



FCC PART 15, SUBPART C

TEST AND MEASUREMENT REPORT

For

Roost, Inc.

955 Benicia Avenue,
Sunnyvale, CA 94085, USA

FCC ID: 2AE5ATOSV

Report Type: Original Report	Product Type: Wireless Battery
Prepared By: Leonard Gray <i>Leonard Gray</i> Associate Engineer	
Report Number: R1509231-247	
Report Date: 2015-10-21	
Reviewed By: Simon Ma <i>Simon Ma</i> RF Lead	
Bay Area Compliance Laboratories Corp. 1274 Anvilwood Avenue, Sunnyvale, CA 94089, USA Tel: (408) 732-9162 Fax: (408) 732-9164	

Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. This report **must not** be used by the customer to claim product certification, approval, or endorsement by A2LA*, NIST, or any agency of the Federal Government.

* This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk "*" (Rev. 2)

TABLE OF CONTENTS

1 General Description.....	5
1.1 Product Description for Equipment Under Test (EUT)	5
1.2 Mechanical Description of EUT	5
1.3 Objective.....	5
1.4 Related Submittal(s)/Grant(s)	5
1.5 Test Methodology	5
1.6 Measurement Uncertainty	5
1.7 Test Facility	6
2 System Test Configuration.....	7
2.1 Justification.....	7
2.2 EUT Exercise Software.....	7
2.3 Equipment Modifications.....	7
2.4 Local Support Equipment	7
2.5 EUT Internal Configuration Details.....	7
2.6 Power Supply and Line Filter	7
2.7 Interface Ports and Cabling.....	7
3 Summary of Test Results	8
4 FCC §15.247(i) & §2.1091 - RF Exposure	9
4.1 Applicable Standard.....	9
4.2 MPE Prediction.....	9
4.3 MPE Results	9
5 FCC §15.203 - Antenna Requirements	11
5.1 Applicable Standards	11
5.2 Antenna List and Details.....	11
6 FCC §15.209 & §15.247(d) - Spurious Radiated Emissions.....	12
6.1 Applicable Standards	12
6.2 Test Setup	13
6.3 Test Procedure	13
6.4 Corrected Amplitude & Margin Calculation.....	14
6.5 Test Equipment List and Details.....	14
6.6 Test Environmental Conditions	15
6.7 Summary of Test Results.....	15
6.8 Radiated Emissions Test Data and Plots.....	16
7 FCC §15.247(a)(2) - 6 dB & 99% Emission Bandwidth	29
7.1 Applicable Standards	29
7.2 Measurement Procedure.....	29
7.3 Test Equipment List and Details.....	29
7.4 Test Environmental Conditions	29
7.5 Test Results.....	30
8 FCC §15.247(b) - Output Power Measurement	41
8.1 Applicable Standards	41
8.2 Measurement Procedure.....	41
8.3 Test Equipment List and Details.....	41
8.4 Test Environmental Conditions	42
9 FCC §15.247(d) - Spurious Emissions at Antenna Port	54
9.1 Applicable Standards	54
9.2 Measurement Procedure.....	54
9.3 Test Equipment List and Details.....	54
9.4 Test Environmental Conditions	54

9.5	Test Results.....	54
10	FCC §15.247(e) - Power Spectral Density	79
10.1	Applicable Standards	79
10.2	Measurement Procedure.....	79
10.3	Test Equipment List and Details.....	79
10.4	Test Environmental Conditions	79
10.5	Test Results.....	80
11	Exhibit A - FCC Equipment Labeling Requirements	91
11.1	FCC ID Label Requirements	91
11.2	FCC ID Label Contents and Location.....	91
12	Exhibit B - Test Setup Photographs.....	92
12.1	Radiated Emission below 1 GHz Front View	92
12.2	Radiated Emission below 1 GHz Rear View	92
12.3	Radiated Emission above 1 GHz Front View	93
12.4	Radiated Emission above 1 GHz Rear View	93
13	Exhibit C - EUT Photographs	94
13.1	EUT – Top View.....	94
13.2	EUT – Bottom View	94
13.3	EUT – Front View	95
13.4	EUT – Rear View	95
13.5	EUT Right Side View	96
13.6	EUT Left Side View	96
13.7	Battery PCB Top.....	97
13.8	Battery PCB Bottom (contains connector to Wireless PCB)	97
13.9	Wireless PCB Top (contains connector to Battery PCB).....	98
13.10	Wireless PCB Bottom.....	98

DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	R1509231-247	Initial	2015-10-21

1 General Description

1.1 Product Description for Equipment Under Test (EUT)

This test and measurement report has been compiled on behalf of *Roost, Inc.* and their product, *FCC ID: 2AE5ATOSV*, model number: *TOSVW*, which henceforth is referred to as the EUT (Equipment under Test). The EUT was a Wi-Fi enabled 9 V battery that is used in smoke alarms that can detect alarm activations and send notifications to users via Wi-Fi and the Internet.

1.2 Mechanical Description of EUT

The EUT measures approximately 4.8 cm (L), 2.5cm (W), 1.7cm (H), and weighs approximately 0.045 kg.

The data gathered are from a typical production sample provided by the manufacturer with serial number: R1509231-01, assigned by BACL.

1.3 Objective

This report is prepared on behalf of *Roost, Inc.*, in accordance with Part 2, Subpart J, and Part 15, Subparts B and C of the Federal Communication Commission's rules.

The objective is to determine compliance with FCC Part 15.247 rules for Output Power, Antenna Requirements, 6 dB Bandwidth, power spectral density, 100 kHz Bandwidth of Band Edges Measurement, Spurious Emissions, Conducted and Radiated Spurious Emissions.

1.4 Related Submittal(s)/Grant(s)

N/A

1.5 Test Methodology

All measurements contained in this report were conducted in accordance with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices and FCC KDB 558074 D01 DTS Meas Guidance v03r03: Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247

1.6 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on CISPR16-4-2:2011, The Treatment of Uncertainty in EMC Measurements, the values ranging from ± 2.0 dB for Conducted Emissions tests and ± 4.0 dB for Radiated Emissions tests are the most accurate estimates pertaining to uncertainty of EMC measurements at BACL Corp.

1.7 Test Facility

Bay area compliance Laboratories Corp. (BACL) is:

1- An independent Commercial Test Laboratory accredited to **ISO 17025: 2005** by **A2LA**, in the fields of: Electromagnetic Compatibility & Telecommunications covering Emissions, Immunity, Radio, RF Exposure, Safety and Telecom. This includes NEBS (Network Equipment Building System), Wireless RF, Telecommunications Terminal Equipment (TTE); Network Equipment; Information Technology Equipment (ITE); Medical Electrical Equipment; Industrial, Commercial, and Medical Test Equipment; Professional Audio and Video Equipment; Electronic (Digital) Products; Industrial and Scientific Instruments; Cabled Distribution Systems and Energy Efficiency Lighting.

2- An ENERGY STAR Recognized Laboratory, for the LM80 Testing, a wide variety of Luminaires and Computers.

3- A NIST Designated Phase-I and Phase-II CAB including: ACMA (Australian Communication and Media Authority), BSMI (Bureau of Standards, Metrology and Inspection of Taiwan), IDA (Infocomm Development Authority of Singapore), IC(Industry Canada), Korea (Ministry of Communications Radio Research Laboratory), NCC (Formerly DGT; Directorate General of Telecommunication of Chinese Taipei) OFTA (Office of the Telecommunications Authority of Hong Kong), Vietnam, VCCI - Voluntary Control Council for Interference of Japan and a designated EU CAB (Conformity Assessment Body) (Notified Body) for the EMC and R&TTE Directives.

4- A Product Certification Body accredited to **ISO Guide 65: 1996** by **A2LA** to certify:

2. Radio Standards Specifications (RSS) in the Category I Equipment Standards List and All Broadcasting Technical Standards (BETS) in Category I Equipment Standards List for Industry Canada.

3. Radio Communication Equipment for Singapore.

4. Radio Equipment Specifications, GMDSS Marine Radio Equipment Specifications, and Fixed Network Equipment Specifications for Hong Kong.

5. Japan MIC Telecommunication Business Law (A1, A2) and Radio Law (B1, B2 and B3).

6. Audio/Video, Battery Charging Systems, Computers, Displays, Enterprise Servers, Imaging Equipment, Set-Top Boxes, Telephony, Televisions, Ceiling Fans, CFLs (Including GU24s), Decorative Light Strings, Integral LED Lamps, Luminaires, Residential Ventilating Fans.

The test site used by BACL Corp. to collect radiated and conducted emissions measurement data is located at its facility in Sunnyvale, California, USA.

The test site at BACL Corp. has been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 11 and December 10, 1997, and Article 8 of the VCCI regulations on December 25, 1997. The test site also complies with the test methods and procedures set forth in CISPR 22:2008 §10.4 for measurements below 1 GHz and §10.6 for measurements above 1 GHz as well as ANSI C63.3-2013, ANSI C63.4-2014, TIA/EIA-603 & CISPR 24:2010.

The Federal Communications Commission and Voluntary Control Council for Interference have the reports on file and they are listed under FCC registration number: 90464 and VCCI Registration No.: A-0027. The test site has been approved by the FCC and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, BACL Corp. is an American Association for Laboratory Accreditation (A2LA) accredited laboratory (Lab Code 3297-02). The current scope of accreditations can be found at

<http://www.a2la.org/scopepdf/3297-02.pdf?CFID=1132286&CFTOKEN=e42a3240dac3f6ba-6DE17DCB-1851-9E57-477422F667031258&jsessionid=8430d44f1f47cf2996124343c704b367816b>

2 System Test Configuration

2.1 Justification

The EUT was configured for testing according to ANSI C63.10-2013 and FCC KDB 558074 D01 DTS Meas Guidance v03r03.

The EUT was tested in a testing mode to represent worst-case results during the final qualification test.

The worst-case data rates are determined to be as follows for each mode based upon investigation by measuring the average power, peak power and PPSD across all data rates bandwidths, and modulations.

2.2 EUT Exercise Software

The test software used was MS DOS Command Prompt Interface Test Scripts that control the module via UART which needs to be soldered on via a pigtail for this testing.

2.3 Equipment Modifications

No modifications were made to the EUT.

2.4 Local Support Equipment

Manufacturer	Description	Model No.	Serial No.
DELL	Laptop	Latitude D630	-

2.5 EUT Internal Configuration Details

Manufacturer/Product Type	Model/Rev.	Crystals (MHz)
ST MCU	STM32L051T8Y6	0.032768
SPIL Wi-Fi Module	SB-WM-N04	37.4 (on-module)

2.6 Power Supply and Line Filter

N/A

2.7 Interface Ports and Cabling

Cable Description	Length (m)	To	From
RF Cable	< 1m	PSA	EUT
USB Cable	<1m	EUT	Laptop

3 Summary of Test Results

Results reported relate only to the product tested.

FCC Rules	Description of Test	Results
§15.247(i), §2.1091	RF Exposure	Compliant
§15.207	AC Line conducted Emissions	N/A ¹
§15.203	Antenna Requirement	Compliant
§15.247(d)	Spurious Emissions at Antenna Port	Compliant
§15.205	Restricted Bands	Compliant
§15.209, §15.247(d)	Radiated Spurious Emissions	Compliant
§15.247(a)(2)	6 dB & 99% Emission Bandwidth	Compliant
§15.247(b)(3)	Maximum Peak Output Power	Compliant
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliant
§15.247(e)	Power Spectral Density	Compliant

¹ The EUT was battery powered.

4 FCC §15.247(i) & §2.1091 - RF Exposure

4.1 Applicable Standard

According to FCC §15.247(i) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	* (100)	30
1.34-30	824/f	2.19/f	* (180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz

* = Plane-wave equivalent power density

4.2 MPE Prediction

Predication of MPE limit at a given distance, Equation from OET Bulletin 65, Edition 97-01

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

Where: S = power density

P = power input to antenna

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

R = distance to the center of radiation of the antenna

4.3 MPE Results

Antenna 0

<u>Maximum peak output power at antenna input terminal (dBm):</u>	<u>12.65</u>
<u>Maximum peak output power at antenna input terminal (mW):</u>	<u>18.40772</u>
<u>Prediction distance (cm):</u>	<u>20</u>
<u>Prediction frequency (MHz):</u>	<u>2437</u>
<u>Maximum Antenna Gain, typical (dBi):</u>	<u>-5.5</u>
<u>Maximum Antenna Gain (numeric):</u>	<u>0.2818</u>
<u>Power density of prediction frequency at 20.0 cm (mW/cm²):</u>	<u>0.001</u>
<u>FCC MPE limit for uncontrolled exposure at prediction frequency (mW/cm²):</u>	<u>1.0</u>

Antenna 1

<u>Maximum peak output power at antenna input terminal (dBm):</u>	<u>14.54</u>
<u>Maximum peak output power at antenna input terminal (mW):</u>	<u>28.445</u>
<u>Prediction distance (cm):</u>	<u>20</u>
<u>Prediction frequency (MHz):</u>	<u>2412</u>
<u>Maximum Antenna Gain, typical (dBi):</u>	<u>-5.2</u>
<u>Maximum Antenna Gain (numeric):</u>	<u>0.3</u>
<u>Power density of prediction frequency at 20.0 cm (mW/cm²):</u>	<u>0.0017</u>
<u>FCC MPE limit for uncontrolled exposure at prediction frequency (mW/cm²):</u>	<u>1.0</u>

The device is compliant with the requirement MPE limit for uncontrolled exposure at 20 cm distance.

5 FCC §15.203 - Antenna Requirements

5.1 Applicable Standards

According to FCC §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. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

And according to FCC §15.247 (b) (4), if transmitting antennas of directional gain greater than 6 dBi are used the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

5.2 Antenna List and Details

Frequency Range (MHz)	Antenna Type	Antenna Gain (dBi)	Antenna Pattern
2400-2500	Ceramic Chip	-5.5	Linear Polarization
2400-2500	Ceramic Chip	-5.2	Linear Polarization

6 FCC §15.209 & §15.247(d) - Spurious Radiated Emissions

6.1 Applicable Standards

As per FCC §15.35(d): Unless otherwise specified, on any frequency or frequencies above 1000 MHz, the radiated emission limits are based on the use of measurement instrumentation employing an average detector function. Unless otherwise specified, measurements above 1000 MHz shall be performed using a minimum resolution bandwidth of 1 MHz.

As per FCC §15.209(a): Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table

Frequency (MHz)	Field Strength (micro volts/meter)	Measurement Distance (meters)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100**	3
88 - 216	150**	3
216 - 960	200**	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

As Per FCC §15.205(a) except as show in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 – 0.110	16.42 – 16.423	960 – 1240	4.5 – 5.15
0.495 – 0.505	16.69475 – 16.69525	1300 – 1427	5.35 – 5.46
2.1735 – 2.1905	25.5 – 25.67	1435 – 1626.5	7.25 – 7.75
4.125 – 4.128	37.5 – 38.25	1645.5 – 1646.5	8.025 – 8.5
4.17725 – 4.17775	73 – 74.6	1660 – 1710	9.0 – 9.2
4.20725 – 4.20775	74.8 – 75.2	1718.8 – 1722.2	9.3 – 9.5
6.215 – 6.218	108 – 121.94	2200 – 2300	10.6 – 12.7
6.26775 – 6.26825	123 – 138	2310 – 2390	13.25 – 13.4
6.31175 – 6.31225	149.9 – 150.05	2483.5 – 2500	14.47 – 14.5
8.291 – 8.294	156.52475 – 156.52525	2690 – 2900	15.35 – 16.2
8.362 – 8.366	156.7 – 156.9	3260 – 3267	17.7 – 21.4
8.37625 – 8.38675	162.0125 – 167.17	3.332 – 3.339	22.01 – 23.12
8.41425 – 8.41475	167.72 – 173.2	3.3458 – 3.358	23.6 – 24.0
12.29 – 12.293	240 – 285	3.600 – 4.400	31.2 – 31.8
12.51975 – 12.52025	322 – 335.4		36.43 – 36.5
12.57675 – 12.57725	399.9 – 410		Above 38.6
13.36 – 13.41	608 – 614		

As per FCC §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) (see §15.205(c)).

6.2 Test Setup

The radiated emissions tests were performed in the 5-meter Chamber, using the setup in accordance with ANSI C63.10-2013. The specification used was the FCC 15 Subpart C limits.

The spacing between the peripherals was 10 centimeters.

External I/O cables were draped along the edge of the test table and bundle when necessary.

6.3 Test Procedure

For the radiated emissions test, the EUT host, and all support equipment power cords was connected to the AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

The EUT is set 3 meter away from the testing antenna, which is varied from 1-4 meter, and the EUT is placed on a turntable, which is 0.8 meter above ground plane, the table shall be rotated for 360 degrees to find out the highest emission. The receiving antenna should be changed the polarization both of horizontal and vertical.

The spectrum analyzer or receiver is set as:

Below 1000 MHz:

RBW = 100 kHz / VBW = 300 kHz / Sweep = Auto

Above 1000 MHz:

- (1) Peak: RBW = 1MHz / VBW = 1MHz / Sweep = Auto
- (2) Average: RBW = 1MHz / VBW = 10Hz / Sweep = Auto

6.4 Corrected Amplitude & Margin Calculation

The Corrected Amplitude (CA) is calculated by adding the Antenna Factor (AF), the Cable Loss (CL), the Attenuator Factor (Atten) and subtracting the Amplifier Gain (Ga) to indicated Amplitude (Ai) reading. The basic equation is as follows:

$$CA = Ai + AF + CL + Atten - Ga$$

For example, a corrected amplitude of 40.3 dBuV/m = Indicated Reading (32.5 dBuV) + Antenna Factor (+23.5dB) + Cable Loss (3.7 dB) + Attenuator (10 dB) - Amplifier Gain (29.4 dB)

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of -7 dB means the emission is 7 dB below the maximum limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corrected Amplitude} - \text{Limit}$$

6.5 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Rohde & Schwarz	EMI Test Receiver	ESCI 1166.5950K03	100338	2014-01-20	2 year
Agilent	Spectrum Analyzer	E4440A	MY44303352	2015-06-22	1 year
Sunol Science Corp	System Controller	SC99V	011003-1	N/R	N/R
Sunol Sciences	Antenna, Biconi-Log	JB1	A013105-3	2015-07-11	2 year
A.R.A	Antenna, Horn	DRG-118/A	1132	2015-09-21	2 year
HP	Pre-Amplifier	8447D	2944A06639	2015-06-08	1 year
Suirong	30 ft conductive emission cable	LMR 400	-	2015-03-05	1 year
-	SMA cable	-	C0001	Each time ¹	N/A
IW Microwave	High Frequency Cable	DC-1531	KPS-1501A3960K PS	2015-08-10	1 year
Agilent	Pre-Amplifier	8449B	3008A01978	2015-09-02	1year

Note¹: cable and attenuator included in the test set-up will be checked each time before testing.

Statement of Traceability: *BACL attests that all calibrations have been performed per the A2LA requirements, traceable to NIST.*

6.6 Test Environmental Conditions

Temperature:	20-25° C
Relative Humidity:	40-45 %
ATM Pressure:	101.2-103.5 kPa

The testing was performed by Leonard Gray on 2015-10-12 in 5m chamber3 and RF site.

6.7 Summary of Test Results

According to the data hereinafter, the EUT complied with the FCC Title 47, Part 15C standard's radiated emissions limits, and had the worst margin of:

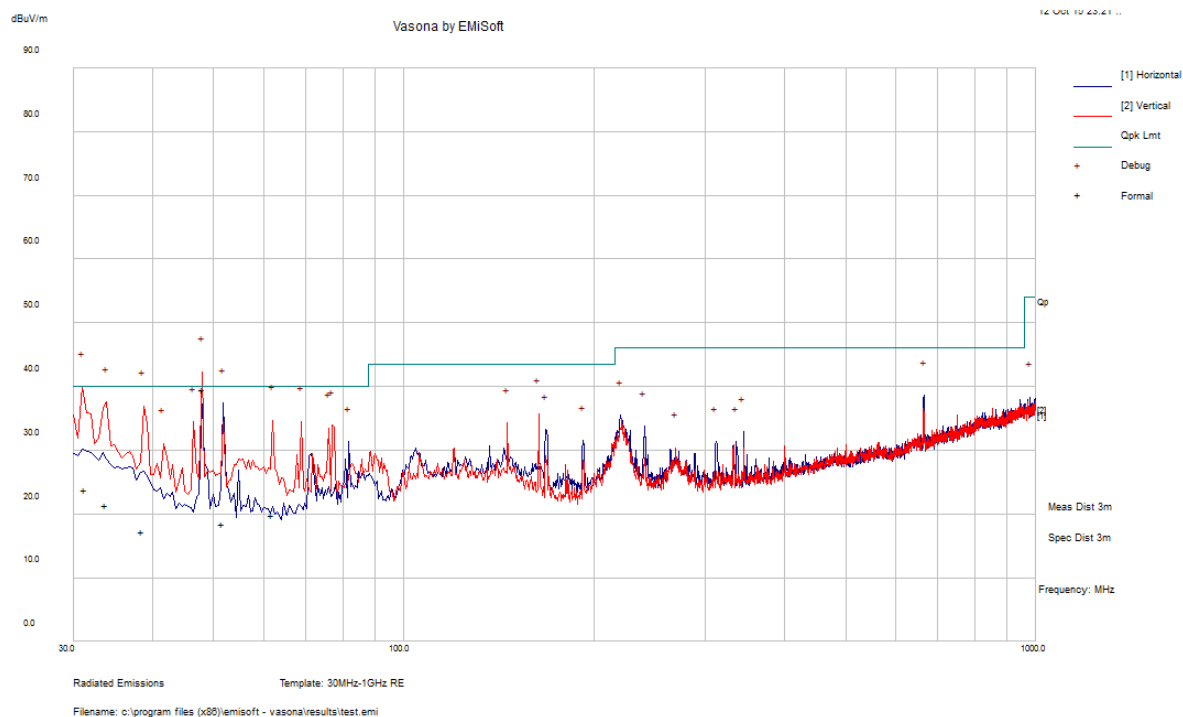
Mode: Transmitting			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Mode, Channel
-0.09	2483.5	Horizontal	Antenna 0 - 802.11n20 High Channel

Please refer to the following table and plots for specific test result details

6.8 Radiated Emissions Test Data and Plots

1) 30 MHz – 1 GHz

Worst Case: 2.4 GHz, Antenna 1 - 802.11n20 Low Channel



Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)	Comments (PK/QP/Ave.)
48.0345	39.58	100	V	42	40	-0.42	QP
31.211	23.90	125	V	360	40	-16.10	QP
33.7275	21.33	160	V	26	40	-18.67	QP
51.708	18.48	259	H	142	40	-21.52	QP
38.50475	17.21	225	V	217	40	-22.79	QP
61.764	19.82	190	V	347	40	-20.18	QP

2) 1 – 25 GHz

Antenna 0, 802.11b Mode

Frequency (MHz)	S.A. Reading (dBμV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre- Amp. (dB)	Cord. Reading (dBμV/m)	FCC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	
Low Channel 2412 MHz											
2412	69.81	262	120	V	28.174	4.44	0.00	102.42	-	-	Peak
2412	73.43	228	173	H	28.197	4.44	0.00	106.07	-	-	Peak
2412	51.95	262	129	V	28.174	4.44	0.00	84.56	-	-	Ave
2412	55.5	228	173	H	28.197	4.44	0.00	88.14	-	-	Ave
2390	26.58	262	120	V	28.174	4.44	0.00	59.19	74.00	-14.81	Peak
2390	26.3	228	173	H	28.197	4.44	0.00	58.94	74.00	-15.06	Peak
2390	12.4	262	120	V	28.174	4.44	0.00	45.01	54.00	-8.99	Ave
2390	12.83	228	173	H	28.197	4.440	0.00	45.47	54.00	-8.53	Ave
4824	50.78	263	222	V	33.12	5.357	34.6	54.64	74.00	-19.36	Peak
4824	50.909	329	186	H	33.18	5.357	34.6	54.83	74.00	-19.17	Peak
4824	39.581	270	220	V	33.12	5.357	34.6	43.44	54.00	-10.56	Ave
4824	42.688	284	146	H	33.18	5.357	34.6	46.61	54.00	-7.39	Ave
7236	44.131	161	217	V	37.44	6.925	34.4	54.06	74.00	-19.94	Peak
7236	50.079	289	256	H	37.44	6.925	34.4	60.01	74.00	-13.99	Peak
7236	31.222	170	234	V	37.44	6.925	34.4	41.15	54.00	-12.85	Ave
7236	33.531	151	257	H	37.44	6.925	34.4	43.46	54.00	-10.54	Ave
9648	42.255	0	100	V	38.83	10.204	32.6	58.63	82.42	-23.80	Peak
9648	43.088	0	100	H	38.83	10.204	32.6	59.47	86.07	-26.60	Peak
9648	29.28	0	100	V	38.83	10.204	32.6	45.65	64.56	-18.91	Ave
9648	29.299	0	100	H	38.83	10.204	32.6	45.68	68.14	-22.46	Ave
Middle Channel 2437 MHz											
2437	68.21	170	221	V	28.17	4.440	0.00	100.82	-	-	Peak
2437	72.72	251	189	H	28.19	4.440	0.00	105.36	-	-	Peak
2437	50.39	170	221	V	28.17	4.440	0.00	83.00	-	-	Ave
2437	54.72	251	189	H	28.19	4.440	0.00	87.36	-	-	Ave
4874	50.21	170	221	V	33.32	5.375	34.6	54.30	74.00	-19.70	Peak
4874	58.82	251	189	H	33.35	5.375	34.6	62.94	74.00	-11.06	Peak
4874	35.65	170	221	V	33.32	5.375	34.6	39.74	54.00	-14.26	Ave
4874	40.87	251	189	H	33.35	5.375	34.6	44.99	54.00	-9.01	Ave
7311	44.51	170	221	V	37.32	6.925	34.5	54.24	74.00	-19.76	Peak
7311	49.31	251	189	H	37.35	6.925	34.5	59.07	74.00	-14.93	Peak
7311	29.52	170	221	V	37.32	6.925	34.5	39.25	54.00	-14.75	Ave
7311	34.61	251	189	H	37.35	6.925	34.5	44.37	54.00	-9.63	Ave
9748	44.37	0	100	V	38.90	10.650	33.1	60.79	80.82	-20.04	Peak
9748	47.59	168	218	H	38.95	10.650	33.1	64.05	85.36	-21.30	Peak
9748	29.22	0	100	V	38.90	10.650	33.1	45.64	63.00	-17.37	Ave
9748	32.15	168	218	H	38.95	10.650	33.1	48.61	67.36	-18.74	Ave

Frequency (MHz)	S.A. Reading (dBμV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre- Amp. (dB)	Cord. Reading (dBμV/m)	FCC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	
High Channel 2462 MHz											
2462	66.53	264	104	V	29.0	4.47	0.00	100.01	-	-	Peak
2462	68.89	325	192	H	29.0	4.47	0.00	102.36	-	-	Peak
2462	49.84	264	104	V	29.0	4.47	0.00	83.32	-	-	Ave
2462	51.53	325	192	H	29.0	4.47	0.00	85.00	-	-	Ave
2483.5	27.05	264	104	V	29.0	4.47	0.00	60.53	74.00	-13.47	Peak
2483.5	26.9	325	192	H	29.0	4.47	0.00	60.37	74.00	-13.63	Peak
2483.5	12.55	264	104	V	29.0	4.47	0.00	46.03	54.00	-7.97	Ave
2483.5	12.57	325	192	H	29.0	4.47	0.00	46.04	54.00	-7.96	Ave
4924	54.05	26	174	V	33.3	6.34	34.6	59.10	74.00	-14.90	Peak
4924	58.28	269	231	H	33.3	6.34	34.6	63.36	74.00	-10.64	Peak
4924	38.23	26	174	V	33.3	6.34	34.6	43.28	54.00	-10.72	Ave
4924	43.35	269	231	H	33.3	6.34	34.6	48.43	54.00	-5.57	Ave
7386	46.57	0	139	V	37.2	7.31	34.6	56.50	74.00	-17.50	Peak
7386	48.77	265	233	H	37.2	7.31	34.6	58.70	74.00	-15.30	Peak
7386	32.63	0	139	V	37.2	7.31	34.6	42.56	54.00	-11.44	Ave
7386	35.01	265	233	H	37.2	7.31	34.6	44.94	54.00	-9.06	Ave
9848	46.91	0	100	V	38.9	10.6	33.4	63.02	80.01	-16.99	Peak
9848	47.05	0	100	H	38.9	10.6	33.4	63.15	82.36	-19.21	Peak
9848	32.13	0	100	V	38.9	10.6	33.4	48.24	63.32	-15.08	Ave
9848	32.39	0	100	H	38.9	10.6	33.4	48.49	65.00	-16.51	Ave

Antenna 0, 802.11g Mode

Frequency (MHz)	S.A. Reading (dBμV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre- Amp. (dB)	Cord. Reading (dBμV/m)	FCC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	
Low Channel 2412 MHz											
2412	66.31	43	100	V	28.174	4.44	0.00	98.92	-	-	Peak
2412	71.51	278	102	H	28.197	4.44	0.00	104.15	-	-	Peak
2412	55.23	43	100	V	28.174	4.44	0.00	87.84	-	-	Ave
2412	60.52	278	102	H	28.197	4.44	0.00	93.16	-	-	Ave
2390	33.57	43	100	V	28.174	4.44	0.00	66.18	74.00	-7.82	Peak
2390	37.94	278	102	H	28.197	4.44	0.00	70.58	74.00	-3.42	Peak
2390	17.9	43	100	V	28.174	4.44	0.00	50.51	54.00	-3.49	Ave
2390	20.43	278	102	H	28.197	4.440	0.00	53.07	54.00	-0.93	Ave
4824	50.47	259	100	V	33.12	5.357	34.62	54.33	74.00	-19.67	Peak
4824	62.47	100	200	H	33.18	5.357	34.62	66.39	74.00	-7.61	Peak
4824	35.68	259	100	V	33.12	5.357	34.62	39.54	54.00	-14.46	Ave
4824	47.71	100	200	H	33.18	5.357	34.62	51.63	54.00	-2.37	Ave
7236	44.27	0	100	V	37.44	6.925	34.44	54.20	74.00	-19.80	Peak
7236	58.69	100	200	H	37.44	6.925	34.44	68.62	74.00	-5.38	Peak
7236	29.57	0	100	V	37.44	6.925	34.44	39.50	54.00	-14.50	Ave
7236	43.33	100	200	H	37.44	6.925	34.44	53.26	54.00	-0.74	Ave
9648	42.06	0	100	V	38.83	10.20	32.66	58.43	78.92	-20.49	Peak
9648	43.18	100	200	H	38.83	10.20	32.66	59.56	84.15	-24.59	Peak
9648	26.43	0	100	V	38.83	10.20	32.66	42.80	67.84	-25.04	Ave
9648	28.23	100	200	H	38.83	10.20	32.66	44.61	73.16	-28.55	Ave
Middle Channel 2437 MHz											
2437	63.29	257	100	V	28.174	4.440	0.00	95.90	-	-	Peak
2437	73.03	123	212	H	28.197	4.440	0.00	105.67	-	-	Peak
2437	51.16	257	100	V	28.174	4.440	0.00	83.77	-	-	Ave
2437	62.01	123	212	H	28.197	4.440	0.00	94.65	-	-	Ave
4874	51.07	257	148	V	33.32	5.375	34.61	55.16	74.00	-18.84	Peak
4874	56.1	316	266	H	33.35	5.375	34.61	60.22	74.00	-13.78	Peak
4874	35.06	257	148	V	33.32	5.375	34.61	39.15	54.00	-14.85	Ave
4874	40.68	316	266	H	33.35	5.375	34.61	44.80	54.00	-9.20	Ave
7311	44.22	0	100	V	37.324	6.925	34.52	53.95	74.00	-20.05	Peak
7311	52.77	95	188	H	37.356	6.925	34.52	62.53	74.00	-11.47	Peak
7311	29.89	0	100	V	37.324	6.925	34.52	39.62	54.00	-14.38	Ave
7311	37.36	95	188	H	37.356	6.925	34.52	47.12	54.00	-6.88	Ave
9748	42.19	0	100	V	38.908	10.650	33.14	58.61	75.90	-17.30	Peak
9748	42.72	0	100	H	38.953	10.650	33.14	59.18	85.67	-26.48	Peak
9748	27.65	0	100	V	38.908	10.650	33.14	44.07	63.77	-19.71	Ave
9748	27.84	0	100	H	38.953	10.650	33.14	44.30	74.65	-30.34	Ave

Frequency (MHz)	S.A. Reading (dBμV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre- Amp. (dB)	Cord. Reading (dBμV/m)	FCC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	
High Channel 2462 MHz											
2462	65.73	89	285	V	29.01	4.47	0.00	99.21	-	-	Peak
2462	70.41	279	100	H	29.00	4.47	0.00	103.88	-	-	Peak
2462	54.8	89	285	V	29.01	4.47	0.00	88.28	-	-	Ave
2462	59.22	279	100	H	29.00	4.47	0.00	92.69	-	-	Ave
2483.5	30.5	89	285	V	29.01	4.47	0.00	63.98	74.00	-10.02	Peak
2483.5	34.52	279	100	H	29.00	4.47	0.00	67.99	74.00	-6.01	Peak
2483.5	15.97	89	285	V	29.01	4.47	0.00	49.45	54.00	-4.55	Ave
2483.5	19.17	279	100	H	29.00	4.47	0.00	52.64	54.00	-1.36	Ave
4924	47.6	210	243	V	33.32	6.340	34.61	52.65	74.00	-21.35	Peak
4924	52.26	102	190	H	33.35	6.340	34.61	57.34	74.00	-16.66	Peak
4924	32.36	210	243	V	33.32	6.340	34.61	37.41	54.00	-16.59	Ave
4924	37.19	102	190	H	33.35	6.340	34.61	42.27	54.00	-11.73	Ave
7386	43.57	0	100	V	37.24	7.310	34.62	53.50	74.00	-20.50	Peak
7386	47.96	95	241	H	37.24	7.310	34.62	57.89	74.00	-16.11	Peak
7386	29.38	0	100	V	37.24	7.310	34.62	39.31	54.00	-14.69	Ave
7386	32.59	95	241	H	37.24	7.310	34.62	42.52	54.00	-11.48	Ave
9848	43.92	0	100	V	38.92	10.650	33.46	60.03	79.21	-19.18	Peak
9848	44.11	0	100	H	38.91	10.650	33.46	60.21	83.88	-23.67	Peak
9848	29.29	0	100	V	38.92	10.650	33.46	45.40	68.28	-22.88	Ave
9848	29.19	0	100	H	38.91	10.650	33.46	45.29	72.69	-27.40	Ave

Antenna 0, 802.11n20 Mode

Frequency (MHz)	S.A. Reading (dBμV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre- Amp. (dB)	Cord. Reading (dBμV/m)	FCC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	
Low Channel 2412 MHz											
2412	67.26	182	100	V	28.174	4.44	0.00	99.87	-	-	Peak
2412	73.69	279	168	H	28.197	4.44	0.00	106.33	-	-	Peak
2412	33.49	182	100	V	28.174	4.44	0.00	66.10	-	-	Ave
2412	36.61	279	168	H	28.197	4.44	0.00	69.25	-	-	Ave
2390	33.8	182	100	V	28.174	4.44	0.00	66.41	74.00	-7.59	Peak
2390	41.22	279	168	H	28.197	4.44	0.00	73.86	74.00	-0.14	Peak
2390	13.87	182	100	V	28.174	4.44	0.00	46.48	54.00	-7.52	Ave
2390	16.25	279	168	H	28.197	4.440	0.00	48.89	54.00	-5.11	Ave
4824	56.3	204	100	V	33.12	5.357	34.62	60.16	74.00	-13.84	Peak
4824	60.81	256	199	H	33.18	5.357	34.62	64.73	74.00	-9.27	Peak
4824	39.43	204	100	V	33.12	5.357	34.62	43.29	54.00	-10.71	Ave
4824	44.6	256	199	H	33.18	5.357	34.62	48.52	54.00	-5.48	Ave
7236	46.84	202	100	V	37.44	6.925	34.44	56.77	74.00	-17.23	Peak
7236	57.31	256	199	H	37.44	6.925	34.44	67.24	74.00	-6.76	Peak
7236	31.912	202	100	V	37.44	6.925	34.44	41.84	54.00	-12.16	Ave
7236	39.57	256	199	H	37.44	6.925	34.44	49.50	54.00	-4.50	Ave
9648	44.43	0	100	V	38.83	10.204	32.66	60.80	74.00	-13.20	Peak
9648	44.59	0	100	H	38.83	10.204	32.66	60.97	74.00	-13.03	Peak
9648	29.92	0	100	V	38.83	10.204	32.66	46.29	54.00	-7.71	Ave
9648	29.35	0	100	H	38.83	10.204	32.66	45.73	54.00	-8.27	Ave
Middle Channel 2437 MHz											
2437	66.88	203	163	V	28.174	4.440	0.00	99.49	-	-	Peak
2437	72.94	177	331	H	28.197	4.440	0.00	105.58	-	-	Peak
2437	49.56	203	163	V	28.174	4.440	0.00	82.17	-	-	Ave
2437	54.91	177	331	H	28.197	4.440	0.00	87.55	-	-	Ave
4874	51.07	199	100	V	33.32	5.375	34.61	55.16	74.00	-18.84	Peak
4874	58.78	252	155	H	33.35	5.375	34.61	62.90	74.00	-11.10	Peak
4874	35.19	199	100	V	33.32	5.375	34.61	39.28	54.00	-14.72	Ave
4874	42.13	252	155	H	33.35	5.375	34.61	46.25	54.00	-7.75	Ave
7311	44.32	0	100	V	37.324	6.925	34.52	54.05	74.00	-19.95	Peak
7311	52.06	174	101	H	37.356	6.925	34.52	61.82	74.00	-12.18	Peak
7311	28.57	0	100	V	37.324	6.925	34.52	38.30	54.00	-15.70	Ave
7311	36.64	174	101	H	37.356	6.925	34.52	46.40	54.00	-7.60	Ave
9748	44.02	0	100	V	38.908	10.650	33.14	60.44	79.49	-19.06	Peak
9748	43.48	0	100	H	38.953	10.650	33.14	59.94	85.58	-25.63	Peak
9748	29.03	0	100	V	38.908	10.650	33.14	45.45	62.17	-16.73	Ave
9748	28.96	0	100	H	38.953	10.650	33.14	45.42	67.55	-22.12	Ave

Frequency (MHz)	S.A. Reading (dBμV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre- Amp. (dB)	Cord. Reading (dBμV/m)	FCC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	
High Channel 2462 MHz											
2462	65.09	88	198	V	29.0	4.47	0.00	98.57	-	-	Peak
2462	72.59	277	100	H	29.0	4.47	0.00	106.06	-	-	Peak
2462	32.86	88	198	V	29.0	4.47	0.00	66.34	-	-	Ave
2462	36.08	277	100	H	29.0	4.47	0.00	69.55	-	-	Ave
2483.5	31.46	88	198	V	29.0	4.47	0.00	64.94	74.00	-9.06	Peak
2483.5	40.44	277	100	H	29.0	4.47	0.00	73.91	74.00	-0.09	Peak
2483.5	13.6	88	198	V	29.0	4.47	0.00	47.08	54.00	-6.92	Ave
2483.5	16.32	277	100	H	29.0	4.47	0.00	49.79	54.00	-4.21	Ave
4924	46.32	194	100	V	33.3	6.34	34.6	51.37	74.00	-22.63	Peak
4924	54.52	254	150	H	33.3	6.34	34.6	59.60	74.00	-14.40	Peak
4924	31.54	194	100	V	33.3	6.34	34.6	36.59	54.00	-17.41	Ave
4924	38.17	254	150	H	33.3	6.34	34.6	43.25	54.00	-10.75	Ave
7386	44.29	0	100	V	37.2	7.31	34.6	54.22	74.00	-19.78	Peak
7386	48.21	252	151	H	37.2	7.31	34.6	58.14	74.00	-15.86	Peak
7386	29.58	0	100	V	37.2	7.31	34.6	39.51	54.00	-14.49	Ave
7386	31.86	252	151	H	37.2	7.31	34.6	41.79	54.00	-12.21	Ave
9848	42.5	0	100	V	38.9	10.6	33.4	58.61	78.57	-19.96	Peak
9848	43.93	0	100	H	38.9	10.6	33.4	60.03	86.06	-26.03	Peak
9848	29.86	0	100	V	38.9	10.6	33.4	45.97	46.34	-0.37	Ave
9848	29.54	0	100	H	38.9	10.6	33.4	45.64	49.55	-3.91	Ave

Antenna 1, 802.11b Mode

Frequency (MHz)	S.A. Reading (dBμV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre- amp. (dB)	Cord. Reading (dBμV/m)	FCC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	
Low Channel 2412 MHz											
2412	64.36	297	181	V	28.174	4.44	0.00	96.97	-	-	Peak
2412	66.27	20	221	H	28.197	4.44	0.00	98.91	-	-	Peak
2412	48.62	297	181	V	28.174	4.44	0.00	81.23	-	-	Ave
2412	50.07	20	221	H	28.197	4.44	0.00	82.71	-	-	Ave
2390	27.88	297	181	V	28.174	4.44	0.00	60.49	74.00	-13.51	Peak
2390	27.66	20	221	H	28.197	4.44	0.00	60.30	74.00	-13.70	Peak
2390	15.25	297	181	V	28.174	4.44	0.00	47.86	54.00	-6.14	Ave
2390	15.22	20	221	H	28.197	4.440	0.00	47.86	54.00	-6.14	Ave
4824	47.13	297	179	V	33.12	5.357	34.62	50.99	74.00	-23.01	Peak
4824	48.49	18	221	H	33.18	5.357	34.62	52.41	74.00	-21.59	Peak
4824	32.2	297	179	V	33.12	5.357	34.62	36.06	54.00	-17.94	Ave
4824	33.45	18	221	H	33.18	5.357	34.62	37.37	54.00	-16.63	Ave
7236	45.58	0	100	V	37.44	6.925	34.44	55.51	74.00	-18.49	Peak
7236	46.16	0	100	H	37.44	6.925	34.44	56.09	74.00	-17.91	Peak
7236	30.71	0	100	V	37.44	6.925	34.44	40.64	54.00	-13.36	Ave
7236	30.68	0	100	H	37.44	6.925	34.44	40.61	54.00	-13.39	Ave
9648	46.2	0	100	V	38.83	10.204	32.66	62.57	76.97	-14.40	Peak
9648	47.65	0	100	H	38.83	10.204	32.66	64.03	78.91	-14.88	Peak
9648	32.01	0	100	V	38.83	10.204	32.66	48.38	61.23	-12.85	Ave
9648	31.9	0	100	H	38.83	10.204	32.66	48.28	62.71	-14.43	Ave
Middle Channel 2437 MHz											
2437	63.69	325	113	V	28.174	4.440	0.00	96.30	-	-	Peak
2437	65.69	27	195	H	28.197	4.440	0.00	98.33	-	-	Peak
2437	47.77	325	113	V	28.174	4.440	0.00	80.38	-	-	Ave
2437	48.31	27	195	H	28.197	4.440	0.00	80.95	-	-	Ave
4874	46.04	325	113	V	33.32	5.375	34.61	50.13	74.00	-23.87	Peak
4874	46.2	27	195	H	33.35	5.375	34.61	50.32	74.00	-23.68	Peak
4874	31.38	325	113	V	33.32	5.375	34.61	35.47	54.00	-18.53	Ave
4874	31.56	27	195	H	33.35	5.375	34.61	35.68	54.00	-18.32	Ave
7311	45	0	100	V	37.324	6.925	34.52	54.73	74.00	-19.27	Peak
7311	45.67	0	100	H	37.356	6.925	34.52	55.43	74.00	-18.57	Peak
7311	30.8	0	100	V	37.324	6.925	34.52	40.53	54.00	-13.47	Ave
7311	30.77	0	100	H	37.356	6.925	34.52	40.53	54.00	-13.47	Ave
9748	47.62	0	100	V	38.908	10.650	33.14	64.04	76.30	-12.27	Peak
9748	47.43	0	100	H	38.953	10.650	33.14	63.89	78.33	-14.43	Peak
9748	32.27	0	100	V	38.908	10.650	33.14	48.69	60.38	-11.70	Ave
9748	32.3	0	100	H	38.953	10.650	33.14	48.76	60.95	-12.18	Ave

Frequency (MHz)	S.A. Reading (dBμV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre- Amp. (dB)	Cord. Reading (dBμV/m)	FCC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	
High Channel 2462 MHz											
2462	64.24	306	154	V	29.01	4.47	0.00	97.72	-	-	Peak
2462	64.65	282	307	H	29.00	4.47	0.00	98.12	-	-	Peak
2462	48.3	306	154	V	29.01	4.47	0.00	81.78	-	-	Ave
2462	48.65	282	307	H	29.00	4.47	0.00	82.12	-	-	Ave
2483.5	29.19	306	154	V	29.01	4.47	0.00	62.67	74.00	-11.33	Peak
2483.5	29.37	282	307	H	29.00	4.47	0.00	62.84	74.00	-11.16	Peak
2483.5	14.43	306	154	V	29.01	4.47	0.00	47.91	54.00	-6.09	Ave
2483.5	14.46	282	307	H	29.00	4.47	0.00	47.93	54.00	-6.07	Ave
4924	45.59	306	154	V	33.32	6.3	34.6	50.64	74.00	-23.36	Peak
4924	48.06	282	307	H	33.35	6.3	34.6	53.14	74.00	-20.86	Peak
4924	31.16	306	154	V	33.32	6.3	34.6	36.21	54.00	-17.79	Ave
4924	32.833	282	307	H	33.35	6.3	34.6	37.92	54.00	-16.08	Ave
7386	44.61	0	100	V	37.24	7.3	34.6	54.54	74.00	-19.46	Peak
7386	44.8	0	100	H	37.24	7.3	34.6	54.73	74.00	-19.27	Peak
7386	30.53	0	100	V	37.24	7.3	34.6	40.46	54.00	-13.54	Ave
7386	30.55	0	100	H	37.24	7.3	34.6	40.48	54.00	-13.52	Ave
9848	46.51	0	100	V	38.92	10.6	33.4	62.62	77.72	-15.10	Peak
9848	46.67	0	100	H	38.91	10.6	33.4	62.77	78.12	-15.35	Peak
9848	31.43	0	100	V	38.92	10.6	33.4	47.54	61.78	-14.24	Ave
9848	31.48	0	100	H	38.91	10.6	33.4	47.58	62.12	-14.54	Ave

Antenna 1, 802.11g Mode

Frequency (MHz)	S.A. Reading (dBμV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre- Amp. (dB)	Cord. Reading (dBμV/m)	FCC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	
Low Channel 2412 MHz											
2412	61.14	206	275	V	28.174	4.44	0.00	93.75	-	-	Peak
2412	63.26	248	158	H	28.197	4.44	0.00	95.90	-	-	Peak
2412	49.9	206	275	V	28.174	4.44	0.00	82.51	-	-	Ave
2412	51.97	248	158	H	28.197	4.44	0.00	84.61	-	-	Ave
2390	30.76	206	275	V	28.174	4.44	0.00	63.37	74.00	-10.63	Peak
2390	33.03	248	158	H	28.197	4.44	0.00	65.67	74.00	-8.33	Peak
2390	17.14	206	275	V	28.174	4.44	0.00	49.75	54.00	-4.25	Ave
2390	19.37	248	158	H	28.197	4.440	0.00	52.01	54.00	-1.99	Ave
4824	44.86	0	100	V	33.12	5.357	34.62	48.72	74.00	-25.28	Peak
4824	47.64	126	219	H	33.18	5.357	34.62	51.56	74.00	-22.44	Peak
4824	30.6	0	100	V	33.12	5.357	34.62	34.46	54.00	-19.54	Ave
4824	32.25	126	219	H	33.18	5.357	34.62	36.17	54.00	-17.83	Ave
7236	43.59	0	100	V	37.44	6.925	34.44	53.52	74.00	-20.48	Peak
7236	44.6	0	100	H	37.44	6.925	34.44	54.53	74.00	-19.47	Peak
7236	29.67	0	100	V	37.44	6.925	34.44	39.60	54.00	-14.40	Ave
7236	29.54	0	100	H	37.44	6.925	34.44	39.47	54.00	-14.53	Ave
9648	45.26	0	100	V	38.83	10.204	32.66	61.63	73.75	-12.12	Peak
9648	45.16	0	100	H	38.83	10.204	32.66	61.54	75.90	-14.36	Peak
9648	30.36	0	100	V	38.83	10.204	32.66	46.73	62.51	-15.78	Ave
9648	30.36	0	100	H	38.83	10.204	32.66	46.74	64.61	-17.87	Ave
Middle Channel 2437 MHz											
2437	60.7	200	281	V	28.174	4.440	0.00	93.31	-	-	Peak
2437	64.3	173	232	H	28.197	4.440	0.00	96.94	-	-	Peak
2437	49.79	200	281	V	28.174	4.440	0.00	82.40	-	-	Ave
2437	52.47	173	232	H	28.197	4.440	0.00	85.11	-	-	Ave
4874	45.31	254	198	V	33.32	5.375	34.61	49.40	74.00	-24.60	Peak
4874	47.83	177	290	H	33.35	5.375	34.61	51.95	74.00	-22.05	Peak
4874	30.39	254	198	V	33.32	5.375	34.61	34.48	54.00	-19.52	Ave
4874	32.87	177	290	H	33.35	5.375	34.61	36.99	54.00	-17.01	Ave
7311	44.09	0	100	V	37.324	6.925	34.52	53.82	74.00	-20.18	Peak
7311	44.94	0	100	H	37.356	6.925	34.52	54.70	74.00	-19.30	Peak
7311	29.26	0	100	V	37.324	6.925	34.52	38.99	54.00	-15.01	Ave
7311	29.25	0	100	H	37.356	6.925	34.52	39.01	54.00	-14.99	Ave
9748	45.55	0	100	V	38.908	10.650	33.14	61.97	73.31	-11.35	Peak
9748	44.74	0	100	H	38.953	10.650	33.14	61.20	76.94	-15.73	Peak
9748	29.92	0	100	V	38.908	10.650	33.14	46.34	62.40	-16.07	Ave
9748	29.99	0	100	H	38.953	10.650	33.14	46.45	65.11	-18.65	Ave

Frequency (MHz)	S.A. Reading (dBμV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre- Amp. (dB)	Cord. Reading (dBμV/m)	FCC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	
High Channel 2462 MHz											
2462	58.99	305	155	V	29.01	4.47	0.00	92.47	-	-	Peak
2462	58.2	279	205	H	29.00	4.47	0.00	91.67	-	-	Peak
2462	47.94	305	155	V	29.01	4.47	0.00	81.42	-	-	Ave
2462	46.72	279	205	H	29.00	4.47	0.00	80.19	-	-	Ave
2483.5	29.24	305	155	V	29.01	4.47	0.00	62.72	74.00	-11.28	Peak
2483.5	31.12	279	205	H	29.00	4.47	0.00	64.59	74.00	-9.41	Peak
2483.5	14.99	305	155	V	29.01	4.47	0.00	48.47	54.00	-5.53	Ave
2483.5	15.53	279	205	H	29.00	4.47	0.00	49.00	54.00	-5.00	Ave
4924	44.92	0	100	V	33.32	6.3	34.6	49.97	74.00	-24.03	Peak
4924	46.89	172	286	H	33.35	6.3	34.6	51.97	74.00	-22.03	Peak
4924	30.3	0	100	V	33.32	6.3	34.6	35.35	54.00	-18.65	Ave
4924	32.01	172	286	H	33.35	6.3	34.6	37.09	54.00	-16.91	Ave
7386	44.86	0	100	V	37.24	7.3	34.6	54.79	74.00	-19.21	Peak
7386	44.48	0	100	H	37.24	7.3	34.6	54.41	74.00	-19.59	Peak
7386	29.51	0	100	V	37.24	7.3	34.6	39.44	54.00	-14.56	Ave
7386	29.57	0	100	H	37.24	7.3	34.6	39.50	54.00	-14.50	Ave
9848	45.54	0	100	V	38.92	10.6	33.4	61.65	72.47	-10.82	Peak
9848	44.66	0	100	H	38.91	10.6	33.4	60.76	71.67	-10.91	Peak
9848	30.03	0	100	V	38.92	10.6	33.4	46.14	61.42	-15.28	Ave
9848	30.29	0	100	H	38.91	10.6	33.4	46.39	60.19	-13.80	Ave

Antenna 1, 802.11n20 Mode

Frequency (MHz)	S.A. Reading (dBμV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre- amp. (dB)	Cord. Reading (dBμV/m)	FCC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	
Low Channel 2412 MHz											
2412	63.23	320	100	V	28.174	4.44	0.00	95.84	-	-	Peak
2412	63.44	232	232	H	28.197	4.44	0.00	96.08	-	-	Peak
2412	32.48	320	100	V	28.174	4.44	0.00	65.09	-	-	Ave
2412	32.37	232	232	H	28.197	4.44	0.00	65.01	-	-	Ave
2390	28.13	320	100	V	28.174	4.44	0.00	60.74	74.00	-13.26	Peak
2390	31.58	232	232	H	28.197	4.44	0.00	64.22	74.00	-9.78	Peak
2390	12.94	320	100	V	28.174	4.44	0.00	45.55	54.00	-8.45	Ave
2390	13.46	232	232	H	28.197	4.440	0.00	46.10	54.00	-7.90	Ave
4824	45.46	0	100	V	33.12	5.357	34.62	49.32	74.00	-24.68	Peak
4824	47.76	175	293	H	33.18	5.357	34.62	51.68	74.00	-22.32	Peak
4824	30.49	0	100	V	33.12	5.357	34.62	34.35	54.00	-19.65	Ave
4824	33.69	175	293	H	33.18	5.357	34.62	37.61	54.00	-16.39	Ave
7236	44.01	0	100	V	37.44	6.925	34.44	53.94	74.00	-20.06	Peak
7236	43.82	0	100	H	37.44	6.925	34.44	53.75	74.00	-20.25	Peak
7236	29.1	0	100	V	37.44	6.925	34.44	39.03	54.00	-14.97	Ave
7236	28.76	0	100	H	37.44	6.925	34.44	38.69	54.00	-15.31	Ave
9648	42.57	0	100	V	38.83	10.204	32.66	58.94	75.84	-16.90	Peak
9648	42.96	0	100	H	38.83	10.204	32.66	59.34	76.08	-16.74	Peak
9648	28.23	0	100	V	38.83	10.204	32.66	44.60	45.09	-0.49	Ave
9648	28.17	0	100	H	38.83	10.204	32.66	44.55	45.01	-0.46	Ave
Middle Channel 2437 MHz											
2437	61.14	203	276	V	28.174	4.440	0.00	93.75	-	-	Peak
2437	65.66	174	100	H	28.197	4.440	0.00	98.30	-	-	Peak
2437	44.64	203	276	V	28.174	4.440	0.00	77.25	-	-	Ave
2437	48.05	174	100	H	28.197	4.440	0.00	80.69	-	-	Ave
4874	45.18	0	100	V	33.32	5.375	34.61	49.27	74.00	-24.73	Peak
4874	47.8	176	100	H	33.35	5.375	34.61	51.92	74.00	-22.08	Peak
4874	30.18	0	100	V	33.32	5.375	34.61	34.27	54.00	-19.73	Ave
4874	31.93	176	100	H	33.35	5.375	34.61	36.05	54.00	-17.95	Ave
7311	42.5	0	100	V	37.324	6.925	34.52	52.23	74.00	-21.77	Peak
7311	44.08	0	100	H	37.356	6.925	34.52	53.84	74.00	-20.16	Peak
7311	29.16	0	100	V	37.324	6.925	34.52	38.89	54.00	-15.11	Ave
7311	29	0	100	H	37.356	6.925	34.52	38.76	54.00	-15.24	Ave
9748	42.48	0	100	V	38.908	10.650	33.14	58.90	73.75	-14.86	Peak
9748	42.16	0	100	H	38.953	10.650	33.14	58.62	78.30	-19.67	Peak
9748	28.92	0	100	V	38.908	10.650	33.14	45.34	57.25	-11.92	Ave
9748	28.78	0	100	H	38.953	10.650	33.14	45.24	60.69	-15.44	Ave

Frequency (MHz)	S.A. Reading (dBμV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre- Amp. (dB)	Cord. Reading (dBμV/m)	FCC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)	
High Channel 2462 MHz											
2462	61.8	326	157	V	29.01	4.47	0.00	95.28	-	-	Peak
2462	59.76	276	207	H	29.00	4.47	0.00	93.23	-	-	Peak
2462	33.78	326	157	V	29.01	4.47	0.00	67.26	-	-	Ave
2462	32.79	276	207	H	29.00	4.47	0.00	66.26	-	-	Ave
2483.5	33.67	326	157	V	29.01	4.47	0.00	67.15	74.00	-6.85	Peak
2483.5	35.62	276	207	H	29.00	4.47	0.00	69.09	74.00	-4.91	Peak
2483.5	14.44	326	157	V	29.01	4.47	0.00	47.92	54.00	-6.08	Ave
2483.5	14.83	276	207	H	29.00	4.47	0.00	48.30	54.00	-5.70	Ave
4924	44.93	0	100	V	33.32	6.3	34.6	49.98	74.00	-24.02	Peak
4924	45.93	171	100	H	33.35	6.3	34.6	51.01	74.00	-22.99	Peak
4924	29.66	0	100	V	33.32	6.3	34.6	34.71	54.00	-19.29	Ave
4924	30.74	171	100	H	33.35	6.3	34.6	35.82	54.00	-18.18	Ave
7386	44	0	100	V	37.24	7.3	34.6	53.93	74.00	-20.07	Peak
7386	43.86	0	100	H	37.24	7.3	34.6	53.79	74.00	-20.21	Peak
7386	29.35	0	100	V	37.24	7.3	34.6	39.28	54.00	-14.72	Ave
7386	29.38	0	100	H	37.24	7.3	34.6	39.31	54.00	-14.69	Ave
9848	43.23	0	100	V	38.92	10.6	33.4	59.34	75.28	-15.94	Peak
9848	43.82	0	100	H	38.91	10.6	33.4	59.92	73.23	-13.31	Peak
9848	29.65	0	100	V	38.92	10.6	33.4	45.76	47.26	-1.50	Ave
9848	29.54	0	100	H	38.91	10.6	33.4	45.64	46.26	-0.62	Ave

7 FCC §15.247(a)(2) - 6 dB & 99% Emission Bandwidth

7.1 Applicable Standards

According to FCC §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

7.2 Measurement Procedure

The measurements are based on FCC KDB 558074 D01 DTS Meas Guidance v03r03: Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 section 8: DTS bandwidth

7.3 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Agilent	Spectrum Analyzer	E4440A	US42221851	2015-06-23	1 year
-	SMA Cable	-	C0001	Each Time ¹	N/A
Mini-circuits	Attenuator	BW-S10W5	1419	Each Time ¹	N/A

Note¹: cable and attenuator included in the test set-up will be checked each time before testing.

Statement of Traceability: *BACL Corp. attests that all calibrations have been performed per the A2LA requirements, traceable to the NIST.*

7.4 Test Environmental Conditions

Temperature:	22 °C
Relative Humidity:	42 %
ATM Pressure:	102.7 kPa

The testing was performed by Leonard Gray on 2015-10-08 in RF site.

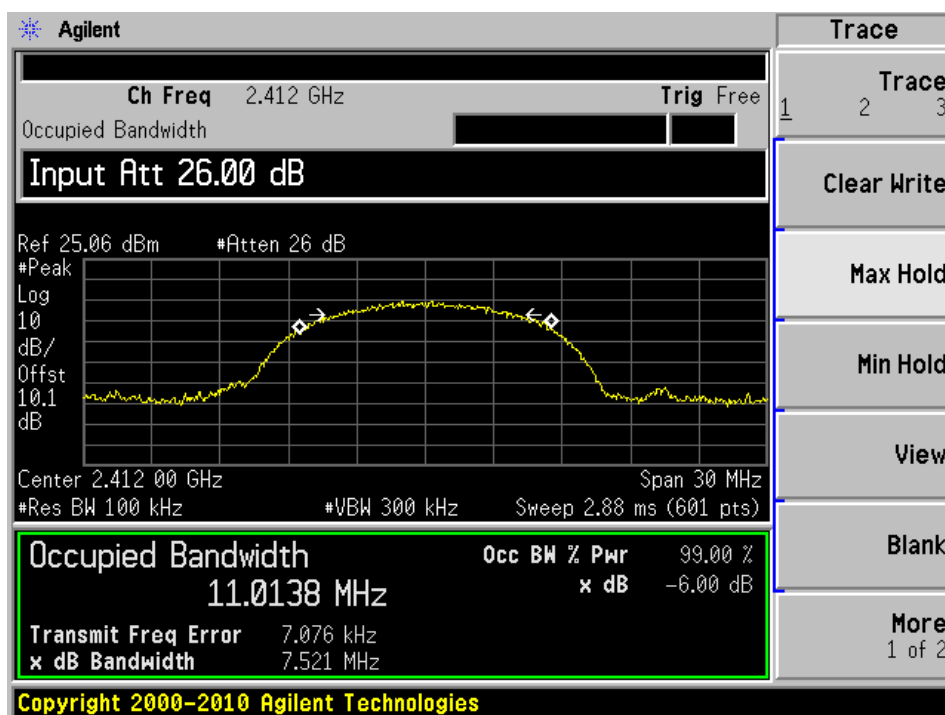
7.5 Test Results

Channel	Frequency (MHz)	99 % OBW (MHz)		6 dB OBW (MHz)		6 dB OBW Limit (kHz)	Result
		Antenna 0	Antenna 1	Antenna 0	Antenna 1		
802.11b							
Low	2412	11.0138	11.1061	7.521	7.748	≥ 500	Pass
Middle	2437	11.1145	11.0779	7.643	7.738	≥ 500	Pass
High	2462	11.0917	11.0907	7.779	7.884	≥ 500	Pass
802.11g							
Low	2412	16.4527	16.4319	16.449	16.399	≥ 500	Pass
Middle	2437	16.4442	16.4397	16.453	16.436	≥ 500	Pass
High	2462	16.4436	16.4430	16.444	16.401	≥ 500	Pass
802.11n20							
Low	2412	17.7273	17.7269	17.639	17.577	≥ 500	Pass
Middle	2437	17.7257	17.7361	17.622	17.627	≥ 500	Pass
High	2462	17.7637	17.7192	17.627	17.617	≥ 500	Pass

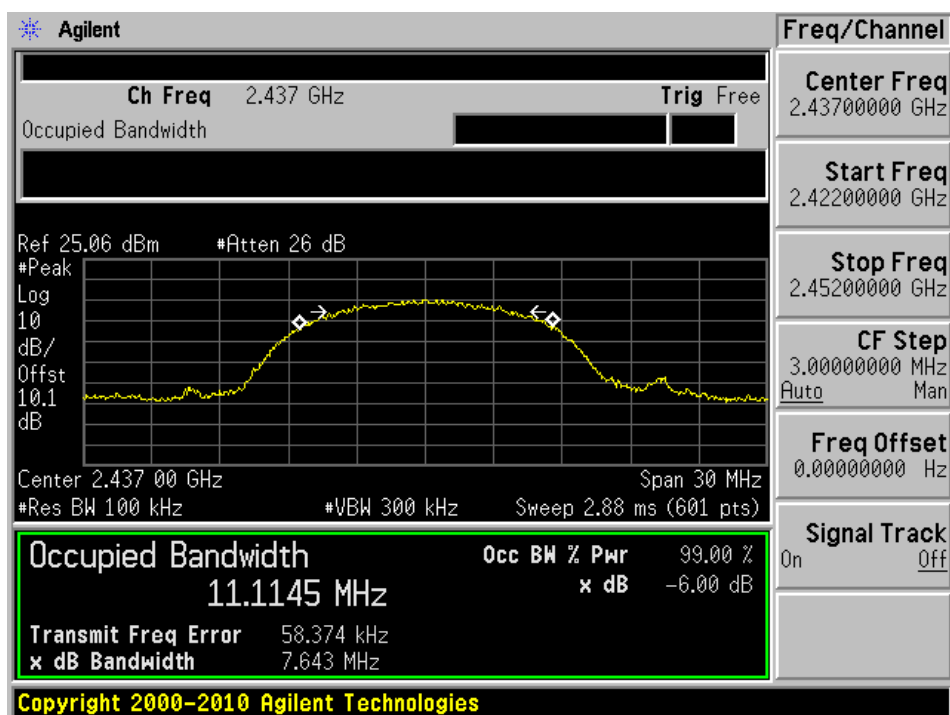
Please refer to the following plots for detailed test results

Antenna Port 0

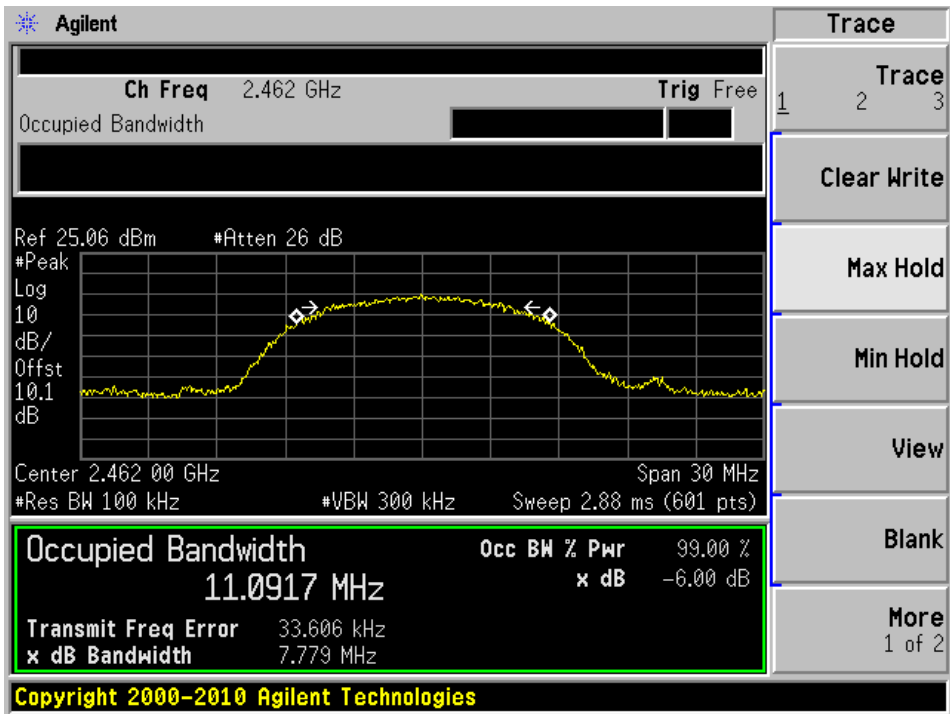
802.11b - 2412 MHz



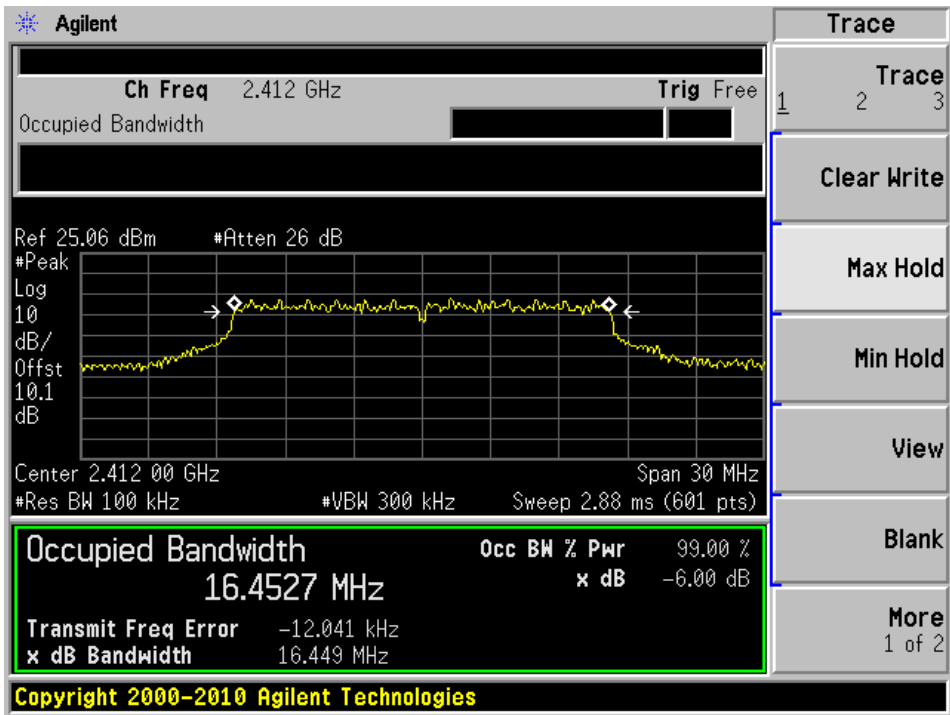
802.11b - 2437 MHz



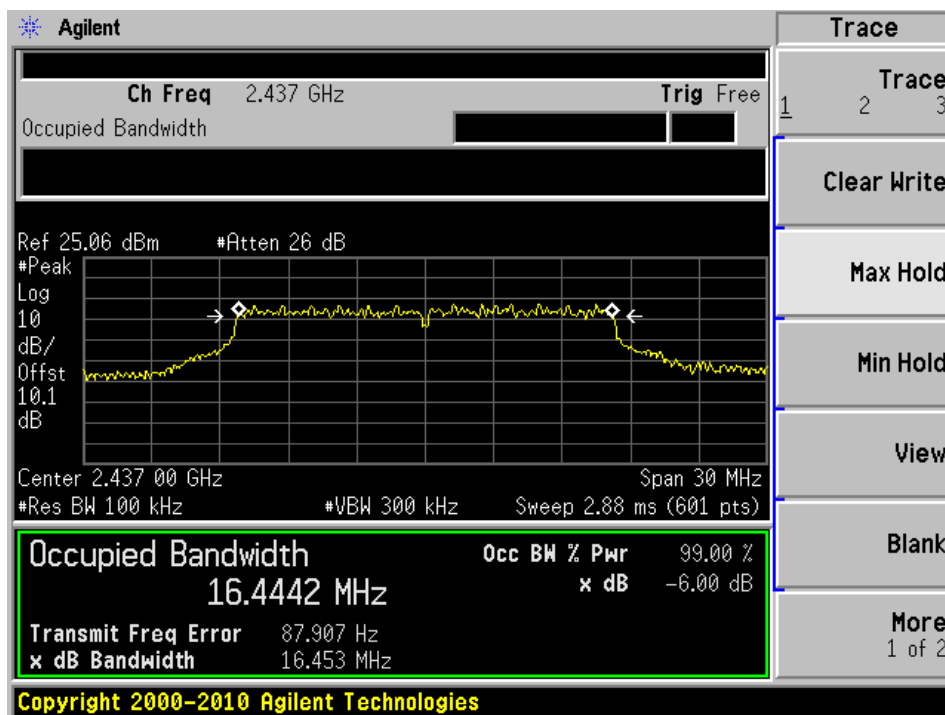
802.11b - 2462 MHz



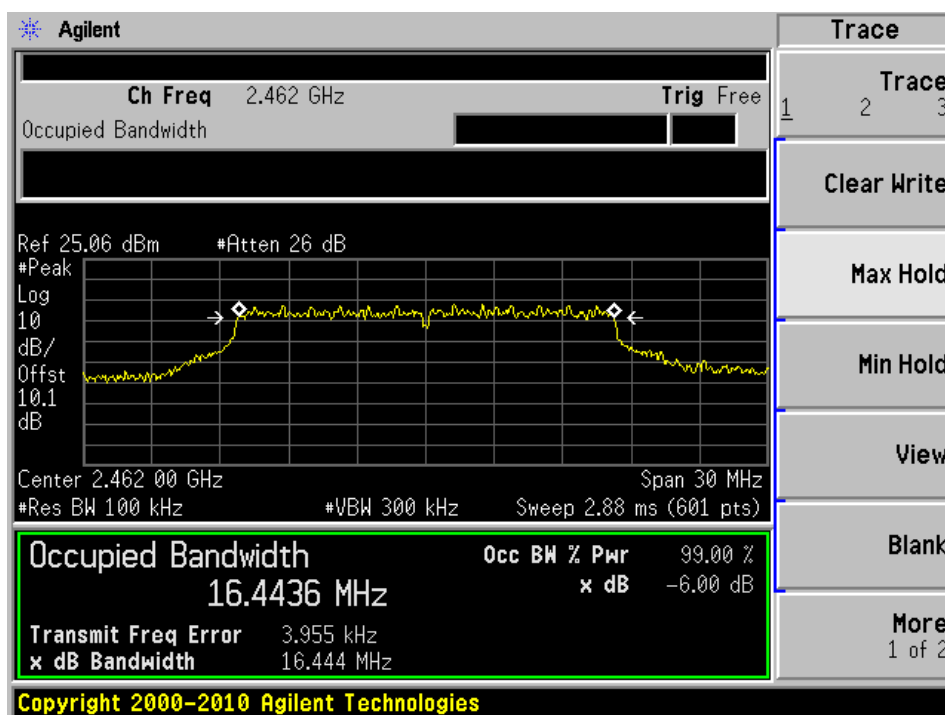
802.11g - 2412 MHz



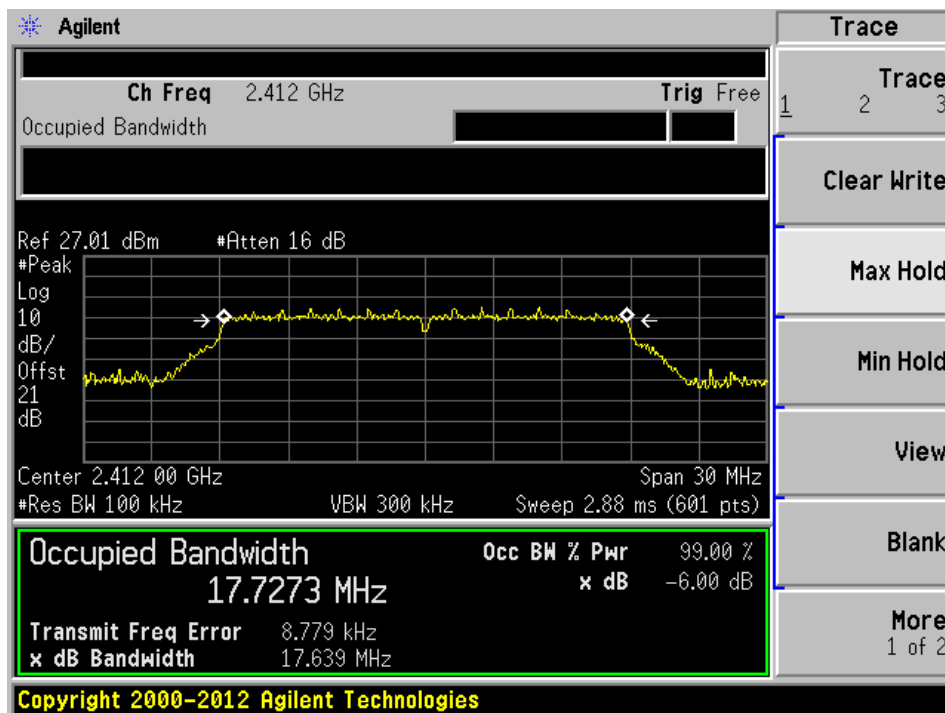
802.11g - 2437 MHz



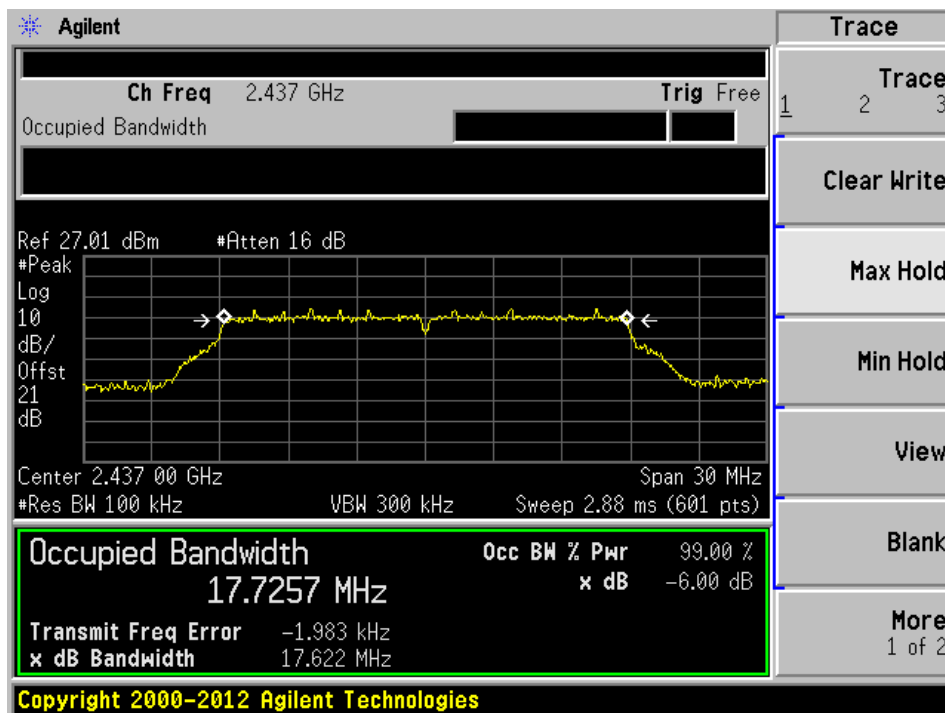
802.11g - 2462 MHz



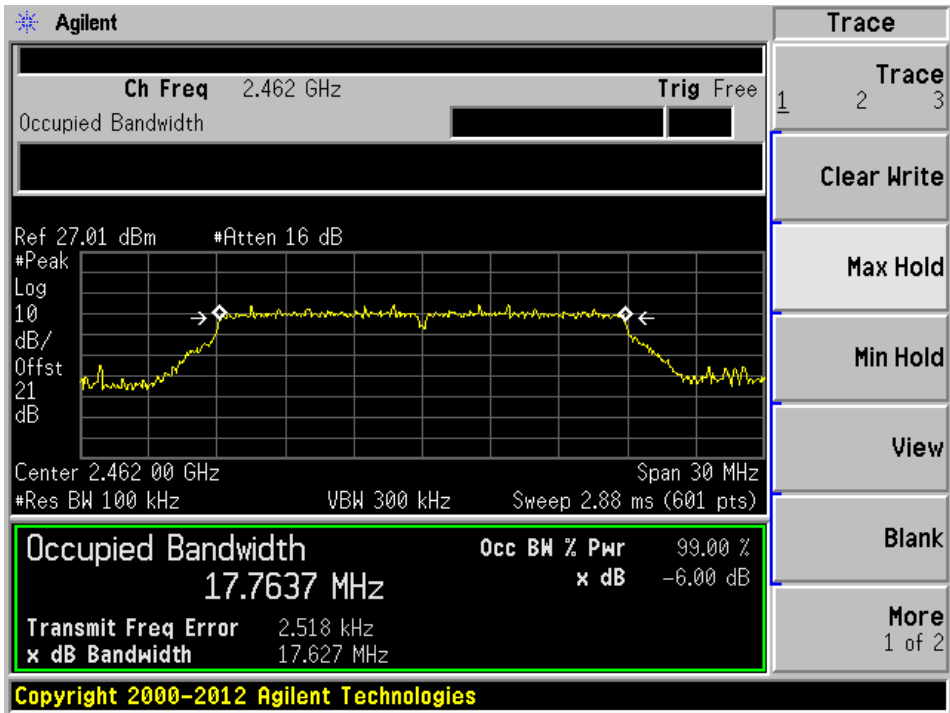
802.11n20 - 2412 MHz



802.11n20 - 2437 MHz

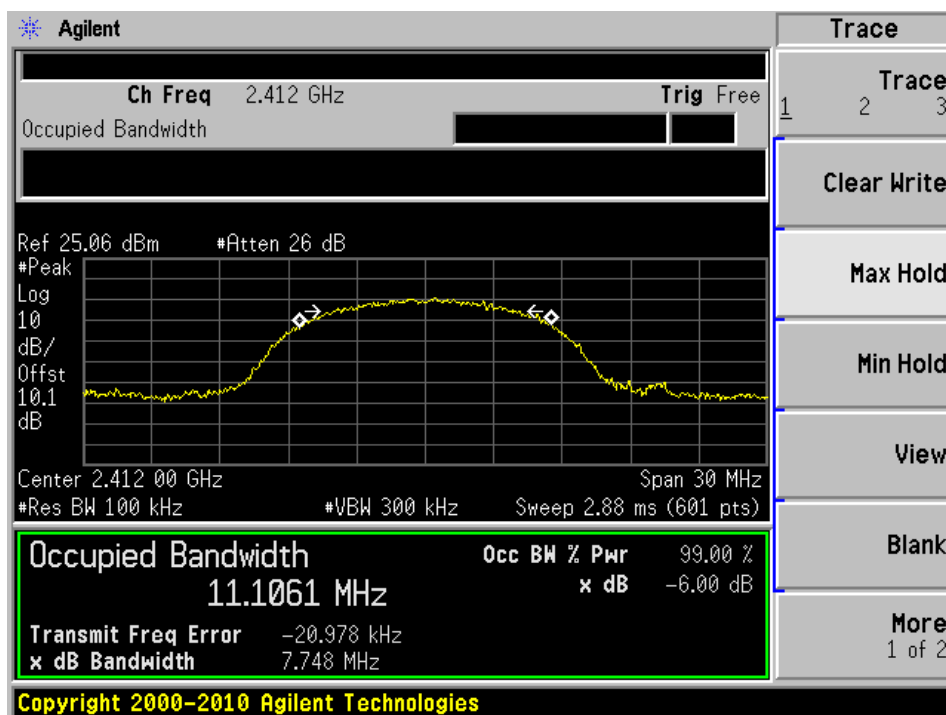


802.11n20 - 2462 MHz

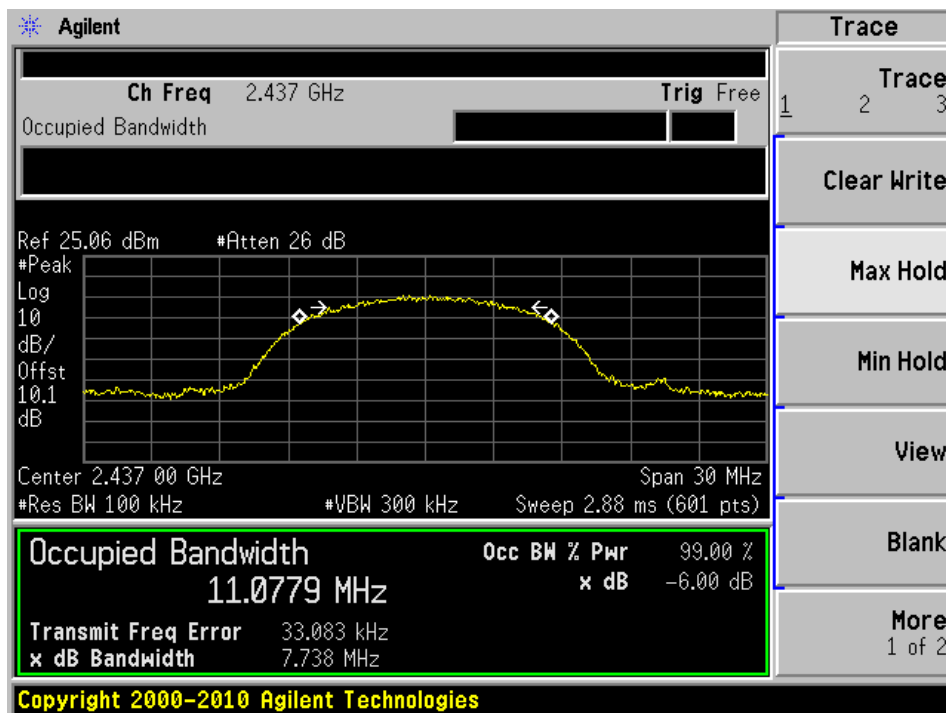


Antenna Port 1

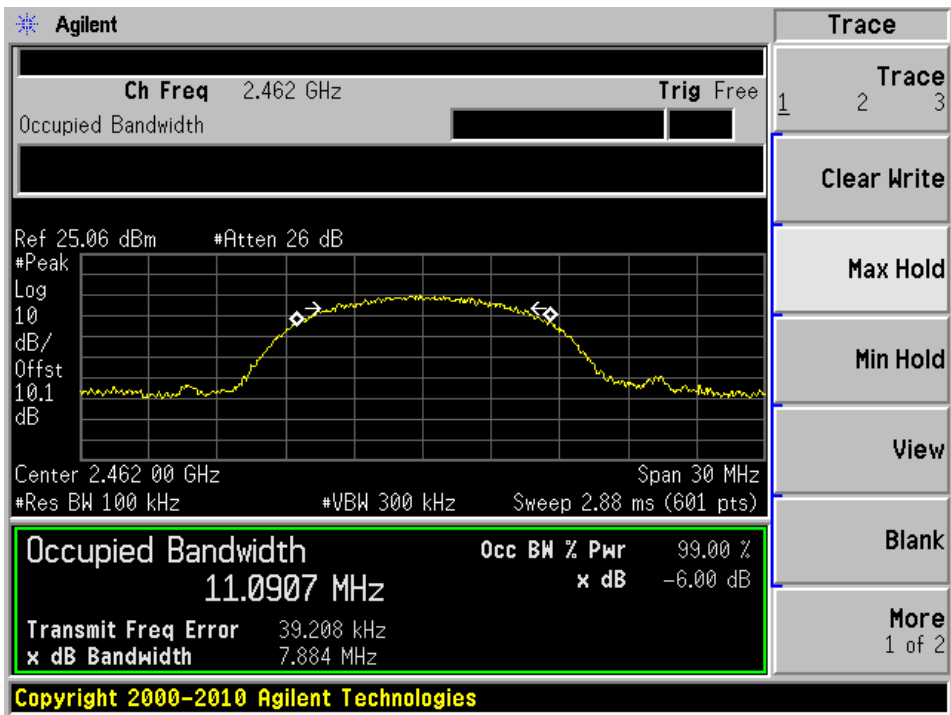
802.11b - 2412 MHz



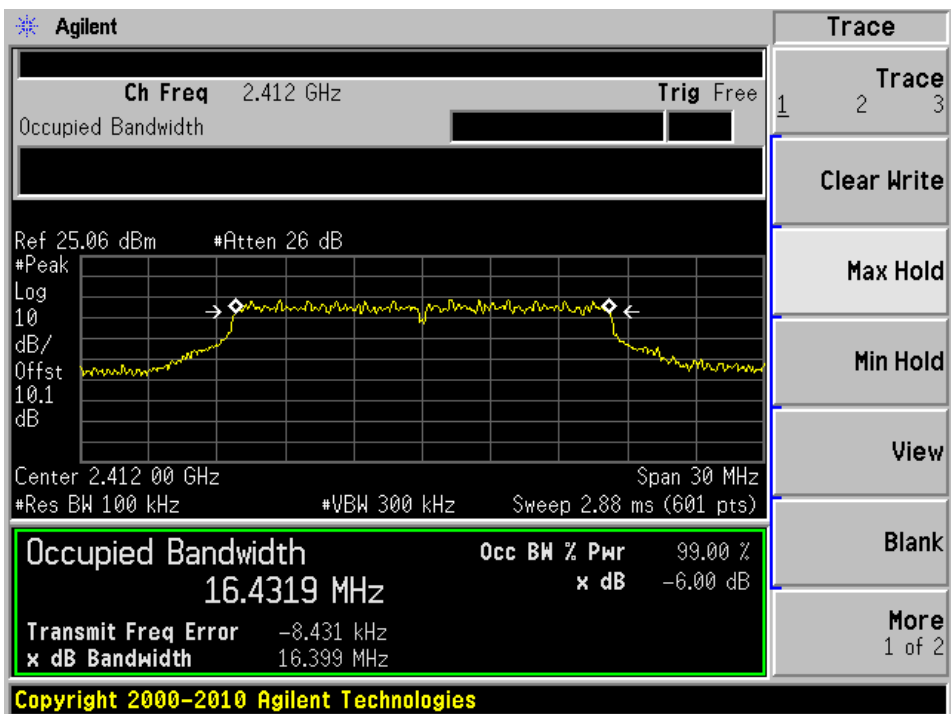
802.11b - 2437 MHz



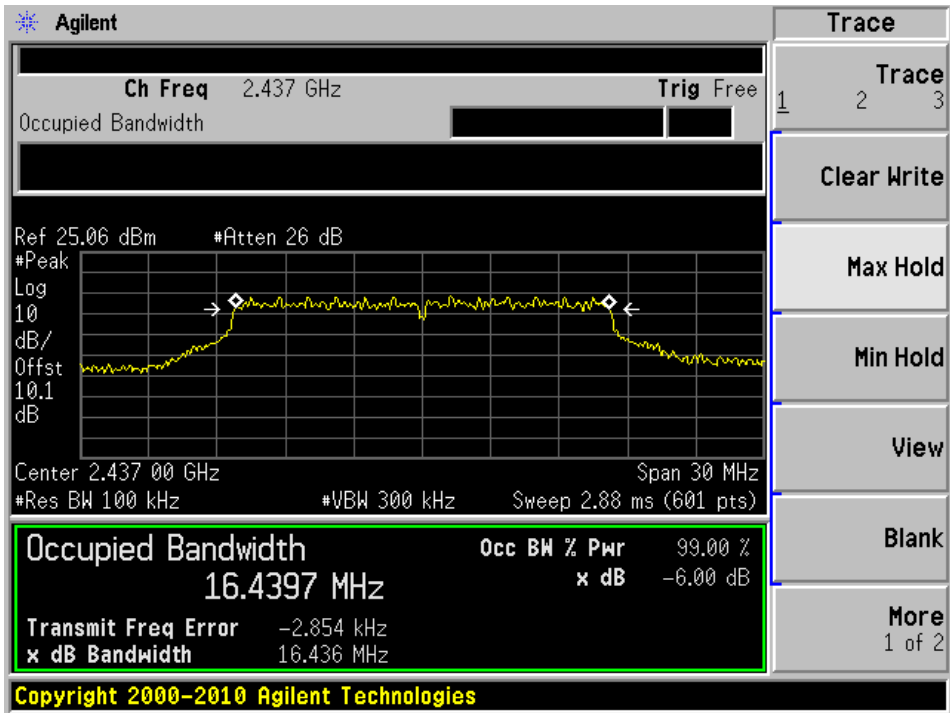
802.11b - 2462 MHz



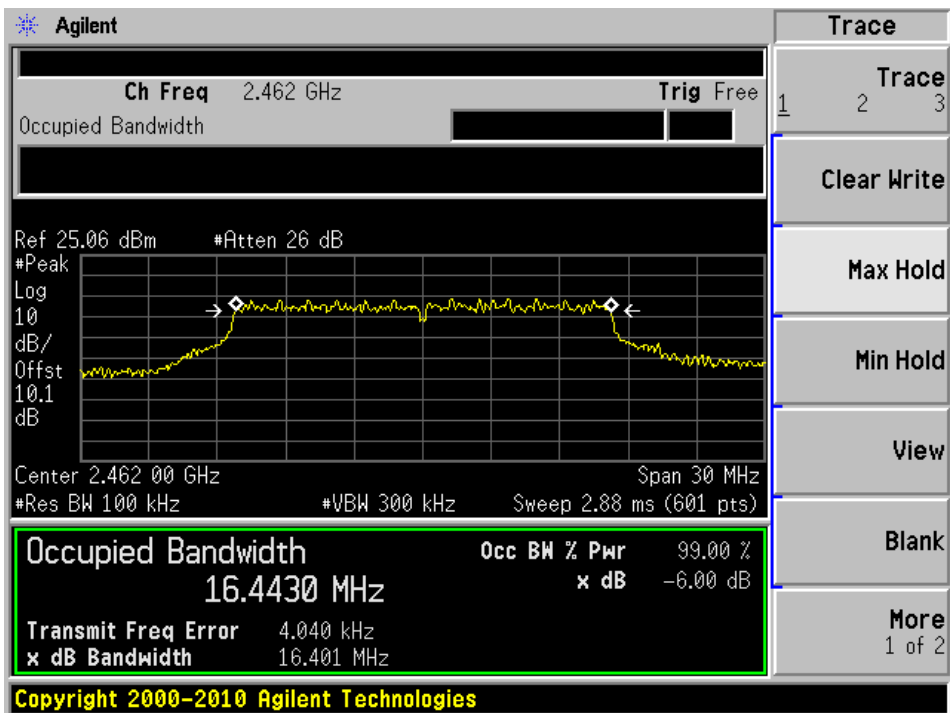
802.11g - 2412 MHz



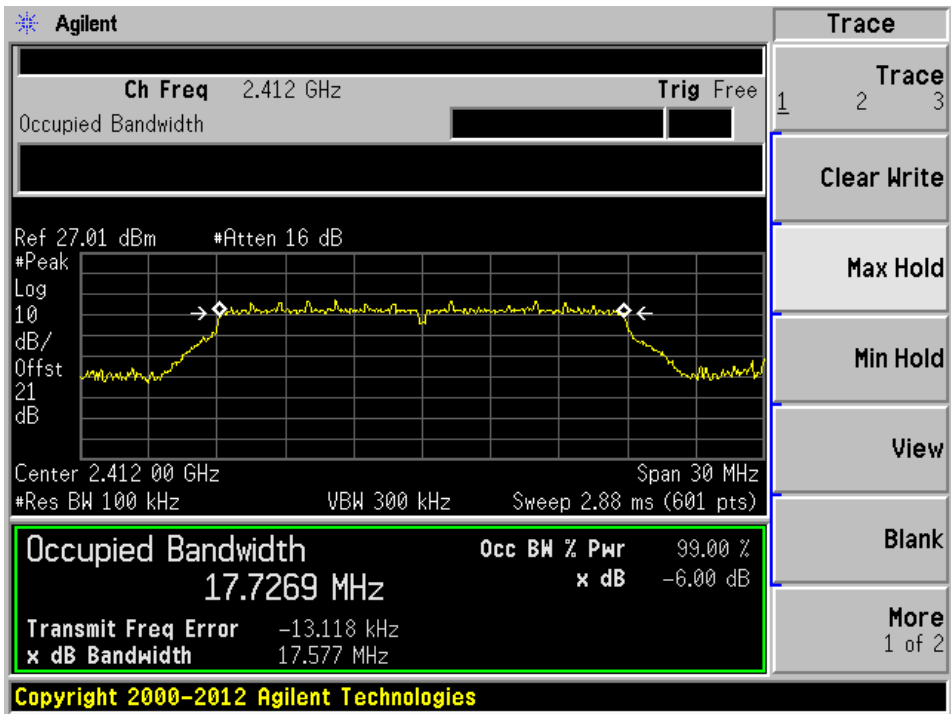
802.11g - 2437 MHz



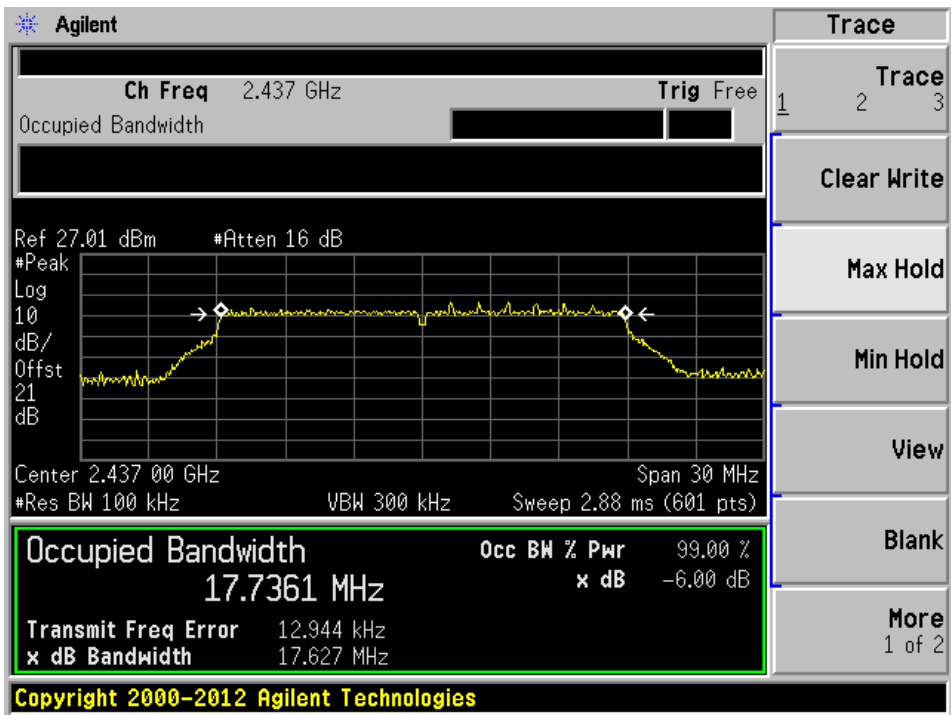
802.11g - 2462 MHz



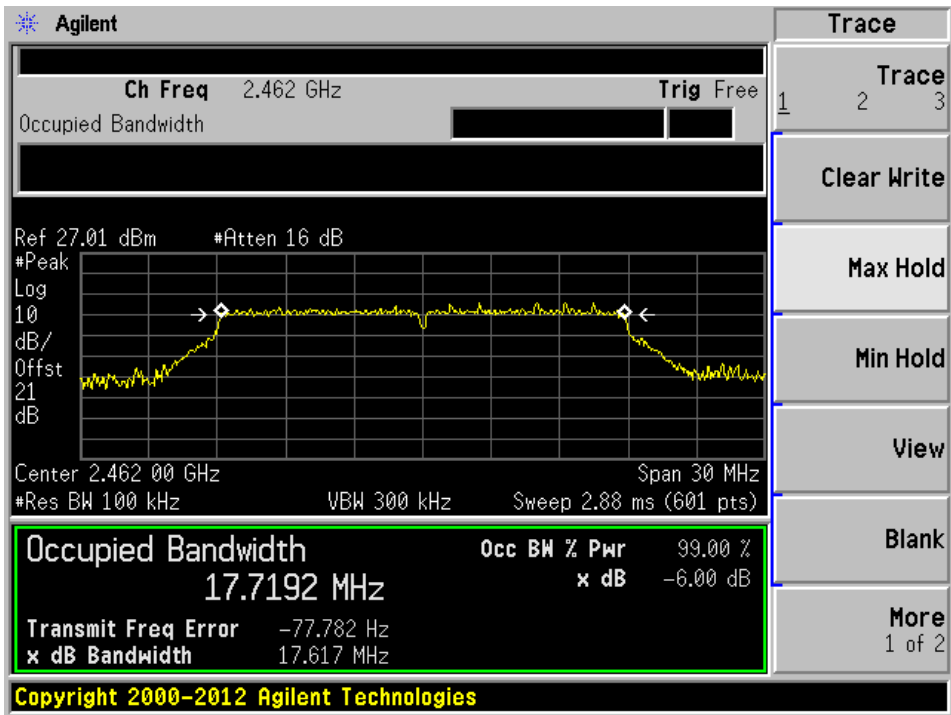
802.11n20 - 2412 MHz



802.11n20 - 2437 MHz



802.11n20 - 2462 MHz



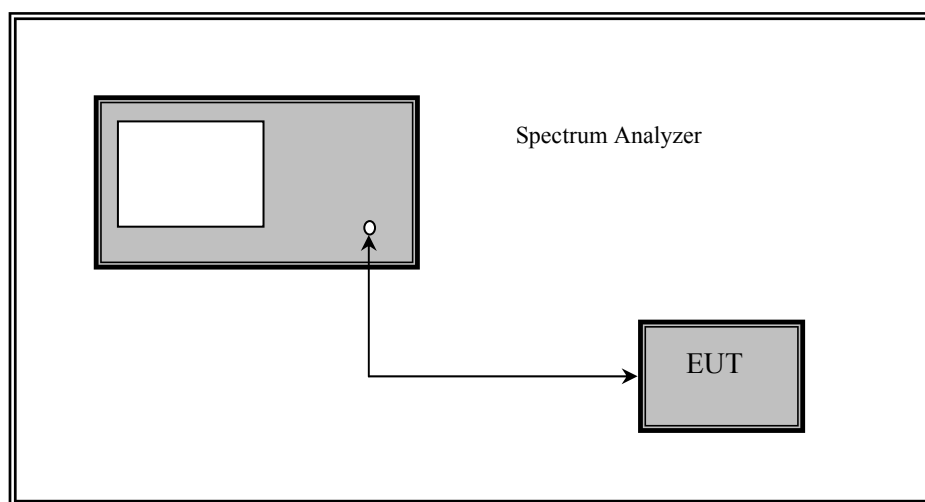
8 FCC §15.247(b) - Output Power Measurement

8.1 Applicable Standards

According to FCC §15.247(b) for systems using digital modulation in the 902~928 MHz, 2400~2483.5 MHz, and 5725~5850 MHz bands: 1 Watt.

8.2 Measurement Procedure

The measurements are based on FCC KDB 558074 D01 DTS Meas Guidance v03r03: Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 section 9: Fundamental emission output power



8.3 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Agilent	Spectrum Analyzer	E4440A	US42221851	2015-06-23	1 year
-	SMA Cable	-	C0001	Each Time ¹	N/A
Mini-Circuits	Attenuator	BW-S20W5	1430	Each Time ¹	N/A

¹ cable and attenuator included in the test set-up will be checked each time before testing.

Statement of Traceability: *BACL Corp.* attests that all calibrations have been performed per the A2LA requirements, traceable to the NIST.

8.4 Test Environmental Conditions

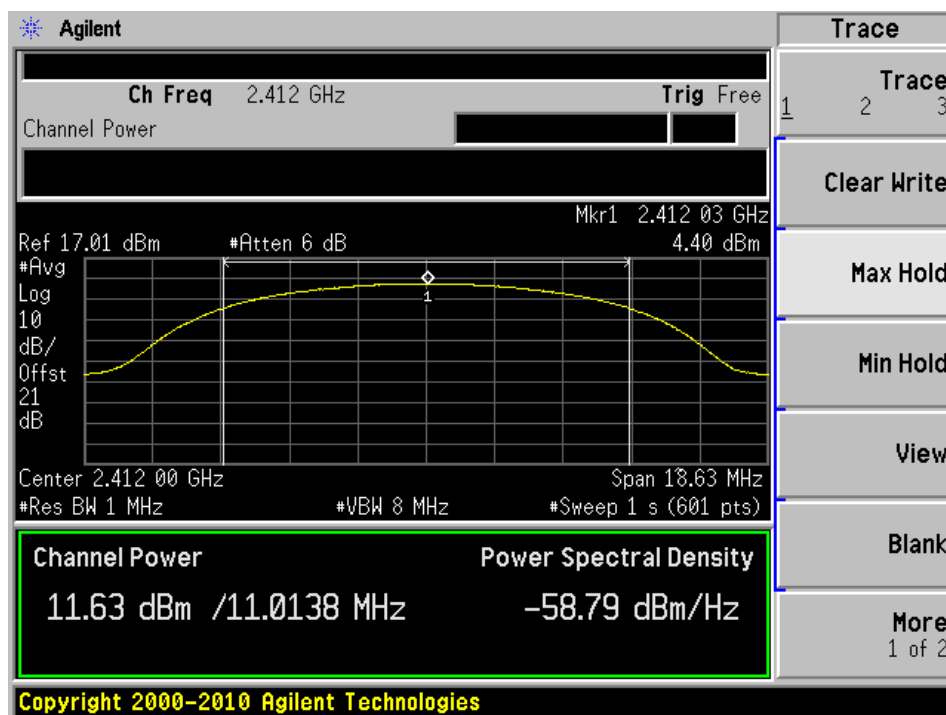
Temperature:	21-24° C
Relative Humidity:	40-44 %
ATM Pressure:	102.1-103.5 kPa

The testing was performed by Leonard Gray on 2015-10-08 in RF site.

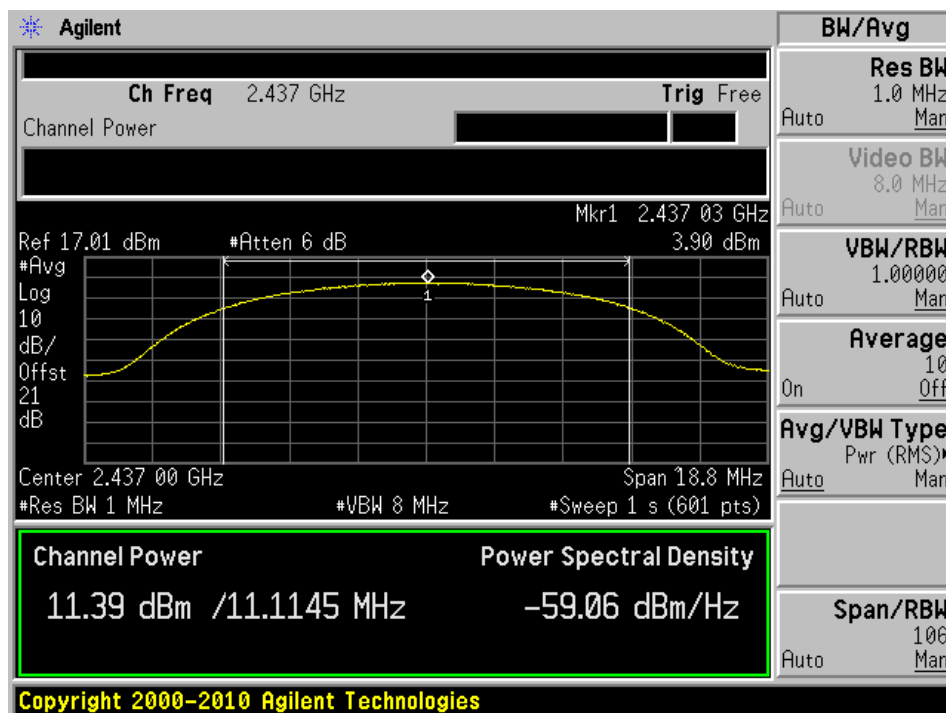
Conducted Output Power at Antenna Port 0

Channel	Frequency (MHz)	Conducted Output Power (dBm)	Limit (dBm)	Result
802.11b				
Low	2412	11.63	30	Pass
Middle	2437	11.39	30	Pass
High	2462	11.55	30	Pass
802.11g				
Low	2412	12.59	30	Pass
Middle	2437	12.65	30	Pass
High	2462	12.61	30	Pass
802.11n20				
Low	2412	12.13	30	Pass
Middle	2437	11.88	30	Pass
High	2462	11.86	30	Pass

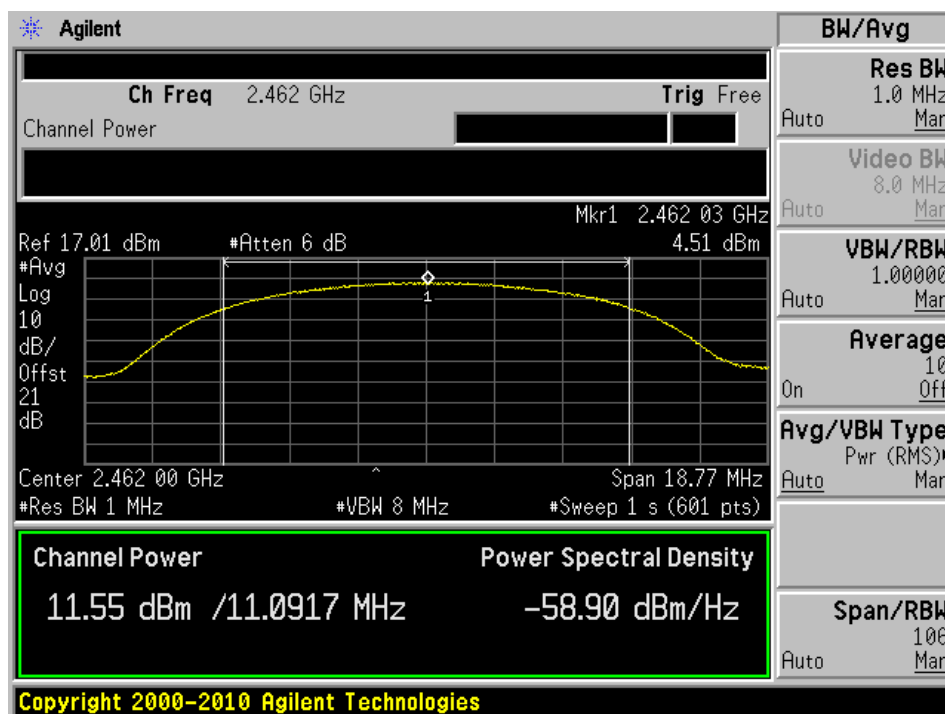
802.11b-2412 MHz



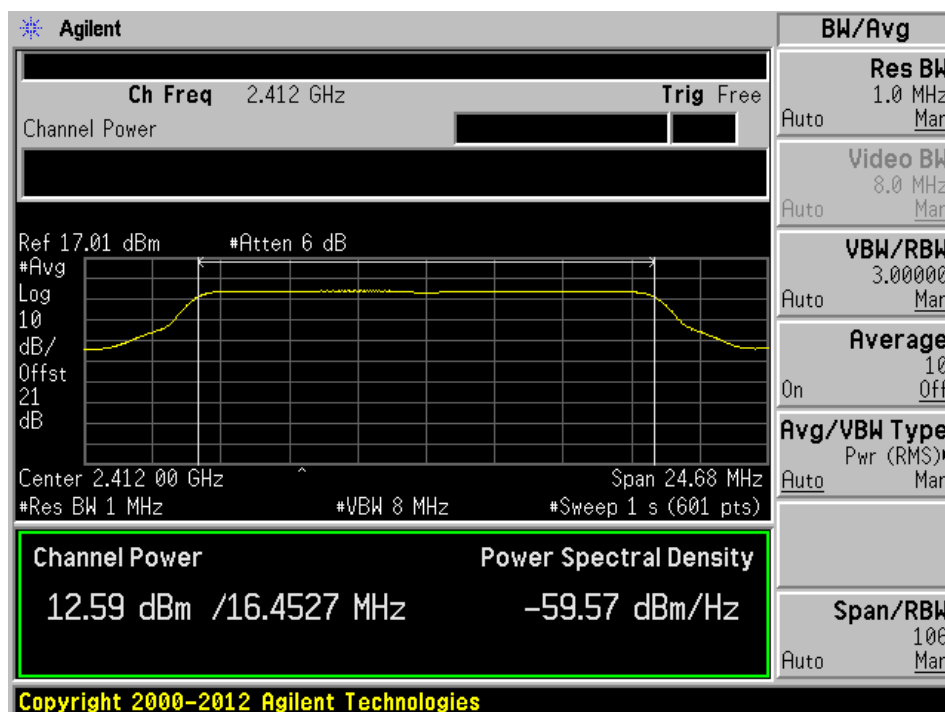
802.11b-2437 MHz



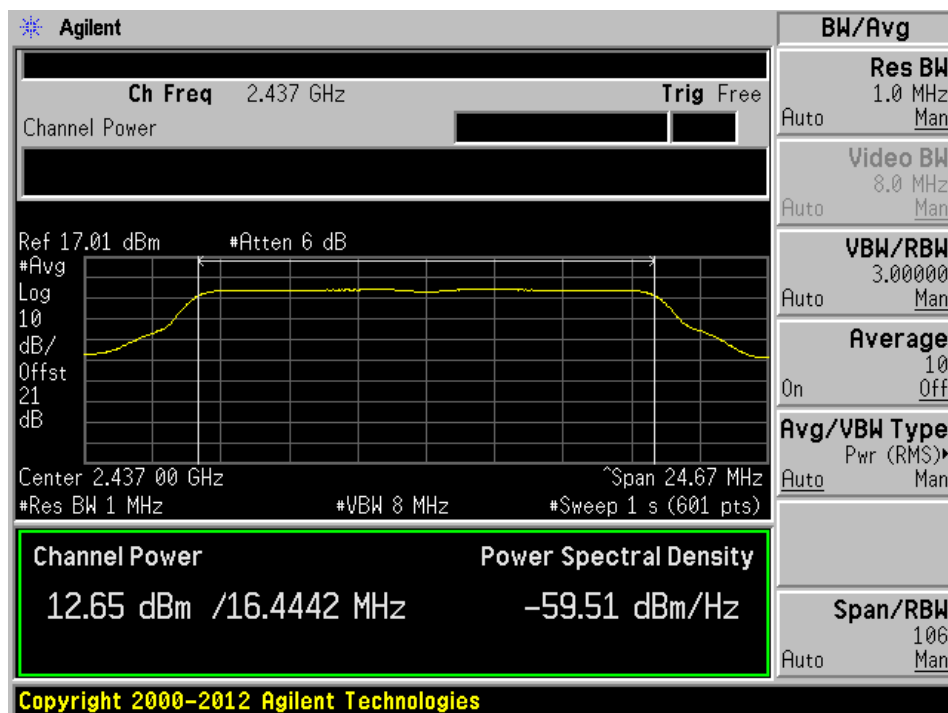
802.11b-2462 MHz



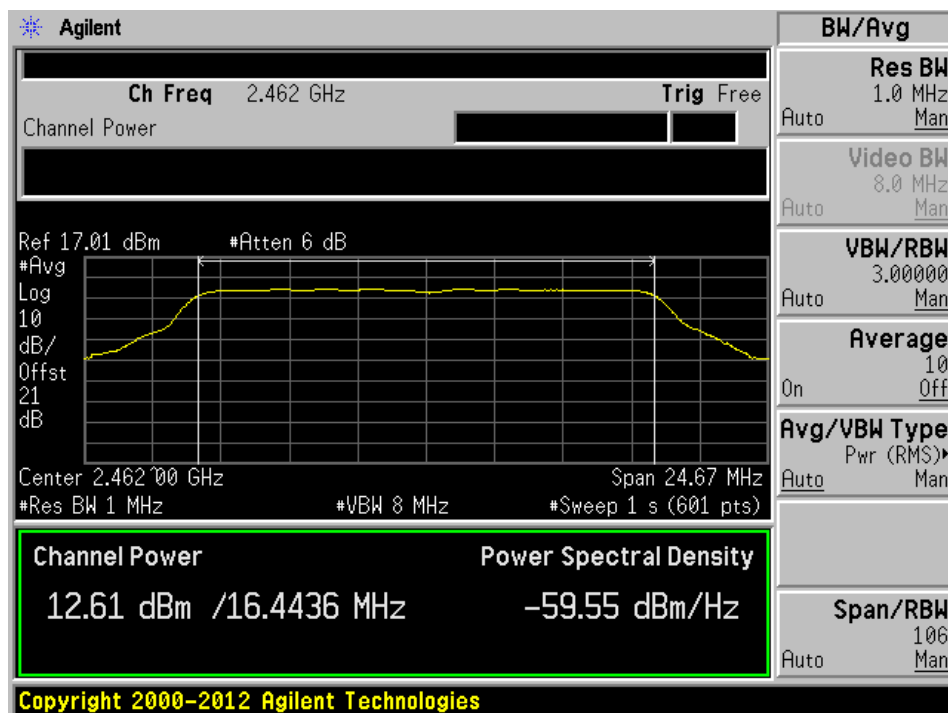
802.11g-2412 MHz



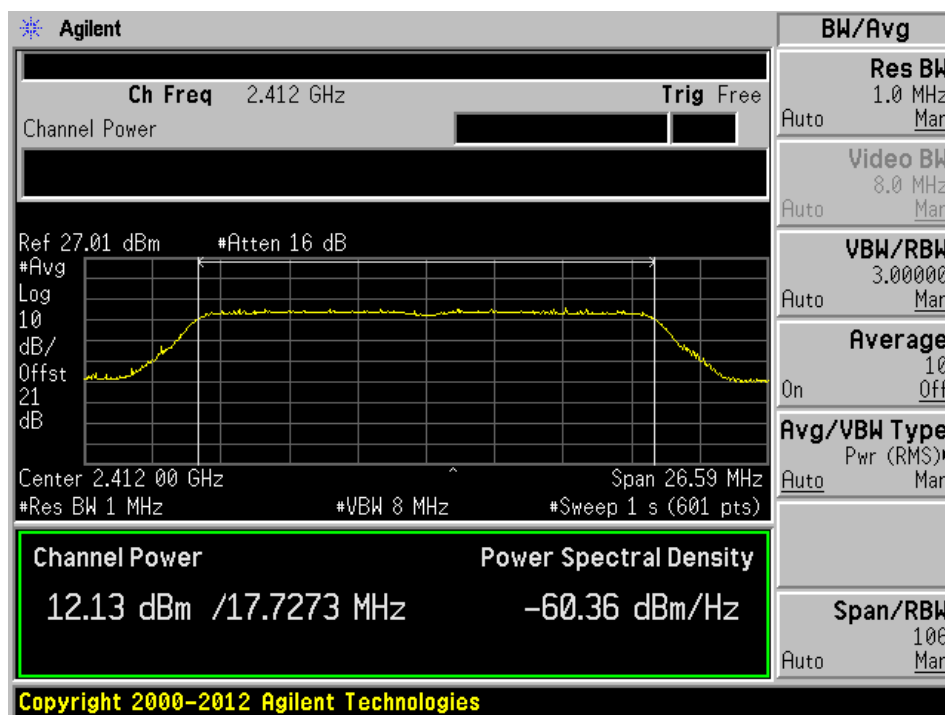
802.11g-2437 MHz



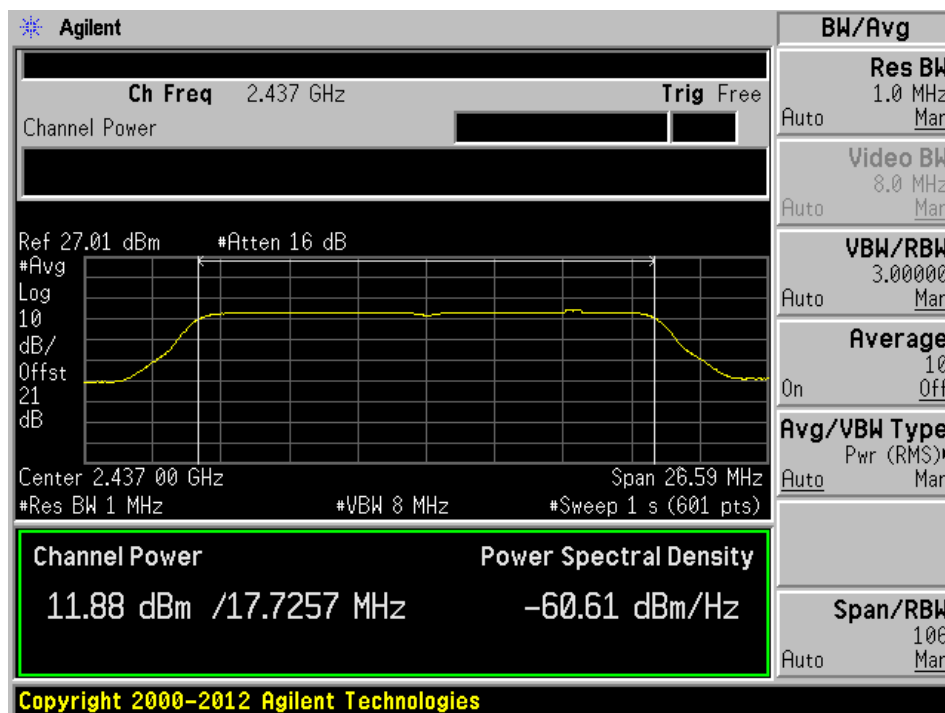
802.11g-2462 MHz



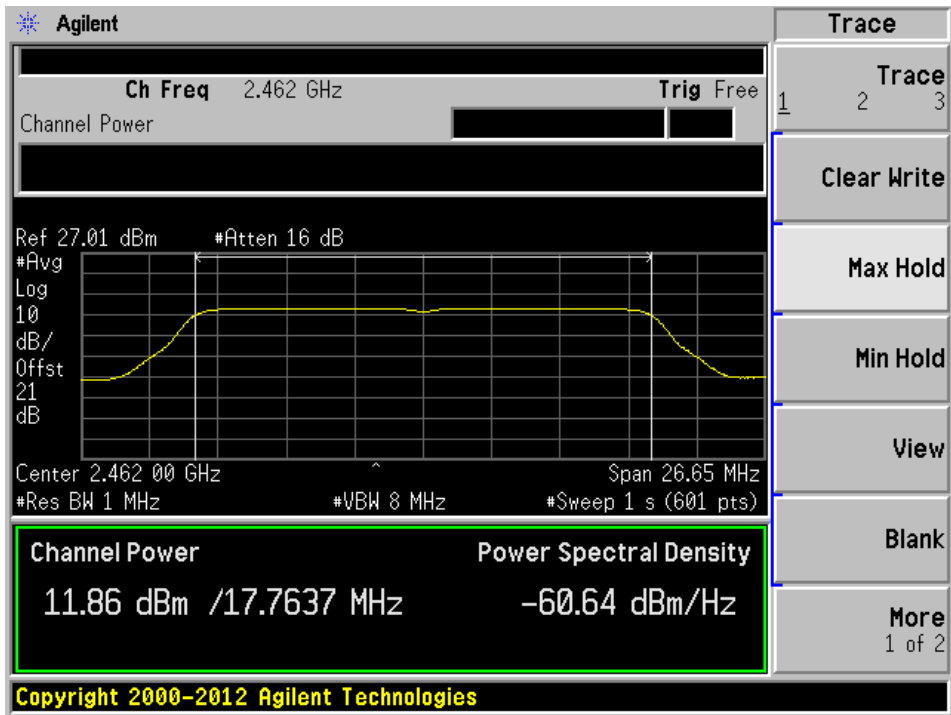
802.11n20-2412 MHz



802.11n20-2437 MHz



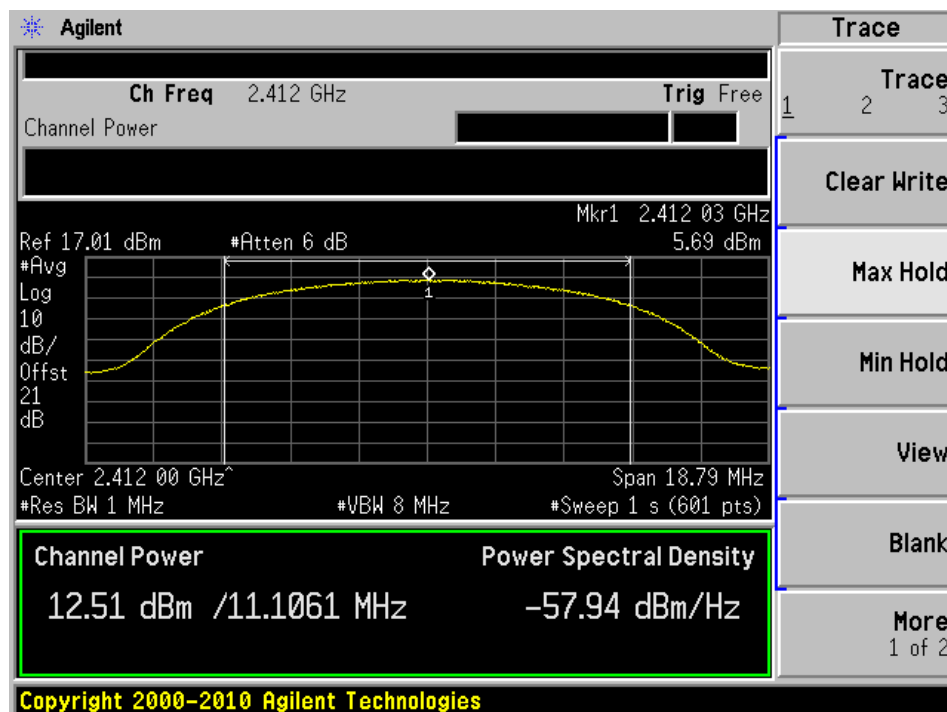
802.11n20-2462 MHz



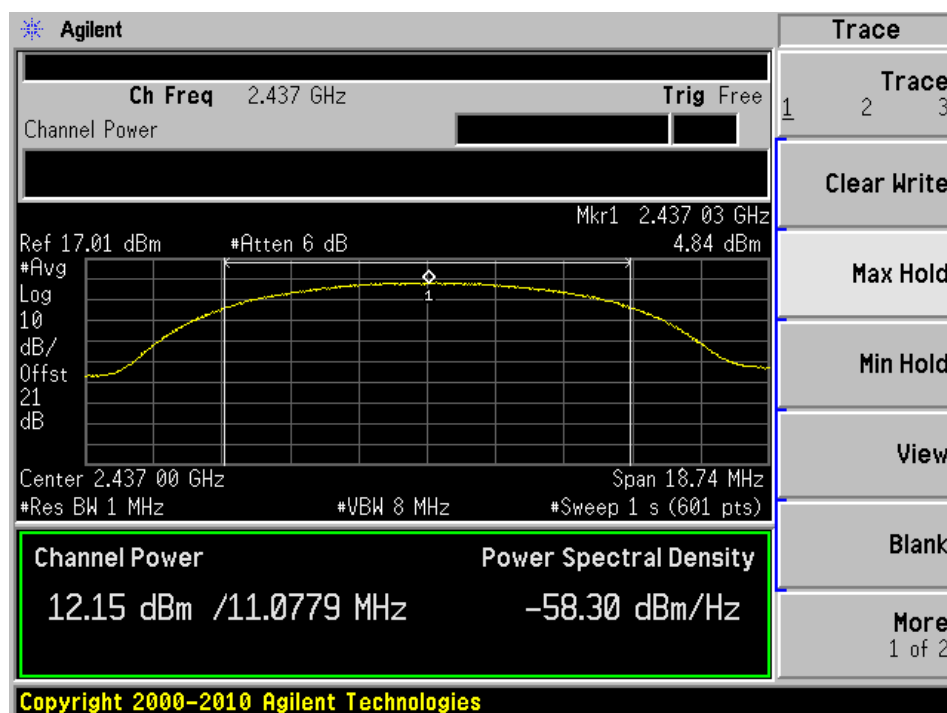
Conducted Output Power at Antenna Port 1

Channel	Frequency (MHz)	Conducted Output Power (dBm)	Limit (dBm)	Result
802.11b				
Low	2412	12.51	30	Pass
Middle	2437	12.15	30	Pass
High	2462	12.28	30	Pass
802.11g				
Low	2412	13.59	30	Pass
Middle	2437	13.62	30	Pass
High	2462	13.69	30	Pass
802.11n20				
Low	2412	14.54	30	Pass
Middle	2437	12.91	30	Pass
High	2462	14.40	30	Pass

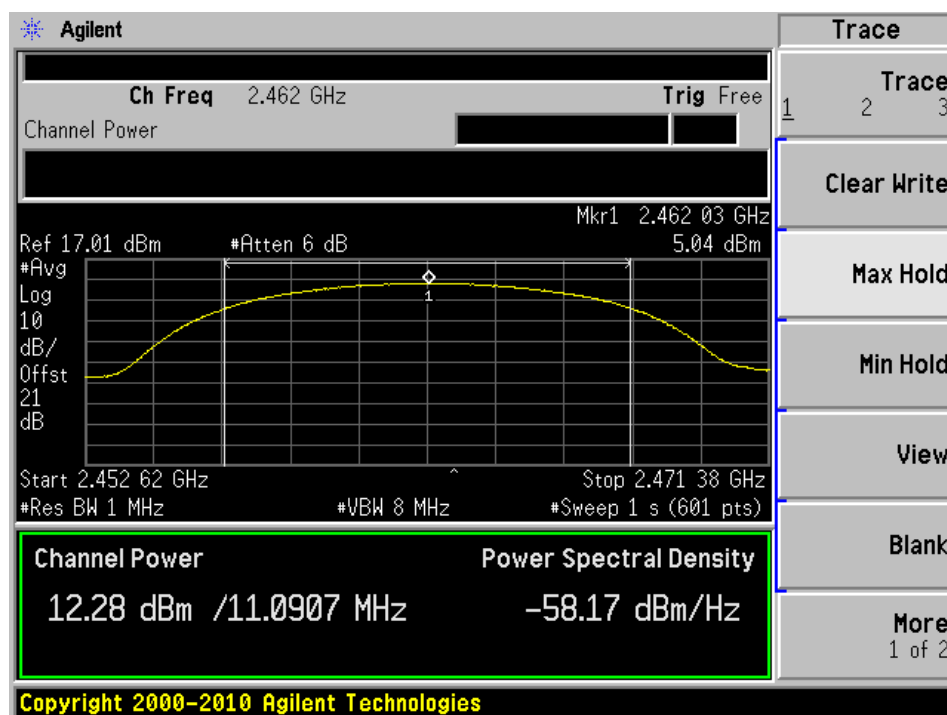
802.11b-2412 MHz



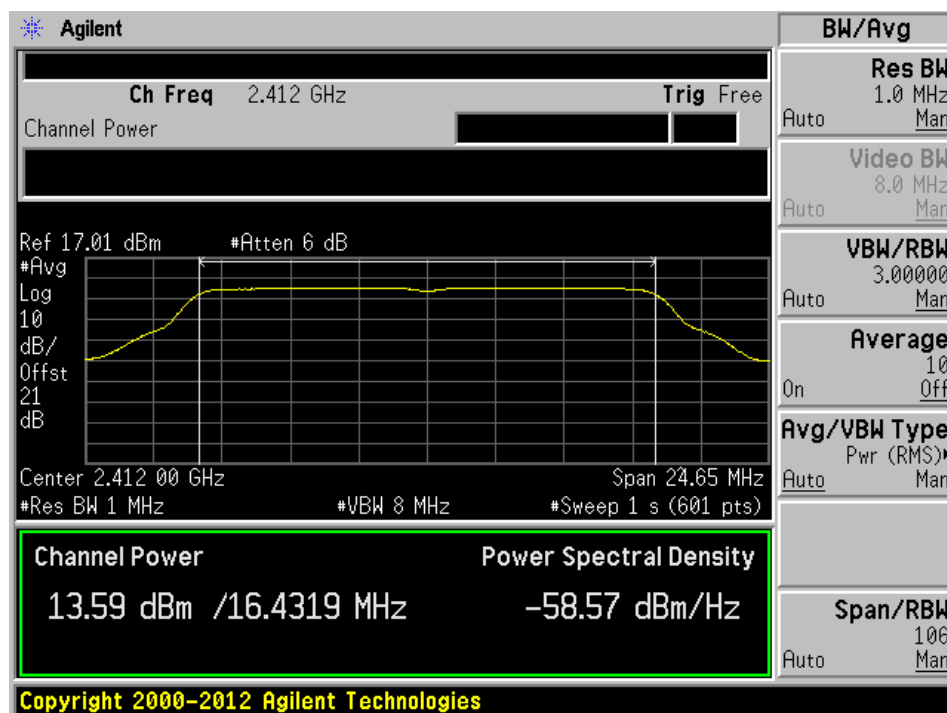
802.11b-2437 MHz



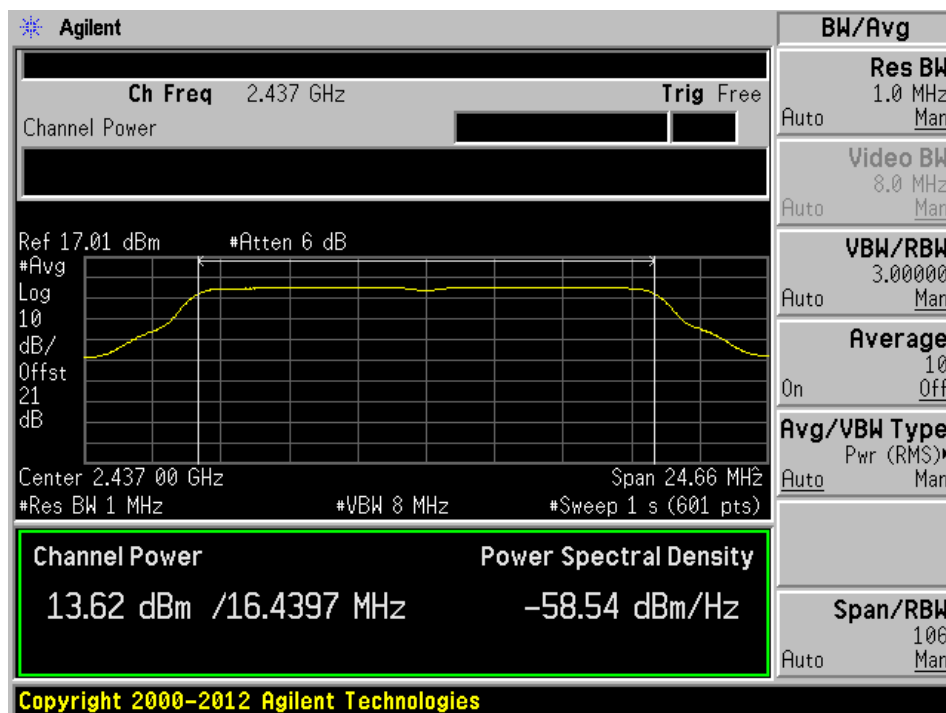
802.11b-2462 MHz



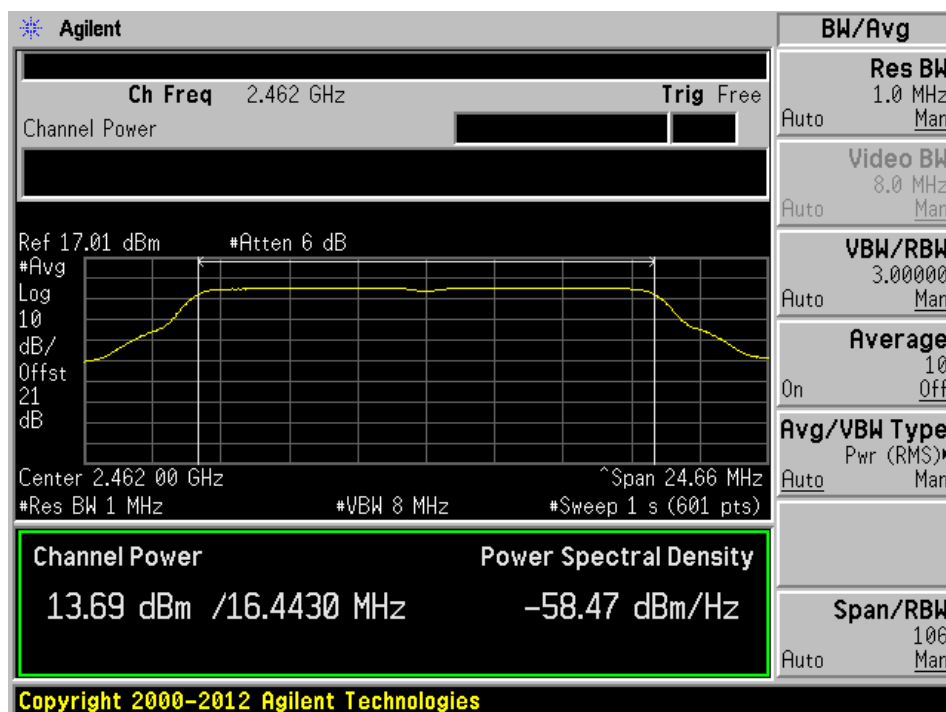
802.11g-2412 MHz



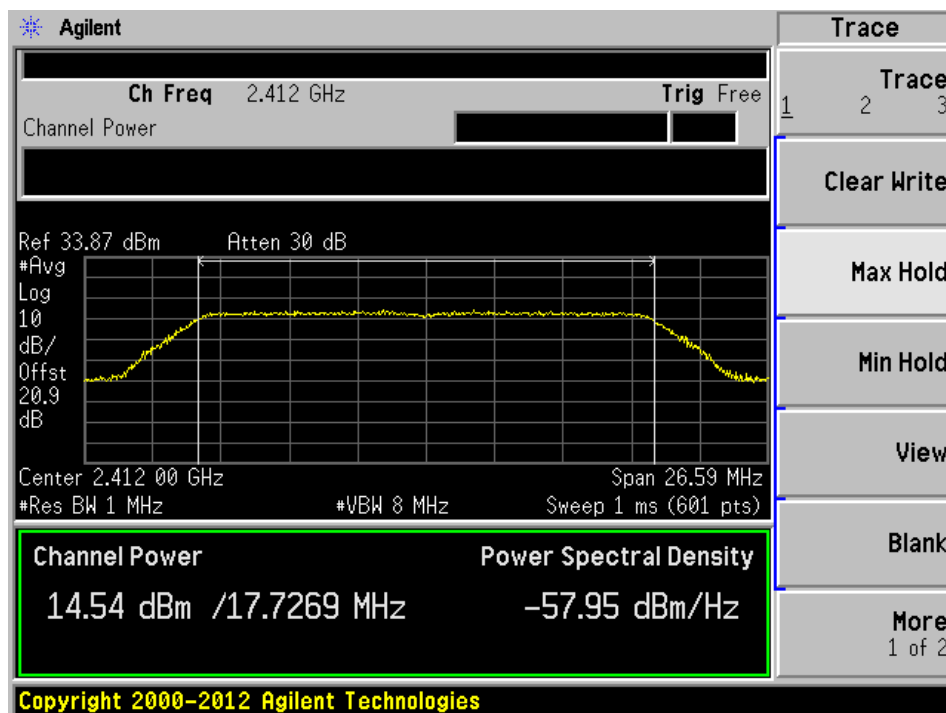
802.11g-2437 MHz



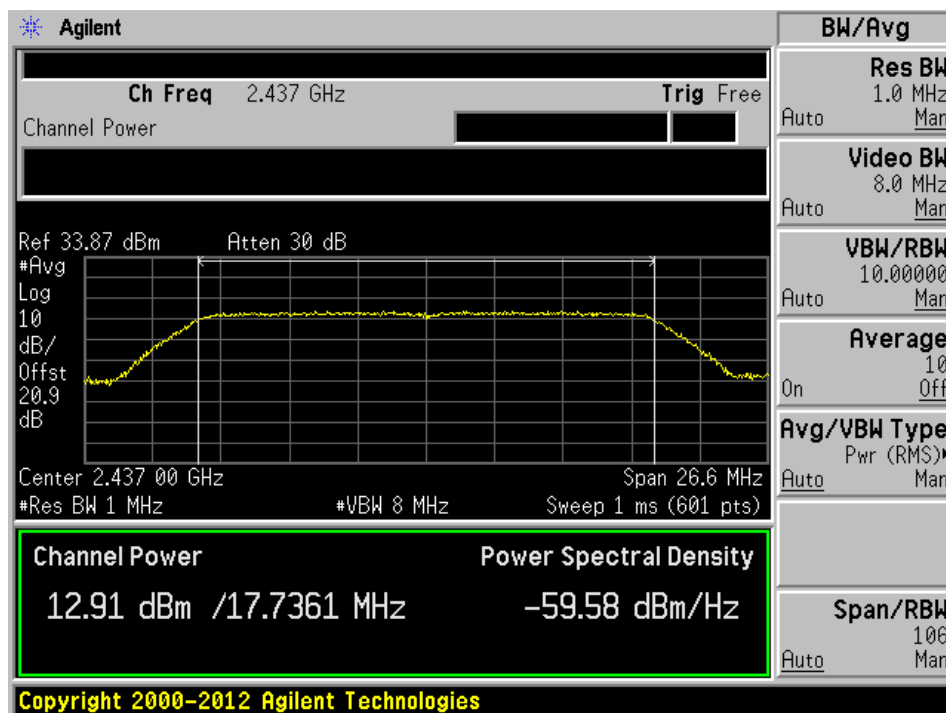
802.11g-2462 MHz



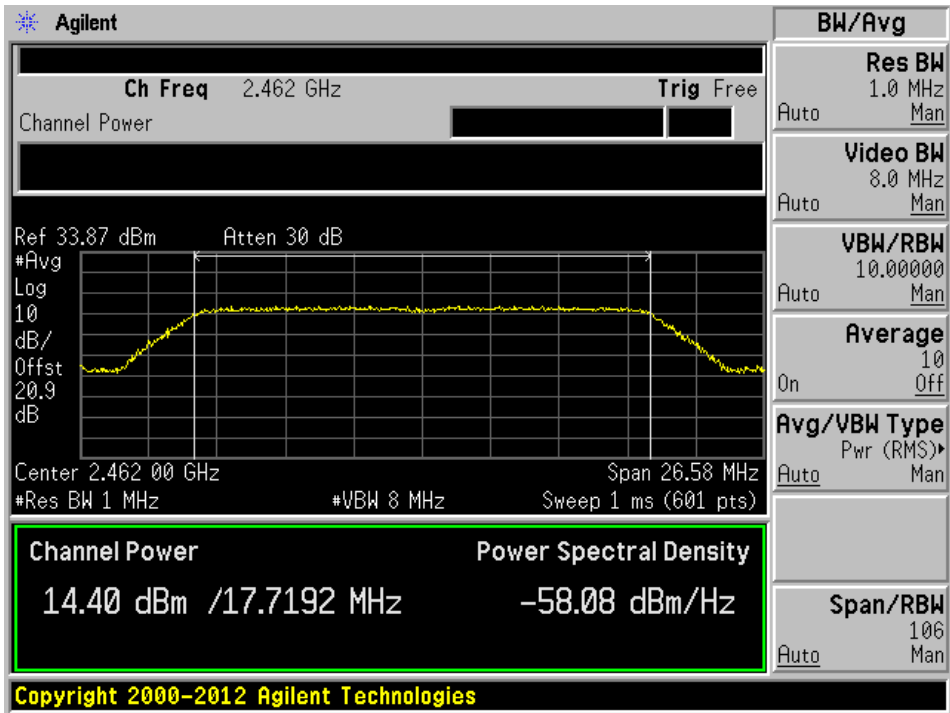
802.11n20-2412 MHz



802.11n20-2437 MHz



802.11n20-2462 MHz



9 FCC §15.247(d) - Spurious Emissions at Antenna Port

9.1 Applicable Standards

According to FCC §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emissions limits specified in §15.209(a) see §15.205(c).

9.2 Measurement Procedure

The measurements are based on FCC KDB 558074 D01 DTS Meas Guidance v03r03: Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 section 13: Band-edge measurements

9.3 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Rohde & Schwarz	Spectrum Analyzer	FSQ	1155.5001.26	2015-03-09	1 year
Agilent	Spectrum Analyzer	E4440A	US42221851	2015-06-23	1 year
-	SMA Cable	-	C0001	Each Time ¹	N/A
Mini-Circuits	Attenuator	BW-S10W5	1419	Each Time ¹	N/A
Mini-Circuits	Attenuator	BW-S20W5	1430	Each Time ¹	N/A

Note¹: cable and attenuator included in the test set-up will be checked each time before testing.

Statement of Traceability: *BACL Corp.* attests that all calibrations have been performed per the A2LA requirements, traceable to the NIST.

9.4 Test Environmental Conditions

Temperature:	22 °C
Relative Humidity:	42 %
ATM Pressure:	102.7 kPa

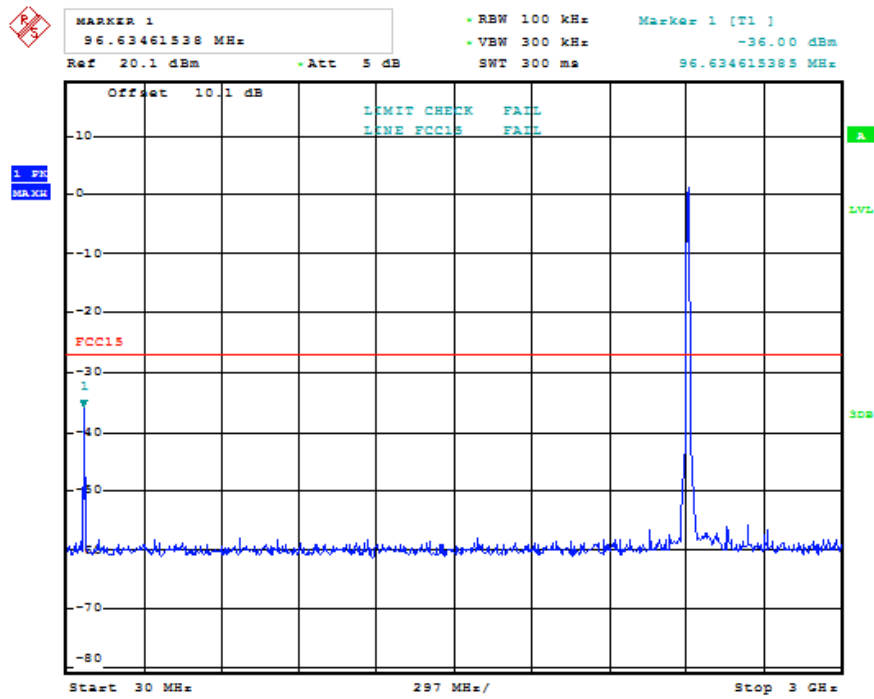
The testing was performed by Leonard Gray on 2015-10-08 in RF site.

9.5 Test Results

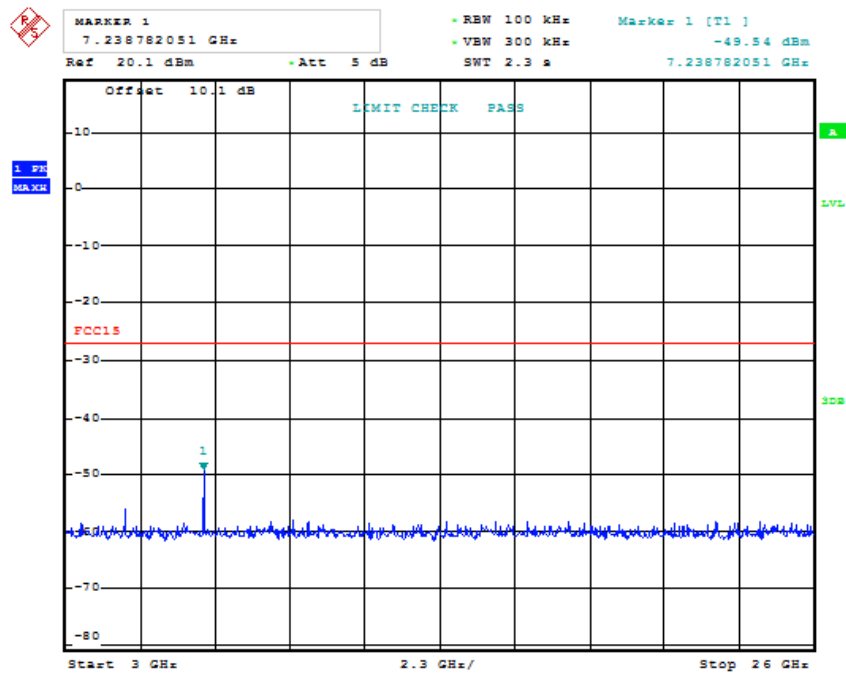
Please refer to the following plots.

Spurious Emissions at Antenna Port 0

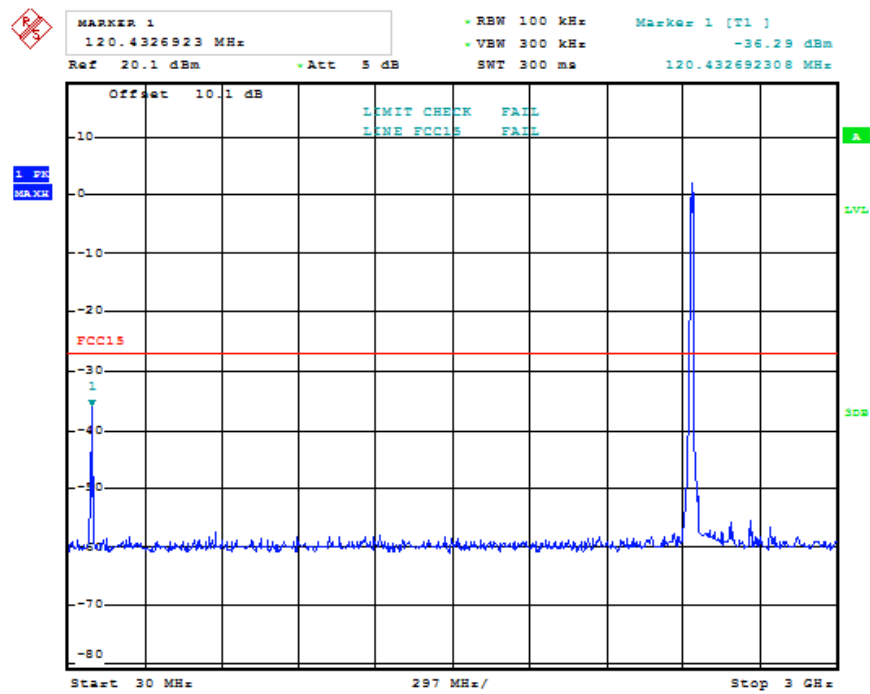
802.11b-2412 MHz (30 MHz-3 GHz)



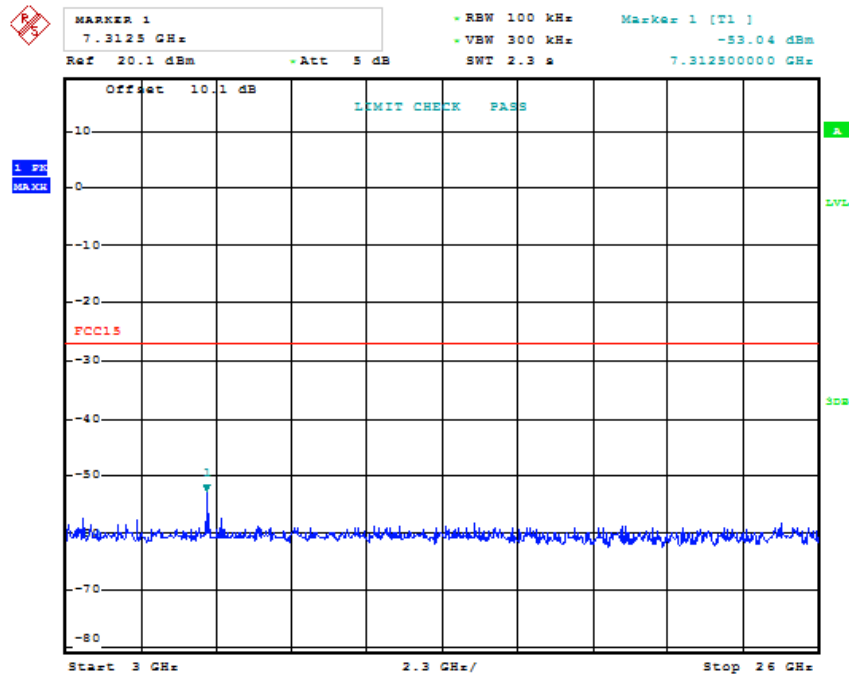
802.11b-2412 MHz (3-25 GHz)



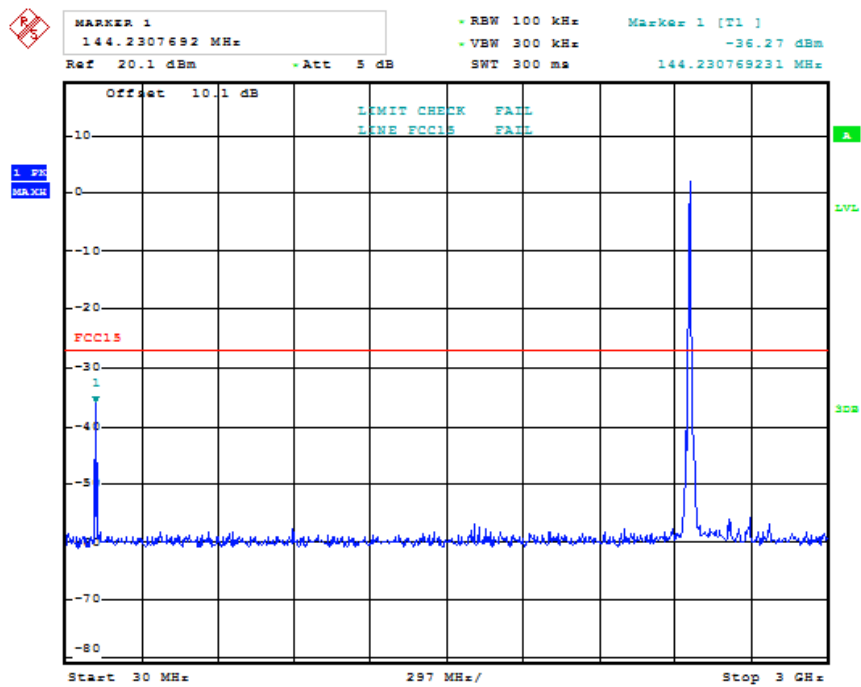
802.11b-2437 MHz (30 MHz-3 GHz)



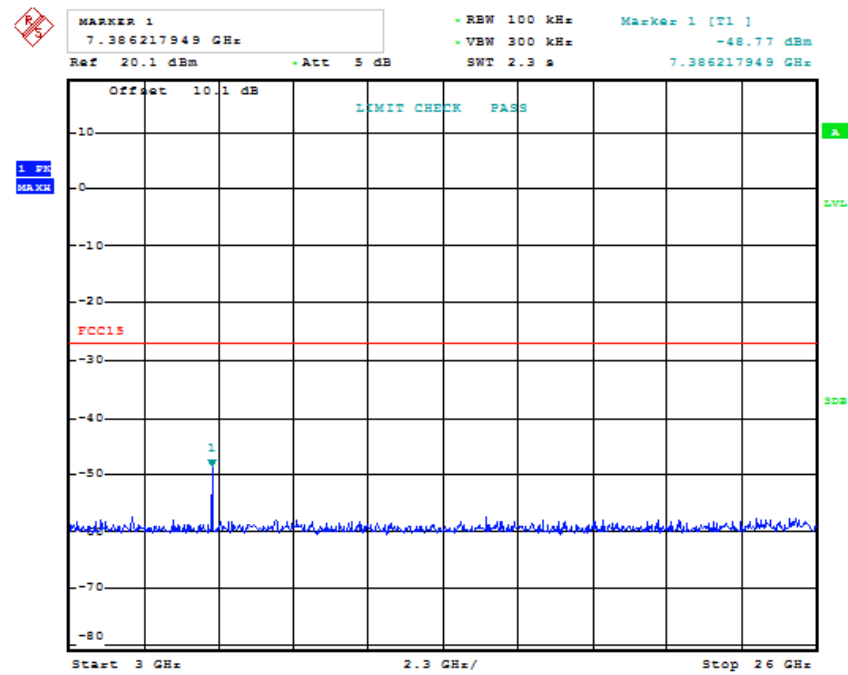
802.11b-2437 MHz (3-25 GHz)



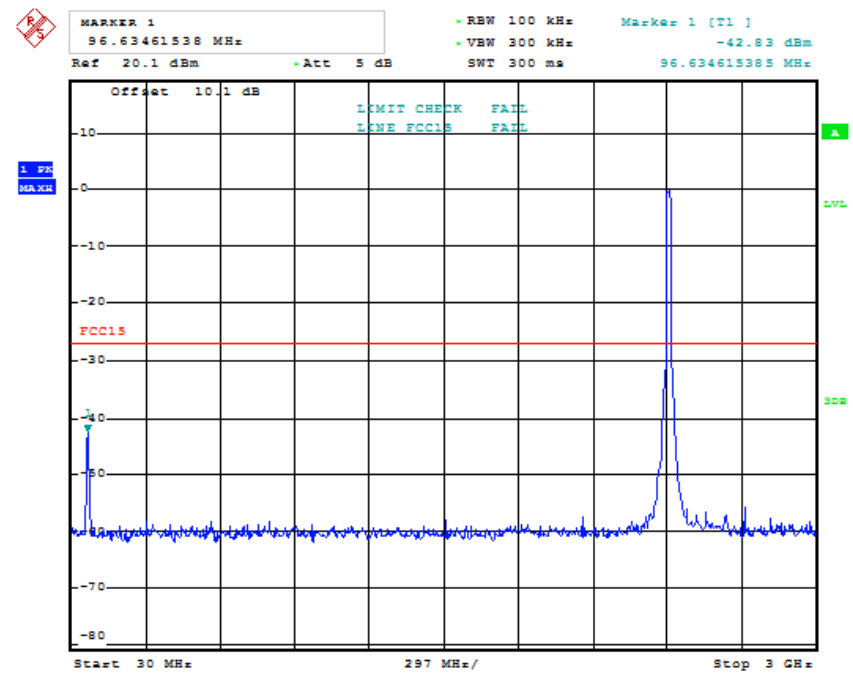
802.11b-2462 MHz (30 MHz-3 GHz)



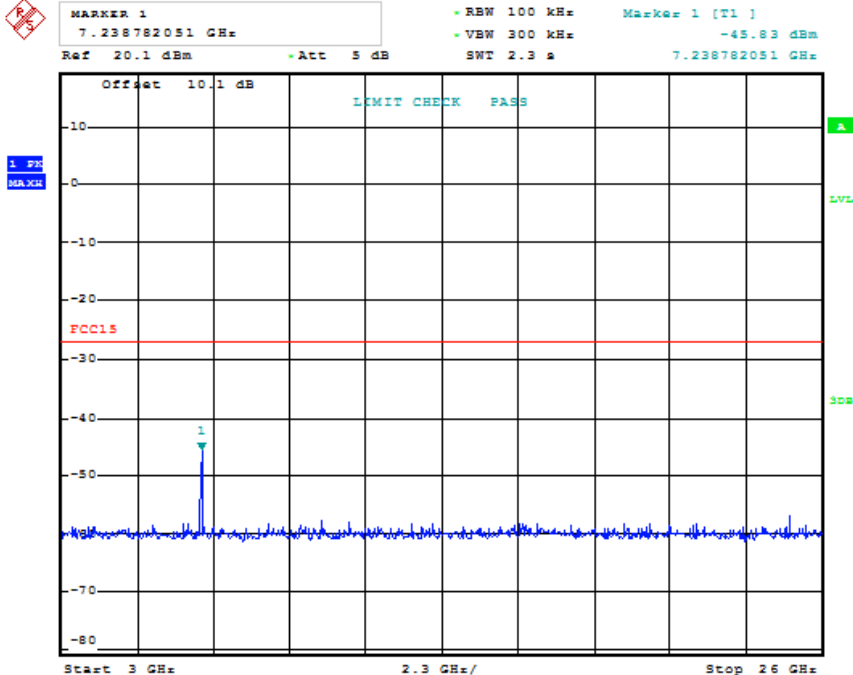
802.11b-2462 MHz (3-25 GHz)



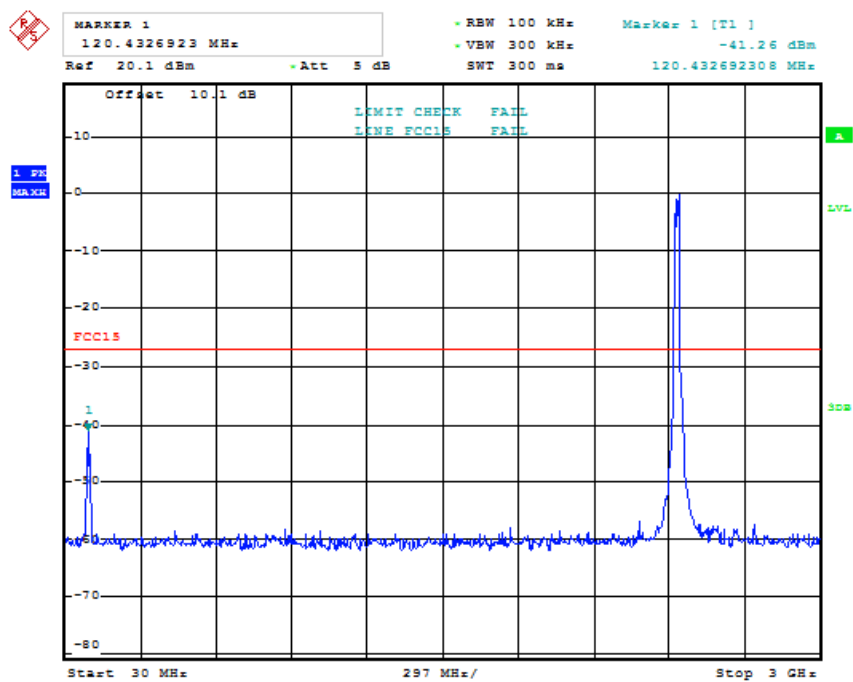
802.11g-2412 MHz (30 MHz-3 GHz)



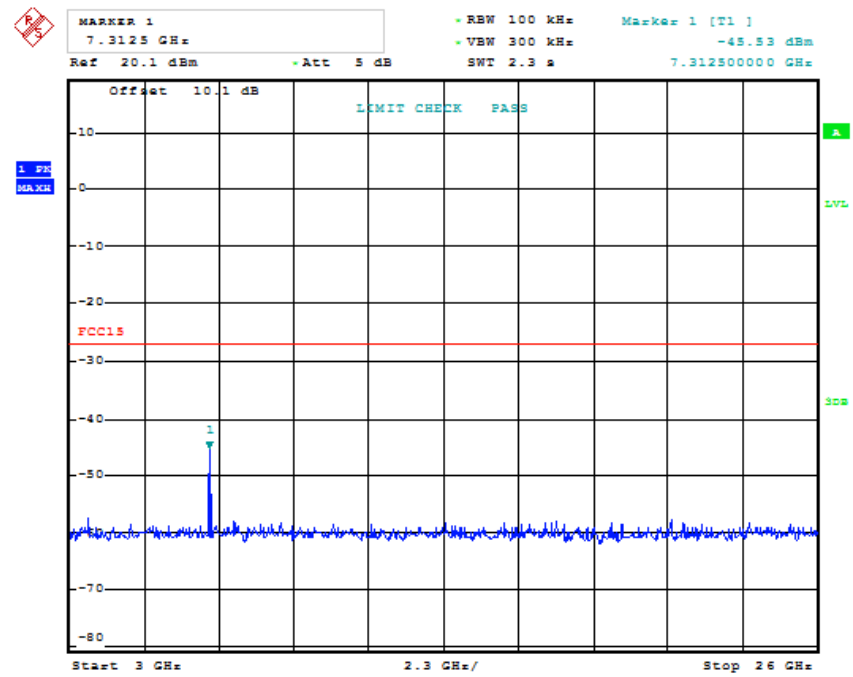
802.11g-2412 MHz (3-25 GHz)



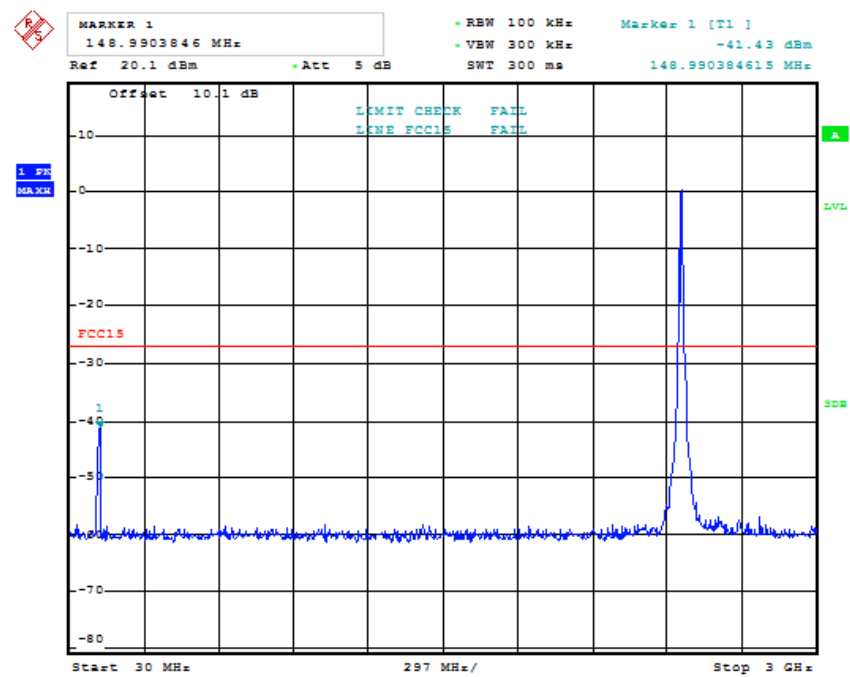
802.11g-2437 MHz (30 MHz-3 GHz)



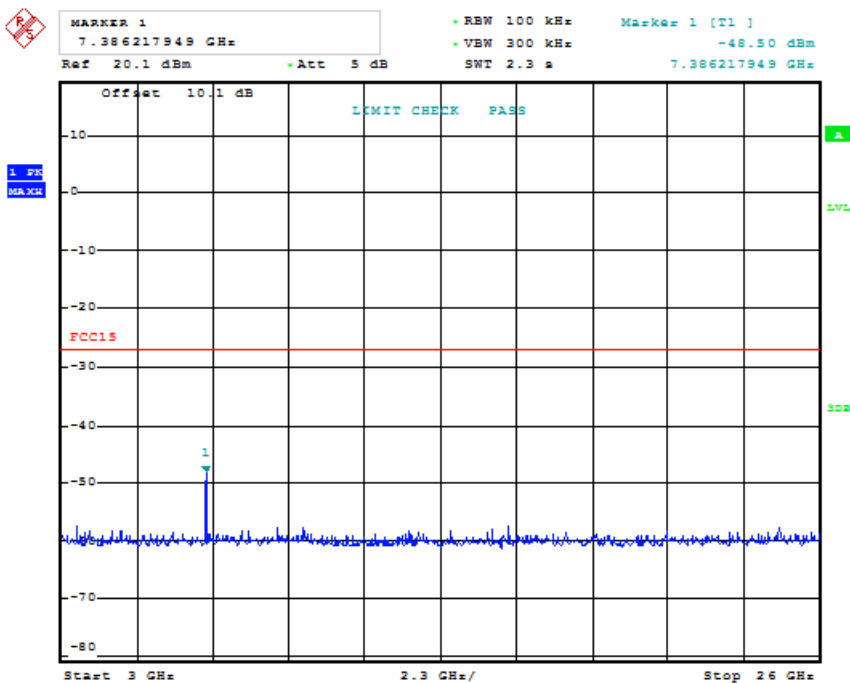
802.11g-2437 MHz (3-25 GHz)



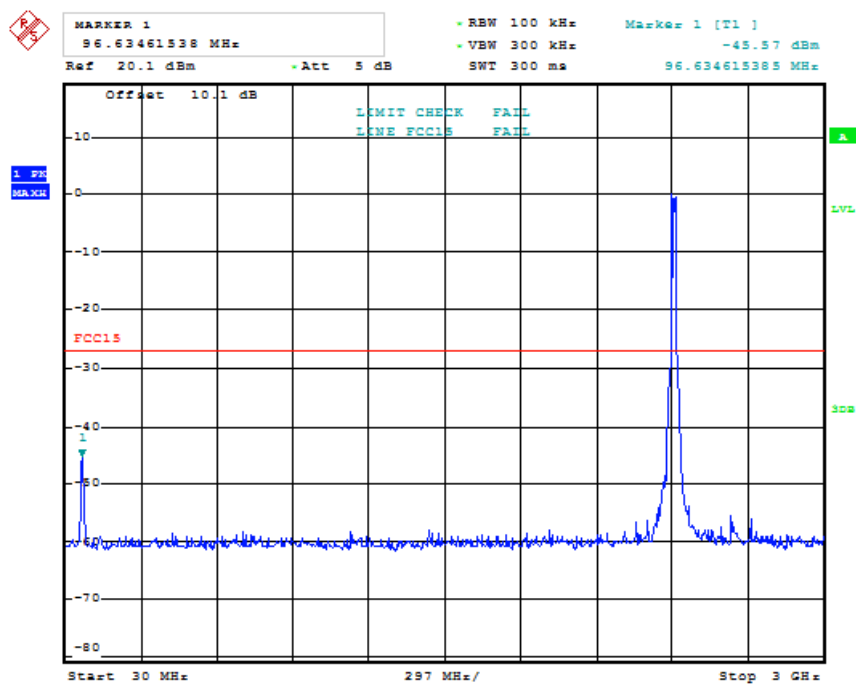
802.11g-2462 MHz (30 MHz-3 GHz)



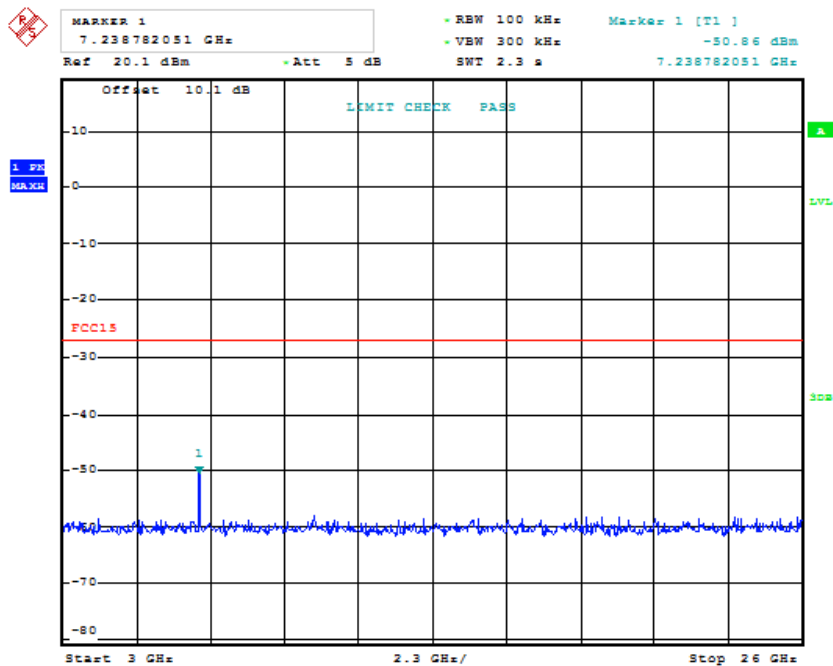
802.11g-2462 MHz (3-25 GHz)



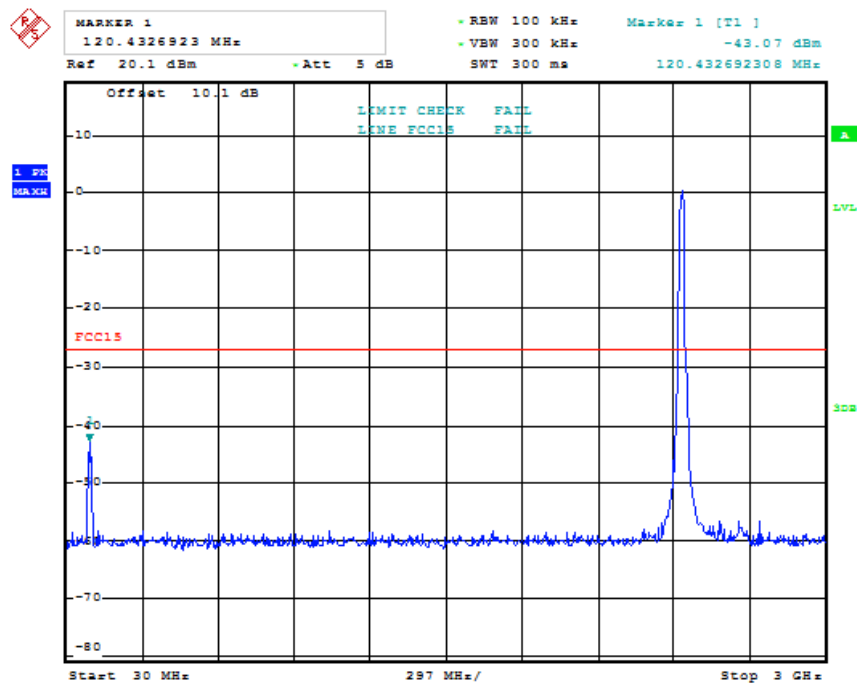
802.11n20-2412 MHz (30 MHz-3 GHz)



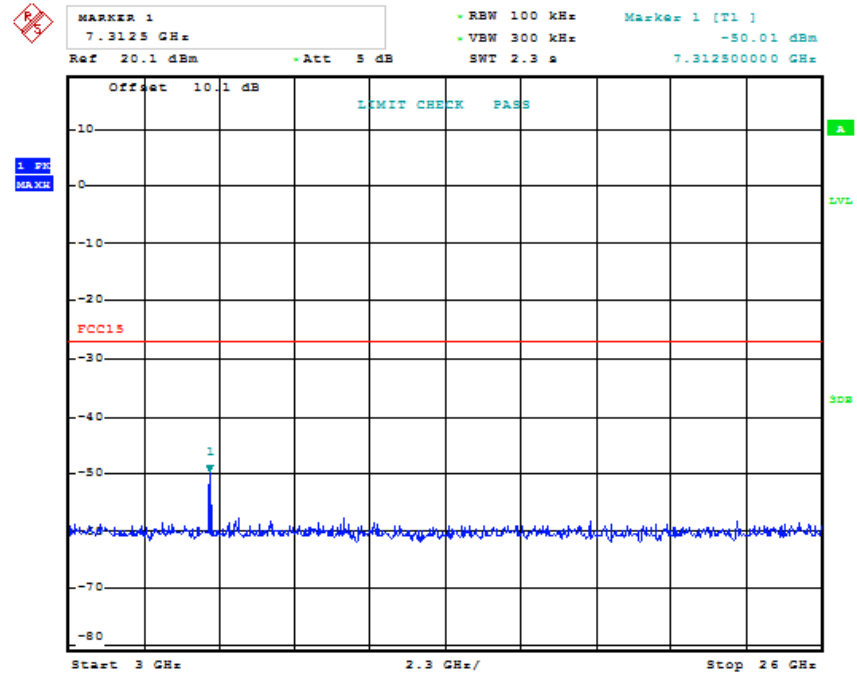
802.11n20-2412 MHz (3-25 GHz)



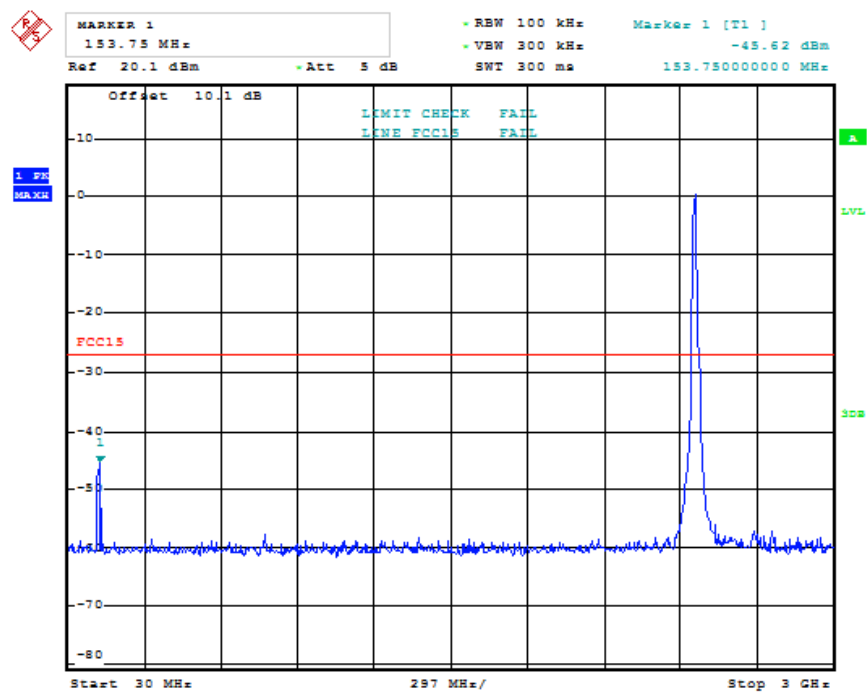
802.11n20-2437 MHz (30 MHz-3 GHz)



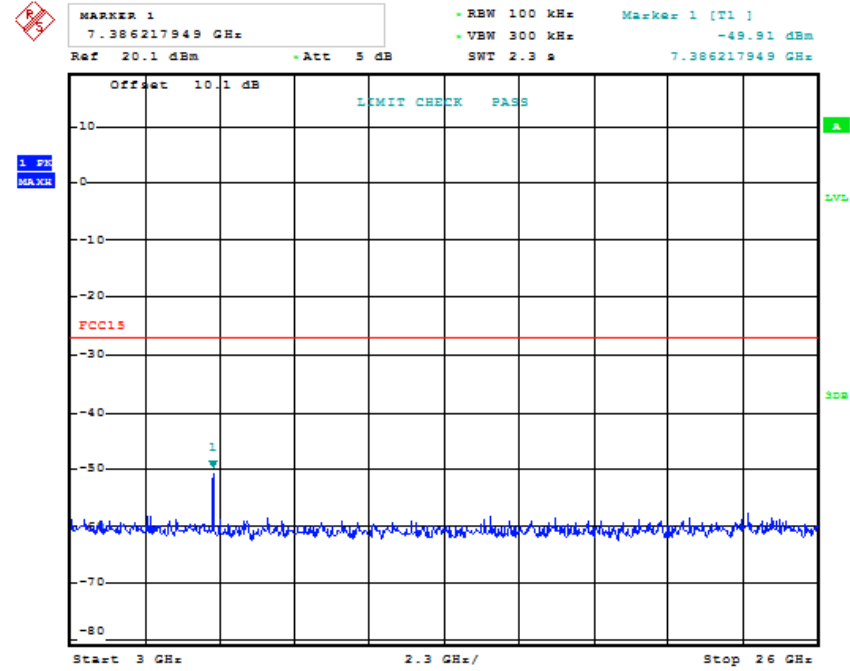
802.11n20-2437 MHz (3-25 GHz)



802.11n20-2462 MHz (30 MHz-3 GHz)

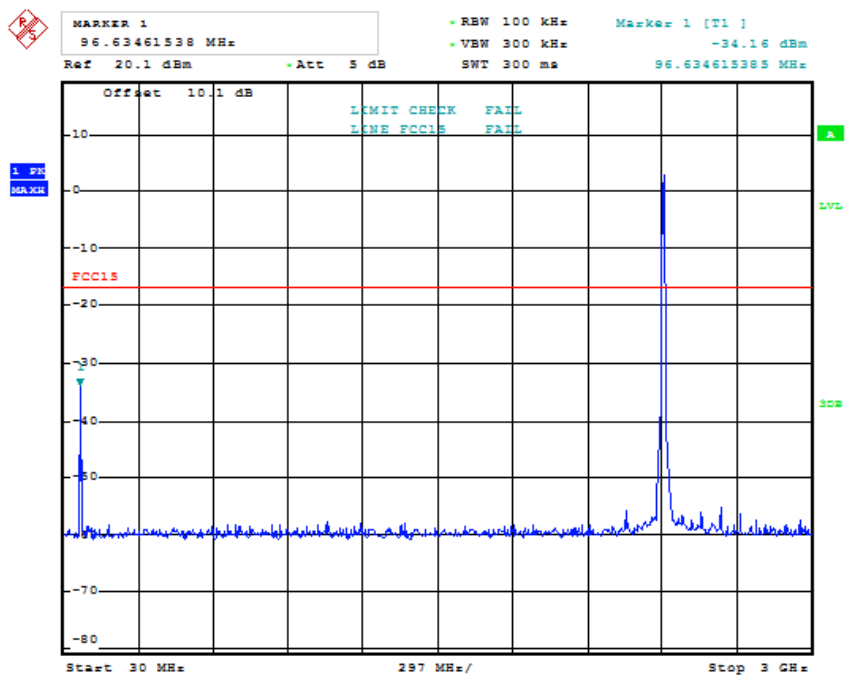


802.11n20-2462 MHz (3-25 GHz)

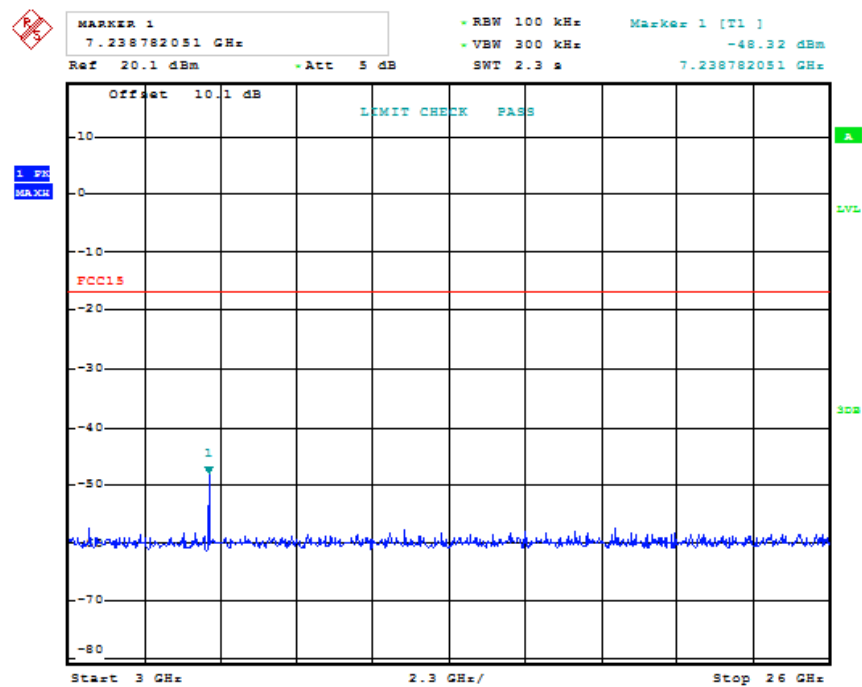


Spurious Emissions at Antenna Port 1

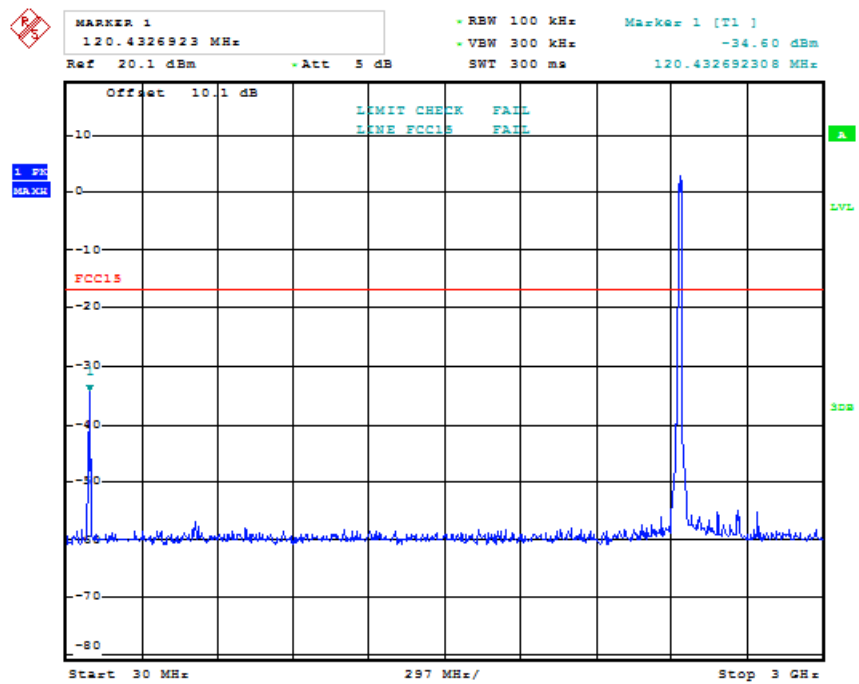
802.11b-2412 MHz (30 MHz-3 GHz)



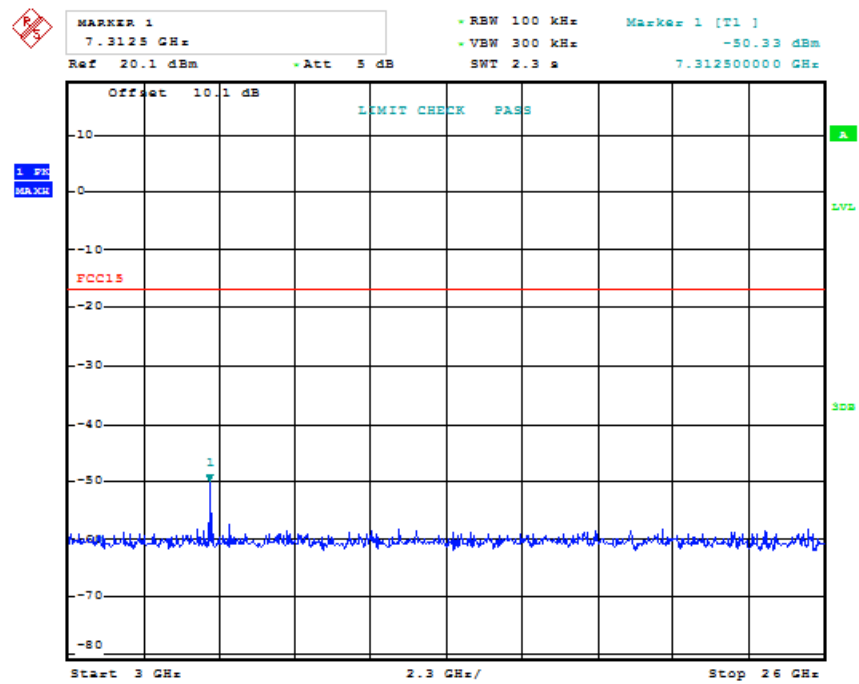
802.11b-2412MHz (3-25 GHz)



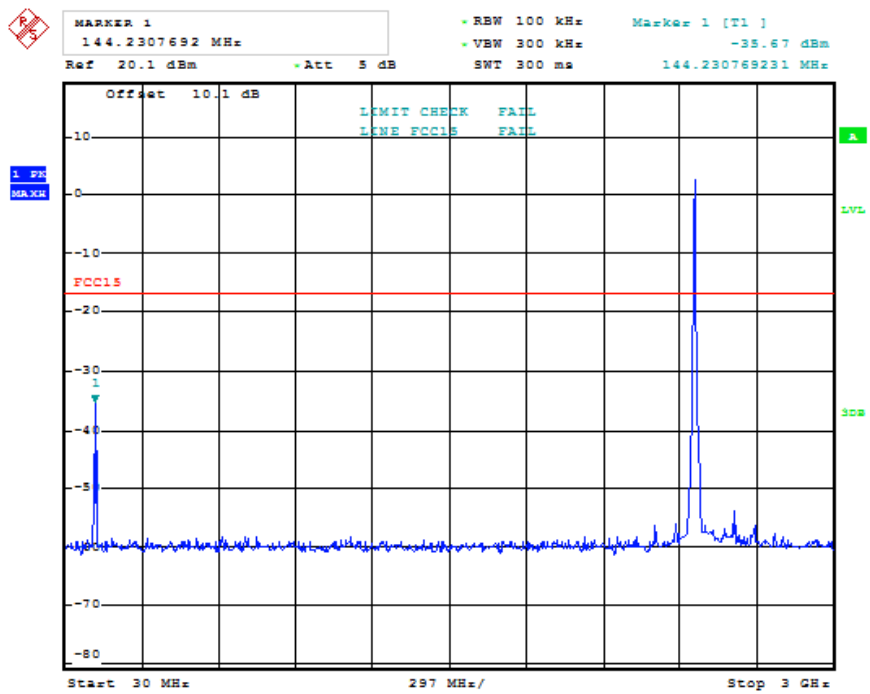
802.11b-2437 MHz (30 MHz-3 GHz)



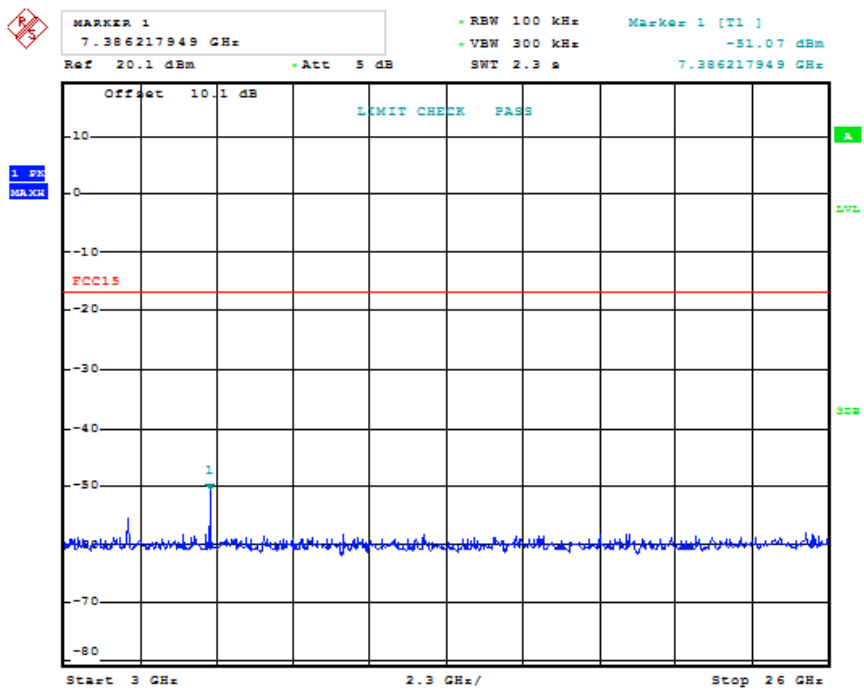
802.11b-2437 MHz (3-25 GHz)



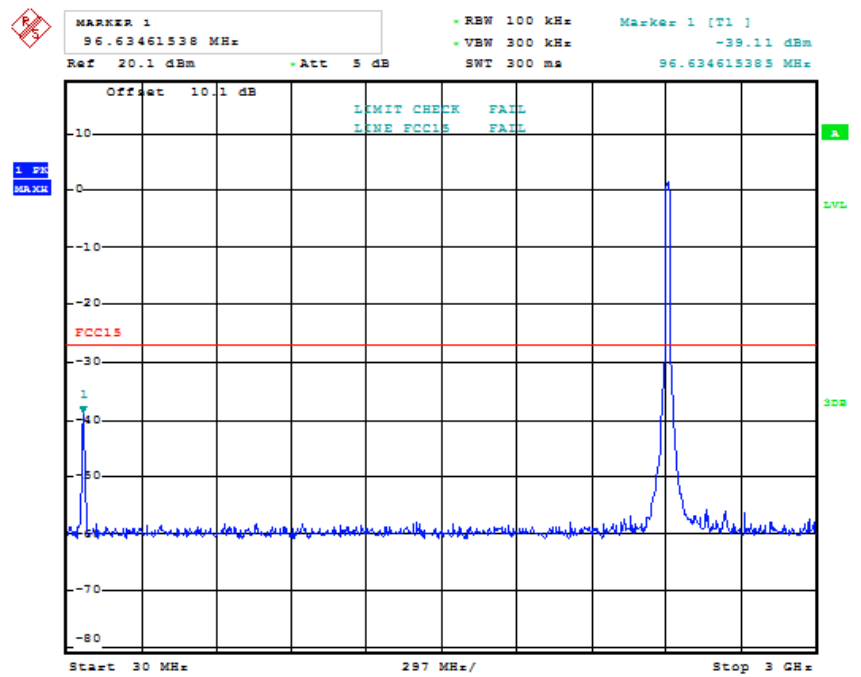
802.11b-2462 MHz (30 MHz-3 GHz)



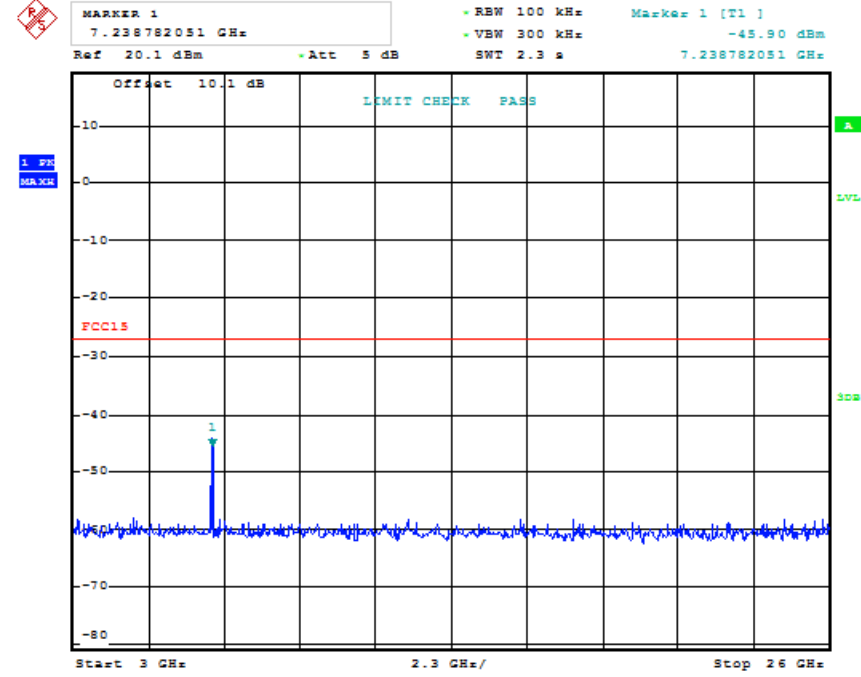
802.11b-2462 MHz (3-25 GHz)



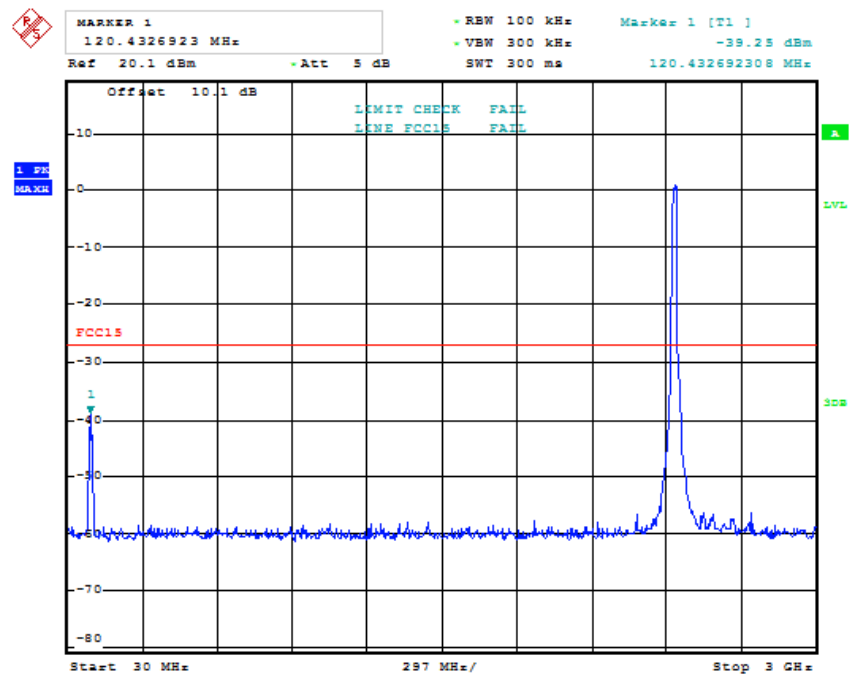
802.11g-2412 MHz (30 MHz-3 GHz)



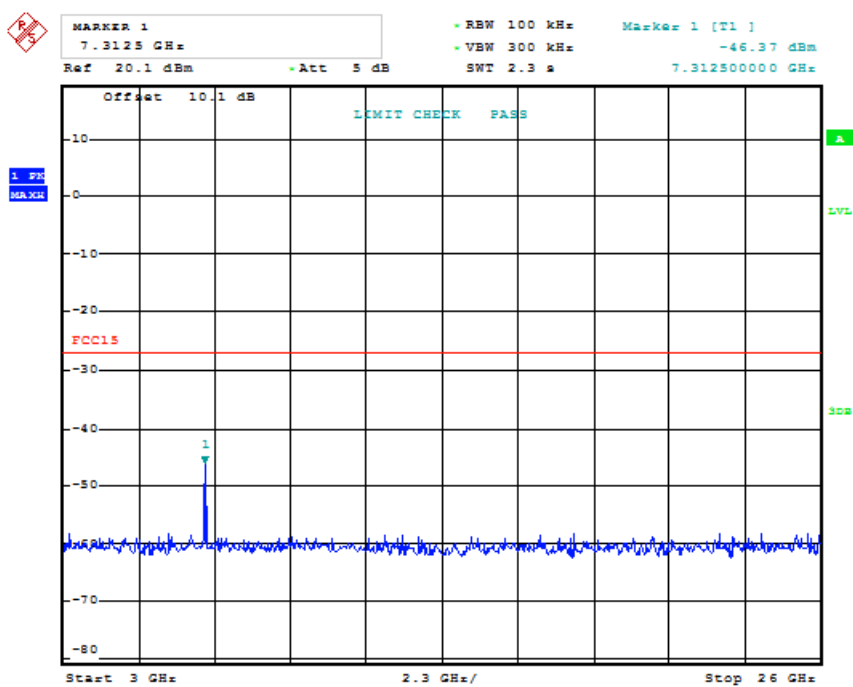
802.11g-2412 MHz (3-25 GHz)



802.11g-2437 MHz (30 MHz-3 GHz)



802.11g-2437 MHz (3-25 GHz)



MARKER 1
148.990384615 MHz

• RBW 100 kHz
• VBW 300 kHz
-39.47 dBm

Ref 20.1 dBm Att 5 dB SWT 300 ms 148.990384615 MHz

Offset 10.1 dB

LIMIT CHECK FAIL
LINE FCC15 FAIL

1 90
MAX

FCC15

Start 30 MHz 297 MHz/ Stop 3 GHz

MARKER 1
7.386217949 GHz

▼ RBW 100 kHz
▼ VBW 300 kHz
SWT 2.3 s

Marker 1 [T1]
-47.90 dBm

Ref 20.1 dBm
▼ Att 5 dB

7.386217949 GHz

Offset 10.1 dB

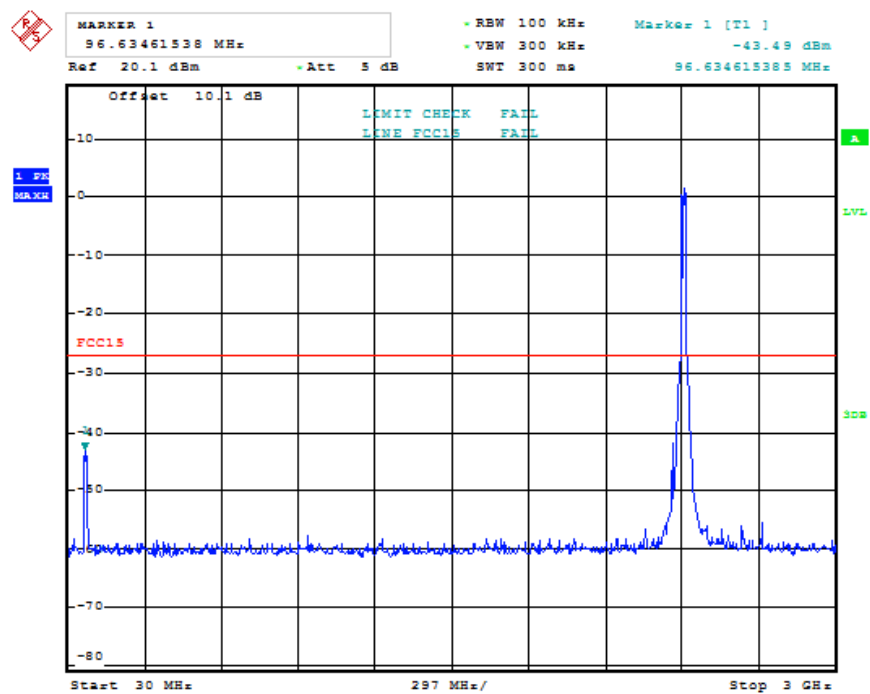
LIMIT CHECK PASS

FCC15

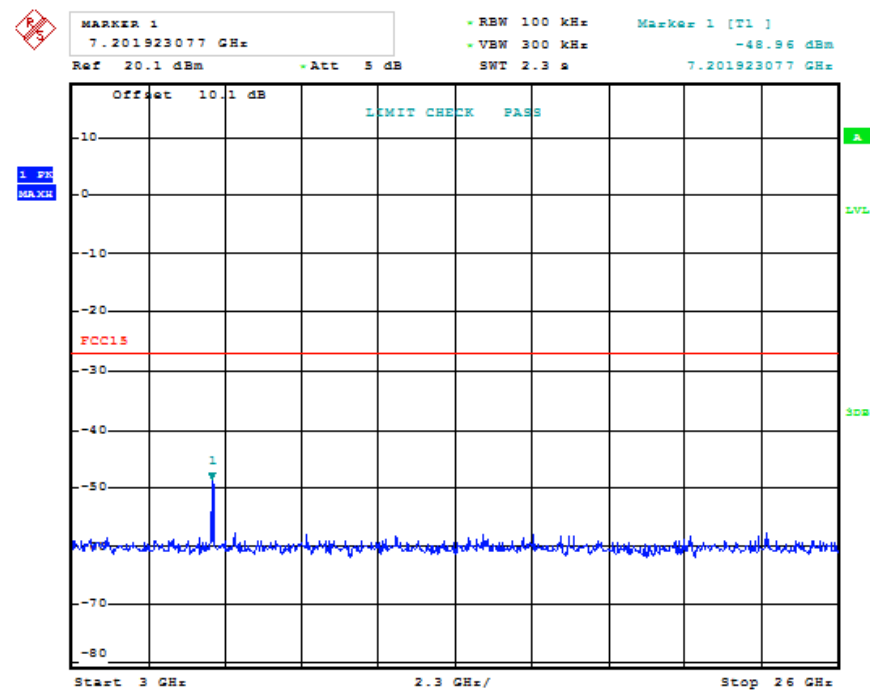
1

Start 3 GHz
2.3 GHz/
Stop 26 GHz

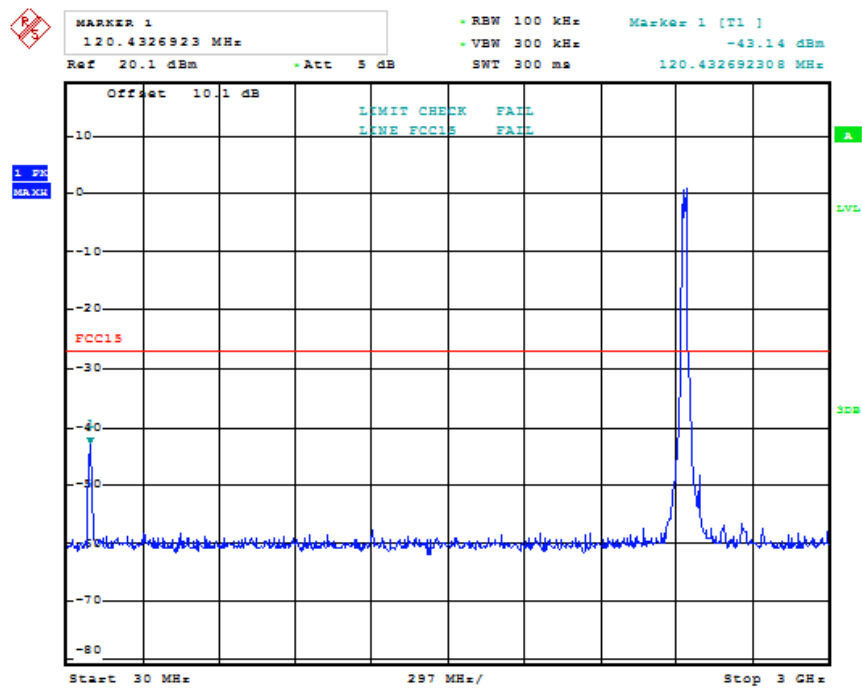
802.11n20-2412 MHz (30 MHz-3 GHz)



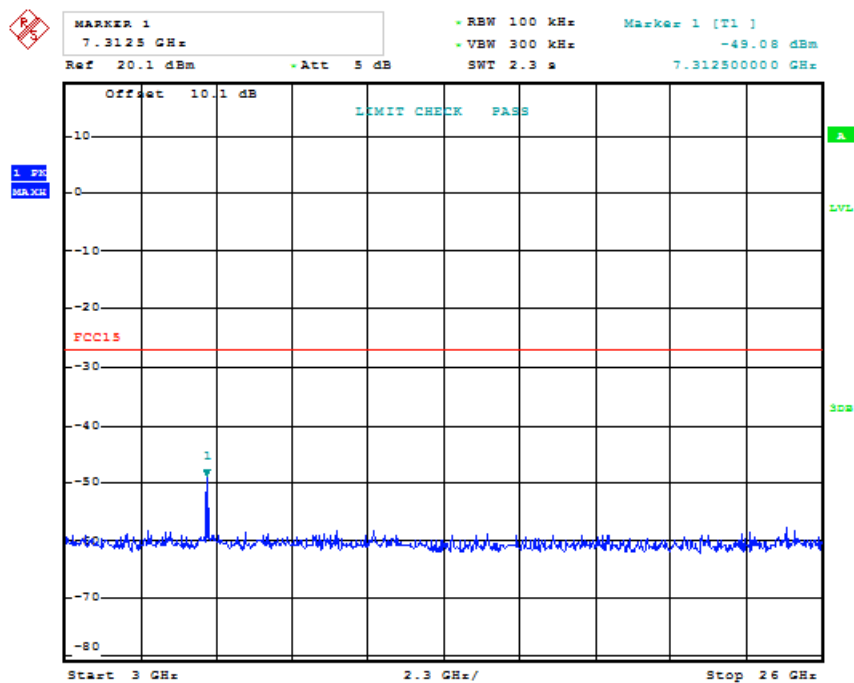
802.11n20-2412 MHz (3-25 GHz)



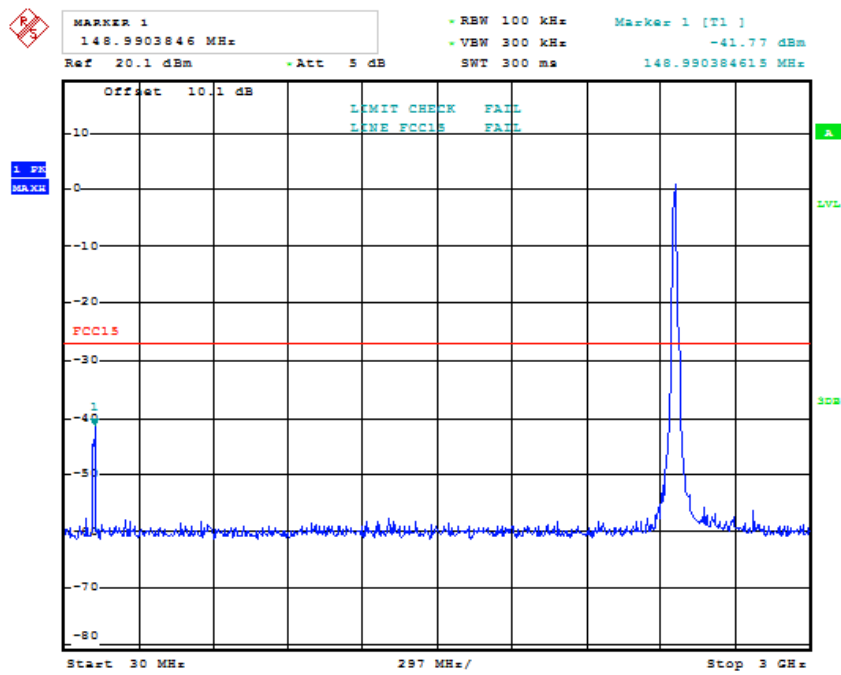
802.11n20-2437 MHz (30 MHz-3 GHz)



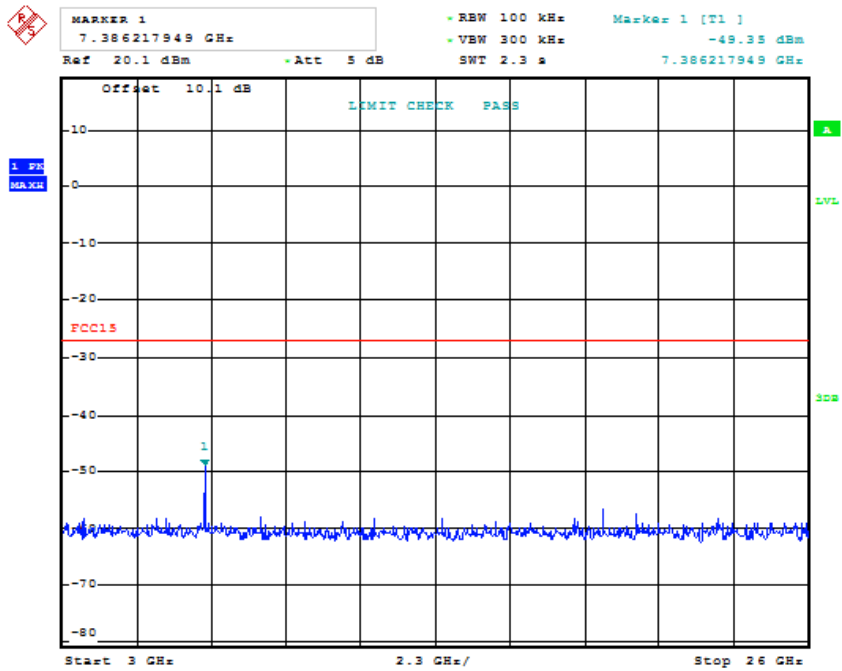
802.11n20-2437 MHz (3-25 GHz)



802.11n20-2462 MHz (30 MHz-3 GHz)

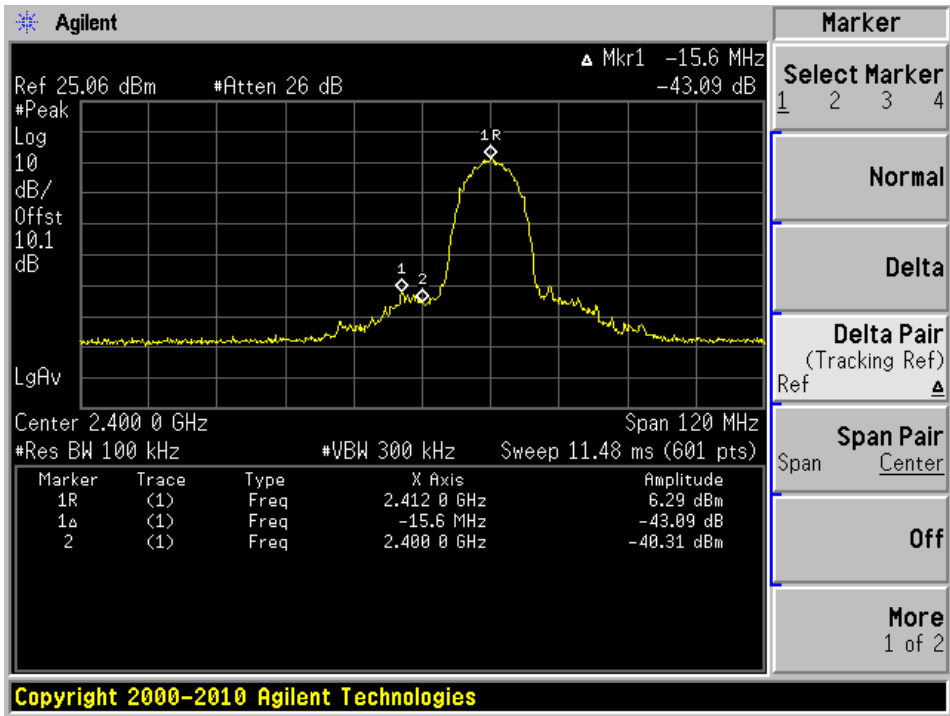


802.11n20-2462 MHz (3-25 GHz)

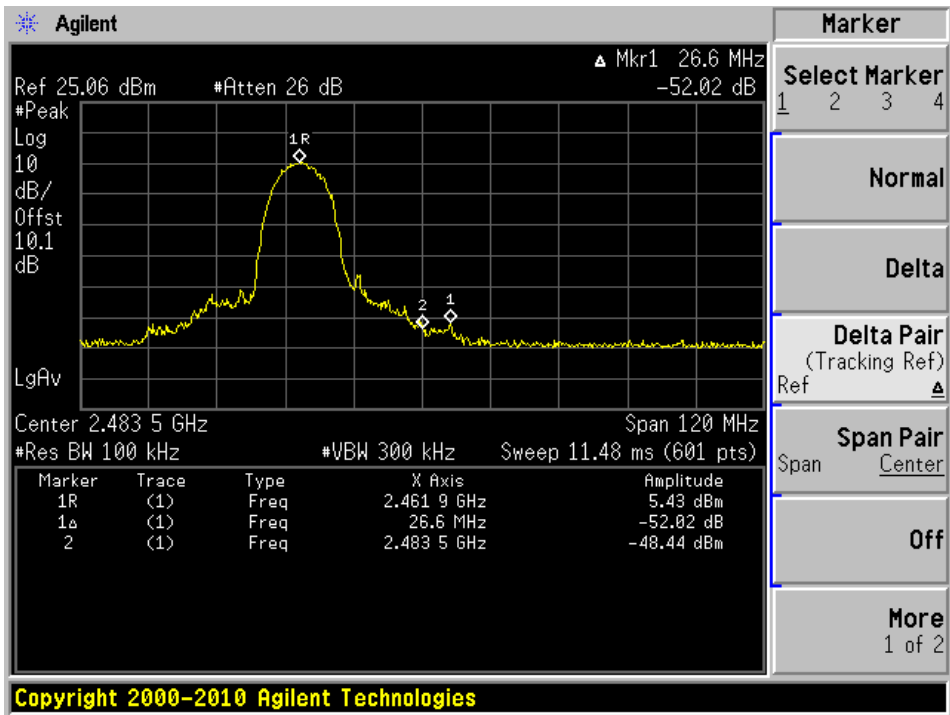


Band Edge at Antenna Port 0

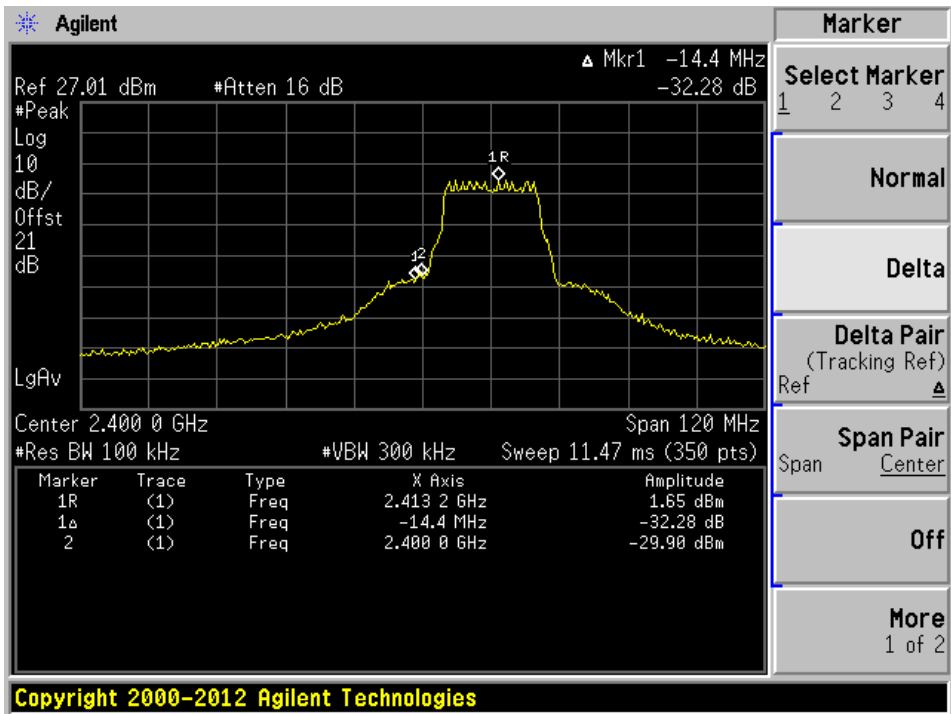
802.11b - Low Band Edge



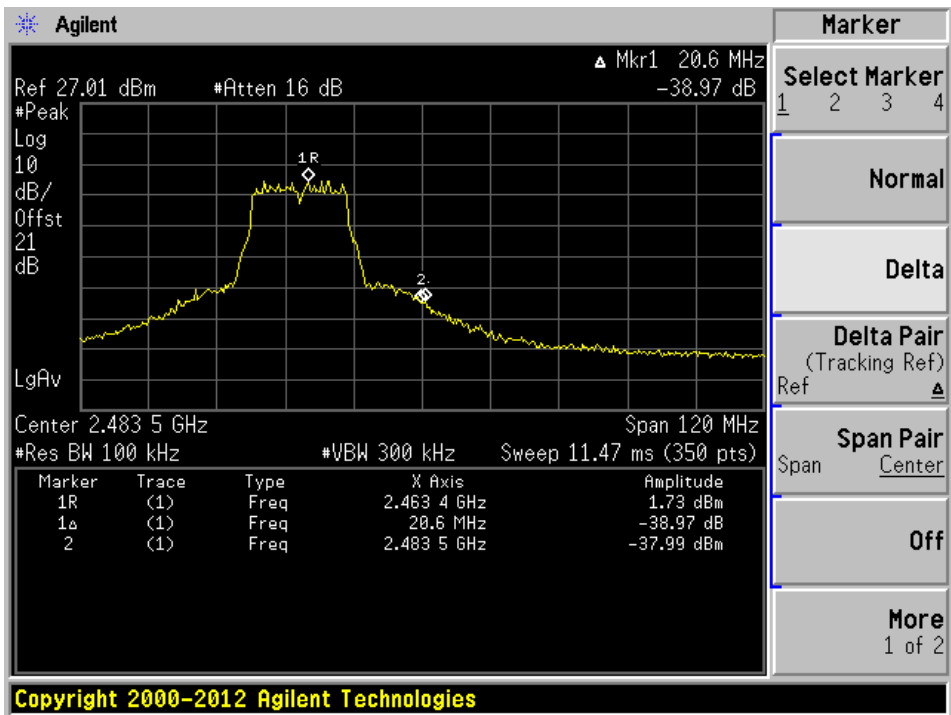
802.11b - High Band Edge



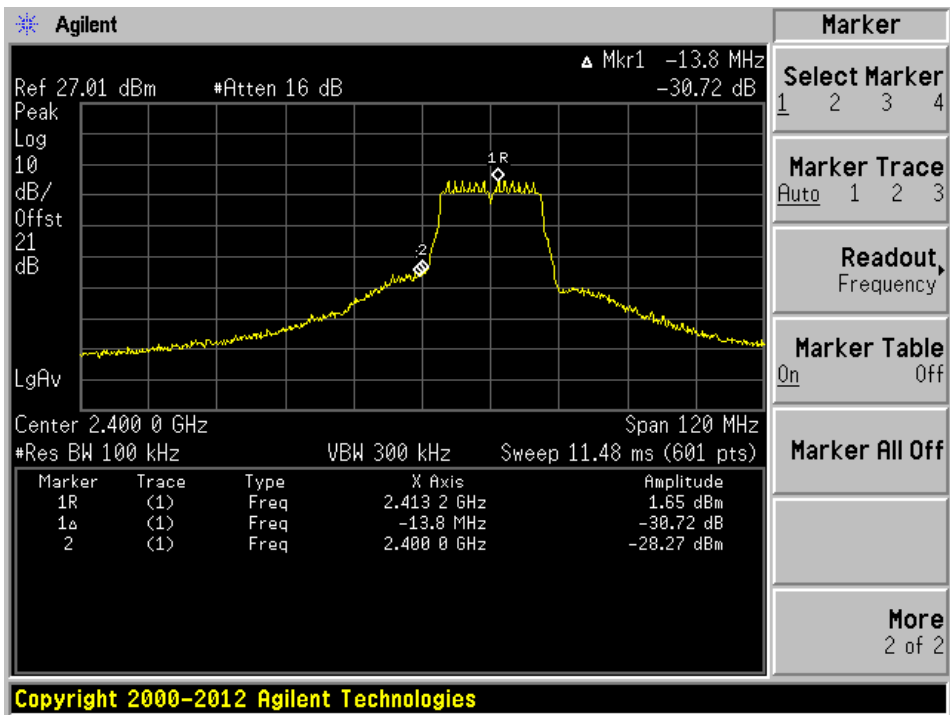
802.11g - Low Band Edge



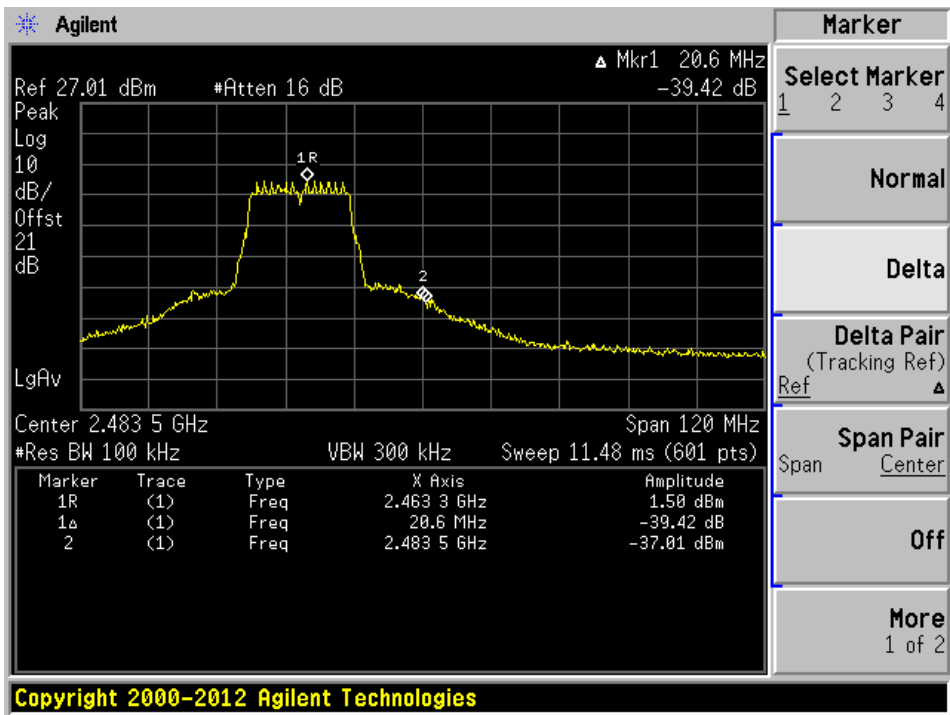
802.11g - High Band Edge



802.11n20 - Low Band Edge

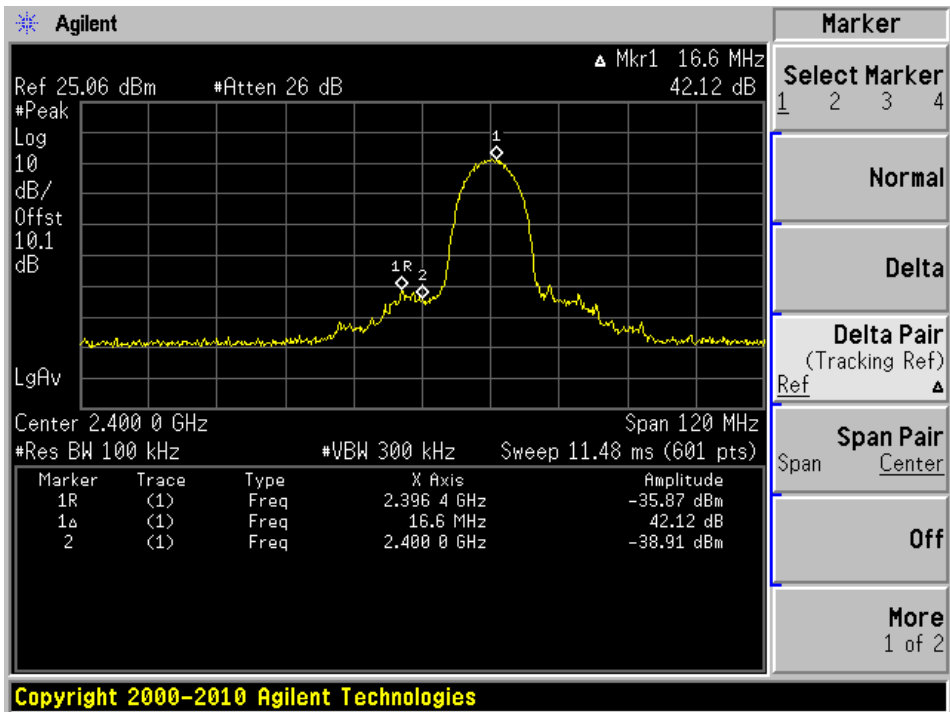


802.11n20 - High Band Edge

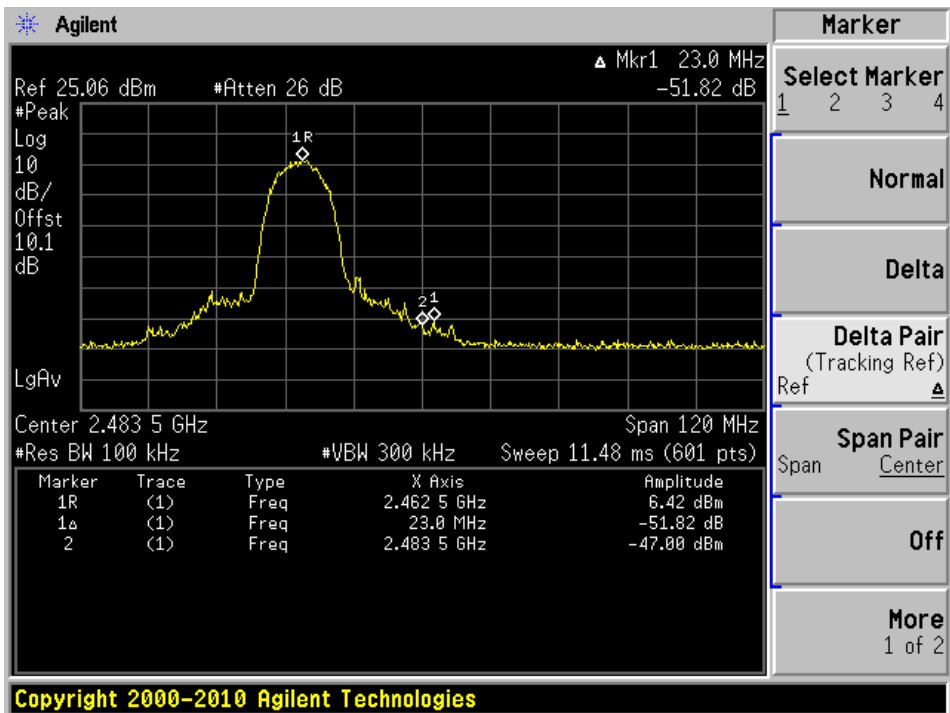


Band Edge at Antenna Port 1

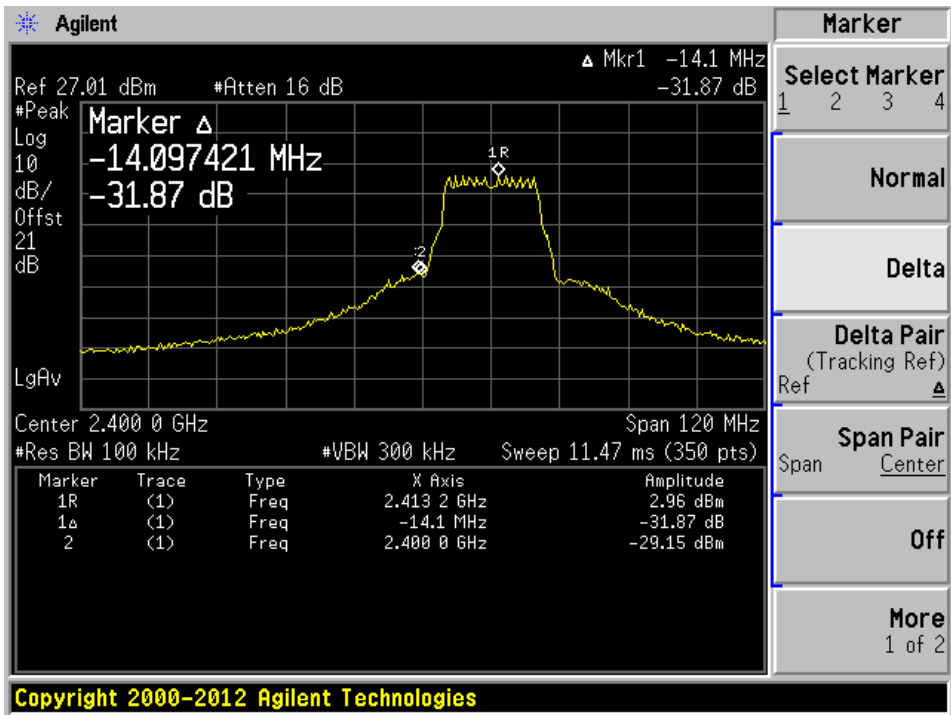
802.11b - Low Band Edge



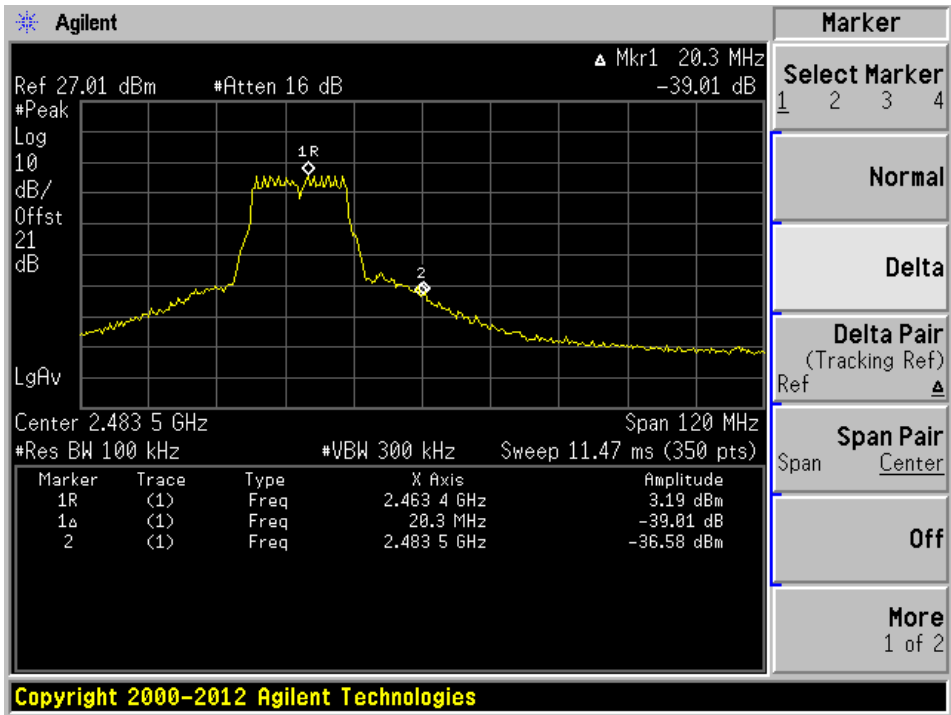
802.11b - High Band Edge



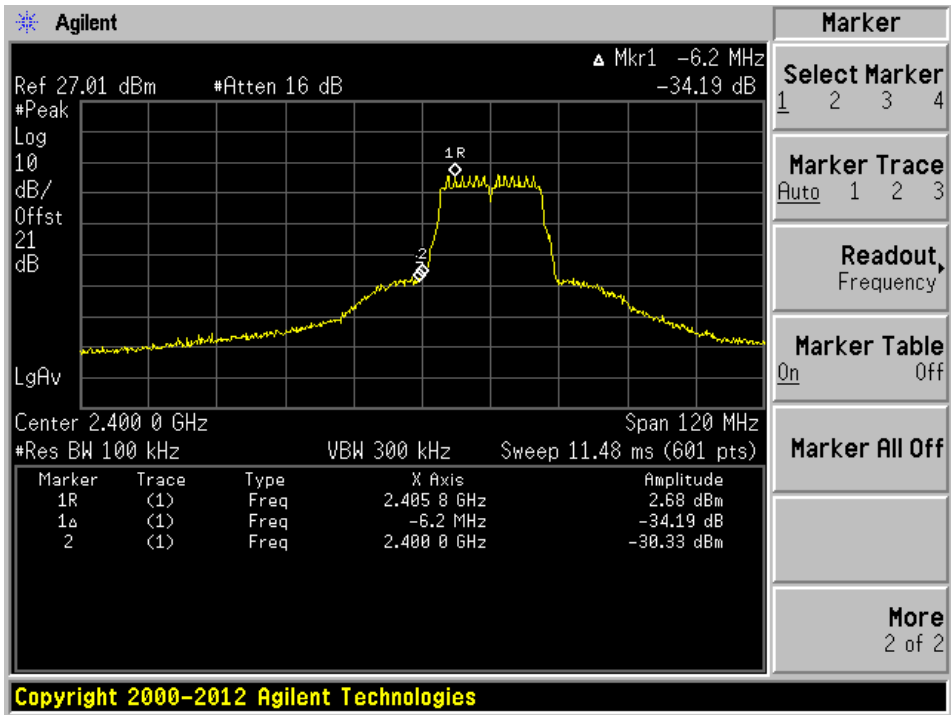
802.11g - Low Band Edge



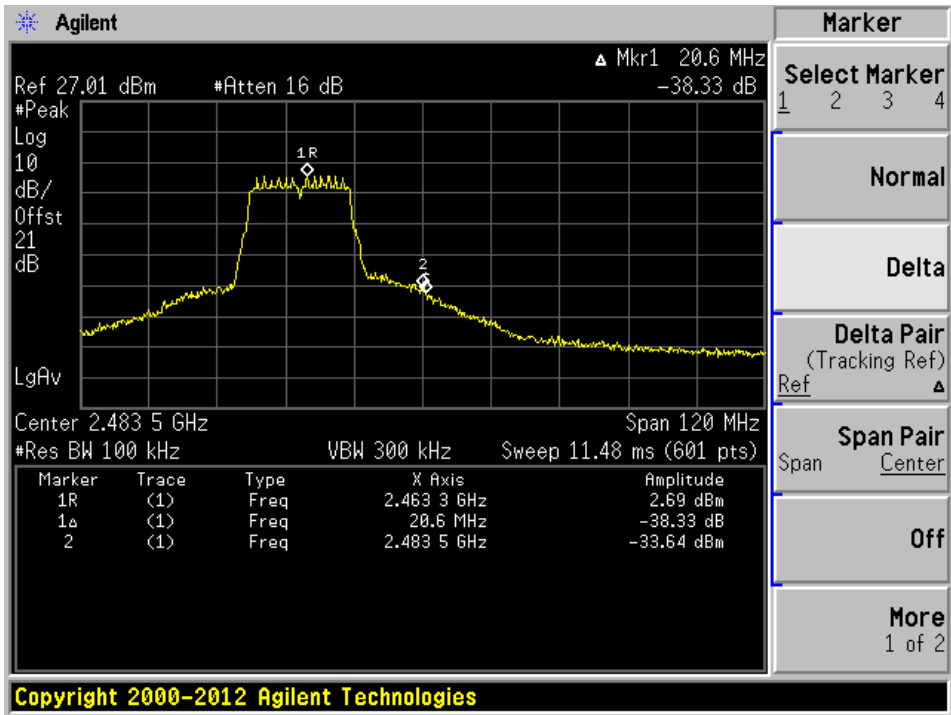
802.11g - High Band Edge



802.11n20 - Low Band Edge



802.11n20 - High Band Edge



10 FCC §15.247(e) - Power Spectral Density

10.1 Applicable Standards

According to FCC §15.247(e), 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.

10.2 Measurement Procedure

The measurements are based on FCC KDB 558074 D01 DTS Meas Guidance v03r03: Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 section 10: Maximum power spectral density level in the fundamental emission

10.3 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Rohde & Schwarz	Spectrum Analyzer	FSQ	1155.5001.26	2015-03-09	1 year
Agilent	Spectrum Analyzer	E4440A	US42221851	2015-06-23	1 year
-	SMA Cable	-	C0001	Each Time ¹	N/A
Mini-Circuits	Attenuator	BW-S10W5	1419	Each Time ¹	N/A
Mini-Circuits	Attenuator	BW-S20W5	1430	Each Time ¹	N/A

Note¹: cable and attenuator included in the test set-up will be checked each time before testing.

Statement of Traceability: *BACL Corp.* attests that all calibrations have been performed per the A2LA requirements, traceable to the NIST.

10.4 Test Environmental Conditions

Temperature:	21-25 °C
Relative Humidity:	42-45 %
ATM Pressure:	102.1-103.7 kPa

The testing was performed by Leonard Gray on 2015-10-08 in RF site.

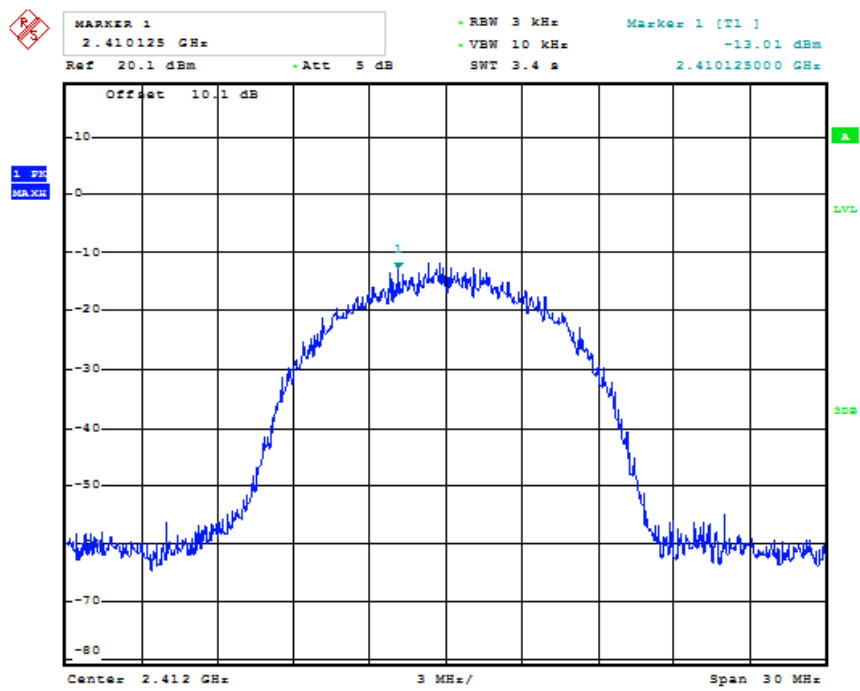
10.5 Test Results

Channel	Frequency (MHz)	Power Spectral Density (dBm)		Limit (dBm)
		Antenna Port 0	Antenna Port 1	
802.11b				
Low	2412	-13.01	-11.42	8
Middle	2437	-12.79	-11.40	8
High	2462	-11.78	-11.86	8
802.11g				
Low	2412	-13.68	-11.72	8
Middle	2437	-12.62	-11.52	8
High	2462	-12.18	-12.18	8
802.11n20				
Low	2412	-13.55	-11.50	8
Middle	2437	-13.41	-11.16	8
High	2462	-12.62	-11.50	8

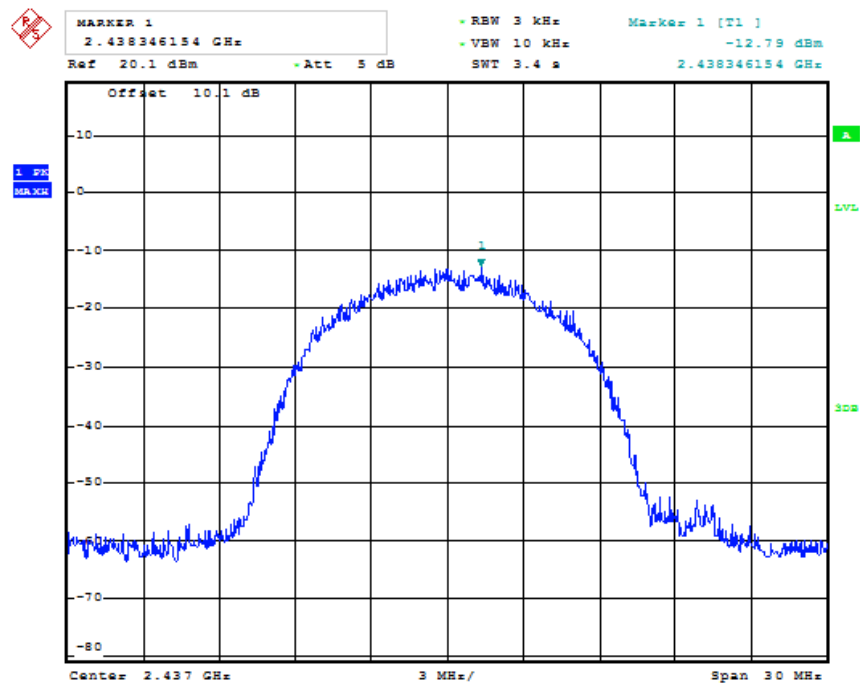
Please refer to the following plots.

Antenna Port 0:

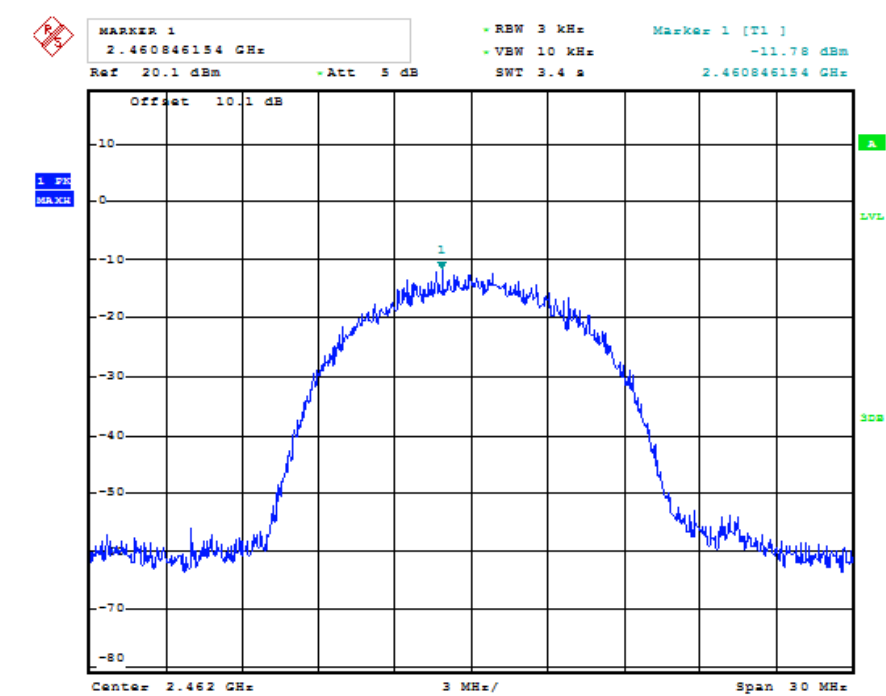
802.11b-2412 MHz



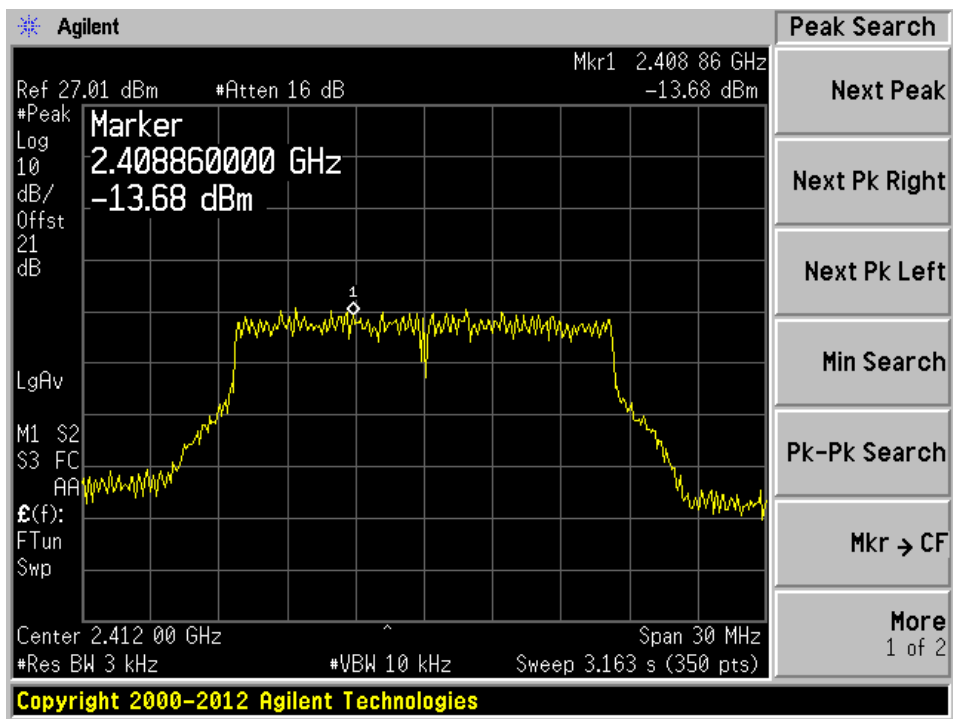
802.11b-2437 MHz



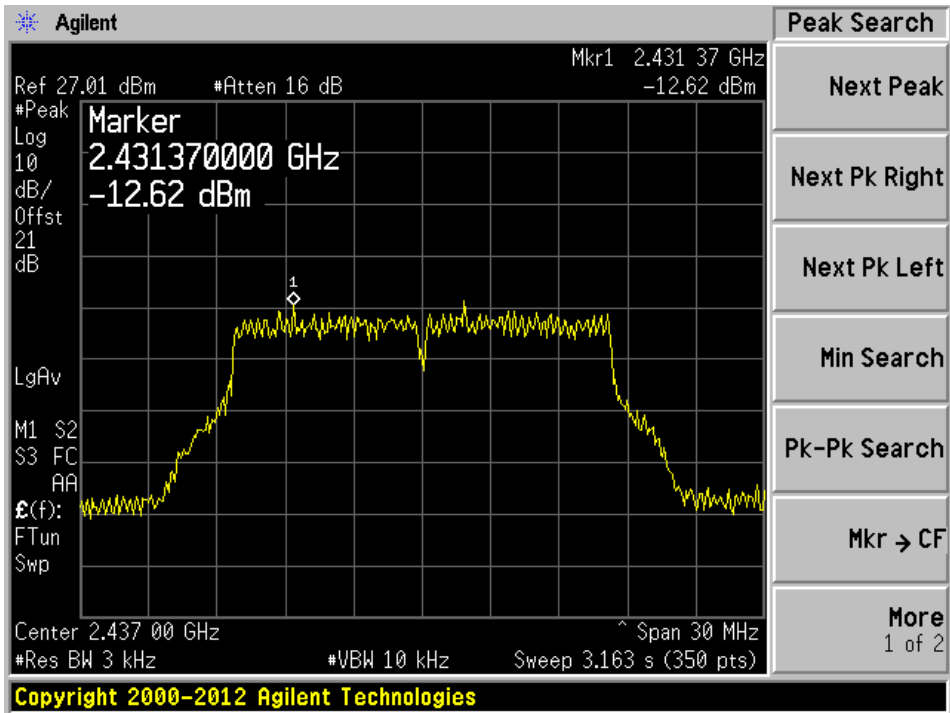
802.11b-2462 MHz



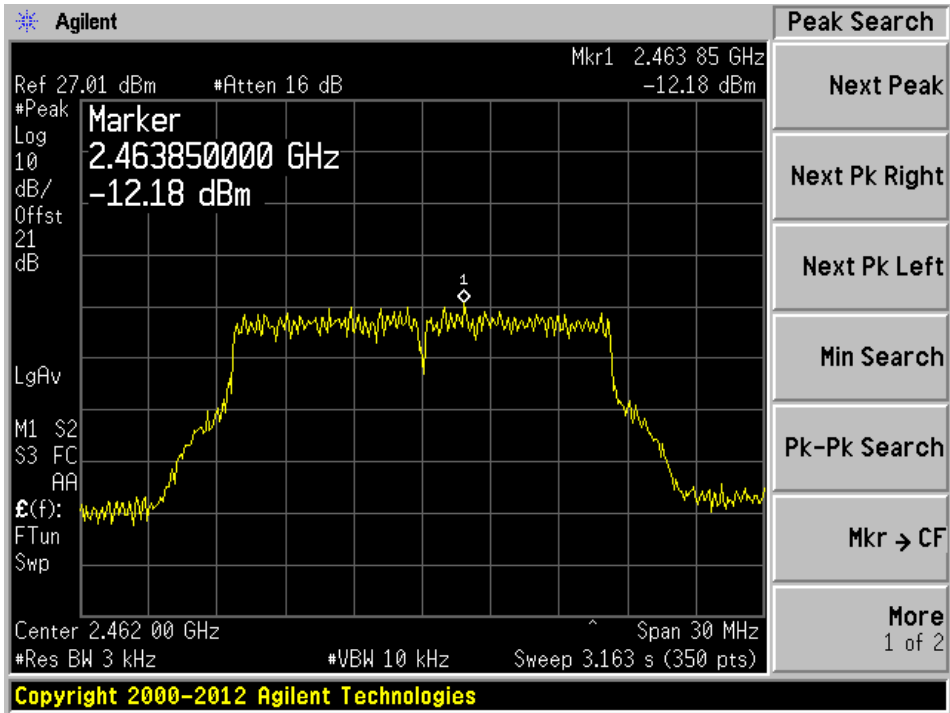
802.11g-2412 MHz



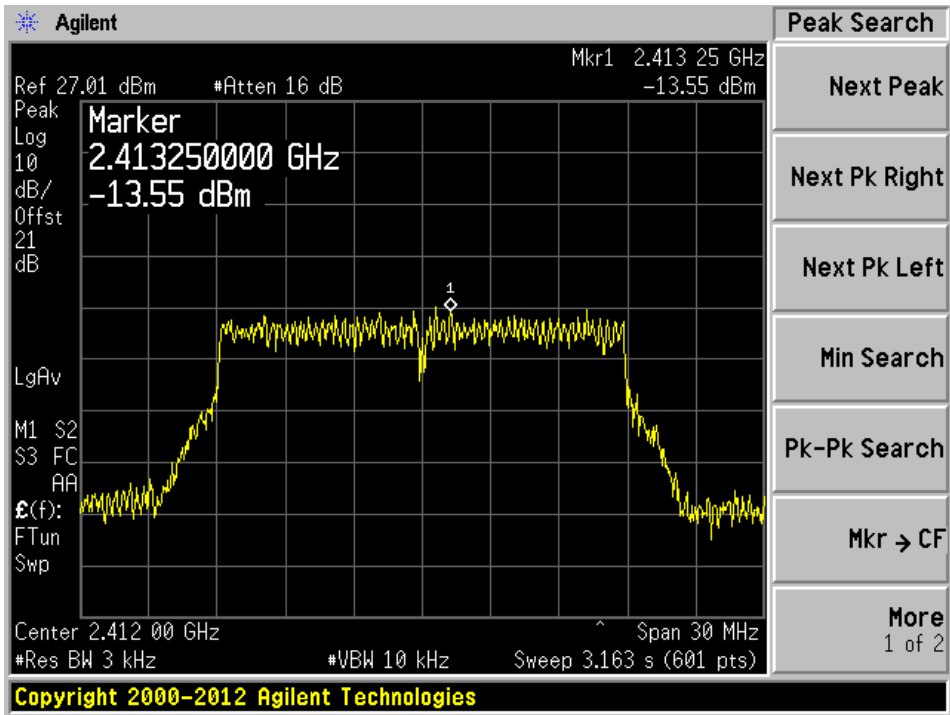
802.11g-2437 MHz



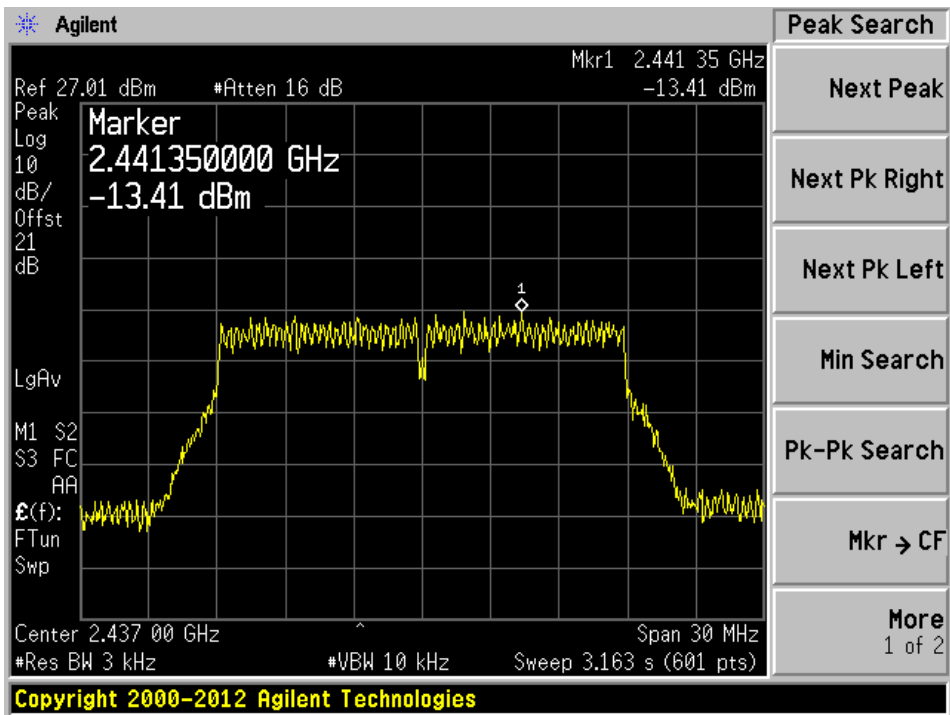
802.11g-2462 MHz



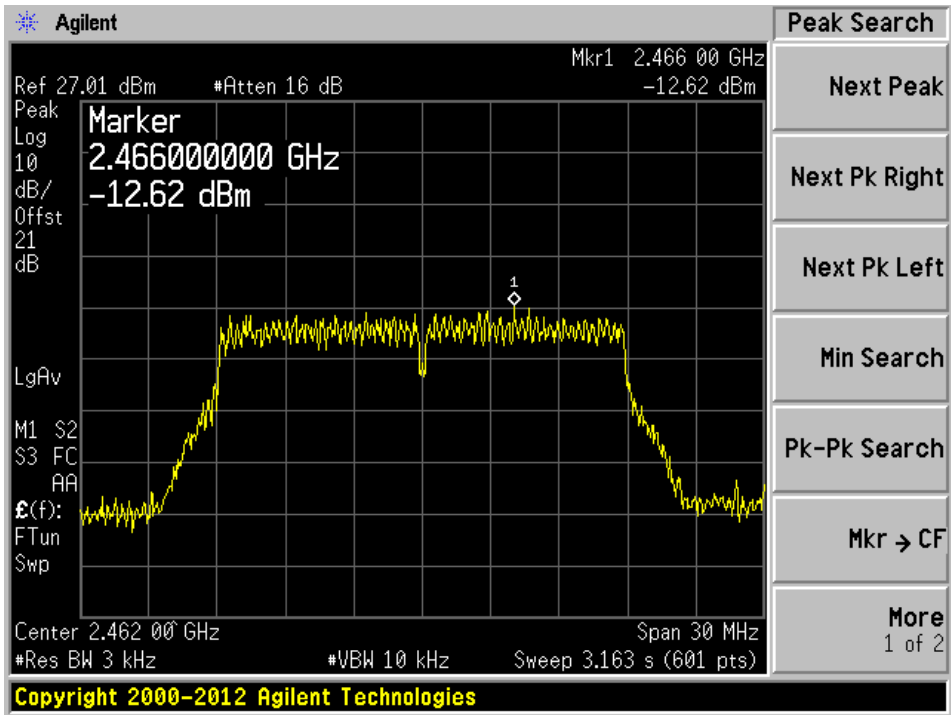
802.11n20-2412 MHz



802.11n20-2437 MHz

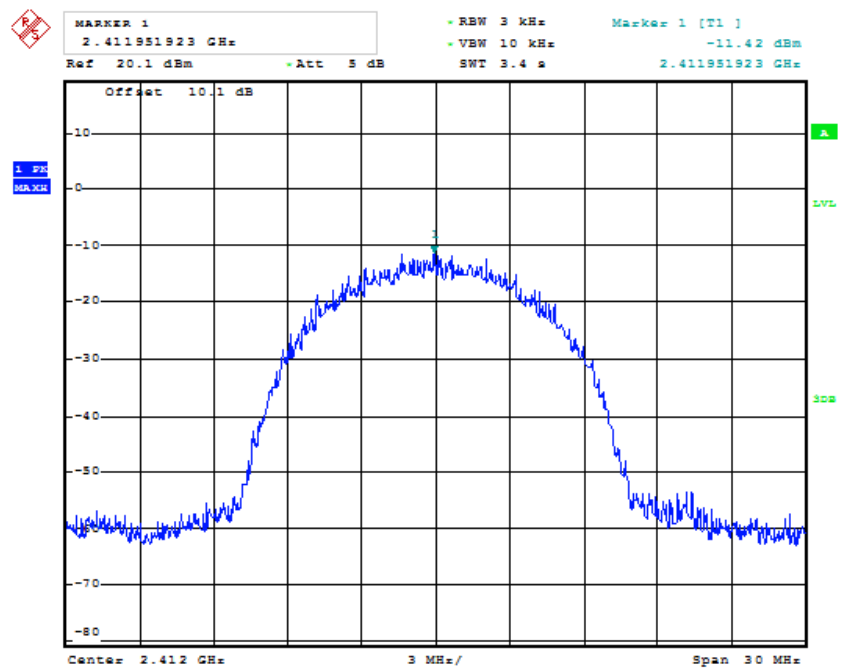


802.11n20-2462 MHz

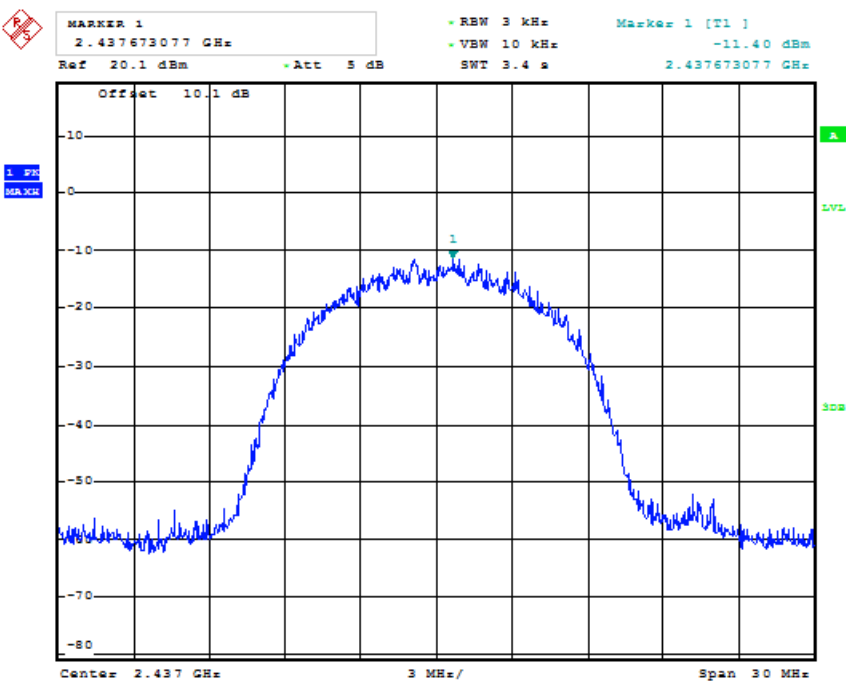


Antenna Port 1:

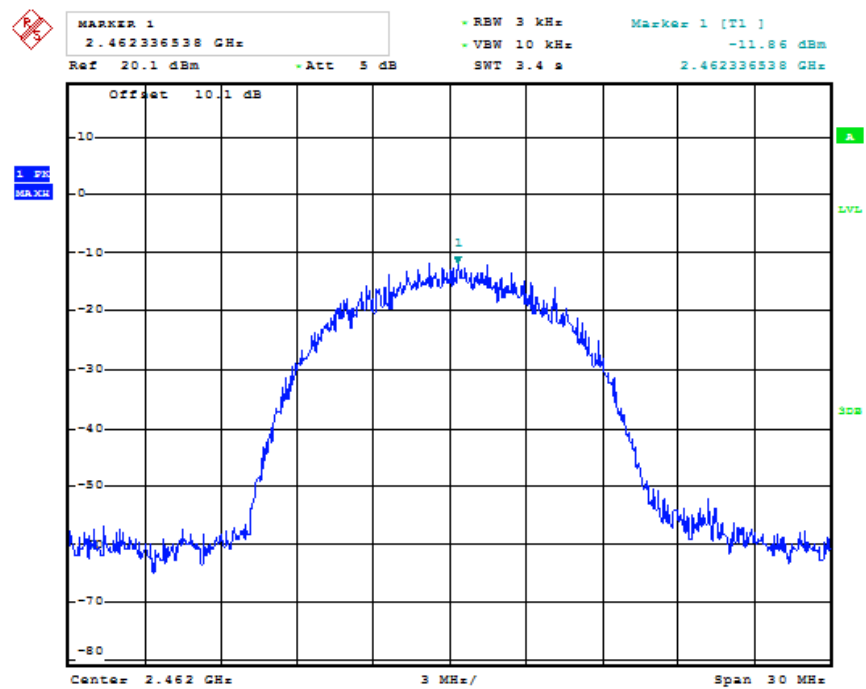
802.11b-2412 MHz



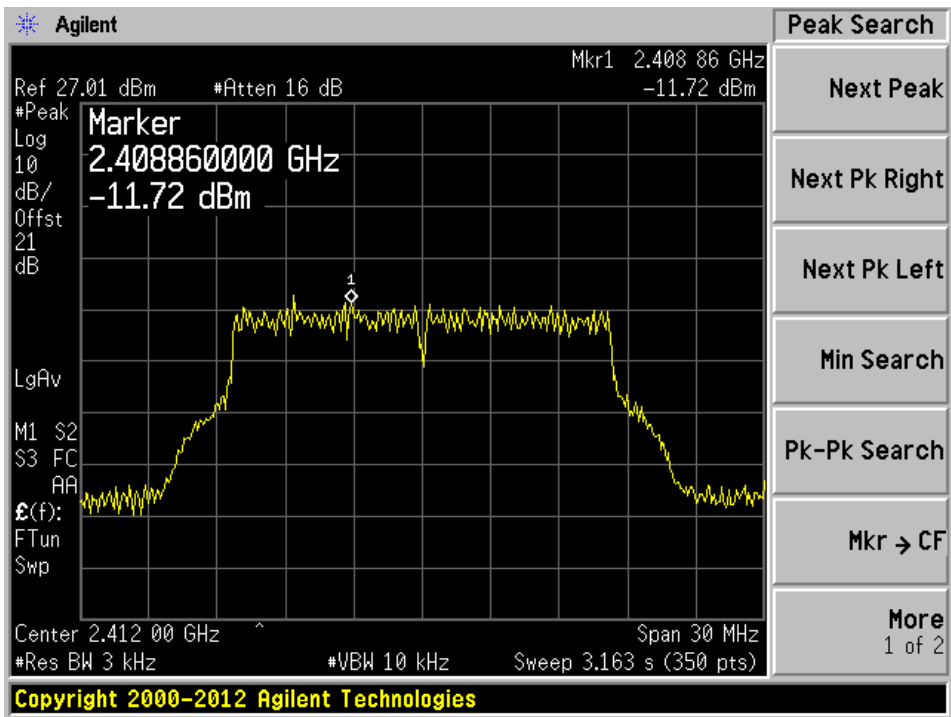
802.11b-2437 MHz



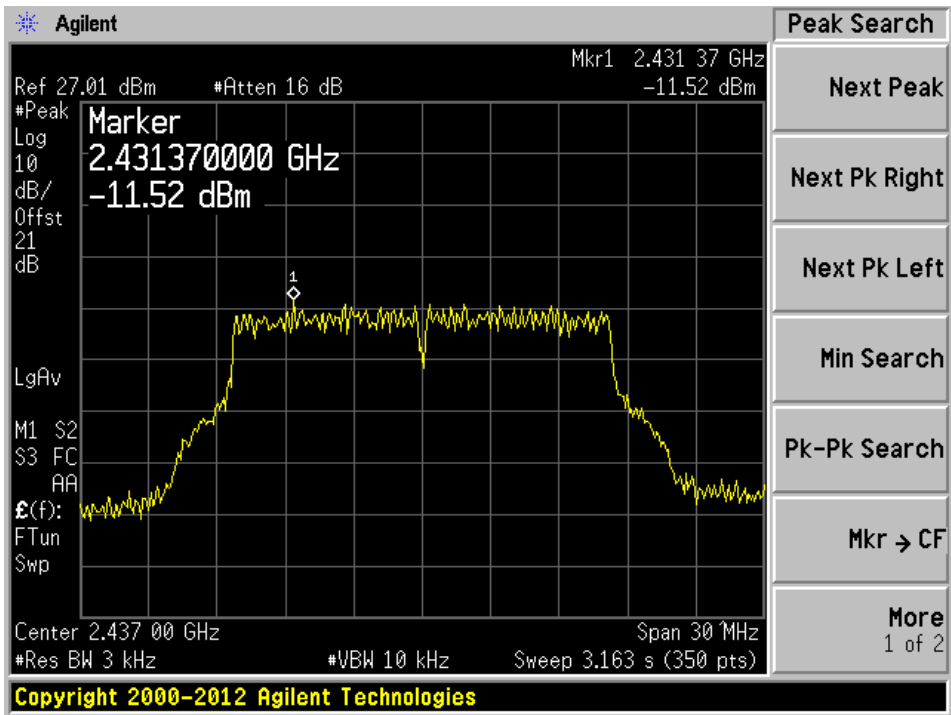
802.11b-2462 MHz



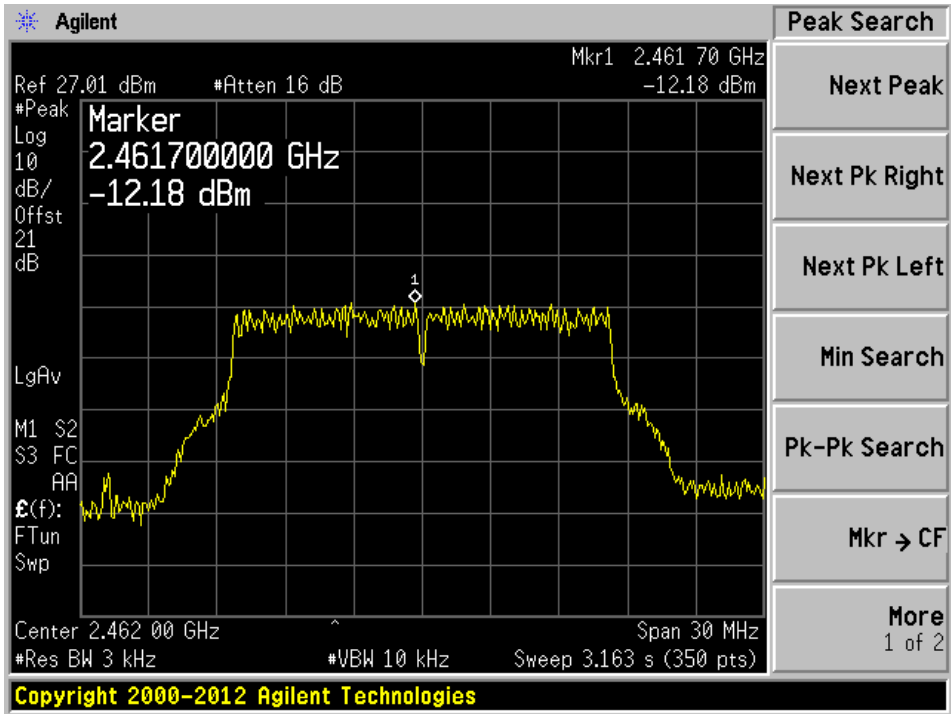
802.11g-2412 MHz



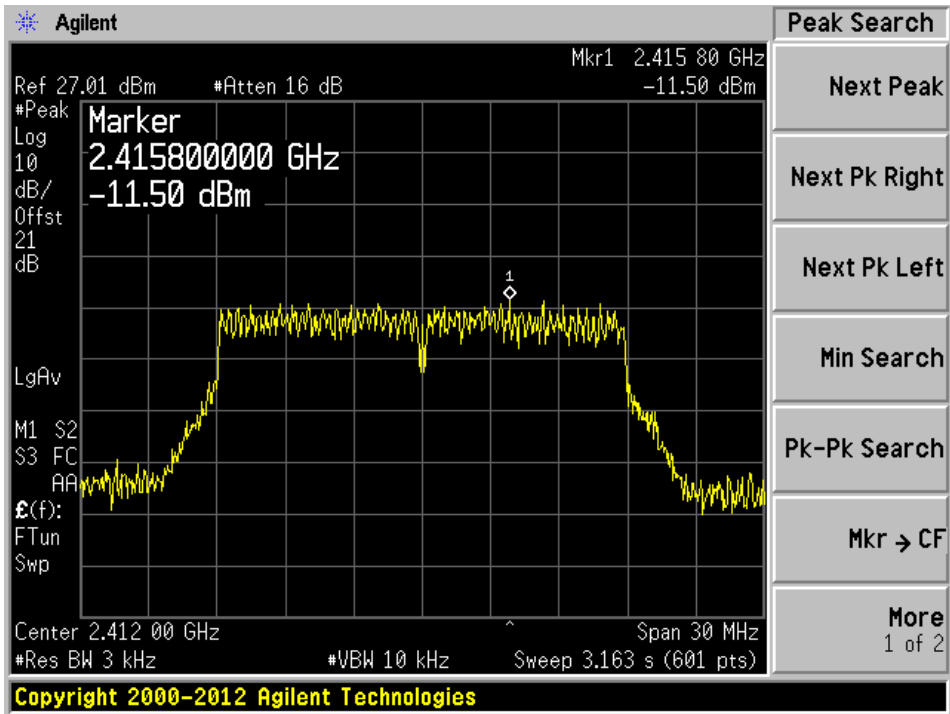
802.11g-2437 MHz



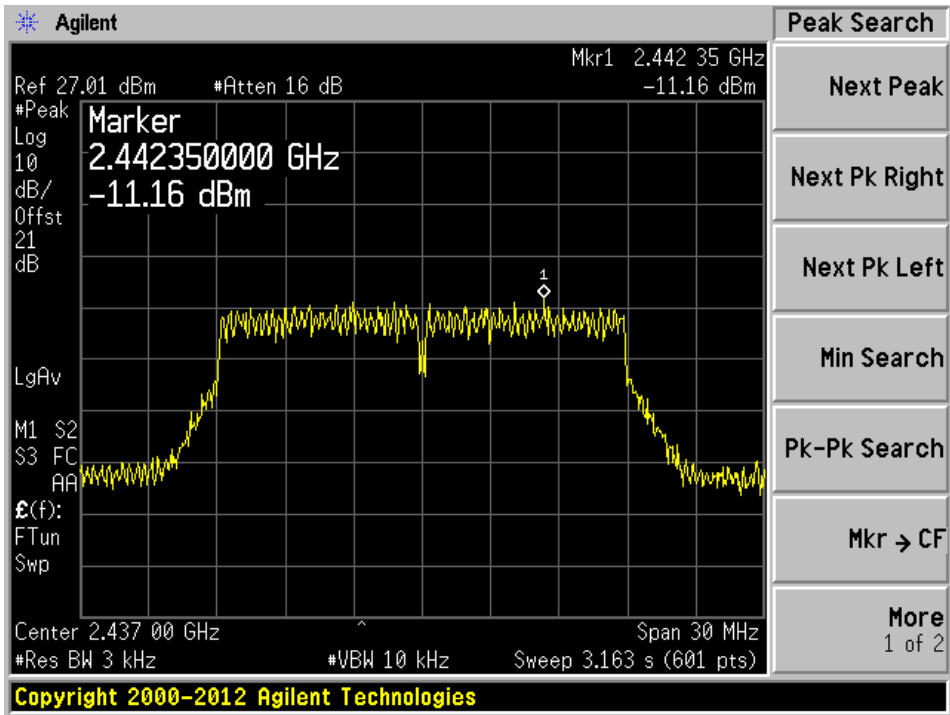
802.11g-2462 MHz



802.11n20-2412 MHz



802.11n20-2437 MHz



802.11n20-2462 MHz

