FCC PART 15, SUBPART B & SUBPART C SECTION 15.249
TEST REPORT

For
CONTROLLABLE OUTLET
Model: R0610400

Prepared for

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

Prepared by: _____ __

MATT HARRISON

Approved by: _____

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DATE: MAY 13, 2013

	REPORT	APPENDICES					TOTAL
	BODY	*A*	*B*	*C*	*D*	*E*	
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1	Conducted Emissions Test Setup
2	Plot Map And Layout of Test Site
3	Plot Map And 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: CONTROLLABLE OUTLET
Model: R0610400
S/N: None

Product Description: The EUT is a replacement outlet that 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 not modified during the testing.

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

Test Dates: April 22-23, September 25, 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.
2	Radiated RF Emissions & Harmonics, 9 kHz – 10GHz.	Complies with the limits of CFR Title 47 Part 15 subpart B section 15.109 and subpart C Section 15.205, 15.209 and
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
5	Voltage Variation	Complies with CFR Title 47 Part 15 Subpart C Section 15.31(e)

1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the Controllable Outlet Model: R0610400. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4 and C63.10. 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 specification limits defined by the Code of Federal Regulations Title 47, Part 15 Subpart B section 15.107, 15.109, Subpart C sections 15.207, 15.205, 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 emissions 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 April 22, 2013.

2.5 Disposition of the Test Sample

The test sample remains at Compatible Electronics 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

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	American National Standard for Testing Unlicensed Wireless Devices

4. DESCRIPTION OF TEST CONFIGURATION

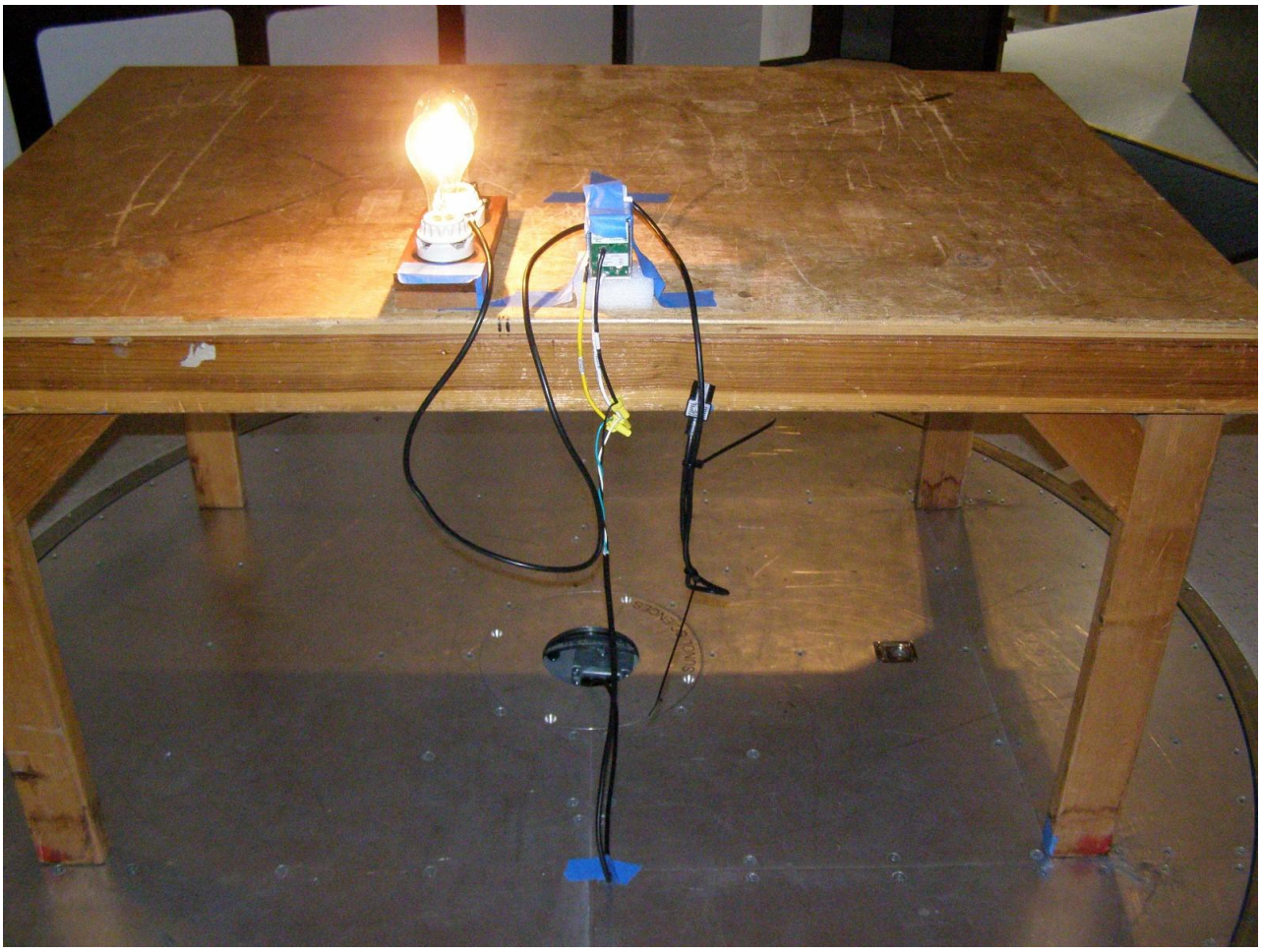
4.1 Description of Test Configuration - EMI

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

The AC mains voltage was varied ±15% of the nominal voltage resulting with no variation of amplitude or frequency.

The highest emissions for radiated were found when the EUT was running with one outlet terminated, for conducted emissions they were worse with both ports terminated. 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 .80-meter, unshielded, round cable connecting to one of the EUT outlet sockets to the light fixture. The cable has a standard AC power plug at the EUT end is hardwired into the light fixture.

Cable 2

This is a .80-meter, unshielded, round cable connected to one of the EUT outlet sockets. The cable has a standard AC power plug at the EUT end and has a female IEC C13 type connector at the other end. The cable is bundled to a length of 1 meter.

5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 EUT and Accessory List

#	EQUIPMENT TYPE	MANUFACTURER	MODEL	SERIAL NUMBER
1	CONTROLLABLE OUTLET (EUT)	BUDDERFLY LLC	R0610400	NONE
2	LIGHT FIXTURE WITH BULBS	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	9/26/2012	9/26/2013
Antenna, Loop	Com Power	AL-130	17085	01/29/2012	01/29/2015
Antenna, CombiLog	Com Power	AC-220	25857	05/25/2012	05/25/2013
Antenna, Horn 1-18GHz	Com Power	AH-118	071225	07/03/2012	07/03/2014
Pre-Amp, 1-18GHz	Com Power	PAM-118	443013	04/08/2013	04/08/2014
Pre-Amp, 1-18GHz	Com Power	PAM-118	443014	04/08/2013	04/08/2014
High Pass Filter	AMTI Microwave Circuits	H3G020G4	481230	06/07/2012	06/07/2013
Mast, Antenna Positioner	Sunol Science Corporation	TWR 95-4	N/A	N/A	N/A
Turntable	Sunol Science Corporation	FM 2001	N/A	N/A	N/A
Mast and Turntable Controller	Sunol Science Corporation	SC104V	N/A	N/A	N/A

5.3 Test Software

LAB(S)	SOFTWARE TITLE	MANUFACTURER	VERSION	RELEASE DATE
P, R	Measurement and Automation Software	TDK TestLab	5.53	

6. TEST SITE DESCRIPTION

6.1 Test Facility Description

Please refer to section 2.1 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 through the AC power cord.

6.3 Facility Environmental Characteristics

When applicable refer to the data sheets in Appendix E for the relative humidity, air temperature and barometric pressure.

7. CHARACTERISTICS OF THE TRANSMITTER

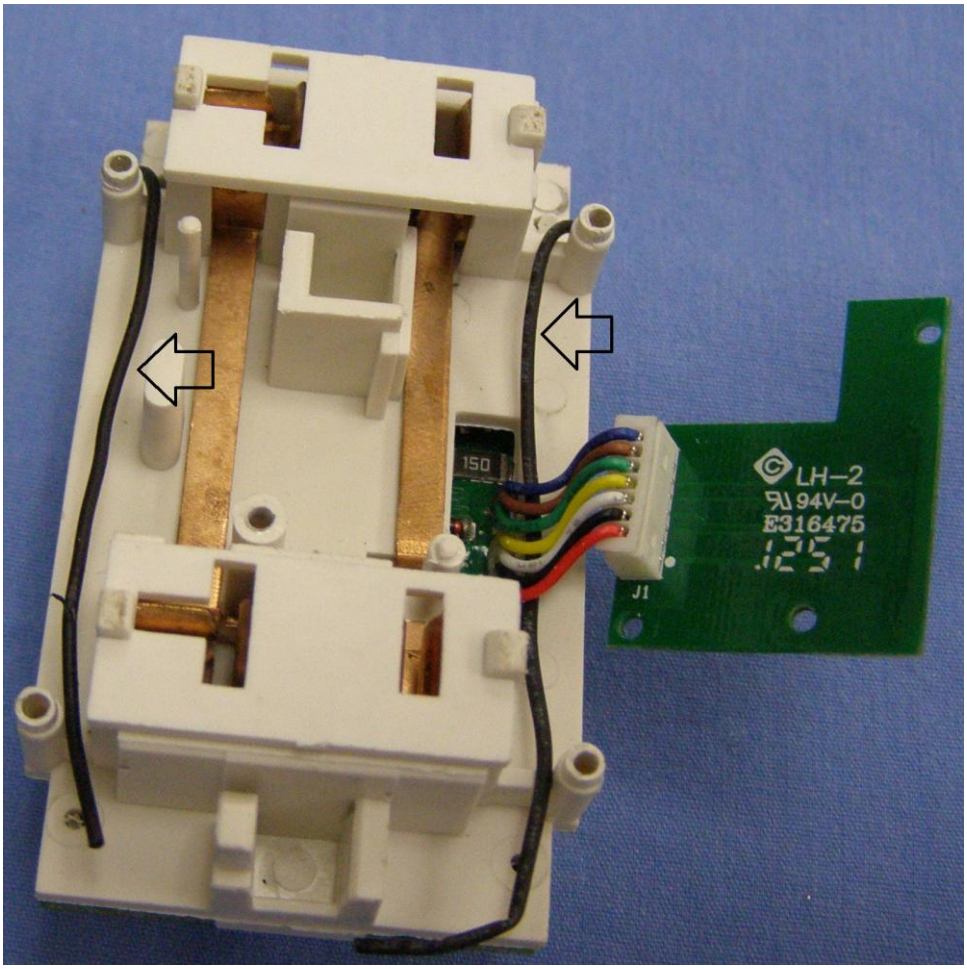
7.1 Channel Number and Frequencies

There is a total of 1 channel.

915.00 MHz

7.2 Antenna

The antenna is made up of two-8cm wire antennas which are 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 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.

A duty cycle average was used for the harmonic emissions.

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	100 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.

8.1.3 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.

8.1.4 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 15.249 and 15.205.

8.1.5 Voltage Fluctuations

Measurements of the variation of the radiated signal level of the fundamental frequency component of the emission was performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage.

Test Results:

The EUT complies with Part 15 Subpart C, Section 15.31(e).

8.1.6 Pulsed Operation Duty Cycle Correction

Duty Cycle Correction Factor = -11.11 dB

Number of Pulse #1 in 100ms = 36
Pulse #1 = 0.223ms * 36 = 8.03ms
Number of Pulse #2 in 100ms = 6
Pulse #2 = 0.335ms * 6 = 2.01ms
Number of Pulse #3 in 100ms = 79
Pulse #3= 0.110ms * 79 = 8.69ms

Total time at 100% Amplitude = 18.73ms
Total Time at Reduced Amplitude = 16.71ms
Amplitude Difference between 100% and Reduced Amplitude = 5.28 dB
Effective ON Time of Reduced Amplitude = 9.09ms
Total Duty Cycle = 27.62ms / 100ms = 27.82%

Correction Factor - 20 * log 0.2763 = -11.11

9. TEST PROCEDURE DEVIATIONS

There were no deviations from the test procedures.

10. CONCLUSIONS

The Controllable Outlet Model: R0610400 meets all of the relevant specification requirements defined in the Code of Federal Regulations Title 47, Part 15 Subpart B sections 15.107 and 15.109 Subpart C sections 15.207, 15.205, 15.209 and 15.249.

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

There were no modifications made to the EUT during the test.

APPENDIX C

ADDITIONAL MODELS COVERED UNDER THIS REPORT

ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST	CONTROLLABLE OUTLET Model: R0610400 S/N: None

There were no additional models covered under this report.

APPENDIX D

DIAGRAMS, CHARTS AND PHOTOS

FIGURE 1: CONDUCTED EMISSIONS TEST SETUP

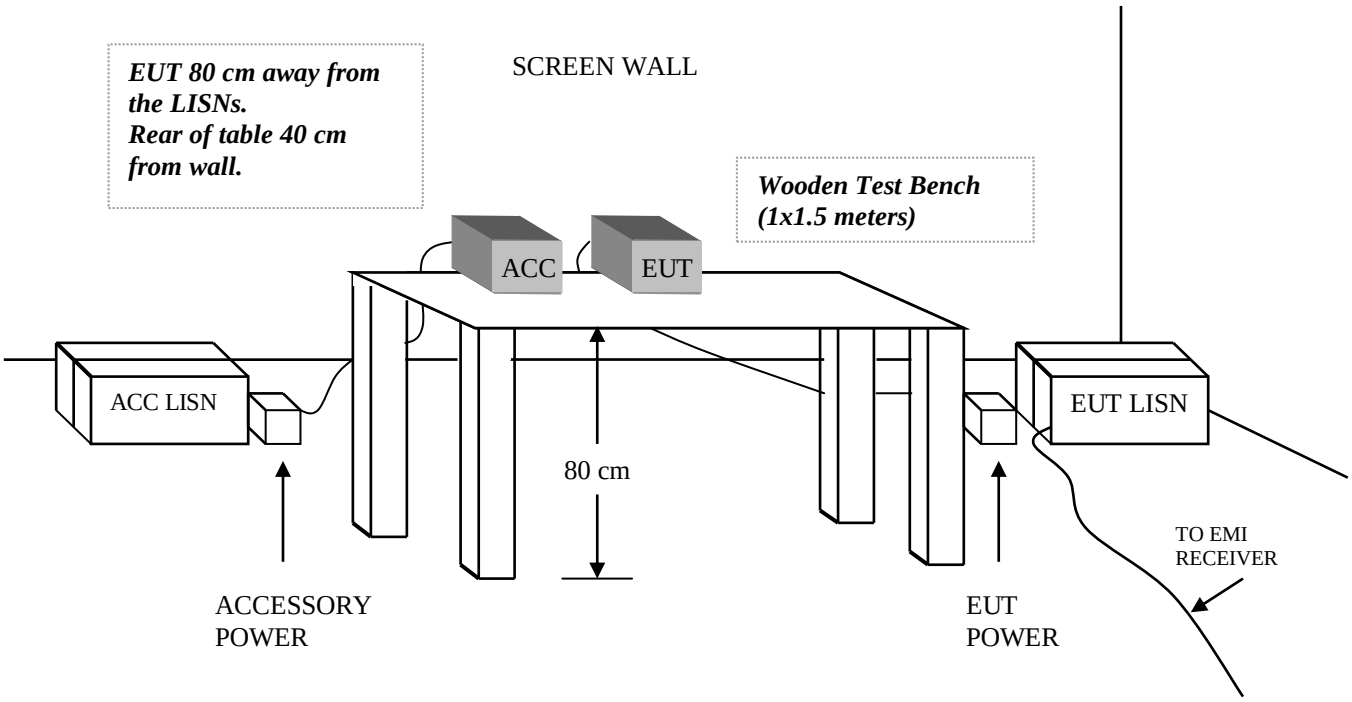


FIGURE 2: RADIATED EMISSIONS 3-METER SEMI-ANECHOIC TEST CHAMBER

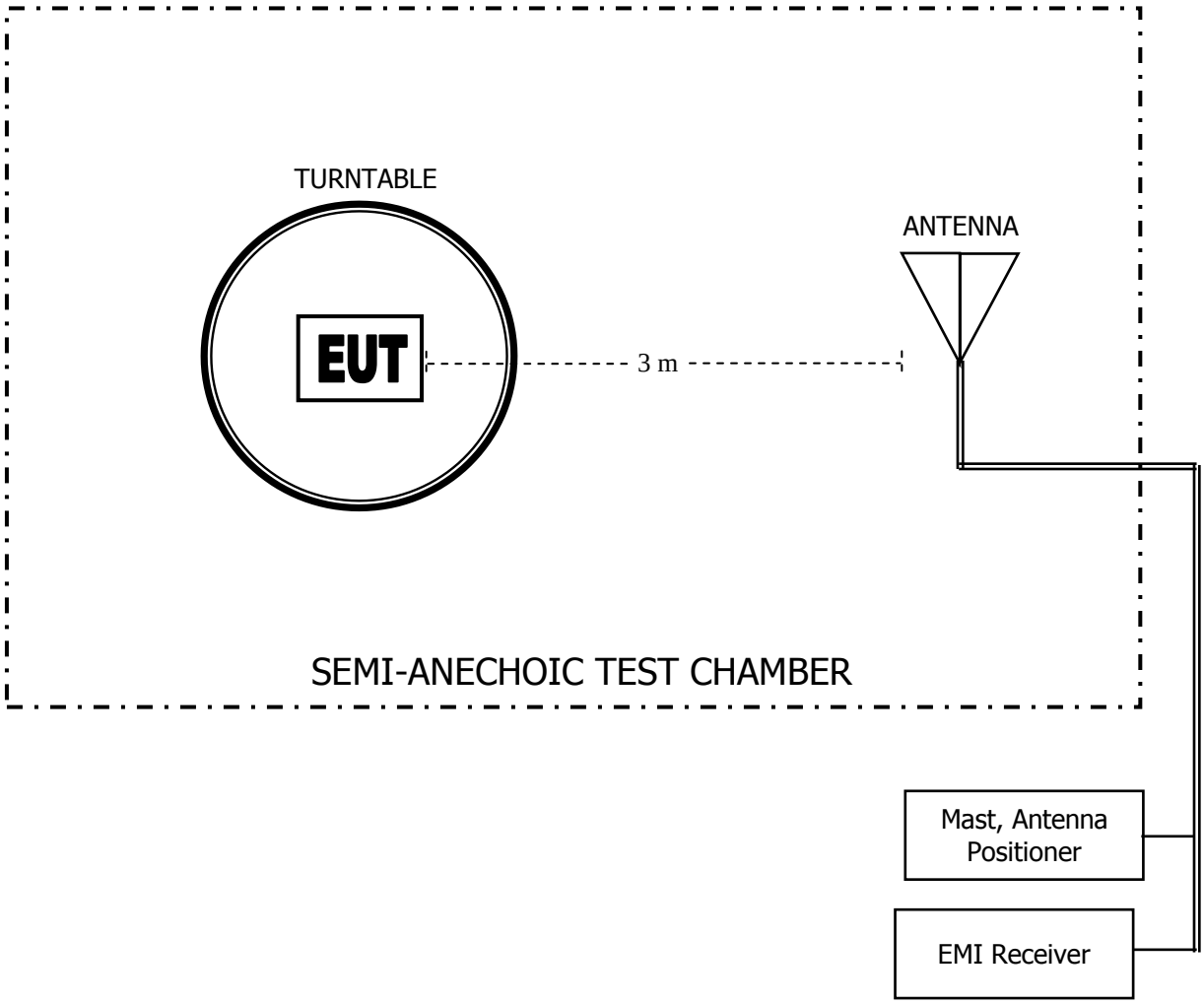
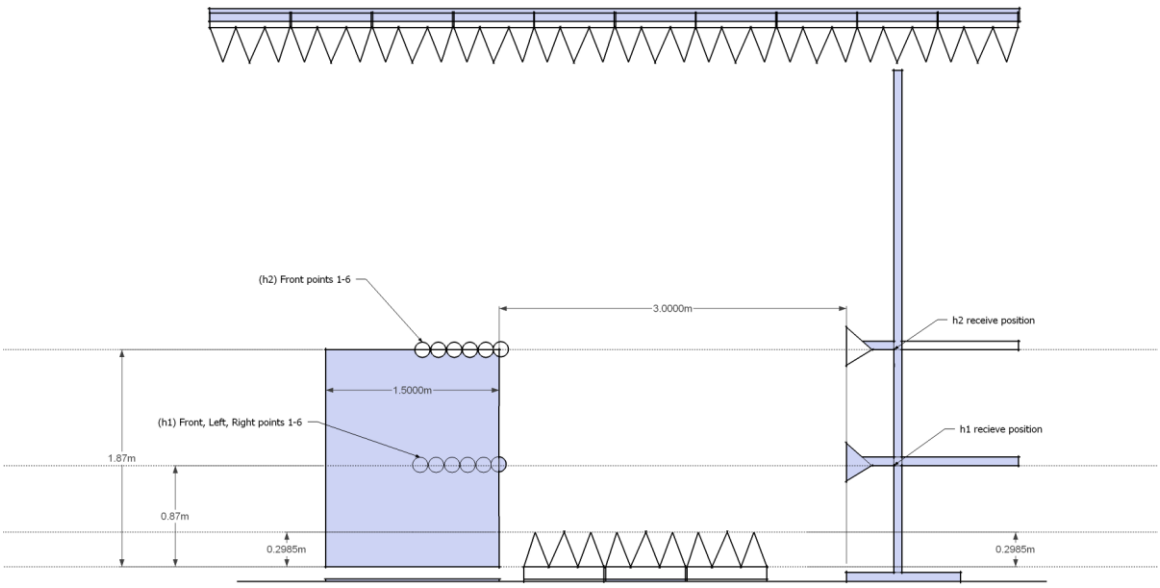


FIGURE 3: PLOT MAP & LAYOUT OF TEST SITE ABOVE 1 GHz



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 R - COMBILOG ANTENNA

S/N: 25857

CALIBRATION DUE: MAY 25, 2013

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	17.8	**180**	9.4
35	18.4	**200**	9.0
40	19.2	**250**	12.0
45	17.2	**300**	13.4
50	17.2	**300**	13.4
60	13.5	**400**	15.0
70	8.9	**500**	17.3
80	6.0	**600**	17.8
90	7.1	**700**	20.0
100	8.0	**800**	20.5
120	9.2	**900**	20.8
140	7.5	**1000**	22.4
160	8.3		

COM-POWER AH-118

HORN ANTENNA

S/N: 071225

CALIBRATION DUE: JULY 3, 2014

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: APRIL 8, 2014

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
500	26.32	**5500**	25.55
1000	24.72	**6000**	25.54
1100	25.89	**6500**	24.57
1200	25.41	**7000**	23.51
1300	26.28	**7500**	23.59
1400	25.94	**8000**	23.32
1500	25.59	**8500**	22.76
1600	26.95	**9000**	23.15
1700	25.52	**9500**	24.41
1800	25.75	**10000**	25.71
1900	26.00	**11000**	26.07
2000	25.38	**12000**	26.17
2500	26.06	**13000**	24.72
3000	26.24	**14000**	23.19
3500	25.82	**15000**	25.42
4000	26.04	**16000**	25.07
4500	25.96	**17000**	24.24
5000	26.02	**18000**	24.92

COM-POWER PAM-118

1-18GHz - PREAMPLIFIER

S/N: 443014

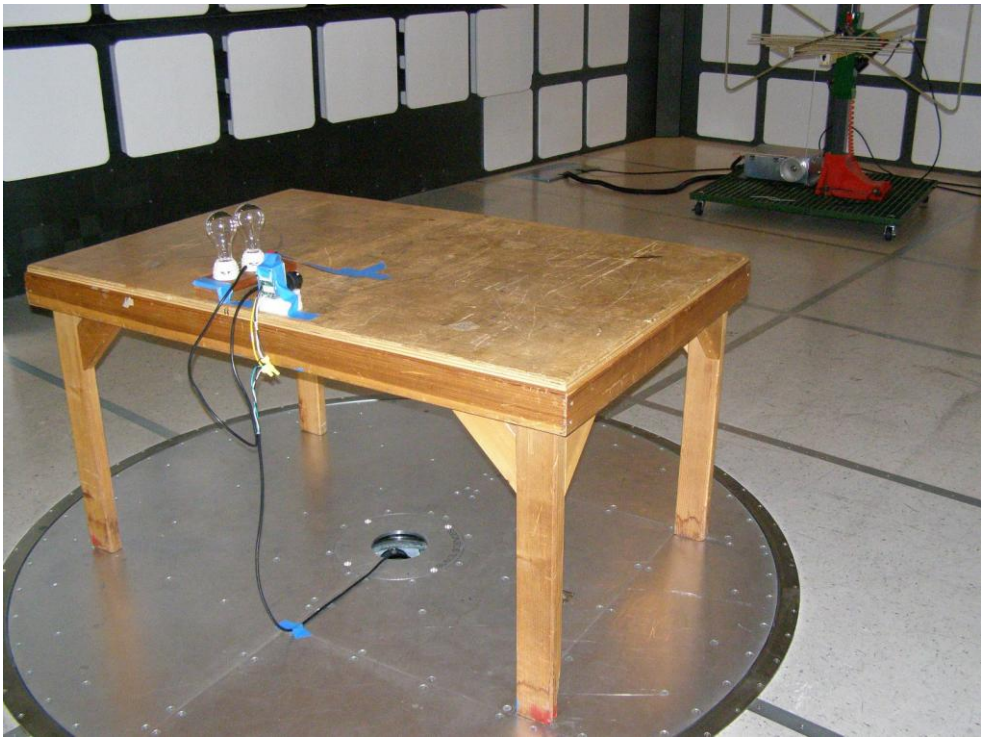
CALIBRATION DUE: APRIL 8, 2014

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
500	26.75	**5500**	26.17
1000	25.15	**6000**	26.28
1100	26.17	**6500**	25.46
1200	25.85	**7000**	23.93
1300	26.75	**7500**	23.83
1400	26.27	**8000**	23.86
1500	26.09	**8500**	23.55
1600	27.23	**9000**	24.39
1700	26.08	**9500**	25.57
1800	26.24	**10000**	26.24
1900	26.50	**11000**	26.43
2000	25.99	**12000**	26.79
2500	26.86	**13000**	25.66
3000	27.13	**14000**	23.50
3500	26.87	**15000**	25.78
4000	26.75	**16000**	25.45
4500	26.94	**17000**	26.45
5000	26.87	**18000**	26.70

VIEW 1

BUDDERFLY LLC
CONTROLLABLE OUTLET
Model: R0610400
FCC PART 15 SUB PART B & C - RADIATED EMISSIONS

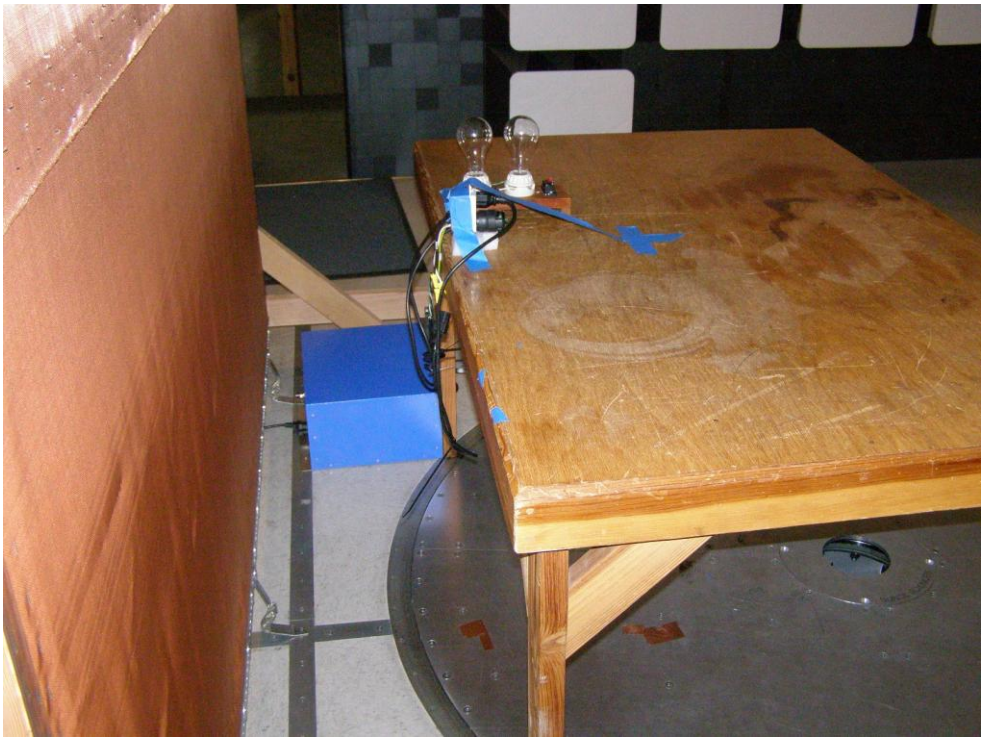
PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



VIEW 2

BUDDERFLY LLC
CONTROLLABLE OUTLET
Model: R0610400
FCC PART 15 SUB PART B & C - RADIATED EMISSIONS

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



VIEW 1

BUDDERFLY LLC
CONTROLLABLE OUTLET
Model: R0610400
FCC PART 15 SUB PART B & C - CONDUCTED EMISSIONS

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

VIEW 2

BUDDERFLY LLC
CONTROLLABLE OUTLET
Model: R0610400
FCC PART 15 SUB PART B & C - CONDUCTED EMISSIONS

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

APPENDIX E

DATA SHEETS

FUNDAMENTAL & HARMONICS

DATA SHEETS

FCC 15.249
Budderfly
Controllable Outlet
Model: R0610400

Date: 4/22/2013
Lab: R
Tested By: Matt Harrison

Fundamental Field Strength

Freq (MHz)	Polarity (H/V)	Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Ant. Height (m)	Table Angle (deg)	Comments
915.0	H	90.90	93.97	-3.07	1.00	160.00	With One Outlet Terminated
915.0	V	89.54	93.97	-4.43	1.00	270.00	With One Outlet Terminated

Test distance
3 meter

FCC 15.249
Budderfly
Controllable Outlet
Model: R0610401
Duty Cycle Correction Factor: -11.11

Date: 4/22/2013
Lab: R
Tested By: Matt Harrison

Harmonic Emissions

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit (dBµV)	Margin (dB)	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1830	56.43	V	--	--	Peak	1.20	155	
1830	45.32	V	53.98	-8.66	Avg	1.20	155	
2745	49.14	V	53.98	-4.84	Peak	1.00	210	
2745		V	--	--	Avg	1.00	210	**In Restricted Band**
3660	48.43	V	53.98	-5.55	Peak	1.00	220	
3660		V	--	--	Avg			**In Restricted Band**
4575	45.64	V	53.98	-8.34	Peak	1.00	115	
4575		V	--	--	Avg			**In Restricted Band**
5490		V	--	--	Peak			**No Emission Found**
5490		V	--	--	Avg			**No Emission Found**
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

FCC 15.249
Budderfly
Controllable Outlet
Model: R0610401
Duty Cycle Correction Factor: -11.52

Date: 4/22/2013
Lab: R
Tested By: Matt Harrison

Harmonic Emissions

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit (dBµV)	Margin (dB)	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1830	59.76	H	--	--	Peak	1.00	160	
1830	48.65	H	53.98	-5.33	Avg	1.00	160	
2745	50.71	H	53.98	-3.27	Peak	1.20	155	
2745		H	--	--	Avg			**In Restricted Band**
3660	49.21	H	53.98	-4.77	Peak	1.00	190	
3660		H	--	--	Avg			**In Restricted Band**
4575	49.02	H	53.98	-4.96	Peak	1.00	160	
4575		H	--	--	Avg			**In Restricted Band**
5490		H	--	--	Peak			**No Emission Found**
5490		H	--	--	Avg			**No Emission Found**
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

EMISSIONS RADIATED OUTSIDE OF THE FUNDAMENTAL FREQUENCY BAND

DATA SHEETS

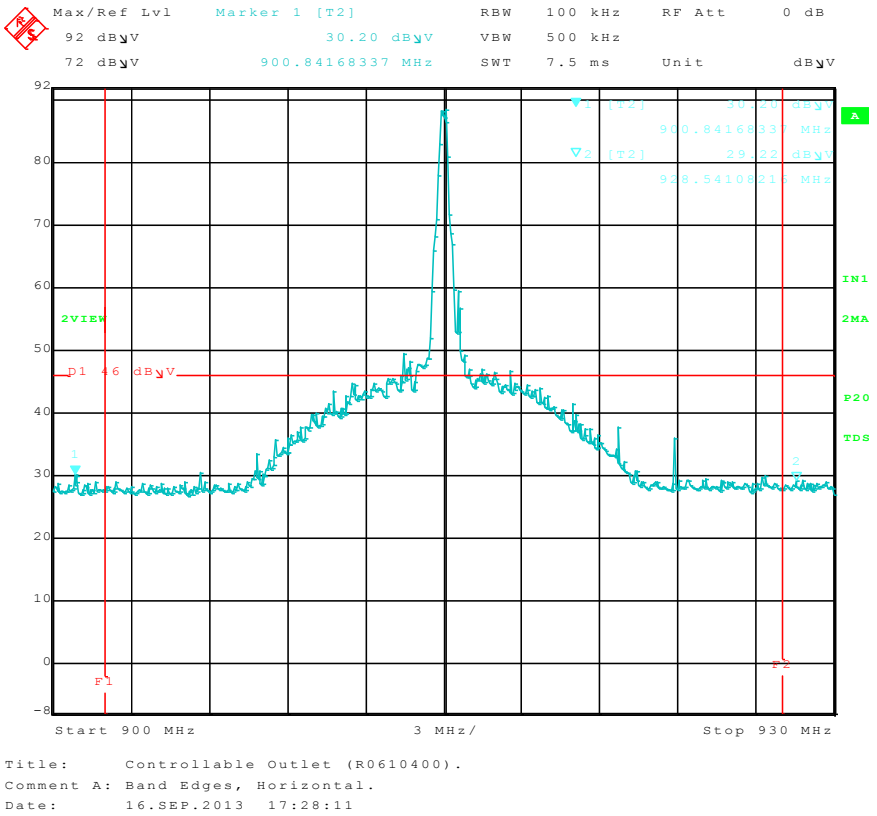
FCC 15.249
Budderfly
Controllable Outlet
Model: R0610400

Date: 4/22/2013
Lab: R
Tested By: Matt Harrison

Band Edge

Freq. (MHz)	Level (dBµV)	Pol (v/h)	Limit (dBµV)	Margin (dB)	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
915.00	90.90	H	--	--	Peak	1.00	160	Fundamental of Channel 915MHz
								@ 3 meters
900.84	30.20	H	46.00	-15.80	Peak	1.00	160	No Marker Delta Method
		H	--	--	QP			Used
915.00	90.90	H	--	--	Peak	1.00	160	Fundamental of Channel 915MHz
								@ 3 meters
928.54	29.22	H	46.00	-16.78	Peak	1.00	160	No Marker Delta Method
		H	--	--	QP			Used

Test Distance
3 meters



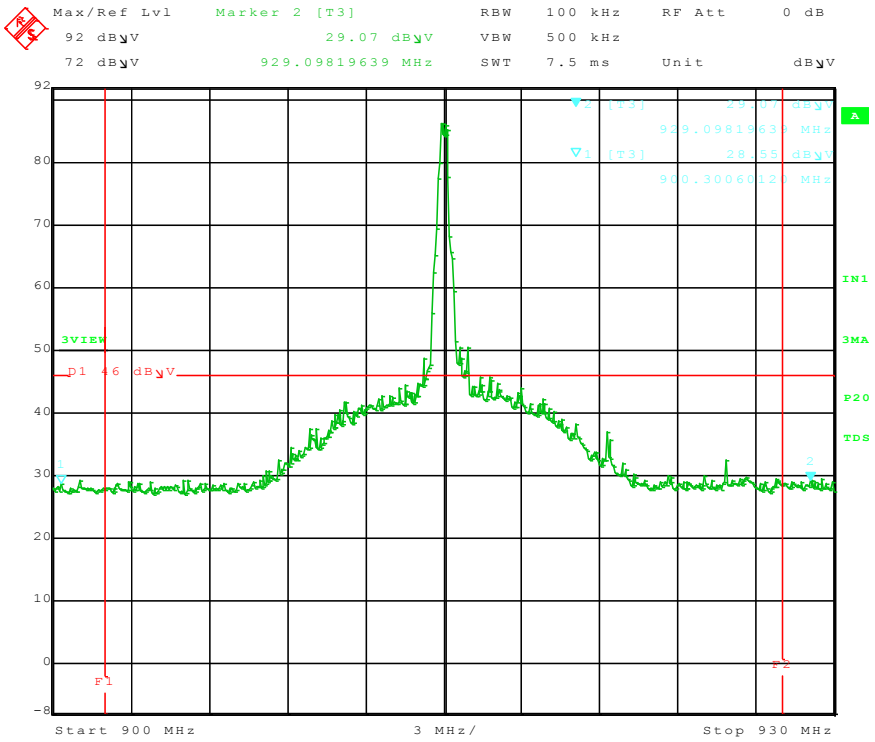
FCC 15.249
Budderfly
Controllable Outlet
Model: R0610400

Date: 4/22/2013
Lab: R
Tested By: Matt Harrison

Band Edge

Freq. (MHz)	Level (dBµV)	Pol (v/h)	Limit (dBµV)	Margin (dB)	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
915.00	89.54	V	--	--	Peak	1.00	270	Fundamental of Channel 915MHz
								@ 3 meters
900.30	28.55	V	46.00	-17.45	Peak	1.00	270	No Marker Delta Method
		V	--	--	QP			Used
915.00	89.54	V	--	--	Peak	1.00	270	Fundamental of Channel 915MHz
								@ 3 meters
929.09	29.07	V	46.00	-16.93	Peak	1.00	270	No Marker Delta Method
		V	--	--	QP			Used

Test Distance
3 meters

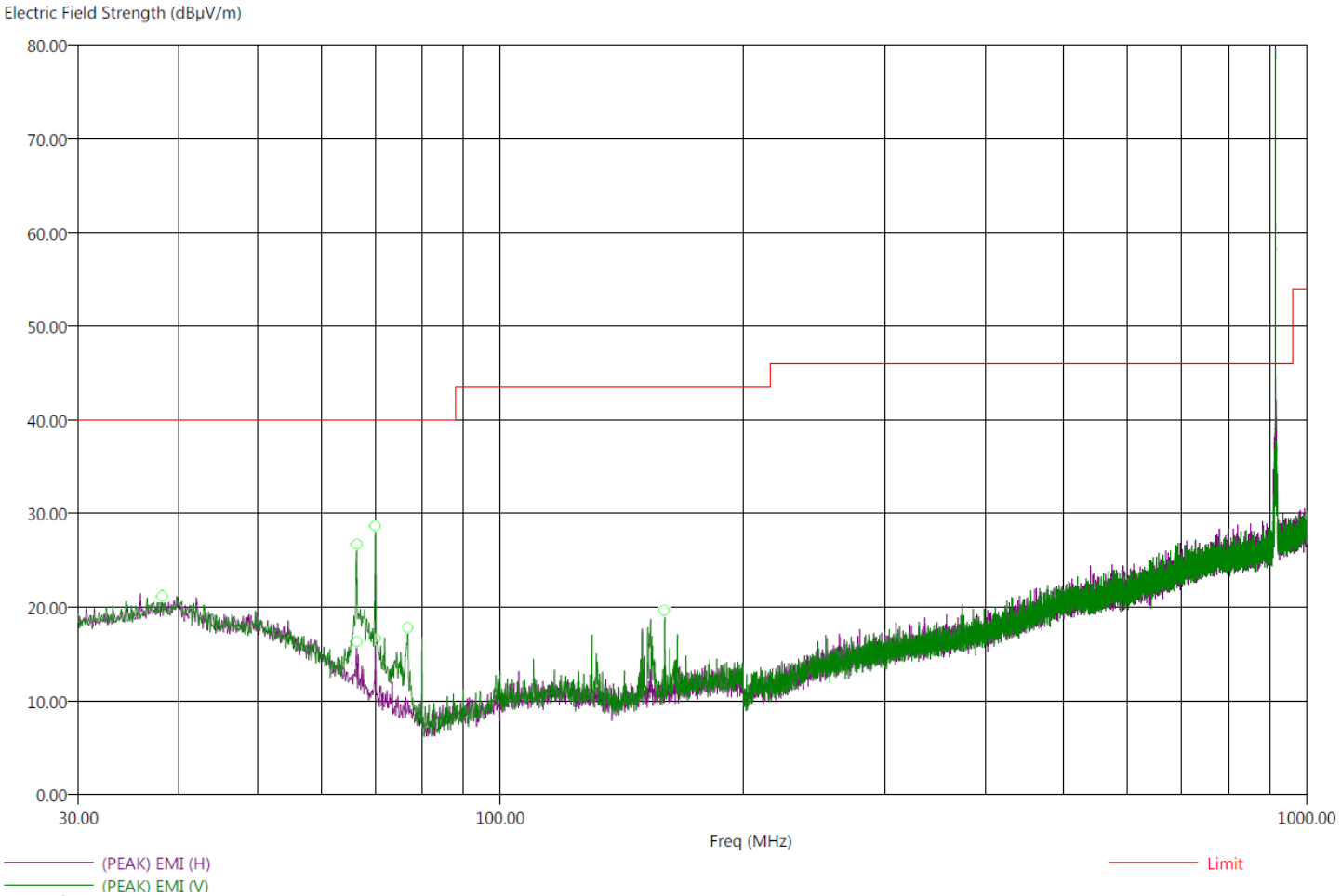


Title: Controllable Outlet (R0610400).
Comment A: Band Edges, Vertical.
Date: 16.SEP.2013 17:33:43

Title: FCC 15.209
File: Radiated Pre-Scan 30-1000Mhz.set
Operator: Matt Harrison
EUT Type: Controllable Outlet, P/N: R0610400.
EUT Condition: Transceiving @ 915MHz.
Comments: One Outlet Terminated (Worst Case)
Temp: 72f
Hum: 42%
120V 60Hz

4/22/2013 9:43:22 AM
Sequence: Preliminary Scan

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



Test Distance:
3 Meters
Note: There were no spurious radiated emissions found below 30 MHz.

Title: FCC 15.209
File: Radiated Final 30-1000Mhz.set
Operator: Matt Harrison
EUT Type: Controllable Outlet, P/N: R0610400.
EUT Condition: Transceiving @ 915MHz.
Comments: One Outlet Terminated (Worst Case)
Temp: 72f
Hum: 42%
120V 60Hz

4/22/2013 10:05:33 AM
Sequence: Final Measurements

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

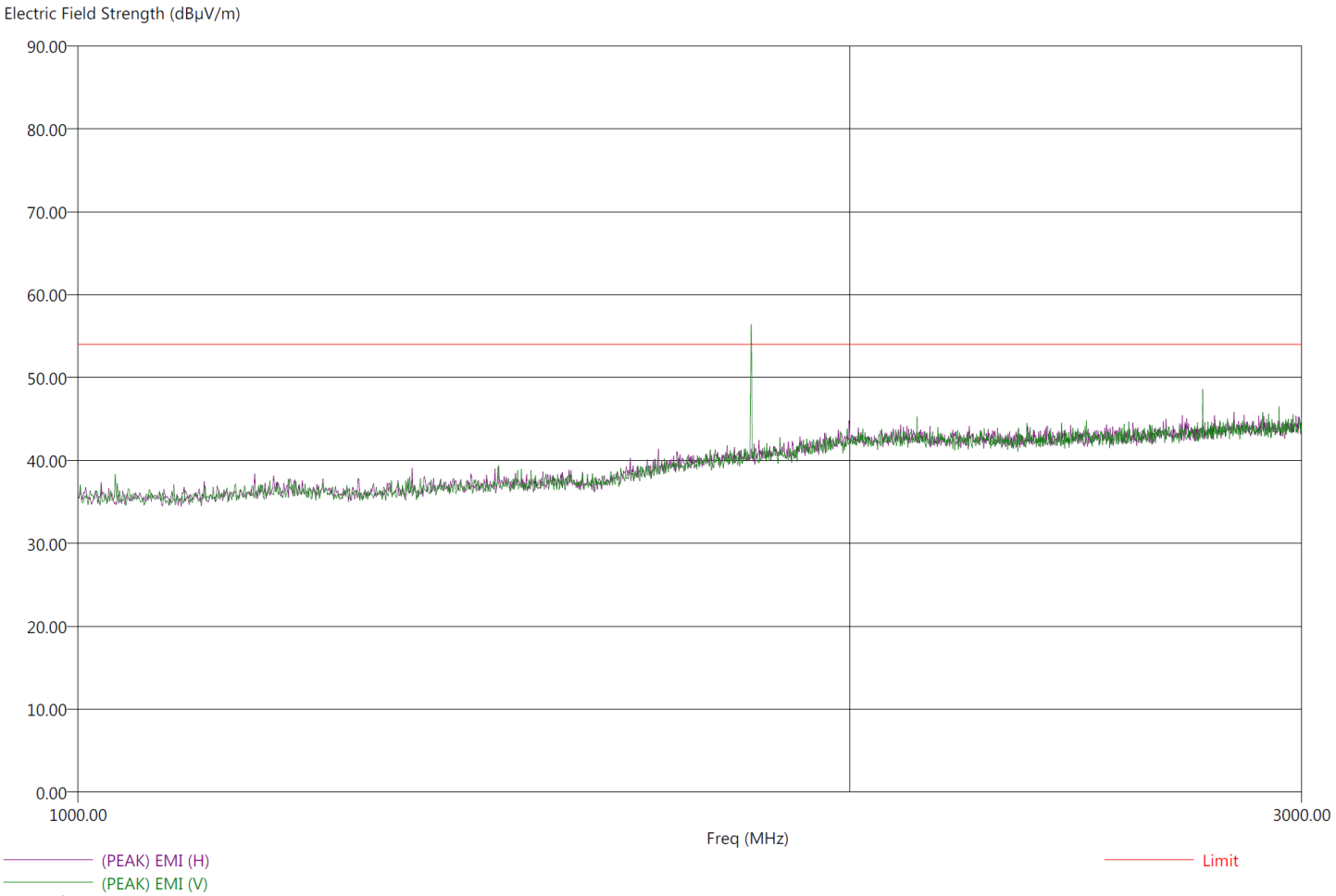
Freq (MHz)	(QP) Margin (dB)	(QP) EMI (dBµV/m)	(PEAK) EMI (dBµV/m)	Limit (dBµV/m)	Pol	Ttbl Agl (deg)	Twr Ht (cm)	Transducer (dB)	Cable (dB)
38.10	-24.70	15.30	20.93	40.00	V	22.00	397.37	18.91	0.58
66.40	-24.35	15.65	19.11	40.00	H	218.75	282.92	10.50	0.70
66.40	-13.98	26.02	28.78	40.00	V	173.50	102.02	10.50	0.70
70.00	-22.69	17.31	20.10	40.00	H	245.50	261.01	8.90	0.70
70.00	-12.58	27.42	29.90	40.00	V	211.50	113.37	8.91	0.70
76.80	-25.21	14.79	18.08	40.00	V	209.50	154.98	6.90	0.70
160.00	-25.65	17.87	20.84	43.52	V	293.00	116.77	8.30	1.30

Test Distance:
3 Meters
Note: There were no spurious radiated emissions found below 30 MHz or above 1000 MHz.

Title: FCC 15.209
File: Radiated Pre-scan 1-3GHz.set
Operator: Matt Harrison
EUT Type: Controllable Outlet, (R0610400).
EUT Condition: Transceiving @ 915MHz.
Comments: One Outlet Terminated (Worst Case)
Temp: 72f
Hum: 42%
120V 60Hz

4/22/2013 1:53:28 PM
Sequence: Preliminary Scan

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

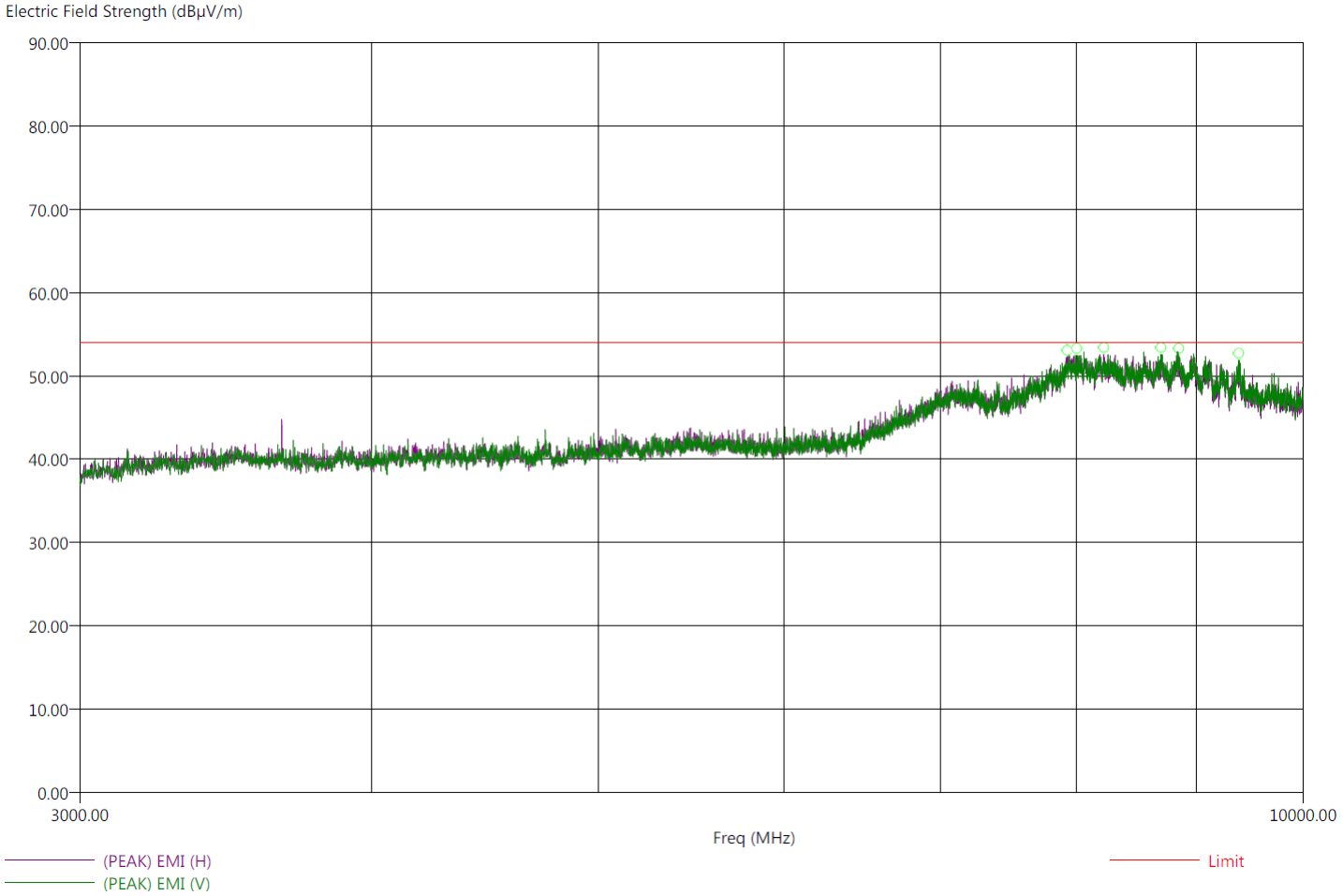


Test Distance:
3 Meters
Note: There were no spurious radiated emissions other than harmonics found between 1000 MHz and 10,000 MHz.

Title: FCC 15.209
File: Radiated Pre-scan 3-10GHz.set
Operator: Matt Harrison
EUT Type: Controllable Outlet, (R0610400).
EUT Condition: Transceiving @ 915MHz.
Comments: One Outlet Terminated (Worst Case)
Temp: 72f
Hum: 42%
120V 60Hz

4/22/2013 2:30:49 PM
Sequence: Preliminary Scan

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



Test Distance:
3 Meters
Note: There were no spurious radiated emissions other than harmonics found between 1000 MHz and 10,000 MHz.

Title: FCC 15.209
File: Radiated Final 3-10GHz.set
Operator: Matt Harrison
EUT Type: Controllable Outlet, (R0610400).
EUT Condition: Transceiving @ 915MHz.
Comments: One Outlet Terminated (Worst Case)
Temp: 72f
Hum: 42%
120V 60Hz

4/22/2013 2:57:33 PM
Sequence: Final Measurements

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

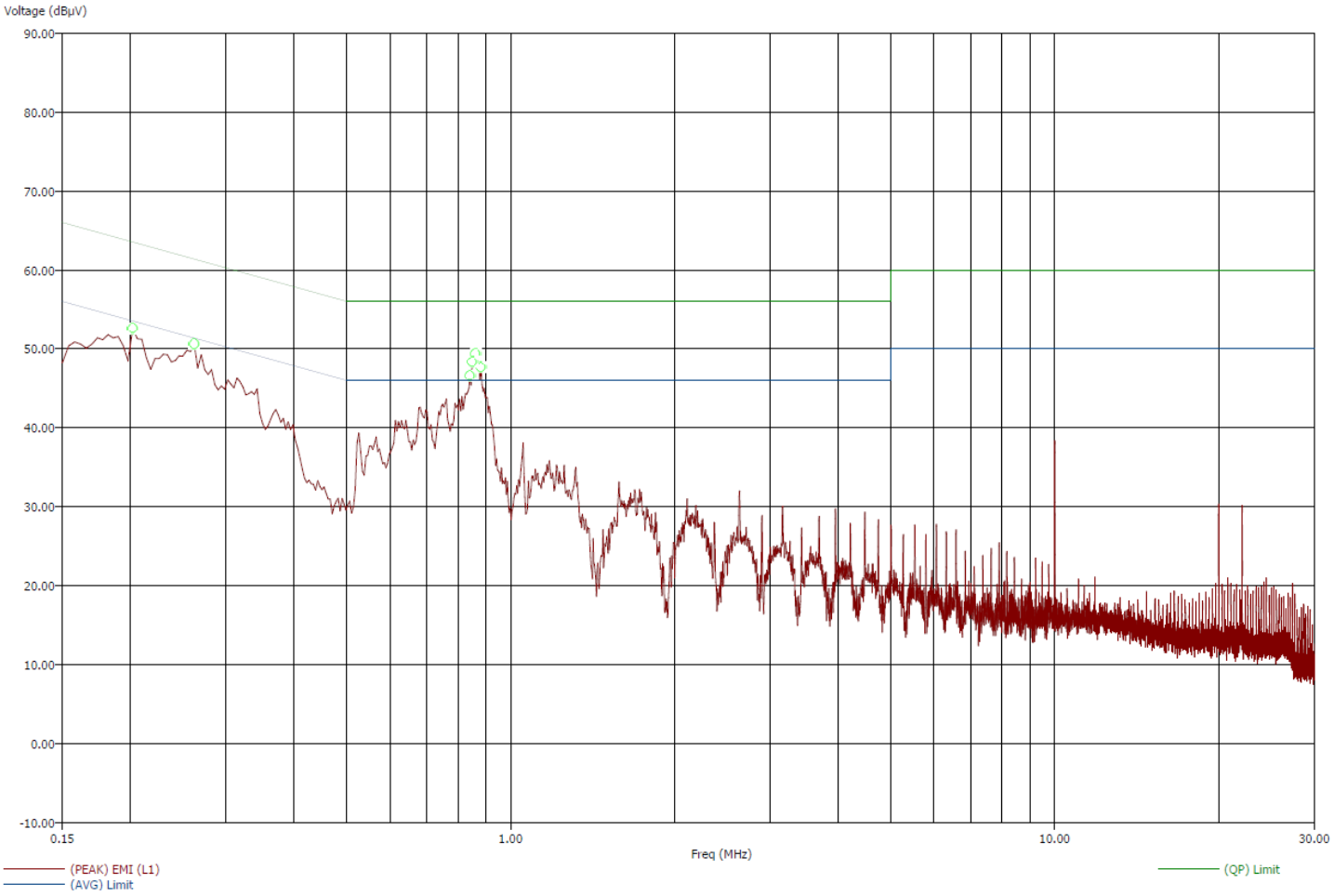
Freq (MHz)	(AVG) Margin (dB)	(AVG) EMI (dBµV/m)	(PEAK) EMI (dBµV/m)	Limit (dBµV/m)	Pol	Ttbl Agl (deg)	Twr Ht (cm)	Transducer (dB)	Cable(dB)	Preamp (dB)	Filter (dB)
7930.00	-13.88	40.10	53.69	53.98	H	359.25	378.80	41.98	12.24	47.21	0.30
8007.00	-14.72	39.26	51.73	53.98	V	325.00	159.94	42.32	12.49	47.16	0.30
8218.00	-14.56	39.42	51.86	53.98	H	360.00	276.77	41.45	12.46	46.79	0.30
8696.00	-13.76	40.22	53.74	53.98	V	274.75	219.58	40.02	12.84	46.80	0.30
8848.00	-14.19	39.79	52.62	53.98	H	42.50	400.11	39.79	13.22	47.18	0.30
9386.00	-15.62	38.36	51.39	53.98	V	136.75	255.88	40.25	13.32	49.44	0.14

Test Distance:
3 Meters
Note: There were no spurious radiated emissions other than harmonics found between 1000 MHz and 3000 MHz.

Title: FCC 15.207
File: Conducted Pre-Line.set
Operator: Matt Harrison
EUT Type: Controllable Outlet (R0610400).
EUT Condition: Transceiving 915MHz.
Comments: Both Outlets Terminated.
Temp: 72f
Hum: 42%
120V 60Hz

4/23/2013 8:34:13 AM
Sequence: Preliminary Scan

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



Title: FCC 15.207
File: Conducted Final-Line.set
Operator: Matt Harrison
EUT Type: Controllable Outlet (R0610400).
EUT Condition: Transceiving 915MHz.
Comments: Both Outlets Terminated.
Temp: 72f
Hum: 42%
120V 60Hz

4/23/2013 8:36:49 AM
Sequence: Final Measurements

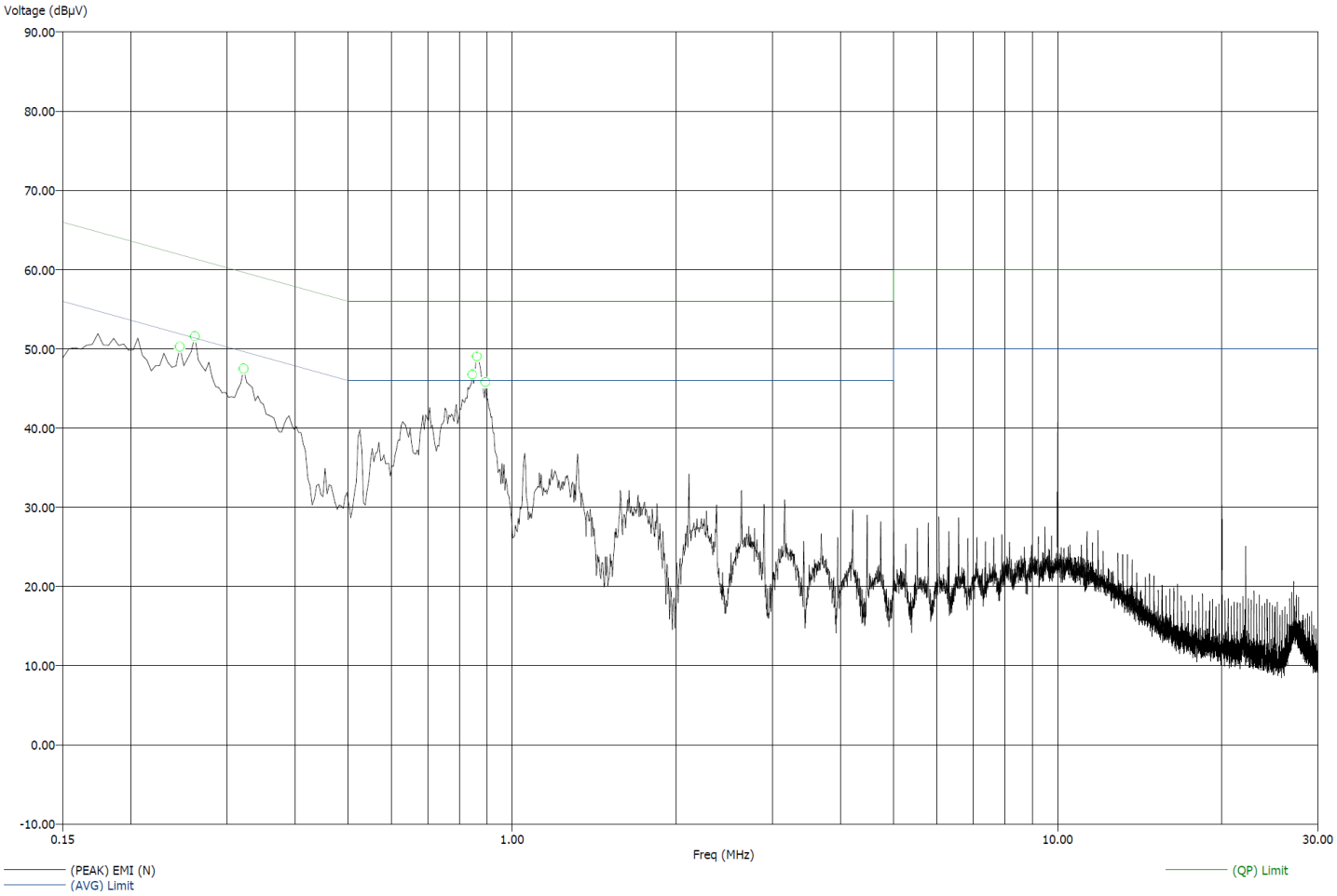
Compatible Electronics, Inc. FAC-3 (LAB-P)

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)
0.20	-10.62	-15.42	42.91	48.11	52.52	53.53	63.53	0.29	0.02
0.26	-8.31	-12.96	43.05	48.41	52.77	51.37	61.37	0.17	0.02
0.84	-8.90	-12.81	37.10	43.19	47.81	46.00	56.00	0.04	0.06
0.85	-7.63	-11.73	38.37	44.27	49.23	46.00	56.00	0.04	0.06
0.86	-3.27	-8.01	42.73	47.99	50.80	46.00	56.00	0.04	0.06
0.88	-8.43	-12.49	37.57	43.51	48.93	46.00	56.00	0.04	0.06

Title: FCC 15.207
File: Conducted Pre-Neutral.set
Operator: Matt Harrison
EUT Type: Controllable Outlet (R0610400).
EUT Condition: Transceiving 915MHz.
Comments: Both Outlets Terminated.
Temp: 72f
Hum: 42%
120V 60Hz

4/23/2013 8:44:56 AM
Sequence: Preliminary Scan

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



Title: FCC 15.207
File: Conducted Final-Neutral.set
Operator: Matt Harrison
EUT Type: Controllable Outlet (R0610400).
EUT Condition: Transceiving 915MHz.
Comments: Both Outlets Terminated (Worst Case)
Temp: 72f
Hum: 42%
120V 60Hz

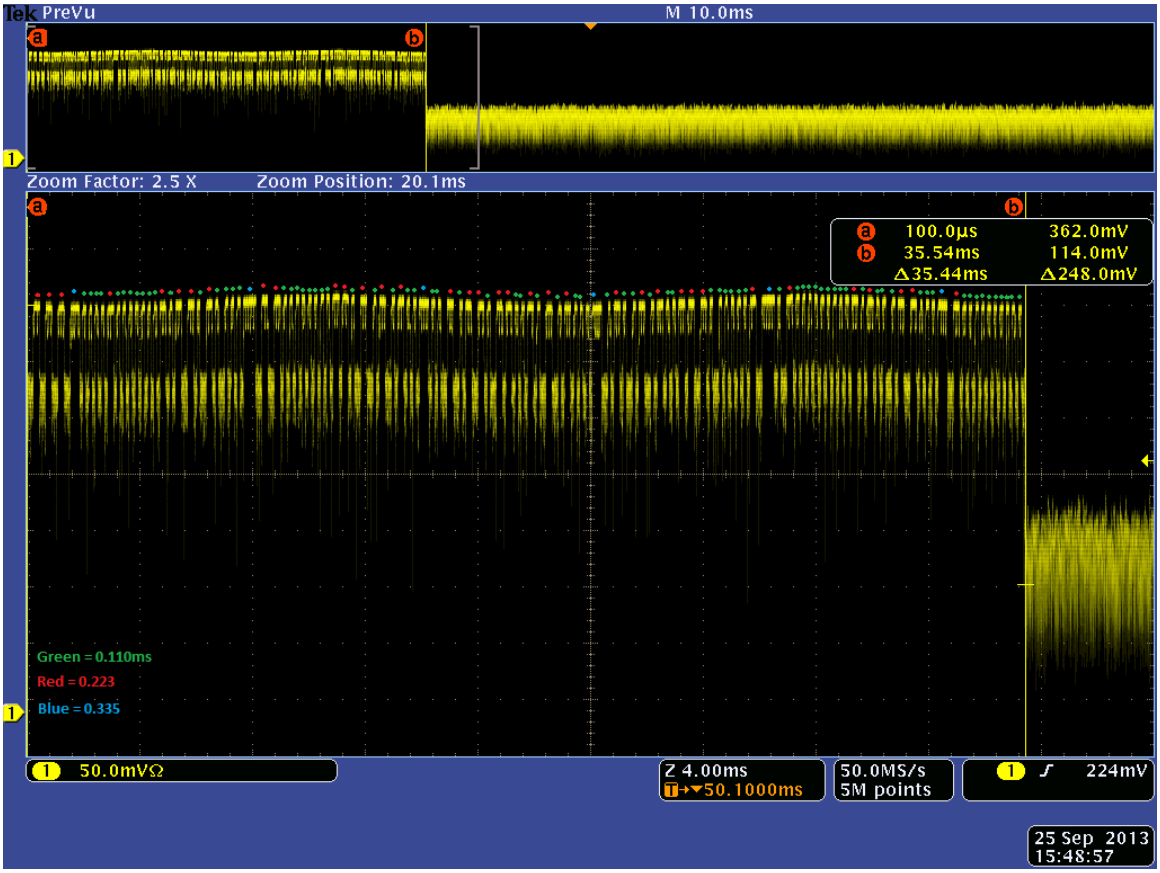
4/23/2013 8:49:51 AM
Sequence: Final Measurements

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)
0.25	-10.10	-15.03	41.79	46.86	50.09	51.89	61.89	0.18	0.02
0.26	-8.19	-12.86	43.17	48.51	52.24	51.37	61.37	0.16	0.02
0.32	-11.02	-15.97	38.64	43.68	48.12	49.66	59.66	0.07	0.02
0.85	-8.56	-11.84	37.44	44.16	48.22	46.00	56.00	0.03	0.06
0.86	-4.82	-9.12	41.18	46.88	50.34	46.00	56.00	0.03	0.06
0.89	-9.66	-13.82	36.34	42.18	47.35	46.00	56.00	0.03	0.06

DUTY CYCLE

Pulse Train

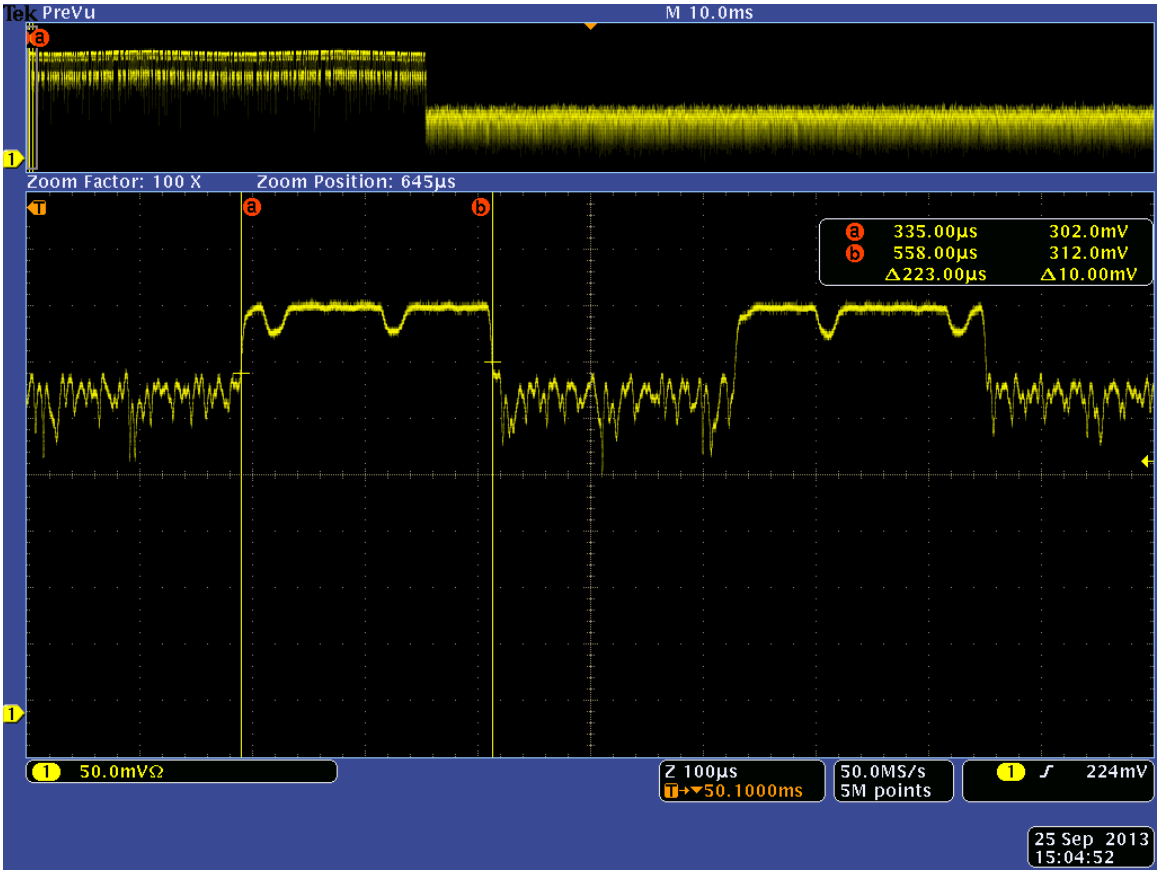


Time of Pulse with Blanking Interval = >100ms

Time of One Pulse Train = 35.44ms

DUTY CYCLE

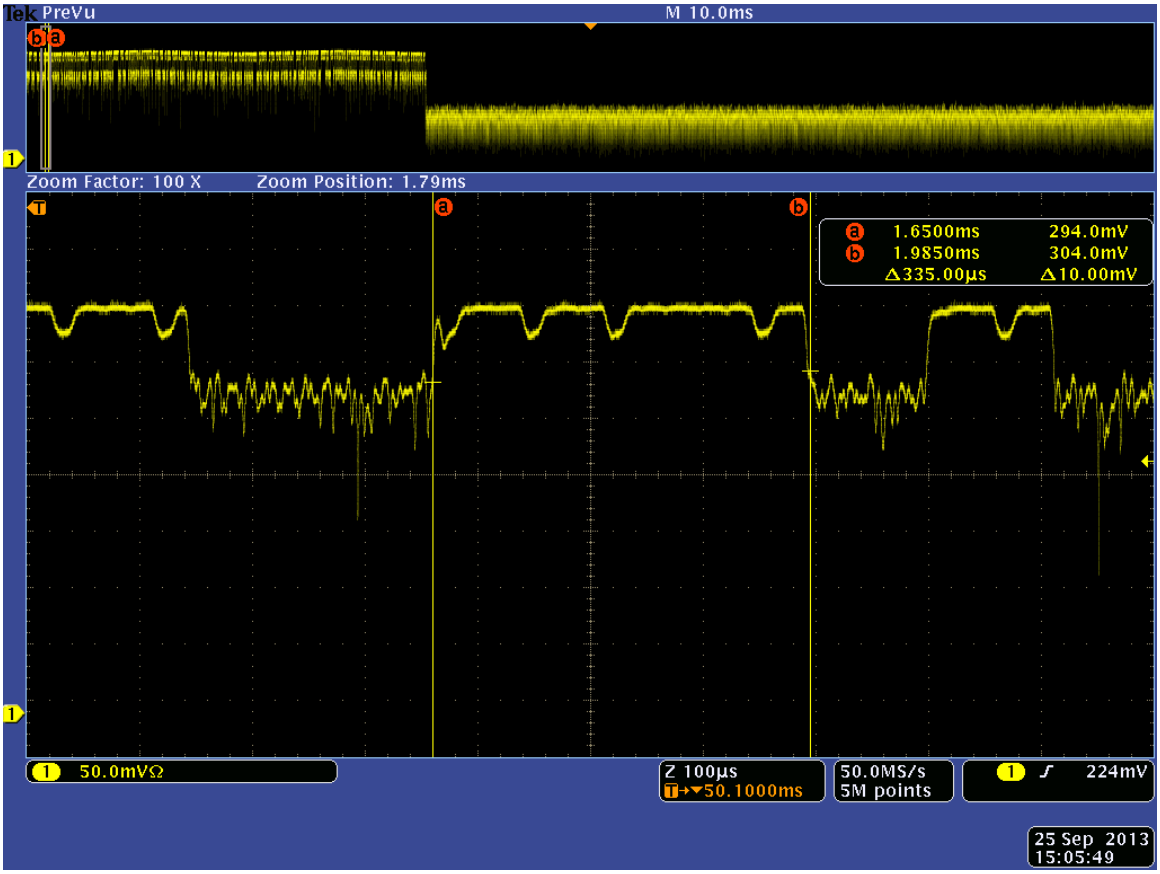
PULSE #1 WIDTH



Pulse #1 width = 0.223ms

DUTY CYCLE

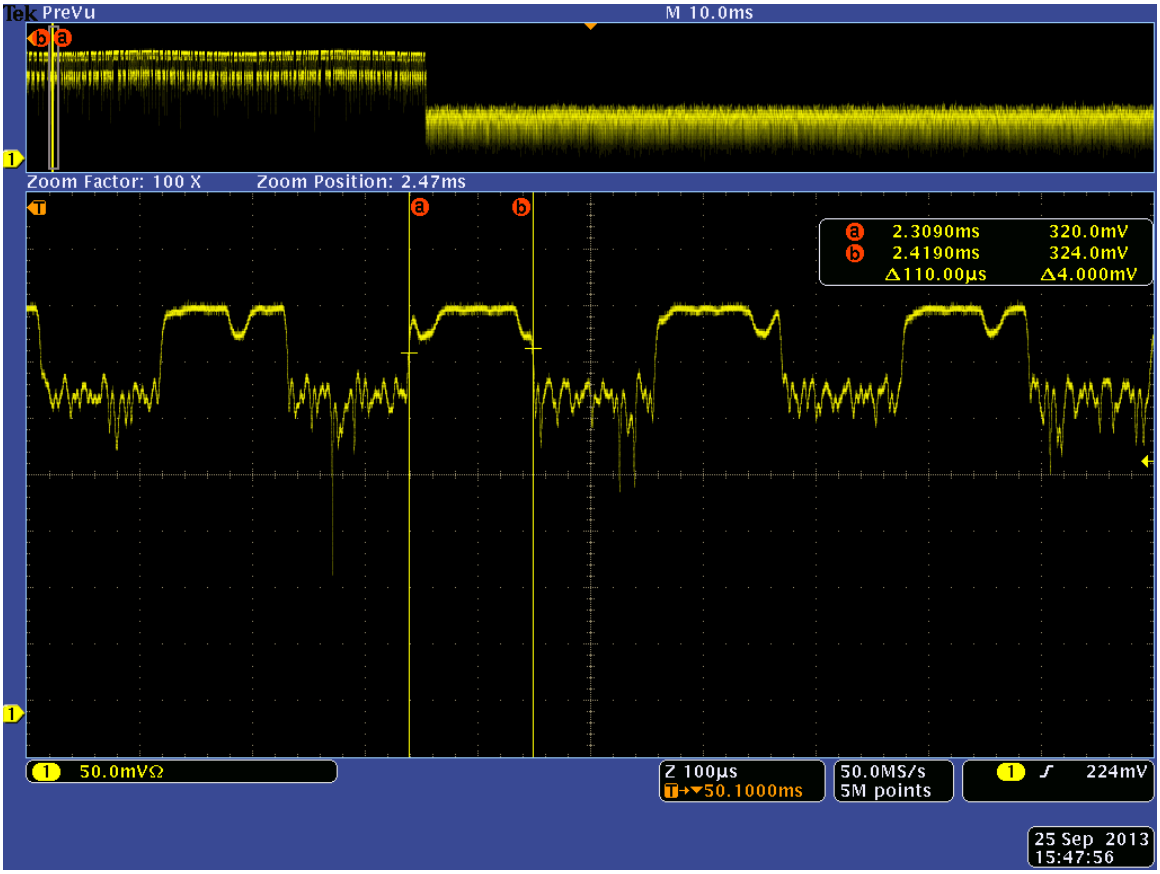
PULSE #2 WIDTH



Pulse #2 width = 0.335ms

DUTY CYCLE

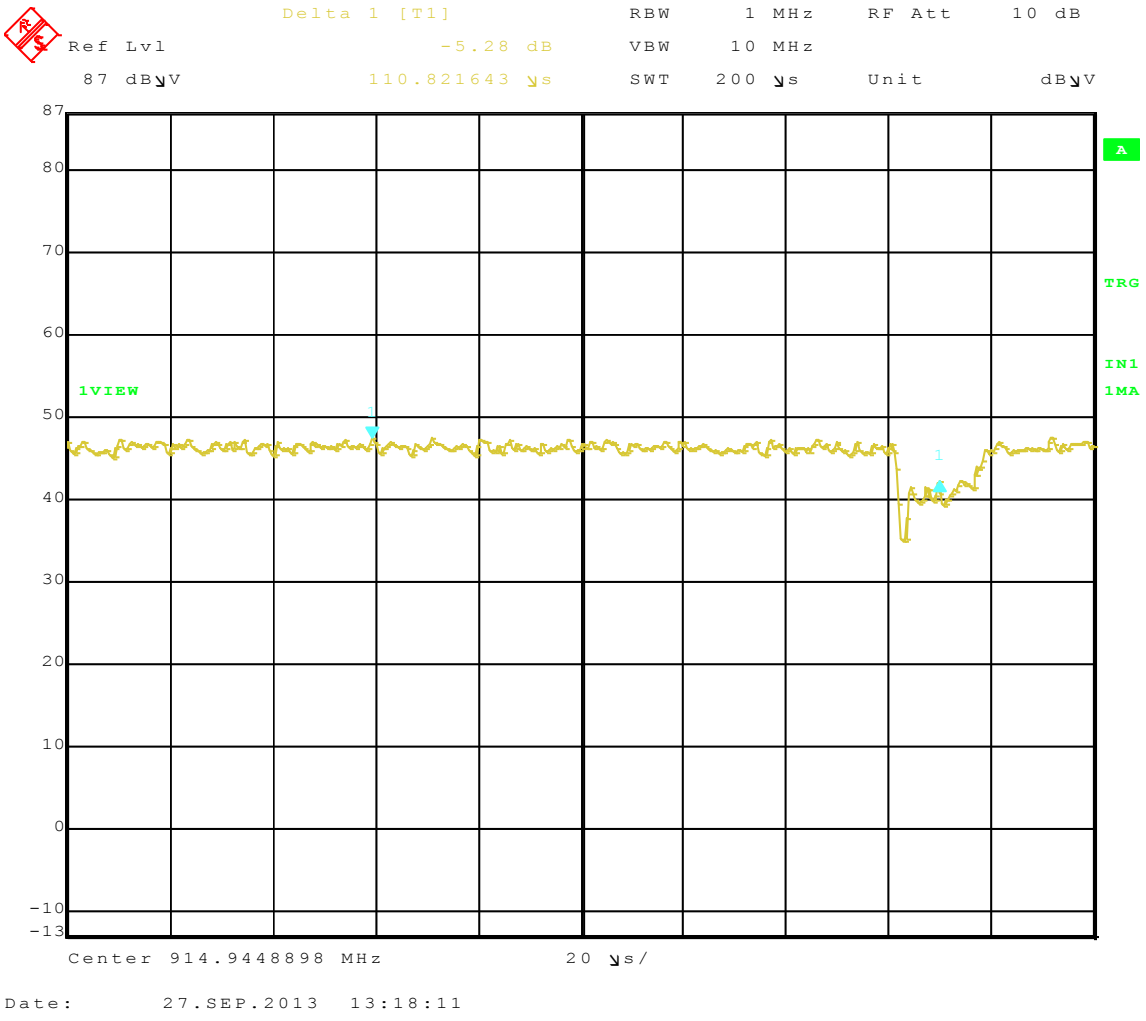
PULSE #3 WIDTH



Pulse width = 0.110ms

DUTY CYCLE

Amplitude Difference



Minimum Level for 100% Amplitude and Maximum Level for Reduced Amplitude Delta = -5.28dB

DUTY CYCLE

Calculation

Number of Pulse #1 in 100ms = 36
*Pulse #1 = 0.223ms * 36 = 8.03ms*
Number of Pulse #2 in 100ms = 6
*Pulse #2 = 0.335ms * 6 = 2.01ms*
Number of Pulse #3 in 100ms = 79
*Pulse #3= 0.110ms * 79 = 8.69ms*

Total time at 100% Amplitude = 18.73ms
Total Time at Reduced Amplitude = 16.71ms
Amplitude Difference between 100% and Reduced Amplitude = 5.28 dB
Effective ON Time of Reduced Amplitude = 9.09ms
Total Duty Cycle = 27.62ms / 100ms = 27.82%

Correction Factor - 20 * log 0.2763 = -11.11