

SmartLabs, Inc.

TEST REPORT FOR

RemoteLinc 2 INSTEON Wireless Controller, 2444Ax

Tested To The Following Standards:

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

Report No.: 92090-4

Date of issue: July 29, 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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ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

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

Representative: Matthew Carter
Customer Reference Number: 11-3MC0622-01

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: 92090

July 27, 2011

July 27, 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 D	US0060	R-1256, C-1319, T-1660 & G-255	3082D-2	100638

SUMMARY OF RESULTS

Standard / Specification: FCC Part 15 Subpart C Section 15.249 & RSS-210 Issue 8

Description	Test Procedure/Method	Results
Voltage Variations	FCC Part 15 Subpart C Section 15.31(e)	Pass
Conducted Emissions	FCC Part 15 Subpart C Section 15.207 / ANSI C63.4 (2003)	NA
Occupied Bandwidth	FCC Part 15 Subpart C Section 15.249 / 2.1049	Pass
Bandedge	FCC Part 15 Subpart C 15.249	Pass
RF Power Output	FCC Part 15 Subpart C Section 15.249(a)	Pass
Field Strength of Spurious Emissions	FCC Part 15 Subpart C Section 15.249(d)	Pass
99% Occupied 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
A fully charged EUT simulates a fresh battery installed during the test.

EQUIPMENT UNDER TEST (EUT)

EQUIPMENT UNDER TEST

RemoteLinc 2 INSTEON Wireless Controller

Manuf: SmartLabs, Inc.

Model: 2444Ax

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 Variations

Test Conditions/ Set up

The EUT is placed on the wooden table lined with Styrofoam of 10 cm thickness. Orientated in three orthogonal operating positions, the EUT is set in constant transmit mode. No load is connected to the EUT for evaluation of RF parameter. The EUT operates on battery power. The EUT power is designed to be mechanically switched off during charge cycle via dedicated USB charging port.

TX freq = 914.5-915.5 MHz

72°F, 53% Relative Humidity
 Frequency range of measurement = 914.5 - 915.5MHz
 30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz.

Note: 15.31(e) A fully charged EUT simulates a fresh battery installed during the test.

Engineer Name: Don Nguyen

Test Equipment					
Asset/Serial #	Description	Model	Manufacturer	Cal Date	Cal Due
P04382	Cable	LDF-50	Andrew	9/3/2010	9/3/2012
02869	Spectrum Analyzer	E4440A	Agilent	2/12/2011	2/12/2013
00010	Preamp	8447D	HP	3/19/2010	3/19/2012
00851	Biconilog Antenna	CBL6111C	Schaffer	3/8/2010	3/8/2012
P05555	Cable	RG223/U	Pasternack	8/18/2010	8/18/2012
P05569	Cable	RG-214/U	Pasternack	8/18/2010	8/18/2012

Test Setup Photos



X AXIS FRONT VIEW



X AXIS BACK VIEW



Y AXIS FRONT VIEW



Y AXIS BACK VIEW



Z AXIS FRONT VIEW



Z AXIS FRONT VIEW

15.207 Conducted Emissions

NA = Conducted Emissions is not applicable because the EUT is battery powered.

15.249 / 2.1049 Occupied Bandwidth

Test Conditions / Set up

The EUT is placed on the wooden table lined with Styrofoam of 10 cm thickness. Orientated in three orthogonal operating positions, the EUT is set in constant transmit mode. No load is connected to the EUT for evaluation of RF parameter. The EUT operates on battery power. The EUT power is designed to be mechanically switched off during charge cycle via dedicated USB charging port.

TX freq = 914.5-915.5 MHz

72°F, 53% Relative Humidity

Frequency range of measurement = 914.5 - 915.5MHz

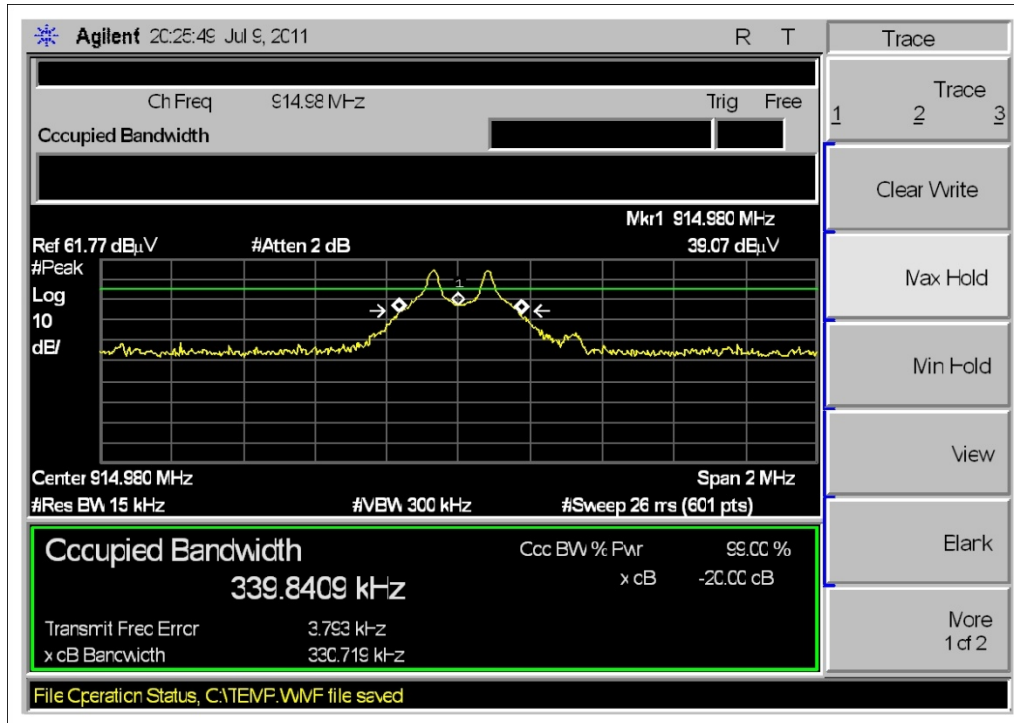
30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz.

Note: A fully charged EUT simulates a fresh battery installed during the test.

Engineer Name: Don Nguyen

Test Equipment					
Asset/Serial #	Description	Model	Manufacturer	Cal Date	Cal Due
P04382	Cable	LDF-50	Andrew	9/3/2010	9/3/2012
02869	Spectrum Analyzer	E4440A	Agilent	2/12/2011	2/12/2013
00010	Preamp	8447D	HP	3/19/2010	3/19/2012
00851	Biconilog Antenna	CBL6111C	Schaffer	3/8/2010	3/8/2012
P05555	Cable	RG223/U	Pasternack	8/18/2010	8/18/2012
P05569	Cable	RG-214/U	Pasternack	8/18/2010	8/18/2012

Test Data



Test Setup Photos



X AXIS FRONT VIEW



X AXIS BACK VIEW



Y AXIS FRONT VIEW



Y AXIS BACK VIEW



Z AXIS FRONT VIEW



Z AXIS BACK VIEW

15.249 FCC_Bandedge

Test Conditions / Set up

The EUT is placed on the wooden table lined with Styrofoam of 10 cm thickness. Orientated in three orthogonal operating positions, the EUT is set in constant transmit mode. No load is connected to the EUT for evaluation of RF parameter. The EUT operates on battery power. The EUT power is designed to be mechanically switched off during charge cycle via dedicated USB charging port.

TX freq = 914.5-915.5 MHz

72°F, 53% Relative Humidity

Frequency range of measurement = 914.5 - 915.5MHz

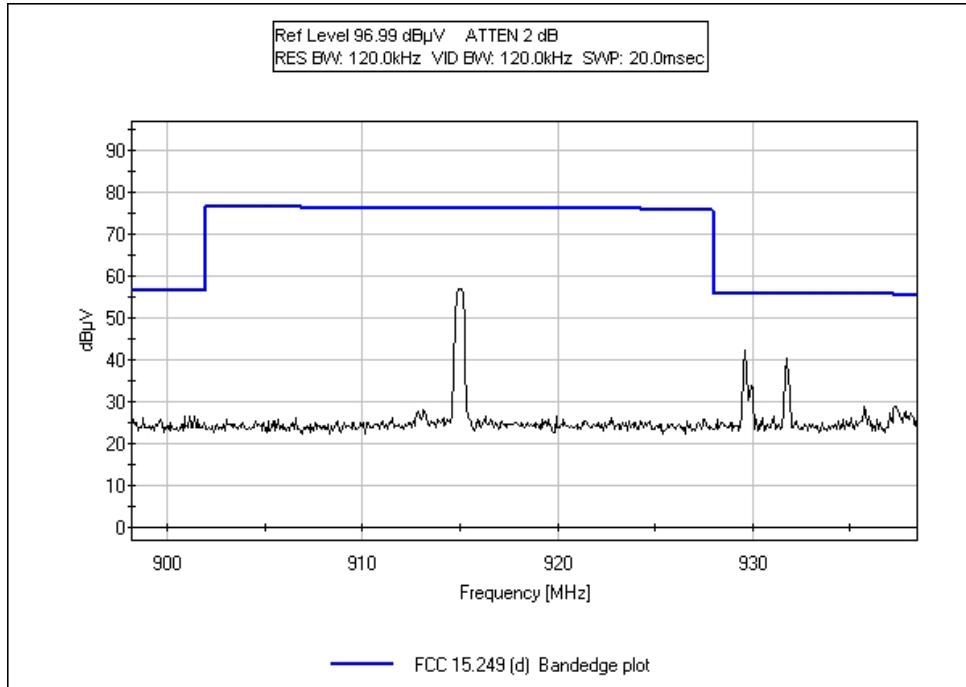
30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz.

Note: A fully charged EUT simulates a fresh battery installed during the test.

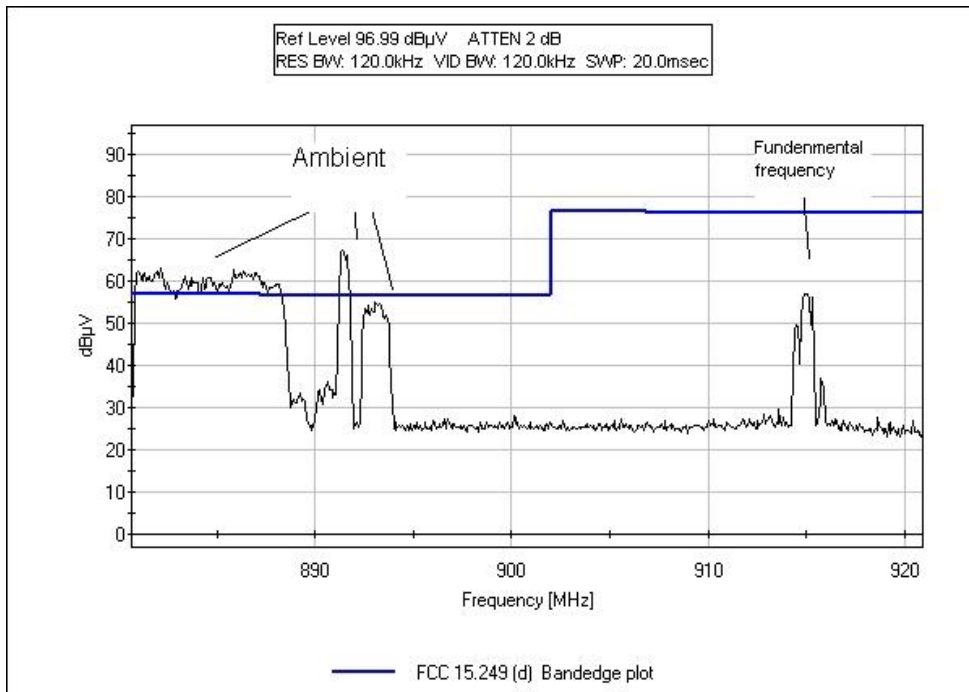
Engineer Name: Don Nguyen

Test Equipment					
Asset/Serial #	Description	Model	Manufacturer	Cal Date	Cal Due
P04382	Cable	LDF-50	Andrew	9/3/2010	9/3/2012
02869	Spectrum Analyzer	E4440A	Agilent	2/12/2011	2/12/2013
00010	Preamp	8447D	HP	3/19/2010	3/19/2012
00851	Biconilog Antenna	CBL6111C	Schaffer	3/8/2010	3/8/2012
P05555	Cable	RG223/U	Pasternack	8/18/2010	8/18/2012
P05569	Cable	RG-214/U	Pasternack	8/18/2010	8/18/2012

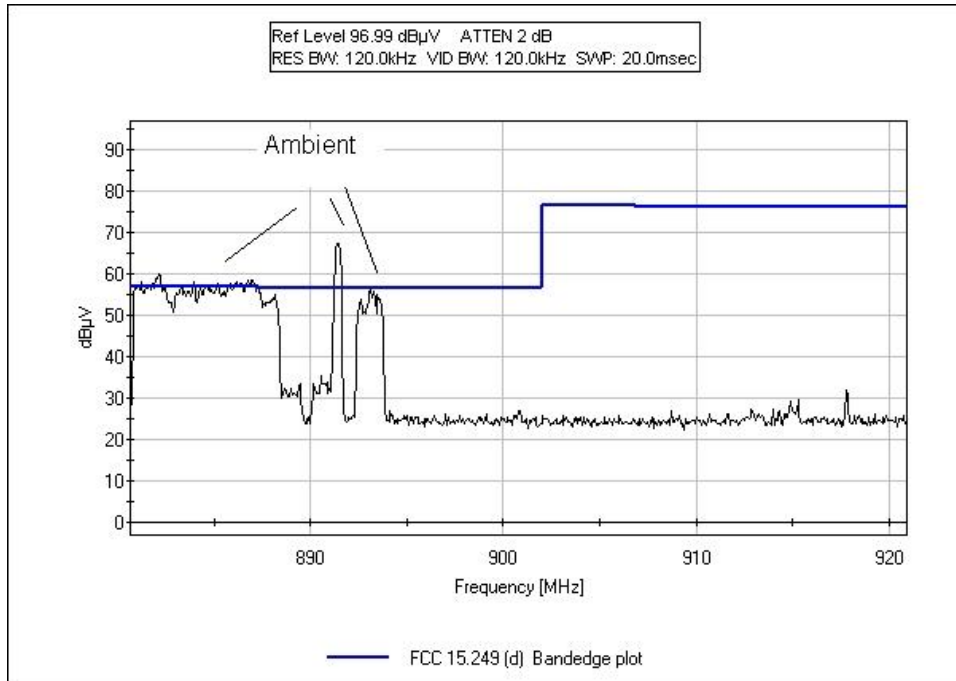
Test Data



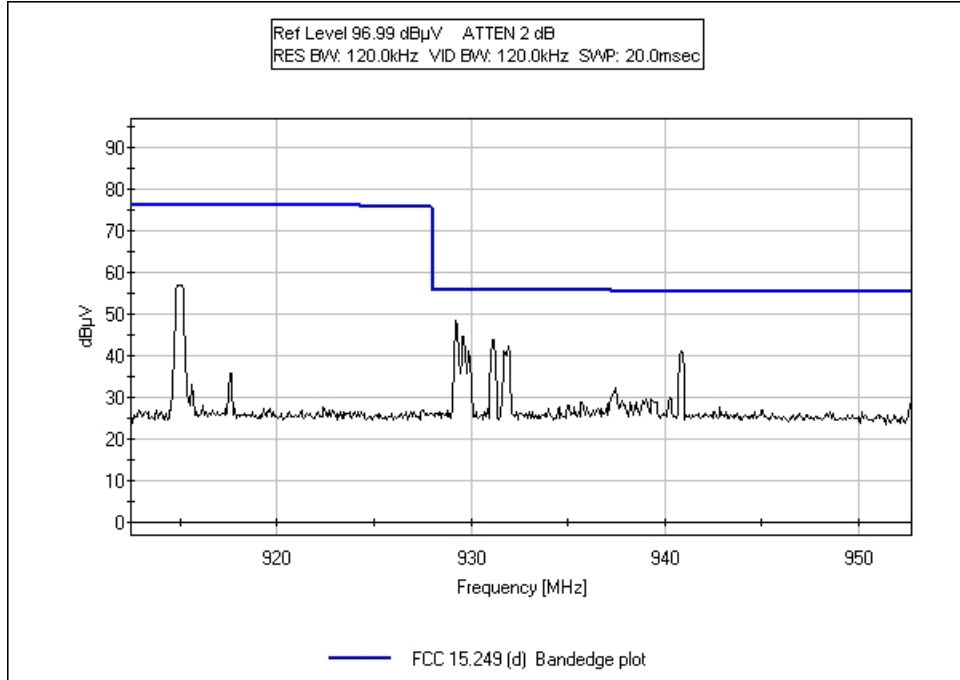
BANDEDGE CENTER



BANDEDGE LEFT



BANDEDGE LEFT Tx OFF



BANDEDGE RIGHT

Test Setup Photos



X AXIS FRONT VIEW



X AXIS BACK VIEW



Y AXIS FRONT VIEW



Y AXIS BACK VIEW



Z AXIS FRONT VIEW



Z AXIS BACK VIEW

15.249(a) RF Power Output

Test Data Sheet

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 #: **92090** Date: 7/27/2011
 Test Type: **Maximized Emissions** Time: 10:13:50
 Equipment: **RemoteLinc 2 INSTEON Wireless Controller** Sequence#: 2
 Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen
 Model: 2444Ax
 S/N: NA

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00010	Preamp	8447D	3/19/2010	3/19/2012
T2	AN00851	Biconilog Antenna	CBL6111C	3/8/2010	3/8/2012
T3	ANP04382	Cable	LDF-50	9/3/2010	9/3/2012
T4	ANP05555	Cable	RG223/U	8/18/2010	8/18/2012
T5	ANP05569	Cable	RG-214/U	8/18/2010	8/18/2012
	AN02869	Spectrum Analyzer	E4440A	2/12/2011	2/12/2013
	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
	AN03169	High Pass Filter	HM1155-11SS	9/14/2009	9/14/2011
	AN00787	Preamp	83017A	4/8/2011	4/8/2013

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
RemoteLinc 2 INSTEON Wireless Controller*	SmartLabs, Inc.	2444Ax	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 three orthogonal operating positions, the EUT is set in constant transmit mode. No load is connected to the EUT for evaluation of RF parameter.
 EUT operates on battery power.

TX freq = 914.5-915.5 MHz

The EUT power is designed to be mechanically switched off during charge cycle via dedicated USB charging port.

Frequency range of measurement
 30Mhz- 1 GHz, RBW=120 kHz, VBW=120 kHz

15.31(e) A fully charged EUT simulates a fresh battery installed during the test.

72°F, 53% Relative Humidity

Ext Attn: 0 dB

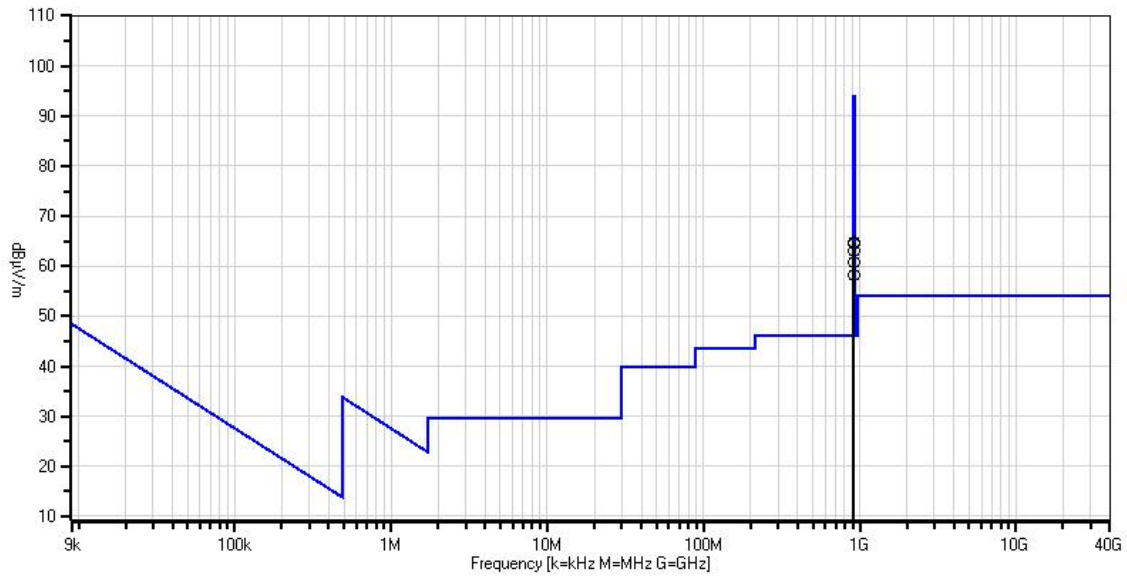
Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	914.900M	61.0	-27.5 +4.1	+23.3	+3.3	+0.6	+0.0	64.8	94.0 Z axis	-29.2	Horiz
2	915.060M	60.9	-27.5 +4.1	+23.3	+3.3	+0.6	+0.0	64.7	94.0 Y axis	-29.3	Vert
3	915.070M	60.9	-27.5 +4.1	+23.3	+3.3	+0.6	+0.0	64.7	94.0 Z axis	-29.3	Horiz
4	914.900M	60.9	-27.5 +4.1	+23.3	+3.3	+0.6	+0.0	64.7	94.0 Y axis	-29.3	Vert
5	914.900M	60.6	-27.5 +4.1	+23.3	+3.3	+0.6	+0.0	64.4	94.0 Z axis	-29.6	Vert
6	915.070M	60.6	-27.5 +4.1	+23.3	+3.3	+0.6	+0.0	64.4	94.0 Z axis	-29.6	Vert
7	914.900M	59.4	-27.5 +4.1	+23.3	+3.3	+0.6	+0.0	63.2	94.0 X axis	-30.8	Horiz
8	915.070M	59.2	-27.5 +4.1	+23.3	+3.3	+0.6	+0.0	63.0	94.0 X axis	-31.0	Horiz
9	914.900M	56.9	-27.5 +4.1	+23.3	+3.3	+0.6	+0.0	60.7	94.0 Y axis	-33.3	Horiz
10	915.060M	56.9	-27.5 +4.1	+23.3	+3.3	+0.6	+0.0	60.7	94.0 Y axis	-33.3	Horiz
11	914.910M	54.5	-27.5 +4.1	+23.3	+3.3	+0.6	+0.0	58.3	94.0 X axis	-35.7	Vert
12	915.070M	54.4	-27.5 +4.1	+23.3	+3.3	+0.6	+0.0	58.2	94.0 X axis	-35.8	Vert

CKC Laboratories, Inc. Date: 7/27/2011 Time: 10:13:50 SmartLabs, Inc. WO#: 92090
 15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter) Test Distance: 3 Meters Sequence#: 2 Ext
 ATTN: 0 dB



- Readings
- × QP Readings
- ▼ Ambient
- Peak Readings
- * Average Readings
- 1 - 15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)

Test Setup Photos



X AXIS FRONT VIEW



X AXIS BACK VIEW



Y AXIS FRONT VIEW



Y AXIS BACK VIEW



Z AXIS FRONT VIEW



Z AXIS BACK VIEW

15.249 (d) Radiated Spurious Emissions

Test Data Sheet

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 #: **92090** Date: 7/27/2011

Test Type: **Maximized Emissions** Time: 10:13:50

Equipment: **RemoteLinc 2 INSTEON Wireless Controller** Sequence#: 2

Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen

Model: 2444Ax

S/N: NA

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00010	Preamp	8447D	3/19/2010	3/19/2012
T2	AN00851	Biconilog Antenna	CBL6111C	3/8/2010	3/8/2012
T3	ANP04382	Cable	LDF-50	9/3/2010	9/3/2012
T4	ANP05555	Cable	RG223/U	8/18/2010	8/18/2012
T5	ANP05569	Cable	RG-214/U	8/18/2010	8/18/2012
T6	AN02869	Spectrum Analyzer	E4440A	2/12/2011	2/12/2013
T7	AN01646	Horn Antenna	3115	8/18/2010	8/18/2012
T8	AN02946	Cable	32022-2-2909K-36TC	9/14/2009	9/14/2011
T9	ANP05988	Cable	LDF1-50	3/12/2010	3/12/2012
T10	AN03169	High Pass Filter	HM1155-11SS	9/14/2009	9/14/2011
T11	AN00787	Preamp	83017A	4/8/2011	4/8/2013
	AN00314	Loop Antenna	6502	6/30/2010	6/30/2012

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
RemoteLinc 2 INSTEON Wireless Controller*	SmartLabs, Inc.	2444Ax	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 three orthogonal operating positions, the EUT is set in constant transmit mode. No load is connected to the EUT for evaluation of RF parameter.
 EUT operates on battery power.

TX freq = 914.5-915.5 MHz

The EUT power is designed to be mechanically switched off during charge cycle via dedicated USB charging port.

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) A fully charged EUT simulates a fresh battery installed during the test.

72°F, 53%Relative Humidity

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	1829.990M	49.4	+0.0 +0.0 +3.2	+0.0 +0.0 +0.3	+4.9 +26.6 -39.4	+0.0 +0.5	+0.0	45.5	54.0 Y axis	-8.5	Horiz
2	3659.990M	40.3	+0.0 +0.0 +5.1	+0.0 +0.0 +0.2	+7.0 +31.5 -39.7	+0.0 +0.7	+0.0	45.1	54.0 Y axis	-8.9	Horiz
3	7151.400M	28.7	-39.4 +7.5 +0.0	+35.6 +0.0 +0.0	+1.1 +0.2 +0.0	+11.0 +0.0	+0.0	44.7	54.0 Y axis	-9.3	Vert
4	5489.990M	32.8	+0.0 +0.0 +6.4	+0.0 +0.0 +0.1	+9.3 +34.0 -39.2	+0.0 +0.9	+0.0	44.3	54.0 X axis	-9.7	Vert
5	7319.990M	27.6	+0.0 +0.0 +7.6	+0.0 +0.0 +0.2	+11.0 +36.0 -39.3	+0.0 +1.1	+0.0	44.2	54.0 Z axis	-9.8	Vert
6	6404.990M	31.1	+0.0 +0.0 +6.9	+0.0 +0.0 +0.1	+10.3 +34.3 -39.6	+0.0 +1.0	+0.0	44.1	54.0 Y axis	-9.9	Horiz
7	5489.990M	32.6	+0.0 +0.0 +6.4	+0.0 +0.0 +0.1	+9.3 +34.0 -39.2	+0.0 +0.9	+0.0	44.1	54.0 Z axis	-9.9	Vert
8	4574.990M	35.5	+0.0 +0.0 +5.9	+0.0 +0.0 +0.3	+8.4 +32.5 -39.4	+0.0 +0.8	+0.0	44.0	54.0 Z axis	-10.0	Vert

9	2342.400M	45.0	-39.4 +3.7 +0.0	+28.1 +0.0 +0.0	+0.6 +0.2 +0.0	+5.5 +0.0	+0.0	43.7	54.0 X axis	-10.3	Horiz
10	4574.990M	35.2	+0.0 +0.0 +5.9	+0.0 +0.0 +0.3	+8.4 +32.5 -39.4	+0.0 +0.8	+0.0	43.7	54.0 Y axis	-10.3	Horiz
11	6404.990M	30.5	+0.0 +0.0 +6.9	+0.0 +0.0 +0.1	+10.3 +34.3 -39.6	+0.0 +1.0	+0.0	43.5	54.0 X axis	-10.5	Vert
12	1829.990M	47.3	+0.0 +0.0 +3.2	+0.0 +0.0 +0.3	+4.9 +26.6 -39.4	+0.0 +0.5	+0.0	43.4	54.0 Z axis	-10.6	Vert
13	6404.990M	30.3	+0.0 +0.0 +6.9	+0.0 +0.0 +0.1	+10.3 +34.3 -39.6	+0.0 +1.0	+0.0	43.3	54.0 Z axis	-10.7	Vert
14	5489.990M	31.7	+0.0 +0.0 +6.4	+0.0 +0.0 +0.1	+9.3 +34.0 -39.2	+0.0 +0.9	+0.0	43.2	54.0 Y axis	-10.8	Horiz
15	2137.450M	44.8	-39.4 +3.5 +0.0	+27.6 +0.0 +0.0	+0.6 +0.2 +0.0	+5.4 +0.0	+0.0	42.7	54.0 Y axis	-11.3	Horiz
16	2146.550M	44.7	-39.4 +3.5 +0.0	+27.6 +0.0 +0.0	+0.6 +0.2 +0.0	+5.4 +0.0	+0.0	42.6	54.0 X axis	-11.4	Horiz
17	6404.990M	29.4	+0.0 +0.0 +6.9	+0.0 +0.0 +0.1	+10.3 +34.3 -39.6	+0.0 +1.0	+0.0	42.4	54.0 Y axis	-11.6	Vert
18	3659.990M	37.4	+0.0 +0.0 +5.1	+0.0 +0.0 +0.2	+7.0 +31.5 -39.7	+0.0 +0.7	+0.0	42.2	54.0 Z axis	-11.8	Vert
19	5489.990M	30.7	+0.0 +0.0 +6.4	+0.0 +0.0 +0.1	+9.3 +34.0 -39.2	+0.0 +0.9	+0.0	42.2	54.0 Y axis	-11.8	Vert
20	2323.400M	43.3	-39.4 +3.7 +0.0	+28.0 +0.0 +0.0	+0.6 +0.2 +0.0	+5.5 +0.0	+0.0	41.9	54.0 Y axis	-12.1	Horiz
21	2322.750M	43.2	-39.4 +3.7 +0.0	+28.0 +0.0 +0.0	+0.6 +0.2 +0.0	+5.5 +0.0	+0.0	41.8	54.0 Y axis	-12.2	Vert
22	2744.990M	40.7	+0.0 +0.0 +4.3	+0.0 +0.0 +0.3	+6.3 +29.3 -39.7	+0.0 +0.6	+0.0	41.8	54.0 Y axis	-12.2	Horiz
23	6357.800M	28.6	-39.5 +6.9 +0.0	+34.3 +0.0 +0.0	+1.0 +0.1 +0.0	+10.3 +0.0	+0.0	41.7	54.0 Z axis	-12.3	Horiz
24	4574.990M	33.2	+0.0 +0.0 +5.9	+0.0 +0.0 +0.3	+8.4 +32.5 -39.4	+0.0 +0.8	+0.0	41.7	54.0 Y axis	-12.3	Vert
25	4574.990M	33.0	+0.0 +0.0 +5.9	+0.0 +0.0 +0.3	+8.4 +32.5 -39.4	+0.0 +0.8	+0.0	41.5	54.0 X axis	-12.5	Vert

26	5013.400M	31.0	-39.3 +6.0 +0.0	+33.3 +0.0 +0.0	+0.9 +0.2 +0.0	+9.3 +0.0 +0.0	+0.0	41.4	54.0 X axis	-12.6	Horiz
27	4575.000M	32.8	+0.0 +0.0 +5.9	+0.0 +0.0 +0.3	+8.4 +32.5 -39.4	+0.0 +0.8	+0.0	41.3	54.0 Z axis	-12.7	Horiz
28	3659.800M	36.5	-39.7 +5.1 +0.0	+31.5 +0.0 +0.0	+0.7 +0.2 +0.0	+7.0 +0.0	+0.0	41.3	54.0 X axis	-12.7	Horiz
29	2186.450M	43.0	-39.4 +3.6 +0.0	+27.7 +0.0 +0.0	+0.6 +0.2 +0.0	+5.5 +0.0	+0.0	41.2	54.0 X axis	-12.8	Vert
30	6405.740M	28.0	+0.0 +0.0 +6.9	+0.0 +0.0 +0.1	+10.3 +34.3 -39.6	+0.0 +1.0	+0.0	41.0	54.0 Z axis	-13.0	Horiz
31	5674.800M	29.3	-39.3 +6.4 +0.0	+34.1 +0.0 +0.0	+0.9 +0.1 +0.0	+9.5 +0.0	+0.0	41.0	54.0 Z axis	-13.0	Vert
32	771.450M	31.8	+0.0 +0.0 +21.7	+0.0 +0.0 +0.6	+0.0 +0.0 +3.5	+3.1 -27.9	+0.0	32.8	46.0 Z axis	-13.2	Vert
33	3659.990M	36.0	+0.0 +0.0 +5.1	+0.0 +0.0 +0.2	+7.0 +31.5 -39.7	+0.0 +0.7	+0.0	40.8	54.0 Y axis	-13.2	Vert
34	664.580M	33.5	+0.0 +0.0 +20.4	+0.0 +0.0 +0.5	+0.0 +0.0 +3.3	+2.9 -28.0	+0.0	32.6	46.0 X axis	-13.4	Horiz
35	2744.990M	39.5	+0.0 +0.0 +4.3	+0.0 +0.0 +0.3	+6.3 +29.3 -39.7	+0.0 +0.6	+0.0	40.6	54.0 Z axis	-13.4	Vert
36	952.640M	27.8	+0.0 +0.0 +23.9	+0.0 +0.0 +0.6	+0.0 +0.0 +4.2	+3.4 -27.5	+0.0	32.4	46.0 X axis	-13.6	Vert
37	838.680M	30.0	+0.0 +0.0 +22.5	+0.0 +0.0 +0.7	+0.0 +0.0 +3.8	+3.1 -27.7	+0.0	32.4	46.0 X axis	-13.6	Horiz
38	2630.750M	40.0	-39.6 +4.1 +0.0	+28.9 +0.0 +0.0	+0.6 +0.3 +0.0	+6.0 +0.0	+0.0	40.3	54.0 Z axis	-13.7	Vert
39	2754.950M	39.0	-39.7 +4.3 +0.0	+29.4 +0.0 +0.0	+0.6 +0.3 +0.0	+6.4 +0.0	+0.0	40.3	54.0 Z axis	-13.7	Vert
40	3660.000M	35.5	+0.0 +0.0 +5.1	+0.0 +0.0 +0.2	+7.0 +31.5 -39.7	+0.0 +0.7	+0.0	40.3	54.0 Z axis	-13.7	Horiz
41	3659.990M	35.4	+0.0 +0.0 +5.1	+0.0 +0.0 +0.2	+7.0 +31.5 -39.7	+0.0 +0.7	+0.0	40.2	54.0 X axis	-13.8	Vert
42	4441.400M	32.2	-39.4 +5.7 +0.0	+32.3 +0.0 +0.0	+0.8 +0.3 +0.0	+8.1 +0.0	+0.0	40.0	54.0 Y axis	-14.0	Horiz

43	1829.990M	43.8	+0.0	+0.0	+4.9	+0.0	+0.0	39.9	54.0	-14.1	Vert
			+0.0	+0.0	+26.6	+0.5			X axis		
			+3.2	+0.3	-39.4						
44	78.900M	43.0	+0.0	+0.0	+0.0	+1.1	+0.0	25.8	40.0	-14.2	Vert
			+0.0	+0.0	+0.0	-27.1			X axis		
			+7.4	+0.2	+1.2						
45	33.650M	34.4	+0.0	+0.0	+0.0	+0.6	+0.0	25.5	40.0	-14.5	Vert
			+0.0	+0.0	+0.0	-27.2			Z axis		
			+16.8	+0.1	+0.8						
46	931.065M	27.2	+0.0	+0.0	+0.0	+3.4	+0.0	31.4	46.0	-14.6	Vert
			+0.0	+0.0	+0.0	-27.5			Z axis		
			+23.6	+0.6	+4.1						
47	2186.850M	41.2	-39.4	+27.7	+0.6	+5.5	+0.0	39.4	54.0	-14.6	Horiz
			+3.6	+0.0	+0.2	+0.0			Y axis		
			+0.0	+0.0	+0.0						
48	2341.250M	40.6	-39.4	+28.1	+0.6	+5.5	+0.0	39.3	54.0	-14.7	Vert
			+3.7	+0.0	+0.2	+0.0			X axis		
			+0.0	+0.0	+0.0						
49	769.650M	30.2	+0.0	+0.0	+0.0	+3.1	+0.0	31.2	46.0	-14.8	Vert
			+0.0	+0.0	+0.0	-27.9			X axis		
			+21.7	+0.6	+3.5						
50	1884.450M	42.6	-39.3	+26.8	+0.5	+5.1	+0.0	39.2	54.0	-14.8	Vert
			+3.2	+0.0	+0.3	+0.0			Z axis		
			+0.0	+0.0	+0.0						
51	2587.750M	39.0	-39.6	+28.8	+0.6	+5.9	+0.0	39.1	54.0	-14.9	Vert
			+4.1	+0.0	+0.3	+0.0			Y axis		
			+0.0	+0.0	+0.0						
52	2744.990M	37.9	+0.0	+0.0	+6.3	+0.0	+0.0	39.0	54.0	-15.0	Vert
			+0.0	+0.0	+29.3	+0.6			X axis		
			+4.3	+0.3	-39.7						
53	2745.000M	37.9	+0.0	+0.0	+6.3	+0.0	+0.0	39.0	54.0	-15.0	Horiz
			+0.0	+0.0	+29.3	+0.6			Z axis		
			+4.3	+0.3	-39.7						
54	1191.050M	46.9	-40.5	+24.5	+0.4	+3.9	+0.0	38.9	54.0	-15.1	Vert
			+2.5	+0.0	+1.2	+0.0			X axis		
			+0.0	+0.0	+0.0						
55	4106.400M	32.1	-39.6	+32.4	+0.8	+7.3	+0.0	38.7	54.0	-15.3	Vert
			+5.4	+0.0	+0.3	+0.0			Z axis		
			+0.0	+0.0	+0.0						
56	1829.990M	42.6	+0.0	+0.0	+4.9	+0.0	+0.0	38.7	54.0	-15.3	Vert
			+0.0	+0.0	+26.6	+0.5			Y axis		
			+3.2	+0.3	-39.4						
57	2744.990M	37.6	+0.0	+0.0	+6.3	+0.0	+0.0	38.7	54.0	-15.3	Vert
			+0.0	+0.0	+29.3	+0.6			Y axis		
			+4.3	+0.3	-39.7						
58	67.150M	43.0	+0.0	+0.0	+0.0	+1.0	+0.0	24.2	40.0	-15.8	Vert
			+0.0	+0.0	+0.0	-27.1			Y axis		
			+5.9	+0.2	+1.2						
59	3097.800M	35.0	-39.8	+30.4	+0.7	+7.0	+0.0	38.1	54.0	-15.9	Horiz
			+4.6	+0.0	+0.2	+0.0			Z axis		
			+0.0	+0.0	+0.0						

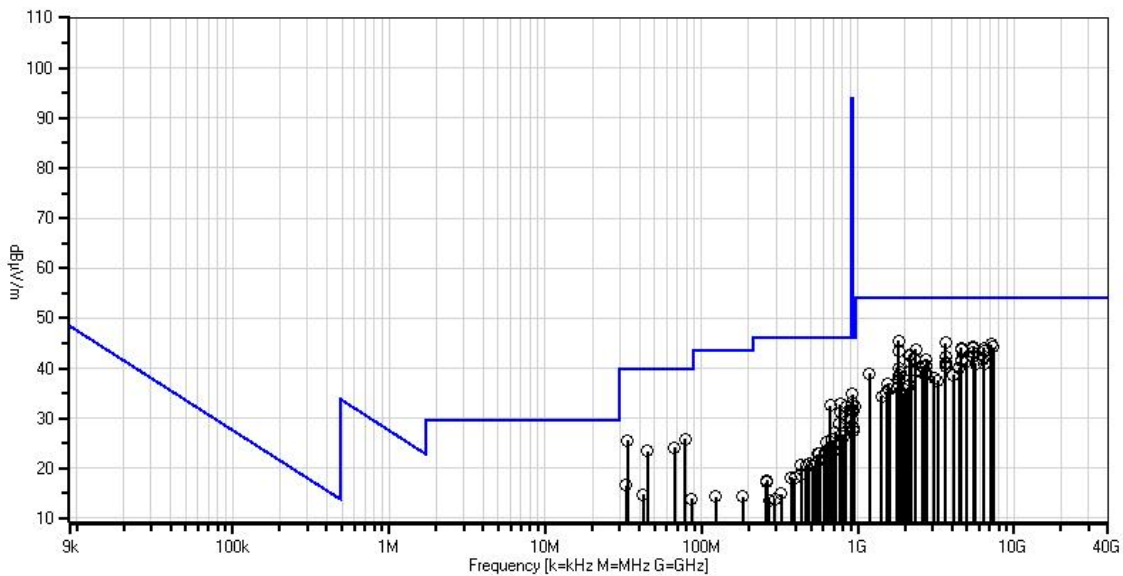
60	832.120M	27.8	+0.0	+0.0	+0.0	+3.1	+0.0	30.0	46.0	-16.0	Vert
			+0.0	+0.0	+0.0	-27.7			Y axis		
			+22.4	+0.7	+3.7						
61	1830.000M	41.7	+0.0	+0.0	+4.9	+0.0	+0.0	37.8	54.0	-16.2	Horiz
			+0.0	+0.0	+26.6	+0.5			Z axis		
			+3.2	+0.3	-39.4						
62	3239.800M	34.1	-39.8	+30.6	+0.7	+7.1	+0.0	37.6	54.0	-16.4	Vert
			+4.7	+0.0	+0.2	+0.0			Y axis		
			+0.0	+0.0	+0.0						
63	45.050M	38.4	+0.0	+0.0	+0.0	+0.8	+0.0	23.4	40.0	-16.6	Horiz
			+0.0	+0.0	+0.0	-27.2			Z axis		
			+10.2	+0.2	+1.0						
64	763.650M	28.0	+0.0	+0.0	+0.0	+3.1	+0.0	28.9	46.0	-17.1	Vert
			+0.0	+0.0	+0.0	-27.9			Y axis		
			+21.6	+0.6	+3.5						
65	1557.000M	42.5	-39.5	+25.5	+0.5	+4.4	+0.0	36.8	54.0	-17.2	Horiz
			+3.0	+0.0	+0.4	+0.0			Z axis		
			+0.0	+0.0	+0.0						
66	2142.550M	38.8	-39.4	+27.6	+0.6	+5.4	+0.0	36.7	54.0	-17.3	Vert
			+3.5	+0.0	+0.2	+0.0			Z axis		
			+0.0	+0.0	+0.0						
67	2099.050M	38.5	-39.3	+27.5	+0.5	+5.3	+0.0	36.2	54.0	-17.8	Vert
			+3.5	+0.0	+0.2	+0.0			X axis		
			+0.0	+0.0	+0.0						
68	1784.000M	40.4	-39.4	+26.4	+0.5	+4.8	+0.0	36.2	54.0	-17.8	Horiz
			+3.2	+0.0	+0.3	+0.0			Z axis		
			+0.0	+0.0	+0.0						
69	936.765M	23.6	+0.0	+0.0	+0.0	+3.4	+0.0	27.9	46.0	-18.1	Vert
			+0.0	+0.0	+0.0	-27.5			X axis		
			+23.7	+0.6	+4.1						
70	1592.250M	41.2	-39.5	+25.7	+0.5	+4.4	+0.0	35.7	54.0	-18.3	Vert
			+3.0	+0.0	+0.4	+0.0			Z axis		
			+0.0	+0.0	+0.0						
71	2010.050M	38.5	-39.3	+27.2	+0.5	+5.1	+0.0	35.6	54.0	-18.4	Horiz
			+3.4	+0.0	+0.2	+0.0			Z axis		
			+0.0	+0.0	+0.0						
72	940.635M	23.1	+0.0	+0.0	+0.0	+3.4	+0.0	27.5	46.0	-18.5	Vert
			+0.0	+0.0	+0.0	-27.5			Z axis		
			+23.7	+0.6	+4.2						
73	720.050M	27.2	+0.0	+0.0	+0.0	+3.0	+0.0	27.3	46.0	-18.7	Vert
			+0.0	+0.0	+0.0	-27.9			Z axis		
			+21.0	+0.6	+3.4						
74	1520.000M	41.0	-39.5	+25.4	+0.5	+4.4	+0.0	35.1	54.0	-18.9	Horiz
			+2.9	+0.0	+0.4	+0.0			X axis		
			+0.0	+0.0	+0.0						
75	1914.500M	38.3	-39.3	+26.9	+0.5	+5.1	+0.0	34.9	54.0	-19.1	Horiz
			+3.2	+0.0	+0.2	+0.0			X axis		
			+0.0	+0.0	+0.0						
76	797.000M	25.2	+0.0	+0.0	+0.0	+3.1	+0.0	26.8	46.0	-19.2	Vert
			+0.0	+0.0	+0.0	-27.8			Z axis		
			+22.0	+0.7	+3.6						

77	1425.350M	40.9	-39.7 +2.8 +0.0	+25.1 +0.0 +0.0	+0.5 +0.5 +0.0	+4.3 +0.0	+0.0	34.4	54.0 Y axis	-19.6	Vert
78	812.650M	24.4	+0.0 +0.0 +22.2	+0.0 +0.0 +0.7	+0.0 +0.0 +3.7	+3.1 -27.8	+0.0	26.3	46.0 Z axis	-19.7	Vert
79	691.200M	26.0	+0.0 +0.0 +20.7	+0.0 +0.0 +0.6	+0.0 +0.0 +3.4	+3.0 -27.9	+0.0	25.8	46.0 X axis	-20.2	Vert
80	631.130M	26.6	+0.0 +0.0 +20.1	+0.0 +0.0 +0.5	+0.0 +0.0 +3.2	+2.9 -28.0	+0.0	25.3	46.0 Z axis	-20.7	Horiz
81	767.780M	23.9	+0.0 +0.0 +21.7	+0.0 +0.0 +0.6	+0.0 +0.0 +3.5	+3.1 -27.9	+0.0	24.9	46.0 Z axis	-21.1	Horiz
82	667.100M	25.2	+0.0 +0.0 +20.5	+0.0 +0.0 +0.5	+0.0 +0.0 +3.3	+2.9 -28.0	+0.0	24.4	46.0 Z axis	-21.6	Vert
83	704.180M	23.7	+0.0 +0.0 +20.8	+0.0 +0.0 +0.6	+0.0 +0.0 +3.4	+3.0 -27.9	+0.0	23.6	46.0 Z axis	-22.4	Horiz
84	630.300M	24.5	+0.0 +0.0 +20.1	+0.0 +0.0 +0.5	+0.0 +0.0 +3.2	+2.9 -28.0	+0.0	23.2	46.0 Z axis	-22.8	Vert
85	613.080M	24.7	+0.0 +0.0 +19.9	+0.0 +0.0 +0.6	+0.0 +0.0 +3.1	+2.8 -28.0	+0.0	23.1	46.0 X axis	-22.9	Horiz
86	571.280M	25.4	+0.0 +0.0 +19.4	+0.0 +0.0 +0.5	+0.0 +0.0 +3.0	+2.7 -28.0	+0.0	23.0	46.0 Z axis	-23.0	Horiz
87	656.130M	24.0	+0.0 +0.0 +20.4	+0.0 +0.0 +0.5	+0.0 +0.0 +3.2	+2.9 -28.0	+0.0	23.0	46.0 Y axis	-23.0	Horiz
88	553.230M	25.5	+0.0 +0.0 +19.1	+0.0 +0.0 +0.5	+0.0 +0.0 +3.0	+2.7 -28.0	+0.0	22.8	46.0 Z axis	-23.2	Horiz
89	32.800M	25.1	+0.0 +0.0 +17.3	+0.0 +0.0 +0.1	+0.0 +0.0 +0.8	+0.6 -27.2	+0.0	16.7	40.0 X axis	-23.3	Horiz
90	651.100M	23.5	+0.0 +0.0 +20.3	+0.0 +0.0 +0.5	+0.0 +0.0 +3.2	+2.9 -28.0	+0.0	22.4	46.0 X axis	-23.6	Vert
91	612.950M	23.2	+0.0 +0.0 +19.9	+0.0 +0.0 +0.6	+0.0 +0.0 +3.1	+2.8 -28.0	+0.0	21.6	46.0 Z axis	-24.4	Vert
92	539.350M	23.9	+0.0 +0.0 +18.9	+0.0 +0.0 +0.5	+0.0 +0.0 +3.0	+2.7 -28.0	+0.0	21.0	46.0 Y axis	-25.0	Horiz
93	488.200M	24.5	+0.0 +0.0 +18.1	+0.0 +0.0 +0.5	+0.0 +0.0 +2.9	+2.6 -27.8	+0.0	20.8	46.0 Z axis	-25.2	Horiz

94	42.150M	28.5	+0.0	+0.0	+0.0	+0.7	+0.0	14.8	40.0	-25.2	Horiz
			+0.0	+0.0	+0.0	-27.2			Y axis		
			+11.8	+0.1	+0.9						
95	510.800M	24.1	+0.0	+0.0	+0.0	+2.6	+0.0	20.7	46.0	-25.3	Horiz
			+0.0	+0.0	+0.0	-27.9			X axis		
			+18.5	+0.5	+2.9						
96	466.350M	25.0	+0.0	+0.0	+0.0	+2.5	+0.0	20.6	46.0	-25.4	Horiz
			+0.0	+0.0	+0.0	-27.7			Y axis		
			+17.6	+0.4	+2.8						
97	432.150M	25.8	+0.0	+0.0	+0.0	+2.4	+0.0	20.6	46.0	-25.4	Vert
			+0.0	+0.0	+0.0	-27.5			Y axis		
			+16.9	+0.4	+2.6						
98	517.650M	23.8	+0.0	+0.0	+0.0	+2.6	+0.0	20.5	46.0	-25.5	Vert
			+0.0	+0.0	+0.0	-27.9			X axis		
			+18.6	+0.5	+2.9						
99	86.350M	30.1	+0.0	+0.0	+0.0	+1.2	+0.0	14.0	40.0	-26.0	Horiz
			+0.0	+0.0	+0.0	-27.1			Y axis		
			+8.3	+0.2	+1.3						
100	433.100M	24.0	+0.0	+0.0	+0.0	+2.4	+0.0	18.8	46.0	-27.2	Horiz
			+0.0	+0.0	+0.0	-27.5			Z axis		
			+16.9	+0.4	+2.6						
101	373.850M	24.6	+0.0	+0.0	+0.0	+2.3	+0.0	18.1	46.0	-27.9	Horiz
			+0.0	+0.0	+0.0	-27.1			Y axis		
			+15.5	+0.4	+2.4						
102	393.650M	24.0	+0.0	+0.0	+0.0	+2.4	+0.0	18.0	46.0	-28.0	Vert
			+0.0	+0.0	+0.0	-27.3			Z axis		
			+16.0	+0.4	+2.5						
103	261.850M	27.0	+0.0	+0.0	+0.0	+1.9	+0.0	17.6	46.0	-28.4	Horiz
			+0.0	+0.0	+0.0	-26.5			Z axis		
			+12.8	+0.3	+2.1						
104	258.400M	26.8	+0.0	+0.0	+0.0	+1.9	+0.0	17.2	46.0	-28.8	Vert
			+0.0	+0.0	+0.0	-26.5			Z axis		
			+12.7	+0.3	+2.0						
105	123.100M	26.7	+0.0	+0.0	+0.0	+1.3	+0.0	14.4	43.5	-29.1	Horiz
			+0.0	+0.0	+0.0	-27.0			X axis		
			+11.8	+0.2	+1.4						
106	182.900M	28.7	+0.0	+0.0	+0.0	+1.5	+0.0	14.3	43.5	-29.2	Vert
			+0.0	+0.0	+0.0	-26.8			Y axis		
			+8.9	+0.3	+1.7						
107	324.350M	22.8	+0.0	+0.0	+0.0	+2.1	+0.0	15.0	46.0	-31.0	Horiz
			+0.0	+0.0	+0.0	-26.7			X axis		
			+14.1	+0.4	+2.3						
108	293.650M	22.8	+0.0	+0.0	+0.0	+2.0	+0.0	14.0	46.0	-32.0	Vert
			+0.0	+0.0	+0.0	-26.5			X axis		
			+13.2	+0.3	+2.2						
109	270.100M	22.9	+0.0	+0.0	+0.0	+2.0	+0.0	13.7	46.0	-32.3	Horiz
			+0.0	+0.0	+0.0	-26.5			Z axis		
			+12.9	+0.3	+2.1						
110	927.555M	30.7	+0.0	+0.0	+0.0	+3.4	+0.0	34.8	94.0	-59.2	Vert
			+0.0	+0.0	+0.0	-27.5			Y axis		
			+23.5	+0.6	+4.1						

111	914.345M	29.3	+0.0	+0.0	+0.0	+3.3	+0.0	33.1	94.0	-60.9	Vert
			+0.0	+0.0	+0.0	-27.5			X axis		
			+23.3	+0.6	+4.1						
112	918.860M	28.8	+0.0	+0.0	+0.0	+3.3	+0.0	32.7	94.0	-61.3	Vert
			+0.0	+0.0	+0.0	-27.5			Z axis		
			+23.4	+0.6	+4.1						
113	927.620M	27.4	+0.0	+0.0	+0.0	+3.4	+0.0	31.5	94.0	-62.5	Vert
			+0.0	+0.0	+0.0	-27.5			Z axis		
			+23.5	+0.6	+4.1						
114	919.280M	25.8	+0.0	+0.0	+0.0	+3.3	+0.0	29.7	94.0	-64.3	Horiz
			+0.0	+0.0	+0.0	-27.5			Y axis		
			+23.4	+0.6	+4.1						

CKC Laboratories, Inc. Date: 7/27/2011 Time: 10:13:50 SmartLabs, Inc. WO#: 92090
 15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter) Test Distance: 3 Meters Sequence#: 2 Ext
 ATTN: 0 dB



— Readings
 × QP Readings
 ▼ Ambient
 ○ Peak Readings
 * Average Readings
 — 1 - 15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)

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 #: **92090** Date: 7/27/2011
 Test Type: **Radiated Scan** Time: 11:23:10
 Equipment: **RemoteLinc 2 INSTEON Wireless Controller** Sequence#: 3
 Manufacturer: SmartLabs, Inc. Tested By: Don Nguyen
 Model: 2444Ax
 S/N: NA

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00787	Preamp	83017A	4/8/2011	4/8/2013
T2	AN01646	Horn Antenna	3115	8/18/2010	8/18/2012
T3	AN02946	Cable	32022-2-2909K-36TC	9/14/2009	9/14/2011
T4	ANP04382	Cable	LDF-50	9/3/2010	9/3/2012
T5	ANP05988	Cable	LDF1-50	3/12/2010	3/12/2012
T6	AN02869	Spectrum Analyzer	E4440A	2/12/2011	2/12/2013
T7	AN03169	High Pass Filter	HM1155-11SS	9/14/2009	9/14/2011
T8	AN00010	Preamp	8447D	3/19/2010	3/19/2012
T9	AN00851	Biconilog Antenna	CBL6111C	3/8/2010	3/8/2012
T10	ANP05555	Cable	RG223/U	8/18/2010	8/18/2012
T11	ANP05569	Cable	RG-214/U	8/18/2010	8/18/2012
	AN00314	Loop Antenna	6502	6/30/2010	6/30/2012

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
RemoteLinc 2 INSTEON Wireless Controller	SmartLabs, Inc.	2444Ax	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 three orthogonal operating positions, the EUT is set in constant transmit mode. No load is connected to the EUT for evaluation of RF parameter. EUT operates on battery power.

TX freq = 914.5-915.5 MHz

The EUT power is designed to be mechanically switched off during charge cycle via dedicated USB charging port.

15.31(e) A fully charged EUT simulates a fresh battery installed during the test.

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

72°F, 53%Relative Humidity

Ext Attn: 0 dB

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 T5 T9 dB	T2 T6 T10 dB	T3 T7 T11 dB	T4 T8 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	7151.400M	28.7	-39.4 +7.5 +0.0	+35.6 +0.0 +0.0	+1.1 +0.2 +0.0	+11.0 +0.0	+0.0	44.7	54.0 Y axis	-9.3	Vert
2	2342.400M	45.0	-39.4 +3.7 +0.0	+28.1 +0.0 +0.0	+0.6 +0.2 +0.0	+5.5 +0.0	+0.0	43.7	54.0 X axis	-10.3	Horiz
3	2137.450M	44.8	-39.4 +3.5 +0.0	+27.6 +0.0 +0.0	+0.6 +0.2 +0.0	+5.4 +0.0	+0.0	42.7	54.0 Y axis	-11.3	Horiz
4	2146.550M	44.7	-39.4 +3.5 +0.0	+27.6 +0.0 +0.0	+0.6 +0.2 +0.0	+5.4 +0.0	+0.0	42.6	54.0 X axis	-11.4	Horiz
5	2323.400M	43.3	-39.4 +3.7 +0.0	+28.0 +0.0 +0.0	+0.6 +0.2 +0.0	+5.5 +0.0	+0.0	41.9	54.0 Y axis	-12.1	Horiz
6	2322.750M	43.2	-39.4 +3.7 +0.0	+28.0 +0.0 +0.0	+0.6 +0.2 +0.0	+5.5 +0.0	+0.0	41.8	54.0 Y axis	-12.2	Vert
7	6357.800M	28.6	-39.5 +6.9 +0.0	+34.3 +0.0 +0.0	+1.0 +0.1 +0.0	+10.3 +0.0	+0.0	41.7	54.0 Z axis	-12.3	Horiz
8	5013.400M	31.0	-39.3 +6.0 +0.0	+33.3 +0.0 +0.0	+0.9 +0.2 +0.0	+9.3 +0.0	+0.0	41.4	54.0 X axis	-12.6	Horiz
9	3659.800M	36.5	-39.7 +5.1 +0.0	+31.5 +0.0 +0.0	+0.7 +0.2 +0.0	+7.0 +0.0	+0.0	41.3	54.0 X axis	-12.7	Horiz
10	2186.450M	43.0	-39.4 +3.6 +0.0	+27.7 +0.0 +0.0	+0.6 +0.2 +0.0	+5.5 +0.0	+0.0	41.2	54.0 X axis	-12.8	Vert
11	5674.800M	29.3	-39.3 +6.4 +0.0	+34.1 +0.0 +0.0	+0.9 +0.1 +0.0	+9.5 +0.0	+0.0	41.0	54.0 Z axis	-13.0	Vert
12	771.450M	31.8	+0.0 +0.0 +21.7	+0.0 +0.0 +0.6	+0.0 +0.0 +3.5	+3.1 -27.9	+0.0	32.8	46.0 Z axis	-13.2	Vert
13	664.580M	33.5	+0.0 +0.0 +20.4	+0.0 +0.0 +0.5	+0.0 +0.0 +3.3	+2.9 -28.0	+0.0	32.6	46.0 X axis	-13.4	Horiz
14	952.640M	27.8	+0.0 +0.0 +23.9	+0.0 +0.0 +0.6	+0.0 +0.0 +4.2	+3.4 -27.5	+0.0	32.4	46.0 X axis	-13.6	Vert
15	838.680M	30.0	+0.0 +0.0 +22.5	+0.0 +0.0 +0.7	+0.0 +0.0 +3.8	+3.1 -27.7	+0.0	32.4	46.0 X axis	-13.6	Horiz

16	2630.750M	40.0	-39.6 +4.1 +0.0	+28.9 +0.0 +0.0	+0.6 +0.3 +0.0	+6.0 +0.0	+0.0	40.3	54.0 Z axis	-13.7	Vert
17	2754.950M	39.0	-39.7 +4.3 +0.0	+29.4 +0.0 +0.0	+0.6 +0.3 +0.0	+6.4 +0.0	+0.0	40.3	54.0 Z axis	-13.7	Vert
18	4441.400M	32.2	-39.4 +5.7 +0.0	+32.3 +0.0 +0.0	+0.8 +0.3 +0.0	+8.1 +0.0	+0.0	40.0	54.0 Y axis	-14.0	Horiz
19	78.900M	43.0	+0.0 +0.0 +7.4	+0.0 +0.0 +0.2	+0.0 +0.0 +1.2	+1.1 -27.1	+0.0	25.8	40.0 X axis	-14.2	Vert
20	33.650M	34.4	+0.0 +0.0 +16.8	+0.0 +0.0 +0.1	+0.0 +0.0 +0.8	+0.6 -27.2	+0.0	25.5	40.0 Z axis	-14.5	Vert
21	931.065M	27.2	+0.0 +0.0 +23.6	+0.0 +0.0 +0.6	+0.0 +0.0 +4.1	+3.4 -27.5	+0.0	31.4	46.0 Z axis	-14.6	Vert
22	2186.850M	41.2	-39.4 +3.6 +0.0	+27.7 +0.0 +0.0	+0.6 +0.2 +0.0	+5.5 +0.0	+0.0	39.4	54.0 Y axis	-14.6	Horiz
23	2341.250M	40.6	-39.4 +3.7 +0.0	+28.1 +0.0 +0.0	+0.6 +0.2 +0.0	+5.5 +0.0	+0.0	39.3	54.0 X axis	-14.7	Vert
24	769.650M	30.2	+0.0 +0.0 +21.7	+0.0 +0.0 +0.6	+0.0 +0.0 +3.5	+3.1 -27.9	+0.0	31.2	46.0 X axis	-14.8	Vert
25	1884.450M	42.6	-39.3 +3.2 +0.0	+26.8 +0.0 +0.0	+0.5 +0.3 +0.0	+5.1 +0.0	+0.0	39.2	54.0 Z axis	-14.8	Vert
26	2587.750M	39.0	-39.6 +4.1 +0.0	+28.8 +0.0 +0.0	+0.6 +0.3 +0.0	+5.9 +0.0	+0.0	39.1	54.0 Y axis	-14.9	Vert
27	1191.050M	46.9	-40.5 +2.5 +0.0	+24.5 +0.0 +0.0	+0.4 +1.2 +0.0	+3.9 +0.0	+0.0	38.9	54.0 X axis	-15.1	Vert
28	4106.400M	32.1	-39.6 +5.4 +0.0	+32.4 +0.0 +0.0	+0.8 +0.3 +0.0	+7.3 +0.0	+0.0	38.7	54.0 Z axis	-15.3	Vert
29	67.150M	43.0	+0.0 +0.0 +5.9	+0.0 +0.0 +0.2	+0.0 +0.0 +1.2	+1.0 -27.1	+0.0	24.2	40.0 Y axis	-15.8	Vert
30	3097.800M	35.0	-39.8 +4.6 +0.0	+30.4 +0.0 +0.0	+0.7 +0.2 +0.0	+7.0 +0.0	+0.0	38.1	54.0 Z axis	-15.9	Horiz
31	832.120M	27.8	+0.0 +0.0 +22.4	+0.0 +0.0 +0.7	+0.0 +0.0 +3.7	+3.1 -27.7	+0.0	30.0	46.0 Y axis	-16.0	Vert
32	3239.800M	34.1	-39.8 +4.7 +0.0	+30.6 +0.0 +0.0	+0.7 +0.2 +0.0	+7.1 +0.0	+0.0	37.6	54.0 Y axis	-16.4	Vert

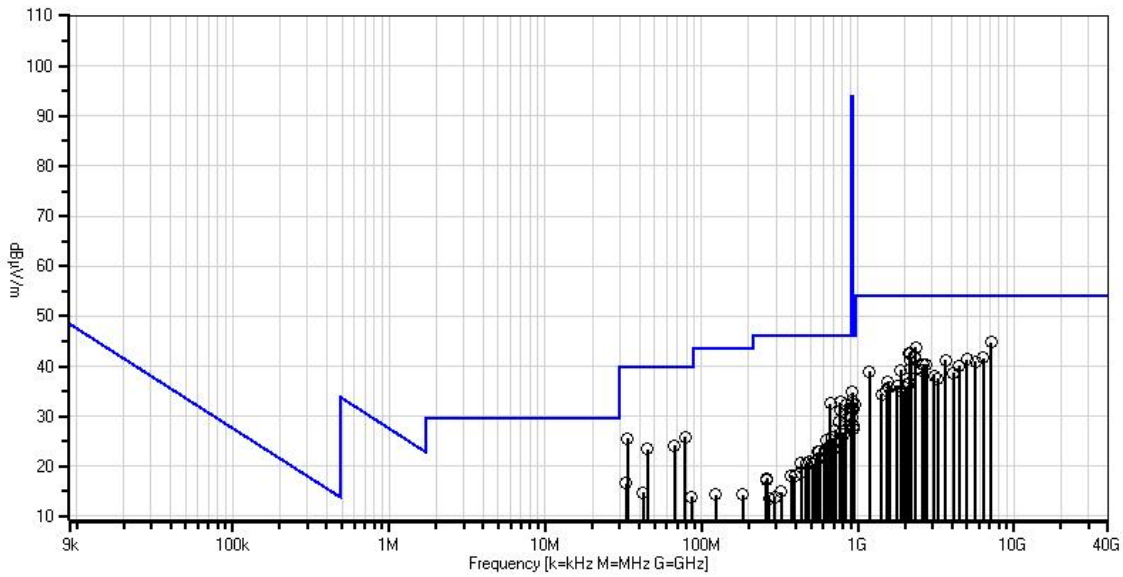
33	45.050M	38.4	+0.0	+0.0	+0.0	+0.8	+0.0	23.4	40.0	-16.6	Horiz
			+0.0	+0.0	+0.0	-27.2			Z axis		
			+10.2	+0.2	+1.0						
34	763.650M	28.0	+0.0	+0.0	+0.0	+3.1	+0.0	28.9	46.0	-17.1	Vert
			+0.0	+0.0	+0.0	-27.9			Y axis		
			+21.6	+0.6	+3.5						
35	1557.000M	42.5	-39.5	+25.5	+0.5	+4.4	+0.0	36.8	54.0	-17.2	Horiz
			+3.0	+0.0	+0.4	+0.0			Z axis		
			+0.0	+0.0	+0.0						
36	2142.550M	38.8	-39.4	+27.6	+0.6	+5.4	+0.0	36.7	54.0	-17.3	Vert
			+3.5	+0.0	+0.2	+0.0			Z axis		
			+0.0	+0.0	+0.0						
37	2099.050M	38.5	-39.3	+27.5	+0.5	+5.3	+0.0	36.2	54.0	-17.8	Vert
			+3.5	+0.0	+0.2	+0.0			X axis		
			+0.0	+0.0	+0.0						
38	1784.000M	40.4	-39.4	+26.4	+0.5	+4.8	+0.0	36.2	54.0	-17.8	Horiz
			+3.2	+0.0	+0.3	+0.0			Z axis		
			+0.0	+0.0	+0.0						
39	936.765M	23.6	+0.0	+0.0	+0.0	+3.4	+0.0	27.9	46.0	-18.1	Vert
			+0.0	+0.0	+0.0	-27.5			X axis		
			+23.7	+0.6	+4.1						
40	1592.250M	41.2	-39.5	+25.7	+0.5	+4.4	+0.0	35.7	54.0	-18.3	Vert
			+3.0	+0.0	+0.4	+0.0			Z axis		
			+0.0	+0.0	+0.0						
41	2010.050M	38.5	-39.3	+27.2	+0.5	+5.1	+0.0	35.6	54.0	-18.4	Horiz
			+3.4	+0.0	+0.2	+0.0			Z axis		
			+0.0	+0.0	+0.0						
42	940.635M	23.1	+0.0	+0.0	+0.0	+3.4	+0.0	27.5	46.0	-18.5	Vert
			+0.0	+0.0	+0.0	-27.5			Z axis		
			+23.7	+0.6	+4.2						
43	720.050M	27.2	+0.0	+0.0	+0.0	+3.0	+0.0	27.3	46.0	-18.7	Vert
			+0.0	+0.0	+0.0	-27.9			Z axis		
			+21.0	+0.6	+3.4						
44	1520.000M	41.0	-39.5	+25.4	+0.5	+4.4	+0.0	35.1	54.0	-18.9	Horiz
			+2.9	+0.0	+0.4	+0.0			X axis		
			+0.0	+0.0	+0.0						
45	1914.500M	38.3	-39.3	+26.9	+0.5	+5.1	+0.0	34.9	54.0	-19.1	Horiz
			+3.2	+0.0	+0.2	+0.0			X axis		
			+0.0	+0.0	+0.0						
46	797.000M	25.2	+0.0	+0.0	+0.0	+3.1	+0.0	26.8	46.0	-19.2	Vert
			+0.0	+0.0	+0.0	-27.8			Z axis		
			+22.0	+0.7	+3.6						
47	1425.350M	40.9	-39.7	+25.1	+0.5	+4.3	+0.0	34.4	54.0	-19.6	Vert
			+2.8	+0.0	+0.5	+0.0			Y axis		
			+0.0	+0.0	+0.0						
48	812.650M	24.4	+0.0	+0.0	+0.0	+3.1	+0.0	26.3	46.0	-19.7	Vert
			+0.0	+0.0	+0.0	-27.8			Z axis		
			+22.2	+0.7	+3.7						
49	691.200M	26.0	+0.0	+0.0	+0.0	+3.0	+0.0	25.8	46.0	-20.2	Vert
			+0.0	+0.0	+0.0	-27.9			X axis		
			+20.7	+0.6	+3.4						

50	631.130M	26.6	+0.0	+0.0	+0.0	+2.9	+0.0	25.3	46.0	-20.7	Horiz
			+0.0	+0.0	+0.0	-28.0			Z axis		
			+20.1	+0.5	+3.2						
51	767.780M	23.9	+0.0	+0.0	+0.0	+3.1	+0.0	24.9	46.0	-21.1	Horiz
			+0.0	+0.0	+0.0	-27.9			Z axis		
			+21.7	+0.6	+3.5						
52	667.100M	25.2	+0.0	+0.0	+0.0	+2.9	+0.0	24.4	46.0	-21.6	Vert
			+0.0	+0.0	+0.0	-28.0			Z axis		
			+20.5	+0.5	+3.3						
53	704.180M	23.7	+0.0	+0.0	+0.0	+3.0	+0.0	23.6	46.0	-22.4	Horiz
			+0.0	+0.0	+0.0	-27.9			Z axis		
			+20.8	+0.6	+3.4						
54	630.300M	24.5	+0.0	+0.0	+0.0	+2.9	+0.0	23.2	46.0	-22.8	Vert
			+0.0	+0.0	+0.0	-28.0			Z axis		
			+20.1	+0.5	+3.2						
55	613.080M	24.7	+0.0	+0.0	+0.0	+2.8	+0.0	23.1	46.0	-22.9	Horiz
			+0.0	+0.0	+0.0	-28.0			X axis		
			+19.9	+0.6	+3.1						
56	571.280M	25.4	+0.0	+0.0	+0.0	+2.7	+0.0	23.0	46.0	-23.0	Horiz
			+0.0	+0.0	+0.0	-28.0			Z axis		
			+19.4	+0.5	+3.0						
57	656.130M	24.0	+0.0	+0.0	+0.0	+2.9	+0.0	23.0	46.0	-23.0	Horiz
			+0.0	+0.0	+0.0	-28.0			Y axis		
			+20.4	+0.5	+3.2						
58	553.230M	25.5	+0.0	+0.0	+0.0	+2.7	+0.0	22.8	46.0	-23.2	Horiz
			+0.0	+0.0	+0.0	-28.0			Z axis		
			+19.1	+0.5	+3.0						
59	32.800M	25.1	+0.0	+0.0	+0.0	+0.6	+0.0	16.7	40.0	-23.3	Horiz
			+0.0	+0.0	+0.0	-27.2			X axis		
			+17.3	+0.1	+0.8						
60	651.100M	23.5	+0.0	+0.0	+0.0	+2.9	+0.0	22.4	46.0	-23.6	Vert
			+0.0	+0.0	+0.0	-28.0			X axis		
			+20.3	+0.5	+3.2						
61	612.950M	23.2	+0.0	+0.0	+0.0	+2.8	+0.0	21.6	46.0	-24.4	Vert
			+0.0	+0.0	+0.0	-28.0			Z axis		
			+19.9	+0.6	+3.1						
62	539.350M	23.9	+0.0	+0.0	+0.0	+2.7	+0.0	21.0	46.0	-25.0	Horiz
			+0.0	+0.0	+0.0	-28.0			Y axis		
			+18.9	+0.5	+3.0						
63	488.200M	24.5	+0.0	+0.0	+0.0	+2.6	+0.0	20.8	46.0	-25.2	Horiz
			+0.0	+0.0	+0.0	-27.8			Z axis		
			+18.1	+0.5	+2.9						
64	42.150M	28.5	+0.0	+0.0	+0.0	+0.7	+0.0	14.8	40.0	-25.2	Horiz
			+0.0	+0.0	+0.0	-27.2			Y axis		
			+11.8	+0.1	+0.9						
65	510.800M	24.1	+0.0	+0.0	+0.0	+2.6	+0.0	20.7	46.0	-25.3	Horiz
			+0.0	+0.0	+0.0	-27.9			X axis		
			+18.5	+0.5	+2.9						
66	466.350M	25.0	+0.0	+0.0	+0.0	+2.5	+0.0	20.6	46.0	-25.4	Horiz
			+0.0	+0.0	+0.0	-27.7			Y axis		
			+17.6	+0.4	+2.8						

67	432.150M	25.8	+0.0	+0.0	+0.0	+2.4	+0.0	20.6	46.0	-25.4	Vert
			+0.0	+0.0	+0.0	-27.5			Y axis		
			+16.9	+0.4	+2.6						
68	517.650M	23.8	+0.0	+0.0	+0.0	+2.6	+0.0	20.5	46.0	-25.5	Vert
			+0.0	+0.0	+0.0	-27.9			X axis		
			+18.6	+0.5	+2.9						
69	86.350M	30.1	+0.0	+0.0	+0.0	+1.2	+0.0	14.0	40.0	-26.0	Horiz
			+0.0	+0.0	+0.0	-27.1			Y axis		
			+8.3	+0.2	+1.3						
70	433.100M	24.0	+0.0	+0.0	+0.0	+2.4	+0.0	18.8	46.0	-27.2	Horiz
			+0.0	+0.0	+0.0	-27.5			Z axis		
			+16.9	+0.4	+2.6						
71	373.850M	24.6	+0.0	+0.0	+0.0	+2.3	+0.0	18.1	46.0	-27.9	Horiz
			+0.0	+0.0	+0.0	-27.1			Y axis		
			+15.5	+0.4	+2.4						
72	393.650M	24.0	+0.0	+0.0	+0.0	+2.4	+0.0	18.0	46.0	-28.0	Vert
			+0.0	+0.0	+0.0	-27.3			Z axis		
			+16.0	+0.4	+2.5						
73	261.850M	27.0	+0.0	+0.0	+0.0	+1.9	+0.0	17.6	46.0	-28.4	Horiz
			+0.0	+0.0	+0.0	-26.5			Z axis		
			+12.8	+0.3	+2.1						
74	258.400M	26.8	+0.0	+0.0	+0.0	+1.9	+0.0	17.2	46.0	-28.8	Vert
			+0.0	+0.0	+0.0	-26.5			Z axis		
			+12.7	+0.3	+2.0						
75	123.100M	26.7	+0.0	+0.0	+0.0	+1.3	+0.0	14.4	43.5	-29.1	Horiz
			+0.0	+0.0	+0.0	-27.0			X axis		
			+11.8	+0.2	+1.4						
76	182.900M	28.7	+0.0	+0.0	+0.0	+1.5	+0.0	14.3	43.5	-29.2	Vert
			+0.0	+0.0	+0.0	-26.8			Y axis		
			+8.9	+0.3	+1.7						
77	324.350M	22.8	+0.0	+0.0	+0.0	+2.1	+0.0	15.0	46.0	-31.0	Horiz
			+0.0	+0.0	+0.0	-26.7			X axis		
			+14.1	+0.4	+2.3						
78	293.650M	22.8	+0.0	+0.0	+0.0	+2.0	+0.0	14.0	46.0	-32.0	Vert
			+0.0	+0.0	+0.0	-26.5			X axis		
			+13.2	+0.3	+2.2						
79	270.100M	22.9	+0.0	+0.0	+0.0	+2.0	+0.0	13.7	46.0	-32.3	Horiz
			+0.0	+0.0	+0.0	-26.5			Z axis		
			+12.9	+0.3	+2.1						
80	927.555M	30.7	+0.0	+0.0	+0.0	+3.4	+0.0	34.8	94.0	-59.2	Vert
			+0.0	+0.0	+0.0	-27.5			Y axis		
			+23.5	+0.6	+4.1						
81	914.345M	29.3	+0.0	+0.0	+0.0	+3.3	+0.0	33.1	94.0	-60.9	Vert
			+0.0	+0.0	+0.0	-27.5			X axis		
			+23.3	+0.6	+4.1						

82	918.860M	28.8	+0.0	+0.0	+0.0	+3.3	+0.0	32.7	94.0	-61.3	Vert
			+0.0	+0.0	+0.0	-27.5			Z axis		
			+23.4	+0.6	+4.1						
83	927.620M	27.4	+0.0	+0.0	+0.0	+3.4	+0.0	31.5	94.0	-62.5	Vert
			+0.0	+0.0	+0.0	-27.5			Z axis		
			+23.5	+0.6	+4.1						
84	919.280M	25.8	+0.0	+0.0	+0.0	+3.3	+0.0	29.7	94.0	-64.3	Horiz
			+0.0	+0.0	+0.0	-27.5			Y axis		
			+23.4	+0.6	+4.1						

CKC Laboratories, Inc. Date: 7/27/2011 Time: 11:23:10 SmartLabs, Inc. WO#: 92090
 15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter) Test Distance: 3 Meters Sequence#: 3 Ext
 ATTN: 0 dB



— Readings
 × QP Readings
 ▼ Ambient
 ○ Peak Readings
 * Average Readings
 — 1 - 15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)

Test Setup Photos



X AXIS FRONT VIEW



X AXIS BACK VIEW



Y AXIS FRONT VIEW



Y AXIS BACK VIEW



Z AXIS FRONT VIEW



Z AXIS BACK VIEW

RSS-210

99 % Bandwidth

Test Conditions / Setup

The EUT is placed on the wooden table lined with Styrofoam of 10 cm thickness. Orientated in three orthogonal operating positions, the EUT is set in constant transmit mode. No load is connected to the EUT for evaluation of RF parameter. The EUT operates on battery power. The EUT power is designed to be mechanically switched off during charge cycle via dedicated USB charging port.

TX freq = 914.5-915.5 MHz

72°F, 53% Relative Humidity

Frequency range of measurement = 914.5 - 915.5MHz

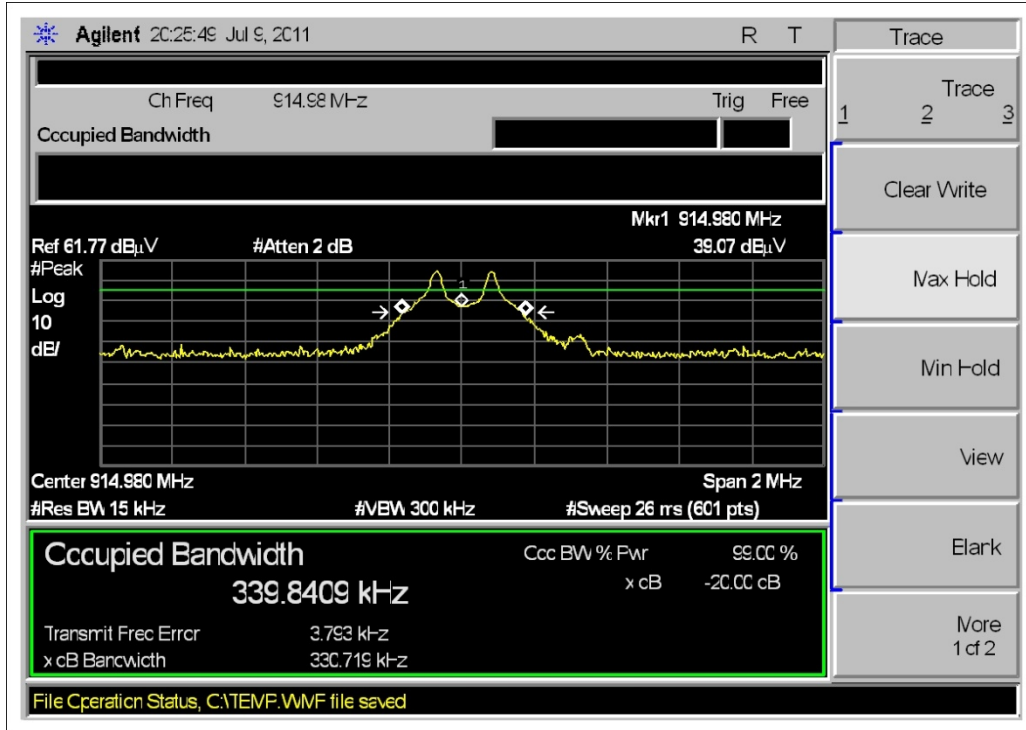
30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz.

Note: A fully charged EUT simulates a fresh battery installed during the test.

Engineer Name: Don Nguyen

Test Equipment					
Asset/Serial #	Description	Model	Manufacturer	Cal Date	Cal Due
P04382	Cable	LDF-50	Andrew	9/3/2010	9/3/2012
02869	Spectrum Analyzer	E4440A	Agilent	2/12/2011	2/12/2013
00010	Preamp	8447D	HP	3/19/2010	3/19/2012
00851	Biconilog Antenna	CBL6111C	Schaffer	3/8/2010	3/8/2012
P05555	Cable	RG223/U	Pasternack	8/18/2010	8/18/2012
P05569	Cable	RG-214/U	Pasternack	8/18/2010	8/18/2012

Test Data



Test Setup Photos



X AXIS FRONT VIEW



X AXIS BACK VIEW



Y AXIS FRONT VIEW



Y AXIS BACK VIEW



Z AXIS FRONT VIEW



Z AXIS BACK VIEW

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 dB μ V/m, the spectrum analyzer reading in dB μ V 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
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.