

# ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

## INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C REQUIREMENT

OF

**Product Name:** Vehicle Mount Computer  
**Brand Name:** Honeywell  
**Marketing Name:** Thor VM3  
**Model No.:** VM3WWANUS  
**Model Difference:** N/A  
**FCC ID:** HD5-VM3WWANA  
**Report No.:** ER/2015/20028  
**Issue Date:** Apr. 07, 2015  
**FCC Rule Part:** §15.247, Cat: DTS  
**Prepared for:**  
**Prepared by:**

**Honeywell International Inc.,  
Honeywell Scanning and Mobility  
9680 Old Bailes Road, Fort Mill, SC 29707,  
USA**  
**SGS Taiwan Ltd.  
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**VERIFICATION OF COMPLIANCE**

**Applicant:** Honeywell International Inc.,  
Honeywell Scanning and Mobility  
9680 Old Bailes Road, Fort Mill, SC 29707, USA

**Product Name:** Vehicle Mount Computer

**Brand Name:** Honeywell

**Marketing Name:** Thor VM3

**Model No.:** VM3WWANUS

**Model Difference:** N/A

**FCC ID:** HD5-VM3WWANA

**File Number:** ER/2015/20028

**Date of test:** Feb. 04, 2015 ~ Apr. 07, 2015

**Date of EUT Received:** Feb. 04, 2015

**We hereby certify that:**

The above equipment was tested by SGS Taiwan Ltd. Electronics & Communication Laboratory. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10:2013 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits.

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

<b>Test By:</b>	<i>Marcus Tseng</i>	<b>Date</b>	Apr. 07, 2015
<hr/>			
<b>Prepared By:</b>	<i>Karen Huang</i>	<b>Date</b>	Apr. 07, 2015
<hr/>			
<b>Approved By:</b>	<i>Jim Chang</i>	<b>Date</b>	Apr. 07, 2015
<hr/>			

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## Revision History

Report Number	Revision	Description	Issue Date
ER/2015/20028	Rev.00	Initial creation of document	Apr. 07, 2015

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## 1 GENERAL INFORMATION

### 1.1 Product description

General:

Product Name:	Vehicle Mount Computer
Brand Name:	Honeywell
Marketing Name:	Thor VM3
Model No.:	VM3WWANUS
Model Difference:	N/A
Product SW/HW version:	(a)Win7: 99.01.00.0002 (b)Win8: 99.01.00.0004 / ALXH48
Radio SW/HW version:	10.0.0.27450 / V.1
Test SW Version:	10.0.0.27450
Power Supply:	7.3Vdc form Rechargeable Li-ion Battery or 15Vdc from adapter
	Battery: Part No.:L3-52301624-R / OVT270L1R00 / 50121692-001, Supplier: TOTEX
	Adapter: Model No.:GT-81081-6015-T3 Supplier: GlobTek, Inc.

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## WLAN 2.4GHz:

Wi-Fi	Frequency Range	Channels	Rated Power	Modulation Technology	
11b/g	2412-2462	11	b: 22.05dBm g: 23.35dBm	DSSS, OFDM	
11n	HT20 2412-2462	11	n: 22.81dBm (MIMO Chain0) n: 23.10dBm (MIMO Chain 1) n: 25.96dBm (MIMO Chain0+1)	OFDM	
11n	HT40 2422-2452	7	n: 22.26dBm (MIMO Chain0) n: 22.34dBm (MIMO Chain 1) n: 25.31dBm (MIMO Chain 0+1)	OFDM	
Antenna Designation:		<p>Internal: PIFA Antenna Part No.: FIT-VM3-ANT-21Y, FIT-VM3-ANT-028 2.4GHz: 4.25dBi</p> <p>External: Dipole Antenna 1. Model No.: R380500314, Supplier: LARSEN 2.4GHz: 1.6dBi 2. Model No.: WTS2450, Supplier: Laird Technologies 2.4GHz: 2.1dBi</p>			
Modulation type:		CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM			
Transition Rate:		802.11 b: up to 11 Mbps; 802.11 g: up to 54 Mbps 802.11 n_20MHz: up to 144Mbps 802.11 n_40MHz: up to 300Mbps			

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## 1.2 Product Feature of Equipment Under Test

The equipment under Test (Hereafter Called: EUT) is Vehicle Mount Computer supporting, GSM / WCDMA / CDMA / LTE, Wi-Fi 802.11abgn, Bluetooth with GPS features, and below is details of information.

Product Feature	
Product Name:	Vehicle Mount Computer
Brand Name:	Honeywell
Marketing Name:	Thor VM3
Model No.:	VM3WWANUS
Model Difference:	N/A
FCC ID	HD5-VM3WWANA
GSM Operating Band(s)	GSM 850/1900MHz
GPRS / EGPRS Multi Slot Class	GPRS Class 10 / Class 12
CDMA / EVDO	BC0 / BC1 / BC10
WCDMA Operating Band(s)	FDD Band II / IV / V
WCDMA Rel. Version	Rel.8
LTE Operating Band(s)	FCC Band 2 / 4 / 5 / 13 / 17 / 25
LTE Rel. Version	Rel.9
Wi-Fi Specification	802.11a/b/g/n
Bluetooth Version	V4.0 dual mode

**Note:** The above EUT information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

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### 1.3 Test Methodology of Applied Standards

FCC Part 15, Subpart C §15.247

FCC KDB 558074 D01 DTS Meas. Guidance V03r02

FCC KDB 662311 D01 Multiple Transmitter Output V02r01

ANSI C63.10:2013

Note:

1. All test items have been performed and record as per the above standards.
2. The composite system is compliance with FCC Subpart B is authorized under the certification procedure.
3. The EUT was placed 1.5m height for frequency above 1GHz in accordance with ANSI C63. 10 :2013

### 1.4 Test Facility

SGS Taiwan Ltd. Electronics & Communication Laboratory No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan. (TAF code 0513)

FCC Registration Numbers are: 990257

Canada Registration Number: 4620A-4.

### 1.5 Special Accessories

There are no special accessories used while test was conducted.

### 1.6 Equipment Modifications

There was no modification incorporated into the EUT.

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## 2 SYSTEM TEST CONFIGURATION

### 2.1 EUT Configuration

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

### 2.2 EUT Exercise

An engineering test mode (software/firmware) that applicant provided was utilized to manipulate the EUT into transmit, selection of the test channel, and modulation scheme.

### 2.3 Test Procedure

#### 2.3.1 Conducted Emissions

The EUT is placed on a turn table which is 0.8 m above ground plane. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz. The CISPR Quasi-Peak and Average detector mode is employed according to §15.107. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

#### 2.3.2 Radiated Emissions

The EUT is placed on a turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made “while keeping the antenna in the ‘cone of radiation’ from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response.” is still within the 3dB illumination BW of the measurement antenna.

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## 2.4 Measurement Results Explanation Example

### For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuation factor between EUT conducted port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly EUT RF output level.

#### Note:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Following shows an offset computation example with cable loss 1 dB and 10 dB attenuator.

Single mode offset

= RF cable loss (dB)+ attenuation factor(dB)=11(dB)

N20 MIMO mode offset

= RF cable loss (dB)+ attenuation factor(dB)+ 10 log(NANT) dB+ duty factor=14(dB)

N40 MIMO mode offset

= RF cable loss (dB)+ attenuation factor(dB)+ 10 log(NANT) dB+ duty factor=14(dB)

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## 2.5 Configuration of Tested System

**Fig. 2-1 Radiated Emission**



**Fig. 2-2 Conducted (Antenna Port) Configuration**



**Table 2-1 Equipment Used in Tested System**

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Data Cable	Power Cord
1.	WLAN Test Software	Qualcomm Atheros	10.0.0.27450	N/A	N/A	N/A
2.	DC Power Supply	HP	E3640A	KR93300208	N/A	N/A

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**Fig. 2-3 AC Power Line Conducted Emission****Table 2-2 Equipment Used in Tested System**

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Data Cable	Power Cord
1.	WLAN Test Software	Qualcomm Atheros	10.0.0.27450	N/A	N/A	N/A

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### 3 SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§15.207(a)	AC Power Line Conducted Emission	Compliant
§15.247(b) (3)	Peak Output Power	Compliant
§15.247(a)(2)	6dB Bandwidth	Compliant
§15.247(d)	Conducted Band Edge and Spurious Emission	Compliant
§15.247(d)	Radiated Band Edge and Spurious Emission	Compliant
§15.247(e)	Power Spectral Density	Compliant
§15.203 §15.247(b)	Antenna Requirement	Compliant

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## 4 DESCRIPTION OF TEST MODES

### 4.1 Operated in 2400 ~ 2483.5MHz Band

11 channels are provided for 802.11b, 802.11g and 802.11n HT20

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412 MHz	7	2442 MHz
2	2417 MHz	8	2447 MHz
3	2422 MHz	9	2452 MHz
4	2427 MHz	10	2457 MHz
5	2432 MHz	11	2462 MHz
6	2437 MHz		

9 channels are provided for 802.11n HT40

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412 MHz	7	2442 MHz
2	2417 MHz	8	2447 MHz
3	2422 MHz	9	2452 MHz
4	2427 MHz		
5	2432 MHz		
6	2437 MHz		

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## 4.2 The Worst Test Modes and Channel Details

1. The EUT has been tested under operating condition.
2. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.
3. Investigation has been done on all the possible configurations for searching the worst case.

Pre-scanned was done on external antenna: R38050031 and antenna WTS2450, and antenna WTS2450 results higher emission at 2.4GHz. Therefore, the completed set of measurement was done on antenna: WTS2450 to presented on this test report.

### RADIATED EMISSION TEST:

RADIATED EMISSION TEST (BELOW 1 GHz)					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11g	1 to 11	1,6,11	OFDM	6	MAIN
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	MCS 8	MIMO
RADIATED EMISSION TEST (ABOVE 1 GHz)					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11b	1 to 11	1, 6, 11	DSSS	1	MAIN
802.11g	1 to 11	1, 6, 11	OFDM	6	MAIN
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	MCS 8	MIMO
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	MCS 8	MIMO

#### Note:

The field strength of radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for 802.11b/g/n WLAN Transmitter for channel Low, Mid and High, the worst case H position was reported.

### ANTENNA PORT CONDUCTED MEASUREMENT:

CONDUCTED TEST					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11b	1 to 11	1, 6, 11	DSSS	1	MAIN
802.11g	1 to 11	1, 6, 11	OFDM	6	MAIN
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	MCS 8	MIMO
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	MCS 8	MIMO

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## 5 MEASUREMENT UNCERTAINTY

Test Items	Uncertainty
AC Power Line Conducted Emission	+/- 2.586 dB
Peak Output Power	+/- 0.84 dB
6dB Bandwidth	+/- 51.33 Hz
100 KHz Bandwidth Of Frequency Band Edges	+/- 1.55 dB
Peak Power Density	+/- 1.3 dB
Temperature	+/- 0.65 °C
Humidity	+/- 4.6 %
DC / AC Power Source	DC= +/- 0.13%, AC= +/- 0.2%

Radiated Spurious Emission:

Measurement uncertainty (Polarization : <b>Vertical</b> )	30MHz - 180MHz: +/- 3.37dB
	180MHz -417MHz: +/- 3.19dB
	0.417GHz-1GHz: +/- 3.19dB
	1GHz - 18GHz: +/- 4.04dB
	18GHz - 40GHz: +/- 4.04dB

Measurement uncertainty (Polarization : <b>Horizontal</b> )	30MHz - 167MHz: +/- 4.22dB
	167MHz -500MHz: +/- 3.44dB
	0.5GHz-1GHz: +/- 3.39dB
	1GHz - 18GHz: +/- 4.08dB
	18GHz - 40GHz: +/- 4.08dB

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

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## 6 CONDUCTED EMISSION TEST

### 6.1 Standard Applicable

Frequency range within 150kHz to 30MHz shall not exceed the Limit table as below.

Frequency range MHz	Limits dB(uV)	
	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 linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

### 6.2 Measurement Equipment Used

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI Test Receiver	R&S	ESCI7	100760	05/26/2014	05/25/2015
LISN	Rolf-Heine	NNB-2/16Z	99012	03/26/2014	03/25/2015
LISN	FCC	FCC-LISN-50/250-25-2-01	04034	03/19/2014	03/18/2015
Coaxial Cables	N/A	WK CE Cable	N/A	11/26/2014	11/25/2015

### 6.3 EUT Setup

1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI 63.10:2013.
2. The AC/DC Power adaptor of EUT was plug-in LISN. The EUT was placed flushed with the rear of the table.
3. The LISN was connected with 120Vac/60Hz power source.

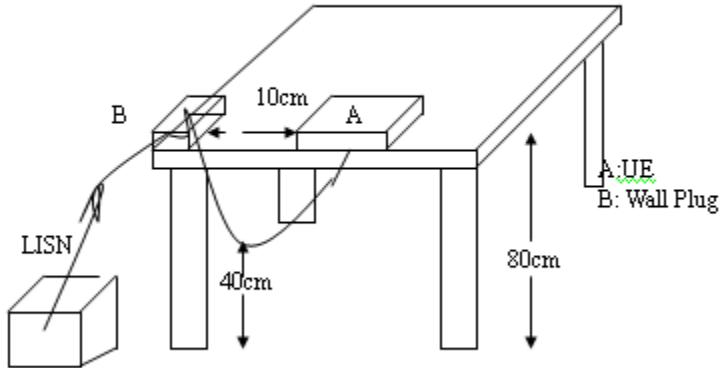
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## 6.4 Test SET-UP (Block Diagram of Configuration)



## 6.5 Measurement Procedure

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all phases of power being supplied by given UE are completed

## 6.6 Measurement Result

Note: Refer to next page for measurement data and plots.

Note2: The \* reveals the worst-case results that closet to the limit

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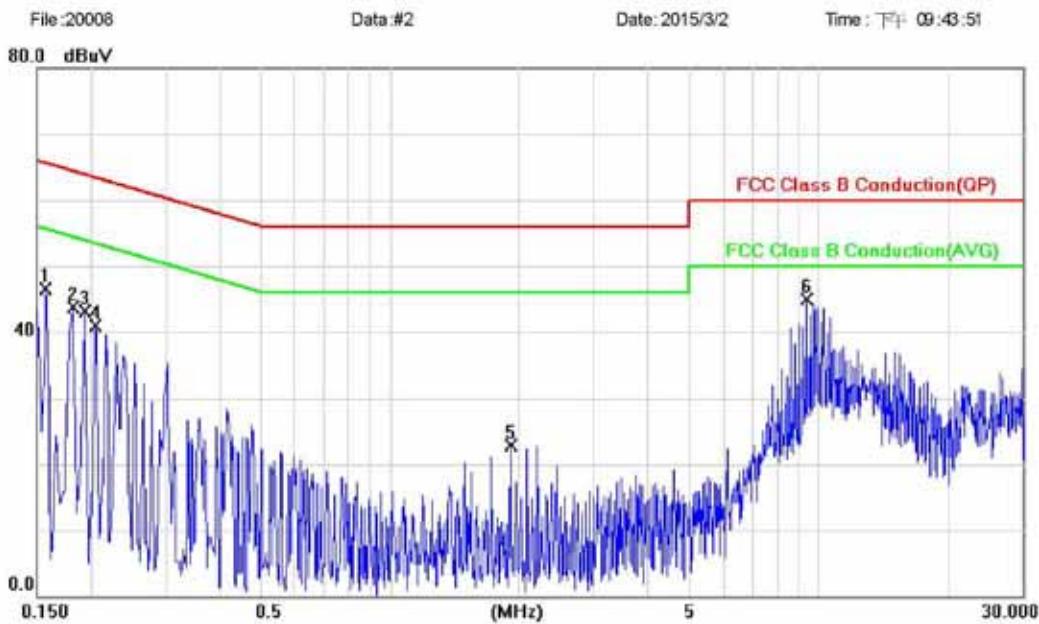
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## AC POWER LINE CONDUCTED EMISSION TEST DATA

Operation Mode:	Operation mode			Test Date:	Mar. 02, 2015
Temperature:	24	Humidity:	66 %	Test By:	Tin

Site: ConductionRoom  
 Phase: **L1**  
 Temperature: 24 °C  
 Limit: FCC Class B Conduction(QP)  
 Power: AC 120V/60Hz  
 Humidity: 66%  
 Mode: Operation  
 Note: Adapter:GT-81081-6015-T3

## Conducted Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV	dB	Detector	Comment
1		0.1580	46.36	0.05	46.41	65.57	-19.16	peak
2		0.1820	43.57	0.06	43.63	64.39	-20.76	peak
3		0.1940	42.95	0.06	43.01	63.86	-20.85	peak
4		0.2060	40.83	0.06	40.89	63.37	-22.48	peak
5		1.9100	22.87	0.12	22.99	56.00	-33.01	peak
6 *		9.3740	44.54	0.32	44.86	60.00	-15.14	peak

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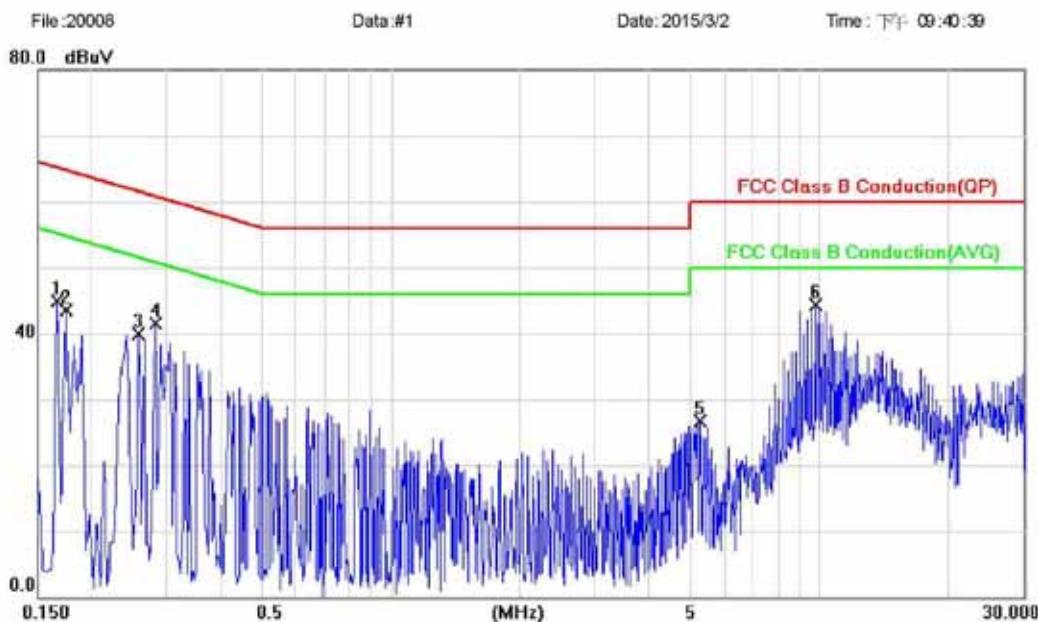
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Site: ConductionRoom  
 Limit: FCC Class B Conduction(QP)  
 Mode: Operation  
 Note: Adapter:GT-81081-6015-T3

Phase: **N**  
 Power: AC 120V/60Hz

Temperature: 24 °C  
 Humidity: 66%

### Conducted Emission



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dB	Detector	Comment
1		0.1660	44.90	0.05	44.95	65.16	-20.21	peak
2		0.1740	43.49	0.05	43.54	64.77	-21.23	peak
3		0.2580	39.87	0.06	39.93	61.50	-21.57	peak
4		0.2820	41.47	0.06	41.53	60.76	-19.23	peak
5		5.2500	26.57	0.20	26.77	60.00	-33.23	peak
6	*	9.7740	44.06	0.34	44.40	60.00	-15.60	peak

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## 7 DUTY CYCLE OF TEST SIGNAL

Pre-analysis Check: While conducting average power measurement, duty cycle of each mode shall be checked to ensure its duty cycle in order to compensate for the loss due to insufficient ratio of duty cycle.

All duty cycle is pre-scanned, and result as obtained below shows only the most representative ones where duty cycle is conducted as the given transmission with given virtual operation that expresses the percentage.

### Formula:

$$\text{Duty Cycle} = \text{Ton} / (\text{Ton} + \text{Toff})$$

### Measurement Procedure:

1. Set span = Zero
2. RBW = 8MHz
3. VBW = 8MHz,
4. Detector = Peak

### Duty Cycle:

	Duty Cycle	Duty Factor (dB)
802.11b	99.00%	0.04
802.11g	97.57%	0.11
802.11n_20	96.01%	0.18
802.11n_40	92.98%	0.32

$$\text{Duty Cycle Factor: } 10 * \log (1/0.99) = 0.04$$

$$\text{Duty Cycle Factor: } 10 * \log (1/0.9757) = 0.11$$

$$\text{Duty Cycle Factor: } 10 * \log (1/0.9601) = 0.18$$

$$\text{Duty Cycle Factor: } 10 * \log (1/0.9298) = 0.32$$

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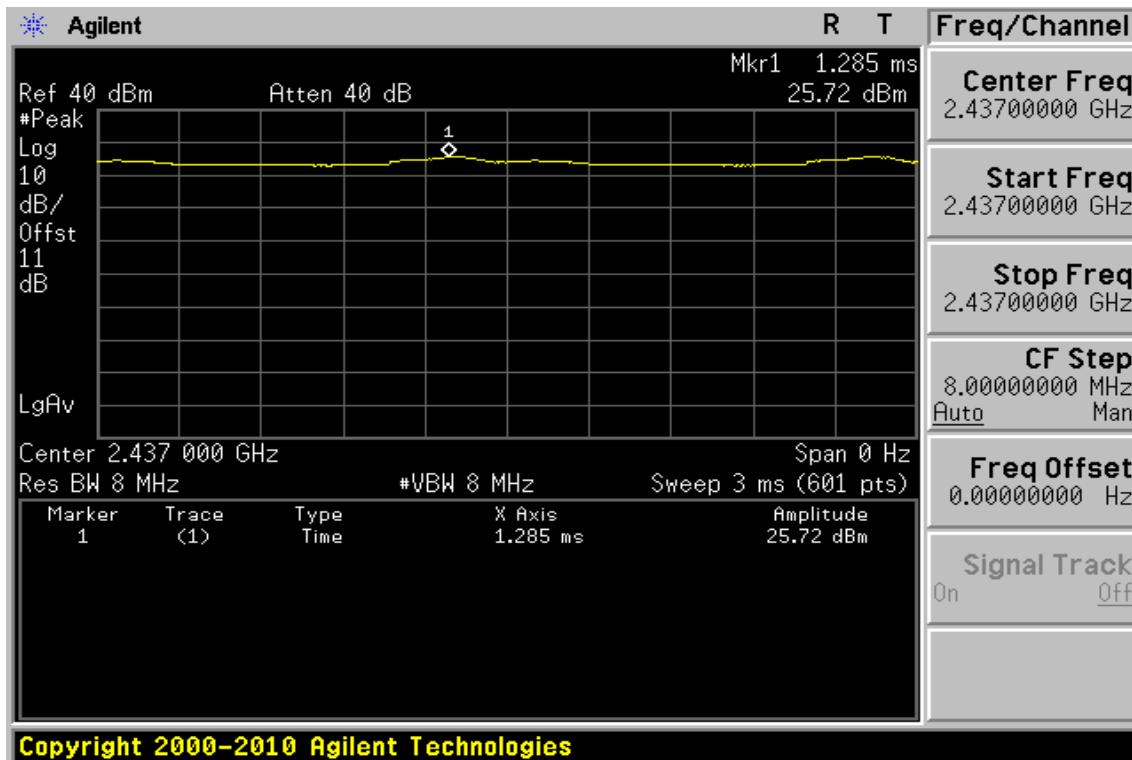
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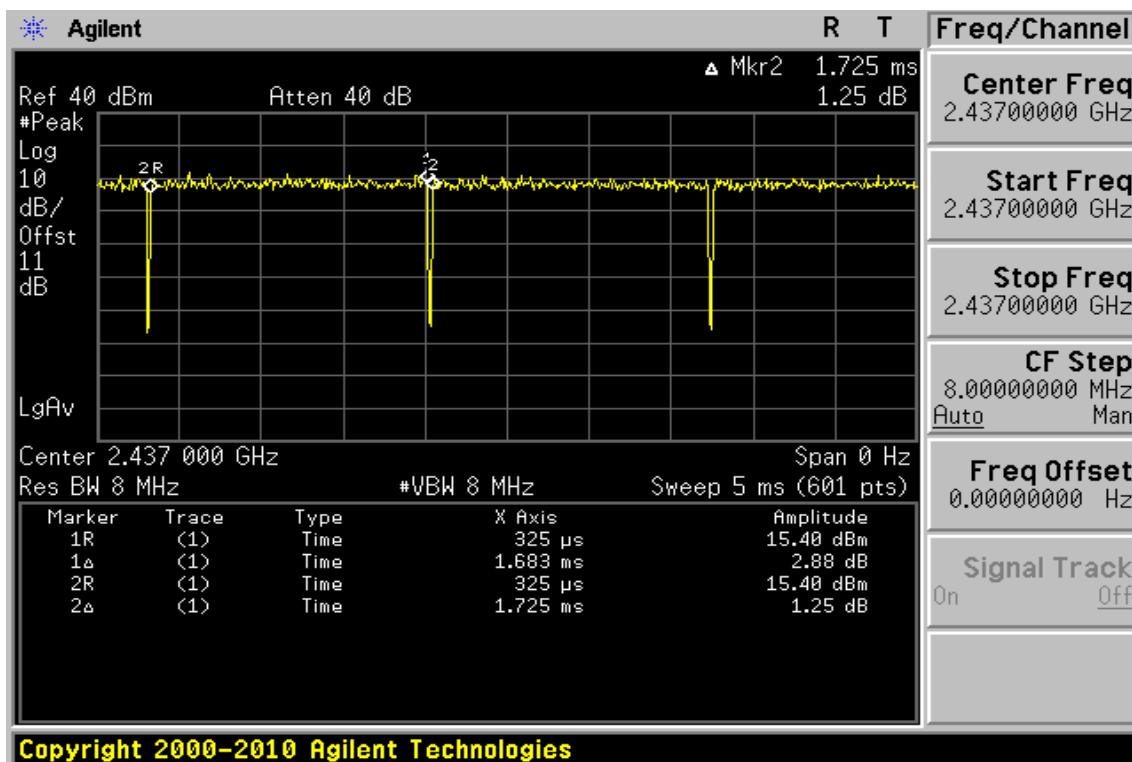
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## 7.1 DUTY CYCLE TEST SIGNAL Measurement Result

### 802.11 b



### 802.11 g



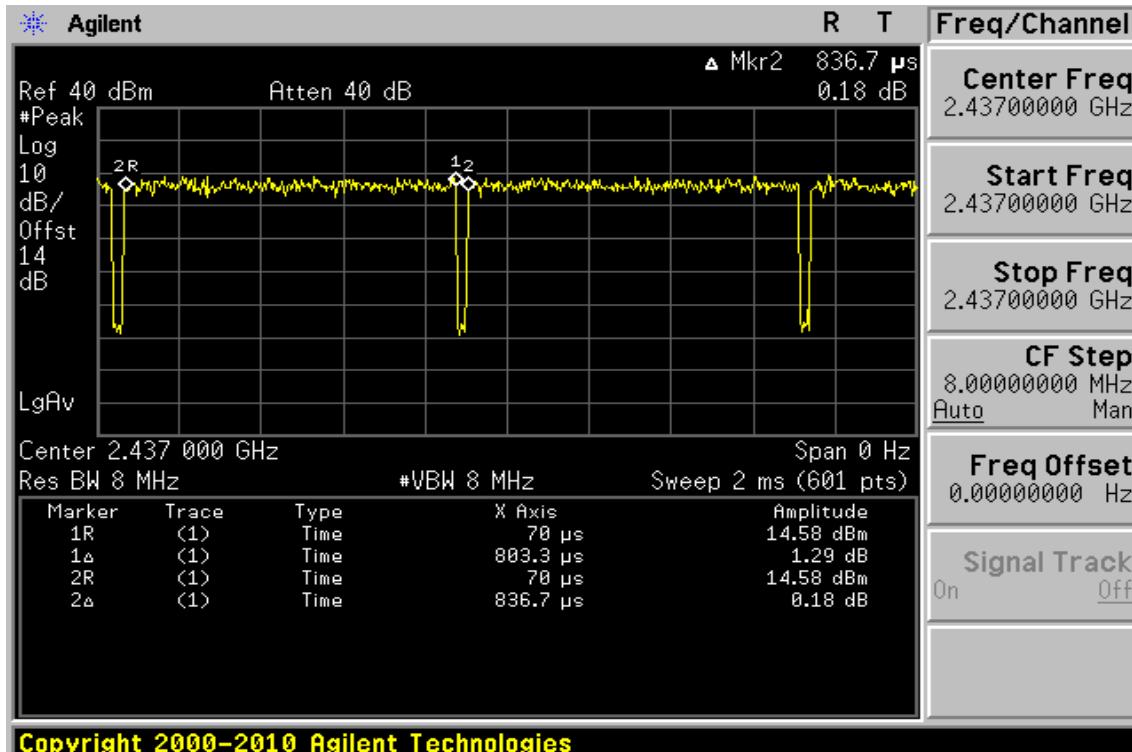
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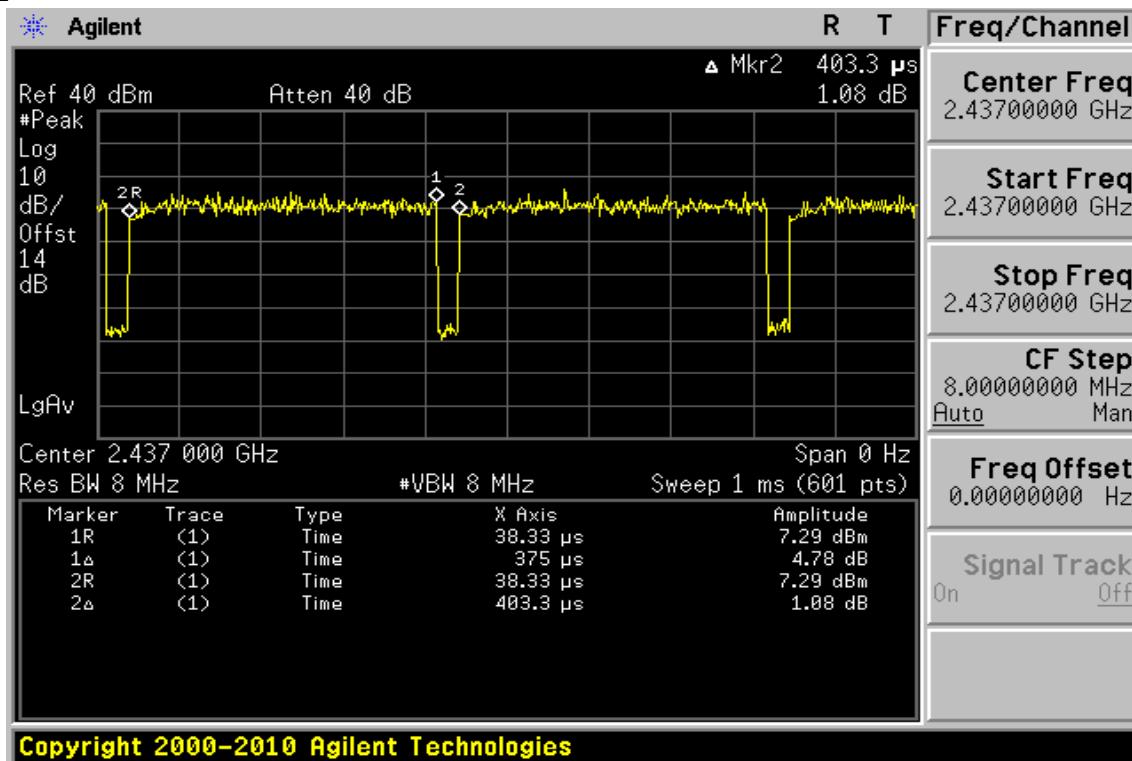
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## 802.11 n\_20 MHz



## 802.11 n\_40 MHz



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## 8 PEAK OUTPUT POWER MEASUREMENT

### 8.1 Standard Applicable

For systems using digital modulation in the 2400-2483.5 MHz bands, the limit for peak output power is 1Watt.

If the transmitting antenna of directional gain greater than 6dBi are used the peak output power form the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the Antenna exceeds 6dBi.

In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of Antenna exceeds 6dBi.

Note: The antenna gain is greater than 6 dBi in MIMO mode the limit reduce as below:

Directional gain = gain of antenna element + 10 log (# of TX antenna elements)

*Effective Legacy Gain (dBi) = 4.25+3.01=7.26 dBi*

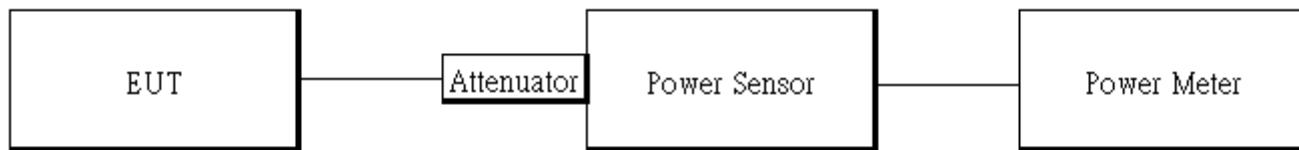
*Limit: 30 dBm - (7.26- 6 dBi) = 28.74 dBm*

### 8.2 Measurement Equipment Used

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Power Meter	Anritsu	ML2495A	1005007	12/20/2014	12/19/2015
Power Sensor	Anritsu	MA2411B	917032	12/20/2014	12/19/2015
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2015	01/01/2016
Attenuator	Mini-Circuit	BW-S10W2+	002	01/02/2015	01/01/2016

### 8.3 Test Set-up

Power Meter:



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## 8.4 Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance V03r02.
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter .

### Power Meter:

It is used as the auxiliary test equipment to conduct the output power measurement.

4. Record the max. Reading as observed from Spectrum or Power Meter.
5. Repeat above procedures until all frequency of interest measured was complete.

## 8.5 Measurement Result

### 802.11b

CH	Frequency (MHz)	DATA RATE	Peak Output Power		REQUIRED LIMIT (dBm)	RESULT
			TOTAL POWER (dBm)	TOTAL POWER (mW)		
1	2412	1	21.45	139.637	1 W = 30 dBm	PASS
6	2437	1	21.88	154.170	1 W = 30 dBm	PASS
11	2462	1	<b>22.05</b>	<b>160.325</b>	1 W = 30 dBm	PASS

CH	Frequency (MHz)	DATA RATE	Avg. Output Power		REQUIRED LIMIT (dBm)	RESULT
			TOTAL POWER (dBm)	TOTAL POWER (mW)		
1	2412	1	19.10	81.283	1 W = 30 dBm	PASS
6	2437	1	19.63	91.833	1 W = 30 dBm	PASS
11	2462	1	19.92	98.175	1 W = 30 dBm	PASS

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**802.11g**

CH	Frequency (MHz)	DATA RATE	Peak Output Power		REQUIRED LIMIT (dBm)	RESULT
			TOTAL POWER (dBm)	TOTAL POWER (mW)		
1	2412	6	21.31	135.207	1 W = 30 dBm	PASS
6	2437	6	<b>23.35</b>	<b>216.272</b>	1 W = 30 dBm	PASS
11	2462	6	23.25	211.349	1 W = 30 dBm	PASS

CH	Frequency (MHz)	DATA RATE	Avg. Output Power		REQUIRED LIMIT (dBm)	RESULT
			TOTAL POWER (dBm)	TOTAL POWER (mW)		
1	2412	6	14.35	27.227	1 W = 30 dBm	PASS
6	2437	6	14.38	27.416	1 W = 30 dBm	PASS
11	2462	6	14.22	26.424	1 W = 30 dBm	PASS

**802.11n HT20**

CH	Frequency (MHz)	DATA RATE	Peak Outout Power (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
			CHAIN 0	CHAIN 1				
1	2412	MCS8	21.73	22.31	25.04	319.152	28.74 dBm	PASS
6	2437	MCS8	22.81	22.93	25.88	387.321	28.74 dBm	PASS
11	2462	MCS8	22.79	23.10	<b>25.96</b>	<b>394.282</b>	28.74 dBm	PASS

CH	Frequency (MHz)	DATA RATE	Avg. Outout Power (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
			CHAIN 0	CHAIN 1				
1	2412	MCS8	11.71	12.27	15.01	31.691	28.74 dBm	PASS
6	2437	MCS8	13.13	13.29	16.22	41.889	28.74 dBm	PASS
11	2462	MCS8	13.12	13.69	16.42	43.900	28.74 dBm	PASS

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**802.11n\_HT40**

CH	Frequency (MHz)	DATA RATE	Peak Outout Power (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
			CHAIN 0	CHAIN 1				
3	2422	MCS8	21.37	21.98	24.70	294.849	28.74 dBm	PASS
6	2437	MCS8	22.26	22.34	25.31	339.663	28.74 dBm	PASS
9	2452	MCS8	21.89	22.07	24.99	315.590	28.74 dBm	PASS

CH	Frequency (MHz)	DATA RATE	Avg. Outout Power (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	REQUIRED LIMIT (dBm)	RESULT
			CHAIN 0	CHAIN 1				
3	2422	MCS8	10.86	11.41	14.15	26.026	28.74 dBm	PASS
6	2437	MCS8	12.16	12.24	15.21	33.193	28.74 dBm	PASS
9	2452	MCS8	11.47	11.58	14.54	28.416	28.74 dBm	PASS

\* Note: The duty cycle factor is compensated to obtain the maximum value of measurement in average.

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## 9 6dB BANDWIDTH

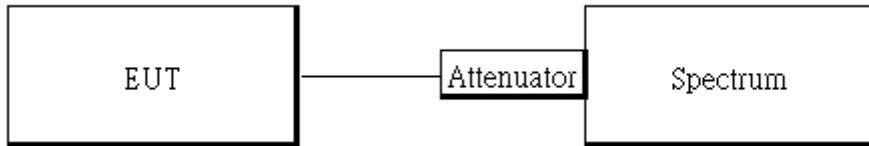
### 9.1 Standard Applicable

The minimum 6 dB bandwidth shall be at least 500 kHz .

### 9.2 Measurement Equipment Used

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4446A	MY51100003	05/19/2014	05/18/2015
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2015	01/01/2016
Attenuator	Mini-Circuit	BW-S10W2+	002	01/02/2015	01/01/2016

### 9.3 Test Set-up



### 9.4 Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance V03r02.
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
4. Set the spectrum analyzer as RBW = 100 kHz, VBW = 3\*RBW, Span = 30M/50MHz, Detector=Peak, Sweep=auto.
5. Mark the peak frequency and -6dB (upper and lower) frequency.
6. Repeat above procedures until all frequency of interest measured was complete.

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## 9.5 Measurement Result

Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Result
802.11b			
2412	10095	> 500	PASS
2437	10148	> 500	PASS
2462	10117	> 500	PASS
802.11g			
2412	16441	> 500	PASS
2437	16417	> 500	PASS
2462	16400	> 500	PASS
802.11n_HT20 (Main)			
2412	17668	> 500	PASS
2437	17681	> 500	PASS
2462	17678	> 500	PASS
802.11n_HT20 (Aux)			
2412	17690	> 500	PASS
2437	17695	> 500	PASS
2462	17654	> 500	PASS
802.11n_HT40 (Main)			
2422	36046	> 500	PASS
2437	36353	> 500	PASS
2452	36375	> 500	PASS
802.11n_HT40 (Aux)			
2422	36205	> 500	PASS
2437	36420	> 500	PASS
2452	36322	> 500	PASS

\* Note: The arrow “->” reveals X decibel level

\*Refer to next page for plots

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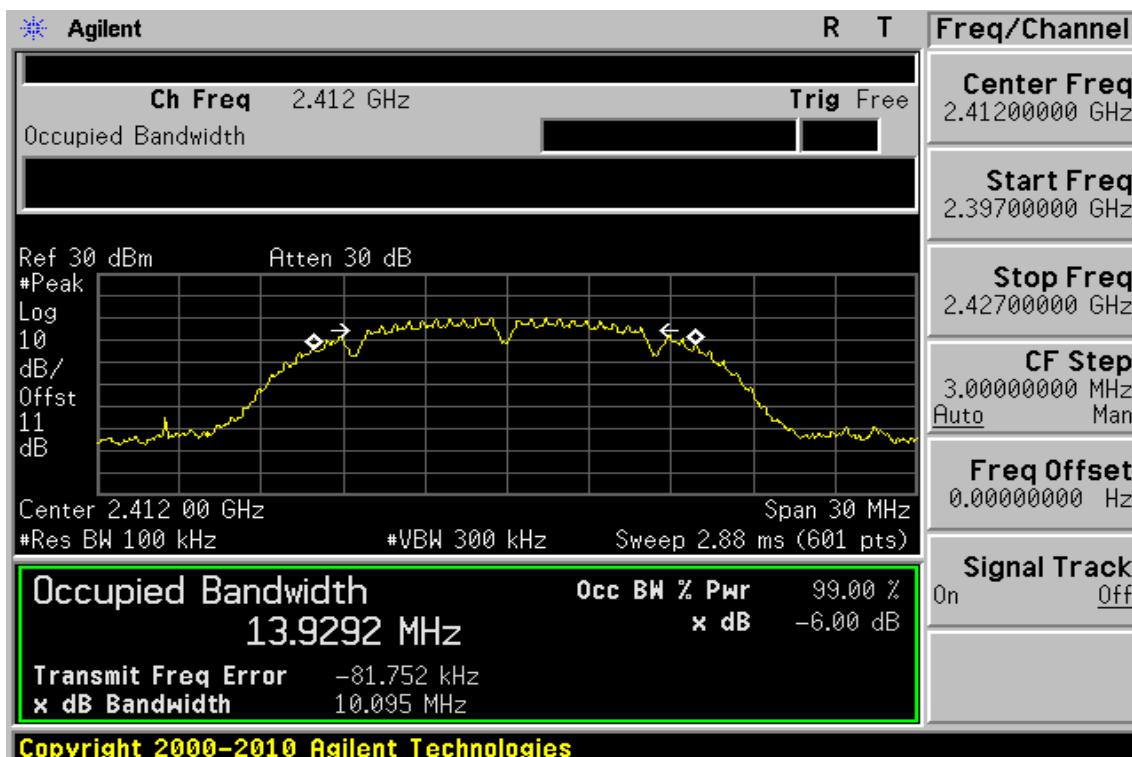
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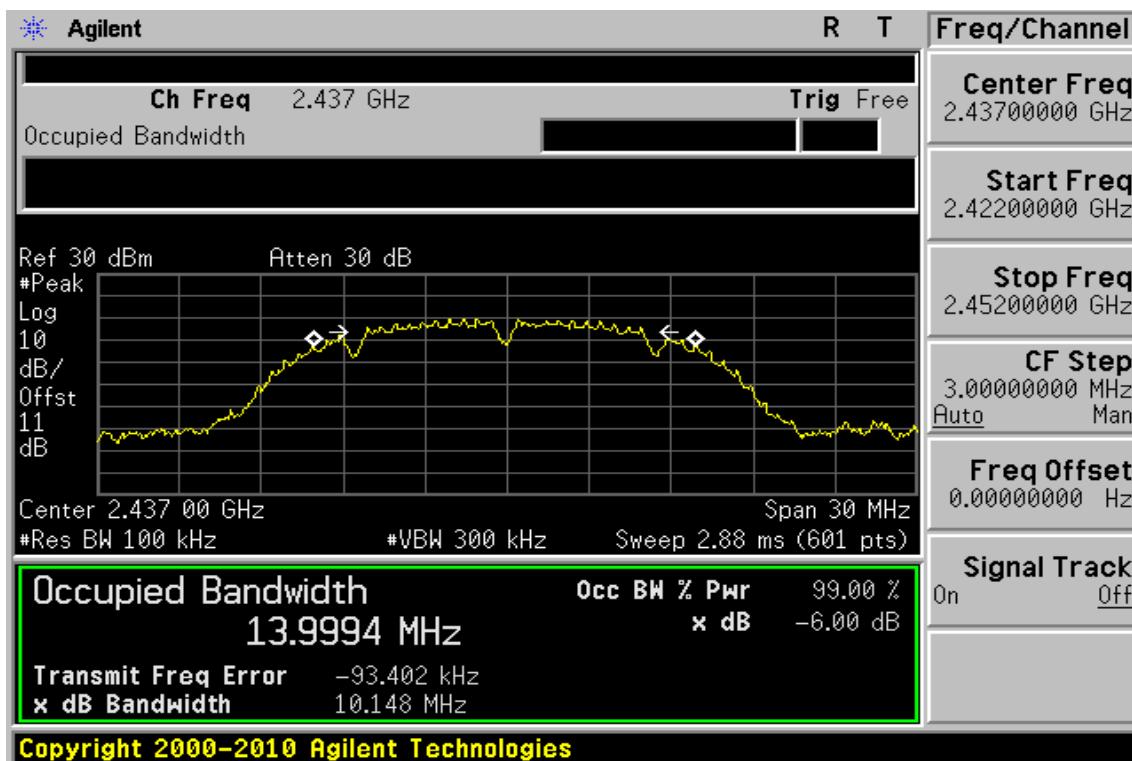
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## 802.11b

## 6dB Band Width Test Data CH-Low



## 6dB Band Width Test Data CH-Mid



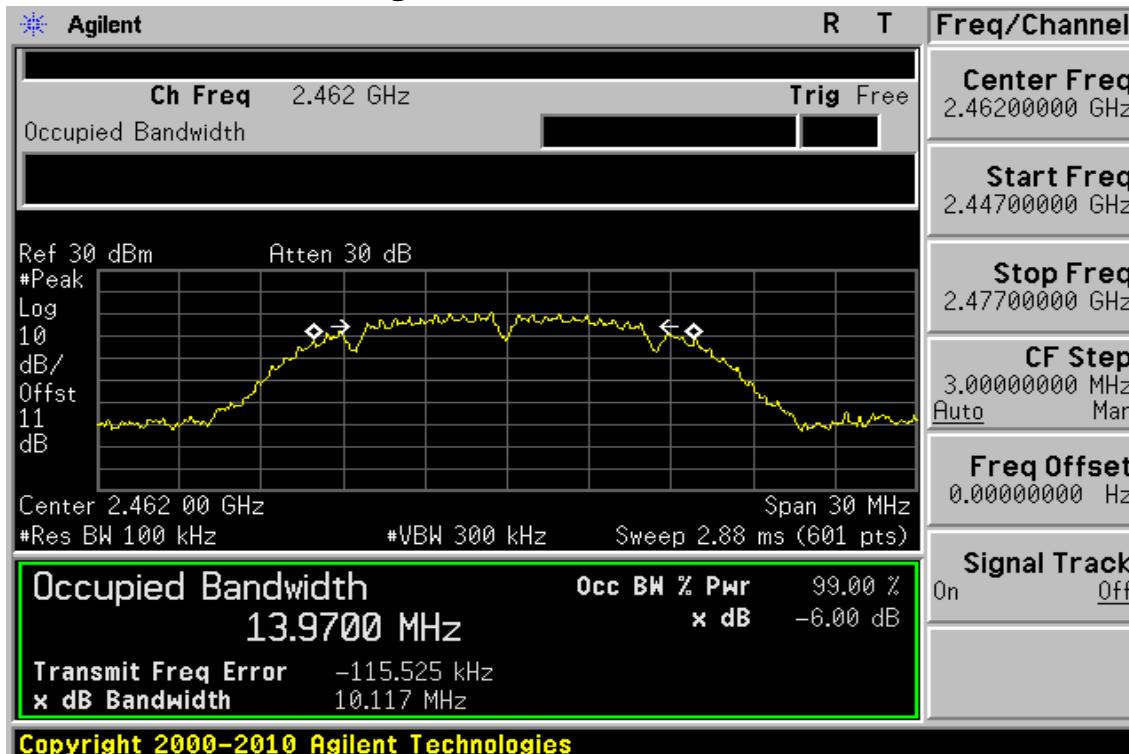
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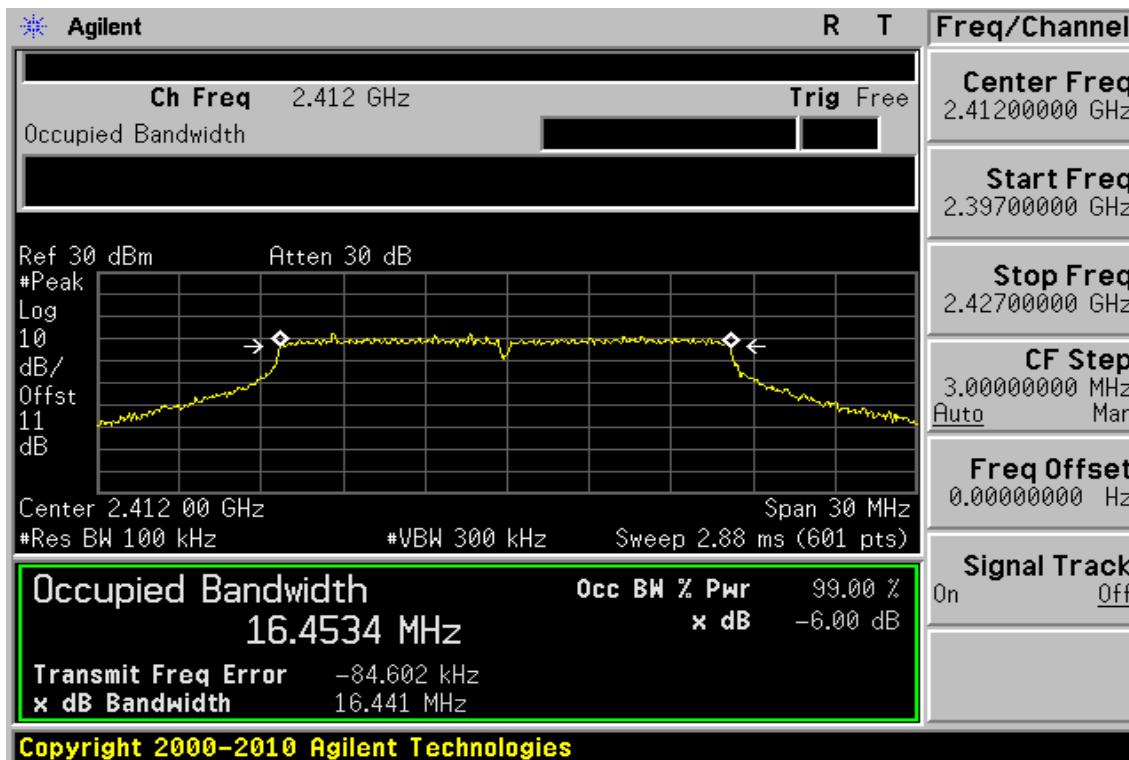
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## 6dB Band Width Test Data CH-High



## 802.11g

## 6dB Band Width Test Data CH-Low



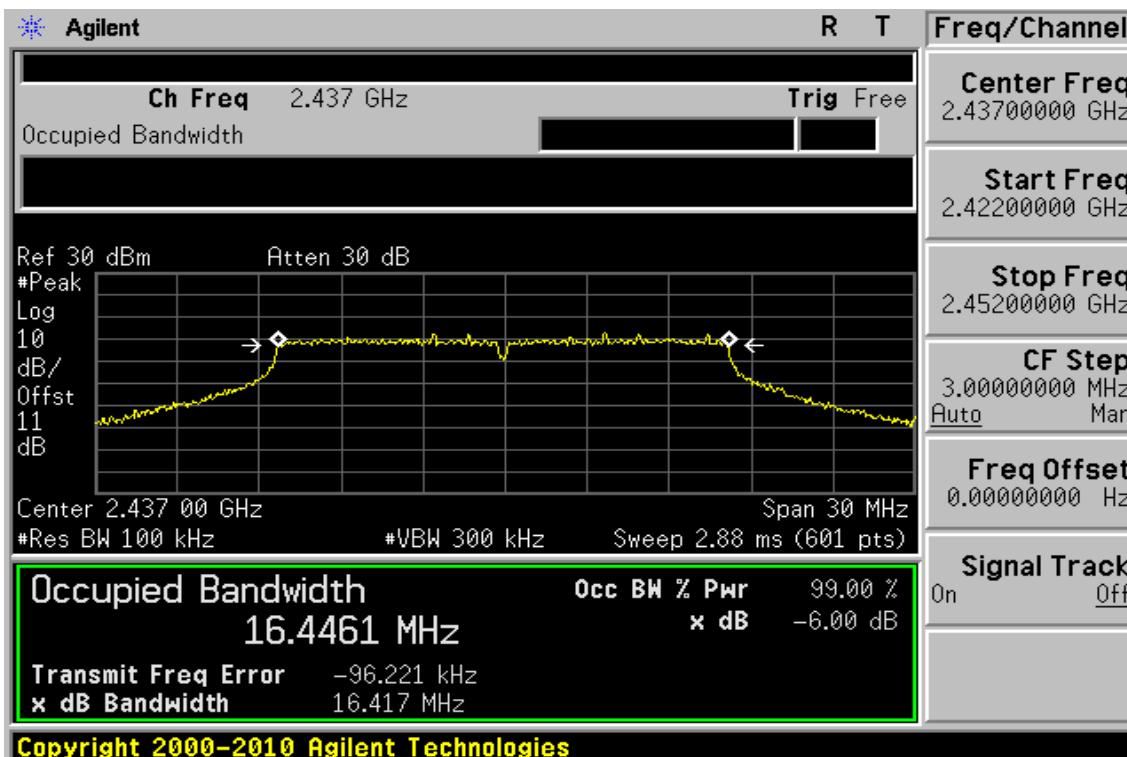
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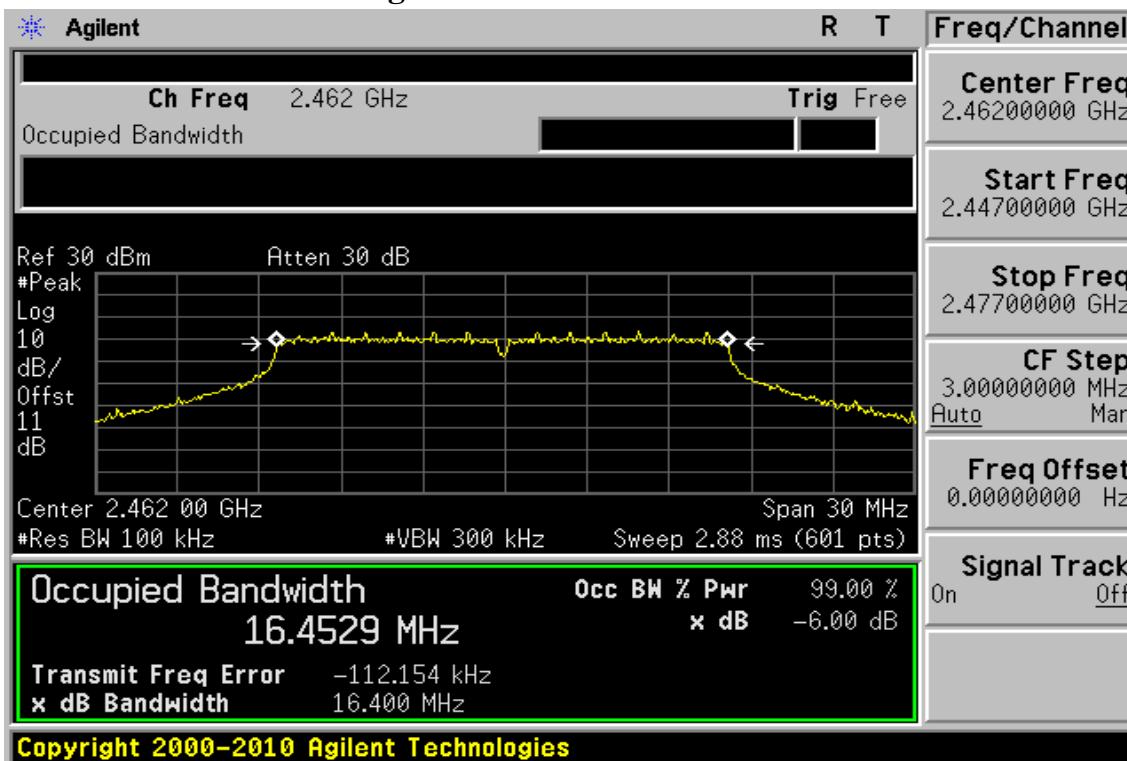
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## 6dB Band Width Test Data CH-Mid



## 6dB Band Width Test Data CH-High



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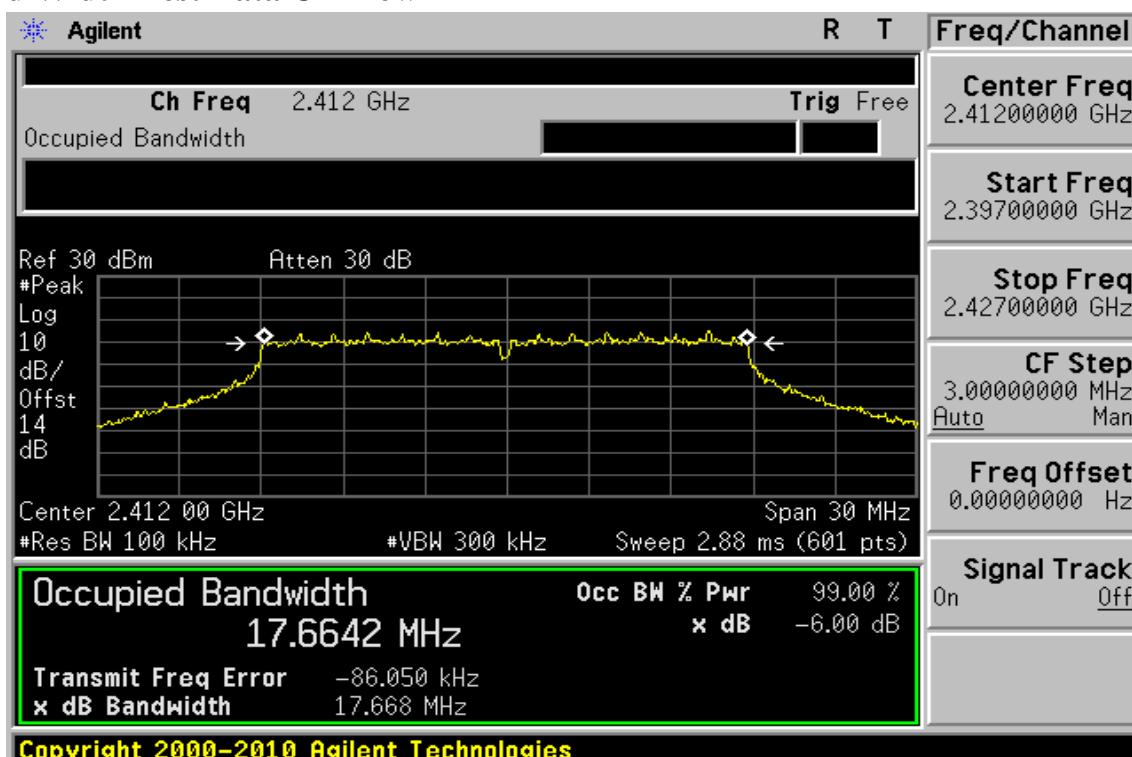
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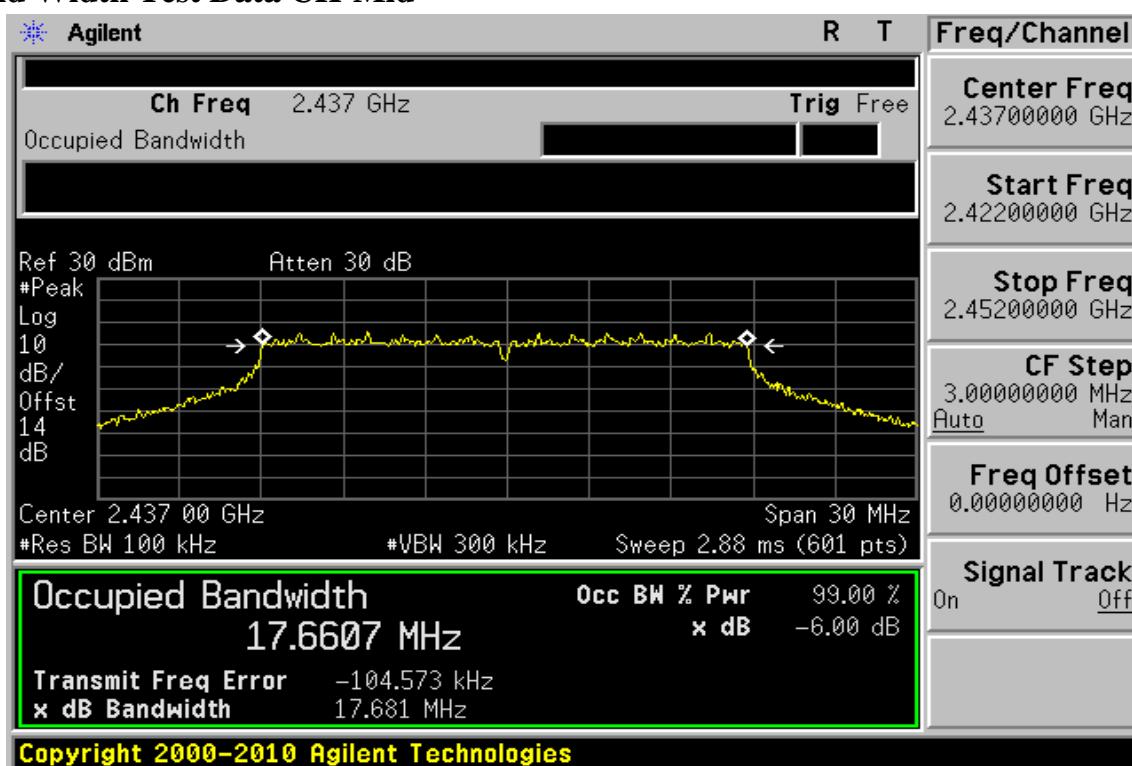
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## 802.11n\_20M (Main)

## 6dB Band Width Test Data CH-Low



## 6dB Band Width Test Data CH-Mid



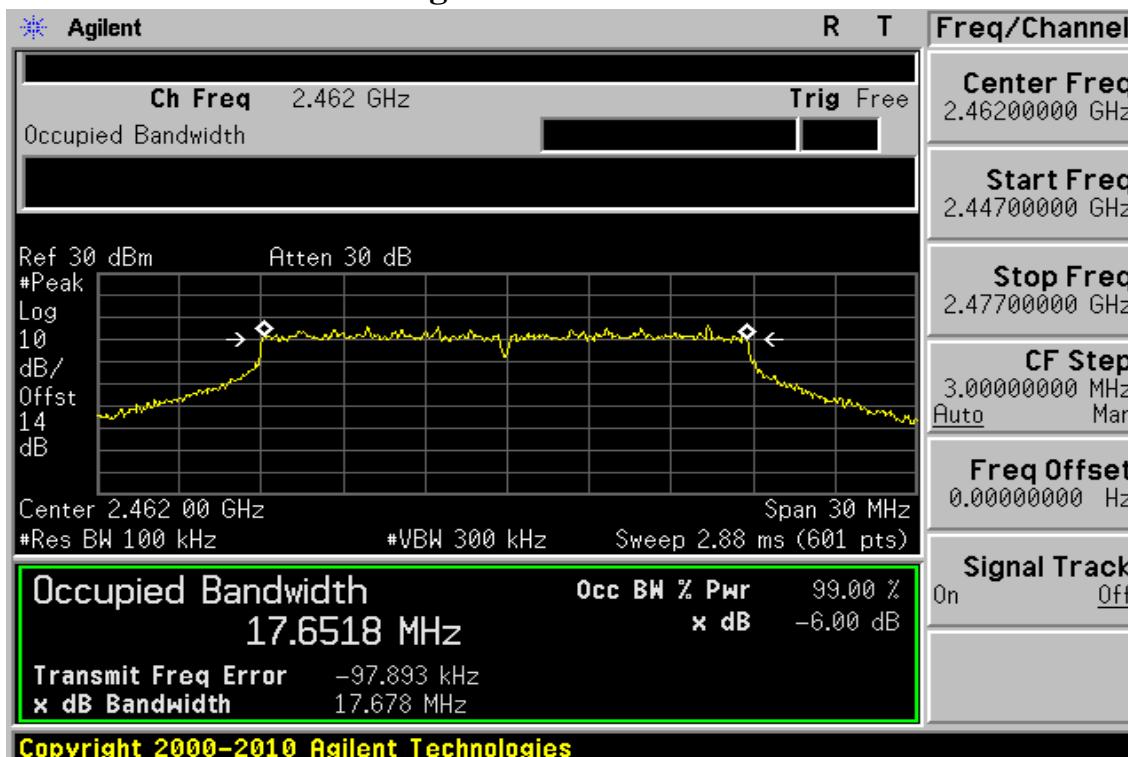
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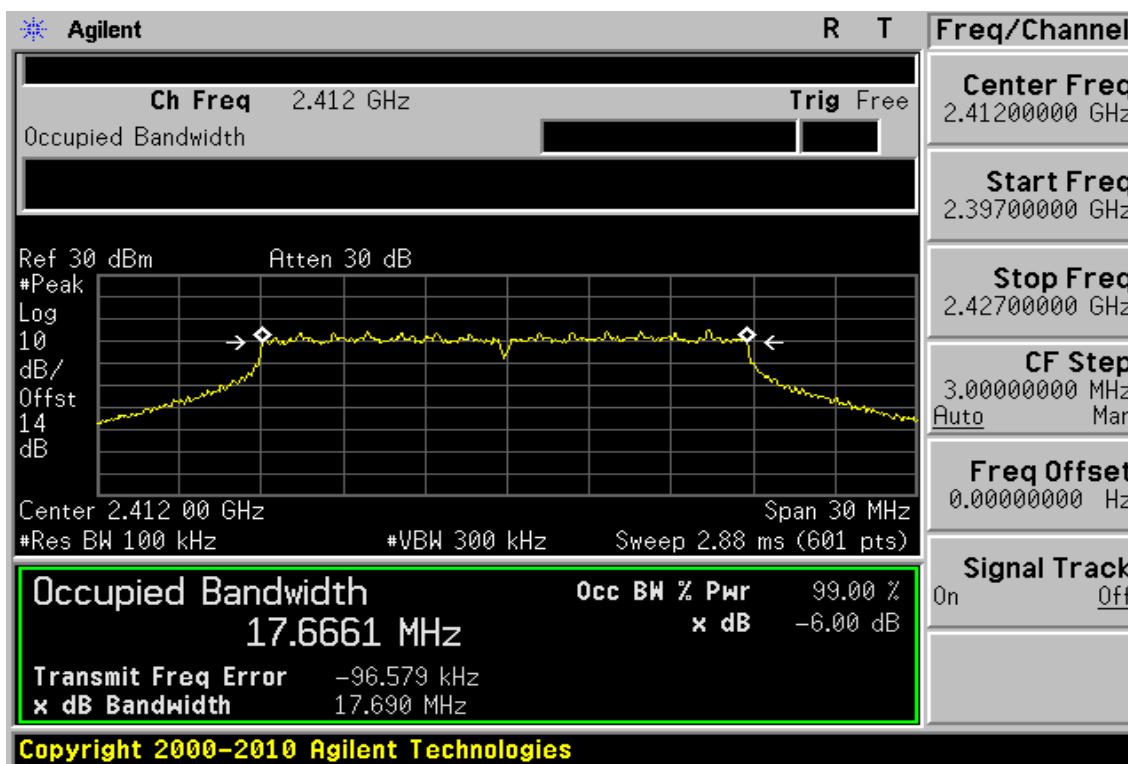
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## 6dB Band Width Test Data CH-High



## 802.11n\_20M (Aux)

## 6dB Band Width Test Data CH-Low



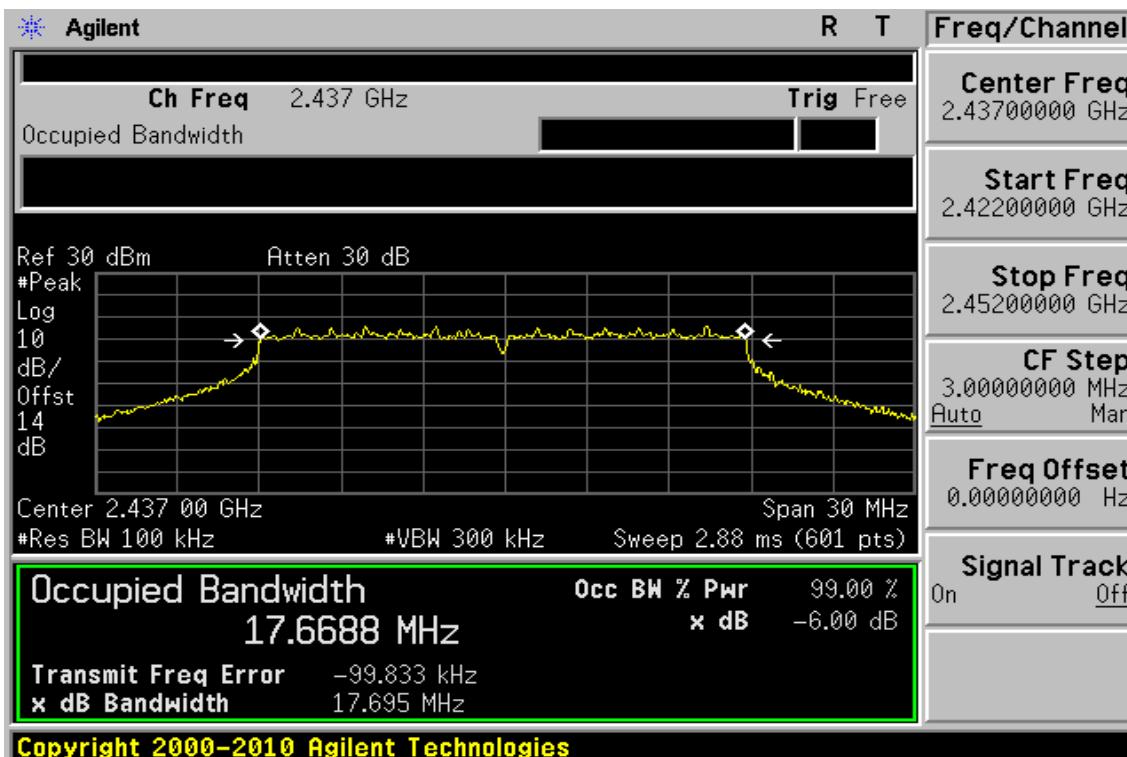
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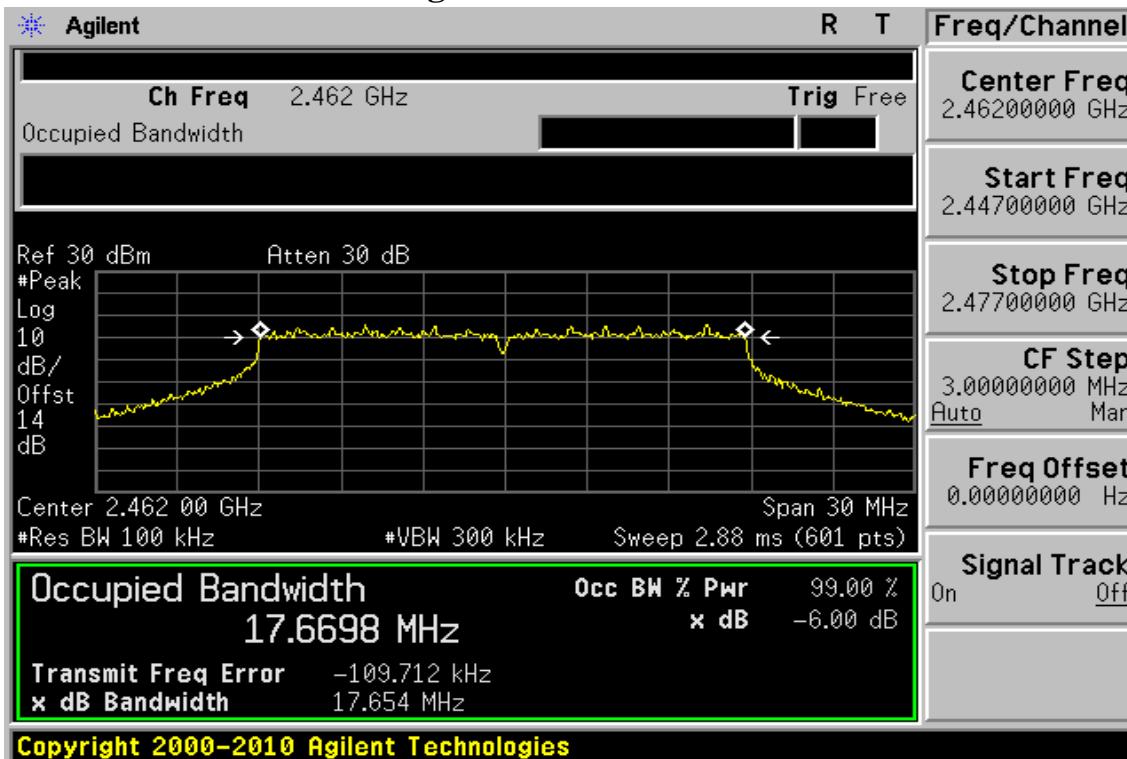
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## 6dB Band Width Test Data CH-Mid



## 6dB Band Width Test Data CH-High



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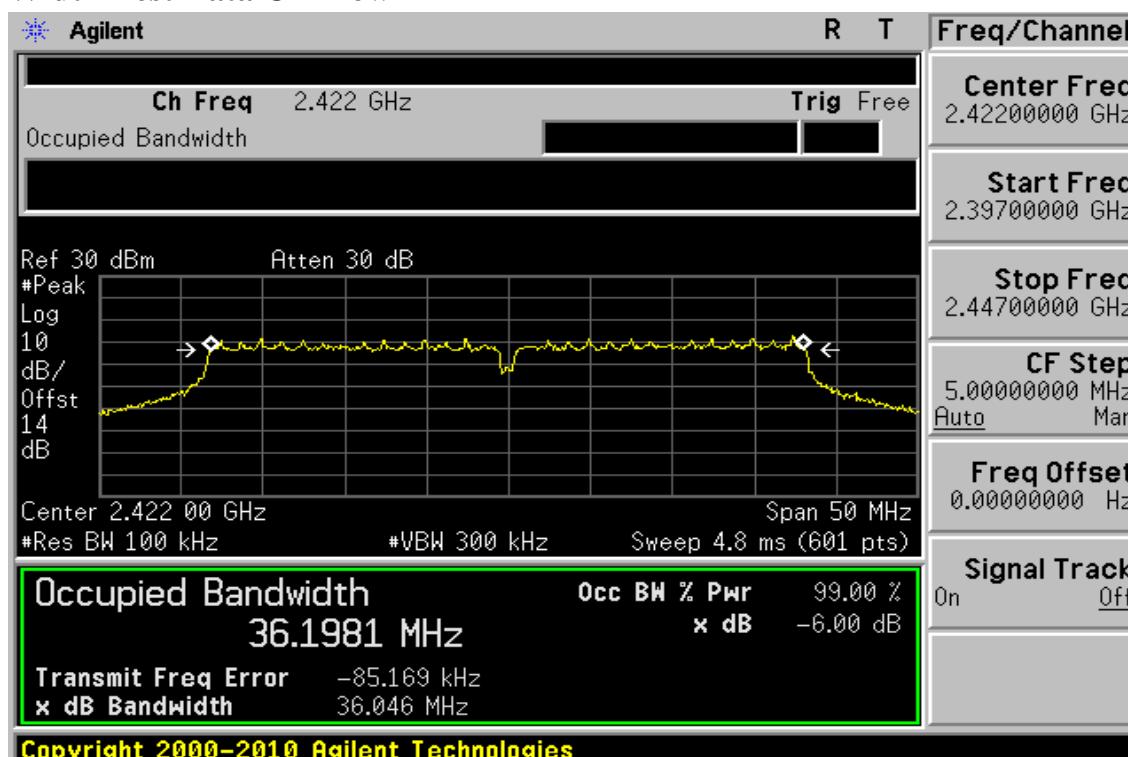
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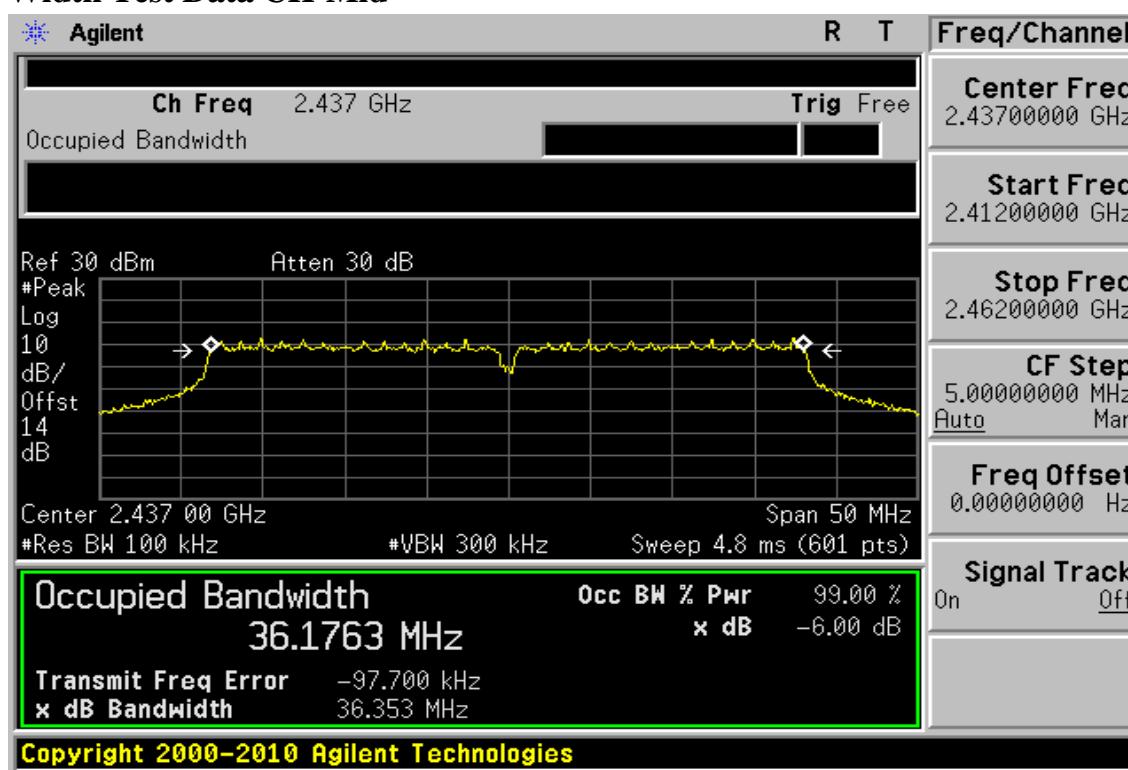
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## 802.11 n\_40M (Main)

## 6dB Band Width Test Data CH-Low



## 6dB Band Width Test Data CH-Mid



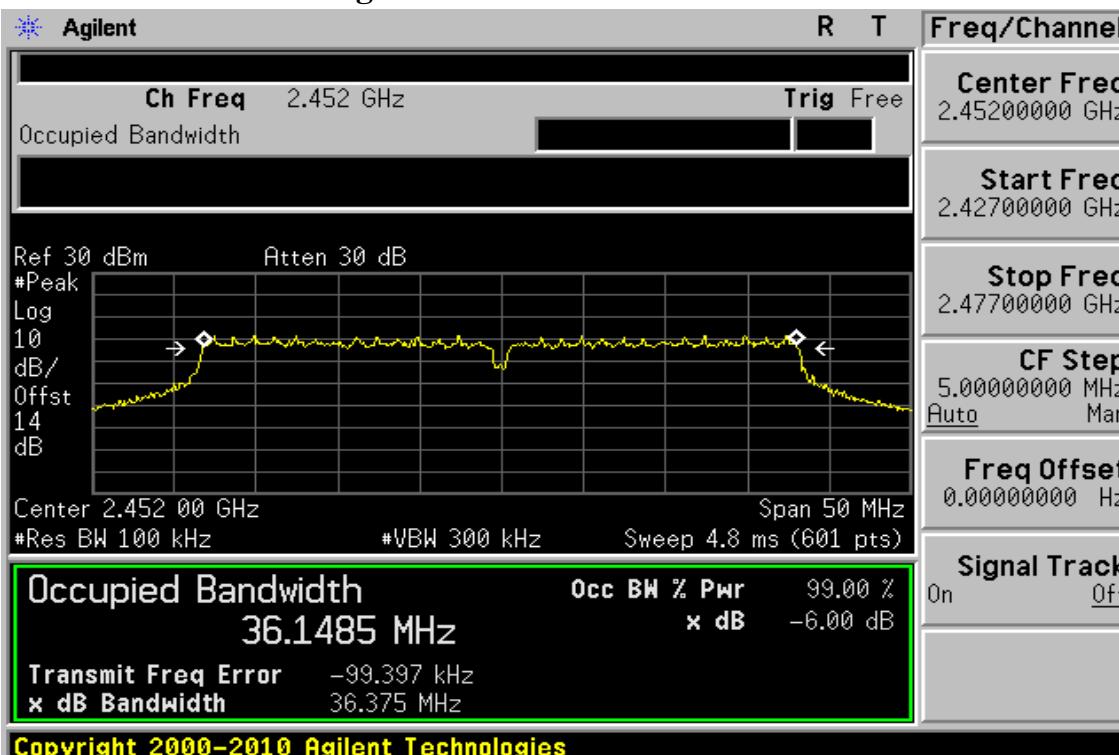
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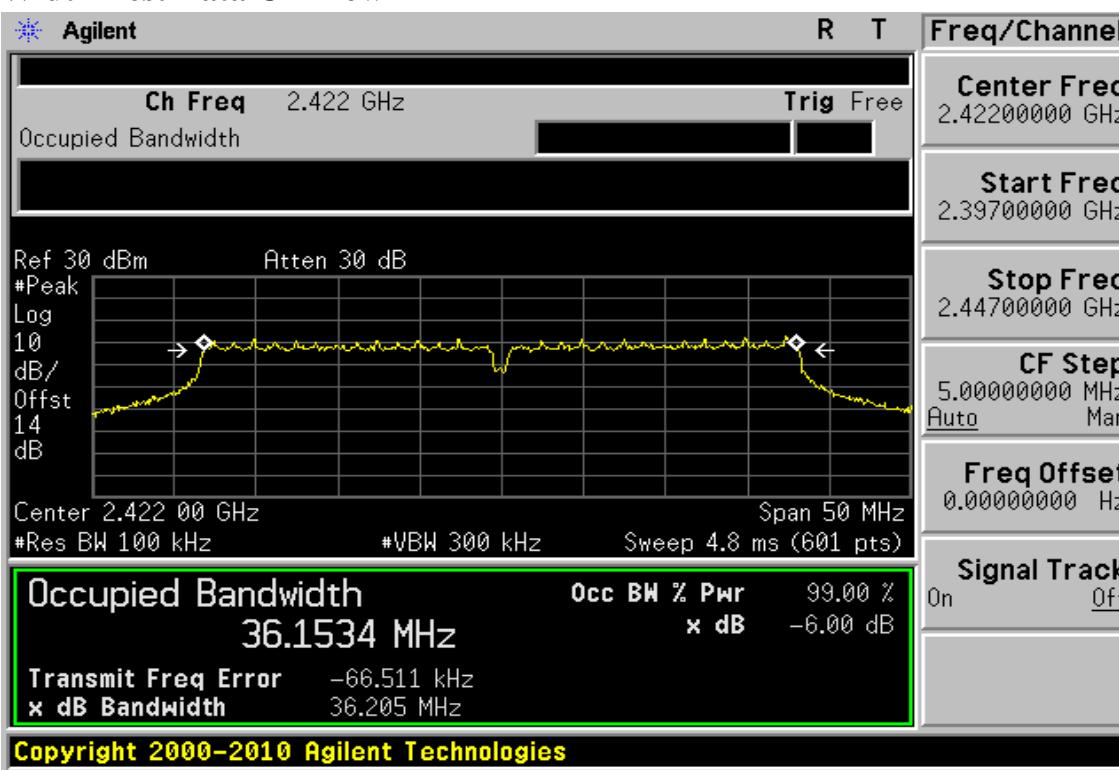
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## 6dB Band Width Test Data CH-High



## 802.11 n\_40M (Aux)

## 6dB Band Width Test Data CH-Low



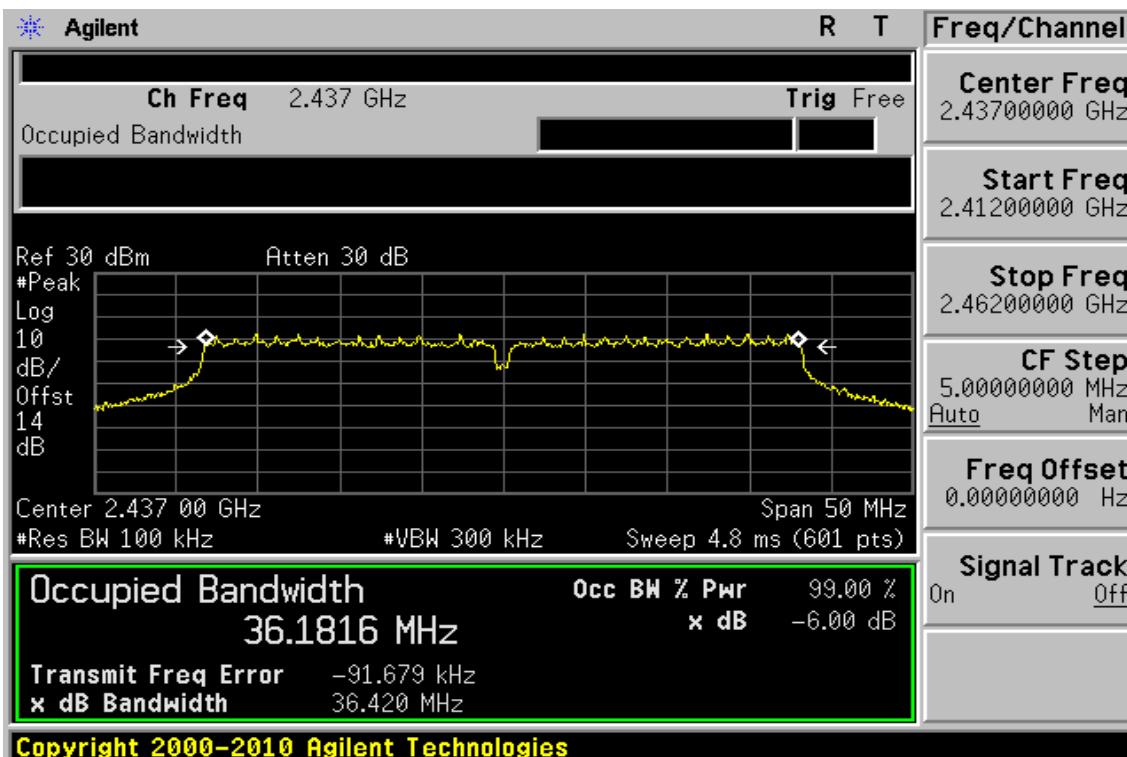
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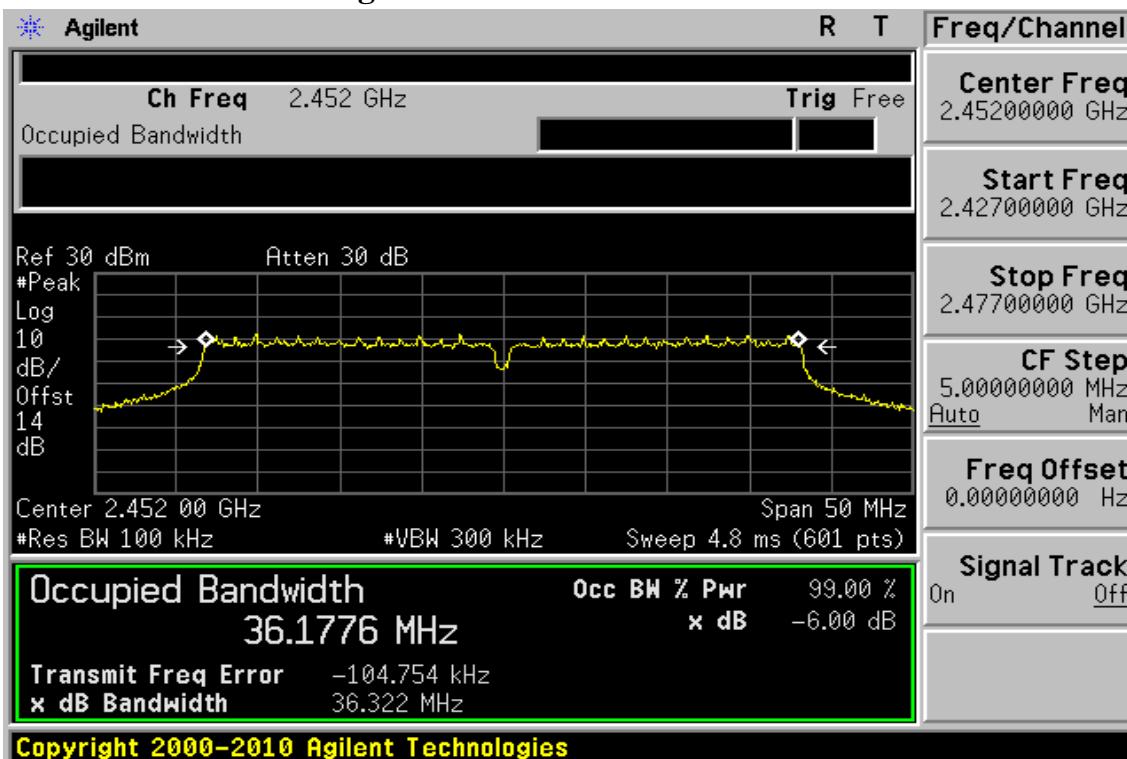
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## 6dB Band Width Test Data CH-Mid



## 6dB Band Width Test Data CH-High



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## 10 CONDUCTED BAND EDGES AND SPURIOUS EMISSION MEASUREMENT

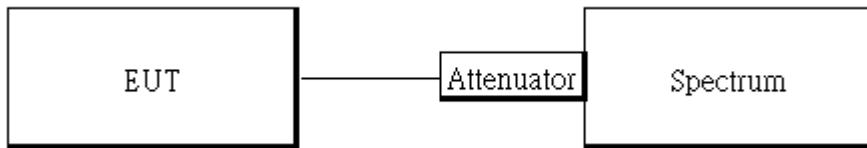
### 10.1 Standard Applicable

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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).

### 10.2 Measurement Equipment Used

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4446A	MY51100003	05/19/2014	05/18/2015
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2015	01/01/2016
Attenuator	Mini-Circuit	BW-S10W2+	002	01/02/2015	01/01/2016

### 10.3 Test SET-UP



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### 10.3.1 Measurement Procedure

#### Conducted Band Edge:

1. To connect Antenna Port of EUT to Spectrum.
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance V03r02.
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
4. Set start to edge frequency, and stop frequency of spectrum analyzer so as to encompass the spectrum to be examined.
5. Set the spectrum analyzer as RBW, VBW=300KHz, Detector = Peak, Sweep = auto
6. Mark the highest reading of the emission as the reference level measurement.
7. Set DL as the limit = reading on marker 1 – 20dBm
8. Marker on frequency, 2.3999GHz and 2.4836GHz, and examine shall 100 KHz immediately outside the authorized (2400~2483.5) be attenuated by 20dB at least relative to the maximum emission of power.
9. Repeat above procedures until all default test channel (low, middle, and high) was complete.

#### Conducted Spurious Emission:

1. To connect Antenna Port of EUT to Spectrum
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance V03r02.
3. Set RBW = 100K & VBW  $\geq$ 300K, Detector =Peak, Sweep = Auto.
4. Allow trace to fully stabilize.
5. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
6. Repeat above procedures until all default test channel measured were complete.

### 10.4 Measurement Result

Note: Refer to next page spectrum analyzer data chart and tabular data sheets.

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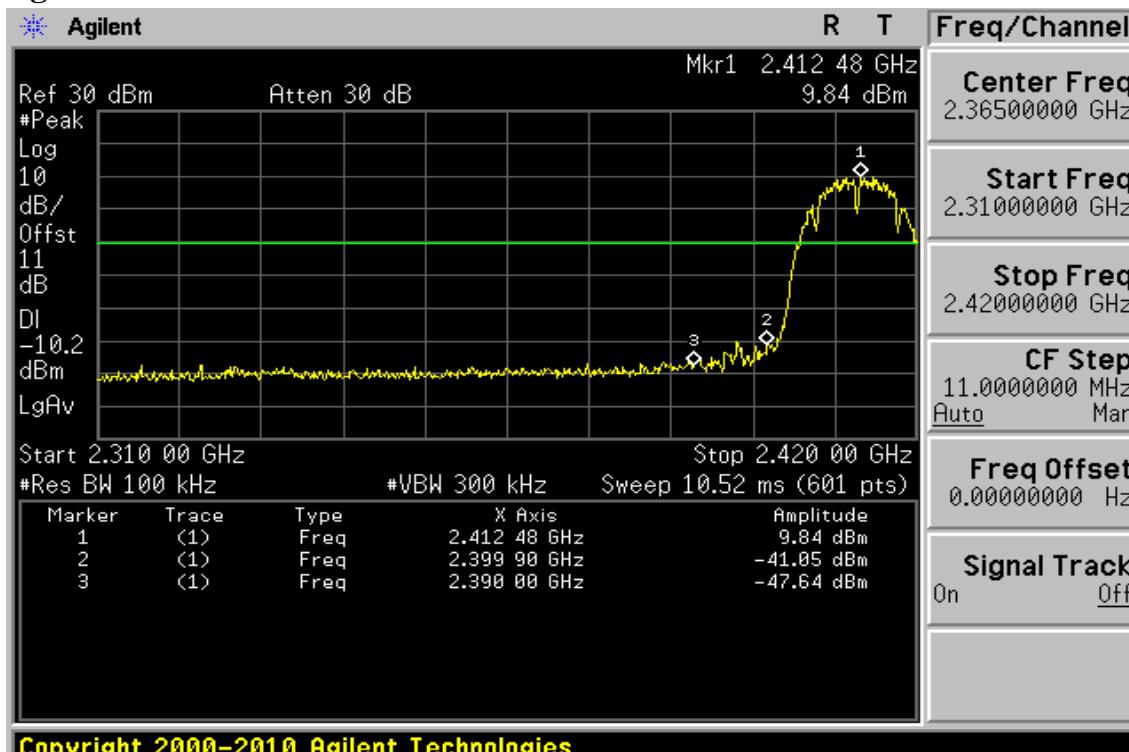
f (886-2) 2298-0488

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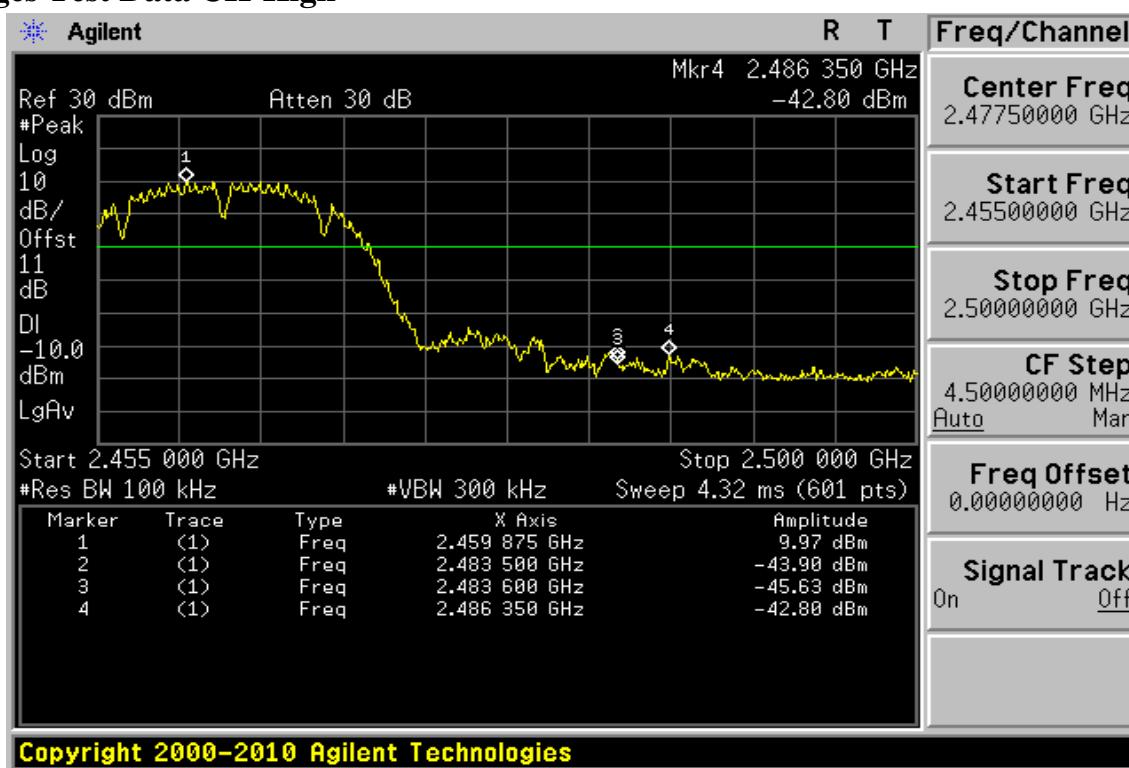
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## 802.11b

### Band Edges Test Data CH-Low



### Band Edges Test Data CH-High



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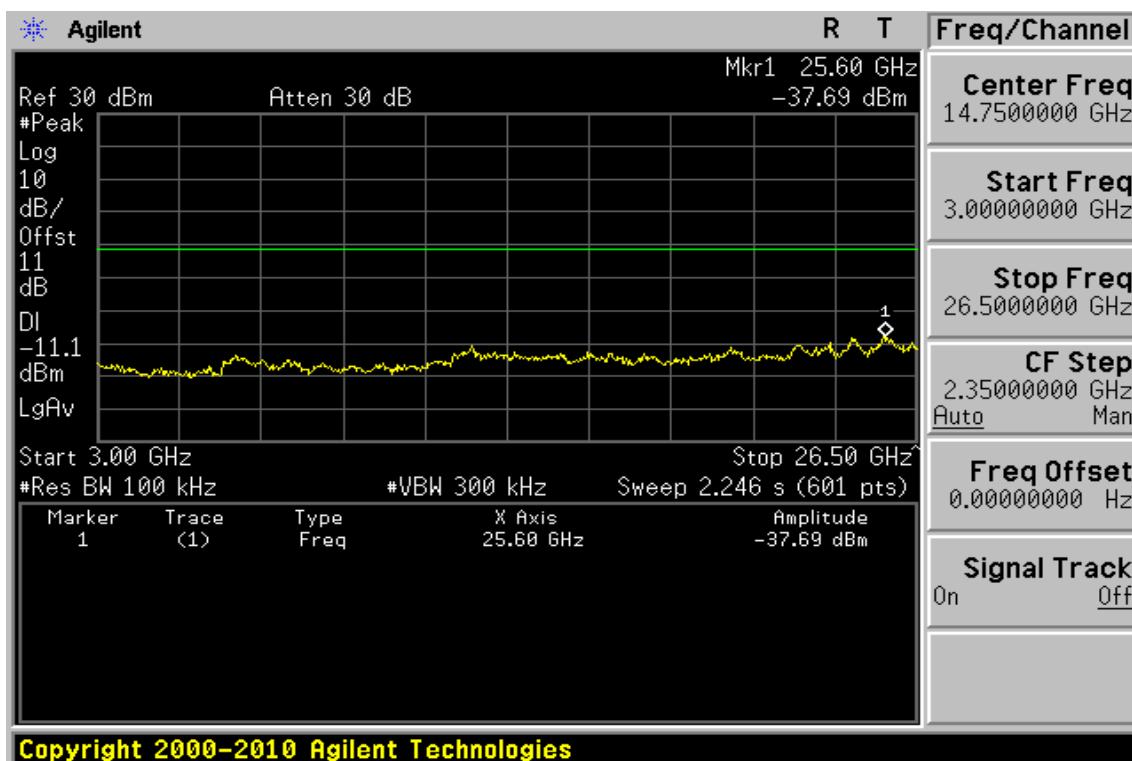
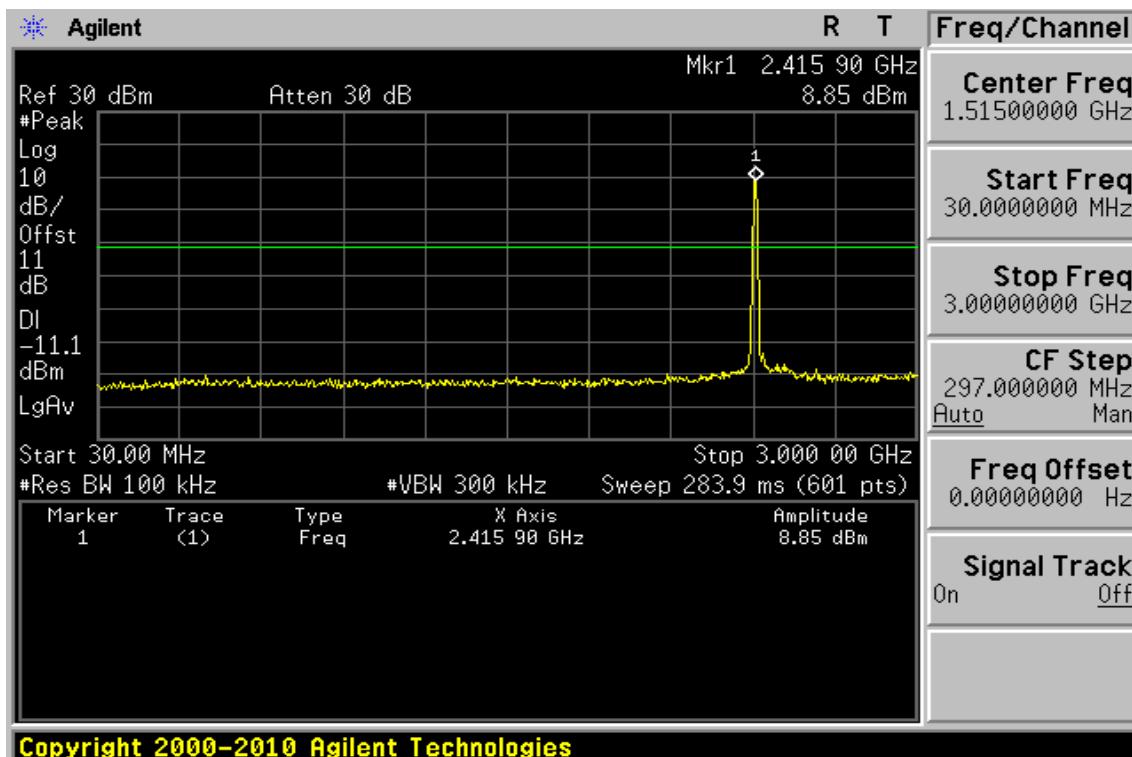
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## 802.11b

## Spurious Emission Test Data CH-Low



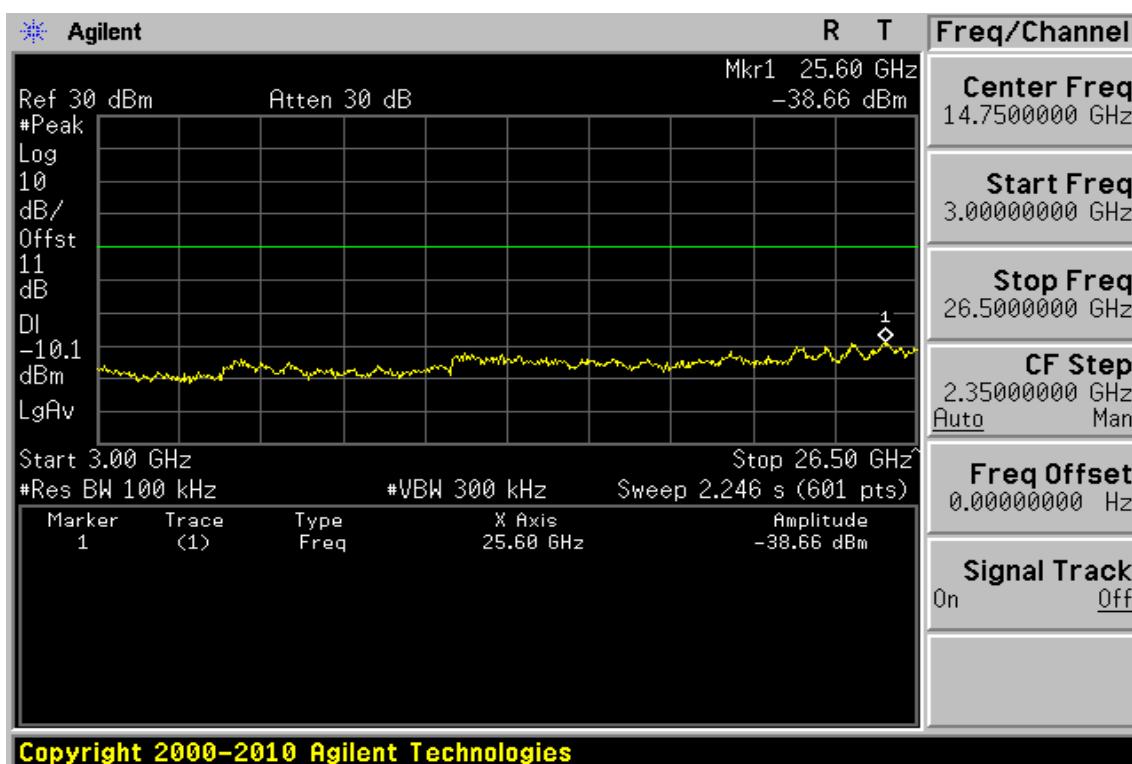
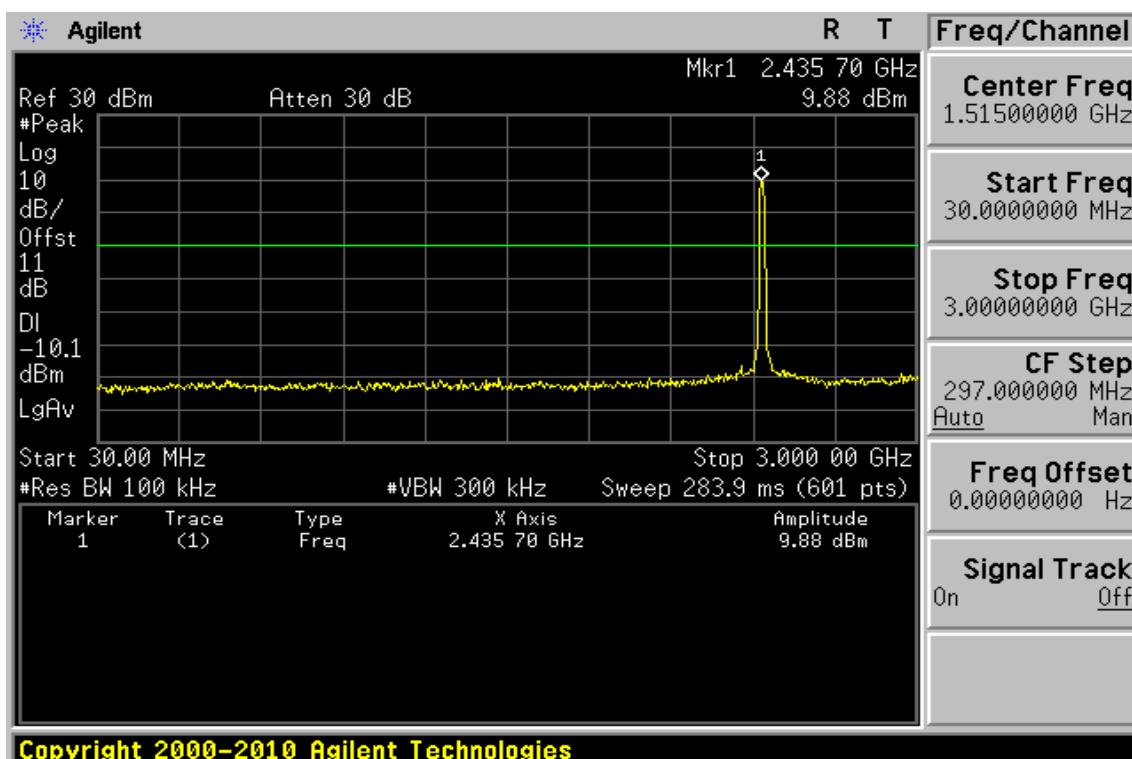
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## Spurious Emission Test Data CH-Mid



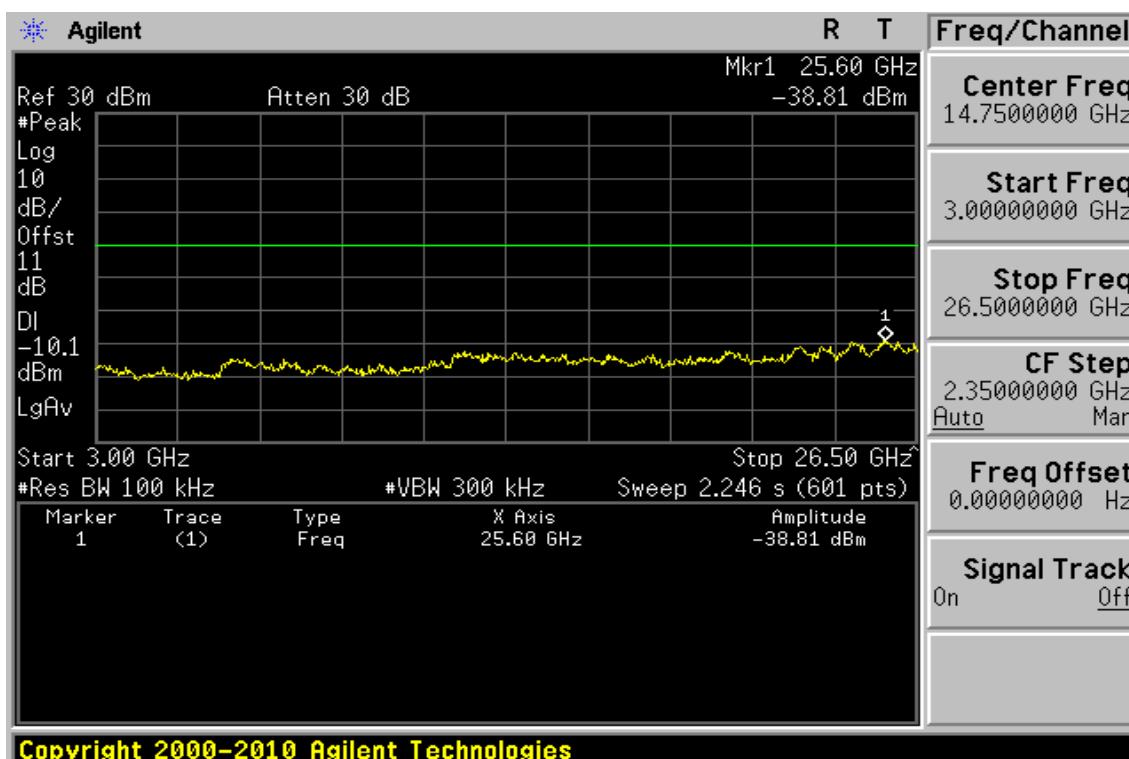
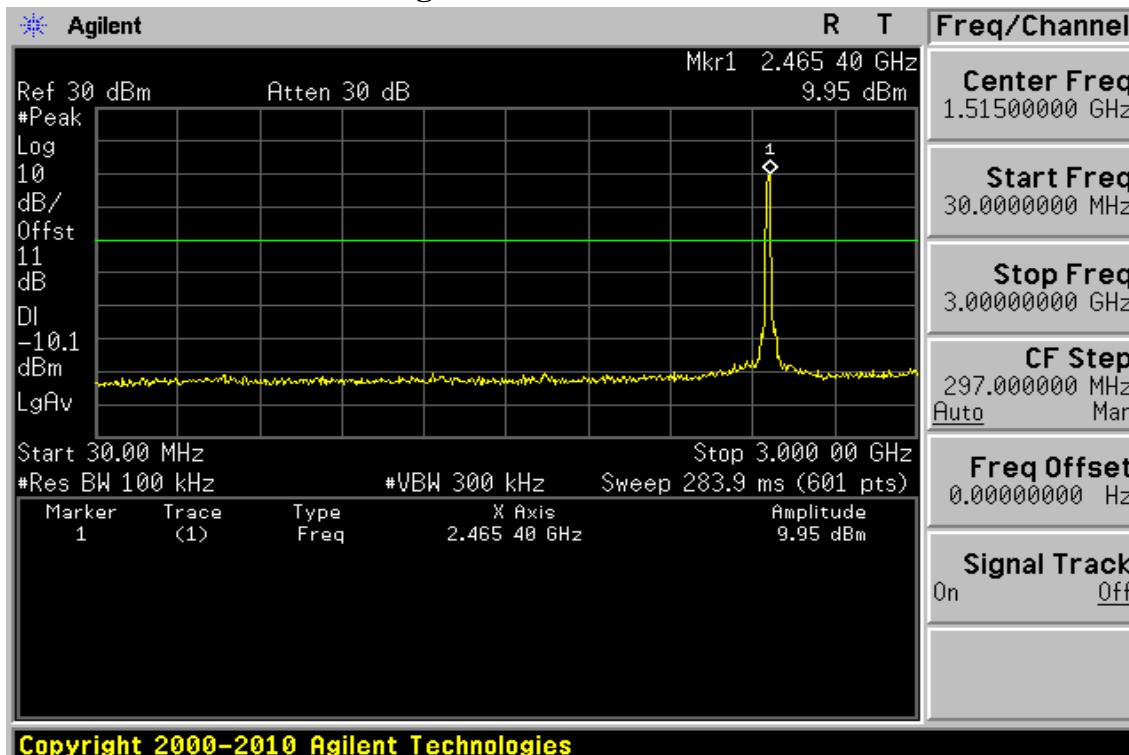
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## Spurious Emission Test Data CH-High



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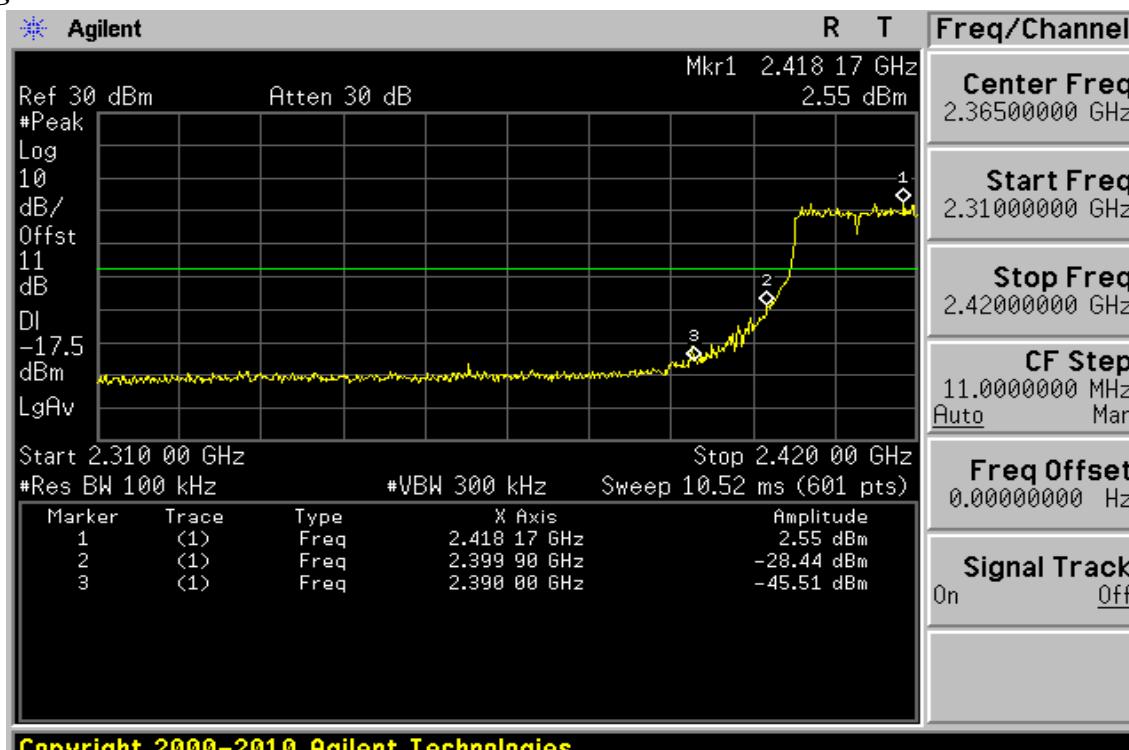
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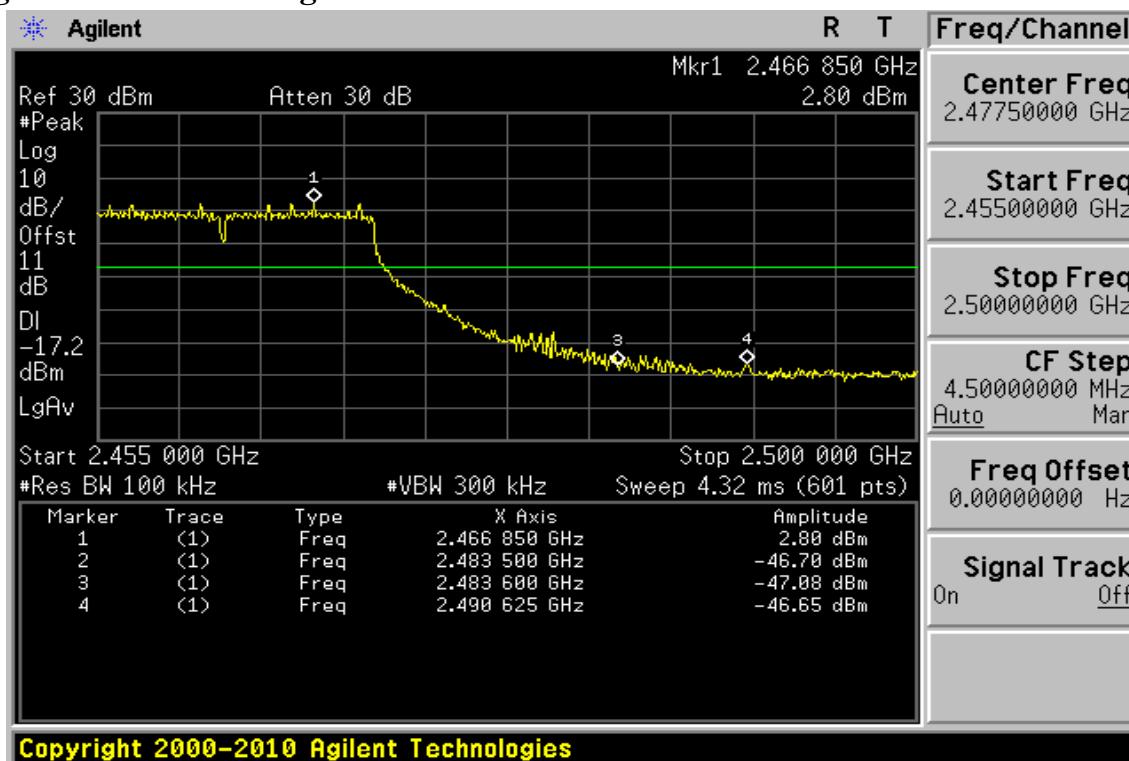
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## 802.11g

### Band Edges Test Data CH-Low



### Band Edges Test Data CH-High



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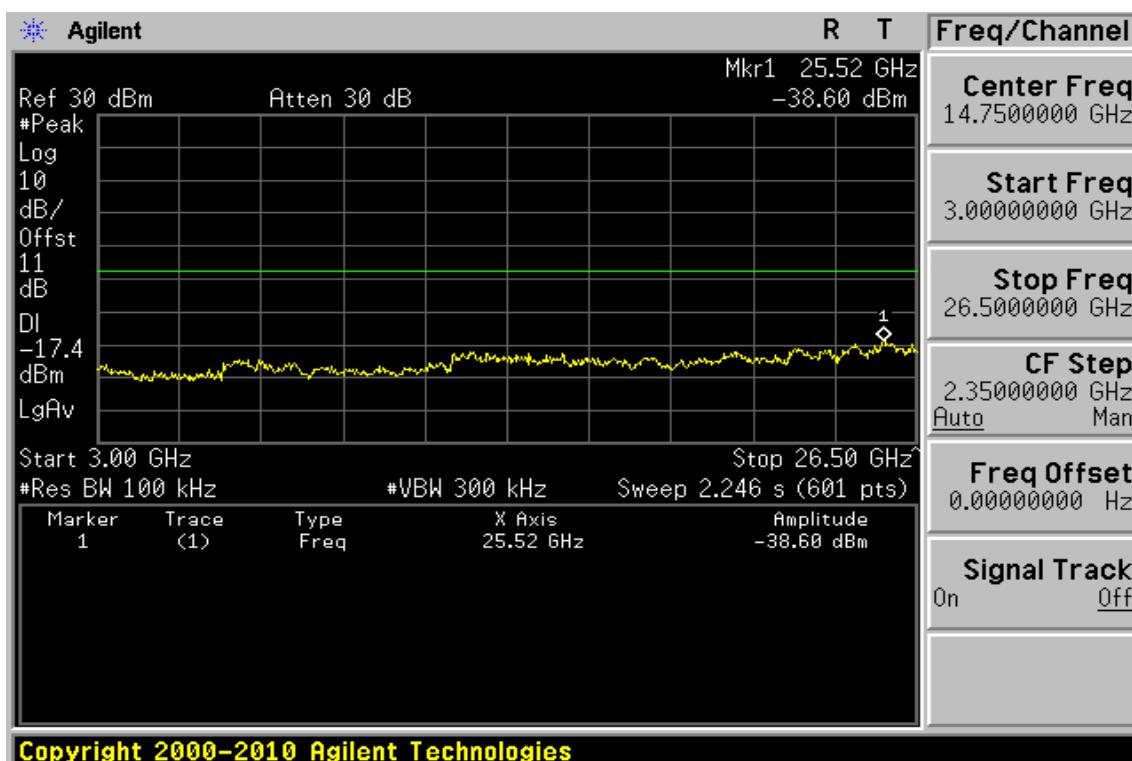
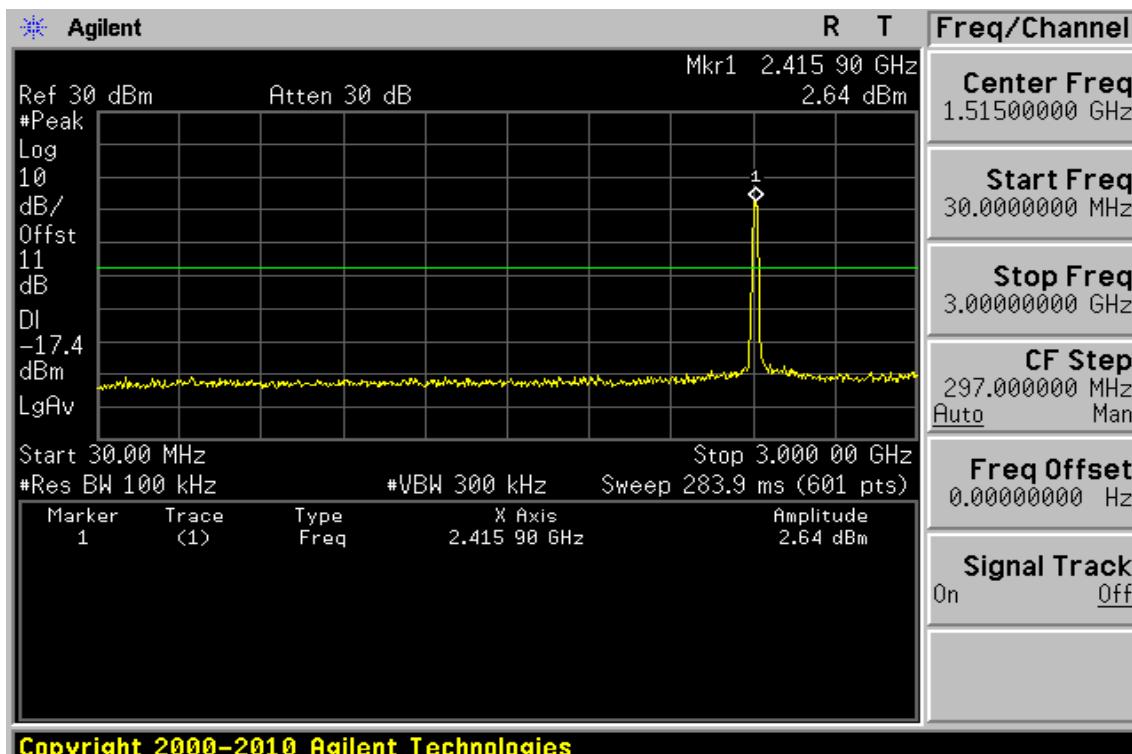
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## 802.11g

## Spurious Emission Test Data CH-Low



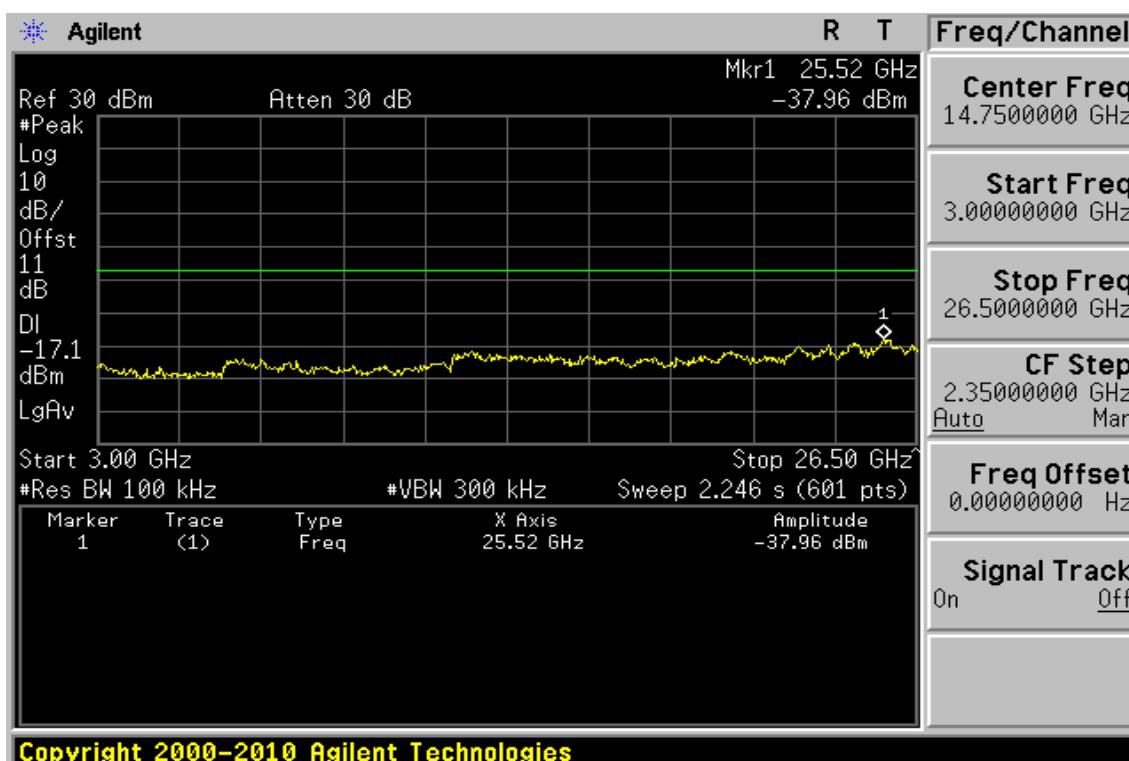
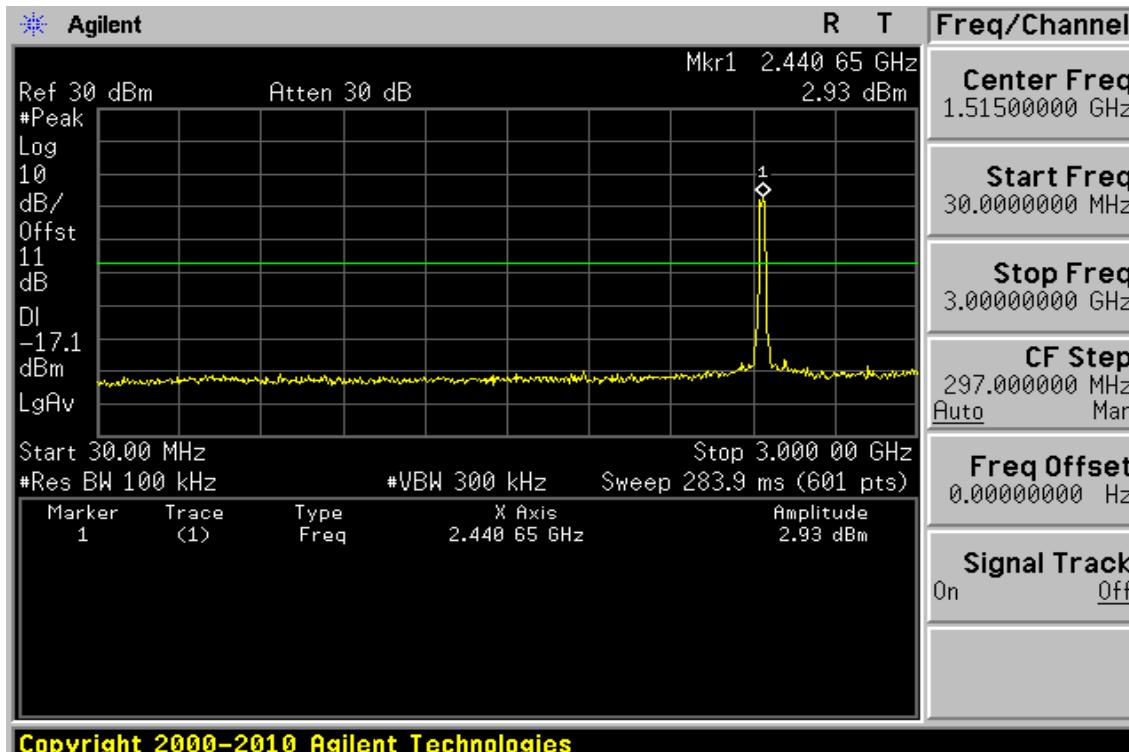
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## Spurious Emission Test Data CH-Mid



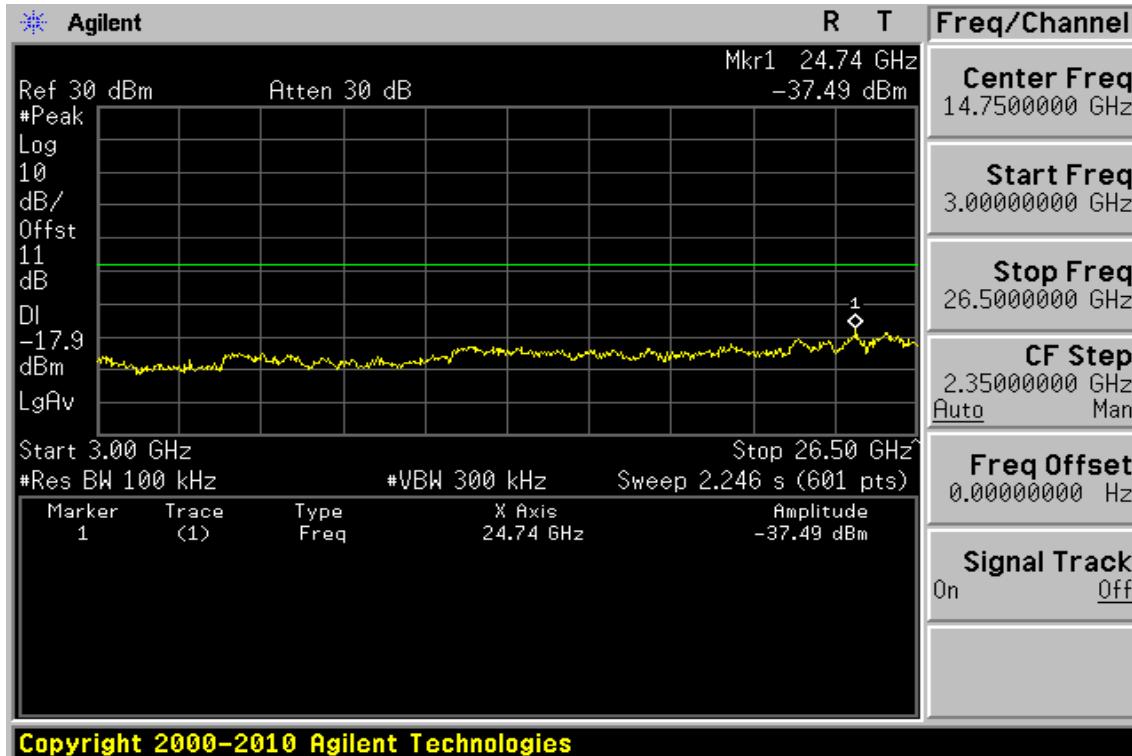
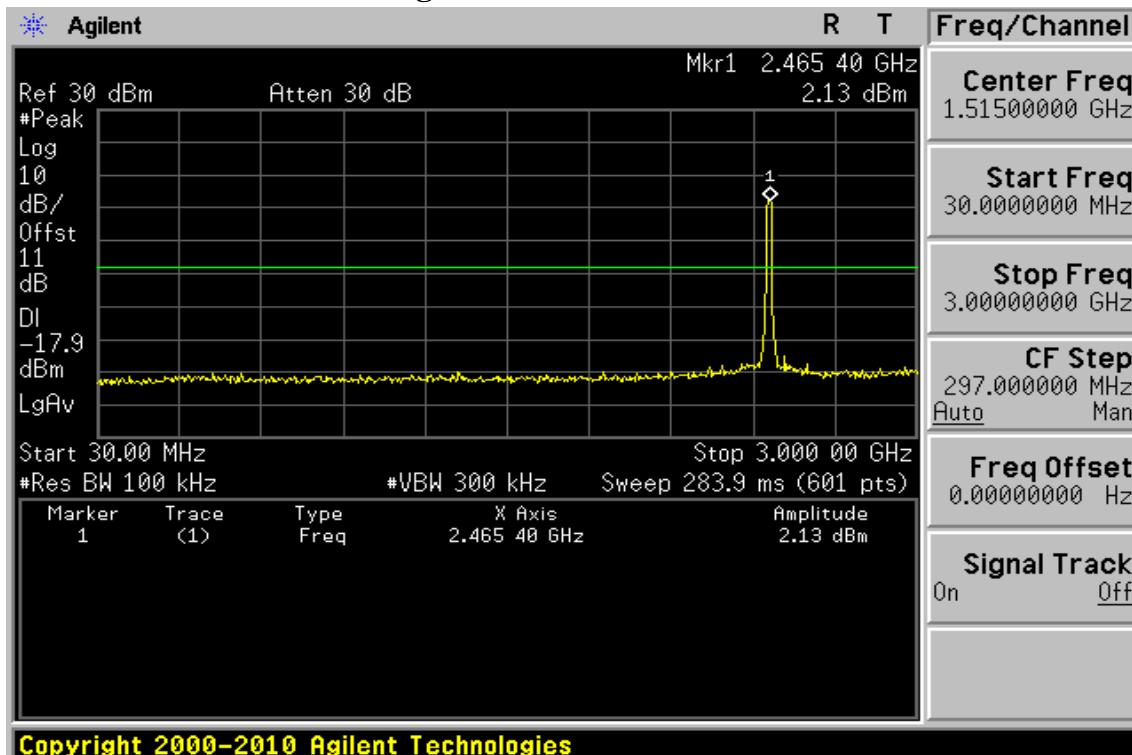
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## Spurious Emission Test Data CH-High



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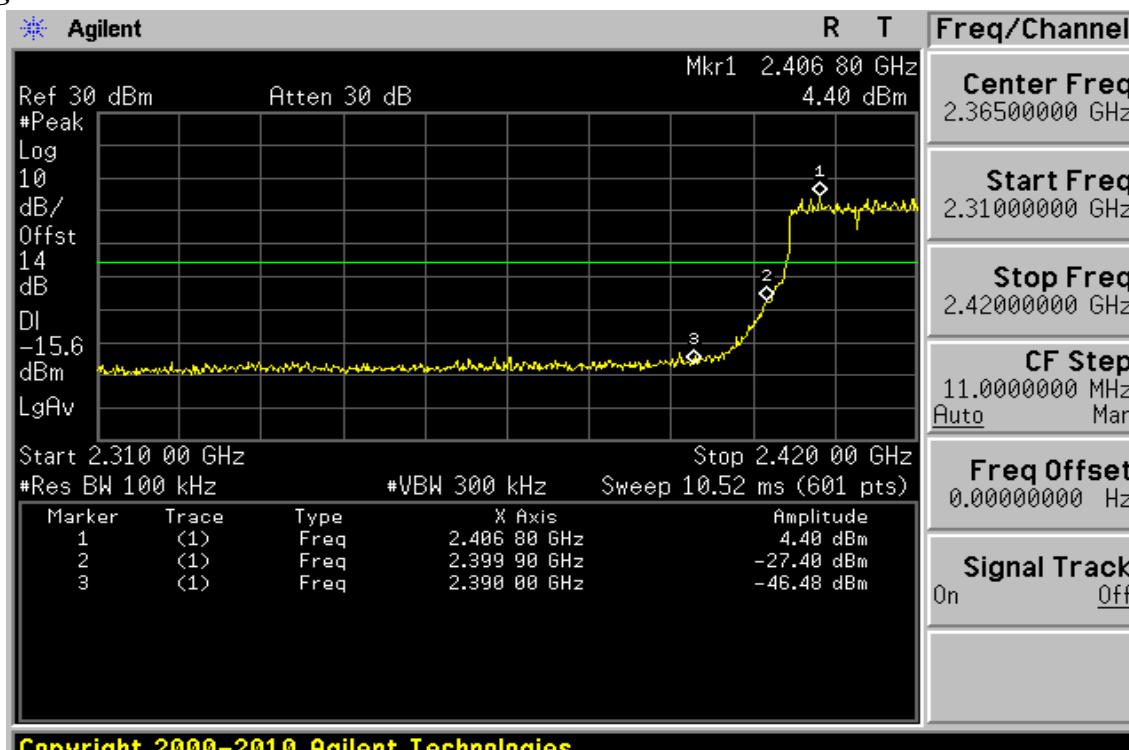
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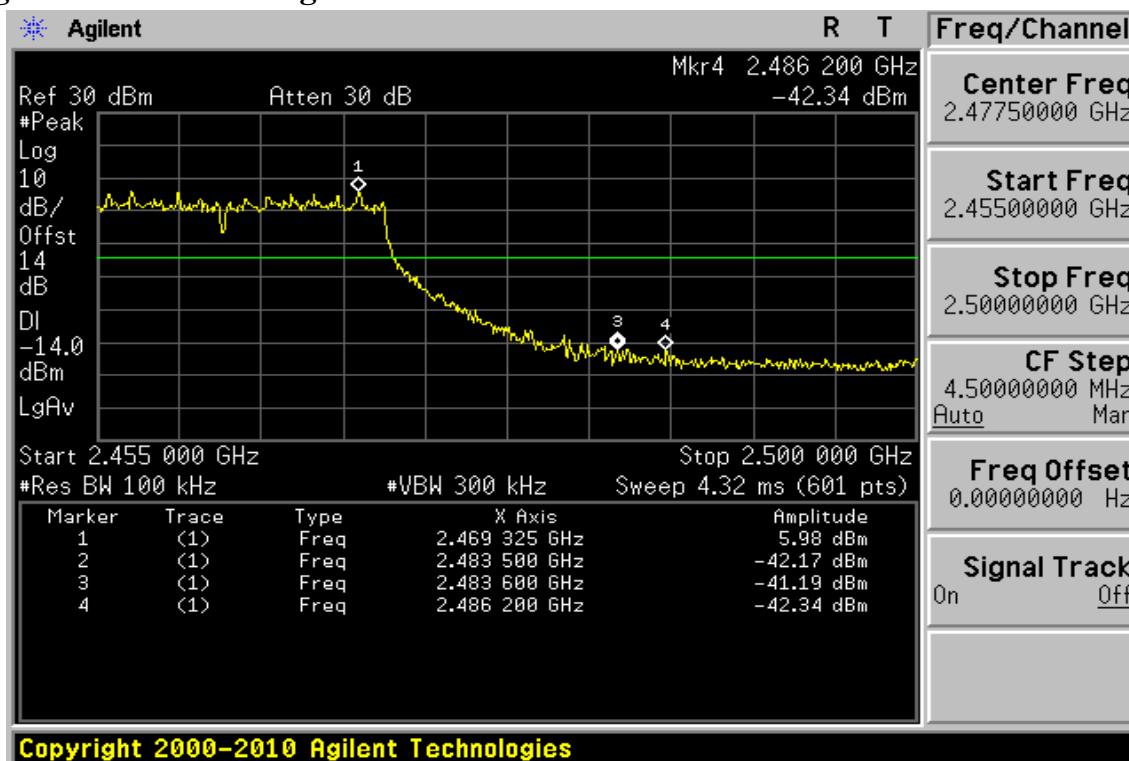
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## 802.11n\_HT20

### Band Edges Test Data CH-Low



### Band Edges Test Data CH-High

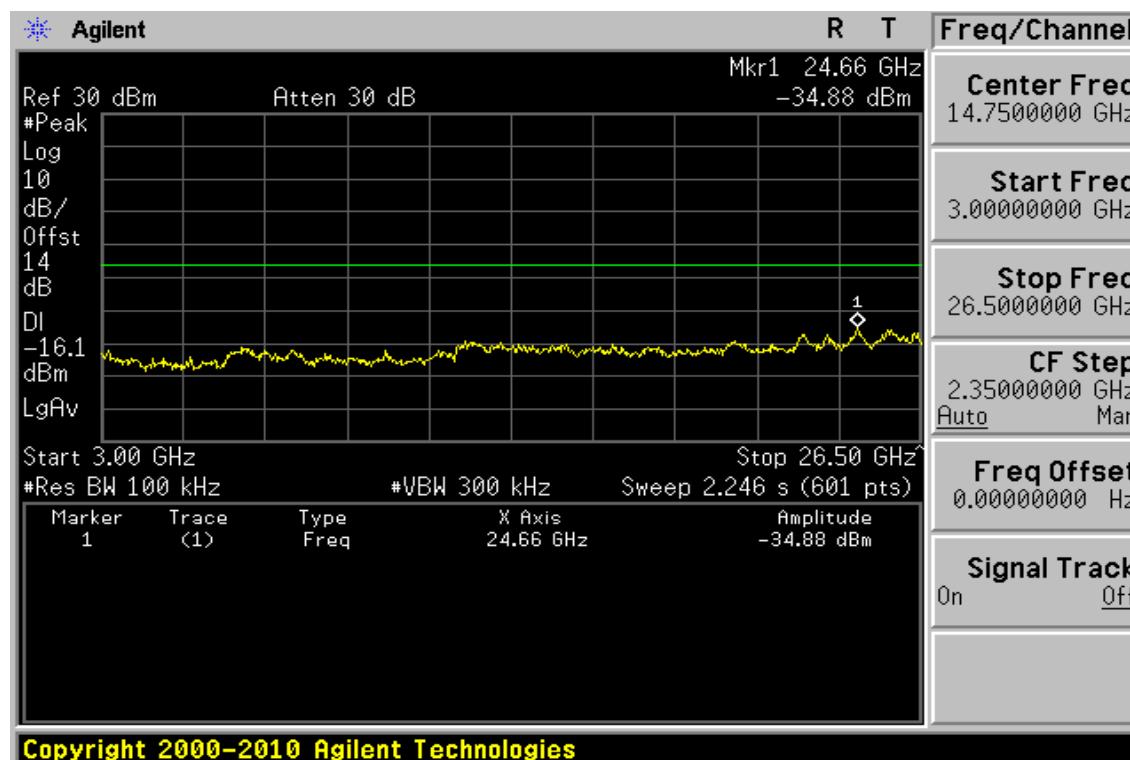
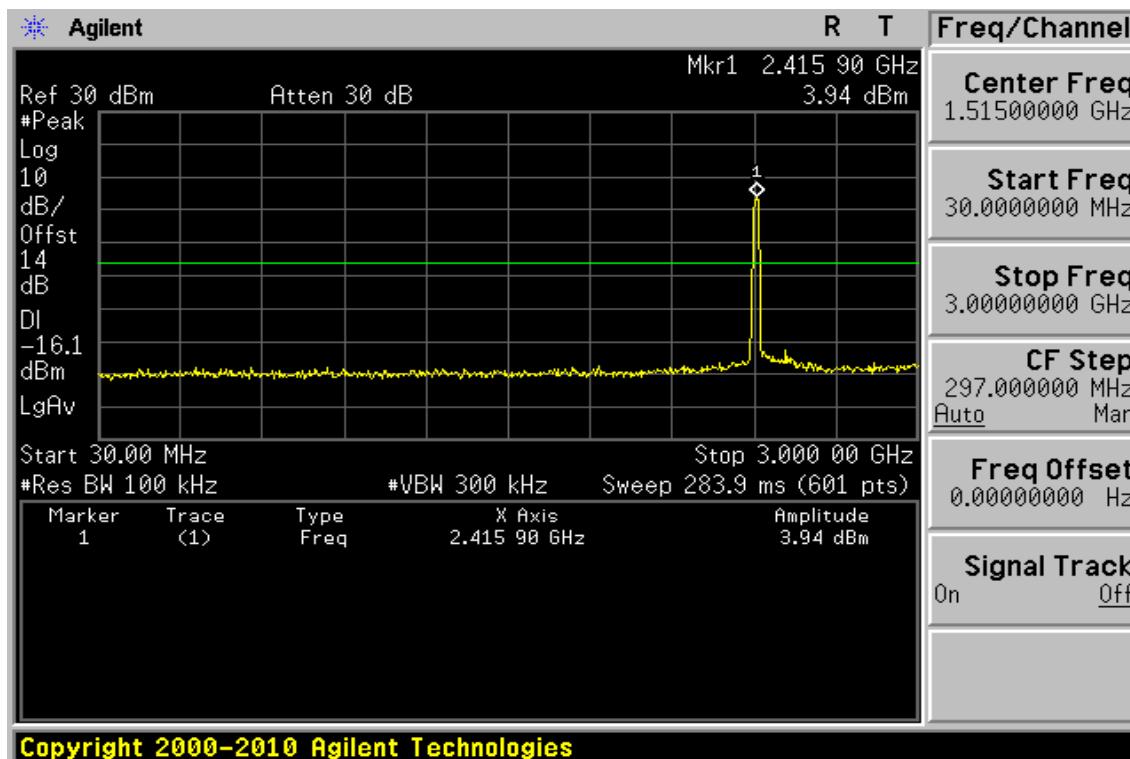


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**802.11n\_HT20****Spurious Emission Test Data CH-Low**

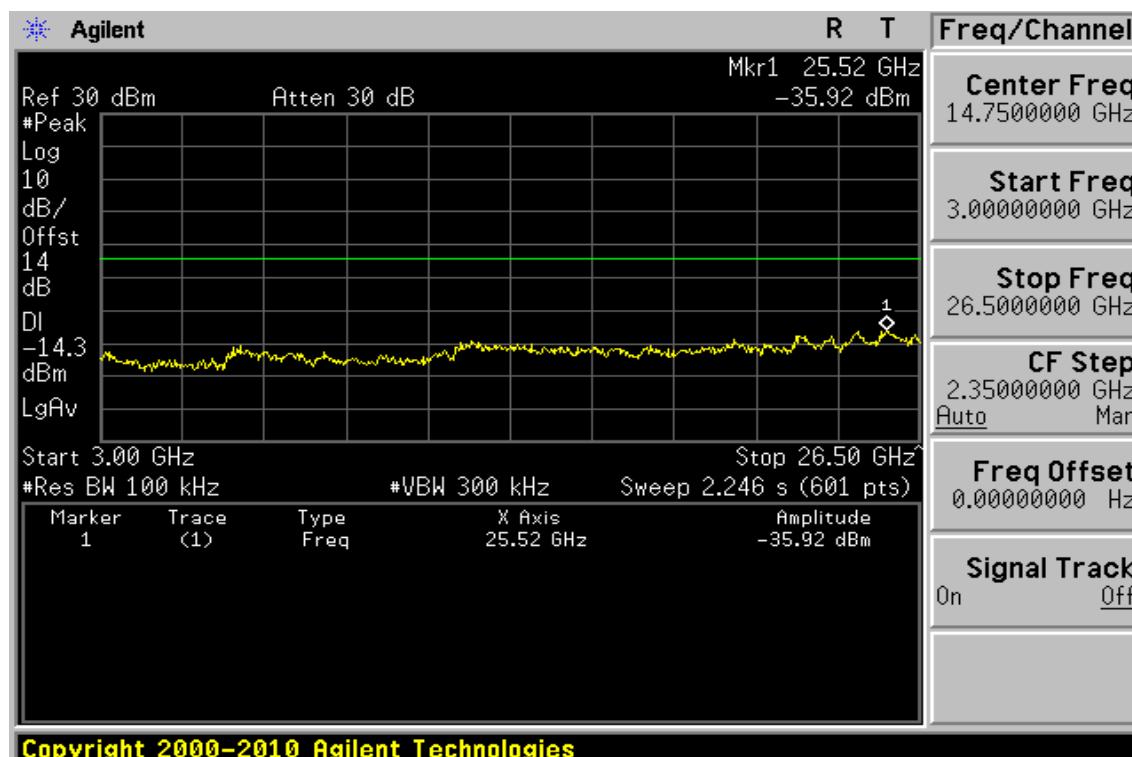
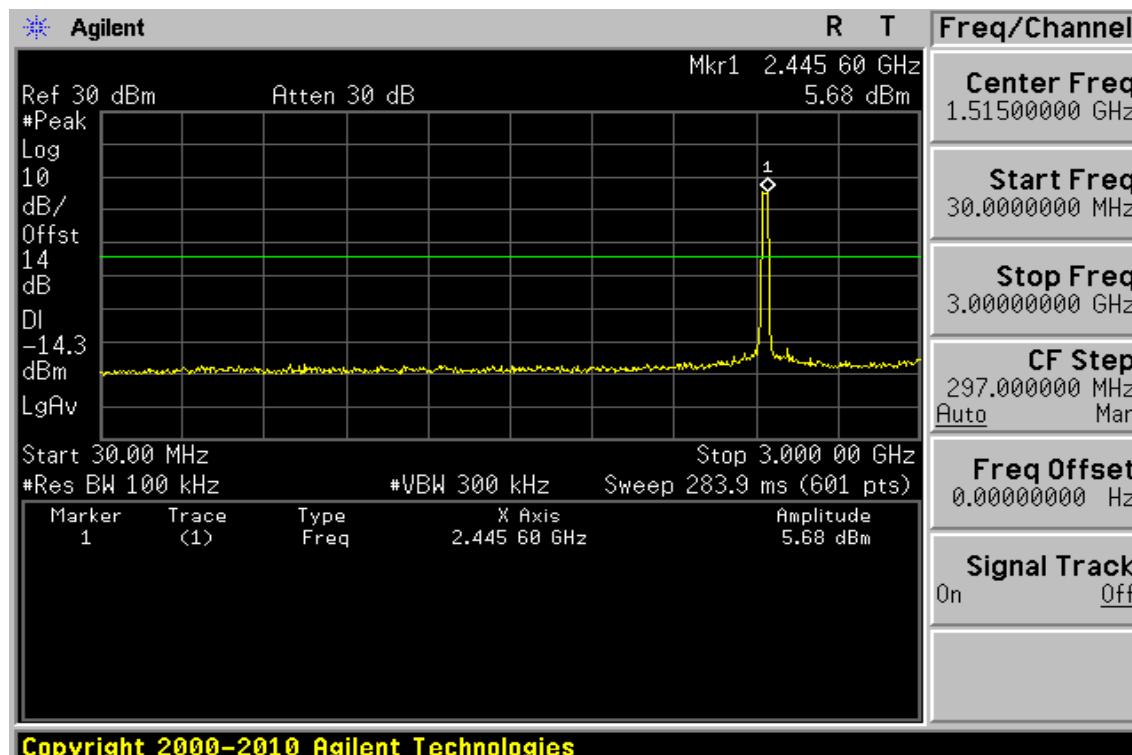
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## Spurious Emission Test Data CH-Mid



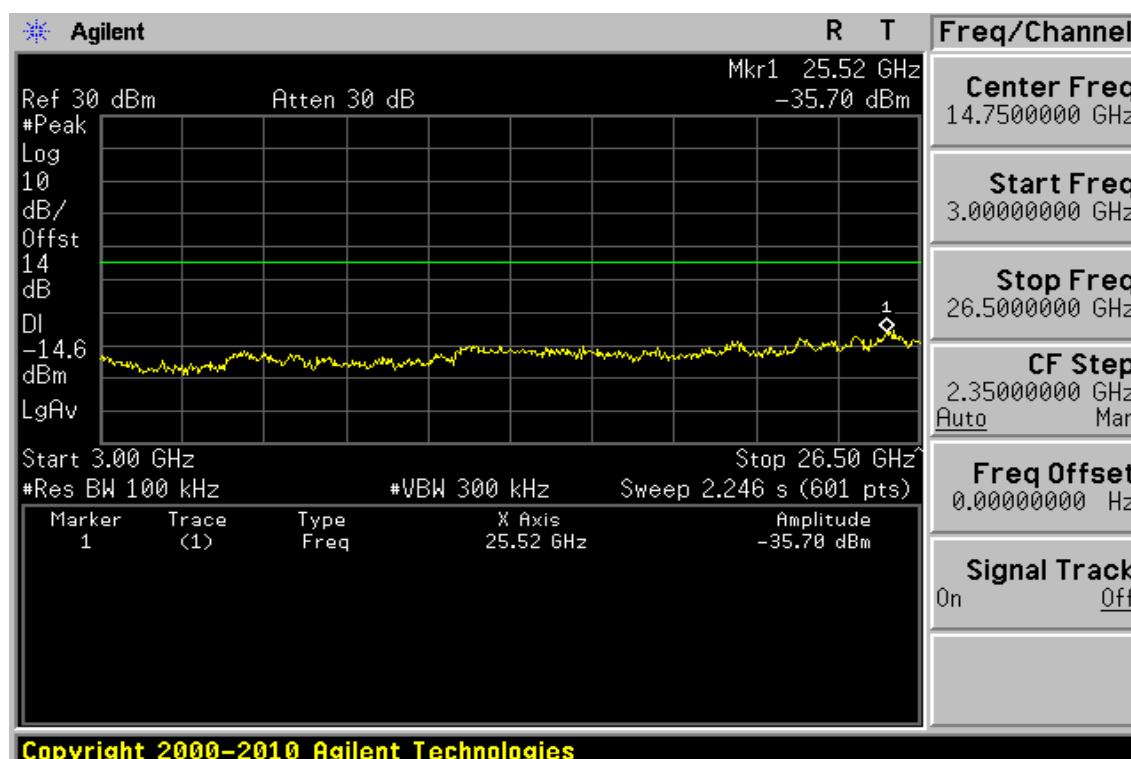
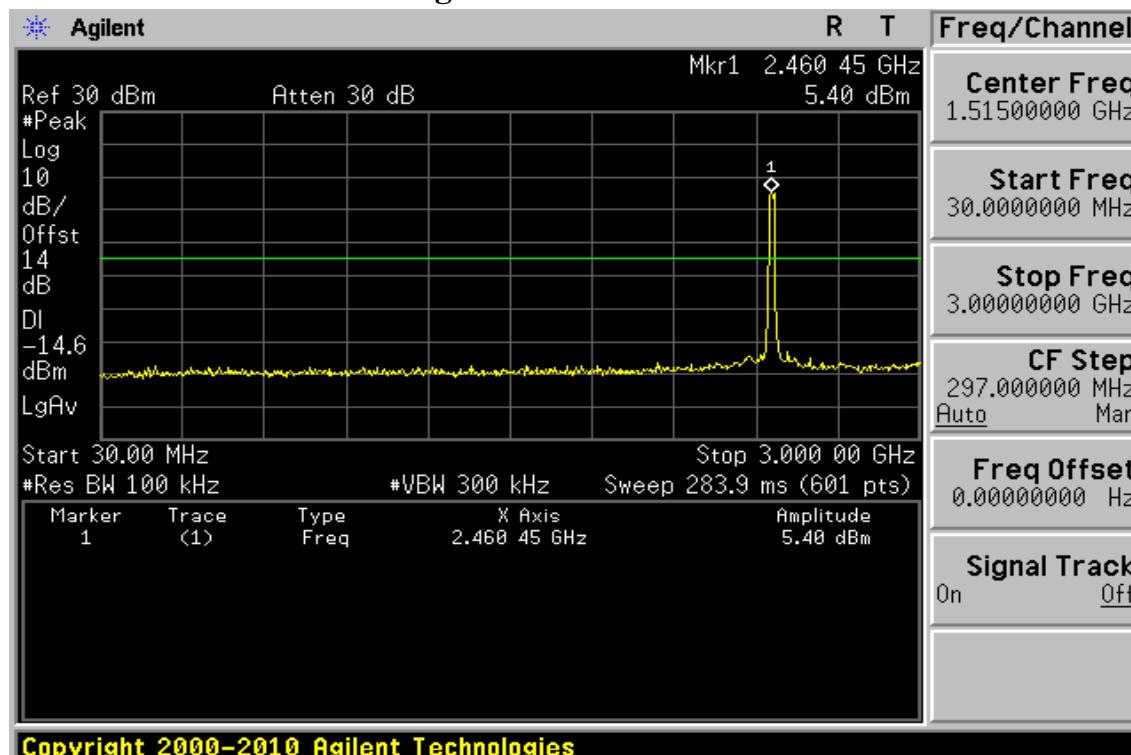
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## Spurious Emission Test Data CH-High



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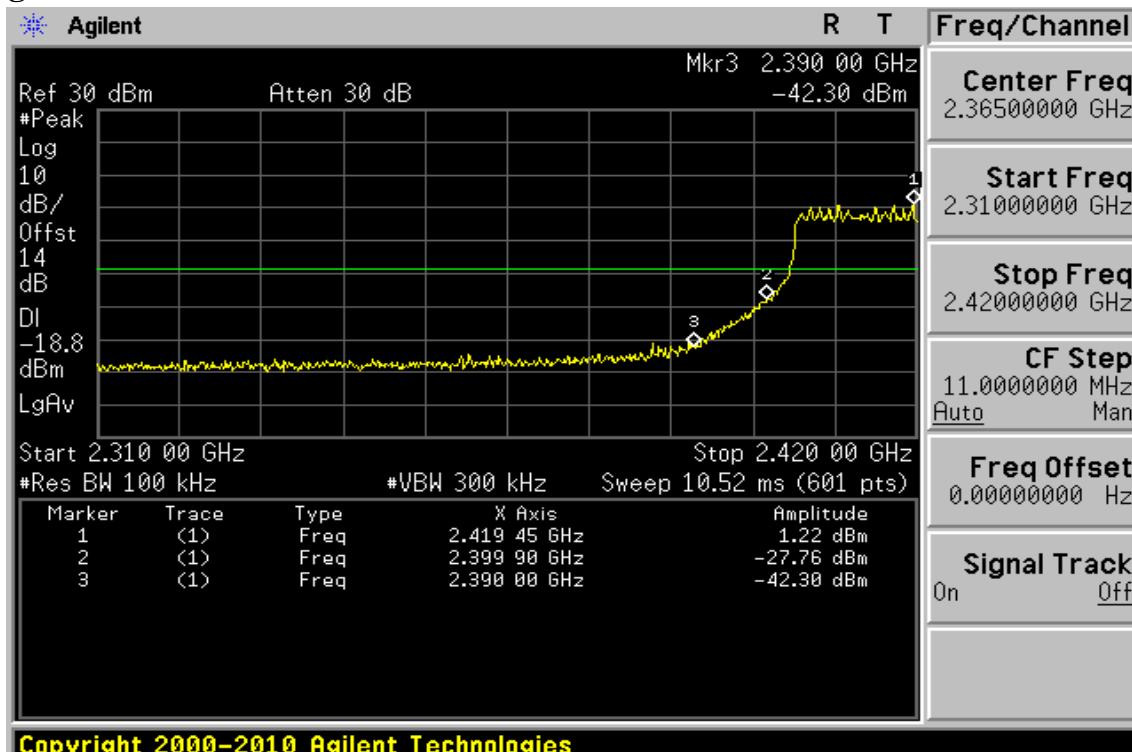
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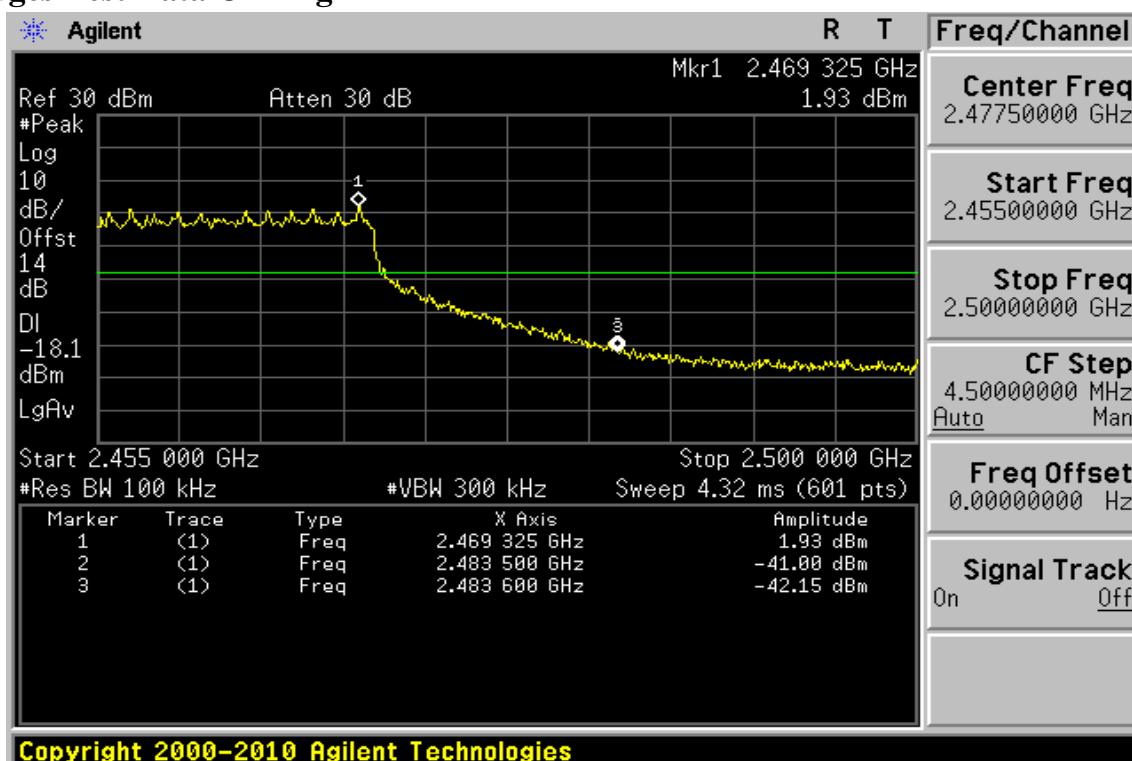
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## 802.11n\_HT40

### Band Edges Test Data CH-Low



### Band Edges Test Data CH-High



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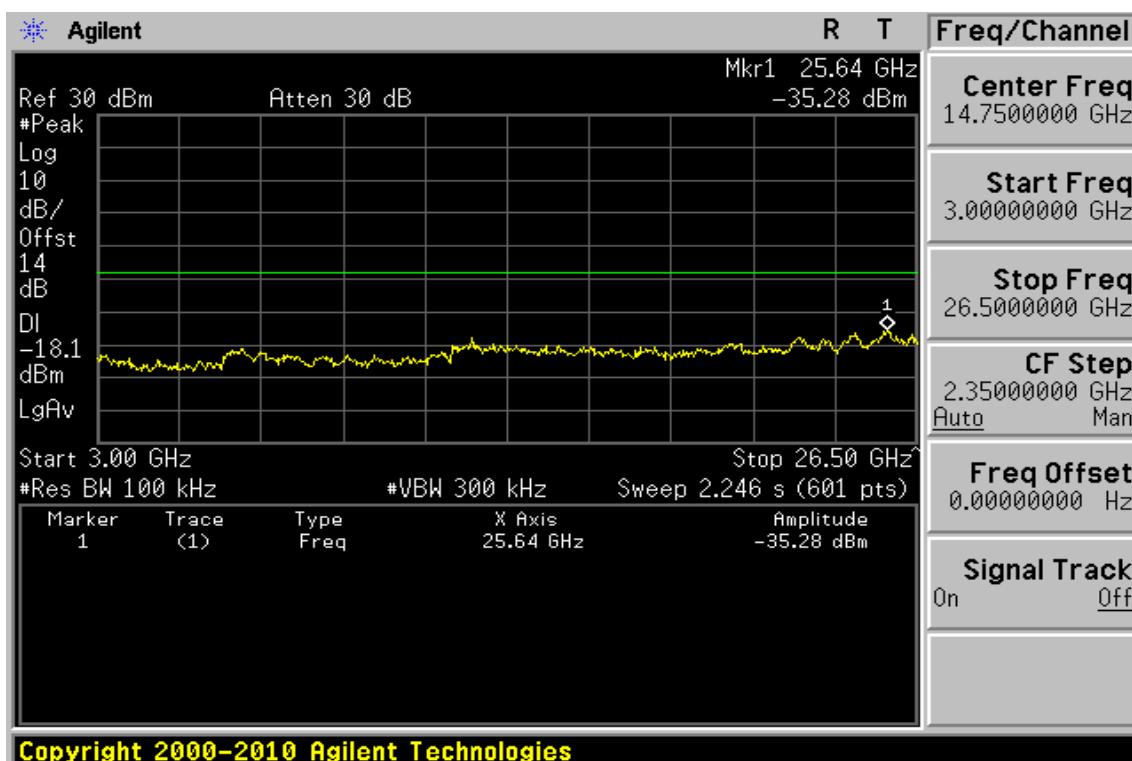
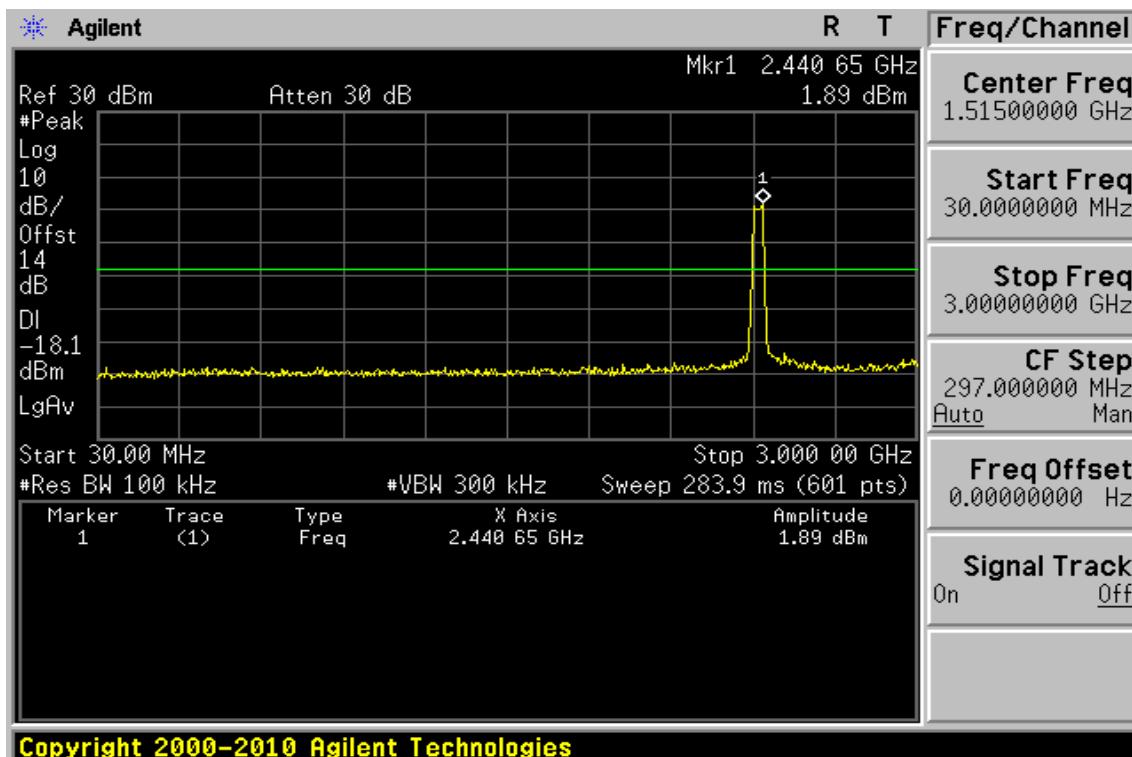
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## 802.11n\_HT40

## Spurious Emission Test Data CH-Low

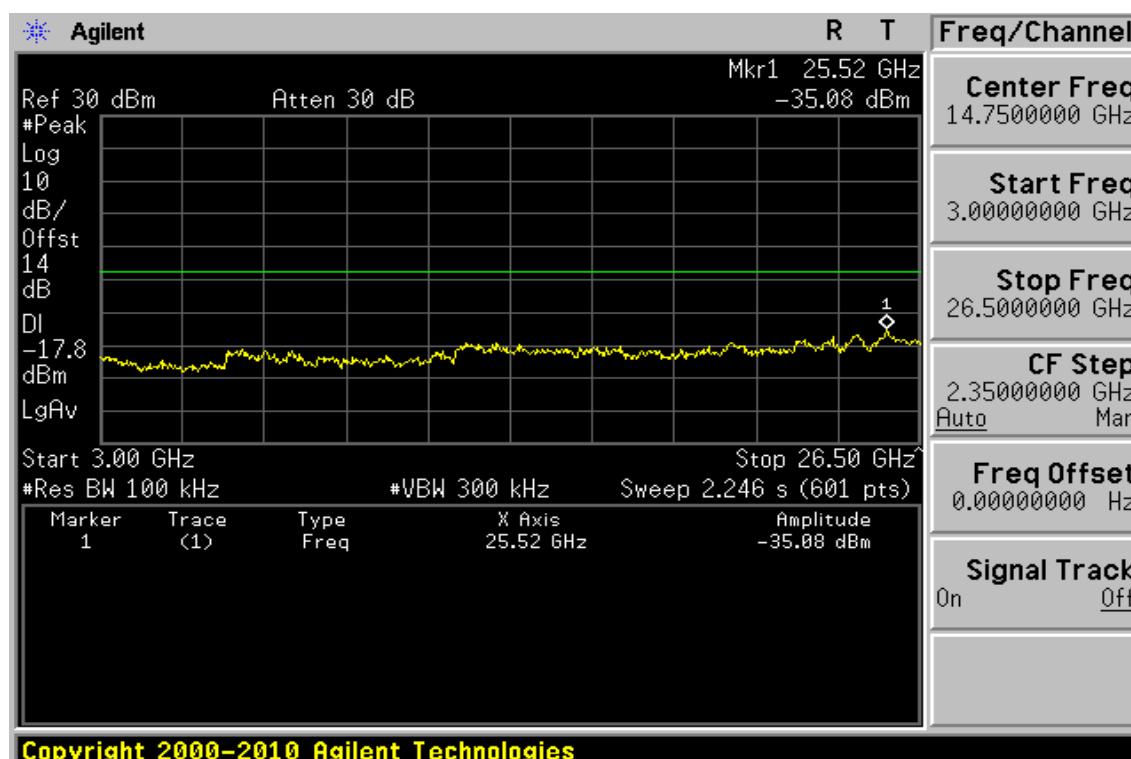
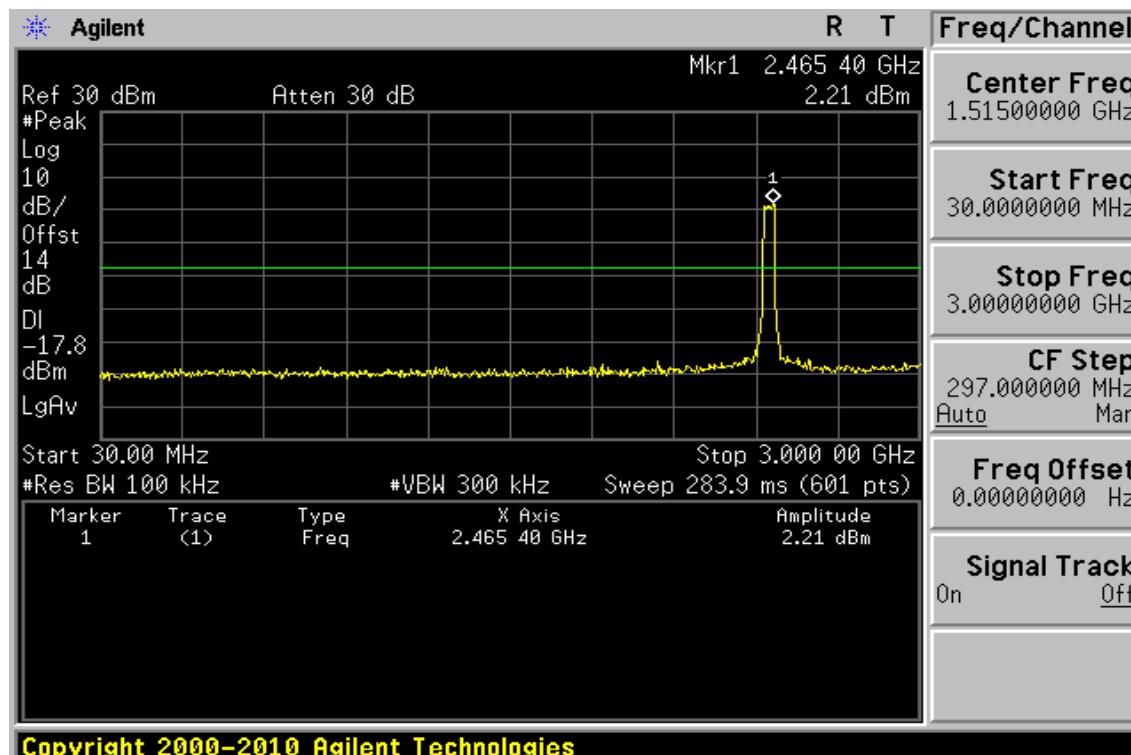


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**Spurious Emission Test Data CH-Mid**

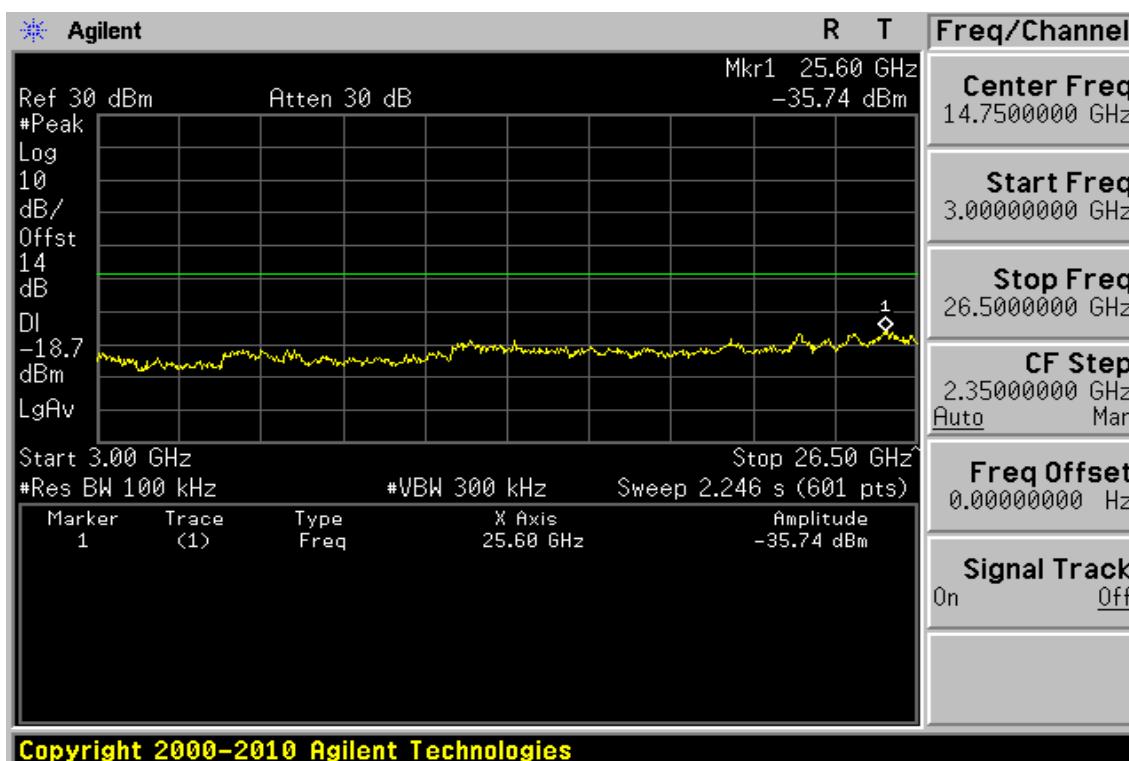
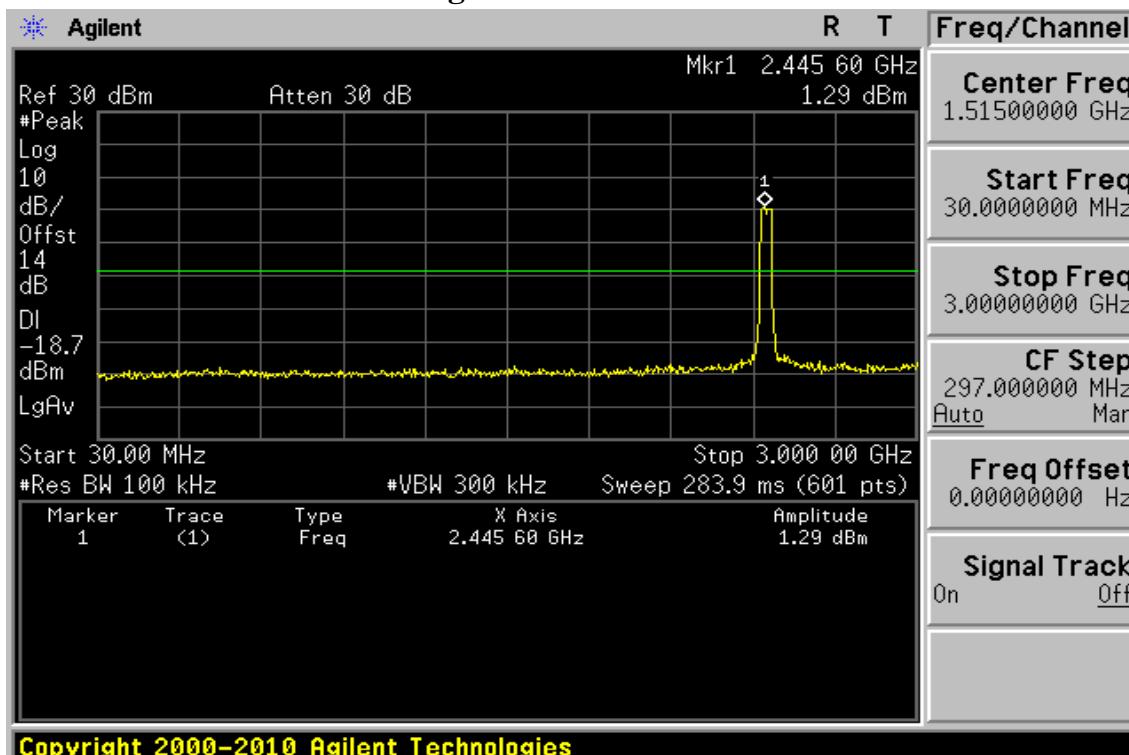
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## Spurious Emission Test Data CH-High



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## 11 RADIATED BANDEDGE AND SPURIOUS EMISSION MEASUREMENT

### 11.1 Standard Applicable

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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 must also comply with the §15.209 limit as below.

And according to §15.33(a) (1), for an intentional radiator operates below 10GHz, the frequency range of measurements: to the tenth harmonic of the highest fundamental frequency or to 40GHz, whichever is lower.

Frequency (MHz)	Field strength (microvolts/meter)	Distance (meters)
0.009-0.490	2400/F(KHz)	300
0.490-1.705	24000/F(KHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

**Note:**

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dB $\mu$ V/m) = 20 log Emission level (dB $\mu$ V/m)

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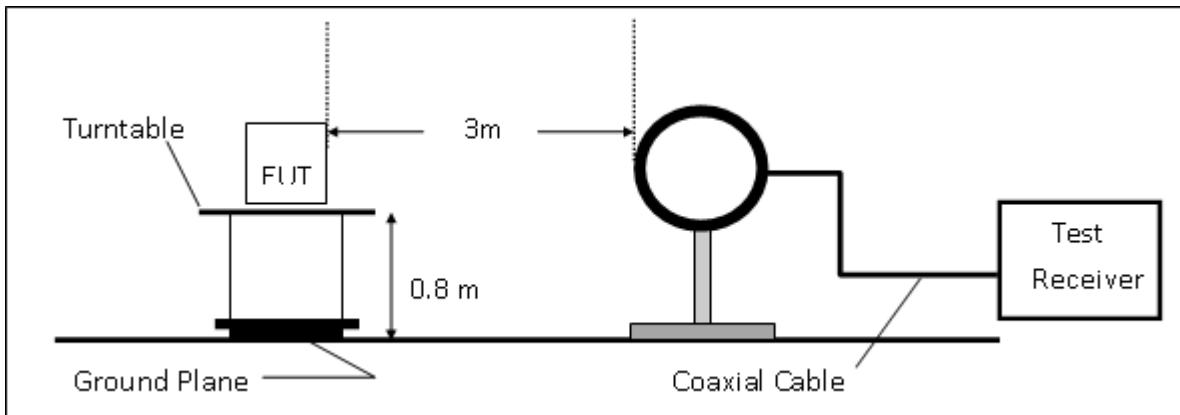
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## 11.2 Measurement Equipment Used:

966 Chamber					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI Test Receiver	R&S	ESCI7	100760	05/26/2014	05/25/2015
EXA Spectrum Analyzer	Agilent	N9010A	MY50420195	12/22/2014	12/21/2015
Spectrum Analyzer	R&S	FSV-30	101398	10/07/2014	10/06/2015
Loop Antenna	ETS.LINDGREN	6502	00148045	07/03/2014	07/02/2015
Bilog Antenna	SCHWAZBECK	VULB9168	378	12/23/2014	12/22/2015
Horn antenna	ETS.LINDGREN	3117	123995	05/19/2014	05/18/2015
Horn Antenna	Schwarzbeck	BBHA9170	184	12/25/2014	12/24/2015
Pre-Amplifier	Agilent	8447D	2944A07676	01/02/2015	01/01/2016
Pre-Amplifier	Agilent	8449B	3008A00578	01/02/2015	01/01/2016
Pre-Amplifier	EMC Instruments Corp.	EMC184045	980135	01/02/2015	01/01/2016
Filter 2400-2483.5 MHz	EWT	EWT-14-0166	M2	01/02/2015	01/01/2016
Attenuator	Mini-Circuit	BW-S10W2+	004	01/02/2015	01/01/2016
Turn Table	HD	DT420	N/A	N.C.R	N.C.R
Antenna Tower	HD	MA240-N	240/657	N.C.R	N.C.R
Controller	HD	HD100	N/A	N.C.R	N.C.R
Low Loss Cable	Huber Suhner	966_Rx	9	01/02/2015	01/01/2016

## 11.3 Test SET-UP

### (A) Radiated Emission Test Set-UP Frequency Below 30MHz.



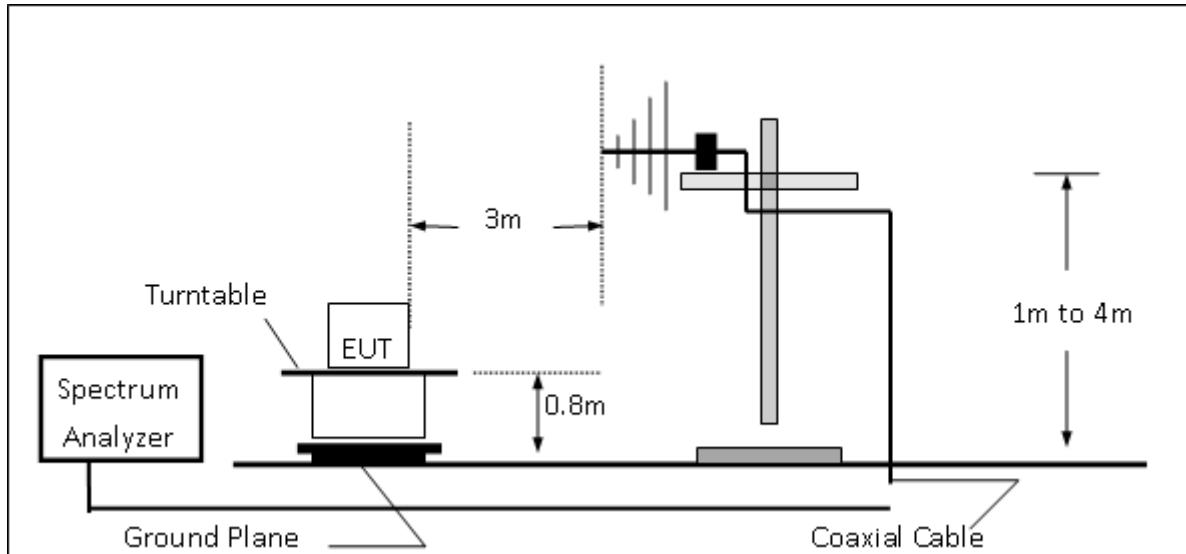
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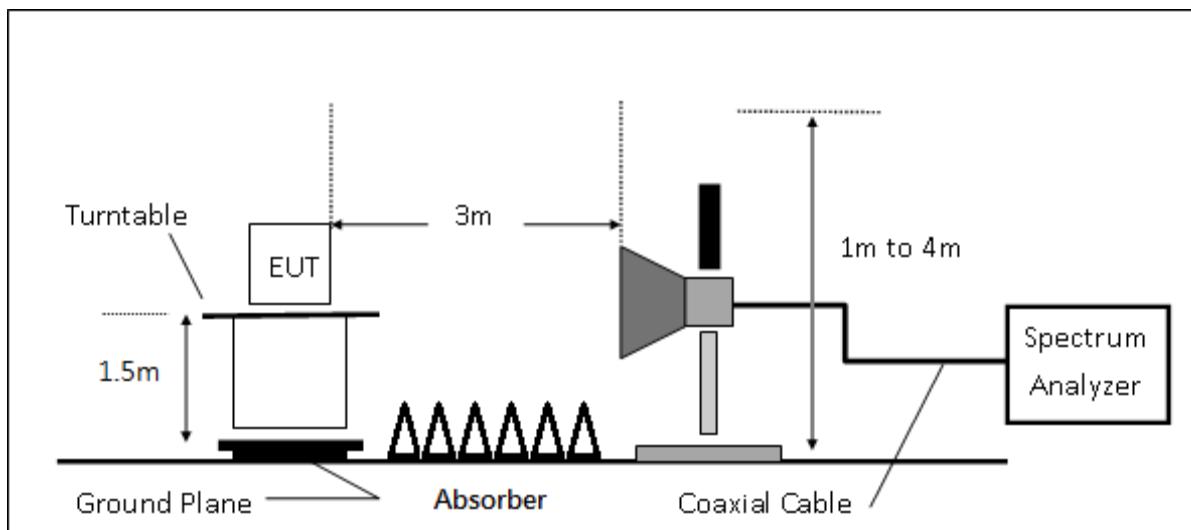
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## (B) Radiated Emission Test Set-Up, Frequency form 30MHz to 1000MHz



## (C) Radiated Emission Test Set-UP Frequency Over 1 GHz



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### 11.3.1 Measurement Procedure

1. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance V03r02.
2. The EUT was placed on a turn table with 0.8m for frequency < 1GHz and 1.5m for frequency > 1GHz above ground plane.
3. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
4. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
5. When measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made “while keeping the antenna in the ‘cone of radiation’ from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response.” is still within the 3dB illumination BW of the measurement antenna.
6. Set the spectrum analyzer as RBW=120 kHz and VBW=300 kHz for Peak Detector (PK) and Quasi-peak (QP) at frequency below 1 GHz.
7. Set the spectrum analyzer as RBW=1 MHz, VBW=3 MHz for Peak Detector at frequency above 1 GHz.
8. Set the spectrum analyzer as RBW=1 MHz, VBW=10 Hz (Duty cycle > 98%) or VBW  $\geq$  1/T (Duty cycle < 98%) for Average Detector at frequency above 1 GHz.
9. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
10. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
11. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. On spectrum, change spectrum mode in linear display mode, and reduce VBW = 10Hz if average reading is measured.
12. Repeat above procedures until all default test channel measured were complete.

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## 11.4 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$\mathbf{FS = RA + AF - CL - AG}$$

Where	FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
	RA = Reading Amplitude	AG = Amplifier Gain
	AF = Antenna Factor	

Actual FS(dB $\mu$ V/m) = SPA. Reading level(dB $\mu$ V) + Factor(dB)

Factor(dB) = Antenna Factor(dB $\mu$ V/m) + Cable Loss(dB) - Pre\_Amplifier Gain(dB)

### Note :

“F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

## 11.5 Test Results of Radiated Spurious Emissions form 9 KHz to 30 MHz

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit per 15.31(o) was not reported.

## 11.6 Measurement Result

Note: Refer to next page spectrum analyzer data chart and tabular data sheets.

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**Radiated Band Edge Measurement Result (802.11b)****Internal Antenna**

Operation Band	:802.11 b	Test Date	:2015-02-24
Fundamental Frequency	:2412 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Band Edge LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL

Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
					FS dB $\mu$ V/m	@3m dB $\mu$ V/m	dB
2390.00	E	Average	44.11	5.16	49.27	54.00	-4.73
2390.00	E	Peak	54.72	5.16	59.88	74.00	-14.12

Operation Band	:802.11 b	Test Date	:2015-02-24
Fundamental Frequency	:2412 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Band Edge LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL

Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
					FS dB $\mu$ V/m	@3m dB $\mu$ V/m	dB
2390.00	E	Average	44.88	5.16	50.04	54.00	-3.96
2390.00	E	Peak	55.72	5.16	60.88	74.00	-13.12

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**Operation Band** :802.11 b  
**Fundamental Frequency** :2462 MHz  
**Operation Mode** :Band Edge HIGH  
**EUT Pol.** :H Plane

**Test Date** :2015-02-24  
**Temp./Humi.** :21 deg\_C / 61 RH  
**Engineer** :Curry  
**Measurement Antenna Pol.** :VERTICAL

Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level	Factor	Actual	Limit	Margin
					FS	@3m	dB
2483.50	E	Average	44.19	6.01	50.20	54.00	-3.80
2483.50	E	Peak	54.92	6.01	60.93	74.00	-13.07
2486.50	S	Average	45.17	6.05	51.22	54.00	-2.78
2486.50	S	Peak	56.55	6.05	62.60	74.00	-11.40

**Operation Band** :802.11 b  
**Fundamental Frequency** :2462 MHz  
**Operation Mode** :Band Edge HIGH  
**EUT Pol.** :H Plane

**Test Date** :2015-02-24  
**Temp./Humi.** :21 deg\_C / 61 RH  
**Engineer** :Curry  
**Measurement Antenna Pol.** :HORIZONTAL

Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level	Factor	Actual	Limit	Margin
					FS	@3m	dB
2483.50	E	Average	45.02	6.01	51.03	54.00	-2.97
2483.50	E	Peak	55.46	6.01	61.47	74.00	-12.53

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**Radiated Band Edge Measurement Result (802.11g)**

Operation Band	:802.11 g	Test Date	:2015-02-24
Fundamental Frequency	:2412 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Band Edge LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL

Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
2390.00	E	Average	45.30	5.16	50.46	54.00	-3.54	
2390.00	E	Peak	65.60	5.16	70.76	74.00	-3.24	

Operation Band	:802.11 g	Test Date	:2015-02-24
Fundamental Frequency	:2412 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Band Edge LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL

Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
2390.00	E	Average	46.11	5.16	51.27	54.00	-2.73	
2390.00	E	Peak	65.88	5.16	71.04	74.00	-2.96	

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**Operation Band** :802.11 g  
**Fundamental Frequency** :2462 MHz  
**Operation Mode** :Band Edge HIGH  
**EUT Pol.** :H Plane

**Test Date** :2015-02-24  
**Temp./Humi.** :21 deg\_C / 61 RH  
**Engineer** :Curry  
**Measurement Antenna Pol.** :VERTICAL

Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level	Factor	Actual	Limit	Margin
					FS	@3m	dB
2483.50	E	Average	44.63	6.01	50.64	54.00	-3.36
2483.50	E	Peak	62.48	6.01	68.49	74.00	-5.51
2484.50	S	Average	44.46	6.02	50.48	54.00	-3.52
2484.50	S	Peak	64.78	6.02	70.80	74.00	-3.20

**Operation Band** :802.11 g  
**Fundamental Frequency** :2462 MHz  
**Operation Mode** :Band Edge HIGH  
**EUT Pol.** :H Plane

**Test Date** :2015-02-24  
**Temp./Humi.** :21 deg\_C / 61 RH  
**Engineer** :Curry  
**Measurement Antenna Pol.** :HORIZONTAL

Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level	Factor	Actual	Limit	Margin
					FS	@3m	dB
2483.50	E	Average	44.57	6.01	50.58	54.00	-3.42
2483.50	E	Peak	64.88	6.01	70.89	74.00	-3.11

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**Radiated Band Edge Measurement Result (802.11\_HT20)**

Operation Band	:802.11 n20M	Test Date	:2015-02-24
Fundamental Frequency	:2412 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Band Edge LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL

Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
2390.00	E	Average	44.48	5.16	49.64	54.00	-4.36	
2390.00	E	Peak	59.94	5.16	65.10	74.00	-8.90	

Operation Band	:802.11 n20M	Test Date	:2015-02-24
Fundamental Frequency	:2412 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Band Edge LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL

Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
2390.00	E	Average	44.90	5.16	50.06	54.00	-3.94	
2390.00	E	Peak	64.42	5.16	69.58	74.00	-4.42	

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Operation Band :802.11 n20M Test Date :2015-02-24  
 Fundamental Frequency :2462 MHz Temp./Humi. :21 deg\_C / 61 RH  
 Operation Mode :Band Edge HIGH Engineer :Curry  
 EUT Pol. :H Plane Measurement Antenna Pol. :VERTICAL

Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
						dB $\mu$ V/m	dB
2483.50	E	Average	45.16	6.01	51.17	54.00	-2.83
2483.50	E	Peak	64.90	6.01	70.91	74.00	-3.09

Operation Band :802.11 n20M Test Date :2015-02-24  
 Fundamental Frequency :2462 MHz Temp./Humi. :21 deg\_C / 61 RH  
 Operation Mode :Band Edge HIGH Engineer :Curry  
 EUT Pol. :H Plane Measurement Antenna Pol. :HORIZONTAL

Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
						dB $\mu$ V/m	dB
2483.50	E	Average	45.52	6.01	51.53	54.00	-2.47
2483.50	E	Peak	65.18	6.01	71.19	74.00	-2.81

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**Radiated Band Edge Measurement Result (802.11\_HT40)**

Operation Band	:802.11 n40M	Test Date	:2015-02-24
Fundamental Frequency	:2422 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Band Edge LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL

Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
2390.00	E	Average	46.97	5.16	52.13	54.00	-1.87	
2390.00	E	Peak	66.03	5.16	71.19	74.00	-2.81	

Operation Band	:802.11 n40M	Test Date	:2015-02-24
Fundamental Frequency	:2422 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Band Edge LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL

Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
2390.00	E	Average	48.15	5.16	53.31	54.00	-0.69	
2390.00	E	Peak	66.30	5.16	71.46	74.00	-2.54	

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Operation Band	:802.11 n40M	Test Date	:2015-02-24
Fundamental Frequency	:2452 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Band Edge HIGH	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL

Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
2483.50	E	Average	46.39	6.01	52.40	54.00	-1.60	
2483.50	E	Peak	66.41	6.01	72.42	74.00	-1.58	

Operation Band	:802.11 n40M	Test Date	:2015-02-24
Fundamental Frequency	:2452 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Band Edge HIGH	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL

Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
2483.50	E	Average	46.20	6.01	52.21	54.00	-1.79	
2483.50	E	Peak	67.26	6.01	73.27	74.00	-0.73	

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**Radiated Band Edge Measurement Result (802.11b)****External Antenna**

Operation Band	:802.11 b	Test Date	:2015-02-24
Fundamental Frequency	:2412 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Band Edge LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL

Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level	Factor	Actual	Limit	Margin
					FS	@3m	dB
2390.00	E	Average	47.01	5.16	52.17	54.00	-1.83
2390.00	E	Peak	57.49	5.16	62.65	74.00	-11.35

Operation Band	:802.11 b	Test Date	:2015-02-24
Fundamental Frequency	:2412 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Band Edge LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL

Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level	Factor	Actual	Limit	Margin
					FS	@3m	dB
2390.00	E	Average	42.36	5.16	47.52	54.00	-6.48
2390.00	E	Peak	54.17	5.16	59.33	74.00	-14.67

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Operation Band :802.11 b  
 Fundamental Frequency :2462 MHz  
 Operation Mode :Band Edge HIGH  
 EUT Pol. :H Plane

Test Date :2015-02-24  
 Temp./Humi. :21 deg\_C / 61 RH  
 Engineer :Curry  
 Measurement Antenna Pol. :VERTICAL

Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
						dB $\mu$ V/m	dB
2483.50	E	Average	46.52	6.01	52.53	54.00	-1.47
2483.50	E	Peak	56.89	6.01	62.90	74.00	-11.10

Operation Band :802.11 b  
 Fundamental Frequency :2462 MHz  
 Operation Mode :Band Edge HIGH  
 EUT Pol. :H Plane

Test Date :2015-02-24  
 Temp./Humi. :21 deg\_C / 61 RH  
 Engineer :Curry  
 Measurement Antenna Pol. :HORIZONTAL

Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
						dB $\mu$ V/m	dB
2483.50	E	Average	42.96	6.01	48.97	54.00	-5.03
2483.50	E	Peak	54.56	6.01	60.57	74.00	-13.43

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**Radiated Band Edge Measurement Result (802.11g)**

Operation Band	:802.11 g	Test Date	:2015-02-24
Fundamental Frequency	:2412 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Band Edge LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL

Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
2390.00	E	Average	46.77	5.16	51.93	54.00	-2.07	
2390.00	E	Peak	68.12	5.16	73.28	74.00	-0.72	

Operation Band	:802.11 g	Test Date	:2015-02-24
Fundamental Frequency	:2412 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Band Edge LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL

Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
2389.32	S	Average	42.60	5.16	47.76	54.00	-6.24	
2389.32	S	Peak	64.05	5.16	69.21	74.00	-4.79	
2390.00	E	Average	42.87	5.16	48.03	54.00	-5.97	
2390.00	E	Peak	62.58	5.16	67.74	74.00	-6.26	

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**Operation Band** :802.11 g  
**Fundamental Frequency** :2462 MHz  
**Operation Mode** :Band Edge HIGH  
**EUT Pol.** :H Plane

**Test Date** :2015-02-24  
**Temp./Humi.** :21 deg\_C / 61 RH  
**Engineer** :Curry  
**Measurement Antenna Pol.** :VERTICAL

Freq.	Note	Detector	Spectrum		Factor	Actual	Limit	Margin
			Mode	Reading Level				
MHz	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB	
2483.50	E	Average	44.04	6.01	50.05	54.00	-3.95	
2483.50	E	Peak	67.07	6.01	73.08	74.00	-0.92	

**Operation Band** :802.11 g  
**Fundamental Frequency** :2462 MHz  
**Operation Mode** :Band Edge HIGH  
**EUT Pol.** :H Plane

**Test Date** :2015-02-24  
**Temp./Humi.** :21 deg\_C / 61 RH  
**Engineer** :Curry  
**Measurement Antenna Pol.** :HORIZONTAL

Freq.	Note	Detector	Spectrum		Factor	Actual	Limit	Margin
			Mode	Reading Level				
MHz	F/H/E/S	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB	
2483.50	E	Average	43.66	6.01	49.67	54.00	-4.33	
2483.50	E	Peak	66.64	6.01	72.65	74.00	-1.35	

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**Radiated Band Edge Measurement Result (802.11\_HT20)**

Operation Band	:802.11 n20M	Test Date	:2015-02-24
Fundamental Frequency	:2412 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Band Edge LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL

Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
2390.00	E	Average	45.79	5.16	50.95	54.00	-3.05	
2390.00	E	Peak	67.07	5.16	72.23	74.00	-1.77	

Operation Band	:802.11 n20M	Test Date	:2015-02-24
Fundamental Frequency	:2412 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Band Edge LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL

Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
2390.00	E	Average	42.09	5.16	47.25	54.00	-6.75	
2390.00	E	Peak	58.91	5.16	64.07	74.00	-9.93	

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Operation Band :802.11 n20M Test Date :2015-02-24  
 Fundamental Frequency :2462 MHz Temp./Humi. :21 deg\_C / 61 RH  
 Operation Mode :Band Edge HIGH Engineer :Curry  
 EUT Pol. :H Plane Measurement Antenna Pol. :VERTICAL

Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
						dB $\mu$ V/m	dB
2483.50	E	Average	45.79	6.01	51.80	54.00	-2.20
2483.50	E	Peak	67.43	6.01	73.44	74.00	-0.56

Operation Band :802.11 n20M Test Date :2015-02-24  
 Fundamental Frequency :2462 MHz Temp./Humi. :21 deg\_C / 61 RH  
 Operation Mode :Band Edge HIGH Engineer :Curry  
 EUT Pol. :H Plane Measurement Antenna Pol. :HORIZONTAL

Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
						dB $\mu$ V/m	dB
2483.50	E	Average	42.58	6.01	48.59	54.00	-5.41
2483.50	E	Peak	62.11	6.01	68.12	74.00	-5.88

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**Radiated Band Edge Measurement Result (802.11\_HT40)**

Operation Band	:802.11 n40M	Test Date	:2015-02-24
Fundamental Frequency	:2422 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Band Edge LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL

Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
2390.00	E	Average	47.87	5.16	53.03	54.00	-0.97	
2390.00	E	Peak	67.23	5.16	72.39	74.00	-1.61	

Operation Band	:802.11 n40M	Test Date	:2015-02-24
Fundamental Frequency	:2422 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Band Edge LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL

Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
2390.00	E	Average	43.62	5.16	48.78	54.00	-5.22	
2390.00	E	Peak	60.46	5.16	65.62	74.00	-8.38	

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Operation Band	:802.11 n40M	Test Date	:2015-02-24
Fundamental Frequency	:2452 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Band Edge HIGH	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL

Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
2483.50	E	Average	47.35	6.01	53.36	54.00	-0.64	
2483.50	E	Peak	67.02	6.01	73.03	74.00	-0.97	

Operation Band	:802.11 n40M	Test Date	:2015-02-24
Fundamental Frequency	:2452 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:Band Edge HIGH	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL

Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV	Reading Level dB $\mu$ V				
2483.50	E	Average	43.97	6.01	49.98	54.00	-4.02	
2483.50	E	Peak	61.08	6.01	67.09	74.00	-6.91	

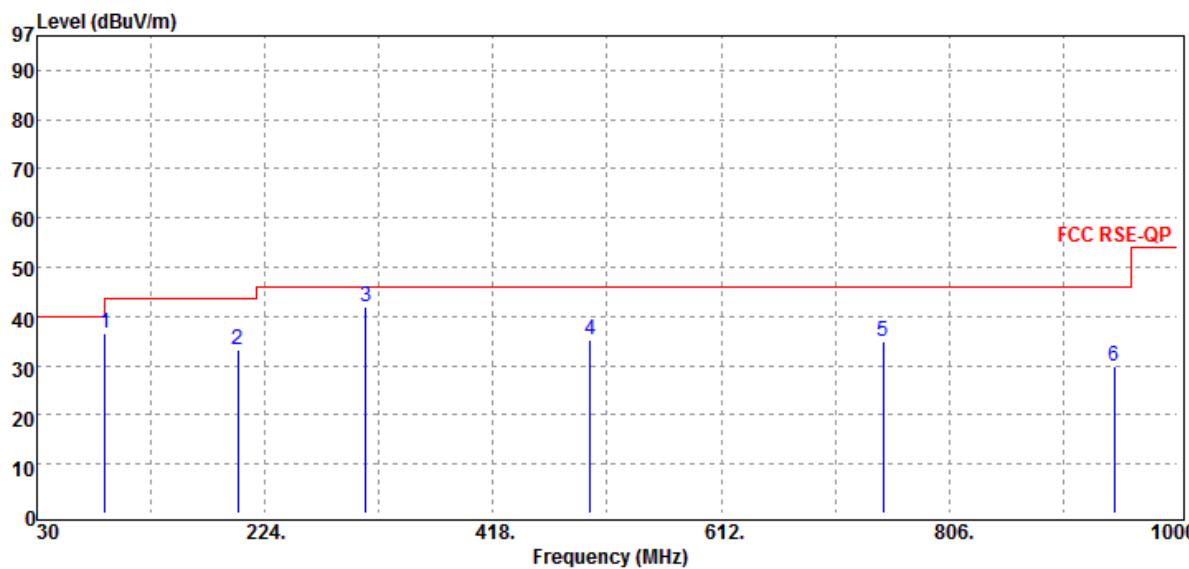
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**Radiated Spurious Emission Measurement Result (802.11 g)****Below 1GHz Worst-Case Data:****Internal Antenna**

Operation Band	:802.11 g	Test Date	:2015-02-24
Fundamental Frequency	:2412 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level		Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
			PK/QP/AV	dB $\mu$ V				
88.20	S	Peak	51.84	51.84	-15.13	36.71	43.50	-6.79
200.72	S	Peak	44.92	44.92	-11.77	33.15	43.50	-10.35
309.36	S	Peak	49.57	49.57	-7.67	41.90	46.00	-4.10
500.45	S	Peak	39.57	39.57	-4.34	35.23	46.00	-10.77
749.74	S	Peak	34.61	34.61	0.27	34.88	46.00	-11.12
946.65	S	Peak	26.64	26.64	3.16	29.80	46.00	-16.20

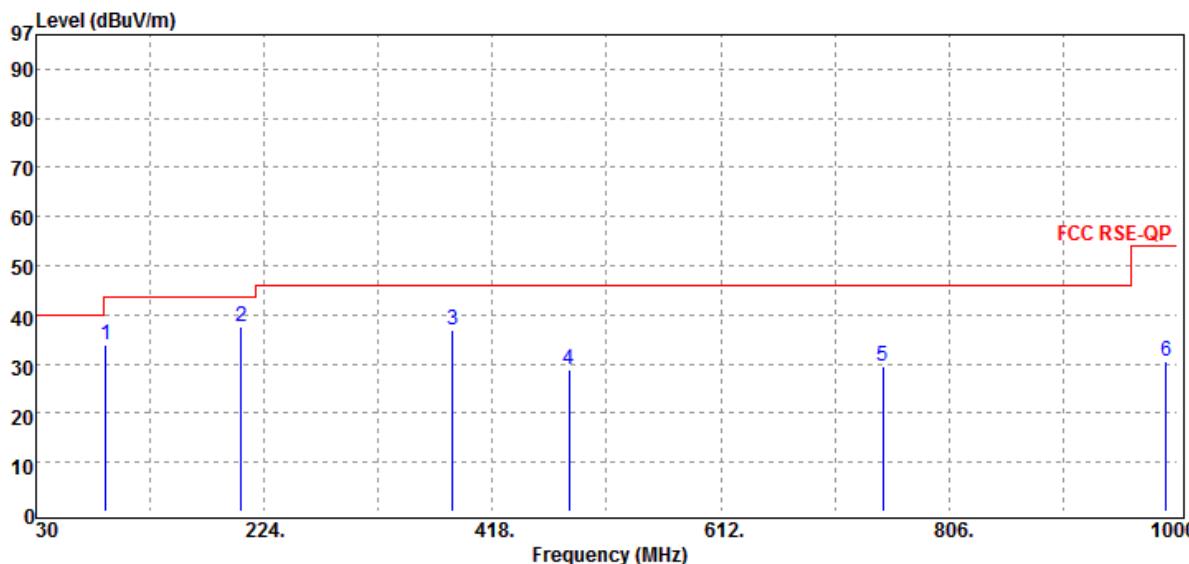
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Operation Band :802.11 g  
 Fundamental Frequency :2412 MHz  
 Operation Mode :TX LOW  
 EUT Pol. :H Plane

Test Date :2015-02-24  
 Temp./Humi. :21 deg\_C / 61 RH  
 Engineer :Curry  
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading	Factor	Actual FS	Limit	Margin
						@3m dB $\mu$ V/m	dB $\mu$ V/m
89.17	S	Peak	49.16	-15.33	33.83	43.50	-9.67
204.60	S	Peak	48.94	-11.51	37.43	43.50	-6.07
384.05	S	Peak	43.07	-6.28	36.79	46.00	-9.21
482.99	S	Peak	33.39	-4.46	28.93	46.00	-17.07
749.74	S	Peak	29.26	0.27	29.53	46.00	-16.47
990.30	S	Peak	27.02	3.42	30.44	54.00	-23.56

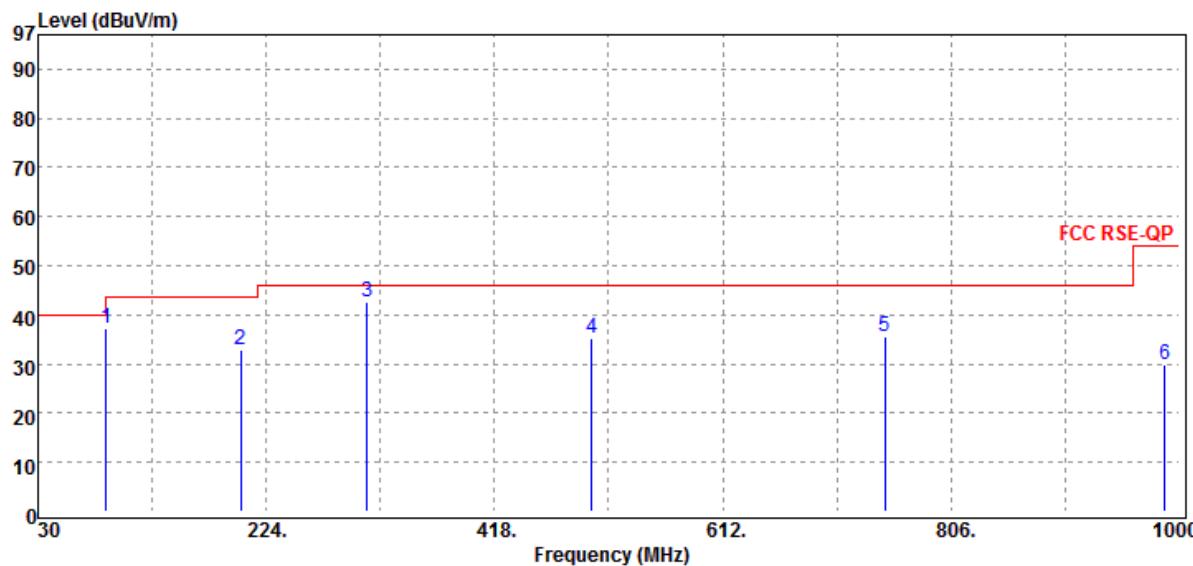
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Operation Band :802.11 g  
 Fundamental Frequency :2437 MHz  
 Operation Mode :TX MID  
 EUT Pol. :H Plane

Test Date :2015-02-24  
 Temp./Humi. :21 deg\_C / 61 RH  
 Engineer :Curry  
 Measurement Antenna Pol. :VERTICAL



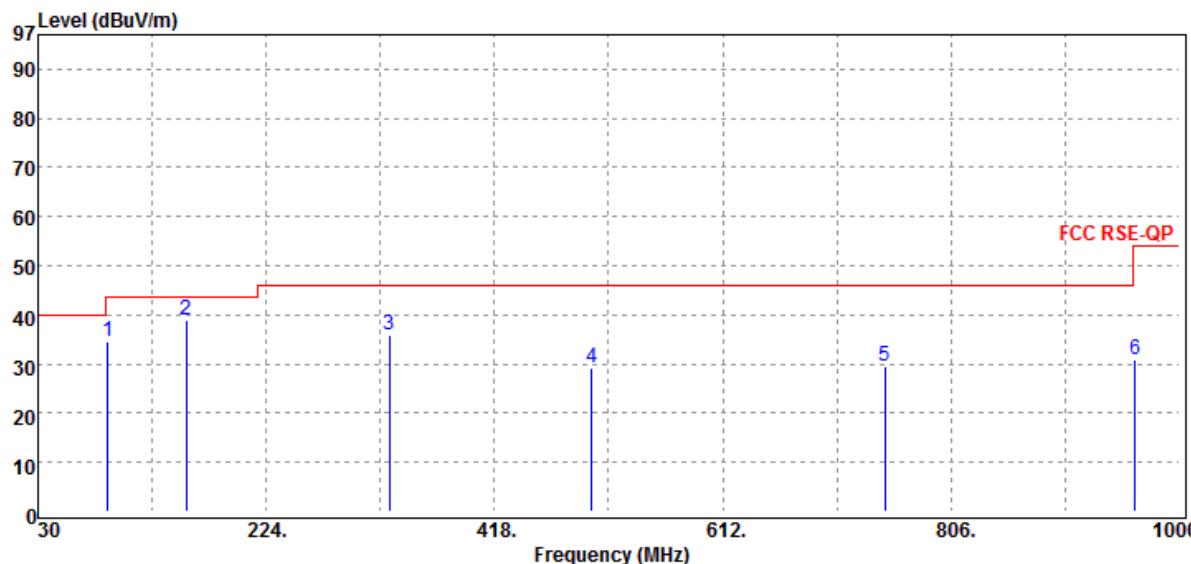
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
						Margin dB	Margin dB
88.20	S	Peak	52.52	-15.13	37.39	43.50	-6.11
202.66	S	Peak	44.39	-11.63	32.76	43.50	-10.74
309.36	S	Peak	50.18	-7.67	42.51	46.00	-3.49
500.45	S	Peak	39.51	-4.34	35.17	46.00	-10.83
749.74	S	Peak	35.39	0.27	35.66	46.00	-10.34
987.39	S	Peak	26.41	3.38	29.79	54.00	-24.21

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Operation Band	:802.11 g	Test Date	:2015-02-24
Fundamental Frequency	:2437 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX MID	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
					FS dB $\mu$ V/m	@3m dB $\mu$ V/m	dB
89.17	S	Peak	49.75	-15.33	34.42	43.50	-9.08
156.10	S	Peak	47.76	-8.98	38.78	43.50	-4.72
328.76	S	Peak	43.75	-7.70	36.05	46.00	-9.95
500.45	S	Peak	33.47	-4.34	29.13	46.00	-16.87
749.74	S	Peak	29.40	0.27	29.67	46.00	-16.33
962.17	S	Peak	27.28	3.69	30.97	54.00	-23.03

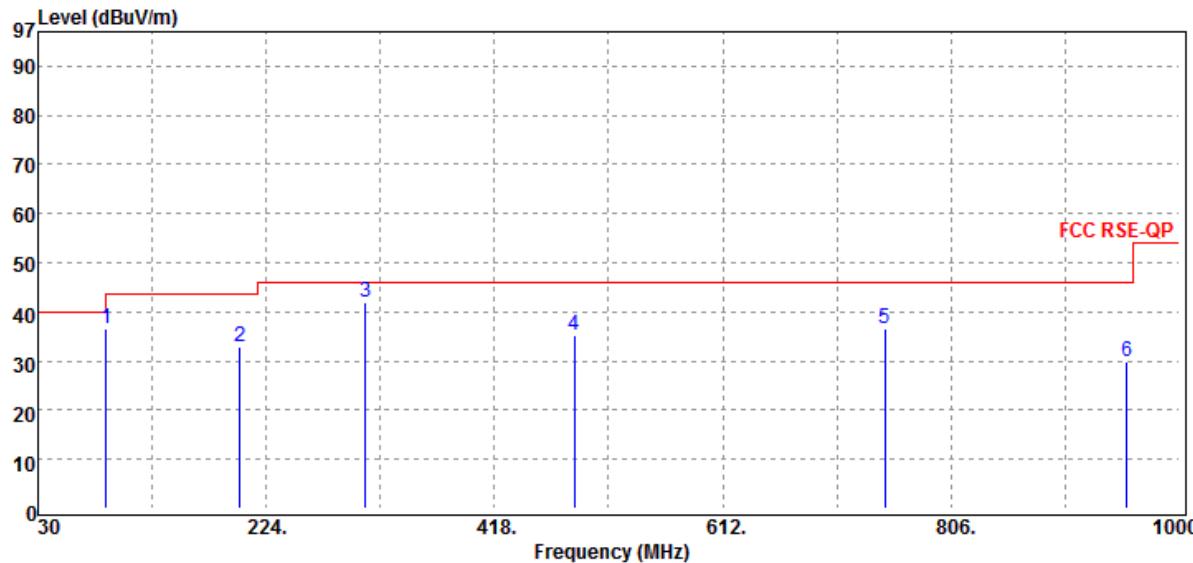
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Operation Band :802.11 g  
 Fundamental Frequency :2462 MHz  
 Operation Mode :TX HIGH  
 EUT Pol. :H Plane

Test Date :2015-02-24  
 Temp./Humi. :21 deg\_C / 61 RH  
 Engineer :Curry  
 Measurement Antenna Pol. :VERTICAL



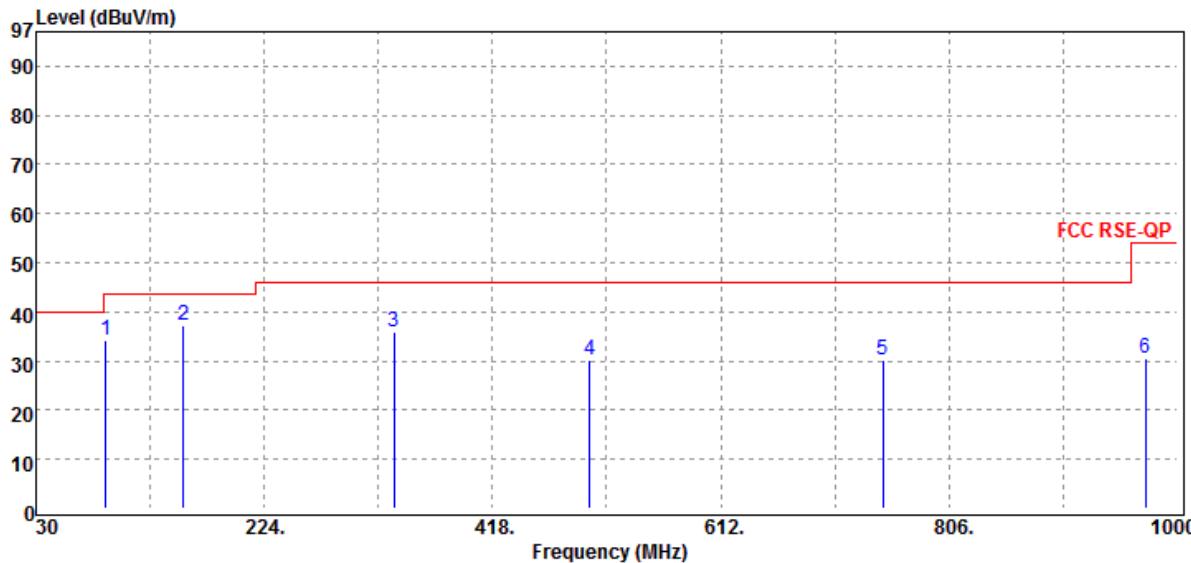
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
					FS dB $\mu$ V/m	@3m dB $\mu$ V/m	dB
88.20	S	Peak	51.76	-15.13	36.63	43.50	-6.87
201.69	S	Peak	44.66	-11.69	32.97	43.50	-10.53
308.39	S	Peak	49.80	-7.70	42.10	46.00	-3.90
485.90	S	Peak	39.49	-4.37	35.12	46.00	-10.88
749.74	S	Peak	36.16	0.27	36.43	46.00	-9.57
955.38	S	Peak	26.28	3.52	29.80	46.00	-16.20

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Operation Band	:802.11 g	Test Date	:2015-02-24
Fundamental Frequency	:2462 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX HIGH	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
					FS dB $\mu$ V/m	@3m dB $\mu$ V/m	dB
89.17	S	Peak	49.48	-15.33	34.15	43.50	-9.35
155.13	S	Peak	46.13	-9.03	37.10	43.50	-6.40
334.58	S	Peak	43.56	-7.63	35.93	46.00	-10.07
500.45	S	Peak	34.44	-4.34	30.10	46.00	-15.90
749.74	S	Peak	29.84	0.27	30.11	46.00	-15.89
972.84	S	Peak	27.10	3.56	30.66	54.00	-23.34

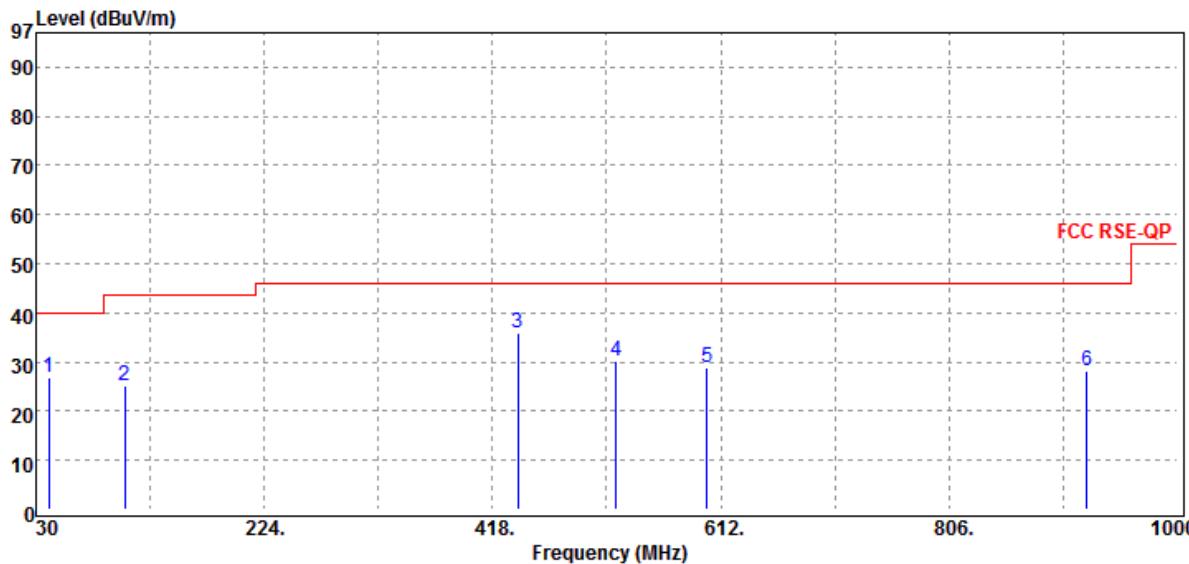
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**Radiated Spurious Emission Measurement Result (802.11-HT40)**

Operation Band	: 802.11 n40M	Test Date	: 2015-02-24
Fundamental Frequency	: 2422 MHz	Temp./Humi.	: 21 deg_C / 61 RH
Operation Mode	: TX LOW	Engineer	: Curry
EUT Pol.	: H Plane	Measurement Antenna Pol.	: VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
			Level dB $\mu$ V				
40.67	S	Peak	36.64	-9.72	26.92	40.00	-13.08
105.66	S	Peak	38.08	-13.05	25.03	43.50	-18.47
439.34	S	Peak	41.92	-5.84	36.08	46.00	-9.92
522.76	S	Peak	34.37	-4.33	30.04	46.00	-15.96
600.36	S	Peak	30.92	-2.05	28.87	46.00	-17.13
923.37	S	Peak	25.76	2.54	28.30	46.00	-17.70

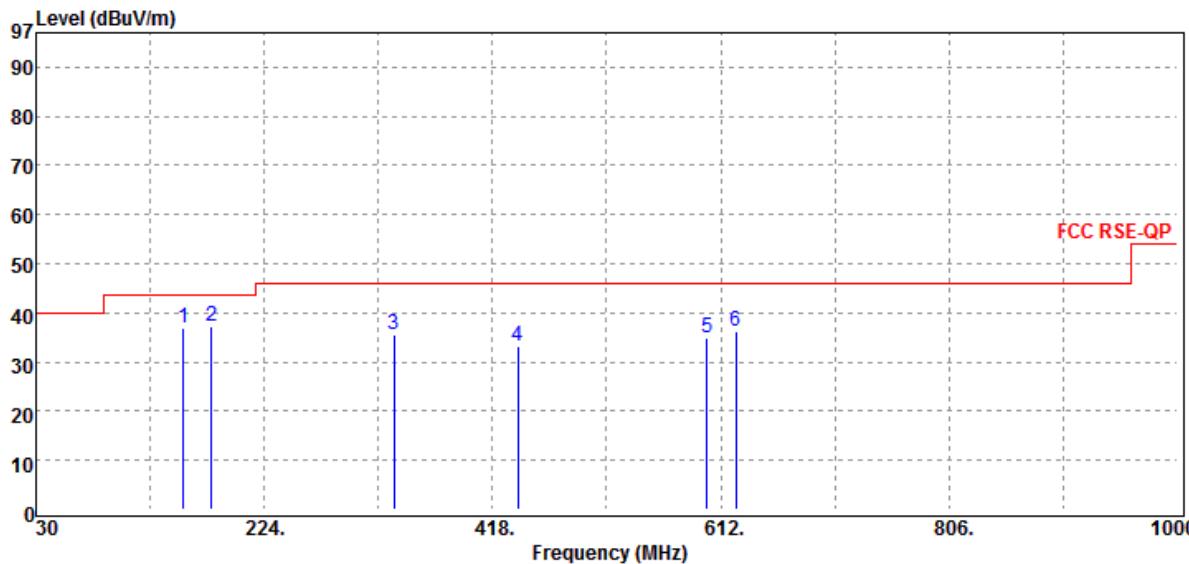
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Operation Band : 802.11 n40M  
 Fundamental Frequency : 2422 MHz  
 Operation Mode : TX LOW  
 EUT Pol. : H Plane

Test Date : 2015-02-24  
 Temp./Humi. : 21 deg\_C / 61 RH  
 Engineer : Curry  
 Measurement Antenna Pol. : HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading	Factor	Actual FS	Limit	Margin
						dB $\mu$ V/m	dB $\mu$ V/m
155.13	S	Peak	45.79	-9.03	36.76	43.50	-6.74
179.38	S	Peak	47.60	-10.47	37.13	43.50	-6.37
334.58	S	Peak	43.33	-7.63	35.70	46.00	-10.30
439.34	S	Peak	39.08	-5.84	33.24	46.00	-12.76
600.36	S	Peak	37.07	-2.05	35.02	46.00	-10.98
624.61	S	Peak	39.46	-3.07	36.39	46.00	-9.61

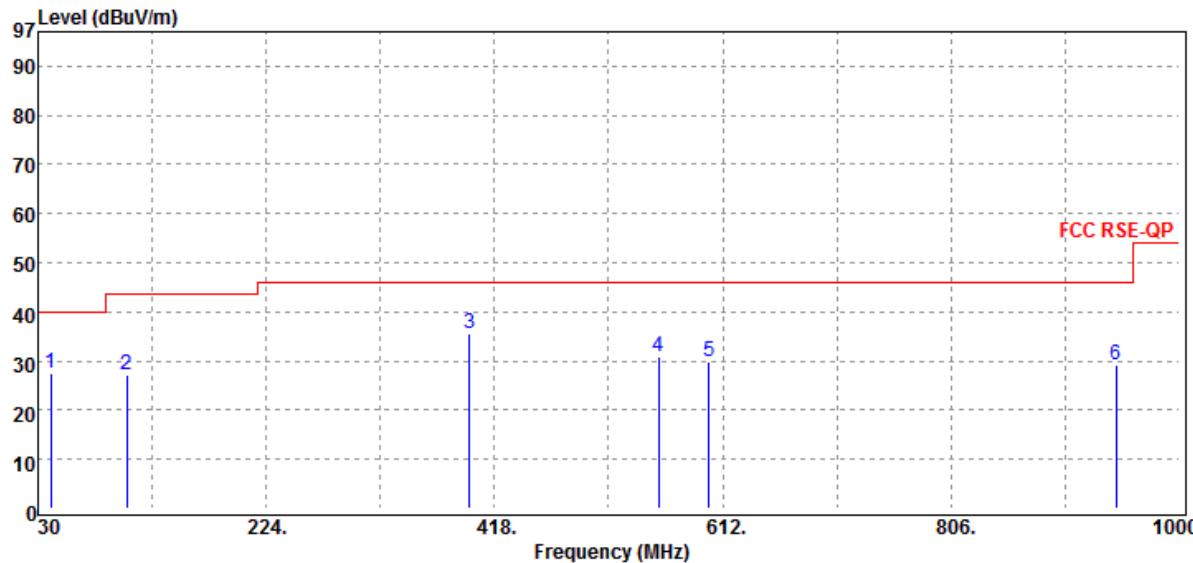
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Operation Band : 802.11 n40M  
 Fundamental Frequency : 2437 MHz  
 Operation Mode : TX MID  
 EUT Pol. : H Plane

Test Date : 2015-02-24  
 Temp./Humi. : 21 deg\_C / 61 RH  
 Engineer : Curry  
 Measurement Antenna Pol. : VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
						Limit @3m dB $\mu$ V/m	Margin dB
40.67	S	Peak	37.32	-9.72	27.60	40.00	-12.40
105.66	S	Peak	40.32	-13.05	27.27	43.50	-16.23
396.66	S	Peak	41.61	-6.06	35.55	46.00	-10.45
557.68	S	Peak	34.68	-3.89	30.79	46.00	-15.21
600.36	S	Peak	31.82	-2.05	29.77	46.00	-16.23
946.65	S	Peak	26.20	3.16	29.36	46.00	-16.64

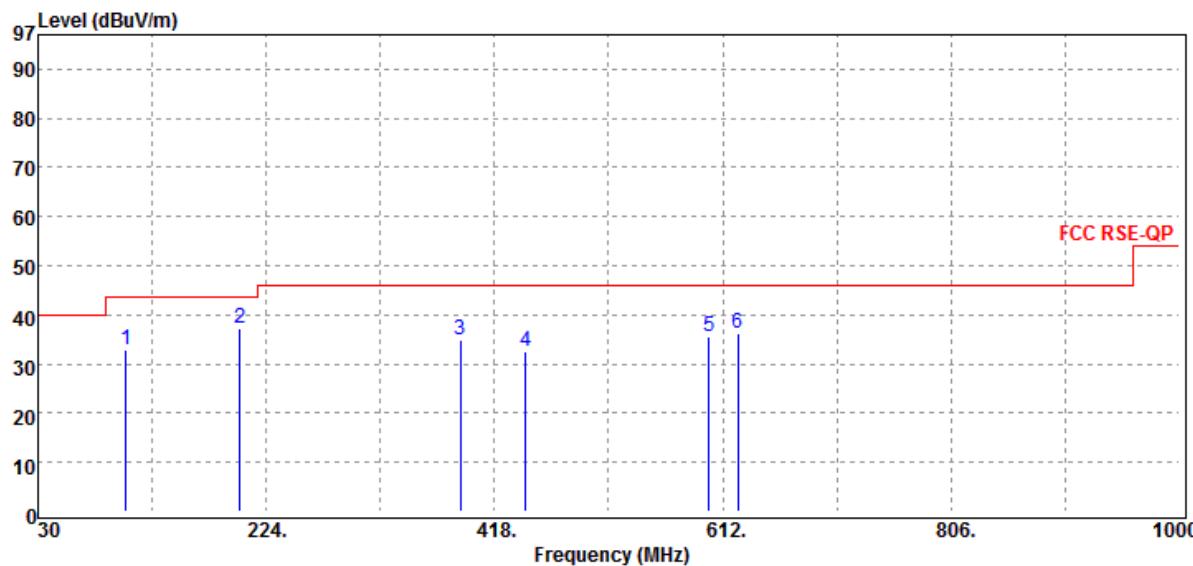
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Operation Band : 802.11 n40M  
 Fundamental Frequency : 2437 MHz  
 Operation Mode : TX MID  
 EUT Pol. : H Plane

Test Date : 2015-02-24  
 Temp./Humi. : 21 deg\_C / 61 RH  
 Engineer : Curry  
 Measurement Antenna Pol. : HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
						Margin dB	Margin dB
104.69	S	Peak	46.13	-13.26	32.87	43.50	-10.63
201.69	S	Peak	48.90	-11.69	37.21	43.50	-6.29
388.90	S	Peak	41.21	-6.17	35.04	46.00	-10.96
444.19	S	Peak	38.44	-5.78	32.66	46.00	-13.34
600.36	S	Peak	37.58	-2.05	35.53	46.00	-10.47
624.61	S	Peak	39.36	-3.07	36.29	46.00	-9.71

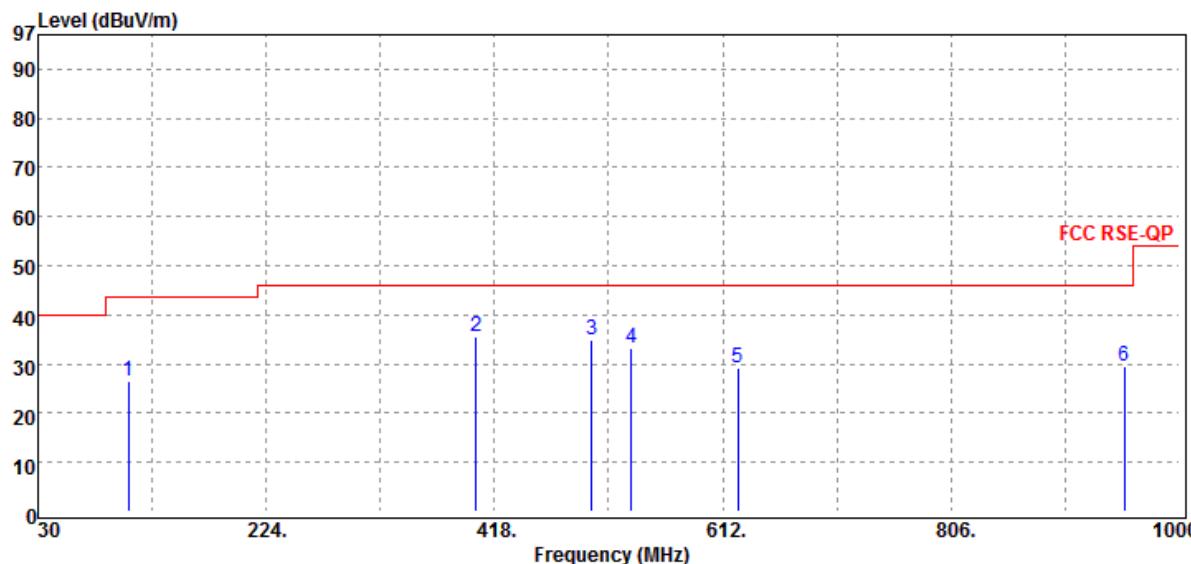
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Operation Band :802.11 n40M  
 Fundamental Frequency :2452 MHz  
 Operation Mode :TX HIGH  
 EUT Pol. :H Plane

Test Date :2015-02-24  
 Temp./Humi. :21 deg\_C / 61 RH  
 Engineer :Curry  
 Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
						Limit @3m dB $\mu$ V/m	Margin dB
106.63	S	Peak	39.45	-12.83	26.62	43.50	-16.88
402.48	S	Peak	41.40	-5.97	35.43	46.00	-10.57
500.45	S	Peak	39.22	-4.34	34.88	46.00	-11.12
534.40	S	Peak	37.16	-4.00	33.16	46.00	-12.84
624.61	S	Peak	32.37	-3.07	29.30	46.00	-16.70
953.44	S	Peak	26.00	3.45	29.45	46.00	-16.55

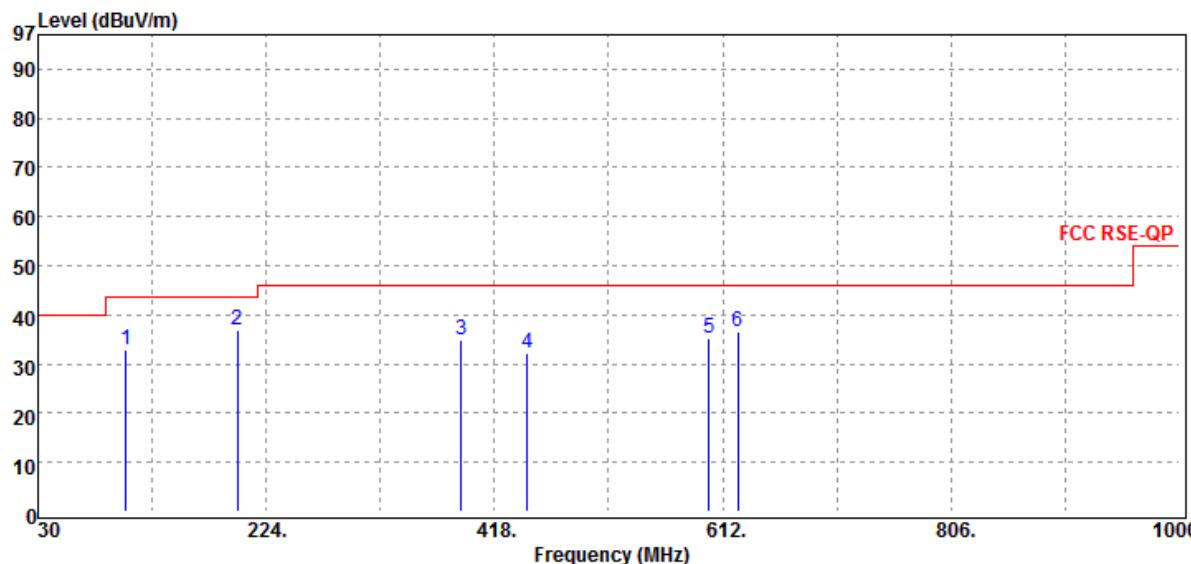
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Operation Band :802.11 n40M  
 Fundamental Frequency :2452 MHz  
 Operation Mode :TX HIGH  
 EUT Pol. :H Plane

Test Date :2015-02-24  
 Temp./Humi. :21 deg\_C / 61 RH  
 Engineer :Curry  
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading	Factor	Actual		Margin dB
					PK dB $\mu$ V	FS dB $\mu$ V/m	
104.69	S	Peak	46.21	-13.26	32.95	43.50	-10.55
199.75	S	Peak	48.85	-11.79	37.06	43.50	-6.44
389.87	S	Peak	41.22	-6.15	35.07	46.00	-10.93
446.13	S	Peak	38.13	-5.75	32.38	46.00	-13.62
600.36	S	Peak	37.15	-2.05	35.10	46.00	-10.90
624.61	S	Peak	39.76	-3.07	36.69	46.00	-9.31

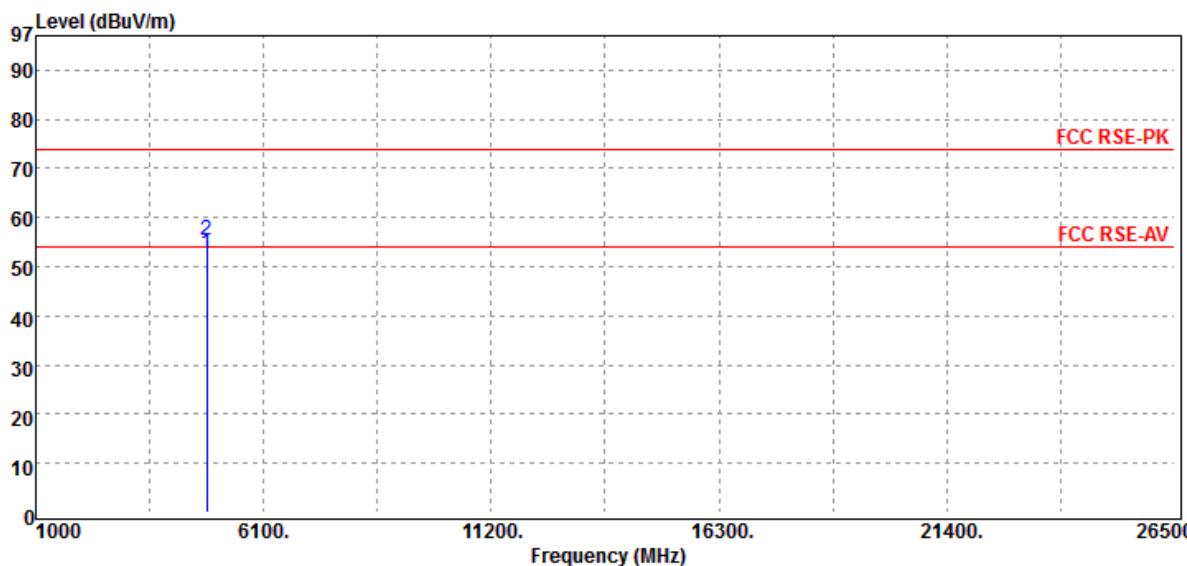
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**Radiated Spurious Emission Measurement Result (802.11 b)****Above 1GHz Worst-Case Data:****Internal Antenna**

Operation Band	:802.11 b	Test Date	:2015-02-24
Fundamental Frequency	:2412 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



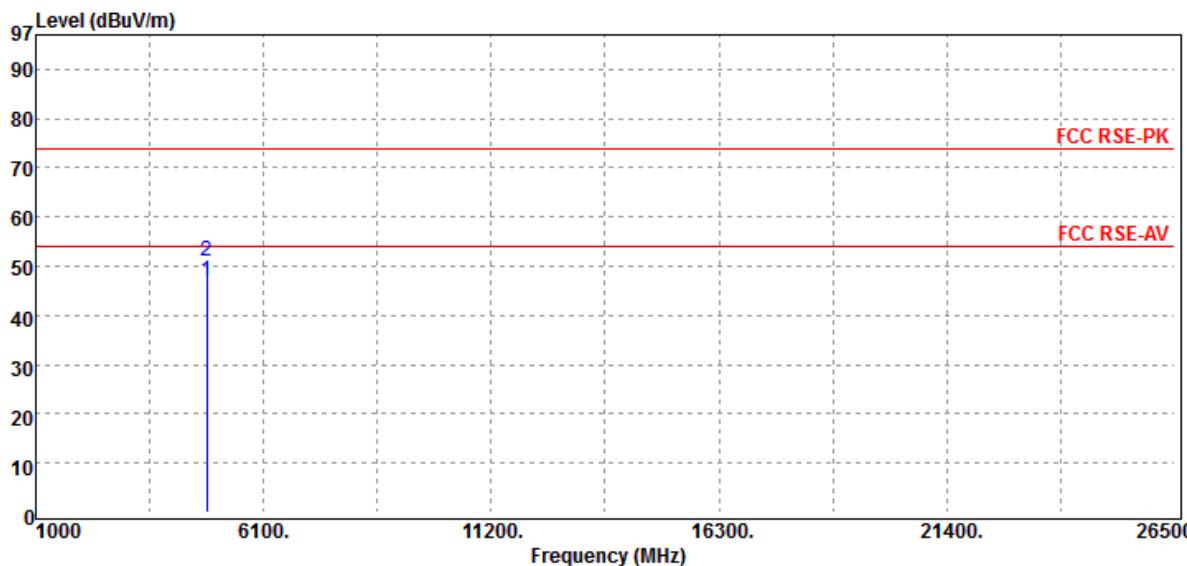
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
		PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
4824.00	H	Average	43.16	9.63	52.79	54.00	-1.21
4824.00	H	Peak	45.78	9.63	55.41	74.00	-18.59

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Operation Band	:802.11 b	Test Date	:2015-02-24
Fundamental Frequency	:2412 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



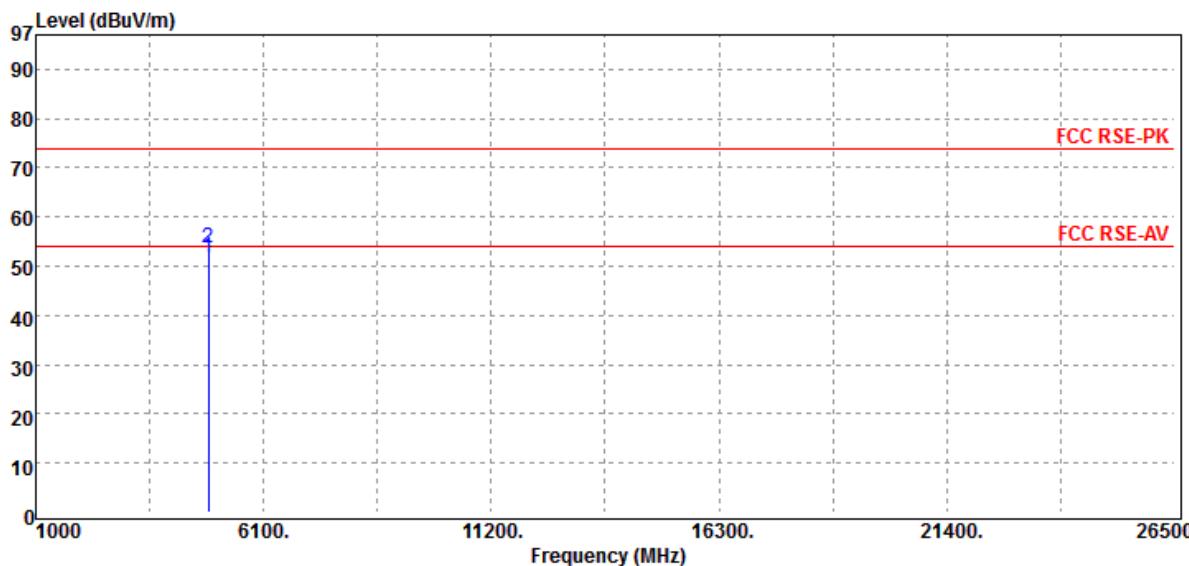
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
						Limit @3m dB $\mu$ V/m	Margin dB
4824.00	H	Average	37.49	9.63	47.12	54.00	-6.88
4824.00	H	Peak	41.55	9.63	51.18	74.00	-22.82

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Operation Band	:802.11 b	Test Date	:2015-02-24
Fundamental Frequency	:2437 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX MID	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



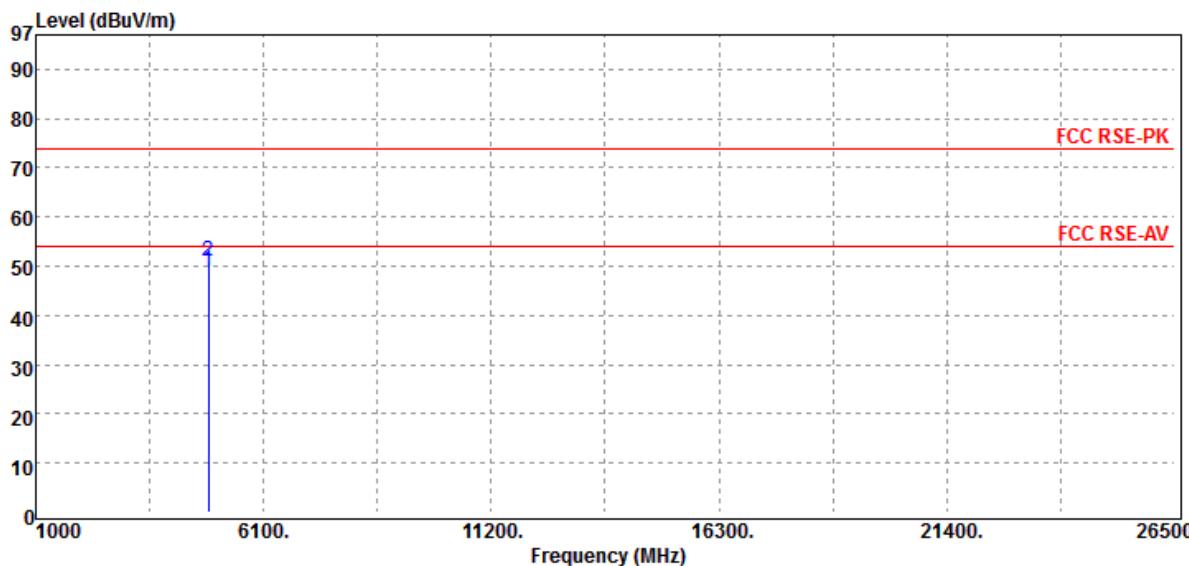
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
		PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
4874.00	H	Average	41.84	9.85	51.69	54.00	-2.31
4874.00	H	Peak	43.70	9.85	53.55	74.00	-20.45

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Operation Band	:802.11 b	Test Date	:2015-02-24
Fundamental Frequency	:2437 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX MID	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



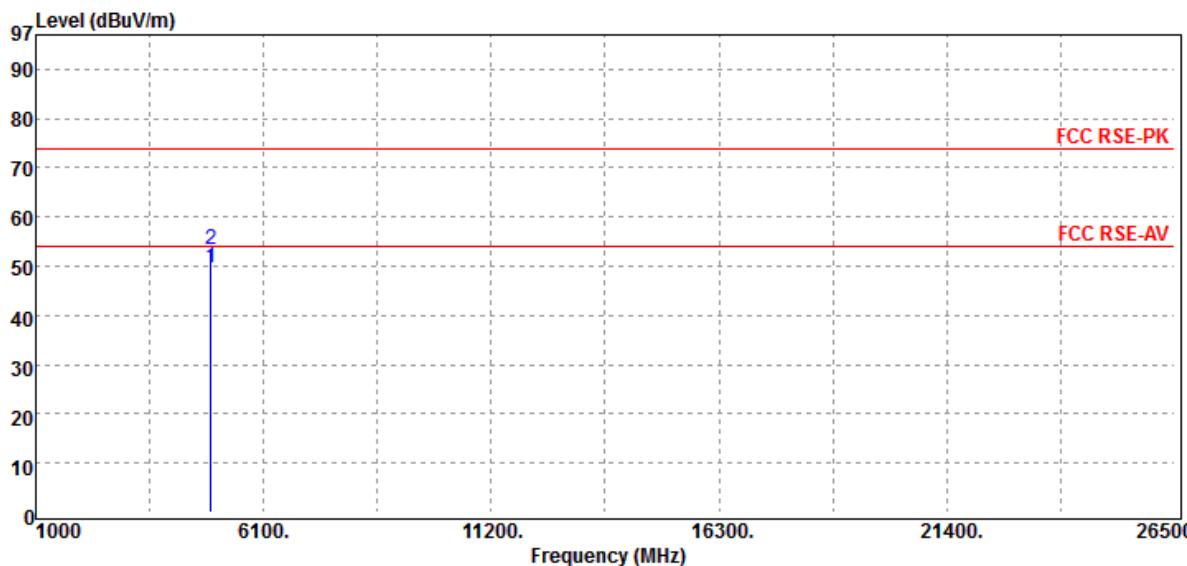
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
		PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
4874.00	H	Average	39.08	9.85	48.93	54.00	-5.07
4874.00	H	Peak	41.16	9.85	51.01	74.00	-22.99

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Operation Band	:802.11 b	Test Date	:2015-02-24
Fundamental Frequency	:2462 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX HIGH	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



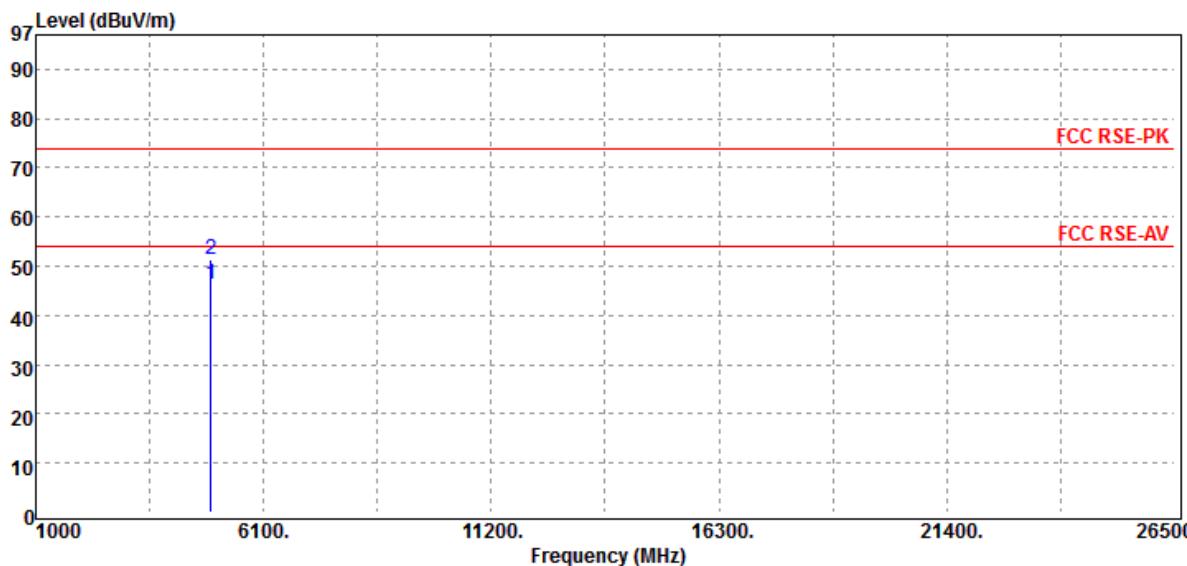
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
		PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
4924.00	H	Average	39.84	9.86	49.70	54.00	-4.30
4924.00	H	Peak	43.67	9.86	53.53	74.00	-20.47

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Operation Band	:802.11 b	Test Date	:2015-02-24
Fundamental Frequency	:2462 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX HIGH	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading Level dB $\mu$ V				
MHz	PK/QP/AV	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
4924.00	H	Average	36.31	9.86	46.17	54.00	-7.83
4924.00	H	Peak	41.51	9.86	51.37	74.00	-22.63

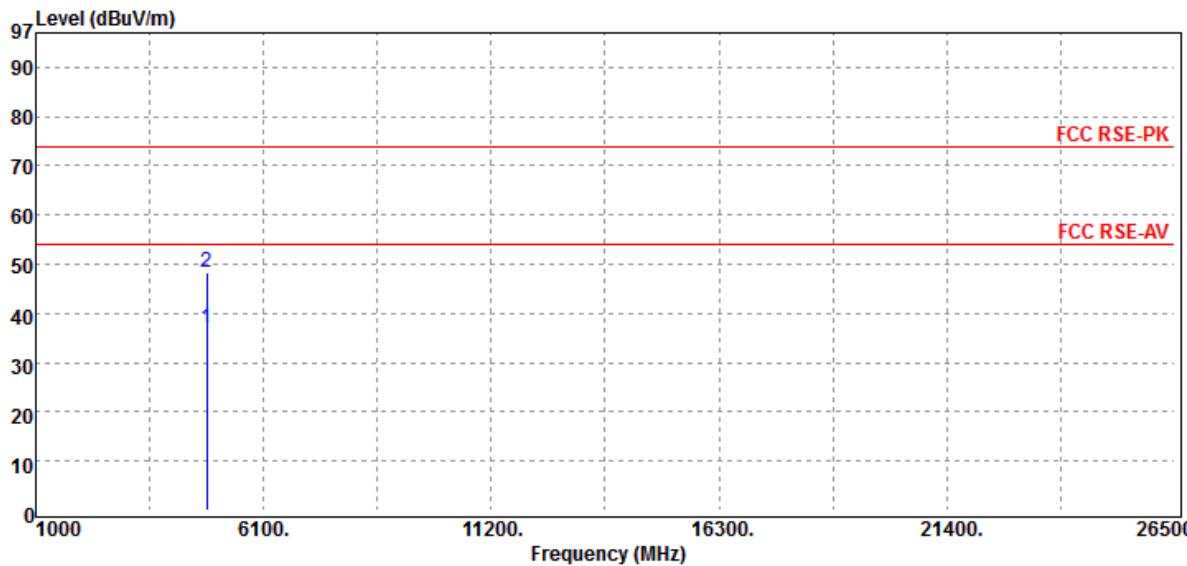
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**Radiated Spurious Emission Measurement Result (802.11 g)**

Operation Band	:802.11 g	Test Date	:2015-02-24
Fundamental Frequency	:2412 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



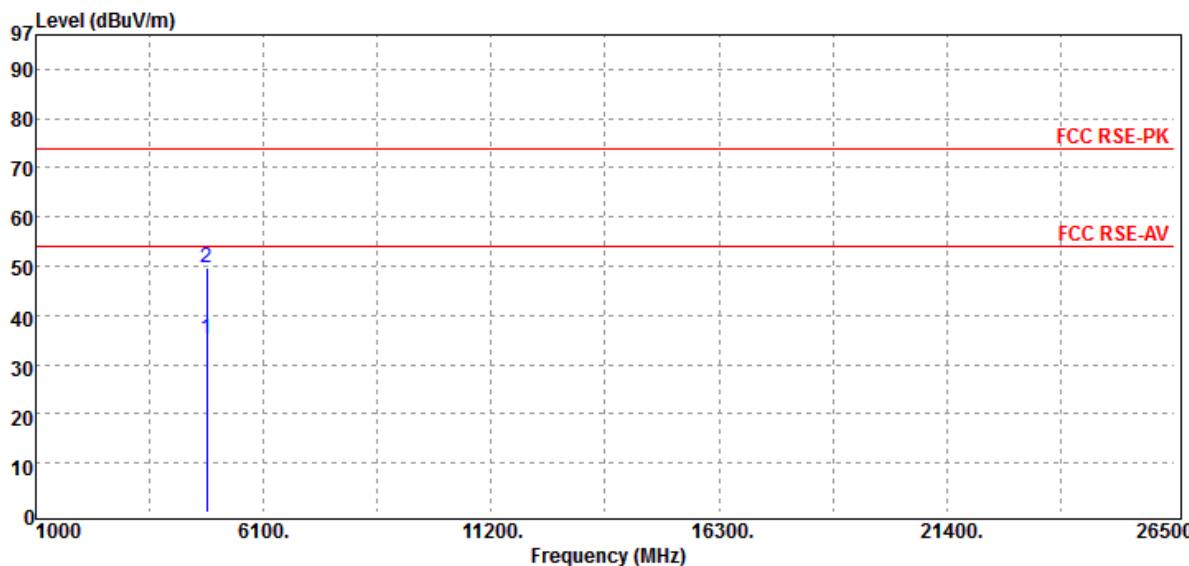
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level		Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
4824.00	H	Average	27.40		9.63	37.03	54.00	-16.97
4824.00	H	Peak	38.61		9.63	48.24	74.00	-25.76

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Operation Band	:802.11 g	Test Date	:2015-02-24
Fundamental Frequency	:2412 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



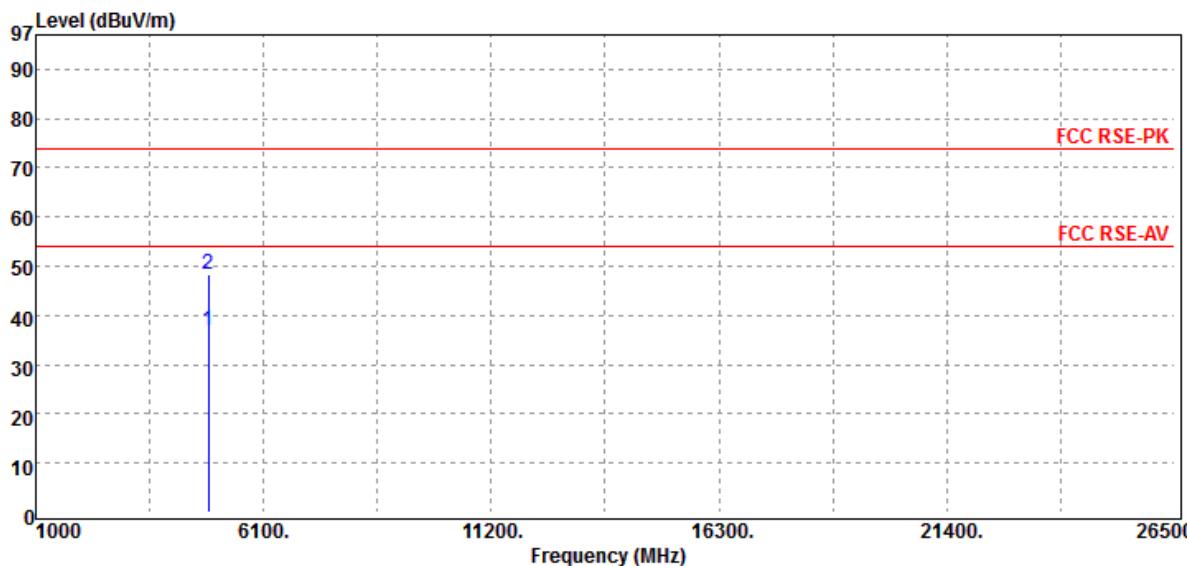
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum	Factor	Actual FS dB	Limit @3m dBuV/m	Margin dB
			Reading Level dB $\mu$ V				
4824.00	H	Average	25.53	9.63	35.16	54.00	-18.84
4824.00	H	Peak	39.92	9.63	49.55	74.00	-24.45

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Operation Band	:802.11 g	Test Date	:2015-02-24
Fundamental Frequency	:2437 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX MID	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



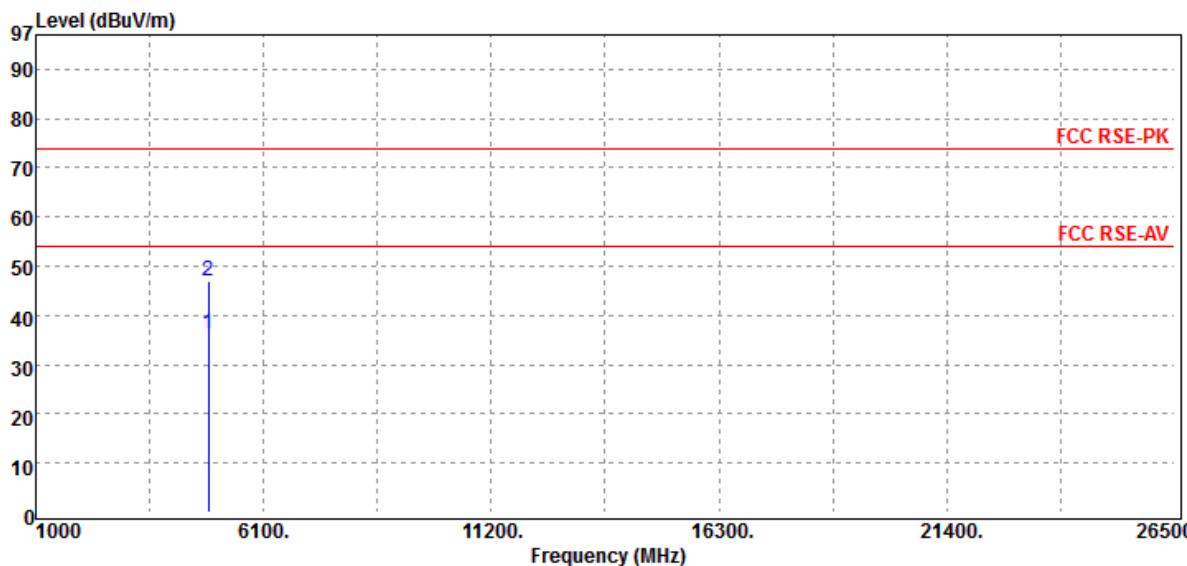
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual	Limit	Margin
					FS dBμV/m	@3m dBμV/m	dB
4874.00	H	Average	27.20	9.85	37.05	54.00	-16.95
4874.00	H	Peak	38.35	9.85	48.20	74.00	-25.80

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Operation Band	:802.11 g	Test Date	:2015-02-24
Fundamental Frequency	:2437 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX MID	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



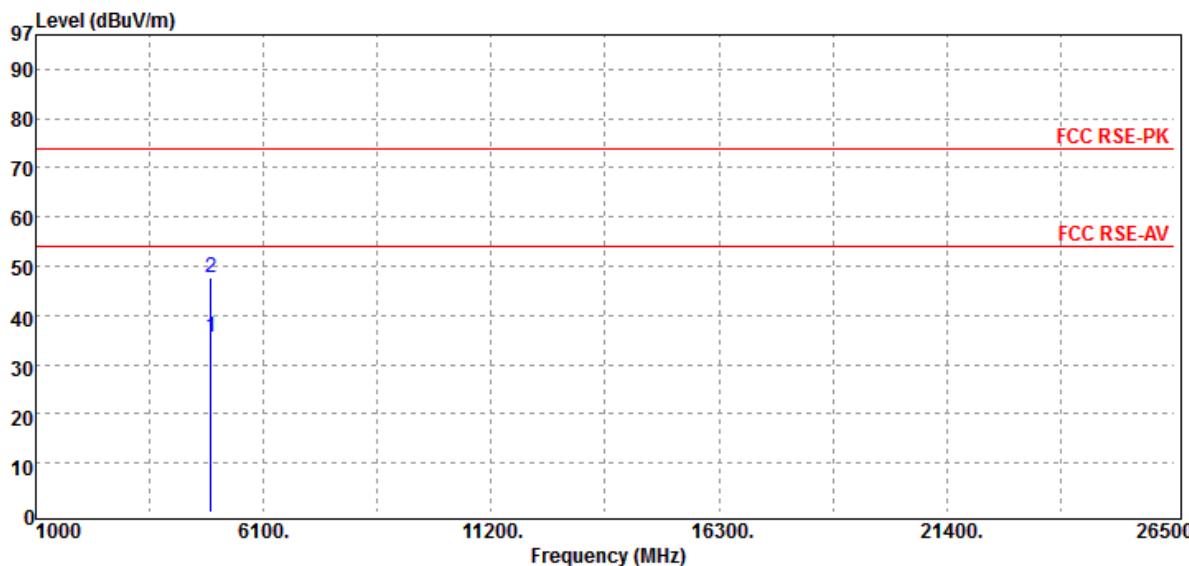
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual	Limit	Margin
					FS dBμV/m	@3m dBμV/m	dB
4874.00	H	Average	26.24	9.85	36.09	54.00	-17.91
4874.00	H	Peak	37.20	9.85	47.05	74.00	-26.95

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Operation Band	:802.11 g	Test Date	:2015-02-24
Fundamental Frequency	:2462 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX HIGH	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



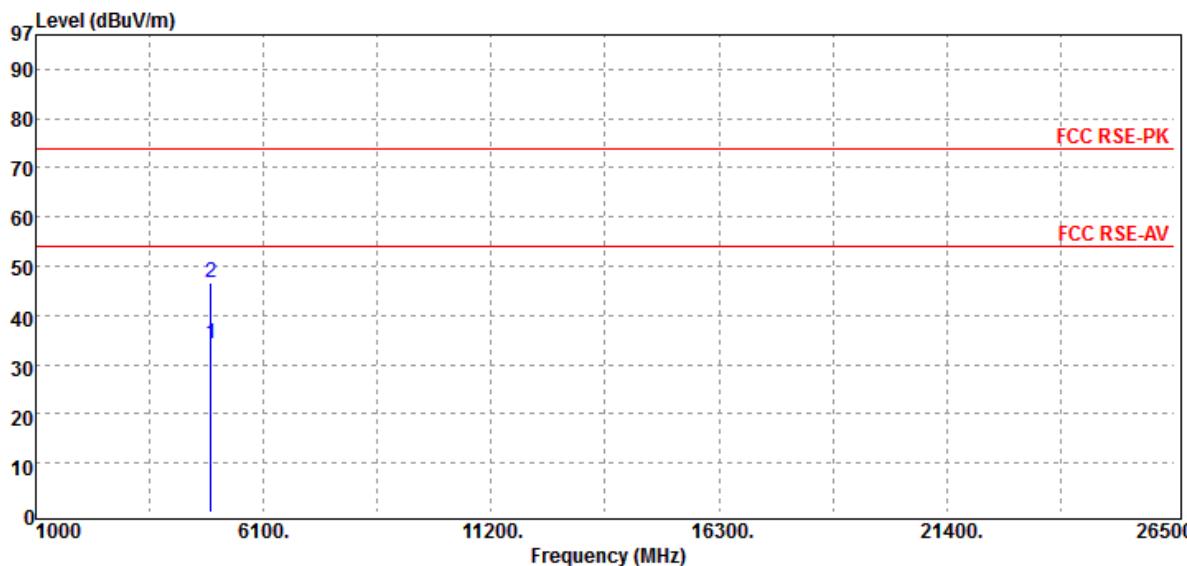
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit @3m dB $\mu$ V/m	Margin dB
					FS dB $\mu$ V/m	dB $\mu$ V/m	
4924.00	H	Average	25.58	9.86	35.44	54.00	-18.56
4924.00	H	Peak	37.68	9.86	47.54	74.00	-26.46

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Operation Band	:802.11 g	Test Date	:2015-02-24
Fundamental Frequency	:2462 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX HIGH	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual	Limit	Margin
			PK/QP/AV		Reading Level dB $\mu$ V	FS dB $\mu$ V/m	@3m dB $\mu$ V/m
4924.00	H	Average		24.33	9.86	34.19	54.00
4924.00	H	Peak		36.84	9.86	46.70	74.00

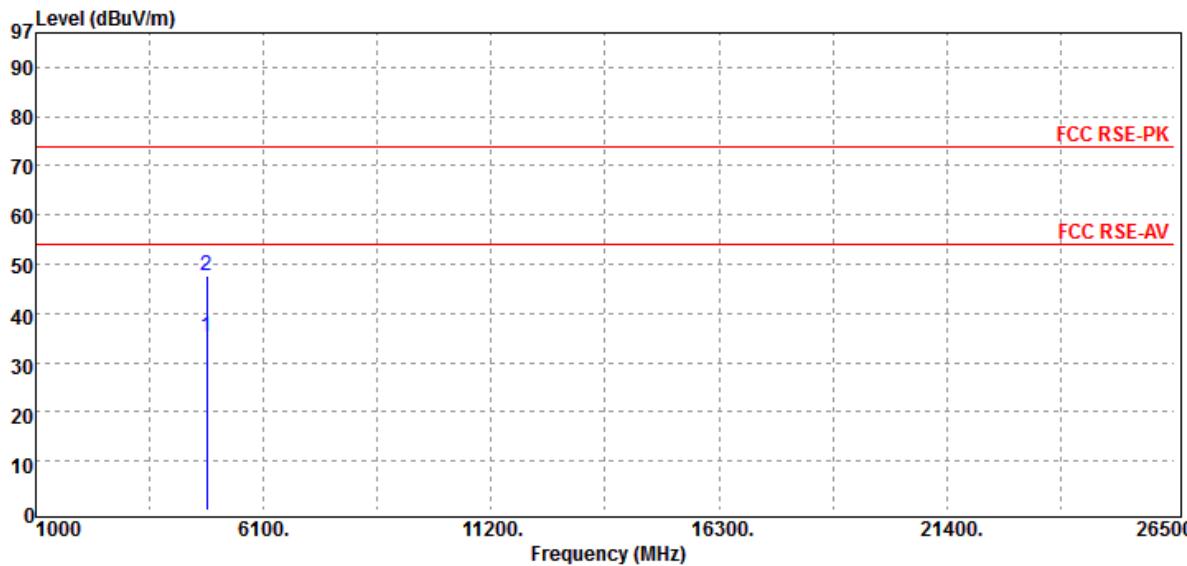
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## Radiated Spurious Emission Measurement Result (802.11\_HT20)

Operation Band	:802.11 n20M	Test Date	:2015-02-24
Fundamental Frequency	:2412 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level		Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
4824.00	H	Average	25.70	9.63	35.33	54.00	-18.67	
4824.00	H	Peak	37.99	9.63	47.62	74.00	-26.38	

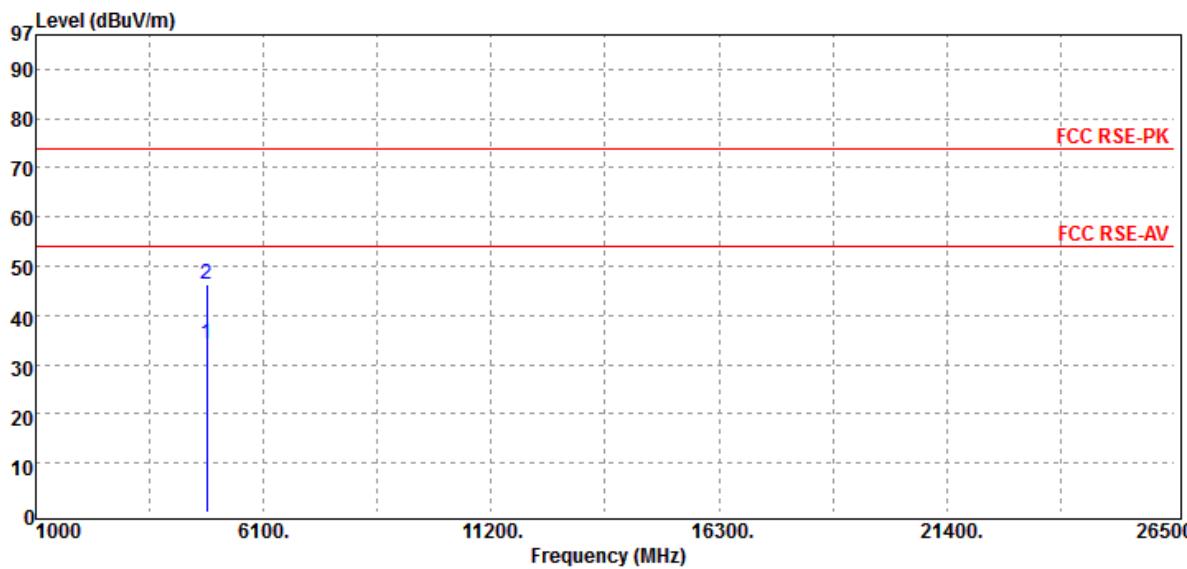
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Operation Band	:802.11 n20M	Test Date	:2015-02-24
Fundamental Frequency	:2412 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



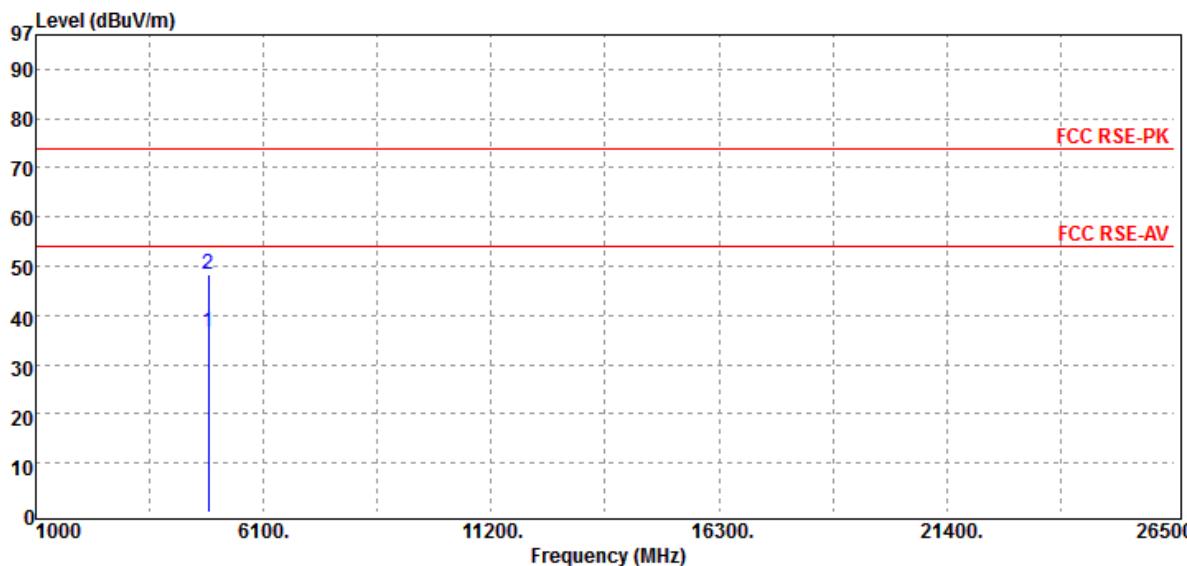
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
		PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
4824.00	H	Average	24.55	9.63	34.18	54.00	-19.82
4824.00	H	Peak	36.84	9.63	46.47	74.00	-27.53

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Operation Band	:802.11 n20M	Test Date	:2015-02-24
Fundamental Frequency	:2437 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX MID	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



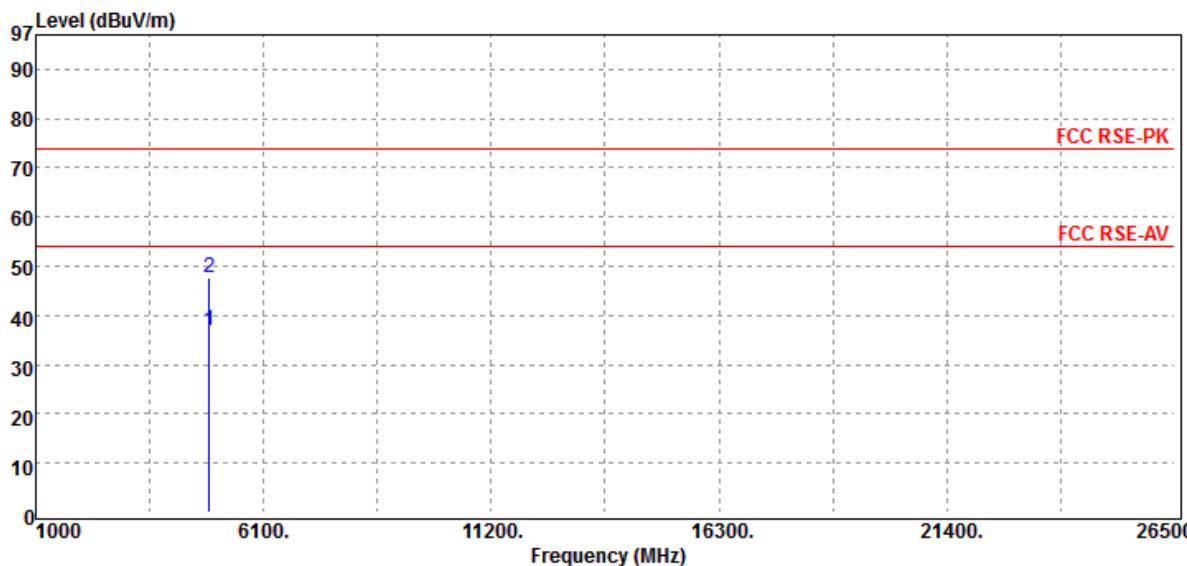
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
					FS dB $\mu$ V/m	@3m dB $\mu$ V/m	dB
4874.00	H	Average	26.63	9.85	36.48	54.00	-17.52
4874.00	H	Peak	38.55	9.85	48.40	74.00	-25.60

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Operation Band	:802.11 n20M	Test Date	:2015-02-24
Fundamental Frequency	:2437 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX MID	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



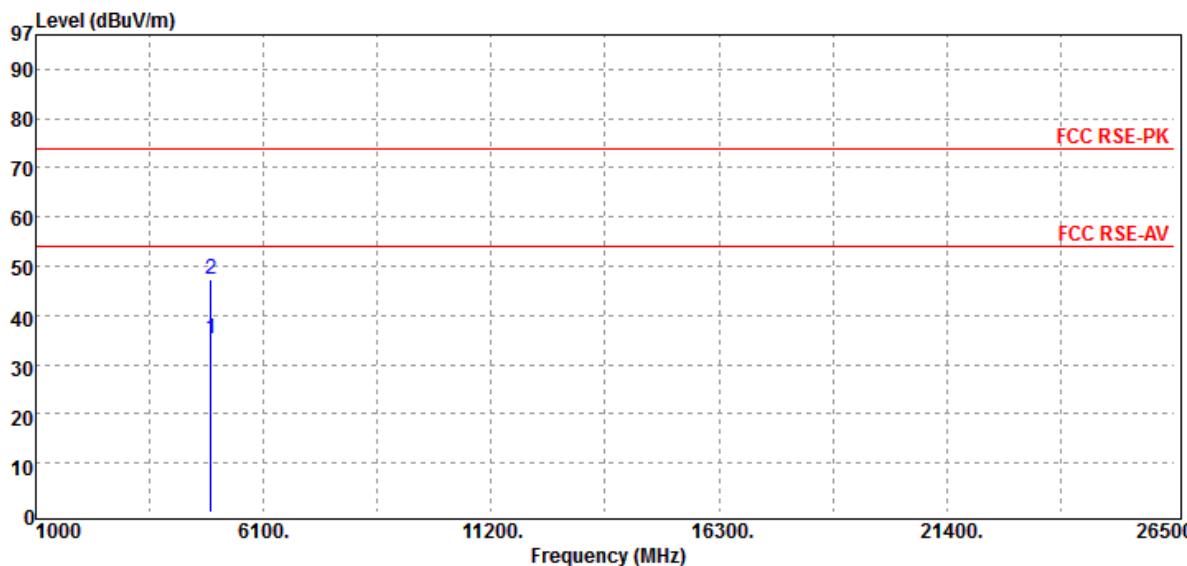
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual	Limit	Margin
					FS dBμV/m	@3m dBμV/m	dB
4878.00	H	Average	27.21	9.85	37.06	54.00	-16.94
4878.00	H	Peak	37.78	9.85	47.63	74.00	-26.37

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Operation Band	:802.11 n20M	Test Date	:2015-02-24
Fundamental Frequency	:2462 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX HIGH	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



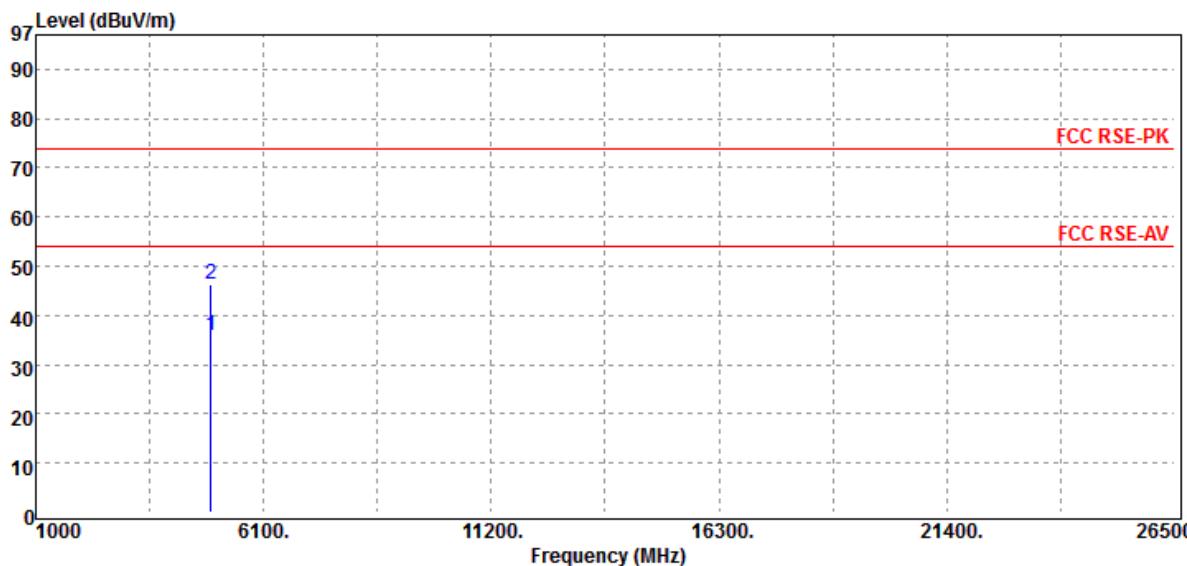
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit FS dB $\mu$ V/m	Margin
					Margin		
4924.00	H	Average	25.53	9.86	35.39	54.00	-18.61
4924.00	H	Peak	37.35	9.86	47.21	74.00	-26.79

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Operation Band	:802.11 n20M	Test Date	:2015-02-24
Fundamental Frequency	:2462 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX HIGH	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
		PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
4924.00	H	Average	26.11	9.86	35.97	54.00	-18.03
4924.00	H	Peak	36.50	9.86	46.36	74.00	-27.64

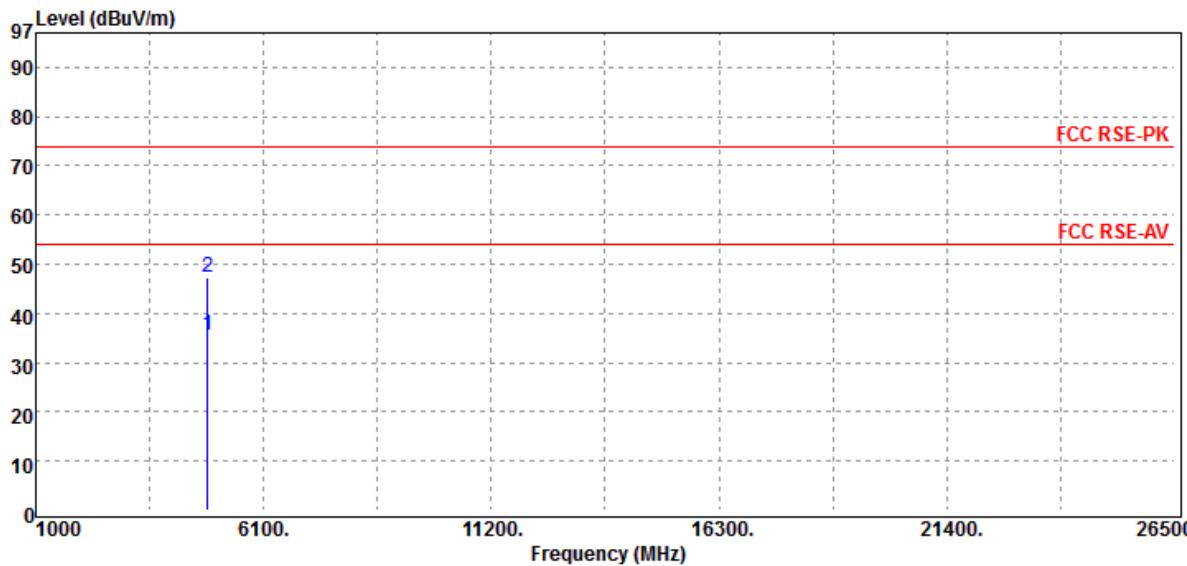
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## Radiated Spurious Emission Measurement Result (802.11\_HT40)

Operation Band	:802.11 n40M	Test Date	:2015-02-24
Fundamental Frequency	:2422 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level		Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
4844.00	H	Average	25.70	9.74	35.44	54.00	-18.56	
4844.00	H	Peak	37.43	9.74	47.17	74.00	-26.83	

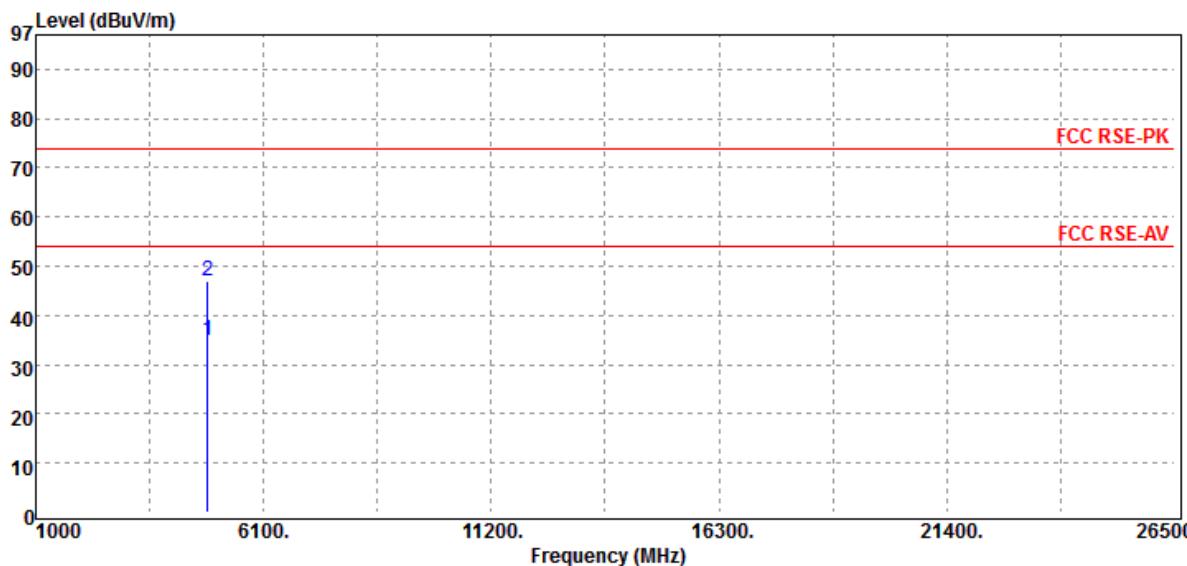
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Operation Band	:802.11 n40M	Test Date	:2015-02-24
Fundamental Frequency	:2422 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



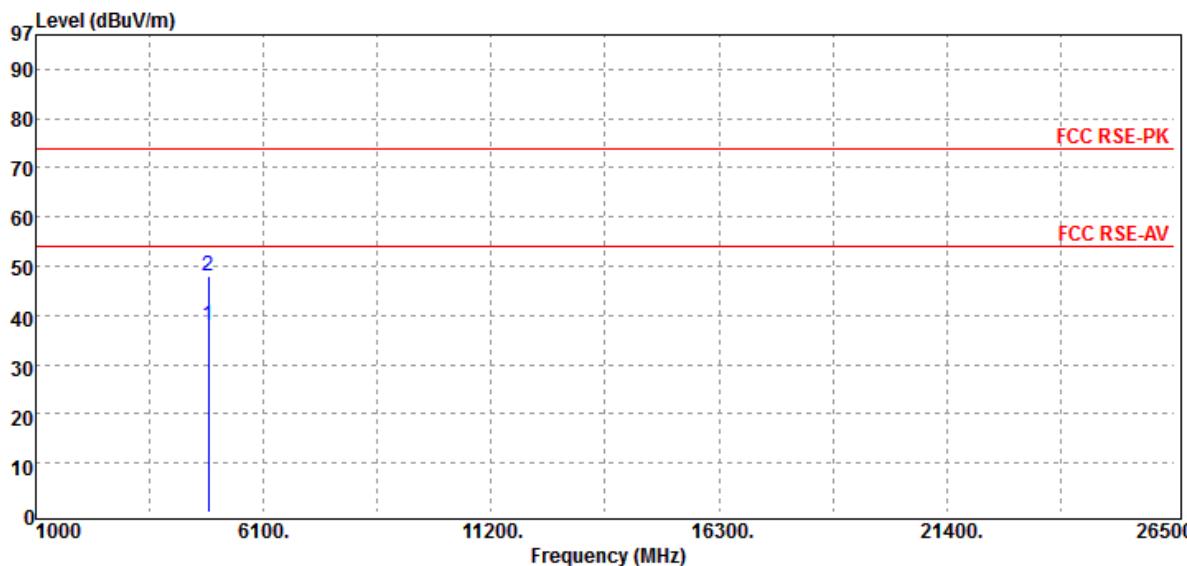
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
					FS dB $\mu$ V/m	@3m dB $\mu$ V/m	dB
4844.00	H	Average	25.15	9.74	34.89	54.00	-19.11
4844.00	H	Peak	37.24	9.74	46.98	74.00	-27.02

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Operation Band	:802.11 n40M	Test Date	:2015-02-24
Fundamental Frequency	:2437 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX MID	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



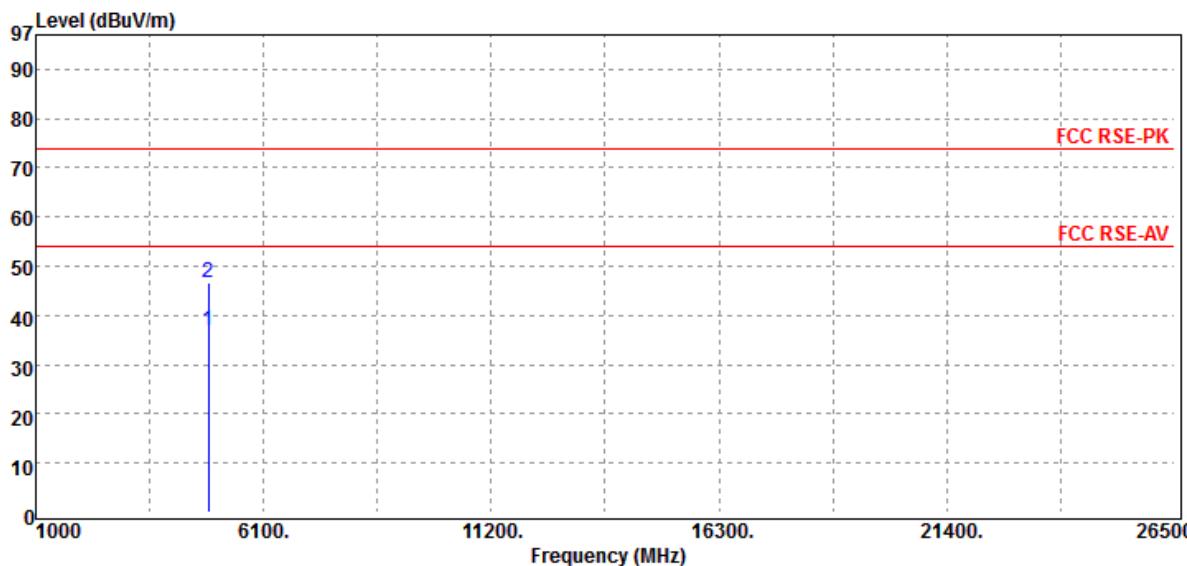
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit FS dB $\mu$ V/m	Margin
					FS dB $\mu$ V/m	@3m dB $\mu$ V/m	dB
4874.00	H	Average	28.24	9.85	38.09	54.00	-15.91
4874.00	H	Peak	38.27	9.85	48.12	74.00	-25.88

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Operation Band	:802.11 n40M	Test Date	:2015-02-24
Fundamental Frequency	:2437 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX MID	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



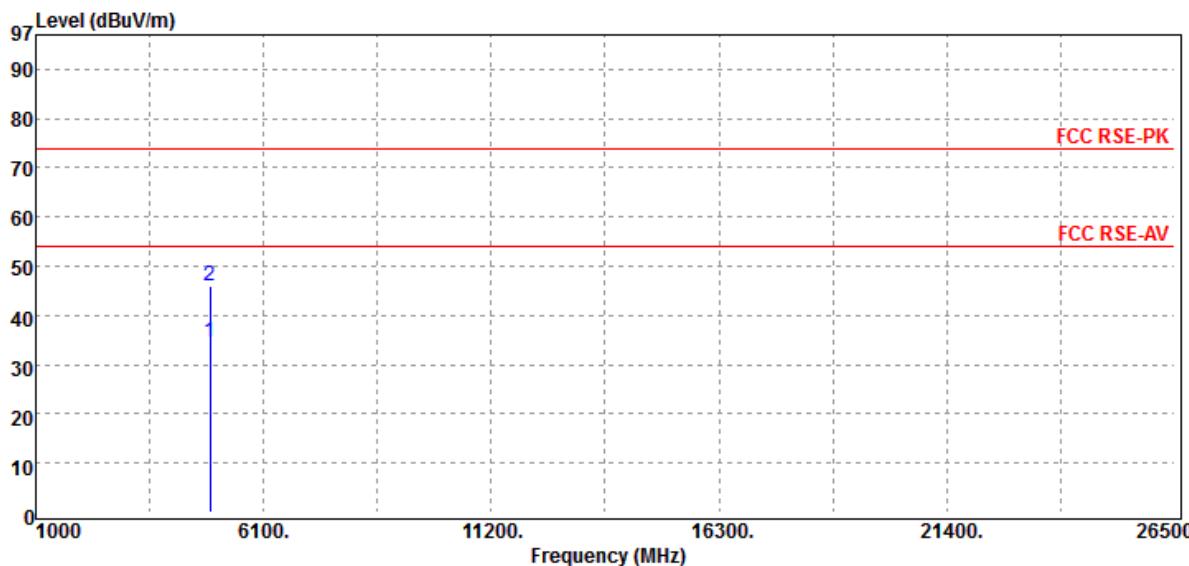
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
		PK/QP/AV	dBμV	dB	dBuV/m	dBuV/m	dB
4874.00	H	Average	27.04	9.85	36.89	54.00	-17.11
4874.00	H	Peak	36.66	9.85	46.51	74.00	-27.49

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Operation Band	:802.11 n40M	Test Date	:2015-02-24
Fundamental Frequency	:2452 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX HIGH	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



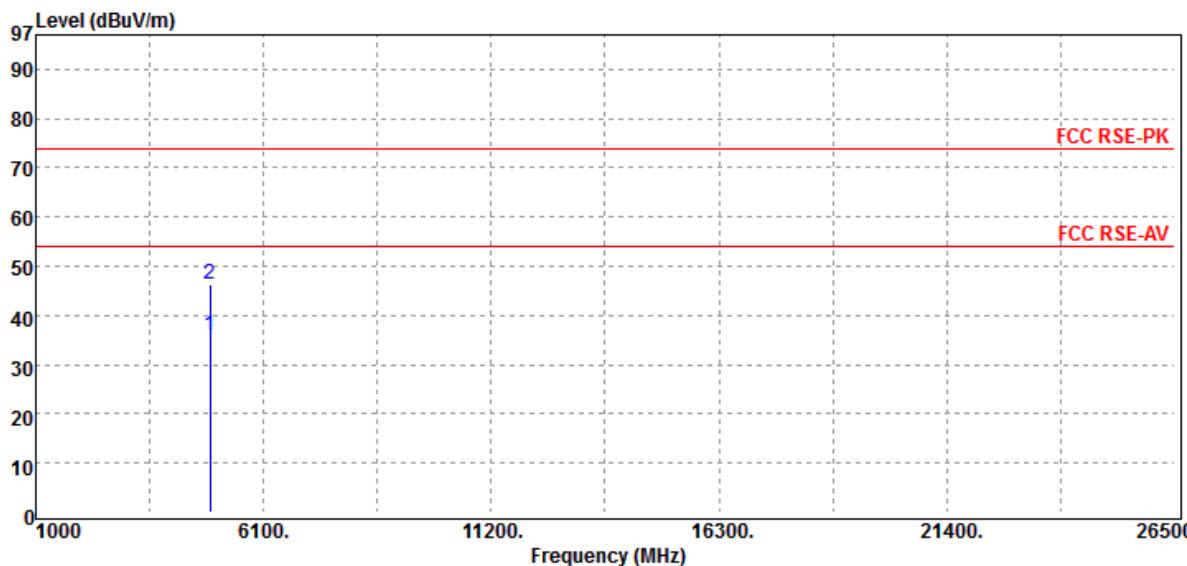
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
					FS dB $\mu$ V/m	@3m dB $\mu$ V/m	dB
4904.00	H	Average	24.72	9.84	34.56	54.00	-19.44
4904.00	H	Peak	36.13	9.84	45.97	74.00	-28.03

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Operation Band	:802.11 n40M	Test Date	:2015-02-24
Fundamental Frequency	:2452 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX HIGH	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
					FS dB $\mu$ V/m	@3m dB $\mu$ V/m	dB
4904.00	H	Average	26.16	9.84	36.00	54.00	-18.00
4904.00	H	Peak	36.48	9.84	46.32	74.00	-27.68

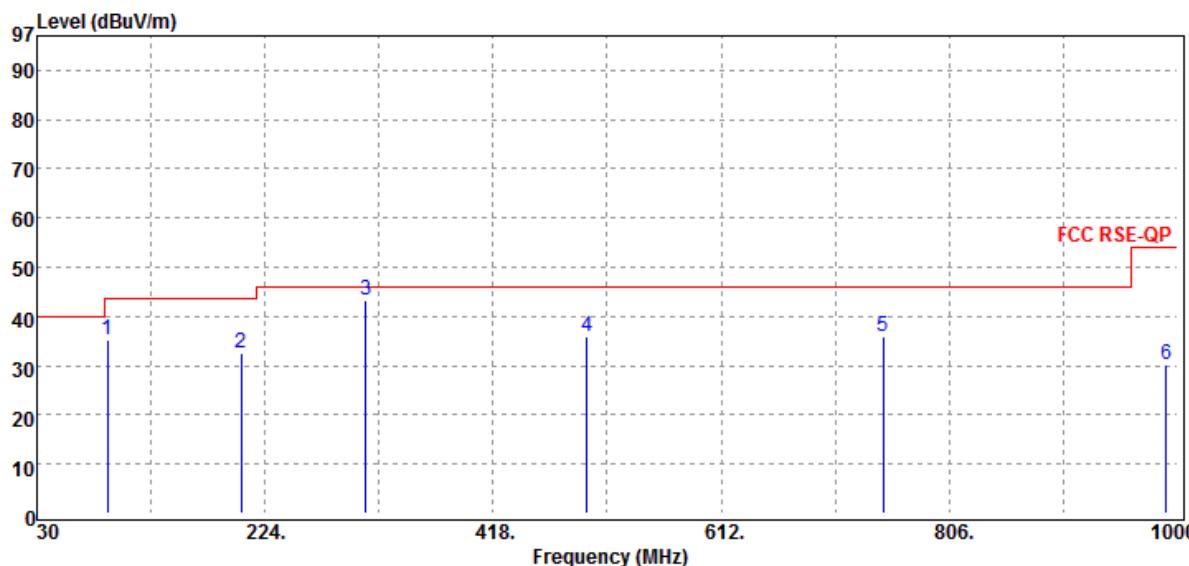
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**Radiated Spurious Emission Measurement Result (802.11 g)****Below 1GHz Worst-Case Data:****External Antenna**

Operation Band	:802.11 g	Test Date	:2015-02-24
Fundamental Frequency	:2412 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit @3m dB $\mu$ V/m	Margin dB
					FS dB $\mu$ V/m		
90.14	S	Peak	50.70	-15.48	35.22	43.50	-8.28
203.63	S	Peak	44.12	-11.57	32.55	43.50	-10.95
309.36	S	Peak	51.08	-7.67	43.41	46.00	-2.59
497.54	S	Peak	40.34	-4.35	35.99	46.00	-10.01
749.74	S	Peak	35.53	0.27	35.80	46.00	-10.20
990.30	S	Peak	26.64	3.42	30.06	54.00	-23.94

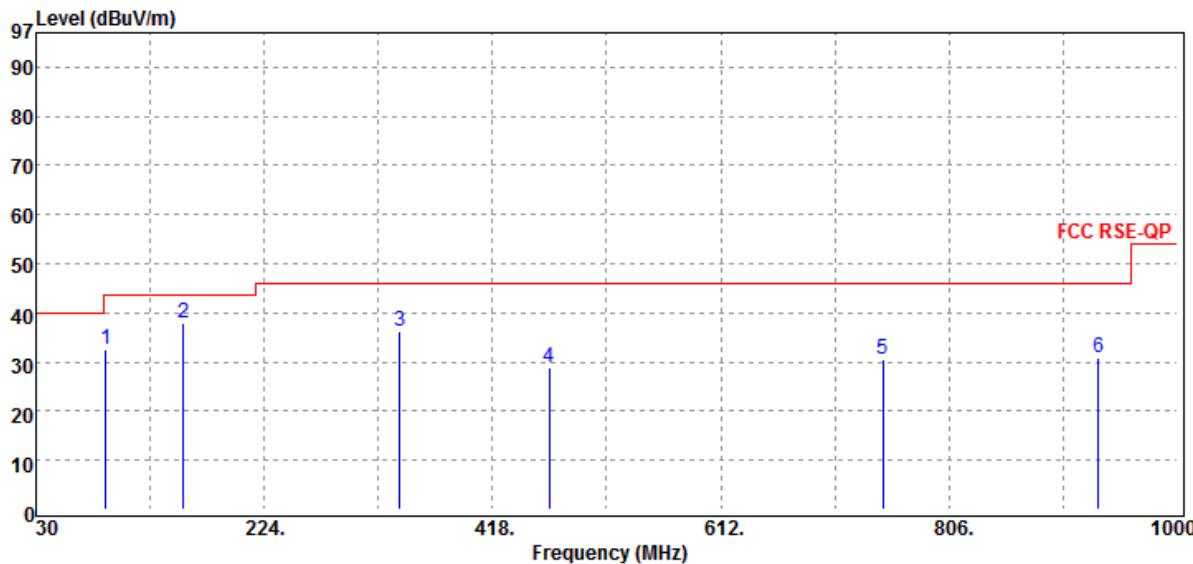
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Operation Band :802.11 g  
 Fundamental Frequency :2412 MHz  
 Operation Mode :TX LOW  
 EUT Pol. :H Plane

Test Date :2015-02-24  
 Temp./Humi. :21 deg\_C / 61 RH  
 Engineer :Curry  
 Measurement Antenna Pol. :HORIZONTAL



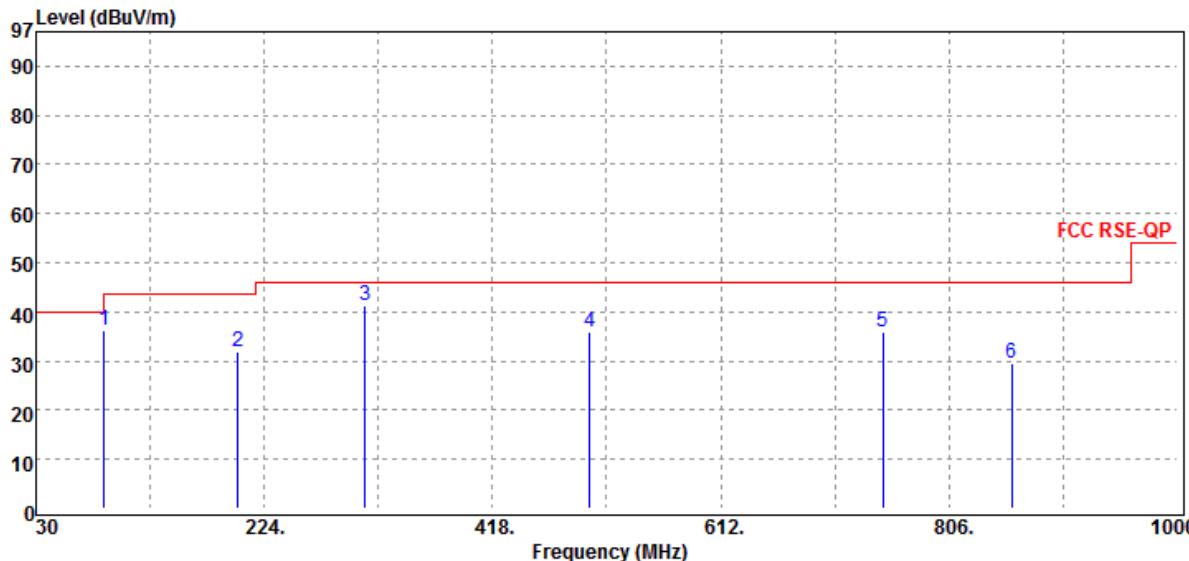
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading	Factor	Actual FS	Limit	Margin
						dB $\mu$ V/m	dB $\mu$ V/m
89.17	S	Peak	47.88	-15.33	32.55	43.50	-10.95
155.13	S	Peak	46.93	-9.03	37.90	43.50	-5.60
339.43	S	Peak	43.82	-7.51	36.31	46.00	-9.69
466.50	S	Peak	34.17	-5.26	28.91	46.00	-17.09
749.74	S	Peak	30.42	0.27	30.69	46.00	-15.31
933.07	S	Peak	28.10	2.79	30.89	46.00	-15.11

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Operation Band	:802.11 g	Test Date	:2015-02-24
Fundamental Frequency	:2437 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX MID	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



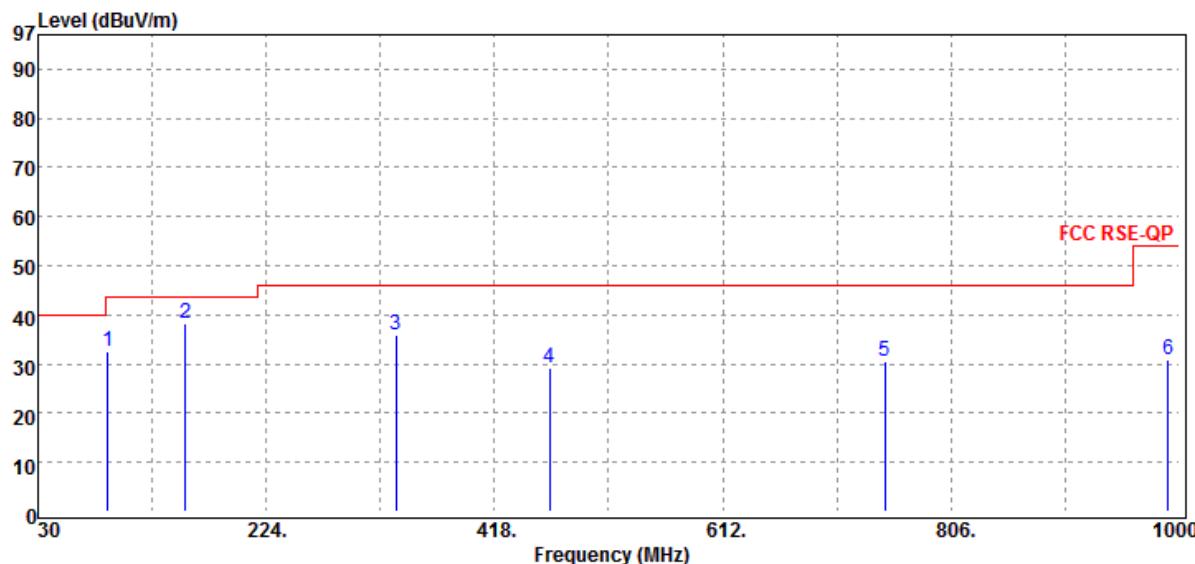
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
					FS dB $\mu$ V/m	@3m dB $\mu$ V/m	dB
88.20	S	Peak	51.38	-15.13	36.25	43.50	-7.25
201.69	S	Peak	43.70	-11.69	32.01	43.50	-11.49
309.36	S	Peak	48.93	-7.67	41.26	46.00	-4.74
500.45	S	Peak	40.30	-4.34	35.96	46.00	-10.04
749.74	S	Peak	35.59	0.27	35.86	46.00	-10.14
859.35	S	Peak	27.60	1.96	29.56	46.00	-16.44

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Operation Band	:802.11 g	Test Date	:2015-02-24
Fundamental Frequency	:2437 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX MID	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
						Limit @3m dB $\mu$ V/m	Margin dB
89.17	S	Peak	47.84	-15.33	32.51	43.50	-10.99
155.13	S	Peak	47.40	-9.03	38.37	43.50	-5.13
334.58	S	Peak	43.53	-7.63	35.90	46.00	-10.10
464.56	S	Peak	34.59	-5.35	29.24	46.00	-16.76
749.74	S	Peak	30.33	0.27	30.60	46.00	-15.40
990.30	S	Peak	27.44	3.42	30.86	54.00	-23.14

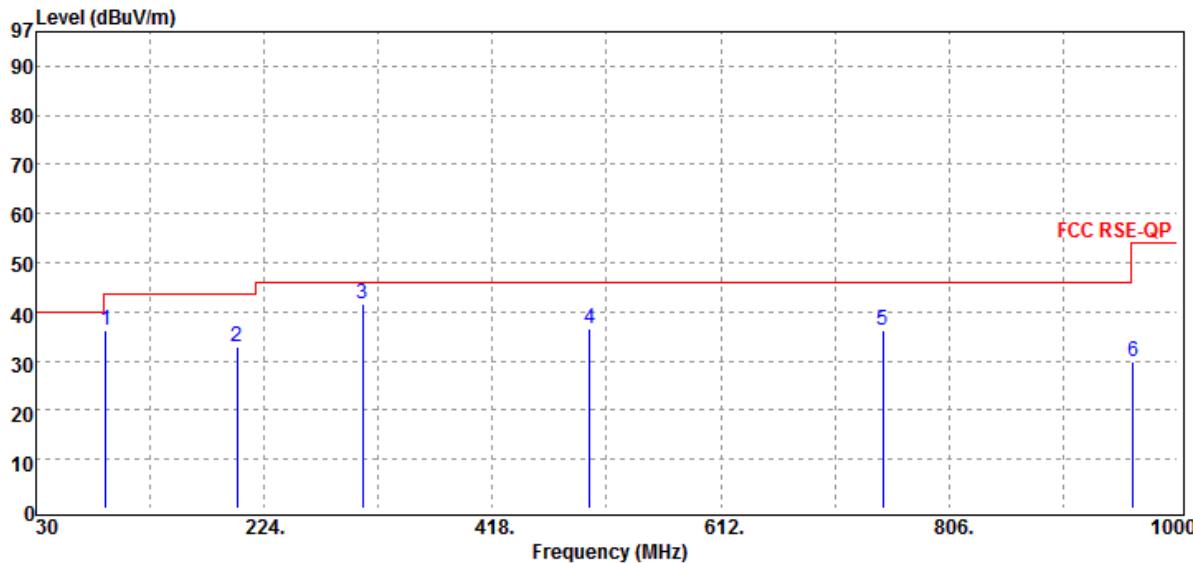
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Operation Band :802.11 g  
 Fundamental Frequency :2462 MHz  
 Operation Mode :TX HIGH  
 EUT Pol. :H Plane

Test Date :2015-02-24  
 Temp./Humi. :21 deg\_C / 61 RH  
 Engineer :Curry  
 Measurement Antenna Pol. :VERTICAL



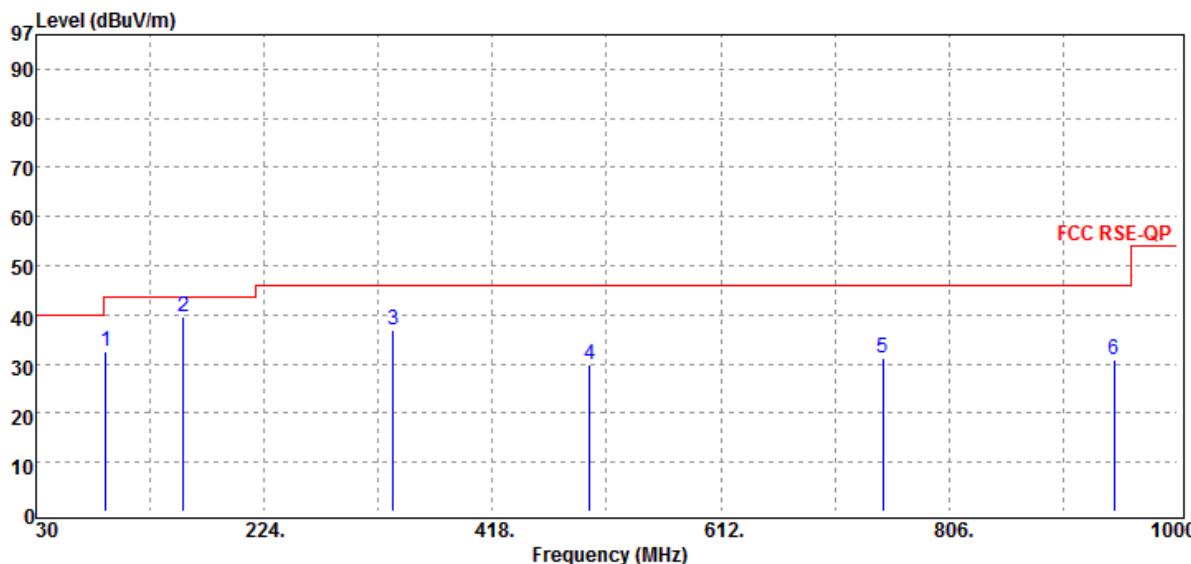
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
						Limit @3m dB $\mu$ V/m	Margin dB
89.17	S	Peak	51.50	-15.33	36.17	43.50	-7.33
200.72	S	Peak	44.74	-11.77	32.97	43.50	-10.53
307.42	S	Peak	49.46	-7.72	41.74	46.00	-4.26
500.45	S	Peak	40.80	-4.34	36.46	46.00	-9.54
749.74	S	Peak	35.95	0.27	36.22	46.00	-9.78
962.17	S	Peak	26.21	3.69	29.90	54.00	-24.10

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Operation Band	:802.11 g	Test Date	:2015-02-24
Fundamental Frequency	:2462 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX HIGH	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
					FS dB $\mu$ V/m	@3m dB $\mu$ V/m	dB
89.17	S	Peak	47.98	-15.33	32.65	43.50	-10.85
155.13	S	Peak	48.63	-9.03	39.60	43.50	-3.90
333.61	S	Peak	44.49	-7.64	36.85	46.00	-9.15
500.45	S	Peak	34.16	-4.34	29.82	46.00	-16.18
749.74	S	Peak	30.83	0.27	31.10	46.00	-14.90
946.65	S	Peak	27.58	3.16	30.74	46.00	-15.26

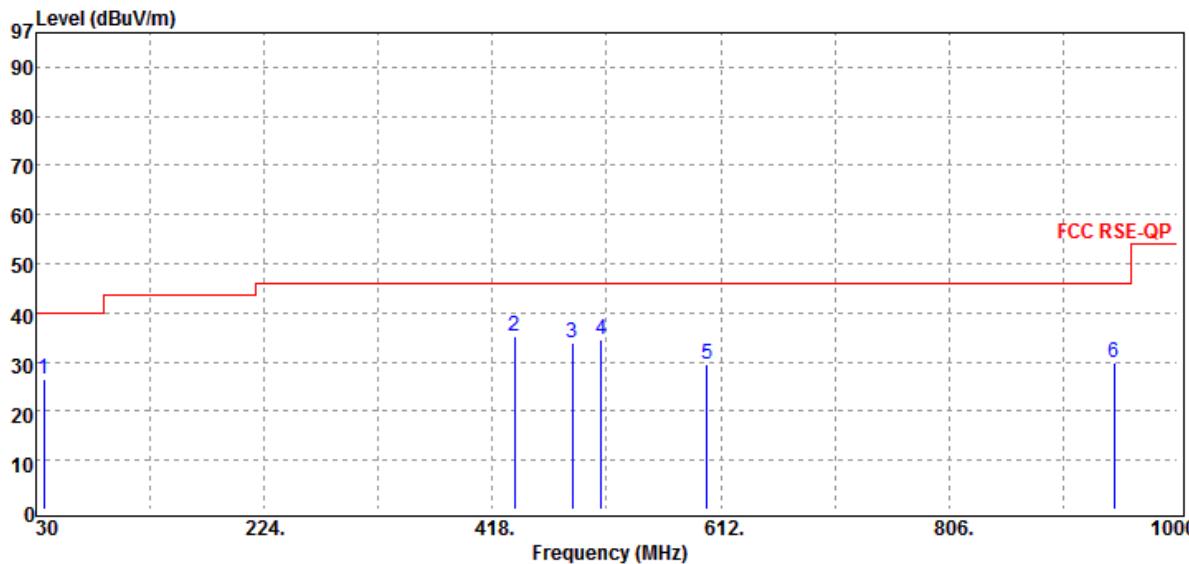
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**Radiated Spurious Emission Measurement Result (802.11 n40M)**

Operation Band	: 802.11 n40M	Test Date	: 2015-02-24
Fundamental Frequency	: 2422 MHz	Temp./Humi.	: 21 deg_C / 61 RH
Operation Mode	: TX LOW	Engineer	: Curry
EUT Pol.	: H Plane	Measurement Antenna Pol.	: VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
			Level dB $\mu$ V				
36.79	S	Peak	36.54	-10.03	26.51	40.00	-13.49
436.43	S	Peak	41.04	-5.85	35.19	46.00	-10.81
485.90	S	Peak	38.12	-4.37	33.75	46.00	-12.25
510.15	S	Peak	39.17	-4.49	34.68	46.00	-11.32
600.36	S	Peak	31.44	-2.05	29.39	46.00	-16.61
946.65	S	Peak	26.60	3.16	29.76	46.00	-16.24

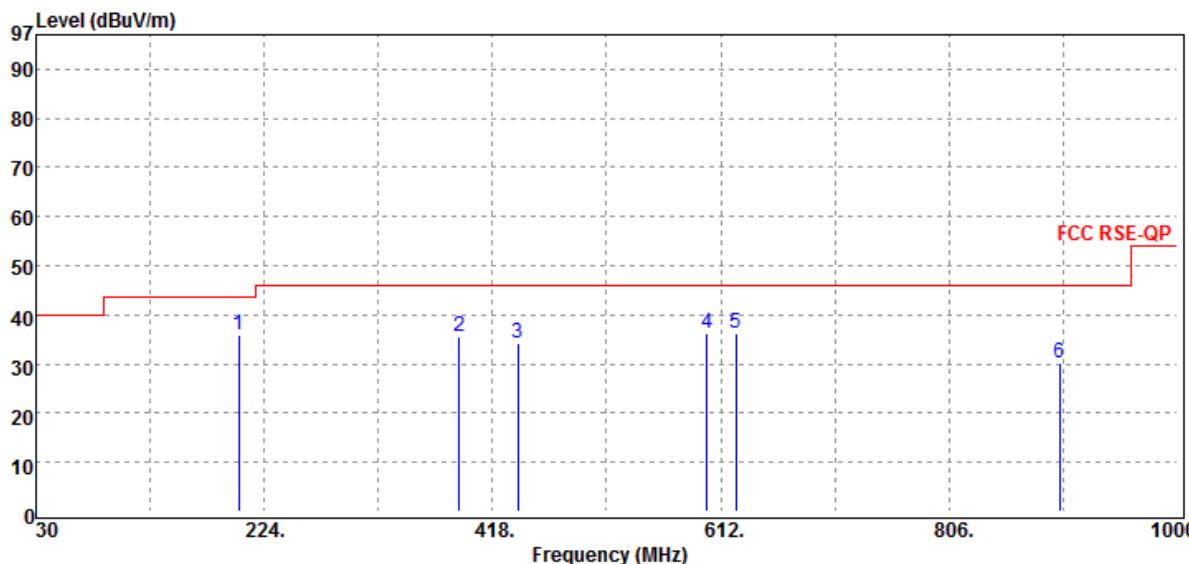
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Operation Band : 802.11 n40M  
 Fundamental Frequency : 2422 MHz  
 Operation Mode : TX LOW  
 EUT Pol. : H Plane

Test Date : 2015-02-24  
 Temp./Humi. : 21 deg\_C / 61 RH  
 Engineer : Curry  
 Measurement Antenna Pol. : HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
202.66	S	Peak	47.64	-11.63	36.01	43.50	-7.49
389.87	S	Peak	41.70	-6.15	35.55	46.00	-10.45
439.34	S	Peak	40.04	-5.84	34.20	46.00	-11.80
600.36	S	Peak	38.19	-2.05	36.14	46.00	-9.86
624.61	S	Peak	39.27	-3.07	36.20	46.00	-9.80
900.09	S	Peak	28.30	2.03	30.33	46.00	-15.67

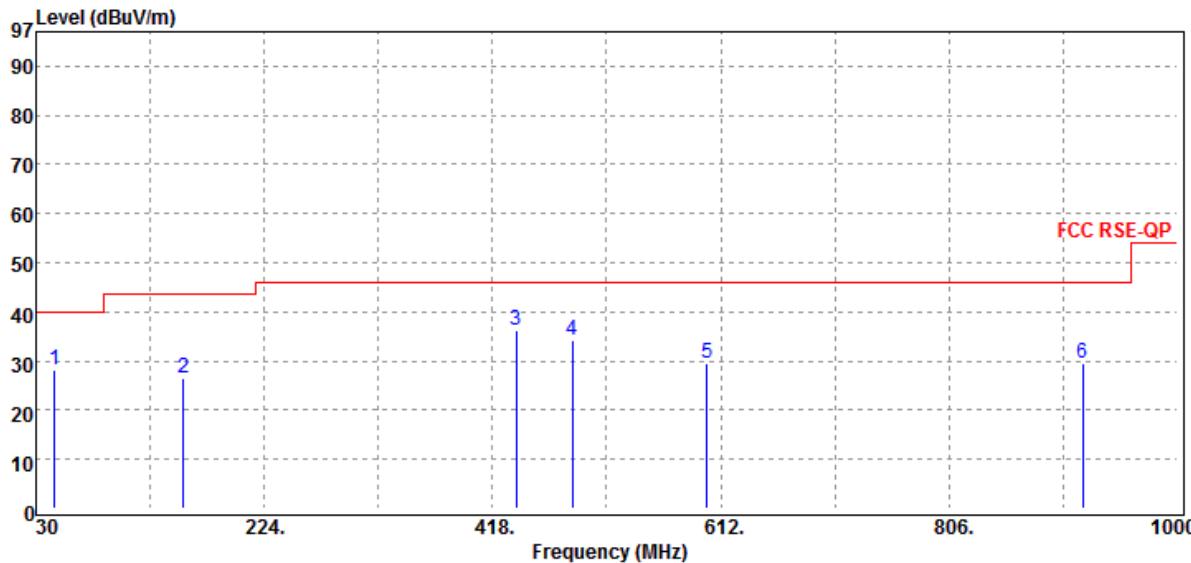
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Operation Band : 802.11 n40M  
 Fundamental Frequency : 2437 MHz  
 Operation Mode : TX MID  
 EUT Pol. : H Plane

Test Date : 2015-02-24  
 Temp./Humi. : 21 deg\_C / 61 RH  
 Engineer : Curry  
 Measurement Antenna Pol. : VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
						Limit @3m dB $\mu$ V/m	Margin dB
45.52	S	Peak	37.51	-9.34	28.17	40.00	-11.83
155.13	S	Peak	35.45	-9.03	26.42	43.50	-17.08
438.37	S	Peak	41.99	-5.84	36.15	46.00	-9.85
485.90	S	Peak	38.44	-4.37	34.07	46.00	-11.93
600.36	S	Peak	31.65	-2.05	29.60	46.00	-16.40
919.49	S	Peak	27.03	2.39	29.42	46.00	-16.58

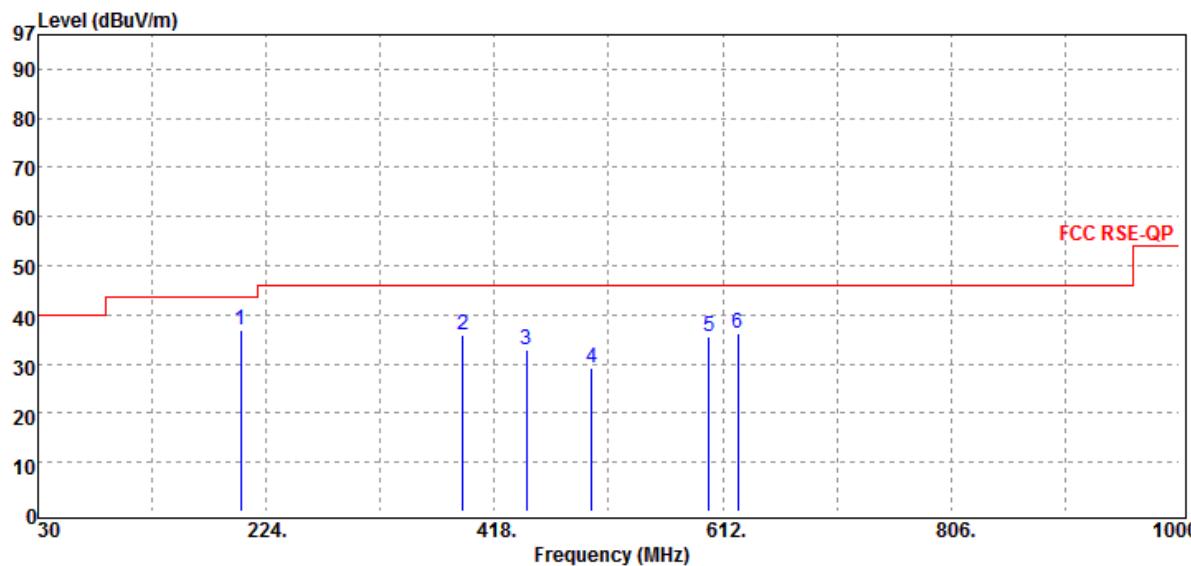
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Operation Band : 802.11 n40M  
 Fundamental Frequency : 2437 MHz  
 Operation Mode : TX MID  
 EUT Pol. : H Plane

Test Date : 2015-02-24  
 Temp./Humi. : 21 deg\_C / 61 RH  
 Engineer : Curry  
 Measurement Antenna Pol. : HORIZONTAL



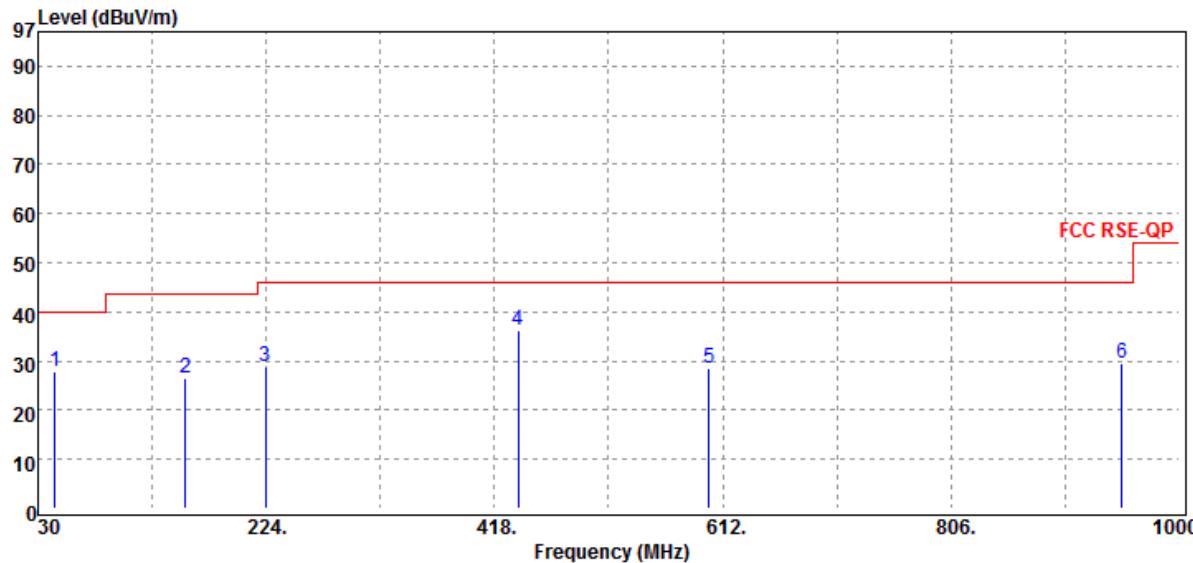
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
						Margin dB	Margin dB
202.66	S	Peak	48.43	-11.63	36.80	43.50	-6.70
390.84	S	Peak	41.96	-6.13	35.83	46.00	-10.17
445.16	S	Peak	38.79	-5.76	33.03	46.00	-12.97
500.45	S	Peak	33.39	-4.34	29.05	46.00	-16.95
600.36	S	Peak	37.70	-2.05	35.65	46.00	-10.35
624.61	S	Peak	39.48	-3.07	36.41	46.00	-9.59

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Operation Band :802.11 n40M  
Fundamental Frequency :2452 MHz  
Operation Mode :TX HIGH  
EUT Pol. :H Plane  
Test Date :2015-02-24  
Temp./Humi. :21 deg\_C / 61 RH  
Engineer :Curry  
Measurement Antenna Pol. :VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum		Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
			PK/QP/AV	Reading Level dB $\mu$ V				
44.55	S	Peak	37.36	-9.38	27.98	40.00	-12.02	
155.13	S	Peak	35.70	-9.03	26.67	43.50	-16.83	
223.03	S	Peak	40.01	-11.14	28.87	46.00	-17.13	
438.37	S	Peak	41.95	-5.84	36.11	46.00	-9.89	
600.36	S	Peak	30.51	-2.05	28.46	46.00	-17.54	
951.50	S	Peak	26.22	3.36	29.58	46.00	-16.42	

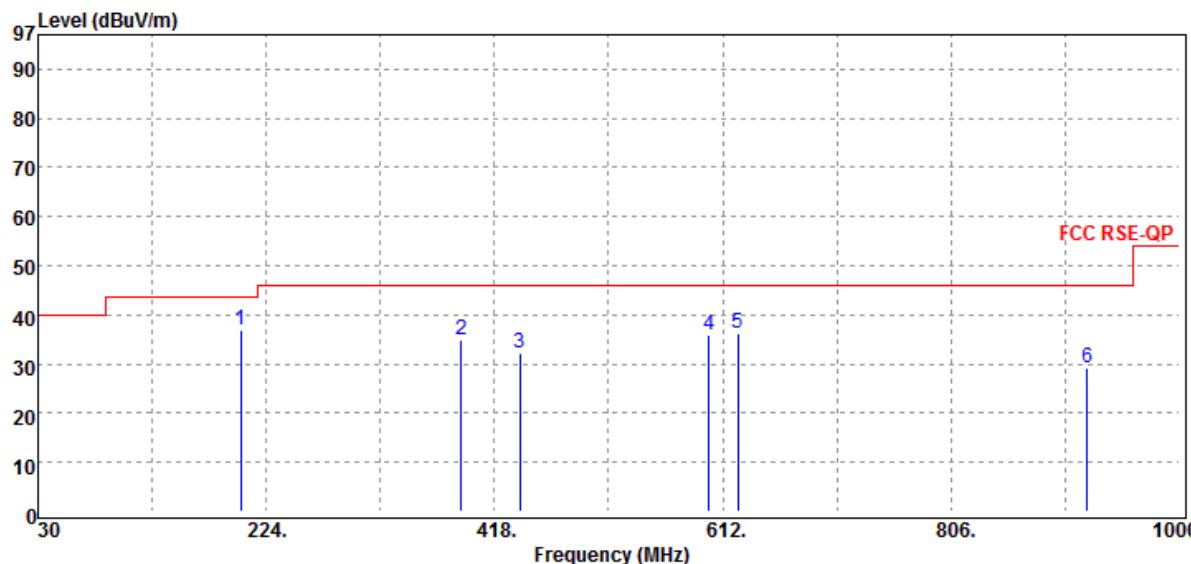
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Operation Band :802.11 n40M  
 Fundamental Frequency :2452 MHz  
 Operation Mode :TX HIGH  
 EUT Pol. :H Plane

Test Date :2015-02-24  
 Temp./Humi. :21 deg\_C / 61 RH  
 Engineer :Curry  
 Measurement Antenna Pol. :HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit	Margin
					FS dB $\mu$ V/m	@3m dB $\mu$ V/m	dB
202.66	S	Peak	48.40	-11.63	36.77	43.50	-6.73
389.87	S	Peak	40.94	-6.15	34.79	46.00	-11.21
439.34	S	Peak	37.90	-5.84	32.06	46.00	-13.94
600.36	S	Peak	37.91	-2.05	35.86	46.00	-10.14
624.61	S	Peak	39.24	-3.07	36.17	46.00	-9.83
921.43	S	Peak	26.65	2.46	29.11	46.00	-16.89

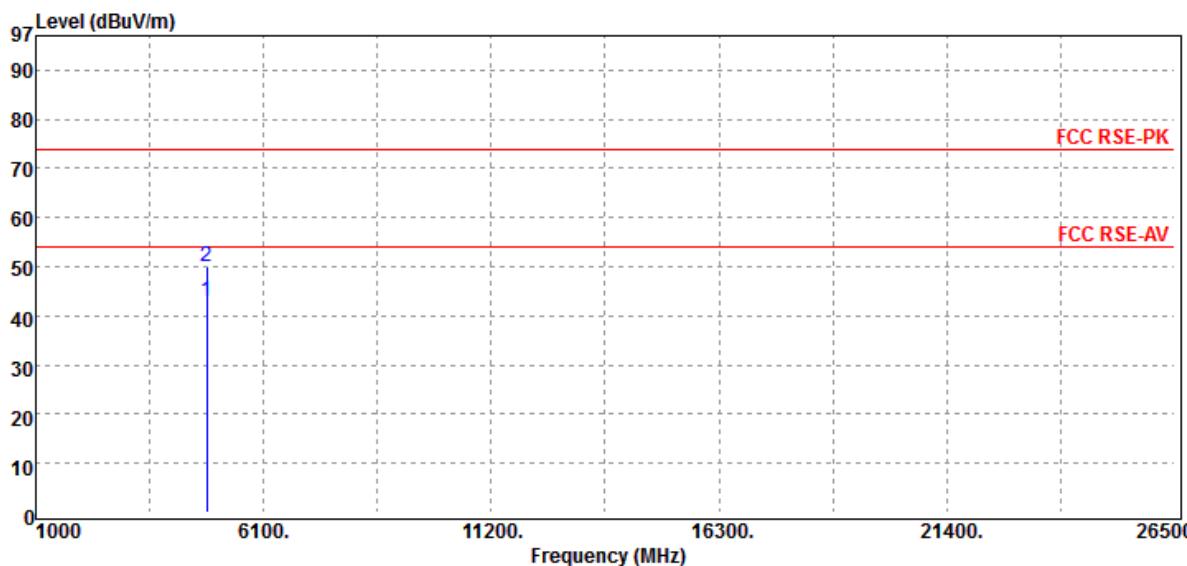
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**Radiated Spurious Emission Measurement Result (802.11b)****Above 1GHz Worst-Case Data:****External Antenna**

Operation Band	:802.11 b	Test Date	:2015-02-24
Fundamental Frequency	:2412 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



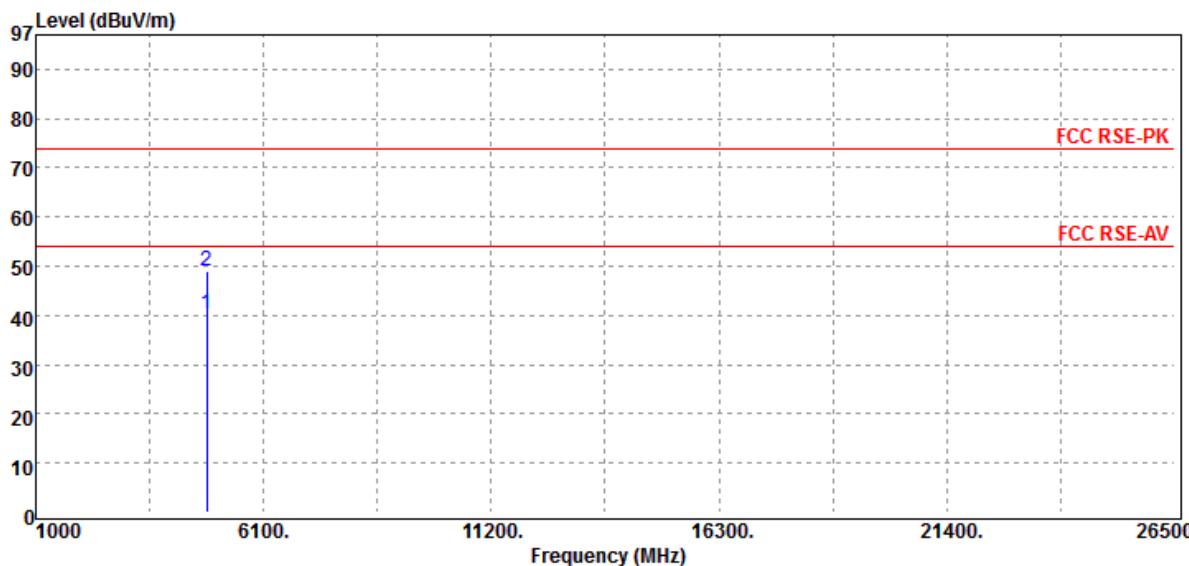
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit	Margin
						@3m	
		PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
4824.00	H	Average	33.44	9.63	43.07	54.00	-10.93
4824.00	H	Peak	40.32	9.63	49.95	74.00	-24.05

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Operation Band	:802.11 b	Test Date	:2015-02-24
Fundamental Frequency	:2412 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



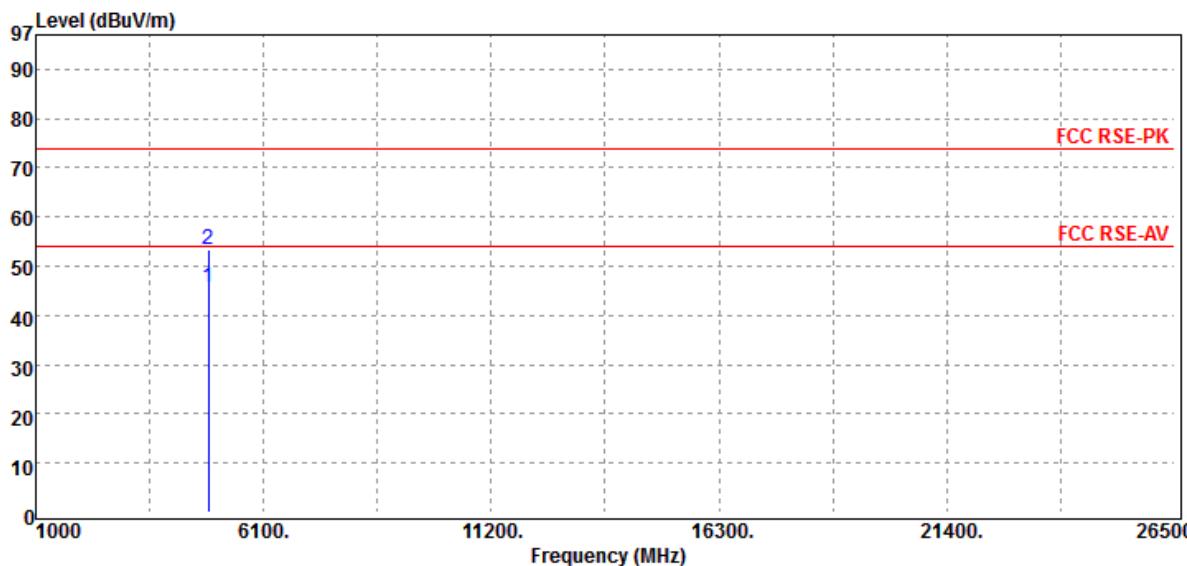
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS dB	Limit @3m dBuV/m	Margin dB
			Reading				
		PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	
4824.00	H	Average	30.53	9.63	40.16	54.00	-13.84
4824.00	H	Peak	39.54	9.63	49.17	74.00	-24.83

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Operation Band	:802.11 b	Test Date	:2015-02-24
Fundamental Frequency	:2437 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX MID	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



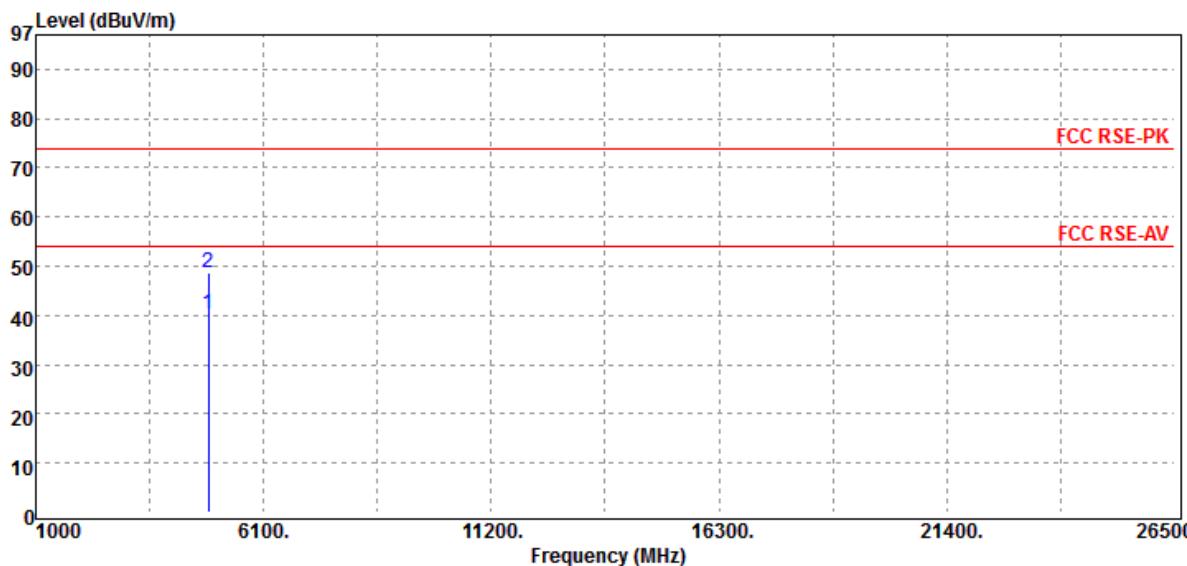
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
		PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
4874.00	H	Average	35.86	9.85	45.71	54.00	-8.29
4874.00	H	Peak	43.52	9.85	53.37	74.00	-20.63

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Operation Band	:802.11 b	Test Date	:2015-02-24
Fundamental Frequency	:2437 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX MID	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



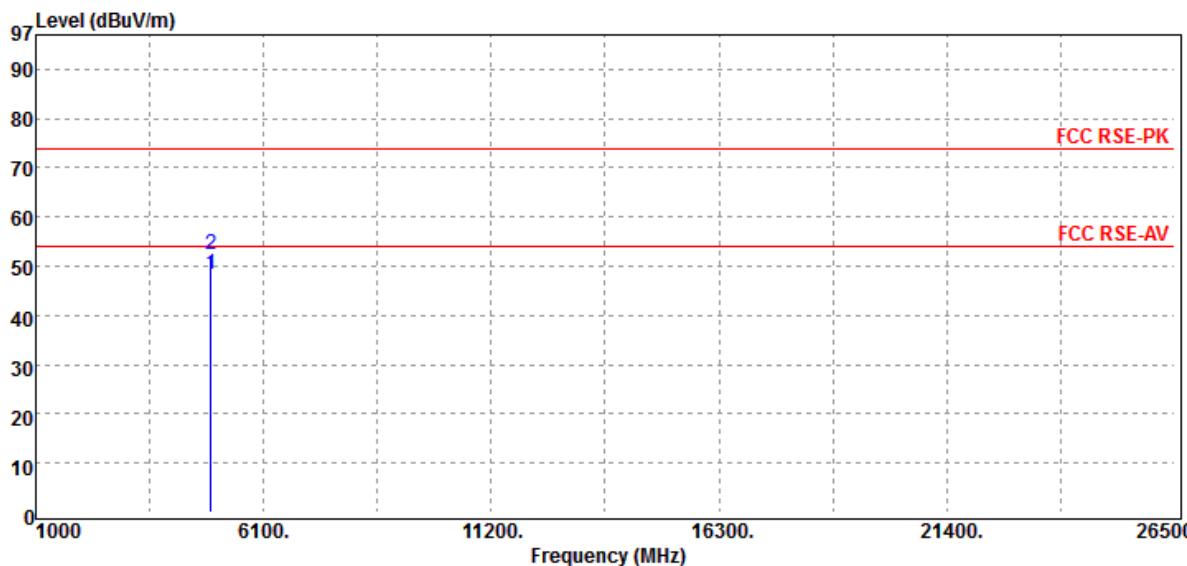
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum Reading	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	Reading	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
4874.00	H	Average	30.54	9.85	40.39	54.00	-13.61
4874.00	H	Peak	38.98	9.85	48.83	74.00	-25.17

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Operation Band	:802.11 b	Test Date	:2015-02-24
Fundamental Frequency	:2462 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX HIGH	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



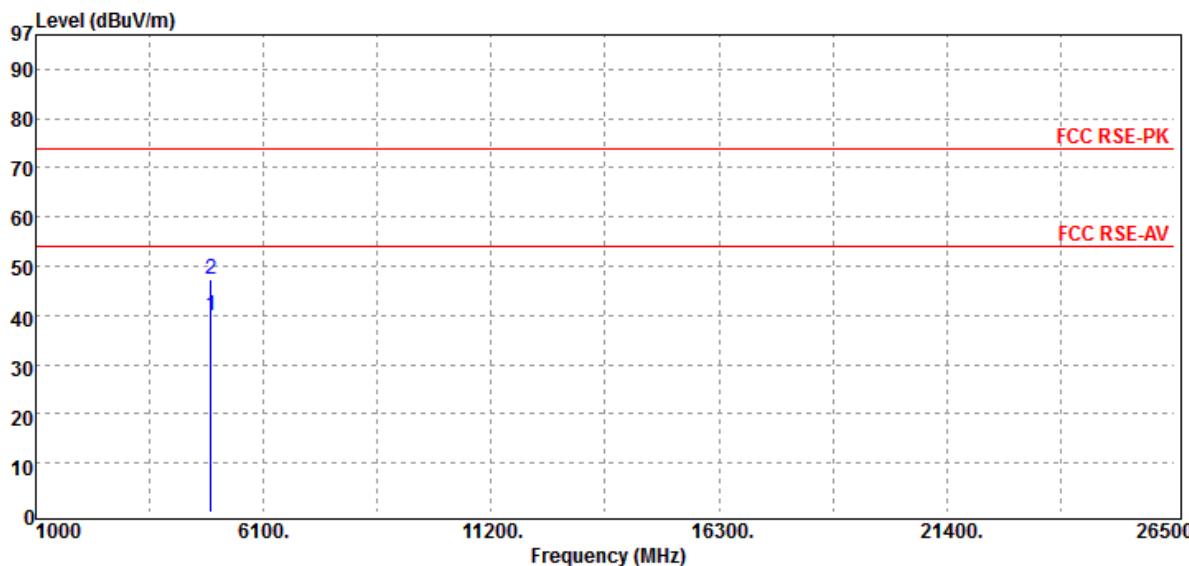
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading Level dB $\mu$ V				
MHz	PK/QP/AV	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
4924.00	H	Average	38.60	9.86	48.46	54.00	-5.54
4924.00	H	Peak	42.51	9.86	52.37	74.00	-21.63

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Operation Band	:802.11 b	Test Date	:2015-02-24
Fundamental Frequency	:2462 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX HIGH	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual	Limit	Margin
			PK/QP/AV		Reading Level dB $\mu$ V	FS dB $\mu$ V/m	@3m dB $\mu$ V/m
4924.00	H	Average		9.86	30.08	39.94	54.00
4924.00	H	Peak		9.86	37.57	47.43	74.00

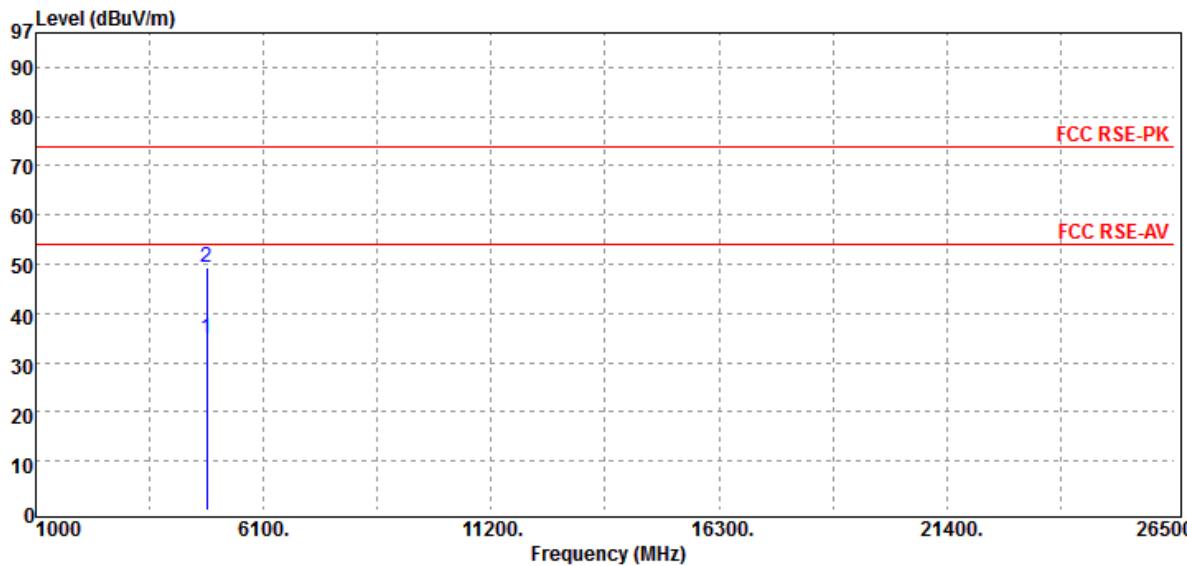
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**Radiated Spurious Emission Measurement Result (802.11 g)**

Operation Band	:802.11 g	Test Date	:2015-02-24
Fundamental Frequency	:2412 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



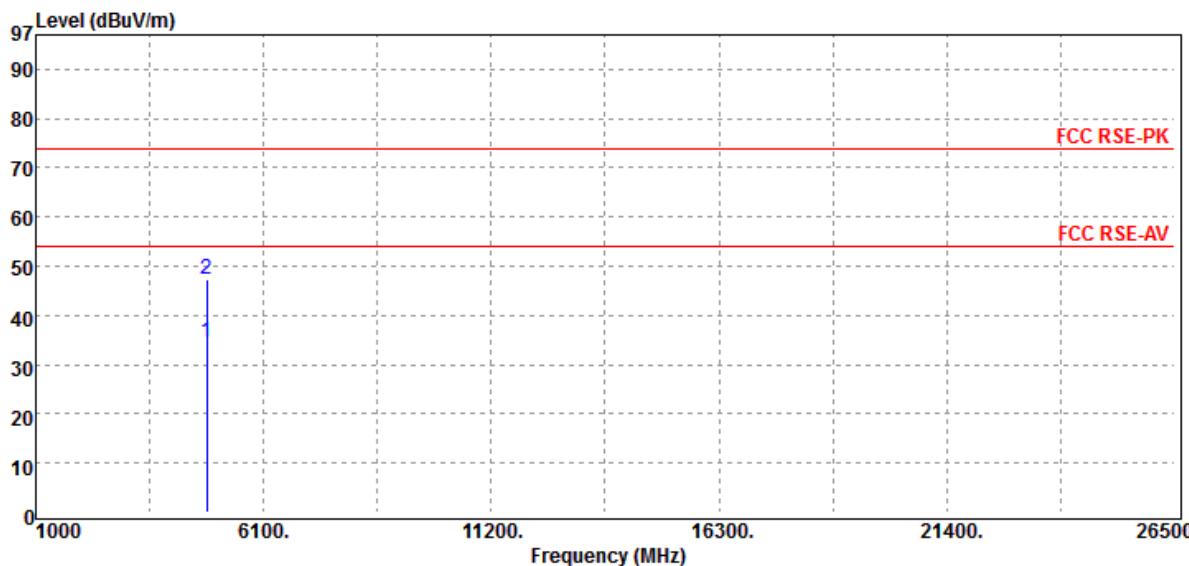
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level		Factor dB	Actual FS dB $\mu$ V	Limit @3m dB $\mu$ V/m	Margin dB
4824.00	H	Average	25.43		9.63	35.06	54.00	-18.94
4824.00	H	Peak	39.67		9.63	49.30	74.00	-24.70

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Operation Band	:802.11 g	Test Date	:2015-02-24
Fundamental Frequency	:2412 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



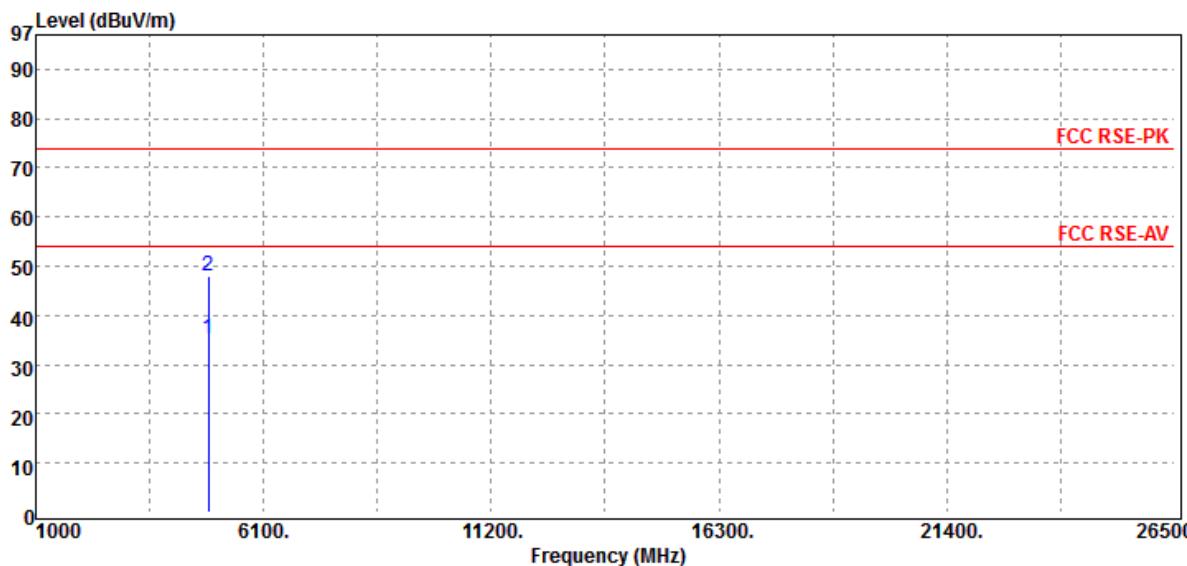
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
		PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
4824.00	H	Average	25.08	9.63	34.71	54.00	-19.29
4824.00	H	Peak	37.63	9.63	47.26	74.00	-26.74

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Operation Band	:802.11 g	Test Date	:2015-02-24
Fundamental Frequency	:2437 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX MID	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



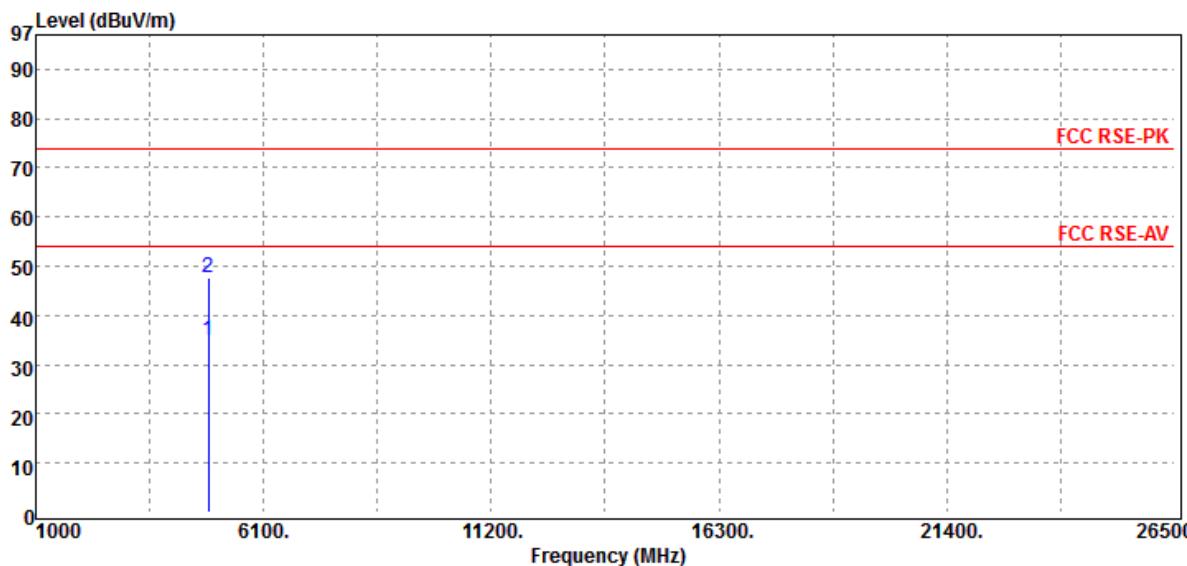
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual	Limit	Margin	
			PK/QP/AV		Reading Level dBµV	FS dBµV/m	@3m dBµV/m	dB
4874.00	H	Average		25.52	9.85	35.37	54.00	-18.63
4874.00	H	Peak		38.18	9.85	48.03	74.00	-25.97

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Operation Band	:802.11 g	Test Date	:2015-02-24
Fundamental Frequency	:2437 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX MID	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



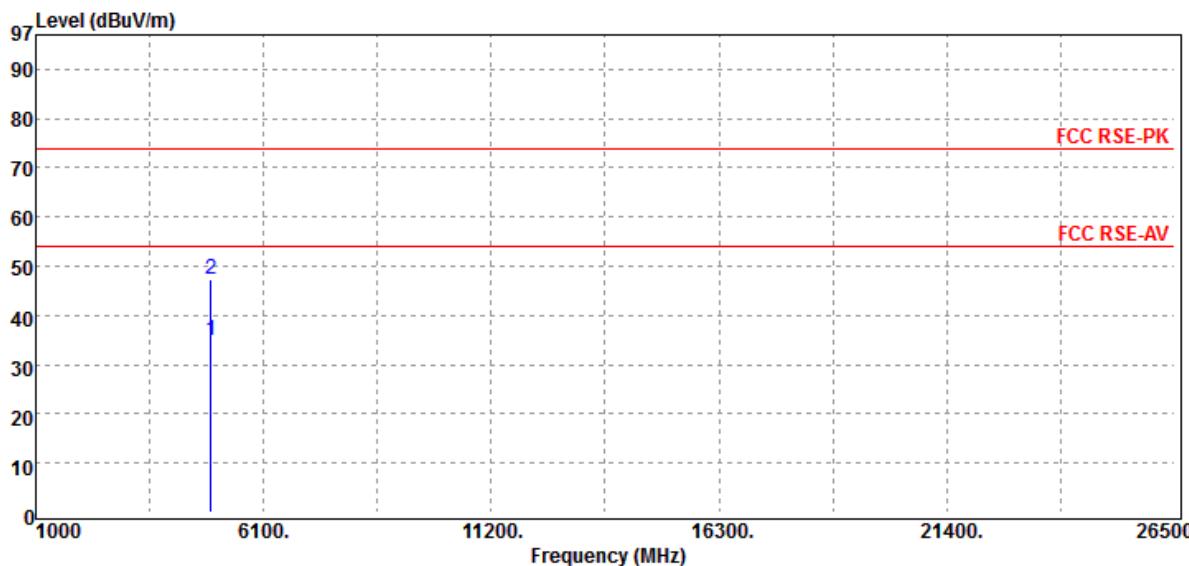
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
		PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
4874.00	H	Average	24.91	9.85	34.76	54.00	-19.24
4874.00	H	Peak	37.68	9.85	47.53	74.00	-26.47

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Operation Band	:802.11 g	Test Date	:2015-02-24
Fundamental Frequency	:2462 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX HIGH	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



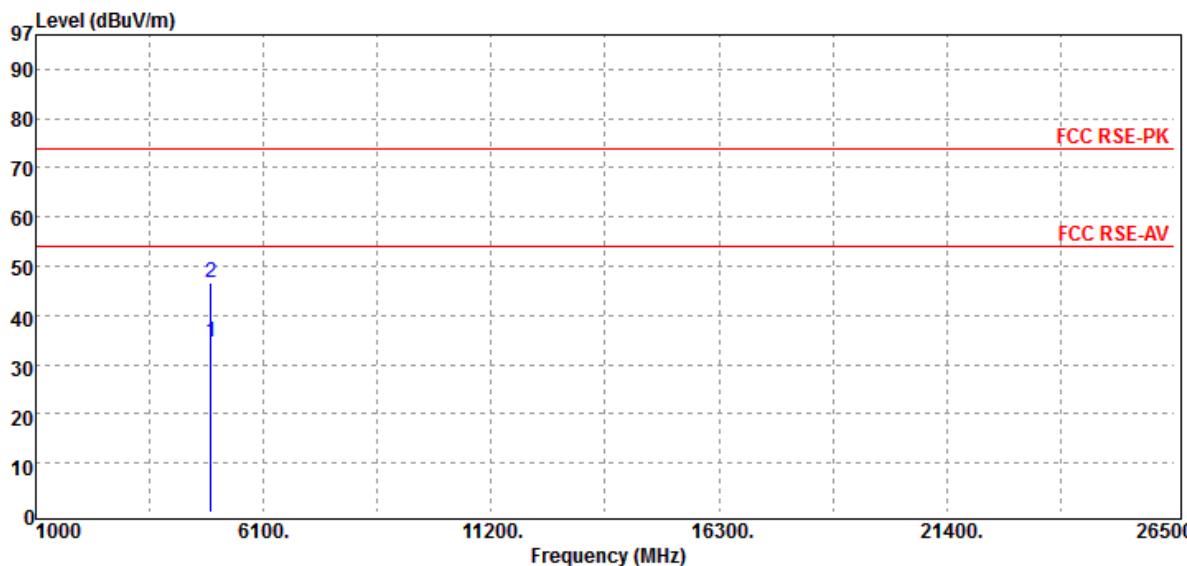
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit FS dB $\mu$ V/m	Margin
					Margin		
4924.00	H	Average	24.99	9.86	34.85	54.00	-19.15
4924.00	H	Peak	37.59	9.86	47.45	74.00	-26.55

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Operation Band	:802.11 g	Test Date	:2015-02-24
Fundamental Frequency	:2462 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX HIGH	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
		PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
4924.00	H	Average	24.71	9.86	34.57	54.00	-19.43
4924.00	H	Peak	36.95	9.86	46.81	74.00	-27.19

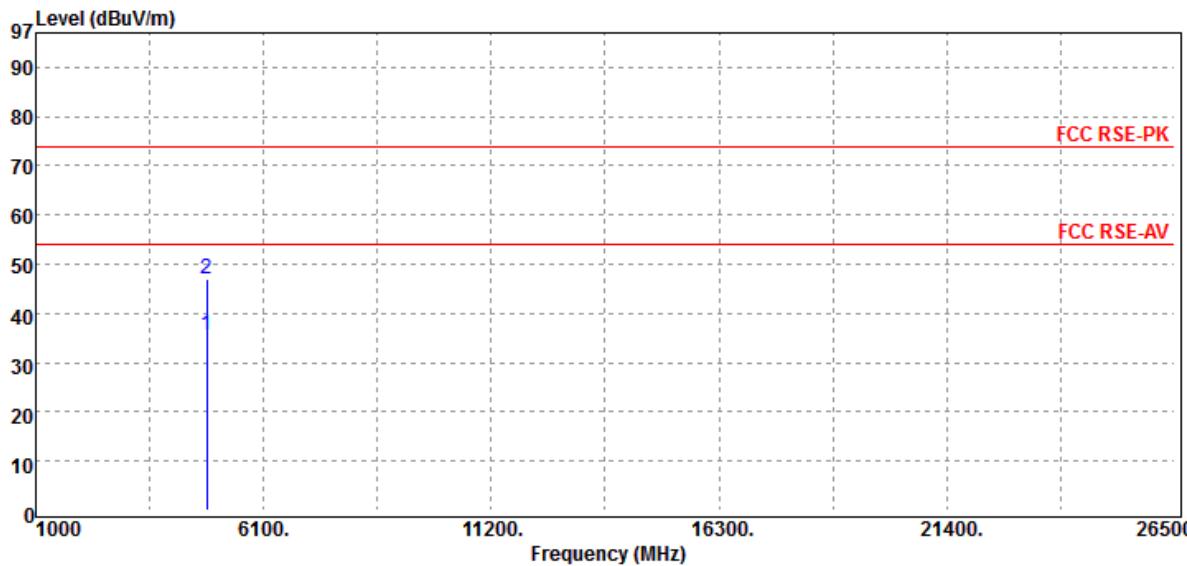
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## Radiated Spurious Emission Measurement Result (802.11\_HT20)

Operation Band	:802.11 n20M	Test Date	:2015-02-24
Fundamental Frequency	:2412 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level		Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
4824.00	H	Average	26.00	9.63	35.63	54.00	-18.37	
4824.00	H	Peak	37.25	9.63	46.88	74.00	-27.12	

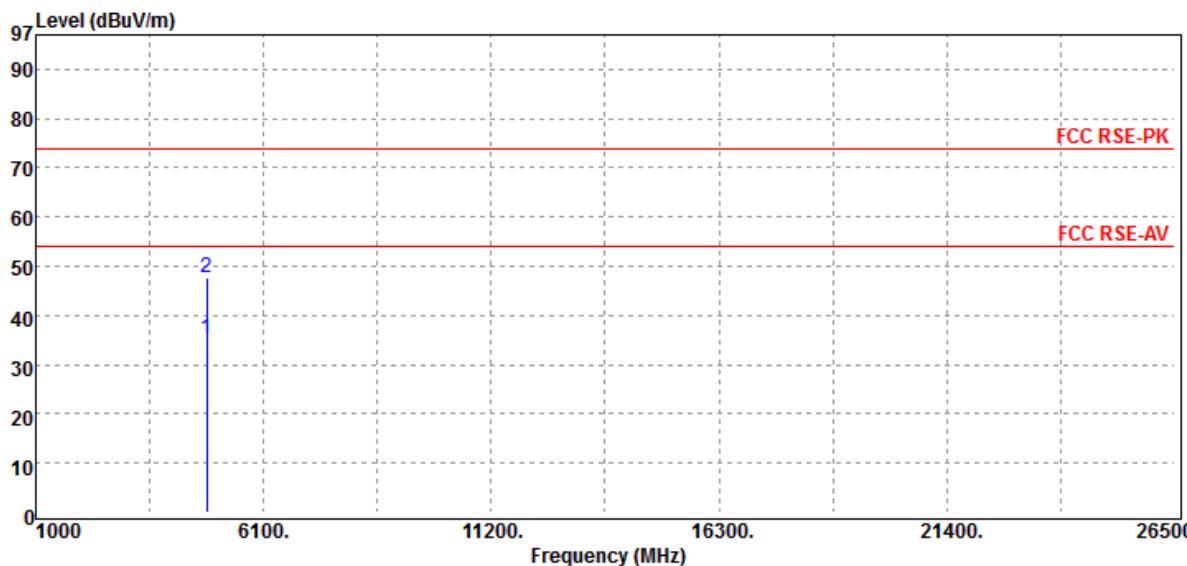
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Operation Band	:802.11 n20M	Test Date	:2015-02-24
Fundamental Frequency	:2412 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



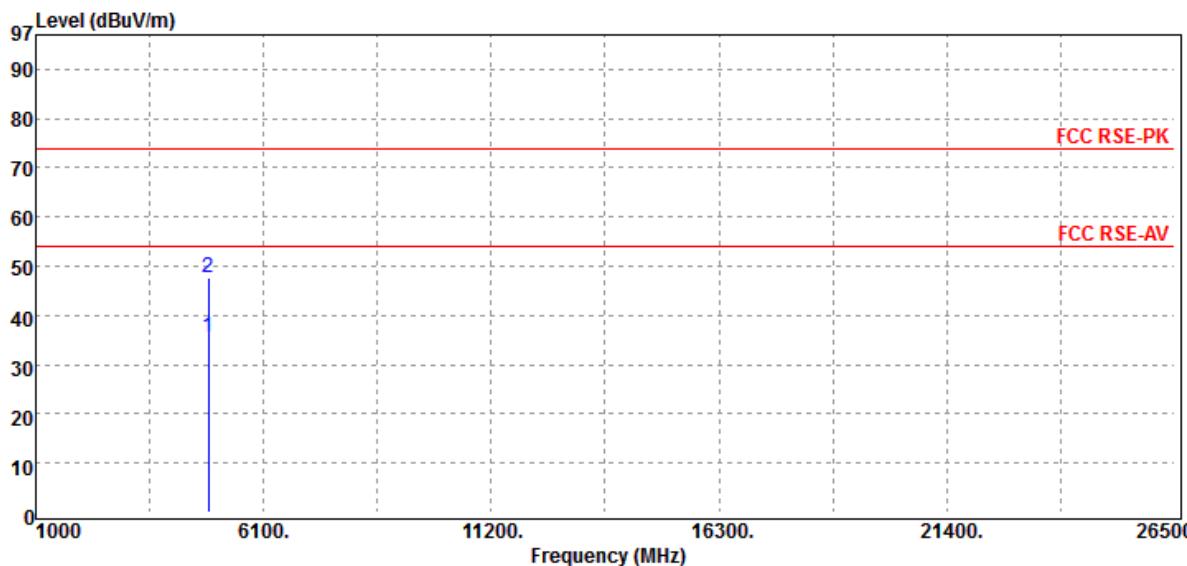
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
		PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
4824.00	H	Average	25.76	9.63	35.39	54.00	-18.61
4824.00	H	Peak	38.03	9.63	47.66	74.00	-26.34

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Operation Band	:802.11 n20M	Test Date	:2015-02-24
Fundamental Frequency	:2437 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX MID	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



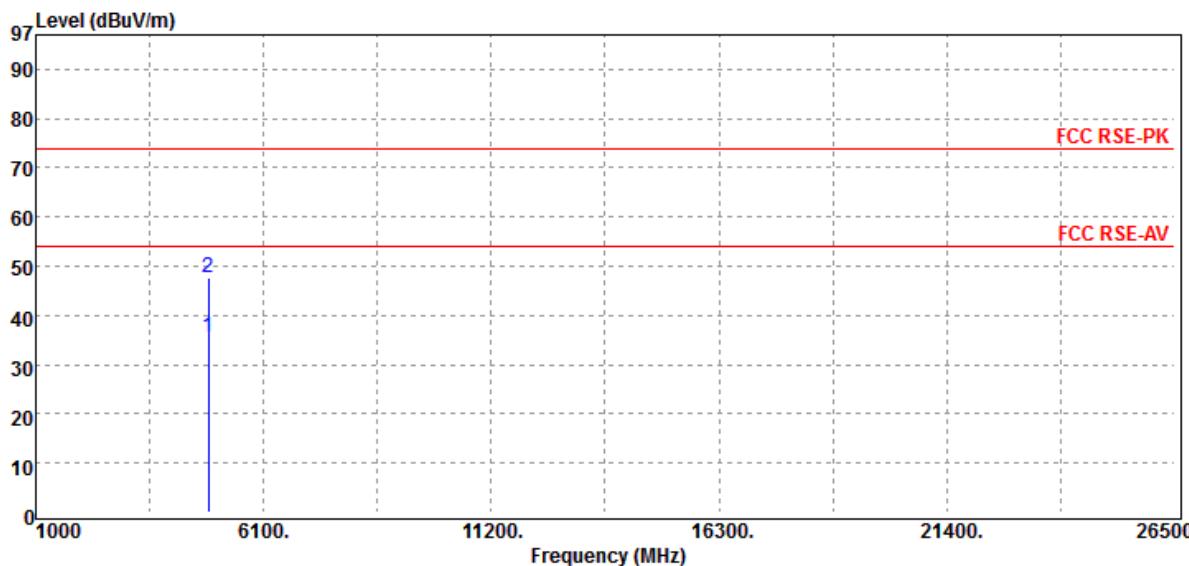
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			PK/QP/AV				
4874.00	H	Average	25.77	9.85	35.62	54.00	-18.38
4874.00	H	Peak	37.92	9.85	47.77	74.00	-26.23

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Operation Band	:802.11 n20M	Test Date	:2015-02-24
Fundamental Frequency	:2437 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX MID	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



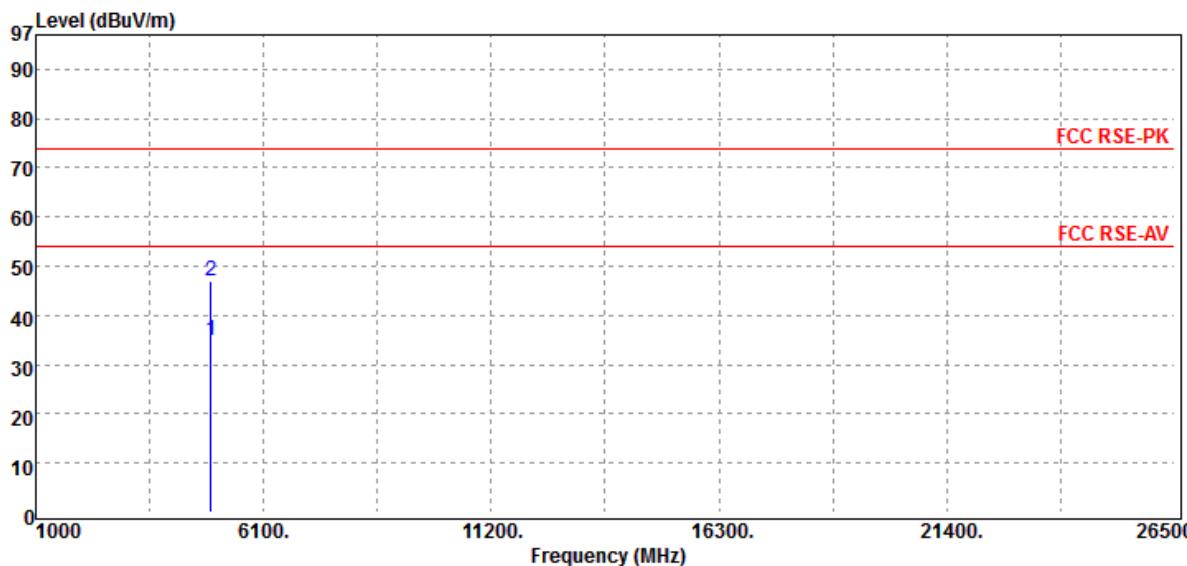
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual	Limit	Margin
			PK/QP/AV		Reading Level dB $\mu$ V	FS dB $\mu$ V/m	@3m dB $\mu$ V/m
4874.00	H	Average		25.56	9.85	35.41	54.00
4874.00	H	Peak		37.98	9.85	47.83	74.00

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Operation Band	:802.11 n20M	Test Date	:2015-02-24
Fundamental Frequency	:2462 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX HIGH	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



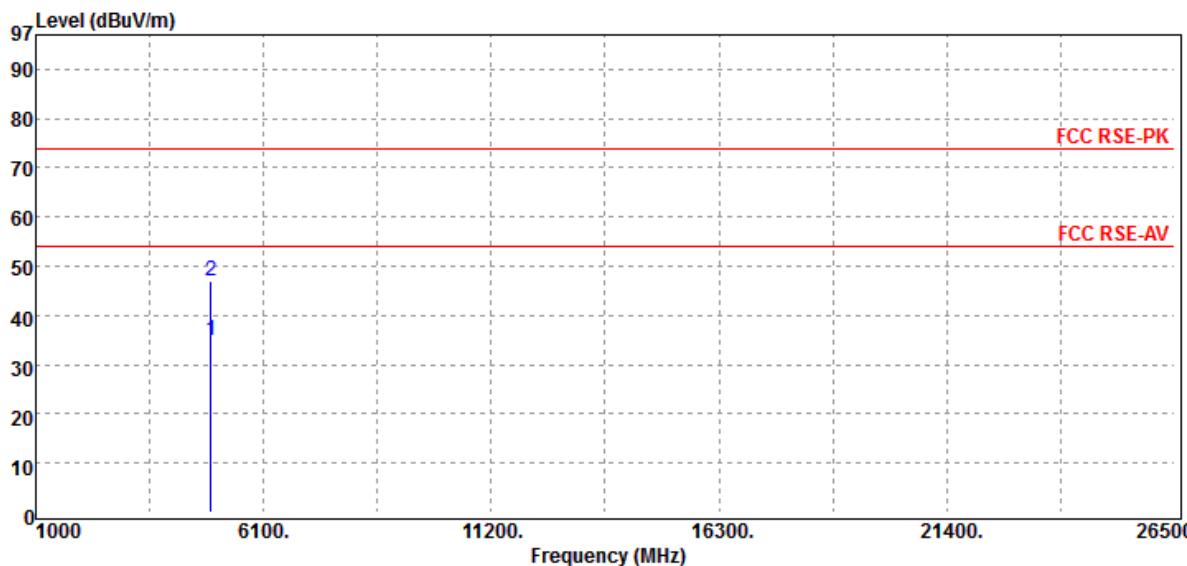
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual	Limit	Margin
			PK/QP/AV		Reading Level dB $\mu$ V	FS dB $\mu$ V/m	@3m dB $\mu$ V/m
4924.00	H	Average		25.05	9.86	34.91	54.00
4924.00	H	Peak		37.19	9.86	47.05	74.00

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Operation Band	:802.11 n20M	Test Date	:2015-02-24
Fundamental Frequency	:2462 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX HIGH	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum	Factor	Actual	Limit	Margin
			Reading		FS	@3m	dB
4924.00	H	Average	24.90	9.86	34.76	54.00	-19.24
4924.00	H	Peak	37.05	9.86	46.91	74.00	-27.09

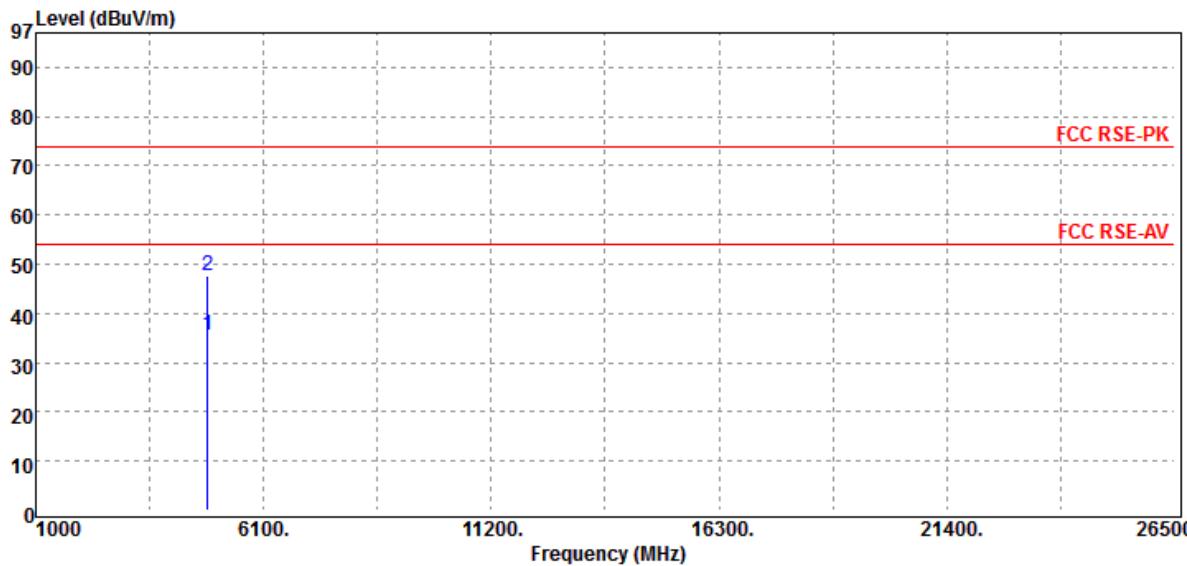
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## Radiated Spurious Emission Measurement Result (802.11\_HT40)

Operation Band	:802.11 n40M	Test Date	:2015-02-24
Fundamental Frequency	:2422 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



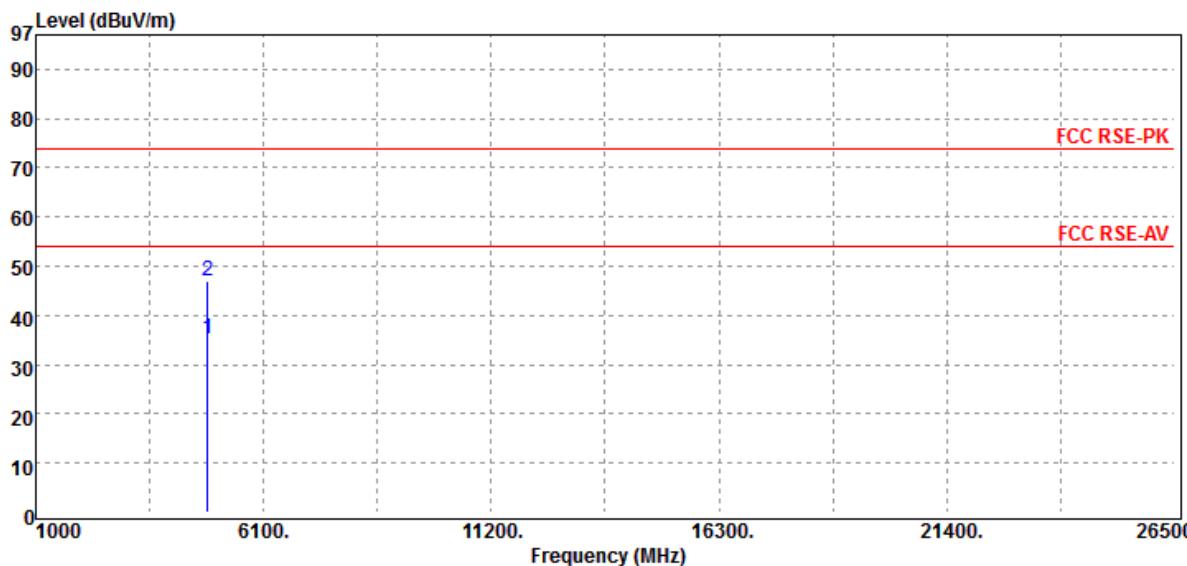
Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level		Factor dB	Actual FS dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Margin dB
4844.00	H	Average	25.84	9.74	35.58	54.00	-18.42	
4844.00	H	Peak	37.97	9.74	47.71	74.00	-26.29	

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Operation Band	:802.11 n40M	Test Date	:2015-02-24
Fundamental Frequency	:2422 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX LOW	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



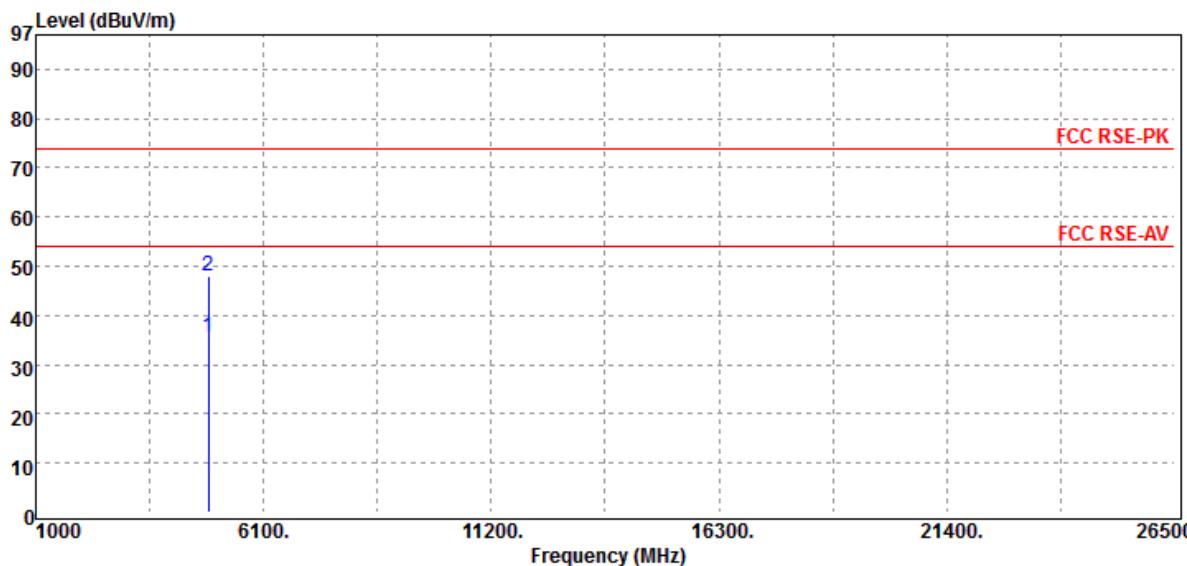
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual	Limit	Margin
			PK/QP/AV		Reading Level dB $\mu$ V	FS dB $\mu$ V/m	@3m dB $\mu$ V/m
4844.00	H	Average		25.56	9.74	35.30	54.00
4844.00	H	Peak		37.16	9.74	46.90	74.00

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Operation Band	:802.11 n40M	Test Date	:2015-02-24
Fundamental Frequency	:2437 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX MID	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



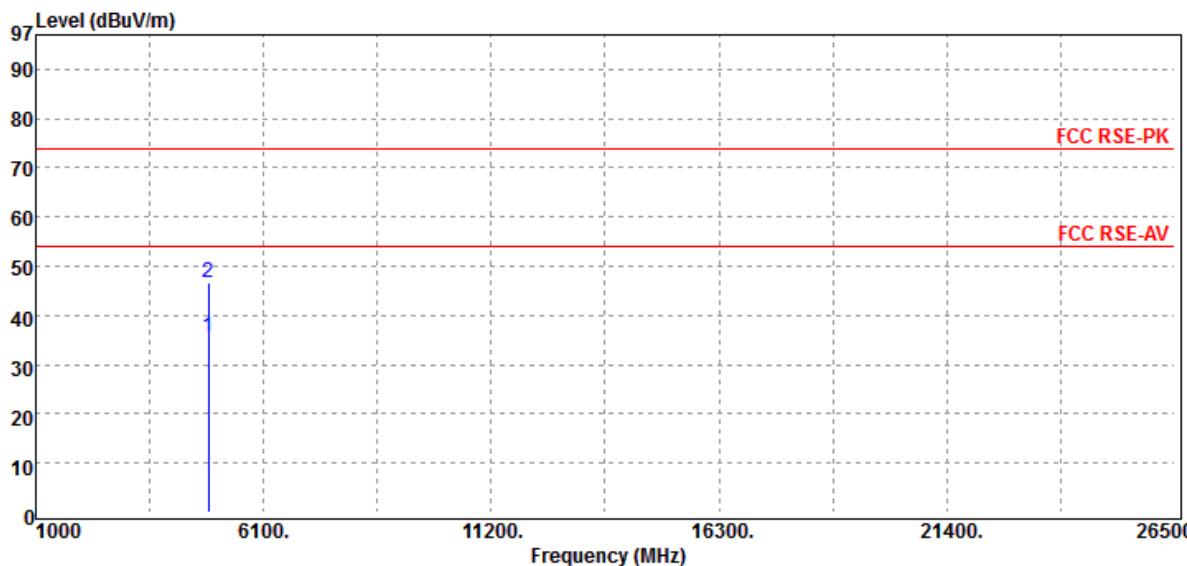
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading Level dB $\mu$ V				
MHz	PK/QP/AV	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
4874.00	H	Average	25.82	9.85	35.67	54.00	-18.33
4874.00	H	Peak	38.11	9.85	47.96	74.00	-26.04

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Operation Band	:802.11 n40M	Test Date	:2015-02-24
Fundamental Frequency	:2437 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX MID	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



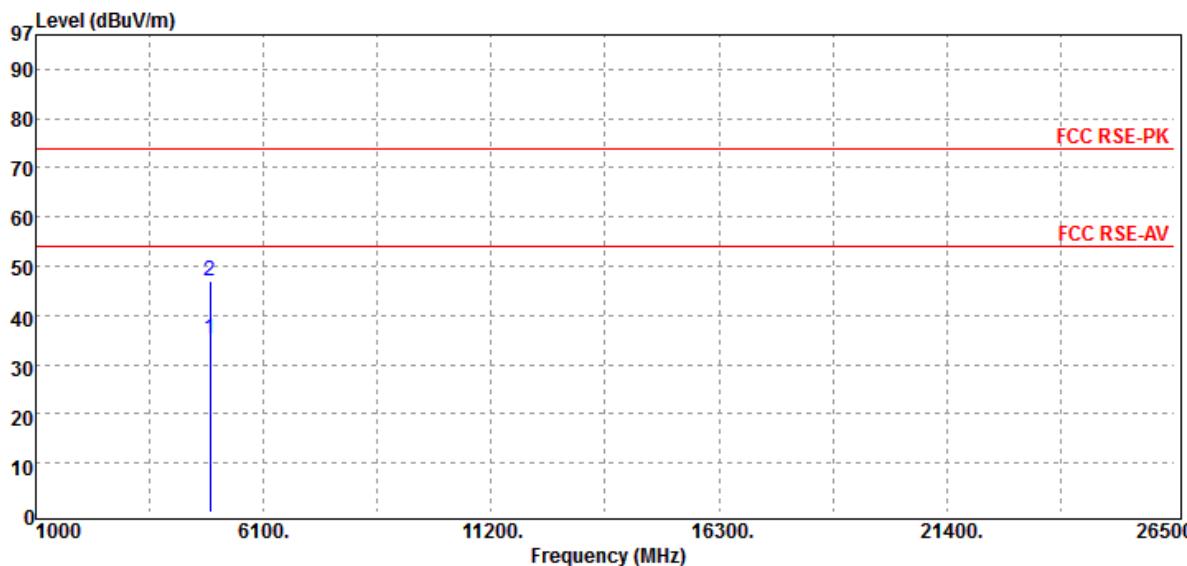
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual FS	Limit @3m	Margin
			Reading				
		PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V/m	dB $\mu$ V/m	dB
4874.00	H	Average	25.66	9.85	35.51	54.00	-18.49
4874.00	H	Peak	36.65	9.85	46.50	74.00	-27.50

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Operation Band	:802.11 n40M	Test Date	:2015-02-24
Fundamental Frequency	:2452 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX HIGH	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:VERTICAL



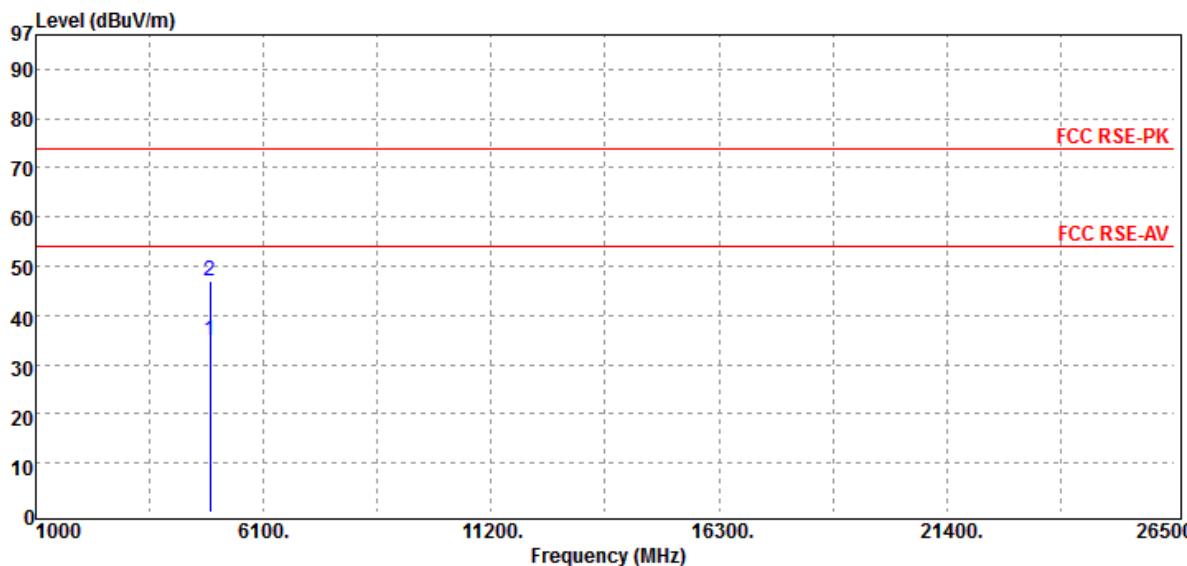
Freq. MHz	Note F/H/E/S	Detector Mode	Spectrum	Factor	Actual	Limit	Margin
			PK/QP/AV		Reading Level dB $\mu$ V	FS dB $\mu$ V/m	@3m dB $\mu$ V/m
4904.00	H	Average		25.34	9.84	35.18	54.00
4904.00	H	Peak		37.09	9.84	46.93	74.00

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Operation Band	:802.11 n40M	Test Date	:2015-02-24
Fundamental Frequency	:2452 MHz	Temp./Humi.	:21 deg_C / 61 RH
Operation Mode	:TX HIGH	Engineer	:Curry
EUT Pol.	:H Plane	Measurement Antenna Pol.	:HORIZONTAL



Freq. MHz	Note F/H/E/S	Detector Mode PK/QP/AV	Spectrum Reading Level dB $\mu$ V	Factor dB	Actual	Limit @3m dB $\mu$ V/m	Margin dB
					FS dB $\mu$ V/m	@3m dB $\mu$ V/m	
4904.00	H	Average	25.19	9.84	35.03	54.00	-18.97
4904.00	H	Peak	37.03	9.84	46.87	74.00	-27.13

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## 12 PEAK POWER SPECTRAL DENSITY

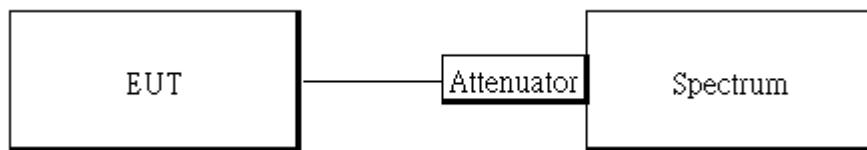
### 12.1 Standard Applicable

The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission.

### 12.2 Measurement Equipment Used

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4446A	MY51100003	05/19/2014	05/18/2015
DC Block	Mini-Circuits	BLK-18-S+	1	01/02/2015	01/01/2016
Attenuator	Mini-Circuit	BW-S10W2+	002	01/02/2015	01/01/2016

### 12.3 Test Set-up



### 12.4 Measurement Procedure

1. Set analyzer center frequency to DTS channel center frequency.
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance V03r02.
3. Set the span to 1.5 times the DTS channel bandwidth.
4. Set the RBW  $\geq$  3 kHz.
5. Set the VBW  $\geq$  3 x RBW.
6. Detector = peak.
7. Sweep time = auto couple.
8. Trace mode = max hold.
9. Allow trace to fully stabilize.
10. Use the peak marker function to determine the maximum amplitude level.
11. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

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## 12.5 Measurement Result

Frequency (MHz)	RF Power Density (dBm)	Maximum Limit (dBm)	Result
802.11b			
2412	-4.86	8	PASS
2437	-4.60	8	PASS
2462	-3.63	8	PASS
802.11g			
2412	-11.46	8	PASS
2437	-10.61	8	PASS
2462	-10.50	8	PASS
802.11n_HT20			
2412	-10.50	8	PASS
2437	-10.19	8	PASS
2462	-7.93	8	PASS
802.11n_HT40			
2422	-13.66	8	PASS
2437	-11.90	8	PASS
2452	-13.20	8	PASS

\*Refer to next page for plots

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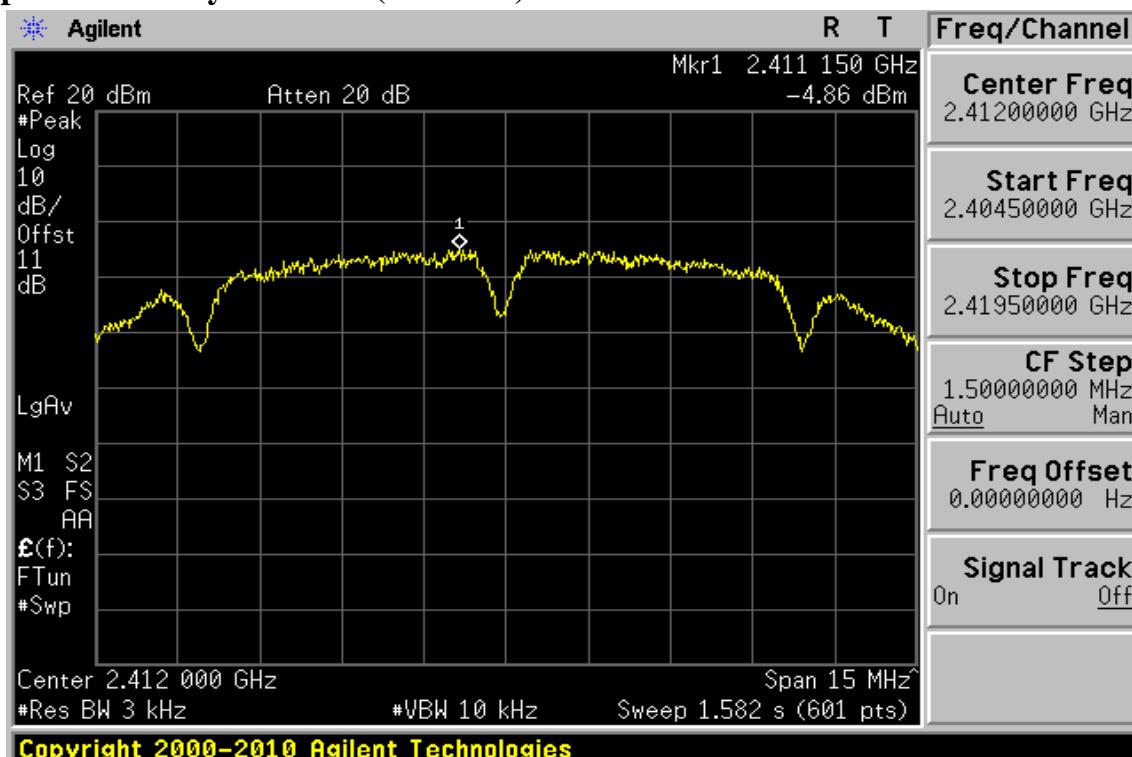
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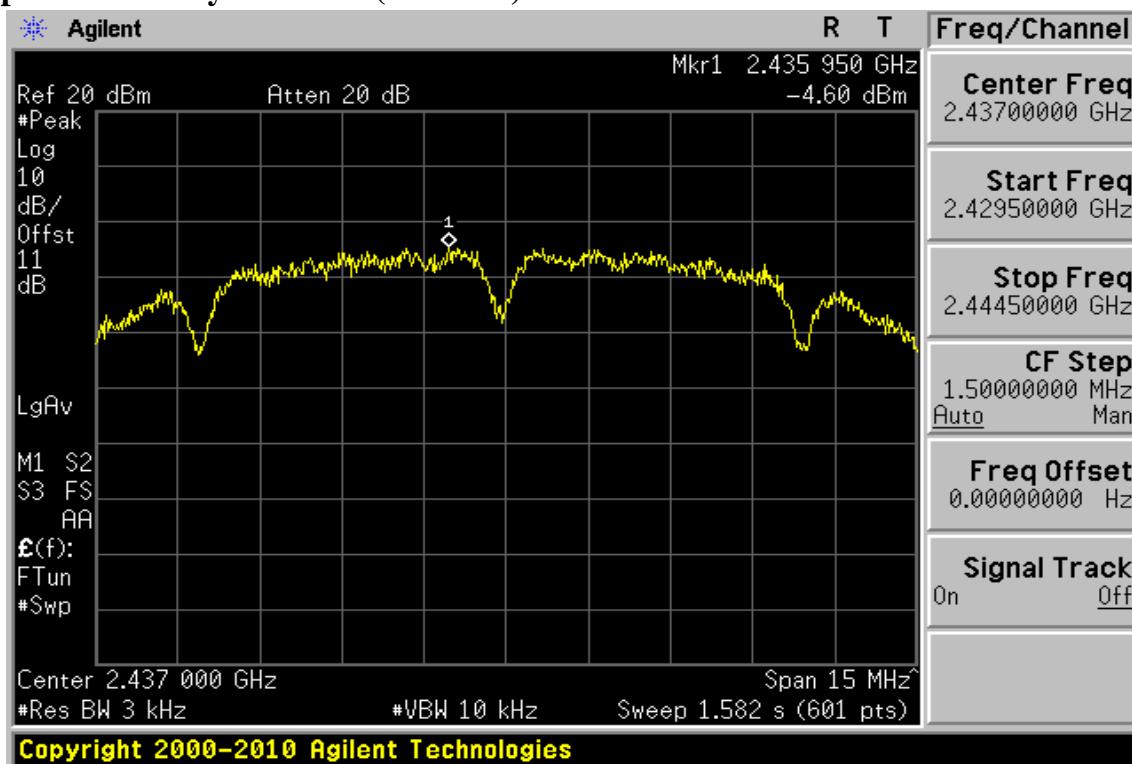
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## 802.11b

### Power Spectral Density Test Plot (CH-Low)



### Power Spectral Density Test Plot (CH-Mid)



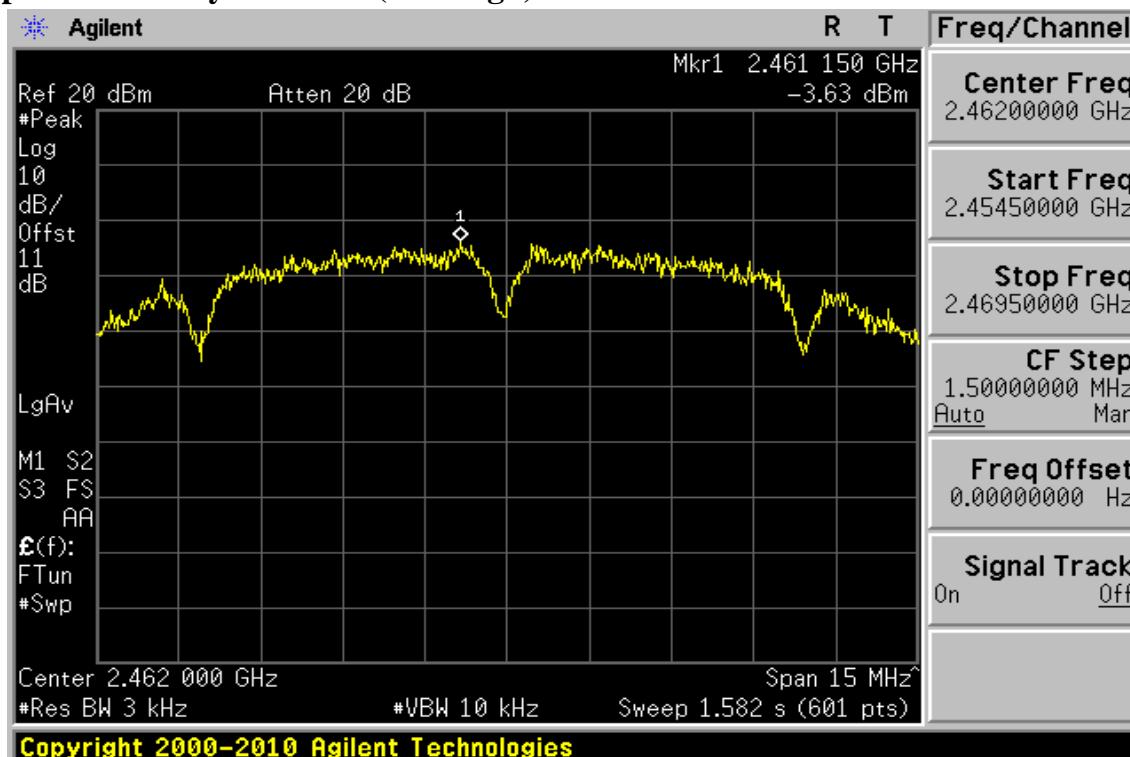
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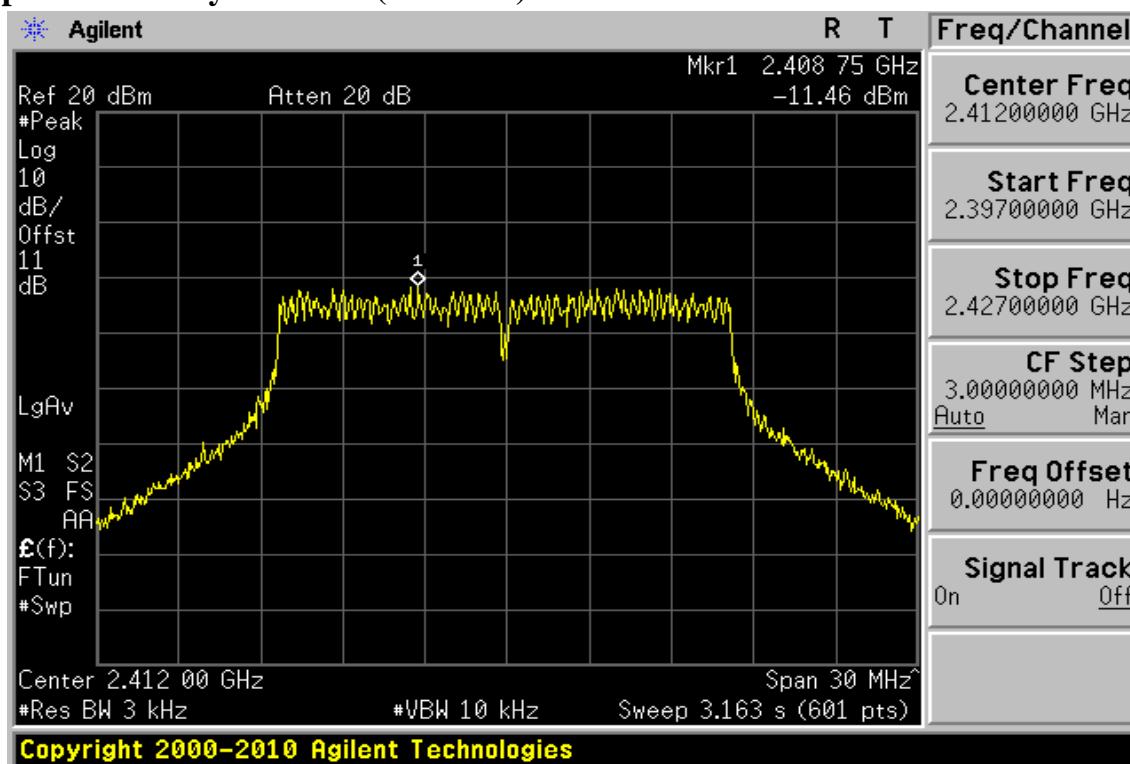
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### Power Spectral Density Test Plot (CH-High)



### 802.11g

### Power Spectral Density Test Plot (CH-Low)

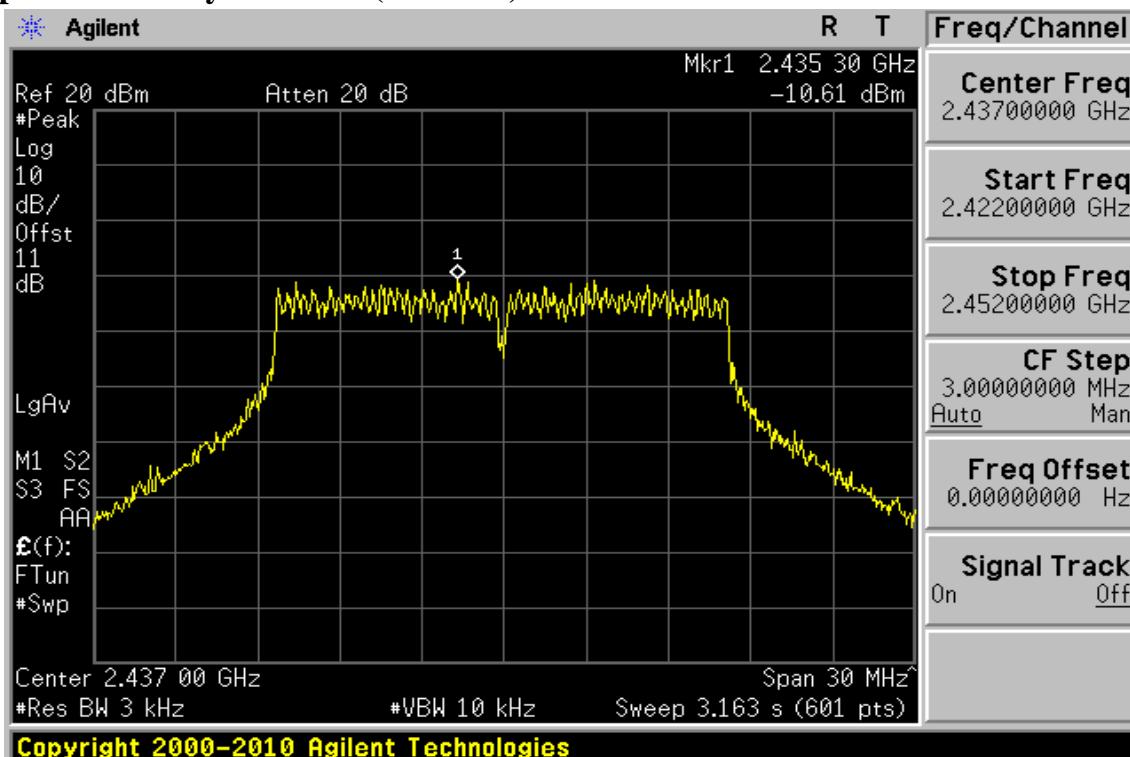
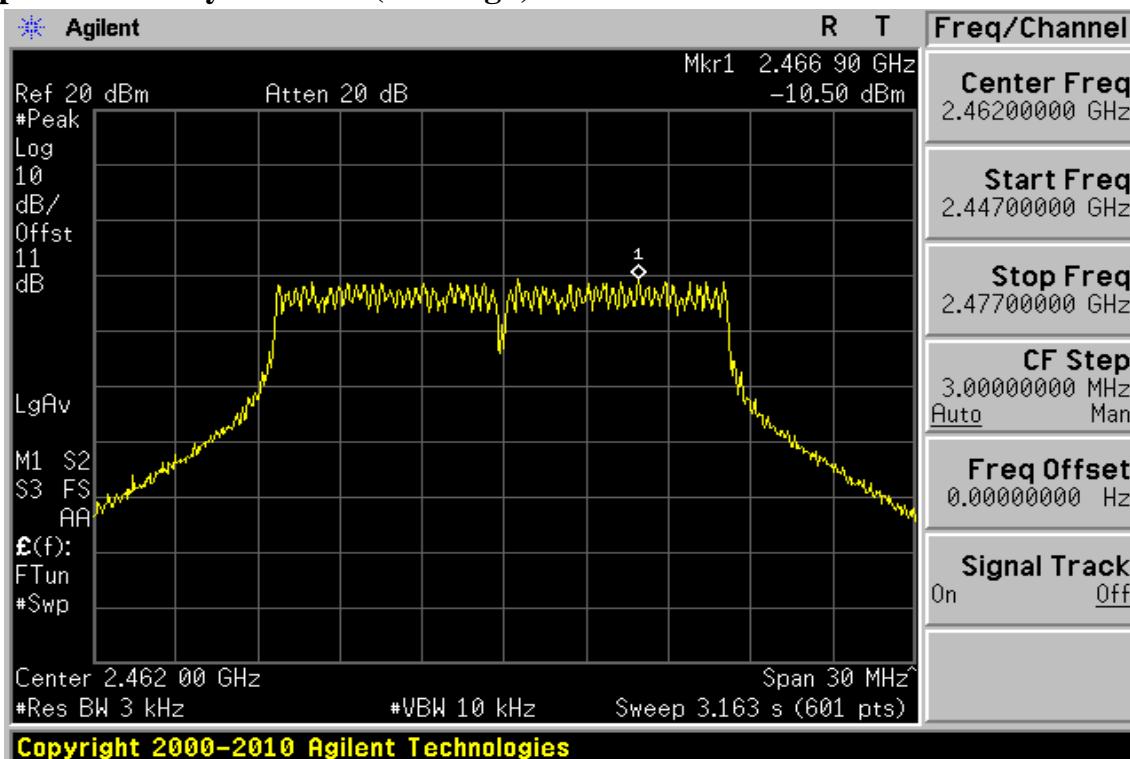


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**Power Spectral Density Test Plot (CH-Mid)****Power Spectral Density Test Plot (CH-High)**

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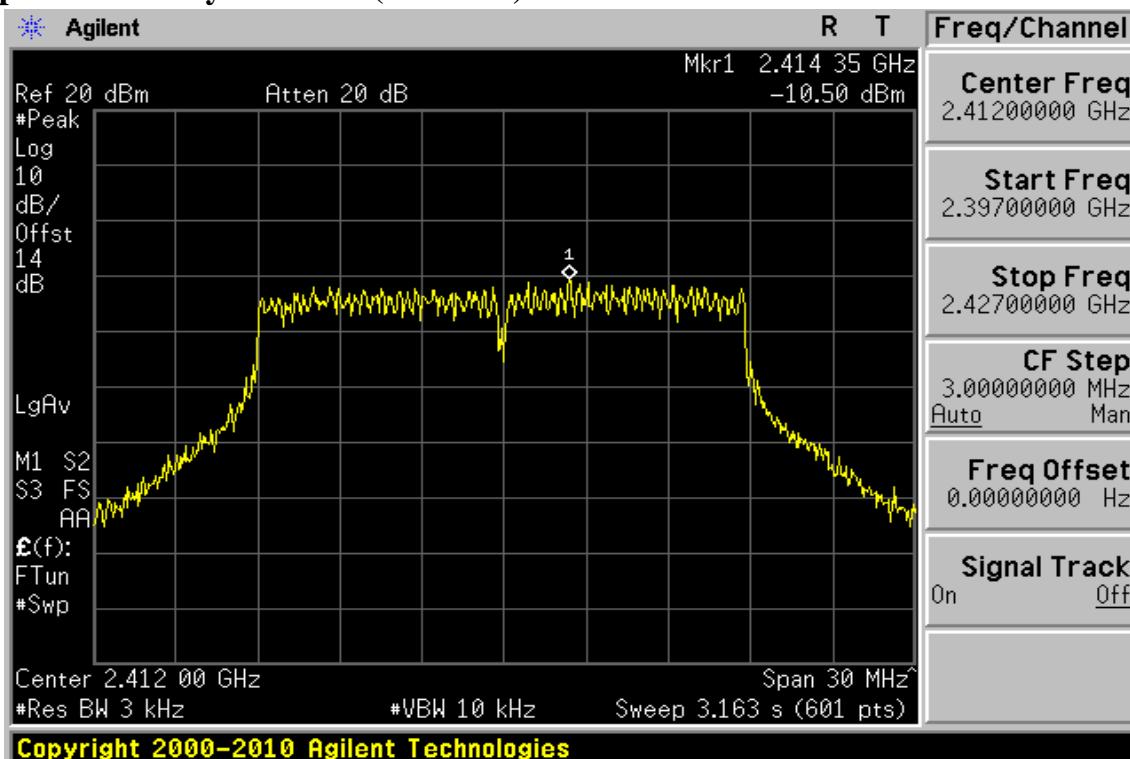
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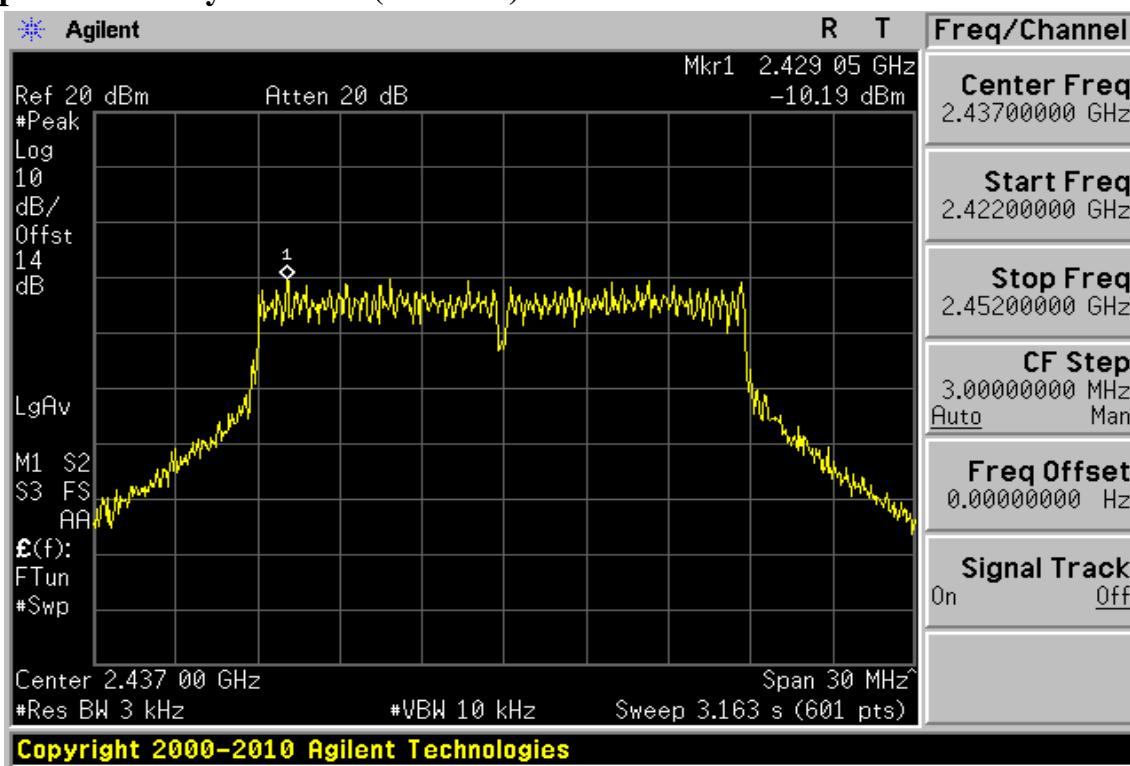
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## 802.11n\_HT20

### Power Spectral Density Test Plot (CH-Low)



### Power Spectral Density Test Plot (CH-Mid)



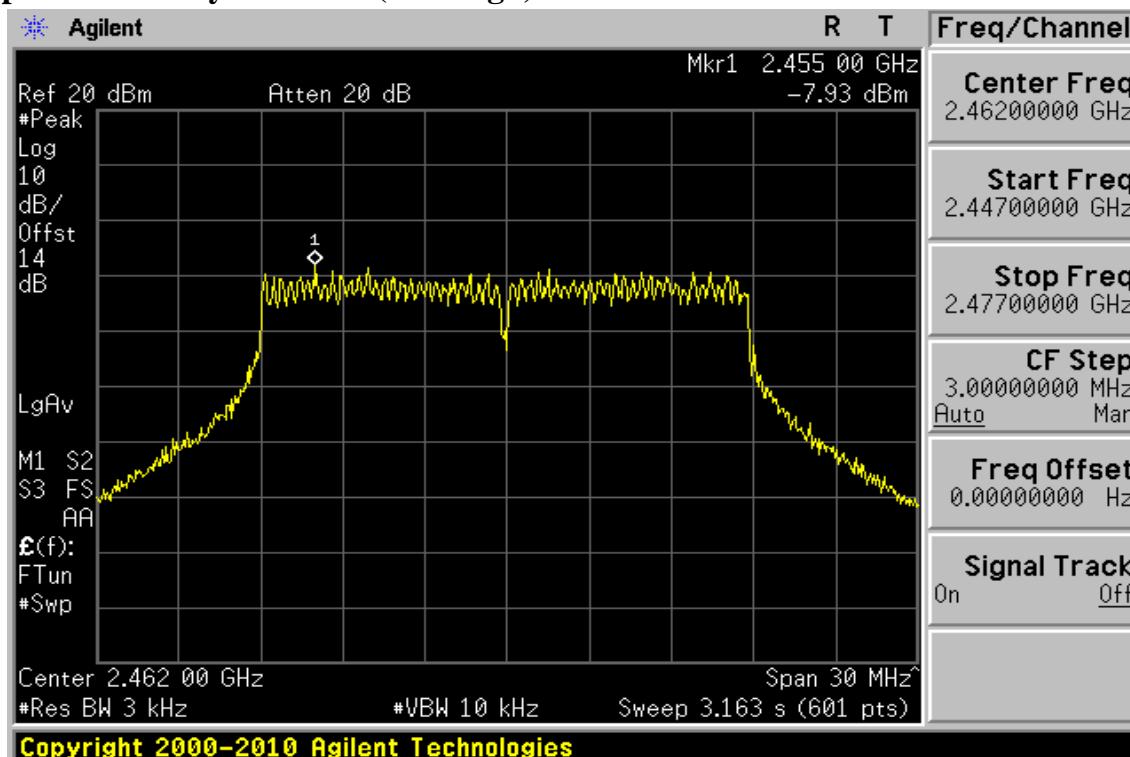
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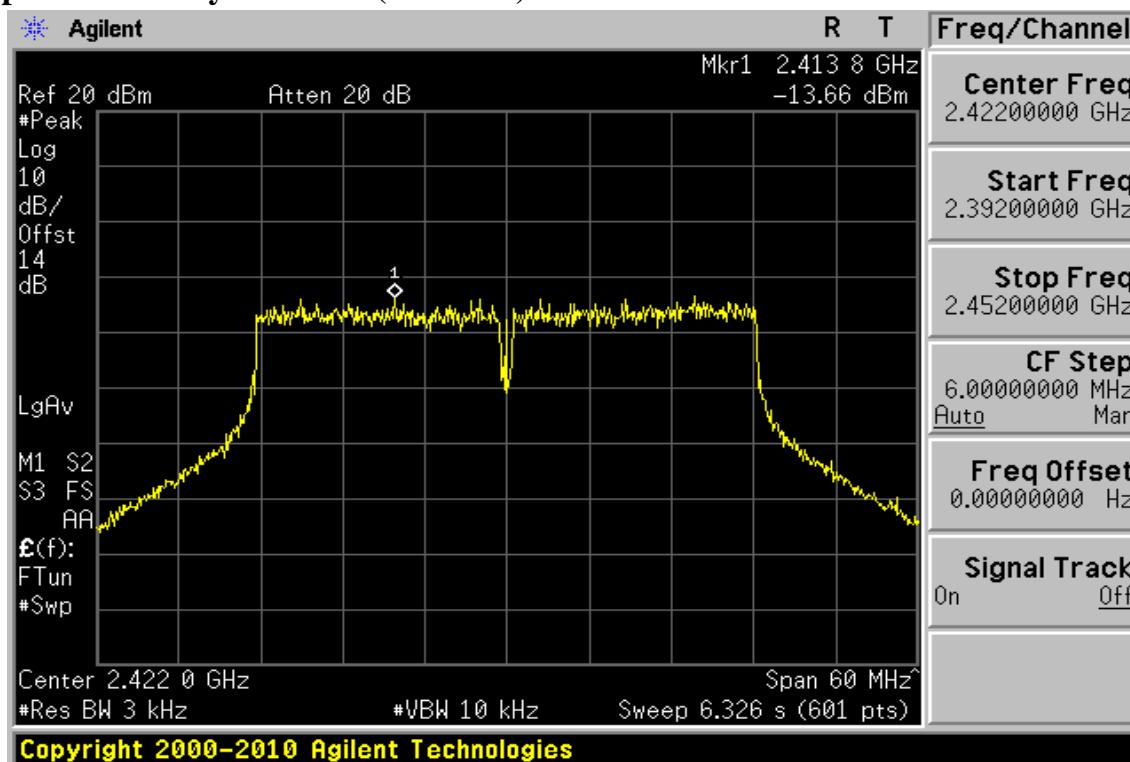
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## Power Spectral Density Test Plot (CH-High)



## 802.11n-HT40

## Power Spectral Density Test Plot (CH-Low)



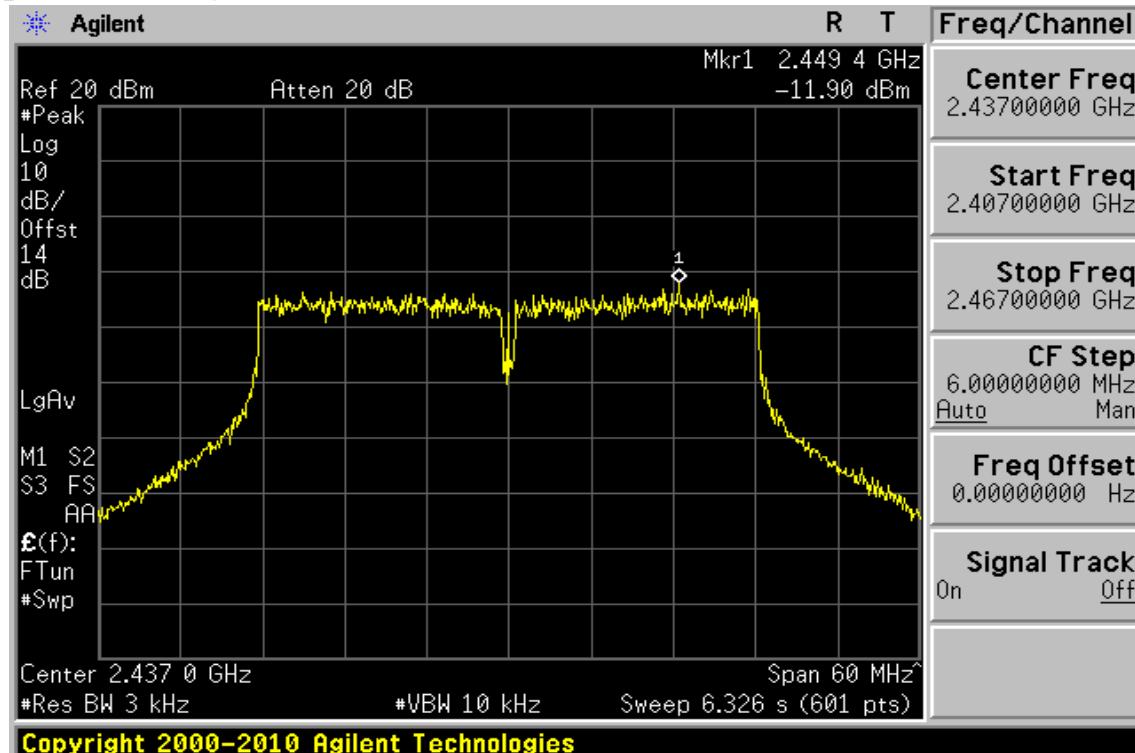
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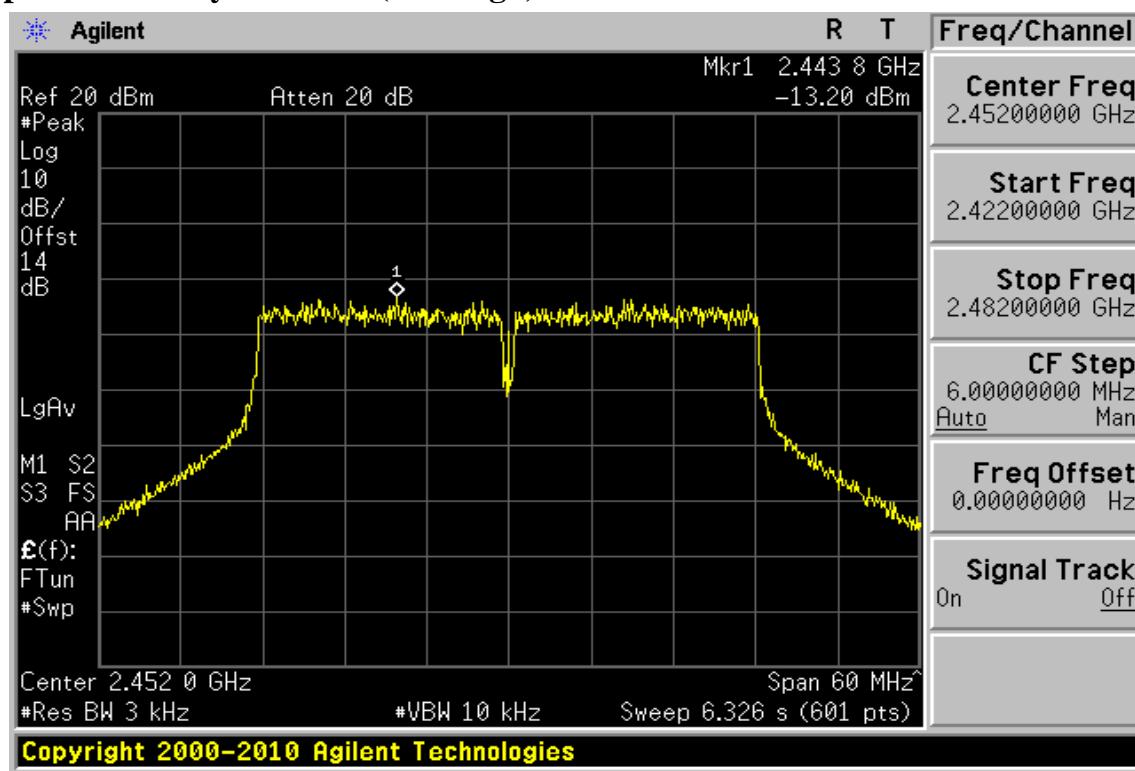
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## Power Spectral Density Test Plot (CH-Mid)



## Power Spectral Density Test Plot (CH-High)



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## 13 ANTENNA REQUIREMENT

### 13.1 Standard Applicable

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

If the transmitting antenna is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi.

In case of point-to-point operation, the power shall be reduced by the one dB for every 3 dB that the directional gain of antenna exceeds 6dBi.

### 13.2 Antenna Connected Construction

An embedded-in antenna design is used.

The antenna connector is designed with unique type RF connector and no consideration of replacement. Please see EUT photo and antenna spec. for details.

The antenna gain is less than 6dBi. Therefore, it is not necessary to reduce maximum output power limit.

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## 14 MAXIMUM PERMISSIBLE EXPOSURE (MPE)

### 14.1 Standard Applicable

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

This is a Mobile device, the MPE is required.

According to §1.1310 and §2.1093 RF exposure is calculated.

#### Limits for Maximum Permissive Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Averaging Time (minute)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f <sup>2</sup> )	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	F/1500	30
1500-15000	/	/	1.0	30

F = frequency in MHz

\* = Plane-wave equipment power density

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## 14.2 Maximum Permissible Exposure (MPE) Evaluation

### Internal Antenna

#### 802.11b Power Table

Frequency (MHz)	Reading Power (dBm)
2412.00	19.10
2437.00	19.63
2462.00	<b>19.92</b>

#### MPE Prediction (802.11b)

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = PG/4 \pi R^2$$

Where: S = Power density

P = Power input to antenna

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

Maximum average output power at antenna input	19.92	(dBm)
Maximum average output power at antenna input	98.1747943	(mW)
Duty cycle:	99	(%)
Maximum Pav :	97.1930464	(mW)
Antenna gain (typical):	4.25	(dBi)
Maximum antenna gain:	2.66072506	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	2462	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm <sup>2</sup> )
Power density at predication frequency at 20 (cm)	0.051474	(mW/cm <sup>2</sup> )

#### Measurement Result

The predicted power density level at 20 cm is 0.051474 mW/cm<sup>2</sup>. This is below the uncontrolled exposure limit of 1 mW/cm<sup>2</sup> at 2462MHz.

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## 802.11g Power Table

Frequency (MHz)	Reading Power (dBm)
2412.00	14.35
2437.00	<b>14.38</b>
2462.00	14.22

## MPE Prediction (802.11g)

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = PG/4 \pi R^2$$

Where: S = Power density

P = Power input to antenna

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

Maximum average output power at antenna input	<b>14.38</b>	(dBm)
Maximum average output power at antenna input	27.4157417	(mW)
Duty cycle:	<b>98</b>	(%)
Maximum Pav :	26.8674269	(mW)
Antenna gain (typical):	<b>4.25</b>	(dBi)
Maximum antenna gain:	2.66072506	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	<b>2437</b>	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm <sup>2</sup> )
Power density at prediction frequency at 20 (cm)	0.014229	(mW/cm <sup>2</sup> )

## Measurement Result

The predicted power density level at 20 cm is 0.014229 mW/cm<sup>2</sup>. This is below the uncontrolled exposure limit of 1 mW/cm<sup>2</sup> at 2437.

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**802.11n\_20M (2.4G) MIMO Chain 0+Chain 1Power Table**

Frequency (MHz)	Reading Power (dBm)
2412.00	15.01
2437.00	16.22
2462.00	<b>16.42</b>

**MPE Prediction (802.11n\_20M (2.4G))**

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = PG/4 \pi R^2$$

Where: S = Power density

P = Power input to antenna

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

Maximum average output power at antenna input	16.42	(dBm)
Maximum average output power at antenna input	43.8530698	(mW)
Duty cycle:	97	(%)
Maximum Pav :	42.5374777	(mW)
Antenna gain (typical):	7.26	(dBi)
Maximum antenna gain:	5.32108259	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	2462	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm <sup>2</sup> )
Power density at predication frequency at 20 (cm)	0.045053	(mW/cm <sup>2</sup> )

**Measurement Result**

The predicted power density level at 20 cm is 0.045053 mW/cm<sup>2</sup>. This is below the uncontrolled exposure limit of 1 mW/cm<sup>2</sup> at 2462.

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**802.11n\_40M (2.4G) MIMO Chain 0+Chain 1Power Table**

Frequency (MHz)	Reading Power (dBm)
2422.00	14.15
2437.00	<b>15.21</b>
2452.00	14.54

**MPE Prediction (802.11n\_40M (2.4G))**

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = PG/4 \pi R^2$$

Where: S = Power density

P = Power input to antenna

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

Maximum average output power at antenna input	15.21	(dBm)
Maximum average output power at antenna input	33.1894458	(mW)
Duty cycle:	93	(%)
Maximum Pav :	30.8661846	(mW)
Antenna gain (typical):	7.26	(dBi)
Maximum antenna gain:	5.32108259	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	2437	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm <sup>2</sup> )
Power density at predication frequency at 20 (cm)	0.032691	(mW/cm <sup>2</sup> )

**Measurement Result**

The predicted power density level at 20 cm is 0.032691 mW/cm<sup>2</sup>. This is below the uncontrolled exposure limit of 1 mW/cm<sup>2</sup> at 2437.

*Remark: For RF exposure potentially generating from Co-located transmitter, please reference to the section of collocated MPE analysis, Report No.: ER/2015/20030.*

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