

# FCC Part 15C Measurement and Test Report

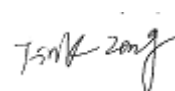


For

**Wiimu Information Technology Inc.**

**YingCui Rd., No. 7, Jiangning Economic and Technological**

**Development Zone, Nanjing, Jiangsu Province, China**

**FCC ID:2AAPP-A31**

<b>FCC Rule(s):</b>	<u>FCC Part 15C</u>
<b>Product Description:</b>	<u>Wireless Audio Module</u>
<b>Tested Model:</b>	<u>A31</u>
<b>Report No.:</b>	<u>STR16058187I</u>
<b>Tested Date:</b>	<u>2016-05-25 to 2016-06-12</u>
<b>Issued Date:</b>	<u>2016-06-12</u>
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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: Wiimu Information Technology Inc.  
Address of applicant: YingCui Rd., No. 7, Jiangning Economic and Technological Development Zone, Nanjing, Jiangsu Province, China

Manufacturer: Wiimu Information Technology Inc.  
Address of manufacturer: YingCui Rd., No. 7, Jiangning Economic and Technological Development Zone, Nanjing, Jiangsu Province, China

General Description of EUT	
Product Name:	Wireless Audio Module
Trade Name:	Linkplay
Model No.:	A31
Adding Model(s):	/
Rated Voltage:	DC 3.5-5.5V
Power Adapter Model:	HKL-0500100 I/P: AC100-240V 50/60Hz 150mA; O/P: DC 5V/1A
<i>Note: The test data is gathered from a production sample provided by the manufacturer.</i>	

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:	17.94 dBm (Conducted)
Type of Modulation:	CCK, OFDM, QPSK, BPSK, 16QAM, 64QAM
Data Rate:	1-11Mbps, 6-54Mbps, up to 300Mbps
Quantity of Channels:	11 for 802.11b/g/n(HT20); 7 for 802.11n(HT40)
Channel Separation:	5MHz
Type of Antenna:	Integral Antenna
Antenna Gain:	1.27 dBi
Lowest Internal Frequency of EUT:	40MHz

## 1.2 Test Standards

The following report is prepared on behalf of the Wiimu Information Technology Inc. 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 C63.10-2013, American National Standard for Testing Unlicensed Wireless Devices, and 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 v03r05 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
USB Cable	1.0	Unshielded	Without Ferrite

<b>Special Cable List and Details</b>			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
RJ45 Cable	1.5	Unshielded	Without Ferrite

<b>Auxiliary Equipment List and Details</b>			
Description	Manufacturer	Model	Serial Number
/	/	/	/

### 1.6 Measurement Uncertainty

<b>Measurement uncertainty</b>		
Parameter	Conditions	Uncertainty
RF Output Power	Conducted	$\pm 0.42\text{dB}$
Occupied Bandwidth	Conducted	$\pm 1.5\%$
Power Spectral Density	Conducted	$\pm 1.8\text{dB}$
Conducted Spurious Emission	Conducted	$\pm 2.17\text{dB}$
Conducted Emissions	Conducted	$\pm 2.88\text{dB}$
Transmitter Spurious Emissions	Radiated	$\pm 5.1\text{dB}$

## 1.7 Test Equipment List and Details

No.	Description	Manufacturer	Model	Serial No.	Cal Date	Due Date
SEMT-1072	Spectrum Analyzer	Agilent	E4407B	MY41440400	2015-06-17	2016-06-16
SEMT-1031	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2015-06-17	2016-06-16
SEMT-1007	EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2015-06-17	2016-06-16
SEMT-1008	Amplifier	Agilent	8447F	3113A06717	2015-06-17	2016-06-16
SEMT-1043	Amplifier	C&D	PAP-1G18	2002	2015-06-17	2016-06-16
SEMT-1011	Broadband Antenna	Schwarz beck	VULB9163	9163-333	2015-06-17	2016-06-16
SEMT-1042	Horn Antenna	ETS	3117	00086197	2015-06-17	2016-06-16
SEMT-1121	Horn Antenna	ETS	3116B	00088203	2015-06-17	2016-06-16
SEMT-1069	Loop Antenna	Schwarz beck	FMZB 1516	9773	2015-06-17	2016-06-16
SEMT-1001	EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2015-06-17	2016-06-16
SEMT-1003	L.I.S.N	Schwarz beck	NSLK8126	8126-224	2015-06-17	2016-06-16
SEMT-1002	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2015-06-17	2016-06-16

## 2. SUMMARY OF TEST RESULTS

<b>FCC Rules</b>	<b>Description of Test Item</b>	<b>Result</b>
§ 2.1093	RF Exposure	Compliant
§ 15.203; § 15.247(b)(4)(i)	Antenna Requirement	Compliant
§15.205	Restricted Band of Operation	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 v03r05, 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

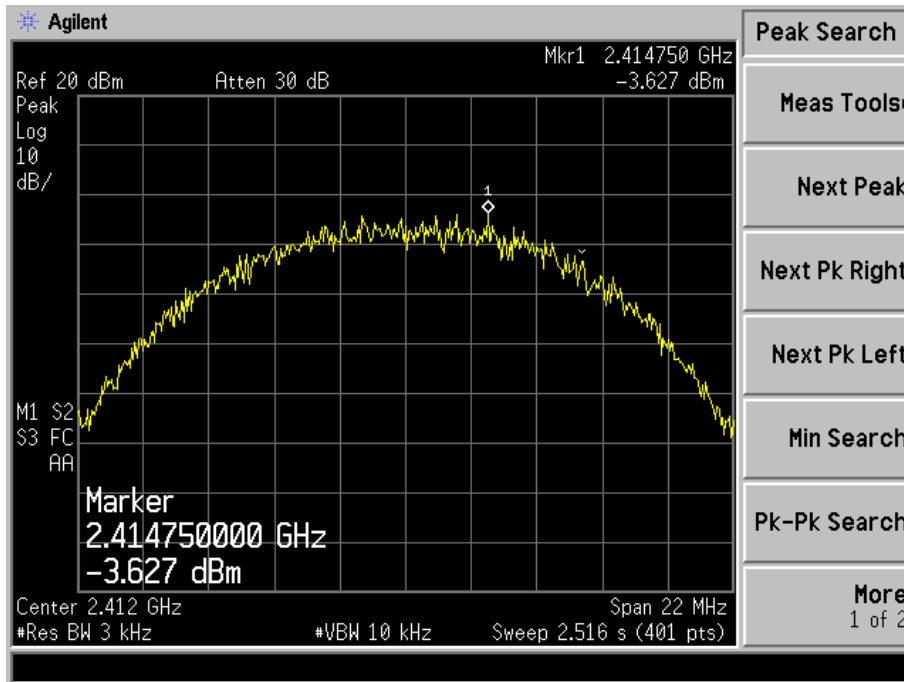
Temperature:	26° C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

## 5.4 Summary of Test Results/Plots

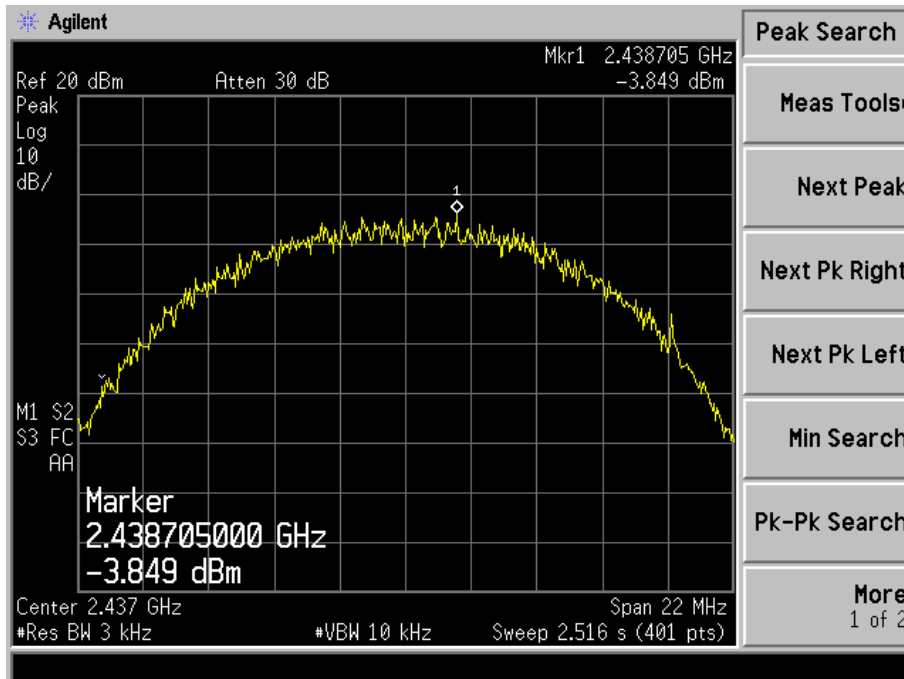
Test Mode	Test Channel MHz	Power Spectral Density dBm/3kHz	Limit dBm/3kHz
802.11b	2412	-3.627	8
	2437	-3.849	8
	2462	-5.572	8
802.11g	2412	-8.540	8
	2437	-9.876	8
	2462	-10.260	8
802.11n HT20	2412	-9.832	8
	2437	-9.036	8
	2462	-9.185	8
802.11n HT40	2422	-14.570	8
	2437	-13.620	8
	2452	-14.320	8

Please refer to the following test plots:

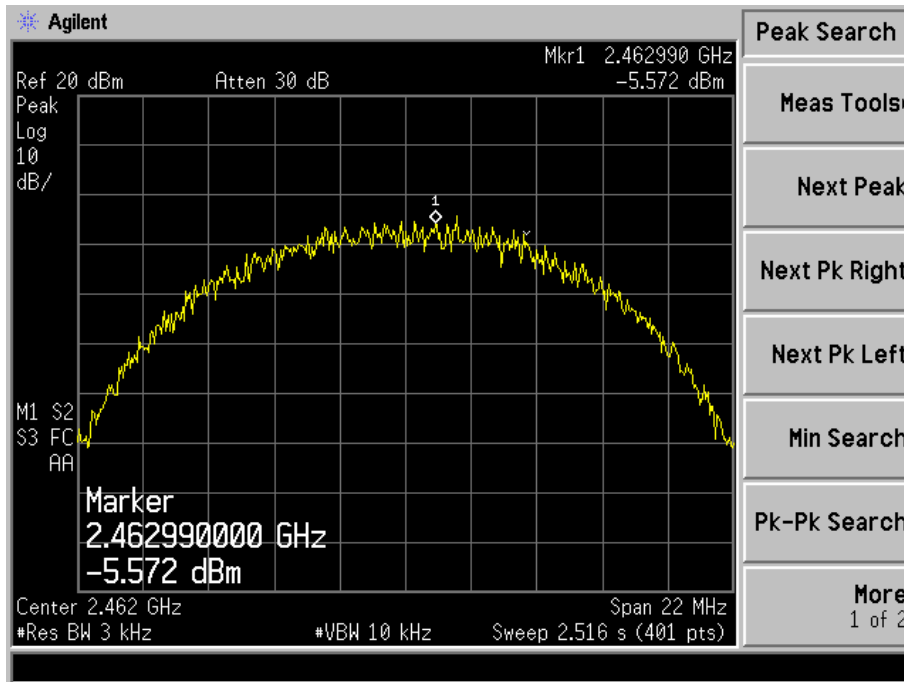
802.11b-Low Channel



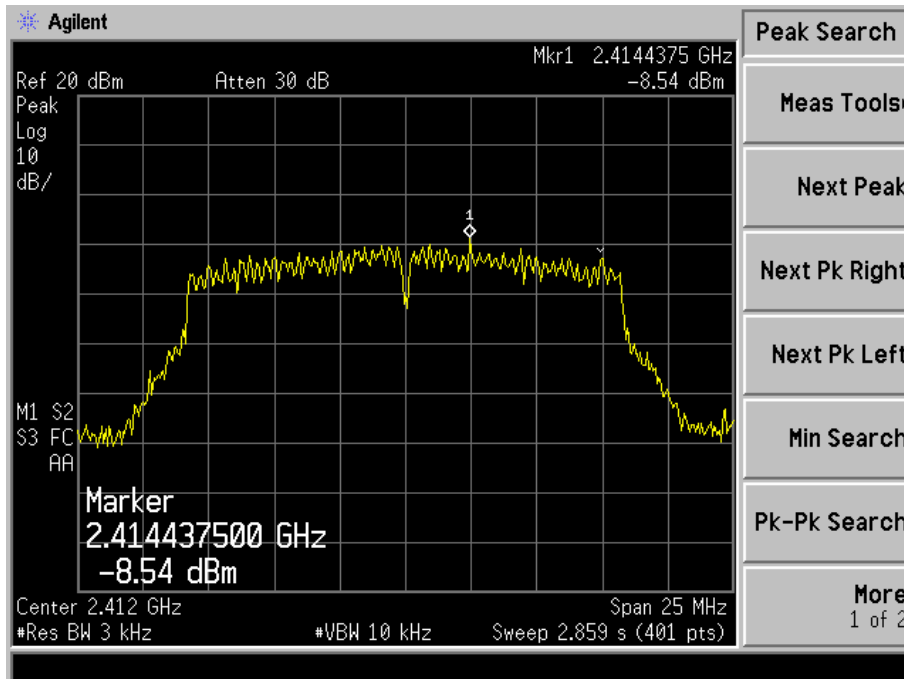
802.11b-Middle Channel



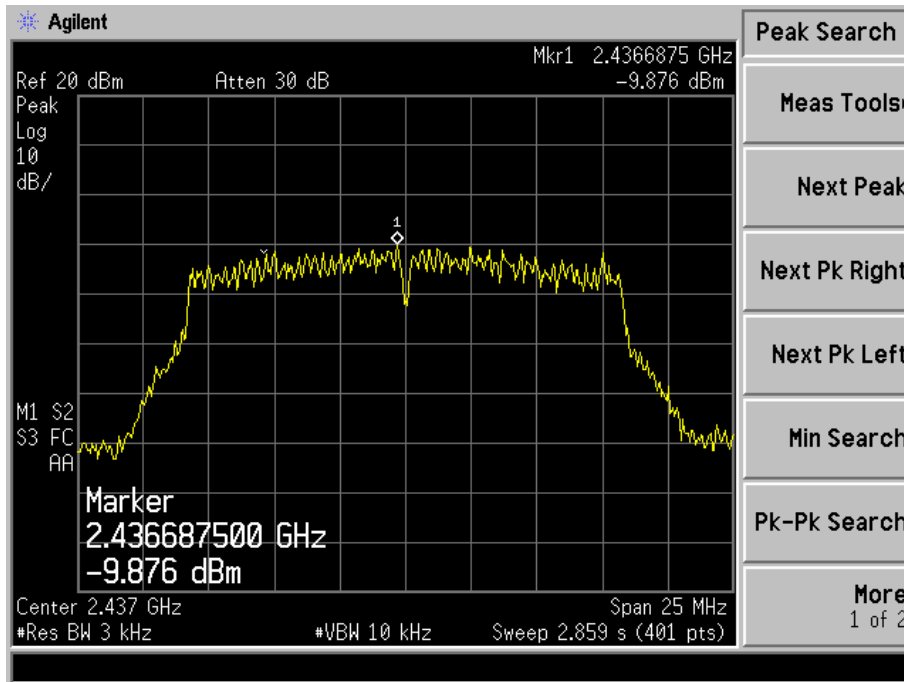
802.11b-High Channel



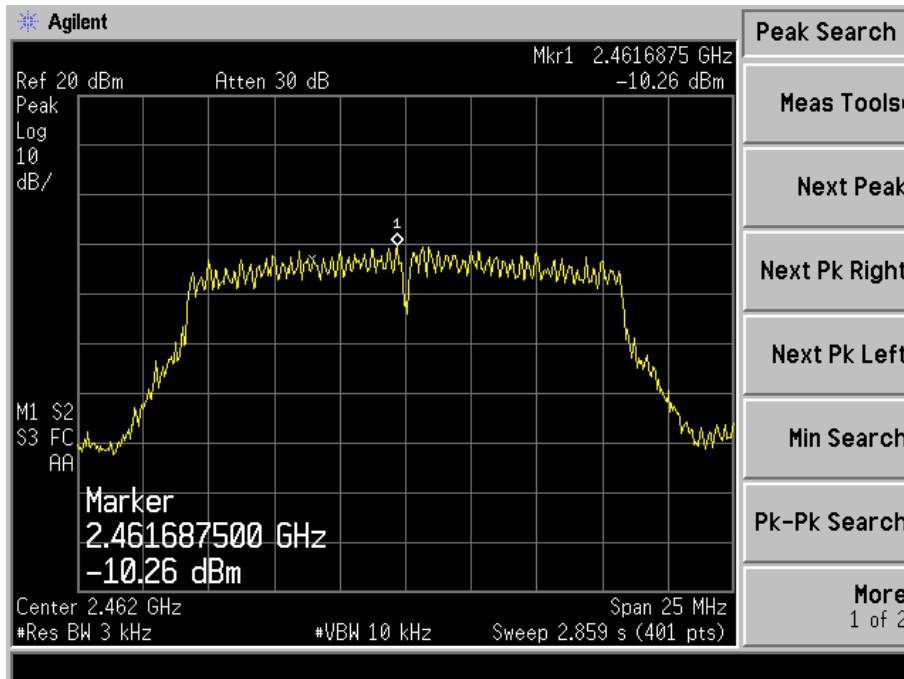
802.11g-Low Channel



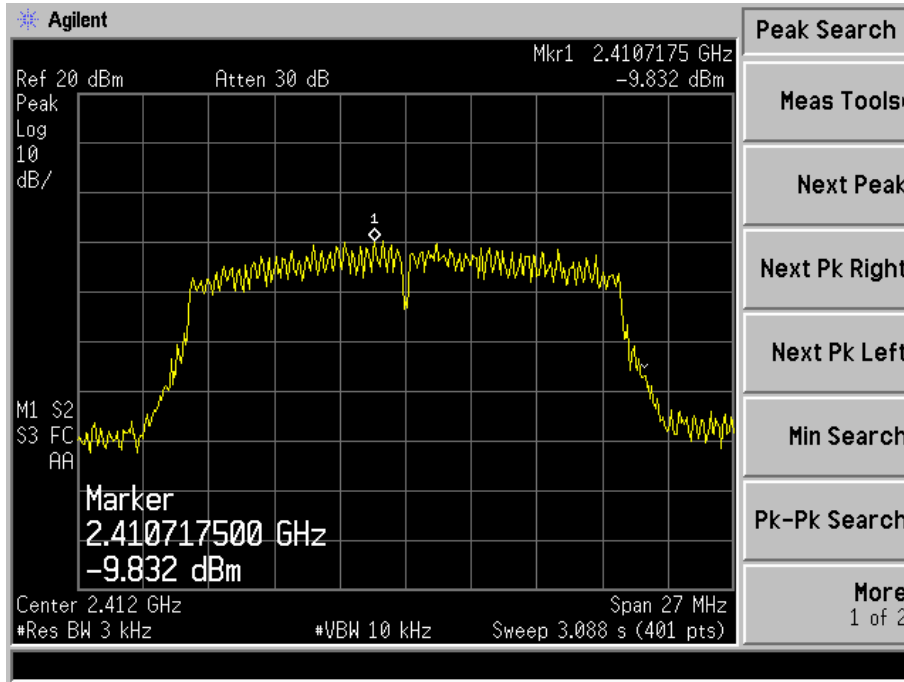
802.11g-Middle Channel



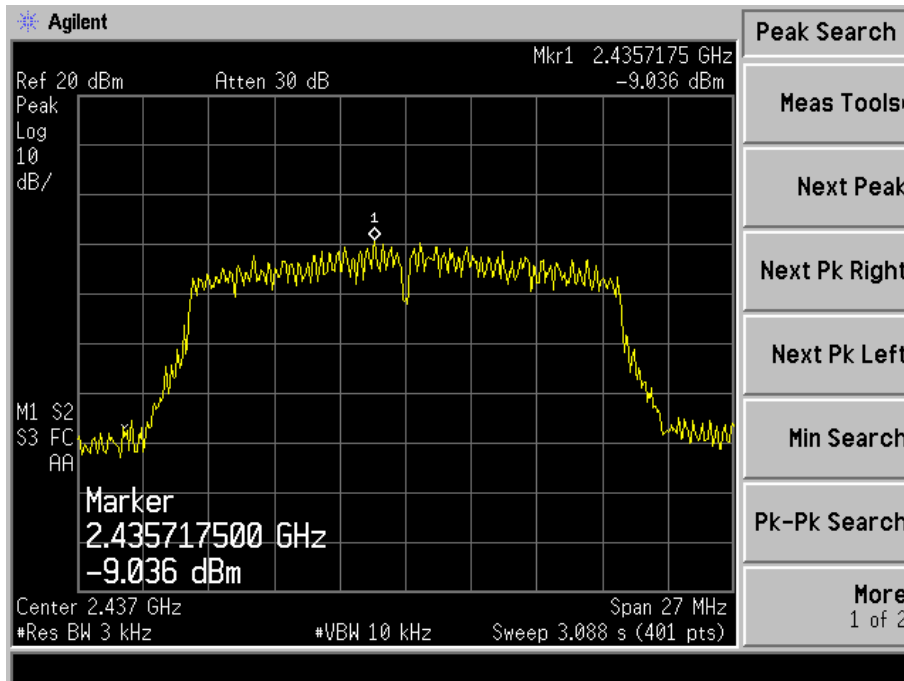
802.11g-High Channel



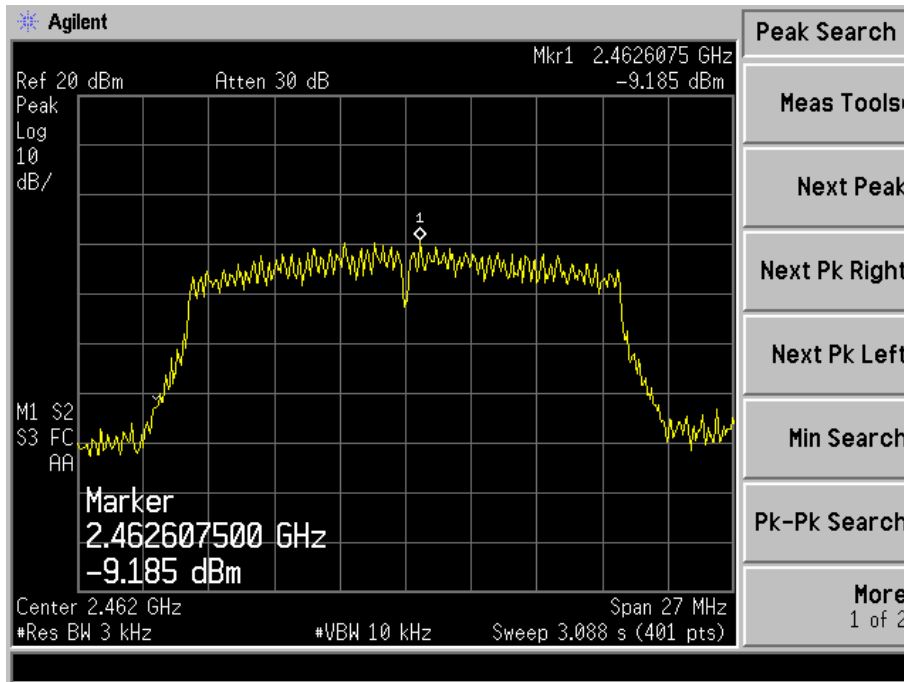
802.11n-HT20-Low Channel



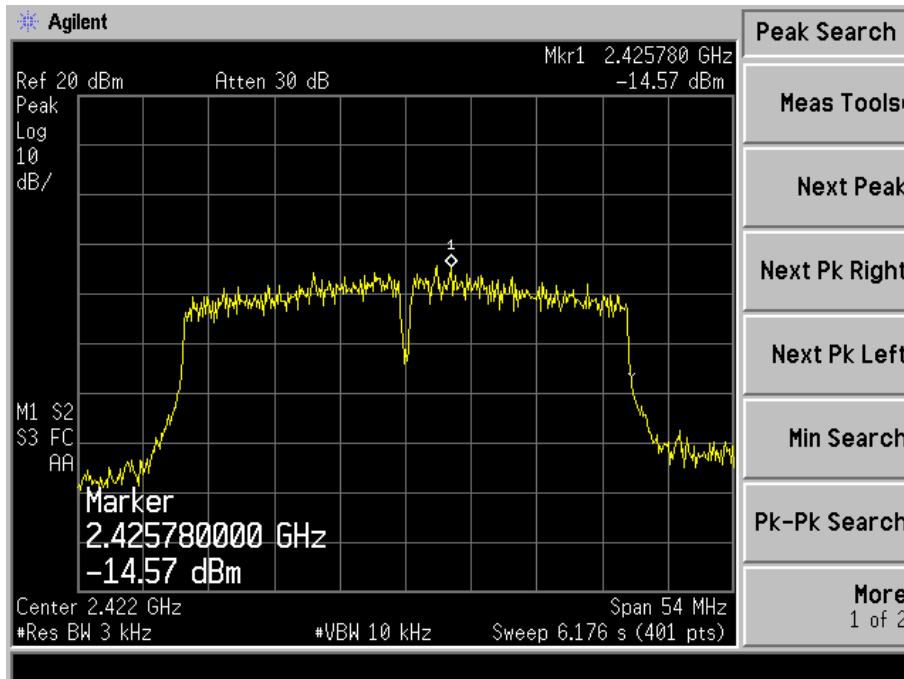
802.11n-HT20-Middle Channel



802.11n-HT20-High Channel

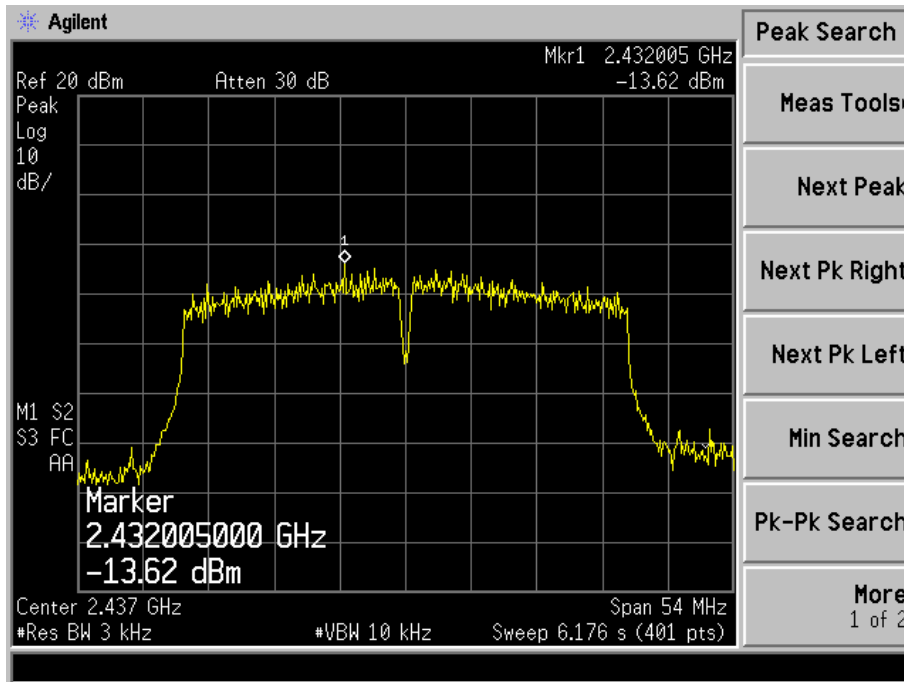


802.11n-HT40-Low Channel

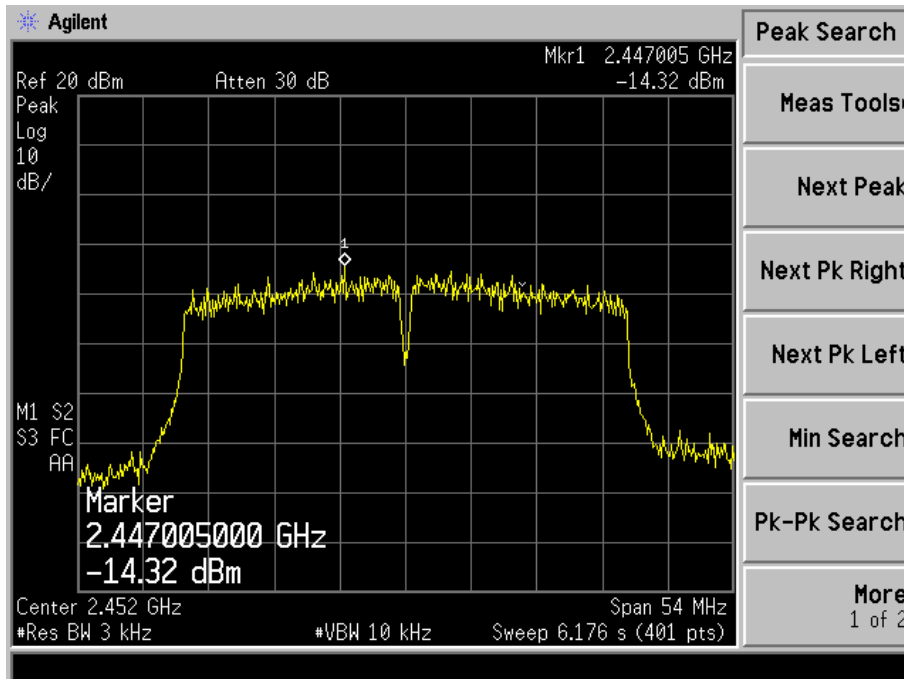




802.11n-HT40-Middle Channel



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

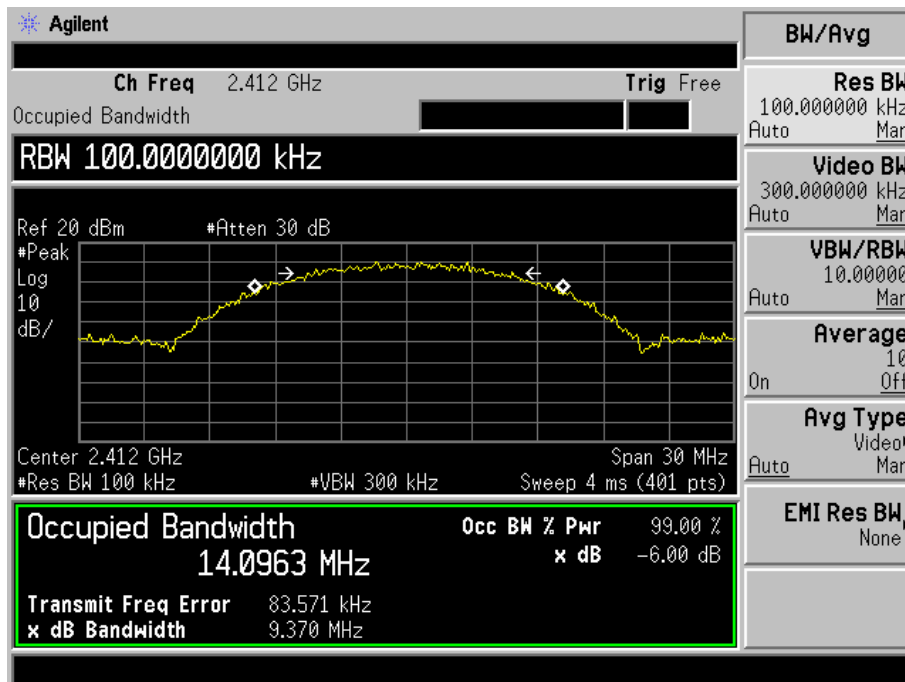
Temperature:	25° C
Relative Humidity:	53%
ATM Pressure:	1018 mbar

### 6.4 Summary of Test Results/Plots

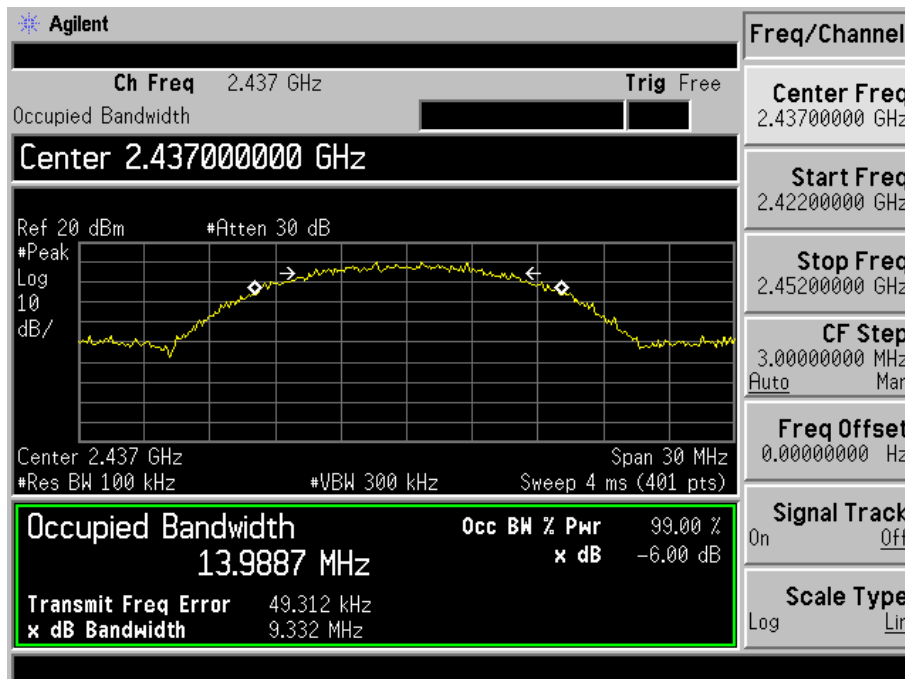
Test Mode	Test Channel MHz	6 dB Bandwidth kHz	99% Bandwidth kHz	Limit kHz
802.11b	2412	9370	14096.3	$\geq 500$
	2437	9332	13988.7	$\geq 500$
	2462	9347	13973.3	$\geq 500$
802.11g	2412	15179	16307.6	$\geq 500$
	2437	15197	16282.9	$\geq 500$
	2462	13827	16289.7	$\geq 500$
802.11n-HT20	2412	16542	17557.6	$\geq 500$
	2437	16025	17462.5	$\geq 500$
	2462	16036	17472.9	$\geq 500$
802.11n-HT40	2422	35098	35638.0	$\geq 500$
	2437	35131	35650.1	$\geq 500$
	2452	35141	35683.4	$\geq 500$

Please refer to the following test plots:

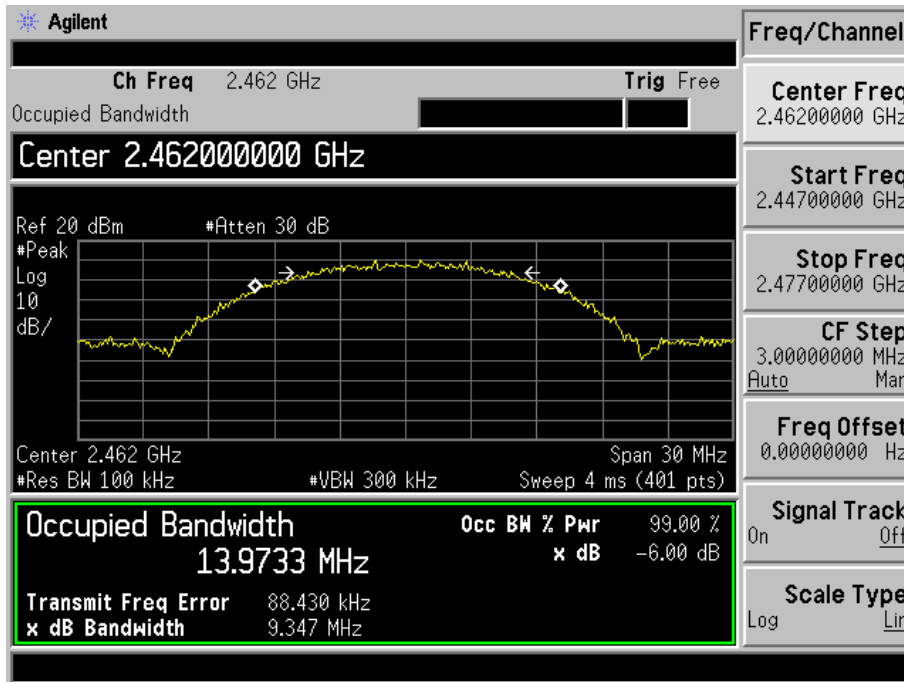
## 802.11b-Low Channel



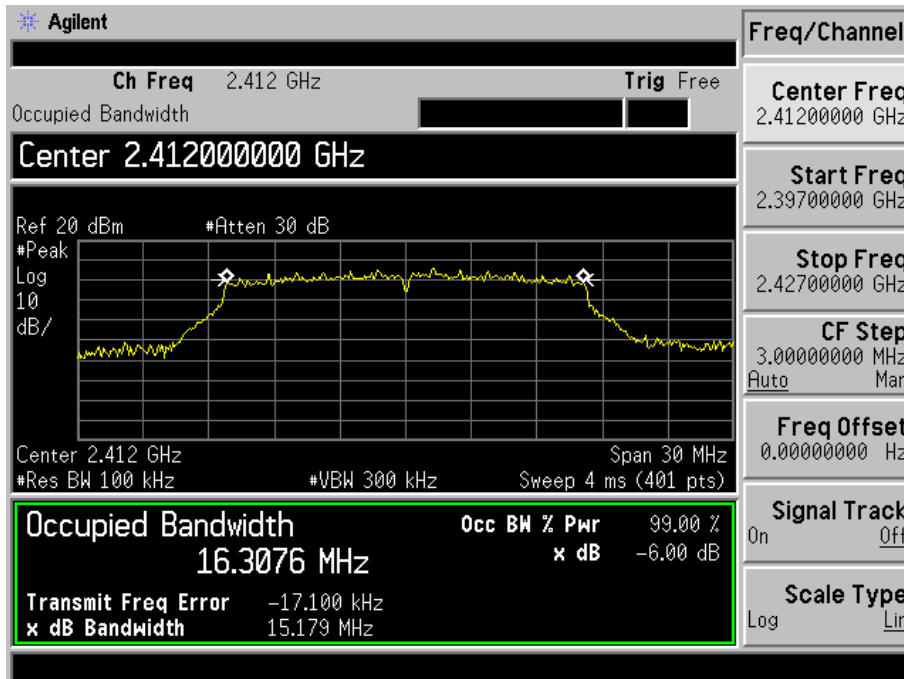
## 802.11b-Middle Channel



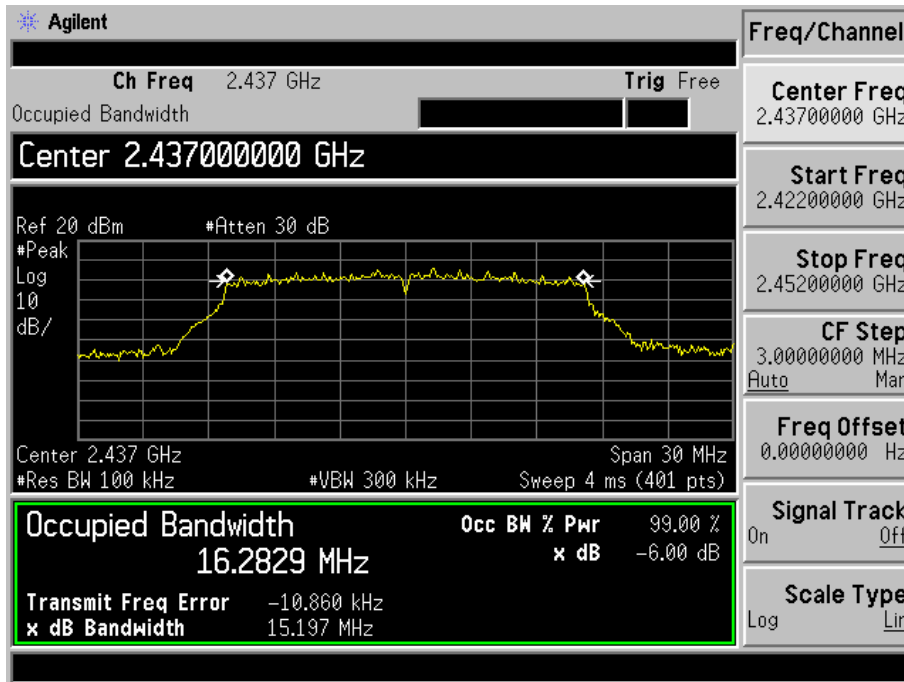
802.11b-High Channel



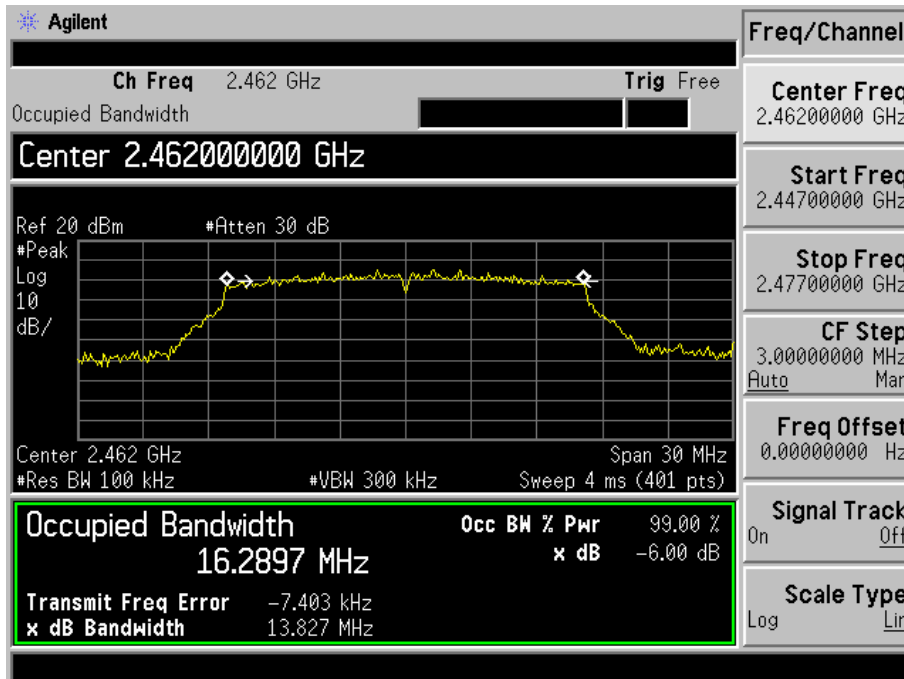
802.11g-Low Channel



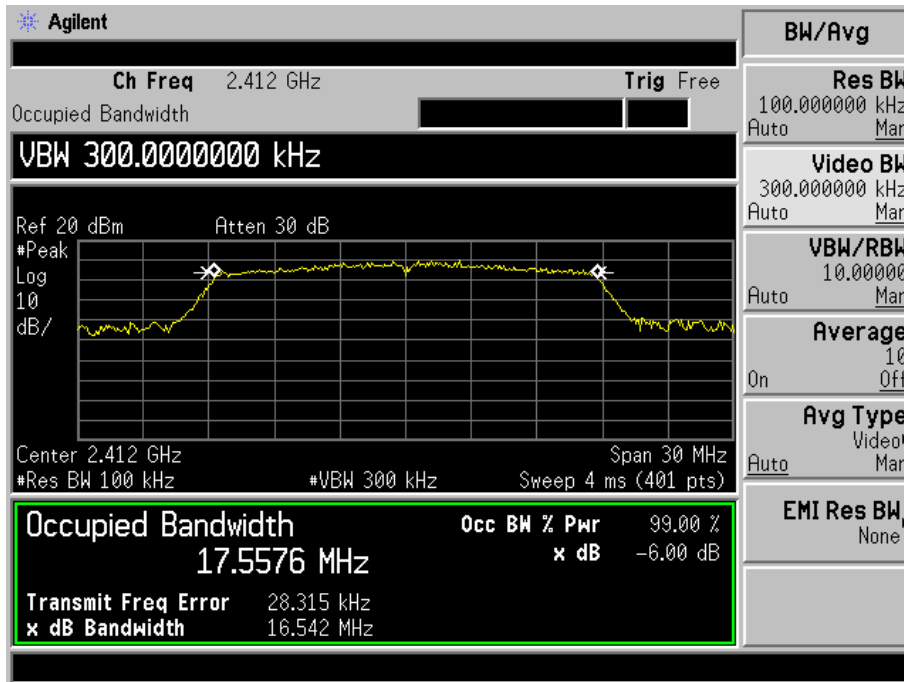
802.11g-Middle Channel



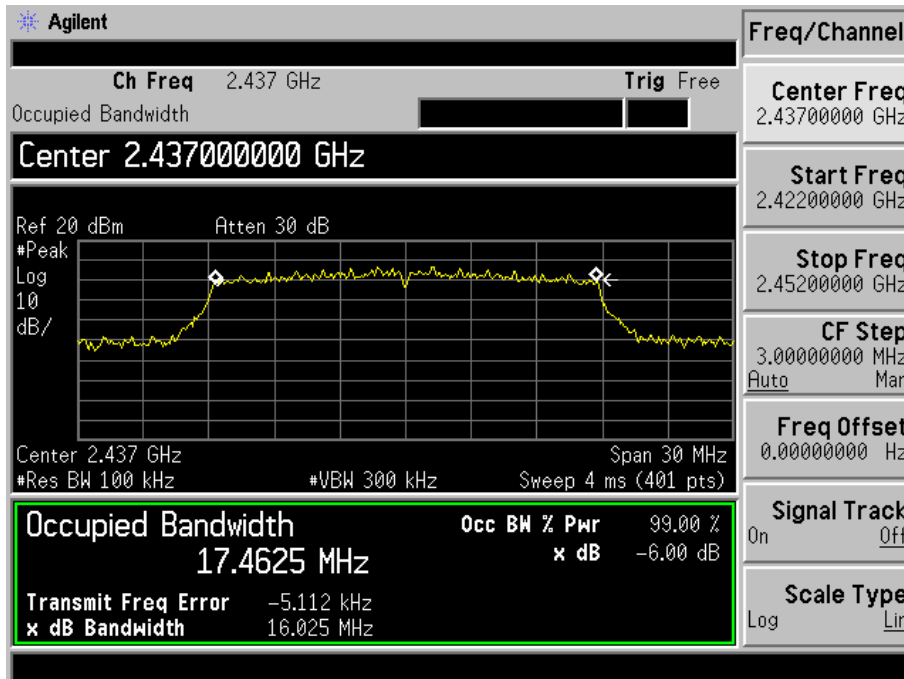
802.11g-High Channel



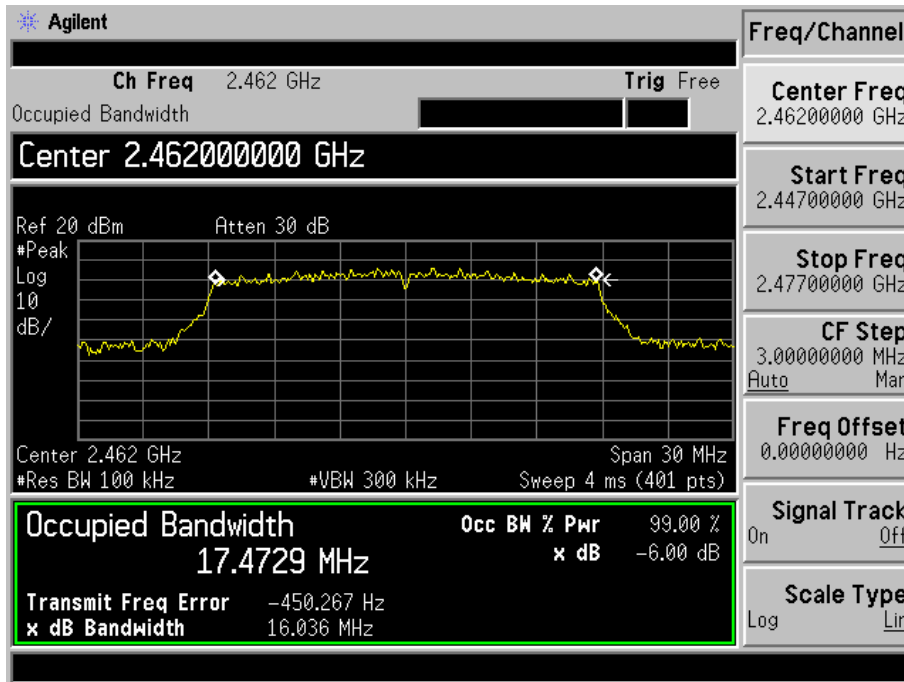
## 802.11n-HT20-Low Channel



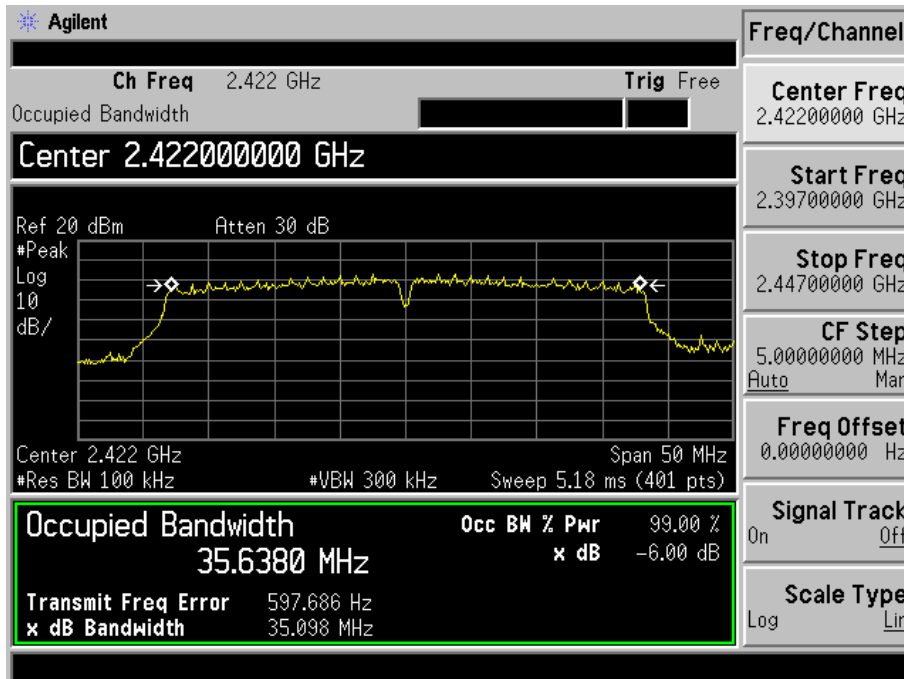
## 802.11n-HT20-Middle Channel



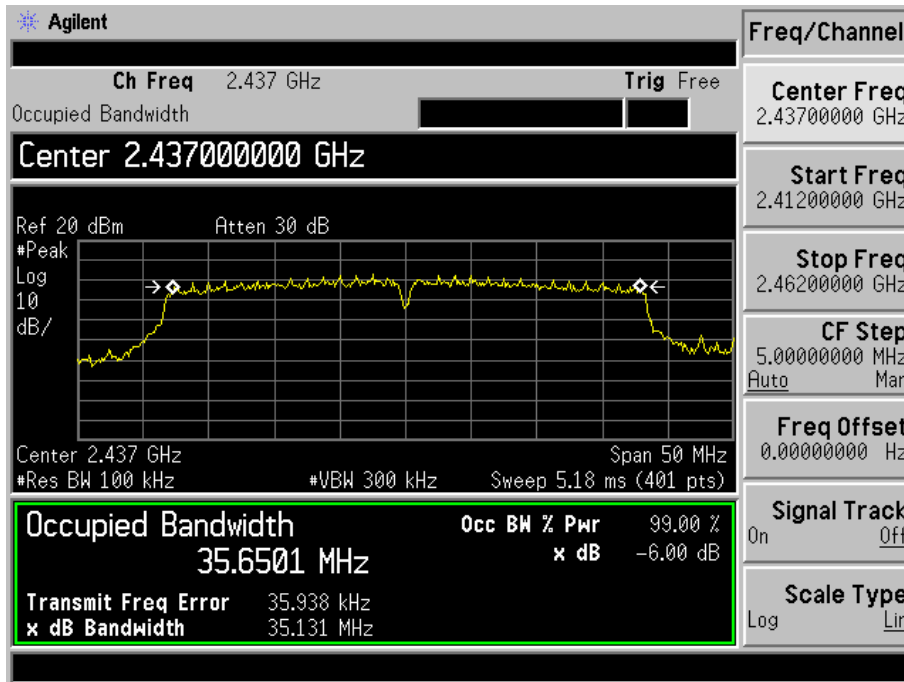
802.11n-HT20-High Channel



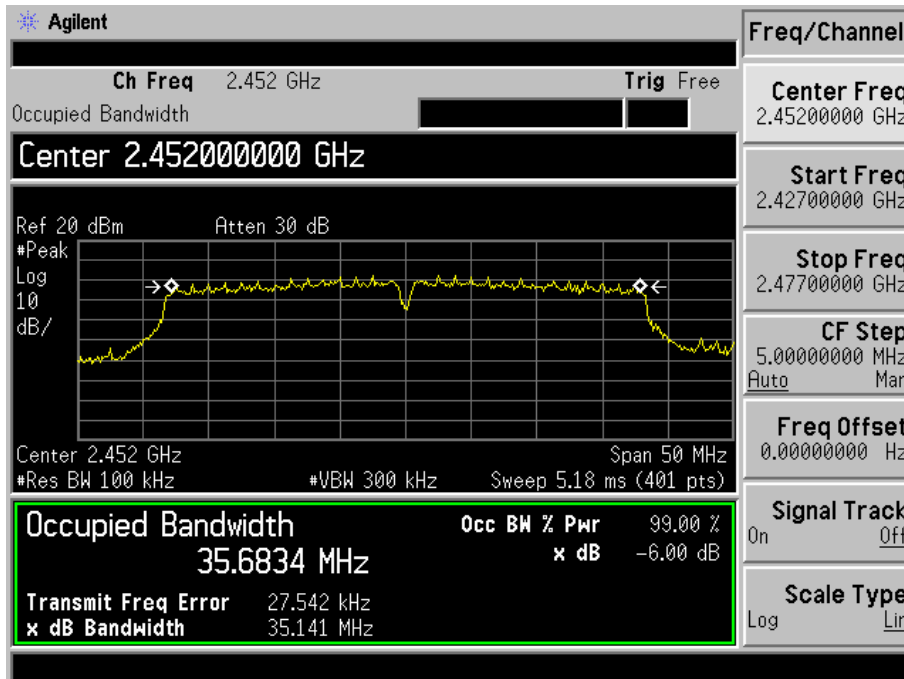
802.11n-HT40-Low Channel



802.11n-HT40-Middle Channel



802.11n-HT40-High Channel





## 7. RF Output Power

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### 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 the KDB-558074 D01 v03r05, 9.2.2.2, 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  $\geq 2 \times$  span / RBW. (This gives bin-to-bin spacing  $\leq$  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

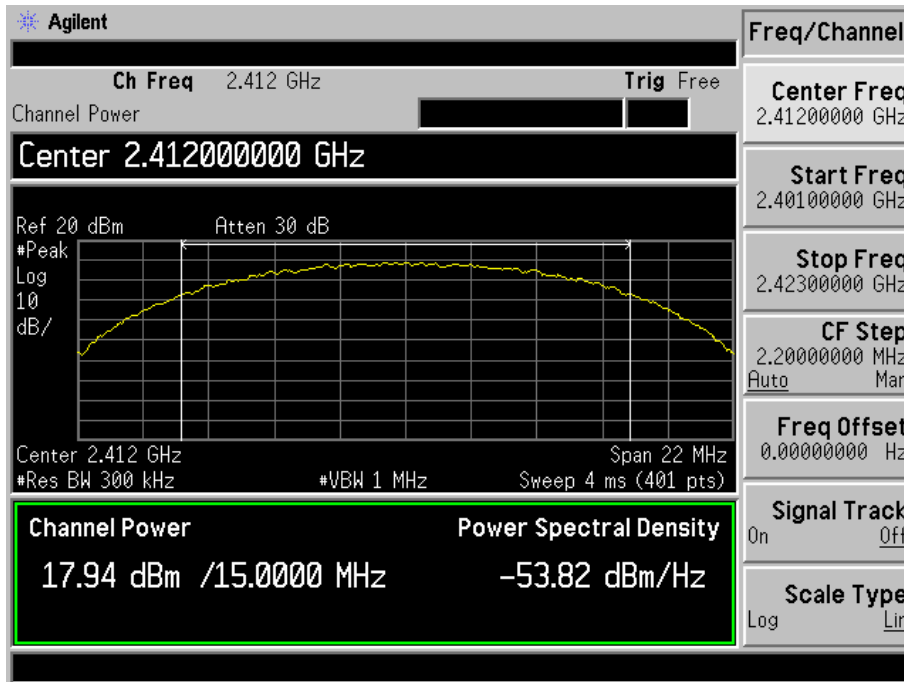
Temperature:	26° C
Relative Humidity:	57%
ATM Pressure:	1011 mbar

#### 7.4 Summary of Test Results/Plots

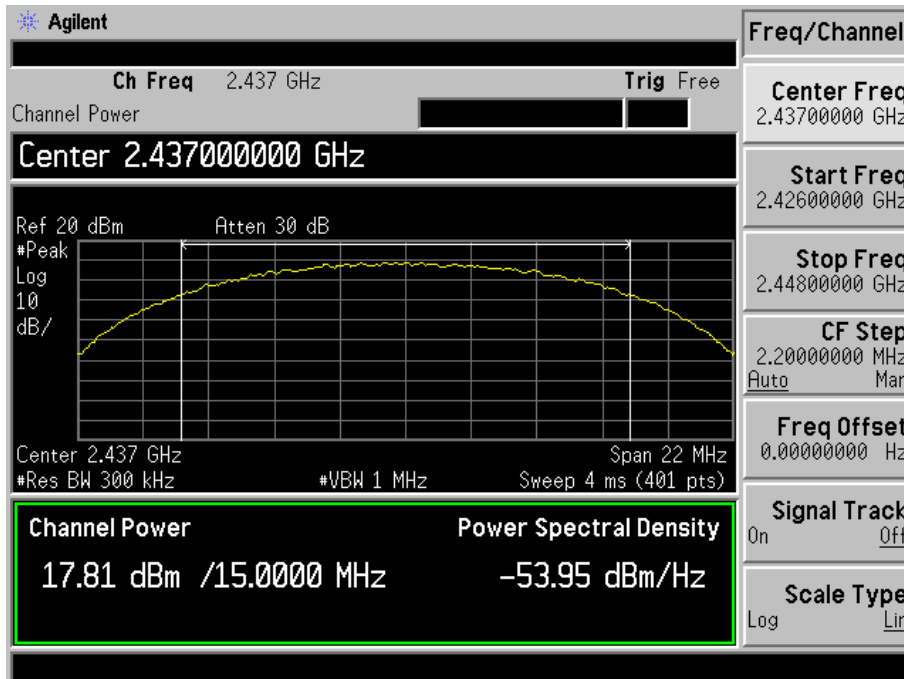
Test Mode	Frequency MHz	Reading dBm	Output Power mW	Limit mW
802.11b_11Mbps	2412	17.94	62.23	1000
	2437	17.81	60.39	1000
	2462	17.53	56.62	1000
802.11g_54Mbps	2412	12.23	16.71	1000
	2437	12.30	16.98	1000
	2462	11.44	13.93	1000
802.11n HT20_MCS7	2412	12.10	16.22	1000
	2437	11.90	15.49	1000
	2462	11.82	15.21	1000
802.11n HT40_MCS7	2422	11.08	12.82	1000
	2437	10.51	11.25	1000
	2452	10.37	10.89	1000

Please refer to the following test plots:

## 802.11b-Low Channel



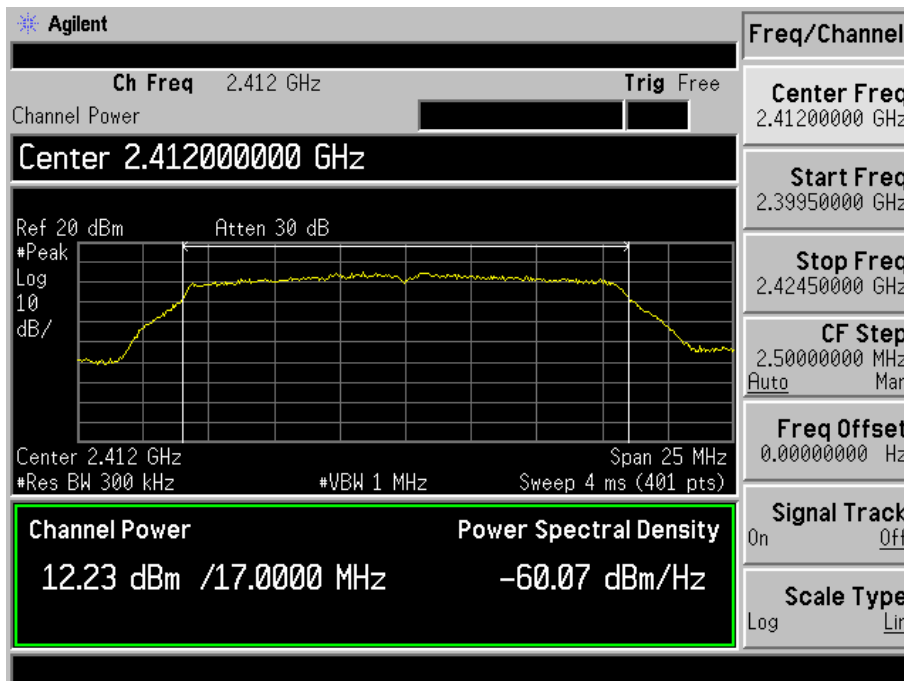
## 802.11b -Middle Channel



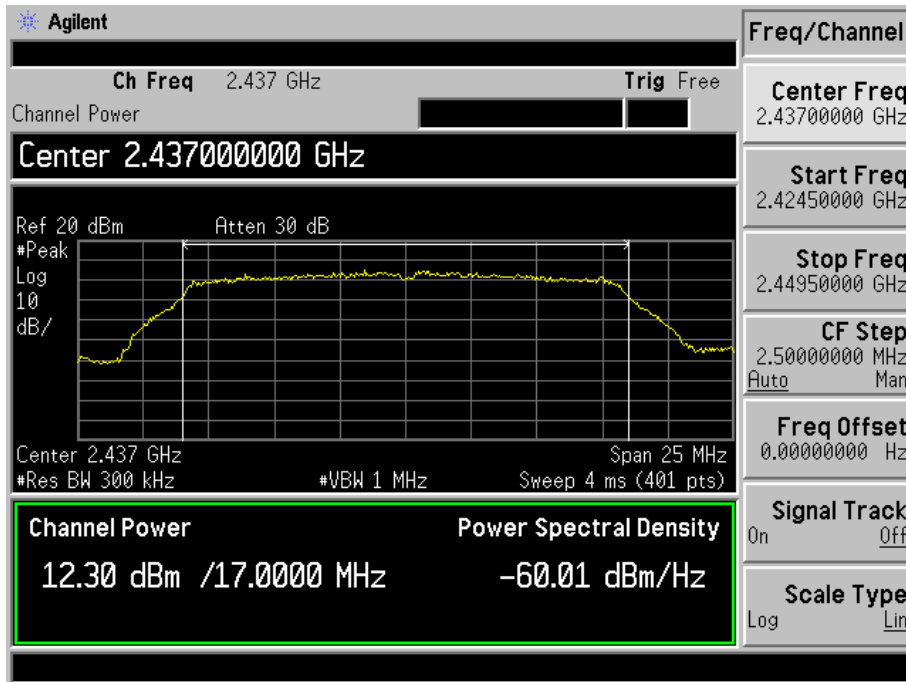
## 802.11b -High Channel



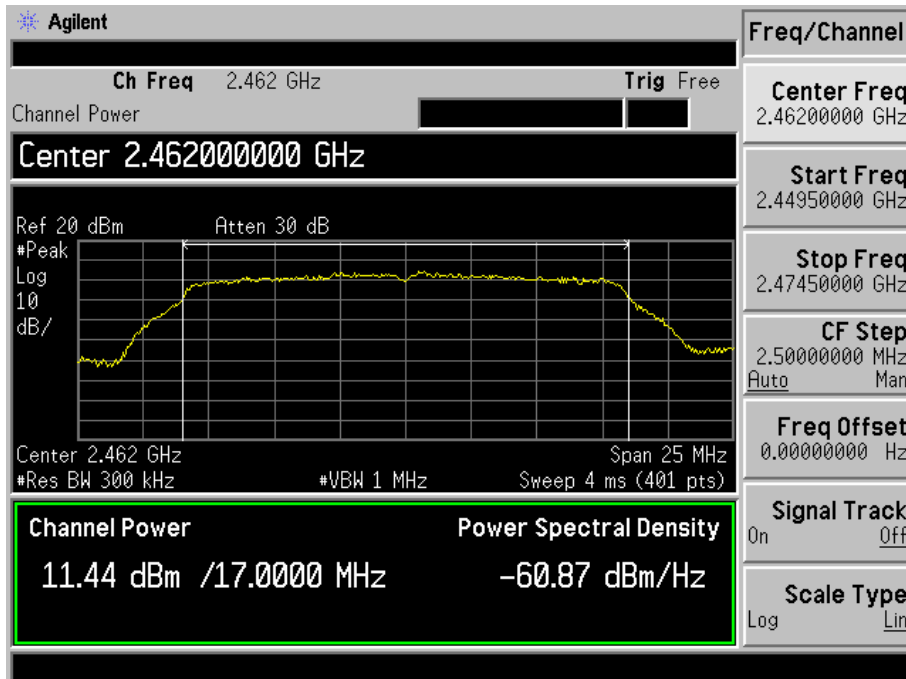
## 802.11g-Low Channel



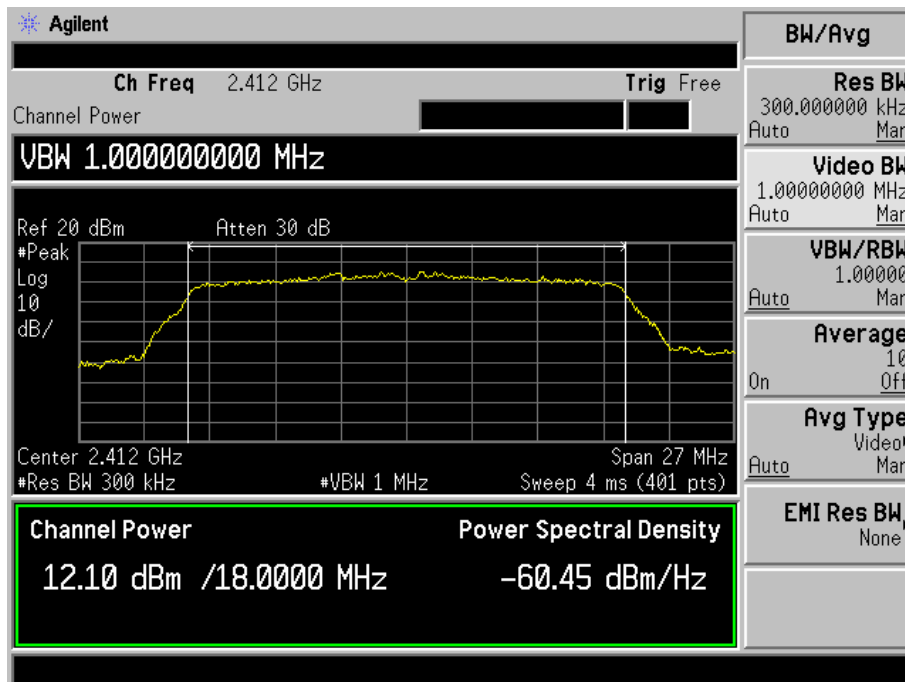
## 802.11g-Middle Channel



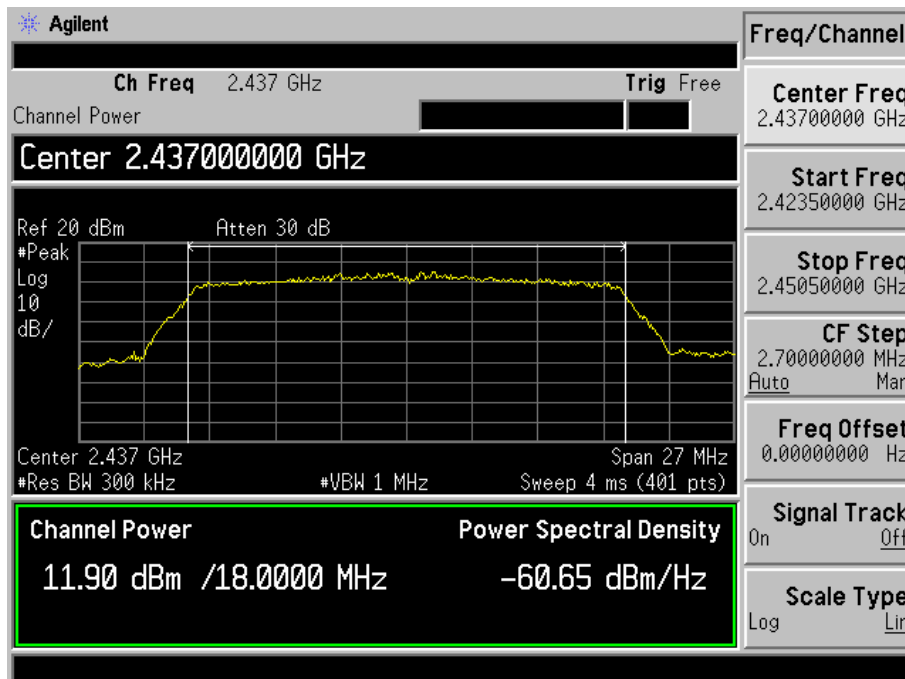
## 802.11g-High Channel



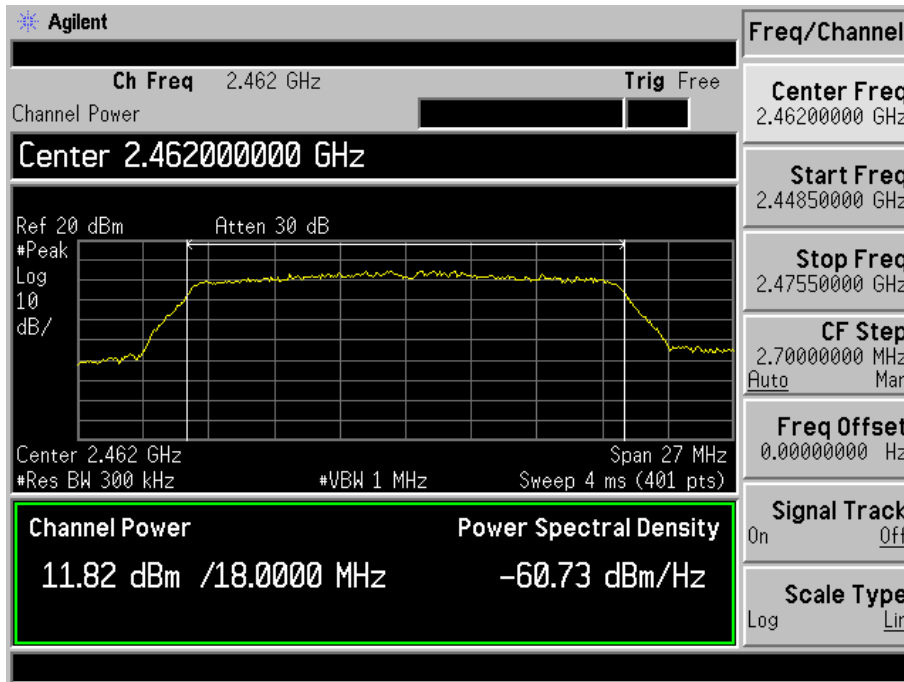
## 802.11n-HT20 -Low Channel



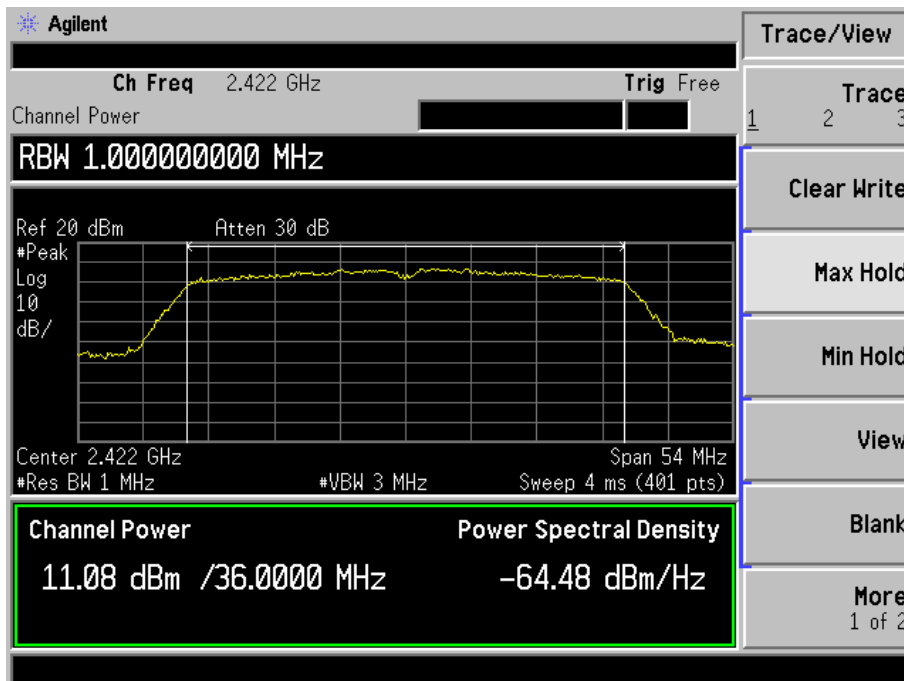
## 802.11n-HT20 -Middle Channel



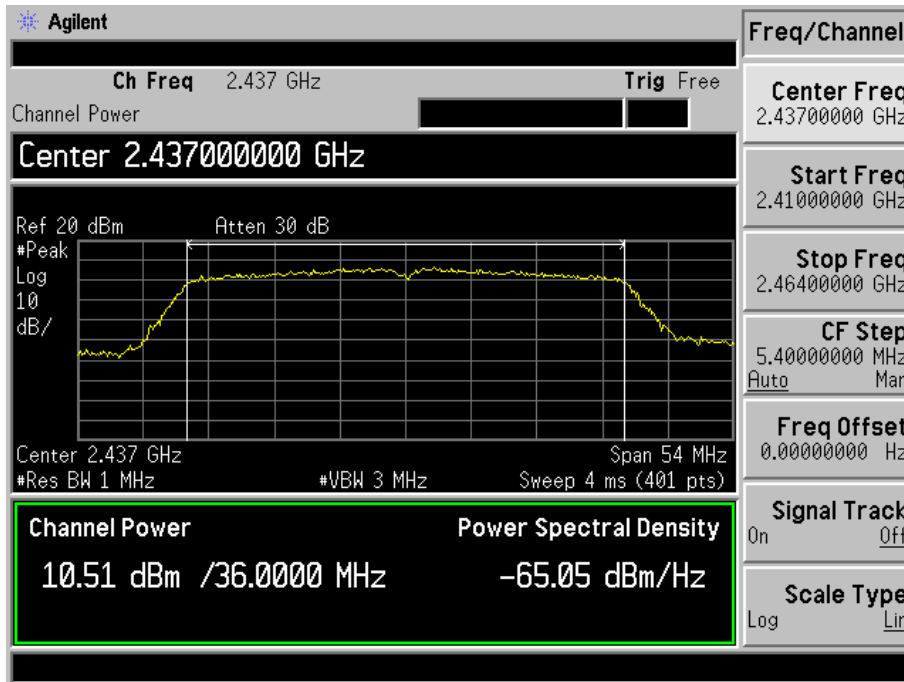
802.11n-HT20 -High Channel



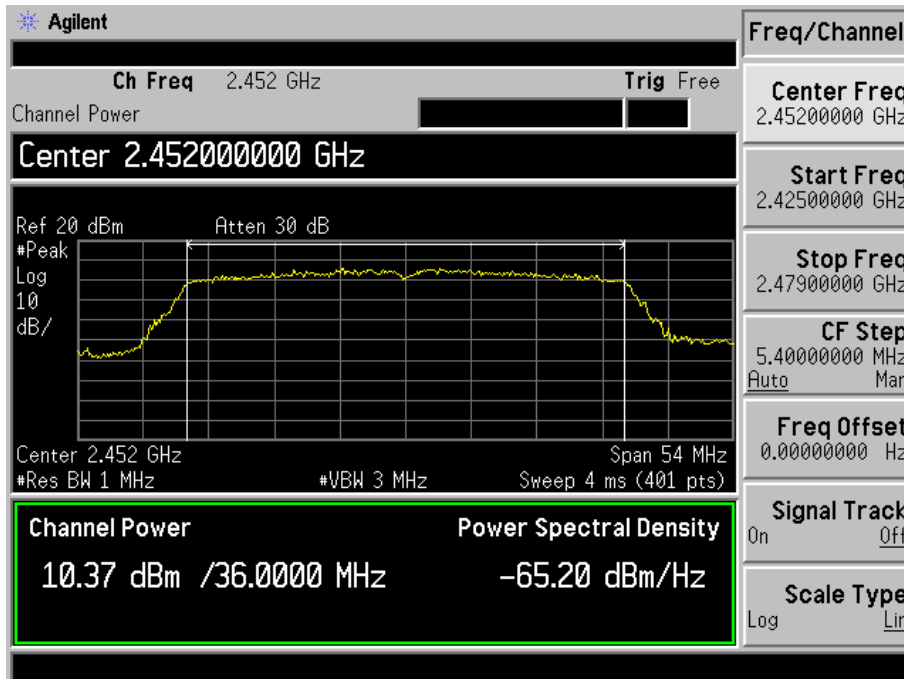
802.11n-HT40 -Low Channel



## 802.11n-HT40 -Middle Channel



## 802.11n-HT40 -High Channel





## 8. Field Strength of Spurious Emissions

### 8.1 Standard Applicable

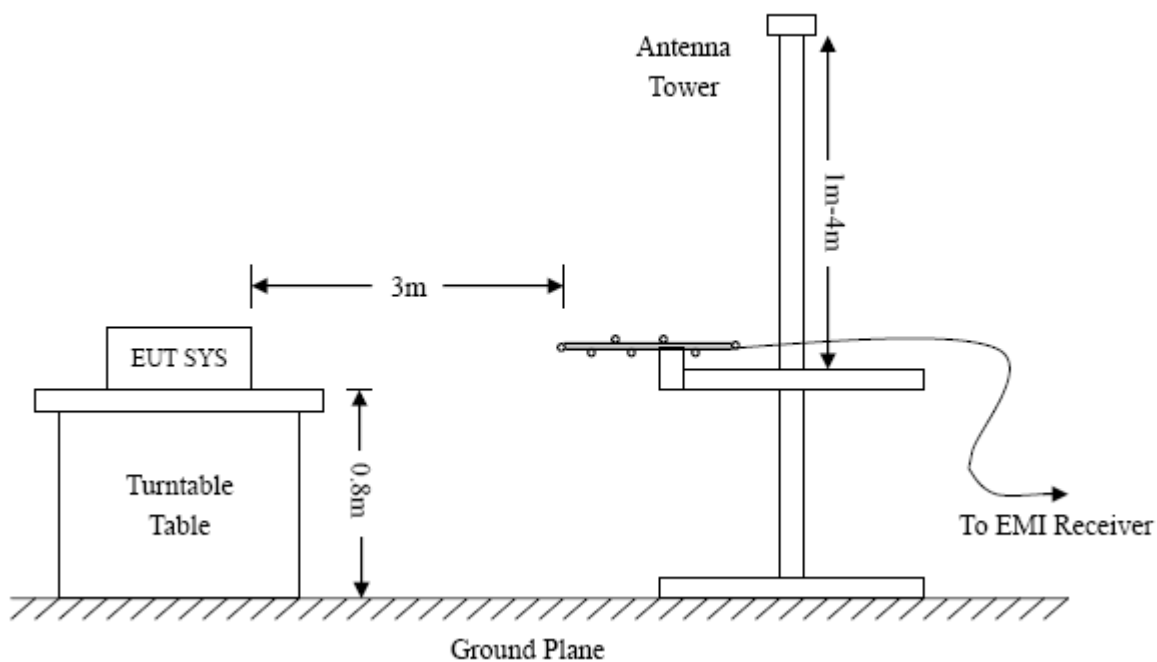
According to §15.247(d), in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within 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).

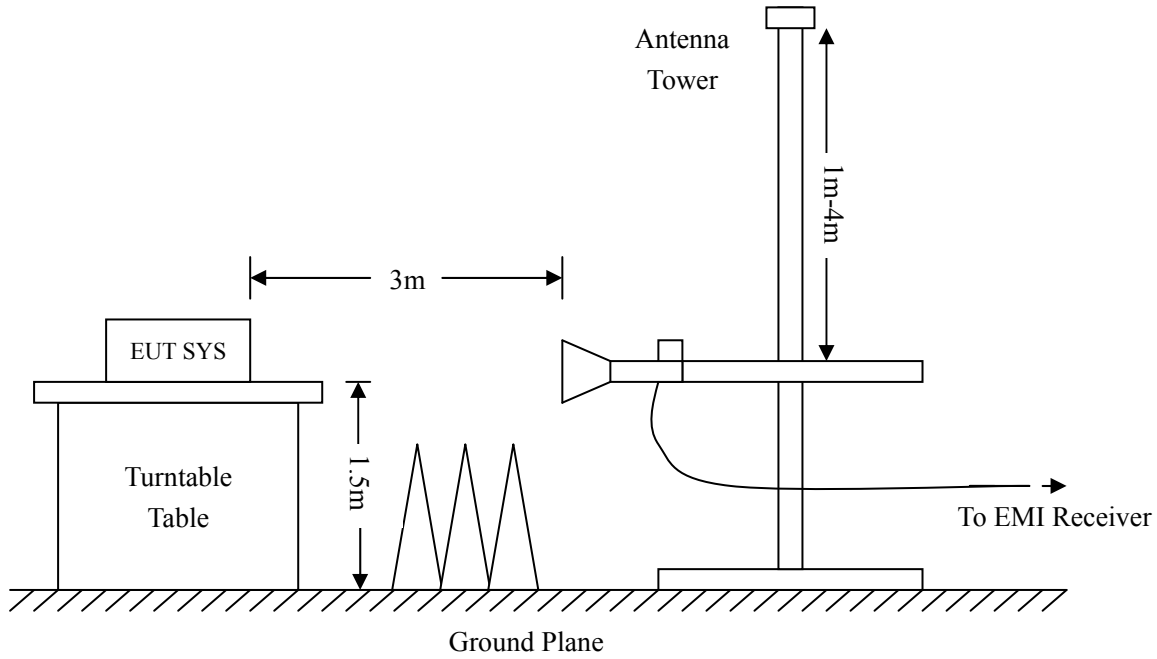
The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply. Spurious Radiated Emissions measurements starting below or at the lowest crystal frequency.

### 8.2 Test Procedure

The setup of EUT is according with per ANSI C63.10-2013 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

### 8.3 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:

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

### 8.4 Environmental Conditions

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

### 8.5 Summary of Test Results/Plots

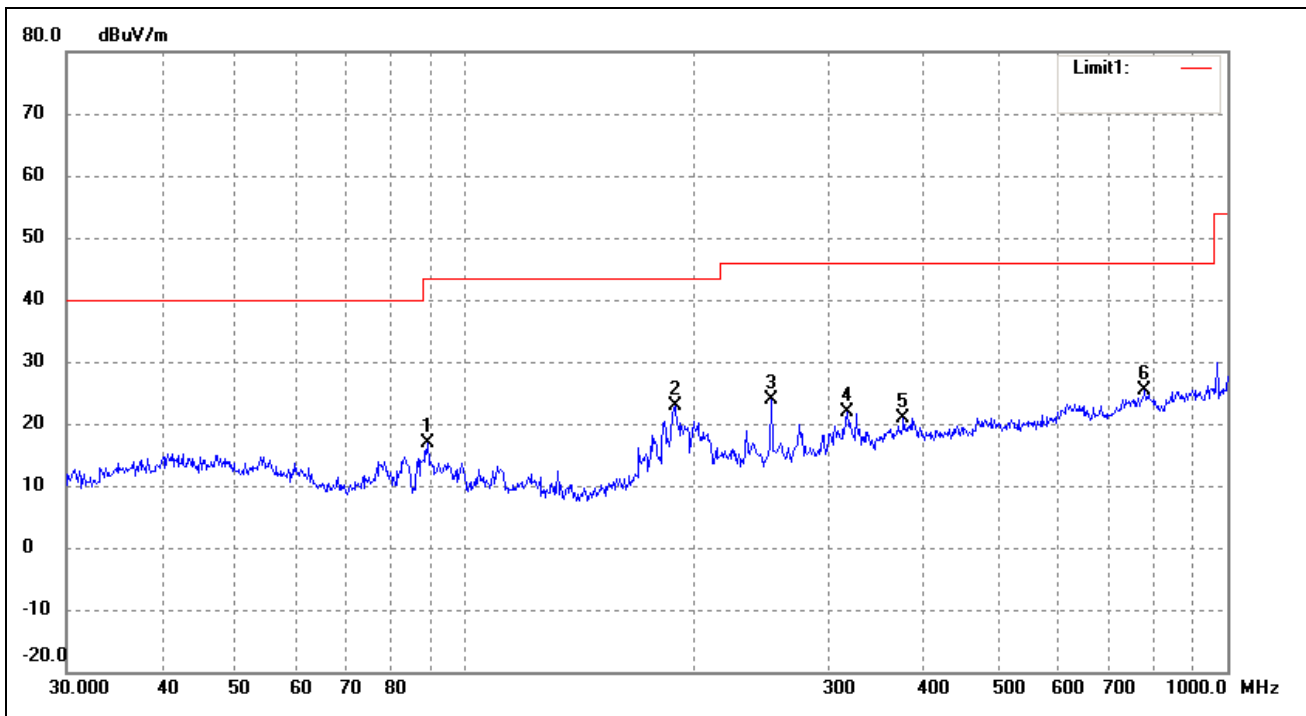
According to the data below, the FCC Part 15.205, 15.209 and 15.247 standards, and had the worst cases:

*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)

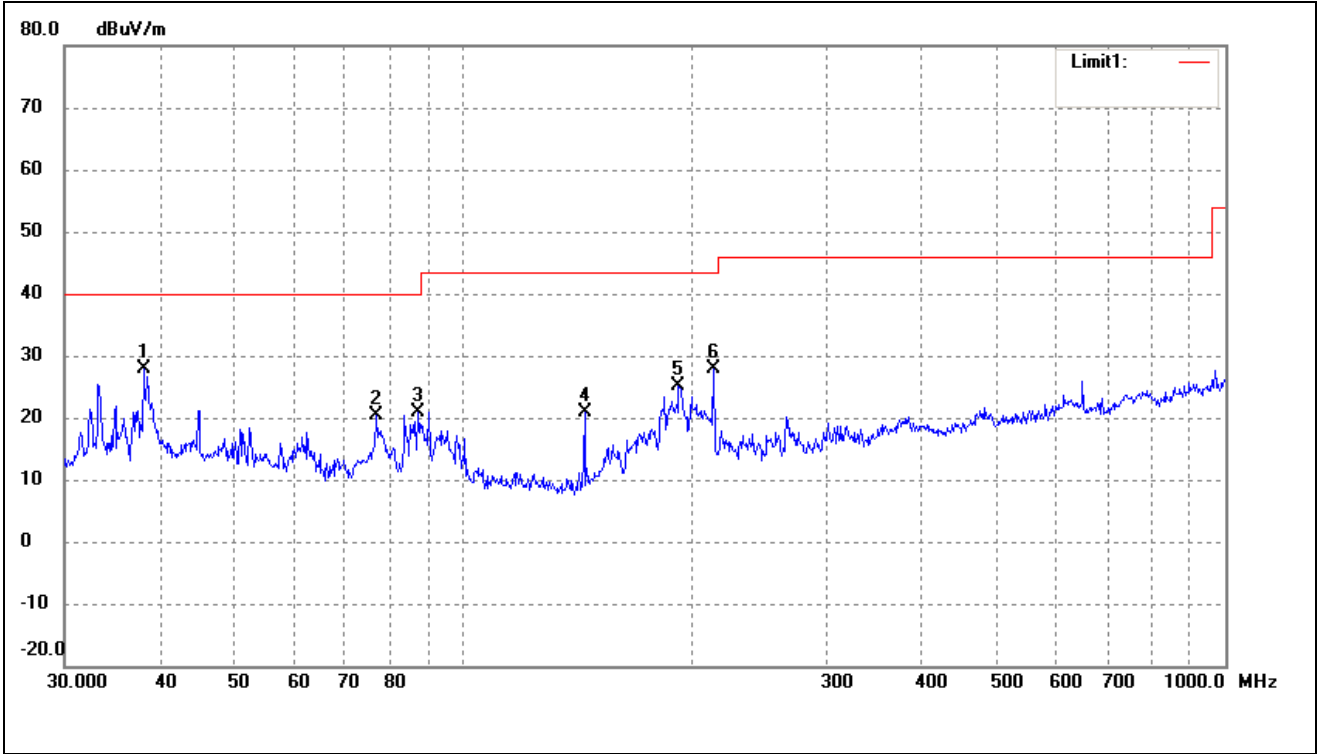
EUT: *Mireless Audio Module*  
 Tested Model: *A31*  
 Operating Condition: *802.11b Transmitting Low Channel-2412MHz*  
 Comment: *AC120V/60Hz; Adapter DC 5V*

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	89.2764	29.83	-12.87	16.96	43.50	-26.54	254	100	peak
2	188.4125	33.09	-10.22	22.87	43.50	-20.63	113	100	peak
3	252.0627	31.34	-7.49	23.85	46.00	-22.15	284	100	peak
4	316.5890	26.65	-4.79	21.86	46.00	-24.14	360	100	peak
5	375.9385	23.32	-2.33	20.99	46.00	-25.01	100	100	peak
	779.6068	22.48	2.88	25.36	46.00	-20.64	41	100	peak

Test Specification: Vertical

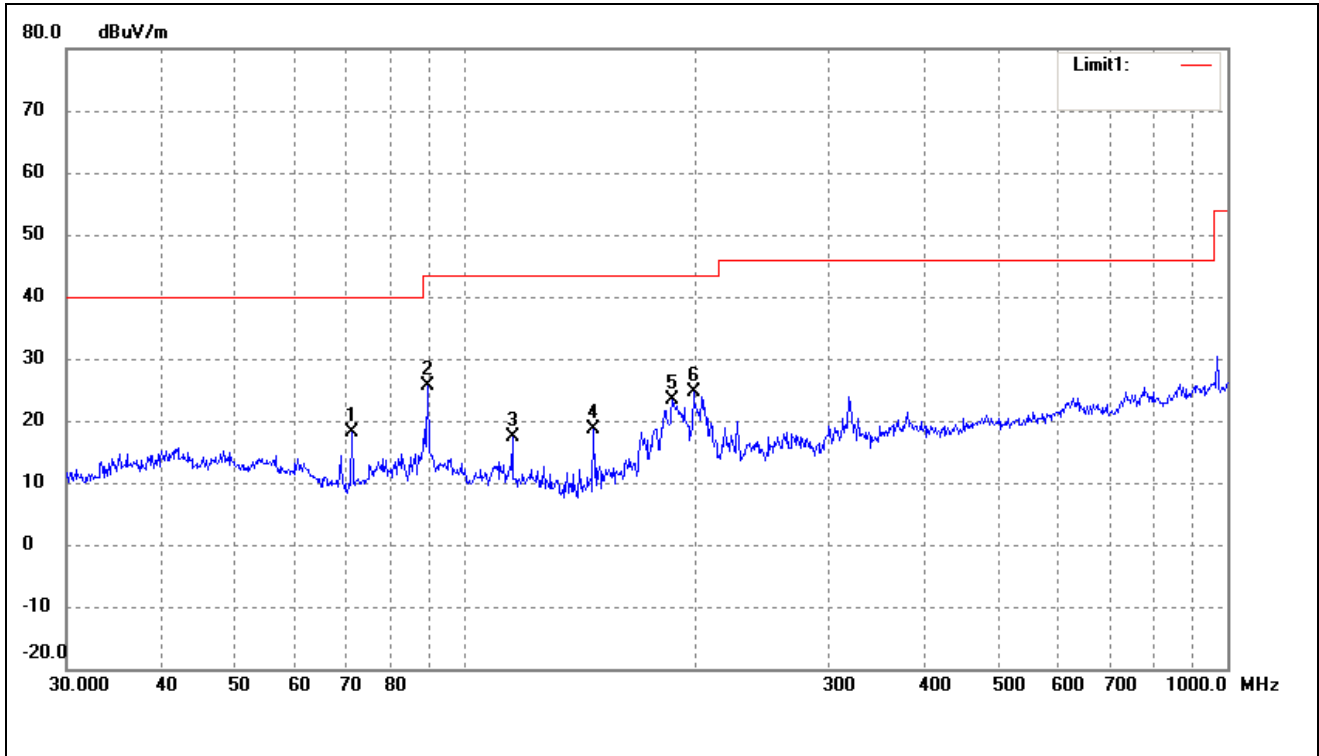


No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	38.0783	36.16	-8.20	27.96	40.00	-12.04	114	100	peak
2	77.0505	32.60	-12.24	20.36	40.00	-19.64	270	100	peak
3	87.4177	33.56	-12.70	20.86	40.00	-19.14	360	100	peak
4	144.3348	33.36	-12.50	20.86	43.50	-22.64	116	100	peak
	191.7450	34.84	-9.77	25.07	43.50	-18.43	56	100	peak
	213.0151	36.54	-8.78	27.76	43.50	-15.74	291	100	peak

Operating Condition: 802.11b Transmitting Middle Channel-2437MHz

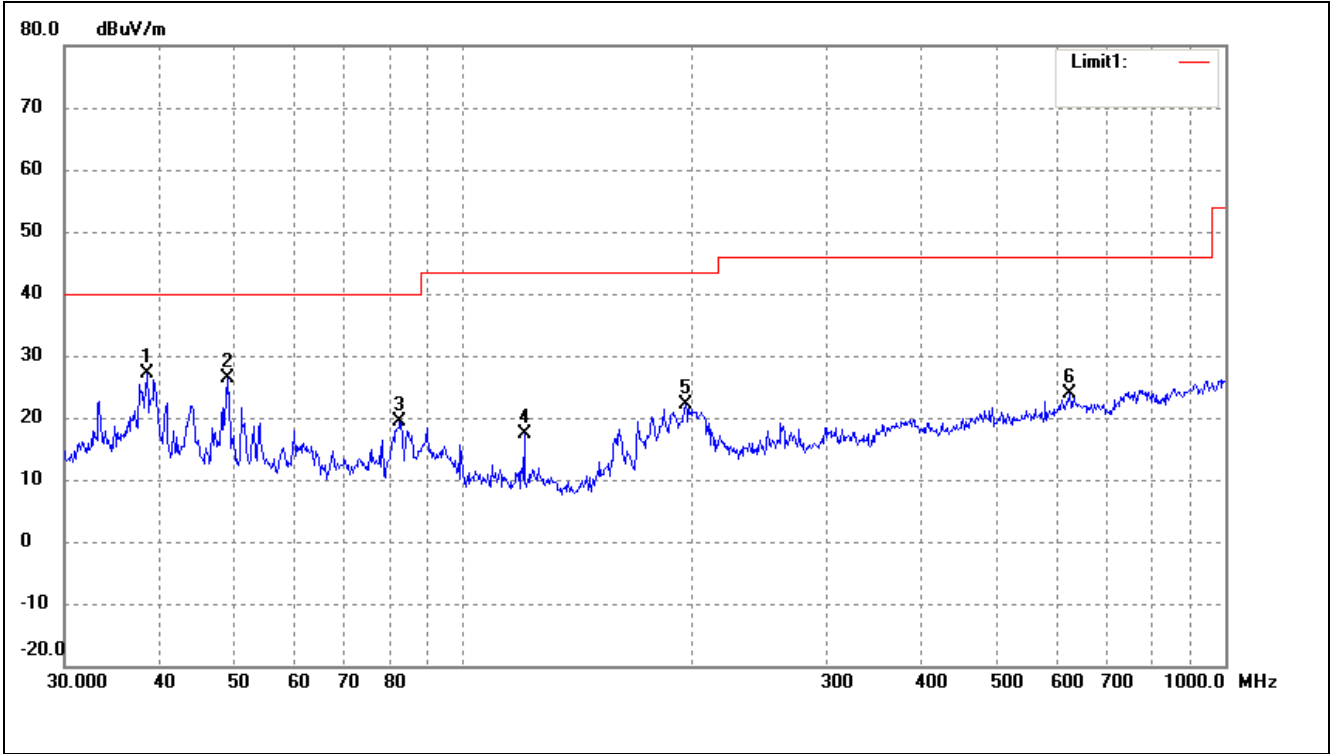
Comment: AC120V/60Hz; Adapter DC 5V

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	71.0803	30.95	-12.74	18.21	40.00	-21.79	178	100	peak
2	89.2764	38.39	-12.87	25.52	43.50	-17.98	224	100	peak
3	115.3205	28.64	-11.31	17.33	43.50	-26.17	160	100	peak
4	147.4036	31.09	-12.46	18.63	43.50	-24.87	290	100	peak
5	187.0958	33.73	-10.40	23.33	43.50	-20.17	360	100	peak
6	199.2855	33.27	-8.75	24.52	43.50	-18.98	79	100	peak

Test Specification: Vertical

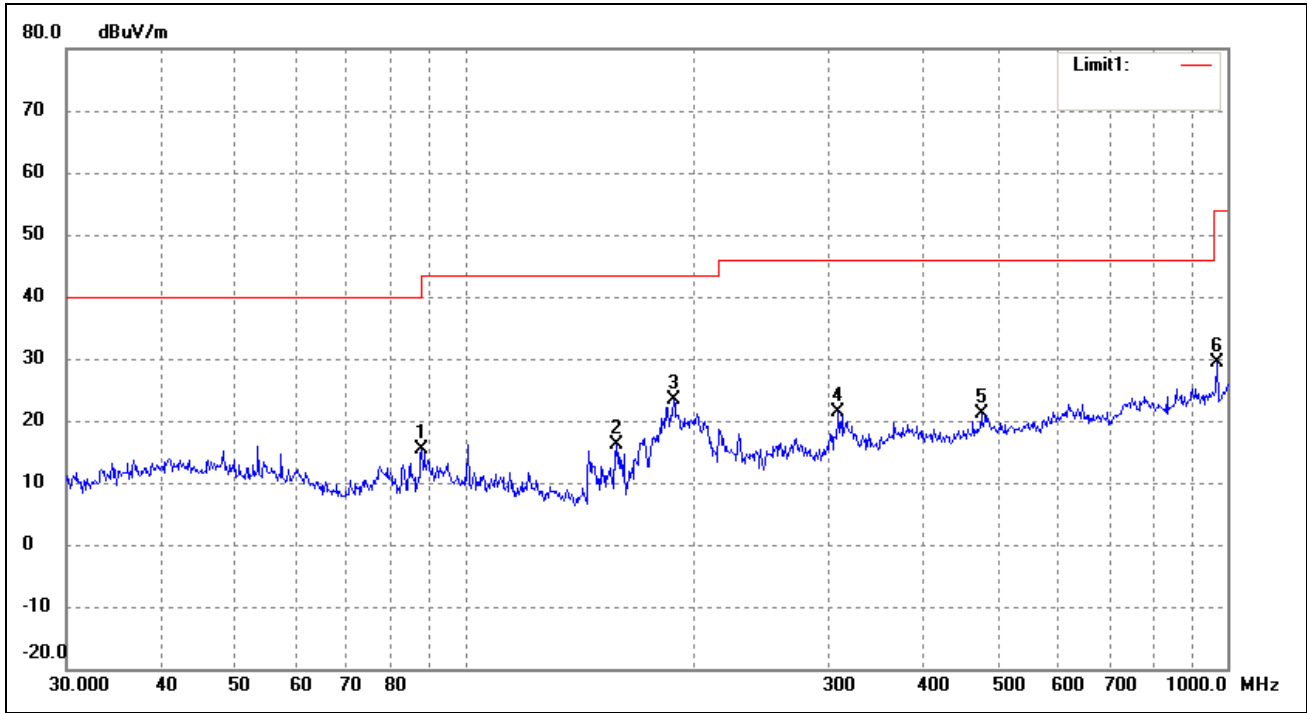


No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	38.4809	35.27	-8.08	27.19	40.00	-12.81	256	100	peak
2	49.0145	34.63	-8.26	26.37	40.00	-13.63	360	100	peak
3	82.6482	31.51	-12.24	19.27	40.00	-20.73	360	100	peak
4	120.2766	28.70	-11.44	17.26	43.50	-26.24	360	100	peak
5	195.8220	31.33	-9.22	22.11	43.50	-21.39	180	100	peak
6	625.0780	22.66	1.11	23.77	46.00	-22.23	273	100	peak

Operating Condition: 802.11b Transmitting High Channel-2462MHz

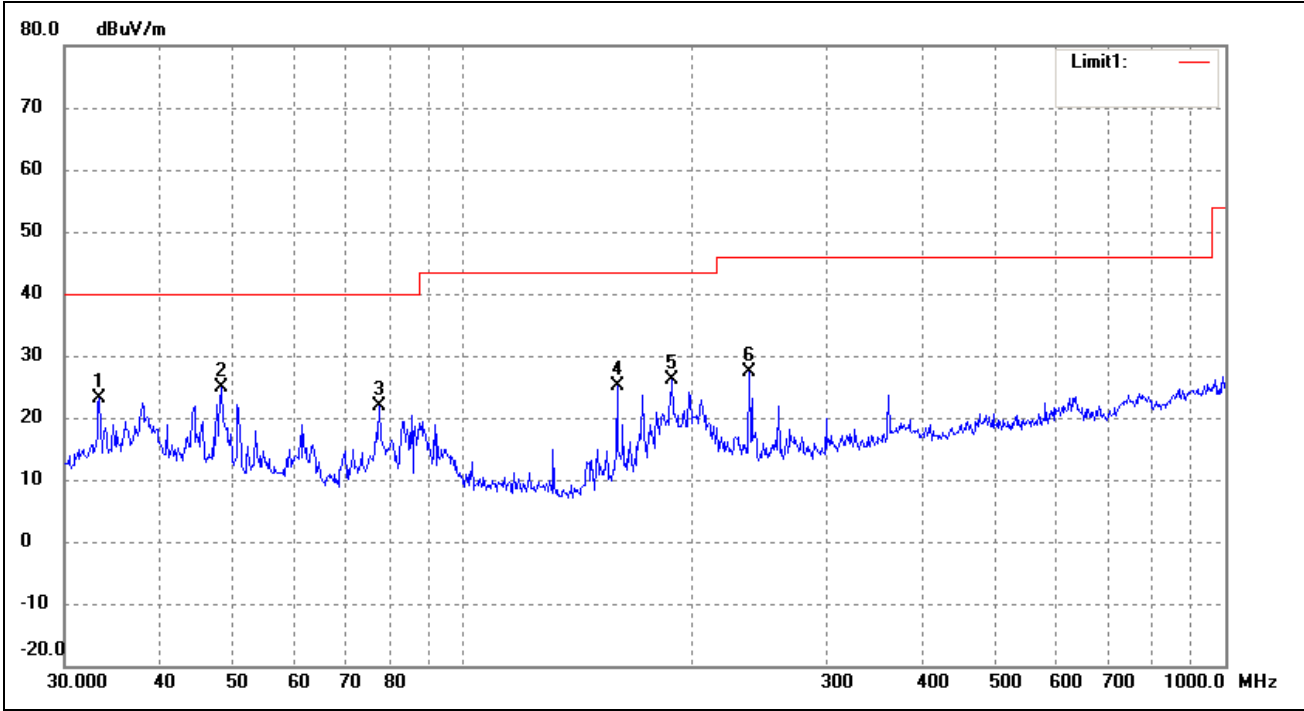
Comment: AC120V/60Hz; Adapter DC 5V

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	87.7248	28.12	-12.73	15.39	40.00	-24.61	176	100	peak
2	158.1123	28.37	-12.30	16.07	43.50	-27.43	255	100	peak
3	187.7530	33.69	-10.31	23.38	43.50	-20.12	360	100	peak
4	308.9126	26.50	-5.19	21.31	46.00	-24.69	178	100	peak
5	475.4991	22.60	-1.42	21.18	46.00	-24.82	12	100	peak
6	968.9338	25.67	3.72	29.39	54.00	-24.61	180	100	peak

Test Specification: Vertical

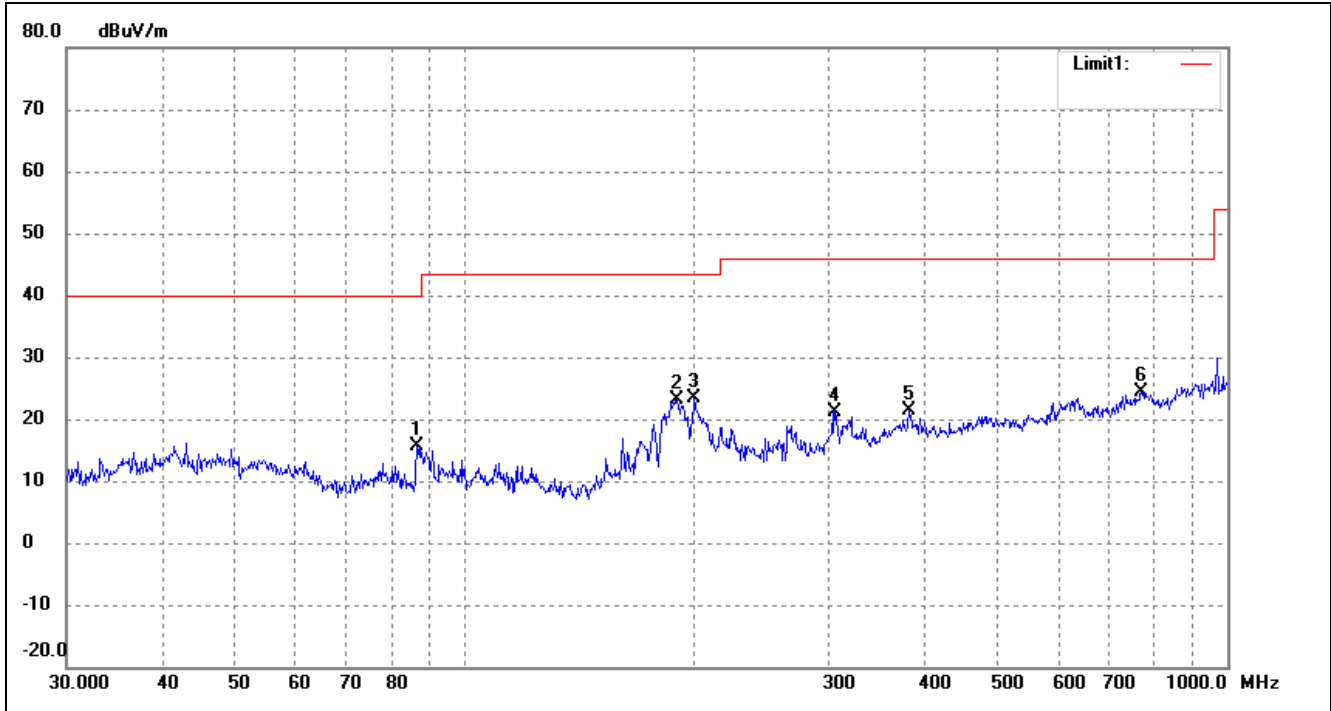


No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	33.3279	32.51	-9.46	23.05	40.00	-16.95	360	100	peak
2	48.1626	32.98	-8.20	24.78	40.00	-15.22	225	100	peak
3	77.5928	34.11	-12.20	21.91	40.00	-18.09	160	100	peak
4	159.2251	37.51	-12.28	25.23	43.50	-18.27	310	100	peak
5	187.7530	36.41	-10.31	26.10	43.50	-17.40	360	100	peak
6	237.4760	35.81	-8.39	27.42	46.00	-18.58	174	100	peak



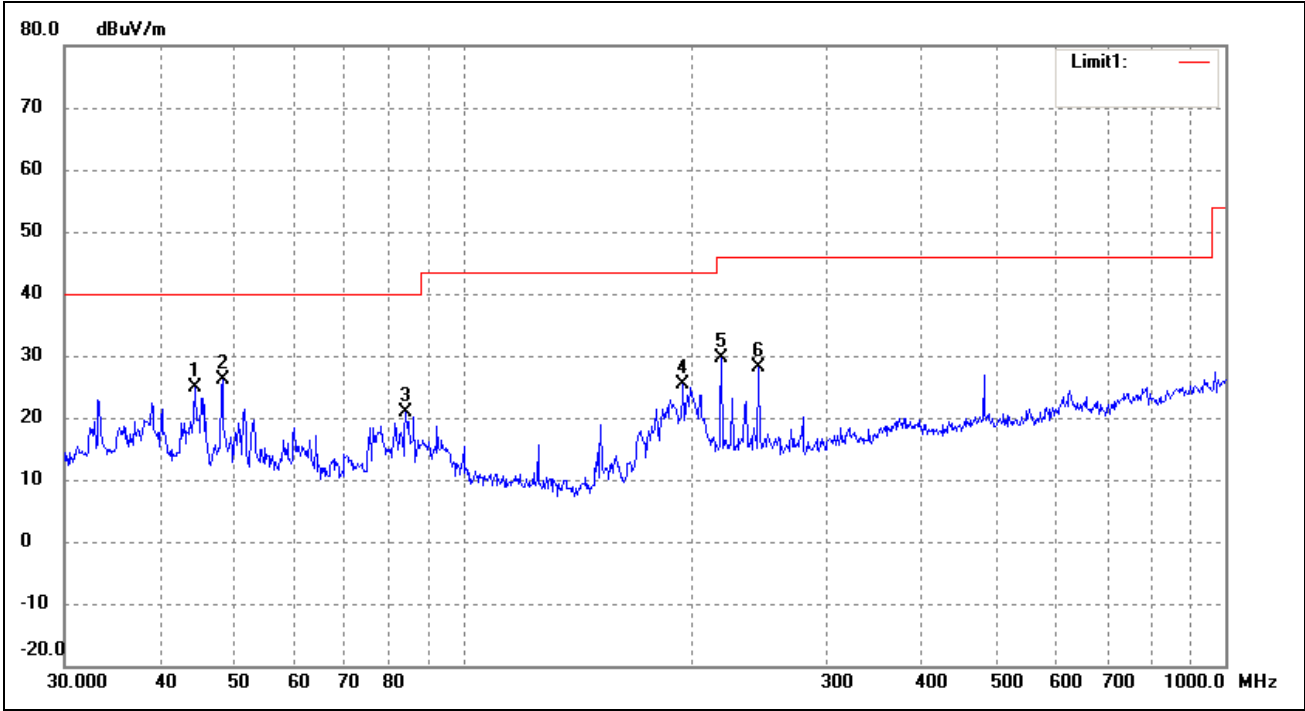
**Plot of Radiated Emissions Test Data (30MHz to 1GHz)**

EUT: *Mireless Audio Module*  
 Tested Model: *A31*  
 Operating Condition: *802.11g Transmitting Low Channel-2412MHz*  
 Comment: *AC120V/60Hz; Adapter DC 5V*  
 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	86.5029	28.25	-12.62	15.63	40.00	-24.37	174	100	peak
2	189.7385	33.17	-10.04	23.13	43.50	-20.37	160	100	peak
3	199.9856	31.94	-8.65	23.29	43.50	-20.21	320	103	peak
4	305.6800	26.60	-5.35	21.25	46.00	-24.75	360	100	peak
5	382.5879	23.61	-2.23	21.38	46.00	-24.62	48	100	peak
6	771.4486	21.93	2.43	24.36	46.00	-21.64	96	100	peak

Test Specification: Vertical

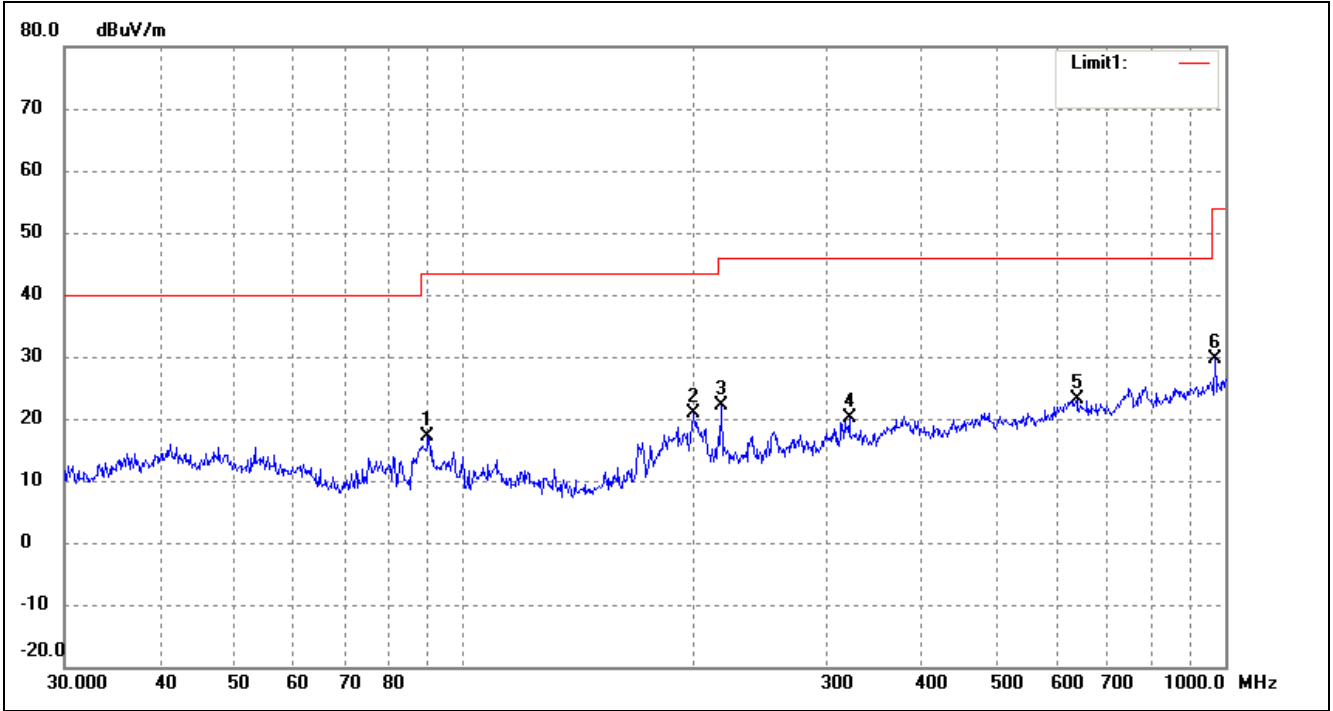


No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	44.4308	32.82	-7.96	24.86	40.00	-15.14	177	100	peak
2	48.3318	34.27	-8.21	26.06	40.00	-13.94	90	100	peak
3	84.1100	33.27	-12.38	20.89	40.00	-19.11	336	100	peak
4	194.4534	34.82	-9.40	25.42	43.50	-18.08	360	100	peak
5	218.3085	38.41	-8.83	29.58	46.00	-16.42	77	100	peak
6	244.2321	36.18	-8.03	28.15	46.00	-17.85	96	100	peak

Operating Condition: 802.11g Transmitting Middle Channel-2437MHz

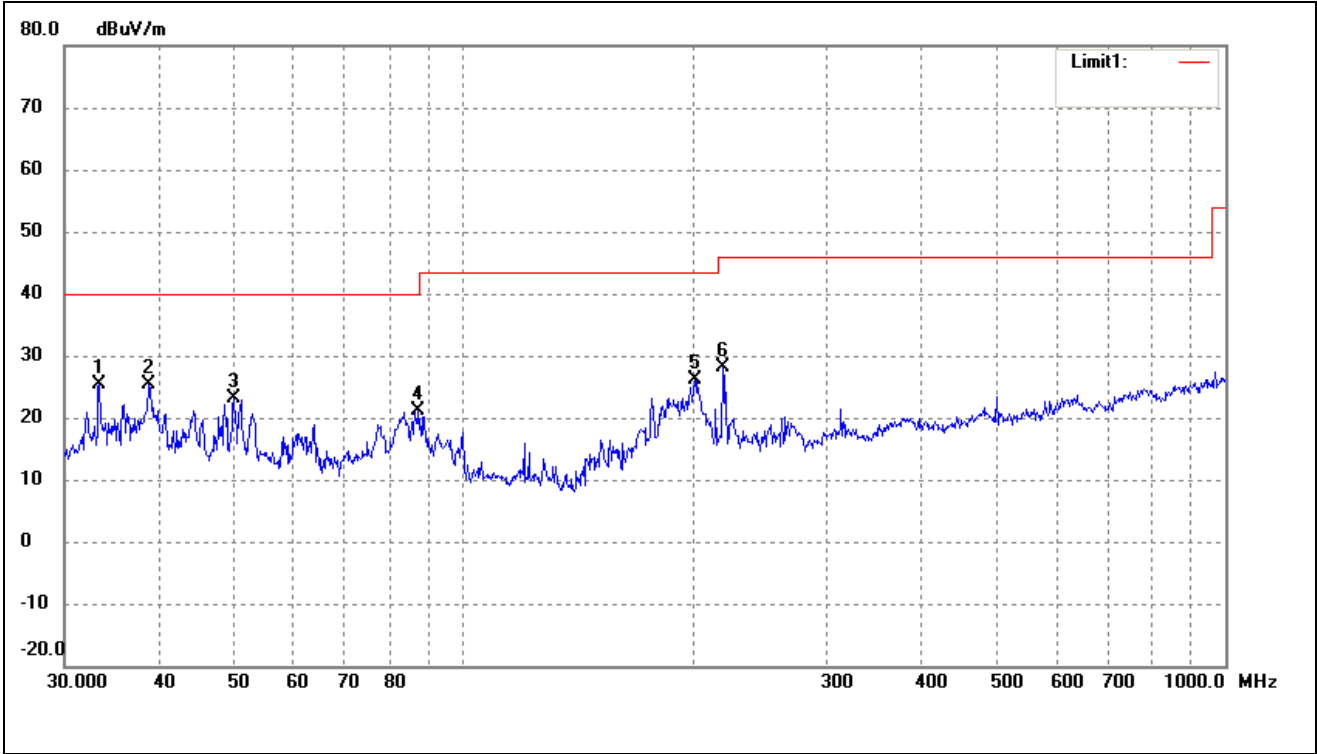
Comment: AC120V/60Hz; Adapter DC 5V

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	89.9047	30.14	-12.93	17.21	43.50	-26.29	270	100	peak
2	200.6881	29.50	-8.66	20.84	43.50	-22.66	164	100	peak
3	218.3085	31.05	-8.83	22.22	46.00	-23.78	228	200	peak
4	321.0608	24.66	-4.64	20.02	46.00	-25.98	130	200	peak
5	638.3686	22.33	0.76	23.09	46.00	-22.91	360	100	peak
6	968.9338	25.83	3.72	29.55	54.00	-24.45	55	100	peak

Test Specification: Vertical

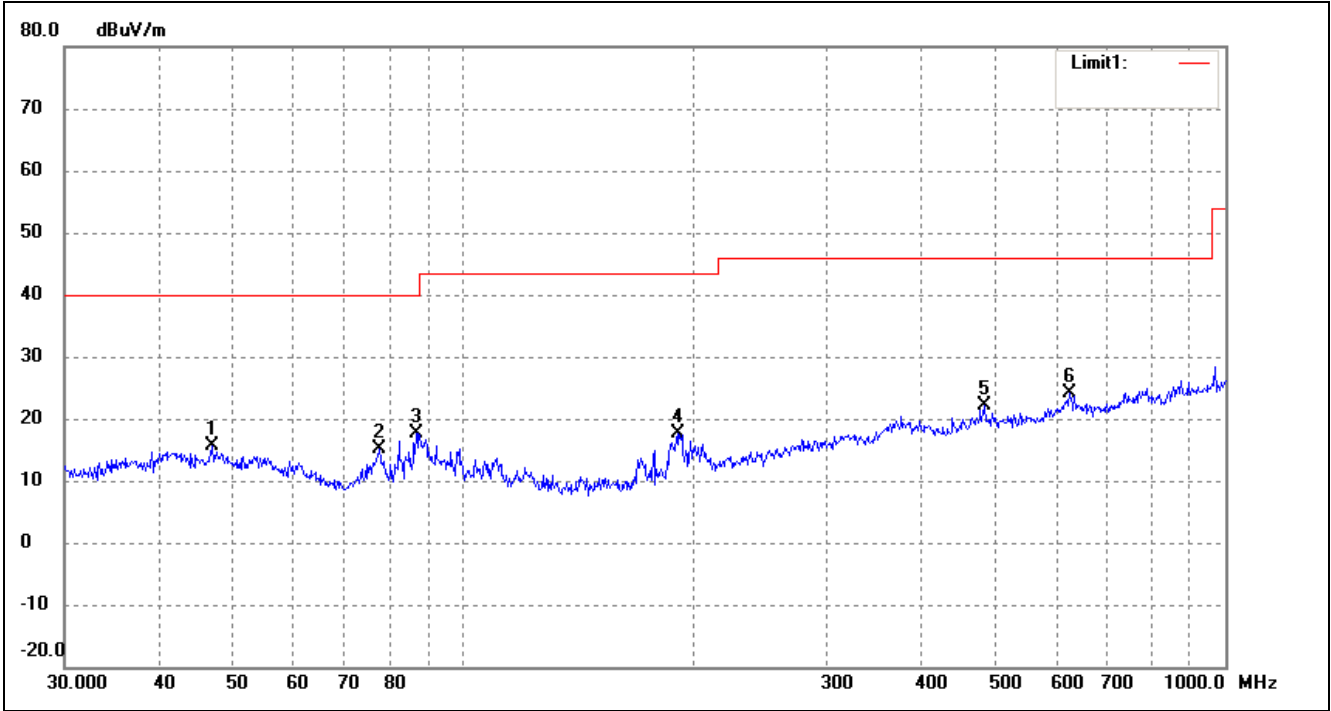


No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	33.3279	34.95	-9.46	25.49	40.00	-14.51	360	100	peak
2	38.6161	33.52	-8.05	25.47	40.00	-14.53	255	100	peak
3	50.0566	31.56	-8.33	23.23	40.00	-16.77	270	100	peak
4	87.4177	33.90	-12.70	21.20	40.00	-18.80	180	100	peak
5	201.3930	34.89	-8.66	26.23	43.50	-17.27	89	100	peak
6	219.0753	37.06	-8.83	28.23	46.00	-17.77	346	100	peak

Operating Condition: 802.11g Transmitting High Channel-2462MHz

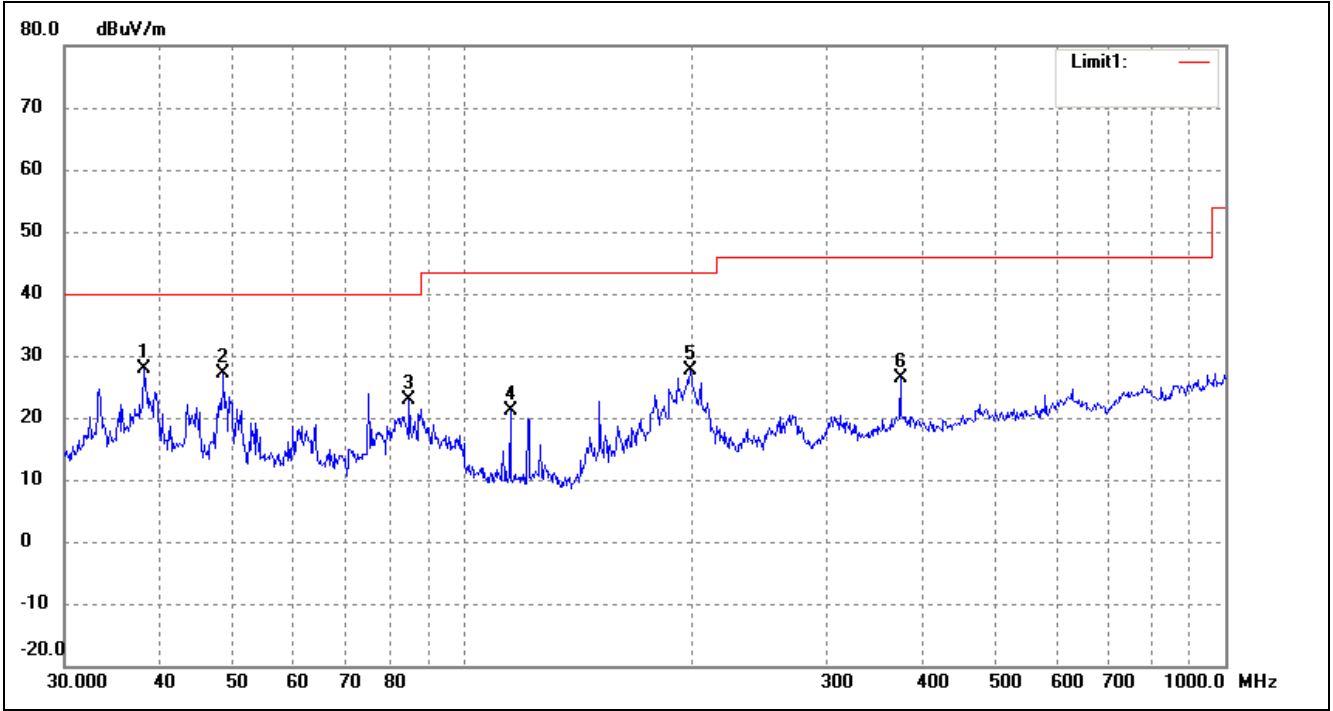
Comment: AC120V/60Hz; Adapter DC 5V

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	46.8303	23.74	-8.11	15.63	40.00	-24.37	270	100	peak
2	77.5928	27.33	-12.20	15.13	40.00	-24.87	51	200	peak
3	86.8068	30.21	-12.64	17.57	40.00	-22.43	360	200	peak
4	191.0738	27.41	-9.86	17.55	43.50	-25.95	360	100	peak
5	483.9094	23.34	-1.27	22.07	46.00	-23.93	59	100	peak
6	625.0780	22.94	1.11	24.05	46.00	-21.95	304	100	peak

Test Specification: Vertical

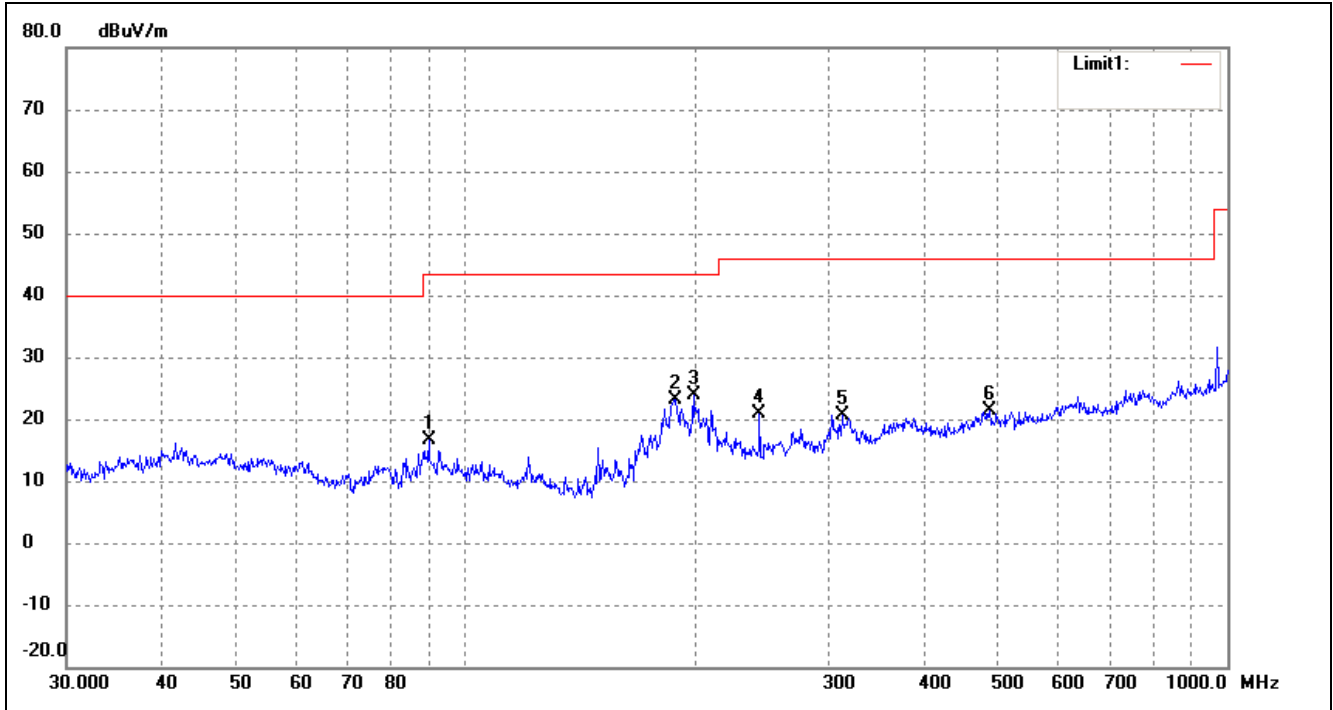


No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	38.0783	36.14	-8.20	27.94	40.00	-12.06	360	100	peak
2	48.5016	35.23	-8.22	27.01	40.00	-12.99	180	100	peak
3	84.9995	35.32	-12.47	22.85	40.00	-17.15	225	100	peak
4	115.3205	32.51	-11.31	21.20	43.50	-22.30	67	100	peak
5	198.5880	36.58	-8.85	27.73	43.50	-15.77	273	100	peak
6	374.6226	28.86	-2.41	26.45	46.00	-19.55	194	100	peak

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

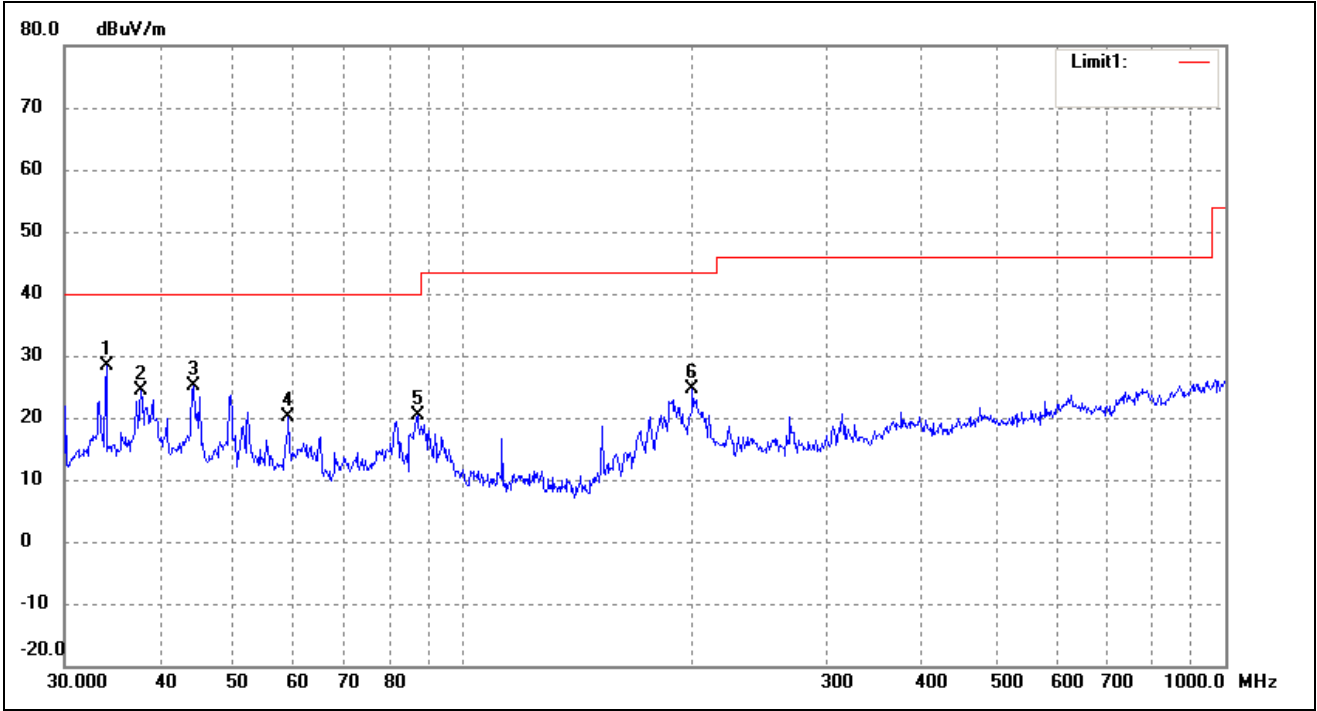
EUT: *Wireless Audio Module*  
 Tested Model: *A31*  
 Operating Condition: *802.11n-HT20 Transmitting Low Channel-2412MHz*  
 Comment: *AC120V/60Hz; Adapter DC 5V*

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	89.5899	29.50	-12.90	16.60	43.50	-26.90	260	100	peak
2	189.0743	33.27	-10.12	23.15	43.50	-20.35	131	200	peak
3	199.2855	32.75	-8.75	24.00	43.50	-19.50	285	200	peak
4	243.3772	29.09	-8.10	20.99	46.00	-25.01	224	100	peak
5	312.1794	25.60	-5.03	20.57	46.00	-25.43	37	100	peak
6	487.3151	22.87	-1.47	21.40	46.00	-24.60	324	100	peak

Test Specification: Vertical



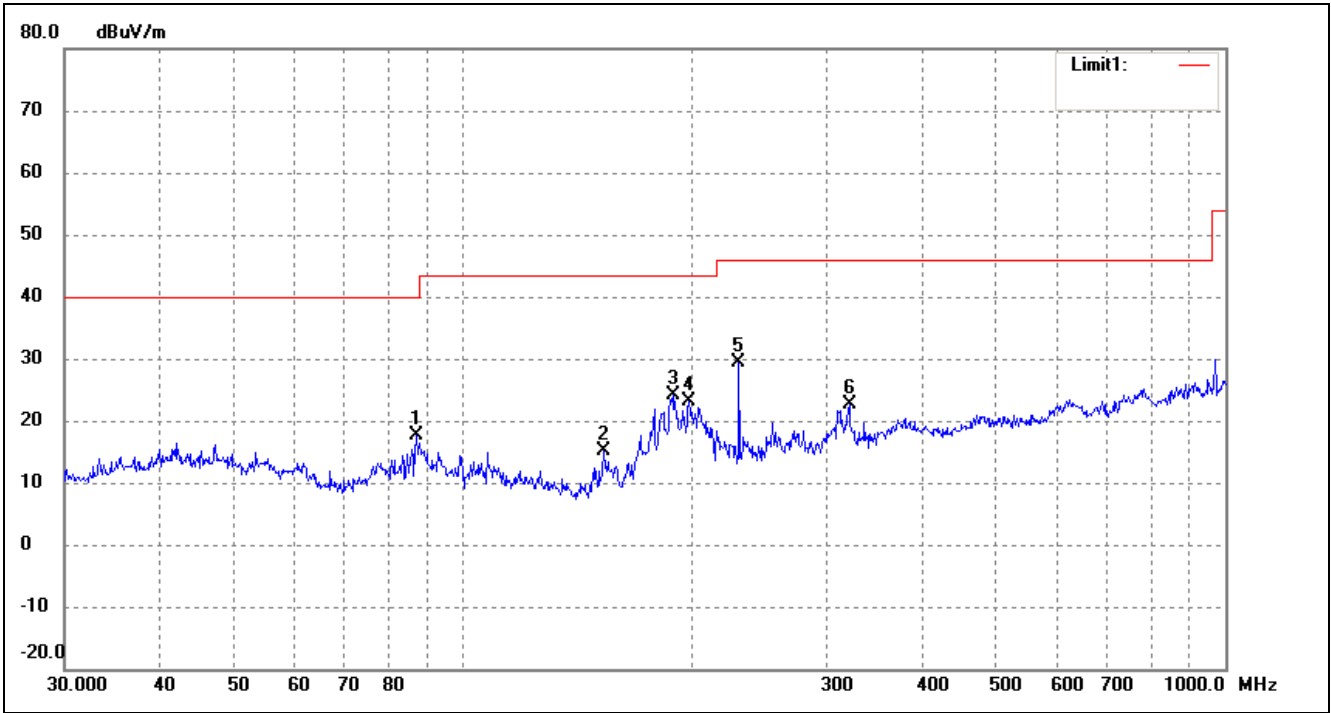
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	34.0365	37.57	-9.28	28.29	40.00	-11.71	155	100	peak
2	37.8121	32.58	-8.26	24.32	40.00	-15.68	197	100	peak
3	44.2752	32.96	-7.95	25.01	40.00	-14.99	310	100	peak
4	59.0251	29.62	-9.45	20.17	40.00	-19.83	229	100	peak
5	87.1117	32.99	-12.67	20.32	40.00	-19.68	130	100	peak
6	199.9856	33.18	-8.65	24.53	43.50	-18.97	360	100	peak



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

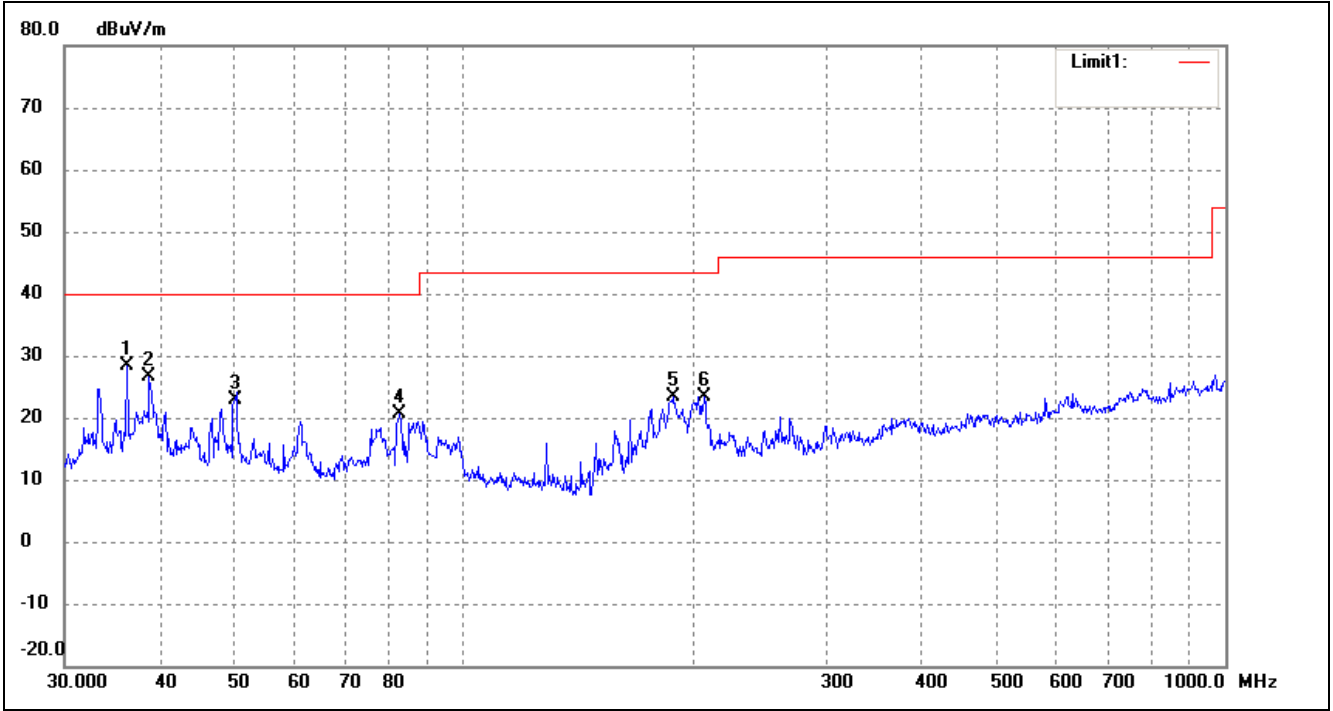
Comment: AC120V/60Hz; Adapter DC 5V

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	86.8068	30.27	-12.64	17.63	40.00	-22.37	274	100	peak
2	152.6641	27.58	-12.39	15.19	43.50	-28.31	116	100	peak
3	188.4125	34.45	-10.22	24.23	43.50	-19.27	82	100	peak
4	197.8928	32.14	-8.94	23.20	43.50	-20.30	134	100	peak
5	230.0985	38.01	-8.58	29.43	46.00	-16.57	96	100	peak
6	321.0608	27.34	-4.64	22.70	46.00	-23.30	77	100	peak

Test Specification: Vertical

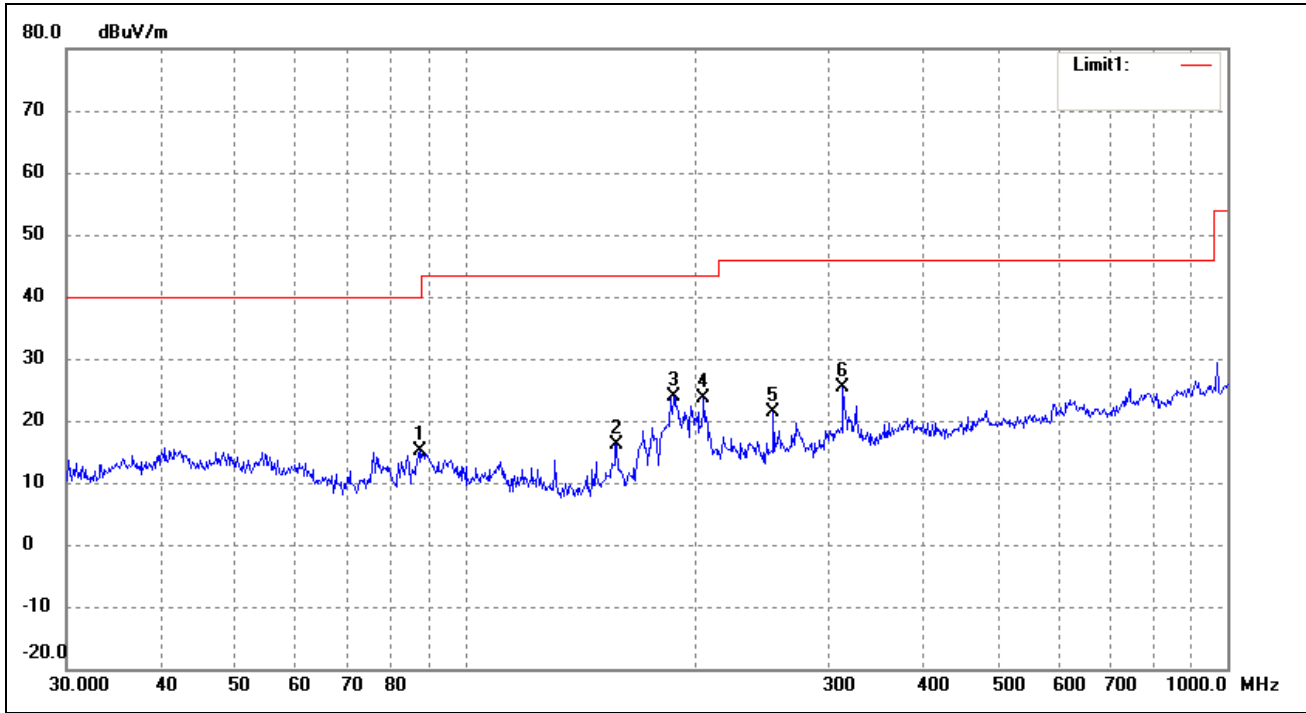


No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	36.2541	36.99	-8.69	28.30	40.00	-11.70	264	100	peak
2	38.7518	34.53	-8.00	26.53	40.00	-13.47	110	100	peak
3	50.2325	31.26	-8.35	22.91	40.00	-17.09	136	100	peak
4	82.6482	32.85	-12.24	20.61	40.00	-19.39	90	100	peak
5	188.4125	33.60	-10.22	23.38	43.50	-20.12	360	100	peak
6	207.1226	32.02	-8.72	23.30	43.50	-20.20	24	100	peak

Operating Condition: 802.11n-HT20 Transmitting High Channel-2462MHz

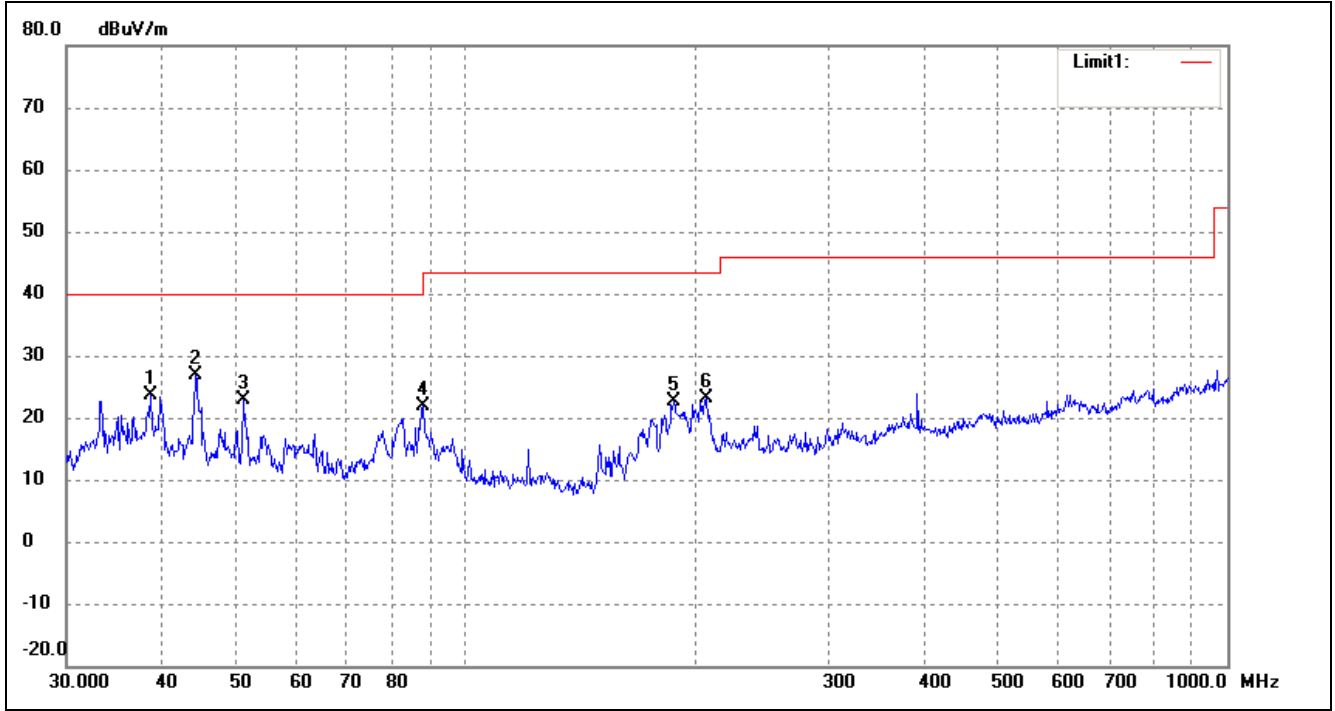
Comment: AC120V/60Hz; Adapter DC 5V

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	87.1117	27.76	-12.67	15.09	40.00	-24.91	360	100	peak
2	158.1123	28.39	-12.30	16.09	43.50	-27.41	112	100	peak
3	187.7530	34.23	-10.31	23.92	43.50	-19.58	180	200	peak
4	205.6751	32.38	-8.71	23.67	43.50	-19.83	270	200	peak
5	253.8367	28.73	-7.37	21.36	46.00	-24.64	53	100	peak
6	313.2760	30.35	-4.97	25.38	46.00	-20.62	247	100	peak

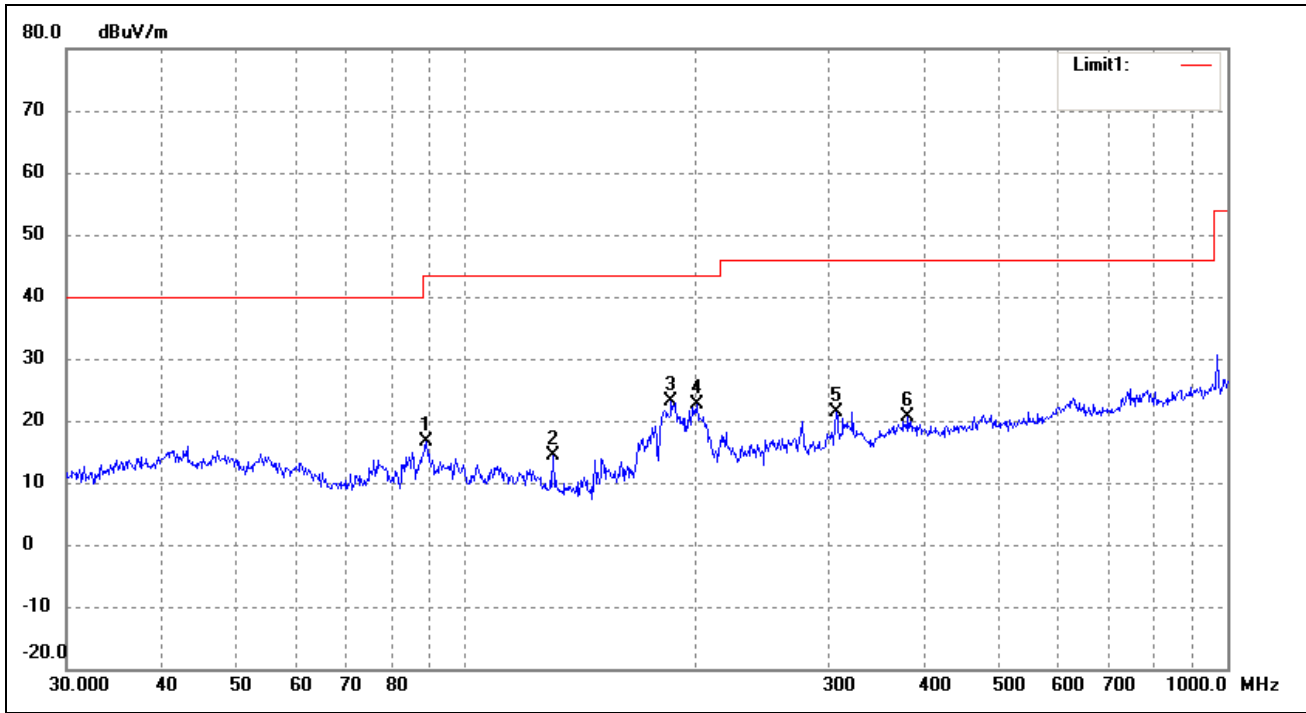
Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	38.6161	31.69	-8.05	23.64	40.00	-16.36	267	100	peak
2	44.2752	34.77	-7.95	26.82	40.00	-13.18	116	100	peak
3	51.1209	31.44	-8.46	22.98	40.00	-17.02	360	100	peak
4	88.0329	34.51	-12.75	21.76	43.50	-21.74	228	100	peak
5	187.7530	32.83	-10.31	22.52	43.50	-20.98	270	100	peak
6	207.1226	31.94	-8.72	23.22	43.50	-20.28	88	100	peak

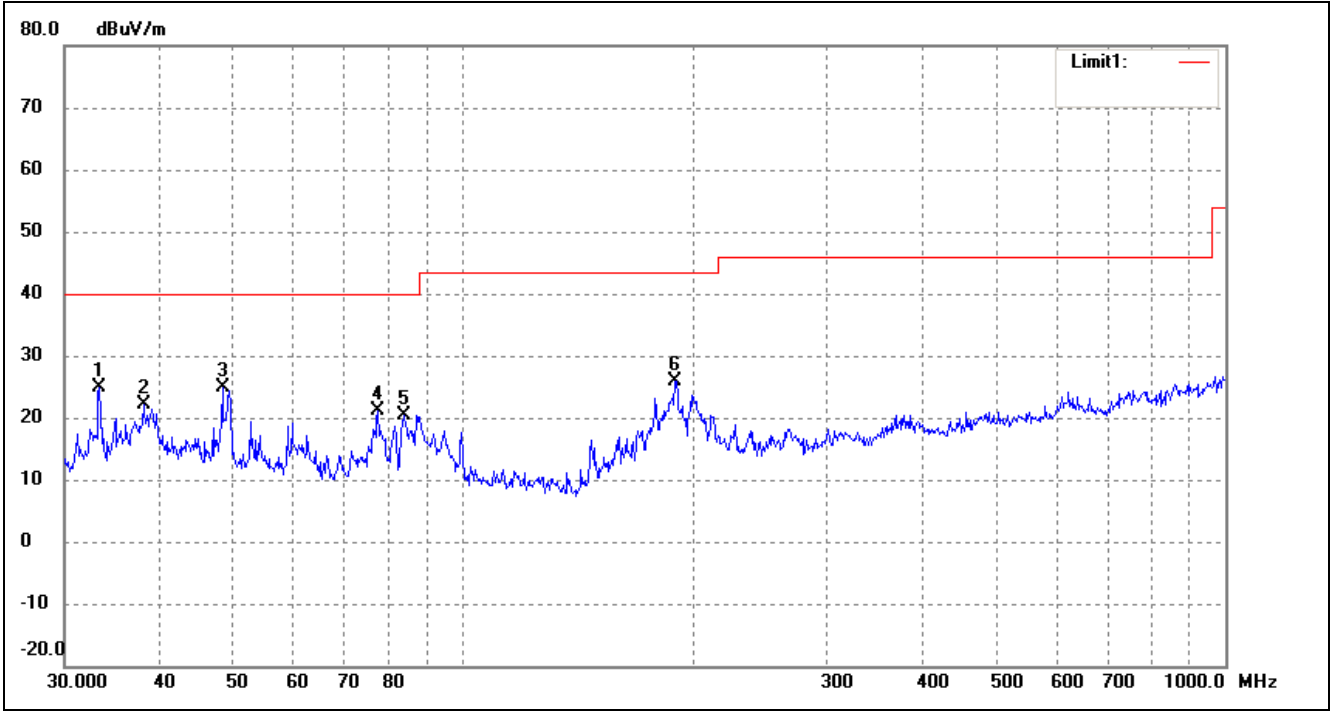
EUT: *Wireless Audio Module*  
 Tested Model: *A31*  
 Operating Condition: *802.11n-HT40 Transmitting Low Channel-2422MHz*  
 Comment: *AC120V/60Hz; Adapter DC 5V*

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	88.9639	29.46	-12.85	16.61	43.50	-26.89	267	100	peak
2	130.3789	26.48	-12.02	14.46	43.50	-29.04	114	200	peak
3	186.4409	33.61	-10.48	23.13	43.50	-20.37	35	200	peak
4	201.3930	31.31	-8.66	22.65	43.50	-20.85	81	100	peak
5	306.7537	26.78	-5.29	21.49	46.00	-24.51	94	200	peak
6	381.2487	22.90	-2.17	20.73	46.00	-25.27	276	100	peak

Test Specification: Vertical

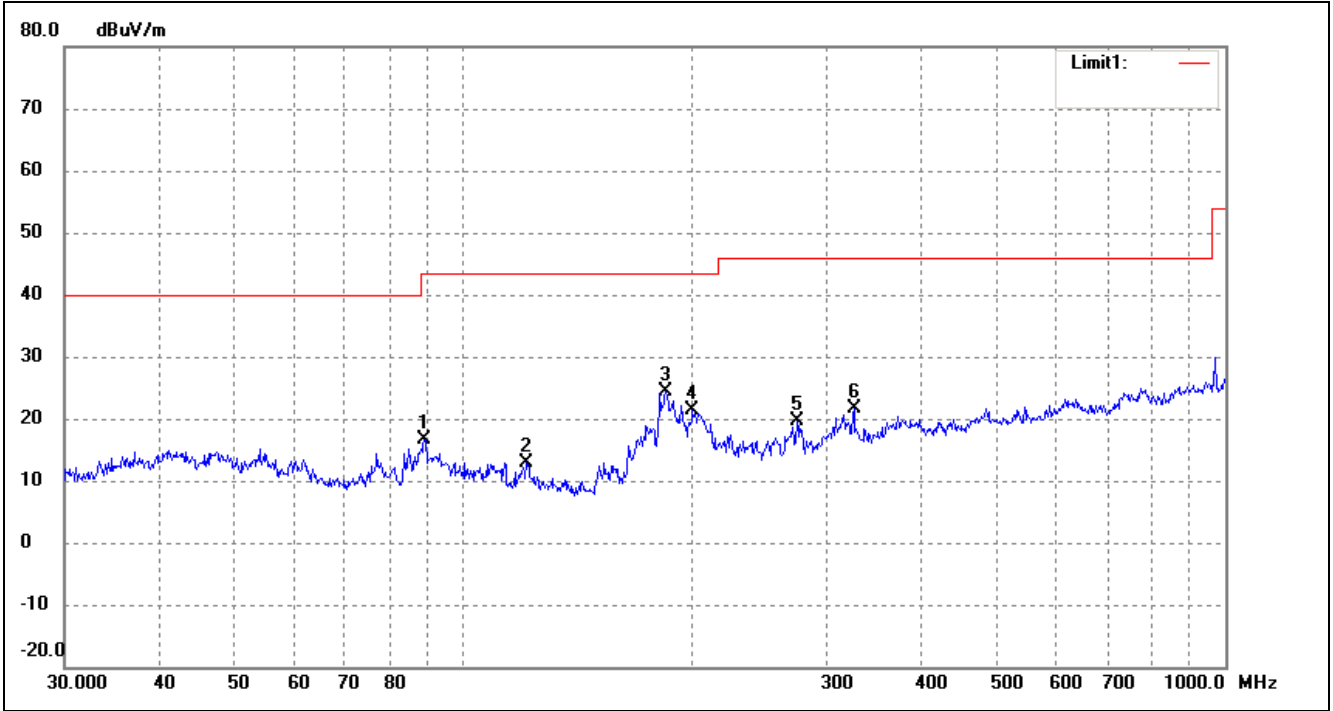


No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	33.3279	34.28	-9.46	24.82	40.00	-15.18	360	100	peak
2	38.0783	30.38	-8.20	22.18	40.00	-17.82	258	100	peak
3	48.3318	33.02	-8.21	24.81	40.00	-15.19	347	100	peak
4	77.3212	33.43	-12.21	21.22	40.00	-18.78	270	100	peak
5	83.5222	32.80	-12.33	20.47	40.00	-19.53	90	100	peak
6	189.7385	35.91	-10.04	25.87	43.50	-17.63	79	100	peak

Operating Condition: 802.11n-HT40 Transmitting Middle Channel-2437MHz

Comment: AC120V/60Hz; Adapter DC 5V

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	88.9639	29.58	-12.85	16.73	43.50	-26.77	251	100	peak
2	121.1231	24.48	-11.50	12.98	43.50	-30.52	167	100	peak
3	184.4898	35.11	-10.75	24.36	43.50	-19.14	44	100	peak
4	199.9856	29.97	-8.65	21.32	43.50	-22.18	130	100	peak
5	274.1939	26.05	-6.35	19.70	46.00	-26.30	188	100	peak
6	325.5958	26.27	-4.72	21.55	46.00	-24.45	234	100	peak

Test Specification: Vertical



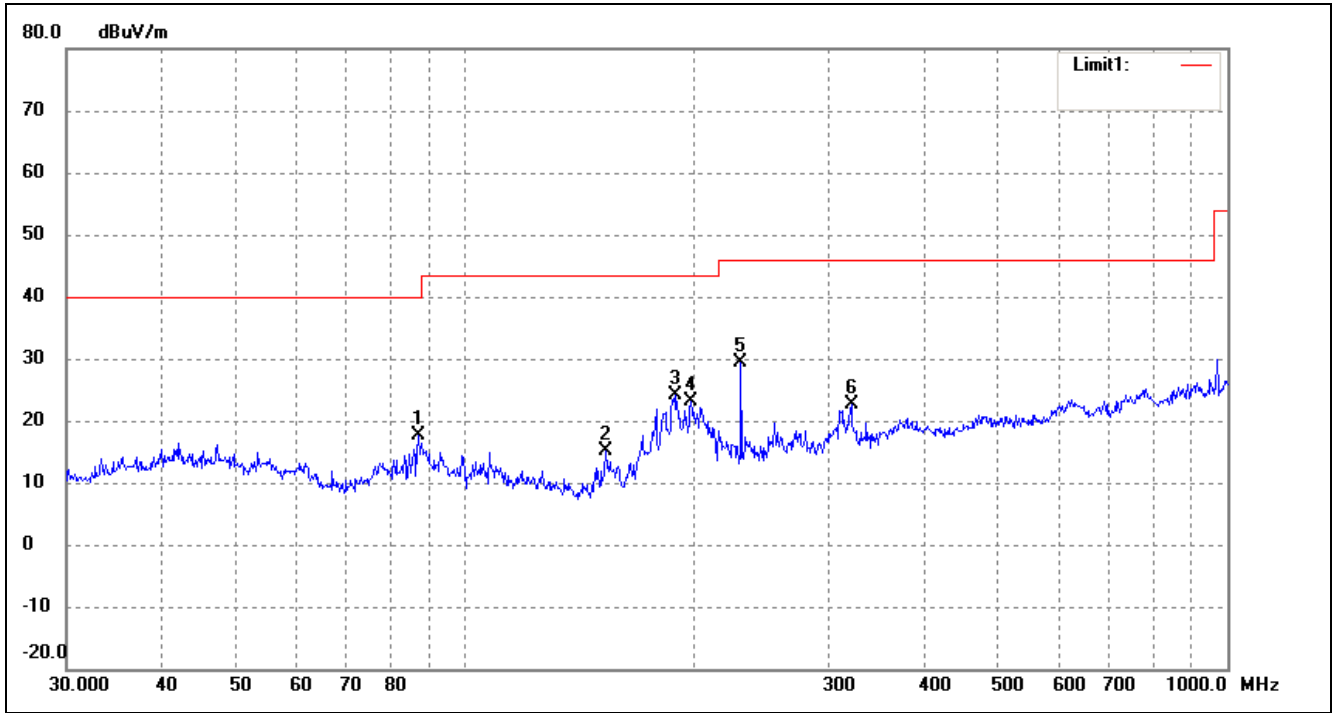
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	38.6161	33.66	-8.05	25.61	40.00	-14.39	47	100	peak
2	44.5868	31.60	-7.97	23.63	40.00	-16.37	264	100	peak
3	82.9385	32.83	-12.27	20.56	40.00	-19.44	225	100	peak
4	89.9047	35.61	-12.93	22.68	43.50	-20.82	180	100	peak
5	189.7385	33.25	-10.04	23.21	43.50	-20.29	315	100	peak
6	206.3976	35.22	-8.70	26.52	43.50	-16.98	360	100	peak



Operating Condition: 802.11n-HT40 Transmitting High Channel-2452MHz

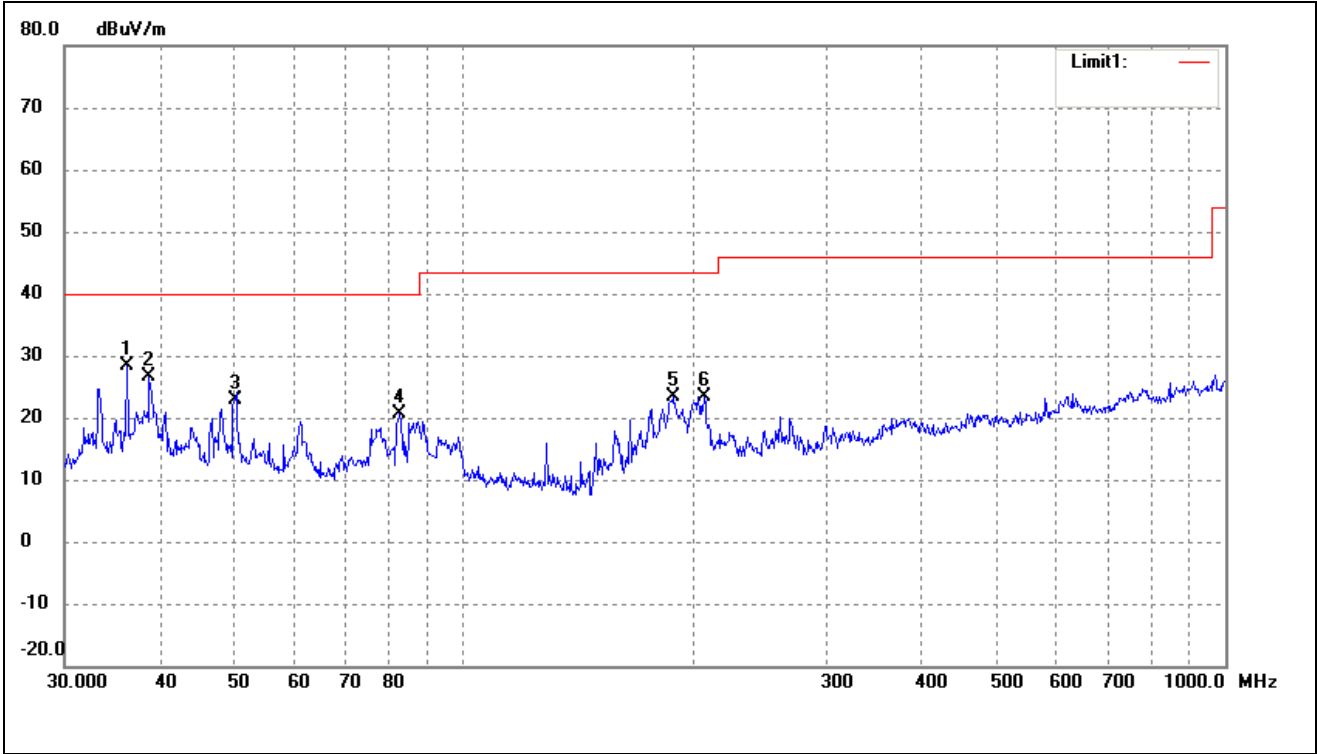
Comment: AC120V/60Hz; Adapter DC 5V

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	86.8068	30.27	-12.64	17.63	40.00	-22.37	360	100	peak
2	152.6641	27.58	-12.39	15.19	43.50	-28.31	287	100	peak
3	188.4125	34.45	-10.22	24.23	43.50	-19.27	168	100	peak
4	197.8928	32.14	-8.94	23.20	43.50	-20.30	122	100	peak
5	230.0985	38.01	-8.58	29.43	46.00	-16.57	359	100	peak
6	321.0608	27.34	-4.64	22.70	46.00	-23.30	34	100	peak

Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	36.2541	36.99	-8.69	28.30	40.00	-11.70	78	100	peak
2	38.7518	34.53	-8.00	26.53	40.00	-13.47	136	100	peak
3	50.2325	31.26	-8.35	22.91	40.00	-17.09	284	100	peak
4	82.6482	32.85	-12.24	20.61	40.00	-19.39	60	100	peak
5	188.4125	33.60	-10.22	23.38	43.50	-20.12	330	100	peak
6	207.1226	32.02	-8.72	23.30	43.50	-20.20	46	100	peak

*Spurious Emissions Above 1GHz*

Test Mode: 802.11b

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Low Channel-2412MHz							
4824.000	54.09	-3.87	50.22	74.00	-23.78	H	PK
4824.000	38.84	-3.87	34.97	54.00	-19.03	H	AV
7236.000	46.30	1.14	47.44	74.00	-26.56	H	PK
7236.000	34.98	1.19	36.17	54.00	-17.83	H	AV
4824.000	57.31	-3.86	53.45	74.00	-20.55	V	PK
4824.000	40.50	-3.86	36.64	54.00	-17.36	V	AV
7236.000	49.11	1.10	50.21	74.00	-23.79	V	PK
7236.000	37.44	1.10	38.54	54.00	-15.46	V	AV
Middle Channel-2437MHz							
4874.000	54.74	-3.74	51.00	74.00	-23.00	H	PK
4874.000	39.99	-3.74	36.25	54.00	-17.75	H	AV
7311.000	47.77	1.47	49.24	74.00	-24.76	H	PK
7311.000	33.10	1.47	34.57	54.00	-19.43	H	AV
4874.000	53.97	-3.74	50.23	74.00	-23.77	V	PK
4874.000	40.89	-3.74	37.15	54.00	-16.85	V	AV
7311.000	47.98	1.47	49.45	74.00	-24.55	V	PK
7311.000	34.08	1.47	35.55	54.00	-18.45	V	AV
High Channel-2462MHz							
4924.000	55.82	-3.59	52.23	74.00	-21.77	H	PK
4924.000	41.76	-3.59	38.17	54.00	-15.83	H	AV
7386.000	46.38	1.79	48.17	74.00	-25.83	H	PK
7386.000	34.83	1.79	36.62	54.00	-17.38	H	AV
4924.000	54.94	-3.59	51.35	74.00	-22.65	V	PK
4924.000	42.04	-3.59	38.45	54.00	-15.55	V	AV
7386.000	47.99	1.79	49.78	74.00	-24.22	V	PK
7386.000	35.18	1.79	36.97	54.00	-17.03	V	AV

Test Mode: 802.11g

Frequency (MHz)	Reading (dBuV/m)	Correct dB	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polar H/V	Detector
Low Channel-2412MHz							
4824.000	55.50	-3.86	51.64	74.00	-22.36	H	PK
4824.000	42.23	-3.86	38.37	54.00	-15.63	H	AV
7236.000	48.42	1.10	49.52	74.00	-24.48	H	PK
7236.000	34.40	1.10	35.50	54.00	-18.50	H	AV
4824.000	55.99	-3.86	52.13	74.00	-21.87	V	PK
4824.000	42.65	-3.86	38.79	54.00	-15.21	V	AV
7236.000	49.22	1.10	50.32	74.00	-23.68	V	PK
7236.000	35.54	1.10	36.64	54.00	-17.36	V	AV
Middle Channel-2437MHz							
4874.000	55.10	-3.74	51.36	74.00	-22.64	H	PK
4874.000	43.28	-3.74	39.54	54.00	-14.46	H	AV
7311.000	47.38	1.47	48.85	74.00	-25.15	H	PK
7311.000	35.27	1.47	36.74	54.00	-17.26	H	AV
4874.000	57.07	-3.74	53.33	74.00	-20.67	V	PK
4874.000	43.86	-3.74	40.12	54.00	-13.88	V	AV
7311.000	48.40	1.47	49.87	74.00	-24.13	V	PK
7311.000	35.33	1.47	36.80	54.00	-17.20	V	AV
High Channel-2462MHz							
4924.000	54.00	-3.59	50.41	74.00	-23.59	H	PK
4924.000	40.75	-3.59	37.16	54.00	-16.84	H	AV
7386.000	47.18	1.79	48.97	74.00	-25.03	H	PK
7386.000	34.73	1.79	36.52	54.00	-17.48	H	AV
4924.000	56.11	-3.59	52.52	74.00	-21.48	V	PK
4924.000	42.69	-3.59	39.10	54.00	-14.90	V	AV
7386.000	48.58	1.79	50.37	74.00	-23.63	V	PK
7386.000	35.95	1.79	37.74	54.00	-16.26	V	AV

Test Mode: 802.11n-HT20

Frequency (MHz)	Reading (dBuV/m)	Correct dB	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polar H/V	Detector
Low Channel-2412MHz							
4824.000	55.60	-3.86	51.74	74.00	-22.26	H	PK
4824.000	40.54	-3.86	36.68	54.00	-17.32	H	AV
7236.000	47.26	1.10	48.36	74.00	-25.64	H	PK
7236.000	34.44	1.10	35.54	54.00	-18.46	H	AV
4824.000	56.71	-3.86	52.85	74.00	-21.15	V	PK
4824.000	43.18	-3.86	39.32	54.00	-14.68	V	AV
7236.000	49.21	1.10	50.31	74.00	-23.69	V	PK
7236.000	35.77	1.10	36.87	54.00	-17.13	V	AV
Middle Channel-2437MHz							
4874.000	54.16	-3.74	50.42	74.00	-23.58	H	PK
4874.000	42.48	-3.74	38.74	54.00	-15.26	H	AV
7311.000	48.74	1.47	50.21	74.00	-23.79	H	PK
7311.000	33.10	1.47	34.57	54.00	-19.43	H	AV
4874.000	54.92	-3.74	51.18	74.00	-22.82	V	PK
4874.000	42.62	-3.74	38.88	54.00	-15.12	V	AV
7311.000	48.49	1.47	49.96	74.00	-24.04	V	PK
7311.000	35.20	1.47	36.67	54.00	-17.33	V	AV
High Channel-2462MHz							
4924.000	53.90	-3.59	50.31	74.00	-23.69	H	PK
4924.000	43.23	-3.59	39.64	54.00	-14.36	H	AV
7386.000	48.31	1.79	50.10	74.00	-23.90	H	PK
7386.000	36.10	1.79	37.89	54.00	-16.11	H	AV
4924.000	55.70	-3.59	52.11	74.00	-21.89	V	PK
4924.000	41.48	-3.59	37.89	54.00	-16.11	V	AV
7386.000	48.55	1.79	50.34	74.00	-23.66	V	PK
7386.000	35.36	1.79	37.15	54.00	-16.85	V	AV

Test Mode: 802.11n-HT40

Frequency (MHz)	Reading (dBuV/m)	Correct dB	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polar H/V	Detector
Low Channel-2422MHz							
4844.000	53.25	-3.90	49.35	74.00	-24.65	H	PK
4824.000	38.25	-3.90	34.35	54.00	-19.65	H	AV
7266.000	46.48	1.06	47.54	74.00	-26.46	H	PK
7266.000	32.56	1.06	33.62	54.00	-20.38	H	AV
4844.000	54.22	-3.90	50.32	74.00	-23.68	V	PK
4824.000	39.42	-3.90	35.52	54.00	-18.48	V	AV
7266.000	48.81	1.06	49.87	74.00	-24.13	V	PK
7266.000	34.78	1.06	35.84	54.00	-18.16	V	AV
Middle Channel-2437MHz							
4874.000	52.53	-3.74	48.79	74.00	-25.21	H	PK
4874.000	37.88	-3.74	34.14	54.00	-19.86	H	AV
7311.000	44.88	1.47	46.35	74.00	-27.65	H	PK
7311.000	32.03	1.47	33.50	54.00	-20.50	H	AV
4874.000	53.74	-3.74	50.00	74.00	-24.00	V	PK
4874.000	39.95	-3.74	36.21	54.00	-17.79	V	AV
7311.000	45.78	1.47	47.25	74.00	-26.75	V	PK
7311.000	34.00	1.47	35.47	54.00	-18.53	V	AV
High Channel-2452MHz							
4904.000	52.65	-3.63	49.02	74.00	-24.98	H	PK
4904.000	39.37	-3.63	35.74	54.00	-18.26	H	AV
7356.000	45.63	1.62	47.25	74.00	-26.75	H	PK
7356.000	30.73	1.62	32.35	54.00	-21.65	H	AV
4904.000	54.84	-3.63	51.21	74.00	-22.79	V	PK
4904.000	40.83	-3.63	37.20	54.00	-16.80	V	AV
7356.000	48.18	1.62	49.80	74.00	-24.20	V	PK
7356.000	35.12	1.62	36.74	54.00	-17.26	V	AV

Note: Testing is carried out with frequency rang 30MHz to the tenth harmonics, other than listed in the table above are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

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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 v03r05, 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 v03r05, 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.

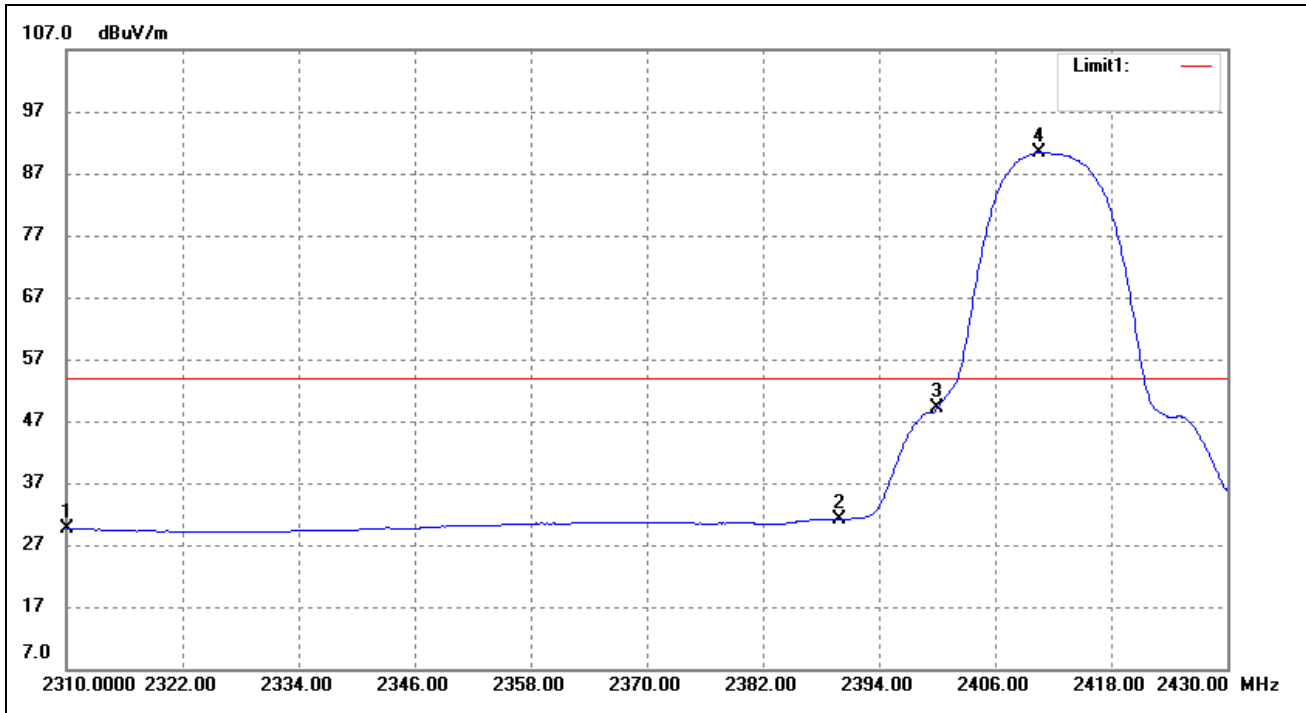
Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) are attenuated by at least the minimum requirements specified in section 8.1. Report the three highest emissions relative to the limit.

### 9.3 Environmental Conditions

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

### 9.4 Summary of Test Results/Plots

802.11b-Lowest Bandedge  
Vertical (Worst case)

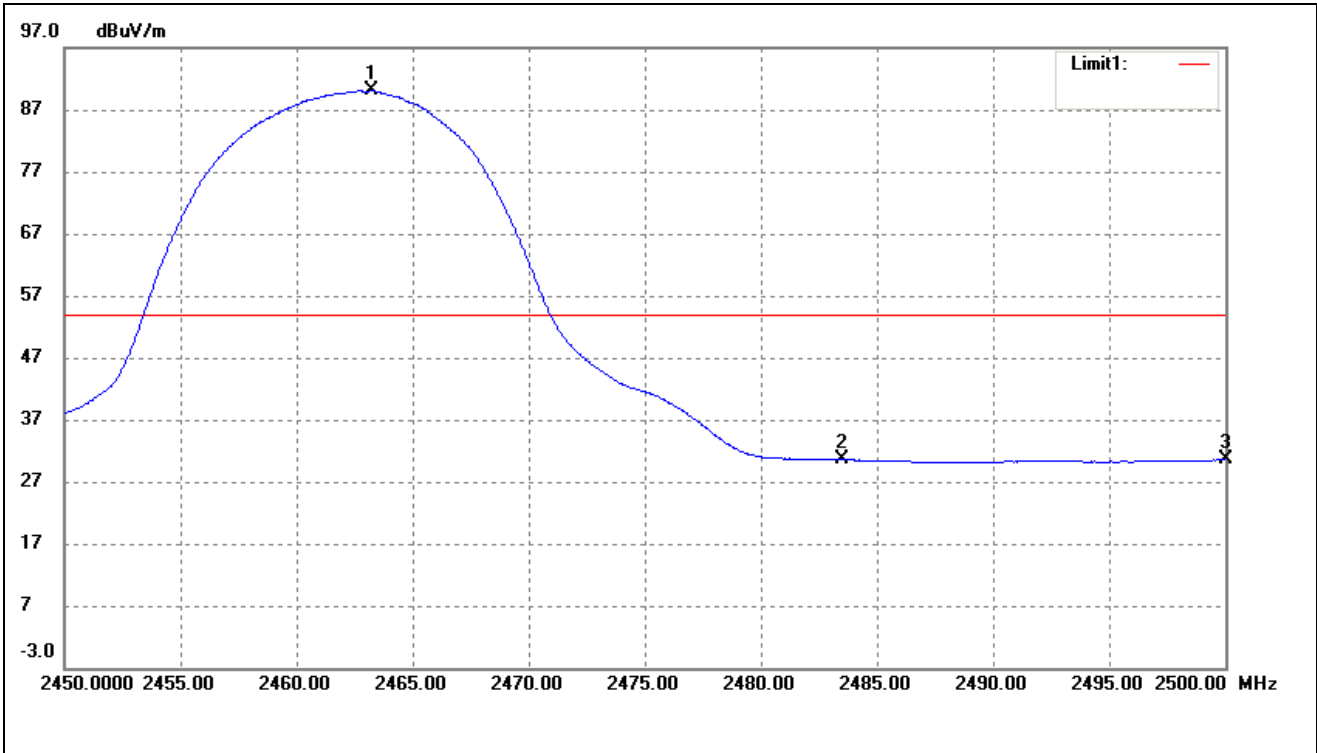


No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2310.000	33.99	-4.42	29.57	54.00	-24.43	Average Detector
	2310.000	45.54	-4.42	41.12	74.00	-32.88	Peak Detector
2	2390.000	34.92	-3.72	31.20	54.00	-22.80	Average Detector
	2390.000	48.21	-3.72	44.49	74.00	-29.51	Peak Detector
3	2400.000	52.72	-3.64	49.08	54.00	-4.92	Average Detector
	2400.000	62.74	-3.64	59.10	74.00	-14.90	Peak Detector



802.11b-Highest Bandedge

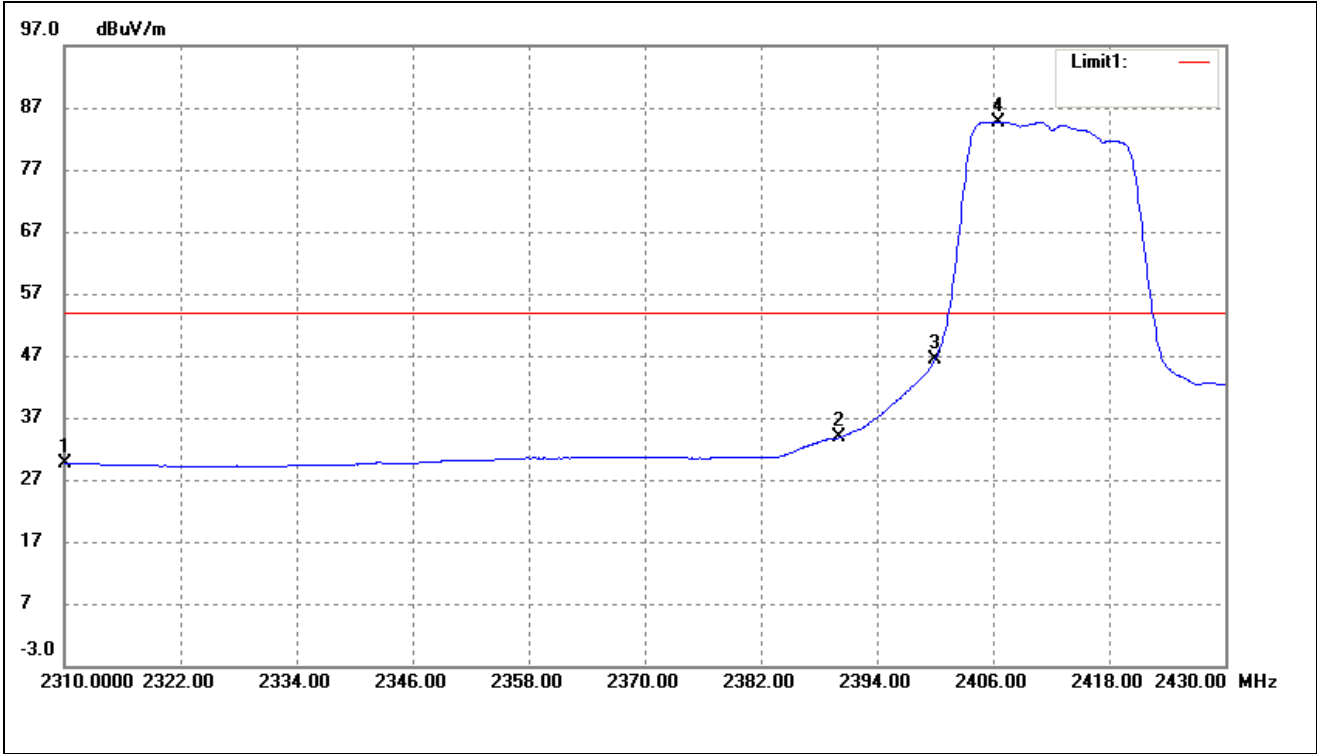
Vertical (Worst case)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2463.250	93.19	-3.16	90.03	/	/	Average Detector
	2463.150	104.73	-3.16	101.57	/	/	Peak Detector
2	2483.500	Delta = 59.91dBc		30.32	54.00	-23.68	Average Detector
	2483.500			41.66	74.00	-32.34	Peak Detector
3	2500.000	33.43	-2.88	30.55	54.00	-23.45	Average Detector
	2500.000	44.64	-2.88	41.76	74.00	-32.24	Peak Detector

802.11g-Lowest Bandedge

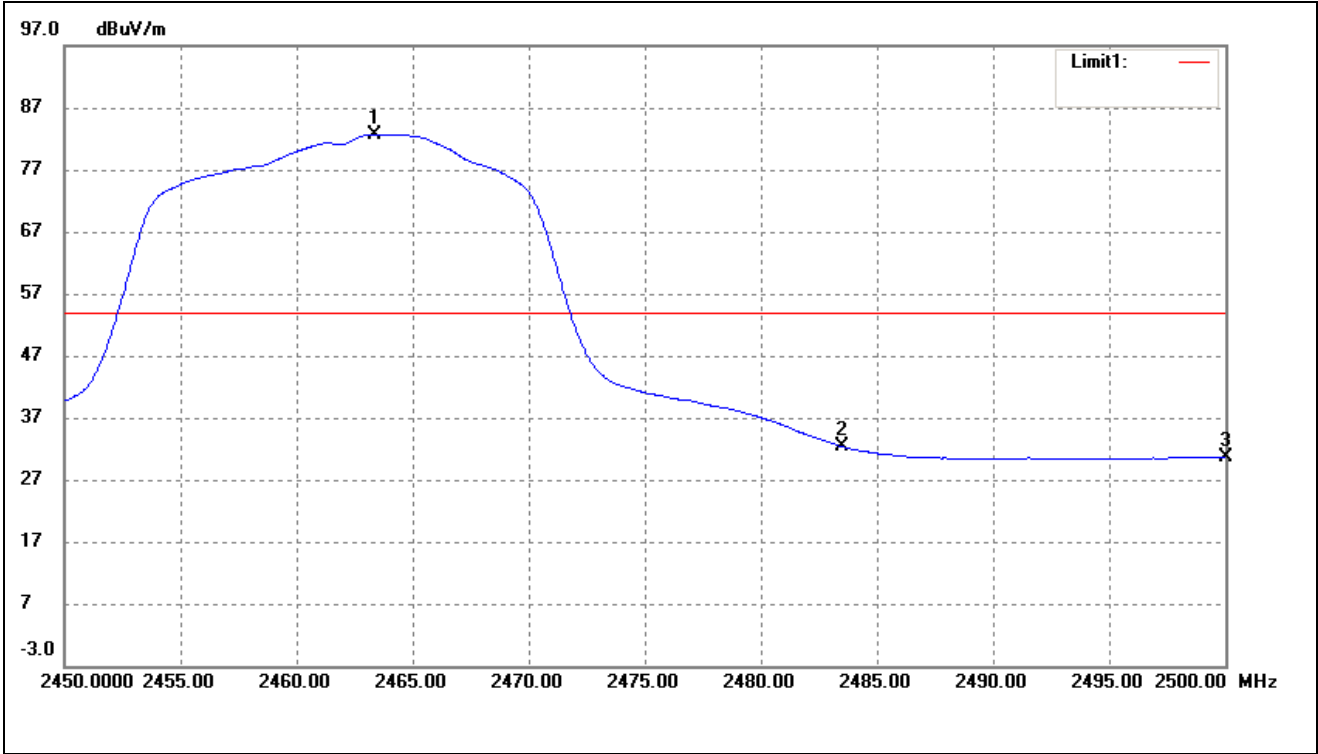
Vertical (Worst case)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2310.000	34.06	-4.42	29.64	54.00	-24.36	Average Detector
	2310.000	46.01	-4.42	41.59	74.00	-32.41	Peak Detector
2	2390.000	37.50	-3.72	33.78	54.00	-20.22	Average Detector
	2390.000	53.12	-3.72	49.40	74.00	-24.60	Peak Detector
3	2400.000	50.07	-3.64	46.43	54.00	-7.57	Average Detector
	2400.000	64.72	-3.64	61.08	74.00	-12.92	Peak Detector

802.11g-Highest Bandedge

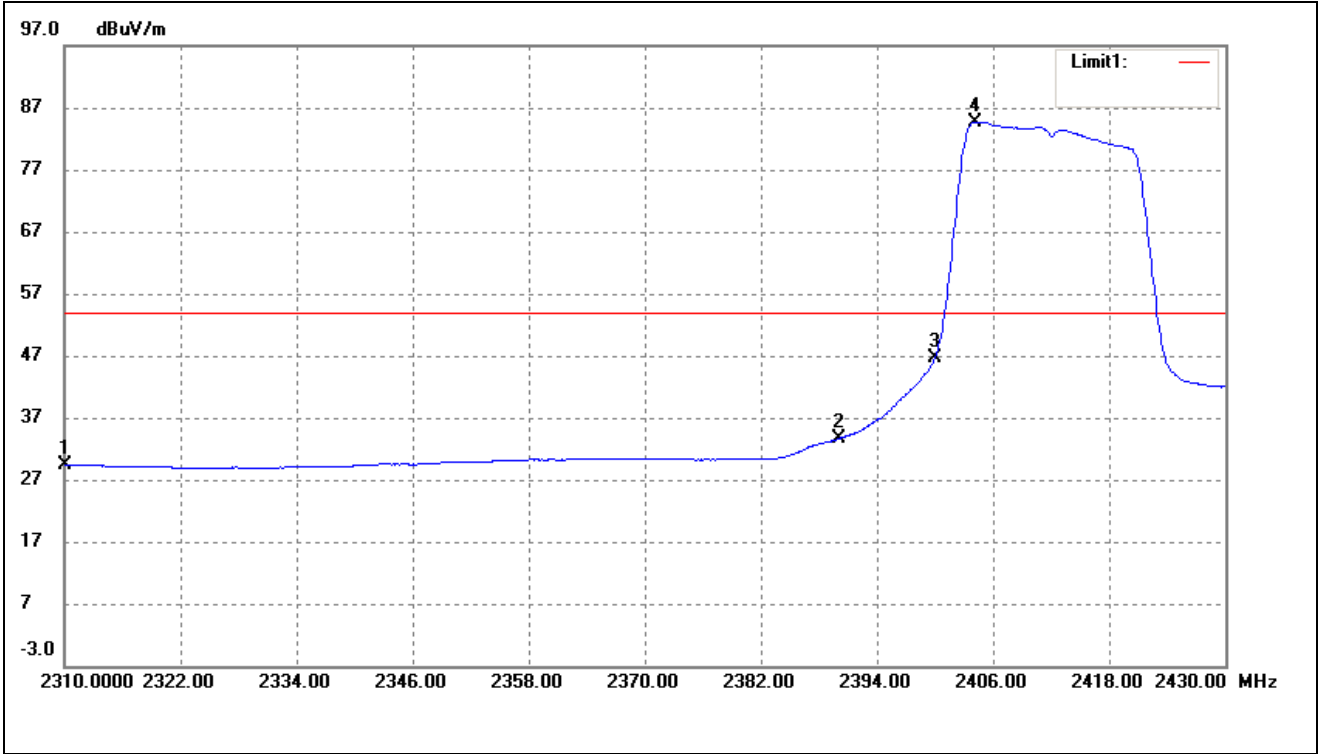
Vertical (Worst case)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2	2463.350	85.83	-3.16	82.67	/	/	Average Detector
	2463.700	98.03	-3.16	94.87	/	/	Peak Detector
1	2483.500	Delta = 48.78dBc		33.89	54.00	-20.11	Average Detector
	2483.500			46.09	74.00	-27.91	Peak Detector
3	2500.000	33.55	-2.88	30.67	54.00	-23.33	Average Detector
	2500.000	46.13	-2.88	43.25	74.00	-30.75	Peak Detector

802.11n-HT20-Lowest Bandedge

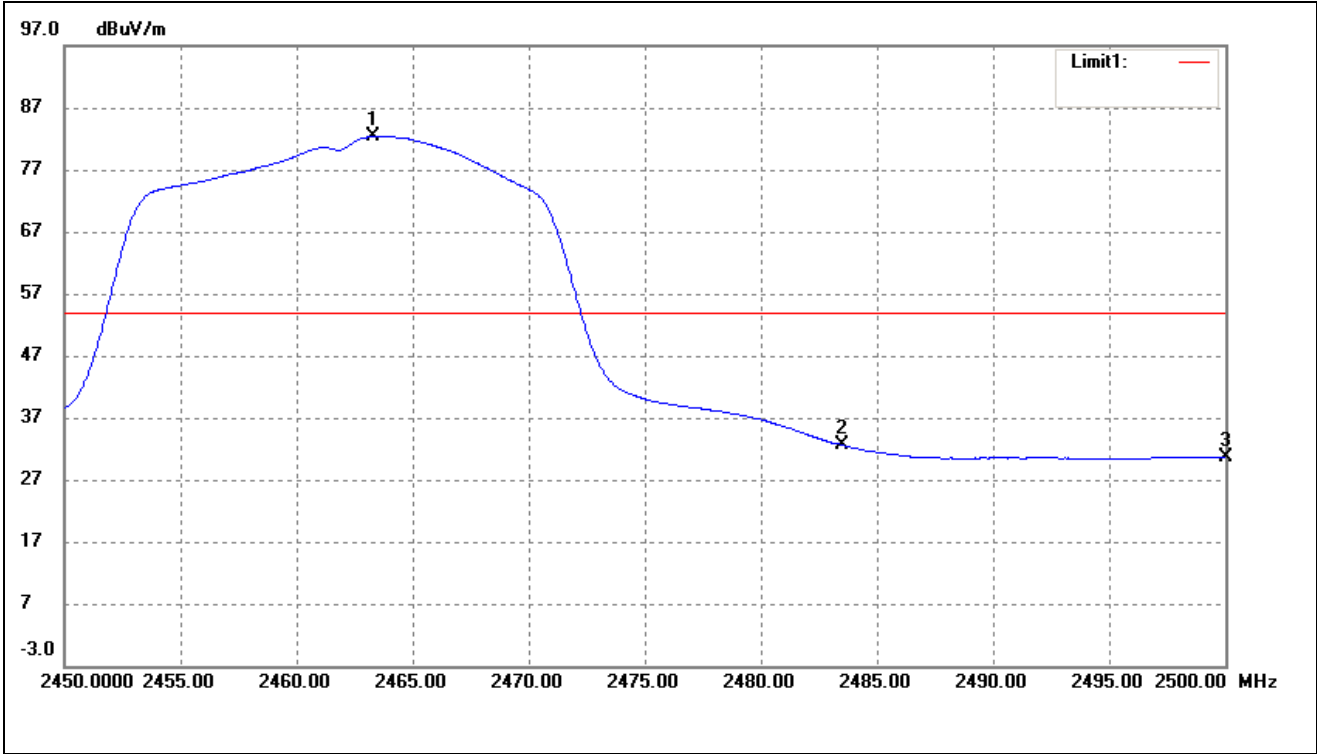
Vertical (Worst case)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2310.000	33.81	-4.42	29.39	54.00	-24.61	Average Detector
		45.57	-4.42	41.15	74.00	-32.85	Peak Detector
2	2390.000	37.35	-3.72	33.63	54.00	-20.37	Average Detector
		52.63	-3.72	48.91	74.00	-25.09	Peak Detector
3	2400.000	50.36	-3.64	46.72	54.00	-7.28	Average Detector
		64.00	-3.64	60.36	74.00	-13.64	Peak Detector

802.11n-HT20-Highest Bandedge

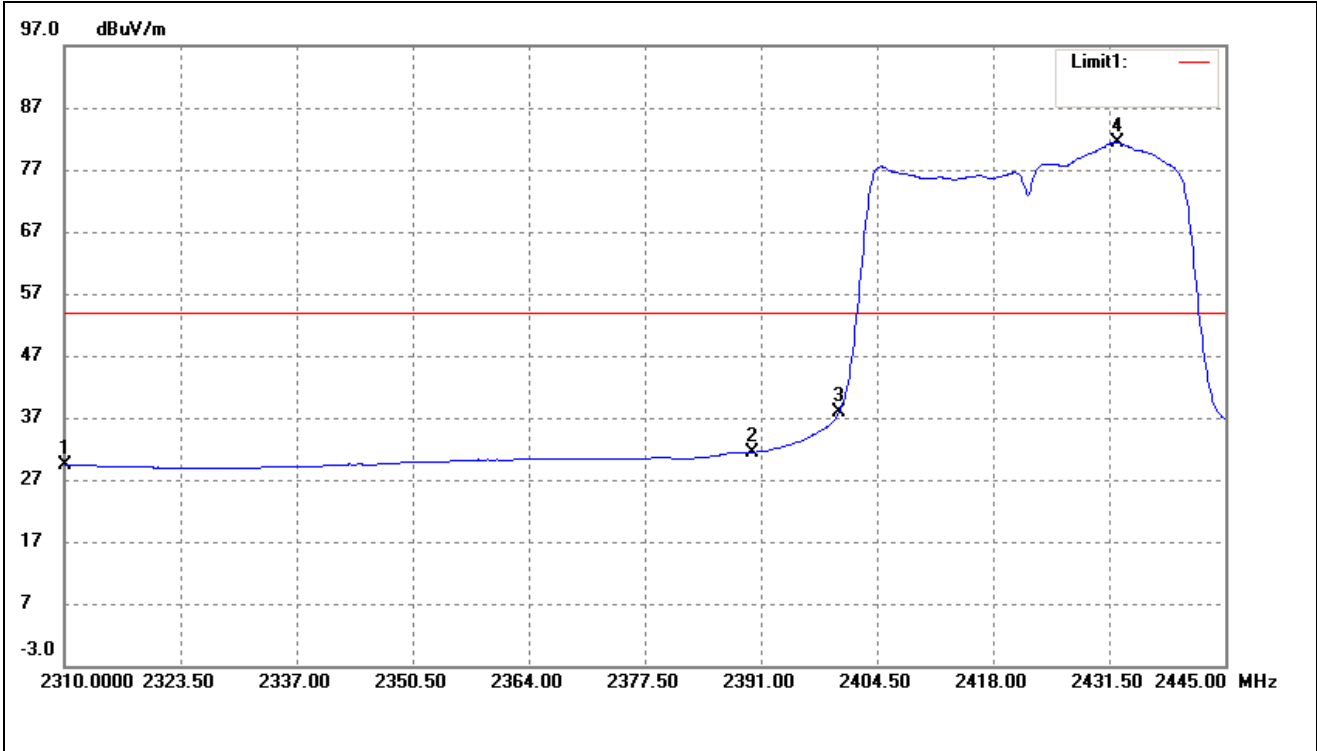
Vertical (Worst case)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2463.300	85.49	-3.16	82.33	/	/	Average Detector
	2463.300	96.27	-3.16	93.11	/	/	Peak Detector
2	2483.500	Delta = 48.41dBc		33.92	54.00	-20.08	Average Detector
	2483.500	Delta = 48.41dBc		44.7	74.00	-29.3	Peak Detector
3	2500.000	33.62	-2.88	30.74	54.00	-23.26	Average Detector
	2500.000	45.89	-2.88	43.01	74.00	-30.99	Peak Detector

802.11n-HT40-Lowest Bandedge

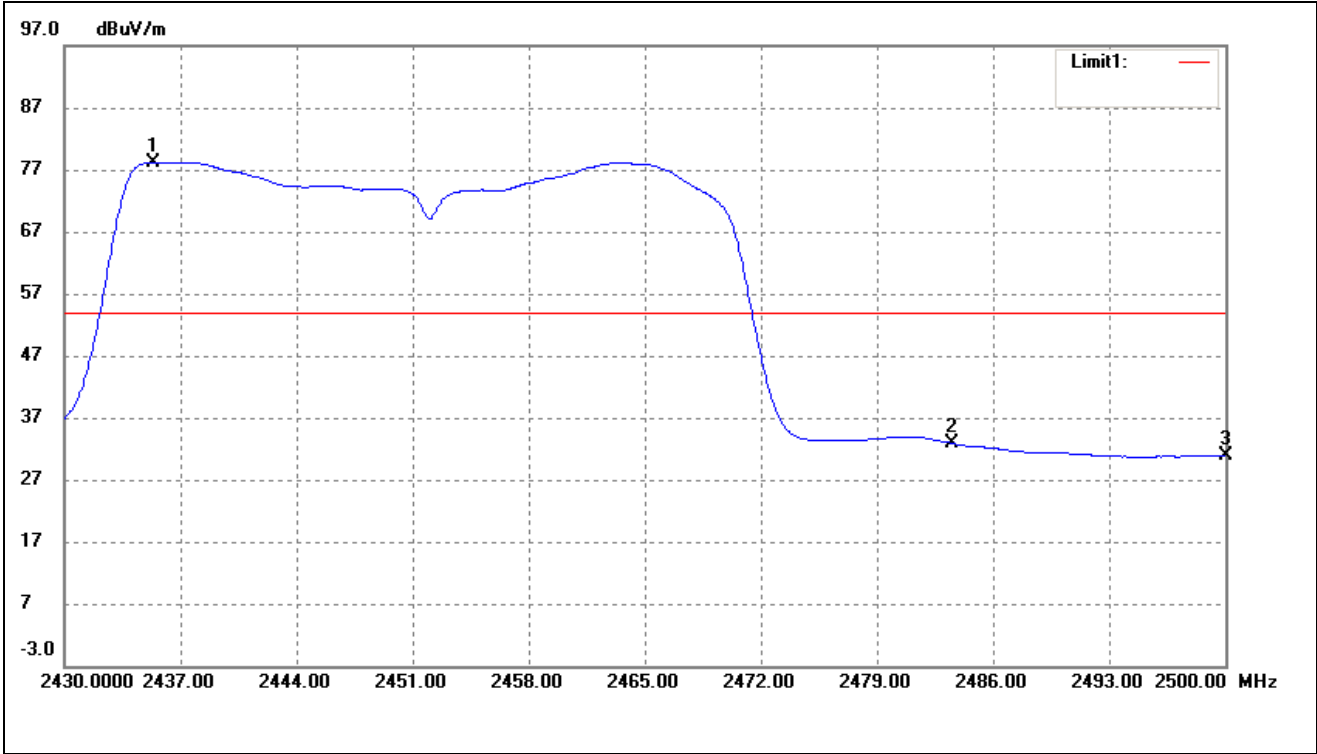
Vertical (Worst case)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2310.000	33.80	-4.42	29.38	54.00	-24.62	Average Detector
		45.65	-4.42	41.23	74.00	-32.77	Peak Detector
2	2390.000	35.20	-3.72	31.48	54.00	-22.52	Average Detector
		47.24	-3.72	43.52	74.00	-30.48	Peak Detector
3	2400.000	41.49	-3.64	37.85	54.00	-16.15	Average Detector
		55.93	-3.64	52.29	74.00	-21.71	Peak Detector

802.11n-HT40-Highest Bandedge

Vertical (Worst case)

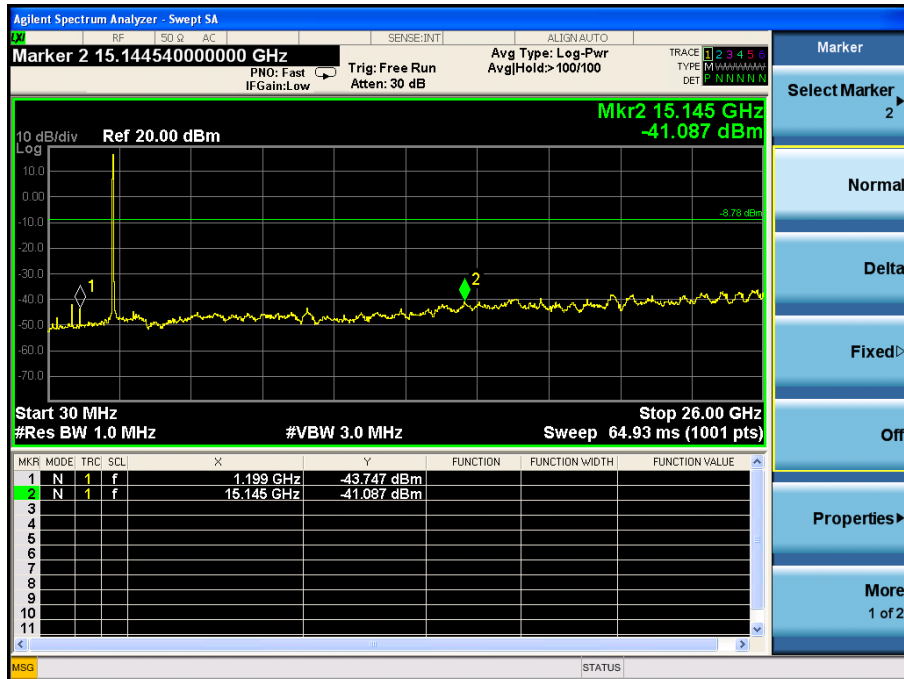
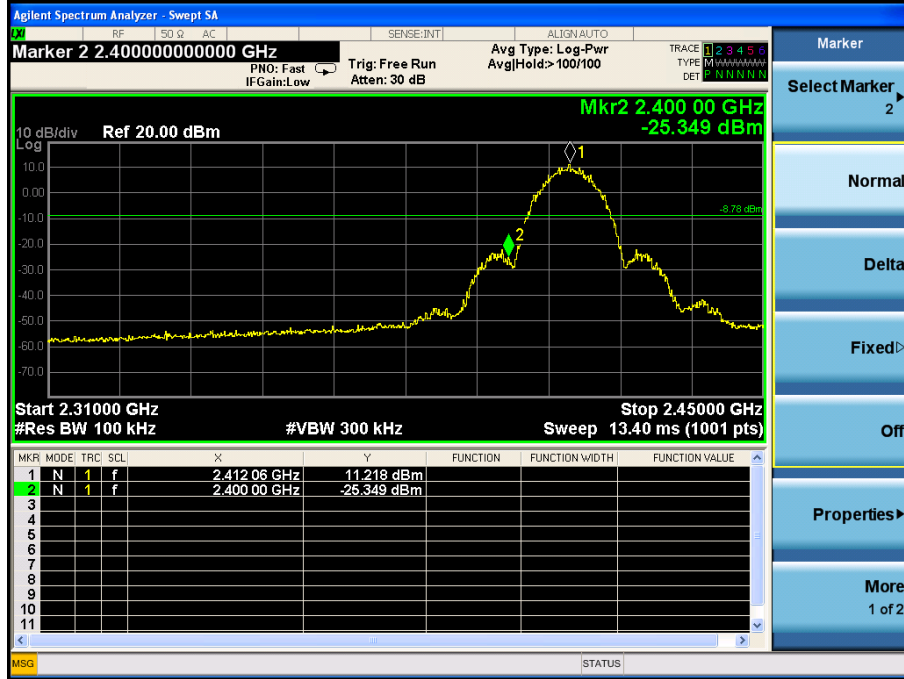


No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
3	2435.320	81.62	-3.37	78.25	/	/	Average Detector
	2434.760	92.68	-3.38	89.30	/	/	Peak Detector
1	2483.500	Delta = 45.24dBc		33.01	54.00	-20.99	Average Detector
	2483.500			44.06	74.00	-29.94	Peak Detector
2	2500.000	33.81	-2.88	30.93	54.00	-23.07	Average Detector
	2500.000	44.87	-2.88	41.99	74.00	-32.01	Peak Detector

Spurious Emission (Conducted)

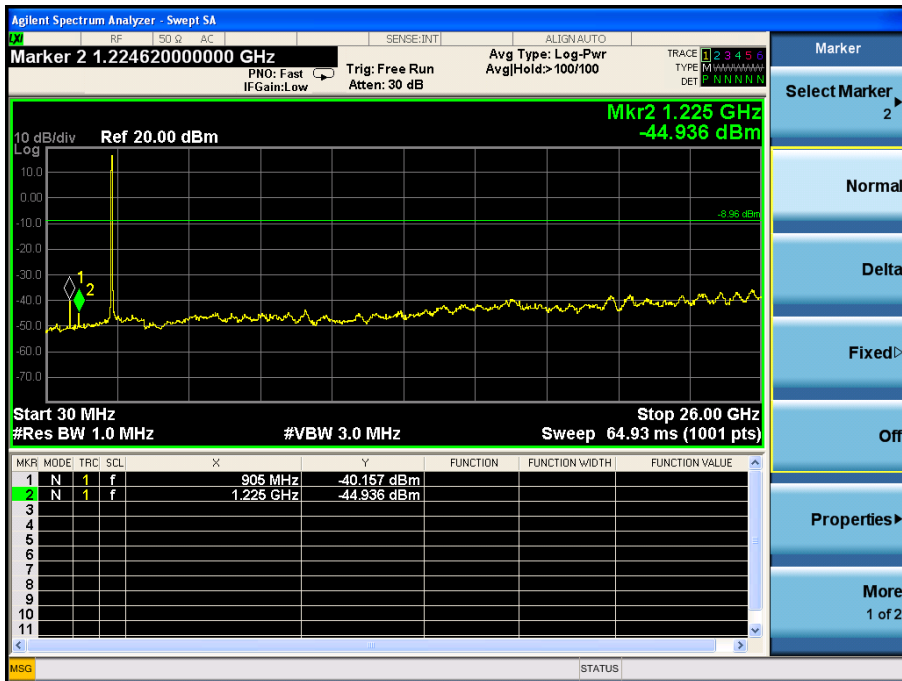
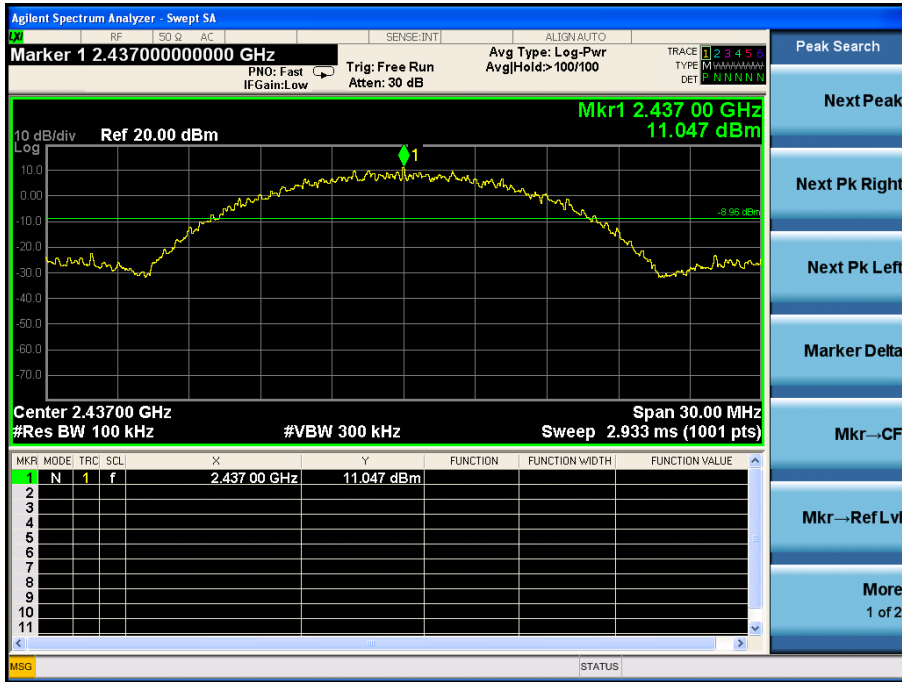
802.11b

Low Channel

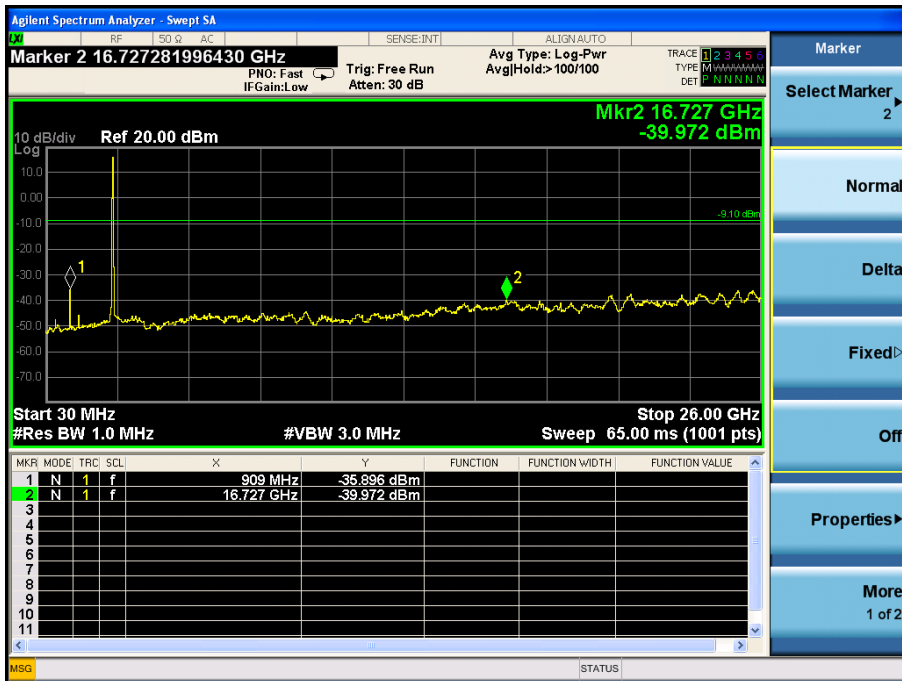
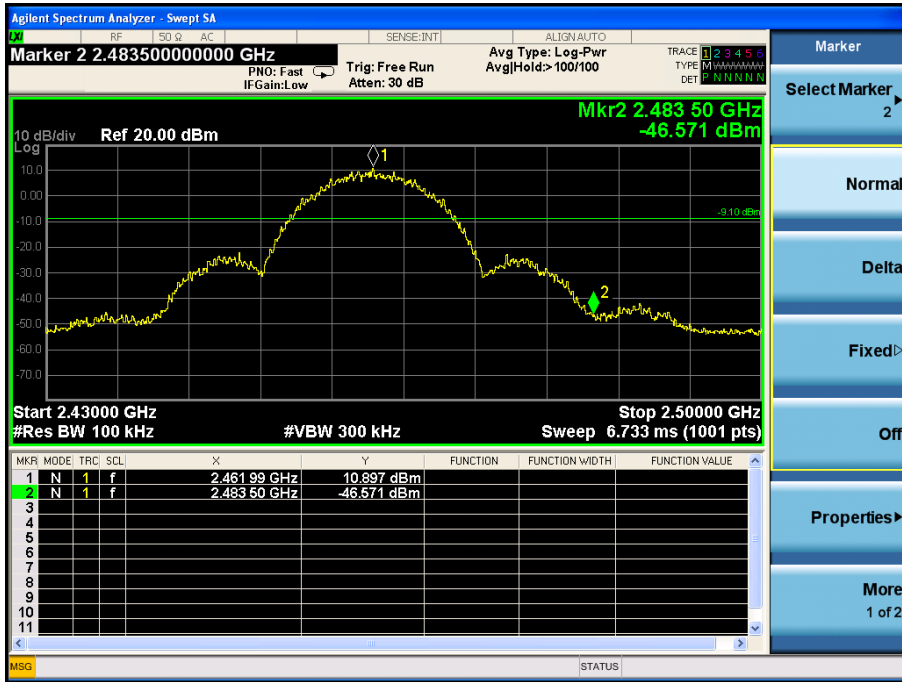




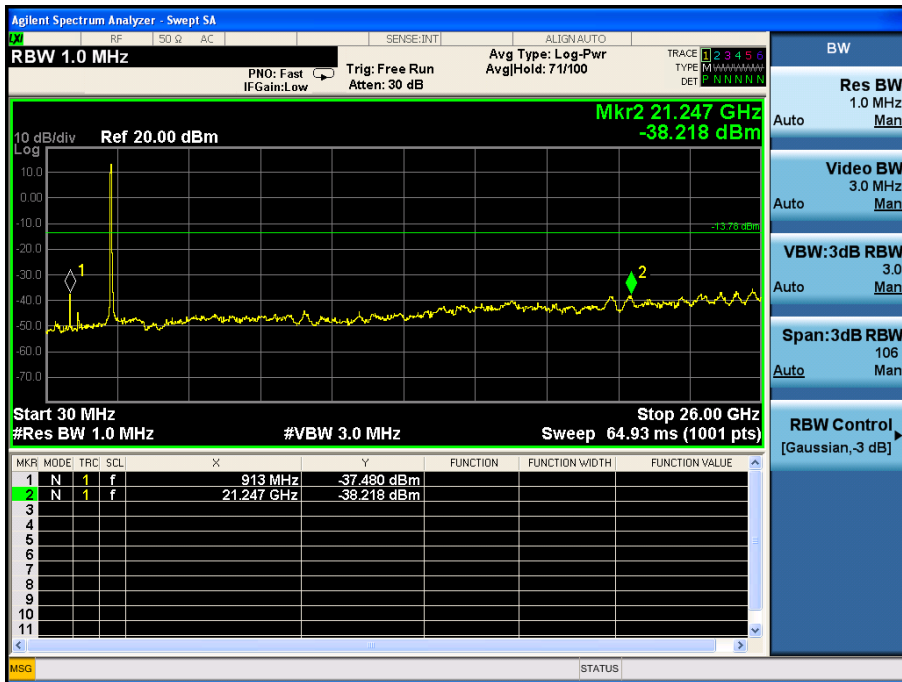
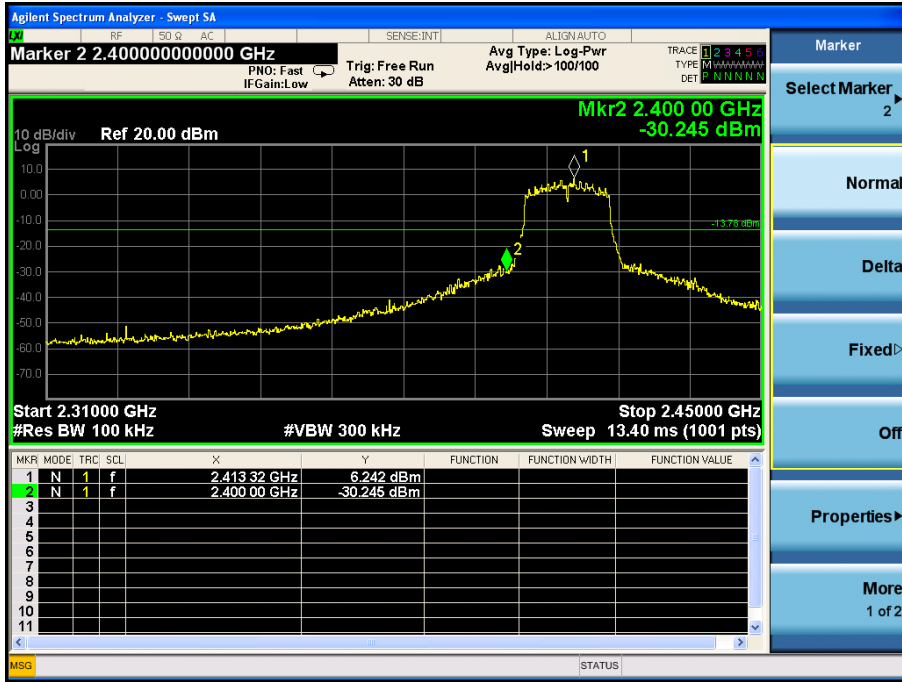
Middle Channel



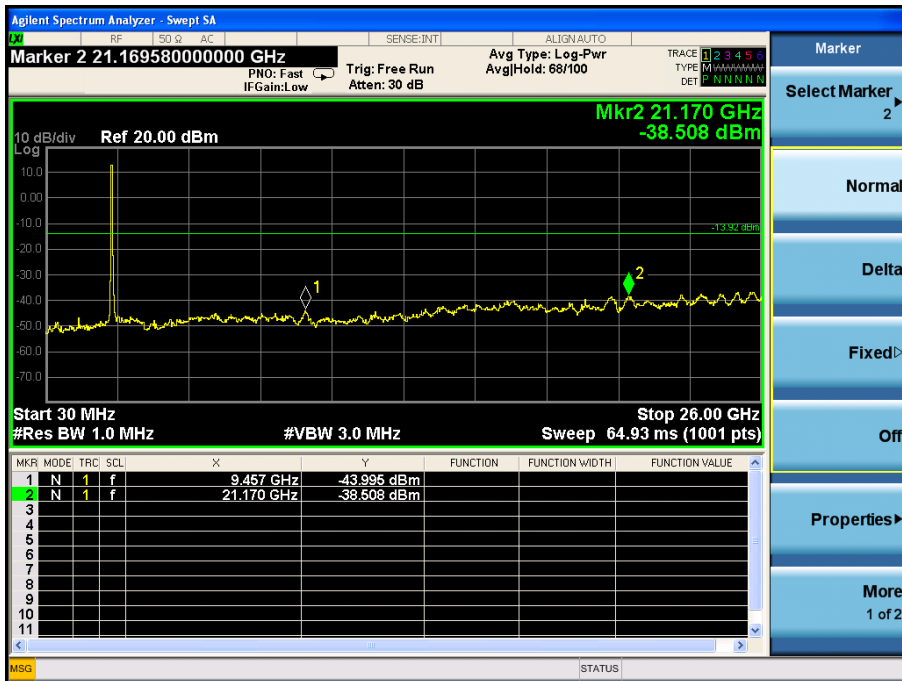
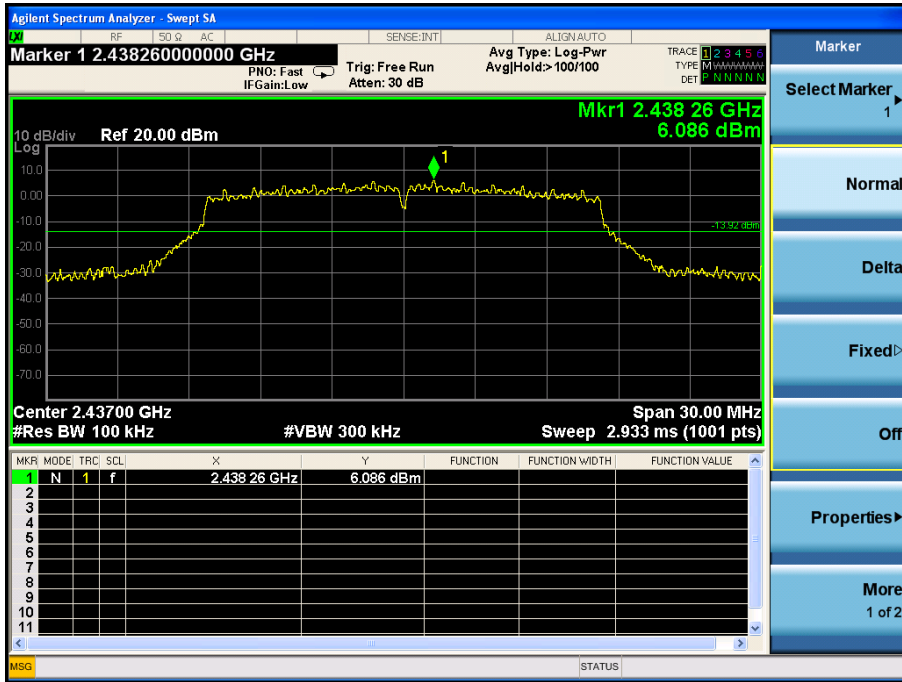
High Channel



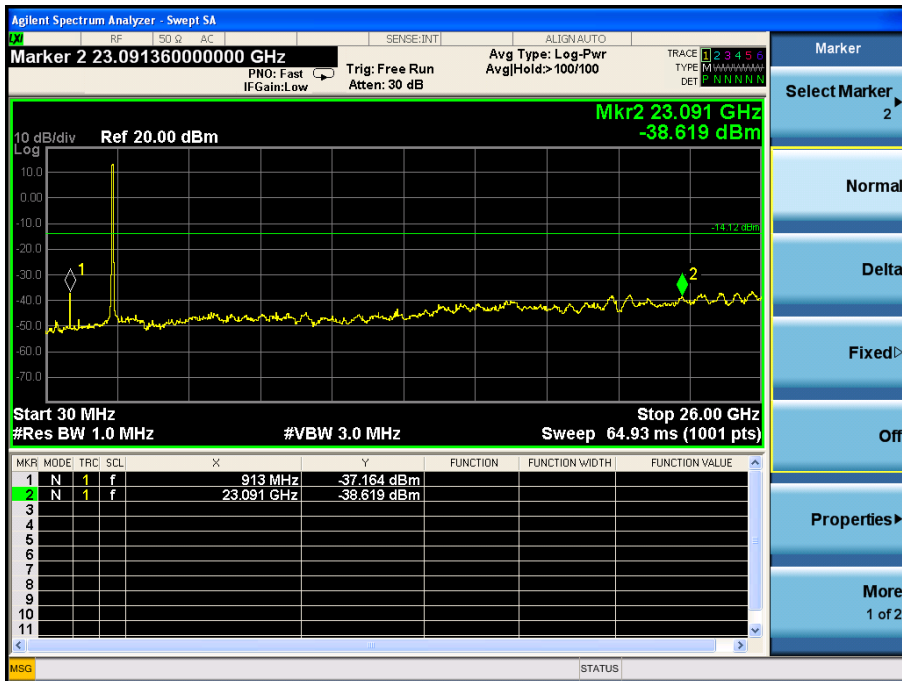
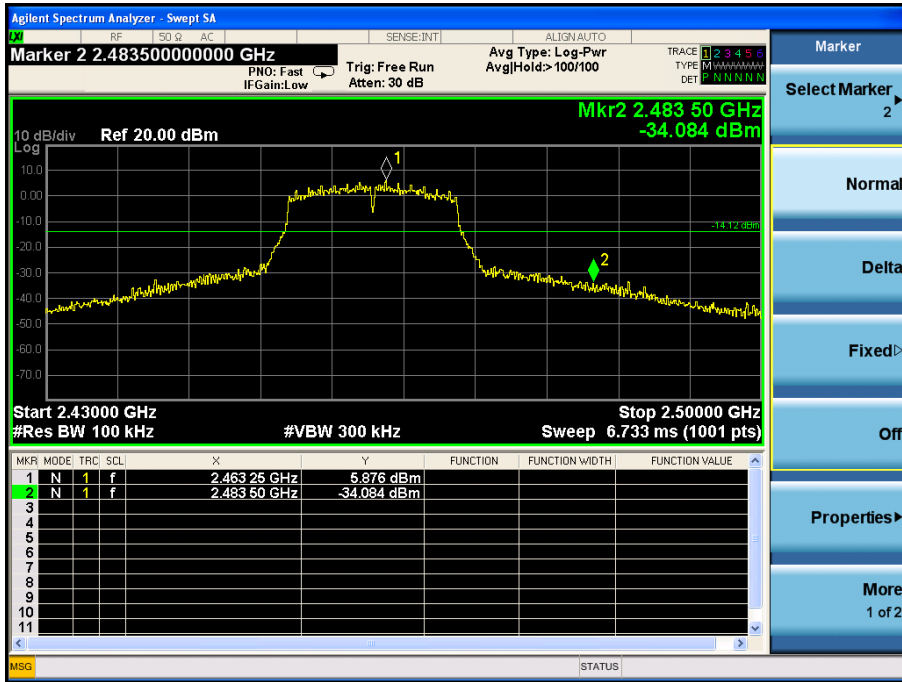
802.11g  
Low Channel



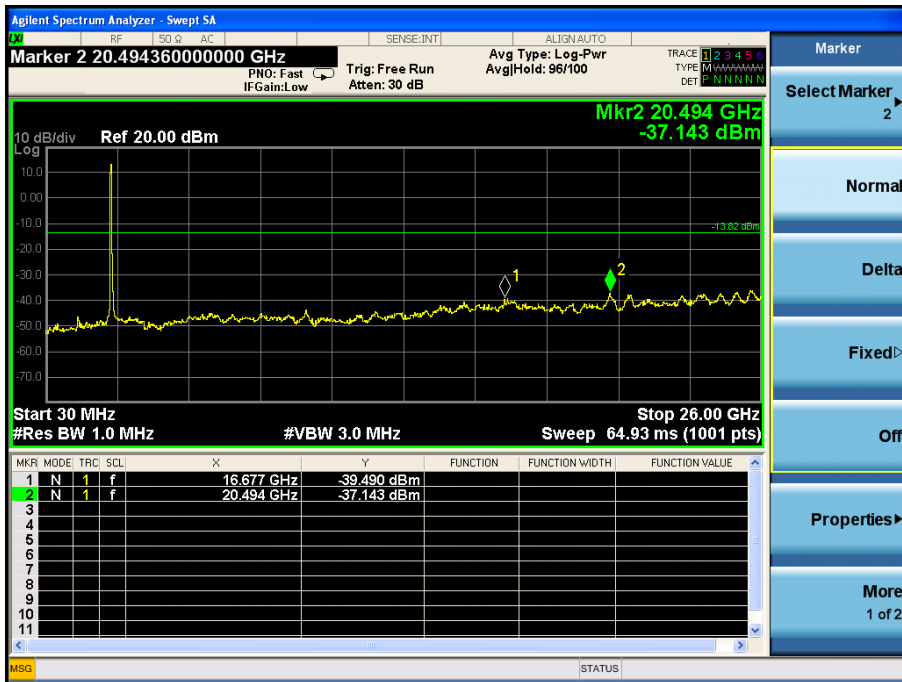
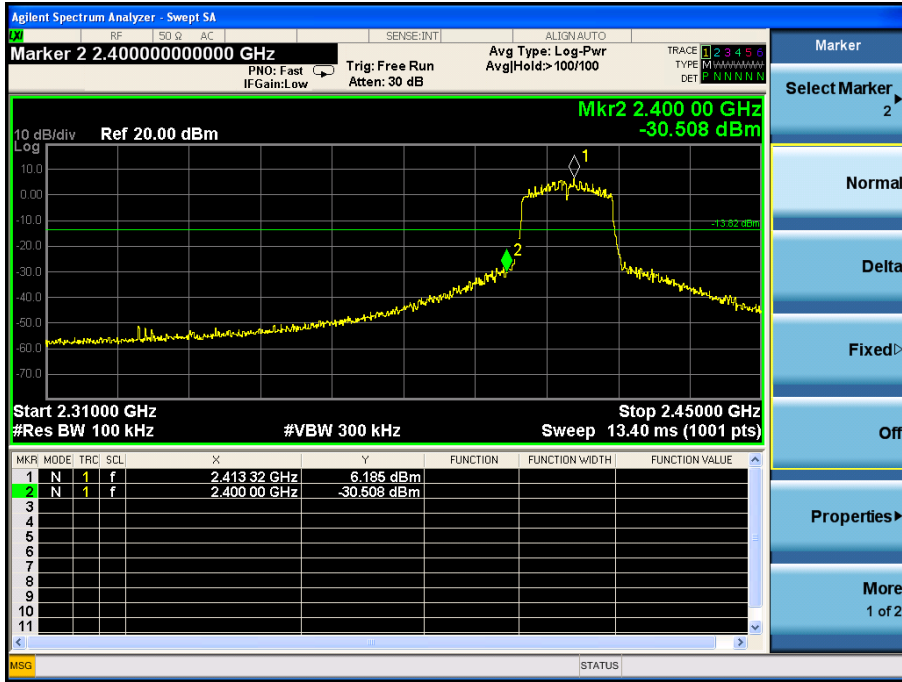
Middle Channel



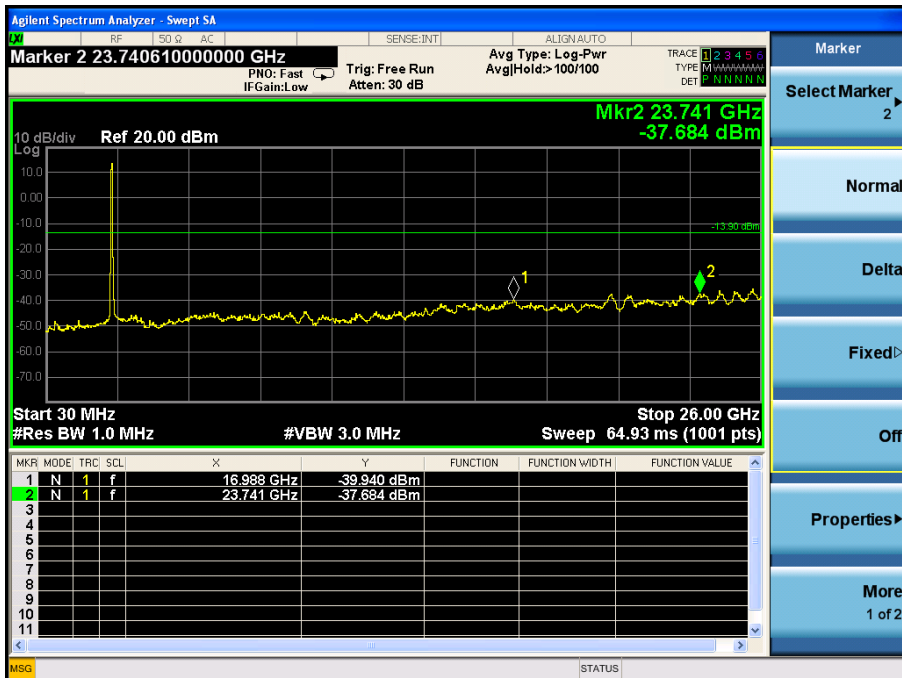
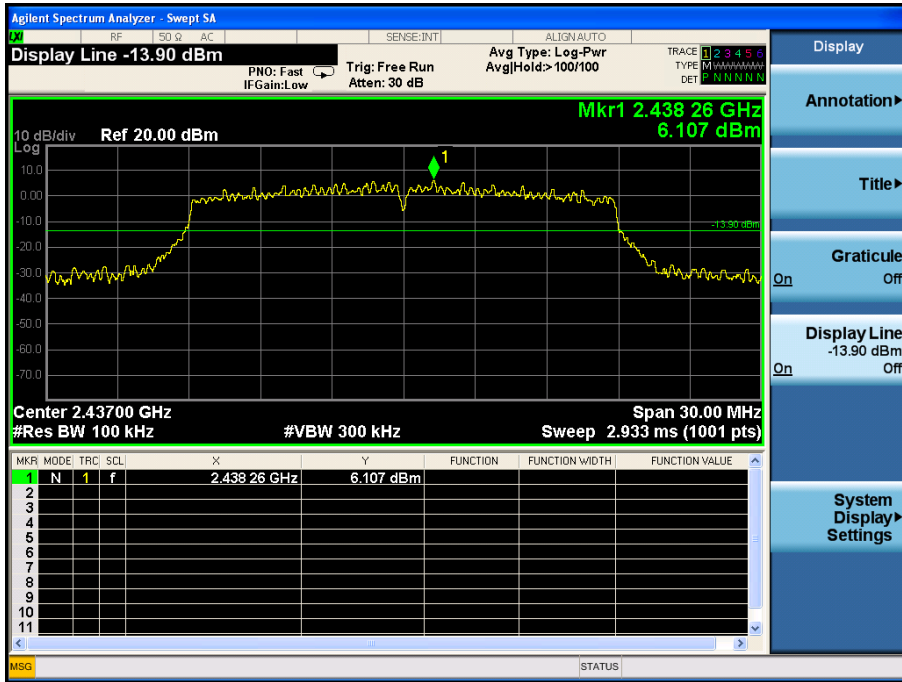
High Channel



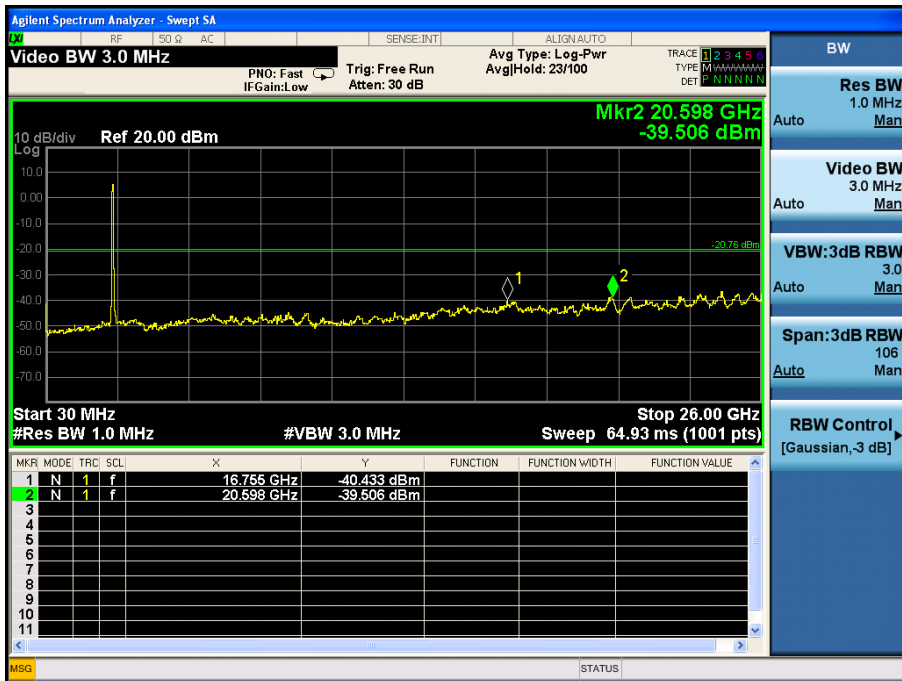
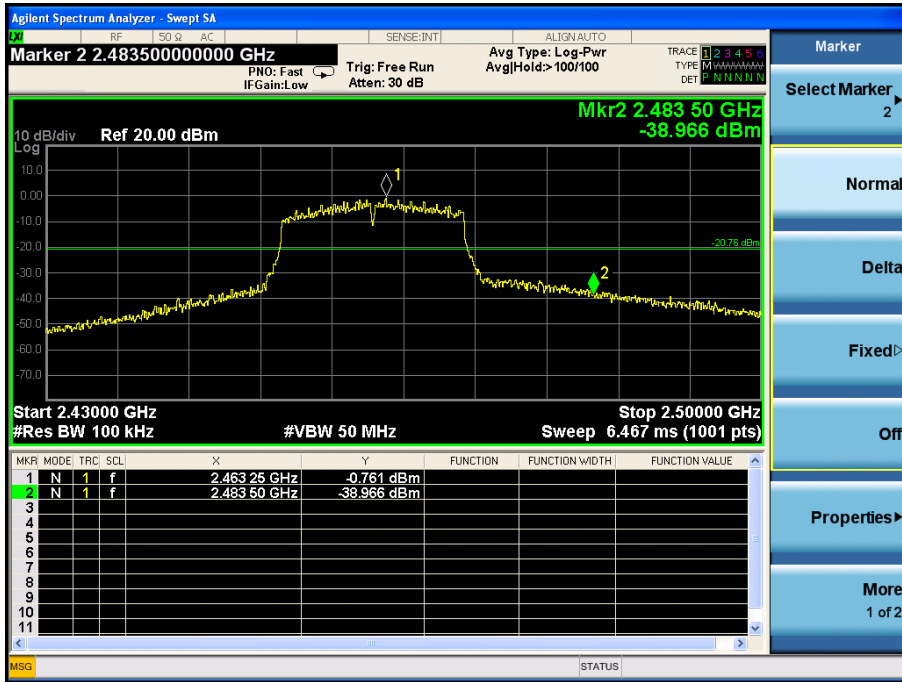
11n-HT20  
Low Channel



Middle Channel

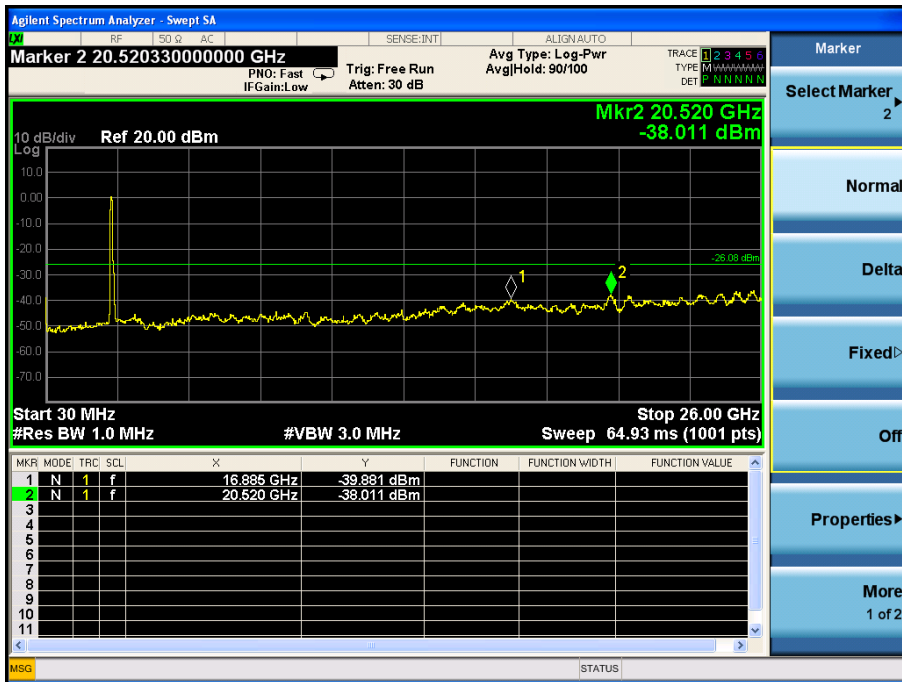
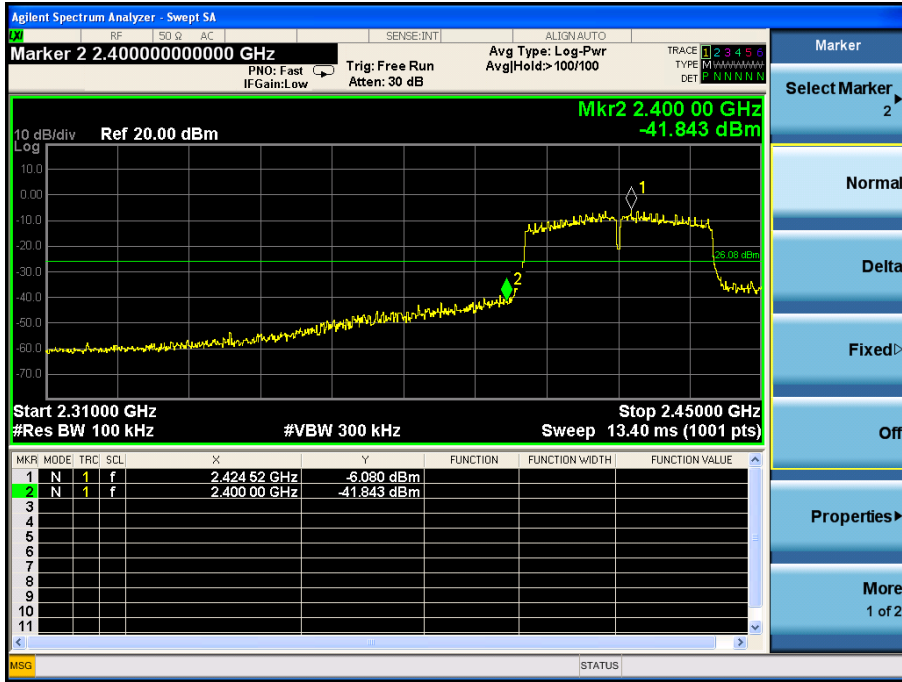


High Channel

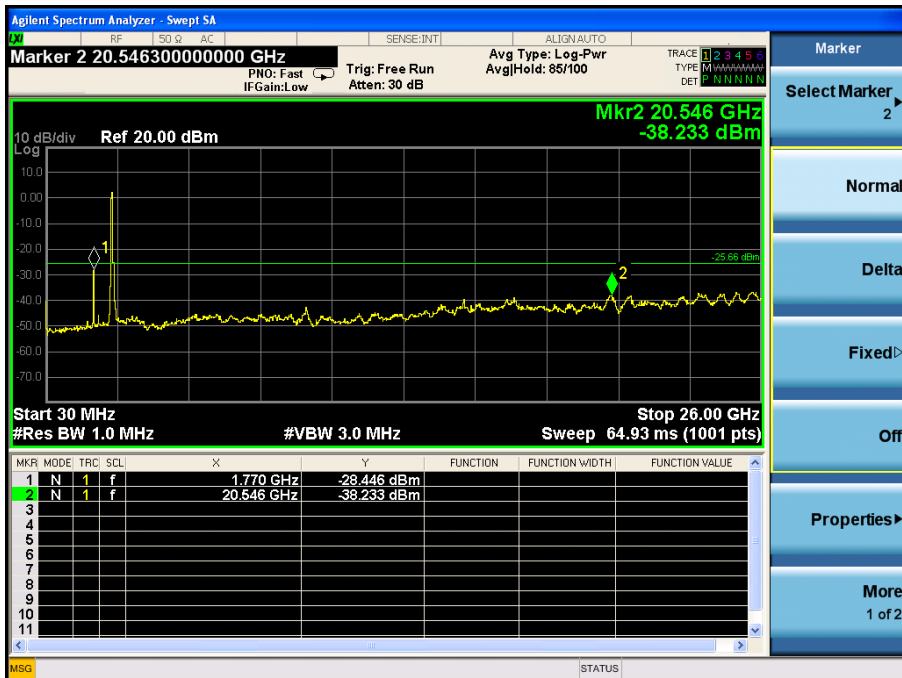
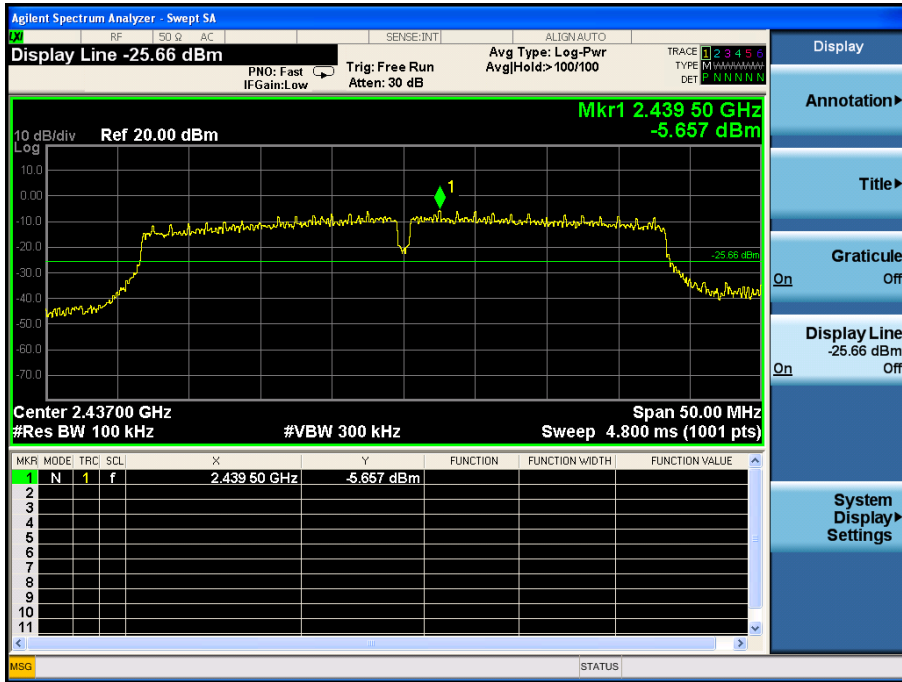




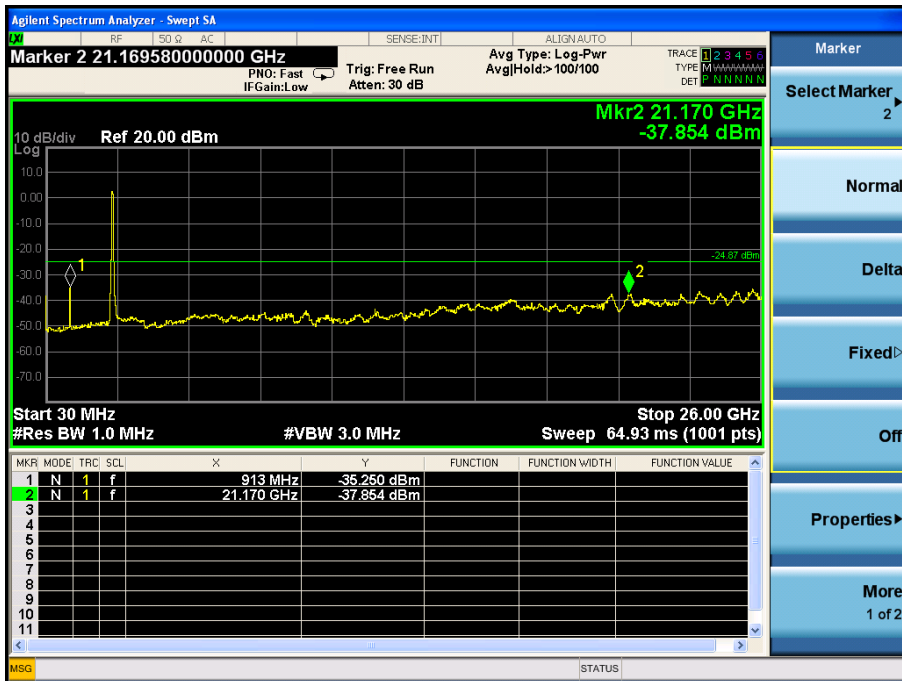
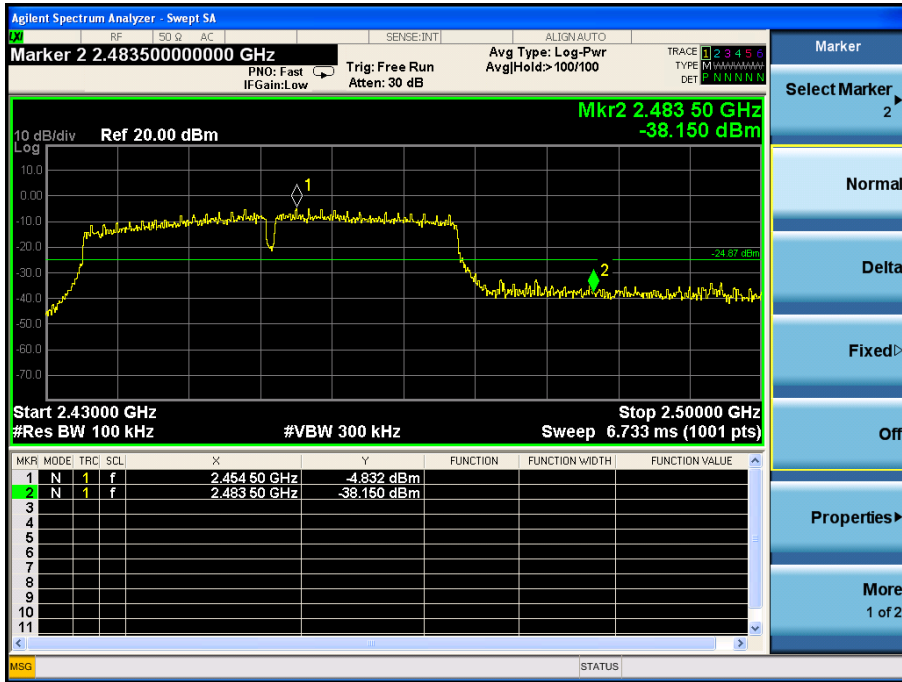
11n-HT40  
Low Channel



Middle Channel



High Channel



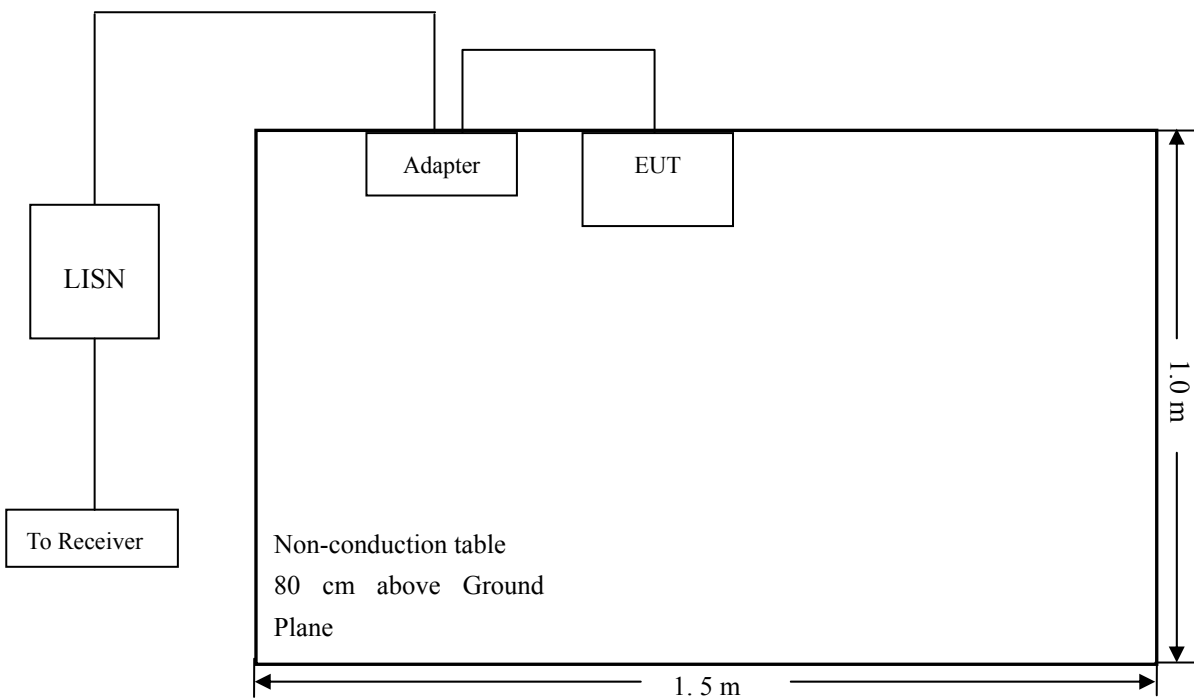
## 10. Conducted Emissions

### 10.1 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.

### 10.2 Basic Test Setup Block Diagram



### 10.3 Environmental Conditions

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

## 10.4 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

## 10.5 Summary of Test Results/Plots

According to the data in section 10.6, the EUT complied with the FCC Part 15.207 Conducted margin for this device, with the *worst* margin reading of:

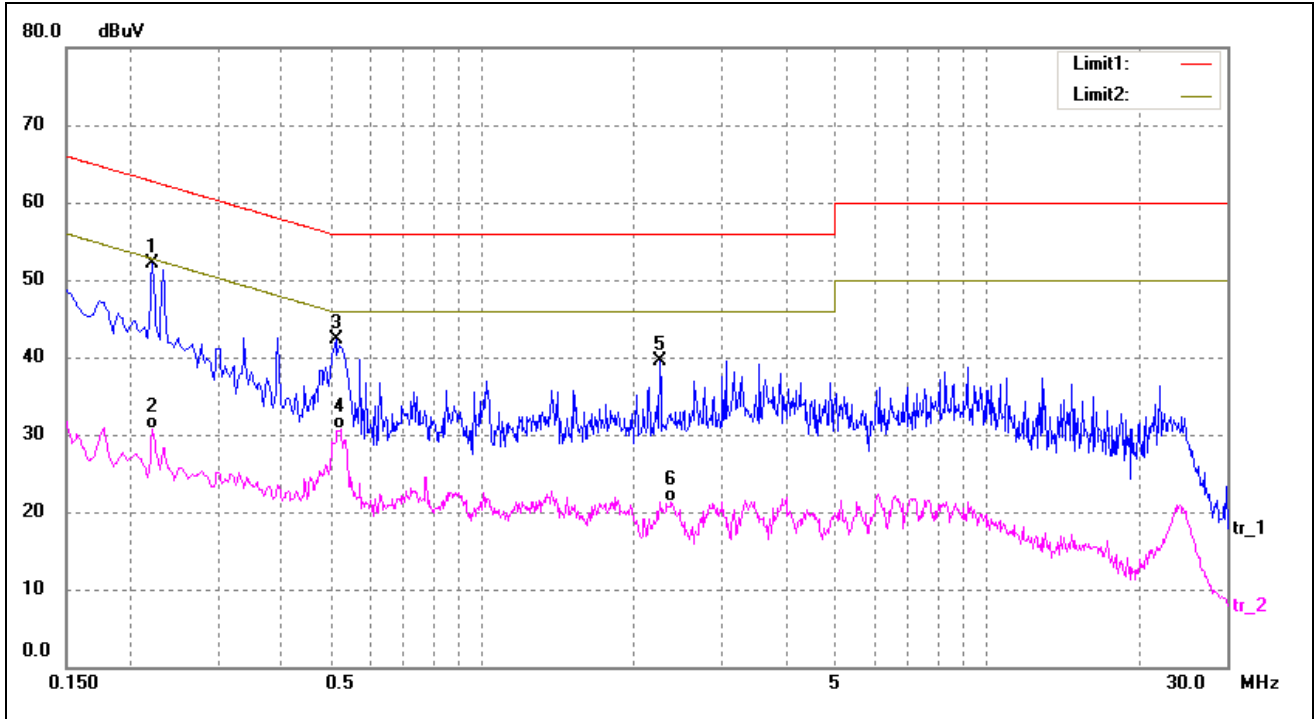
**-6.12 dB at 0.5220 MHz in the Line mode, Peak detector, 0.15-30MHz**

## 10.6 Conducted Emissions Test Data

**Plot of Conducted Emissions Test Data**

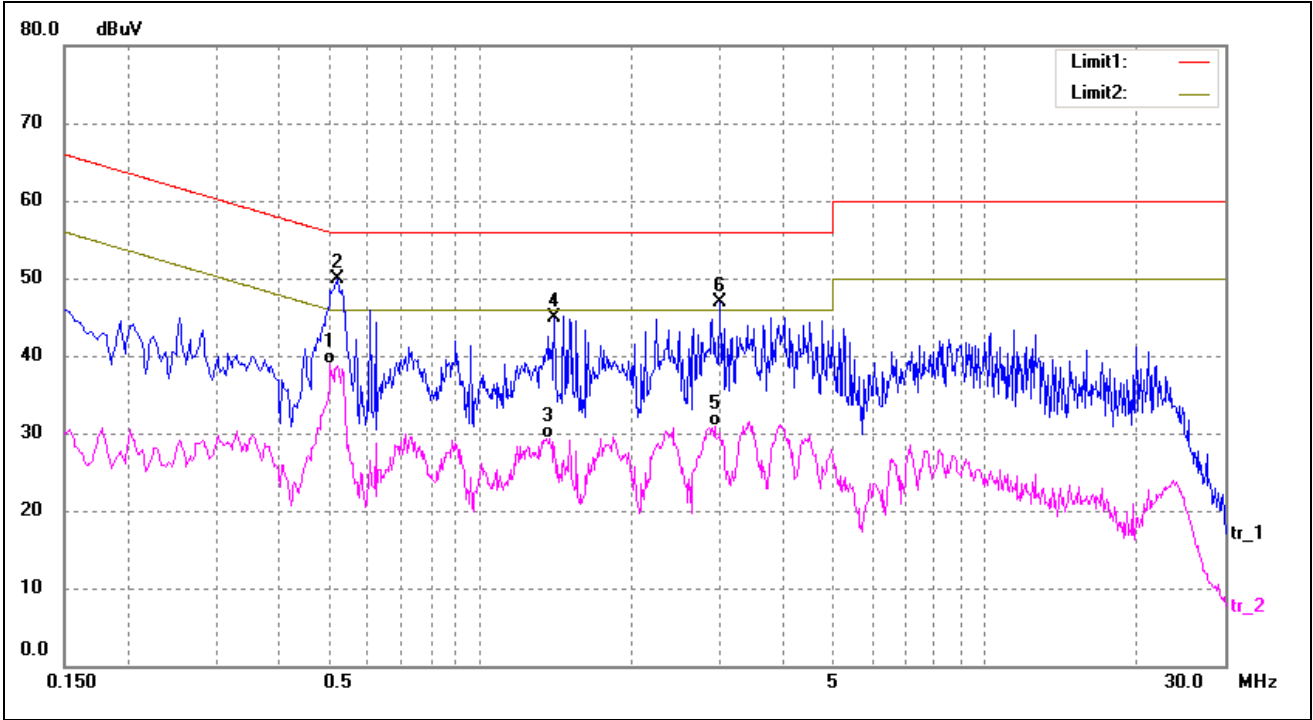
EUT: *Wireless Audio Module*  
 Tested Model: *A31*  
 Operating Condition: *Transmitting(Wi-Fi)*  
 Comment: *AC120V/60Hz; Adapter DC 5V*

Test Specification: *Neutral*



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.2220	42.63	9.50	52.13	62.74	-10.61	peak
2	0.2220	21.18	9.50	30.68	52.74	-22.06	AVG
3	0.5140	32.81	9.56	42.37	56.00	-13.63	peak
4	0.5260	21.06	9.57	30.63	46.00	-15.37	AVG
5	2.2540	29.58	9.86	39.44	56.00	-16.56	peak
6	2.3740	11.35	9.87	21.22	46.00	-24.78	AVG

Test Specification: Line



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.5060	29.25	9.56	38.81	46.00	-7.19	AVG
2*	0.5220	40.31	9.57	49.88	56.00	-6.12	peak
3	1.3740	19.65	9.73	29.38	46.00	-16.62	AVG
4	1.4060	35.25	9.74	44.99	56.00	-11.01	peak
5	2.9260	20.93	9.95	30.88	46.00	-15.12	AVG
6	3.0060	36.94	9.96	46.90	56.00	-9.10	peak

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