FCC PART 15, SUBPART B and C
TEST REPORT

for

PowerLincTM USB

MODEL: 2413U

Prepared for

SMARTLABS, INC.
16542 MILLIKAN AVENUE
IRVINE, CALIFORNIA 92606

Prepared by: Kyle Fujimoto

KYLE FUJIMOTO

Approved by:

MICHAEL CHRISTENSEN

COMPATIBLE ELECTRONICS INC.
114 OLINDA DRIVE
BREA, CALIFORNIA 92823
(714) 579-0500

DATE: JANUARY 2, 2009

	REPORT BODY	APPENDICES					TOTAL
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GENERAL REPORT SUMMARY

This electromagnetic emission test report is generated by Compatible Electronics Inc., which is an independent testing and consulting firm. The test report is based on testing performed by Compatible Electronics personnel according to the measurement procedures described in the test specifications given below and in the "Test Procedures" section of this report.

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced without the written permission of Compatible Electronics, unless done so in full.

This report must not be used to claim product endorsement by NVLAP, NIST or any other agency of the U.S. Government.

Device Tested:	PowerLincTM USB Model: 2413U S/N: N/A
Product Description:	See Expository Statement
Modifications:	The EUT was modified in order to meet the specifications. Please see the list located in Appendix B.
Manufacturer:	SmartLabs, Inc. 16542 Millikan Avenue Irvine, California 92606
Test Dates:	December 16 and 19, 2008
Test Specifications:	EMI requirements CFR Title 47, Part 15 Subpart B; and Subpart C, Sections 15.205, 15.209 and 15.249
Test Procedure:	ANSI C63.4
Test Deviations:	The test procedure was not deviated from during the testing.

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 150 kHz – 30 MHz	Complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; and Subpart C section 15.207.
2	Radiated RF Emissions, 10 kHz – 9300 MHz (Transmitter Portion)	Complies with the limits of CFR Title 47, Part 15, Subpart C, section 15.205, 15.209, and 15.249.
3	Radiated RF Emissions, 10 kHz – 9300 MHz (Digital and Receiver Portion)	Complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B.

1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the PowerLincTM USB, Model: 2413U. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT hereafter, are within the **Class B** specification limits defined by CFR Title 47, Part 15, Subpart B for the digital and receiver portion; and the limits defined in Subpart C, sections 15.205, 15.207, 15.209, and 15.249 for the transmitter portion.

2. ADMINISTRATIVE DATA

2.1 Location of Testing

The EMI tests described herein were performed at the test facility of Compatible Electronics, 114 Olinda Drive, Brea, California 92823.

2.2 Traceability Statement

The calibration certificates of all test equipment used during the test are on file at the location of the test. The calibration is traceable to the National Institute of Standards and Technology (NIST).

2.3 Cognizant Personnel

SmartLabs, Inc.

John Lockyer
Marcus Escobosa

Compatible Electronics, Inc.

Kyle Fujimoto	Test Engineer
Michael Christensen	Lab Manager

2.4 Date Test Sample was Received

The test sample was received on December 15, 2008.

2.5 Disposition of the Test Sample

The sample has not been returned to SmartLabs, Inc. as of January 2, 2009.

2.6 Abbreviations and Acronyms

The following abbreviations and acronyms may be used in this document.

RF	Radio Frequency
EMI	Electromagnetic Interference
EUT	Equipment Under Test
P/N	Part Number
S/N	Serial Number
HP	Hewlett Packard
ITE	Information Technology Equipment
CML	Corrected Meter Limit
LISN	Line Impedance Stabilization Network

3. APPLICABLE DOCUMENTS

The following documents are referenced or used in the preparation of this EMI Test Report.

SPEC	TITLE
CFR Title 47, Part 15	FCC Rules – Radio frequency devices (including digital devices)
ANSI C63.4 2003	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description Of Test Configuration - EMI

Setup and operation of the equipment under test.

Specifics of the EUT and Peripherals Tested

The PowerLincTM USB, Model: 2413U (EUT) was directly connected to the AC public mains. The EUT was also connected to a laptop via its USB port. The laptop was also connected to an AC Adapter and scanner via its power and USB ports, respectively. The scanner was also connected to its AC Adapter via its power port. The EUT was controlled by a ControLinc Model: 2430 that was also connected to the AC public mains. The EUT's antenna is hardwired onto the PCB itself. The EUT was tested in three orthogonal axis. The EUT was continuously transmitting and/or receiving while sending data for the laptop via its USB port.

The final radiated data as well as the conducted data was taken in the both the transmitting and receiving modes. Please see Appendix E for the data sheets.

4.1.1 Cable Construction and Termination

Cable 1 This is a 2-meter unshielded cable connecting the EUT to the AC public mains. The cable has a 3-prong female connector at the EUT end and a 3-prong male connector at the AC public mains end.

Cable 2 This is a 2-meter unshielded cable connecting the ControLinc to the AC public mains. The cable is hard wired at the ControLinc end and has a 2-prong power connector at the AC public mains end.

Cable 3 This is a 3-meter braid shielded cable connecting the laptop to the scanner. The cable has a USB type 'A' connector at the laptop end and a USB type 'B' connector at the scanner end. The cable was bundled to a length of 1 meter. The shield of the cable was grounded to the chassis via the connectors.

Cable 4 This is a 2-meter unshielded cable connecting the AC Adapter to the scanner. The cable has a 1/8 inch power connector at the scanner end and is hard wired into the AC Adapter.

Cable 5 This is a 1.5-meter braid shielded cable connecting the EUT to the laptop. The cable has a USB type 'A' connector at the laptop end and a USB type 'B' connector at the EUT end. The cable was bundled to a length of 1 meter. The shield of the cable was grounded to the chassis via the connectors.

Cable 6 This is a 2-meter unshielded cable connecting the laptop to the AC adapter. The cable is hard wired at the AC Adapter end and has a 1-pin power connector at the laptop end. The cable was bundled to a length of 1 meter.

5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 EUT and Accessory List

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIALNUMBER	FCC ID
POWERLINCTM USB (EUT)	SMARTLABS, INC.	2413U	N/A	**SBP2413U**
LAPTOP	IBM	2623-DAU	L3-AV583 06/12	**N/A**
SCANNER	MICROTEK	5800	W3756A12478	**N/A**
AC ADAPTER FOR SCANNER	DVE	DSA-0151A-12 S	N/A	**N/A**
CONTROLINC	SMARTHOME	2430	N/A	**N/A**
AC ADAPTER FOR LAPTOP	LENOVO	P/N: 92P1109	11S92P1109Z1ZBTZ675626	**N/A**

5.2 EMI Test Equipment

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DATE	CALIBRATION DUE DATE
GENERAL TEST EQUIPMENT USED FOR ALL RF EMISSIONS TESTS					
Computer	Hewlett Packard	4530	US91912319	N/A	N/A
EMI Receiver	Rohde & Schwarz	ESIB40	100194	September 17, 2008	Sept. 17, 2010
Monitor	Hewlett Packard	D5258A	TW74500641	N/A	N/A
RF RADIATED EMISSIONS TEST EQUIPMENT					
Radiated Emissions Data Capture Program	Compatible Electronics	2.0	N/A	N/A	N/A
Biconical Antenna	Com Power	AB-900	15226	February 28, 2008	Feb. 28, 2009
Log Periodic Antenna	Com Power	AL-100	16060	June 27, 2008	June 27, 2009
Preamplifier	Com-Power	PA-102	1017	January 11, 2008	Jan. 11, 2009
Loop Antenna	Com Power	AL-130	17089	September 29, 2008	Sept. 29, 2009
Horn Antenna	Com Power	AH-118	071175	June 27, 2008	June 27, 2010
Microwave Preamplifier	Com Power	PA-122	181921	March 3, 2008	March 3, 2009
Antenna Mast	Com Power	AM-100	N/A	N/A	N/A
RF CONDUCTED EMISSIONS TEST EQUIPMENT					
LISN	Com Power	LI-215	12078	September 29, 2008	Sept. 29, 2009
LISN	Com Power	LI-215	12082	September 29, 2008	Sept. 29, 2009
Transient Limiter	Seaward	252A910	1	September 26, 2008	Sept. 26, 2009

6. TEST SITE DESCRIPTION

6.1 Test Facility Description

Please refer to section 2.1 and 7.1 of this report for EMI test location.

6.2 EUT Mounting, Bonding and Grounding

The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 0.8 meters above the ground plane.

The EUT was grounded to the chassis of the laptop via the shell of the USB connector.

7. TEST PROCEDURES

The following sections describe the test methods and the specifications for the tests. Test results are also included in this section.

7.1 RF Emissions

7.1.1 Conducted Emissions Test

The spectrum analyzer was used as a measuring meter. The data was collected with the spectrum analyzer in the peak detect mode with the "Max Hold" feature activated. The quasi-peak was used only where indicated in the data sheets. A transient limiter was used for the protection of the spectrum analyzer input stage, and the offset was adjusted accordingly to read the actual data measured. The LISN output was measured using the spectrum analyzer. The output of the second LISN was terminated by a 50 ohm termination. The effective measurement bandwidth used for this test was 9 kHz.

Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The EUT was powered through the LISN, which was bonded to the ground plane. The LISN power was filtered and the filter was bonded to the ground plane. The EUT was set up with the minimum distances from any conductive surfaces as specified in ANSI C63.4. The excess power cord was wrapped in a figure eight pattern to form a bundle not exceeding 0.4 meters in length.

The conducted emissions from the EUT were maximized for operating mode as well as cable placement. The final data was collected under program control by the Compatible Electronics software in several overlapping sweeps by running the spectrum analyzer at a minimum scan rate of 10 seconds per octave. The final qualification data is located in Appendix E.

Test Results:

The EUT complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; and CFR Title 47, Part 15, Subpart C, section 15.207.

7.1.2 Radiated Emissions (Spurious and Harmonics) Test

The EMI Receiver was used as a measuring meter along with the quasi-peak adapter. Amplifiers were used to increase the sensitivity of the instrument. The Com Power Preamplifier Model: PA-102 was used for frequencies from 30 MHz to 1 GHz, and the Com-Power Microwave Preamplifier Model: PA-122 was used for frequencies above 1 GHz. The EMI Receiver was used in the peak detect mode with the "Max Hold" feature activated. In this mode, the EMI Receiver records the highest measured reading over all the sweeps.

The frequencies above 1 GHz were averaged manually by narrowing the video filter down to 10 Hz and putting the sweep time on AUTO on the spectrum analyzer to keep the amplitude reading calibrated.

The measurement bandwidths and transducers used for the radiated emissions test were:

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
9 kHz to 150 kHz	200 Hz	Active Loop Antenna
150 kHz to 30 MHz	9 kHz	Active Loop Antenna
30 MHz to 300 MHz	120 kHz	Biconical Antenna
300 MHz to 1 GHz	120 kHz	Log Periodic Antenna
1 GHz to 9.3 GHz	1 MHz	Horn Antenna

The open field test site of Compatible Electronics, Inc. was used for radiated emission testing. This test site is set up according to ANSI C63.4. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor. The turntable permits EUT rotation of 360 degrees in order to maximize emissions. Also, the antenna mast allows height variation of the antenna from 1 meter to 4 meters. Data was collected in the worst case (highest emission) configuration of the EUT. At each reading, the EUT was rotated 360 degrees and the antenna height was varied from 1 to 4 meters (for E field radiated field strength). The gunsight method was used when measuring with the horn antenna in order to ensure accurate results. The loop antenna was also rotated in the horizontal and vertical axis in order to ensure accurate results.

7.1.3 Radiated Emissions (Spurious and Harmonics) Test (Continued)

The presence of ambient signals was verified by turning the EUT off. In case an ambient signal was detected, the measurement bandwidth was reduced temporarily and verification was made that an additional adjacent peak did not exist. This ensures that the ambient signal does not hide any emissions from the EUT. The EUT was tested at a 3 meter test distance to obtain the final test data. The final qualification data sheets are located in Appendix E.

Test Results:

The EUT complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; and CFR Title 47, Part 15, Subpart C, sections 15.205, 15.209, and 15.249.

8. CONCLUSIONS

The PowerLincTM USB, Model: 2413U meets all of the **Class B** specification limits defined in CFR Title 47, Part 15, Subpart B for the digital and receiver portion; and the limits defined in Subpart C, sections 15.205, 15.207, 15.209, and 15.249 for the transmitter portion.

APPENDIX A

LABORATORY RECOGNITIONS

LABORATORY RECOGNITIONS

Compatible Electronics has the following agency accreditations:

National Voluntary Laboratory Accreditation Program - Lab Code: 200528-0

Voluntary Control Council for Interference - Registration Numbers: R-983, C-1026, R-984 and C-1027

Bureau of Standards and Metrology Inspection - Reference Number: SL2-IN-E-1031

Conformity Assessment Body for the EMC Directive Under the US/EU MRA Appointed by NIST

Compatible Electronics is recognized or on file with the following agencies:

Federal Communications Commission

Industry Canada

APPENDIX B

MODIFICATIONS TO THE EUT

MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC 15.249 or FCC Class B specifications.

All the rework described below was implemented during the test in a method that could be reproduced in all the units by the manufacturer.

Added a high voltage capacitor (2220 pF) between the primary and secondary of the transformer. Also the inductor was shorted.

APPENDIX C

ADDITIONAL MODELS COVERED UNDER THIS REPORT

ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

PowerLincTM USB
Model: 2413U
S/N: N/A

There were no additional models covered under this report.

APPENDIX D

DIAGRAMS, CHARTS, AND PHOTOS

FIGURE 1: CONDUCTED EMISSIONS TEST SETUP

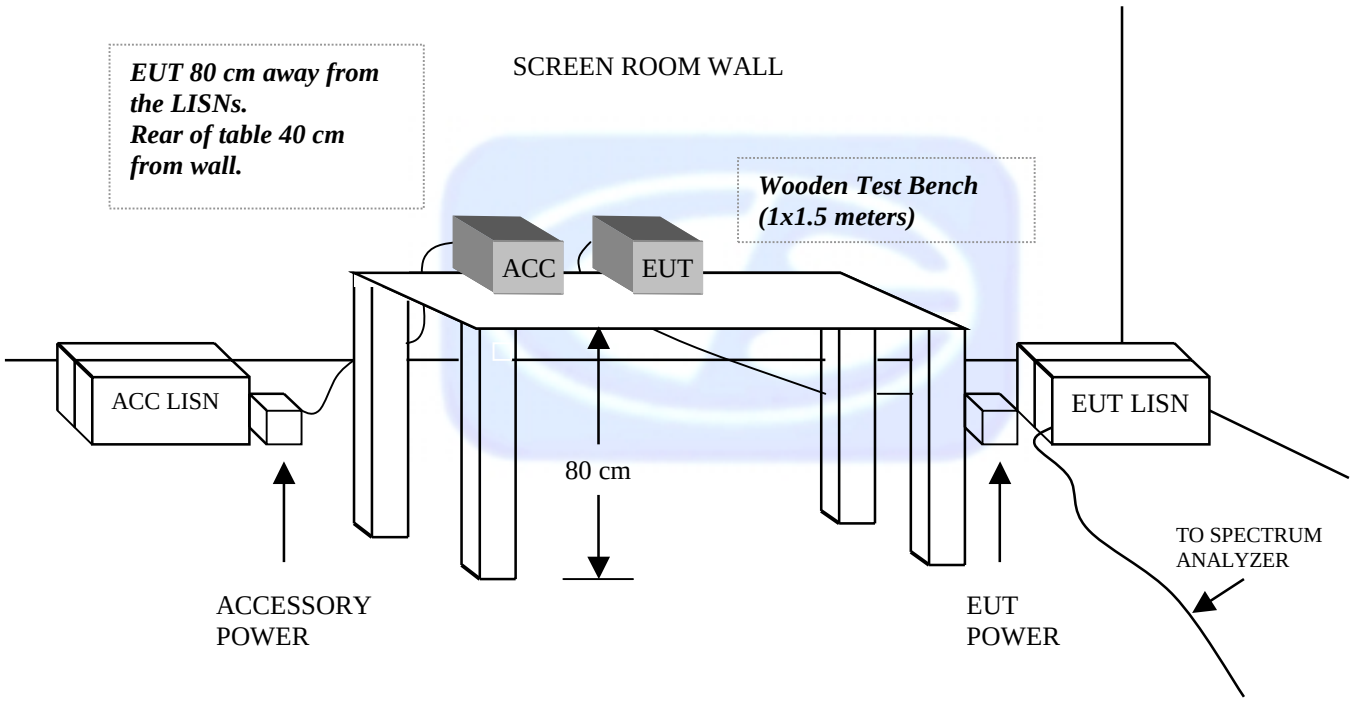
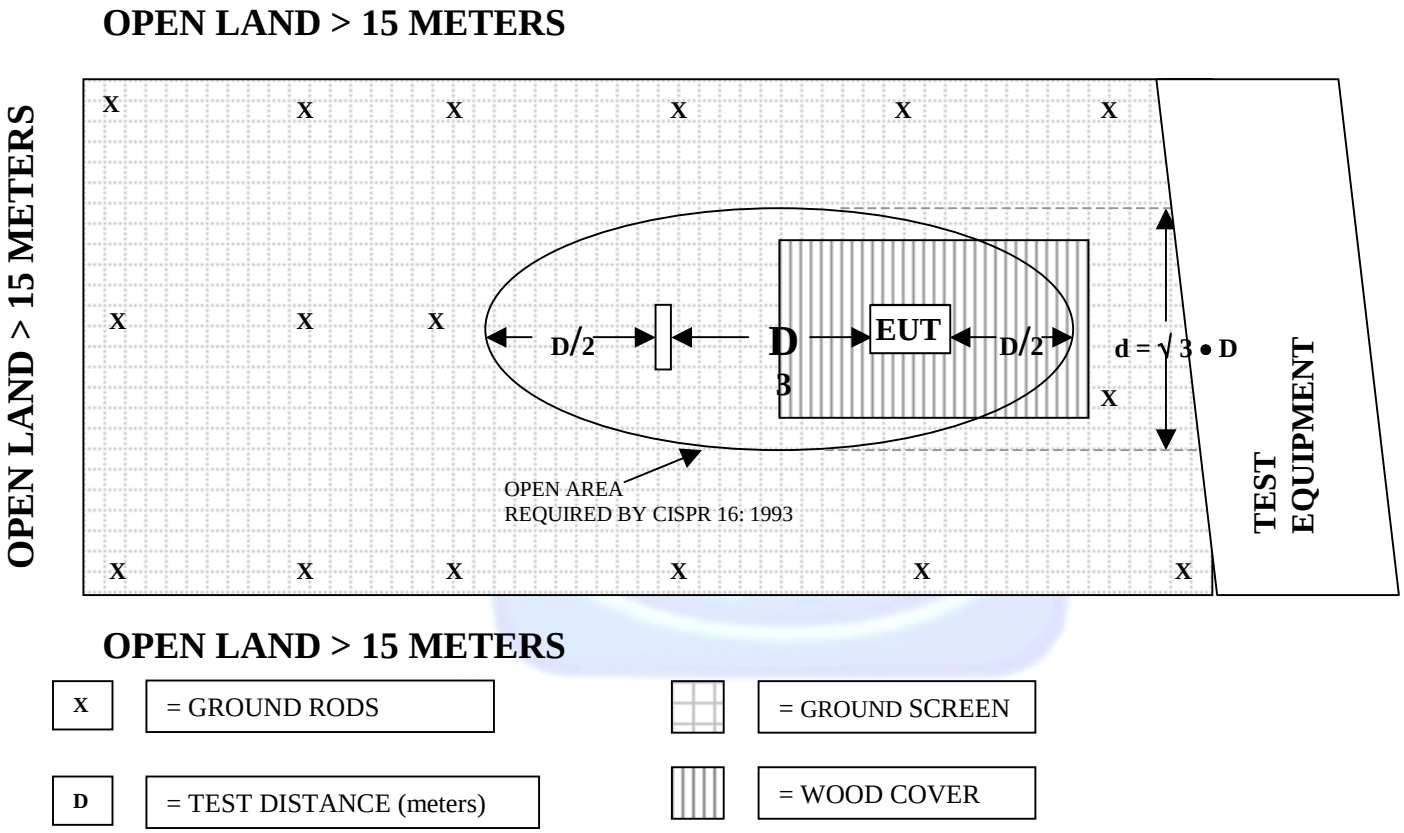


FIGURE 2: PLOT MAP AND LAYOUT OF RADIATED TEST SITE – 3 METERS



COM-POWER AB-900

BICONICAL ANTENNA

S/N: 15226

CALIBRATION DATE: FEBRUARY 28, 2008

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	12.1	100	10.7
35	12.2	120	13.6
40	11.7	140	12.1
45	9.9	160	12.2
50	11.3	180	15.2
60	9.4	200	16.5
70	7.6	250	16.5
80	6.0	275	18.1
90	6.8	300	21.5

COM-POWER AL-100

LOG PERIODIC ANTENNA

S/N: 16060

CALIBRATION DATE: JUNE 27, 2008

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
300	12.7	700	21.2
400	15.3	800	21.7
500	17.4	900	21.8
600	19.0	1000	22.8

COM POWER AH-118

HORN ANTENNA

S/N: 071175

CALIBRATION DATE: JUNE 27, 2008

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	24.5	10.0	39.4
1.5	25.4	10.5	39.7
2.0	28.3	11.0	39.0
2.5	28.9	11.5	40.0
3.0	29.7	12.0	39.7
3.5	30.8	12.5	41.7
4.0	31.4	13.0	42.7
4.5	32.6	13.5	41.2
5.0	33.7	14.0	41.6
5.5	34.4	14.5	43.2
6.0	34.7	15.0	42.3
6.5	35.4	15.5	39.3
7.0	37.0	16.0	41.7
7.5	37.4	16.5	39.6
8.0	37.6	17.0	43.0
8.5	37.6	17.5	47.1
9.0	38.5	18.0	46.2
9.5	38.6		

COM-POWER PA-102

PREAMPLIFIER

S/N: 1017

CALIBRATION DATE: JANUARY 11, 2008

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	38.2	300	38.0
40	38.0	350	38.3
50	38.3	400	38.0
60	38.6	450	37.5
70	38.4	500	37.9
80	38.4	550	37.9
90	38.3	600	37.8
100	38.1	650	37.5
125	38.5	700	38.0
150	38.2	750	37.7
175	38.1	800	37.1
200	38.4	850	37.1
225	38.2	900	37.1
250	38.2	950	37.0
275	38.2	1000	36.5

COM-POWER PA-122

PREAMPLIFIER

S/N: 181921

CALIBRATION DATE: MARCH 3, 2008

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	36.32	10.0	35.47
1.5	35.40	10.5	35.05
2.0	34.77	11.0	34.16
2.5	35.07	11.5	33.75
3.0	34.86	12.0	34.65
3.5	34.48	12.5	34.41
4.0	34.30	13.0	35.36
4.5	33.96	13.5	35.30
5.0	34.06	14.0	35.87
5.5	34.54	14.5	36.44
6.0	35.90	15.0	36.24
6.5	36.85	15.5	35.92
7.0	36.55	16.0	35.53
7.5	35.31	16.5	35.29
8.0	33.57	17.0	34.96
8.5	33.36	17.5	34.02
9.0	35.01	18.0	33.39
9.5	35.97		

COM-POWER AL-130

LOOP ANTENNA

S/N: 17089

CALIBRATION DATE: SEPTEMBER 29, 2008

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.009	-41.57	9.93
0.01	-42.06	9.44
0.02	-42.43	9.07
0.05	-42.50	9.00
0.07	-42.10	9.40
0.1	-42.03	9.47
0.2	-44.50	7.00
0.3	-41.93	9.57
0.5	-41.90	9.60
0.7	-41.73	9.77
1	-41.23	10.27
2	-40.90	10.60
3	-41.20	10.30
4	-41.30	10.20
5	-40.70	10.80
10	-41.10	10.40
15	-42.17	9.33
20	-42.00	9.50
25	-42.20	9.30
30	-43.10	8.40

FRONT VIEW

SMARTLABS, INC.
PowerLincTM USB
MODEL: 2413U
FCC SUBPART B AND C – RADIATED EMISSIONS

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

REAR VIEW

SMARTLABS, INC.
PowerLincTM USB
MODEL: 2413U
FCC SUBPART B AND C – RADIATED EMISSIONS

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

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REAR VIEW

SMARTLABS, INC.
PowerLincTM USB
MODEL: 2413U
FCC SUBPART B AND C – CONDUCTED EMISSIONS

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

APPENDIX E

DATA SHEETS

RADIATED EMISSIONS

DATA SHEETS

FCC 15.249
SmartLabs, Inc.
PowerLincTM USB
Model: 2413U

Date: 12/19/08
Labs: B and D
Tested By: Kyle Fujimoto

X-Axis
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
914.94	87.38	V	94	-6.62	Peak	1.35	125	
1829.36	46.48	V	74	-27.52	Peak	1.18	150	
1829.36	40.93	V	54	-13.07	Avg	1.18	150	
2744.3	42.42	V	74	-31.58	Peak	1.19	150	
2744.3	29.54	V	54	-24.46	Avg	1.19	150	
3659.23	44.38	V	74	-29.62	Peak	1.19	150	
3659.23	32.62	V	54	-21.38	Avg	1.19	150	
4574.16	47.29	V	74	-26.71	Peak	1.18	150	
4574.16	34.76	V	54	-19.24	Avg	1.18	150	
5489.09		V	74		Peak			**No Emission**
5489.09		V	54		Avg			**Detected**
6404.02		V	74		Peak			**No Emission**
6404.02		V	54		Avg			**Detected**
7318.96		V	74		Peak			**No Emission**
7318.96		V	54		Avg			**Detected**
8233.89		V	74		Peak			**No Emission**
8233.89		V	54		Avg			**Detected**
9148.82		V	74		Peak			**No Emission**
9148.82		V	54		Avg			**Detected**

FCC 15.249
SmartLabs, Inc.
PowerLincTM USB
Model: 2413U

Date: 12/19/08
Labs: B and D
Tested By: Kyle Fujimoto

X-Axis
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
914.94	90.48	H	94	-3.52	Peak	1.29	225	
1829.36	48.46	H	74	-25.54	Peak	2.05	0	
1829.36	44.26	H	54	-9.74	Avg	2.05	0	
2744.3	41.44	H	74	-32.56	Peak	1.18	135	
2744.3	29.42	H	54	-24.58	Avg	1.18	135	
3659.23	44.62	H	74	-29.38	Peak	1.18	150	
3659.23	31.95	H	54	-22.05	Avg	1.18	150	
4574.16	46.56	H	74	-27.44	Peak	1.29	150	
4574.16	34.33	H	54	-19.67	Avg	1.29	150	
5489.09		H	74		Peak			**No Emission**
5489.09		H	54		Avg			**Detected**
6404.02		H	74		Peak			**No Emission**
6404.02		H	54		Avg			**Detected**
7318.96		H	74		Peak			**No Emission**
7318.96		H	54		Avg			**Detected**
8233.89		H	74		Peak			**No Emission**
8233.89		H	54		Avg			**Detected**
9148.82		H	74		Peak			**No Emission**
9148.82		H	54		Avg			**Detected**

FCC 15.249
SmartLabs, Inc.
PowerLincTM USB
Model: 2413U

Date: 12/19/08
Labs: B and D
Tested By: Kyle Fujimoto

Y-Axis
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
914.94	84.68	V	94	-9.32	Peak	1.05	180	
1829.36	45.63	V	74	-28.37	Peak	1.18	150	
1829.36	39.41	V	54	-14.59	Avg	1.18	150	
2744.3	41.81	V	74	-32.19	Peak	1.19	135	
2744.3	30.01	V	54	-23.99	Avg	1.19	135	
3659.23	44.58	V	74	-29.42	Peak	1.18	150	
3659.23	32.34	V	54	-21.66	Avg	1.18	150	
4574.16	47.31	V	74	-26.69	Peak	1.26	125	
4574.16	34.55	V	54	-19.45	Avg	1.26	125	
5489.09		V	74		Peak			**No Emission**
5489.09		V	54		Avg			**Detected**
6404.02		V	74		Peak			**No Emission**
6404.02		V	54		Avg			**Detected**
7318.96		V	74		Peak			**No Emission**
7318.96		V	54		Avg			**Detected**
8233.89		V	74		Peak			**No Emission**
8233.89		V	54		Avg			**Detected**
9148.82		V	74		Peak			**No Emission**
9148.82		V	54		Avg			**Detected**

FCC 15.249
SmartLabs, Inc.
PowerLincTM USB
Model: 2413U

Date: 12/19/08
Labs: B and D
Tested By: Kyle Fujimoto

Y-Axis
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
914.94	92.75	H	94	-1.25	Peak	1.09	125	
914.94	92.28	H	94	-1.72	QP	1.09	125	
1829.36	50.31	H	74	-23.69	Peak	1.19	125	
1829.36	46.51	H	54	-7.49	Avg	1.19	125	
2744.3	41.93	H	74	-32.07	Peak	1.18	150	
2744.3	30.31	H	54	-23.69	Avg	1.18	150	
3659.23	45.89	H	74	-28.11	Peak	1.19	150	
3659.23	32.33	H	54	-21.67	Avg	1.19	150	
4574.16	47.02	H	74	-26.98	Peak	1.25	180	
4574.16	34.65	H	54	-19.35	Avg	1.25	180	
5489.09		H	74		Peak			**No Emission**
5489.09		H	54		Avg			**Detected**
6404.02		H	74		Peak			**No Emission**
6404.02		H	54		Avg			**Detected**
7318.96		H	74		Peak			**No Emission**
7318.96		H	54		Avg			**Detected**
8233.89		H	74		Peak			**No Emission**
8233.89		H	54		Avg			**Detected**
9148.82		H	74		Peak			**No Emission**
9148.82		H	54		Avg			**Detected**

FCC 15.249
SmartLabs, Inc.
PowerLincTM USB
Model: 2413U

Date: 12/19/08
Labs: B and D
Tested By: Kyle Fujimoto

Z-Axis
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
914.94	89.78	V	94	-4.22	Peak	1.29	135	
1829.36	47.94	V	74	-26.06	Peak	1.18	225	
1829.36	44.27	V	54	-9.73	Avg	1.18	225	
2744.3	38.21	V	74	-35.79	Peak	1.29	225	
2744.3	26.17	V	54	-27.83	Avg	1.29	225	
3659.23	41.27	V	74	-32.73	Peak	1.18	180	
3659.23	28.61	V	54	-25.39	Avg	1.18	180	
4574.16	43.74	V	74	-30.26	Peak	1.25	180	
4574.16	31.05	V	54	-22.95	Avg	1.25	180	
5489.09		V	74		Peak			**No Emission**
5489.09		V	54		Avg			**Detected**
6404.02		V	74		Peak			**No Emission**
6404.02		V	54		Avg			**Detected**
7318.96		V	74		Peak			**No Emission**
7318.96		V	54		Avg			**Detected**
8233.89		V	74		Peak			**No Emission**
8233.89		V	54		Avg			**Detected**
9148.82		V	74		Peak			**No Emission**
9148.82		V	54		Avg			**Detected**

FCC 15.249
SmartLabs, Inc.
PowerLincTM USB
Model: 2413U

Date: 12/19/08
Labs: B and D
Tested By: Kyle Fujimoto

Z-Axis
Transmit Mode

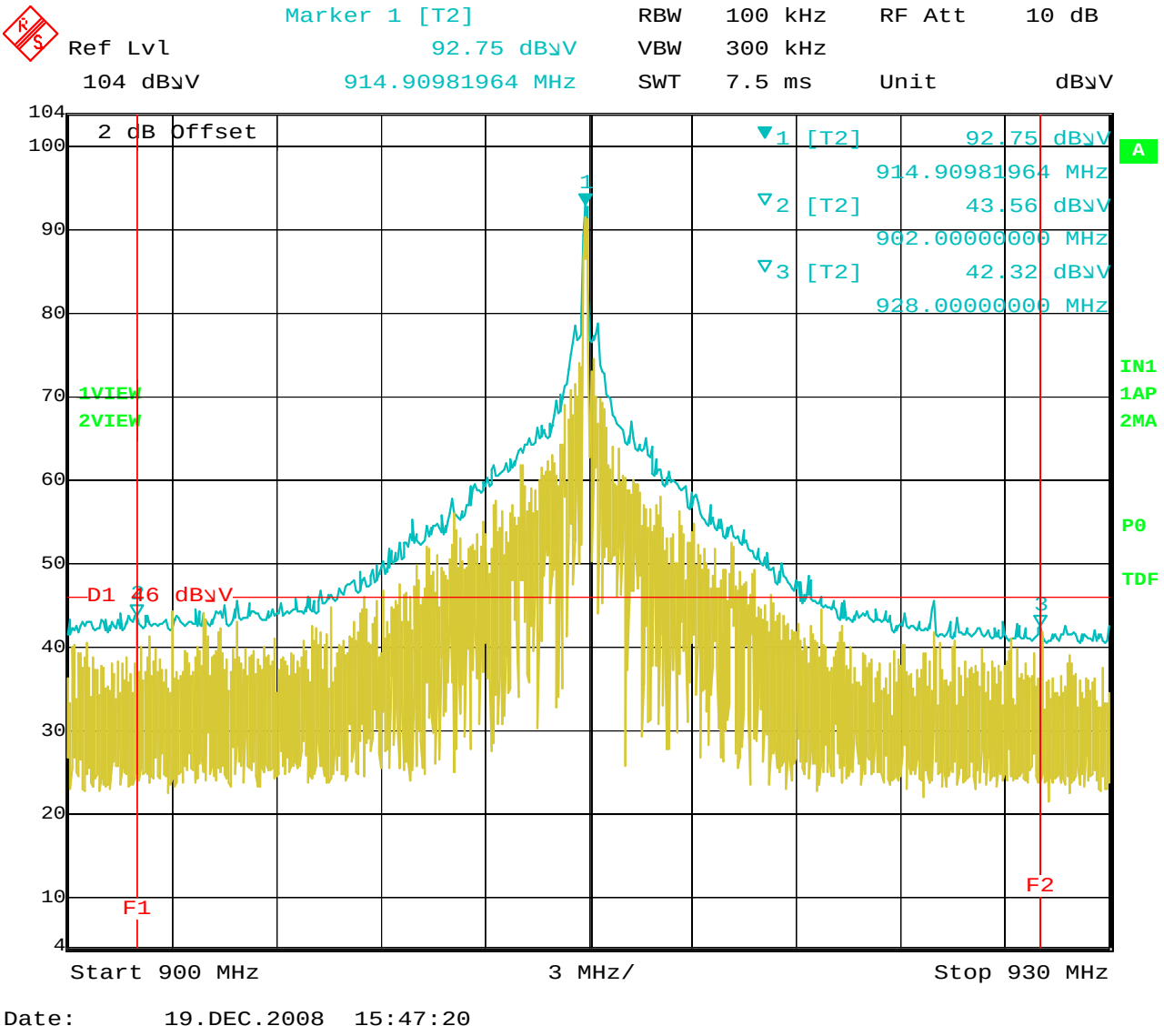
Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
914.94	87.58	H	94	-6.42	Peak	1.45	125	
1829.36	42.78	H	74	-31.22	Peak	1.18	150	
1829.36	37.31	H	54	-16.69	Avg	1.18	150	
2744.3	39.55	H	74	-34.45	Peak	1.16	225	
2744.3	26.18	H	54	-27.82	Avg	1.16	225	
3659.23	42.27	H	74	-31.73	Peak	1.18	150	
3659.23	28.75	H	54	-25.25	Avg	1.18	150	
4574.16	44.71	H	74	-29.29	Peak	1.19	150	
4574.16	31.32	H	54	-22.68	Avg	1.19	150	
5489.09		H	74		Peak			**No Emission**
5489.09		H	54		Avg			**Detected**
6404.02		H	74		Peak			**No Emission**
6404.02		H	54		Avg			**Detected**
7318.96		H	74		Peak			**No Emission**
7318.96		H	54		Avg			**Detected**
8233.89		H	74		Peak			**No Emission**
8233.89		H	54		Avg			**Detected**
9148.82		H	74		Peak			**No Emission**
9148.82		H	54		Avg			**Detected**

FCC 15.249
SmartLabs, Inc.
PowerLincTM USB
Model: 2413U

Date: 12/19/08
Labs: B and D
Tested By: Kyle Fujimoto

Z-Axis (Worst Case)

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions Detected
								from 1 GHz to 9300 MHz
								for the Digital Portion
								for both the Vertical and
								Horizontal Polarizations
								No Emissions Detected
								from 1 GHz to 9300 MHz
								for the non-harmonic Tx
								emissions for both the
								Vertical and
								Horizontal Polarizations.
								No Emissions Detected
								from 1 GHz to 9300 MHz
								for the receiver mode
								for both the
								Vertical and
								Horizontal Polarizations.



Band Edge of the Fundamental – Y-Axis – Horizontal Polarization (Worst Case)

COMPATIBLE ELECTRONICS

Test Location : Compatible Electronics
Customer : SmartLabs, Inc.
Manufacturer : SmartLabs, Inc.
Eut name : PowerLincTM USB
Model : 2413-U
Serial # : N/A
Specification : FCC Class B

Page : 1/1
Date : 12/16/2008
Time : 14:55:50
Lab : D
Test Distance : 3.0 Meters

Distance correction factor (20 * log(test/spec) : 0.00

Test Mode : Test Type: Radiated Emissions Qualification
Test Range: 10 kHz to 1 GHz (Vertical and Horizontal)
Clocks: 10 MHz and 22.1184 MHz (Transmit Mode - Worst Case)
Test Engineer: Kyle Fujimoto

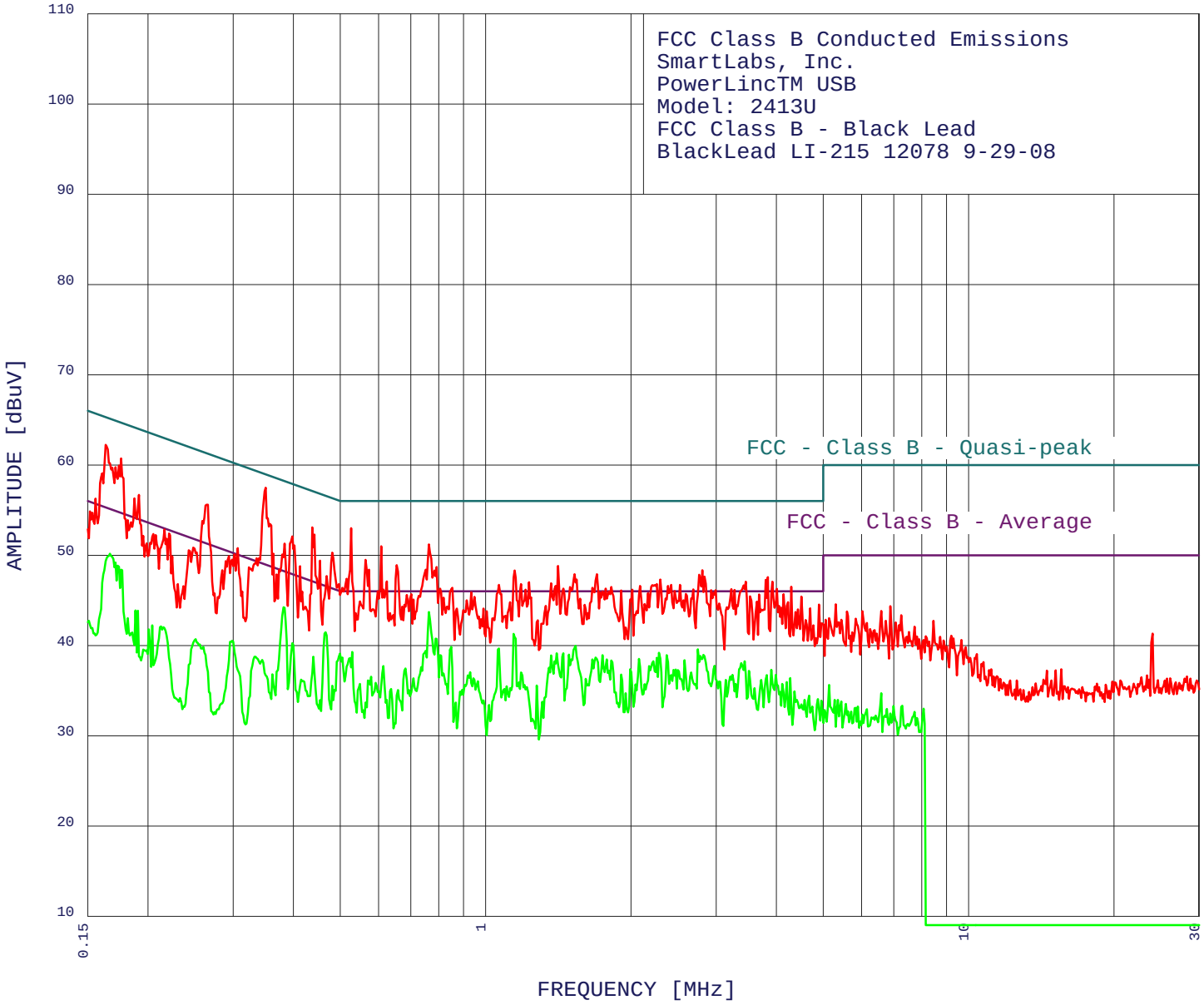
Pol	Freq	Rdng	Cable loss	Ant factor	Amp gain	Cor'd rdg = R	Limit = L	Delta R-L
	MHz	dBuV	dB	dB	dB	dBuV	dBuV/m	dB
1V	60.052	45.60	0.70	9.39	38.60	17.09	40.00	-22.91
2H	60.136	39.40	0.70	9.37	38.60	10.88	40.00	-29.12
3V	66.544	49.00	0.77	8.19	38.47	19.49	40.00	-20.51
4H	66.628	42.20	0.77	8.18	38.46	12.68	40.00	-27.32
5V	72.481	59.60	0.80	7.18	38.40	29.18	40.00	-10.82
6V	125.116	39.60	1.10	13.19	38.50	15.40	43.50	-28.10
7V	160.735	44.00	1.34	12.32	38.16	19.51	43.50	-23.99
8V	166.672	43.30	1.37	13.24	38.13	19.78	43.50	-23.72
9H	192.456	36.30	1.47	16.03	38.31	15.48	43.50	-28.02
10H	234.500	38.30	1.70	16.50	38.20	18.30	46.00	-27.70
11V	236.996	46.00	1.70	16.50	38.20	26.00	46.00	-20.00
12H	300.768	43.60	1.90	12.72	38.00	20.22	46.00	-25.78
13V	306.060	36.40	1.94	12.88	38.04	13.18	46.00	-32.82
14V	312.055	39.30	1.98	13.06	38.08	16.26	46.00	-29.74
15V	342.101	36.30	2.16	13.89	38.26	14.09	46.00	-31.91
16H	453.072	45.40	2.51	16.47	37.53	26.86	46.00	-19.14
17V	455.667	38.70	2.52	16.53	37.55	20.20	46.00	-25.80
18H	589.839	40.10	2.98	18.85	37.82	24.11	46.00	-21.89
19H	681.622	43.30	3.23	20.82	37.82	29.53	46.00	-16.47
20H	719.806	35.00	3.38	21.30	37.88	21.81	46.00	-24.19
21H	725.335	34.90	3.40	21.33	37.85	21.79	46.00	-24.21

CONDUCTED EMISSIONS

DATA SHEETS

EMISSION LEVEL [dBuV] PEAK 12/16/2008 10:49:13

Graph for Peak & Average



COMPATIBLE ELECTRONICS

COMPATIBLE ELECTRONICS

12/16/2008 10:49:13

FCC Class B Conducted Emissions
SmartLabs, Inc.
PowerLincTM USB
Model: 2413U
FCC Class B - Black Lead
BlackLead LI-215 12078 9-29-08
TEST ENGINEER : Kyle Fujimoto

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48 highest peaks above -50.00 dB of FCC - Class B - Average limit line
Peak criteria : 1.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.350	57.47	48.95	8.52**
2	0.527	52.99	46.00	6.99**
3	0.163	62.24	55.29	6.94**
4	0.176	60.72	54.68	6.04**
5	0.438	53.08	47.11	5.98**
6	0.442	52.28	47.02	5.26**
7	0.763	51.19	46.00	5.19**
8	0.174	59.94	54.77	5.17**
9	0.608	50.99	46.00	4.99**
10	0.171	59.76	54.90	4.86**
11	0.265	55.59	51.29	4.30**
12	0.398	52.08	47.90	4.18**
13	0.481	50.29	46.32	3.97**
14	0.161	59.06	55.43	3.63**
15	0.564	49.49	46.00	3.49**
16	0.383	51.28	48.21	3.07**
17	0.655	48.89	46.00	2.89**
18	1.412	48.79	46.00	2.79**
19	0.192	56.67	53.97	2.70**
20	0.792	48.69	46.00	2.69**
21	0.454	49.38	46.80	2.58**
22	0.751	48.39	46.00	2.39**
23	0.573	48.39	46.00	2.39**
24	2.811	48.32	46.00	2.32**
25	1.148	48.30	46.00	2.30**
26	0.187	56.31	54.15	2.16**
27	1.528	47.89	46.00	1.89**
28	1.699	47.89	46.00	1.89**
29	2.766	47.82	46.00	1.82**
30	2.840	47.62	46.00	1.62**
31	3.841	47.57	46.00	1.57**
32	0.363	50.17	48.65	1.53**
33	0.516	47.39	46.00	1.39**
34	2.298	47.30	46.00	1.30**
35	3.800	47.27	46.00	1.27**
36	0.413	48.78	47.59	1.19**
37	0.469	47.68	46.53	1.15**
38	0.624	47.09	46.00	1.09**
39	3.924	47.08	46.00	1.08**
40	3.456	47.05	46.00	1.05**
41	1.230	46.99	46.00	0.99**
42	1.367	46.89	46.00	0.89**
43	1.184	46.79	46.00	0.79**
44	2.262	46.79	46.00	0.79**
45	0.307	50.78	50.05	0.72**
46	2.527	46.71	46.00	0.71**
47	2.423	46.70	46.00	0.70**
48	1.066	46.70	46.00	0.70**

** Please See the Average Readings on the Next Page and on the Plot

COMPATIBLE ELECTRONICS

12/16/2008 10:49:13

FCC Class B Conducted Emissions
SmartLabs, Inc.
PowerLincTM USB
Model: 2413U
FCC Class B - Black Lead
BlackLead LI-215 12078 9-29-08
TEST ENGINEER : Kyle Fujimoto

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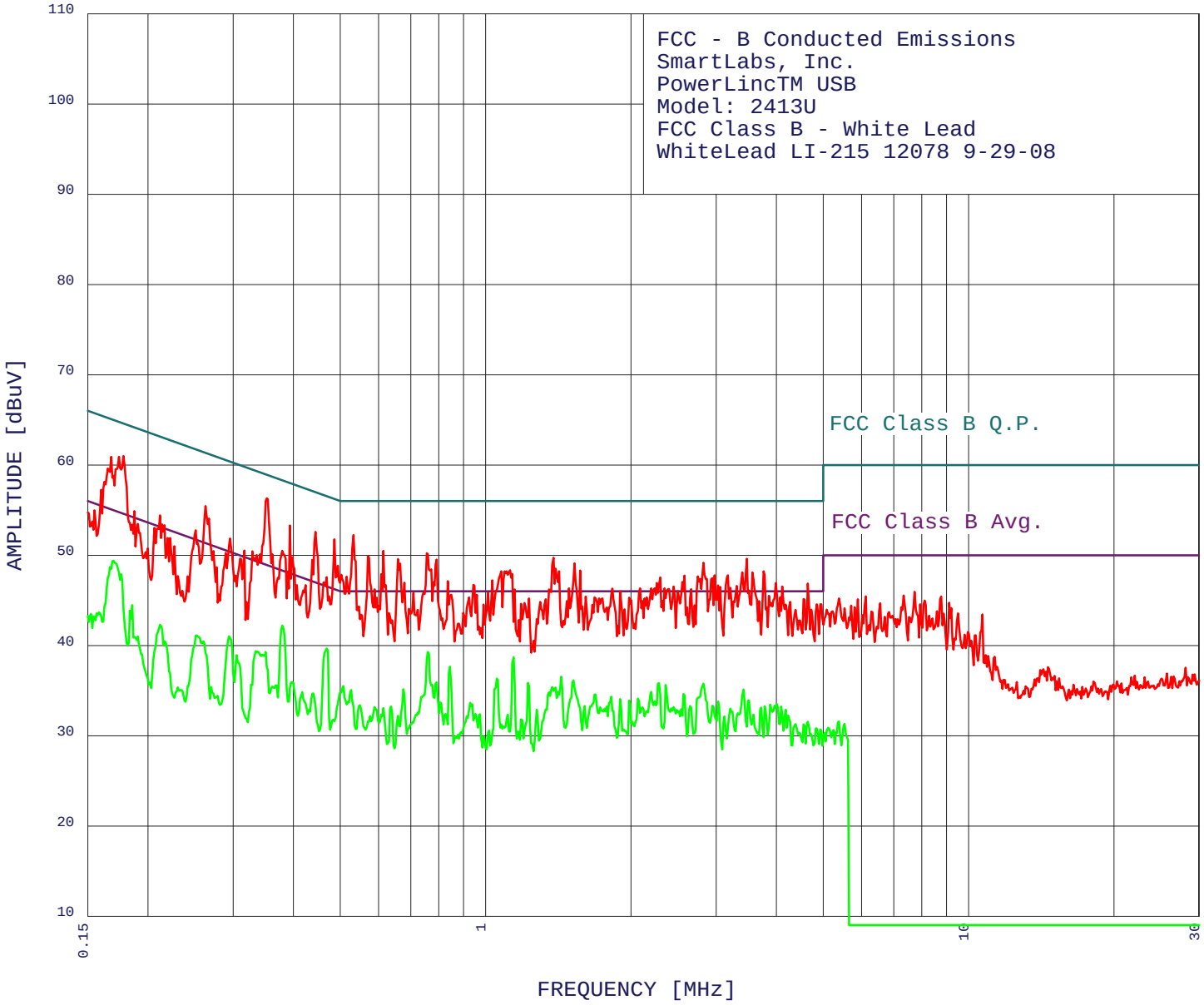
48 highest peaks above -50.00 dB of FCC - Class B - Average limit line
Peak criteria : 0.00 dB, Curve : Average

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.763	43.70	46.00	-2.30
2	0.381	44.23	48.25	-4.02
3	1.142	41.28	46.00	-4.72
4	0.167	50.15	55.11	-4.96
5	0.466	41.47	46.58	-5.10
6	0.788	40.75	46.00	-5.25
7	0.171	49.20	54.90	-5.70
8	0.173	48.85	54.81	-5.96
9	1.536	39.97	46.00	-6.03
10	0.849	39.84	46.00	-6.16
11	0.176	48.40	54.68	-6.28
12	1.066	39.65	46.00	-6.35
13	2.751	39.56	46.00	-6.44
14	0.751	39.39	46.00	-6.61
15	0.530	39.29	46.00	-6.71
16	2.286	39.18	46.00	-6.82
17	1.404	39.14	46.00	-6.86
18	1.449	39.12	46.00	-6.88
19	0.500	39.09	46.01	-6.92
20	1.488	38.97	46.00	-7.03
21	2.826	38.95	46.00	-7.05
22	1.745	38.94	46.00	-7.06
23	0.805	38.92	46.00	-7.08
24	2.371	38.91	46.00	-7.09
25	1.367	38.89	46.00	-7.11
26	2.781	38.84	46.00	-7.16
27	0.505	38.65	46.00	-7.35
28	1.690	38.65	46.00	-7.35
29	2.262	38.63	46.00	-7.37
30	0.524	38.59	46.00	-7.41
31	2.077	38.51	46.00	-7.49
32	1.781	38.46	46.00	-7.54
33	1.504	38.46	46.00	-7.54
34	1.663	38.45	46.00	-7.55
35	2.582	38.37	46.00	-7.63
36	0.398	40.24	47.90	-7.66
37	1.820	38.32	46.00	-7.68
38	3.438	38.25	46.00	-7.75
39	2.226	38.24	46.00	-7.76
40	1.389	38.24	46.00	-7.76
41	3.383	38.03	46.00	-7.97
42	2.979	37.74	46.00	-8.26
43	2.179	37.70	46.00	-8.30
44	0.614	37.70	46.00	-8.30
45	0.440	38.74	47.06	-8.32
46	0.735	37.60	46.00	-8.40
47	1.352	37.54	46.00	-8.46
48	0.683	37.45	46.00	-8.55

EMISSION LEVEL [dBuV] PEAK 12/16/2008 11:02:25

Graph for Peak & Average



COMPATIBLE ELECTRONICS

COMPATIBLE ELECTRONICS

12/16/2008 11:02:25

FCC - B Conducted Emissions
SmartLabs, Inc.
PowerLincTM USB
Model: 2413U
FCC Class B - White Lead
WhiteLead LI-215 12078 9-29-08
TEST ENGINEER : Kyle Fujimoto

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48 highest peaks above -50.00 dB of FCC Class B Avg. limit line
Peak criteria : 1.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.352	56.31	48.91	7.40**
2	0.178	60.99	54.59	6.40**
3	0.532	52.23	46.00	6.23**
4	0.174	60.90	54.77	6.13**
5	0.168	60.91	55.07	5.84**
6	0.445	52.57	46.98	5.59**
7	0.486	51.75	46.23	5.52**
8	0.393	53.29	47.99	5.30**
9	0.614	50.49	46.00	4.49**
10	0.755	50.22	46.00	4.22**
11	0.263	55.45	51.33	4.12**
12	0.570	49.91	46.00	3.91**
13	1.382	49.72	46.00	3.72**
14	3.474	49.59	46.00	3.59**
15	0.658	49.56	46.00	3.56**
16	0.792	49.51	46.00	3.51**
17	2.826	49.15	46.00	3.15**
18	1.528	49.11	46.00	3.11**
19	0.494	48.85	46.09	2.75**
20	1.397	48.52	46.00	2.52**
21	0.438	49.47	47.11	2.37**
22	1.124	48.32	46.00	2.32**
23	1.569	48.31	46.00	2.31**
24	1.077	48.22	46.00	2.22**
25	1.419	48.22	46.00	2.22**
26	3.761	48.21	46.00	2.21**
27	0.379	50.50	48.29	2.20**
28	3.565	48.09	46.00	2.09**
29	3.401	48.09	46.00	2.09**
30	0.608	47.89	46.00	1.89**
31	0.398	49.79	47.90	1.89**
32	3.175	47.77	46.00	1.77**
33	2.979	47.76	46.00	1.76**
34	0.160	57.23	55.47	1.76**
35	2.582	47.74	46.00	1.74**
36	2.751	47.65	46.00	1.65**
37	0.516	47.64	46.00	1.64**
38	2.298	47.52	46.00	1.52**
39	0.296	51.84	50.36	1.47**
40	2.948	47.46	46.00	1.46**
41	0.212	54.42	53.14	1.28**
42	1.032	47.22	46.00	1.22**
43	0.835	47.12	46.00	1.12**
44	0.251	52.76	51.73	1.03**
45	0.469	47.56	46.53	1.03**
46	0.679	46.95	46.00	0.95**
47	0.329	50.42	49.48	0.94**
48	2.262	46.92	46.00	0.92**

** Please See the Average Readings on the Next Page and on the Plot

COMPATIBLE ELECTRONICS

12/16/2008 11:02:25

FCC - B Conducted Emissions
SmartLabs, Inc.
PowerLincTM USB
Model: 2413U
FCC Class B - White Lead
WhiteLead LI-215 12078 9-29-08
TEST ENGINEER : Kyle Fujimoto

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48 highest peaks above -50.00 dB of FCC Class B Avg. limit line
Peak criteria : 0.00 dB, Curve : Average

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.170	49.41	54.98	-5.58
2	0.379	42.19	48.29	-6.11
3	0.167	48.68	55.11	-6.43
4	0.759	39.28	46.00	-6.72
5	0.176	47.89	54.68	-6.78
6	0.469	39.65	46.53	-6.88
7	1.142	38.68	46.00	-7.32
8	0.844	37.64	46.00	-8.36
9	0.294	41.03	50.41	-9.38
10	1.434	36.54	46.00	-9.46
11	1.055	36.32	46.00	-9.68
12	0.350	39.27	48.95	-9.68
13	0.185	44.48	54.24	-9.75
14	1.520	36.11	46.00	-9.89
15	0.338	39.32	49.26	-9.95
16	0.334	39.37	49.35	-9.98
17	0.792	35.91	46.00	-10.09
18	0.345	38.99	49.09	-10.10
19	1.223	35.85	46.00	-10.15
20	2.286	35.82	46.00	-10.18
21	2.826	35.76	46.00	-10.24
22	0.775	35.63	46.00	-10.37
23	2.358	35.61	46.00	-10.39
24	0.183	43.85	54.33	-10.48
25	0.508	35.51	46.00	-10.49
26	0.252	41.09	51.68	-10.59
27	1.374	35.39	46.00	-10.61
28	1.397	35.32	46.00	-10.68
29	0.676	35.15	46.00	-10.85
30	0.212	42.28	53.14	-10.86
31	3.419	35.12	46.00	-10.88
32	0.527	35.06	46.00	-10.94
33	0.260	40.45	51.42	-10.97
34	2.201	34.85	46.00	-11.15
35	1.412	34.85	46.00	-11.15
36	0.305	38.93	50.10	-11.17
37	1.352	34.81	46.00	-11.19
38	2.568	34.63	46.00	-11.37
39	1.690	34.57	46.00	-11.43
40	1.820	34.32	46.00	-11.68
41	0.735	34.30	46.00	-11.70
42	2.066	34.11	46.00	-11.89
43	0.158	43.66	55.56	-11.90
44	1.899	34.06	46.00	-11.94
45	0.398	35.93	47.90	-11.97
46	0.157	43.56	55.64	-12.08
47	1.981	33.91	46.00	-12.09
48	3.511	33.90	46.00	-12.10
