

SmartLabs, Inc.

TEST REPORT FOR

120-277V Heavy-Duty RF InLine Switch, 4773

Tested To The Following Standards:

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

Report No.: 91847-2

Date of issue: May 9, 2011



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

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

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Test Report Information

REPORT PREPARED FOR:

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

Representative: John Lockyer
Customer Reference Number: 11-3JL0411

DATE OF EQUIPMENT RECEIPT:

DATE(S) OF TESTING:

REPORT PREPARED BY:

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

Project Number: 91847

April 27, 2011

April 27-29, 2011

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 #	JAPAN	CANADA	FCC
Brea A	US0060	R-2945, C-3248 & T-1572	3082D-1	90473

SUMMARY OF RESULTS

Standard / Specification: FCC Part 15 Subpart C 15.207, 15.249 and RSS-210 Issue 8

Description	Test Procedure/Method	Results
Voltage Variation on Power	FCC Part 15 Subpart C Section 15.31(e)	Pass
AC Mains Conducted Emissions	FCC Part 15 Subpart C Section 15.207 / ANSI C63.4 (2003)	Pass
Field Strength of Harmonics	FCC Part 15 Subpart C Section 15.249(a)	Pass
-20dBc Occupied Bandwidth	FCC Part 15 Subpart C Section 2.1049	Pass
Bandedge	FCC Part 15 Subpart C	Pass
Field Strength of Spurious Emissions	FCC Part 15 Subpart C Section 15.249(d) / 15.209	Pass
99% Bandwidth	RSS-210 Issue 8	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

120-277V Heavy-Duty RF InLine Switch

Manuf: SmartLabs, Inc.

Model: 4773

Serial: NA

PERIPHERAL DEVICES

The EUT was not tested with peripheral devices.

FCC PART 15 SUBPART C

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

15.31(e) Voltage Variation on Power

Test Conditions / Setup

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

Customer: **SmartLabs, Inc.**

Specification: **FCC 15.31(e)**

Work Order #: **91847**

Date: 4/29/2011

Test Type: **Radiated Scan**

Time: 09:36:55

Equipment: **120-277V Heavy-Duty RF InLine Switch**

Sequence#: 1

Manufacturer: SmartLabs, Inc.

Tested By: Don Nguyen

Model: 4773

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	AN00309	Preamp	8447D	5/7/2010	5/7/2012
T2	AN01995	Biconilog Antenna	CBL6111C	3/8/2010	3/8/2012
T3	ANP05050	Cable	RG223/U	3/21/2011	3/21/2013
T4	ANP05198	Cable	8268	12/21/2010	12/21/2012

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
120-277V Heavy-Duty RF InLine Switch	SmartLabs, Inc.	4773	NA

Support Devices:

Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

The EUT is placed on the wooden table lined with Styrofoam of 10 cm thickness. Orientated in normal operating position, the EUT is set in constant transmit mode. No load is connected to the EUT for evaluation of RF parameter.

EUT uses AC power.

914.9 - 915.1MHz

TX freq = 914.9 - 915.1MHz

Frequency range of measurement = 914.9 - 915.1MHz

30 MHz-1000 MHz; 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 (110- 240Vac) , no change in the Fundamental signal level was observed.

16°C, 69% Relative Humidity

Test Setup Photos



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 #: **91847** Date: 4/29/2011
 Test Type: **Conducted Emissions** Time: 13:49:45
 Equipment: **120-277V Heavy-Duty RF InLine Switch** Sequence#: 3
 Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen
 Model: 4773 110V 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	ANP04358	Cable	RG142	5/7/2010	5/7/2012
T3	AN02610	High Pass Filter	HE9615-150K-50-720B	11/16/2009	11/16/2011
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
120-277V Heavy-Duty RF InLine Switch	SmartLabs, Inc.	4773	NA

Support Devices:

Function	Manufacturer	Model #	S/N
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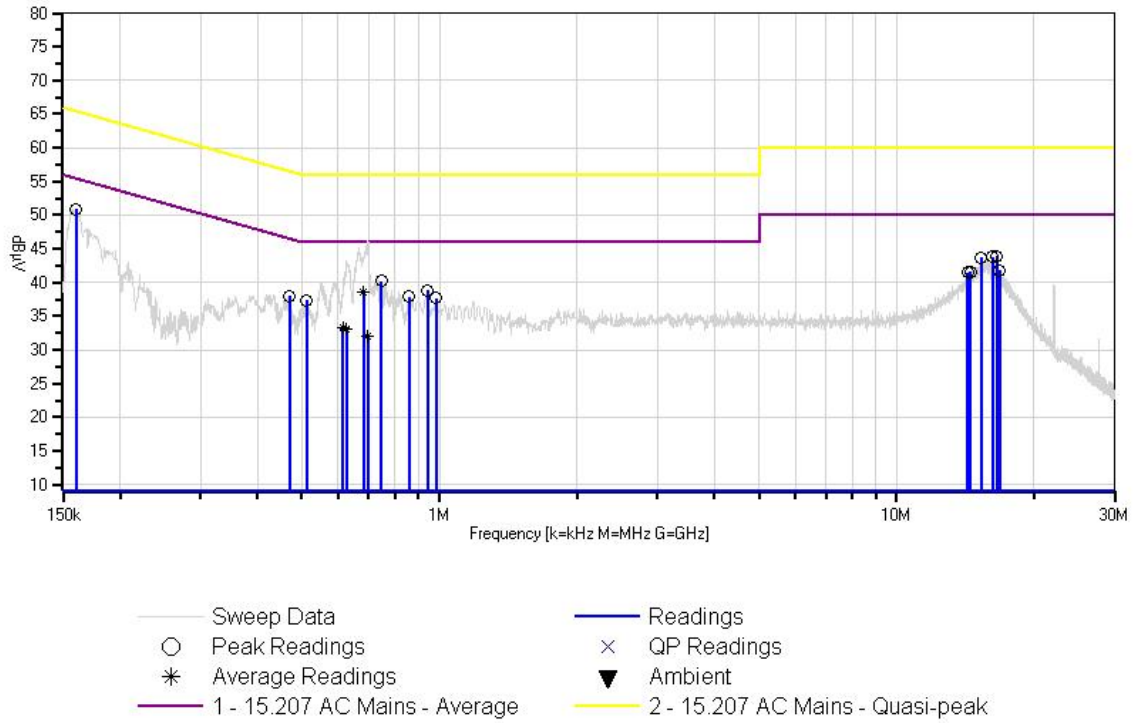
Test Conditions / Notes:

The EUT is placed on the wooden table lined with Styrofoam of 10 cm thickness. Orientated in normal operating position, the EUT is set in constant transmit mode. No load is connected to the EUT for evaluation of RF parameter.
 EUT uses AC power.
 914.9 - 915.1MHz
 TX freq = 914.9 - 915.1MHz
 Frequency range of measurement = 15kHz- 30Mhz.
 150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz
 16°C, 69% Relative Humidity

Ext Attn: 0 dB

Measurement Data:		Reading listed by margin.						Test Lead: Black				
#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V	Spec dB μ V	Margin dB	Polar Ant	
1	160.181k	44.6	+5.8	+0.1	+0.4	+0.0	+0.0	50.9	55.5	-4.6	Black	
2	744.855k	34.1	+5.8	+0.1	+0.2	+0.0	+0.0	40.2	46.0	-5.8	Black	
3	16.589M	36.7	+5.8	+0.3	+0.2	+0.9	+0.0	43.9	50.0	-6.1	Black	
4	16.202M	36.6	+5.8	+0.3	+0.2	+0.9	+0.0	43.8	50.0	-6.2	Black	
5	15.310M	36.6	+5.8	+0.3	+0.2	+0.8	+0.0	43.7	50.0	-6.3	Black	
6	940.996k	32.7	+5.8	+0.1	+0.2	+0.0	+0.0	38.8	46.0	-7.2	Black	
7	681.136k	32.4	+5.8	+0.1	+0.3	+0.0	+0.0	38.6	46.0	-7.4	Black	
	Ave											
8	858.299k	31.8	+5.8	+0.1	+0.2	+0.0	+0.0	37.9	46.0	-8.1	Black	
9	16.806M	34.6	+5.8	+0.3	+0.2	+0.9	+0.0	41.8	50.0	-8.2	Black	
10	983.523k	31.6	+5.8	+0.1	+0.2	+0.0	+0.0	37.7	46.0	-8.3	Black	
11	14.508M	34.5	+5.8	+0.3	+0.2	+0.8	+0.0	41.6	50.0	-8.4	Black	
12	469.243k	31.9	+5.7	+0.1	+0.3	+0.0	+0.0	38.0	46.5	-8.5	Black	
13	14.319M	34.4	+5.8	+0.3	+0.2	+0.8	+0.0	41.5	50.0	-8.5	Black	
14	512.149k	31.3	+5.7	+0.1	+0.3	+0.0	+0.0	37.4	46.0	-8.6	Black	
15	614.593k	27.1	+5.8	+0.1	+0.3	+0.0	+0.0	33.3	46.0	-12.7	Black	
	Ave											
16	625.593k	26.9	+5.8	+0.1	+0.3	+0.0	+0.0	33.1	46.0	-12.9	Black	
	Ave											
^	625.593k	37.0	+5.8	+0.1	+0.3	+0.0	+0.0	43.2	46.0	-2.8	Black	
18	697.586k	25.8	+5.8	+0.1	+0.3	+0.0	+0.0	32.0	46.0	-14.0	Black	
	Ave											
^	697.586k	40.1	+5.8	+0.1	+0.3	+0.0	+0.0	46.3	46.0	+0.3	Black	

CKC Laboratories, Inc. Date: 4/29/2011 Time: 13:49:45 SmartLabs, Inc. WO#: 91847
 15.207 AC Mains - Average Test Lead: Black 110V 60Hz Sequence#: 3 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 #: **91847** Date: 4/29/2011
 Test Type: **Conducted Emissions** Time: 13:57:11
 Equipment: **120-277V Heavy-Duty RF InLine Switch** Sequence#: 4
 Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen
 Model: 4773 110V 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	ANP04358	Cable	RG142	5/7/2010	5/7/2012
T3	AN02610	High Pass Filter	HE9615-150K-50-720B	11/16/2009	11/16/2011
	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
120-277V Heavy-Duty RF InLine Switch	SmartLabs, Inc.	4773	NA

Support Devices:

Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

The EUT is placed on the wooden table lined with Styrofoam of 10 cm thickness. Orientated in normal operating position, the EUT is set in constant transmit mode. No load is connected to the EUT for evaluation of RF parameter.
 EUT uses AC power.
 914.9 - 915.1MHz
 TX freq = 914.9 - 915.1MHz
 Frequency range of measurement = 15kHz- 30Mhz.
 150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz
 16°C, 69% Relative Humidity

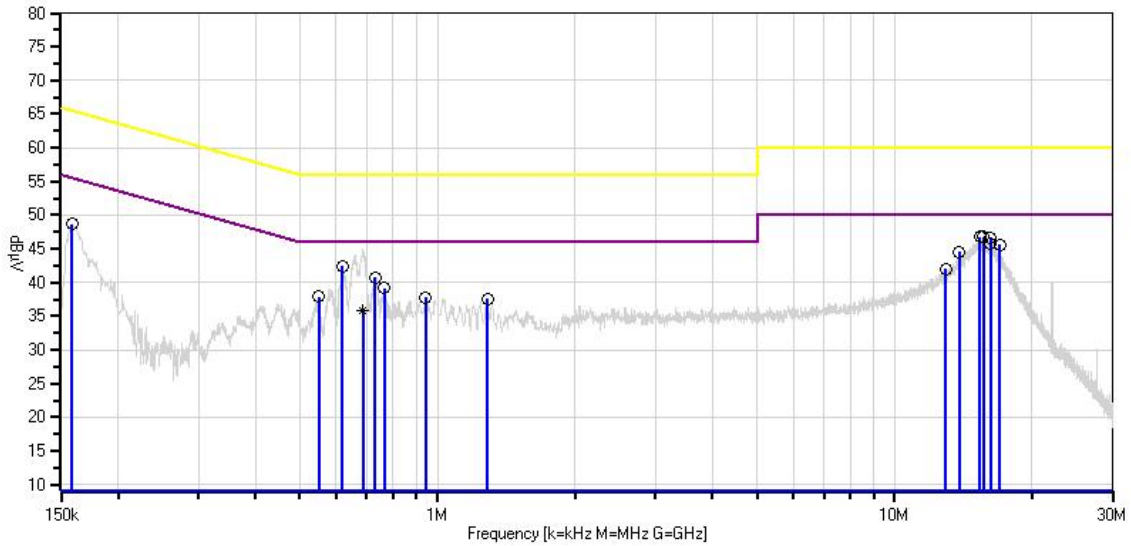
Ext Attn: 0 dB

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

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V	Spec dB μ V	Margin dB	Polar Ant
1	15.382M	39.5	+5.8	+0.3	+0.2	+1.0	+0.0	46.8	50.0	-3.2	White
2	15.643M	39.5	+5.8	+0.3	+0.2	+1.0	+0.0	46.8	50.0	-3.2	White
3	16.211M	39.4	+5.8	+0.3	+0.2	+1.0	+0.0	46.7	50.0	-3.3	White

4	619.047k	36.2	+5.8	+0.1	+0.3	+0.0	+0.0	42.4	46.0	-3.6	White
5	16.247M	38.4	+5.8	+0.3	+0.2	+1.0	+0.0	45.7	50.0	-4.3	White
6	16.995M	38.3	+5.8	+0.3	+0.2	+1.0	+0.0	45.6	50.0	-4.4	White
7	729.582k	34.7	+5.8	+0.1	+0.2	+0.0	+0.0	40.8	46.0	-5.2	White
8	13.833M	37.4	+5.8	+0.3	+0.1	+0.9	+0.0	44.5	50.0	-5.5	White
9	158.725k	42.2	+5.8	+0.1	+0.6	+0.0	+0.0	48.7	55.5	-6.8	White
10	764.488k	33.1	+5.8	+0.1	+0.2	+0.0	+0.0	39.2	46.0	-6.8	White
11	12.950M	35.0	+5.8	+0.3	+0.1	+0.8	+0.0	42.0	50.0	-8.0	White
12	549.962k	31.7	+5.8	+0.1	+0.3	+0.0	+0.0	37.9	46.0	-8.1	White
13	940.996k	31.7	+5.8	+0.1	+0.2	+0.0	+0.0	37.8	46.0	-8.2	White
14	1.285M	31.4	+5.8	+0.1	+0.2	+0.1	+0.0	37.6	46.0	-8.4	White
15	685.950k Ave	29.7	+5.8	+0.1	+0.3	+0.0	+0.0	35.9	46.0	-10.1	White
^	685.950k	38.8	+5.8	+0.1	+0.3	+0.0	+0.0	45.0	46.0	-1.0	White

CKC Laboratories, Inc. Date: 4/29/2011 Time: 13:57:11 SmartLabs, Inc. WO#: 91847
 15.207 AC Mains - Average Test Lead: White 110V 60Hz Sequence#: 4 Ext ATTN: 0 dB



- Sweep Data
- Peak Readings
- * Average Readings
- 1 - 15.207 AC Mains - Average
- Readings
- × QP Readings
- ▼ Ambient
- 2 - 15.207 AC Mains - Quasi-peak

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 #: **91847** Date: 4/29/2011
 Test Type: **Conducted Emissions** Time: 14:13:08
 Equipment: **120-277V Heavy-Duty RF InLine Switch** Sequence#: 6
 Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen
 Model: 4773 240V 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	ANP04358	Cable	RG142	5/7/2010	5/7/2012
T3	AN02610	High Pass Filter	HE9615-150K-50-720B	11/16/2009	11/16/2011
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
120-277V Heavy-Duty RF InLine Switch	SmartLabs, Inc.	4773	NA

Support Devices:

Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

The EUT is placed on the wooden table lined with Styrofoam of 10 cm thickness. Orientated in normal operating position, the EUT is set in constant transmit mode. No load is connected to the EUT for evaluation of RF parameter.
 EUT uses AC power.
 914.9 - 915.1MHz
 TX freq = 914.9 - 915.1MHz
 Frequency range of measurement = 15kHz- 30Mhz.
 150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz
 16°C, 69% Relative Humidity

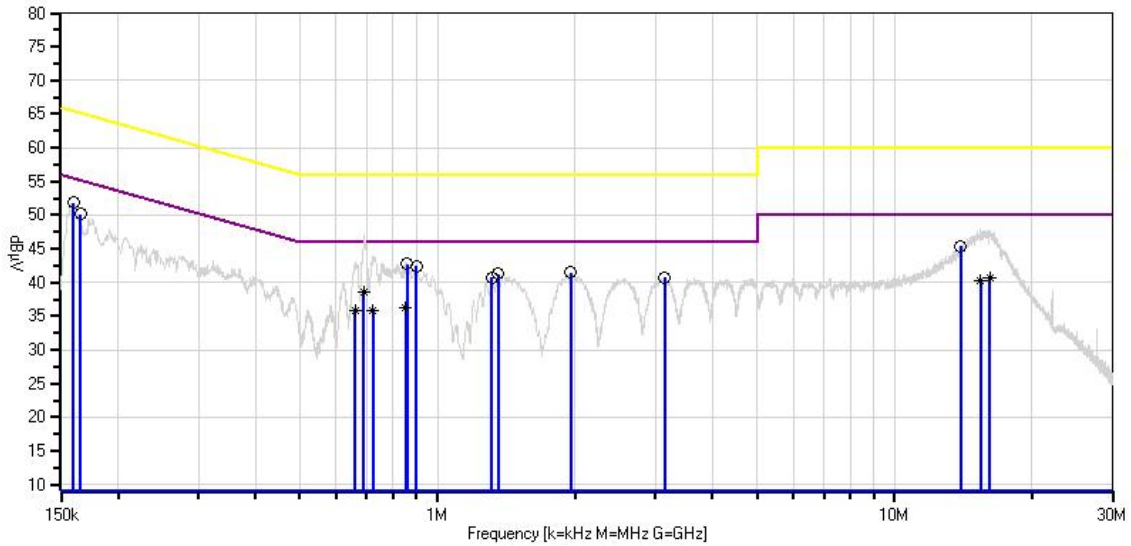
Ext Attn: 0 dB

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

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V	Spec dB μ V	Margin dB	Polar Ant
1	857.571k	36.7	+5.8	+0.1	+0.2	+0.0	+0.0	42.8	46.0	-3.2	Black
2	898.469k	36.3	+5.8	+0.1	+0.2	+0.0	+0.0	42.4	46.0	-3.6	Black
3	159.454k	45.4	+5.8	+0.1	+0.5	+0.0	+0.0	51.8	55.5	-3.7	Black

4	1.957M	35.5	+5.8	+0.1	+0.1	+0.0	+0.0	41.5	46.0	-4.5	Black
5	13.977M	38.4	+5.8	+0.3	+0.1	+0.8	+0.0	45.4	50.0	-4.6	Black
6	1.358M	35.2	+5.8	+0.1	+0.2	+0.0	+0.0	41.3	46.0	-4.7	Black
7	165.271k	43.8	+5.8	+0.1	+0.4	+0.0	+0.0	50.1	55.2	-5.1	Black
8	1.315M	34.7	+5.8	+0.1	+0.2	+0.0	+0.0	40.8	46.0	-5.2	Black
9	3.140M	34.6	+5.8	+0.2	+0.1	+0.1	+0.0	40.8	46.0	-5.2	Black
10	689.587k	32.3	+5.8	+0.1	+0.3	+0.0	+0.0	38.5	46.0	-7.5	Black
	Ave										
^	689.587k	40.9	+5.8	+0.1	+0.3	+0.0	+0.0	47.1	46.0	+1.1	Black
12	16.193M	33.4	+5.8	+0.3	+0.2	+0.9	+0.0	40.6	50.0	-9.4	Black
	Ave										
^	16.193M	40.4	+5.8	+0.3	+0.2	+0.9	+0.0	47.6	50.0	-2.4	Black
14	852.481k	30.2	+5.8	+0.1	+0.2	+0.0	+0.0	36.3	46.0	-9.7	Black
	Ave										
^	852.481k	37.1	+5.8	+0.1	+0.2	+0.0	+0.0	43.2	46.0	-2.8	Black
16	15.427M	33.1	+5.8	+0.3	+0.2	+0.8	+0.0	40.2	50.0	-9.8	Black
	Ave										
^	15.427M	40.8	+5.8	+0.3	+0.2	+0.8	+0.0	47.9	50.0	-2.1	Black
18	723.038k	29.8	+5.8	+0.1	+0.2	+0.0	+0.0	35.9	46.0	-10.1	Black
	Ave										
^	723.038k	37.9	+5.8	+0.1	+0.2	+0.0	+0.0	44.0	46.0	-2.0	Black
20	659.771k	29.6	+5.8	+0.1	+0.3	+0.0	+0.0	35.8	46.0	-10.2	Black
	Ave										
^	659.771k	36.9	+5.8	+0.1	+0.3	+0.0	+0.0	43.1	46.0	-2.9	Black

CKC Laboratories, Inc. Date: 4/29/2011 Time: 14:13:08 SmartLabs, Inc. WO#: 91847
 15.207 AC Mains - Average Test Lead: Black 240V 60Hz Sequence#: 6 Ext ATTN: 0 dB



— Sweep Data	— Readings
○ Peak Readings	× QP Readings
* Average Readings	▼ Ambient
— 1 - 15.207 AC Mains - Average	— 2 - 15.207 AC Mains - Quasi-peak

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 #: **91847** Date: 4/29/2011
 Test Type: **Conducted Emissions** Time: 14:06:21
 Equipment: **120-277V Heavy-Duty RF InLine Switch** Sequence#: 5
 Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen
 Model: 4773 240V 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	ANP04358	Cable	RG142	5/7/2010	5/7/2012
T3	AN02610	High Pass Filter	HE9615-150K-50-720B	11/16/2009	11/16/2011
	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
120-277V Heavy-Duty RF InLine Switch	SmartLabs, Inc.	4773	NA

Support Devices:

Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

The EUT is placed on the wooden table lined with Styrofoam of 10 cm thickness. Orientated in normal operating position, the EUT is set in constant transmit mode. No load is connected to the EUT for evaluation of RF parameter.
 EUT uses AC power.
 914.9 - 915.1MHz
 TX freq = 914.9 - 915.1MHz
 Frequency range of measurement = 15kHz- 30Mhz.
 150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz
 16°C, 69% Relative Humidity

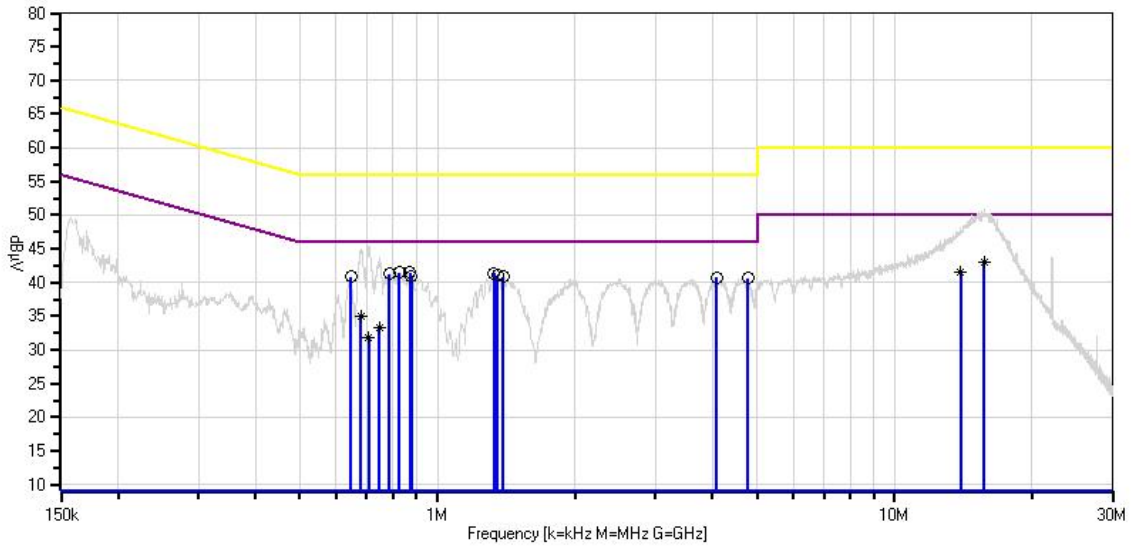
Ext Attn: 0 dB

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

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V	Spec dB μ V	Margin dB	Polar Ant
1	824.120k	35.4	+5.8	+0.1	+0.2	+0.0	+0.0	41.5	46.0	-4.5	White
2	871.388k	35.4	+5.8	+0.1	+0.2	+0.0	+0.0	41.5	46.0	-4.5	White
3	1.328M	35.2	+5.8	+0.1	+0.2	+0.1	+0.0	41.4	46.0	-4.6	White

4	785.578k	35.2	+5.8	+0.1	+0.2	+0.0	+0.0	41.3	46.0	-4.7	White
5	1.354M	34.9	+5.8	+0.1	+0.2	+0.1	+0.0	41.1	46.0	-4.9	White
6	646.682k	34.7	+5.8	+0.1	+0.3	+0.0	+0.0	40.9	46.0	-5.1	White
7	877.205k	34.8	+5.8	+0.1	+0.2	+0.0	+0.0	40.9	46.0	-5.1	White
8	1.392M	34.7	+5.8	+0.1	+0.2	+0.1	+0.0	40.9	46.0	-5.1	White
9	4.084M	34.5	+5.8	+0.2	+0.1	+0.1	+0.0	40.7	46.0	-5.3	White
10	4.785M	34.3	+5.8	+0.2	+0.1	+0.2	+0.0	40.6	46.0	-5.4	White
11	15.706M	35.8	+5.8	+0.3	+0.2	+1.0	+0.0	43.1	50.0	-6.9	White
^	15.706M	43.5	+5.8	+0.3	+0.2	+1.0	+0.0	50.8	50.0	+0.8	White
13	13.950M	34.4	+5.8	+0.3	+0.1	+0.9	+0.0	41.5	50.0	-8.5	White
^	13.950M	41.0	+5.8	+0.3	+0.1	+0.9	+0.0	48.1	50.0	-1.9	White
15	680.860k	28.7	+5.8	+0.1	+0.3	+0.0	+0.0	34.9	46.0	-11.1	White
^	680.860k	38.8	+5.8	+0.1	+0.3	+0.0	+0.0	45.0	46.0	-1.0	White
17	747.036k	27.1	+5.8	+0.1	+0.2	+0.0	+0.0	33.2	46.0	-12.8	White
^	747.036k	37.5	+5.8	+0.1	+0.2	+0.0	+0.0	43.6	46.0	-2.4	White
19	707.767k	25.7	+5.8	+0.1	+0.2	+0.0	+0.0	31.8	46.0	-14.2	White
^	707.767k	39.4	+5.8	+0.1	+0.2	+0.0	+0.0	45.5	46.0	-0.5	White

CKC Laboratories, Inc. Date: 4/29/2011 Time: 14:06:21 SmartLabs, Inc. WO#: 91847
 15.207 AC Mains - Average Test Lead: White 240V 60Hz Sequence#: 5 Ext ATTN: 0 dB



- | | |
|---------------------------------|------------------------------------|
| — Sweep Data | — Readings |
| ○ Peak Readings | × QP Readings |
| * Average Readings | ▼ Ambient |
| — 1 - 15.207 AC Mains - Average | — 2 - 15.207 AC Mains - Quasi-peak |

Test Setup Photos



15.249(a) Field Strength of Harmonics

Test Data Sheets

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

Customer: **SmartLabs, Inc.**

Specification: **FCC 15.249(a) Field strength of Fundamental/ Field strength of Harmonics**

Work Order #: **91847** Date: 4/29/2011

Test Type: **Radiated Scan** Time: 09:36:55

Equipment: **120-277V Heavy-Duty RF InLine Switch** Sequence#: 1

Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen

Model: 4773

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	AN00309	Preamp	8447D	5/7/2010	5/7/2012
T2	AN01995	Biconilog Antenna	CBL6111C	3/8/2010	3/8/2012
T3	ANP05050	Cable	RG223/U	3/21/2011	3/21/2013
T4	ANP05198	Cable	8268	12/21/2010	12/21/2012
T5	AN03169	High Pass Filter	HM1155-11SS	9/14/2009	9/14/2011
T6	ANP05563	Cable	ANDL-1-PNMN-48	9/3/2010	9/3/2012
T7	ANP05421	Cable	Sucoflex 104A	2/12/2010	2/12/2012
T8	AN02948	Cable	32022-2-2909K-24TC	9/21/2009	9/21/2011
T9	AN00849	Horn Antenna	3115	4/23/2010	4/23/2012
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
120-277V Heavy-Duty RF InLine Switch	SmartLabs, Inc.	4773	NA

Support Devices:

Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

The EUT is placed on the wooden table lined with Styrofoam of 10 cm thickness. Orientated in normal operating position, the EUT is set in constant transmit mode. No load is connected to the EUT for evaluation of RF parameter.
 EUT uses AC power.
 914.9 - 915.1MHz
 TX freq = 914.9 - 915.1MHz
 Frequency range of measurement = 9 kHz- 10 GHz.
 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
 15.31(e) compliance: the supply voltage was varied between 85% and 115% of the nominal rated supply voltage (110- 240Vac) , no change in the Fundamental signal level was observed.
 16°C, 69% Relative Humidity

Ext Attn: 0 dB

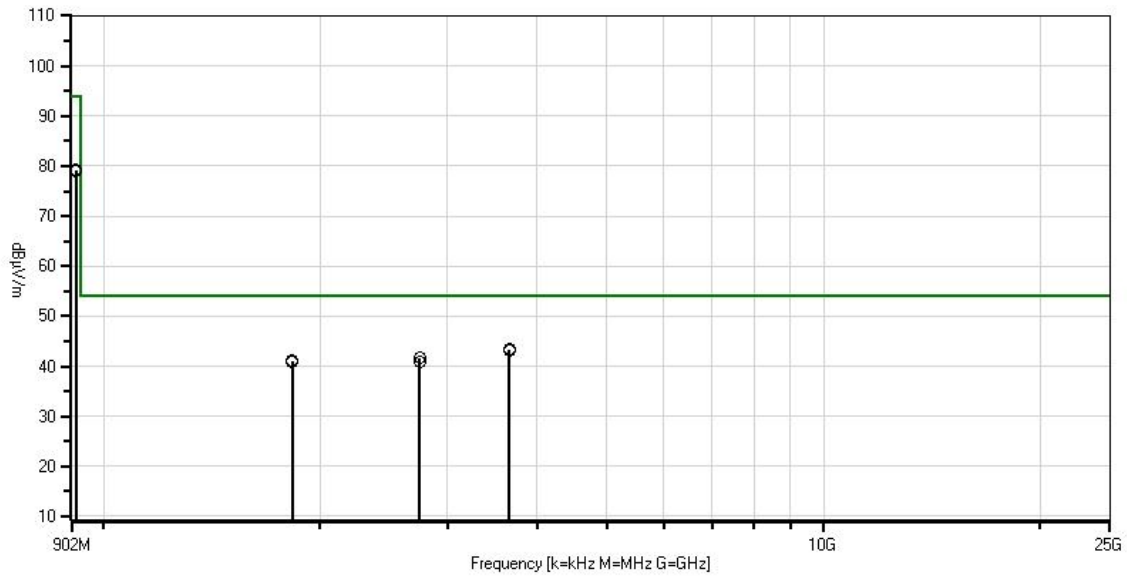
Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	Reading listed by margin.				Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
			T1 dB	T2 dB	T3 dB	T4 dB					
1	3659.650M	42.8	+0.0	+0.0	+0.0	+0.0	+0.0	43.3	54.0	-10.7	Horiz
			+0.2	+4.1	+1.7	+0.6					
			+31.3	-37.4							
2	3659.730M	42.5	+0.0	+0.0	+0.0	+0.0	+0.0	43.0	54.0	-11.0	Vert
			+0.2	+4.1	+1.7	+0.6					
			+31.3	-37.4							
3	2744.800M	44.7	+0.0	+0.0	+0.0	+0.0	+0.0	41.7	54.0	-12.3	Horiz
			+0.3	+3.3	+1.4	+0.5					
			+29.3	-37.8							
4	1829.950M	47.7	+0.0	+0.0	+0.0	+0.0	+0.0	41.1	54.0	-12.9	Horiz
			+0.3	+2.7	+1.0	+0.4					
			+27.2	-38.2							
5	2745.310M	43.9	+0.0	+0.0	+0.0	+0.0	+0.0	40.9	54.0	-13.1	Vert
			+0.3	+3.3	+1.4	+0.5					
			+29.3	-37.8							
6	1830.240M	47.5	+0.0	+0.0	+0.0	+0.0	+0.0	40.9	54.0	-13.1	Vert
			+0.3	+2.7	+1.0	+0.4					
			+27.2	-38.2							
7	915.087M	76.3	-27.1	+23.6	+0.5	+5.8	+0.0	79.1	93.9	-14.8	Vert
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0							
8	915.087M	76.2	-27.1	+23.6	+0.5	+5.8	+0.0	79.0	93.9	-14.9	Horiz
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0							

CKC Laboratories, Inc. Date: 4/29/2011 Time: 09:36:55 SmartLabs, Inc. WO#: 91847
 FCC 15.249(a) Field strength of Fundamental/ Field strength of Harmonics Test Distance: 3 Meters Sequence#: 1
 Ext ATTN: 0 dB



— Readings
 × QP Readings
 ▼ Ambient
 ○ Peak Readings
 * Average Readings
 — 1 - FCC 15.249(a) Field strength of Fundamental/ Field strength of Harmonics

Test Setup Photos



-20dBc Occupied Bandwidth

Test Conditions / Setup

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

Customer: **SmartLabs, Inc.**
 Specification: Occupied Bandwidth -20dB c
 Work Order #: **91847** Date: 4/29/2011
 Test Type: **Radiated Scan** Time: 09:36:55
 Equipment: **120-277V Heavy-Duty RF InLine Switch** Sequence#: 1
 Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen
 Model: 4773
 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	AN00309	Preamp	8447D	5/7/2010	5/7/2012
T2	AN01995	Biconilog Antenna	CBL6111C	3/8/2010	3/8/2012
T3	ANP05050	Cable	RG223/U	3/21/2011	3/21/2013
T4	ANP05198	Cable	8268	12/21/2010	12/21/2012

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
120-277V Heavy-Duty RF InLine Switch	SmartLabs, Inc.	4773	NA

Support Devices:

Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

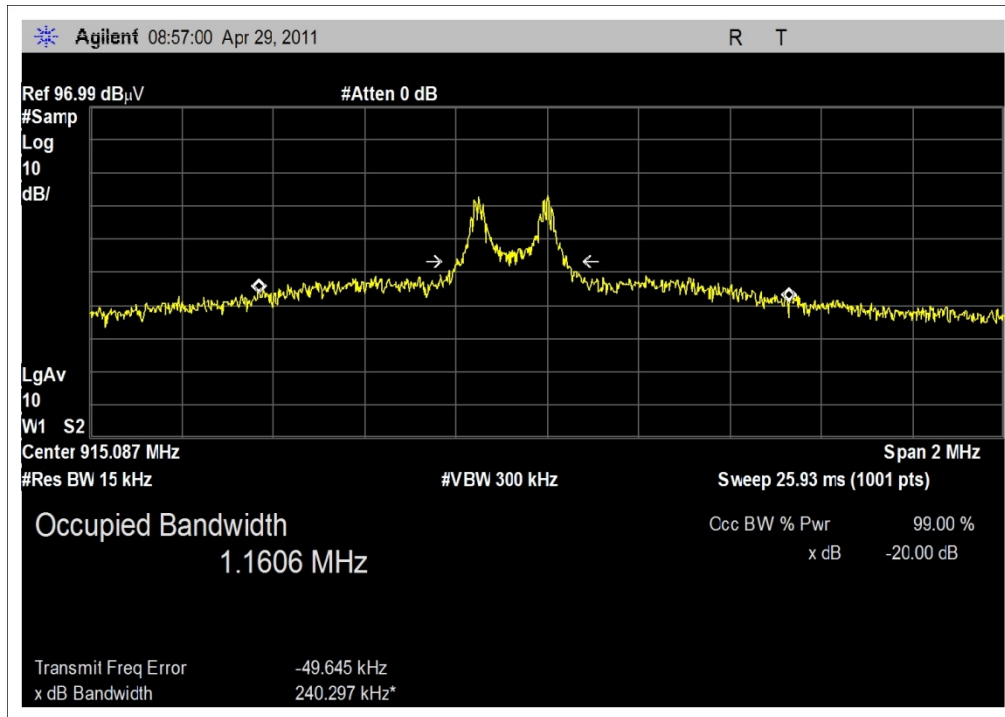
The EUT is placed on the wooden table lined with Styrofoam of 10 cm thickness. Orientated in normal operating position, the EUT is set in constant transmit mode. No load is connected to the EUT for evaluation of RF parameter.

EUT uses AC power.
 914.9 - 915.1MHz
 TX freq = 914.9 - 915.1MHz

Frequency range of measurement = 914.9 - 915.1MHz
 30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz.

16°C, 69% Relative Humidity

Plot



Test Setup Photos



Bandedge

Test Conditions / Setup

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

Customer: **SmartLabs, Inc.**

Specification: **Bandedgeplot**

Work Order #: **91847**

Date: 4/29/2011

Test Type: **Radiated Scan**

Time: 09:36:55

Equipment: **120-277V Heavy-Duty RF InLine Switch**

Sequence#: 1

Manufacturer: SmartLabs, Inc.

Tested By: Don Nguyen

Model: 4773

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	AN00309	Preamp	8447D	5/7/2010	5/7/2012
T2	AN01995	Biconilog Antenna	CBL6111C	3/8/2010	3/8/2012
T3	ANP05050	Cable	RG223/U	3/21/2011	3/21/2013
T4	ANP05198	Cable	8268	12/21/2010	12/21/2012

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
120-277V Heavy-Duty RF InLine Switch	SmartLabs, Inc.	4773	NA

Support Devices:

Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

The EUT is placed on the wooden table lined with Styrofoam of 10 cm thickness. Orientated in normal operating position, the EUT is set in constant transmit mode. No load is connected to the EUT for evaluation of RF parameter.

EUT uses AC power.

914.9 - 915.1MHz

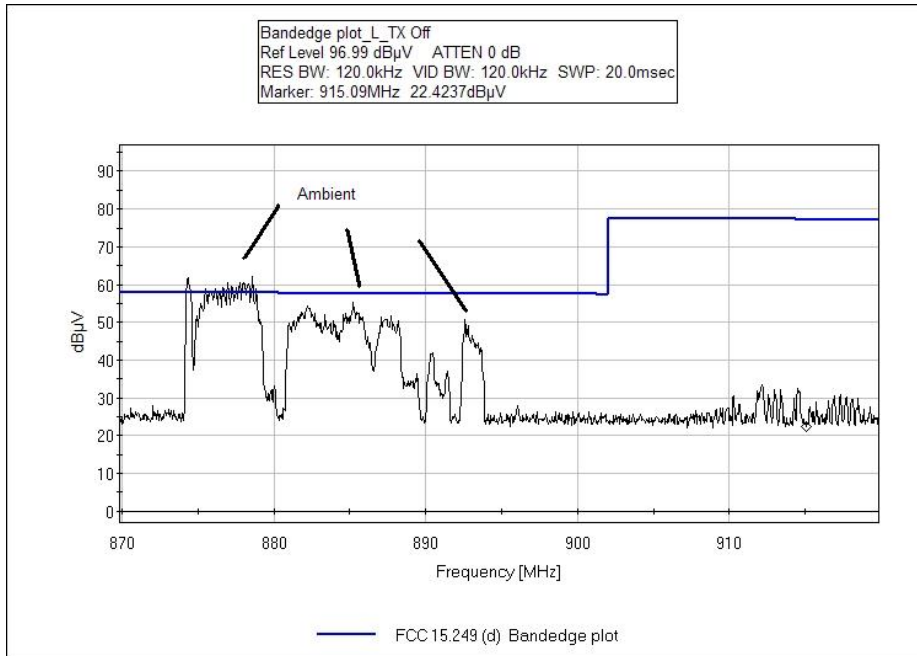
TX freq = 914.9 - 915.1MHz

Frequency range of measurement = 914.9 - 915.1MHz

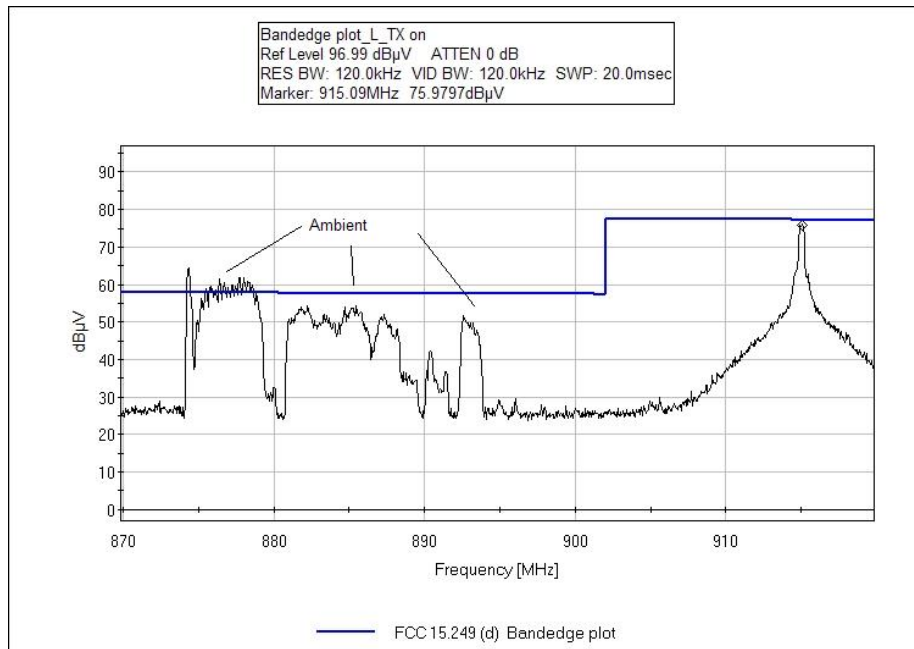
30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz.

16°C, 69% Relative Humidity

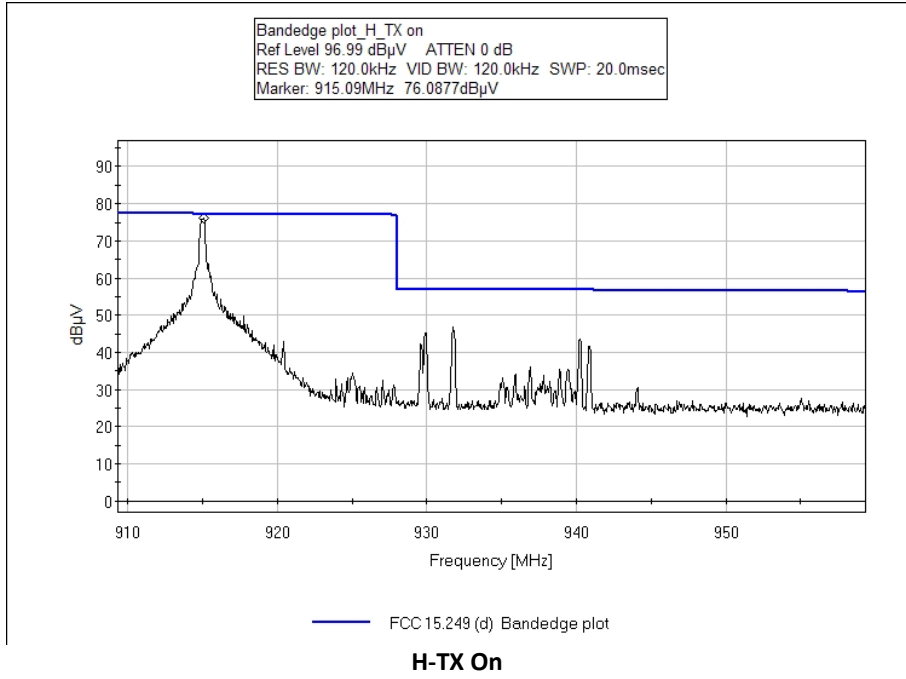
Test Plots



L-TX Off



L-TX On



Test Setup Photos



15.249(d) / 15.209 - Field Strength of Spurious Emissions

Test Data

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

Customer: **SmartLabs, Inc.**
 Specification: **FCC 15.249(d) / 15.209**
 Work Order #: **91847** Date: 4/29/2011
 Test Type: **Radiated Scan** Time: 11:14:51
 Equipment: **120-277V Heavy-Duty RF InLine Switch** Sequence#: 2
 Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen
 Model: 4773
 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	AN00309	Preamp	8447D	5/7/2010	5/7/2012
T2	AN01995	Biconilog Antenna	CBL6111C	3/8/2010	3/8/2012
T3	ANP05050	Cable	RG223/U	3/21/2011	3/21/2013
T4	ANP05198	Cable	8268	12/21/2010	12/21/2012
T5	AN03169	High Pass Filter	HM1155-11SS	9/14/2009	9/14/2011
T6	ANP05563	Cable	ANDL-1-PNMN-48	9/3/2010	9/3/2012
T7	ANP05421	Cable	Sucoflex 104A	2/12/2010	2/12/2012
T8	AN02948	Cable	32022-2-2909K-24TC	9/21/2009	9/21/2011
T9	AN00849	Horn Antenna	3115	4/23/2010	4/23/2012
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
120-277V Heavy-Duty RF InLine Switch	SmartLabs, Inc.	4773	NA

Support Devices:

Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

The EUT is placed on the wooden table lined with Styrofoam of 10 cm thickness. Orientated in normal operating position, the EUT is set in constant transmit mode. No load is connected to the EUT for evaluation of RF parameter.
 EUT uses AC power.
 914.9 - 915.1MHz
 TX freq = 914.9 - 915.1MHz

Frequency range of measurement = 9 kHz- 10 GHz.
 9 kH -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

16°C, 69% Relative Humidity

Ext Attn: 0 dB

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

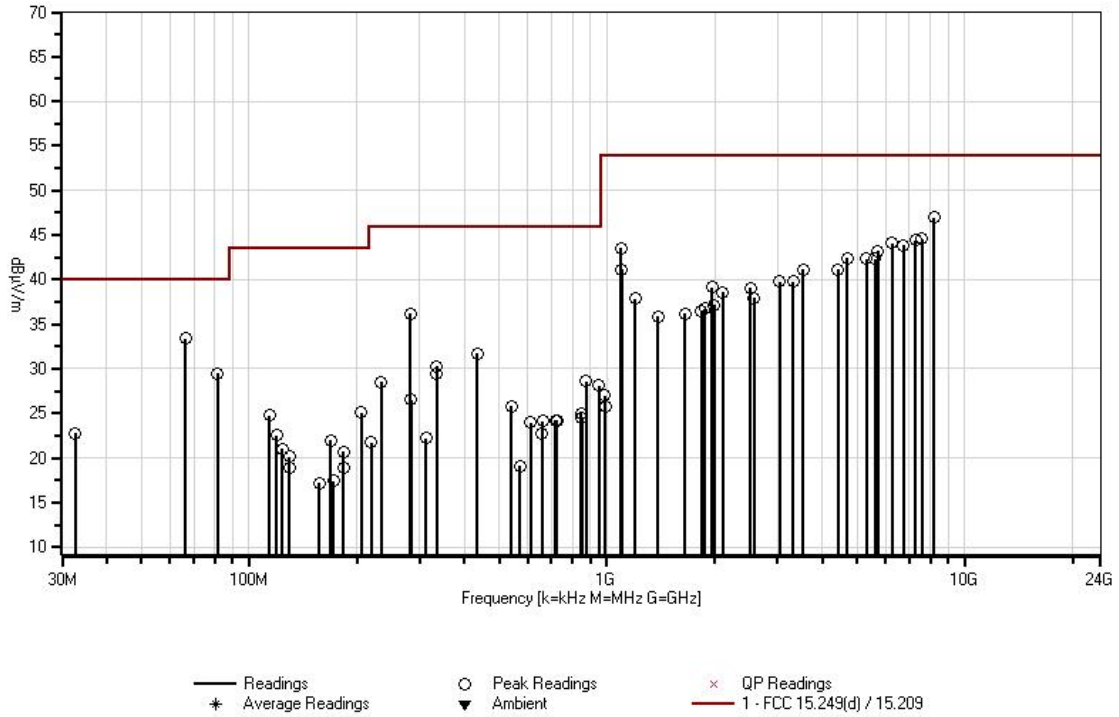
#	Freq MHz	Rdng dBµV	T1	T2	T3	T4	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
			T5	T6	T7	T8					
1	66.400M	54.0	-27.9 +0.0 +0.0	+5.8 +0.0 +0.0	+0.1 +0.0 +0.0	+1.4 +0.0 +0.0	+0.0	33.4	40.0	-6.6	Vert
2	8207.700M	37.0	+0.0 +0.1 +36.6	+0.0 +6.2 -36.4	+0.0 +2.5	+0.0 +0.9	+0.0	46.9	54.0	-7.1	Vert
3	7578.500M	36.3	+0.0 +0.1 +35.7	+0.0 +6.0 -36.7	+0.0 +2.3	+0.0 +0.9	+0.0	44.6	54.0	-9.4	Horiz
4	7297.200M	36.0	+0.0 +0.2 +36.0	+0.0 +5.8 -36.7	+0.0 +2.3	+0.0 +0.8	+0.0	44.4	54.0	-9.6	Vert
5	282.000M	47.5	-27.7 +0.0 +0.0	+13.1 +0.0 +0.0	+0.3 +0.0 +0.0	+3.0 +0.0 +0.0	+0.0	36.2	46.0	-9.8	Horiz
6	6263.800M	36.8	+0.0 +0.1 +34.9	+0.0 +5.8 -36.5	+0.0 +2.2	+0.0 +0.8	+0.0	44.1	54.0	-9.9	Vert
7	6748.500M	35.9	+0.0 +0.2 +36.0	+0.0 +5.7 -37.0	+0.0 +2.3	+0.0 +0.8	+0.0	43.9	54.0	-10.1	Horiz
8	1095.700M	48.0	+0.0 +7.8 +24.4	+0.0 +2.0 -39.8	+0.0 +0.8	+0.0 +0.3	+0.0	43.5	54.0	-10.5	Vert
9	81.500M	47.8	-27.8 +0.0 +0.0	+7.9 +0.0 +0.0	+0.1 +0.0 +0.0	+1.5 +0.0 +0.0	+0.0	29.5	40.0	-10.5	Vert
10	5701.800M	37.8	+0.0 +0.1 +34.4	+0.0 +4.9 -36.7	+0.0 +2.0	+0.0 +0.7	+0.0	43.2	54.0	-10.8	Vert

11	4691.800M	39.6	+0.0 +0.3 +32.8	+0.0 +4.4 -37.2	+0.0 +1.9	+0.0 +0.6	+0.0	42.4	54.0	-11.6	Vert
12	5618.500M	37.0	+0.0 +0.1 +34.4	+0.0 +5.0 -36.8	+0.0 +2.0	+0.0 +0.7	+0.0	42.4	54.0	-11.6	Horiz
13	5300.800M	37.7	+0.0 +0.1 +34.0	+0.0 +4.8 -36.9	+0.0 +1.9	+0.0 +0.7	+0.0	42.3	54.0	-11.7	Vert
14	3538.800M	41.4	+0.0 +0.2 +31.1	+0.0 +3.9 -37.6	+0.0 +1.6	+0.0 +0.6	+0.0	41.2	54.0	-12.8	Vert
15	4418.500M	38.6	+0.0 +0.3 +32.3	+0.0 +4.4 -37.0	+0.0 +1.9	+0.0 +0.6	+0.0	41.1	54.0	-12.9	Horiz
16	1100.700M	45.8	+0.0 +7.4 +24.5	+0.0 +2.0 -39.7	+0.0 +0.8	+0.0 +0.3	+0.0	41.1	54.0	-12.9	Horiz
17	3041.800M	41.6	+0.0 +0.2 +30.1	+0.0 +3.5 -37.7	+0.0 +1.6	+0.0 +0.5	+0.0	39.8	54.0	-14.2	Vert
18	3318.500M	40.9	+0.0 +0.2 +30.7	+0.0 +3.6 -37.7	+0.0 +1.6	+0.0 +0.5	+0.0	39.8	54.0	-14.2	Horiz
19	433.350M	38.5	-27.8 +0.0 +0.0	+16.9 +0.0 +0.0	+0.3 +0.0	+3.8 +0.0	+0.0	31.7	46.0	-14.3	Vert
20	1962.280M	44.8	+0.0 +0.2 +27.8	+0.0 +2.8 -38.0	+0.0 +1.1	+0.0 +0.4	+0.0	39.1	54.0	-14.9	Vert
21	2516.900M	43.2	+0.0 +0.2 +28.6	+0.0 +3.2 -37.9	+0.0 +1.3	+0.0 +0.5	+0.0	39.1	54.0	-14.9	Horiz
22	2105.500M	43.8	+0.0 +0.2 +28.1	+0.0 +2.9 -37.9	+0.0 +1.1	+0.0 +0.4	+0.0	38.6	54.0	-15.4	Horiz
23	333.750M	40.2	-27.8 +0.0 +0.0	+14.4 +0.0 +0.0	+0.3 +0.0	+3.2 +0.0	+0.0	30.3	46.0	-15.7	Horiz
24	2573.800M	41.9	+0.0 +0.2 +28.7	+0.0 +3.2 -37.9	+0.0 +1.4	+0.0 +0.5	+0.0	38.0	54.0	-16.0	Vert
25	1200.400M	48.2	+0.0 +1.1 +24.7	+0.0 +2.1 -39.3	+0.0 +0.8	+0.0 +0.3	+0.0	37.9	54.0	-16.1	Vert
26	333.600M	39.4	-27.8 +0.0 +0.0	+14.4 +0.0 +0.0	+0.3 +0.0	+3.2 +0.0	+0.0	29.5	46.0	-16.5	Vert
27	1995.080M	42.7	+0.0 +0.2 +28.0	+0.0 +2.8 -38.0	+0.0 +1.1	+0.0 +0.4	+0.0	37.2	54.0	-16.8	Vert

28	32.626M	32.2	-27.8 +0.0 +0.0	+17.4 +0.0 +0.0	+0.1 +0.0 +0.0	+0.9 +0.0 +0.0	+0.0	22.8	40.0	-17.2	Horiz
29	1880.500M	42.9	+0.0 +0.3 +27.4	+0.0 +2.8 -38.1	+0.0 +1.0	+0.0 +0.4	+0.0	36.7	54.0	-17.3	Horiz
30	872.200M	26.4	-27.1 +0.0 +0.0	+23.1 +0.0 +0.0	+0.5 +0.0 +0.0	+5.7 +0.0 +0.0	+0.0	28.6	46.0	-17.4	Vert
31	233.850M	41.8	-27.8 +0.0 +0.0	+11.6 +0.0 +0.0	+0.2 +0.0 +0.0	+2.7 +0.0 +0.0	+0.0	28.5	46.0	-17.5	Horiz
32	1838.300M	43.0	+0.0 +0.3 +27.2	+0.0 +2.7 -38.1	+0.0 +1.0	+0.0 +0.4	+0.0	36.5	54.0	-17.5	Vert
33	1652.300M	43.9	+0.0 +0.3 +26.2	+0.0 +2.6 -38.2	+0.0 +1.0	+0.0 +0.4	+0.0	36.2	54.0	-17.8	Vert
34	949.500M	24.7	-27.1 +0.0 +0.0	+24.1 +0.0 +0.0	+0.5 +0.0 +0.0	+5.9 +0.0 +0.0	+0.0	28.1	46.0	-17.9	Horiz
35	1390.300M	45.2	+0.0 +0.6 +25.1	+0.0 +2.4 -38.7	+0.0 +0.9	+0.0 +0.4	+0.0	35.9	54.0	-18.1	Vert
36	205.943M	40.6	-27.7 +0.0 +0.0	+9.5 +0.0 +0.0	+0.2 +0.0 +0.0	+2.5 +0.0 +0.0	+0.0	25.1	43.5	-18.4	Horiz
37	113.700M	39.3	-27.8 +0.0 +0.0	+11.3 +0.0 +0.0	+0.2 +0.0 +0.0	+1.8 +0.0 +0.0	+0.0	24.8	43.5	-18.7	Vert
38	283.600M	37.8	-27.7 +0.0 +0.0	+13.1 +0.0 +0.0	+0.3 +0.0 +0.0	+3.0 +0.0 +0.0	+0.0	26.5	46.0	-19.5	Vert
39	540.000M	29.8	-27.6 +0.0 +0.0	+18.9 +0.0 +0.0	+0.4 +0.0 +0.0	+4.3 +0.0 +0.0	+0.0	25.8	46.0	-20.2	Horiz
40	119.100M	36.4	-27.8 +0.0 +0.0	+11.8 +0.0 +0.0	+0.2 +0.0 +0.0	+1.9 +0.0 +0.0	+0.0	22.5	43.5	-21.0	Vert
41	847.800M	23.2	-27.1 +0.0 +0.0	+22.8 +0.0 +0.0	+0.5 +0.0 +0.0	+5.6 +0.0 +0.0	+0.0	25.0	46.0	-21.0	Vert
42	169.059M	37.5	-27.8 +0.0 +0.0	+9.8 +0.0 +0.0	+0.2 +0.0 +0.0	+2.3 +0.0 +0.0	+0.0	22.0	43.5	-21.5	Horiz
43	850.250M	22.6	-27.1 +0.0 +0.0	+22.9 +0.0 +0.0	+0.5 +0.0 +0.0	+5.6 +0.0 +0.0	+0.0	24.5	46.0	-21.5	Horiz
44	724.300M	24.4	-27.2 +0.0 +0.0	+21.4 +0.0 +0.0	+0.5 +0.0 +0.0	+5.1 +0.0 +0.0	+0.0	24.2	46.0	-21.8	Vert

45	719.250M	24.5	-27.2 +0.0 +0.0	+21.3 +0.0 +0.0	+0.5 +0.0 +0.0	+5.1 +0.0 +0.0	+0.0	24.2	46.0	-21.8	Horiz
46	662.000M	25.6	-27.3 +0.0 +0.0	+20.6 +0.0 +0.0	+0.4 +0.0 +0.0	+4.8 +0.0 +0.0	+0.0	24.1	46.0	-21.9	Horiz
47	611.000M	26.2	-27.3 +0.0 +0.0	+20.1 +0.0 +0.0	+0.4 +0.0 +0.0	+4.6 +0.0 +0.0	+0.0	24.0	46.0	-22.0	Horiz
48	123.570M	34.7	-27.8 +0.0 +0.0	+12.0 +0.0 +0.0	+0.2 +0.0 +0.0	+1.9 +0.0 +0.0	+0.0	21.0	43.5	-22.5	Horiz
49	183.732M	36.9	-27.8 +0.0 +0.0	+9.0 +0.0 +0.0	+0.2 +0.0 +0.0	+2.4 +0.0 +0.0	+0.0	20.7	43.5	-22.8	Horiz
50	657.050M	24.2	-27.3 +0.0 +0.0	+20.6 +0.0 +0.0	+0.4 +0.0 +0.0	+4.8 +0.0 +0.0	+0.0	22.7	46.0	-23.3	Vert
51	129.500M	33.8	-27.8 +0.0 +0.0	+12.0 +0.0 +0.0	+0.2 +0.0 +0.0	+1.9 +0.0 +0.0	+0.0	20.1	43.5	-23.4	Vert
52	311.850M	32.9	-27.8 +0.0 +0.0	+13.7 +0.0 +0.0	+0.2 +0.0 +0.0	+3.2 +0.0 +0.0	+0.0	22.2	46.0	-23.8	Vert
53	219.000M	36.2	-27.8 +0.0 +0.0	+10.5 +0.0 +0.0	+0.2 +0.0 +0.0	+2.6 +0.0 +0.0	+0.0	21.7	46.0	-24.3	Vert
54	183.300M	35.1	-27.8 +0.0 +0.0	+9.0 +0.0 +0.0	+0.2 +0.0 +0.0	+2.4 +0.0 +0.0	+0.0	18.9	43.5	-24.6	Vert
55	129.570M	32.7	-27.8 +0.0 +0.0	+11.9 +0.0 +0.0	+0.2 +0.0 +0.0	+1.9 +0.0 +0.0	+0.0	18.9	43.5	-24.6	Horiz
56	172.100M	33.2	-27.8 +0.0 +0.0	+9.5 +0.0 +0.0	+0.2 +0.0 +0.0	+2.3 +0.0 +0.0	+0.0	17.4	43.5	-26.1	Vert
57	157.200M	31.7	-27.7 +0.0 +0.0	+10.9 +0.0 +0.0	+0.1 +0.0 +0.0	+2.2 +0.0 +0.0	+0.0	17.2	43.5	-26.3	Vert
58	570.350M	22.4	-27.5 +0.0 +0.0	+19.4 +0.0 +0.0	+0.4 +0.0 +0.0	+4.4 +0.0 +0.0	+0.0	19.1	46.0	-26.9	Vert
59	985.400M	23.0	-27.3 +0.0 +0.0	+24.6 +0.0 +0.0	+0.6 +0.0 +0.0	+6.1 +0.0 +0.0	+0.0	27.0	54.0	-27.0	Vert
60	989.750M	21.8	-27.3 +0.0 +0.0	+24.6 +0.0 +0.0	+0.6 +0.0 +0.0	+6.1 +0.0 +0.0	+0.0	25.8	54.0	-28.2	Horiz

CKC Laboratories, Inc. Date: 4/29/2011 Time: 11:14:51 SmartLabs, Inc. WO#: 91847
 FCC 15.249(d) / 15.209 Test Distance: 3 Meters Sequence#: 2 Ext ATTN: 0 dB



Test Setup Photos



RSS-210

This report contains EMC emissions test results under Industry of Canada requirements equipment certification of several types of radio apparatus used for radio communication.

Test Conditions / Setup

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

Customer: **SmartLabs, Inc.**

Specification: 99% Bandwidth

Work Order #: **91847** Date: 4/29/2011

Test Type: **Radiated Scan** Time: 09:36:55

Equipment: **120-277V Heavy-Duty RF InLine Switch** Sequence#: 1

Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen

Model: 4773

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	AN00309	Preamp	8447D	5/7/2010	5/7/2012
T2	AN01995	Biconilog Antenna	CBL6111C	3/8/2010	3/8/2012
T3	ANP05050	Cable	RG223/U	3/21/2011	3/21/2013
T4	ANP05198	Cable	8268	12/21/2010	12/21/2012

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
120-277V Heavy-Duty RF InLine Switch	SmartLabs, Inc.	4773	NA

Support Devices:

Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

The EUT is placed on the wooden table lined with Styrofoam of 10 cm thickness. Orientated in normal operating position, the EUT is set in constant transmit mode. No load is connected to the EUT for evaluation of RF parameter.

EUT uses AC power.

914.9 - 915.1MHz

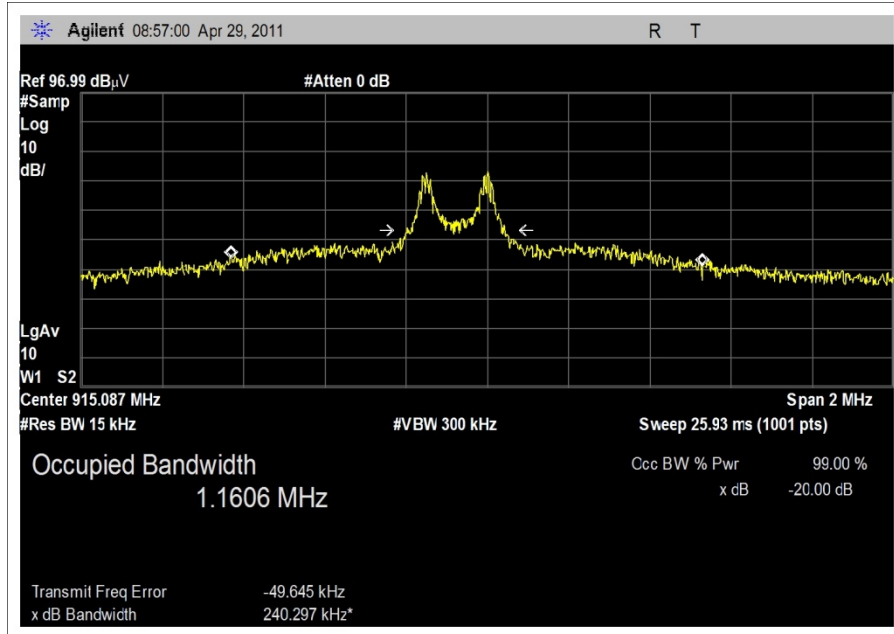
TX freq = 914.9 - 915.1MHz

Frequency range of measurement = 914.9 - 915.1MHz

30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz.

16°C, 69% Relative Humidity

Test Plots



Test Setup Photos



SUPPLEMENTAL INFORMATION

Measurement Uncertainty

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

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

Emissions Test Details

TESTING PARAMETERS

The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. Cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

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

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

CORRECTION FACTORS

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

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

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed were used to collect the emissions data. A spectrum analyzer or receiver was used for all measurements. 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	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 "Peak" mode. Whenever a "Quasi-Peak" or "Average" reading is listed as one of the highest readings, this is indicated as a "QP" or an "Ave" on the appropriate rows of the data sheets. 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/receiver readings recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the measuring device called "peak hold," the measuring device had the ability to measure transients 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

When the true peak values exceeded or were within 2 dB of the specification limit, quasi-peak measurements were taken using the quasi-peak detector.

Average

For certain frequencies, average measurements may be made using the spectrum analyzer/receiver. 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.