Leviton Mfg Co, Inc

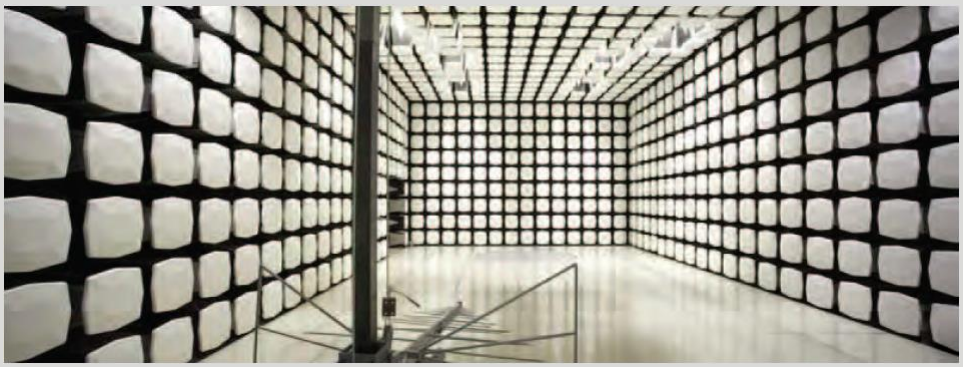
Neuron Sensor Head

FCC 15.207:2016

FCC 15.247:2016

2.4 GHz DTS Radio

Report # LEVT0124 Rev. 1



NVLAP Lab Code: 200630-0

CERTIFICATE OF TEST

Last Date of Test: December 6, 2016
Leviton Mfg Co, Inc
Model: Neuron Sensor Head

Radio Equipment Testing

Standards

Specification	Method
FCC 15.207:2016	ANSI C63.10:2013
FCC 15.247:2016	

Results

Method Clause	Test Description	Applied	Results	Comments
6.2	Powerline Conducted Emissions	Yes	Pass	
6.5, 6.6, 11.12.1, 11.13.2	Spurious Radiated Emissions	Yes	Pass	
11.6	Duty Cycle	Yes	N/A	Characterization of radio operation.
11.8.2	Occupied Bandwidth	Yes	Pass	
11.9.2.2.4	Output Power	Yes	Pass	
11.10.2	Power Spectral Density	Yes	Pass	
11.11	Spurious Conducted Emissions	Yes	Pass	
11.11	Band Edge Compliance	Yes	Pass	

Deviations From Test Standards

None

On July 1, 2016, Northwest EMC was purchased by Element Materials Technology. All laboratory accreditations, designations, and recognitions were transferred from Northwest EMC to Element Materials Technology. No changes were made to the facilities, equipment, procedures, or personnel. This test report contains test data produced by Northwest EMC prior to the purchase on July 1, 2016, and by Element Materials Technology after that date. All the test data in this test report is accredited and maintains the same recognition as described herein.

This test report was re-issued so that the ILAC mark could appear on the cover of the test report. The customer has declared that the results continue to be representative of the current device. The equipment design and manufacturing process has not changed since the original testing/evaluation was performed and documented.

Approved By:

Kyle Holgate, Operations Manager

Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information.

REVISION HISTORY

NORTHWEST EMC
REV 2014.10.14

Revision Number	Description	Date	Page Number
01	Updated report cover and certificate of test to Element Materials Technology.	2020-01-13	1, 2
	Added statement to certificate of test.	2020-01-13	2
	Added Ilac logo to cover page.	2020-01-13	1

ACCREDITATIONS AND AUTHORIZATIONS

REV 2016.7.25

United States

FCC - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

A2LA - Accredited by A2LA to ISO / IEC 17065 as a product certifier. This allows Northwest EMC to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

ISED - Recognized by Innovation, Science and Economic Development Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with ISED.

European Union

European Commission – Validated by the European Commission as a Notified Body under the R&TTE Directive.

Australia/New Zealand

ACMA - Recognized by ACMA as a CAB for the acceptance of test data.

Korea

MSIP / RRA - Recognized by KCC's RRA as a CAB for the acceptance of test data.

Japan

VCCI - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

Taiwan

BSMI – Recognized by BSMI as a CAB for the acceptance of test data.

NCC - Recognized by NCC as a CAB for the acceptance of test data.

Singapore

IDA – Recognized by IDA as a CAB for the acceptance of test data.

Israel

MOC – Recognized by MOC as a CAB for the acceptance of test data.

Hong Kong

OFCA – Recognized by OFCA as a CAB for the acceptance of test data.

Vietnam

MIC – Recognized by MIC as a CAB for the acceptance of test data.

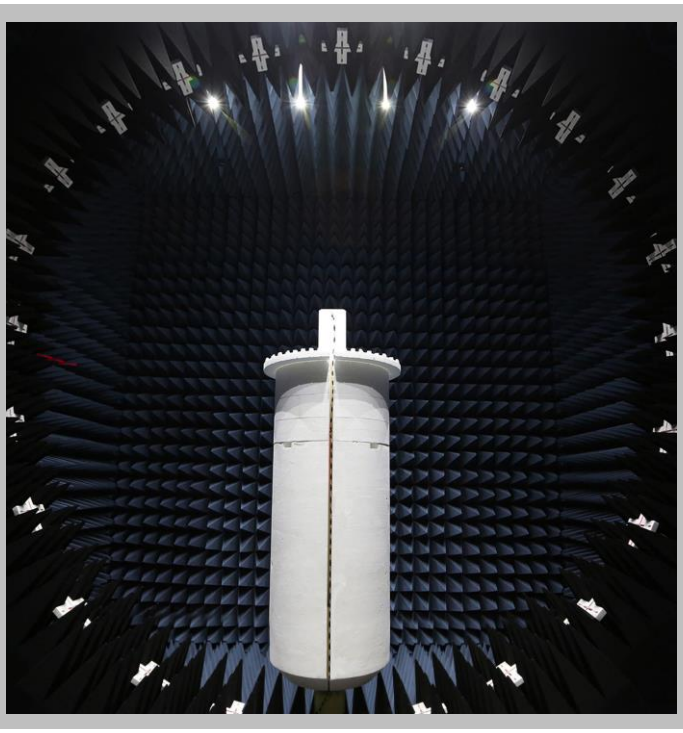
SCOPE

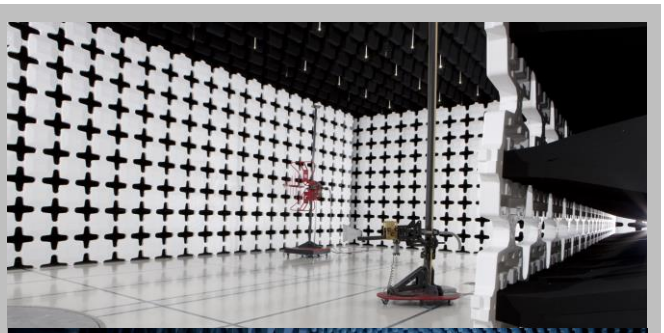
For details on the Scopes of our Accreditations, please visit:
http://www.nwemc.com/accreditations/
http://gsi.nist.gov/global/docs/cabs/designations.html

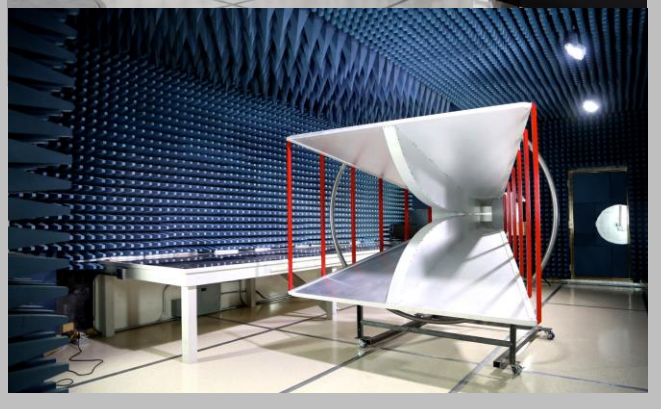
FACILITIES

NORTHWEST EMC
REV 2016.7.25

California	Minnesota	New York	Oregon	Texas	Washington
Labs OC01-13 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs MN01-08, MN10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 554-8214	Labs EV01-12 22975 NW Evergreen Pkwy Hillsboro, OR 97124 (503) 844-4066	Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Labs NC01-05 19201 120th Ave NE Bothell, WA 98011 (425)984-6600
NVLAP					
NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200761-0	NVLAP Lab Code: 200630-0	NVLAP Lab Code:201049-0	NVLAP Lab Code: 200629-0
Innovation, Science and Economic Development Canada					
2834B-1, 2834B-3	2834E-1	N/A	2834D-1, 2834D-*2*	2834G-1	2834F-1
BSMI					
SL2-IN-E-1154R	SL2-IN-E-1152R	N/A	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI					
A-0029	A-0109	N/A	A-0108	A-0201	A-0110
Recognized Phase I CAB for ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA					
US0158	US0175	N/A	US0017	US0191	US0157



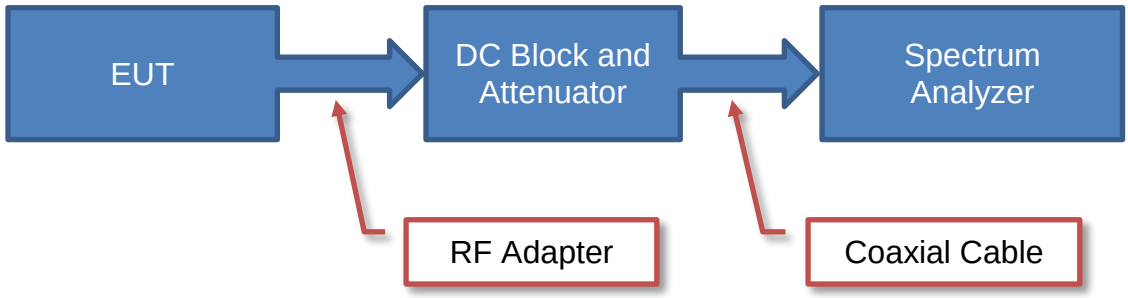




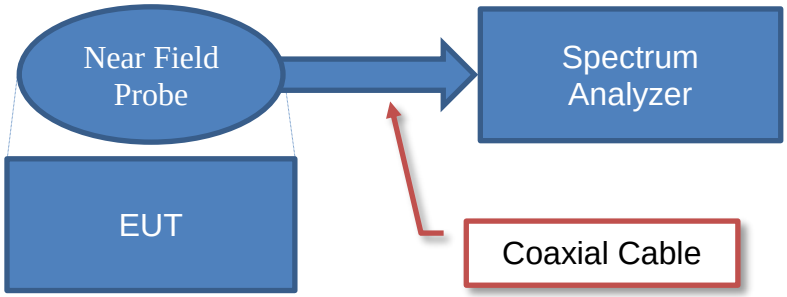
Test Setup Block Diagrams

NORTHWEST EMC
REV 2016.10.04

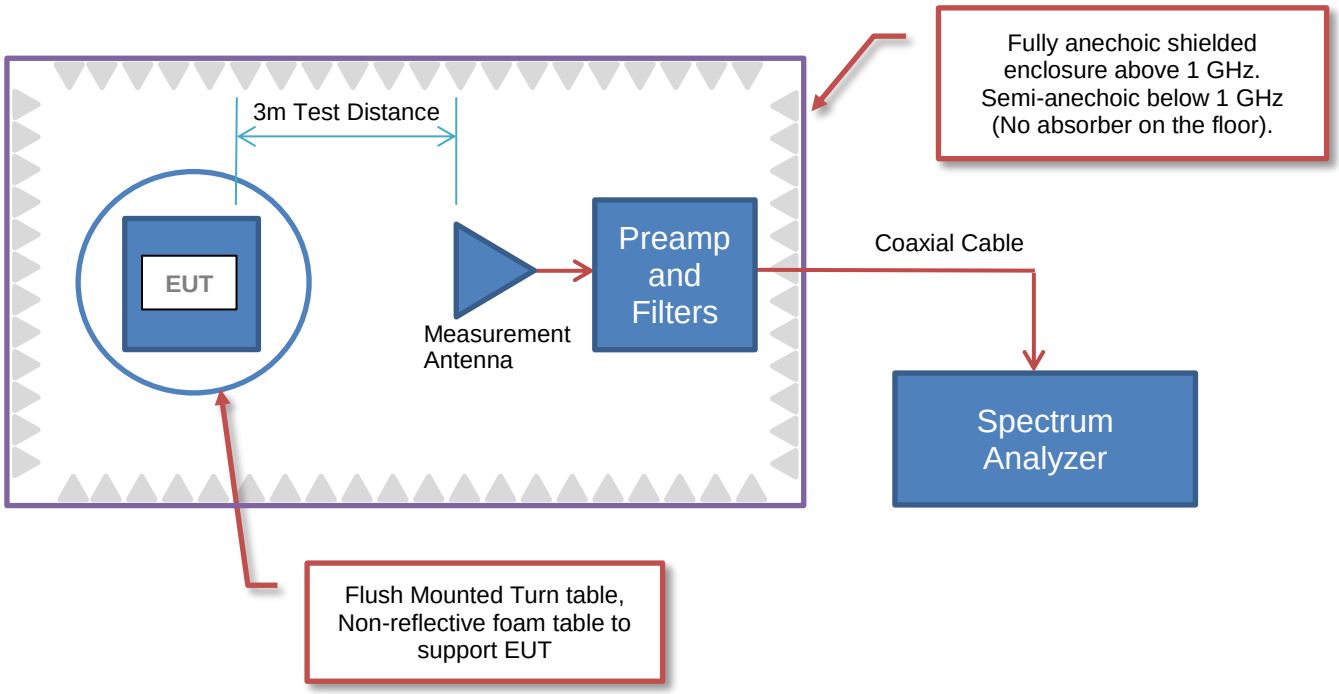
Antenna Port Conducted Measurements



Near Field Test Fixture Measurements



Spurious Radiated Emissions



MEASUREMENT UNCERTAINTY

TMU.2015.07.10

Measurement Uncertainty

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found included as part of the applicable test description page. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-2 as applicable), and are available upon request.

The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

Test	+ MU	- MU
Frequency Accuracy (Hz)	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	0.3 dB	-0.3 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	5.2 dB	-5.2 dB
AC Powerline Conducted Emissions (dB)	2.4 dB	-2.4 dB

PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	Leviton Mfg Co, Inc
Address:	20497 SW Teton Avenue
City, State, Zip:	Tualatin, OR 97062
Test Requested By:	Mark Darula
Model:	Neuron Sensor Head
First Date of Test:	December 1, 2016
Last Date of Test:	December 6, 2016
Receipt Date of Samples:	December 1, 2016
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
Sensor for ceiling mount with a 2.4 GHz DTS radio for communication with a remote key pad.

Testing Objective:
To demonstrate compliance of the 2.4 GHz DTS radio to FCC 15.247 requirements.

CONFIGURATIONS

NORTHWEST EMC 2014-12-10

Configuration LEVT0124- 1

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Neuron Sensor (PCBA 0XB0928 Rev 4)	Leviton	ZL00J	L173

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AC/DC Power Supply	Ericsson	425AG44622	None

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC Power Cable	No	2m	No	AC/DC Power Supply	AC Mains

Configuration LEVT0124- 2

Software/Firmware Running during test	
Description	**Version**
Ember Desktop	3.3.1937 Beta

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Neuron Sensor (PCBA 0XB0928 Rev 4)	Leviton	ZL00J	L183

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AC/DC Power Supply	Ericsson	425AG44622	None

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AC DC Adapter (Programmer)	V - Infinity	EMSA050100	None
Test Laptop	Lenovo	80K9	R90FRKLB
AC DC Adapter (Test Laptop)	Lenovo	ADLX65NCC3A	None
Router	Leviton	47611-WG4	E500284501096
AC DC Adapter (Router)	PowerTron Electronics	PA1015-2DU	A20140200102714

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC Power Cable	No	2m	No	AC/DC Power Supply	AC Mains

CONFIGURATIONS

NORTHWEST EMC
2014-12-10

Configuration LEVT0124- 3

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Neuron Sensor (PCBA 0XB0928 Rev 4)	Leviton	ZL00J	L173

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC Cable (AC Powerline)	No	.037m	No	Neuron Sensor (PCBA 0XB0928 Rev 4)	Power Supply

MODIFICATIONS

NORTHWEST EMC
2014-12-10

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	12/1/2016	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	12/5/2016	Occupied Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
3	12/5/2016	Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
4	12/5/2016	Power Spectral Density	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
5	12/5/2016	Spurious Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
6	12/5/2016	Band Edge Compliance	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
7	12/6/2016	Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2016.09.09

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from the EUT power-input terminals that are directly (or indirectly via separate transformer or power supplies) connected to a public power network. Per the standard, an insulating material was also added to ground plane between the EUT's power and remote I/O cables. Equipment is tested with power cords that are normally used or that have electrical or shielding characteristics that are the same as those cords normally used. Typically those measurements are made using a LISN (Line Impedance Stabilization Network), the 50ohm measuring port is terminated by a 50ohm EMI meter or a 50ohm resistive load. All 50ohm measuring ports of the LISN are terminated by 50ohm. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Receiver	Rohde & Schwarz	ESCI	ARH	3/21/2016	3/21/2017
Cable - Conducted Cable Assembly	Northwest EMC	EVG, HHD, RKA	EVGA	5/10/2016	5/10/2017
LISN	Solar Electronics	9252-50-R-24-BNC	LIP	10/4/2016	10/4/2018

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	2.4 dB	-2.4 dB

CONFIGURATIONS INVESTIGATED

LEVT0124-3

MODES INVESTIGATED

Transmit. High Channel 2480 MHz.
Transmit. Low Channel 2405 MHz.
Transmit. Mid Channel 2440 MHz.

POWERLINE CONDUCTED EMISSIONS

EUT:	Neuron Sensor Head	Work Order:	LEVT0124
Serial Number:	L173	Date:	12/06/2016
Customer:	Leviton Mfg Co, Inc	Temperature:	20.1°C
Attendees:	Vikas Asthana	Relative Humidity:	35.3%
Customer Project:	None	Bar. Pressure:	1020 mb
Tested By:	Jared Ison	Job Site:	EV07
Power:	110VAC/60Hz	Configuration:	LEVT0124-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2016	ANSI C63.10:2013

TEST PARAMETERS

Run #:	3	Line:	Neutral	Add. Ext. Attenuation (dB):	0

COMMENTS

None.

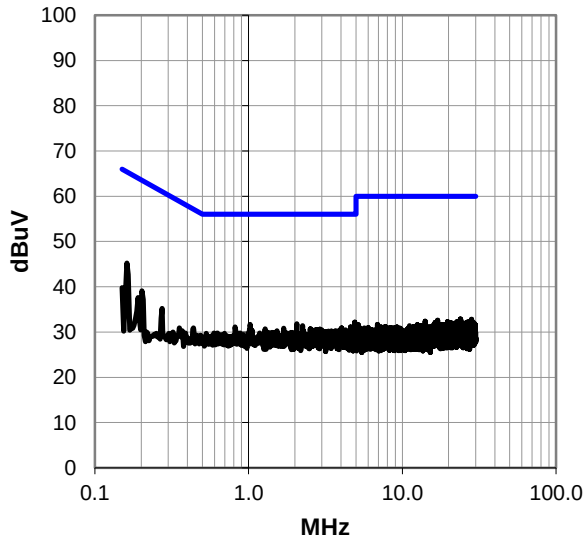
EUT OPERATING MODES

Transmit. Low Channel 2405 MHz.

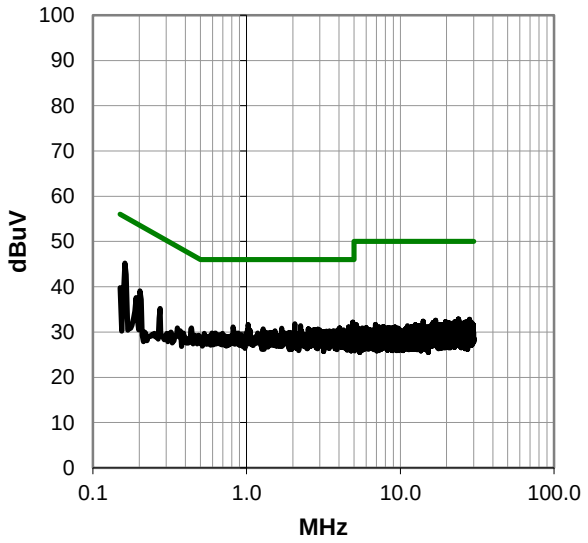
DEVIATIONS FROM TEST STANDARD

None.

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2016.09.09

RESULTS - Run #3

Peak Data - vs - Quasi Peak Limit

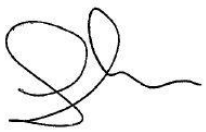
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.161	25.5	19.7	45.2	65.4	-20.2
4.910	12.3	19.9	32.2	56.0	-23.8
2.056	12.1	19.7	31.8	56.0	-24.2
1.023	12.0	19.7	31.7	56.0	-24.3
0.202	19.4	19.7	39.1	63.5	-24.4
2.243	11.7	19.7	31.4	56.0	-24.6
0.818	11.5	19.6	31.1	56.0	-24.9
4.608	11.2	19.9	31.1	56.0	-24.9
4.030	11.0	19.9	30.9	56.0	-25.1
1.691	11.1	19.7	30.8	56.0	-25.2
1.280	11.0	19.7	30.7	56.0	-25.3
2.519	10.9	19.8	30.7	56.0	-25.3
2.911	10.8	19.8	30.6	56.0	-25.4
2.732	10.7	19.8	30.5	56.0	-25.5
3.000	10.6	19.9	30.5	56.0	-25.5
3.907	10.6	19.9	30.5	56.0	-25.5
4.261	10.6	19.9	30.5	56.0	-25.5
1.530	10.6	19.7	30.3	56.0	-25.7
2.277	10.6	19.7	30.3	56.0	-25.7
3.668	10.4	19.9	30.3	56.0	-25.7
0.273	15.5	19.7	35.2	61.0	-25.8
3.306	10.3	19.9	30.2	56.0	-25.8
3.455	10.3	19.9	30.2	56.0	-25.8
3.735	10.3	19.9	30.2	56.0	-25.8
4.343	10.3	19.9	30.2	56.0	-25.8
2.967	10.2	19.9	30.1	56.0	-25.9

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.161	25.5	19.7	45.2	55.4	-10.2
4.910	12.3	19.9	32.2	46.0	-13.8
2.056	12.1	19.7	31.8	46.0	-14.2
1.023	12.0	19.7	31.7	46.0	-14.3
0.202	19.4	19.7	39.1	53.5	-14.4
2.243	11.7	19.7	31.4	46.0	-14.6
0.818	11.5	19.6	31.1	46.0	-14.9
4.608	11.2	19.9	31.1	46.0	-14.9
4.030	11.0	19.9	30.9	46.0	-15.1
1.691	11.1	19.7	30.8	46.0	-15.2
1.280	11.0	19.7	30.7	46.0	-15.3
2.519	10.9	19.8	30.7	46.0	-15.3
2.911	10.8	19.8	30.6	46.0	-15.4
2.732	10.7	19.8	30.5	46.0	-15.5
3.000	10.6	19.9	30.5	46.0	-15.5
3.907	10.6	19.9	30.5	46.0	-15.5
4.261	10.6	19.9	30.5	46.0	-15.5
1.530	10.6	19.7	30.3	46.0	-15.7
2.277	10.6	19.7	30.3	46.0	-15.7
3.668	10.4	19.9	30.3	46.0	-15.7
0.273	15.5	19.7	35.2	51.0	-15.8
3.306	10.3	19.9	30.2	46.0	-15.8
3.455	10.3	19.9	30.2	46.0	-15.8
3.735	10.3	19.9	30.2	46.0	-15.8
4.343	10.3	19.9	30.2	46.0	-15.8
2.967	10.2	19.9	30.1	46.0	-15.9

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	Neuron Sensor Head	Work Order:	LEVT0124
Serial Number:	L173	Date:	12/06/2016
Customer:	Leviton Mfg Co, Inc	Temperature:	20.1°C
Attendees:	Vikas Asthana	Relative Humidity:	35.3%
Customer Project:	None	Bar. Pressure:	1020 mb
Tested By:	Jared Ison	Job Site:	EV07
Power:	110VAC/60Hz	Configuration:	LEVT0124-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2016	ANSI C63.10:2013

TEST PARAMETERS

Run #:	4	Line:	High Line	Add. Ext. Attenuation (dB):	0

COMMENTS

None.

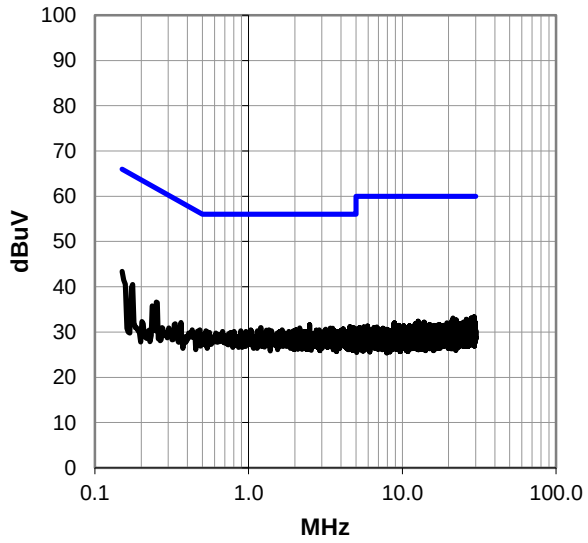
EUT OPERATING MODES

Transmit. Low Channel 2405 MHz.

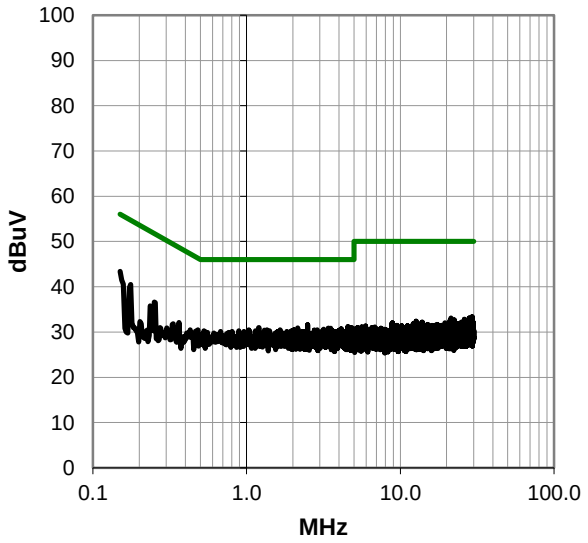
DEVIATIONS FROM TEST STANDARD

None.

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2016.09.09

RESULTS - Run #4

Peak Data - vs - Quasi Peak Limit

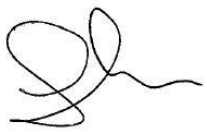
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.150	23.6	19.8	43.4	66.0	-22.6
0.176	20.8	19.7	40.5	64.7	-24.2
2.497	11.8	19.8	31.6	56.0	-24.4
4.564	11.3	19.9	31.2	56.0	-24.8
1.198	11.3	19.7	31.0	56.0	-25.0
4.784	11.1	19.9	31.0	56.0	-25.0
0.251	16.9	19.7	36.6	61.7	-25.1
2.153	11.2	19.7	30.9	56.0	-25.1
3.403	10.9	19.9	30.8	56.0	-25.2
3.530	10.9	19.9	30.8	56.0	-25.2
4.937	10.9	19.9	30.8	56.0	-25.2
4.123	10.8	19.9	30.7	56.0	-25.3
3.176	10.7	19.9	30.6	56.0	-25.4
1.030	10.8	19.7	30.5	56.0	-25.5
1.355	10.8	19.7	30.5	56.0	-25.5
1.650	10.8	19.7	30.5	56.0	-25.5
2.030	10.8	19.7	30.5	56.0	-25.5
2.885	10.7	19.8	30.5	56.0	-25.5
1.307	10.7	19.7	30.4	56.0	-25.6
2.758	10.6	19.8	30.4	56.0	-25.6
3.224	10.5	19.9	30.4	56.0	-25.6
4.015	10.5	19.9	30.4	56.0	-25.6
0.527	10.7	19.6	30.3	56.0	-25.7
0.889	10.7	19.6	30.3	56.0	-25.7
1.142	10.6	19.7	30.3	56.0	-25.7
1.411	10.6	19.7	30.3	56.0	-25.7

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.150	23.6	19.8	43.4	56.0	-12.6
0.176	20.8	19.7	40.5	54.7	-14.2
2.497	11.8	19.8	31.6	46.0	-14.4
4.564	11.3	19.9	31.2	46.0	-14.8
1.198	11.3	19.7	31.0	46.0	-15.0
4.784	11.1	19.9	31.0	46.0	-15.0
0.251	16.9	19.7	36.6	51.7	-15.1
2.153	11.2	19.7	30.9	46.0	-15.1
3.403	10.9	19.9	30.8	46.0	-15.2
3.530	10.9	19.9	30.8	46.0	-15.2
4.937	10.9	19.9	30.8	46.0	-15.2
4.123	10.8	19.9	30.7	46.0	-15.3
3.176	10.7	19.9	30.6	46.0	-15.4
1.030	10.8	19.7	30.5	46.0	-15.5
1.355	10.8	19.7	30.5	46.0	-15.5
1.650	10.8	19.7	30.5	46.0	-15.5
2.030	10.8	19.7	30.5	46.0	-15.5
2.885	10.7	19.8	30.5	46.0	-15.5
1.307	10.7	19.7	30.4	46.0	-15.6
2.758	10.6	19.8	30.4	46.0	-15.6
3.224	10.5	19.9	30.4	46.0	-15.6
4.015	10.5	19.9	30.4	46.0	-15.6
0.527	10.7	19.6	30.3	46.0	-15.7
0.889	10.7	19.6	30.3	46.0	-15.7
1.142	10.6	19.7	30.3	46.0	-15.7
1.411	10.6	19.7	30.3	46.0	-15.7

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	Neuron Sensor Head	Work Order:	LEVT0124
Serial Number:	L173	Date:	12/06/2016
Customer:	Leviton Mfg Co, Inc	Temperature:	20.1°C
Attendees:	Vikas Asthana	Relative Humidity:	35.3%
Customer Project:	None	Bar. Pressure:	1020 mb
Tested By:	Jared Ison	Job Site:	EV07
Power:	110VAC/60Hz	Configuration:	LEVT0124-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2016	ANSI C63.10:2013

TEST PARAMETERS

Run #:	5	Line:	High Line	Add. Ext. Attenuation (dB):	0

COMMENTS

None.

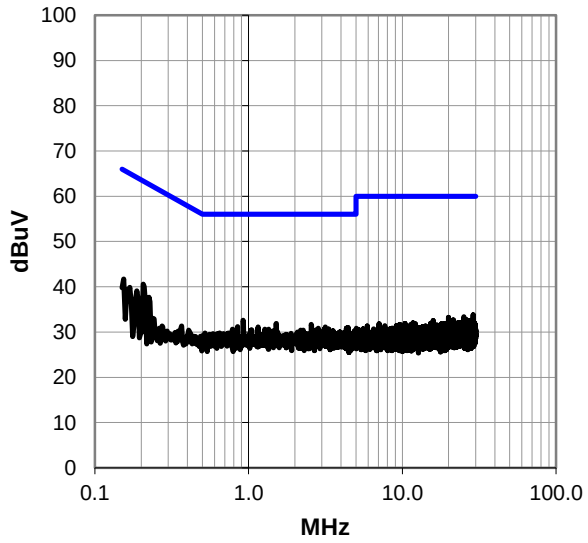
EUT OPERATING MODES

Transmit. Mid Channel 2440 MHz.

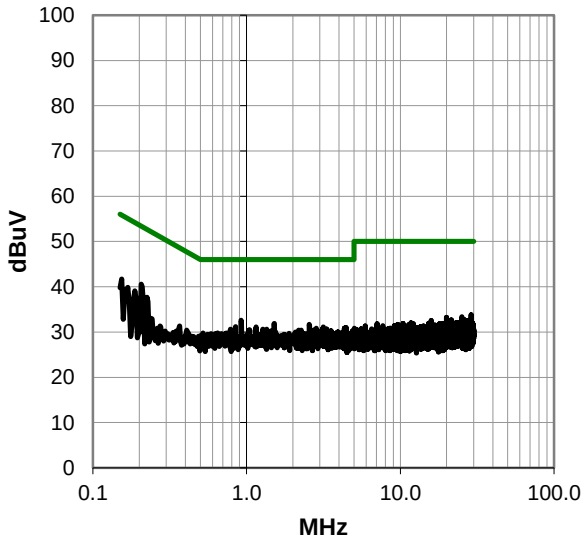
DEVIATIONS FROM TEST STANDARD

None.

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2016.09.09

RESULTS - Run #5

Peak Data - vs - Quasi Peak Limit

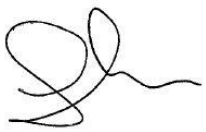
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.206	20.9	19.7	40.6	63.4	-22.8
0.922	13.0	19.6	32.6	56.0	-23.4
0.154	21.9	19.8	41.7	65.8	-24.1
1.515	12.2	19.7	31.9	56.0	-24.1
2.560	11.9	19.8	31.7	56.0	-24.3
0.848	11.6	19.6	31.2	56.0	-24.8
0.225	18.0	19.7	37.7	62.6	-24.9
1.154	11.4	19.7	31.1	56.0	-24.9
3.161	11.2	19.9	31.1	56.0	-24.9
4.433	11.1	19.9	31.0	56.0	-25.0
0.169	20.2	19.7	39.9	65.0	-25.1
0.187	19.4	19.7	39.1	64.2	-25.1
2.844	11.0	19.8	30.8	56.0	-25.2
4.325	10.9	19.9	30.8	56.0	-25.2
3.123	10.8	19.9	30.7	56.0	-25.3
3.288	10.8	19.9	30.7	56.0	-25.3
0.784	11.0	19.6	30.6	56.0	-25.4
1.273	10.9	19.7	30.6	56.0	-25.4
1.351	10.9	19.7	30.6	56.0	-25.4
3.321	10.7	19.9	30.6	56.0	-25.4
1.045	10.8	19.7	30.5	56.0	-25.5
2.582	10.7	19.8	30.5	56.0	-25.5
2.180	10.7	19.7	30.4	56.0	-25.6
2.269	10.7	19.7	30.4	56.0	-25.6
2.735	10.6	19.8	30.4	56.0	-25.6
3.075	10.5	19.9	30.4	56.0	-25.6

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.206	20.9	19.7	40.6	53.4	-12.8
0.922	13.0	19.6	32.6	46.0	-13.4
0.154	21.9	19.8	41.7	55.8	-14.1
1.515	12.2	19.7	31.9	46.0	-14.1
2.560	11.9	19.8	31.7	46.0	-14.3
0.848	11.6	19.6	31.2	46.0	-14.8
0.225	18.0	19.7	37.7	52.6	-14.9
1.154	11.4	19.7	31.1	46.0	-14.9
3.161	11.2	19.9	31.1	46.0	-14.9
4.433	11.1	19.9	31.0	46.0	-15.0
0.169	20.2	19.7	39.9	55.0	-15.1
0.187	19.4	19.7	39.1	54.2	-15.1
2.844	11.0	19.8	30.8	46.0	-15.2
4.325	10.9	19.9	30.8	46.0	-15.2
3.123	10.8	19.9	30.7	46.0	-15.3
3.288	10.8	19.9	30.7	46.0	-15.3
0.784	11.0	19.6	30.6	46.0	-15.4
1.273	10.9	19.7	30.6	46.0	-15.4
1.351	10.9	19.7	30.6	46.0	-15.4
3.321	10.7	19.9	30.6	46.0	-15.4
1.045	10.8	19.7	30.5	46.0	-15.5
2.582	10.7	19.8	30.5	46.0	-15.5
2.180	10.7	19.7	30.4	46.0	-15.6
2.269	10.7	19.7	30.4	46.0	-15.6
2.735	10.6	19.8	30.4	46.0	-15.6
3.075	10.5	19.9	30.4	46.0	-15.6

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	Neuron Sensor Head	Work Order:	LEVT0124
Serial Number:	L173	Date:	12/06/2016
Customer:	Leviton Mfg Co, Inc	Temperature:	20.1°C
Attendees:	Vikas Asthana	Relative Humidity:	35.3%
Customer Project:	None	Bar. Pressure:	1020 mb
Tested By:	Jared Ison	Job Site:	EV07
Power:	110VAC/60Hz	Configuration:	LEVT0124-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2016	ANSI C63.10:2013

TEST PARAMETERS

Run #:	6	Line:	Neutral	Add. Ext. Attenuation (dB):	0

COMMENTS

None.

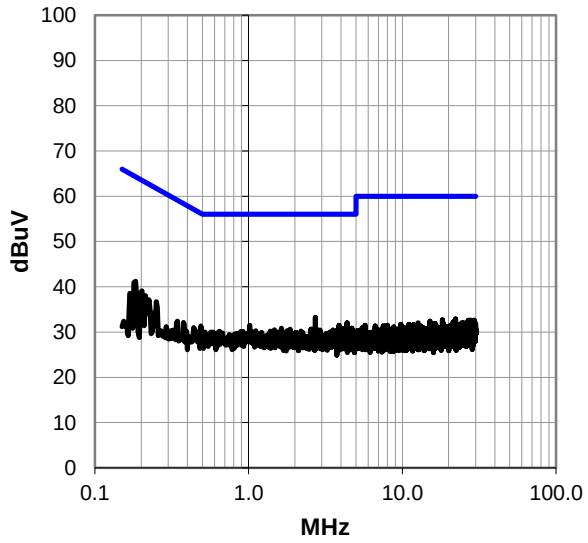
EUT OPERATING MODES

Transmit. Mid Channel 2440 MHz.

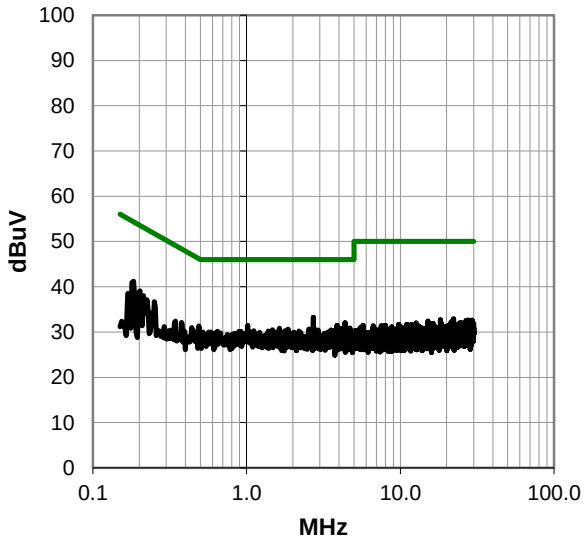
DEVIATIONS FROM TEST STANDARD

None.

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2016.09.09

RESULTS - Run #6

Peak Data - vs - Quasi Peak Limit

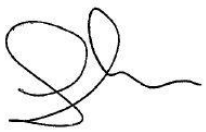
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.721	13.4	19.8	33.2	56.0	-22.8
0.184	21.5	19.7	41.2	64.3	-23.1
4.366	12.1	19.9	32.0	56.0	-24.0
0.202	19.4	19.7	39.1	63.5	-24.4
1.019	11.8	19.7	31.5	56.0	-24.5
3.881	11.6	19.9	31.5	56.0	-24.5
0.490	11.7	19.6	31.3	56.2	-24.9
0.251	17.0	19.7	36.7	61.7	-25.0
0.213	18.3	19.7	38.0	63.1	-25.1
1.635	11.1	19.7	30.8	56.0	-25.2
4.026	10.9	19.9	30.8	56.0	-25.2
4.702	10.9	19.9	30.8	56.0	-25.2
1.866	10.9	19.7	30.6	56.0	-25.4
2.556	10.8	19.8	30.6	56.0	-25.4
4.138	10.7	19.9	30.6	56.0	-25.4
1.471	10.8	19.7	30.5	56.0	-25.5
2.527	10.7	19.8	30.5	56.0	-25.5
2.814	10.6	19.8	30.4	56.0	-25.6
2.836	10.6	19.8	30.4	56.0	-25.6
2.915	10.6	19.8	30.4	56.0	-25.6
3.545	10.5	19.9	30.4	56.0	-25.6
4.314	10.5	19.9	30.4	56.0	-25.6
4.437	10.5	19.9	30.4	56.0	-25.6
1.113	10.6	19.7	30.3	56.0	-25.7
1.777	10.6	19.7	30.3	56.0	-25.7
3.773	10.4	19.9	30.3	56.0	-25.7

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.721	13.4	19.8	33.2	46.0	-12.8
0.184	21.5	19.7	41.2	54.3	-13.1
4.366	12.1	19.9	32.0	46.0	-14.0
0.202	19.4	19.7	39.1	53.5	-14.4
1.019	11.8	19.7	31.5	46.0	-14.5
3.881	11.6	19.9	31.5	46.0	-14.5
0.490	11.7	19.6	31.3	46.2	-14.9
0.251	17.0	19.7	36.7	51.7	-15.0
0.213	18.3	19.7	38.0	53.1	-15.1
1.635	11.1	19.7	30.8	46.0	-15.2
4.026	10.9	19.9	30.8	46.0	-15.2
4.702	10.9	19.9	30.8	46.0	-15.2
1.866	10.9	19.7	30.6	46.0	-15.4
2.556	10.8	19.8	30.6	46.0	-15.4
4.138	10.7	19.9	30.6	46.0	-15.4
1.471	10.8	19.7	30.5	46.0	-15.5
2.527	10.7	19.8	30.5	46.0	-15.5
2.814	10.6	19.8	30.4	46.0	-15.6
2.836	10.6	19.8	30.4	46.0	-15.6
2.915	10.6	19.8	30.4	46.0	-15.6
3.545	10.5	19.9	30.4	46.0	-15.6
4.314	10.5	19.9	30.4	46.0	-15.6
4.437	10.5	19.9	30.4	46.0	-15.6
1.113	10.6	19.7	30.3	46.0	-15.7
1.777	10.6	19.7	30.3	46.0	-15.7
3.773	10.4	19.9	30.3	46.0	-15.7

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	Neuron Sensor Head	Work Order:	LEVT0124
Serial Number:	L173	Date:	12/06/2016
Customer:	Leviton Mfg Co, Inc	Temperature:	20.1°C
Attendees:	Vikas Asthana	Relative Humidity:	35.3%
Customer Project:	None	Bar. Pressure:	1020 mb
Tested By:	Jared Ison	Job Site:	EV07
Power:	110VAC/60Hz	Configuration:	LEVT0124-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2016	ANSI C63.10:2013

TEST PARAMETERS

Run #:	7	Line:	Neutral	Add. Ext. Attenuation (dB):	0

COMMENTS

None.

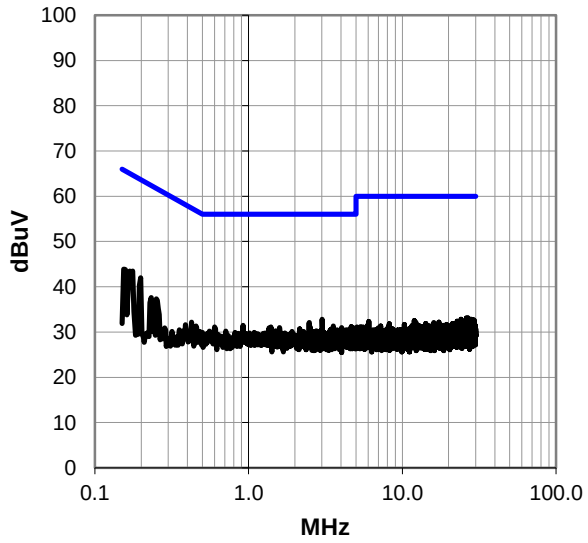
EUT OPERATING MODES

Transmit. High Channel 2480 MHz.

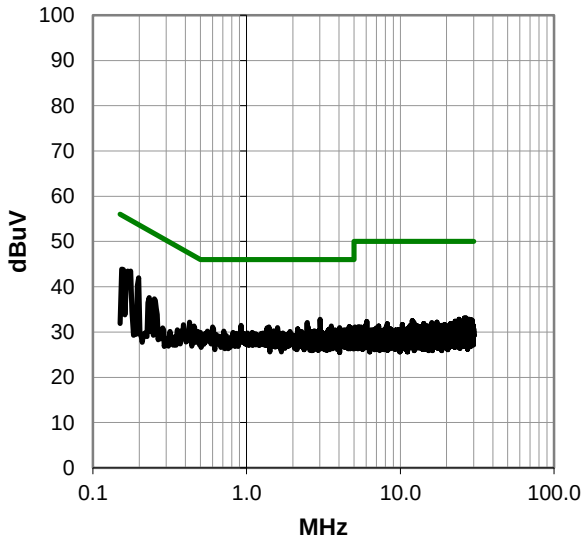
DEVIATIONS FROM TEST STANDARD

None.

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2016.09.09

RESULTS - Run #7

Peak Data - vs - Quasi Peak Limit

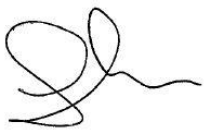
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.169	23.8	19.7	43.5	65.0	-21.5
0.199	22.3	19.7	42.0	63.7	-21.7
0.154	24.1	19.8	43.9	65.8	-21.9
3.015	12.9	19.9	32.8	56.0	-23.2
2.478	12.3	19.8	32.1	56.0	-23.9
0.251	17.6	19.7	37.3	61.7	-24.4
0.919	11.9	19.6	31.5	56.0	-24.5
3.552	11.4	19.9	31.3	56.0	-24.7
0.232	17.9	19.7	37.6	62.4	-24.8
4.657	11.3	19.9	31.2	56.0	-24.8
0.601	11.5	19.6	31.1	56.0	-24.9
1.400	11.4	19.7	31.1	56.0	-24.9
2.508	11.3	19.8	31.1	56.0	-24.9
1.590	11.3	19.7	31.0	56.0	-25.0
4.023	11.1	19.9	31.0	56.0	-25.0
4.761	11.1	19.9	31.0	56.0	-25.0
0.426	12.6	19.6	32.2	57.3	-25.1
1.359	11.2	19.7	30.9	56.0	-25.1
2.150	11.0	19.7	30.7	56.0	-25.3
4.869	10.7	19.9	30.6	56.0	-25.4
0.456	11.7	19.6	31.3	56.8	-25.5
3.411	10.6	19.9	30.5	56.0	-25.5
3.452	10.6	19.9	30.5	56.0	-25.5
3.761	10.6	19.9	30.5	56.0	-25.5
4.403	10.6	19.9	30.5	56.0	-25.5
4.515	10.6	19.9	30.5	56.0	-25.5

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.169	23.8	19.7	43.5	55.0	-11.5
0.199	22.3	19.7	42.0	53.7	-11.7
0.154	24.1	19.8	43.9	55.8	-11.9
3.015	12.9	19.9	32.8	46.0	-13.2
2.478	12.3	19.8	32.1	46.0	-13.9
0.251	17.6	19.7	37.3	51.7	-14.4
0.919	11.9	19.6	31.5	46.0	-14.5
3.552	11.4	19.9	31.3	46.0	-14.7
0.232	17.9	19.7	37.6	52.4	-14.8
4.657	11.3	19.9	31.2	46.0	-14.8
0.601	11.5	19.6	31.1	46.0	-14.9
1.400	11.4	19.7	31.1	46.0	-14.9
2.508	11.3	19.8	31.1	46.0	-14.9
1.590	11.3	19.7	31.0	46.0	-15.0
4.023	11.1	19.9	31.0	46.0	-15.0
4.761	11.1	19.9	31.0	46.0	-15.0
0.426	12.6	19.6	32.2	47.3	-15.1
1.359	11.2	19.7	30.9	46.0	-15.1
2.150	11.0	19.7	30.7	46.0	-15.3
4.869	10.7	19.9	30.6	46.0	-15.4
0.456	11.7	19.6	31.3	46.8	-15.5
3.411	10.6	19.9	30.5	46.0	-15.5
3.452	10.6	19.9	30.5	46.0	-15.5
3.761	10.6	19.9	30.5	46.0	-15.5
4.403	10.6	19.9	30.5	46.0	-15.5
4.515	10.6	19.9	30.5	46.0	-15.5

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	Neuron Sensor Head	Work Order:	LEVT0124
Serial Number:	L173	Date:	12/06/2016
Customer:	Leviton Mfg Co, Inc	Temperature:	20.1°C
Attendees:	Vikas Asthana	Relative Humidity:	35.3%
Customer Project:	None	Bar. Pressure:	1020 mb
Tested By:	Jared Ison	Job Site:	EV07
Power:	110VAC/60Hz	Configuration:	LEVT0124-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2016	ANSI C63.10:2013

TEST PARAMETERS

Run #:	8	Line:	High Line	Add. Ext. Attenuation (dB):	0

COMMENTS

None.

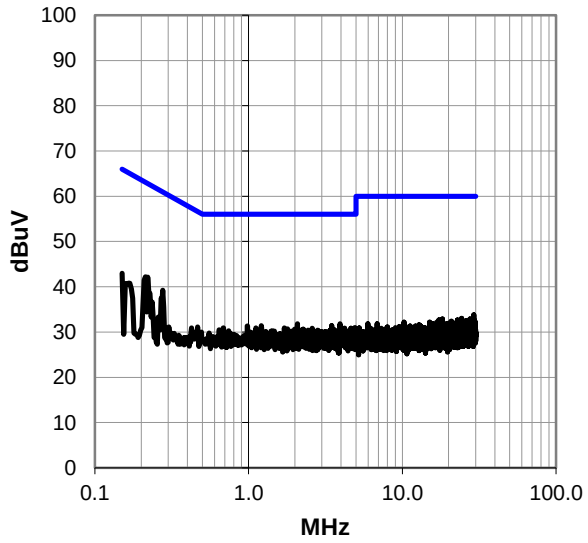
EUT OPERATING MODES

Transmit. High Channel 2480 MHz.

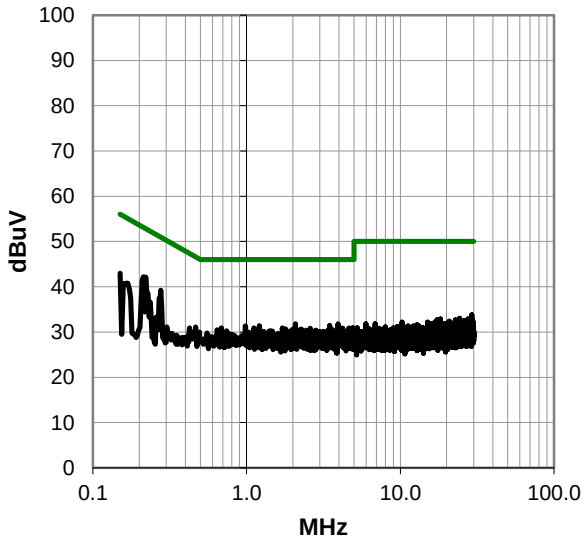
DEVIATIONS FROM TEST STANDARD

None.

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2016.09.09

RESULTS - Run #8

Peak Data - vs - Quasi Peak Limit

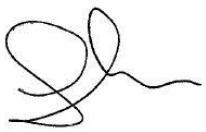
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.221	22.4	19.7	42.1	62.8	-20.7
0.213	22.5	19.7	42.2	63.1	-20.9
0.277	19.5	19.7	39.2	60.9	-21.7
0.150	23.2	19.8	43.0	66.0	-23.0
2.075	12.1	19.7	31.8	56.0	-24.2
3.940	11.9	19.9	31.8	56.0	-24.2
0.165	21.1	19.7	40.8	65.2	-24.4
1.210	11.7	19.7	31.4	56.0	-24.6
3.470	11.5	19.9	31.4	56.0	-24.6
0.982	11.6	19.7	31.3	56.0	-24.7
4.914	11.1	19.9	31.0	56.0	-25.0
0.684	11.3	19.6	30.9	56.0	-25.1
1.116	11.2	19.7	30.9	56.0	-25.1
1.706	11.2	19.7	30.9	56.0	-25.1
2.597	11.0	19.8	30.8	56.0	-25.2
4.202	10.9	19.9	30.8	56.0	-25.2
4.634	10.9	19.9	30.8	56.0	-25.2
1.792	11.0	19.7	30.7	56.0	-25.3
4.702	10.8	19.9	30.7	56.0	-25.3
1.993	10.9	19.7	30.6	56.0	-25.4
2.265	10.9	19.7	30.6	56.0	-25.4
4.112	10.7	19.9	30.6	56.0	-25.4
0.467	11.5	19.6	31.1	56.6	-25.5
0.642	10.9	19.6	30.5	56.0	-25.5
1.180	10.8	19.7	30.5	56.0	-25.5
3.403	10.6	19.9	30.5	56.0	-25.5

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.221	22.4	19.7	42.1	52.8	-10.7
0.213	22.5	19.7	42.2	53.1	-10.9
0.277	19.5	19.7	39.2	50.9	-11.7
0.150	23.2	19.8	43.0	56.0	-13.0
2.075	12.1	19.7	31.8	46.0	-14.2
3.940	11.9	19.9	31.8	46.0	-14.2
0.165	21.1	19.7	40.8	55.2	-14.4
1.210	11.7	19.7	31.4	46.0	-14.6
3.470	11.5	19.9	31.4	46.0	-14.6
0.982	11.6	19.7	31.3	46.0	-14.7
4.914	11.1	19.9	31.0	46.0	-15.0
0.684	11.3	19.6	30.9	46.0	-15.1
1.116	11.2	19.7	30.9	46.0	-15.1
1.706	11.2	19.7	30.9	46.0	-15.1
2.597	11.0	19.8	30.8	46.0	-15.2
4.202	10.9	19.9	30.8	46.0	-15.2
4.634	10.9	19.9	30.8	46.0	-15.2
1.792	11.0	19.7	30.7	46.0	-15.3
4.702	10.8	19.9	30.7	46.0	-15.3
1.993	10.9	19.7	30.6	46.0	-15.4
2.265	10.9	19.7	30.6	46.0	-15.4
4.112	10.7	19.9	30.6	46.0	-15.4
0.467	11.5	19.6	31.1	46.6	-15.5
0.642	10.9	19.6	30.5	46.0	-15.5
1.180	10.8	19.7	30.5	46.0	-15.5
3.403	10.6	19.9	30.5	46.0	-15.5

CONCLUSION

Pass



Tested By

SPURIOUS RADIATED EMISSIONS

PSA-ESCI 2016.07.22

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Low Channel 2405 MHz, Modulation: OQPSK
Middle Channel 2440 MHz, Modulation: OQPSK
High Channel 2480 MHz, Modulation: OQPSK

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

LEVT0124 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	26.5 GHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Amplifier - Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AVU	10/17/2016	12 mo
Cable	ESM Cable Corp.	KMKM-72	EVY	10/17/2016	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-09	AIV	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	3/11/2016	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AHV	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVC	3/11/2016	12 mo
Cable	None	Standard Gain Horns Cable	EVF	3/11/2016	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AHU	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAG	3/11/2016	12 mo
Cable	N/A	Double Ridge Horn Cables	EVB	3/11/2016	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AIZ	2/3/2016	24 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AOL	3/11/2016	12 mo
Cable	N/A	Bilog Cables	EVA	3/11/2016	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AXR	6/30/2016	24 mo
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAQ	4/22/2016	12 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

The highest gain antenna of each type to be used with the EUT was tested. The EUT was configured for the required transmit frequencies and the modes as showed in the data sheets.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These “pre-scans” are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis if required, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector
PK = Peak Detector
AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions as well as the restricted band requirements.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

Measurements at the edges of the allowable band may be presented in an alternative method as provided for in the ANSI C63.10 Marker-Delta method. This method involves performing an in-band fundamental measurement followed by a screen capture of the fundamental and out-of-band emission using reduced measurement instrumentation bandwidths. The amplitude delta measured on this screen capture is applied to the fundamental emission value to show the out-of-band emission level as applied to the limit.

SPURIOUS RADIATED EMISSIONS

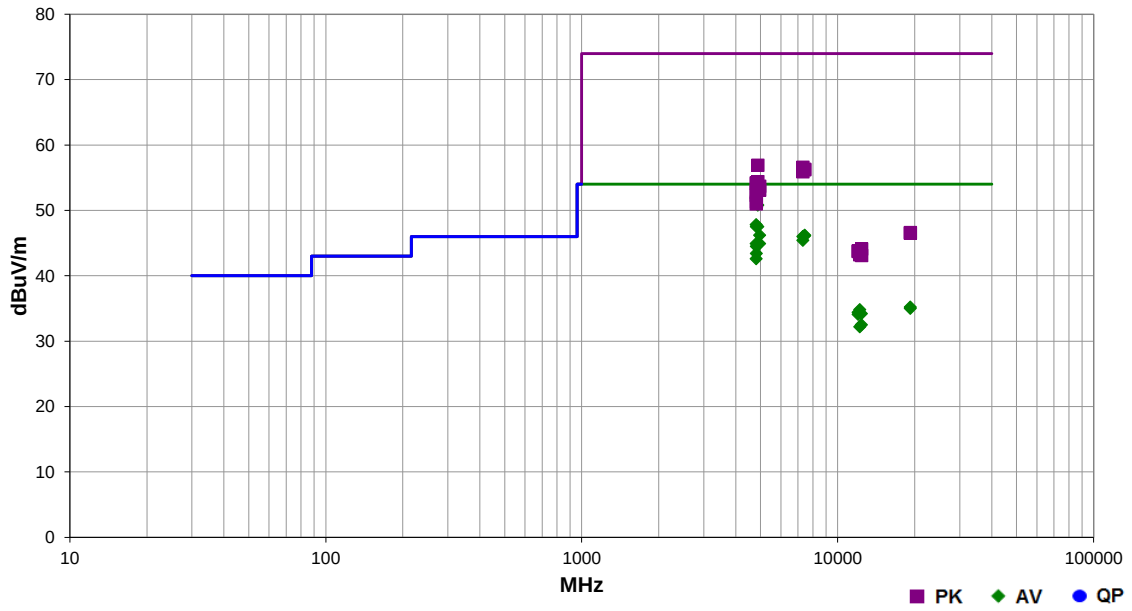
NORTHWEST EMC

PSA-ESCI 2016.07.22
EmiR5 2016.08.26

Work Order:	LEVT0124	**Date:**	12/01/16		
Project:	None	**Temperature:**	20.9 °C		
Job Site:	EV01	**Humidity:**	38% RH		
Serial Number:	L173	**Barometric Pres.:**	1030 mbar	**Tested by:**	Jared Ison
EUT:	Neuron Sensor Head				
Configuration:	1				
Customer:	Leviton Mfg Co, Inc.				
Attendees:	Vikas Asthana				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmit.				
Deviations:	None				
Comments:	None				

Test Specifications	**Test Method**
FCC 15.247:2016	ANSI C63.10:2013

Run #	4	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
4880.883	41.6	9.2	2.9	81.0	3.0	0.0	Horz	AV	0.0	50.8	54.0	-3.2	Mid Ch. 2440 MHz, EUT Horz
4809.000	38.8	9.0	1.2	83.0	3.0	0.0	Vert	AV	0.0	47.8	54.0	-6.2	Low Ch. 2405 MHz, EUT On Side
4810.850	38.5	9.0	1.6	0.0	3.0	0.0	Horz	AV	0.0	47.5	54.0	-6.5	Low Ch. 2405 MHz, EUT Horz
4878.983	38.3	9.2	2.6	226.0	3.0	0.0	Vert	AV	0.0	47.5	54.0	-6.5	Mid Ch. 2440 MHz, EUT On Side
4958.983	36.8	9.4	2.9	75.0	3.0	0.0	Horz	AV	0.0	46.2	54.0	-7.8	High Ch. 2480 MHz, EUT Horz
7438.283	27.7	18.5	1.0	329.0	3.0	0.0	Vert	AV	0.0	46.2	54.0	-7.8	High Ch. 2480 MHz, EUT On Side
7441.717	27.6	18.5	1.0	360.0	3.0	0.0	Horz	AV	0.0	46.1	54.0	-7.9	High Ch. 2480 MHz, EUT Horz
7318.492	28.2	17.8	2.6	264.0	3.0	0.0	Vert	AV	0.0	46.0	54.0	-8.0	Mid Ch. 2440 MHz, EUT On Side
7318.117	27.6	17.8	1.8	43.0	3.0	0.0	Horz	AV	0.0	45.4	54.0	-8.6	Mid Ch. 2440 MHz, EUT Horz
4808.950	35.9	9.0	1.2	205.0	3.0	0.0	Vert	AV	0.0	44.9	54.0	-9.1	Low Ch. 2405 MHz, EUT Vert
4958.967	35.5	9.4	1.0	297.0	3.0	0.0	Vert	AV	0.0	44.9	54.0	-9.1	High Ch. 2480 MHz, EUT On Side
4810.950	35.5	9.0	2.3	17.0	3.0	0.0	Horz	AV	0.0	44.5	54.0	-9.5	Low Ch. 2405 MHz, EUT Vert
4810.950	34.4	9.0	1.2	333.0	3.0	0.0	Horz	AV	0.0	43.4	54.0	-10.6	Low Ch. 2405 MHz, EUT On Side
4808.933	33.6	9.0	1.2	225.0	3.0	0.0	Vert	AV	0.0	42.6	54.0	-11.4	Low Ch. 2405 MHz, EUT Horz
4880.892	47.7	9.2	2.9	81.0	3.0	0.0	Horz	PK	0.0	56.9	74.0	-17.1	Mid Ch. 2440 MHz, EUT Horz
7318.425	38.8	17.8	2.6	264.0	3.0	0.0	Vert	PK	0.0	56.6	74.0	-17.4	Mid Ch. 2440 MHz, EUT On Side
7438.050	37.8	18.5	1.0	329.0	3.0	0.0	Vert	PK	0.0	56.3	74.0	-17.7	High Ch. 2480 MHz, EUT On Side
7438.350	37.7	18.5	1.0	360.0	3.0	0.0	Horz	PK	0.0	56.2	74.0	-17.8	High Ch. 2480 MHz, EUT Horz
7318.342	38.1	17.8	1.8	43.0	3.0	0.0	Horz	PK	0.0	55.9	74.0	-18.1	Mid Ch. 2440 MHz, EUT Horz
19239.720	34.1	1.1	1.6	0.0	3.0	0.0	Horz	AV	0.0	35.2	54.0	-18.8	Low Ch. 2405 MHz, EUT Horz
19239.610	33.9	1.1	1.6	148.0	3.0	0.0	Vert	AV	0.0	35.0	54.0	-19.0	Low Ch. 2405 MHz, EUT On Side
12202.480	30.4	4.4	1.9	0.0	3.0	0.0	Horz	AV	0.0	34.8	54.0	-19.2	Mid Ch. 2440 MHz, EUT Horz
4881.100	45.2	9.2	2.6	226.0	3.0	0.0	Vert	PK	0.0	54.4	74.0	-19.6	Mid Ch. 2440 MHz, EUT On Side

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
12022.300	31.0	3.4	1.9	19.0	3.0	0.0	Horz	AV	0.0	34.4	54.0	-19.6	Low Ch. 2405 MHz, EUT Horz
4808.917	45.2	9.0	1.2	83.0	3.0	0.0	Vert	PK	0.0	54.2	74.0	-19.8	Low Ch. 2405 MHz, EUT On Side
12397.510	29.2	5.0	1.0	233.0	3.0	0.0	Vert	AV	0.0	34.2	54.0	-19.8	High Ch. 2480 MHz, EUT On Side
4811.033	45.1	9.0	1.6	0.0	3.0	0.0	Horz	PK	0.0	54.1	74.0	-19.9	Low Ch. 2405 MHz, EUT Horz
12027.300	30.7	3.4	2.0	28.0	3.0	0.0	Vert	AV	0.0	34.1	54.0	-19.9	Low Ch. 2405 MHz, EUT On Side
4959.017	44.3	9.4	2.9	75.0	3.0	0.0	Horz	PK	0.0	53.7	74.0	-20.3	High Ch. 2480 MHz, EUT Horz
4960.742	43.7	9.4	1.0	297.0	3.0	0.0	Vert	PK	0.0	53.1	74.0	-20.9	High Ch. 2480 MHz, EUT On Side
4808.717	43.8	9.0	1.2	205.0	3.0	0.0	Vert	PK	0.0	52.8	74.0	-21.2	Low Ch. 2405 MHz, EUT Vert
12397.520	27.5	5.0	1.0	351.0	3.0	0.0	Horz	AV	0.0	32.5	54.0	-21.5	High Ch. 2480 MHz, EUT Horz
4808.800	43.3	9.0	2.3	17.0	3.0	0.0	Horz	PK	0.0	52.3	74.0	-21.7	Low Ch. 2405 MHz, EUT Vert
12202.330	27.8	4.4	1.0	51.0	3.0	0.0	Vert	AV	0.0	32.2	54.0	-21.8	Mid Ch. 2440 MHz, EUT Vert
4810.783	42.3	9.0	1.2	225.0	3.0	0.0	Vert	PK	0.0	51.3	74.0	-22.7	Low Ch. 2405 MHz, EUT Horz
4809.117	42.0	9.0	1.2	333.0	3.0	0.0	Horz	PK	0.0	51.0	74.0	-23.0	Low Ch. 2405 MHz, EUT On Side
19240.170	45.5	1.1	1.6	0.0	3.0	0.0	Horz	PK	0.0	46.6	74.0	-27.4	Low Ch. 2405 MHz, EUT Horz
19240.140	45.4	1.1	1.6	148.0	3.0	0.0	Vert	PK	0.0	46.5	74.0	-27.5	Low Ch. 2405 MHz, EUT On Side
12397.750	39.1	5.0	1.0	233.0	3.0	0.0	Vert	PK	0.0	44.1	74.0	-29.9	High Ch. 2480 MHz, EUT On Side
12197.610	39.4	4.4	1.9	0.0	3.0	0.0	Horz	PK	0.0	43.8	74.0	-30.2	Mid Ch. 2440 MHz, EUT Horz
12027.580	40.4	3.4	1.9	19.0	3.0	0.0	Horz	PK	0.0	43.8	74.0	-30.2	Low Ch. 2405 MHz, EUT Horz
12027.160	40.3	3.4	2.0	28.0	3.0	0.0	Vert	PK	0.0	43.7	74.0	-30.3	Low Ch. 2405 MHz, EUT On Side
12202.340	38.8	4.4	1.0	51.0	3.0	0.0	Vert	PK	0.0	43.2	74.0	-30.8	Mid Ch. 2440 MHz, EUT Vert
12397.840	38.1	5.0	1.0	351.0	3.0	0.0	Horz	PK	0.0	43.1	74.0	-30.9	High Ch. 2480 MHz, EUT Horz

SPURIOUS RADIATED EMISSIONS

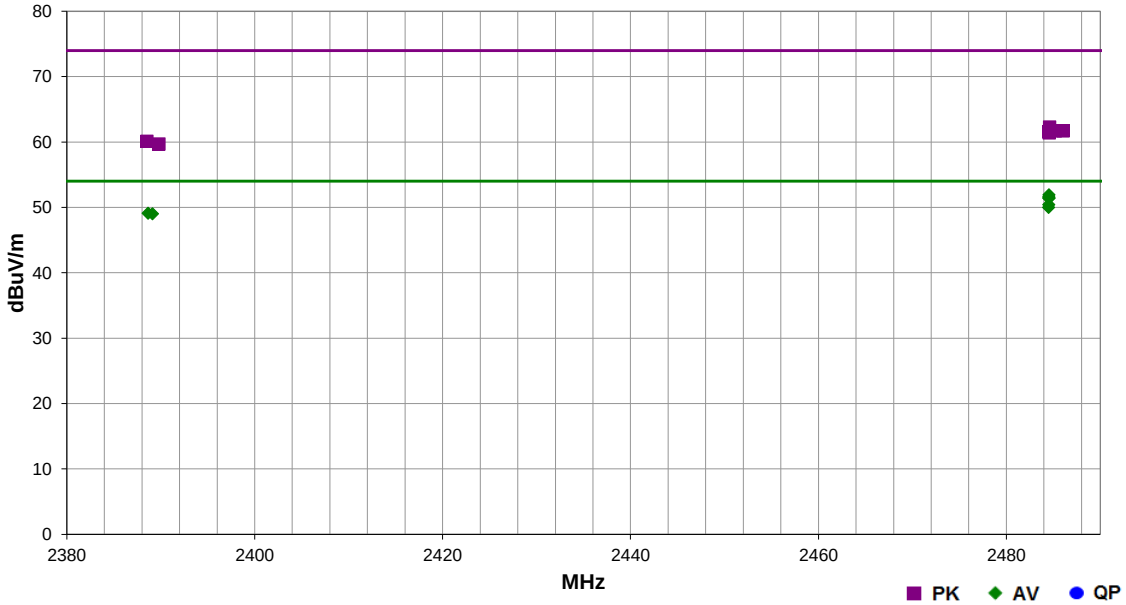
NORTHWEST EMC

PSA-ESCI 2016.07.22
EmiR5 2016.08.26

Work Order:	LEVT0124	**Date:**	12/01/16		
Project:	None	**Temperature:**	20.9 °C		
Job Site:	EV01	**Humidity:**	38% RH		
Serial Number:	L173	**Barometric Pres.:**	1030 mbar	**Tested by:**	Jared Ison
EUT:	Neuron Sensor Head				
Configuration:	1				
Customer:	Leviton Mfg Co, Inc.				
Attendees:	Vikas Asthana				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmit.				
Deviations:	None				
Comments:	None				

Test Specifications	**Test Method**
FCC 15.247:2016	ANSI C63.10:2013

Run #	5	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2484.537	33.0	-1.1	3.8	251.0	3.0	20.0	Vert	AV	0.0	51.9	54.0	-2.1	High Ch. 2480, EUT On Side
2484.530	32.7	-1.1	1.0	207.0	3.0	20.0	Horz	AV	0.0	51.6	54.0	-2.4	High Ch. 2480, EUT On Side
2484.557	32.5	-1.1	1.3	250.0	3.0	20.0	Horz	AV	0.0	51.4	54.0	-2.6	High Ch. 2480, EUT Horz
2484.517	32.5	-1.1	1.0	311.0	3.0	20.0	Vert	AV	0.0	51.4	54.0	-2.6	High Ch. 2480, EUT Vert
2484.517	31.5	-1.1	1.0	249.0	3.0	20.0	Vert	AV	0.0	50.4	54.0	-3.6	High Ch. 2480, EUT Horz
2484.507	31.1	-1.1	1.0	360.0	3.0	20.0	Horz	AV	0.0	50.0	54.0	-4.0	High Ch. 2480, EUT Vert
2388.670	30.7	-1.6	1.0	146.0	3.0	20.0	Horz	AV	0.0	49.1	54.0	-4.9	Low Ch. 2405 MHz, EUT On Side
2389.133	30.6	-1.6	1.0	17.0	3.0	20.0	Vert	AV	0.0	49.0	54.0	-5.0	Low Ch. 2405 MHz, EUT On Side
2484.593	43.4	-1.1	3.8	251.0	3.0	20.0	Vert	PK	0.0	62.3	74.0	-11.7	High Ch. 2480, EUT On Side
2485.210	42.8	-1.1	1.0	207.0	3.0	20.0	Horz	PK	0.0	61.7	74.0	-12.3	High Ch. 2480, EUT On Side
2486.033	42.8	-1.1	1.0	311.0	3.0	20.0	Vert	PK	0.0	61.7	74.0	-12.3	High Ch. 2480, EUT Vert
2484.530	42.7	-1.1	1.3	250.0	3.0	20.0	Horz	PK	0.0	61.6	74.0	-12.4	High Ch. 2480, EUT Horz
2484.570	42.6	-1.1	1.0	249.0	3.0	20.0	Vert	PK	0.0	61.5	74.0	-12.5	High Ch. 2480, EUT Horz
2484.557	42.5	-1.1	1.0	360.0	3.0	20.0	Horz	PK	0.0	61.4	74.0	-12.6	High Ch. 2480, EUT Vert
2388.533	41.7	-1.6	1.0	146.0	3.0	20.0	Horz	PK	0.0	60.1	74.0	-13.9	Low Ch. 2405 MHz, EUT On Side
2389.800	41.3	-1.6	1.0	17.0	3.0	20.0	Vert	PK	0.0	59.7	74.0	-14.3	Low Ch. 2405 MHz, EUT On Side

DUTY CYCLE

NORTHWEST EMC

TEST DESCRIPTION

The Duty Cycle (x) were measured for each of the EUT operating modes. The measurements were made using a zero span on the spectrum analyzer to see the pulses in the time domain. The transmit power was set to its default maximum.

The duty cycle was calculated by dividing the transmission pulse duration (T) by the total period of a single on and total off time.

The EUT operates at 100% Duty Cycle.

OCCUPIED BANDWIDTH

XMit 2016.09.29

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Block - DC	Fairview Microwave	SD3379	AMQ	6/8/2016	6/8/2017
Attenuator	S.M. Electronics	SA26B-20	AWT	NCR	NCR
Cable	Micro-Coax	UFD150A-1-0720-200200	EVH	6/7/2016	6/7/2017
Generator - Signal	Keysight	N5182B	TFU	10/27/2015	10/27/2018
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFP	8/10/2016	8/10/2017

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The EUT was set to the channels and modes listed in the datasheet.

The 6dB occupied bandwidth was measured using 100 kHz resolution bandwidth and 300 kHz video bandwidth. The 99.0% occupied bandwidth was also measured at the same time which can be needed during Output Power depending on the applicable method.

OCCUPIED BANDWIDTH

NORTHWEST EMC

XMit 2016.09.29
NweTx 2016.09.14.2

EUT:	**Neuron Sensor Head**			**Work Order:**	**LEVT0124**
Serial Number:	**L183**			**Date:**	**12/05/16**
Customer:	**Leviton Mfg Co, Inc**			**Temperature:**	**22.1 °C**
Attendees:	**Vikas Asthana**			**Humidity:**	**33.8% RH**
Project:	**None**			**Barometric Pres.:**	**1020 mbar**
Tested by:	**Jared Ison**	**Power:**	**110VAC/60Hz**	**Job Site:**	**EV06**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2016	ANSI C63.10:2013

COMMENTS

None.

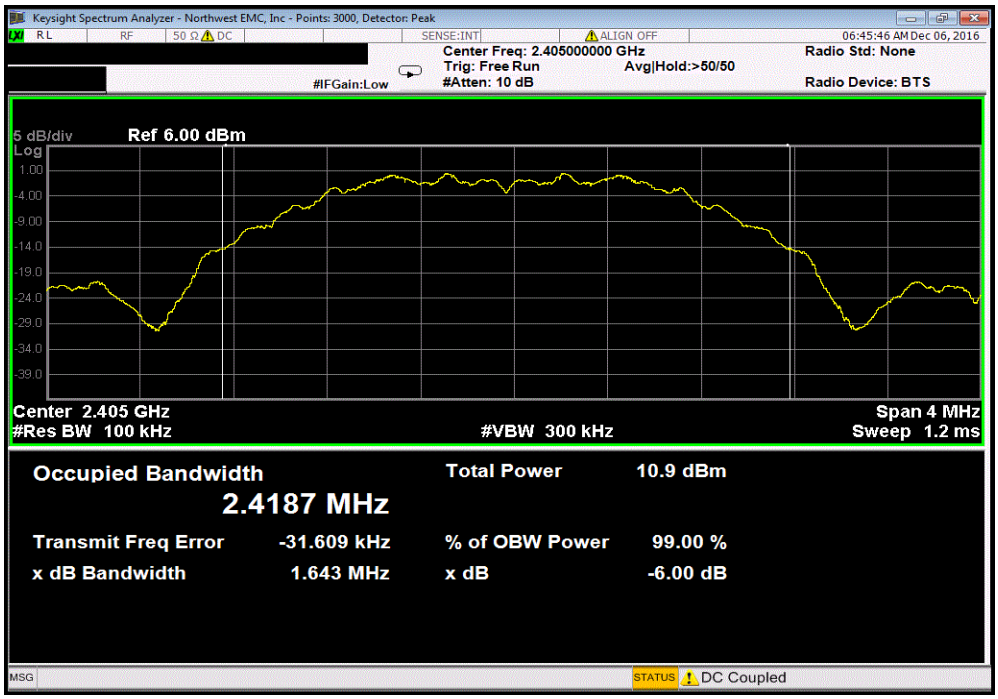
DEVIATIONS FROM TEST STANDARD

None

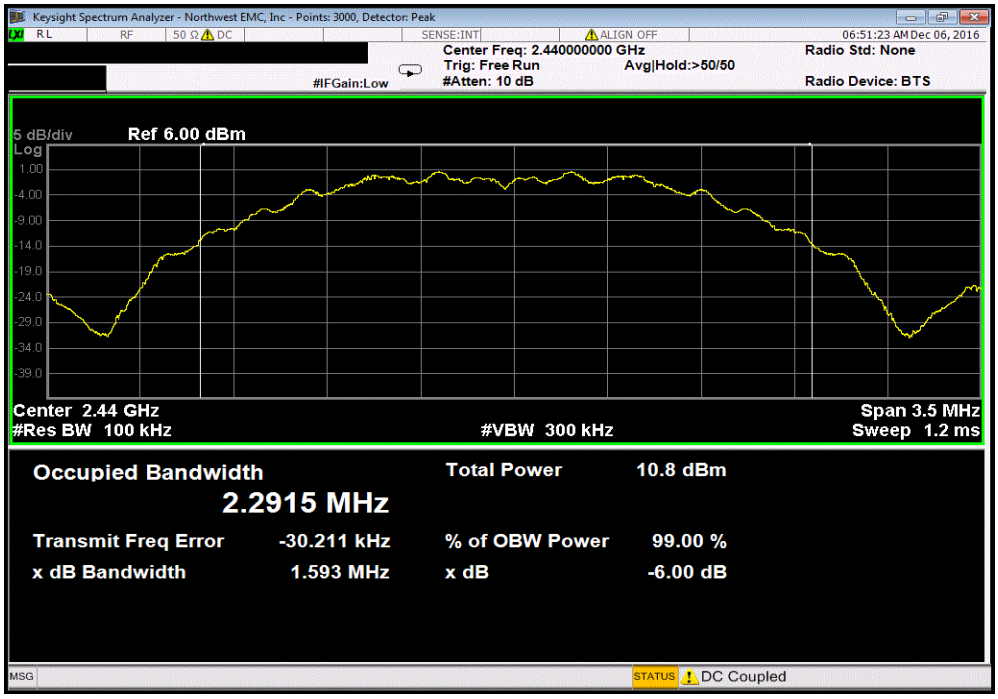
Configuration #	**2**	*Signature*

		Value	**Limit (>)**	**Result**
2400 MHz - 2483.5 MHz Band				
	OQPSK			
	Low Ch, 2405 MHz	1.643 MHz	500 kHz	Pass
	Mid Ch, 2440 MHz	1.593 MHz	500 kHz	Pass
	High Ch, 2480 MHz	1.575 MHz	500 kHz	Pass

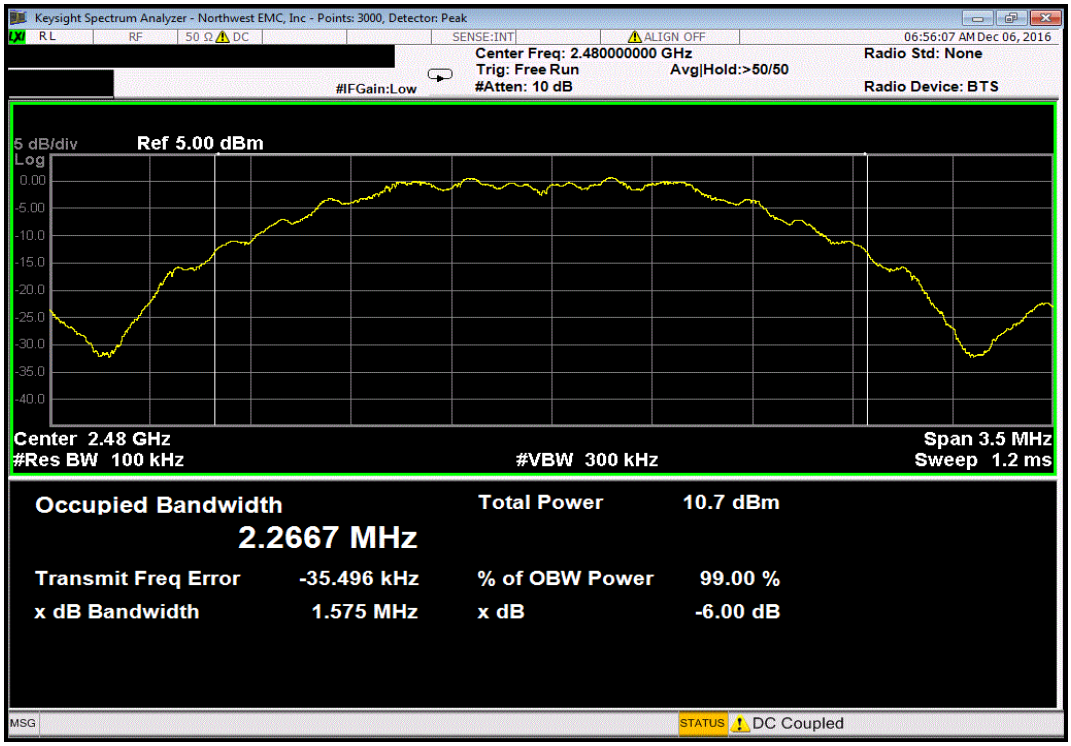
2400 MHz - 2483.5 MHz Band, OQPSK, Low Ch, 2405 MHz						
				Value	Limit (>)	Result
				1.643 MHz	500 kHz	Pass



2400 MHz - 2483.5 MHz Band, OQPSK, Mid Ch, 2440 MHz						
				Value	Limit (>)	Result
				1.593 MHz	500 kHz	Pass



2400 MHz - 2483.5 MHz Band, OQPSK, High Ch, 2480 MHz						
				Value	Limit (>)	Result
				1.575 MHz	500 kHz	Pass



OUTPUT POWER

XMit 2016.09.29

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Block - DC	Fairview Microwave	SD3379	AMQ	6/8/2016	6/8/2017
Attenuator	S.M. Electronics	SA26B-20	AWT	NCR	NCR
Cable	Micro-Coax	UFD150A-1-0720-200200	EVH	6/7/2016	6/7/2017
Generator - Signal	Keysight	N5182B	TFU	10/27/2015	10/27/2018
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFP	8/10/2016	8/10/2017

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum.

Prior to measuring peak transmit power the DTS bandwidth (B) was measured.

The method found in ANSI C63.10:2013 Section 11.9.1.1 was used because the RBW on the analyzer was greater than the DTS Bandwidth of the radio.

De Facto EIRP Limit: The EUT meets the de facto EIRP limit of +36 dBm.

OUTPUT POWER

XMit 2016.09.29
NweTx 2016.09.14.2

EUT:	**Neuron Sensor Head**			**Work Order:**	**LEVT0124**
Serial Number:	**L183**			**Date:**	**12/05/16**
Customer:	**Leviton Mfg Co, Inc**			**Temperature:**	**22.1 °C**
Attendees:	**Vikas Asthana**			**Humidity:**	**33.7% RH**
Project:	**None**			**Barometric Pres.:**	**1020 mbar**
Tested by:	**Jared Ison**	**Power:**	**110VAC/60Hz**	**Job Site:**	**EV06**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2016	ANSI C63.10:2013

COMMENTS

None.

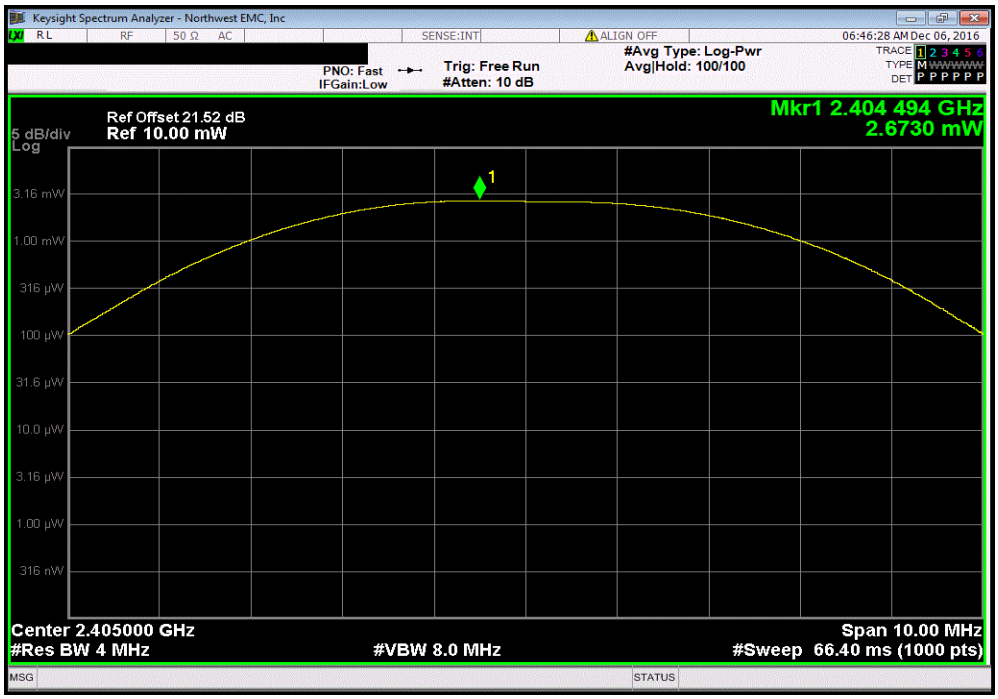
DEVIATIONS FROM TEST STANDARD

None

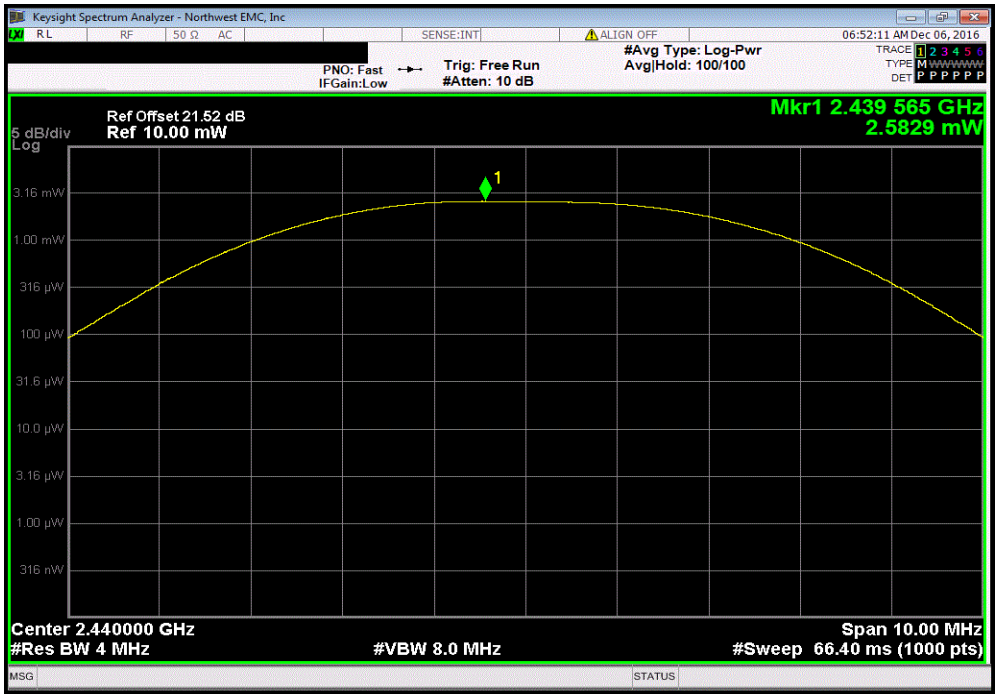
Configuration #	**2**	*Signature*

		Value	**Limit (<)**	**Result**
2400 MHz - 2483.5 MHz Band				
	OQPSK			
	Low Ch, 2405 MHz	2.673 mW	1 W	Pass
	Mid Ch, 2440 MHz	2.583 mW	1 W	Pass
	High Ch, 2480 MHz	2.523 mW	1 W	Pass

2400 MHz - 2483.5 MHz Band, OQPSK, Low Ch, 2405 MHz						
				Value	Limit (<)	Result
				2.673 mW	1 W	Pass



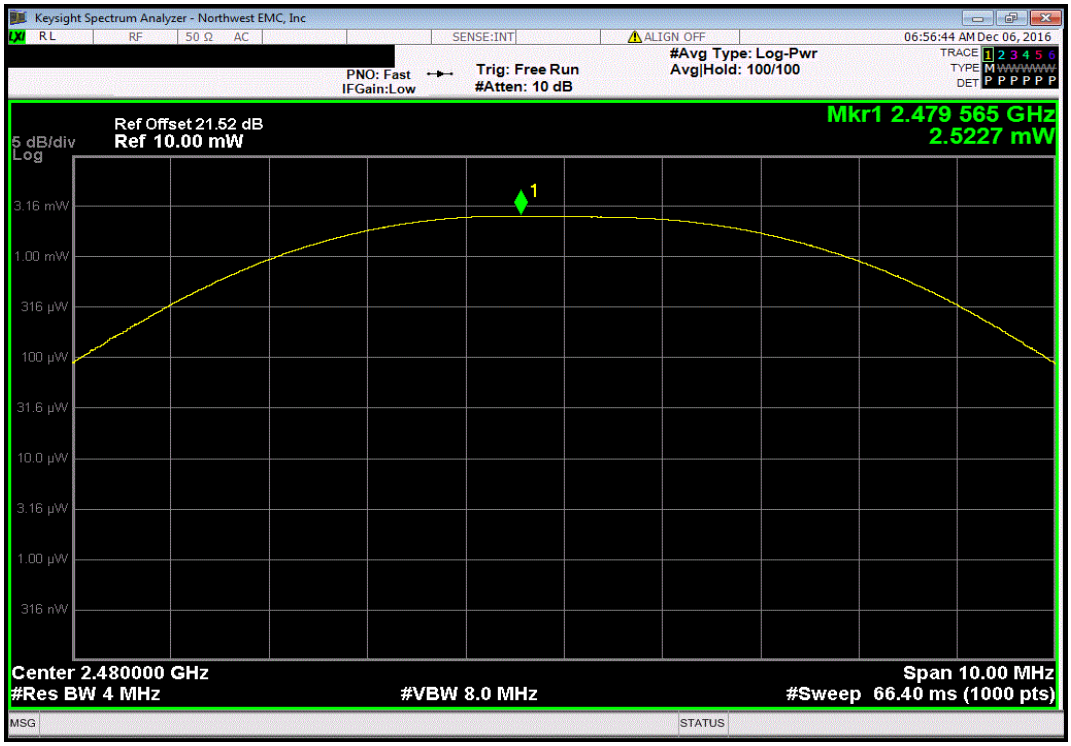
2400 MHz - 2483.5 MHz Band, OQPSK, Mid Ch, 2440 MHz						
				Value	Limit (<)	Result
				2.583 mW	1 W	Pass



OUTPUT POWER

XMit 2016.09.29
NweTx 2016.09.14.2

2400 MHz - 2483.5 MHz Band, OQPSK, High Ch, 2480 MHz							
					Value	Limit (<)	Result
					2.523 mW	1 W	Pass



POWER SPECTRAL DENSITY

XMit 2016.09.29

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Block - DC	Fairview Microwave	SD3379	AMQ	6/8/2016	6/8/2017
Attenuator	S.M. Electronics	SA26B-20	AWT	NCR	NCR
Cable	Micro-Coax	UFD150A-1-0720-200200	EVH	6/7/2016	6/7/2017
Generator - Signal	Keysight	N5182B	TFU	10/27/2015	10/27/2018
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFP	8/10/2016	8/10/2017

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The maximum power spectral density measurements was measured using the channels and modes as called out on the following data sheets.

Per the procedure outlined in ANSI C63.10 the peak power spectral density was measured in a 3 kHz RBW.

POWER SPECTRAL DENSITY

NORTHWEST EMC

XMit 2016.09.29
NweTx 2016.09.14.2

EUT:	**Neuron Sensor Head**			**Work Order:**	**LEVT0124**
Serial Number:	**L183**			**Date:**	**12/05/16**
Customer:	**Leviton Mfg Co, Inc**			**Temperature:**	**22.1 °C**
Attendees:	**Vikas Asthana**			**Humidity:**	**33.5% RH**
Project:	**None**			**Barometric Pres.:**	**1020 mbar**
Tested by:	**Jared Ison**	**Power:**	**110VAC/60Hz**	**Job Site:**	**EV06**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2016	ANSI C63.10:2013

COMMENTS

None.

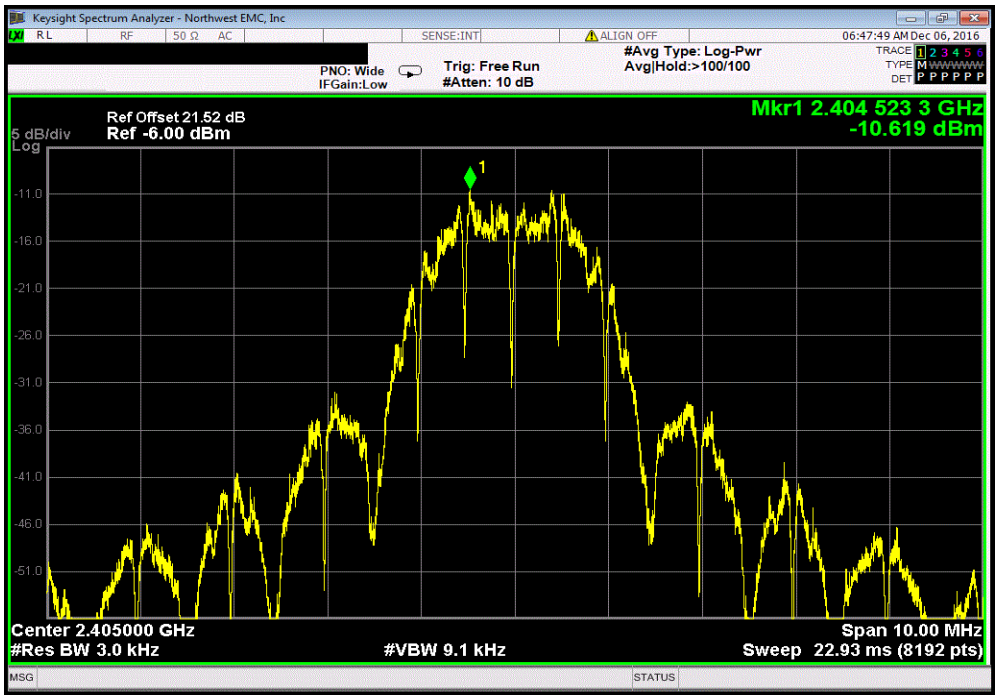
DEVIATIONS FROM TEST STANDARD

None

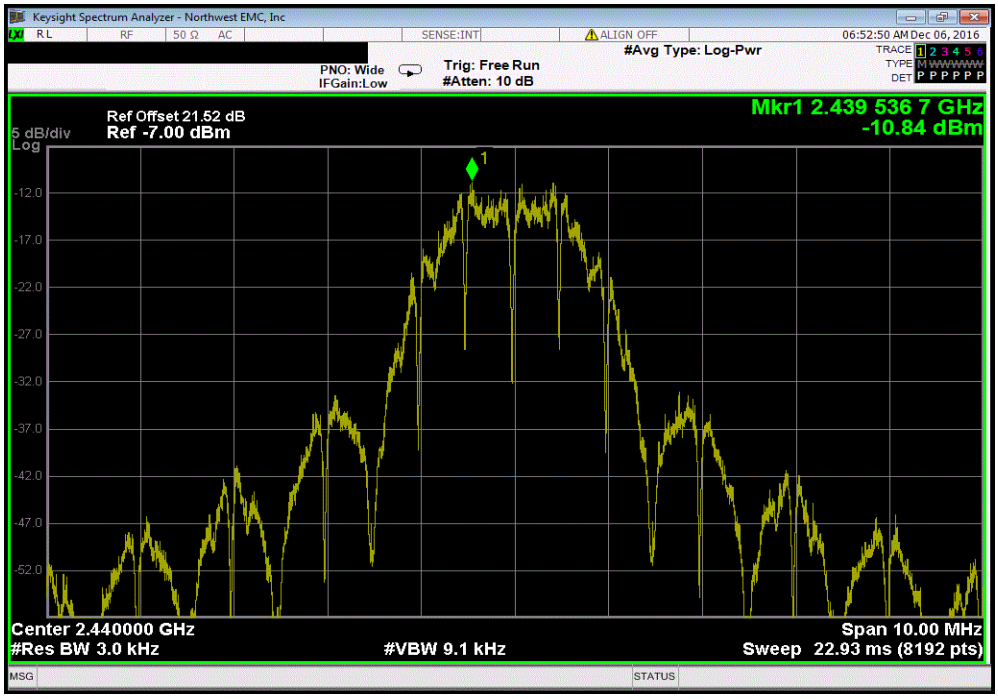
Configuration #	**2**	*Signature*

	Value dBm/3kHz	**Limit < dBm/3kHz**	**Results**
2400 MHz - 2483.5 MHz Band			
OQPSK			
Low Ch, 2405 MHz	-10.619	8	Pass
Mid Ch, 2440 MHz	-10.838	8	Pass
High Ch, 2480 MHz	-10.323	8	Pass

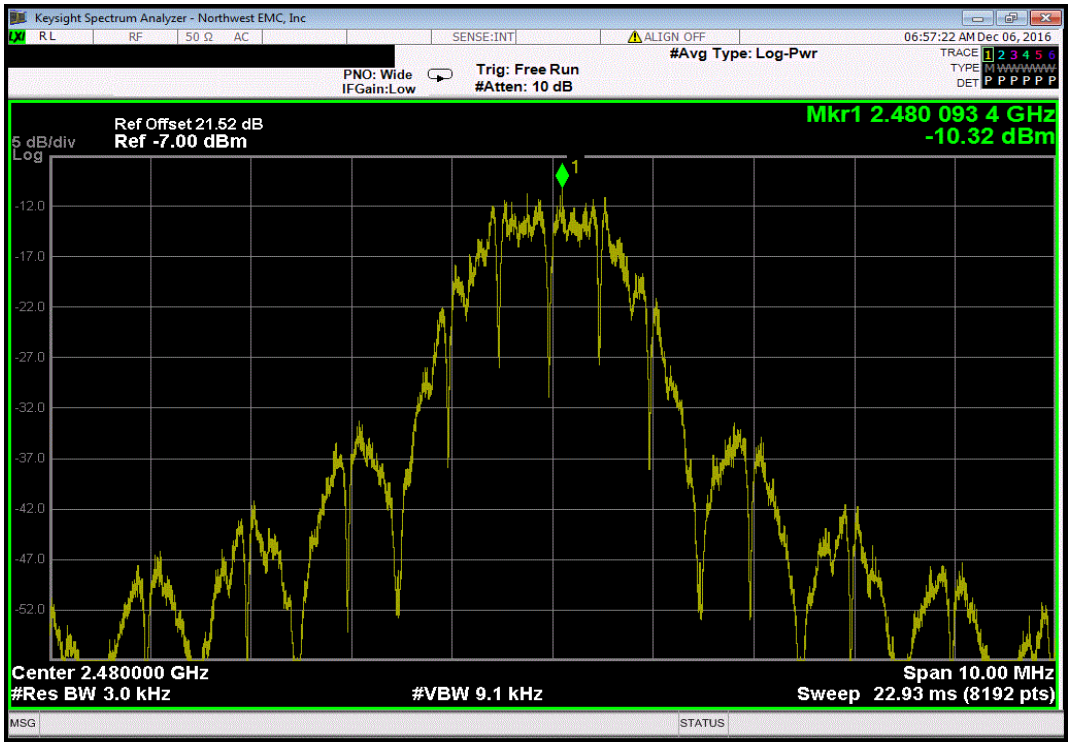
2400 MHz - 2483.5 MHz Band, OQPSK, Low Ch, 2405 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-10.619	8	Pass



2400 MHz - 2483.5 MHz Band, OQPSK, Mid Ch, 2440 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-10.838	8	Pass



2400 MHz - 2483.5 MHz Band, OQPSK, High Ch, 2480 MHz							
					Value dBm/3kHz	Limit < dBm/3kHz	Results
					-10.323	8	Pass



SPURIOUS CONDUCTED EMISSIONS

XMit 2016.09.29

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Block - DC	Fairview Microwave	SD3379	AMQ	6/8/2016	6/8/2017
Attenuator	S.M. Electronics	SA26B-20	AWT	NCR	NCR
Cable	Micro-Coax	UFD150A-1-0720-200200	EVH	6/7/2016	6/7/2017
Generator - Signal	Keysight	N5182B	TFY	4/16/2015	4/16/2018
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFP	8/10/2016	8/10/2017

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The spurious RF conducted emissions were measured with the EUT set to low, medium and high transmit frequencies. The EUT was transmitting at the data rate(s) listed in the datasheet. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.

SPURIOUS CONDUCTED EMISSIONS

XMit 2016.09.29
NweTx 2016.09.14.2

EUT:	**Neuron Sensor Head**			**Work Order:**	**LEVT0124**
Serial Number:	**L183**			**Date:**	**12/05/16**
Customer:	**Leviton Mfg Co, Inc**			**Temperature:**	**22.1 °C**
Attendees:	**Vikas Asthana**			**Humidity:**	**33.5% RH**
Project:	**None**			**Barometric Pres.:**	**1020 mbar**
Tested by:	**Jared Ison**	**Power:**	**110VAC/60Hz**	**Job Site:**	**EV06**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2016	ANSI C63.10:2013

COMMENTS

None.

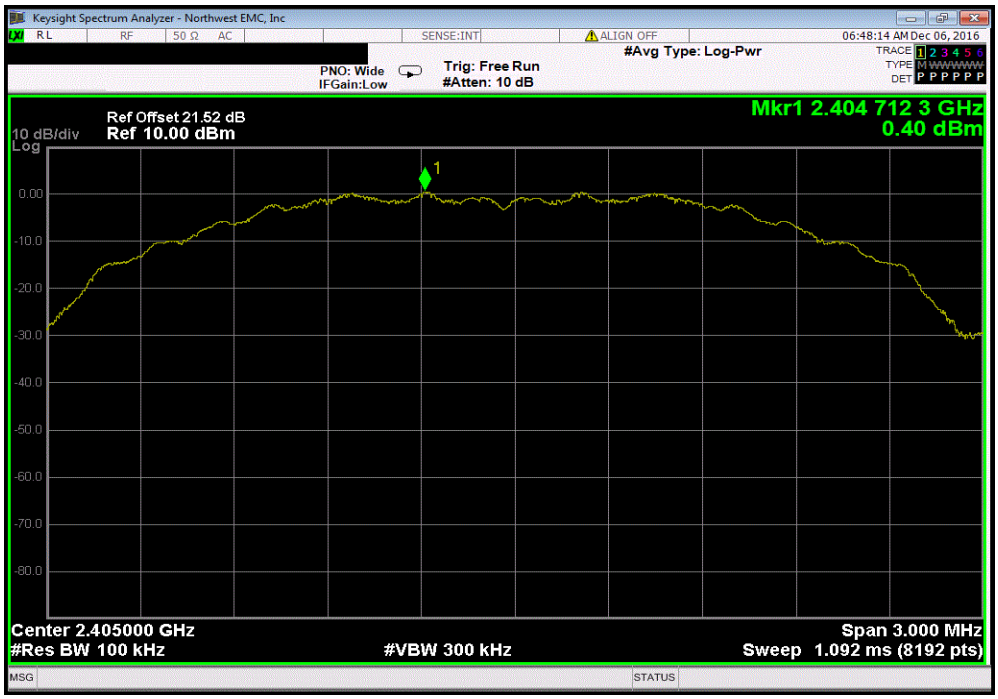
DEVIATIONS FROM TEST STANDARD

None

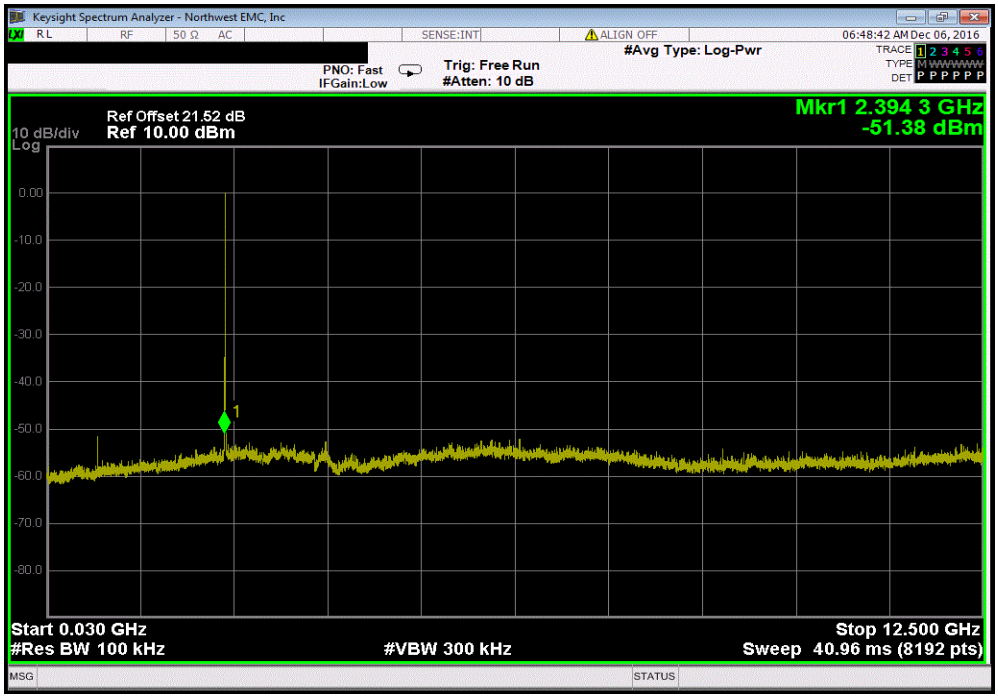
Configuration #	**2**	*Signature*

		Frequency Range	**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
2400 MHz - 2483.5 MHz Band					
	OQPSK				
	Low Ch, 2405 MHz	Fundamental	N/A	N/A	N/A
	Low Ch, 2405 MHz	30 MHz - 12.5 GHz	-51.78	-20	Pass
	Low Ch, 2405 MHz	12.5 GHz - 25 GHz	-38.84	-20	Pass
	Mid Ch, 2440 MHz	Fundamental	N/A	N/A	N/A
	Mid Ch, 2440 MHz	30 MHz - 12.5 GHz	-53.12	-20	Pass
	Mid Ch, 2440 MHz	12.5 GHz - 25 GHz	-38.92	-20	Pass
	High Ch, 2480 MHz	Fundamental	N/A	N/A	N/A
	High Ch, 2480 MHz	30 MHz - 12.5 GHz	-45.91	-20	Pass
	High Ch, 2480 MHz	12.5 GHz - 25 GHz	-39.24	-20	Pass

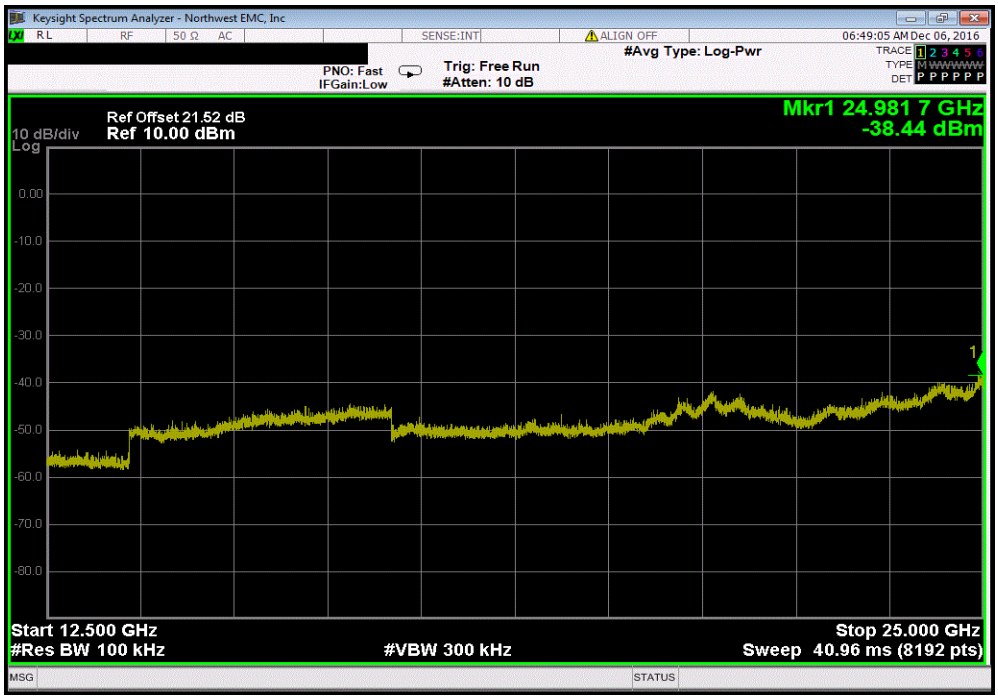
2400 MHz - 2483.5 MHz Band, OQPSK, Low Ch, 2405 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



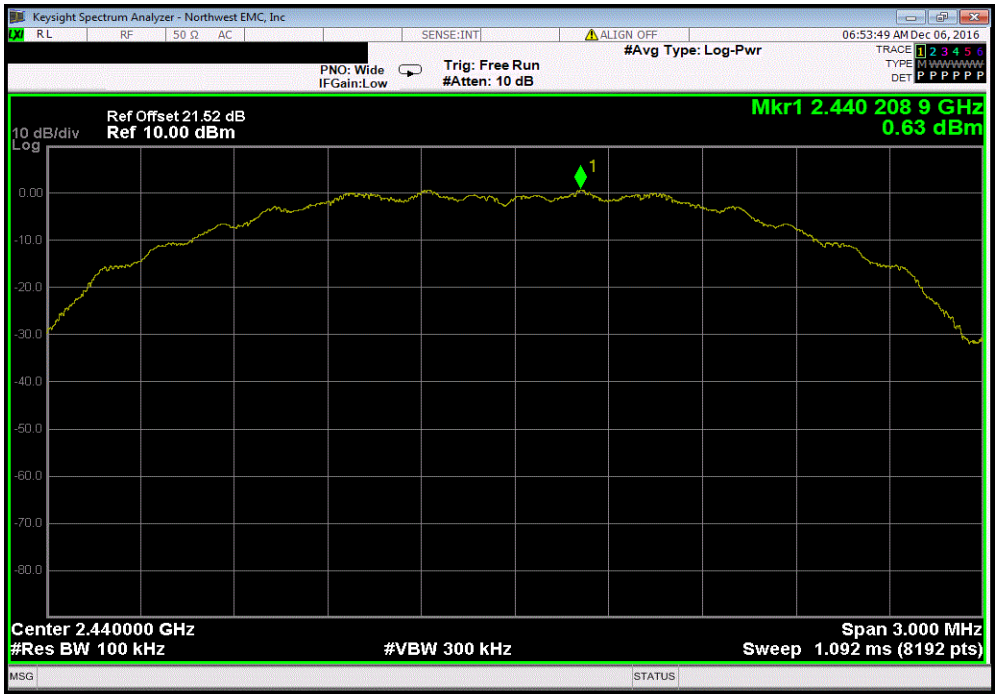
2400 MHz - 2483.5 MHz Band, OQPSK, Low Ch, 2405 MHz					
Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz			-51.78	-20	Pass



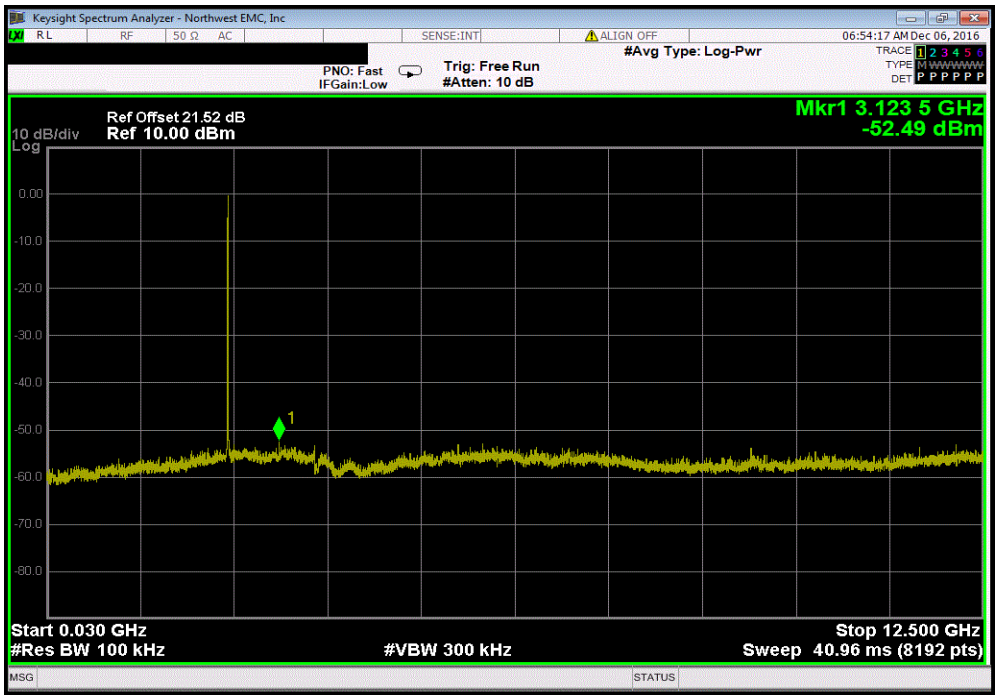
2400 MHz - 2483.5 MHz Band, OQPSK, Low Ch, 2405 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-38.84	-20	Pass



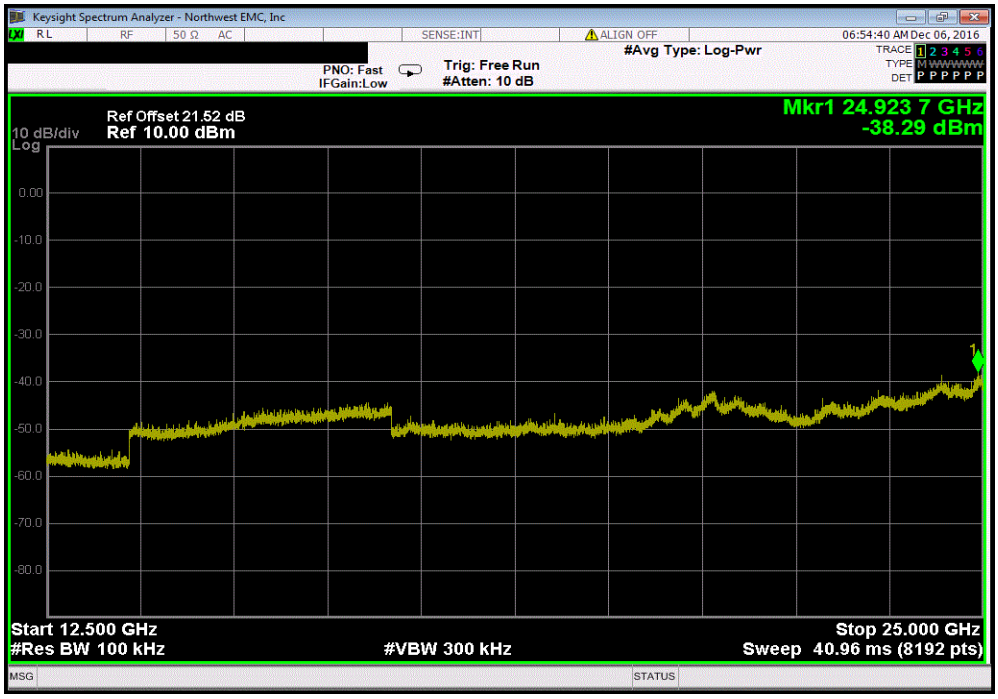
2400 MHz - 2483.5 MHz Band, OQPSK, Mid Ch, 2440 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



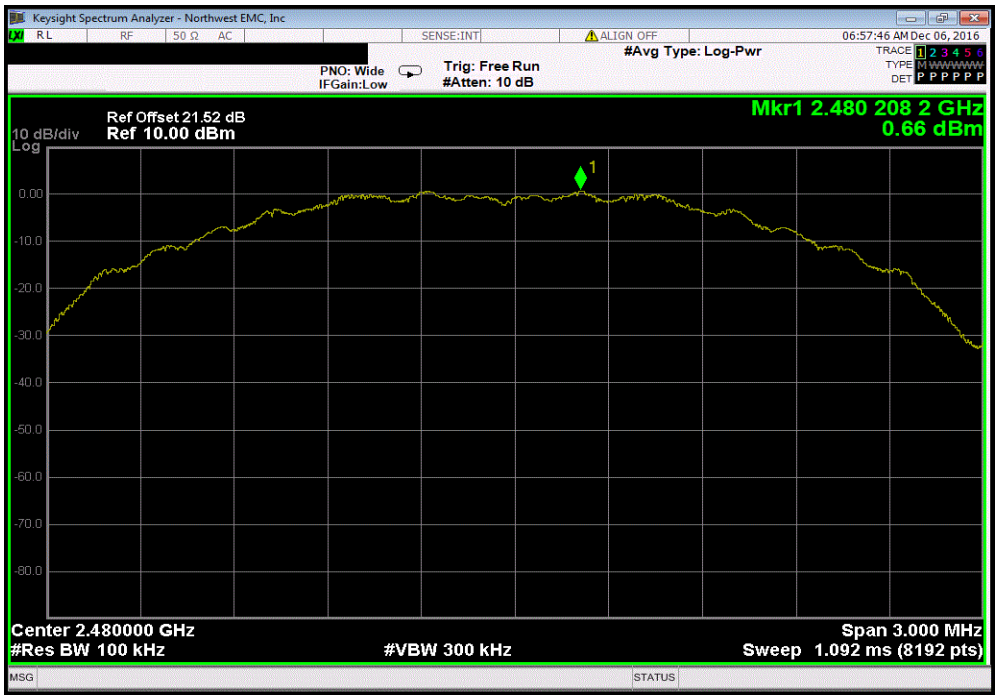
2400 MHz - 2483.5 MHz Band, OQPSK, Mid Ch, 2440 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-53.12	-20	Pass



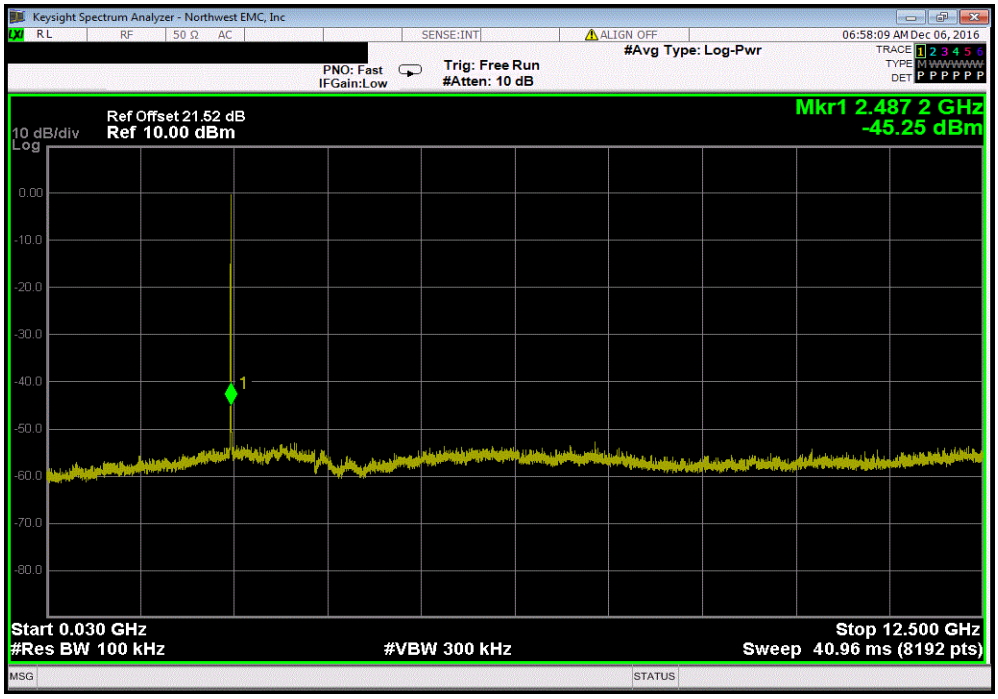
2400 MHz - 2483.5 MHz Band, OQPSK, Mid Ch, 2440 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-38.92	-20	Pass



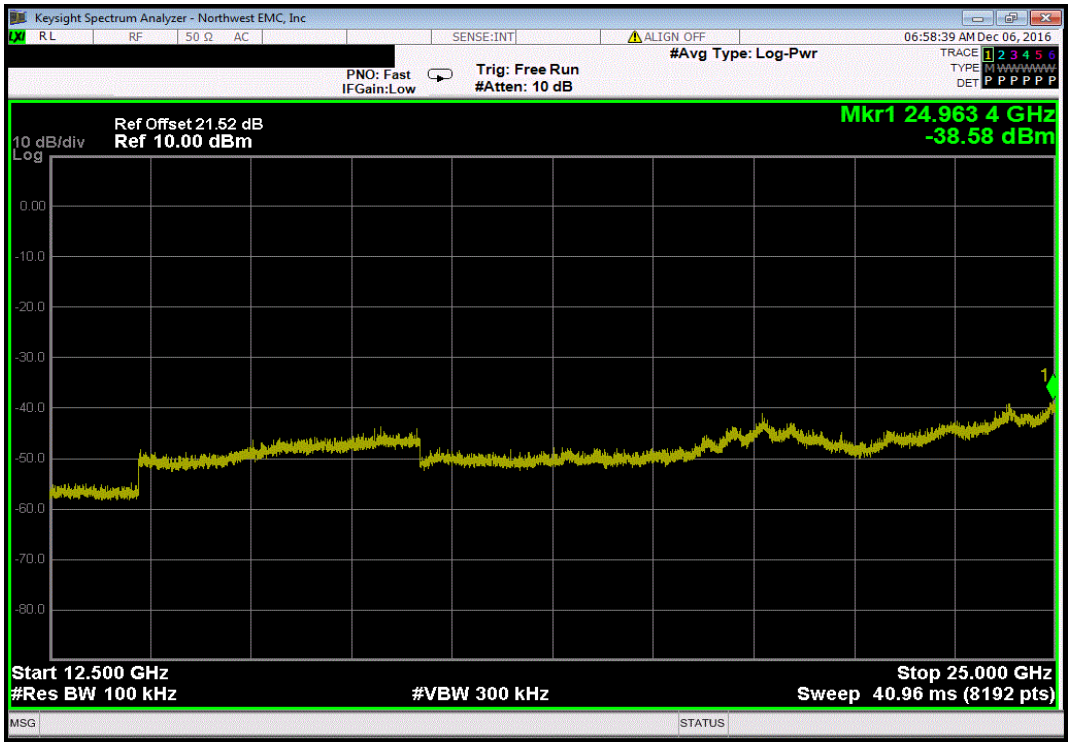
2400 MHz - 2483.5 MHz Band, OQPSK, High Ch, 2480 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



2400 MHz - 2483.5 MHz Band, OQPSK, High Ch, 2480 MHz					
Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz			-45.91	-20	Pass



2400 MHz - 2483.5 MHz Band, OQPSK, High Ch, 2480 MHz				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-39.24	-20	Pass



BAND EDGE COMPLIANCE

XMit 2016.09.29

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Attenuator	S.M. Electronics	SA26B-20	AWT	NCR	NCR
Block - DC	Fairview Microwave	SD3379	AMQ	6/8/2016	6/8/2017
Cable	Micro-Coax	UFD150A-1-0720-200200	EVH	6/7/2016	6/7/2017
Generator - Signal	Keysight	N5182B	TFU	10/27/2015	10/27/2018
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFP	8/10/2016	8/10/2017

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in each available band. The channels closest to the band edges were selected. The EUT was transmitting at the data rate(s) listed in the datasheet.

The spectrum was scanned below the lower band edge and above the higher band edge.

BAND EDGE COMPLIANCE

NORTHWEST EMC

XMit 2016.09.29
NweTx 2016.09.14.2

EUT:	**Neuron Sensor Head**			**Work Order:**	**LEVT0124**
Serial Number:	**L183**			**Date:**	**12/05/16**
Customer:	**Leviton Mfg Co, Inc**			**Temperature:**	**22.1 °C**
Attendees:	**Vikas Asthana**			**Humidity:**	**34.2% RH**
Project:	**None**			**Barometric Pres.:**	**1020 mbar**
Tested by:	**Jared Ison**	**Power:**	**110VAC/60Hz**	**Job Site:**	**EV06**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2016	ANSI C63.10:2013

COMMENTS

None.

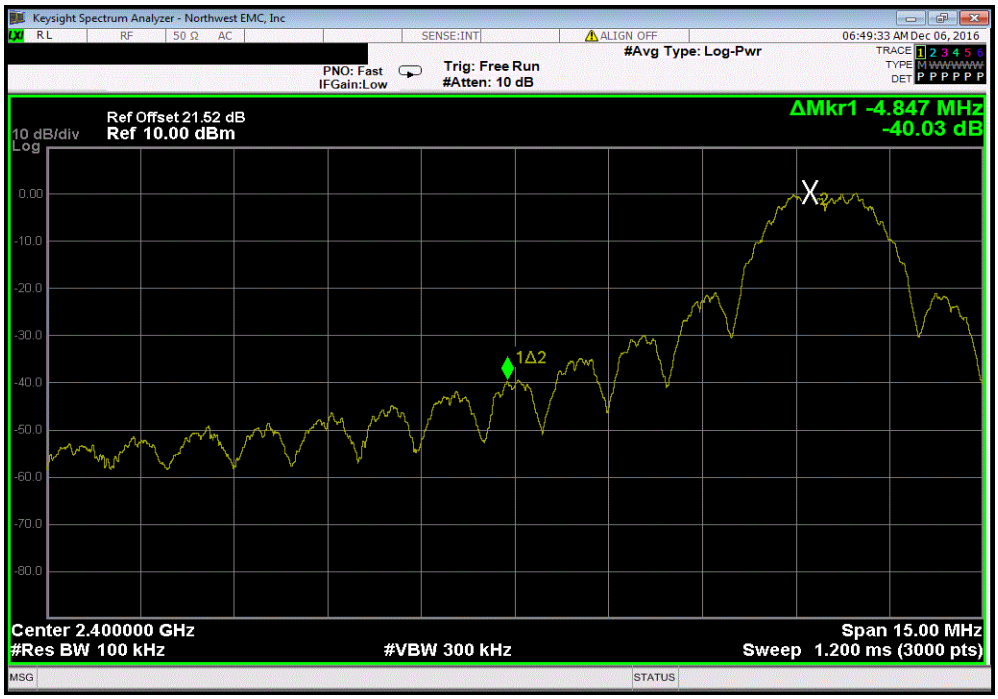
DEVIATIONS FROM TEST STANDARD

None.

Configuration #	**2**	*Signature*

		Value (dBc)	**Limit ≤ (dBc)**	**Result**
2400 MHz - 2483.5 MHz Band				
	OQPSK			
	Low Ch, 2405 MHz	-40.03	-20	Pass
	High Ch, 2480 MHz	-36.31	-20	Pass

2400 MHz - 2483.5 MHz Band, OQPSK, Low Ch, 2405 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-40.03	-20	Pass



2400 MHz - 2483.5 MHz Band, OQPSK, High Ch, 2480 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-36.31	-20	Pass