SmartLabs, Inc.

ADDENDUM TO TEST REPORT FOR 94820-8

INSTEON PAR38 Bulb
Model: 2674

Tested To The Following Standards:

FCC Part 15 Subpart C Sections 15.249 & 15.207
&
RSS-210 Issue 8

Report No.: 94820-8A

Date of issue: November 19, 2013

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.

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ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

SmartLabs, Inc.
16542 Millikan Ave.
Irvine, CA 92606

Representative: John Lockyer
Customer Reference Number: 13-3JC1002-01

REPORT PREPARED BY:

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

Project Number: 94820

DATE OF EQUIPMENT RECEIPT: October 9, 2013
DATE(S) OF TESTING: October 9 – November 14, 2013

Revision History

Original: Testing of the INSTEON PAR38 Bulb, 2674 to FCC Part 15 Subpart C Sections 15.249 & 15.207 & RSS-210 Issue 8.
Addendum A: In the Radiated Spurious Emissions section, the Occupied Bandwidth plot was replaced with the correct radiated spurious emissions plot.

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.
110 Olinda Place
Brea, CA 92823

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
Brea D	US0060	SL2-IN-E-1146R	3082D-2	100638	A-0147

SUMMARY OF RESULTS

Standard / Specification: FCC Part 15 Subpart C & RSS-210 Issue 8

Description	Test Procedure/Method	Results
Conducted Emissions	FCC Part 15 Subpart C Section 15.207 / ANSI C63.4 / ANSI C63.10	Pass
Fundamental Field Strength	FCC Part 15 Subpart C Section 15.249(a) /ANSI C63.4 / ANSI C63.10	Pass
Voltage Variation	FCC Part 15 Subpart C Section 15.31(e) /ANSI C63.4 / ANSI C63.10	Pass
Occupied Bandwidth	FCC Part 15 Subpart C Section 15.215(c) / ANSI C63.4/ANSI C63.10	Pass
99% Bandwidth	RSP-100 / RSS-GEN section 4.6	Pass
Radiated Spurious Emissions	FCC Part 15 Subpart C Section 15.249(a) /ANSI C63.4 / ANSI C63.10	Pass
Band Edge Measurements	FCC Part 15 Subpart C 15.249(d) /ANSI C63.4 / ANSI C63.10	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)

EQUIPMENT UNDER TEST

INSTEON PAR38 Bulb
Manuf: SmartLabs, Inc.
Model: 2674
Serial: None

PERIPHERAL DEVICES

The EUT was not tested with peripheral devices.

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.

AC Conducted Emissions 15.207

Test Data Sheets

Test Location: CKC Laboratories • 110 Olinda Place • Brea, CA 92823 • 714-993-6112

Customer: **SmartLabs, Inc.**
Specification: **15.207 AC Mains - Average**
Work Order #: **94820** Date: 10/9/2013
Test Type: **Conducted Emissions** Time: 09:26:55
Equipment: **INSTEON PAR38 Bulb** Sequence#: 12
Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen
Model: 2674 120V 60Hz
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06085	Attenuator	SA18N10W-09	12/14/2012	12/14/2014
T2	ANP01910	Cable	RG-142	2/6/2012	2/6/2014
T3	AN02343	High Pass Filter	HE9615-150K-50-720B	1/10/2013	1/10/2015
	AN02672	Spectrum Analyzer	E4446A	9/4/2012	9/4/2014
T4	AN00848.1	50uH LISN-Line 1 (L1) (dB)	3816/2nm	3/14/2013	3/14/2015
	AN00848.1	50uH LISN-Line 2 (L2) (dB)	3816/2nm	3/14/2013	3/14/2015

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

Function	Manufacturer	Model #	S/N
INSTEON PAR38 Bulb*	SmartLabs, Inc.	2674	NA

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

The EUT is placed on wooden table. EUT is turned on and set into transmit always mode.
Operating frequency: 914.5-915.5MHz
Frequency Range: 150kHz-30MHz
VBW=RBW=9kHz
Temp: 21°C, 42% Relative Humidity, 100.1kpal
Site D

Ext Attn: 0 dB

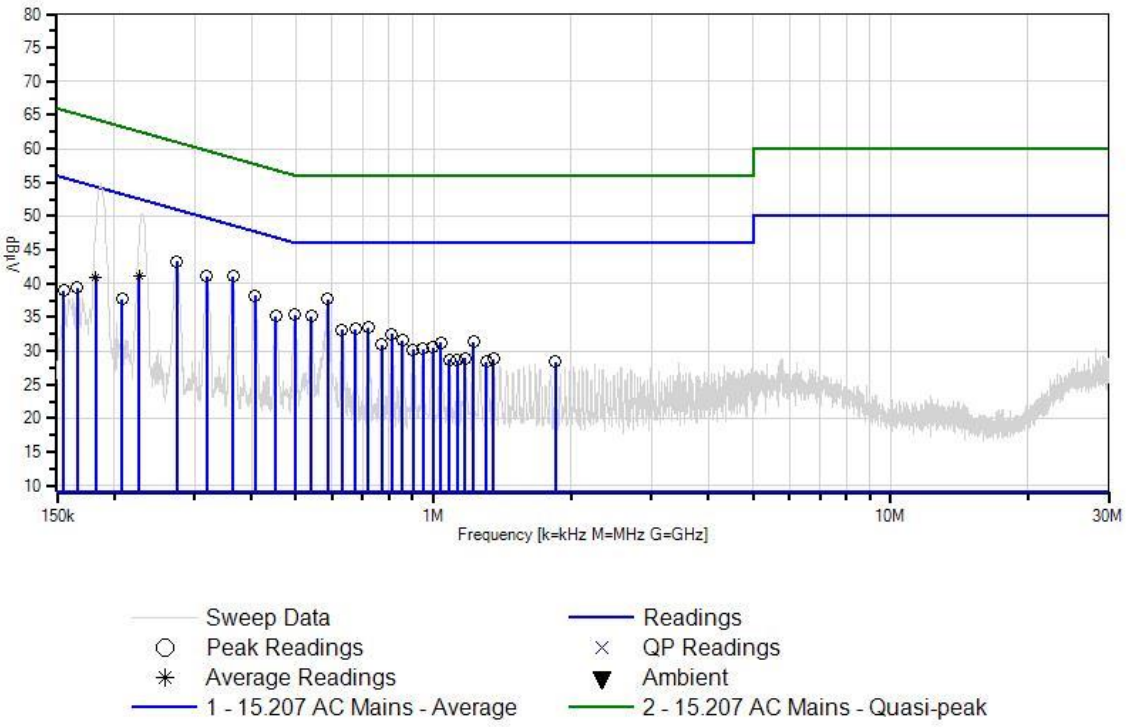
Measurement Data: Reading listed by margin. Test Lead: L1(L)

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant

1	363.799k	35.1	+5.7	+0.1	+0.2	+0.0	+0.0	41.1	48.6	-7.5	L1(L)
2	274.352k	37.3	+5.7	+0.1	+0.2	+0.0	+0.0	43.3	51.0	-7.7	L1(L)
3	587.051k	31.6	+5.7	+0.1	+0.2	+0.1	+0.0	37.7	46.0	-8.3	L1(L)
4	318.712k	35.1	+5.7	+0.1	+0.2	+0.0	+0.0	41.1	49.7	-8.6	L1(L)
5	407.431k	32.2	+5.7	+0.1	+0.2	+0.0	+0.0	38.2	47.7	-9.5	L1(L)
6	497.604k	29.4	+5.7	+0.1	+0.2	+0.0	+0.0	35.4	46.0	-10.6	L1(L)
7	540.510k	29.1	+5.7	+0.1	+0.2	+0.0	+0.0	35.1	46.0	-10.9	L1(L)
8	227.299k	35.1	+5.7	+0.1	+0.2	+0.0	+0.0	41.1	52.5	-11.4	L1(L)
Ave											
^	230.720k	44.4	+5.7	+0.1	+0.2	+0.0	+0.0	50.4	52.4	-2.0	L1(L)
^	227.299k	43.6	+5.7	+0.1	+0.2	+0.0	+0.0	49.6	52.5	-2.9	L1(L)
11	451.790k	29.2	+5.7	+0.1	+0.2	+0.0	+0.0	35.2	46.8	-11.6	L1(L)
12	719.402k	27.5	+5.7	+0.1	+0.1	+0.1	+0.0	33.5	46.0	-12.5	L1(L)
13	675.043k	27.1	+5.7	+0.1	+0.2	+0.1	+0.0	33.2	46.0	-12.8	L1(L)
14	630.683k	27.0	+5.7	+0.1	+0.2	+0.1	+0.0	33.1	46.0	-12.9	L1(L)
15	182.286k	34.8	+5.7	+0.1	+0.4	+0.0	+0.0	41.0	54.4	-13.4	L1(L)
Ave											
^	187.088k	48.7	+5.7	+0.1	+0.3	+0.0	+0.0	54.8	54.2	+0.6	L1(L)
^	182.286k	47.4	+5.7	+0.1	+0.4	+0.0	+0.0	53.6	54.4	-0.8	L1(L)
18	811.030k	26.5	+5.7	+0.1	+0.1	+0.1	+0.0	32.5	46.0	-13.5	L1(L)
19	856.117k	25.6	+5.7	+0.1	+0.1	+0.1	+0.0	31.6	46.0	-14.4	L1(L)
20	1.222M	25.3	+5.7	+0.1	+0.1	+0.1	+0.0	31.3	46.0	-14.7	L1(L)
21	1.039M	25.2	+5.7	+0.1	+0.1	+0.1	+0.0	31.2	46.0	-14.8	L1(L)
22	769.580k	24.9	+5.7	+0.1	+0.1	+0.1	+0.0	30.9	46.0	-15.1	L1(L)
23	996.281k	24.5	+5.7	+0.1	+0.1	+0.1	+0.0	30.5	46.0	-15.5	L1(L)
24	208.176k	31.7	+5.7	+0.1	+0.2	+0.0	+0.0	37.7	53.3	-15.6	L1(L)
25	949.501k	24.3	+5.7	+0.1	+0.1	+0.1	+0.0	30.3	46.0	-15.7	L1(L)
26	902.721k	24.2	+5.7	+0.1	+0.1	+0.1	+0.0	30.2	46.0	-15.8	L1(L)

27	165.999k	33.2	+5.7	+0.1	+0.4	+0.0	+0.0	39.4	55.2	-15.8	L1(L)
28	155.090k	31.3	+5.7	+0.1	+1.9	+0.0	+0.0	39.0	55.7	-16.7	L1(L)
29	1.171M	22.9	+5.7	+0.1	+0.1	+0.1	+0.0	28.9	46.0	-17.1	L1(L)
30	1.354M	22.8	+5.7	+0.1	+0.1	+0.1	+0.0	28.8	46.0	-17.2	L1(L)
31	1.081M	22.7	+5.7	+0.1	+0.1	+0.1	+0.0	28.7	46.0	-17.3	L1(L)
32	1.128M	22.6	+5.7	+0.1	+0.1	+0.1	+0.0	28.6	46.0	-17.4	L1(L)
33	1.851M	22.3	+5.7	+0.1	+0.2	+0.1	+0.0	28.4	46.0	-17.6	L1(L)
34	1.307M	22.4	+5.7	+0.1	+0.1	+0.1	+0.0	28.4	46.0	-17.6	L1(L)

Date: 10/9/2013 Time: 09:26:55 SmartLabs, Inc. WO#: 94820
15.207 AC Mains - Average Test Lead: L1(L) 120V 60Hz Sequence#: 12 Ext ATTN: 0 dB



Test Location: CKC Laboratories • 110 Olinda Place • Brea, CA 92823 • 714-993-6112

Customer: **SmartLabs, Inc.**
Specification: **15.207 AC Mains - Average**
Work Order #: **94820** Date: 10/9/2013
Test Type: **Conducted Emissions** Time: 09:23:21
Equipment: **INSTEON PAR38 Bulb** Sequence#: 11
Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen
Model: 2674 120V 60Hz
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06085	Attenuator	SA18N10W-09	12/14/2012	12/14/2014
T2	ANP01910	Cable	RG-142	2/6/2012	2/6/2014
T3	AN02343	High Pass Filter	HE9615-150K-50-720B	1/10/2013	1/10/2015
	AN02672	Spectrum Analyzer	E4446A	9/4/2012	9/4/2014
	AN00848.1	50uH LISN-Line 1 (L1) (dB)	3816/2nm	3/14/2013	3/14/2015
T4	AN00848.1	50uH LISN-Line 2 (L2) (dB)	3816/2nm	3/14/2013	3/14/2015

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

Function	Manufacturer	Model #	S/N
INSTEON PAR38 Bulb*	SmartLabs, Inc.	2674	NA

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

The EUT is placed on wooden table. EUT is turned on and set into transmit always mode.
Operating frequency: 914.5-915.5MHz

Frequency Range: 150kHz-30MHz
VBW=RBW=9kHz

Temp: 21°C, 42% Relative Humidity, 100.1kpal

Site D

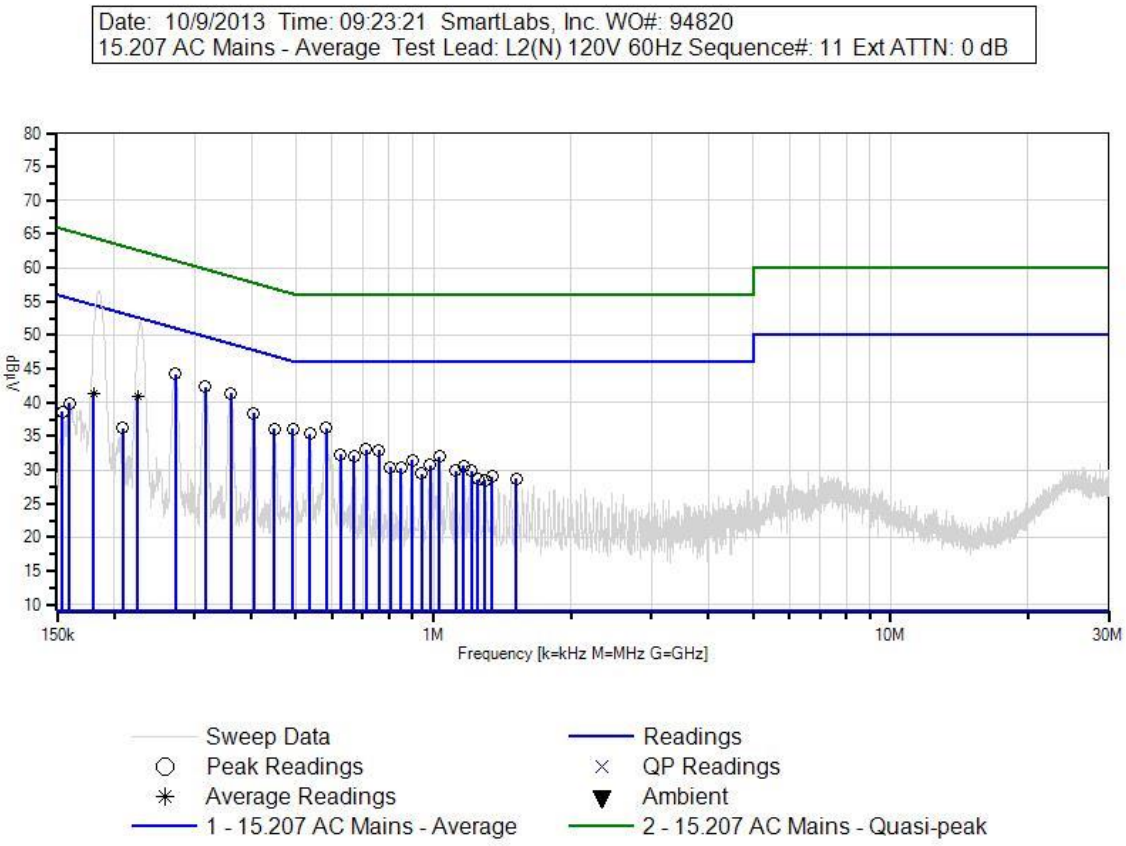
Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Lead: L2(N)

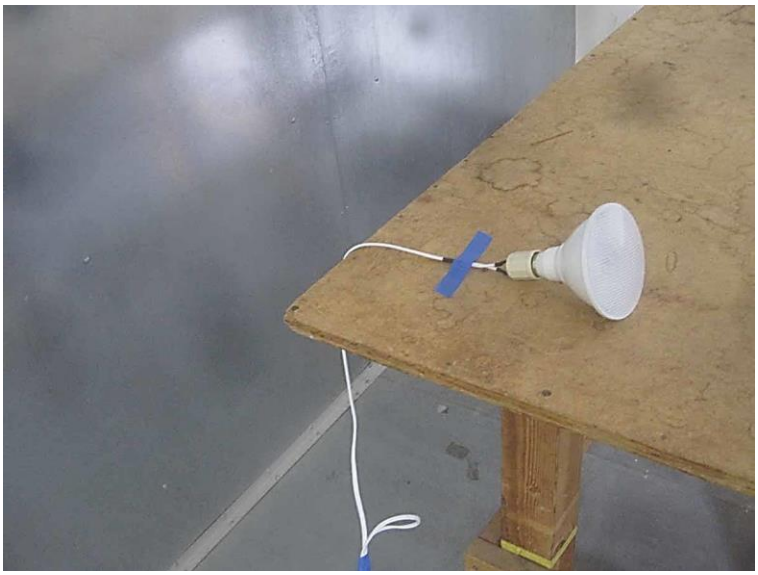
#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	272.898k	38.2	+5.7	+0.1	+0.2	+0.0	+0.0	44.2	51.0	-6.8	L2(N)
2	360.163k	35.4	+5.7	+0.1	+0.2	+0.0	+0.0	41.4	48.7	-7.3	L2(N)
3	316.530k	36.3	+5.7	+0.1	+0.2	+0.0	+0.0	42.3	49.8	-7.5	L2(N)
4	403.795k	32.4	+5.7	+0.1	+0.2	+0.0	+0.0	38.4	47.8	-9.4	L2(N)
5	581.960k	30.1	+5.7	+0.1	+0.2	+0.1	+0.0	36.2	46.0	-9.8	L2(N)

6	492.514k	30.1	+5.7	+0.1	+0.2	+0.0	+0.0	36.1	46.1	-10.0	L2(N)
7	536.146k	29.3	+5.7	+0.1	+0.2	+0.1	+0.0	35.4	46.0	-10.6	L2(N)
8	448.882k	30.1	+5.7	+0.1	+0.2	+0.0	+0.0	36.1	46.9	-10.8	L2(N)
9 Ave	225.290k	34.9	+5.7	+0.1	+0.2	+0.0	+0.0	40.9	52.6	-11.7	L2(N)
^	227.811k	45.9	+5.7	+0.1	+0.2	+0.0	+0.0	51.9	52.5	-0.6	L2(N)
^	225.290k	43.6	+5.7	+0.1	+0.2	+0.0	+0.0	49.6	52.6	-3.0	L2(N)
12	712.857k	27.1	+5.7	+0.1	+0.1	+0.0	+0.0	33.0	46.0	-13.0	L2(N)
13	758.671k	27.0	+5.7	+0.1	+0.1	+0.0	+0.0	32.9	46.0	-13.1	L2(N)
14 Ave	180.404k	35.2	+5.7	+0.1	+0.4	+0.0	+0.0	41.4	54.5	-13.1	L2(N)
^	184.906k	50.6	+5.7	+0.1	+0.3	+0.0	+0.0	56.7	54.3	+2.4	L2(N)
^	180.404k	49.2	+5.7	+0.1	+0.4	+0.0	+0.0	55.4	54.5	+0.9	L2(N)
17	625.593k	26.3	+5.7	+0.1	+0.2	+0.0	+0.0	32.3	46.0	-13.7	L2(N)
18	669.225k	26.1	+5.7	+0.1	+0.2	+0.0	+0.0	32.1	46.0	-13.9	L2(N)
19	1.030M	26.0	+5.7	+0.1	+0.1	+0.1	+0.0	32.0	46.0	-14.0	L2(N)
20	898.469k	25.6	+5.7	+0.1	+0.1	+0.0	+0.0	31.5	46.0	-14.5	L2(N)
21	983.523k	24.7	+5.7	+0.1	+0.1	+0.1	+0.0	30.7	46.0	-15.3	L2(N)
22	1.162M	24.6	+5.7	+0.1	+0.1	+0.1	+0.0	30.6	46.0	-15.4	L2(N)
23	159.454k	33.4	+5.7	+0.1	+0.7	+0.0	+0.0	39.9	55.5	-15.6	L2(N)
24	804.485k	24.5	+5.7	+0.1	+0.1	+0.0	+0.0	30.4	46.0	-15.6	L2(N)
25	848.845k	24.4	+5.7	+0.1	+0.1	+0.0	+0.0	30.3	46.0	-15.7	L2(N)
26	1.209M	23.9	+5.7	+0.1	+0.1	+0.1	+0.0	29.9	46.0	-16.1	L2(N)
27	1.120M	23.9	+5.7	+0.1	+0.1	+0.1	+0.0	29.9	46.0	-16.1	L2(N)
28	940.996k	23.5	+5.7	+0.1	+0.1	+0.0	+0.0	29.4	46.0	-16.6	L2(N)
29	208.904k	30.2	+5.7	+0.1	+0.2	+0.0	+0.0	36.2	53.2	-17.0	L2(N)
30	1.345M	23.0	+5.7	+0.1	+0.1	+0.1	+0.0	29.0	46.0	-17.0	L2(N)
31	154.363k	30.7	+5.7	+0.1	+2.1	+0.0	+0.0	38.6	55.8	-17.2	L2(N)

32	1.519M	22.6	+5.7	+0.1	+0.2	+0.1	+0.0	28.7	46.0	-17.3	L2(N)
33	1.251M	22.6	+5.7	+0.1	+0.1	+0.1	+0.0	28.6	46.0	-17.4	L2(N)
34	1.294M	22.5	+5.7	+0.1	+0.1	+0.1	+0.0	28.5	46.0	-17.5	L2(N)



Test Setup Photos



Fundamental Field Strength 15.249(a)

Test Data

Test Location: CKC Laboratories • 110 Olinda Place • Brea, CA 92823 • 714-993-6112

Customer: **SmartLabs, Inc.**
Specification: **15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)**
Work Order #: **94820** Date: 10/9/2013
Test Type: **Maximized Emissions** Time: 14:31:56
Equipment: **INSTEON PAR38 Bulb** Sequence#: 13
Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen
Model: 2674
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00010	Preamp	8447D	3/29/2012	3/29/2014
T2	AN00851	Biconilog Antenna	CBL6111C	5/16/2012	5/16/2014
T3	ANP05555	Cable	RG223/U	6/19/2012	6/19/2014
T4	ANP05569	Cable	RG-214/U	6/19/2012	6/19/2014
T5	ANP04382	Cable	LDF-50	8/30/2012	8/30/2014
	AN02672	Spectrum Analyzer	E4446A	9/4/2012	9/4/2014

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

Function	Manufacturer	Model #	S/N
INSTEON PAR38 Bulb*	SmartLabs, Inc.	2674	NA

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

The EUT is placed on the wooden table lined with Styrofoam of 10 cm thickness. EUT is installed in fixed position. EUT is turned on and set into transmit always mode.
Operating frequency: 914.5-915.5MHz

Frequency Range: fundamental
RBW=VBW=120kHz

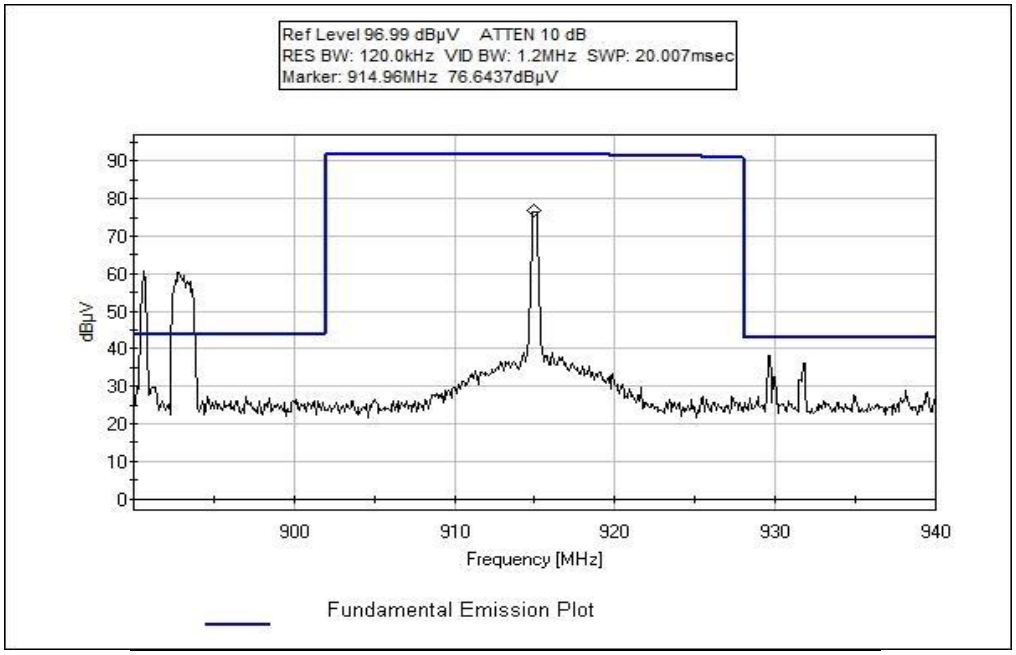
Temp: 19°C, 49% Relative Humidity, 100.1kpal
Site D

Ext Attn: 0 dB

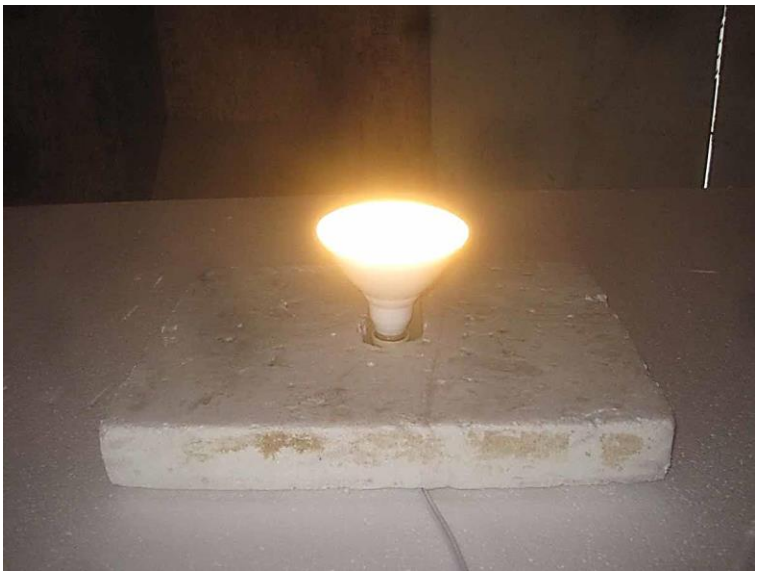
Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	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	915.078M	77.4	-27.4 +3.6	+22.2	+0.5	+3.5	+0.0	79.8	94.0	-14.2	Vert
2	914.918M	77.3	-27.4 +3.6	+22.2	+0.5	+3.5	+0.0	79.7	94.0	-14.3	Vert
3	914.918M	76.8	-27.4 +3.6	+22.2	+0.5	+3.5	+0.0	79.2	94.0	-14.8	Horiz
4	915.088M	76.7	-27.4 +3.6	+22.2	+0.5	+3.5	+0.0	79.1	94.0	-14.9	Horiz

Test Plot



Test Setup Photos



Voltage Variations 15.31(e)

Test Data

Test Location: CKC Laboratories • 110 Olinda Place • Brea, CA 92823 • 714-993-6112

Customer: **SmartLabs, Inc.**
Specification: **15.31e**
Work Order #: **94820** Date: 10/9/2013
Test Type: **Maximized Emissions** Time: 14:31:56
Equipment: **INSTEON PAR38 Bulb** Sequence#: 13
Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen
Model: 2674
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00010	Preamp	8447D	3/29/2012	3/29/2014
T2	AN00851	Biconilog Antenna	CBL6111C	5/16/2012	5/16/2014
T3	ANP05555	Cable	RG223/U	6/19/2012	6/19/2014
T4	ANP05569	Cable	RG-214/U	6/19/2012	6/19/2014
T5	ANP04382	Cable	LDF-50	8/30/2012	8/30/2014
	AN02672	Spectrum Analyzer	E4446A	9/4/2012	9/4/2014

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

Function	Manufacturer	Model #	S/N
INSTEON PAR38 Bulb*	SmartLabs, Inc.	2674	NA

Support Devices:

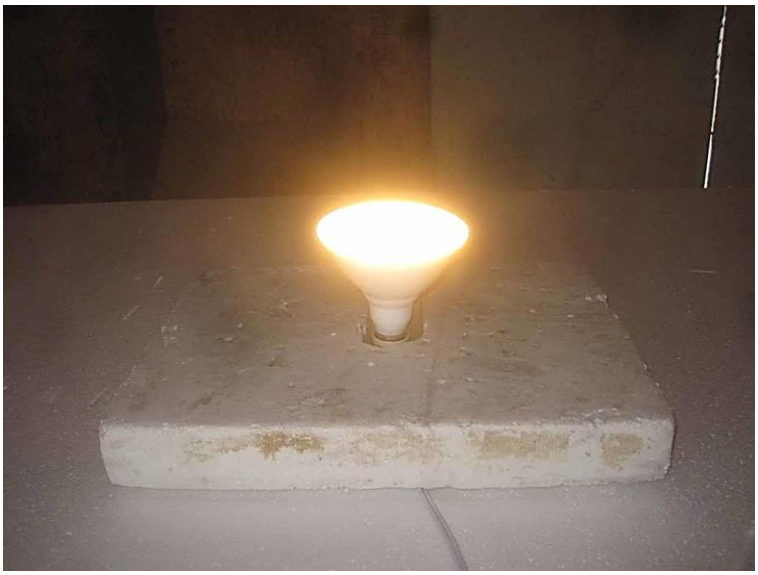
Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

The EUT is placed on the wooden table lined with Styrofoam of 10 cm thickness. EUT is installed in fixed position. EUT is turned on and set into transmit always mode.
Operating frequency: 914.5-915.5MHz

Frequency Range: fundamental
RBW=VBW=120kHz
Temp: 19°C, 49% Relative Humidity, 100.1kpal
Site D
15.31(e) compliance: the supply voltage was varied between 85% and 115% of the nominal rated supply voltage (100vac and 240 Vac); no change in the fundamental signal level was observed.

Test Setup Photos



Occupied Bandwidth 15.215(c)

Test Data

Test Location: CKC Laboratories • 110 Olinda Place • Brea, CA 92823 • 714-993-6112

Customer: **SmartLabs, Inc.**
Specification: **Occupied Bandwidth**
Work Order #: **94820** Date: 10/9/2013
Test Type: **Maximized Emissions** Time: 14:31:56
Equipment: **INSTEON PAR38 Bulb** Sequence#: 13
Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen
Model: 2674
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00010	Preamp	8447D	3/29/2012	3/29/2014
T2	AN00851	Biconilog Antenna	CBL6111C	5/16/2012	5/16/2014
T3	ANP05555	Cable	RG223/U	6/19/2012	6/19/2014
T4	ANP05569	Cable	RG-214/U	6/19/2012	6/19/2014
T5	ANP04382	Cable	LDF-50	8/30/2012	8/30/2014
	AN02672	Spectrum Analyzer	E4446A	9/4/2012	9/4/2014

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

Function	Manufacturer	Model #	S/N
INSTEON PAR38 Bulb*	SmartLabs, Inc.	2674	NA

Support Devices:

Function	Manufacturer	Model #	S/N

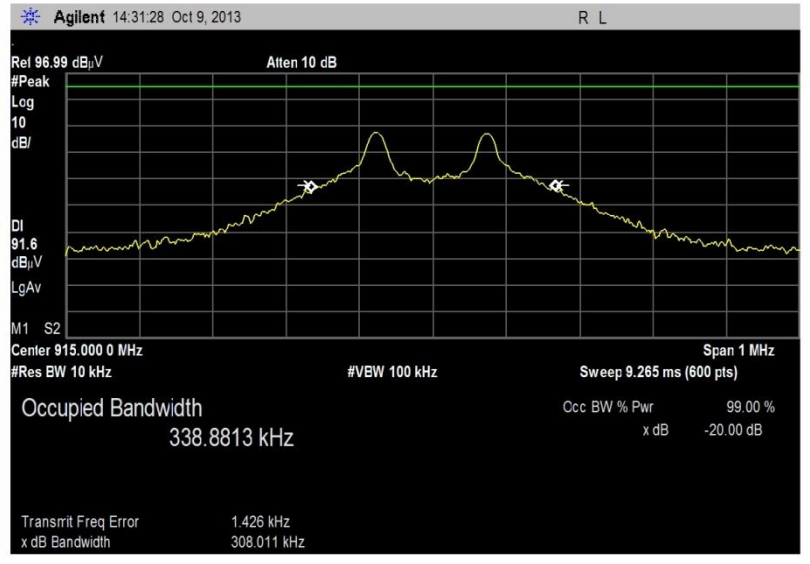
Test Conditions / Notes:

The EUT is placed on the wooden table lined with Styrofoam of 10 cm thickness. EUT is installed in fixed position. EUT is turned on and set into transmit always mode.
Operating frequency: 914.5-915.5MHz

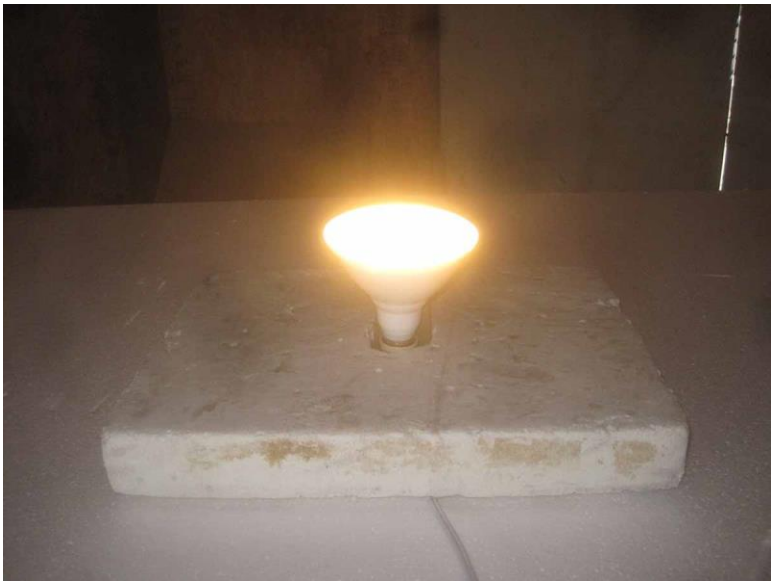
Frequency Range: fundamental
RBW=VBW=120kHz

Temp: 19°C, 49% Relative Humidity, 100.1kpal
Site D

Test Plots


Agilent 14:31:28 Oct 9, 2013
R L
Ref 96.99 dBµV
Atten 10 dB
#Peak
Log
10
dB/
Dl
91.6
dBµV
LgAv
M1 S2
Center 915.000 0 MHz
#Res BW 10 kHz
#VBW 100 kHz
Span 1 MHz
Sweep 9.265 ms (600 pts)
Occupied Bandwidth
338.8813 kHz
Occ BW % Pwr 99.00 %
x dB -20.00 dB
Transmit Freq Error 1.426 kHz
x dB Bandwidth 308.011 kHz

Test Setup Photos



99 % Bandwidth

Test Data

Test Location: CKC Laboratories • 110 Olinda Place • Brea, CA 92823 • 714-993-6112

Customer: **SmartLabs, Inc.**
Specification: **99% Bandwidth**
Work Order #: **94820** Date: 10/9/2013
Test Type: **Maximized Emissions** Time: 14:31:56
Equipment: **INSTEON PAR38 Bulb** Sequence#: 13
Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen
Model: 2674
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00010	Preamp	8447D	3/29/2012	3/29/2014
T2	AN00851	Biconilog Antenna	CBL6111C	5/16/2012	5/16/2014
T3	ANP05555	Cable	RG223/U	6/19/2012	6/19/2014
T4	ANP05569	Cable	RG-214/U	6/19/2012	6/19/2014
T5	ANP04382	Cable	LDF-50	8/30/2012	8/30/2014
	AN02672	Spectrum Analyzer	E4446A	9/4/2012	9/4/2014

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

Function	Manufacturer	Model #	S/N
INSTEON PAR38 Bulb*	SmartLabs, Inc.	2674	NA

Support Devices:

Function	Manufacturer	Model #	S/N

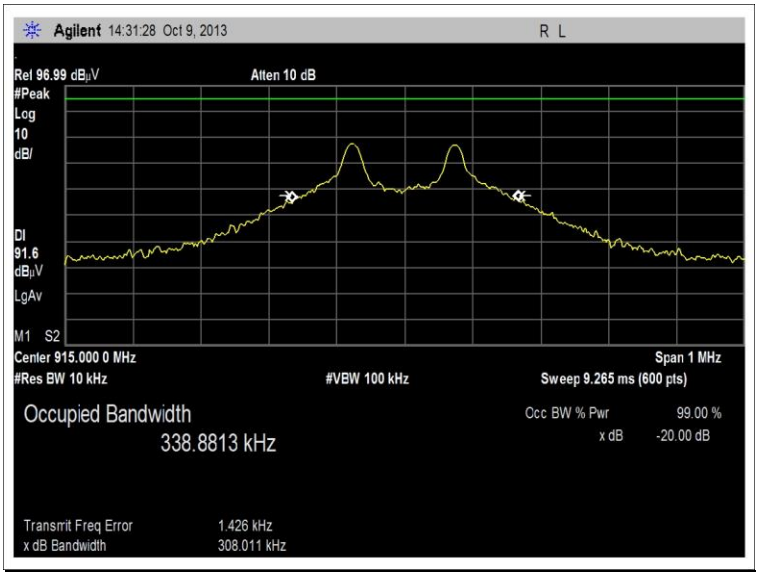
Test Conditions / Notes:

The EUT is placed on the wooden table lined with Styrofoam of 10 cm thickness. EUT is installed in fixed position. EUT is turned on and set into transmit always mode.
Operating frequency: 914.5-915.5MHz

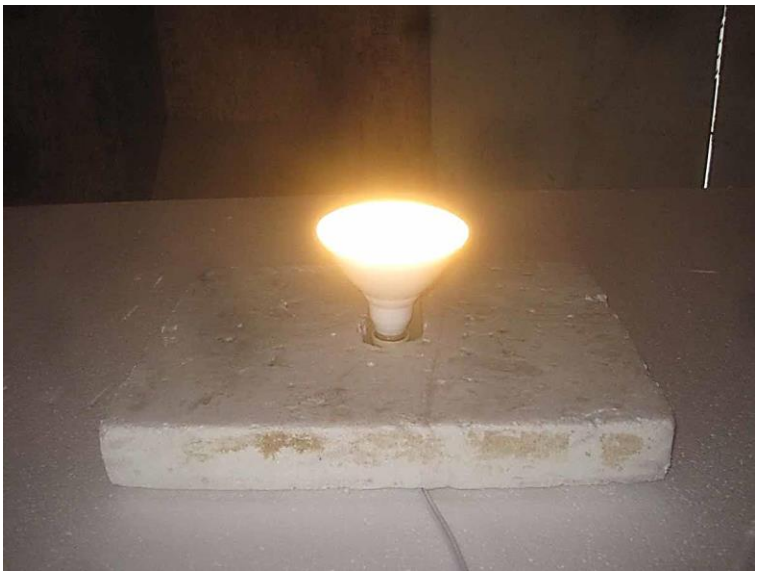
Frequency Range: fundamental
RBW=VBW=120kHz

Temp: 19°C, 49% Relative Humidity, 100.1kpal
Site D

Test Plots


Agilent 14:31:28 Oct 9, 2013
R L
Ref 96.99 dBµV
Atten 10 dB
#Peak
Log
10
dB/
Dl
91.6
dBµV
LgAv
M1 S2
Center 915.000 0 MHz
Span 1 MHz
#Res BW 10 kHz
#VBW 100 kHz
Sweep 9.265 ms (600 pts)
Occupied Bandwidth
338.8813 kHz
Occ BW % Pwr 99.00 %
x dB -20.00 dB
Transmit Freq Error 1.426 kHz
x dB Bandwidth 308.011 kHz

Test Setup Photos



Radiated Spurious Emissions 15.249(a)

Test Data Sheets

Test Location: CKC Laboratories • 110 Olinda Place • Brea, CA 92823 • 714-993-6112

Customer: **SmartLabs, Inc.**
Specification: **15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)**
Work Order #: **94820** Date: 10/9/2013
Test Type: **Maximized Emissions** Time: 15:30:45
Equipment: **INSTEON PAR38 Bulb** Sequence#: 14
Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen
Model: 2674
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN00010	Preamp	8447D	3/29/2012	3/29/2014
	AN00851	Biconilog Antenna	CBL6111C	5/16/2012	5/16/2014
	ANP05555	Cable	RG223/U	6/19/2012	6/19/2014
	ANP05569	Cable	RG-214/U	6/19/2012	6/19/2014
T1	ANP04382	Cable	LDF-50	8/30/2012	8/30/2014
	AN02672	Spectrum Analyzer	E4446A	9/4/2012	9/4/2014
T2	AN00787	Preamp	83017A	5/31/2013	5/31/2015
T3	AN01646	Horn Antenna	3115	4/13/2012	4/13/2014
T4	ANP06153	Cable	16301	10/27/2011	10/27/2013
T5	ANP06360	Cable	L1-PNMNM-48	8/29/2012	8/29/2014
T6	AN03169	High Pass Filter	HM1155-11SS	7/30/2013	7/30/2015
	AN00314	Loop Antenna	6502	6/29/2012	6/29/2014

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

Function	Manufacturer	Model #	S/N
INSTEON PAR38 Bulb*	SmartLabs, Inc.	2674	NA

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

The EUT is placed on the wooden table lined with Styrofoam of 10 cm thickness. EUT is installed in fixed position.
EUT is turned on and set into transmit always mode.
Operating frequency: 914.5-915.5MHz

Frequency range of measurement = 9kHz-10GHz
9 kHz -150 kHz;RBW=200 Hz,VBW=200 Hz;
150 kHz-30 MHz;RBW=9 kHz,VBW=9 kHz;
30 MHz-1000 MHz;RBW=120 kHz,VBW=120 kHz,
1000 MHz-10000 MHz;RBW=1 MHz,VBW=1 MHz.

Temp: 19°C
49% Relative Humidity
100.1kpal
Site D

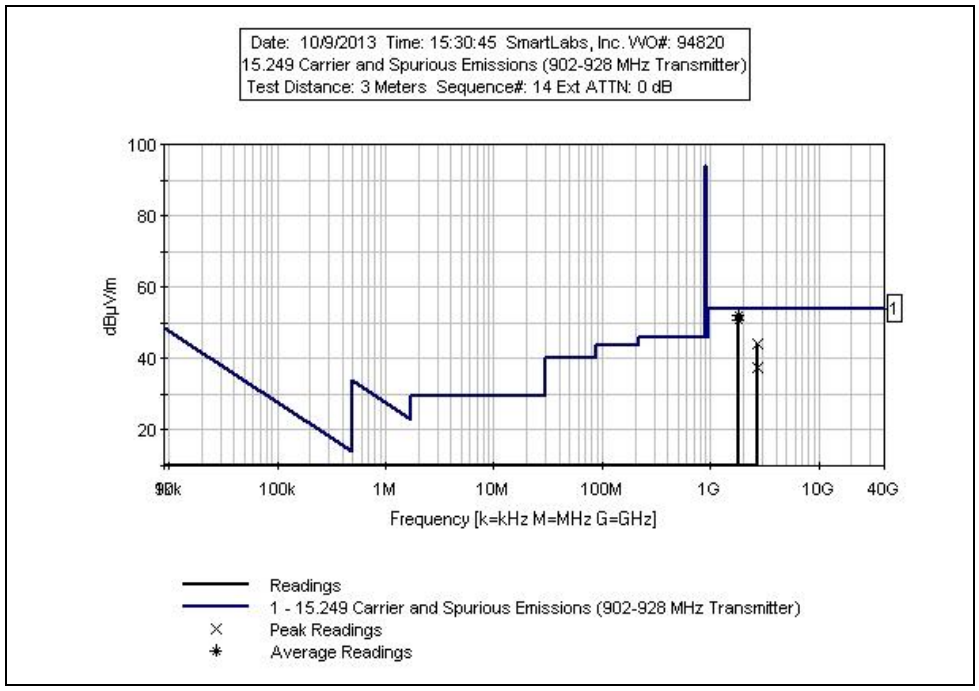
No EUT spurious emissions were detected below 1GHz.

Ext Attn: 0 dB

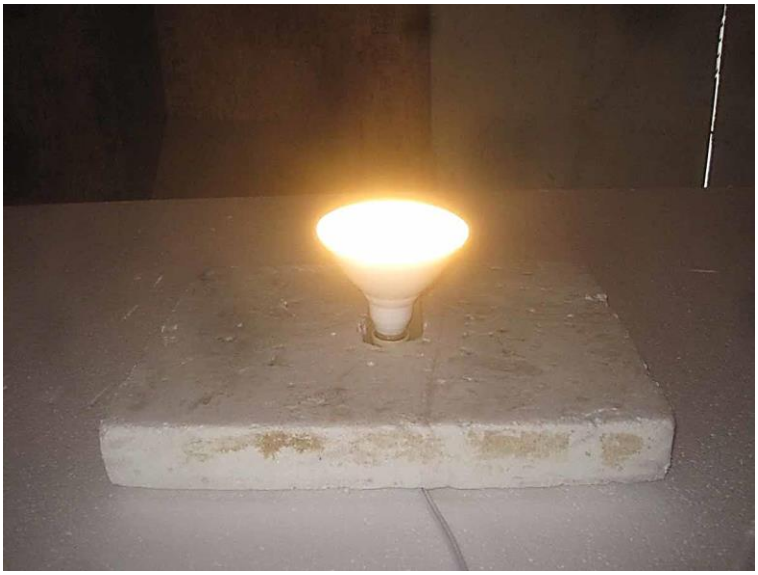
Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
			T5	T6							
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	1830.000M	55.7	+5.2	-39.7	+27.4	+0.5	+0.0	52.2	54.0	-1.8	Vert
	Ave		+2.8	+0.3							
^	1830.000M	56.8	+5.2	-39.7	+27.4	+0.5	+0.0	53.3	54.0	-0.7	Vert
			+2.8	+0.3							
3	1830.000M	54.1	+5.2	-39.7	+27.4	+0.5	+0.0	50.6	54.0	-3.4	Horiz
	Ave		+2.8	+0.3							
^	1830.000M	56.5	+5.2	-39.7	+27.4	+0.5	+0.0	53.0	54.0	-1.0	Horiz
			+2.8	+0.3							
5	2744.992M	45.8	+5.9	-39.7	+27.8	+0.6	+0.0	44.0	54.0	-10.0	Vert
			+3.4	+0.2							
6	2744.980M	39.4	+5.9	-39.7	+27.8	+0.6	+0.0	37.6	54.0	-16.4	Horiz
			+3.4	+0.2							

Test Plots


Date: 10/9/2013 Time: 15:30:45 SmartLabs, Inc. WO#: 94820
15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)
Test Distance: 3 Meters Sequence#: 14 Ext ATTN: 0 dB
dBµV/m
100
80
60
40
20
100k
1M
10M
100M
1G
10G
40G
Frequency [k=kHz M=MHz G=GHz]
1
Readings
1 - 15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)
Peak Readings
Average Readings

Test Setup Photos



Band Edge Measurements 15.249(d)

Test Data

Test Location: CKC Laboratories • 110 Olinda Place • Brea, CA 92823 • 714-993-6112

Customer: **SmartLabs, Inc.**
Specification: **Bandedge**
Work Order #: **94820** Date: 10/9/2013
Test Type: **Maximized Emissions** Time: 14:31:56
Equipment: **INSTEON PAR38 Bulb** Sequence#: 13
Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen
Model: 2674
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00010	Preamp	8447D	3/29/2012	3/29/2014
T2	AN00851	Biconilog Antenna	CBL6111C	5/16/2012	5/16/2014
T3	ANP05555	Cable	RG223/U	6/19/2012	6/19/2014
T4	ANP05569	Cable	RG-214/U	6/19/2012	6/19/2014
T5	ANP04382	Cable	LDF-50	8/30/2012	8/30/2014
	AN02672	Spectrum Analyzer	E4446A	9/4/2012	9/4/2014

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

Function	Manufacturer	Model #	S/N
INSTEON PAR38 Bulb*	SmartLabs, Inc.	2674	NA

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

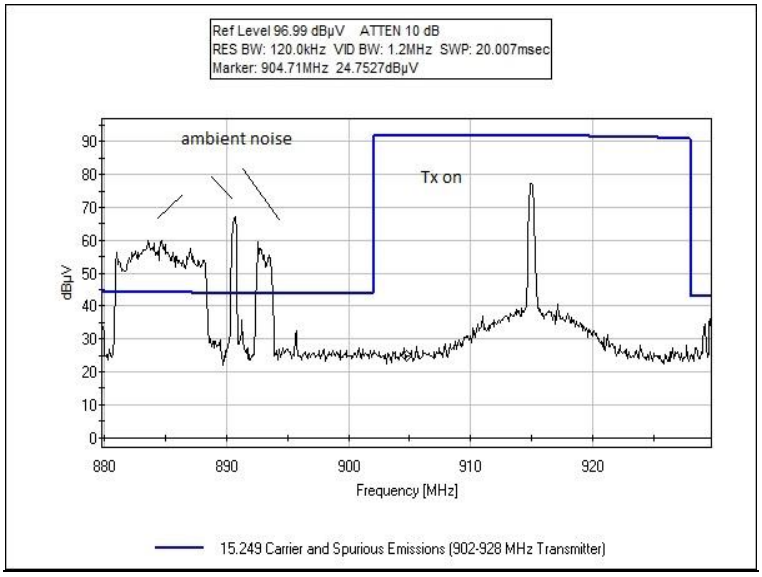
The EUT is placed on the wooden table lined with Styrofoam of 10 cm thickness. EUT is installed in fixed position. EUT is turned on and set into transmit always mode.
Operating frequency: 914.5-915.5MHz

Frequency Range: fundamental
RBW=VBW=120kHz

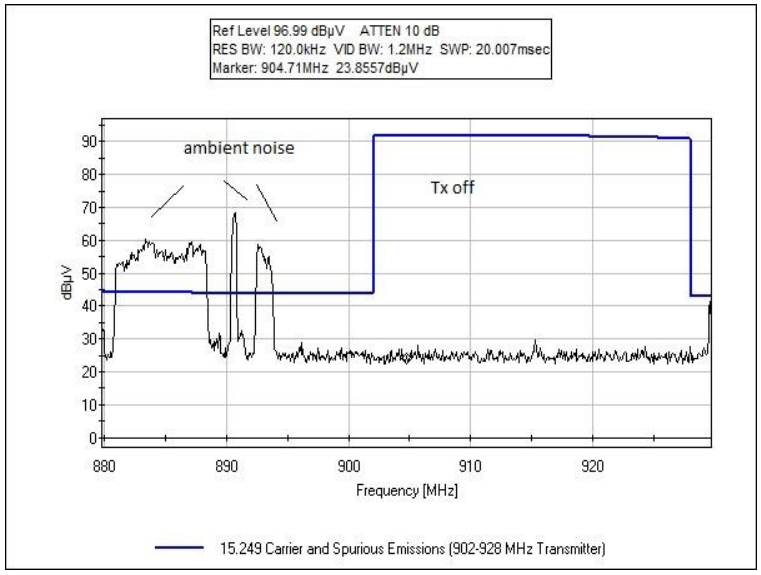
Temp: 19°C, 49% Relative Humidity, 100.1kpal;

Site D

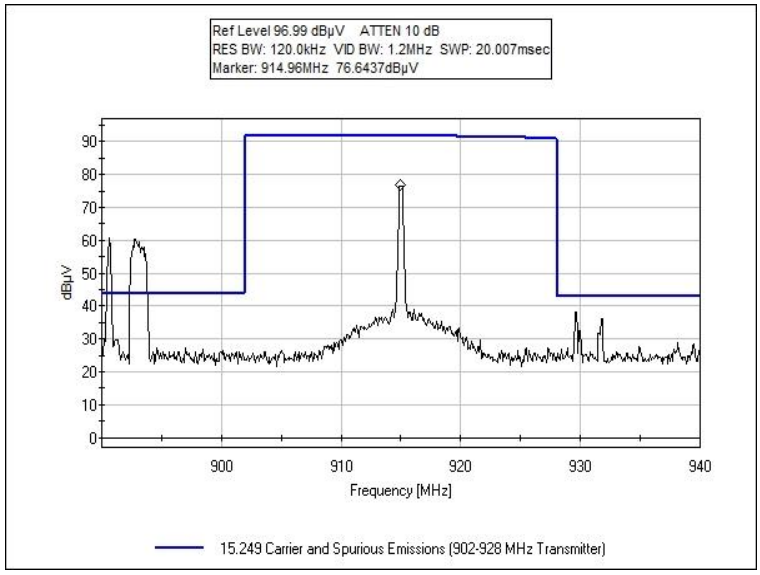
Test Plots



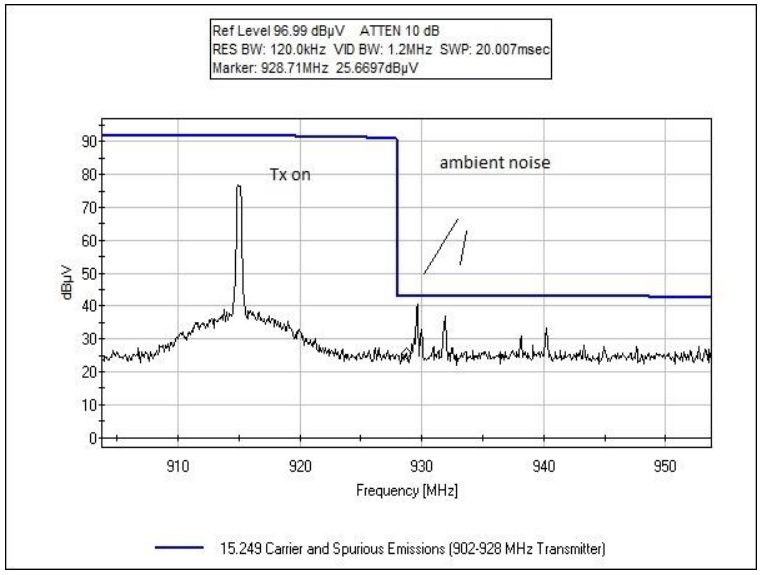
Left Side, TX on



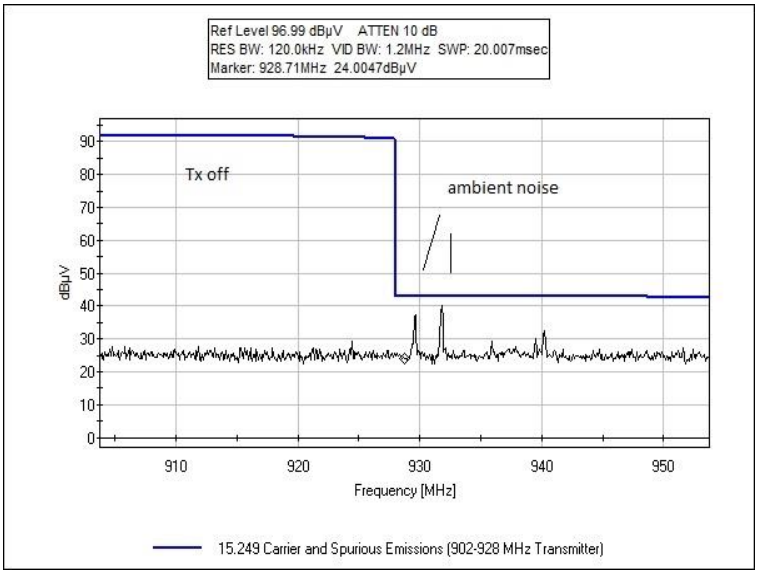
TX off



Center

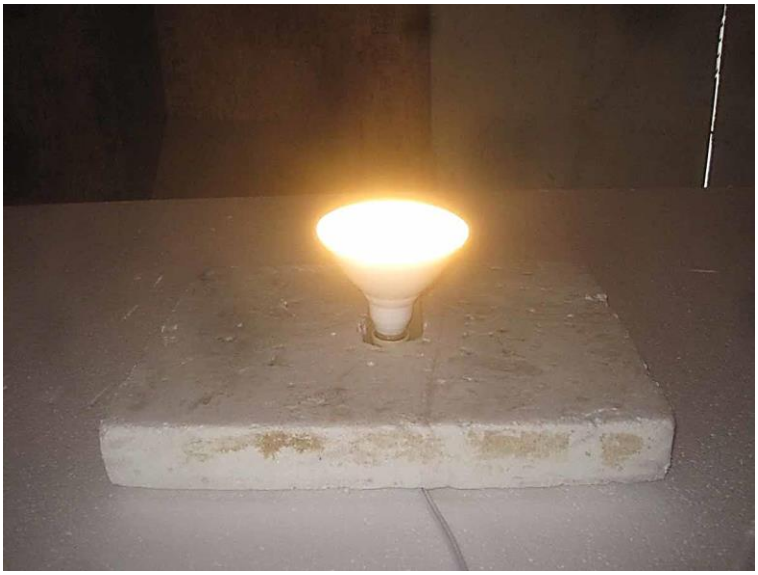


TX on, Right Side


Ref Level 96.99 dBµV ATTEN 10 dB
RES BW: 120.0kHz VID BW: 1.2MHz SWP: 20.007msec
Marker: 928.71MHz 24.0047dBµV
Tx off
ambient noise
dBµV
90
80
70
60
50
40
30
20
10
0
910
920
930
940
950
Frequency [MHz]
15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)

TX off

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.