FCC PART 15, SUBPART B & SUBPART C
TEST REPORT

For
DUAL BAND SWITCH
Model: S0711011

Prepared for

BUDDERFLY LLC
2 TRAP FALLS RD., SUITE 507
SHELTON, CT 06484

Prepared by:_____

JOEY MADLANGBAYAN

Approved by:_____

JOSH HANSEN

COMPATIBLE ELECTRONICS INC.
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DATE: MARCH 27, 2013

	REPORT BODY	APPENDICES					TOTAL
		A	***B***	***C***	***D***	***E***	
PAGES	17	2	2	2	15	18	**56**

TABLE OF CONTENTS

LIST OF APPENDICES

APPENDIX	TITLE
A	Laboratory Accreditations
B	Modifications to the EUT
C	Additional Models Covered Under This Report
D	Diagrams, Charts and Photos • Test Setup Diagrams • Antenna and Amplifier Gain Factors • Radiated and Conducted Emissions Photos
E	Data Sheets

LIST OF FIGURES

FIGURE	TITLE
1	Conducted Emissions Test Setup
2	Plot Map & Layout of Test Site below 1 GHz
3	Plot Map & Layout of test site above 1 GHz

GENERAL REPORT SUMMARY

This electromagnetic emission 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 in any form except in full, without the written permission of Compatible Electronics.

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

Device Tested: Dual Band Switch
Model: S0711011
S/N: None

Product Description: The EUT is a light switch that replaces ordinary switches and is capable of sensing the current/voltage on the Power Line. This device also supports both power-line and RF communication using the INSTEON Protocol.

Modifications: The EUT was modified in order to comply with specifications. Please see the list of modifications in Appendix B.

Manufacturer: Budderfly LLC
2 Trap Falls Rd., Suite 507
Shelton, CT 06484

Test Date: January 29-31, 2013

Test Specifications: EMI requirements
CFR Title 47, Part 15 Subpart B section 15.107 and 15.109
CFR Title 47, Part 15 Subpart C Sections 15.205, 15.207, 15.209 and 15.249
Test Procedure: ANSI C63.4 and ANSI 63.10.

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 150 kHz - 30 MHz.	Complies with the limits of CFR Title 47 Part 15 Subpart B Section 15.107, Subpart C Section 15.207
2	Radiated RF Emissions & Harmonics, 9 kHz – 10,000 MHz.	Complies with the limits of CFR Title 47 Part 15Subpart B section 15.109 and Subpart C Sections 15.205 and 15.209.
3	Fundamental Field Strength	Complies with CFR Title 47 Part 15 Subpart C Section 15.249(a)
4	Emissions Radiated Outside of the Fundamental Frequency Band	Complies with CFR Title 47 Part 15 Subpart C Section 15.249(d) and 15.205

1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the Dual Band Switch Model: S0711011. The EMI measurements were performed according to the measurement procedures described in ANSI C63.10 and ANSI 63.4. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT (equipment under test) hereafter, are within the specification limits defined by the Code of Federal Regulations Title 47, Part 15 subpart B sections 15.107, 15.109, Part 15 Subpart C sections 15.205, 15.207, 15.209 and 15.249. The power line carrier emissions tests were not performed by Compatible Electronics.

2. ADMINISTRATIVE DATA

2.1 Location of Testing

The EMI tests described herein were performed at the test facility of Compatible Electronics, 20621 Pascal Way Lake Forest, California 92630.

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

Budderfly LLC

Daniel Riscalla	Vice President of Engineering

Compatible Electronics, Inc.

Matt Harrison	Test Technician
Eugene Adams	Test Technician
Joey Madlangbayan	Test Engineer
Josh Hansen	Lab Manager

2.4 Date Test Sample was Received

The test sample was received on January 29, 2013.

2.5 Disposition of the Test Sample

The test sample has not been returned to Budderfly LLC as of the date of this report.

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
NVLAP	National Voluntary Laboratory Accreditation Program
CFR	Code of Federal Regulations
PCB	Printed Circuit Board
TX	Transmit
RX	Receive

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 2009	Methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz.
ANSI C63.10: 2009	Methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz

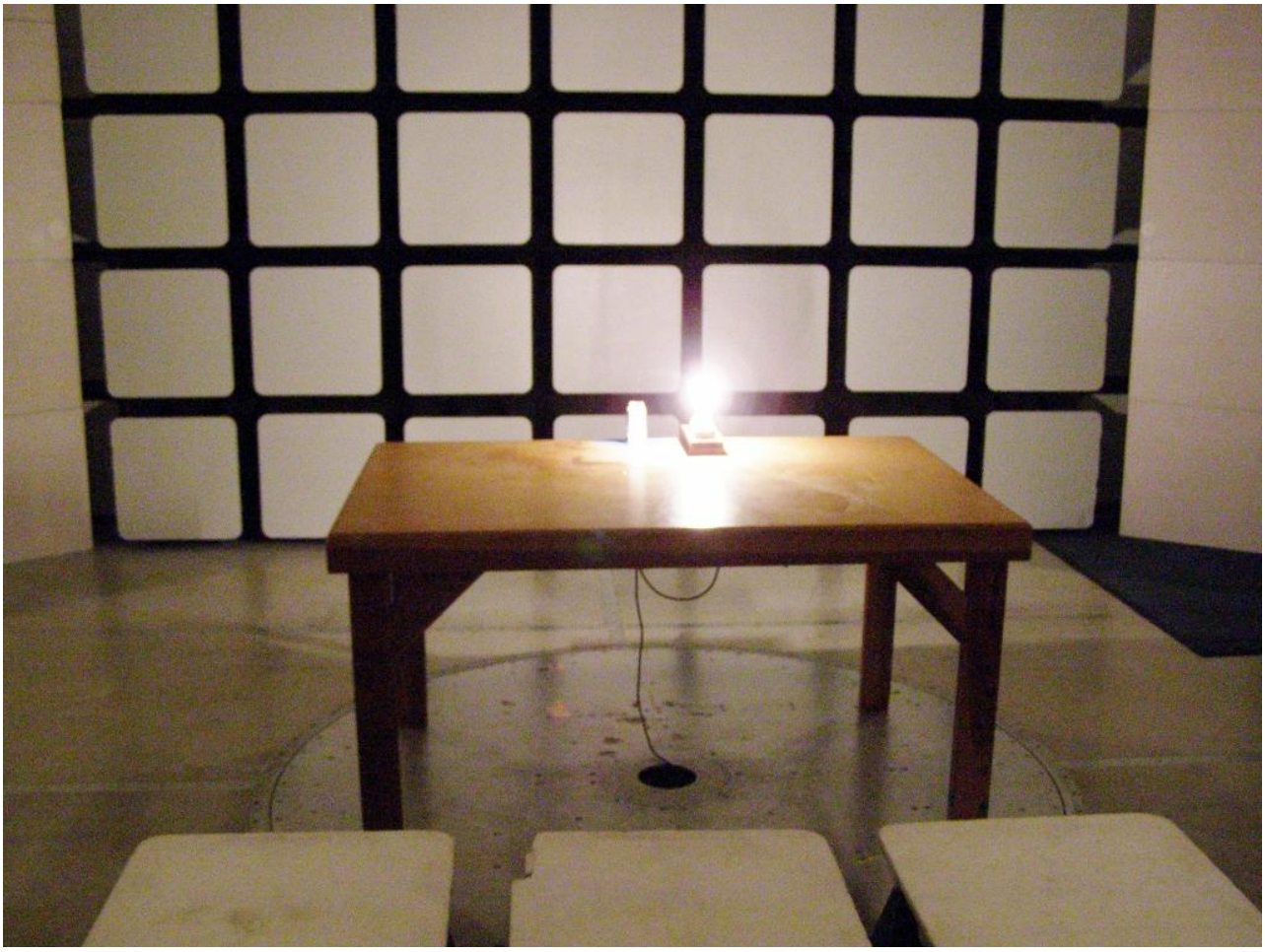
4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration - EMI

The EUT was tested in a tabletop configuration. The EUT was connected to the AC mains and a dual bulb light fixture. The EUT was continuously transmitting throughout all the tests.

The highest emissions were found when the EUT was running in the above configuration. The cables were moved to maximize the emissions. The final radiated and conducted data was taken in this mode of operation. All initial investigations were performed with the EMI receiver in manual mode scanning the frequency range continuously. The cables were and routed as shown in the photographs in Appendix D.

4.1.1 Photograph of Test Configuration - EMI



4.1.2 Cable Construction and Termination

Cable 1

This is a 1-meter, unshielded, round cable connecting the EUT to the light fixture. The cable is hardwired into the EUT and into the light fixture as well.

5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 EUT and Accessory List

#	EQUIPMENT TYPE	MANUFACTURER	MODEL	SERIAL NUMBER
1	DUAL BAND SWITCH (EUT)	BUDDERFLY LLC	S0711011	None
2	LIGHT FIXTURE	GENERIC	NONE	NONE

5.2 EMI Test Equipment

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. DUE DATE
Computer	Compatible Electronics	NONE	NONE	N/A	N/A
EMI Receiver	Rohde & Schwarz	ESIB40	100219	09/26/2012	09/26/2013
Antenna, Loop	Com Power	AL-130	17085	01/29/2013	01/29/2015
Antenna, CombiLog	Com Power	AC-220	003	05/25/2012	05/25/2013
Antenna, Horn 1-18GHz	Com Power	AH-118	071225	07/03/2012	07/03/2013
Pre-Amp, 1-18GHz	Com Power	PAM-118	443013	03/12/2012	03/12/2013
Pre-Amp, 1-18GHz	Com Power	PAM-118	443011	06/11/2012	06/11/2013
High Pass Filter	AMTI Microwave Circuits	H3G020G4	481230	06/07/2012	06/07/2013
LISN	Com Power	LI-215	12088	3/05/2012	3/05/2013
Mast, Antenna Positioner	Sunol Science Corporation	TWR 95-4	020808-3	N/A	N/A
Antenna Mast	Sunol Science Corporation	TWR 95-4	020808-3	N/A	N/A
Turntable	Sunol Science Corporation	FM 2001	N/A	N/A	N/A
Mast and Turntable Controller	Sunol Science Corporation	SC104V	020808-1	N/A	N/A

6. TEST SITE DESCRIPTION

6.1 Test Facility Description

Please refer to section 2.1 and 7.1.2 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 through the power cord.

7. CHARACTERISTICS OF THE TRANSMITTER

7.1 Channel Number and Frequencies

There is only 1 channel.

1 = 915 MHz

7.2 Antenna

The antenna is made up of two 8cm wire antennas which is connected and soldered to the PCB.

8. TEST PROCEDURES

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

8.1 RF Emissions

8.1.1 Conducted Emissions Test

The EMI receiver was used as a measuring meter. A quasi-peak and/or average reading was taken only where indicated in the data sheets. The LISN output was measured using the EMI receiver. 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 received its power through the LISN, which was bonded to the ground plane. The EUT was set up with the minimum distances from any conductive surfaces as specified in ANSI 63.4. 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 computer software.

Test Results:

The EUT complies with the limits of CFR Title 47 Part 15 Subpart B section 15.107 and Subpart C section 15.207.

8.1.2 Radiated Emissions (Spurious and Harmonics) Test

The EMI receiver was used as a measuring meter. The receiver was used in the peak detect mode with the "Max Hold" feature activated. In this mode, the receiver records the highest measured reading over all the sweeps. Preamplifiers were used to increase the sensitivity of the instrument.

For spurious emissions the quasi-peak detector was used for frequencies below 1GHz and the average detector was used for frequencies above 1 GHz.

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

FREQUENCY RANGE (MHz)	TRANSDUCER	EFFECTIVE MEASUREMENT BANDWIDTH
.009 to .150	Active Loop Antenna	200 kHz
.150 to 30	Active Loop Antenna	9 kHz
30 to 1000	Combilog Antenna	120 kHz
1000 to 10000	Horn Antenna	1 MHz

The TDK FAC-3 shielded test chamber of Compatible Electronics, Inc. was used for radiated emissions testing. This test site is in full compliance with ANSI 63.10, ANSI C63.4, EN 50147-2, and CISPR 22. 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 in both vertical and horizontal polarizations (for E field radiated field strength).

Test Results:

The EUT complies with the limits of CFR Title 47 Part 15 Subpart B section 15.109, Subpart C sections 15.205, 15.209 and 15.249.

8.2 Fundamental Field Strength

The Peak Transmit EMI was measured using the EMI Receiver 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 Part 15 Subpart C, Section 15.249.

8.3 Emissions Radiated Outside of the Fundamental Frequency Band

The Band Edge measurement was measured using the EMI Receiver at a 3-meter test distance to obtain the final test data. The frequency was tuned to the lowest and highest frequency if the EUT transmits more than one frequency. The final qualification data sheets are located in Appendix E.

Test Results:

The EUT complies with Part 15 Subpart C, Section 15.205 and 15.249.

8.4 Voltage Fluctuations

The supply voltage fluctuation test was performed using the EMI Receiver. The EUT input power was varied between 85% and 115% of the nominal rated supply voltage. The carrier frequency was monitored for any change in amplitude.

Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.31 (e).

9. TEST PROCEDURE DEVIATIONS

There were no deviations from the test procedures.

10. CONCLUSIONS

The Dual Band Switch Model: S0711011 meets all of the relevant specification requirements defined in the Code of Federal Regulations Title 47, Part 15 subpart B sections 15.107, 15.109 Subpart C sections 15.205, 15.207 15.209 and 15.249. The power line carrier emissions tests were not performed by Compatible Electronics.

APPENDIX A

LABORATORY ACCREDITATIONS

LABORATORY ACCREDITATIONS AND RECOGNITIONS

NVLAP CODES 200063-0, 200528-0, 200527-0

For US, Canada, Australia/New Zealand, Taiwan and the European Union, Compatible Electronics is currently accredited by NVLAP to ISO/IEC 17025 an ISO 9002 equivalent. Please follow the link to the NIST site for each of our facilities NVLAP certificate and scope of accreditation.

Silverado/Lake Forest Division: http://ts.nist.gov/ts/htdocs/210/214/scopes/2005270.htm
Brea Division: http://ts.nist.gov/ts/htdocs/210/214/scopes/2005280.htm
Agoura Division: http://ts.nist.gov/ts/htdocs/210/214/scopes/2000630.htm

Compatible Electronics has been accredited by ANSI and appointed by the FCC to serve as a Telecommunications Certification Body (TCB). Compatible Electronics ANSI TCB listing can be found at: http://www.ansi.org/public/ca/ansi_cp.html

Compatible Electronics has been nominated as a Conformity Assessment Body (CAB) for EMC under the US/EU Mutual Recognition Agreement (MRA). Compatible Electronics NIST US/EU CAB listing can be found at: http://ts.nist.gov/ts/htdocs/210/gsig/emc-cabs-mar02.pdf

Compatible Electronics has been nominated as a Conformity Assessment Body (CAB) for Taiwan/BSMI under the US/APEC (Asia-Pacific Economic Cooperation) Mutual Recognition Agreement (MRA). Compatible Electronics NIST US/APEC CAB listing can be found at: http://ts.nist.gov/ts/htdocs/210/gsig/apec/bsmi-cabs-may02.pdf

World Wide Market Access with Nemko

Compatible Electronics has been validated by NEMKO against ISO/IEC 17025 under the NEMKO EMC Laboratory Authorization (ELA) program to all EN standards required by the European Union (EU) EMC Directive 89/336/EEC. Please follow the link to the Compatible Electronics' web site for each of our facilities NEMKO ELA certificate and scope of accreditation. http://www.celectronics.com/certs.htm

We are also certified/listed for IT products by the following country/agency:

Compatible Electronics VCCI listing can be found at:
http://www.vcci.or.jp/vcci_e/member/tekigo/setsubi_index_id.html

Just type "Compatible Electronics" into the Keyword search box.

Compatible Electronics FCC listing can be found at:
https://gullfoss2.fcc.gov/prod/oet/index_ie.html

Just type "Compatible Electronics" into the Test Firms search box.

Industry Canada Industrie Canada

Compatible Electronics IC listing can be found at:
http://spectrum.ic.gc.ca/~cert/labs/oats_lab_c_e.html

APPENDIX B

MODIFICATIONS TO THE EUT

MODIFICATIONS TO THE EUT

The following modifications were made to the EUT during the test in order to comply with FCC limits. The modifications were made in such a way that they could be reproduced during manufacturing.

1. The resistor R27 on the Communication PCB board was replaced with a 15k-Ohm resistor.

APPENDIX C

ADDITIONAL MODELS COVERED UNDER THIS REPORT

ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST	BUDDERFLY DUAL BAND SWITCH Model: S0711011 S/N: None

There were no additional models covered under this report.

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APPENDIX D

DIAGRAMS, CHARTS AND PHOTOS

FIGURE 1: CONDUCTED EMISSIONS TEST SETUP

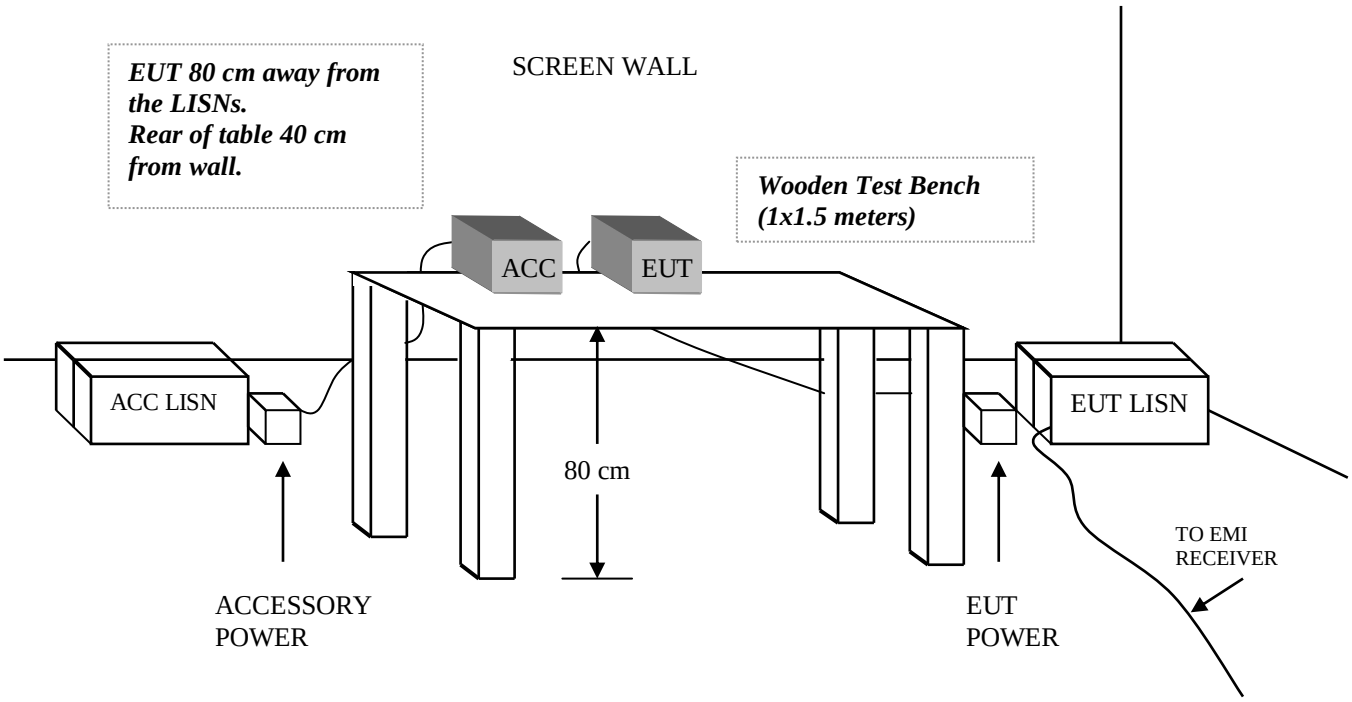


FIGURE 2: PLOT MAP & LAYOUT OF TEST SITE BELOW 1GHz

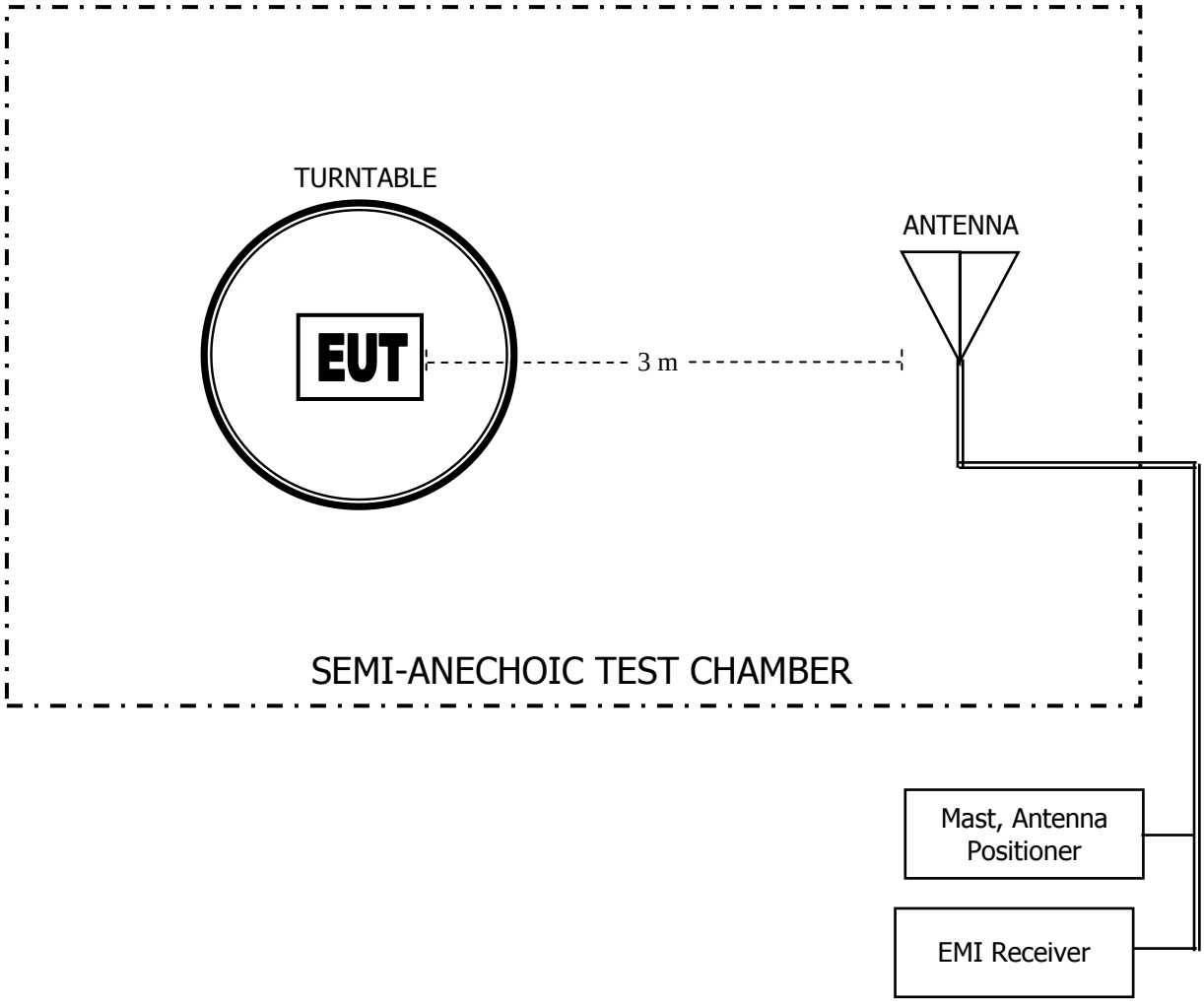
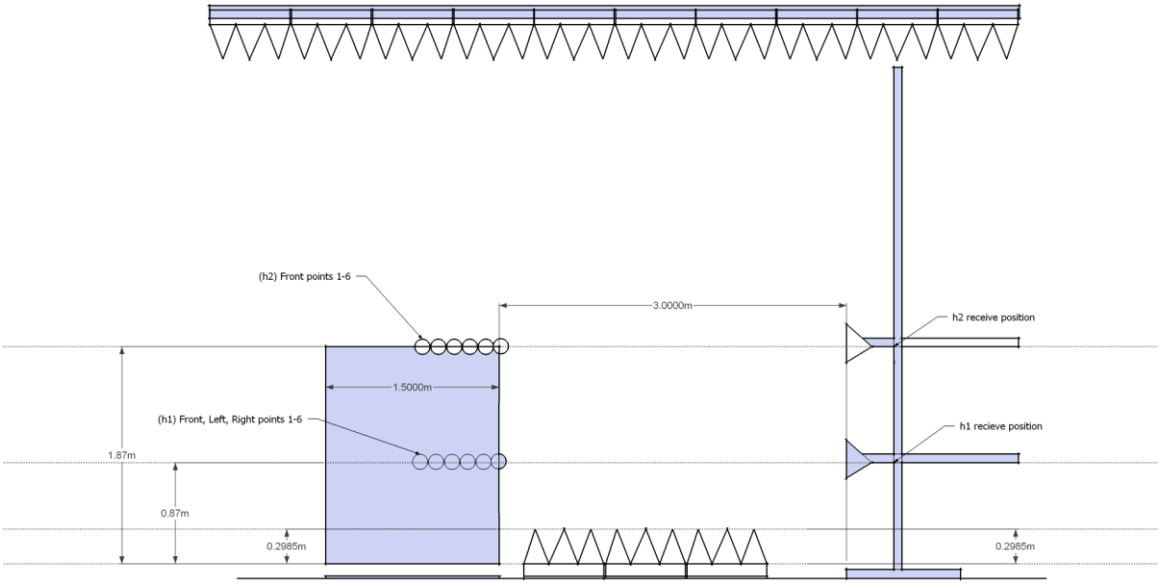


FIGURE 3: PLOT MAP & LAYOUT OF TEST SITE ABOVE 1 GHz



COM-POWER AL-130

LOOP ANTENNA

S/N: 17085

CALIBRATION DUE: JANUARY 29, 2015

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)	FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.009	-40.70	10.80	**0.8**	-40.91	10.59
0.01	-40.50	11.00	**0.9**	-40.80	10.70
0.02	-40.70	10.80	**1.0**	-40.81	10.69
0.03	-40.10	11.40	**2.0**	-40.51	10.99
0.04	-40.50	11.00	**3.0**	-40.54	10.96
0.05	-41.10	10.40	**4.0**	-40.44	11.06
0.06	-41.00	10.50	**5.0**	-40.32	11.18
0.07	-41.10	10.40	**6.0**	-40.69	10.81
0.08	-41.10	10.40	**7.0**	-40.37	11.13
0.09	-41.20	10.30	**8.0**	-39.99	11.51
0.1	-41.20	10.30	**9.0**	-40.00	11.50
0.2	-41.40	10.10	**10.0**	-40.08	11.42
0.3	-41.30	10.20	**15.0**	-42.36	9.14
0.4	-41.20	10.30	**20.0**	-38.75	12.75
0.5	-41.40	10.10	**25.0**	-40.70	10.80
0.6	-41.40	10.10	**30.0**	-41.09	10.41
0.7	-41.20	10.30			

COM-POWER AC-220

LAB P - COMBILOG ANTENNA

S/N: 003

CALIBRATION DUE: MAY 25, 2013

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	19.2	**180**	9.2
35	19.3	**200**	9.3
40	20.0	**250**	12.1
45	17.8	**300**	14.2
50	17.8	**300**	13.8
60	13.2	**400**	15.0
70	7.9	**500**	17.5
80	6.9	**600**	17.9
90	8.1	**700**	20.7
100	8.1	**800**	20.3
120	9.6	**900**	21.3
140	9.7	**1000**	22.4
160	8.6		

COM-POWER AH-118

HORN ANTENNA

S/N: 071225

CALIBRATION DUE: JULY 3, 2013

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
1000	26.5	**9500**	40.4
1500	27.2	**10000**	40.3
2000	31.5	**10500**	41.7
2500	31.9	**11000**	42.1
3000	32.7	**11500**	42.3
3500	34.0	**12000**	42.6
4000	33.5	**12500**	41.4
4500	34.9	**13000**	42.7
5000	36.2	**13500**	43.6
5500	36.6	**14000**	42.4
6000	36.8	**14500**	42.7
6500	37.4	**15000**	45.4
7000	39.4	**15500**	45.1
7500	39.6	**16000**	42.9
8000	42.4	**16500**	44.0
8500	40.3	**17000**	46.8
9000	39.6	**17500**	47.5
		18000	46.6

COM-POWER PAM-118

1-18GHz - PREAMPLIFIER

S/N: 443013

CALIBRATION DUE: MARCH 12, 2013

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
0500	27.20	**9500**	26.30
1000	26.20	**10000**	26.70
1500	27.00	**10500**	26.60
2000	26.90	**11000**	26.20
2500	26.80	**11500**	25.90
3000	26.90	**12000**	25.60
3500	26.90	**12500**	25.50
4000	27.10	**13000**	25.30
4500	26.70	**13500**	25.00
5000	26.40	**14000**	25.30
5500	26.00	**14500**	25.50
6000	25.70	**15000**	25.50
6500	25.30	**15500**	25.70
7000	25.10	**16000**	26.10
7500	25.00	**16500**	26.10
8000	25.20	**17000**	25.70
8500	25.50	**17500**	25.30
		18000	25.90

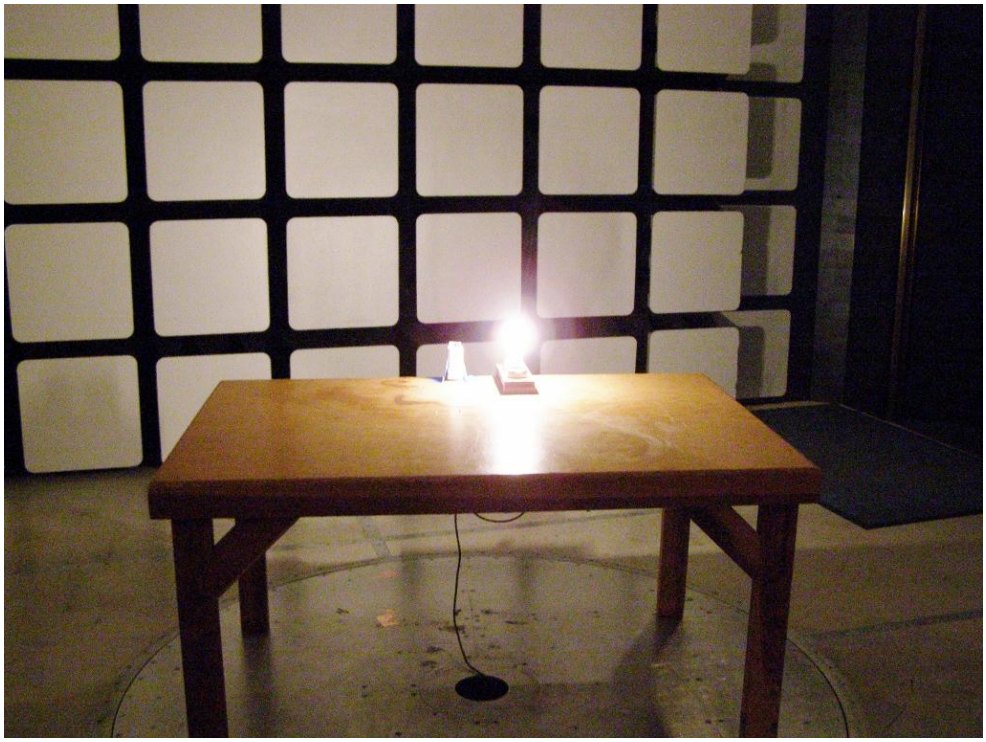
COM-POWER PAM-118

1-18GHz - PREAMPLIFIER

S/N: 443011

CALIBRATION DUE: JUNE 11, 2013

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
0.500	27.61	**7.000**	23.72
1.000	26.44	**7.500**	23.80
1.500	27.28	**8.000**	24.28
2.000	27.20	**8.500**	24.29
2.500	27.26	**9.500**	26.07
3.000	27.30	**10.000**	25.91
3.500	26.93	**11.000**	25.93
4.000	27.44	**12.000**	26.47
4.500	26.89	**13.000**	25.32
5.000	26.47	**14.000**	24.93
5.500	26.20	**15.000**	25.71
6.000	25.64	**16.000**	24.96
6.500	25.18	**17.000**	23.8
		18.000	26.27



VIEW 1

BUDDERFLY LLC
DUAL BAND SWITCH
Model: S0711011
FCC - RADIATED EMISSIONS

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

VIEW 2

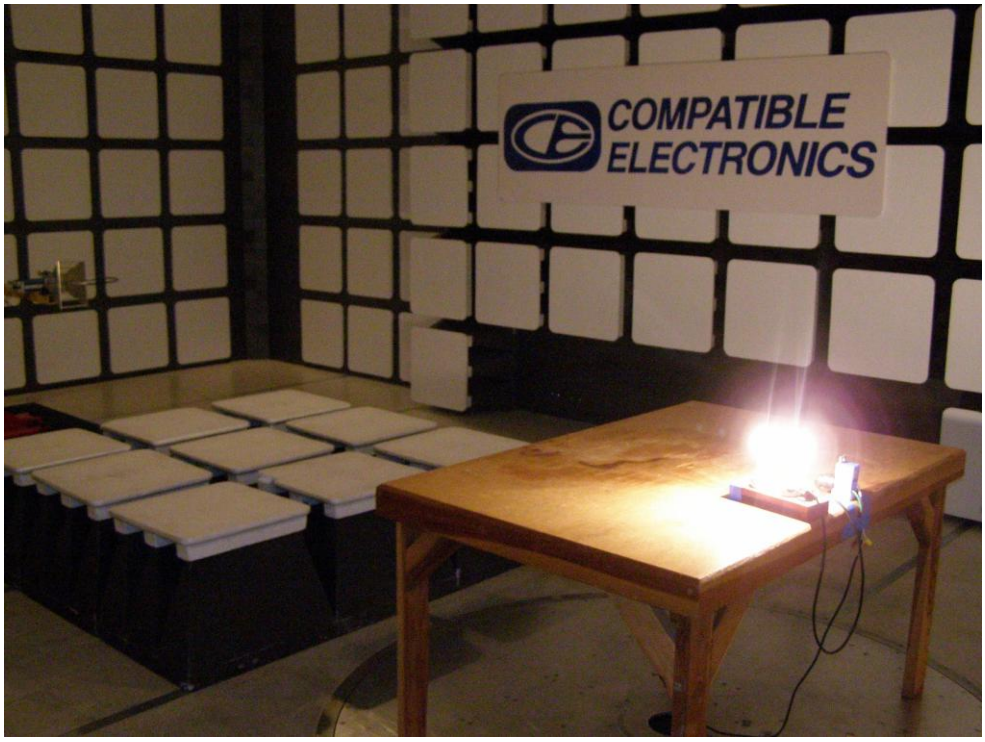
BUDDERFLY LLC
DUAL BAND SWITCH
Model: S0711011
FCC - RADIATED EMISSIONS - below 1GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

VIEW 3

BUDDERFLY LLC
DUAL BAND SWITCH
Model: S0711011
FCC - RADIATED EMISSIONS - above 1GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



VIEW 4

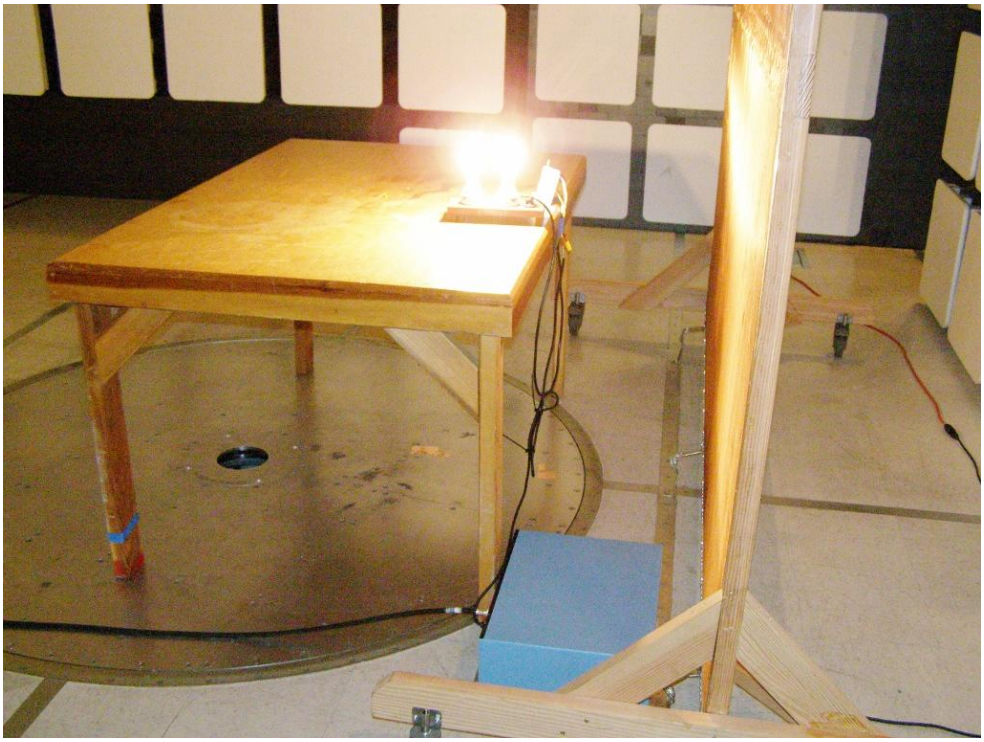
BUDDERFLY LLC
DUAL BAND SWITCH
Model: S0711011
FCC - RADIATED EMISSIONS - above 1GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

VIEW 1

BUDDERFLY LLC
DUAL BAND SWITCH
Model: S0711011
FCC - CONDUCTED EMISSIONS

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



VIEW 2

BUDDERFLY LLC
DUAL BAND SWITCH
Model: S0711011
FCC - CONDUCTED EMISSIONS

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

APPENDIX E

DATA SHEETS

FUNDAMENTAL & HARMONICS

DATA SHEETS

FCC 15.249
Budderfly
Dual Band Switch
Model: S0711011

Date: 1/30/2013
Lab: P
Tested By: Matt Harrison

Fundamental Field Strength

Freq. (MHz)	Level (dµBV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
915.00	85.35	H	93.98	-8.63	Peak	100.00	283.00	
915.00	83.54	V	93.98	-10.44	Peak	120.00	187.00	

Test distance
3 meter

FCC 15.249
Budderfly
Dual Band Switch
Model: S0711011

Date: 1/31/2013
Lab: P
Tested By: Matt Harrison

Harmonic Emissions

Freq. (MHz)	Level (dµBV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1830	54.37	H	--	--	Peak	1.00	232	
1830	50.19	H	53.98	-3.79	Avg	1.00	232	
2745	56.19	H	--	--	Peak	1.25	217	
2745	49.21	H	53.98	-4.77	Avg	1.25	217	**In Restricted Band**
3660	49.66	H	--	--	Peak	1.00	180	
3660	33.73	H	53.98	-20.25	Avg	1.00	180	**In Restricted Band**
4575	49.66	H	--	--	Peak	1.10	168	
4575	42.18	H	53.98	-11.80	Avg	1.10	168	**In Restricted Band**
5490	43.47	H	--	--	Peak	3.70	204	
5490	30.86	H	53.98	-23.12	Avg	3.70	204	
6405		H	--	--	Peak			**No Emissions Found**
6405		H	--	--	Avg			**No Emissions Found**
7320		H	--	--	Peak			**No Emissions Found**
7320		H	--	--	Avg			**In Restricted Band**
8235		H	--	--	Peak			**No Emissions Found**
8235		H	--	--	Avg			**In Restricted Band**
9150		H	--	--	Peak			**No Emissions Found**
9150		H	--	--	Avg			**In Restricted Band**

Test distance
3 meter

FCC 15.249
Budderfly
Dual Band Switch
Model: S0711011

Date: 1/31/2013
Lab: P
Tested By: Matt Harrison

Harmonic Emissions

Freq. (MHz)	Level (dµBV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1830	54.89	V	--	--	Peak	1.00	195	
1830	51.47	V	53.98	-2.51	Avg	1.00	195	
2745	53.89	V	--	--	Peak	1.30	198	
2745	48.19	V	53.98	-5.79	Avg	1.30	198	**In Restricted Band**
3660	43.06	V	--	--	Peak	1.40	200	
3660	30.46	V	53.98	-23.52	Avg	1.40	200	**In Restricted Band**
4575	44.75	V	--	--	Peak	1.23	128	
4575	33.46	V	53.98	-20.52	Avg	1.23	128	**In Restricted Band**
5490	43.97	V	--	--	Peak	3.12	89	
5490	31.02	V	53.98	-22.96	Avg	3.12	89	
6405		V	--	--	Peak			**No Emissions Found**
6405		V	--	--	Avg			**No Emissions Found**
7320		V	--	--	Peak			**No Emissions Found**
7320		V	--	--	Avg			**In Restricted Band**
8235		V	--	--	Peak			**No Emissions Found**
8235		V	--	--	Avg			**In Restricted Band**
9150		V	--	--	Peak			**No Emissions Found**
9150		V	--	--	Avg			**In Restricted Band**

Test distance
3 meter

EMISSIONS RADIATED OUTSIDE OF THE FUNDAMENTAL FREQUENCY BAND

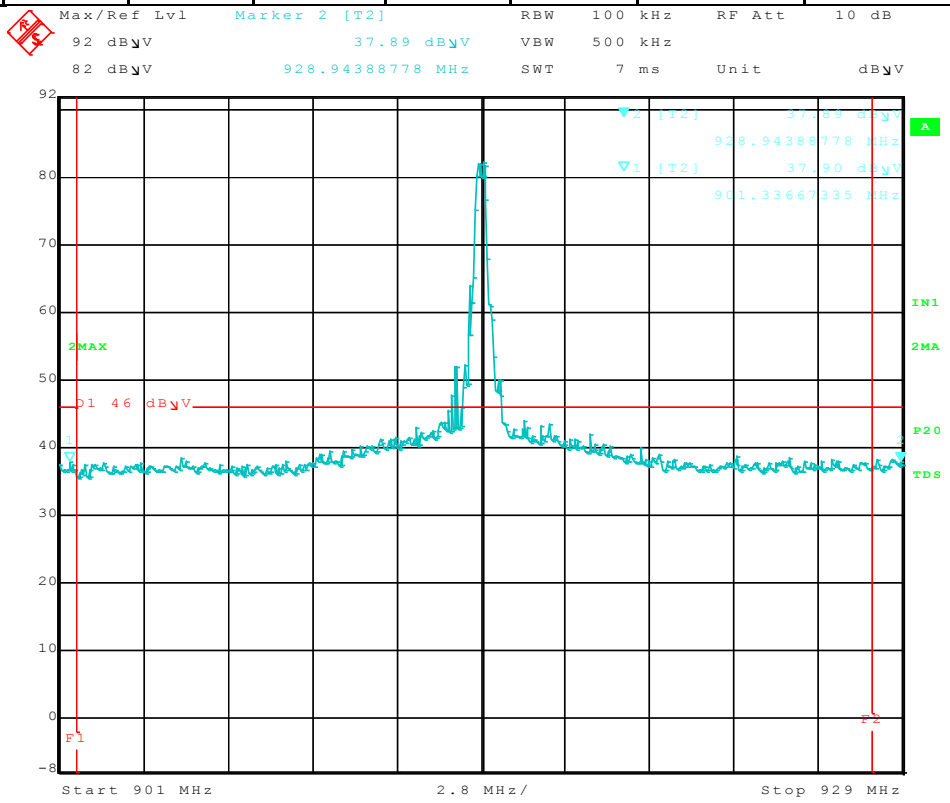
DATA SHEETS

FCC 15.249
Budderfly
Dual Band Switch
Model: S0711011

Date: 1/29/2013
Lab: P
Tested By: Eugene Adams

Band Edge

Freq. (MHz)	Level (dµBV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
915.00	85.35	H	--	--	Peak			Fundamental of Channel 915MHz
								@ 3 meters
901.33	37.90	H	46.00	-8.10	Peak	1.00	155	No Marker Delta Method
		H	--	--	QP			Method Used
915.00	83.54	H	--	--	Peak			Fundamental of Channel 915MHz
								@ 3 meters
928.94	37.89	H	46.00	-8.11	Peak	1.00	155	No Marker Delta Method
		H	--	--	QP			Method Used



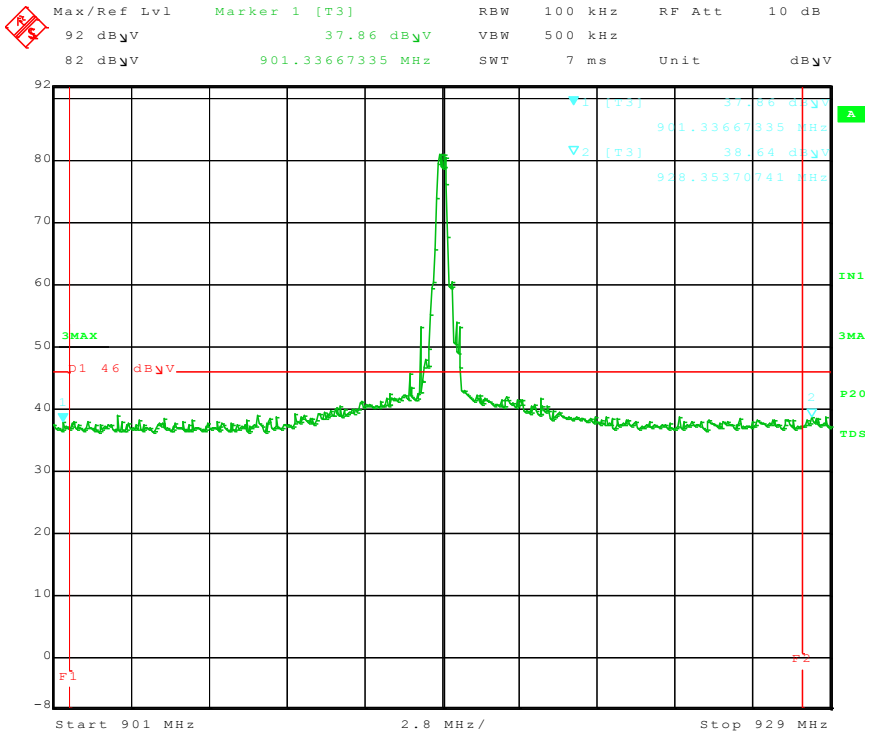
Title: Budderfly
Comment A: Band edge Horizontal
Date: 29.JAN.2013 18:48:20

FCC 15.249
Budderfly
Dual Band Switch
Model: S0711011

Date: 1/29/2013
Lab : P
Tested By: Eugene Adams

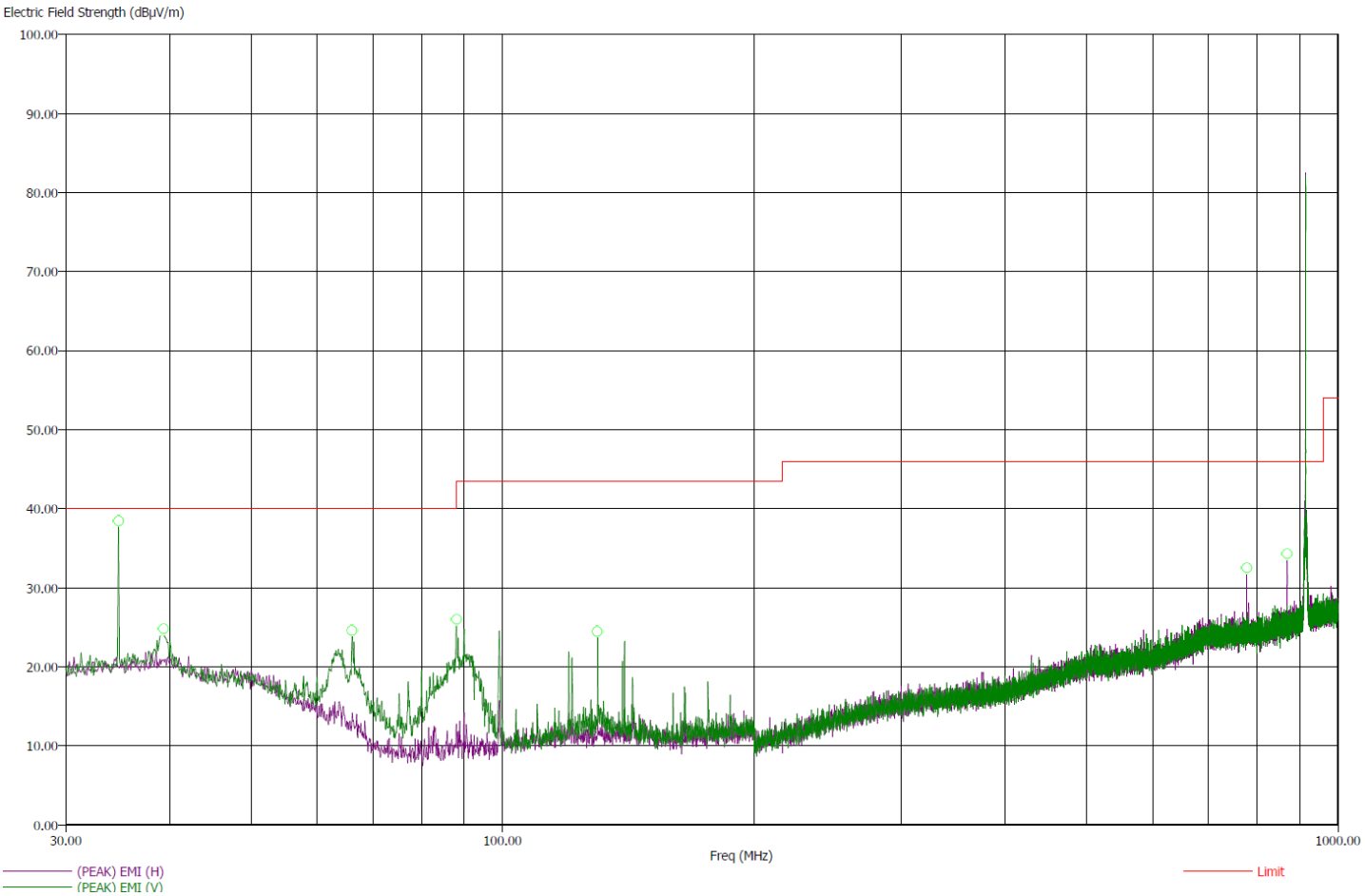
Band Edge

Freq. (MHz)	Level (dµBV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
915.00	83.54	V	--	--	Peak			Fundamental of Channel 915MHz
								@ 3 meters
901.33	37.86	V	46.00	-8.14	Peak	1.00	110	No Marker Delta Method
		V	--	--	QP			Method Used
915.00	83.54	V	--	--	Peak			Fundamental of Channel 915MHz
								@ 3 meters
928.35	38.64	V	46.00	-7.36	Peak	1.00	110	No Marker Delta Method
		V	--	--	QP			Method Used



Title: FCC 15.109 Class B 1/29/2013 7:08:12 PM
File: Radiated Pre-Scan 30-1000Mhz.set Sequence: Preliminary Scan
Operator: Eugene Adams
EUT Type: Dual Band Switch (S0711011)
EUT Condition: Continuously Transmitting @ 915MHz.
Comments: Added 15k-Ohm Resistors to R27-Comm PCB. Connected to Load.
Temp: 70f
Hum: 38%
120V 60Hz

Compatible Electronics, Inc. FAC-3 (Lab P)



There were no radiated emissions found below 30 MHz

Title: FCC 15.109 Class B 1/29/2013 7:29:25 PM
File: Radiated Final 30-1000Mhz.set Sequence: Final Measurements
Operator: Eugene Adams
EUT Type: Dual Band Switch (S0711011)
EUT Condition: Continuously Transmitting @ 915MHz.
Comments: Added 15k-Ohm Resistors to R27-Comm PCB. Connected to Load.
Temp: 70f
Hum: 38%
120V 60Hz

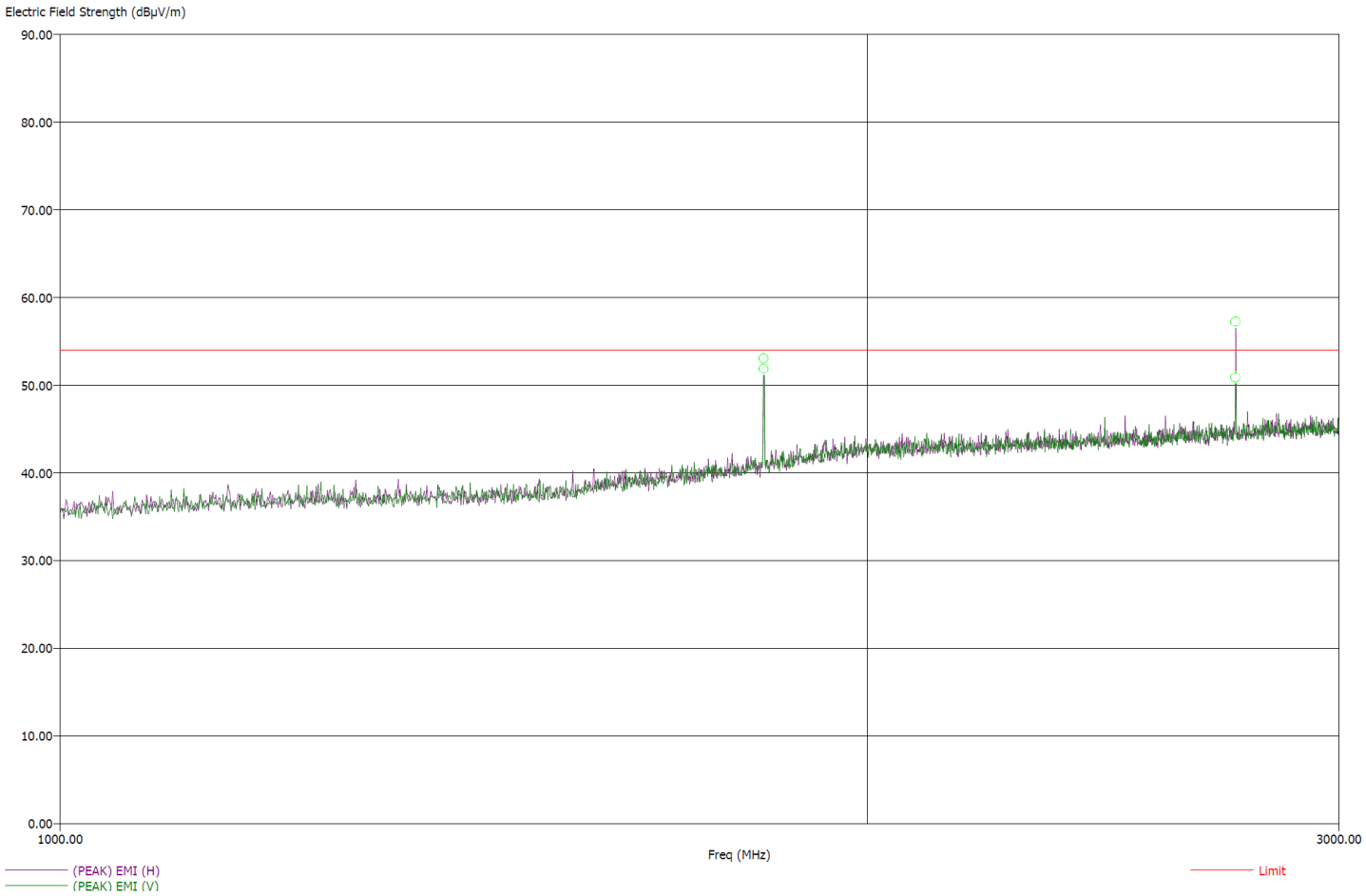
Compatible Electronics, Inc. FAC-3 (Lab P)

Freq (MHz)	(QP) Margin (dB)	(QP)EMI (dBµV/m)	(PEAK) EMI (dBµV/m)	Limit (dBµV/m)	Pol	Ttbl Agl (deg)	Twr Ht (cm)	Transducer (dB)	Cable (dB)
34.70	-24.13	15.87	38.47	40.00	V	154.50	109.58	19.30	0.49
39.30	-21.13	18.87	24.75	40.00	V	214.50	99.52	19.91	0.55
66.10	-16.22	23.78	27.79	40.00	V	109.50	108.05	9.89	0.71
88.10	-20.25	23.27	26.80	43.52	V	0.00	134.94	7.88	0.79
130.00	-20.84	22.68	25.65	43.52	V	150.25	138.35	9.65	0.97
777.80	-24.75	21.25	27.33	46.00	H	0.00	209.35	20.38	2.62
869.40	-18.71	27.29	31.10	46.00	H	175.50	260.94	21.01	2.85

There were no radiated emissions found below 30 MHz

Title: FCC 15.209 1/31/2013 5:57:37 PM
File: Radiated Pre-scan 1-3GHz.set Sequence: Preliminary Scan
Operator: Matt Harrison
EUT Type: Dual Band Switch (S0711011)
EUT Condition: Continuously Transmitting @ 915MHz.
Comments: Replaced R27 (on Comm. PCB) with 15k-Ohm Resistor. Connected to Load.
Temp: 70f
Hum: 38%
120V 60Hz

Compatible Electronics, Inc. FAC-3 (Lab P)



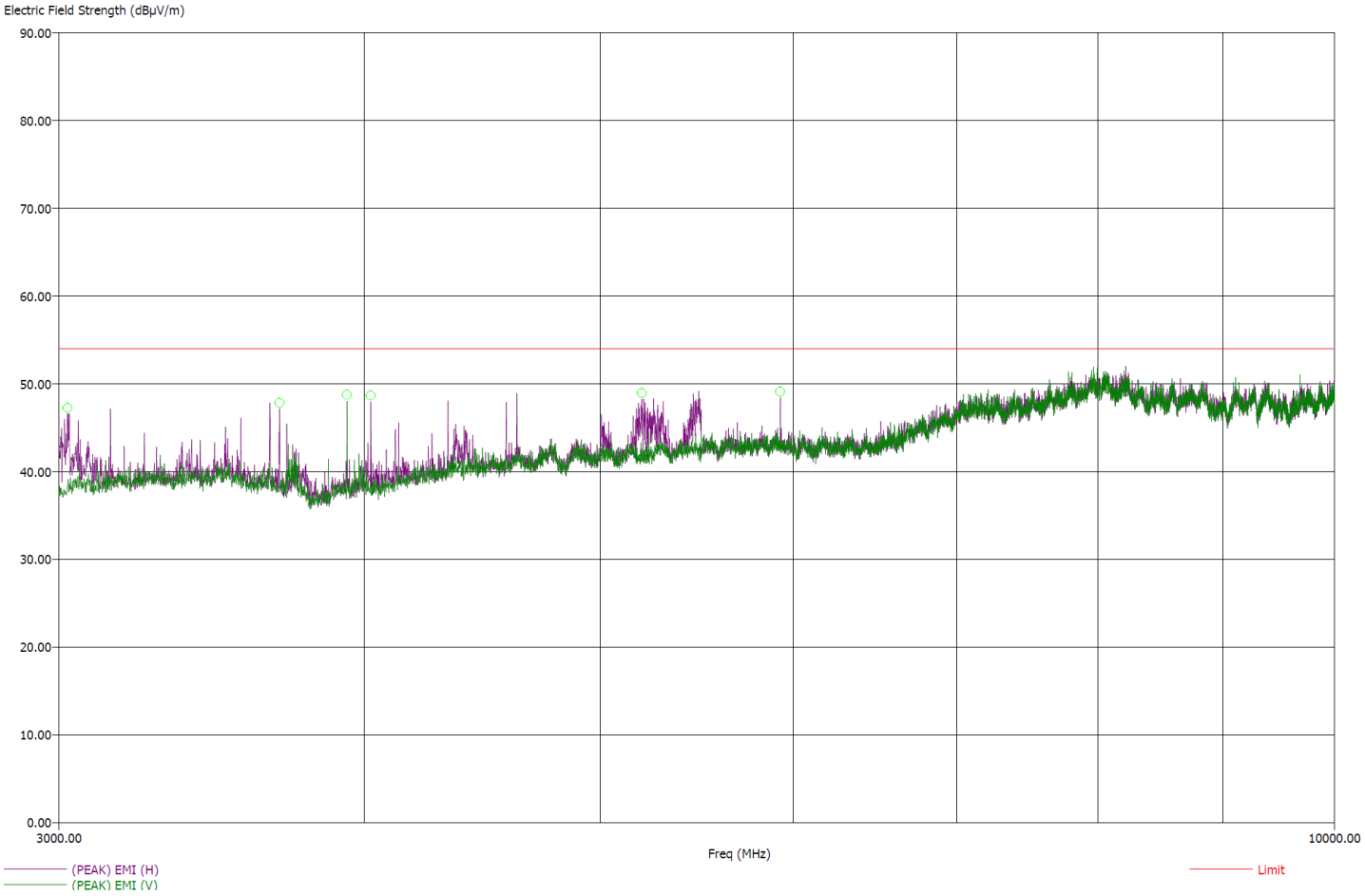
Title: FCC 15.209 1/31/2013 6:14:10 PM
File: Radiated Final 1-3GHz.set Sequence: Final Measurements
Operator: Matt Harrison
EUT Type: Dual Band Switch (S0711011)
EUT Condition: Continuously Transmitting @ 915MHz.
Comments: Replaced R27 (on Comm. PCB) with 15k-Ohm Resistor. Connected to Load.
Temp: 70f
Hum: 38%
120V 60Hz

Compatible Electronics, Inc. FAC-3 (Lab P)

Freq (MHz)	(AVG) Margin (dB)	(AVG) EMI (dBµV/m)	(PEAK) EMI (dBµV/m)	Limit (dBµV/m)	Pol	Ttbl Agl (deg)	Twr Ht (cm)	Transducer (dB)	Cable (dB)	Preamp (dB)
1830.00	-3.79	50.19	54.37	53.98	H	232.50	101.76	30.21	6.00	26.93
1830.00	-2.51	51.47	54.89	53.98	V	194.50	101.76	30.21	6.00	26.93
2745.00	-4.77	49.21	56.19	53.98	H	216.75	124.88	32.34	7.59	26.85
2745.00	-5.79	48.19	53.86	53.98	V	198.50	130.29	32.34	7.59	26.85

Title: FCC 15.209 1/31/2013 6:37:57 PM
File: Radiated Pre-scan 3-10GHz.set Sequence: Preliminary Scan
Operator: Matt Harrison
EUT Type: Dual Band Switch (S0711011)
EUT Condition: Continuously Transmitting @ 915MHz.
Comments: Replaced R27 (on Comm. PCB) with 15k-Ohm Resistor. Connected to Load.
Temp: 70f
Hum: 38%
120V 60Hz

Compatible Electronics, Inc. FAC-3 (Lab P)



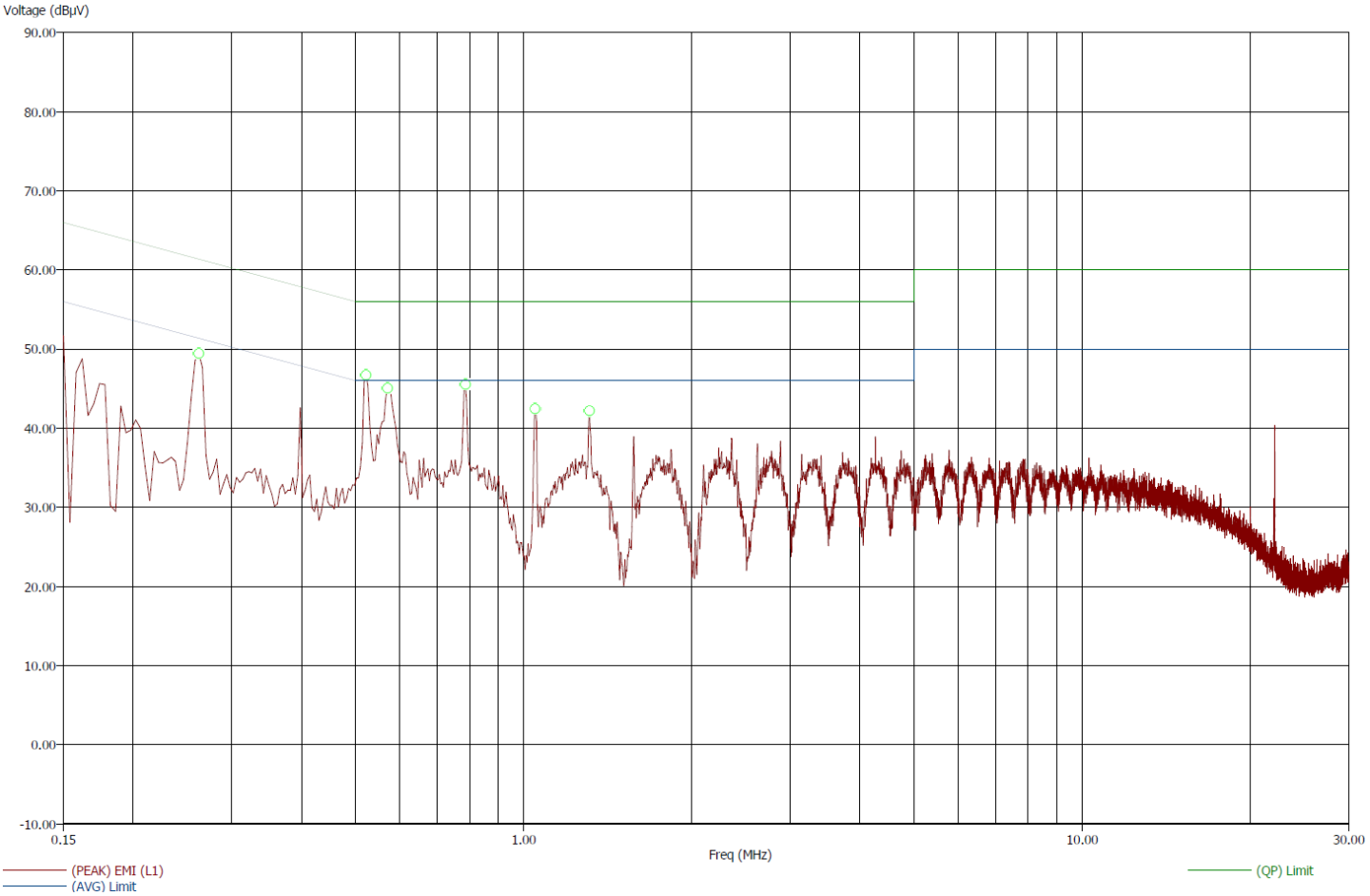
Title: FCC 15.209 1/31/2013 7:11:19 PM
File: Radiated Final 3-10GHz.set Sequence: Final Measurements
Operator: Matt Harrison
EUT Type: Dual Band Switch (S0711011)
EUT Condition: Continuously Transmitting @ 915MHz.
Comments: Replaced R27 (on Comm. PCB) with 15k-Ohm Resistor. Connected to Load.
Temp: 70f
Hum: 38%
120V 60Hz

Compatible Electronics, Inc. FAC-3 (Lab P)

Freq (MHz)	(AVG) Margin (dB)	(AVG) EMI (dBµV/m)	(PEAK) EMI (dBµV/m)	Limit (dBµV/m)	Pol	Ttbl Agl (deg)	Twr Ht (cm)	Transducer (dB)	Cable (dB)	Preamp (dB)	Filter (dB)
3024.00	-26.95	27.03	39.57	53.98	H	90.50	340.64	32.77	8.07	54.18	0.68
3694.00	-27.12	26.86	39.36	53.98	H	52.50	310.76	33.78	9.01	54.12	0.34
3937.00	-27.53	26.45	39.54	53.98	V	146.25	129.23	33.54	9.19	54.45	0.39
4026.00	-27.72	26.26	39.24	53.98	H	46.50	192.88	33.55	9.29	54.49	0.41
5200.00	-22.97	31.01	43.29	53.98	H	9.25	272.00	36.36	10.98	52.60	0.10
5926.00	-22.18	31.80	44.35	53.98	H	186.25	346.05	36.76	11.77	51.46	0.01

Title: FCC 15.107 Class B 1/29/2013 5:44:39 PM
File: Conducted Pre-Line.set Sequence: Preliminary Scan
Operator: Matt Harrison
EUT Type: Dual Band Switch (S0711011)
EUT Condition: Continuously Transmitting @ 915MHz.
Comments: Added 15k-Ohm Resistors to R27-Comm PCB. Connected to Load.
Temp: 70f
Hum: 38%
120V 60Hz

Compatible Electronics, Inc. FAC-3 (LAB P)



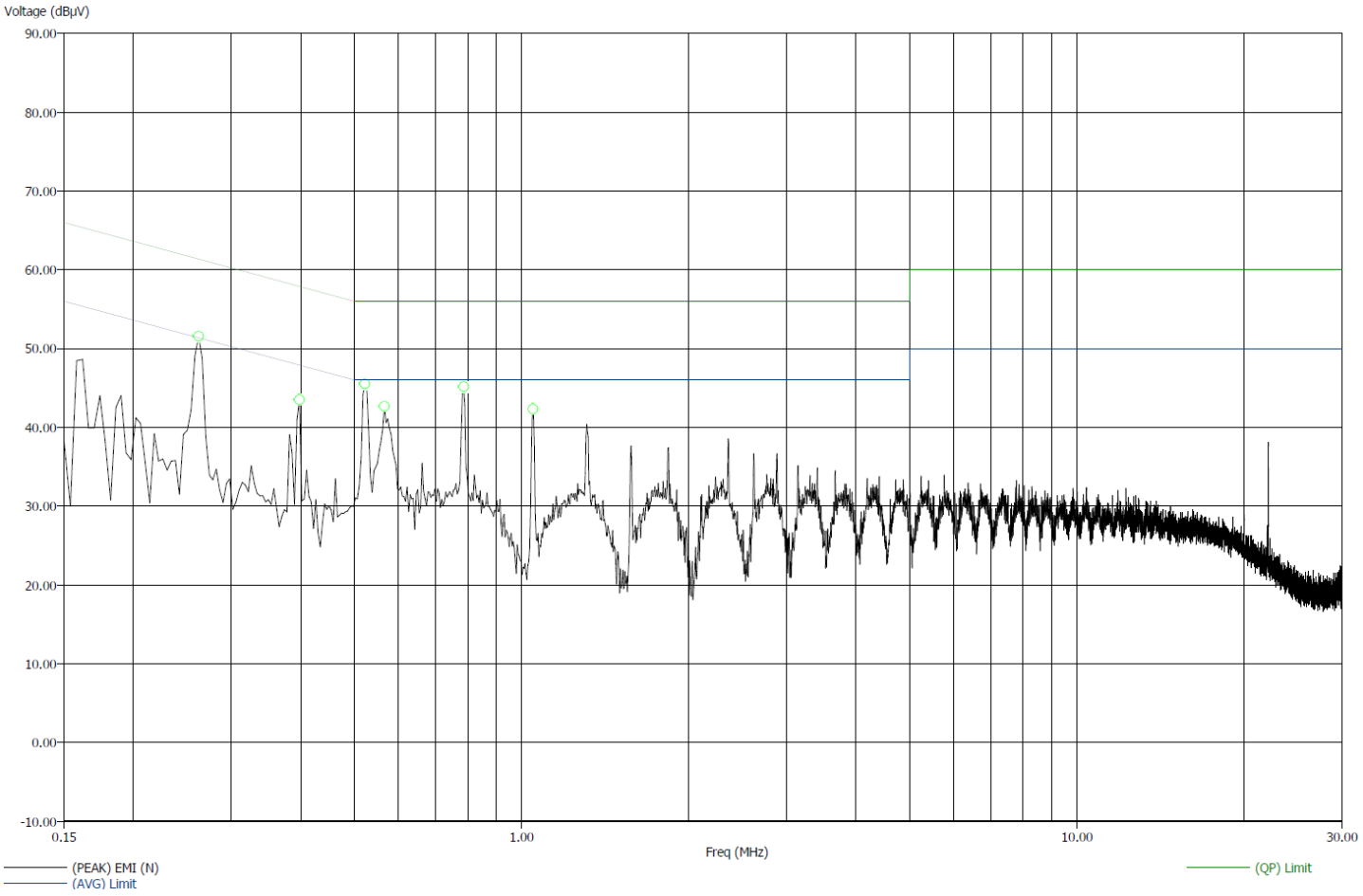
Title: FCC 15.107 Class B 1/29/2013 5:48:18 PM
File: Conducted Final-Line.set Sequence: Final Measurements
Operator: Matt Harrison
EUT Type: Dual Band Switch (S0711011)
EUT Condition: Continuously Transmitting @ 915MHz.
Comments: Added 15k-Ohm Resistors to R27-Comm PCB. Connected to Load.
Temp: 70f
Hum: 38%
120V 60Hz

Compatible Electronics, Inc. FAC-3 (LAB P)

Freq (MHz)	(AVG) Margin AVL (dB)	(QP) Margin QPL (dB)	(AVG) EMI (dBµV)	(QP) EMI (dBµV)	(PEAK) EMI (dBµV)	(AVG) Limit (dBµV)	(QP) Limit (dBµV)	Transducer (dB)	Cable (dB)
0.26	-2.93	-11.05	48.43	50.31	53.40	51.37	61.37	0.09	0.00
0.52	-1.25	-10.89	44.75	45.11	74.78	46.00	56.00	0.07	0.01
0.57	-6.71	-12.79	39.29	43.21	92.47	46.00	56.00	0.07	0.02
0.79	-1.82	-10.66	44.18	45.34	47.62	46.00	56.00	0.06	0.07
1.05	-5.50	-15.10	40.50	40.90	43.79	46.00	56.00	0.06	0.01
1.31	-7.88	-15.62	38.12	40.38	43.37	46.00	56.00	0.06	0.04

Title: FCC 15.107 Class B 1/29/2013 5:56:11 PM
File: Conducted Pre-Neutral.set Sequence: Preliminary Scan
Operator: Matt Harrison
EUT Type: Dual Band Switch (S0711011)
EUT Condition: Continuously Transmitting @ 915MHz.
Comments: Added 15k-Ohm Resistors to R27-Comm PCB. Connected to Load.
Temp: 70f
Hum: 38%
120V 60Hz

Compatible Electronics, Inc. FAC-3 (LAB P)



Title: FCC 15.107 Class B 1/29/2013 6:08:57 PM
File: Conducted Final-Neutral.set Sequence: Final Measurements
Operator: Matt Harrison
EUT Type: Dual Band Switch (S0711011)
EUT Condition: Continuously Transmitting @ 915MHz.
Comments: Added 15k-Ohm Resistors to R27-Comm PCB. Connected to Load.
Temp: 70f
Hum: 38%
120V 60Hz

Compatible Electronics, Inc. FAC-3 (LAB P)

Freq (MHz)	(AVG) Margin AVL (dB)	(QP) Margin QPL (dB)	(AVG) EMI (dBµV)	(QP) EMI (dBµV)	(PEAK) EMI (dBµV)	(AVG) Limit (dBµV)	(QP) Limit (dBµV)	Transducer (dB)	Cable (dB)
0.26	-2.46	-8.05	48.91	53.31	56.31	51.37	61.37	0.03	0.00
0.40	-14.78	-13.49	33.12	44.40	48.97	47.90	57.90	0.03	0.00
0.52	-0.92	-9.95	45.08	46.05	49.42	46.00	56.00	0.04	0.01
0.57	-10.83	-16.65	35.17	39.35	43.52	46.00	56.00	0.04	0.02
0.79	-1.89	-10.84	44.11	45.16	49.09	46.00	56.00	0.03	0.07
1.05	-6.13	-15.77	39.87	40.23	81.24	46.00	56.00	0.03	0.01