

FCC Part 15C Measurement and Test Report

For

LM Technologies Ltd.

Unit19, Spectrum House, 32-34, Gordon House Road, London, NW5 1LP,

United Kingdom

FCC ID: VVX-816-0648

FCC Rule(s): FCC Part 15C

Product Description: LM816 802.11n USB Adapter 150Mbps

Tested Model: 816-0648

Report No.: STR16048077I-1

Tested Date: 2016-04-10 to 2016-04-26

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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: LM Technologies Ltd.
Address of applicant: Unit19, Spectrum House, 32-34, Gordon House Road, London, NW5 1LP, United Kingdom
Manufacturer: LM Technologies Ltd.
Address of manufacturer: Unit19, Spectrum House, 32-34, Gordon House Road, London, NW5 1LP, United Kingdom

General Description of EUT	
Product Name:	LM816 802.11n USB Adapter 150Mbps
Trade Name:	LM816 WLAN USB Adapter
Model No.:	816-0648
Adding Model(s):	/
Rated Voltage:	USB 5V
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:	17.52 dBm (Conducted)
Type of Modulation:	CCK, OFDM, QPSK, BPSK, 16QAM, 64QAM
Data Rate:	1-11Mbps, 6-54Mbps, up to 150Mbps
Quantity of Channels:	11 for 802.11b/g/n(HT20); 7 for 802.11n(HT40)
Channel Separation:	5MHz
Type of Antenna:	Integral
Antenna Gain:	1.8 dBi
Lowest Internal Frequency	40MHz

1.2 Test Standards

The following report is prepared on behalf of the LM Technologies 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 C63.10-2013, 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 2nd 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:

Test Mode List		
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

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

Special Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

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

1.6 Measurement Uncertainty

Measurement uncertainty		
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 Emissions	Conducted	$\pm 2.88\text{dB}$
Transmitter Spurious Emissions	Radiated	$\pm 5.1\text{dB}$

1.7 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

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

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

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

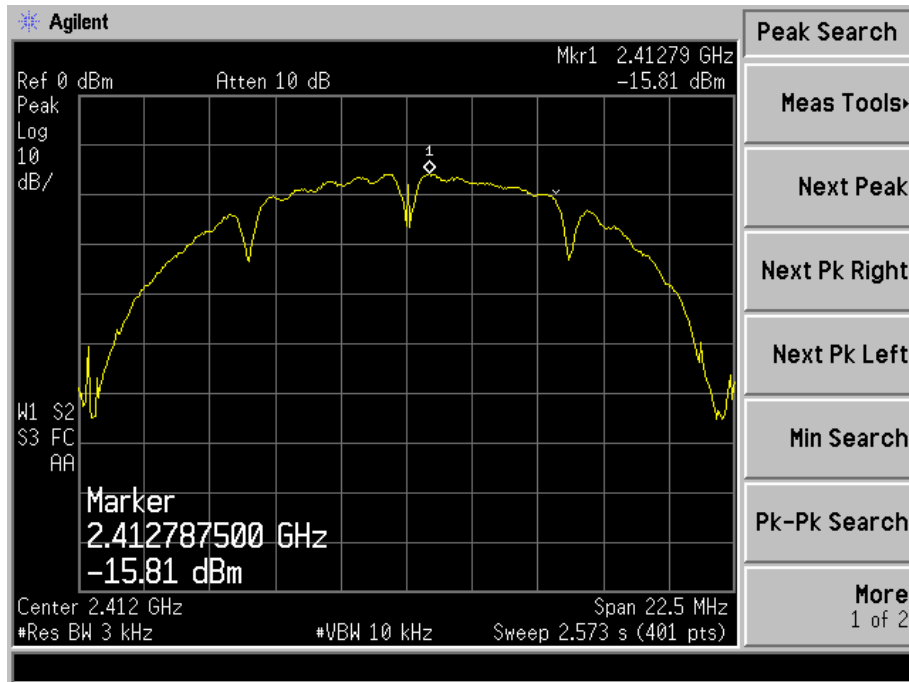
Temperature:	26° C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

5.4 Summary of Test Results/Plots

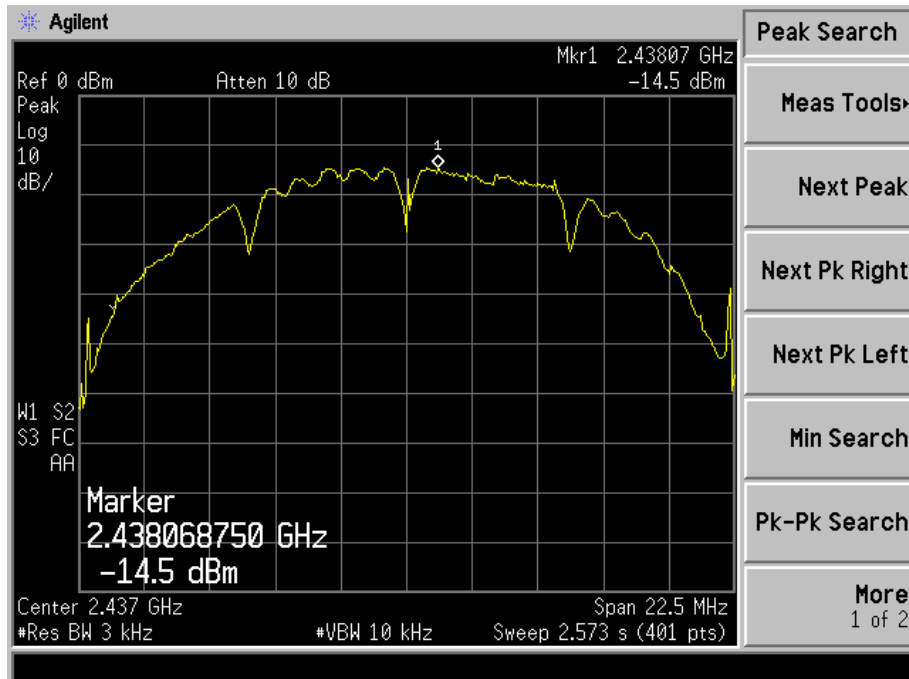
Test Mode	Test Channel MHz	Power Spectral Density dBm/3kHz	Limit dBm/3kHz
802.11b	2412	-15.81	8
	2437	-14.50	8
	2462	-14.35	8
802.11g	2412	-15.01	8
	2437	-13.69	8
	2462	-12.34	8
802.11n HT20	2412	-16.19	8
	2437	-14.41	8
	2462	-13.58	8
802.11n HT40	2422	-16.41	8
	2437	-15.40	8
	2452	-14.31	8

Please refer to the following test plots:

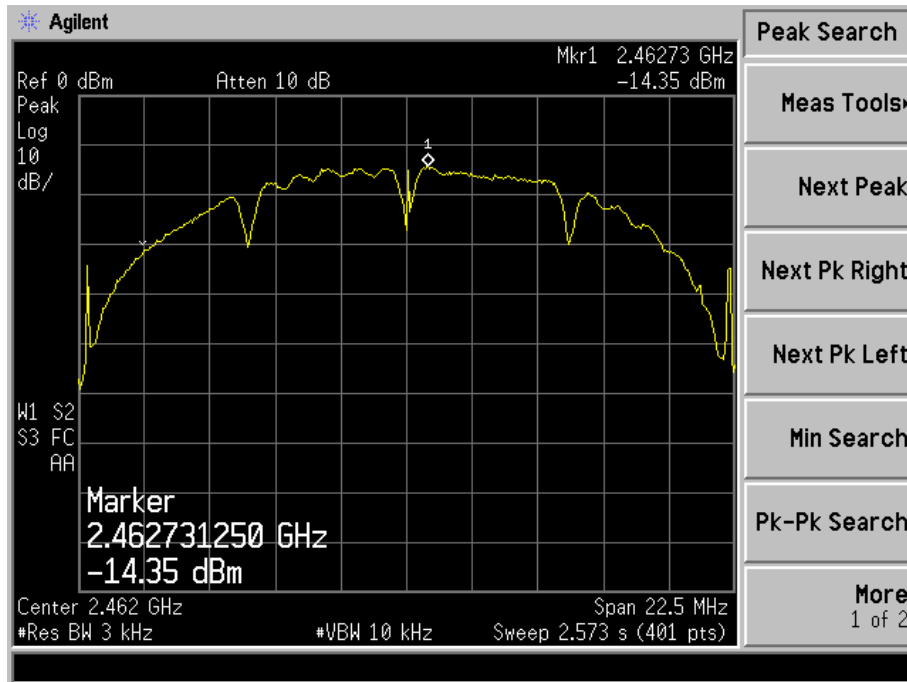
802.11b-Low Channel



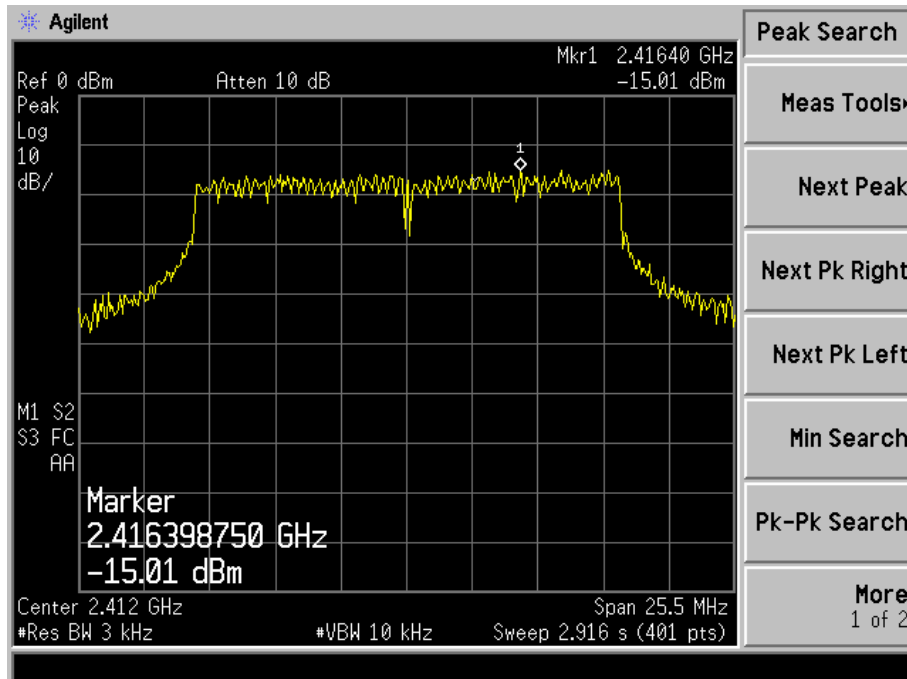
802.11b-Middle Channel



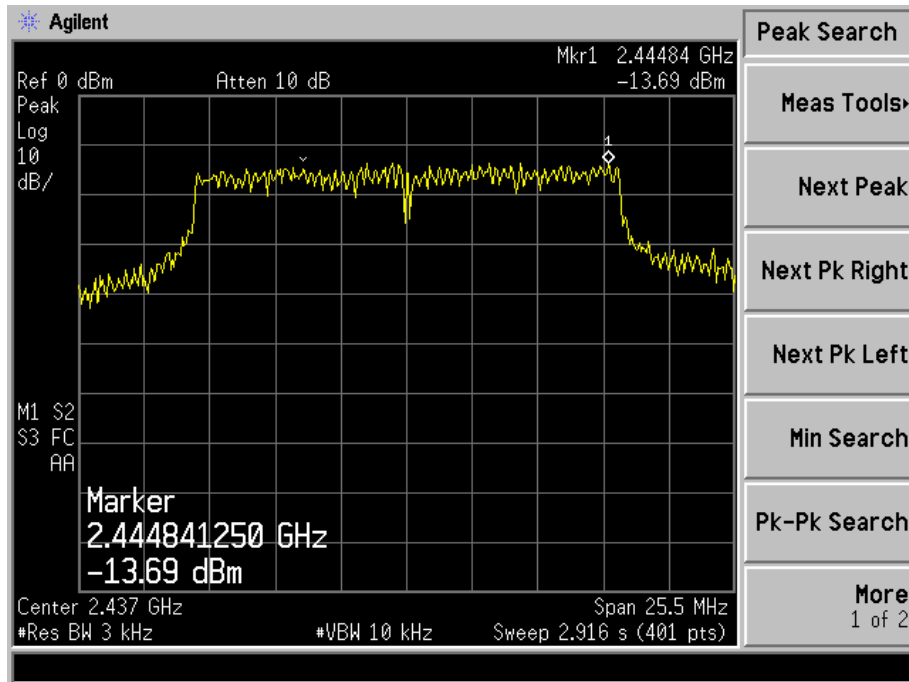
802.11b-High Channel



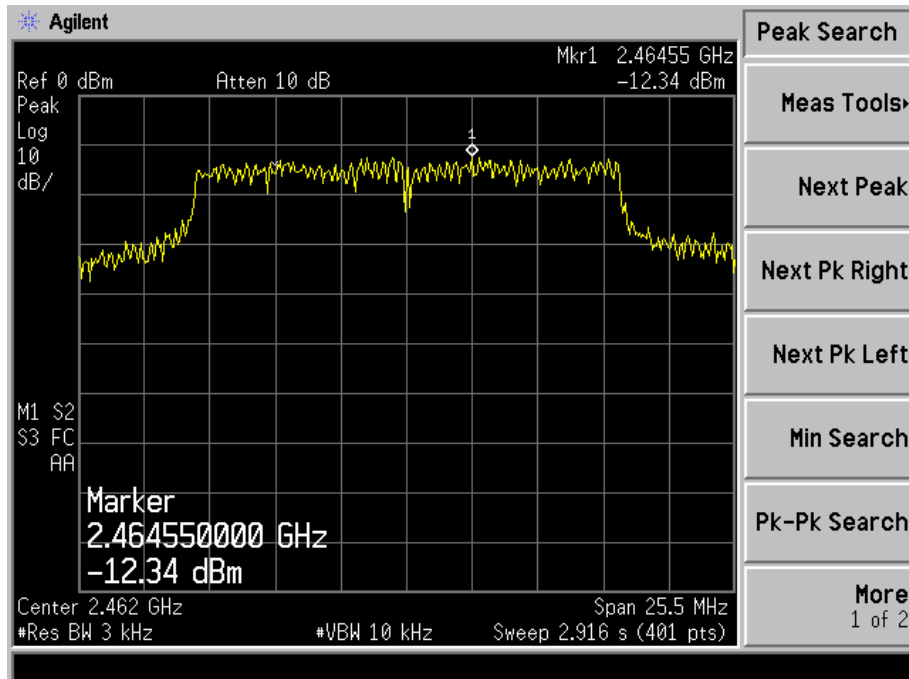
802.11g-Low Channel



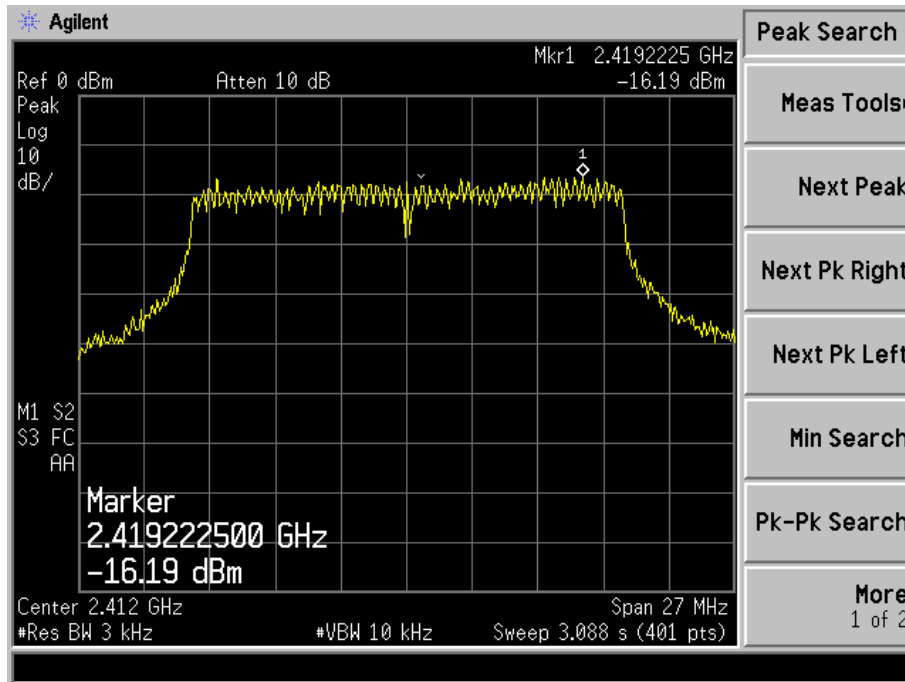
802.11g-Middle Channel



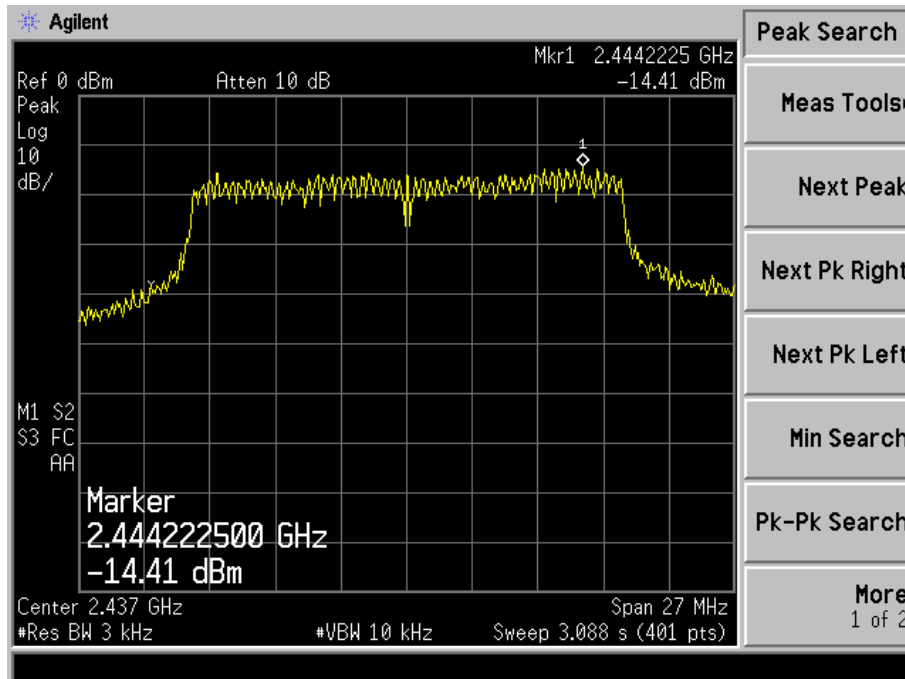
802.11g-High Channel



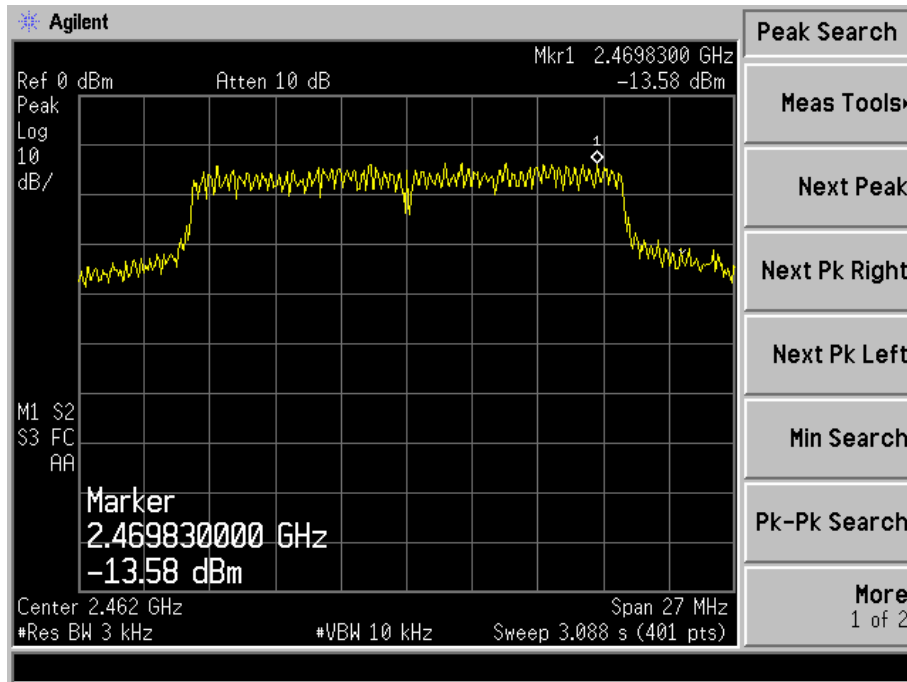
802.11n-HT20-Low Channel



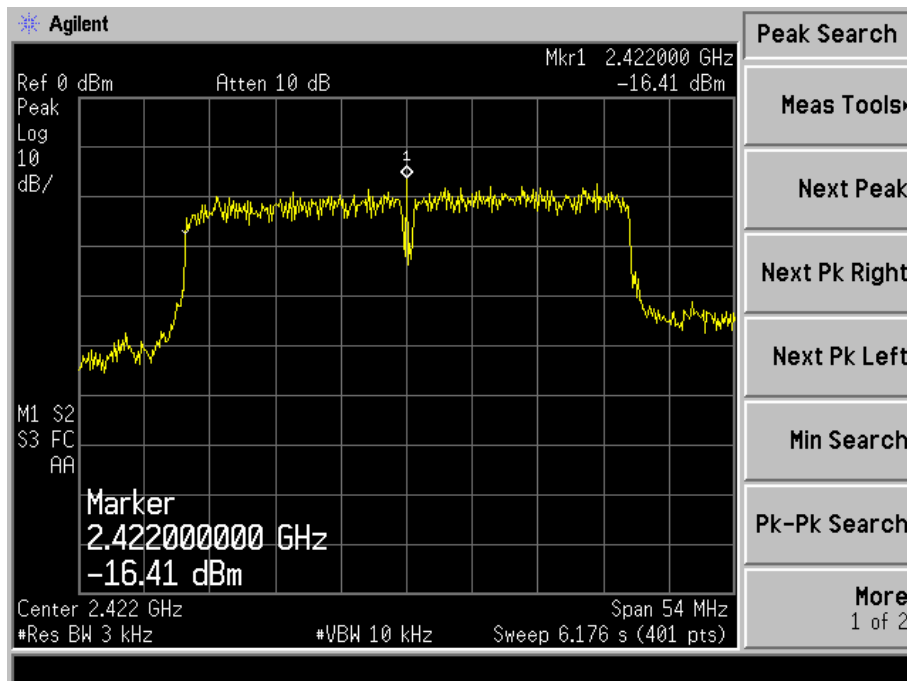
802.11n-HT20-Middle Channel



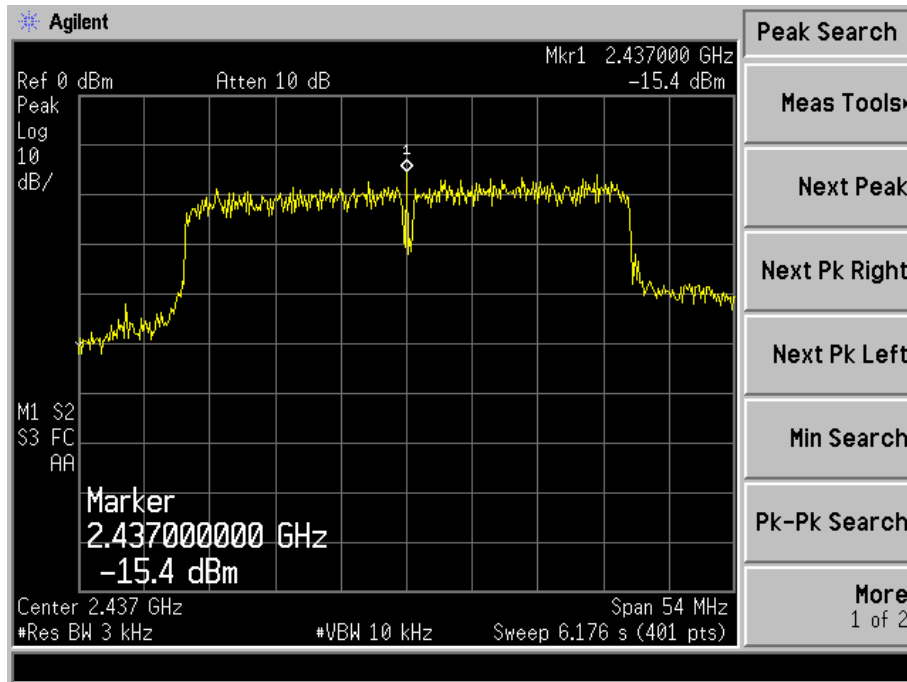
802.11n-HT20-High Channel



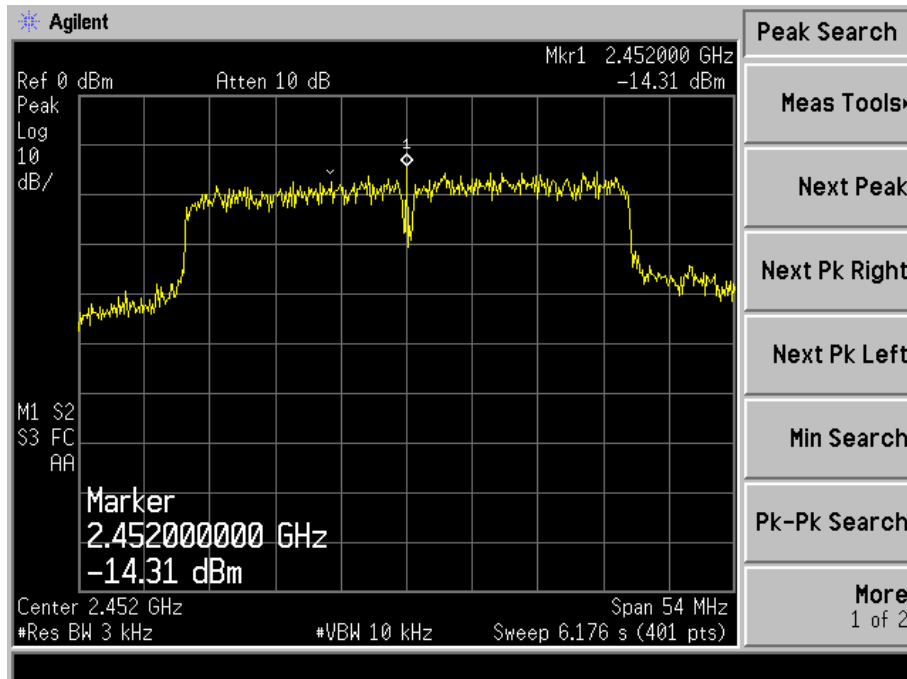
802.11n-HT40-Low Channel



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

- Set RBW = 100 kHz.
- Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
- Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Allow the trace to stabilize.
- 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

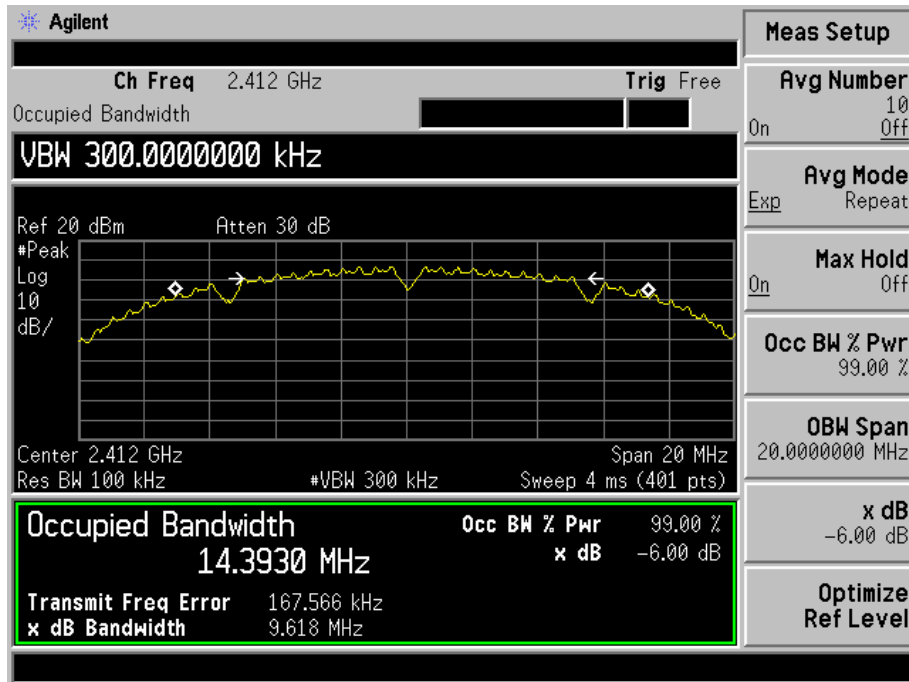
Temperature:	25° C
Relative Humidity:	53%
ATM Pressure:	1018 mbar

6.4 Summary of Test Results/Plots

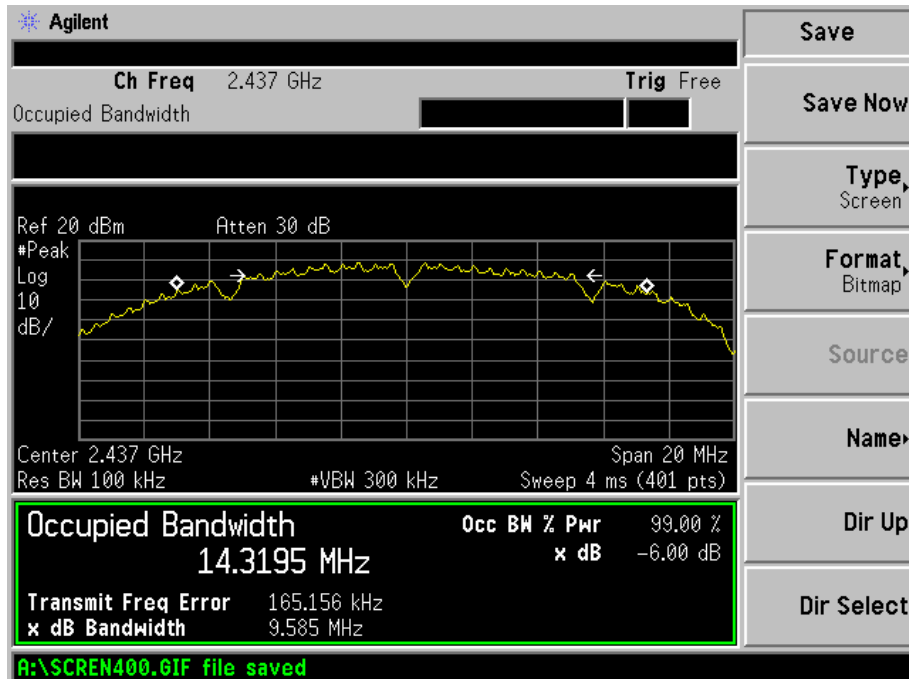
Test Mode	Test Channel MHz	6 dB Bandwidth kHz	99% Bandwidth kHz	Limit kHz
802.11b	2412	9618	14393.0	≥ 500
	2437	9585	14319.5	≥ 500
	2462	9604	14603.4	≥ 500
802.11g	2412	16550	16456.8	≥ 500
	2437	16556	16458.1	≥ 500
	2462	16531	16508.2	≥ 500
802.11n-HT20	2412	17800	17637.5	≥ 500
	2437	17843	17651.3	≥ 500
	2462	17798	17636.9	≥ 500
802.11n-HT40	2422	36376	35895.1	≥ 500
	2437	36330	35854.8	≥ 500
	2452	36417	35914.5	≥ 500

Please refer to the following test plots:

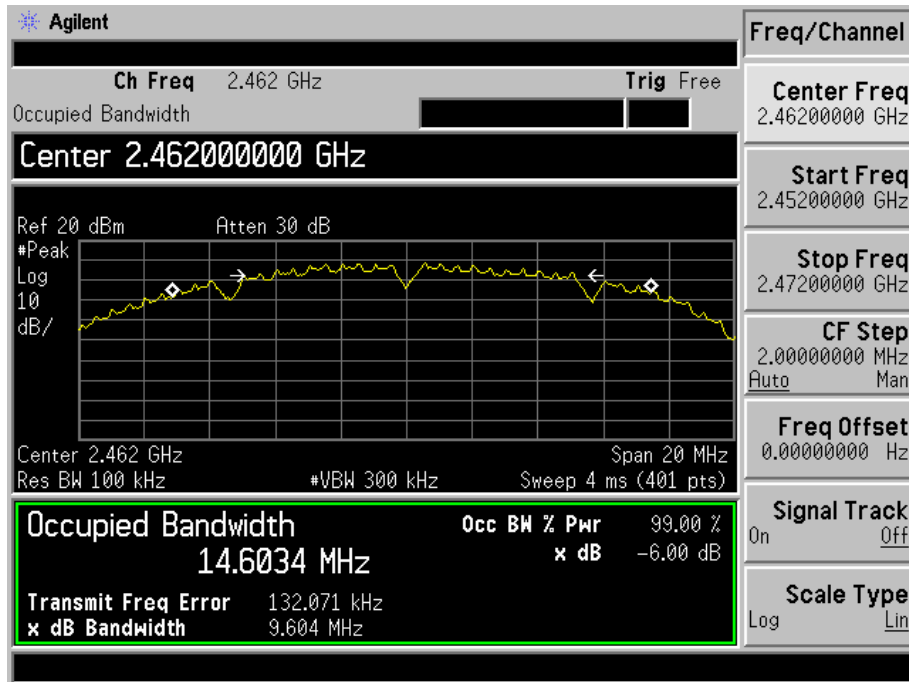
802.11b-Low Channel



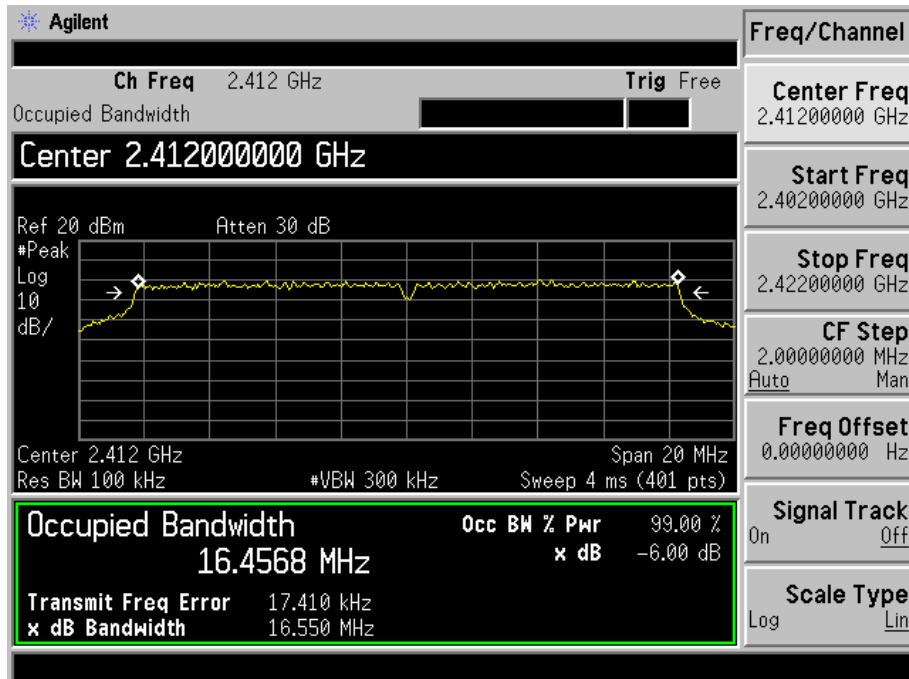
802.11b-Middle Channel



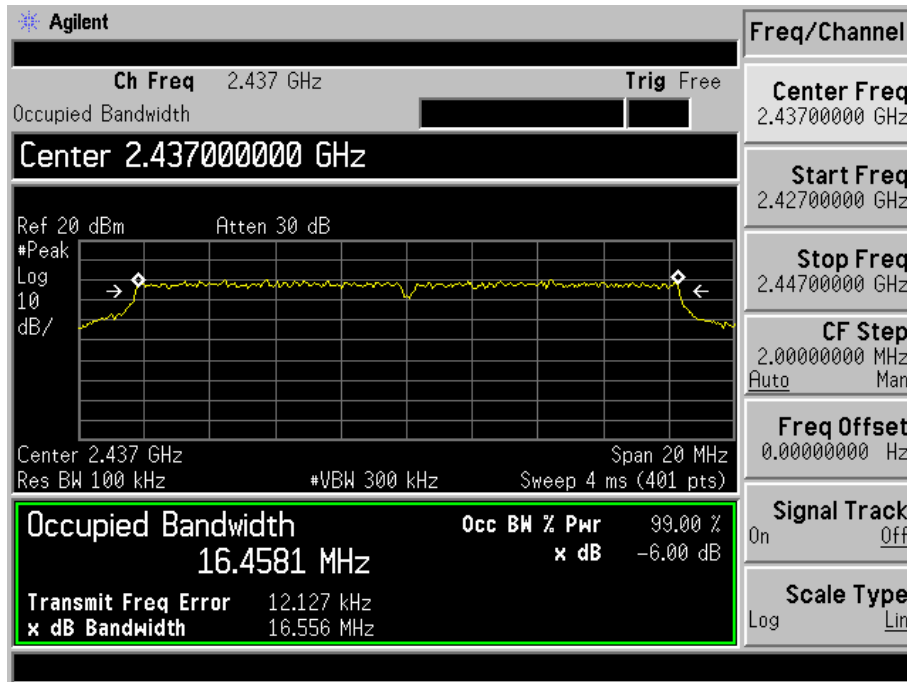
802.11b-High Channel



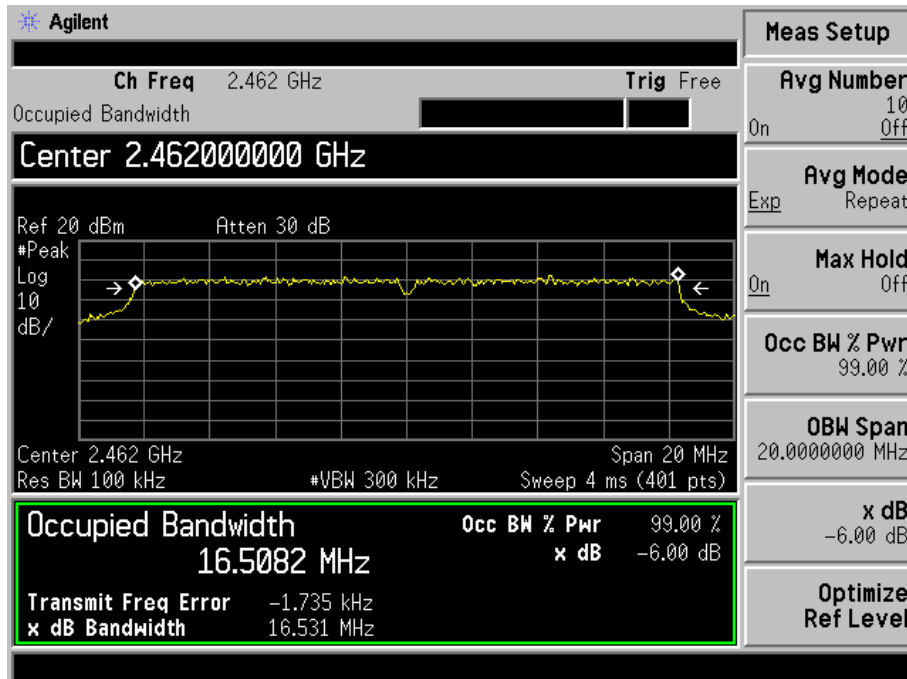
802.11g-Low Channel



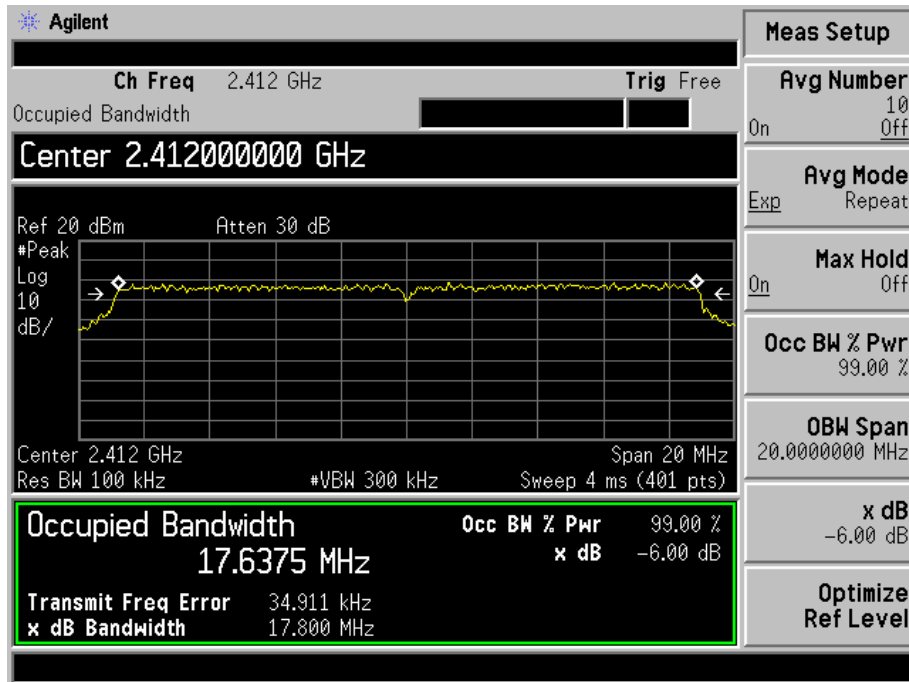
802.11g-Middle Channel



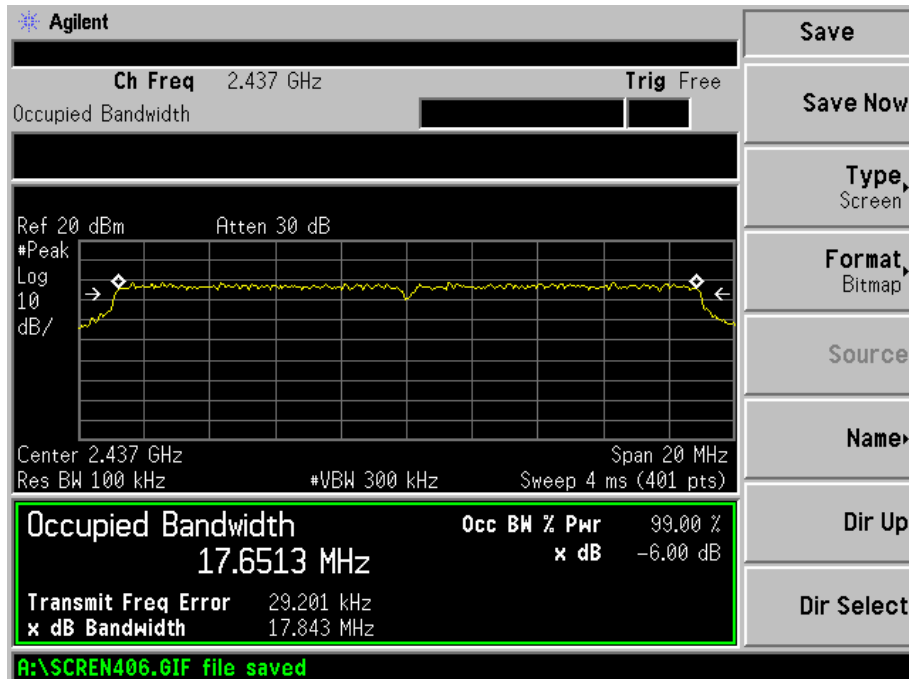
802.11g-High Channel



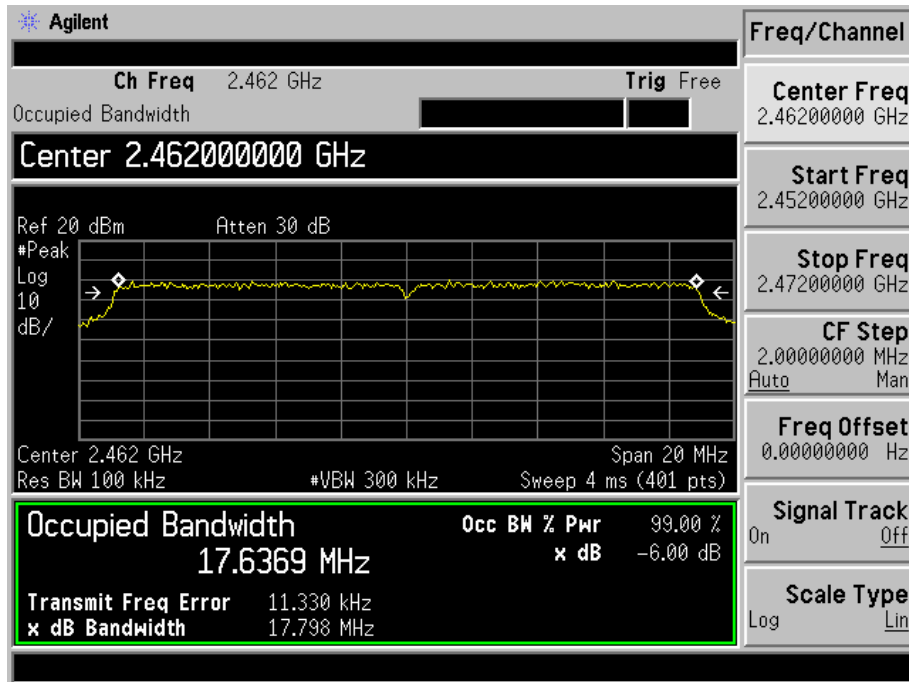
802.11n-HT20-Low Channel



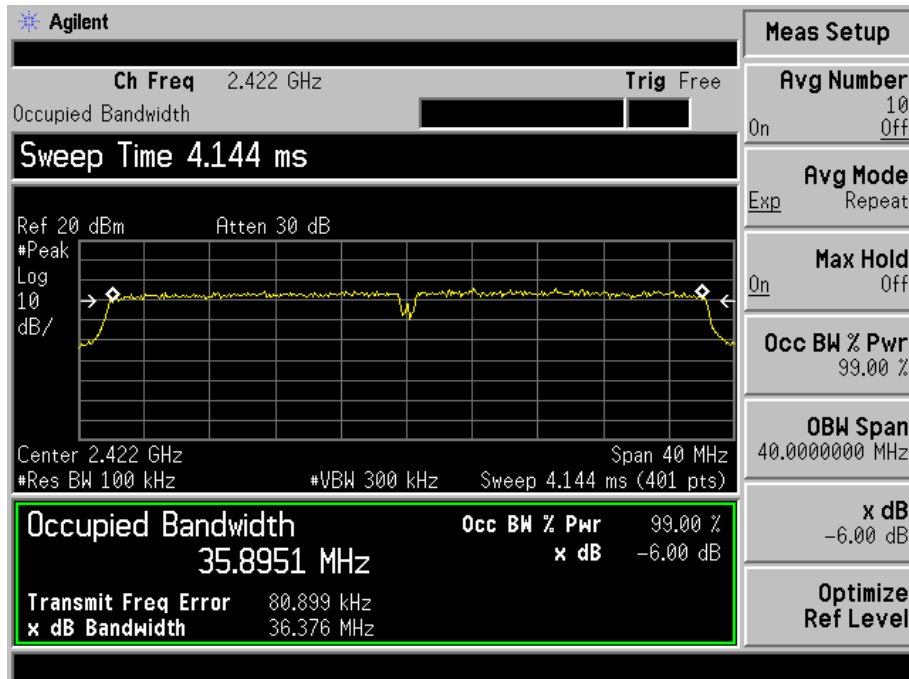
802.11n-HT20-Middle Channel



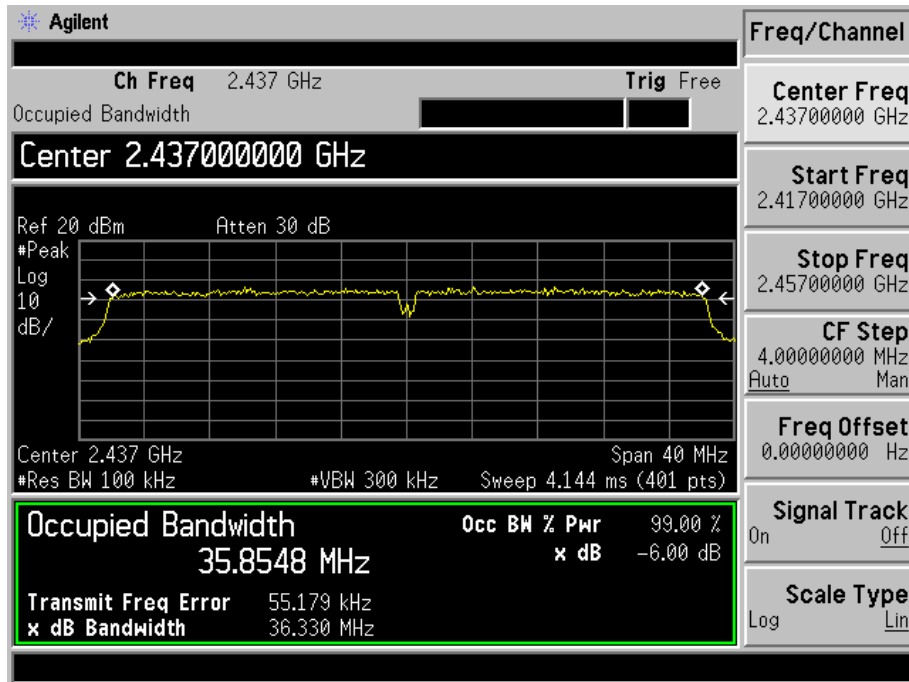
802.11n-HT20-High Channel



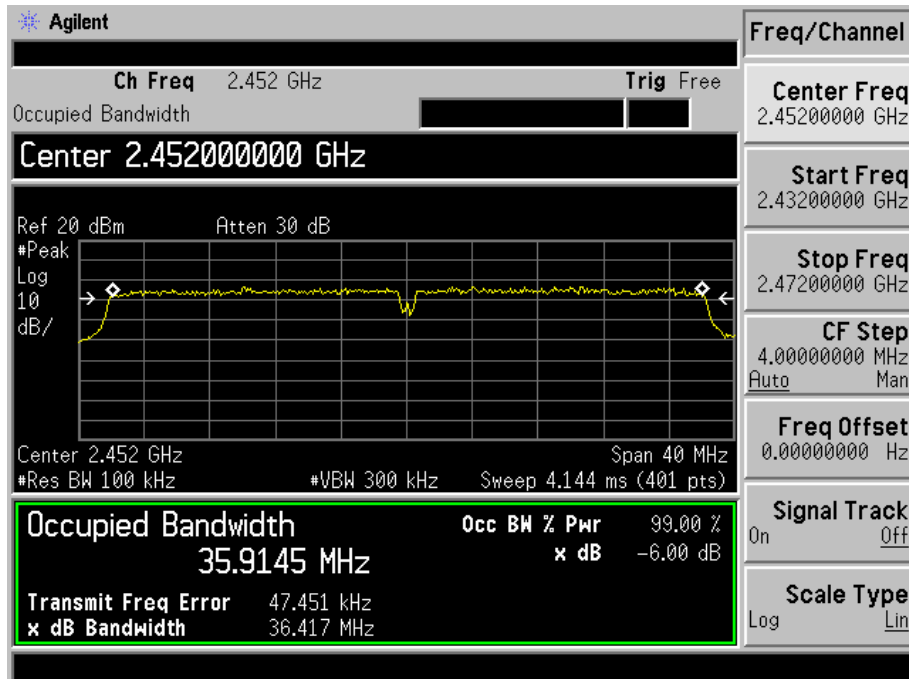
802.11n-HT40-Low Channel



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 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 $\geq 2 \times \text{span} / \text{RBW}$. (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

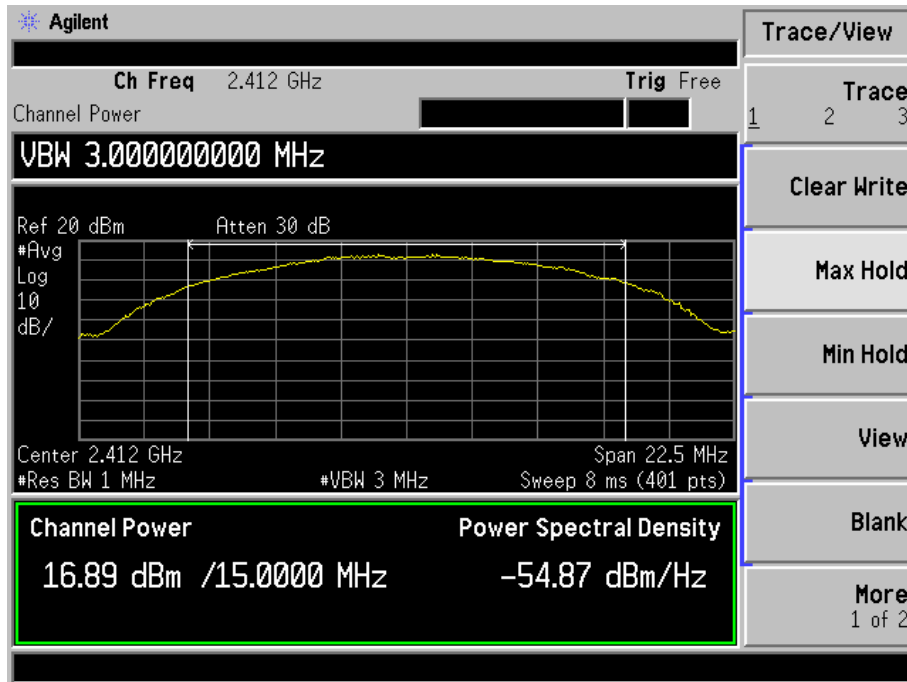
Temperature:	26° C
Relative Humidity:	57%
ATM Pressure:	1011 mbar

7.4 Summary of Test Results/Plots

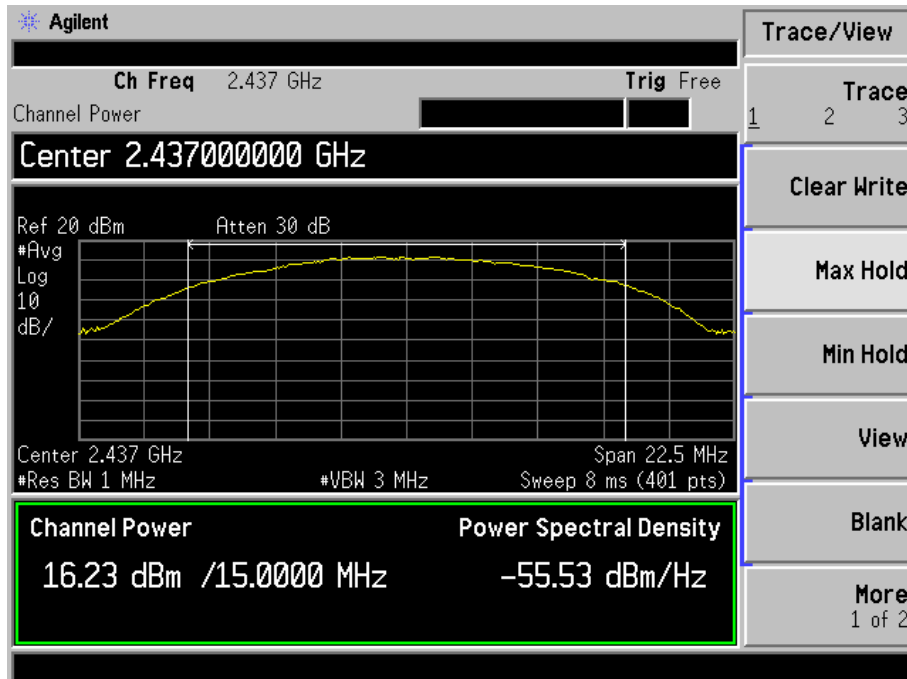
Test Mode	Frequency MHz	Reading dBm	Output Power mW	Limit mW
802.11b_11Mbps	2412	16.89	48.8652	1000
	2437	16.23	41.9759	1000
	2462	17.52	56.4937	1000
802.11g_54Mbps	2412	14.65	29.1743	1000
	2437	14.74	29.7852	1000
	2462	14.02	25.2348	1000
802.11n HT20_MCS7	2412	11.71	14.8252	1000
	2437	12.16	16.4437	1000
	2462	12.82	19.1426	1000
802.11n HT40_MCS7	2422	11.05	12.7350	1000
	2437	11.96	15.7036	1000
	2452	12.08	16.1436	1000

Please refer to the following test plots:

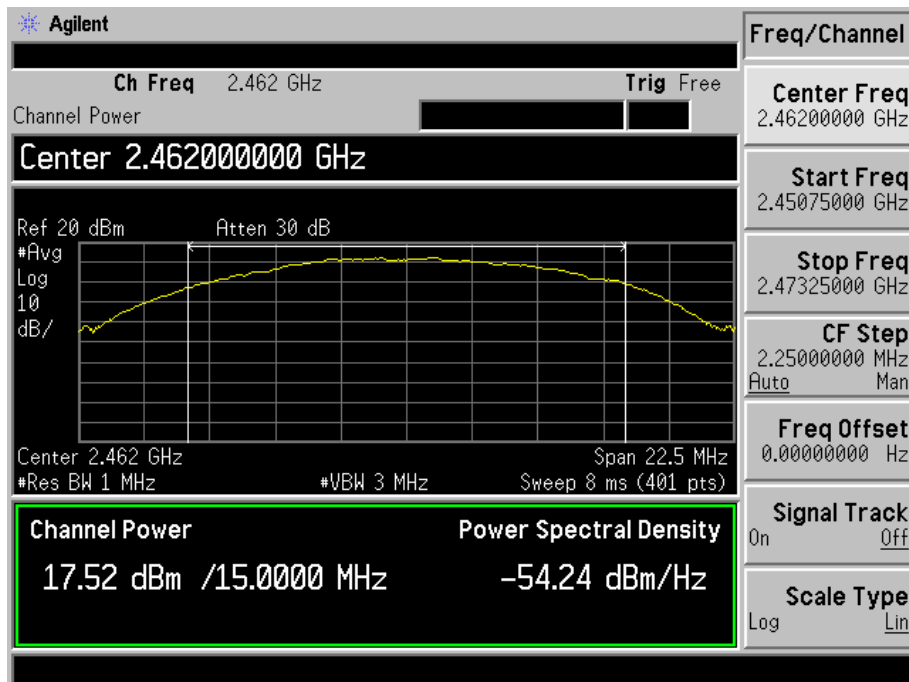
802.11-11Mbps-Low Channel



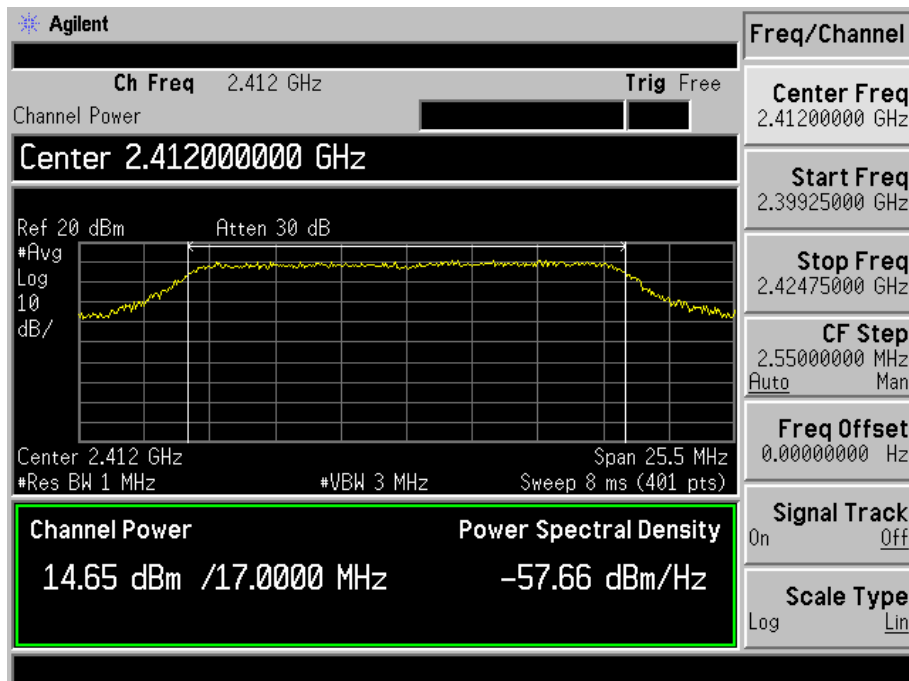
802.11b -11Mbps-Middle Channel



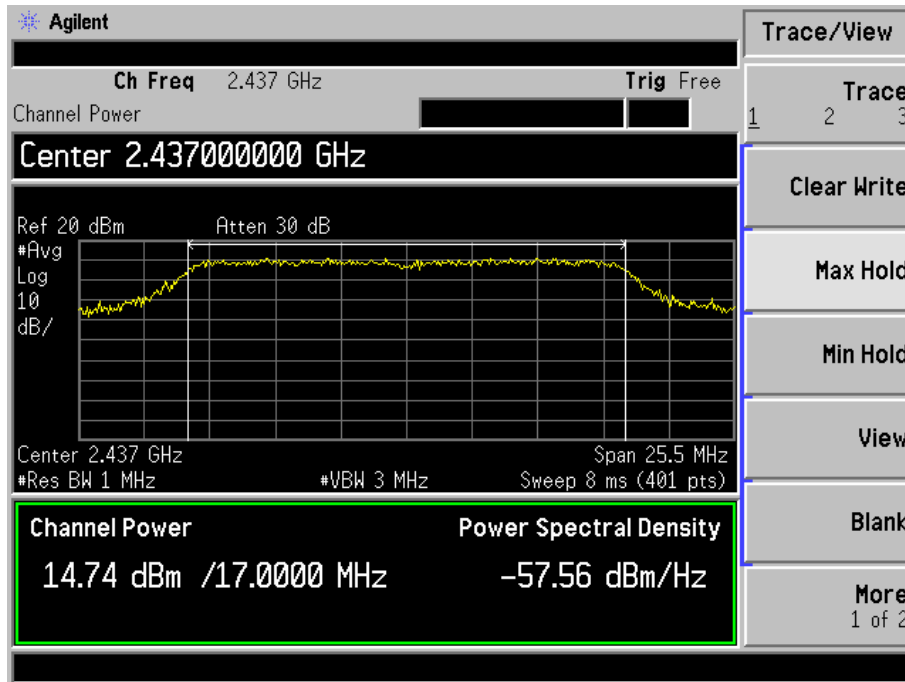
802.11b -11Mbps-High Channel



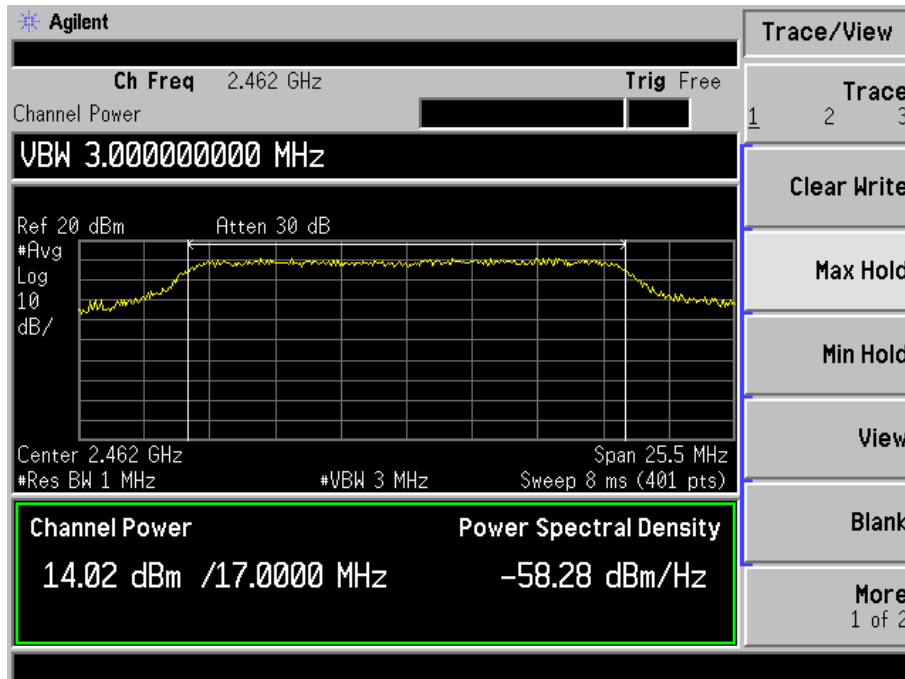
802.11g-54Mbps-Low Channel



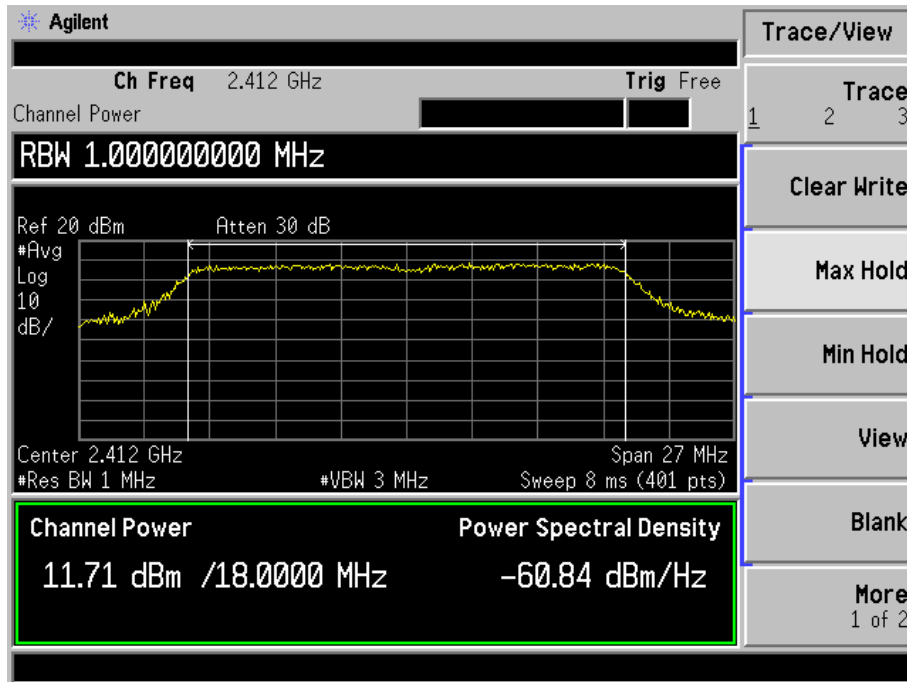
802.11g-54Mbps-Middle Channel



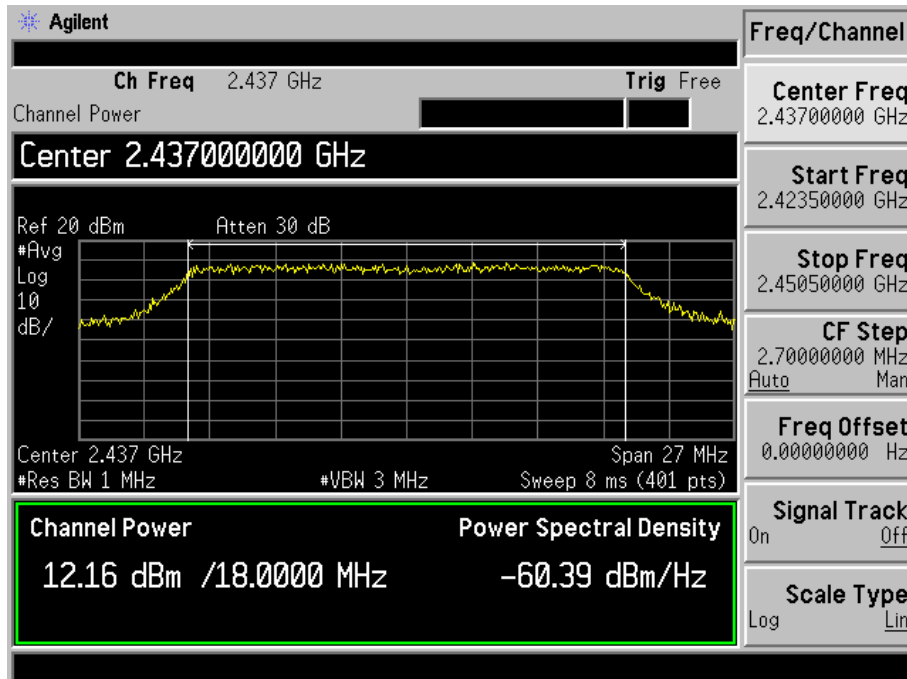
802.11g-54Mbps-High Channel



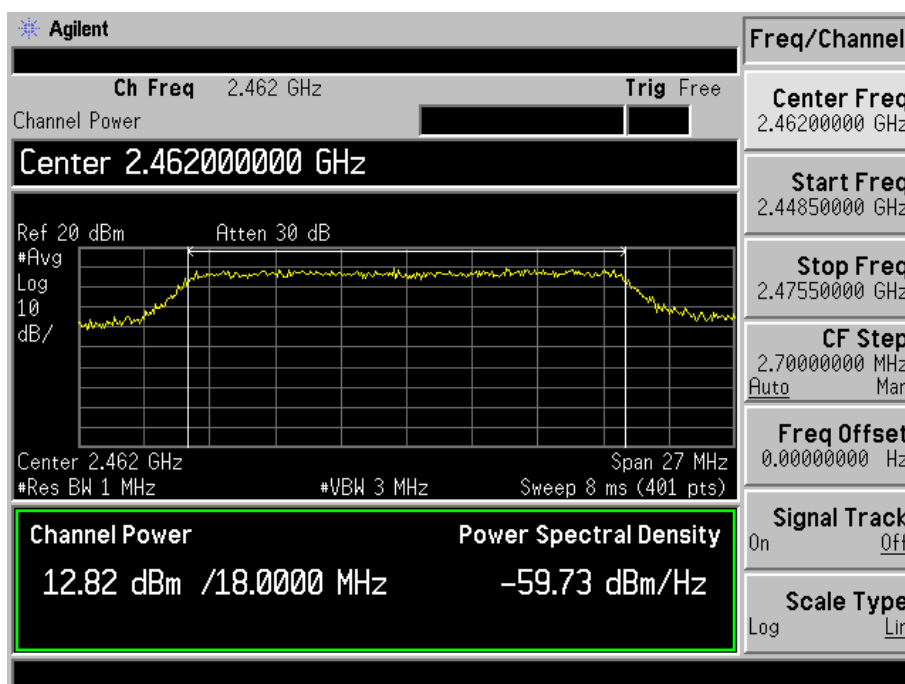
802.11n-HT20-MCS7-Low Channel



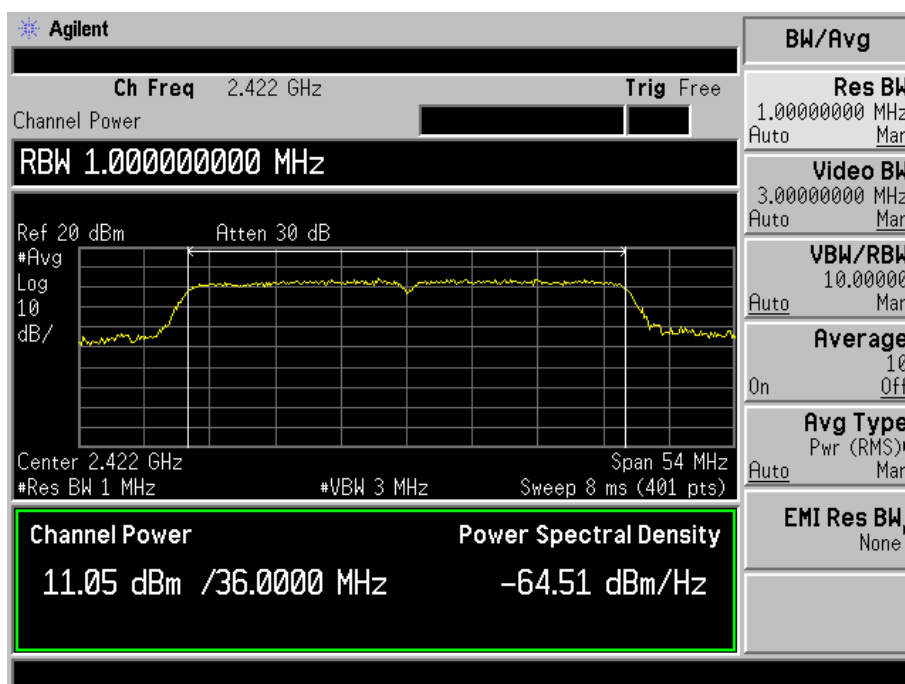
802.11n-HT20-MCS7-Middle Channel



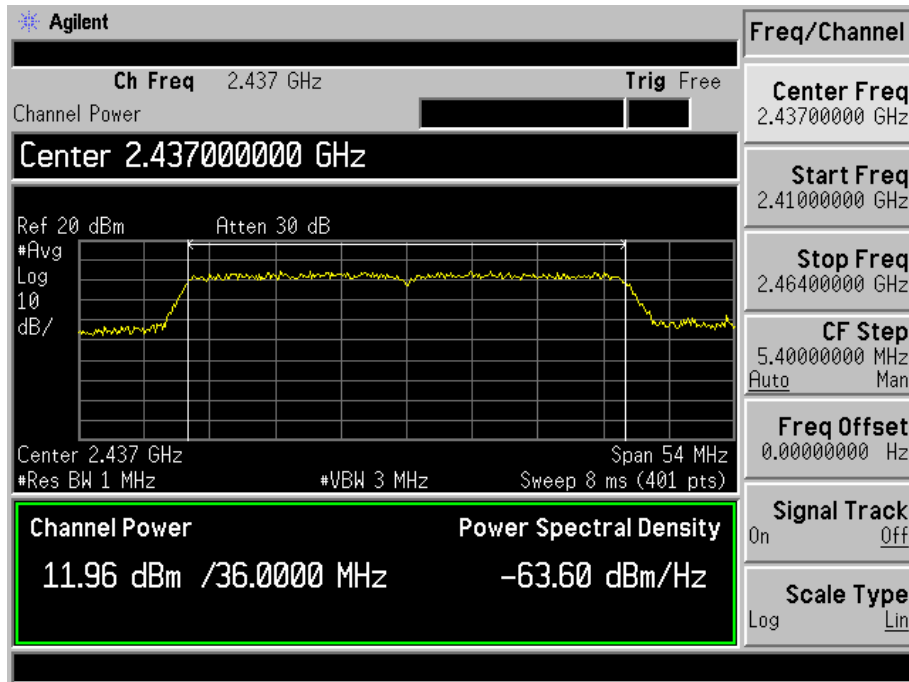
802.11n-HT20-MCS7-High Channel



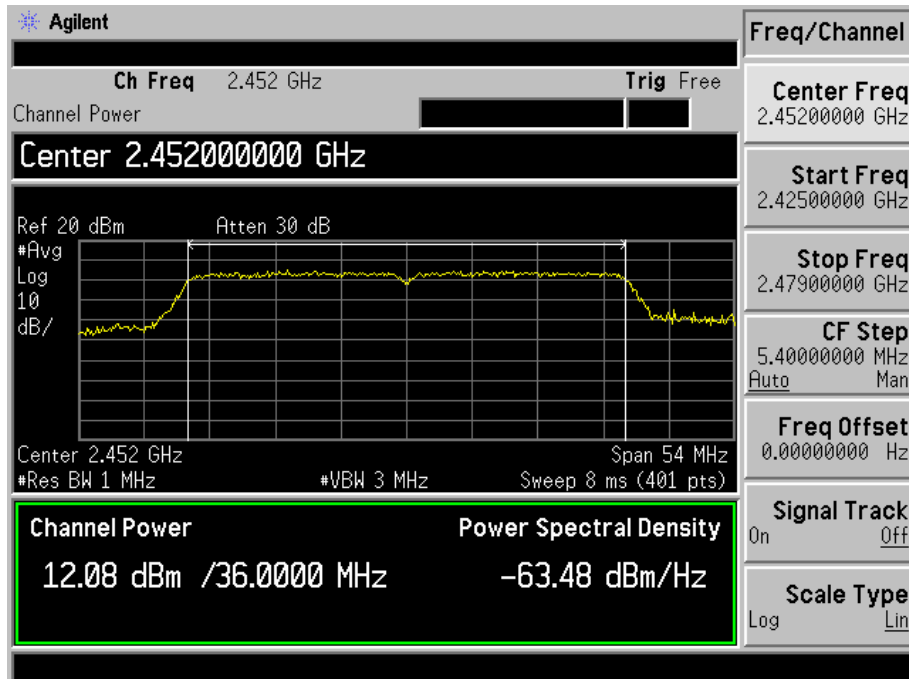
802.11n-HT40-MCS7-Low Channel



802.11n-HT40-MCS7-Middle Channel



802.11n-HT40-MCS7-High Channel



8. Field Strength of Spurious Emissions

8.1 Standard Applicable

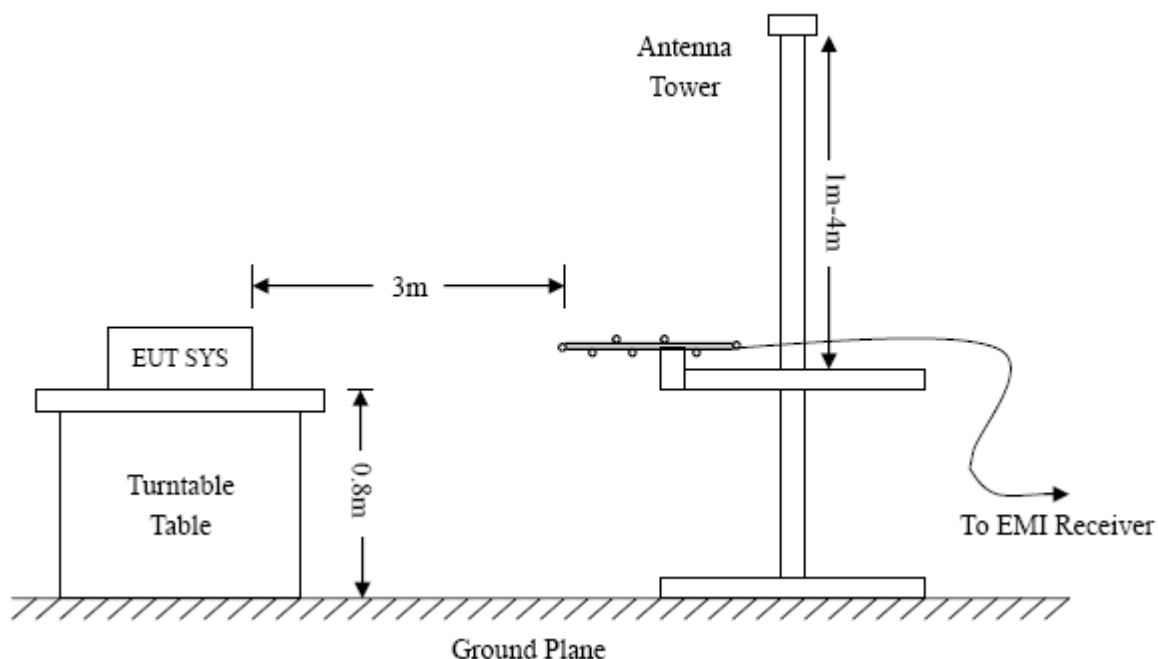
According to §15.247(d), in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within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

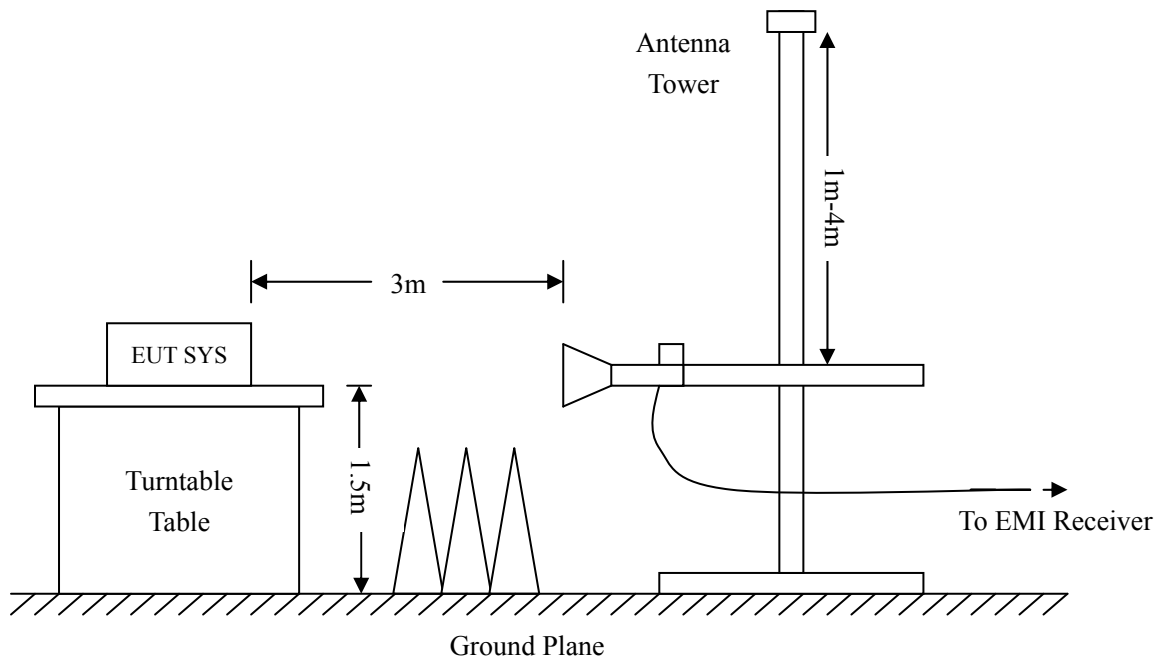
The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply. Spurious Radiated Emissions measurements starting below or at the lowest crystal frequency.

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 -6dB μ V means the emission is 6dB μ V 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

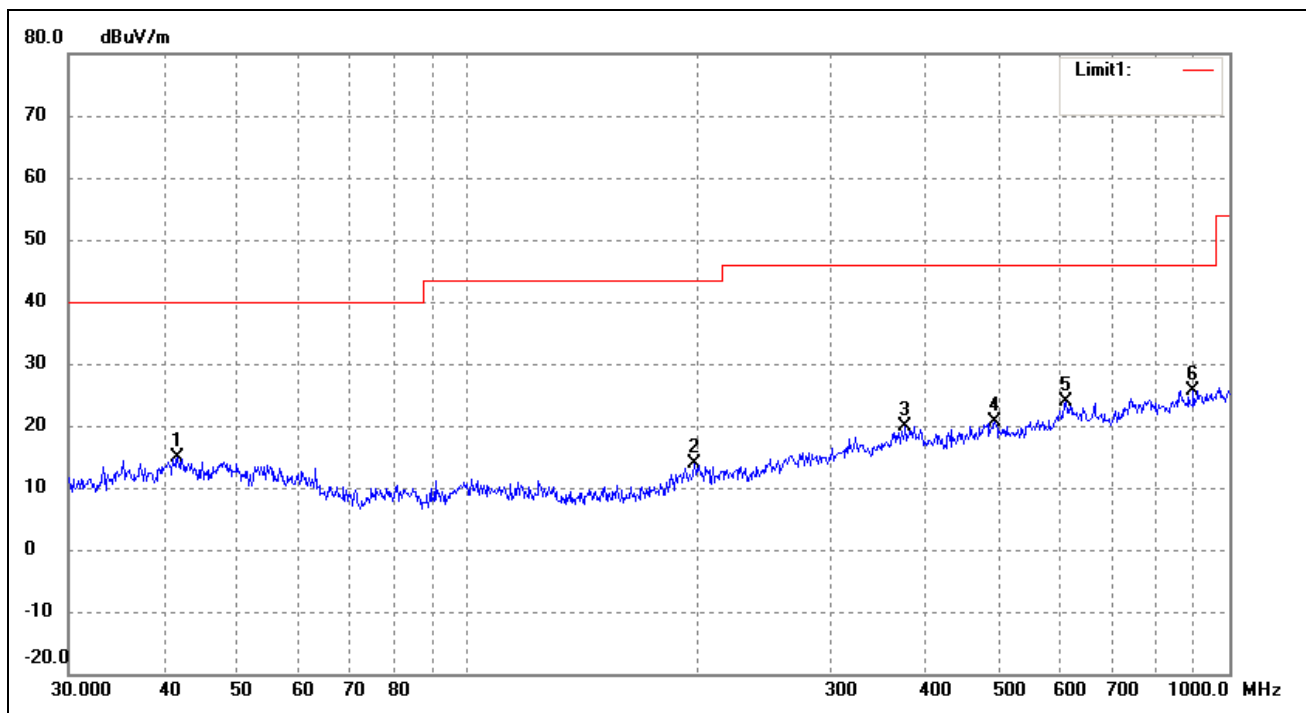
According to the data below, the FCC Part 15.205, 15.209 and 15.247 standards, and had the worst cases:

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)

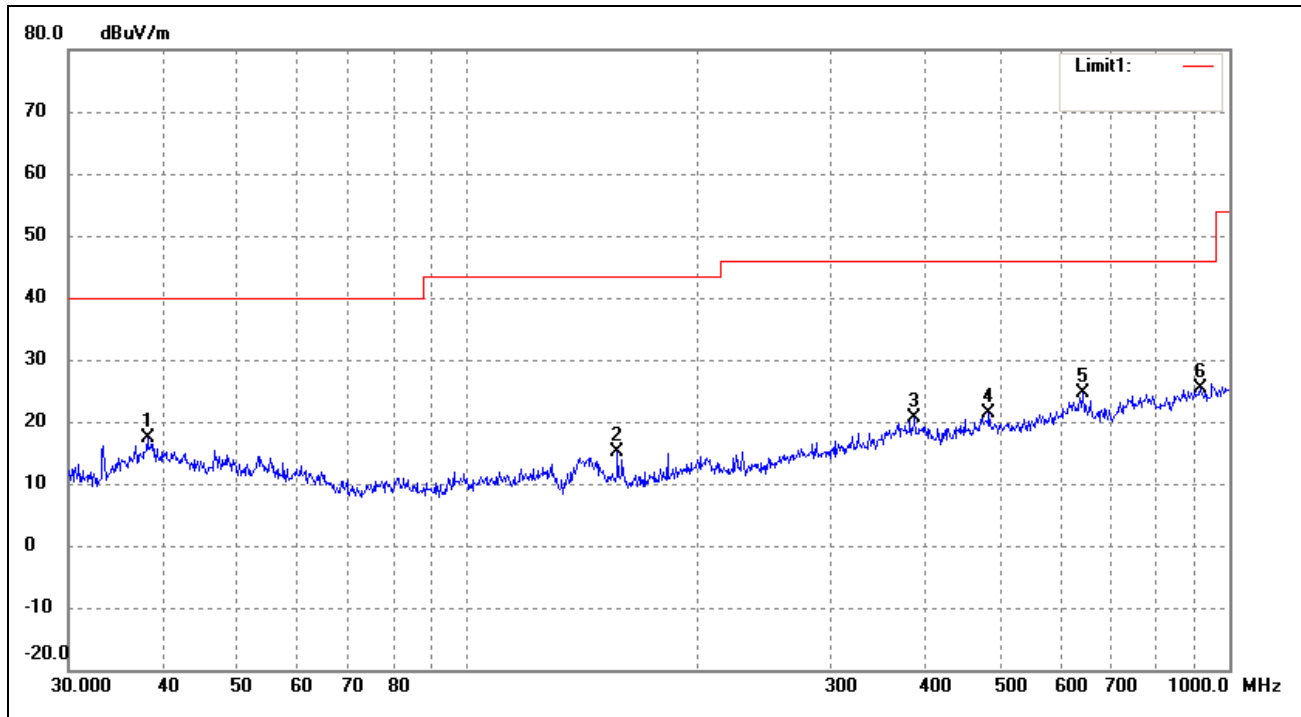
EUT: LM816 802.11n USB Adapter 150Mbps
 Tested Model: 816-0648
 Operating Condition: 802.11b Transmitting Low Channel-2412MHz
 Comment: AC 120V/60Hz; USB 5V

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	41.7130	22.71	-7.78	14.93	40.00	-25.07	152	100	peak
2	198.5879	22.71	-8.85	13.86	43.50	-29.64	113	100	peak
3	375.9384	22.27	-2.33	19.94	46.00	-26.06	284	100	peak
4	492.4685	22.33	-1.76	20.57	46.00	-25.43	167	100	peak
5	609.9216	23.30	0.54	23.84	46.00	-22.16	100	100	peak
6	896.9964	22.43	3.14	25.57	46.00	-20.43	43	100	peak

Test Specification: Vertical

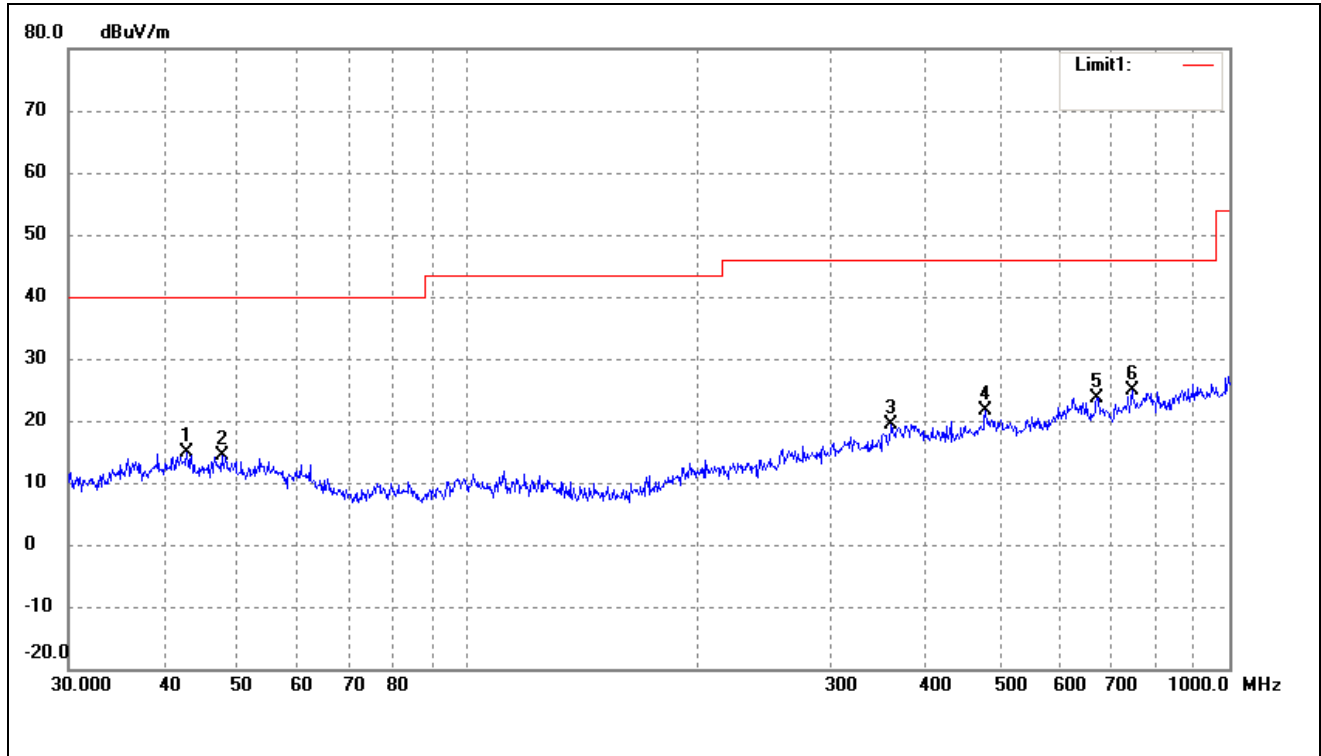


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	38.0782	25.55	-8.20	17.35	40.00	-22.65	114	100	peak
2	157.5588	27.56	-12.31	15.25	43.50	-28.25	270	100	peak
3	386.6338	23.09	-2.45	20.64	46.00	-25.36	76	100	peak
4	483.9094	22.77	-1.27	21.50	46.00	-24.50	159	100	peak
5	642.8613	24.06	0.65	24.71	46.00	-21.29	360	100	peak
6	916.0687	21.92	3.56	25.48	46.00	-20.52	116	100	peak

Operating Condition: 802.11b Transmitting Middle Channel-2437MHz

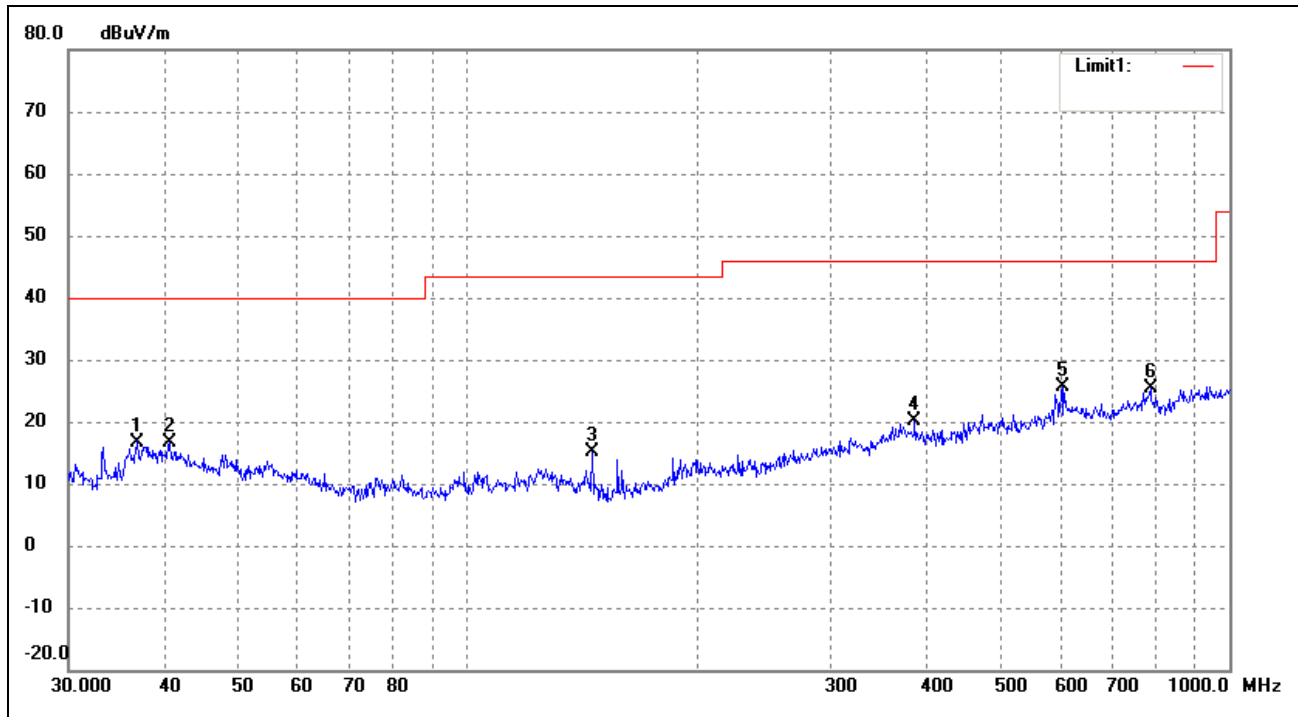
Comment: AC 120V/60Hz; USB 5V

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	42.8997	22.63	-7.85	14.78	40.00	-25.22	178	100	peak
2	47.6585	22.54	-8.17	14.37	40.00	-25.63	68	100	peak
3	360.4476	22.64	-3.22	19.42	46.00	-26.58	131	100	peak
4	478.8455	22.67	-1.13	21.54	46.00	-24.46	224	100	peak
5	670.4892	23.38	0.20	23.58	46.00	-22.42	160	100	peak
6	744.8660	22.85	2.04	24.89	46.00	-21.11	290	100	peak

Test Specification: Vertical

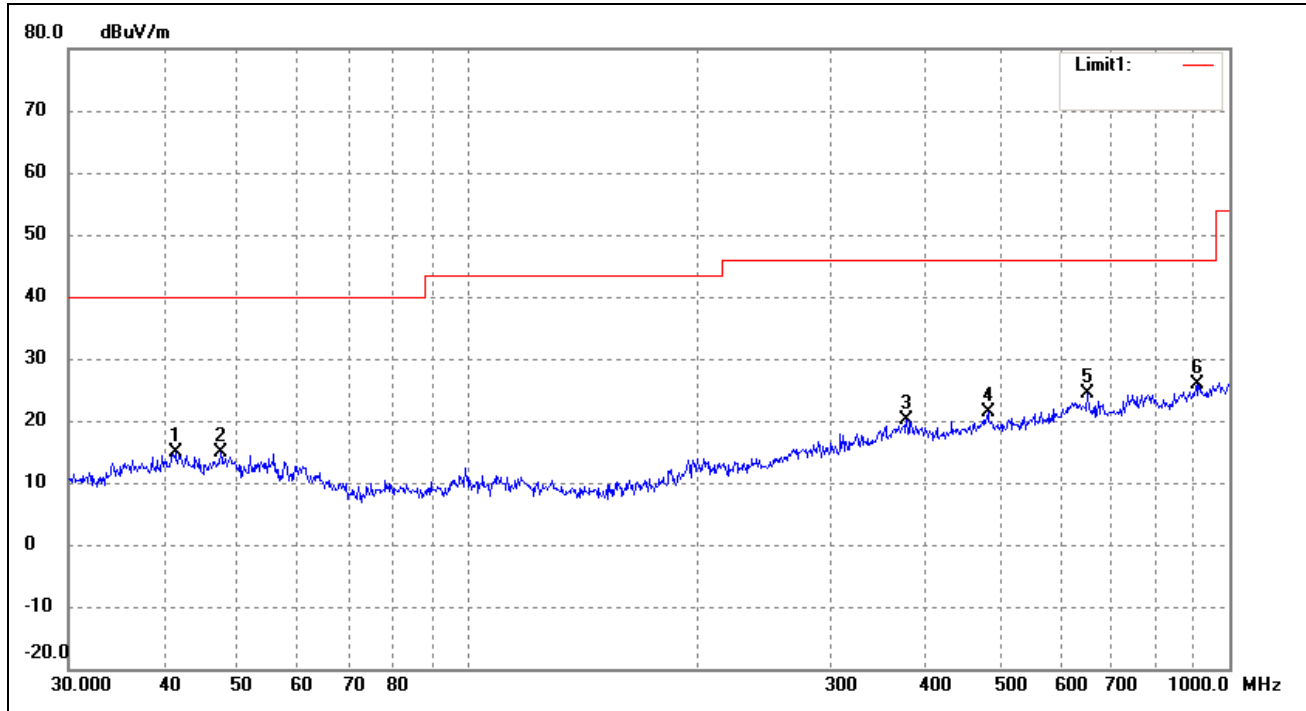


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	36.8952	25.27	-8.52	16.75	40.00	-23.25	60	100	peak
2	40.7015	24.32	-7.71	16.61	40.00	-23.39	135	100	peak
3	145.8610	27.60	-12.48	15.12	43.50	-28.38	157	100	peak
4	386.6338	22.64	-2.45	20.19	46.00	-25.81	194	100	peak
5	603.5392	25.64	0.10	25.74	46.00	-20.26	242	100	peak
6	787.8513	22.92	2.51	25.43	46.00	-20.57	231	100	peak

Operating Condition: 802.11b Transmitting High Channel-2462MHz

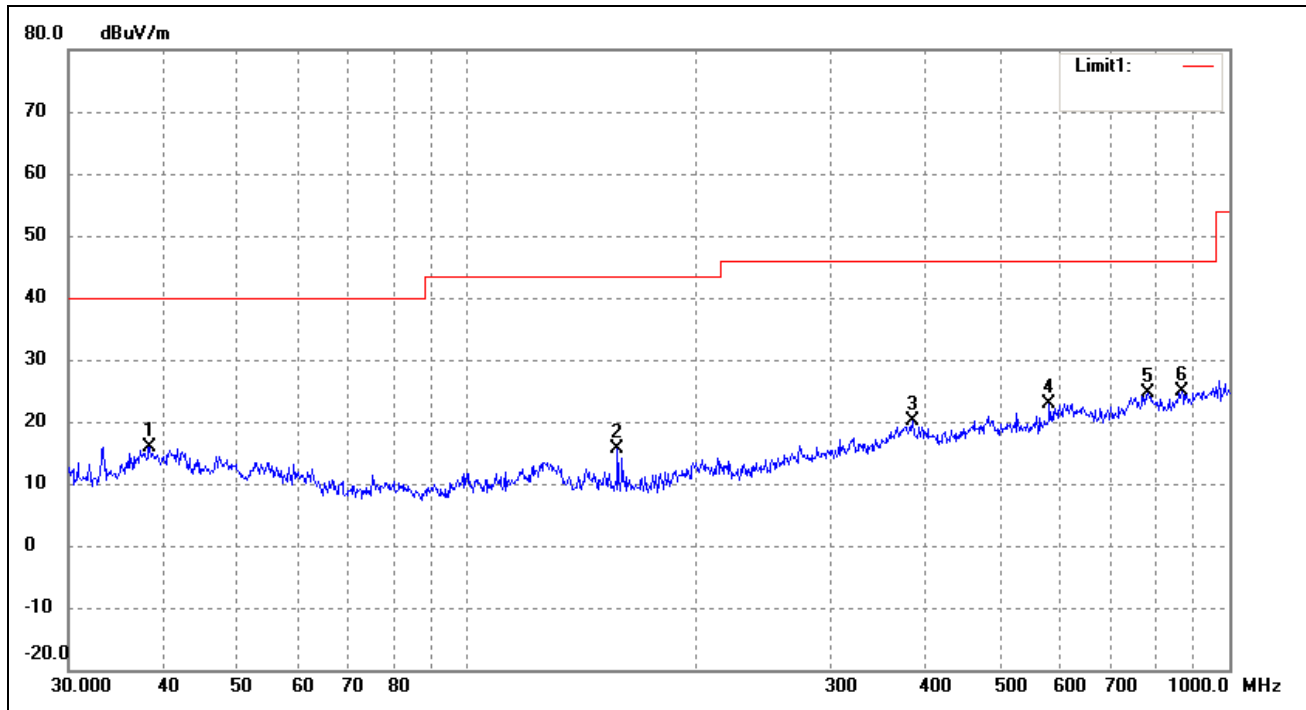
Comment: AC 120V/60Hz; USB 5V

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	41.4215	22.57	-7.76	14.81	40.00	-25.19	64	100	peak
2	47.4917	23.14	-8.16	14.98	40.00	-25.02	90	100	peak
3	377.2590	22.32	-2.26	20.06	46.00	-25.94	131	100	peak
4	482.2155	22.53	-1.17	21.36	46.00	-24.64	178	100	peak
5	651.9416	24.00	0.46	24.46	46.00	-21.54	176	100	peak
6	906.4823	22.50	3.31	25.81	46.00	-20.19	255	100	peak

Test Specification: Vertical

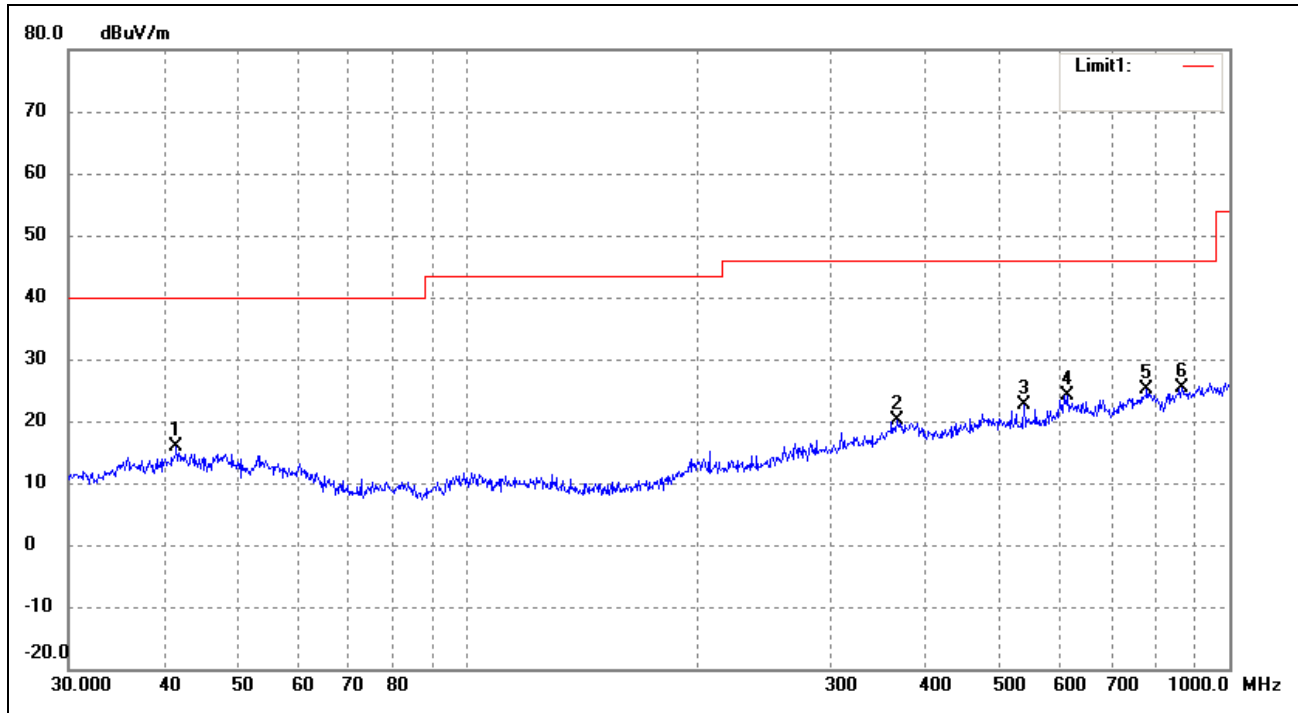


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	38.3462	24.03	-8.12	15.91	40.00	-24.09	66	100	peak
2	157.5588	27.90	-12.31	15.59	43.50	-27.91	91	100	peak
3	383.9318	22.40	-2.30	20.10	46.00	-25.90	135	100	peak
4	580.7025	23.88	-0.93	22.95	46.00	-23.05	168	100	peak
5	782.3452	21.73	2.78	24.51	46.00	-21.49	225	100	peak
6	866.0878	22.00	2.99	24.99	46.00	-21.01	160	100	peak

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

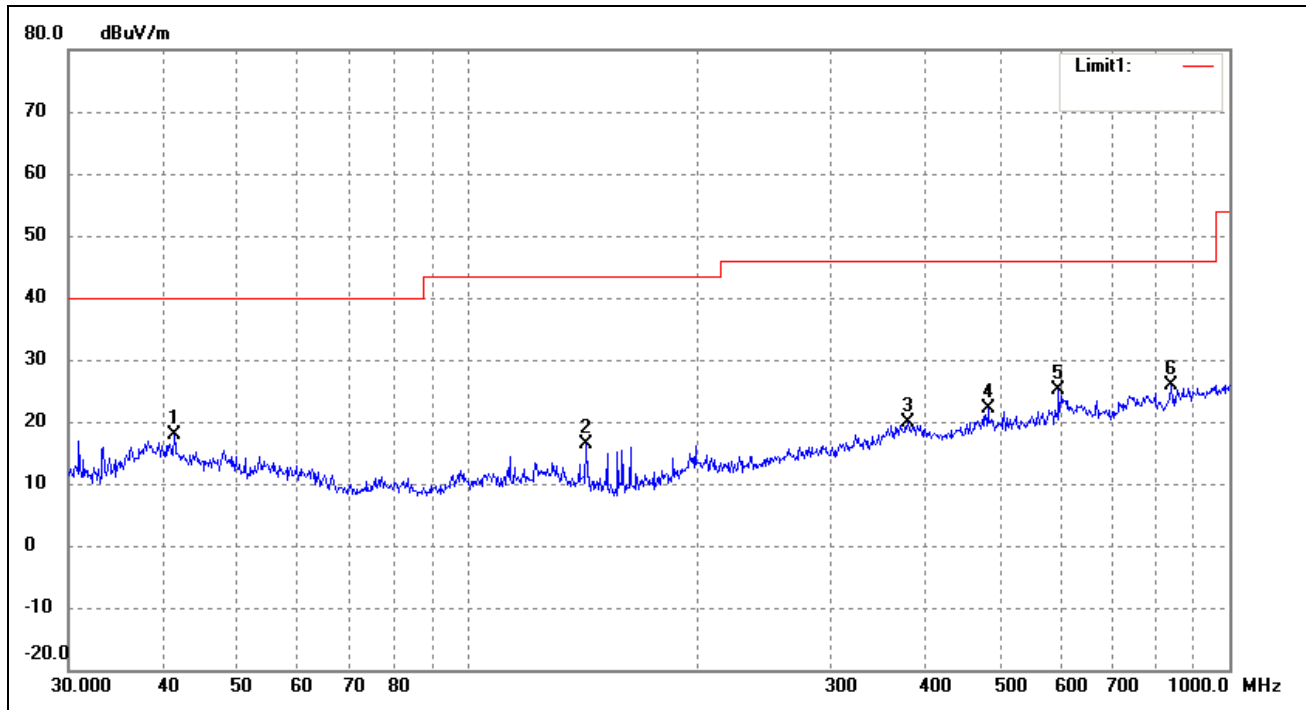
EUT: LM816 802.11n USB Adapter 150Mbps
Tested Model: 816-0648
Operating Condition: 802.11g Transmitting Low Channel-2412MHz
Comment: AC 120V/60Hz; USB 5V

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	41.5670	23.75	-7.77	15.98	40.00	-24.02	46	100	peak
2	366.8231	22.93	-2.86	20.07	46.00	-25.93	79	100	peak
3	537.5891	24.33	-1.80	22.53	46.00	-23.47	115	100	peak
4	614.2142	23.41	0.83	24.24	46.00	-21.76	166	100	peak
5	779.6068	22.18	2.88	25.06	46.00	-20.94	193	100	peak
6	866.0878	22.45	2.99	25.44	46.00	-20.56	258	100	peak

Test Specification: Vertical

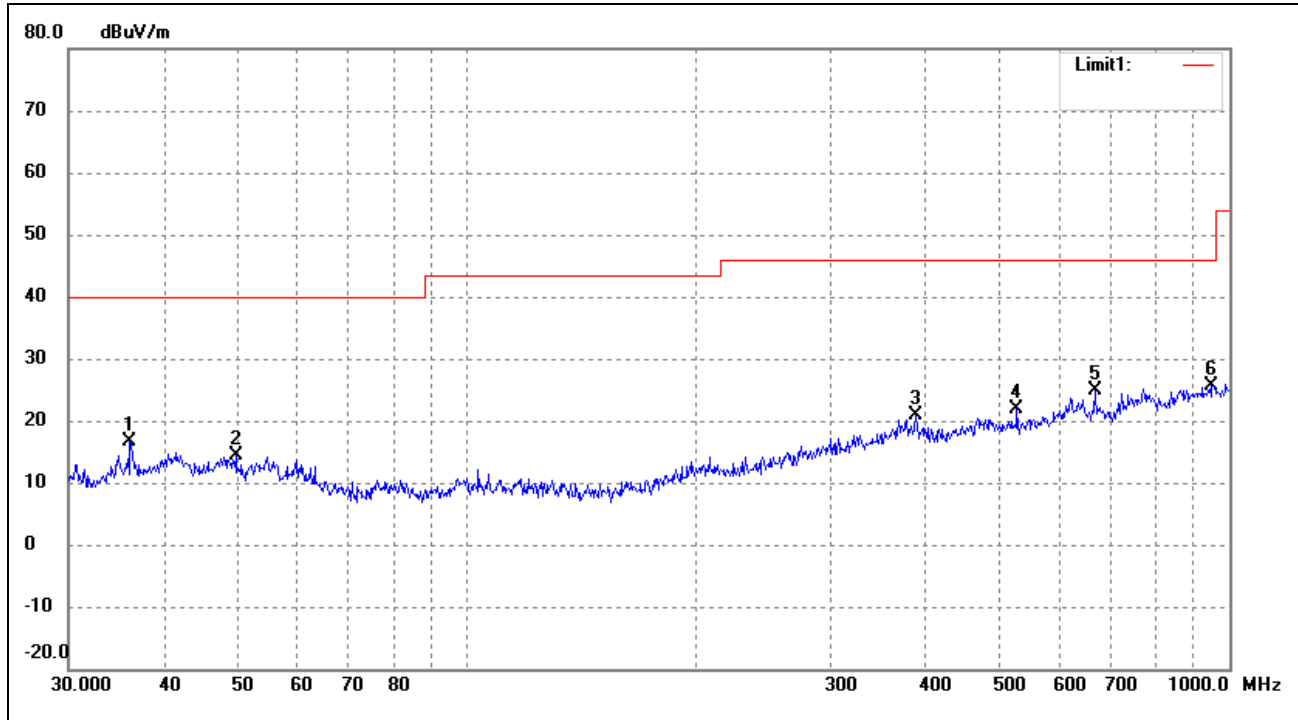


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	41.2764	25.75	-7.75	18.00	40.00	-22.00	57	100	peak
2	143.3260	28.95	-12.51	16.44	43.50	-27.06	83	100	peak
3	378.5842	22.02	-2.17	19.85	46.00	-26.15	122	100	peak
4	482.2155	23.33	-1.17	22.16	46.00	-23.84	177	100	peak
5	597.2233	25.28	-0.26	25.02	46.00	-20.98	90	100	peak
6	839.1817	23.87	1.91	25.78	46.00	-20.22	336	100	peak

Operating Condition: 802.11g Transmitting Middle Channel-2437MHz

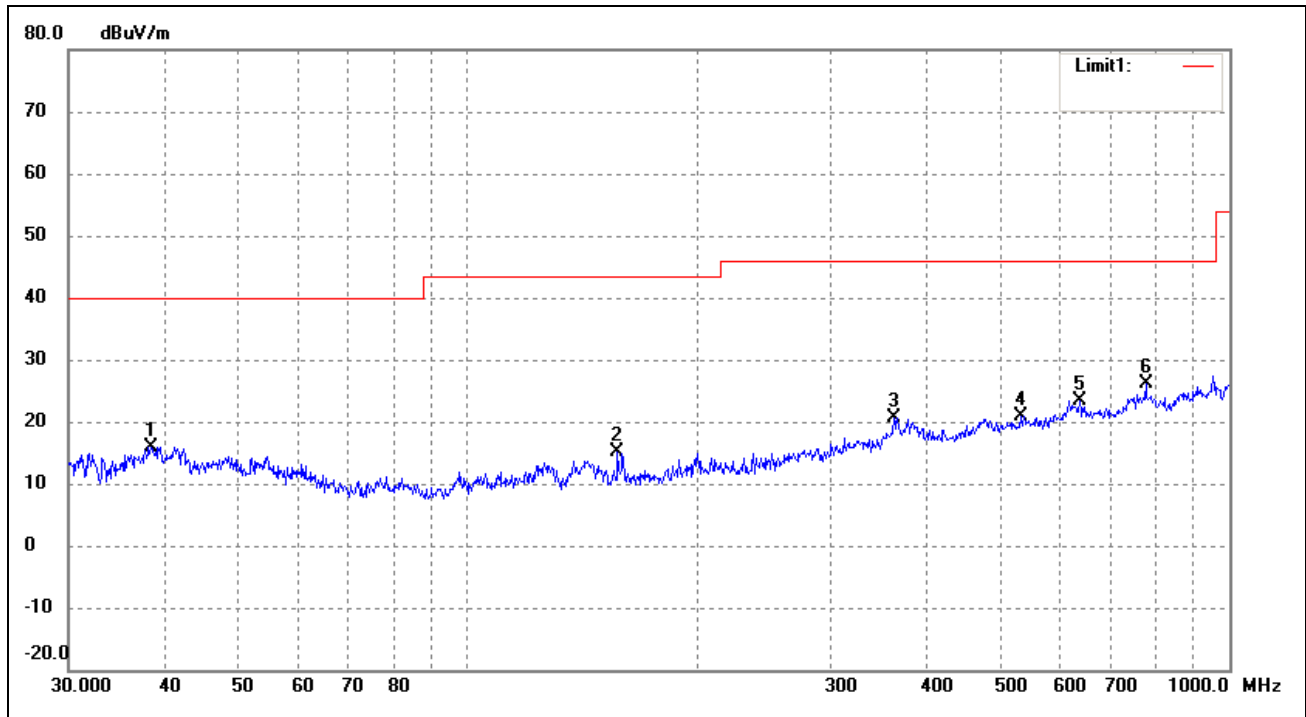
Comment: AC 120V/60Hz; USB 5V

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	36.1272	25.47	-8.74	16.73	40.00	-23.27	88	100	peak
2	49.7068	22.71	-8.30	14.41	40.00	-25.59	137	100	peak
3	387.9920	23.33	-2.51	20.82	46.00	-25.18	105	100	peak
4	526.3967	23.84	-1.86	21.98	46.00	-24.02	164	100	peak
5	665.8034	24.70	0.24	24.94	46.00	-21.06	228	100	peak
6	948.7609	21.61	3.97	25.58	46.00	-20.42	130	100	peak

Test Specification: Vertical

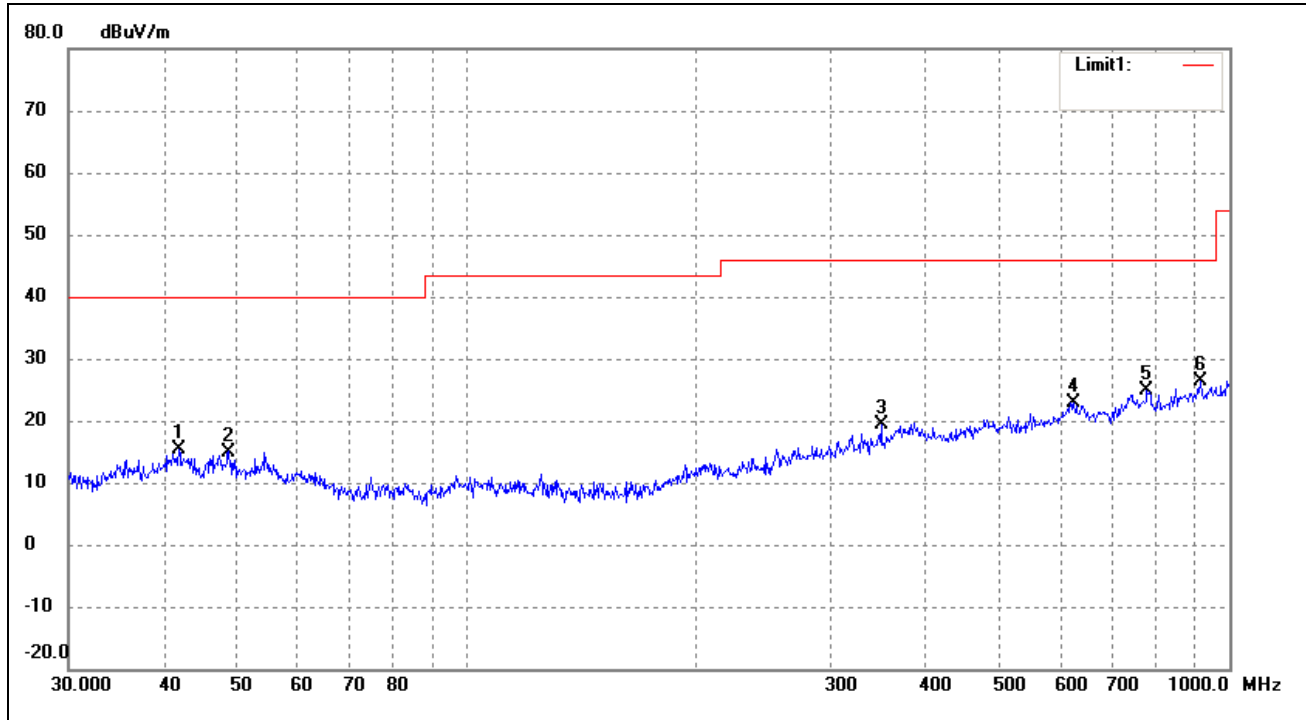


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	38.4808	24.00	-8.08	15.92	40.00	-24.08	67	100	peak
2	157.5588	27.35	-12.31	15.04	43.50	-28.46	136	100	peak
3	362.9845	23.78	-3.08	20.70	46.00	-25.30	184	100	peak
4	531.9634	22.76	-1.83	20.93	46.00	-25.07	255	100	peak
5	636.1340	22.60	0.82	23.42	46.00	-22.58	270	100	peak
6	776.8777	23.38	2.73	26.11	46.00	-19.89	180	100	peak

Operating Condition: 802.11g Transmitting High Channel-2462MHz

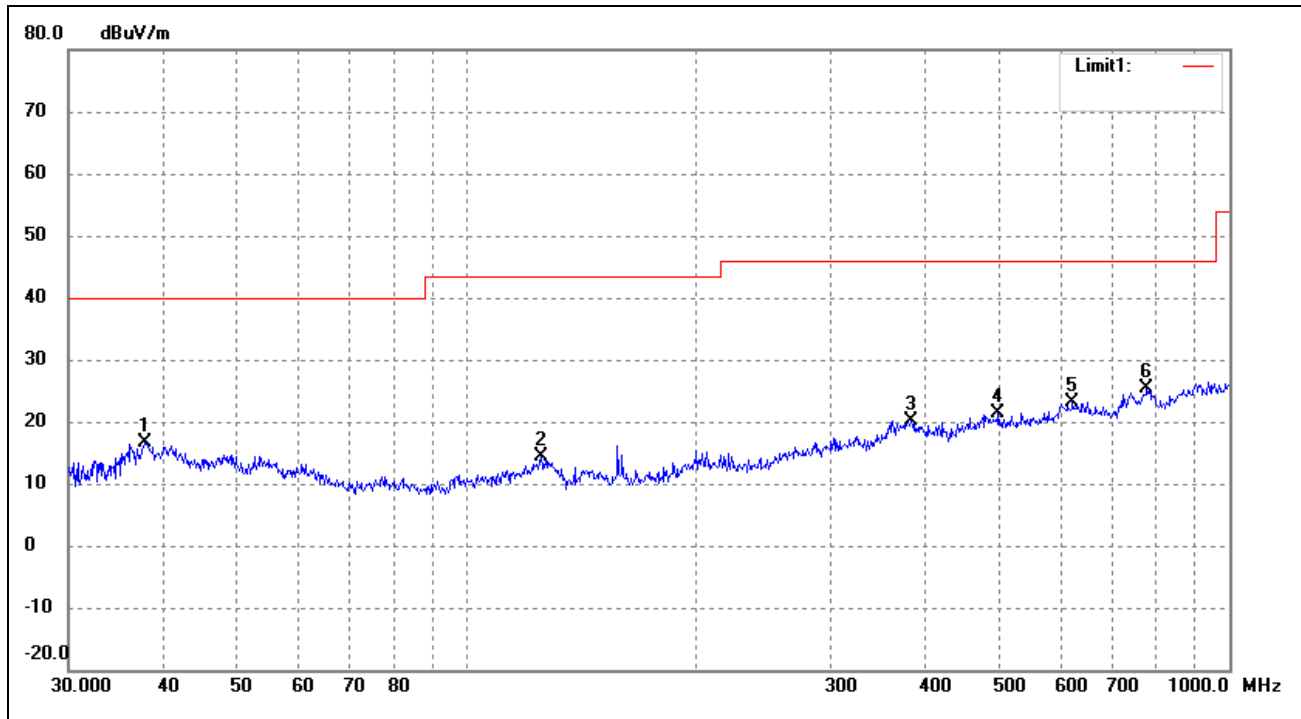
Comment: AC 120V/60Hz; USB 5V

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	41.8596	23.20	-7.79	15.41	40.00	-24.59	114	100	peak
2	48.6719	23.23	-8.23	15.00	40.00	-25.00	157	100	peak
3	349.2500	23.51	-4.19	19.32	46.00	-26.68	169	100	peak
4	625.0779	21.82	1.11	22.93	46.00	-23.07	132	100	peak
5	779.6068	22.11	2.88	24.99	46.00	-21.01	206	100	peak
6	916.0687	22.74	3.56	26.30	46.00	-19.70	239	100	peak

Test Specification: Vertical

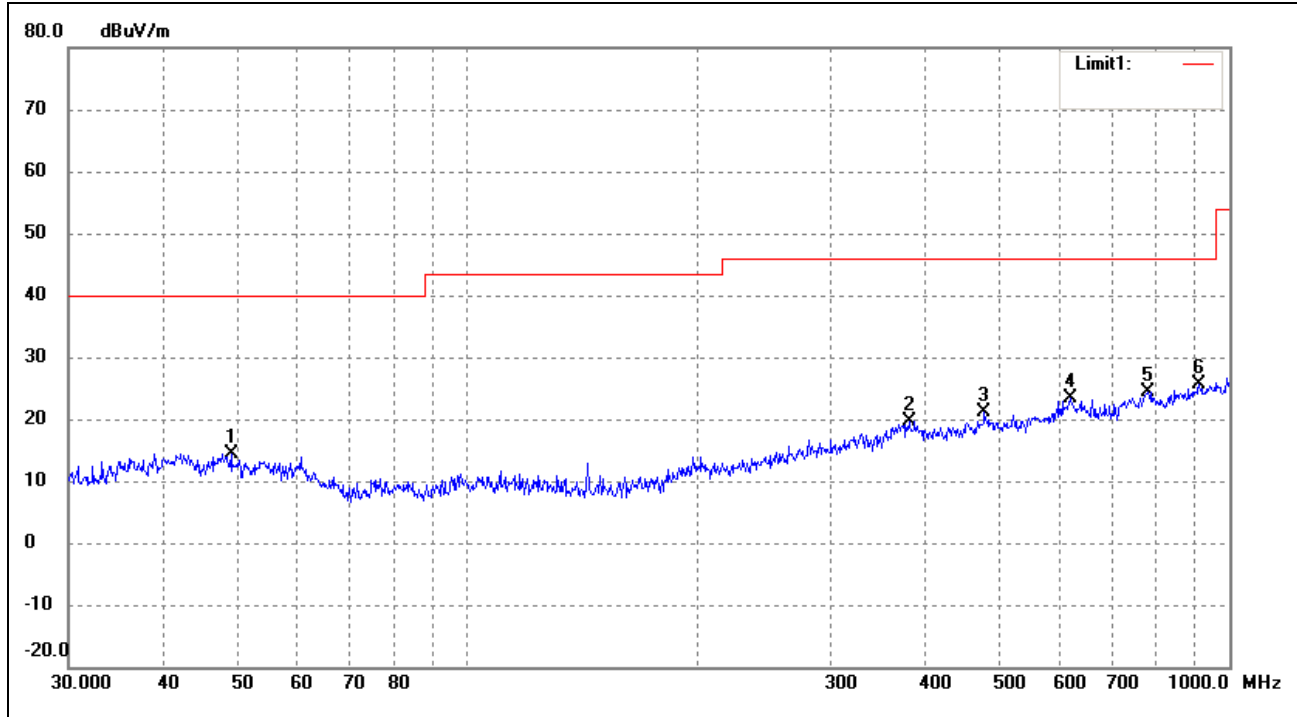


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	37.8121	24.88	-8.26	16.62	40.00	-23.38	84	100	peak
2	125.0066	26.14	-11.71	14.43	43.50	-29.07	106	100	peak
3	382.5878	22.34	-2.23	20.11	46.00	-25.89	155	100	peak
4	497.6764	23.45	-2.05	21.40	46.00	-24.60	180	100	peak
5	622.8899	21.94	1.16	23.10	46.00	-22.90	225	100	peak
6	779.6068	22.38	2.88	25.26	46.00	-20.74	67	100	peak

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

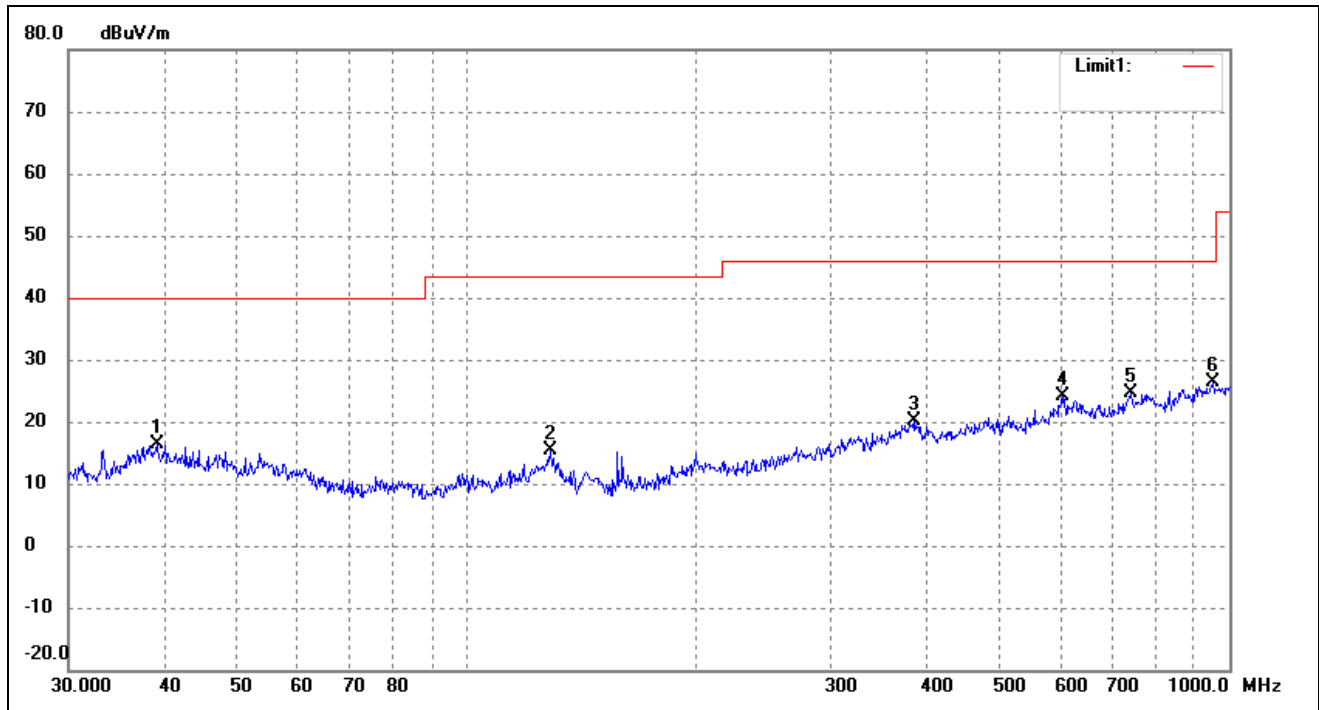
EUT: LM816 802.11n USB Adapter 150Mbps
Tested Model: 816-0648
Operating Condition: 802.11n-HT20 Transmitting Low Channel-2412MHz
Comment: AC 120V/60Hz; USB 5V

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	49.0144	22.72	-8.26	14.46	40.00	-25.54	86	100	peak
2	379.9141	21.86	-2.11	19.75	46.00	-26.25	124	100	peak
3	477.1693	22.38	-1.27	21.11	46.00	-24.89	169	100	peak
4	618.5368	22.31	1.14	23.45	46.00	-22.55	183	100	peak
5	782.3452	21.68	2.78	24.46	46.00	-21.54	203	100	peak
6	912.8619	22.14	3.49	25.63	46.00	-20.37	257	100	peak

Test Specification: Vertical

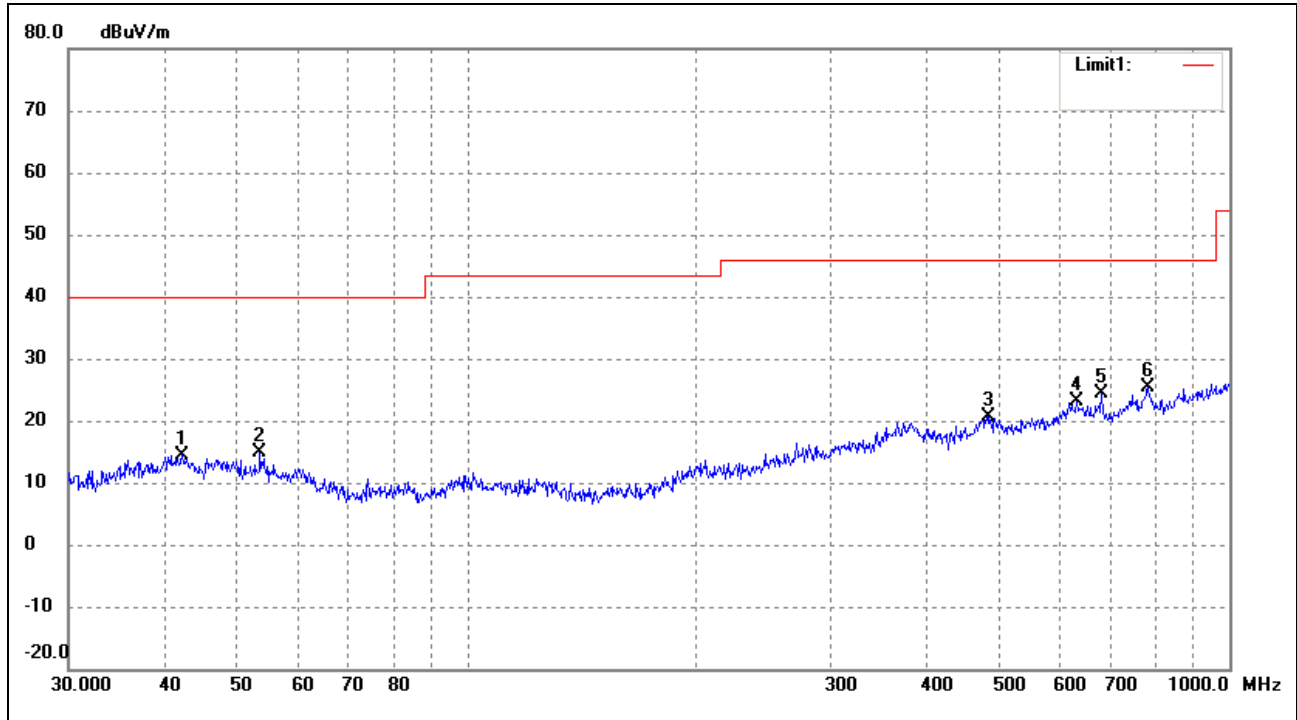


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	39.1615	24.22	-7.90	16.32	40.00	-23.68	67	100	peak
2	128.5629	27.23	-11.92	15.31	43.50	-28.19	133	100	peak
3	386.6338	22.70	-2.45	20.25	46.00	-25.75	169	100	peak
4	603.5392	23.93	0.10	24.03	46.00	-21.97	205	100	peak
5	742.2586	22.42	2.09	24.51	46.00	-21.49	155	100	peak
6	952.0937	22.45	3.85	26.30	46.00	-19.70	197	100	peak

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

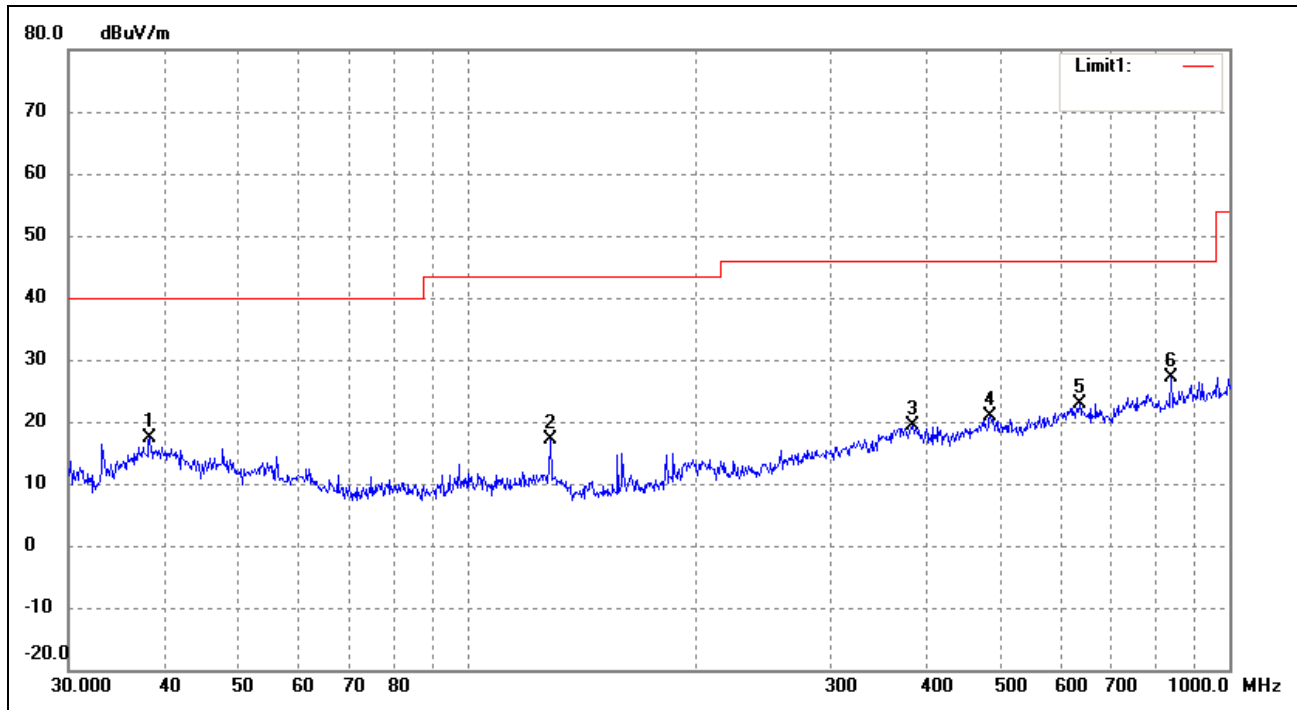
Comment: AC 120V/60Hz; USB 5V

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	42.3021	22.32	-7.82	14.50	40.00	-25.50	38	100	peak
2	53.5052	23.69	-8.76	14.93	40.00	-25.07	117	100	peak
3	483.9094	21.82	-1.27	20.55	46.00	-25.45	160	100	peak
4	631.6884	22.10	0.93	23.03	46.00	-22.97	228	100	peak
5	679.9600	24.24	0.10	24.34	46.00	-21.66	269	100	peak
6	782.3452	22.55	2.78	25.33	46.00	-20.67	82	100	peak

Test Specification: Vertical

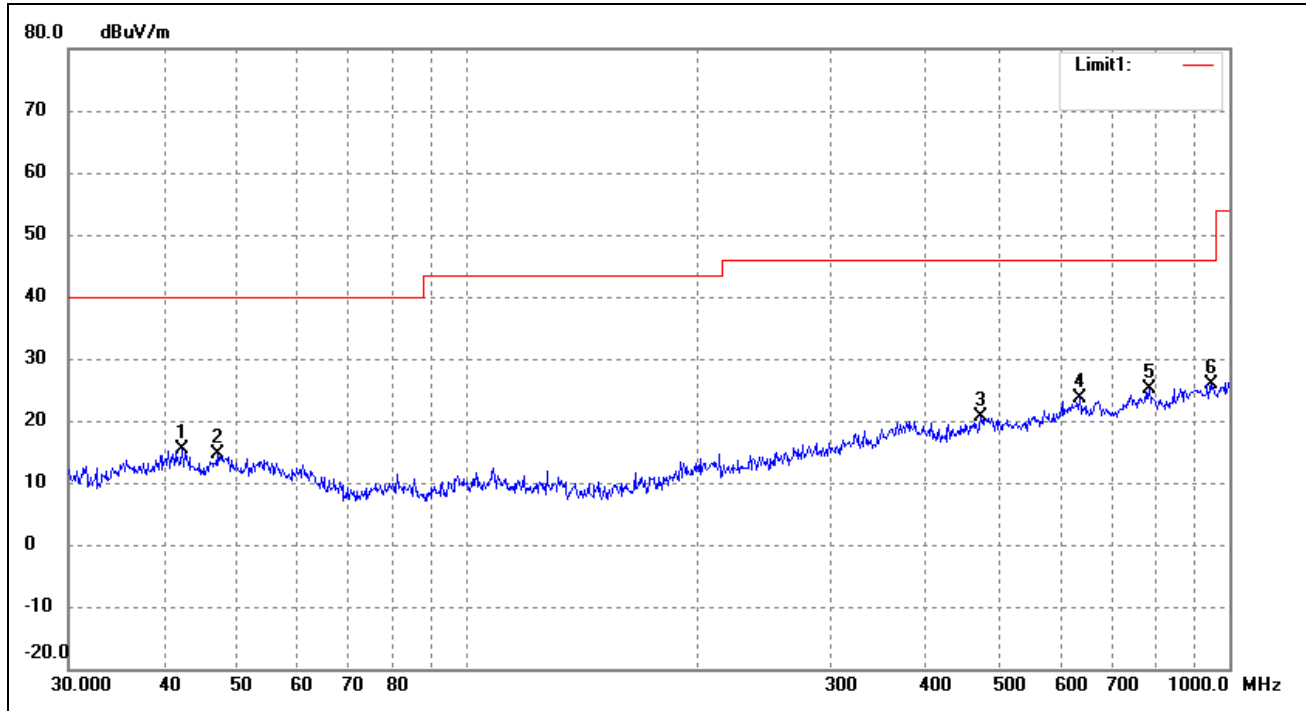


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	38.3462	25.58	-8.12	17.46	40.00	-22.54	49	100	peak
2	128.5629	29.02	-11.92	17.10	43.50	-26.40	136	100	peak
3	383.9318	21.60	-2.30	19.30	46.00	-26.70	97	100	peak
4	485.6093	22.25	-1.36	20.89	46.00	-25.11	264	100	peak
5	636.1340	22.18	0.82	23.00	46.00	-23.00	110	100	peak
6	839.1817	25.24	1.91	27.15	46.00	-18.85	136	100	peak

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

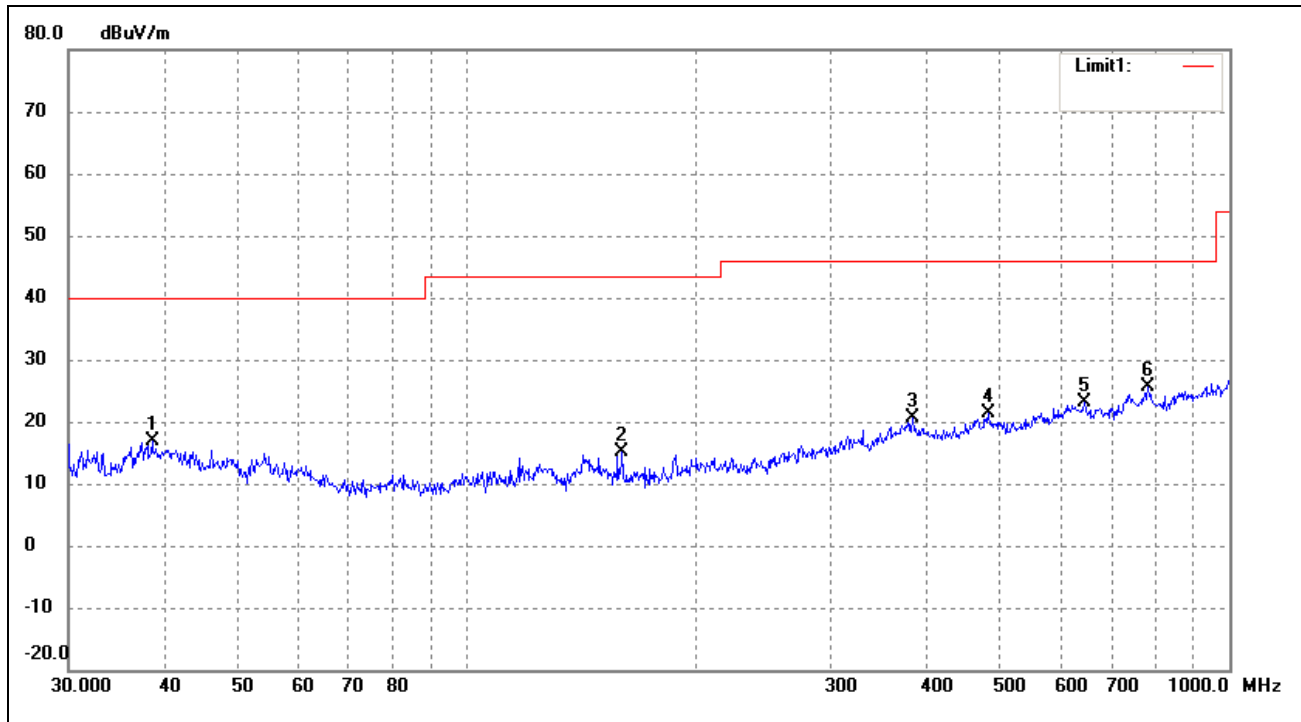
Comment: AC 120V/60Hz; USB 5V

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	42.3021	23.12	-7.82	15.30	40.00	-24.70	126	100	peak
2	46.9947	22.73	-8.13	14.60	40.00	-25.40	172	100	peak
3	472.1759	22.33	-1.69	20.64	46.00	-25.36	139	100	peak
4	636.1340	22.75	0.82	23.57	46.00	-22.43	112	100	peak
5	785.0933	22.49	2.65	25.14	46.00	-20.86	180	100	peak
6	945.4397	21.87	4.08	25.95	46.00	-20.05	270	100	peak

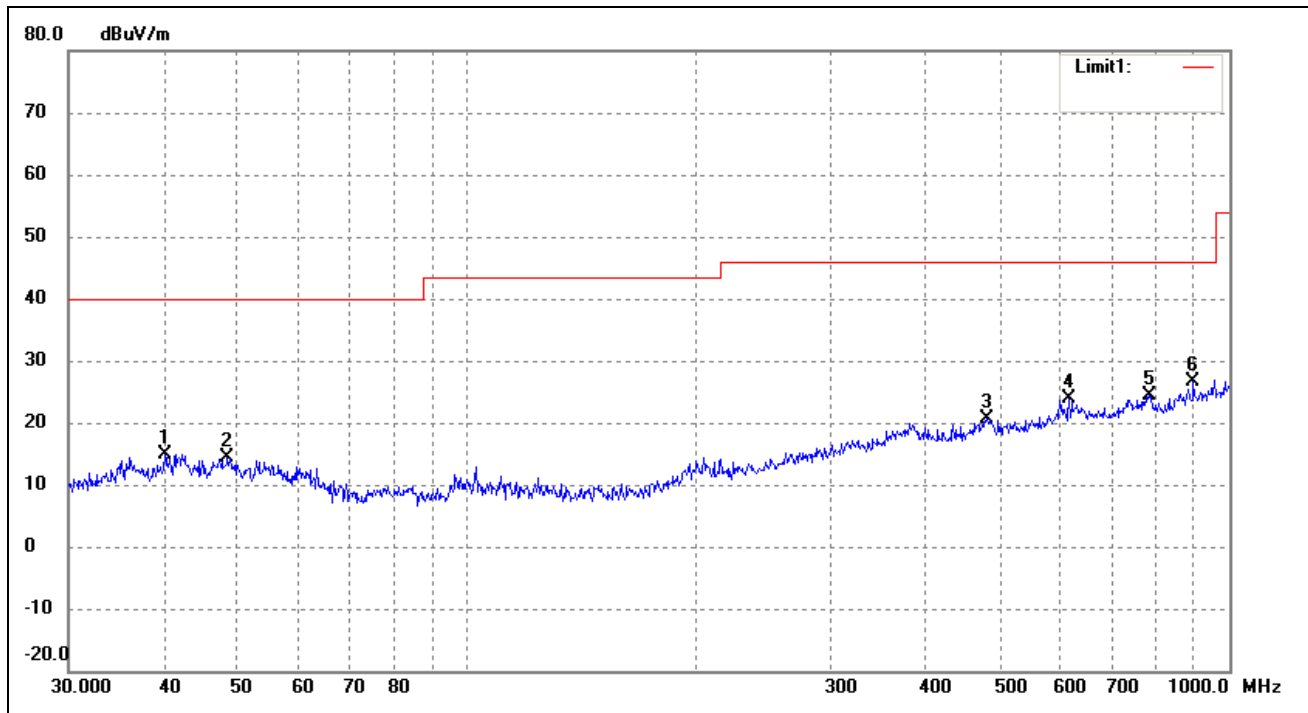
Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	38.6161	24.89	-8.05	16.84	40.00	-23.16	67	100	peak
2	159.7844	27.38	-12.27	15.11	43.50	-28.39	136	100	peak
3	383.9318	22.87	-2.30	20.57	46.00	-25.43	194	100	peak
4	482.2155	22.43	-1.17	21.26	46.00	-24.74	267	100	peak
5	645.1195	22.42	0.61	23.03	46.00	-22.97	116	100	peak
6	782.3452	22.77	2.78	25.55	46.00	-20.45	360	100	peak

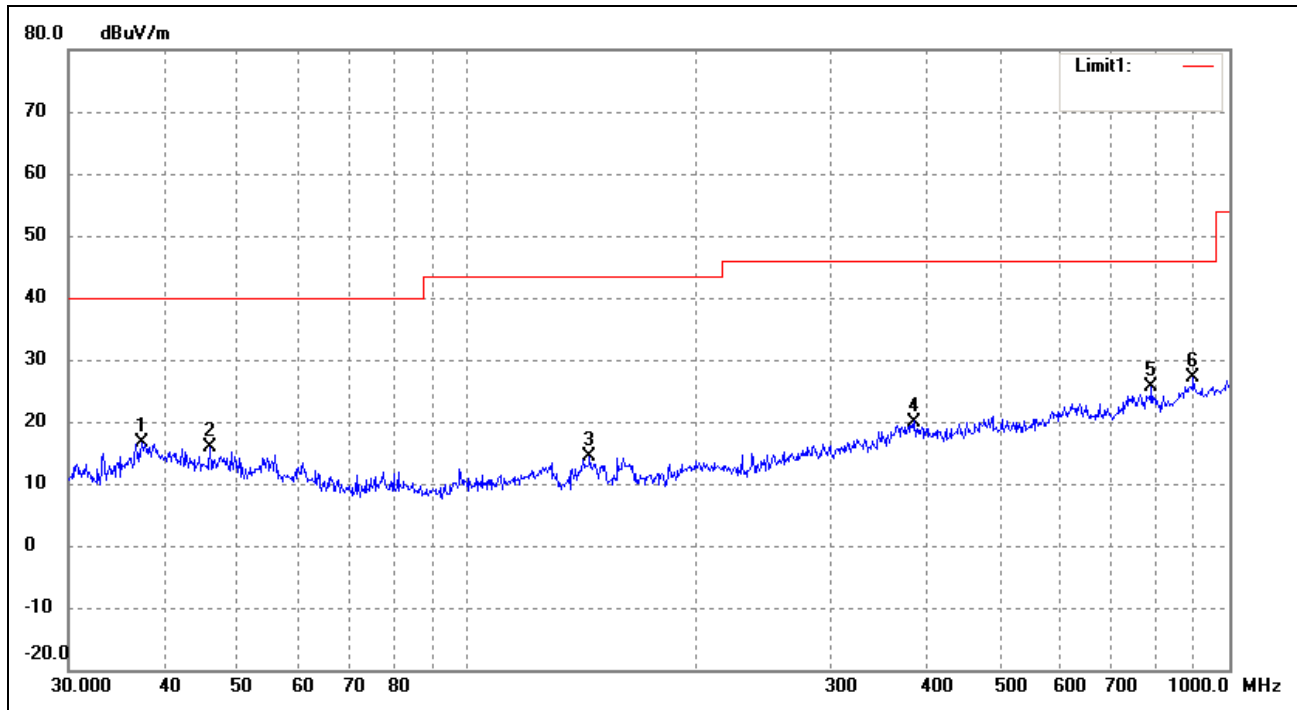
EUT: LM816 802.11n USB Adapter 150Mbps
 Tested Model: 816-0648
 Operating Condition: 802.11n-HT40 Transmitting Low Channel-2422MHz
 Comment: AC 120V/60Hz; USB 5V

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	40.1347	22.62	-7.68	14.94	40.00	-25.06	114	100	peak
2	48.5016	22.50	-8.22	14.28	40.00	-25.72	35	100	peak
3	480.5276	21.79	-1.08	20.71	46.00	-25.29	81	100	peak
4	616.3718	22.92	0.99	23.91	46.00	-22.09	163	100	peak
5	785.0934	21.61	2.65	24.26	46.00	-21.74	246	100	peak
6	896.9964	23.37	3.14	26.51	46.00	-19.49	297	100	peak

Test Specification: Vertical

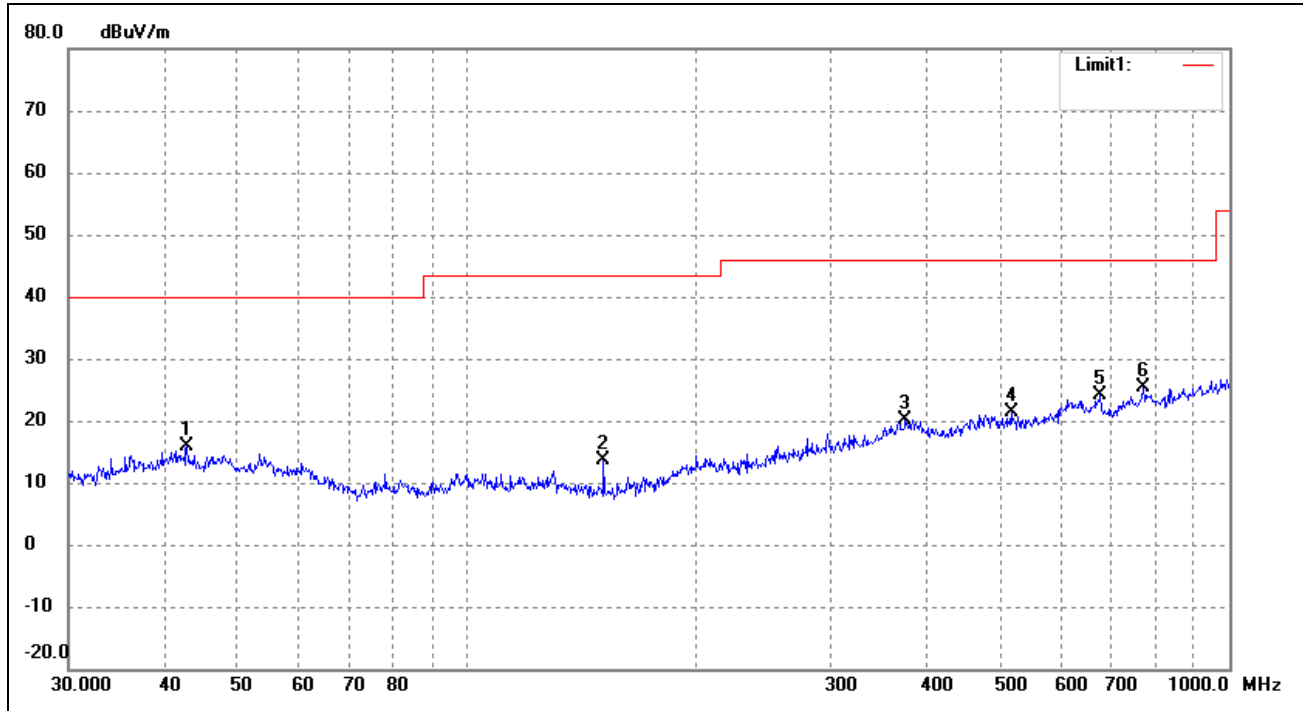


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	37.4164	24.97	-8.37	16.60	40.00	-23.40	113	100	peak
2	46.0163	23.83	-8.06	15.77	40.00	-24.23	148	100	peak
3	144.8418	26.76	-12.50	14.26	43.50	-29.24	167	100	peak
4	386.6338	22.45	-2.45	20.00	46.00	-26.00	150	100	peak
5	790.6187	23.25	2.37	25.62	46.00	-20.38	194	100	peak
6	896.9964	24.08	3.14	27.22	46.00	-18.78	235	100	peak

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

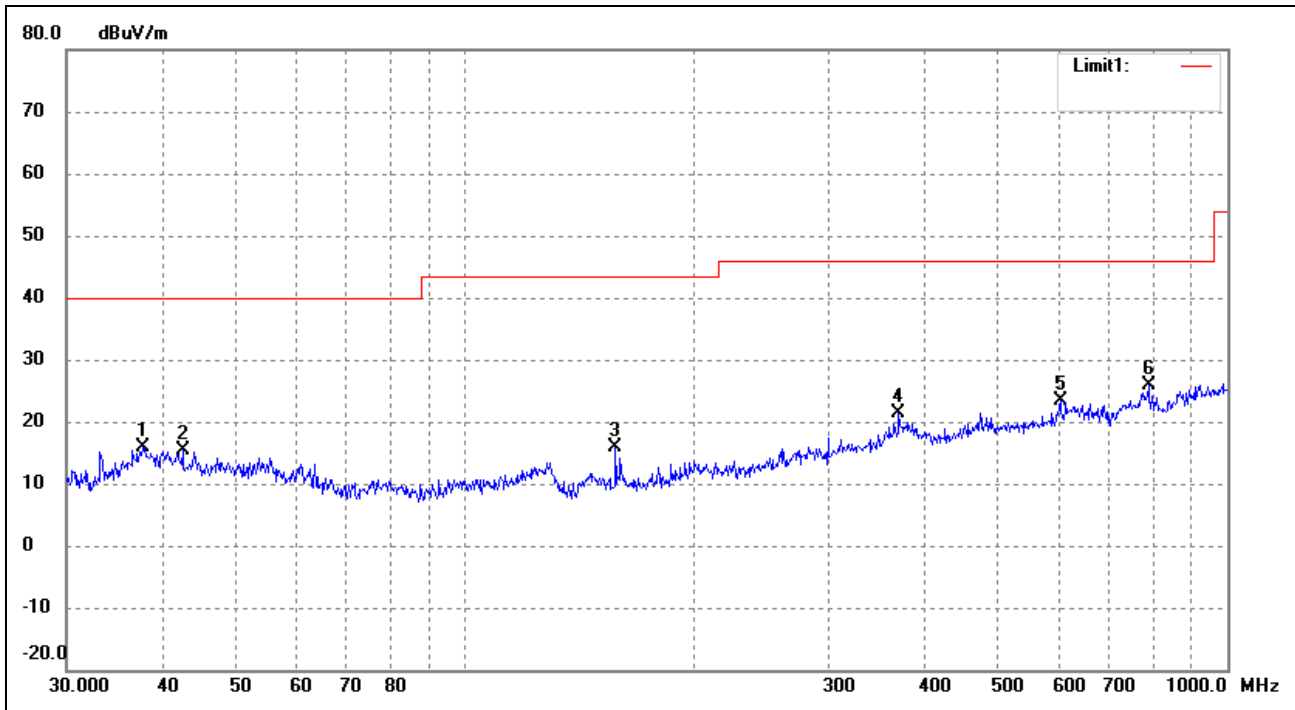
Comment: AC 120V/60Hz; USB 5V

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	42.8997	23.66	-7.85	15.81	40.00	-24.19	67	100	peak
2	151.0665	26.11	-12.41	13.70	43.50	-29.80	124	100	peak
3	375.9384	22.57	-2.33	20.24	46.00	-25.76	198	100	peak
4	517.2480	23.23	-1.94	21.29	46.00	-24.71	167	100	peak
5	677.5797	23.96	0.13	24.09	46.00	-21.91	44	100	peak
6	771.4486	22.98	2.43	25.41	46.00	-20.59	130	100	peak

Test Specification: Vertical

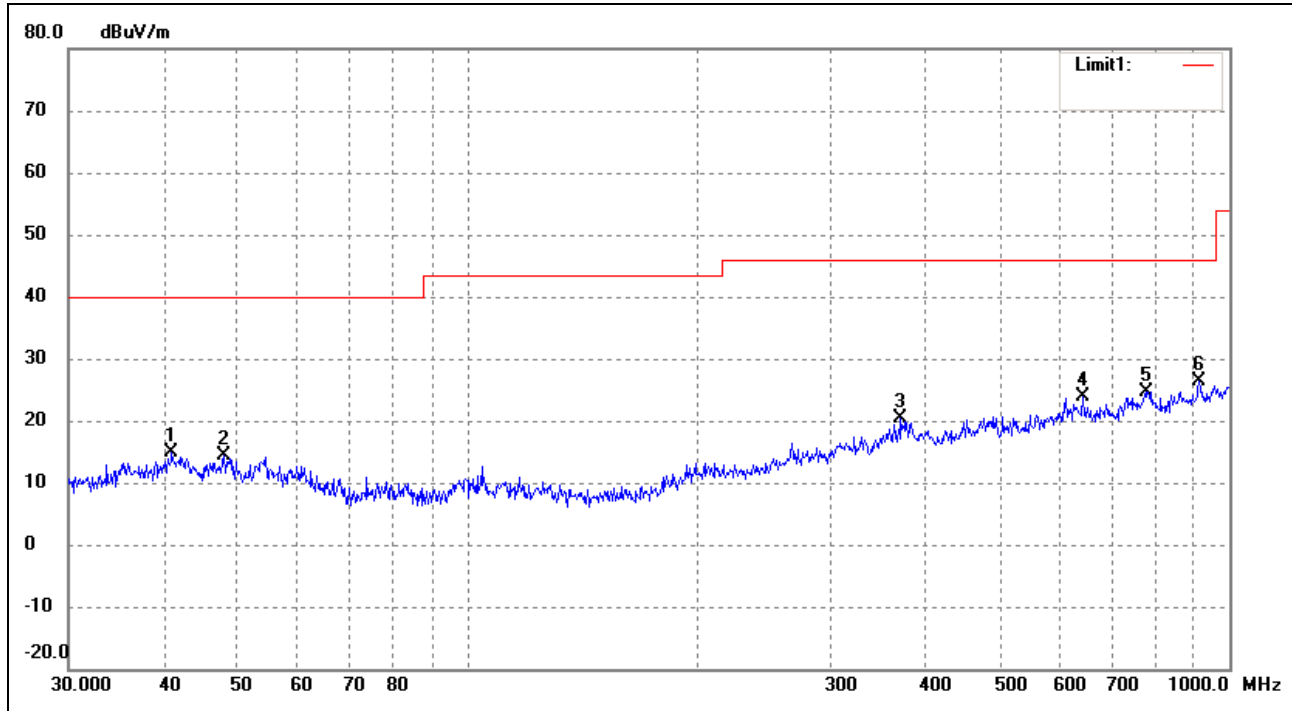


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	37.8121	24.14	-8.26	15.88	40.00	-24.12	77	100	peak
2	42.6000	23.15	-7.84	15.31	40.00	-24.69	135	100	peak
3	157.5588	28.23	-12.31	15.92	43.50	-27.58	169	100	peak
4	370.7022	24.01	-2.63	21.38	46.00	-24.62	180	100	peak
5	603.5392	23.23	0.10	23.33	46.00	-22.67	242	100	peak
6	787.8513	23.26	2.51	25.77	46.00	-20.23	293	100	peak

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

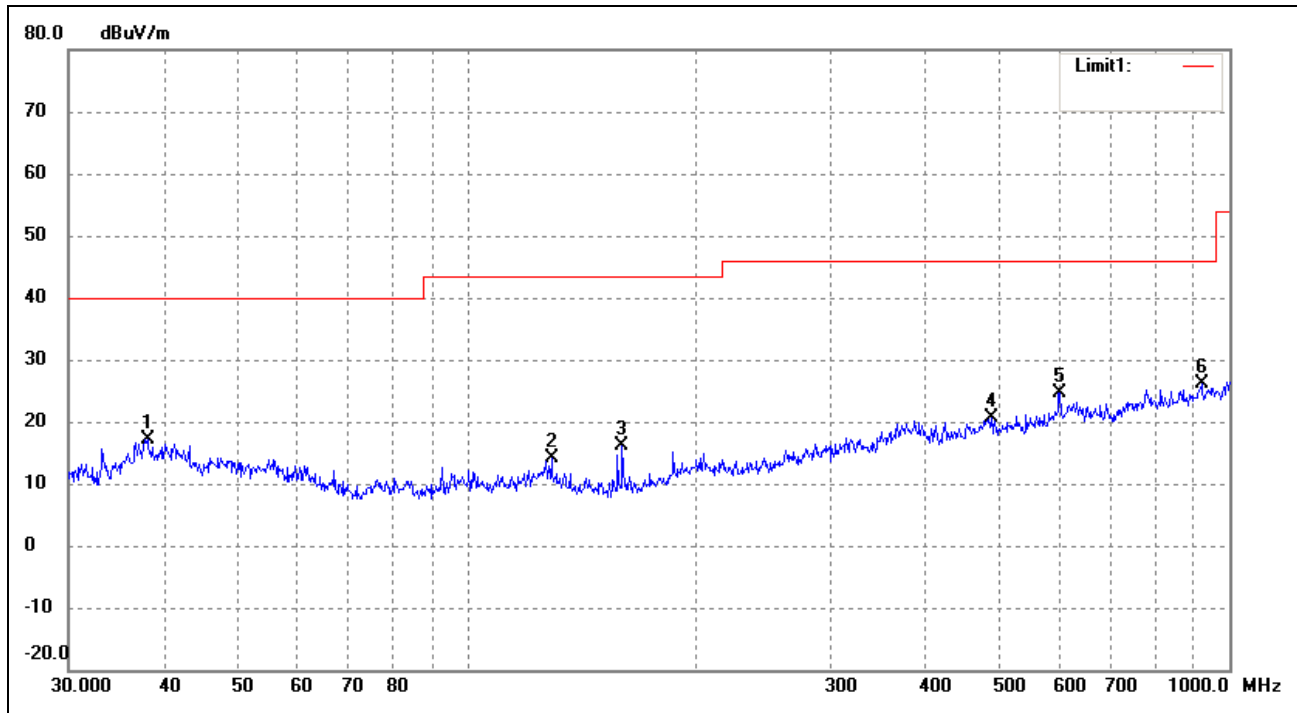
Comment: AC 120V/60Hz; USB 5V

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	40.9881	22.55	-7.73	14.82	40.00	-25.18	71	100	peak
2	47.9939	22.55	-8.19	14.36	40.00	-25.64	136	100	peak
3	370.7022	23.00	-2.63	20.37	46.00	-25.63	169	100	peak
4	642.8613	23.21	0.65	23.86	46.00	-22.14	205	100	peak
5	776.8777	21.92	2.73	24.65	46.00	-21.35	267	100	peak
6	912.8619	22.89	3.49	26.38	46.00	-19.62	290	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	38.0782	25.33	-8.20	17.13	40.00	-22.87	90	100	peak
2	129.0146	26.11	-11.94	14.17	43.50	-29.33	136	100	peak
3	159.7844	28.28	-12.27	16.01	43.50	-27.49	168	100	peak
4	487.3150	22.02	-1.47	20.55	46.00	-25.45	194	100	peak
5	599.3212	24.85	-0.17	24.68	46.00	-21.32	245	100	peak
6	919.2866	22.44	3.65	26.09	46.00	-19.91	282	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	57.95	-3.87	54.08	74.00	-19.92	H	PK
4824.000	43.89	-3.87	40.02	54.00	-13.98	H	AV
7236.000	48.51	1.14	49.65	74.00	-24.35	H	PK
7236.000	36.96	1.19	38.15	54.00	-15.85	H	AV
4824.000	57.07	-3.86	53.21	74.00	-20.79	V	PK
4824.000	44.17	-3.86	40.31	54.00	-13.69	V	AV
7236.000	50.12	1.10	51.22	74.00	-22.78	V	PK
7236.000	37.31	1.10	38.41	54.00	-15.59	V	AV
Middle Channel-2437MHz							
4874.000	56.07	-3.74	52.33	74.00	-21.67	H	PK
4874.000	40.82	-3.74	37.08	54.00	-16.92	H	AV
7311.000	48.28	1.47	49.75	74.00	-24.25	H	PK
7311.000	36.96	1.47	38.43	54.00	-15.57	H	AV
4874.000	59.29	-3.74	55.55	74.00	-18.45	V	PK
4874.000	42.48	-3.74	38.74	54.00	-15.26	V	AV
7311.000	51.09	1.47	52.56	74.00	-21.44	V	PK
7311.000	39.42	1.47	40.89	54.00	-13.11	V	AV
High Channel-2462MHz							
4924.000	57.9	-3.59	54.31	74.00	-19.69	H	PK
4924.000	43.84	-3.59	40.25	54.00	-13.75	H	AV
7386.000	48.46	1.79	50.25	74.00	-23.75	H	PK
7386.000	36.91	1.79	38.70	54.00	-15.30	H	AV
4924.000	57.02	-3.59	53.43	74.00	-20.57	V	PK
4924.000	44.12	-3.59	40.53	54.00	-13.47	V	AV
7386.000	50.07	1.79	51.86	74.00	-22.14	V	PK
7386.000	37.26	1.79	39.05	54.00	-14.95	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	57.63	-3.87	53.76	74.00	-20.24	H	PK
4824.000	44.36	-3.87	40.49	54.00	-13.51	H	AV
7236.000	50.55	1.14	51.69	74.00	-22.31	H	PK
7236.000	36.53	1.19	37.72	54.00	-16.28	H	AV
4824.000	58.12	-3.86	54.26	74.00	-19.74	V	PK
4824.000	44.78	-3.86	40.92	54.00	-13.08	V	AV
7236.000	51.35	1.10	52.45	74.00	-21.55	V	PK
7236.000	37.67	1.10	38.77	54.00	-15.23	V	AV
Middle Channel-2437MHz							
4874.000	57.08	-3.74	53.34	74.00	-20.66	H	PK
4874.000	45.26	-3.74	41.52	54.00	-12.48	H	AV
7311.000	49.36	1.47	50.83	74.00	-23.17	H	PK
7311.000	37.25	1.47	38.72	54.00	-15.28	H	AV
4874.000	59.05	-3.74	55.31	74.00	-18.69	V	PK
4874.000	45.84	-3.74	42.10	54.00	-11.90	V	AV
7311.000	50.38	1.47	51.85	74.00	-22.15	V	PK
7311.000	37.31	1.47	38.78	54.00	-15.22	V	AV
High Channel-2462MHz							
4924.000	56.08	-3.59	52.49	74.00	-21.51	H	PK
4924.000	42.83	-3.59	39.24	54.00	-14.76	H	AV
7386.000	49.26	1.79	51.05	74.00	-22.95	H	PK
7386.000	36.81	1.79	38.60	54.00	-15.40	H	AV
4924.000	58.19	-3.59	54.60	74.00	-19.40	V	PK
4924.000	44.77	-3.59	41.18	54.00	-12.82	V	AV
7386.000	50.66	1.79	52.45	74.00	-21.55	V	PK
7386.000	38.03	1.79	39.82	54.00	-14.18	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	57.73	-3.87	53.86	74.00	-20.14	H	PK
4824.000	42.67	-3.87	38.80	54.00	-15.20	H	AV
7236.000	49.39	1.14	50.53	74.00	-23.47	H	PK
7236.000	36.57	1.19	37.76	54.00	-16.24	H	AV
4824.000	58.84	-3.86	54.98	74.00	-19.02	V	PK
4824.000	45.31	-3.86	41.45	54.00	-12.55	V	AV
7236.000	51.34	1.10	52.44	74.00	-21.56	V	PK
7236.000	37.90	1.10	39.00	54.00	-15.00	V	AV
Middle Channel-2437MHz							
4874.000	56.14	-3.74	52.40	74.00	-21.60	H	PK
4874.000	44.46	-3.74	40.72	54.00	-13.28	H	AV
7311.000	50.72	1.47	52.19	74.00	-21.81	H	PK
7311.000	35.08	1.47	36.55	54.00	-17.45	H	AV
4874.000	56.90	-3.74	53.16	74.00	-20.84	V	PK
4874.000	44.60	-3.74	40.86	54.00	-13.14	V	AV
7311.000	50.47	1.47	51.94	74.00	-22.06	V	PK
7311.000	37.18	1.47	38.65	54.00	-15.35	V	AV
High Channel-2462MHz							
4924.000	55.98	-3.59	52.39	74.00	-21.61	H	PK
4924.000	45.31	-3.59	41.72	54.00	-12.28	H	AV
7386.000	50.39	1.79	52.18	74.00	-21.82	H	PK
7386.000	38.18	1.79	39.97	54.00	-14.03	H	AV
4924.000	57.78	-3.59	54.19	74.00	-19.81	V	PK
4924.000	43.56	-3.59	39.97	54.00	-14.03	V	AV
7386.000	50.63	1.79	52.42	74.00	-21.58	V	PK
7386.000	37.44	1.79	39.23	54.00	-14.77	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	55.38	-3.90	51.48	74.00	-22.52	H	PK
4824.000	40.38	-3.90	36.48	54.00	-17.52	H	AV
7266.000	48.61	1.06	49.67	74.00	-24.33	H	PK
7266.000	34.69	1.06	35.75	54.00	-18.25	H	AV
4844.000	56.35	-3.9	52.45	74.00	-21.55	V	PK
4824.000	41.55	-3.9	37.65	54.00	-16.35	V	AV
7266.000	50.94	1.06	52.00	74.00	-22.00	V	PK
7266.000	36.91	1.06	37.97	54.00	-16.03	V	AV
Middle Channel-2437MHz							
4874.000	54.51	-3.74	50.77	74.00	-23.23	H	PK
4874.000	39.86	-3.74	36.12	54.00	-17.88	H	AV
7311.000	46.86	1.47	48.33	74.00	-25.67	H	PK
7311.000	34.01	1.47	35.48	54.00	-18.52	H	AV
4874.000	55.72	-3.74	51.98	74.00	-22.02	V	PK
4874.000	41.93	-3.74	38.19	54.00	-15.81	V	AV
7311.000	47.76	1.47	49.23	74.00	-24.77	V	PK
7311.000	35.98	1.47	37.45	54.00	-16.55	V	AV
High Channel-2452MHz							
4904.000	54.73	-3.63	51.10	74.00	-22.90	H	PK
4904.000	41.45	-3.63	37.82	54.00	-16.18	H	AV
7356.000	47.71	1.62	49.33	74.00	-24.67	H	PK
7356.000	32.81	1.62	34.43	54.00	-19.57	H	AV
4904.000	56.92	-3.63	53.29	74.00	-20.71	V	PK
4904.000	42.91	-3.63	39.28	54.00	-14.72	V	AV
7356.000	50.26	1.62	51.88	74.00	-22.12	V	PK
7356.000	37.20	1.62	38.82	54.00	-15.18	V	AV

Note: Testing is carried out with frequency rang 30MHz to the tenth harmonics, which above 3th Harmonics are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

9. Out of Band Emissions

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.

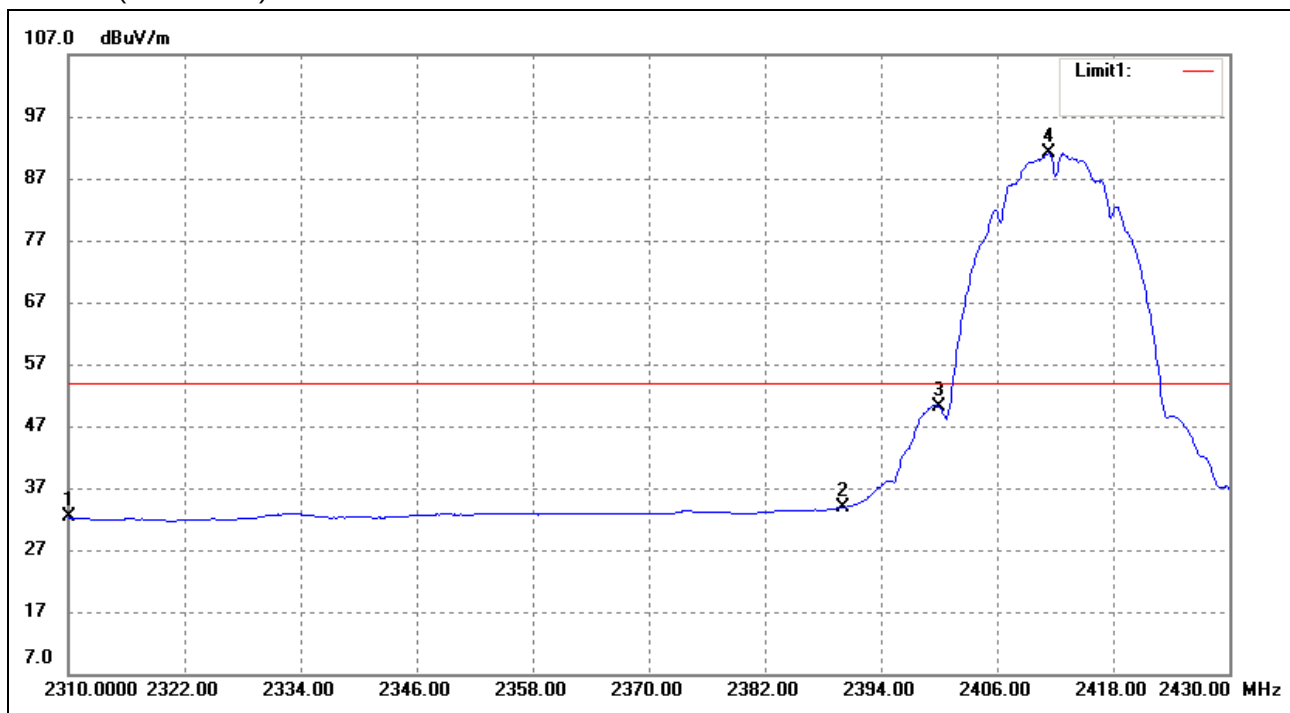
9.3 Environmental Conditions

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

9.4 Summary of Test Results/Plots

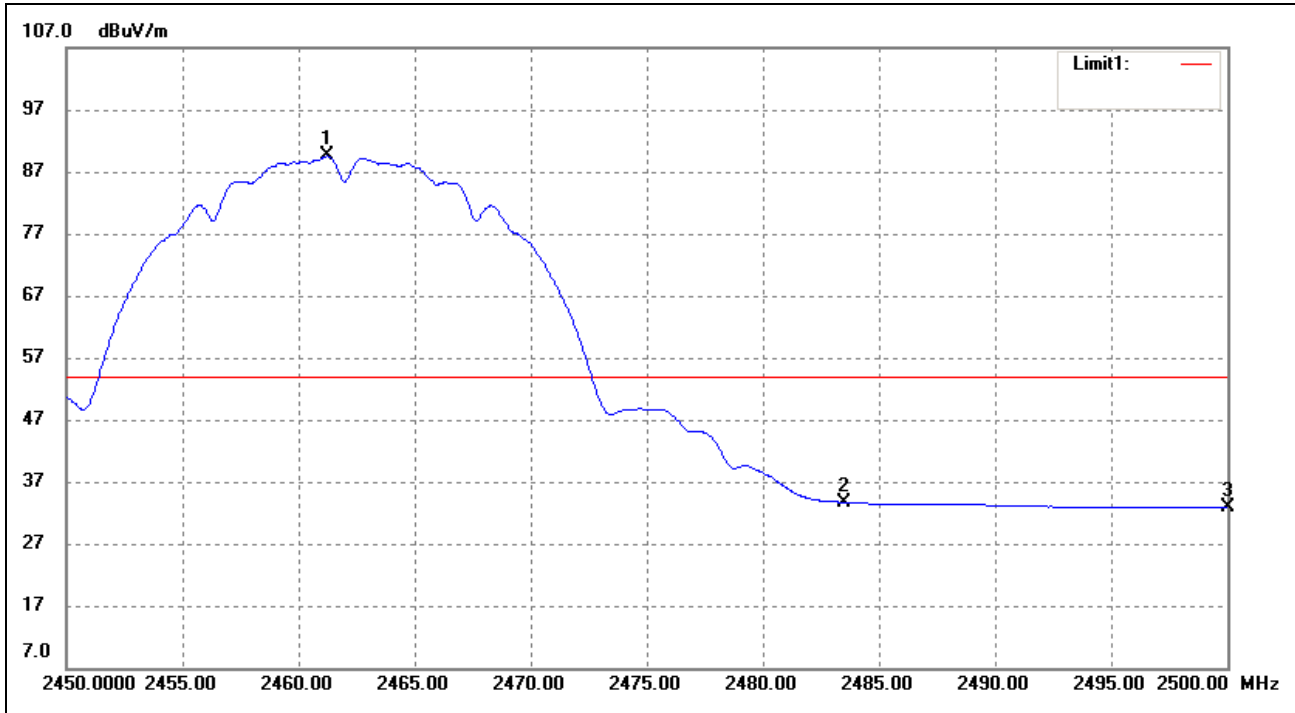
802.11b-Lowest Bandedge

Vertical (Worst case)



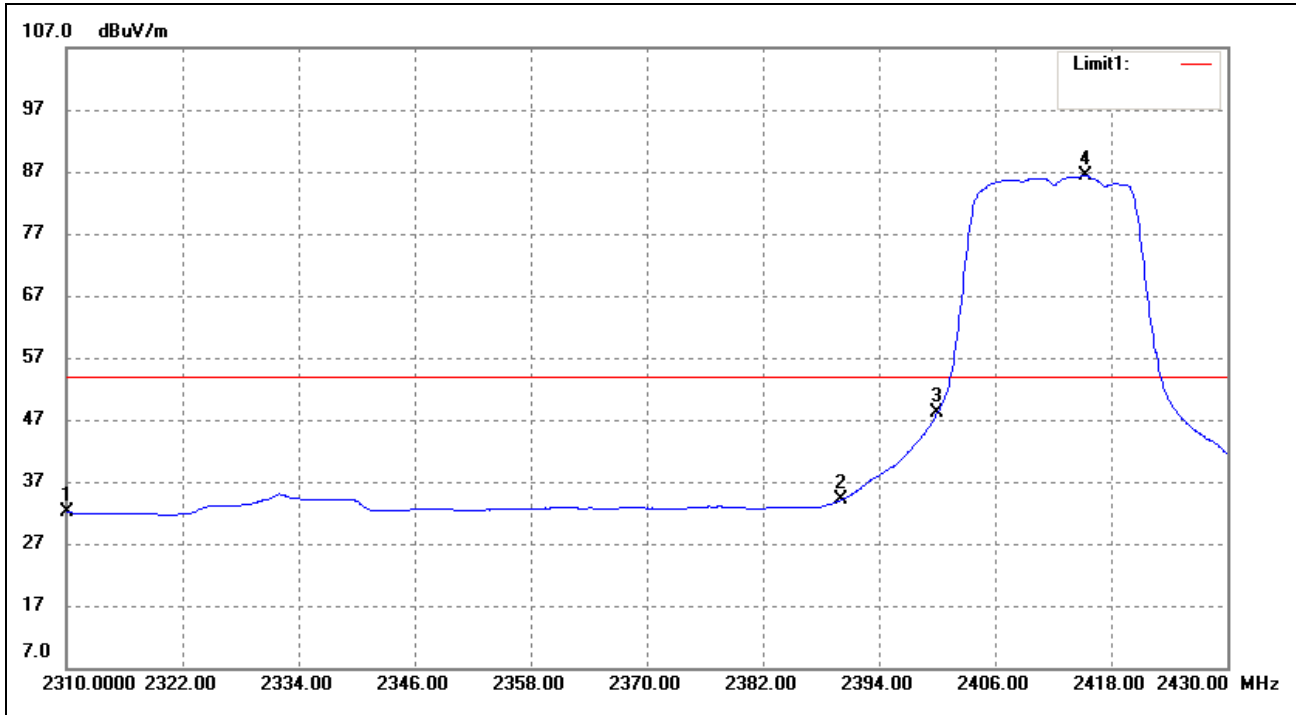
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2310.000	36.06	-3.80	32.26	54.00	-21.74	Average Detector
	2310.000	50.61	-3.80	46.81	74.00	-27.19	Peak Detector
2	2390.000	36.87	-3.00	33.87	54.00	-20.13	Average Detector
	2390.000	50.10	-3.00	47.10	74.00	-26.90	Peak Detector
3	2400.000	53.01	-2.90	50.11	Delta =40.96dBc		Average Detector
4	2411.280	93.91	-2.84	91.07			Average Detector

802.11b-Highest Bandedge
Vertical (Worst case)



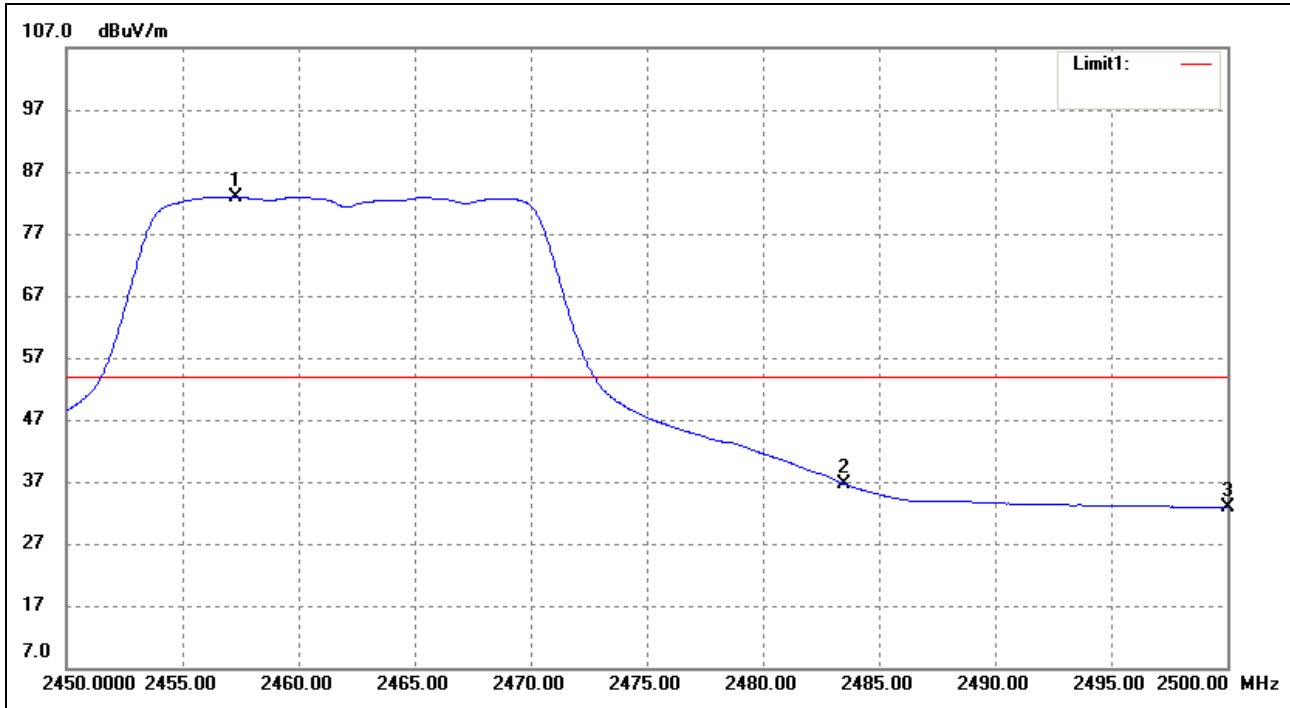
No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2461.200	92.14	-2.60	89.54	/	/	Average Detector
	2460.900	96.75	-2.60	94.15	/	/	Peak Detector
2	2483.500	36.17	-2.49	33.68	54.00	-20.32	Average Detector
	2483.500	48.79	-2.49	46.30	74.00	-27.70	Peak Detector
3	2500.000	35.33	-2.40	32.93	54.00	-21.07	Average Detector
	2500.000	46.89	-2.40	44.49	74.00	-29.51	Peak Detector

802.11g-Lowest Bandedge
Vertical (Worst case)



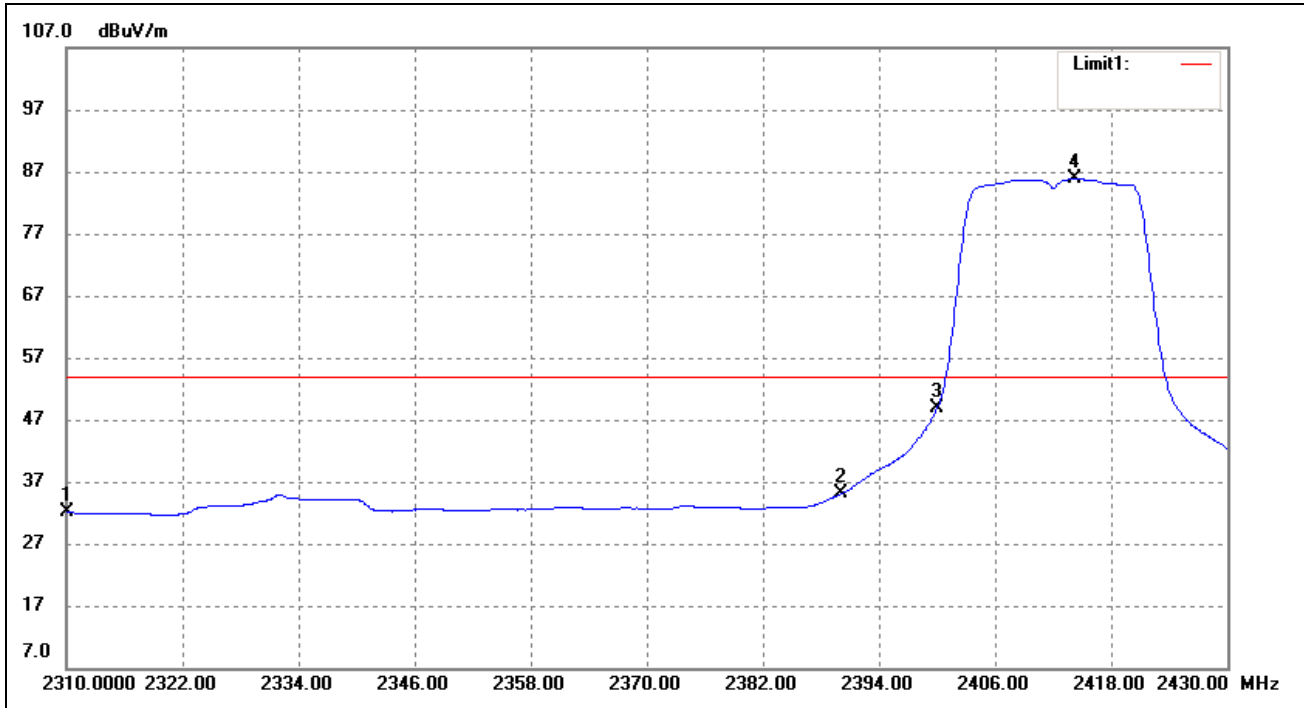
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2310.000	35.89	-3.80	32.09	54.00	-21.91	Average Detector
	2310.000	51.47	-3.80	47.67	74.00	-26.33	Peak Detector
2	2390.000	37.02	-3.00	34.02	54.00	-19.98	Average Detector
	2390.000	57.85	-3.00	54.85	74.00	-19.15	Peak Detector
3	2400.000	50.92	-2.90	48.02	Delta = 38.30dBc		Average Detector
4	2415.360	89.14	-2.82	86.32			Average Detector

802.11g-Highest Bandedge
Vertical (Worst case)



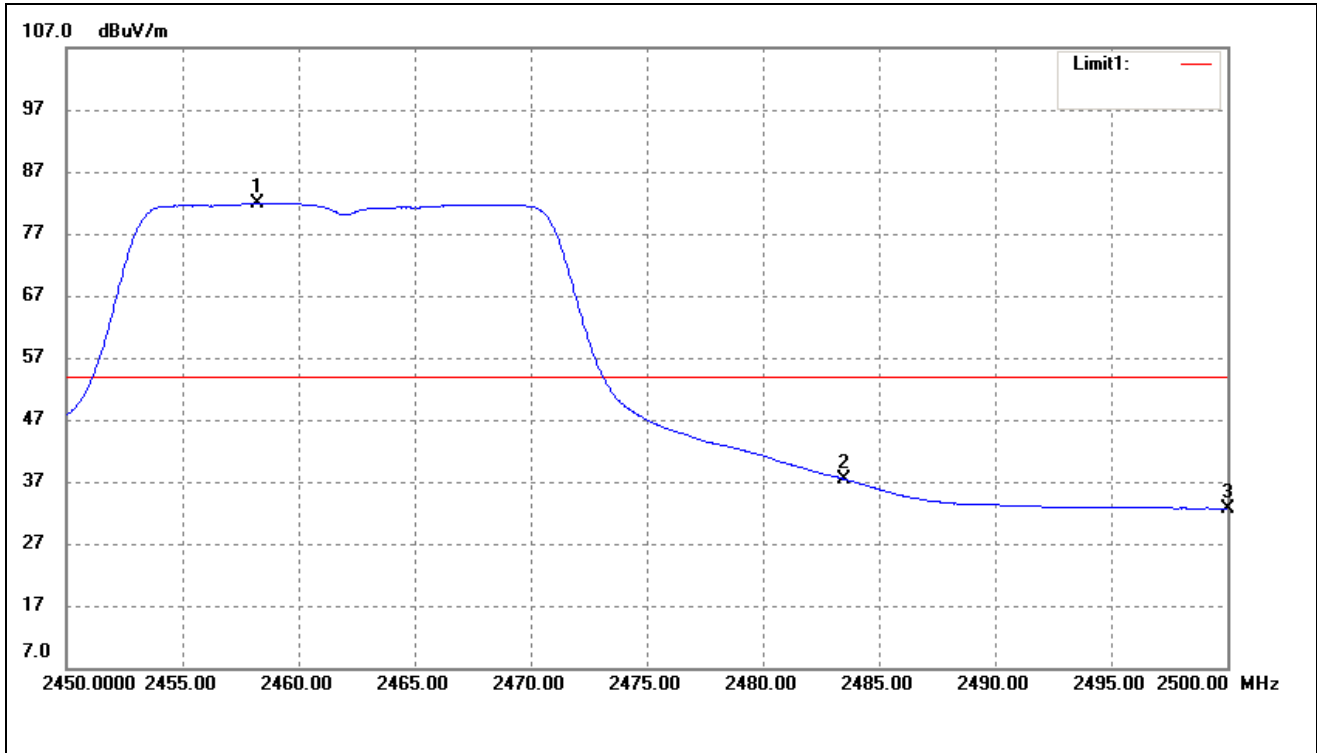
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2457.300	85.50	-2.61	82.89	/	/	Average Detector
	2458.750	96.71	-2.61	94.10	/	/	Peak Detector
2	2483.500	39.11	-2.49	36.62	54.00	-17.38	Average Detector
	2483.500	57.42	-2.49	54.93	74.00	-19.07	Peak Detector
3	2500.000	35.25	-2.40	32.85	54.00	-21.15	Average Detector
	2500.000	48.08	-2.40	45.68	74.00	-28.32	Peak Detector

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



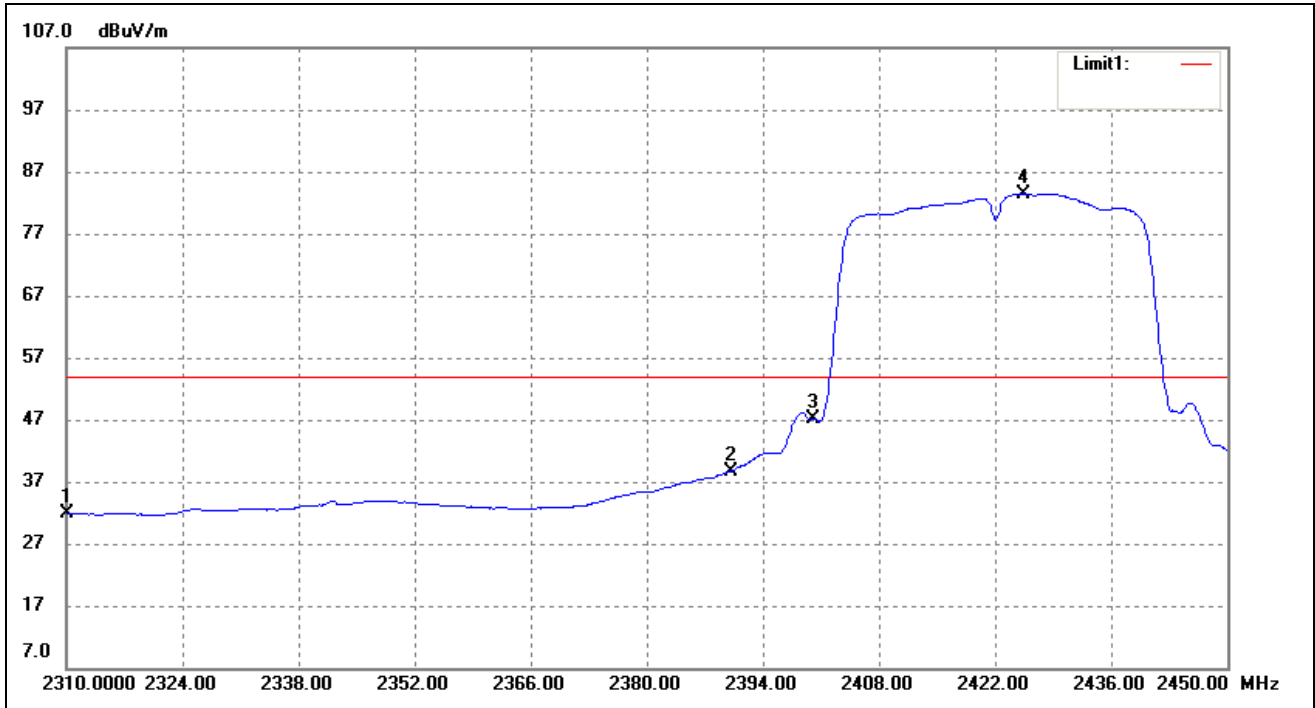
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2310.000	35.91	-3.80	32.11	54.00	-21.89	Average Detector
	2310.000	51.08	-3.80	47.28	74.00	-26.72	Peak Detector
2	2390.000	38.08	-3.00	35.08	54.00	-18.92	Average Detector
	2390.000	53.45	-3.00	50.45	74.00	-23.55	Peak Detector
3	2400.000	51.73	-2.90	48.83	Delta =37.15dBc		Average Detector
4	2414.280	88.80	-2.82	85.98			Average Detector

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



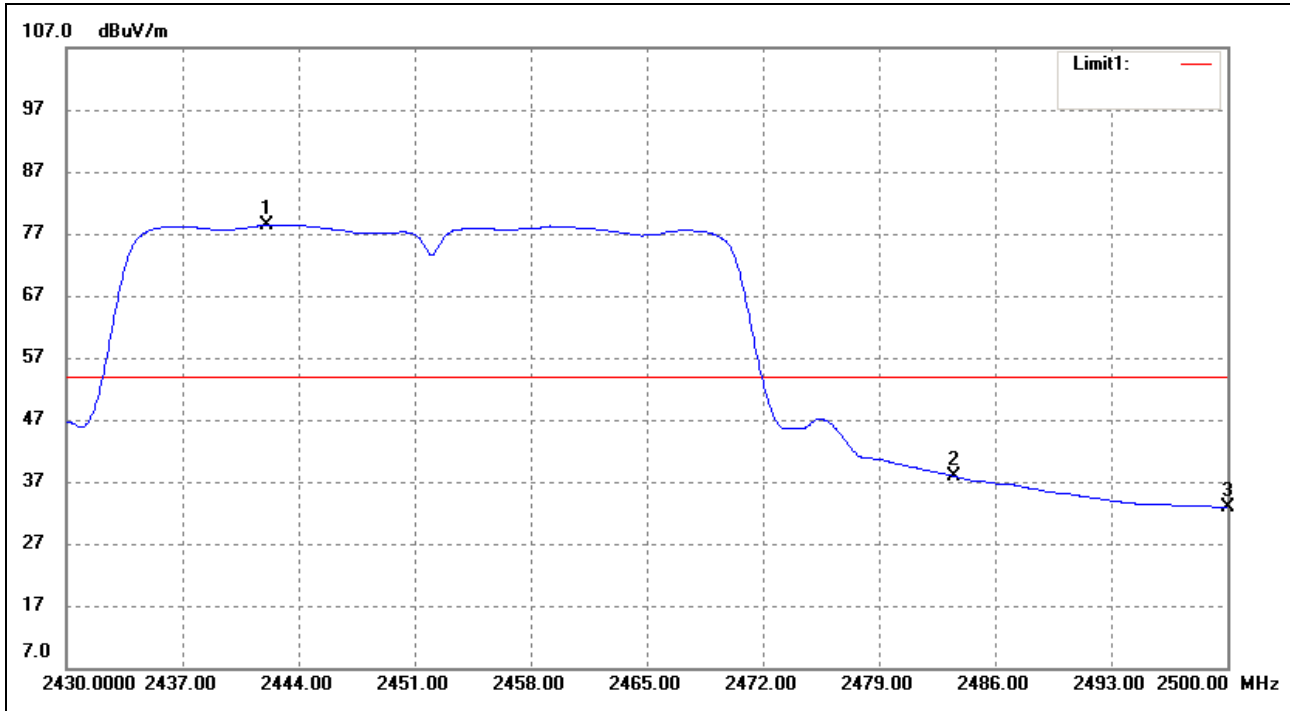
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2458.200	84.49	-2.61	81.88	/	/	Average Detector
	2457.200	96.68	-2.61	94.07	/	/	Peak Detector
2	2483.500	39.92	-2.49	37.43	54.00	-16.57	Average Detector
	2483.500	61.28	-2.49	58.79	74.00	-15.21	Peak Detector
3	2500.000	35.08	-2.40	32.68	54.00	-21.32	Average Detector
	2500.000	48.88	-2.40	46.48	74.00	-27.52	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	35.78	-3.80	31.98	54.00	-22.02	Average Detector
	2310.000	50.29	-3.80	46.49	74.00	-27.51	Peak Detector
2	2390.000	41.71	-3.00	38.71	54.00	-15.29	Average Detector
	2390.000	57.94	-3.00	54.94	74.00	-19.06	Peak Detector
3	2400.000	50.03	-2.90	47.13	Delta =36.37dBc		Average Detector
4	2425.500	86.28	-2.78	83.50			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	2442.110	81.04	-2.69	78.35	/	/	Average Detector
	2443.020	92.55	-2.69	89.86	/	/	Peak Detector
2	2483.500	40.40	-2.49	37.91	54.00	-16.09	Average Detector
	2483.500	56.91	-2.49	54.42	74.00	-19.58	Peak Detector
3	2500.000	35.28	-2.40	32.88	54.00	-21.12	Average Detector
	2500.000	47.92	-2.40	45.52	74.00	-28.48	Peak Detector

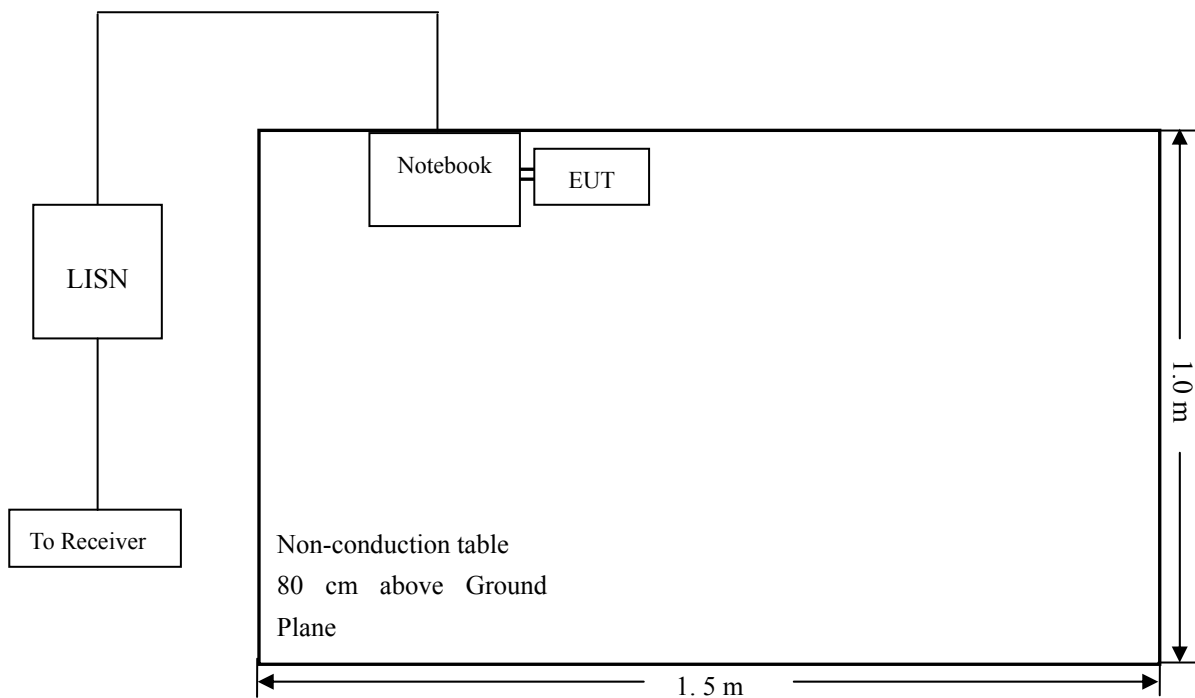
10. Conducted Emissions

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:

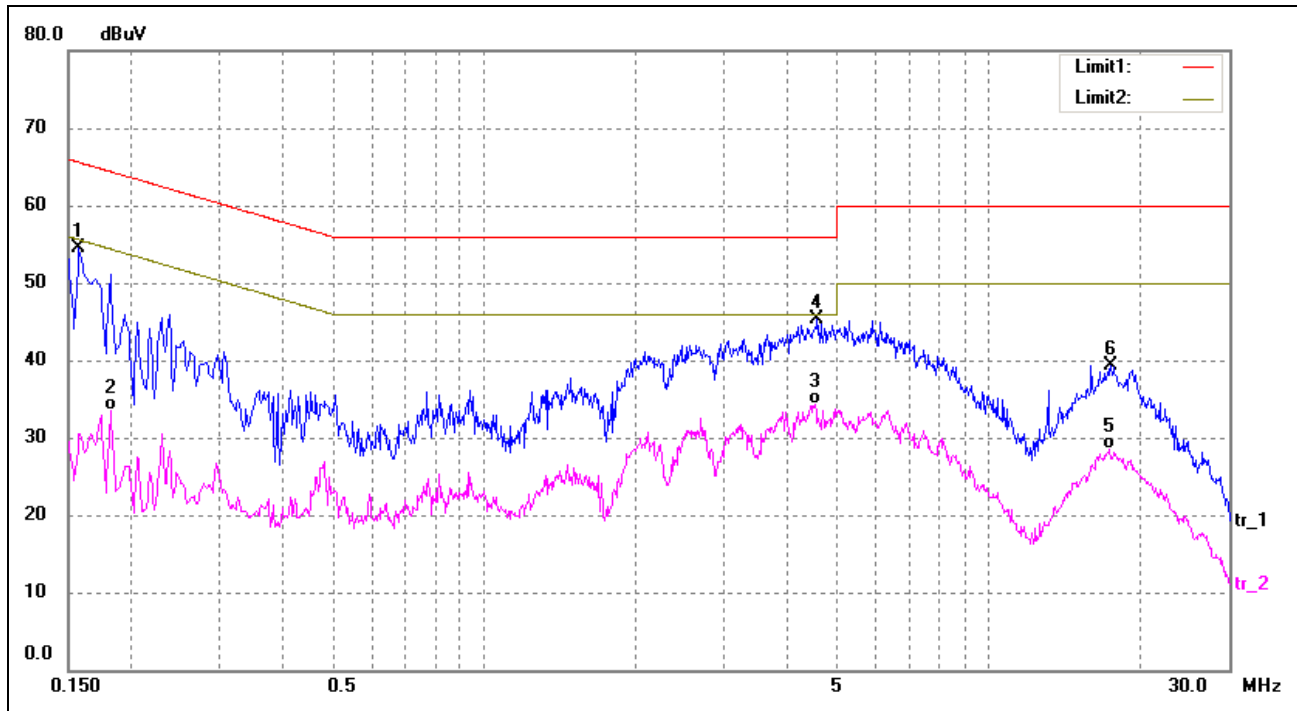
-10.69 dB at 4.5860 MHz in the Neutral mode, Peak detector, 0.15-30MHz

10.6 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

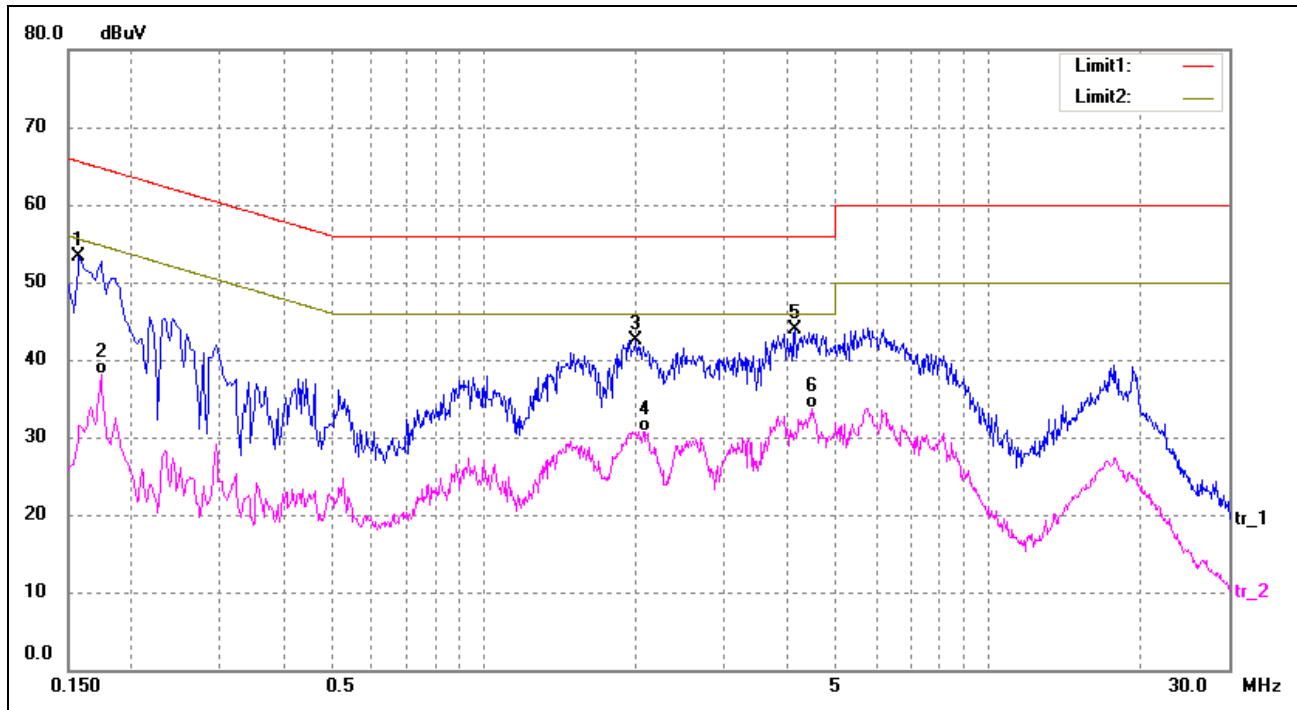
EUT: LM816 802.11n USB Adapter 150Mbps
 Tested Model: 816-0648
 Operating Condition: Transmitting(Wi-Fi)
 Comment: AC 120V/60Hz; USB 5V

Test Specification: Neutral



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1580	44.52	10.02	54.54	65.57	-11.03	peak
2	0.1820	25.02	8.58	33.60	54.39	-20.79	AVG
3	4.5340	21.68	12.69	34.37	46.00	-11.63	AVG
4*	4.5860	32.59	12.72	45.31	56.00	-10.69	peak
5	17.4700	16.97	11.49	28.46	50.00	-21.54	AVG
6	17.5060	27.86	11.50	39.36	60.00	-20.64	peak

Test Specification: Line



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.1580	43.37	10.02	53.39	65.57	-12.18	peak
2	0.1740	28.98	9.06	38.04	54.77	-16.73	AVG
3	2.0100	31.53	11.01	42.54	56.00	-13.46	peak
4	2.0980	19.66	11.07	30.73	46.00	-15.27	AVG
5	4.1540	31.38	12.44	43.82	56.00	-12.18	peak
6	4.4740	21.09	12.65	33.74	46.00	-12.26	AVG

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