SmartLabs, Inc.

ADDENDUM TEST REPORT FOR 93547-4A

INSTEON Dual-Band Appliance Module
Model: 2635-222 On/Off Module

Tested To The Following Standards:

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

Report No.: 93547-4A

Date of issue: July 1, 2013

ACCREDITED
Testing Certificates:
803.01, 803.02, 803.05, 803.06

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

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

Testing the Future
CKC LABORATORIES, INC.

TABLE OF CONTENTS

ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

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

Representative: Matthew Meyer
Customer Reference Number: 12-3MM1019-03

REPORT PREPARED BY:

Joyce Walker
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Project Number: 93547

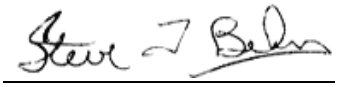
DATE OF EQUIPMENT RECEIPT: April 18, 2013
DATE(S) OF TESTING: April 18 – June 28, 2013

Revision History

Original: Testing of the INSTEON Dual-Band Appliance Module, 2635-222 On/Off Module to FCC Part 15 Subpart C Sections 15.207, 15.249 and RSS 210 Issue 8.
Addendum A: New testing was performed to meet Canada specific requirements; the 99% bandwidth plot was replaced with new test results plot. A graphical plot was added to the power output section and incorrect references to 15.247 were corrected.

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

Software Versions

CKC Laboratories Proprietary Software	Version
EMITest Emissions	5.00.14
Immunity	5.00.07

Site Registration & Accreditation Information

Location	CB #	TAIWAN	CANADA	FCC	JAPAN
Brea D	US0060	SL2-IN-E-1146R	3082D-2	100638	A-0147

SUMMARY OF RESULTS

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

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
-20dBc & 99% Occupied Bandwidth	FCC Part 15 Subpart C Section 15.249 / RSS 210 Issue 8	Pass
Field Strength of Spurious Emissions / Bandedge	FCC Part 15 Subpart C Section 15.249(b)(d) / 15.209	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

INSTEON Dual-Band Appliance Module
Manuf: SmartLabs, Inc.
Model: 2635-222 On/Off Module
Serial: NA

PERIPHERAL DEVICES

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

Light Bulb
Manuf: GE
Model: Reveal
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, Inc. • 110 North Olinda Place • Brea, CA 92823• 714-993-6112

Customer:	**SmartLabs, Inc.**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**93547**	Date:	4/18/2013
Test Type:	**Conducted Emissions**	Time:	14:51:52
Equipment:	**INSTEON Dual-Band Appliance Module**	Sequence#:	2
Manufacturer:	SmartLabs, Inc.	Tested By:	E. Wong
Model:	2635-222 On/Off Module		110V 60Hz
S/N:	NA		

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02869	Spectrum Analyzer	E4440A	2/6/2013	2/6/2015
T1	ANP06085	Attenuator	SA18N10W-09	12/14/2012	12/14/2014
T2	AN02343	High Pass Filter	HE9615-150K-50-720B	1/10/2013	1/10/2015
T3	ANP01910	Cable	RG-142	2/6/2012	2/6/2014
T4	AN00969A	50uH LISN-Line 1 (L1) (dB)	3816/2NM	3/12/2013	3/12/2015
	AN00969A	50uH LISN-Line 2 (L2) (dB)	3816/2NM	3/12/2013	3/12/2015

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

Function	Manufacturer	Model #	S/N
INSTEON Dual-Band Appliance Module*	SmartLabs, Inc.	2635-222 On/Off Module	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Light bulb	GE	Reveal	NA

Test Conditions / Notes:

The single channel wall mounted EUT is placed on the wooden table lined with Styrofoam of 10 cm thickness. Oriented upright to simulate the intended position of final installation in a vertically installed electrical outlet mounted on a vertical wall. A light bulb is connected to the EUT via a section of AC power cord.

Freq: 915MHz.

The EUT is set in constant transmit and receive mode.

Frequency range of measurement = 150kHz- 30MHz.
150 kHz-30 MHz; RBW=9 kHz, VBW=9kHz
Test environment conditions: 21°C, 18 % Relative humidity, 100kPa

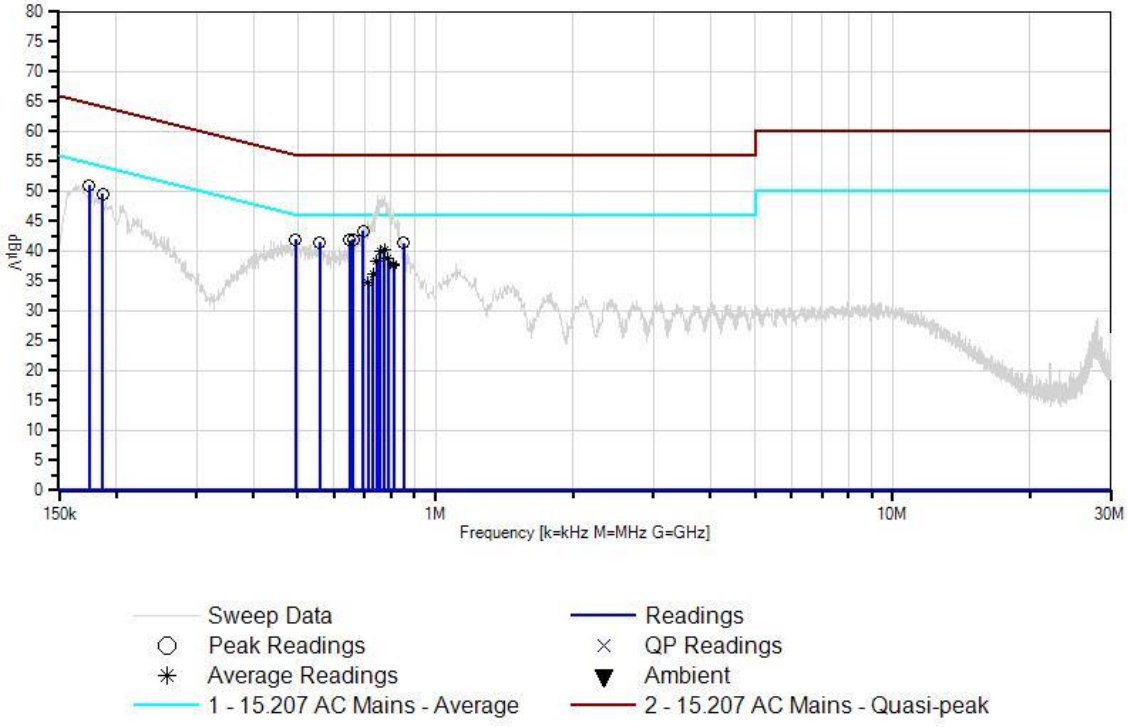
Ext Attn: 0 dB

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

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	693.222k	37.3	+5.7	+0.2	+0.1	+0.1	+0.0	43.4	46.0	-2.6	Black
2	174.724k	44.8	+5.7	+0.3	+0.1	+0.1	+0.0	51.0	54.7	-3.7	Black
3	659.770k	35.9	+5.7	+0.2	+0.1	+0.1	+0.0	42.0	46.0	-4.0	Black
4	493.240k	35.9	+5.7	+0.2	+0.1	+0.1	+0.0	42.0	46.1	-4.1	Black
5	648.862k	35.7	+5.7	+0.2	+0.1	+0.1	+0.0	41.8	46.0	-4.2	Black
6	557.962k	35.4	+5.7	+0.2	+0.1	+0.1	+0.0	41.5	46.0	-4.5	Black
7	187.087k	43.4	+5.7	+0.3	+0.1	+0.1	+0.0	49.6	54.2	-4.6	Black
8	851.026k	35.4	+5.7	+0.1	+0.1	+0.1	+0.0	41.4	46.0	-4.6	Black
9	774.669k Ave	34.2	+5.7	+0.1	+0.1	+0.1	+0.0	40.2	46.0	-5.8	Black
^	774.669k	43.2	+5.7	+0.1	+0.1	+0.1	+0.0	49.2	46.0	+3.2	Black
11	757.880k Ave	34.1	+5.7	+0.1	+0.1	+0.1	+0.0	40.1	46.0	-5.9	Black
12	787.759k Ave	32.7	+5.7	+0.1	+0.1	+0.1	+0.0	38.7	46.0	-7.3	Black
^	787.759k	42.0	+5.7	+0.1	+0.1	+0.1	+0.0	48.0	46.0	+2.0	Black
14	744.126k Ave	32.3	+5.7	+0.1	+0.1	+0.1	+0.0	38.3	46.0	-7.7	Black
^	746.308k	43.4	+5.7	+0.1	+0.1	+0.1	+0.0	49.4	46.0	+3.4	Black
^	744.126k	41.8	+5.7	+0.1	+0.1	+0.1	+0.0	47.8	46.0	+1.8	Black
17	808.848k Ave	31.8	+5.7	+0.1	+0.1	+0.1	+0.0	37.8	46.0	-8.2	Black

18 Ave	808.848k	31.6	+5.7	+0.1	+0.1	+0.1	+0.0	37.6	46.0	-8.4	Black
^	808.848k	40.9	+5.7	+0.1	+0.1	+0.1	+0.0	46.9	46.0	+0.9	Black
20 Ave	730.309k	30.3	+5.7	+0.1	+0.1	+0.1	+0.0	36.3	46.0	-9.7	Black
^	730.309k	40.2	+5.7	+0.1	+0.1	+0.1	+0.0	46.2	46.0	+0.2	Black
22 Ave	712.129k	28.8	+5.7	+0.1	+0.1	+0.1	+0.0	34.8	46.0	-11.2	Black
^	712.129k	39.1	+5.7	+0.1	+0.1	+0.1	+0.0	45.1	46.0	-0.9	Black

Date: 4/18/2013 Time: 14:51:52 SmartLabs, Inc. WO#: 93547
15.207 AC Mains - Average Test Lead: Black 110V 60Hz Sequence#: 2 Ext ATTN: 0 dB



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

Customer:	**SmartLabs, Inc.**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**93547**	Date:	4/18/2013
Test Type:	**Conducted Emissions**	Time:	14:59:17
Equipment:	**INSTEON Dual-Band Appliance Module**	Sequence#:	3
Manufacturer:	SmartLabs, Inc.	Tested By:	E. Wong
Model:	2635-222 On/Off Module		110V 60Hz
S/N:	NA		

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02869	Spectrum Analyzer	E4440A	2/6/2013	2/6/2015
T1	ANP06085	Attenuator	SA18N10W-09	12/14/2012	12/14/2014
T2	AN02343	High Pass Filter	HE9615-150K-50-720B	1/10/2013	1/10/2015
T3	ANP01910	Cable	RG-142	2/6/2012	2/6/2014
	AN00969A	50uH LISN-Line 1 (L1) (dB)	3816/2NM	3/12/2013	3/12/2015
T4	AN00969A	50uH LISN-Line 2 (L2) (dB)	3816/2NM	3/12/2013	3/12/2015

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

Function	Manufacturer	Model #	S/N
INSTEON Dual-Band Appliance Module*	SmartLabs, Inc.	2635-222 On/Off Module	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Light bulb	GE	Reveal	NA

Test Conditions / Notes:

The single channel wall mounted EUT is placed on the wooden table lined with Styrofoam of 10 cm thickness. Oriented upright to simulate the intended position of final installation in a vertically installed electrical outlet mounted on a vertical wall. A light bulb is connected to the EUT via a section of AC power cord.

Freq: 915MHz.

The EUT is set in constant transmit and receive mode.

Frequency range of measurement = 150kHz- 30MHz.
150 kHz-30 MHz; RBW=9 kHz, VBW=9kHz
Test environment conditions: 21°C, 18 % Relative humidity, 100kPa

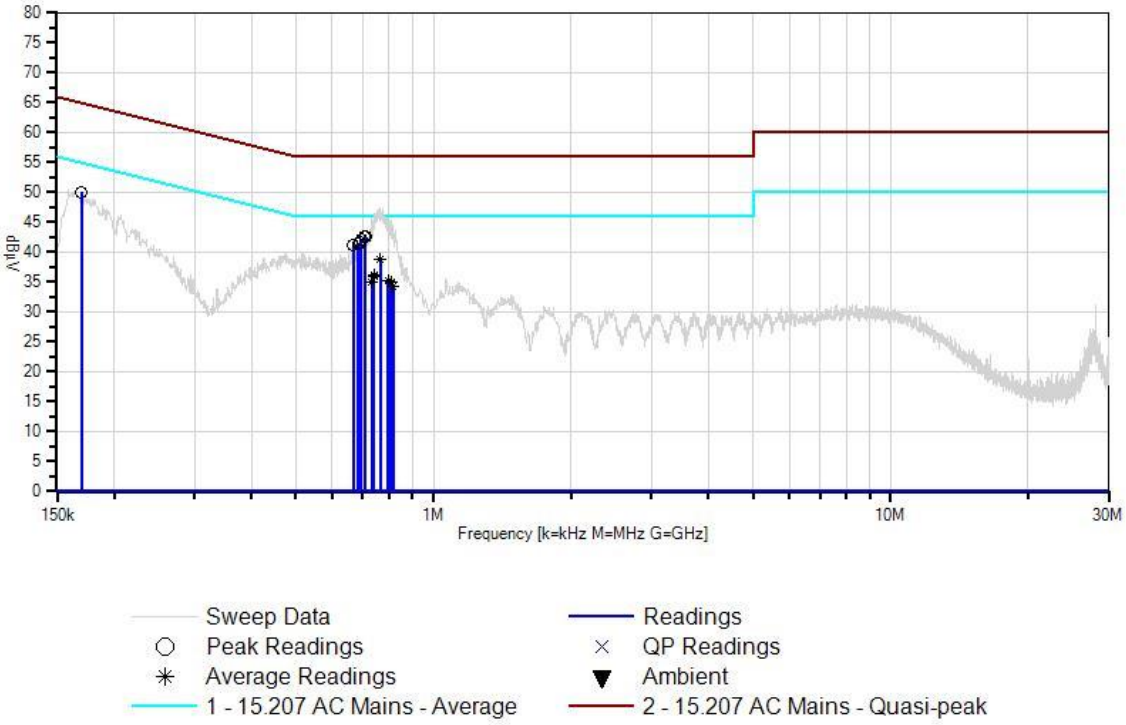
Ext Attn: 0 dB

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

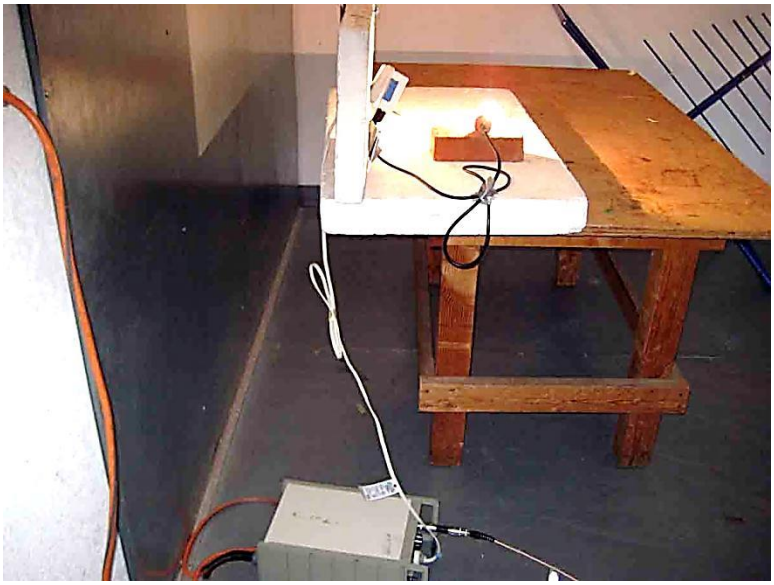
#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	707.039k	36.7	+5.7	+0.2	+0.1	+0.0	+0.0	42.7	46.0	-3.3	White
2	709.220k	36.8	+5.7	+0.1	+0.1	+0.0	+0.0	42.7	46.0	-3.3	White

3	695.404k	36.1	+5.7	+0.2	+0.1	+0.0	+0.0	42.1	46.0	-3.9	White
4	691.767k	35.6	+5.7	+0.2	+0.1	+0.0	+0.0	41.6	46.0	-4.4	White
5	684.495k	35.5	+5.7	+0.2	+0.1	+0.0	+0.0	41.5	46.0	-4.5	White
6	667.770k	35.2	+5.7	+0.2	+0.1	+0.0	+0.0	41.2	46.0	-4.8	White
7	169.634k	44.0	+5.7	+0.3	+0.1	+0.0	+0.0	50.1	55.0	-4.9	White
8	763.761k Ave	32.9	+5.7	+0.1	+0.1	+0.0	+0.0	38.8	46.0	-7.2	White
^	763.761k	41.5	+5.7	+0.1	+0.1	+0.0	+0.0	47.4	46.0	+1.4	White
10	740.490k Ave	30.2	+5.7	+0.1	+0.1	+0.0	+0.0	36.1	46.0	-9.9	White
11	740.490k Ave	30.1	+5.7	+0.1	+0.1	+0.0	+0.0	36.0	46.0	-10.0	White
12	740.490k Ave	30.0	+5.7	+0.1	+0.1	+0.0	+0.0	35.9	46.0	-10.1	White
^	740.490k	40.7	+5.7	+0.1	+0.1	+0.0	+0.0	46.6	46.0	+0.6	White
14	797.212k Ave	29.3	+5.7	+0.1	+0.1	+0.0	+0.0	35.2	46.0	-10.8	White
^	797.212k	38.6	+5.7	+0.1	+0.1	+0.0	+0.0	44.5	46.0	-1.5	White
16	805.939k Ave	29.2	+5.7	+0.1	+0.1	+0.0	+0.0	35.1	46.0	-10.9	White
^	805.939k	39.5	+5.7	+0.1	+0.1	+0.0	+0.0	45.4	46.0	-0.6	White
18	733.218k Ave	29.0	+5.7	+0.1	+0.1	+0.0	+0.0	34.9	46.0	-11.1	White
^	733.218k	39.8	+5.7	+0.1	+0.1	+0.0	+0.0	45.7	46.0	-0.3	White
^	735.400k	39.4	+5.7	+0.1	+0.1	+0.0	+0.0	45.3	46.0	-0.7	White
^	728.855k	38.0	+5.7	+0.1	+0.1	+0.0	+0.0	43.9	46.0	-2.1	White
22	816.120k Ave	28.5	+5.7	+0.1	+0.1	+0.0	+0.0	34.4	46.0	-11.6	White
^	816.120k	38.7	+5.7	+0.1	+0.1	+0.0	+0.0	44.6	46.0	-1.4	White

Date: 4/18/2013 Time: 14:59:17 SmartLabs, Inc. WO#: 93547
15.207 AC Mains - Average Test Lead: White 110V 60Hz Sequence#: 3 Ext ATTN: 0 dB



Test Setup Photos



15.249(a) RF Power Output

Test Conditions / Setup / Data

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

Customer: **SmartLabs, Inc.**
Specification: **15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)**
Work Order #: **93547** Date: 4/18/2013
Test Type: **Radiated Scan** Time: 11:54:20
Equipment: **INSTEON Dual-Band Appliance Module** Sequence#: 1
Manufacturer: SmartLabs, Inc. Tested By: E. Wong
Model: 2635-222 On/Off Module
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02869	Spectrum Analyzer	E4440A	2/6/2013	2/6/2015
T2	AN00010	Preamp	8447D	3/29/2012	3/29/2014
T3	AN00851	Biconilog Antenna	CBL6111C	5/16/2012	5/16/2014
T4	ANP04382	Cable	LDF-50	8/30/2012	8/30/2014
T5	ANP05555	Cable	RG223/U	6/19/2012	6/19/2014
T6	ANP05569	Cable	RG-214/U	6/19/2012	6/19/2014

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

Function	Manufacturer	Model #	S/N
INSTEON Dual-Band Appliance Module*	SmartLabs, Inc.	2635-222 On/Off Module	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Light bulb	GE	Reveal	NA

Test Conditions / Notes:

The single channel wall mounted EUT is placed on the wooden table lined with Styrofoam of 10 cm thickness. Oriented upright to simulate the intended position of final installation in a vertical installed electrical outlet mounted on a vertical wall. A light bulb is connected to the EUT via a section of AC power cord.

Freq: 915MHz.

The EUT is set in constant transmit and receive mode.

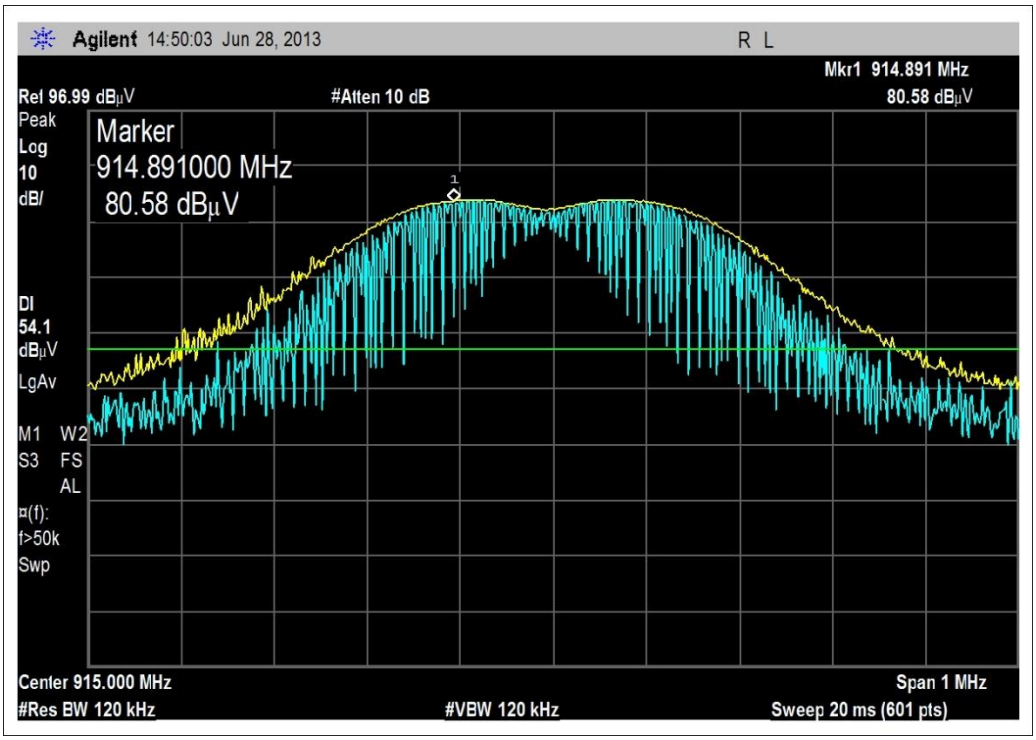
Frequency range of measurement = Fundamental
30 MHz-1000 MHz; RBW=120kHz, VBW=120kHz
Test environment conditions: 21°C, 18 % Relative humidity, 100kPa

15.31(e) compliance: the supply voltage was varied between 85% and 115% of the nominal rated supply voltage, no change in the Fundamental signal level was observed.

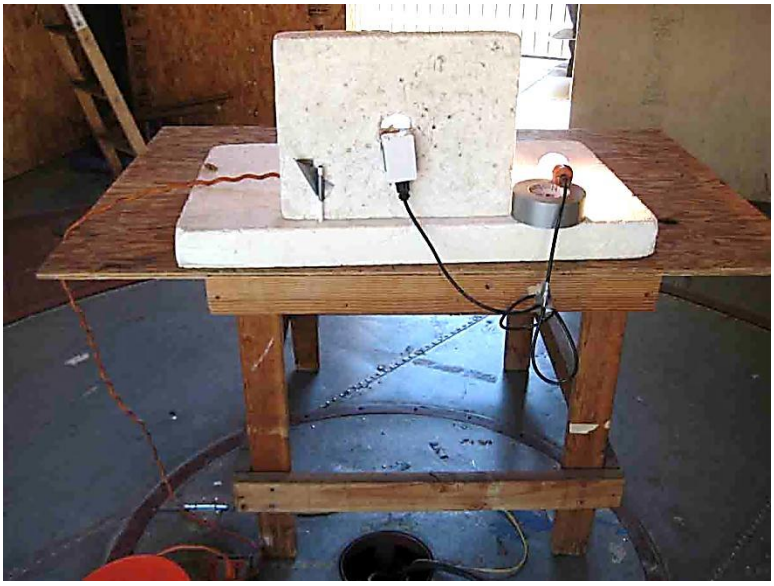
Ext Attn: 0 dB

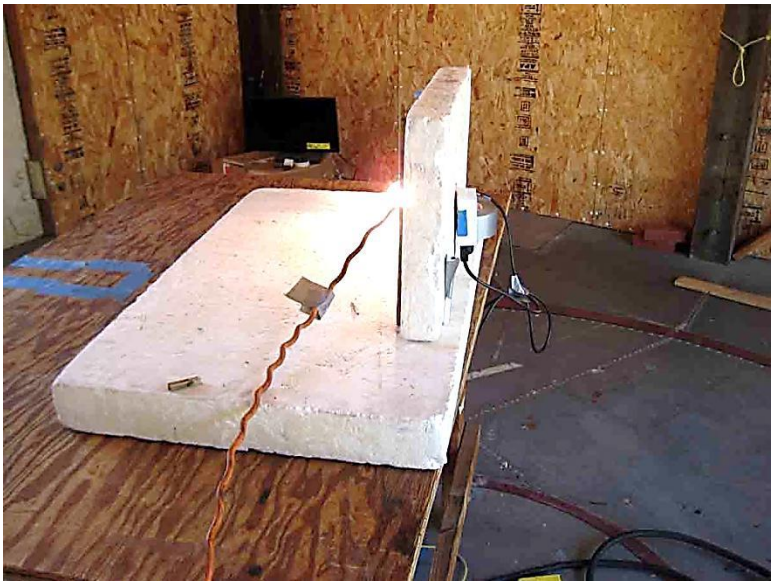
Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	914.917M	80.6	+0.0 +0.5	-27.4 +3.5	+22.2	+3.6	+0.0	83.0	94.0	-11.0	Horiz
2	914.917M	79.3	+0.0 +0.5	-27.4 +3.5	+22.2	+3.6	+0.0	81.7	94.0	-12.3	Vert



Test Setup Photos





-20dBc & 99% Occupied Bandwidth

Test Conditions / Setup

Customer:	**SmartLabs, Inc.**		
Specification:	**-20dB Occupied bandwidth RSS210 99% Bandwidth**		
Work Order #:	**93547**	Date:	4/18/2013
		Time:	11:54:20
Equipment:	**INSTEON Dual-Band Appliance Module**	Sequence#:	1
Manufacturer:	SmartLabs, Inc.	Tested By:	E. Wong
Model:	2635-222 On/Off Module		
S/N:	NA		

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02869	Spectrum Analyzer	E4440A	2/6/2013	2/6/2015
T2	AN00010	Preamp	8447D	3/29/2012	3/29/2014
T3	AN00851	Biconilog Antenna	CBL6111C	5/16/2012	5/16/2014
T4	ANP04382	Cable	LDF-50	8/30/2012	8/30/2014
T5	ANP05555	Cable	RG223/U	6/19/2012	6/19/2014
T6	ANP05569	Cable	RG-214/U	6/19/2012	6/19/2014

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

Function	Manufacturer	Model #	S/N
INSTEON Dual-Band Appliance Module*	SmartLabs, Inc.	2635-222 On/Off Module	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Light bulb	GE	Reveal	NA

Test Conditions / Notes:

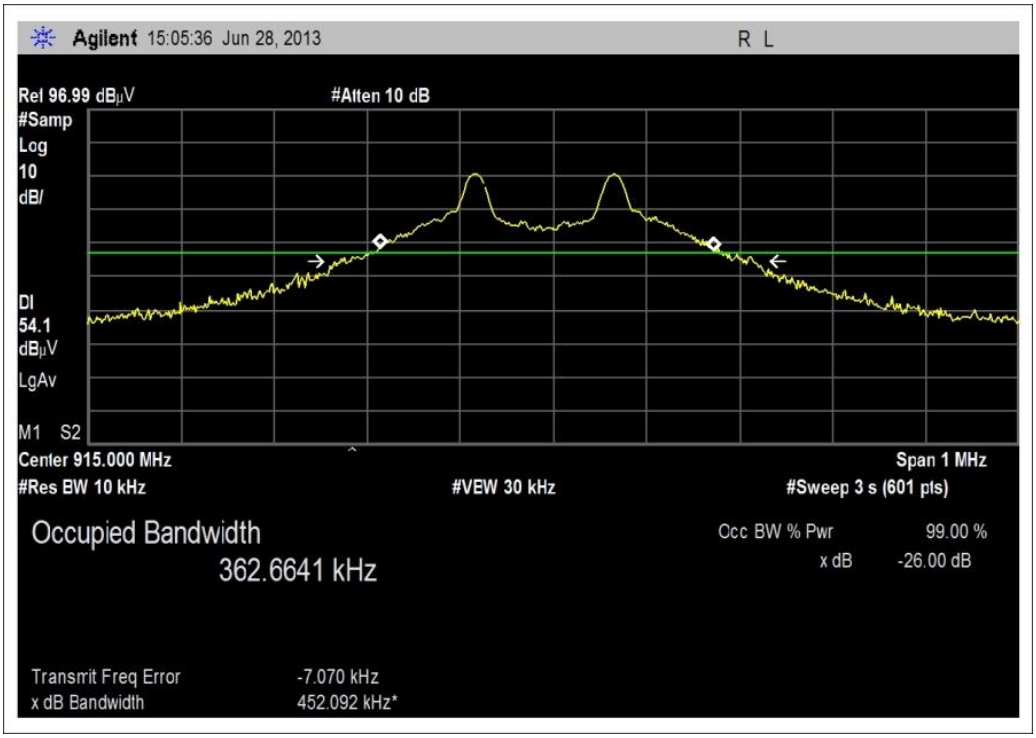
The single channel wall mounted EUT is placed on the wooden table lined with Styrofoam of 10 cm thickness. Oriented upright to simulate the intended position of final installation in a vertically installed electrical outlet mounted on a vertical wall. A light bulb is connected to the EUT via a section of AC power cord.

Freq: 915MHz.

The EUT is set in constant transmit and receive mode.

Frequency range of measurement = Fundamental
30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz
Test environment conditions: 21°C, 18 % Relative humidity, 100kPa

Test Plots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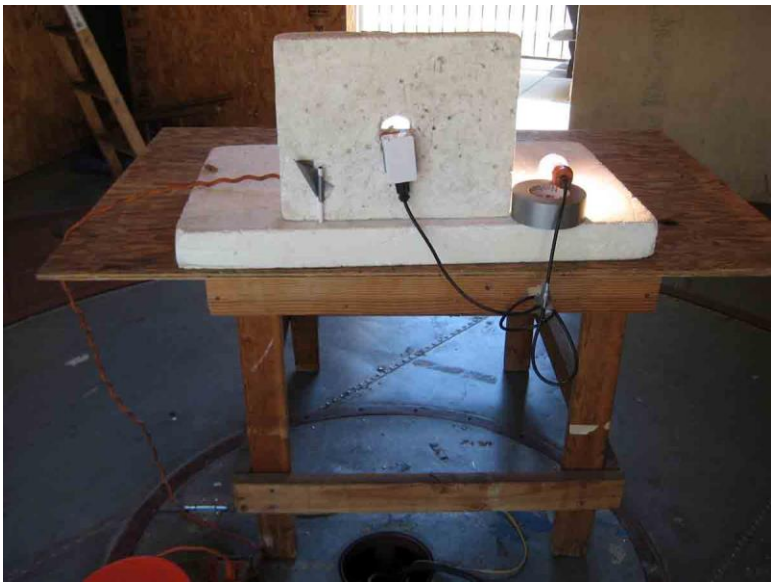
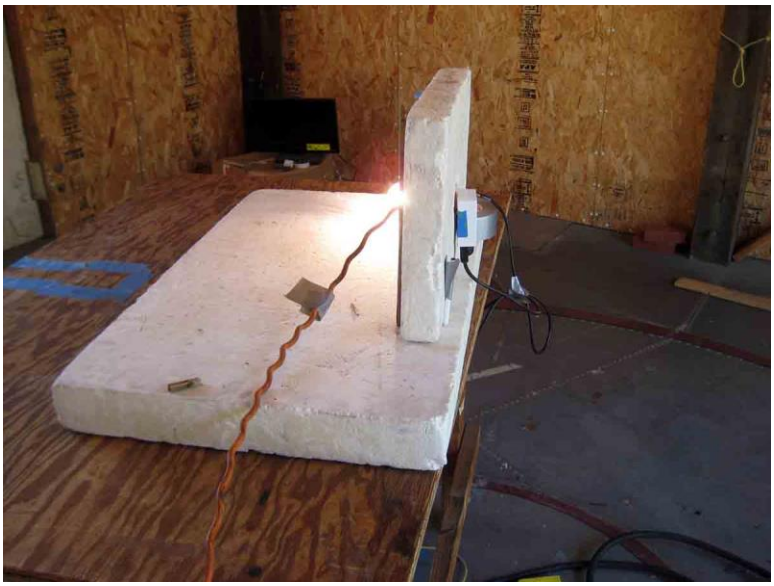
R L
Ref 96.99 dBµV
#Atten 10 dB
#Samp
Log
10
dB/
Dl
54.1
dBµV
LgAv
M1 S2
Center 915.000 MHz
Span 1 MHz
#Res BW 10 kHz
#VEW 30 kHz
#Sweep 3 s (601 pts)
Occupied Bandwidth
362.6641 kHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -7.070 kHz
x dB Bandwidth 452.092 kHz*

Test Setup Photos





15.249(b)(d) Field Strength of Spurious Emissions

Test Data Sheets

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

Customer: **SmartLabs, Inc.**
Specification: **15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)**
Work Order #: **93547** Date: 4/18/2013
Test Type: **Radiated Scan** Time: 11:54:20
Equipment: **INSTEON Dual-Band Appliance Module** Sequence#: 1
Manufacturer: SmartLabs, Inc. Tested By: E. Wong
Model: 2635-222 On/Off Module
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02869	Spectrum Analyzer	E4440A	2/6/2013	2/6/2015
T2	AN00010	Preamp	8447D	3/29/2012	3/29/2014
T3	AN00851	Biconilog Antenna	CBL6111C	5/16/2012	5/16/2014
T4	ANP04382	Cable	LDF-50	8/30/2012	8/30/2014
T5	ANP05555	Cable	RG223/U	6/19/2012	6/19/2014
T6	ANP05569	Cable	RG-214/U	6/19/2012	6/19/2014
T7	AN02115	Preamp	83051A	11/12/2012	11/12/2014
T8	AN01646	Horn Antenna	3115	4/13/2012	4/13/2014
T9	AN02947	Cable	32022-29094K-29094K-72TC	8/8/2011	8/8/2013
T10	ANP06360	Cable	L1-PNMNM-48	8/29/2012	8/29/2014
T11	AN03169	High Pass Filter	HM1155-11SS	9/22/2011	9/22/2013
	AN00314	Loop Antenna	6502	6/29/2012	6/29/2014

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

Function	Manufacturer	Model #	S/N
INSTEON Dual-Band Appliance Module*	SmartLabs, Inc.	2635-222 On/Off Module	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Light bulb	GE	Reveal	NA

Test Conditions / Notes:

The single channel wall mounted EUT is placed on the wooden table lined with Styrofoam of 10 cm thickness. Oriented upright to simulate the intended position of final installation in a vertically installed electrical outlet mounted on a vertical wall. A light bulb is connected to the EUT via a section of AC power cord.

Freq: 915MHz.

The EUT is set in constant transmit and receive mode.

Frequency range of measurement = 9 kHz- 10 GHz.
9kHz -150 kHz; RBW=200Hz, 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-10000MHz; RBW=1 MHz, VBW=1 MHz.
Test environment conditions: 21°C, 18 % Relative Humidity, 100kPa

Ext Attn: 0 dB

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

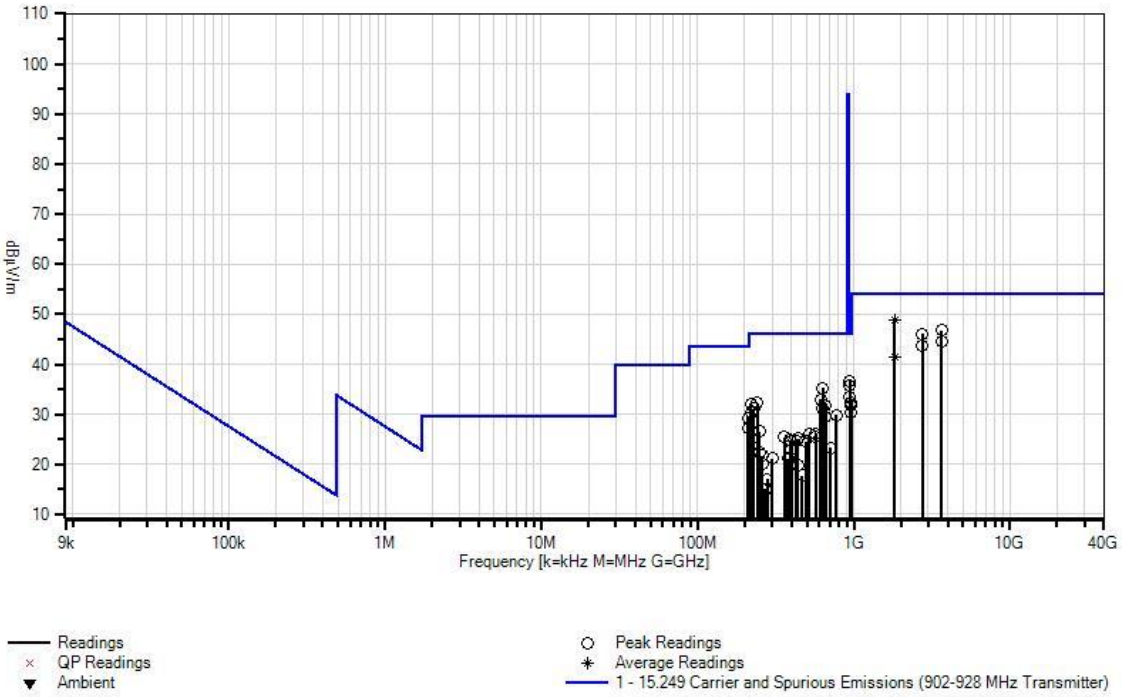
#	Freq	Rdng	T1 T5 T9	T2 T6 T10	T3 T7 T11	T4 T8	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	1830.050M	46.7	+0.0	+0.0	+0.0	+5.2	+0.0	48.8	54.0	-5.2	Vert
	Ave		+0.0	+0.0	-34.1	+27.4					
			+0.4	+2.8	+0.4						
^	1830.050M	49.4	+0.0	+0.0	+0.0	+5.2	+0.0	51.5	54.0	-2.5	Vert
			+0.0	+0.0	-34.1	+27.4					
			+0.4	+2.8	+0.4						
3	3659.700M	35.1	+0.0	+0.0	+0.0	+8.0	+0.0	46.8	54.0	-7.2	Vert
			+0.0	+0.0	-33.3	+32.0					
			+0.6	+4.1	+0.3						
4	2745.220M	40.9	+0.0	+0.0	+0.0	+5.9	+0.0	46.1	54.0	-7.9	Vert
			+0.0	+0.0	-32.7	+27.8					
			+0.5	+3.4	+0.3						
5	945.071M	33.5	+0.0	-27.3	+22.7	+3.6	+0.0	36.7	46.0	-9.3	Vert
			+0.6	+3.6	+0.0	+0.0					
			+0.0	+0.0	+0.0						
6	3660.000M	32.8	+0.0	+0.0	+0.0	+8.0	+0.0	44.5	54.0	-9.5	Horiz
			+0.0	+0.0	-33.3	+32.0					
			+0.6	+4.1	+0.3						
7	944.917M	32.5	+0.0	-27.3	+22.7	+3.6	+0.0	35.7	46.0	-10.3	Horiz
			+0.6	+3.6	+0.0	+0.0					
			+0.0	+0.0	+0.0						
8	2745.470M	38.5	+0.0	+0.0	+0.0	+5.9	+0.0	43.7	54.0	-10.3	Horiz
			+0.0	+0.0	-32.7	+27.8					
			+0.5	+3.4	+0.3						
9	630.000M	36.8	+0.0	-27.9	+19.9	+3.0	+0.0	35.2	46.0	-10.8	Horiz
			+0.5	+2.9	+0.0	+0.0					
			+0.0	+0.0	+0.0						
10	945.080M	30.4	+0.0	-27.3	+22.7	+3.6	+0.0	33.6	46.0	-12.4	Horiz
			+0.6	+3.6	+0.0	+0.0					
			+0.0	+0.0	+0.0						
11	1830.137M	39.3	+0.0	+0.0	+0.0	+5.2	+0.0	41.4	54.0	-12.6	Horiz
	Ave		+0.0	+0.0	-34.1	+27.4					
			+0.4	+2.8	+0.4						

^	1830.137M	46.6	+0.0 +0.0 +0.4	+0.0 +0.0 +2.8	+0.0 -34.1 +0.4	+5.2 +27.4	+0.0	48.7	54.0	-5.3	Horiz
13	610.000M	35.0	+0.0 +0.5 +0.0	-27.9 +2.8 +0.0	+19.6 +0.0 +0.0	+2.9 +0.0	+0.0	32.9	46.0	-13.1	Horiz
14	239.969M	43.2	+0.0 +0.3 +0.0	-26.5 +1.6 +0.0	+11.9 +0.0 +0.0	+1.8 +0.0	+0.0	32.3	46.0	-13.7	Vert
15	219.998M	44.6	+0.0 +0.3 +0.0	-26.5 +1.5 +0.0	+10.5 +0.0 +0.0	+1.7 +0.0	+0.0	32.1	46.0	-13.9	Horiz
16	956.080M	28.5	+0.0 +0.6 +0.0	-27.3 +3.6 +0.0	+22.9 +0.0 +0.0	+3.6 +0.0	+0.0	31.9	46.0	-14.1	Horiz
17	660.008M	33.1	+0.0 +0.5 +0.0	-27.9 +2.9 +0.0	+20.2 +0.0 +0.0	+3.0 +0.0	+0.0	31.8	46.0	-14.2	Horiz
18	209.984M	42.9	+0.0 +0.3 +0.0	-26.6 +1.4 +0.0	+9.7 +0.0 +0.0	+1.6 +0.0	+0.0	29.3	43.5	-14.2	Vert
19	630.002M	32.7	+0.0 +0.5 +0.0	-27.9 +2.9 +0.0	+19.9 +0.0 +0.0	+3.0 +0.0	+0.0	31.1	46.0	-14.9	Vert
20	229.994M	42.9	+0.0 +0.3 +0.0	-26.5 +1.5 +0.0	+11.2 +0.0 +0.0	+1.7 +0.0	+0.0	31.1	46.0	-14.9	Horiz
21	219.997M	42.9	+0.0 +0.3 +0.0	-26.5 +1.5 +0.0	+10.5 +0.0 +0.0	+1.7 +0.0	+0.0	30.4	46.0	-15.6	Vert
22	959.910M	26.9	+0.0 +0.6 +0.0	-27.3 +3.6 +0.0	+22.9 +0.0 +0.0	+3.6 +0.0	+0.0	30.3	46.0	-15.7	Vert
23	774.970M	29.0	+0.0 +0.5 +0.0	-27.6 +3.2 +0.0	+21.5 +0.0 +0.0	+3.3 +0.0	+0.0	29.9	46.0	-16.1	Horiz
24	209.995M	40.7	+0.0 +0.3 +0.0	-26.6 +1.4 +0.0	+9.7 +0.0 +0.0	+1.6 +0.0	+0.0	27.1	43.5	-16.4	Horiz
25	659.997M	30.9	+0.0 +0.5 +0.0	-27.9 +2.9 +0.0	+20.2 +0.0 +0.0	+3.0 +0.0	+0.0	29.6	46.0	-16.4	Vert
26	249.998M	36.8	+0.0 +0.3 +0.0	-26.5 +1.6 +0.0	+12.6 +0.0 +0.0	+1.8 +0.0	+0.0	26.6	46.0	-19.4	Horiz
27	569.970M	29.2	+0.0 +0.4 +0.0	-27.9 +2.7 +0.0	+19.0 +0.0 +0.0	+2.8 +0.0	+0.0	26.2	46.0	-19.8	Vert
28	518.370M	30.2	+0.0 +0.4 +0.0	-27.8 +2.5 +0.0	+18.0 +0.0 +0.0	+2.7 +0.0	+0.0	26.0	46.0	-20.0	Vert

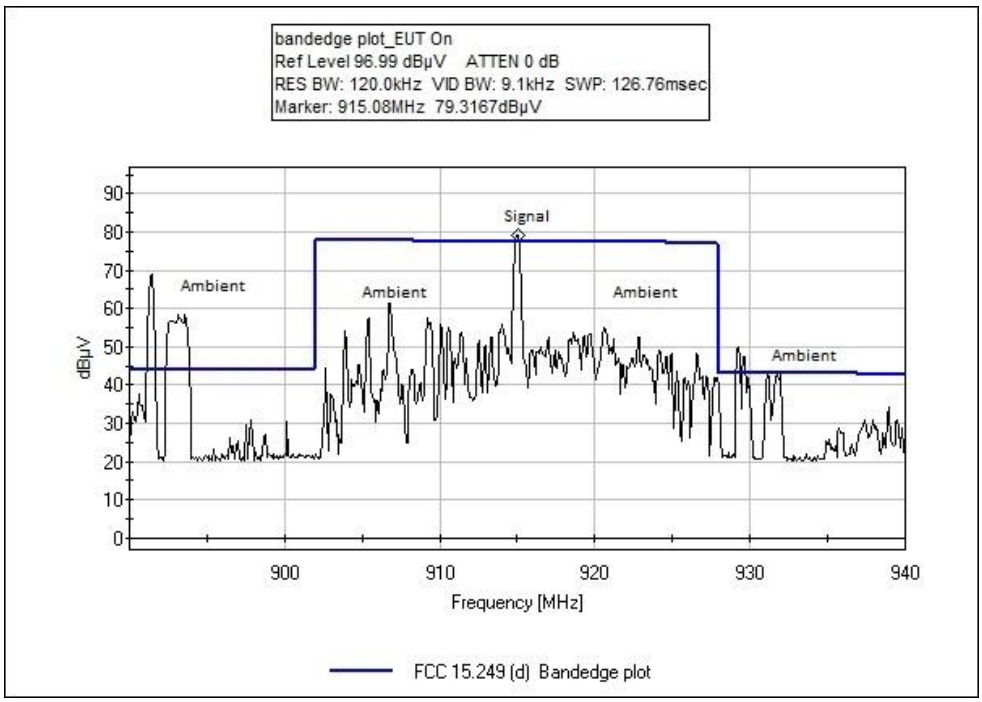
29	360.000M	33.1	+0.0 +0.4 +0.0	-26.9 +2.0 +0.0	+14.6 +0.0 +0.0	+2.2 +0.0	+0.0	25.4	46.0	-20.6	Vert
30	569.983M	28.4	+0.0 +0.4 +0.0	-27.9 +2.7 +0.0	+19.0 +0.0 +0.0	+2.8 +0.0	+0.0	25.4	46.0	-20.6	Horiz
31	439.990M	31.0	+0.0 +0.4 +0.0	-27.5 +2.3 +0.0	+16.4 +0.0 +0.0	+2.5 +0.0	+0.0	25.1	46.0	-20.9	Vert
32	389.990M	31.7	+0.0 +0.4 +0.0	-27.1 +2.2 +0.0	+15.3 +0.0 +0.0	+2.3 +0.0	+0.0	24.8	46.0	-21.2	Vert
33	399.983M	31.5	+0.0 +0.4 +0.0	-27.2 +2.2 +0.0	+15.5 +0.0 +0.0	+2.3 +0.0	+0.0	24.7	46.0	-21.3	Vert
34	489.990M	29.5	+0.0 +0.4 +0.0	-27.8 +2.5 +0.0	+17.4 +0.0 +0.0	+2.6 +0.0	+0.0	24.6	46.0	-21.4	Vert
35	430.003M	30.7	+0.0 +0.4 +0.0	-27.4 +2.3 +0.0	+16.2 +0.0 +0.0	+2.4 +0.0	+0.0	24.6	46.0	-21.4	Horiz
36	965.050M	28.7	+0.0 +0.6 +0.0	-27.3 +3.7 +0.0	+23.0 +0.0 +0.0	+3.7 +0.0	+0.0	32.4	54.0	-21.6	Vert
37	229.969M	35.1	+0.0 +0.3 +0.0	-26.5 +1.5 +0.0	+11.2 +0.0 +0.0	+1.7 +0.0	+0.0	23.3	46.0	-22.7	Vert
38	709.998M	23.8	+0.0 +0.5 +0.0	-27.9 +3.0 +0.0	+20.8 +0.0 +0.0	+3.1 +0.0	+0.0	23.3	46.0	-22.7	Vert
39	399.995M	29.6	+0.0 +0.4 +0.0	-27.2 +2.2 +0.0	+15.5 +0.0 +0.0	+2.3 +0.0	+0.0	22.8	46.0	-23.2	Horiz
40	249.961M	32.5	+0.0 +0.3 +0.0	-26.5 +1.6 +0.0	+12.6 +0.0 +0.0	+1.8 +0.0	+0.0	22.3	46.0	-23.7	Vert
41	259.969M	31.8	+0.0 +0.3 +0.0	-26.5 +1.6 +0.0	+12.7 +0.0 +0.0	+1.8 +0.0	+0.0	21.7	46.0	-24.3	Vert
42	379.988M	28.2	+0.0 +0.4 +0.0	-27.0 +2.1 +0.0	+15.1 +0.0 +0.0	+2.3 +0.0	+0.0	21.1	46.0	-24.9	Horiz
43	299.936M	30.3	+0.0 +0.3 +0.0	-26.4 +1.8 +0.0	+13.1 +0.0 +0.0	+2.0 +0.0	+0.0	21.1	46.0	-24.9	Vert
44	259.997M	30.2	+0.0 +0.3 +0.0	-26.5 +1.6 +0.0	+12.7 +0.0 +0.0	+1.8 +0.0	+0.0	20.1	46.0	-25.9	Horiz
45	440.013M	25.6	+0.0 +0.4 +0.0	-27.5 +2.3 +0.0	+16.4 +0.0 +0.0	+2.5 +0.0	+0.0	19.7	46.0	-26.3	Horiz

46	465.987M	23.2	+0.0 +0.4 +0.0	-27.7 +2.4 +0.0	+16.9 +0.0 +0.0	+2.5 +0.0	+0.0	17.7	46.0	-28.3	Horiz
47	280.005M	26.6	+0.0 +0.3 +0.0	-26.4 +1.7 +0.0	+12.9 +0.0 +0.0	+1.9 +0.0	+0.0	17.0	46.0	-29.0	Horiz
48	269.998M	24.7	+0.0 +0.3 +0.0	-26.4 +1.7 +0.0	+12.8 +0.0 +0.0	+1.9 +0.0	+0.0	15.0	46.0	-31.0	Horiz

Date: 4/18/2013 Time: 11:54:20 SmartLabs, Inc. WO#: 93547
15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter) Test Distance: 3 Meters Sequence#: 1 Ext
ATTN: 0 dB



Bandedge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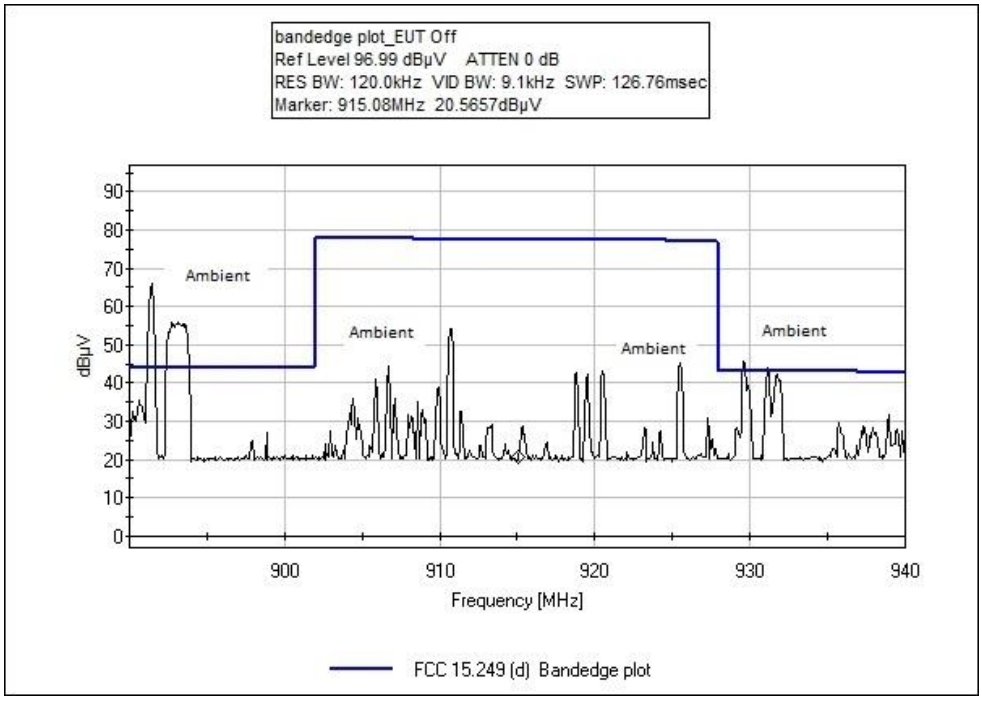
RES BW: 120.0kHz VID BW: 9.1kHz SWP: 126.76msec
Marker: 915.08MHz 79.3167dBµV
Signal
Ambient
Ambient
Ambient
Ambient
dBµV
Frequency [MHz]
FCC 15.249 (d) Bandedge plot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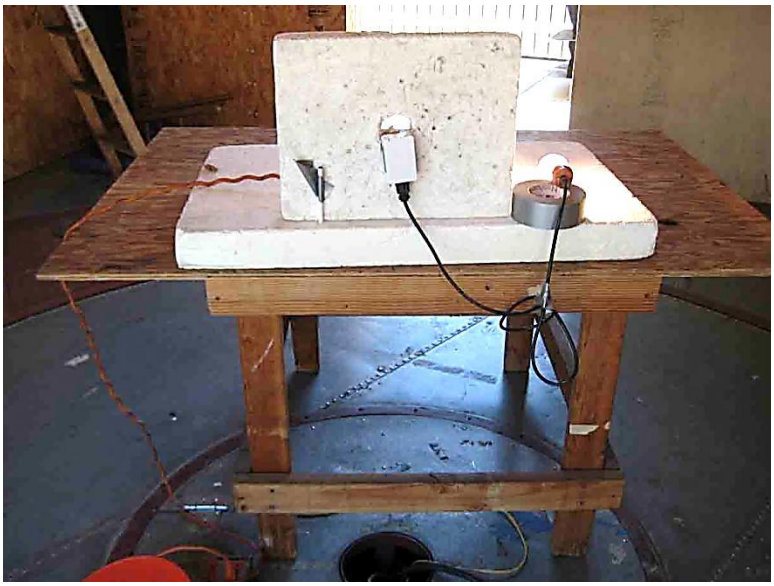
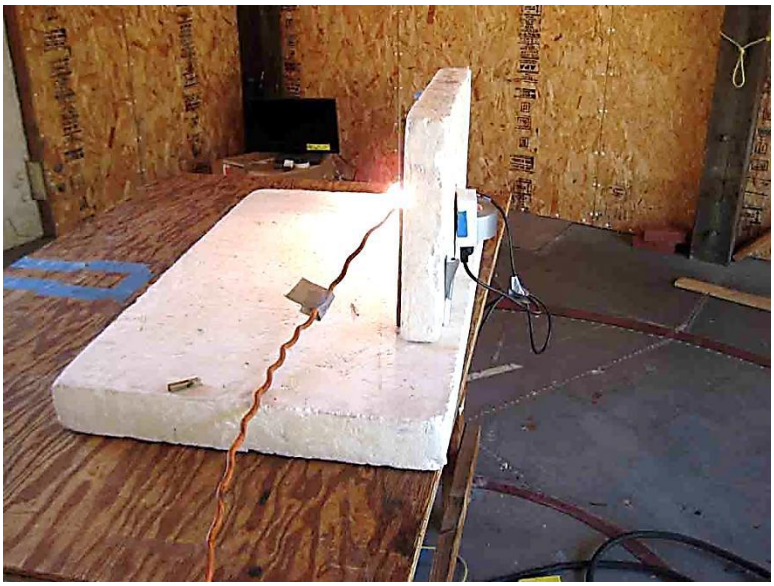
RES BW: 120.0kHz VID BW: 9.1kHz SWP: 126.76msec
Marker: 915.08MHz 20.5657dBµV
Ambient
Ambient
Ambient
Ambient
dBµV
Frequency [MHz]
FCC 15.249 (d) Bandedge plot

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

Unless otherwise indicated, the following configuration parameters are used for equipment setup: The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. Cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

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

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

CORRECTION FACTORS

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

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

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed were used to collect the emissions data. A spectrum analyzer or receiver was used for all measurements. Unless otherwise specified, the following table shows the measuring equipment bandwidth settings that were used in designated frequency bands. For testing emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used.

MEASURING EQUIPMENT BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	9 kHz	150 kHz	200 Hz
RADIATED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	>1 GHz	1 MHz

SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the emissions tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "positive peak" detector mode. Whenever a "quasi-peak" or "average" reading was recorded, the measurement was annotated with a "QP" or an "Ave" on the appropriate rows of the data sheets. In cases where quasi-peak or average limits were employed and data exists for multiple measurement types for the same frequency then the peak measurement was retained in the report for reference, however the numbering for the affected row was removed and an arrow or carrot ("^") was placed in the far left-hand column indicating that the row above takes precedence for comparison to the limit. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

Peak

In this mode, the spectrum analyzer or receiver recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature called "peak hold," the measurement device had the ability to measure intermittent or low duty cycle transient emission peak levels. In this mode the measuring device made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

Quasi-peak measurements were taken using the quasi-peak detector when the true peak values exceeded or were within 2 dB of a quasi-peak specification limit. Additional QP measurements may have been taken at the discretion of the operator.

Average

Average measurements were taken using the average detector when the true peak values exceeded or were within 2 dB of an average specification limit. Additional average measurements may have been taken at the discretion of the operator. If the specification or test procedure requires trace averaging, then the averaging was performed using 100 samples or as required by the specification. All other average measurements are performed using video bandwidth averaging. To make these measurements, the test engineer reduces the video bandwidth on the measuring device until the modulation of the signal is filtered out. At this point the measuring device is set into the linear mode and the scan time is reduced.