Testing Cert #1007.01

Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com

Atlas Compliance & Engineering, Inc.

FCC
Test Report

FCC CFR 47 Part 15.207, 15.209 and 15.231 COMPLIANCE

USA Products Group, Inc.
1300 East Vine Street, Suite 1
Lodi, CA 95240 USA

Product:
Remote Control Light Positioner
Model:
SunWinch

FCC ID:	2AAMY960400
IC:	11257A-960400
Test Report Number:	1328UPG_231
Date of Report:	July 17, 2013

Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com

Change History

1328UPG_231

Rev.	Change Description	Reason/Application	Date	Appvd.
C1	Updated information	Response to TCB questions.	8/13/2013	BKS

Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com

Table of Contents

Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com

General Information

Test Report Number:	1328UPG_231
Date Product Tested:	July 8-16, 2013
Date of Report:	July 17, 2013
Applicant:	USA Products Group, Inc. 1300 East Vine Street, Suite 1 Lodi, CA 95240 USA
Contact Person	Mike Wilcox
Equipment Tested:	Remote Control Light Positioner
Trade Name:	USA Products Group
Model:	SunWinch
Purpose Of Test:	To demonstrate the compliance of the Remote Control Light Positioner, SunWinch, with the requirements of FCC CFR 47 Part 15 Rules and Regulations to the limits of Subpart C 15.207, 15.209 and 15.231 using the procedure stated in ANSI C63.4-2009 and including IC RSS-210 requirements.
Frequency Range Investigated:	4 MHz to 4.5 GHz
FCC ID:	2AAMY960400
IC:	11257A-960400
Test Site Locations:	Field Strength Measurement Facility: Atlas Compliance & Engineering, Inc. 726 Hidden Valley Road Royal Oaks, California 95076 Industry Canada test site file number IC 3655B-1, Conducted Interference Measurement Facility: Atlas Compliance & Engineering, Inc. 1792 Little Orchard Street San Jose, California 95125
Test Personnel:	Bruce Smith EMC Engineer

Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com

Test Equipment

The following list contains the test equipment that was utilized in making the measurements in this report.

Description _ Model	Serial	Manufacturer	Calibration Due
Active Loop Antenna _ 6502	9108-2669	EMCO	9/13/13
BiLog Antenna _ CBL6112B	2783	Chase Electronics Ltd.	6/7/14
Biconilog Antenna _ 3142	9610-1101	EMCO	10/15/14
Double Ridge Guide Horn Antenna _ 3115	9003-3340	EMCO	9/14/13
Pre amp 9kHz-2GHz _ CPA9231A	3323	Schaffner	12/21/14
EMI Test Receiver 9 kHz - 2500 MHz _ ESPC (bat)	DE14459 843820/0015	Rohde & Schwarz	12/20/14
EMI Receiver 9kHz – 6.5 GHz _ 8546A	3650A00196	HP	12/4/14
Pre amp 1Ghz-26.5GHz _ 8449B	3008A00910	HP	1/29/15
Spectrum Analyzer 100Hz-22GHz _ 8566B	2542A13058 (IF) 2637A03426 (RF)	HP	2/28/15
Quasi-Peak Adapter _ 85650A	2521A00716	HP	2/28/15
RG8 Cable 75 ft.	0005	Belden	3/1/14
RF Cable 45 ft. _ BM95012.540	106	Bracke Manufacturing	7/2/15
Thermal Chamber _ F-100/350-8	3411-4	Bemco	9/21/13
Thermal Chamber – 107	0700496	Test Equity	9/21/13

Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com

Test Configuration

Customer:	USA Products Group, Inc.
Test Date:	July 8-16, 2013
Specification:	FCC CRF 47 Part 15.231 Limits, ANSI C63.4-2009 Methods

EUT Description / Note:

The EUT, SunWinch, a Remote Control Light Positioner, was powered up with new batteries and in a continuous transmitting mode. The wired in switch was used to keep the transmitter in a continuous mode. The EUT is battery powered therefore no conducted emissions testing was performed. The EUT operating frequency is 418 MHz.

The SunWinch is a radio frequency (RF) remote control. The antenna is build-in type. The antenna gain is less than -8.9 dBi. The remote control is powered by two pieces of AAA-battery.

Modulation scheme:

- ASK, On-Off Keying (OOK)

EUT Support Program

The EUT was constantly transmitting at 418 MHz a key press code. The EUT was tested through three orthogonal axes to determine the attitude that maximizes the emissions with the measurement antenna in horizontal and then vertical polarization.

EUT Modifications for Compliance

There were no modifications performed on the EUT. The test results state the emission levels of the EUT in the condition as it was received on July 8-16, 2013.

Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com

EUT Support Devices

Table 1 - Support Equipment Used For Test

Model:	Description:	S/N	FCC ID#
NA			

I/O Ports and Cables

Table 2 - EUT Port Termination's

I/O Port	Cable Type	Length	Connector	Termination
NA				

Table 3 - Host Port Termination's

I/O Port	Cable Type	Length	Connector	Termination
NA				

Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com

Operational Description

The SunWinch system provides the capability to remotely raise and lower artificial lights to optimize plant growth. The system consists of a handheld transmitter, a remote receiver and motor driven winches connected to the lighting components. Multiple receivers can be used with a single transmitter with each receiver assigned a uniquely addressable channel number.

- Transmitter

A membrane keypad provides the user control interface to select the desired receiver channel and activate the motor up/down motion. When keypad buttons are pressed, a 4 MHz microcontroller reads the keypad input and outputs encoded serial data to a fixed frequency 418 MHz transmitter module connected to an internal board mounted antenna. The transmitter is powered by 2 AAA batteries connected in series. Power management features are incorporated to maximize battery life.

The transmitter enters low power sleep mode when first powered up. Any key press on a number 1 through 8 button on the keypad will wake up the encoder from sleep mode. When the number key is released power is applied to the RF transmitter module with a short delay to allow the module time to power up and stabilize. If the up or down key is not pressed within 5 seconds the transmitter returns to the low power sleep mode.

When the up or down key is pressed then 3 bytes of encoded data are sent to the RF transmitter module for transmission to the receiver. The encoded data includes a synchronization byte, the selected receiver ID number and a byte to indicate up or down direction. This data packet transmission is repeated until the up or down key is released with a 20 millisecond pause between each data packet. Data is transmitted to the receiver at a 2400 bps data rate.

- Receiver

The transmitter RF signal is received by a fixed frequency 418 MHz receiver module connected to an internal board mounted antenna. The receiver outputs decoded serial data to a 4 MHz microcontroller which validates the data and activates up or down motor control switches if the jumper selected receiver channel matches the channel selected by the user keypad buttons. Internally fused 12VDC power is supplied by an external supply which provides motor and logic power.

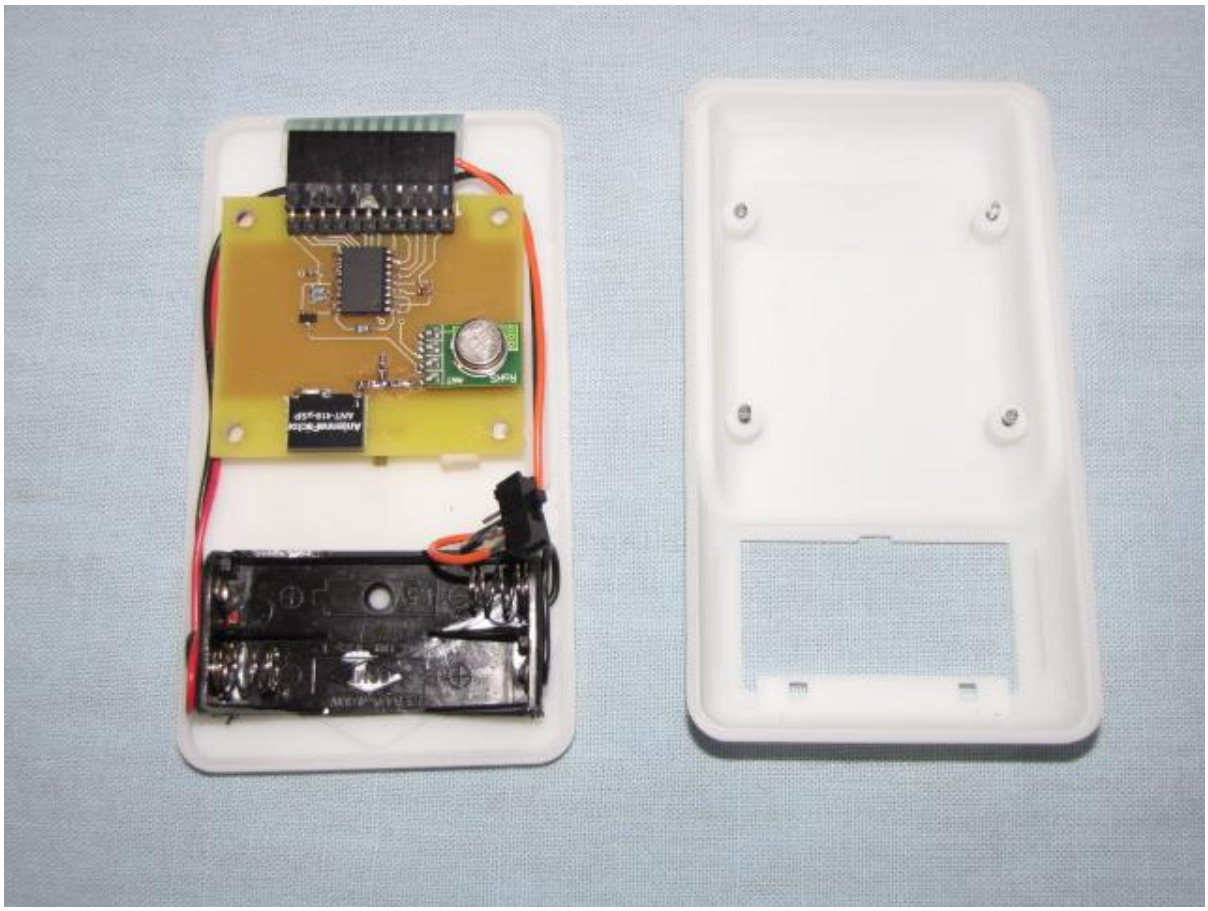
Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com

Equipment Under Test

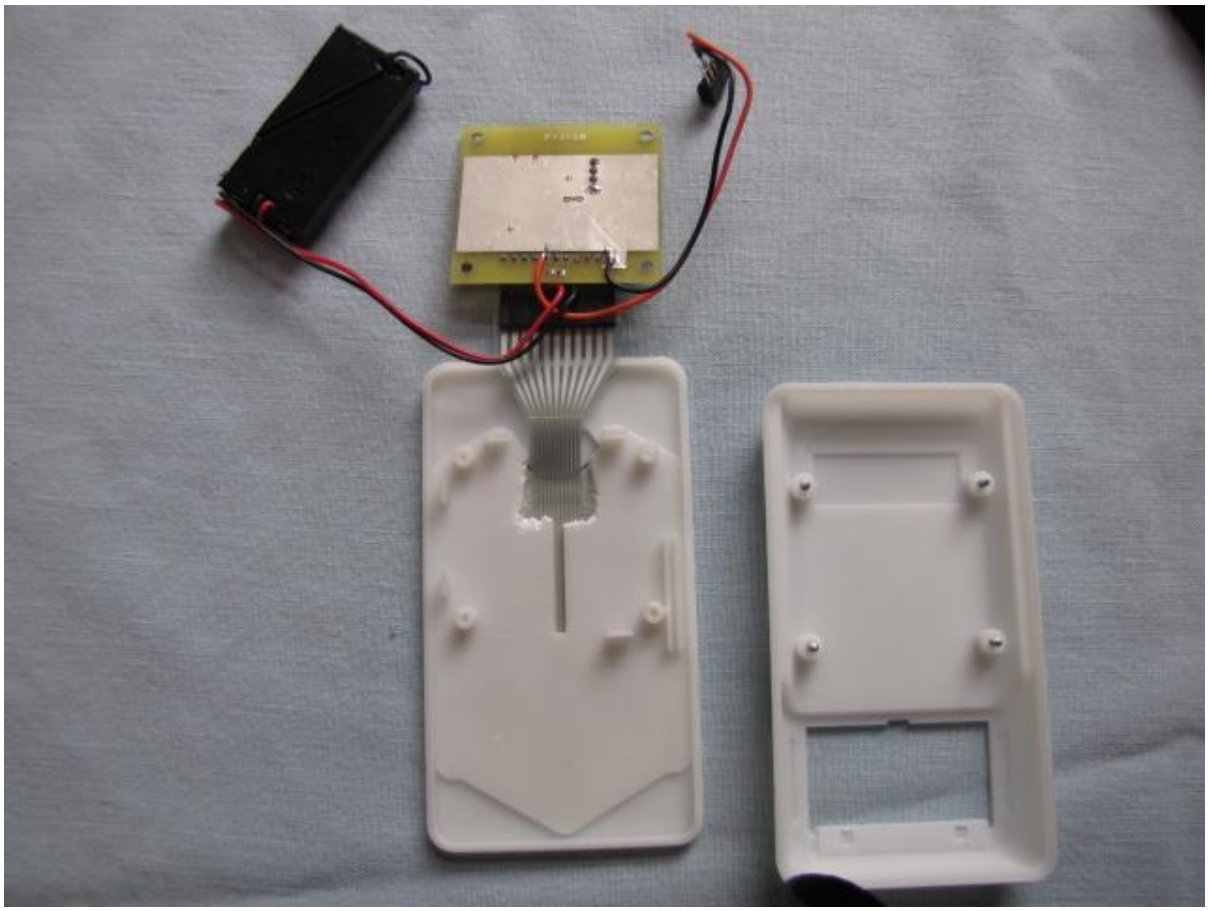
The photographs below show the condition of the EUT for test.

Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com

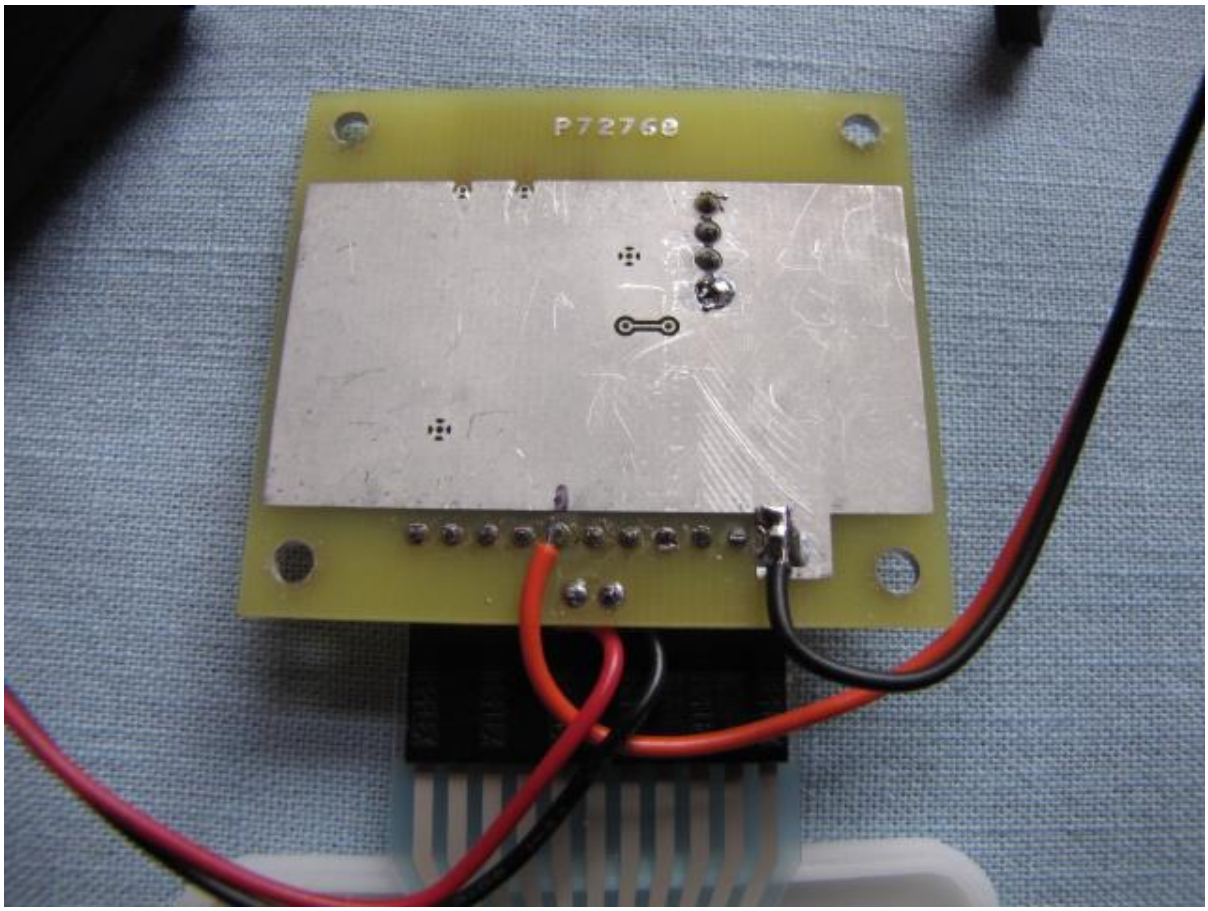
Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com



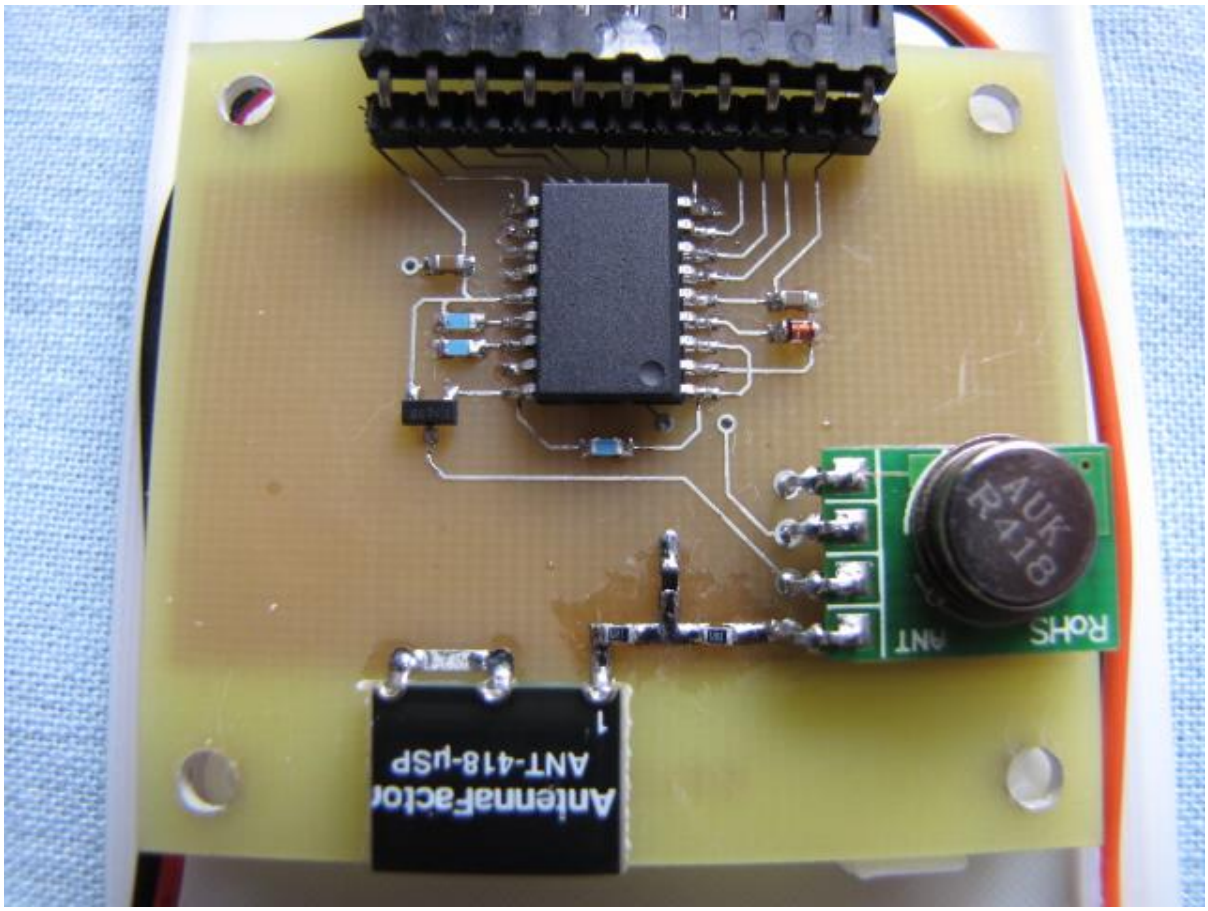
Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com



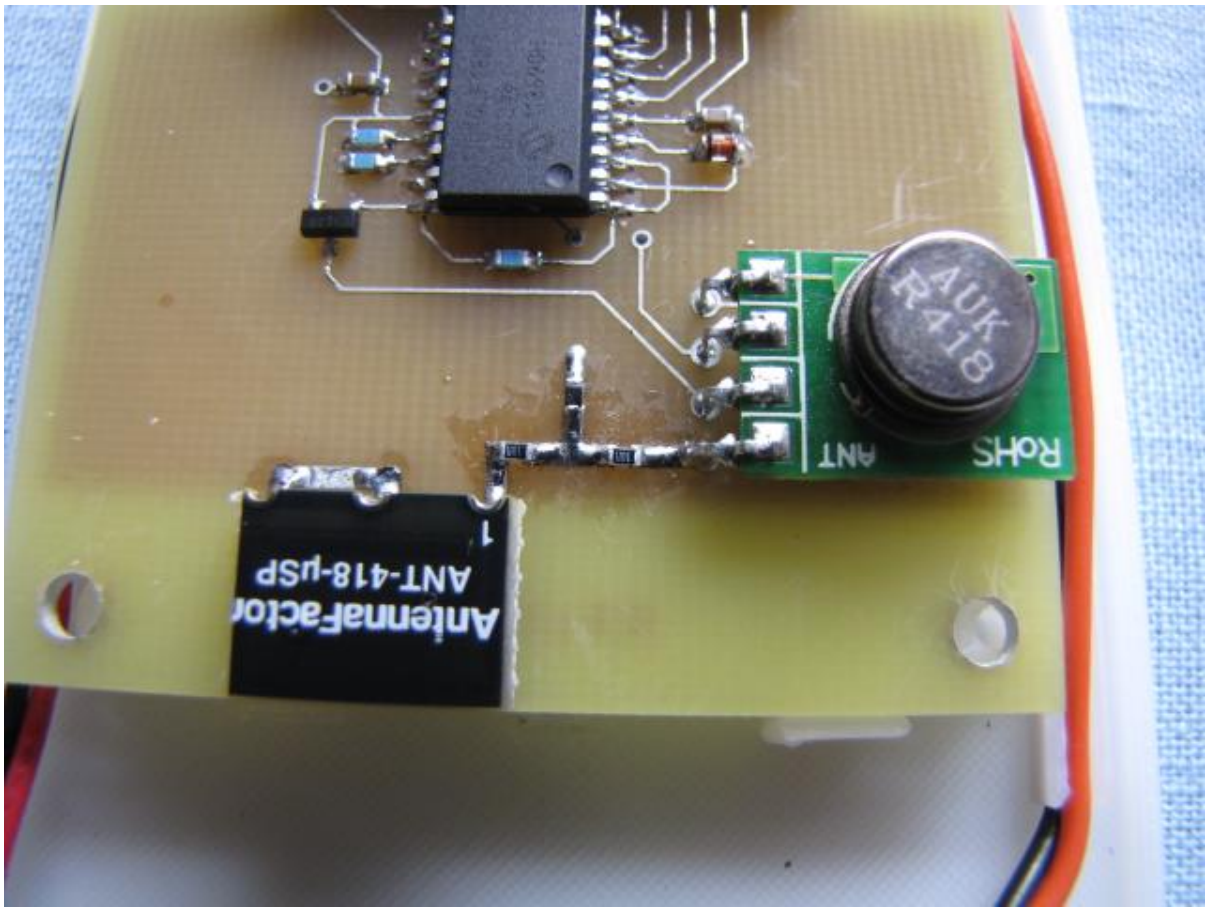
Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com



Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com



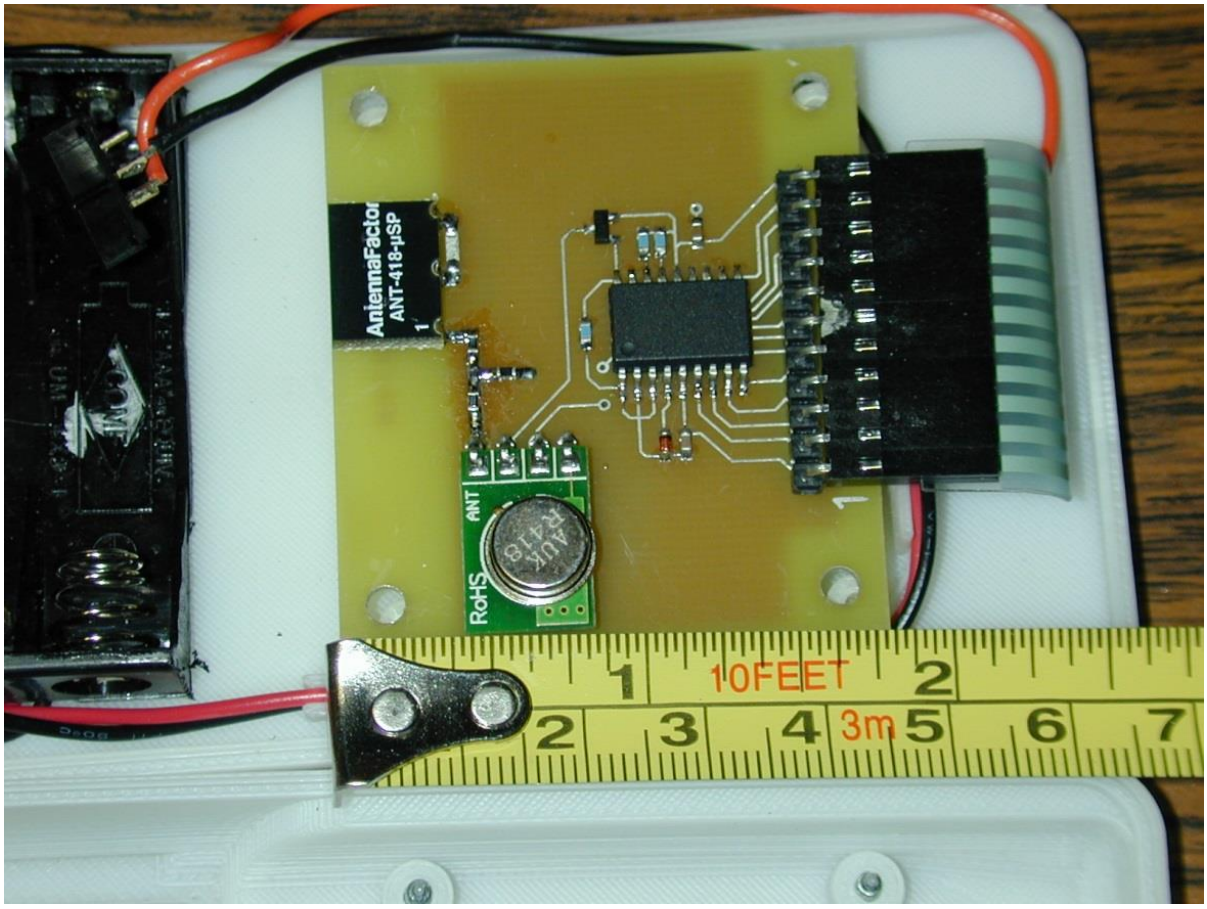
Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com



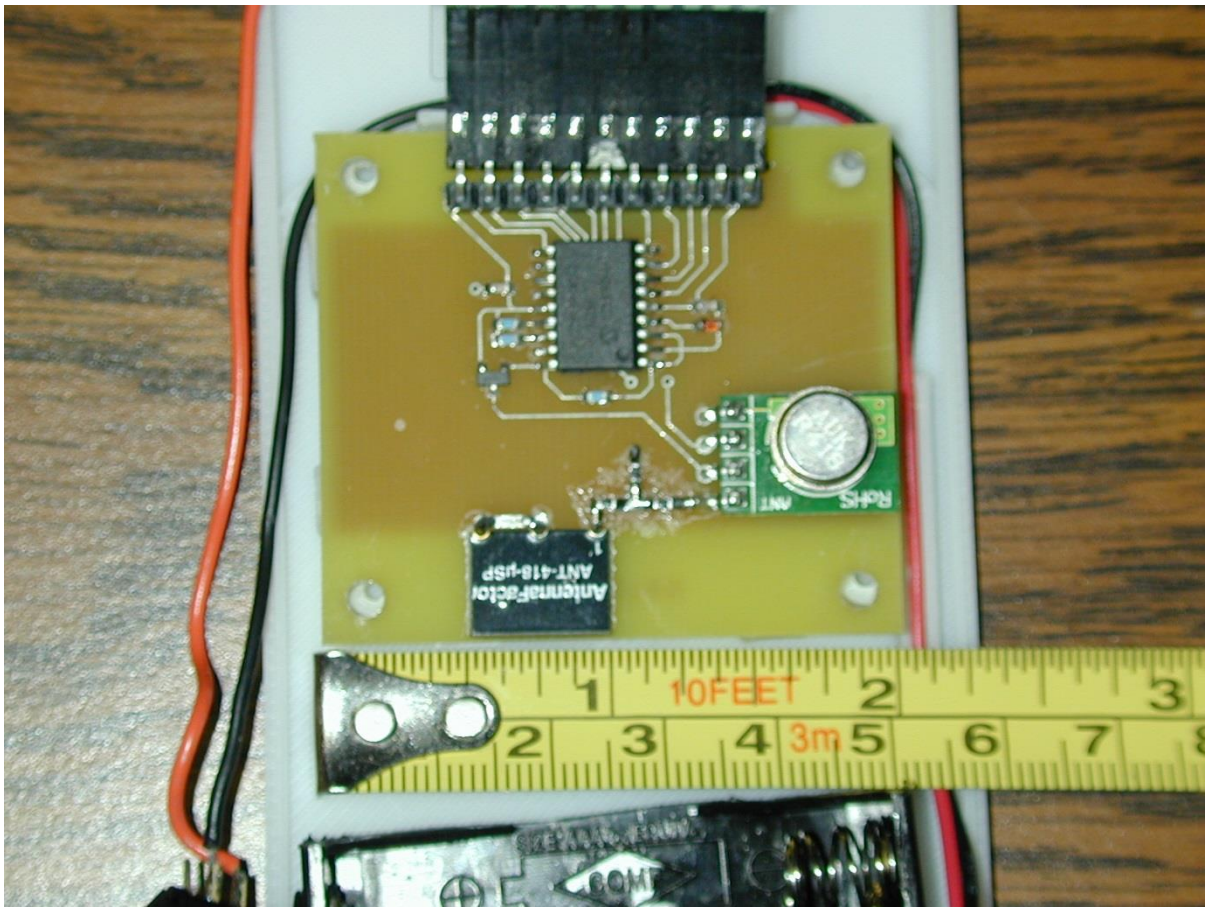
Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com

Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com

Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com



Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com

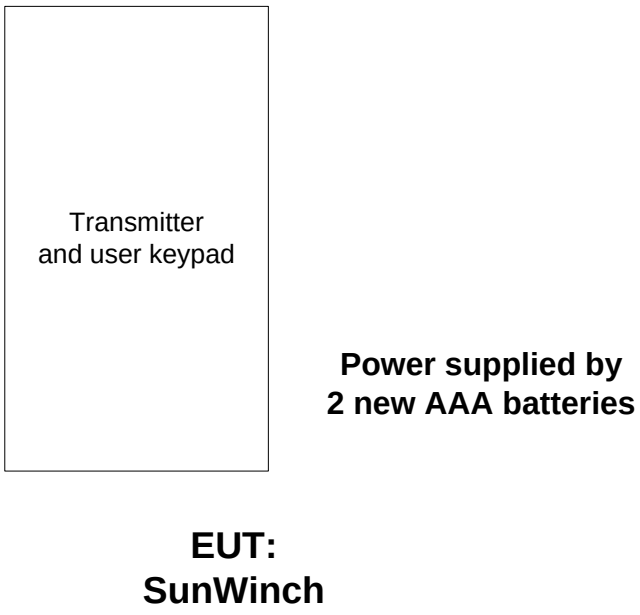


Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com

Equipment Block Diagram

Following is the block diagram of the test setup. Refer to TEST CONFIGURATION pages for port connections and information.

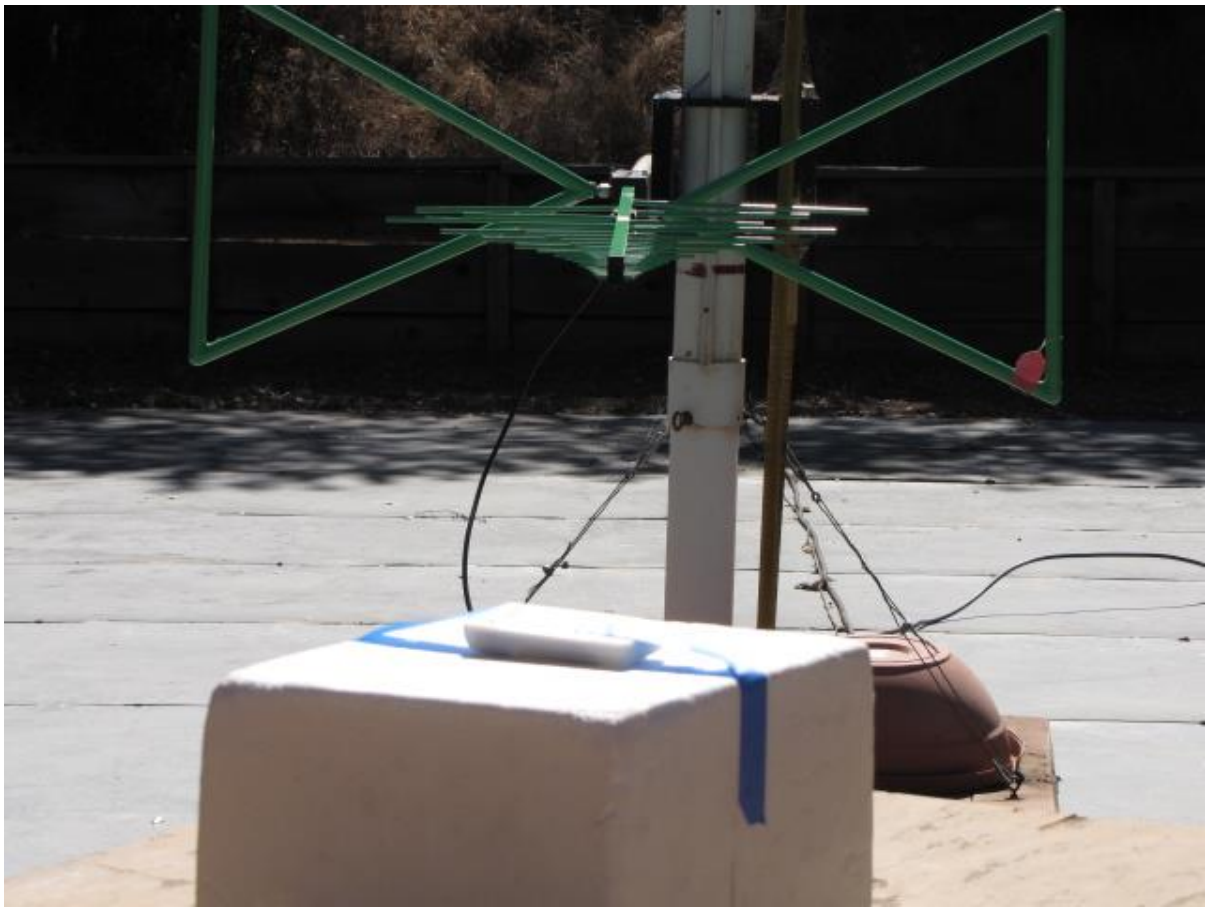
Figure 1 - Test Setup Diagram



Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com

Test Setup (Radiated Emissions)

The photographs below show the test setup for radiated emission testing.



Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com

Test Setup (Radiated Emissions)

The photographs below show the test setup for radiated emission testing.

Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com

Test Setup (Radiated Emissions)

The photographs below show the test setup for radiated emission testing.

Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com

Test Methods for Emissions

The test procedure stated in ANSI C63.4-2009 was used to collect the test data. The radiated emission data of the EUT was taken with the Rohde & Schwarz EMI Test Receiver or HP 8566B. Incorporating the application of correction factors programmed into the Test Receiver and verified for distance, antenna, cable loss, and amplifier gain, the data was reduced as shown in the Sample Calculations. These correction factors are available upon request. The corrected data was then compared to the FCC limits to determine compliance.

During radiated emission testing, the EUT was placed on a nonconductive rotating table 0.8 meter above the conductive grid. The nonconductive table dimensions were 1 meter deep by 1.5 meters wide at 0.8 meter high. The EUT is centered on the tabletop and the measurement antenna was placed 3 meters from the EUT as noted in the test data. The EUT, being a hand-held device, was tested in 3 orthogonal axes to determine which attitude produced the highest emission.

For radiated emissions testing, scans in the frequency range of 4 MHz to 4.5 GHz were made. Each frequency between 4 MHz and 30 MHz was measured at a bandwidth of 10 kHz, between 30 MHz and 1000 MHz was measured at a bandwidth of 100 kHz and between 1000 MHz and above was measured at a bandwidth of 1 MHz. Measurements were made employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz, and above 1GHz which employed a peak detector. All readings within 10 dB of the limits were recorded, and those emissions were then measured using the appropriate detector and bandwidth. Since the device uses OOK the averaging factor was calculate and added to the measured peak readings.

Measurements were made at a distance of 3 meters.

Conducted Emission Testing

The EUT is a battery powered device therefore no conducted emission testing was performed.

Section 15.207 Conducted limits.

(c) Measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Devices that include, or make provision for, the use of battery chargers which permit operating while charging, AC adaptors or battery eliminators or that connect to the AC power lines indirectly, obtaining their power through another device which is connected to the AC power lines, shall be tested to demonstrate compliance with the conducted limits.

Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com

Temperature and Humidity

The ambient temperature of the actual EUT was within the range of 10° to 40° C (50° to 104° F) unless the particular equipment requirements specify testing over a different temperature range. The humidity levels were within the range of 10% to 90% relative humidity unless the EUT operating requirements call for a different level.

Sample Calculations

An example of how the EMI Test Receiver reading is converted using correction factors is given for the emissions recorded in Table 7. These correction factors are programmed into the EMI Test Receiver and verified. For radiated emissions in dBµV/m, the EMI Test Receiver reading in dBµV is corrected by using the following formula: (example using reading at 835.9 MHz)

61.57	Meter Reading (dBµV/m)
30.32	- Pre amp Gain (dB)
3.35	+ Cable Loss (dB)
20.69	+ Antenna Factor (dB)
-8.52	+ Averaging Factor (dB)
46.77	= Corrected Reading (dBµV/m)

This reading is then compared to the applicable specification limits and the difference will determine compliance.

46.77	Corrected Reading (dBµV/m)
60.3	- Limit (dBµV/m)
-13.53	= Margin (dBµV/m)

Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com

FCC Part 15 Subpart C 15.207 and 15.209 Limits

Table 4 - Conducted Limits

Frequency MHz	Limit Quasi-Peak dBµV	Limit Average dBµV
0.15-0.50	66-56	56-46
0.50-5	56	46
5-30	60	50

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Both Quasi-Peak and Average limits for power line conducted testing must be met.
3. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

Table 5 - Radiated Emission Limits, General Requirements

Frequency MHz	Field Strength µV/m	Measurement Distance Meters
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30 – 88	100	3
88 – 216	150	3
216 – 960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closest point of any part of the device or system.
3. The level of any unwanted emissions from an intentional radiator operating under these general provisions shall not exceed the level of the fundamental emission.
4. The emission limits shown are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com

FCC Part 15 Subpart C 15.231 Limits

Table 6 - Radiated Emission Limits 15.231,
Periodic operation in the band 40.66 - 40.70 MHz and above 70 MHz.

Fundamental Frequency MHz	Field Strength of Fundamental microvolts/meter	Field Strength of Spurious Emissions microvolts/meter
40.66 - 40.70	2,250	225
70 – 130	1,250	125
130 – 174	1,250 to 3,750 **	125 to 375 **
174 – 260	3,750	375
260 – 470	3,750 to 12,500 **	375 to 1,250 **
Above 470	12,500	1,250

NOTE: ** linear interpolations [Where F is the frequency in MHz, the formulas for calculating the maximum permitted fundamental field strengths are as follows: for the band 130-174 MHz, uV/m at 3 meters = 56.81818(F) - 6136.3636; for the band 260-470 MHz, uV/m at 3 meters = 41.6667(F) - 7083.3333. The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.]

1. The above field strength limits are specified at a distance of 3 meters. The tighter limits apply at the band edges.
2. Intentional radiators operating under the provisions of this Section shall demonstrate compliance with the limits on the field strength of emissions, as shown in the above table, based on the average value of the measured emissions. As an alternative, compliance with the limits in the above table may be based on the use of measurement instrumentation with a CISPR quasi-peak detector. The specific method of measurement employed shall be specified in the application for equipment authorization. If average emission measurements are employed, the provisions in Section 15.35 for averaging pulsed emissions and for limiting peak emissions apply. Further, compliance with the provisions of Section 15.205 shall be demonstrated using the measurement instrumentation specified in that section.
3. The limits on the field strength of the spurious emissions in the above table are based on the fundamental frequency of the intentional radiator. Spurious emissions shall be attenuated to the average (or, alternatively, CISPR quasi-peak) limits shown in this table or to the general limits shown in Section 15.209, whichever limit permits a higher field strength.

Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com

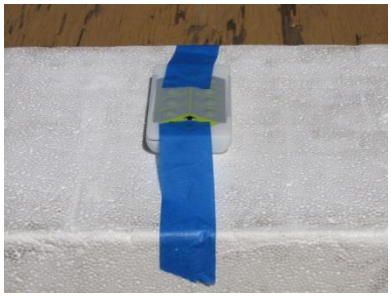
Report of Measurements Radiated Data

Radiated emissions measurements were performed from 4 MHz to 30 MHz at 3-meter distance. The loop antenna was placed at 1-meter height and was rotated about its vertical axis. The EUT was also rotated 360 degrees in front of the antenna, all three orthogonal planes were scanned. No emissions were observed from the EUT in this frequency range.

Measurements were performed in the frequency range of 30 MHz to 1 GHz at 3-meter distance. The Bilog antenna was searched from 1 to 4 meters in height in both horizontal and vertical orientation. The EUT was also rotated 360 degrees in front of the antenna, all three orthogonal planes were scanned. No emissions were observed within 15dB of the limit other than the fundamental transmitter frequencies and the second harmonic.

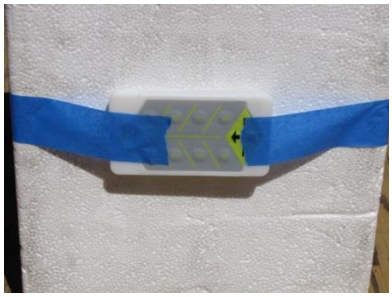
Measurements were performed in the frequency range of 1 GHz to 4.5 GHz at 3-meter distance. The Horn antenna was searched from 1 to 4 meters in height in both horizontal and vertical orientation. The EUT was also rotated 360 degrees in front of the antenna, all three orthogonal planes were scanned. The third to tenth harmonics of the transmitter were measured and the levels recorded.

Exploratory radiated emissions measurement of the transmitter frequency was made in all three orthogonal planes to determine the maximum transmit level of the EUT. The transmit frequency of 418 MHz was determined to be the highest level with the antenna in horizontal orientation and the EUT in the X-plane, as shown below. The highest level was recorded.



X-Plane

Y-Plane



Z-Plane

Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com

Frequency Stability

IC RSS Gen states frequency stability is a measure of frequency drift due to temperature and supply voltage variations with reference to the frequency measured at an appropriate reference temperature and the rated supply voltage.

(a) at temperatures of -30°C, +20°C and +50°C, and at the manufacturer's rated supply voltage; and

(b) at a temperature of +20°C and at ±15 percent of the manufacturer's rated supply voltage.

FCC 15.31(e) specifies – For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

Measurements were performed with the stated temperature changes and a drift of the fundamental was observed to be 27 kHz.

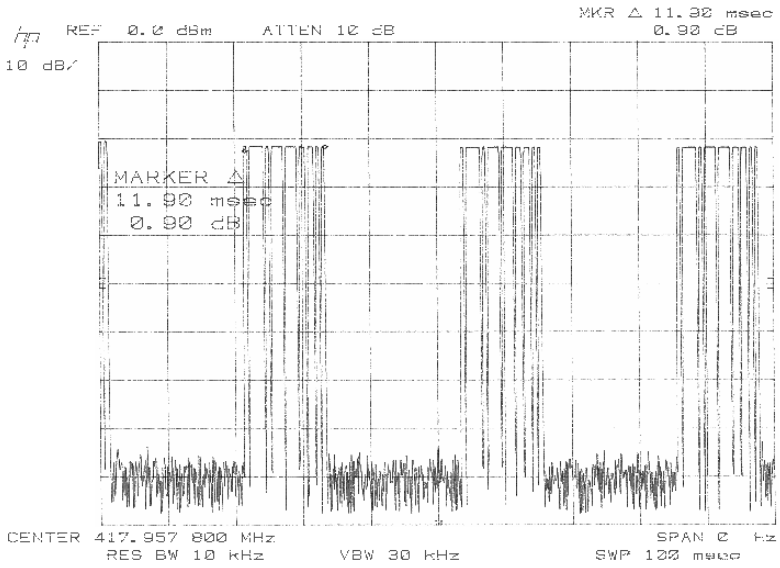
Limit Calculation

For the band 260-470 MHz, uV/m at 3 meters = 41.6667(F) - 7083.3333
(41.6667 x 418) – 7083.3333 = 10333.3473 uV/m at 3 meters
= **80.28 dbUv/m at 3 meters**

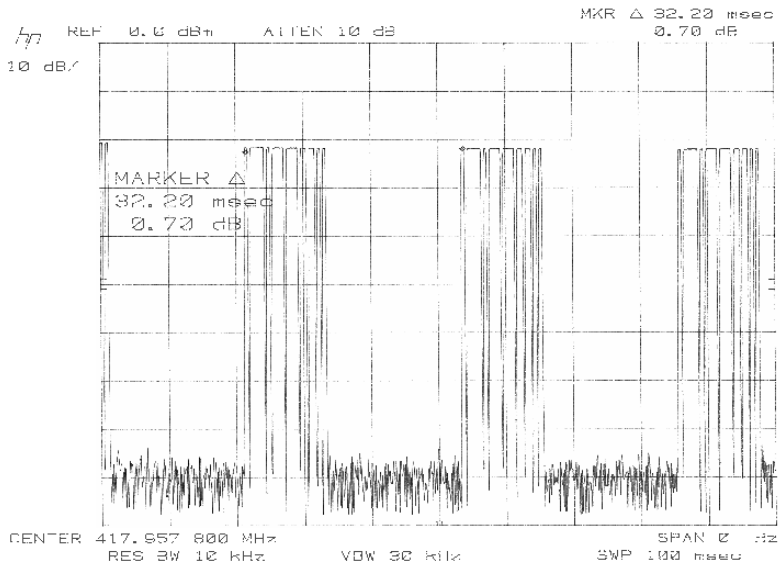
The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.
. 80.28 – 20 = **60.28dBuV/m at 3 meters**

Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com

Pulsed Operation Averaging Factor



On Time = 12 mS



Pulse Period = 32 mS

Averaging Factor:

= 20LOG (12/32)/

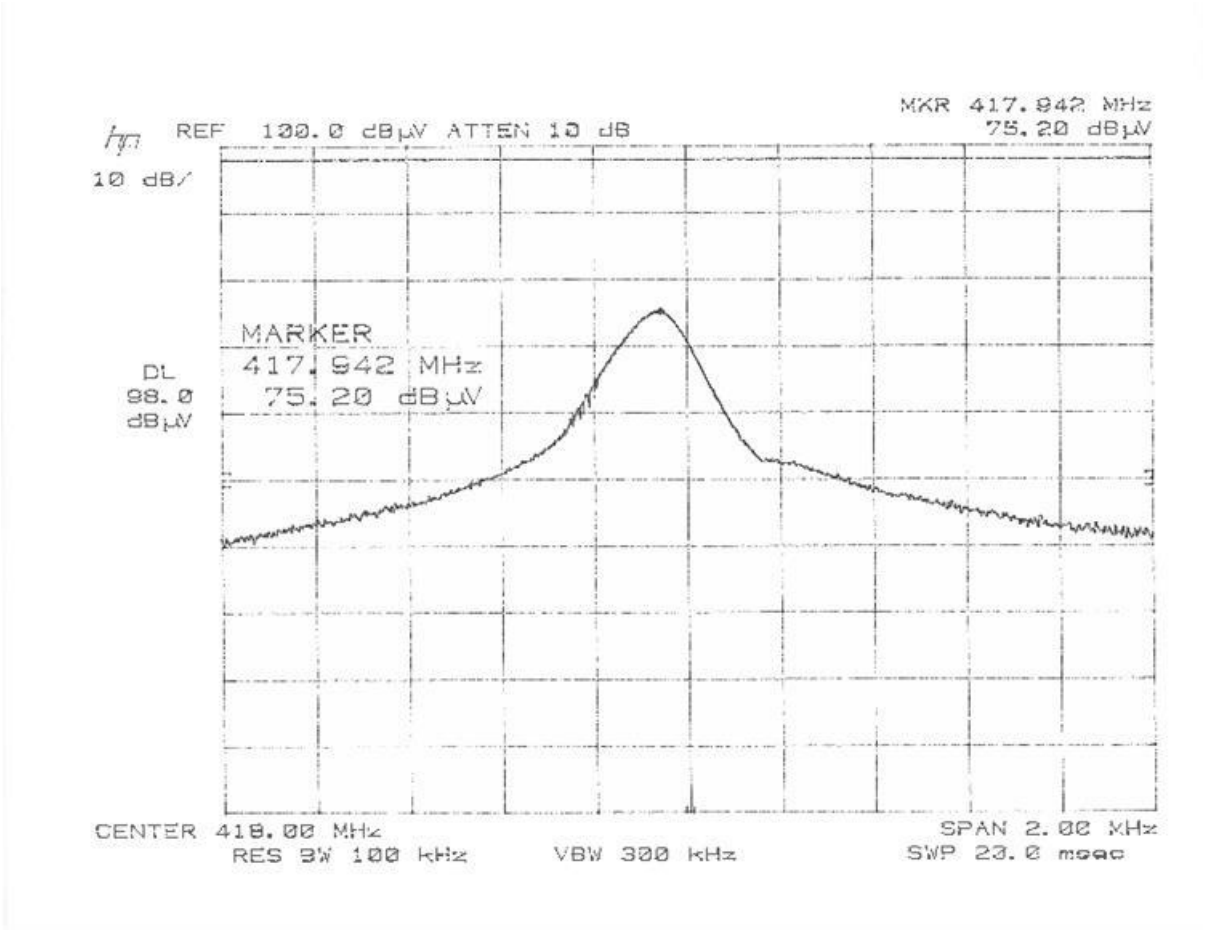
= -8.52 dB

Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com

Plot of fundamental – Horizontal

This plot is of the fundamental emission at 418MHz and is not a corrected level. The detector used is peak and the sweep trace was in peak hold. The corrected level includes the antenna factor, cable factor, and pre-amp factor which is -9.17dB at 417.95 MHz. The corrected level of the emissions is.75.20 – 9.17 = 66.03 dBuV/m Peak.

The display line is the limit including the averaging factor and the correction factor. 80.3 + 8.52 + 9.17 = 97.99.

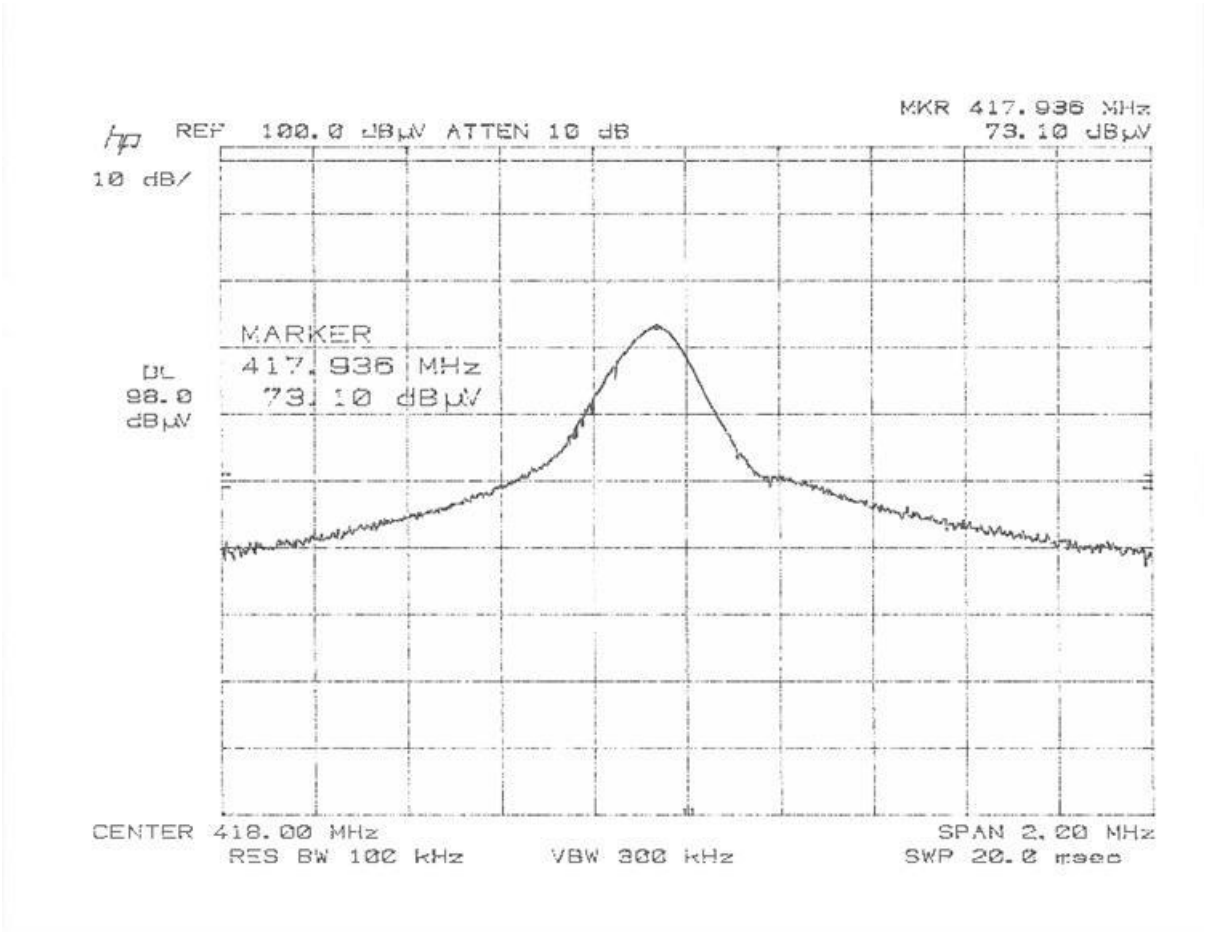


Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com

Plot of fundamental – Vertical

This plot is of the fundamental emission at 418MHz and is not a corrected level. The detector used is peak and the sweep trace was in peak hold. The corrected level includes the antenna factor, cable factor, and pre-amp factor which is -9.17dB at 417.95 MHz. The corrected level of the emissions is.73.10 – 9.17 = 63.93 dBuV/m Peak.

The display line is the limit including the averaging factor and the correction factor. 80.3 + 8.52 + 9.17 = 97.99.



Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com

Report of Measurements Radiated Data

The following table reports the results of the radiated measurements for the SunWinch, a Remote Control Light Positioner.

Table 7 - Radiated Emission Level

15.231 Limit dBµV/m	Fundamental Frequency MHz	Level dBµV/m	Detector	Averaging Factor dB	Test Distance	Antenna	Polarity	Worst Case Orientation
80.3 @ 3 meters Tested to determine worst case orientation	417.95	66.03	PK	0	3	BiLog	H – X	Worst Case H
		56.04	PK	0	3	BiLog	V – X	–
	417.95	57.40	PK	0	3	BiLog	H – Y	–
		63.93	PK	0	3	BiLog	V – Y	Worst Case V
	417.95	61.17	PK	0	3	BiLog	H – Z	–
		58.12	PK	0	3	BiLog	V - Z	–

15.231 Limit dBµV/m	Frequency MHz	Level dBµV	Detector	Averaging Factor dB	Test Distance	Antenna	Polarity	Margin dB
80.3 @ 3 meters Averaging Factor -8.52dB	417.95	66.03	PK	-8.52	3	BiLog	H	-22.79
60.3 @ 3 meters	835.90	55.29	PK	-8.52	3	BiLog	H	-13.53
60.3 @ 3 meters	1253.85	52.65	PK	-8.52	3	Horn	H	-16.17
54.0 @ 3 meters	1671.80	30.33	PK	-8.52	3	Horn	H	-32.19
60.3 @ 3 meters	2089.75	22.99	PK	-8.52	3	Horn	H	-45.83
60.3 @ 3 meters	2507.70	15.06	PK	-8.52	3	Horn	H	-53.76
60.3 @ 3 meters	2925.65	25.97	PK	-8.52	3	Horn	H	-42.85
60.3 @ 3 meters	3343.60	17.62	PK	-8.52	3	Horn	H	-51.20
54.0 @ 3 meters	3761.55	19.62	PK	-8.52	3	Horn	H	-42.90
54.0 @ 3 meters	4179.50	20.48	PK	-8.52	3	Horn	H	-42.04
80.3 @ 3 meters Averaging Factor -8.52dB	417.95	62.83	PK	-8.52	3	BiLog	V	-24.89
60.3 @ 3 meters	835.90	47.32	PK	-8.52	3	BiLog	V	-21.50
60.3 @ 3 meters	1253.85	48.22	PK	-8.52	3	Horn	V	-20.60
54.0 @ 3 meters	1671.80	30.29	PK	-8.52	3	Horn	V	-32.23
60.3 @ 3 meters	2089.75	25.03	PK	-8.52	3	Horn	V	-43.79
60.3 @ 3 meters	2507.70	20.79	PK	-8.52	3	Horn	V	-48.03
60.3 @ 3 meters	2925.65	22.81	PK	-8.52	3	Horn	V	-46.01
60.3 @ 3 meters	3343.60	19.02	PK	-8.52	3	Horn	V	-49.80
54.0 @ 3 meters	3761.55	20.40	PK	-8.52	3	Horn	V	-42.12
54.0 @ 3 meters	4179.50	20.14	PK	-8.52	3	Horn	V	-42.38

Test Method: ANSI C63.4-2009
Spec Limit: FCC 15.231

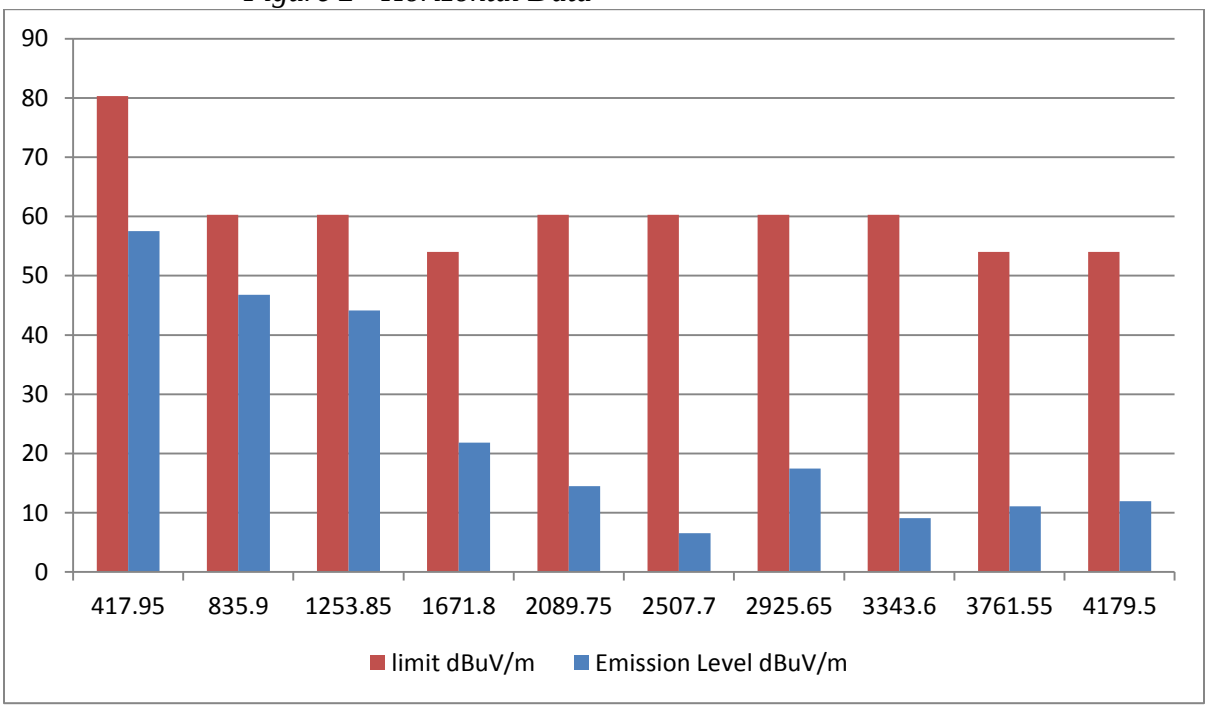
Note: QP = Quasi-Peak
PK = Peak
AV = Average
H = Horizontal
V = Vertical

COMMENTS: System continuously transmitting a key press. Ambient temperature 66°F and relative humidity of 45%. Test distance of 3 meters. No other emissions were observed between 4MHz and 4.5GHz.

Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com

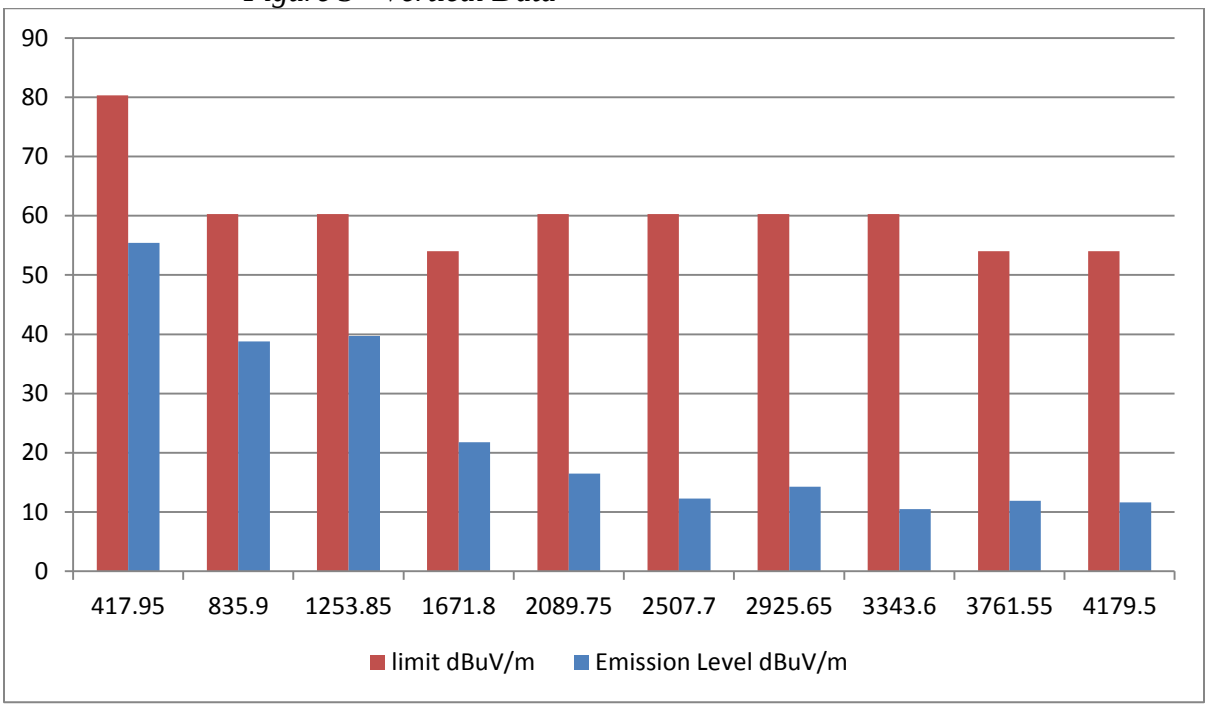
Horizontal data

Figure 2 - Horizontal Data



Vertical data

Figure 3 - Vertical Data

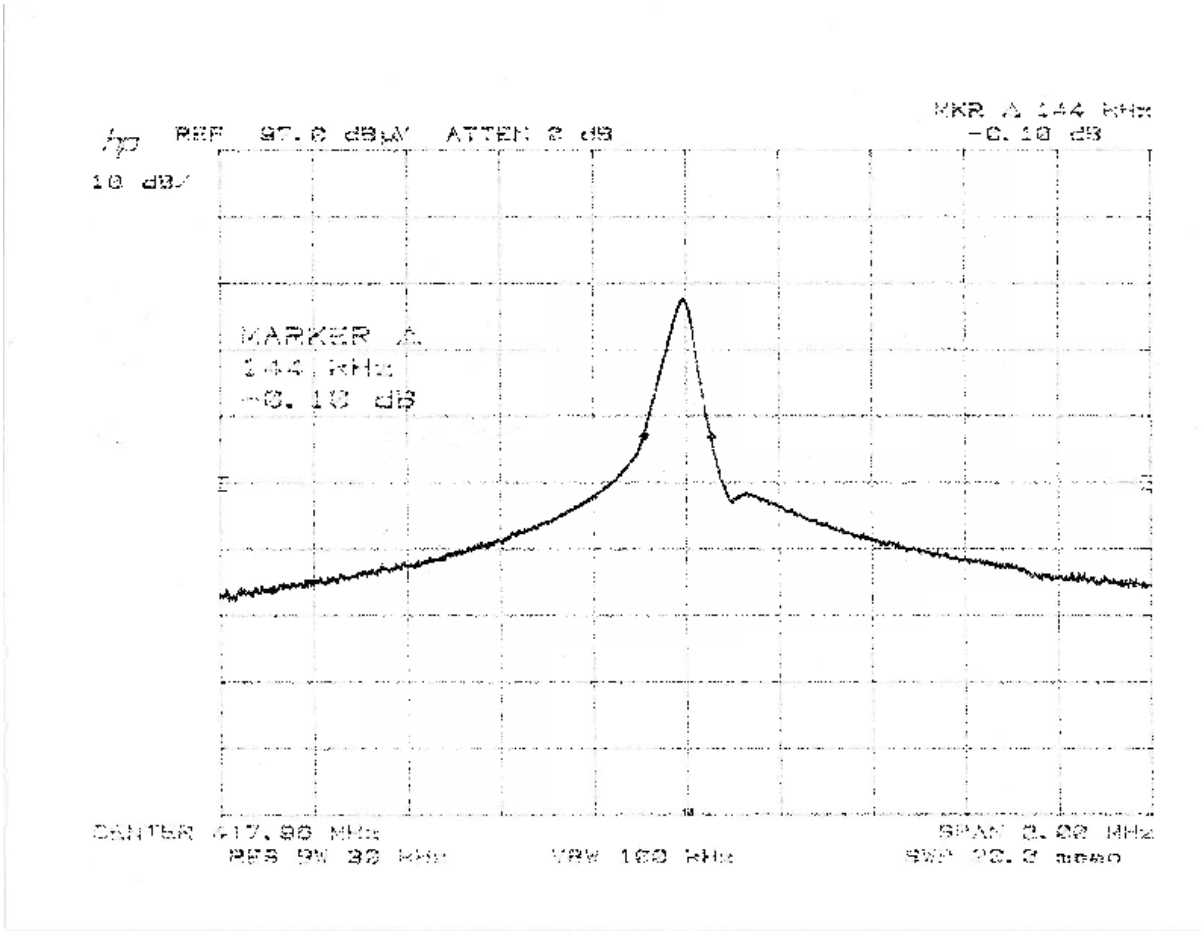


Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com

Report of Measurements Bandwidth

The following graph reports the results of the bandwidth measurements for the SunWinch, a Remote Control Light Positioner.

BW Limit = 0.25% of center frequency 418 MHz
BW Limit = 1.05MHz, **20 dB BW Measured = 144 kHz**

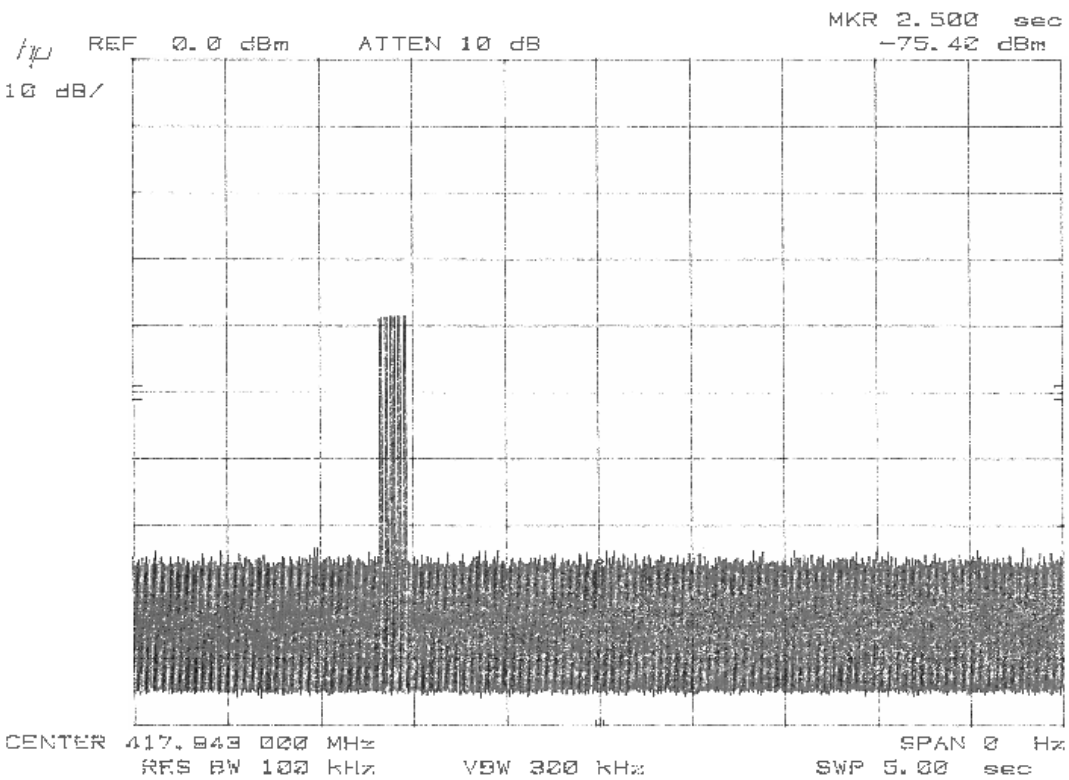


Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com

Report of 15.231 (a)(1)

The following graph reports the results of the 5 second measurement for the SunWinch, a Remote Control Light Positioner.

This plot shows one button press and release during a 5 second sweep time. The device turns off the transmit pulse within the 5 second limit.



Atlas Compliance & Engineering, Inc.
1792 Little Orchard Street
San Jose, CA 95125
Phone 408.971.9743
Fax 408-971-9783
Web www.atlasce.com

COMPLIANCE VERIFICATION REPORT

TEST CERTIFICATE

APPLICANT:	USA Products Group, Inc. 1300 East Vine Street, Suite 1 Lodi, CA 95240 USA
Trade Name:	USA Products Group
Model:	SunWinch

I HEREBY CERTIFY THAT:

The measurements shown in this report were made in accordance with the procedures indicated and that the energy emitted by this equipment, as received, was found to be within the FCC CFR 47 Part 15 Subpart C section 15.231 requirements. This also satisfies the Industry Canada RSS-210 requirements. Additionally, it should be noted that the results in this report apply only to the items tested, as identified herein.

I FURTHER CERTIFY THAT:

On the basis of the measurements taken at the test site, the equipment tested is capable of operation in compliance with the requirements set forth in FCC CFR 47 Part 15.207, 15.209 and 15.231 Rules and Regulations and Industry Canada RSS-210.

On this Date: July 17, 2013

Bruce Smith
Atlas Compliance & Engineering, Inc.

Printed Name

Signature
USA Products Group, Inc. Representative