

# FCC Part 15C

## Measurement and Test Report

For

**ThinPAD Technology (ShenZhen) Co., Ltd.**

**Room 2305, Xingji Tower, Xinsha Road, Shajing Town, Baoan, Shenzhen,**

**Guangdong, China**

**FCC ID: 2ADZ7MGS101033160**

**FCC Rule(s):** FCC Part 15C

**Product Description:** carbon Baytrail-M

**Tested Model:** MGS101-03

**Report No.:** STRD15040040I-3

**Tested Date:** 2015-07-15 to 2015-09-24

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Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by Shenzhen SEM.Test Technology Co., Ltd.

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## 1. GENERAL INFORMATION

### 1.1 Product Description for Equipment Under Test (EUT)

#### Client Information

Applicant: ThinPAD Technology (ShenZhen) Co.,Ltd.  
 Address of applicant: Room 2305, Xingji Tower, Xinsha Road, Shajing Town, Baoan, Shenzhen, Guangdong, China  
 Manufacturer: ThinPAD Technology (ShenZhen) Co.,Ltd.  
 Address of manufacturer: Room 2305, Xingji Tower, Xinsha Road, Shajing Town, Baoan, Shenzhen, Guangdong, China

General Description of EUT	
Product Name:	carbon Baytrail-M
Brand Name:	TPtech
Model No.:	MGS101-03
Adding Model:	/
Hardware Version:	MGS101-03 X01
Software Version:	Windows Embedded 8.1
Rated Voltage:	DC 7.4V Li-ion Battery
Battery Capacity:	16000mAh
Power Adaptor:	WSC1304WB
	Input 100-240V, 50/60Hz, Output DC 12V/4A
Device Category:	Portable Device
Note: The test data is gathered from a production sample provided by the manufacturer.	

Technical Characteristics of EUT	
Support Standards:	802.11b, 802.11g, 802.11n
Frequency Range:	2412-2462MHz for 802.11b/g/n(HT20) 2422-2452MHz for 802.11n(HT40)
RF Output Power:	13.18dBm (Conducted)
Type of Modulation:	CCK, OFDM, QPSK, BPSK, 16QAM, 64QAM
Data Rate:	1-11Mbps, 6-54Mbps, up to 150Mbps
Quantity of Channels:	11/7
Channel Separation:	5MHz
Type of Antenna:	Integral Antenna
Antenna Gain:	2.0dBi
Lowest Internal Frequency	32.768KHz

Center Frequency of Each Channel for 802.11b/g/n(HT20):

Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 1:	2412MHz	Channel 5:	2432MHz	Channel 9:	2452MHz
Channel 2:	2417MHz	Channel 6:	2437MHz	Channel 10:	2457MHz
Channel 3:	2422MHz	Channel 7:	2442MHz	Channel 11:	2462MHz
Channel 4:	2427MHz	Channel 8:	2447MHz	/	/

Center Frequency of Each Channel for 802.11n(HT40):

Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 1:	2422MHz	Channel 5:	2442MHz	/	
Channel 2:	2427MHz	Channel 6:	2447MHz	/	/
Channel 3:	2432MHz	Channel 7:	2452MHz	/	/
Channel 4:	2437MHz	Channel 8:	/	/	/

## 1.2 Test Standards

The following report is prepared on behalf of the ThinPAD Technology (ShenZhen) Co., Ltd in accordance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 of the Federal Communication Commissions rules.

**Maintenance of compliance** is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

## 1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz. The measurement guide KDB 558074 D01 V03r03 for digital transmission systems shall be performed also.

## 1.4 Test Facility

### FCC – Registration No.: 934118

Shenzhen SEM.Test Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Registration is 934118.

### Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Shenzhen SEM.Test Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

**CNAS Registration No.: L4062**

Shenzhen SEM.Test Technology Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 1/F, Building A, Hongwei Industrial Park, Liuxian 2<sup>nd</sup> Road, Bao'an District, Shenzhen, P.R.C (518101).

**1.5 EUT Setup and Test Mode**

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. All testing shall be performed under maximum output power condition, and to measure its highest possible emissions level, more detailed description as follows:

<b>Test Mode List</b>		
Test Mode	Description	Remark
TM1	802.11b	2412MHz, 2437MHz, 2462MHz
TM2	802.11g	2412MHz, 2437MHz, 2462MHz
TM3	802.11n-HT20	2412MHz, 2437MHz, 2462MHz
TM4	802.11n-HT40	2422MHz, 2437MHz, 2452MHz

<b>EUT Cable List and Details</b>			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
Adapter Cable	1.0	Unshielded	Without Ferrite

<b>Special Cable List and Details</b>			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
Earphone	1.2	Unshielded	Without Ferrite
USB Cable	0.3	Unshielded	Without Ferrite

<b>Auxiliary Equipment List and Details</b>			
Description	Manufacturer	Model	Serial Number
Notebook	Lenovo	E10	LR-63C8R

## 1.6 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
Spectrum Analyzer	Agilent	E4407B	MY41440400	2015-06-17	2016-06-16
Spectrum Analyzer	Rohde & Schwarz	FSP	836079/035	2015-06-17	2016-06-16
EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2015-06-17	2016-06-16
Amplifier	Agilent	8447F	3113A06717	2015-06-17	2016-06-16
Amplifier	C&D	PAP-1G18	2002	2015-06-17	2016-06-16
Broadband Antenna	Schwarz beck	VULB9163	9163-333	2015-06-17	2016-06-16
Horn Antenna	ETS	3117	00086197	2015-06-17	2016-06-16
Horn Antenna	ETS	3116B	00088203	2015-06-17	2016-06-16
Loop Antenna	Schwarz beck	FMZB 1516	9773	2015-06-17	2016-06-16
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2015-06-17	2016-06-16
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2015-06-17	2016-06-16
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2015-06-17	2016-06-16

## 2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test Item	Result
§ 2.1093	RF Exposure	Compliant
§ 15.203; § 15.247(b)(4)(i)	Antenna Requirement	Compliant
§ 15.207(a)	Conducted Emission	Compliant
§ 15.247(e)	Power Spectral Density	Compliant
§ 15.247(a)(2)	6 dB Bandwidth	Compliant
§ 15.247(b)(3)	RF Output Power	Compliant
§ 15.209(a)	Radiated Emission	Compliant
§ 15.247(d)	Band Edge (Out of Band Emissions)	Compliant

N/A: not applicable

### **3. RF Exposure**

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#### **3.1 Standard Applicable**

According to § 1.1307 and § 2.1093, the portable transmitter must comply the RF exposure requirements.

#### **3.2 Test Result**

This product complied with the requirement of the RF exposure, please see the RF exposure Report.



## **4. Antenna Requirement**

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### **4.1 Standard Applicable**

According to FCC Part 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

### **4.2 Evaluation Information**

This product has an integral antenna, fulfill the requirement of this section.

## 5. Power Spectral Density

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### 5.1 Standard Applicable

According to 15.247(a)(1)(iii), For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

### 5.2 Test Procedure

According to the KDB 558074 D01 V03r03, such specifications require that the same method as used to determine the conducted output power shall also be used to determine the power spectral density. The test method of power spectral density as below:

- a) Set instrument center frequency to DTS channel center frequency.
- b) Set span to at least 1.5 times the OBW.
- c) Set RBW to:  $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$ .
- d) Set VBW  $\geq 3 \times \text{RBW}$ .
- e) Detector = power averaging (RMS) or sample detector (when RMS not available).
- f) Ensure that the number of measurement points in the sweep  $\geq 2 \times \text{span/RBW}$ .
- g) Sweep time = auto couple.
- h) Employ trace averaging (RMS) mode over a minimum of 100 traces.
- i) Use the peak marker function to determine the maximum amplitude level.
- j) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat (note that this may require zooming in on the emission of interest and reducing the span in order to meet the minimum measurement point requirement as the RBW is reduced).

### 5.3 Environmental Conditions

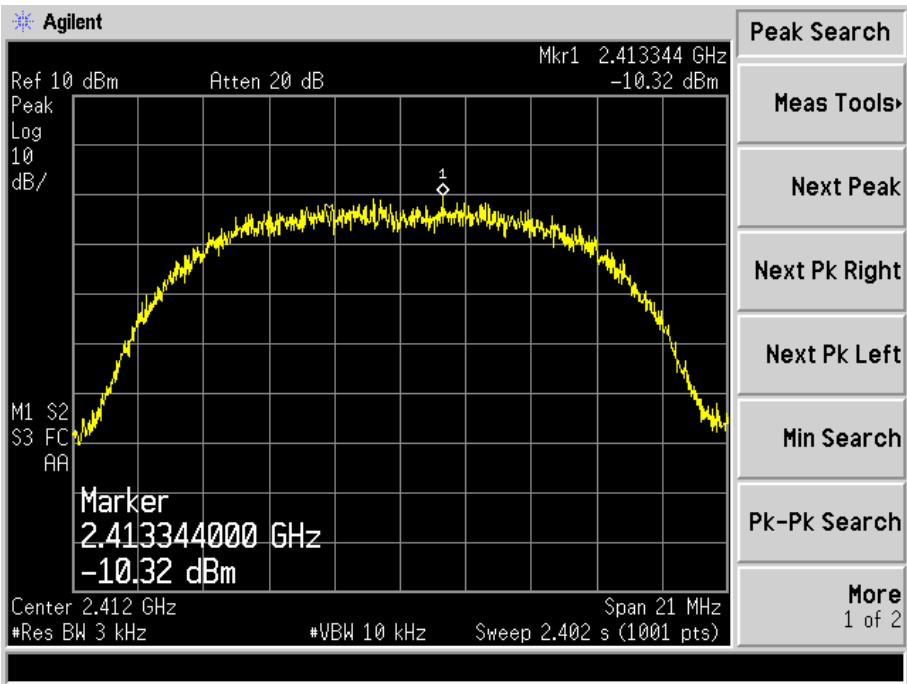
Temperature:	26° C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

## 5.4 Summary of Test Results/Plots

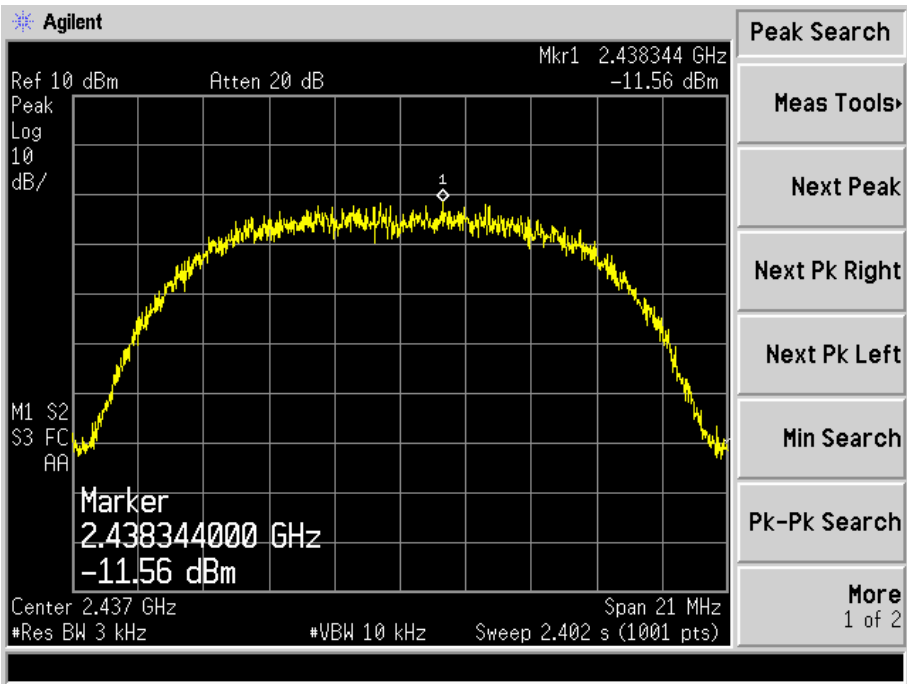
Test Mode	Test Channel MHz	Power Spectral Density dBm/3kHz	Limit dBm/3kHz
802.11b	2412	-10.32	8
	2437	-11.56	8
	2462	-12.26	8
802.11g	2412	-14.44	8
	2437	-15.49	8
	2462	-16.10	8
802.11n HT20	2412	-15.23	8
	2437	-16.57	8
	2462	-16.94	8
802.11n HT40	2422	-17.66	8
	2437	-17.44	8
	2452	-17.95	8

Please refer to the following test plots:

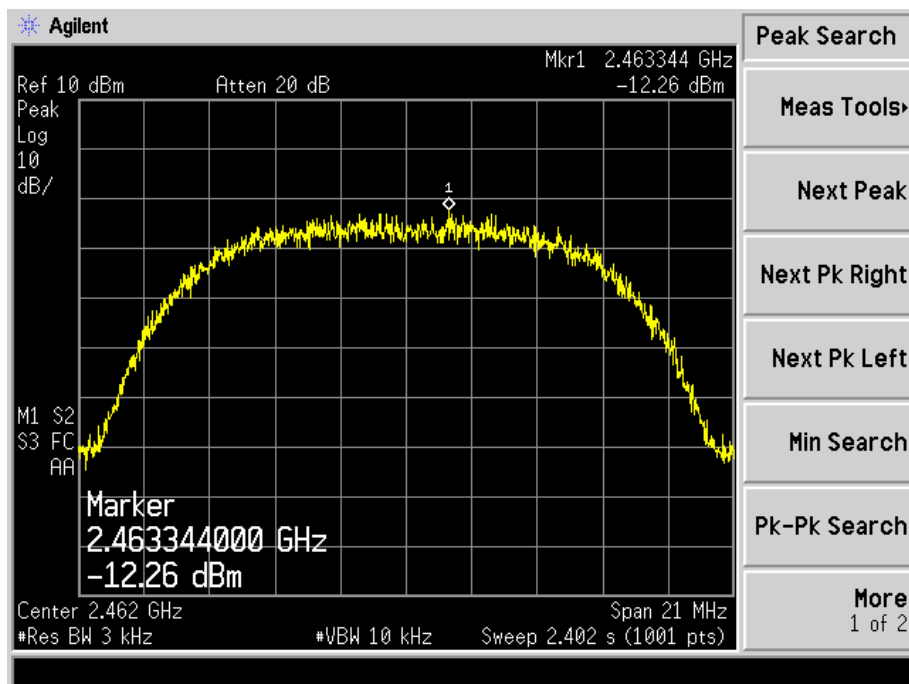
802.11b-Low Channel



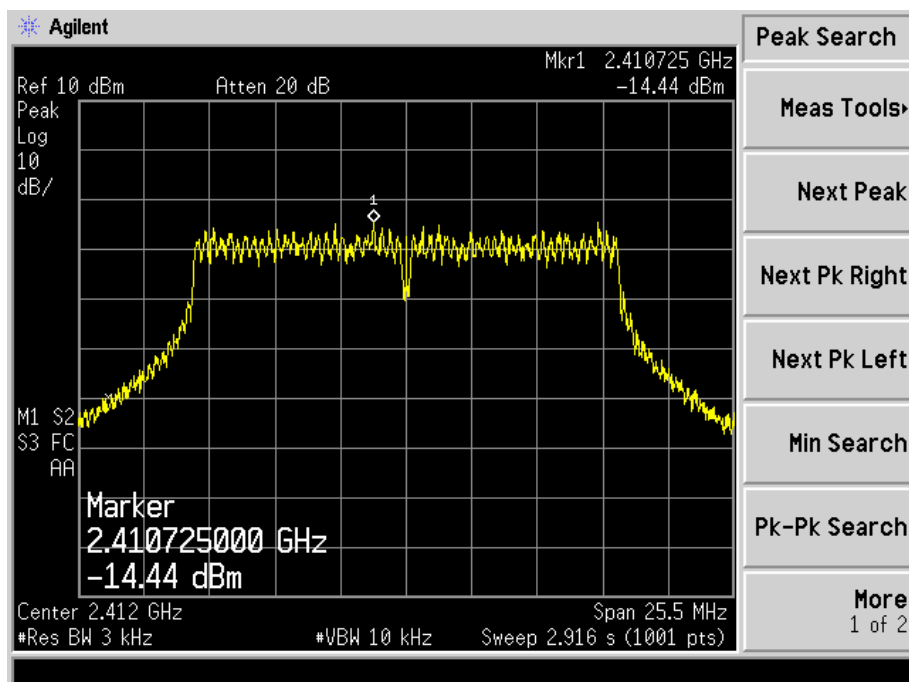
802.11b-Middle Channel



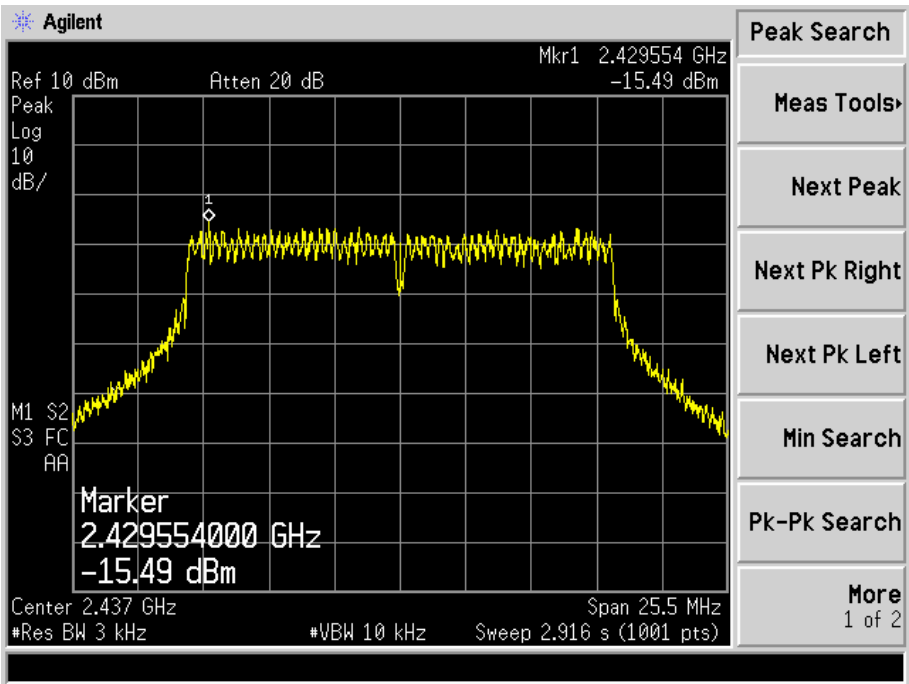
## 802.11b-High Channel



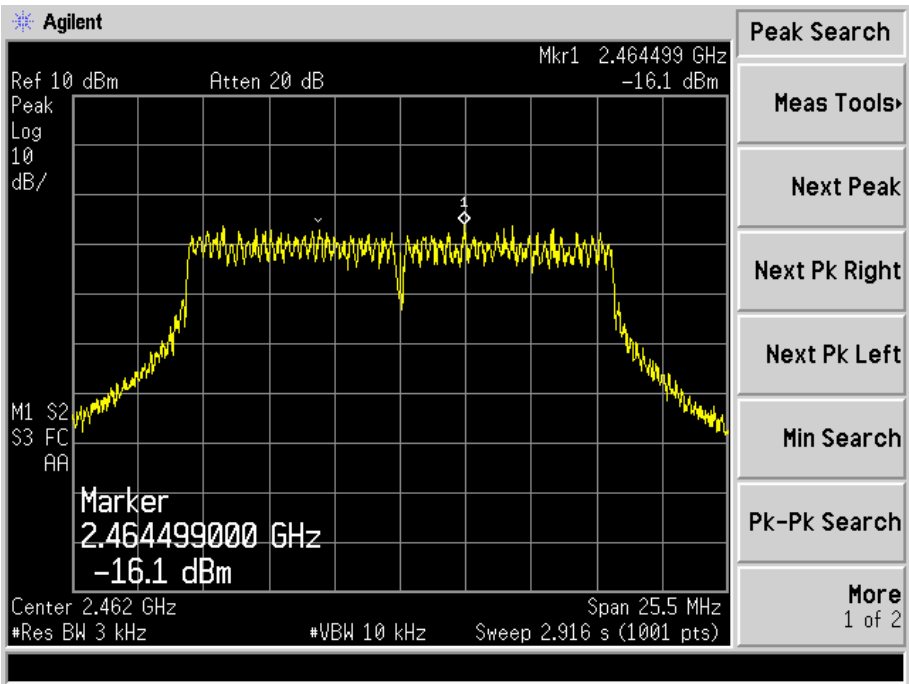
## 802.11g-Low Channel



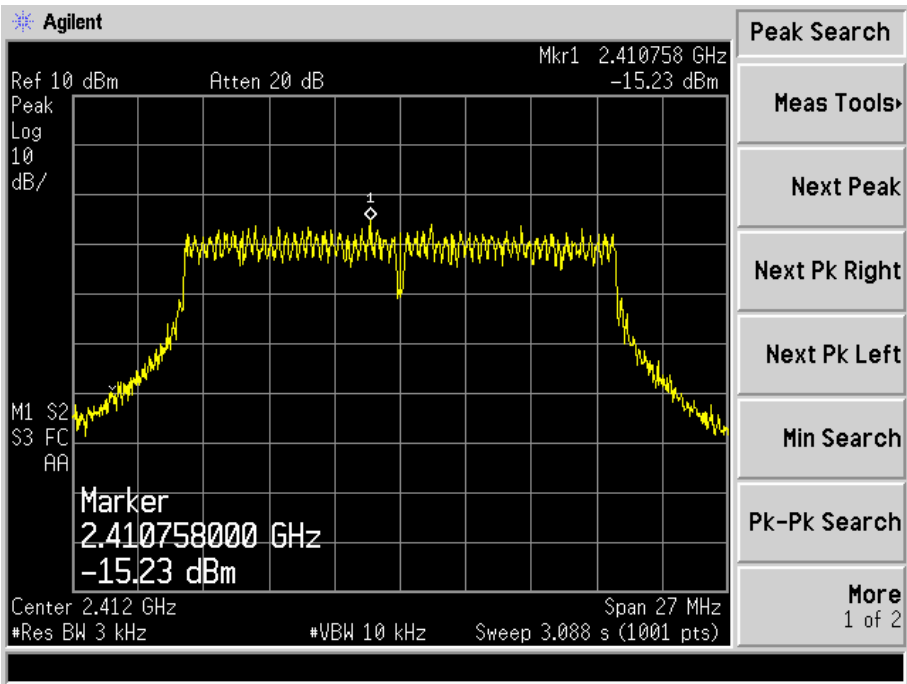
802.11g-Middle Channel



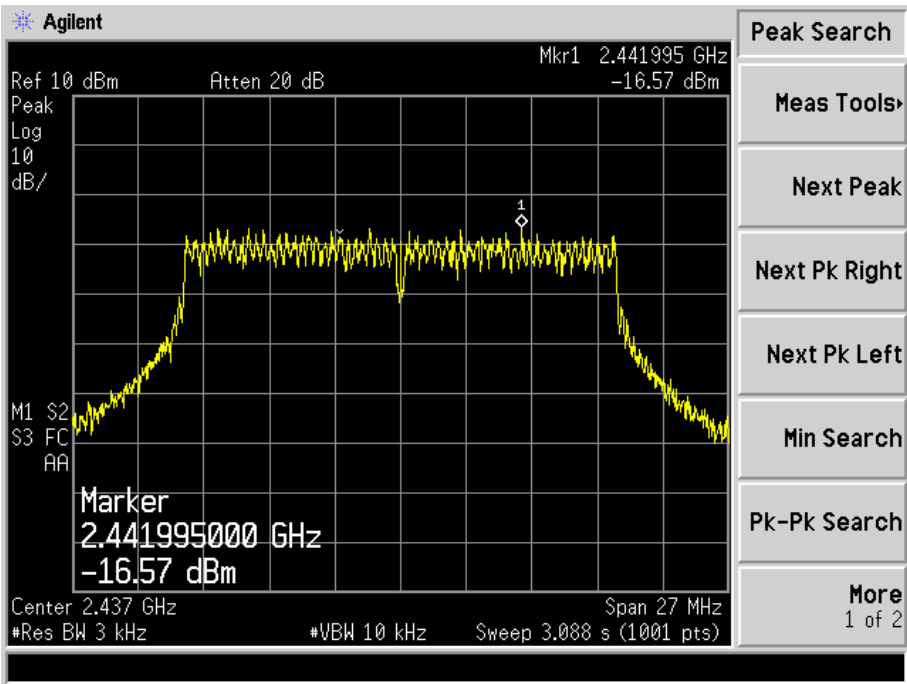
802.11g-High Channel



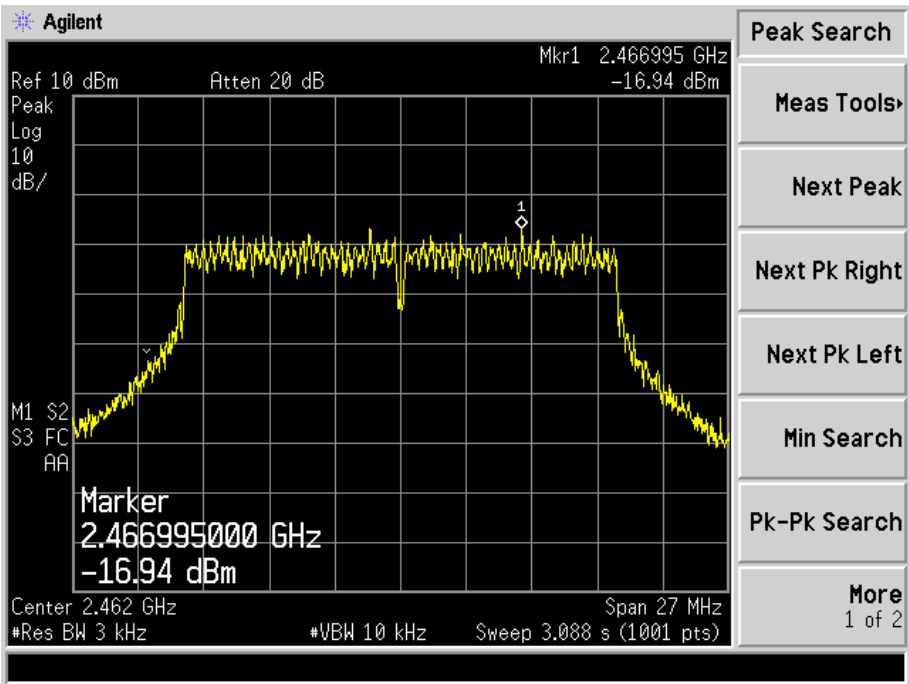
802.11n-HT20-Low Channel



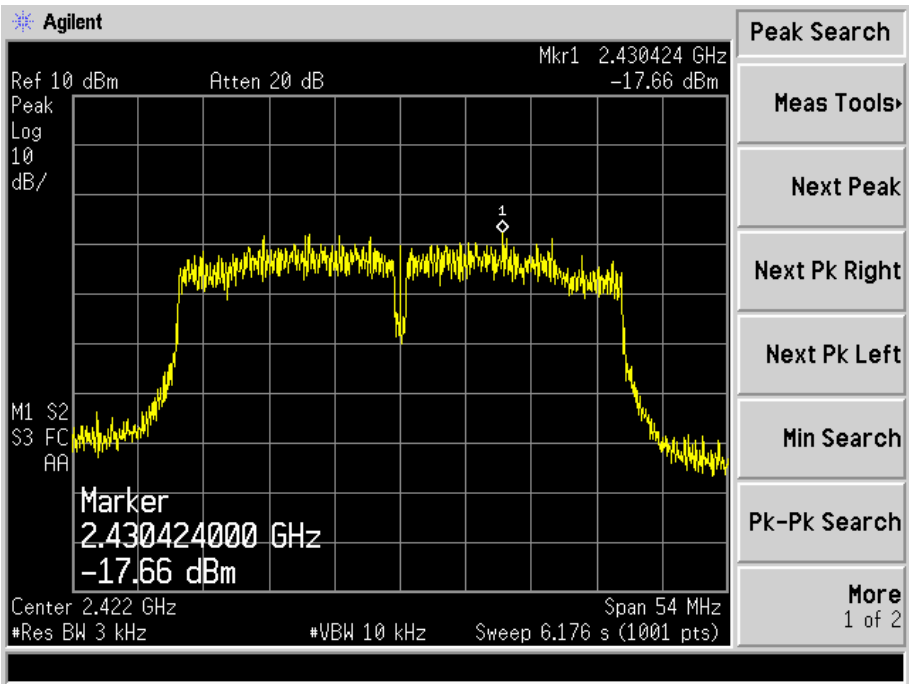
802.11n-HT20-Middle Channel



802.11n-HT20-High Channel

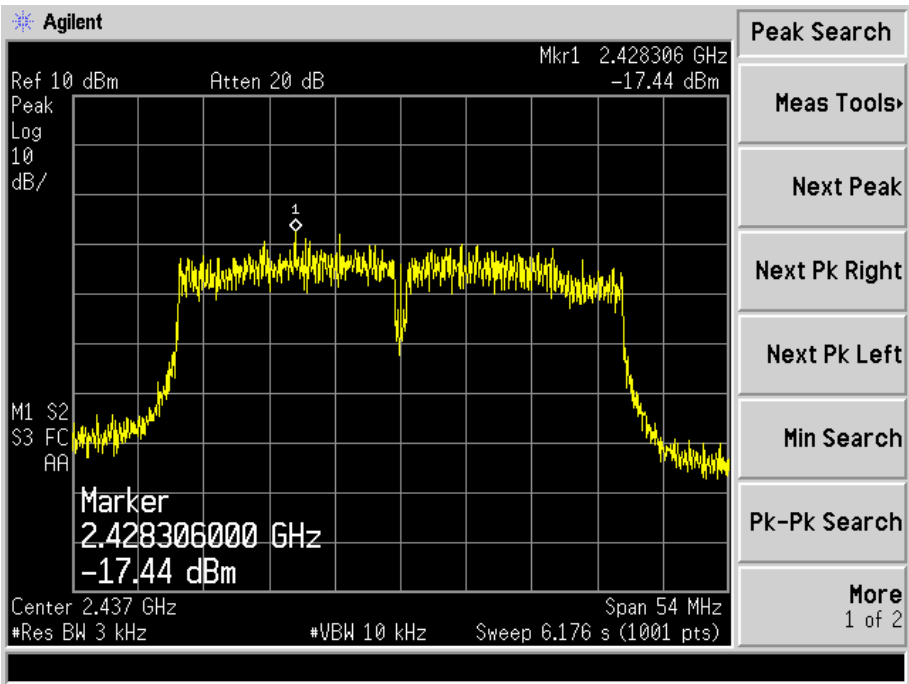


802.11n-HT40-Low Channel

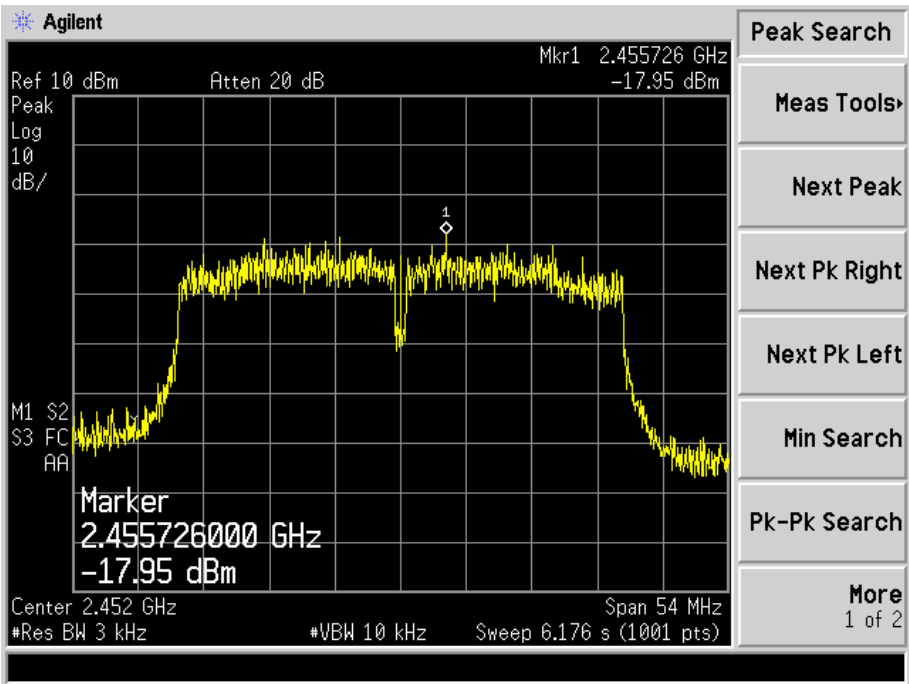




802.11n-HT40-Middle Channel



802.11n-HT40-High Channel



## 6. 6dB Bandwidth

### 6.1 Standard Applicable

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

### 6.2 Test Procedure

- a) Set RBW = 100 kHz.
- b) Set the video bandwidth (VBW)  $\geq 3 \times$  RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.
- g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

### 6.3 Environmental Conditions

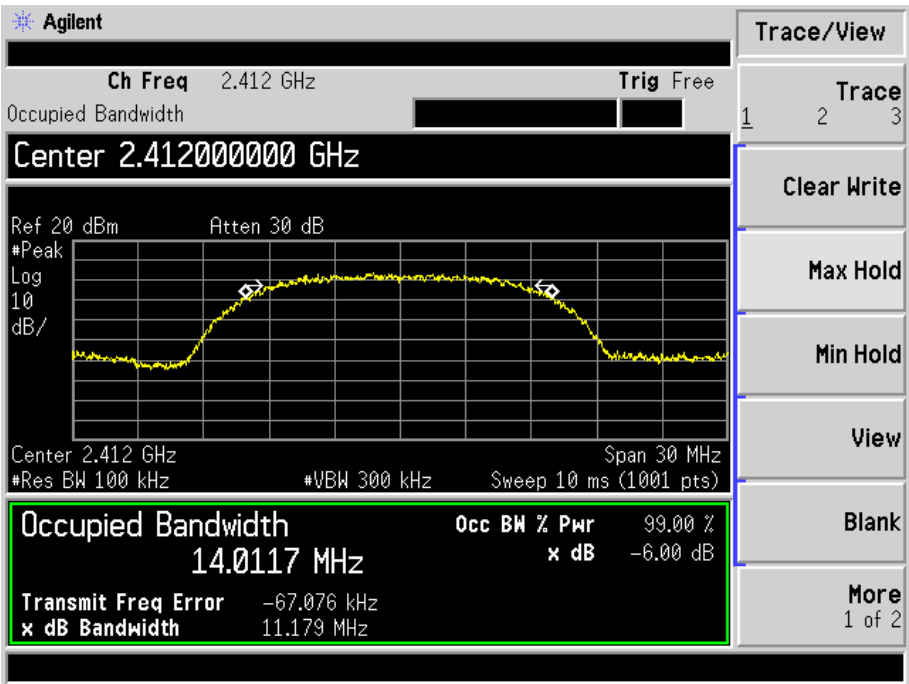
Temperature:	25° C
Relative Humidity:	53%
ATM Pressure:	1018 mbar

### 6.4 Summary of Test Results/Plots

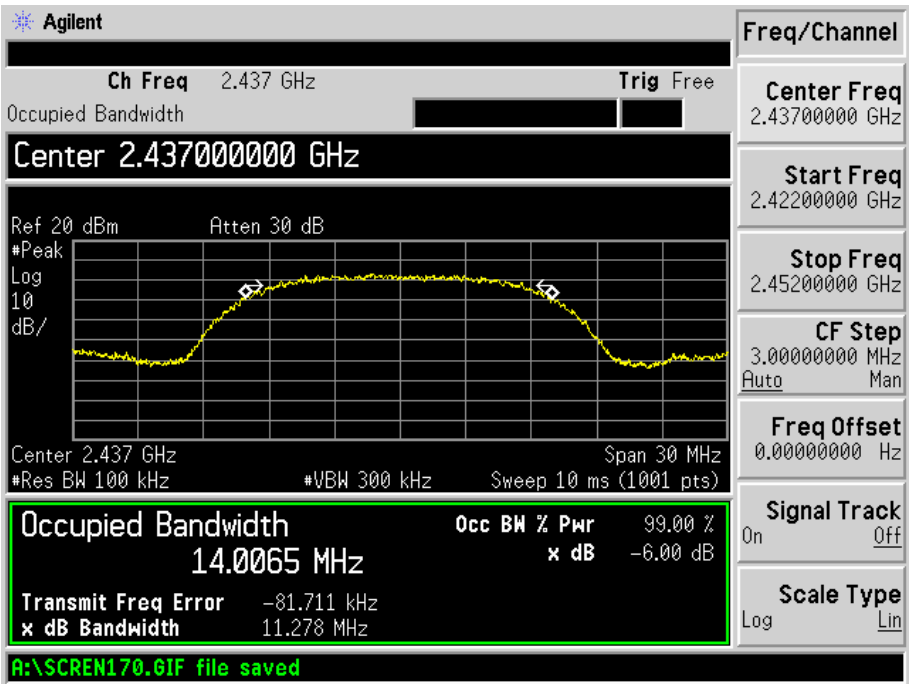
Test Mode	Test Channel MHz	6 dB Bandwidth kHz	99% Bandwidth kHz	Limit kHz
802.11b	2412	11179	14011.7	$\geq 500$
	2437	11278	14006.5	$\geq 500$
	2462	11236	14022.7	$\geq 500$
802.11g	2412	16452	16414.3	$\geq 500$
	2437	16474	16432.6	$\geq 500$
	2462	16446	16402.6	$\geq 500$
802.11n-HT20	2412	17671	17645.1	$\geq 500$
	2437	17733	17663.9	$\geq 500$
	2462	17702	17651.6	$\geq 500$
802.11n-HT20	2422	35147	35736.2	$\geq 500$
	2437	35144	35739.5	$\geq 500$
	2452	35122	35816.5	$\geq 500$

Please refer to the following test plots:

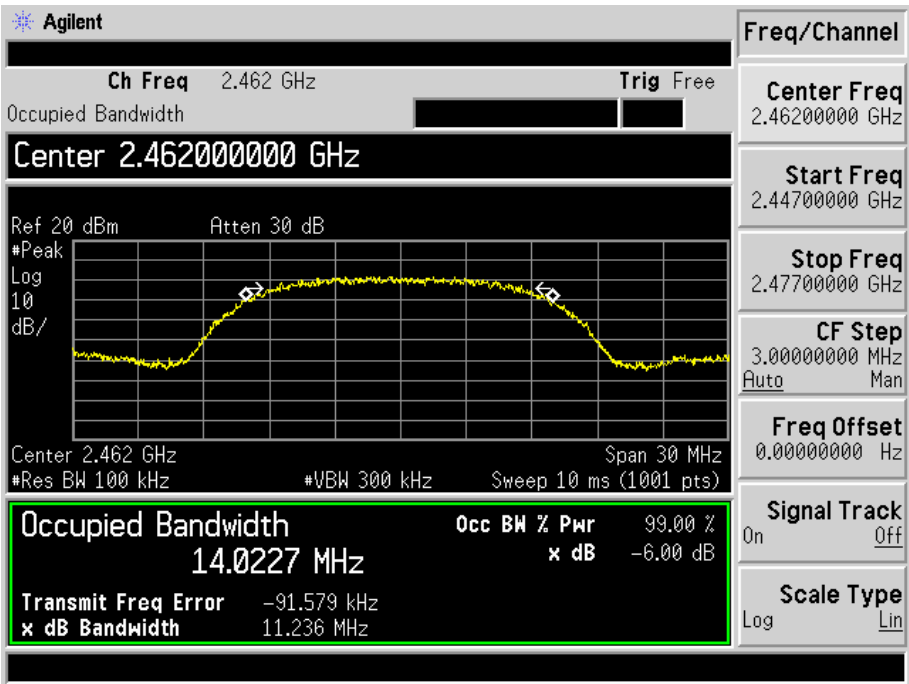
802.11b-Low Channel



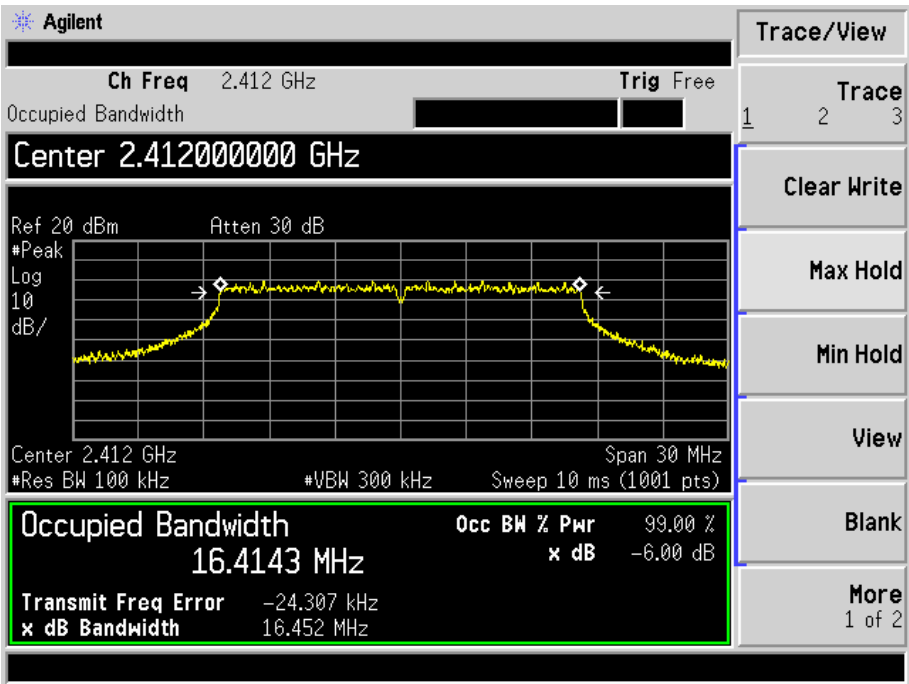
802.11b-Middle Channel



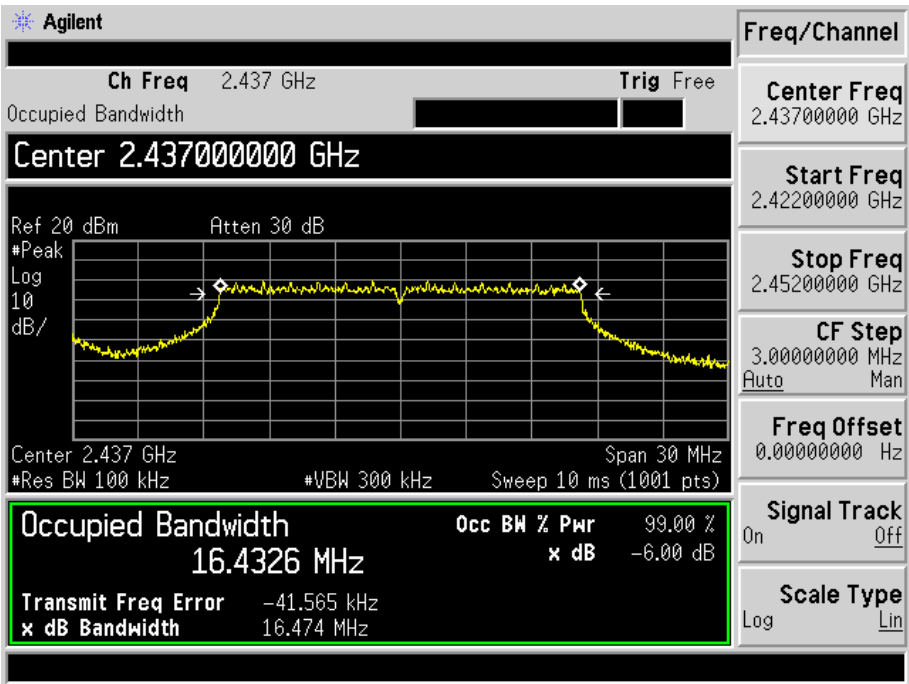
802.11b-High Channel



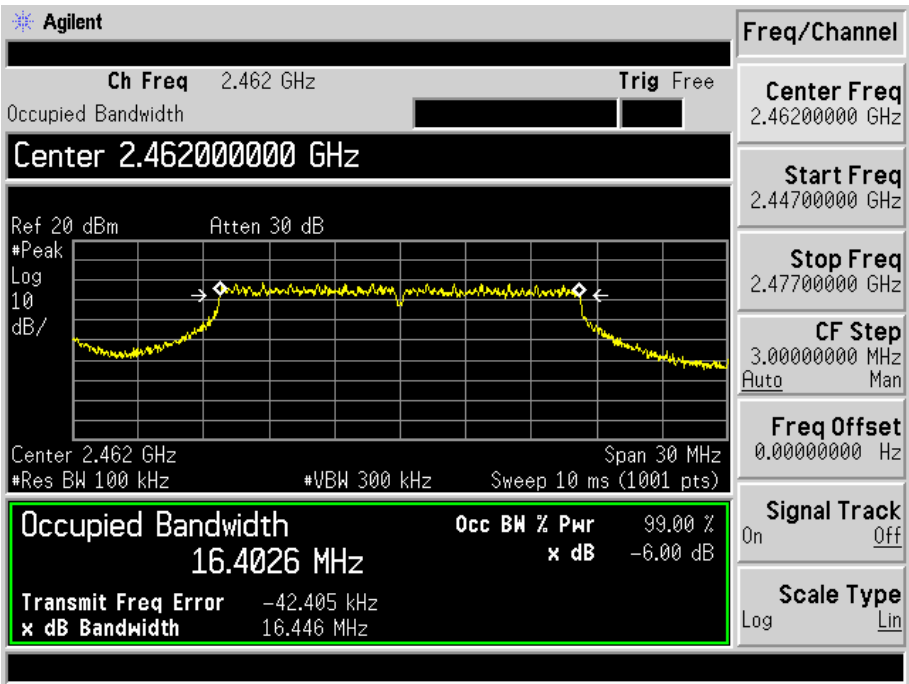
802.11g-Low Channel



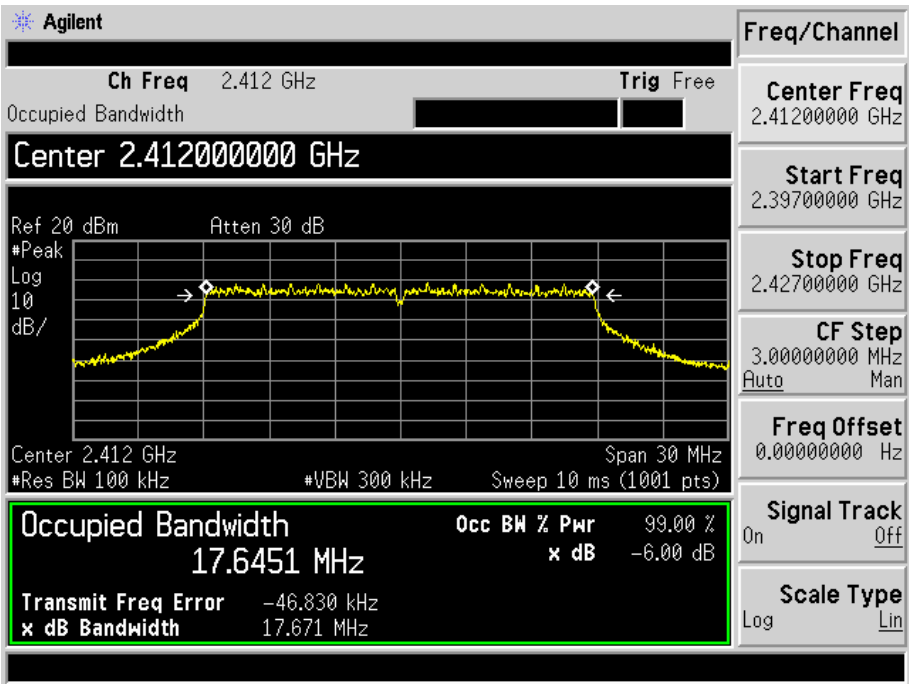
802.11g-Middle Channel



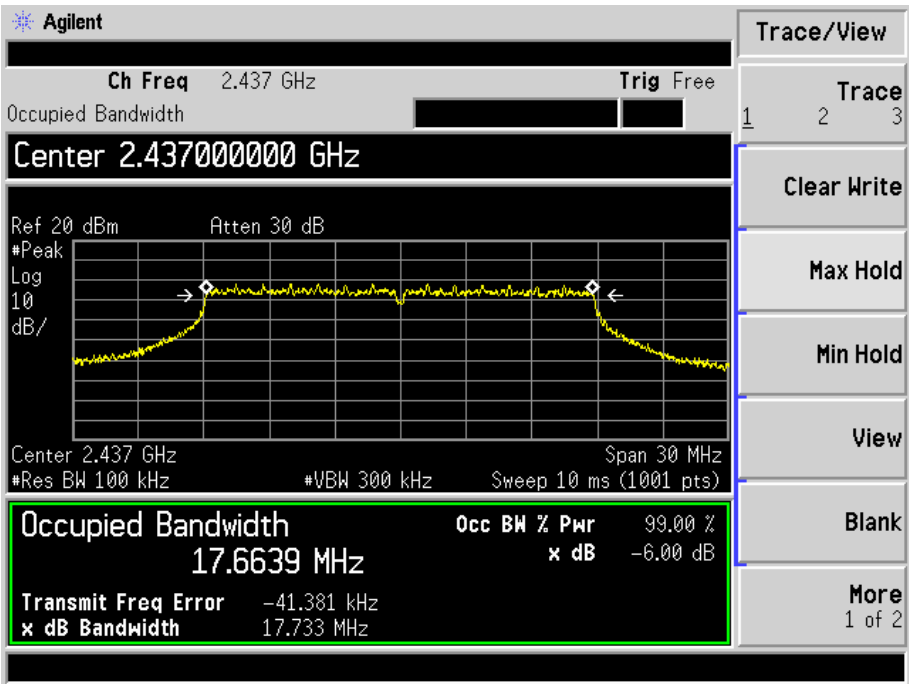
802.11g-High Channel



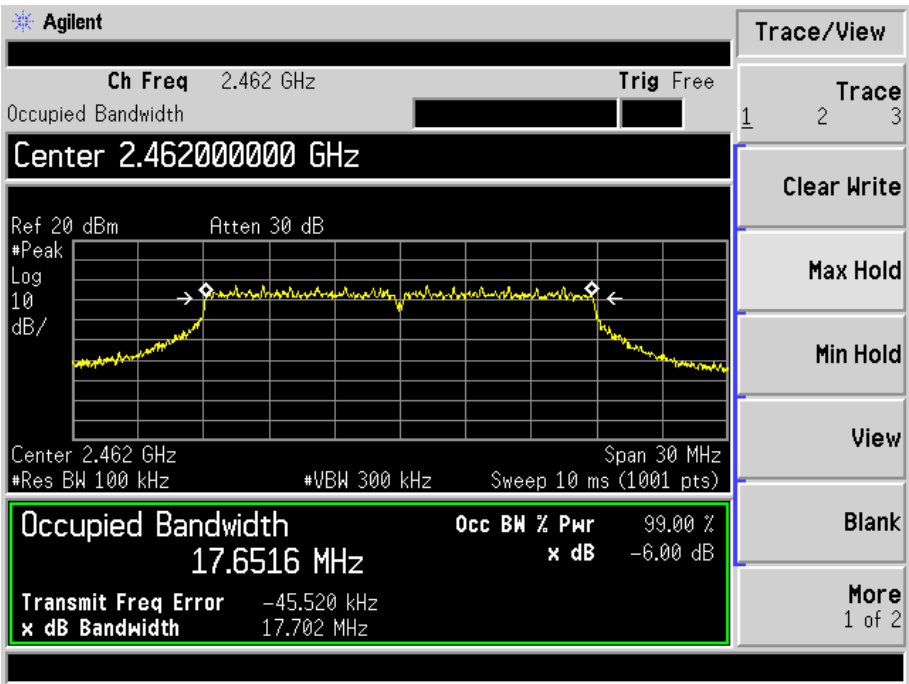
802.11n-HT20-Low Channel



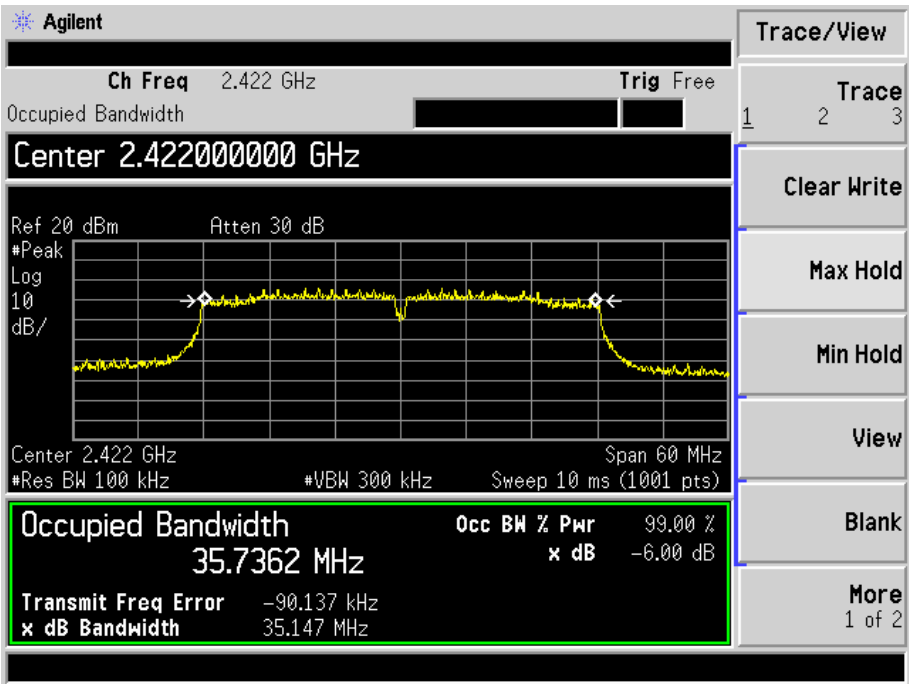
802.11n-HT20-Middle Channel



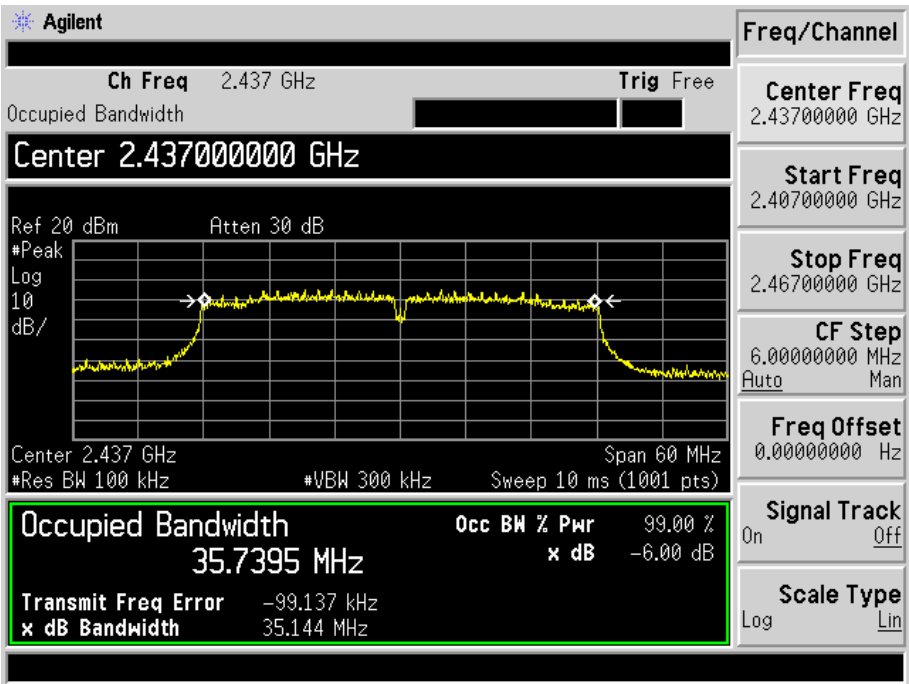
802.11n-HT20-High Channel



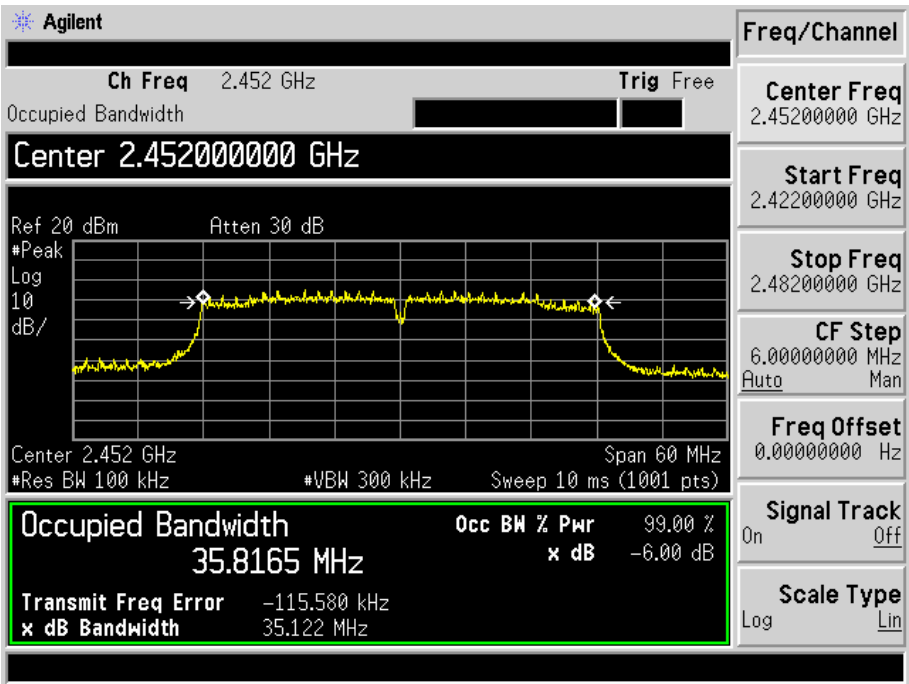
802.11n-HT40-Low Channel



802.11n-HT40-Middle Channel



802.11n-HT40-High Channel





## 7. RF Output Power

### 7.1 Standard Applicable

According to 15.247(b)(3). For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt.

### 7.2 Test Procedure

According to section 15.247(b)-power output of the KDB-558074 D01 V03r03, 9.2.2.2 (channel integration method) When this option is exercised, the measured power is to be referenced to the OBW rather than the DTS bandwidth

- a) Set span to at least 1.5 times the OBW.
- b) Set RBW = 1-5% of the OBW, not to exceed 1 MHz.
- c) Set VBW  $\geq 3 \times$  RBW.
- d) Number of points in sweep  $\geq 2 \times \text{span} / \text{RBW}$ . (This gives bin-to-bin spacing  $\leq \text{RBW}/2$ , so that narrowband signals are not lost between frequency bins.)
- e) Sweep time = auto.
- f) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
- g) If transmit duty cycle < 98 %, use a sweep trigger with the level set to enable triggering only on full power pulses. The transmitter shall operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle  $\geq 98 \%$ , and if each transmission is entirely at the maximum power control level, then the trigger shall be set to “free run” .
- h) Trace average at least 100 traces in power averaging (i.e., RMS) mode.
- i) Compute power by integrating the spectrum across the OBW of the signal using the instrument’s band power measurement function, with band limits set equal to the OBW band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.

### 7.3 Environmental Conditions

Temperature:	26° C
Relative Humidity:	57%
ATM Pressure:	1011 mbar

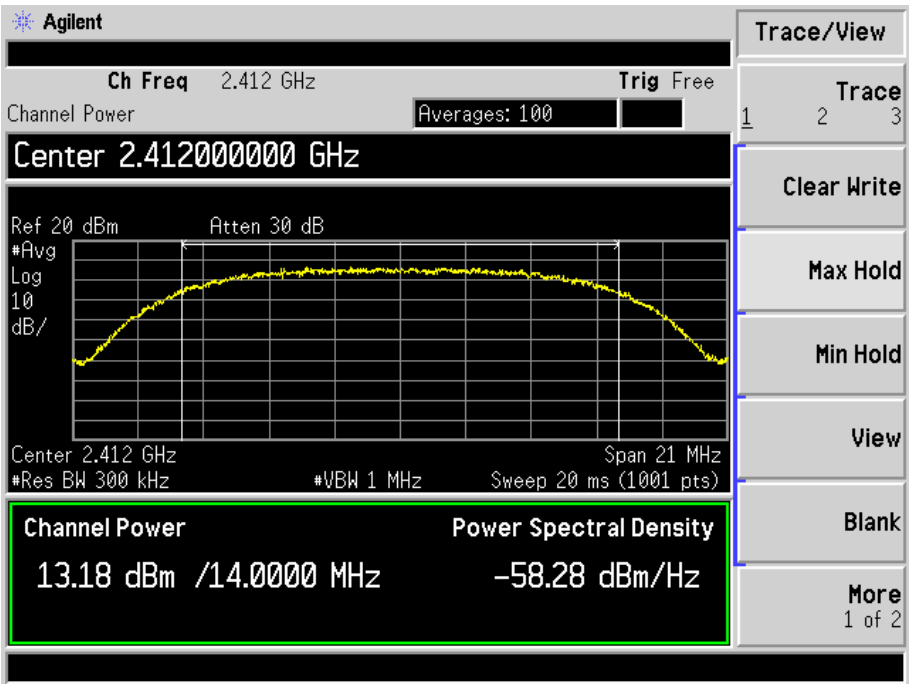
## 7.4 Summary of Test Results/Plots

*Only the worst case was reported*

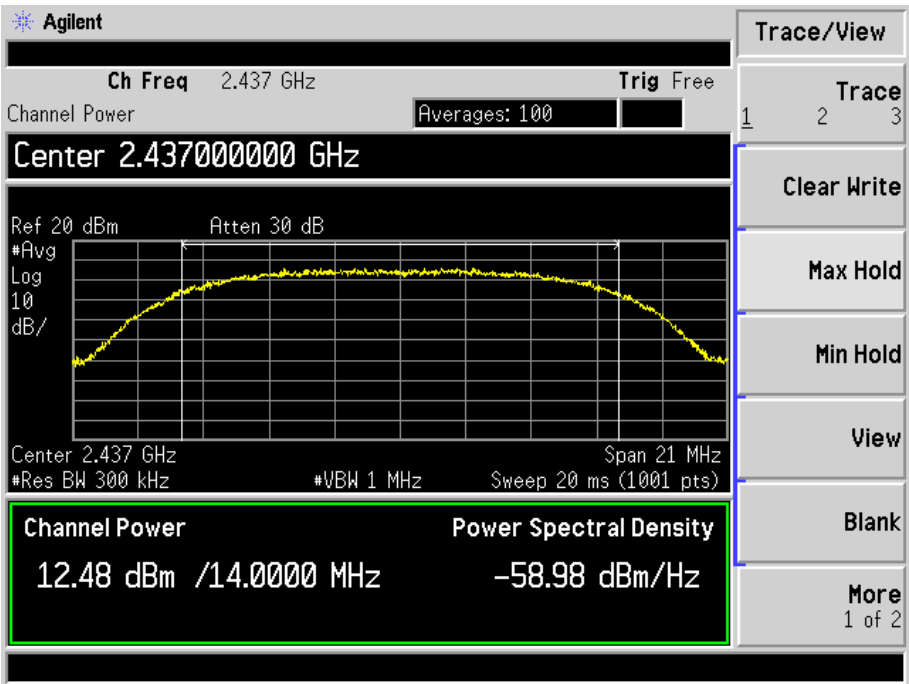
Test Mode	Frequency MHz	Reading dBm	Output Power mW	Limit mW
802.11b _11Mbps	2412	13.18	20.80	1000
	2437	12.48	17.70	1000
	2462	11.58	14.39	1000
802.11g_54Mbps	2412	9.77	9.48	1000
	2437	9.58	9.08	1000
	2462	8.28	6.73	1000
802.11n HT20_MCS7	2412	8.33	6.81	1000
	2437	7.40	5.50	1000
	2462	6.95	4.95	1000
802.11n HT40_MCS7	2422	6.93	4.93	1000
	2437	6.35	4.32	1000
	2452	6.43	4.40	1000

Please refer to the following test plots:

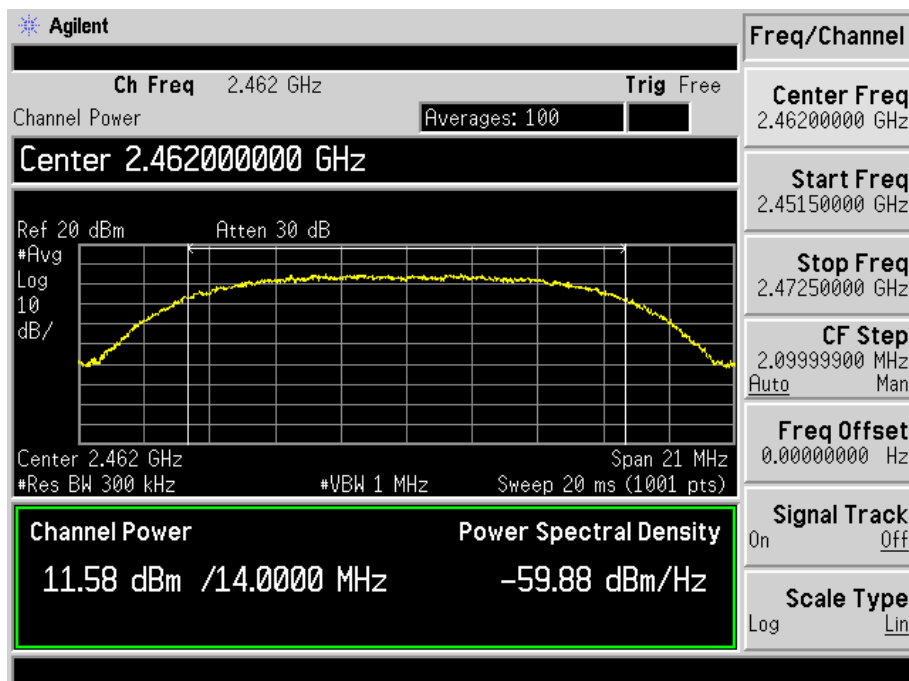
802.11b-11Mbps-Low Channel



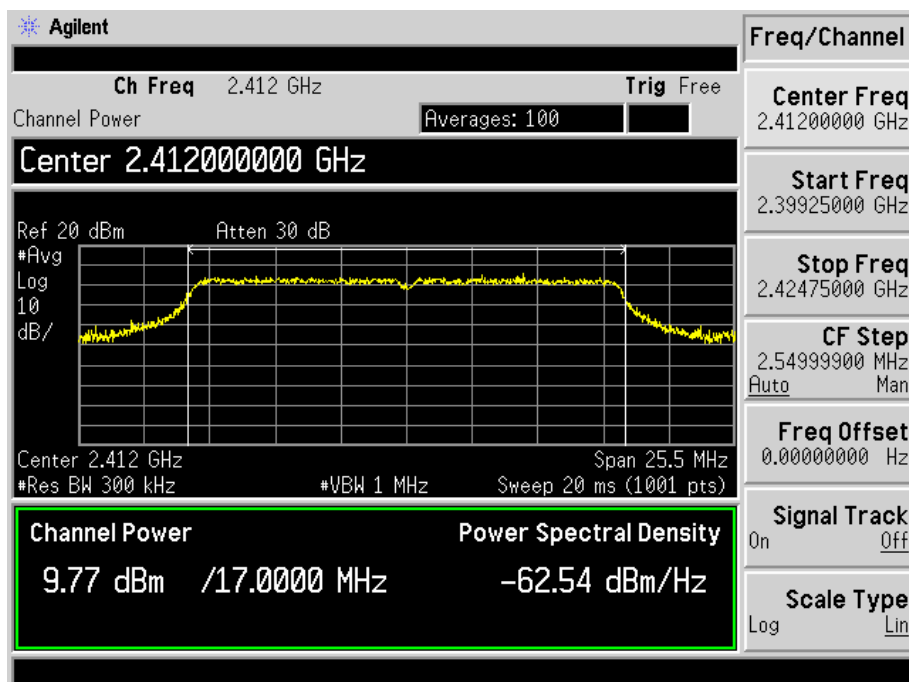
802.11b -11Mbps-Middle Channel



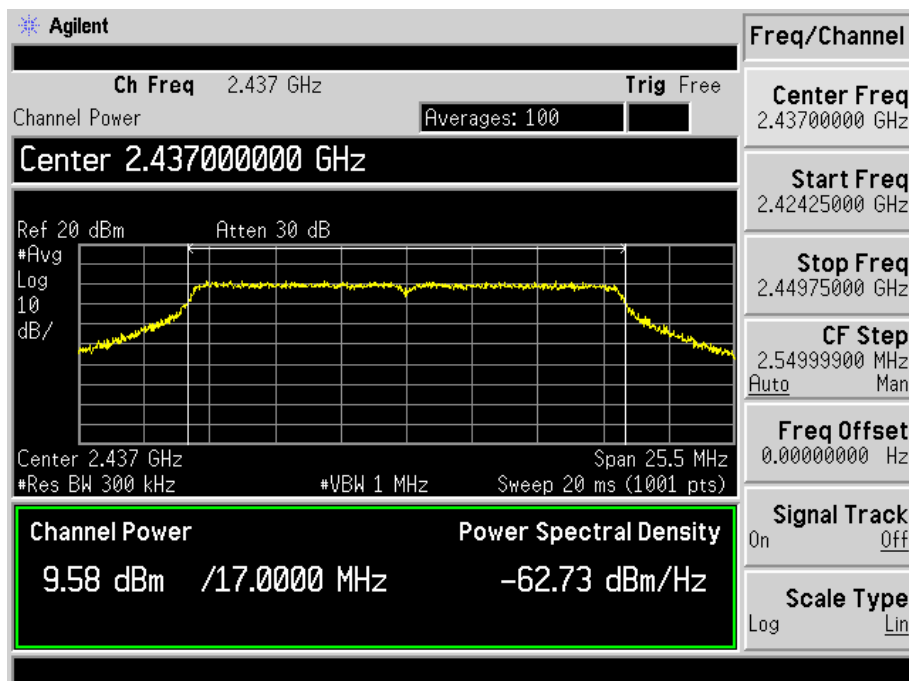
## 802.11b -11Mbps-High Channel



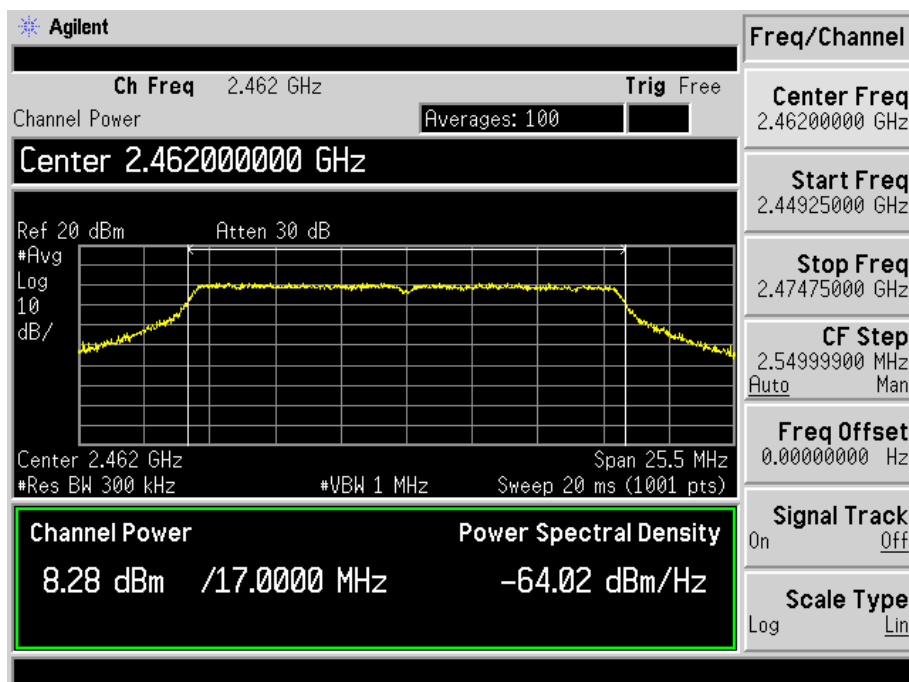
## 802.11g-54Mbps-Low Channel



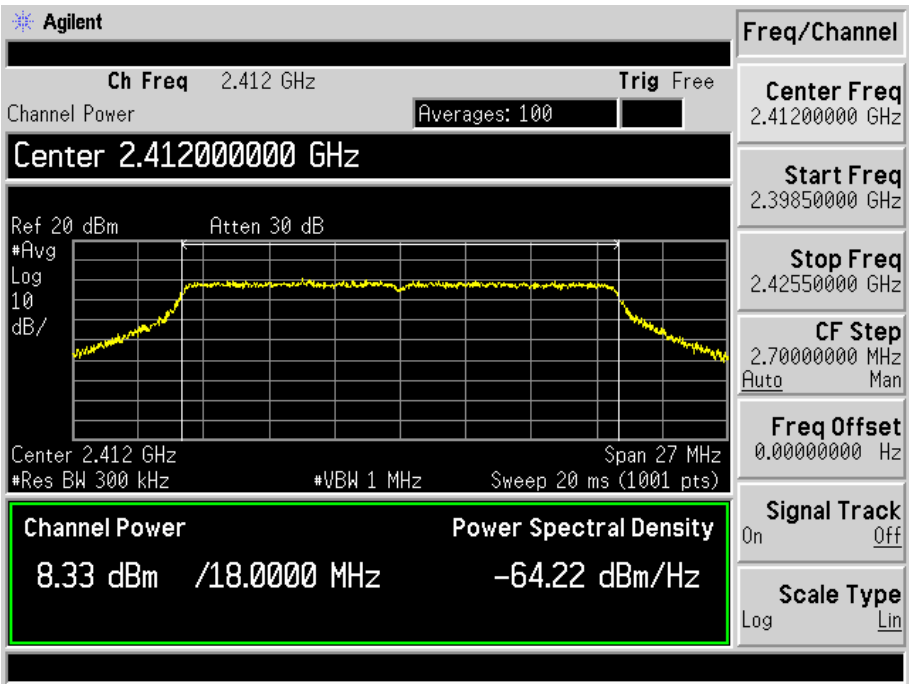
## 802.11g-54Mbps-Middle Channel



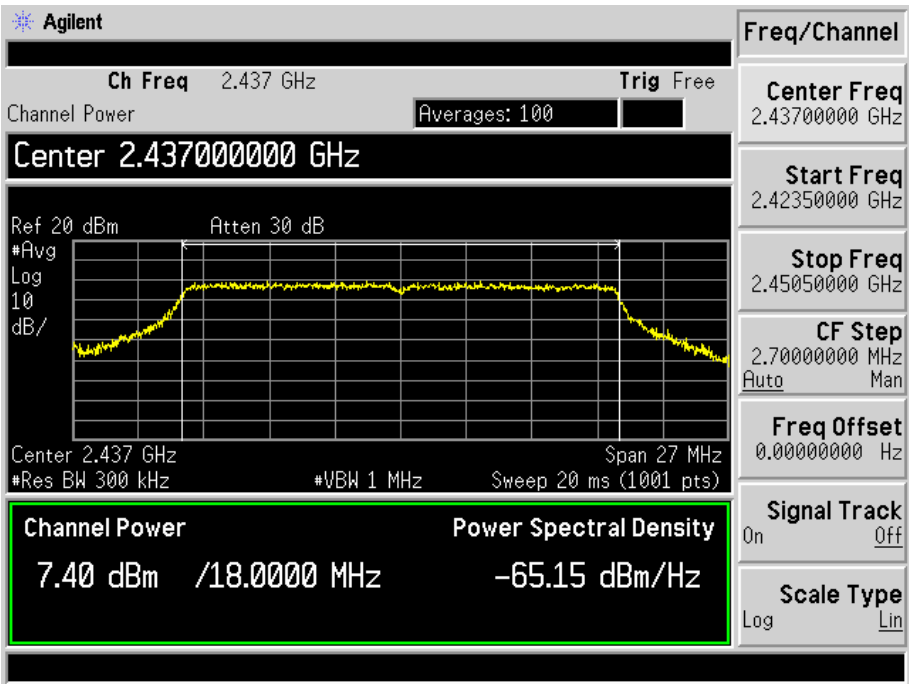
## 802.11g-54Mbps-High Channel



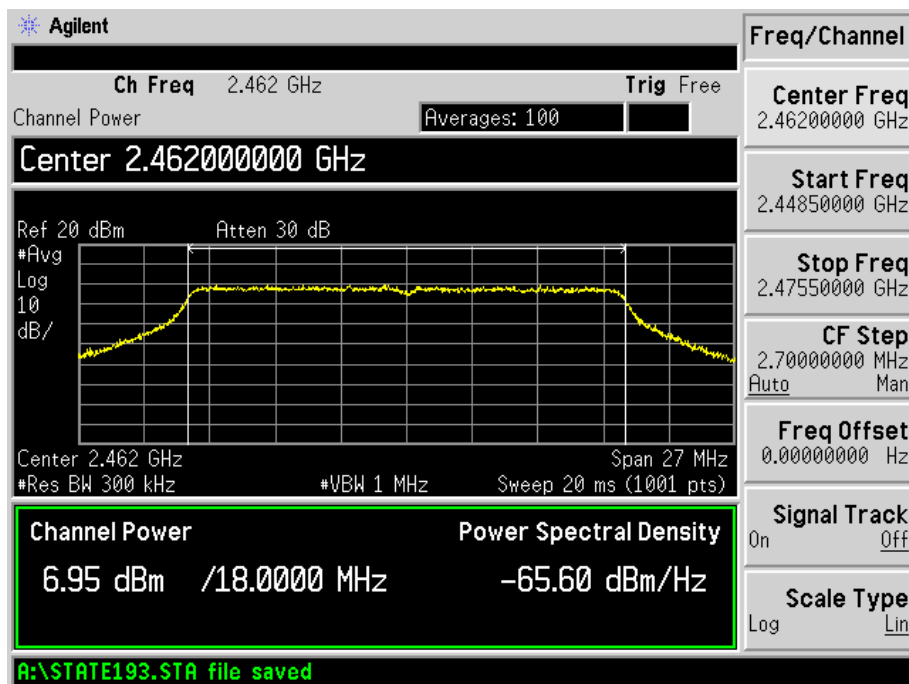
802.11n-HT20-MCS7-Low Channel



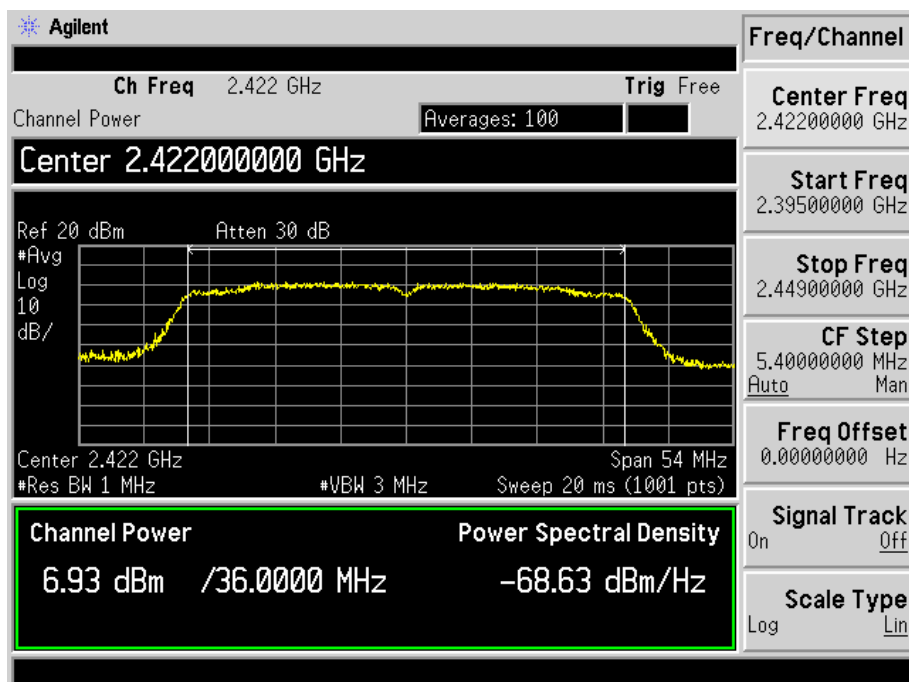
802.11n-HT20-MCS7-Middle Channel



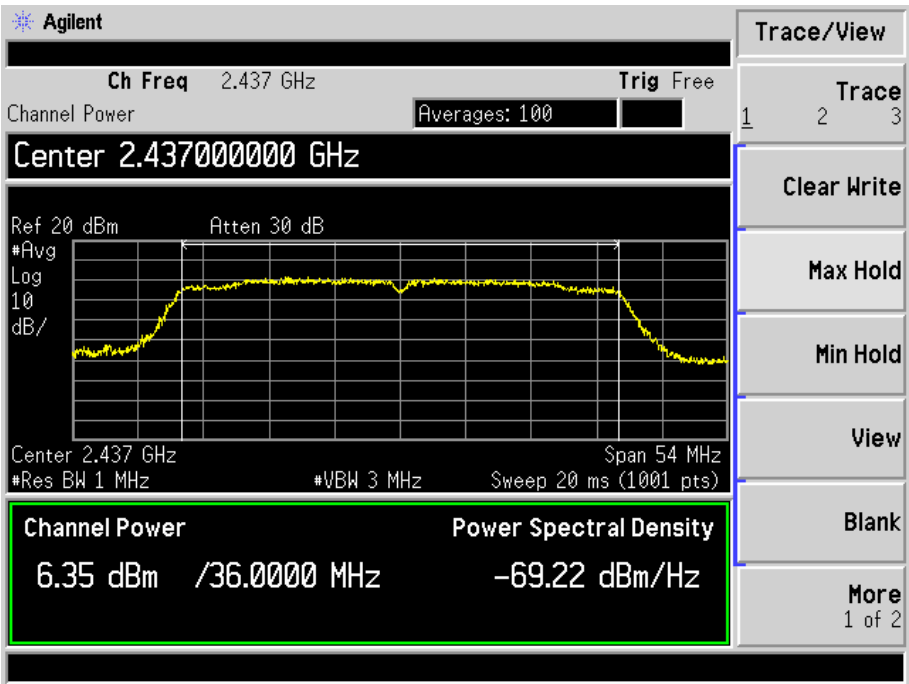
## 802.11n-HT20-MCS7-High Channel



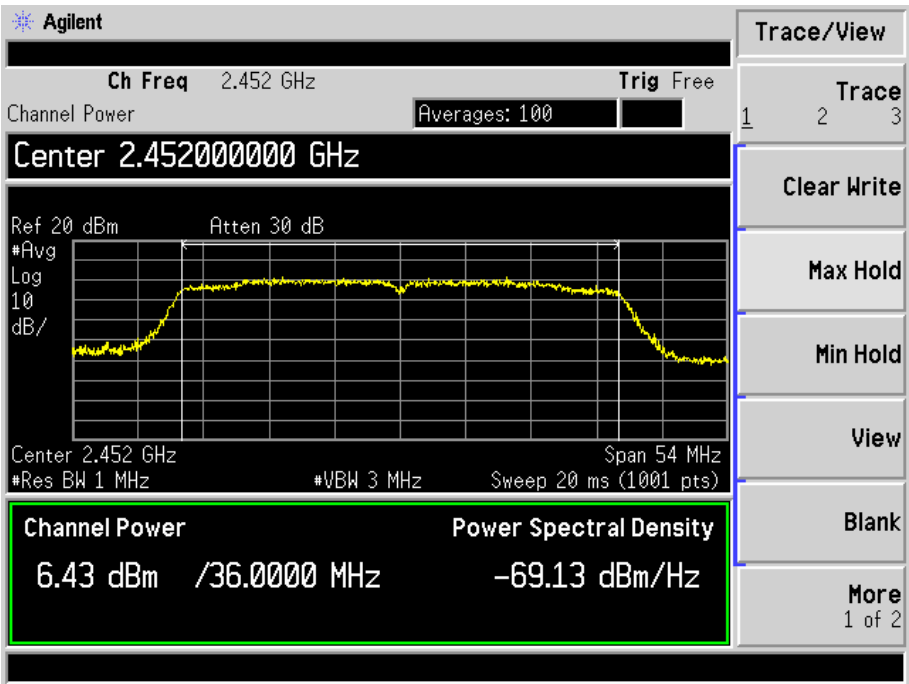
## 802.11n-HT40-MCS7-Low Channel



802.11n-HT40-MCS7-Middle Channel



802.11n-HT40-MCS7-High Channel





## 8. Field Strength of Spurious Emissions

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### 8.1 Measurement Uncertainty

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement is  $\pm 5.10$  dB.

### 8.2 Standard Applicable

According to §15.247(d), 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. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. 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).

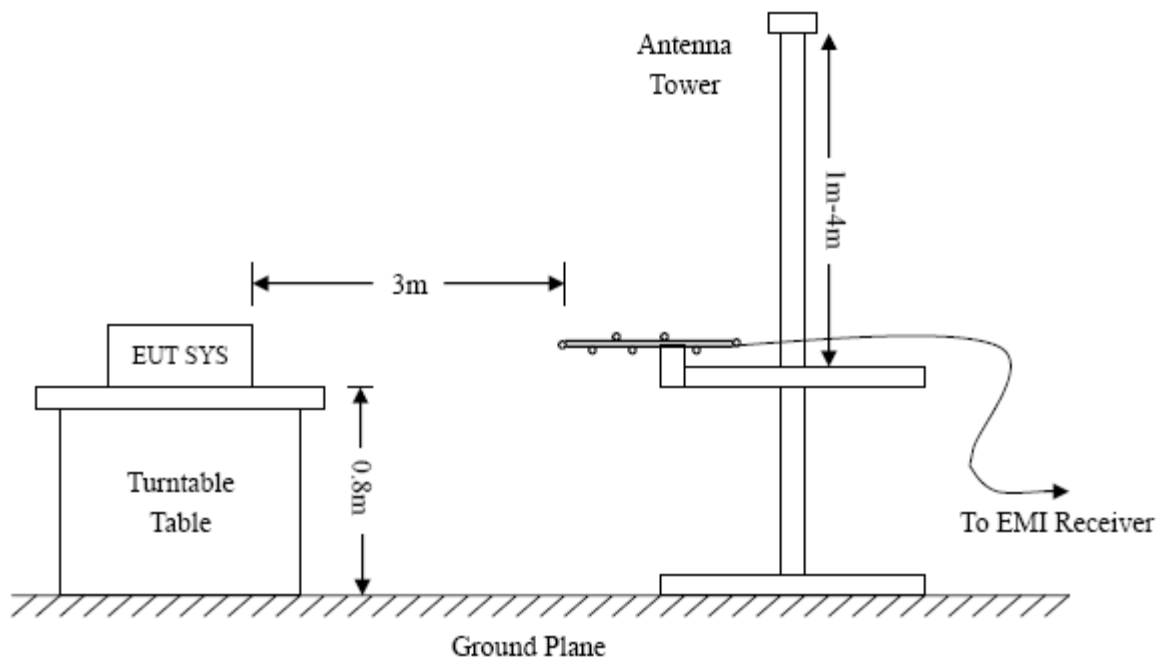
The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply. Spurious Radiated Emissions measurements starting below or at the lowest crystal frequency.

### 8.3 Test Procedure

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 15.205 15.247(a) and FCC Part 15.209 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.



Frequency :9kHz-30MHz

RBW=10KHz,

VBW =30KHz

Sweep time= Auto

Trace = max hold

Detector function = peak

Frequency :30MHz-1GHz

RBW=120KHz,

VBW=300KHz

Sweep time= Auto

Trace = max hold

Detector function = peak, QP

Frequency :Above 1GHz

RBW=1MHz,

VBW=3MHz(Peak), 10Hz(AV)

Sweep time= Auto

Trace = max hold

Detector function = peak, AV

### 8.4 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Ant. Factor} + \text{Cable Loss} - \text{Ampl. Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dBμV means the emission is 6dBμV below the maximum limit . The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15 Limit}$$

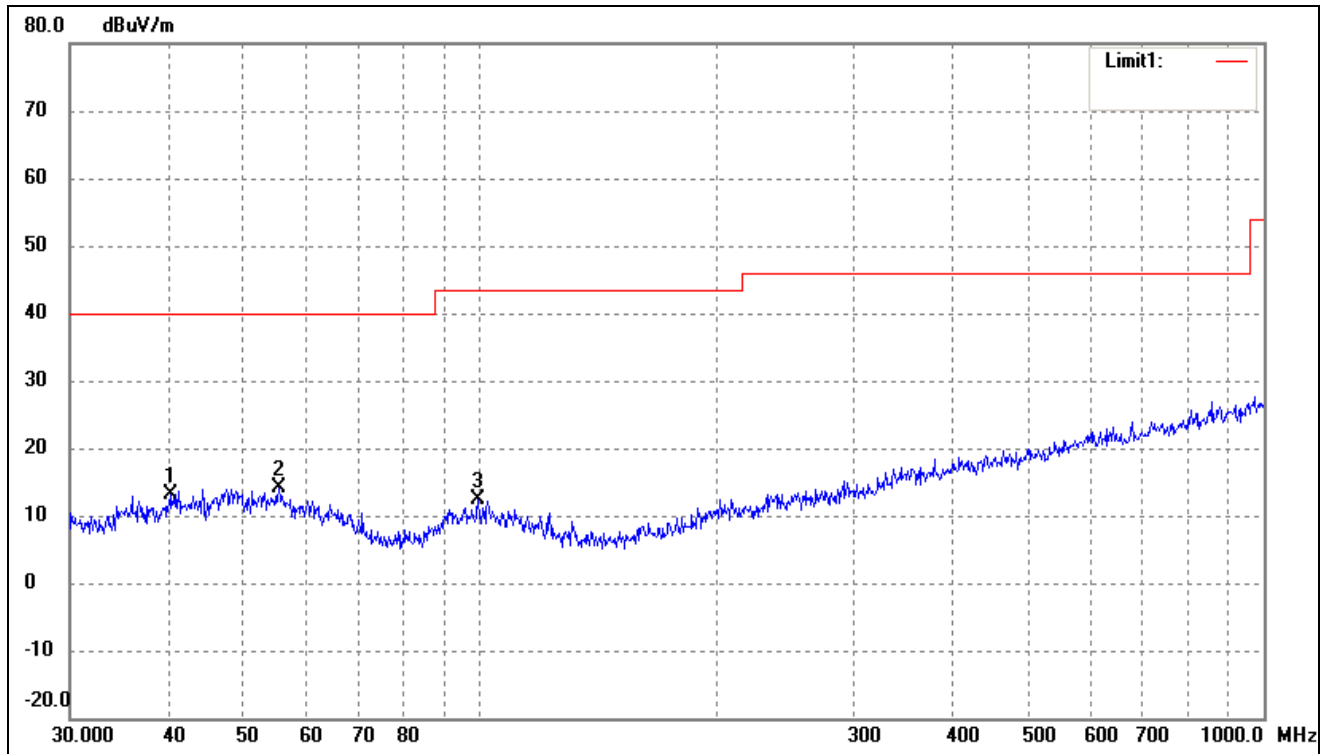
## 8.5 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	52%
ATM Pressure:	1012 mbar

## 8.6 Summary of Test Results/Plots

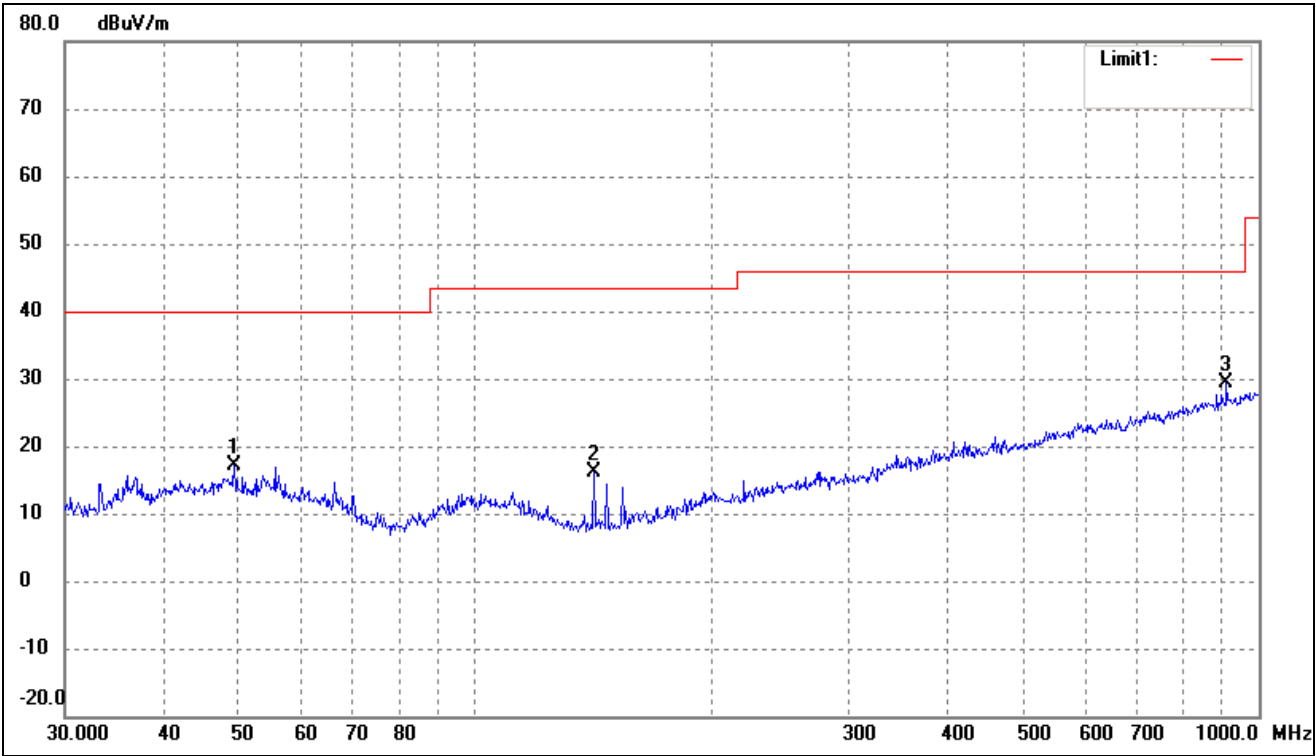
According to the data below, the FCC Part 15.205, 15.209 and 15.247 standards, and had the worst cases:

*Note: this EUT was tested in 3 orthogonal positions and the worst case position data was reported.*

**Plot of Radiated Emissions Test Data (30MHz to 1GHz)***EUT:* carbon Baytrail-M*Tested Model:* MGS101-03*Operating Condition:* 802.11b Transmitting Low Channel-2412MHz*Comment:* Battery: DC 7.4V*Test Specification:* Horizontal

No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	40.2757	21.64	-8.39	13.25	40.00	-26.75	105	100	peak
2	55.4147	22.15	-7.99	14.16	40.00	-25.84	160	100	peak
3	99.5281	21.88	-9.61	12.27	43.50	-31.23	180	100	peak

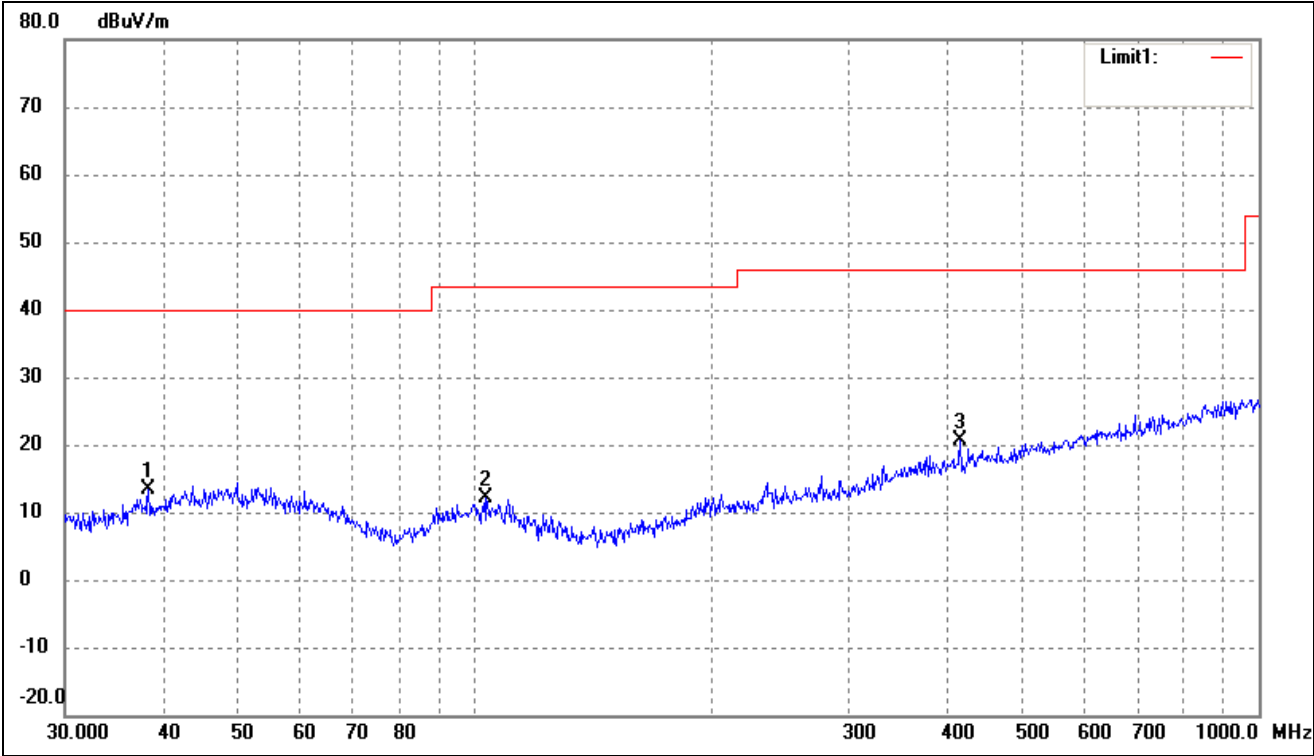
Test Specification: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	49.3594	24.54	-7.45	17.09	40.00	-22.91	140	100	peak
2	141.8262	29.29	-13.12	16.17	43.50	-27.33	250	100	peak
3	909.6667	23.90	5.38	29.28	46.00	-16.72	120	100	peak

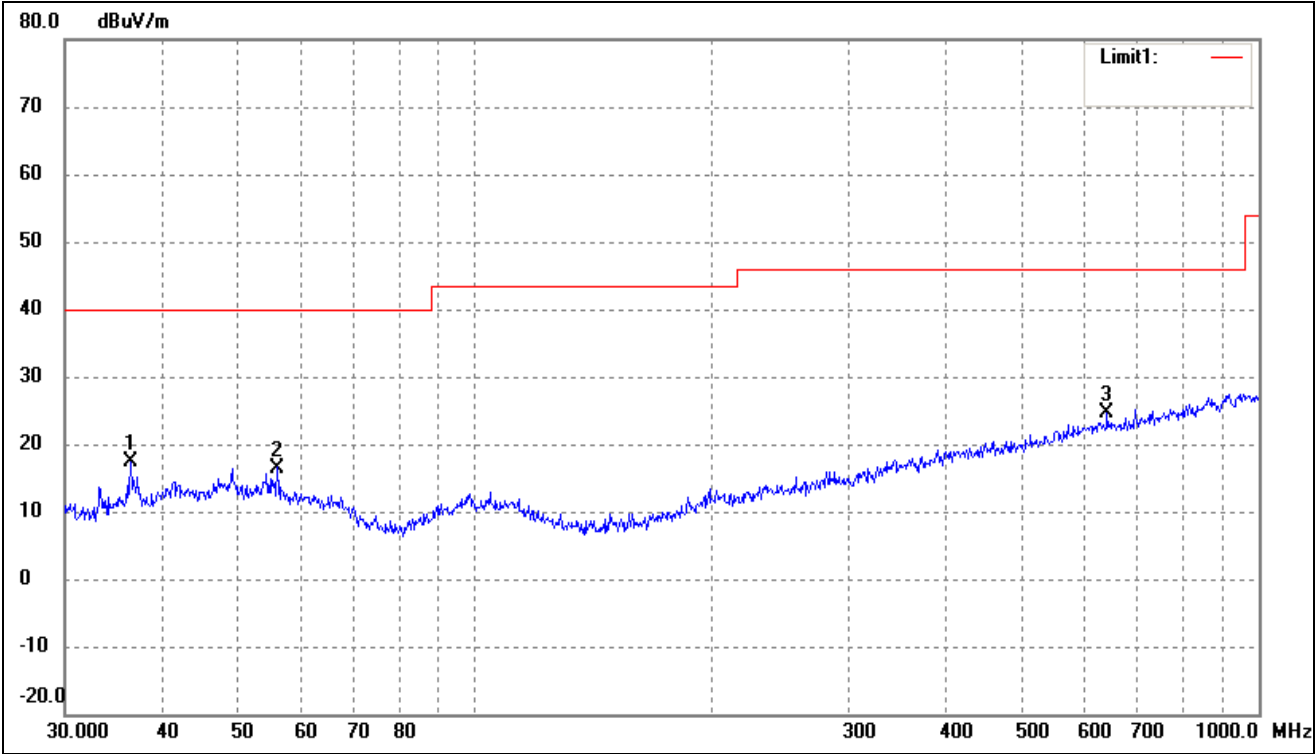
Operating Condition: 802.11b Transmitting Middle Channel-2437MHz  
Comment: Battery: DC7.4V

Test Specification: Horizontal



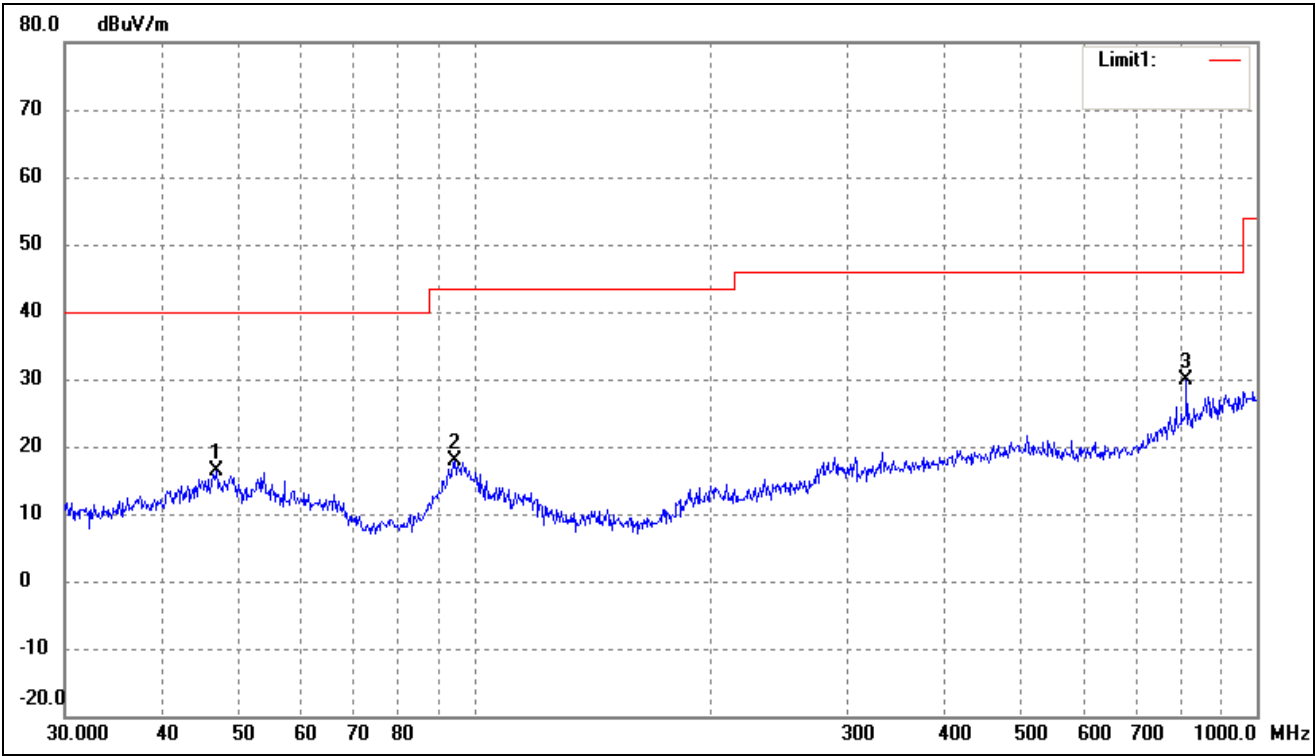
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	38.3462	22.12	-8.77	13.35	40.00	-26.65	145	100	peak
2	103.4421	21.68	-9.57	12.11	43.50	-31.39	120	100	peak
3	416.1791	23.29	-2.56	20.73	46.00	-25.27	108	100	peak

Test Specification: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	36.3814	26.86	-9.52	17.34	40.00	-22.66	120	100	peak
2	56.0007	24.57	-8.07	16.50	40.00	-23.50	113	100	peak
3	640.6110	22.98	1.70	24.68	46.00	-21.32	157	100	peak

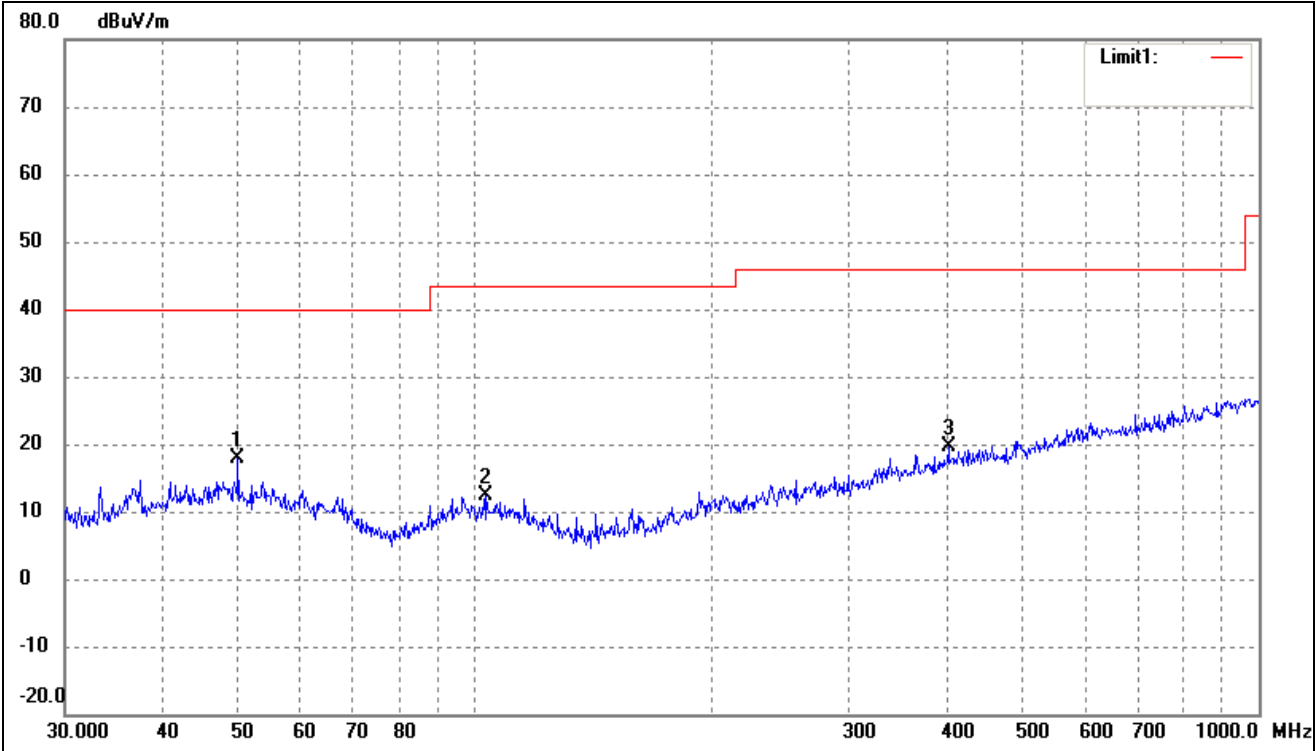
Operating Condition: 802.11b Transmitting High Channel-2462MHz  
Comment: Battery: DC7.4V  
  
Test Specification: Horizontal



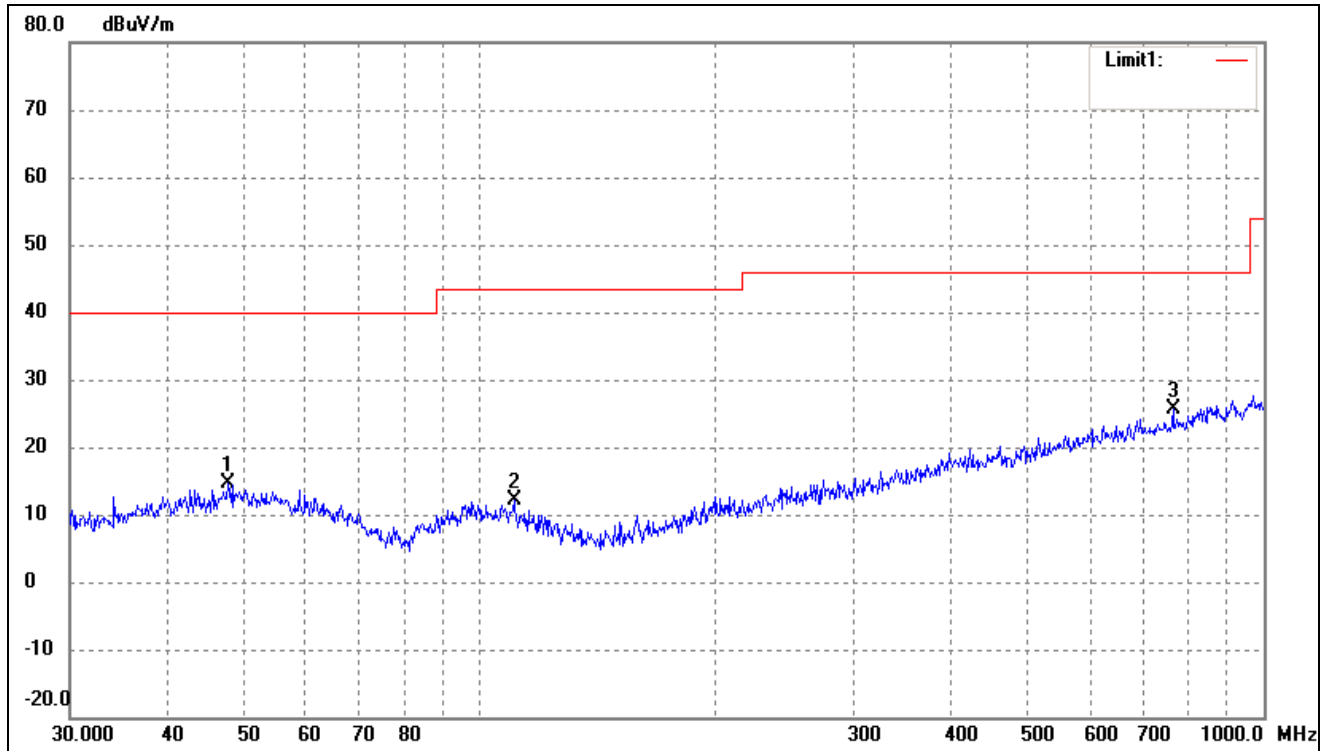
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	49.0145	22.54	-7.44	15.10	40.00	-24.90	120	100	peak
2	275.1570	23.41	-6.91	16.50	46.00	-29.50	250	100	peak
3	734.4913	25.08	0.45	25.53	46.00	-20.47	360	100	peak



Test Specification: Vertical

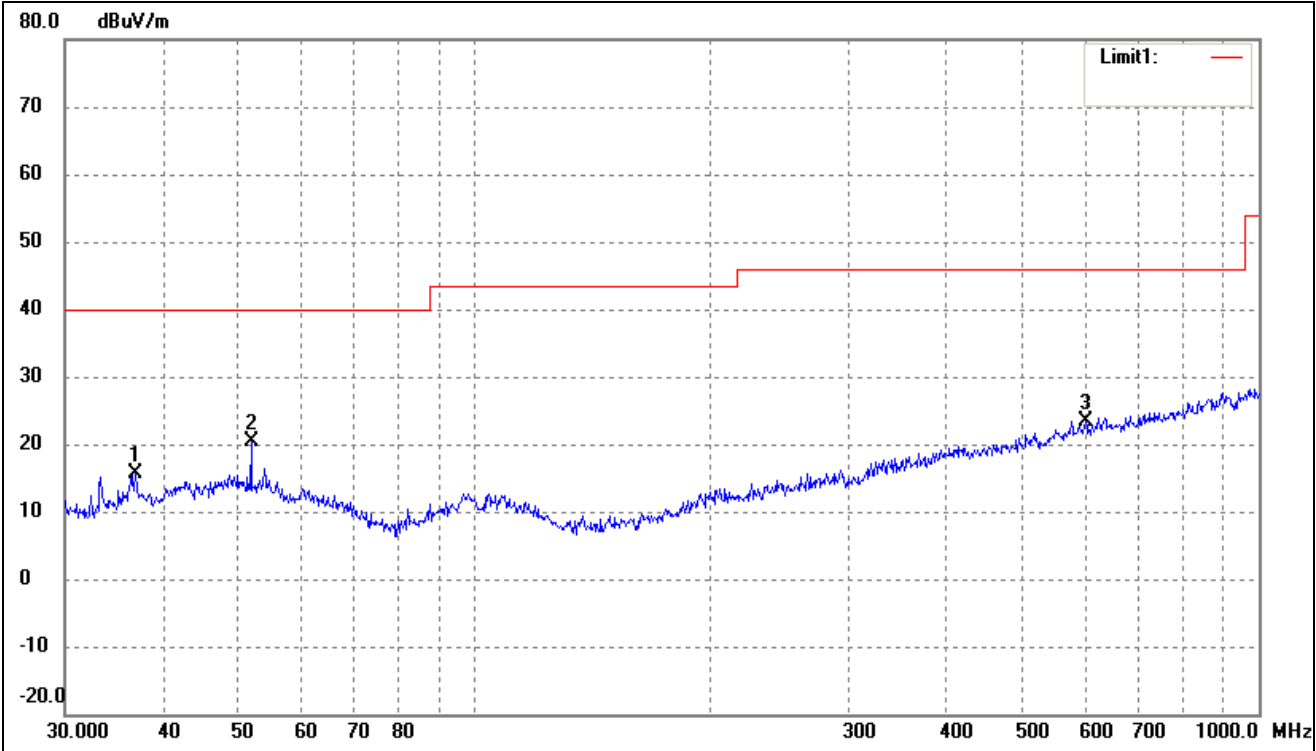


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	49.8814	25.39	-7.44	17.95	40.00	-22.05	360	100	peak
2	103.4421	21.93	-9.57	12.36	43.50	-31.14	200	100	peak
3	401.8385	22.52	-2.89	19.63	46.00	-26.37	120	100	peak

**Plot of Radiated Emissions Test Data (30MHz to 1GHz)***EUT:* carbon Baytrail-M*Tested Model:* MGS101-03*Operating Condition:* 802.11g Transmitting Low Channel-2412MHz*Comment:* Battery: DC7.4V*Test Specification:* Horizontal

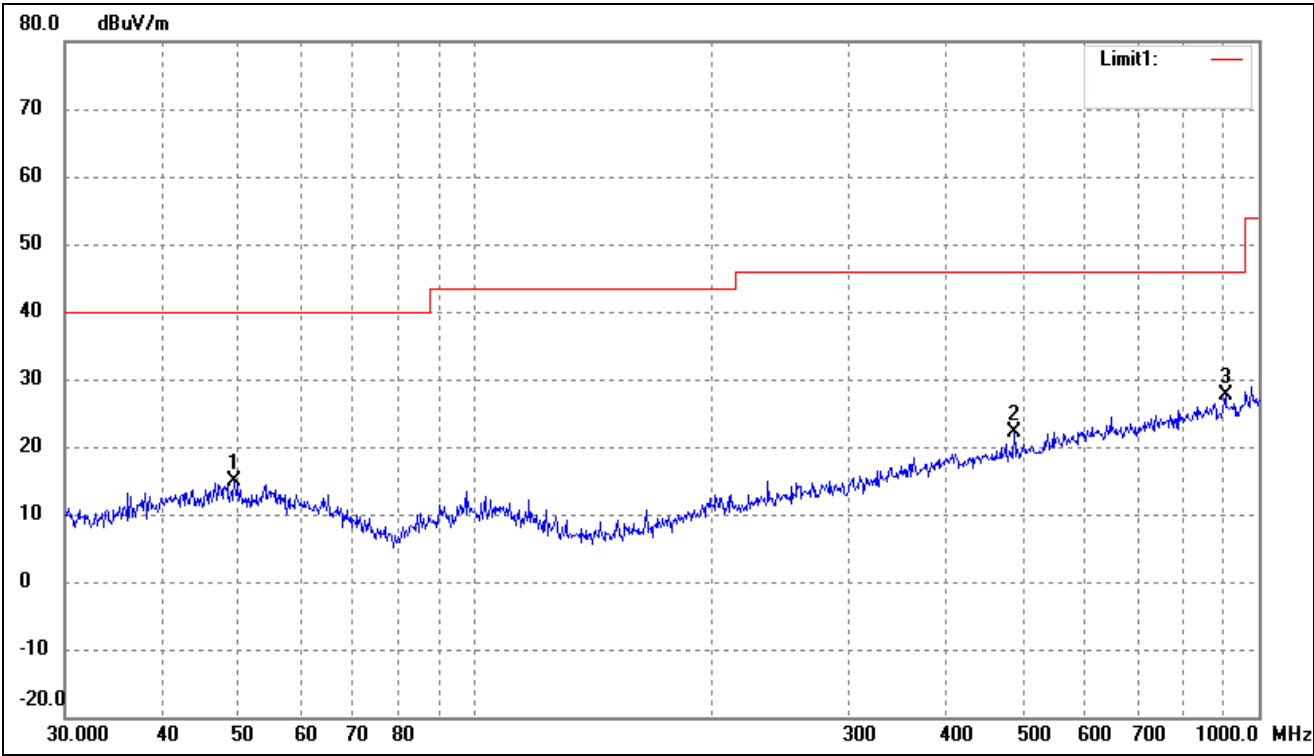
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( ° )	Height (cm)	Remark
1	47.8260	22.04	-7.46	14.58	40.00	-25.42	170	100	peak
2	110.5687	21.75	-9.70	12.05	43.50	-31.45	120	100	peak
3	766.0572	24.04	1.55	25.59	46.00	-20.41	320	100	peak

Test Specification: Vertical



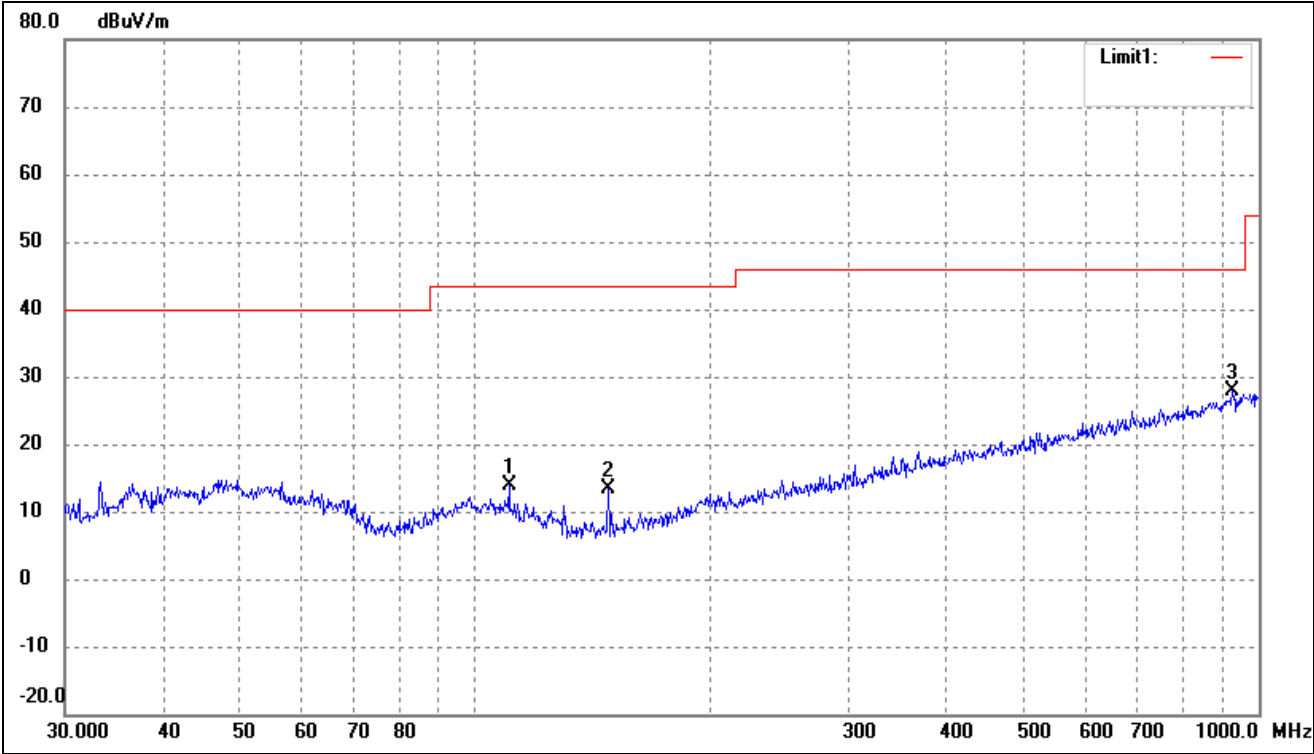
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	33.3279	24.81	-10.48	14.33	40.00	-25.67	270	100	peak
2	108.2667	22.08	-9.59	12.49	43.50	-31.01	190	100	peak
3	345.5952	22.25	-4.38	17.87	46.00	-28.13	360	100	peak

Operating Condition: 802.11g Transmitting Middle Channel-2437MHz  
Comment: Battery: DC7.4V  
  
Test Specification: Horizontal



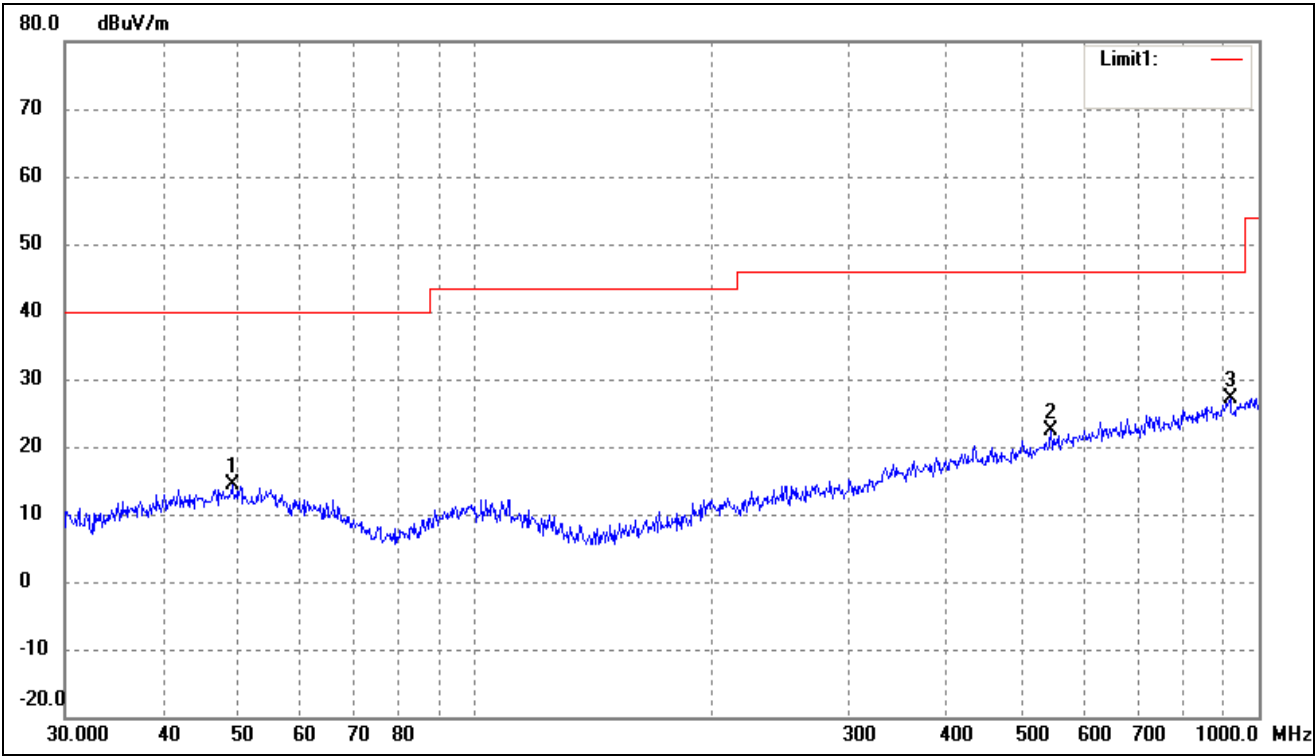
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	49.3594	22.31	-7.45	14.86	40.00	-25.14	270	100	peak
2	487.3151	23.63	-1.59	22.04	46.00	-23.96	160	100	peak
3	906.4824	22.39	5.34	27.73	46.00	-18.27	228	200	peak

Test Specification: Vertical



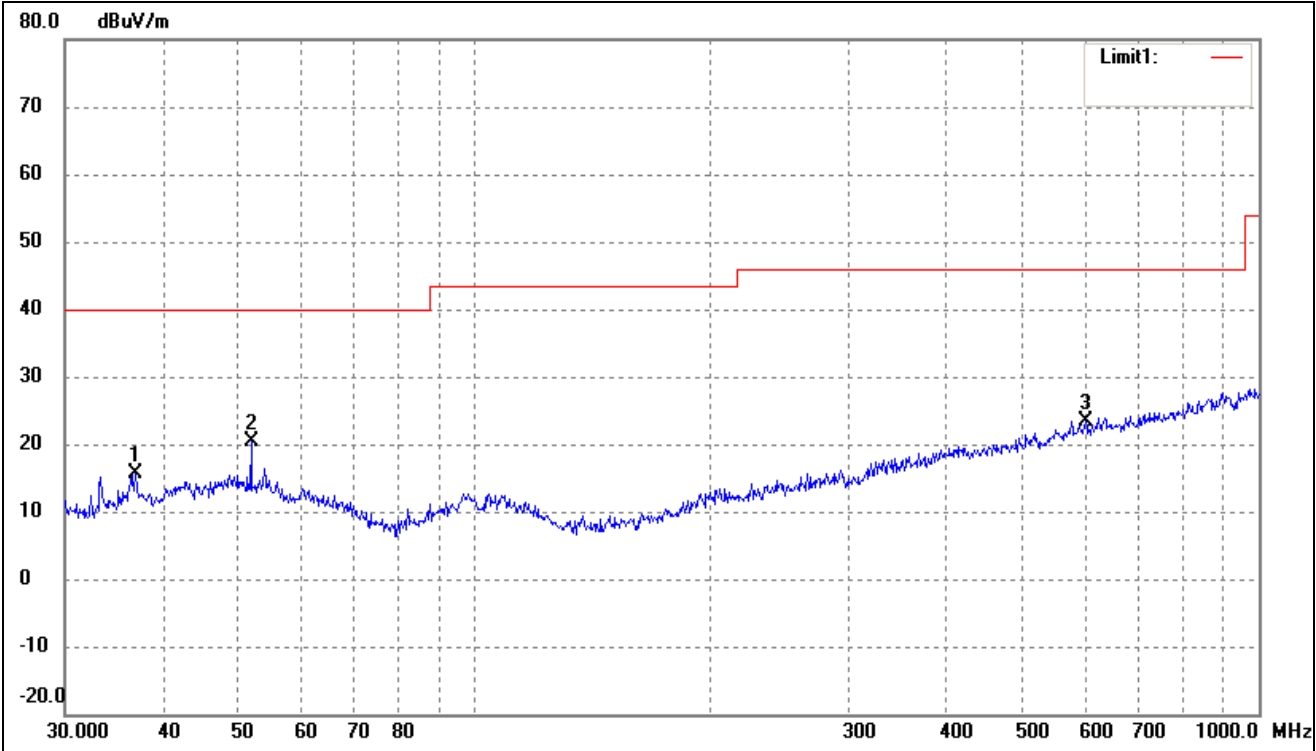
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	35.4993	36.79	-9.88	26.91	40.00	-13.09	360	100	peak
2	45.3755	34.39	-7.46	26.93	40.00	-13.07	120	100	peak
3	93.1132	33.00	-10.57	22.43	43.50	-21.07	270	100	peak

Operating Condition: 802.11g Transmitting High Channel-2462MHz  
Comment: Battery: DC7.4V  
  
Test Specification: Horizontal

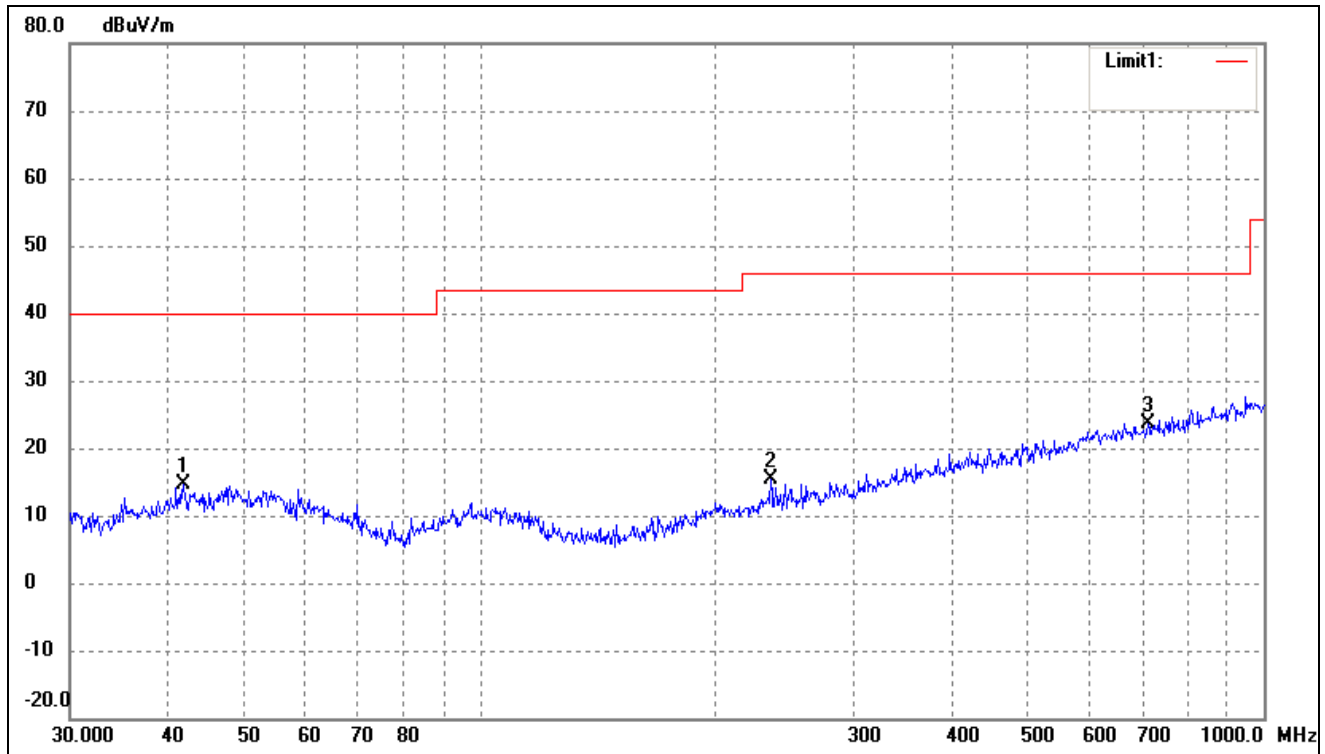


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	49.0145	21.82	-7.44	14.38	40.00	-25.62	270	100	peak
2	543.2742	23.82	-1.36	22.46	46.00	-23.54	150	100	peak
3	919.2866	21.65	5.51	27.16	46.00	-18.84	360	100	peak

Test Specification: Vertical



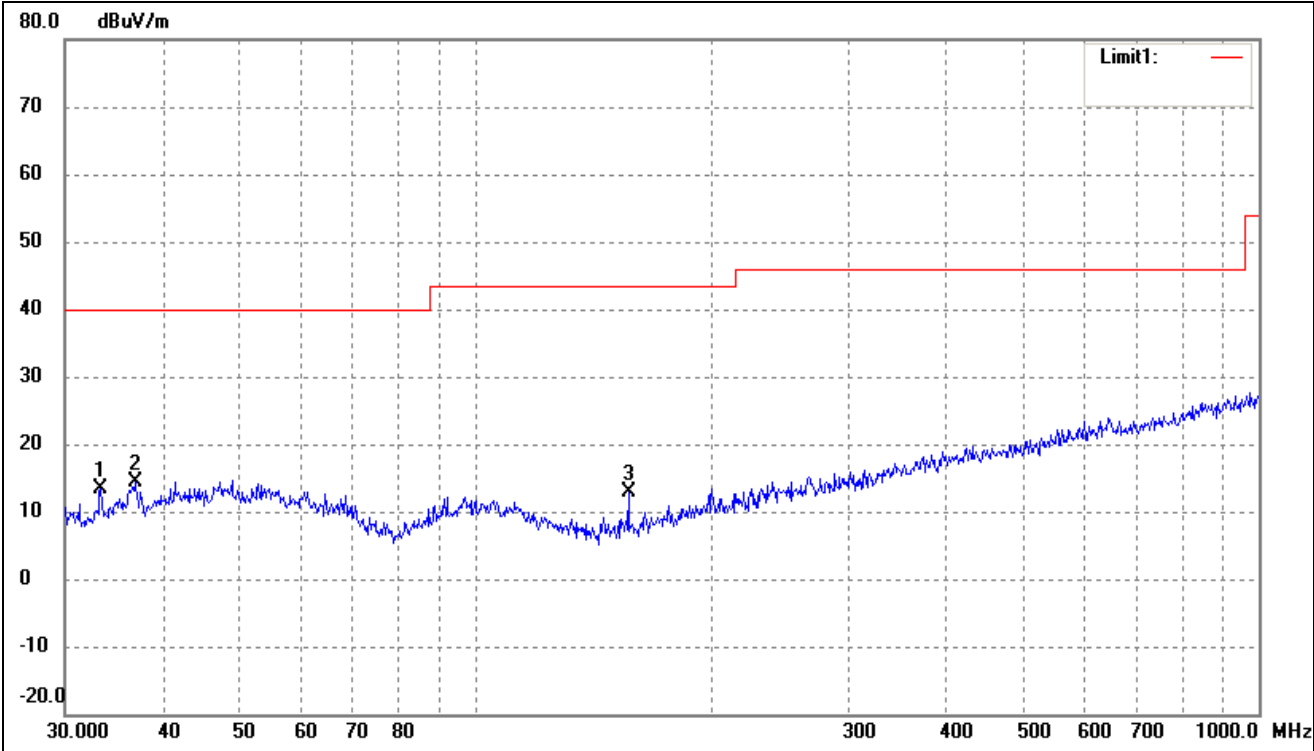
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	36.8953	24.99	-9.26	15.73	40.00	-24.27	360	100	peak
2	51.8430	28.03	-7.63	20.40	40.00	-19.60	180	100	peak
3	601.4265	22.32	1.16	23.48	46.00	-22.52	120	100	peak

**Plot of Radiated Emissions Test Data (30MHz to 1GHz)***EUT:* carbon Baytrail-M*Tested Model:* MGS101-03*Operating Condition:* 802.11n-HT20 Transmitting Low Channel-2412MHz*Comment:* Battery: DC7.4V*Test Specification:* Horizontal

No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	41.8596	22.72	-8.08	14.64	40.00	-25.36	260	100	peak
2	234.9909	23.32	-8.06	15.26	46.00	-30.74	120	200	peak
3	711.6734	24.00	-0.38	23.62	46.00	-22.38	289	200	peak



Test Specification: Vertical

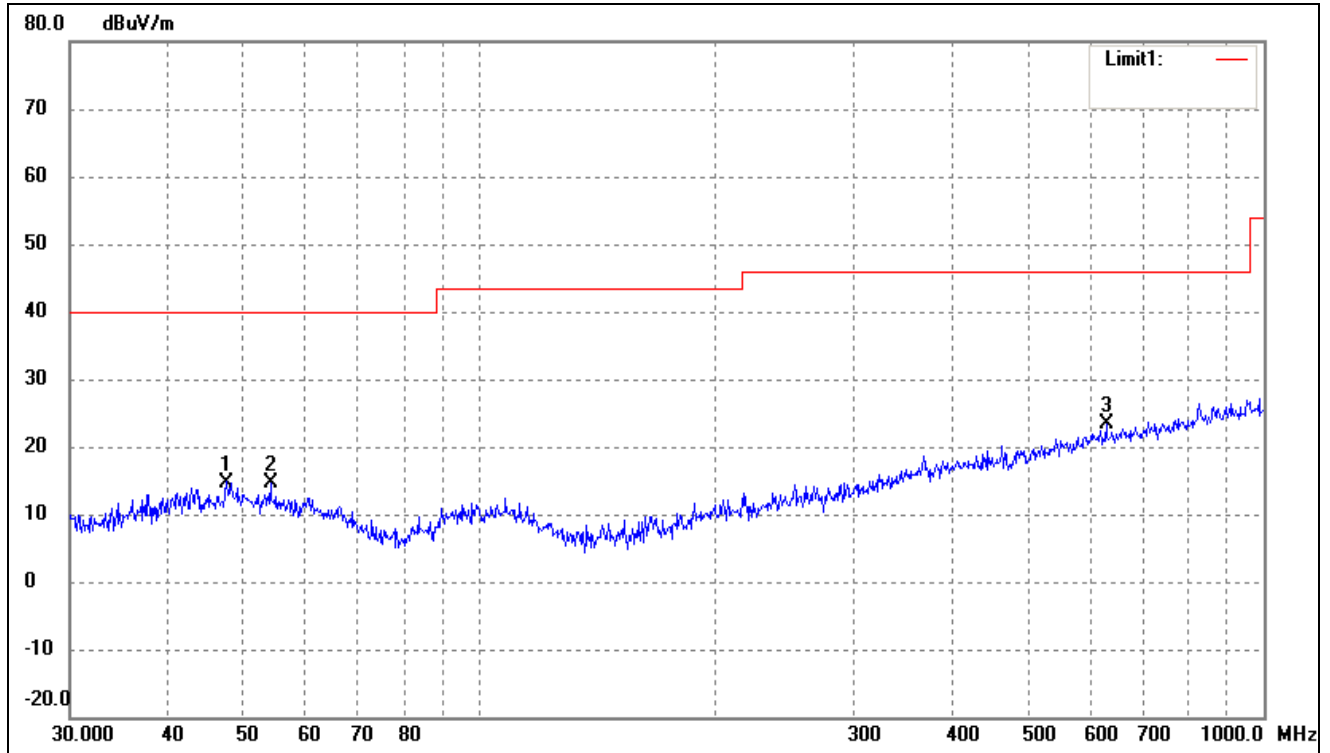


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	33.3279	23.81	-10.48	13.33	40.00	-26.67	130	100	peak
2	36.8953	23.67	-9.26	14.41	40.00	-25.59	120	100	peak
3	157.0074	25.31	-12.52	12.79	43.50	-30.71	360	100	peak

Operating Condition: 802.11n-HT20 Transmitting Middle Channel-2437MHz

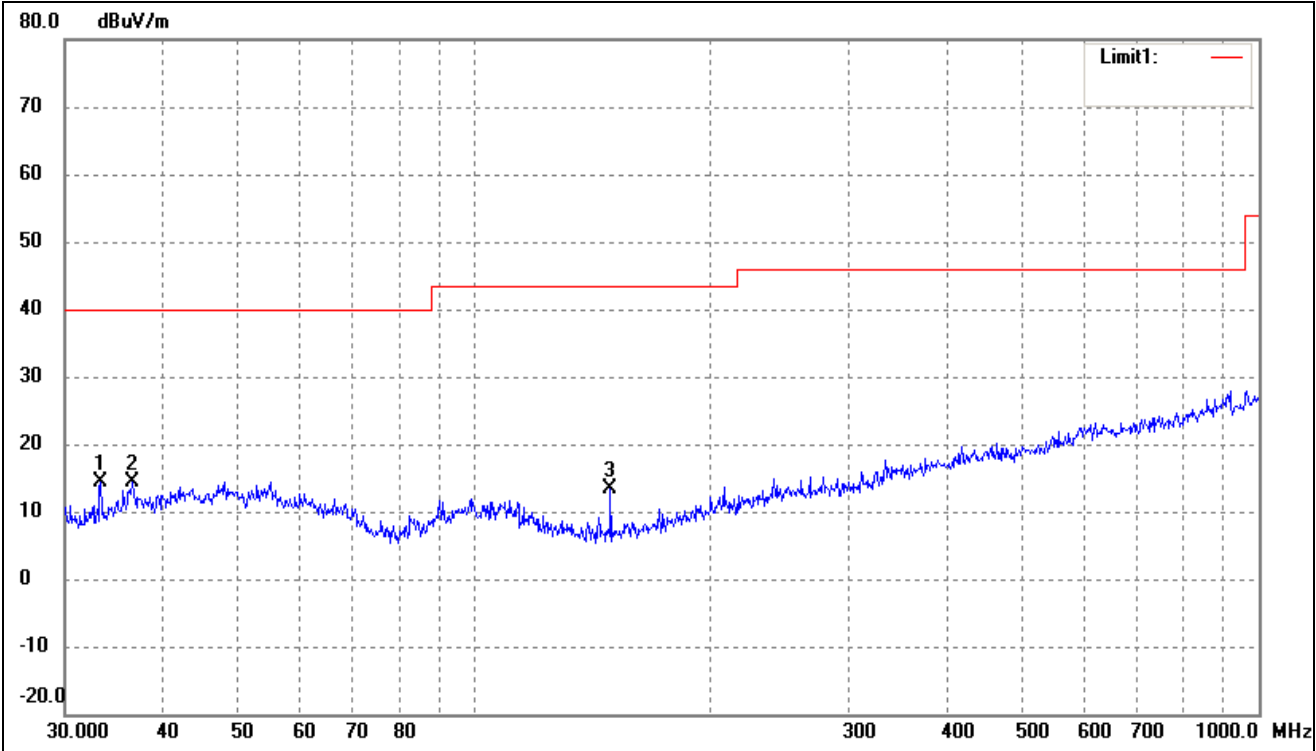
Comment: Battery: DC7.4V

Test Specification: Horizontal



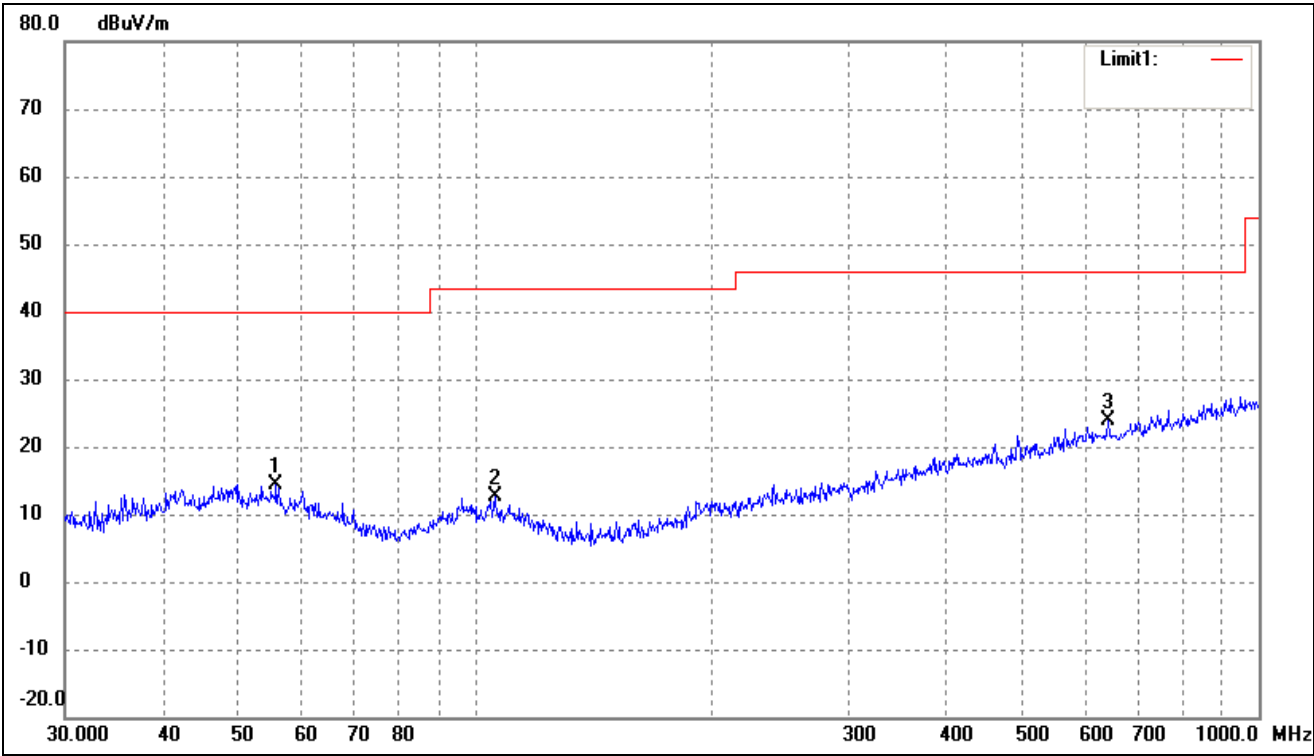
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	47.4918	22.20	-7.45	14.75	40.00	-25.25	274	100	peak
2	54.0711	22.56	-7.85	14.71	40.00	-25.29	130	100	peak
3	629.4772	24.71	-1.44	23.27	46.00	-22.73	120	100	peak

Test Specification: Vertical



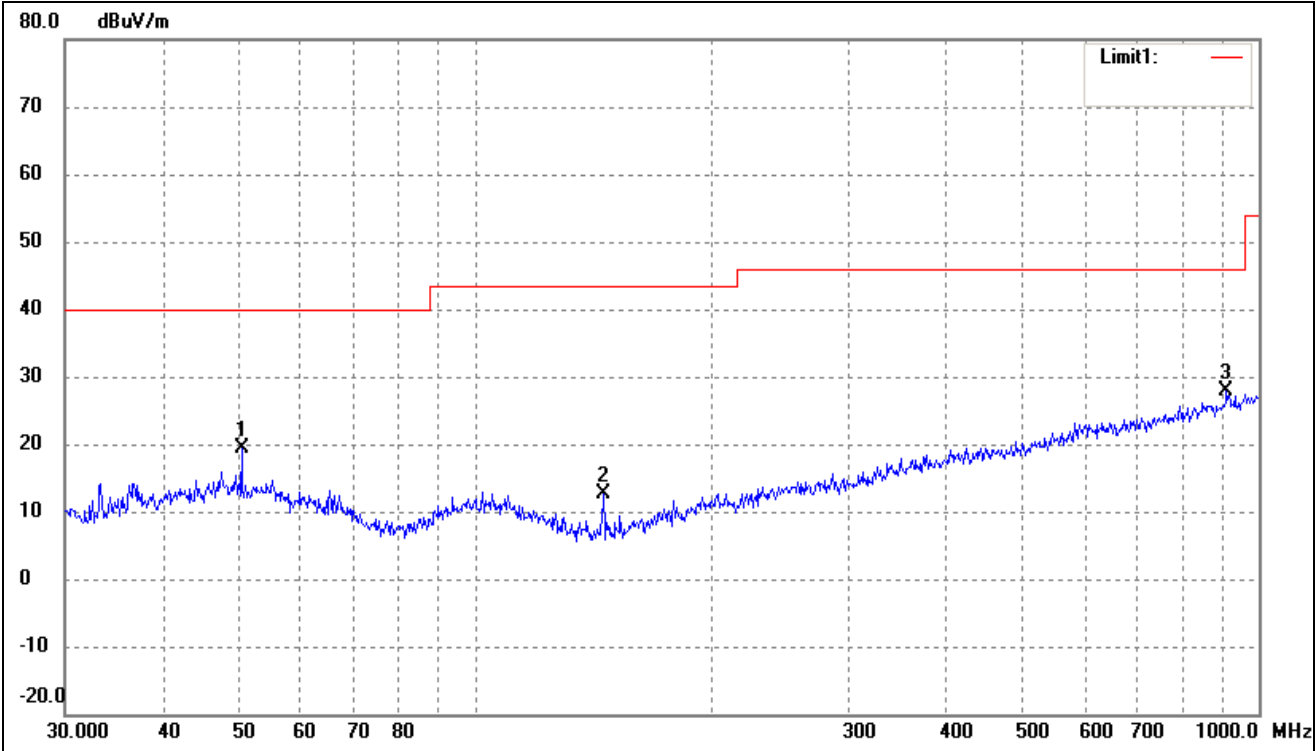
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	33.3279	24.81	-10.48	14.33	40.00	-25.67	360	100	peak
2	36.6375	23.77	-9.39	14.38	40.00	-25.62	110	100	peak
3	148.9625	26.35	-12.98	13.37	43.50	-30.13	120	100	peak

Operating Condition: 802.11n-HT20 Transmitting High Channel-2462MHz  
Comment: Battery: DC7.4V  
  
Test Specification: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	55.8047	22.44	-8.04	14.40	40.00	-25.60	360	100	peak
2	106.0126	22.28	-9.58	12.70	43.50	-30.80	138	100	peak
3	642.8613	25.04	-1.26	23.78	46.00	-22.22	180	200	peak

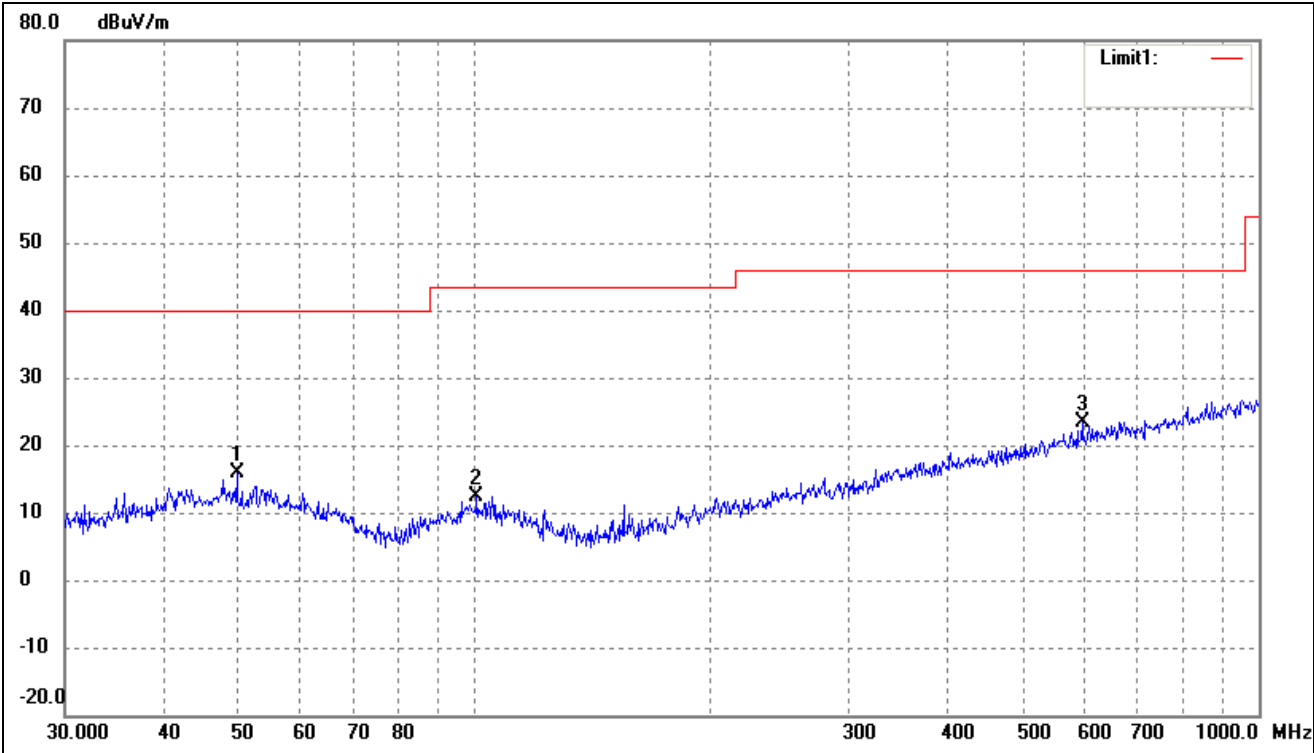
Test Specification: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	50.4089	26.75	-7.49	19.26	40.00	-20.74	270	100	peak
2	145.8611	25.70	-13.04	12.66	43.50	-30.84	120	100	peak
3	909.6667	22.53	5.38	27.91	46.00	-18.09	360	100	peak

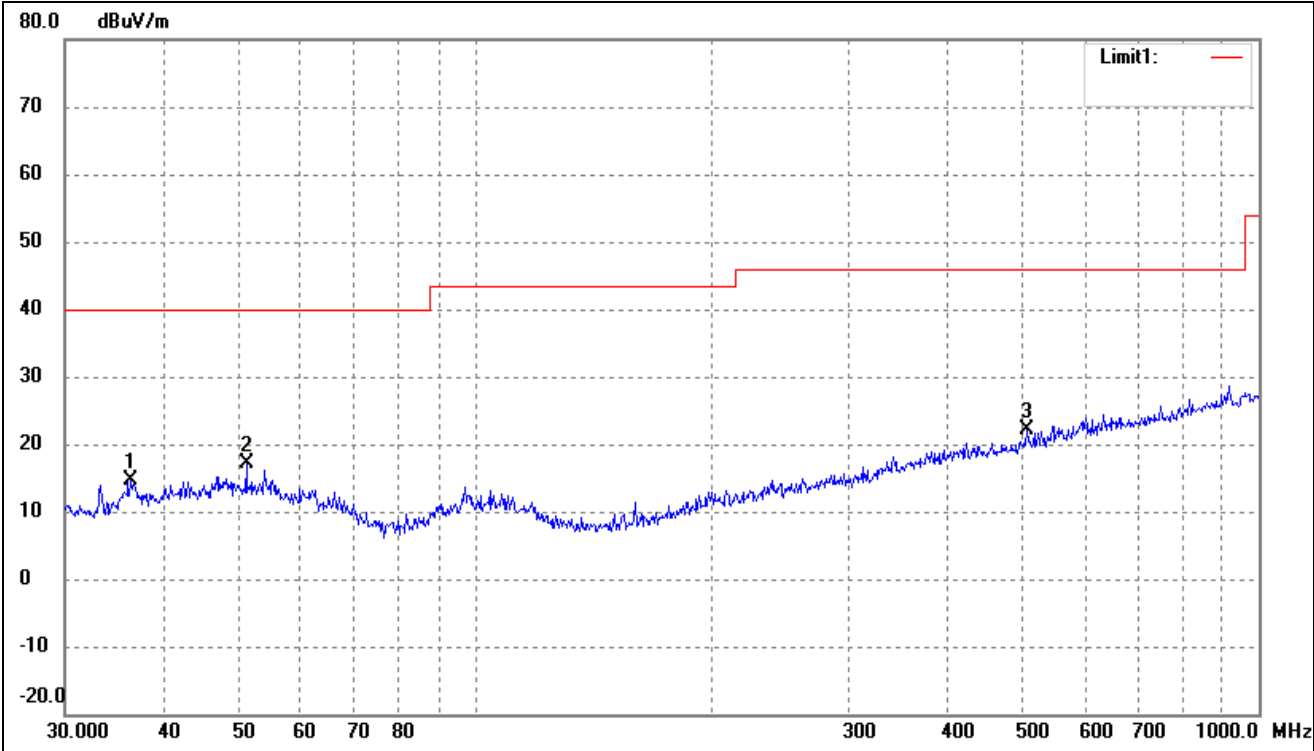
Plot of Radiated Emissions Test Data (30MHz to 1GHz)

EUT: carbon Baytrail-M  
Tested Model: MGS101-03  
Operating Condition: 802.11n-HT40 Transmitting Low Channel-2422MHz  
Comment: Battery: DC7.4V  
  
Test Specification: Horizontal



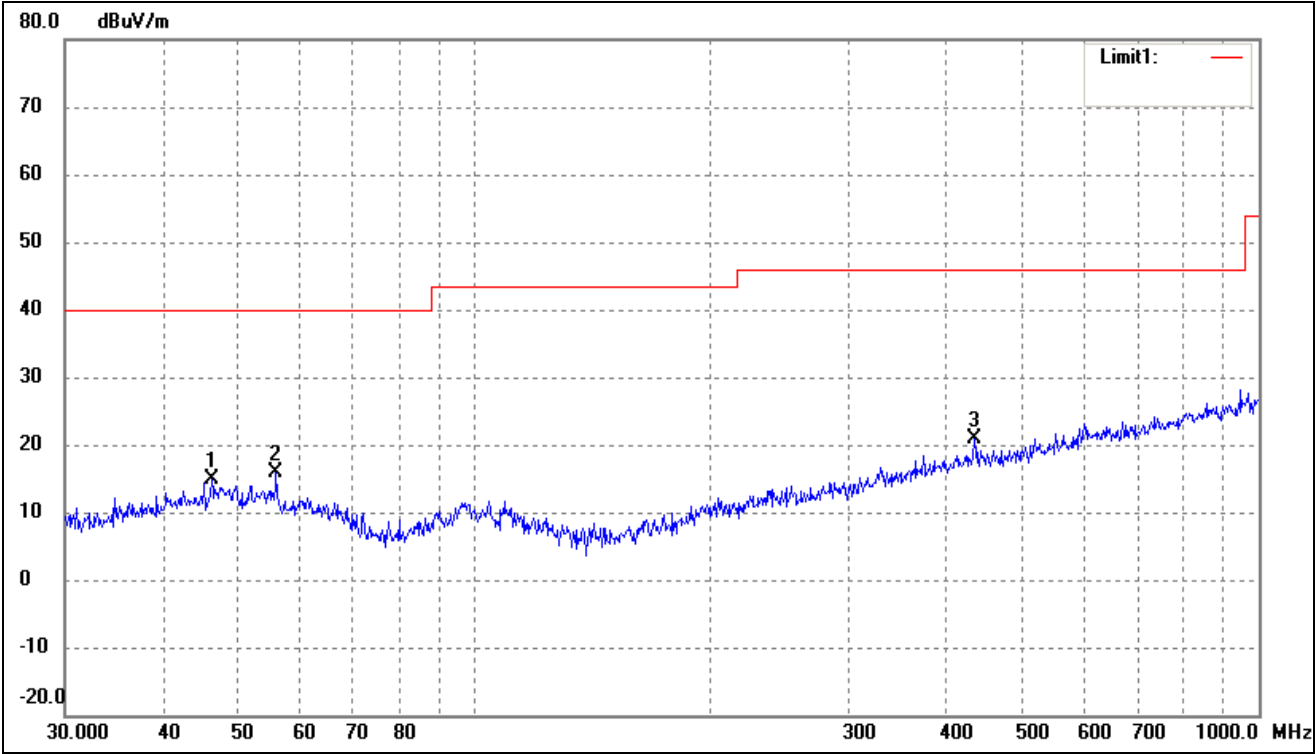
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	49.7068	23.33	-7.44	15.89	40.00	-24.11	260	100	peak
2	100.5806	22.04	-9.57	12.47	43.50	-31.03	120	200	peak
3	595.1329	25.13	-1.81	23.32	46.00	-22.68	289	200	peak

Test Specification: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	36.3814	24.24	-9.52	14.72	40.00	-25.28	130	100	peak
2	51.1209	24.69	-7.56	17.13	40.00	-22.87	120	100	peak
3	506.4791	23.25	-1.17	22.08	46.00	-23.92	360	100	peak

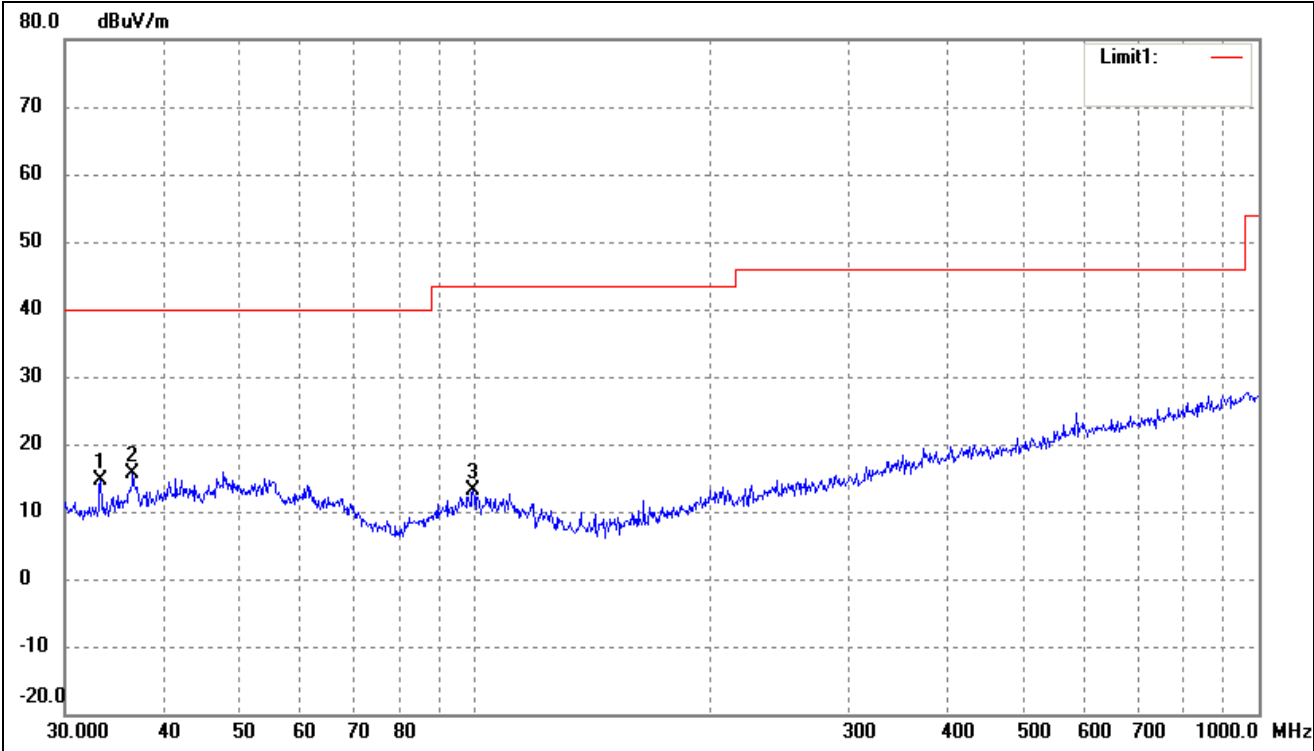
Operating Condition: 802.11n-HT40 Transmitting Middle Channel-2437MHz  
Comment: Battery: DC7.4V  
  
Test Specification: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	46.1780	22.25	-7.46	14.79	40.00	-25.21	274	100	peak
2	55.8047	24.02	-8.04	15.98	40.00	-24.02	130	100	peak
3	434.0651	23.14	-2.32	20.82	46.00	-25.18	120	100	peak

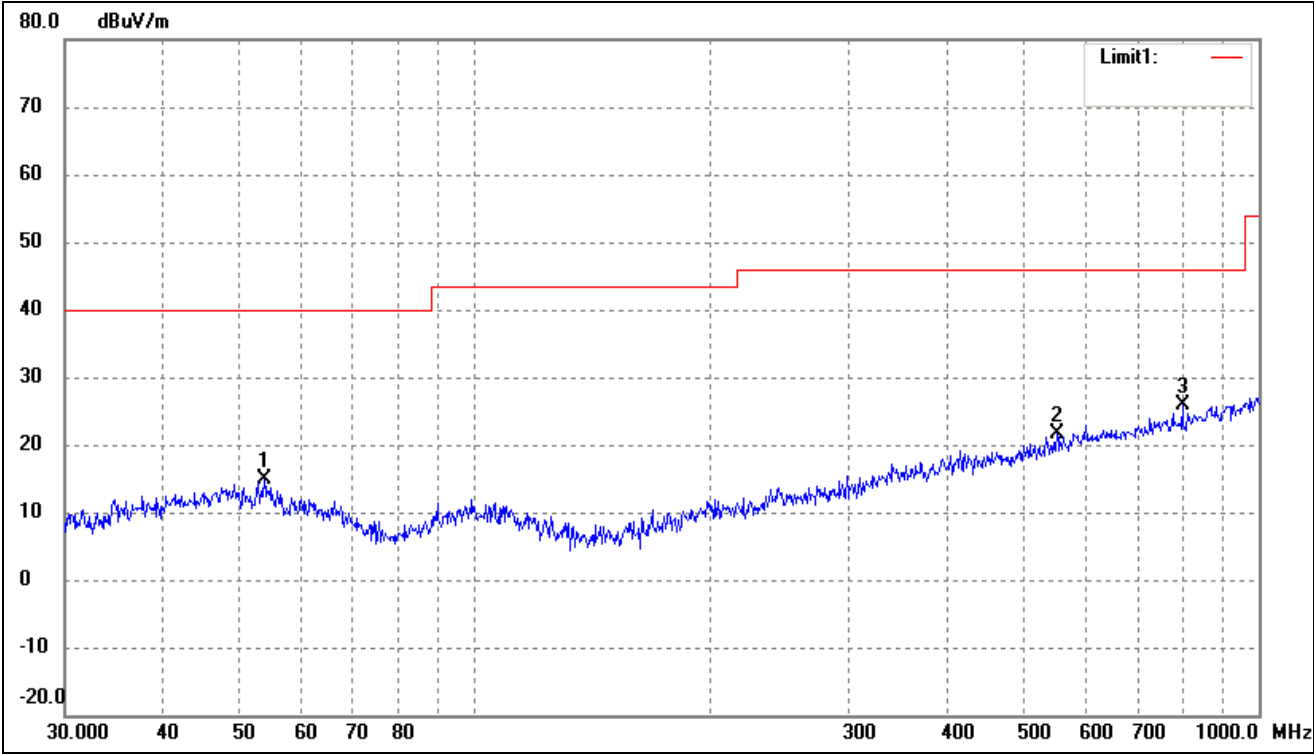


Test Specification: Vertical



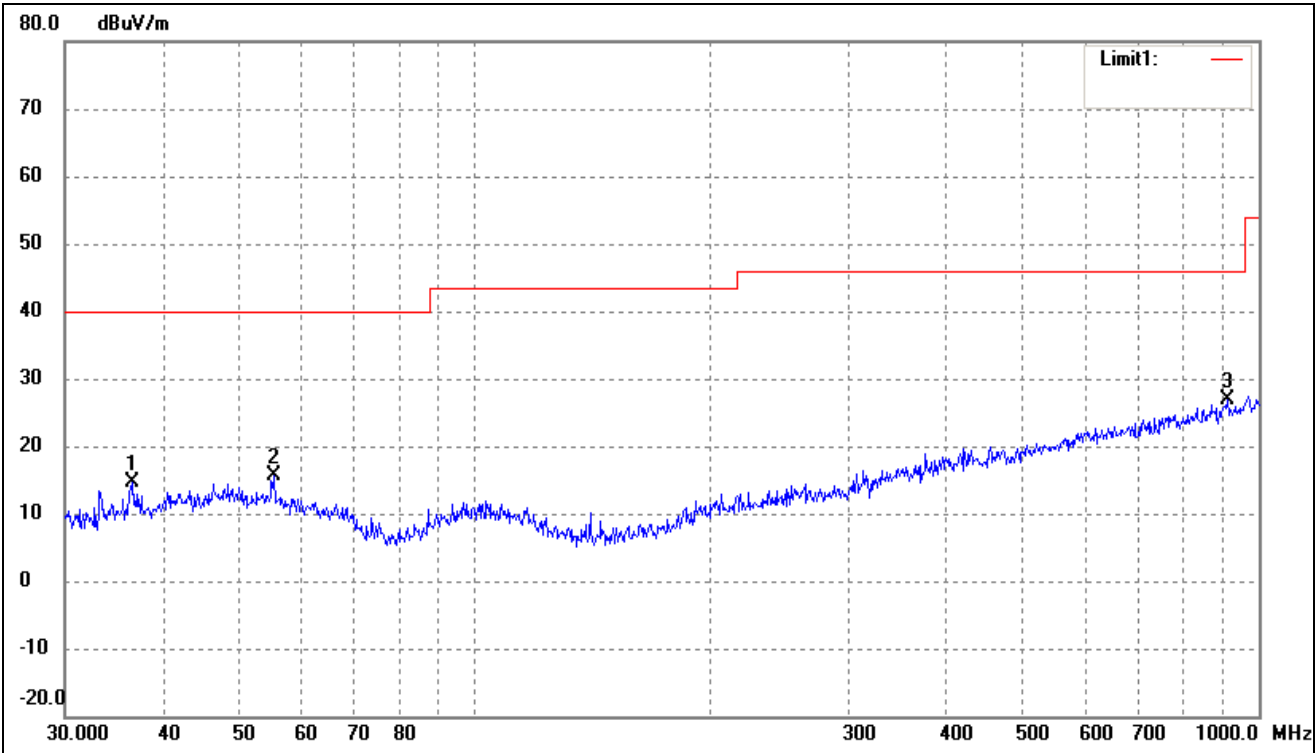
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	33.3279	25.07	-10.48	14.59	40.00	-25.41	360	100	peak
2	36.6375	24.94	-9.39	15.55	40.00	-24.45	110	100	peak
3	99.5281	22.72	-9.61	13.11	43.50	-30.39	120	100	peak

Operating Condition: 802.11n-HT40 Transmitting High Channel-2452MHz  
Comment: Battery: DC7.4V  
  
Test Specification: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	53.8818	22.60	-7.83	14.77	40.00	-25.23	360	100	peak
2	552.8833	22.91	-1.38	21.53	46.00	-24.47	138	100	peak
3	798.9797	23.17	2.60	25.77	46.00	-20.23	180	200	peak

Test Specification: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	36.6375	23.98	-9.39	14.59	40.00	-25.41	270	100	peak
2	55.4147	23.65	-7.99	15.66	40.00	-24.34	120	100	peak
3	912.8620	21.34	5.43	26.77	46.00	-19.23	360	100	peak

*Spurious Emissions Above 1GHz**Test Mode: 802.11b*

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Low Channel-2412MHz							
4824.000	59.24	0.57	59.81	74.00	-14.19	H	PK
4824.000	44.84	0.57	45.41	54.00	-8.59	H	AV
7236.000	35.01	3.69	38.70	74.00	-35.30	H	PK
7236.000	23.58	3.69	27.27	54.00	-26.73	H	AV
4824.000	50.85	0.57	51.42	74.00	-22.58	V	PK
4824.000	37.17	0.57	37.74	54.00	-16.26	V	AV
7236.000	34.80	3.69	38.49	74.00	-35.51	V	PK
7236.000	23.41	3.69	27.10	54.00	-26.90	V	AV
Middle Channel-2437MHz							
4874.000	57.35	0.66	58.01	74.00	-15.99	H	PK
4874.000	42.77	0.66	43.43	54.00	-10.57	H	AV
7311.000	37.61	3.76	41.37	74.00	-32.63	H	PK
7311.000	25.87	3.76	29.63	54.00	-24.37	H	AV
4874.000	51.19	0.66	51.85	74.00	-22.15	V	PK
4874.000	37.61	0.66	38.27	54.00	-15.73	V	AV
7311.000	38.83	3.76	42.59	74.00	-31.41	V	PK
7311.000	25.84	3.76	29.60	54.00	-24.40	V	AV
High Channel-2462MHz							
4924.000	56.32	0.74	57.06	74.00	-16.94	H	PK
4924.000	42.94	0.74	43.68	54.00	-10.32	H	AV
7386.000	37.91	3.83	41.74	74.00	-32.26	H	PK
7386.000	27.26	3.83	31.09	54.00	-22.91	H	AV
4924.000	53.07	0.74	53.81	74.00	-20.19	V	PK
4924.000	39.42	0.74	40.16	54.00	-13.84	V	AV
7386.000	38.69	3.83	42.52	74.00	-31.48	V	PK
7386.000	27.20	3.83	31.03	54.00	-22.97	V	AV

Test Mode: 802.11g

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Low Channel-2412MHz							
4824.000	54.00	0.57	54.57	74.00	-19.43	H	PK
4824.000	47.78	0.57	48.35	54.00	-5.65	H	AV
7236.000	35.17	3.69	38.86	74.00	-35.14	H	PK
7236.000	23.82	3.69	27.51	54.00	-26.49	H	AV
4824.000	42.22	0.57	42.79	74.00	-31.21	V	PK
4824.000	33.11	0.57	33.68	54.00	-20.32	V	AV
7236.000	35.08	3.69	38.77	74.00	-35.23	V	PK
7236.000	23.89	3.69	27.58	54.00	-26.42	V	AV
Middle Channel-2437MHz							
4874.000	53.19	0.66	53.85	74.00	-20.15	H	PK
4874.000	46.35	0.66	47.01	54.00	-6.99	H	AV
7311.000	37.62	3.76	41.38	74.00	-32.62	H	PK
7311.000	26.04	3.76	29.80	54.00	-24.20	H	AV
4874.000	43.36	0.66	44.02	74.00	-29.98	V	PK
4874.000	32.19	0.66	32.85	54.00	-21.15	V	AV
7311.000	37.03	3.76	40.79	74.00	-33.21	V	PK
7311.000	26.65	3.76	30.41	54.00	-23.59	V	AV
High Channel-2462MHz							
4924.000	55.79	0.74	56.53	74.00	-17.47	H	PK
4924.000	33.00	0.74	33.74	54.00	-20.26	H	AV
7386.000	37.86	3.83	41.69	74.00	-32.31	H	PK
7386.000	27.21	3.83	31.04	54.00	-22.96	H	AV
4924.000	45.15	0.74	45.89	74.00	-28.11	V	PK
4924.000	33.60	0.74	34.34	54.00	-19.66	V	AV
7386.000	38.93	3.83	42.76	74.00	-31.24	V	PK
7386.000	27.12	3.83	30.95	54.00	-23.05	V	AV

Test Mode: 802.11n-HT20

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Low Channel-2412MHz							
4824.000	55.85	0.57	56.42	74.00	-17.58	H	PK
4824.000	32.67	0.57	33.24	54.00	-20.76	H	AV
7236.000	34.49	3.69	38.18	74.00	-35.82	H	PK
7236.000	23.28	3.69	26.97	54.00	-27.03	H	AV
4824.000	43.03	0.57	43.60	74.00	-30.40	V	PK
4824.000	31.74	0.57	32.31	54.00	-21.69	V	AV
7236.000	34.59	3.69	38.28	74.00	-35.72	V	PK
7236.000	23.31	3.69	27.00	54.00	-27.00	V	AV
Middle Channel-2437MHz							
4874.000	53.08	0.66	53.74	74.00	-20.26	H	PK
4874.000	31.66	0.66	32.32	54.00	-21.68	H	AV
7311.000	36.80	3.76	40.56	74.00	-33.44	H	PK
7311.000	26.16	3.76	29.92	54.00	-24.08	H	AV
4874.000	44.14	0.66	44.80	74.00	-29.20	V	PK
4874.000	32.41	0.66	33.07	54.00	-20.93	V	AV
7311.000	37.59	3.76	41.35	74.00	-32.65	V	PK
7311.000	25.48	3.76	29.24	54.00	-24.76	V	AV
High Channel-2462MHz							
4924.000	53.25	0.74	53.99	74.00	-20.01	H	PK
4924.000	31.69	0.74	32.43	54.00	-21.57	H	AV
7386.000	38.35	3.83	42.18	74.00	-31.82	H	PK
7386.000	27.19	3.83	31.02	54.00	-22.98	H	AV
4924.000	43.52	0.74	44.26	74.00	-29.74	V	PK
4924.000	31.12	0.74	31.86	54.00	-22.14	V	AV
7386.000	38.66	3.83	42.49	74.00	-31.51	V	PK
7386.000	26.99	3.83	30.82	54.00	-23.18	V	AV

Test Mode: 802.11n-HT40

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Low Channel-2422MHz							
4844.000	53.25	0.60	53.85	74.00	-20.15	H	PK
4824.000	38.25	0.60	38.85	54.00	-15.15	H	AV
7266.000	46.48	3.72	50.20	74.00	-23.80	H	PK
7266.000	32.56	3.72	36.28	54.00	-17.72	H	AV
4844.000	54.22	0.60	54.82	74.00	-19.18	V	PK
4824.000	39.42	0.60	40.02	54.00	-13.98	V	AV
7266.000	48.81	3.72	52.53	74.00	-21.47	V	PK
7266.000	34.78	3.72	38.50	54.00	-15.50	V	AV
Middle Channel-2437MHz							
4874.000	52.53	0.66	53.19	74.00	-20.81	H	PK
4874.000	37.88	0.66	38.54	54.00	-15.46	H	AV
7311.000	44.88	3.76	48.64	74.00	-25.36	H	PK
7311.000	32.03	3.76	35.79	54.00	-18.21	H	AV
4874.000	53.74	0.66	54.40	74.00	-19.60	V	PK
4874.000	39.95	0.66	40.61	54.00	-13.39	V	AV
7311.000	45.78	3.76	49.54	74.00	-24.46	V	PK
7311.000	34.00	3.76	37.76	54.00	-16.24	V	AV
High Channel-2452MHz							
4904.000	52.65	0.72	53.37	74.00	-20.63	H	PK
4904.000	39.37	0.72	40.09	54.00	-13.91	H	AV
7356.000	45.63	3.81	49.44	74.00	-24.56	H	PK
7356.000	30.73	3.81	34.54	54.00	-19.46	H	AV
4904.000	54.84	0.72	55.56	74.00	-18.44	V	PK
4904.000	40.83	0.72	41.55	54.00	-12.45	V	AV
7356.000	48.18	3.81	51.99	74.00	-22.01	V	PK
7356.000	35.12	3.81	38.93	54.00	-15.07	V	AV

Note: Testing is carried out with frequency rang 9kHz to the tenth harmonics, which above 3<sup>th</sup> Harmonics are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

The measurements greater than 20dB below the limit from 9kHz to 30MHz.

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## 9. Out of Band Emissions

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### 9.1 Standard Applicable

According to §15.247 (d) 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. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. 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).

### 9.2 Test Procedure

According to the KDB 558074D01 v03r03, the band-edge radiated test method as follows:

Set span = wide enough to capture the peak level of the emission operating on the channel closest to the bandedge, as well as any modulation products which fall outside of the authorized band of operation (2310MHz to 2420MHz for low bandedge, 2460MHz to 2500MHz for the high bandedge)

RBW = 1MHz, VBW = 1MHz for peak value measured

RBW = 1MHz, VBW = 10Hz for average value measured

Sweep = auto; Detector function = peak/average; Trace = max hold

All the trace to stabilize, set the marker on the emission at the bandedge, or on the highest modulation product outside of the band, if this level is greater than that at the bandedge. Enable the marker-delta function, then use the marker-to-peak function to move the marker to the peak of the in-band emission. Those emission must comply with the 15.209 limit for fall in the restricted bands listed in section 15.205. Note that the method of measurement KDB publication number: 913591 may be used for the radiated bandedge measurements.

According to the KDB 558074 D01 V03r02, the conducted spurious emissions test method as follows:

1. Set start frequency to DTS channel edge frequency.
2. Set stop frequency so as to encompass the spectrum to be examined.
3. Set RBW = 100 kHz.
4. Set VBW  $\geq$  300 kHz.
5. Detector = peak.
6. Trace Mode = max hold.
7. Sweep = auto couple.
8. Allow the trace to stabilize (this may take some time, depending on the extent of the span).
9. Use peak marker function to determine maximum amplitude of all unwanted emissions within any 100 kHz bandwidth.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) are attenuated by at least the minimum requirements specified in section 8.1. Report the three highest emissions relative to the limit.



### 9.3 Environmental Conditions

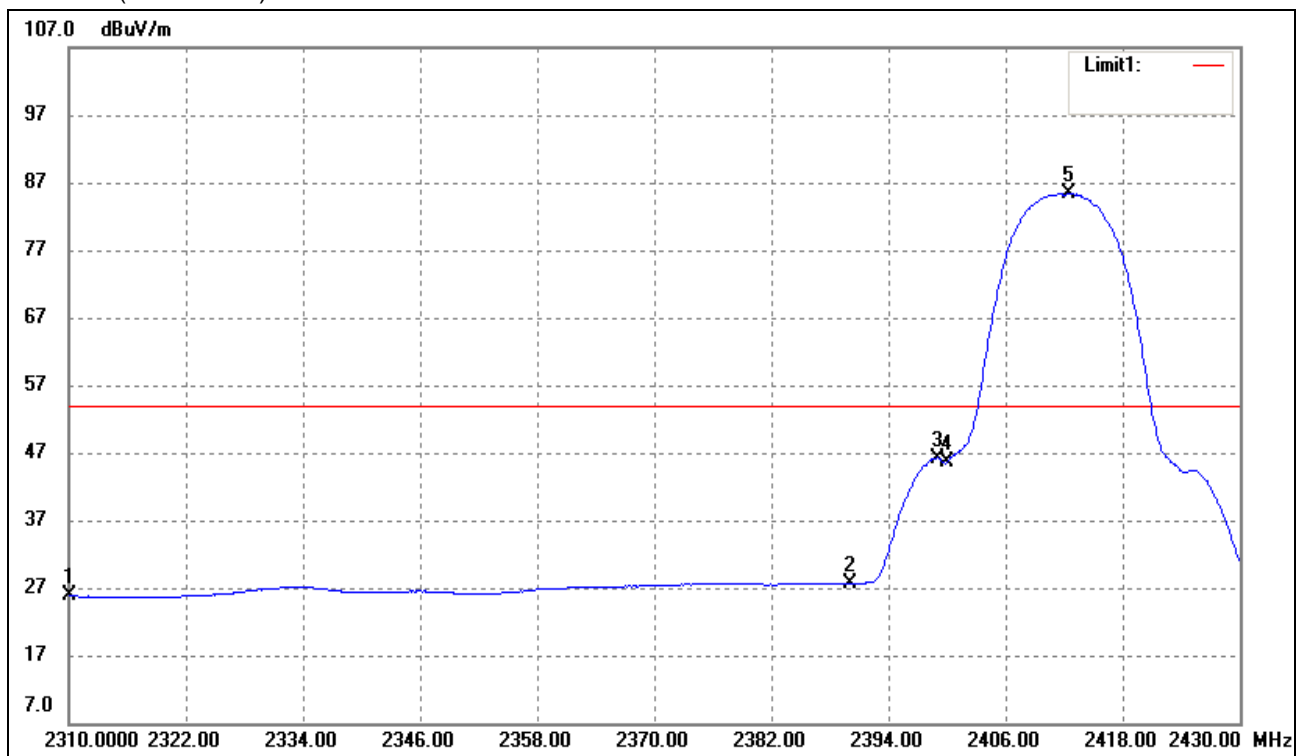
Temperature:	23°C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

### 9.4 Summary of Test Results/Plots

Please refer to the test plots as below.

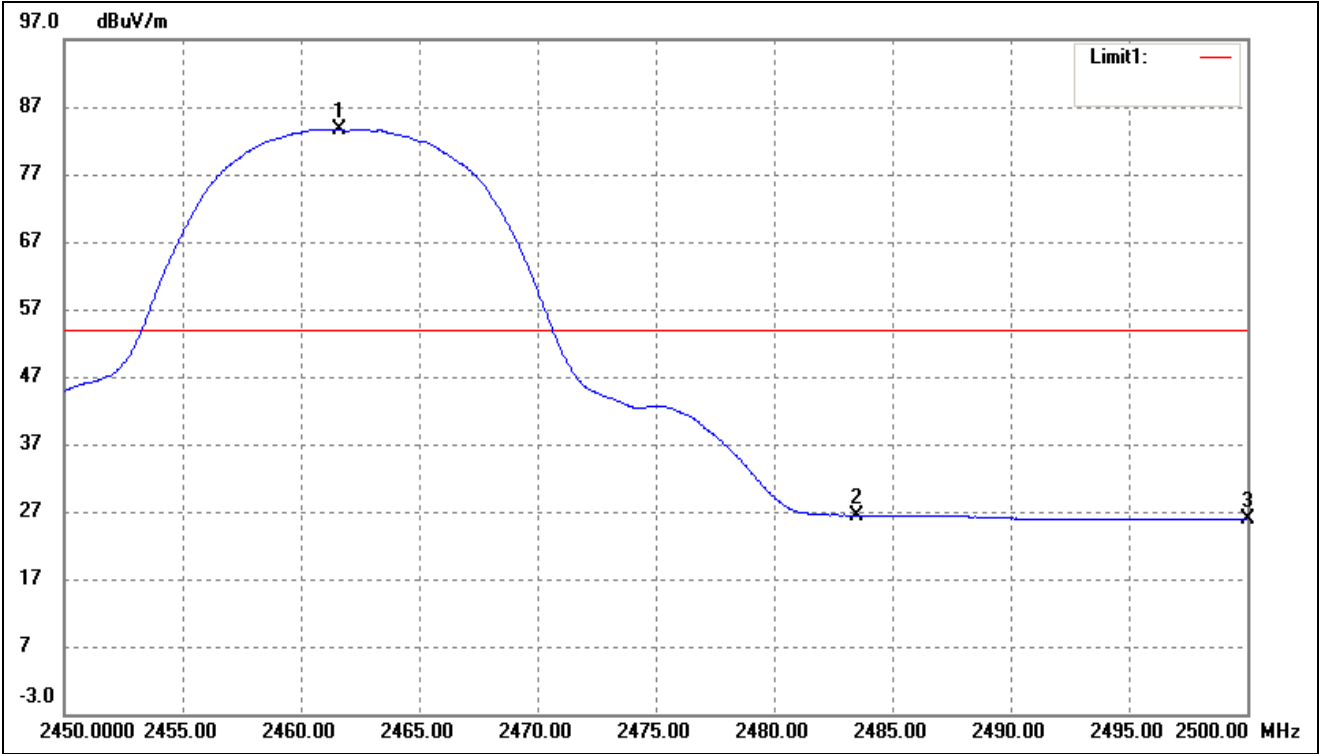
802.11b-Lowest Bandedge

Vertical (Worst case)



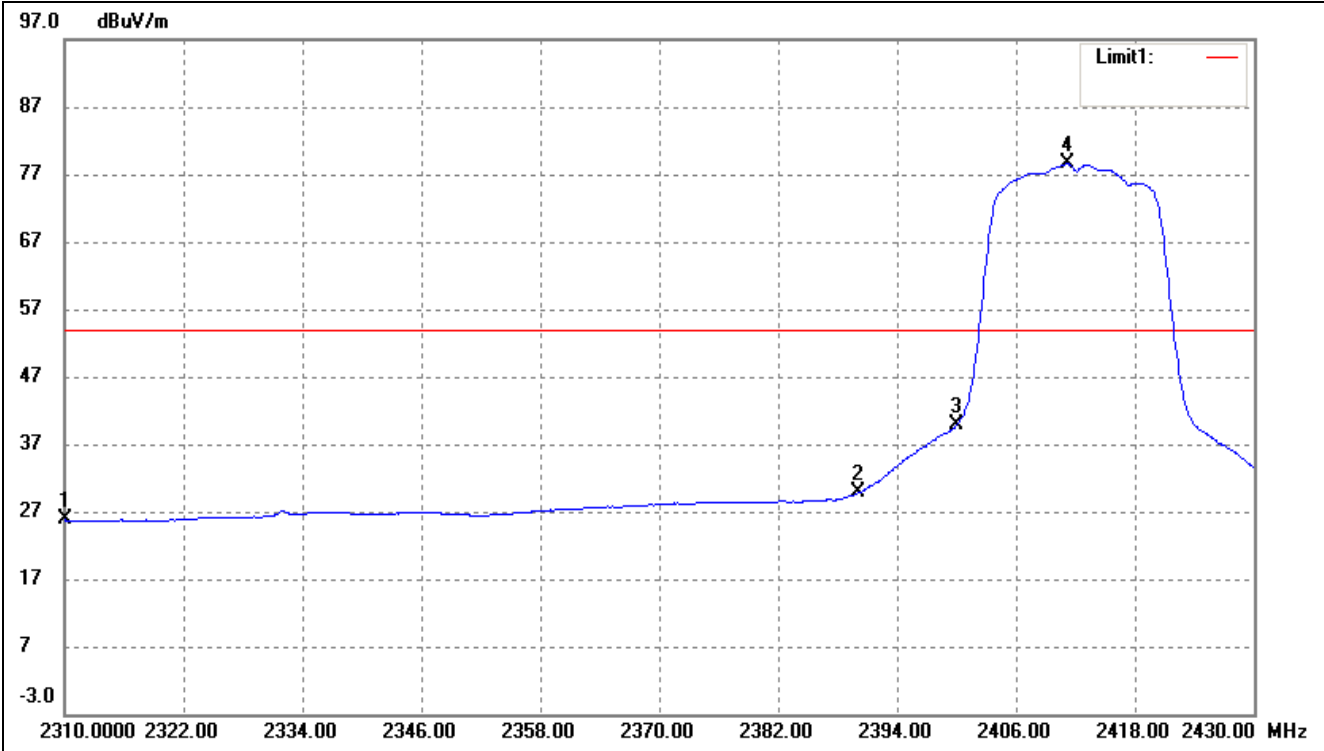
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2310.000	29.50	-3.71	25.79	54.00	-28.21	Average Detector
	2310.000	42.81	-3.71	39.10	74.00	-34.90	Peak Detector
2	2390.000	31.27	-3.54	27.73	54.00	-26.27	Average Detector
	2390.000	44.12	-3.54	40.58	74.00	-33.42	Peak Detector
3	2399.040	49.76	-3.51	46.25	54.00	-7.75	Average Detector
4	2400.000	49.20	-3.51	45.69	Delta =39.65dBc		Average Detector
5	2412.480	88.82	-3.48	85.34			Average Detector

802.11b-Highest Bandedge  
Vertical (Worst case)



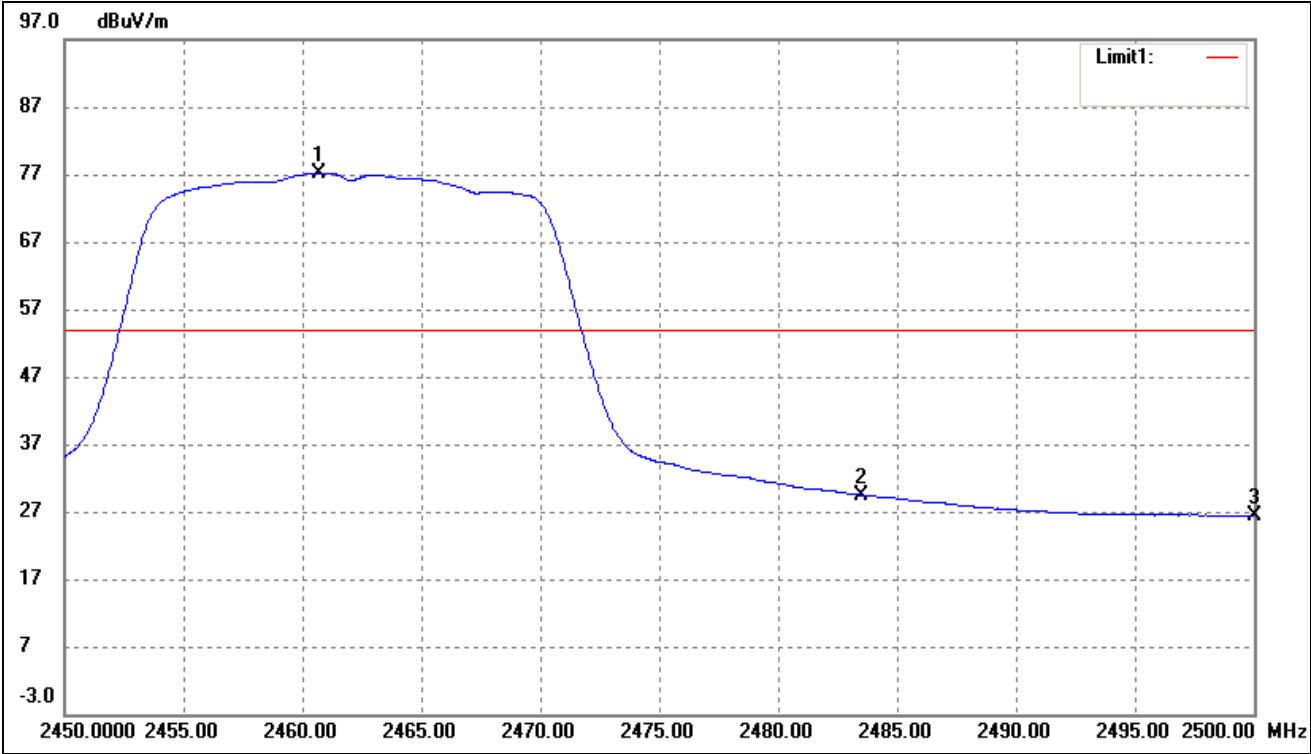
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	
1	2461.600	87.03	-3.37	83.66	/	/	Average Detector
	2463.300	96.02	-3.36	92.66	/	/	Peak Detector
2	2483.500	29.76	-3.33	26.43	54.00	-27.57	Average Detector
	2483.500	42.04	-3.33	38.71	74.00	-35.29	Peak Detector
3	2500.000	29.17	-3.28	25.89	54.00	-28.11	Average Detector
	2500.000	41.43	-3.28	38.15	74.00	-35.85	Peak Detector

802.11g-Lowest Bandedge  
Vertical (Worst case)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2310.000	29.51	-3.71	25.80	54.00	-28.20	Average Detector
	2310.000	41.73	-3.71	38.02	74.00	-35.98	Peak Detector
2	2390.000	33.32	-3.54	29.78	54.00	-24.22	Average Detector
	2390.000	47.51	-3.54	43.97	74.00	-30.03	Peak Detector
3	2400.000	43.36	-3.51	39.85	Delta =38.69dBc		Average Detector
4	2411.160	82.02	-3.48	78.54			Average Detector

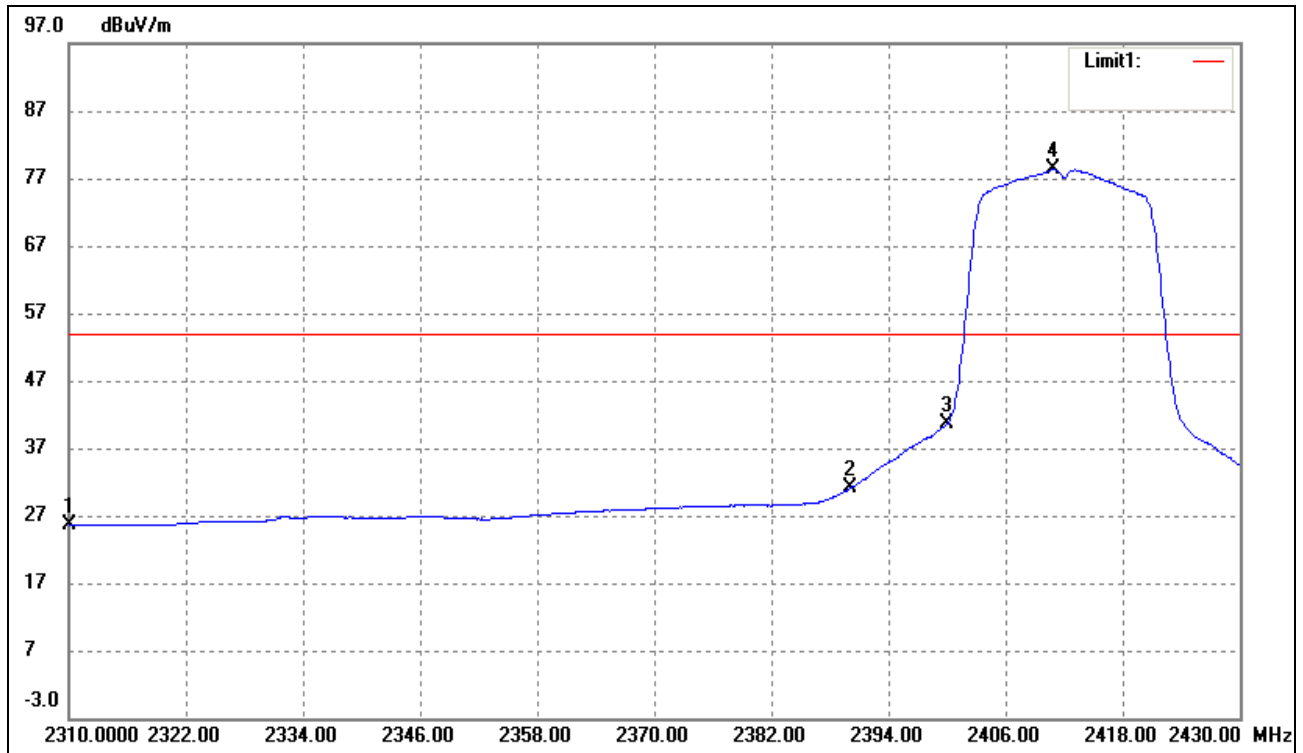
802.11g-Highest Bandedge  
Vertical (Worst case)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2460.700	80.60	-3.37	77.23	/	/	Average Detector
	2463.450	91.85	-3.36	88.49	/	/	Peak Detector
2	2483.500	32.80	-3.33	29.47	54.00	-24.53	Average Detector
	2483.500	51.84	-3.33	48.51	74.00	-25.49	Peak Detector
3	2500.000	29.60	-3.28	26.32	54.00	-27.68	Average Detector
	2500.000	42.55	-3.28	39.27	74.00	-34.73	Peak Detector

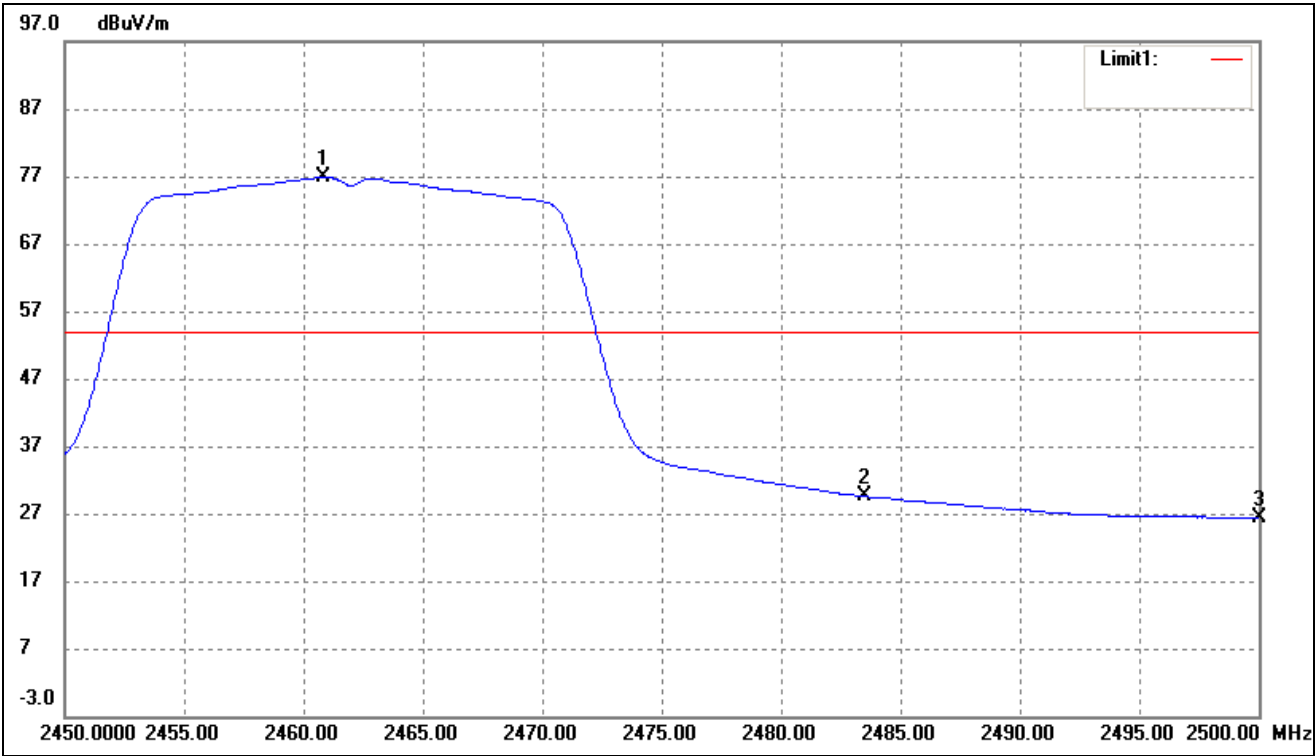
802.11n-HT20-Lowest Bandedge

Vertical (Worst case)



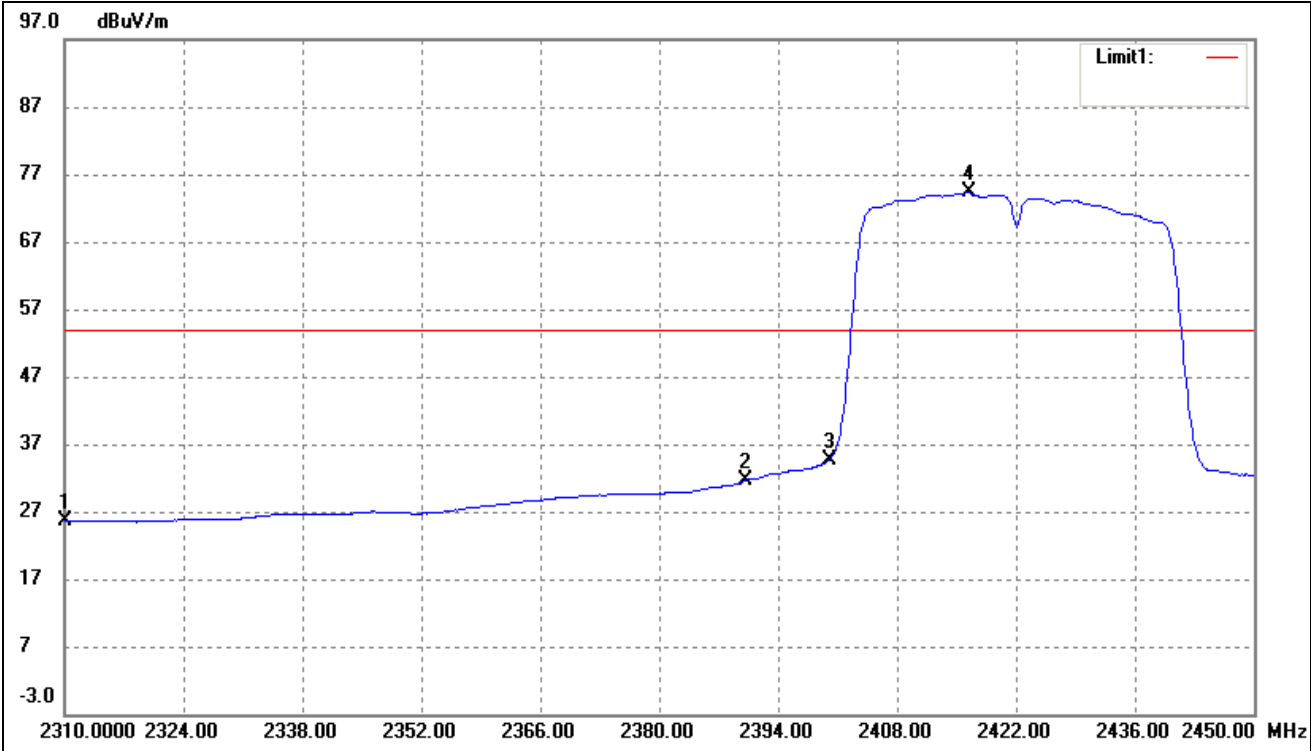
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2310.000	29.43	-3.71	25.72	54.00	-28.28	Average Detector
	2310.000	42.34	-3.71	38.63	74.00	-35.37	Peak Detector
2	2390.000	34.55	-3.54	31.01	54.00	-22.99	Average Detector
	2390.000	51.10	-3.54	47.56	74.00	-26.44	Peak Detector
3	2400.000	44.09	-3.51	40.58	Delta =37.75dBc		Average Detector
4	2410.920	81.81	-3.48	78.33			Average Detector

802.11n-HT20-Highest Bandedge  
Vertical (Worst case)



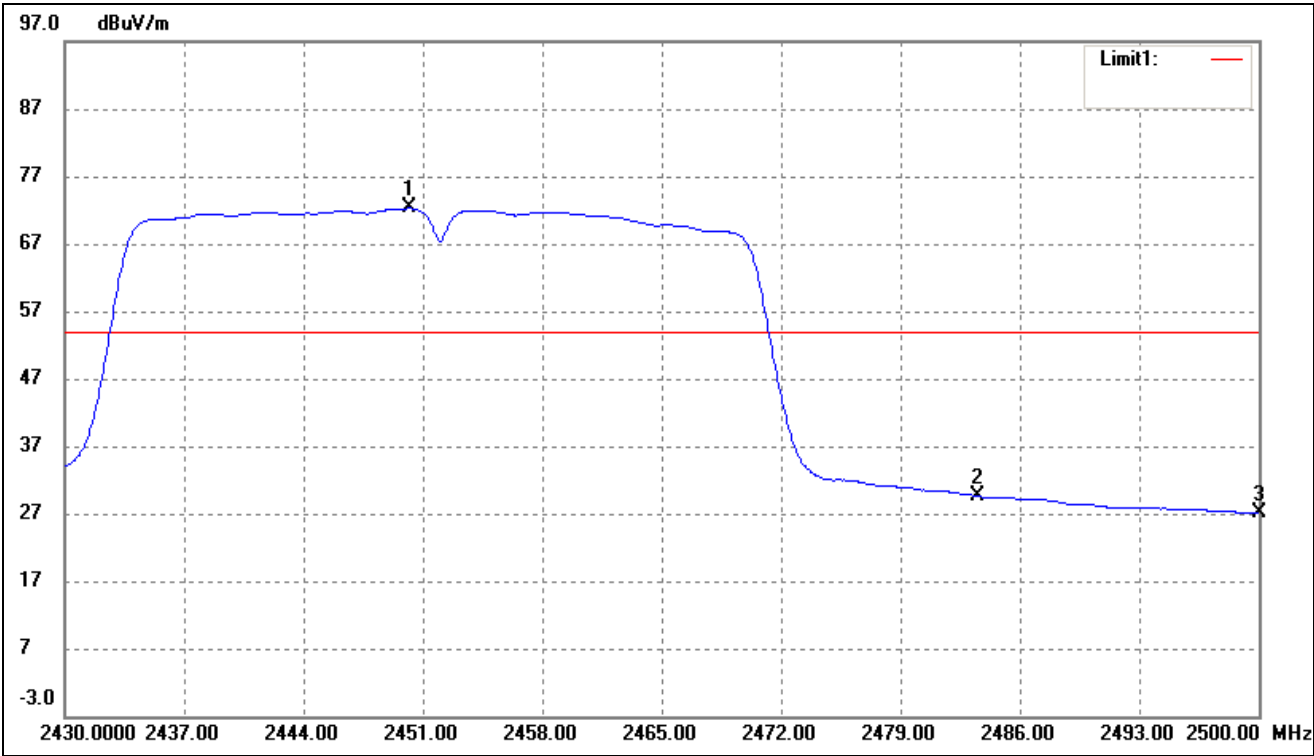
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2460.850	80.29	-3.37	76.92	/	/	Average Detector
	2461.400	91.78	-3.37	88.41	/	/	Peak Detector
2	2483.500	32.91	-3.33	29.58	54.00	-24.42	Average Detector
	2483.500	49.88	-3.33	46.55	74.00	-27.45	Peak Detector
3	2500.000	29.63	-3.28	26.35	54.00	-27.65	Average Detector
	2500.000	41.59	-3.28	38.31	74.00	-35.69	Peak Detector

802.11n-HT40-Lowest Bandedge  
Vertical (Worst case)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2310.000	29.35	-3.71	25.64	54.00	-28.36	Average Detector
	2310.000	41.55	-3.71	37.84	74.00	-36.16	Peak Detector
2	2390.000	35.14	-3.54	31.60	54.00	-22.40	Average Detector
	2390.000	48.65	-3.54	45.11	74.00	-28.89	Peak Detector
3	2400.000	38.12	-3.51	34.61	Delta =39.70dBc		Average Detector
4	2416.400	77.78	-3.47	74.31			Average Detector

802.11n-HT40-Highest Bandedge  
Vertical (Worst case)

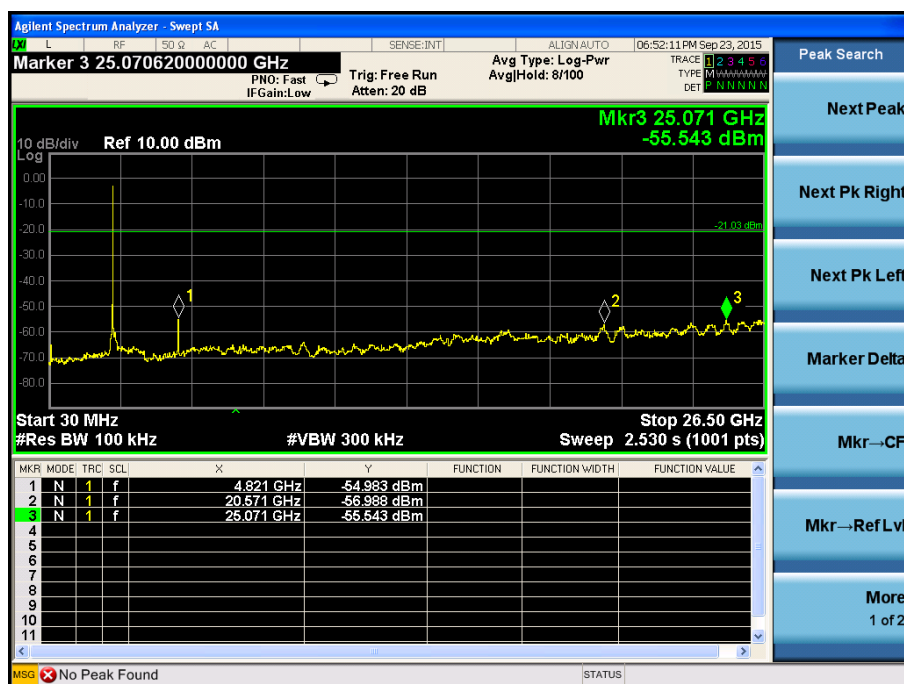
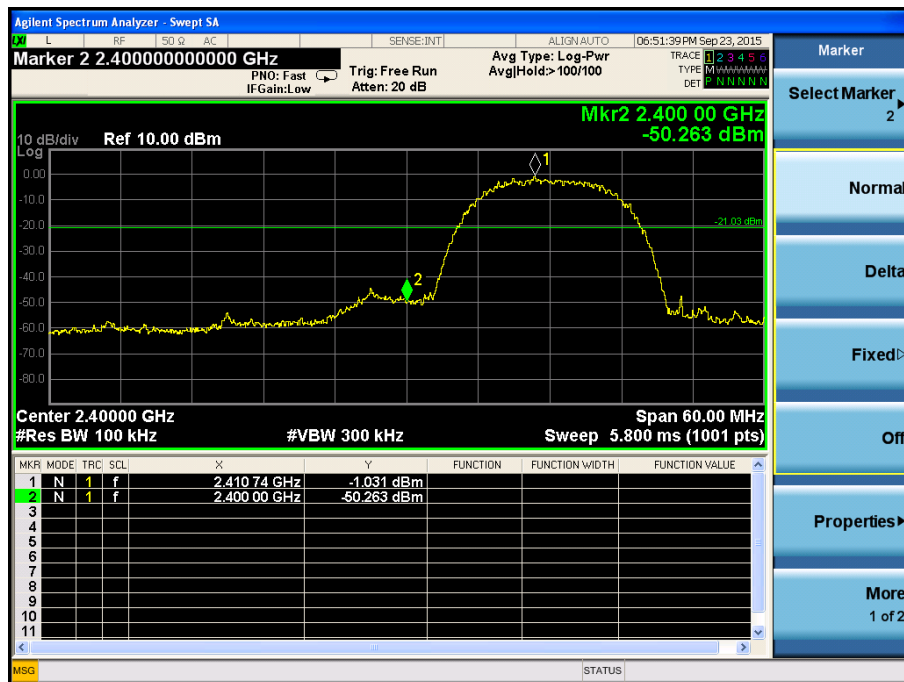


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2450.230	75.67	-3.40	72.27	/	/	Average Detector
	2459.330	86.70	-3.38	83.32	/	/	Peak Detector
2	2483.500	32.87	-3.33	29.54	54.00	-24.46	Average Detector
	2483.500	47.43	-3.33	44.10	74.00	-29.90	Peak Detector
3	2500.000	30.39	-3.28	27.11	54.00	-26.89	Average Detector
	2500.000	43.57	-3.28	40.29	74.00	-33.71	Peak Detector

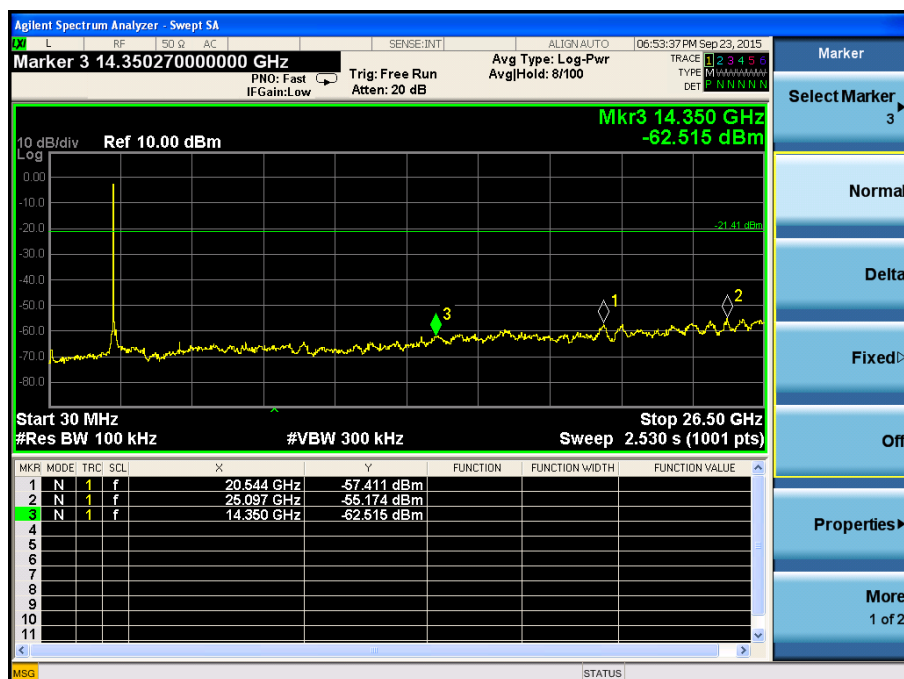
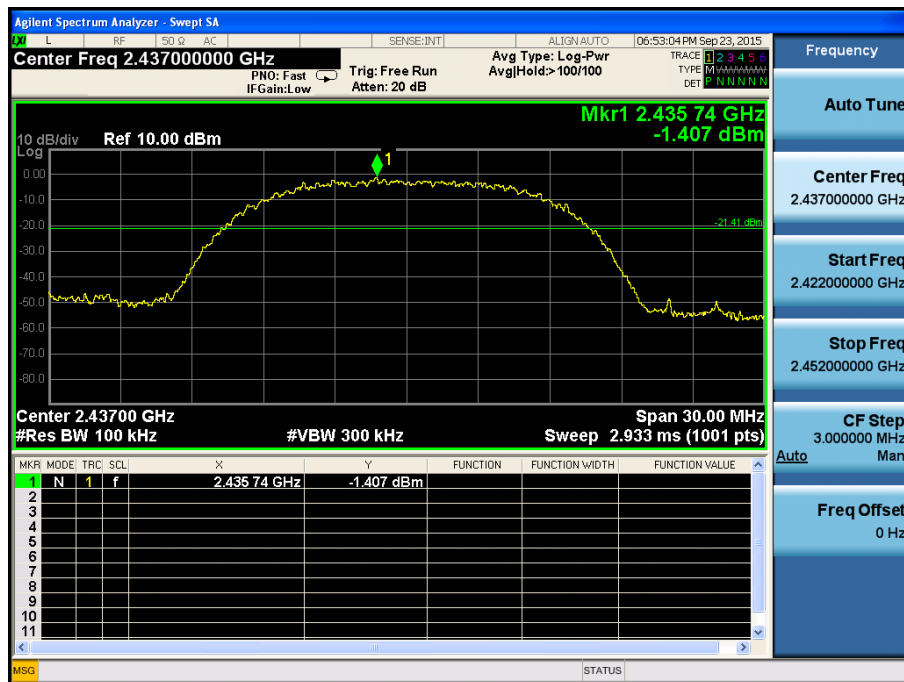


## Bandedge (Conducted)

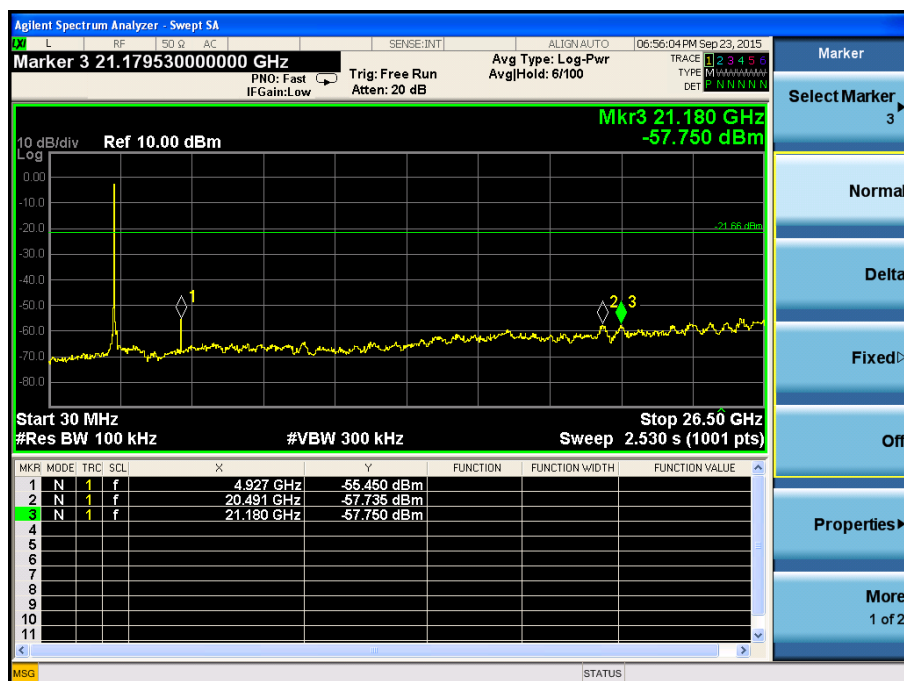
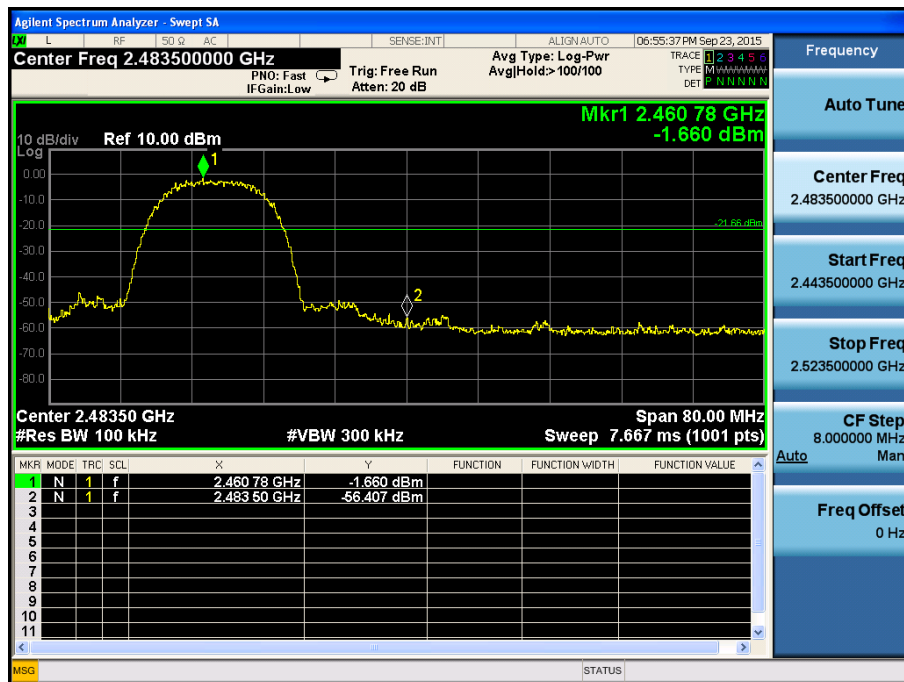
## 11b Lowest Channel



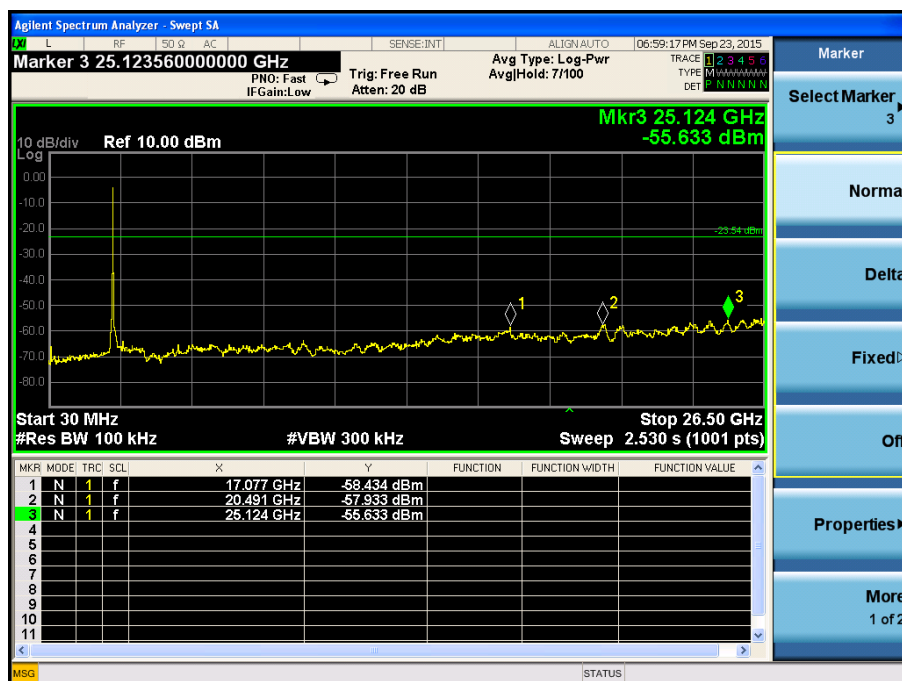
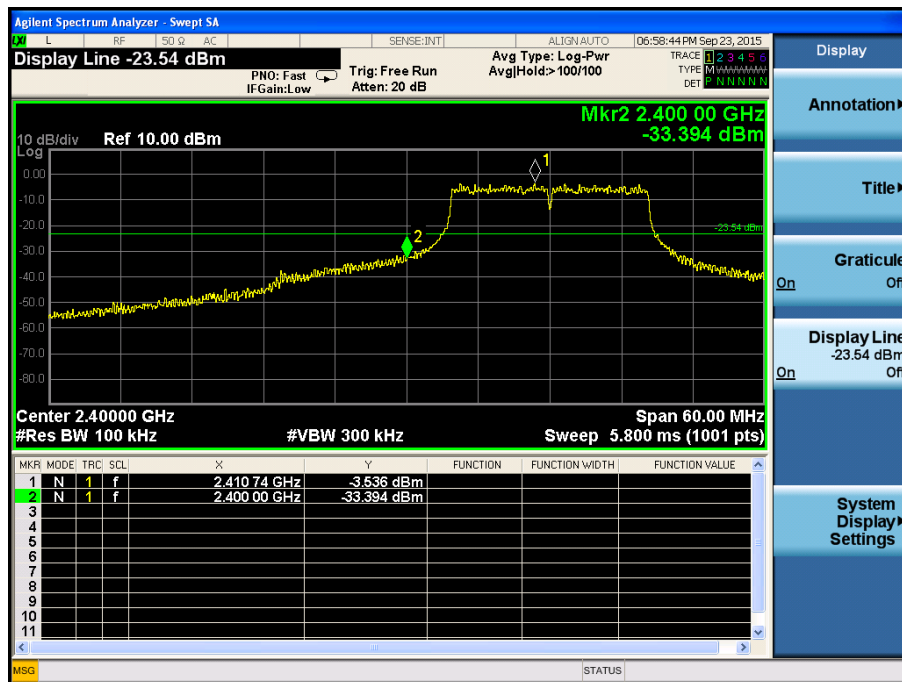
## 11b Middle Channel



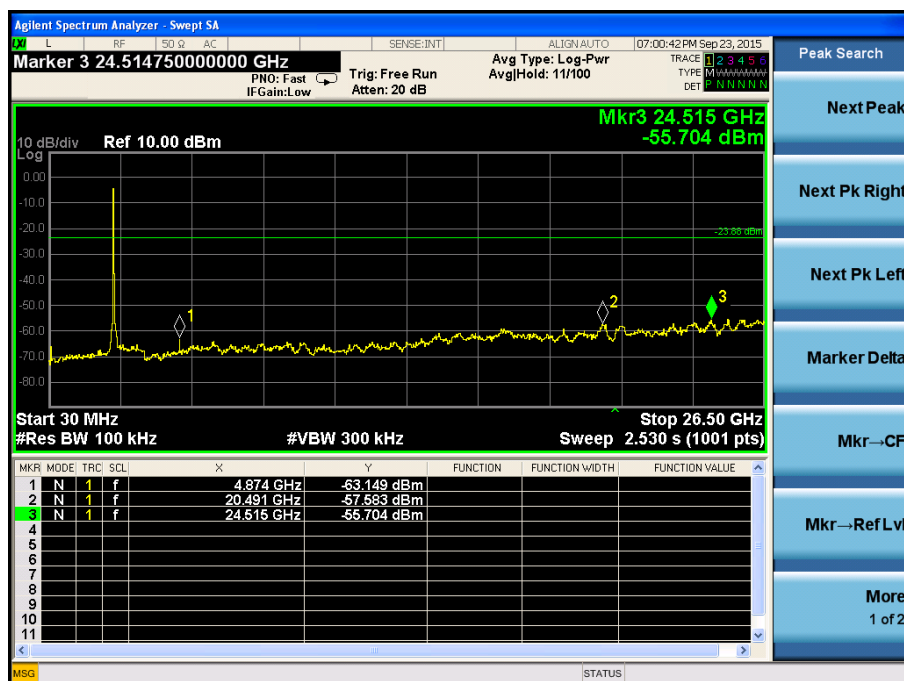
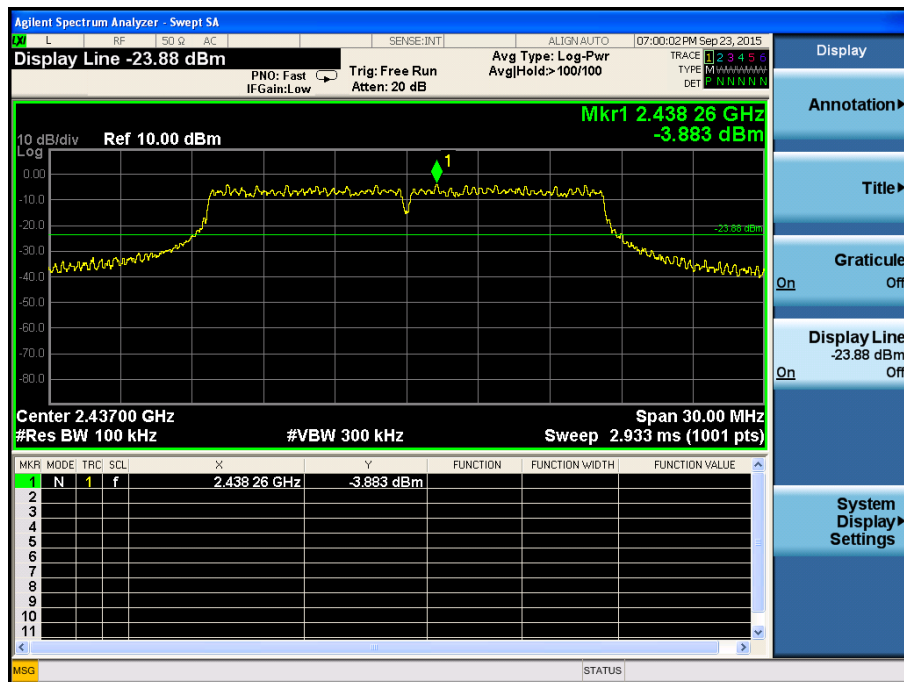
## 11b High Channel



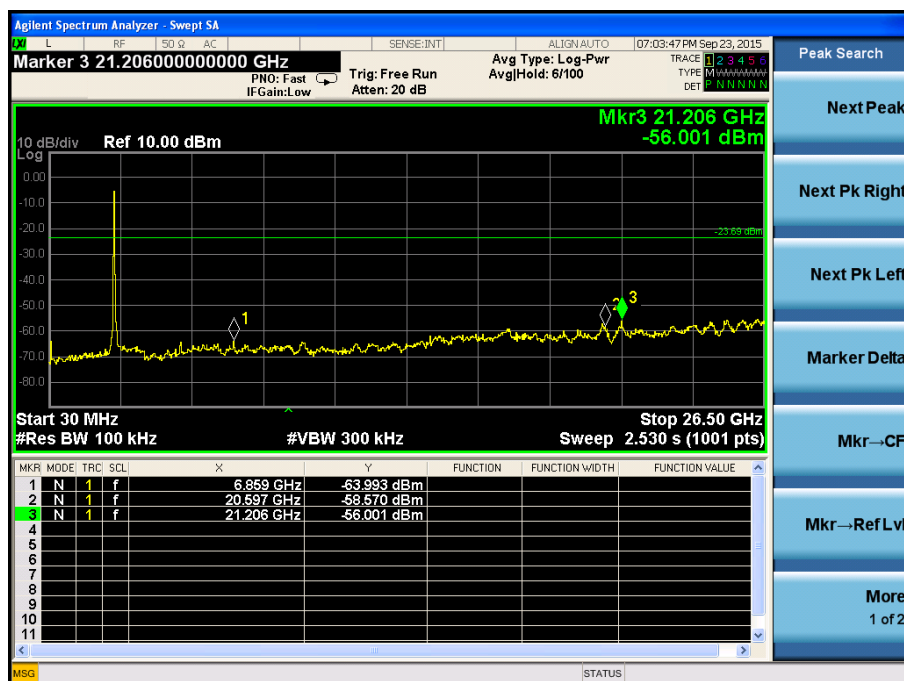
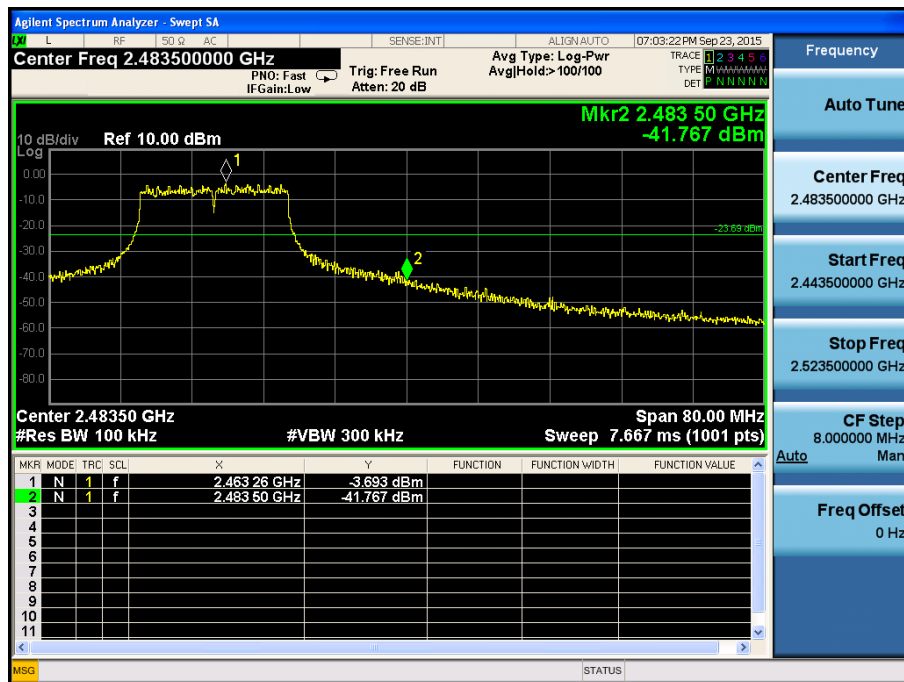
## 11g Lowest Channel



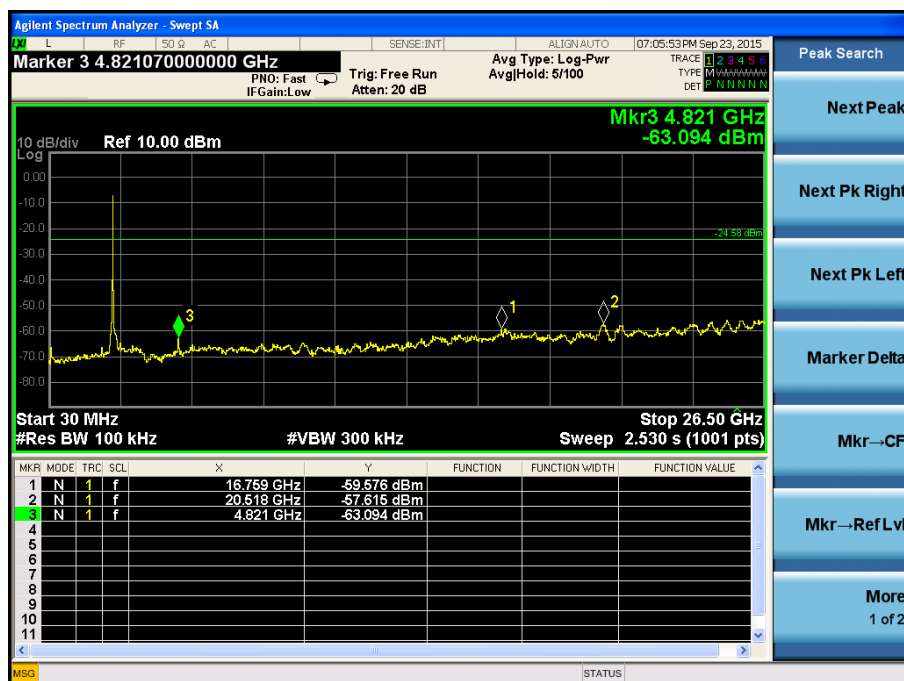
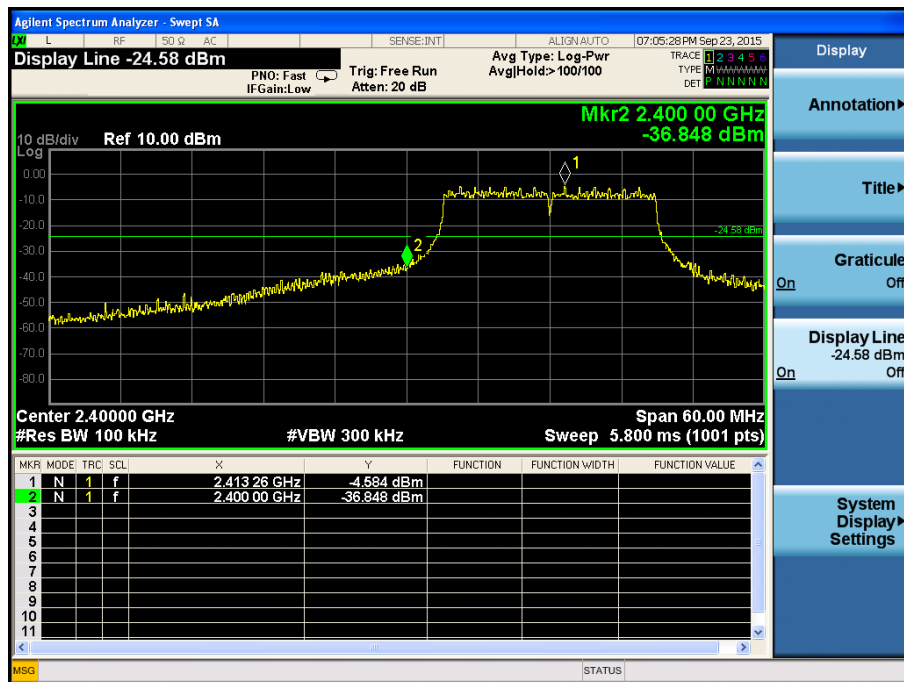
## 11g Middle Channel



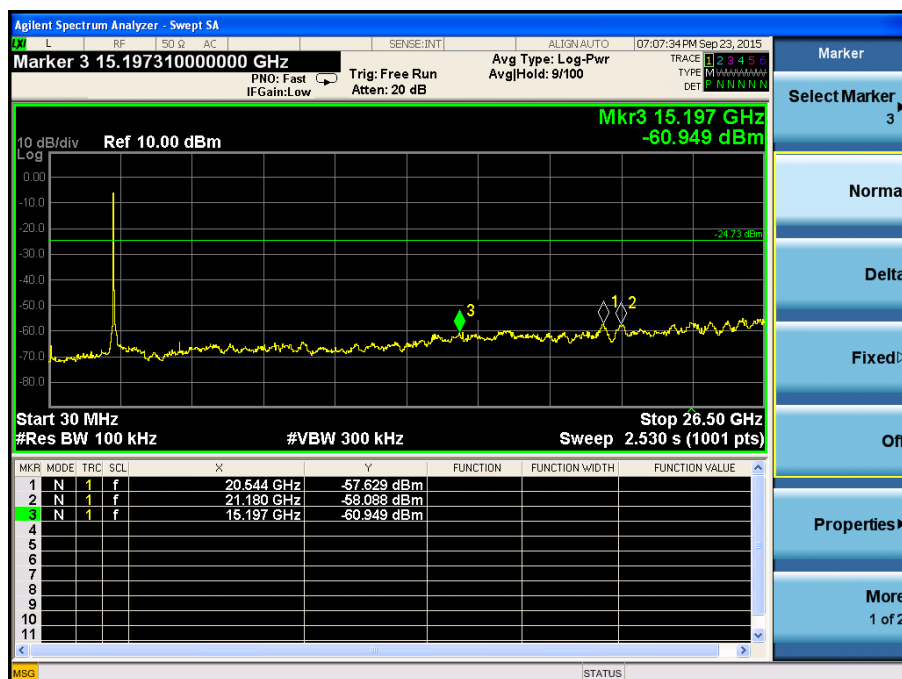
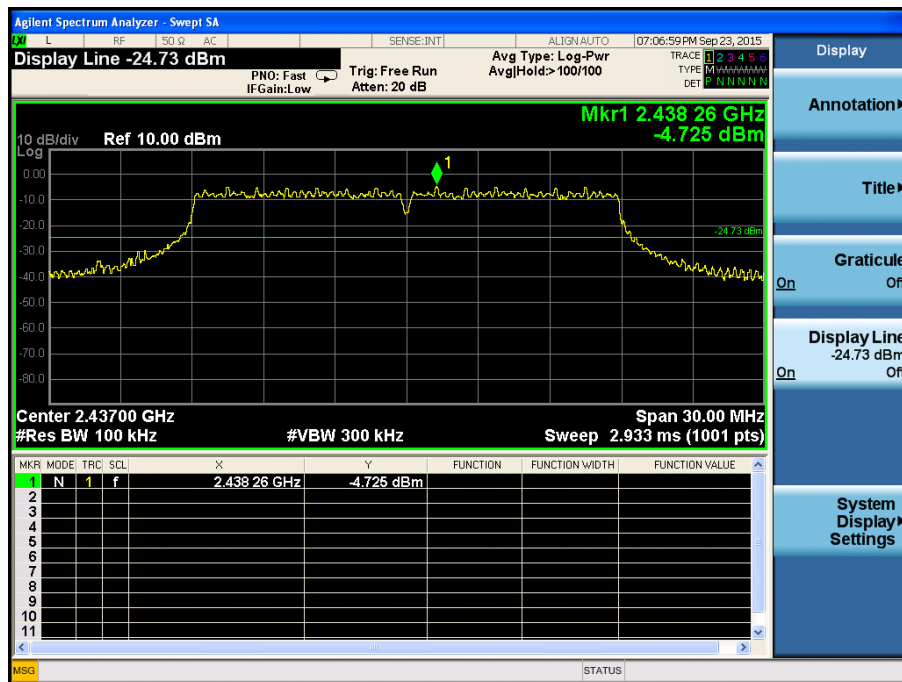
## 11g High Channel



## 11n-HT20 Lowest Channel

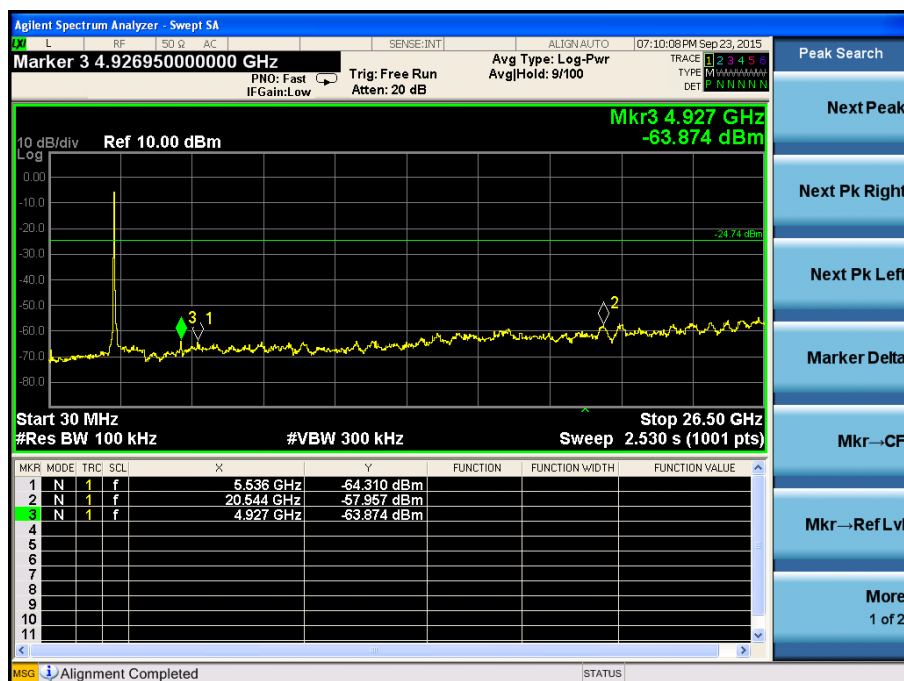


## 11n-HT20 Middle Channel

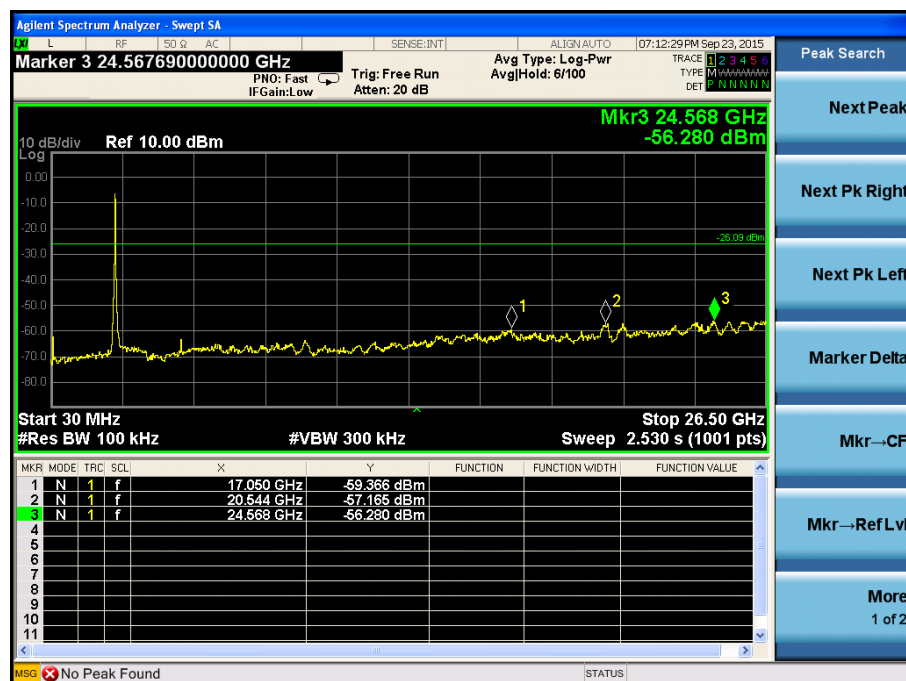
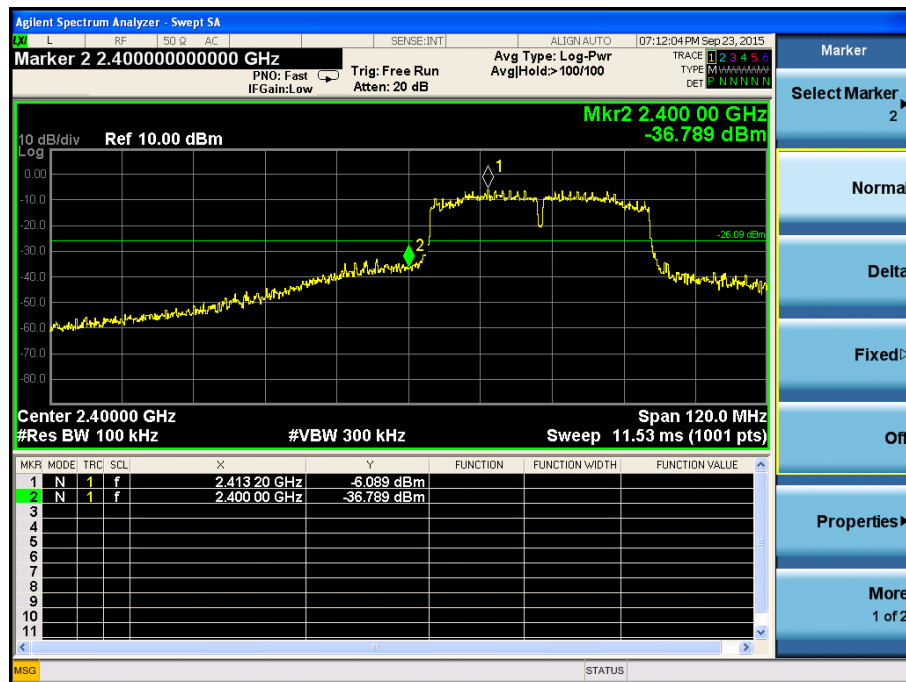




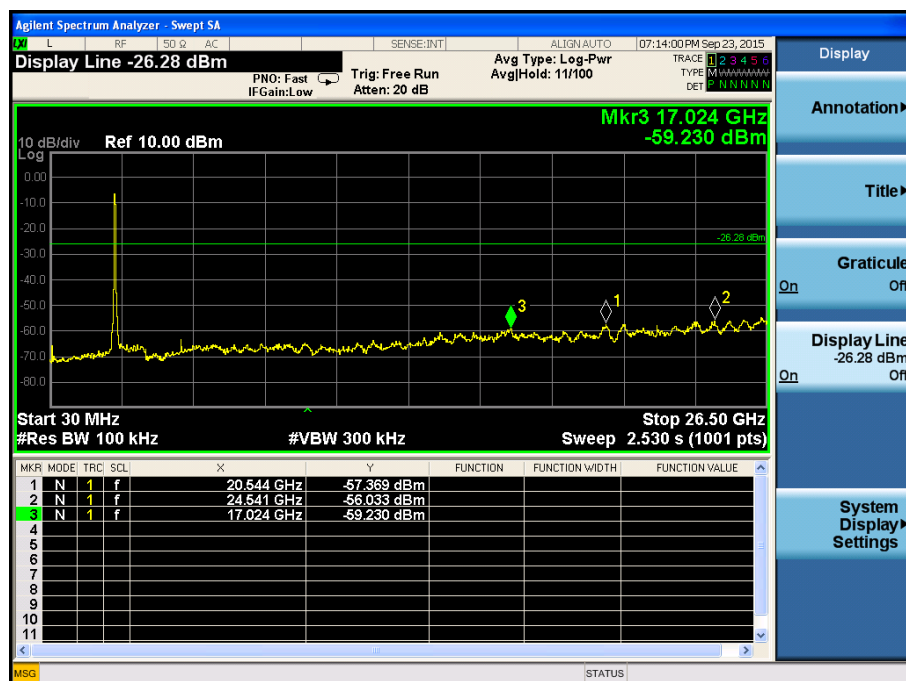
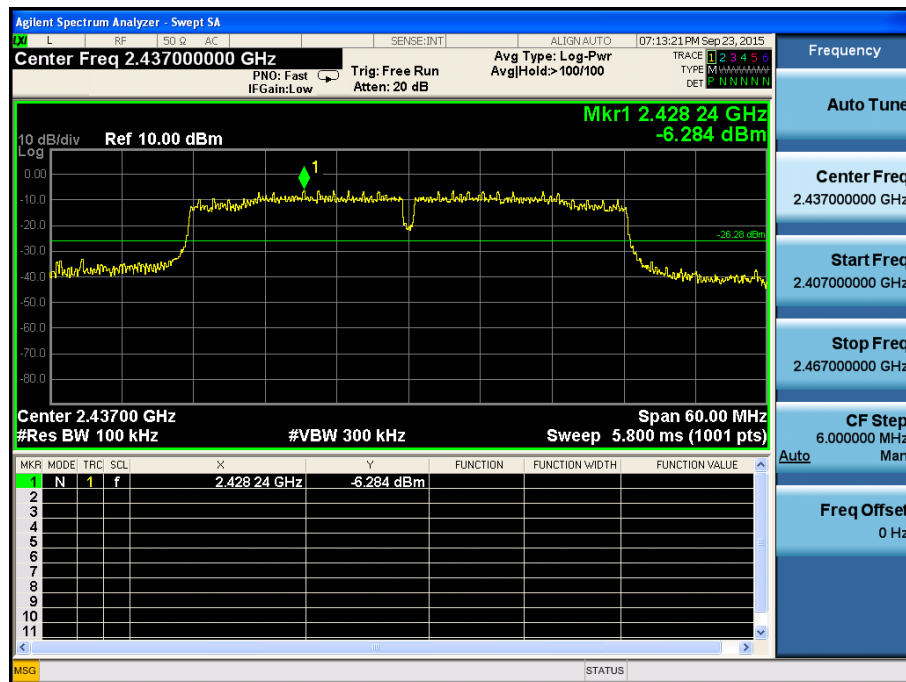
## 11n-HT20 High Channel



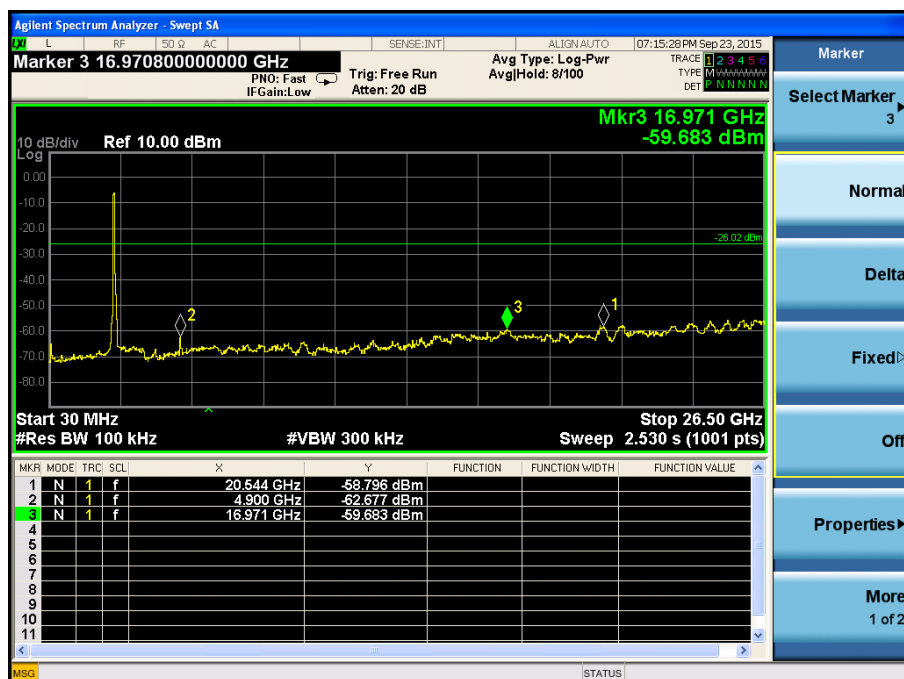
## 11n-HT40 Lowest Channel



## 11n-HT40 Middle Channel



## 11n-HT40 High Channel



## 10. Conducted Emissions

### 10.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is  $\pm 2.88$  dB.

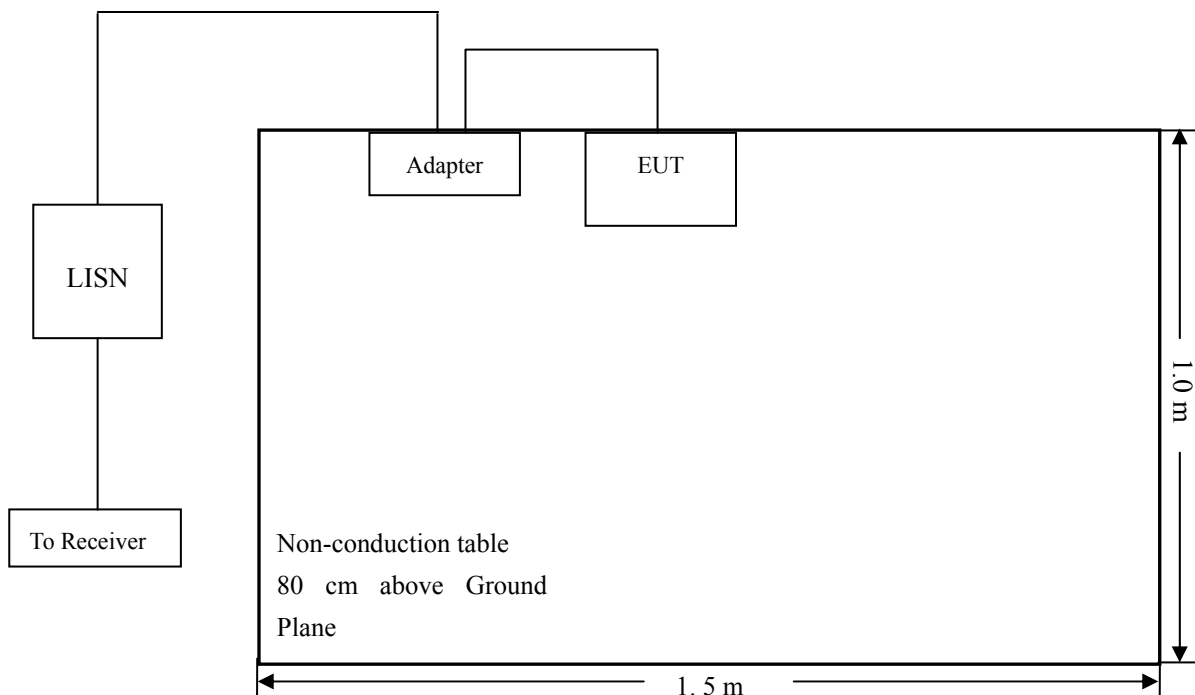
### 10.2 Test Procedure

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 15.207 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

### 10.3 Basic Test Setup Block Diagram



## 10.4 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	52%
ATM Pressure:	1012 mbar

## 10.5 Test Receiver Setup

During the conducted emission test, the test receiver was set with the following configurations:

Start Frequency ..... 150 kHz  
Stop Frequency..... 30 MHz  
Sweep Speed ..... Auto  
IF Bandwidth..... 10 kHz  
Quasi-Peak Adapter Bandwidth ..... 9 kHz  
Quasi-Peak Adapter Mode ..... Normal

## 10.6 Summary of Test Results/Plots

According to the data in section 10.8, the EUT complied with the FCC Part 15.207 Conducted margin for this device, with the *worst* margin reading of:

**-8.89 dB at 17.9820 MHz in the Line, Average detector, 0.15-30MHz**

## 10.8 Conducted Emissions Test Data

**Plot of Conducted Emissions Test Data**

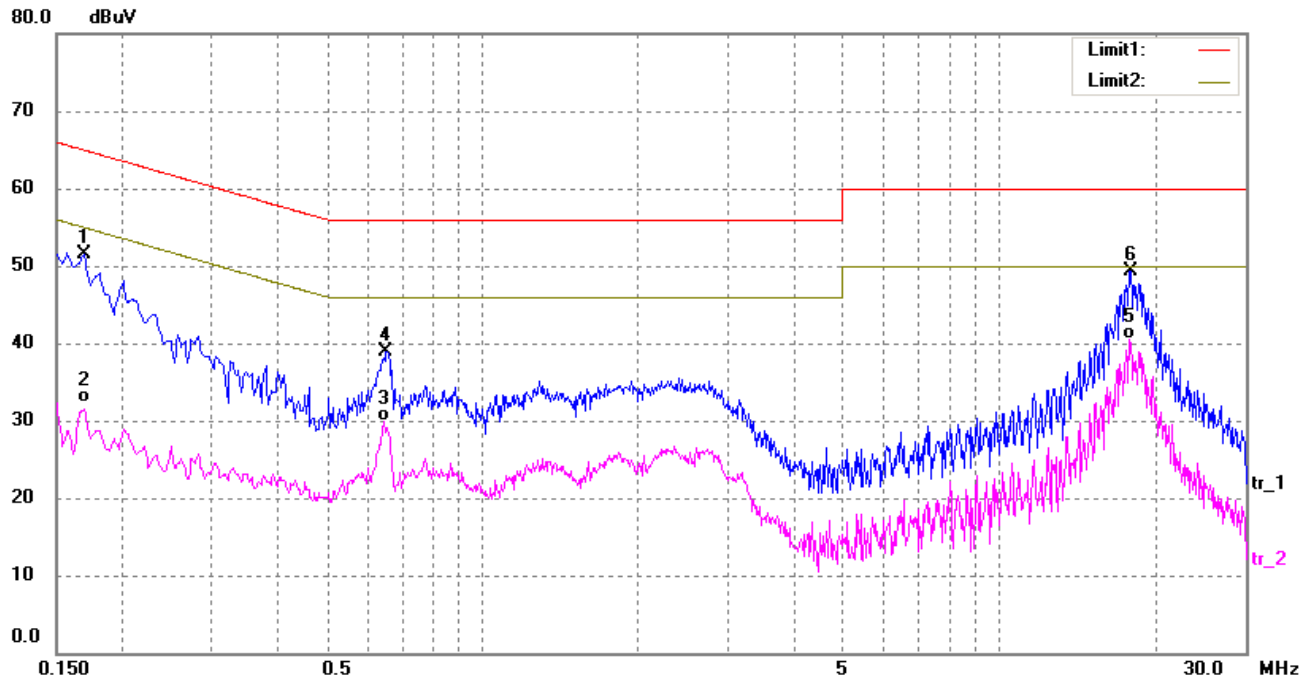
EUT: carbon Baytrail-M

Tested Model: MGS101-03

Operating Condition: (WIFI)Transmitting

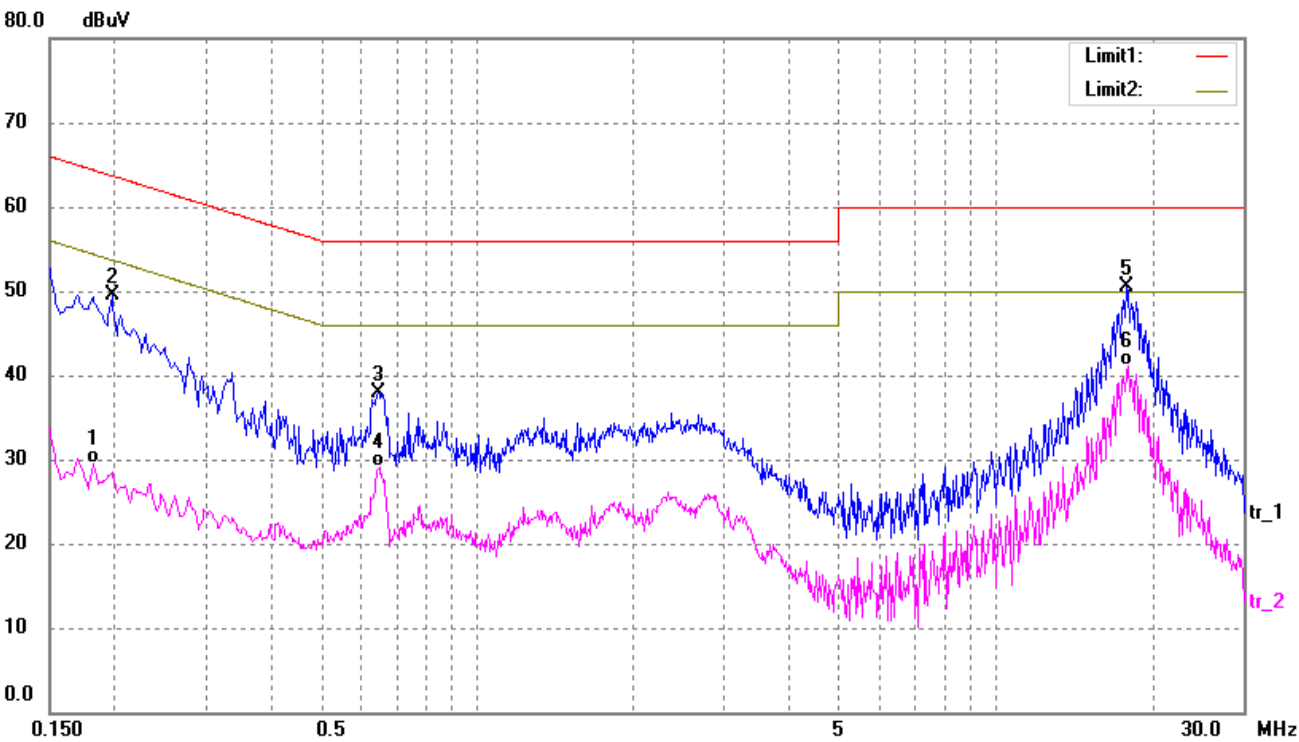
Comment: AC 120V/60Hz, Adapter DC 12V/4A

Test Specification: Neutral



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1700	42.06	9.50	51.56	64.96	-13.40	peak
2	0.1700	22.75	9.50	32.25	54.96	-22.71	AVG
3	0.6460	20.20	9.65	29.85	46.00	-16.15	AVG
4	0.6540	29.32	9.65	38.97	56.00	-17.03	peak
5	17.9420	28.99	11.59	40.58	50.00	-9.42	AVG
6	17.9460	37.74	11.59	49.33	60.00	-10.67	peak

Test Specification: Line



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.1820	20.04	9.50	29.54	54.39	-24.85	AVG
2	0.1980	39.91	9.50	49.41	63.69	-14.28	peak
3	0.6460	28.33	9.65	37.98	56.00	-18.02	peak
4	0.6500	19.36	9.65	29.01	46.00	-16.99	AVG
5	17.9140	38.86	11.58	50.44	60.00	-9.56	peak
6	17.9820	29.51	11.60	41.11	50.00	-8.89	AVG

\*\*\*\*\* END OF REPORT \*\*\*\*\*