

Enlighted, Inc.

ADDENDUM TO TEST REPORT 93965-5

**Enlighted Room Control
Model: WS-1-00**

Tested To The Following Standards:

FCC Part 15 Subpart C Sections 15.249 and RSS-210 Issue 8

Report No.: 93965-5A

Date of issue: May 8, 2013



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

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

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ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

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

Representative: Tanuj Mohan
Customer Reference Number: 10113183

DATE OF EQUIPMENT RECEIPT:

DATE(S) OF TESTING:

REPORT PREPARED BY:

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

Project Number: 93965

January 17, 2013

January 17-18, 2013

Revision History

Original: Testing of the Enlighted Wireless Switch, WS-1-00 to FCC Part 15 Subpart C Sections 15.249 and RSS-210 Issue 8 devices.

Addendum A: Since the time of the original testing, the manufacturer has chosen to use the following device and model name for the EUT, Enlighted Room Control, WS-1-00. In addition a reference to the testing complying to FCC 15.31(e) was added, as well as references to the worst case orientation of the EUT during testing.

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 & RSS-210 Issue 8

Description	Test Procedure/Method	Results
Voltage Variation	FCC Part 15 Subpart C Section 15.31(e) / ANSI C63.4 (2003)	Pass
RF Power Output	FCC Part 15 Subpart C Section 15.249(a)(b) / ANSI C63.4 (2003)	Pass
Radiated Spurious Emissions	FCC Part 15 Subpart C Section 15.249(d) / ANSI C63.4 (2003)	Pass
Occupied Bandwidth	FCC -20dBc & RSS-210 99% BW / ANSI C63.4 (2003)	Pass

Conditions During Testing

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

Summary of Conditions
None

EQUIPMENT UNDER TEST (EUT)

The **Enlighted Wireless Switch**, WS-1-00 was tested by CKC Laboratories. Since the time of the original testing, the manufacturer has chosen to use the following model name, **Enlighted Room Control, WS-1-00**. Any difference between the names does not affect the EMC characteristics and therefore meets the level of testing equivalent to the tested model name shown on the data sheets.

EQUIPMENT UNDER TEST

Enlighted Room Control

Manuf: Enlighted Inc.
Model: WS-1-00
Serial: None

PERIPHERAL DEVICES

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

AC/DC Power Adapter

Manuf: Lenovo
Model: 92P1156
Serial: 11S92P1156ZDXN17B5GG

Laptop

Manuf: Lenovo
Model: T420
Serial: None

FCC PART 15 SUBPART C

This report contains EMC emissions test results under United States Federal Communications Commission (FCC) 47 CFR 15C requirements for Unlicensed Radio Frequency Devices, Subpart C - Intentional Radiators.

15.31(e) Voltage Variations

Test Data

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170
 Customer: **Enlighted, Inc.**
 Specification: **15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**
 Work Order #: **93965** Date: 1/17/2013
 Test Type: **Radiated Scan** Time: 10:32:32
 Equipment: **Enlighted Wireless Switch** Sequence#: 1
 Manufacturer: Enlighted Inc. Tested By: Hieu Song Nguyenpham
 Model: WS-1-00 S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	10/19/2011	10/19/2013
T2	AN03302	Cable	32026-29094K-29094K-72TC	3/21/2012	3/21/2014
T3	ANP01210	Cable	FSJ1P-50A-4A	3/15/2011	3/15/2013
	AN02668	Spectrum Analyzer	E4446A	2/23/2011	2/23/2013

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Enlighted Wireless Switch*	Enlighted Inc.	WS-1-00	None

Support Devices:

Function	Manufacturer	Model #	S/N
AC/DC Power Adapter	Lenovo	92P1156	11S92P1156ZDXN17B5GG
Laptop	Lenovo	T420	None

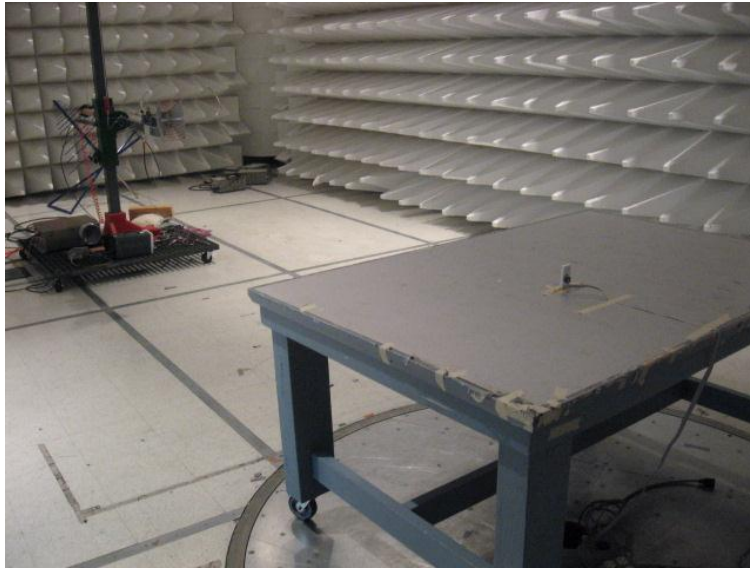
Test Conditions / Notes:

Fundamental of the EUT
Transmitter operating frequency: 2.4GHz
Number of Channel: 16
Low Frequency: 2.405GHz
High Frequency: 2.480 GHz
Enlighted Software
Temperature: 19.9°C
Humidity: 28%
Atmospheric Pressure: 102.1kPa
RBW=VBW= 1MHz
Note: The EUT is a battery device. It is placed on 80cm table and at the center of the turning table. The EUT is set in constant transmit mode.

15.31(e) A fresh battery is used.

Test Setup Photos





15.249(a)(b) RF Power Output

Test Data

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

Customer: **Enlighted, Inc.**

Specification: **15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**

Work Order #: **93965**

Date: 1/17/2013

Test Type: **Radiated Scan**

Time: 10:24:41

Equipment: **Enlighted Wireless Switch**

Sequence#: 2

Manufacturer: Enlighted Inc.

Tested By: Hieu Song Nguyenpham

Model: WS-1-00

S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	10/19/2011	10/19/2013
T2	AN03302	Cable	32026-29094K- 29094K-72TC	3/21/2012	3/21/2014
T3	ANP01210	Cable	FSJ1P-50A-4A	3/15/2011	3/15/2013
	AN02668	Spectrum Analyzer	E4446A	2/23/2011	2/23/2013

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Enlighted Wireless Switch*	Enlighted Inc.	WS-1-00	None

Support Devices:

Function	Manufacturer	Model #	S/N
AC/DC Power Adapter	Lenovo	92P1156	11S92P1156ZDXN17B5GG
Laptop	Lenovo	T420	None

Test Conditions / Notes:

Fundamental of the EUT

Transmitter operating frequency: 2.4GHz

Number of Channel: 16

Low Frequency: 2.405GHz

High Frequency: 2.480GHz

Enlighted Software

Temperature: 19.9° C

Humidity: 28%

Atmospheric Pressure: 102.1kPa

RBW=VBW= 1MHz

Note: The EUT is a battery device. It is placed on 80cm table and at the center of the turning table.

Low- Channel

Ext Attn: 0 dB

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	2406.045M Ave	50.1	+26.4	+1.1	+2.8		+0.0	80.4	94.0 Z-axis	-13.6	Vert
2	2406.045M Ave	48.2	+26.4	+1.1	+2.8		+0.0	78.5	94.0 X-axis	-15.5	Horiz
3	2406.045M Ave	46.5	+26.4	+1.1	+2.8		+0.0	76.8	94.0 Xaxis	-17.2	Vert
4	2406.045M Ave	45.8	+26.4	+1.1	+2.8		+0.0	76.1	94.0 Y-axis	-17.9	Vert
^	2406.045M	68.8	+26.4	+1.1	+2.8		+0.0	99.1	94.0 Z-axis	+5.1	Vert
^	2406.045M	65.0	+26.4	+1.1	+2.8		+0.0	95.3	94.0 X-axis	+1.3	Vert
^	2406.045M	64.3	+26.4	+1.1	+2.8		+0.0	94.6	94.0 Y-axis	+0.6	Vert
8	2406.045M Ave	44.5	+26.4	+1.1	+2.8		+0.0	74.8	94.0 Y-axis	-19.2	Horiz
9	2406.045M Ave	39.3	+26.4	+1.1	+2.8		+0.0	69.6	94.0 Z-axis	-24.4	Horiz
^	2406.045M	67.2	+26.4	+1.1	+2.8		+0.0	97.5	94.0 X-axis	+3.5	Horiz
^	2406.045M	62.9	+26.4	+1.1	+2.8		+0.0	93.2	94.0 Y-axis	-0.8	Horiz
^	2406.045M	58.5	+26.4	+1.1	+2.8		+0.0	88.8	94.0 Z-axis	-5.2	Horiz

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

Customer: **Enlighted, Inc.**
 Specification: **15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**
 Work Order #: **93965** Date: 1/17/2013
 Test Type: **Radiated Scan** Time: 10:32:32
 Equipment: **Enlighted Wireless Switch** Sequence#: 1
 Manufacturer: Enlighted Inc. Tested By: Hieu Song Nguyenpham
 Model: WS-1-00
 S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	10/19/2011	10/19/2013
T2	AN03302	Cable	32026-29094K-29094K-72TC	3/21/2012	3/21/2014
T3	ANP01210	Cable	FSJ1P-50A-4A	3/15/2011	3/15/2013
	AN02668	Spectrum Analyzer	E4446A	2/23/2011	2/23/2013

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Enlighted Wireless Switch*	Enlighted Inc.	WS-1-00	None

Support Devices:

Function	Manufacturer	Model #	S/N
AC/DC Power Adapter	Lenovo	92P1156	11S92P1156ZDXN17B5GG
Laptop	Lenovo	T420	None

Test Conditions / Notes:

<p>Fundamental of the EUT</p> <p>Transmitter operating frequency: 2.4GHz Number of Channel: 16 Low Frequency: 2.405GHz High Frequency: 2.480 GHz Enlighted Software Temperature: 19.9° C Humidity: 28% Atmospheric Pressure: 102.1kPa</p> <p>RBW=VBW= 1MHz</p> <p>Note: The EUT is a battery device. It is placed on 80cm table and at the center of the turning table.</p> <p>Middle- Channel</p>

Ext Attn: 0 dB

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	2440.183M Ave	48.9	+26.4	+1.1	+2.8		+0.0	79.2	94.0 Z-axis	-14.8	Vert
2	2440.183M Ave	47.4	+26.4	+1.1	+2.8		+0.0	77.7	94.0 X-axis	-16.3	Horiz
3	2440.183M Ave	47.2	+26.4	+1.1	+2.8		+0.0	77.5	94.0 X-axis	-16.5	Vert
4	2440.183M Ave	46.1	+26.4	+1.1	+2.8		+0.0	76.4	94.0 Y-axis	-17.6	Vert
^	2440.183M	68.3	+26.4	+1.1	+2.8		+0.0	98.6	94.0 Z-axis	+4.6	Vert
^	2440.183M	66.3	+26.4	+1.1	+2.8		+0.0	96.6	94.0 X-axis	+2.6	Vert
^	2440.183M	65.1	+26.4	+1.1	+2.8		+0.0	95.4	94.0 Y-axis	+1.4	Vert
8	2440.183M Ave	45.4	+26.4	+1.1	+2.8		+0.0	75.7	94.0 Y-axis	-18.3	Horiz
9	2440.183M Ave	40.2	+26.4	+1.1	+2.8		+0.0	70.5	94.0 Z-axis	-23.5	Horiz
^	2440.183M	68.1	+26.4	+1.1	+2.8		+0.0	98.4	94.0 X-axis	+4.4	Horiz
^	2440.183M	65.2	+26.4	+1.1	+2.8		+0.0	95.5	94.0 Y-axis	+1.5	Horiz
^	2440.183M	59.2	+26.4	+1.1	+2.8		+0.0	89.5	94.0 Z-axis	-4.5	Horiz

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

Customer: **Enlighted, Inc.**
 Specification: **15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**
 Work Order #: **93965** Date: 1/17/2013
 Test Type: **Radiated Scan** Time: 11:03:53
 Equipment: **Enlighted Wireless Switch** Sequence#: 3
 Manufacturer: **Enlighted Inc.** Tested By: **Hieu Song Nguyenpham**
 Model: **WS-1-00**
 S/N: **None**

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	10/19/2011	10/19/2013
T2	AN03302	Cable	32026-29094K-29094K-72TC	3/21/2012	3/21/2014
T3	ANP01210	Cable	FSJ1P-50A-4A	3/15/2011	3/15/2013
	AN02668	Spectrum Analyzer	E4446A	2/23/2011	2/23/2013

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Enlighted Wireless Switch*	Enlighted Inc.	WS-1-00	None

Support Devices:

Function	Manufacturer	Model #	S/N
AC/DC Power Adapter	Lenovo	92P1156	11S92P1156ZDXN17B5GG
Laptop	Lenovo	T420	None

Test Conditions / Notes:

<p>Fundamental of the EUT</p> <p>Transmitter operating frequency: 2.4GHz Number of Channel: 16 Low Frequency: 2.405GHz High Frequency: 2.480GHz Enlighted Software Temperature: 19.9° C Humidity: 28% Atmospheric Pressure: 102.1kPa</p> <p>RBW=VBW= 1MHz</p> <p>Note: Note: The EUT is a battery device. It is placed on 80cm table and at the center of the turning table.</p> <p>High- Channel</p>
--

Ext Attn: 0 dB

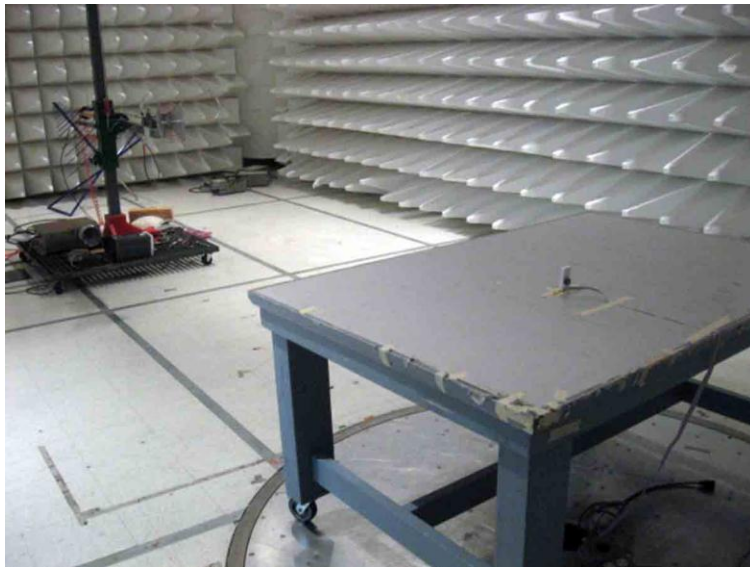
Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	T3 dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	2480.150M Ave	51.5	+26.4	+1.1	+2.9	+0.0	81.9	94.0 Z-axis	-12.1	Vert
2	2480.150M Ave	47.6	+26.4	+1.1	+2.9	+0.0	78.0	94.0 X-axis	-16.0	Horiz
3	2480.150M Ave	46.3	+26.4	+1.1	+2.9	+0.0	76.7	94.0 X-axis	-17.3	Vert
4	2480.150M Ave	44.8	+26.4	+1.1	+2.9	+0.0	75.2	94.0 Y-axis	-18.8	Vert
^	2480.150M	70.9	+26.4	+1.1	+2.9	+0.0	101.3	94.0 Z-axis	+7.3	Vert
^	2480.150M	66.0	+26.4	+1.1	+2.9	+0.0	96.4	94.0 X-axis	+2.4	Vert
^	2480.150M	64.0	+26.4	+1.1	+2.9	+0.0	94.4	94.0 Y-axis	+0.4	Vert
8	2480.150M Ave	44.8	+26.4	+1.1	+2.9	+0.0	75.2	94.0 Y-axis	-18.8	Horiz
9	2480.150M Ave	42.5	+26.4	+1.1	+2.9	+0.0	72.9	94.0 Z-axis	-21.1	Horiz
^	2480.150M	68.0	+26.4	+1.1	+2.9	+0.0	98.4	94.0 X-axis	+4.4	Horiz
^	2480.150M	64.2	+26.4	+1.1	+2.9	+0.0	94.6	94.0 Y-axis	+0.6	Horiz
^	2480.150M	62.0	+26.4	+1.1	+2.9	+0.0	92.4	94.0 Z-axis	-1.6	Horiz

Test Setup Photos

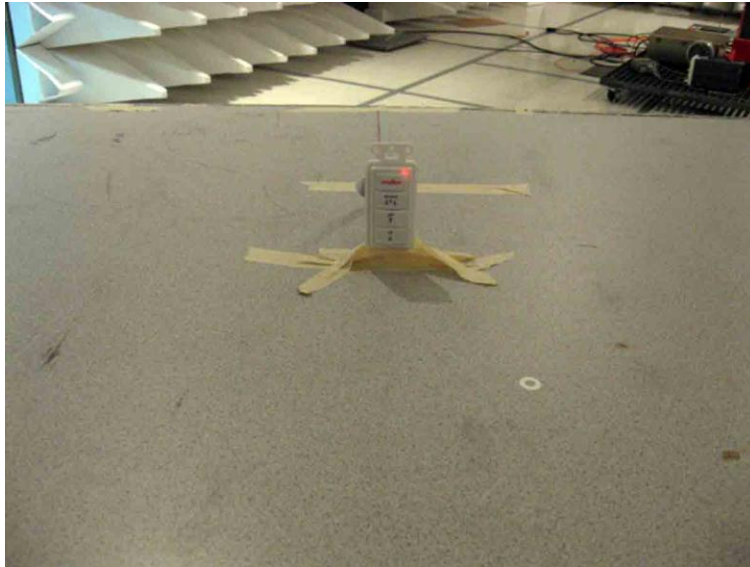




X Axis



Y Axis



Z Axis

15.249(d) Radiated Spurious Emissions

Test Data Sheets

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

Customer: **Enlighted, Inc.**
 Specification: **15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**
 Work Order #: **93965** Date: 1/18/2013
 Test Type: **Radiated Scan** Time: 16:31:18
 Equipment: **Enlighted Wireless Switch** Sequence#: 49
 Manufacturer: Enlighted Inc. Tested By: Hieu Song Nguyenpham
 Model: WS-1-00
 S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP00880	Cable	RG214U	7/30/2012	7/30/2014
T2	ANP05440	Cable		3/7/2011	3/7/2013
	AN02668	Spectrum Analyzer	E4446A	2/23/2011	2/23/2013
T3	AN00432	Loop Antenna	6502	3/31/2011	3/31/2013

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Enlighted Wireless Switch*	Enlighted Inc.	WS-1-00	None

Support Devices:

Function	Manufacturer	Model #	S/N
AC/DC Power Adapter	Lenovo	92P1156	11S92P1156ZDXN17B5G G
Laptop	Lenovo	T420	None

Test Conditions / Notes:

Radiated Spurious Emission
 Frequency Range: 9kHz to 30MHz
 Transmitter operating frequency: 2.4GHz
 Number of Channel: 16
 Low Frequency: 2.405GHz
 High Frequency: 2.480GHz
 Software: Enlighted software
 Temperature: 20.3° C
 Humidity: 30%
 Atmospheric Pressure: 101.9kPa

RBW=VBW= 200Hz from 9kHz to 150kHz
 RBW=VBW=9kHz from 150kHz to 30MHz

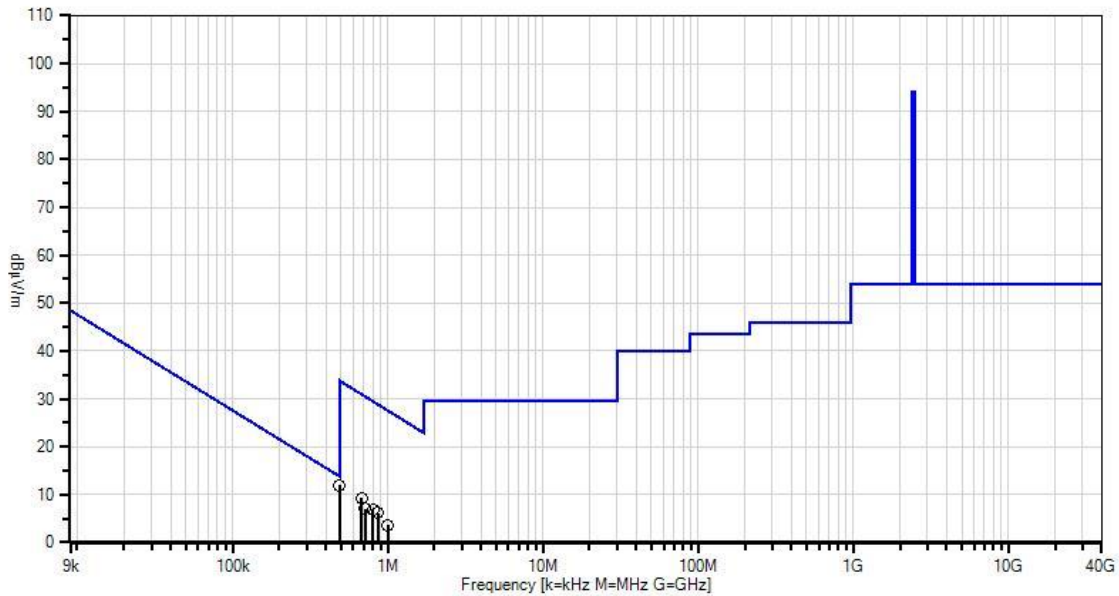
Note: The EUT is a battery device. It is placed on 80cm table and at the center of the turning table.
 Low- Channel
 Z-axis is the worst axis

Ext Attn: 0 dB

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

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	Dist dB	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	681.038k	37.7	+0.1	+0.0	+11.5	-40.0	9.3	30.9	-21.6	Perpe
2	490.784k	40.7	+0.1	+0.0	+11.1	-40.0	11.9	33.8	-21.9	Perpe
3	804.390k	35.4	+0.1	+0.0	+11.4	-40.0	6.9	29.5	-22.6	Paral
4	869.201k	34.5	+0.1	+0.1	+11.4	-40.0	6.1	28.8	-22.7	Perpe
5	712.399k	35.5	+0.1	+0.0	+11.5	-40.0	7.1	30.5	-23.4	Paral
6	1.003M	32.1	+0.1	+0.0	+11.5	-40.0	3.7	27.5	-23.8	Paral

CKC Laboratories, Inc Date: 1/18/2013 Time: 16:31:18 Enlighted, Inc WO#: 93965
 Test Distance: 3 Meters Sequence#: 49



— Readings
 × QP Readings
 ▼ Ambient
 ○ Peak Readings
 * Average Readings
 — 1 - 15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

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

Customer: **Enlighted, Inc.**
 Specification: **15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**
 Work Order #: **93965** Date: 1/18/2013
 Test Type: **Radiated Scan** Time: 15:03:33
 Equipment: **Enlighted Wireless Switch** Sequence#: 40
 Manufacturer: **Enlighted Inc.** Tested By: **Hieu Song Nguyenpham**
 Model: **WS-1-00**
 S/N: **None**

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00730	Preamp		1/31/2011	1/31/2013
T2	AN00852	Biconilog Antenna	CBL 6111C	11/28/2012	11/28/2014
T3	ANP00880	Cable	RG214U	7/30/2012	7/30/2014
T4	ANP01183	Cable	CNT-195	10/24/2011	10/24/2013
T5	ANP05440	Cable		3/7/2011	3/7/2013
	AN02668	Spectrum Analyzer	E4446A	2/23/2011	2/23/2013

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Enlighted Wireless Switch*	Enlighted Inc.	WS-1-00	None

Support Devices:

Function	Manufacturer	Model #	S/N
AC/DC Power Adapter	Lenovo	92P1156	11S92P1156ZDXN17B5GG
Laptop	Lenovo	T420	None

Test Conditions / Notes:

Radiated Spurious Emission
 Frequency Range: 30MHz to 1000MHz
 Transmitter operating frequency: 2.4GHz
 Number of Channel: 16
 Low Frequency: 2.405GHz
 High Frequency: 2.480GHz
 Enlighted software
 Temperature: 20.3° C
 Humidity: 30%
 Atmospheric Pressure: 101.9kPa

RBW=VBW= 120kHz

Note: The EUT is a battery device. It is placed on 80cm table and at the center of the turning table.

Low- Channel
 Z-axis is the worst axis

Ext Attn: 0 dB

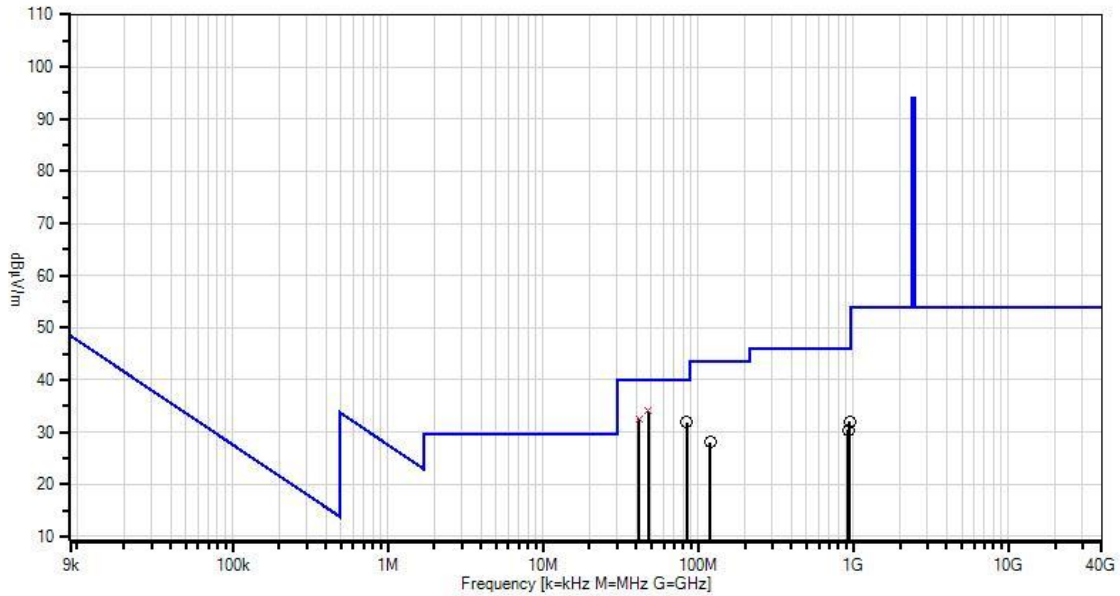
Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	47.992M QP	50.8	-27.5 +0.4	+9.6	+0.6	+0.1	+0.0	34.0	40.0	-6.0	Vert
^	47.992M	53.7	-27.5 +0.4	+9.6	+0.6	+0.1	+0.0	36.9	40.0	-3.1	Vert
^	47.992M	53.3	-27.5 +0.4	+9.6	+0.6	+0.1	+0.0	36.5	40.0	-3.5	Vert
4	41.517M QP	46.4	-27.5 +0.3	+12.6	+0.6	+0.1	+0.0	32.5	40.0	-7.5	Vert
^	41.517M	52.1	-27.5 +0.3	+12.6	+0.6	+0.1	+0.0	38.2	40.0	-1.8	Vert
^	41.517M	51.2	-27.5 +0.3	+12.6	+0.6	+0.1	+0.0	37.3	40.0	-2.7	Vert
7	84.171M	49.7	-27.5 +0.5	+8.2	+0.9	+0.1	+0.0	31.9	40.0	-8.1	Vert
8	951.226M	29.7	-27.7 +2.0	+23.5	+3.5	+1.0	+0.0	32.0	46.0	-14.0	Horiz
9	120.213M	42.3	-27.4 +0.6	+11.3	+1.1	+0.2	+0.0	28.1	43.5	-15.4	Horiz
10	925.377M	28.9	-27.6 +1.9	+22.7	+3.5	+1.0	+0.0	30.4	46.0	-15.6	Horiz

CKC Laboratories, Inc Date: 1/18/2013 Time: 15:03:33 Enlighted, Inc WO#: 93965
 Test Distance: 3 Meters Sequence#: 40



- Readings
- x QP Readings
- ▼ Ambient
- o Peak Readings
- * Average Readings
- 1 - 15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

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

Customer: **Enlighted, Inc.**
 Specification: **15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**
 Work Order #: **93965** Date: 1/17/2013
 Test Type: **Radiated Scan** Time: 16:21:05
 Equipment: **Enlighted Wireless Switch** Sequence#: 13
 Manufacturer: **Enlighted Inc.** Tested By: **Hieu Song Nguyenpham**
 Model: **WS-1-00**
 S/N: **None**

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	10/19/2011	10/19/2013
T2	AN03302	Cable	32026-29094K-29094K-72TC	3/21/2012	3/21/2014
T3	ANP01210	Cable	FSJ1P-50A-4A	3/15/2011	3/15/2013
	AN02668	Spectrum Analyzer	E4446A	2/23/2011	2/23/2013
T4	AN03309	High Pass Filter	11SH10-3000/T10000-O/O	6/12/2012	6/12/2014
T5	AN03114	Preamp	AMF-7D-00101800-30-10P	5/13/2011	5/13/2013
T6	ANP05843	Cable	32022-2-29094K-48TC	8/7/2012	8/7/2014

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Enlighted Wireless Switch*	Enlighted Inc.	WS-1-00	None

Support Devices:

Function	Manufacturer	Model #	S/N
AC/DC Power Adapter	Lenovo	92P1156	11S92P1156ZDXN17B5GG
Laptop	Lenovo	T420	None

Test Conditions / Notes:

Radiated Spurious and Harmonic Emission
 Frequency Range: 1000-12000MHz
 Transmitter operating frequency: 2.4GHz
 Number of Channel: 16
 Low Frequency: 2.405GHz
 High Frequency: 2.480GHz
 Enlighted Software
 Temperature: 19.9° C
 Humidity: 28%
 Atmospheric Pressure: 102.1kPa

RBW=VBW= 1MHz

Note: The EUT is a battery device. It is placed on 80cm table and at the center of the turning table.
 Low- Channel
 Z-axis is the worst axis

Ext Attn: 0 dB

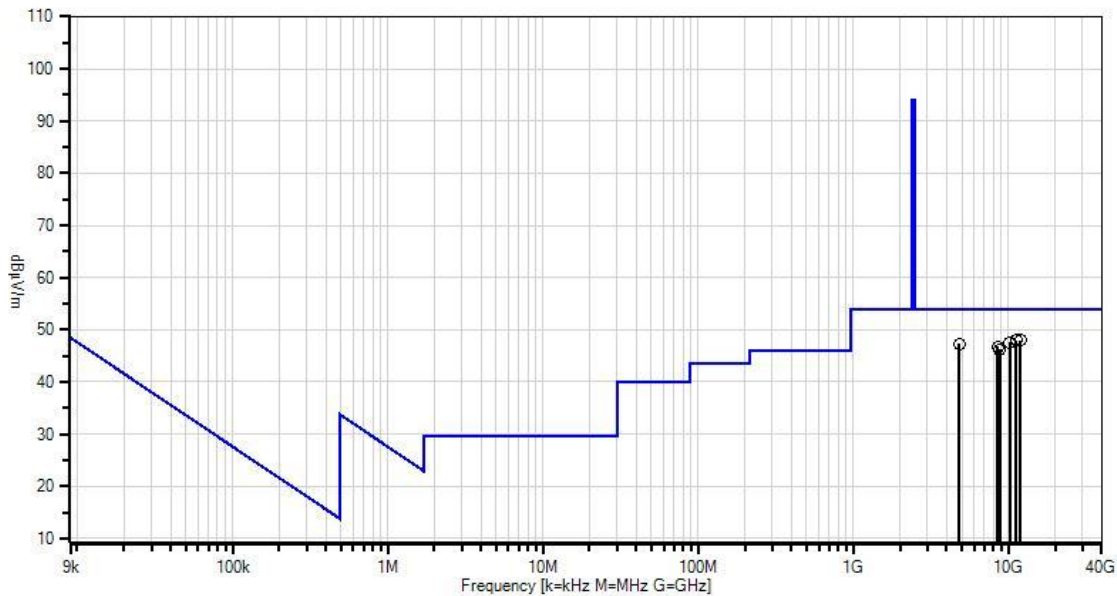
Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 T5 dB	T2 T6 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	11992.064 M	53.2	+38.6 -55.9	+2.4 +2.2	+7.1	+0.3	+0.0	47.9	54.0	-6.1	Vert
2	11200.448 M	55.3	+38.3 -57.1	+2.3 +2.1	+6.8	+0.2	+0.0	47.9	54.0	-6.1	Horiz
3	10236.229 M	57.1	+38.1 -58.5	+2.3 +2.0	+6.5	+0.1	+0.0	47.6	54.0	-6.4	Horiz
4	4811.810M	67.0	+32.0 -58.9	+1.5 +1.3	+4.2	+0.2	+0.0	47.3	54.0	-6.7	Vert
5	8513.508M	56.5	+36.7 -56.3	+2.1 +1.6	+5.8	+0.3	+0.0	46.7	54.0	-7.3	Horiz
6	8838.833M	56.1	+37.0 -56.7	+2.1 +1.5	+5.9	+0.3	+0.0	46.2	54.0	-7.8	Vert

CKC Laboratories, Inc Date: 1/17/2013 Time: 16:21:05 Enlighted, Inc WO#: 93965
Test Distance: 3 Meters Sequence#: 13



— Readings
 × QP Readings
 ▼ Ambient
 ○ Peak Readings
 * Average Readings
 — 1 - 15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

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

Customer: **Enlighted, Inc.**
 Specification: **15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**
 Work Order #: **93965** Date: 1/18/2013
 Test Type: **Radiated Scan** Time: 09:56:54
 Equipment: **Enlighted Wireless Switch** Sequence#: 22
 Manufacturer: **Enlighted Inc.** Tested By: **Hieu Song Nguyenpham**
 Model: **WS-1-00**
 S/N: **None**

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP00928	Cable	various	2/10/2012	2/10/2014
T2	ANP05843	Cable	32022-2-29094K-48TC	8/7/2012	8/7/2014
T3	ANP06127	Cable	32022-29094K-29094K-132TC	9/7/2011	9/7/2013
	AN02668	Spectrum Analyzer	E4446A	2/23/2011	2/23/2013
T4	AN02741	Active Horn Antenna	AMFW-5F-12001800-20-10P	12/18/2012	12/18/2014

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Enlighted Wireless Switch*	Enlighted Inc.	WS-1-00	None

Support Devices:

Function	Manufacturer	Model #	S/N
AC/DC Power Adapter	Lenovo	92P1156	11S92P1156ZDXN17B5GG
Laptop	Lenovo	T420	None

Test Conditions / Notes:

Radiated Spurious and Harmonic Emission
 Frequency Range: 12000MHz to 18000MHz
 Transmitter operating frequency: 2.4GHz
 Number of Channel: 16
 Low Frequency: 2.405GHz
 High Frequency: 2.480GHz
 Enlighted Software
 Temperature: 20.3° C
 Humidity: 30%
 Atmospheric Pressure: 101.9kPa

RBW=VBW= 1MHz

Note: The EUT is a battery device. It is placed on 80cm table and at the center of the turning table.

Low- Channel
 Z-axis is the worst axis

Ext Attn: 0 dB

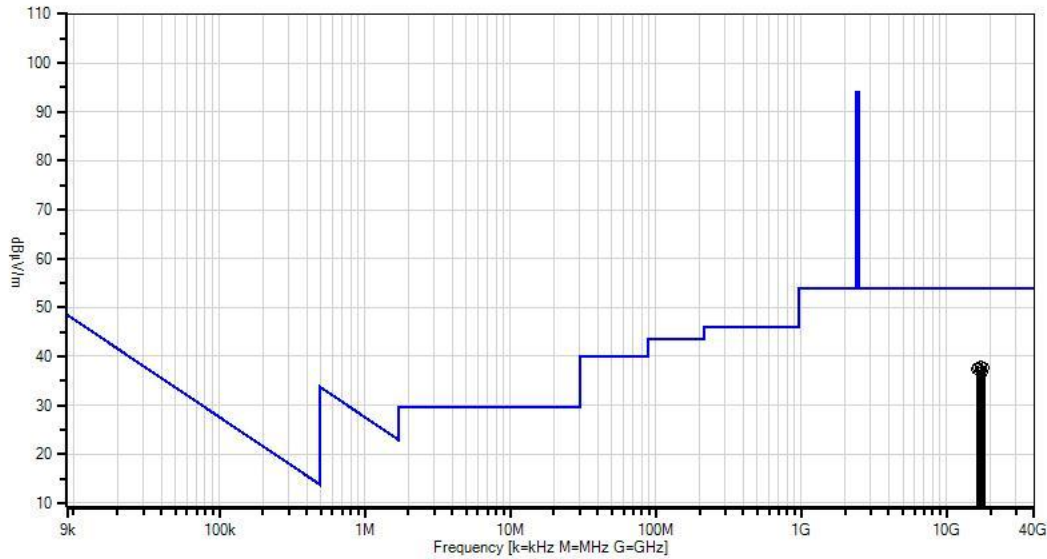
Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	17234.845 M	43.4	+0.8	+2.6	+3.7	-12.5	+0.0	38.0	54.0	-16.0	Vert
2	16433.429 M	42.0	+0.9	+2.6	+3.6	-11.4	+0.0	37.7	54.0	-16.3	Horiz
3	17975.125 M	40.7	+0.8	+2.7	+3.7	-10.3	+0.0	37.6	54.0	-16.4	Horiz
4	16297.293 M	41.5	+1.0	+2.6	+3.6	-11.3	+0.0	37.4	54.0	-16.6	Vert
5	17155.245 M	42.7	+0.9	+2.6	+3.7	-12.7	+0.0	37.2	54.0	-16.8	Vert
6	17592.050 M	41.2	+0.8	+2.7	+3.7	-11.6	+0.0	36.8	54.0	-17.2	Horiz

CKC Laboratories, Inc Date: 1/18/2013 Time: 09:56:54 Enlighted , Inc WO#: 93965
 Test Distance: 3 Meters Sequence#: 22



Readings
 × QP Readings
 ▼ Ambient
 ○ Peak Readings
 * Average Readings
 — 1 - 15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

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

Customer: **Enlighted, Inc.**
 Specification: **15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**
 Work Order #: **93965** Date: 1/18/2013
 Test Type: **Radiated Scan** Time: 11:31:29
 Equipment: **Enlighted Wireless Switch** Sequence#: 31
 Manufacturer: **Enlighted Inc.** Tested By: **Hieu Song Nguyenpham**
 Model: **WS-1-00**
 S/N: **None**

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP05843	Cable	32022-2-29094K-48TC	8/7/2012	8/7/2014
T2	ANP06127	Cable	32022-29094K-29094K-132TC	9/7/2011	9/7/2013
	AN02668	Spectrum Analyzer	E4446A	2/23/2011	2/23/2013
T3	ANP00929	Cable	various	2/16/2012	2/16/2014
T4	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	12/17/2012	12/17/2014

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Enlighted Wireless Switch*	Enlighted Inc.	WS-1-00	None

Support Devices:

Function	Manufacturer	Model #	S/N
AC/DC Power Adapter	Lenovo	92P1156	11S92P1156ZDXN17B5GG
Laptop	Lenovo	T420	None

Test Conditions / Notes:

Radiated Spurious and Harmonic Emission
 Frequency Range: 18000MHz to 25000MHz
 Transmitter operating frequency: 2.4GHz
 Number of Channel: 16
 Low Frequency: 2.405GHz
 High Frequency: 2.480GHz
 Enlighted software
 Temperature: 20.3°C
 Humidity: 30%
 Atmospheric Pressure: 101.9kPa

RBW=VBW= 1MHz

Note: The EUT is a battery device. It is placed on 80cm table and at the center of the turning table.

Low- Channel
 Z-axis is the worst axis.

Ext Attn: 0 dB

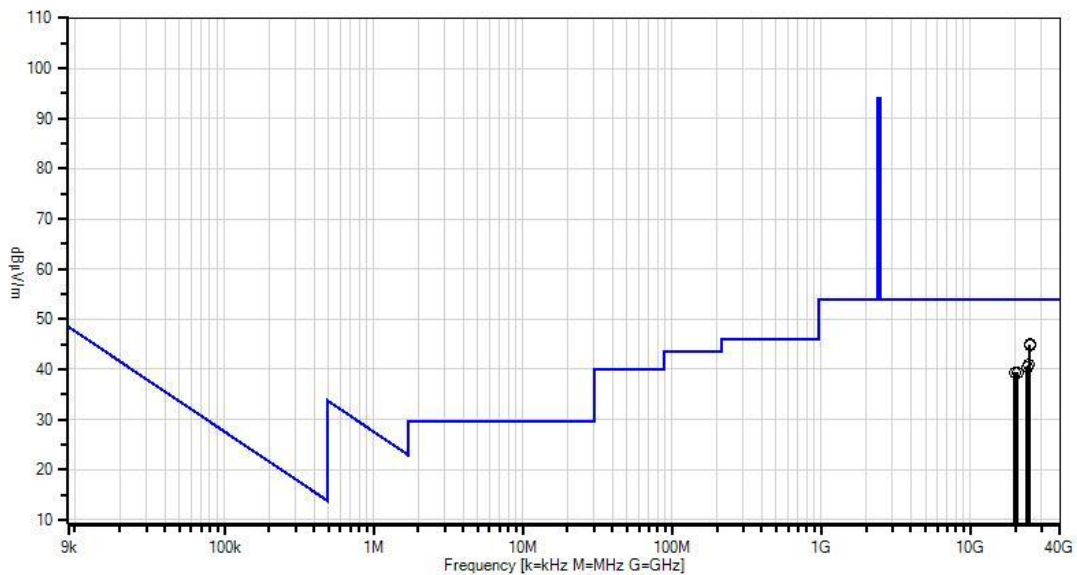
Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	24982.108 M	46.8	+3.1	+4.4	+2.9	-12.3	+0.0	44.9	54.0	-9.1	Horiz
2	24897.618 M	46.4	+3.3	+4.4	+2.9	-12.3	+0.0	44.7	54.0	-9.3	Vert
3	24587.490 M	43.0	+3.4	+4.4	+2.9	-12.8	+0.0	40.9	54.0	-13.1	Horiz
4	23994.989 M	43.9	+3.1	+4.4	+3.0	-14.0	+0.0	40.4	54.0	-13.6	Vert
5	19927.926 M	42.7	+2.9	+4.0	+3.2	-13.4	+0.0	39.4	54.0	-14.6	Vert
6	20646.644 M	43.6	+2.8	+4.0	+3.1	-14.1	+0.0	39.4	54.0	-14.6	Horiz

CKC Laboratories, Inc Date: 1/18/2013 Time: 11:31:29 Enlighted , Inc WO#: 93965
 Test Distance: 3 Meters Sequence#: 31



— Readings
 × QP Readings
 ▼ Ambient
 ○ Peak Readings
 * Average Readings
 — 1 - 15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

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

Customer: **Enlighted, Inc.**
 Specification: **15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**
 Work Order #: **93965** Date: 1/18/2013
 Test Type: **Radiated Scan** Time: 15:40:06
 Equipment: **Enlighted Wireless Switch** Sequence#: 43
 Manufacturer: Enlighted Inc. Tested By: Hieu Song Nguyenpham
 Model: WS-1-00
 S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP00880	Cable	RG214U	7/30/2012	7/30/2014
T2	ANP05440	Cable		3/7/2011	3/7/2013
	AN02668	Spectrum Analyzer	E4446A	2/23/2011	2/23/2013
T3	AN00432	Loop Antenna	6502	3/31/2011	3/31/2013

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Enlighted Wireless Switch*	Enlighted Inc.	WS-1-00	None

Support Devices:

Function	Manufacturer	Model #	S/N
AC/DC Power Adapter	Lenovo	92P1156	11S92P1156ZDXN17B5GG
Laptop	Lenovo	T420	None

Test Conditions / Notes:

Radiated Spurious Emission
 Frequency Range: 9kHz to 30MHz
 Transmitter operating frequency: 2.4GHz
 Number of Channel: 16
 Low Frequency: 2.405GHz
 High Frequency: 2.480GHz
 Enlighted software
 Temperature: 20.3° C
 Humidity: 30%
 Atmospheric Pressure: 101.9kPa

RBW=VBW= 200Hz from 9kHz to 150kHz
 RBW=VBW=9kHz from 150kHz to 30MHz

Note: The EUT is a battery device. It is placed on 80cm table and at the center of the turning table.

Middle- Channel
 Z-axis is the worst axis.

Ext Attn: 0 dB

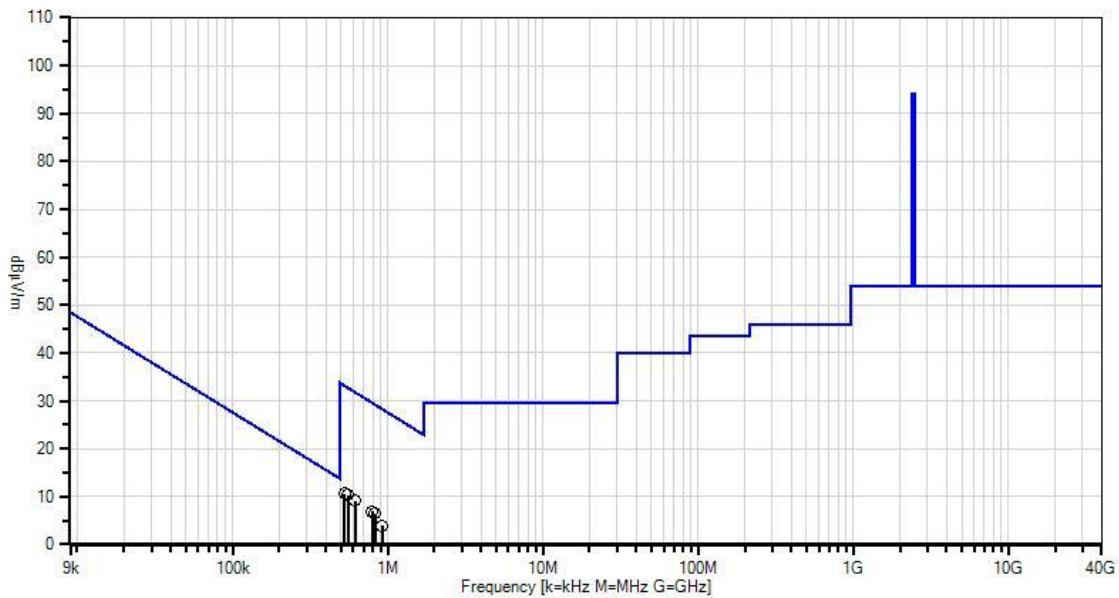
Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	T3 dB	Dist Table dB	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	557.687k	39.1	+0.1	+0.0	+11.2	-40.0	10.4	32.7	-22.3	Perpe
2	528.417k	39.3	+0.1	+0.0	+11.2	-40.0	10.6	33.1	-22.5	Perpe
3	618.317k	37.8	+0.1	+0.0	+11.3	-40.0	9.2	31.8	-22.6	Paral
4	798.118k	35.4	+0.1	+0.0	+11.4	-40.0	6.9	29.5	-22.6	Paral
5	833.660k	35.0	+0.1	+0.0	+11.4	-40.0	6.5	29.2	-22.7	Perpe
6	917.288k	32.5	+0.1	+0.0	+11.4	-40.0	4.0	28.3	-24.3	Paral

CKC Laboratories, Inc Date: 1/18/2013 Time: 15:40:06 Enlighted , Inc WO#: 93965
 Test Distance: 3 Meters Sequence#: 43



— Readings
 × QP Readings
 ▼ Ambient
 ○ Peak Readings
 * Average Readings
 — 1 - 15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

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

Customer: **Enlighted, Inc.**
 Specification: **15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**
 Work Order #: **93965** Date: 1/18/2013
 Test Type: **Radiated Scan** Time: 13:53:36
 Equipment: **Enlighted Wireless Switch** Sequence#: 34
 Manufacturer: **Enlighted Inc.** Tested By: **Hieu Song Nguyenpham**
 Model: **WS-1-00**
 S/N: **None**

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00730	Preamp		1/31/2011	1/31/2013
T2	AN00852	Biconilog Antenna	CBL 6111C	11/28/2012	11/28/2014
T3	ANP00880	Cable	RG214U	7/30/2012	7/30/2014
T4	ANP01183	Cable	CNT-195	10/24/2011	10/24/2013
T5	ANP05440	Cable		3/7/2011	3/7/2013
	AN02668	Spectrum Analyzer	E4446A	2/23/2011	2/23/2013

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Enlighted Wireless Switch*	Enlighted Inc.	WS-1-00	None

Support Devices:

Function	Manufacturer	Model #	S/N
AC/DC Power Adapter	Lenovo	92P1156	11S92P1156ZDXN17B5GG
Laptop	Lenovo	T420	None

Test Conditions / Notes:

Radiated Spurious Emission
 Frequency Range: 30MHz to 1000MHz
 Transmitter operating frequency: 2.4GHz
 Number of Channel: 16
 Low Frequency: 2.405GHz
 High Frequency: 2.480GHz
 Enlighted software
 Temperature: 20.3° C
 Humidity: 30%
 Atmospheric Pressure: 101.9kPa

RBW=VBW= 120kHz

Note: The EUT is a battery device. It is placed on 80cm table and at the center of the turning table.

Middle- Channel
 Z-axis is the worst axis.

Ext Attn: 0 dB

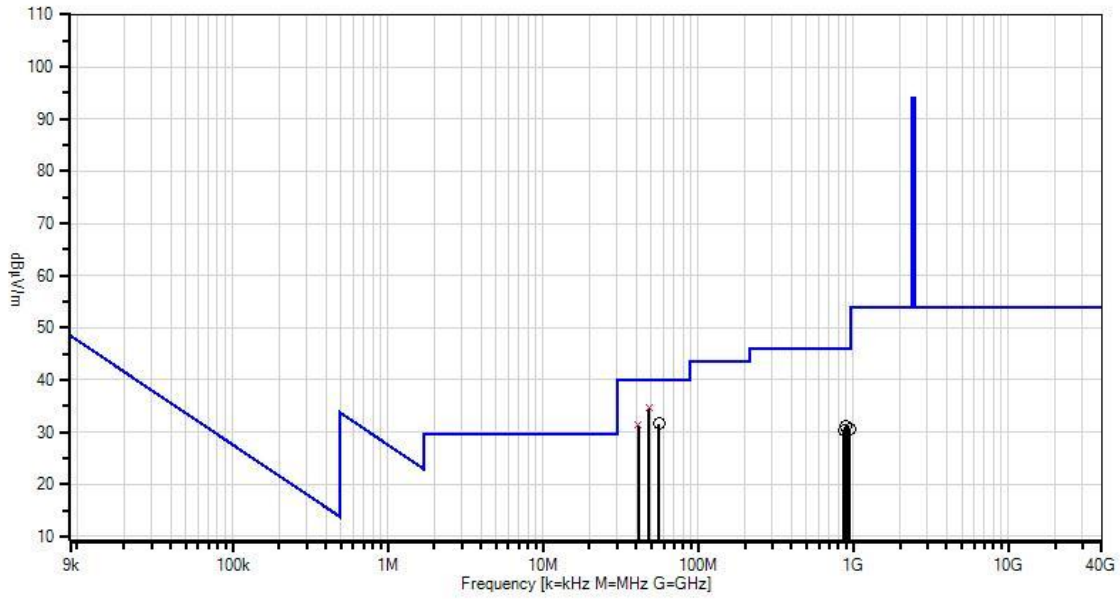
Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	48.117M QP	51.4	-27.5 +0.4	+9.6	+0.6	+0.1	+0.0	34.6	40.0	-5.4	Vert
^	48.117M	54.2	-27.5 +0.4	+9.6	+0.6	+0.1	+0.0	37.4	40.0	-2.6	Vert
^	48.117M	53.8	-27.5 +0.4	+9.6	+0.6	+0.1	+0.0	37.0	40.0	-3.0	Vert
4	56.220M	51.0	-27.5 +0.4	+6.8	+0.7	+0.2	+0.0	31.6	40.0	-8.4	Vert
5	41.139M QP	45.0	-27.5 +0.3	+12.8	+0.6	+0.1	+0.0	31.3	40.0	-8.7	Vert
^	41.139M	50.9	-27.5 +0.3	+12.8	+0.6	+0.1	+0.0	37.2	40.0	-2.8	Vert
^	41.139M	50.6	-27.5 +0.3	+12.8	+0.6	+0.1	+0.0	36.9	40.0	-3.1	Vert
8	903.395M	29.1	-27.4 +1.9	+23.0	+3.4	+1.0	+0.0	31.0	46.0	-15.0	Horiz
9	946.530M	28.3	-27.7 +2.0	+23.5	+3.5	+1.0	+0.0	30.6	46.0	-15.4	Horiz
10	874.806M	28.5	-27.3 +1.9	+22.9	+3.4	+0.9	+0.0	30.3	46.0	-15.7	Horiz

CKC Laboratories, Inc Date: 1/18/2013 Time: 13:53:36 Enlighted , Inc WO#: 93965
 Test Distance: 3 Meters Sequence#: 34



Readings
 × QP Readings
 ▼ Ambient
 ○ Peak Readings
 * Average Readings
 — 1 - 15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

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

Customer: **Enlighted, Inc.**
 Specification: **15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**
 Work Order #: **93965** Date: 1/17/2013
 Test Type: **Radiated Scan** Time: 15:14:07
 Equipment: **Enlighted Wireless Switch** Sequence#: 7
 Manufacturer: **Enlighted Inc.** Tested By: **Hieu Song Nguyenpham**
 Model: **WS-1-00**
 S/N: **None**

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	10/19/2011	10/19/2013
T2	AN03302	Cable	32026-29094K- 29094K-72TC	3/21/2012	3/21/2014
T3	ANP01210	Cable	FSJ1P-50A-4A	3/15/2011	3/15/2013
	AN02668	Spectrum Analyzer	E4446A	2/23/2011	2/23/2013
T4	AN03309	High Pass Filter	11SH10- 3000/T10000-O/O	6/12/2012	6/12/2014
T5	AN03114	Preamp	AMF-7D- 00101800-30-10P	5/13/2011	5/13/2013
T6	ANP05843	Cable	32022-2-29094K- 48TC	8/7/2012	8/7/2014

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Enlighted Wireless Switch*	Enlighted Inc.	WS-1-00	None

Support Devices:

Function	Manufacturer	Model #	S/N
AC/DC Power Adapter	Lenovo	92P1156	11S92P1156ZDXN17B5GG
Laptop	Lenovo	T420	None

Test Conditions / Notes:

Radiated Spurious and Harmonic Emission
 Frequency Range: 1000-12000MHz
 Transmitter operating frequency: 2.4GHz
 Number of Channel: 16
 Low Frequency: 2.405GHz
 High Frequency: 2.480GHz
 Enlighted Software
 Temperature: 19.9°C
 Humidity: 28%
 Atmospheric Pressure: 102.1kPa

RBW=VBW= 1MHz

Note: The EUT is a battery device. It is placed on 80cm table and at the center of the turning table.

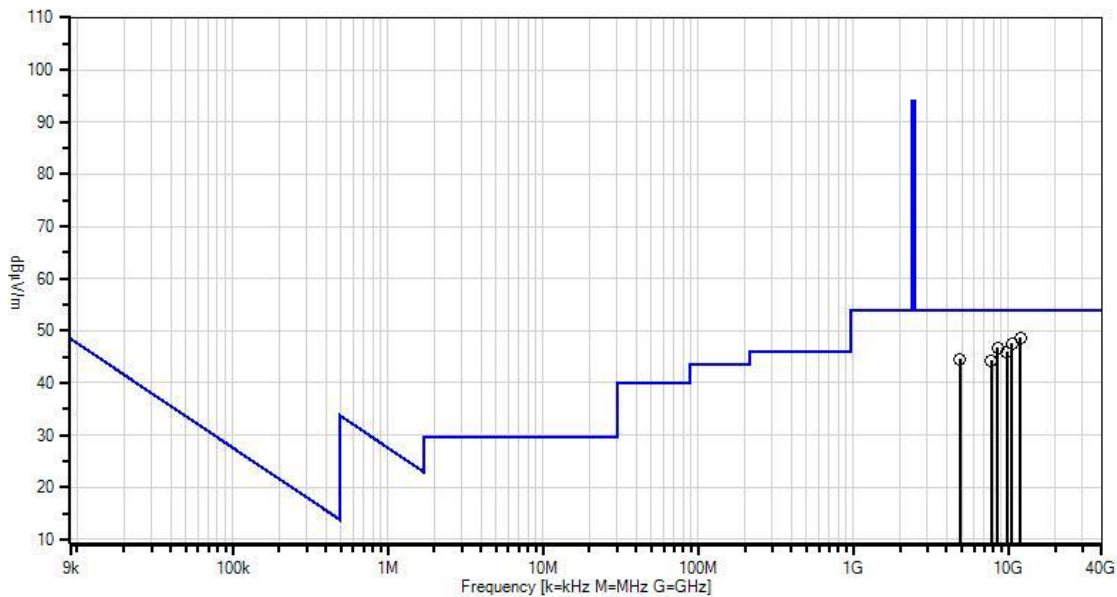
Middle- Channel
 Z-axis is the worst axis.

Ext Attn: 0 dB

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

#	Freq MHz	Rdng dB μ V	T1 T5 dB	T2 T6 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	11986.112 M	54.0	+38.6 -56.0	+2.4 +2.2	+7.1	+0.3	+0.0	48.6	54.0	-5.4	Vert
2	10470.463 M	56.7	+38.4 -58.6	+2.3 +1.9	+6.7	+0.1	+0.0	47.5	54.0	-6.5	Horiz
3	8501.496M	56.8	+36.7 -56.4	+2.0 +1.6	+5.8	+0.3	+0.0	46.8	54.0	-7.2	Horiz
4	9760.754M	57.8	+36.3 -58.7	+2.3 +1.7	+6.3	+0.2	+0.0	45.9	54.0	-8.1	Horiz
5	4881.880M	64.2	+32.1 -59.0	+1.5 +1.3	+4.2	+0.3	+0.0	44.6	54.0	-9.4	Vert
6	7780.776M	57.8	+35.9 -58.6	+2.0 +1.5	+5.5	+0.2	+0.0	44.3	54.0	-9.7	Vert

CKC Laboratories, Inc Date: 1/17/2013 Time: 15:14:07 Enlighted , Inc WO#: 93965
Test Distance: 3 Meters Sequence#: 7



— Readings
 × QP Readings
 ▼ Ambient
 ○ Peak Readings
 * Average Readings
 — 1 - 15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

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

Customer: **Enlighted, Inc.**
 Specification: **15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**
 Work Order #: **93965** Date: 1/18/2013
 Test Type: **Radiated Scan** Time: 09:11:37
 Equipment: **Enlighted Wireless Switch** Sequence#: 16
 Manufacturer: **Enlighted Inc.** Tested By: **Hieu Song Nguyenpham**
 Model: **WS-1-00**
 S/N: **None**

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP00928	Cable	various	2/10/2012	2/10/2014
T2	ANP05843	Cable	32022-2-29094K-48TC	8/7/2012	8/7/2014
T3	ANP06127	Cable	32022-29094K-29094K-132TC	9/7/2011	9/7/2013
	AN02668	Spectrum Analyzer	E4446A	2/23/2011	2/23/2013
T4	AN02741	Active Horn Antenna	AMFW-5F-12001800-20-10P	12/18/2012	12/18/2014

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Enlighted Wireless Switch*	Enlighted Inc.	WS-1-00	None

Support Devices:

Function	Manufacturer	Model #	S/N
AC/DC Power Adapter	Lenovo	92P1156	11S92P1156ZDXN17B5GG
Laptop	Lenovo	T420	None

Test Conditions / Notes:

Radiated Spurious and Harmonic Emission
 Frequency Range: 12000MHz to 18000MHz
 Transmitter operating frequency: 2.4GHz
 Number of Channel: 16
 Low Frequency: 2.405GHz
 High Frequency: 2.480GHz
 Enlighted Software
 Temperature: 20.3°C
 Humidity: 30%
 Atmospheric Pressure: 101.9kPa

RBW=VBW= 1MHz

Note: The EUT is a battery device. It is placed on 80cm table and at the center of the turning table.

Middle- Channel
 Z-axis is the worst axis.

Ext Attn: 0 dB

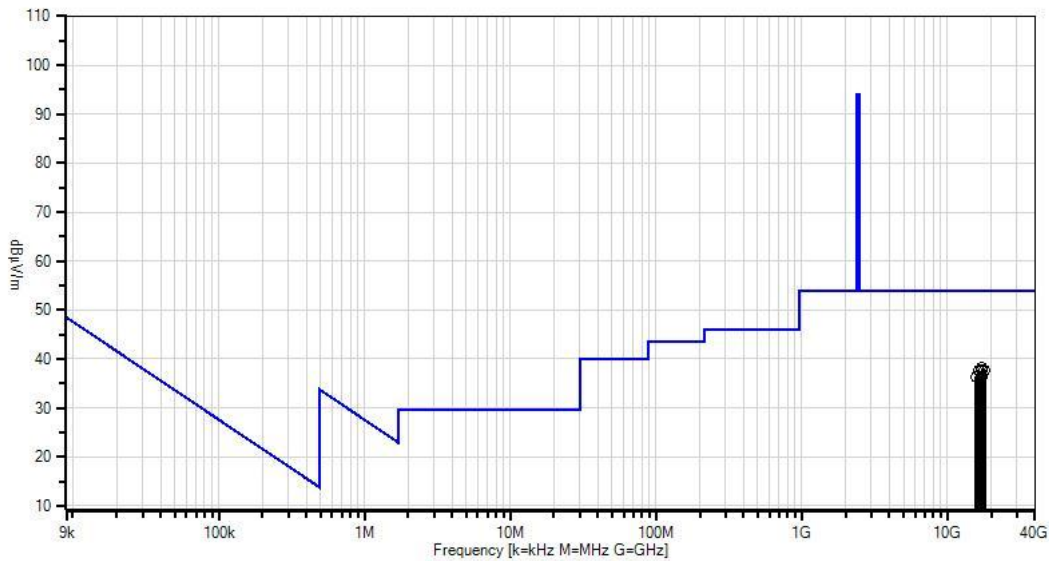
Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	17306.485 M	43.3	+0.8	+2.6	+3.7	-12.3	+0.0	38.1	54.0	-15.9	Vert
2	17977.115 M	40.7	+0.8	+2.7	+3.7	-10.3	+0.0	37.6	54.0	-16.4	Vert
3	17167.185 M	43.1	+0.8	+2.6	+3.7	-12.6	+0.0	37.6	54.0	-16.4	Vert
4	16389.385 M	41.6	+0.9	+2.6	+3.6	-11.1	+0.0	37.6	54.0	-16.4	Horiz
5	15738.735 M	42.5	+1.0	+2.5	+3.5	-13.1	+0.0	36.4	54.0	-17.6	Horiz
6	17058.730 M	42.0	+0.9	+2.6	+3.7	-12.8	+0.0	36.4	54.0	-17.6	Horiz

CKC Laboratories, Inc Date: 1/18/2013 Time: 09:11:37 Enlighted, Inc WO#: 93965
Test Distance: 3 Meters Sequence#: 16



Readings
 × QP Readings
 ▼ Ambient
 ○ Peak Readings
 * Average Readings
 — 1 - 15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

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

Customer: **Enlighted, Inc.**
 Specification: **15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**
 Work Order #: **93965** Date: 1/18/2013
 Test Type: **Radiated Scan** Time: 10:35:28
 Equipment: **Enlighted Wireless Switch** Sequence#: 25
 Manufacturer: **Enlighted Inc.** Tested By: **Hieu Song Nguyenpham**
 Model: **WS-1-00**
 S/N: **None**

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP05843	Cable	32022-2-29094K-48TC	8/7/2012	8/7/2014
T2	ANP06127	Cable	32022-29094K-29094K-132TC	9/7/2011	9/7/2013
	AN02668	Spectrum Analyzer	E4446A	2/23/2011	2/23/2013
T3	ANP00929	Cable	various	2/16/2012	2/16/2014
T4	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	12/17/2012	12/17/2014

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Enlighted Wireless Switch*	Enlighted Inc.	WS-1-00	None

Support Devices:

Function	Manufacturer	Model #	S/N
AC/DC Power Adapter	Lenovo	92P1156	11S92P1156ZDXN17B5GG
Laptop	Lenovo	T420	None

Test Conditions / Notes:

Radiated Spurious and Harmonic Emission
 Frequency Range: 18000MHz to 25000MHz
 Transmitter operating frequency: 2.4GHz
 Number of Channel: 16
 Low Frequency: 2.405GHz
 High Frequency: 2.480GHz
 Enlighted Software
 Temperature: 20.3° C
 Humidity: 30%
 Atmospheric Pressure: 101.9kPa

RBW=VBW= 1MHz

Note: The EUT is a battery device. It is placed on 80cm table and at the center of the turning table.

Middle- Channel
 Z-axis is the worst axis.

Ext Attn: 0 dB

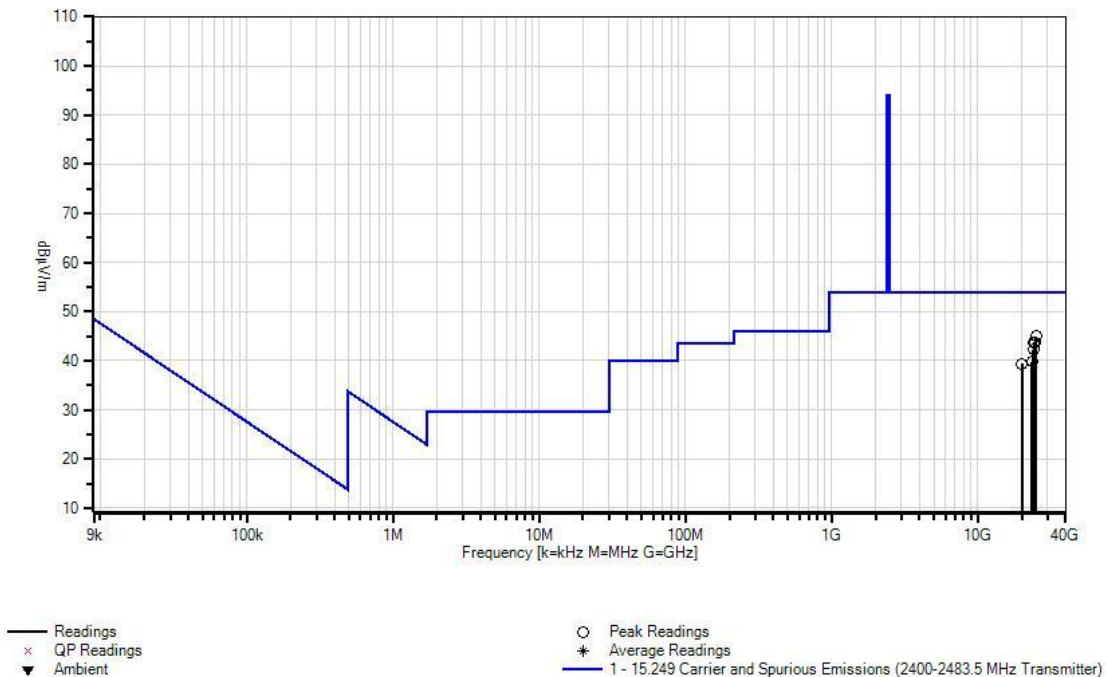
Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	24956.264 M	46.8	+3.2	+4.4	+2.9	-12.3	+0.0	45.0	54.0	-9.0	Vert
2	24336.008 M	46.7	+3.0	+4.4	+2.9	-13.2	+0.0	43.8	54.0	-10.2	Horiz
3	24812.134 M	45.3	+3.4	+4.4	+2.9	-12.4	+0.0	43.6	54.0	-10.4	Horiz
4	24039.796 M	45.7	+3.1	+4.4	+2.9	-13.9	+0.0	42.2	54.0	-11.8	Vert
5	23563.558 M	44.2	+3.2	+4.4	+3.0	-15.0	+0.0	39.8	54.0	-14.2	Vert
6	19930.929 M	42.6	+2.9	+4.0	+3.2	-13.4	+0.0	39.3	54.0	-14.7	Horiz

CKC Laboratories, Inc Date: 1/18/2013 Time: 10:35:28 Enlighted , Inc WO#: 93965
 Test Distance: 3 Meters Sequence#: 25



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

Customer: **Enlighted, Inc.**
 Specification: **15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**
 Work Order #: **93965** Date: 1/18/2013
 Test Type: **Radiated Scan** Time: 16:08:15
 Equipment: **Enlighted Wireless Switch** Sequence#: 46
 Manufacturer: **Enlighted Inc.** Tested By: **Hieu Song Nguyenpham**
 Model: **WS-1-00**
 S/N: **None**

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP00880	Cable	RG214U	7/30/2012	7/30/2014
T2	ANP05440	Cable		3/7/2011	3/7/2013
	AN02668	Spectrum Analyzer	E4446A	2/23/2011	2/23/2013
T3	AN00432	Loop Antenna	6502	3/31/2011	3/31/2013

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Enlighted Wireless Switch*	Enlighted Inc.	WS-1-00	None

Support Devices:

Function	Manufacturer	Model #	S/N
AC/DC Power Adapter	Lenovo	92P1156	11S92P1156ZDXN17B5GG
Laptop	Lenovo	T420	None

Test Conditions / Notes:

Radiated Spurious Emission
 Frequency Range: 9kHz to 30MHz
 Transmitter operating frequency: 2.4GHz
 Number of Channel: 16
 Low Frequency: 2.405GHz
 High Frequency: 2.480GHz
 Enlighted software
 Temperature: 20.3°C
 Humidity: 30%
 Atmospheric Pressure: 101.9kPa

RBW=VBW= 200Hz from 9kHz to 150kHz
 RBW=VBW=9kHz from 150kHz to 30MHz

Note: The EUT is a battery device. It is placed on 80cm table and at the center of the turning table.

High- Channel.

Ext Attn: 0 dB

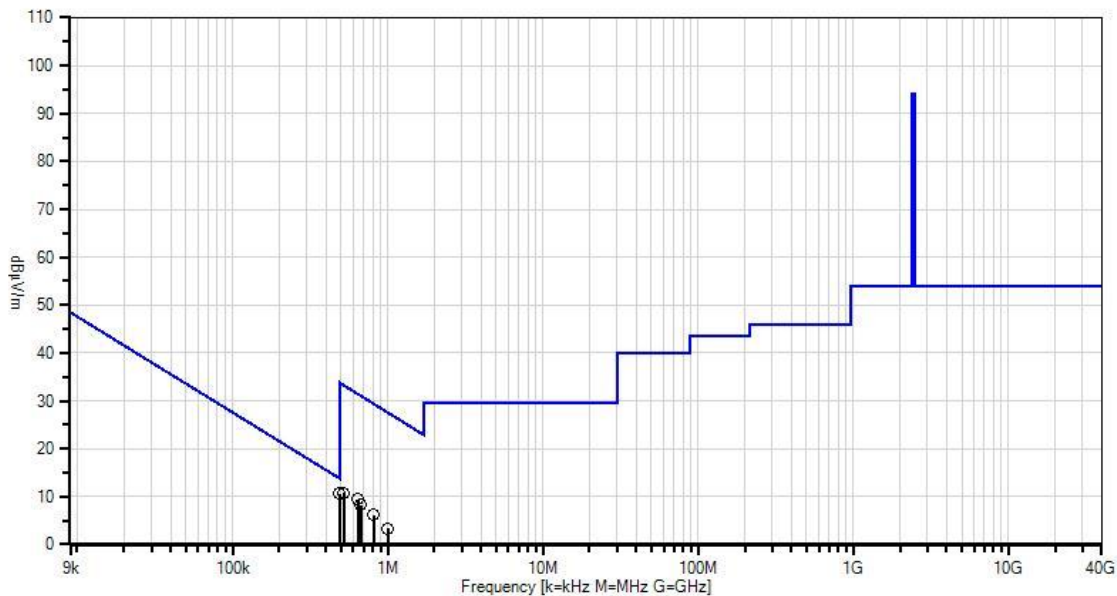
Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	Dist dB	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	641.315k	38.0	+0.1	+0.0	+11.4	-40.0	9.5	31.4	-21.9	Paral
2	522.145k	39.6	+0.1	+0.0	+11.1	-40.0	10.8	33.2	-22.4	Perpe
3	674.766k	36.6	+0.1	+0.0	+11.5	-40.0	8.2	31.0	-22.8	Perpe
4	490.784k	39.5	+0.1	+0.0	+11.1	-40.0	10.7	33.8	-23.1	Perpe
5	812.753k	34.6	+0.1	+0.0	+11.4	-40.0	6.1	29.4	-23.3	Paral
6	1.003M	31.7	+0.1	+0.0	+11.5	-40.0	3.3	27.5	-24.2	Paral

CKC Laboratories, Inc Date: 1/18/2013 Time: 16:08:15 Enlighted, Inc WO#: 93965
 Test Distance: 3 Meters Sequence#: 46



— Readings
 × QP Readings
 ▼ Ambient
 ○ Peak Readings
 * Average Readings
 — 1 - 15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

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

Customer: **Enlighted, Inc.**
 Specification: **15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**
 Work Order #: **93965** Date: 1/18/2013
 Test Type: **Radiated Scan** Time: 14:29:24
 Equipment: **Enlighted Wireless Switch** Sequence#: 37
 Manufacturer: **Enlighted Inc.** Tested By: **Hieu Song Nguyenpham**
 Model: **WS-1-00**
 S/N: **None**

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00730	Preamp		1/31/2011	1/31/2013
T2	AN00852	Biconilog Antenna	CBL 6111C	11/28/2012	11/28/2014
T3	ANP00880	Cable	RG214U	7/30/2012	7/30/2014
T4	ANP01183	Cable	CNT-195	10/24/2011	10/24/2013
T5	ANP05440	Cable		3/7/2011	3/7/2013
	AN02668	Spectrum Analyzer	E4446A	2/23/2011	2/23/2013

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Enlighted Wireless Switch*	Enlighted Inc.	WS-1-00	None

Support Devices:

Function	Manufacturer	Model #	S/N
AC/DC Power Adapter	Lenovo	92P1156	11S92P1156ZDXN17B5GG
Laptop	Lenovo	T420	None

Test Conditions / Notes:

Radiated Spurious Emission
 Frequency Range: 30MHz to 1000MHz
 Transmitter operating frequency: 2.4GHz
 Number of Channel: 16
 Low Frequency: 2.405GHz
 High Frequency: 2.480GHz
 Enlighted software
 Temperature: 20.3°C
 Humidity: 30%
 Atmospheric Pressure: 101.9kPa

RBW=VBW= 120kHz

Note: The EUT is a battery device. It is placed on 80cm table and at the center of the turning table.

High- Channel
 Z-axis is the worst axis.

Ext Attn: 0 dB

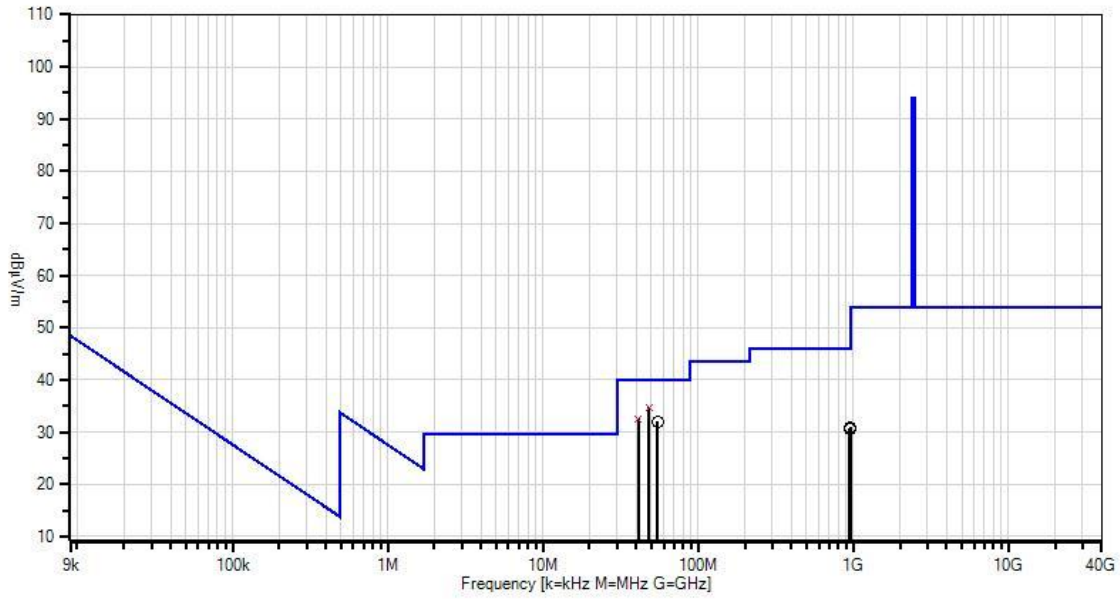
Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	48.114M	51.5	-27.5 +0.4	+9.6	+0.6	+0.1	+0.0	34.7	40.0	-5.3	Vert
	QP										
^	48.114M	54.5	-27.5 +0.4	+9.6	+0.6	+0.1	+0.0	37.7	40.0	-2.3	Vert
^	48.114M	53.5	-27.5 +0.4	+9.6	+0.6	+0.1	+0.0	36.7	40.0	-3.3	Vert
4	41.400M	46.4	-27.5 +0.3	+12.6	+0.6	+0.1	+0.0	32.5	40.0	-7.5	Vert
	QP										
^	41.400M	51.6	-27.5 +0.3	+12.6	+0.6	+0.1	+0.0	37.7	40.0	-2.3	Vert
^	41.400M	51.2	-27.5 +0.3	+12.6	+0.6	+0.1	+0.0	37.3	40.0	-2.7	Vert
7	54.756M	50.9	-27.5 +0.4	+7.3	+0.7	+0.2	+0.0	32.0	40.0	-8.0	Vert
8	956.798M	28.6	-27.7 +2.0	+23.5	+3.5	+1.0	+0.0	30.9	46.0	-15.1	Horiz
9	951.664M	28.4	-27.7 +2.0	+23.5	+3.5	+1.0	+0.0	30.7	46.0	-15.3	Horiz
10	957.424M	28.2	-27.7 +2.0	+23.5	+3.5	+1.0	+0.0	30.5	46.0	-15.5	Horiz

CKC Laboratories, Inc Date: 1/18/2013 Time: 14:29:24 Enlighted, Inc WO#: 93965
 Test Distance: 3 Meters Sequence#: 37



Readings
 x QP Readings
 v Ambient
 o Peak Readings
 * Average Readings
 1 - 15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

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

Customer: **Enlighted, Inc.**
 Specification: **15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**
 Work Order #: **93965** Date: 1/17/2013
 Test Type: **Radiated Scan** Time: 15:51:37
 Equipment: **Enlighted Wireless Switch** Sequence#: 10
 Manufacturer: **Enlighted Inc.** Tested By: **Hieu Song Nguyenpham**
 Model: **WS-1-00**
 S/N: **None**

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	10/19/2011	10/19/2013
T2	AN03302	Cable	32026-29094K-29094K-72TC	3/21/2012	3/21/2014
T3	ANP01210	Cable	FSJ1P-50A-4A	3/15/2011	3/15/2013
	AN02668	Spectrum Analyzer	E4446A	2/23/2011	2/23/2013
T4	AN03309	High Pass Filter	11SH10-3000/T10000-O/O	6/12/2012	6/12/2014
T5	AN03114	Preamp	AMF-7D-00101800-30-10P	5/13/2011	5/13/2013
T6	ANP05843	Cable	32022-2-29094K-48TC	8/7/2012	8/7/2014

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Enlighted Wireless Switch*	Enlighted Inc.	WS-1-00	None

Support Devices:

Function	Manufacturer	Model #	S/N
AC/DC Power Adapter	Lenovo	92P1156	11S92P1156ZDXN17B5GG
Laptop	Lenovo	T420	None

Test Conditions / Notes:

Radiated Spurious and Harmonic Emission
 Frequency Range: 1000-12000MHz
 Transmitter operating frequency: 2.4GHz
 Number of Channel: 16
 Low Frequency: 2.405GHz
 High Frequency: 2.480GHz
 Enlighted Software
 Temperature: 19.9°C
 Humidity: 28%
 Atmospheric Pressure: 102.1kPa

RBW=VBW= 1MHz

Note: The EUT is a battery device. It is placed on 80cm table and at the center of the turning table.

High- Channel
 Z-axis is the worst axis.

Ext Attn: 0 dB

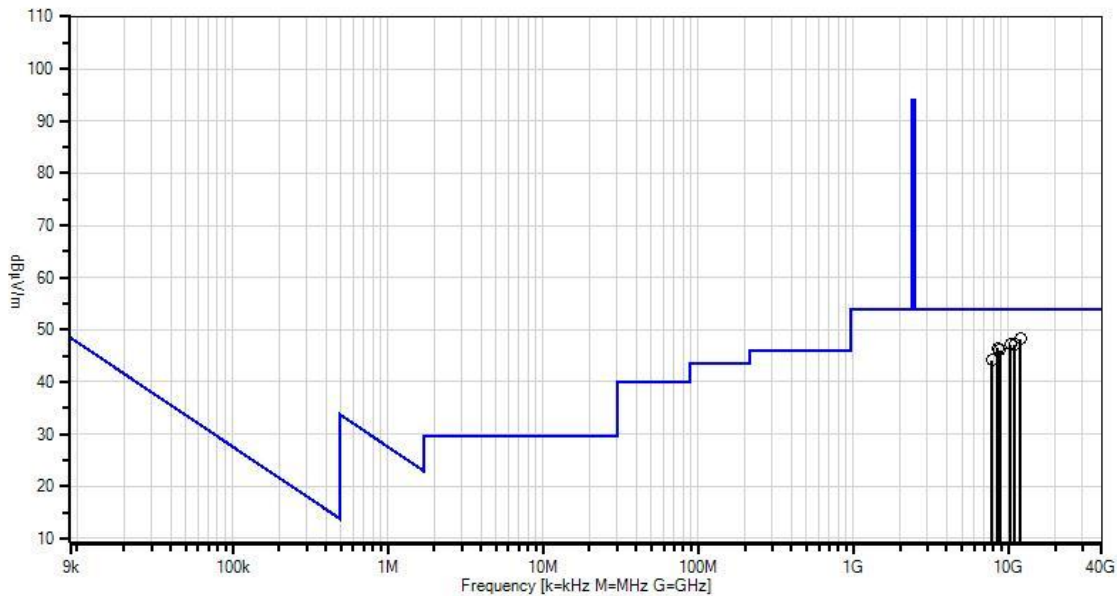
Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 T5 dB	T2 T6 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	11982.144 M	53.7	+38.6 -56.0	+2.4 +2.2	+7.1	+0.3	+0.0	48.3	54.0	-5.7	Horiz
2	10994.987 M	55.5	+38.3 -58.0	+2.3 +2.1	+6.8	+0.2	+0.0	47.2	54.0	-6.8	Vert
3	10301.294 M	56.6	+38.2 -58.6	+2.3 +2.0	+6.5	+0.1	+0.0	47.1	54.0	-6.9	Horiz
4	8564.559M	56.4	+36.8 -56.6	+2.1 +1.6	+5.8	+0.3	+0.0	46.4	54.0	-7.6	Horiz
5	8764.759M	55.6	+36.9 -56.3	+2.1 +1.5	+5.9	+0.3	+0.0	46.0	54.0	-8.0	Vert
6	7806.802M	57.7	+35.9 -58.6	+2.0 +1.5	+5.5	+0.2	+0.0	44.2	54.0	-9.8	Vert

CKC Laboratories, Inc Date: 1/17/2013 Time: 15:51:37 Enlighted, Inc WO#: 93965
Test Distance: 3 Meters Sequence#: 10



— Readings
 × QP Readings
 ▼ Ambient
 ○ Peak Readings
 * Average Readings
 — 1 - 15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

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

Customer: **Enlighted, Inc.**
 Specification: **15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**
 Work Order #: **93965** Date: 1/18/2013
 Test Type: **Radiated Scan** Time: 09:37:37
 Equipment: **Enlighted Wireless Switch** Sequence#: 19
 Manufacturer: **Enlighted Inc.** Tested By: **Hieu Song Nguyenpham**
 Model: **WS-1-00**
 S/N: **None**

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP00928	Cable	various	2/10/2012	2/10/2014
T2	ANP05843	Cable	32022-2-29094K-48TC	8/7/2012	8/7/2014
T3	ANP06127	Cable	32022-29094K-29094K-132TC	9/7/2011	9/7/2013
	AN02668	Spectrum Analyzer	E4446A	2/23/2011	2/23/2013
T4	AN02741	Active Horn Antenna	AMFW-5F-12001800-20-10P	12/18/2012	12/18/2014

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Enlighted Wireless Switch*	Enlighted Inc.	WS-1-00	None

Support Devices:

Function	Manufacturer	Model #	S/N
AC/DC Power Adapter	Lenovo	92P1156	11S92P1156ZDXN17B5G
Laptop	Lenovo	T420	None

Test Conditions / Notes:

Radiated Spurious and Harmonic Emission
 Frequency Range: 12000MHz to 18000MHz
 Transmitter operating frequency: 2.4GHz
 Number of Channel: 16
 Low Frequency: 2.405GHz
 High Frequency: 2.480GHz
 Enlighted Software
 Temperature: 20.3°C
 Humidity: 30%
 Atmospheric Pressure: 101.9kPa

RBW=VBW= 1MHz

Note: The EUT is a battery device. It is placed on 80cm table and at the center of the turning table.

High- Channel
 Z-axis is the worst axis.

Ext Attn: 0 dB

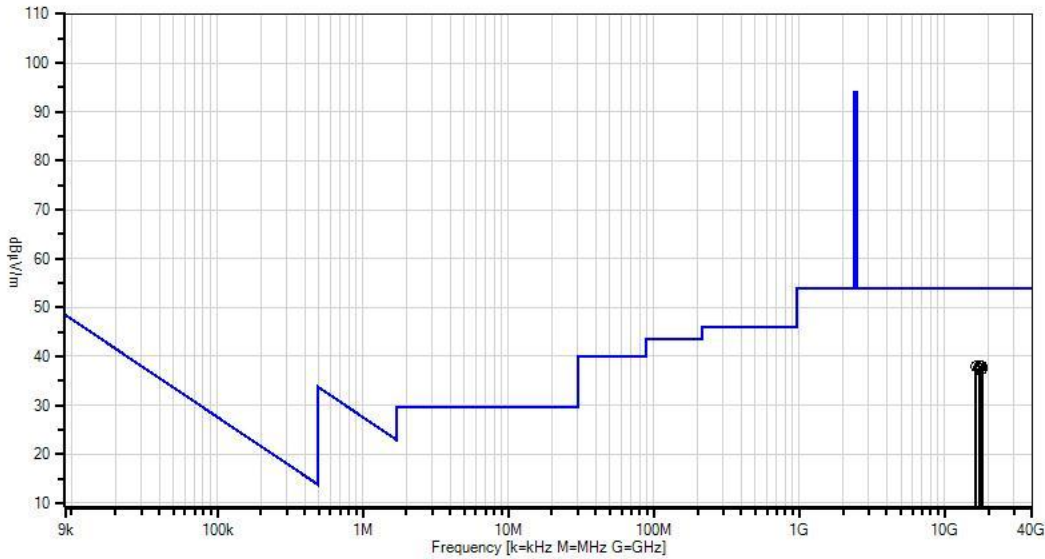
Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	17402.005 M	43.1	+0.8	+2.6	+3.7	-12.2	+0.0	38.0	54.0	-16.0	Vert
2	16437.433 M	42.3	+0.9	+2.6	+3.6	-11.4	+0.0	38.0	54.0	-16.0	Horiz
3	17974.130 M	41.0	+0.8	+2.7	+3.7	-10.3	+0.0	37.9	54.0	-16.1	Vert
4	17372.155 M	42.8	+0.8	+2.6	+3.7	-12.2	+0.0	37.7	54.0	-16.3	Vert
5	17204.995 M	43.0	+0.8	+2.6	+3.7	-12.6	+0.0	37.5	54.0	-16.5	Horiz
6	17776.125 M	41.1	+0.8	+2.7	+3.7	-11.0	+0.0	37.3	54.0	-16.7	Horiz

CKC Laboratories, Inc Date: 1/18/2013 Time: 09:37:37 Enlighted, Inc WO#: 93965
Test Distance: 3 Meters Sequence#: 19



Readings
 × QP Readings
 ▼ Ambient
 ○ Peak Readings
 * Average Readings
 — 1 - 15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

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

Customer: **Enlighted, Inc.**
 Specification: **15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**
 Work Order #: **93965** Date: 1/18/2013
 Test Type: **Radiated Scan** Time: 11:05:29
 Equipment: **Enlighted Wireless Switch** Sequence#: 28
 Manufacturer: **Enlighted Inc.** Tested By: **Hieu Song Nguyenpham**
 Model: **WS-1-00**
 S/N: **None**

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP05843	Cable	32022-2-29094K-48TC	8/7/2012	8/7/2014
T2	ANP06127	Cable	32022-29094K-29094K-132TC	9/7/2011	9/7/2013
	AN02668	Spectrum Analyzer	E4446A	2/23/2011	2/23/2013
T3	ANP00929	Cable	various	2/16/2012	2/16/2014
T4	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	12/17/2012	12/17/2014

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Enlighted Wireless Switch*	Enlighted Inc.	WS-1-00	None

Support Devices:

Function	Manufacturer	Model #	S/N
AC/DC Power Adapter	Lenovo	92P1156	11S92P1156ZDXN17B5GG
Laptop	Lenovo	T420	None

Test Conditions / Notes:

Radiated Spurious and Harmonic Emission
 Frequency Range: 18000MHz to 25000MHz
 Transmitter operating frequency: 2.4GHz
 Number of Channel: 16
 Low Frequency: 2.405GHz
 High Frequency: 2.480GHz
 Enlighted Software
 Temperature: 20.3° C
 Humidity: 30%
 Atmospheric Pressure: 101.9kPa

RBW=VBW= 1MHz

Note: The EUT is a battery device. It is placed on 80cm table and at the center of the turning table.

High- Channel
 Z-axis is the worst axis.

Ext Attn: 0 dB

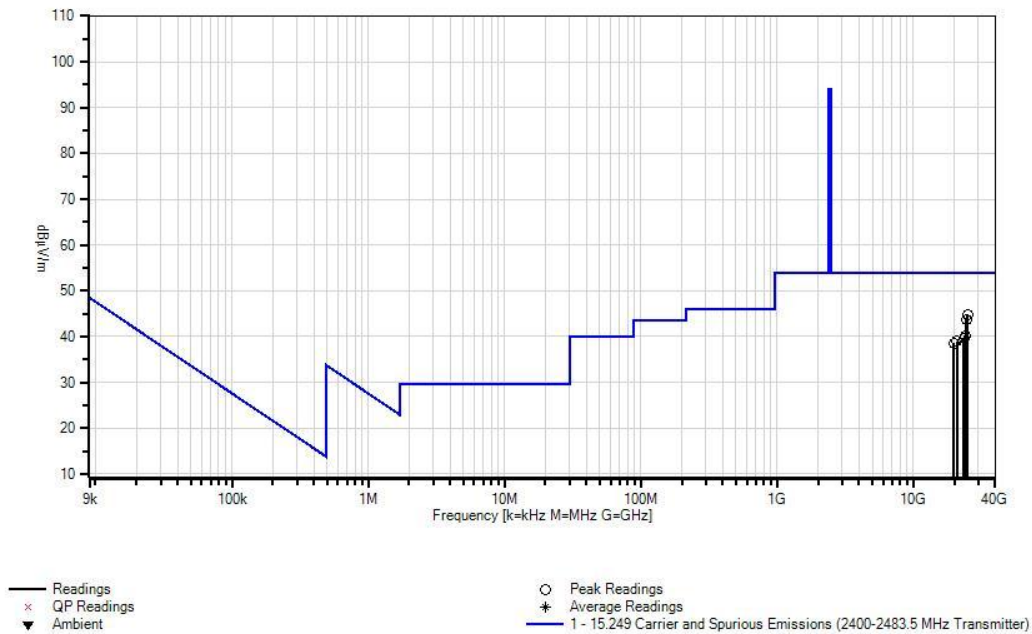
Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	24960.240 M	46.6	+3.2	+4.4	+2.9	-12.3	+0.0	44.8	54.0	-9.2	Horiz
2	24370.798 M	46.6	+3.0	+4.4	+2.9	-13.2	+0.0	43.7	54.0	-10.3	Vert
3	23961.956 M	43.8	+3.1	+4.4	+3.0	-14.1	+0.0	40.2	54.0	-13.8	Horiz
4	23530.525 M	44.2	+3.2	+4.3	+3.0	-15.1	+0.0	39.6	54.0	-14.4	Vert
5	20800.798 M	43.3	+2.8	+4.1	+3.1	-14.4	+0.0	38.9	54.0	-15.1	Horiz
6	19910.909 M	41.9	+2.9	+3.9	+3.2	-13.4	+0.0	38.5	54.0	-15.5	Vert

CKC Laboratories, Inc Date: 1/18/2013 Time: 11:05:29 Enlighted , Inc WO#: 93965
Test Distance: 3 Meters Sequence#: 28



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

Customer: **Enlighted , Inc.**
 Specification: **15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**
 Work Order #: **93965** Date: 1/17/2013
 Test Type: **Radiated Scan** Time: 10:32:32
 Equipment: **Enlighted Wireless Switch** Sequence#: 1
 Manufacturer: Enlighted Inc. Tested By: Hieu Song Nguyenpham
 Model: WS-1-00
 S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	10/19/2011	10/19/2013
T2	AN03302	Cable	32026-29094K-29094K-72TC	3/21/2012	3/21/2014
T3	ANP01210	Cable	FSJ1P-50A-4A	3/15/2011	3/15/2013
	AN02668	Spectrum Analyzer	E4446A	2/23/2011	2/23/2013

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Enlighted Wireless Switch*	Enlighted Inc.	WS-1-00	None

Support Devices:

Function	Manufacturer	Model #	S/N
AC/DC Power Adapter	Lenovo	92P1156	11S92P1156ZDXN17B5G
Laptop	Lenovo	T420	None

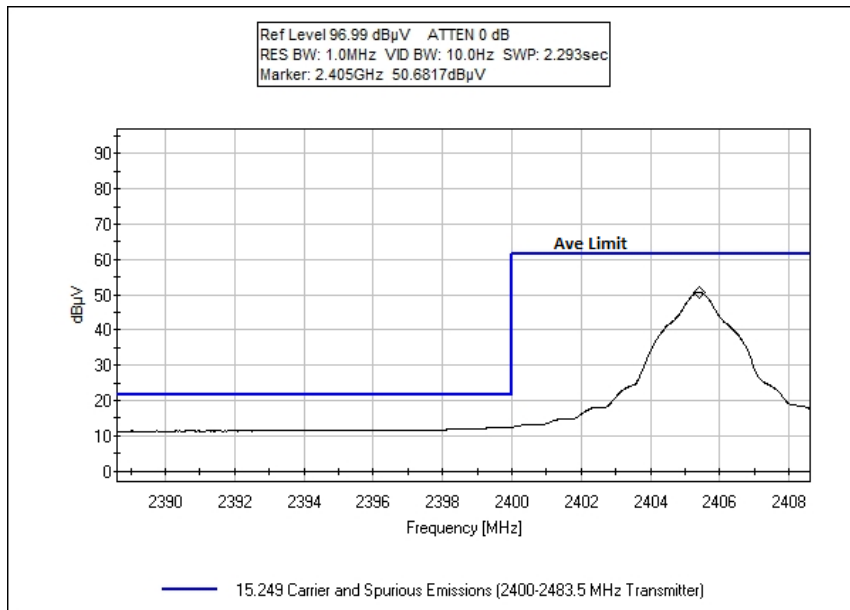
Test Conditions / Notes:

Fundamental of the EUT

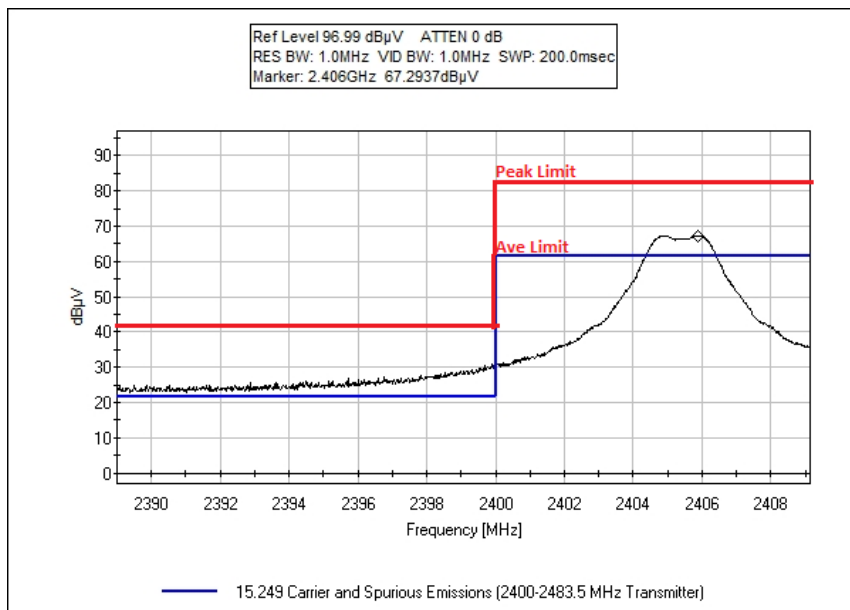
Transmitter operating frequency: 2.4GHz
 Number of Channel: 16
 Low Frequency: 2.405GHz
 High Frequency: 2.480 GHz
 Software: Enlighted Software
 Temperature: 19.9°C
 Humidity: 28%
 Atmospheric Pressure: 102.1kPa

RBW=VBW= 1MHz

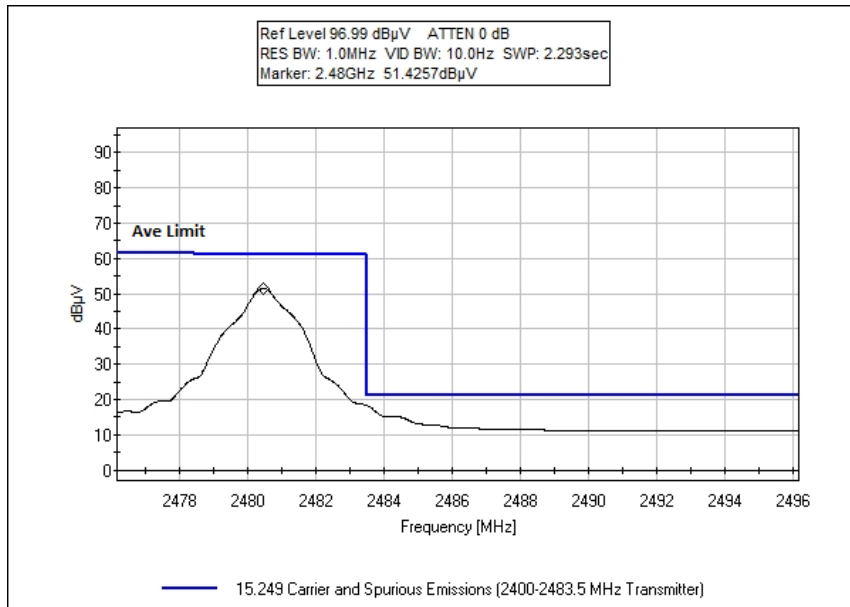
Note: The EUT is a battery device. It is placed on 80cm table and at the center of the turning table. The EUT is set in constant transmit mode.



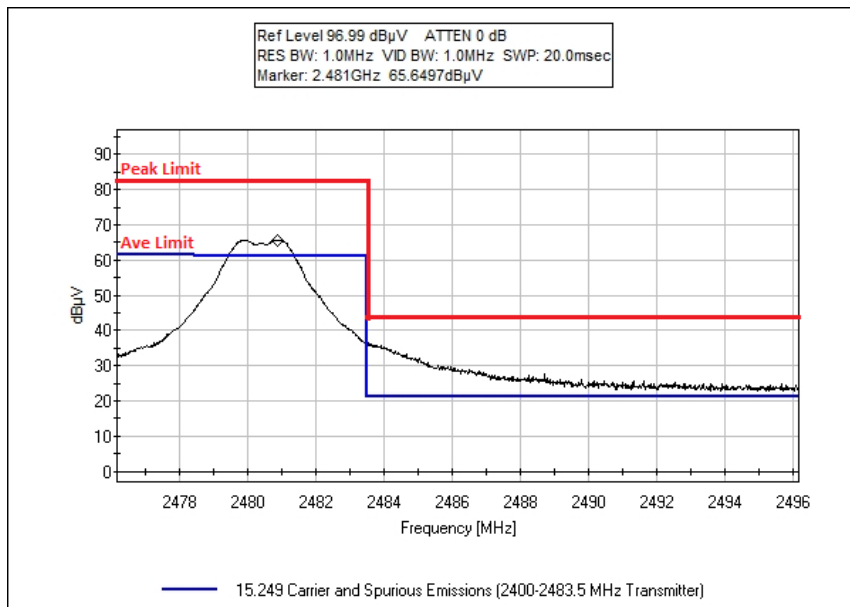
Low Channel Bandedge-AVE



Low Channel Bandedge-PEAK



High Channel Bandedge-AVE

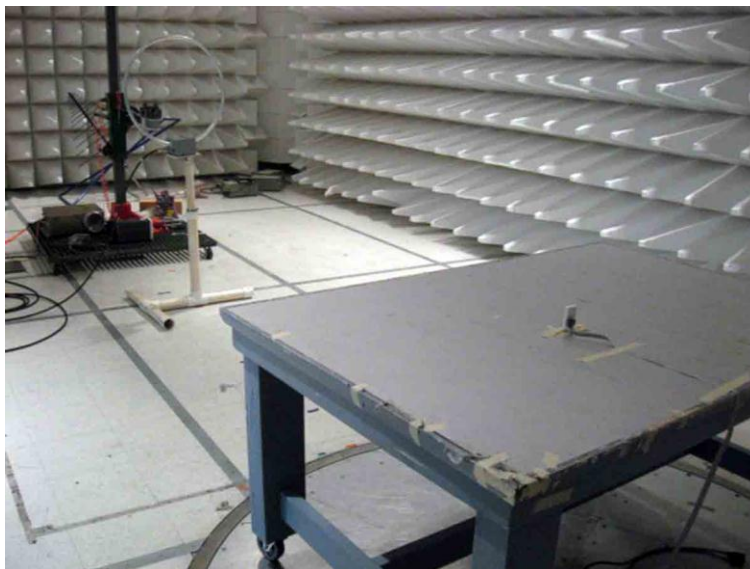


High Channel Bandedge-PEAK

Test Setup Photos



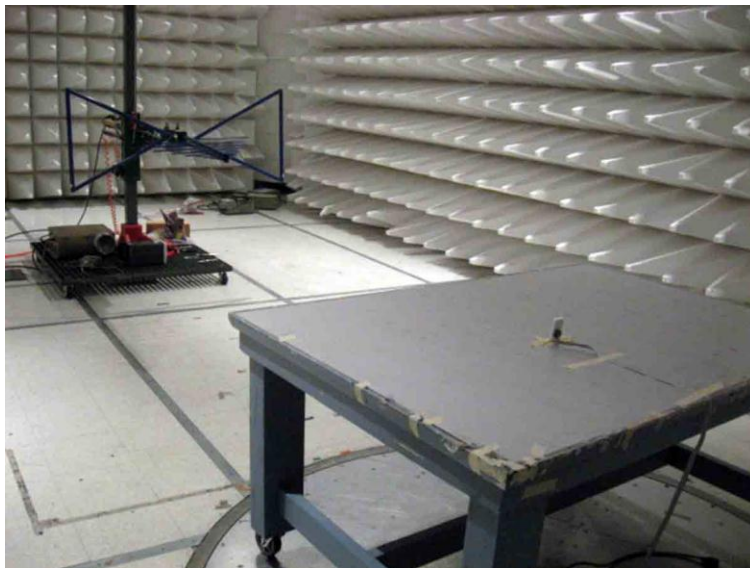
9kHz to 30MHz



9kHz to 30MHz



30MHz to 1GHz



30MHz to 1GHz



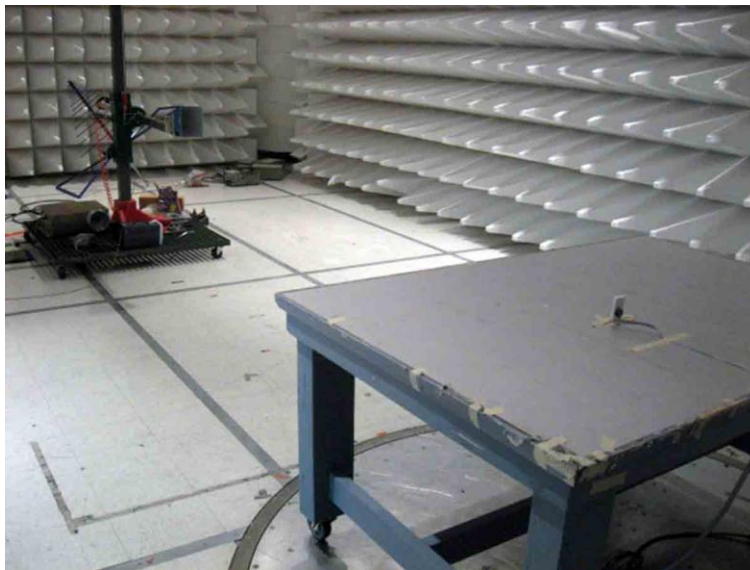
1GHz to 12GHz



1GHz to 12GHz



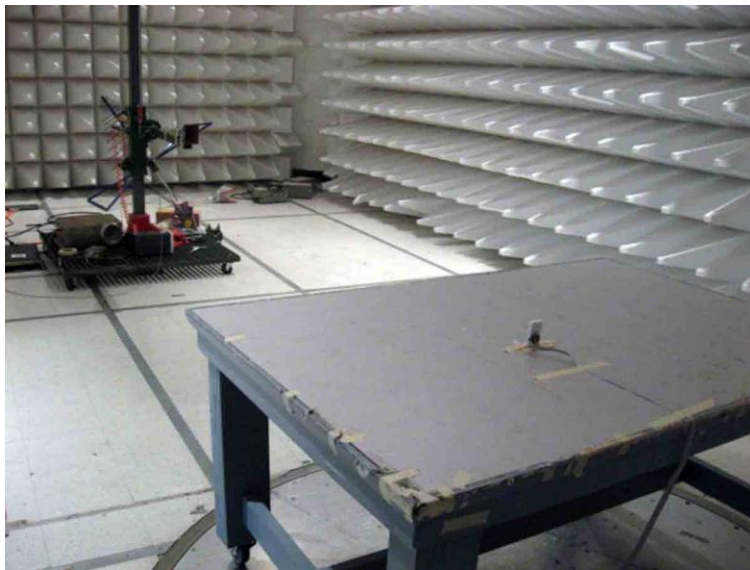
12GHz to 18GHz



12GHz to 18GHz



18GHz to 25GHz



18GHz to 25GHz

FCC -20dBc & RSS-210 99% Bandwidth

Test Conditions / Setup

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

Customer: **Enlighted, Inc.**

Specification: **OBW Set up**

Work Order #: **93965**

Date: 1/17/2013

Test Type: **Radiated Scan**

Time: 10:32:32

Equipment: **Enlighted Wireless Switch**

Sequence#: 1

Manufacturer: Enlighted Inc.

Tested By: Hieu Song Nguyenpham

Model: WS-1-00

S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	10/19/2011	10/19/2013
T2	AN03302	Cable	32026-29094K- 29094K-72TC	3/21/2012	3/21/2014
T3	ANP01210	Cable	FSJ1P-50A-4A	3/15/2011	3/15/2013
	AN02668	Spectrum Analyzer	E4446A	2/23/2011	2/23/2013

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Enlighted Wireless Switch*	Enlighted Inc.	WS-1-00	None

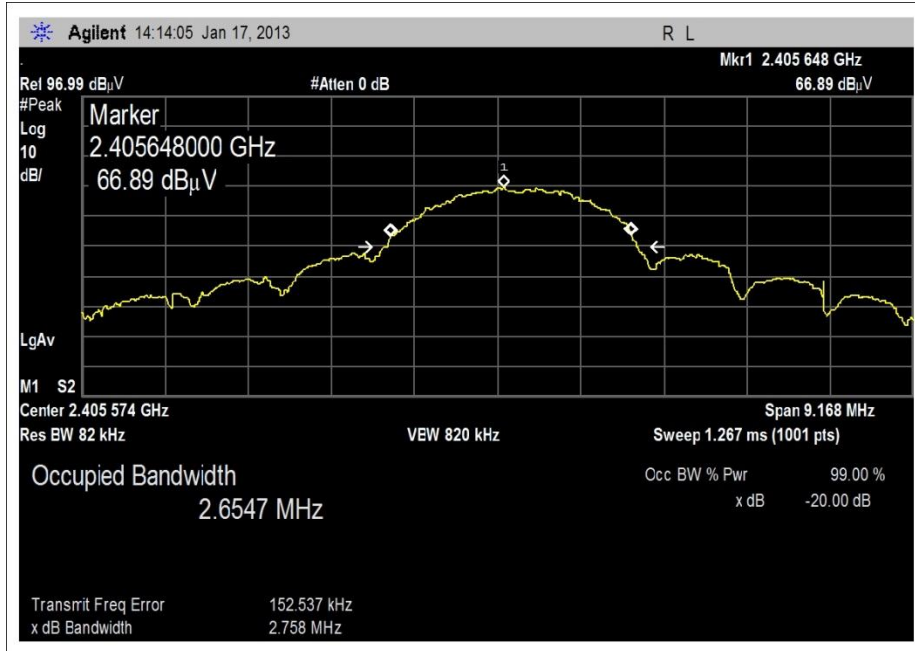
Support Devices:

Function	Manufacturer	Model #	S/N
AC/DC Power Adapter	Lenovo	92P1156	11S92P1156ZDXN17B5GG
Laptop	Lenovo	T420	None

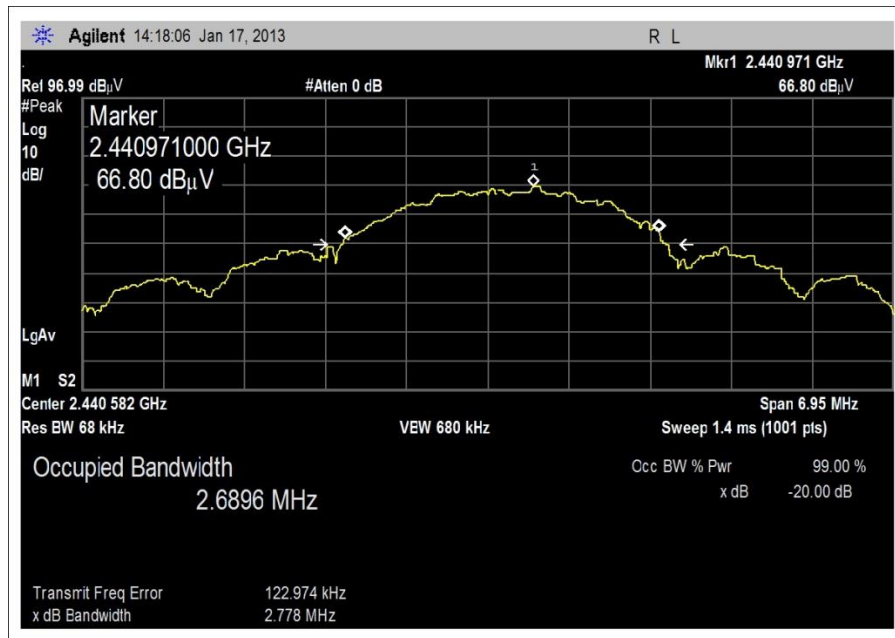
Test Conditions / Notes:

<p>Fundamental of the EUT</p> <p>Transmitter operating frequency: 2.4GHz</p> <p>Number of Channel: 16</p> <p>Low Frequency: 2.405GHz</p> <p>High Frequency: 2.480 GHz</p> <p>Enlighted Software</p> <p>Temperature: 19.9°C</p> <p>Humidity: 28%</p> <p>Atmospheric Pressure: 102.1kPa</p> <p>RBW=VBW= 1MHz</p> <p>Note: The EUT is a battery device. It is placed on 80cm table and at the center of the turning table. The EUT is set in constant transmit mode.</p>

Test Plots



Low Channel

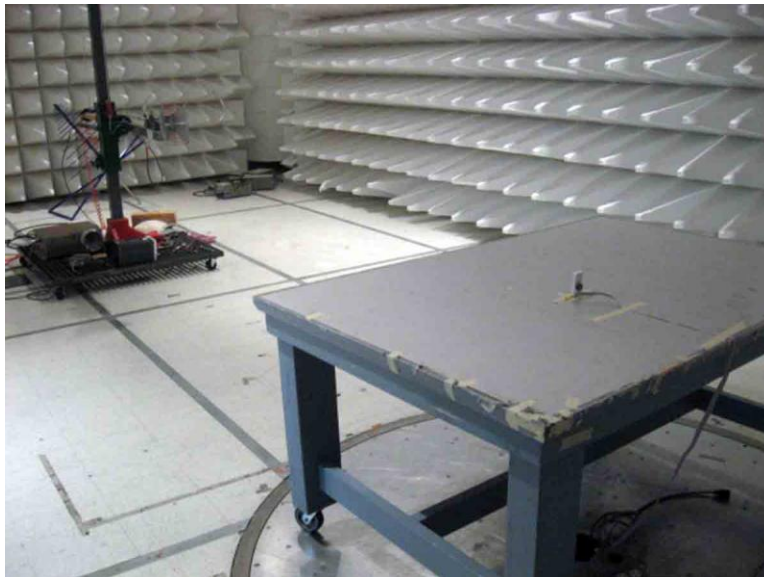


Middle Channel



High Channel

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	(dB μ V)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dB μ V/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.