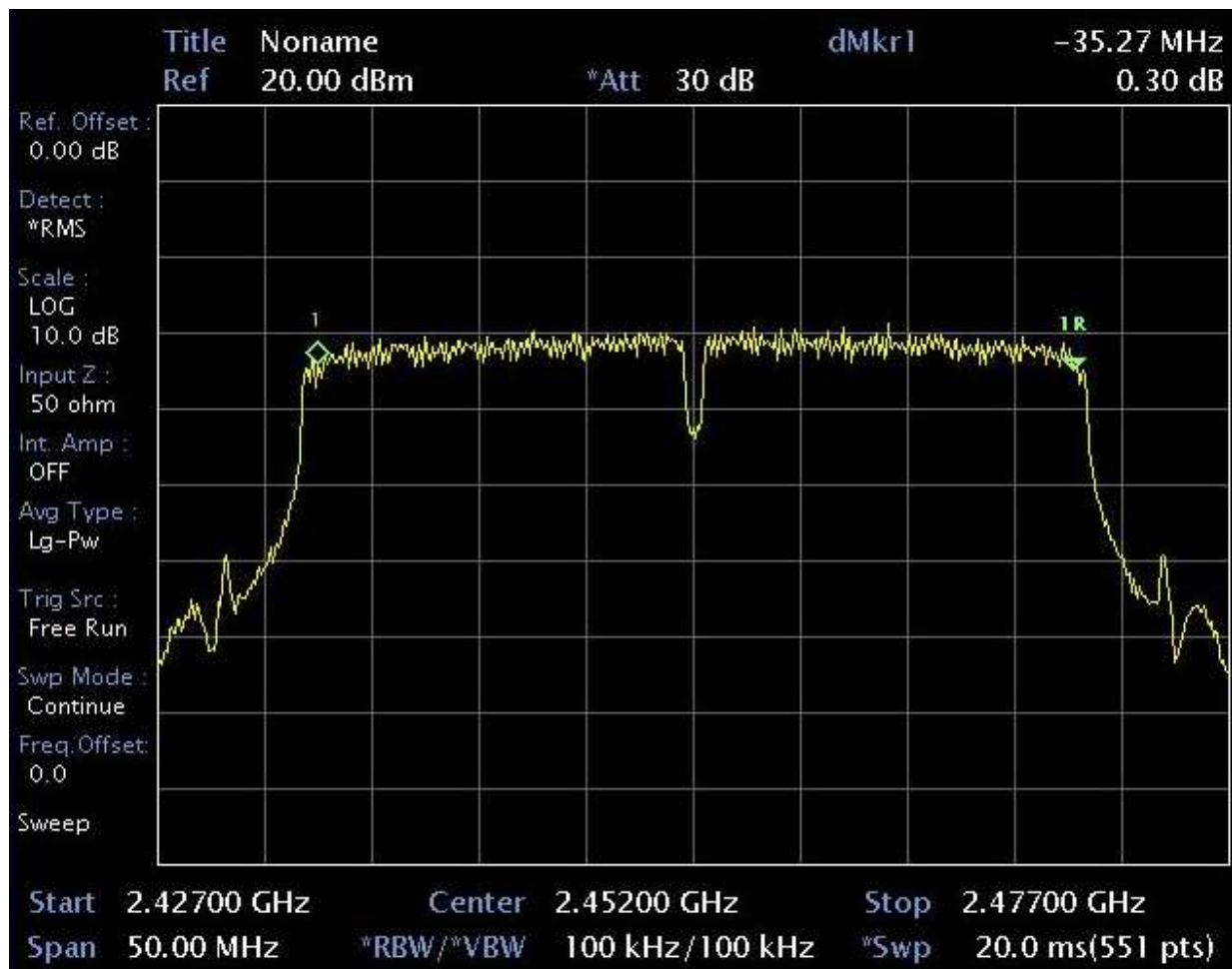
6dB Bandwidth (Channel Middle)





IEEE 802.11n(40M) mode

6dB Bandwidth (Channel High)





## **12. PEAK POWER SPECTRAL DENSITY**

### **12.1 TEST SETUP**



### **12.2 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 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.

### **12.3 TEST PROCEDURE**

1. Place the EUT on the table and set it in transmitting mode.
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.

### **12.4 TEST RESULT: PASSED**



## 12.5 TEST DATA:

TEST Mode: IEEE 802.11b

Chammel	Frequency (MHz)	Output Power (dBm)	Limit (dBw)	Result
Low	2412	-14.29	8.00	PASS
Mid	2437	-13.15		PASS
High	2462	-13.42		PASS

TEST Mode: IEEE 802.11g

Chammel	Frequency (MHz)	Output Power (dBm)	Limit (dBw)	Result
Low	2412	-20.05	8.00	PASS
Mid	2437	-18.19		PASS
High	2462	-17.40		PASS

TEST Mode: IEEE 802.11n(20M)

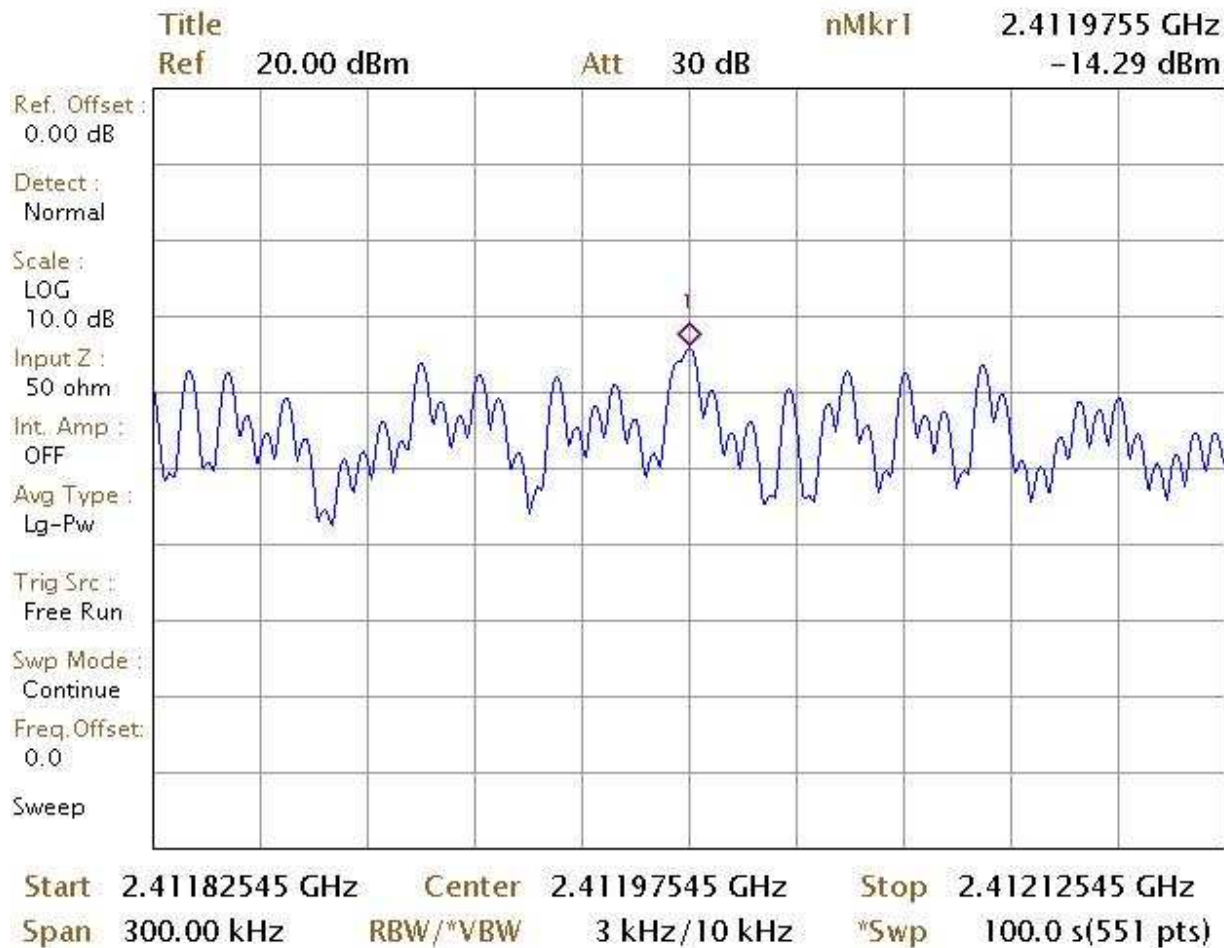
Chammel	Frequency (MHz)	Output Power (dBm)	Limit (dBw)	Result
Low	2412	-20.53	8.00	PASS
Mid	2437	-18.40		PASS
High	2462	-17.65		PASS

TEST Mode: IEEE 802.11n(40M)

Chammel	Frequency (MHz)	Output Power (dBm)	Limit (dBw)	Result
Low	2422	-17.83	8.00	PASS
Mid	2437	-18.78		PASS
High	2452	-18.18		PASS

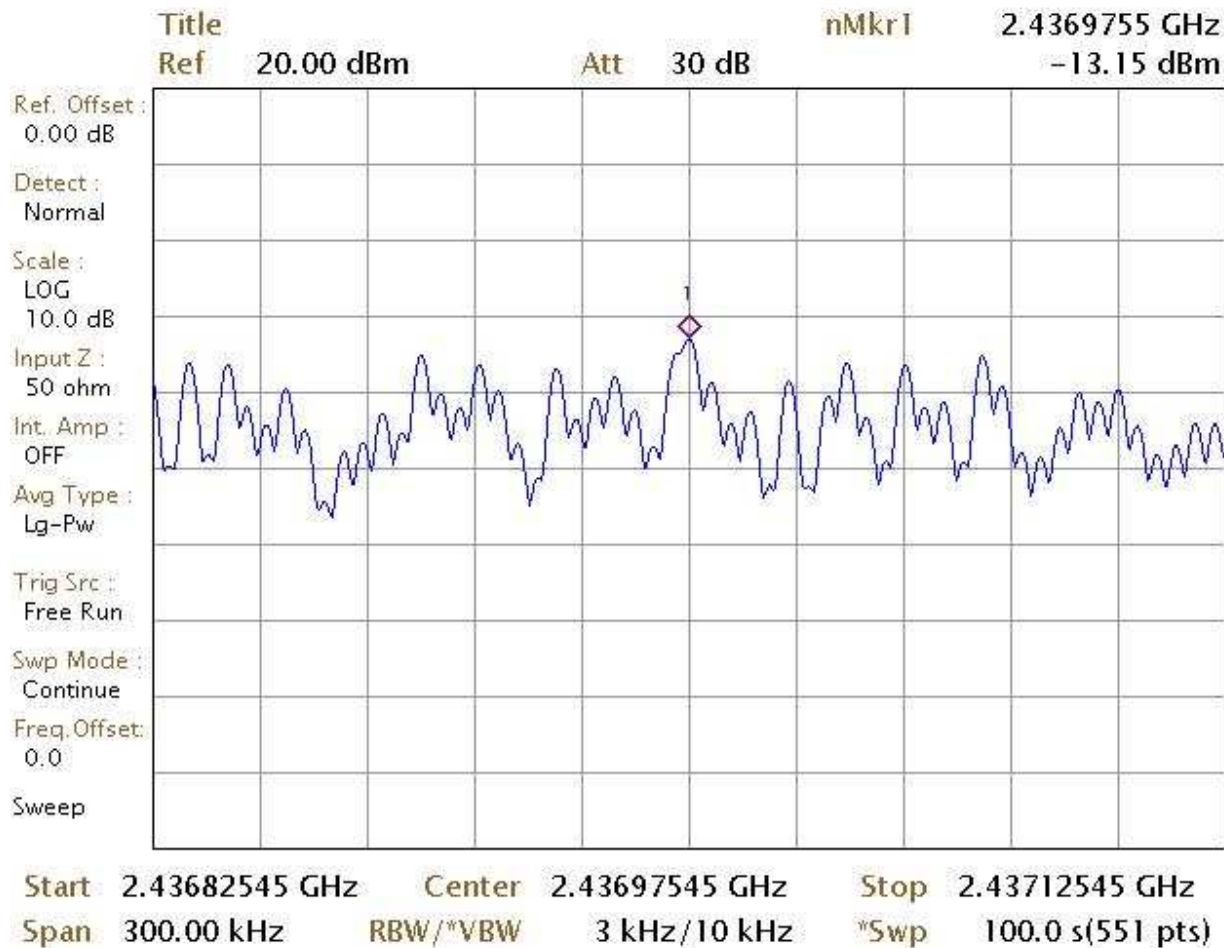


IEEE 802.11b mode  
Channel Low





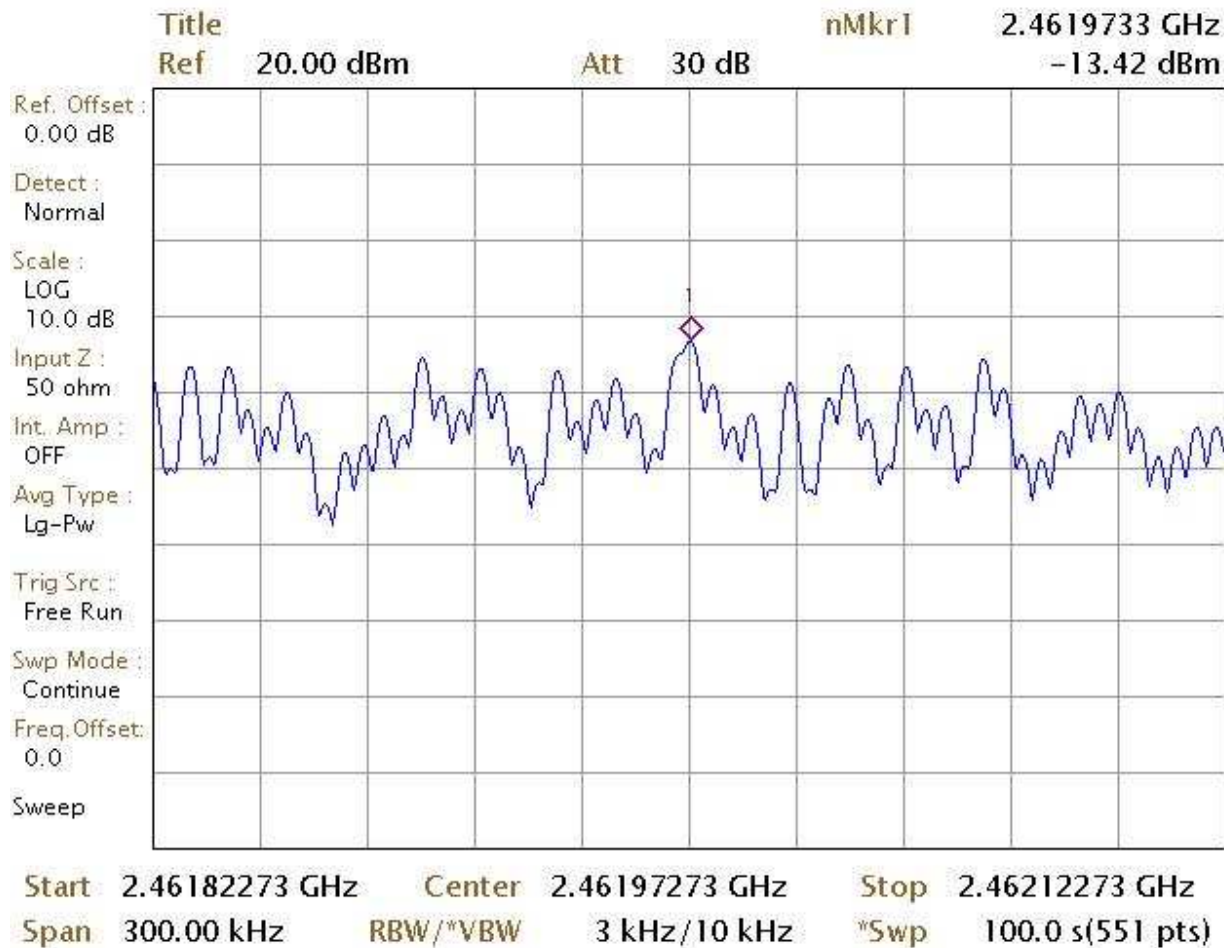
IEEE 802.11b mode  
Channel Middle





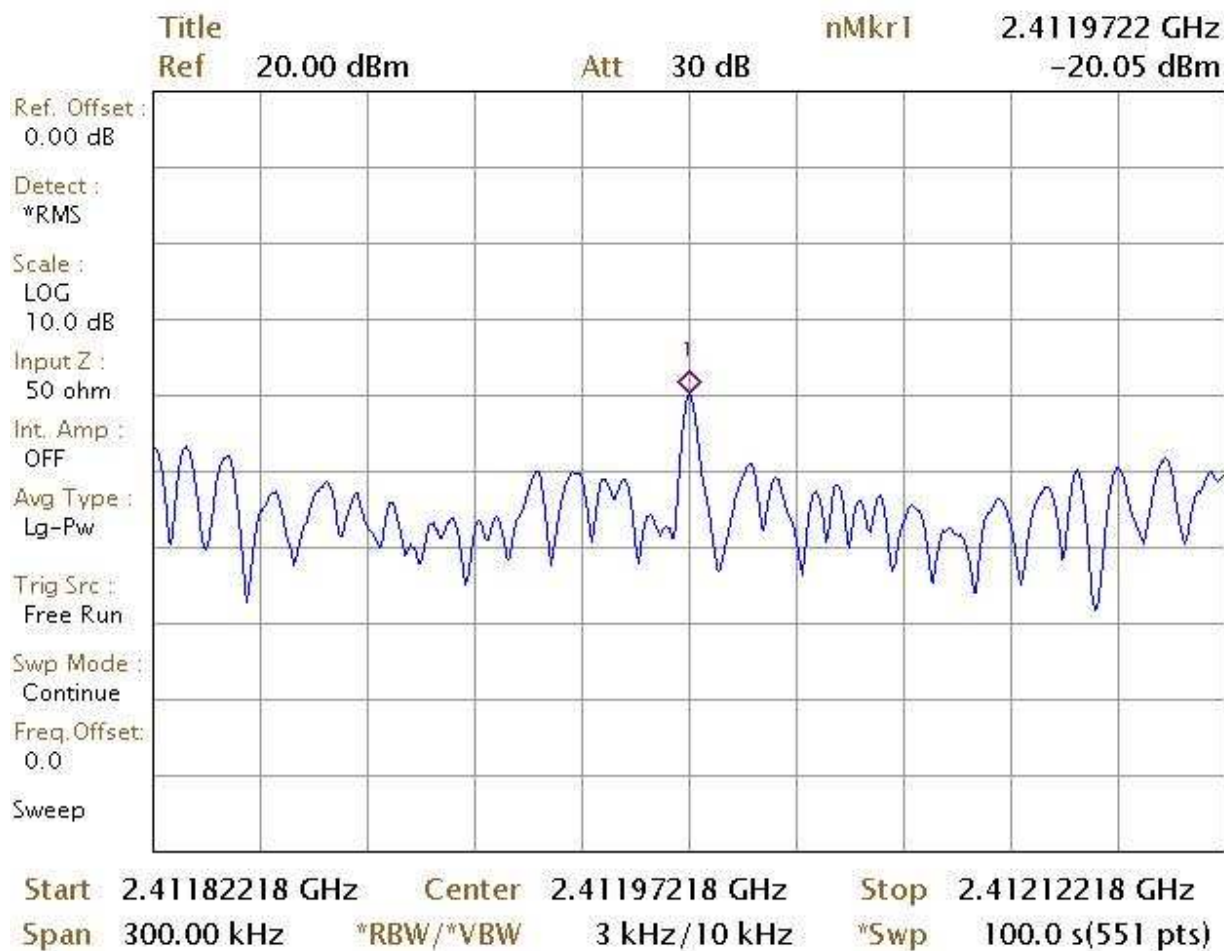


IEEE 802.11b mode  
Channel High



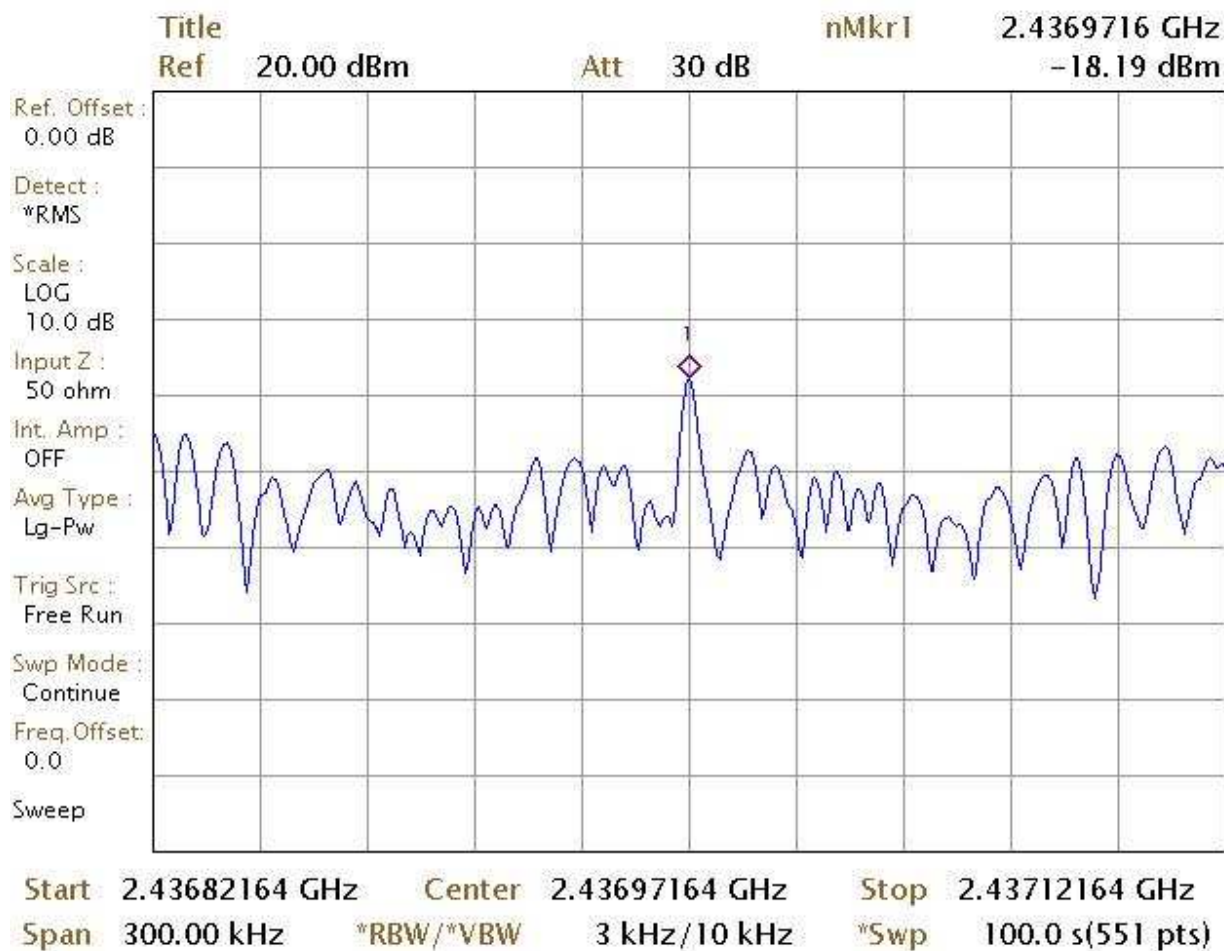


IEEE 802.11g mode  
Channel Low



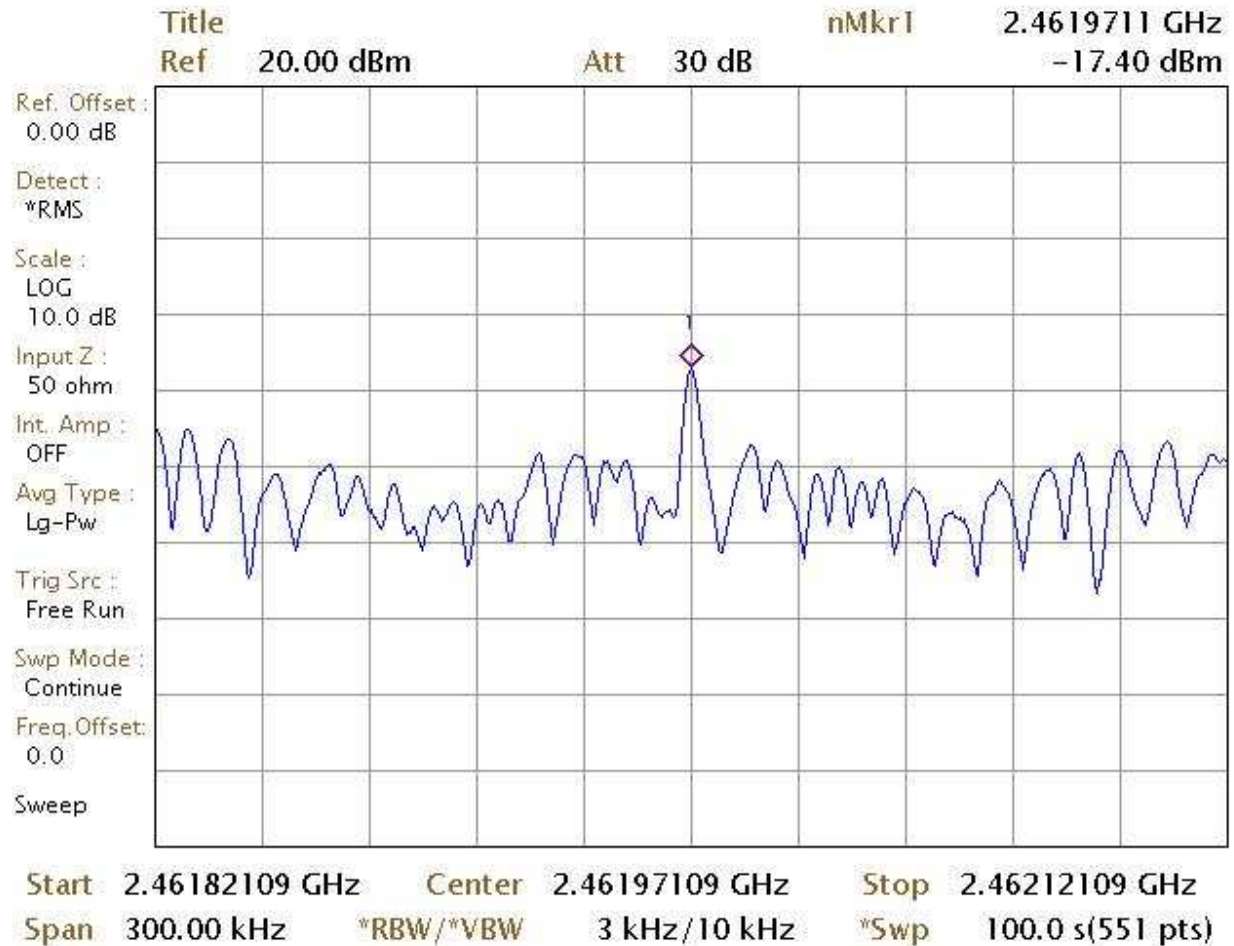


IEEE 802.11g mode  
Channel Middle



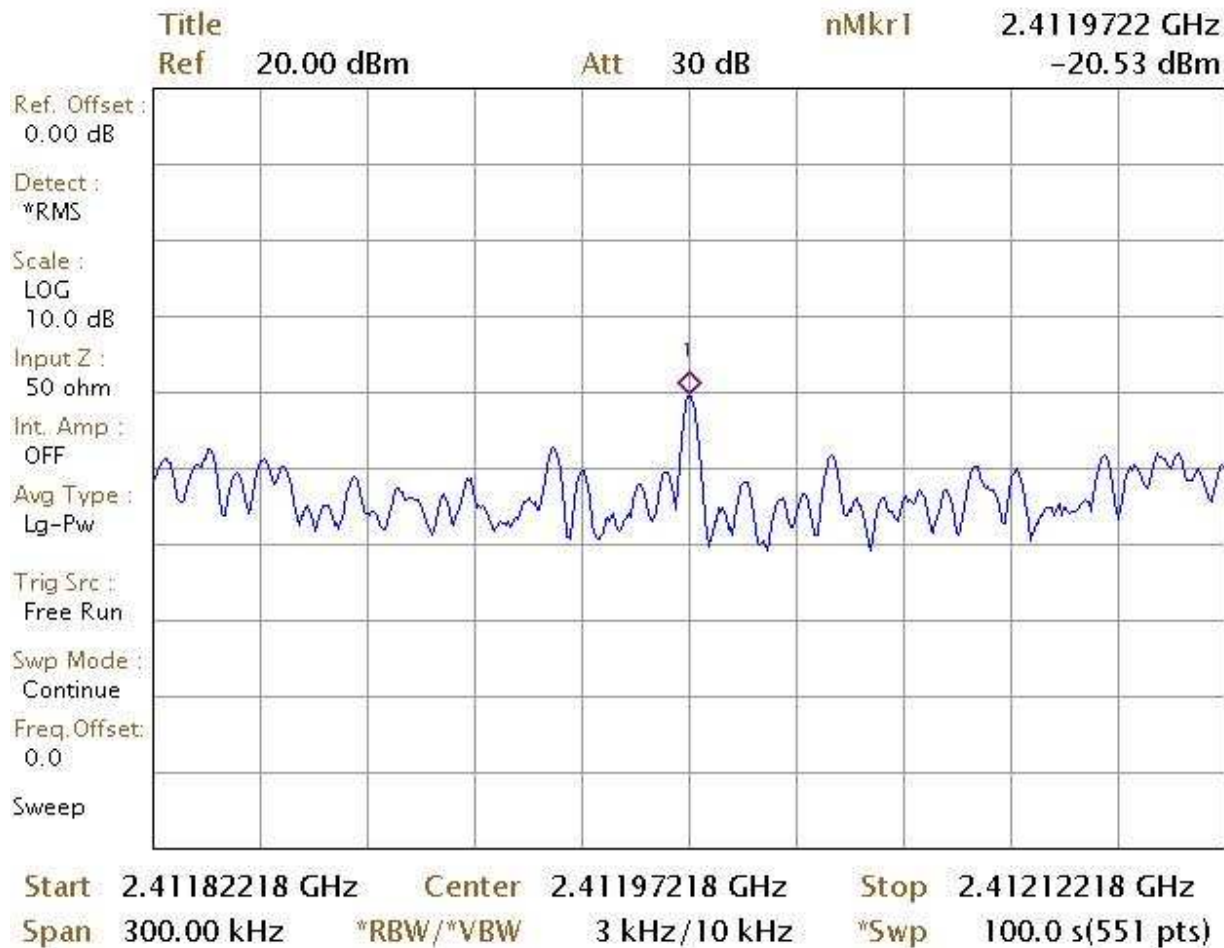


IEEE 802.11g mode  
Channel High



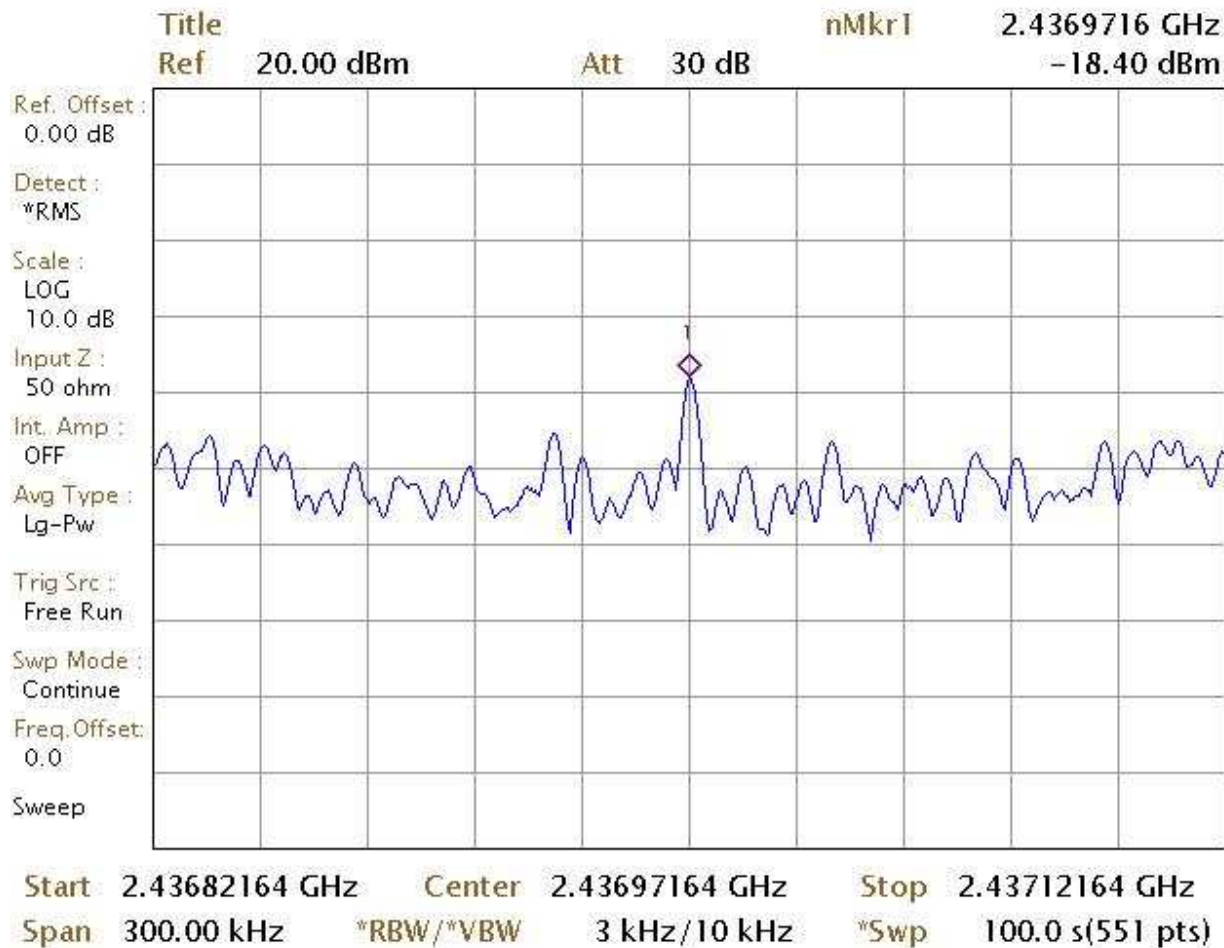


IEEE 802.11n(20M) mode  
Channel Low



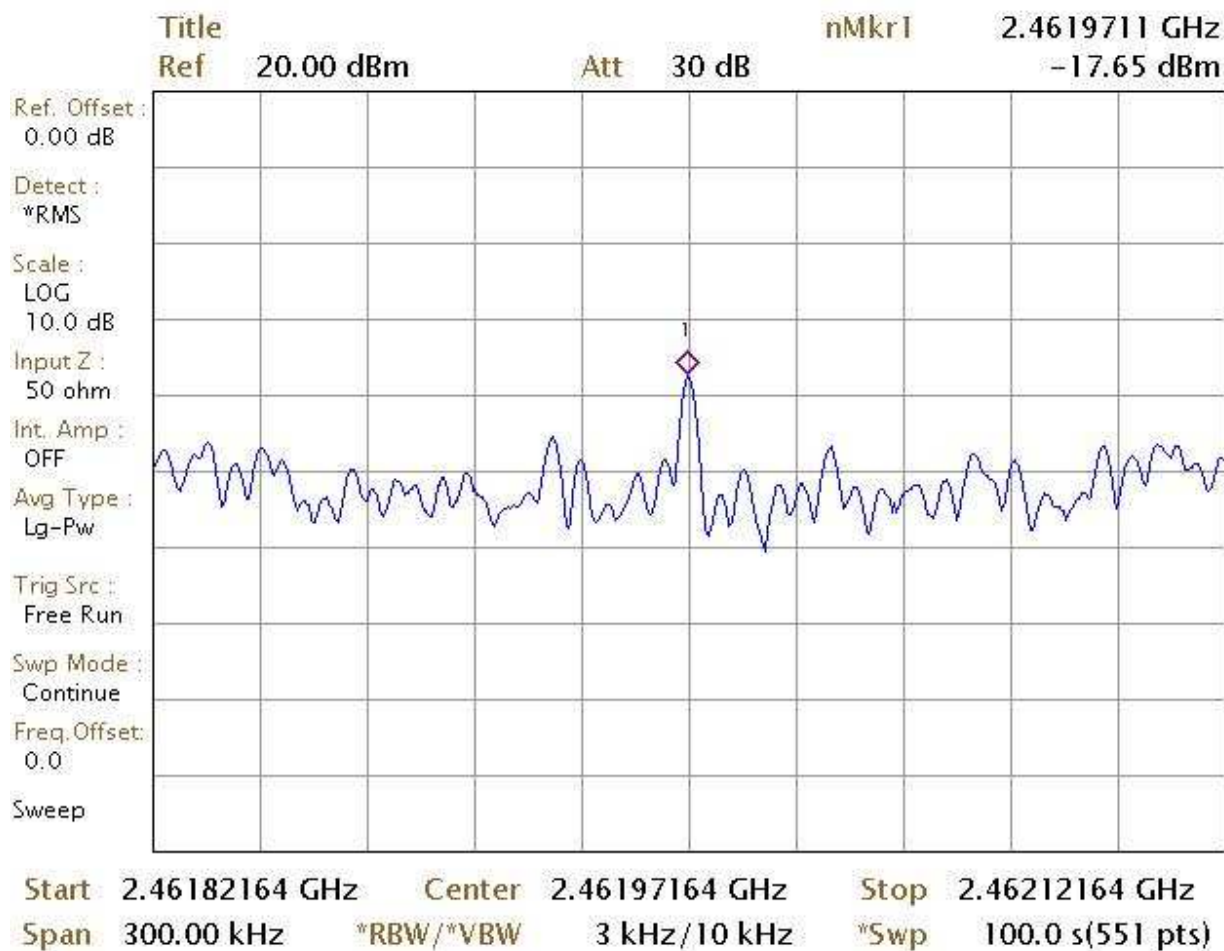


IEEE 802.11n(20M) mode  
Channel Middle





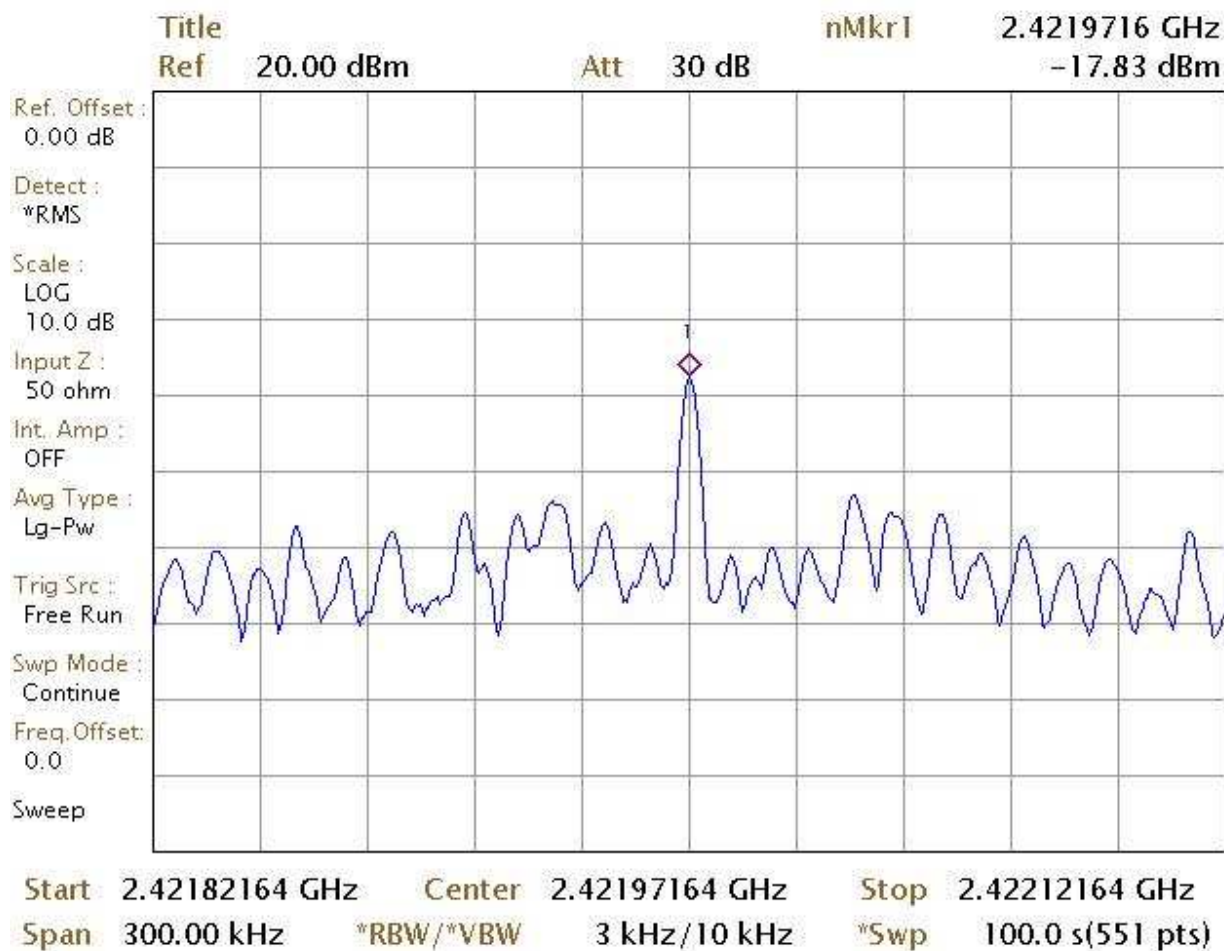
IEEE 802.11n(20M) mode  
Channel High





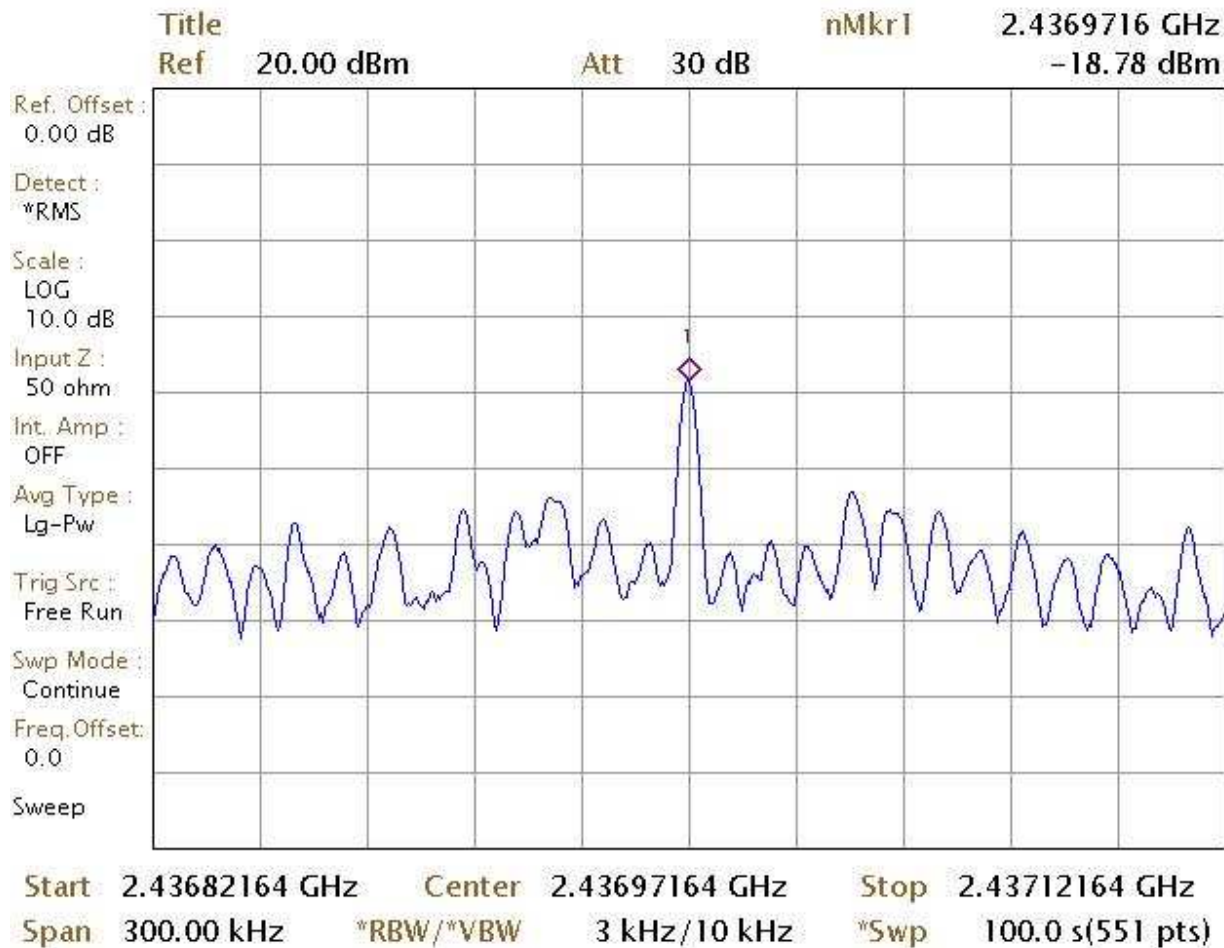


IEEE 802.11n(40M) mode  
Channel Low



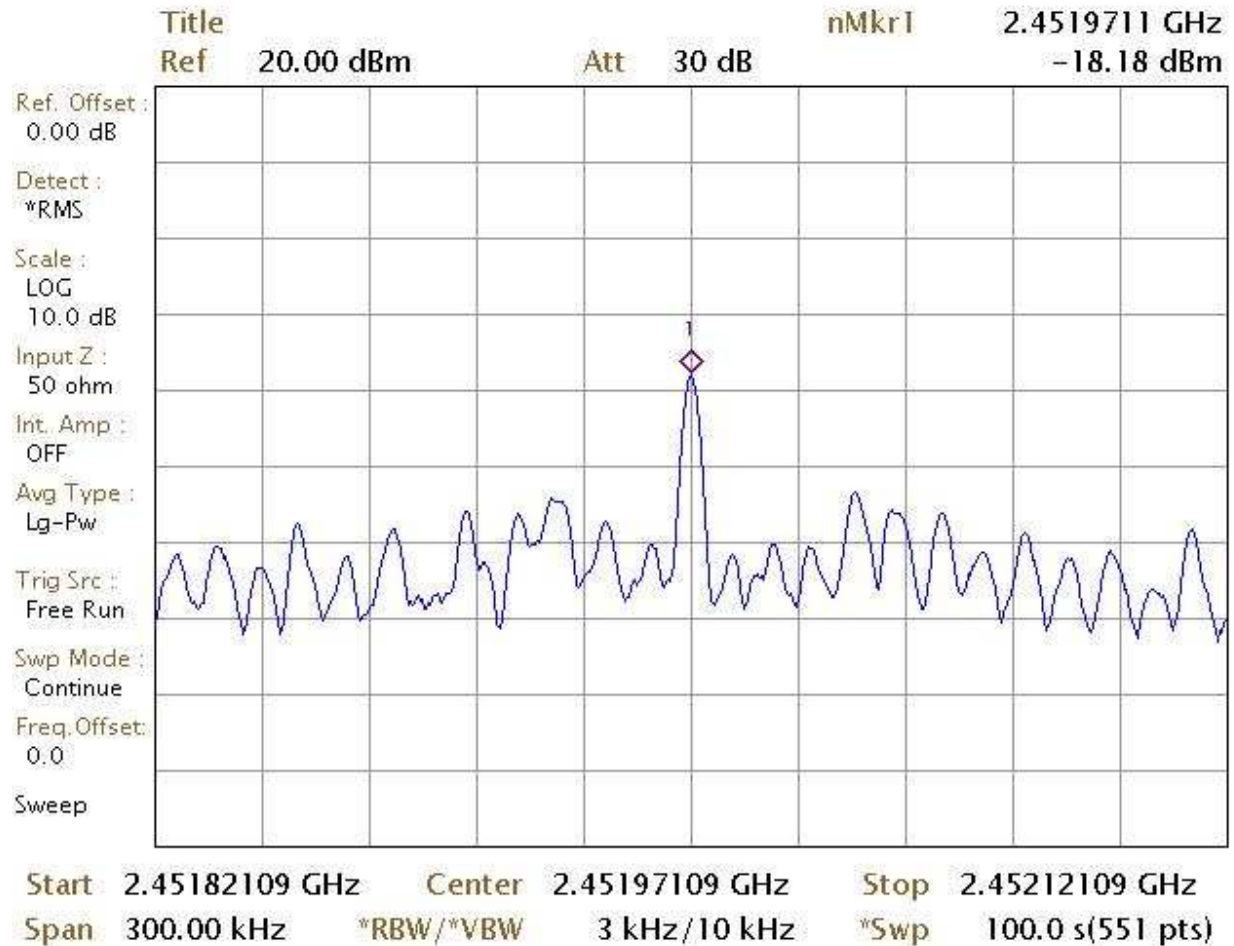


IEEE 802.11n(40M) mode  
Channel Middle





IEEE 802.11n(40M) mode  
Channel High





## **13. SPURIOUS EMISSIONS**

### **13.1 CONDUCTED MEASUREMENT**

#### **13.2 TEST SETUP**



#### **13.3 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)).

#### **13.4 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.

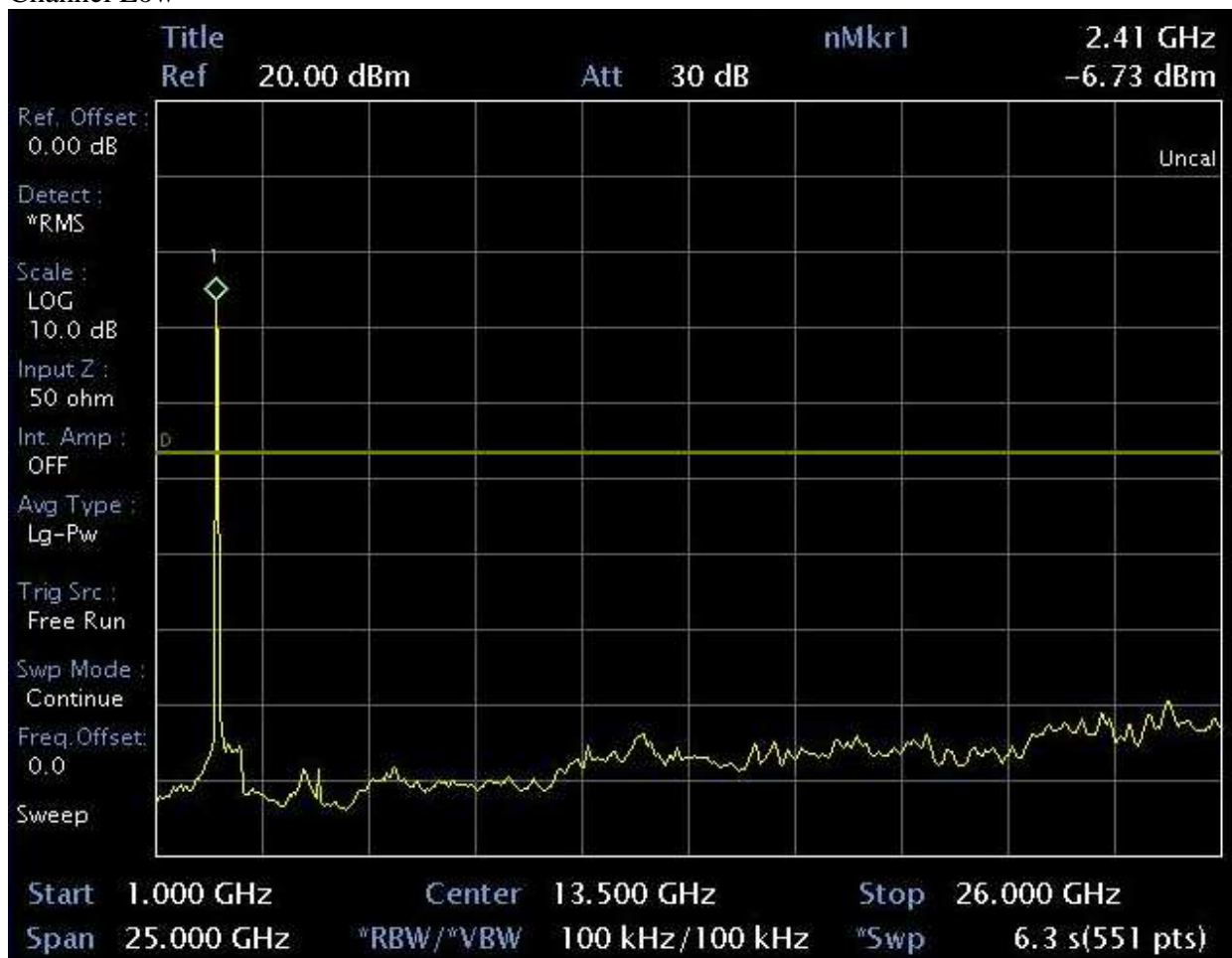
Measurements are made over the 13 GHz to 26GHz range for IEEE 802.11b/g.

#### **13.5 TEST RESULTS: PASSED**

#### **13.6 TEST DATA:**

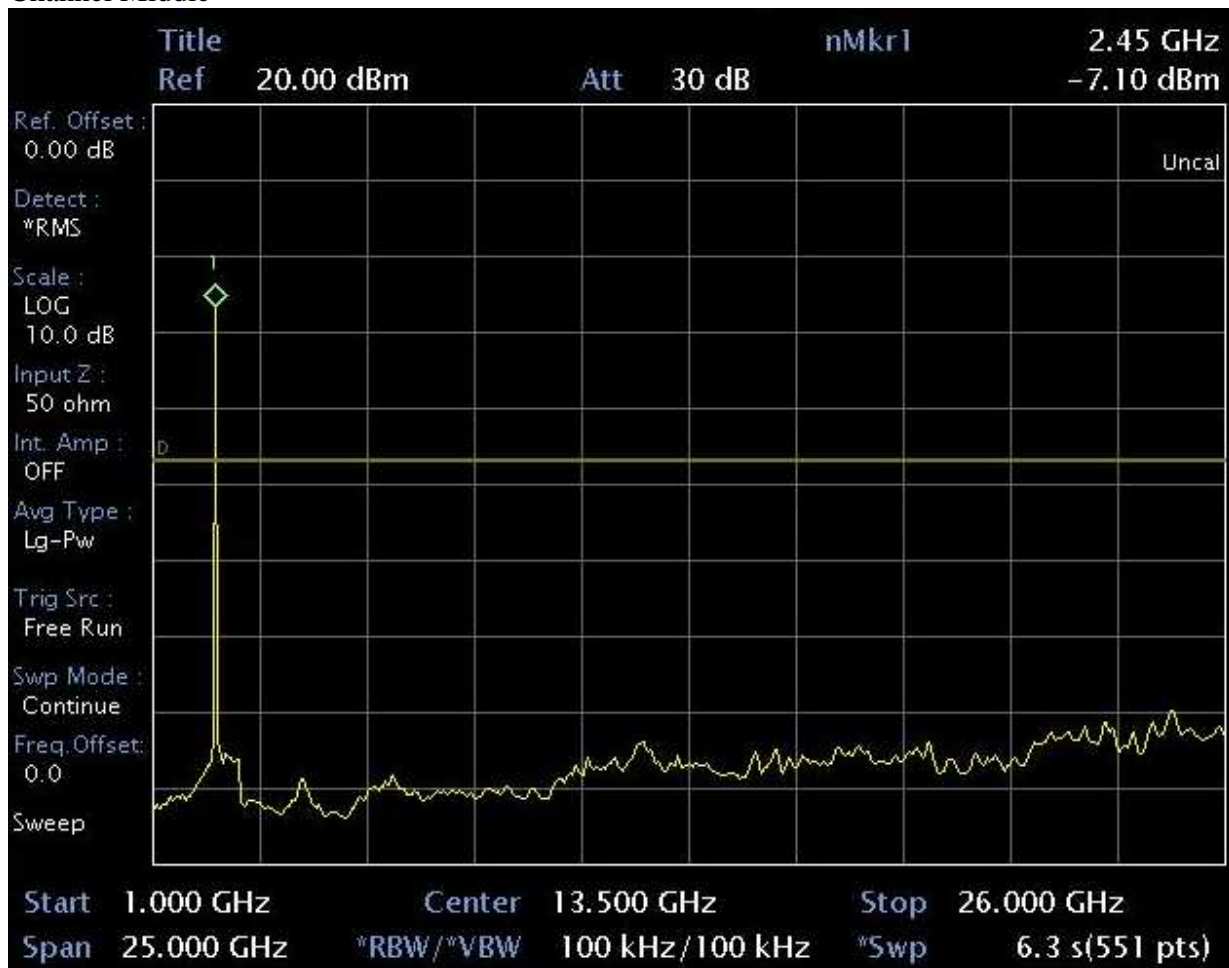


Test Plot  
IEEE 802.11b mode  
Channel Low



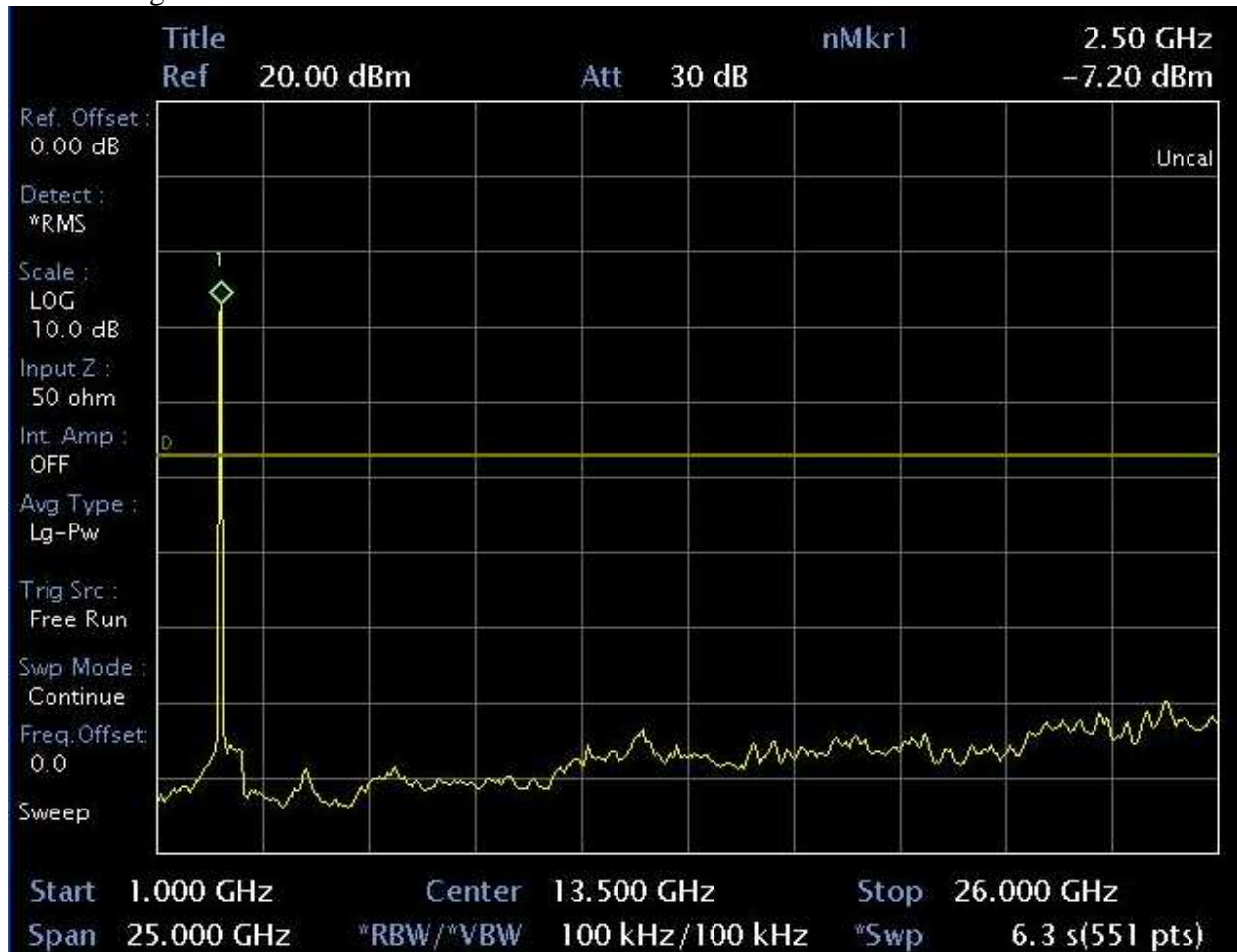


IEEE 802.11b mode  
Channel Middle





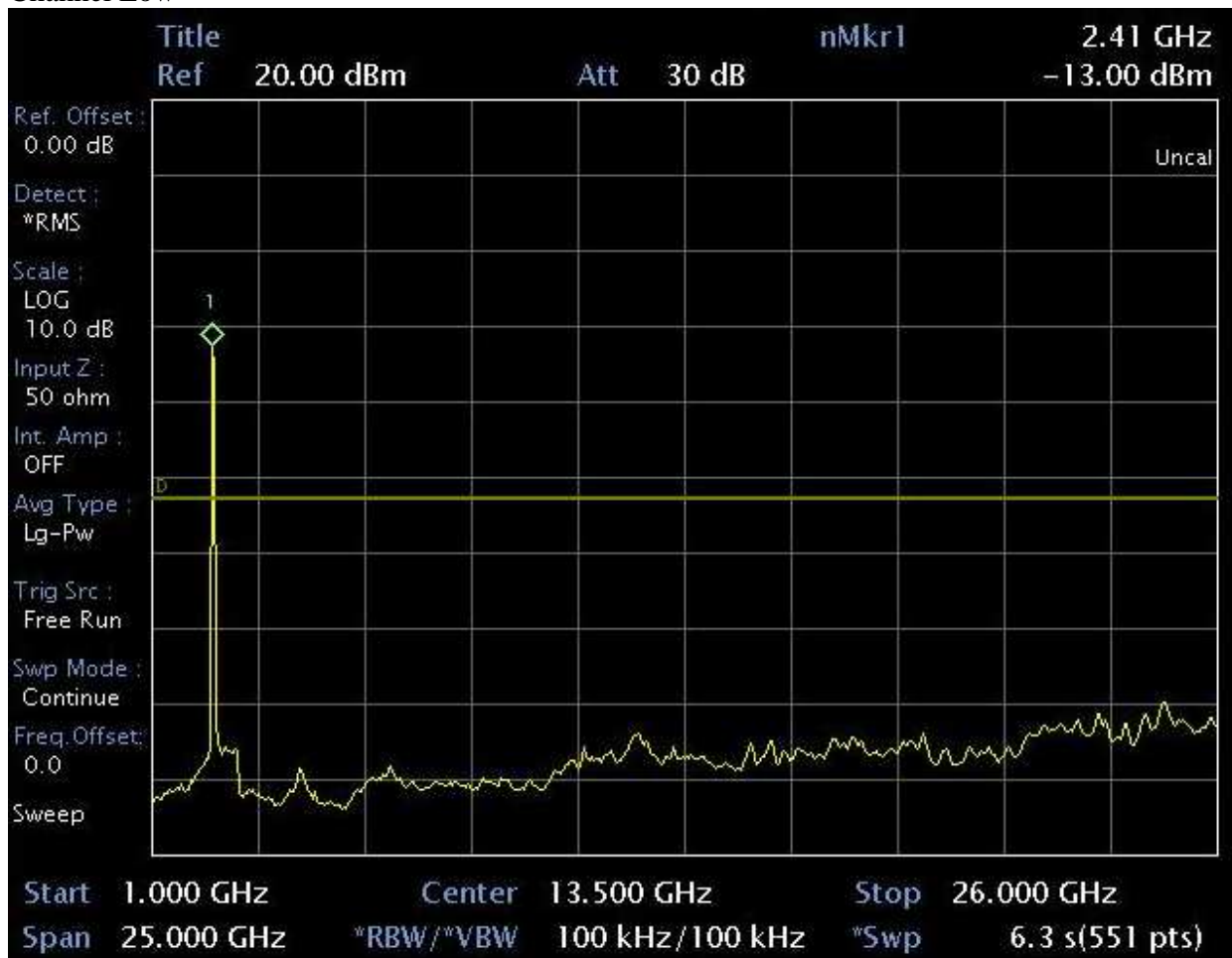
IEEE 802.11b mode  
Channel High





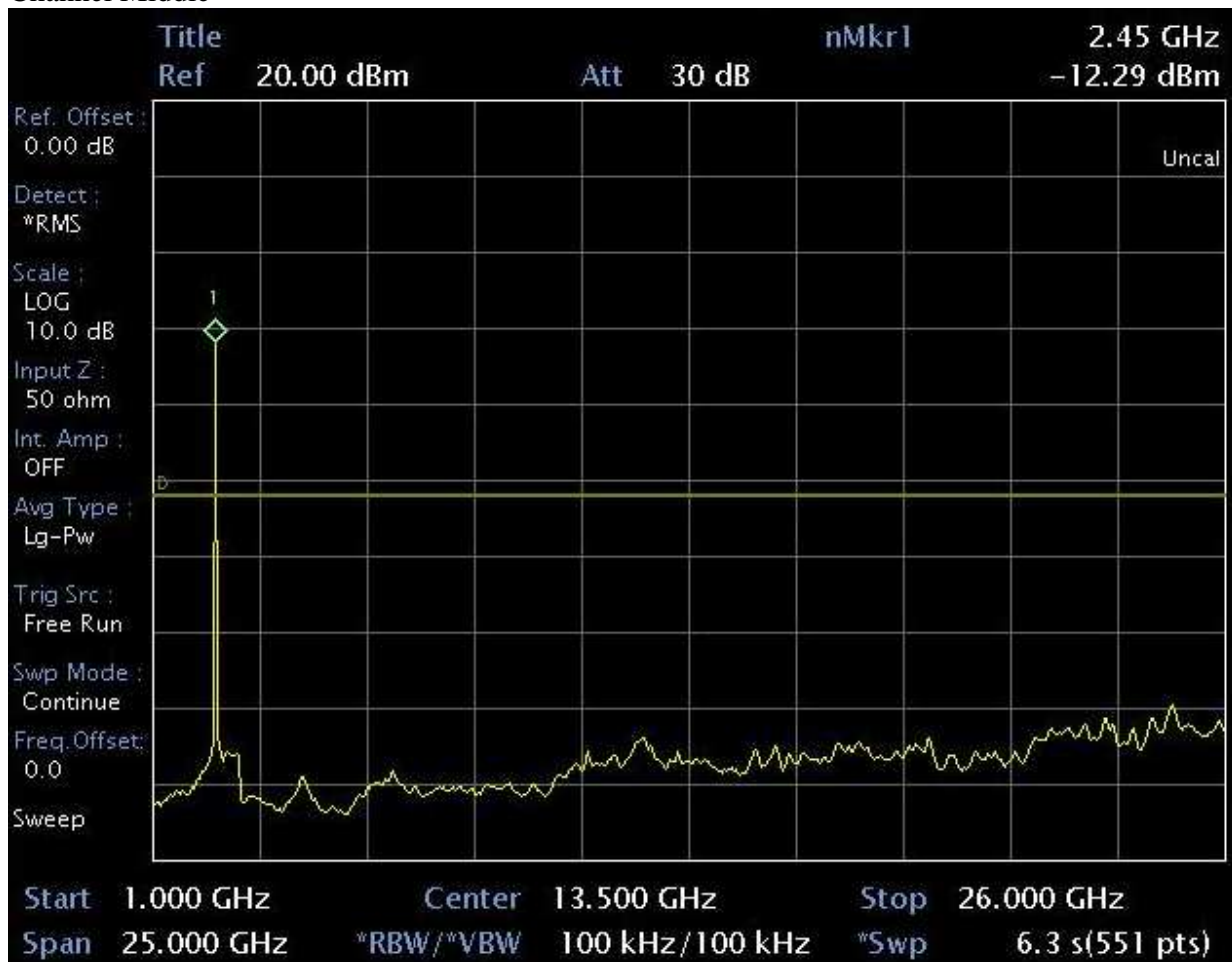


IEEE 802.11g mode  
Channel Low





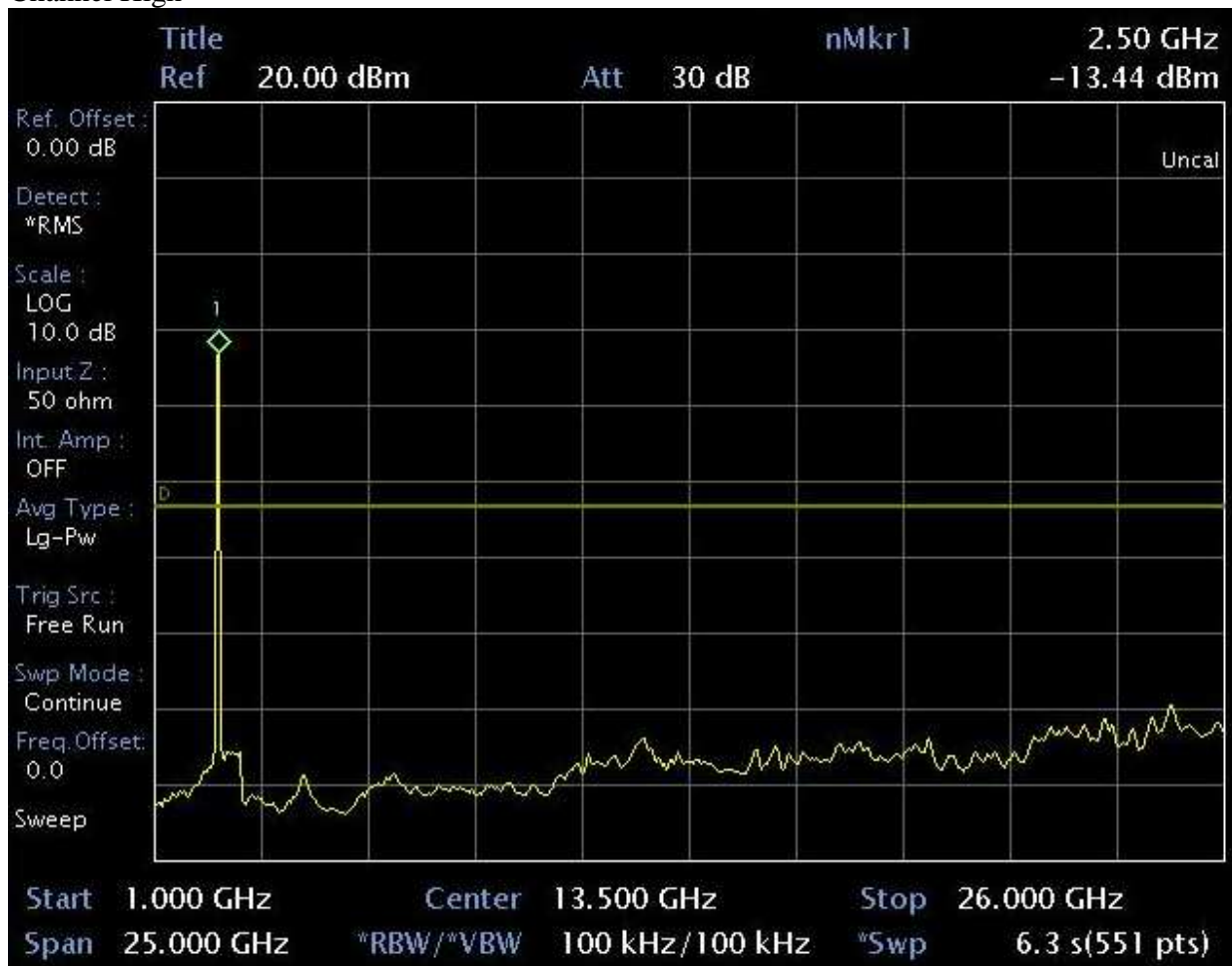
IEEE 802.11g mode  
Channel Middle





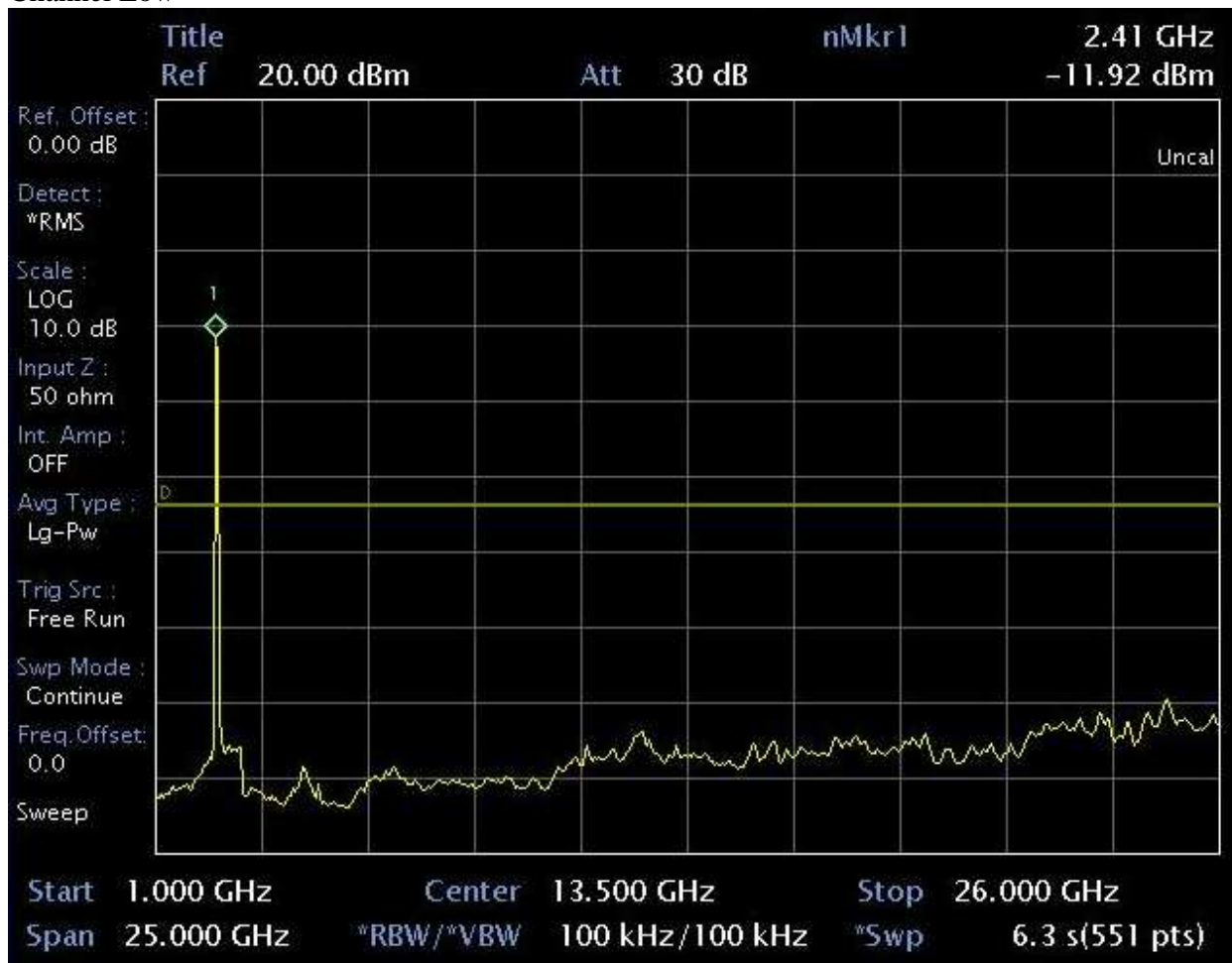
IEEE 802.11g mode

Channel High



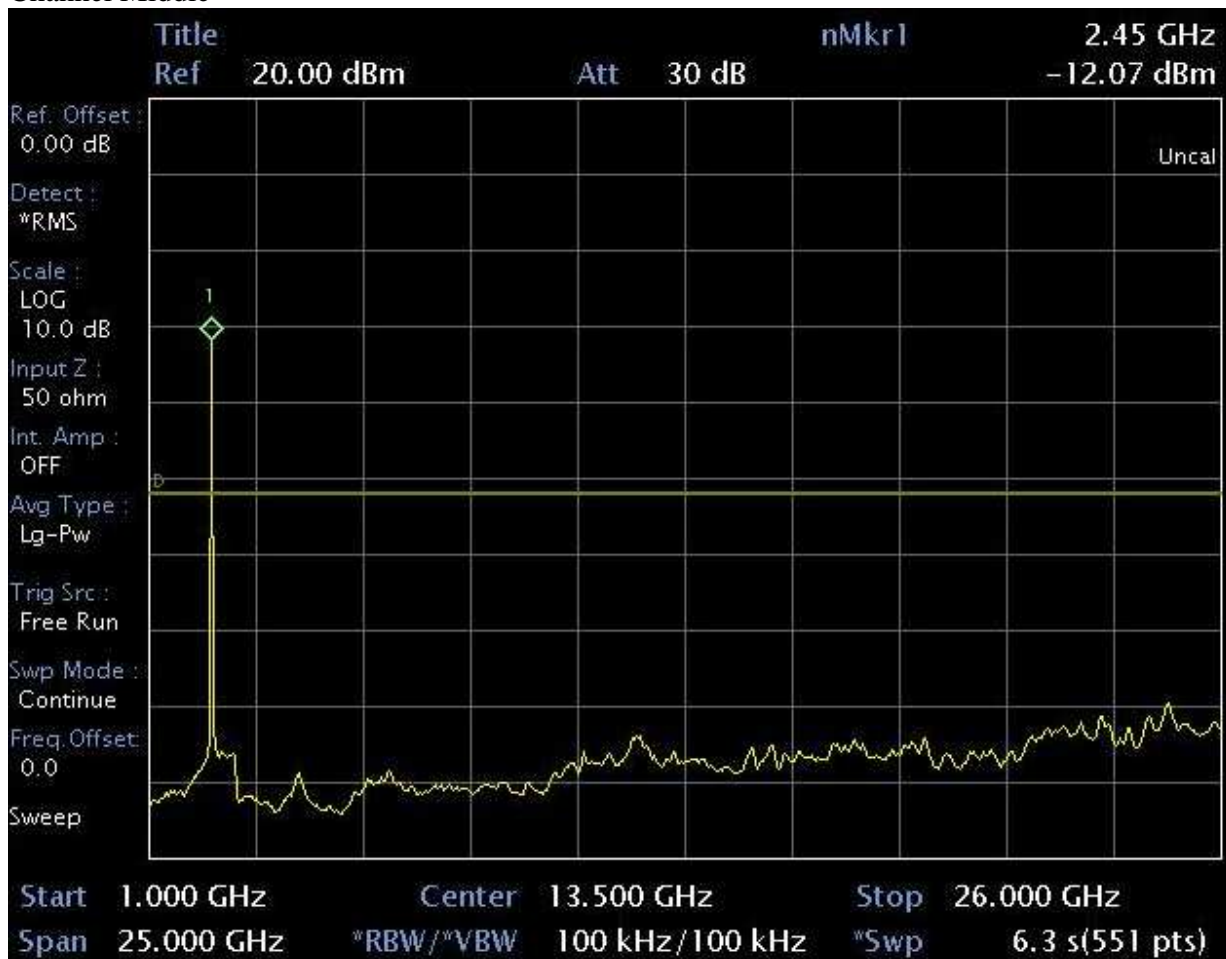


IEEE 802.11n(20M) mode  
Channel Low





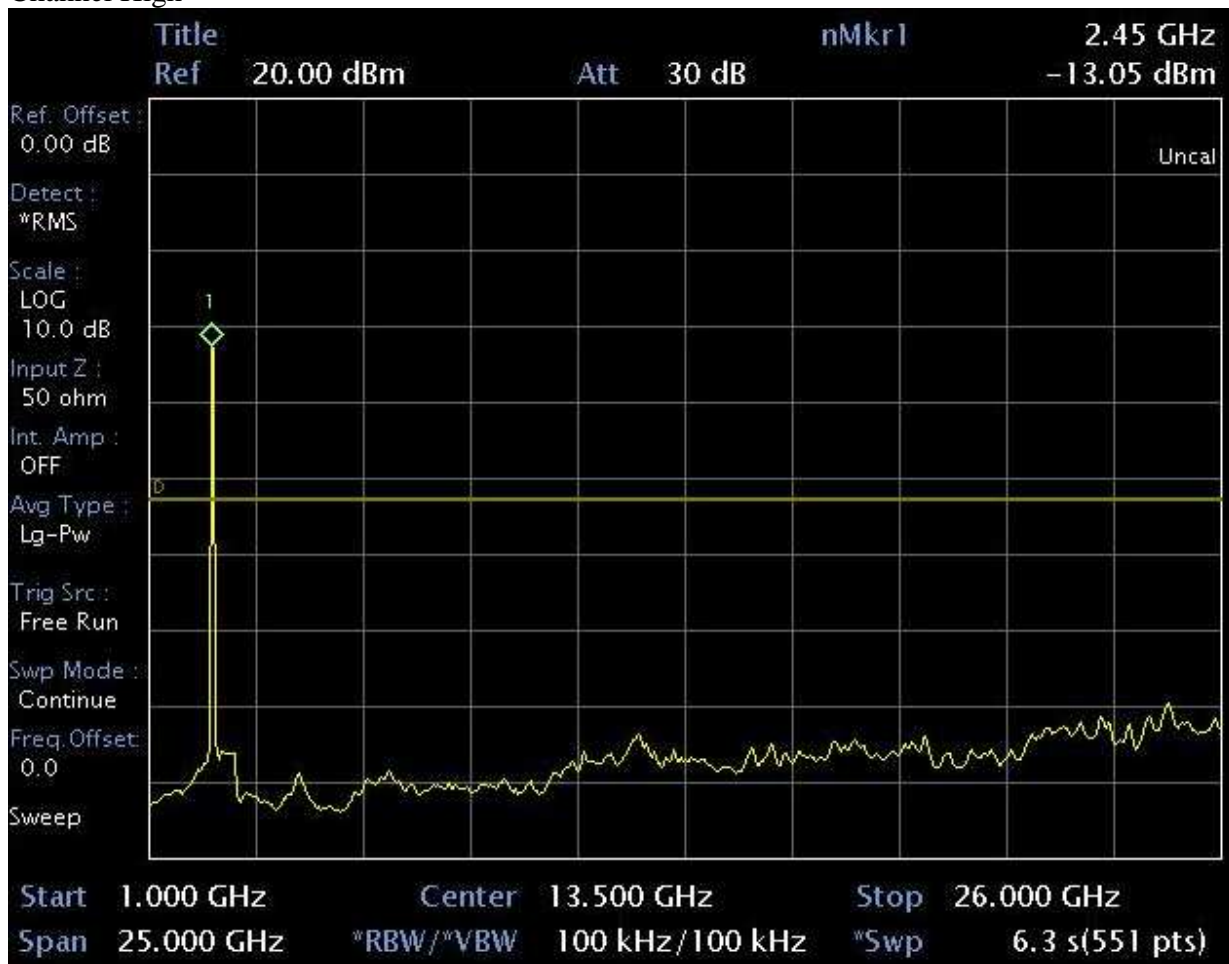
IEEE 802.11n(20M) mode  
Channel Middle





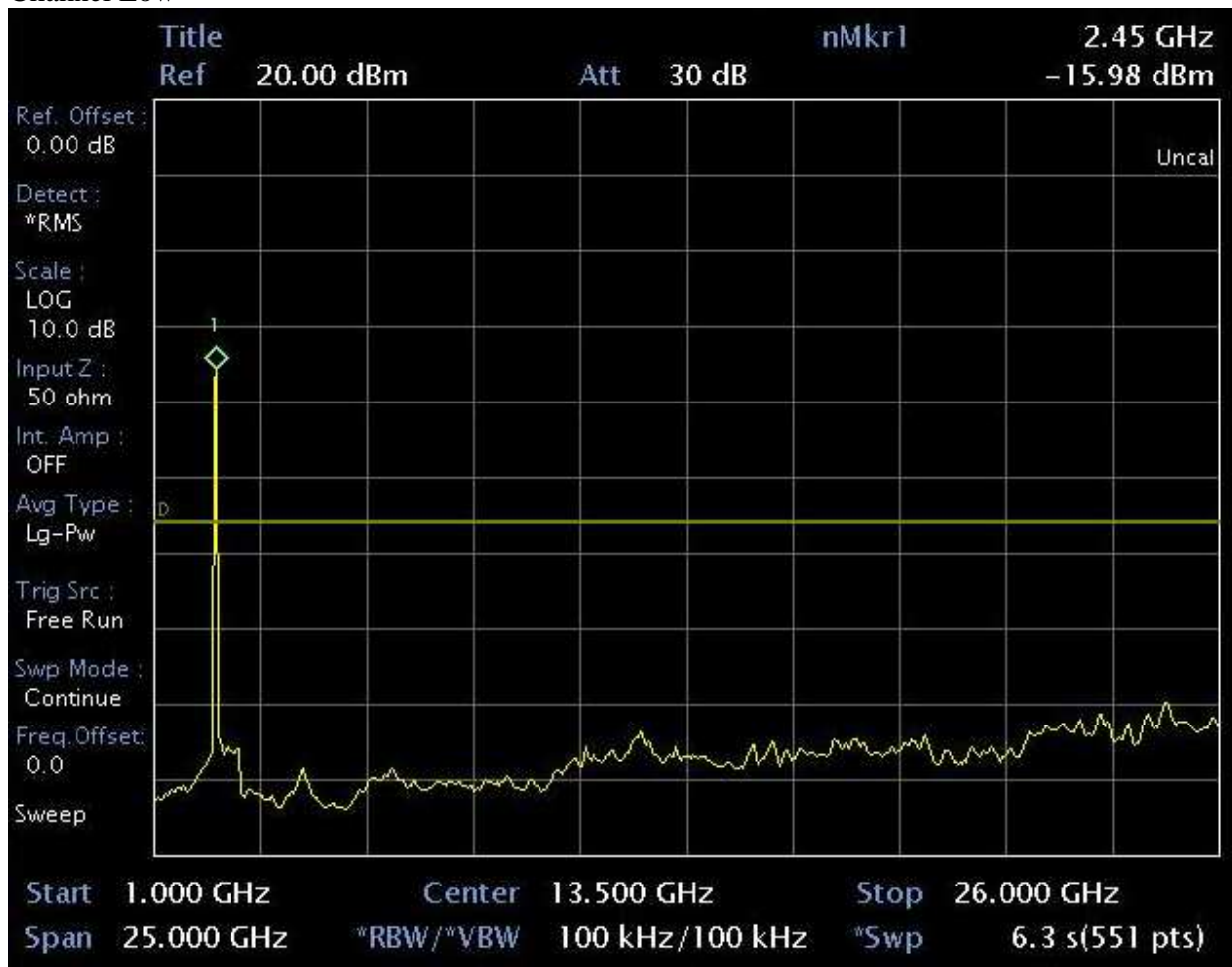
IEEE 802.11n(20M) mode

Channel High





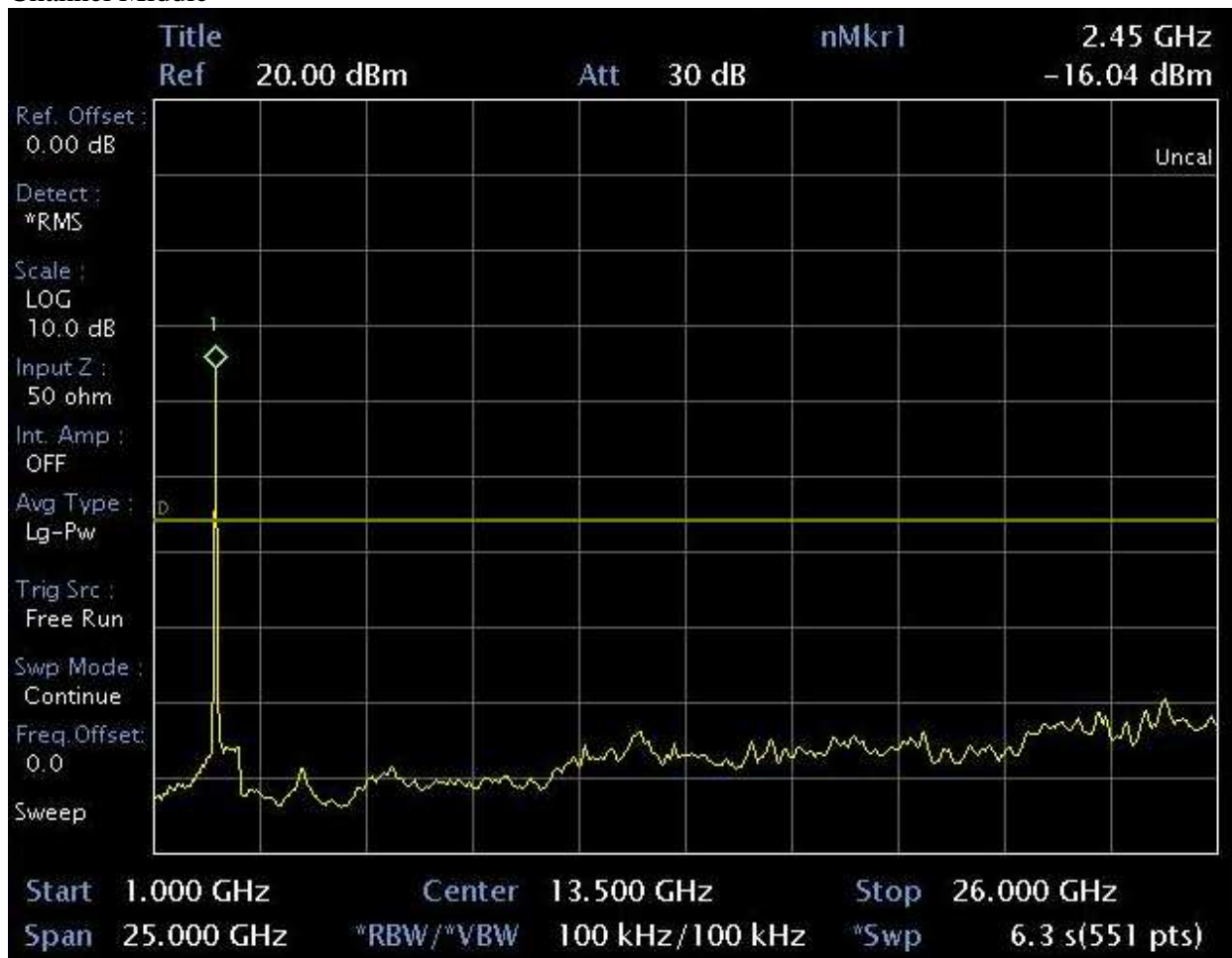
IEEE 802.11n(40M) mode  
Channel Low







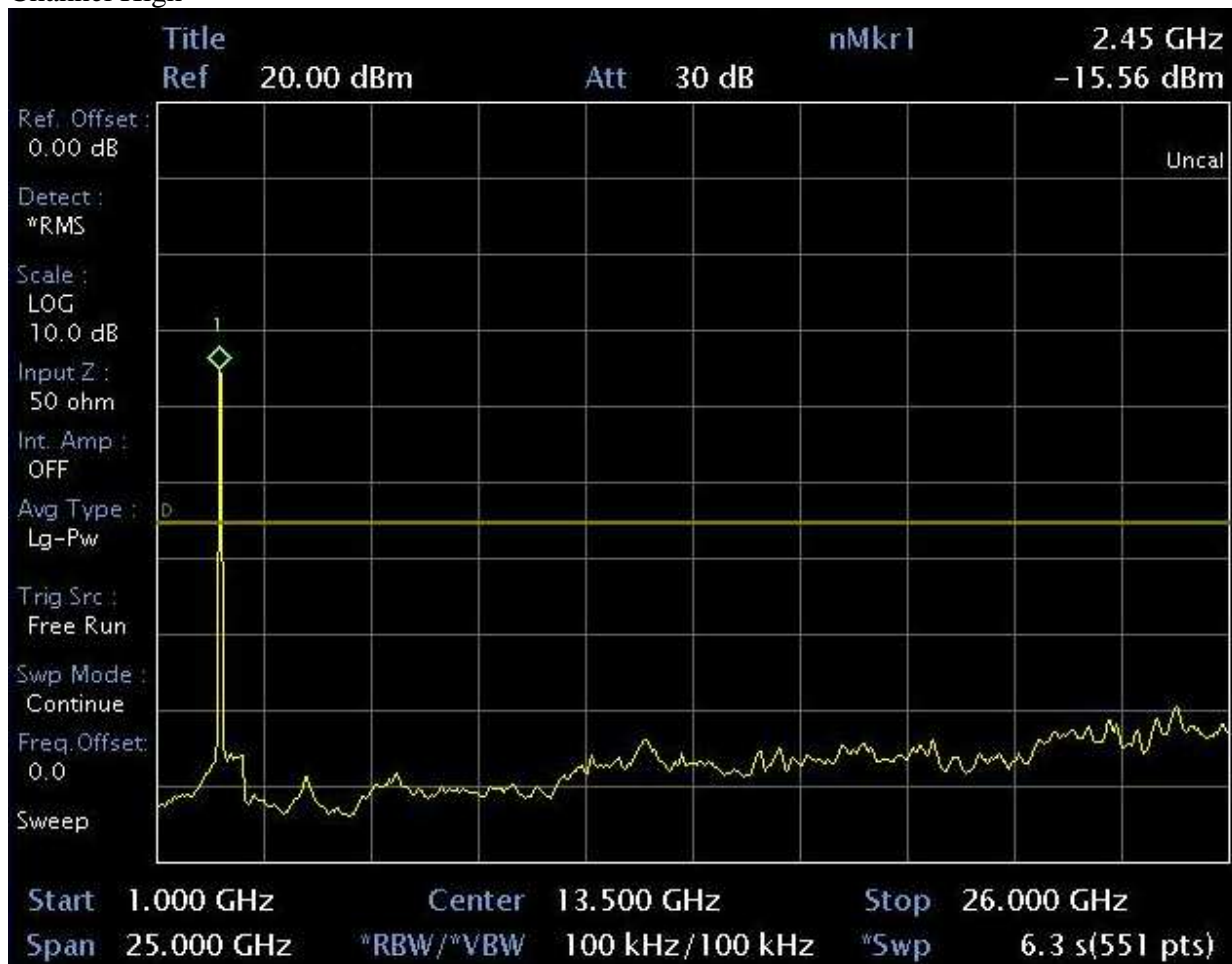
IEEE 802.11n(40M) mode  
Channel Middle





IEEE 802.11n(40M) mode

Channel High





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## **Appendix 1**

### **PHOTOS OF TEST CONFIGURATION**



**Global Certification Corp.**

Report No. : F0D0803

Radiated Emission

