SmartLabs, Inc.

TEST REPORT FOR

DIN Rail Module Dimmer, 24522
DIN Rail Module Relay, 24532

Tested To The Following Standards:

FCC Part 15 Subpart C Sections 15.207, 15.249
and
RSS 210 Issue 8

Report No.: 93084-18

Date of issue: July 30, 2012

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: Matthew Meyer
Customer Reference Number: 12-3MM0419-02

REPORT PREPARED BY:

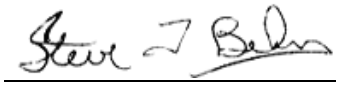
Dianne Dudley
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Project Number: 93084

DATE OF EQUIPMENT RECEIPT: June 13, 2012
DATE(S) OF TESTING: June 13-July 2, 2012

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

Site Registration & Accreditation Information

Location	CB #	Taiwan	Canada	FCC	Japan
Brea A	US0060	SL2-IN-E-1146R	3082D-1	90473	R-2945 C-3248 T-1572

SUMMARY OF RESULTS

Standard / Specification: FCC Part 15 Subpart C 15.249 and RSS 210 Issue 8

Description	Test Procedure/Method	Results
Voltage Variation	FCC Part 15 Subpart C Section 15.31(e)	Pass
Conducted Emissions	FCC Part 15 Subpart C Section 15.207 / ANSI C63.4 (2009)	Pass
RF Power Output	FCC Part 15 Subpart C Section 15.249 (a)(b)	Pass
-20dBc & 99% Occupied Bandwidth	FCC Part 15 Subpart C Section 15.249 / RSS 210 Issue 8	Pass
Bandedge	FCC Part 15 Subpart C 15.249	Pass
Radiated Spurious Emissions	FCC Part 15 Subpart C Section 15.249(d)	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
Modifications during Conducted Emissions testing of the DIN Rail Module Relay, 24532: Switching inductor is replaced (from 1 to 2.2mH) and installed on solder side of power board.

EQUIPMENT UNDER TEST (EUT)

EQUIPMENT UNDER TEST

DIN Rail Module Dimmer
Manuf: SmartLabs, Inc.
Model: 24522
Serial: NA

DIN Rail Module Relay
Manuf: SmartLabs, Inc.
Model: 24532
Serial: NA

PERIPHERAL DEVICES

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

Switcher
Manuf: Leviton
Model: S02-5601-2WS
Serial: 078477104163

Light Bulb Fixture
Manuf: Sylvania
Model: Hi Spot 63 Halogen
Serial: R42-61-W

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 Conditions / Setup

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **SmartLabs, Inc.**
Specification: **15.31e**
Work Order #: **93084** Date: 6/13/2012
Test Type: **Maximized Emissions** Time: 13:56:07
Equipment: **DIN Rail Module Dimmer** Sequence#: 12
DIN Rail Module Relay
Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen
Model: 24522, 24532
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00309	Preamp	8447D	3/29/2012	3/29/2014
T2	ANP05050	Cable	RG223/U	3/21/2011	3/21/2013
T3	ANP05198	Cable	8268	12/21/2010	12/21/2012
T4	AN01995	Biconilog Antenna	CBL6111C	5/16/2012	5/16/2014
	AN02672	Spectrum Analyzer	E4446A	8/9/2010	8/9/2012

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

Function	Manufacturer	Model #	S/N
DIN Rail Module Dimmer*	SmartLabs, Inc.	24522	NA
DIN Rail Module Relay*	SmartLabs, Inc.	24532	NA

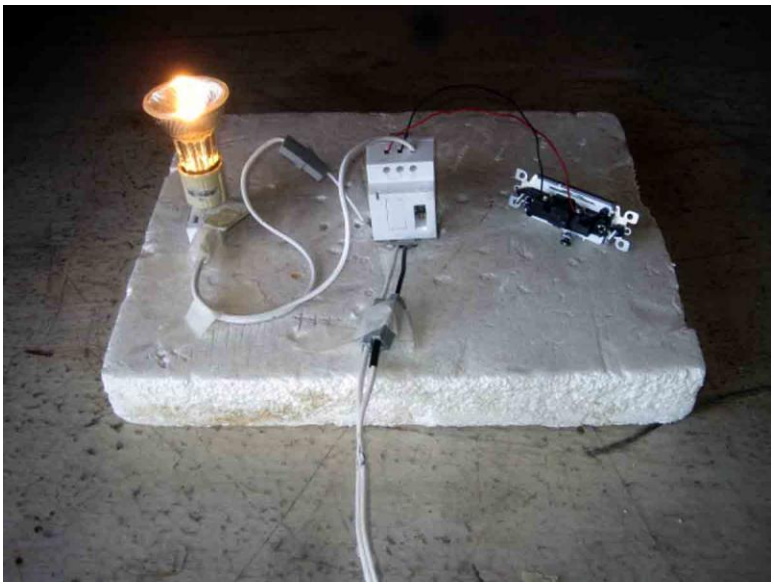
Support Devices:

Function	Manufacturer	Model #	S/N
Switcher	Leviton	S02-5601-2WS	078477104163
Light bulb fixture	Sylvania	Hi Spot 63 Halogen	R42-61-W

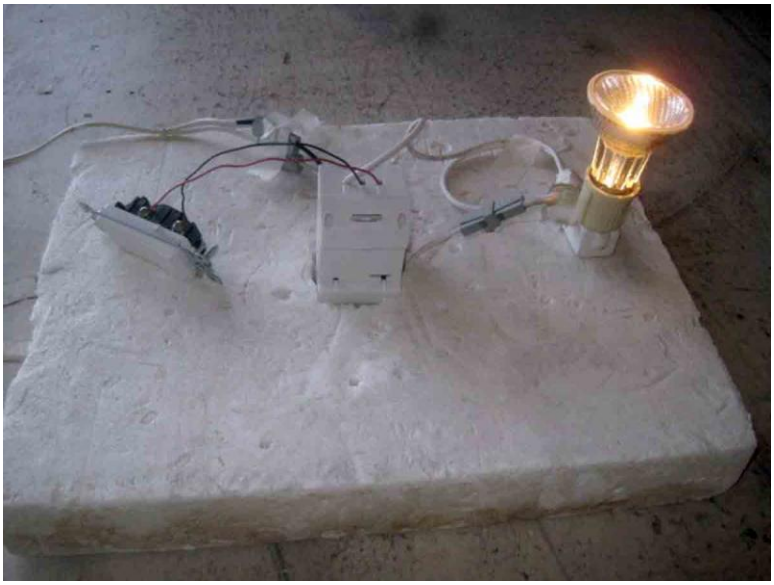
Test Conditions / Notes:

The EUT is placed on the wooden table lined with Styrofoam of 10 cm thickness. EUT is installed in fixed position.
EUT is connected to light fixture which is turned on constantly. Sense port is connected to switcher.
The EUT is set in constant transmit mode.
TX freq = 914.5-915.5 MHz
Frequency range of measurement = fundamental
RBW=120 kHz, VBW=120 kHz
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 environment conditions: 20°C, 42% relative humidity, 100kPa

Test Setup Photos



DIMMER & RELAY, FRONT VIEW



DIMMER & RELAY, BACK VIEW

15.207 AC Conducted Emissions

Test Data Sheets

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer:	**SmartLabs, Inc.**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**93084**	Date:	6/15/2012
Test Type:	**Conducted Emissions**	Time:	08:55:08
Equipment:	**DIN Rail Module Dimmer**	Sequence#:	20
Manufacturer:	SmartLabs, Inc.	Tested By:	Don Nguyen
Model:	24522		120V 60Hz
S/N:	NA		

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02672	Spectrum Analyzer	E4446A	8/9/2010	8/9/2012
T1	ANP06084	Attenuator	SA18N10W-06	12/8/2010	12/8/2012
T2	AN02610	High Pass Filter	HE9615-150K-50-720B	11/21/2011	11/21/2013
T3	ANP04358	Cable	RG142	4/10/2012	4/10/2014
T4	AN00847.1	50uH LISN-Line 1 (dB)	3816/2NM	12/21/2010	12/21/2012
	AN00847.1	50uH LISN-Line 2 (dB)	3816/2NM	12/21/2010	12/21/2012

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

Function	Manufacturer	Model #	S/N
DIN Rail Module Dimmer*	SmartLabs, Inc.	24522	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Switcher	Leviton	S02-5601-2WS	078477104163
Light bulb fixture	Sylvania	Hi Spot 63 Halogen	R42-61-W

Test Conditions / Notes:

The EUT is placed on the wooden table. EUT is installed in fixed position. EUT is connected to light fixture which is turned off. Sense port is connected to switcher.
The EUT is set in transmit mode.
TX freq = 914.5-915.5 MHz
Frequency range of measurement = 150kHz-30MHz
RBW=VBW=9kHz
Test environment conditions: 20°C, 42% relative humidity, 100kPa
Note: The light bulb for dimmer EUT is turned off because customer declares that when it is turned on, interference from triac dimmer circuitry would invalidate the readings of the conducted emissions test.

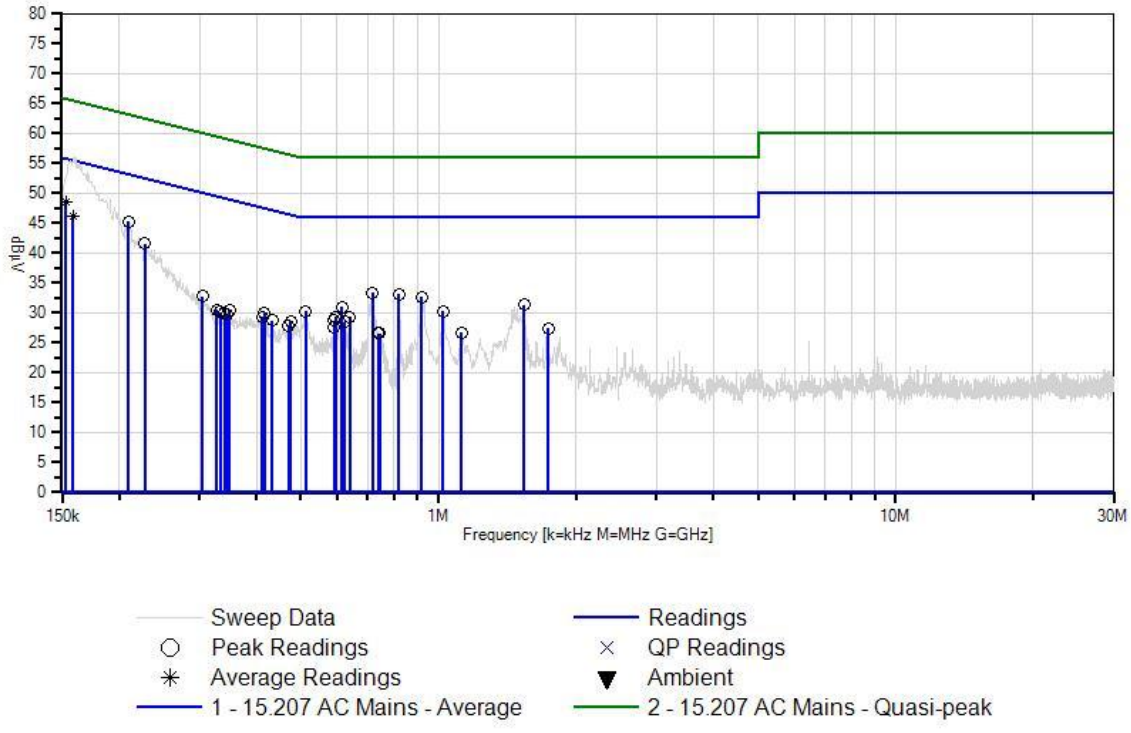
Ext Attn: 0 dB

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

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	153.217k	41.1	+5.8	+1.6	+0.0	+0.0	+0.0	48.5	55.8	-7.3	L1 (L
	Ave										
^	153.217k	50.0	+5.8	+1.6	+0.0	+0.0	+0.0	57.4	55.8	+1.6	L1 (L
3	209.630k	39.3	+5.8	+0.2	+0.0	+0.0	+0.0	45.3	53.2	-7.9	L1 (L
4	158.725k	39.6	+5.8	+0.7	+0.0	+0.0	+0.0	46.1	55.5	-9.4	L1 (L
	Ave										
^	158.725k	49.5	+5.8	+0.7	+0.0	+0.0	+0.0	56.0	55.5	+0.5	L1 (L
6	227.810k	35.6	+5.8	+0.2	+0.0	+0.0	+0.0	41.6	52.5	-10.9	L1 (L
7	716.492k	27.4	+5.8	+0.2	+0.0	+0.0	+0.0	33.4	46.0	-12.6	L1 (L
8	818.301k	27.1	+5.8	+0.2	+0.0	+0.0	+0.0	33.1	46.0	-12.9	L1 (L
9	919.732k	26.6	+5.8	+0.2	+0.1	+0.0	+0.0	32.7	46.0	-13.3	L1 (L
10	1.541M	25.3	+5.8	+0.2	+0.1	+0.0	+0.0	31.4	46.0	-14.6	L1 (L
11	615.411k	25.0	+5.8	+0.2	+0.0	+0.0	+0.0	31.0	46.0	-15.0	L1 (L
12	512.875k	24.3	+5.7	+0.2	+0.1	+0.0	+0.0	30.3	46.0	-15.7	L1 (L
13	1.022M	24.2	+5.8	+0.2	+0.1	+0.0	+0.0	30.3	46.0	-15.7	L1 (L
14	594.322k	23.4	+5.8	+0.2	+0.0	+0.0	+0.0	29.4	46.0	-16.6	L1 (L
15	638.681k	23.3	+5.8	+0.2	+0.0	+0.0	+0.0	29.3	46.0	-16.7	L1 (L
16	591.413k	22.7	+5.8	+0.2	+0.0	+0.0	+0.0	28.7	46.0	-17.3	L1 (L
17	304.167k	26.8	+5.7	+0.2	+0.1	+0.0	+0.0	32.8	50.1	-17.3	L1 (L
18	622.683k	22.5	+5.8	+0.2	+0.0	+0.0	+0.0	28.5	46.0	-17.5	L1 (L
19	415.429k	24.0	+5.7	+0.2	+0.1	+0.0	+0.0	30.0	47.5	-17.5	L1 (L
20	475.060k	22.6	+5.7	+0.2	+0.1	+0.0	+0.0	28.6	46.4	-17.8	L1 (L
21	589.959k	21.7	+5.8	+0.2	+0.0	+0.0	+0.0	27.7	46.0	-18.3	L1 (L
22	411.066k	23.3	+5.7	+0.2	+0.1	+0.0	+0.0	29.3	47.6	-18.3	L1 (L
23	432.882k	22.7	+5.7	+0.2	+0.1	+0.0	+0.0	28.7	47.2	-18.5	L1 (L
24	469.970k	21.9	+5.7	+0.2	+0.1	+0.0	+0.0	27.9	46.5	-18.6	L1 (L

25	1.741M	21.3	+5.8	+0.2	+0.1	+0.0	+0.0	27.4	46.0	-18.6	L1 (L
26	348.526k	24.4	+5.7	+0.2	+0.1	+0.0	+0.0	30.4	49.0	-18.6	L1 (L
27	327.437k	24.5	+5.7	+0.2	+0.1	+0.0	+0.0	30.5	49.5	-19.0	L1 (L
28	340.527k	24.0	+5.7	+0.2	+0.1	+0.0	+0.0	30.0	49.2	-19.2	L1 (L
29	333.255k	24.2	+5.7	+0.2	+0.1	+0.0	+0.0	30.2	49.4	-19.2	L1 (L
30	1.124M	20.6	+5.8	+0.2	+0.1	+0.0	+0.0	26.7	46.0	-19.3	L1 (L
31	343.436k	23.8	+5.7	+0.2	+0.1	+0.0	+0.0	29.8	49.1	-19.3	L1 (L
32	744.126k	20.6	+5.8	+0.2	+0.0	+0.0	+0.0	26.6	46.0	-19.4	L1 (L
33	739.036k	20.6	+5.8	+0.2	+0.0	+0.0	+0.0	26.6	46.0	-19.4	L1 (L

CKC Laboratories, Inc. Date: 6/15/2012 Time: 08:55:08 SmartLabs, Inc. WO#: 93084
15.207 AC Mains - Average Test Lead: L1 (Live) 120V 60Hz Sequence#: 20 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **SmartLabs, Inc.**
Specification: **15.207 AC Mains - Average**
Work Order #: **93084** Date: 6/15/2012
Test Type: **Conducted Emissions** Time: 08:51:45
Equipment: **DIN Rail Module Dimmer** Sequence#: 19
Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen
Model: 24522 120V 60Hz
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02672	Spectrum Analyzer	E4446A	8/9/2010	8/9/2012
T1	ANP06084	Attenuator	SA18N10W-06	12/8/2010	12/8/2012
T2	AN02610	High Pass Filter	HE9615-150K-50-720B	11/21/2011	11/21/2013
T3	ANP04358	Cable	RG142	4/10/2012	4/10/2014
	AN00847.1	50uH LISN-Line 1 (dB)	3816/2NM	12/21/2010	12/21/2012
T4	AN00847.1	50uH LISN-Line 2 (dB)	3816/2NM	12/21/2010	12/21/2012

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

Function	Manufacturer	Model #	S/N
DIN Rail Module Dimmer*	SmartLabs, Inc.	24522	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Switcher	Leviton	S02-5601-2WS	078477104163
Light bulb fixture	Sylvania	Hi Spot 63 Halogen	R42-61-W

Test Conditions / Notes:

The EUT is placed on the wooden table. EUT is installed in fixed position. EUT is connected to light fixture which is turned off. Sense port is connected to switcher.
The EUT is set in transmit mode.
TX freq = 914.5-915.5 MHz
Frequency range of measurement = 150kHz-30MHz
RBW=VBW=9kHz
Test environment conditions: 20°C, 42% relative humidity, 100kPa
Note: The light bulb for dimmer EUT is turned off because customer declares that when it is turned on, interference from triac dimmer circuitry would invalidate the readings of the conducted emissions test.

Ext Attn: 0 dB

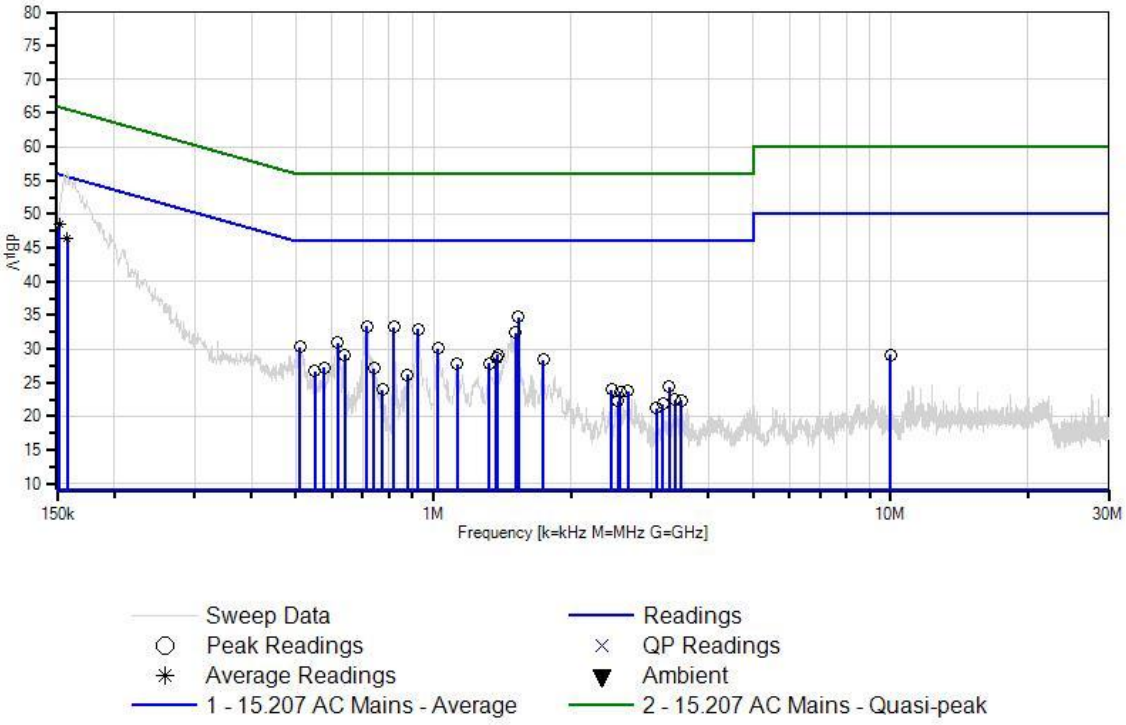
Measurement Data: Reading listed by margin. Test Lead: L2 (Neutral)

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1 Ave	152.044k	41.0	+5.8	+1.8	+0.0	+0.0	+0.0	48.6	55.9	-7.3	L2 (N
^	152.044k	50.2	+5.8	+1.8	+0.0	+0.0	+0.0	57.8	55.9	+1.9	L2 (N
3 Ave	157.999k	39.7	+5.8	+0.8	+0.0	+0.0	+0.0	46.3	55.6	-9.3	L2 (N
^	157.999k	49.9	+5.8	+0.8	+0.0	+0.0	+0.0	56.5	55.6	+0.9	L2 (N

5	1.532M	28.5	+5.8	+0.2	+0.1	+0.1	+0.0	34.7	46.0	-11.3	L2 (N
6	715.766k	27.4	+5.8	+0.2	+0.0	+0.0	+0.0	33.4	46.0	-12.6	L2 (N
7	819.757k	27.2	+5.8	+0.2	+0.0	+0.0	+0.0	33.2	46.0	-12.8	L2 (N
8	923.985k	26.8	+5.8	+0.2	+0.1	+0.0	+0.0	32.9	46.0	-13.1	L2 (N
9	1.511M	26.2	+5.8	+0.2	+0.1	+0.1	+0.0	32.4	46.0	-13.6	L2 (N
10	617.593k	24.9	+5.8	+0.2	+0.0	+0.0	+0.0	30.9	46.0	-15.1	L2 (N
11	509.967k	24.3	+5.7	+0.2	+0.1	+0.0	+0.0	30.3	46.0	-15.7	L2 (N
12	1.022M	24.0	+5.8	+0.2	+0.1	+0.0	+0.0	30.1	46.0	-15.9	L2 (N
13	640.137k	23.1	+5.8	+0.2	+0.0	+0.0	+0.0	29.1	46.0	-16.9	L2 (N
14	1.383M	22.9	+5.8	+0.2	+0.1	+0.1	+0.0	29.1	46.0	-16.9	L2 (N
15	1.371M	22.4	+5.8	+0.2	+0.1	+0.1	+0.0	28.6	46.0	-17.4	L2 (N
16	1.736M	22.2	+5.8	+0.2	+0.1	+0.1	+0.0	28.4	46.0	-17.6	L2 (N
17	1.324M	21.7	+5.8	+0.2	+0.1	+0.1	+0.0	27.9	46.0	-18.1	L2 (N
18	1.128M	21.7	+5.8	+0.2	+0.1	+0.0	+0.0	27.8	46.0	-18.2	L2 (N
19	576.870k	21.2	+5.8	+0.2	+0.0	+0.0	+0.0	27.2	46.0	-18.8	L2 (N
20	741.218k	21.1	+5.8	+0.2	+0.0	+0.0	+0.0	27.1	46.0	-18.9	L2 (N
21	549.963k	20.7	+5.8	+0.2	+0.0	+0.0	+0.0	26.7	46.0	-19.3	L2 (N
22	875.752k	20.1	+5.8	+0.2	+0.1	+0.0	+0.0	26.2	46.0	-19.8	L2 (N
23	10.004M	22.3	+5.8	+0.2	+0.2	+0.6	+0.0	29.1	50.0	-20.9	L2 (N
24	3.280M	18.2	+5.8	+0.1	+0.2	+0.1	+0.0	24.4	46.0	-21.6	L2 (N
25	772.488k	17.9	+5.8	+0.2	+0.0	+0.0	+0.0	23.9	46.0	-22.1	L2 (N
26	2.455M	17.6	+5.8	+0.2	+0.2	+0.1	+0.0	23.9	46.0	-22.1	L2 (N
27	2.659M	17.4	+5.8	+0.2	+0.2	+0.1	+0.0	23.7	46.0	-22.3	L2 (N
28	2.557M	17.3	+5.8	+0.2	+0.2	+0.1	+0.0	23.6	46.0	-22.4	L2 (N
29	3.378M	16.3	+5.8	+0.1	+0.2	+0.1	+0.0	22.5	46.0	-23.5	L2 (N
30	3.480M	16.2	+5.8	+0.1	+0.2	+0.1	+0.0	22.4	46.0	-23.6	L2 (N

31	2.532M	16.0	+5.8	+0.2	+0.2	+0.1	+0.0	22.3	46.0	-23.7	L2 (N
32	3.174M	15.6	+5.8	+0.1	+0.2	+0.1	+0.0	21.8	46.0	-24.2	L2 (N
33	3.072M	14.9	+5.8	+0.2	+0.2	+0.1	+0.0	21.2	46.0	-24.8	L2 (N

CKC Laboratories, Inc. Date: 6/15/2012 Time: 08:51:45 SmartLabs, Inc. WO#: 93084
15.207 AC Mains - Average Test Lead: L2 (Neutral) 120V 60Hz Sequence#: 19 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **SmartLabs, Inc.**
Specification: **15.207 AC Mains - Average**
Work Order #: **93084** Date: 6/15/2012
Test Type: **Conducted Emissions** Time: 08:42:43
Equipment: **DIN Rail Module Dimmer** Sequence#: 17
Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen
Model: 24522 230V 50Hz
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02672	Spectrum Analyzer	E4446A	8/9/2010	8/9/2012
T1	ANP06084	Attenuator	SA18N10W-06	12/8/2010	12/8/2012
T2	AN02610	High Pass Filter	HE9615-150K-50-720B	11/21/2011	11/21/2013
T3	ANP04358	Cable	RG142	4/10/2012	4/10/2014
T4	AN00847.1	50uH LISN-Line 1 (dB)	3816/2NM	12/21/2010	12/21/2012
	AN00847.1	50uH LISN-Line 2 (dB)	3816/2NM	12/21/2010	12/21/2012

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

Function	Manufacturer	Model #	S/N
DIN Rail Module Dimmer*	SmartLabs, Inc.	24522	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Switcher	Leviton	S02-5601-2WS	078477104163
Light bulb fixture	Sylvania	Hi Spot 63 Halogen	R42-61-W

Test Conditions / Notes:

The EUT is placed on the wooden table. EUT is installed in fixed position. EUT is connected to light fixture which is turned off. Sense port is connected to switcher.
The EUT is set in transmit mode.
TX freq = 914.5-915.5 MHz
Frequency range of measurement = 150kHz-30MHz
RBW=VBW=9kHz
Test environment conditions: 20°C, 42% relative humidity, 100kP
Note: The light bulb for dimmer EUT is turned off because customer declares that when it is turned on, interference from triac dimmer circuitry would invalidate the readings of the conducted emissions test.

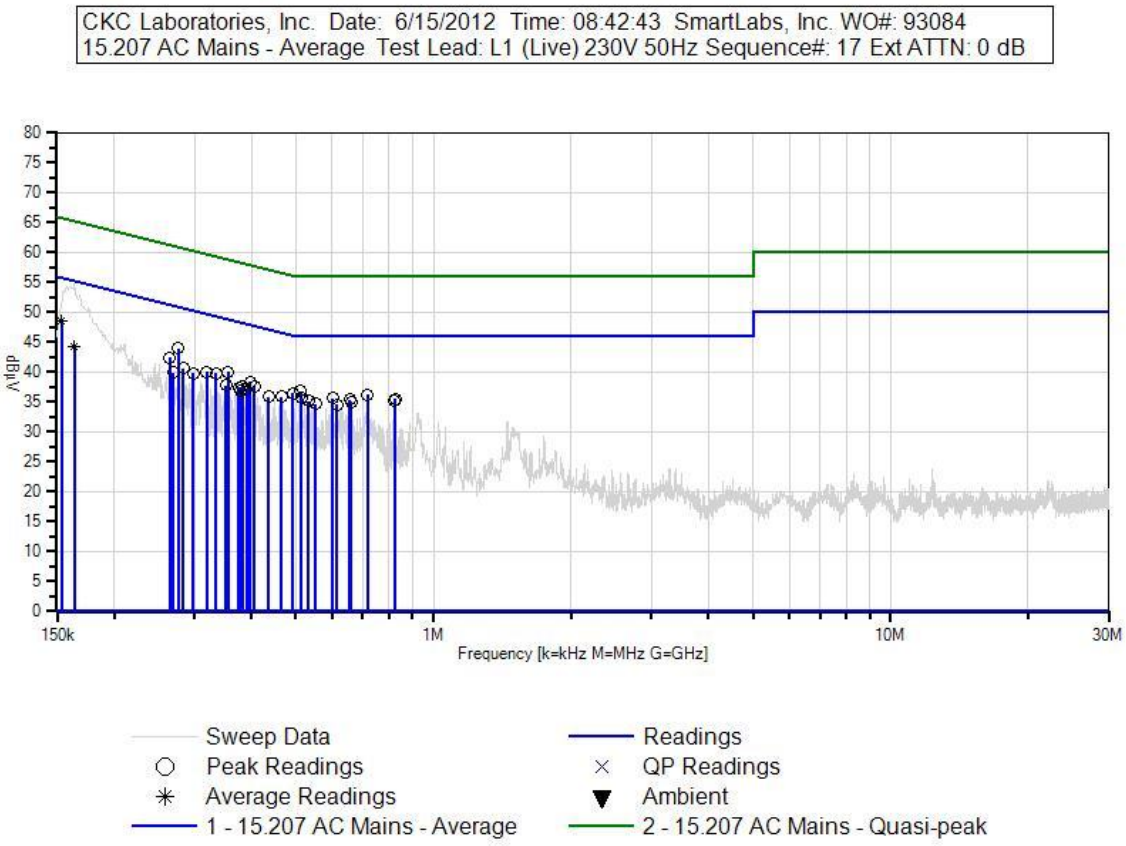
Ext Attn: 0 dB

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

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	276.534k	38.0	+5.8	+0.2	+0.0	+0.0	+0.0	44.0	50.9	-6.9	L1 (L
2	153.358k Ave	41.2	+5.8	+1.6	+0.0	+0.0	+0.0	48.6	55.8	-7.2	L1 (L
^	153.358k	48.8	+5.8	+1.6	+0.0	+0.0	+0.0	56.2	55.8	+0.4	L1 (L
4	355.072k	34.0	+5.7	+0.2	+0.1	+0.0	+0.0	40.0	48.8	-8.8	L1 (L

5	264.899k	36.4	+5.8	+0.2	+0.0	+0.0	+0.0	42.4	51.3	-8.9	L1 (L
6	511.421k	30.8	+5.7	+0.2	+0.1	+0.0	+0.0	36.8	46.0	-9.2	L1 (L
7	334.710k	33.8	+5.7	+0.2	+0.1	+0.0	+0.0	39.8	49.3	-9.5	L1 (L
8	396.523k	32.4	+5.7	+0.2	+0.1	+0.0	+0.0	38.4	47.9	-9.5	L1 (L
9	491.787k	30.5	+5.7	+0.2	+0.1	+0.0	+0.0	36.5	46.1	-9.6	L1 (L
10	319.439k	34.0	+5.7	+0.2	+0.1	+0.0	+0.0	40.0	49.7	-9.7	L1 (L
11	717.221k	30.3	+5.8	+0.2	+0.0	+0.0	+0.0	36.3	46.0	-9.7	L1 (L
12	283.806k	34.7	+5.7	+0.2	+0.1	+0.0	+0.0	40.7	50.7	-10.0	L1 (L
13	405.249k	31.5	+5.7	+0.2	+0.1	+0.0	+0.0	37.5	47.7	-10.2	L1 (L
14	513.603k	29.6	+5.7	+0.2	+0.1	+0.0	+0.0	35.6	46.0	-10.4	L1 (L
15	602.322k	29.6	+5.8	+0.2	+0.0	+0.0	+0.0	35.6	46.0	-10.4	L1 (L
16	826.302k	29.5	+5.8	+0.2	+0.0	+0.0	+0.0	35.5	46.0	-10.5	L1 (L
17	381.979k	31.7	+5.7	+0.2	+0.1	+0.0	+0.0	37.7	48.2	-10.5	L1 (L
18	298.350k	33.8	+5.7	+0.2	+0.1	+0.0	+0.0	39.8	50.3	-10.5	L1 (L
19	655.408k	29.4	+5.8	+0.2	+0.0	+0.0	+0.0	35.4	46.0	-10.6	L1 (L
20	465.607k	29.9	+5.7	+0.2	+0.1	+0.0	+0.0	35.9	46.6	-10.7	L1 (L
21	531.783k	29.2	+5.8	+0.2	+0.0	+0.0	+0.0	35.2	46.0	-10.8	L1 (L
22	822.666k	29.2	+5.8	+0.2	+0.0	+0.0	+0.0	35.2	46.0	-10.8	L1 (L
23	389.978k	31.2	+5.7	+0.2	+0.1	+0.0	+0.0	37.2	48.1	-10.9	L1 (L
24	374.707k	31.4	+5.7	+0.2	+0.1	+0.0	+0.0	37.4	48.4	-11.0	L1 (L
25	660.499k	29.0	+5.8	+0.2	+0.0	+0.0	+0.0	35.0	46.0	-11.0	L1 (L
26	163.817k Ave	37.9	+5.8	+0.5	+0.0	+0.0	+0.0	44.2	55.3	-11.1	L1 (L
^	163.817k	48.5	+5.8	+0.5	+0.0	+0.0	+0.0	54.8	55.3	-0.5	L1 (L
28	351.436k	31.8	+5.7	+0.2	+0.1	+0.0	+0.0	37.8	48.9	-11.1	L1 (L
29	436.519k	29.9	+5.7	+0.2	+0.1	+0.0	+0.0	35.9	47.1	-11.2	L1 (L
30	269.262k	33.9	+5.8	+0.2	+0.0	+0.0	+0.0	39.9	51.1	-11.2	L1 (L

31	551.418k	28.7	+5.8	+0.2	+0.0	+0.0	+0.0	34.7	46.0	-11.3	L1 (L
32	378.343k	31.0	+5.7	+0.2	+0.1	+0.0	+0.0	37.0	48.3	-11.3	L1 (L
33	613.957k	28.6	+5.8	+0.2	+0.0	+0.0	+0.0	34.6	46.0	-11.4	L1 (L



Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **SmartLabs, Inc.**
Specification: **15.207 AC Mains - Average**
Work Order #: **93084** Date: 6/15/2012
Test Type: **Conducted Emissions** Time: 08:46:56
Equipment: **DIN Rail Module Dimmer** Sequence#: 18
Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen
Model: 24522 230V 50Hz
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02672	Spectrum Analyzer	E4446A	8/9/2010	8/9/2012
T1	ANP06084	Attenuator	SA18N10W-06	12/8/2010	12/8/2012
T2	AN02610	High Pass Filter	HE9615-150K-50-720B	11/21/2011	11/21/2013
T3	ANP04358	Cable	RG142	4/10/2012	4/10/2014
	AN00847.1	50uH LISN-Line 1 (dB)	3816/2NM	12/21/2010	12/21/2012
T4	AN00847.1	50uH LISN-Line 2 (dB)	3816/2NM	12/21/2010	12/21/2012

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

Function	Manufacturer	Model #	S/N
DIN Rail Module Dimmer*	SmartLabs, Inc.	24522	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Switcher	Leviton	S02-5601-2WS	078477104163
Light bulb fixture	Sylvania	Hi Spot 63 Halogen	R42-61-W

Test Conditions / Notes:

The EUT is placed on the wooden table. EUT is installed in fixed position. EUT is connected to light fixture which is turned off. Sense port is connected to switcher.
The EUT is set in transmit mode.
TX freq = 914.5-915.5 MHz
Frequency range of measurement = 150kHz-30MHz
RBW=VBW=9kHz
Test environment conditions: 20°C, 42% relative humidity, 100kPa
Note: The light bulb for dimmer EUT is turned off because customer declares that when it is turned on, interference from triac dimmer circuitry would invalidate the readings of the conducted emissions test.

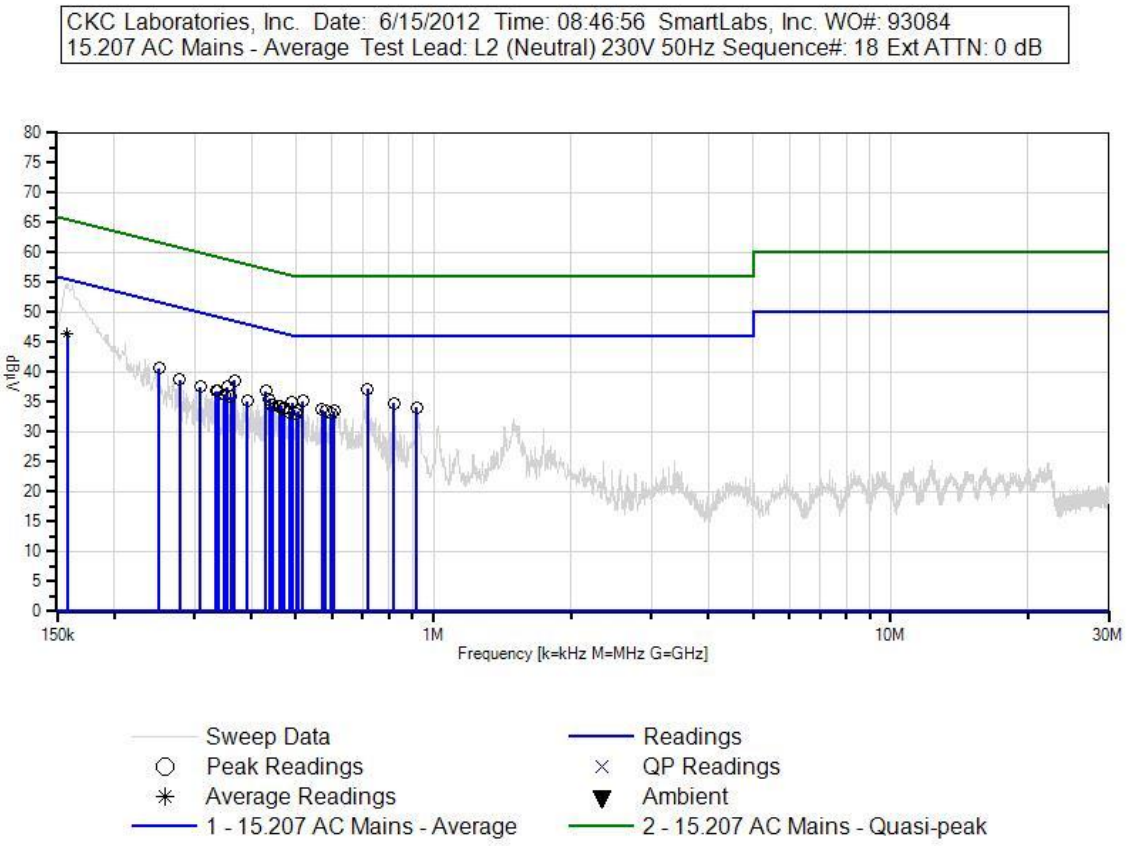
Ext Attn: 0 dB

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

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	716.492k	31.2	+5.8	+0.2	+0.0	+0.0	+0.0	37.2	46.0	-8.8	L2 (N
2	157.998k Ave	39.8	+5.8	+0.8	+0.0	+0.0	+0.0	46.4	55.6	-9.2	L2 (N
^	157.998k	48.2	+5.8	+0.8	+0.0	+0.0	+0.0	54.8	55.6	-0.8	L2 (N

4	367.434k	32.6	+5.7	+0.2	+0.1	+0.0	+0.0	38.6	48.6	-10.0	L2 (N
5	429.246k	30.9	+5.7	+0.2	+0.1	+0.0	+0.0	36.9	47.3	-10.4	L2 (N
6	517.965k	29.2	+5.7	+0.2	+0.1	+0.0	+0.0	35.2	46.0	-10.8	L2 (N
7	251.081k	34.7	+5.8	+0.2	+0.0	+0.0	+0.0	40.7	51.7	-11.0	L2 (N
8	818.301k	28.8	+5.8	+0.2	+0.0	+0.0	+0.0	34.8	46.0	-11.2	L2 (N
9	490.331k	28.9	+5.7	+0.2	+0.1	+0.0	+0.0	34.9	46.2	-11.3	L2 (N
10	353.617k	31.6	+5.7	+0.2	+0.1	+0.0	+0.0	37.6	48.9	-11.3	L2 (N
11	437.973k	29.5	+5.7	+0.2	+0.1	+0.0	+0.0	35.5	47.1	-11.6	L2 (N
12	919.732k	28.0	+5.8	+0.2	+0.1	+0.0	+0.0	34.1	46.0	-11.9	L2 (N
13	463.425k	28.4	+5.7	+0.2	+0.1	+0.0	+0.0	34.4	46.6	-12.2	L2 (N
14	569.597k	27.8	+5.8	+0.2	+0.0	+0.0	+0.0	33.8	46.0	-12.2	L2 (N
15	278.714k	32.7	+5.8	+0.2	+0.0	+0.0	+0.0	38.7	50.9	-12.2	L2 (N
16	338.345k	30.9	+5.7	+0.2	+0.1	+0.0	+0.0	36.9	49.2	-12.3	L2 (N
17	334.709k	30.9	+5.7	+0.2	+0.1	+0.0	+0.0	36.9	49.3	-12.4	L2 (N
18	471.424k	28.0	+5.7	+0.2	+0.1	+0.0	+0.0	34.0	46.5	-12.5	L2 (N
19	460.516k	28.2	+5.7	+0.2	+0.1	+0.0	+0.0	34.2	46.7	-12.5	L2 (N
20	443.063k	28.5	+5.7	+0.2	+0.1	+0.0	+0.0	34.5	47.0	-12.5	L2 (N
21	504.876k	27.5	+5.7	+0.2	+0.1	+0.0	+0.0	33.5	46.0	-12.5	L2 (N
22	308.530k	31.5	+5.7	+0.2	+0.1	+0.0	+0.0	37.5	50.0	-12.5	L2 (N
23	606.684k	27.5	+5.8	+0.2	+0.0	+0.0	+0.0	33.5	46.0	-12.5	L2 (N
24	579.778k	27.5	+5.8	+0.2	+0.0	+0.0	+0.0	33.5	46.0	-12.5	L2 (N
25	468.515k	27.9	+5.7	+0.2	+0.1	+0.0	+0.0	33.9	46.5	-12.6	L2 (N
26	390.704k	29.2	+5.7	+0.2	+0.1	+0.0	+0.0	35.2	48.0	-12.8	L2 (N
27	360.889k	29.9	+5.7	+0.2	+0.1	+0.0	+0.0	35.9	48.7	-12.8	L2 (N
28	349.253k	30.2	+5.7	+0.2	+0.1	+0.0	+0.0	36.2	49.0	-12.8	L2 (N

29	500.512k	27.2	+5.7	+0.2	+0.1	+0.0	+0.0	33.2	46.0	-12.8	L2 (N
30	483.059k	27.4	+5.7	+0.2	+0.1	+0.0	+0.0	33.4	46.3	-12.9	L2 (N
31	597.231k	27.0	+5.8	+0.2	+0.0	+0.0	+0.0	33.0	46.0	-13.0	L2 (N



Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **SmartLabs, Inc.**
Specification: **15.207 AC Mains - Average**
Work Order #: **93084** Date: 7/2/2012
Test Type: **Conducted Emissions** Time: 09:50:22
Equipment: **DIN Rail Module Relay** Sequence#: 21
Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen
Model: 24532 120V 60Hz
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02672	Spectrum Analyzer	E4446A	8/9/2010	8/9/2012
T1	ANP06084	Attenuator	SA18N10W-06	12/8/2010	12/8/2012
T2	AN02610	High Pass Filter	HE9615-150K-50-720B	11/21/2011	11/21/2013
T3	ANP04358	Cable	RG142	4/10/2012	4/10/2014
T4	AN00847.1	50uH LISN-Line 1 (dB)	3816/2NM	12/21/2010	12/21/2012
	AN00847.1	50uH LISN-Line 2 (dB)	3816/2NM	12/21/2010	12/21/2012

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

Function	Manufacturer	Model #	S/N
DIN Rail Module Relay*	SmartLabs, Inc.	24532	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Switcher	Leviton	S02-5601-2WS	078477104163
Light bulb fixture	Sylvania	Hi Spot 63 Halogen	R42-61-W

Test Conditions / Notes:

The EUT is placed on the wooden table. EUT is installed in fixed position. EUT is connected to light fixture which is turned on constantly. Sense port is connected to switcher.
The EUT is set in transmit mode.
TX freq = 914.5-915.5 MHz
Frequency range of measurement = 150kHz-30MHz
RBW=VBW=9kHz
Test environment conditions: 20° C, 42% relative humidity, 100kPa
Modification: switching inductor is replaced (from 1 to 2.2mH) and installed on solder side of power board.

Ext Attn: 0 dB

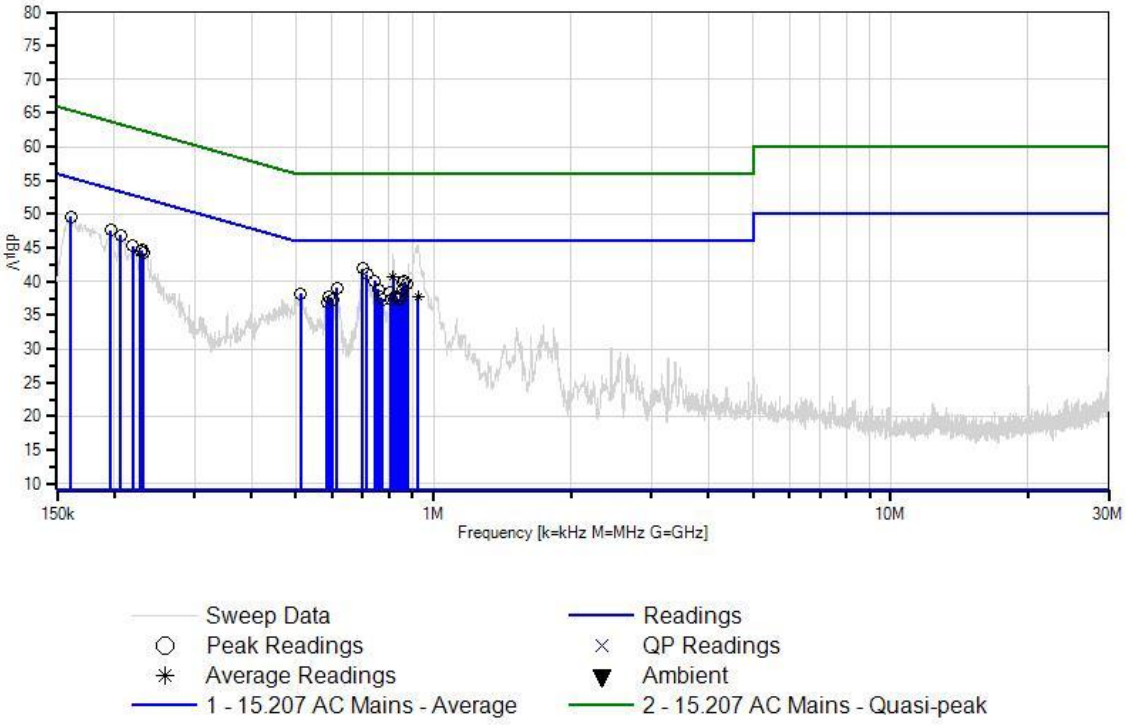
Measurement Data: Reading listed by margin. Test Lead: L1 (Live)

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	700.495k	35.9	+5.8	+0.2	+0.0	+0.0	+0.0	41.9	46.0	-4.1	L1 (L
2	715.039k	35.1	+5.8	+0.2	+0.0	+0.0	+0.0	41.1	46.0	-4.9	L1 (L
3 Ave	816.621k	34.8	+5.8	+0.2	+0.0	+0.0	+0.0	40.8	46.0	-5.2	L1 (L
^	816.121k	38.1	+5.8	+0.2	+0.0	+0.0	+0.0	44.1	46.0	-1.9	L1 (L

5	160.908k	43.3	+5.8	+0.5	+0.0	+0.0	+0.0	49.6	55.4	-5.8	L1 (L
6	744.127k	34.1	+5.8	+0.2	+0.0	+0.0	+0.0	40.1	46.0	-5.9	L1 (L
7	864.116k	33.9	+5.8	+0.2	+0.1	+0.0	+0.0	40.0	46.0	-6.0	L1 (L
8	196.541k	41.6	+5.8	+0.2	+0.0	+0.0	+0.0	47.6	53.8	-6.2	L1 (L
9	857.571k	33.7	+5.8	+0.2	+0.1	+0.0	+0.0	39.8	46.0	-6.2	L1 (L
10	206.722k	40.9	+5.8	+0.2	+0.0	+0.0	+0.0	46.9	53.3	-6.4	L1 (L
11	876.479k	33.5	+5.8	+0.2	+0.1	+0.0	+0.0	39.6	46.0	-6.4	L1 (L
12	613.957k	33.1	+5.8	+0.2	+0.0	+0.0	+0.0	39.1	46.0	-6.9	L1 (L
13	757.944k	32.8	+5.8	+0.2	+0.0	+0.0	+0.0	38.8	46.0	-7.2	L1 (L
14	853.935k	32.6	+5.8	+0.2	+0.1	+0.0	+0.0	38.7	46.0	-7.3	L1 (L
15	219.812k	39.3	+5.8	+0.2	+0.0	+0.0	+0.0	45.3	52.8	-7.5	L1 (L
16	804.485k	32.3	+5.8	+0.2	+0.0	+0.0	+0.0	38.3	46.0	-7.7	L1 (L
17	229.993k	38.7	+5.8	+0.2	+0.0	+0.0	+0.0	44.7	52.4	-7.7	L1 (L
18	511.421k	32.2	+5.7	+0.2	+0.1	+0.0	+0.0	38.2	46.0	-7.8	L1 (L
19	228.538k	38.6	+5.8	+0.2	+0.0	+0.0	+0.0	44.6	52.5	-7.9	L1 (L
20	849.572k	31.9	+5.8	+0.2	+0.1	+0.0	+0.0	38.0	46.0	-8.0	L1 (L
21	232.174k	38.2	+5.8	+0.2	+0.0	+0.0	+0.0	44.2	52.4	-8.2	L1 (L
22	923.985k	31.7	+5.8	+0.2	+0.1	+0.0	+0.0	37.8	46.0	-8.2	L1 (L
Ave											
^	923.985k	39.4	+5.8	+0.2	+0.1	+0.0	+0.0	45.5	46.0	-0.5	L1 (L
24	828.483k	31.8	+5.8	+0.2	+0.0	+0.0	+0.0	37.8	46.0	-8.2	L1 (L
25	591.414k	31.7	+5.8	+0.2	+0.0	+0.0	+0.0	37.7	46.0	-8.3	L1 (L
26	765.216k	31.7	+5.8	+0.2	+0.0	+0.0	+0.0	37.7	46.0	-8.3	L1 (L
27	842.300k	31.4	+5.8	+0.2	+0.1	+0.0	+0.0	37.5	46.0	-8.5	L1 (L
28	837.937k	31.3	+5.8	+0.2	+0.1	+0.0	+0.0	37.4	46.0	-8.6	L1 (L
29	773.943k	31.4	+5.8	+0.2	+0.0	+0.0	+0.0	37.4	46.0	-8.6	L1 (L

30	806.667k	31.3	+5.8	+0.2	+0.0	+0.0	+0.0	37.3	46.0	-8.7	L1 (L
31	601.595k	31.3	+5.8	+0.2	+0.0	+0.0	+0.0	37.3	46.0	-8.7	L1 (L
32	584.869k	30.9	+5.8	+0.2	+0.0	+0.0	+0.0	36.9	46.0	-9.1	L1 (L

CKC Laboratories, Inc. Date: 7/2/2012 Time: 09:50:22 SmartLabs, Inc. WO#: 93084
15.207 AC Mains - Average Test Lead: L1 (Live) 120V 60Hz Sequence#: 21 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **SmartLabs, Inc.**
Specification: **15.207 AC Mains - Average**
Work Order #: **93084** Date: 7/2/2012
Test Type: **Conducted Emissions** Time: 09:46:27
Equipment: **DIN Rail Module Relay** Sequence#: 20
Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen
Model: 24532 120V 60Hz
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02672	Spectrum Analyzer	E4446A	8/9/2010	8/9/2012
T1	ANP06084	Attenuator	SA18N10W-06	12/8/2010	12/8/2012
T2	AN02610	High Pass Filter	HE9615-150K-50-720B	11/21/2011	11/21/2013
T3	ANP04358	Cable	RG142	4/10/2012	4/10/2014
	AN00847.1	50uH LISN-Line 1 (dB)	3816/2NM	12/21/2010	12/21/2012
T4	AN00847.1	50uH LISN-Line 2 (dB)	3816/2NM	12/21/2010	12/21/2012

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

Function	Manufacturer	Model #	S/N
DIN Rail Module Relay*	SmartLabs, Inc.	24532	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Switcher	Leviton	S02-5601-2WS	078477104163
Light bulb fixture	Sylvania	Hi Spot 63 Halogen	R42-61-W

Test Conditions / Notes:

The EUT is placed on the wooden table. EUT is installed in fixed position. EUT is connected to light fixture which is turned on constantly. Sense port is connected to switcher.
The EUT is set in transmit mode.
TX freq = 914.5-915.5 MHz
Frequency range of measurement = 150kHz-30MHz
RBW=VBW=9kHz
Test environment conditions: 20°C, 42% relative humidity, 100kPa
Modification: switching inductor is replaced (from 1 to 2.2mH) and installed on solder side of power board.

Ext Attn: 0 dB

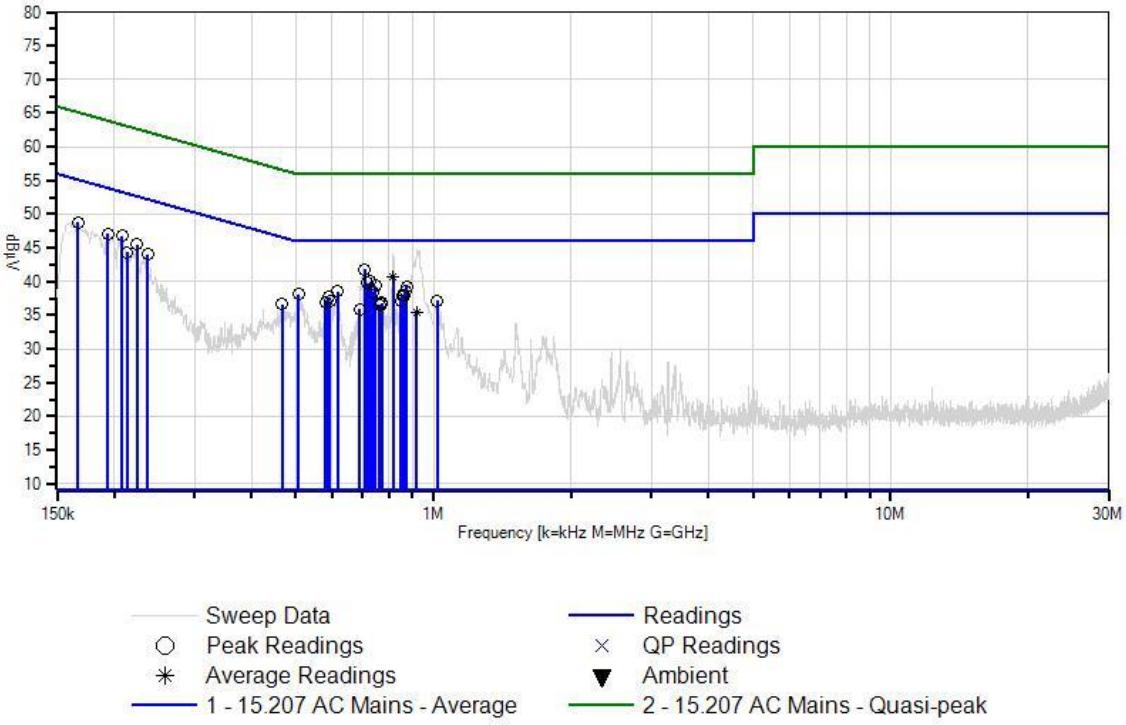
Measurement Data: Reading listed by margin. Test Lead: L2 (Neutral)

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	706.313k	35.8	+5.8	+0.2	+0.0	+0.0	+0.0	41.8	46.0	-4.2	L2 (N
2	816.688k Ave	34.8	+5.8	+0.2	+0.0	+0.0	+0.0	40.8	46.0	-5.2	L2 (N
^	816.848k	38.1	+5.8	+0.2	+0.0	+0.0	+0.0	44.1	46.0	-1.9	L2 (N
4	728.856k	34.0	+5.8	+0.2	+0.0	+0.0	+0.0	40.0	46.0	-6.0	L2 (N

5	716.493k	33.8	+5.8	+0.2	+0.0	+0.0	+0.0	39.8	46.0	-6.2	L2 (N
6	166.726k	42.6	+5.8	+0.4	+0.0	+0.0	+0.0	48.8	55.1	-6.3	L2 (N
7	208.176k	40.8	+5.8	+0.2	+0.0	+0.0	+0.0	46.8	53.3	-6.5	L2 (N
8	744.855k	33.4	+5.8	+0.2	+0.0	+0.0	+0.0	39.4	46.0	-6.6	L2 (N
9	872.843k	33.2	+5.8	+0.2	+0.1	+0.0	+0.0	39.3	46.0	-6.7	L2 (N
10	193.632k	41.1	+5.8	+0.2	+0.0	+0.0	+0.0	47.1	53.9	-6.8	L2 (N
11	224.902k	39.5	+5.8	+0.2	+0.0	+0.0	+0.0	45.5	52.6	-7.1	L2 (N
12	868.480k	32.4	+5.8	+0.2	+0.1	+0.0	+0.0	38.5	46.0	-7.5	L2 (N
13	616.866k	32.5	+5.8	+0.2	+0.0	+0.0	+0.0	38.5	46.0	-7.5	L2 (N
14	737.582k	32.4	+5.8	+0.2	+0.0	+0.0	+0.0	38.4	46.0	-7.6	L2 (N
15	507.058k	32.1	+5.7	+0.2	+0.1	+0.0	+0.0	38.1	46.0	-7.9	L2 (N
16	854.663k	31.9	+5.8	+0.2	+0.1	+0.0	+0.0	38.0	46.0	-8.0	L2 (N
17	865.571k	31.8	+5.8	+0.2	+0.1	+0.0	+0.0	37.9	46.0	-8.1	L2 (N
18	237.265k	38.0	+5.8	+0.2	+0.0	+0.0	+0.0	44.0	52.2	-8.2	L2 (N
19	589.232k	31.7	+5.8	+0.2	+0.0	+0.0	+0.0	37.7	46.0	-8.3	L2 (N
20	213.267k	38.3	+5.8	+0.2	+0.0	+0.0	+0.0	44.3	53.1	-8.8	L2 (N
21	1.018M	31.1	+5.8	+0.2	+0.1	+0.0	+0.0	37.2	46.0	-8.8	L2 (N
22	848.118k	31.1	+5.8	+0.2	+0.1	+0.0	+0.0	37.2	46.0	-8.8	L2 (N
23	592.141k	31.1	+5.8	+0.2	+0.0	+0.0	+0.0	37.1	46.0	-8.9	L2 (N
24	593.596k	31.1	+5.8	+0.2	+0.0	+0.0	+0.0	37.1	46.0	-8.9	L2 (N
25	581.233k	30.9	+5.8	+0.2	+0.0	+0.0	+0.0	36.9	46.0	-9.1	L2 (N
26	771.761k	30.8	+5.8	+0.2	+0.0	+0.0	+0.0	36.8	46.0	-9.2	L2 (N
27	766.671k	30.6	+5.8	+0.2	+0.0	+0.0	+0.0	36.6	46.0	-9.4	L2 (N
28	761.580k	30.5	+5.8	+0.2	+0.0	+0.0	+0.0	36.5	46.0	-9.5	L2 (N
29	466.335k	30.6	+5.7	+0.2	+0.1	+0.0	+0.0	36.6	46.6	-10.0	L2 (N

30	688.860k	29.9	+5.8	+0.2	+0.0	+0.0	+0.0	35.9	46.0	-10.1	L2 (N
31	919.732k	29.4	+5.8	+0.2	+0.1	+0.0	+0.0	35.5	46.0	-10.5	L2 (N
	Ave										
^	919.732k	38.7	+5.8	+0.2	+0.1	+0.0	+0.0	44.8	46.0	-1.2	L2 (N

CKC Laboratories, Inc. Date: 7/2/2012 Time: 09:46:27 SmartLabs, Inc. WO#: 93084
15.207 AC Mains - Average Test Lead: L2 (Neutral) 120V 60Hz Sequence#: 20 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **SmartLabs, Inc.**
Specification: **15.207 AC Mains - Average**
Work Order #: **93084** Date: 7/2/2012
Test Type: **Conducted Emissions** Time: 09:37:34
Equipment: **DIN Rail Module Relay** Sequence#: 18
Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen
Model: 24532 230V 50Hz
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02672	Spectrum Analyzer	E4446A	8/9/2010	8/9/2012
T1	ANP06084	Attenuator	SA18N10W-06	12/8/2010	12/8/2012
T2	AN02610	High Pass Filter	HE9615-150K-50-720B	11/21/2011	11/21/2013
T3	ANP04358	Cable	RG142	4/10/2012	4/10/2014
T4	AN00847.1	50uH LISN-Line 1 (dB)	3816/2NM	12/21/2010	12/21/2012
	AN00847.1	50uH LISN-Line 2 (dB)	3816/2NM	12/21/2010	12/21/2012

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

Function	Manufacturer	Model #	S/N
DIN Rail Module Relay*	SmartLabs, Inc.	24532	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Switcher	Leviton	S02-5601-2WS	078477104163
Light bulb fixture	Sylvania	Hi Spot 63 Halogen	R42-61-W

Test Conditions / Notes:

The EUT is placed on the wooden table. EUT is installed in fixed position. EUT is connected to light fixture which is turned on constantly. Sense port is connected to switcher.
The EUT is set in transmit mode.
TX freq = 914.5-915.5 MHz
Frequency range of measurement = 150kHz-30MHz
RBW=VBW=9kHz
Test environment conditions: 20°C, 42% relative humidity, 100kPa
Modification: switching inductor is replaced (from 1 to 2.2mH) and installed on solder side of power board.

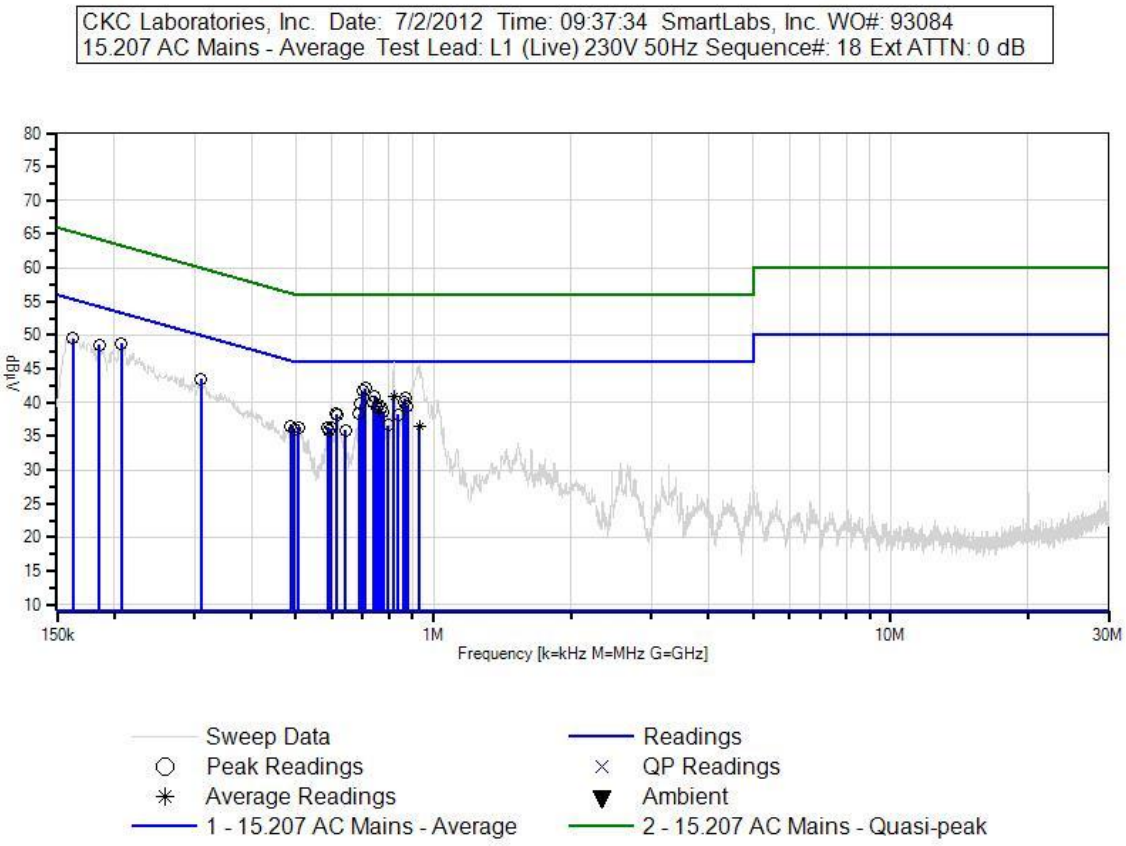
Ext Attn: 0 dB

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

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	708.494k	36.1	+5.8	+0.2	+0.0	+0.0	+0.0	42.1	46.0	-3.9	L1 (L
2	699.768k	35.7	+5.8	+0.2	+0.0	+0.0	+0.0	41.7	46.0	-4.3	L1 (L
3	207.449k	42.8	+5.8	+0.2	+0.0	+0.0	+0.0	48.8	53.3	-4.5	L1 (L
4	744.127k	35.0	+5.8	+0.2	+0.0	+0.0	+0.0	41.0	46.0	-5.0	L1 (L

5	817.690k	35.0	+5.8	+0.2	+0.0	+0.0	+0.0	41.0	46.0	-5.0	L1 (L
	Ave										
^	819.030k	40.0	+5.8	+0.2	+0.0	+0.0	+0.0	46.0	46.0	+0.0	L1 (L
7	867.752k	34.5	+5.8	+0.2	+0.1	+0.0	+0.0	40.6	46.0	-5.4	L1 (L
8	185.633k	42.6	+5.8	+0.2	+0.0	+0.0	+0.0	48.6	54.2	-5.6	L1 (L
9	162.363k	43.2	+5.8	+0.5	+0.0	+0.0	+0.0	49.5	55.3	-5.8	L1 (L
10	737.582k	34.1	+5.8	+0.2	+0.0	+0.0	+0.0	40.1	46.0	-5.9	L1 (L
11	860.480k	34.0	+5.8	+0.2	+0.1	+0.0	+0.0	40.1	46.0	-5.9	L1 (L
12	691.041k	33.8	+5.8	+0.2	+0.0	+0.0	+0.0	39.8	46.0	-6.2	L1 (L
13	760.126k	33.6	+5.8	+0.2	+0.0	+0.0	+0.0	39.6	46.0	-6.4	L1 (L
14	309.985k	37.5	+5.7	+0.2	+0.1	+0.0	+0.0	43.5	50.0	-6.5	L1 (L
15	876.479k	33.3	+5.8	+0.2	+0.1	+0.0	+0.0	39.4	46.0	-6.6	L1 (L
16	768.852k	33.2	+5.8	+0.2	+0.0	+0.0	+0.0	39.2	46.0	-6.8	L1 (L
17	753.581k	33.2	+5.8	+0.2	+0.0	+0.0	+0.0	39.2	46.0	-6.8	L1 (L
18	775.397k	32.6	+5.8	+0.2	+0.0	+0.0	+0.0	38.6	46.0	-7.4	L1 (L
19	611.776k	32.3	+5.8	+0.2	+0.0	+0.0	+0.0	38.3	46.0	-7.7	L1 (L
20	687.405k	32.3	+5.8	+0.2	+0.0	+0.0	+0.0	38.3	46.0	-7.7	L1 (L
21	613.957k	32.2	+5.8	+0.2	+0.0	+0.0	+0.0	38.2	46.0	-7.8	L1 (L
22	836.482k	32.2	+5.8	+0.2	+0.0	+0.0	+0.0	38.2	46.0	-7.8	L1 (L
23	796.486k	30.6	+5.8	+0.2	+0.0	+0.0	+0.0	36.6	46.0	-9.4	L1 (L
24	932.490k	30.4	+5.8	+0.2	+0.1	+0.0	+0.0	36.5	46.0	-9.5	L1 (L
	Ave										
^	932.490k	39.4	+5.8	+0.2	+0.1	+0.0	+0.0	45.5	46.0	-0.5	L1 (L
26	586.324k	30.3	+5.8	+0.2	+0.0	+0.0	+0.0	36.3	46.0	-9.7	L1 (L
27	486.696k	30.5	+5.7	+0.2	+0.1	+0.0	+0.0	36.5	46.2	-9.7	L1 (L
28	507.058k	30.3	+5.7	+0.2	+0.1	+0.0	+0.0	36.3	46.0	-9.7	L1 (L
29	597.959k	30.2	+5.8	+0.2	+0.0	+0.0	+0.0	36.2	46.0	-9.8	L1 (L

30	641.591k	29.9	+5.8	+0.2	+0.0	+0.0	+0.0	35.9	46.0	-10.1	L1 (L
31	495.423k	30.0	+5.7	+0.2	+0.1	+0.0	+0.0	36.0	46.1	-10.1	L1 (L
32	588.505k	29.8	+5.8	+0.2	+0.0	+0.0	+0.0	35.8	46.0	-10.2	L1 (L



Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **SmartLabs, Inc.**
Specification: **15.207 AC Mains - Average**
Work Order #: **93084** Date: 7/2/2012
Test Type: **Conducted Emissions** Time: 09:42:37
Equipment: **DIN Rail Module Relay** Sequence#: 19
Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen
Model: 24532 230V 50Hz
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02672	Spectrum Analyzer	E4446A	8/9/2010	8/9/2012
T1	ANP06084	Attenuator	SA18N10W-06	12/8/2010	12/8/2012
T2	AN02610	High Pass Filter	HE9615-150K-50-720B	11/21/2011	11/21/2013
T3	ANP04358	Cable	RG142	4/10/2012	4/10/2014
	AN00847.1	50uH LISN-Line 1 (dB)	3816/2NM	12/21/2010	12/21/2012
T4	AN00847.1	50uH LISN-Line 2 (dB)	3816/2NM	12/21/2010	12/21/2012

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

Function	Manufacturer	Model #	S/N
DIN Rail Module Relay*	SmartLabs, Inc.	24532	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Switcher	Leviton	S02-5601-2WS	078477104163
Light bulb fixture	Sylvania	Hi Spot 63 Halogen	R42-61-W

Test Conditions / Notes:

The EUT is placed on the wooden table. EUT is installed in fixed position. EUT is connected to light fixture which is turned on constantly. Sense port is connected to switcher.
The EUT is set in transmit mode.
TX freq = 914.5-915.5 MHz
Frequency range of measurement = 150kHz-30MHz
RBW=VBW=9kHz
Test environment conditions: 20°C, 42% relative humidity, 100kPa
Modification: switching inductor is replaced (from 1 to 2.2mH) and installed on solder side of power board.

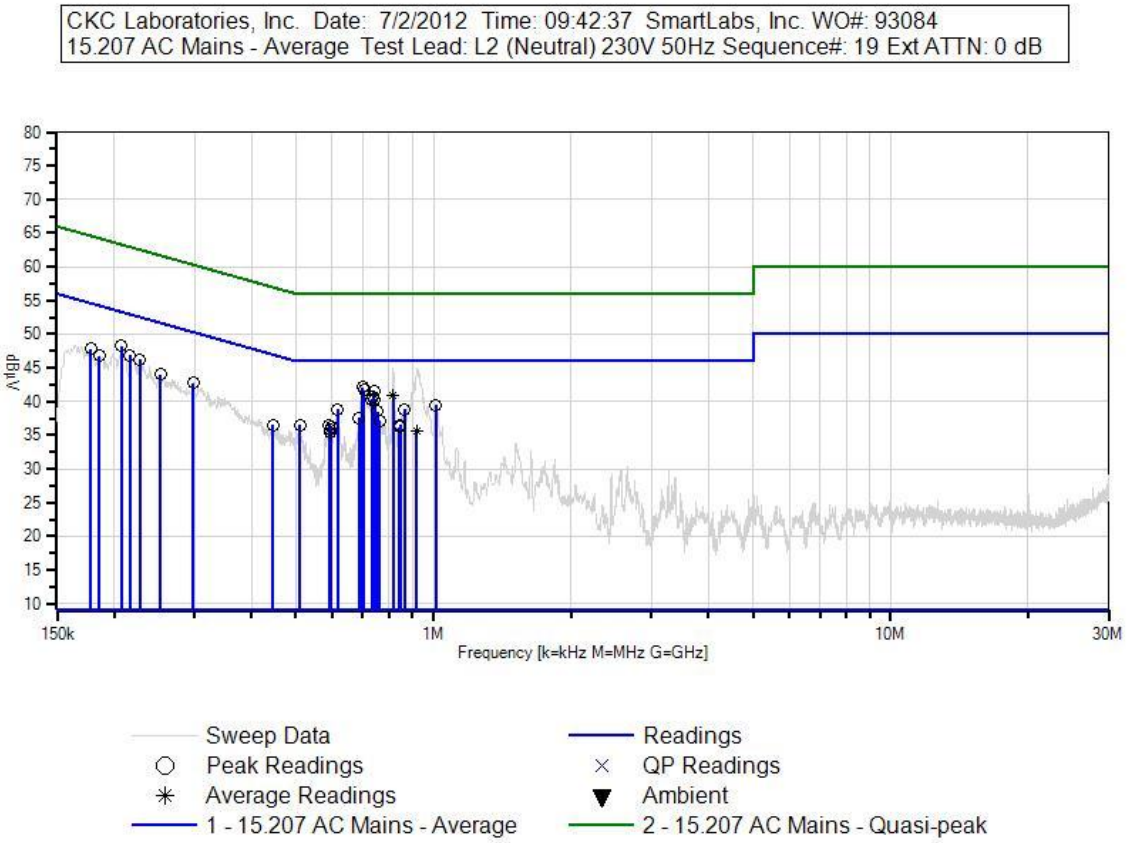
Ext Attn: 0 dB

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

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	699.041k	36.1	+5.8	+0.2	+0.0	+0.0	+0.0	42.1	46.0	-3.9	L2 (N
2	705.585k	35.7	+5.8	+0.2	+0.0	+0.0	+0.0	41.7	46.0	-4.3	L2 (N
3	740.491k	35.5	+5.8	+0.2	+0.0	+0.0	+0.0	41.5	46.0	-4.5	L2 (N
4	207.449k	42.3	+5.8	+0.2	+0.0	+0.0	+0.0	48.3	53.3	-5.0	L2 (N

5 Ave	816.601k	35.0	+5.8	+0.2	+0.0	+0.0	+0.0	41.0	46.0	-5.0	L2 (N
^	816.121k	39.0	+5.8	+0.2	+0.0	+0.0	+0.0	45.0	46.0	-1.0	L2 (N
7	738.310k	34.8	+5.8	+0.2	+0.0	+0.0	+0.0	40.8	46.0	-5.2	L2 (N
8	731.765k	34.3	+5.8	+0.2	+0.0	+0.0	+0.0	40.3	46.0	-5.7	L2 (N
9	743.400k	34.3	+5.8	+0.2	+0.0	+0.0	+0.0	40.3	46.0	-5.7	L2 (N
10	216.903k	40.9	+5.8	+0.2	+0.0	+0.0	+0.0	46.9	52.9	-6.0	L2 (N
11	227.811k	40.2	+5.8	+0.2	+0.0	+0.0	+0.0	46.2	52.5	-6.3	L2 (N
12	1.013M	33.4	+5.8	+0.2	+0.1	+0.0	+0.0	39.5	46.0	-6.5	L2 (N
13	177.634k	41.7	+5.8	+0.3	+0.0	+0.0	+0.0	47.8	54.6	-6.8	L2 (N
14	616.139k	32.9	+5.8	+0.2	+0.0	+0.0	+0.0	38.9	46.0	-7.1	L2 (N
15	865.571k	32.8	+5.8	+0.2	+0.1	+0.0	+0.0	38.9	46.0	-7.1	L2 (N
16	185.633k	40.8	+5.8	+0.2	+0.0	+0.0	+0.0	46.8	54.2	-7.4	L2 (N
17	298.350k	36.8	+5.7	+0.2	+0.1	+0.0	+0.0	42.8	50.3	-7.5	L2 (N
18	755.035k	32.5	+5.8	+0.2	+0.0	+0.0	+0.0	38.5	46.0	-7.5	L2 (N
19	252.536k	38.0	+5.8	+0.2	+0.0	+0.0	+0.0	44.0	51.7	-7.7	L2 (N
20	688.132k	31.6	+5.8	+0.2	+0.0	+0.0	+0.0	37.6	46.0	-8.4	L2 (N
21	761.580k	31.2	+5.8	+0.2	+0.0	+0.0	+0.0	37.2	46.0	-8.8	L2 (N
22	509.967k	30.5	+5.7	+0.2	+0.1	+0.0	+0.0	36.5	46.0	-9.5	L2 (N
23	590.687k	30.5	+5.8	+0.2	+0.0	+0.0	+0.0	36.5	46.0	-9.5	L2 (N
24	846.663k	30.4	+5.8	+0.2	+0.1	+0.0	+0.0	36.5	46.0	-9.5	L2 (N
25	596.504k	30.3	+5.8	+0.2	+0.0	+0.0	+0.0	36.3	46.0	-9.7	L2 (N
26	841.573k	30.1	+5.8	+0.2	+0.1	+0.0	+0.0	36.2	46.0	-9.8	L2 (N
27	843.755k	30.1	+5.8	+0.2	+0.1	+0.0	+0.0	36.2	46.0	-9.8	L2 (N
28	594.323k	29.8	+5.8	+0.2	+0.0	+0.0	+0.0	35.8	46.0	-10.2	L2 (N

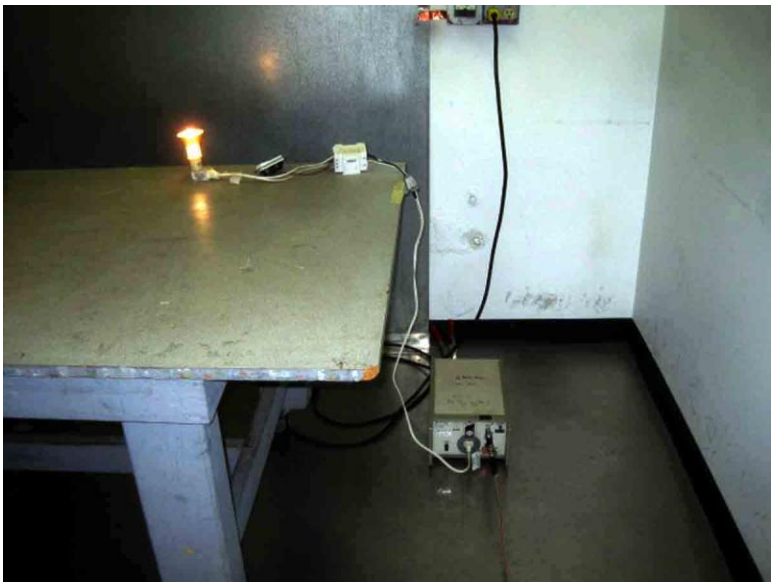
29	919.732k	29.5	+5.8	+0.2	+0.1	+0.0	+0.0	35.6	46.0	-10.4	L2 (N Ave
^	919.732k	38.8	+5.8	+0.2	+0.1	+0.0	+0.0	44.9	46.0	-1.1	L2 (N
31	445.973k	30.5	+5.7	+0.2	+0.1	+0.0	+0.0	36.5	46.9	-10.4	L2 (N
32	592.868k	29.4	+5.8	+0.2	+0.0	+0.0	+0.0	35.4	46.0	-10.6	L2 (N



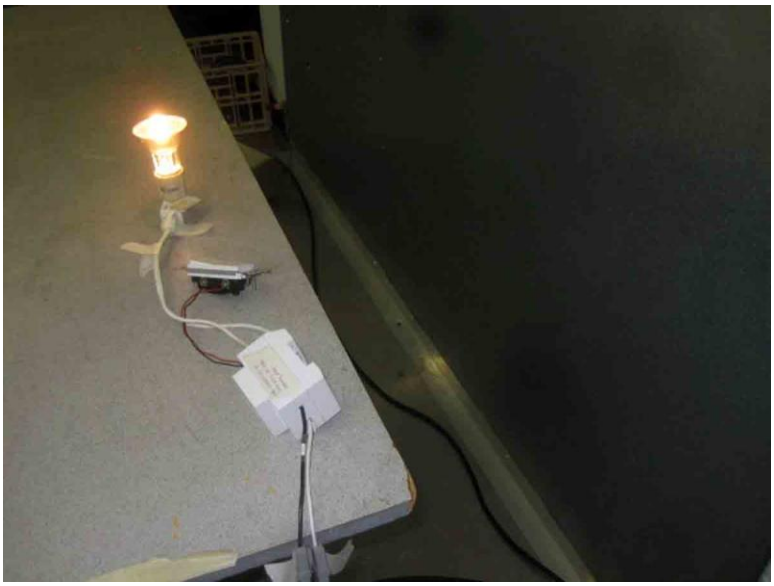
Test Setup Photos

DIMMER, LIGHT OFF

DIMMER, LIGHT OFF



RELAY, LIGHT ON



RELAY, LIGHT ON

15.249(a)(b) RF Power Output

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **SmartLabs, Inc.**
Specification: **15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)**
Work Order #: **93084** Date: 6/13/2012
Test Type: **Maximized Emissions** Time: 13:56:07
Equipment: **DIN Rail Module Dimmer** Sequence#: 12
Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen
Model: 24522
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00309	Preamp	8447D	3/29/2012	3/29/2014
T2	ANP05050	Cable	RG223/U	3/21/2011	3/21/2013
T3	ANP05198	Cable	8268	12/21/2010	12/21/2012
T4	AN01995	Biconilog Antenna	CBL6111C	5/16/2012	5/16/2014
	AN02672	Spectrum Analyzer	E4446A	8/9/2010	8/9/2012

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

Function	Manufacturer	Model #	S/N
DIN Rail Module Dimmer*	SmartLabs, Inc.	24522	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Switcher	Leviton	S02-5601-2WS	078477104163
Light bulb fixture	Sylvania	Hi Spot 63 Halogen	R42-61-W

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 connected to light fixture which is turned on constantly. Sense port is connected to switcher.
The EUT is set in constant transmit mode.
TX freq = 914.5-915.5 MHz
Frequency range of measurement = fundamental
RBW=120 kHz, VBW=120 kHz
Test environment conditions: 20°C, 42% relative humidity, 100kPa

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	915.089M	84.8	-27.2	+0.5	+5.8	+23.3	+0.0	87.2	94.0	-6.8	Horiz
2	914.929M	84.8	-27.2	+0.5	+5.8	+23.3	+0.0	87.2	94.0	-6.8	Horiz
3	915.089M	80.4	-27.2	+0.5	+5.8	+23.3	+0.0	82.8	94.0	-11.2	Vert
4	914.929M	80.3	-27.2	+0.5	+5.8	+23.3	+0.0	82.7	94.0	-11.3	Vert

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **SmartLabs, Inc.**
Specification: **15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)**
Work Order #: **93084** Date: 6/14/2012
Test Type: **Maximized Emissions** Time: 11:21:41
Equipment: **DIN Rail Module Relay** Sequence#: 13
Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen
Model: 24532
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00309	Preamp	8447D	3/29/2012	3/29/2014
T2	ANP05050	Cable	RG223/U	3/21/2011	3/21/2013
T3	ANP05198	Cable	8268	12/21/2010	12/21/2012
T4	AN01995	Biconilog Antenna	CBL6111C	5/16/2012	5/16/2014
T5	AN02672	Spectrum Analyzer	E4446A	8/9/2010	8/9/2012

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

Function	Manufacturer	Model #	S/N
DIN Rail Module Relay*	SmartLabs, Inc.	24532	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Switcher	Leviton	S02-5601-2WS	078477104163
Light bulb fixture	Sylvania	Hi Spot 63 Halogen	R42-61-W

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 connected to light fixture which is turned on constantly. Sense port is connected to switcher.
The EUT is set in constant transmit mode.
TX freq = 914.5-915.5 MHz
Frequency range of measurement = fundamental
RBW=120 kHz, VBW=120 kHz
Test environment conditions: 20° C, 42% relative humidity, 100kP

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	915.090M	86.0	-27.2 +0.0	+0.5	+5.8	+23.3	+0.0	88.4	94.0	-5.6	Horiz
2	914.940M	86.0	-27.2 +0.0	+0.5	+5.8	+23.3	+0.0	88.4	94.0	-5.6	Horiz
3	915.090M	83.4	-27.2 +0.0	+0.5	+5.8	+23.3	+0.0	85.8	94.0	-8.2	Vert
4	914.930M	83.3	-27.2 +0.0	+0.5	+5.8	+23.3	+0.0	85.7	94.0	-8.3	Vert

Test Setup Photos

DIMMER & RELAY

DIMMER & RELAY

-20dBc & 99% Occupied Bandwidth

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **SmartLabs, Inc.**
Specification: **Occupied Bandwidth.**
Work Order #: **93084** Date: 6/13/2012
Test Type: **Maximized Emissions** Time: 13:56:07
Equipment: **DIN Rail Module Dimmer** Sequence#: 12
DIN Rail Module Relay
Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen
Model: 24522, 24532
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00309	Preamp	8447D	3/29/2012	3/29/2014
T2	ANP05050	Cable	RG223/U	3/21/2011	3/21/2013
T3	ANP05198	Cable	8268	12/21/2010	12/21/2012
T4	AN01995	Biconilog Antenna	CBL6111C	5/16/2012	5/16/2014
	AN02672	Spectrum Analyzer	E4446A	8/9/2010	8/9/2012

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

Function	Manufacturer	Model #	S/N
DIN Rail Module Dimmer*	SmartLabs, Inc.	24522	NA
DIN Rail Module Relay*	SmartLabs, Inc.	24532	NA

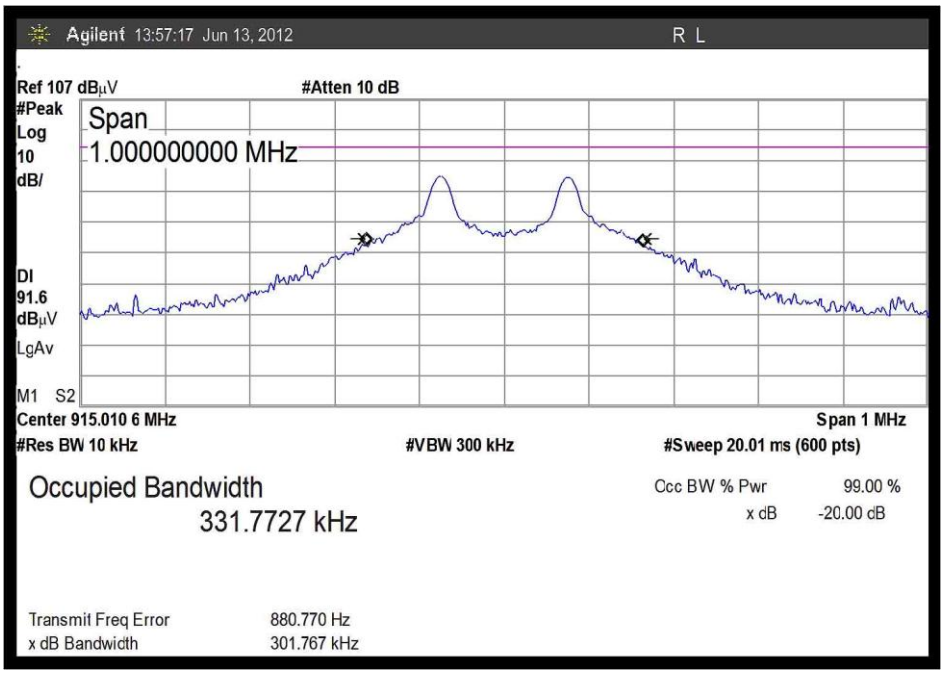
Support Devices:

Function	Manufacturer	Model #	S/N
Switcher	Leviton	S02-5601-2WS	078477104163
Light bulb fixture	Sylvania	Hi Spot 63 Halogen	R42-61-W

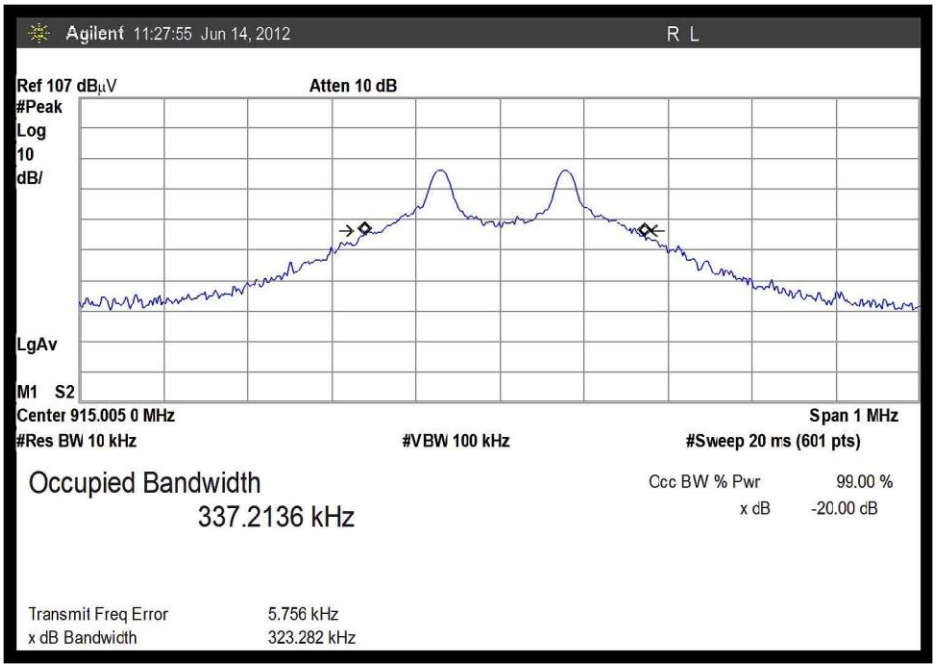
Test Conditions / Notes:

The EUT is placed on the wooden table lined with Styrofoam of 10 cm thickness. EUT is installed in fixed position.
EUT is connected to light fixture which is turned on constantly. Sense port is connected to switcher.
The EUT is set in constant transmit mode.
TX freq = 914.5-915.5 MHz
Frequency range of measurement = fundamental
RBW=120 kHz, VBW=120 kHz
Test environment conditions: 20° C, 42% relative humidity, 100kPa

Test Plot

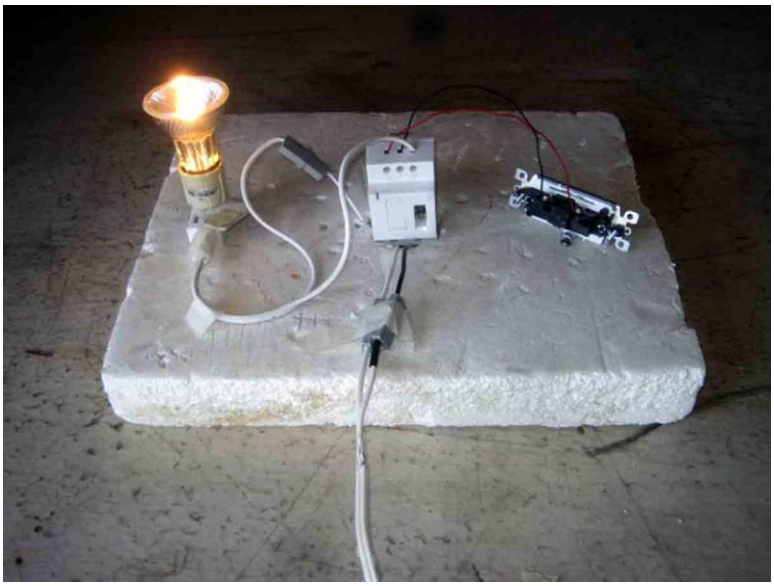


DIMMER

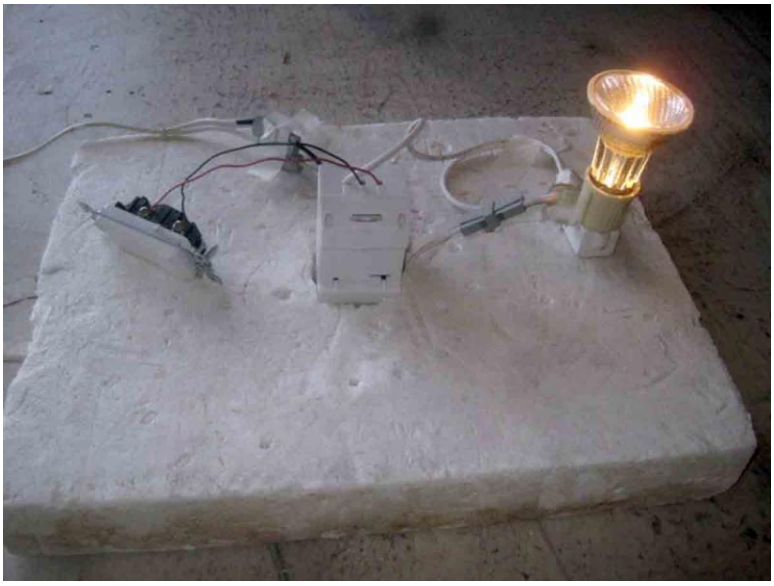


RELAY

Test Setup Photos



DIMMER & RELAY



DIMMER & RELAY

Bandedge

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **SmartLabs, Inc.**
Specification: **Bandedge**
Work Order #: **93084** Date: 6/13/2012
Test Type: **Maximized Emissions** Time: 13:56:07
Equipment: **DIN Rail Module Dimmer** Sequence#: 12
DIN Rail Module Relay
Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen
Model: 24522, 24532
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00309	Preamp	8447D	3/29/2012	3/29/2014
T2	ANP05050	Cable	RG223/U	3/21/2011	3/21/2013
T3	ANP05198	Cable	8268	12/21/2010	12/21/2012
T4	AN01995	Biconilog Antenna	CBL6111C	5/16/2012	5/16/2014
	AN02672	Spectrum Analyzer	E4446A	8/9/2010	8/9/2012

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

Function	Manufacturer	Model #	S/N
DIN Rail Module Dimmer*	SmartLabs, Inc.	24522	NA
DIN Rail Module Relay*	SmartLabs, Inc.	24532	NA

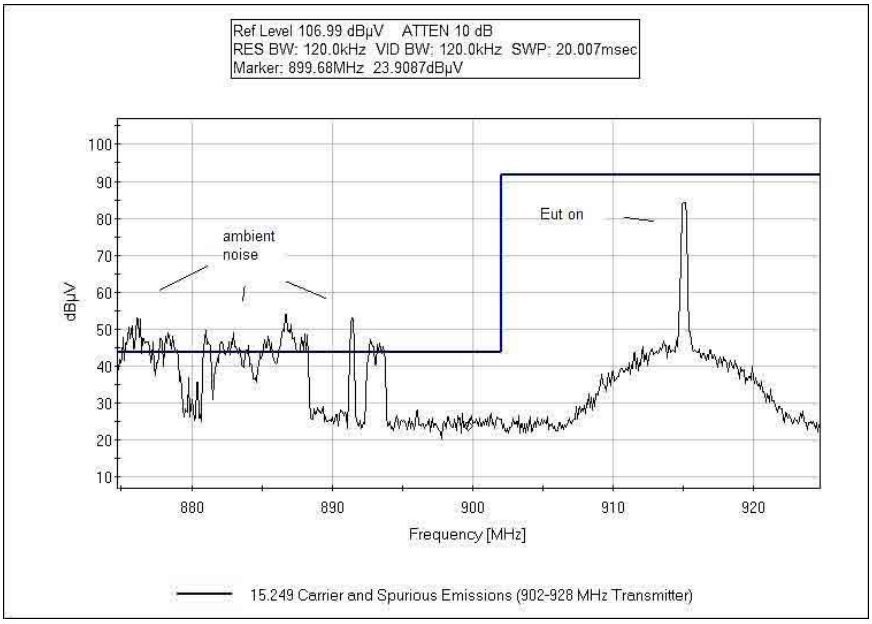
Support Devices:

Function	Manufacturer	Model #	S/N
Switcher	Leviton	S02-5601-2WS	078477104163
Light bulb fixture	Sylvania	Hi Spot 63 Halogen	R42-61-W

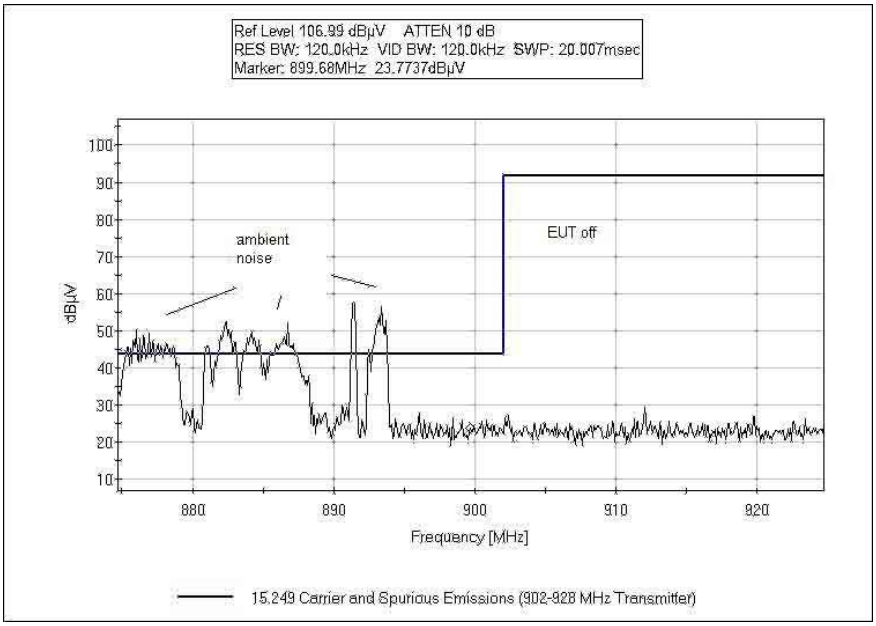
Test Conditions / Notes:

The EUT is placed on the wooden table lined with Styrofoam of 10 cm thickness. EUT is installed in fixed position.
EUT is connected to light fixture which is turned on constantly. Sense port is connected to switcher.
The EUT is set in constant transmit mode.
TX freq = 914.5-915.5 MHz
Frequency range of measurement = fundamental
RBW=120 kHz, VBW=120 kHz
Test environment conditions: 20°C, 42% relative humidity, 100kPa

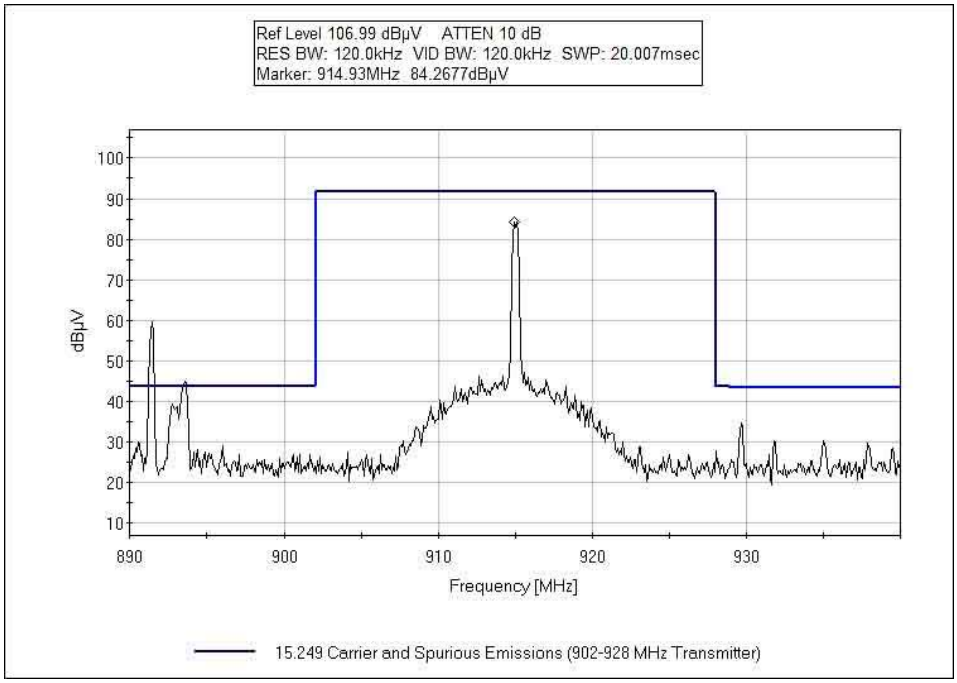
Test Data



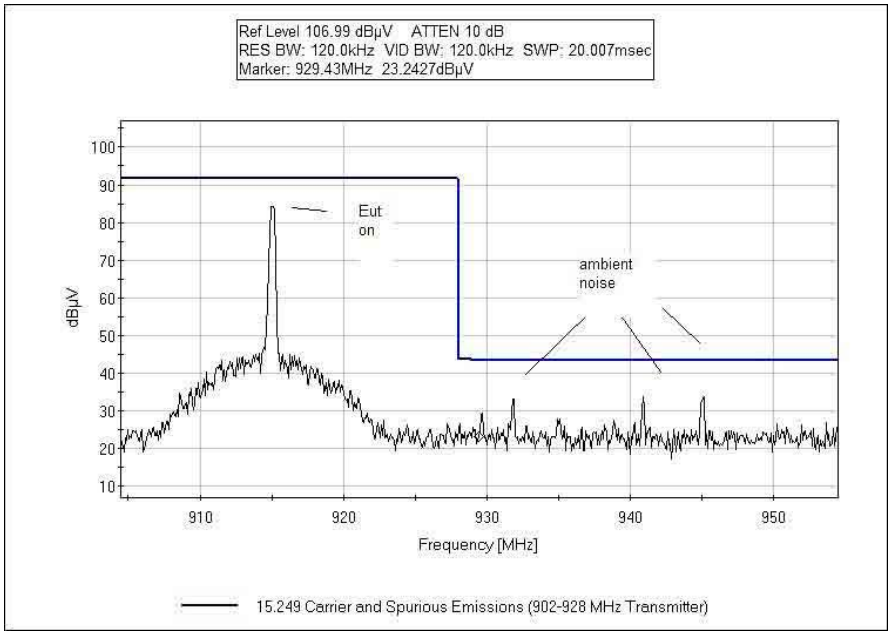
DIMMER, LEFT TX ON



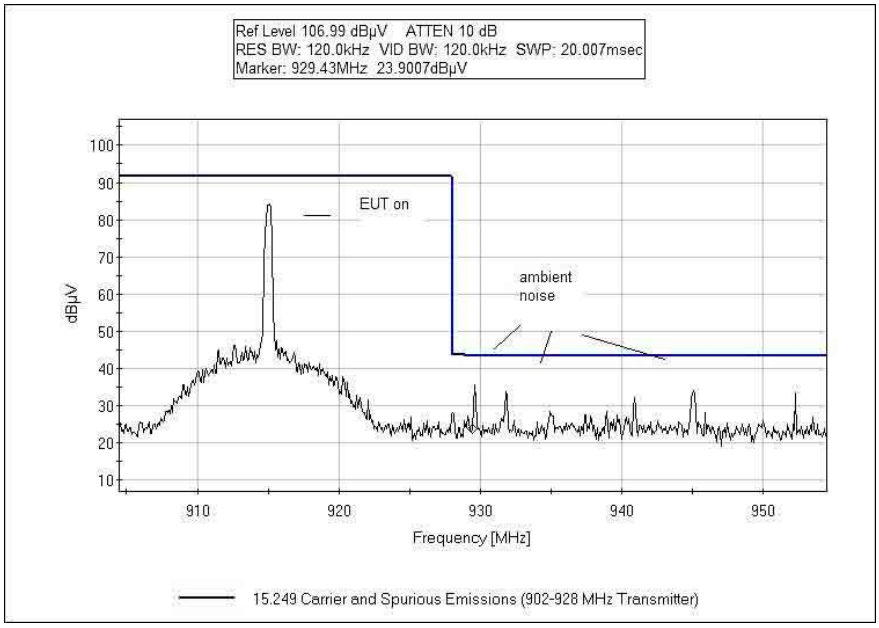
DIMMER, LEFT TX OFF



DIMMER, CENTER



DIMMER, RIGHT TX ON



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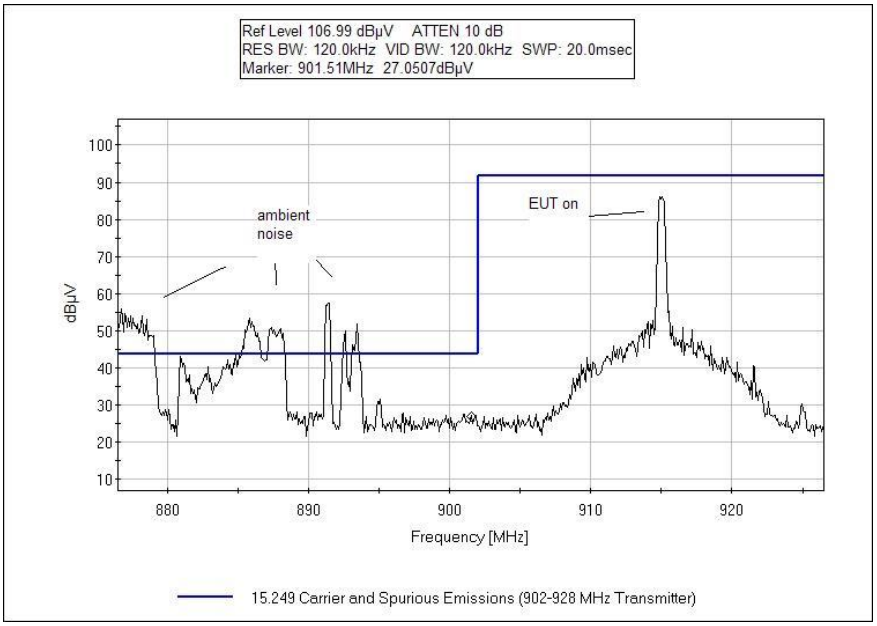

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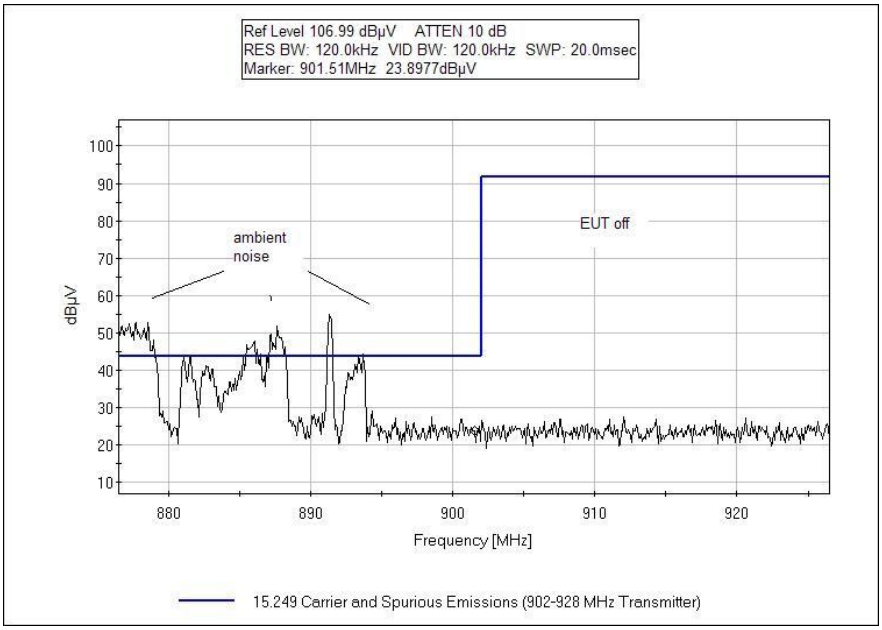

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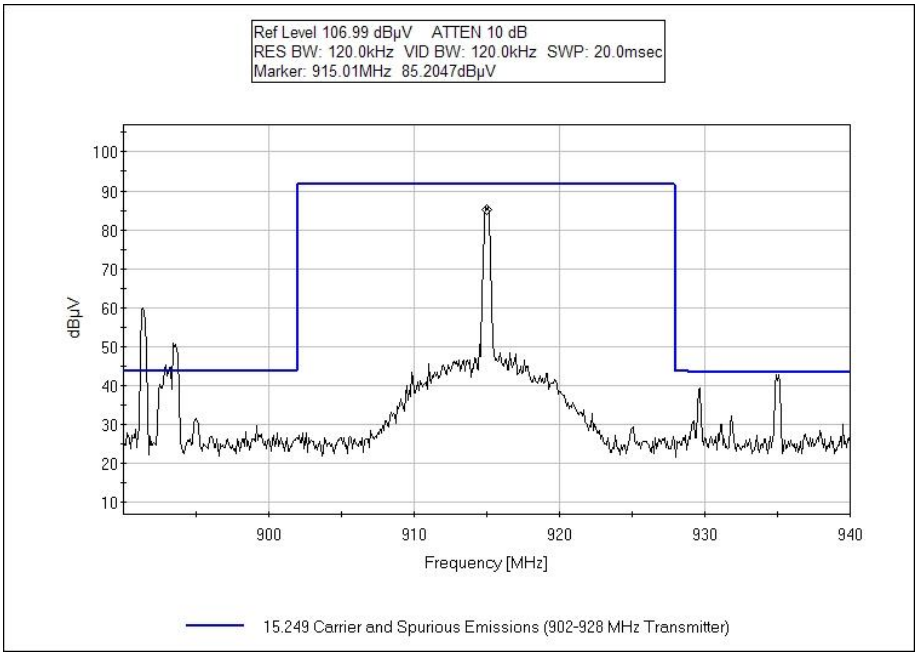
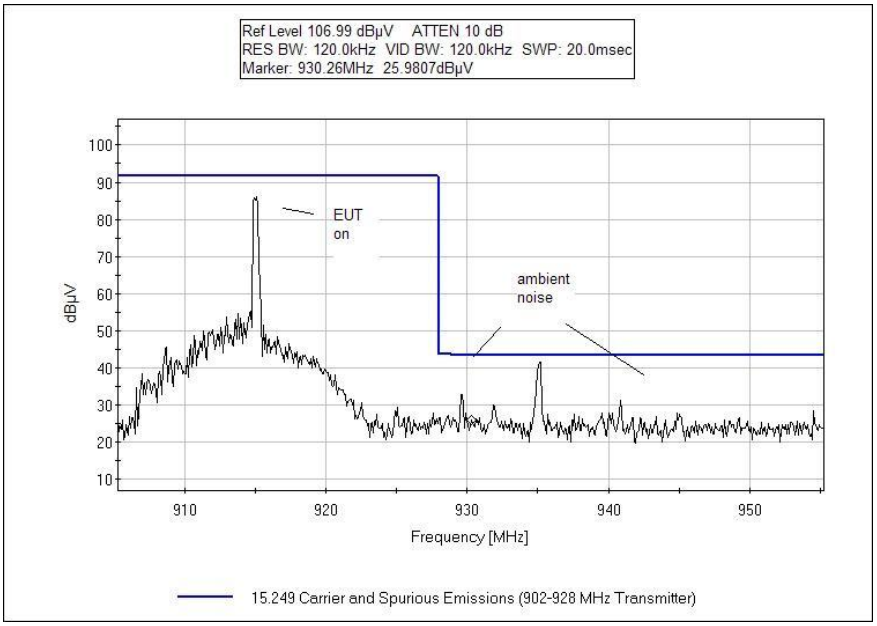


RELAY, CENTER



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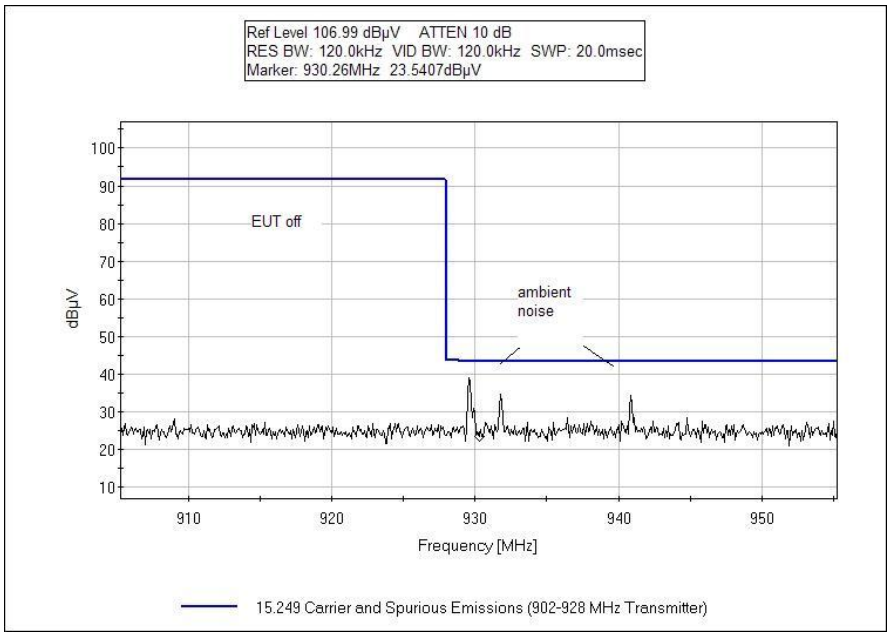
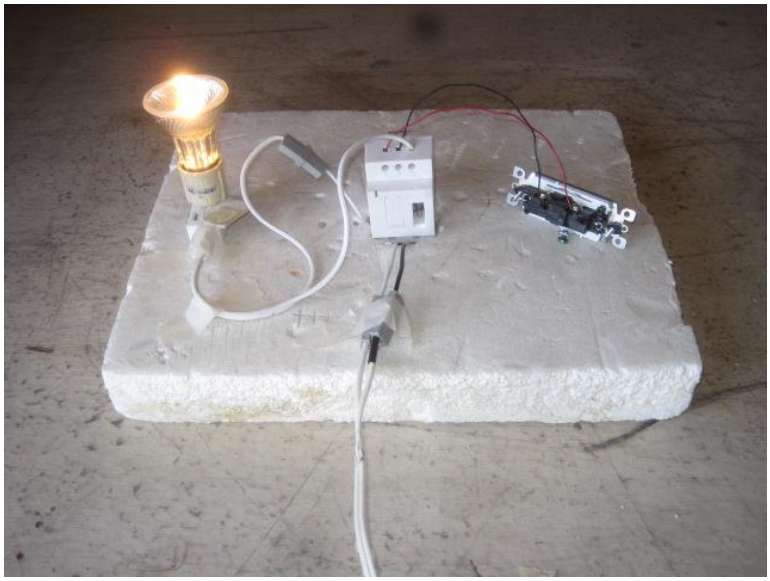
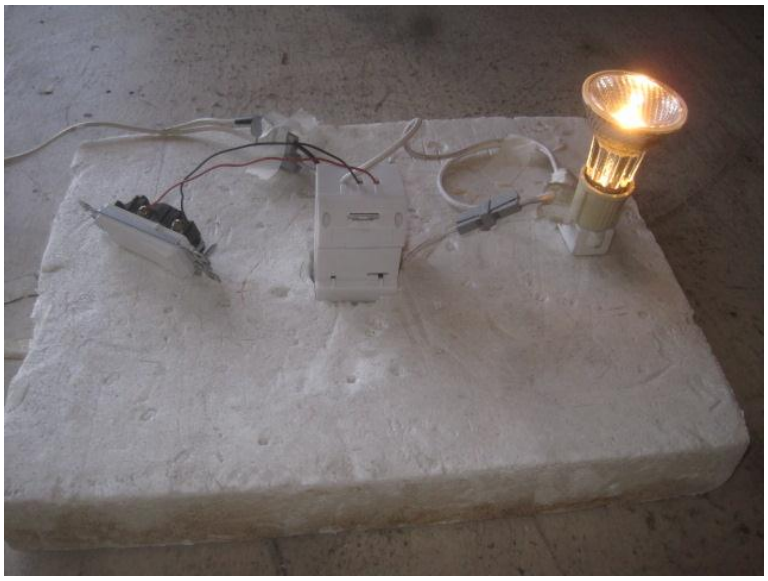


RELAY, RIGHT TX OFF

Test Setup Photos



DIMMER & RELAY



DIMMER & RELAY

15.249(d) Radiated Spurious Emissions

Test Data Sheets

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **SmartLabs, Inc.**
Specification: **15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)**
Work Order #: **93084** Date: 6/13/2012
Test Type: **Maximized Emissions** Time: 15:06:07
Equipment: **DIN Rail Module Dimmer** Sequence#: 13
Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen
Model: 24522
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00309	Preamp	8447D	3/29/2012	3/29/2014
T2	ANP05050	Cable	RG223/U	3/21/2011	3/21/2013
T3	ANP05198	Cable	8268	12/21/2010	12/21/2012
T4	AN01995	Biconilog Antenna	CBL6111C	5/16/2012	5/16/2014
T5	AN02672	Spectrum Analyzer	E4446A	8/9/2010	8/9/2012
T6	AN01646	Horn Antenna	3115	4/13/2012	4/13/2014
T7	AN03239	Cable	32022-2-29094K-24TC	8/30/2011	8/30/2013
T8	ANP05421	Cable	Sucoflex 104A	2/8/2012	2/8/2014
T9	ANP06081	Cable	L1-PNMNM-48	4/28/2011	4/28/2013
T10	AN03169	High Pass Filter	HM1155-11SS	9/22/2011	9/22/2013
T11	AN00786	Preamp	83017A	8/5/2010	8/5/2012
	AN00314	Loop Antenna	6502	6/30/2010	6/30/2012

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

Function	Manufacturer	Model #	S/N
DIN Rail Module Dimmer*	SmartLabs, Inc.	24522	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Switcher	Leviton	S02-5601-2WS	078477104163
Light bulb fixture	Sylvania	Hi Spot 63 Halogen	R42-61-W

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 connected to light fixture which is turned on constantly. Sense port is connected to switcher.
The EUT is set in constant transmit mode.

TX freq = 914.5-915.5 MHz

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.

Test environment conditions: 20°C, 42% relative humidity, 100kPa

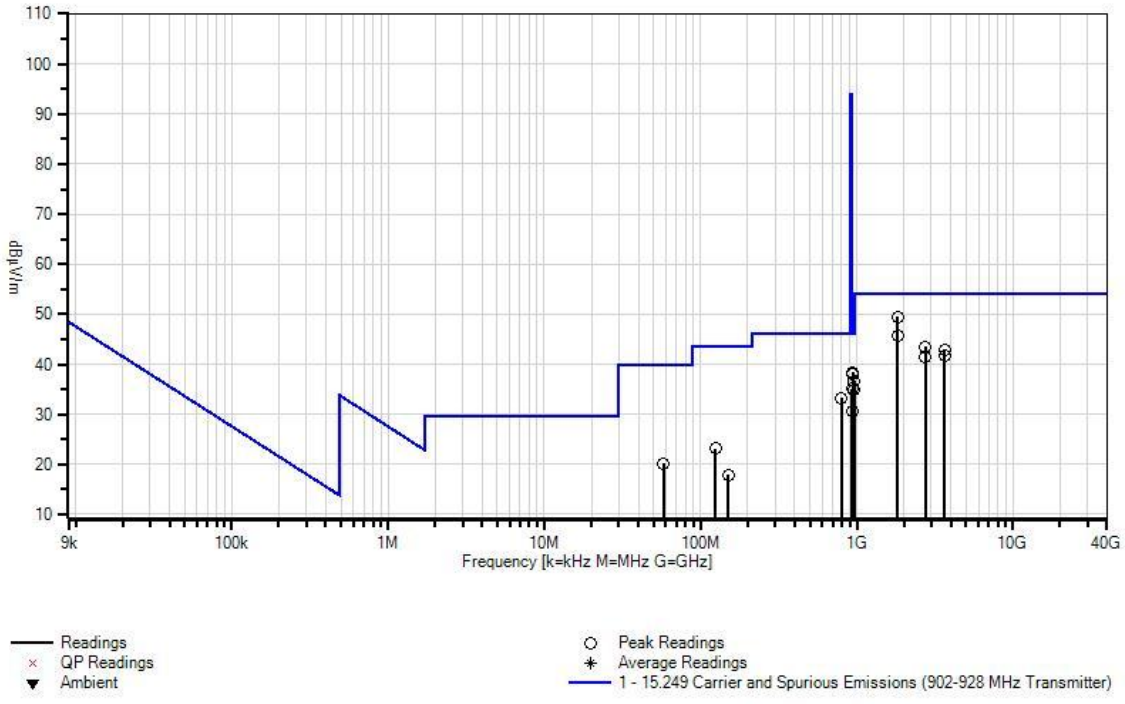
Ext Attn: 0 Db

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

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
			T5	T6	T7	T8					
			T9	T10	T11						
	MHz	DbµV	Db	Db	Db	Db	Table	DbµV/m	DbµV/m	Db	Ant
1	1829.992M	55.2	+0.0	+0.0	+0.0	+0.0	+0.0	49.4	54.0	-4.6	Vert
			+0.0	+27.8	+0.3	+1.1					
			+2.8	+0.4	-38.2						
2	945.091M	35.9	-27.3	+0.5	+5.9	+23.4	+0.0	38.4	46.0	-7.6	Horiz
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
3	945.067M	35.6	-27.3	+0.5	+5.9	+23.4	+0.0	38.1	46.0	-7.9	Vert
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
4	1830.042M	51.4	+0.0	+0.0	+0.0	+0.0	+0.0	45.6	54.0	-8.4	Horiz
			+0.0	+27.8	+0.3	+1.1					
			+2.8	+0.4	-38.2						
5	955.117M	34.0	-27.3	+0.5	+5.9	+23.5	+0.0	36.6	46.0	-9.4	Vert
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
6	2745.042M	47.1	+0.0	+0.0	+0.0	+0.0	+0.0	43.5	54.0	-10.5	Vert
			+0.0	+28.7	+0.4	+1.4					
			+3.4	+0.3	-37.8						
7	935.098M	32.5	-27.3	+0.5	+5.9	+23.4	+0.0	35.1	46.0	-11.0	Horiz
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
8	3660.042M	43.4	+0.0	+0.0	+0.0	+0.0	+0.0	42.9	54.0	-11.1	Vert
			+0.0	+30.4	+0.4	+1.6					
			+4.2	+0.3	-37.4						
9	3660.042M	42.1	+0.0	+0.0	+0.0	+0.0	+0.0	41.6	54.0	-12.4	Horiz
			+0.0	+30.4	+0.4	+1.6					
			+4.2	+0.3	-37.4						
10	2745.042M	44.9	+0.0	+0.0	+0.0	+0.0	+0.0	41.3	54.0	-12.7	Horiz
			+0.0	+28.7	+0.4	+1.4					
			+3.4	+0.3	-37.8						

11	794.946M	32.0	-27.3 +0.0 +0.0	+0.6 +0.0 +0.0	+5.4 +0.0 +0.0	+22.5 +0.0	+0.0	33.2	46.0	-12.8	Horiz
12	934.967M	28.0	-27.3 +0.0 +0.0	+0.5 +0.0 +0.0	+5.9 +0.0 +0.0	+23.4 +0.0	+0.0	30.5	46.0	-15.5	Vert
13	964.917M	34.0	-27.3 +0.0 +0.0	+0.5 +0.0 +0.0	+6.0 +0.0 +0.0	+23.5 +0.0	+0.0	36.7	54.0	-17.3	Vert
14	964.962M	32.3	-27.3 +0.0 +0.0	+0.5 +0.0 +0.0	+6.0 +0.0 +0.0	+23.5 +0.0	+0.0	35.0	54.0	-19.0	Horiz
15	57.792M	40.5	-28.1 +0.0 +0.0	+0.1 +0.0 +0.0	+1.3 +0.0 +0.0	+6.4 +0.0	+0.0	20.2	40.0	-19.8	Vert
16	124.346M	37.4	-28.0 +0.0 +0.0	+0.2 +0.0 +0.0	+1.9 +0.0 +0.0	+11.6 +0.0	+0.0	23.1	43.5	-20.4	Horiz
17	150.571M	32.7	-27.9 +0.0 +0.0	+0.1 +0.0 +0.0	+2.1 +0.0 +0.0	+10.9 +0.0	+0.0	17.9	43.5	-25.6	Vert

CKC Laboratories, Inc. Date: 6/13/2012 Time: 15:06:07 SmartLabs, Inc. WO#: 93084
15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter) Test Distance: 3 Meters Sequence#: 13 Ext
ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **SmartLabs, Inc.**
Specification: **15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)**
Work Order #: **93084** Date: 6/14/2012
Test Type: **Maximized Emissions** Time: 14:11:26
Equipment: **DIN Rail Module Relay** Sequence#: 14
Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen
Model: 24532
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00309	Preamp	8447D	3/29/2012	3/29/2014
T2	ANP05050	Cable	RG223/U	3/21/2011	3/21/2013
T3	ANP05198	Cable	8268	12/21/2010	12/21/2012
T4	AN01995	Biconilog Antenna	CBL6111C	5/16/2012	5/16/2014
	AN02672	Spectrum Analyzer	E4446A	8/9/2010	8/9/2012
T5	AN01646	Horn Antenna	3115	4/13/2012	4/13/2014
T6	AN03239	Cable	32022-2-29094K-24TC	8/30/2011	8/30/2013
T7	ANP05421	Cable	Sucoflex 104A	2/8/2012	2/8/2014
T8	ANP06081	Cable	L1-PNMNM-48	4/28/2011	4/28/2013
T9	AN03169	High Pass Filter	HM1155-11SS	9/22/2011	9/22/2013
T10	AN00786	Preamp	83017A	8/5/2010	8/5/2012
	AN00314	Loop Antenna	6502	6/30/2010	6/30/2012

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

Function	Manufacturer	Model #	S/N
DIN Rail Module Relay*	SmartLabs, Inc.	24532	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Switcher	Leviton	S02-5601-2WS	078477104163
Light bulb fixture	Sylvania	Hi Spot 63 Halogen	R42-61-W

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 connected to light fixture which is turned on constantly. Sense port is connected to switcher.
The EUT is set in constant transmit mode.

TX freq = 914.5-915.5 MHz

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.
Test environment conditions: 20°C, 42% relative humidity, 100kPa

Ext Attn: 0 Db

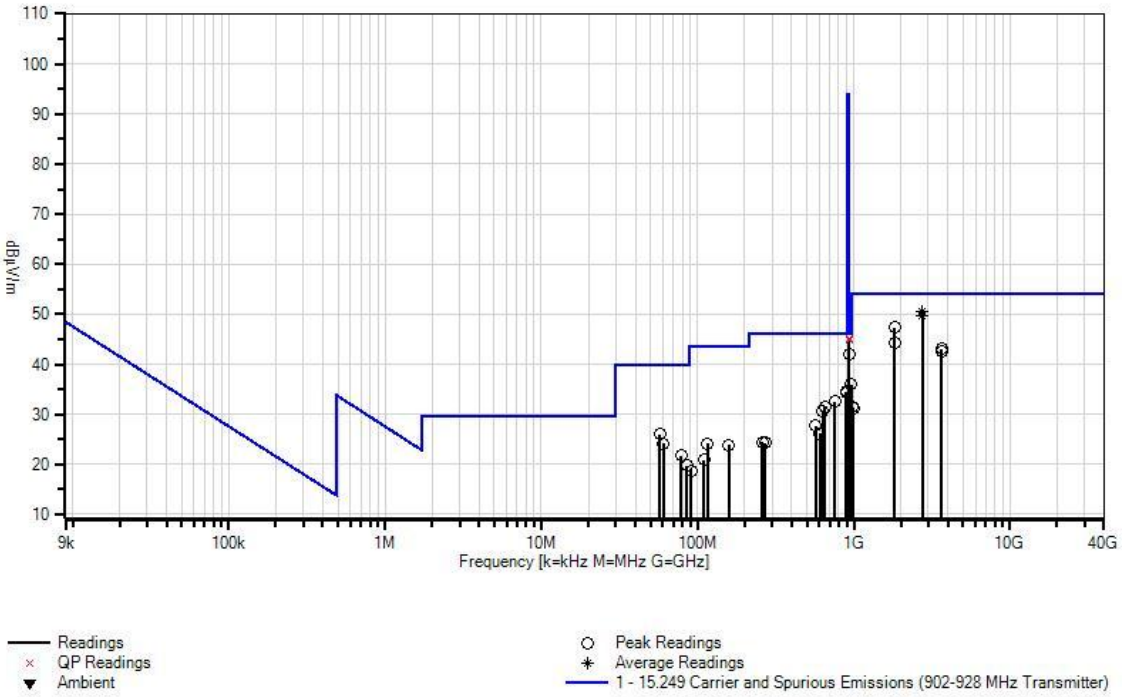
Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5 T9	T2 T6 T10	T3 T7	T4 T8	Dist	Corr	Spec	Margin	Polar
	MHz	DbµV	Db	Db	Db	Db	Table	DbµV/m	DbµV/m	Db	Ant
1	935.083M QP	42.6	-27.3 +0.0 +0.0	+0.5 +0.0 +0.0	+5.9 +0.0	+23.4 +0.0	+0.0	45.1	46.0	-0.9	Horiz
^	935.083M	43.0	-27.3 +0.0 +0.0	+0.5 +0.0 +0.0	+5.9 +0.0	+23.4 +0.0	+0.0	45.5	46.0	-0.5	Horiz
3	934.933M QP	42.4	-27.3 +0.0 +0.0	+0.5 +0.0 +0.0	+5.9 +0.0	+23.4 +0.0	+0.0	44.9	46.0	-1.1	Horiz
^	934.933M	43.2	-27.3 +0.0 +0.0	+0.5 +0.0 +0.0	+5.9 +0.0	+23.4 +0.0	+0.0	45.7	46.0	-0.3	Horiz
5	2745.000M Ave	54.0	+0.0 +28.7 +0.3	+0.0 +0.4 -37.8	+0.0 +1.4	+0.0 +3.4	+0.0	50.4	54.0	-3.6	Vert
^	2745.000M	56.6	+0.0 +28.7 +0.3	+0.0 +0.4 -37.8	+0.0 +1.4	+0.0 +3.4	+0.0	53.0	54.0	-1.0	Vert
7	934.930M	39.6	-27.3 +0.0 +0.0	+0.5 +0.0 +0.0	+5.9 +0.0	+23.4 +0.0	+0.0	42.1	46.0	-3.9	Vert
8	935.090M	39.5	-27.3 +0.0 +0.0	+0.5 +0.0 +0.0	+5.9 +0.0	+23.4 +0.0	+0.0	42.0	46.0	-4.0	Vert
9	2745.000M Ave	53.3	+0.0 +28.7 +0.3	+0.0 +0.4 -37.8	+0.0 +1.4	+0.0 +3.4	+0.0	49.7	54.0	-4.3	Horiz
^	2745.000M	55.6	+0.0 +28.7 +0.3	+0.0 +0.4 -37.8	+0.0 +1.4	+0.0 +3.4	+0.0	52.0	54.0	-2.0	Horiz
11	1830.000M	53.2	+0.0 +27.8 +0.4	+0.0 +0.3 -38.2	+0.0 +1.1	+0.0 +2.8	+0.0	47.4	54.0	-6.6	Vert
12	1830.000M	50.2	+0.0 +27.8 +0.4	+0.0 +0.3 -38.2	+0.0 +1.1	+0.0 +2.8	+0.0	44.4	54.0	-9.6	Horiz
13	3660.100M	43.6	+0.0 +30.4 +0.3	+0.0 +0.4 -37.4	+0.0 +1.6	+0.0 +4.2	+0.0	43.1	54.0	-10.9	Horiz
14	3660.000M	43.1	+0.0 +30.4 +0.3	+0.0 +0.4 -37.4	+0.0 +1.6	+0.0 +4.2	+0.0	42.6	54.0	-11.4	Vert
15	894.958M	32.3	-27.2 +0.0 +0.0	+0.5 +0.0 +0.0	+5.8 +0.0	+23.2 +0.0	+0.0	34.6	46.0	-11.4	Horiz

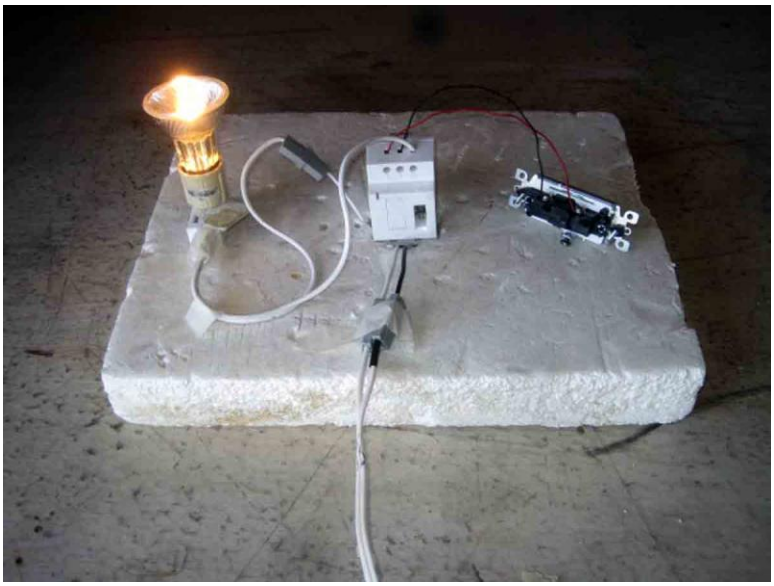
16	895.083M	32.1	-27.2 +0.0 +0.0	+0.5 +0.0 +0.0	+5.8 +0.0	+23.2 +0.0	+0.0	34.4	46.0	-11.6	Horiz
17	760.000M	32.2	-27.2 +0.0 +0.0	+0.4 +0.0 +0.0	+5.2 +0.0	+21.9 +0.0	+0.0	32.5	46.0	-13.5	Vert
18	57.120M	46.2	-28.1 +0.0 +0.0	+0.1 +0.0 +0.0	+1.3 +0.0	+6.5 +0.0	+0.0	26.0	40.0	-14.0	Vert
19	649.970M	33.3	-27.2 +0.0 +0.0	+0.4 +0.0 +0.0	+4.8 +0.0	+20.3 +0.0	+0.0	31.6	46.0	-14.4	Vert
20	630.005M	32.8	-27.3 +0.0 +0.0	+0.4 +0.0 +0.0	+4.7 +0.0	+20.1 +0.0	+0.0	30.7	46.0	-15.3	Vert
21	60.370M	45.1	-28.1 +0.0 +0.0	+0.1 +0.0 +0.0	+1.3 +0.0	+5.8 +0.0	+0.0	24.2	40.0	-15.8	Vert
22	964.933M	33.3	-27.3 +0.0 +0.0	+0.5 +0.0 +0.0	+6.0 +0.0	+23.5 +0.0	+0.0	36.0	54.0	-18.0	Horiz
23	78.170M	41.1	-28.1 +0.0 +0.0	+0.1 +0.0 +0.0	+1.5 +0.0	+7.2 +0.0	+0.0	21.8	40.0	-18.2	Vert
24	567.105M	31.3	-27.5 +0.0 +0.0	+0.4 +0.0 +0.0	+4.4 +0.0	+19.1 +0.0	+0.0	27.7	46.0	-18.3	Vert
25	115.455M	38.8	-28.0 +0.0 +0.0	+0.2 +0.0 +0.0	+1.8 +0.0	+11.3 +0.0	+0.0	24.1	43.5	-19.4	Vert
26	159.110M	39.0	-27.9 +0.0 +0.0	+0.1 +0.0 +0.0	+2.2 +0.0	+10.5 +0.0	+0.0	23.9	43.5	-19.6	Horiz
27	609.905M	28.6	-27.4 +0.0 +0.0	+0.4 +0.0 +0.0	+4.6 +0.0	+19.9 +0.0	+0.0	26.1	46.0	-19.9	Vert
28	85.820M	37.8	-28.1 +0.0 +0.0	+0.1 +0.0 +0.0	+1.6 +0.0	+8.3 +0.0	+0.0	19.7	40.0	-20.3	Vert
29	260.005M	36.7	-27.8 +0.0 +0.0	+0.2 +0.0 +0.0	+2.8 +0.0	+12.6 +0.0	+0.0	24.5	46.0	-21.5	Vert
30	270.005M	36.3	-27.9 +0.0 +0.0	+0.3 +0.0 +0.0	+2.9 +0.0	+12.7 +0.0	+0.0	24.3	46.0	-21.7	Vert
31	975.083M	28.4	-27.3 +0.0 +0.0	+0.6 +0.0 +0.0	+6.1 +0.0	+23.6 +0.0	+0.0	31.4	54.0	-22.6	Horiz

32	110.405M	36.1	-28.0 +0.0 +0.0	+0.1 +0.0 +0.0	+1.8 +0.0	+10.9 +0.0	+0.0	20.9	43.5	-22.6	Vert
33	995.083M	28.0	-27.3 +0.0 +0.0	+0.6 +0.0 +0.0	+6.2 +0.0	+23.7 +0.0	+0.0	31.2	54.0	-22.8	Horiz
34	90.510M	36.1	-28.1 +0.0 +0.0	+0.1 +0.0 +0.0	+1.6 +0.0	+9.0 +0.0	+0.0	18.7	43.5	-24.8	Vert

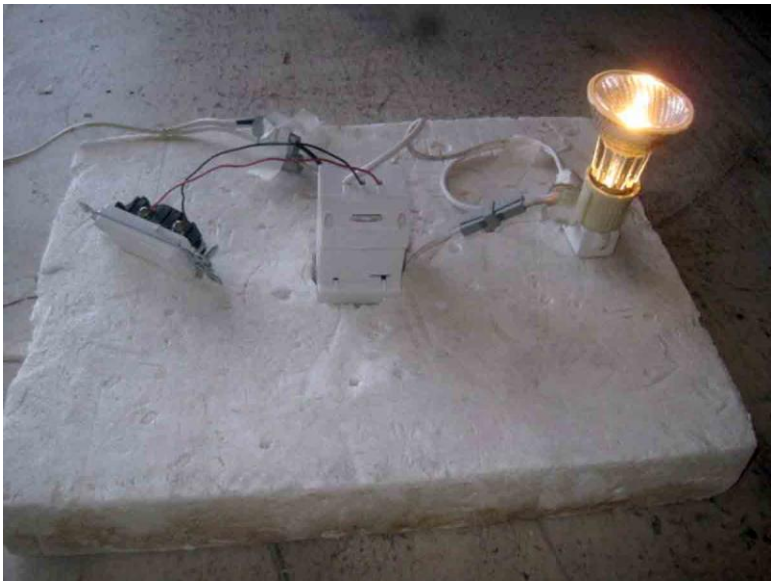
CKC Laboratories, Inc. Date: 6/14/2012 Time: 14:11:26 SmartLabs, Inc. WO#: 93084
15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter) Test Distance: 3 Meters Sequence#: 14 Ext ATTN: 0 dB



Test Setup Photos



DIMMER & RELAY



DIMMER & RELAY

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.