KE2 Therm Solutions

TEST REPORT FOR

Refrigeration Case Controller
Model: 21610

Tested to The Following Standards:

FCC Part 15 Subpart C Section(s)

15.207 & 15.247
(DTS 2400-2483.5 MHz)

Report No.: 100985-7

Date of issue: April 3, 2018

ACCREDITED
Certificate # 803.02

This test report bears the accreditation symbol indicating that the testing performed herein meets the test and reporting requirements of ISO/IEC 17025 under the applicable scope of EMC testing for CKC Laboratories, Inc.

We strive to create long-term, trust based relationships by providing sound, adaptive, customer first testing services. We embrace each of our customers' unique EMC challenges, not as an interruption to set processes, but rather as the reason we are in business.

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ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

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Washington, MO 63090

Representative: Steve Roberts

REPORT PREPARED BY:

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5046 Sierra Pines Drive
Mariposa, CA 95338

Project Number: 100985

DATE OF EQUIPMENT RECEIPT: March 26, 2018
DATE(S) OF TESTING: March 26-29, 2018

Report Authorization

The test data contained in this report documents the observed testing parameters pertaining to and are relevant for only the equipment provided by the client, tested in the agreed upon operational mode(s) and configuration(s) as identified herein. Compliance assessment remains the client's responsibility. This report may not be used to claim product endorsement by A2LA or any government agencies. This test report has been authorized for release under quality control from CKC Laboratories, Inc.

Steve Behm
Director of Quality Assurance & Engineering Services
CKC Laboratories, Inc.

Test Facility Information

Our laboratories are configured to effectively test a wide variety of product types. CKC utilizes first class test equipment, anechoic chambers, data acquisition and information services to create accurate, repeatable and affordable test results.

TEST LOCATION(S):
CKC Laboratories, Inc.
110 Olinda Place
Brea, CA 92823

Software Versions

CKC Laboratories Proprietary Software	Version
EMITest Emissions	5.03.11

Site Registration & Accreditation Information

Location	NIST CB #	TAIWAN	CANADA	FCC	JAPAN
Brea D, CA	US0060	SL2-IN-E-1146R	3082D-2	US1025	A-0147

SUMMARY OF RESULTS

Standard / Specification: FCC Part 15 Subpart C - 15.247 (DTS)

Test Procedure	Description	Modifications	Results
15.247(a)(2)	6dB Bandwidth	NA	Pass
15.247(b)(3)	Output Power	NA	Pass
15.247(e)	Power Spectral Density	NA	Pass
15.247(d)	RF Conducted Emissions & Band Edge	NA	Pass
15.247(d)	Radiated Emissions & Band Edge	NA	Pass
15.207	AC Conducted Emissions	NA	Pass

NA = Not Applicable

Modifications During Testing

This list is a summary of the modifications made to the equipment during testing.

Summary of Conditions
No modifications were made during testing.

Modifications listed above must be incorporated into all production units.

Conditions During Testing

This list is a summary of the conditions noted to the equipment during testing.

Summary of Conditions
None

EQUIPMENT UNDER TEST (EUT)

During testing, numerous configurations may have been utilized. The configurations listed below support compliance to the standard(s) listed in the Summary of Results section.

Configuration 1

Equipment Tested:

Device	Manufacturer	Model #	S/N
Refrigeration Case Controller	KE2 Therm Solutions	21610	NA

Support Equipment:

Device	Manufacturer	Model #	S/N
Laptop	Lenovo	Thinkpad T500	L3B3906
AC Adapter	Lenovo	45N0121	NA

General Product Information:

Product Information	Manufacturer-Provided Details
Equipment Type:	Stand-Alone Equipment
Type of Wideband System:	802.11B/G/N20/N40
Operating Frequency Range:	2412-2462MHz
Modulation Type(s):	CCK, OFDM, BPSK, 64-QAM
Maximum Duty Cycle:	100%
Number of TX Chains:	1
Antenna Type(s) and Gain:	PCB Trace / 3.3 dBi
Beamforming Type:	NA
Antenna Connection Type:	Integral (External connector provided to facilitate testing)
Nominal Input Voltage:	120Vac/60Hz
Firmware / Software used for Test:	Atheros Radio Test 2 (ART2-GUI)

FCC Part 15 Subpart C

15.247(a)(2) 6dB Bandwidth

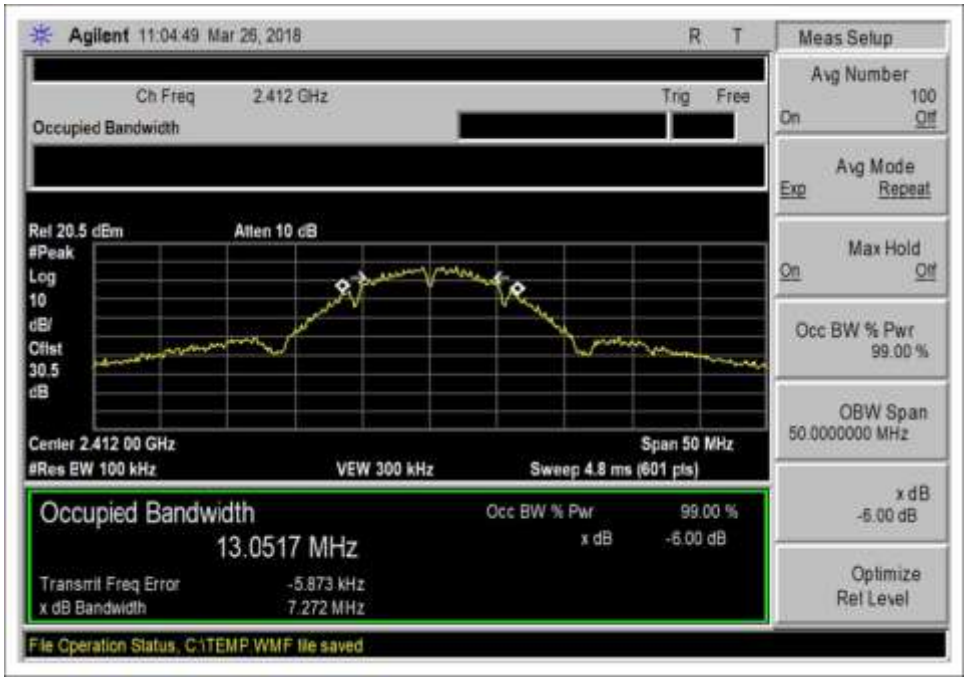
Test Setup/Conditions			
Test Location:	Brea Lab D	Test Engineer:	Don Nguyen
Test Method:	ANSI C63.10 (2013), KDB 558074 D01 V.04 (04/05/2017)	Test Date(s):	3/26/2018
Configuration:	1		
Test Setup:	The EUT is placed on test bench. Antenna port is connected to spectrum analyzer. The EUT is set to continuously transmit at 100% duty cycle and maximum power. A support laptop is running software Atheros Radio Test 2 (ART2-GUI) to exercise the Wi-Fi module. Operating frequency: 2412-2462MHz Protocols and data rate: 802.11B, 1Mbps-11Mbps 802.11G, 6Mbps-54Mbps 802.11N20, 6.5Mbps (MCS0)-65Mbps (MCS7) 802.11N40, 13.5Mbps (MCS0)-135Mbps (MCS7) Firmware power: 802.11B, 18dBm (target) 802.11G, 11dBm 802.11N20, 6.5dBm 802.11N40, 8dBm Scanned frequency: 2412-2462MHz RBW=100kHz, VBW=300kHz		

Environmental Conditions			
Temperature (ºC)	24	Relative Humidity (%):	30.8

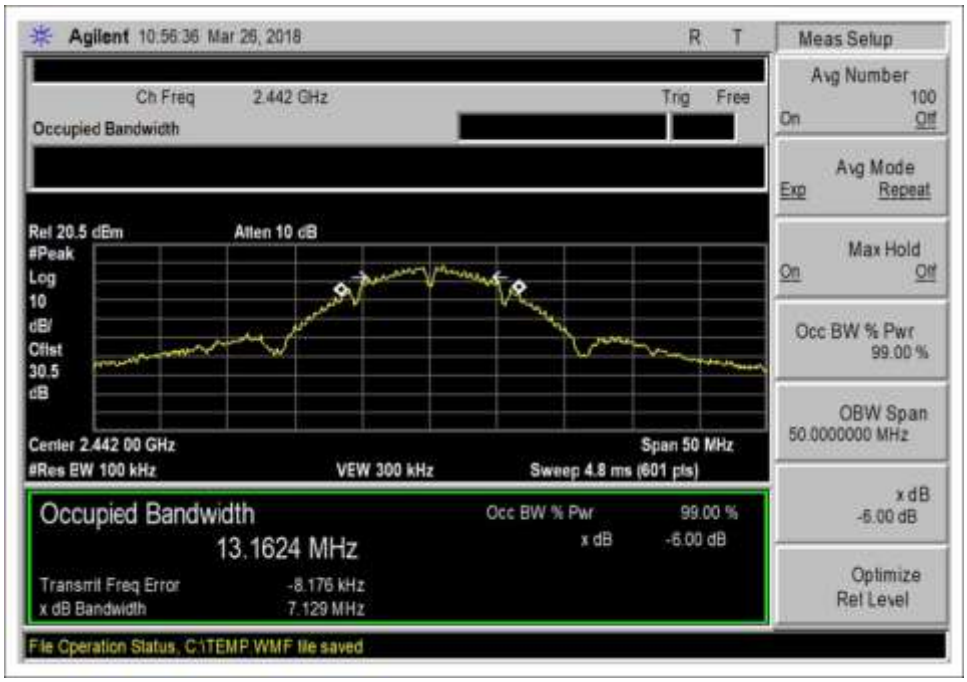
Test Equipment					
Asset#	**Description**	**Manufacturer**	**Model**	**Cal Date**	**Cal Due**
02869	Spectrum Analyzer	Agilent	E4440A	8/1/2017	8/1/2018
03432	Attenuator	Aeroflex/Weinschel	90-30-34	10/27/2017	10/27/2019
P06544	Cable	Astro Steel	32026-29094K-29094K-36TC	12/21/2017	12/21/2019

Test Data Summary				
Frequency (MHz)	**Modulation**	**Measured (kHz)**	**Limit (kHz)**	**Results**
2412	Long CCK (802.11B, 1Mbps)	7272	≥500	Pass
2442	Long CCK (802.11B, 1Mbps)	7129	≥500	Pass
2462	Long CCK (802.11B, 1Mbps)	7073	≥500	Pass
2412	Long CCK (802.11B, 11Mbps)	7008	≥500	Pass
2442	Long CCK (802.11B, 11Mbps)	6987	≥500	Pass
2462	Long CCK (802.11B, 11Mbps)	7042	≥500	Pass
2412	OFDM (802.11G, 6Mbps)	16606	≥500	Pass
2442	OFDM (802.11G, 6Mbps)	16615	≥500	Pass
2462	OFDM (802.11G, 6Mbps)	16573	≥500	Pass
2412	OFDM (802.11G, 54Mbps)	16593	≥500	Pass
2442	OFDM (802.11G, 54Mbps)	16593	≥500	Pass
2462	OFDM (802.11G, 54Mbps)	16572	≥500	Pass
2412	BPSK (802.11N20, 6.5Mbps)	17792	≥500	Pass
2442	BPSK (802.11N20, 6.5Mbps)	17772	≥500	Pass
2462	BPSK (802.11N20, 6.5Mbps)	17788	≥500	Pass
2412	64-QAM (802.11N20, 65Mbps)	17803	≥500	Pass
2442	64-QAM (802.11N20, 65Mbps)	17800	≥500	Pass
2462	64-QAM (802.11N20, 65Mbps)	17815	≥500	Pass
2422	BPSK (802.11N40, 13.5Mbps)	36341	≥500	Pass
2442	BPSK (802.11N40, 13.5Mbps)	36321	≥500	Pass
2452	BPSK (802.11N40, 13.5Mbps)	35639	≥500	Pass
2422	64-QAM (802.11N40, 135Mbps)	36672	≥500	Pass
2442	64-QAM (802.11N40, 135Mbps)	36655	≥500	Pass
2452	64-QAM (802.11N40, 135Mbps)	36568	≥500	Pass

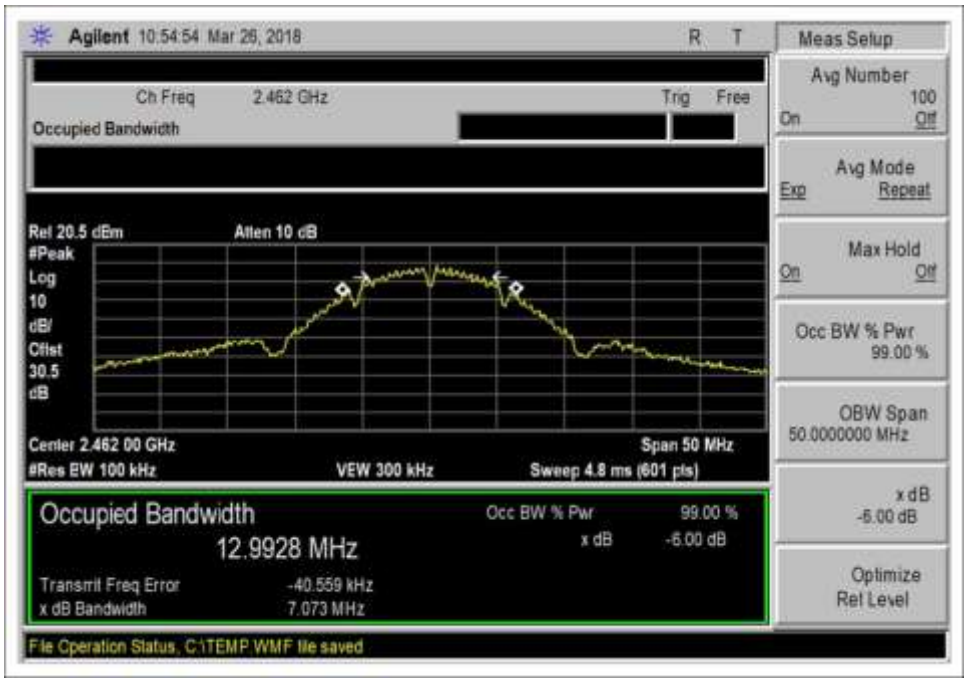
Plots



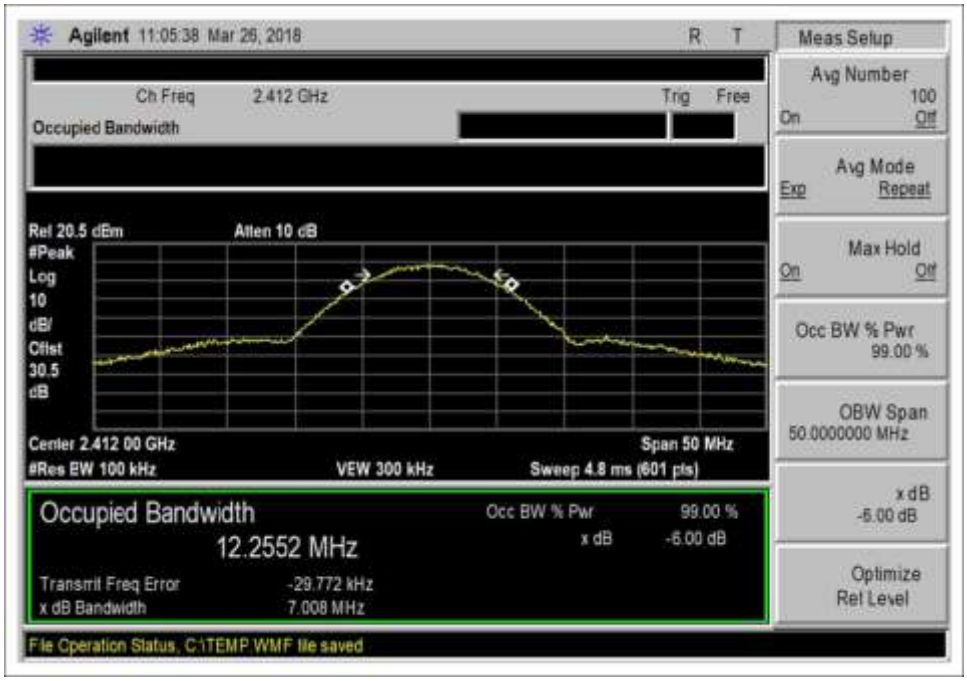
802.11B 1Mbps Low Channel



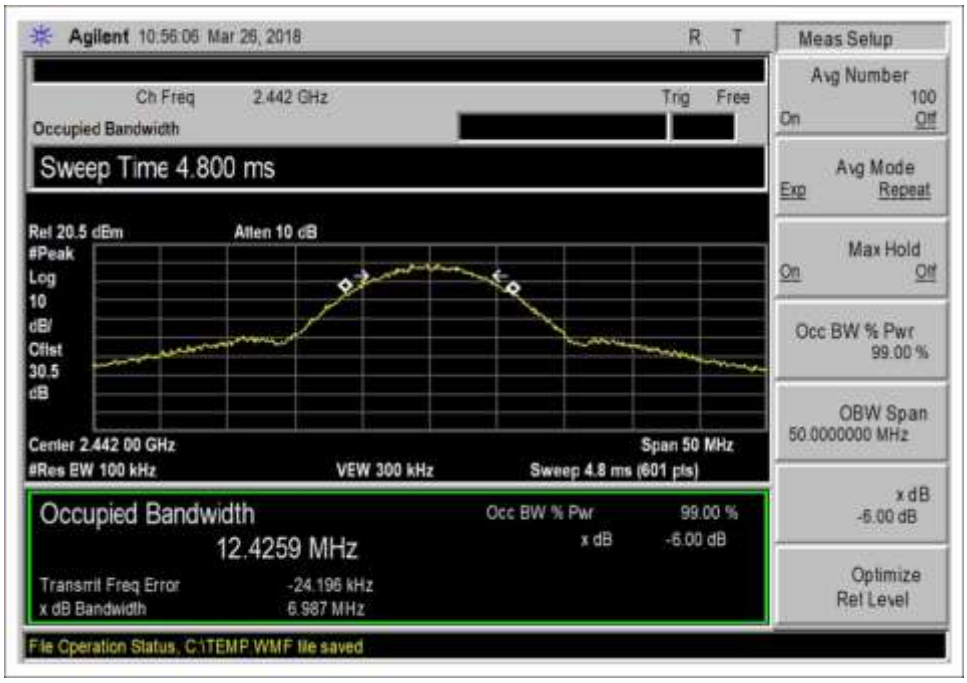
802.11B 1Mbps Middle Channel



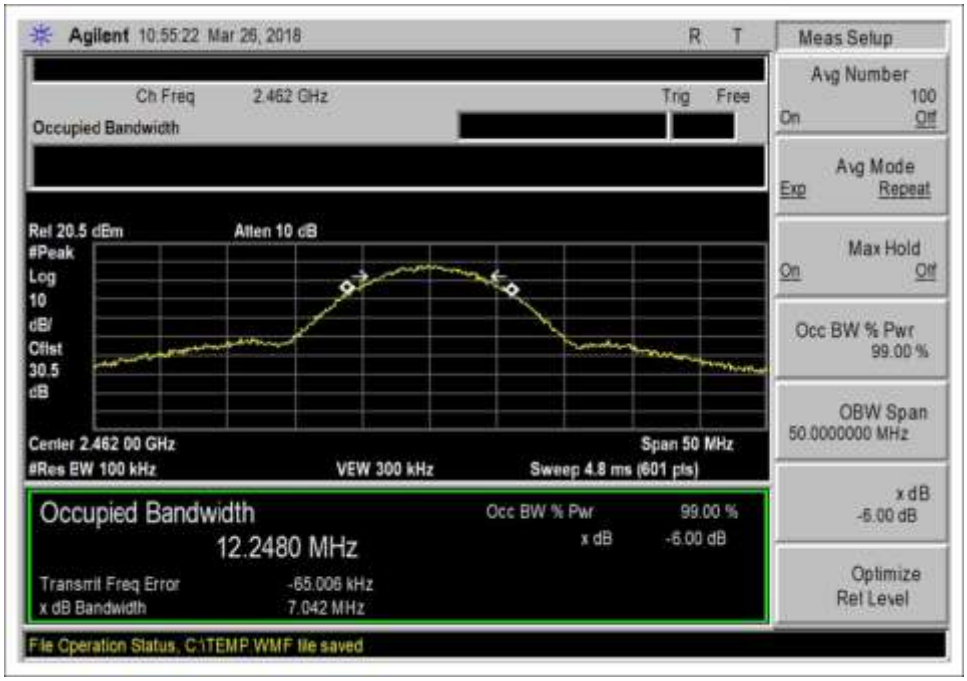
802.11B 1Mbps High Channel



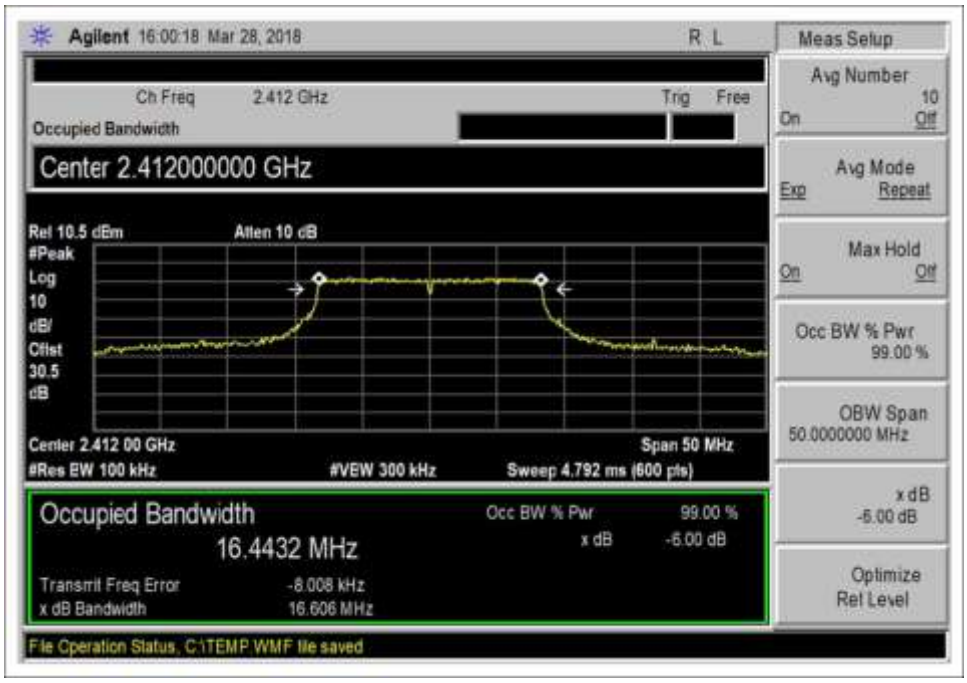
802.11B 11Mbps Low Channel



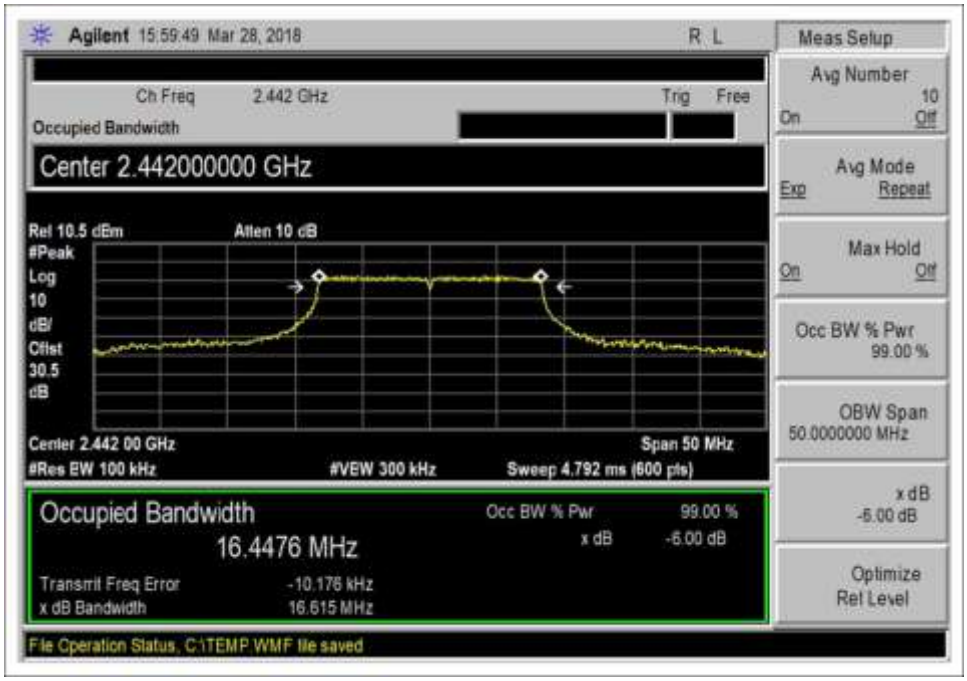
802.11B 11Mbps Middle Channel



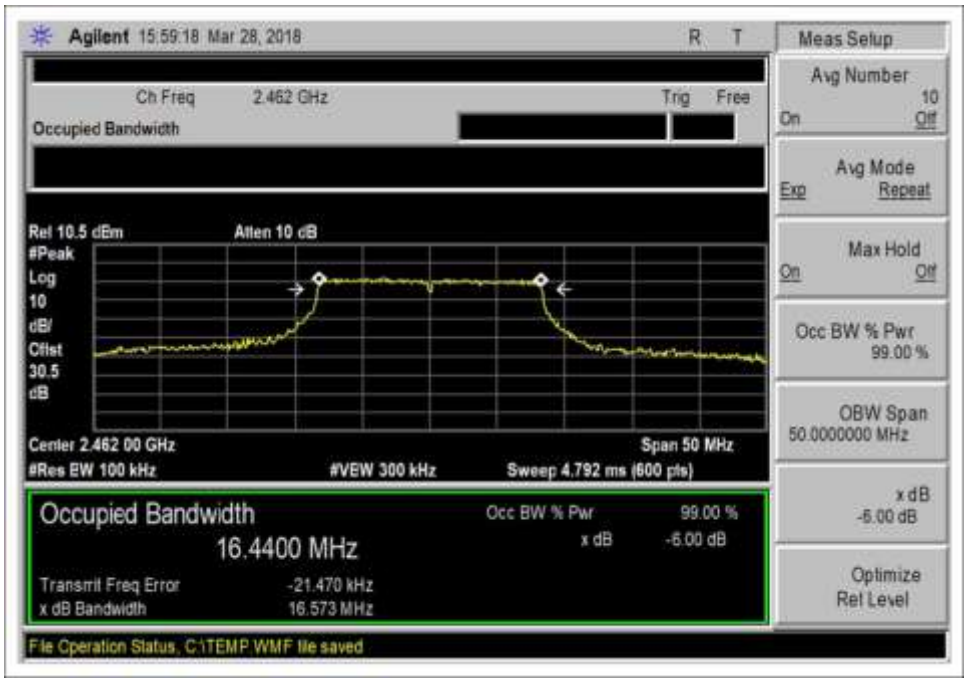
802.11B 11Mbps High Channel



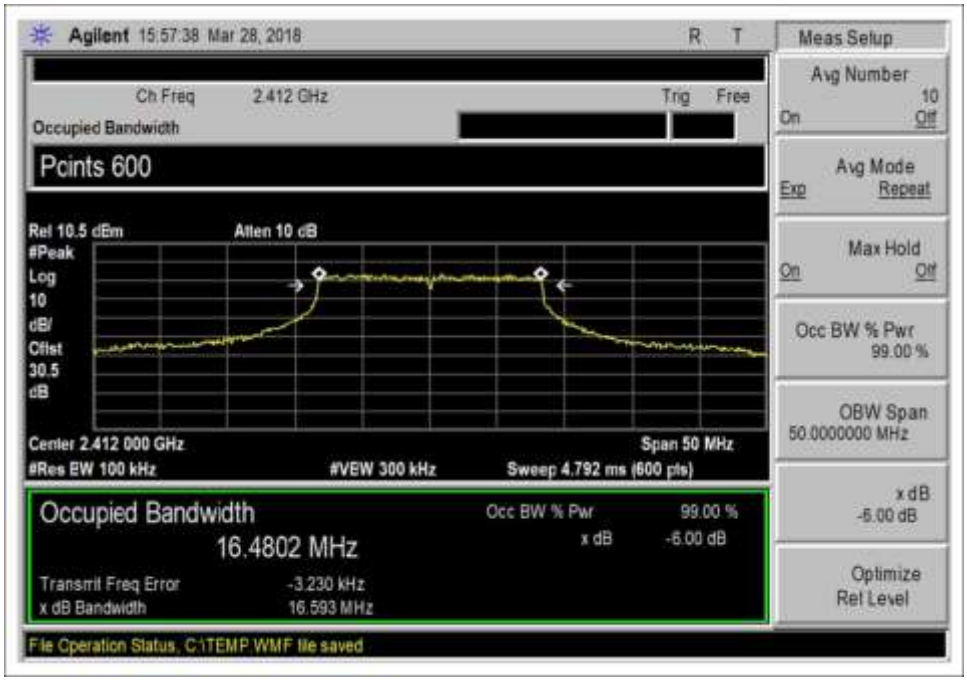
802.11G 6Mbps Low Channel



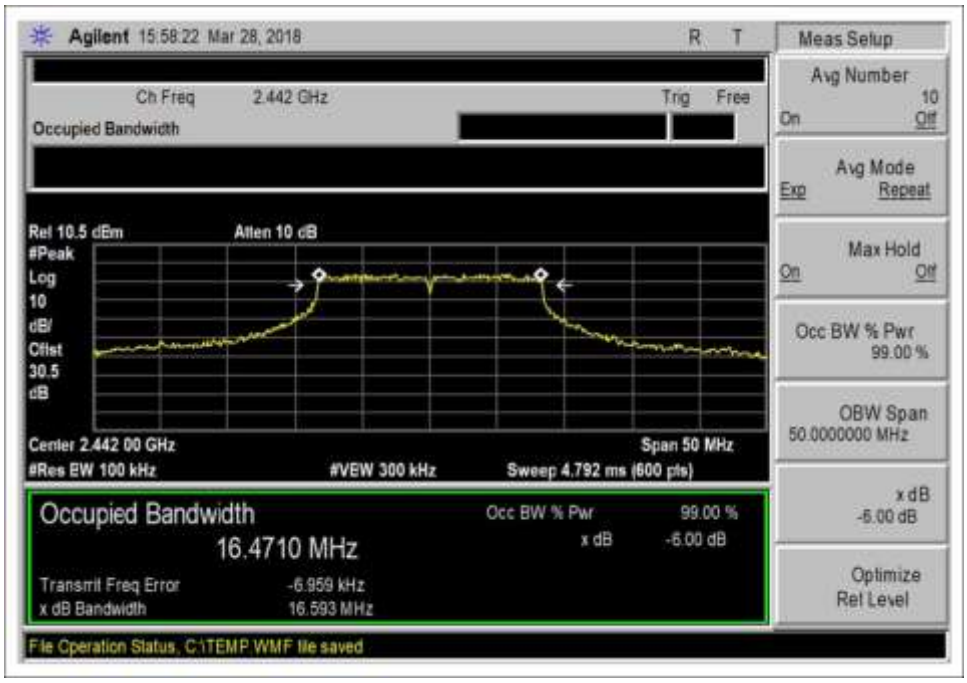
802.11G 6Mbps Middle Channel



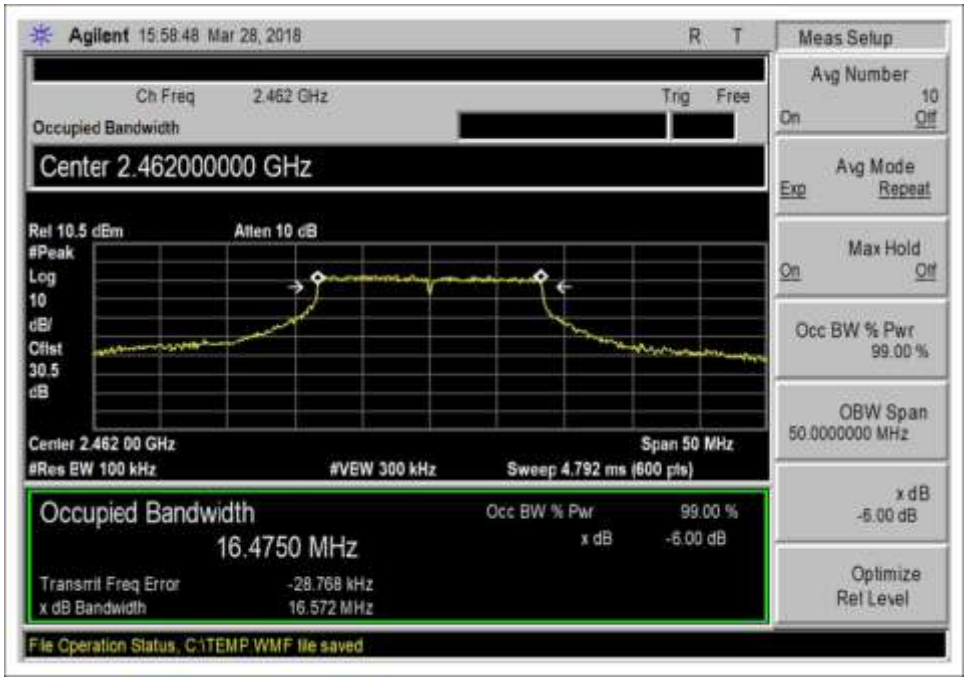
802.11G 6Mbps High Channel



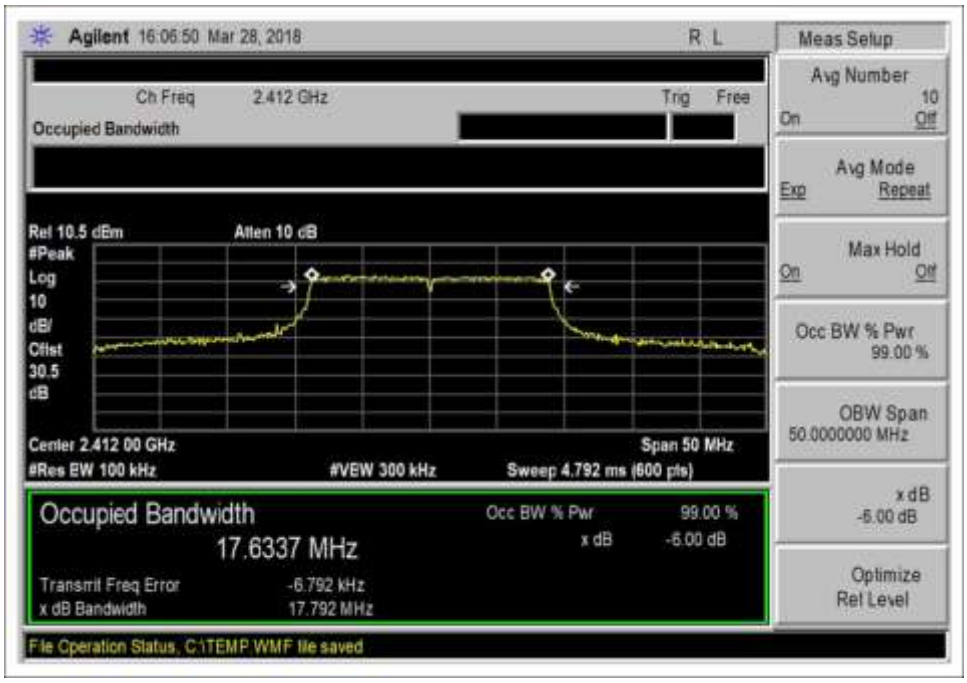
802.11G 54Mbps Low Channel



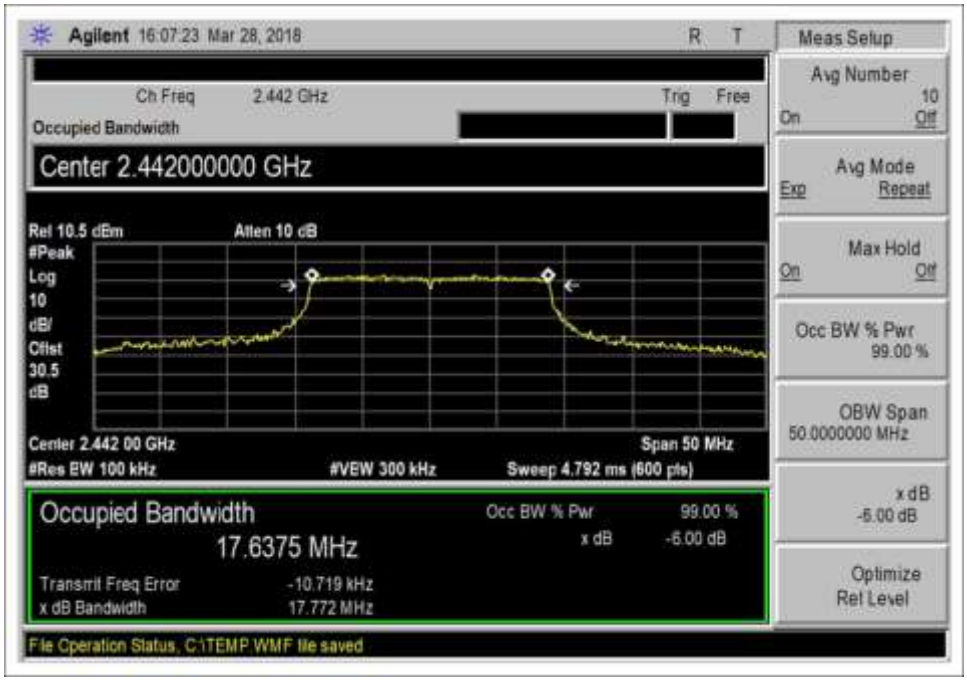
802.11G 54Mbps Middle Channel



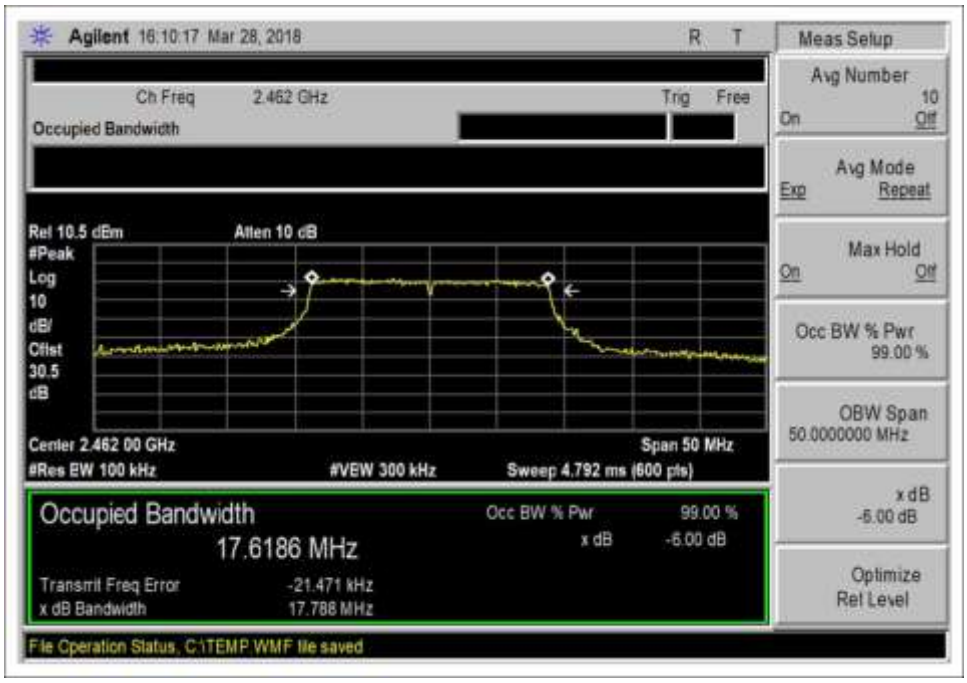
802.11G 54Mbps High Channel



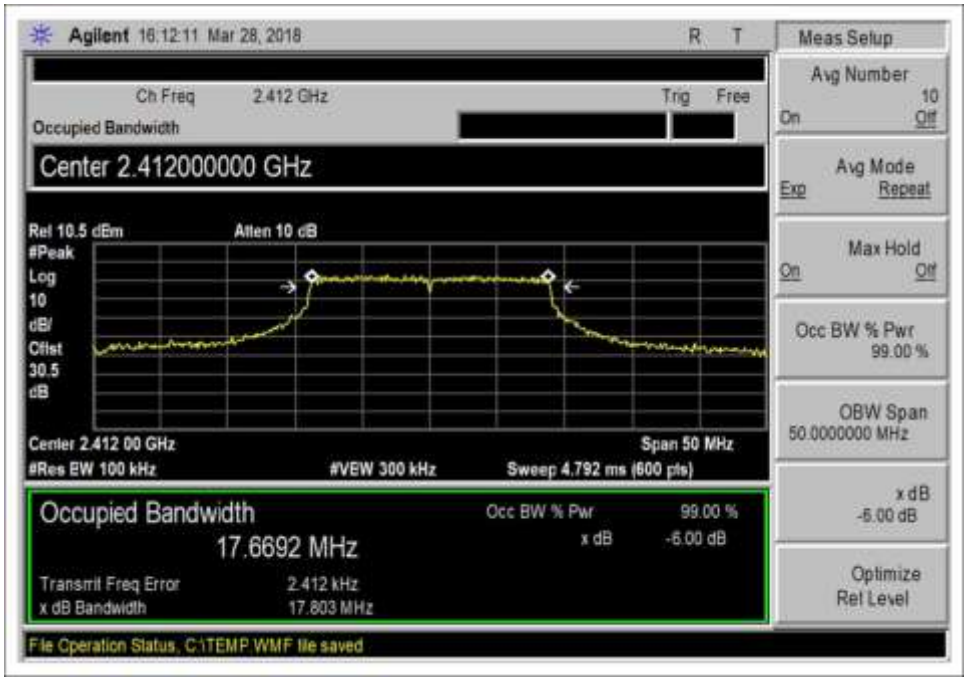
802.11N20 6.5Mbps Low Channel



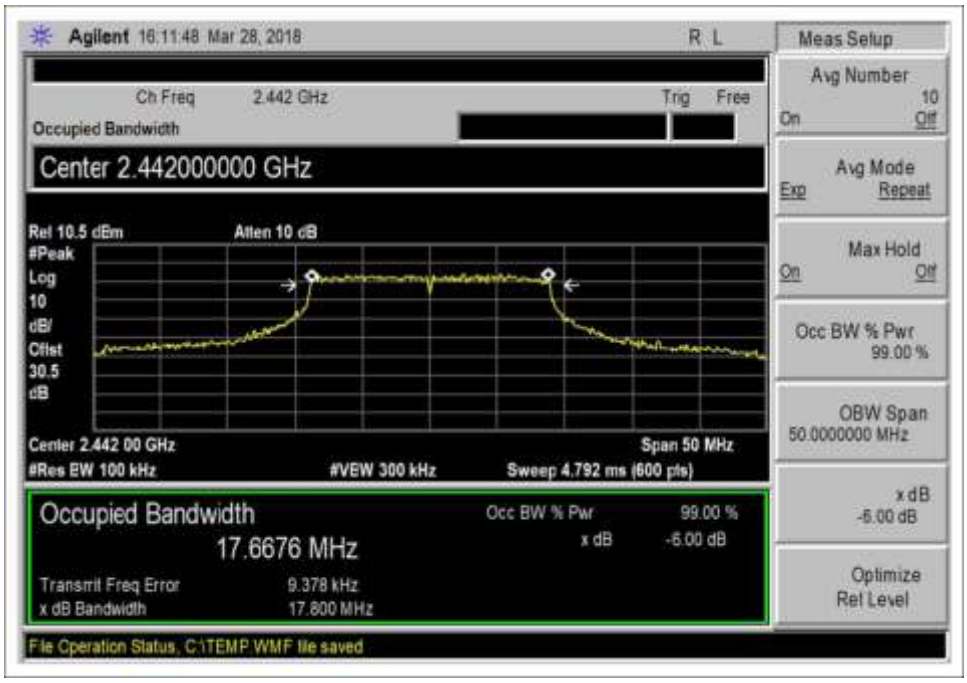
802.11N20 6.5Mbps Middle Channel



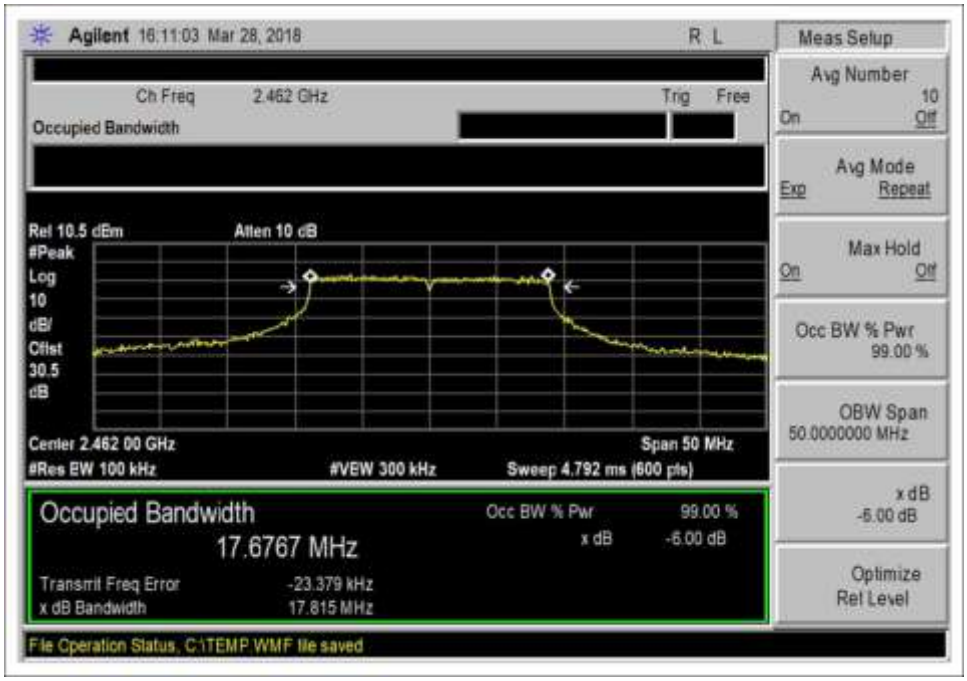
802.11N20 6.5Mbps High Channel



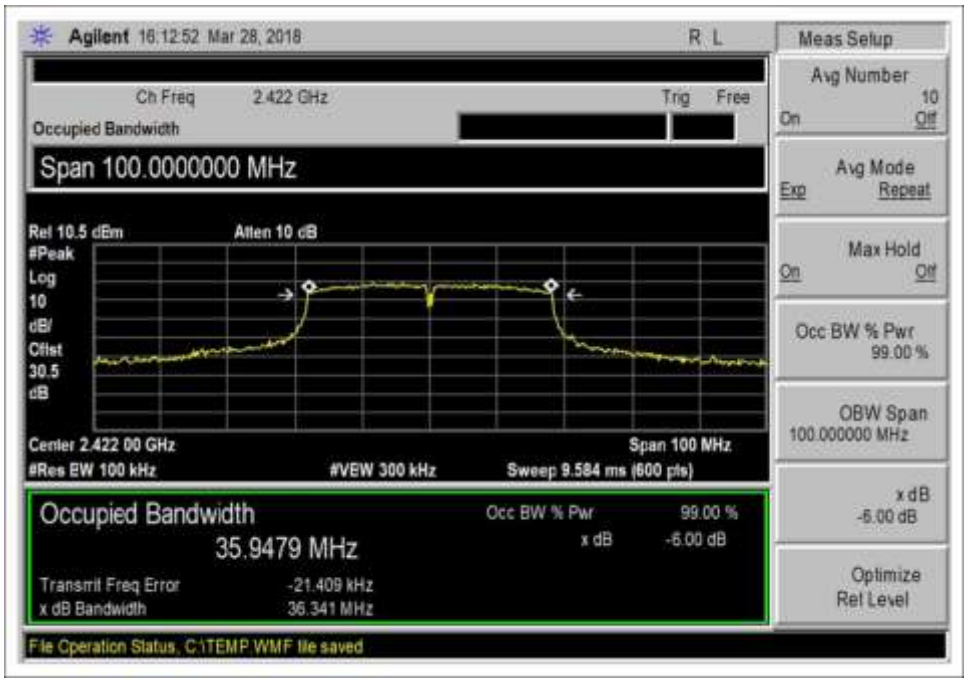
802.11N20 65Mbps Low Channel



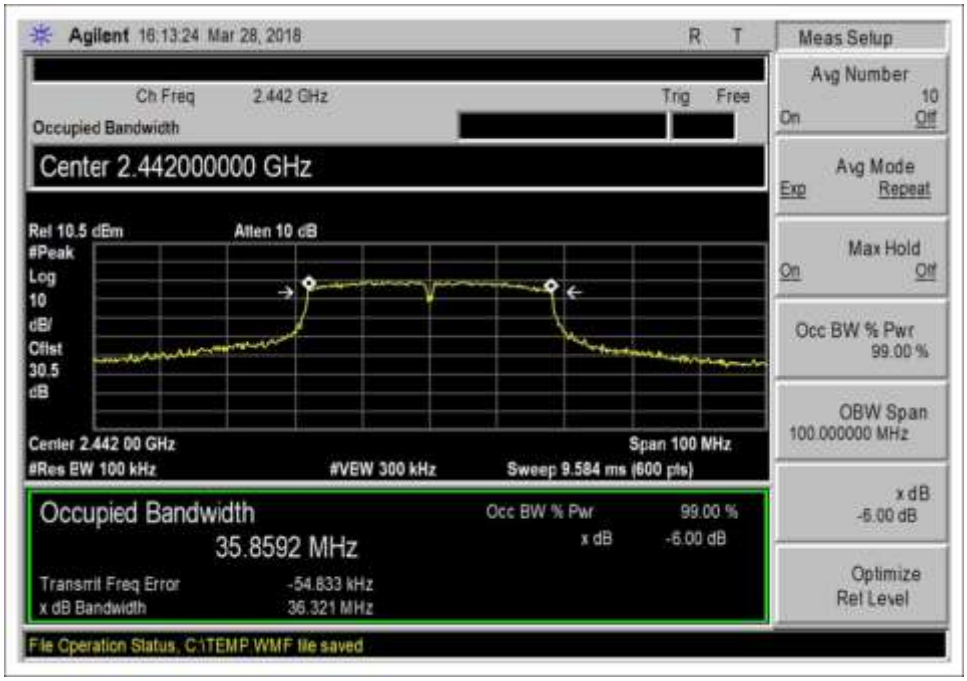
802.11N20 65Mbps Middle Channel



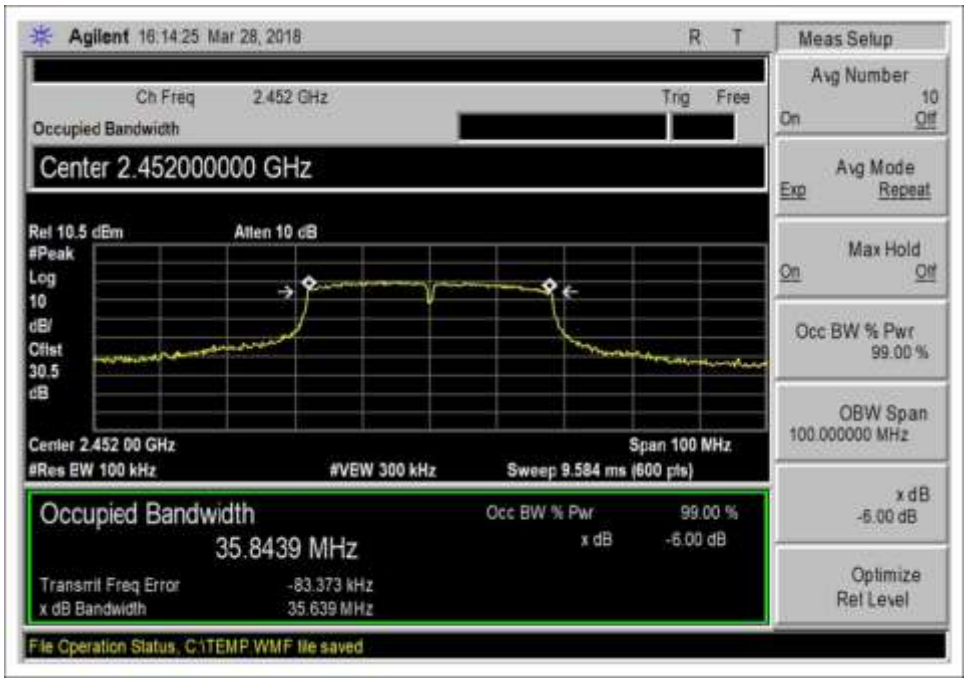
802.11N20 65Mbps High Channel



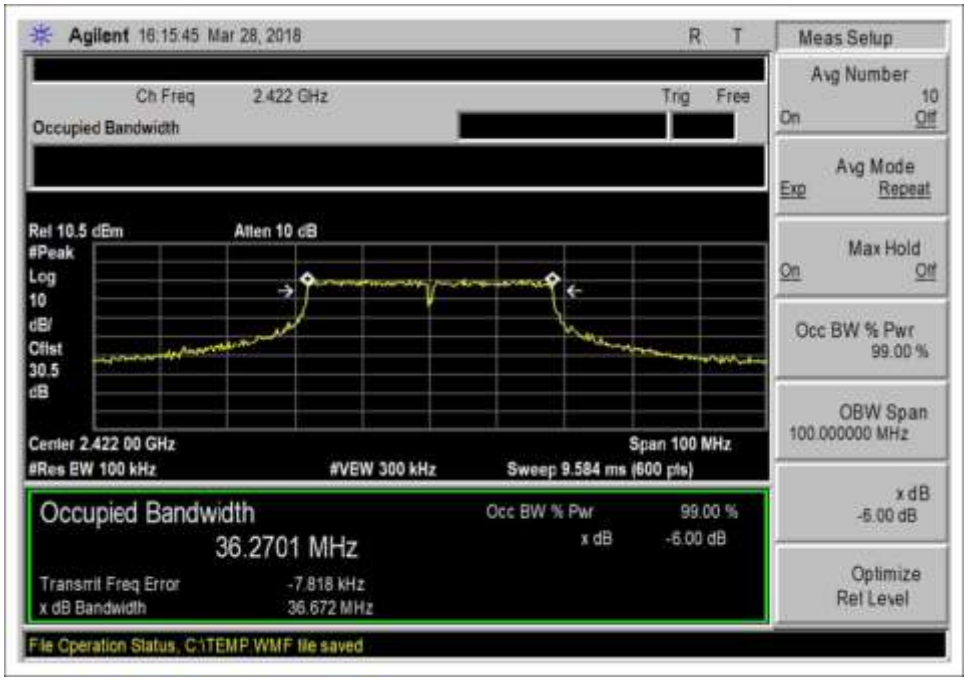
802.11N40 13.5Mbps Low Channel



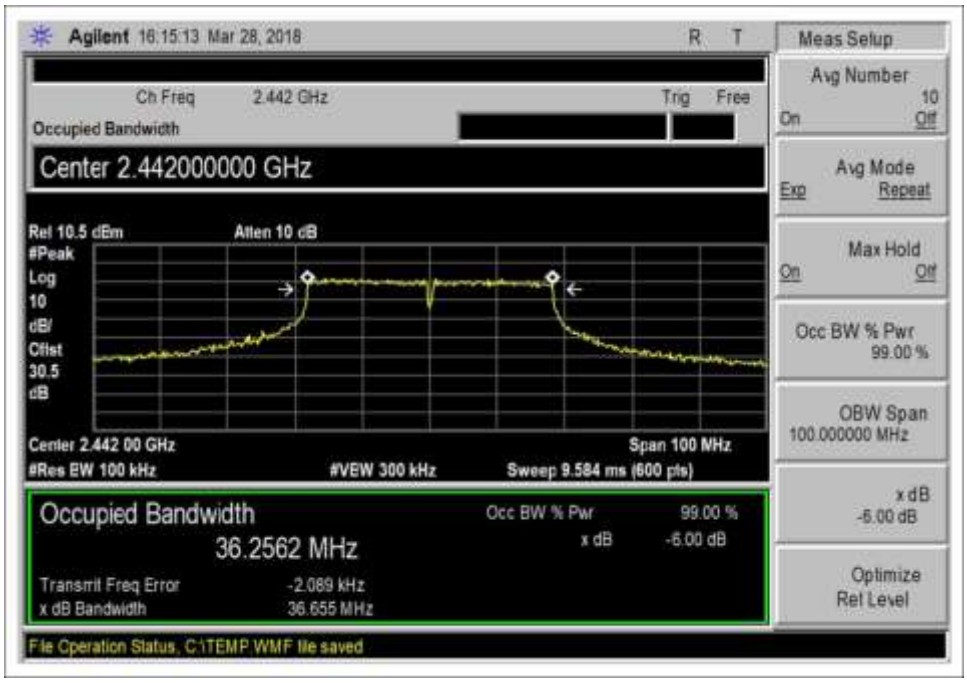
802.11N40 13.5Mbps Middle Channel



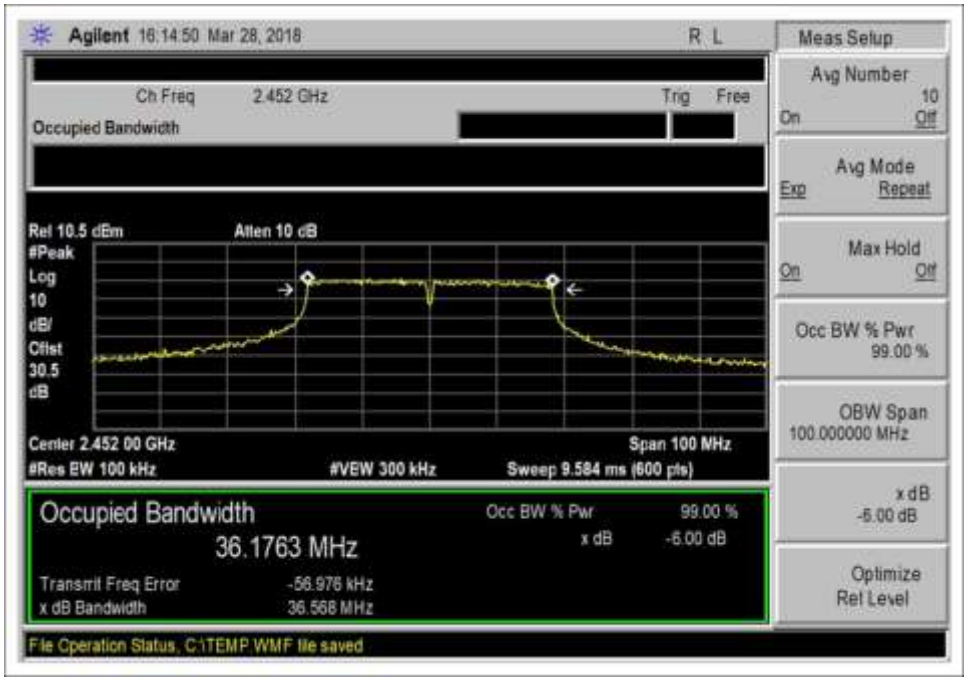
802.11N40 13.5Mbps High Channel



802.11N40 135Mbps Low Channel



802.11N40 135Mbps Middle Channel



802.11N40 135Mbps High Channel

Test Setup Photo

15.247(b)(3) Output Power

Test Setup / Conditions			
Test Location:	Brea Lab D	Test Engineer:	Don Nguyen
Test Method:	ANSI C63.10 (2013), KDB 558074 D01 V.04 (04/05/2017)	Test Date(s):	3/26/2018
Configuration:	1		
Test Setup:	The EUT is placed on test bench. Antenna port is connected to spectrum analyzer. The EUT is set to continuously transmit at 100% duty cycle and maximum power. A support laptop is running software Atheros Radio Test 2 (ART2-GUI) to exercise the Wi-Fi module. Operating frequency: 2412-2462MHz Protocols and data rate: 802.11B, 1Mbps-11Mbps 802.11G, 6Mbps-54Mbps 802.11N20, 6.5Mbps (MCS0)-65Mbps (MCS7) 802.11N40, 13.5Mbps (MCS0)-135Mbps (MCS7) Firmware power: 802.11B, 18dBm (target) 802.11G, 11dBm 802.11N20, 6.5dBm 802.11N40, 8dBm Scanned frequency: 2412-2462MHz RBW=510kHz, VBW=5MHz		

Environmental Conditions			
Temperature (ºC)	24	Relative Humidity (%):	30.8

Test Equipment					
Asset#	**Description**	**Manufacturer**	**Model**	**Cal Date**	**Cal Due**
02869	Spectrum Analyzer	Agilent	E4440A	8/1/2017	8/1/2018
03432	Attenuator	Aeroflex/Weinschel	90-30-34	10/27/2017	10/27/2019
P06544	Cable	Astro Steel	32026-29094K-29094K-36TC	12/21/2017	12/21/2019

Test Data Summary - Voltage Variations					
Frequency (MHz)	Modulation	$V_{Minimum}$ (dBm)	$V_{Nominal}$ (dBm)	$V_{Maximum}$ (dBm)	Max Deviation from $V_{Nominal}$ (dB)
2412	Long CCK (802.11B, 11Mbps)	16.22	16.55	16.35	0.33
2442	Long CCK (802.11B, 11Mbps)	17.29	17.14	16.85	0.29
2462	Long CCK (802.11B, 11Mbps)	16.27	16.49	16.28	0.22

Test performed using operational mode with the highest output power, representing worst case.

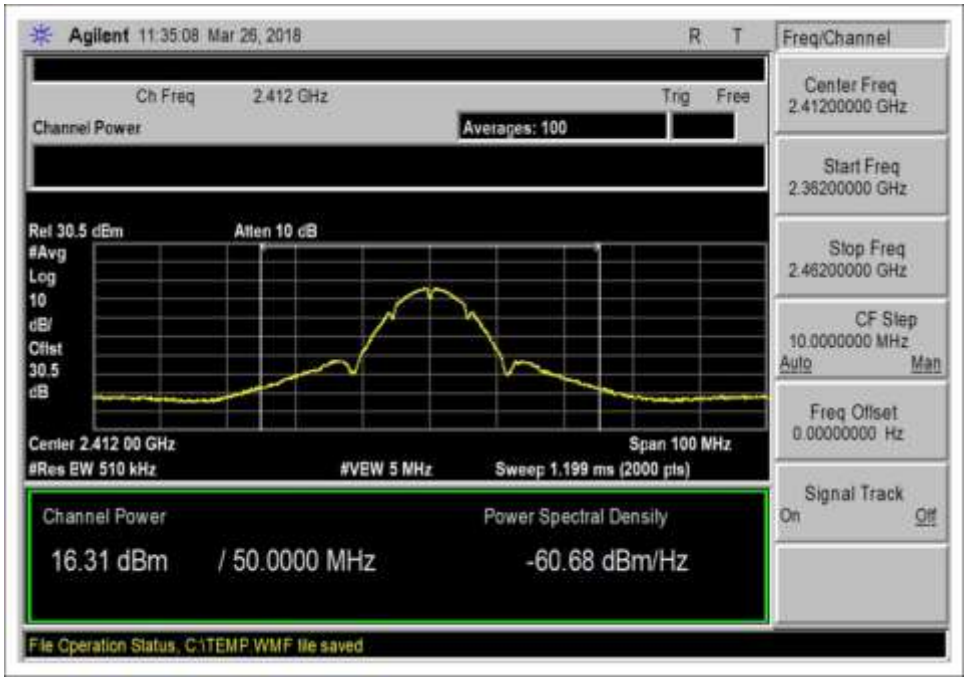
Parameter Definitions:

Measurements performed at input voltage Vnominal ± 15%.

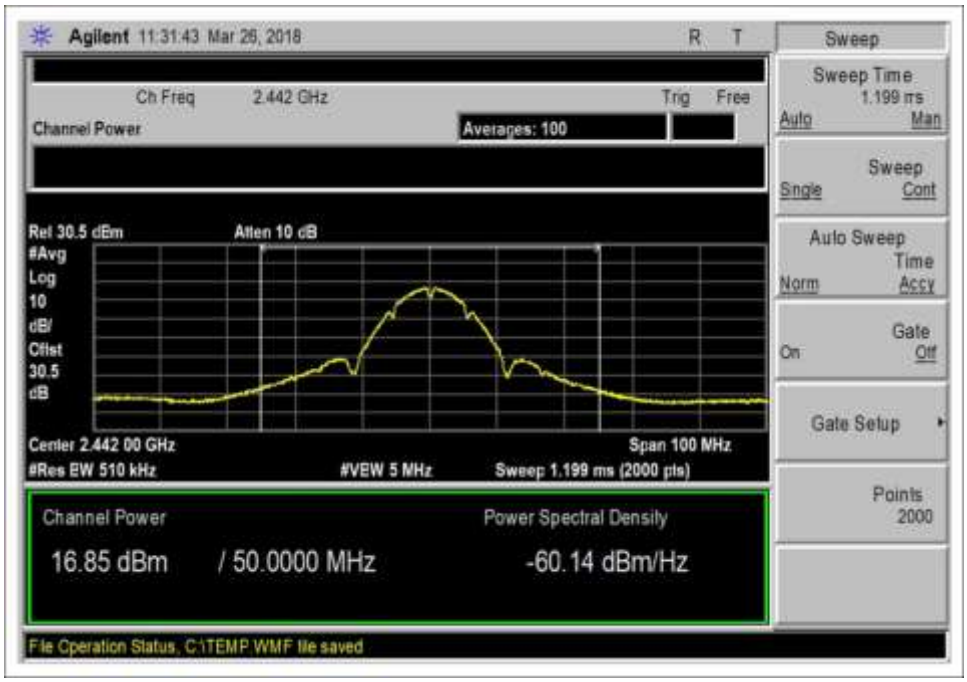
Parameter	Value
$V_{Nominal}$:	120Vac/60Hz
$V_{Minimum}$:	102Vac/60Hz
$V_{Maximum}$:	138Vac/60Hz

Power Output Test Data Summary - RF Conducted Measurement					
Measurement Option: AVGSA-1					
Frequency (MHz)	Modulation	Ant. Type / Gain (dBi)	Measured (dBm)	Limit (dBm)	Results
2412	Long CCK (802.11B, 1Mbps)	PCB Trace/3.3	16.31	≤ 30	Pass
2442	Long CCK (802.11B, 1Mbps)	PCB Trace/3.3	16.85	≤ 30	Pass
2462	Long CCK (802.11B, 1Mbps)	PCB Trace/3.3	16.22	≤ 30	Pass
2412	Long CCK (802.11B, 11Mbps)	PCB Trace/3.3	16.55	≤ 30	Pass
2442	Long CCK (802.11B, 11Mbps)	PCB Trace/3.3	**17.14**	≤ 30	Pass
2462	Long CCK (802.11B, 11Mbps)	PCB Trace/3.3	16.49	≤ 30	Pass
2412	OFDM (802.11G, 6Mbps)	PCB Trace/3.3	11.11	≤ 30	Pass
2442	OFDM (802.11G, 6Mbps)	PCB Trace/3.3	11.43	≤ 30	Pass
2462	OFDM (802.11G, 6Mbps)	PCB Trace/3.3	10.57	≤ 30	Pass
2412	OFDM (802.11G, 54Mbps)	PCB Trace/3.3	11.17	≤ 30	Pass
2442	OFDM (802.11G, 54Mbps)	PCB Trace/3.3	11.94	≤ 30	Pass
2462	OFDM (802.11G, 54Mbps)	PCB Trace/3.3	10.51	≤ 30	Pass
2412	BPSK (802.11N20, 6.5Mbps)	PCB Trace/3.3	6.72	≤ 30	Pass
2442	BPSK (802.11N20, 6.5Mbps)	PCB Trace/3.3	7.11	≤ 30	Pass
2462	BPSK (802.11N20, 6.5Mbps)	PCB Trace/3.3	6.10	≤ 30	Pass
2412	64-QAM (802.11N20, 65Mbps)	PCB Trace/3.3	6.45	≤ 30	Pass
2442	64-QAM (802.11N20, 65Mbps)	PCB Trace/3.3	7.02	≤ 30	Pass
2462	64-QAM (802.11N20, 65Mbps)	PCB Trace/3.3	5.87	≤ 30	Pass
2422	BPSK (802.11N40, 13.5Mbps)	PCB Trace/3.3	7.99	≤ 30	Pass
2442	BPSK (802.11N40, 13.5Mbps)	PCB Trace/3.3	8.47	≤ 30	Pass
2452	BPSK (802.11N40, 13.5Mbps)	PCB Trace/3.3	8.61	≤ 30	Pass
2422	64-QAM (802.11N40, 135Mbps)	PCB Trace/3.3	7.87	≤ 30	Pass
2442	64-QAM (802.11N40, 135Mbps)	PCB Trace/3.3	9.18	≤ 30	Pass
2452	64-QAM (802.11N40, 135Mbps)	PCB Trace/3.3	8.80	≤ 30	Pass

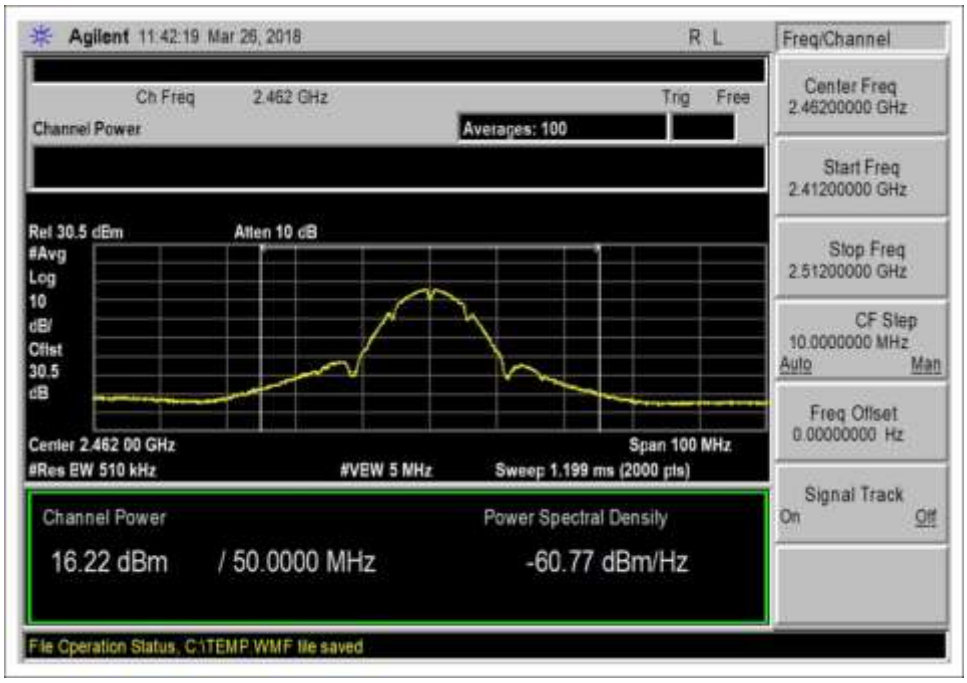
Plots



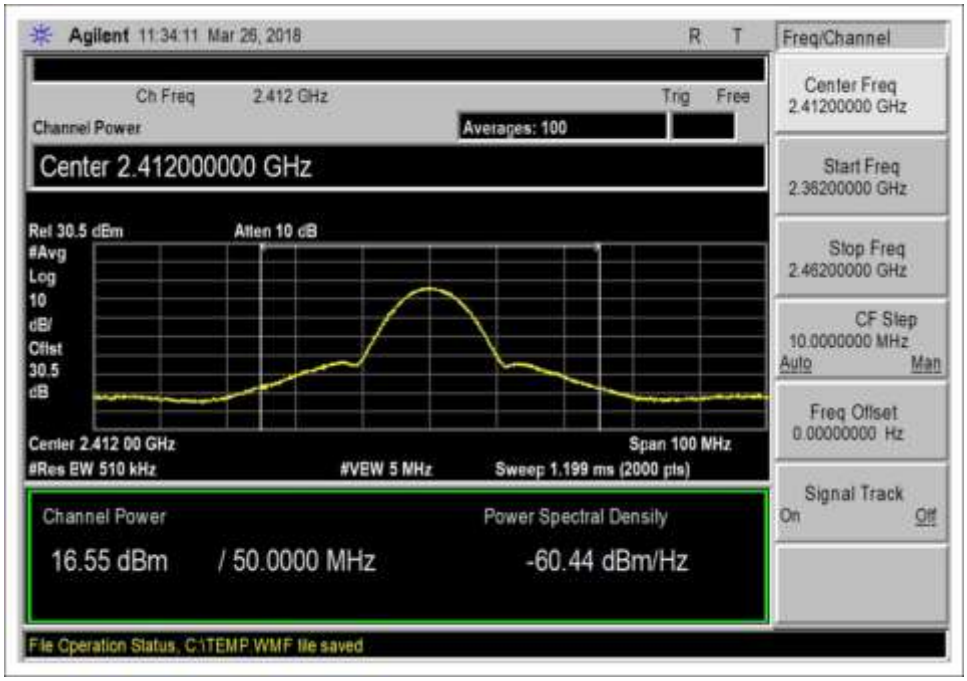
802.11B 1Mbps Low Channel



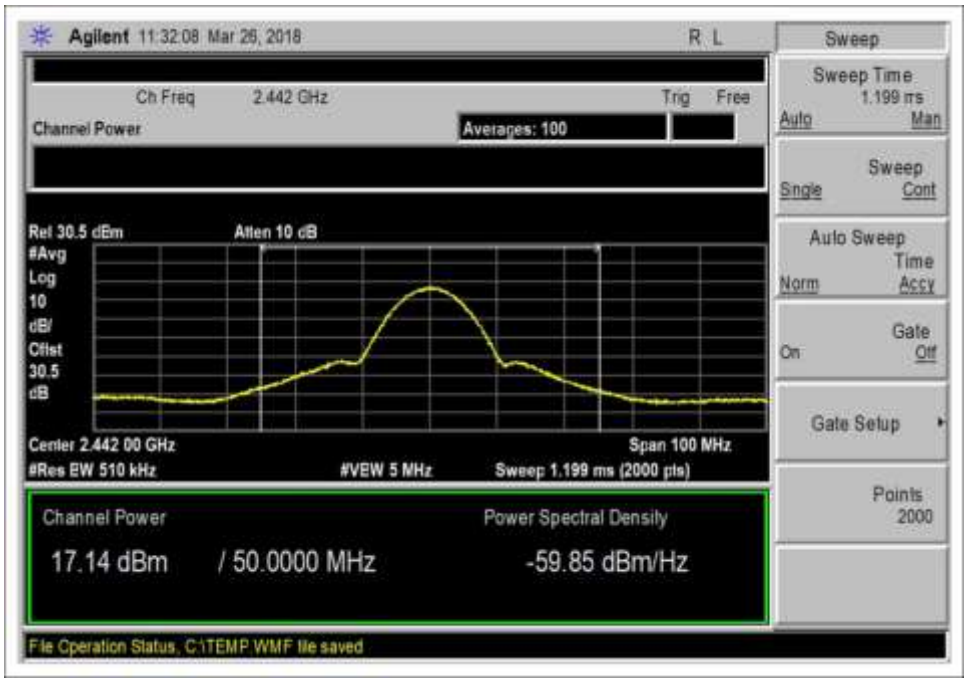
802.11B 1Mbps Middle Channel



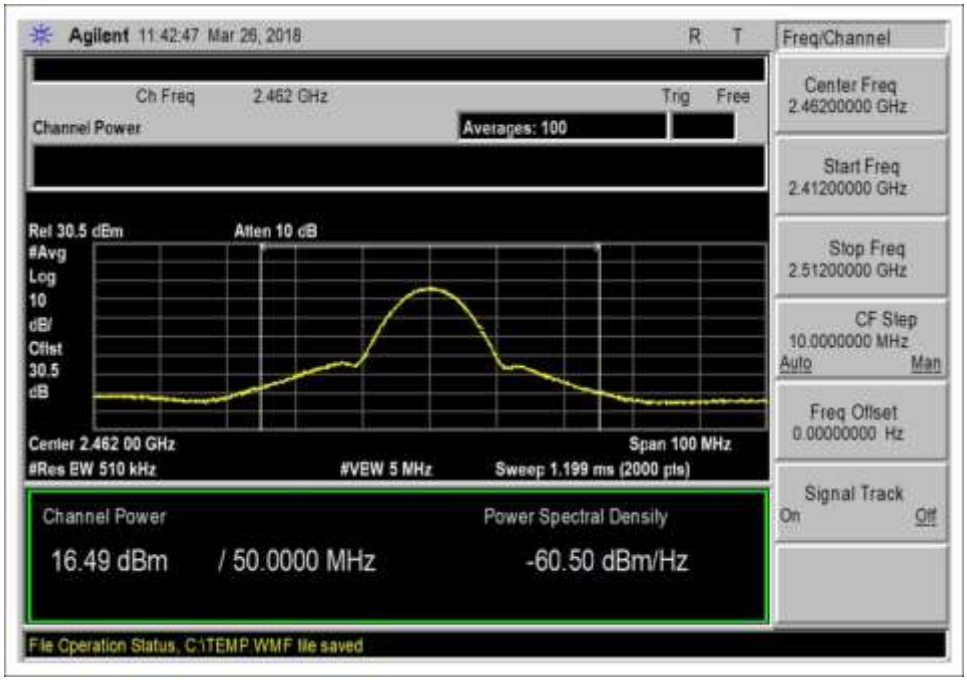
802.11B 1Mbps High Channel



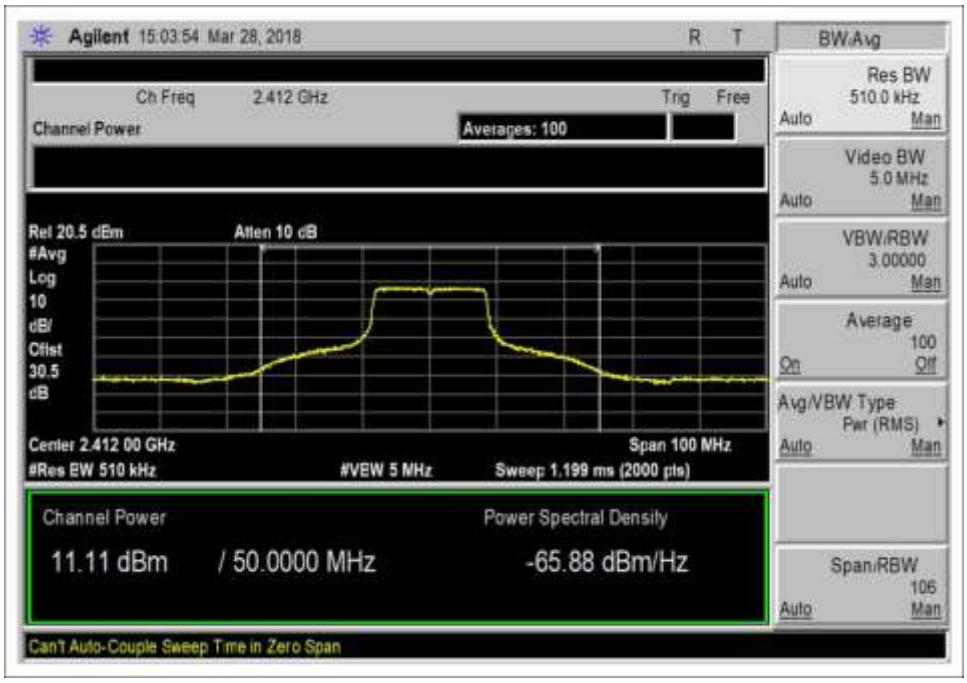
802.11B 11Mbps Low Channel



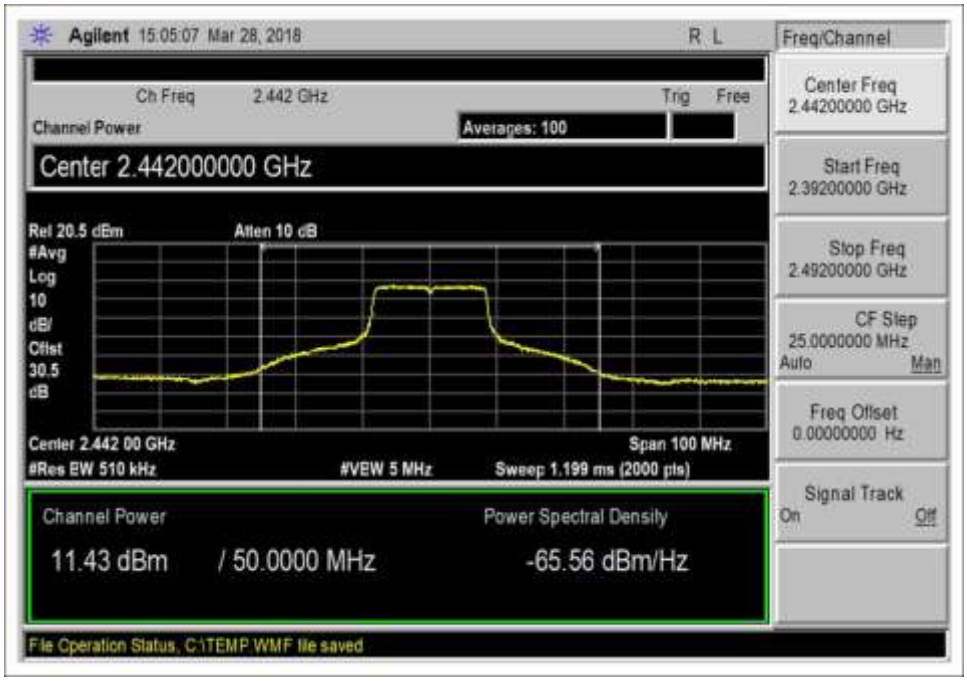
802.11B 11Mbps Middle Channel



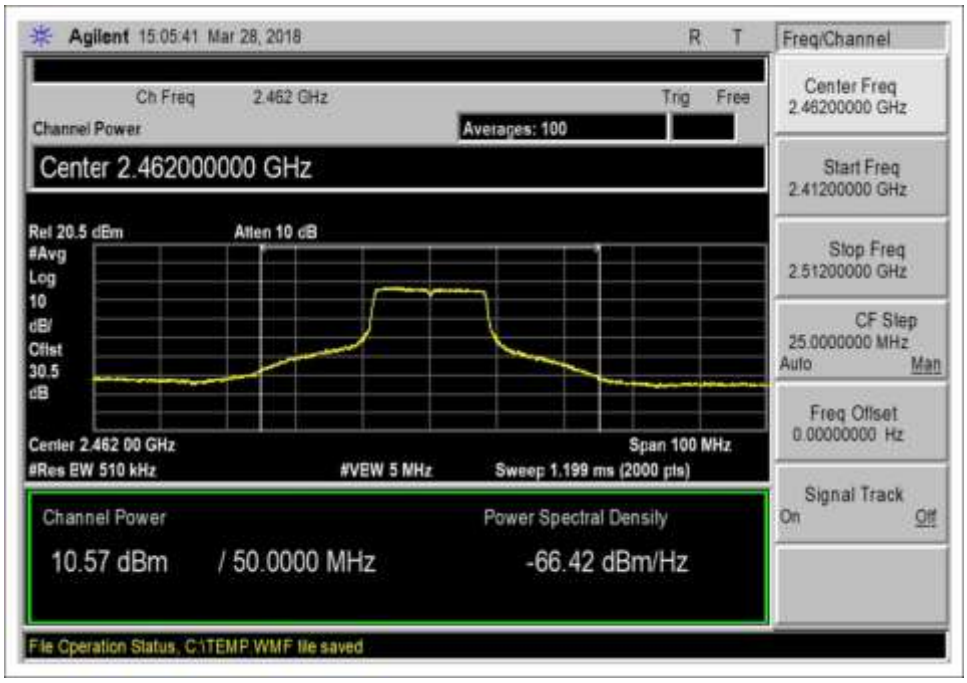
802.11B 11Mbps High Channel



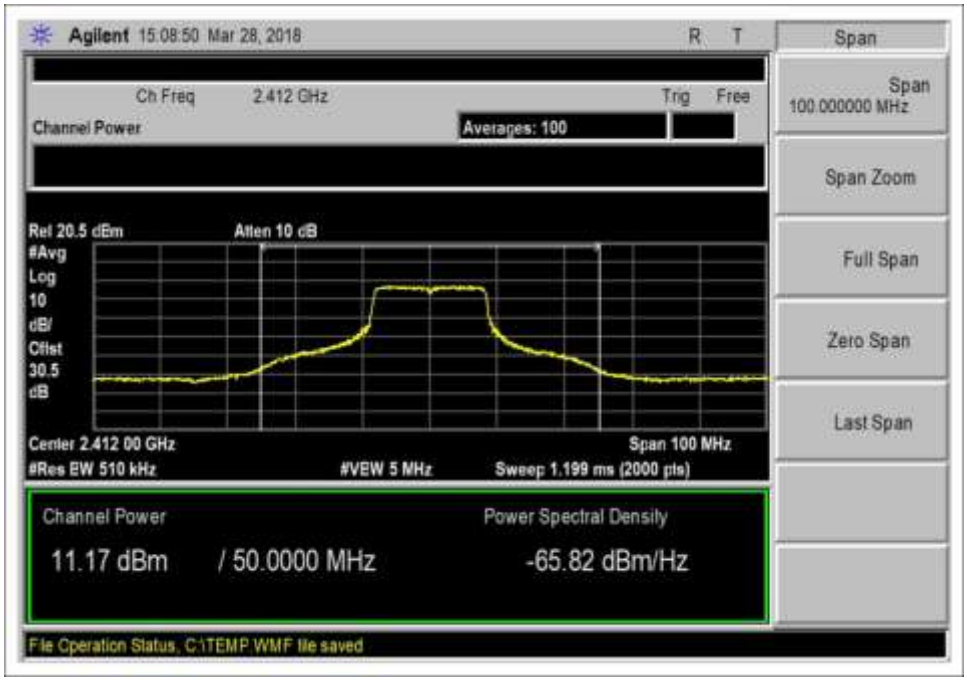
802.11G 6Mbps Low Channel



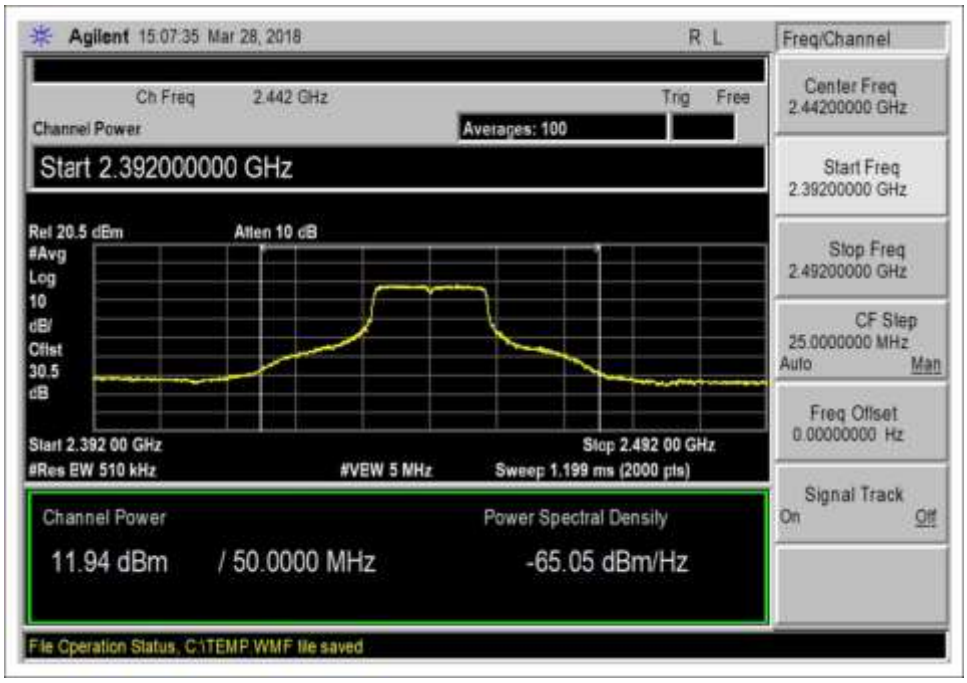
802.11G 6Mbps Middle Channel



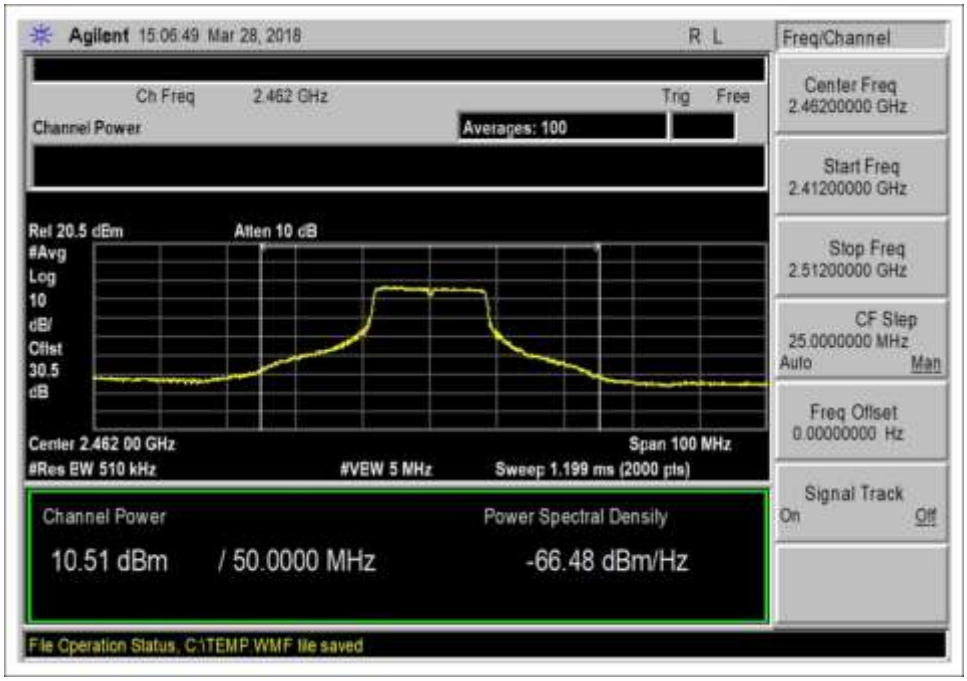
802.11G 6Mbps High Channel



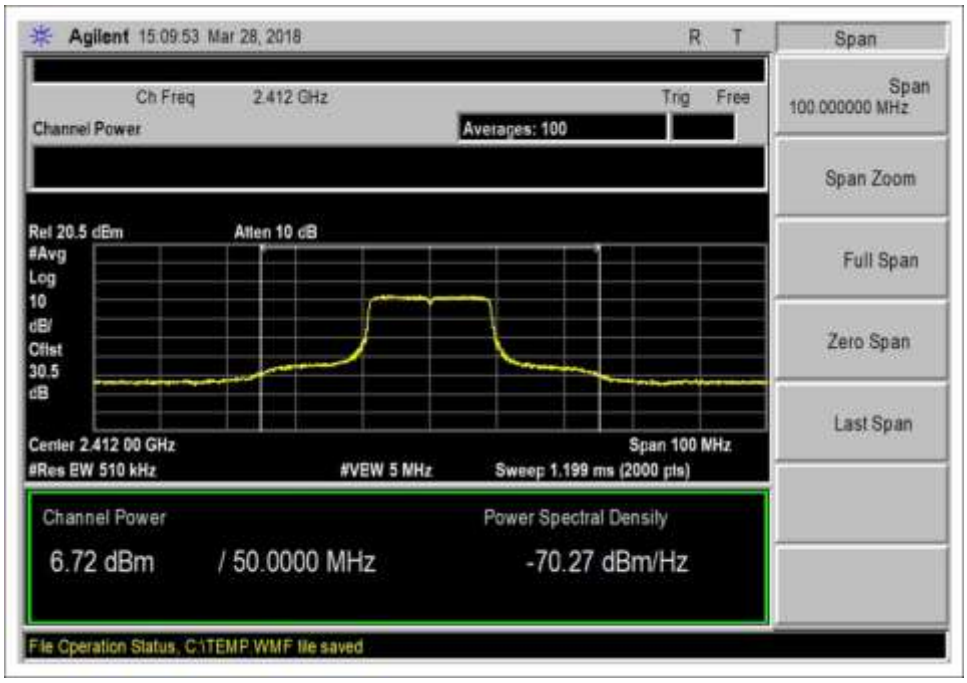
802.11G 54Mbps Low Channel



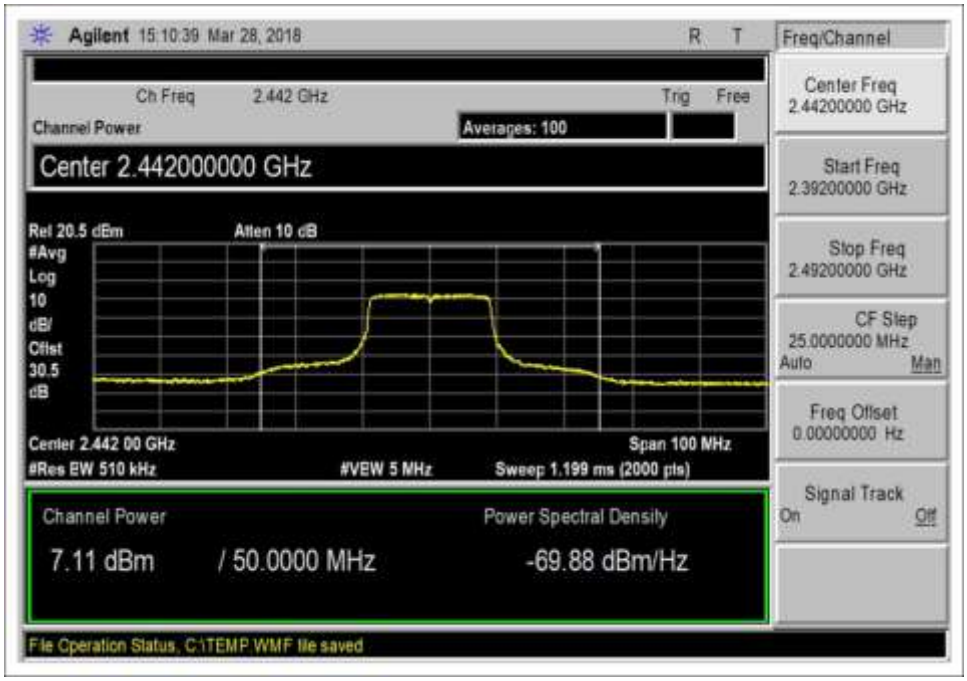
802.11G 54Mbps Middle Channel



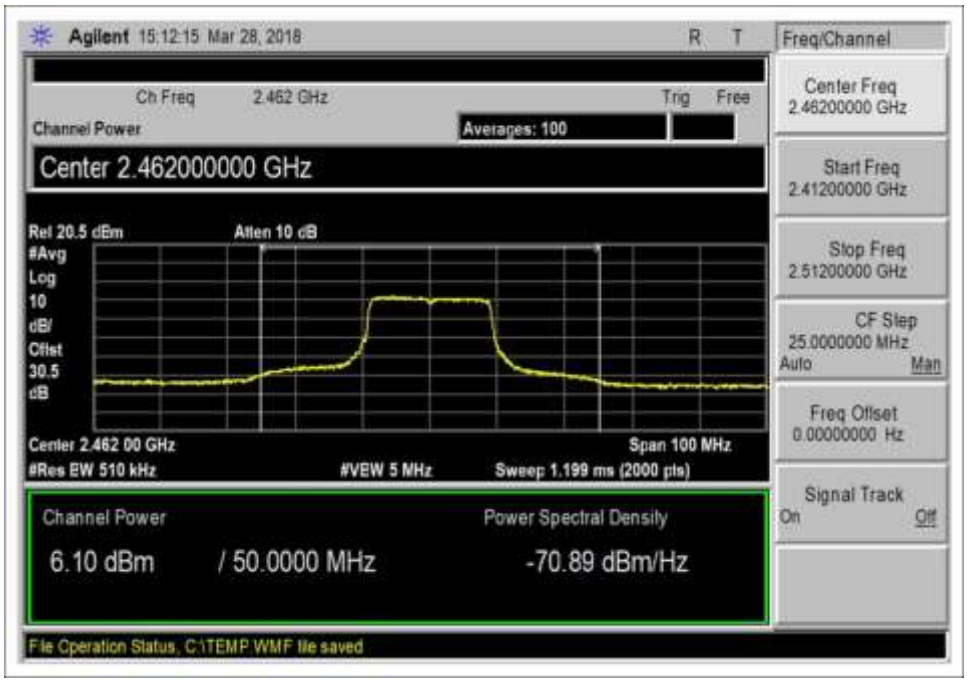
802.11G 54Mbps High Channel



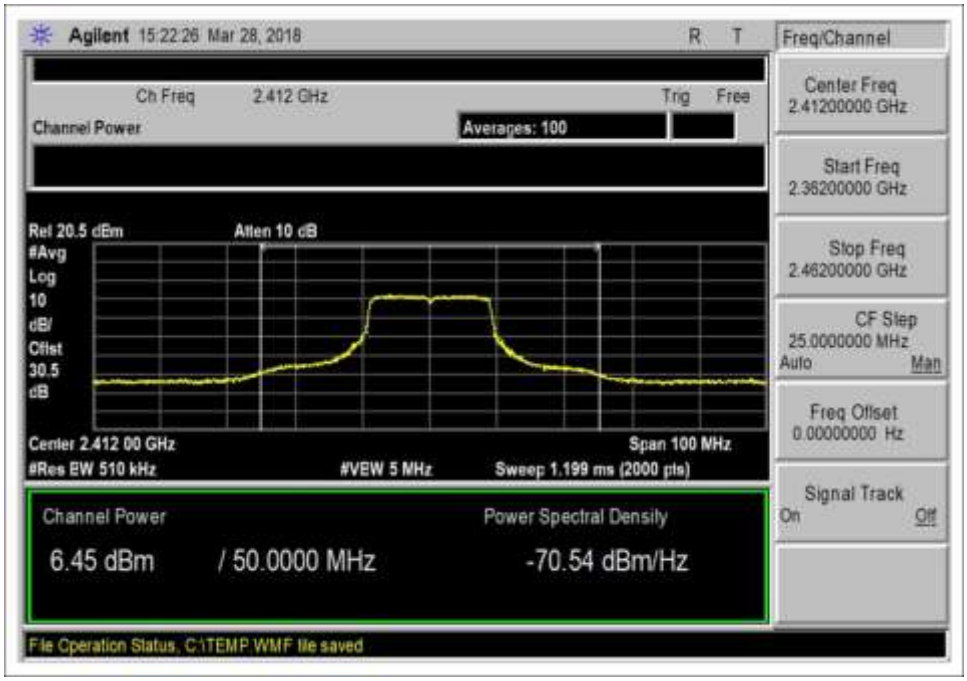
802.11N20 6.5Mbps Low Channel



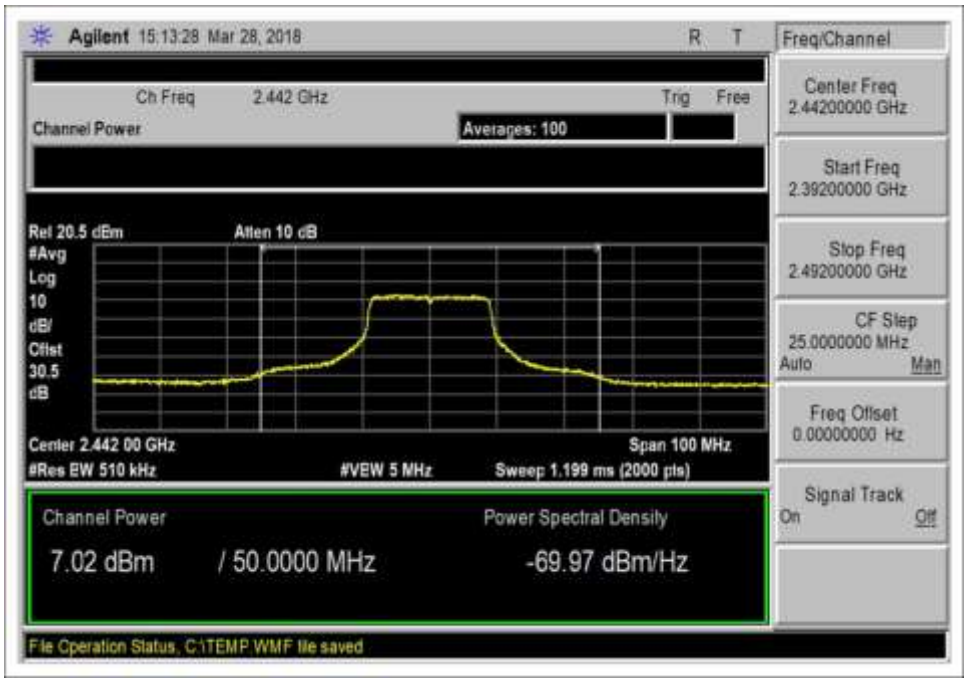
802.11N20 6.5Mbps Middle Channel



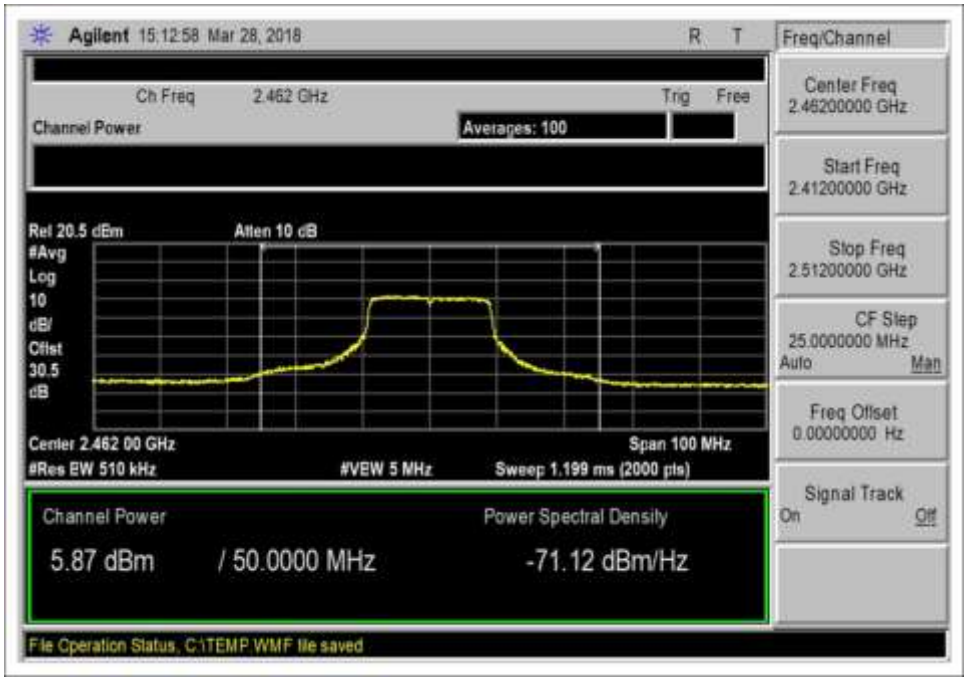
802.11N20 6.5Mbps High Channel



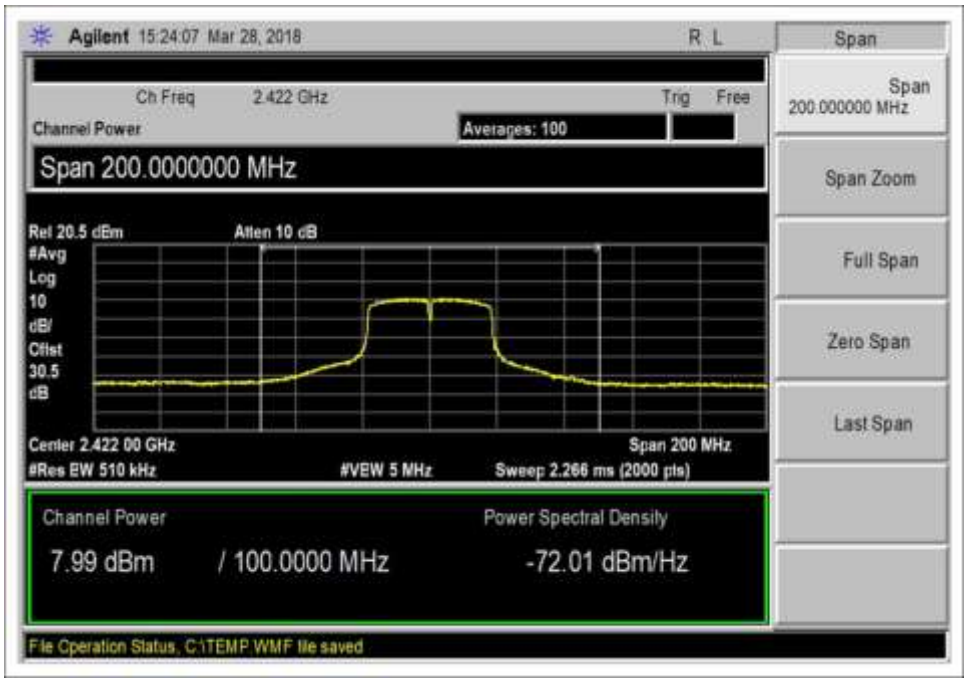
802.11N20 65Mbps Low Channel



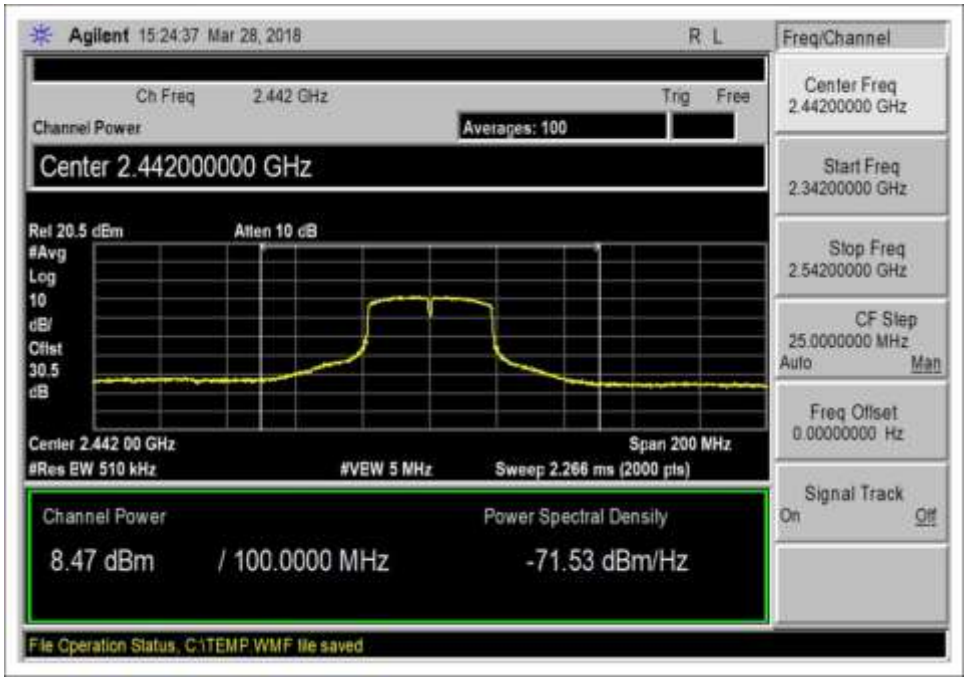
802.11N20 65Mbps Middle Channel



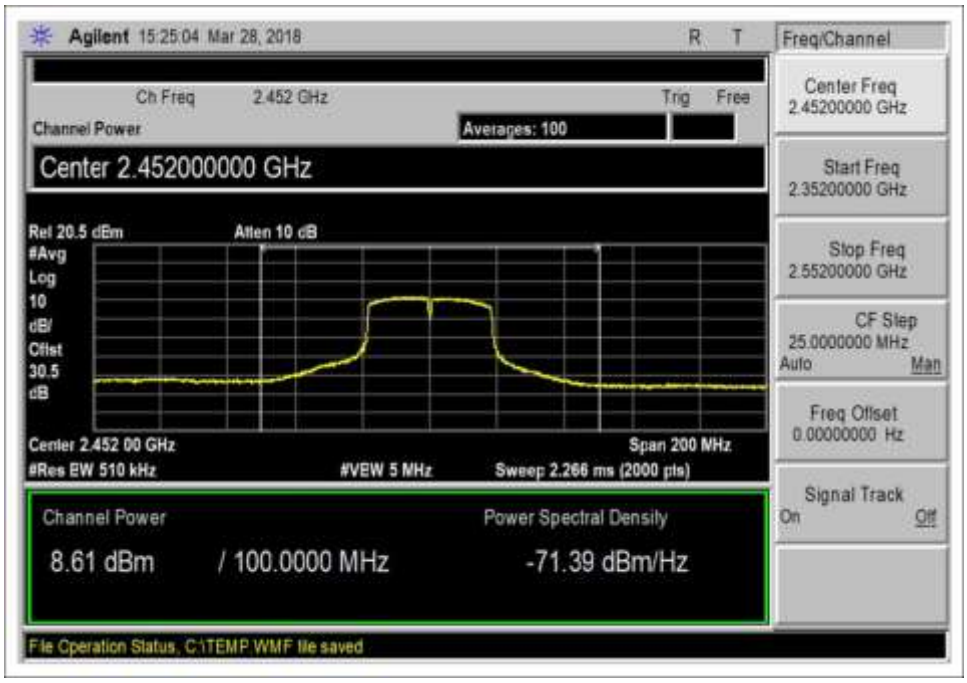
802.11N20 65Mbps High Channel



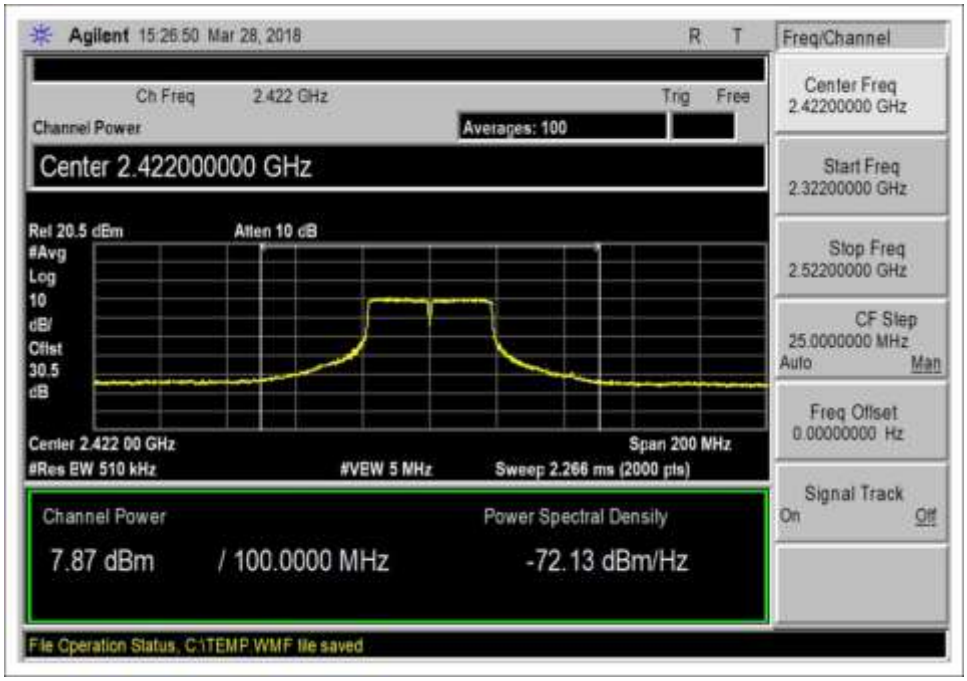
802.11N40 13.5Mbps Low Channel



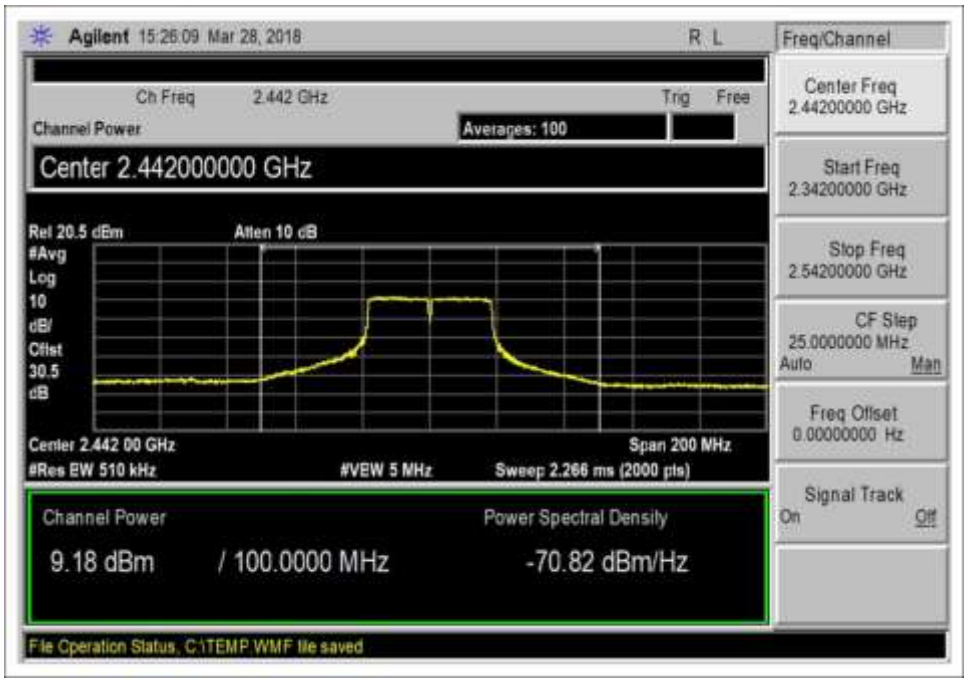
802.11N40 13.5Mbps Middle Channel



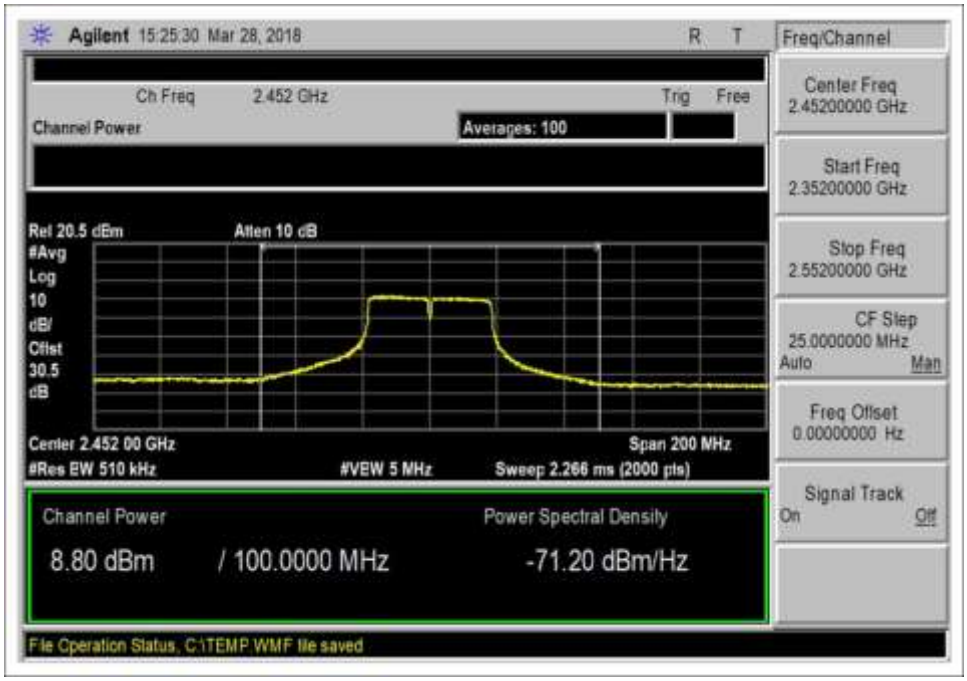
802.11N40 13.5Mbps High Channel



802.11N40 135Mbps Low Channel



802.11N40 135Mbps Middle Channel



802.11N40 135Mbps High Channel

Test Setup Photo

15.247(e) Power Spectral Density

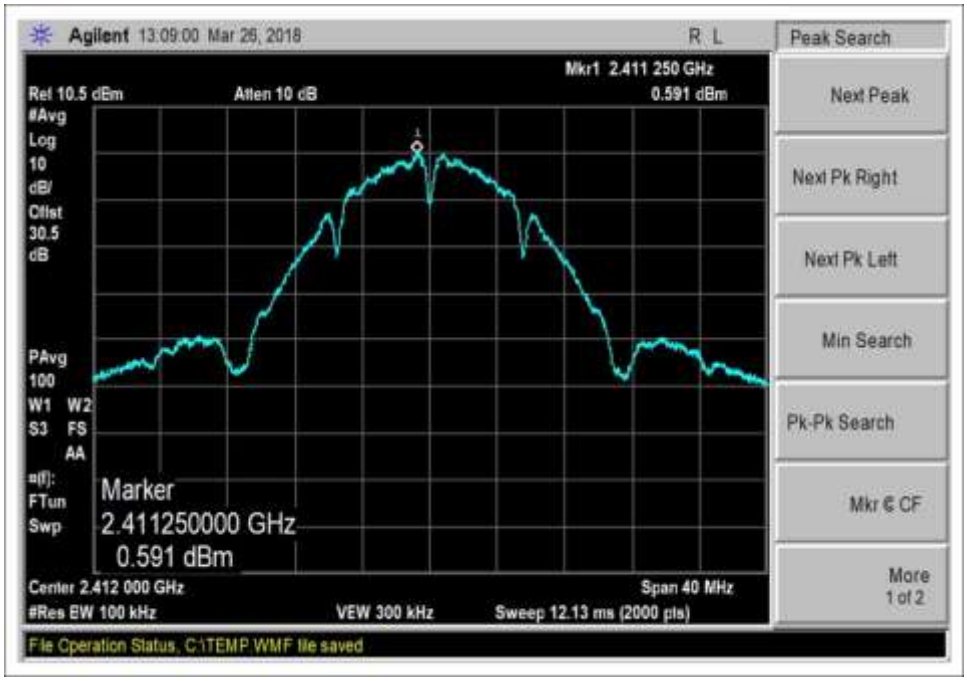
Test Setup / Conditions / Data			
Test Location:	Brea Lab D	Test Engineer:	Don Nguyen
Test Method:	ANSI C63.10 (2013), KDB 558074 D01 V.04 (04/05/2017)	Test Date(s):	3/26/2018
Configuration:	1		
Test Setup:	The EUT is placed on test bench. Antenna port is connected to spectrum analyzer. The EUT is set to continuously transmit at 100% duty cycle and maximum power. A support laptop is running software Atheros Radio Test 2 (ART2-GUI) to exercise the Wi-Fi module. Operating frequency: 2412-2462MHz Protocols and data rate: 802.11B, 1Mbps-11Mbps 802.11G, 6Mbps-54Mbps 802.11N20, 6.5Mbps (MCS0)-65Mbps (MCS7) 802.11N40, 13.5Mbps (MCS0)-135Mbps (MCS7) Firmware power: 802.11B, 18dBm (target) 802.11G, 11dBm 802.11N20, 6.5dBm 802.11N40, 8dBm Scanned frequency: 2412-2462MHz RBW=100kHz, VBW=300kHz		

Environmental Conditions			
Temperature (ºC)	24	Relative Humidity (%):	30.8

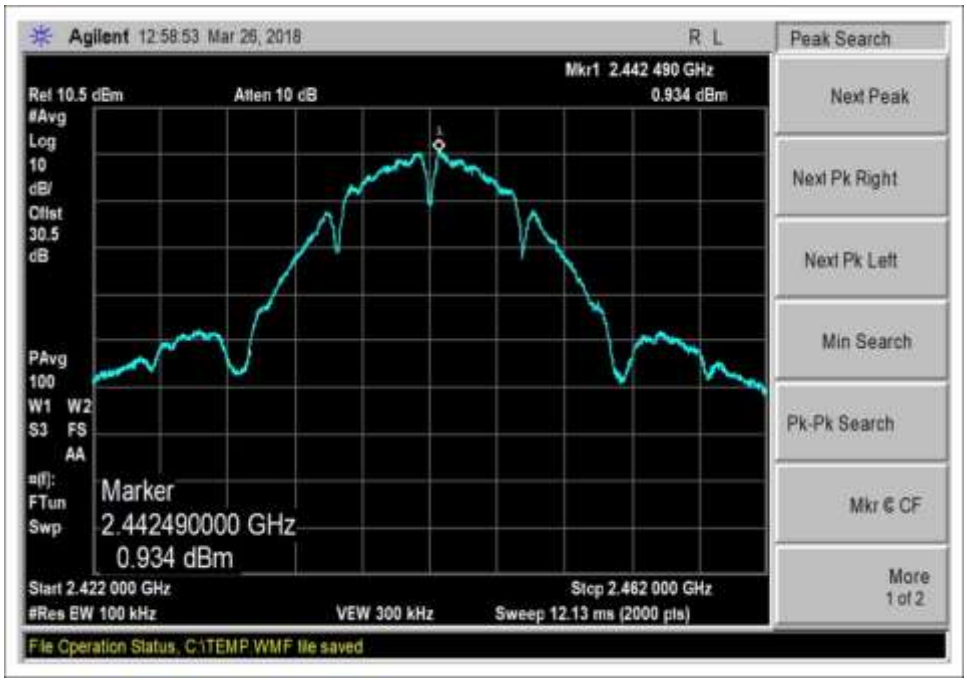
Test Equipment					
Asset#	**Description**	**Manufacturer**	**Model**	**Cal Date**	**Cal Due**
02869	Spectrum Analyzer	Agilent	E4440A	8/1/2017	8/1/2018
03432	Attenuator	Aeroflex/Weinschel	90-30-34	10/27/2017	10/27/2019
P06544	Cable	Astro Steel	32026-29094K-29094K-36TC	12/21/2017	12/21/2019

PSD Test Data Summary - RF Conducted Measurement				
Measurement Method: AVGPSD-1				
Frequency (MHz)	**Modulation**	**Measured (dBm/100kHz)**	**Limit (dBm/3kHz)**	**Results**
2412	Long CCK (802.11B, 1Mbps)	0.591	≤8	Pass
2442	Long CCK (802.11B, 1Mbps)	0.934	≤8	Pass
2462	Long CCK (802.11B, 1Mbps)	0.508	≤8	Pass
2412	Long CCK (802.11B, 11Mbps)	0.249	≤8	Pass
2442	Long CCK (802.11B, 11Mbps)	0.379	≤8	Pass
2462	Long CCK (802.11B, 11Mbps)	-0.186	≤8	Pass
2412	OFDM (802.11G, 6Mbps)	-12.963	≤8	Pass
2442	OFDM (802.11G, 6Mbps)	-12.909	≤8	Pass
2462	OFDM (802.11G, 6Mbps)	-13.662	≤8	Pass
2412	OFDM (802.11G, 54Mbps)	-13.732	≤8	Pass
2442	OFDM (802.11G, 54Mbps)	-12.949	≤8	Pass
2462	OFDM (802.11G, 54Mbps)	-13.115	≤8	Pass
2412	BPSK (802.11N20, 6.5Mbps)	-14.094	≤8	Pass
2442	BPSK (802.11N20, 6.5Mbps)	-13.038	≤8	Pass
2462	BPSK (802.11N20, 6.5Mbps)	-14.048	≤8	Pass
2412	64-QAM (802.11N20, 65Mbps)	-13.926	≤8	Pass
2442	64-QAM (802.11N20, 65Mbps)	-13.328	≤8	Pass
2462	64-QAM (802.11N20, 65Mbps)	-14.067	≤8	Pass
2422	BPSK (802.11N40, 13.5Mbps)	-14.853	≤8	Pass
2442	BPSK (802.11N40, 13.5Mbps)	-14.054	≤8	Pass
2452	BPSK (802.11N40, 13.5Mbps)	-14.119	≤8	Pass
2422	64-QAM (802.11N40, 135Mbps)	-15.439	≤8	Pass
2442	64-QAM (802.11N40, 135Mbps)	-13.968	≤8	Pass
2452	64-QAM (802.11N40, 135Mbps)	-14.796	≤8	Pass

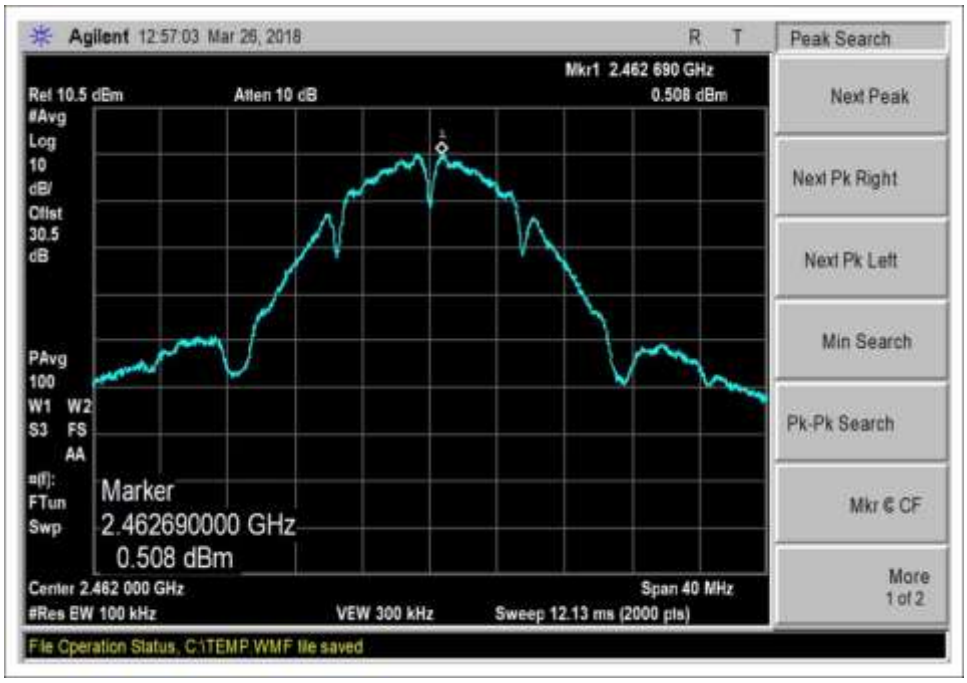
Plots



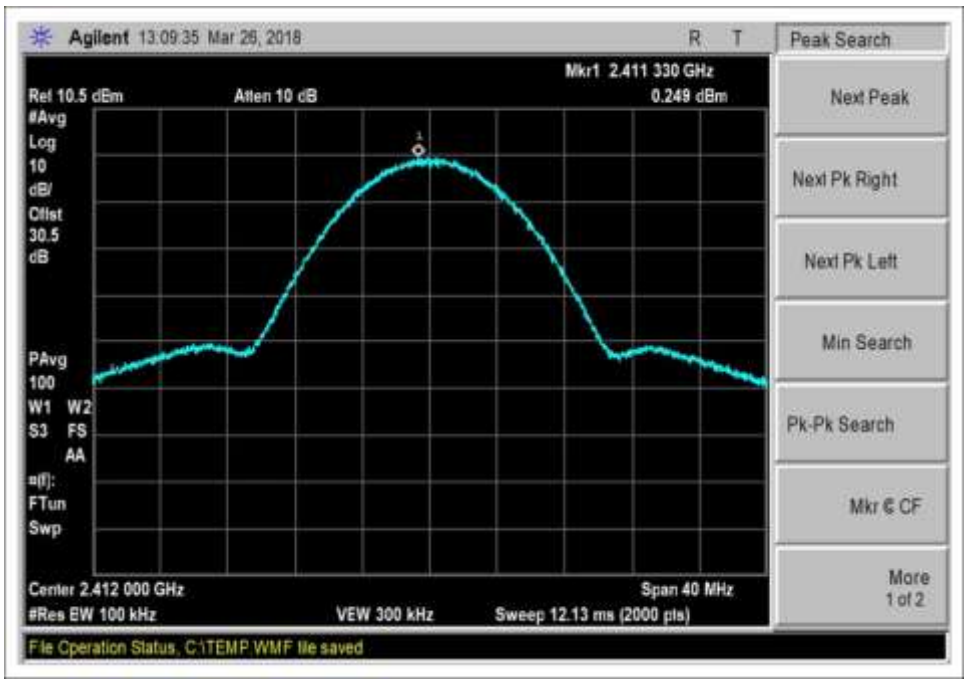
802.11B 1Mbps Low Channel



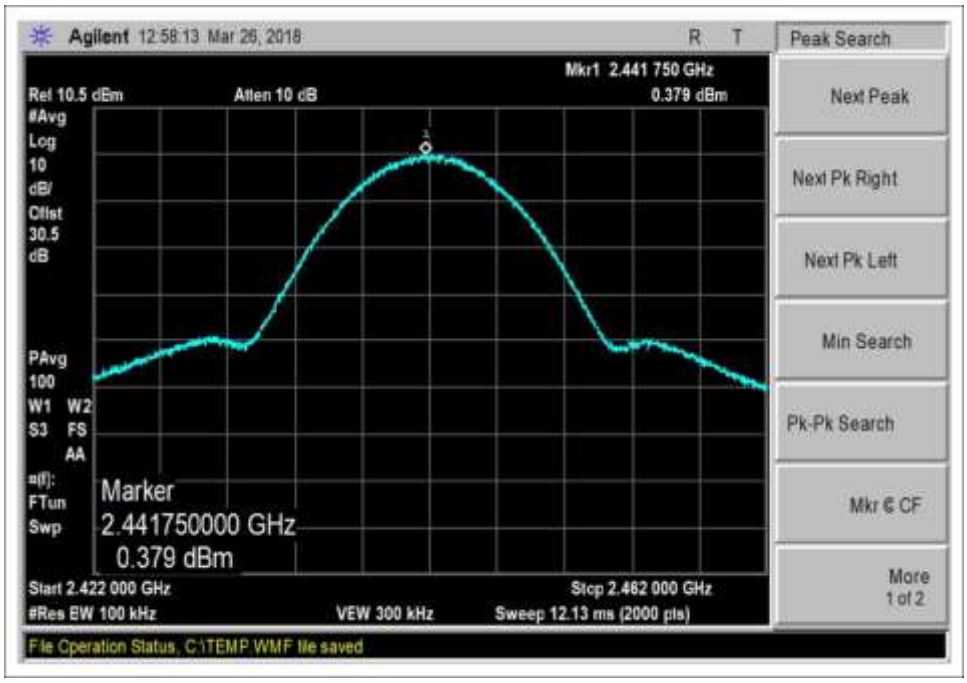
802.11B 1Mbps Middle Channel



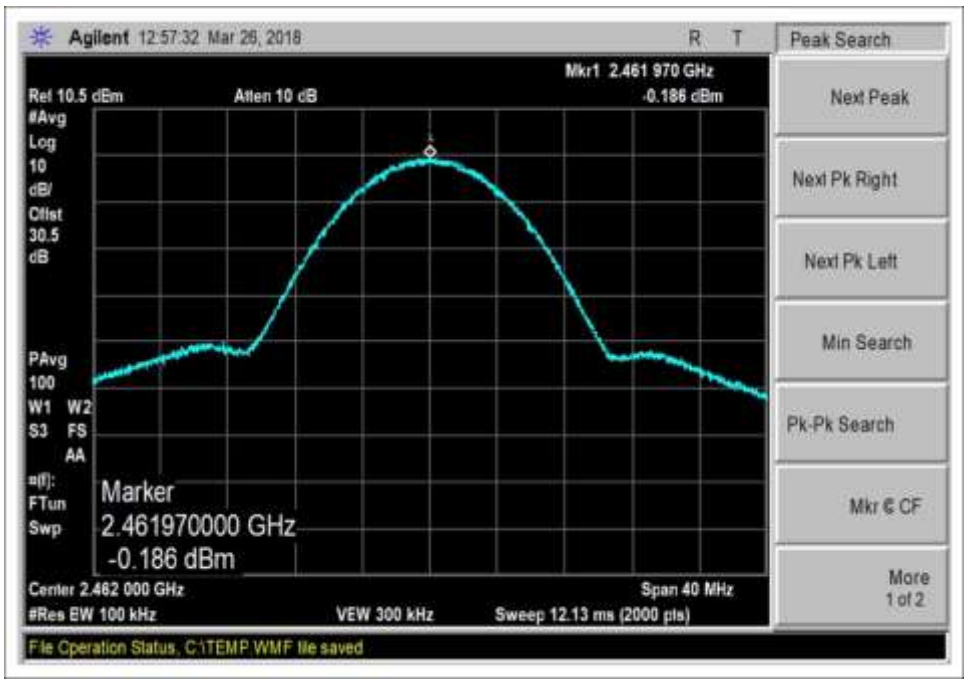
802.11B 1Mbps High Channel



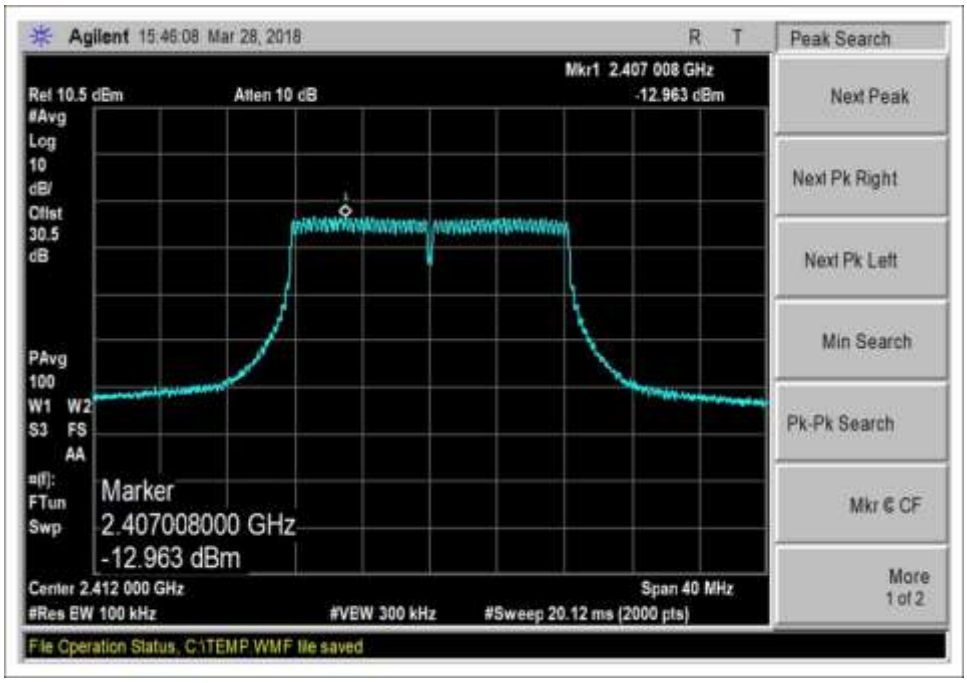
802.11B 11Mbps Low Channel



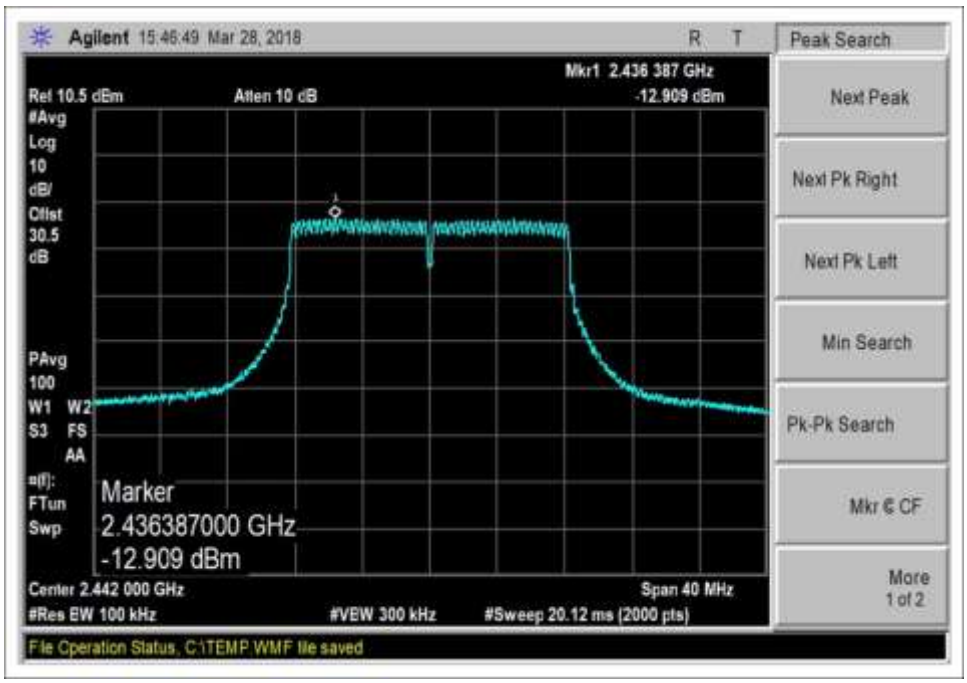
802.11B 11Mbps Middle Channel



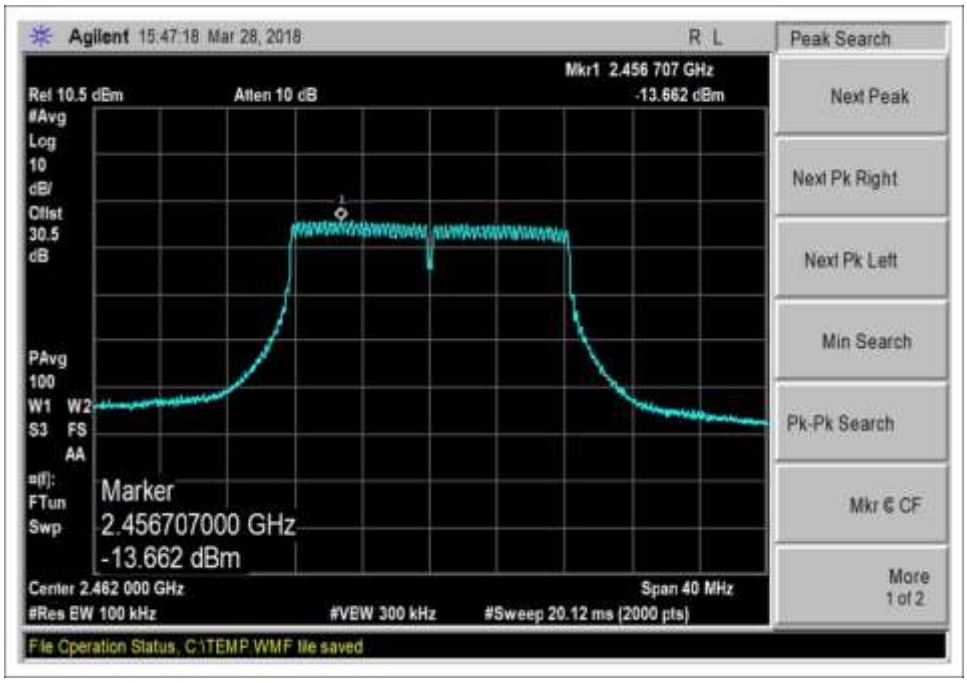
802.11B 11Mbps High Channel



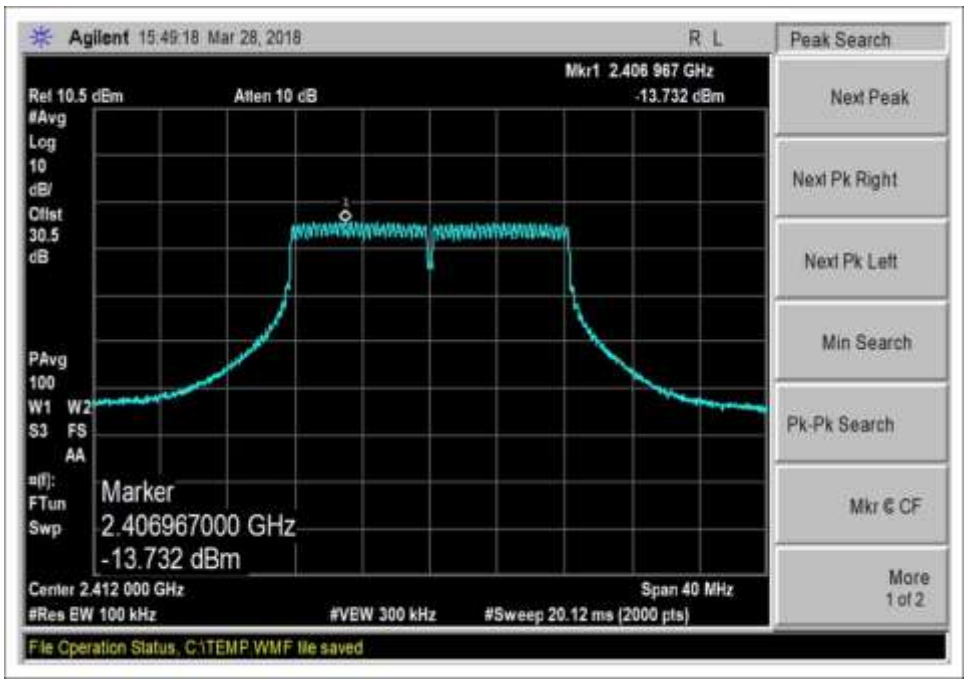
802.11G 6Mbps Low Channel



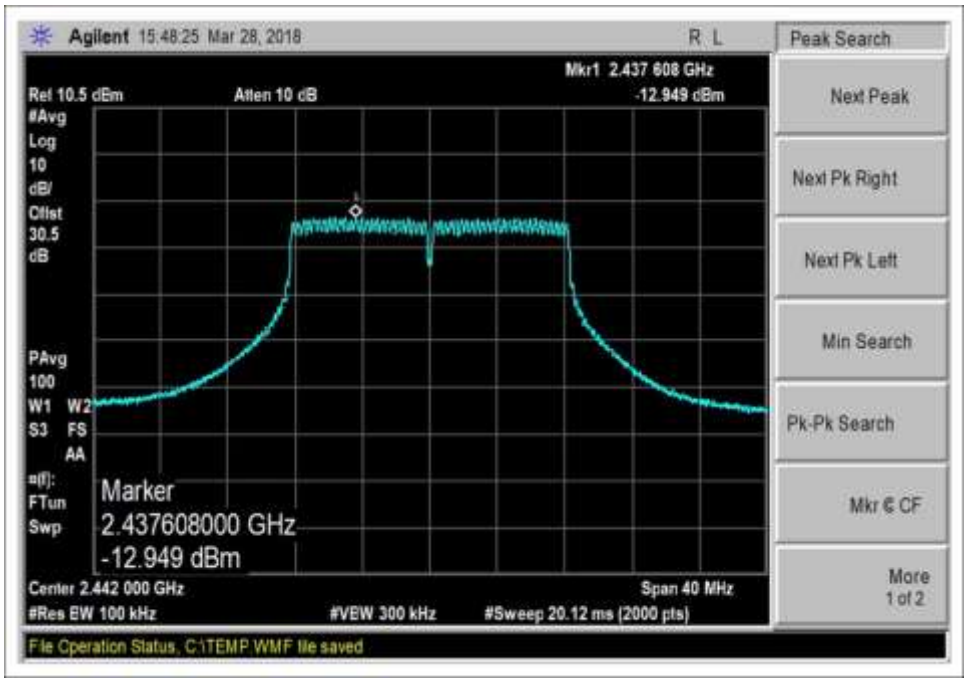
802.11G 6Mbps Middle Channel



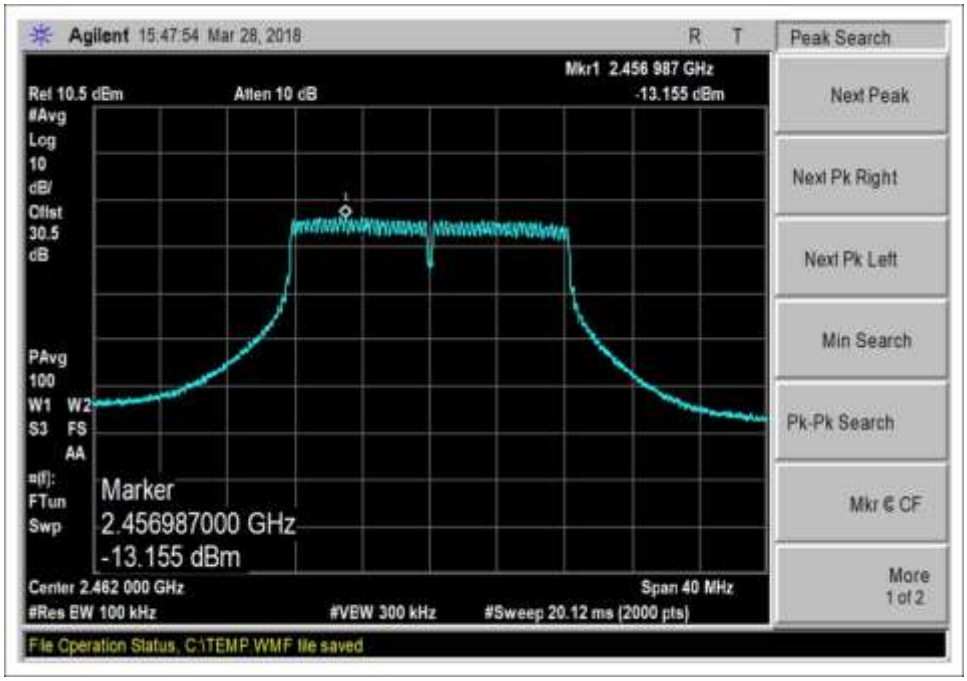
802.11G 6Mbps High Channel



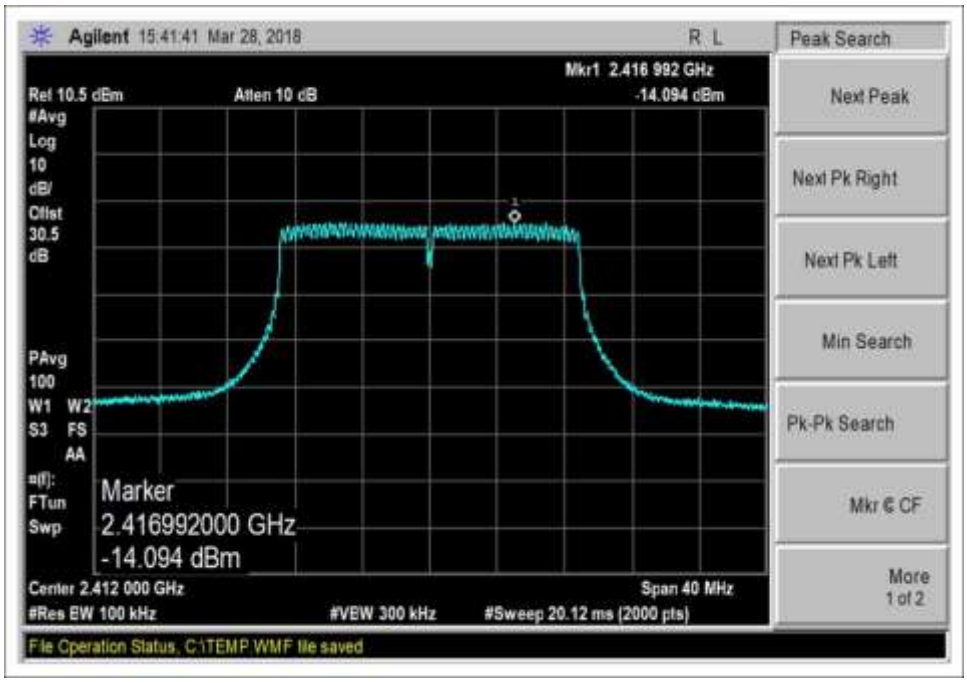
802.11G 24Mbps Low Channel



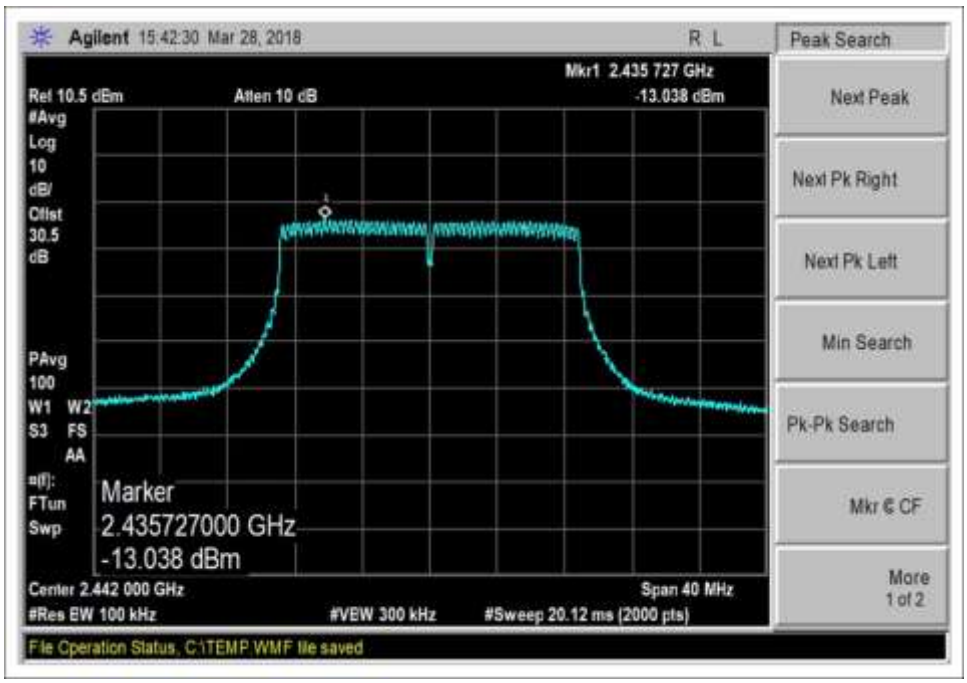
802.11G 24Mbps Middle Channel



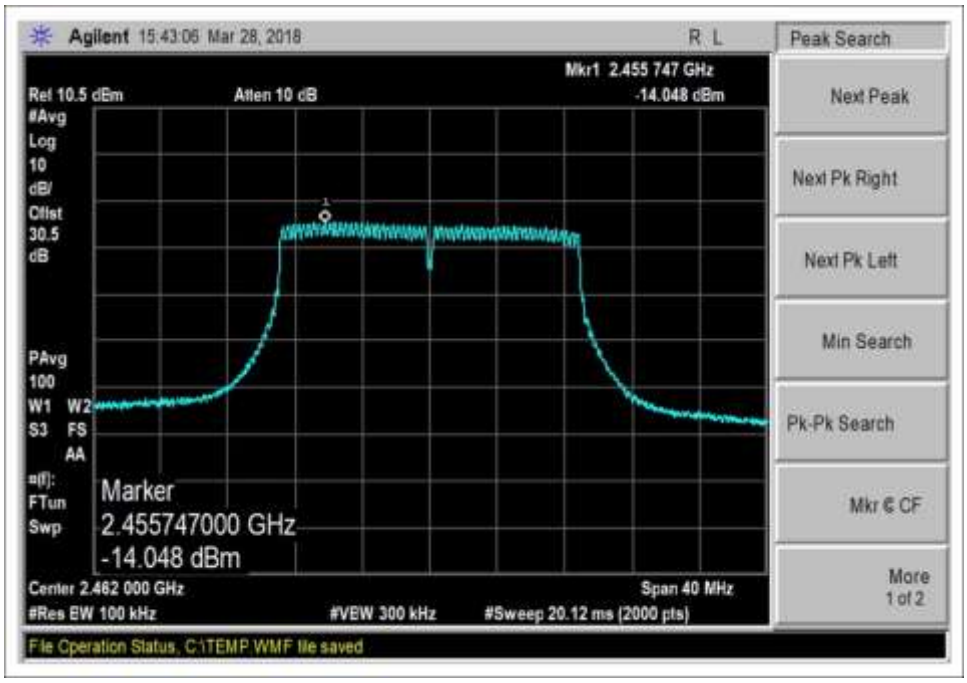
802.11G 24Mbps Middle Channel



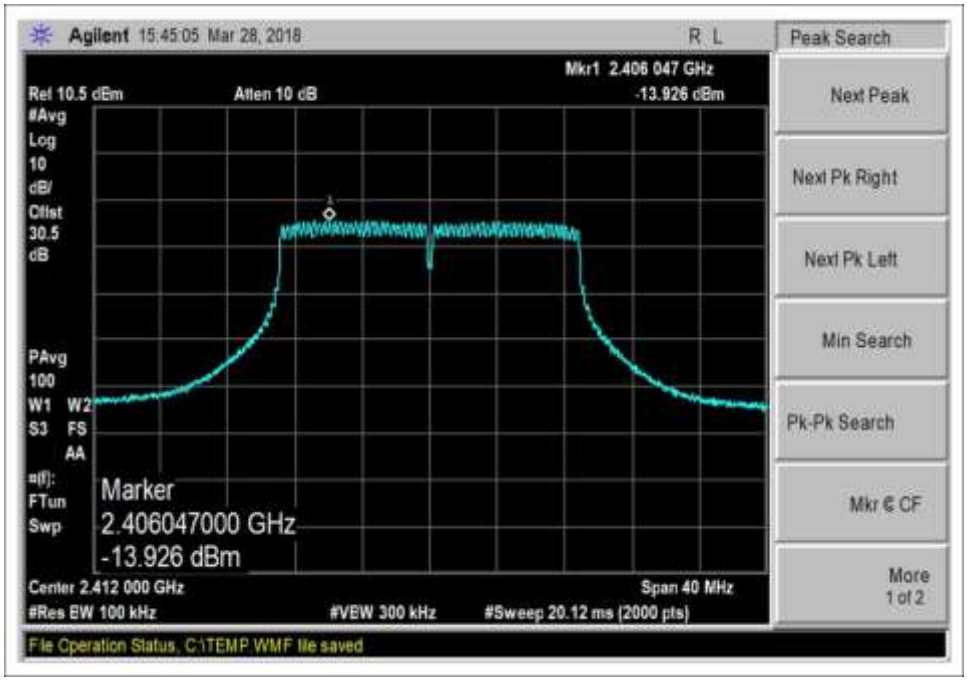
802.11N20 6.5Mbps Low Channel



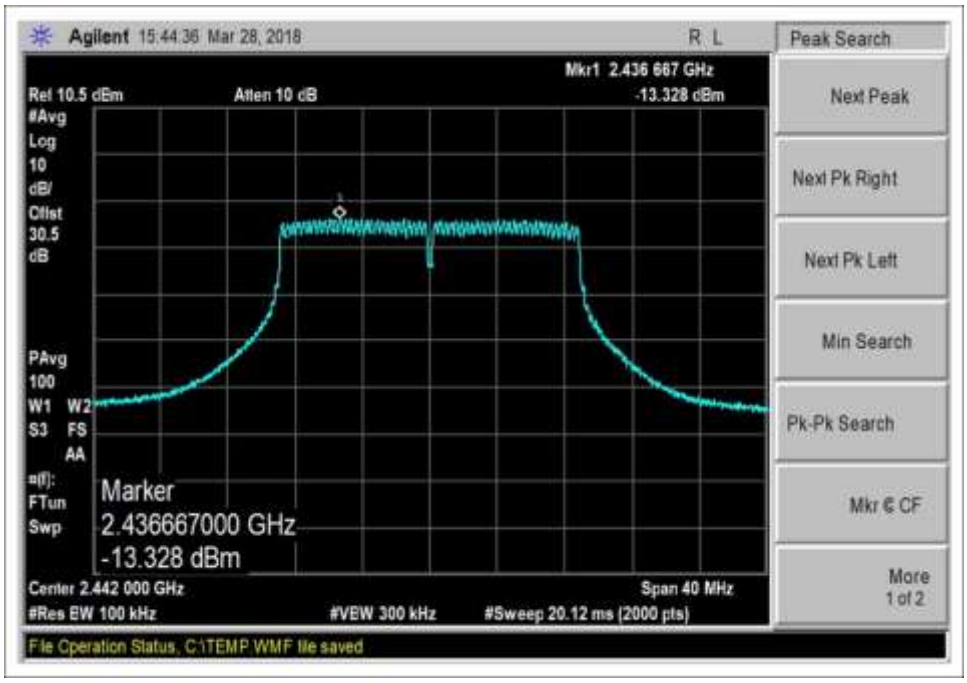
802.11N20 6.5Mbps Middle Channel



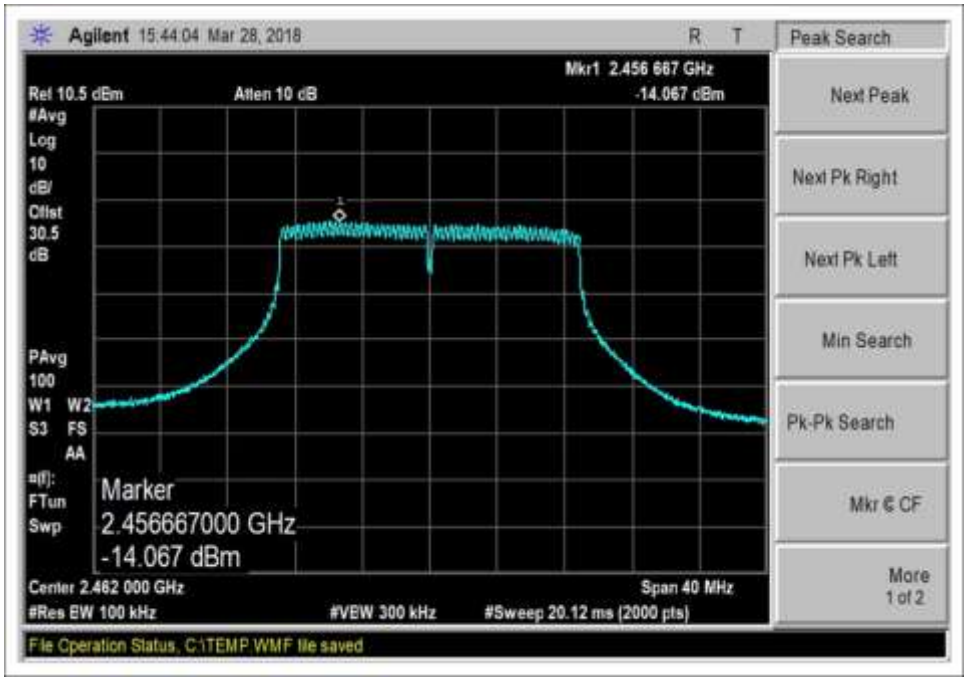
802.11N20 6.5Mbps High Channel



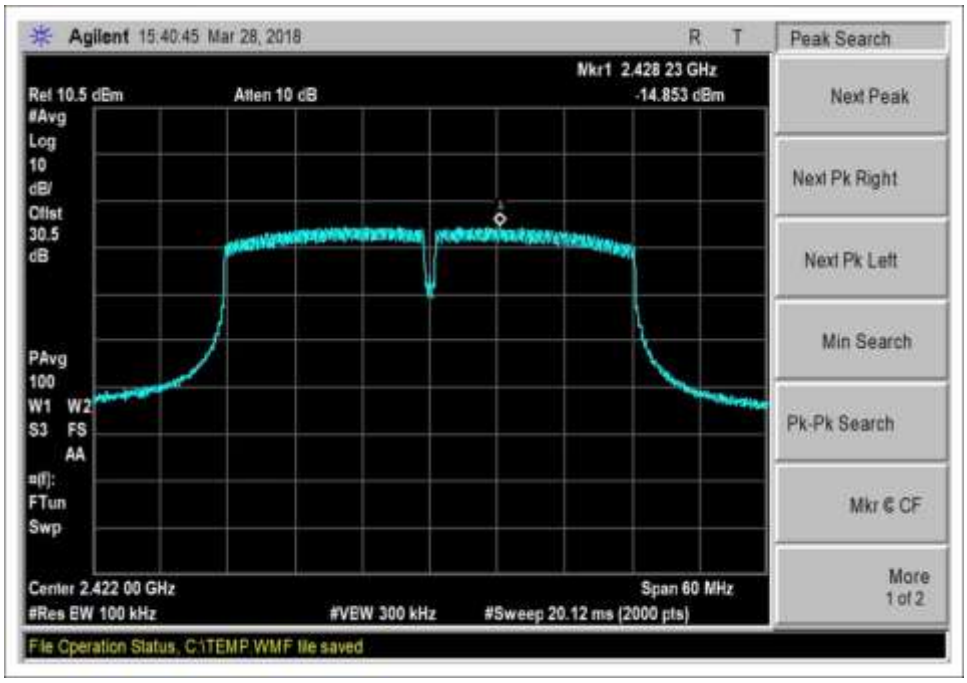
802.11N20 65Mbps Low Channel



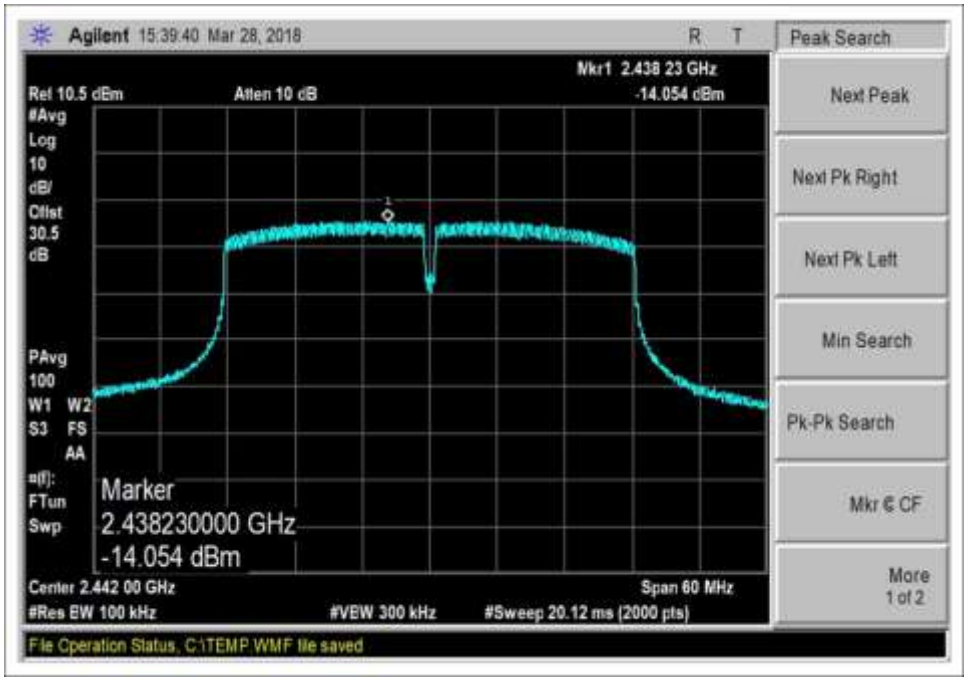
802.11N20 65Mbps Middle Channel



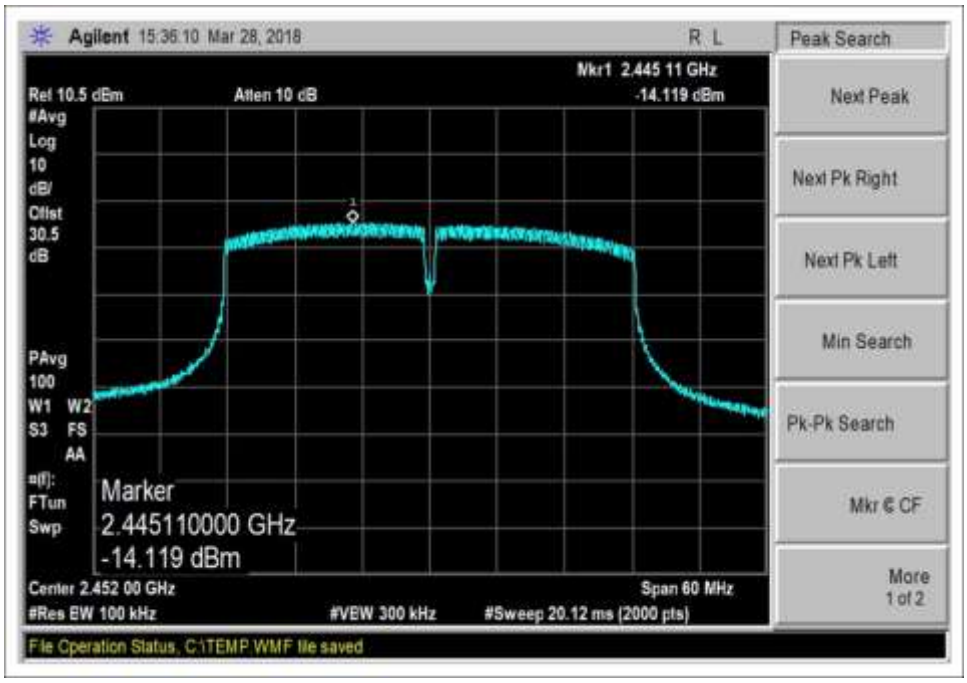
802.11N20 65Mbps High Channel



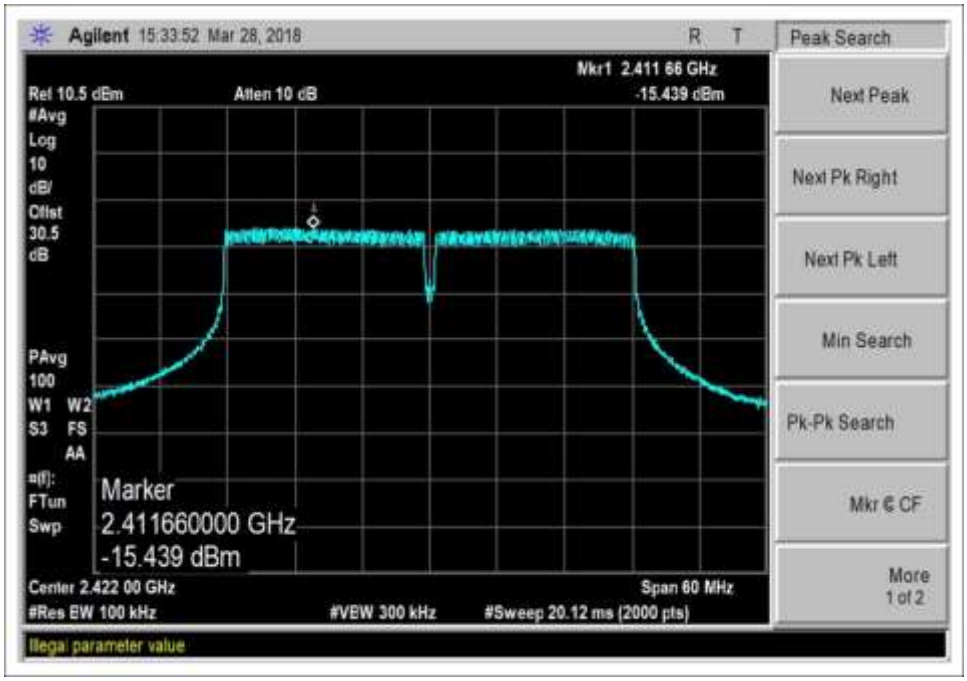
802.11N40 13.5Mbps Low Channel



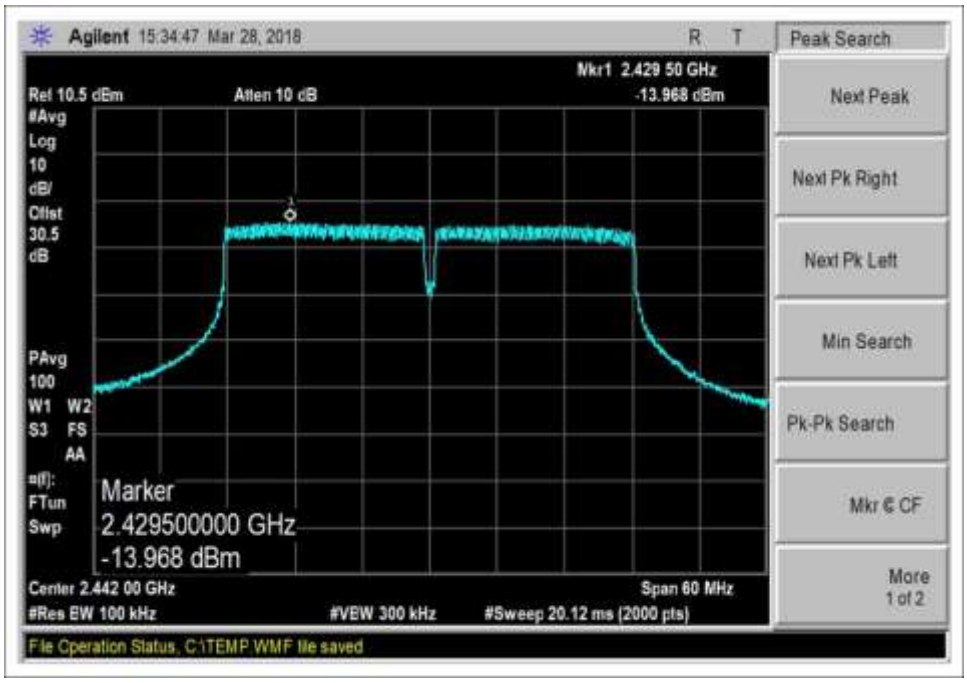
802.11N40 13.5Mbps Middle Channel



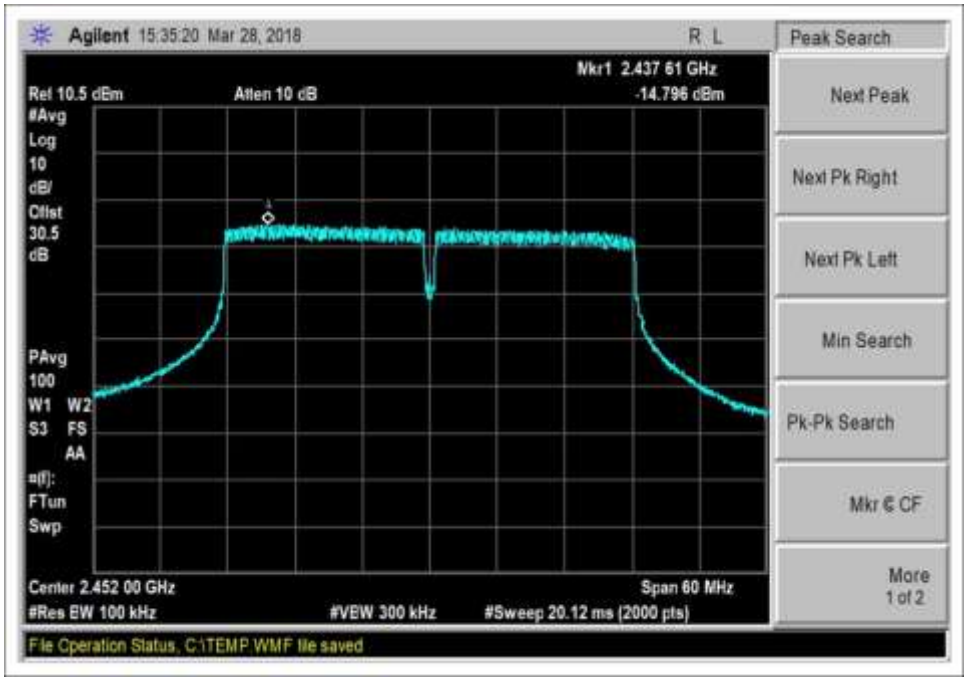
802.11N40 13.5Mbps High Channel



802.11N40 135Mbps Low Channel



802.11N40 135Mbps Middle Channel



802.11N40 135Mbps High Channel

Test Setup Photo

15.247(d) RF Conducted Emissions & Band Edge

Test Setup / Conditions / Data

Test Location:	CKC Laboratories Inc. • 110 N. Olinda Place • Brea, CA 92823 • 714-993-6112		
Customer:	**KE2 Therm Solutions**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**100985**	Date:	3/29/2018
Test Type:	**Maximized Emissions**	Time:	09:30:08
Tested By:	Don Nguyen	Sequence#:	1
Software:	EMITest 5.03.11		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

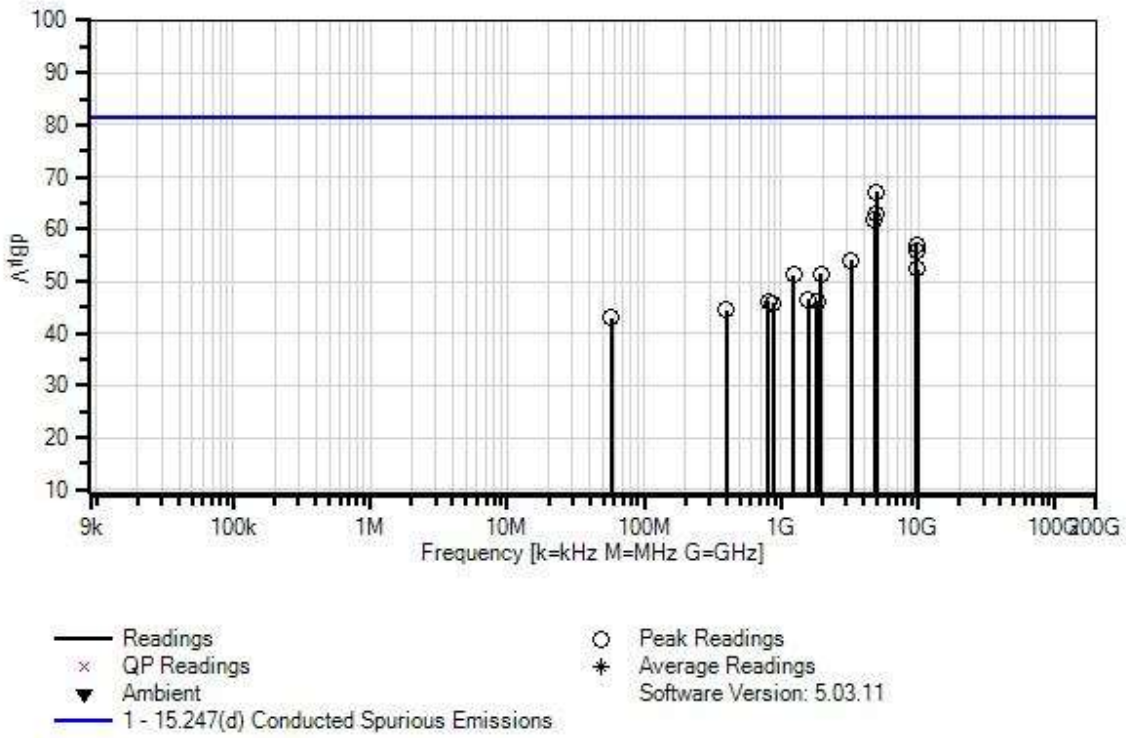
The EUT is placed on test bench. Antenna port is connected to spectrum analyzer. The EUT is set to continuously transmit at 100% duty cycle and maximum power. A support laptop is running software Atheros Radio Test 2 (ART2-GUI) to exercise the Wi-Fi module.
Operating frequency: 2412-2462MHz
Protocols and data rate:
802.11B, 1Mbps-11Mbps

Test Location: Brea Lab D
Test Method: ANSI C63.10 (2013), KDB 558074 D01 V.04 (04/05/2017)
Temperature (ºC): 23
Relative Humidity (%): 31

Scanned frequency: 9kHz-25GHz
RBW=100kHz, VBW=300kHz

Note: Data presents worst case modulation/data rate (11Mbps)

KE2 Therm Solutions WO#: 100985 Sequence#: 1 Date: 3/29/2018
15.247(d) Conducted Spurious Emissions Test Distance: None Antenna Port



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06544	Cable	32026-29094K-29094K-36TC	12/21/2017	12/21/2019
	AN02869	Spectrum Analyzer	E4440A	8/1/2017	8/1/2018
T2	AN03431	Attenuator	89-20-21	12/19/2017	12/19/2019

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	4924.330M	46.1	+1.6	+19.5			+0.0	67.2	81.6	-14.4	Anten
2	4884.000M	41.9	+1.6	+19.5			+0.0	63.0	81.6	-18.6	Anten
3	4824.330M	40.7	+1.6	+19.5			+0.0	61.8	81.6	-19.8	Anten
4	9648.000M	35.5	+1.8	+19.7			+0.0	57.0	81.6	-24.6	Anten
5	9768.000M	34.3	+1.8	+19.7			+0.0	55.8	81.6	-25.8	Anten
6	3216.100M	33.8	+1.1	+19.2			+0.0	54.1	81.6	-27.5	Anten
7	9848.000M	30.8	+1.8	+19.7			+0.0	52.3	81.6	-29.3	Anten
8	1935.950M	31.5	+0.7	+19.3			+0.0	51.5	81.6	-30.1	Anten
9	1231.925M	31.4	+0.6	+19.3			+0.0	51.3	81.6	-30.3	Anten
10	1584.200M	26.7	+0.6	+19.3			+0.0	46.6	81.6	-35.0	Anten
11	804.050M	26.4	+0.5	+19.3			+0.0	46.2	81.6	-35.4	Anten
12	1828.325M	26.1	+0.7	+19.3			+0.0	46.1	81.6	-35.5	Anten
13	880.175M	26.0	+0.5	+19.3			+0.0	45.8	81.6	-35.8	Anten
14	399.800M	25.0	+0.3	+19.2			+0.0	44.5	81.6	-37.1	Anten
15	57.500M	23.5	+0.2	+19.2			+0.0	42.9	81.6	-38.7	Anten

Test Location:	CKC Laboratories Inc. • 110 N. Olinda Place • Brea, CA 92823 • 714-993-6112		
Customer:	**KE2 Therm Solutions**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**100985**	Date:	3/29/2018
Test Type:	**Maximized Emissions**	Time:	09:19:59
Tested By:	Don Nguyen	Sequence#:	2
Software:	EMITest 5.03.11		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

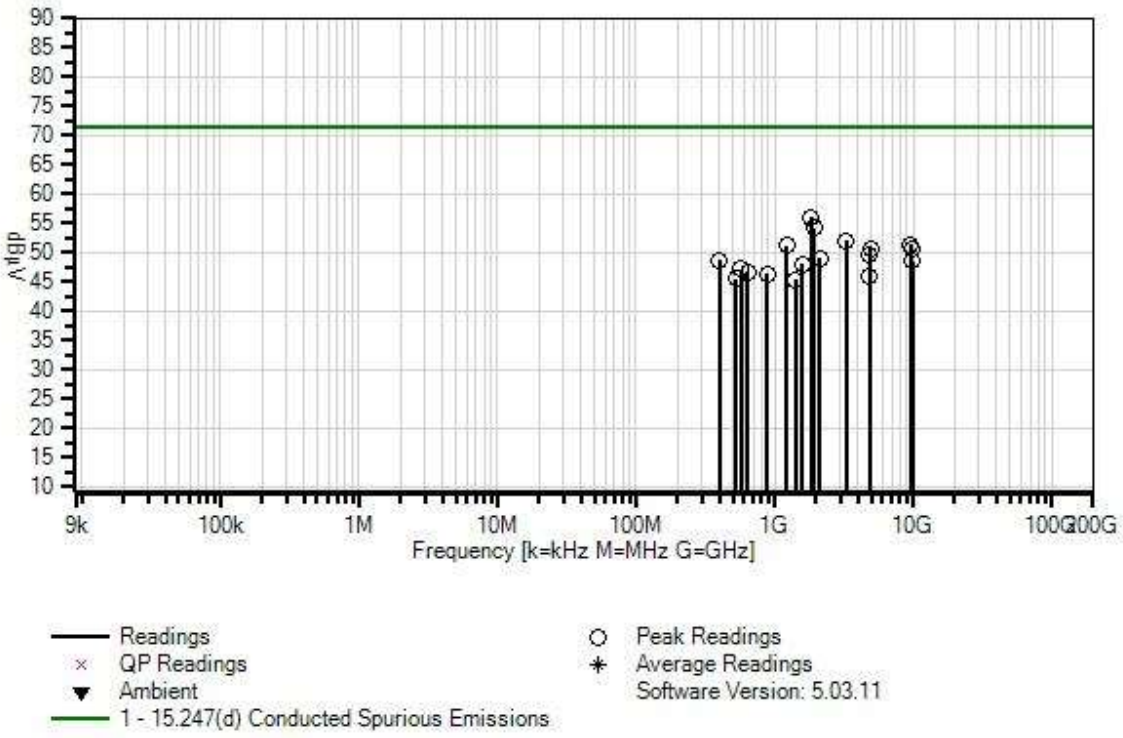
The EUT is placed on test bench. Antenna port is connected to spectrum analyzer. The EUT is set to continuously transmit at 100% duty cycle and maximum power. A support laptop is running software Atheros Radio Test 2 (ART2-GUI) to exercise the Wi-Fi module.
Operating frequency: 2412-2462MHz
Protocols and data rate:
802.11G, 6Mbps-54Mbps

Test Location: Brea Lab D
Test Method: ANSI C63.10 (2013), KDB 558074 D01 V.04 (04/05/2017)
Temperature (ºC): 23
Relative Humidity (%): 31

Scanned frequency: 9kHz-25GHz
RBW=100kHz, VBW=300kHz

Note: Data presents worst case modulation/data rate (6Mbps)

KE2 Therm Solutions WO#: 100985 Sequence#: 2 Date: 3/29/2018
15.247(d) Conducted Spurious Emissions Test Distance: None Antenna Port



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06544	Cable	32026-29094K-29094K-36TC	12/21/2017	12/21/2019
	AN02869	Spectrum Analyzer	E4440A	8/1/2017	8/1/2018
T2	AN03431	Attenuator	89-20-21	12/19/2017	12/19/2019

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	1833.100M	36.0	+0.7	+19.3			+0.0	56.0	71.6	-15.6	Anten
2	1935.930M	34.2	+0.7	+19.3			+0.0	54.2	71.6	-17.4	Anten
3	3282.600M	31.7	+1.1	+19.2			+0.0	52.0	71.6	-19.6	Anten
4	9648.000M	30.0	+1.8	+19.7			+0.0	51.5	71.6	-20.1	Anten
5	1231.930M	31.3	+0.6	+19.3			+0.0	51.2	71.6	-20.4	Anten
6	9768.000M	29.2	+1.8	+19.7			+0.0	50.7	71.6	-20.9	Anten
7	4924.000M	29.6	+1.6	+19.5			+0.0	50.7	71.6	-20.9	Anten
8	4824.000M	28.5	+1.6	+19.5			+0.0	49.6	71.6	-22.0	Anten
9	2112.100M	29.1	+0.7	+19.3			+0.0	49.1	71.6	-22.5	Anten
10	399.930M	29.2	+0.3	+19.2			+0.0	48.7	71.6	-22.9	Anten
11	9848.000M	27.0	+1.8	+19.7			+0.0	48.5	71.6	-23.1	Anten
12	1584.100M	28.1	+0.6	+19.3			+0.0	48.0	71.6	-23.6	Anten
13	575.930M	27.6	+0.4	+19.2			+0.0	47.2	71.6	-24.4	Anten
14	637.270M	27.0	+0.4	+19.3			+0.0	46.7	71.6	-24.9	Anten
15	880.100M	26.6	+0.5	+19.3			+0.0	46.4	71.6	-25.2	Anten
16	4884.000M	24.8	+1.6	+19.5			+0.0	45.9	71.6	-25.7	Anten
17	527.930M	26.0	+0.4	+19.2			+0.0	45.6	71.6	-26.0	Anten
18	1407.930M	25.6	+0.6	+19.3			+0.0	45.5	71.6	-26.1	Anten

Test Location:	CKC Laboratories Inc. • 110 N. Olinda Place • Brea, CA 92823 • 714-993-6112		
Customer:	**KE2 Therm Solutions**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**100985**	Date:	3/29/2018
Test Type:	**Maximized Emissions**	Time:	09:14:08
Tested By:	Don Nguyen	Sequence#:	3
Software:	EMITest 5.03.11		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

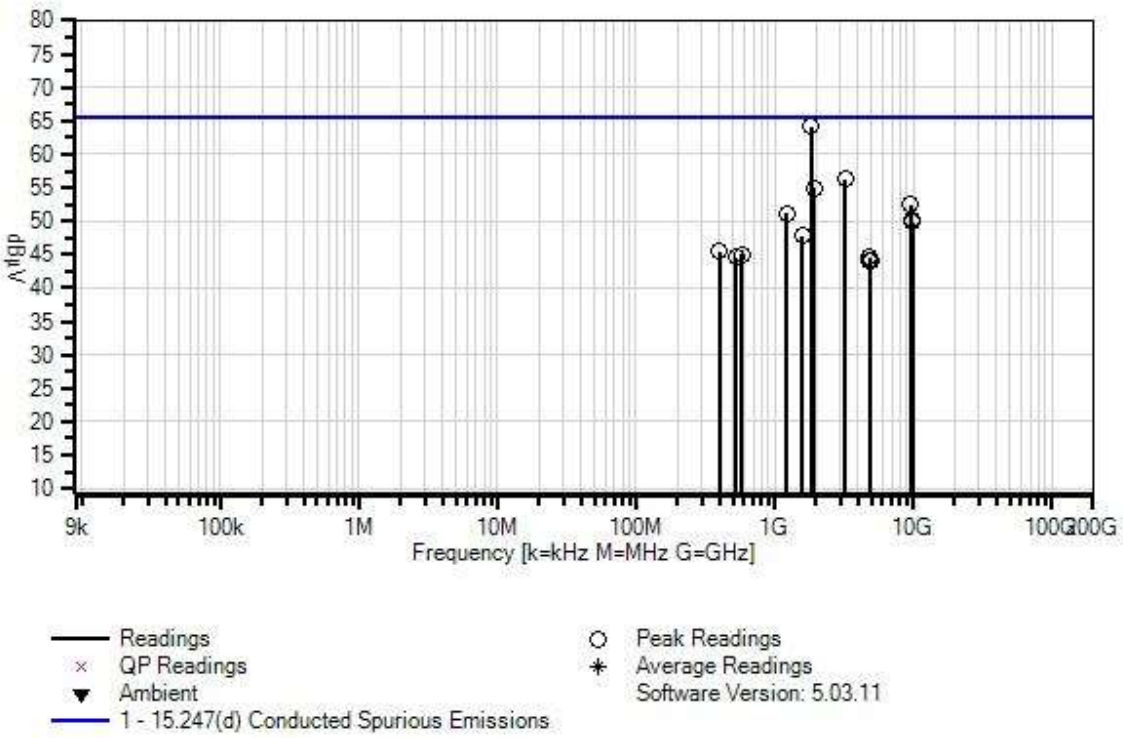
The EUT is placed on test bench. Antenna port is connected to spectrum analyzer. The EUT is set to continuously transmit at 100% duty cycle and maximum power. A support laptop is running software Atheros Radio Test 2 (ART2-GUI) to exercise the Wi-Fi module.
Operating frequency: 2412-2462MHz
Protocols and data rate:
802.11N20, 6.5Mbps-65Mbps

Test Location: Brea Lab D
Test Method: ANSI C63.10 (2013), KDB 558074 D01 V.04 (04/05/2017)
Temperature (ºC): 23
Relative Humidity (%): 31

Scanned frequency: 9kHz-25GHz
RBW=100kHz, VBW=300kHz

Note: Data presents worst case modulation/data rate (6.5Mbps)

KE2 Therm Solutions WO#: 100985 Sequence#: 3 Date: 3/29/2018
15.247(d) Conducted Spurious Emissions Test Distance: None Antenna Port



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06544	Cable	32026-29094K-29094K-36TC	12/21/2017	12/21/2019
	AN02869	Spectrum Analyzer	E4440A	8/1/2017	8/1/2018
T2	AN03431	Attenuator	89-20-21	12/19/2017	12/19/2019

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	1833.500M	44.1	+0.7	+19.3			+0.0	64.1	65.6	-1.5	Anten
2	3215.800M	36.0	+1.1	+19.2			+0.0	56.3	65.6	-9.3	Anten
3	1936.000M	35.0	+0.7	+19.3			+0.0	55.0	65.6	-10.6	Anten
4	9648.000M	30.9	+1.8	+19.7			+0.0	52.4	65.6	-13.2	Anten
5	1232.000M	31.3	+0.6	+19.3			+0.0	51.2	65.6	-14.4	Anten
6	9767.970M	28.6	+1.8	+19.7			+0.0	50.1	65.6	-15.5	Anten
7	9847.970M	28.4	+1.8	+19.7			+0.0	49.9	65.6	-15.7	Anten
8	1584.000M	27.9	+0.6	+19.3			+0.0	47.8	65.6	-17.8	Anten
9	400.000M	26.0	+0.3	+19.2			+0.0	45.5	65.6	-20.1	Anten
10	583.000M	25.4	+0.4	+19.2			+0.0	45.0	65.6	-20.6	Anten
11	4824.000M	23.5	+1.6	+19.5			+0.0	44.6	65.6	-21.0	Anten
12	528.000M	25.0	+0.4	+19.2			+0.0	44.6	65.6	-21.0	Anten
13	4923.970M	23.0	+1.6	+19.5			+0.0	44.1	65.6	-21.5	Anten
14	4883.970M	22.9	+1.6	+19.5			+0.0	44.0	65.6	-21.6	Anten

Test Location:	CKC Laboratories Inc. • 110 N. Olinda Place • Brea, CA 92823 • 714-993-6112		
Customer:	**KE2 Therm Solutions**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**100985**	Date:	3/29/2018
Test Type:	**Maximized Emissions**	Time:	09:08:40
Tested By:	Don Nguyen	Sequence#:	4
Software:	EMITest 5.03.11		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

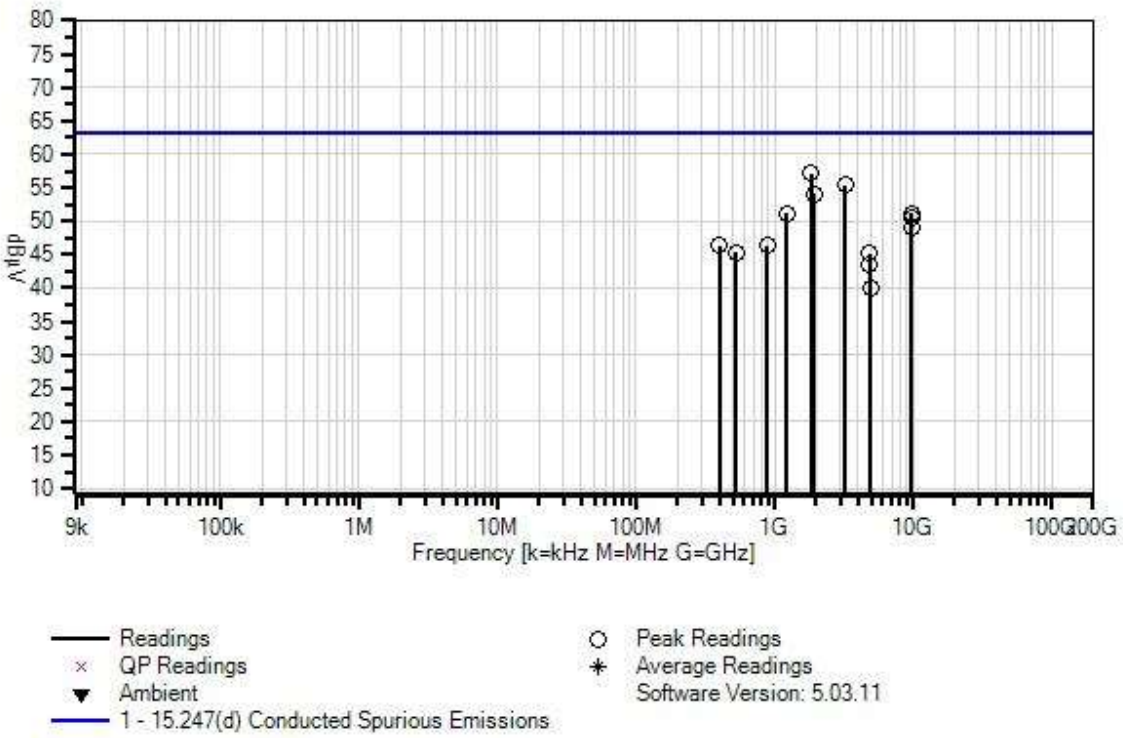
The EUT is placed on test bench. Antenna port is connected to spectrum analyzer. The EUT is set to continuously transmit at 100% duty cycle and maximum power. A support laptop is running software Atheros Radio Test 2 (ART2-GUI) to exercise the Wi-Fi module.
Operating frequency: 2412-2462MHz
Protocols and data rate:
802.11N40, 13.5Mbps-135Mbps

Test Location: Brea Lab D
Test Method: ANSI C63.10 (2013), KDB 558074 D01 V.04 (04/05/2017)
Temperature (ºC): 23
Relative Humidity (%): 31

Scanned frequency: 9kHz-25GHz
RBW=100kHz, VBW=300kHz

Note: Data presents worst case modulation/data rate (13.5Mbps)

KE2 Therm Solutions WO#: 100985 Sequence#: 4 Date: 3/29/2018
15.247(d) Conducted Spurious Emissions Test Distance: None Antenna Port



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06544	Cable	32026-29094K-29094K-36TC	12/21/2017	12/21/2019
	AN02869	Spectrum Analyzer	E4440A	8/1/2017	8/1/2018
T2	AN03431	Attenuator	89-20-21	12/19/2017	12/19/2019

Measurement Data: Reading listed by margin. Test Distance: None

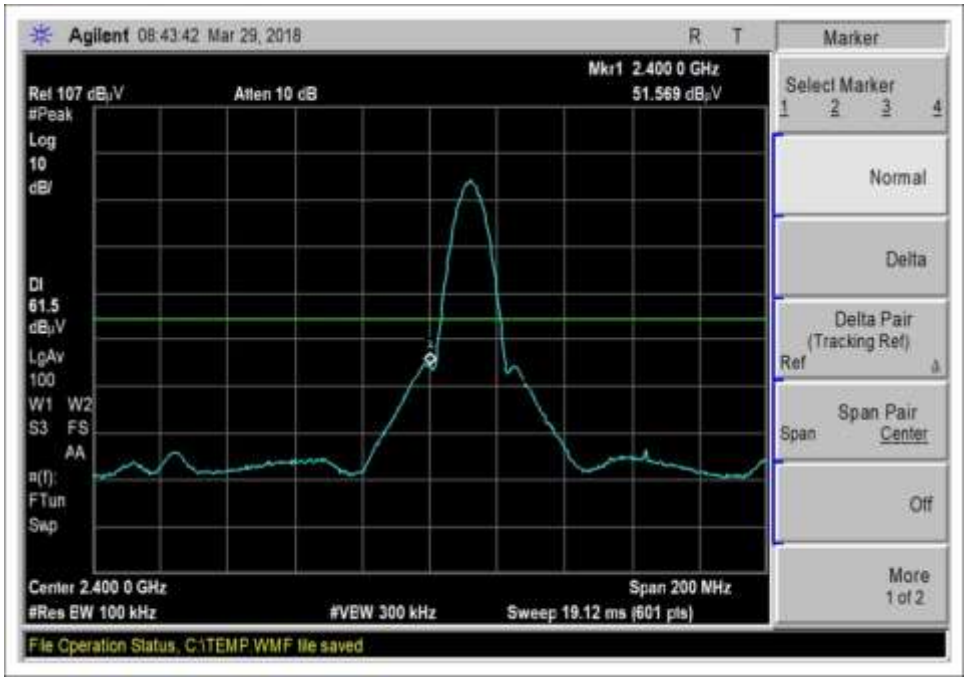
#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	1833.500M	37.1	+0.7	+19.3			+0.0	57.1	63.3	-6.2	Anten
2	3229.350M	35.1	+1.1	+19.2			+0.0	55.4	63.3	-7.9	Anten
3	1936.000M	34.1	+0.7	+19.3			+0.0	54.1	63.3	-9.2	Anten
4	9688.000M	29.7	+1.8	+19.7			+0.0	51.2	63.3	-12.1	Anten
5	1232.000M	31.2	+0.6	+19.3			+0.0	51.1	63.3	-12.2	Anten
6	9768.000M	28.9	+1.8	+19.7			+0.0	50.4	63.3	-12.9	Anten
7	9808.000M	27.6	+1.8	+19.7			+0.0	49.1	63.3	-14.2	Anten
8	880.000M	26.5	+0.5	+19.3			+0.0	46.3	63.3	-17.0	Anten
9	400.000M	26.8	+0.3	+19.2			+0.0	46.3	63.3	-17.0	Anten
10	528.000M	25.7	+0.4	+19.2			+0.0	45.3	63.3	-18.0	Anten
11	4844.000M	24.0	+1.6	+19.5			+0.0	45.1	63.3	-18.2	Anten
12	4884.000M	22.5	+1.6	+19.5			+0.0	43.6	63.3	-19.7	Anten
13	4904.000M	18.8	+1.6	+19.5			+0.0	39.9	63.3	-23.4	Anten

Band Edge

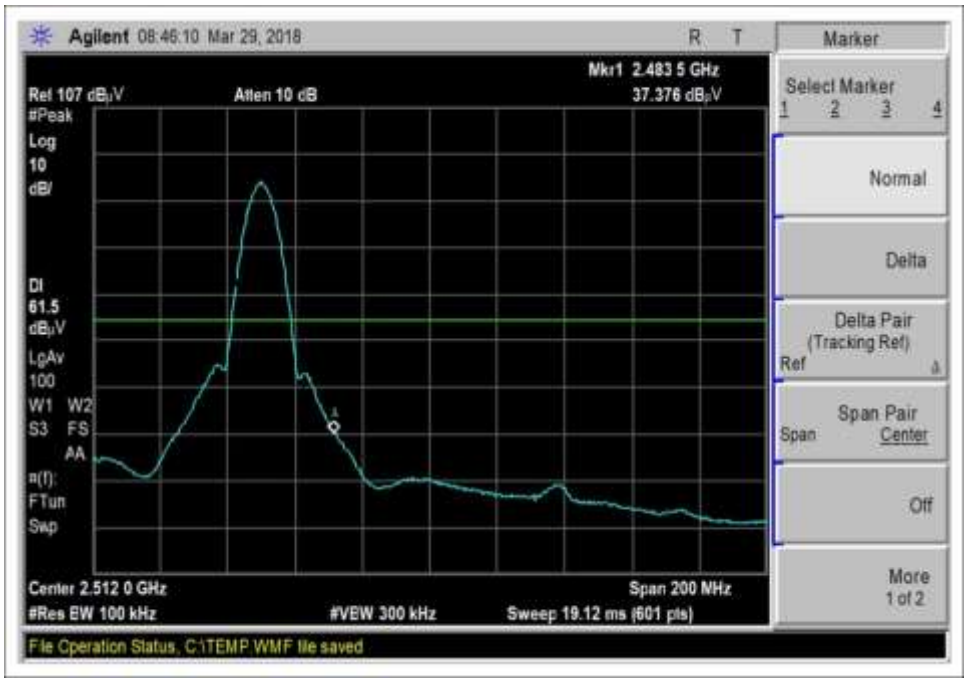
Band Edge Summary				
Limit applied: Max Power/100kHz - 30dB (When average power limit is applied).				
Frequency (MHz)	**Modulation**	**Measured (dBuV)**	**Limit (dBuV)**	**Results**
2400.0	Long CCK (802.11B, 11Mbps)	71.7	< 81.6	Pass
2483.5	Long CCK (802.11B, 11Mbps)	57.5	< 81.6	Pass
2400.0	OFDM (802.11G, 6Mbps)	70.8	< 71.6	Pass
2483.5	OFDM (802.11G, 6Mbps)	58.3	< 71.6	Pass
2400.0	BPSK (802.11N20, 6.5Mbps)	63.2	< 65.6	Pass
2483.5	BPSK (802.11N20, 6.5Mbps)	52.7	< 65.6	Pass
2400.0	BPSK (802.11N40, 13.5Mbps)	61.9	< 63.3	Pass
2483.5	BPSK (802.11N40, 13.5Mbps)	51.1	< 63.3	Pass

Note: Data presents worst case modulation/data rate

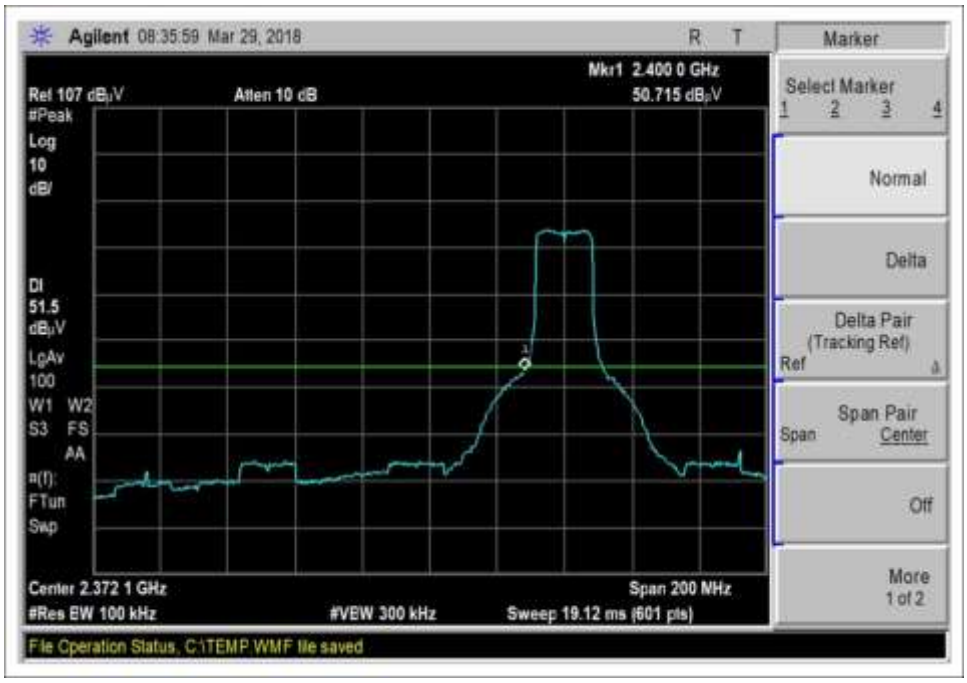
Band Edge Plots



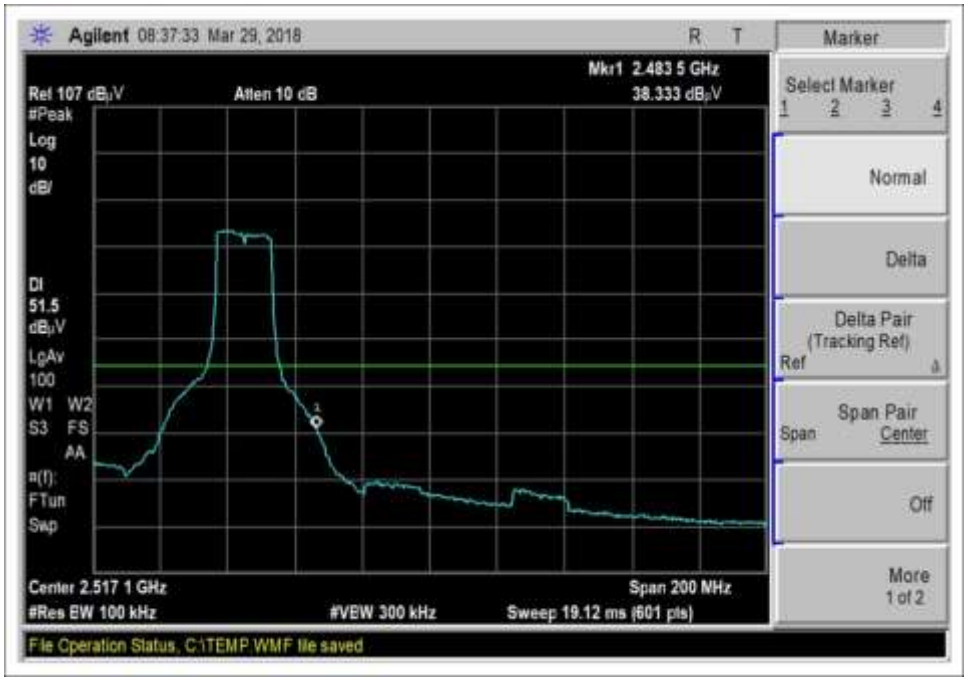
802.11B Low Channel



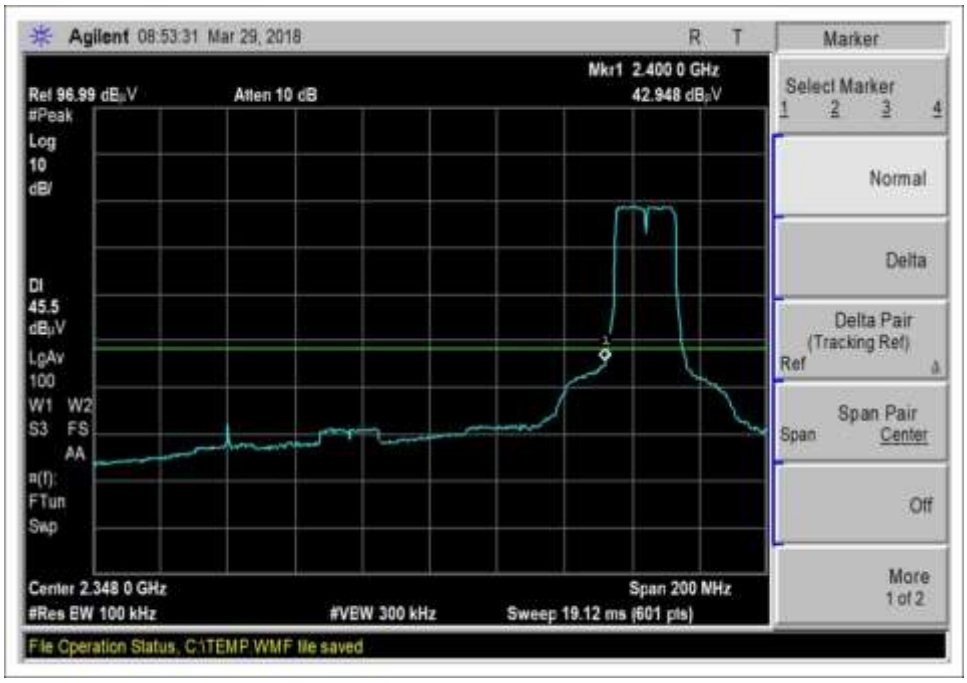
802.11B High Channel



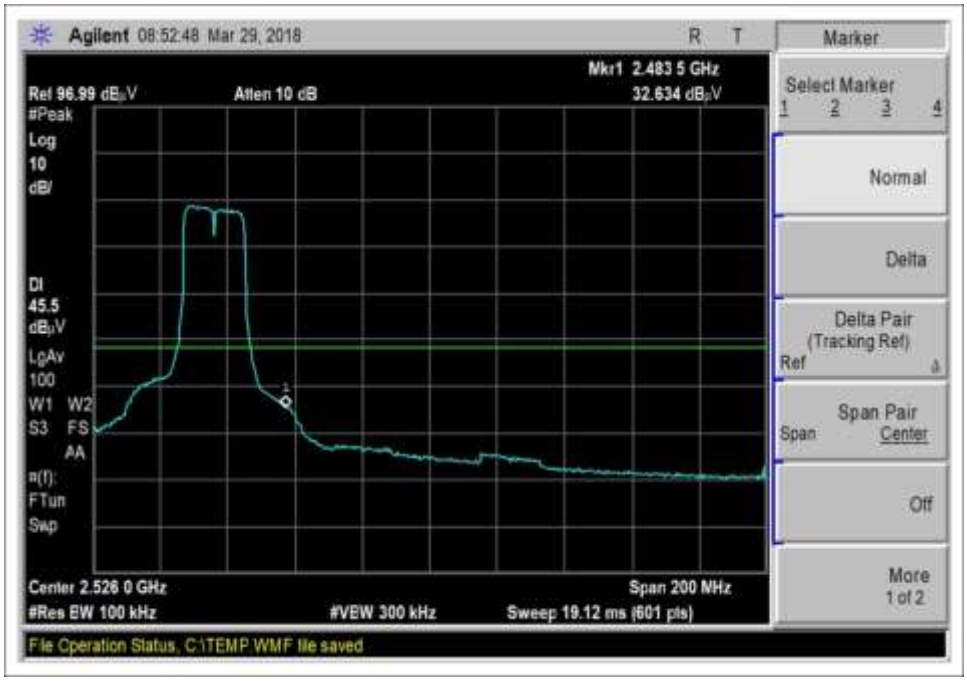
802.11G Low Channel



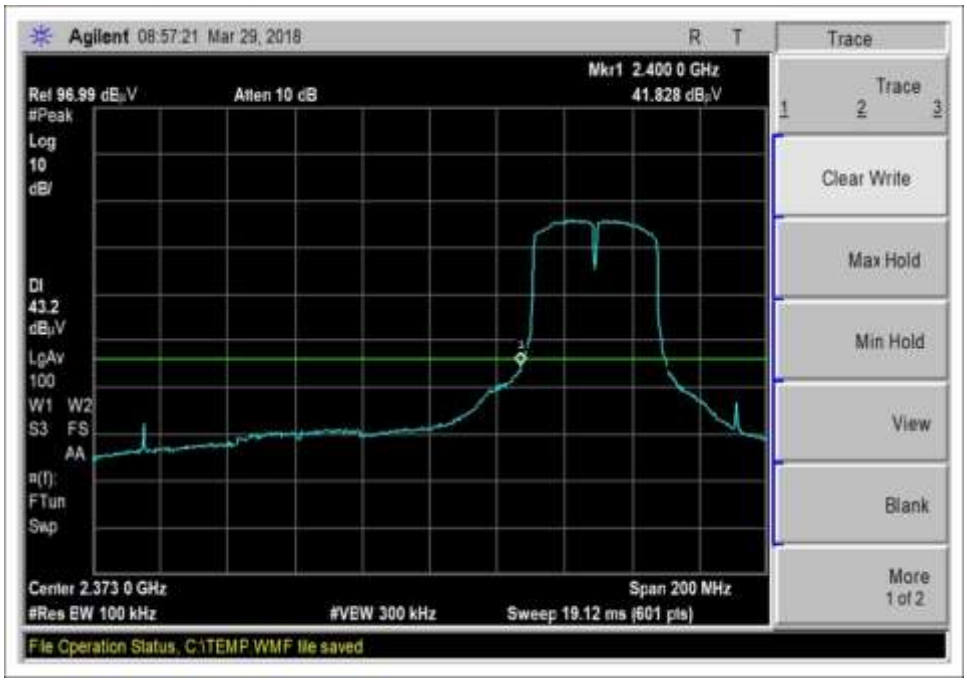
802.11G High Channel



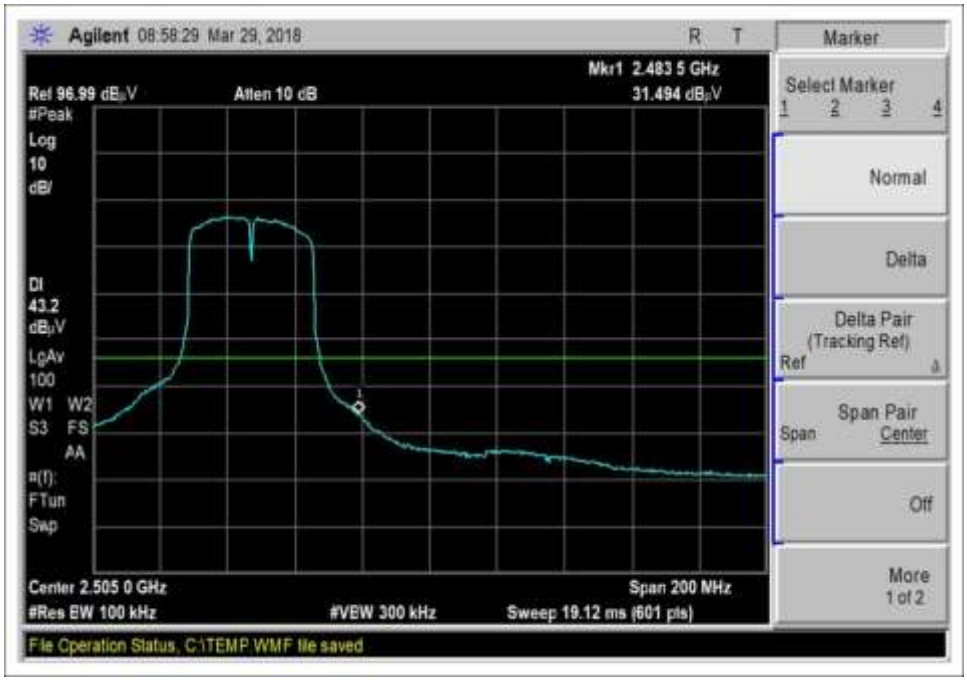
802.11N20 Low Channel



802.11N20 High Channel



802.11N40 Low Channel



802.11N40 High Channel

Test Setup / Conditions / Data

Test Location:	CKC Laboratories Inc. • 110 N. Olinda Place • Brea, CA 92823 • 714-993-6112		
Customer:	**KE2 Therm Solutions**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**100985**	Date:	3/29/2018
Test Type:	**Maximized Emissions**	Time:	08:21:28
Tested By:	Don Nguyen	Sequence#:	0
Software:	EMITest 5.03.11		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

The EUT is placed on test bench. Antenna port is connected to spectrum analyzer. The EUT is set to continuously transmit at 100% duty cycle and maximum power. A support laptop is running software Atheros Radio Test 2 (ART2-GUI) to exercise the Wi-Fi module.
Operating frequency: 2412-2462MHz
Protocols and data rate:
802.11B, 1Mbps-11Mbps

Test Location: Brea Lab D
Test Method: ANSI C63.10 (2013), KDB 558074 D01 V.04 (04/05/2017)
Temperature (ºC): 23
Relative Humidity (%): 31

Scanned frequency: 2300MHz-2600MHz
RBW=100kHz, VBW=300kHz

Note: Data presents worst case modulation/data rate (11Mbps)

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06544	Cable	32026-29094K-29094K-36TC	12/21/2017	12/21/2019
T2	AN02869	Spectrum Analyzer	E4440A	8/1/2017	8/1/2018
T3	AN03431	Attenuator	89-20-21	12/19/2017	12/19/2019

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	2400.000M	51.6	+0.8	+0.0	+19.3		+0.0	71.7	81.6	-9.9	Anten
2	2483.500M	37.4	+0.8	+0.0	+19.3		+0.0	57.5	81.6	-24.1	Anten

Test Location:	CKC Laboratories Inc. • 110 N. Olinda Place • Brea, CA 92823 • 714-993-6112		
Customer:	**KE2 Therm Solutions**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**100985**	Date:	3/29/2018
Test Type:	**Maximized Emissions**	Time:	08:40:14
Tested By:	Don Nguyen	Sequence#:	1
Software:	EMITest 5.03.11		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

The EUT is placed on test bench. Antenna port is connected to spectrum analyzer. The EUT is set to continuously transmit at 100% duty cycle and maximum power. A support laptop is running software Atheros Radio Test 2 (ART2-GUI) to exercise the Wi-Fi module.
Operating frequency: 2412-2462MHz
Protocols and data rate:
802.11G, 6Mbps-54Mbps

Test Location: Brea Lab D
Test Method: ANSI C63.10 (2013), KDB 558074 D01 V.04 (04/05/2017)
Temperature (ºC): 23
Relative Humidity (%): 31

Scanned frequency: 2300MHz-2600MHz
RBW=100kHz, VBW=300kHz

Note: Data presents worst case modulation/data rate (6Mbps)

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06544	Cable	32026-29094K-29094K-36TC	12/21/2017	12/21/2019
T2	AN02869	Spectrum Analyzer	E4440A	8/1/2017	8/1/2018
T3	AN03431	Attenuator	89-20-21	12/19/2017	12/19/2019

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	2400.000M	50.7	+0.8	+0.0	+19.3		+0.0	70.8	71.6	-0.8	Anten
2	2483.500M	38.2	+0.8	+0.0	+19.3		+0.0	58.3	71.6	-13.3	Anten

Test Location:	CKC Laboratories Inc. • 110 N. Olinda Place • Brea, CA 92823 • 714-993-6112		
Customer:	**KE2 Therm Solutions**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**100985**	Date:	3/29/2018
Test Type:	**Maximized Emissions**	Time:	08:53:56
Tested By:	Don Nguyen	Sequence#:	2
Software:	EMITest 5.03.11		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

The EUT is placed on test bench. Antenna port is connected to spectrum analyzer. The EUT is set to continuously transmit at 100% duty cycle and maximum power. A support laptop is running software Atheros Radio Test 2 (ART2-GUI) to exercise the Wi-Fi module.
Operating frequency: 2412-2462MHz
Protocols and data rate:
802.11N20, 6.5Mbps-65Mbps

Test Location: Brea Lab D
Test Method: ANSI C63.10 (2013), KDB 558074 D01 V.04 (04/05/2017)
Temperature (ºC): 23
Relative Humidity (%): 31

Scanned frequency: 2300MHz-2600MHz
RBW=100kHz, VBW=300kHz

Note: Data presents worst case modulation/data rate (6.5Mbps)

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06544	Cable	32026-29094K-29094K-36TC	12/21/2017	12/21/2019
	AN02869	Spectrum Analyzer	E4440A	8/1/2017	8/1/2018
T2	AN03431	Attenuator	89-20-21	12/19/2017	12/19/2019

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	2400.000M	43.1	+0.8	+19.3			+0.0	63.2	65.6	-2.4	Anten
2	2483.500M	32.6	+0.8	+19.3			+0.0	52.7	65.6	-12.9	Anten

Test Location:	CKC Laboratories Inc. • 110 N. Olinda Place • Brea, CA 92823 • 714-993-6112		
Customer:	**KE2 Therm Solutions**		
Specification:	**15.247(d) Conducted Spurious Emissions**		
Work Order #:	**100985**	Date:	3/29/2018
Test Type:	**Maximized Emissions**	Time:	08:58:58
Tested By:	Don Nguyen	Sequence#:	3
Software:	EMITest 5.03.11		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

The EUT is placed on test bench. Antenna port is connected to spectrum analyzer. The EUT is set to continuously transmit at 100% duty cycle and maximum power. A support laptop is running software Atheros Radio Test 2 (ART2-GUI) to exercise the Wi-Fi module.
Operating frequency: 2412-2462MHz
Protocols and data rate:
802.11N40, 13.5Mbps-135Mbps

Test Location: Brea Lab D
Test Method: ANSI C63.10 (2013), KDB 558074 D01 V.04 (04/05/2017)
Temperature (ºC): 23
Relative Humidity (%): 31

Scanned frequency: 2300MHz-2600MHz
RBW=100kHz, VBW=300kHz

Note: Data presents worst case modulation/data rate (13.5Mbps)

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06544	Cable	32026-29094K-29094K-36TC	12/21/2017	12/21/2019
	AN02869	Spectrum Analyzer	E4440A	8/1/2017	8/1/2018
T2	AN03431	Attenuator	89-20-21	12/19/2017	12/19/2019

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	2400.000M	41.8	+0.8	+19.3			+0.0	61.9	63.3	-1.4	Anten
2	2483.500M	31.0	+0.8	+19.3			+0.0	51.1	63.3	-12.2	Anten

Test Setup Photo

15.247(d) Radiated Emissions & Band Edge

Test Setup / Conditions / Data

Test Location:	CKC Laboratories Inc. • 110 N. Olinda Place • Brea, CA 92823 • 714-993-6112		
Customer:	**KE2 Therm Solutions**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**100985**	Date:	3/28/2018
Test Type:	**Maximized Emissions**	Time:	14:19:03
Tested By:	Don Nguyen	Sequence#:	3
Software:	EMITest 5.03.11		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

The EUT is placed on Styrofoam platform. The EUT is set to continuously transmit at 100% duty cycle and maximum power. Ethernet port is connected to a support laptop running software Atheros Radio Test 2 (ART2-GUI) to exercise the Wi-Fi module. All other IO ports are populated with section of cables.
The EUT is rotated in three orthogonal axes.
Operating frequency: 2412-2462MHz
Protocols and data rate:
802.11B, 1Mbps-11Mbps (the worst case protocol with highest power output)

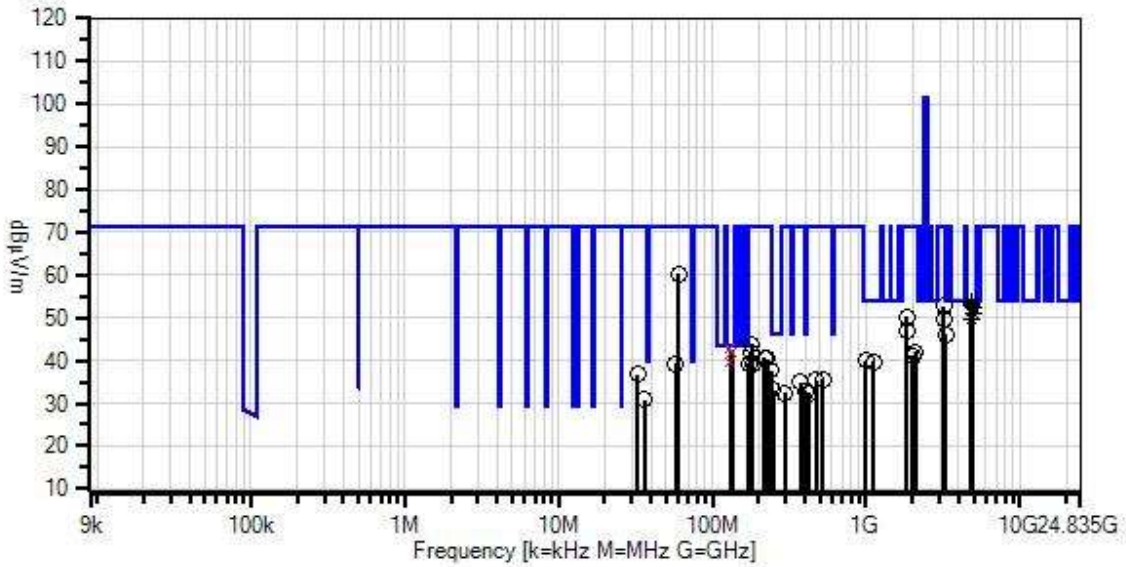
Test Location: Brea Lab D
Test Method: ANSI C63.10 (2013), KDB 558074 D01 V.04 (04/05/2017)
Temperature (ºC): 22
Relative Humidity (%): 24

Scanned frequency: 9kHz-25GHz

9 kHz - 150 kHz, RBW=200 Hz, VBW=600 Hz
150 kHz -30 MHz, RBW=9 kHz, VBW=27 kHz
30 MHz - 1000MHz, RBW=120 kHz, VBW=360 kHz
1000 MHz - 25000MHz, RBW=1 MHz, VBW=3 MHz

Note: Data presents worst case modulation/data rate with the highest power output (802.11B, 11Mbps)

KE2 Therm Solutions WO#: 100985 Sequence#: 3 Date: 3/28/2018
15.247(d) / 15.209 Radiated Spurious Emissions Test Distance: 3 Meters Horiz



Readings
QP Readings
Ambient
1 - 15.247(d) / 15.209 Radiated Spurious Emissions
Peak Readings
Average Readings
Software Version: 5.03.11

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN00314	Loop Antenna	6502	5/20/2016	5/20/2018
T1	AN00787	Preamp	83017A	6/9/2017	6/9/2019
T2	ANP04382	Cable	LDF-50	6/6/2016	6/6/2018
T3	ANP06544	Cable	32026-29094K-29094K-36TC	12/21/2017	12/21/2019
T4	ANP07139	Cable	ANDL1-PNMNM-48	3/1/2017	3/1/2019
T5	AN01646	Horn Antenna	3115	3/14/2018	3/14/2020
T6	AN03385	High Pass Filter	11SH10-3000/T10000-O/O	6/2/2017	6/2/2019
	AN03367	Horn Antenna-ANSI C63.5 Calibration	62-GH-62-25.	8/24/2017	8/24/2019
	AN01413	Horn Antenna	84125-80008	10/7/2016	10/7/2018
T7	AN02869	Spectrum Analyzer	E4440A	8/1/2017	8/1/2018
T8	AN00010	Preamp	8447D	2/19/2018	2/19/2020
T9	AN01995	Biconilog Antenna	CBL6111C	5/10/2016	5/10/2018
T10	ANP05275	Attenuator	1W	5/5/2016	5/5/2018
T11	ANP05569	Cable-Amplitude +15C to +45C (dB)	RG-214/U	12/7/2016	12/7/2018
T12	ANP06978	Cable	Sucoflex 104A	4/5/2016	4/5/2018

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5 T9	T2 T6 T10	T3 T7 T11	T4 T8 T12	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	4884.000M Ave	45.2	-39.7 +33.2 +0.0	+8.9 +0.3 +0.0	+1.6 +0.0 +0.0	+4.3 +0.0 +0.0	+0.0	53.8	54.0	-0.2	Horiz
^	4884.000M	57.4	-39.7 +33.2 +0.0	+8.9 +0.3 +0.0	+1.6 +0.0 +0.0	+4.3 +0.0 +0.0	+0.0	66.0	54.0	+12.0	Horiz
3	4884.000M Ave	44.8	-39.7 +33.2 +0.0	+8.9 +0.3 +0.0	+1.6 +0.0 +0.0	+4.3 +0.0 +0.0	+0.0	53.4	54.0	-0.6	Vert
^	4884.000M	57.6	-39.7 +33.2 +0.0	+8.9 +0.3 +0.0	+1.6 +0.0 +0.0	+4.3 +0.0 +0.0	+0.0	66.2	54.0	+12.2	Vert
5	130.306M QP	49.2	+0.0 +0.0 +11.7	+1.2 +0.0 +6.0	+0.0 +0.0 +1.2	+0.0 -26.9 +0.2	+0.0	42.6	43.5	-0.9	Vert
^	130.306M	54.6	+0.0 +0.0 +11.7	+1.2 +0.0 +6.0	+0.0 +0.0 +1.2	+0.0 -26.9 +0.2	+0.0	48.0	43.5	+4.5	Vert

7	4824.000M	44.5	-39.8	+8.8	+1.6	+4.2	+0.0	52.8	54.0	-1.2	Horiz
	Ave		+33.2	+0.3	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
^	4824.000M	57.1	-39.8	+8.8	+1.6	+4.2	+0.0	65.4	54.0	+11.4	Horiz
			+33.2	+0.3	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
9	4924.000M	43.6	-39.6	+9.0	+1.6	+4.3	+0.0	52.5	54.0	-1.5	Vert
	Ave		+33.3	+0.3	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
^	4924.000M	55.9	-39.6	+9.0	+1.6	+4.3	+0.0	64.8	54.0	+10.8	Vert
			+33.3	+0.3	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
11	134.056M	48.3	+0.0	+1.2	+0.0	+0.0	+0.0	41.7	43.5	-1.8	Vert
	QP		+0.0	+0.0	+0.0	-26.9					
			+11.7	+6.0	+1.2	+0.2					
^	134.056M	54.0	+0.0	+1.2	+0.0	+0.0	+0.0	47.4	43.5	+3.9	Vert
			+0.0	+0.0	+0.0	-26.9					
			+11.7	+6.0	+1.2	+0.2					
13	4924.000M	42.1	-39.6	+9.0	+1.6	+4.3	+0.0	51.0	54.0	-3.0	Horiz
	Ave		+33.3	+0.3	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
^	4924.000M	54.6	-39.6	+9.0	+1.6	+4.3	+0.0	63.5	54.0	+9.5	Horiz
			+33.3	+0.3	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
15	131.300M	46.2	+0.0	+1.2	+0.0	+0.0	+0.0	39.6	43.5	-3.9	Horiz
	QP		+0.0	+0.0	+0.0	-26.9					
			+11.7	+6.0	+1.2	+0.2					
^	131.300M	50.9	+0.0	+1.2	+0.0	+0.0	+0.0	44.3	43.5	+0.8	Horiz
			+0.0	+0.0	+0.0	-26.9					
			+11.7	+6.0	+1.2	+0.2					
17	171.300M	47.3	+0.0	+1.4	+0.0	+0.0	+0.0	39.3	43.5	-4.2	Horiz
			+0.0	+0.0	+0.0	-26.7					
			+9.8	+6.0	+1.3	+0.2					
18	4824.000M	41.3	-39.8	+8.8	+1.6	+4.2	+0.0	49.6	54.0	-4.4	Vert
	Ave		+33.2	+0.3	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
^	4824.000M	55.4	-39.8	+8.8	+1.6	+4.2	+0.0	63.7	54.0	+9.7	Vert
			+33.2	+0.3	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
20	242.800M	42.7	+0.0	+1.6	+0.0	+0.0	+0.0	37.7	46.0	-8.3	Horiz
			+0.0	+0.0	+0.0	-26.5					
			+12.1	+6.0	+1.6	+0.2					
21	60.250M	73.8	+0.0	+0.8	+0.0	+0.0	+0.0	60.3	71.5	-11.2	Vert
			+0.0	+0.0	+0.0	-27.1					
			+5.9	+6.0	+0.7	+0.2					
22	250.010M	37.8	+0.0	+1.6	+0.0	+0.0	+0.0	33.2	46.0	-12.8	Vert
			+0.0	+0.0	+0.0	-26.5					
			+12.5	+6.0	+1.6	+0.2					
23	400.010M	33.7	+0.0	+2.1	+0.0	+0.0	+0.0	32.9	46.0	-13.1	Vert
			+0.0	+0.0	+0.0	-27.3					
			+16.0	+6.0	+2.1	+0.3					

24	1000.080M	51.7	-42.0	+3.5	+0.5	+1.8	+0.0	40.1	54.0	-13.9	Horiz
			+24.6	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
25	1124.830M	49.2	-41.3	+3.8	+0.6	+1.9	+0.0	39.6	54.0	-14.4	Horiz
			+25.4	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
26	3216.080M	50.3	-40.2	+6.9	+1.1	+3.5	+0.0	52.8	71.5	-18.7	Horiz
			+31.2	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
27	1827.250M	54.7	-39.9	+5.1	+0.7	+2.5	+0.0	50.1	71.5	-21.4	Vert
			+27.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
28	3216.000M	47.1	-40.2	+6.9	+1.1	+3.5	+0.0	49.6	71.5	-21.9	Vert
			+31.2	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
29	1827.300M	51.5	-39.9	+5.1	+0.7	+2.5	+0.0	46.9	71.5	-24.6	Horiz
			+27.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
30	3282.750M	43.1	-40.1	+7.0	+1.1	+3.6	+0.0	46.0	71.5	-25.5	Vert
			+31.3	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
31	180.810M	52.2	+0.0	+1.4	+0.0	+0.0	+0.0	43.5	71.5	-28.0	Vert
			+0.0	+0.0	+0.0	-26.7					
			+9.1	+6.0	+1.3	+0.2					
32	2104.250M	45.2	-39.9	+5.5	+0.7	+2.7	+0.0	42.0	71.5	-29.5	Vert
			+27.8	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
33	177.310M	50.5	+0.0	+1.4	+0.0	+0.0	+0.0	42.0	71.5	-29.5	Vert
			+0.0	+0.0	+0.0	-26.7					
			+9.3	+6.0	+1.3	+0.2					
34	1999.750M	45.1	-39.9	+5.4	+0.7	+2.6	+0.0	41.2	71.5	-30.3	Vert
			+27.3	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0	+0.0					
35	218.800M	47.5	+0.0	+1.5	+0.0	+0.0	+0.0	40.7	71.5	-30.8	Horiz
			+0.0	+0.0	+0.0	-26.5					
			+10.5	+6.0	+1.5	+0.2					
36	226.310M	46.7	+0.0	+1.6	+0.0	+0.0	+0.0	40.5	71.5	-31.0	Vert
			+0.0	+0.0	+0.0	-26.5					
			+11.0	+6.0	+1.5	+0.2					
37	228.800M	46.4	+0.0	+1.6	+0.0	+0.0	+0.0	40.3	71.5	-31.2	Horiz
			+0.0	+0.0	+0.0	-26.5					
			+11.1	+6.0	+1.5	+0.2					
38	57.900M	52.4	+0.0	+0.8	+0.0	+0.0	+0.0	39.3	71.5	-32.2	Horiz
			+0.0	+0.0	+0.0	-27.1					
			+6.3	+6.0	+0.7	+0.2					
39	182.800M	47.7	+0.0	+1.4	+0.0	+0.0	+0.0	39.0	71.5	-32.5	Horiz
			+0.0	+0.0	+0.0	-26.7					
			+9.1	+6.0	+1.3	+0.2					
40	32.700M	39.5	+0.0	+0.5	+0.0	+0.0	+0.0	36.7	71.5	-34.8	Horiz
			+0.0	+0.0	+0.0	-27.1					
			+17.3	+6.0	+0.4	+0.1					

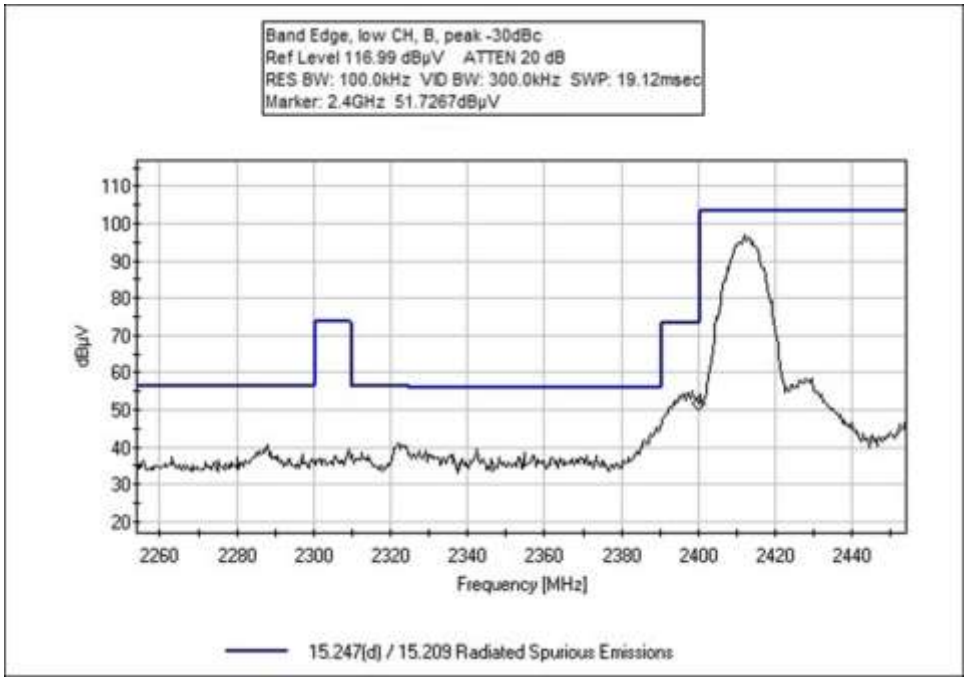
41	525.010M	33.9	+0.0 +0.0 +18.5	+2.5 +0.0 +6.0	+0.0 +0.0 +2.5	+0.0 -28.0 +0.3	+0.0	35.7	71.5	-35.8	Vert
42	475.010M	34.8	+0.0 +0.0 +17.5	+2.3 +0.0 +6.0	+0.0 +0.0 +2.3	+0.0 -27.8 +0.3	+0.0	35.4	71.5	-36.1	Vert
43	375.010M	36.2	+0.0 +0.0 +15.4	+2.1 +0.0 +6.0	+0.0 +0.0 +2.1	+0.0 -27.1 +0.3	+0.0	35.0	71.5	-36.5	Vert
44	297.300M	36.0	+0.0 +0.0 +13.2	+1.8 +0.0 +6.0	+0.0 +0.0 +1.8	+0.0 -26.5 +0.2	+0.0	32.5	71.5	-39.0	Horiz
45	425.010M	32.7	+0.0 +0.0 +16.5	+2.2 +0.0 +6.0	+0.0 +0.0 +2.2	+0.0 -27.5 +0.3	+0.0	32.4	71.5	-39.1	Vert
46	36.400M	35.3	+0.0 +0.0 +15.3	+0.6 +0.0 +6.0	+0.0 +0.0 +0.5	+0.0 -27.1 +0.1	+0.0	30.7	71.5	-40.8	Horiz

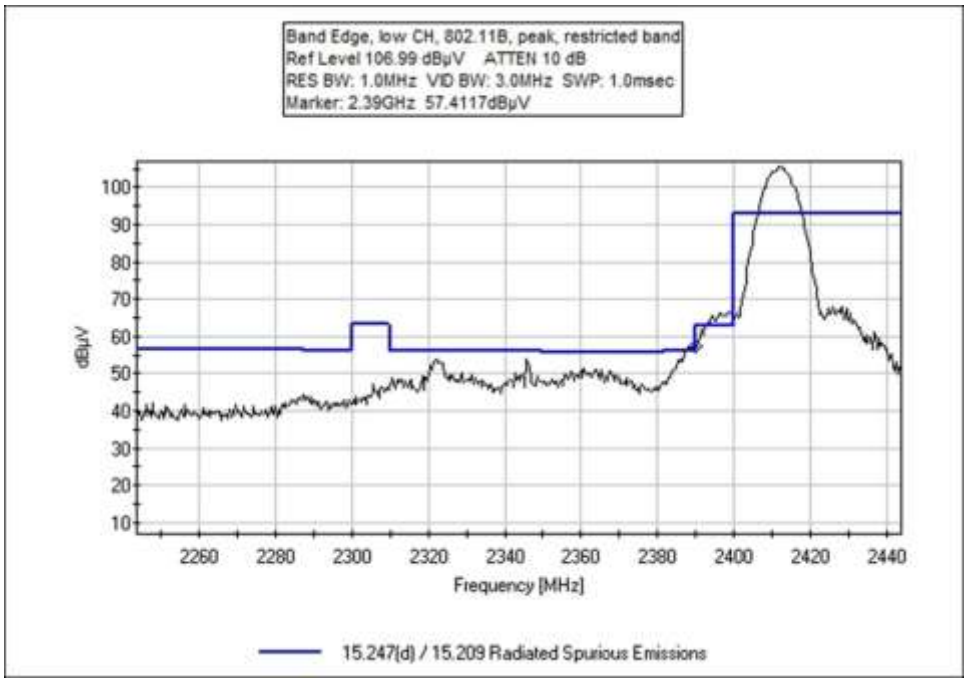
Band Edge

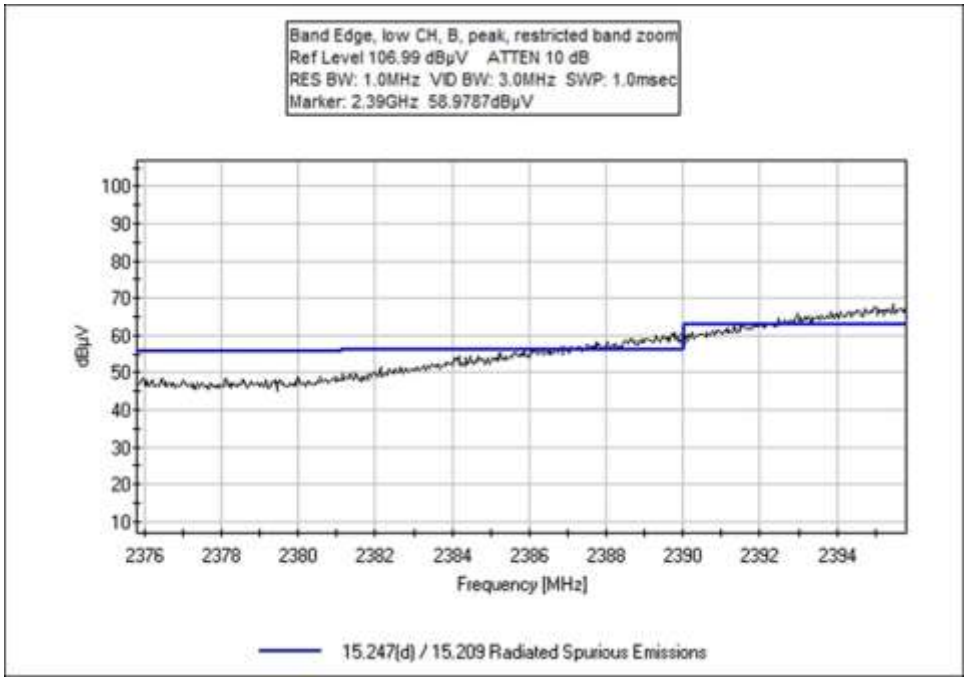
Band Edge Summary					
Frequency (MHz)	**Modulation**	**Ant. Type**	**Field Strength (dBuV/m @3m)**	**Limit (dBuV/m @3m)**	**Results**
2390.0	Long CCK (802.11B, 11Mbps)	PCB Trace	45.4*	<54.0	Pass
2400.0	Long CCK (802.11B, 11Mbps)	PCB Trace	49.7	<71.5	Pass
2483.5	Long CCK (802.11B, 11Mbps)	PCB Trace	51.0*	<54.0	Pass
2390.0	OFDM (802.11G, 6Mbps)	PCB Trace	44.0*	<54.0	Pass
2400.0	OFDM (802.11G, 6Mbps)	PCB Trace	53.0	<61.0	Pass
2483.5	OFDM (802.11G, 6Mbps)	PCB Trace	52.4*	<54.0	Pass
2390.0	BPSK (802.11N20, 6.5Mbps)	PCB Trace	51.8	<54.0	Pass
2400.0	BPSK (802.11N20, 6.5Mbps)	PCB Trace	46.3	<60.0	Pass
2483.5	BPSK (802.11N20, 6.5Mbps)	PCB Trace	53.7*	<54.0	Pass
2390.0	BPSK (802.11N40, 13.5Mbps)	PCB Trace	50.8	<54.0	Pass
2400.0	BPSK (802.11N40, 13.5Mbps)	PCB Trace	46.8	<55.0	Pass
2483.5	BPSK (802.11N40, 13.5Mbps)	PCB Trace	51.1*	<54.0	Pass

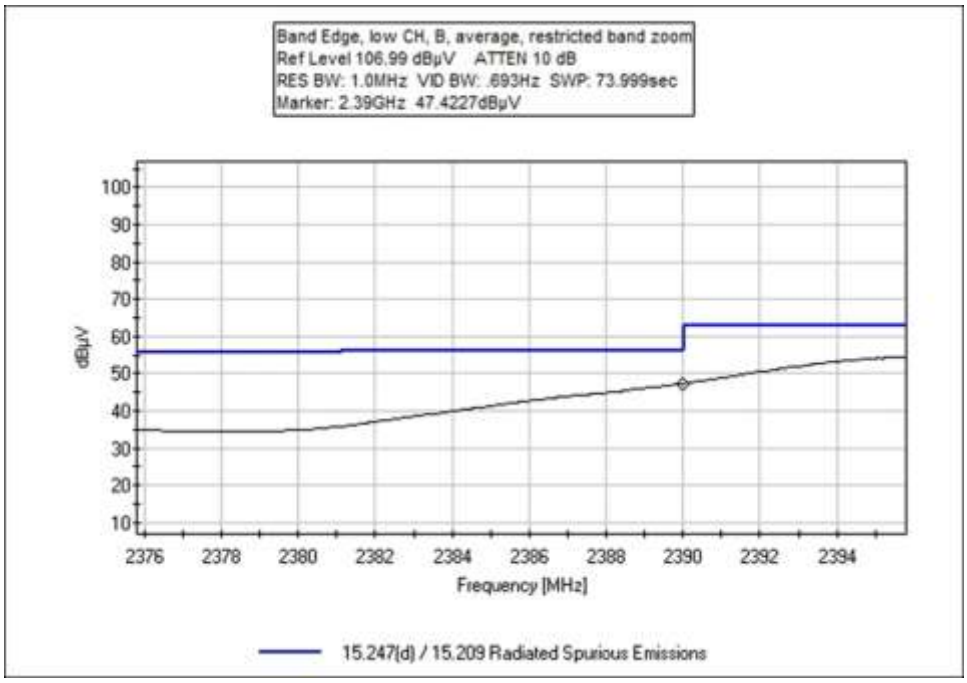
Note: Data presents worst case modulation/data rate
*Average detector

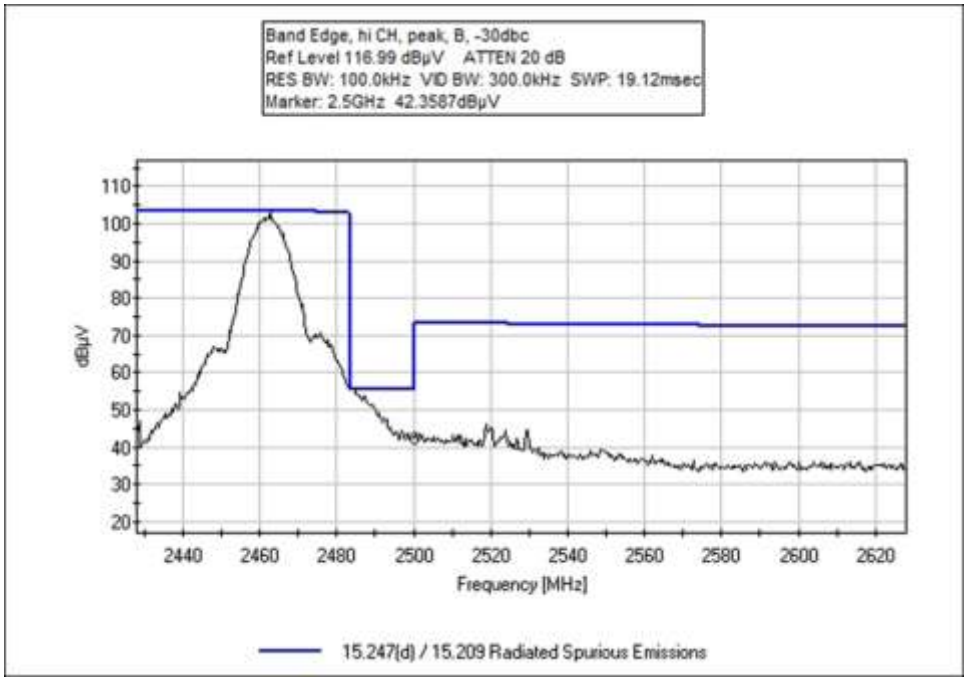
Band Edge Plots

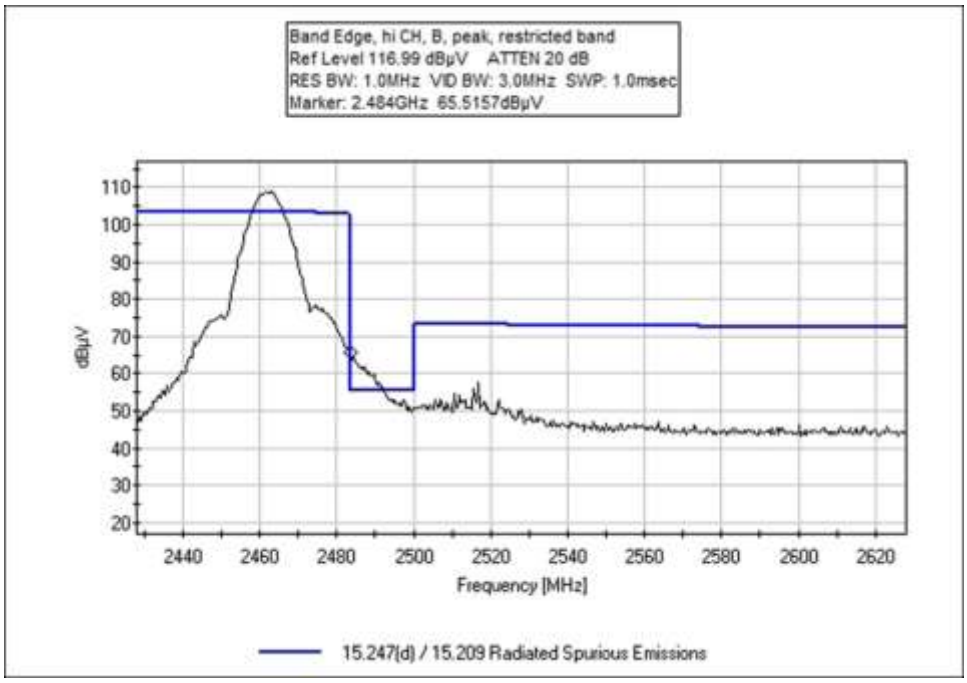


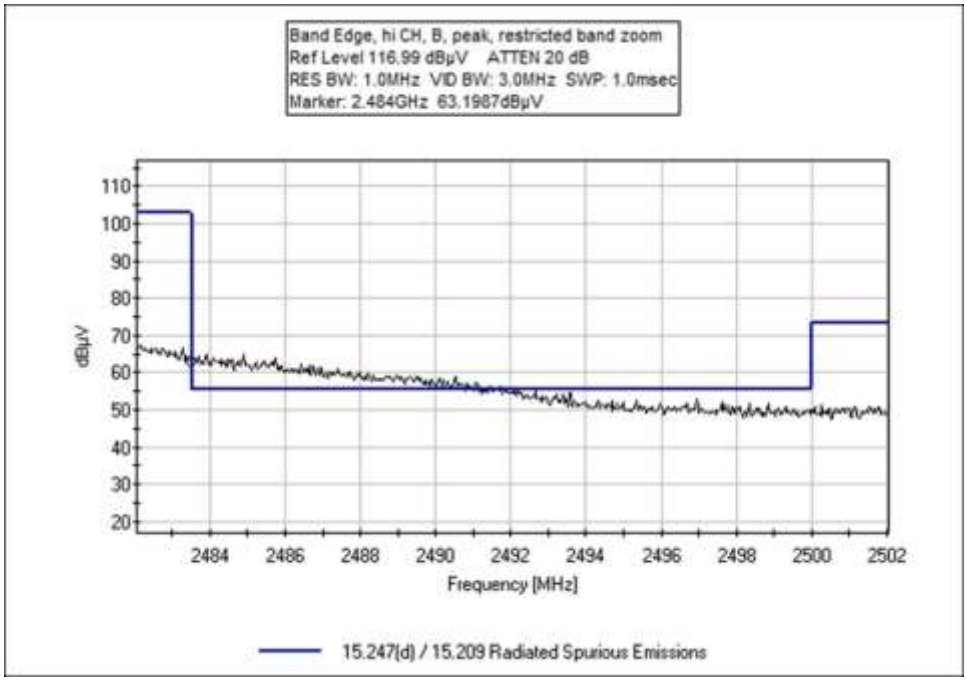

Band Edge, low CH, 802.11B, peak, restricted band
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 1.0msec
Marker: 2.39GHz 57.4117dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

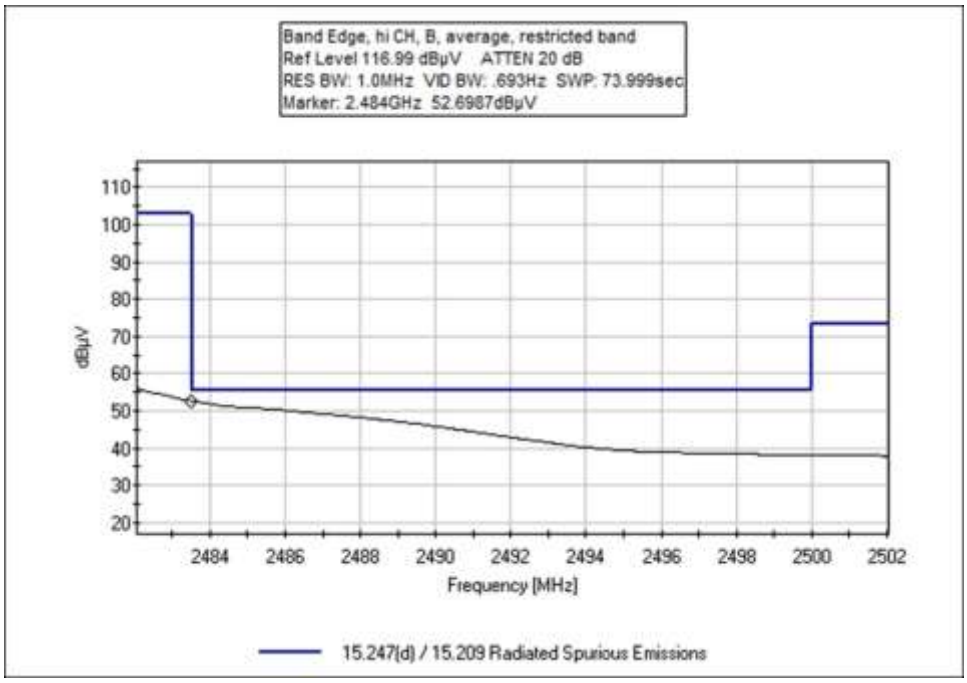

Band Edge, low CH, B, peak, restricted band zoom
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 1.0msec
Marker: 2.39GHz 58.9787dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

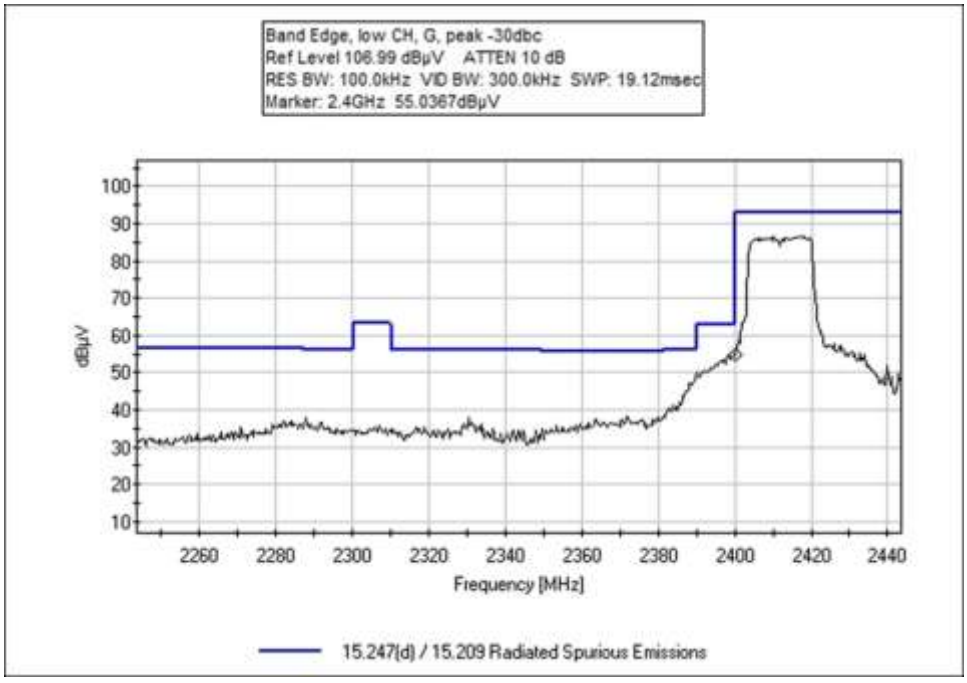

Band Edge, low CH, B, average, restricted band zoom
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 1.0MHz VID BW: .693Hz SWP: 73.999sec
Marker: 2.39GHz 47.4227dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

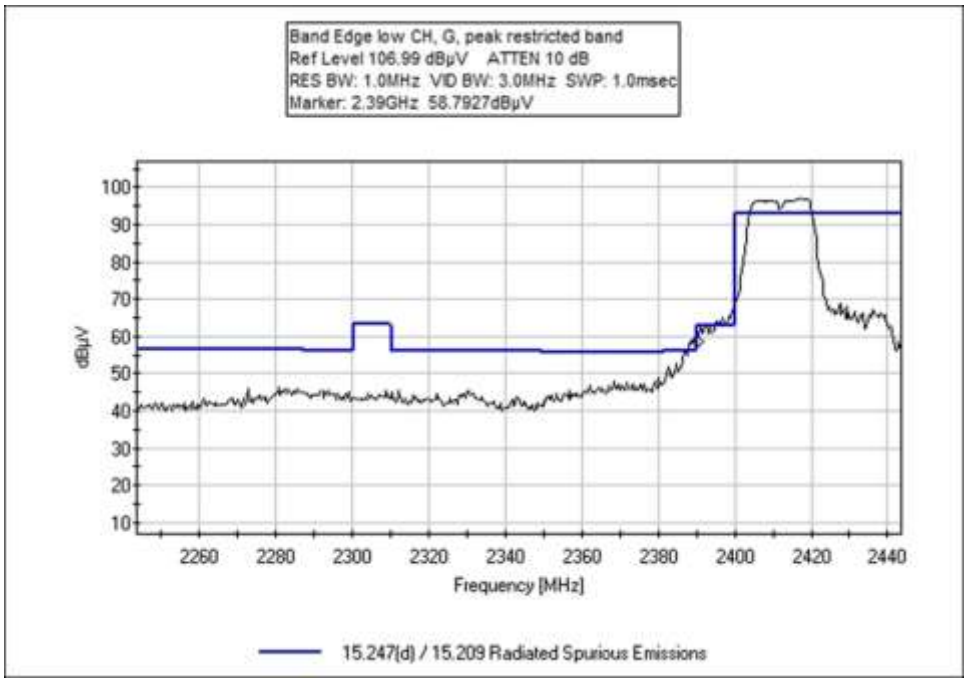

Band Edge, hi CH, peak, B, -30dbc
Ref Level 116.99 dBµV ATTEN 20 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 19.12msec
Marker: 2.5GHz 42.3587dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

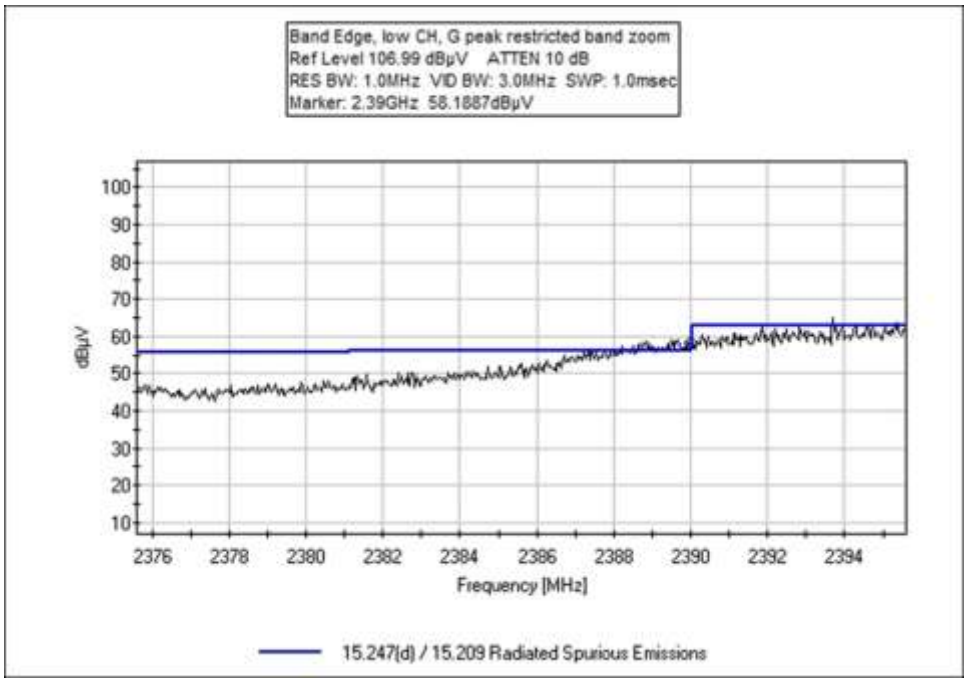

Band Edge, hi CH, B, peak, restricted band
Ref Level 116.99 dBµV ATTEN 20 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 1.0msec
Marker: 2.484GHz 65.5157dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

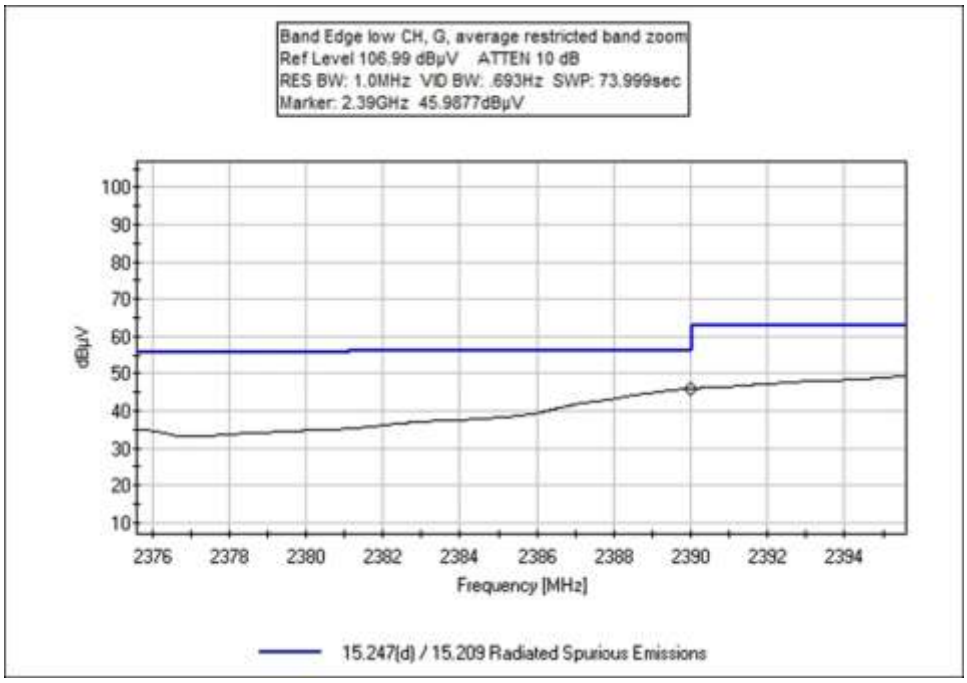

Band Edge, hi CH, B, peak, restricted band zoom
Ref Level 116.99 dBµV ATTEN 20 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 1.0msec
Marker: 2.484GHz 63.1987dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

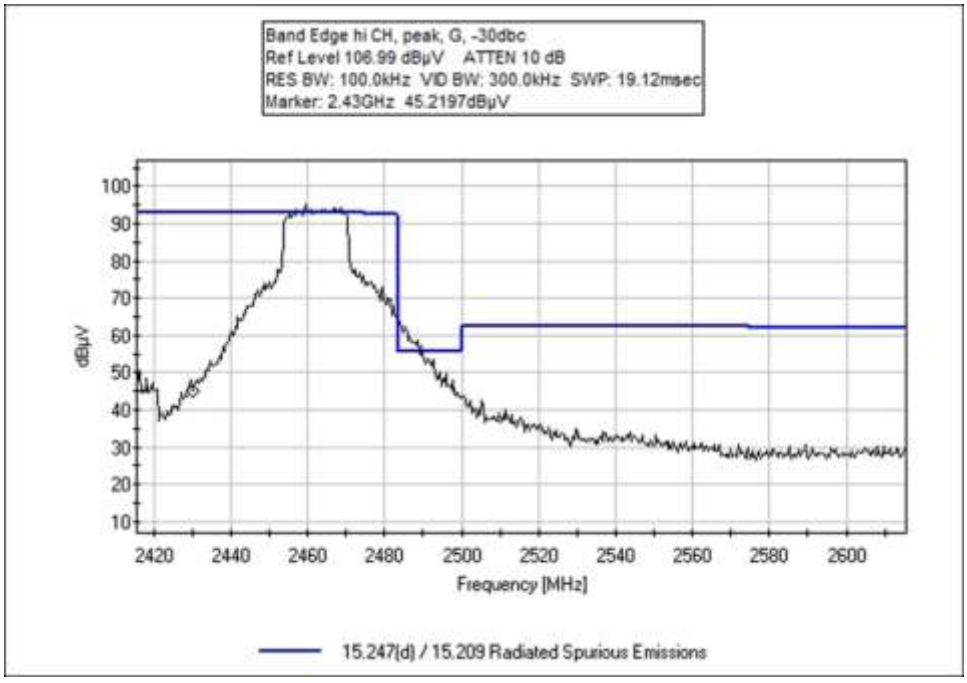

Band Edge, hi CH, B, average, restricted band
Ref Level 116.99 dBµV ATTEN 20 dB
RES BW: 1.0MHz VID BW: .693Hz SWP: 73.999sec
Marker: 2.484GHz 52.6987dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

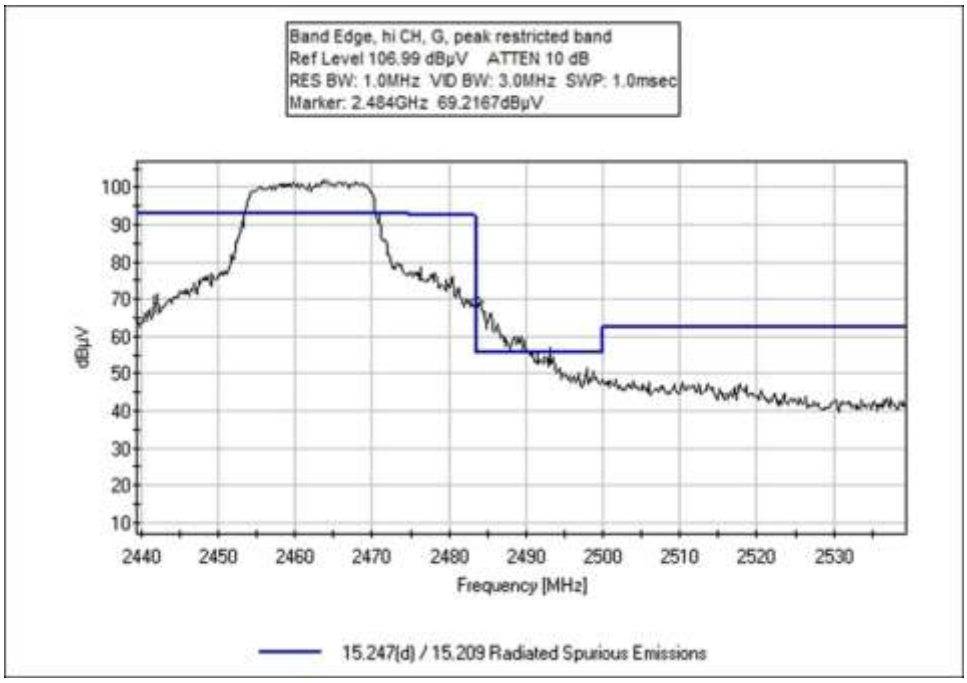

Band Edge, low CH, G, peak -30dbc
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 19.12msec
Marker: 2.4GHz 55.0367dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

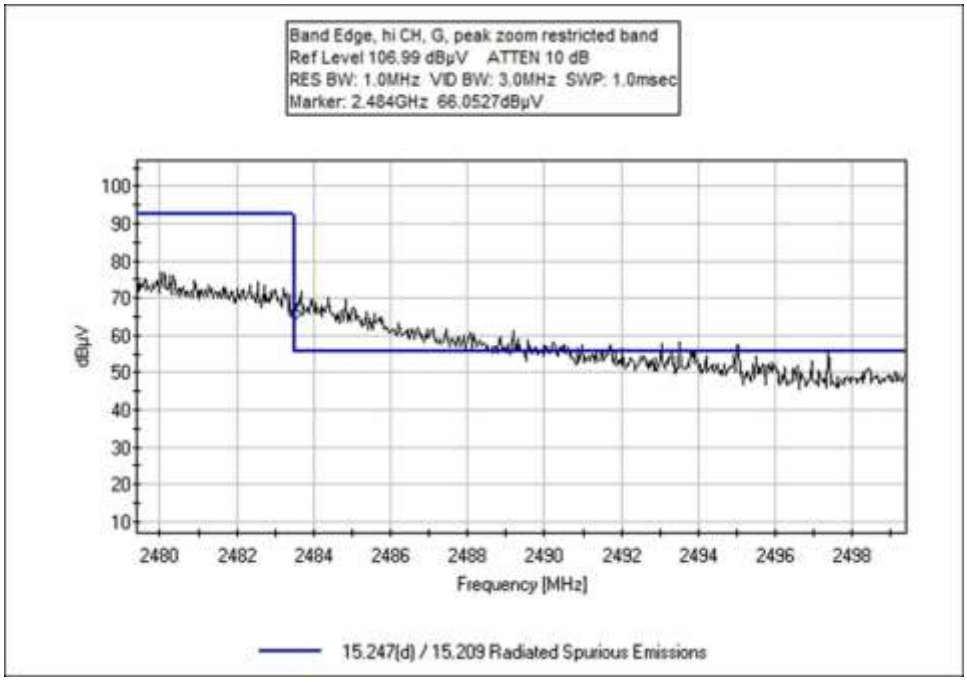

Band Edge low CH, G, peak restricted band
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 1.0msec
Marker: 2.39GHz 58.7927dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

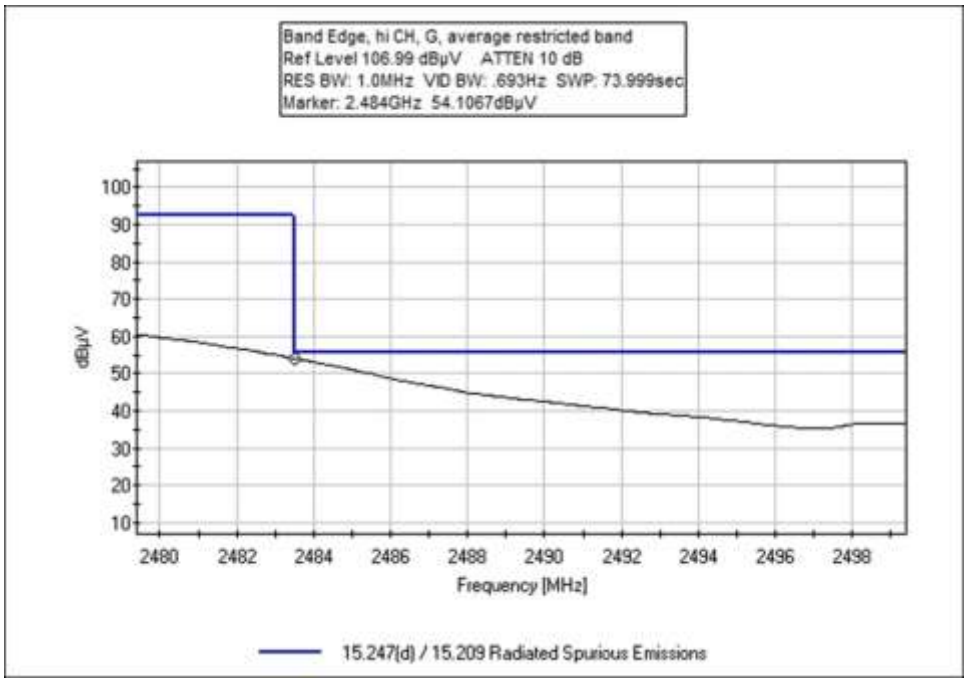

Band Edge, low CH, G peak restricted band zoom
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 1.0msec
Marker: 2.39GHz 58.1887dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

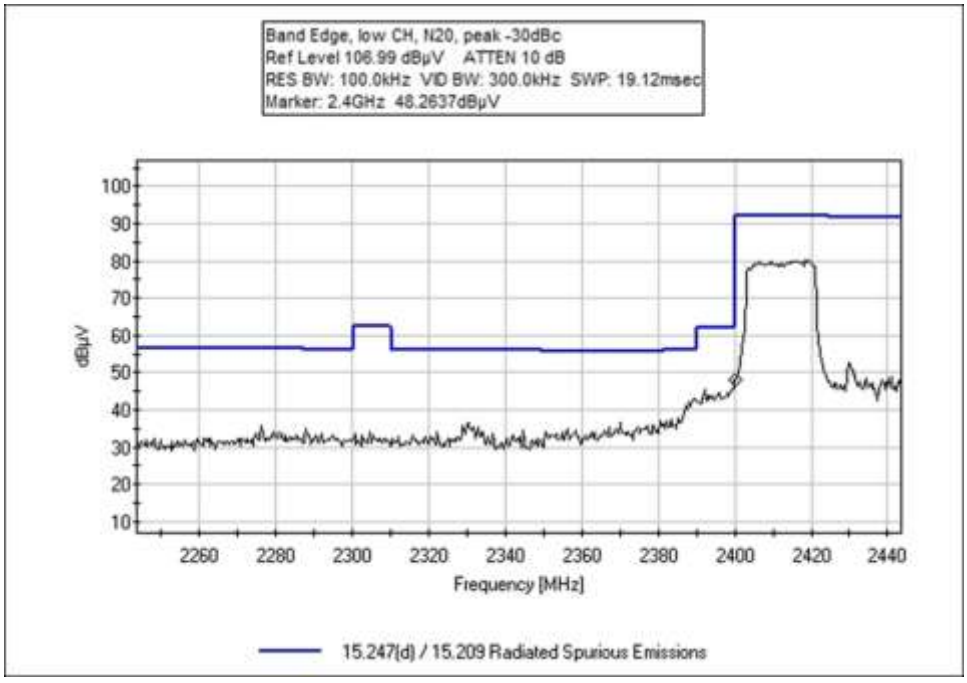

Band Edge low CH, G, average restricted band zoom
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 1.0MHz VID BW: .693Hz SWP: 73.999sec
Marker: 2.39GHz 45.9877dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

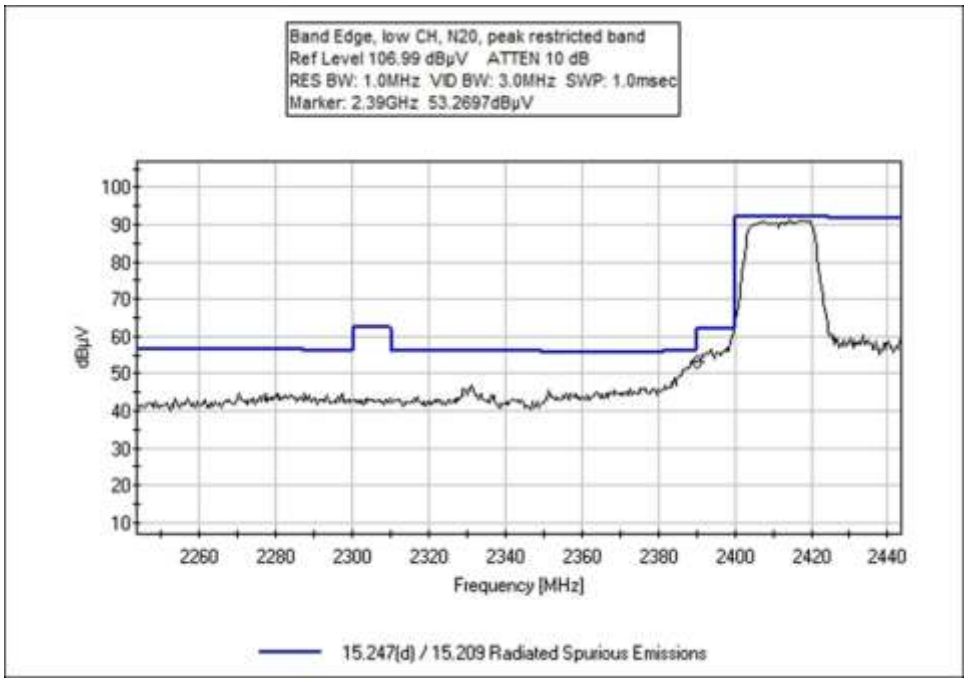

Band Edge hi CH, peak, G, -30dbc
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 19.12msec
Marker: 2.43GHz 45.2197dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

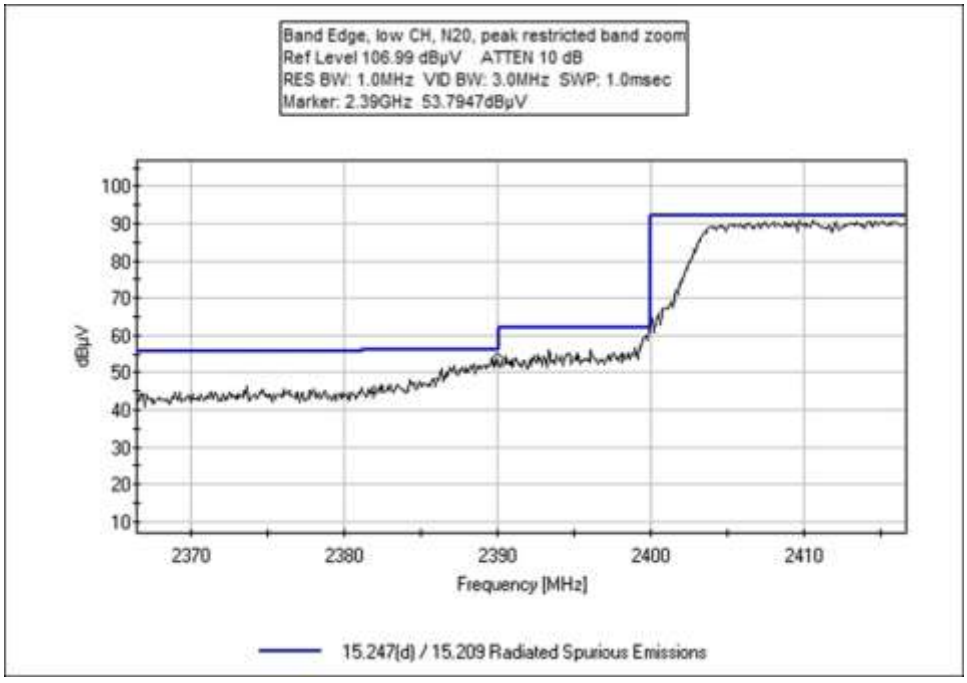

Band Edge, hi CH, G, peak restricted band
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 1.0msec
Marker: 2.484GHz 69.2167dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

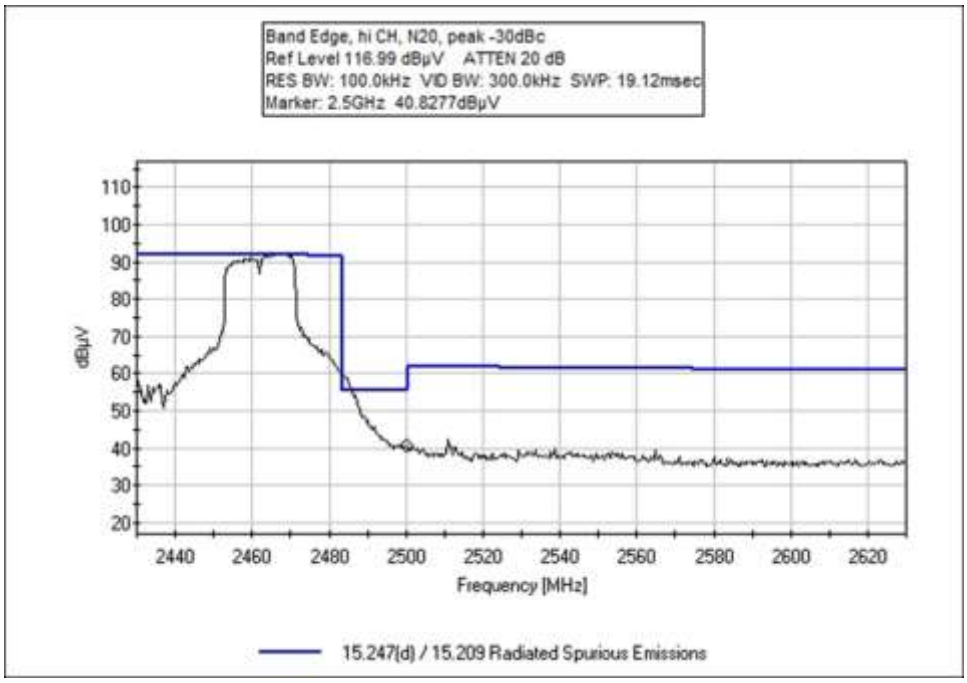

Band Edge, hi CH, G, peak zoom restricted band
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 1.0msec
Marker: 2.484GHz 66.0527dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

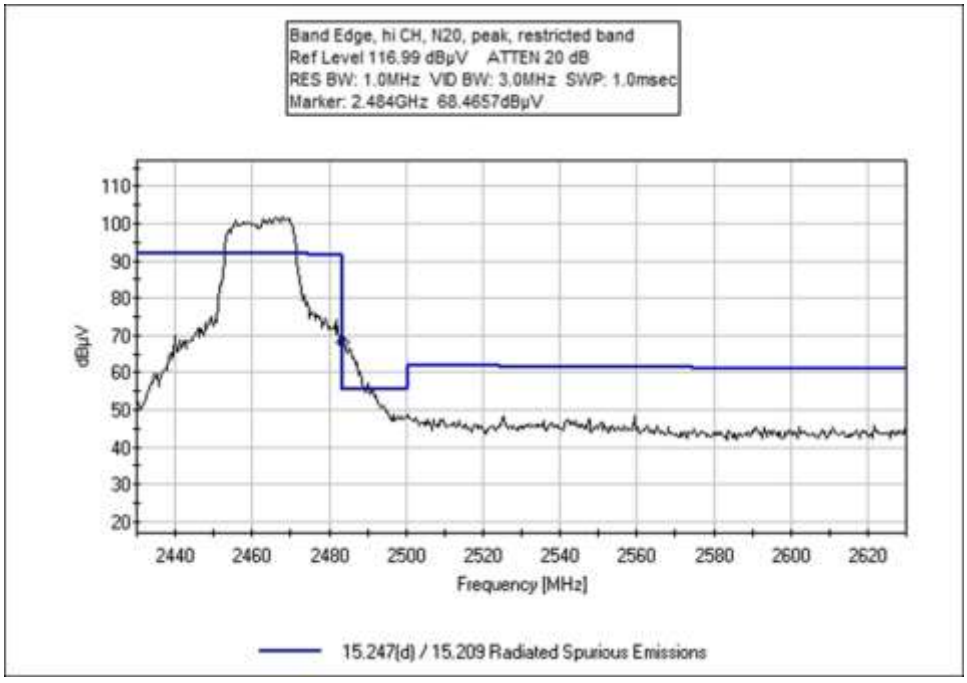

Band Edge, hi CH, G, average restricted band
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 1.0MHz VID BW: .693Hz SWP: 73.999sec
Marker: 2.484GHz 54.1067dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

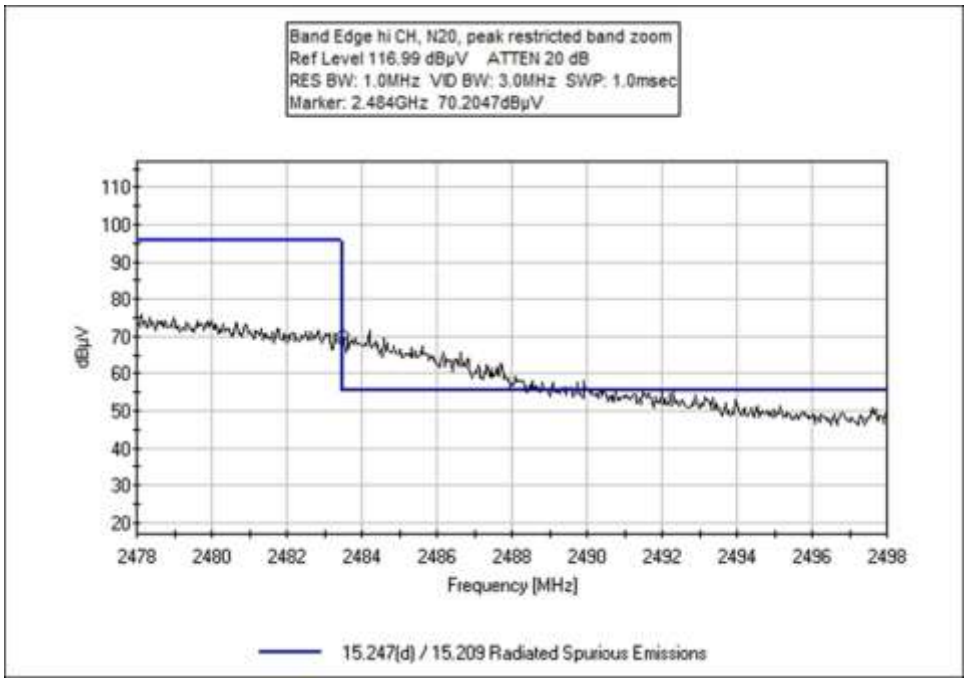

Band Edge, low CH, N20, peak -30dBc
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 19.12msec
Marker: 2.4GHz 48.2637dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

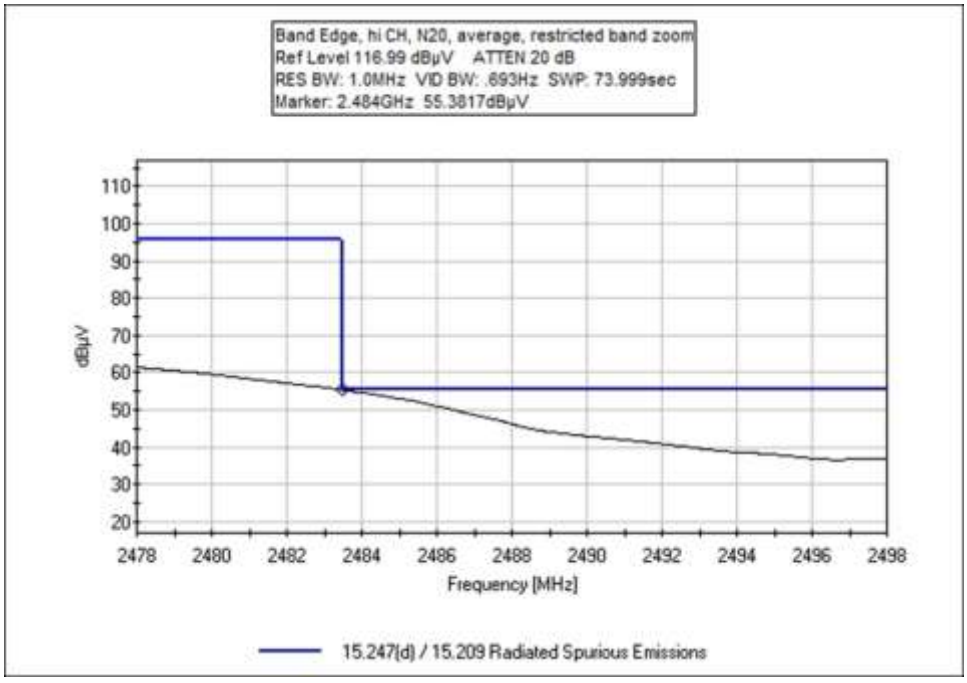

Band Edge, low CH, N20, peak restricted band
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 1.0msec
Marker: 2.39GHz 53.2697dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
2260
2280
2300
2320
2340
2360
2380
2400
2420
2440
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

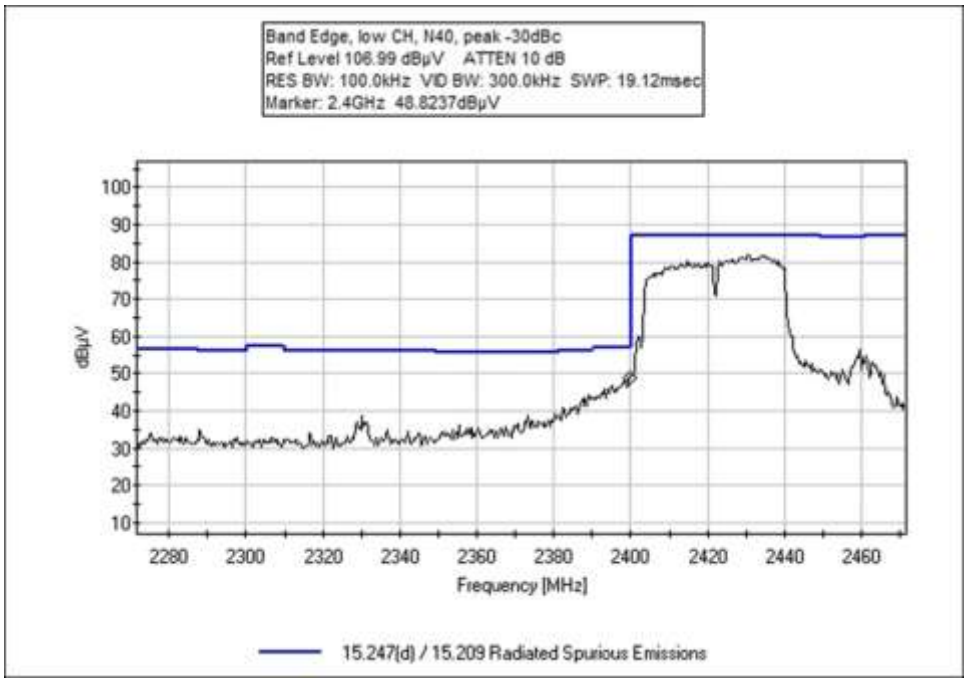

Band Edge, low CH, N20, peak restricted band zoom
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 1.0msec
Marker: 2.39GHz 53.7947dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
2370
2380
2390
2400
2410
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

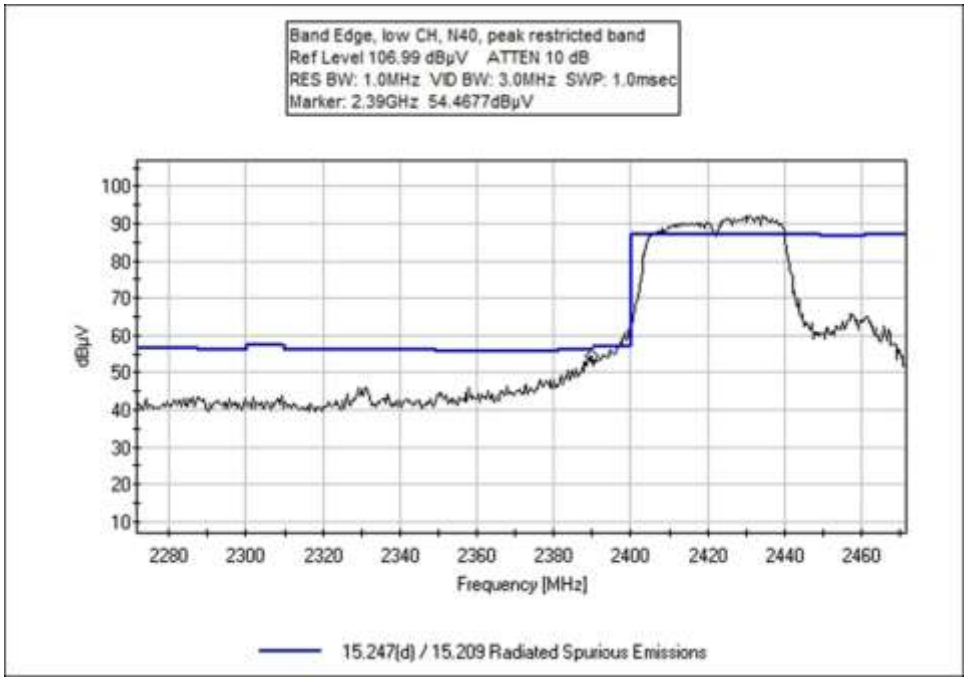

Band Edge, hi CH, N20, peak -30dBc
Ref Level 116.99 dBµV ATTEN 20 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 19.12msec
Marker: 2.5GHz 40.8277dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

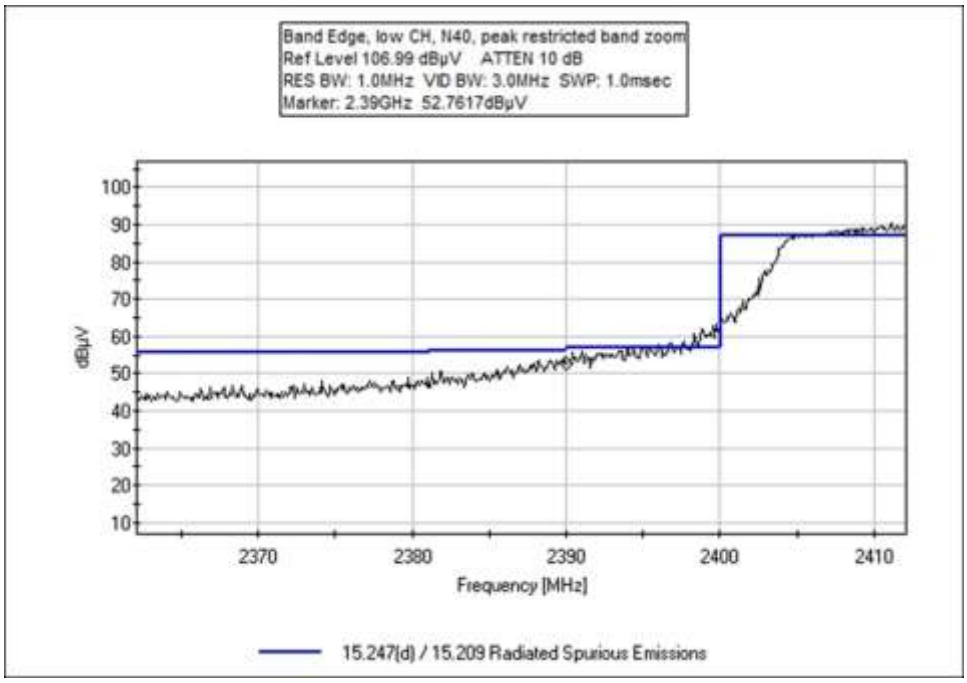

Band Edge, hi CH, N20, peak, restricted band
Ref Level 116.99 dBµV ATTEN 20 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 1.0msec
Marker: 2.484GHz 68.4657dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

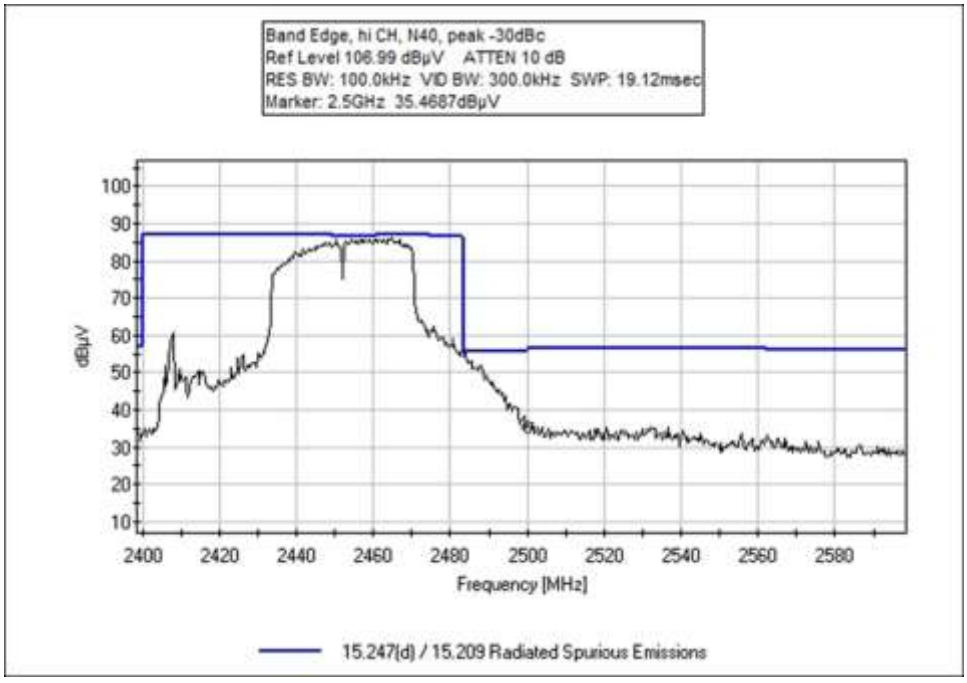

Band Edge hi CH, N20, peak restricted band zoom
Ref Level 116.99 dBµV ATTEN 20 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 1.0msec
Marker: 2.484GHz 70.2047dBµV
dBµV
110
100
90
80
70
60
50
40
30
20
2478
2480
2482
2484
2486
2488
2490
2492
2494
2496
2498
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

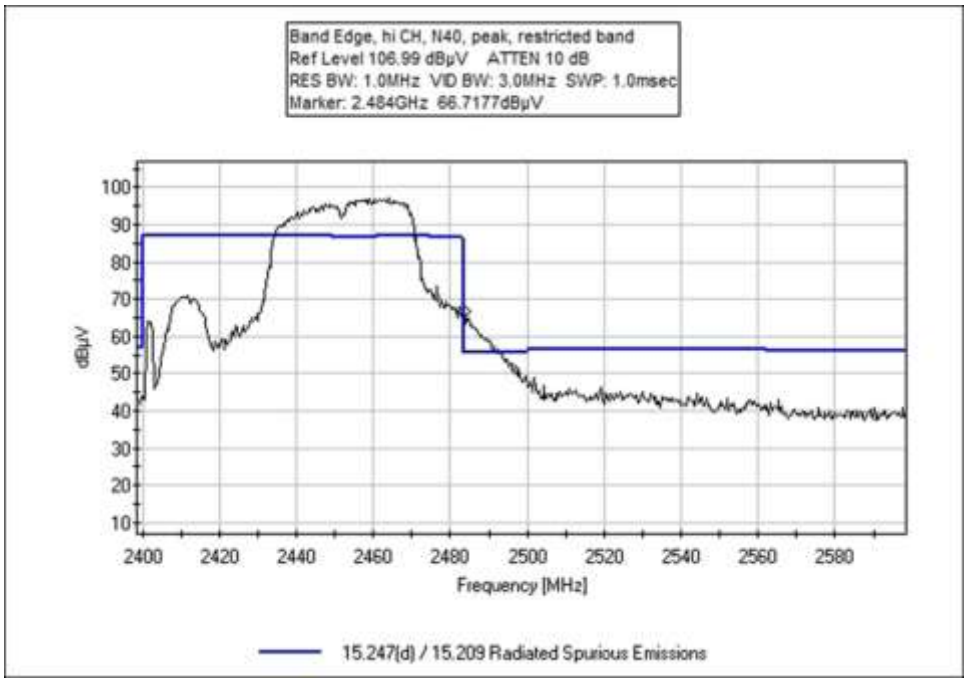

Band Edge, hi CH, N20, average, restricted band zoom
Ref Level 116.99 dBµV ATTEN 20 dB
RES BW: 1.0MHz VID BW: .693Hz SWP: 73.999sec
Marker: 2.484GHz 55.3817dBµV
dBµV
110
100
90
80
70
60
50
40
30
20
2478
2480
2482
2484
2486
2488
2490
2492
2494
2496
2498
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

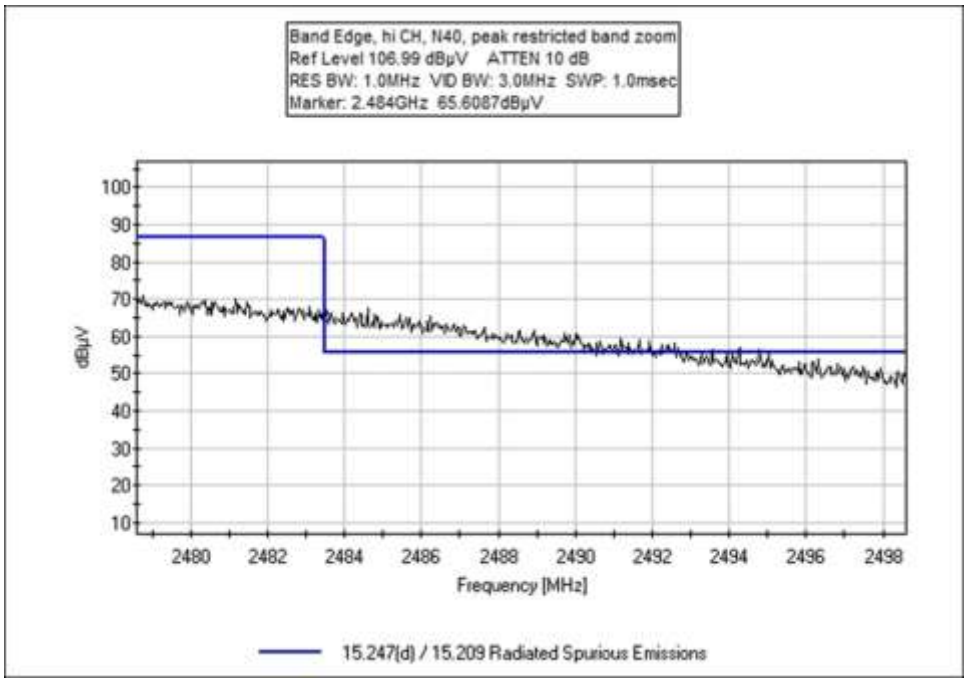

Band Edge, low CH, N40, peak -30dBc
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 19.12msec
Marker: 2.4GHz 48.8237dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

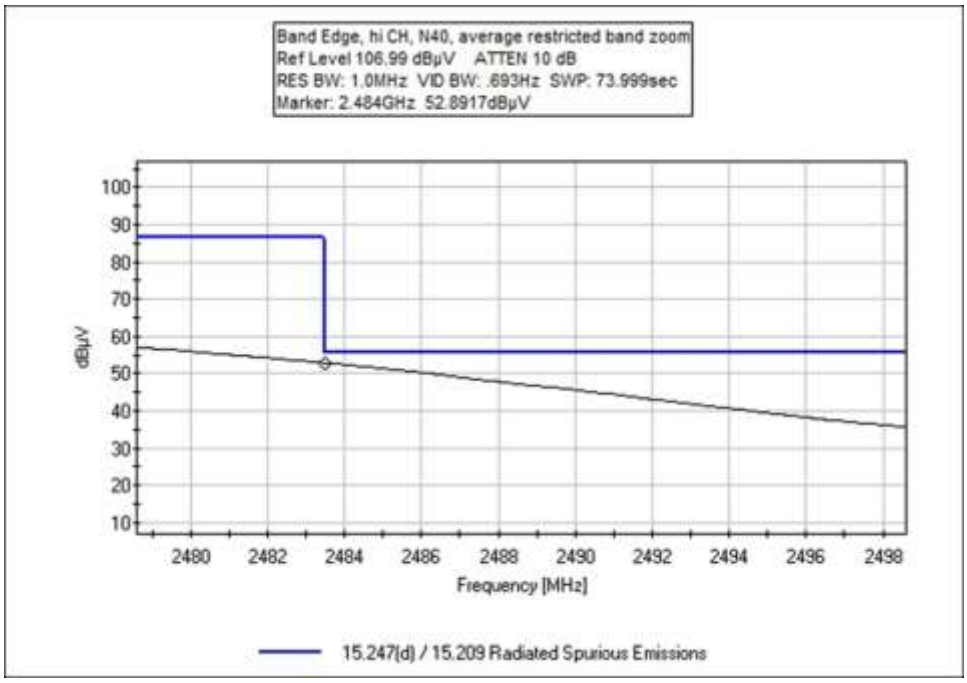

Band Edge, low CH, N40, peak restricted band
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 1.0msec
Marker: 2.39GHz 54.4677dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Band Edge, low CH, N40, peak restricted band zoom
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 1.0msec
Marker: 2.39GHz 52.7617dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Band Edge, hi CH, N40, peak -30dBc
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 19.12msec
Marker: 2.5GHz 35.4687dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Band Edge, hi CH, N40, peak, restricted band
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 1.0msec
Marker: 2.484GHz 66.7177dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Band Edge, hi CH, N40, peak restricted band zoom
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 1.0msec
Marker: 2.484GHz 65.6087dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


Band Edge, hi CH, N40, average restricted band zoom
Ref Level 106.99 dBµV ATTEN 10 dB
RES BW: 1.0MHz VID BW: .693Hz SWP: 73.999sec
Marker: 2.484GHz 52.8917dBµV
100
90
80
70
60
50
40
30
20
10
dBµV
2480
2482
2484
2486
2488
2490
2492
2494
2496
2498
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

Test Setup / Conditions / Data

Test Location:	CKC Laboratories Inc. • 110 N. Olinda Place • Brea, CA 92823 • 714-993-6112		
Customer:	**KE2 Therm Solutions**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**100985**	Date:	3/27/2018
Test Type:	**Maximized Emissions**	Time:	16:02:46
Tested By:	Don Nguyen	Sequence#:	2
Software:	EMITest 5.03.11		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

The EUT is placed on Styrofoam platform. The EUT is set to continuously transmit at 100% duty cycle and maximum power. Ethernet port is connected to a support laptop running software Atheros Radio Test 2 (ART2-GUI) to exercise the Wi-Fi module. All other IO ports are populated with section of cables.
The EUT is rotated in three orthogonal axes.
Operating frequency: 2412-2462MHz
Protocols and data rate:
802.11B, 1Mbps-11Mbps

Test Location: Brea Lab D
Test Method: ANSI C63.10 (2013), KDB 558074 D01 V.04 (04/05/2017)
Temperature (ºC): 22
Relative Humidity (%): 24

Scanned frequency: 1-3GHz
RBW=100kHz, VBW=300kHz
RBW=1MHz, VBW=3MHz (restricted band)

Note: Data presents worst case modulation/data rate (11Mbps)

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02869	Spectrum Analyzer	E4440A	8/1/2017	8/1/2018
T2	AN00787	Preamp	83017A	6/9/2017	6/9/2019
T3	ANP04382	Cable	LDF-50	6/6/2016	6/6/2018
T4	ANP06544	Cable	32026-29094K-29094K-36TC	12/21/2017	12/21/2019
T5	ANP07139	Cable	ANDL1-PNMNM-48	3/1/2017	3/1/2019
T6	AN01646	Horn Antenna	3115	3/14/2018	3/14/2020

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	2483.500M	52.7	+0.0	-40.2	+6.1	+0.8	+0.0	51.0	54.0	-3.0	Horiz
	Ave		+3.1	+28.5							
^	2483.500M	63.2	+0.0	-40.2	+6.1	+0.8	+0.0	61.5	54.0	+7.5	Horiz
			+3.1	+28.5							
3	2390.000M	47.4	+0.0	-40.0	+6.0	+0.8	+0.0	45.4	54.0	-8.6	Horiz
	Ave		+2.9	+28.3							
^	2390.000M	59.0	+0.0	-40.0	+6.0	+0.8	+0.0	57.0	54.0	+3.0	Horiz
			+2.9	+28.3							
5	2400.000M	51.7	+0.0	-40.0	+6.0	+0.8	+0.0	49.7	71.5	-21.8	Horiz
			+2.9	+28.3							

Test Location:	CKC Laboratories Inc. • 110 N. Olinda Place • Brea, CA 92823 • 714-993-6112		
Customer:	**KE2 Therm Solutions**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**100985**	Date:	3/28/2018
Test Type:	**Maximized Emissions**	Time:	09:39:44
Tested By:	Don Nguyen	Sequence#:	2
Software:	EMITest 5.03.11		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

The EUT is placed on Styrofoam platform. The EUT is set to continuously transmit at 100% duty cycle and maximum power. Ethernet port is connected to a support laptop running software Atheros Radio Test 2 (ART2-GUI) to exercise the Wi-Fi module. All other IO ports are populated with section of cables.
The EUT is rotated in three orthogonal axes.
Operating frequency: 2412-2462MHz
Protocols and data rate:
802.11G, 6Mbps-54Mbps

Test Location: Brea Lab D
Test Method: ANSI C63.10 (2013), KDB 558074 D01 V.04 (04/05/2017)
Temperature (ºC): 22
Relative Humidity (%): 24

Scanned frequency: 1-3GHz
RBW=100kHz, VBW=300kHz
RBW=1MHz, VBW=3MHz (restricted band)

Note: Data presents worst case modulation/data rate (6Mbps)

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02869	Spectrum Analyzer	E4440A	8/1/2017	8/1/2018
T2	AN00787	Preamp	83017A	6/9/2017	6/9/2019
T3	ANP04382	Cable	LDF-50	6/6/2016	6/6/2018
T4	ANP06544	Cable	32026-29094K-29094K-36TC	12/21/2017	12/21/2019
T5	ANP07139	Cable	ANDL1-PNMNM-48	3/1/2017	3/1/2019
T6	AN01646	Horn Antenna	3115	3/14/2018	3/14/2020

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	2483.500M	54.1	+0.0	-40.2	+6.1	+0.8	+0.0	52.4	54.0	-1.6	Horiz
	Ave		+3.1	+28.5							
^	2483.500M	66.1	+0.0	-40.2	+6.1	+0.8	+0.0	64.4	54.0	+10.4	Horiz
			+3.1	+28.5							
3	2400.000M	55.0	+0.0	-40.0	+6.0	+0.8	+0.0	53.0	61.0	-8.0	Horiz
			+2.9	+28.3							
4	2390.000M	46.0	+0.0	-40.0	+6.0	+0.8	+0.0	44.0	54.0	-10.0	Horiz
	Ave		+2.9	+28.3							
^	2390.000M	58.2	+0.0	-40.0	+6.0	+0.8	+0.0	56.2	54.0	+2.2	Horiz
			+2.9	+28.3							

Test Location:	CKC Laboratories Inc. • 110 N. Olinda Place • Brea, CA 92823 • 714-993-6112		
Customer:	**KE2 Therm Solutions**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**100985**	Date:	3/28/2018
Test Type:	**Maximized Emissions**	Time:	08:32:00
Tested By:	Don Nguyen	Sequence#:	3
Software:	EMITest 5.03.11		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

The EUT is placed on Styrofoam platform. The EUT is set to continuously transmit at 100% duty cycle and maximum power. Ethernet port is connected to a support laptop running software Atheros Radio Test 2 (ART2-GUI) to exercise the Wi-Fi module. All other IO ports are populated with section of cables.
The EUT is rotated in three orthogonal axes.
Operating frequency: 2412-2462MHz
Protocols and data rate:
802.11N20, 6.5Mbps-65Mbps

Test Location: Brea Lab D
Test Method: ANSI C63.10 (2013), KDB 558074 D01 V.04 (04/05/2017)
Temperature (ºC): 22
Relative Humidity (%): 24

Scanned frequency: 1-3GHz
RBW=100kHz, VBW=300kHz
RBW=1MHz, VBW=3MHz (restricted band)

Note: Data presents worst case modulation/data rate (6.5Mbps)

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02869	Spectrum Analyzer	E4440A	8/1/2017	8/1/2018
T2	AN00787	Preamp	83017A	6/9/2017	6/9/2019
T3	ANP04382	Cable	LDF-50	6/6/2016	6/6/2018
T4	ANP06544	Cable	32026-29094K-29094K-36TC	12/21/2017	12/21/2019
T5	ANP07139	Cable	ANDL1-PNMNM-48	3/1/2017	3/1/2019
T6	AN01646	Horn Antenna	3115	3/14/2018	3/14/2020

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	2483.500M	55.4	+0.0	-40.2	+6.1	+0.8	+0.0	53.7	54.0	-0.3	Horiz
	Ave		+3.1	+28.5							
^	2483.500M	70.2	+0.0	-40.2	+6.1	+0.8	+0.0	68.5	54.0	+14.5	Horiz
			+3.1	+28.5							
3	2390.000M	53.8	+0.0	-40.0	+6.0	+0.8	+0.0	51.8	54.0	-2.2	Horiz
			+2.9	+28.3							
4	2400.000M	48.3	+0.0	-40.0	+6.0	+0.8	+0.0	46.3	60.0	-13.7	Horiz
			+2.9	+28.3							

Test Location:	CKC Laboratories Inc. • 110 N. Olinda Place • Brea, CA 92823 • 714-993-6112		
Customer:	**KE2 Therm Solutions**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**100985**	Date:	3/28/2018
Test Type:	**Maximized Emissions**	Time:	09:11:22
Tested By:	Don Nguyen	Sequence#:	4
Software:	EMITest 5.03.11		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

The EUT is placed on Styrofoam platform. The EUT is set to continuously transmit at 100% duty cycle and maximum power. Ethernet port is connected to a support laptop running software Atheros Radio Test 2 (ART2-GUI) to exercise the Wi-Fi module. All other IO ports are populated with section of cables.
The EUT is rotated in three orthogonal axes.
Operating frequency: 2412-2462MHz
Protocols and data rate:
802.11N40, 13.5Mbps-135Mbps

Test Location: Brea Lab D
Test Method: ANSI C63.10 (2013), KDB 558074 D01 V.04 (04/05/2017)
Temperature (ºC): 22
Relative Humidity (%): 24

Scanned frequency: 1-3GHz
RBW=100kHz, VBW=300kHz
RBW=1MHz, VBW=3MHz (restricted band)

Note: Data presents worst case modulation/data rate (13.5Mbps)

Test Equipment:

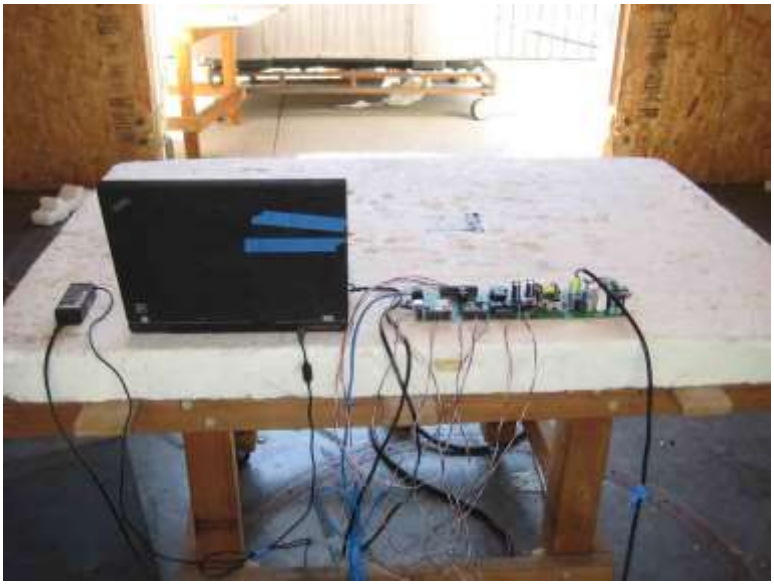
ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02869	Spectrum Analyzer	E4440A	8/1/2017	8/1/2018
T2	AN00787	Preamp	83017A	6/9/2017	6/9/2019
T3	ANP04382	Cable	LDF-50	6/6/2016	6/6/2018
T4	ANP06544	Cable	32026-29094K-29094K-36TC	12/21/2017	12/21/2019
T5	ANP07139	Cable	ANDL1-PNMNM-48	3/1/2017	3/1/2019
T6	AN01646	Horn Antenna	3115	3/14/2018	3/14/2020

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

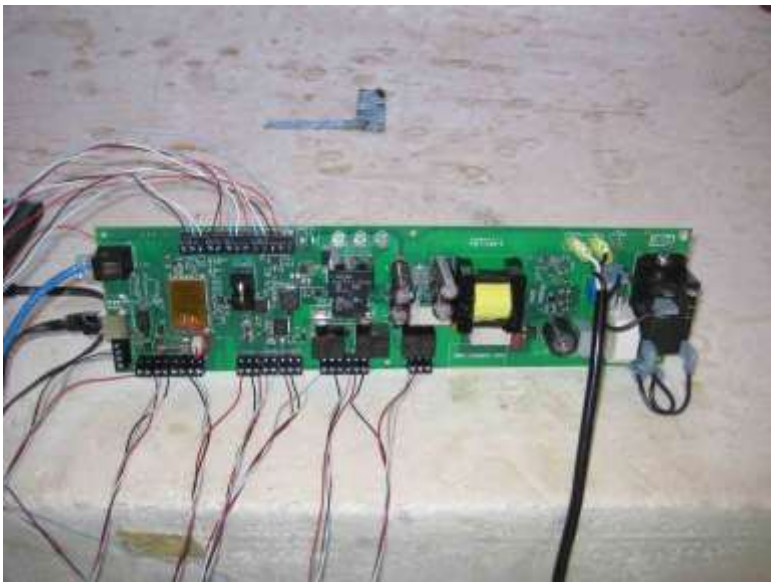
#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	2483.500M	52.8	+0.0	-40.2	+6.1	+0.8	+0.0	51.1	54.0	-2.9	Horiz
	Ave		+3.1	+28.5							
^	2483.500M	65.6	+0.0	-40.2	+6.1	+0.8	+0.0	63.9	54.0	+9.9	Horiz
			+3.1	+28.5							
3	2390.000M	52.8	+0.0	-40.0	+6.0	+0.8	+0.0	50.8	54.0	-3.2	Horiz
			+2.9	+28.3							
4	2400.000M	48.8	+0.0	-40.0	+6.0	+0.8	+0.0	46.8	55.0	-8.2	Horiz
			+2.9	+28.3							

Test Setup Photos

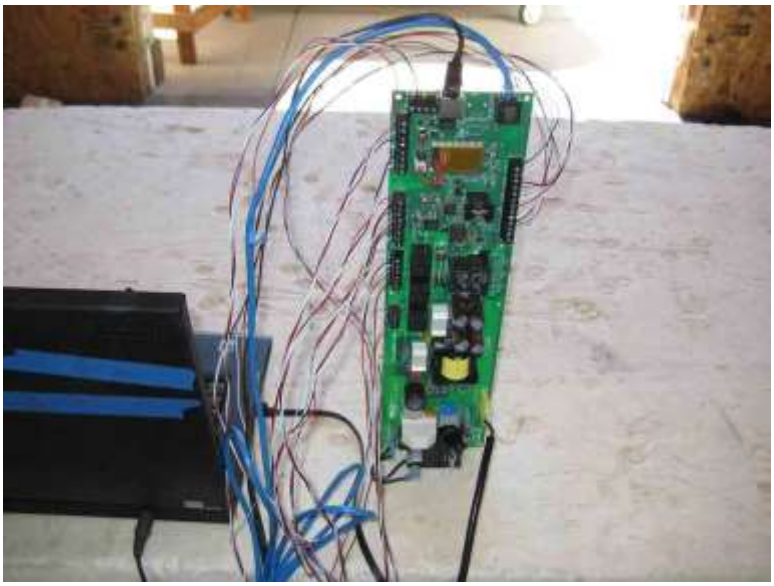
30MHz – 1GHz, X Axis



30MHz – 1GHz, X Axis



30MHz – 1GHz, Y Axis

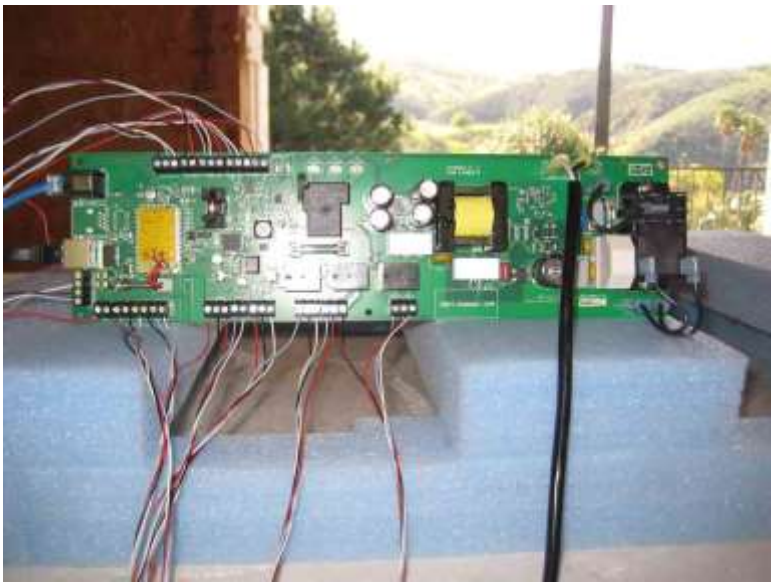


30MHz – 1GHz, Z Axis

1 –25GHz Cone placement

1 –25GHz Cone placement

1 – 25GHz, X Axis



1 – 25GHz, Y Axis

1 – 25GHz, Z Axis

15.207 AC Conducted Emissions

Test Setup / Conditions / Data

Test Location:	CKC Laboratories Inc. • 110 N. Olinda Place • Brea, CA 92823 • 714-993-6112		
Customer:	**KE2 Therm Solutions**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**100985**	Date:	3/26/2018
Test Type:	**Conducted Emissions**	Time:	15:54:38
Tested By:	Don Nguyen	Sequence#:	2
Software:	EMITest 5.03.11		120V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

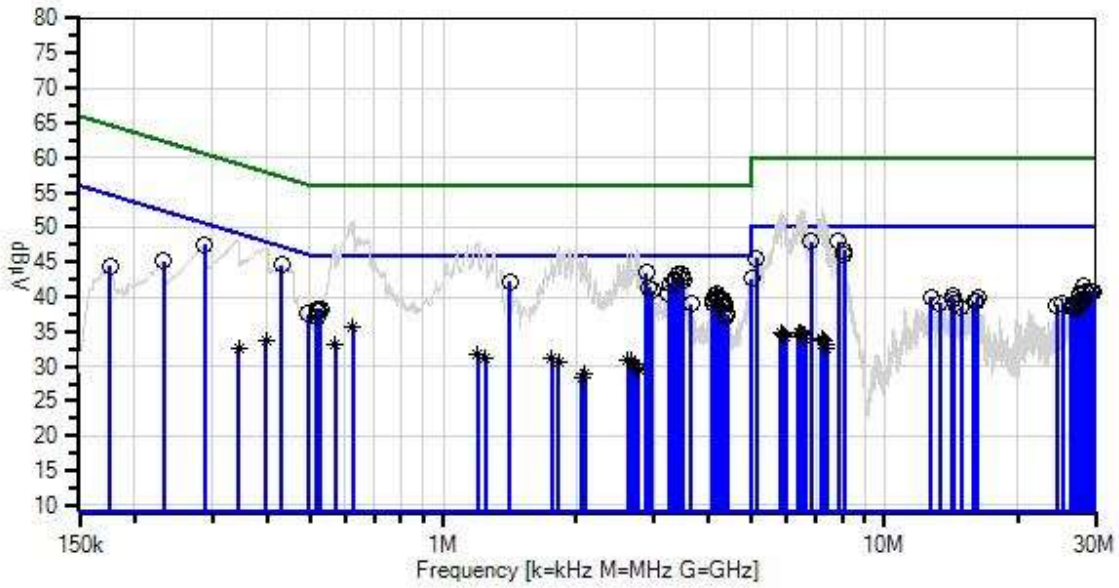
The EUT is placed on table top The EUT is set to continuously transmit at 100% duty cycle and maximum power.
A support laptop is running software Atheros Radio Test 2 (ART2-GUI) to exercise the Wi-Fi module.
Operating frequency: 2412-2462MHz
Protocols and data rate:
802.11B, 1Mbps-11Mbps
802.11G, 6Mbps-54Mbps
802.11N20, 6.5Mbps (MCS0)-65Mbps (MCS7)
802.11N40, 13.5Mbps (MCS0)-135Mbps (MCS7)

Scanned frequency: 150kHz-30MHz
RBW=9kHz, VBW=9kHz

Test Method: ANSI C63.10 (2013)
Temperature: 22.1°C
Relative Humidity: 30.6%
Site D

Note: Data presents the worst case mode with the highest power output (802.11B, 11Mbps, 2442MHz)

KE2 Therm Solutions WO#: 100985 Sequence#: 2 Date: 3/26/2018
15.207 AC Mains - Average Test Lead: 120V 60Hz L1-Line



Sweep Data
× QP Readings
Software Version: 5.03.11
Readings
Average Readings
1 - 15.207 AC Mains - Average
Peak Readings
Ambient
2 - 15.207 AC Mains - Quasi-peak

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06085	Attenuator	SA18N10W-09	11/14/2016	11/14/2018
T2	ANP01910	Cable	RG-142	10/25/2017	10/25/2019
T3	AN00847.1	50uH LISN-Line 1	3816/2NM	3/12/2018	3/12/2019
	AN00847.1	50uH LISN-Line 2	3816/2NM	3/12/2018	3/12/2019
	AN02869	Spectrum Analyzer	E4440A	8/1/2017	8/1/2018
T4	AN02343	High Pass Filter	HE9615-150K-50-720B	1/25/2017	1/25/2019

Measurement Data: Reading listed by margin. Test Lead: L1-Line

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	6.824M	41.6	+5.7	+0.2	+0.3	+0.1	+0.0	47.9	50.0	-2.1	L1-Li
2	7.860M	41.6	+5.7	+0.2	+0.3	+0.1	+0.0	47.9	50.0	-2.1	L1-Li
3	2.889M	37.5	+5.7	+0.1	+0.1	+0.1	+0.0	43.5	46.0	-2.5	L1-Li
4	430.701k	38.6	+5.7	+0.1	+0.1	+0.1	+0.0	44.6	47.2	-2.6	L1-Li
5	3.416M	37.0	+5.7	+0.1	+0.2	+0.1	+0.0	43.1	46.0	-2.9	L1-Li
6	3.459M	37.0	+5.7	+0.1	+0.2	+0.1	+0.0	43.1	46.0	-2.9	L1-Li
7	288.896k	41.5	+5.7	+0.1	+0.1	+0.1	+0.0	47.5	50.6	-3.1	L1-Li
8	8.103M	40.4	+5.7	+0.2	+0.3	+0.1	+0.0	46.7	50.0	-3.3	L1-Li
9	3.488M	36.5	+5.7	+0.1	+0.2	+0.1	+0.0	42.6	46.0	-3.4	L1-Li
10	4.994M	36.4	+5.7	+0.2	+0.2	+0.1	+0.0	42.6	46.0	-3.4	L1-Li
11	3.335M	36.3	+5.7	+0.1	+0.2	+0.1	+0.0	42.4	46.0	-3.6	L1-Li
12	3.369M	36.3	+5.7	+0.1	+0.2	+0.1	+0.0	42.4	46.0	-3.6	L1-Li
13	3.501M	36.3	+5.7	+0.1	+0.2	+0.1	+0.0	42.4	46.0	-3.6	L1-Li
14	1.417M	36.2	+5.7	+0.1	+0.1	+0.1	+0.0	42.2	46.0	-3.8	L1-Li
15	8.085M	39.7	+5.7	+0.2	+0.3	+0.1	+0.0	46.0	50.0	-4.0	L1-Li
16	3.254M	35.6	+5.7	+0.1	+0.2	+0.1	+0.0	41.7	46.0	-4.3	L1-Li
17	5.121M	39.3	+5.7	+0.2	+0.2	+0.1	+0.0	45.5	50.0	-4.5	L1-Li
18	2.936M	35.3	+5.7	+0.1	+0.2	+0.1	+0.0	41.4	46.0	-4.6	L1-Li
19	2.970M	34.8	+5.7	+0.1	+0.2	+0.1	+0.0	40.9	46.0	-5.1	L1-Li

20	3.237M	34.3	+5.7	+0.1	+0.2	+0.1	+0.0	40.4	46.0	-5.6	L1-Li
21	4.177M	34.2	+5.7	+0.2	+0.2	+0.1	+0.0	40.4	46.0	-5.6	L1-Li
22	4.143M	34.0	+5.7	+0.2	+0.2	+0.1	+0.0	40.2	46.0	-5.8	L1-Li
23	4.169M	33.6	+5.7	+0.2	+0.2	+0.1	+0.0	39.8	46.0	-6.2	L1-Li
24	4.088M	33.5	+5.7	+0.2	+0.2	+0.1	+0.0	39.7	46.0	-6.3	L1-Li
25	4.216M	33.5	+5.7	+0.2	+0.2	+0.1	+0.0	39.7	46.0	-6.3	L1-Li
26	4.288M	33.4	+5.7	+0.2	+0.2	+0.1	+0.0	39.6	46.0	-6.4	L1-Li
27	4.258M	33.1	+5.7	+0.2	+0.2	+0.1	+0.0	39.3	46.0	-6.7	L1-Li
28	3.637M	32.9	+5.7	+0.1	+0.2	+0.1	+0.0	39.0	46.0	-7.0	L1-Li
29	4.080M	32.7	+5.7	+0.2	+0.2	+0.1	+0.0	38.9	46.0	-7.1	L1-Li
30	4.335M	32.7	+5.7	+0.2	+0.2	+0.1	+0.0	38.9	46.0	-7.1	L1-Li
31	232.901k	39.0	+5.7	+0.1	+0.1	+0.2	+0.0	45.1	52.3	-7.2	L1-Li
32	4.313M	32.6	+5.7	+0.2	+0.2	+0.1	+0.0	38.8	46.0	-7.2	L1-Li
33	528.874k	32.2	+5.7	+0.1	+0.1	+0.2	+0.0	38.3	46.0	-7.7	L1-Li
34	520.147k	32.1	+5.7	+0.1	+0.1	+0.2	+0.0	38.2	46.0	-7.8	L1-Li
35	523.783k	31.9	+5.7	+0.1	+0.1	+0.2	+0.0	38.0	46.0	-8.0	L1-Li
36	517.239k	31.8	+5.7	+0.1	+0.1	+0.2	+0.0	37.9	46.0	-8.1	L1-Li
37	28.321M	34.2	+5.8	+0.4	+1.0	+0.2	+0.0	41.6	50.0	-8.4	L1-Li
38	4.411M	31.3	+5.7	+0.2	+0.2	+0.1	+0.0	37.5	46.0	-8.5	L1-Li
39	494.695k	31.4	+5.7	+0.1	+0.1	+0.2	+0.0	37.5	46.1	-8.6	L1-Li
40	4.369M	31.2	+5.7	+0.2	+0.2	+0.1	+0.0	37.4	46.0	-8.6	L1-Li
41	4.360M	31.0	+5.7	+0.2	+0.2	+0.1	+0.0	37.2	46.0	-8.8	L1-Li
42	518.693k	30.9	+5.7	+0.1	+0.1	+0.2	+0.0	37.0	46.0	-9.0	L1-Li
43	29.472M	33.3	+5.8	+0.4	+1.1	+0.2	+0.0	40.8	50.0	-9.2	L1-Li
44	29.815M	33.3	+5.8	+0.4	+1.1	+0.2	+0.0	40.8	50.0	-9.2	L1-Li
45	28.568M	33.3	+5.8	+0.4	+1.0	+0.2	+0.0	40.7	50.0	-9.3	L1-Li

46	27.739M	33.1	+5.8	+0.4	+1.0	+0.2	+0.0	40.5	50.0	-9.5	L1-Li
47	29.157M	33.1	+5.8	+0.4	+1.0	+0.2	+0.0	40.5	50.0	-9.5	L1-Li
48	27.615M	32.9	+5.8	+0.4	+1.0	+0.2	+0.0	40.3	50.0	-9.7	L1-Li
49	14.274M	33.5	+5.8	+0.3	+0.5	+0.1	+0.0	40.2	50.0	-9.8	L1-Li
50	27.691M	32.7	+5.8	+0.4	+1.0	+0.2	+0.0	40.1	50.0	-9.9	L1-Li
51	12.716M	33.4	+5.8	+0.3	+0.4	+0.1	+0.0	40.0	50.0	-10.0	L1-Li
52	16.229M	33.1	+5.8	+0.3	+0.6	+0.1	+0.0	39.9	50.0	-10.1	L1-Li
53 Ave	624.866k	29.7	+5.7	+0.1	+0.1	+0.2	+0.0	35.8	46.0	-10.2	L1-Li
^	624.866k	44.8	+5.7	+0.1	+0.1	+0.2	+0.0	50.9	46.0	+4.9	L1-Li
^	624.865k	44.8	+5.7	+0.1	+0.1	+0.2	+0.0	50.9	46.0	+4.9	L1-Li
^	627.774k	44.7	+5.7	+0.1	+0.1	+0.2	+0.0	50.8	46.0	+4.8	L1-Li
57	27.917M	32.3	+5.8	+0.4	+1.0	+0.2	+0.0	39.7	50.0	-10.3	L1-Li
58	176.179k	38.2	+5.7	+0.1	+0.1	+0.3	+0.0	44.4	54.7	-10.3	L1-Li
59	14.337M	33.0	+5.8	+0.3	+0.5	+0.1	+0.0	39.7	50.0	-10.3	L1-Li
60	16.166M	32.6	+5.8	+0.3	+0.6	+0.1	+0.0	39.4	50.0	-10.6	L1-Li
61	15.896M	32.5	+5.8	+0.3	+0.6	+0.1	+0.0	39.3	50.0	-10.7	L1-Li
62	27.766M	31.9	+5.8	+0.4	+1.0	+0.2	+0.0	39.3	50.0	-10.7	L1-Li
63	25.279M	31.9	+5.8	+0.4	+0.8	+0.2	+0.0	39.1	50.0	-10.9	L1-Li
64	13.301M	32.5	+5.8	+0.3	+0.4	+0.1	+0.0	39.1	50.0	-10.9	L1-Li
65	27.876M	31.7	+5.8	+0.4	+1.0	+0.2	+0.0	39.1	50.0	-10.9	L1-Li
66	14.400M	32.2	+5.8	+0.3	+0.5	+0.1	+0.0	38.9	50.0	-11.1	L1-Li
67	24.532M	31.6	+5.8	+0.4	+0.8	+0.2	+0.0	38.8	50.0	-11.2	L1-Li
68	27.239M	31.5	+5.8	+0.4	+0.9	+0.2	+0.0	38.8	50.0	-11.2	L1-Li
69	26.540M	31.5	+5.8	+0.4	+0.9	+0.2	+0.0	38.8	50.0	-11.2	L1-Li
70	14.878M	31.9	+5.8	+0.3	+0.5	+0.1	+0.0	38.6	50.0	-11.4	L1-Li
71	26.492M	31.2	+5.8	+0.4	+0.9	+0.2	+0.0	38.5	50.0	-11.5	L1-Li

72	26.882M	31.2	+5.8	+0.4	+0.9	+0.2	+0.0	38.5	50.0	-11.5	L1-Li
73	26.834M	31.1	+5.8	+0.4	+0.9	+0.2	+0.0	38.4	50.0	-11.6	L1-Li
74	27.191M	31.0	+5.8	+0.4	+0.9	+0.2	+0.0	38.3	50.0	-11.7	L1-Li
75 Ave	568.871k	27.1	+5.7	+0.1	+0.1	+0.2	+0.0	33.2	46.0	-12.8	L1-Li
^	568.870k	41.5	+5.7	+0.1	+0.1	+0.2	+0.0	47.6	46.0	+1.6	L1-Li
^	571.052k	41.0	+5.7	+0.1	+0.1	+0.2	+0.0	47.1	46.0	+1.1	L1-Li
78 Ave	397.977k	27.6	+5.7	+0.1	+0.1	+0.1	+0.0	33.6	47.9	-14.3	L1-Li
^	397.977k	41.3	+5.7	+0.1	+0.1	+0.1	+0.0	47.3	47.9	-0.6	L1-Li
80 Ave	1.196M	25.7	+5.7	+0.1	+0.1	+0.1	+0.0	31.7	46.0	-14.3	L1-Li
^	1.196M	41.9	+5.7	+0.1	+0.1	+0.1	+0.0	47.9	46.0	+1.9	L1-Li
82 Ave	1.247M	25.3	+5.7	+0.1	+0.1	+0.1	+0.0	31.3	46.0	-14.7	L1-Li
83 Ave	1.762M	25.2	+5.7	+0.1	+0.1	+0.1	+0.0	31.2	46.0	-14.8	L1-Li
^	1.762M	39.4	+5.7	+0.1	+0.1	+0.1	+0.0	45.4	46.0	-0.6	L1-Li
85 Ave	1.247M	25.2	+5.7	+0.1	+0.1	+0.1	+0.0	31.2	46.0	-14.8	L1-Li
^	1.247M	41.1	+5.7	+0.1	+0.1	+0.1	+0.0	47.1	46.0	+1.1	L1-Li
87 Ave	2.617M	24.9	+5.7	+0.1	+0.1	+0.1	+0.0	30.9	46.0	-15.1	L1-Li
^	2.617M	40.1	+5.7	+0.1	+0.1	+0.1	+0.0	46.1	46.0	+0.1	L1-Li
89 Ave	5.815M	28.7	+5.7	+0.2	+0.2	+0.1	+0.0	34.9	50.0	-15.1	L1-Li
^	5.815M	46.2	+5.7	+0.2	+0.2	+0.1	+0.0	52.4	50.0	+2.4	L1-Li
91 Ave	6.490M	28.5	+5.7	+0.2	+0.3	+0.1	+0.0	34.8	50.0	-15.2	L1-Li
^	6.490M	46.4	+5.7	+0.2	+0.3	+0.1	+0.0	52.7	50.0	+2.7	L1-Li
93 Ave	6.364M	28.5	+5.7	+0.2	+0.3	+0.1	+0.0	34.8	50.0	-15.2	L1-Li
^	6.364M	45.6	+5.7	+0.2	+0.3	+0.1	+0.0	51.9	50.0	+1.9	L1-Li
95 Ave	2.672M	24.8	+5.7	+0.1	+0.1	+0.1	+0.0	30.8	46.0	-15.2	L1-Li
^	2.672M	40.3	+5.7	+0.1	+0.1	+0.1	+0.0	46.3	46.0	+0.3	L1-Li
97 Ave	1.830M	24.5	+5.7	+0.1	+0.1	+0.1	+0.0	30.5	46.0	-15.5	L1-Li

^	1.830M	41.2	+5.7	+0.1	+0.1	+0.1	+0.0	47.2	46.0	+1.2	L1-Li
99	6.535M Ave	28.2	+5.7	+0.2	+0.3	+0.1	+0.0	34.5	50.0	-15.5	L1-Li
^	6.535M	46.0	+5.7	+0.2	+0.3	+0.1	+0.0	52.3	50.0	+2.3	L1-Li
101	5.869M Ave	28.3	+5.7	+0.2	+0.2	+0.1	+0.0	34.5	50.0	-15.5	L1-Li
^	5.869M	45.5	+5.7	+0.2	+0.2	+0.1	+0.0	51.7	50.0	+1.7	L1-Li
103	6.571M Ave	28.1	+5.7	+0.2	+0.3	+0.1	+0.0	34.4	50.0	-15.6	L1-Li
^	6.571M	45.9	+5.7	+0.2	+0.3	+0.1	+0.0	52.2	50.0	+2.2	L1-Li
105	5.959M Ave	28.0	+5.7	+0.2	+0.3	+0.1	+0.0	34.3	50.0	-15.7	L1-Li
^	5.959M	45.0	+5.7	+0.2	+0.3	+0.1	+0.0	51.3	50.0	+1.3	L1-Li
107	2.723M Ave	24.2	+5.7	+0.1	+0.1	+0.1	+0.0	30.2	46.0	-15.8	L1-Li
^	2.723M	40.2	+5.7	+0.1	+0.1	+0.1	+0.0	46.2	46.0	+0.2	L1-Li
109	7.202M Ave	27.6	+5.7	+0.2	+0.3	+0.1	+0.0	33.9	50.0	-16.1	L1-Li
^	7.202M	45.5	+5.7	+0.2	+0.3	+0.1	+0.0	51.8	50.0	+1.8	L1-Li
111	6.616M Ave	27.6	+5.7	+0.2	+0.3	+0.1	+0.0	33.9	50.0	-16.1	L1-Li
^	6.616M	45.7	+5.7	+0.2	+0.3	+0.1	+0.0	52.0	50.0	+2.0	L1-Li
113	7.238M Ave	27.6	+5.7	+0.2	+0.3	+0.1	+0.0	33.9	50.0	-16.1	L1-Li
114	2.744M Ave	23.9	+5.7	+0.1	+0.1	+0.1	+0.0	29.9	46.0	-16.1	L1-Li
^	2.744M	40.8	+5.7	+0.1	+0.1	+0.1	+0.0	46.8	46.0	+0.8	L1-Li
116	7.310M Ave	27.5	+5.7	+0.2	+0.3	+0.1	+0.0	33.8	50.0	-16.2	L1-Li
^	7.310M	45.7	+5.7	+0.2	+0.3	+0.1	+0.0	52.0	50.0	+2.0	L1-Li
118	7.238M Ave	27.5	+5.7	+0.2	+0.3	+0.1	+0.0	33.8	50.0	-16.2	L1-Li
^	7.238M	46.4	+5.7	+0.2	+0.3	+0.1	+0.0	52.7	50.0	+2.7	L1-Li
120	344.164k Ave	26.6	+5.7	+0.1	+0.1	+0.1	+0.0	32.6	49.1	-16.5	L1-Li
^	344.164k	42.2	+5.7	+0.1	+0.1	+0.1	+0.0	48.2	49.1	-0.9	L1-Li
122	2.774M Ave	23.4	+5.7	+0.1	+0.1	+0.1	+0.0	29.4	46.0	-16.6	L1-Li
^	2.774M	40.5	+5.7	+0.1	+0.1	+0.1	+0.0	46.5	46.0	+0.5	L1-Li

124 Ave	7.355M	26.9	+5.7	+0.2	+0.3	+0.1	+0.0	33.2	50.0	-16.8	L1-Li
^	7.355M	44.3	+5.7	+0.2	+0.3	+0.1	+0.0	50.6	50.0	+0.6	L1-Li
126 Ave	2.093M	22.9	+5.7	+0.1	+0.1	+0.1	+0.0	28.9	46.0	-17.1	L1-Li
^	2.093M	39.8	+5.7	+0.1	+0.1	+0.1	+0.0	45.8	46.0	-0.2	L1-Li
128 Ave	7.400M	26.4	+5.7	+0.2	+0.3	+0.1	+0.0	32.7	50.0	-17.3	L1-Li
^	7.400M	44.5	+5.7	+0.2	+0.3	+0.1	+0.0	50.8	50.0	+0.8	L1-Li
130 Ave	2.064M	22.3	+5.7	+0.1	+0.1	+0.1	+0.0	28.3	46.0	-17.7	L1-Li
^	2.064M	39.1	+5.7	+0.1	+0.1	+0.1	+0.0	45.1	46.0	-0.9	L1-Li

Test Location:	CKC Laboratories Inc. • 110 N. Olinda Place • Brea, CA 92823 • 714-993-6112		
Customer:	**KE2 Therm Solutions**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**100985**	Date:	3/26/2018
Test Type:	**Conducted Emissions**	Time:	16:05:22
Tested By:	Don Nguyen	Sequence#:	3
Software:	EMITest 5.03.11		120V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

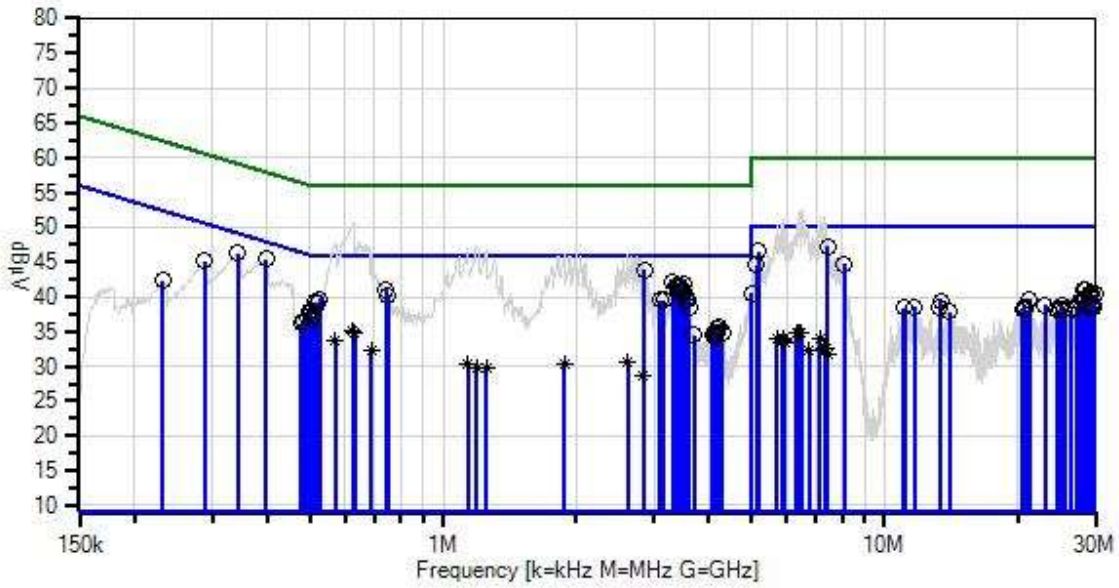
The EUT is placed on table top. The EUT is set to continuously transmit at 100% duty cycle and maximum power.
A support laptop is running software Atheros Radio Test 2 (ART2-GUI) to exercise the Wi-Fi module.
Operating frequency: 2412-2462MHz
Protocols and data rate:
802.11B, 1Mbps-11Mbps
802.11G, 6Mbps-54Mbps
802.11N20, 6.5Mbps (MCS0)-65Mbps (MCS7)
802.11N40, 13.5Mbps (MCS0)-135Mbps (MCS7)

Scanned frequency: 150kHz-30MHz
RBW=9kHz, VBW=9kHz

Test Method: ANSI C63.10 (2013)
Temperature: 22.1°C
Relative Humidity: 30.6%
Site D

Note: Data presents the worst case mode with the highest power output (802.11B, 11Mbps, 2442MHz)

KE2 Therm Solutions WO#: 100985 Sequence#: 3 Date: 3/26/2018
15.207 AC Mains - Average Test Lead: 120V 60Hz L2-Neutral



Sweep Data
× QP Readings
Software Version: 5.03.11
Readings
Average Readings
1 - 15.207 AC Mains - Average
Peak Readings
Ambient
2 - 15.207 AC Mains - Quasi-peak

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06085	Attenuator	SA18N10W-09	11/14/2016	11/14/2018
T2	ANP01910	Cable	RG-142	10/25/2017	10/25/2019
	AN00847.1	50uH LISN-Line 1	3816/2NM	3/12/2018	3/12/2019
T3	AN00847.1	50uH LISN-Line 2	3816/2NM	3/12/2018	3/12/2019
	AN02869	Spectrum Analyzer	E4440A	8/1/2017	8/1/2018
T4	AN02343	High Pass Filter	HE9615-150K-50-720B	1/25/2017	1/25/2019

Measurement Data: Reading listed by margin. Test Lead: L2-Neutral

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	2.855M	37.9	+5.7	+0.1	+0.1	+0.1	+0.0	43.9	46.0	-2.1	L2-Ne
2	396.521k	39.5	+5.7	+0.1	+0.0	+0.1	+0.0	45.4	47.9	-2.5	L2-Ne
3	7.445M	41.1	+5.7	+0.2	+0.2	+0.1	+0.0	47.3	50.0	-2.7	L2-Ne
4	343.435k	40.4	+5.7	+0.1	+0.0	+0.1	+0.0	46.3	49.1	-2.8	L2-Ne
5	5.184M	40.4	+5.7	+0.2	+0.1	+0.1	+0.0	46.5	50.0	-3.5	L2-Ne
6	3.310M	36.0	+5.7	+0.1	+0.1	+0.1	+0.0	42.0	46.0	-4.0	L2-Ne
7	3.497M	35.8	+5.7	+0.1	+0.1	+0.1	+0.0	41.8	46.0	-4.2	L2-Ne
8	3.408M	35.6	+5.7	+0.1	+0.1	+0.1	+0.0	41.6	46.0	-4.4	L2-Ne
9	3.446M	35.6	+5.7	+0.1	+0.1	+0.1	+0.0	41.6	46.0	-4.4	L2-Ne
10	3.357M	35.5	+5.7	+0.1	+0.1	+0.1	+0.0	41.5	46.0	-4.5	L2-Ne
11	3.476M	35.1	+5.7	+0.1	+0.1	+0.1	+0.0	41.1	46.0	-4.9	L2-Ne
12	742.671k	35.1	+5.7	+0.1	+0.0	+0.1	+0.0	41.0	46.0	-5.0	L2-Ne
13	3.522M	34.8	+5.7	+0.1	+0.1	+0.1	+0.0	40.8	46.0	-5.2	L2-Ne
14	8.112M	38.5	+5.7	+0.2	+0.2	+0.1	+0.0	44.7	50.0	-5.3	L2-Ne
15	3.454M	34.6	+5.7	+0.1	+0.1	+0.1	+0.0	40.6	46.0	-5.4	L2-Ne
16	5.117M	38.5	+5.7	+0.2	+0.1	+0.1	+0.0	44.6	50.0	-5.4	L2-Ne
17	288.168k	39.2	+5.7	+0.1	+0.0	+0.1	+0.0	45.1	50.6	-5.5	L2-Ne
18	4.994M	34.4	+5.7	+0.2	+0.1	+0.1	+0.0	40.5	46.0	-5.5	L2-Ne
19	749.216k	34.2	+5.7	+0.1	+0.0	+0.1	+0.0	40.1	46.0	-5.9	L2-Ne

20	525.237k	33.7	+5.7	+0.1	+0.0	+0.2	+0.0	39.7	46.0	-6.3	L2-Ne
21	3.569M	33.7	+5.7	+0.1	+0.1	+0.1	+0.0	39.7	46.0	-6.3	L2-Ne
22	3.531M	33.6	+5.7	+0.1	+0.1	+0.1	+0.0	39.6	46.0	-6.4	L2-Ne
23	3.093M	33.5	+5.7	+0.1	+0.1	+0.1	+0.0	39.5	46.0	-6.5	L2-Ne
24	3.169M	33.5	+5.7	+0.1	+0.1	+0.1	+0.0	39.5	46.0	-6.5	L2-Ne
25	3.590M	33.5	+5.7	+0.1	+0.1	+0.1	+0.0	39.5	46.0	-6.5	L2-Ne
26	514.329k	33.3	+5.7	+0.1	+0.0	+0.2	+0.0	39.3	46.0	-6.7	L2-Ne
27	517.965k	33.1	+5.7	+0.1	+0.0	+0.2	+0.0	39.1	46.0	-6.9	L2-Ne
28	520.146k	33.1	+5.7	+0.1	+0.0	+0.2	+0.0	39.1	46.0	-6.9	L2-Ne
29	3.607M	32.4	+5.7	+0.1	+0.1	+0.1	+0.0	38.4	46.0	-7.6	L2-Ne
30	496.149k	32.0	+5.7	+0.1	+0.0	+0.2	+0.0	38.0	46.1	-8.1	L2-Ne
31	499.785k	31.7	+5.7	+0.1	+0.0	+0.2	+0.0	37.7	46.0	-8.3	L2-Ne
32	507.057k	31.3	+5.7	+0.1	+0.0	+0.2	+0.0	37.3	46.0	-8.7	L2-Ne
33	28.260M	33.6	+5.8	+0.4	+1.1	+0.2	+0.0	41.1	50.0	-8.9	L2-Ne
34	28.431M	33.6	+5.8	+0.4	+1.1	+0.2	+0.0	41.1	50.0	-8.9	L2-Ne
35	492.513k	31.0	+5.7	+0.1	+0.0	+0.2	+0.0	37.0	46.1	-9.1	L2-Ne
36	505.602k	30.9	+5.7	+0.1	+0.0	+0.2	+0.0	36.9	46.0	-9.1	L2-Ne
37	29.171M	32.9	+5.8	+0.4	+1.2	+0.2	+0.0	40.5	50.0	-9.5	L2-Ne
38	29.301M	32.9	+5.8	+0.4	+1.2	+0.2	+0.0	40.5	50.0	-9.5	L2-Ne
39	29.952M	32.7	+5.8	+0.4	+1.3	+0.2	+0.0	40.4	50.0	-9.6	L2-Ne
40	485.240k	30.6	+5.7	+0.1	+0.0	+0.2	+0.0	36.6	46.2	-9.6	L2-Ne
41	29.082M	32.6	+5.8	+0.4	+1.2	+0.2	+0.0	40.2	50.0	-9.8	L2-Ne
42	479.423k	30.3	+5.7	+0.1	+0.0	+0.2	+0.0	36.3	46.3	-10.0	L2-Ne
43	232.173k	36.3	+5.7	+0.1	+0.0	+0.2	+0.0	42.3	52.4	-10.1	L2-Ne
44	28.479M	32.4	+5.8	+0.4	+1.1	+0.2	+0.0	39.9	50.0	-10.1	L2-Ne
45	477.241k	30.2	+5.7	+0.1	+0.0	+0.2	+0.0	36.2	46.4	-10.2	L2-Ne

46	28.191M	32.2	+5.8	+0.4	+1.1	+0.2	+0.0	39.7	50.0	-10.3	L2-Ne
47	4.220M	29.5	+5.7	+0.2	+0.1	+0.1	+0.0	35.6	46.0	-10.4	L2-Ne
48	21.319M	32.7	+5.7	+0.4	+0.7	+0.1	+0.0	39.6	50.0	-10.4	L2-Ne
49	13.418M	32.8	+5.8	+0.3	+0.4	+0.1	+0.0	39.4	50.0	-10.6	L2-Ne
50	27.588M	32.0	+5.8	+0.4	+1.0	+0.2	+0.0	39.4	50.0	-10.6	L2-Ne
51	4.152M	29.2	+5.7	+0.2	+0.1	+0.1	+0.0	35.3	46.0	-10.7	L2-Ne
52	625.592k Ave	29.2	+5.7	+0.1	+0.0	+0.2	+0.0	35.2	46.0	-10.8	L2-Ne
^	625.591k	44.6	+5.7	+0.1	+0.0	+0.2	+0.0	50.6	46.0	+4.6	L2-Ne
54	4.160M	28.8	+5.7	+0.2	+0.1	+0.1	+0.0	34.9	46.0	-11.1	L2-Ne
55	29.472M	31.3	+5.8	+0.4	+1.2	+0.2	+0.0	38.9	50.0	-11.1	L2-Ne
56	4.122M	28.7	+5.7	+0.2	+0.1	+0.1	+0.0	34.8	46.0	-11.2	L2-Ne
57	4.284M	28.7	+5.7	+0.2	+0.1	+0.1	+0.0	34.8	46.0	-11.2	L2-Ne
58	25.204M	31.6	+5.8	+0.4	+0.8	+0.2	+0.0	38.8	50.0	-11.2	L2-Ne
59	23.130M	31.7	+5.7	+0.4	+0.8	+0.2	+0.0	38.8	50.0	-11.2	L2-Ne
60	631.409k Ave	28.7	+5.7	+0.1	+0.0	+0.2	+0.0	34.7	46.0	-11.3	L2-Ne
^	631.409k	43.2	+5.7	+0.1	+0.0	+0.2	+0.0	49.2	46.0	+3.2	L2-Ne
62	29.582M	31.1	+5.8	+0.4	+1.2	+0.2	+0.0	38.7	50.0	-11.3	L2-Ne
63	4.075M	28.5	+5.7	+0.2	+0.1	+0.1	+0.0	34.6	46.0	-11.4	L2-Ne
64	11.670M	32.0	+5.7	+0.3	+0.5	+0.1	+0.0	38.6	50.0	-11.4	L2-Ne
65	27.163M	31.2	+5.8	+0.4	+1.0	+0.2	+0.0	38.6	50.0	-11.4	L2-Ne
66	29.520M	31.0	+5.8	+0.4	+1.2	+0.2	+0.0	38.6	50.0	-11.4	L2-Ne
67	20.770M	31.6	+5.7	+0.4	+0.8	+0.1	+0.0	38.6	50.0	-11.4	L2-Ne
68	4.105M	28.4	+5.7	+0.2	+0.1	+0.1	+0.0	34.5	46.0	-11.5	L2-Ne
69	29.644M	30.9	+5.8	+0.4	+1.2	+0.2	+0.0	38.5	50.0	-11.5	L2-Ne
70	3.705M	28.4	+5.7	+0.1	+0.1	+0.1	+0.0	34.4	46.0	-11.6	L2-Ne
71	11.040M	31.9	+5.7	+0.3	+0.4	+0.1	+0.0	38.4	50.0	-11.6	L2-Ne

72	13.355M	31.8	+5.8	+0.3	+0.4	+0.1	+0.0	38.4	50.0	-11.6	L2-Ne
73	11.121M	31.9	+5.7	+0.3	+0.4	+0.1	+0.0	38.4	50.0	-11.6	L2-Ne
74	11.094M	31.9	+5.7	+0.3	+0.4	+0.1	+0.0	38.4	50.0	-11.6	L2-Ne
75	4.135M	28.2	+5.7	+0.2	+0.1	+0.1	+0.0	34.3	46.0	-11.7	L2-Ne
76	25.498M	31.1	+5.8	+0.4	+0.8	+0.2	+0.0	38.3	50.0	-11.7	L2-Ne
77	20.499M	31.2	+5.7	+0.4	+0.8	+0.1	+0.0	38.2	50.0	-11.8	L2-Ne
78	20.869M	31.2	+5.7	+0.4	+0.7	+0.1	+0.0	38.1	50.0	-11.9	L2-Ne
79	24.957M	30.9	+5.8	+0.4	+0.8	+0.2	+0.0	38.1	50.0	-11.9	L2-Ne
80	26.464M	30.8	+5.8	+0.4	+0.9	+0.2	+0.0	38.1	50.0	-11.9	L2-Ne
81	24.532M	30.9	+5.8	+0.4	+0.8	+0.2	+0.0	38.1	50.0	-11.9	L2-Ne
82	14.031M	31.3	+5.8	+0.3	+0.4	+0.1	+0.0	37.9	50.0	-12.1	L2-Ne
83 Ave	569.597k	27.8	+5.7	+0.1	+0.0	+0.2	+0.0	33.8	46.0	-12.2	L2-Ne
^	569.596k	41.9	+5.7	+0.1	+0.0	+0.2	+0.0	47.9	46.0	+1.9	L2-Ne
85 Ave	686.677k	26.4	+5.7	+0.1	+0.0	+0.2	+0.0	32.4	46.0	-13.6	L2-Ne
^	686.677k	40.2	+5.7	+0.1	+0.0	+0.2	+0.0	46.2	46.0	+0.2	L2-Ne
87 Ave	6.310M	28.7	+5.7	+0.2	+0.1	+0.1	+0.0	34.8	50.0	-15.2	L2-Ne
^	6.310M	44.5	+5.7	+0.2	+0.1	+0.1	+0.0	50.6	50.0	+0.6	L2-Ne
89 Ave	6.382M	28.7	+5.7	+0.2	+0.1	+0.1	+0.0	34.8	50.0	-15.2	L2-Ne
^	6.382M	45.8	+5.7	+0.2	+0.1	+0.1	+0.0	51.9	50.0	+1.9	L2-Ne
91 Ave	6.490M	28.6	+5.7	+0.2	+0.1	+0.1	+0.0	34.7	50.0	-15.3	L2-Ne
^	6.490M	46.6	+5.7	+0.2	+0.1	+0.1	+0.0	52.7	50.0	+2.7	L2-Ne
93 Ave	2.621M	24.6	+5.7	+0.1	+0.1	+0.1	+0.0	30.6	46.0	-15.4	L2-Ne
^	2.621M	40.1	+5.7	+0.1	+0.1	+0.1	+0.0	46.1	46.0	+0.1	L2-Ne
95 Ave	1.137M	24.5	+5.7	+0.1	+0.0	+0.1	+0.0	30.4	46.0	-15.6	L2-Ne
^	1.137M	41.1	+5.7	+0.1	+0.0	+0.1	+0.0	47.0	46.0	+1.0	L2-Ne
97 Ave	1.881M	24.3	+5.7	+0.1	+0.1	+0.1	+0.0	30.3	46.0	-15.7	L2-Ne

^	1.881M	40.1	+5.7	+0.1	+0.1	+0.1	+0.0	46.1	46.0	+0.1	L2-Ne
99	5.716M Ave	27.9	+5.7	+0.2	+0.1	+0.1	+0.0	34.0	50.0	-16.0	L2-Ne
^	5.716M	44.1	+5.7	+0.2	+0.1	+0.1	+0.0	50.2	50.0	+0.2	L2-Ne
101	7.130M Ave	27.7	+5.7	+0.2	+0.2	+0.1	+0.0	33.9	50.0	-16.1	L2-Ne
^	7.130M	45.4	+5.7	+0.2	+0.2	+0.1	+0.0	51.6	50.0	+1.6	L2-Ne
103	5.905M Ave	27.8	+5.7	+0.2	+0.1	+0.1	+0.0	33.9	50.0	-16.1	L2-Ne
^	5.905M	44.1	+5.7	+0.2	+0.1	+0.1	+0.0	50.2	50.0	+0.2	L2-Ne
105	1.251M Ave	23.9	+5.7	+0.1	+0.0	+0.1	+0.0	29.8	46.0	-16.2	L2-Ne
^	1.251M	40.8	+5.7	+0.1	+0.0	+0.1	+0.0	46.7	46.0	+0.7	L2-Ne
107	1.192M Ave	23.9	+5.7	+0.1	+0.0	+0.1	+0.0	29.8	46.0	-16.2	L2-Ne
^	1.192M	41.4	+5.7	+0.1	+0.0	+0.1	+0.0	47.3	46.0	+1.3	L2-Ne
109	5.878M Ave	27.7	+5.7	+0.2	+0.1	+0.1	+0.0	33.8	50.0	-16.2	L2-Ne
^	5.878M	45.2	+5.7	+0.2	+0.1	+0.1	+0.0	51.3	50.0	+1.3	L2-Ne
111	5.941M Ave	27.2	+5.7	+0.2	+0.1	+0.1	+0.0	33.3	50.0	-16.7	L2-Ne
^	5.941M	43.8	+5.7	+0.2	+0.1	+0.1	+0.0	49.9	50.0	-0.1	L2-Ne
113	7.319M Ave	26.5	+5.7	+0.2	+0.2	+0.1	+0.0	32.7	50.0	-17.3	L2-Ne
^	7.319M	45.3	+5.7	+0.2	+0.2	+0.1	+0.0	51.5	50.0	+1.5	L2-Ne
115	2.842M Ave	22.6	+5.7	+0.1	+0.1	+0.1	+0.0	28.6	46.0	-17.4	L2-Ne
^	2.842M	38.7	+5.7	+0.1	+0.1	+0.1	+0.0	44.7	46.0	-1.3	L2-Ne
117	7.373M Ave	26.4	+5.7	+0.2	+0.2	+0.1	+0.0	32.6	50.0	-17.4	L2-Ne
^	7.373M	43.8	+5.7	+0.2	+0.2	+0.1	+0.0	50.0	50.0	+0.0	L2-Ne
119	6.752M Ave	26.2	+5.7	+0.2	+0.1	+0.1	+0.0	32.3	50.0	-17.7	L2-Ne
^	6.752M	43.5	+5.7	+0.2	+0.1	+0.1	+0.0	49.6	50.0	-0.4	L2-Ne
121	7.418M Ave	25.6	+5.7	+0.2	+0.2	+0.1	+0.0	31.8	50.0	-18.2	L2-Ne
^	7.418M	42.1	+5.7	+0.2	+0.2	+0.1	+0.0	48.3	50.0	-1.7	L2-Ne

Test Setup Photos

SUPPLEMENTAL INFORMATION

Measurement Uncertainty

Uncertainty Value	Parameter
4.73 dB	Radiated Emissions
3.34 dB	Mains Conducted Emissions
3.30 dB	Disturbance Power

Uncertainties reported are worst case for all CKC Laboratories' sites and represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k=2. Compliance is deemed to occur provided measurements are below the specified limits.

Emissions Test Details

TESTING PARAMETERS

Unless otherwise indicated, the following configuration parameters are used for equipment setup: The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. Cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the setup photographs. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables.

The emissions data was taken with a spectrum analyzer or receiver. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in the table below. The corrected data was then compared to the applicable emission limits. Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in dBµV/m, the spectrum analyzer reading in dBµV was corrected by using the following formula. This reading was then compared to the applicable specification limit. Individual measurements were compared with the displayed limit value in the margin column. The margin was calculated based on subtracting the limit value from the corrected measurement value; a positive margin represents a measurement exceeding the limit, while a negative margin represents a measurement less than the limit.

SAMPLE CALCULATIONS		
	Meter reading	(dBµV)
+	Antenna Factor	(dB/m)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dBµV/m)

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed were used to collect the emissions data. A spectrum analyzer or receiver was used for all measurements. Unless otherwise specified, the following table shows the measuring equipment bandwidth settings that were used in designated frequency bands. For testing emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used.

MEASURING EQUIPMENT BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	9 kHz	150 kHz	200 Hz
RADIATED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	>1 GHz	1 MHz

SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the emissions tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "positive peak" detector mode. Whenever a "quasi-peak" or "average" reading was recorded, the measurement was annotated with a "QP" or an "Ave" on the appropriate rows of the data sheets. In cases where quasi-peak or average limits were employed and data exists for multiple measurement types for the same frequency then the peak measurement was retained in the report for reference, however the numbering for the affected row was removed and an arrow or caret (“^”) was placed in the far left-hand column indicating that the row above takes precedence for comparison to the limit. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

Peak

In this mode, the spectrum analyzer or receiver recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature called "peak hold," the measurement device had the ability to measure intermittent or low duty cycle transient emission peak levels. In this mode the measuring device made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

Quasi-peak measurements were taken using the quasi-peak detector when the true peak values exceeded or were within 2 dB of a quasi-peak specification limit. Additional QP measurements may have been taken at the discretion of the operator.

Average

Average measurements were taken using the average detector when the true peak values exceeded or were within 2 dB of an average specification limit. Additional average measurements may have been taken at the discretion of the operator. If the specification or test procedure requires trace averaging, then the averaging was performed using 100 samples or as required by the specification. All other average measurements are performed using video bandwidth averaging. To make these measurements, the test engineer reduces the video bandwidth on the measuring device until the modulation of the signal is filtered out. At this point, the measuring device is set into the linear mode and the scan time is reduced.