Enlighted, Inc.

TEST REPORT FOR

Plug Load Controller Unit
Model: PC-01-20

Tested To The Following Standards:

FCC Part 15 Subpart C Section(s)
15.207 & 15.247

Report No.: 96421-7

Date of issue: January 20, 2015

ACCREDITED
Testing Certificates:
803.01, 803.02, 803.05, 803.06

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

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

TABLE OF CONTENTS

ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

Enlighted, Inc.
930 Benecia Ave.
Sunnyvale, CA 94085

Representative: Heber Alfaro
Customer Reference Number: 0001843

REPORT PREPARED BY:

Morgan Tramontin
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Project Number: 96421

DATE OF EQUIPMENT RECEIPT: December 11, 2014
DATE(S) OF TESTING: December 11 - 15, 2014

Report Authorization

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

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

Test Facility Information

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

TEST LOCATION(S):
CKC Laboratories, Inc.
1120 Fulton Place
Fremont, CA 94539

Software Versions

CKC Laboratories Proprietary Software	Version
EMITest Emissions	5.00.14
Immunity	5.00.07

Site Registration & Accreditation Information

Location	CB #	TAIWAN	CANADA	FCC	JAPAN
Fremont	US0082	SL2-IN-E-1148R	3082B-1	958979	A-0149

SUMMARY OF RESULTS

Standard / Specification: FCC Part 15 Subpart C

Test Procedure	Description	Modifications*	Results
15.207	Conducted Emissions	NA	Pass
15.247(b)(3)	RF Power Output	NA	Pass
15.31(e)	Voltage Variation	NA	Pass
15.247(a)(2)	-6dB Bandwidth	NA	Pass
15.247(d)	Radiated Spurious Emissions and Band Edge	NA	Pass
15.247(e)	Power Spectral Density	NA	Pass

Modifications*/Conditions During Testing

This list is a summary of the conditions noted for or modifications made to the equipment during testing.

Summary of Conditions
No modifications were made during testing.

***Modifications listed above must be incorporated into all production units.**

EQUIPMENT UNDER TEST (EUT)

EQUIPMENT UNDER TEST

Plug Load Controller Unit
Manuf: Enlighted, Inc.
Model: PC-01-20
Serial: 01

PERIPHERAL DEVICES

The EUT was tested with the following peripheral device(s):

USB Adapter
Manuf: Generic
Model: Generic
Serial: NSN

AC/DC Adapter
Manuf: Dell
Model: LA65NS2-01
Serial: PA-1650-0202

Laptop Computer
Manuf: Dell
Model: Latitude ES440
Serial: DPN 23HXX A01

Resistor Network
Manuf: Vishay Dale
Model: RH250
Serial: none

FCC PART 15 SUBPART C

This report contains EMC emissions test results under United States Federal Communications Commission (FCC) CFR 47 Section 15 Subpart C requirements for Intentional Radiators.

15.207 AC Conducted Emissions

Test Data

Test Location: CKC Laboratories, Inc. • 1120 Fulton Pl. • Fremont, CA 94539 • 510-249-1170

Customer: **Enlighted, Inc.**
Specification: **15.207 AC Mains - Average**
Work Order #: **96421** Date: 12/11/2014
Test Type: **Conducted Emissions** Time: 11:33:27
Equipment: **Plug Load Controller Unit** Sequence#: 1
Manufacturer: Enlighted, Inc. Tested By: Daniel Bertran
Model: PC-01-20 120V 60Hz
S/N: 01

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP01211	Attenuator	PE7002-10	4/2/2013	4/2/2015
T2	ANP00880	Cable	RG214U	6/13/2014	6/13/2016
T3	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
T4	AN00493	50uH LISN-L1 (L) Loss W/O European Adapter	3816/NM	3/4/2013	3/4/2015
	AN00493	50uH LISN-L(2) N Loss W/O European Adapter	3816/NM	3/4/2013	3/4/2015
T5	AN03279	High Pass Filter	HE9615-150K-50-720B	1/6/2014	1/6/2016
	AN03471	RF Characteristics Analyzer	E4440A	12/19/2013	12/19/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Plug Load Controller Unit*	Enlighted, Inc.	PC-01-20	01

Support Devices:

Function	Manufacturer	Model #	S/N
USB adapter	Generic	Generic	NSN
Laptop Computer	Dell	Latitude ES440	DPN 23HXX A01
AC/DC adapter	Dell	LA65NS2-01	PA-1650-0202
Resistor Network	Vishay Dale	RH250	none

Test Conditions / Notes:

Conducted Emissions
Frequency Range: 150kHz to 30MHz
Test Method: ANSI C63.4 (2003)

Temperature: 21.5°C
Humidity: 55%
Atmospheric Pressure: 100kPa

Firmware Used: Version 2.6.2
Application: PuTTy
High Clock: 16MHz

Transmitting operating frequency= 2.4GHz Band
RF Output= 0dBm
Gain of the antenna= 0dBi
Number of Channel=16

The EUT is a ceiling-mounted Transmitter/Receiver which is part of the Enlighted Lighting System. The EUT is a Plug Load Controller Unit. The EUT is powered with 120VAC. The EUT acts as sensors for occupancy, ambient light, and temperature. Application "PuTTy" is used for testing purposes in order to monitor and control the EUT which is connected to the laptop outside the chamber via USB cable. The EUT is set continuously transmitting or receive.

Note: TX Mode

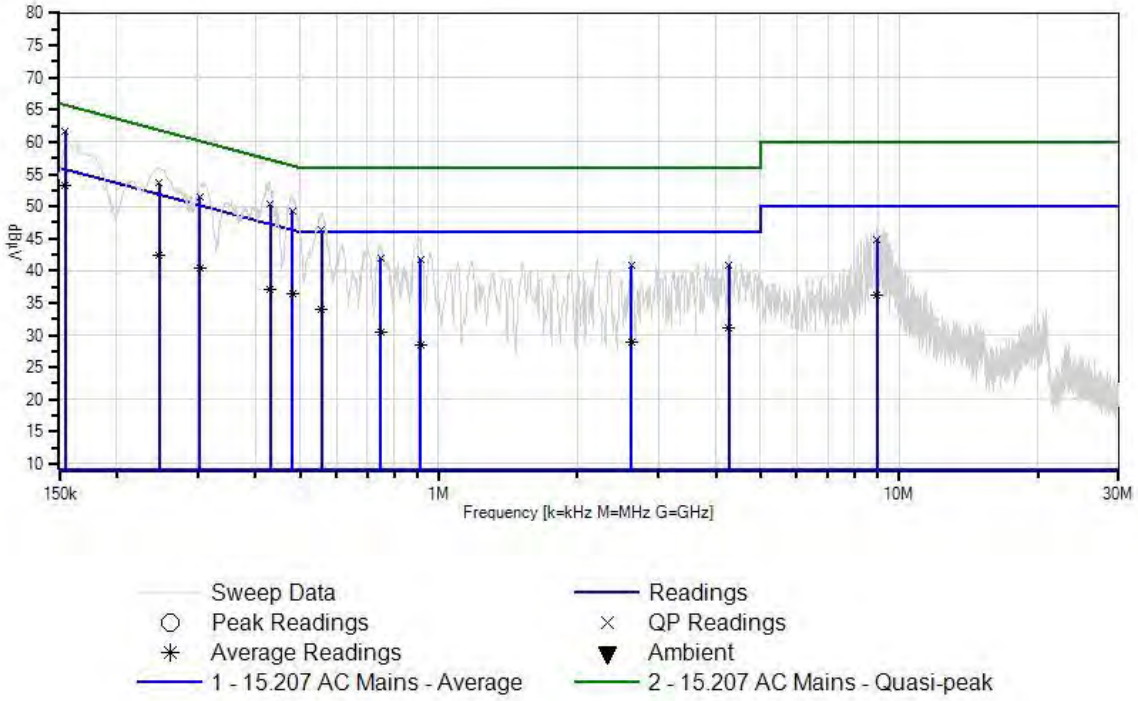
Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Lead: Black

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	154.383k Ave	39.7	+9.7 +3.7	+0.0	+0.0	+0.1	+0.0	53.2	55.8	-2.6	Black
2	154.383k QP	48.2	+9.7 +3.7	+0.0	+0.0	+0.1	+0.0	61.7	65.8	-4.1	Black
^	154.383k	51.0	+9.7 +3.7	+0.0	+0.0	+0.1	+0.0	64.5	55.8	+8.7	Black
4	430.887k QP	40.4	+9.6 +0.2	+0.0	+0.0	+0.1	+0.0	50.3	57.2	-6.9	Black
5	480.937k QP	39.4	+9.6 +0.2	+0.0	+0.0	+0.1	+0.0	49.3	56.3	-7.0	Black
6	247.721k QP	43.6	+9.6 +0.3	+0.0	+0.0	+0.1	+0.0	53.6	61.8	-8.2	Black
7	303.162k QP	41.6	+9.6 +0.2	+0.0	+0.0	+0.1	+0.0	51.5	60.2	-8.7	Black
8	247.721k Ave	32.4	+9.6 +0.3	+0.0	+0.0	+0.1	+0.0	42.4	51.8	-9.4	Black
^	247.721k	45.9	+9.6 +0.3	+0.0	+0.0	+0.1	+0.0	55.9	51.8	+4.1	Black
10	557.443k QP	36.5	+9.5 +0.2	+0.0	+0.0	+0.1	+0.0	46.3	56.0	-9.7	Black

11	480.937k Ave	26.6	+9.6 +0.2	+0.0	+0.0	+0.1	+0.0	36.5	46.3	-9.8	Black
^	480.937k	42.1	+9.6 +0.2	+0.0	+0.0	+0.1	+0.0	52.0	46.3	+5.7	Black
13	303.162k Ave	30.5	+9.6 +0.2	+0.0	+0.0	+0.1	+0.0	40.4	50.2	-9.8	Black
^	303.162k	44.2	+9.6 +0.2	+0.0	+0.0	+0.1	+0.0	54.1	50.2	+3.9	Black
15	430.887k Ave	27.2	+9.6 +0.2	+0.0	+0.0	+0.1	+0.0	37.1	47.2	-10.1	Black
^	430.887k	44.7	+9.6 +0.2	+0.0	+0.0	+0.1	+0.0	54.6	47.2	+7.4	Black
17	557.443k Ave	24.2	+9.5 +0.2	+0.0	+0.0	+0.1	+0.0	34.0	46.0	-12.0	Black
^	557.443k	39.1	+9.5 +0.2	+0.0	+0.0	+0.1	+0.0	48.9	46.0	+2.9	Black
19	8.963M Ave	25.9	+9.6 +0.1	+0.2	+0.1	+0.2	+0.0	36.1	50.0	-13.9	Black
20	748.394k QP	32.1	+9.6 +0.2	+0.0	+0.0	+0.1	+0.0	42.0	56.0	-14.0	Black
21	914.088k QP	31.9	+9.6 +0.1	+0.1	+0.0	+0.1	+0.0	41.8	56.0	-14.2	Black
22	4.273M Ave	21.0	+9.6 +0.2	+0.1	+0.1	+0.1	+0.0	31.1	46.0	-14.9	Black
23	4.273M QP	30.8	+9.6 +0.2	+0.1	+0.1	+0.1	+0.0	40.9	56.0	-15.1	Black
^	4.273M	32.8	+9.6 +0.2	+0.1	+0.1	+0.1	+0.0	42.9	46.0	-3.1	Black
25	8.963M QP	34.7	+9.6 +0.1	+0.2	+0.1	+0.2	+0.0	44.9	60.0	-15.1	Black
^	8.963M	37.1	+9.6 +0.1	+0.2	+0.1	+0.2	+0.0	47.3	50.0	-2.7	Black
27	2.620M QP	30.9	+9.6 +0.1	+0.1	+0.0	+0.1	+0.0	40.8	56.0	-15.2	Black
28	748.394k Ave	20.5	+9.6 +0.2	+0.0	+0.0	+0.1	+0.0	30.4	46.0	-15.6	Black
^	748.394k	34.4	+9.6 +0.2	+0.0	+0.0	+0.1	+0.0	44.3	46.0	-1.7	Black
30	2.620M Ave	18.9	+9.6 +0.1	+0.1	+0.0	+0.1	+0.0	28.8	46.0	-17.2	Black
^	2.620M	33.1	+9.6 +0.1	+0.1	+0.0	+0.1	+0.0	43.0	46.0	-3.0	Black
32	914.088k Ave	18.5	+9.6 +0.1	+0.1	+0.0	+0.1	+0.0	28.4	46.0	-17.6	Black
^	914.088k	35.3	+9.6 +0.1	+0.1	+0.0	+0.1	+0.0	45.2	46.0	-0.8	Black

CKC Laboratories, Inc. Date: 12/11/2014 Time: 11:33:27 Enlighted, Inc. WO#: 96421
Test Lead: Black 120V 60Hz Sequence#: 1
Black



Test Location: CKC Laboratories, Inc. • 1120 Fulton Pl. • Fremont, CA 94539 • 510-249-1170

Customer: **Enlighted, Inc.**
Specification: **15.207 AC Mains - Quasi-peak**
Work Order #: **96421** Date: 12/11/2014
Test Type: **Conducted Emissions** Time: 11:47:50
Equipment: **Plug Load Controller Unit** Sequence#: 2
Manufacturer: Enlighted, Inc. Tested By: Daniel Bertran
Model: PC-01-20 120V 60Hz
S/N: 01

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP01211	Attenuator	PE7002-10	4/2/2013	4/2/2015
T2	ANP00880	Cable	RG214U	6/13/2014	6/13/2016
T3	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
	AN00493	50uH LISN-L1 (L) Loss W/O European Adapter	3816/NM	3/4/2013	3/4/2015
T4	AN00493	50uH LISN-L(2) N Loss W/O European Adapter	3816/NM	3/4/2013	3/4/2015
T5	AN03279	High Pass Filter	HE9615-150K-50-720B	1/6/2014	1/6/2016
	AN03471	RF Characteristics Analyzer	E4440A	12/19/2013	12/19/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Plug Load Controller Unit*	Enlighted, Inc.	PC-01-20	01

Support Devices:

Function	Manufacturer	Model #	S/N
USB adapter	Generic	Generic	NSN
Laptop Computer	Dell	Latitude ES440	DPN 23HXX A01
AC/DC adapter	Dell	LA65NS2-01	PA-1650-0202
Resistor Network	Vishay Dale	RH250	none

Test Conditions / Notes:

Conducted Emissions
Frequency Range: 150kHz to 30MHz
Test Method: ANSI C63.4 (2003)

Temperature: 21.5°C
Humidity: 55%
Atmospheric Pressure: 100kPa

Firmware Used: Version 2.6.2
Application: PuTTy
High Clock: 16MHz
Transmitting operating frequency= 2.4GHz Band
RF Output= 0dBm
Gain of the antenna= 0dBi
Number of Channel=16

The EUT is a ceiling-mounted Transmitter/Receiver which is part of the Enlighted Lighting System. The EUT is a Plug Load Controller Unit. The EUT is powered with 120VAC. The EUT acts as sensors for occupancy, ambient light, and temperature. Application "PuTTy" is used for testing purposes in order to monitor and control the EUT which is connected to the laptop outside the chamber via USB cable. The EUT is set continuously transmitting or receive.

Note: TX Mode

Ext Attn: 0 dB

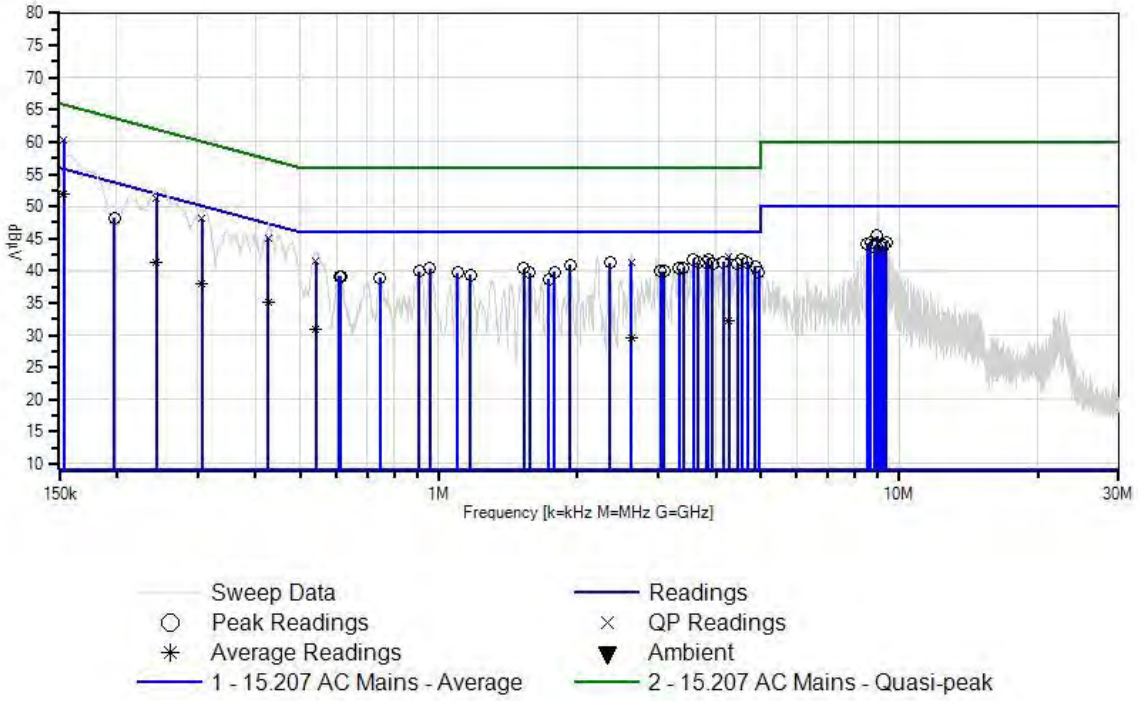
Measurement Data: Reading listed by margin. Test Lead: White

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	153.371k Ave	37.4	+9.7 +4.2	+0.0	+0.0	+0.6	+0.0	51.9	55.8	-3.9	White
2	4.547M	31.0	+9.7 +0.2	+0.1	+0.1	+0.7	+0.0	41.8	46.0	-4.2	White
3	3.578M	31.2	+9.6 +0.2	+0.1	+0.1	+0.6	+0.0	41.8	46.0	-4.2	White
4	3.846M	31.3	+9.6 +0.1	+0.1	+0.1	+0.6	+0.0	41.8	46.0	-4.2	White
5	4.148M	30.9	+9.6 +0.1	+0.1	+0.1	+0.6	+0.0	41.4	46.0	-4.6	White
6	8.959M	34.5	+9.7 +0.1	+0.2	+0.1	+0.8	+0.0	45.4	50.0	-4.6	White
7	3.807M	30.9	+9.6 +0.1	+0.1	+0.1	+0.6	+0.0	41.4	46.0	-4.6	White
8	4.692M	30.5	+9.6 +0.2	+0.2	+0.1	+0.7	+0.0	41.3	46.0	-4.7	White
9	2.353M	30.8	+9.6 +0.1	+0.1	+0.0	+0.6	+0.0	41.2	46.0	-4.8	White
10	3.663M	30.7	+9.6 +0.1	+0.1	+0.1	+0.6	+0.0	41.2	46.0	-4.8	White
11	3.931M	30.6	+9.6 +0.1	+0.1	+0.1	+0.6	+0.0	41.1	46.0	-4.9	White

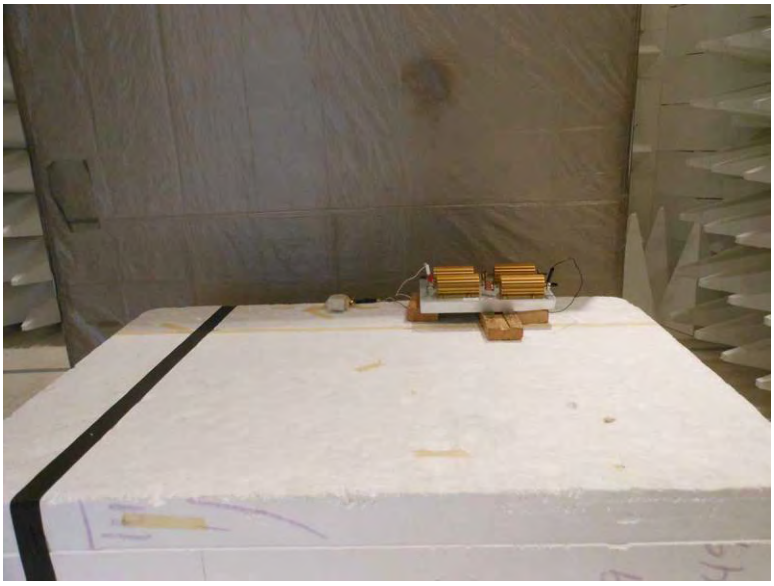
12	4.449M	30.5	+9.6 +0.2	+0.1	+0.1	+0.6	+0.0	41.1	46.0	-4.9	White
13	1.928M	30.4	+9.6 +0.2	+0.1	+0.0	+0.6	+0.0	40.9	46.0	-5.1	White
14	4.879M	30.0	+9.5 +0.2	+0.2	+0.1	+0.7	+0.0	40.7	46.0	-5.3	White
15	153.371k QP	45.8	+9.7 +4.2	+0.0	+0.0	+0.6	+0.0	60.3	65.8	-5.5	White
^	153.371k	47.4	+9.7 +4.2	+0.0	+0.0	+0.6	+0.0	61.9	55.8	+6.1	White
17	197.996k	37.7	+9.6 +0.3	+0.0	+0.0	+0.6	+0.0	48.2	53.7	-5.5	White
18	3.399M	30.0	+9.5 +0.2	+0.1	+0.1	+0.6	+0.0	40.5	46.0	-5.5	White
19	8.670M	33.7	+9.7 +0.1	+0.2	+0.1	+0.7	+0.0	44.5	50.0	-5.5	White
20	958.007k	30.0	+9.6 +0.1	+0.1	+0.0	+0.6	+0.0	40.4	46.0	-5.6	White
21	9.373M	33.6	+9.6 +0.1	+0.2	+0.1	+0.8	+0.0	44.4	50.0	-5.6	White
22	1.532M	29.8	+9.6 +0.2	+0.1	+0.0	+0.6	+0.0	40.3	46.0	-5.7	White
23	3.323M	29.7	+9.6 +0.2	+0.1	+0.1	+0.6	+0.0	40.3	46.0	-5.7	White
24	8.526M	33.4	+9.7 +0.1	+0.2	+0.1	+0.7	+0.0	44.2	50.0	-5.8	White
25	906.974k	29.5	+9.6 +0.1	+0.1	+0.0	+0.6	+0.0	39.9	46.0	-6.1	White
26	3.038M	29.5	+9.6 +0.1	+0.1	+0.0	+0.6	+0.0	39.9	46.0	-6.1	White
27	9.238M	33.1	+9.6 +0.1	+0.2	+0.1	+0.8	+0.0	43.9	50.0	-6.1	White
28	3.093M	29.4	+9.6 +0.2	+0.1	+0.0	+0.6	+0.0	39.9	46.0	-6.1	White
29	4.956M	29.2	+9.5 +0.1	+0.2	+0.1	+0.7	+0.0	39.8	46.0	-6.2	White
30	1.787M	29.4	+9.6 +0.1	+0.1	+0.0	+0.6	+0.0	39.8	46.0	-6.2	White
31	9.103M	33.0	+9.6 +0.1	+0.2	+0.1	+0.8	+0.0	43.8	50.0	-6.2	White
32	8.833M	32.9	+9.7 +0.1	+0.2	+0.1	+0.8	+0.0	43.8	50.0	-6.2	White
33	1.098M	29.2	+9.6 +0.2	+0.1	+0.0	+0.6	+0.0	39.7	46.0	-6.3	White
34	1.575M	29.3	+9.6 +0.1	+0.1	+0.0	+0.6	+0.0	39.7	46.0	-6.3	White
35	1.171M	28.9	+9.6 +0.2	+0.1	+0.0	+0.6	+0.0	39.4	46.0	-6.6	White
36	609.594k	28.5	+9.7 +0.3	+0.0	+0.0	+0.6	+0.0	39.1	46.0	-6.9	White
37	612.503k	28.5	+9.7 +0.3	+0.0	+0.0	+0.6	+0.0	39.1	46.0	-6.9	White

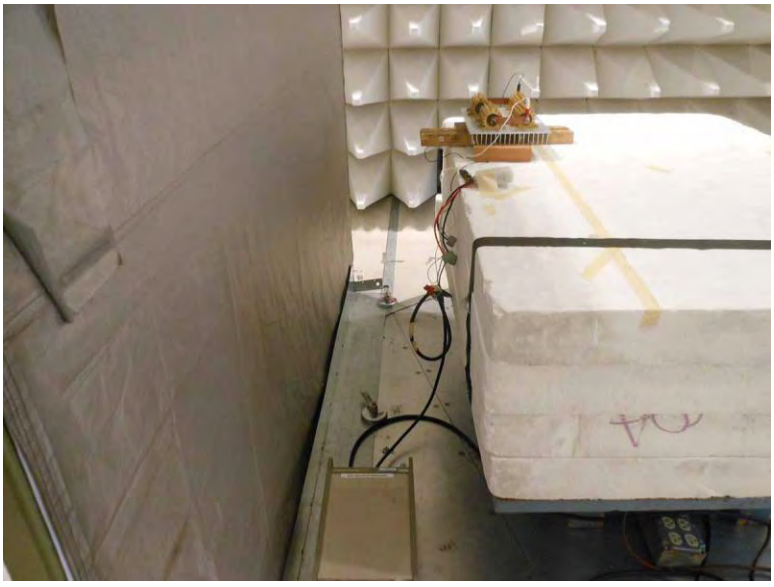
38	747.036k	28.5	+9.6 +0.2	+0.0	+0.0	+0.6	+0.0	38.9	46.0	-7.1	White
39	1.736M	28.3	+9.6 +0.1	+0.1	+0.0	+0.6	+0.0	38.7	46.0	-7.3	White
40	243.791k QP	40.8	+9.6 +0.3	+0.0	+0.0	+0.6	+0.0	51.3	62.0	-10.7	White
41	243.791k Ave	30.7	+9.6 +0.3	+0.0	+0.0	+0.6	+0.0	41.2	52.0	-10.8	White
^	243.791k	42.7	+9.6 +0.3	+0.0	+0.0	+0.6	+0.0	53.2	52.0	+1.2	White
43	305.951k QP	37.7	+9.6 +0.2	+0.0	+0.0	+0.6	+0.0	48.1	60.1	-12.0	White
44	305.951k Ave	27.6	+9.6 +0.2	+0.0	+0.0	+0.6	+0.0	38.0	50.1	-12.1	White
^	305.951k	40.0	+9.6 +0.2	+0.0	+0.0	+0.6	+0.0	50.4	50.1	+0.3	White
46	427.030k QP	34.7	+9.6 +0.2	+0.0	+0.0	+0.6	+0.0	45.1	57.3	-12.2	White
47	427.030k Ave	24.6	+9.6 +0.2	+0.0	+0.0	+0.6	+0.0	35.0	47.3	-12.3	White
^	427.030k	37.3	+9.6 +0.2	+0.0	+0.0	+0.6	+0.0	47.7	47.3	+0.4	White
49	4.272M QP	31.7	+9.6 +0.2	+0.1	+0.1	+0.6	+0.0	42.3	56.0	-13.7	White
50	4.272M Ave	21.6	+9.6 +0.2	+0.1	+0.1	+0.6	+0.0	32.2	46.0	-13.8	White
^	4.272M	33.6	+9.6 +0.2	+0.1	+0.1	+0.6	+0.0	44.2	46.0	-1.8	White
52	541.982k QP	31.1	+9.5 +0.2	+0.0	+0.0	+0.6	+0.0	41.4	56.0	-14.6	White
53	2.618M QP	30.9	+9.6 +0.1	+0.1	+0.0	+0.6	+0.0	41.3	56.0	-14.7	White
54	541.982k Ave	20.7	+9.5 +0.2	+0.0	+0.0	+0.6	+0.0	31.0	46.0	-15.0	White
^	541.982k	33.1	+9.5 +0.2	+0.0	+0.0	+0.6	+0.0	43.4	46.0	-2.6	White
56	2.618M Ave	19.1	+9.6 +0.1	+0.1	+0.0	+0.6	+0.0	29.5	46.0	-16.5	White
^	2.618M	32.8	+9.6 +0.1	+0.1	+0.0	+0.6	+0.0	43.2	46.0	-2.8	White

CKC Laboratories, Inc. Date: 12/11/2014 Time: 11:47:50 Enlighted, Inc. WO#: 96421
Test Lead: White 120V 60Hz Sequence#: 2
White



Test Setup Photos





15.247(b)(3) RF Power Output

Test Conditions / Setup

Test Location: CKC Laboratories, Inc. • 1120 Fulton Pl. • Fremont, CA 94539 • 510-249-1170

Customer: **Enlighted, Inc.**
Specification: **15.247(b) Fundamental**
Work Order #: **96421** Date: 12/11/2014
Test Type: **Maximized Emissions** Time: 14:48:47
Equipment: **Plug Load Controller Unit** Sequence#: 5
Manufacturer: Enlighted, Inc. Tested By: Daniel Bertran
Model: PC-01-20
S/N: 01

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02113	Horn Antenna-ANSI C63.5	3115	1/24/2013	1/24/2015
T2	AN03302	Cable	32026-29094K-29094K-72TC	3/24/2014	3/24/2016
T3	ANP01210	Cable	FSJ1P-50A-4A	2/19/2013	2/19/2015
	AN03471	RF Characteristics Analyzer	E4440A	12/19/2013	12/19/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Plug Load Controller Unit*	Enlighted, Inc.	PC-01-20	01

Support Devices:

Function	Manufacturer	Model #	S/N
USB adapter	Generic	Generic	NSN
Laptop Computer	Dell	Latitude ES440	DPN 23HXX A01
AC/DC adapter	Dell	LA65NS2-01	PA-1650-0202
Resistor Network	Vishay Dale	RH250	none

Test Conditions / Notes:

Fundamental of the EUT
Test Method: ANSI C63.4 (2003)

Temperature: 21.5°C
Humidity: 55%
Atmospheric Pressure: 100kPa

Firmware Used: Version 2.6.2
Application: PuTTy
High Clock: 16MHz

Transmitting operating frequency= 2.4GHz Band
RF Output= 0dBm
Gain of the antenna= 0dBi
Number of Channel=16

The EUT is a ceiling-mounted Transmitter/Receiver which is part of the Enlighted Lighting System. The EUT is a Plug Load Controller Unit. The EUT is powered with 120VAC. The EUT acts as sensors for occupancy, ambient light, and temperature. Application "PuTTy" is used for testing purposes in order to monitor and control the EUT which is connected to the laptop outside the chamber via USB cable. The EUT is set continuously transmitting or receive.

Note: X-axis

Ext Attn: 0 dB

Measurement Data: Reading listed by order taken. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	2405.420M	68.7	+27.9	+1.2	+2.7		+0.0	100.5	125.2 Low Channel	-24.7	Horiz
2	2405.420M	65.7	+27.9	+1.2	+2.7		+0.0	97.5	125.2 Low Channel	-27.7	Vert
3	2439.424M	65.0	+27.9	+1.2	+2.7		+0.0	96.8	125.2 Middle Channel	-28.4	Vert
4	2439.424M	69.8	+27.9	+1.2	+2.7		+0.0	101.6	125.2 Middle Channel	-23.6	Horiz
5	2479.436M	66.0	+28.0	+1.2	+2.7		+0.0	97.9	125.2 High Channel	-27.3	Horiz
6	2479.436M	64.3	+28.0	+1.2	+2.7		+0.0	96.2	125.2 High Channel	-29.0	Vert

Convert equivalent electric field strength to the resultant power level.

Frequency (MHz)	Measured Power in Watt	Power Limit in Watt	Pass/Fail
2404.420 Low Channel (Horizontal)	3.3661E-03	1.00	Pass
2404.420 Low Channel (Vertical)	1.6870E-03	1.00	Pass
2439.424 Middle Channel (Horizontal)	4.3363E-03	1.00	Pass
2439. 424 Middle Channel (Vertical)	1.4359E-03	1.00	Pass
2479.436 High Channel (Horizontal)	1.8498E-03	1.00	Pass
2479. 436 High Channel (Vertical)	1.2506E-03	1.00	Pass

A formula converts Radiated Method to Conducted Method.

dBm (conducted power) = dBuV/m +20*LOG D -104.77 – Gain (dBi).

Test Location: CKC Laboratories, Inc. • 1120 Fulton Pl. • Fremont, CA 94539 • 510-249-1170

Customer: **Enlighted, Inc.**
Specification: **15.247(b) Fundamental**
Work Order #: **96421** Date: 12/11/2014
Test Type: **Radiated Scan** Time: 15:52:41
Equipment: **Plug Load Controller Unit** Sequence#: 6
Manufacturer: Enlighted, Inc. Tested By: Daniel Bertran
Model: PC-01-20
S/N: 01

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02113	Horn Antenna-ANSI C63.5	3115	1/24/2013	1/24/2015
T2	AN03302	Cable	32026-29094K-29094K-72TC	3/24/2014	3/24/2016
T3	ANP01210	Cable	FSJ1P-50A-4A	2/19/2013	2/19/2015
	AN03471	RF Characteristics Analyzer	E4440A	12/19/2013	12/19/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Plug Load Controller Unit*	Enlighted, Inc.	PC-01-20	01

Support Devices:

Function	Manufacturer	Model #	S/N
USB adapter	Generic	Generic	NSN
Laptop Computer	Dell	Latitude ES440	DPN 23HXX A01
AC/DC adapter	Dell	LA65NS2-01	PA-1650-0202
Resistor Network	Vishay Dale	RH250	none

Test Conditions / Notes:

Fundamental of the EUT
Test Method: ANSI C63.4 (2003)

Temperature: 21.5°C
Humidity: 55%
Atmospheric Pressure: 100kPa

Firmware Used: Version 2.6.2
Application: PuTTy
High Clock: 16MHz

Transmitting operating frequency= 2.4GHz Band
RF Output= 0dBm
Gain of the antenna= 0dBi
Number of Channel=16

The EUT is a ceiling-mounted Transmitter/Receiver which is part of the Enlighted Lighting System. The EUT is a Plug Load Controller Unit. The EUT is powered with 120VAC. The EUT acts as sensors for occupancy, ambient light, and temperature. Application "PuTTy" is used for testing purposes in order to monitor and control the EUT which is connected to the laptop outside the chamber via USB cable. The EUT is set continuously transmitting or receive.

Note: Y-axis

Ext Attn: 0 dB

Measurement Data: Reading listed by order taken. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	2405.420M	66.2	+27.9	+1.2	+2.7		+0.0	98.0	125.2 Low Channel	-27.2	Horiz
2	2439.424M	64.4	+27.9	+1.2	+2.7		+0.0	96.2	125.2 Middle Channel	-29.0	Horiz
3	2439.424M	69.6	+27.9	+1.2	+2.7		+0.0	101.4	125.2 Middle Channel	-23.8	Vert
4	2405.420M	64.9	+27.9	+1.2	+2.7		+0.0	96.7	125.2 Low Channel	-28.5	Vert
5	2479.436M	65.0	+28.0	+1.2	+2.7		+0.0	96.9	125.2 High Channel	-28.3	Vert
6	2479.436M	66.1	+28.0	+1.2	+2.7		+0.0	98.0	125.2 High Channel	-27.2	Horiz

Convert equivalent electric field strength to the resultant power level.

Frequency (MHz)	Measured Power in Watt	Power Limit in Watt	Pass/Fail
2404.420 Low Channel (Horizontal)	1.8929E-03	1.00	Pass
2404.420 Low Channel (Vertical)	1.4032E-03	1.00	Pass
2439.424 Middle Channel (Horizontal)	1.2506E-03	1.00	Pass
2439. 424 Middle Channel (Vertical)	4.1412E-03	1.00	Pass
2479.436 High Channel (Horizontal)	1.8929E-03	1.00	Pass
2479. 436 High Channel (Vertical)	1.4693E-03	1.00	Pass

A formula converts Radiated Method to Conducted Method.

dBm (conducted power) = dBuV/m +20*LOG D -104.77 – Gain (dBi).

Test Location: CKC Laboratories, Inc. • 1120 Fulton Pl. • Fremont, CA 94539 • 510-249-1170

Customer: **Enlighted, Inc.**
Specification: **15.247(b) Fundamental**
Work Order #: **96421** Date: 12/11/2014
Test Type: **Radiated Scan** Time: 16:14:10
Equipment: **Plug Load Controller Unit** Sequence#: 7
Manufacturer: Enlighted, Inc. Tested By: Daniel Bertran
Model: PC-01-20
S/N: 01

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02113	Horn Antenna-ANSI C63.5	3115	1/24/2013	1/24/2015
T2	AN03302	Cable	32026-29094K-29094K-72TC	3/24/2014	3/24/2016
T3	ANP01210	Cable	FSJ1P-50A-4A	2/19/2013	2/19/2015
	AN03471	RF Characteristics Analyzer	E4440A	12/19/2013	12/19/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Plug Load Controller Unit*	Enlighted, Inc.	PC-01-20	01

Support Devices:

Function	Manufacturer	Model #	S/N
USB adapter	Generic	Generic	NSN
Laptop Computer	Dell	Latitude ES440	DPN 23HXX A01
AC/DC adapter	Dell	LA65NS2-01	PA-1650-0202
Resistor Network	Vishay Dale	RH250	none

Test Conditions / Notes:

Fundamental of the EUT
Test Method: ANSI C63.4 (2003)

Temperature: 21.5°C
Humidity: 55%
Atmospheric Pressure: 100kPa

Firmware Used: Version 2.6.2
Application: PuTTy
High Clock: 16MHz
Transmitting operating frequency= 2.4GHz Band
RF Output= 0dBm
Gain of the antenna= 0dBi
Number of Channel=16

The EUT is a ceiling-mounted Transmitter/Receiver which is part of the Enlighted Lighting System. The EUT is a Plug Load Controller Unit. The EUT is powered with 120VAC. The EUT acts as sensors for occupancy, ambient light, and temperature. Application "PuTTy" is used for testing purposes in order to monitor and control the EUT which is connected to the laptop outside the chamber via USB cable. The EUT is set continuously transmitting or receive.
Note: Z-axis

Ext Attn: 0 dB

Measurement Data: Reading listed by order taken. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	2405.420M	70.1	+27.9	+1.2	+2.7		+0.0	101.9	125.2 Low Channel	-23.3	Horiz
2	2405.420M	63.1	+27.9	+1.2	+2.7		+0.0	94.9	125.2 Low Channel	-30.3	Vert
3	2439.424M	64.3	+27.9	+1.2	+2.7		+0.0	96.1	125.2 Middle Channel	-29.1	Vert
4	2439.424M	69.9	+27.9	+1.2	+2.7		+0.0	101.7	125.2 Middle Channel	-23.5	Horiz
5	2479.436M	68.4	+28.0	+1.2	+2.7		+0.0	100.3	125.2 High Channel	-24.9	Horiz
6	2479.436M	64.6	+28.0	+1.2	+2.7		+0.0	96.5	125.2 High Channel	-28.7	Vert

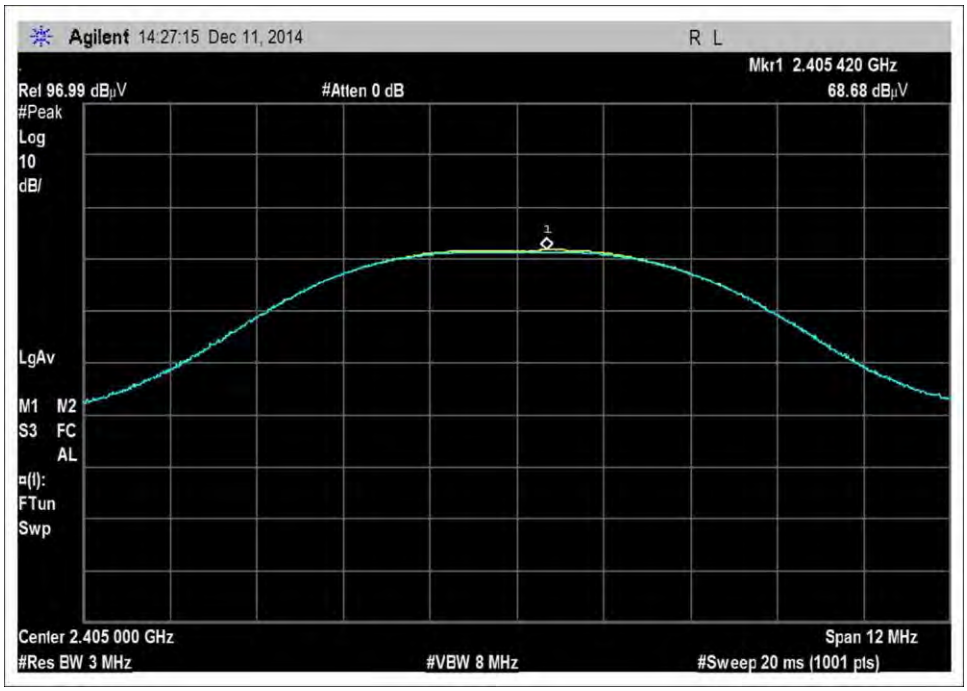
Convert equivalent electric field strength to the resultant power level.

Frequency (MHz)	Measured Power in Watt	Power Limit in Watt	Pass/Fail
2404.420 Low Channel (Horizontal)	4.6464E-03	1.00	Pass
2404.420 Low Channel (Vertical)	9.2709E-04	1.00	Pass
2439.424 Middle Channel (Horizontal)	4.4373E-03	1.00	Pass
2439. 424 Middle Channel (Vertical)	1.2221E-03	1.00	Pass
2479.436 High Channel (Horizontal)	3.2146E-03	1.00	Pass
2479. 436 High Channel (Vertical)	1.3401E-03	1.00	Pass

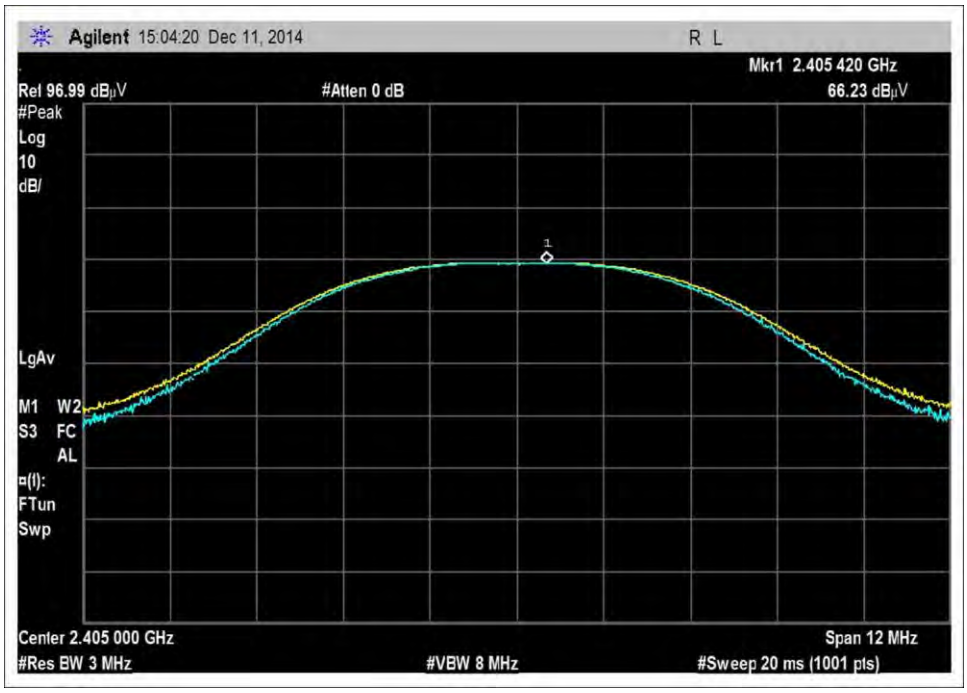
A formula converts Radiated Method to Conducted Method.

dBm (conducted power) = dBuV/m +20*LOG D -104.77 – Gain (dBi).

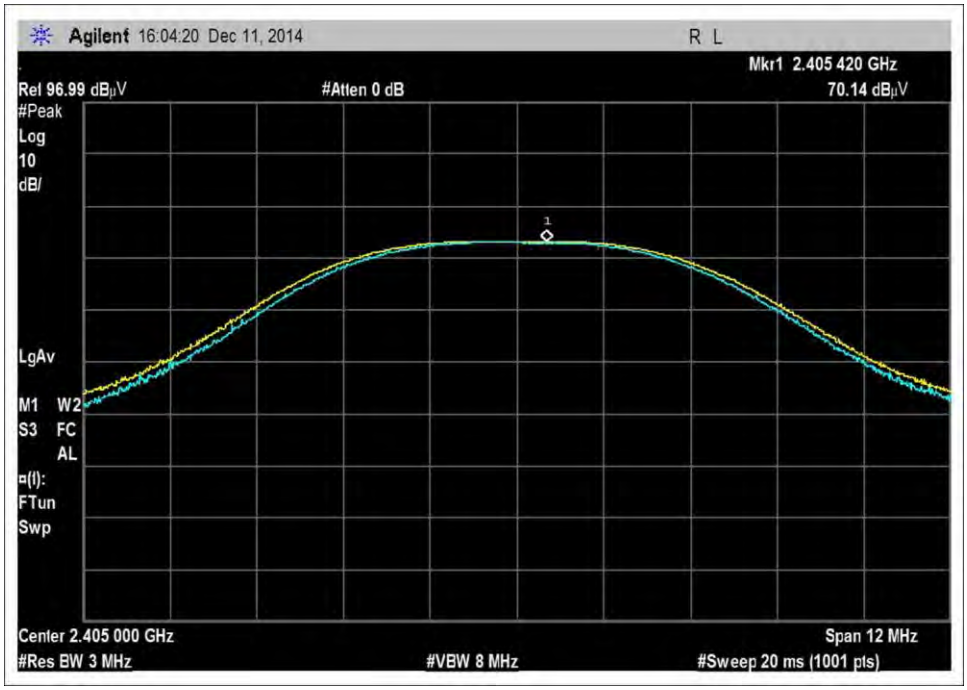
Test Data



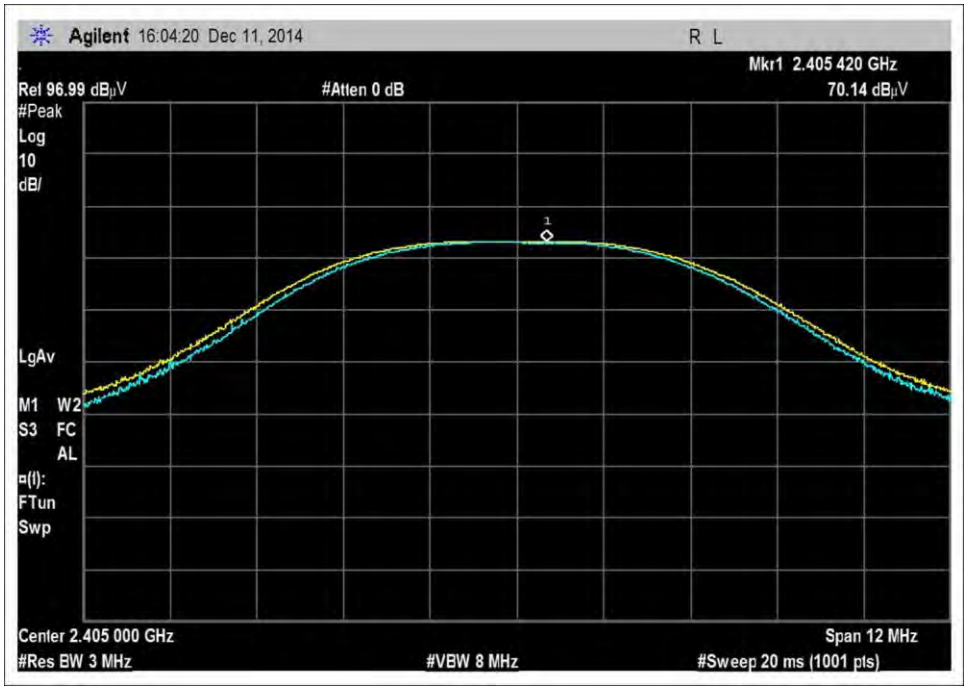
Low Channel, X-Axis - Horizontal



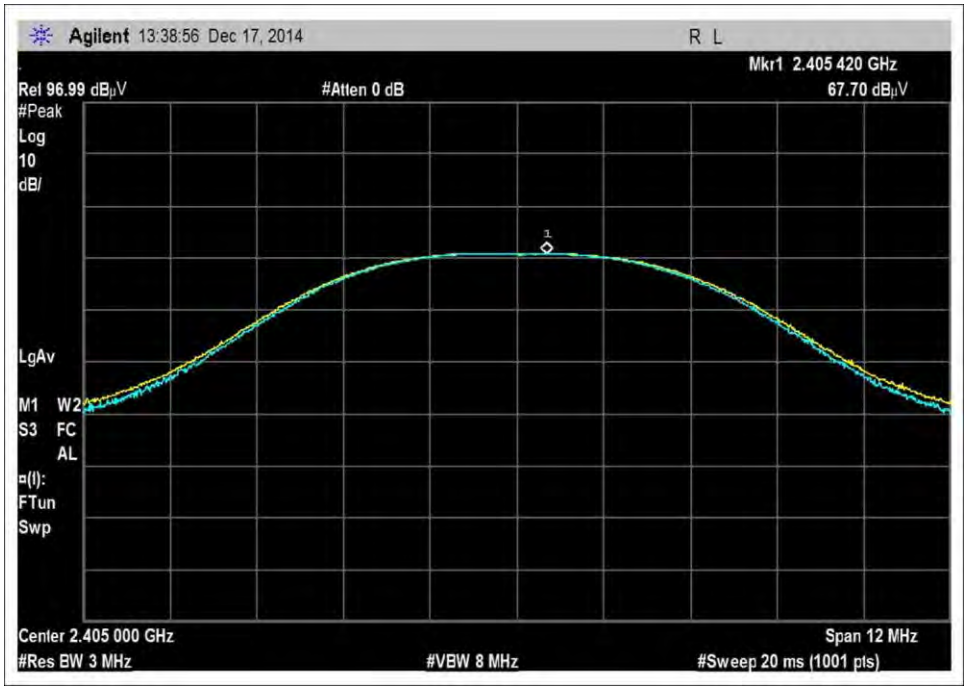
Low Channel, Y-Axis – Horizontal



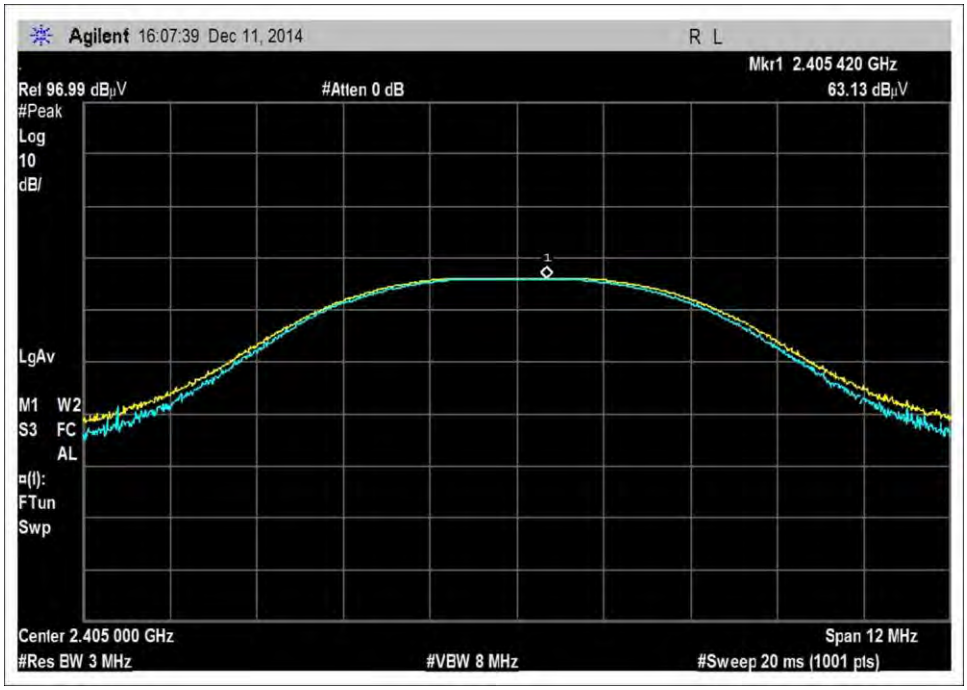
Low Channel, Z-Axis – Horizontal



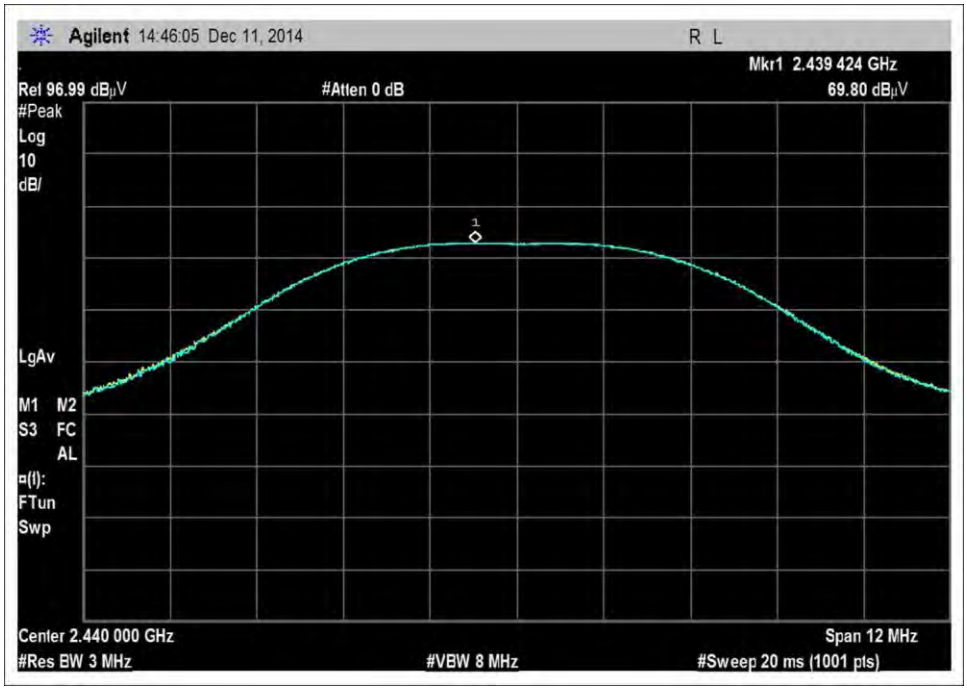
Low Channel, X-Axis - Vertical



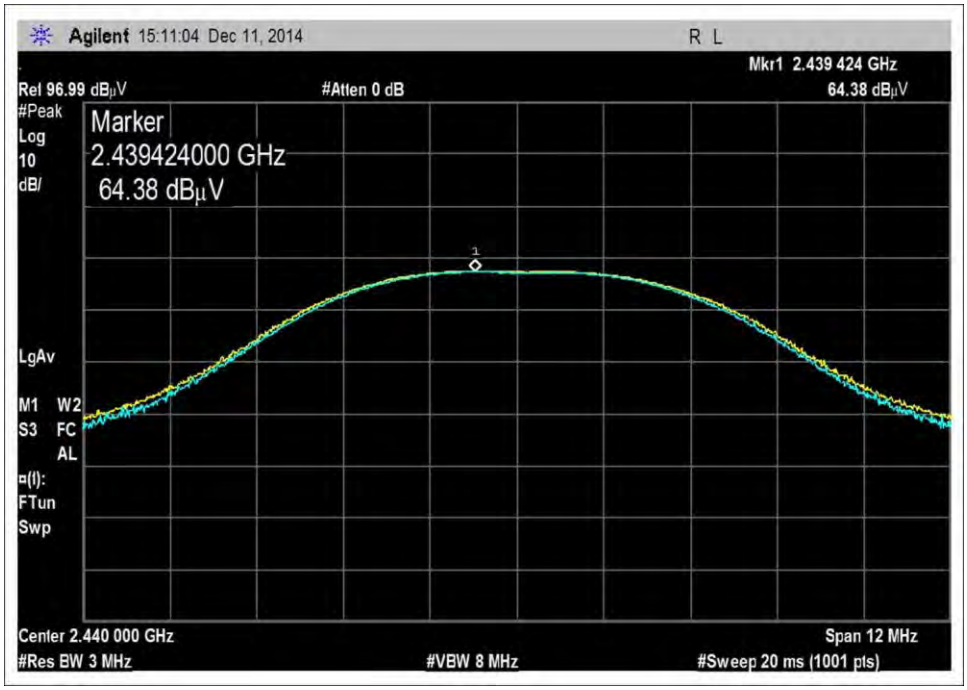
Low Channel, Y-Axis – Vertical



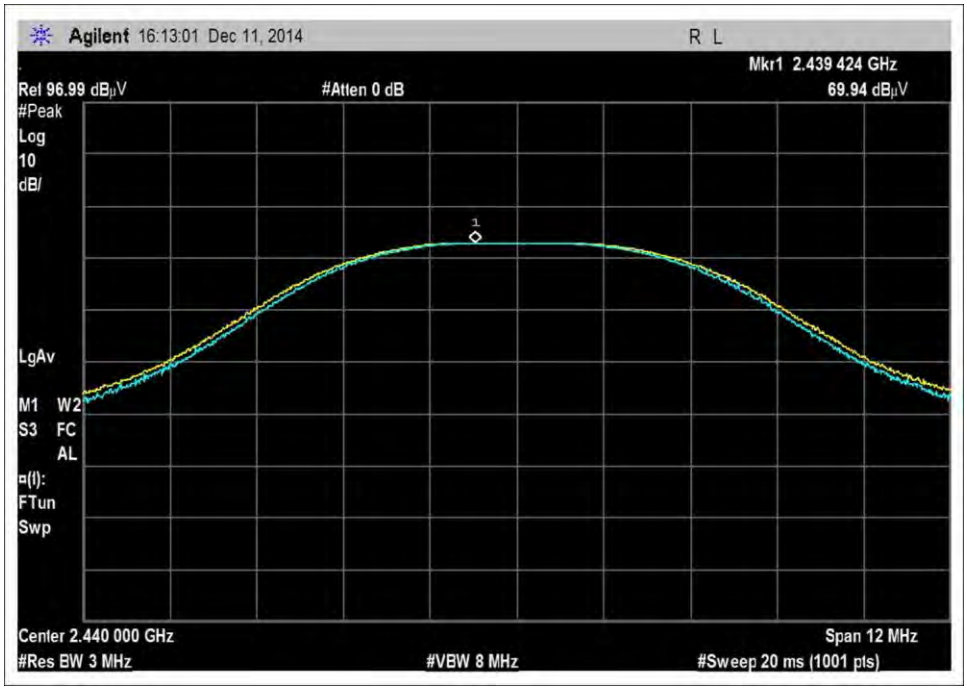
Low Channel, Z-Axis – Vertical



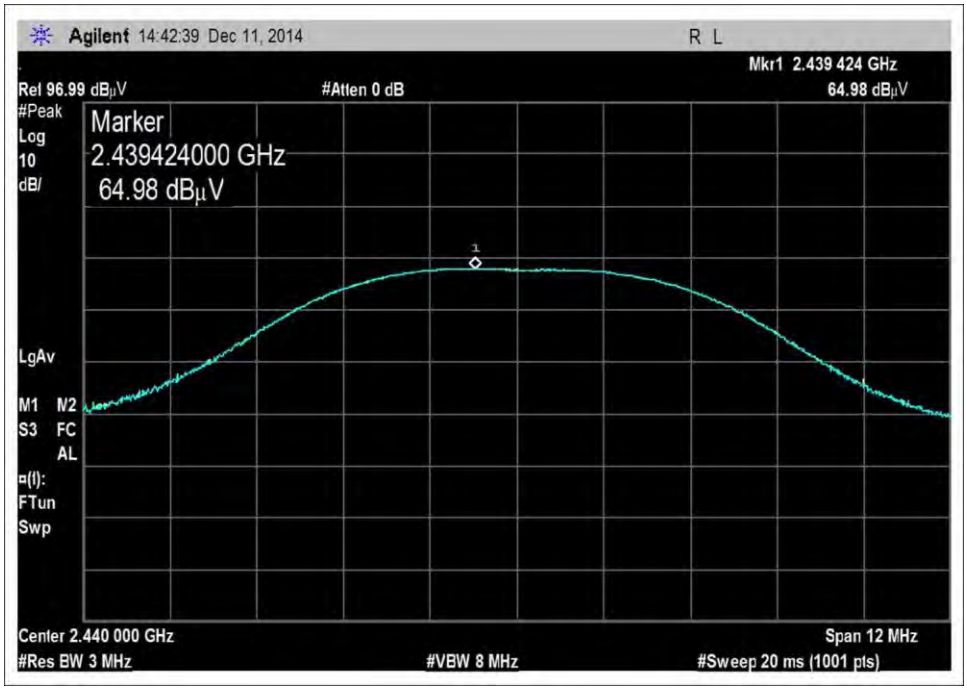
Middle Channel, X-Axis - Horizontal



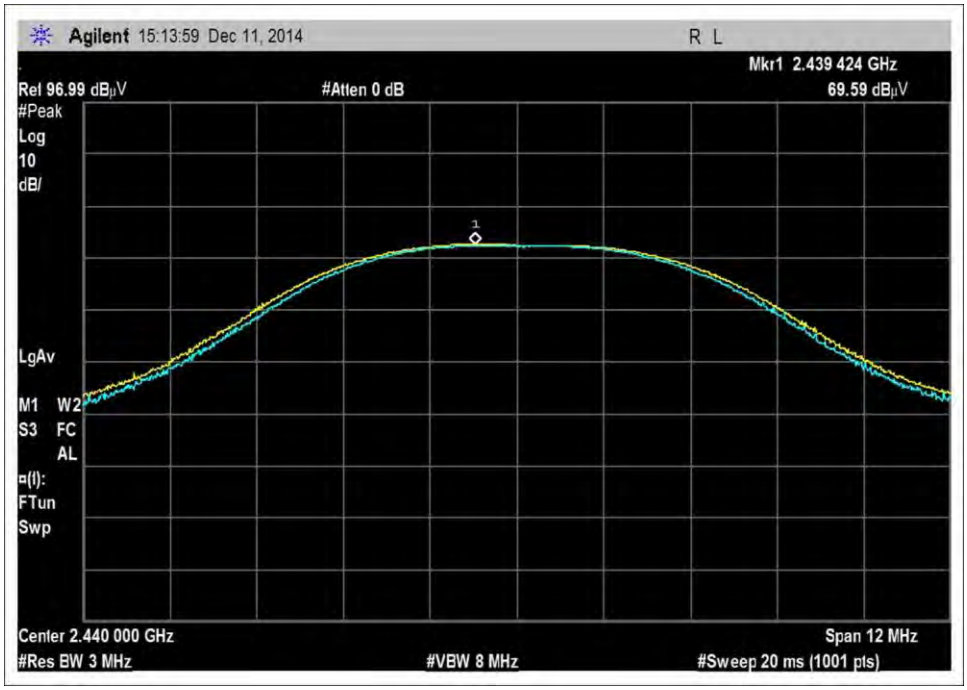
Middle Channel, Y-Axis – Horizontal



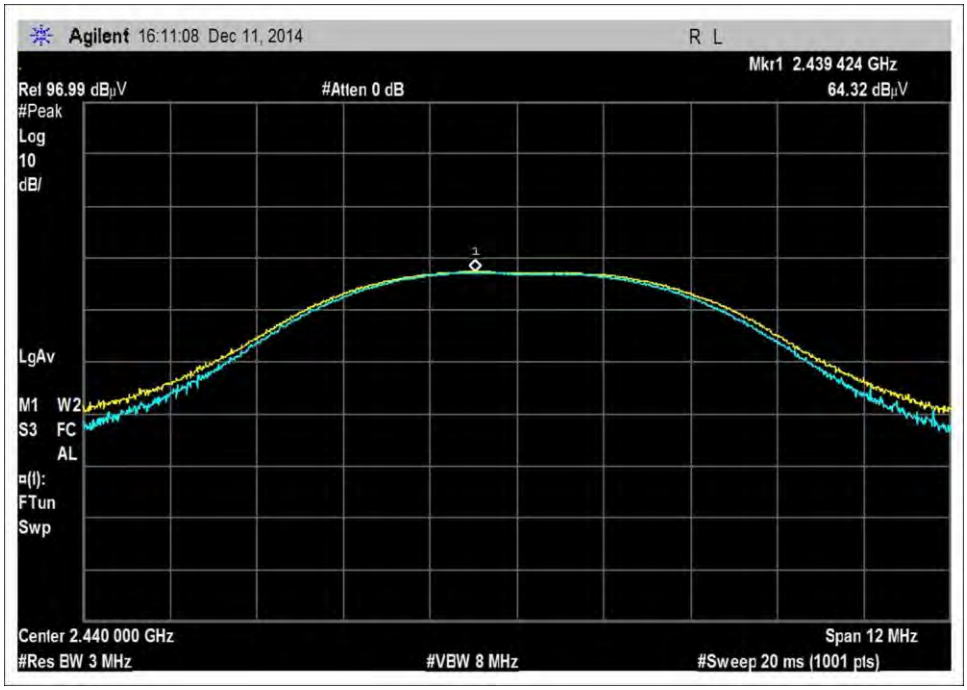
Middle Channel, Z-Axis - Horizontal



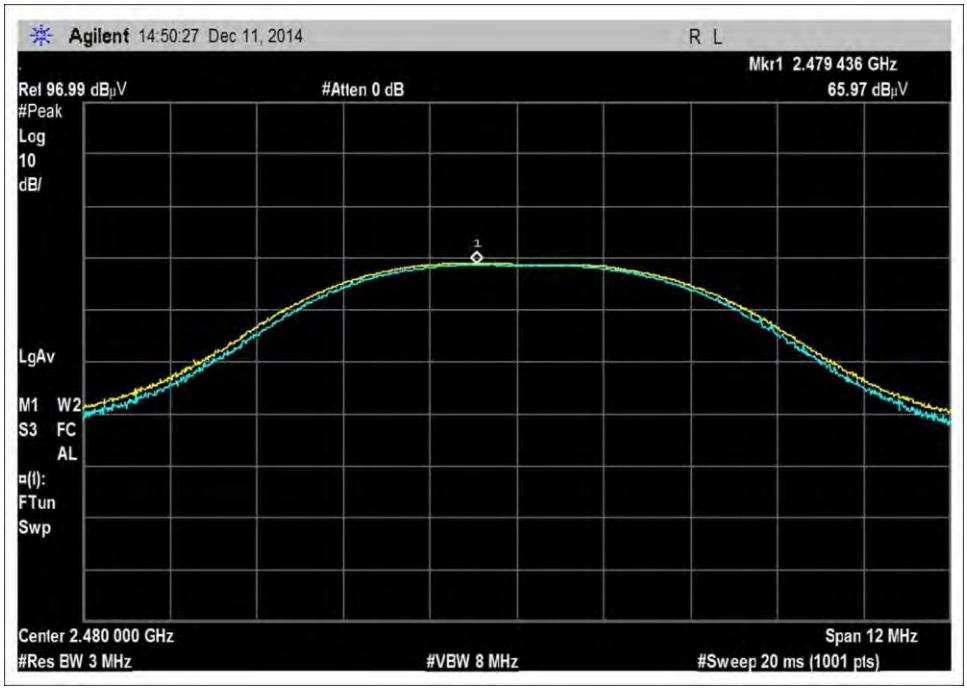
Middle Channel, X-Axis – Vertical



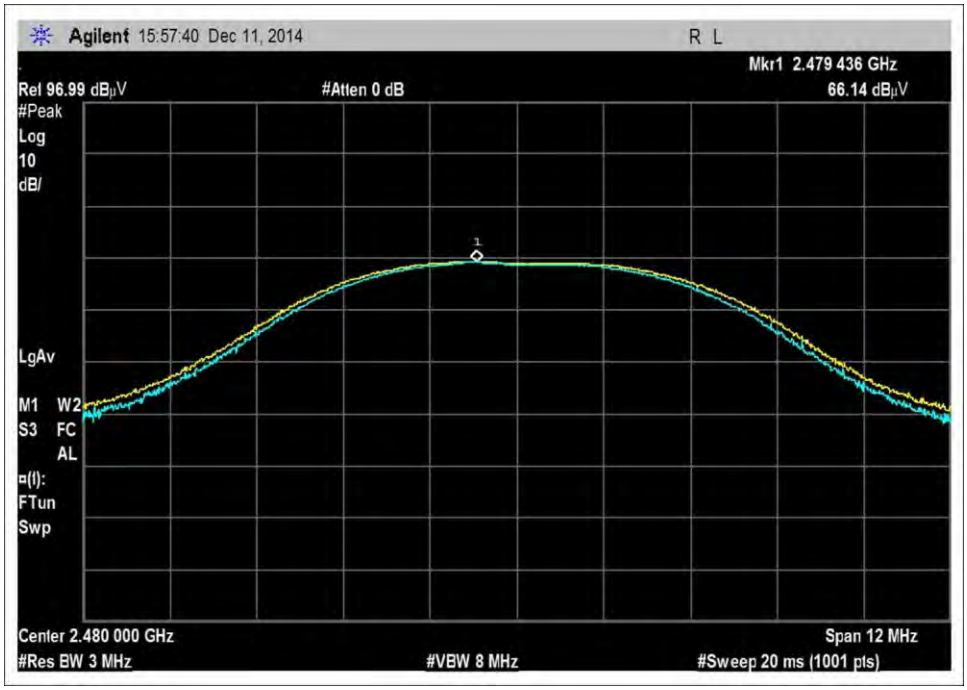
Middle Channel, Y-Axis - Vertical



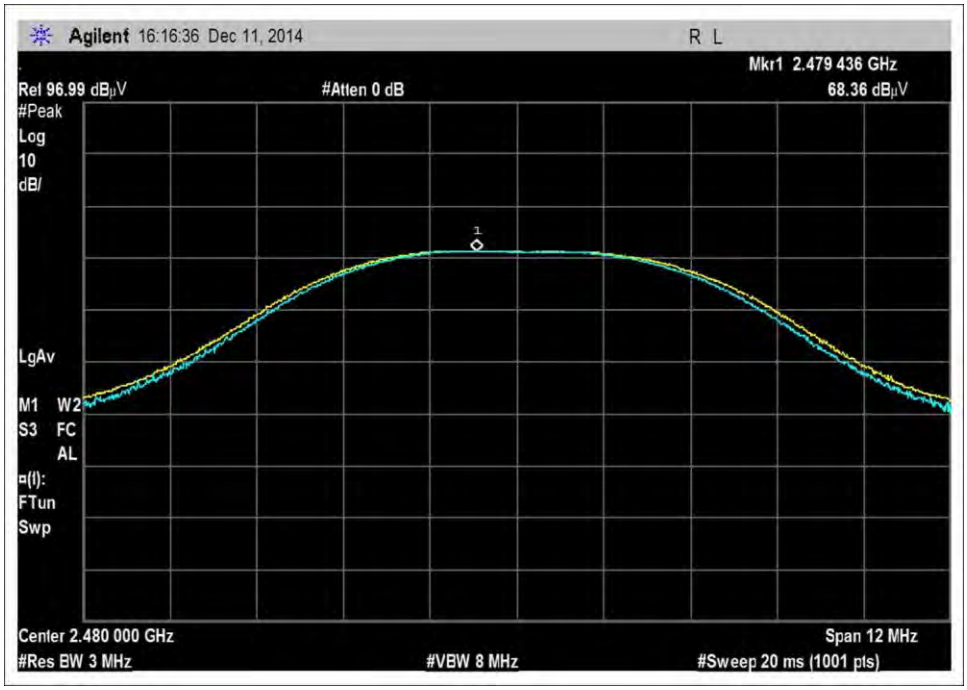
Middle Channel, Z-Axis – Vertical



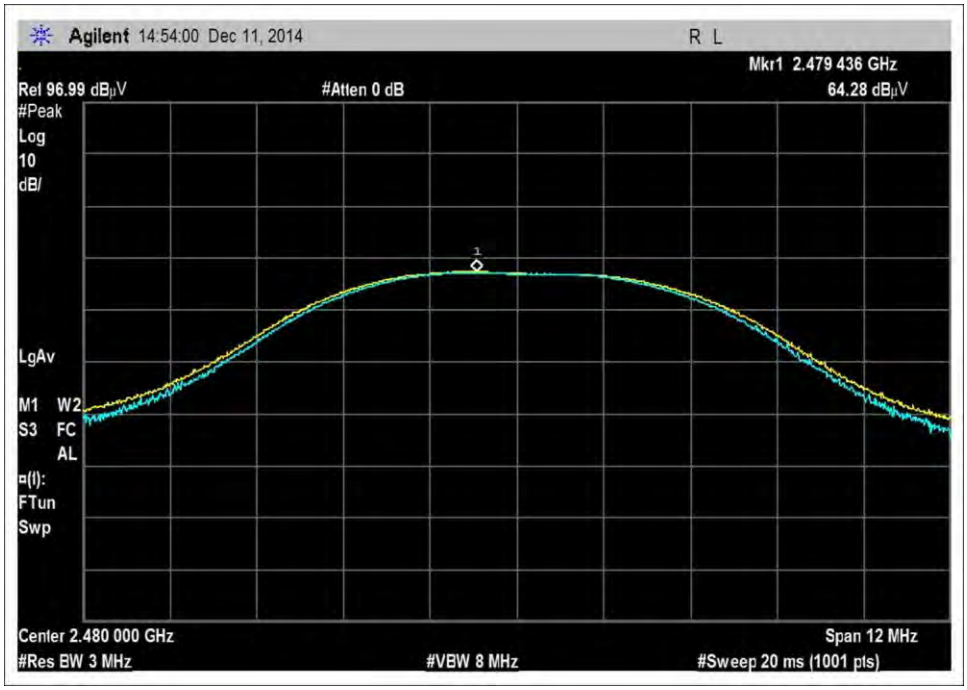
High Channel, X-Axis - Horizontal



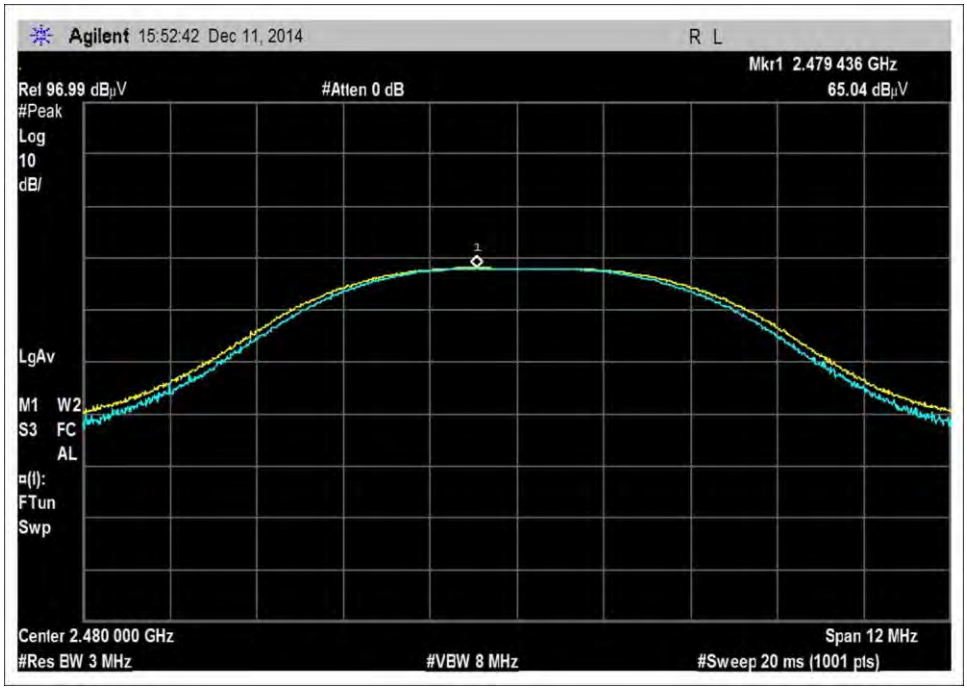
High Channel, Y-Axis – Horizontal



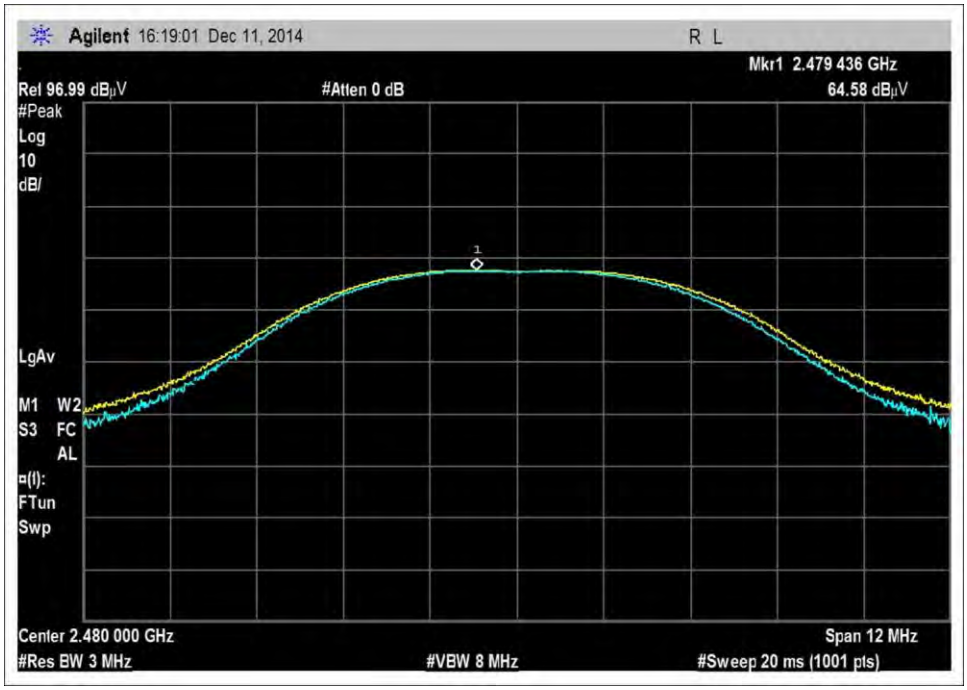
High Channel, Z-Axis – Horizontal



High Channel, X-Axis – Vertical

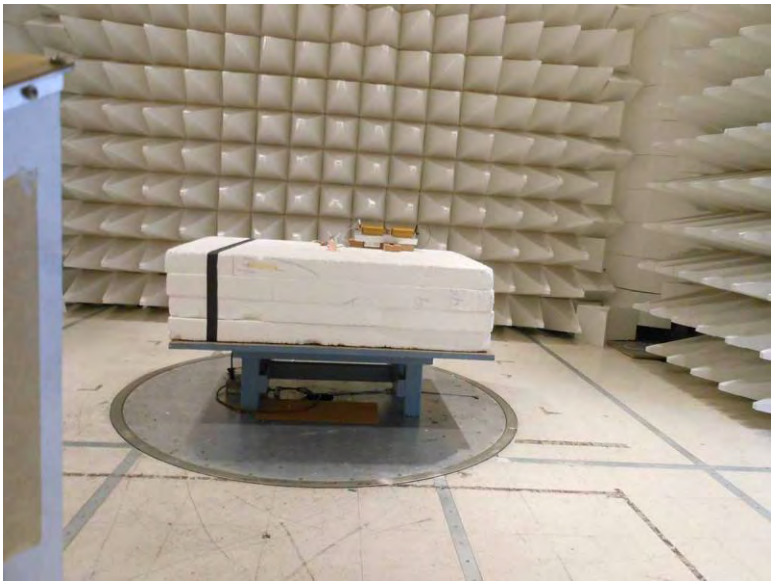


High Channel, Y-Axis - Vertical

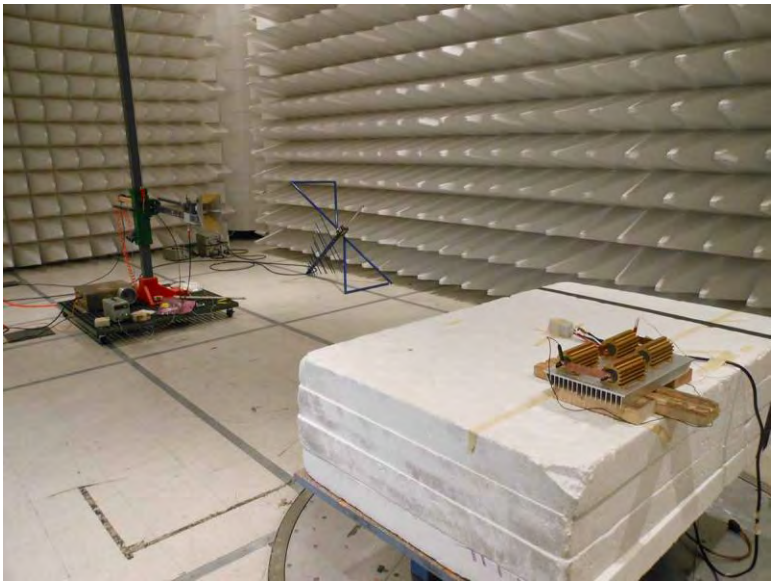


High Channel, Z-Axis – Vertical

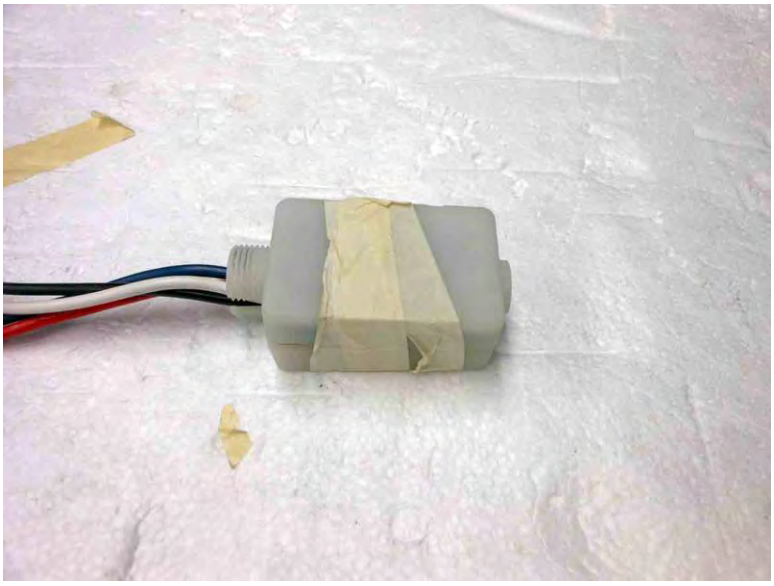
Test Setup Photos



Front View

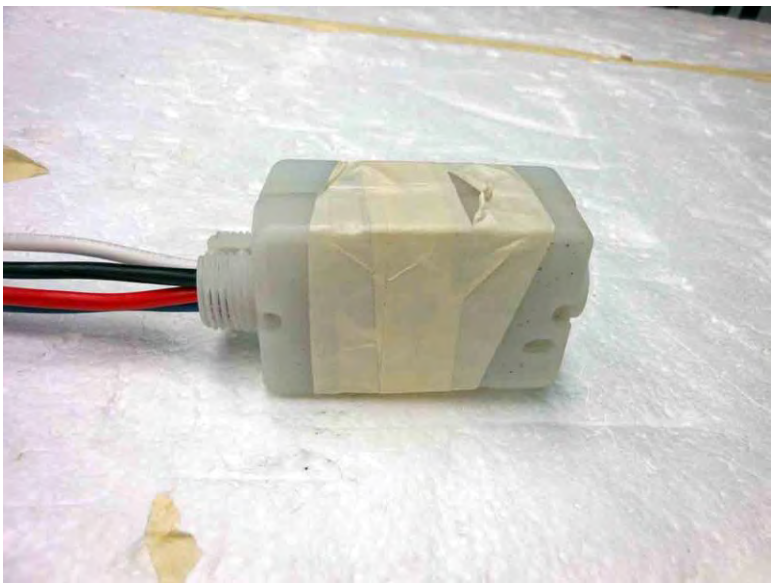


Back View



X-Axis

Y-Axis



Z-Axis

15.31(e) Voltage Variations

Test Data

Test Location: CKC Laboratories, Inc. • 1120 Fulton Pl. • Fremont, CA 94539 • 510-249-1170

Customer: **Enlighted, Inc.**
Specification: **15.31e**
Work Order #: **96421** Date: 12/12/2014
Test Type: **Radiated Scan** Time: 09:37:01
Equipment: **Plug Load Controller Unit** Sequence#: 8
Manufacturer: Enlighted, Inc. Tested By: Daniel Bertran
Model: PC-01-20
S/N: 01

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02113	Horn Antenna-ANSI C63.5	3115	1/24/2013	1/24/2015
T2	AN03302	Cable	32026-29094K-29094K-72TC	3/24/2014	3/24/2016
T3	ANP01210	Cable	FSJ1P-50A-4A	2/19/2013	2/19/2015
	AN03471	RF Characteristics Analyzer	E4440A	12/19/2013	12/19/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Plug Load Controller Unit*	Enlighted, Inc.	PC-01-20	01

Support Devices:

Function	Manufacturer	Model #	S/N
USB adapter	Generic	Generic	NSN
Laptop Computer	Dell	Latitude ES440	DPN 23HXX A01
AC/DC adapter	Dell	LA65NS2-01	PA-1650-0202
Resistor Network	Vishay Dale	RH250	none

Test Conditions / Notes:

15.31e Setup

Temperature: 21.5°C
Humidity: 55%
Atmospheric Pressure: 100kPa

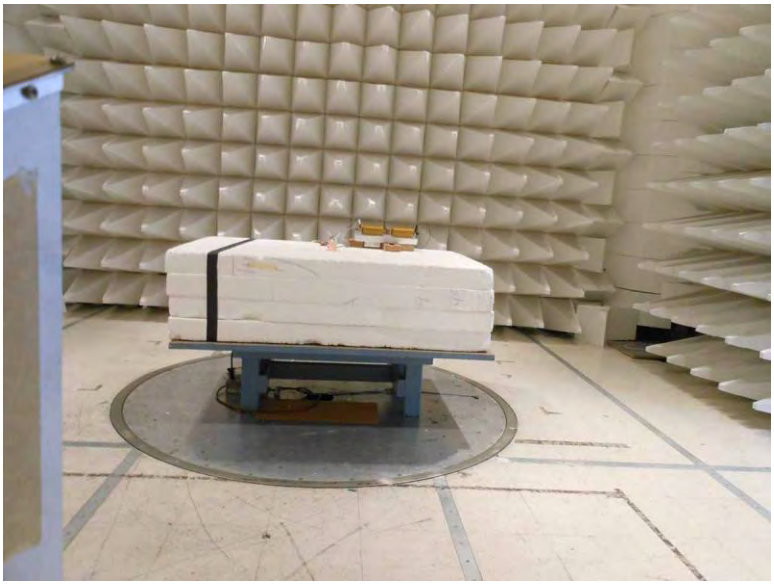
Firmware Used: Version 2.6.2
Application: PuTTy
High Clock: 16MHz

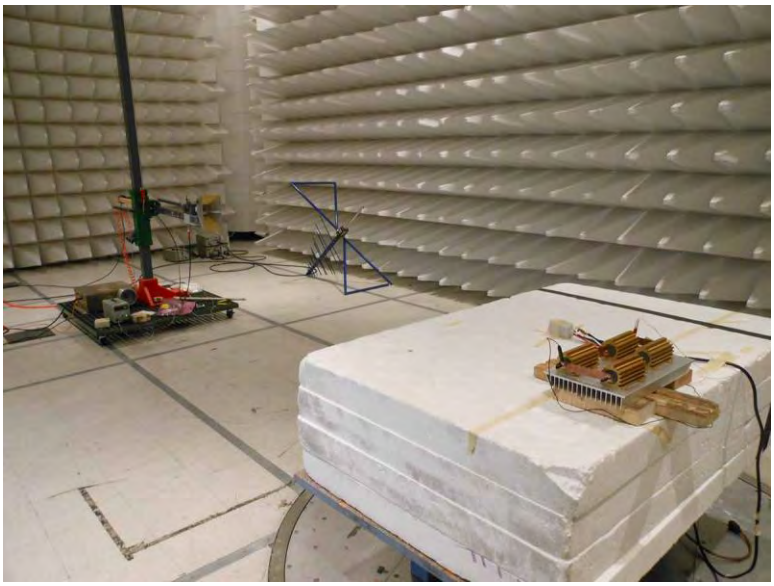
Transmitting operating frequency= 2.4GHz Band
RF Output= 0dBm
Gain of the antenna= 0dBi
Number of Channel=16

The EUT is a ceiling-mounted Transmitter/Receiver which is part of the Enlighted Lighting System. The EUT is a Plug Load Controller Unit. The EUT is powered with 120VAC. The EUT acts as sensors for occupancy, ambient light, and temperature. Application "PuTTy" is used for testing purposes in order to monitor and control the EUT which is connected to the laptop outside the chamber via USB cable. The EUT is set continuously transmitting or receive.

15.31(e). Connect the EUT to AC power supply. Adjust the voltage +/- 15% (102VAC, 138VAC), the Fundamental of the EUT is not changing.

Test Setup Photos





15.247(a)(2) -6dB Bandwidth

Test Conditions / Setup

Test Location: CKC Laboratories, Inc. • 1120 Fulton Pl. • Fremont, CA 94539 • 510-249-1170

Customer: **Enlighted, Inc.**
Specification: **OBW**
Work Order #: **96421** Date: 12/12/2014
Test Type: **Radiated Scan** Time: 09:37:01
Equipment: **Plug Load Controller Unit** Sequence#: 8
Manufacturer: Enlighted, Inc. Tested By: Daniel Bertran
Model: PC-01-20
S/N: 01

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02113	Horn Antenna-ANSI C63.5	3115	1/24/2013	1/24/2015
T2	AN03302	Cable	32026-29094K-29094K-72TC	3/24/2014	3/24/2016
T3	ANP01210	Cable	FSJ1P-50A-4A	2/19/2013	2/19/2015
	AN03471	RF Characteristics Analyzer	E4440A	12/19/2013	12/19/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Plug Load Controller Unit*	Enlighted, Inc.	PC-01-20	01

Support Devices:

Function	Manufacturer	Model #	S/N
USB adapter	Generic	Generic	NSN
Laptop Computer	Dell	Latitude ES440	DPN 23HXX A01
AC/DC adapter	Dell	LA65NS2-01	PA-1650-0202
Resistor Network	Vishay Dale	RH250	none

Test Conditions / Notes:

OBW Setup

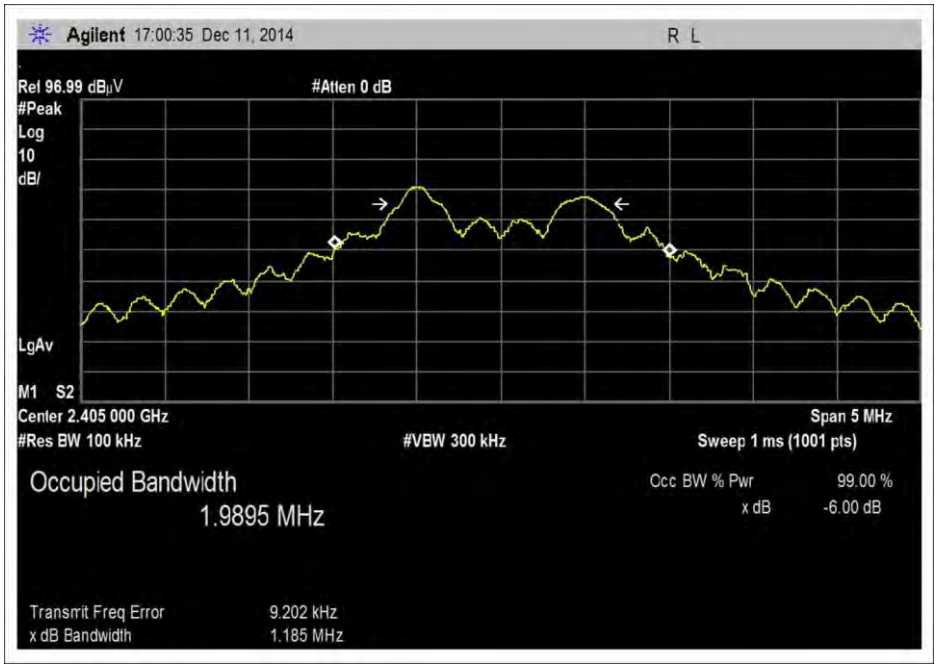
Temperature: 21.5°C
Humidity: 55%
Atmospheric Pressure: 100kPa

Firmware Used: Version 2.6.2
Application: PuTTy
High Clock: 16MHz

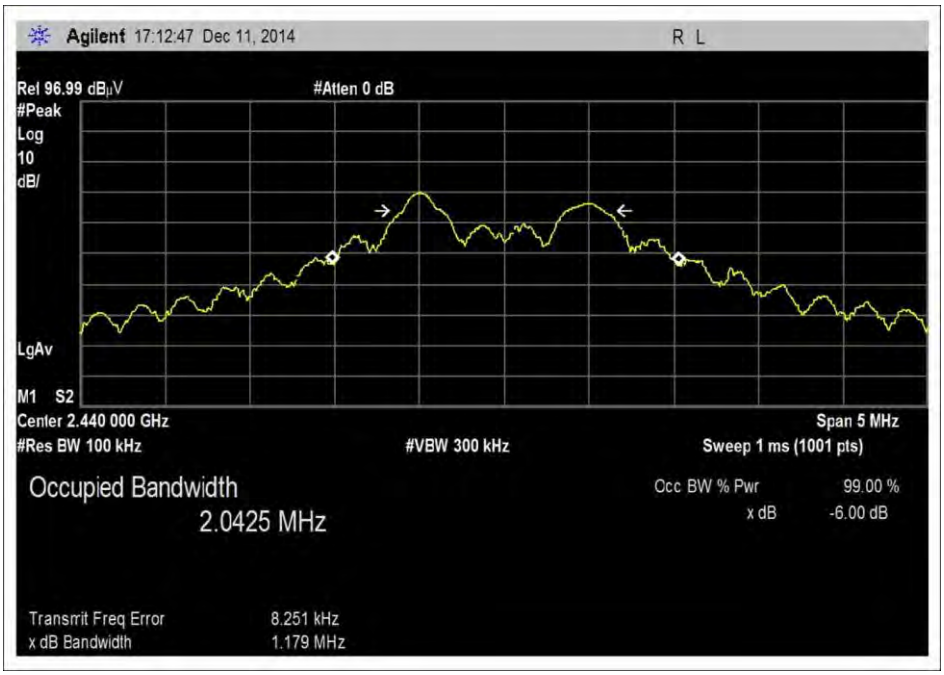
Transmitting operating frequency= 2.4GHz Band
RF Output= 0dBm
Gain of the antenna= 0dBi
Number of Channel=16

The EUT is a ceiling-mounted Transmitter/Receiver which is part of the Enlighted Lighting System. The EUT is a Plug Load Controller Unit. The EUT is powered with 120VAC. The EUT acts as sensors for occupancy, ambient light, and temperature. Application "PuTTy" is used for testing purposes in order to monitor and control the EUT which is connected to the laptop outside the chamber via USB cable. The EUT is set continuously transmitting or receive.

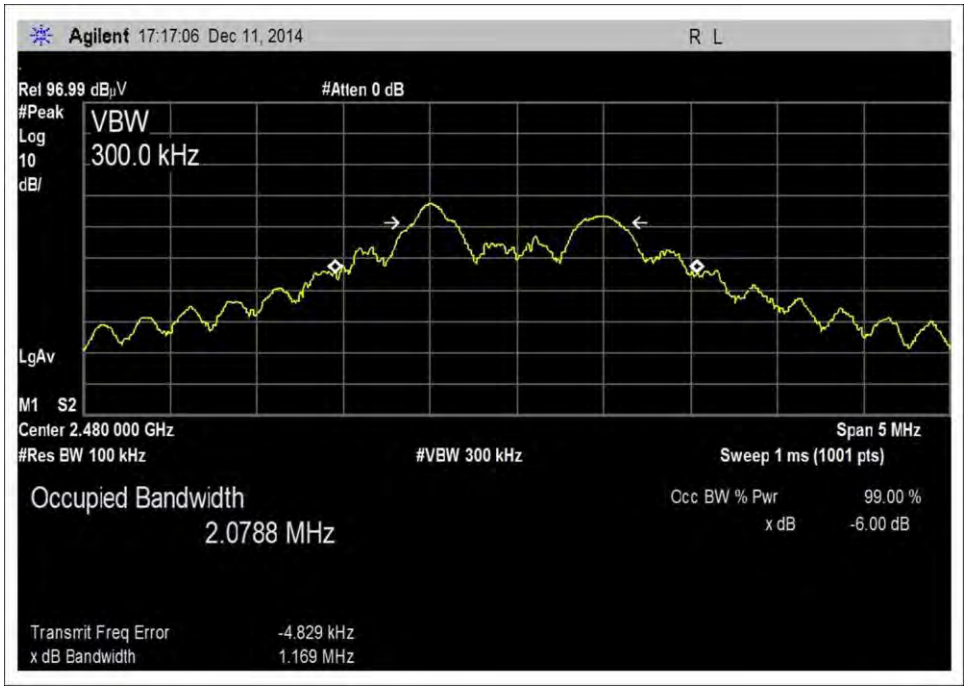
Test Data



Low Channel

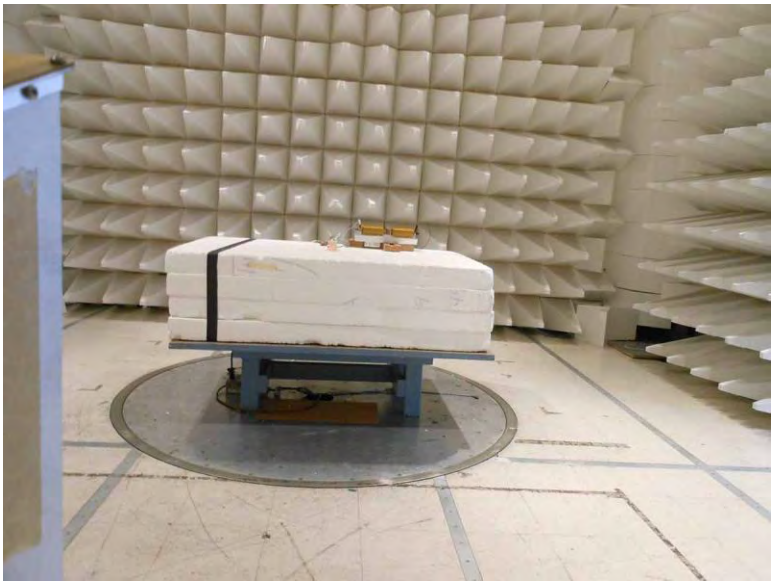


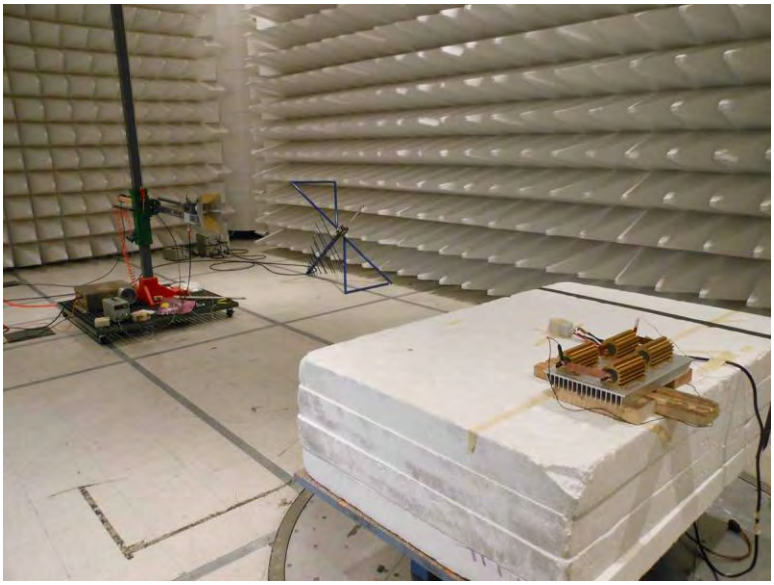
Middle Channel



High Channel

Test Setup Photos





15.247(d) Radiated Spurious Emissions and Band Edge

Test Data

Test Location: CKC Laboratories, Inc. • 1120 Fulton Pl. • Fremont, CA 94539 • 510-249-1170

Customer: **Enlighted, Inc.**
Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
Work Order #: **96421** Date: 12/15/2014
Test Type: **Maximized Emissions** Time: 15:41:24
Equipment: **Plug Load Controller Unit** Sequence#: 53
Manufacturer: Enlighted, Inc. Tested By: Daniel Bertran
Model: PC-01-20
S/N: 01

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN00432	Loop Antenna	6502	4/2/2013	4/2/2015
	ANP00880	Cable	RG214U	6/13/2014	6/13/2016
	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
	AN03471	RF Characteristics Analyzer	E4440A	12/19/2013	12/19/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Plug Load Controller Unit*	Enlighted, Inc.	PC-01-20	01

Support Devices:

Function	Manufacturer	Model #	S/N
USB adapter	Generic	Generic	NSN
Laptop Computer	Dell	Latitude ES440	DPN 23HXX A01
AC/DC adapter	Dell	LA65NS2-01	PA-1650-0202
Resistor Network	Vishay Dale	RH250	none

Test Conditions / Notes:

Radiated Spurious Emissions
Frequency Range: 9kHz to 30MHz
Test Method: ANSI C63.4 (2003)

Temperature: 21.5°C
Humidity: 55%
Atmospheric Pressure: 100kPa

Firmware Used: Version 2.6.2
Application: PuTTy
High Clock: 16MHz
Test Method: KDB 558074 D01 DTS Meas Guidance v03r02

Transmitting operating frequency= 2.4GHz Band
RF Output= 0dBm
Gain of the antenna= 0dBi
Number of Channel=16

The EUT is a ceiling-mounted Transmitter/Receiver which is part of the Enlighted Lighting System. The EUT is a Plug Load Controller Unit. The EUT is powered with 120VAC. The EUT acts as sensors for occupancy, ambient light, and temperature. Application "PuTTy" is used for testing purposes in order to monitor and control the EUT which is connected to the laptop outside the chamber via USB cable. The EUT is set continuously transmitting or receive.

Note:
Z-axis (Worst Case)
TX Mode
Low Channel
NO EUT EMISSION DETECTED WITHIN 20dB of THE LIMIT.

Test Location: CKC Laboratories, Inc. • 1120 Fulton Pl. • Fremont, CA 94539 • 510-249-1170

Customer: **Enlighted, Inc.**
Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
Work Order #: **96421** Date: 12/15/2014
Test Type: **Maximized Emissions** Time: 13:28:51
Equipment: **Plug Load Controller Unit** Sequence#: 41
Manufacturer: Enlighted, Inc. Tested By: Daniel Bertran
Model: PC-01-20
S/N: 01

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00852	Biconilog Antenna	CBL 6111C	11/24/2014	11/24/2016
T2	ANP00880	Cable	RG214U	6/13/2014	6/13/2016
T3	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
T4	AN00686	Preamp	8447D Opt 010	5/27/2014	5/27/2016
T5	ANP01183	Cable	CNT-195	9/3/2013	9/3/2015
	AN03471	RF Characteristics Analyzer	E4440A	12/19/2013	12/19/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Plug Load Controller Unit*	Enlighted, Inc.	PC-01-20	01

Support Devices:

Function	Manufacturer	Model #	S/N
USB adapter	Generic	Generic	NSN
Laptop Computer	Dell	Latitude ES440	DPN 23HXX A01
AC/DC adapter	Dell	LA65NS2-01	PA-1650-0202
Resistor Network	Vishay Dale	RH250	none

Test Conditions / Notes:

Radiated Spurious Emissions
Frequency Range: 30MHz to 1000MHz
Test Method: ANSI C63.4 (2003)
Test Method: KDB 558074 D01 DTS Meas Guidance v03r02

Temperature: 21.5°C
Humidity: 55%
Atmospheric Pressure: 100kPa

Firmware Used: Version 2.6.2
Application: PuTTy
High Clock: 16MHz

Transmitting operating frequency= 2.4GHz Band
RF Output= 0dBm
Gain of the antenna= 0dBi
Number of Channel=16

The EUT is a ceiling-mounted Transmitter/Receiver which is part of the Enlighted Lighting System. The EUT is a Plug Load Controller Unit. The EUT is powered with 120VAC. The EUT acts as sensors for occupancy, ambient light, and temperature. Application "PuTTy" is used for testing purposes in order to monitor and control the EUT which is connected to the laptop outside the chamber via USB cable. The EUT is set continuously transmitting or receive.

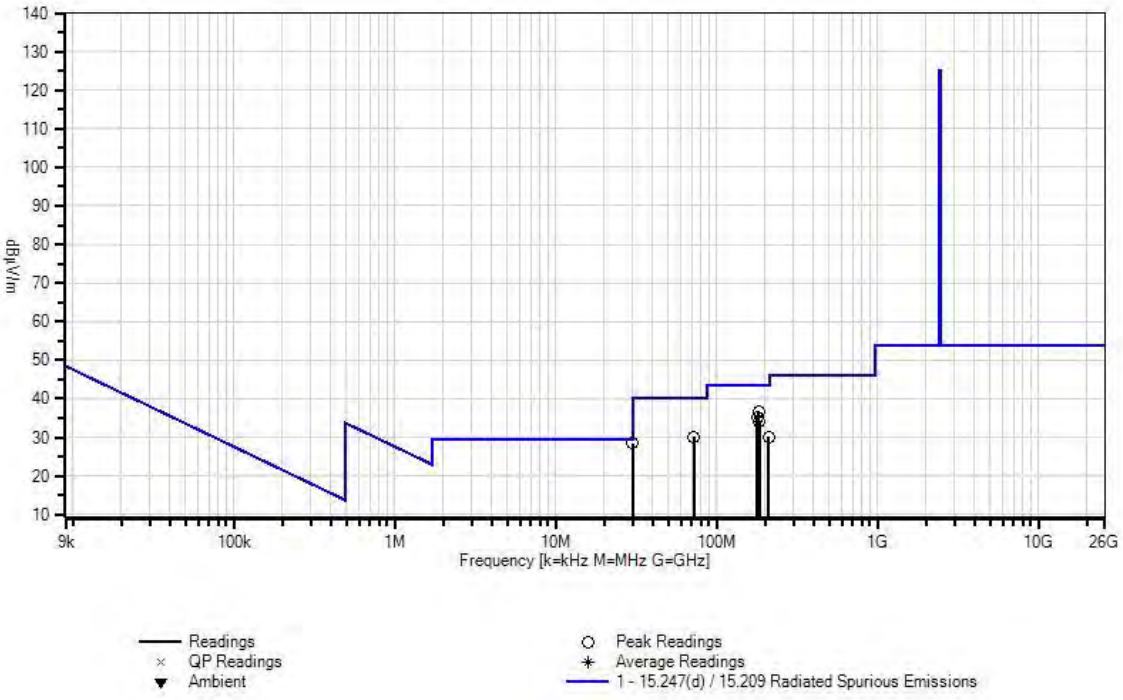
Note:
Z-axis (Worst Case)
TX Mode
Low Channel

Ext Attn: 0 dB

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

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	182.675M	54.3	+9.0 +0.4	+1.2	+0.4	-28.8	+0.0	36.5	43.5	-7.0	Horiz
2	178.351M	52.9	+9.1 +0.4	+1.2	+0.4	-28.8	+0.0	35.2	43.5	-8.3	Horiz
3	184.597M	51.8	+9.0 +0.5	+1.1	+0.4	-28.8	+0.0	34.0	43.5	-9.5	Horiz
4	72.658M	51.6	+6.6 +0.3	+0.7	+0.2	-29.3	+0.0	30.1	40.0	-9.9	Vert
5	30.067M	38.2	+18.9 +0.3	+0.4	+0.1	-29.4	+0.0	28.5	40.0	-11.5	Vert
6	211.143M	46.6	+10.0 +0.5	+1.3	+0.4	-28.7	+0.0	30.1	43.5	-13.4	Vert

CKC Laboratories, Inc. Date: 12/15/2014 Time: 13:28:51 Enlighted, Inc. WO#: 96421
Test Distance: 3 Meters Sequence#: 41
Vert



Test Location: CKC Laboratories, Inc. • 1120 Fulton Pl. • Fremont, CA 94539 • 510-249-1170

Customer: **Enlighted, Inc.**
Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
Work Order #: **96421** Date: 12/12/2014
Test Type: **Maximized Emissions** Time: 14:42:55
Equipment: **Plug Load Controller Unit** Sequence#: 11
Manufacturer: Enlighted, Inc. Tested By: Daniel Bertran
Model: PC-01-20
S/N: 01

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02113	Horn Antenna-ANSI C63.5	3115	1/24/2013	1/24/2015
T2	AN03309	High Pass Filter	11SH10-3000/T10000-O/O	4/2/2014	4/2/2016
T3	AN03114	Preamp	AMF-7D-00101800-30-10P	4/11/2013	4/11/2015
T4	ANP06712	Cable	32022-29094K-29094K-48TC	9/18/2014	9/18/2016
T5	AN03302	Cable	32026-29094K-29094K-72TC	3/24/2014	3/24/2016
T6	ANP01210	Cable	FSJ1P-50A-4A	2/19/2013	2/19/2015
	AN03471	RF Characteristics Analyzer	E4440A	12/19/2013	12/19/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Plug Load Controller Unit*	Enlighted, Inc.	PC-01-20	01

Support Devices:

Function	Manufacturer	Model #	S/N
USB adapter	Generic	Generic	NSN
Laptop Computer	Dell	Latitude ES440	DPN 23HXX A01
AC/DC adapter	Dell	LA65NS2-01	PA-1650-0202
Resistor Network	Vishay Dale	RH250	none

Test Conditions / Notes:

Radiated Spurious Emissions
Frequency Range: 1000MHz to 12000MHz
Test Method: ANSI C63.4 (2003)
Test Method: KDB 558074 D01 DTS Meas Guidance v03r02

Temperature: 21.5°C
Humidity: 55%
Atmospheric Pressure: 100kPa

Firmware Used: Version 2.6.2
Application: PuTTy
High Clock: 16MHz

Transmitting operating frequency= 2.4GHz Band
RF Output= 0dBm
Gain of the antenna= 0dBi
Number of Channel=16

The EUT is a ceiling-mounted Transmitter/Receiver which is part of the Enlighted Lighting System. The EUT is a Plug Load Controller Unit. The EUT is powered with 120VAC. The EUT acts as sensors for occupancy, ambient light, and temperature. Application "PuTTy" is used for testing purposes in order to monitor and control the EUT which is connected to the laptop outside the chamber via USB cable. The EUT is set continuously transmitting or receive.

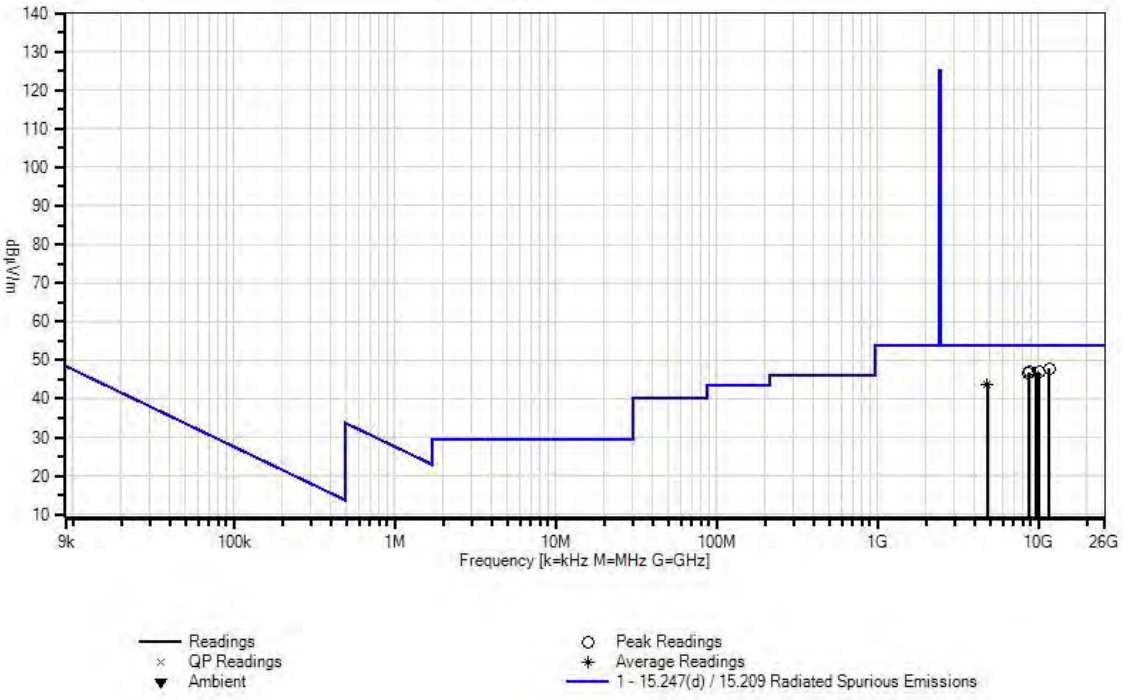
Note:
Z-axis (Worst Case)
Low Channel

Ext Attn: 0 dB

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

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	11676.608 M	54.0	+39.0 +2.6	+0.3 +6.3	-56.3	+1.9	+0.0	47.8	54.0	-6.2	Horiz
2	8825.820M	55.5	+37.7 +2.3	+0.3 +5.9	-56.3	+1.6	+0.0	47.0	54.0	-7.0	Vert
3	10172.165 M	56.4	+38.1 +2.5	+0.2 +6.3	-58.2	+1.7	+0.0	47.0	54.0	-7.0	Vert
4	8675.670M	55.6	+37.6 +2.3	+0.3 +5.7	-56.4	+1.5	+0.0	46.6	54.0	-7.4	Horiz
5	9621.934M Ave	55.3	+37.9 +2.4	+0.2 +6.2	-57.4	+1.6	+0.0	46.2	54.0	-7.8	Vert
^	9621.934M	63.8	+37.9 +2.4	+0.2 +6.2	-57.4	+1.6	+0.0	54.7	54.0	+0.7	Vert
7	4810.981M Ave	62.3	+32.9 +1.7	+0.2 +3.8	-58.3	+1.1	+0.0	43.7	54.0	-10.3	Horiz
^	4810.981M	70.1	+32.9 +1.7	+0.2 +3.8	-58.3	+1.1	+0.0	51.5	54.0	-2.5	Horiz

CKC Laboratories, Inc. Date: 12/12/2014 Time: 14:42:55 Enlighted, Inc. WO#: 96421
Test Distance: 3 Meters Sequence#: 11
Horiz



Test Location: CKC Laboratories, Inc. • 1120 Fulton Pl. • Fremont, CA 94539 • 510-249-1170

Customer: **Enlighted, Inc.**
Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
Work Order #: **96421** Date: 12/15/2014
Test Type: **Maximized Emissions** Time: 09:26:55
Equipment: **Plug Load Controller Unit** Sequence#: 23
Manufacturer: Enlighted, Inc. Tested By: Daniel Bertran
Model: PC-01-20
S/N: 01

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06712	Cable	32022-29094K-29094K-48TC	9/18/2014	9/18/2016
	AN03471	RF Characteristics Analyzer	E4440A	12/19/2013	12/19/2015
T2	AN2693	Active Horn Antenna	AMFW-5F-18002650-20-10P	2/21/2013	2/21/2015
T3	ANP00928	Cable	various	1/23/2014	1/23/2016
T4	ANP06709	Cable	32026-29094K-29094K-72TC	9/18/2014	9/18/2016
T5	ANP06710	Cable	32026-29094K-29094K-72TC	9/18/2014	9/18/2016

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Plug Load Controller Unit*	Enlighted, Inc.	PC-01-20	01

Support Devices:

Function	Manufacturer	Model #	S/N
USB adapter	Generic	Generic	NSN
Laptop Computer	Dell	Latitude ES440	DPN 23HXX A01
AC/DC adapter	Dell	LA65NS2-01	PA-1650-0202
Resistor Network	Vishay Dale	RH250	none

Test Conditions / Notes:

Radiated Spurious Emissions
Frequency Range: 1200MHz to 18000MHz
Test Method: ANSI C63.4 (2003)
Test Method: KDB 558074 D01 DTS Meas Guidance v03r02

Temperature: 21.5°C
Humidity: 55%
Atmospheric Pressure: 100kPa

Firmware Used: Version 2.6.2
Application: PuTTy
High Clock: 16MHz

Transmitting operating frequency= 2.4GHz Band
RF Output= 0dBm
Gain of the antenna= 0dBi
Number of Channel=16

The EUT is a ceiling-mounted Transmitter/Receiver which is part of the Enlighted Lighting System. The EUT is a Plug Load Controller Unit. The EUT is powered with 120VAC. The EUT acts as sensors for occupancy, ambient light, and temperature. Application "PuTTy" is used for testing purposes in order to monitor and control the EUT which is connected to the laptop outside the chamber via USB cable. The EUT is set continuously transmitting or receive.

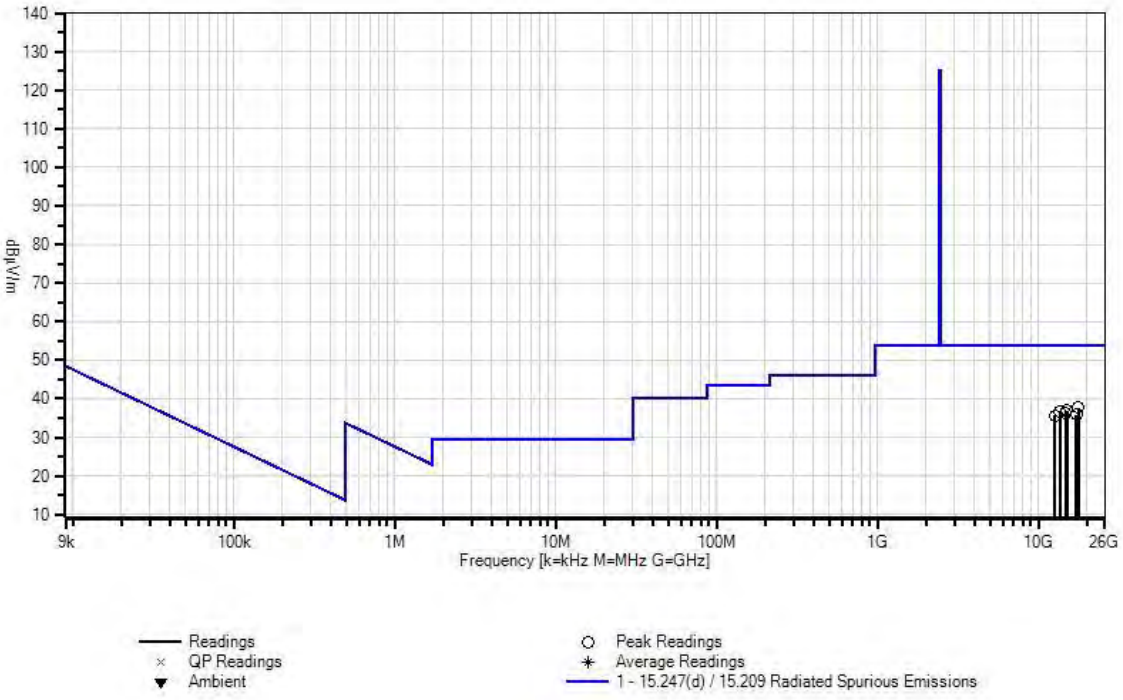
Note:
Z-axis (Worst Case)
TX Mode
Low Channel

Ext Attn: 0 dB

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

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	17711.963 M	42.2	+2.2 +3.1	-13.7	+0.7	+3.1	+0.0	37.6	54.0	-16.4	Vert
2	15048.148 M	43.8	+2.0 +2.8	-15.4	+0.8	+2.9	+0.0	36.9	54.0	-17.1	Vert
3	13547.950 M	44.6	+2.0 +2.7	-16.1	+0.8	+2.7	+0.0	36.7	54.0	-17.3	Vert
4	14743.975 M	43.3	+2.0 +2.8	-15.5	+0.8	+2.8	+0.0	36.2	54.0	-17.8	Horiz
5	17151.505 M	42.1	+2.1 +3.0	-15.1	+0.7	+3.1	+0.0	35.9	54.0	-18.1	Horiz
6	12638.811 M	43.4	+1.9 +2.6	-15.6	+0.8	+2.6	+0.0	35.7	54.0	-18.3	Horiz

CKC Laboratories, Inc. Date: 12/15/2014 Time: 09:26:55 Enlighted, Inc. WO#: 96421
Test Distance: 3 Meters Sequence#: 23
Vert



Test Location: CKC Laboratories, Inc. • 1120 Fulton Pl. • Fremont, CA 94539 • 510-249-1170

Customer: **Enlighted, Inc.**
Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
Work Order #: **96421** Date: 12/15/2014
Test Type: **Maximized Emissions** Time: 10:50:13
Equipment: **Plug Load Controller Unit** Sequence#: 32
Manufacturer: Enlighted, Inc. Tested By: Daniel Bertran
Model: PC-01-20
S/N: 01

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02694	Horn Antenna-ANSI C63.5 Antenna Factors (dB)	AMFW-5F-18002650-20-10P	2/4/2013	2/4/2015
T2	ANP06709	Cable	32026-29094K-29094K-72TC	9/18/2014	9/18/2016
T3	ANP06710	Cable	32026-29094K-29094K-72TC	9/18/2014	9/18/2016
T4	ANP00929	Cable	various	1/23/2014	1/23/2016
T5	ANP06712	Cable	32022-29094K-29094K-48TC	9/18/2014	9/18/2016
	AN03471	RF Characteristics Analyzer	E4440A	12/19/2013	12/19/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Plug Load Controller Unit*	Enlighted, Inc.	PC-01-20	01

Support Devices:

Function	Manufacturer	Model #	S/N
USB adapter	Generic	Generic	NSN
Laptop Computer	Dell	Latitude ES440	DPN 23HXX A01
AC/DC adapter	Dell	LA65NS2-01	PA-1650-0202
Resistor Network	Vishay Dale	RH250	none

Test Conditions / Notes:

Radiated Spurious Emissions
Frequency Range: 18000MHz to 25000MHz
Test Method: ANSI C63.4 (2003)
Test Method: KDB 558074 D01 DTS Meas Guidance v03r02

Temperature: 21.5°C
Humidity: 55%
Atmospheric Pressure: 100kPa

Firmware Used: Version 2.6.2
Application: PuTTy
High Clock: 16MHz

Transmitting operating frequency= 2.4GHz Band
RF Output= 0dBm
Gain of the antenna= 0dBi
Number of Channel=16

The EUT is a ceiling-mounted Transmitter/Receiver which is part of the Enlighted Lighting System. The EUT is a Plug Load Controller Unit. The EUT is powered with 120VAC. The EUT acts as sensors for occupancy, ambient light, and temperature. Application "PuTTy" is used for testing purposes in order to monitor and control the EUT which is connected to the laptop outside the chamber via USB cable. The EUT is set continuously transmitting or receive.

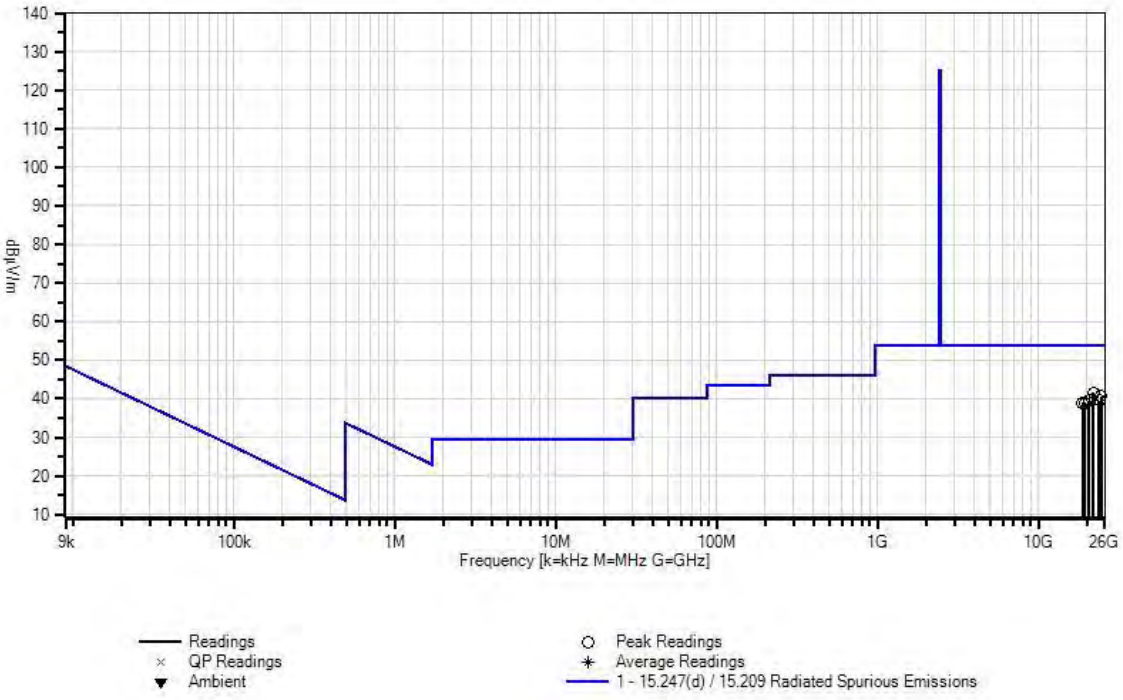
Note:
Z-axis (Worst Case)
TX Mode
Low Channel

Ext Attn: 0 dB

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

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	21928.587 M	46.6	-17.3 +2.4	+3.5	+3.4	+3.0	+0.0	41.6	54.0	-12.4	Horiz
2	24471.744 M	44.7	-17.2 +2.6	+3.8	+3.7	+3.0	+0.0	40.6	54.0	-13.4	Horiz
3	23726.667 M	44.5	-17.7 +2.5	+3.7	+3.6	+3.0	+0.0	39.6	54.0	-14.4	Horiz
4	20662.939 M	44.2	-16.9 +2.3	+3.4	+3.3	+3.2	+0.0	39.5	54.0	-14.5	Vert
5	18858.151 M	43.4	-16.5 +2.2	+3.3	+3.2	+3.4	+0.0	39.0	54.0	-15.0	Vert
6	19434.361 M	43.2	-16.6 +2.3	+3.3	+3.3	+3.3	+0.0	38.8	54.0	-15.2	Vert

CKC Laboratories, Inc. Date: 12/15/2014 Time: 10:50:13 Enlighted, Inc. WO#: 96421
Test Distance: 3 Meters Sequence#: 32
Vert



Test Location: CKC Laboratories, Inc. • 1120 Fulton Pl. • Fremont, CA 94539 • 510-249-1170

Customer: **Enlighted, Inc.**
Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
Work Order #: **96421** Date: 12/15/2014
Test Type: **Maximized Emissions** Time: 16:08:48
Equipment: **Plug Load Controller Unit** Sequence#: 56
Manufacturer: Enlighted, Inc. Tested By: Daniel Bertran
Model: PC-01-20
S/N: 01

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN00432	Loop Antenna	6502	4/2/2013	4/2/2015
	ANP00880	Cable	RG214U	6/13/2014	6/13/2016
	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
	AN03471	RF Characteristics Analyzer	E4440A	12/19/2013	12/19/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Plug Load Controller Unit*	Enlighted, Inc.	PC-01-20	01

Support Devices:

Function	Manufacturer	Model #	S/N
USB adapter	Generic	Generic	NSN
Laptop Computer	Dell	Latitude ES440	DPN 23HXX A01
AC/DC adapter	Dell	LA65NS2-01	PA-1650-0202
Resistor Network	Vishay Dale	RH250	none

Test Conditions / Notes:

Radiated Spurious Emissions
Frequency Range: 9kHz to 30MHz
Test Method: ANSI C63.4 (2003)
Test Method: KDB 558074 D01 DTS Meas Guidance v03r02

Temperature: 21.5°C
Humidity: 55%
Atmospheric Pressure: 100kPa

Firmware Used: Version 2.6.2
Application: PuTTy
High Clock: 16MHz
Transmitting operating frequency= 2.4GHz Band
RF Output= 0dBm
Gain of the antenna= 0dBi
Number of Channel=16

The EUT is a ceiling-mounted Transmitter/Receiver which is part of the Enlighted Lighting System. The EUT is a Plug Load Controller Unit. The EUT is powered with 120VAC. The EUT acts as sensors for occupancy, ambient light, and temperature. Application "PuTTy" is used for testing purposes in order to monitor and control the EUT which is connected to the laptop outside the chamber via USB cable. The EUT is set continuously transmitting or receive.

Note:
Z-axis (Worst Case)
TX Mode
Middle Channel
NO EUT EMISSION DETECTED WITHIN 20dB of THE LIMIT.

Test Location: CKC Laboratories, Inc. • 1120 Fulton Pl. • Fremont, CA 94539 • 510-249-1170

Customer: **Enlighted, Inc.**
Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
Work Order #: **96421** Date: 12/15/2014
Test Type: **Maximized Emissions** Time: 14:01:40
Equipment: **Plug Load Controller Unit** Sequence#: 44
Manufacturer: Enlighted, Inc. Tested By: Daniel Bertran
Model: PC-01-20
S/N: 01

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00852	Biconilog Antenna	CBL 6111C	11/24/2014	11/24/2016
T2	ANP00880	Cable	RG214U	6/13/2014	6/13/2016
T3	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
T4	AN00686	Preamp	8447D Opt 010	5/27/2014	5/27/2016
T5	ANP01183	Cable	CNT-195	9/3/2013	9/3/2015
	AN03471	RF Characteristics Analyzer	E4440A	12/19/2013	12/19/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Plug Load Controller Unit*	Enlighted, Inc.	PC-01-20	01

Support Devices:

Function	Manufacturer	Model #	S/N
USB adapter	Generic	Generic	NSN
Laptop Computer	Dell	Latitude ES440	DPN 23HXX A01
AC/DC adapter	Dell	LA65NS2-01	PA-1650-0202
Resistor Network	Vishay Dale	RH250	none

Test Conditions / Notes:

Radiated Spurious Emissions
Frequency Range: 30MHz to 1000MHz
Test Method: ANSI C63.4 (2003)
Test Method: KDB 558074 D01 DTS Meas Guidance v03r02

Temperature: 21.5°C
Humidity: 55%
Atmospheric Pressure: 100kPa

Firmware Used: Version 2.6.2
Application: PuTTy
High Clock: 16MHz
Transmitting operating frequency= 2.4GHz Band
RF Output= 0dBm
Gain of the antenna= 0dBi
Number of Channel=16

The EUT is a ceiling-mounted Transmitter/Receiver which is part of the Enlighted Lighting System. The EUT is a Plug Load Controller Unit. The EUT is powered with 120VAC. The EUT acts as sensors for occupancy, ambient light, and temperature. Application "PuTTy" is used for testing purposes in order to monitor and control the EUT which is connected to the laptop outside the chamber via USB cable. The EUT is set continuously transmitting or receive.

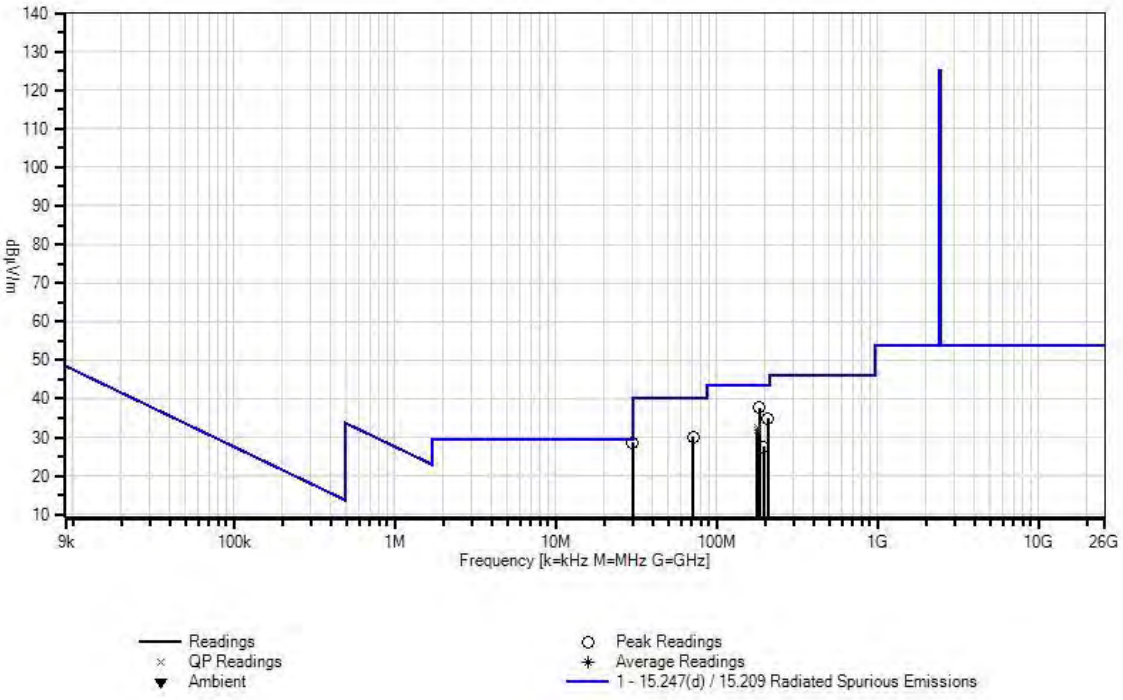
Note:
Z-axis (Worst Case)
TX Mode
Middle Channel

Ext Attn: 0 dB

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

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	185.318M	55.4	+9.0 +0.5	+1.1	+0.4	-28.8	+0.0	37.6	43.5	-5.9	Horiz
2	209.221M	51.6	+9.8 +0.5	+1.3	+0.4	-28.7	+0.0	34.9	43.5	-8.6	Horiz
3	71.660M	52.0	+6.4 +0.2	+0.7	+0.2	-29.3	+0.0	30.2	40.0	-9.8	Vert
4	179.884M QP	50.3	+9.0 +0.4	+1.2	+0.4	-28.8	+0.0	32.5	43.5	-11.0	Horiz
^	179.884M	58.0	+9.0 +0.4	+1.2	+0.4	-28.8	+0.0	40.2	43.5	-3.3	Horiz
6	30.067M	38.3	+18.9 +0.3	+0.4	+0.1	-29.4	+0.0	28.6	40.0	-11.4	Vert
7	181.881M QP	49.6	+9.0 +0.4	+1.2	+0.4	-28.8	+0.0	31.8	43.5	-11.7	Horiz
^	181.881M	59.2	+9.0 +0.4	+1.2	+0.4	-28.8	+0.0	41.4	43.5	-2.1	Horiz
9	195.648M	44.9	+9.1 +0.5	+1.3	+0.4	-28.7	+0.0	27.5	43.5	-16.0	Vert

CKC Laboratories, Inc. Date: 12/15/2014 Time: 14:01:40 Enlighted, Inc. WO#: 96421
Test Distance: 3 Meters Sequence#: 44
Vert



Test Location: CKC Laboratories, Inc. • 1120 Fulton Pl. • Fremont, CA 94539 • 510-249-1170

Customer: **Enlighted, Inc.**
Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
Work Order #: **96421** Date: 12/12/2014
Test Type: **Maximized Emissions** Time: 15:24:48
Equipment: **Plug Load Controller Unit** Sequence#: 14
Manufacturer: Enlighted, Inc. Tested By: Daniel Bertran
Model: PC-01-20
S/N: 01

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02113	Horn Antenna-ANSI C63.5	3115	1/24/2013	1/24/2015
T2	AN03309	High Pass Filter	11SH10-3000/T10000-O/O	4/2/2014	4/2/2016
T3	AN03114	Preamp	AMF-7D-00101800-30-10P	4/11/2013	4/11/2015
T4	ANP06712	Cable	32022-29094K-29094K-48TC	9/18/2014	9/18/2016
T5	AN03302	Cable	32026-29094K-29094K-72TC	3/24/2014	3/24/2016
T6	ANP01210	Cable	FSJ1P-50A-4A	2/19/2013	2/19/2015
	AN03471	RF Characteristics Analyzer	E4440A	12/19/2013	12/19/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Plug Load Controller Unit*	Enlighted, Inc.	PC-01-20	01

Support Devices:

Function	Manufacturer	Model #	S/N
USB adapter	Generic	Generic	NSN
Laptop Computer	Dell	Latitude ES440	DPN 23HXX A01
AC/DC adapter	Dell	LA65NS2-01	PA-1650-0202
Resistor Network	Vishay Dale	RH250	none

Test Conditions / Notes:

Radiated Spurious Emissions
Frequency Range: 1000MHz to 12000MHz
Test Method: ANSI C63.4 (2003)

Temperature: 21.5°C
Humidity: 55%
Atmospheric Pressure: 100kPa

Firmware Used: Version 2.6.2
Application: PuTTy
High Clock: 16MHz
Test Method: KDB 558074 D01 DTS Meas Guidance v03r02

Transmitting operating frequency= 2.4GHz Band
RF Output= 0dBm
Gain of the antenna= 0dBi
Number of Channel=16

The EUT is a ceiling-mounted Transmitter/Receiver which is part of the Enlighted Lighting System. The EUT is a Plug Load Controller Unit. The EUT is powered with 120VAC. The EUT acts as sensors for occupancy, ambient light, and temperature. Application "PuTTy" is used for testing purposes in order to monitor and control the EUT which is connected to the laptop outside the chamber via USB cable. The EUT is set continuously transmitting or receive.

Note:
Z-axis (Worst Case)
Middle Channel

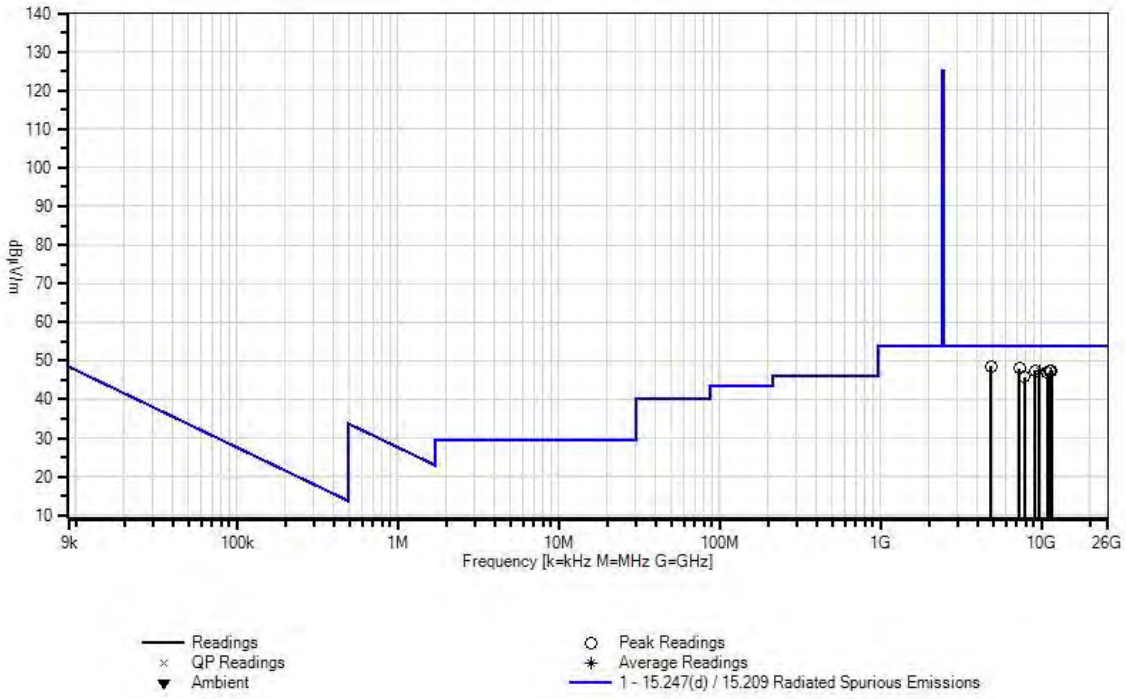
Ext Attn: 0 dB

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

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	4878.877M	66.8	+33.1 +1.7	+0.2 +3.8	-58.2	+1.1	+0.0	48.5	54.0	-5.5	Horiz
2	7321.317M	62.1	+36.2 +2.1	+0.2 +5.4	-59.3	+1.3	+0.0	48.0	54.0	-6.0	Vert
3	9758.049M Ave	56.7	+37.8 +2.4	+0.2 +6.3	-57.6	+1.6	+0.0	47.4	54.0	-6.6	Vert
^	9758.049M	65.2	+37.8 +2.4	+0.2 +6.3	-57.6	+1.6	+0.0	55.9	54.0	+1.9	Vert
5	11604.192 M	53.7	+38.9 +2.6	+0.3 +6.3	-56.3	+1.9	+0.0	47.4	54.0	-6.6	Vert
6	11297.664 M	55.0	+38.4 +2.6	+0.2 +6.2	-56.8	+1.8	+0.0	47.4	54.0	-6.6	Horiz

7	9142.136M	56.0	+37.8 +2.3	+0.3 +6.0	-56.8	+1.6	+0.0	47.2	54.0	-6.8	Horiz
8	10881.874 M	56.0	+38.2 +2.5	+0.1 +6.2	-57.8	+1.8	+0.0	47.0	54.0	-7.0	Vert
9	7853.849M	58.2	+36.6 +2.2	+0.2 +5.5	-58.2	+1.4	+0.0	45.9	54.0	-8.1	Vert

CKC Laboratories, Inc. Date: 12/12/2014 Time: 15:24:48 Enlighted, Inc. WO#: 96421
Test Distance: 3 Meters Sequence#: 14
Vert



Test Location: CKC Laboratories, Inc. • 1120 Fulton Pl. • Fremont, CA 94539 • 510-249-1170

Customer: **Enlighted, Inc.**
Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
Work Order #: **96421** Date: 12/15/2014
Test Type: **Maximized Emissions** Time: 09:48:19
Equipment: **Plug Load Controller Unit** Sequence#: 26
Manufacturer: Enlighted, Inc. Tested By: Daniel Bertran
Model: PC-01-20
S/N: 01

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06712	Cable	32022-29094K-29094K-48TC	9/18/2014	9/18/2016
	AN03471	RF Characteristics Analyzer	E4440A	12/19/2013	12/19/2015
T2	AN2693	Active Horn Antenna	AMFW-5F-18002650-20-10P	2/21/2013	2/21/2015
T3	ANP00928	Cable	various	1/23/2014	1/23/2016
T4	ANP06709	Cable	32026-29094K-29094K-72TC	9/18/2014	9/18/2016
T5	ANP06710	Cable	32026-29094K-29094K-72TC	9/18/2014	9/18/2016

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Plug Load Controller Unit*	Enlighted, Inc.	PC-01-20	01

Support Devices:

Function	Manufacturer	Model #	S/N
USB adapter	Generic	Generic	NSN
Laptop Computer	Dell	Latitude ES440	DPN 23HXX A01
AC/DC adapter	Dell	LA65NS2-01	PA-1650-0202
Resistor Network	Vishay Dale	RH250	none

Test Conditions / Notes:

Radiated Spurious Emissions
Frequency Range: 1200MHz to 18000MHz
Test Method: ANSI C63.4 (2003)

Temperature: 21.5°C
Humidity: 55%
Atmospheric Pressure: 100kPA

Firmware Used: Version 2.6.2
Application: PuTTy
High Clock: 16MHz
Test Method: KDB 558074 D01 DTS Meas Guidance v03r02

Transmitting operating frequency= 2.4GHz Band
RF Output= 0dBm
Gain of the antenna= 0dBi
Number of Channel=16

The EUT is a ceiling-mounted Transmitter/Receiver which is part of the Enlighted Lighting System. The EUT is a Plug Load Controller Unit. The EUT is powered with 120VAC. The EUT acts as sensors for occupancy, ambient light, and temperature. Application "PuTTy" is used for testing purposes in order to monitor and control the EUT which is connected to the laptop outside the chamber via USB cable. The EUT is set continuously transmitting or receive.

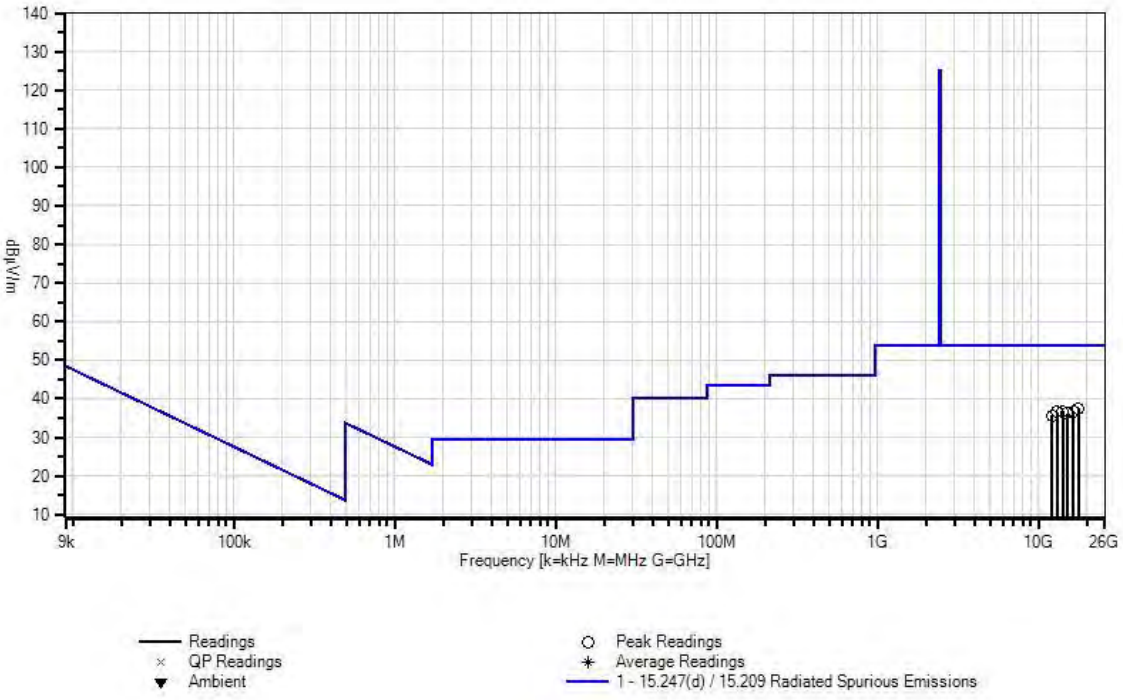
Note:
Z-axis (Worst Case)
TX Mode
Middle Channel

Ext Attn: 0 dB

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

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	17788.065 M	41.7	+2.2 +3.1	-13.5	+0.8	+3.2	+0.0	37.5	54.0	-16.5	Vert
2	14168.166 M	44.2	+2.0 +2.7	-15.7	+0.8	+2.8	+0.0	36.8	54.0	-17.2	Horiz
3	16499.495 M	44.3	+2.1 +3.0	-16.5	+0.7	+3.0	+0.0	36.6	54.0	-17.4	Vert
4	13083.082 M	44.4	+2.0 +2.6	-16.0	+0.8	+2.7	+0.0	36.5	54.0	-17.5	Vert
5	15067.064 M	43.2	+2.0 +2.8	-15.4	+0.8	+2.9	+0.0	36.3	54.0	-17.7	Horiz
6	12225.225 M	42.9	+1.9 +2.5	-15.2	+0.9	+2.6	+0.0	35.6	54.0	-18.4	Horiz

CKC Laboratories, Inc. Date: 12/15/2014 Time: 09:48:19 Enlighted, Inc. WO#: 96421
Test Distance: 3 Meters Sequence#: 26
Vert



Test Location: CKC Laboratories, Inc. • 1120 Fulton Pl. • Fremont, CA 94539 • 510-249-1170

Customer: **Enlighted, Inc.**
Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
Work Order #: **96421** Date: 12/15/2014
Test Type: **Maximized Emissions** Time: 11:07:04
Equipment: **Plug Load Controller Unit** Sequence#: 35
Manufacturer: Enlighted, Inc. Tested By: Daniel Bertran
Model: PC-01-20
S/N: 01

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02694	Horn Antenna-ANSI C63.5 Antenna Factors (dB)	AMFW-5F-18002650-20-10P	2/4/2013	2/4/2015
T2	ANP06709	Cable	32026-29094K-29094K-72TC	9/18/2014	9/18/2016
T3	ANP06710	Cable	32026-29094K-29094K-72TC	9/18/2014	9/18/2016
T4	ANP00929	Cable	various	1/23/2014	1/23/2016
T5	ANP06712	Cable	32022-29094K-29094K-48TC	9/18/2014	9/18/2016
	AN03471	RF Characteristics Analyzer	E4440A	12/19/2013	12/19/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Plug Load Controller Unit*	Enlighted, Inc.	PC-01-20	01

Support Devices:

Function	Manufacturer	Model #	S/N
USB adapter	Generic	Generic	NSN
Laptop Computer	Dell	Latitude ES440	DPN 23HXX A01
AC/DC adapter	Dell	LA65NS2-01	PA-1650-0202
Resistor Network	Vishay Dale	RH250	none

Test Conditions / Notes:

Radiated Spurious Emissions
Frequency Range: 18000MHz to 25000MHz
Test Method: ANSI C63.4 (2003)

Temperature: 21.5°C
Humidity: 55%
Atmospheric Pressure: 100kPa

Firmware Used: Version 2.6.2
Application: PuTTy
High Clock: 16MHz
Test Method: KDB 558074 D01 DTS Meas Guidance v03r02

Transmitting operating frequency= 2.4GHz Band
RF Output= 0dBm
Gain of the antenna= 0dBi
Number of Channel=16

The EUT is a ceiling-mounted Transmitter/Receiver which is part of the Enlighted Lighting System. The EUT is a Plug Load Controller Unit. The EUT is powered with 120VAC. The EUT acts as sensors for occupancy, ambient light, and temperature. Application "PuTTy" is used for testing purposes in order to monitor and control the EUT which is connected to the laptop outside the chamber via USB cable. The EUT is set continuously transmitting or receive.

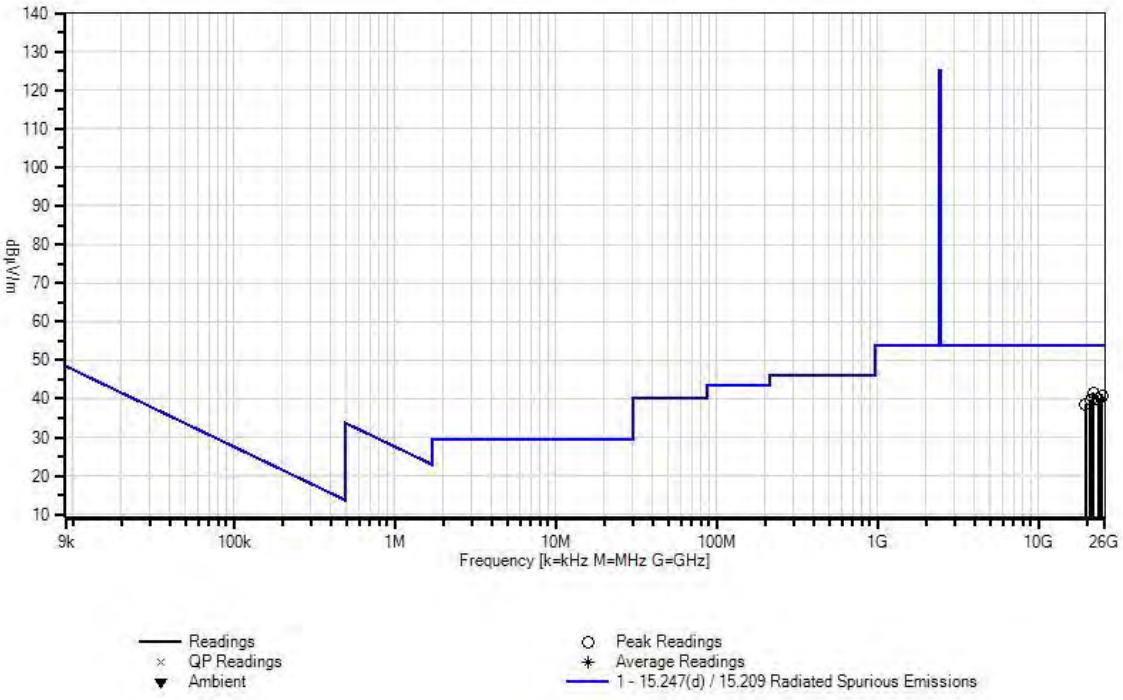
Note:
Z-axis (Worst Case)
TX Mode
Middle Channel

Ext Attn: 0 dB

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

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	21961.269 M	46.5	-17.3 +2.4	+3.5	+3.4	+3.0	+0.0	41.5	54.0	-12.5	Horiz
2	24789.092 M	44.7	-17.0 +2.6	+3.8	+3.7	+3.0	+0.0	40.8	54.0	-13.2	Horiz
3	24806.832 M	44.4	-17.0 +2.6	+3.8	+3.7	+3.1	+0.0	40.6	54.0	-13.4	Vert
4	23578.835 M	44.9	-17.7 +2.5	+3.7	+3.6	+3.0	+0.0	40.0	54.0	-14.0	Vert
5	21007.481 M	44.4	-17.0 +2.4	+3.4	+3.4	+3.1	+0.0	39.7	54.0	-14.3	Vert
6	19657.744 M	43.0	-16.6 +2.3	+3.3	+3.3	+3.3	+0.0	38.6	54.0	-15.4	Horiz

CKC Laboratories, Inc. Date: 12/15/2014 Time: 11:07:04 Enlighted, Inc. WO#: 96421
Test Distance: 3 Meters Sequence#: 35
Vert



Test Location: CKC Laboratories, Inc. • 1120 Fulton Pl. • Fremont, CA 94539 • 510-249-1170

Customer: **Enlighted, Inc.**
Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
Work Order #: **96421** Date: 12/15/2014
Test Type: **Maximized Emissions** Time: 16:20:01
Equipment: **Plug Load Controller Unit** Sequence#: 59
Manufacturer: Enlighted, Inc. Tested By: Daniel Bertran
Model: PC-01-20
S/N: 01

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN00432	Loop Antenna	6502	4/2/2013	4/2/2015
	ANP00880	Cable	RG214U	6/13/2014	6/13/2016
	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
	AN03471	RF Characteristics Analyzer	E4440A	12/19/2013	12/19/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Plug Load Controller Unit*	Enlighted, Inc.	PC-01-20	01

Support Devices:

Function	Manufacturer	Model #	S/N
USB adapter	Generic	Generic	NSN
Laptop Computer	Dell	Latitude ES440	DPN 23HXX A01
AC/DC adapter	Dell	LA65NS2-01	PA-1650-0202
Resistor Network	Vishay Dale	RH250	none

Test Conditions / Notes:

Radiated Spurious Emissions
Frequency Range: 9kHz to 30MHz
Test Method: ANSI C63.4 (2003)

Temperature: 21.5°C
Humidity: 55%
Atmospheric Pressure: 100kPa

Firmware Used: Version 2.6.2
Application: PuTTy
High Clock: 16MHz
Test Method: KDB 558074 D01 DTS Meas Guidance v03r02
Transmitting operating frequency= 2.4GHz Band
RF Output= 0dBm
Gain of the antenna= 0dBi
Number of Channel=16

The EUT is a ceiling-mounted Transmitter/Receiver which is part of the Enlighted Lighting System. The EUT is a Plug Load Controller Unit. The EUT is powered with 120VAC. The EUT acts as sensors for occupancy, ambient light, and temperature. Application "PuTTy" is used for testing purposes in order to monitor and control the EUT which is connected to the laptop outside the chamber via USB cable. The EUT is set continuously transmitting or receive.

Note:
Z-axis (Worst Case)
TX Mode
High Channel
NO EUT EMISSION DETECTED WITHIN 20dB of THE LIMIT.

Test Location: CKC Laboratories, Inc. • 1120 Fulton Pl. • Fremont, CA 94539 • 510-249-1170

Customer: **Enlighted, Inc.**
Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
Work Order #: **96421** Date: 12/15/2014
Test Type: **Maximized Emissions** Time: 14:26:30
Equipment: **Plug Load Controller Unit** Sequence#: 47
Manufacturer: Enlighted, Inc. Tested By: Daniel Bertran
Model: PC-01-20
S/N: 01

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00852	Biconilog Antenna	CBL 6111C	11/24/2014	11/24/2016
T2	ANP00880	Cable	RG214U	6/13/2014	6/13/2016
T3	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
T4	AN00686	Preamp	8447D Opt 010	5/27/2014	5/27/2016
T5	ANP01183	Cable	CNT-195	9/3/2013	9/3/2015
	AN03471	RF Characteristics Analyzer	E4440A	12/19/2013	12/19/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Plug Load Controller Unit*	Enlighted, Inc.	PC-01-20	01

Support Devices:

Function	Manufacturer	Model #	S/N
USB adapter	Generic	Generic	NSN
Laptop Computer	Dell	Latitude ES440	DPN 23HXX A01
AC/DC adapter	Dell	LA65NS2-01	PA-1650-0202
Resistor Network	Vishay Dale	RH250	none

Test Conditions / Notes:

Radiated Spurious Emissions
Frequency Range: 30MHz to 1000MHz
Test Method: ANSI C63.4 (2003)

Temperature: 21.5°C
Humidity: 55%
Atmospheric Pressure: 100kPa

Firmware Used: Version 2.6.2
Application: PuTTy
High Clock: 16MHz
Test Method: KDB 558074 D01 DTS Meas Guidance v03r02
Transmitting operating frequency= 2.4GHz Band
RF Output= 0dBm
Gain of the antenna= 0dBi
Number of Channel=16

The EUT is a ceiling-mounted Transmitter/Receiver which is part of the Enlighted Lighting System. The EUT is a Plug Load Controller Unit. The EUT is powered with 120VAC. The EUT acts as sensors for occupancy, ambient light, and temperature. Application "PuTTy" is used for testing purposes in order to monitor and control the EUT which is connected to the laptop outside the chamber via USB cable. The EUT is set continuously transmitting or receive.

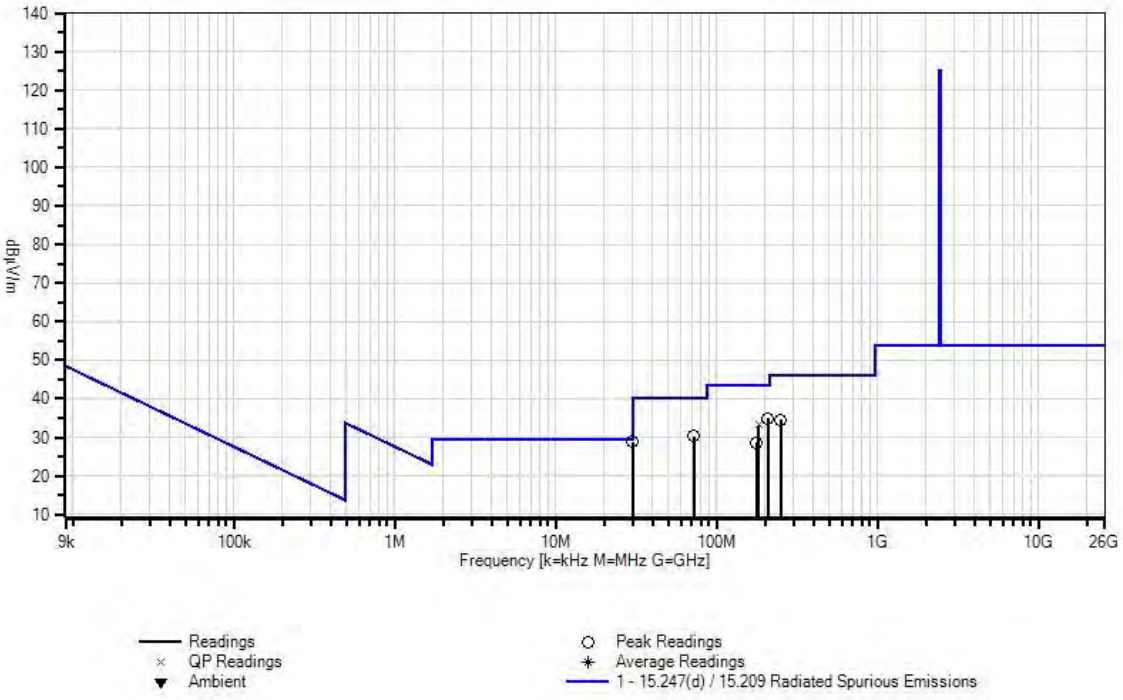
Note:
Z-axis (Worst Case)
TX Mode
High Channel

Ext Attn: 0 dB

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

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	209.582M	51.5	+9.9 +0.5	+1.3	+0.4	-28.7	+0.0	34.9	43.5	-8.6	Horiz
2	72.192M	51.9	+6.5 +0.3	+0.7	+0.2	-29.3	+0.0	30.3	40.0	-9.7	Vert
3	182.633M QP	51.1	+9.0 +0.4	+1.2	+0.4	-28.8	+0.0	33.3	43.5	-10.2	Horiz
^	182.633M	58.9	+9.0 +0.4	+1.2	+0.4	-28.8	+0.0	41.1	43.5	-2.4	Horiz
5	30.067M	38.6	+18.9 +0.3	+0.4	+0.1	-29.4	+0.0	28.9	40.0	-11.1	Vert
6	249.582M	47.7	+12.8 +0.7	+1.5	+0.4	-28.5	+0.0	34.6	46.0	-11.4	Horiz
7	178.231M	46.3	+9.1 +0.4	+1.2	+0.4	-28.8	+0.0	28.6	43.5	-14.9	Vert

CKC Laboratories, Inc. Date: 12/15/2014 Time: 14:26:30 Enlighted, Inc. WO#: 96421
Test Distance: 3 Meters Sequence#: 47
Vert



Test Location: CKC Laboratories, Inc. • 1120 Fulton Pl. • Fremont, CA 94539 • 510-249-1170

Customer: **Enlighted, Inc.**
Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
Work Order #: **96421** Date: 12/12/2014
Test Type: **Maximized Emissions** Time: 15:59:26
Equipment: **Plug Load Controller Unit** Sequence#: 17
Manufacturer: Enlighted, Inc. Tested By: Daniel Bertran
Model: PC-01-20
S/N: 01

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02113	Horn Antenna-ANSI C63.5	3115	1/24/2013	1/24/2015
T2	AN03309	High Pass Filter	11SH10-3000/T10000-O/O	4/2/2014	4/2/2016
T3	AN03114	Preamp	AMF-7D-00101800-30-10P	4/11/2013	4/11/2015
T4	ANP06712	Cable	32022-29094K-29094K-48TC	9/18/2014	9/18/2016
T5	AN03302	Cable	32026-29094K-29094K-72TC	3/24/2014	3/24/2016
T6	ANP01210	Cable	FSJ1P-50A-4A	2/19/2013	2/19/2015
	AN03471	RF Characteristics Analyzer	E4440A	12/19/2013	12/19/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Plug Load Controller Unit*	Enlighted, Inc.	PC-01-20	01

Support Devices:

Function	Manufacturer	Model #	S/N
USB adapter	Generic	Generic	NSN
Laptop Computer	Dell	Latitude ES440	DPN 23HXX A01
AC/DC adapter	Dell	LA65NS2-01	PA-1650-0202
Resistor Network	Vishay Dale	RH250	none

Test Conditions / Notes:

Radiated Spurious Emissions
Frequency Range: 1000MHz to 12000MHz
Test Method: ANSI C63.4 (2003)

Temperature: 21.5°C
Humidity: 55%
Atmospheric Pressure: 100kPA

Firmware Used: Version 2.6.2
Application: PuTTy
High Clock: 16MHz
Test Method: KDB 558074 D01 DTS Meas Guidance v03r02

Transmitting operating frequency= 2.4GHz Band
RF Output= 0dBm
Gain of the antenna= 0dBi
Number of Channel=16

The EUT is a ceiling-mounted Transmitter/Receiver which is part of the Enlighted Lighting System. The EUT is a Plug Load Controller Unit. The EUT is powered with 120VAC. The EUT acts as sensors for occupancy, ambient light, and temperature. Application "PuTTy" is used for testing purposes in order to monitor and control the EUT which is connected to the laptop outside the chamber via USB cable. The EUT is set continuously transmitting or receive.

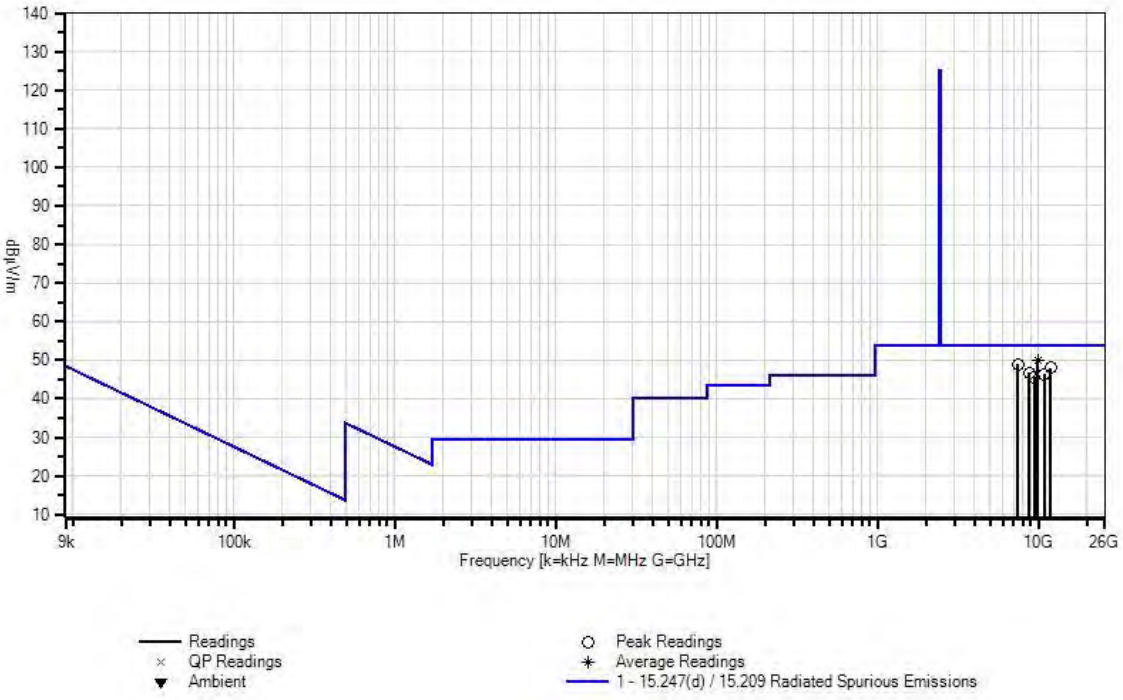
Note:
Z-axis (Worst Case)
High Channel

Ext Attn: 0 dB

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

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	9918.011M Ave	59.6	+38.1 +2.4	+0.2 +6.3	-58.2	+1.7	+0.0	50.1	54.0	-3.9	Vert
^	9918.011M	66.7	+38.1 +2.4	+0.2 +6.3	-58.2	+1.7	+0.0	57.2	54.0	+3.2	Vert
3	7441.437M	62.9	+36.3 +2.1	+0.2 +5.4	-59.3	+1.4	+0.0	49.0	54.0	-5.0	Vert
4	11929.568 M	54.2	+38.9 +2.7	+0.2 +6.4	-56.2	+1.9	+0.0	48.1	54.0	-5.9	Vert
5	8773.768M	55.4	+37.7 +2.3	+0.3 +5.8	-56.3	+1.5	+0.0	46.7	54.0	-7.3	Horiz
6	10860.853 M	55.3	+38.1 +2.5	+0.2 +6.2	-57.8	+1.8	+0.0	46.3	54.0	-7.7	Horiz
7	9422.416M	54.8	+37.9 +2.4	+0.2 +6.2	-57.4	+1.6	+0.0	45.7	54.0	-8.3	Horiz

CKC Laboratories, Inc. Date: 12/12/2014 Time: 15:59:26 Enlighted, Inc. WO#: 96421
Test Distance: 3 Meters Sequence#: 17
Horiz



Test Location: CKC Laboratories, Inc. • 1120 Fulton Pl. • Fremont, CA 94539 • 510-249-1170

Customer: **Enlighted, Inc.**
Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
Work Order #: **96421** Date: 12/15/2014
Test Type: **Maximized Emissions** Time: 10:05:28
Equipment: **Plug Load Controller Unit** Sequence#: 29
Manufacturer: Enlighted, Inc. Tested By: Daniel Bertran
Model: PC-01-20
S/N: 01

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06712	Cable	32022-29094K-29094K-48TC	9/18/2014	9/18/2016
	AN03471	RF Characteristics Analyzer	E4440A	12/19/2013	12/19/2015
T2	AN2693	Active Horn Antenna	AMFW-5F-18002650-20-10P	2/21/2013	2/21/2015
T3	ANP00928	Cable	various	1/23/2014	1/23/2016
T4	ANP06709	Cable	32026-29094K-29094K-72TC	9/18/2014	9/18/2016
T5	ANP06710	Cable	32026-29094K-29094K-72TC	9/18/2014	9/18/2016

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Plug Load Controller Unit*	Enlighted, Inc.	PC-01-20	01

Support Devices:

Function	Manufacturer	Model #	S/N
USB adapter	Generic	Generic	NSN
Laptop Computer	Dell	Latitude ES440	DPN 23HXX A01
AC/DC adapter	Dell	LA65NS2-01	PA-1650-0202
Resistor Network	Vishay Dale	RH250	none

Test Conditions / Notes:

Radiated Spurious Emissions
Frequency Range: 1200MHz to 18000MHz
Test Method: ANSI C63.4 (2003)

Temperature: 21.5°C
Humidity: 55%
Atmospheric Pressure: 100kPA

Firmware Used: Version 2.6.2
Application: PuTTy
High Clock: 16MHz
Test Method: KDB 558074 D01 DTS Meas Guidance v03r02

Transmitting operating frequency= 2.4GHz Band
RF Output= 0dBm
Gain of the antenna= 0dBi
Number of Channel=16

The EUT is a ceiling-mounted Transmitter/Receiver which is part of the Enlighted Lighting System. The EUT is a Plug Load Controller Unit. The EUT is powered with 120VAC. The EUT acts as sensors for occupancy, ambient light, and temperature. Application "PuTTy" is used for testing purposes in order to monitor and control the EUT which is connected to the laptop outside the chamber via USB cable. The EUT is set continuously transmitting or receive.

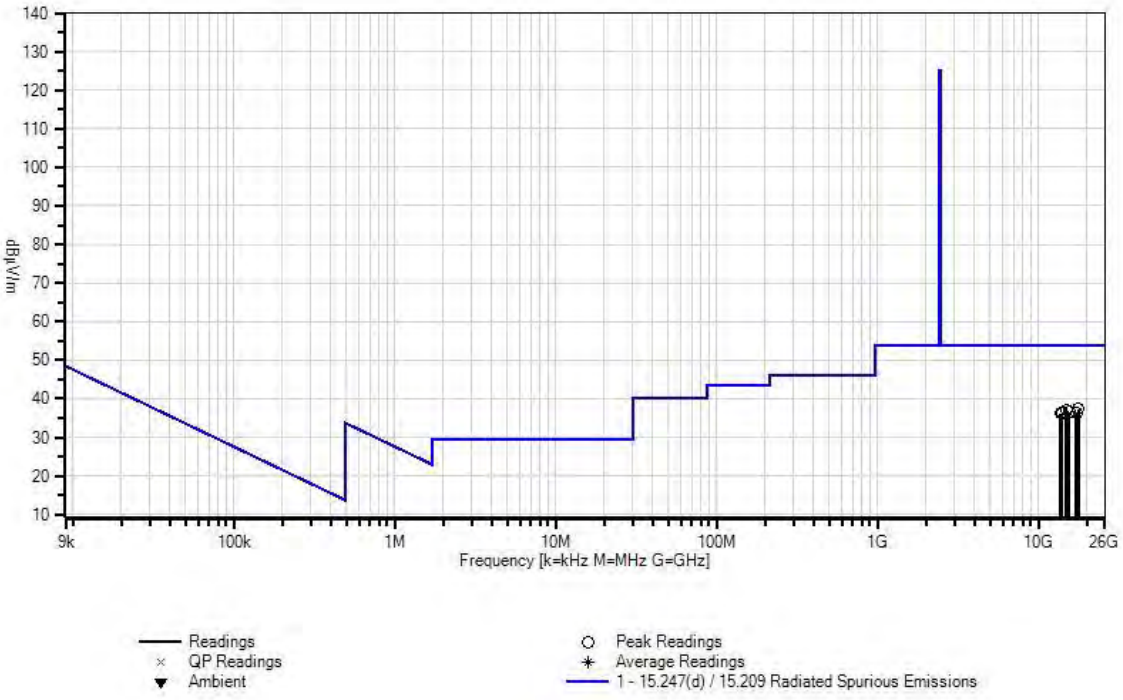
Note:
Z-axis (Worst Case)
TX Mode
High Channel

Ext Attn: 0 dB

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

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	17654.702 M	42.0	+2.2 +3.1	-13.8	+0.7	+3.1	+0.0	37.3	54.0	-16.7	Horiz
2	14877.247 M	44.0	+2.0 +2.8	-15.4	+0.8	+2.9	+0.0	37.1	54.0	-16.9	Vert
3	15501.270 M	43.7	+2.1 +2.9	-15.8	+0.8	+2.9	+0.0	36.6	54.0	-17.4	Horiz
4	17245.204 M	42.1	+2.2 +3.0	-14.7	+0.7	+3.1	+0.0	36.4	54.0	-17.6	Vert
5	14026.813 M	43.9	+2.0 +2.7	-16.0	+0.8	+2.8	+0.0	36.2	54.0	-17.8	Horiz
6	13702.376 M	44.1	+2.0 +2.7	-16.1	+0.8	+2.7	+0.0	36.2	54.0	-17.8	Vert

CKC Laboratories, Inc. Date: 12/15/2014 Time: 10:05:28 Enlighted, Inc. WO#: 96421
Test Distance: 3 Meters Sequence#: 29
Vert



Test Location: CKC Laboratories, Inc. • 1120 Fulton Pl. • Fremont, CA 94539 • 510-249-1170

Customer: **Enlighted, Inc.**
Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
Work Order #: **96421** Date: 12/15/2014
Test Type: **Maximized Emissions** Time: 11:28:01
Equipment: **Plug Load Controller Unit** Sequence#: 38
Manufacturer: Enlighted, Inc. Tested By: Daniel Bertran
Model: PC-01-20
S/N: 01

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02694	Horn Antenna-ANSI C63.5 Antenna Factors (dB)	AMFW-5F-18002650-20-10P	2/4/2013	2/4/2015
T2	ANP06709	Cable	32026-29094K-29094K-72TC	9/18/2014	9/18/2016
T3	ANP06710	Cable	32026-29094K-29094K-72TC	9/18/2014	9/18/2016
T4	ANP00929	Cable	various	1/23/2014	1/23/2016
T5	ANP06712	Cable	32022-29094K-29094K-48TC	9/18/2014	9/18/2016
	AN03471	RF Characteristics Analyzer	E4440A	12/19/2013	12/19/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Plug Load Controller Unit*	Enlighted, Inc.	PC-01-20	01

Support Devices:

Function	Manufacturer	Model #	S/N
USB adapter	Generic	Generic	NSN
Laptop Computer	Dell	Latitude ES440	DPN 23HXX A01
AC/DC adapter	Dell	LA65NS2-01	PA-1650-0202
Resistor Network	Vishay Dale	RH250	none

Test Conditions / Notes:

Radiated Spurious Emissions
Frequency Range: 18000MHz to 25000MHz
Test Method: ANSI C63.4 (2003)

Temperature: 21.5°C
Humidity: 55%
Atmospheric Pressure: 100kPA

Firmware Used: Version 2.6.2
Application: PuTTy
High Clock: 16MHz
Test Method: KDB 558074 D01 DTS Meas Guidance v03r02

Transmitting operating frequency= 2.4GHz Band
RF Output= 0dBm
Gain of the antenna= 0dBi
Number of Channel=16

The EUT is a ceiling-mounted Transmitter/Receiver which is part of the Enlighted Lighting System. The EUT is a Plug Load Controller Unit. The EUT is powered with 120VAC. The EUT acts as sensors for occupancy, ambient light, and temperature. Application "PuTTy" is used for testing purposes in order to monitor and control the EUT which is connected to the laptop outside the chamber via USB cable. The EUT is set continuously transmitting or receive.

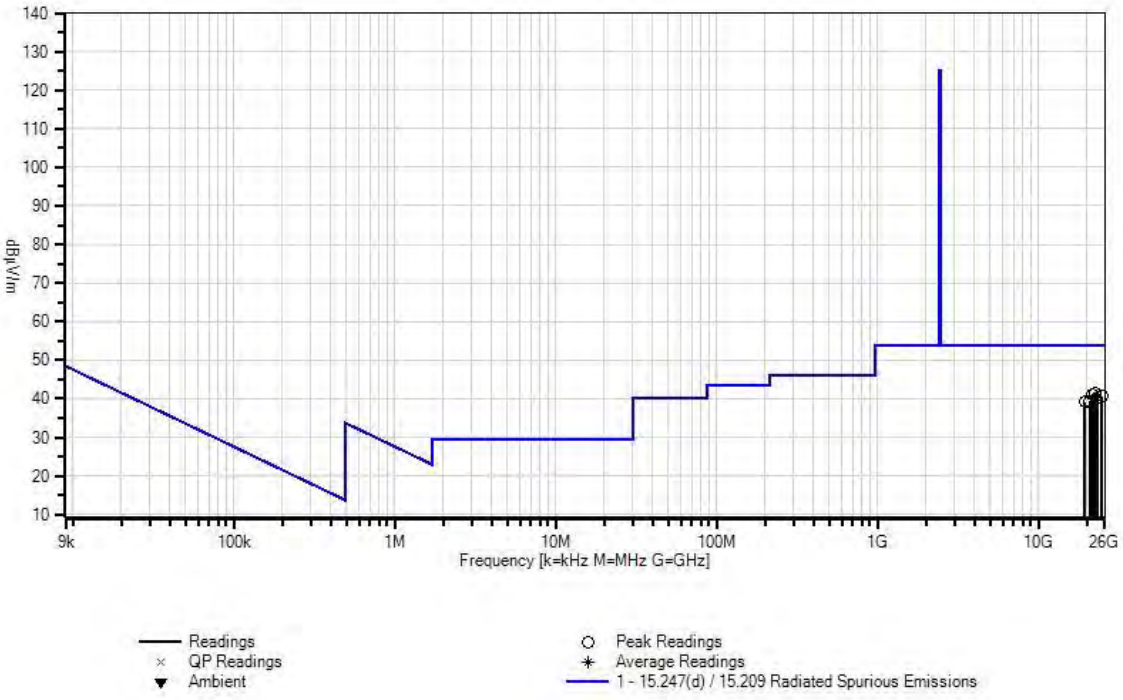
Note:
Z-axis (Worst Case)
TX Mode
High Channel

Ext Attn: 0 dB

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

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	22358.354 M	46.4	-17.5 +2.5	+3.6	+3.5	+3.0	+0.0	41.5	54.0	-12.5	Horiz
2	21790.787 M	46.0	-17.3 +2.4	+3.5	+3.4	+3.0	+0.0	41.0	54.0	-13.0	Horiz
3	24842.312 M	44.4	-16.9 +2.6	+3.8	+3.7	+3.1	+0.0	40.7	54.0	-13.3	Vert
4	23060.434 M	45.1	-17.8 +2.5	+3.7	+3.6	+3.0	+0.0	40.1	54.0	-13.9	Vert
5	20872.006 M	44.1	-17.0 +2.4	+3.4	+3.3	+3.1	+0.0	39.3	54.0	-14.7	Vert
6	19428.427 M	43.6	-16.6 +2.3	+3.3	+3.3	+3.3	+0.0	39.2	54.0	-14.8	Horiz

CKC Laboratories, Inc. Date: 12/15/2014 Time: 11:28:01 Enlighted, Inc. WO#: 96421
Test Distance: 3 Meters Sequence#: 38
Vert



Band Edge

Test Conditions / Setup

Test Location: CKC Laboratories, Inc. • 1120 Fulton Pl. • Fremont, CA 94539 • 510-249-1170

Customer: **Enlighted, Inc.**
Specification: **Band Edge**
Work Order #: **96421** Date: 12/12/2014
Test Type: **Radiated Scan** Time: 09:37:01
Equipment: **Plug Load Controller Unit** Sequence#: 8
Manufacturer: Enlighted, Inc. Tested By: Daniel Bertran
Model: PC-01-20
S/N: 01

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02113	Horn Antenna-ANSI C63.5	3115	1/24/2013	1/24/2015
T2	AN03302	Cable	32026-29094K-29094K-72TC	3/24/2014	3/24/2016
T3	ANP01210	Cable	FSJ1P-50A-4A	2/19/2013	2/19/2015
	AN03471	RF Characteristics Analyzer	E4440A	12/19/2013	12/19/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Plug Load Controller Unit*	Enlighted, Inc.	PC-01-20	01

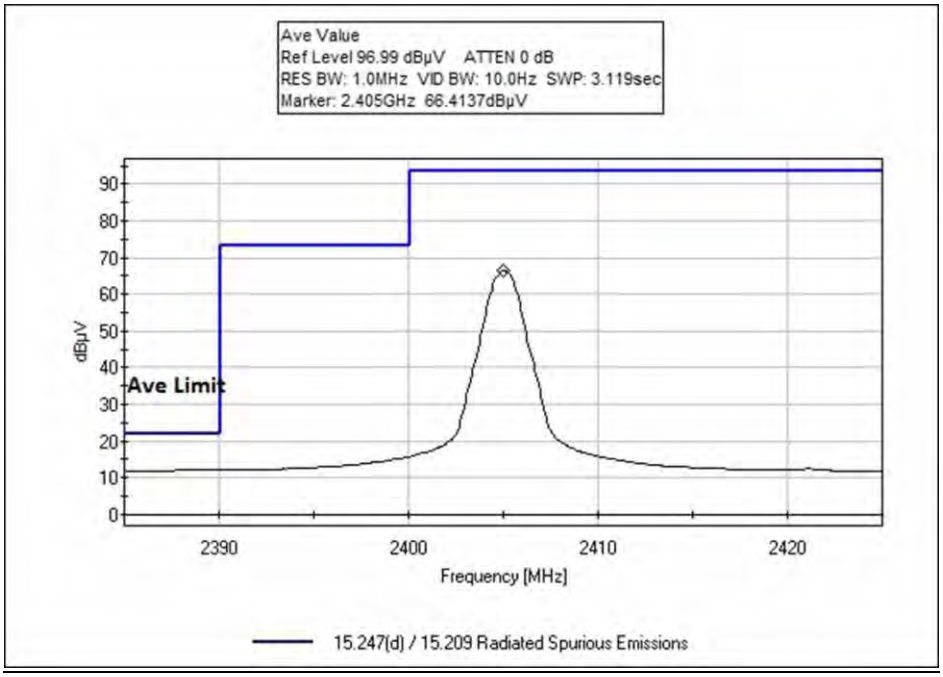
Support Devices:

Function	Manufacturer	Model #	S/N
USB adapter	Generic	Generic	NSN
Laptop Computer	Dell	Latitude ES440	DPN 23HXX A01
AC/DC adapter	Dell	LA65NS2-01	PA-1650-0202
Resistor Network	Vishay Dale	RH250	none

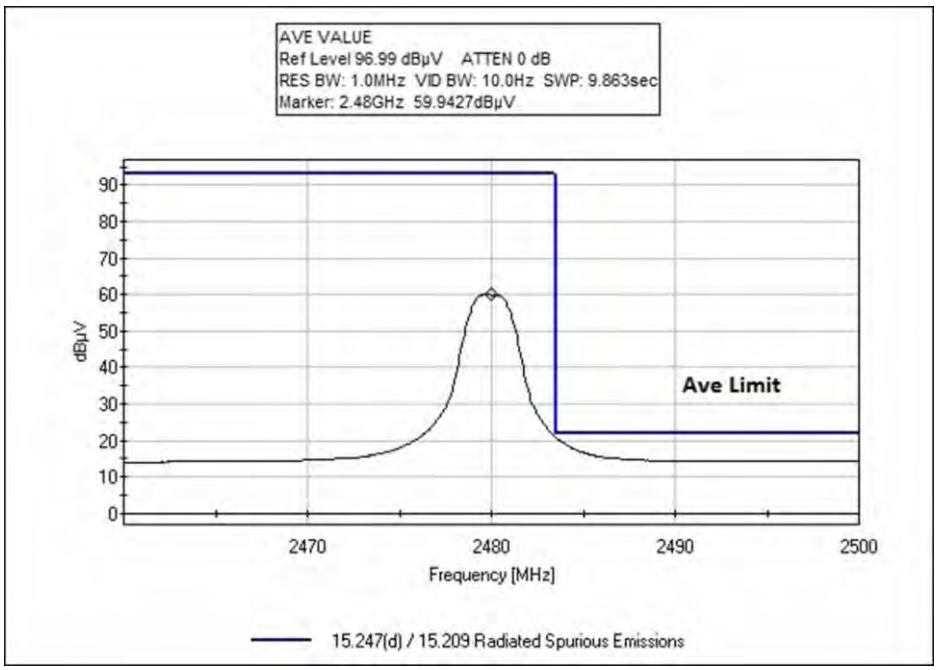
Test Conditions / Notes:

Band Edge Setup Temperature: 21.5°C Humidity: 55% Atmospheric Pressure: 100kPa Firmware Used: Version 2.6.2 Application: PuTTy High Clock: 16MHz Transmitting operating frequency= 2.4GHz Band RF Output= 0dBm Gain of the antenna= 0dBi Number of Channel=16 The EUT is a ceiling-mounted Transmitter/Receiver which is part of the Enlighted Lighting System. The EUT is a Plug Load Controller Unit. The EUT is powered with 120VAC. The EUT acts as sensors for occupancy, ambient light, and temperature. Application "PuTTy" is used for testing purposes in order to monitor and control the EUT which is connected to the laptop outside the chamber via USB cable. The EUT is set continuously transmitting or receive.

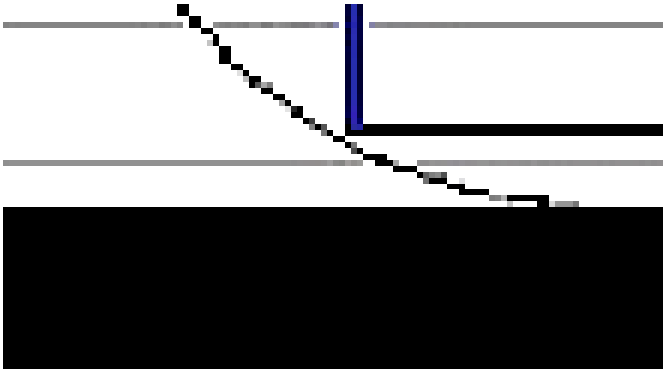
Test Data



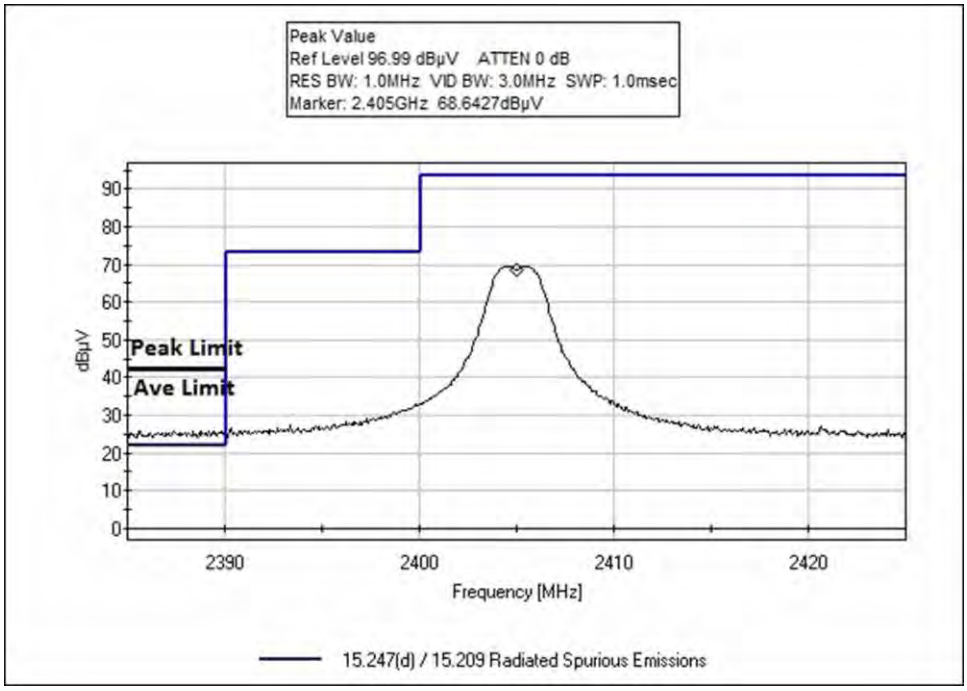
Low Channel



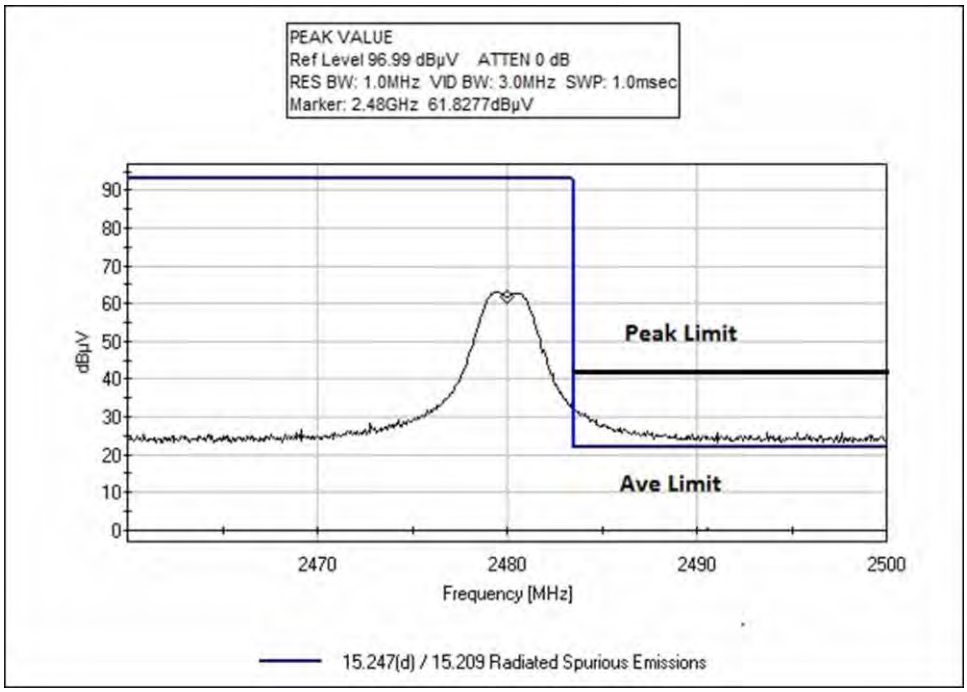
High Channel



High Channel, Detail View

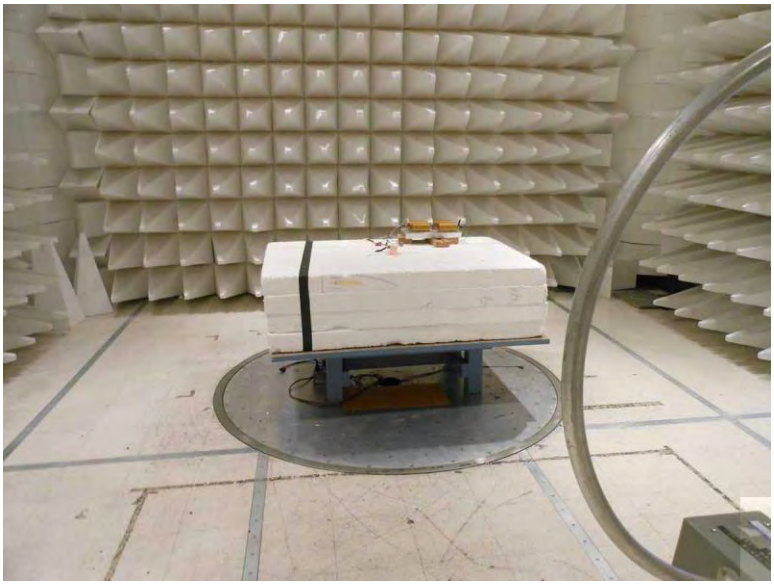


Low Channel

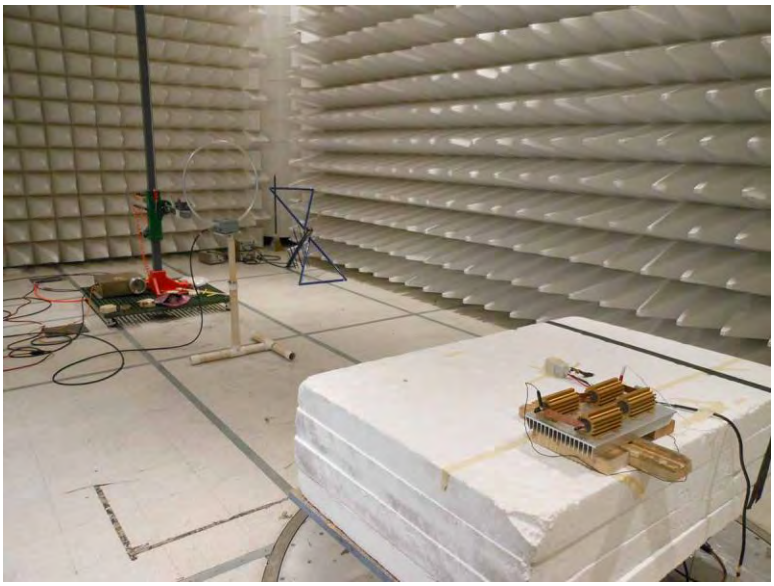


High Channel

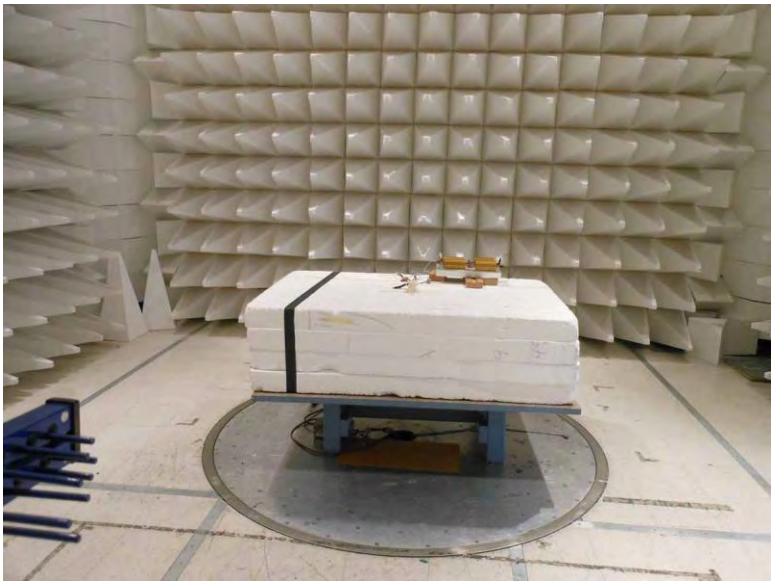
Test Setup Photos



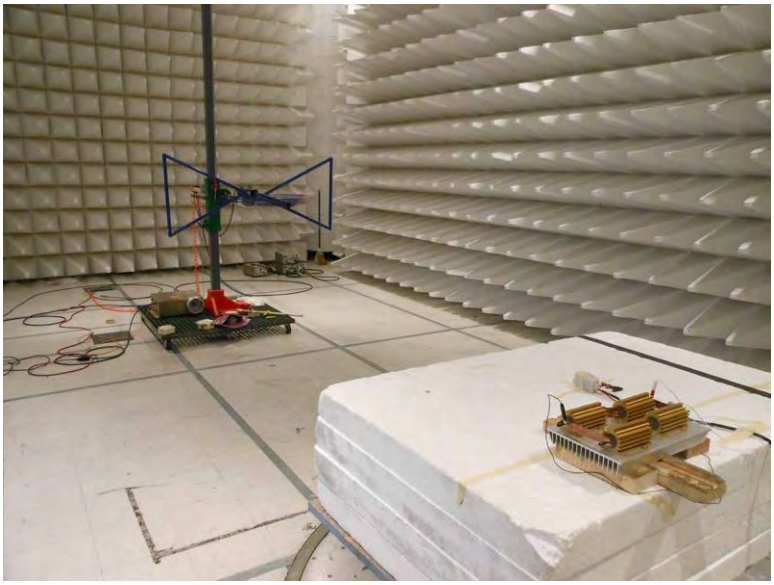
9kHz – 30MHz



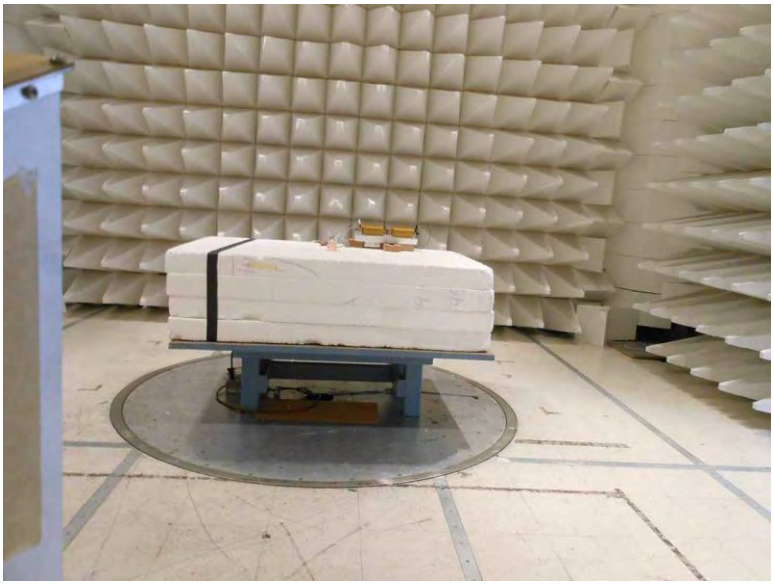
9kHz – 30MHz



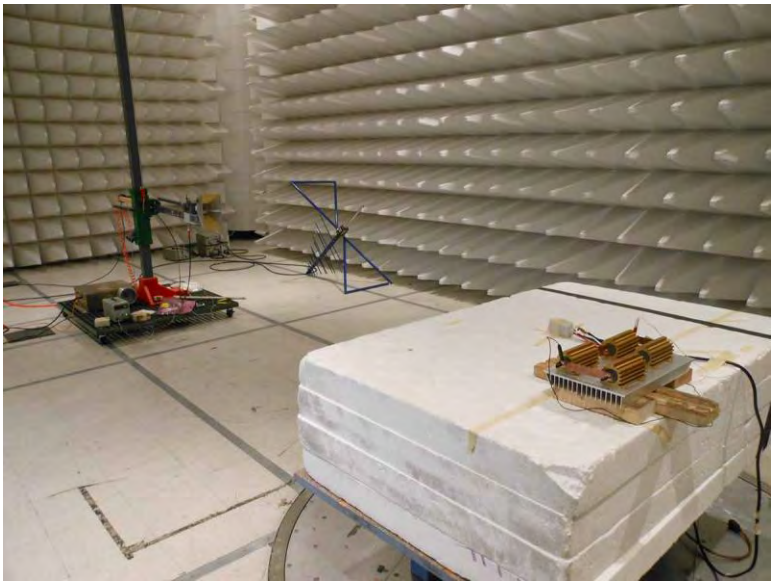
30MHz – 1GHz



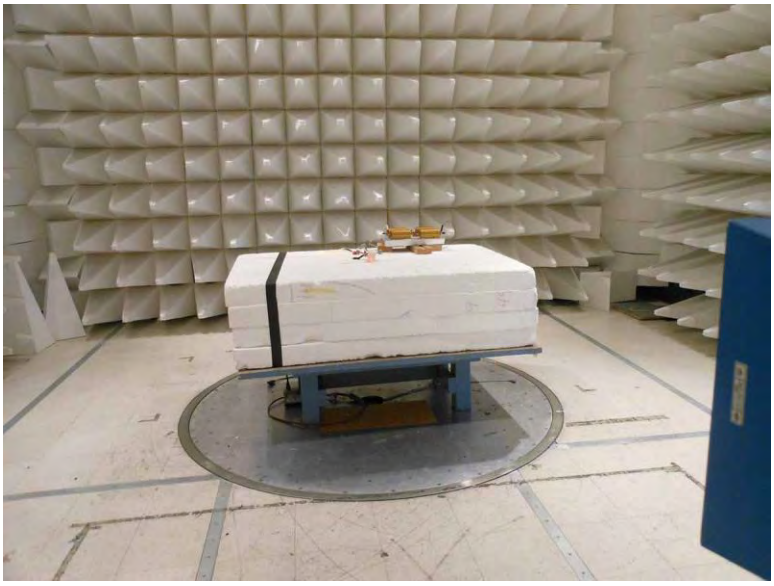
30MHz – 1GHz



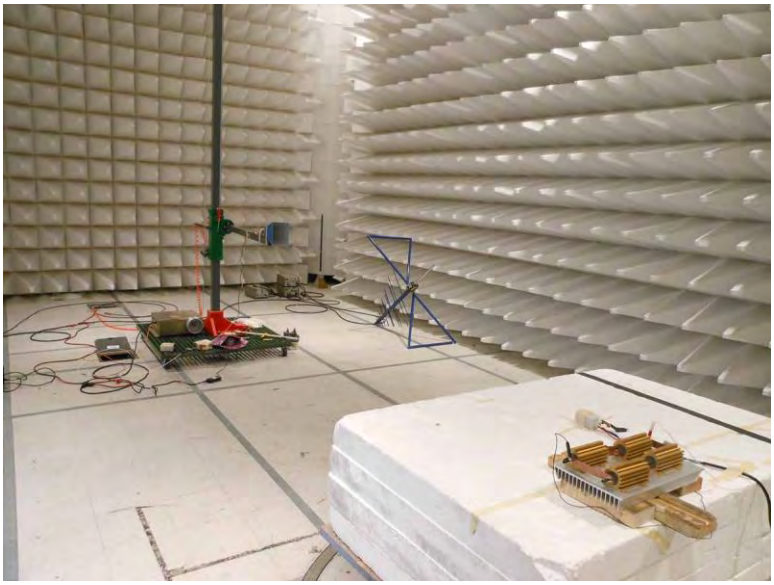
1GHz – 12GHz



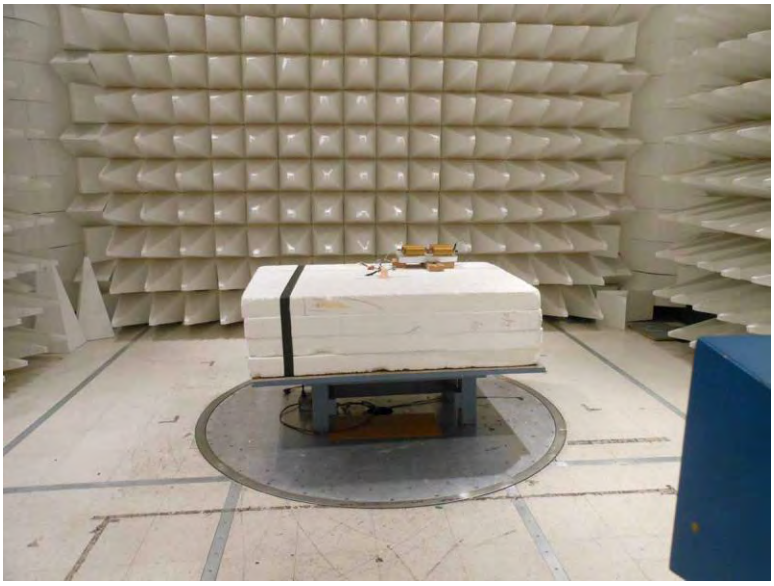
1GHz – 12GHz



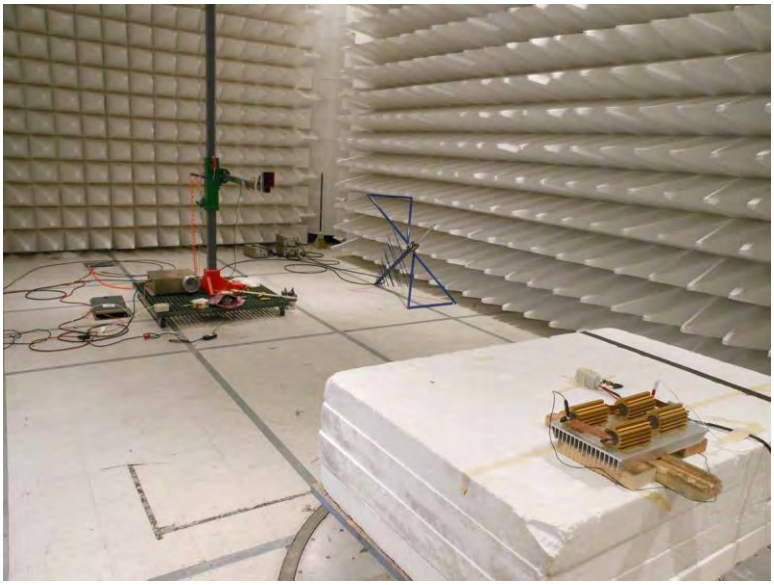
12GHz – 18GHz



12GHz – 18GHz



18GHz – 25GHz



18GHz – 25GHz

15.247(e) Power Spectral Density

Test Conditions / Setup

Test Location: CKC Laboratories, Inc. • 1120 Fulton Pl. • Fremont, CA 94539 • 510-249-1170

Customer: **Enlighted, Inc.**
Specification: **15.247(e) Peak Power Spectral Density (2400-2483.5 MHz DTS)**
Work Order #: **96421** Date: 12/12/2014
Test Type: **Radiated Scan** Time: 09:37:01
Equipment: **Plug Load Controller Unit** Sequence#: 8
Manufacturer: Enlighted, Inc. Tested By: Daniel Bertran
Model: PC-01-20
S/N: 01

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02113	Horn Antenna-ANSI C63.5	3115	1/24/2013	1/24/2015
T2	AN03302	Cable	32026-29094K-29094K-72TC	3/24/2014	3/24/2016
T3	ANP01210	Cable	FSJ1P-50A-4A	2/19/2013	2/19/2015
	AN03471	RF Characteristics Analyzer	E4440A	12/19/2013	12/19/2015

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Plug Load Controller Unit*	Enlighted, Inc.	PC-01-20	01

Support Devices:

Function	Manufacturer	Model #	S/N
USB adapter	Generic	Generic	NSN
Laptop Computer	Dell	Latitude ES440	DPN 23HXX A01
AC/DC adapter	Dell	LA65NS2-01	PA-1650-0202
Resistor Network	Vishay Dale	RH250	none

Test Conditions / Notes:

Power Spectral Density
Temperature: 21.5°C
Humidity: 55%

Atmospheric Pressure: 100kPa
Firmware Used: Version 2.6.2
Application: PuTTy
High Clock: 16MHz

Transmitting operating frequency= 2.4GHz Band
RF Output= 0dBm
Gain of the antenna= 0dBi
Number of Channel=16

The EUT is a ceiling-mounted Transmitter/Receiver which is part of the Enlighted Lighting System. The EUT is a Plug Load Controller Unit. The EUT is powered with 120VAC. The EUT acts as sensors for occupancy, ambient light, and temperature. Application "PuTTy" is used for testing purposes in order to monitor and control the EUT which is connected to the laptop outside the chamber via USB cable. The EUT is set continuously transmitting or receive.

Note: Z-axis (Worst Case)

Ext Attn: 0 dB

Measurement Data: Reading listed by order taken. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	2404.505M	68.3	+27.9	+1.2	+2.7		+0.0	100.1	103.2 Low Channel	-3.1	Horiz
2	2404.505M	62.5	+27.9	+1.2	+2.7		+0.0	94.3	103.2 Low Channel	-8.9	Vert
3	2439.515M	65.5	+27.9	+1.2	+2.7		+0.0	97.3	103.2 Middle Channel	-5.9	Horiz
4	2439.515M	60.8	+27.9	+1.2	+2.7		+0.0	92.6	103.2 Middle Channel	-10.6	Vert
5	2479.508M	62.0	+28.0	+1.2	+2.7		+0.0	93.9	103.2 High Channel	-9.3	Vert
6	2479.508M	66.0	+28.0	+1.2	+2.7		+0.0	97.9	103.2 High Channel	-5.3	Horiz

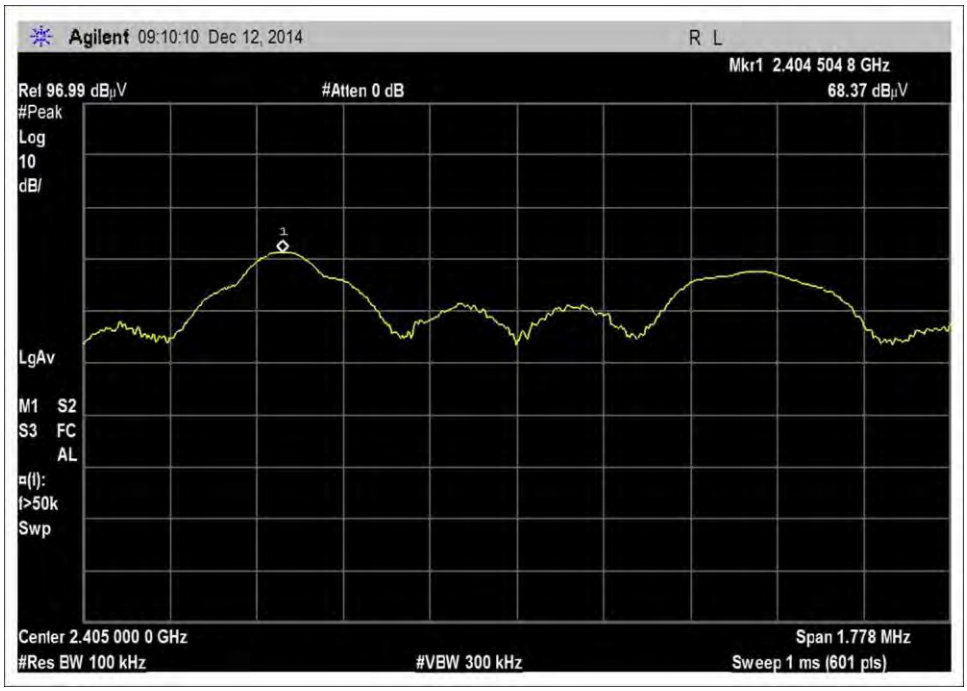
Convert equivalent electric field strength to the resultant power level

Frequency (MHz)	Measured Power in dBm	Power Limit in dBm	Pass/Fail
2404.505 Low Channel (Horizontal)	4.871	8.00	Pass
2404.505 Low Channel (Vertical)	-0.929	8.00	Pass
2439.515 Middle Channel (Horizontal)	2.071	8.00	Pass
2439.515 Middle Channel (Vertical)	-2.629	8.00	Pass
2479.508 High Channel (Horizontal)	2.671	8.00	Pass
2479.508 High Channel (Vertical)	-1.329	8.00	Pass

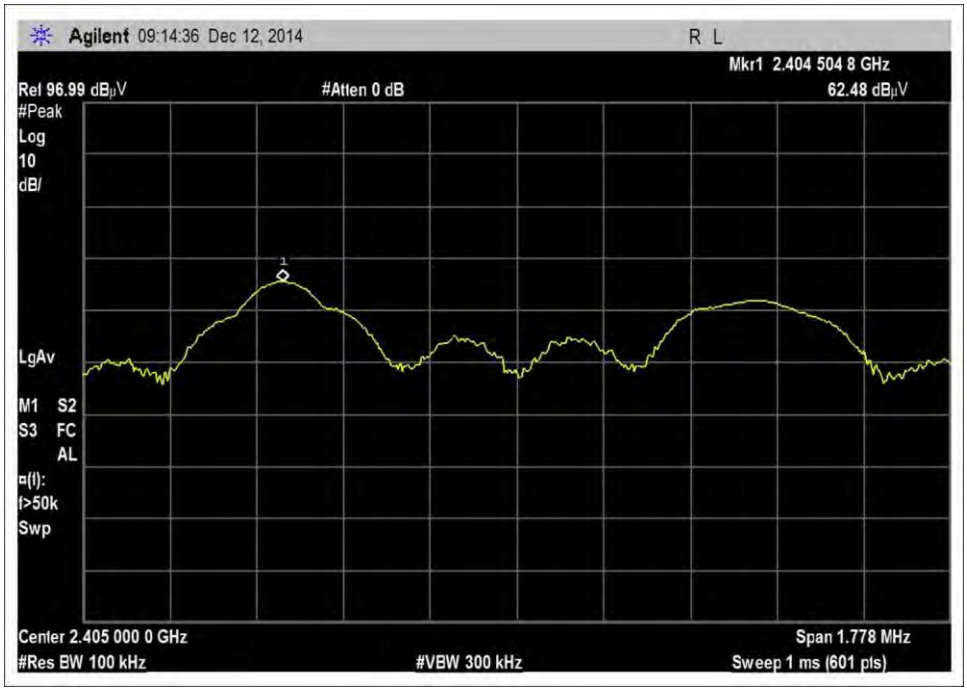
A formula converts Radiated Method to Conducted Method.

dBm (conducted power) = dBuV/m +20*LOG D -104.77 – Gain (dBi).

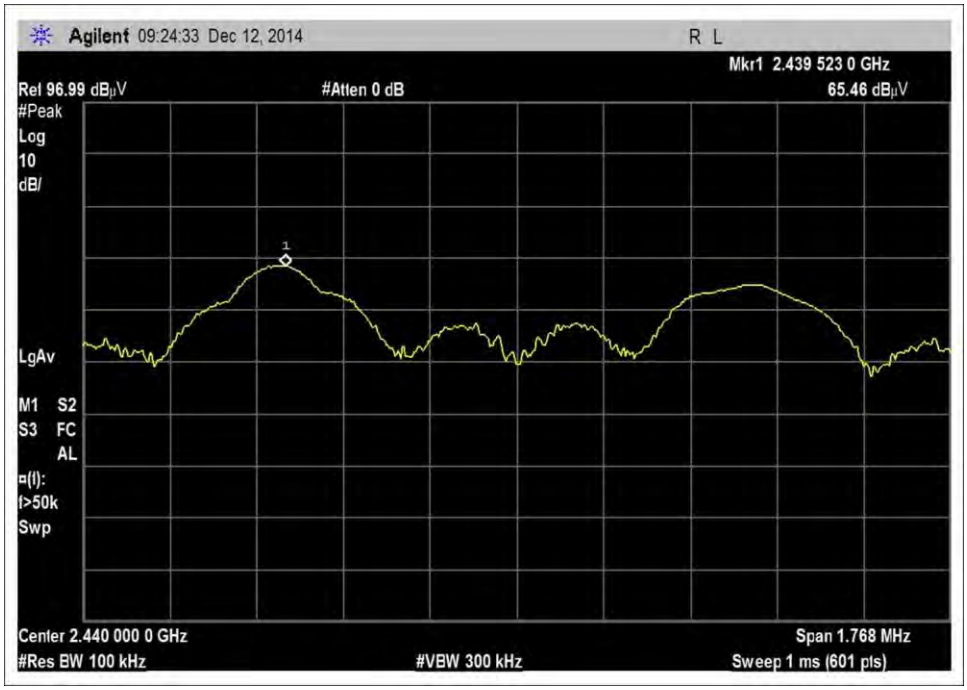
Test Data



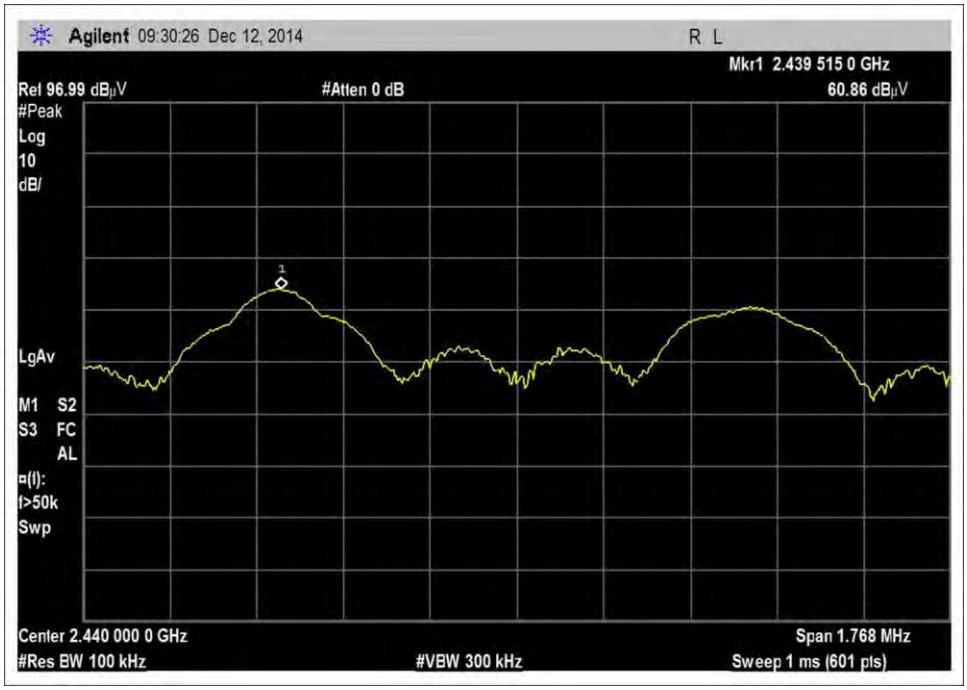
Low Channel, Horizontal



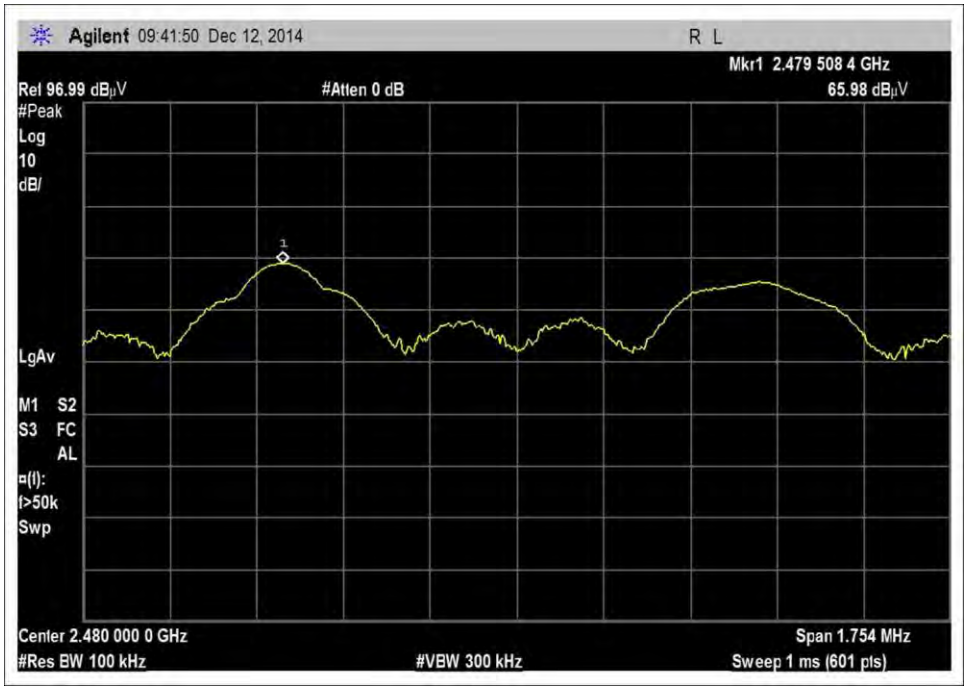
Low Channel, Vertical



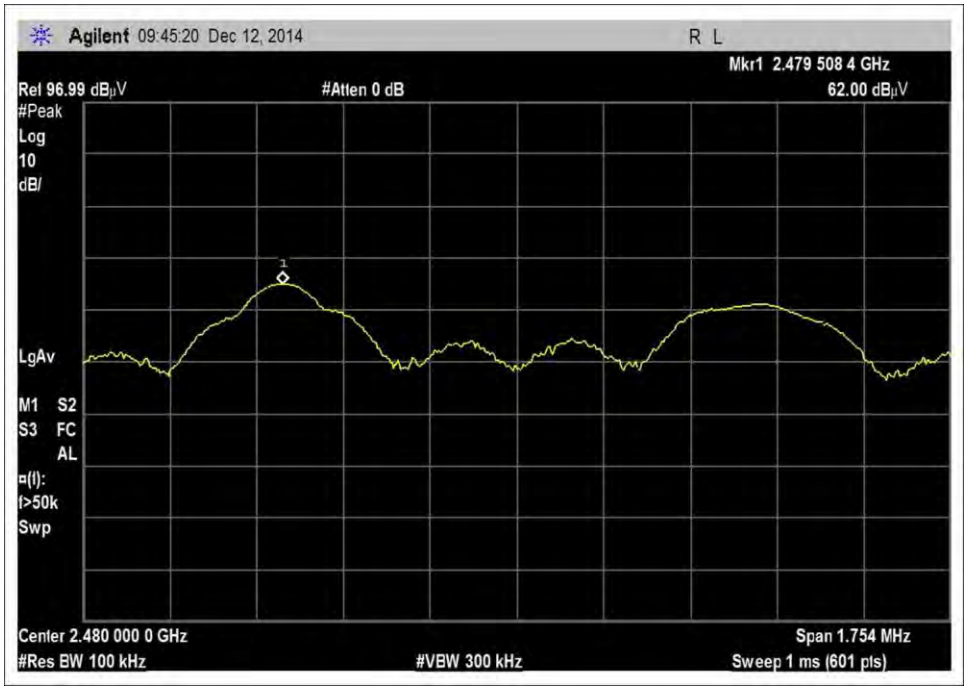
Middle Channel, Horizontal



Middle Channel, Vertical

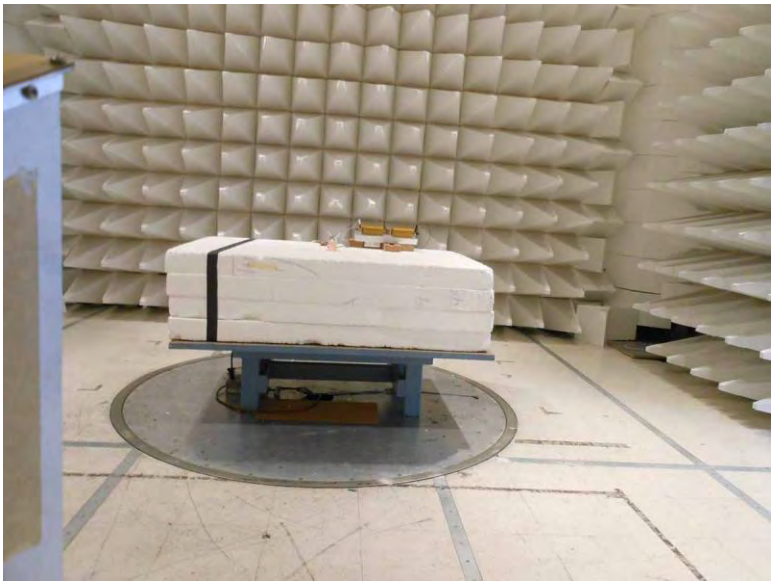


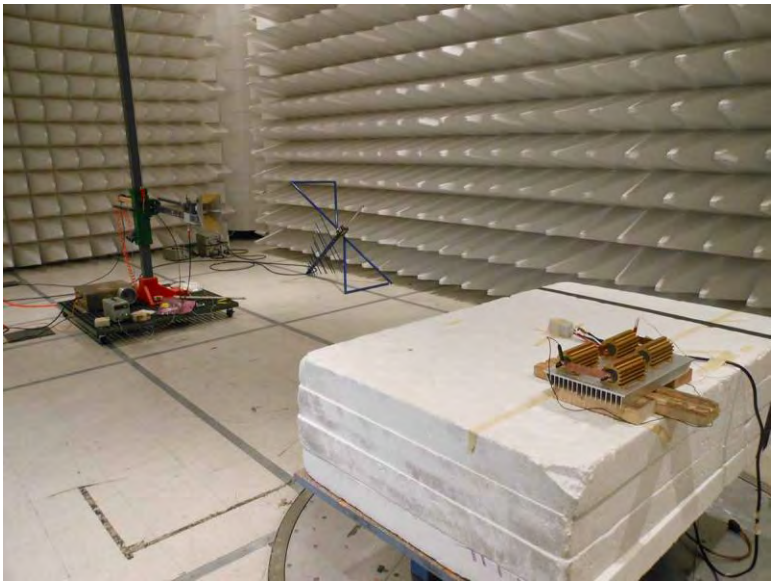
High Channel, Horizontal



High Channel, Vertical

Test Setup Photos





SUPPLEMENTAL INFORMATION

Measurement Uncertainty

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

The reported measurement uncertainties are calculated based on the worst case of all laboratory environments from CKC Laboratories, Inc. test sites. Only those parameters which require estimation of measurement uncertainty are reported. The reported worst case measurement uncertainty is less than the maximum values derived in CISPR 16-4-2. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k=2. Compliance is deemed to occur provided measurements are below the specified limits.

Emissions Test Details

TESTING PARAMETERS

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

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

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

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in dBµV/m, the spectrum analyzer reading in dBµV was corrected by using the following formula. This reading was then compared to the applicable specification limit.

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

TEST INSTRUMENTATION AND ANALYZER SETTINGS

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

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

SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

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

Peak

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

Quasi-Peak

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

Average

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