Compliance Testing, LLC
Previously Flom Test Lab
EMI, EMC, RF Testing Experts Since 1963

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http://www.ComplianceTesting.com
info@ComplianceTesting.com

Test Report

Prepared for: AutoEnginuity

Model: Wireless Diagnostics

Description: Wireless diagnostics tool for auto parts stores

Serial Number: N/A

FCC ID: 2ALTV-AS12017

To

FCC Part 15.247 DTS

Date of Issue: October 18, 2017

On the behalf of the applicant:

AutoEnginuity
1819 N Rosemont
Mesa, AZ 85205

Attention of:

Jay Horak
Ph: (480)840-5815
E-Mail: jayh@autoenginuity.com

Prepared By
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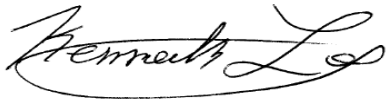
Project No: p1720024



Kenneth Lee
Project Test Engineer

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All results contained herein relate only to the sample tested.

Test Report Revision History

Revision	Date	Revised By	Reason for Revision
1.0	March 29, 2017	Kenneth Lee	Original Document
2.0	September 27, 2017	Kenneth Lee	Updated Test Summary Table Page, added Band edge plots to Annex A.
3.0	October 17, 2017	Kenneth Lee	Added RF Conducted Setup Photo

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ILAC / A2LA

Compliance Testing, LLC, has been accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to the joint ISO-ILAC-IAF Communiqué dated January 2009).

The tests results contained within this test report all fall within our scope of accreditation, unless noted below.

Please refer to http://www.compliancetesting.com/labscope.html for current scope of accreditation.

Testing Certificate Number: **2152.01**

ACCREDITED
TESTING CERT
#2152.01

FCC Site Reg. #349717

IC Site Reg. #2044A-2

Non-accredited tests contained in this report:

N/A

The applicant has been cautioned as to the following

15.21 - Information to User

The user's manual or instruction manual for an intentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

15.27(a) - Special Accessories

Equipment marked to a consumer must be capable of complying with the necessary regulations in the configuration in which the equipment is marketed. Where special accessories, such as shielded cables and/or special connectors are required to enable an unintentional or intentional radiator to comply with the emission limits in this part, the equipment must be marketed with, i.e. shipped and sold with, those special accessories. However, in lieu of shipping or packaging the special accessories with the unintentional or intentional radiator, the responsible party may employ other methods of ensuring that the special accessories are provided to the consumer without an additional charge.

Information detailing any alternative method used to supply the special accessories for a grant of equipment authorization or retained in the verification records, as appropriate. The party responsible for the equipment, as detailed in § 2.909 of this chapter, shall ensure that these special accessories are provided with the equipment. The instruction manual for such devices shall include appropriate instructions on the first page of text concerned with the installation of the device that these special accessories must be used with the device. It is the responsibility of the user to use the needed special accessories supplied with the equipment.

Standard Test Conditions Engineering Practices

Except as noted herein, the following conditions and procedures were observed during the testing:

In accordance with ANSI C63.10-2013 and unless otherwise indicated in the specific measurement results, the ambient temperature of the actual EUT was maintained within the range of 10° to 40°C (50° to 104°F) unless the particular equipment requirements specified testing over a different temperature range. Also, unless otherwise indicated, the humidity levels were in the range of 10% to 90% relative humidity.

Measurement results, unless otherwise noted, are worst-case measurements.

Environmental Conditions		
Temperature (ºC)	**Humidity (%)**	**Pressure (mbar)**
25.2	37.9	968.7

EUT Description
Model: Wireless Diagnostics
Description: Wireless diagnostics tool for auto parts stores
Firmware: N/A
Software: N/A
Serial Number: N/A
Additional Information: The device is capable of implementing BLE, 802.11b, 802.11g and 802.11n, all were fully tested. The spurious emissions testing for the WiFi modulations were done with a CW signal. The device was tested using an 3 dBi antenna.

EUT Operation during Tests:
The device was set to transmit at the lowest, a middle and the highest channel of operation via an SSH connection with a laptop computer.

Accessories:

Qty	Description	Manufacturer	Model	S/N
1	AC Adapter	XP Power	VEL24US120-US-JA	N/A

Cables: None

Modifications: None

15.203: Antenna Requirement:

	The antenna is permanently attached to the EUT
X	The antenna uses a unique coupling
	The EUT must be professionally installed
	The antenna requirement does not apply

Test Summary

FCC 15.247 Specification	Test Name	Pass, Fail, N/A	Comments
15.247(b)	Output Power	Pass	
15.247(b)	Conducted Spurious Emissions	Pass	
15.247(d), 15.209(a), 15.205	Radiated Spurious Emissions	Pass	
15.247(d), 15.209(a), 15.205	Emissions At Band Edges	Pass	
15.247(a)(2)	Occupied Bandwidth	Pass	
15.247(e)	Transmitter Power Spectral Density	Pass	
15.207	A/C Powerline Conducted Emissions	Pass	

References	Description
CFR47, Part 15, Subpart B	Unintentional Radiators
CFR47, Part 15, Subpart C	Intentional Radiators
ANSI C63.10-2014	American National standard for testing Unlicensed Wireless Devices
ANSI C63.4-2013	Method and Measurements of Radio-Noise Emissions from low-Voltage Electrical and Electronic Equipment in the range 9kHz to 40GHz.
ISO/IEC 17025:2005	General requirements for the Competence of Testing and Calibrations Laboratories
KDB 558074 D01 v04	Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating under §15.247

Conducted Output Power
Engineer: Kenneth Lee
Test Date: 3/29/2017

Test Procedure for WiFi testing

The EUT was connected directly to a spectrum analyzer. The Spectrum Analyzer was set to the following:

RBW = 1-5% of the OBW, not to exceed 1MHz
VBW ≥ 3 x RBW
RMS Detector
Number of points in sweep ≥ 2 x span / RBW
Trace average at least 100 traces in power averaging mode
Sweep = auto
Span = 1.5 x EBW

The EUT was set to transmit on the lowest, middle and highest frequencies at the maximum power level. The RF output power was measured using the spectrum analyzer's channel power function

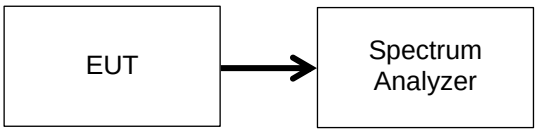
Test Procedure for BLE testing

The EUT was connected directly to a spectrum analyzer. The Spectrum Analyzer was set to the following:

RBW ≥ DTS Bandwidth
VBW ≥ 3 x RBW
Span ≥ 3 x RBW
Sweep time = auto couple
Detector = peak
Trace Mode = max hold

The EUT was set to transmit on the lowest, middle and highest frequencies at the maximum power level. The RF output power was measured using the marker peak function on the spectrum analyzer

Test Setup



Transmitter Output Power

Transmitter Output Power – BLE

Tuned Frequency (MHz)	Measured Value (dBm)	Specification Limit	Result
2402	6.893	1 W (30 dBm)	Pass
2442	7.083	1 W (30 dBm)	Pass
2480	7.586	1 W (30 dBm)	Pass

Transmitter Output Power – WiFi B

Tuned Frequency (MHz)	Measured Value (dBm)	Specification Limit	Result
2412	13.34	1 W (30 dBm)	Pass
2437	13.13	1 W (30 dBm)	Pass
2467	13.18	1 W (30 dBm)	Pass

Transmitter Output Power – WiFi G

Tuned Frequency (MHz)	Measured Value (dBm)	Specification Limit	Result
2412	8.89	1 W (30 dBm)	Pass
2437	9.04	1 W (30 dBm)	Pass
2467	9.07	1 W (30 dBm)	Pass

Transmitter Output Power – WiFi N

Tuned Frequency (MHz)	Measured Value (dBm)	Specification Limit	Result
2412	7.14	1 W (30 dBm)	Pass
2437	7.01	1 W (30 dBm)	Pass
2467	7.04	1 W (30 dBm)	Pass

Conducted RF Measurements (15.209)

Engineer: Kenneth Lee

Test Date: 3/29/2017

Test Procedure

Antenna-port conducted measurements were performed as an alternative to radiated measurements for demonstrating compliance in the restricted frequency bands for 15.209.

The following offsets were added to the measurements:
The maximum transmit antenna gain (in dBi) to the measured output power level to determine the EIRP level
A maximum ground reflection factor to the EIRP level, 6 dB for frequencies ≤ 30 MHz, 4.7 dB for frequencies between 30 MHz and 1000 MHz, inclusive and 0 dB for frequencies > 1000MHz.

The following equations were used to determine the field strength from the conducted values.
E[dBµV/m] = EIRP[dBm] - 20 log(d[meters]) + 104.77, where E = field strength and d = 3m
E[dBµV/m] = EIRP[dBm] + 95.2, for d = 3 meters.

The Spectrum Analyzer was set to the following:

The Spectrum Analyzer was set to the following for emissions > 1000MHz:

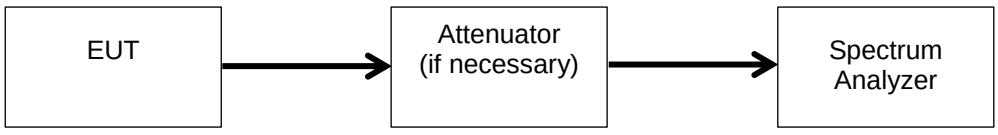
a. RBW = 1 MHz
b. VBW ≥ 3 MHz
c. Detector = Peak.
d. Sweep time = auto
e. Trace mode = max hold
    1. Note: For emissions where the peak exceeded that of the average 15.209 emission limit the following was performed.
f. RBW = 1 MHz
g. VBW ≤ RBW/100 (i.e., 10 kHz) but not less than 10 Hz

For emissions below 1000MHz the Spectrum Analyzer settings were as follows:

a. RBW = 100 kHz
b. VBW ≥ 300 kHz
c. Detector = Peak
d. Sweep time = auto
e. Trace mode = max hold

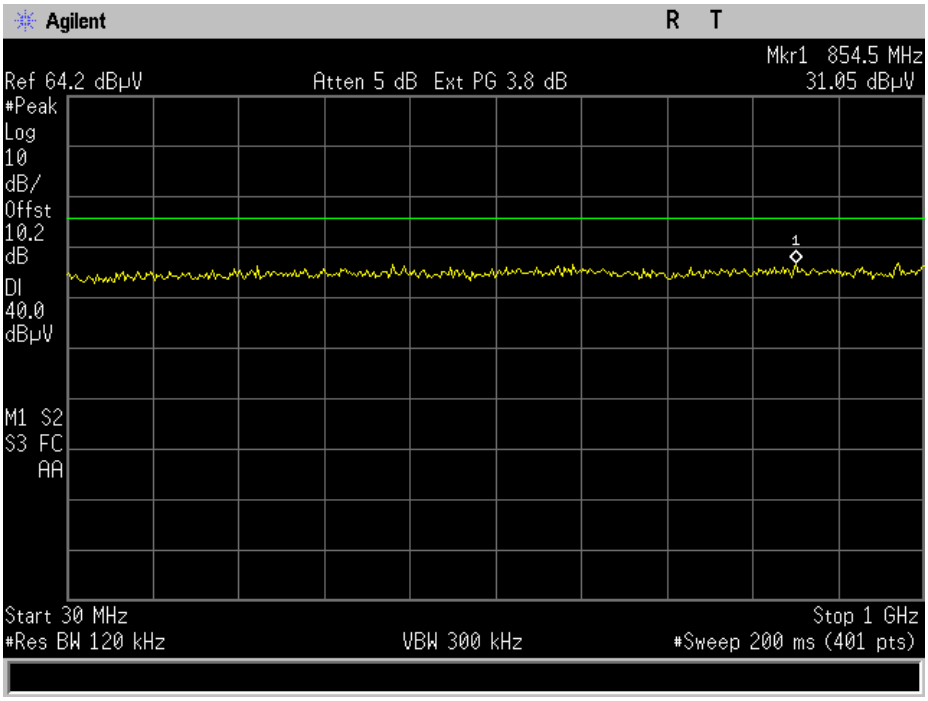
The EUT was connected to a spectrum analyzer to verify that the EUT met the requirements for spurious emissions. The EUT was set to transmit on the lowest, middle and highest frequencies at the maximum power level. The cable and attenuator losses were put into the analyzer as offsets. The frequency range from 30 MHz to the 10th harmonic of the fundamental transmitter was investigated.

Test Setup

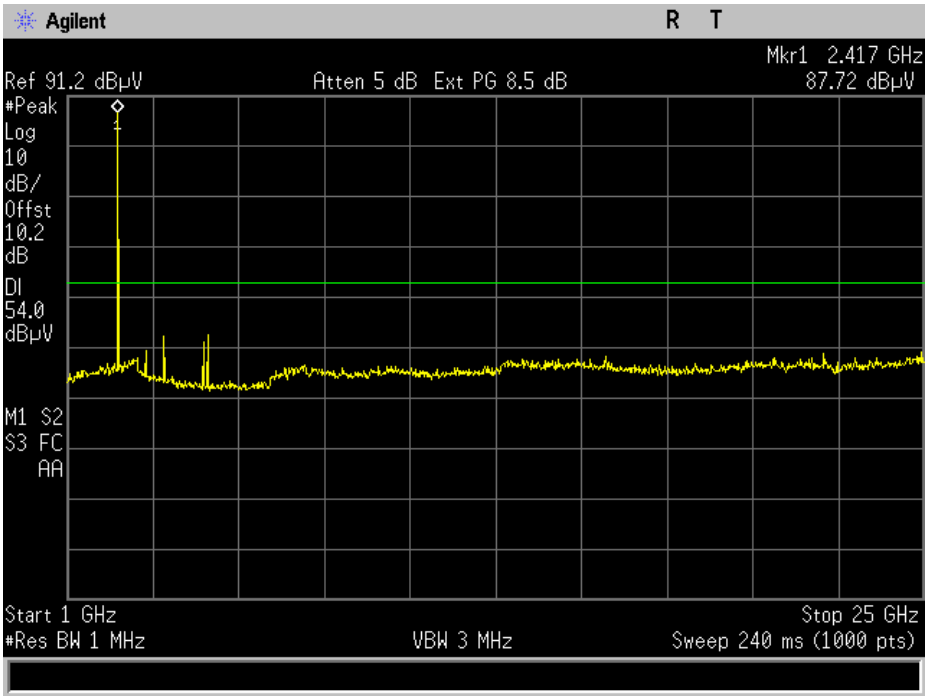


BLE Conducted RF Measurement Results

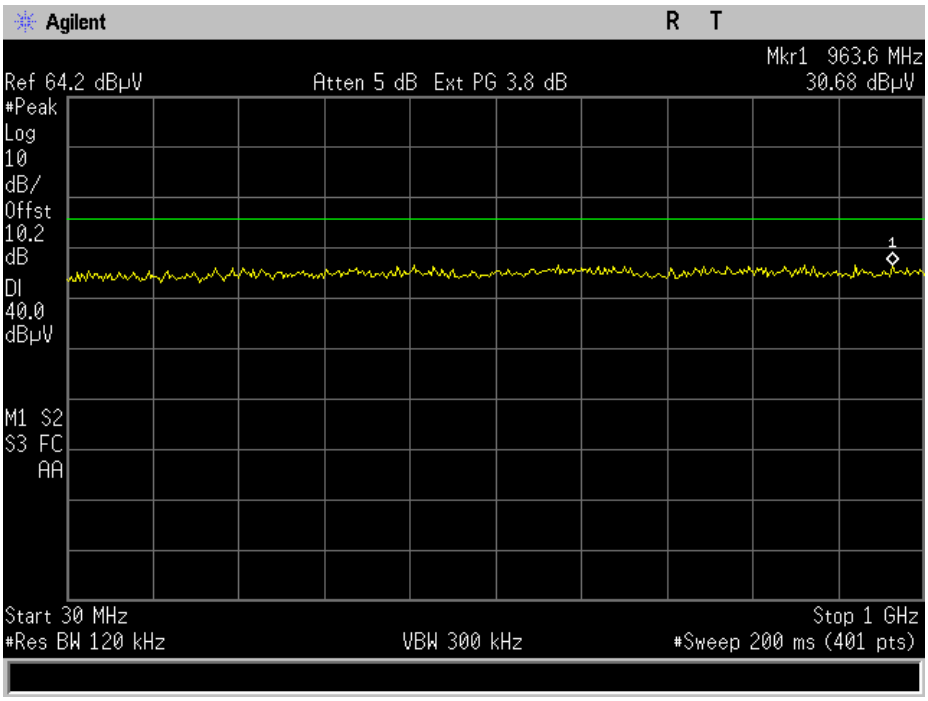
Low Ch – 30-1000 MHz



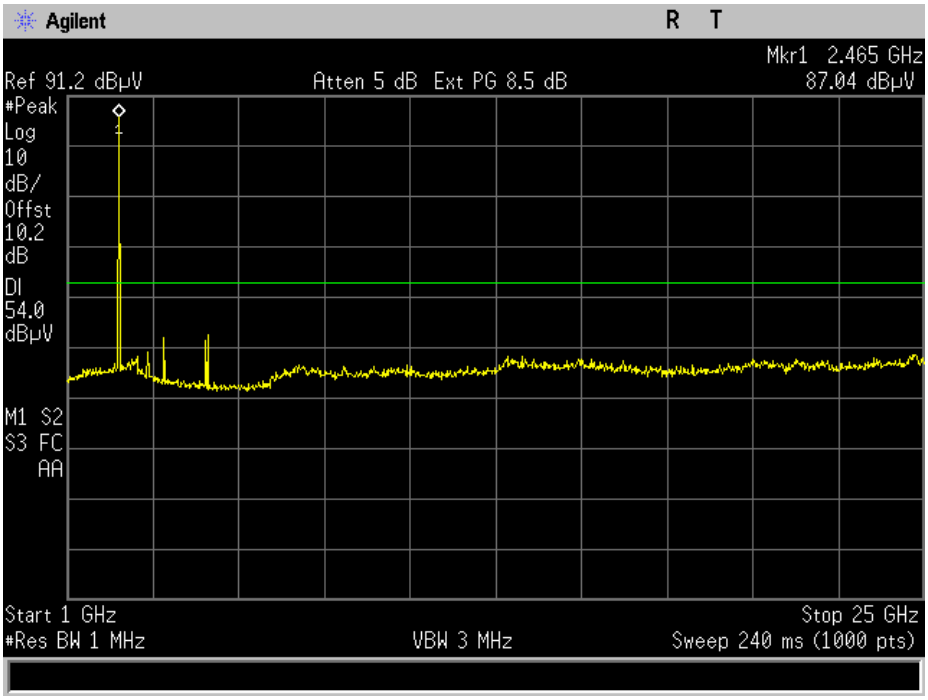
Low Ch – 1-25 GHz



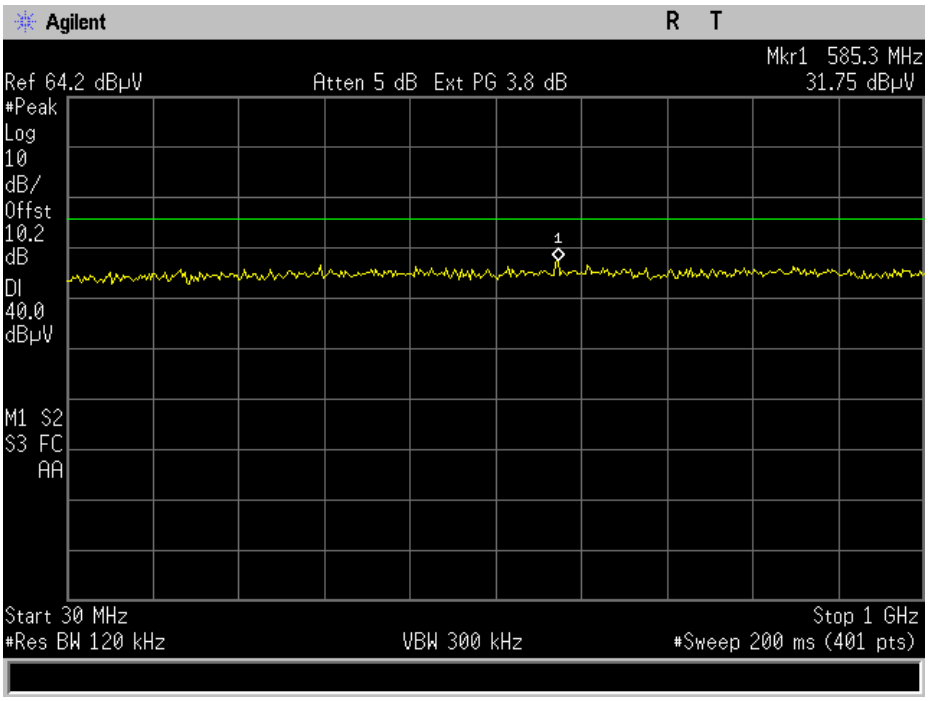
Mid Ch – 30-1000 MHz



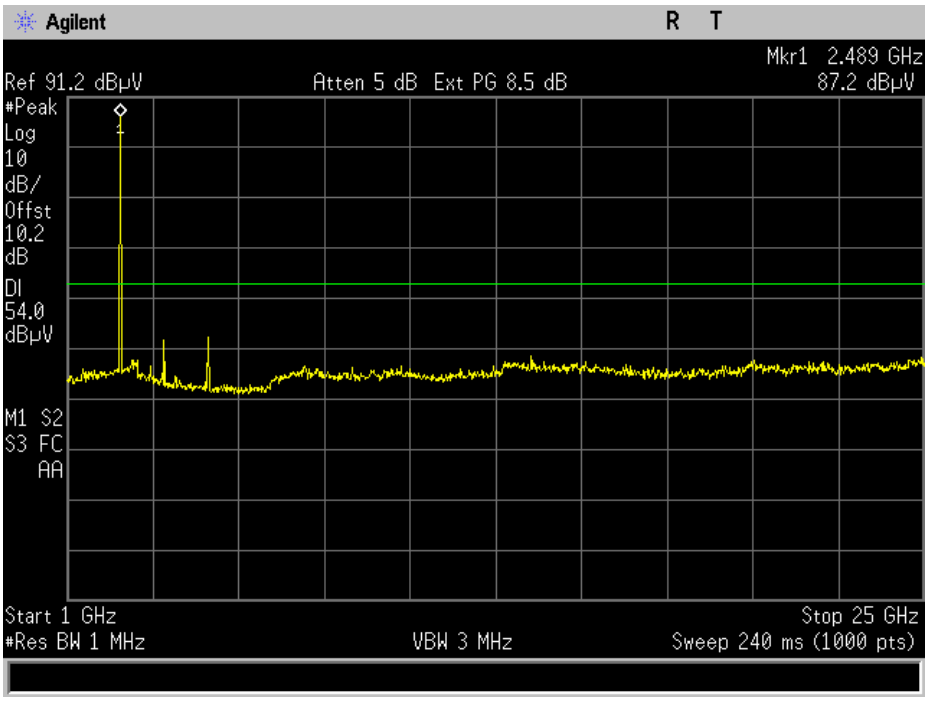
Mid Ch – 1-25 GHz



High Ch – 30-1000 MHz

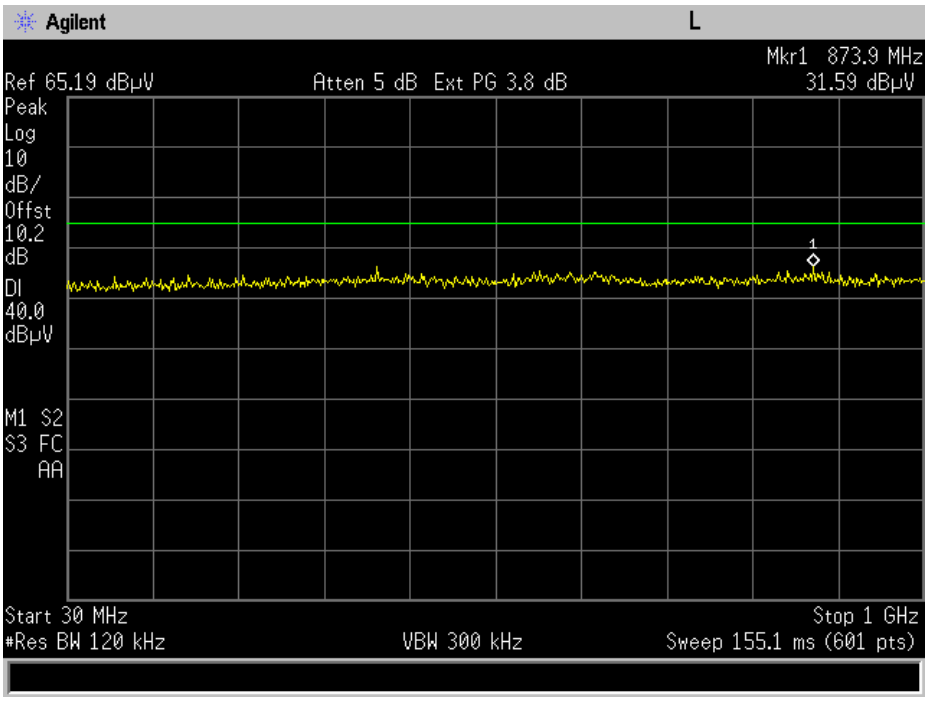


High Ch – 1-25 GHz

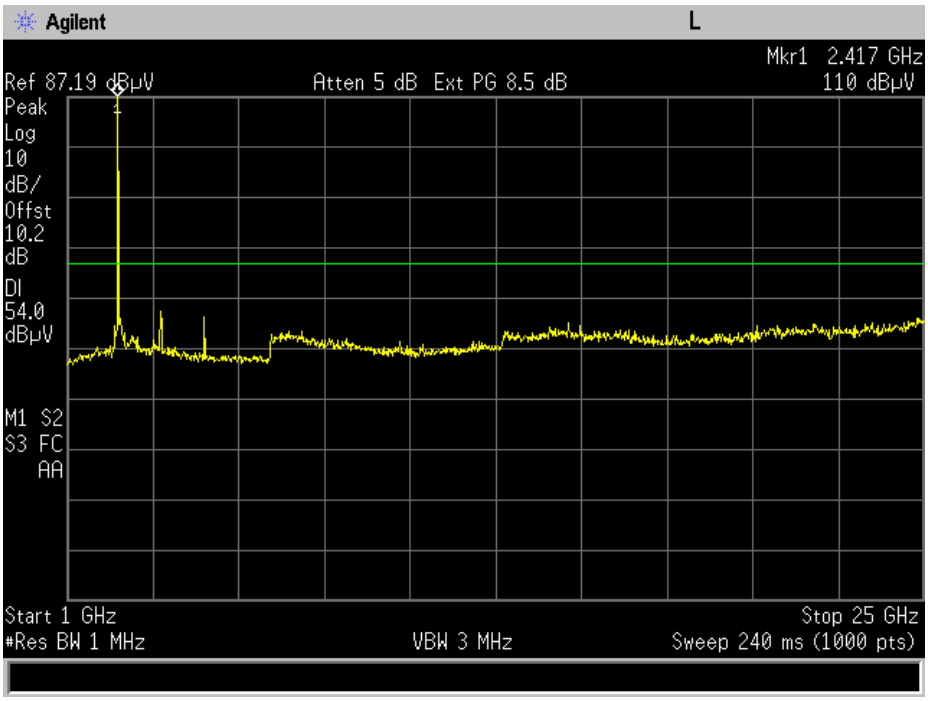


WiFi Conducted RF Measurement Results

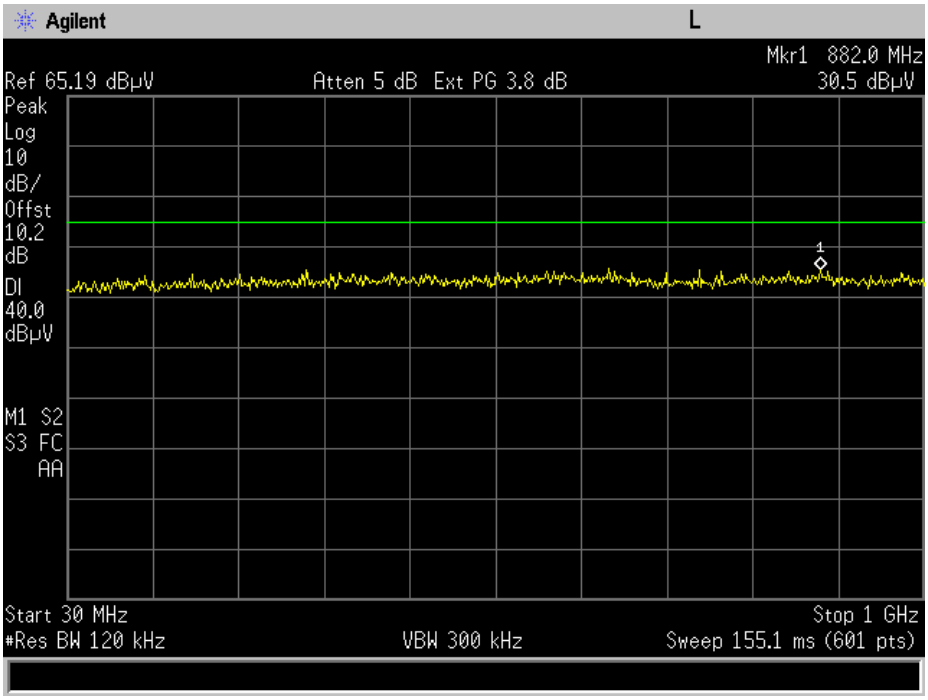
Low Ch – 30-1000 MHz



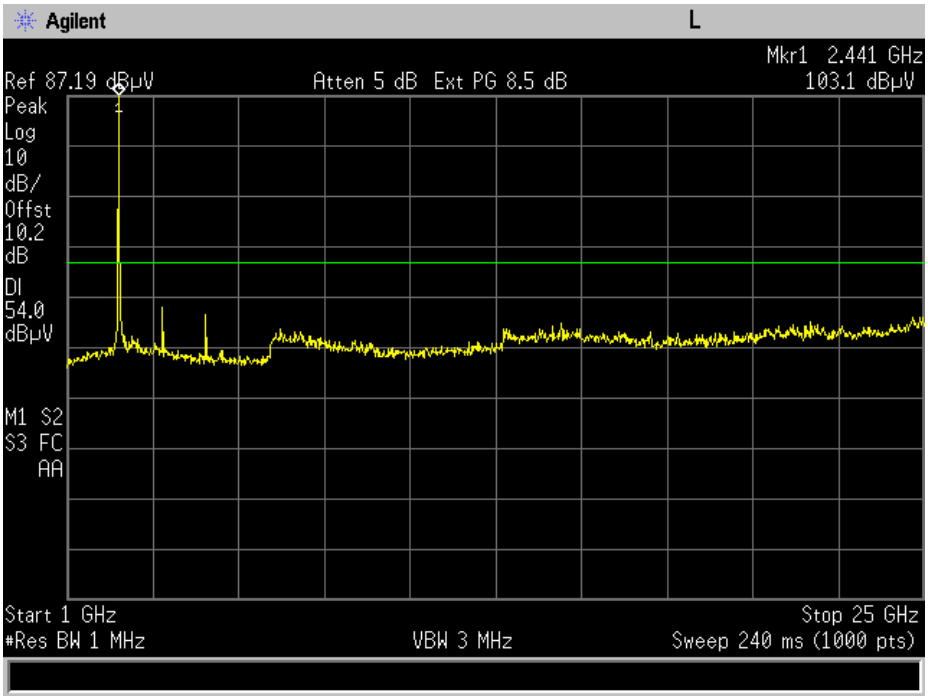
Low Ch – 1-25 GHz



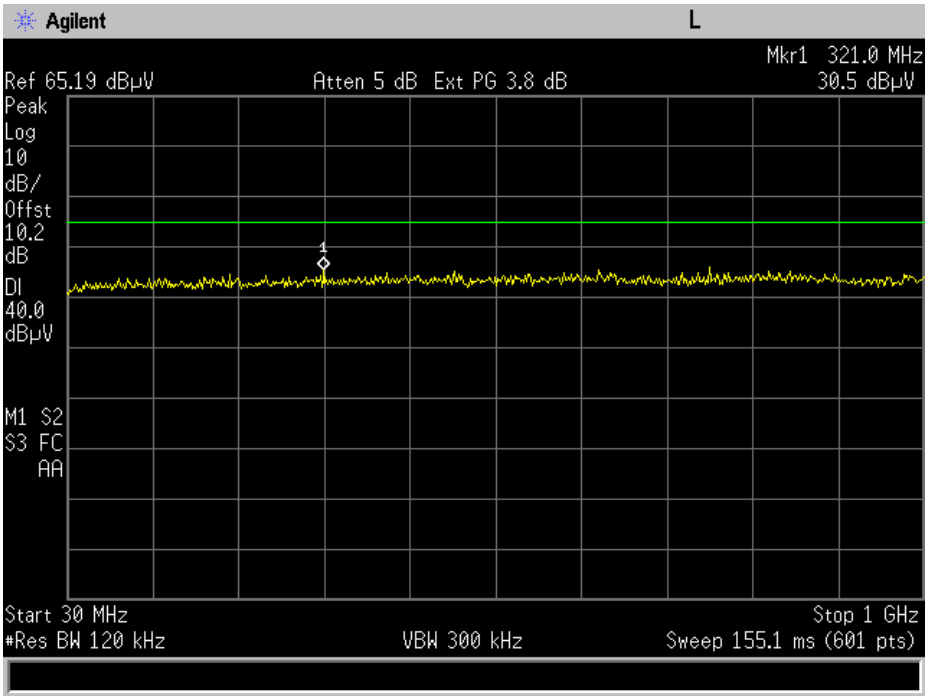
Mid Ch – 30-1000 MHz



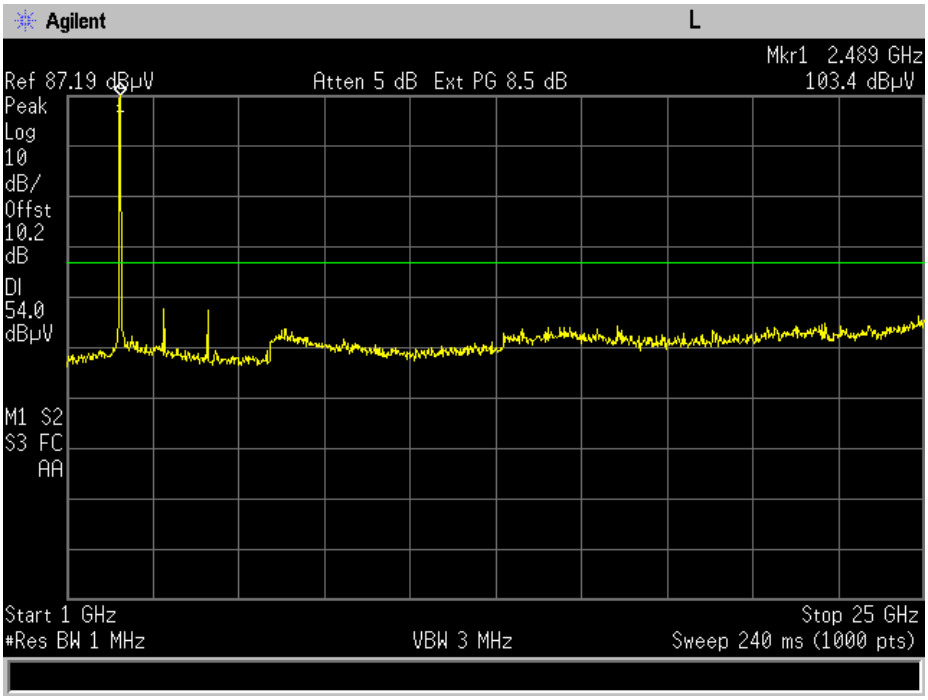
Mid Ch – 1-25 GHz



High Ch – 30-1000 MHz



High Ch – 1-25 GHz



Radiated Spurious Emissions
Engineer: Kenneth Lee
Test Date: 3/30/2017

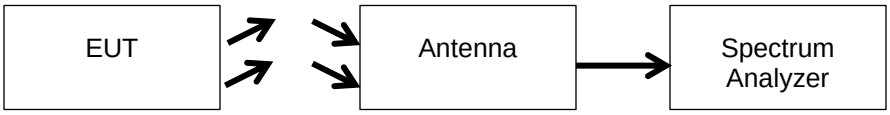
Test Procedure
Radiated Spurious Emissions: 30 – 1000 MHz

The EUT was setup in a semi-anechoic test chamber set 3m from the receiving antenna. The output of the transmitter was connected to a non-radiating balance load. The EUT was set to transmit on the lowest, middle and highest frequencies at the maximum power level. A spectrum analyzer was used to verify that the EUT met the requirements for Radiated Emissions. The EUT was tested by rotating it 360° with the antennas in both the vertical and horizontal orientation and was raised from 1 to 4 meters to ensure the TX signal levels were maximized.

All emissions from 30 MHz to 1 GHz were examined.
Measured Level includes antenna and receiver cable correction factors.
Correction factors were input into the spectrum analyzer before recording “Measured Level”.

RBW = 100 KHz
VBW = 300 KHz
Detector – Quasi Peak

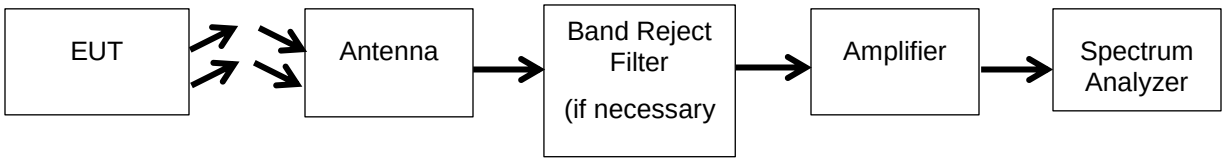
Test Setup



Test Procedure for
Radiated Spurious Emissions above 1 GHz

The EUT was setup in a semi-anechoic test chamber set 3m from the receiving antenna. The output of the transmitter was connected to a non-radiating balance load. The EUT was set to transmit on the lowest, middle and highest frequencies at the maximum power level. A spectrum analyzer was used to verify that the EUT met the requirements for Radiated Emissions. The EUT was tested by rotating it 360° with the antennas in both the vertical and horizontal orientation and was raised from 1 to 4 meters to ensure the TX signal levels were maximized.

Test Setup



See Annex A for test data

Conducted Spurious Emissions

Engineer: Kenneth Lee

Test Date: 3/29/2017

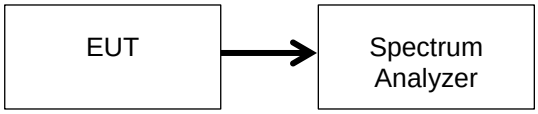
Test Procedure

The EUT was connected directly to a spectrum analyzer. The Spectrum Analyzer was set to the following:

RBW = 100 kHz
VBW ≥ 3 x RBW
Peak Detector
Trace mode = max hold
Sweep = auto couple
Frequency Range = 30MHz – 10th Harmonic of the fundamental

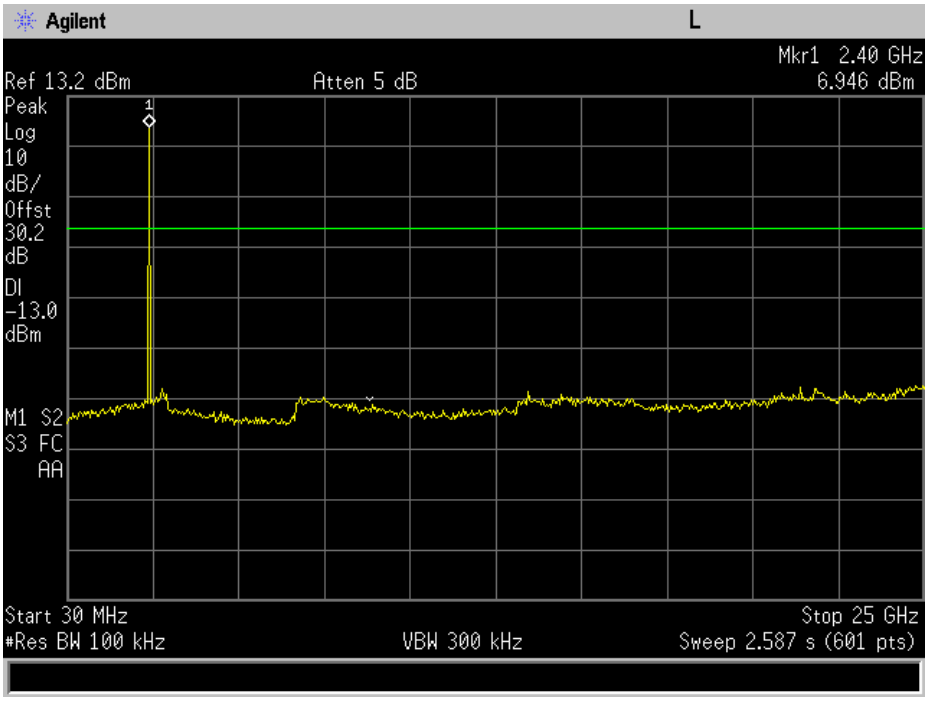
The EUT was set to transmit on the lowest, middle and highest frequencies at the maximum power level. The trace was allowed to stabilize. All emissions were investigated to insure they were attenuated from the peak fundamental by at least 20dB. If the average power levels were measured then the out-of-band emissions needed to be attenuated by 30dB. In addition emissions were investigated at the band edges to insure all out-of-band emissions were attenuated 20 or 30dB as necessary.

Test Setup

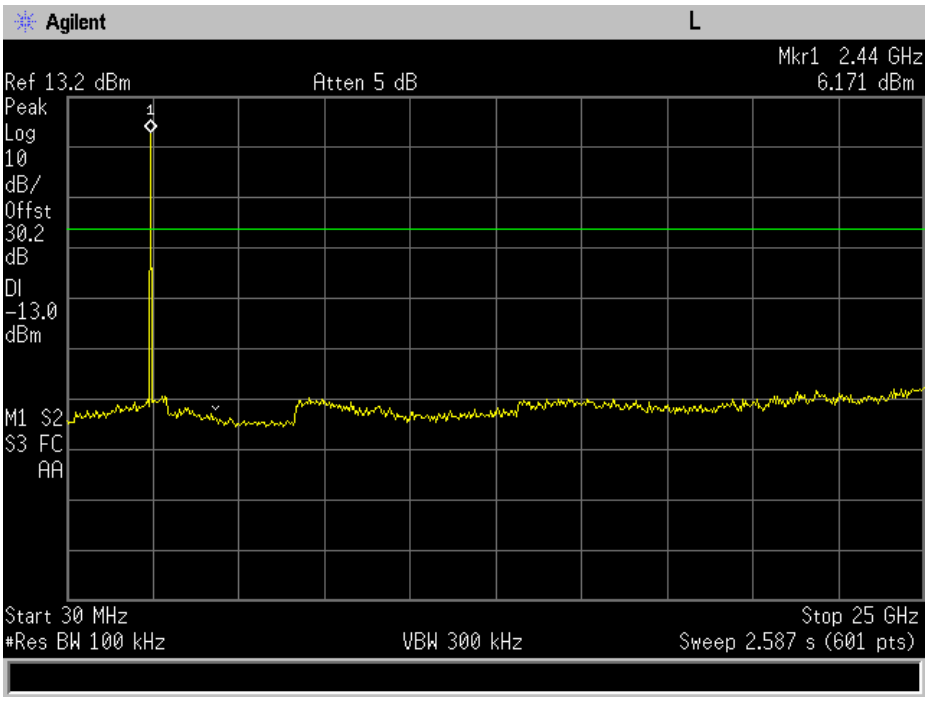


Conducted Spurious Emissions Results

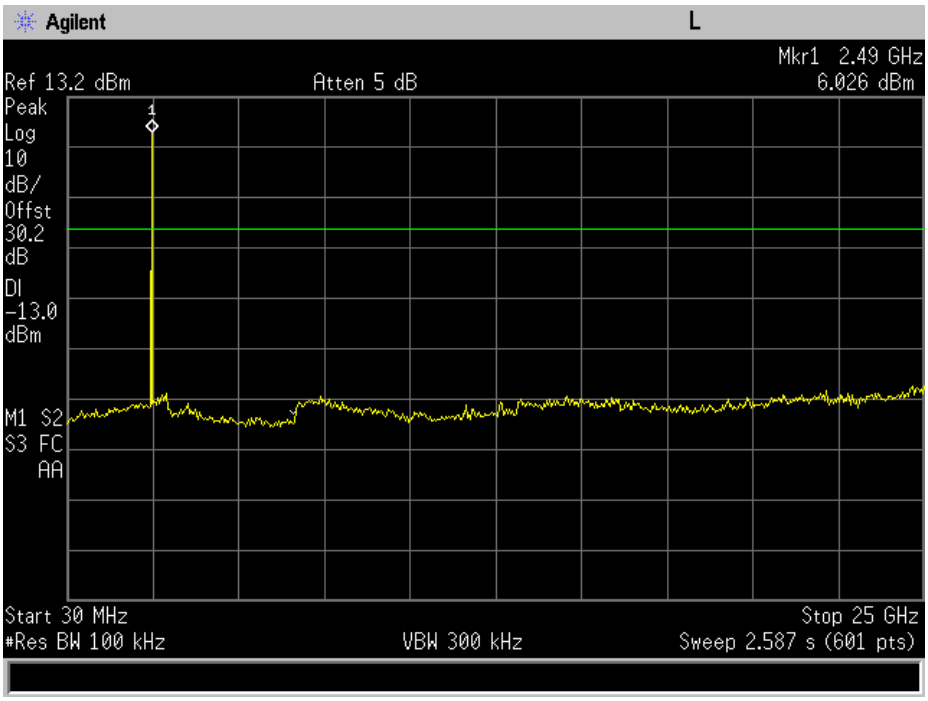
Low Ch – BLE



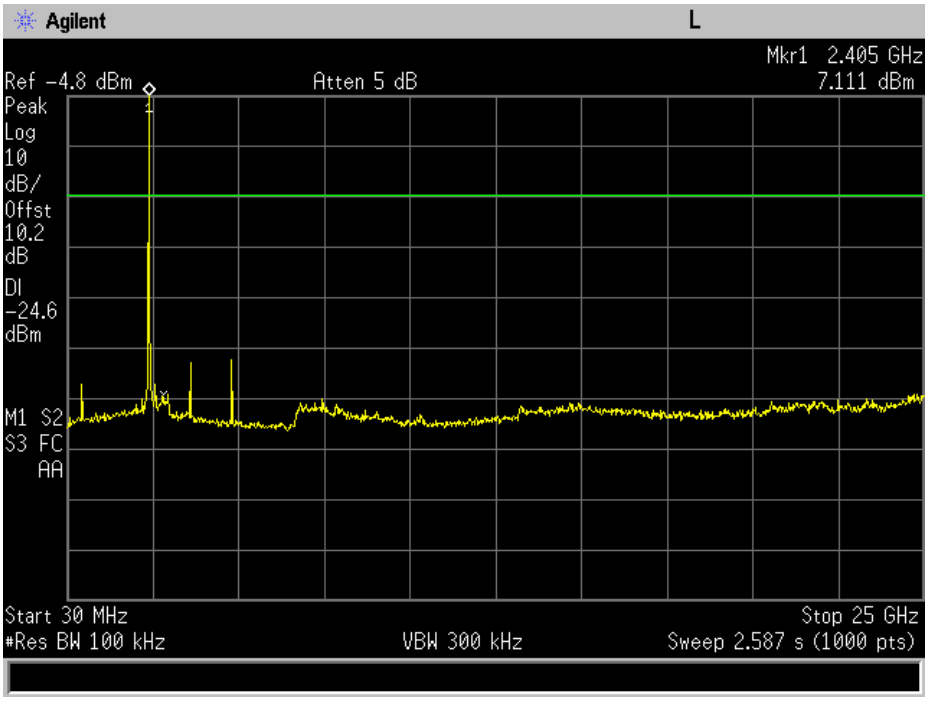
Mid Ch – BLE



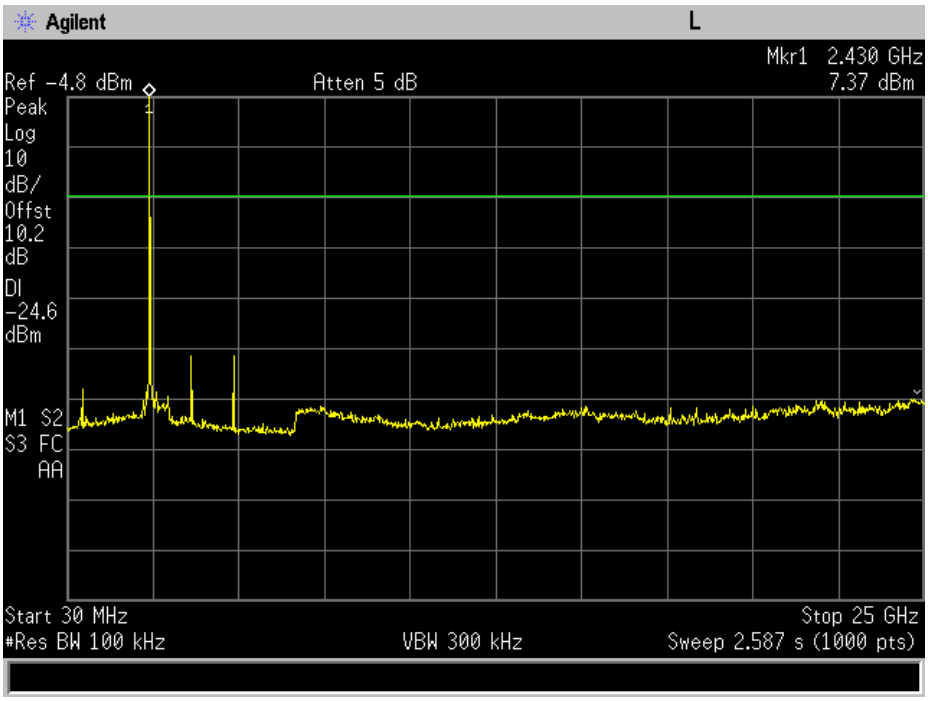
High Ch – BLE



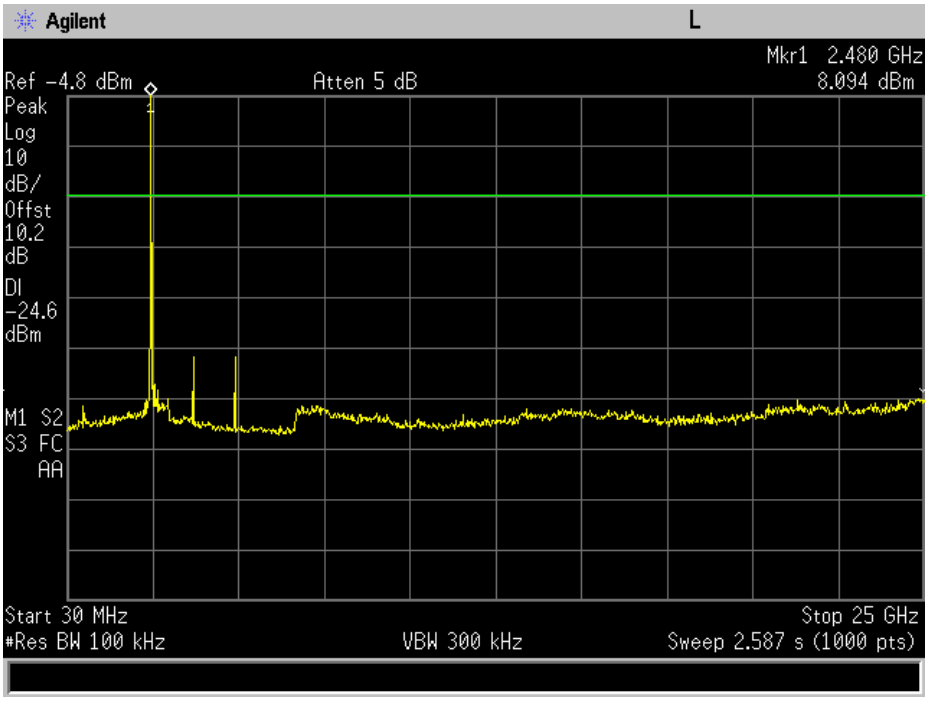
Low Ch – WiFi



Mid Ch – WiFi

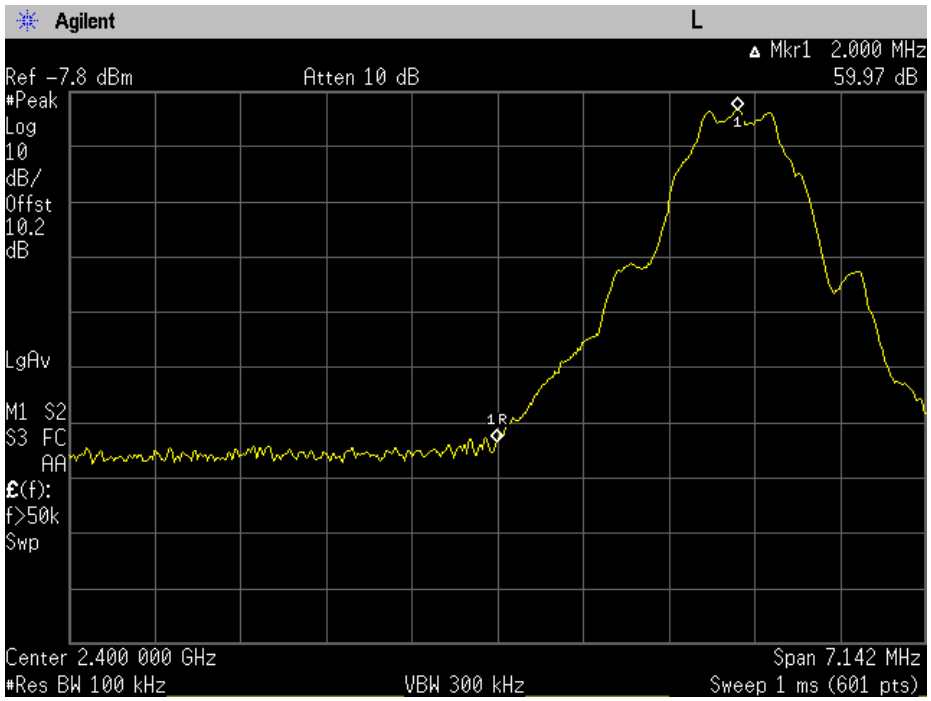


High Ch – WiFi

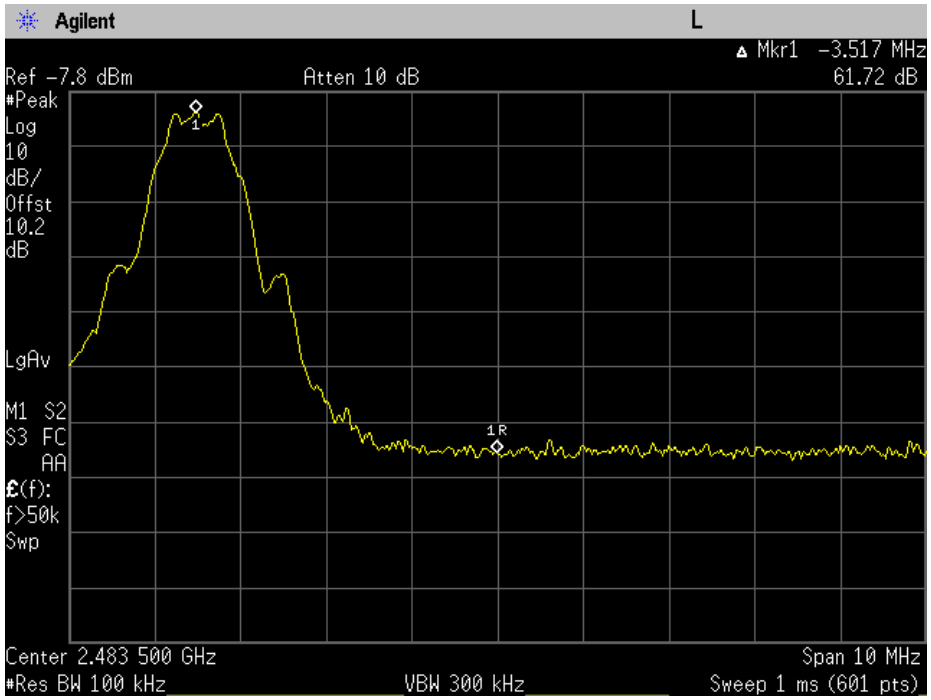


Conducted Spurious Emissions Test Results (Band Edges)

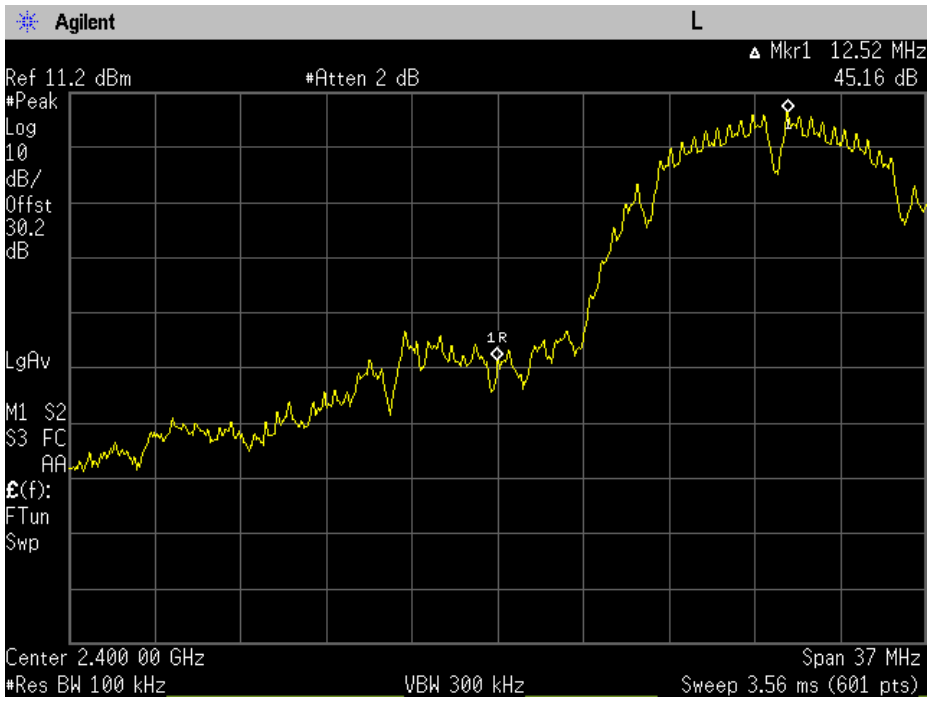
Low Ch – BLE



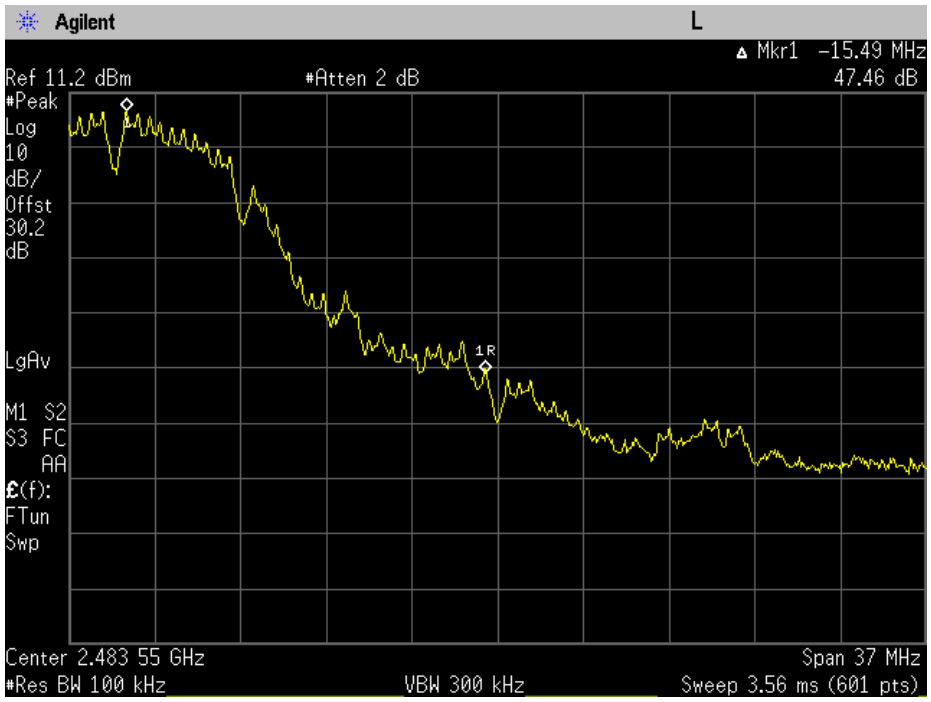
High Ch – BLE



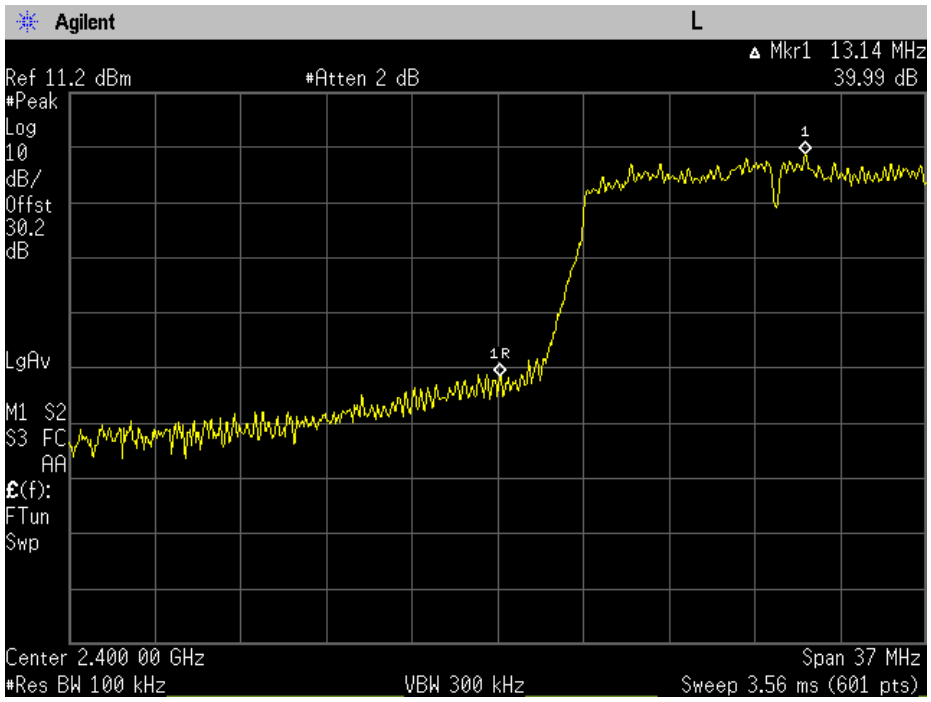
Low Ch – WiFi B



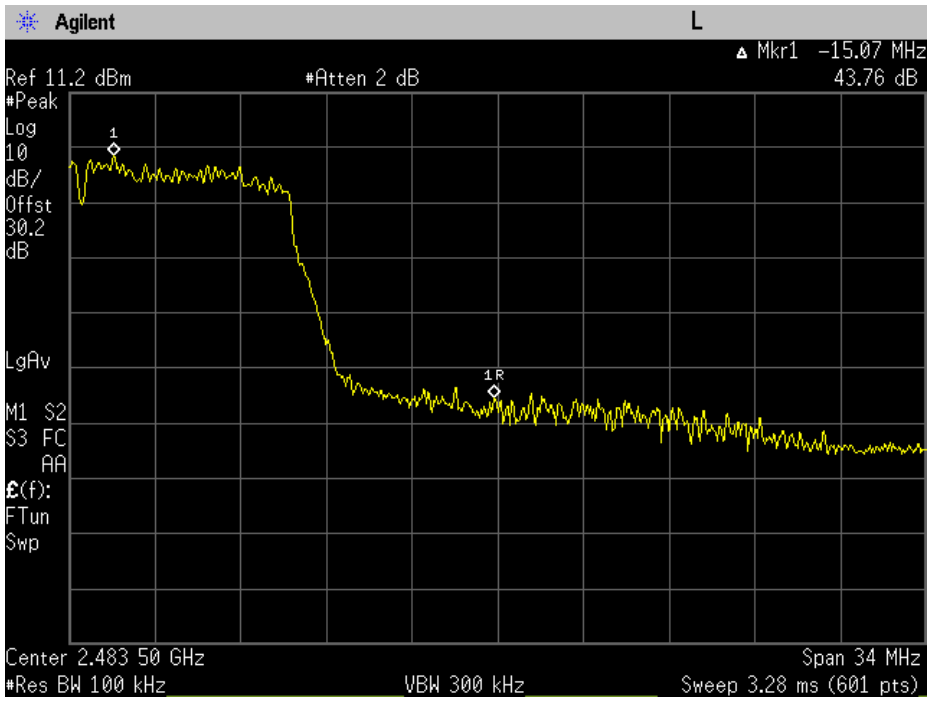
High Ch – WiFi B



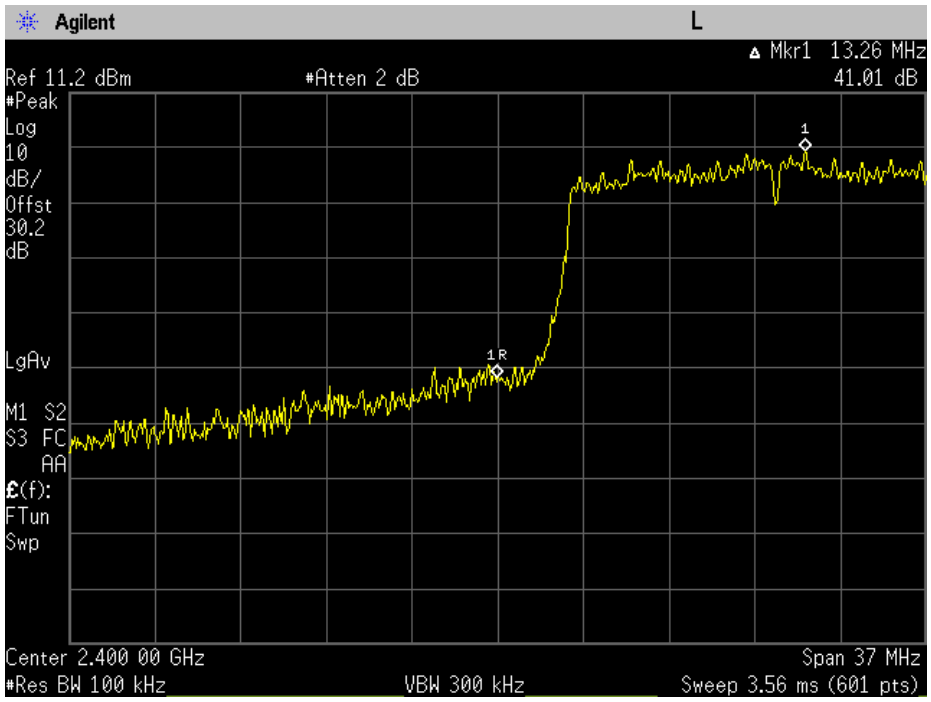
Low Ch – WiFi G



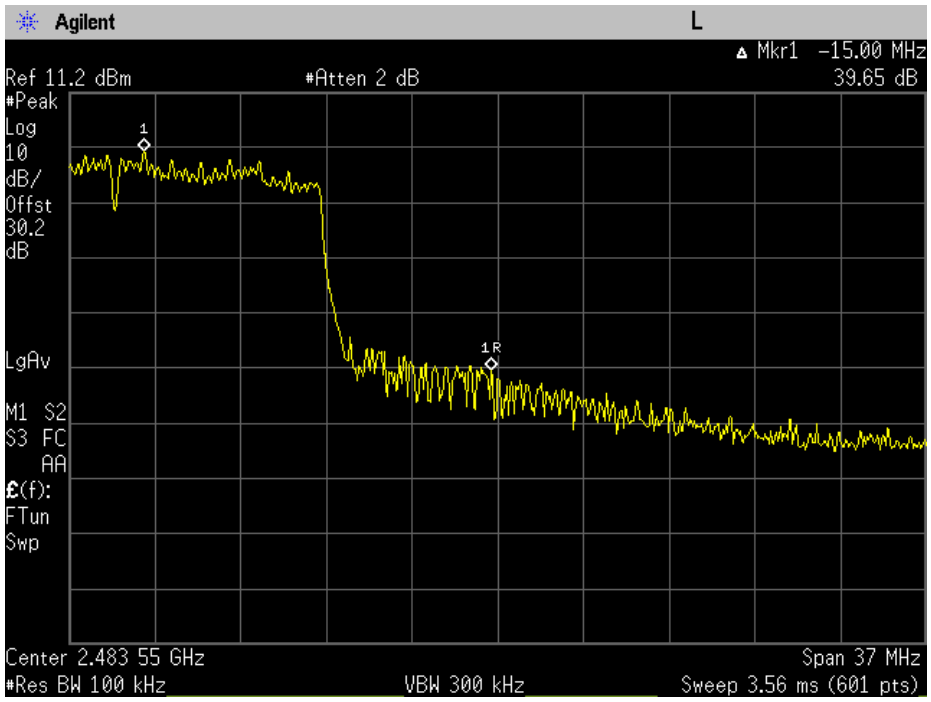
High Ch – WiFi G



Low Ch – WiFi N



High Ch – WiFi N



DTS Bandwidth
Engineer: Kenneth Lee
Test Date: 3/28/2017

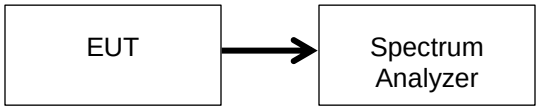
Test Procedure

The EUT was connected directly to a spectrum analyzer. The Spectrum Analyzer was set to the following:

RBW = 100 kHz
VBW ≥ 3 x RBW
Peak Detector
Trace mode = max hold
Sweep = auto couple
Span = 1.5 x EBW

The EUT was set to transmit at the lowest, middle and highest channels of the band at the maximum power levels. The maximum width of the emission that was determined by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that were attenuated by 6db and this value was used to determine the width of the carrier. Alternatively the spectrum analyzer's automatic bandwidth capability was used.

Test Setup



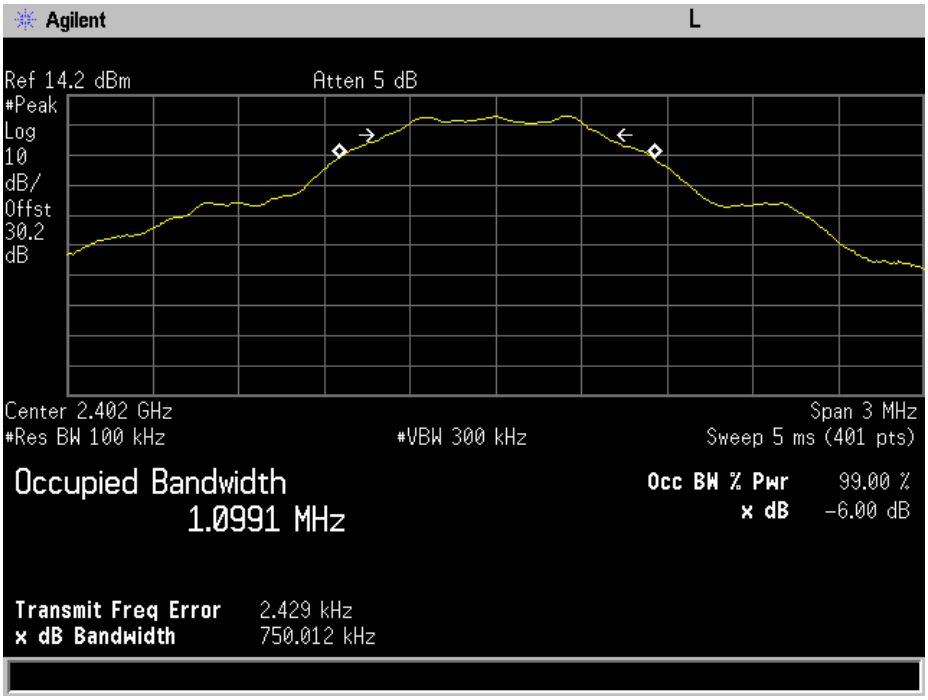
6 dB Occupied Bandwidth Summary – BLE

Frequency (MHz)	Measured Bandwidth (kHz)	Specification Limit (kHz)	Result
2402	750.012	≥ 500	Pass
2442	744.619	≥ 500	Pass
2480	747.511	≥ 500	Pass

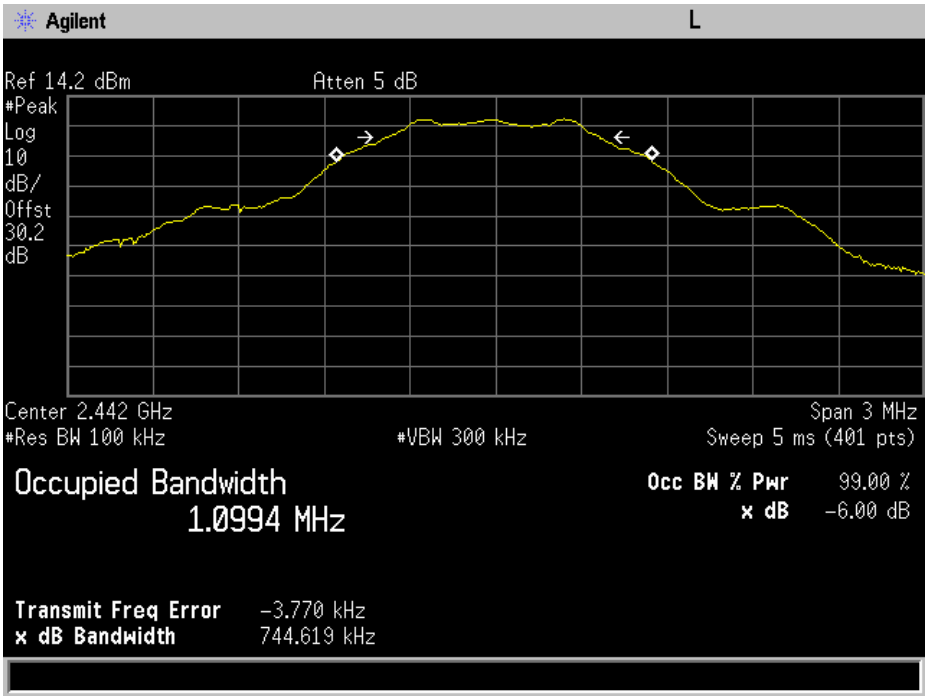
99% Bandwidth Summary – BLE

Frequency (MHz)	Measured Bandwidth (MHz)	Result
2402	1.0991	Pass
2442	1.0994	Pass
2480	1.0982	Pass

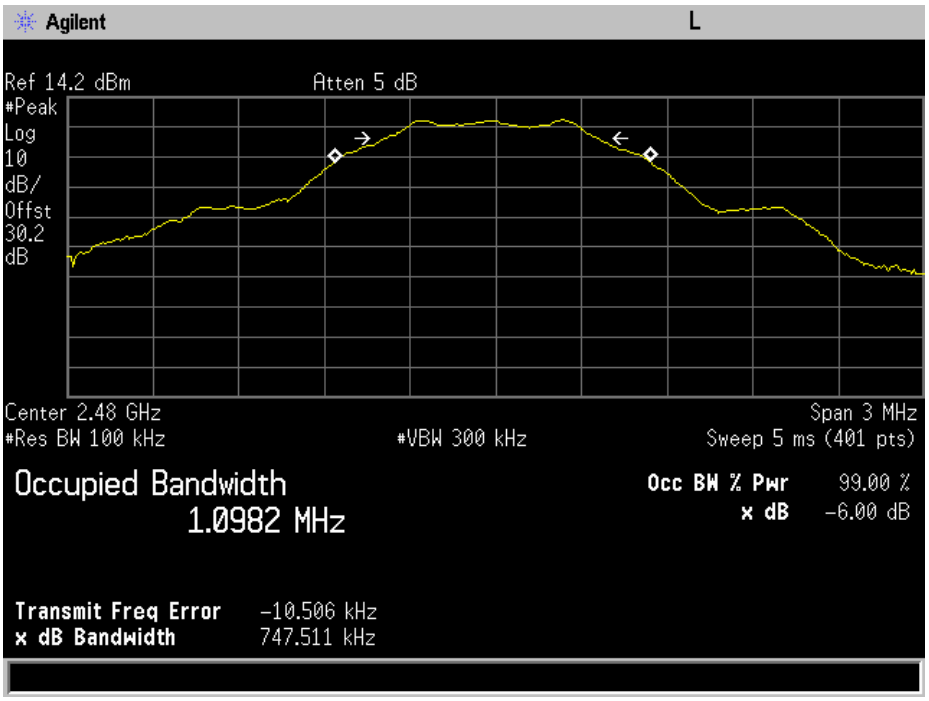
6 dB and 99% Occupied Bandwidths at 2402 MHz – BLE



6 dB and 99% Occupied Bandwidths at 2442 MHz – BLE



6 dB and 99% Occupied Bandwidths at 2480 MHz – BLE



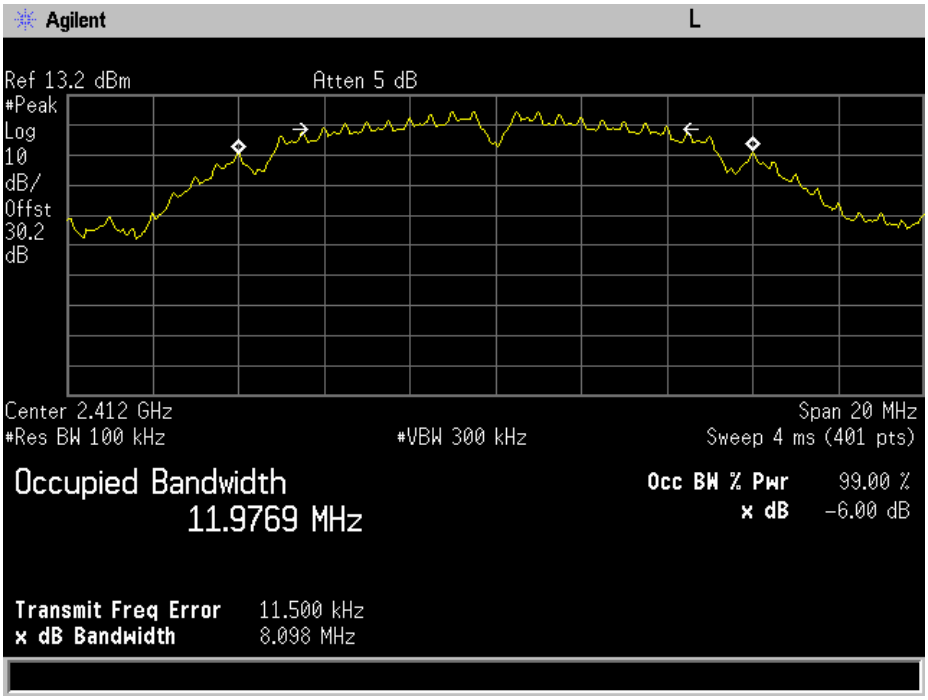
6 dB Occupied Bandwidth Summary – WiFi B

Frequency (MHz)	Measured Bandwidth (MHz)	Specification Limit (kHz)	Result
2412	8.089	≥ 500	Pass
2437	8.066	≥ 500	Pass
2467	8.043	≥ 500	Pass

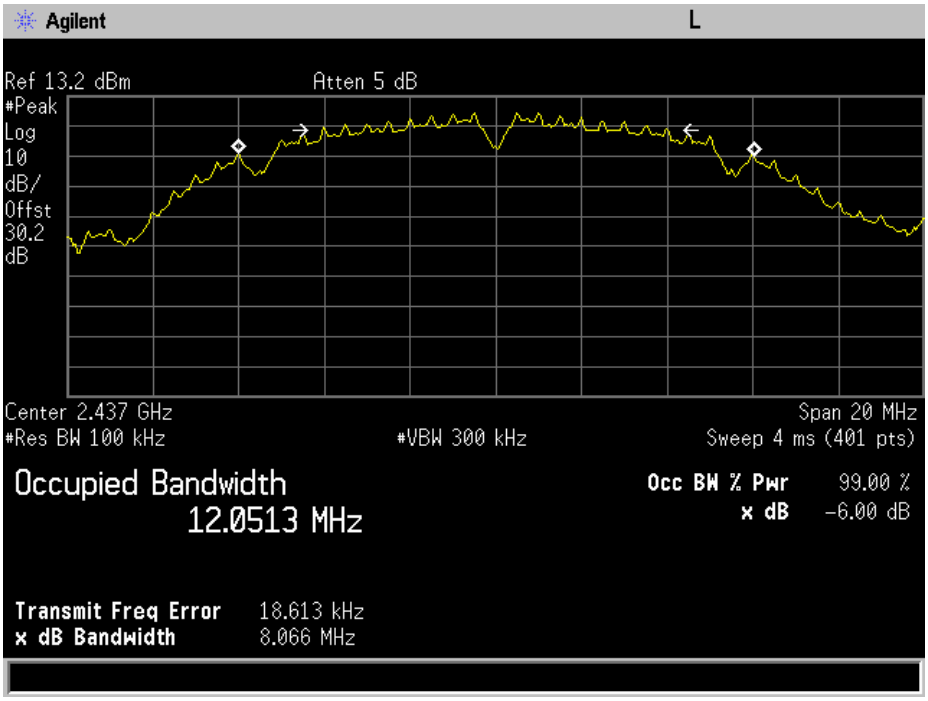
99% Bandwidth Summary – WiFi B

Frequency (MHz)	Measured Bandwidth (MHz)	Result
2412	11.9769	Pass
2437	12.0513	Pass
2467	12.0522	Pass

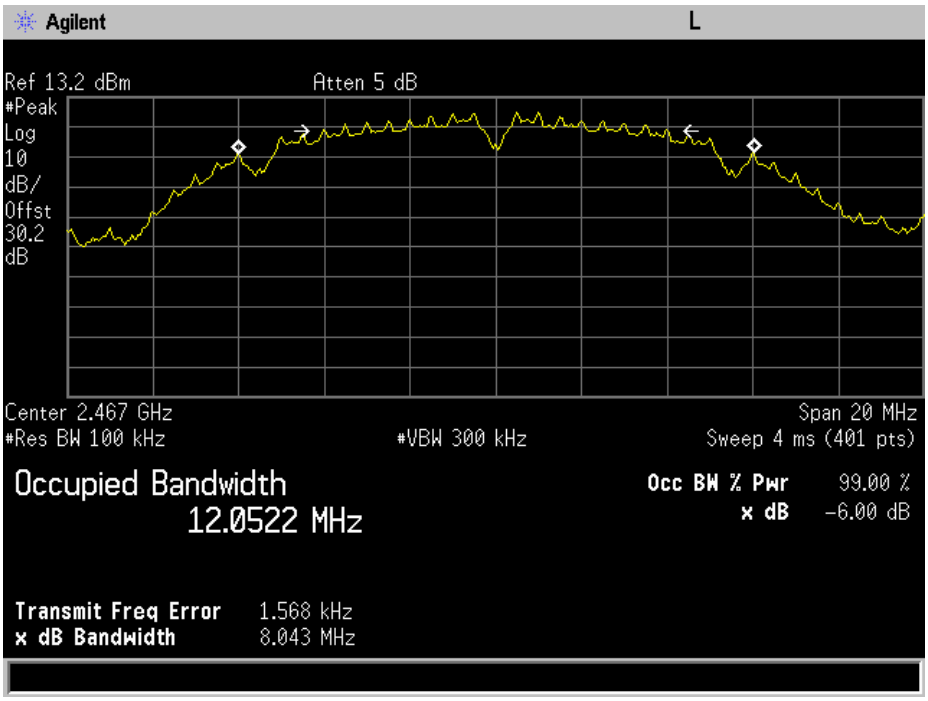
6 dB and 99% Occupied Bandwidths at 2412 MHz – WiFi B



6 dB and 99% Occupied Bandwidths at 2437 MHz – WiFi B



6 dB and 99% Occupied Bandwidths at 2467 MHz – WiFi B



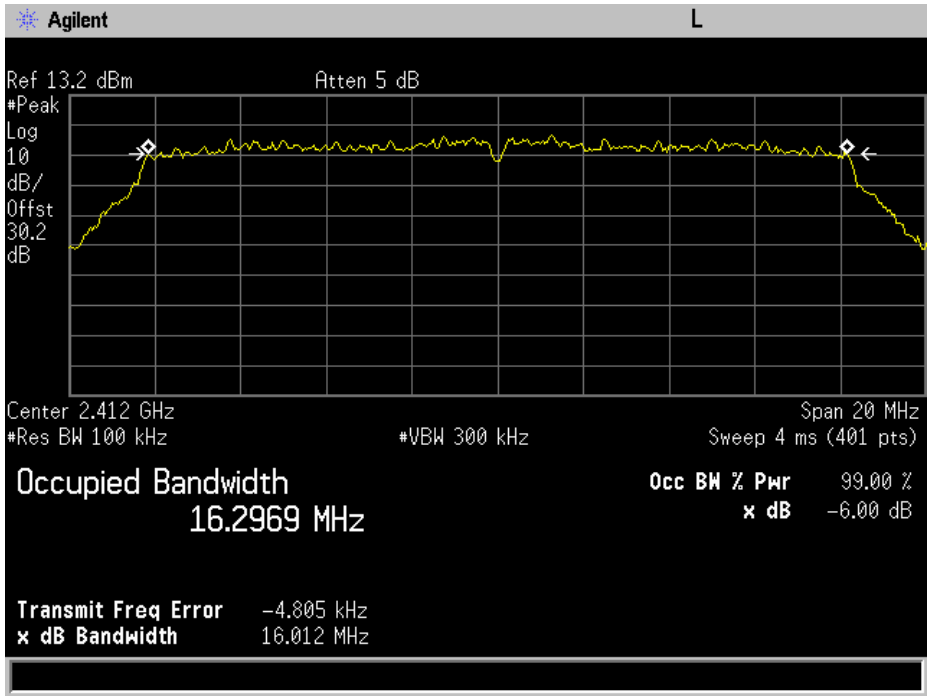
6 dB Occupied Bandwidth Summary – WiFi G

Frequency (MHz)	Measured Bandwidth (MHz)	Specification Limit (kHz)	Result
2412	16.012	≥ 500	Pass
2437	15.408	≥ 500	Pass
2467	16.055	≥ 500	Pass

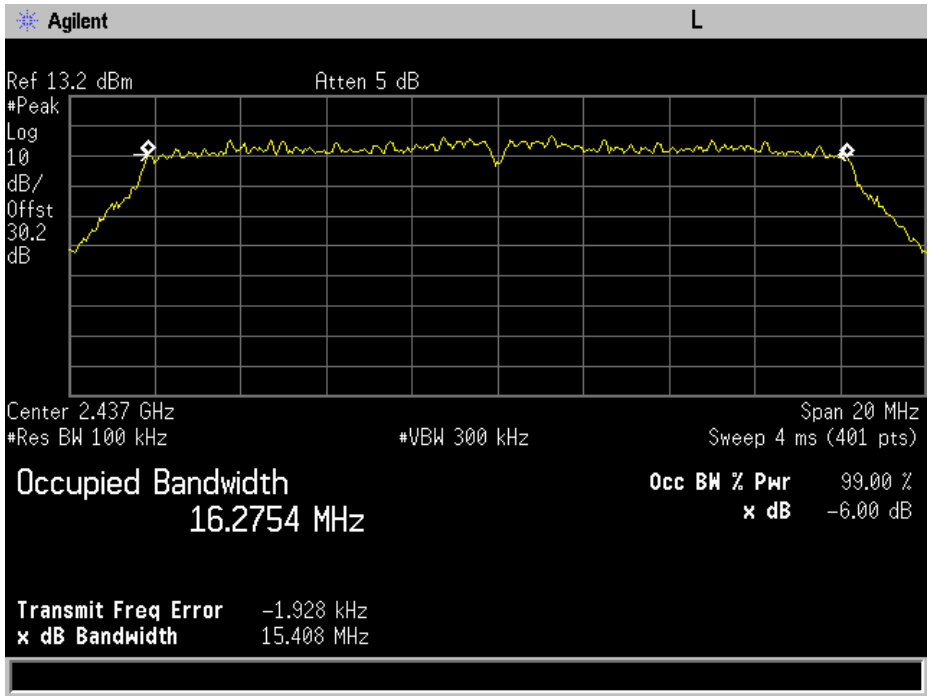
99% Bandwidth Summary – WiFi G

Frequency (MHz)	Measured Bandwidth (MHz)	Result
2412	16.2969	Pass
2437	16.2754	Pass
2467	16.2919	Pass

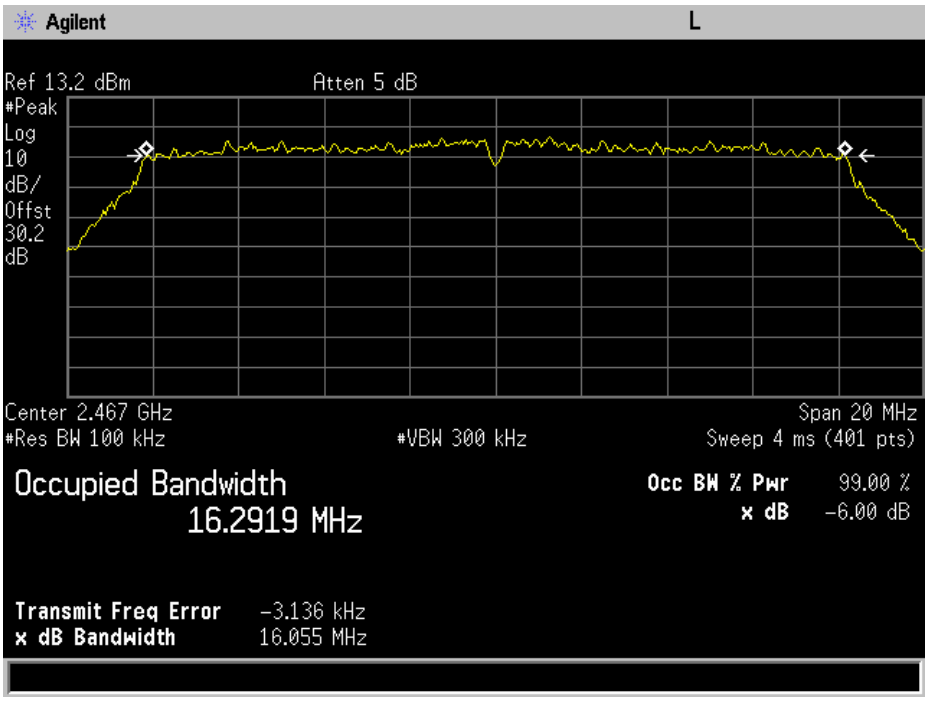
6 dB and 99% Occupied Bandwidths at 2412 MHz – WiFi G



6 dB and 99% Occupied Bandwidths at 2437 MHz – WiFi G



6 dB and 99% Occupied Bandwidths at 2467 MHz – WiFi G



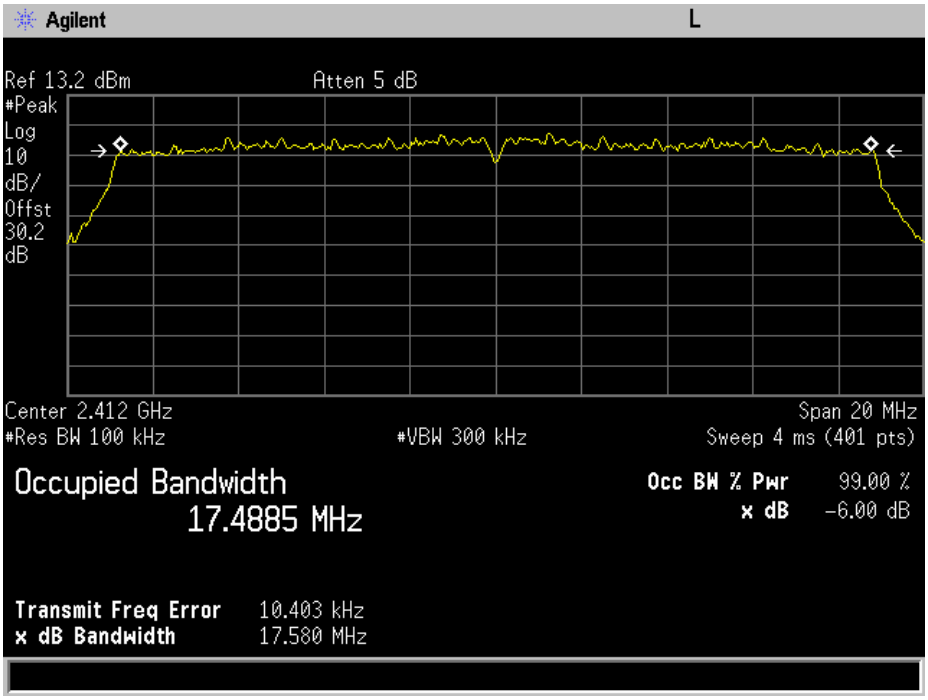
6 dB Occupied Bandwidth Summary – WiFi N

Frequency (MHz)	Measured Bandwidth (MHz)	Specification Limit (kHz)	Result
2412	17.580	≥ 500	Pass
2437	17.052	≥ 500	Pass
2467	17.298	≥ 500	Pass

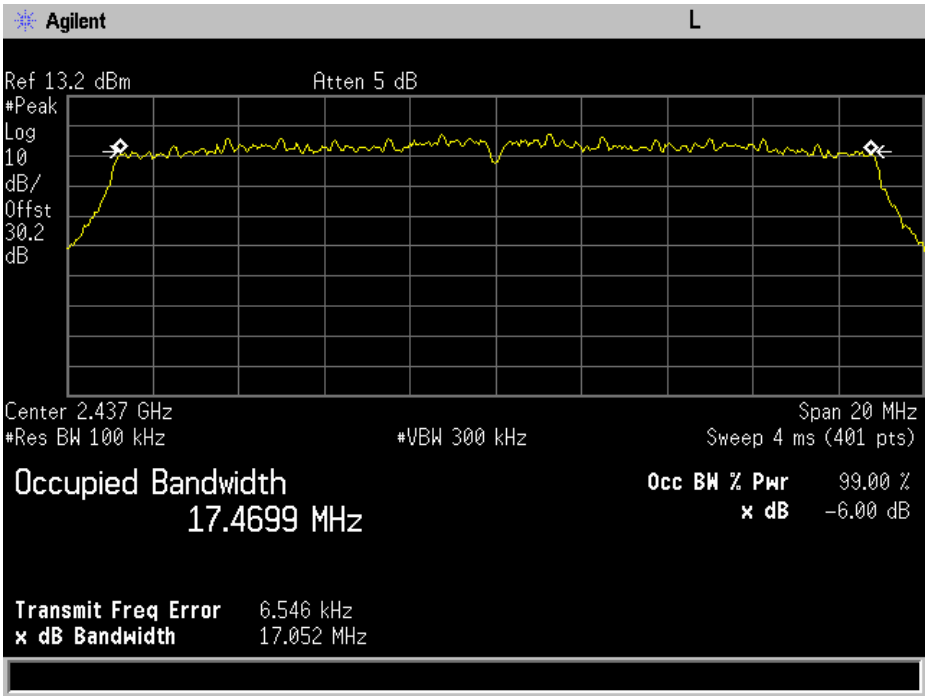
99% Bandwidth Summary – WiFi N

Frequency (MHz)	Measured Bandwidth (MHz)	Result
2412	17.4885	Pass
2437	17.4699	Pass
2467	17.4718	Pass

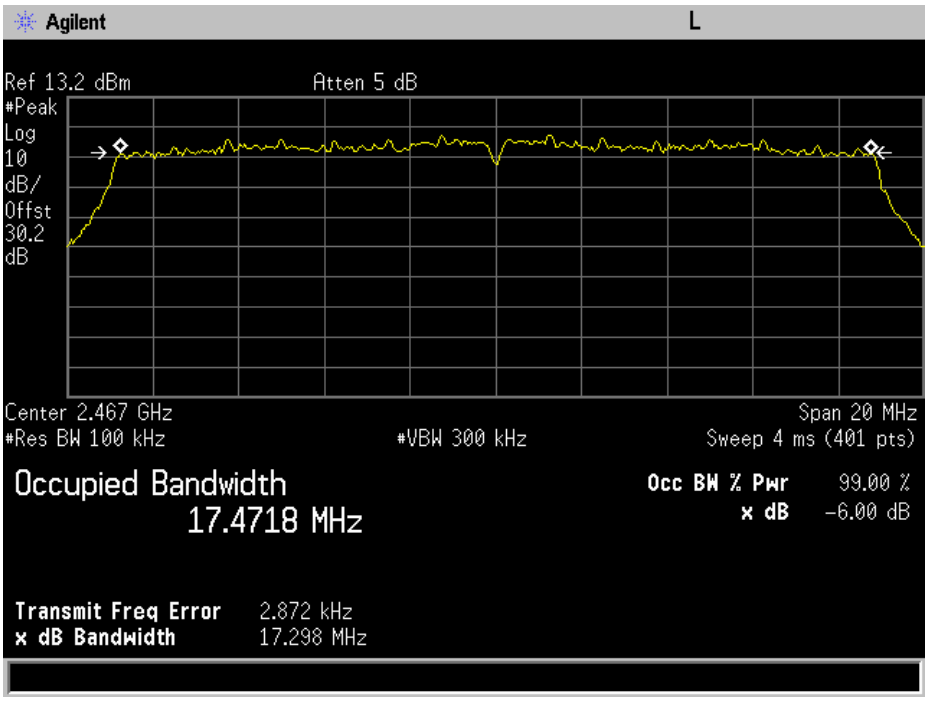
6 dB and 99% Occupied Bandwidths at 2412 MHz – WiFi N



6 dB and 99% Occupied Bandwidths at 2437 MHz – WiFi N



6 dB and 99% Occupied Bandwidths at 2467 MHz – WiFi N



Transmitter Power Spectral Density (PSD)

Engineer: Kenneth Lee

Test Date: 3/28/2017

Test Procedure for WiFi

The EUT was connected directly to a spectrum analyzer. The Spectrum Analyzer was set to the following:

DTS channel center frequency
Span 1.5 x DTS bandwidth
RBW =3 kHz ≤ RBW ≤ 100 kHz
VBW ≥ 3 x RBW
Peak Detector
Sweep time = auto couple
Trace mode = max hold

The EUT was set to transmit at the lowest, middle and highest channels of the band at the maximum power levels. Once the trace has stabilize the peak marker was used to determine the peak power spectral density.

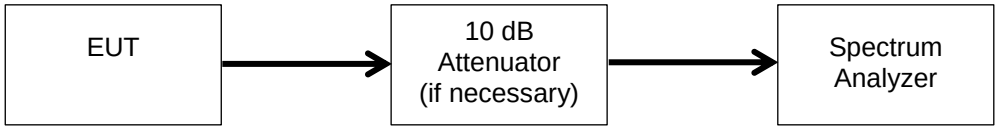
Test Procedure for BLE

The EUT was connected directly to a spectrum analyzer. The Spectrum Analyzer was set to the following:

DTS channel center frequency
Span 1.5 x OBW
RBW =3 kHz ≤ RBW ≤ 100 kHz
VBW ≥ 3 x RBW
Detector = RMS
Number of Points = ≥ 2 x span/RBW
Sweep time = auto couple

The EUT was set to transmit at the lowest, middle and highest channels of the band at the maximum power levels. Once the trace was averaged over 100 traces, the peak marker was used to determine the power spectral density.

Test Setup



PSD Summary – BLE

Frequency (MHz)	Measured Data (dBm)	Specification Limit (dBm)	Result
2402	-6.14	8	Pass
2442	-6.76	8	Pass
2480	-6.771	8	Pass

PSD Summary – WiFi B

Frequency (MHz)	Measured Data (dBm)	Specification Limit (dBm)	Result
2412	-12.811	8	Pass
2437	-12.912	8	Pass
2467	-12.718	8	Pass

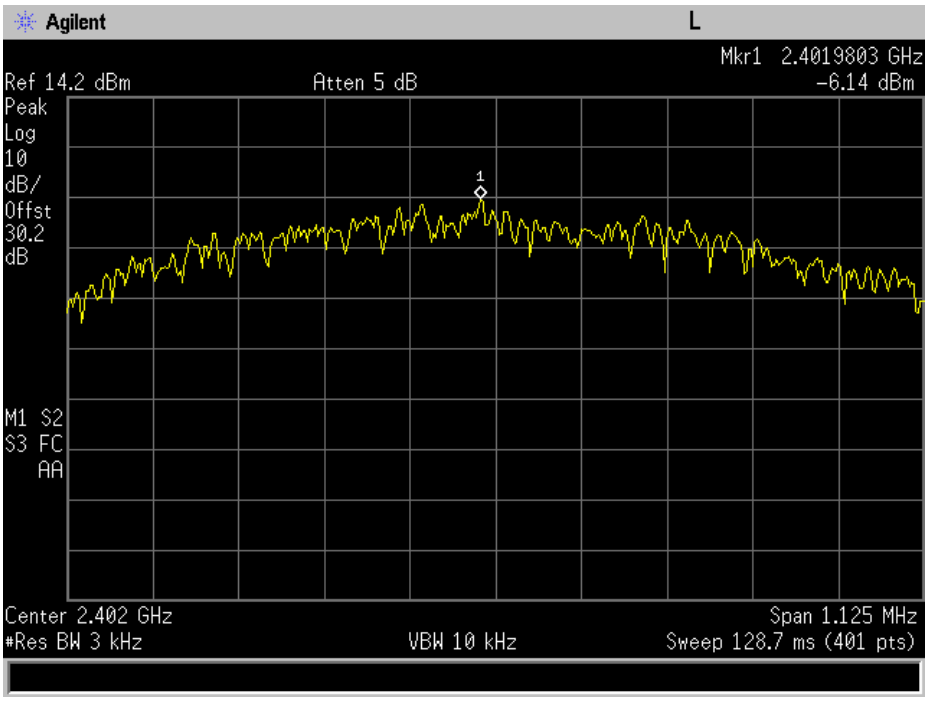
PSD Summary – WiFi G

Frequency (MHz)	Measured Data (dBm)	Specification Limit (dBm)	Result
2412	-17.79	8	Pass
2437	-18.021	8	Pass
2467	-17.821	8	Pass

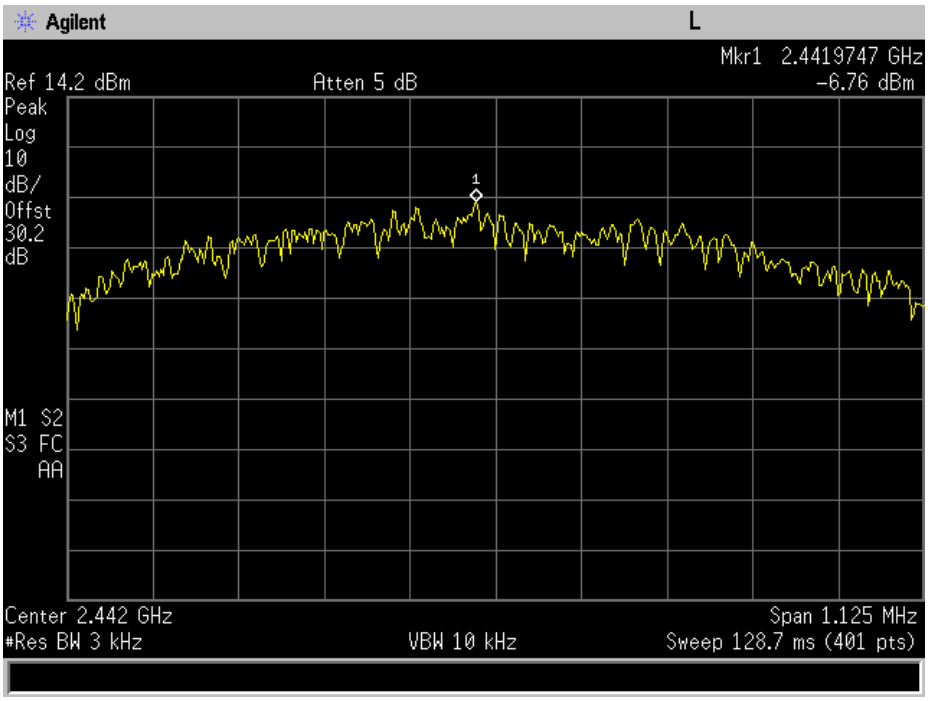
PSD Summary – WiFi N

Frequency (MHz)	Measured Data (dBm)	Specification Limit (dBm)	Result
2412	-19.091	8	Pass
2437	-19.136	8	Pass
2467	-19.002	8	Pass

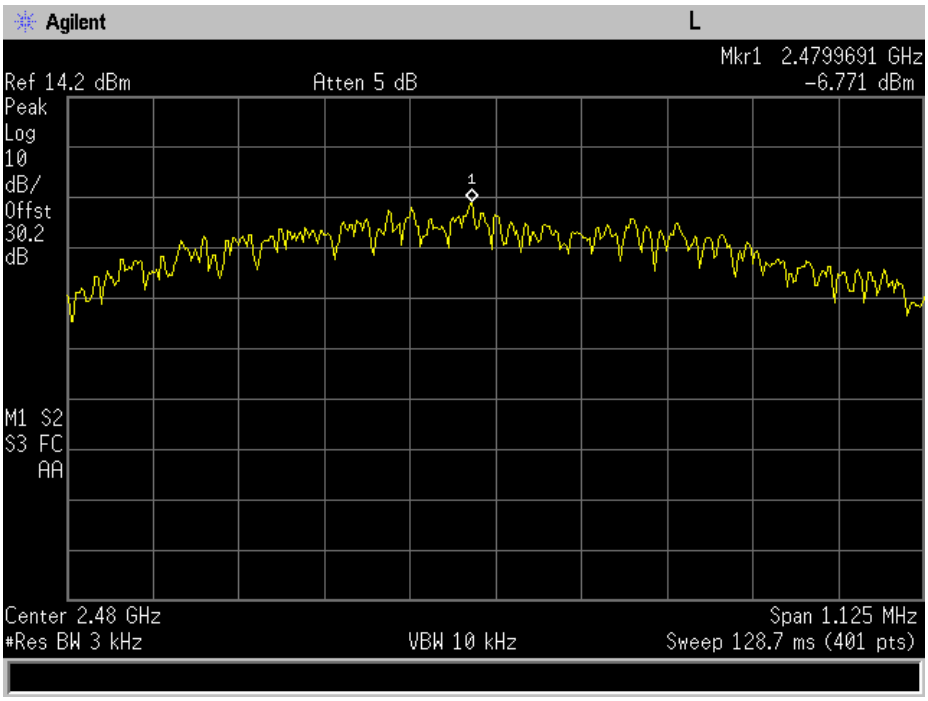
PSD – Low Ch – BLE



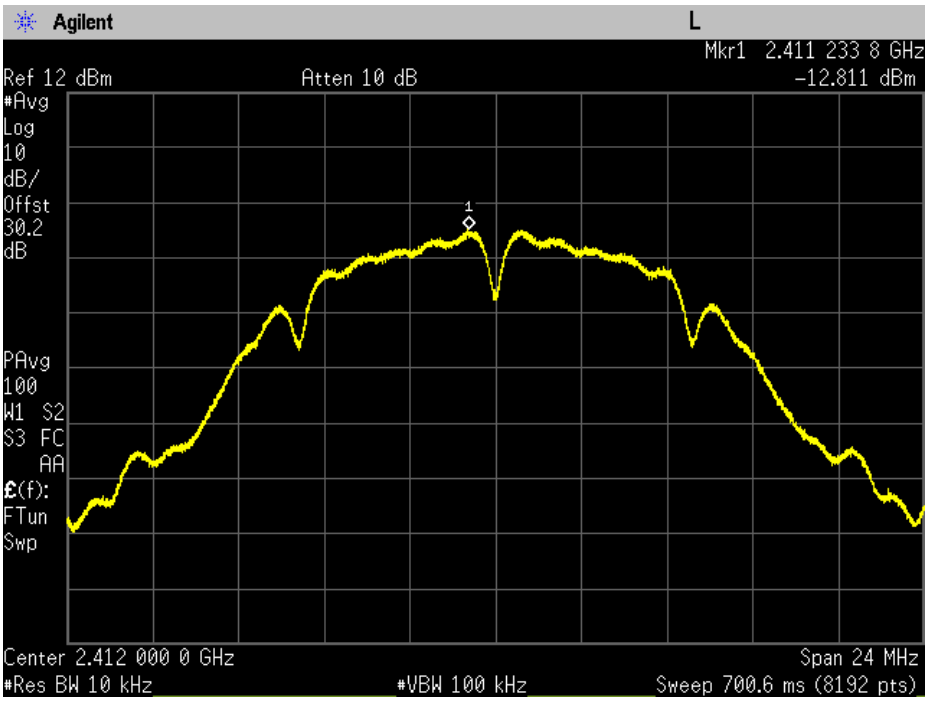
PSD – Mid Ch – BLE



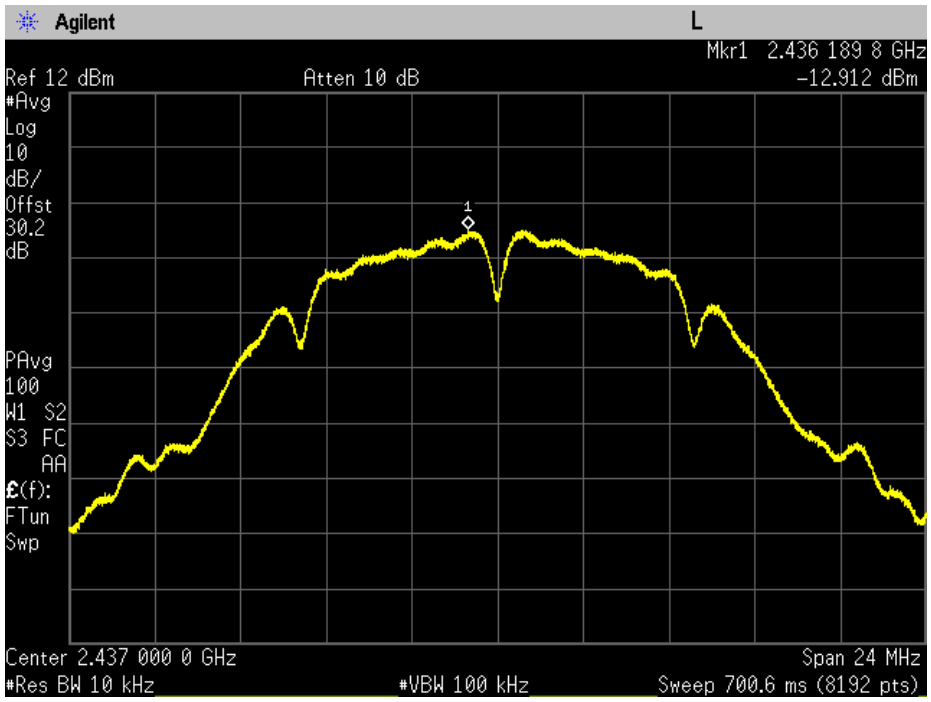
PSD – High Ch – BLE



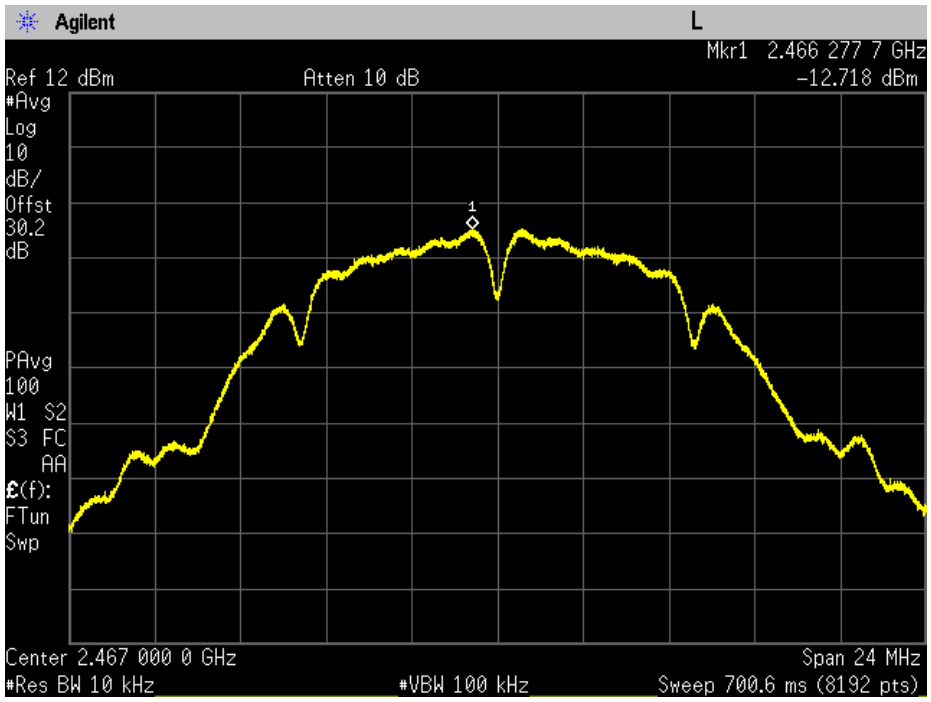
PSD – Low Ch – WiFi – B



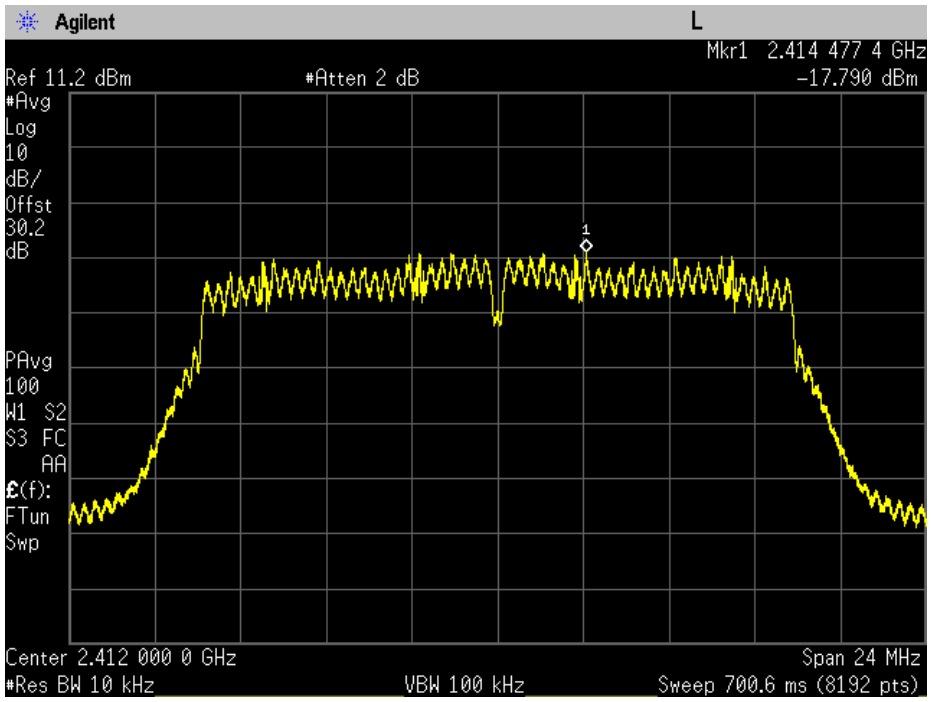
PSD – Mid Ch – WiFi – B



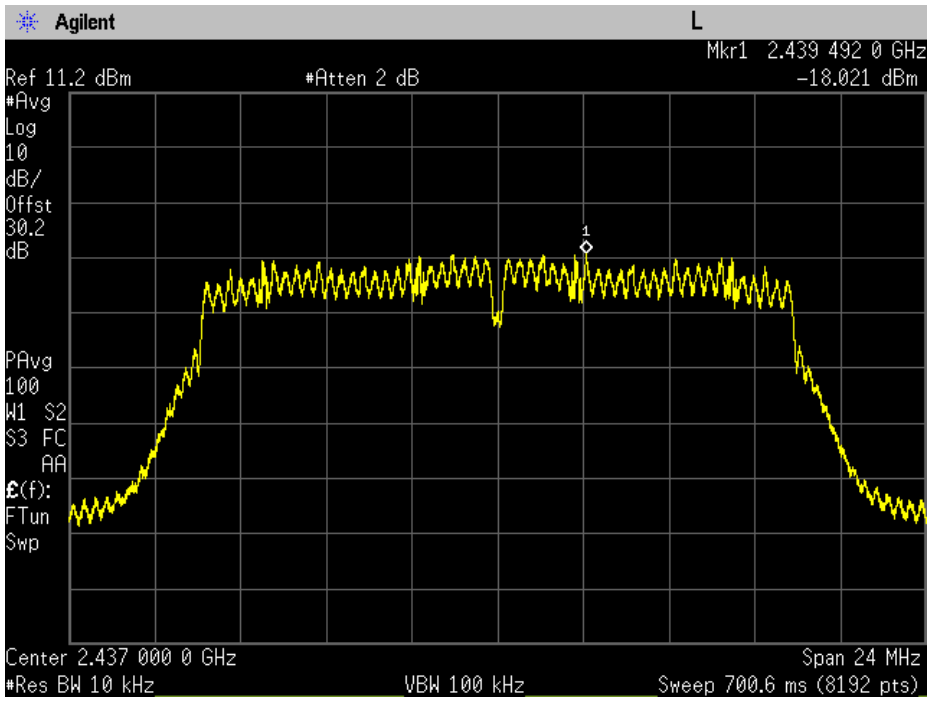
PSD – High Ch – WiFi – B



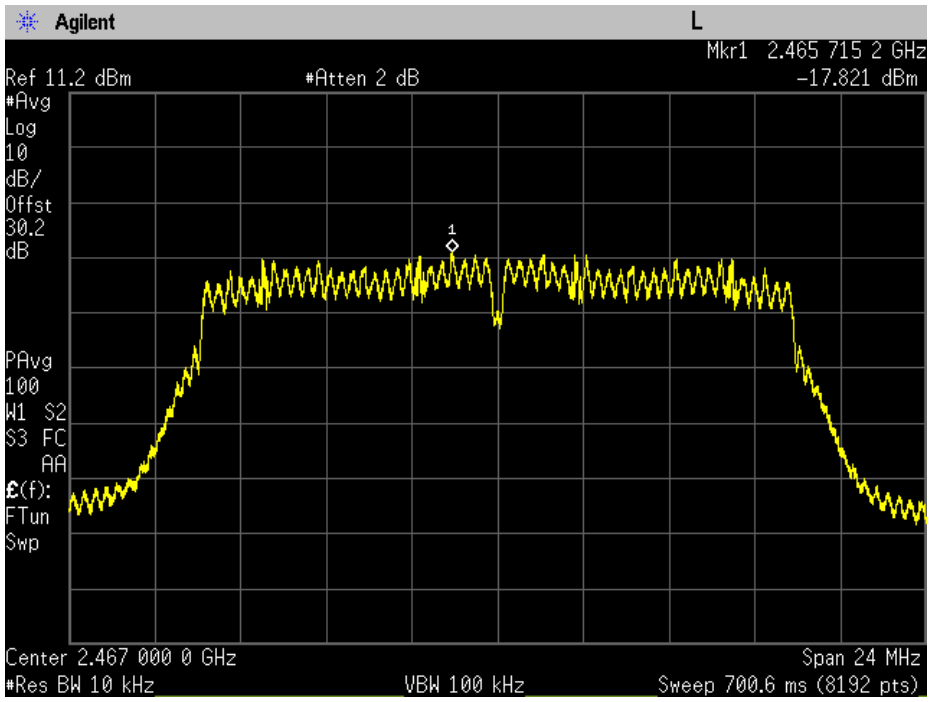
PSD – Low Ch – WiFi – G



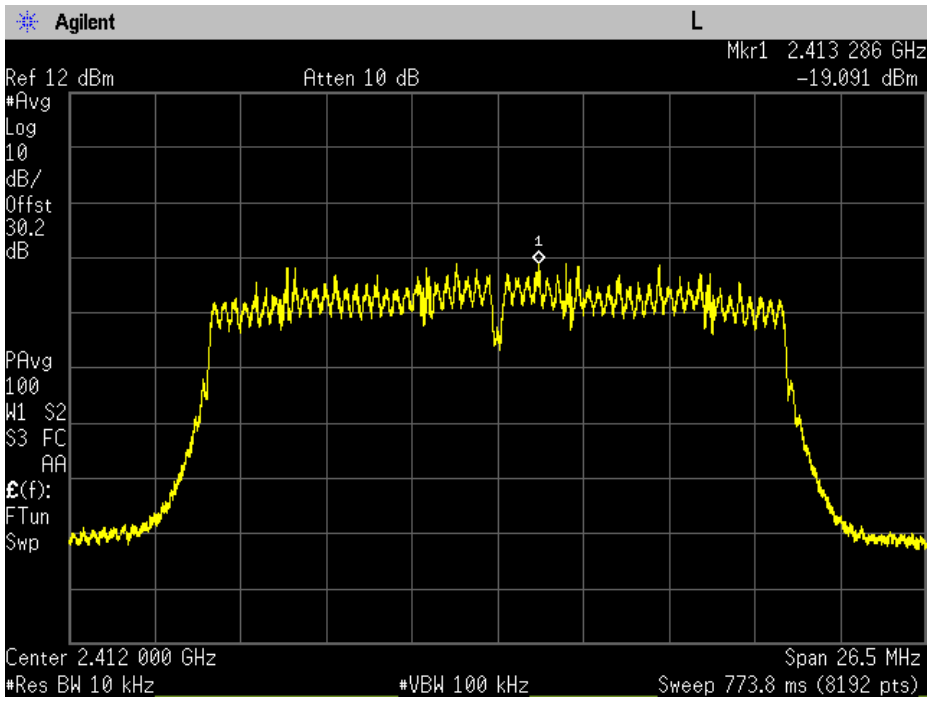
PSD – Mid Ch – WiFi – G



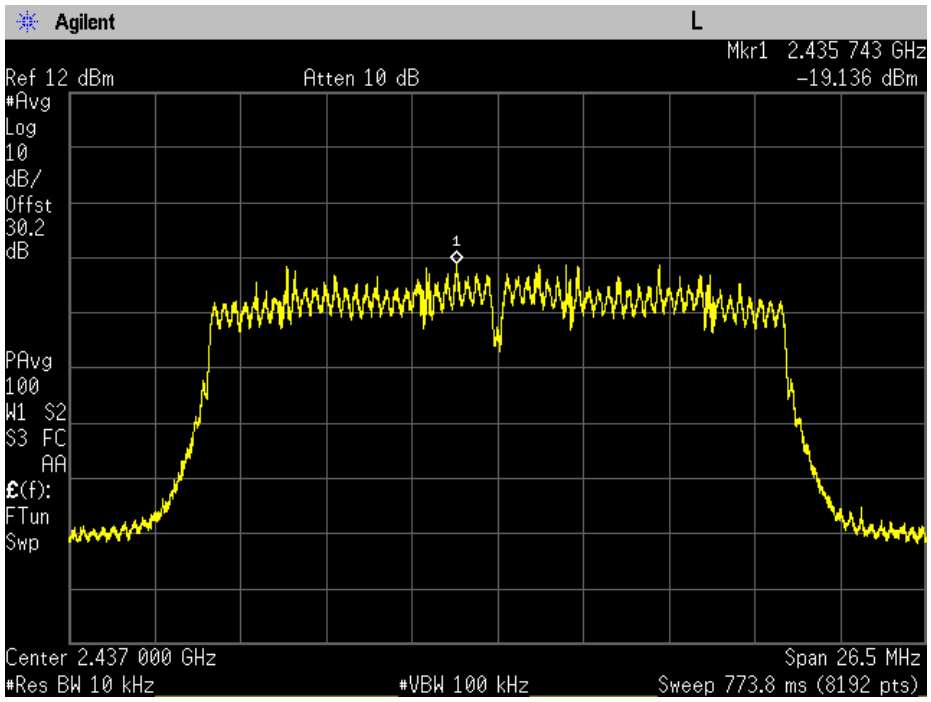
PSD – High Ch – WiFi – G



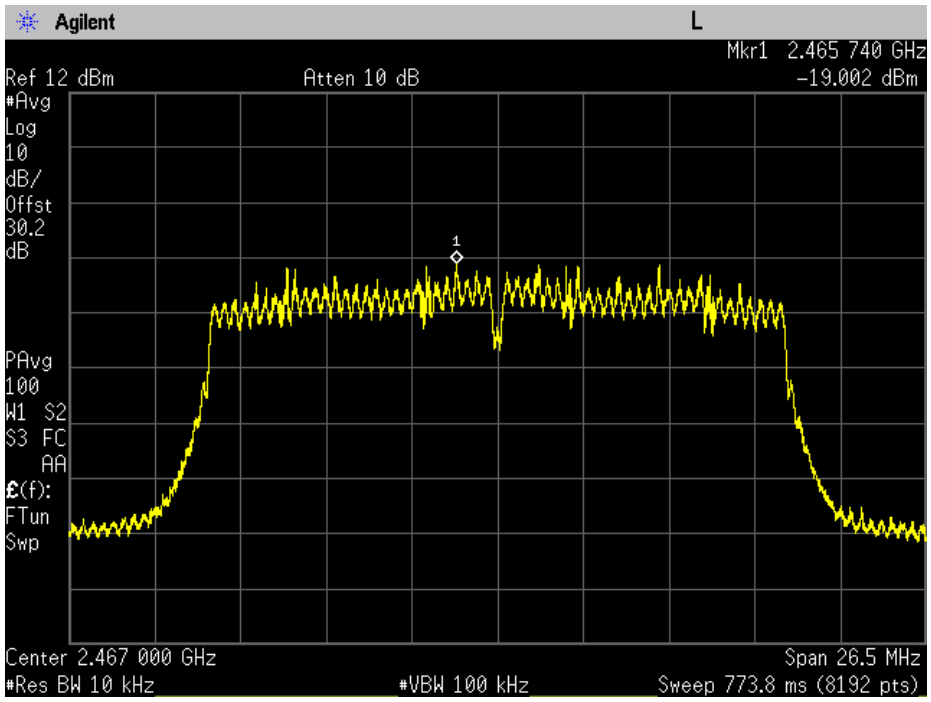
PSD – Low Ch – WiFi – N



PSD – Mid Ch – WiFi – N



PSD – High Ch – WiFi – N



A/C Powerline Conducted Emission

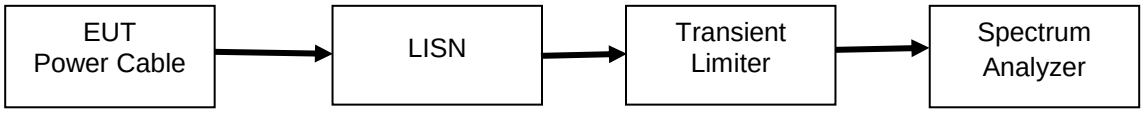
Engineer: Kenneth Lee

Test Date: 3/29/2017

Test Procedure

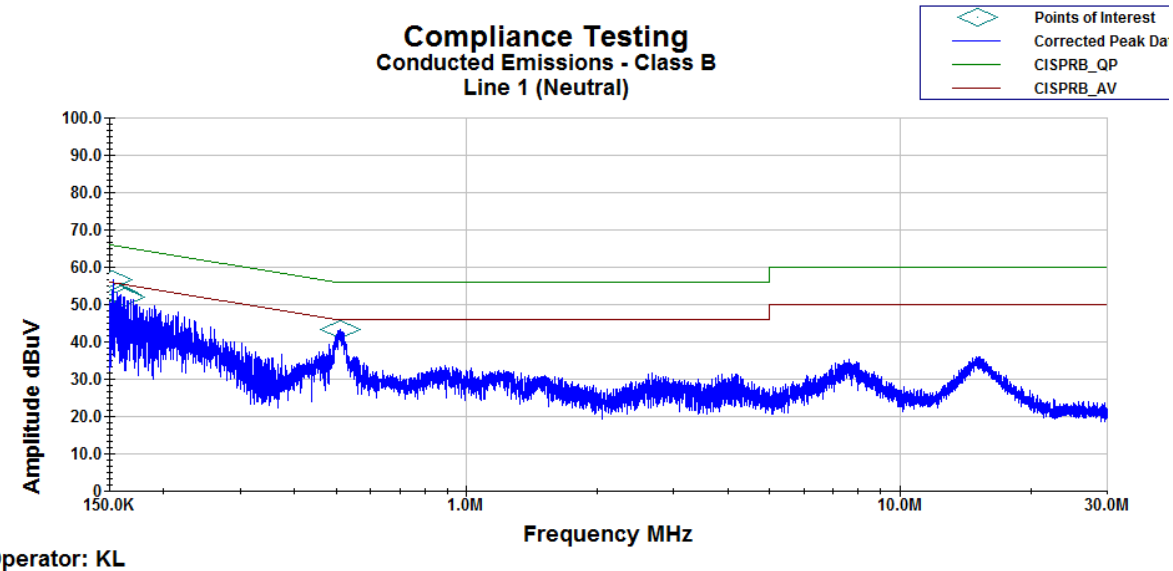
The EUT power cable was connected to a LISN and the monitored output of the LISN was connected to a transient limiter, which then connected directly to a spectrum analyzer. The conducted emissions from 150 kHz to 30 MHz were measured and compared to the specification limits.

Test Setup



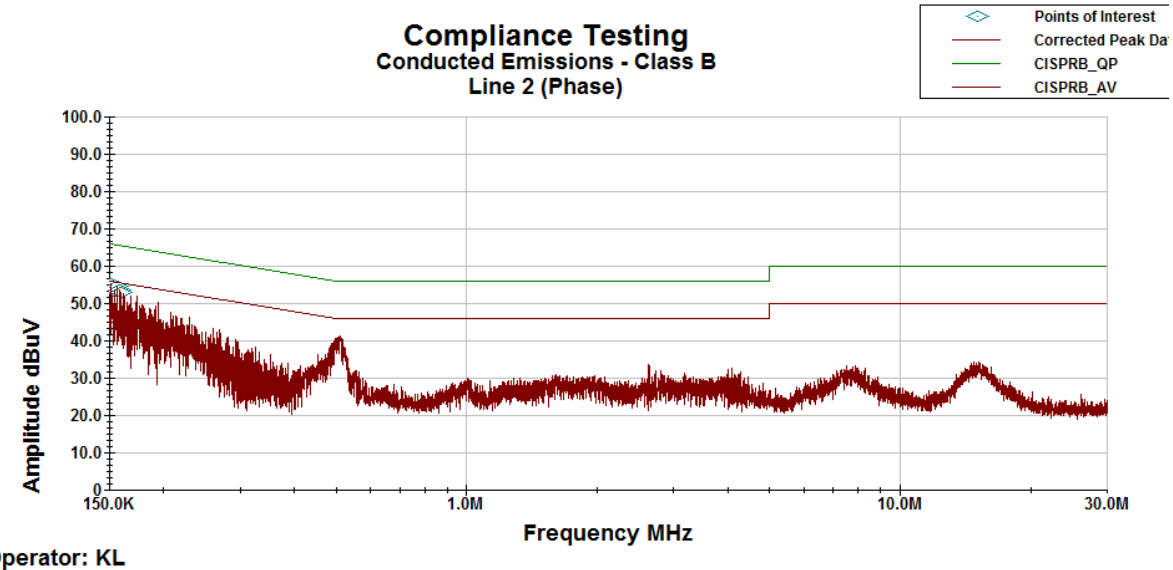
Conducted Emissions Test Results

Line 1 Peak Plot



Operator: KL
Conducted Emissions.til **Job #: p1720024**

Line 2 Peak Plot



Operator: KL
Conducted Emissions.til **Job #: p1720024**

Line 1 Neutral Avg Detector

Frequency	Measured Value (dBuV)	LISN Correction Factor (dB)	Cable Loss (dB)	Transient Limiter (dB)	Final Data (dBuV)	Limit (dBuV)	Avg Margin (dB)
150.63 KHz	30.21	0.29	0.02	10.2	40.728	55.982	-15.254
150.63 KHz	30.21	0.29	0.02	10.2	40.728	55.982	-15.254
151.8 KHz	30.44	0.28	0.02	10.2	40.944	55.949	-15.004
151.9 KHz	30.31	0.28	0.02	10.2	40.807	55.946	-15.139
153.28 KHz	30.27	0.27	0.02	10.2	40.76	55.906	-15.146
510.93 KHz	26.46	0.1	0.03	10.1	36.695	46	-9.305

Line 2 Phase Avg Detector

Frequency	Measured Value (dBuV)	LISN Correction Factor (dB)	Cable Loss (dB)	Transient Limiter (dB)	Final Data (dBuV)	Limit (dBuV)	Avg Margin (dB)
150.03 KHz	29.76	0.3	0.02	10.2	40.278	55.999	-15.722
150.38 KHz	29.85	0.3	0.02	10.2	40.371	55.989	-15.619
153.8 KHz	29.68	0.26	0.02	10.2	40.16	55.891	-15.731
154.22 KHz	29.73	0.26	0.02	10.2	40.21	55.879	-15.67
156.43 KHz	29.93	0.24	0.02	10.2	40.382	55.816	-15.435
153.72 KHz	29.89	0.26	0.02	10.2	40.373	55.894	-15.52

Line 1 Neutral QP Detector

Frequency	Measured Value (dBuV)	LISN Correction Factor (dB)	Cable Loss (dB)	Transient Limiter (dB)	Final Data (dBuV)	Limit (dBuV)	QP Margin (dB)
150.63 KHz	36.788	0.294	0.02	10.2	47.301	65.982	-18.681
150.63 KHz	36.788	0.294	0.02	10.2	47.301	65.982	-18.681
151.8 KHz	36.761	0.282	0.02	10.2	47.263	65.949	-18.686
151.9 KHz	36.762	0.281	0.02	10.2	47.263	65.946	-18.683
153.28 KHz	36.818	0.267	0.02	10.2	47.305	65.906	-18.601
510.93 KHz	31.335	0.1	0.03	10.1	41.565	56	-14.435

Line 2 Phase QP Detector

Frequency	Measured Value (dBuV)	LISN Correction Factor (dB)	Cable Loss (dB)	Transient Limiter (dB)	Final Data (dBuV)	Limit (dBuV)	QP Margin (dB)
150.03 KHz	36.15	0.3	0.02	10.2	46.667	65.999	-19.332
150.38 KHz	36.33	0.3	0.02	10.2	46.851	65.989	-19.138
153.8 KHz	36.21	0.26	0.02	10.2	46.697	65.891	-19.195
154.22 KHz	36.34	0.26	0.02	10.2	46.819	65.879	-19.06
156.43 KHz	36.37	0.24	0.02	10.2	46.823	65.816	-18.993
153.72 KHz	36.22	0.26	0.02	10.2	46.707	65.894	-19.186

Test Equipment Utilized

Description	Manufacturer	Model #	CT Asset #	Last Cal Date	Cal Due Date
EMI Receiver	HP	8546A	i00033	3/28/17	3/28/18
Transient Limiter	Com-Power	LIT-153	i00123	Verified on: 3/29/17	
Horn Antenna	ARA	DRG-118/A	i00271	6/16/16	6/16/18
Humidity / Temp Meter	Newport	IBTHX-W-5	i00282	5/26/16	5/26/17
Bi-Log Antenna	Schaffner	CBL 6111D	i00349	8/3/16	8/3/18
AC Power Source	Behlman	BL 6000	i00362	Verified on: 3/29/17	
EMI Analyzer	Agilent	E7405A	i00379	2/22/17	2/22/18
3 Meter Semi-Anechoic Chamber	Panashield	3 Meter Semi-Anechoic Chamber	i00428	8/15/16	8/15/19
LISN	COM-Power	LI-125A	i00446	4/29/16	4/29/18
LISN	COM-Power	LI-125A	i00448	4/29/16	4/29/18
PSA Spectrum Analyzer	Agilent	E4445A	i00471	8/30/16	8/30/17
Spectrum Analyzer	Agilent	E4407B	i00331	10/19/16	10/19/17
Preamplifier for 1-18GHz horn antenna	Miteq	AFS44 00101 400 23-10P-44	i00509	N/A	N/A

In addition to the above listed equipment standard RF connectors and cables were utilized in the testing of the described equipment. Prior to testing these components were tested to verify proper operation.

END OF TEST REPORT