SmartLabs, Inc.

TEST REPORT FOR

On/Off Outlet
Model: 2663-222

Tested To The Following Standards:

FCC Part 15 Subpart C Section(s) 15.207 and 15.249

Report No.: 94949-4

Date of issue: May 13, 2014

A2LA 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.

Testing the Future
CKC LABORATORIES, INC.

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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: 13-3JL1004-01

REPORT PREPARED BY:

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

Project Number: 94949

DATE OF EQUIPMENT RECEIPT: May 6, 2014
DATE(S) OF TESTING: May 6, 2014

Report Authorization

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

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

Test Facility Information

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

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

Software Versions

CKC Laboratories Proprietary Software	Version
EMITest Emissions	5.00.14
Immunity	5.00.07

Site Registration & Accreditation Information

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

SUMMARY OF RESULTS

Standard / Specification: FCC Part 15 Subpart C

Test Procedure/Method	Description	Results
15.207 / ANSI C63.4	Conducted Emissions	Pass
15.215(c) / ANSI C63.4	Occupied Bandwidth	Pass
15.249(a)(b) / ANSI C63.4	RF Power Output	Pass
15.31(e) / ANSI C63.4	Voltage Variation	Pass
15.249(d) / ANSI C63.4	Field Strength of Spurious Emissions and Bandedge	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

On/Off Outlet
Manuf: SmartLabs, Inc.
Model: 2663-222
Serial: None

PERIPHERAL DEVICES

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

Light Bulb
Manuf: Sylvania
Model: SYL7.5W
Serial: None

FCC PART 15 SUBPART C

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

15.207 AC Conducted Emissions

Test Data

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

Customer: **SmartLabs, Inc.**
Specification: **15.207 AC Mains - Average**
Work Order #: **94949** Date: 5/6/2014
Test Type: **Conducted Emissions** Time: 8:47:14 AM
Equipment: **On/Off Outlet** Sequence#: 1
Manufacturer: SmartLabs, Inc. Tested By: Hieu Song Nguyenpham
Model: 2663-222 120V 60Hz
S/N: None

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP01211	Attenuator	PE7002-10	4/2/2013	4/2/2015
T2	ANP00880	Cable	RG214U	7/30/2012	7/30/2014
T3	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
T4	AN00493	50uH LISN-L1 (L) Loss W/O European Adapter	3816/NM	3/4/2013	3/4/2015
	AN00493	50uH LISN-L(2) N Loss W/O European Adapter	3816/NM	3/4/2013	3/4/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015
T5	ANP05258	High Pass Filter	HE9615-150K-50-720B	12/6/2012	12/6/2014

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

Function	Manufacturer	Model #	S/N
On/Off Outlet*	SmartLabs, Inc.	2663-222	None

Support Devices:

Function	Manufacturer	Model #	S/N
Light Bulb	Sylvania	SYL7.5W	None

Test Conditions / Notes:

Conducted Emission
Frequency Range: 150kHz to 30MHz

Temperature: 21.4°C
Humidity: 40 %
Atmospheric Pressure: 101.2 kPa
High Clock: 10MHz

Transmitting operating frequency= 915MHz
RF Output= 0dBm

The EUT is a wall mount device. It is placed on the 80 cm Styrofoam table. The EUT is used to turn on or off power from the outlet. The EUT is set in continuously transmit.

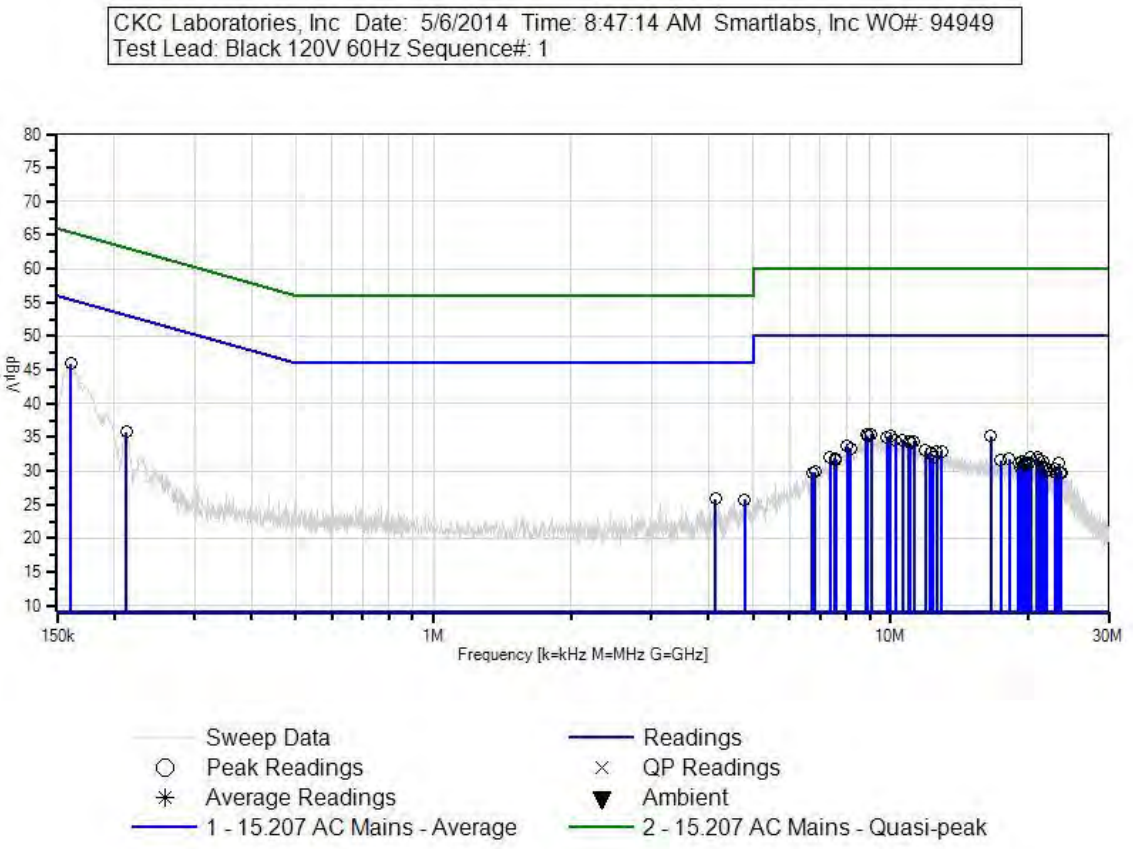
Ext Attn: 0 dB

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

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	160.907k	35.8	+9.6 +0.4	+0.0	+0.0	+0.1	+0.0	45.9	55.4	-9.5	Black
2	9.067M	25.1	+9.6 +0.1	+0.3	+0.1	+0.3	+0.0	35.5	50.0	-14.5	Black
3	8.860M	25.0	+9.7 +0.1	+0.3	+0.1	+0.2	+0.0	35.4	50.0	-14.6	Black
4	9.995M	25.0	+9.6 +0.0	+0.3	+0.1	+0.3	+0.0	35.3	50.0	-14.7	Black
5	8.923M	24.8	+9.7 +0.1	+0.3	+0.1	+0.2	+0.0	35.2	50.0	-14.8	Black
6	16.589M	24.8	+9.7 +0.1	+0.3	+0.1	+0.2	+0.0	35.2	50.0	-14.8	Black
7	9.833M	24.7	+9.6 +0.0	+0.3	+0.1	+0.3	+0.0	35.0	50.0	-15.0	Black
8	10.256M	24.2	+9.7 +0.0	+0.3	+0.1	+0.3	+0.0	34.6	50.0	-15.4	Black
9	10.625M	24.3	+9.7 +0.0	+0.3	+0.1	+0.2	+0.0	34.6	50.0	-15.4	Black
10	11.238M	24.0	+9.7 +0.1	+0.3	+0.1	+0.2	+0.0	34.4	50.0	-15.6	Black
11	10.959M	23.9	+9.7 +0.1	+0.3	+0.1	+0.2	+0.0	34.3	50.0	-15.7	Black
12	11.067M	23.7	+9.7 +0.1	+0.3	+0.1	+0.2	+0.0	34.1	50.0	-15.9	Black
13	8.049M	23.4	+9.6 +0.1	+0.3	+0.1	+0.2	+0.0	33.7	50.0	-16.3	Black
14	8.166M	23.1	+9.6 +0.1	+0.3	+0.1	+0.2	+0.0	33.4	50.0	-16.6	Black
15	11.932M	22.7	+9.6 +0.1	+0.3	+0.1	+0.2	+0.0	33.0	50.0	-17.0	Black
16	12.625M	22.6	+9.6 +0.1	+0.3	+0.1	+0.2	+0.0	32.9	50.0	-17.1	Black

17	12.923M	22.6	+9.6 +0.1	+0.3	+0.1	+0.2	+0.0	32.9	50.0	-17.1	Black
18	212.539k	25.8	+9.6 +0.2	+0.1	+0.0	+0.1	+0.0	35.8	53.1	-17.3	Black
19	12.211M	22.4	+9.6 +0.1	+0.3	+0.1	+0.2	+0.0	32.7	50.0	-17.3	Black
20	20.256M	21.0	+9.7 +0.2	+0.4	+0.1	+0.7	+0.0	32.1	50.0	-17.9	Black
21	7.382M	21.8	+9.6 +0.1	+0.2	+0.1	+0.2	+0.0	32.0	50.0	-18.0	Black
22	12.400M	21.7	+9.6 +0.1	+0.3	+0.1	+0.2	+0.0	32.0	50.0	-18.0	Black
23	20.914M	20.9	+9.7 +0.2	+0.4	+0.1	+0.7	+0.0	32.0	50.0	-18.0	Black
24	7.562M	21.7	+9.6 +0.1	+0.2	+0.1	+0.2	+0.0	31.9	50.0	-18.1	Black
25	18.166M	21.3	+9.6 +0.1	+0.4	+0.1	+0.3	+0.0	31.8	50.0	-18.2	Black
26	7.598M	21.5	+9.6 +0.1	+0.2	+0.1	+0.2	+0.0	31.7	50.0	-18.3	Black
27	21.058M	20.6	+9.7 +0.2	+0.4	+0.1	+0.7	+0.0	31.7	50.0	-18.3	Black
28	17.427M	21.1	+9.7 +0.1	+0.4	+0.1	+0.2	+0.0	31.6	50.0	-18.4	Black
29	19.319M	20.7	+9.6 +0.2	+0.4	+0.1	+0.5	+0.0	31.5	50.0	-18.5	Black
30	21.571M	20.3	+9.7 +0.2	+0.4	+0.1	+0.8	+0.0	31.5	50.0	-18.5	Black
31	19.058M	20.4	+9.6 +0.2	+0.4	+0.1	+0.5	+0.0	31.2	50.0	-18.8	Black
32	19.607M	20.3	+9.6 +0.2	+0.4	+0.1	+0.6	+0.0	31.2	50.0	-18.8	Black
33	19.779M	20.2	+9.6 +0.2	+0.4	+0.1	+0.6	+0.0	31.1	50.0	-18.9	Black
34	20.049M	20.1	+9.6 +0.2	+0.4	+0.1	+0.7	+0.0	31.1	50.0	-18.9	Black
35	23.388M	20.1	+9.7 +0.2	+0.4	+0.1	+0.6	+0.0	31.1	50.0	-18.9	Black
36	19.824M	20.1	+9.6 +0.2	+0.4	+0.1	+0.6	+0.0	31.0	50.0	-19.0	Black
37	19.229M	19.8	+9.6 +0.2	+0.4	+0.1	+0.5	+0.0	30.6	50.0	-19.4	Black
38	21.355M	19.4	+9.7 +0.2	+0.4	+0.1	+0.8	+0.0	30.6	50.0	-19.4	Black
39	21.490M	19.4	+9.7 +0.2	+0.4	+0.1	+0.8	+0.0	30.6	50.0	-19.4	Black
40	21.706M	19.3	+9.7 +0.2	+0.4	+0.1	+0.8	+0.0	30.5	50.0	-19.5	Black
41	22.869M	19.3	+9.7 +0.2	+0.4	+0.1	+0.7	+0.0	30.4	50.0	-19.6	Black
42	22.013M	19.0	+9.7 +0.2	+0.4	+0.1	+0.7	+0.0	30.1	50.0	-19.9	Black

43	6.833M	19.8	+9.6 +0.1	+0.2	+0.1	+0.1	+0.0	29.9	50.0	-20.1	Black
44	21.941M	18.7	+9.7 +0.2	+0.4	+0.1	+0.8	+0.0	29.9	50.0	-20.1	Black
45	4.143M	15.7	+9.6 +0.1	+0.2	+0.1	+0.1	+0.0	25.8	46.0	-20.2	Black
46	6.734M	19.7	+9.6 +0.1	+0.2	+0.1	+0.1	+0.0	29.8	50.0	-20.2	Black
47	23.022M	18.8	+9.7 +0.2	+0.4	+0.1	+0.6	+0.0	29.8	50.0	-20.2	Black
48	4.798M	15.5	+9.6 +0.2	+0.2	+0.1	+0.1	+0.0	25.7	46.0	-20.3	Black
49	23.456M	18.7	+9.7 +0.2	+0.4	+0.1	+0.6	+0.0	29.7	50.0	-20.3	Black
50	23.669M	18.7	+9.7 +0.2	+0.4	+0.1	+0.6	+0.0	29.7	50.0	-20.3	Black



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

Customer: **SmartLabs, Inc.**
Specification: **15.207 AC Mains - Average**
Work Order #: **94949** Date: 5/6/2014
Test Type: **Conducted Emissions** Time: 8:51:35 AM
Equipment: **On/Off Outlet** Sequence#: 2
Manufacturer: SmartLabs, Inc. Tested By: Hieu Song Nguyenpham
Model: 2663-222 120V 60Hz
S/N: None

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP01211	Attenuator	PE7002-10	4/2/2013	4/2/2015
T2	ANP00880	Cable	RG214U	7/30/2012	7/30/2014
T3	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
	AN00493	50uH LISN-L1 (L) Loss W/O European Adapter	3816/NM	3/4/2013	3/4/2015
T4	AN00493	50uH LISN-L(2) N Loss W/O European Adapter	3816/NM	3/4/2013	3/4/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015
T5	ANP05258	High Pass Filter	HE9615-150K-50-720B	12/6/2012	12/6/2014

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

Function	Manufacturer	Model #	S/N
On/Off Outlet*	SmartLabs, Inc.	2663-222	None

Support Devices:

Function	Manufacturer	Model #	S/N
Light Bulb	Sylvania	SYL7.5W	None

Test Conditions / Notes:

Conducted Emission
Frequency Range: 150kHz to 30MHz

Temperature: 21.4°C
Humidity: 40 %
Atmospheric Pressure: 101.2 kPa
High Clock: 10MHz

Transmitting operating frequency= 915MHz
RF Output= 0dBm

The EUT is a wall mount device. It is placed on the 80 cm Styrofoam table. The EUT is used to turn on or off power from the outlet. The EUT is set in continuously transmit.

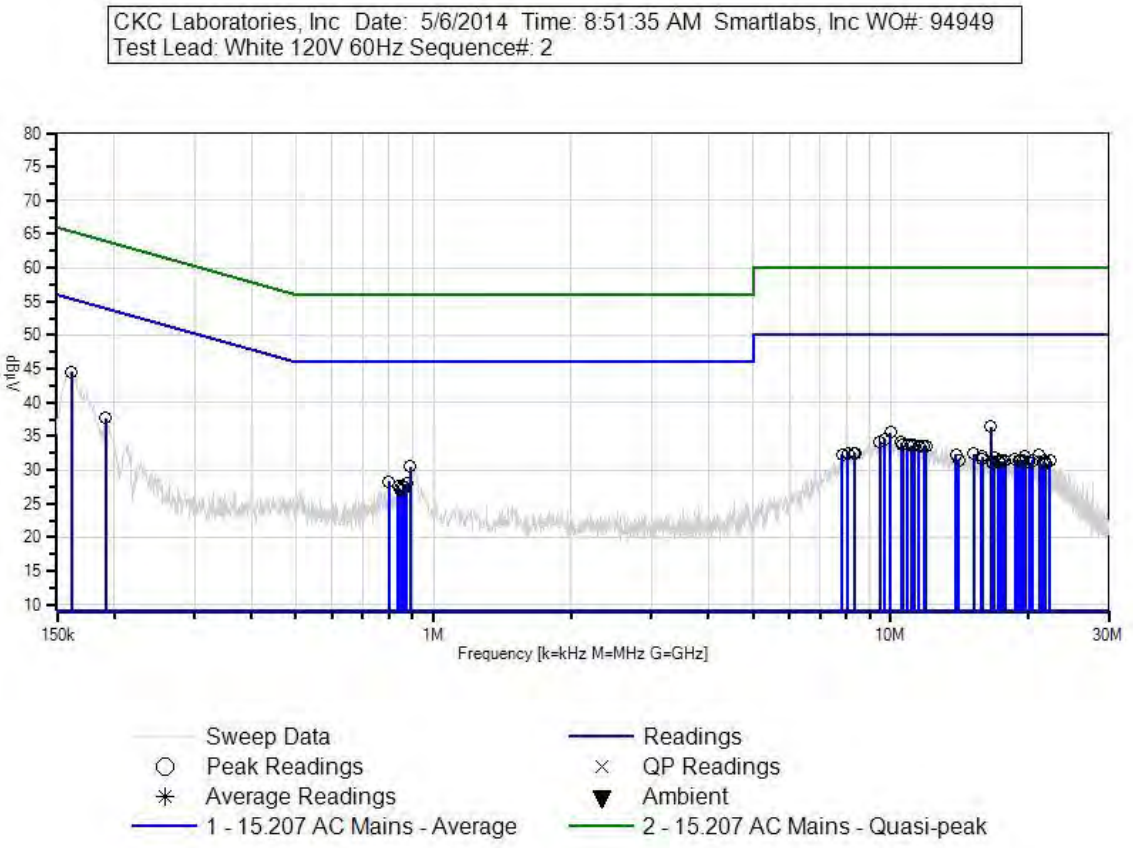
Ext Attn: 0 dB

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

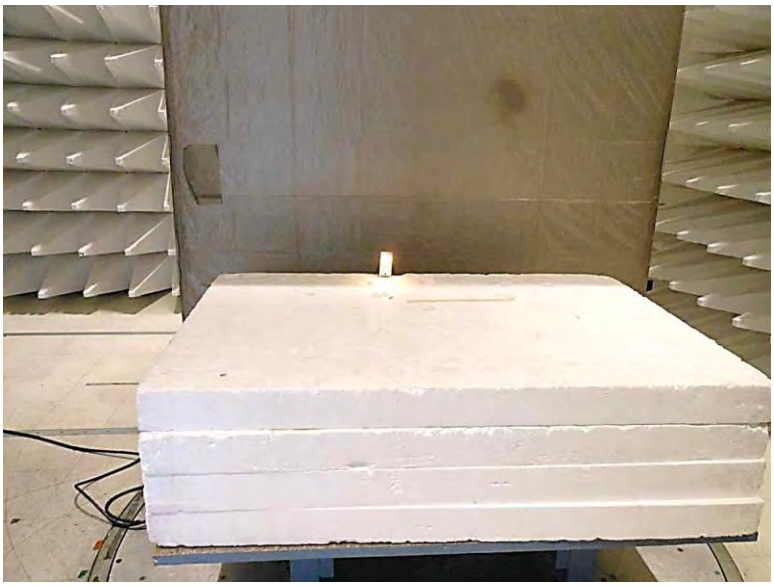
#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	161.635k	33.9	+9.6 +0.4	+0.1	+0.0	+0.6	+0.0	44.6	55.4	-10.8	White
2	16.589M	25.4	+9.7 +0.1	+0.3	+0.1	+0.8	+0.0	36.4	50.0	-13.6	White
3	9.995M	24.8	+9.6 +0.0	+0.3	+0.1	+0.8	+0.0	35.6	50.0	-14.4	White
4	9.707M	23.8	+9.6 +0.0	+0.3	+0.1	+0.8	+0.0	34.6	50.0	-15.4	White
5	889.963k	20.0	+9.6 +0.2	+0.1	+0.0	+0.6	+0.0	30.5	46.0	-15.5	White
6	9.481M	23.3	+9.6 +0.1	+0.3	+0.1	+0.8	+0.0	34.2	50.0	-15.8	White
7	10.544M	23.3	+9.7 +0.0	+0.3	+0.1	+0.7	+0.0	34.1	50.0	-15.9	White
8	10.896M	23.0	+9.7 +0.0	+0.3	+0.1	+0.7	+0.0	33.8	50.0	-16.2	White
9	11.274M	22.9	+9.7 +0.1	+0.3	+0.1	+0.7	+0.0	33.8	50.0	-16.2	White
10	191.451k	27.2	+9.6 +0.2	+0.1	+0.0	+0.6	+0.0	37.7	54.0	-16.3	White
11	10.634M	22.9	+9.7 +0.0	+0.3	+0.1	+0.7	+0.0	33.7	50.0	-16.3	White
12	11.085M	22.8	+9.7 +0.1	+0.3	+0.1	+0.7	+0.0	33.7	50.0	-16.3	White
13	11.851M	22.8	+9.6 +0.1	+0.3	+0.1	+0.7	+0.0	33.6	50.0	-16.4	White
14	11.959M	22.8	+9.6 +0.1	+0.3	+0.1	+0.7	+0.0	33.6	50.0	-16.4	White
15	11.553M	22.7	+9.6 +0.1	+0.3	+0.1	+0.7	+0.0	33.5	50.0	-16.5	White
16	8.067M	21.7	+9.6 +0.1	+0.3	+0.1	+0.7	+0.0	32.5	50.0	-17.5	White
17	8.319M	21.7	+9.6 +0.1	+0.3	+0.1	+0.7	+0.0	32.5	50.0	-17.5	White
18	8.346M	21.7	+9.6 +0.1	+0.3	+0.1	+0.7	+0.0	32.5	50.0	-17.5	White
19	15.202M	21.5	+9.7 +0.1	+0.3	+0.1	+0.7	+0.0	32.4	50.0	-17.6	White
20	797.941k	17.8	+9.6 +0.2	+0.1	+0.0	+0.6	+0.0	28.3	46.0	-17.7	White
21	7.842M	21.5	+9.6 +0.1	+0.3	+0.1	+0.7	+0.0	32.3	50.0	-17.7	White

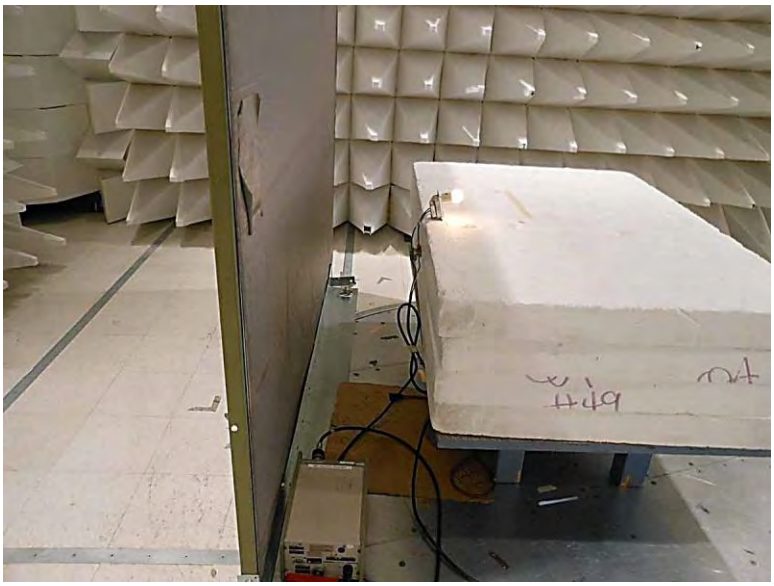
22	13.905M	21.5	+9.6 +0.1	+0.3	+0.1	+0.7	+0.0	32.3	50.0	-17.7	White
23	21.139M	20.7	+9.7 +0.2	+0.4	+0.1	+1.1	+0.0	32.2	50.0	-17.8	White
24	19.688M	20.7	+9.6 +0.2	+0.4	+0.1	+1.1	+0.0	32.1	50.0	-17.9	White
25	15.851M	21.1	+9.7 +0.1	+0.3	+0.1	+0.7	+0.0	32.0	50.0	-18.0	White
26	872.116k	17.5	+9.6 +0.2	+0.1	+0.0	+0.6	+0.0	28.0	46.0	-18.0	White
27	16.878M	20.8	+9.7 +0.1	+0.3	+0.1	+0.8	+0.0	31.8	50.0	-18.2	White
28	857.571k	17.2	+9.6 +0.2	+0.1	+0.0	+0.6	+0.0	27.7	46.0	-18.3	White
29	15.824M	20.7	+9.7 +0.1	+0.3	+0.1	+0.7	+0.0	31.6	50.0	-18.4	White
30	18.725M	20.4	+9.6 +0.1	+0.4	+0.1	+1.0	+0.0	31.6	50.0	-18.4	White
31	836.482k	17.0	+9.6 +0.2	+0.1	+0.0	+0.6	+0.0	27.5	46.0	-18.5	White
32	14.121M	20.7	+9.6 +0.1	+0.3	+0.1	+0.7	+0.0	31.5	50.0	-18.5	White
33	19.040M	20.2	+9.6 +0.2	+0.4	+0.1	+1.0	+0.0	31.5	50.0	-18.5	White
34	17.779M	20.3	+9.7 +0.1	+0.4	+0.1	+0.8	+0.0	31.4	50.0	-18.6	White
35	860.480k	16.9	+9.6 +0.2	+0.1	+0.0	+0.6	+0.0	27.4	46.0	-18.6	White
36	20.490M	19.9	+9.7 +0.2	+0.4	+0.1	+1.1	+0.0	31.4	50.0	-18.6	White
37	19.238M	20.0	+9.6 +0.2	+0.4	+0.1	+1.1	+0.0	31.4	50.0	-18.6	White
38	17.535M	20.2	+9.7 +0.1	+0.4	+0.1	+0.8	+0.0	31.3	50.0	-18.7	White
39	17.301M	20.2	+9.7 +0.1	+0.4	+0.1	+0.8	+0.0	31.3	50.0	-18.7	White
40	19.472M	19.9	+9.6 +0.2	+0.4	+0.1	+1.1	+0.0	31.3	50.0	-18.7	White
41	22.301M	19.7	+9.7 +0.2	+0.4	+0.1	+1.2	+0.0	31.3	50.0	-18.7	White
42	21.715M	19.8	+9.7 +0.2	+0.4	+0.1	+1.1	+0.0	31.3	50.0	-18.7	White
43	841.573k	16.7	+9.6 +0.2	+0.1	+0.0	+0.6	+0.0	27.2	46.0	-18.8	White
44	16.634M	20.1	+9.7 +0.1	+0.3	+0.1	+0.8	+0.0	31.1	50.0	-18.9	White
45	17.238M	20.0	+9.7 +0.1	+0.4	+0.1	+0.8	+0.0	31.1	50.0	-18.9	White
46	20.130M	19.7	+9.6 +0.2	+0.4	+0.1	+1.1	+0.0	31.1	50.0	-18.9	White
47	851.027k	16.5	+9.6 +0.2	+0.1	+0.0	+0.6	+0.0	27.0	46.0	-19.0	White

48	16.770M	20.0	+9.7 +0.1	+0.3	+0.1	+0.8	+0.0	31.0	50.0	-19.0	White
49	21.508M	19.4	+9.7 +0.2	+0.4	+0.1	+1.1	+0.0	30.9	50.0	-19.1	White
50	21.860M	19.4	+9.7 +0.2	+0.4	+0.1	+1.1	+0.0	30.9	50.0	-19.1	White



Test Setup Photo(s)





15.215(c) Occupied Bandwidth

Test Conditions / Setup

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

Customer: **SmartLabs, Inc.**
Specification: **OBW**
Work Order #: **94949** Date: 5/6/2014
Test Type: **Radiated Scan** Time: 09:34:06
Equipment: **On/Off Outlet** Sequence#: 5
Manufacturer: SmartLabs, Inc. Tested By: Hieu Song Nguyenpham
Model: 2663-222
S/N: None

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00852	Biconilog Antenna	CBL 6111C	11/28/2012	11/28/2014
T2	ANP00880	Cable	RG214U	7/30/2012	7/30/2014
T3	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

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

Function	Manufacturer	Model #	S/N
On/Off Outlet*	SmartLabs, Inc.	2663-222	None

Support Devices:

Function	Manufacturer	Model #	S/N
Light Bulb	Sylvania	SYL7.5W	None

Test Conditions / Notes:

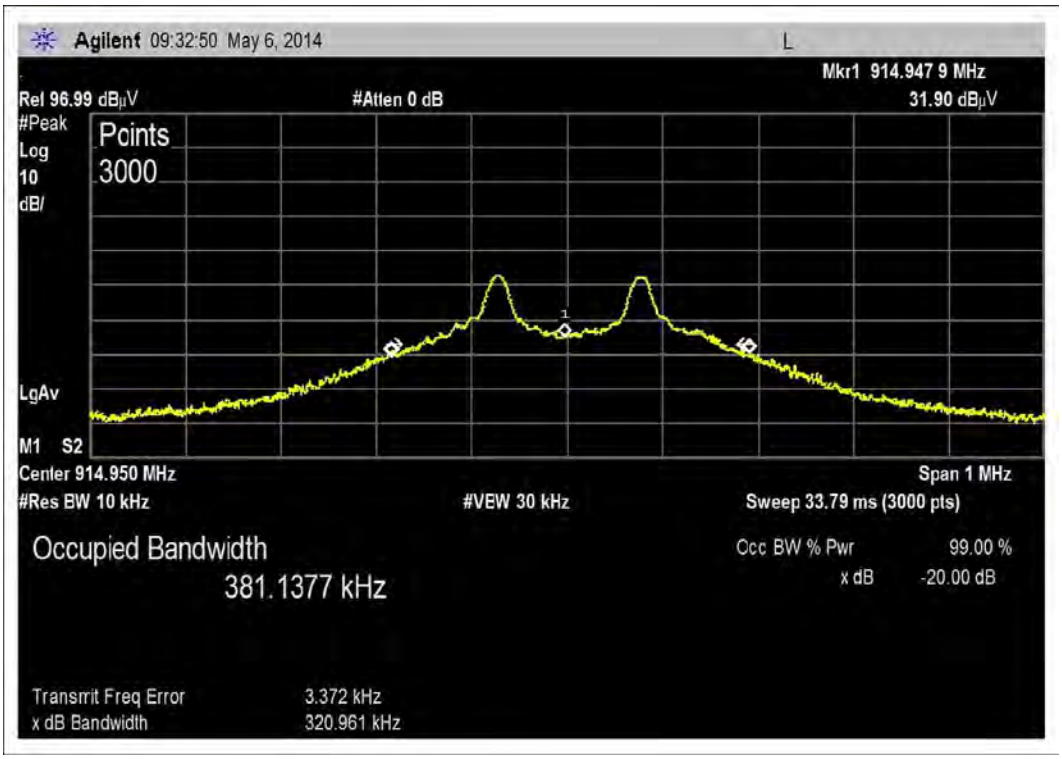
OBW Set up

Temperature: 21.4°C
Humidity: 40 %
Atmospheric Pressure: 101.2 kPa
High Clock: 10MHz

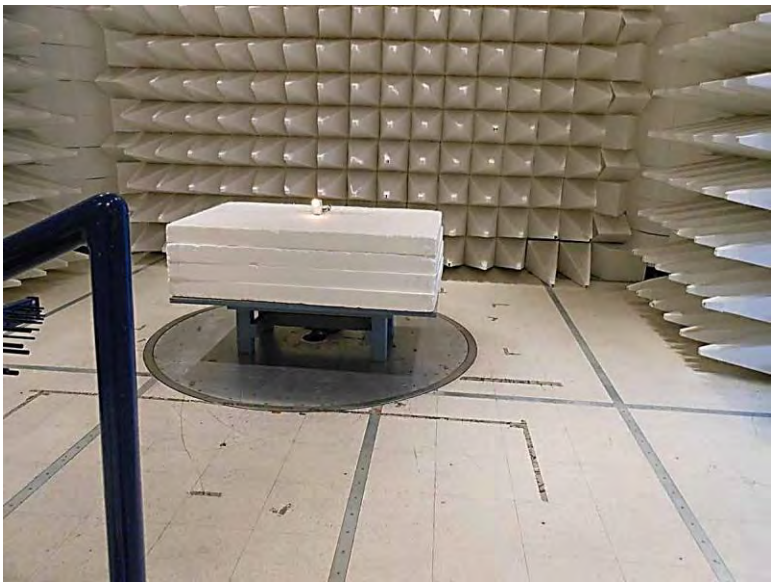
Transmitting operating frequency= 915MHz
RF Output= 0dBm

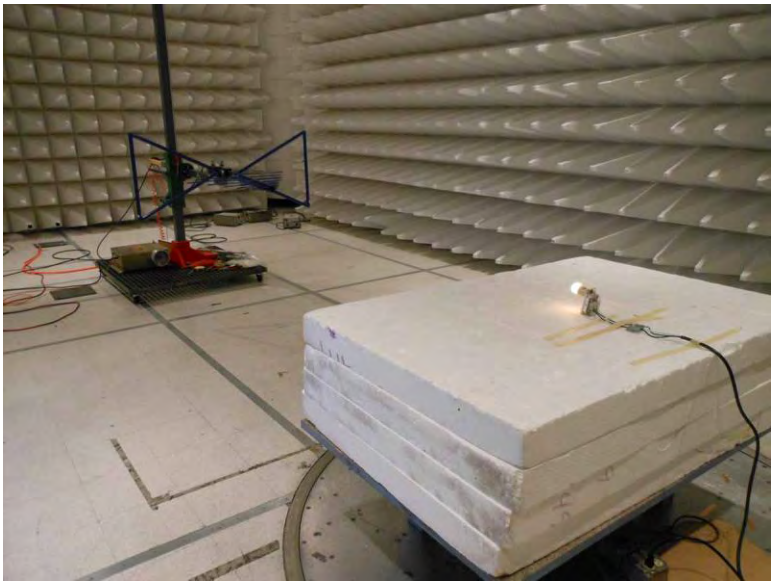
The EUT is a wall mount device. It is placed on the 80 cm Styrofoam table. The EUT is used to turn on or off power from the outlet. The EUT is set in continuously transmit.

Test Data


Agilent 09:32:50 May 6, 2014
L
Mkr1 914.947 9 MHz
Rel 96.99 dBµV
#Atten 0 dB
31.90 dBµV
#Peak
Log
10
dB/
Points
3000
LgAv
M1 S2
Center 914.950 MHz
Span 1 MHz
#Res BW 10 kHz
#VEW 30 kHz
Sweep 33.79 ms (3000 pts)
Occupied Bandwidth
381.1377 kHz
Occ BW % Pwr 99.00 %
x dB -20.00 dB
Transmit Freq Error 3.372 kHz
x dB Bandwidth 320.961 kHz

Test Setup Photo(s)





15.249(a)(b) RF Power Output

Test Conditions / Setup

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

Customer: **SmartLabs, Inc.**
Specification: **15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)**
Work Order #: **94949** Date: 5/6/2014
Test Type: **Radiated Scan** Time: 09:34:06
Equipment: **On/Off Outlet** Sequence#: 5
Manufacturer: SmartLabs, Inc. Tested By: Hieu Song Nguyenpham
Model: 2663-222
S/N: None

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00852	Biconilog Antenna	CBL 6111C	11/28/2012	11/28/2014
T2	ANP00880	Cable	RG214U	7/30/2012	7/30/2014
T3	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

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

Function	Manufacturer	Model #	S/N
On/Off Outlet*	SmartLabs, Inc.	2663-222	None

Support Devices:

Function	Manufacturer	Model #	S/N
Light Bulb	Sylvania	SYL7.5W	None

Test Conditions / Notes:

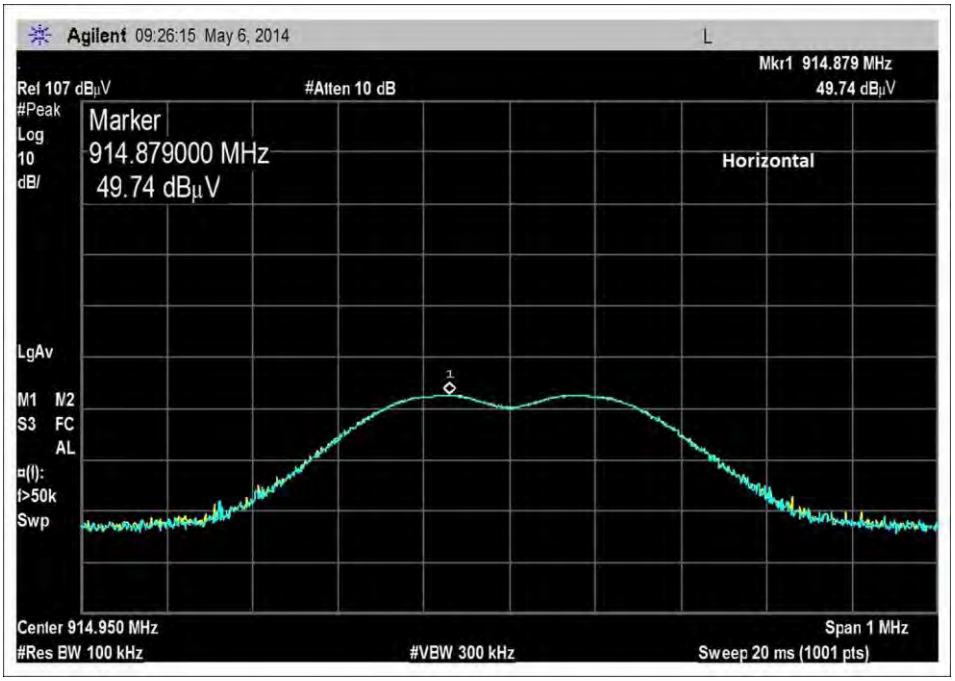
Fundamental of the EUT
Temperature: 21.4°C, Humidity: 40 %, Atmospheric Pressure: 101.2 kPa
High Clock: 10MHz
Transmitting operating frequency= 915MHz
RF Output= 0dBm
The EUT is a wall mount device. It is placed on the 80 cm Styrofoam table. The EUT is used to turn on or off power from the outlet. The EUT is set in continuously transmit.

Ext Attn: 0 dB

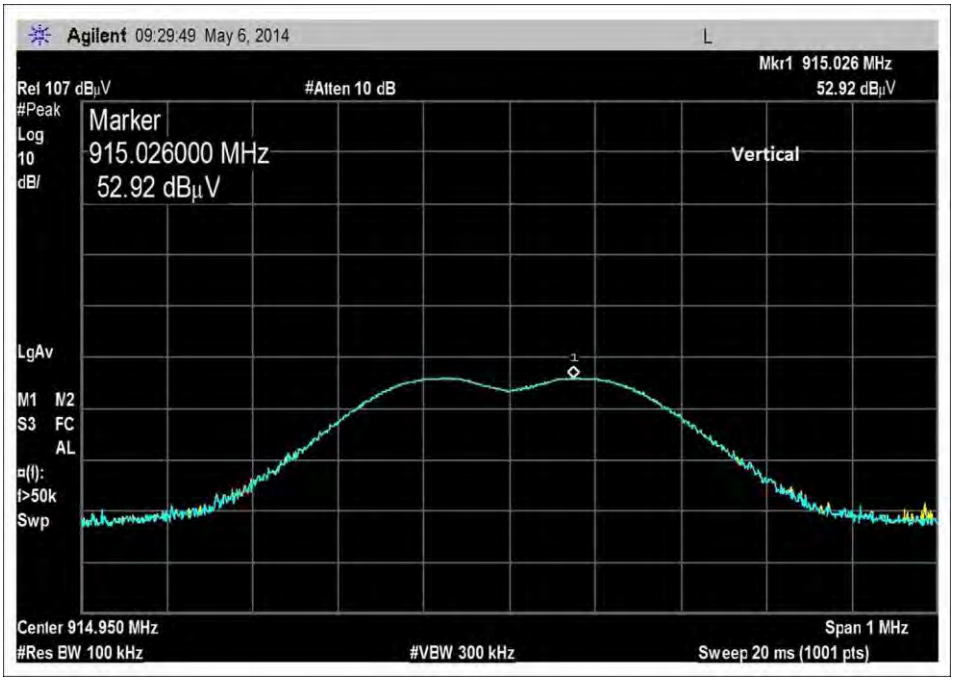
Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	915.026M	52.9	+22.7	+3.5	+0.9		+0.0	80.0	94.0	-14.0	Vert
2	915.026M	49.7	+22.7	+3.5	+0.9		+0.0	76.8	94.0	-17.2	Horiz

Test Data

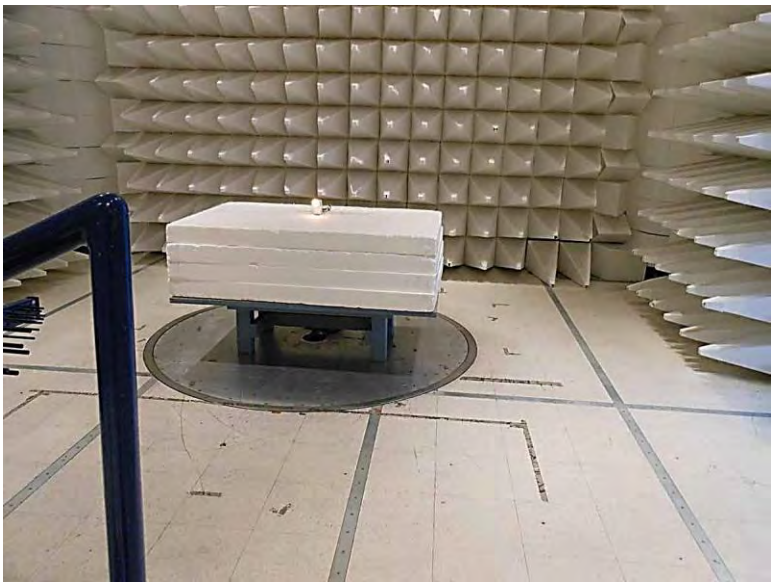


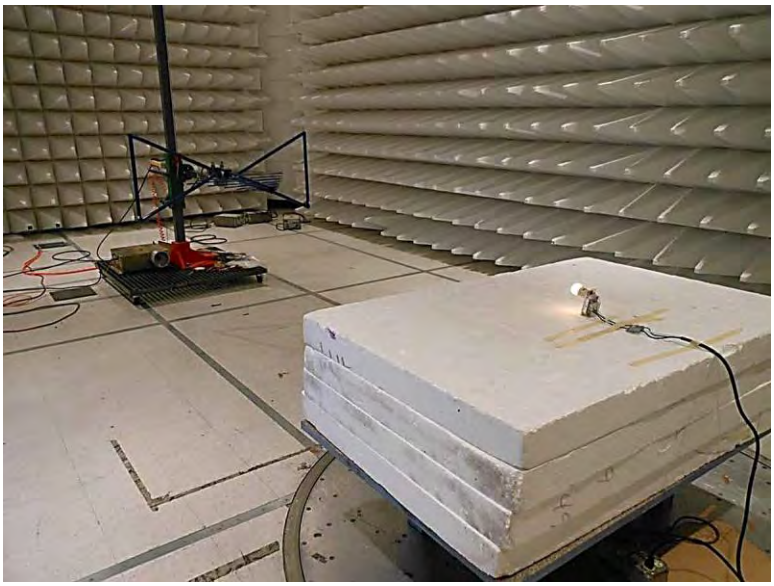
Horizontal Polarization



Vertical Polarization

Test Setup Photo(s)





15.31(e) Voltage Variations

Test Conditions / Setup

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

Customer: **SmartLabs, Inc.**
Specification: **15.31e**
Work Order #: **94949** Date: 5/6/2014
Test Type: **Radiated Scan** Time: 09:34:06
Equipment: **On/Off Outlet** Sequence#: 5
Manufacturer: SmartLabs, Inc. Tested By: Hieu Song Nguyenpham
Model: 2663-222
S/N: None

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00852	Biconilog Antenna	CBL 6111C	11/28/2012	11/28/2014
T2	ANP00880	Cable	RG214U	7/30/2012	7/30/2014
T3	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

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

Function	Manufacturer	Model #	S/N
On/Off Outlet*	SmartLabs, Inc.	2663-222	None

Support Devices:

Function	Manufacturer	Model #	S/N
Light Bulb	Sylvania	SYL7.5W	None

Test Conditions / Notes:

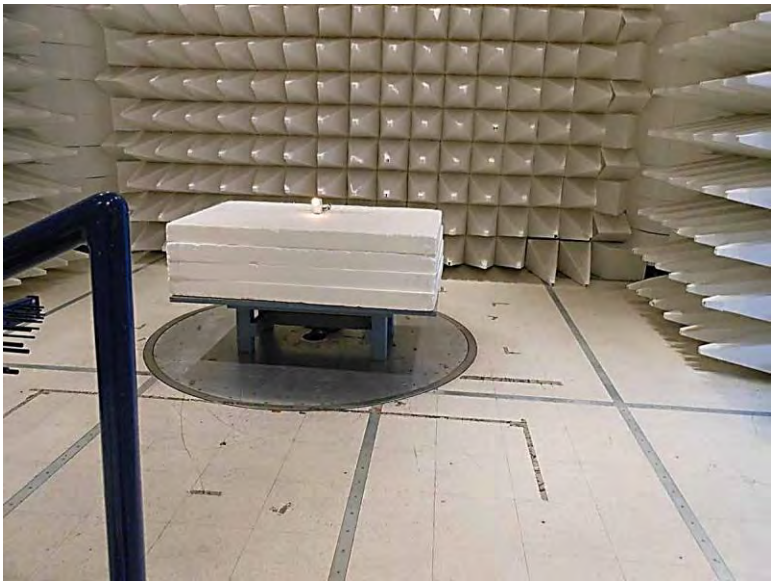
Firmware Used: None
Temperature: 21.4°C
Humidity: 40 %
Atmospheric Pressure: 101.2 kPa
High Clock: 10MHz

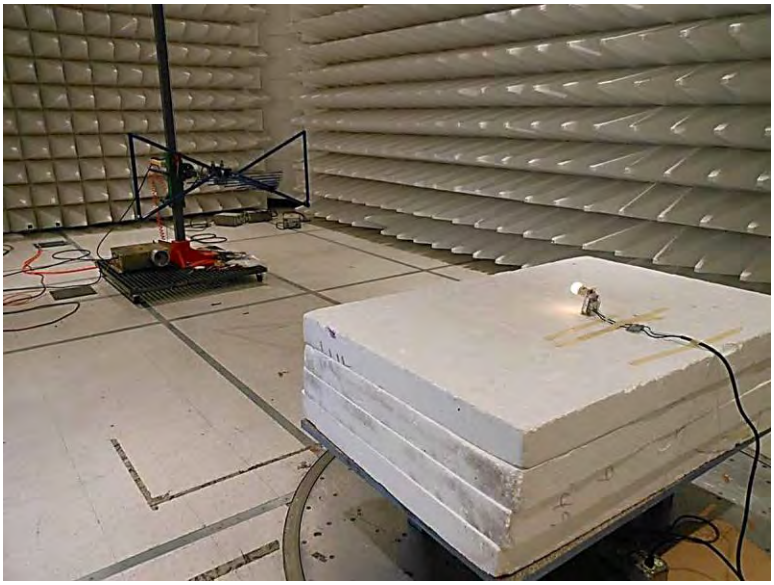
Transmitting operating frequency= 915MHz
RF Output= 0dBm

The EUT is a wall mount device. It is placed on the 80 cm Styrofoam table. The EUT is used to turn on or off power from the outlet. The EUT is set in continuously transmit.

15.31e: adjust the power voltage +/- 15% (102V and 138V), the RF output power is not changing.

Test Setup Photo(s)





15.249(d) Field Strength of Spurious Emissions and Bandedge

Test Setup / Test Data

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

Customer: **SmartLabs, Inc.**
Specification: **15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)**
Work Order #: **94949** Date: 5/6/2014
Test Type: **Radiated Scan** Time: 14:28:12
Equipment: **On/Off Outlet** Sequence#: 20
Manufacturer: SmartLabs, Inc. Tested By: Hieu Song Nguyenpham
Model: 2663-222
S/N: None

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	ANP00880	Cable	RG214U	7/30/2012	7/30/2014
	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015
	AN00432	Loop Antenna	6502	4/2/2013	4/2/2015

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

Function	Manufacturer	Model #	S/N
On/Off Outlet*	SmartLabs, Inc.	2663-222	None

Support Devices:

Function	Manufacturer	Model #	S/N
Light Bulb	Sylvania	SYL7.5W	None

Test Conditions / Notes:

Radiated Spurious Emission
Frequency Range: 9kHz to 30MHz

Temperature: 21.4°C, Humidity: 40 %, Atmospheric Pressure: 101.2 kPa
High Clock: 10MHz

RBW=VBW=200Hz from 9kHz to 150kHz
RBW=VBW=9kHz from 150kHz to 30MHz
Transmitting operating frequency= 915MHz
RF Output= 0dBm

The EUT is a wall mount device. It is placed on the 80 cm Styrofoam table. The EUT is used to turn on or off power from the outlet. The EUT is set in continuously transmit.

NO EMISSIONS FOUND.

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

Customer: **SmartLabs, Inc.**
Specification: **15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)**
Work Order #: **94949** Date: 5/6/2014
Test Type: **Radiated Scan** Time: 13:49:56
Equipment: **On/Off Outlet** Sequence#: 17
Manufacturer: SmartLabs, Inc. Tested By: Hieu Song Nguyenpham
Model: 2663-222
S/N: None

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00730	Preamp	8447D	1/17/2013	1/17/2015
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	9/3/2013	9/3/2015
T5	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

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

Function	Manufacturer	Model #	S/N
On/Off Outlet*	SmartLabs, Inc.	2663-222	None

Support Devices:

Function	Manufacturer	Model #	S/N
Light Bulb	Sylvania	SYL7.5W	None

Test Conditions / Notes:

Radiated Spurious Emission
Frequency Range: 30MHz to 1000MHz

Temperature: 21.4°C
Humidity: 40 %
Atmospheric Pressure: 101.2 kPa
High Clock: 10MHz

RBW=VBW=120kHz

Transmitting operating frequency= 915MHz
RF Output= 0dBm

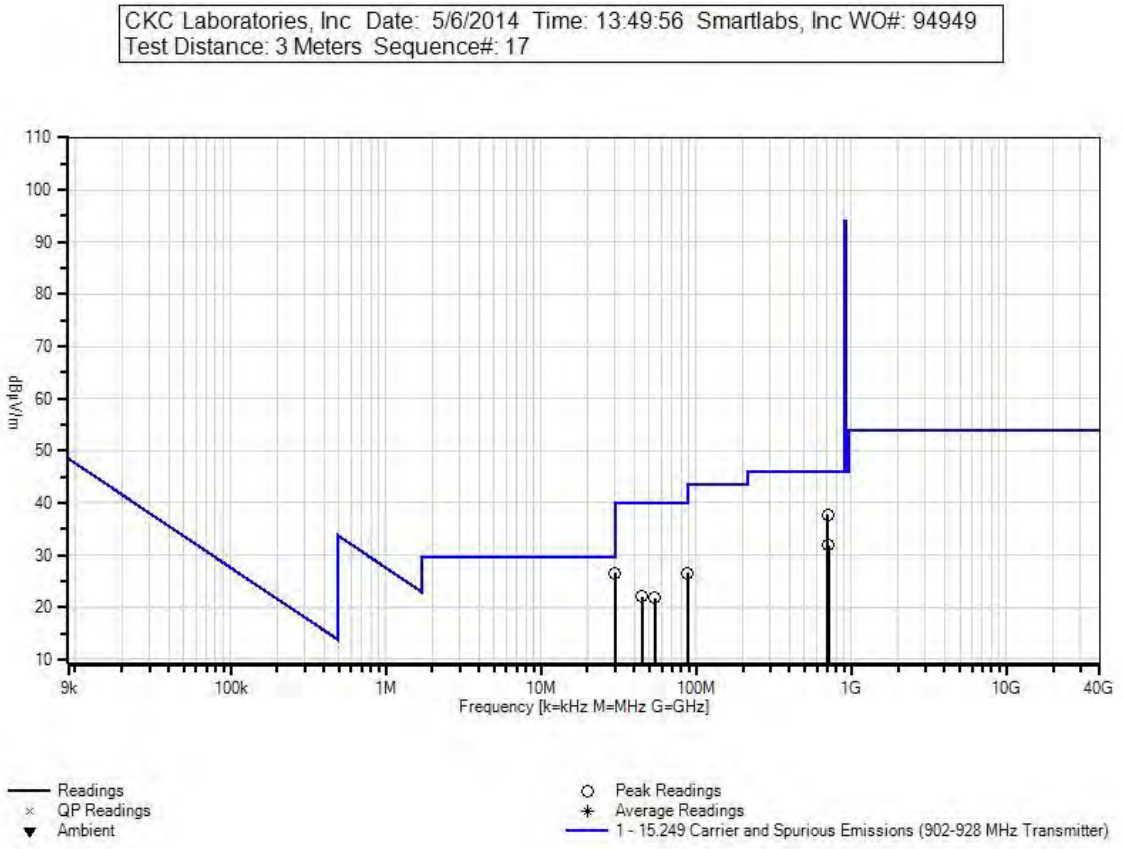
The EUT is a wall mount device. It is placed on the 80 cm Styrofoam table. The EUT is used to turn on or off power from the outlet. The EUT is set in continuously transmit.

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	706.398M	39.4	-26.7 +0.8	+20.3	+2.9	+1.0	+0.0	37.7	46.0	-8.3	Vert
2	30.067M	34.3	-27.0 +0.1	+18.4	+0.5	+0.3	+0.0	26.6	40.0	-13.4	Vert

3	713.485M	33.1	-26.7 +0.8	+20.7	+2.9	+1.0	+0.0	31.8	46.0	-14.2	Vert
4	88.430M	43.2	-27.0 +0.3	+8.8	+0.9	+0.3	+0.0	26.5	43.5	-17.0	Vert
5	44.641M	37.1	-27.1 +0.2	+11.0	+0.6	+0.3	+0.0	22.1	40.0	-17.9	Vert
6	54.423M	40.2	-27.0 +0.2	+7.4	+0.7	+0.2	+0.0	21.7	40.0	-18.3	Vert



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

Customer: **SmartLabs, Inc.**
Specification: **15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)**
Work Order #: **94949** Date: 5/6/2014
Test Type: **Radiated Scan** Time: 10:41:34
Equipment: **On/Off Outlet** Sequence#: 9
Manufacturer: SmartLabs, Inc. Tested By: Hieu Song Nguyenpham
Model: 2663-222
S/N: None

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02812	Preamp	83017-69004	4/29/2013	4/29/2015
T2	AN02157	Horn Antenna-ANSI C63.5	3115	1/23/2013	1/23/2015
T3	AN03302	Cable	32026-29094K-29094K-72TC	3/24/2014	3/24/2016
T4	ANP01210	Cable	FSJ1P-50A-4A	2/19/2013	2/19/2015
T5	ANP06125	Cable	32022-29094K-29094K-72TC	5/6/2013	5/6/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

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

Function	Manufacturer	Model #	S/N
On/Off Outlet*	SmartLabs, Inc.	2663-222	None

Support Devices:

Function	Manufacturer	Model #	S/N
Light Bulb	Sylvania	SYL7.5W	None

Test Conditions / Notes:

Radiated Spurious Emission
Frequency Range: 1000MHz to 10000MHz

Temperature: 21.4°C
Humidity: 40 %
Atmospheric Pressure: 101.2 kPa
High Clock: 10MHz

RBW=VBW=1MHz

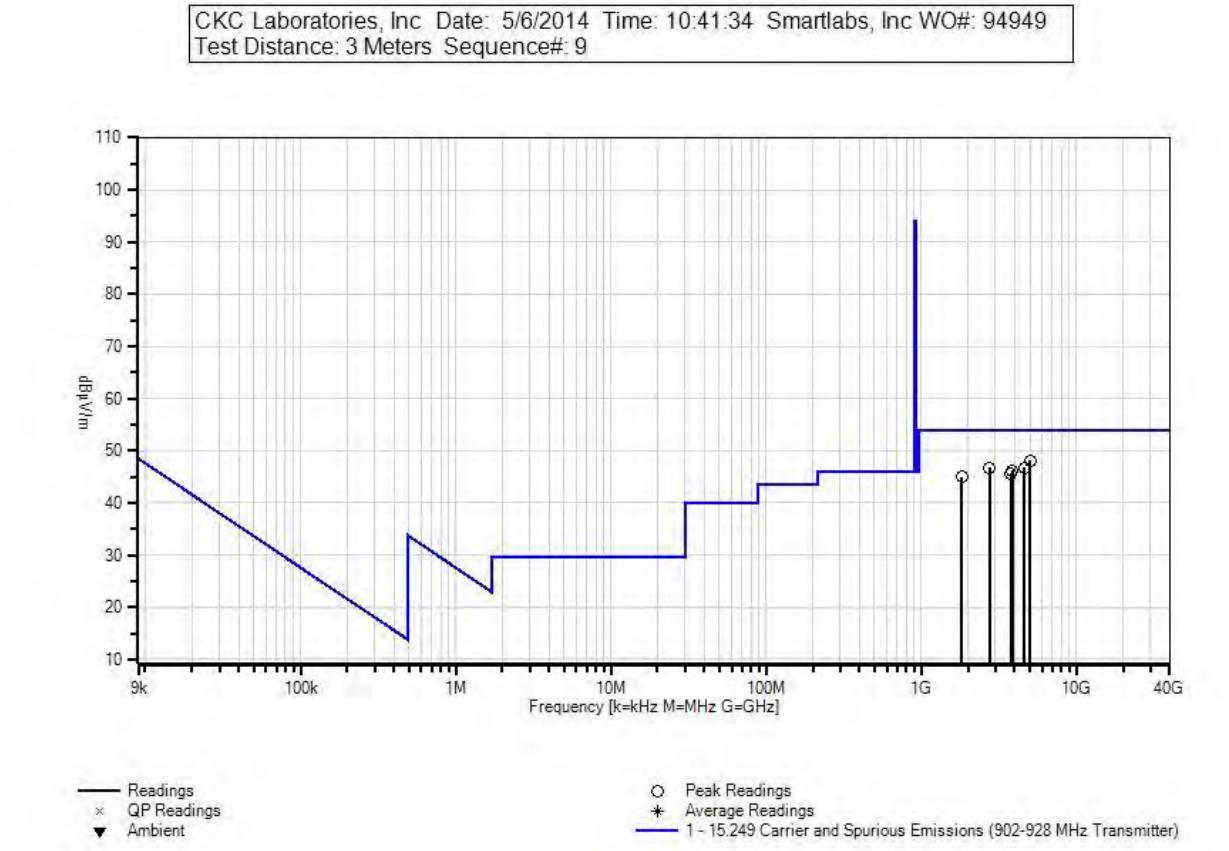
Transmitting operating frequency= 915MHz
RF Output= 0dBm

The EUT is a wall mount device. It is placed on the 80 cm Styrofoam table. The EUT is used to turn on or off power from the outlet. The EUT is set in continuously transmit.

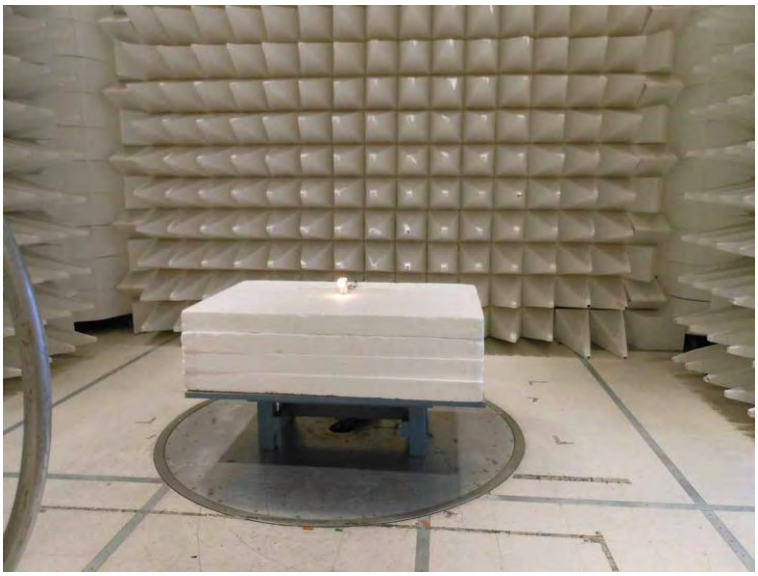
Ext Attn: 0 dB

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

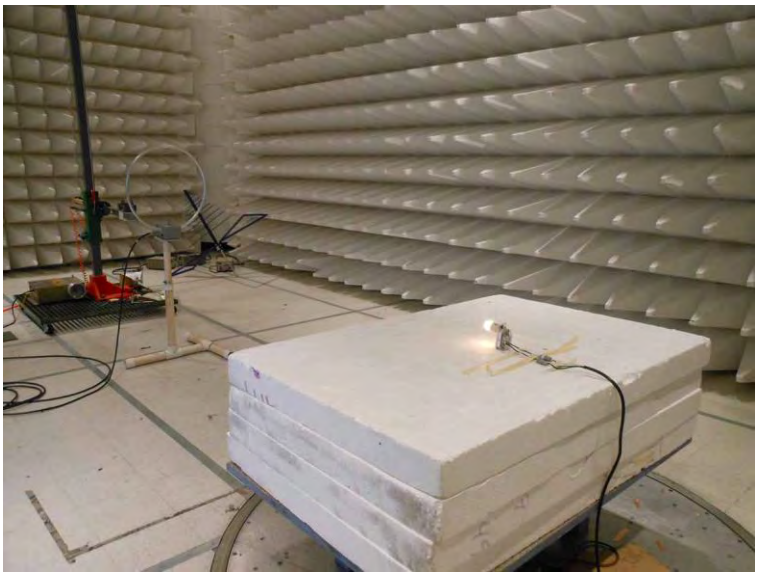
#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	5023.019M	39.5	-32.4 +1.6	+33.8	+1.7	+3.9	+0.0	48.1	54.0	-5.9	Horiz
2	4619.616M	40.1	-32.8 +1.6	+32.6	+1.6	+3.7	+0.0	46.8	54.0	-7.2	Horiz
3	2744.743M	45.6	-33.4 +1.4	+29.2	+1.2	+2.8	+0.0	46.8	54.0	-7.2	Vert
4	3879.877M	40.5	-33.0 +1.4	+32.5	+1.5	+3.3	+0.0	46.2	54.0	-7.8	Horiz
5	3765.763M	40.2	-32.9 +1.4	+32.3	+1.5	+3.2	+0.0	45.7	54.0	-8.3	Vert
6	1829.829M	47.9	-34.1 +1.1	+27.0	+1.0	+2.1	+0.0	45.0	54.0	-9.0	Vert



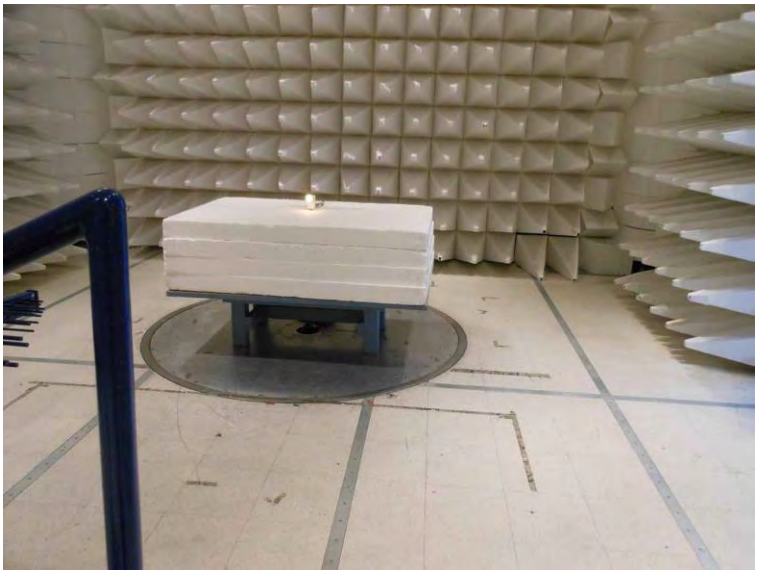
Test Setup Photo(s)



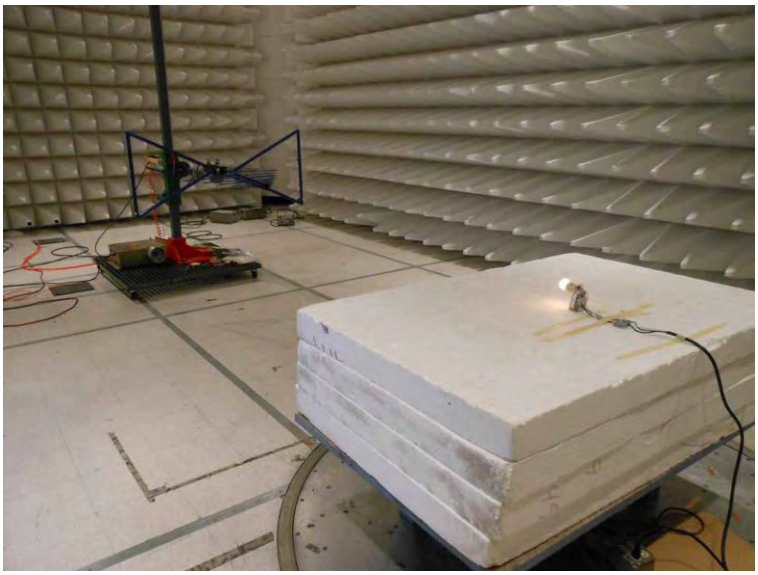
9kHz-30MHz



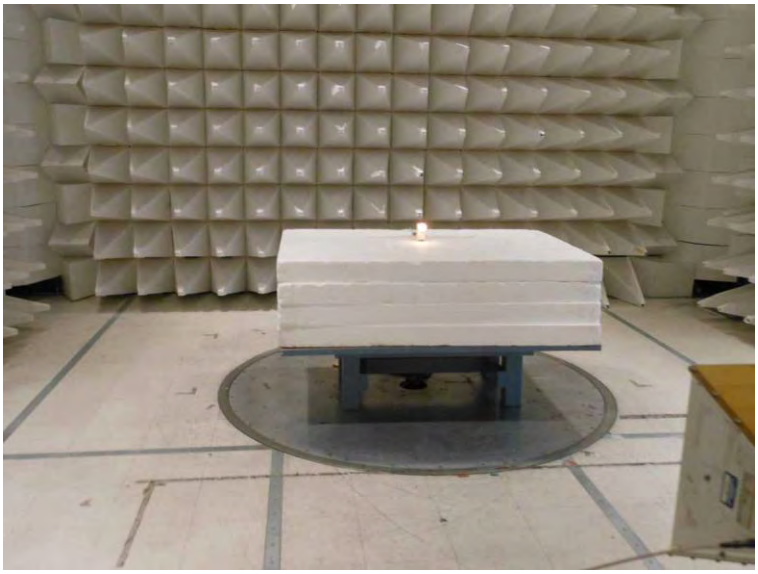
9kHz-30MHz



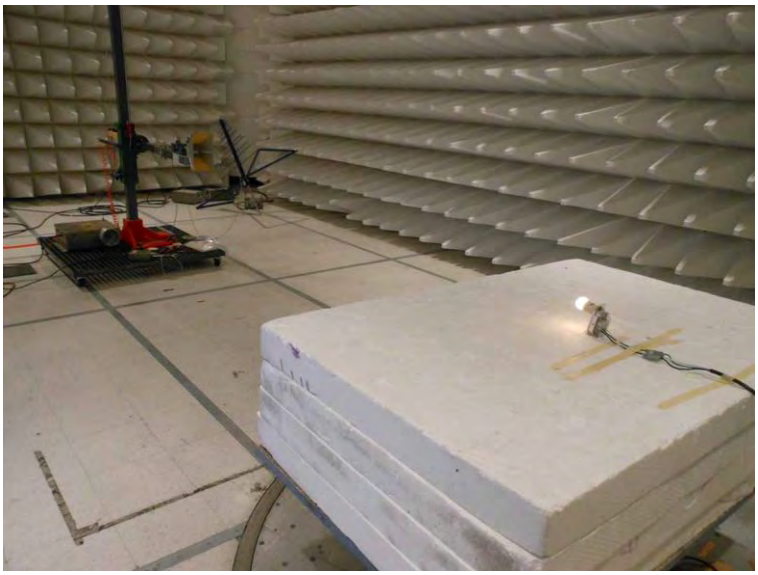
30MHz-1GHz



30MHz-1GHz



1-10GHz



1-10GHz

Bandedge

Test Conditions / Setup

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

Customer: **SmartLabs, Inc.**
Specification: **Band Edge**
Work Order #: **94949** Date: 5/6/2014
Test Type: **Radiated Scan** Time: 09:34:06
Equipment: **On/Off Outlet** Sequence#: 5
Manufacturer: SmartLabs, Inc. Tested By: Hieu Song Nguyenpham
Model: 2663-222
S/N: None

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00852	Biconilog Antenna	CBL 6111C	11/28/2012	11/28/2014
T2	ANP00880	Cable	RG214U	7/30/2012	7/30/2014
T3	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

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

Function	Manufacturer	Model #	S/N
On/Off Outlet*	SmartLabs, Inc.	2663-222	None

Support Devices:

Function	Manufacturer	Model #	S/N
Light Bulb	Sylvania	SYL7.5W	None

Test Conditions / Notes:

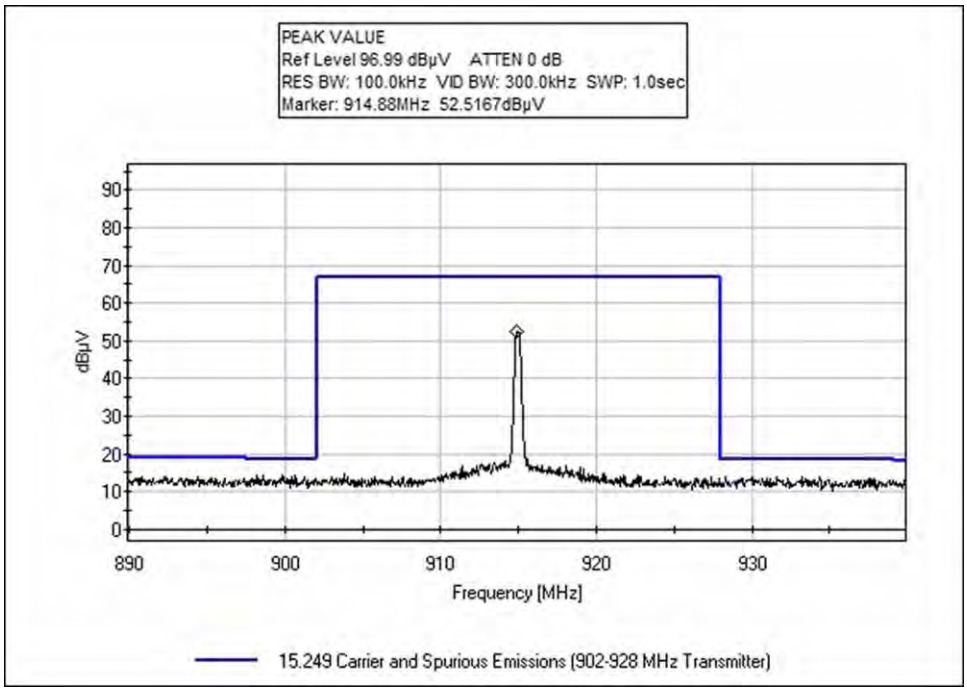
Band Edge Set up

Temperature: 21.4°C
Humidity: 40 %
Atmospheric Pressure: 101.2 kPa
High Clock: 10MHz

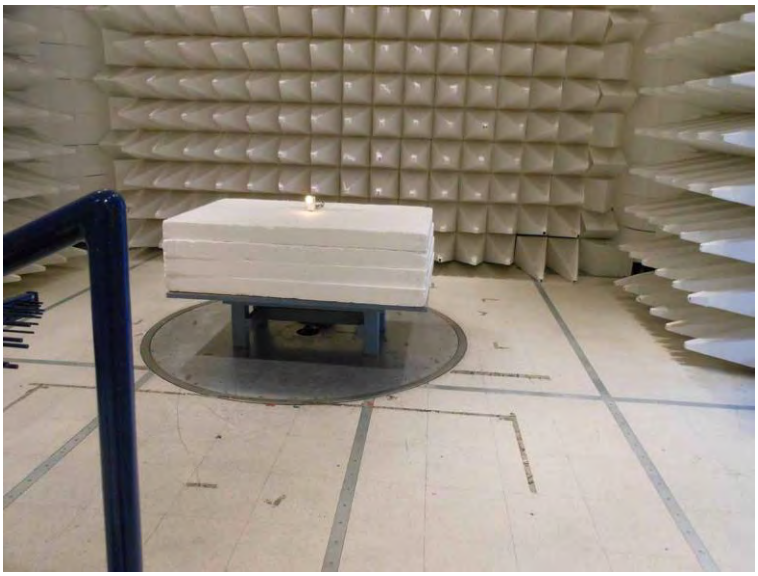
Transmitting operating frequency= 915MHz
RF Output= 0dBm

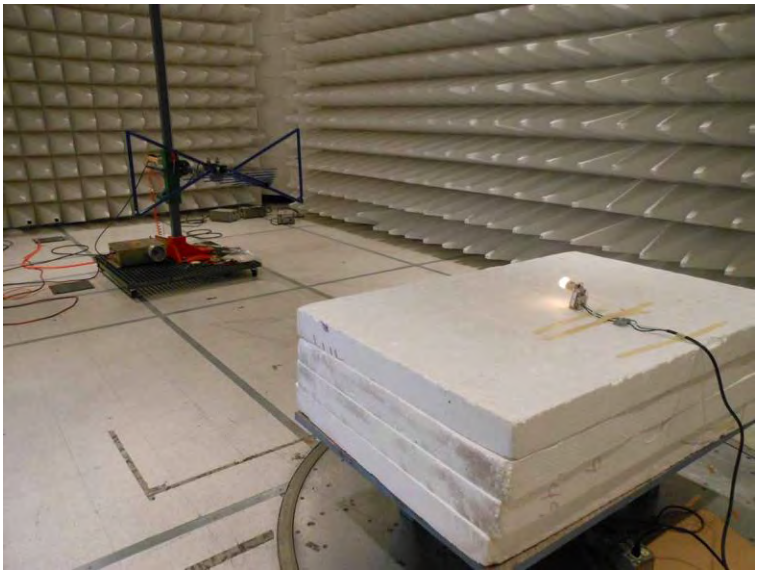
The EUT is a wall mount device. It is placed on the 80 cm Styrofoam table. The EUT is used to turn on or off power from the outlet. The EUT is set in continuously transmit.

Test Data


PEAK VALUE
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 100.0kHz VID BW: 300.0kHz SWP: 1.0sec
Marker: 914.88MHz 52.5167dBµV
dBµV
90
80
70
60
50
40
30
20
10
0
890
900
910
920
930
Frequency [MHz]
15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)

Test Setup Photo(s)





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.