

SmartLabs, Inc.

TEST REPORT FOR

**KeypadLinc™ - On/Off Switch (Dual-Band), #2487S
SMART Keypad Switch, 277V #4772**

Tested To The Following Standards:

**FCC Part 15 Subpart C Sections 15.207, 15.249
and
RSS 210 Issue 7**

Report No.: 91263-7

Date of issue: December 3, 2010



**TESTING
CERT #803.01, 803.02,
803.05, 803.06**

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

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

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ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

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

Representative: John Lockyer
Customer Reference Number: 10-3JL1006-02

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: 91263

November 11, 2010

November 11- 29, 2010

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 D	US0060	R-1256, C-1319, T-1660 & G-255	3082D-2	100638

SUMMARY OF RESULTS

Standard / Specification: FCC Part 15 Subpart C and RSS-210

Description	Test Procedure/Method	Results
Conducted Emissions	FCC Part 15 Subpart C Section 15.207 / ANSI C63.4 (2003)	Pass
RF Power Output	FCC Part 15 Subpart C Section 15.249(a)	Pass
Field Strength of Harmonics	FCC Part 15 Subpart C Section 15.249(b)	Pass
Occupied Bandwidth	Occupied Bandwidth -20dBc	Pass
Bandedge	Bandedge	Pass
Field Strength of Spurious Emissions	FCC Part 15 Subpart C Section 15.249(d)	Pass
99% Bandwidth	RSS-210 Issue 7	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

KeypadLinc™-On/Off Switch (Dual-Band)

Manuf: SmartLabs, Inc.
Model: #2487S
Serial: 13.D0.E9

SMART Keypad Switch, 277V

Manuf: SmartLabs, Inc.
Model: #4772
Serial: 13.D0.E9

PERIPHERAL DEVICES

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

100W Light bulb

Manuf: Phillips
Model: DuraMax
Serial: NA

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.

15.207 AC Conducted Emissions

Test Data Sheets

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

Customer: **SmartLabs, Inc.**

Specification: **15.207 AC Mains - Average**

Work Order #: **91263** Date: 11/29/2010

Test Type: **Conducted Emissions** Time: 1:37:23 PM

Equipment: **KeypadLinc™ – On/Off Switch (Dual-Band), SMART Keypad Switch, 277V** Sequence#: 4

Manufacturer: SmartLabs, Inc. Tested By: S. Hundal

Model: #2487S, #4772 120V 60Hz

S/N: 13.D0.E9

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP05613	Attenuator	50FHC-006-10BNC	3/10/2009	3/10/2011
T2	ANP01910	Cable	RG-142	3/19/2010	3/19/2012
T3	AN02128	50uH LISN-L-1	3816/2NM	3/25/2009	3/25/2011
	AN02128	50uH LISN-L-2	3816/2NM	3/25/2009	3/25/2011
	AN02672	Spectrum Analyzer	E4446A	8/9/2010	8/9/2012
T4	AN02343	High Pass Filter	HE9615-150K-50-720B	1/14/2009	1/14/2011

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
SMART Keypad Switch, 277V*	SmartLabs, Inc.	#4772	13.D0.E9
KeypadLinc™ – On/Off Switch (Dual-Band)*	SmartLabs, Inc.	#2487S	13.D0.E9

Support Devices:

Function	Manufacturer	Model #	S/N
100W Light bulb	Phillips	DuraMax	NA

Test Conditions / Notes:

The EUT is connected to a 100W light bulb. Ground wire is attached. The EUT is in the on state at maximum brightness.

EUT environment - 23°C and 20% Relative Humidity

Highest Clock Freq - 915.1MHz

Freq Range Tested - 150kHz-30MHz

150 kHz- 30 MHz RBWVBW=9 kHz

Ext Attn: 0 dB

Measurement Data:

Reading listed by margin.

Test Lead: L1 (L)

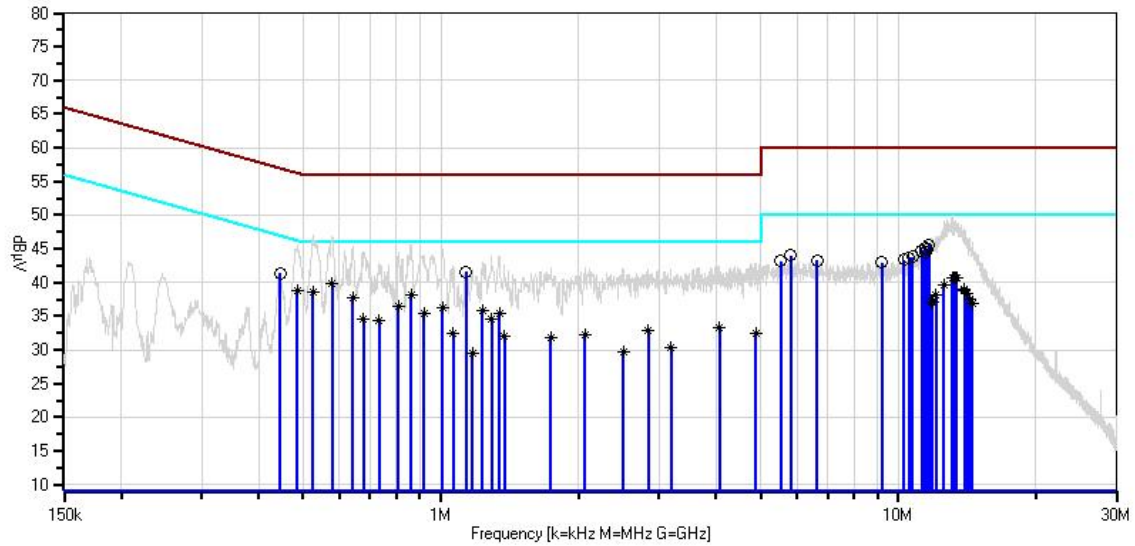
#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V	Spec dB μ V	Margin dB	Polar Ant
1	1.137M	35.7	+5.6	+0.1	+0.1	+0.1	+0.0	41.6	46.0	-4.4	L1 (L)
2	11.652M	39.0	+5.6	+0.3	+0.6	+0.1	+0.0	45.6	50.0	-4.4	L1 (L)
3	11.463M	38.5	+5.6	+0.3	+0.6	+0.1	+0.0	45.1	50.0	-4.9	L1 (L)
4	11.553M	38.4	+5.6	+0.3	+0.6	+0.1	+0.0	45.0	50.0	-5.0	L1 (L)
5	11.274M	38.2	+5.6	+0.3	+0.6	+0.1	+0.0	44.8	50.0	-5.2	L1 (L)
6	444.518k	35.4	+5.7	+0.1	+0.0	+0.2	+0.0	41.4	47.0	-5.6	L1 (L)
7	11.508M	37.8	+5.6	+0.3	+0.6	+0.1	+0.0	44.4	50.0	-5.6	L1 (L)
8	5.824M	37.8	+5.6	+0.2	+0.3	+0.1	+0.0	44.0	50.0	-6.0	L1 (L)
9	578.324k	34.0	+5.6	+0.1	+0.0	+0.2	+0.0	39.9	46.0	-6.1	L1 (L)
	Ave										
^	578.324k	41.0	+5.6	+0.1	+0.0	+0.2	+0.0	46.9	46.0	+0.9	L1 (L)
11	10.734M	37.3	+5.6	+0.3	+0.5	+0.1	+0.0	43.8	50.0	-6.2	L1 (L)
12	10.535M	37.2	+5.6	+0.3	+0.5	+0.1	+0.0	43.7	50.0	-6.3	L1 (L)
13	10.283M	36.9	+5.6	+0.3	+0.5	+0.1	+0.0	43.4	50.0	-6.6	L1 (L)
14	6.634M	37.1	+5.6	+0.2	+0.3	+0.1	+0.0	43.3	50.0	-6.7	L1 (L)
15	5.526M	37.1	+5.6	+0.2	+0.2	+0.1	+0.0	43.2	50.0	-6.8	L1 (L)
16	9.211M	36.5	+5.6	+0.3	+0.5	+0.1	+0.0	43.0	50.0	-7.0	L1 (L)
17	485.242k	32.9	+5.7	+0.1	+0.0	+0.2	+0.0	38.9	46.2	-7.3	L1 (L)
	Ave										
^	485.242k	39.6	+5.7	+0.1	+0.0	+0.2	+0.0	45.6	46.2	-0.6	L1 (L)
19	525.238k	32.6	+5.7	+0.1	+0.0	+0.2	+0.0	38.6	46.0	-7.4	L1 (L)
	Ave										

^	525.238k	41.1	+5.7	+0.1	+0.0	+0.2	+0.0	47.1	46.0	+1.1	L1 (L)
21	859.753k Ave	32.4	+5.6	+0.1	+0.0	+0.1	+0.0	38.2	46.0	-7.8	L1 (L)
^	859.753k	39.9	+5.6	+0.1	+0.0	+0.1	+0.0	45.7	46.0	-0.3	L1 (L)
23	641.591k Ave	31.8	+5.6	+0.1	+0.0	+0.2	+0.0	37.7	46.0	-8.3	L1 (L)
^	641.591k	39.5	+5.6	+0.1	+0.0	+0.2	+0.0	45.4	46.0	-0.6	L1 (L)
25	13.211M Ave	34.2	+5.6	+0.3	+0.6	+0.1	+0.0	40.8	50.0	-9.2	L1 (L)
^	13.211M	42.5	+5.6	+0.3	+0.6	+0.1	+0.0	49.1	50.0	-0.9	L1 (L)
27	13.328M Ave	34.1	+5.6	+0.3	+0.6	+0.1	+0.0	40.7	50.0	-9.3	L1 (L)
^	13.328M	42.5	+5.6	+0.3	+0.6	+0.1	+0.0	49.1	50.0	-0.9	L1 (L)
29	13.139M Ave	34.1	+5.6	+0.3	+0.6	+0.1	+0.0	40.7	50.0	-9.3	L1 (L)
^	13.139M	43.5	+5.6	+0.3	+0.6	+0.1	+0.0	50.1	50.0	+0.1	L1 (L)
31	13.409M Ave	34.0	+5.6	+0.3	+0.6	+0.1	+0.0	40.6	50.0	-9.4	L1 (L)
^	13.409M	42.3	+5.6	+0.3	+0.6	+0.1	+0.0	48.9	50.0	-1.1	L1 (L)
33	807.394k Ave	30.5	+5.6	+0.1	+0.1	+0.1	+0.0	36.4	46.0	-9.6	L1 (L)
^	807.394k	38.6	+5.6	+0.1	+0.1	+0.1	+0.0	44.5	46.0	-1.5	L1 (L)
35	1.009M Ave	30.4	+5.6	+0.1	+0.1	+0.1	+0.0	36.3	46.0	-9.7	L1 (L)
^	1.009M	39.1	+5.6	+0.1	+0.1	+0.1	+0.0	45.0	46.0	-1.0	L1 (L)
37	1.234M Ave	29.9	+5.6	+0.1	+0.1	+0.1	+0.0	35.8	46.0	-10.2	L1 (L)
^	1.234M	37.2	+5.6	+0.1	+0.1	+0.1	+0.0	43.1	46.0	-2.9	L1 (L)
39	12.598M Ave	33.1	+5.6	+0.3	+0.6	+0.1	+0.0	39.7	50.0	-10.3	L1 (L)
^	12.598M	42.6	+5.6	+0.3	+0.6	+0.1	+0.0	49.2	50.0	-0.8	L1 (L)
41	1.341M Ave	29.5	+5.6	+0.1	+0.1	+0.1	+0.0	35.4	46.0	-10.6	L1 (L)
^	1.341M	38.1	+5.6	+0.1	+0.1	+0.1	+0.0	44.0	46.0	-2.0	L1 (L)
43	919.732k Ave	29.6	+5.6	+0.1	+0.0	+0.1	+0.0	35.4	46.0	-10.6	L1 (L)
^	919.732k	38.3	+5.6	+0.1	+0.0	+0.1	+0.0	44.1	46.0	-1.9	L1 (L)
45	13.950M Ave	32.4	+5.6	+0.3	+0.7	+0.1	+0.0	39.1	50.0	-10.9	L1 (L)

^	13.950M	41.0	+5.6	+0.3	+0.7	+0.1	+0.0	47.7	50.0	-2.3	L1 (L)
47	13.977M Ave	32.2	+5.6	+0.3	+0.7	+0.1	+0.0	38.9	50.0	-11.1	L1 (L)
^	13.977M	41.3	+5.6	+0.3	+0.7	+0.1	+0.0	48.0	50.0	-2.0	L1 (L)
49	676.497k Ave	28.7	+5.6	+0.1	+0.0	+0.2	+0.0	34.6	46.0	-11.4	L1 (L)
^	676.497k	38.7	+5.6	+0.1	+0.0	+0.2	+0.0	44.6	46.0	-1.4	L1 (L)
51	1.290M Ave	28.6	+5.6	+0.1	+0.1	+0.1	+0.0	34.5	46.0	-11.5	L1 (L)
^	1.290M	37.9	+5.6	+0.1	+0.1	+0.1	+0.0	43.8	46.0	-2.2	L1 (L)
53	733.946k Ave	28.5	+5.6	+0.1	+0.0	+0.1	+0.0	34.3	46.0	-11.7	L1 (L)
^	733.946k	37.1	+5.6	+0.1	+0.0	+0.1	+0.0	42.9	46.0	-3.1	L1 (L)
55	14.139M Ave	31.6	+5.6	+0.3	+0.7	+0.1	+0.0	38.3	50.0	-11.7	L1 (L)
^	14.139M	39.9	+5.6	+0.3	+0.7	+0.1	+0.0	46.6	50.0	-3.4	L1 (L)
57	12.112M Ave	31.5	+5.6	+0.3	+0.6	+0.1	+0.0	38.1	50.0	-11.9	L1 (L)
^	12.112M	40.4	+5.6	+0.3	+0.6	+0.1	+0.0	47.0	50.0	-3.0	L1 (L)
59	14.337M Ave	30.9	+5.6	+0.3	+0.7	+0.1	+0.0	37.6	50.0	-12.4	L1 (L)
^	14.337M	39.9	+5.6	+0.3	+0.7	+0.1	+0.0	46.6	50.0	-3.4	L1 (L)
61	4.067M Ave	27.2	+5.6	+0.2	+0.2	+0.1	+0.0	33.3	46.0	-12.7	L1 (L)
^	4.067M	36.4	+5.6	+0.2	+0.2	+0.1	+0.0	42.5	46.0	-3.5	L1 (L)
63	11.878M Ave	30.6	+5.6	+0.3	+0.6	+0.1	+0.0	37.2	50.0	-12.8	L1 (L)
^	11.878M	39.8	+5.6	+0.3	+0.6	+0.1	+0.0	46.4	50.0	-3.6	L1 (L)
65	11.851M Ave	30.5	+5.6	+0.3	+0.6	+0.1	+0.0	37.1	50.0	-12.9	L1 (L)
^	11.851M	40.1	+5.6	+0.3	+0.6	+0.1	+0.0	46.7	50.0	-3.3	L1 (L)
67	14.517M Ave	30.2	+5.6	+0.3	+0.7	+0.1	+0.0	36.9	50.0	-13.1	L1 (L)
^	14.517M	39.3	+5.6	+0.3	+0.7	+0.1	+0.0	46.0	50.0	-4.0	L1 (L)
69	2.842M Ave	26.7	+5.6	+0.2	+0.2	+0.1	+0.0	32.8	46.0	-13.2	L1 (L)
^	2.842M	35.9	+5.6	+0.2	+0.2	+0.1	+0.0	42.0	46.0	-4.0	L1 (L)
71	4.875M Ave	26.3	+5.6	+0.2	+0.2	+0.1	+0.0	32.4	46.0	-13.6	L1 (L)

^	4.875M	36.9	+5.6	+0.2	+0.2	+0.1	+0.0	43.0	46.0	-3.0	L1 (L)
73	1.064M	26.5	+5.6	+0.1	+0.1	+0.1	+0.0	32.4	46.0	-13.6	L1 (L)
^	1.064M	36.5	+5.6	+0.1	+0.1	+0.1	+0.0	42.4	46.0	-3.6	L1 (L)
75	2.068M	26.3	+5.6	+0.1	+0.1	+0.1	+0.0	32.2	46.0	-13.8	L1 (L)
^	2.068M	36.3	+5.6	+0.1	+0.1	+0.1	+0.0	42.2	46.0	-3.8	L1 (L)
77	1.375M	26.1	+5.6	+0.1	+0.1	+0.1	+0.0	32.0	46.0	-14.0	L1 (L)
^	1.375M	36.7	+5.6	+0.1	+0.1	+0.1	+0.0	42.6	46.0	-3.4	L1 (L)
79	1.741M	25.9	+5.6	+0.1	+0.1	+0.1	+0.0	31.8	46.0	-14.2	L1 (L)
^	1.741M	36.2	+5.6	+0.1	+0.1	+0.1	+0.0	42.1	46.0	-3.9	L1 (L)
81	3.186M	24.2	+5.6	+0.2	+0.2	+0.1	+0.0	30.3	46.0	-15.7	L1 (L)
^	3.186M	35.9	+5.6	+0.2	+0.2	+0.1	+0.0	42.0	46.0	-4.0	L1 (L)
83	2.502M	23.6	+5.6	+0.2	+0.2	+0.1	+0.0	29.7	46.0	-16.3	L1 (L)
^	2.502M	35.9	+5.6	+0.2	+0.2	+0.1	+0.0	42.0	46.0	-4.0	L1 (L)
85	1.171M	23.5	+5.6	+0.1	+0.1	+0.1	+0.0	29.4	46.0	-16.6	L1 (L)
^	1.171M	36.2	+5.6	+0.1	+0.1	+0.1	+0.0	42.1	46.0	-3.9	L1 (L)

CKC Laboratories Date: 11/29/2010 Time: 1:37:23 PM SmartLabs, Inc. WO#: 91263
15.207 AC Mains - Average Test Lead: L1 (L) 120V 60Hz Sequence#: 4 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 • 110 Olinda Place • Brea, CA 92823 • 714-993-6112

Customer: **SmartLabs, Inc.**
 Specification: **15.207 AC Mains - Average**
 Work Order #: **91263** Date: 11/29/2010
 Test Type: **Conducted Emissions** Time: 1:25:07 PM
 Equipment: **KeypadLinc™ – On/Off Switch (Dual-Band), SMART Keypad Switch, 277V** Sequence#: 3
 Manufacturer: SmartLabs, Inc. Tested By: S. Hundal
 Model: #2487S, #4772 120V 60Hz
 S/N: 13.D0.E9

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP05613	Attenuator	50FHC-006-10BNC	3/10/2009	3/10/2011
T2	ANP01910	Cable	RG-142	3/19/2010	3/19/2012
	AN02128	50uH LISN-L-1	3816/2NM	3/25/2009	3/25/2011
T3	AN02128	50uH LISN-L-2	3816/2NM	3/25/2009	3/25/2011
	AN02672	Spectrum Analyzer	E4446A	8/9/2010	8/9/2012
T4	AN02343	High Pass Filter	HE9615-150K-50-720B	1/14/2009	1/14/2011

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
SMART Keypad Switch, 277V*	SmartLabs, Inc.	#4772	13.D0.E9
KeypadLinc™ – On/Off Switch (Dual-Band)*	SmartLabs, Inc.	#2487S	13.D0.E9

Support Devices:

Function	Manufacturer	Model #	S/N
100W Light bulb	Phillips	DuraMax	NA

Test Conditions / Notes:

The EUT is connected to a 100W light bulb. Ground wire is attached. The EUT is in the on state at maximum brightness.

EUT environment - 23°C and 20% Relative Humidity

Highest Clock Freq - 915.1MHz

Freq Range Tested - 150kHz-30MHz

150 kHz- 30 MHz RBWVBW=9 kHz

Ext Attn: 0 dB

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

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	13.247M	37.8	+5.6	+0.3	+0.6	+0.1	+0.0	44.4	50.0	-5.6	(N) L
	Ave										
^	13.247M	47.5	+5.6	+0.3	+0.6	+0.1	+0.0	54.1	50.0	+4.1	(N) L
3	613.957k	34.3	+5.6	+0.1	+0.1	+0.2	+0.0	40.3	46.0	-5.7	(N) L
	Ave										

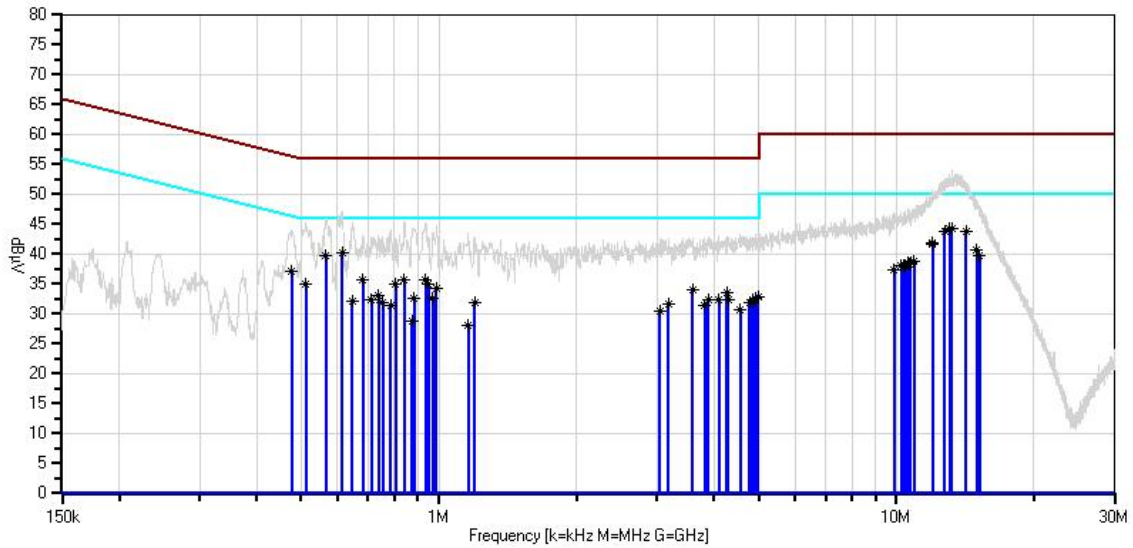
^	613.957k	41.2	+5.6	+0.1	+0.1	+0.2	+0.0	47.2	46.0	+1.2	(N) L
5	13.076M Ave	37.7	+5.6	+0.3	+0.6	+0.1	+0.0	44.3	50.0	-5.7	(N) L
^	13.076M	46.8	+5.6	+0.3	+0.6	+0.1	+0.0	53.4	50.0	+3.4	(N) L
7	566.689k Ave	33.8	+5.6	+0.1	+0.1	+0.2	+0.0	39.8	46.0	-6.2	(N) L
^	566.689k	40.0	+5.6	+0.1	+0.1	+0.2	+0.0	46.0	46.0	+0.0	(N) L
9	12.779M Ave	37.2	+5.6	+0.3	+0.6	+0.1	+0.0	43.8	50.0	-6.2	(N) L
^	12.779M	45.9	+5.6	+0.3	+0.6	+0.1	+0.0	52.5	50.0	+2.5	(N) L
11	14.193M Ave	37.0	+5.6	+0.3	+0.7	+0.1	+0.0	43.7	50.0	-6.3	(N) L
^	14.193M	45.3	+5.6	+0.3	+0.7	+0.1	+0.0	52.0	50.0	+2.0	(N) L
13	12.004M Ave	35.3	+5.6	+0.3	+0.6	+0.1	+0.0	41.9	50.0	-8.1	(N) L
^	12.004M	44.1	+5.6	+0.3	+0.6	+0.1	+0.0	50.7	50.0	+0.7	(N) L
15	12.022M Ave	35.0	+5.6	+0.3	+0.6	+0.1	+0.0	41.6	50.0	-8.4	(N) L
^	12.022M	44.1	+5.6	+0.3	+0.6	+0.1	+0.0	50.7	50.0	+0.7	(N) L
17	14.977M Ave	34.1	+5.6	+0.3	+0.7	+0.1	+0.0	40.8	50.0	-9.2	(N) L
^	14.977M	42.4	+5.6	+0.3	+0.7	+0.1	+0.0	49.1	50.0	-0.9	(N) L
19	477.243k Ave	31.1	+5.7	+0.1	+0.0	+0.2	+0.0	37.1	46.4	-9.3	(N) L
^	477.243k	38.1	+5.7	+0.1	+0.0	+0.2	+0.0	44.1	46.4	-2.3	(N) L
21	683.042k Ave	29.8	+5.6	+0.1	+0.1	+0.2	+0.0	35.8	46.0	-10.2	(N) L
^	683.042k	37.3	+5.6	+0.1	+0.1	+0.2	+0.0	43.3	46.0	-2.7	(N) L
23	15.193M Ave	33.1	+5.6	+0.3	+0.7	+0.1	+0.0	39.8	50.0	-10.2	(N) L
^	15.193M	41.4	+5.6	+0.3	+0.7	+0.1	+0.0	48.1	50.0	-1.9	(N) L
25	936.743k Ave	29.9	+5.6	+0.1	+0.1	+0.1	+0.0	35.8	46.0	-10.2	(N) L
^	936.743k	39.5	+5.6	+0.1	+0.1	+0.1	+0.0	45.4	46.0	-0.6	(N) L
27	840.846k Ave	29.7	+5.6	+0.1	+0.1	+0.1	+0.0	35.6	46.0	-10.4	(N) L
^	840.846k	39.8	+5.6	+0.1	+0.1	+0.1	+0.0	45.7	46.0	-0.3	(N) L
29	512.149k Ave	29.1	+5.7	+0.1	+0.0	+0.2	+0.0	35.1	46.0	-10.9	(N) L

^	512.149k	39.3	+5.7	+0.1	+0.0	+0.2	+0.0	45.3	46.0	-0.7	(N) L
31	949.501k Ave	29.2	+5.6	+0.1	+0.1	+0.1	+0.0	35.1	46.0	-10.9	(N) L
^	949.501k	37.1	+5.6	+0.1	+0.1	+0.1	+0.0	43.0	46.0	-3.0	(N) L
33	10.941M Ave	32.4	+5.6	+0.3	+0.5	+0.1	+0.0	38.9	50.0	-11.1	(N) L
^	10.941M	41.3	+5.6	+0.3	+0.5	+0.1	+0.0	47.8	50.0	-2.2	(N) L
35	804.485k Ave	29.0	+5.6	+0.1	+0.1	+0.1	+0.0	34.9	46.0	-11.1	(N) L
^	804.485k	36.7	+5.6	+0.1	+0.1	+0.1	+0.0	42.6	46.0	-3.4	(N) L
37	10.643M Ave	32.1	+5.6	+0.3	+0.5	+0.1	+0.0	38.6	50.0	-11.4	(N) L
^	10.643M	41.3	+5.6	+0.3	+0.5	+0.1	+0.0	47.8	50.0	-2.2	(N) L
39	10.725M Ave	32.1	+5.6	+0.3	+0.5	+0.1	+0.0	38.6	50.0	-11.4	(N) L
^	10.725M	40.4	+5.6	+0.3	+0.5	+0.1	+0.0	46.9	50.0	-3.1	(N) L
41	10.688M Ave	31.9	+5.6	+0.3	+0.5	+0.1	+0.0	38.4	50.0	-11.6	(N) L
^	10.688M	40.4	+5.6	+0.3	+0.5	+0.1	+0.0	46.9	50.0	-3.1	(N) L
43	987.776k Ave	28.3	+5.6	+0.1	+0.1	+0.1	+0.0	34.2	46.0	-11.8	(N) L
^	987.776k	39.0	+5.6	+0.1	+0.1	+0.1	+0.0	44.9	46.0	-1.1	(N) L
45	10.463M Ave	31.7	+5.6	+0.3	+0.5	+0.1	+0.0	38.2	50.0	-11.8	(N) L
^	10.463M	40.6	+5.6	+0.3	+0.5	+0.1	+0.0	47.1	50.0	-2.9	(N) L
47	3.582M Ave	28.0	+5.6	+0.2	+0.2	+0.1	+0.0	34.1	46.0	-11.9	(N) L
^	3.582M	36.6	+5.6	+0.2	+0.2	+0.1	+0.0	42.7	46.0	-3.3	(N) L
49	10.256M Ave	31.6	+5.6	+0.3	+0.5	+0.1	+0.0	38.1	50.0	-11.9	(N) L
^	10.256M	40.5	+5.6	+0.3	+0.5	+0.1	+0.0	47.0	50.0	-3.0	(N) L
51	10.373M Ave	31.6	+5.6	+0.3	+0.5	+0.1	+0.0	38.1	50.0	-11.9	(N) L
^	10.373M	40.4	+5.6	+0.3	+0.5	+0.1	+0.0	46.9	50.0	-3.1	(N) L
53	4.262M Ave	27.5	+5.6	+0.2	+0.2	+0.1	+0.0	33.6	46.0	-12.4	(N) L
^	4.262M	36.7	+5.6	+0.2	+0.2	+0.1	+0.0	42.8	46.0	-3.2	(N) L
55	9.896M Ave	30.9	+5.6	+0.3	+0.5	+0.1	+0.0	37.4	50.0	-12.6	(N) L

^	9.896M	40.4	+5.6	+0.3	+0.5	+0.1	+0.0	46.9	50.0	-3.1	(N) L
57	737.582k	27.2	+5.6	+0.1	+0.1	+0.1	+0.0	33.1	46.0	-12.9	(N) L
^	737.582k	37.2	+5.6	+0.1	+0.1	+0.1	+0.0	43.1	46.0	-2.9	(N) L
59	4.990M	26.8	+5.6	+0.2	+0.2	+0.1	+0.0	32.9	46.0	-13.1	(N) L
^	4.990M	37.3	+5.6	+0.2	+0.2	+0.1	+0.0	43.4	46.0	-2.6	(N) L
61	4.917M	26.6	+5.6	+0.2	+0.2	+0.1	+0.0	32.7	46.0	-13.3	(N) L
^	4.917M	37.3	+5.6	+0.2	+0.2	+0.1	+0.0	43.4	46.0	-2.6	(N) L
63	881.458k	26.8	+5.6	+0.1	+0.1	+0.1	+0.0	32.7	46.0	-13.3	(N) L
^	881.458k	38.5	+5.6	+0.1	+0.1	+0.1	+0.0	44.4	46.0	-1.6	(N) L
65	970.765k	26.7	+5.6	+0.1	+0.1	+0.1	+0.0	32.6	46.0	-13.4	(N) L
^	970.765k	37.9	+5.6	+0.1	+0.1	+0.1	+0.0	43.8	46.0	-2.2	(N) L
67	3.884M	26.4	+5.6	+0.2	+0.2	+0.1	+0.0	32.5	46.0	-13.5	(N) L
^	3.884M	36.8	+5.6	+0.2	+0.2	+0.1	+0.0	42.9	46.0	-3.1	(N) L
69	4.288M	26.3	+5.6	+0.2	+0.2	+0.1	+0.0	32.4	46.0	-13.6	(N) L
^	4.288M	36.7	+5.6	+0.2	+0.2	+0.1	+0.0	42.8	46.0	-3.2	(N) L
71	4.845M	26.2	+5.6	+0.2	+0.2	+0.1	+0.0	32.3	46.0	-13.7	(N) L
^	4.845M	36.8	+5.6	+0.2	+0.2	+0.1	+0.0	42.9	46.0	-3.1	(N) L
73	4.097M	26.2	+5.6	+0.2	+0.2	+0.1	+0.0	32.3	46.0	-13.7	(N) L
^	4.097M	37.0	+5.6	+0.2	+0.2	+0.1	+0.0	43.1	46.0	-2.9	(N) L
75	712.857k	26.4	+5.6	+0.1	+0.1	+0.1	+0.0	32.3	46.0	-13.7	(N) L
^	712.857k	37.1	+5.6	+0.1	+0.1	+0.1	+0.0	43.0	46.0	-3.0	(N) L
77	646.682k	26.1	+5.6	+0.1	+0.1	+0.2	+0.0	32.1	46.0	-13.9	(N) L
^	646.682k	39.4	+5.6	+0.1	+0.1	+0.2	+0.0	45.4	46.0	-0.6	(N) L
79	4.866M	25.8	+5.6	+0.2	+0.2	+0.1	+0.0	31.9	46.0	-14.1	(N) L
^	4.866M	36.6	+5.6	+0.2	+0.2	+0.1	+0.0	42.7	46.0	-3.3	(N) L
81	754.308k	26.0	+5.6	+0.1	+0.1	+0.1	+0.0	31.9	46.0	-14.1	(N) L

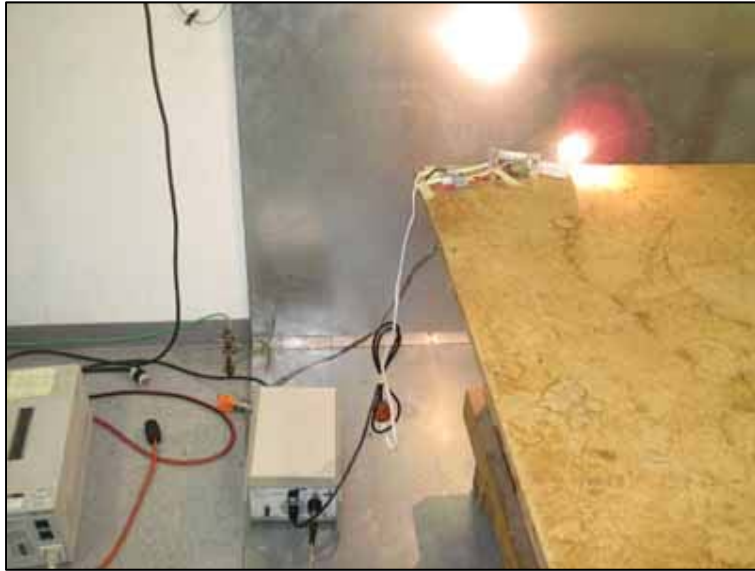
^	754.308k	37.1	+5.6	+0.1	+0.1	+0.1	+0.0	43.0	46.0	-3.0	(N) L
83	4.777M	25.8	+5.6	+0.2	+0.2	+0.1	+0.0	31.9	46.0	-14.1	(N) L
^	4.777M	36.8	+5.6	+0.2	+0.2	+0.1	+0.0	42.9	46.0	-3.1	(N) L
85	1.196M	26.0	+5.6	+0.1	+0.1	+0.1	+0.0	31.9	46.0	-14.1	(N) L
^	1.196M	37.0	+5.6	+0.1	+0.1	+0.1	+0.0	42.9	46.0	-3.1	(N) L
87	3.174M	25.6	+5.6	+0.2	+0.2	+0.1	+0.0	31.7	46.0	-14.3	(N) L
^	3.174M	36.7	+5.6	+0.2	+0.2	+0.1	+0.0	42.8	46.0	-3.2	(N) L
89	784.851k	25.6	+5.6	+0.1	+0.1	+0.1	+0.0	31.5	46.0	-14.5	(N) L
^	784.851k	38.1	+5.6	+0.1	+0.1	+0.1	+0.0	44.0	46.0	-2.0	(N) L
91	3.812M	25.4	+5.6	+0.2	+0.2	+0.1	+0.0	31.5	46.0	-14.5	(N) L
^	3.812M	36.7	+5.6	+0.2	+0.2	+0.1	+0.0	42.8	46.0	-3.2	(N) L
93	4.564M	24.7	+5.6	+0.2	+0.2	+0.1	+0.0	30.8	46.0	-15.2	(N) L
^	4.564M	37.4	+5.6	+0.2	+0.2	+0.1	+0.0	43.5	46.0	-2.5	(N) L
95	3.046M	24.3	+5.6	+0.2	+0.2	+0.1	+0.0	30.4	46.0	-15.6	(N) L
^	3.046M	36.5	+5.6	+0.2	+0.2	+0.1	+0.0	42.6	46.0	-3.4	(N) L
97	874.297k	22.8	+5.6	+0.1	+0.1	+0.1	+0.0	28.7	46.0	-17.3	(N) L
^	874.297k	38.3	+5.6	+0.1	+0.1	+0.1	+0.0	44.2	46.0	-1.8	(N) L
99	1.158M	22.2	+5.6	+0.1	+0.1	+0.1	+0.0	28.1	46.0	-17.9	(N) L
^	1.158M	37.7	+5.6	+0.1	+0.1	+0.1	+0.0	43.6	46.0	-2.4	(N) L

CKC Laboratories Date: 11/29/2010 Time: 1:25:07 PM SmartLabs, Inc. WO#: 91263
15.207 AC Mains - Average Test Lead: (N) L2 120V 60Hz Sequence#: 3 Ext ATTN: 0 dB



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

Test Setup Photos



15.249(a) RF Power Output

Test Data Sheets

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

Customer: **SmartLabs, Inc.**

Specification: **15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)**

Work Order #: **91263** Date: 11/29/2010

Test Type: **Maximized Emissions** Time: 15:37:08

Equipment: **KeypadLinc™ – On/Off Switch (Dual-Band), SMART Keypad Switch, 277V** Sequence#: 5

Manufacturer: SmartLabs, Inc. Tested By: S. Hundal

Model: #2487S, #4772

S/N: 13.D0.E9

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN00314	Loop Antenna	6502	6/30/2010	6/30/2012
T1	AN00010	Preamp	8447D	3/19/2010	3/19/2012
T2	AN01995	Biconilog Antenna	CBL6111C	3/8/2010	3/8/2012
T3	ANP05555	Cable	RG223/U	8/18/2010	8/18/2012
T4	ANP05569	Cable	RG-214/U	8/18/2010	8/18/2012
T5	ANP04382	Cable	LDF-50	9/3/2010	9/3/2012
	AN02672	Spectrum Analyzer	E4446A	8/9/2010	8/9/2012
	AN00787	Preamp	83017A	6/4/2009	6/4/2011
	AN01646	Horn Antenna	3115	8/18/2010	8/18/2012
	AN02946	Cable	32022-2-2909K-36TC	9/14/2009	9/14/2011
	ANP05988	Cable	LDF1-50	3/12/2010	3/12/2012

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
SMART Keypad Switch, 277V*	SmartLabs, Inc.	#4772	13.D0.E9
KeypadLinc™ – On/Off Switch (Dual-Band)*	SmartLabs, Inc.	#2487S	13.D0.E9

Support Devices:

Function	Manufacturer	Model #	S/N
100W Light bulb	Phillips	DuraMax	NA

Test Conditions / Notes:

The EUT is connected to a 100W light bulb. Ground wire is attached. The EUT is in the on state at maximum brightness.
 EUT environment - 23°C and 20% Relative Humidity
 Highest Clock Freq - 915.1MHz
 Freq Range Tested - 915.1MHz
 30-1000MHz RBWVBW=120 kHz
 15.31(e) Voltage variation on power. Supply voltage varied between 85% and 115% of the nominal rated supply voltage. No change in fundamental emission was observed as a result of these tests.

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
	MHz	dB μ V	T5				Table	dB μ V/m	dB μ V/m	dB	Ant
1	915.050M	75.9	-27.5 +3.3	+23.6	+0.6	+4.1	+0.0	80.0	94.0	-14.0	Horiz
2	914.896M	68.6	-27.5 +3.3	+23.6	+0.6	+4.1	+0.0	72.7	94.0	-21.3	Vert

Test Setup Photos



RF POWER OUTPUT



RF POWER OUTPUT

15.249(b) Field Strength of Harmonics

Test Data Sheets

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

Customer: **SmartLabs, Inc.**

Specification: **15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)**

Work Order #: **91263** Date: 11/29/2010

Test Type: **Maximized Emissions** Time: 16:29:57

Equipment: **KeypadLinc™ – On/Off Switch (Dual-Band), SMART Keypad Switch, 277V** Sequence#: 5

Manufacturer: SmartLabs, Inc. Tested By: S. Hundal

Model: #2487S, #4772

S/N: 13.D0.E9

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP04382	Cable	LDF-50	9/3/2010	9/3/2012
	AN02672	Spectrum Analyzer	E4446A	8/9/2010	8/9/2012
T2	AN00787	Preamp	83017A	6/4/2009	6/4/2011
T3	AN02946	Cable	32022-2-2909K-36TC	9/14/2009	9/14/2011
T4	ANP05988	Cable	LDF1-50	3/12/2010	3/12/2012
T5	AN00849	Horn Antenna	3115	4/23/2010	4/23/2012

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
SMART Keypad Switch, 277V*	SmartLabs, Inc.	#4772	13.D0.E9
KeypadLinc™ – On/Off Switch (Dual-Band)*	SmartLabs, Inc.	#2487S	13.D0.E9

Support Devices:

Function	Manufacturer	Model #	S/N
100W Light bulb	Phillips	DuraMax	NA

Test Conditions / Notes:

The EUT is connected to a 100W light bulb. Ground wire is attached. The EUT is in the on state at maximum brightness.

EUT environment - 23°C and 20% Relative Humidity

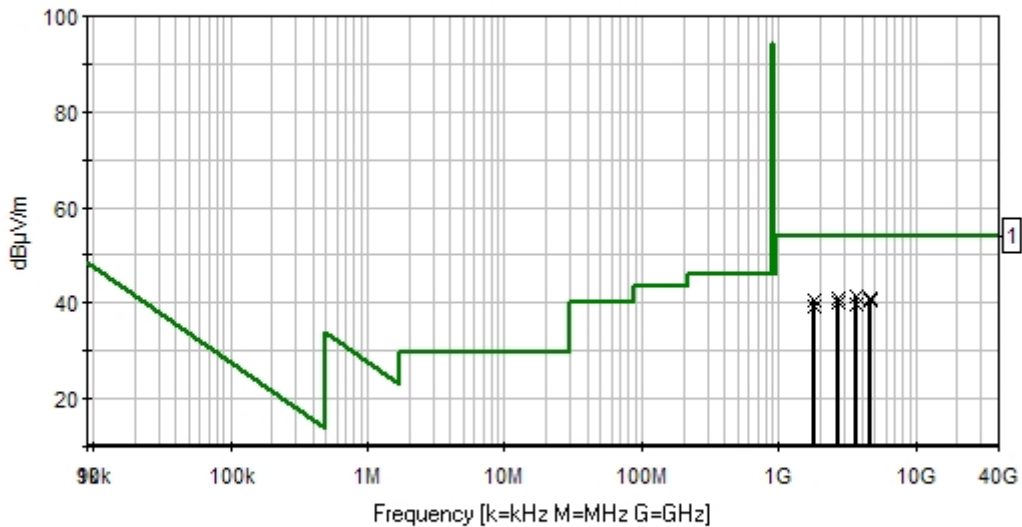
Highest Clock Freq - 915.1MHz
 Freq Range Tested - 1000MHz-10000MHz
 1GHz-40GHz RBW=VBW=1MHz

Ext Attn: 0 dB

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

#	Freq MHz	Rdng dB μ V	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	3660.000M	37.5	+7.0 +31.3	-40.2	+0.7	+5.1	+0.0	41.4	54.0	-12.6	Vert
2	4575.000M	33.8	+8.4 +32.5	-40.3	+0.8	+5.9	+0.0	41.1	54.0	-12.9	Vert
3	2745.000M	40.4	+6.3 +29.3	-39.9	+0.6	+4.3	+0.0	41.0	54.0	-13.0	Vert
4	4575.000M	33.4	+8.4 +32.5	-40.3	+0.8	+5.9	+0.0	40.7	54.0	-13.3	Horiz
5	1830.000M	44.5	+4.9 +27.2	-39.7	+0.5	+3.2	+0.0	40.6	54.0	-13.4	Horiz
6	2745.000M	39.4	+6.3 +29.3	-39.9	+0.6	+4.3	+0.0	40.0	54.0	-14.0	Horiz
7	3660.000M	35.9	+7.0 +31.3	-40.2	+0.7	+5.1	+0.0	39.8	54.0	-14.2	Horiz
8	1830.000M	43.4	+4.9 +27.2	-39.7	+0.5	+3.2	+0.0	39.5	54.0	-14.5	Vert

CKC Laboratories Date: 11/29/2010 Time: 16:29:57 SmartLabs, Inc. WO#: 91263
15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)
Test Distance: 3 Meters Sequence#: 5 Ext ATTN: 0 dB



Test Setup Photos



FIELD STRENGTH OF HARMONICS



FIELD STRENGTH OF HARMONICS

Occupied Bandwidth

Test Location: CKC Laboratories • 110 Olinda Place • Brea, CA 92823 • 714-993-6112
 Customer: **SmartLabs, Inc.**
 Specification: **15.249 Occupied Bandwidth (902-928 MHz Transmitter)**
 Work Order #: **91263** Date: 11/29/2010
 Test Type: **Maximized Emissions** Time: 3:49:25 PM
 Equipment: **KeypadLinc™ – On/Off Switch (Dual-Band), SMART Keypad Switch, 277V** Sequence#: 6
 Manufacturer: SmartLabs, Inc. Tested By: S. Hundal
 Model: #2487S, #4772
 S/N: 13.D0.E9

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN00010	Preamp	8447D	3/19/2010	3/19/2012
	AN01995	Biconilog Antenna	CBL6111C	3/8/2010	3/8/2012
	ANP05555	Cable	RG223/U	8/18/2010	8/18/2012
	ANP05569	Cable	RG-214/U	8/18/2010	8/18/2012
	ANP04382	Cable	LDF-50	9/3/2010	9/3/2012
	AN02672	Spectrum Analyzer	E4446A	8/9/2010	8/9/2012

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
SMART Keypad Switch, 277V*	SmartLabs, Inc.	#4772	13.D0.E9
KeypadLinc™ – On/Off Switch (Dual-Band)*	SmartLabs, Inc.	#2487S	13.D0.E9

Support Devices:

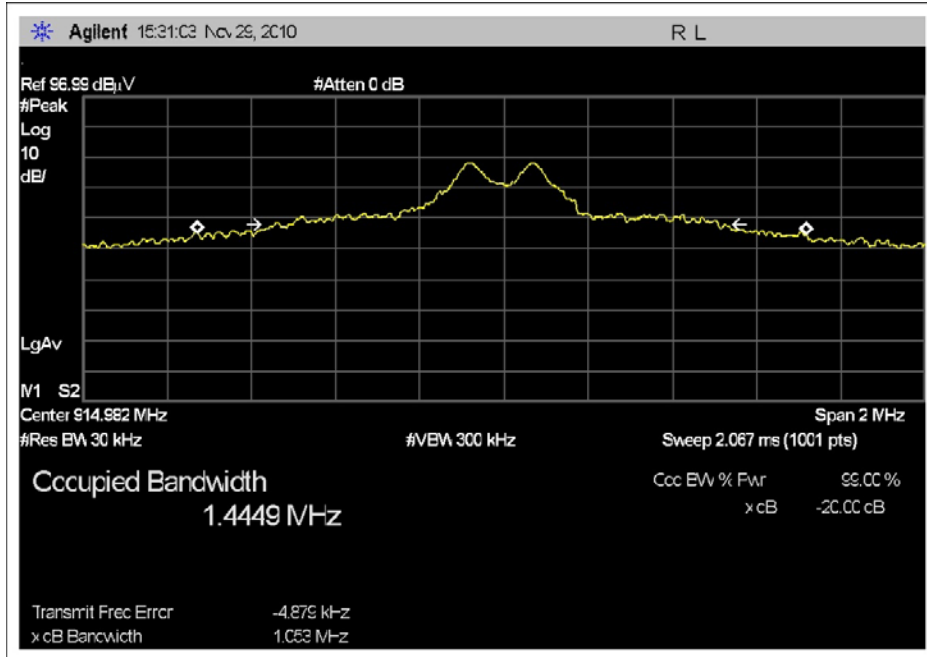
Function	Manufacturer	Model #	S/N
100W Light bulb	Phillips	DuraMax	NA

Test Conditions / Notes:

The EUT is connected to a 100W light bulb. Ground wire is attached.
 The EUT is in the on state at maximum brightness.

EUT environment - 23°C and 20% Relative Humidity

Test Data



Test Setup Photos



OCCUPIED BANDWIDTH



OCCUPIED BANDWIDTH

Bandedge

Test Location: CKC Laboratories • 110 Olinda Place • Brea, CA 92823 • 714-993-6112
 Customer: **SmartLabs, Inc.**
 Specification: **15.249 Bandedge Compliance (902-928 MHz Transmitter)**
 Work Order #: **91263** Date: 11/29/2010
 Test Type: **Maximized Emissions** Time: 3:49:25 PM
 Equipment: **KeypadLinc™ – On/Off Switch (Dual-Band), SMART Keypad Switch, 277V** Sequence#: 6
 Manufacturer: SmartLabs, Inc. Tested By: S. Hundal
 Model: #2487S, #4772
 S/N: 13.D0.E9

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN00010	Preamp	8447D	3/19/2010	3/19/2012
	AN01995	Biconilog Antenna	CBL6111C	3/8/2010	3/8/2012
	ANP05555	Cable	RG223/U	8/18/2010	8/18/2012
	ANP05569	Cable	RG-214/U	8/18/2010	8/18/2012
	ANP04382	Cable	LDF-50	9/3/2010	9/3/2012
	AN02672	Spectrum Analyzer	E4446A	8/9/2010	8/9/2012

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
SMART Keypad Switch, 277V*	SmartLabs, Inc.	#4772xx	13.D0.E9
KeypadLinc™ – On/Off Switch (Dual-Band)*	SmartLabs, Inc.	#2487Sxx	13.D0.E9

Support Devices:

Function	Manufacturer	Model #	S/N
100W Light bulb	Phillips	DuraMax	NA

Test Conditions / Notes:

The EUT is connected to a 100W light bulb. Ground wire is attached. The EUT is in the on state at maximum brightness.

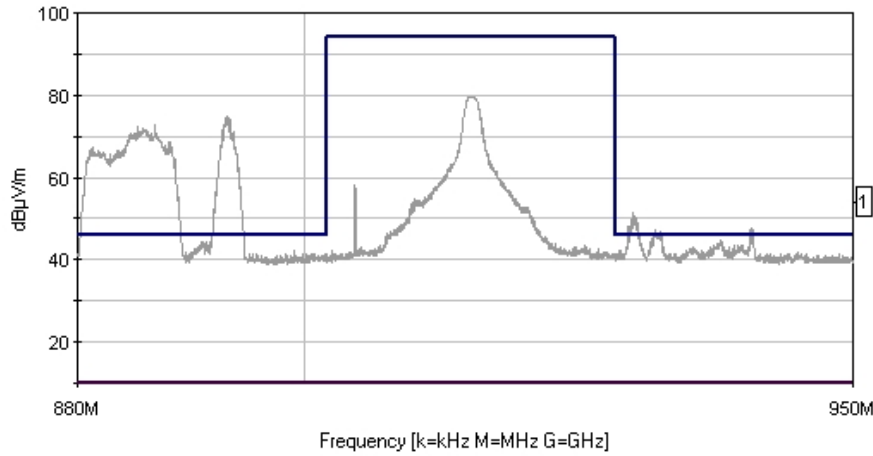
EUT environment - 23°C and 20% Relative Humidity

Highest Clock Freq - 915.1MHz
 Freq Range Tested - 915.1MHz
 30-1000MHz RBWVBW=1MHz

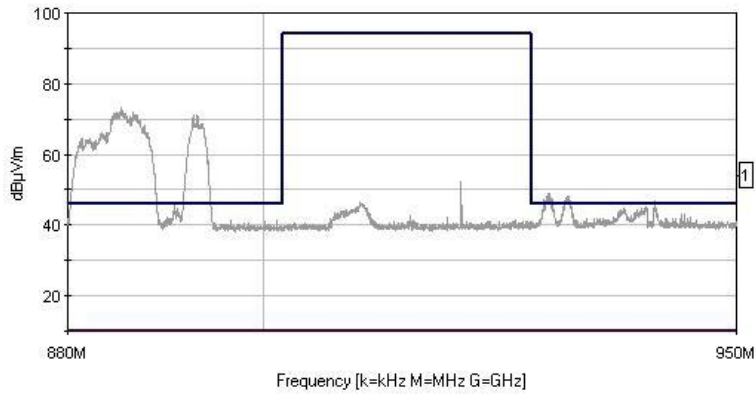
One plot with EUT on and the other with EUT off. This shows that some emissions are ambient.

Test Data

CKC Laboratories Date: 11/29/2010 Time: 3:49:25 PM SmartLabs, Inc. WVO#: 91263
 15,249 Carrier and Spurious Emissions (902-928 MHz Transmitter)
 Test Distance: 3 Meters Sequence#: 6 Ext ATTN: 0 dB



CKC Laboratories Date: 11/29/2010 Time: 3:52:25 PM SmartLabs, Inc. WO#: 91263
 15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)
 Test Distance: 3 Meters Sequence#: 6 Ext ATTN: 0 dB



— Sweep Data
 — 1 - 15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)
 — Readings

Test Setup Photos



BANDEGE



BANDEGE

15.249(d) Field Strength of Spurious Emissions

Test Data Sheets

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

Customer: **SmartLabs, Inc.**

Specification: **15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)**

Work Order #: **91263** Date: 11/29/2010

Test Type: **Maximized Emissions** Time: 15:26:14

Equipment: **KeypadLinc™ – On/Off Switch (Dual-Band), SMART Keypad Switch, 277V** Sequence#: 5

Manufacturer: SmartLabs, Inc. Tested By: S. Hundal

Model: #2487S, #4772

S/N: 13.D0.E9

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN00314	Loop Antenna	6502	6/30/2010	6/30/2012
T1	AN00010	Preamp	8447D	3/19/2010	3/19/2012
T2	AN01995	Biconilog Antenna	CBL6111C	3/8/2010	3/8/2012
T3	ANP05555	Cable	RG223/U	8/18/2010	8/18/2012
T4	ANP05569	Cable	RG-214/U	8/18/2010	8/18/2012
T5	ANP04382	Cable	LDF-50	9/3/2010	9/3/2012
	AN02672	Spectrum Analyzer	E4446A	8/9/2010	8/9/2012
	AN00787	Preamp	83017A	6/4/2009	6/4/2011
	AN01646	Horn Antenna	3115	8/18/2010	8/18/2012
	AN02946	Cable	32022-2-2909K-36TC	9/14/2009	9/14/2011
	ANP05988	Cable	LDF1-50	3/12/2010	3/12/2012

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
SMART Keypad Switch, 277V*	SmartLabs, Inc.	#4772	13.D0.E9
KeypadLinc™ – On/Off Switch (Dual-Band)*	SmartLabs, Inc.	#2487S	13.D0.E9

Support Devices:

Function	Manufacturer	Model #	S/N
100W Light bulb	Phillips	DuraMax	NA

Test Conditions / Notes:

The EUT is connected to a 100W light bulb. Ground wire is attached. The EUT is in the on state at maximum brightness.

EUT environment - 23°C and 20% Relative Humidity

Highest Clock Freq - 915.1MHz

Freq Range Tested - 9kHz-10GHz

9kHz-150kHz RBW=VBW=200Hz; 150kHz-30MHz RBW=VBW=9kHz; 30MHz-1GHz RBW=VBW=120kHz; 1GHz-40GHz RBW=VBW=1MHz

Ext Attn: 0 dB

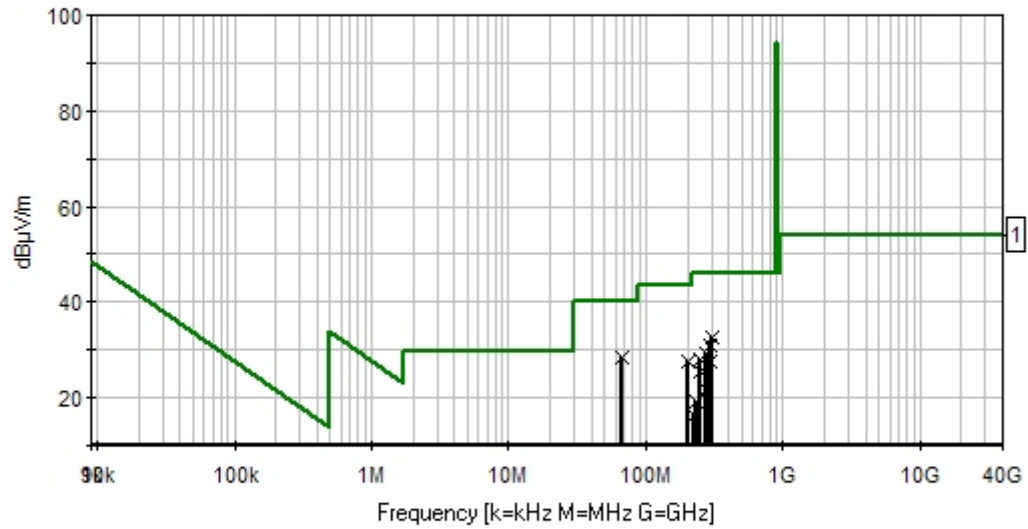
Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	66.343M	47.4	-27.1 +1.0	+5.8	+0.2	+1.2	+0.0	28.5	40.0	-11.5	Vert
2	304.139M	41.0	-26.5 +2.0	+13.4	+0.3	+2.2	+0.0	32.4	46.0	-13.6	Horiz
3	298.632M	39.7	-26.5 +2.0	+13.3	+0.3	+2.2	+0.0	31.0	46.0	-15.0	Horiz
4	204.620M	41.3	-26.7 +1.6	+9.4	+0.3	+1.8	+0.0	27.7	43.5	-15.8	Vert
5	276.481M	38.3	-26.5 +2.0	+13.0	+0.3	+2.1	+0.0	29.2	46.0	-16.8	Vert
6	248.843M	37.7	-26.5 +1.9	+12.6	+0.3	+2.0	+0.0	28.0	46.0	-18.0	Horiz
7	298.612M	36.2	-26.5 +2.0	+13.3	+0.3	+2.2	+0.0	27.5	46.0	-18.5	Vert
8	248.858M	35.0	-26.5 +1.9	+12.6	+0.3	+2.0	+0.0	25.3	46.0	-20.7	Vert
9	276.516M	31.0	-26.5 +2.0	+13.0	+0.3	+2.1	+0.0	21.9	46.0	-24.1	Horiz
10	232.267M	30.4	-26.6 +1.8	+11.5	+0.3	+1.9	+0.0	19.3	46.0	-26.7	Horiz
11	226.718M	27.8	-26.6 +1.7	+11.1	+0.3	+1.9	+0.0	16.2	46.0	-29.8	Horiz

CKC Laboratories Date: 11/29/2010 Time: 15:26:14 SmartLabs, Inc. WO#: 91263
 15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)
 Test Distance: 3 Meters Sequence#: 5 Ext ATTN: 0 dB



— Readings
 — 1 - 15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)
 × Peak Readings

Test Setup Photos



FIELD STRENGTH OF SPURIOUS EMISSIONS



FIELD STRENGTH OF SPURIOUS EMISSIONS

RSS-210

99% Bandwidth

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

Customer: **SmartLabs, Inc.**

Specification: **RSS 210 Occupied Bandwidth (902-928 MHz Transmitter)**

Work Order #: **91263** Date: 11/29/2010

Test Type: **Maximized Emissions** Time: 3:49:25 PM

Equipment: **KeypadLinc™ – On/Off Switch (Dual-Band), SMART Keypad Switch, 277V** Sequence#: 6

Manufacturer: SmartLabs, Inc. Tested By: S. Hundal

Model: #2487S, #4772

S/N: 13.D0.E9

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN00010	Preamp	8447D	3/19/2010	3/19/2012
	AN01995	Biconilog Antenna	CBL6111C	3/8/2010	3/8/2012
	ANP05555	Cable	RG223/U	8/18/2010	8/18/2012
	ANP05569	Cable	RG-214/U	8/18/2010	8/18/2012
	ANP04382	Cable	LDF-50	9/3/2010	9/3/2012
	AN02672	Spectrum Analyzer	E4446A	8/9/2010	8/9/2012

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
SMART Keypad Switch, 277V*	SmartLabs, Inc.	#4772	13.D0.E9
KeypadLinc™ – On/Off Switch (Dual-Band)*	SmartLabs, Inc.	#2487S	13.D0.E9

Support Devices:

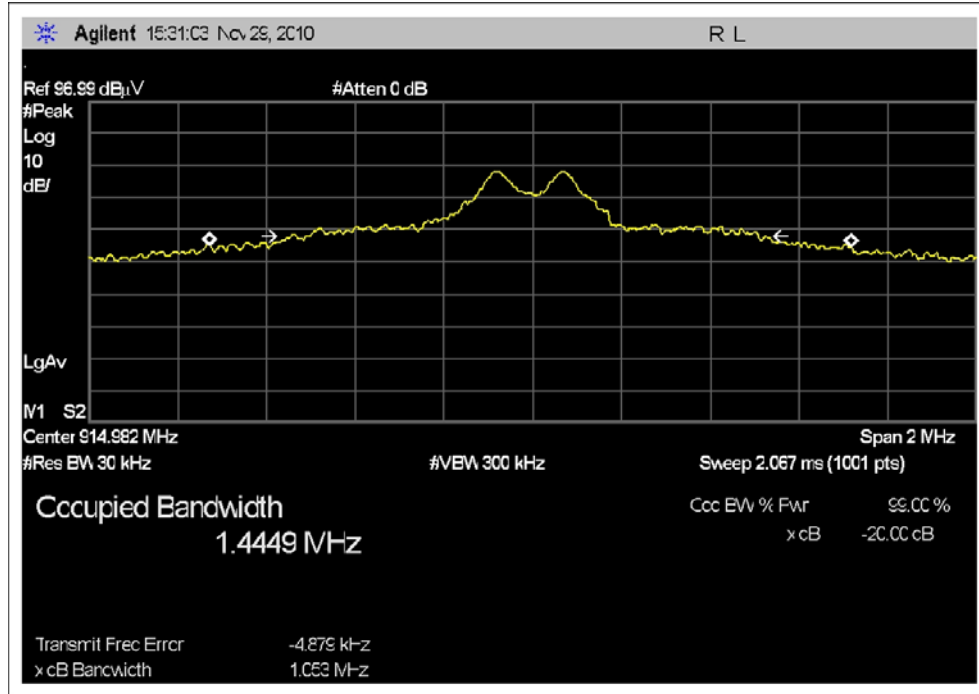
Function	Manufacturer	Model #	S/N
100W Light bulb	Phillips	DuraMax	NA

Test Conditions / Notes:

The EUT is connected to a 100W light bulb. Ground wire is attached. The EUT is in the on state at maximum brightness.

EUT environment - 23°C and 20% Relative Humidity

Test Data



Test Setup Photos



99% BANDWIDTH



99% BANDWIDTH

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. For testing emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used.

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.