Electronic Warfare Associates, Inc.

TEST REPORT FOR

Remote Control Door Lock
Model: SRCED-3

Tested To The Following Standards:

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

Report No.: 94578-11

Date of issue: August 2, 2013

ACCREDITED
Testing Certificates:
803.01, 803.02, 803.05, 803.06

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

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

Testing the Future
CKC LABORATORIES, INC.

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ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

Electronic Warfare Associates, Inc
13873 Park Center Rd.
Herdon, VA 20171

Representative: Jason Pizzillo
Customer Reference Number: P210000039

REPORT PREPARED BY:

Dianne Dudley
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Project Number: 94578

DATE OF EQUIPMENT RECEIPT: July 22, 2013
DATE(S) OF TESTING: July 22, 2013

Report Authorization

The test data contained in this report documents the observed testing parameters pertaining to and are relevant for only the sample equipment tested in the agreed upon operational mode(s) and configuration(s) as identified herein. Compliance assessment remains the client's responsibility. This report may not be used to claim product endorsement by A2LA or any government agencies. This test report has been authorized for release under quality control from CKC Laboratories, Inc.

Steve Behm
Director of Quality Assurance & Engineering Services
CKC Laboratories, Inc.

Test Facility Information

Our laboratories are configured to effectively test a wide variety of product types. CKC utilizes first class test equipment, anechoic chambers, data acquisition and information services to create accurate, repeatable and affordable test results.

TEST LOCATION(S):
CKC Laboratories, Inc.
1120 Fulton Place
Fremont, CA 94539

Software Versions

CKC Laboratories Proprietary Software	Version
EMITest Emissions	5.00.14
Immunity	5.00.07

Site Registration & Accreditation Information

Location	CB #	TAIWAN	CANADA	FCC	JAPAN
Fremont	US0082	SL2-IN-E-1148R	3082B-1	958979	A-0149

SUMMARY OF RESULTS

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

Description	Test Procedure/Method	Results
Voltage Variation	FCC Part 15 Subpart C Section 15.31(e) / ANSI C63.4 (2003)	Pass
RF Power Output	FCC Part 15 Subpart C Section 15.249(a) / ANSI C63.4 (2003)	Pass
-20dBc Occupied Bandwidth	FCC Part 15 Subpart C Section 15.249 / 2.1049	Pass
Field Strength of Harmonics and Spurious Emissions / Bandedge	FCC Part 15 Subpart C Section 15.249(a)(d) / ANSI C63.4(2003)	Pass
99 % Bandwidth	RSS 210 Issue 8	Pass

Conditions During Testing

This list is a summary of the conditions noted for or modifications made to the equipment during testing.

Summary of Conditions
None

EQUIPMENT UNDER TEST (EUT)

EQUIPMENT UNDER TEST

Remote Control Door Lock
Manuf: Electronic Warfare Associates, Inc.
Model: SRCED-3
Serial: ENG1

PERIPHERAL DEVICES

The EUT was not tested with peripheral devices.

FCC PART 15 SUBPART C

This report contains EMC emissions test results under United States Federal Communications Commission (FCC) 47 CFR 15C requirements for Unlicensed Radio Frequency Devices, Subpart C - Intentional Radiators.

15.31(e) Voltage Variations

Test Conditions / Setup

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **Electronic Warfare Associates, Inc.**
Specification: **15.31e**
Work Order #: **94578** Date: 7/22/2013
Test Type: **Radiated Scan** Time: 09:42:04
Equipment: **Remote Control Door Lock** Sequence#: 1
Manufacturer: Electronic Warfare Associates, Inc. Tested By: Hieu Song Nguyenpham
Model: SRCED-3
S/N: ENG1

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02157	Horn Antenna-ANSI C63.5	3115	1/23/2013	1/23/2015
T2	AN03302	Cable	32026-29094K-29094K-72TC	3/21/2012	3/21/2014
T3	ANP01210	Cable	FSJ1P-50A-4A	2/19/2013	2/19/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

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

Function	Manufacturer	Model #	S/N
Remote Control Door Lock*	Electronic Warfare Associates, Inc.	SRCED-3	ENG1

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

Software Used: C language and burned into memory as binary machine language.
Temperature: 22°C, Humidity: 39 %, Atmospheric Pressure: 101.0 kPa
High Clock: 26MHz
Transmitting operating frequency= 2481MHz RF Output= -2dBm at antenna connector
Gain of the antenna= -1 dBi (outdoor side) and -2.5 dBi (indoor side)
The EUT is a fixed device and operated at 6VDC. It is placed on the 80cm Styrofoam table and at the center of a turn table. The EUT is set in continue transmit. 15.31e. Using new batteries

15.249(a) RF Power Output

Test Conditions / Setup

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **Electronic Warfare Associates, Inc.**
Specification: **15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**
Work Order #: **94578** Date: 7/22/2013
Test Type: **Radiated Scan** Time: 09:42:04
Equipment: **Remote Control Door Lock** Sequence#: 1
Manufacturer: Electronic Warfare Associates, Inc. Tested By: Hieu Song Nguyenpham
Model: SRCED-3
S/N: ENG1

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02157	Horn Antenna-ANSI C63.5	3115	1/23/2013	1/23/2015
T2	AN03302	Cable	32026-29094K-29094K-72TC	3/21/2012	3/21/2014
T3	ANP01210	Cable	FSJ1P-50A-4A	2/19/2013	2/19/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

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

Function	Manufacturer	Model #	S/N
Remote Control Door Lock*	Electronic Warfare Associates, Inc.	SRCED-3	ENG1

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

Fundamental of the EUT
Software Used: C language and burned into memory as binary machine language.
Temperature: 22°C
Humidity: 39 %
Atmospheric Pressure: 101.0 kPa
High Clock: 26MHz
Transmitting operating frequency= 2481MHz
RF Output= -2dBm at antenna connector
Gain of the antenna= -1 dBi (outdoor side) and -2.5 dBi (indoor side)

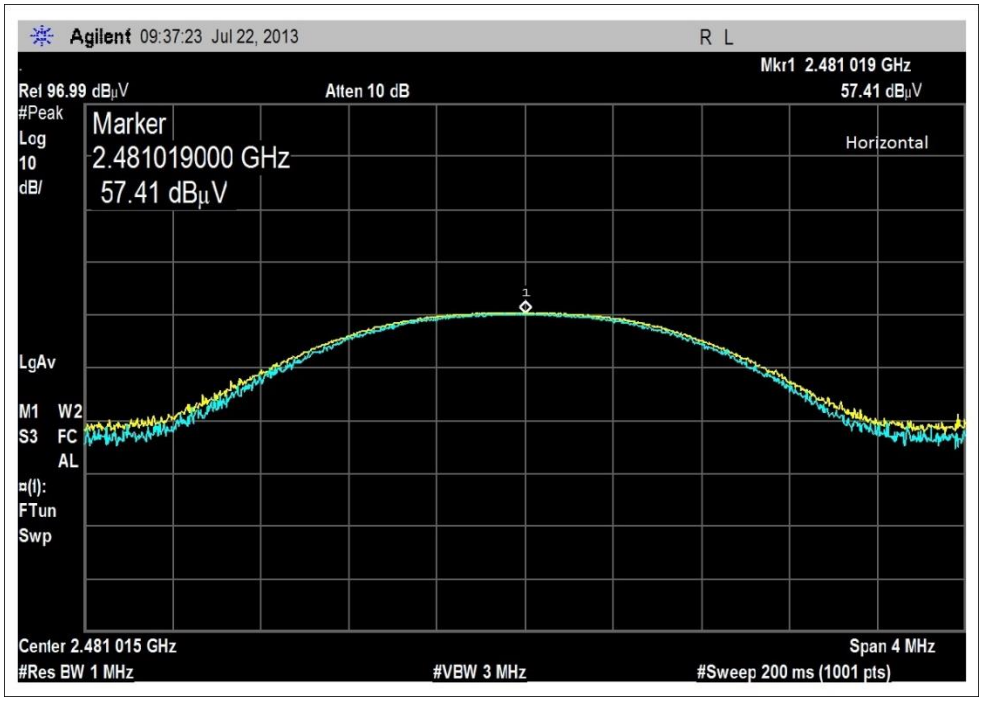
The EUT is a fixed device and operated at 6VDC. It is placed on the 80cm Styrofoam table and at the center of a turn table. The EUT is set in continue transmit.

Test Data

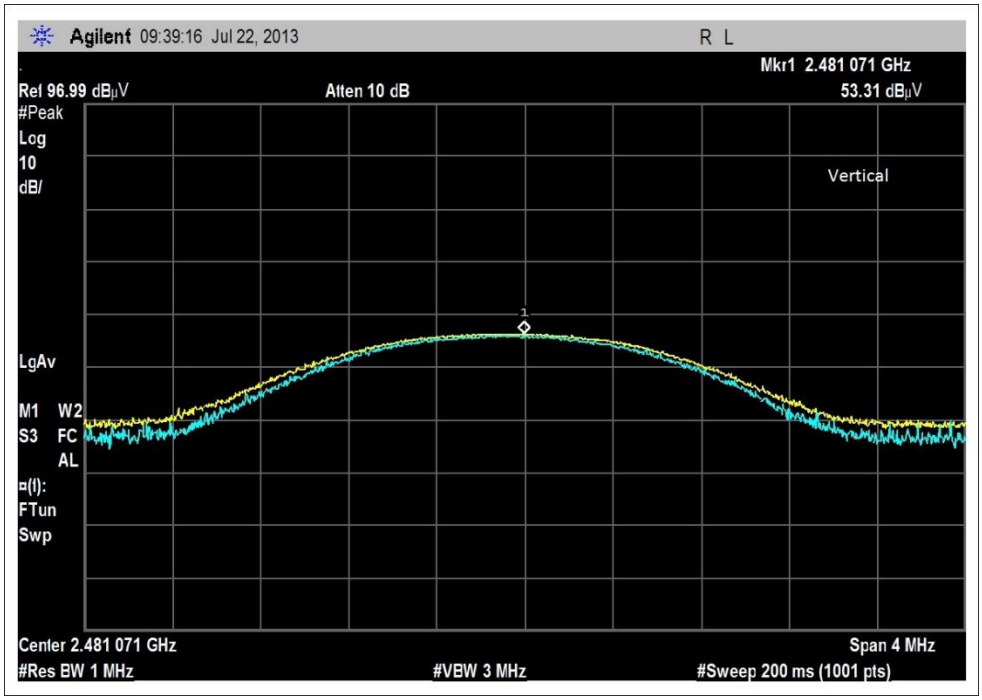
Ext Attn: 0 dB

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

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	2481.019M	57.4	+28.9	+1.1	+2.7		+0.0	90.1	94.0	-3.9	Vert
2	2481.019M	53.3	+28.9	+1.1	+2.7		+0.0	86.0	94.0	-8.0	Horiz

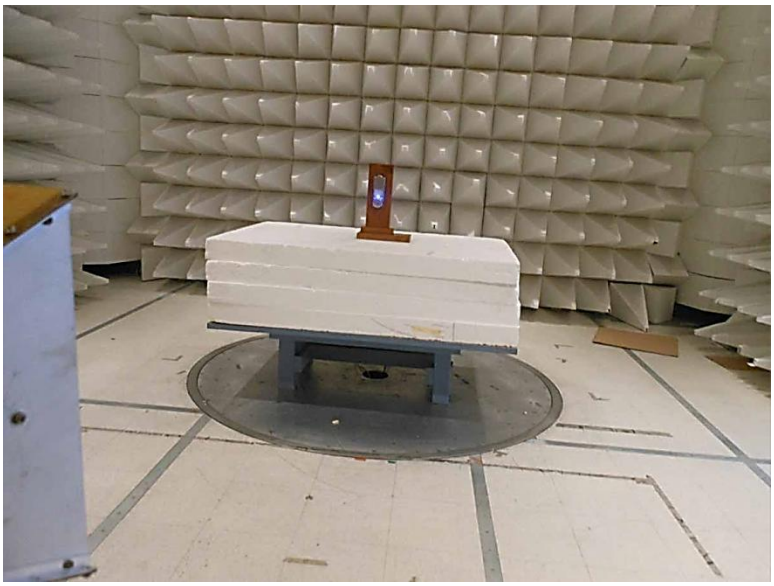


Horizontal


Agilent 09:39:16 Jul 22, 2013
R L
Mkr1 2.481 071 GHz
Ref 96.99 dBµV
Atten 10 dB
53.31 dBµV
#Peak
Log
10
dB/
Vertical
LgAv
M1 W2
S3 FC
AL
¤(i):
FTun
Swp
Center 2.481 071 GHz
Span 4 MHz
#Res BW 1 MHz
#VBW 3 MHz
#Sweep 200 ms (1001 pts)

Vertical

Test Setup Photos



-20dBc Occupied Bandwidth

Test Conditions / Setup

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer:	**Electronic Warfare Associates, Inc.**		
Specification:	**OBW**		
Work Order #:	**94578**	Date:	7/22/2013
Test Type:	**Radiated Scan**	Time:	09:42:04
Equipment:	**Remote Control Door Lock**	Sequence#:	1
Manufacturer:	Electronic Warfare Associates, Inc.	Tested By:	Hieu Song Nguyenpham
Model:	SRCED-3		
S/N:	ENG1		

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02157	Horn Antenna-ANSI C63.5	3115	1/23/2013	1/23/2015
T2	AN03302	Cable	32026-29094K-29094K-72TC	3/21/2012	3/21/2014
T3	ANP01210	Cable	FSJ1P-50A-4A	2/19/2013	2/19/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

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

Function	Manufacturer	Model #	S/N
Remote Control Door Lock*	Electronic Warfare Associates, Inc.	SRCED-3	ENG1

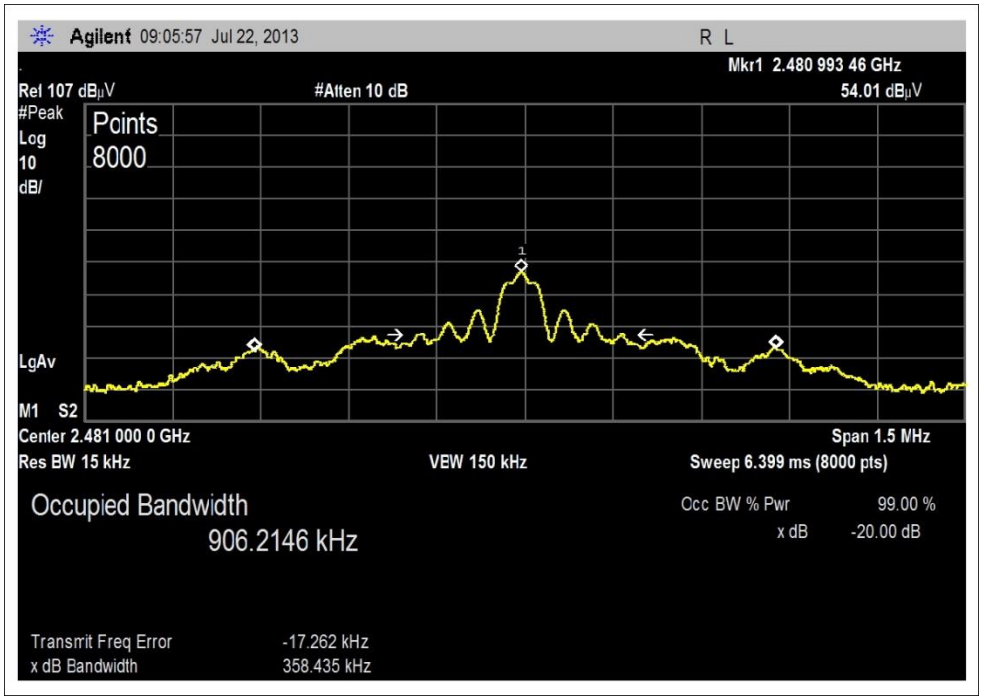
Support Devices:

Function	Manufacturer	Model #	S/N

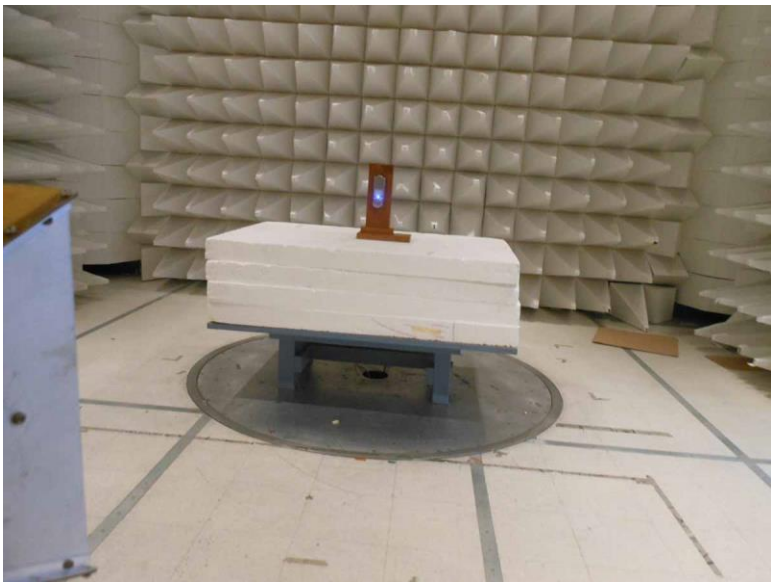
Test Conditions / Notes:

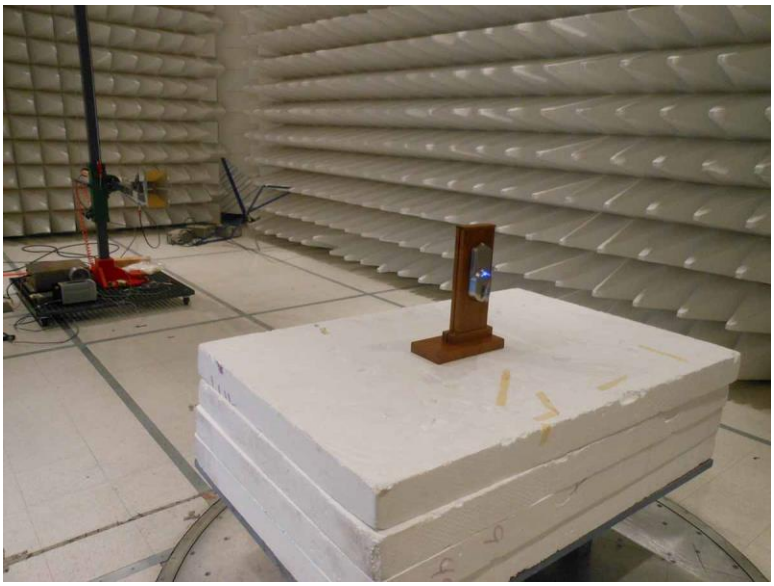
Software Used: C language and burned into memory as binary machine language.
Temperature: 22°C
Humidity: 39 %
Atmospheric Pressure: 101.0 kPa
High Clock: 26MHz
Transmitting operating frequency= 2481MHz
RF Output= -2dBm at antenna connector
Gain of the antenna= -1 dBi (outdoor side) and -2.5 dBi (indoor side)
The EUT is a fixed device and operated at 6VDC. It is placed on the 80cm Styrofoam table and at the center of a turn table. The EUT is set in continue transmit.

Test Data


Agilent 09:05:57 Jul 22, 2013
R L
Mkr1 2.480 993 46 GHz
Ref 107 dBµV
#Atten 10 dB
54.01 dBµV
#Peak
Log
10
dB/
Points
8000
LgAv
M1 S2
Center 2.481 000 0 GHz
Span 1.5 MHz
Res BW 15 kHz
VBW 150 kHz
Sweep 6.399 ms (8000 pts)
Occupied Bandwidth
906.2146 kHz
Occ BW % Pwr 99.00 %
x dB -20.00 dB
Transmit Freq Error -17.262 kHz
x dB Bandwidth 358.435 kHz

Test Setup Photos





15.249(a)(d) Field Strength of Harmonics and Spurious Emissions / Bandedge

Test Data Sheets

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **Electronic Warfare Associates, Inc.**
Specification: **15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**
Work Order #: **94578** Date: 7/22/2013
Test Type: **Radiated Scan** Time: 14:36:06
Equipment: **Remote Control Door Lock** Sequence#: 19
Manufacturer: Electronic Warfare Associates, Inc. Tested By: Hieu Song Nguyenpham
Model: SRCED-3
S/N: ENG1

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP00880	Cable	RG214U	7/30/2012	7/30/2014
T2	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015
T3	AN00432	Loop Antenna	6502	4/2/2013	4/2/2015

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

Function	Manufacturer	Model #	S/N
Remote Control Door Lock*	Electronic Warfare Associates, Inc.	SRCED-3	ENG1

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

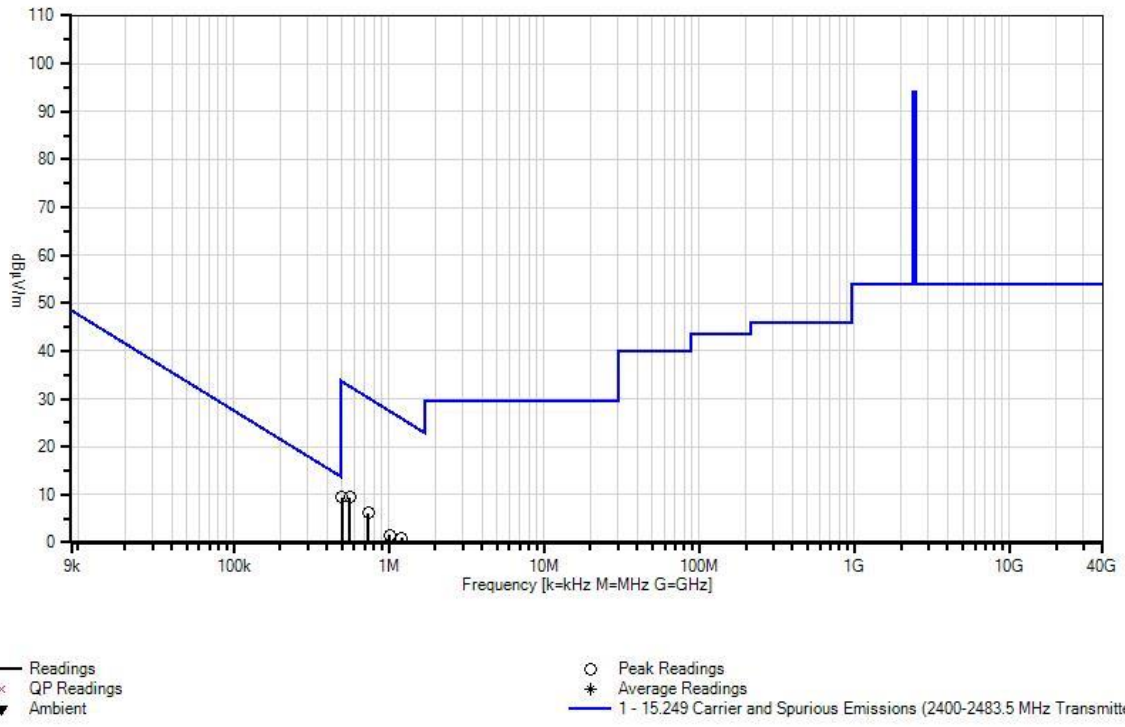
Radiated Spurious Emission
Frequency Range: 9kHz to 30MHz
Software Used: C language and burned into memory as binary machine language.
Temperature: 22°C, Humidity: 39 %, Atmospheric Pressure: 101.0 kPa
High Clock: 26MHz
Transmitting operating frequency= 2481MHz
RF Output= -2dBm at antenna connector
Gain of the antenna= -1 dBi (outdoor side) and -2.5 dBi (indoor side)
The EUT is a fixed device and operated at 6VDC. It is placed on the 80cm Styrofoam table and at the center of a turn table. The EUT is set in continue transmit.
9 kHz -150 kHz; RBW=200 Hz, VBW=200 Hz
150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz
30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz
1000 MHz-25000MHz; RBW=1 MHz, VBW=1 MHz.

Ext Attn: 0 dB

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

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	561.868k	39.5	+0.1	+0.0	+9.8		-40.0	9.4	32.6	-23.2	Paral
2	735.397k	36.3	+0.1	+0.0	+9.7		-40.0	6.1	30.3	-24.2	Perpe
3	499.147k	39.5	+0.1	+0.0	+9.8		-40.0	9.4	33.6	-24.2	Perpe
4	1.208M	31.0	+0.1	+0.0	+9.8		-40.0	0.9	25.9	-25.0	Perpe
5	1.011M	31.8	+0.1	+0.0	+9.7		-40.0	1.6	27.5	-25.9	Paral
6	1.302M	28.4	+0.1	+0.0	+9.8		-40.0	-1.7	25.3	-27.0	Paral

CKC Laboratories, Inc Date: 7/22/2013 Time: 14:36:06 Electronic Warfare Associates, Inc WO#: 94578
Test Distance: 3 Meters Sequence#: 19



Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **Electronic Warfare Associates, Inc.**
Specification: **15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**
Work Order #: **94578** Date: 7/22/2013
Test Type: **Radiated Scan** Time: 13:31:57
Equipment: **Remote Control Door Lock** Sequence#: 13
Manufacturer: Electronic Warfare Associates, Inc. Tested By: Hieu Song Nguyenpham
Model: SRCED-3
S/N: ENG1

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00730	Preamp	8447D	1/17/2013	1/17/2015
T2	AN00852	Biconilog Antenna	CBL 6111C	11/28/2012	11/28/2014
T3	ANP00880	Cable	RG214U	7/30/2012	7/30/2014
T4	ANP01183	Cable	CNT-195	10/24/2011	10/24/2013
T5	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

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

Function	Manufacturer	Model #	S/N
Remote Control Door Lock*	Electronic Warfare Associates, Inc.	SRCED-3	ENG1

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

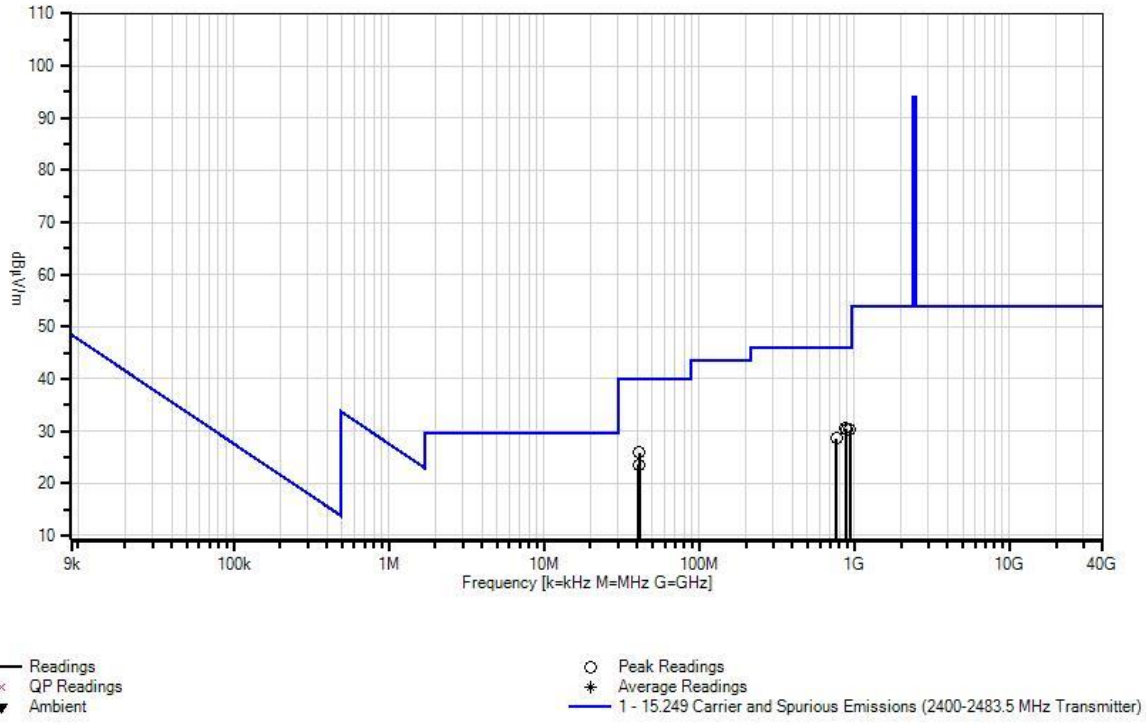
Radiated Spurious Emission
Frequency Range: 30MHz to 1000MHz
Software Used: C language and burned into memory as binary machine language.
Temperature: 22°C, Humidity: 39 %, Atmospheric Pressure: 101.0 kPa
High Clock: 26MHz
Transmitting operating frequency= 2481MHz
RF Output= -2dBm at antenna connector
Gain of the antenna= -1 dBi (outdoor side) and -2.5 dBi (indoor side)
The EUT is a fixed device and operated at 6VDC. It is placed on the 80cm Styrofoam table and at the center of a turn table. The EUT is set in continue transmit.
9 kHz -150 kHz; RBW=200 Hz, VBW=200 Hz
150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz
30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz
1000 MHz-25000MHz MHz; RBW=1 MHz, VBW=1 MHz.

Ext Attn: 0 dB

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

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	41.047M	39.1	-27.0 +0.2	+12.8	+0.6	+0.1	+0.0	25.8	40.0	-14.2	Vert
2	880.212M	29.3	-27.1 +0.9	+23.1	+3.4	+0.9	+0.0	30.5	46.0	-15.5	Horiz
3	893.185M	29.5	-27.1 +0.9	+22.7	+3.4	+1.0	+0.0	30.4	46.0	-15.6	Horiz
4	937.890M	28.7	-27.1 +0.9	+23.2	+3.5	+1.0	+0.0	30.2	46.0	-15.8	Horiz
5	40.648M	36.7	-27.0 +0.2	+13.0	+0.6	+0.1	+0.0	23.6	40.0	-16.4	Vert
6	770.302M	29.1	-26.8 +0.8	+21.5	+3.1	+0.9	+0.0	28.6	46.0	-17.4	Vert

CKC Laboratories, Inc Date: 7/22/2013 Time: 13:31:57 Electronic Warfare Associates, Inc WO#: 94578
Test Distance: 3 Meters Sequence#: 13



Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **Electronic Warfare Associates, Inc.**
Specification: **15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**
Work Order #: **94578** Date: 7/22/2013
Test Type: **Radiated Scan** Time: 10:27:25
Equipment: **Remote Control Door Lock** Sequence#: 4
Manufacturer: Electronic Warfare Associates, Inc. Tested By: Hieu Song Nguyenpham
Model: SRCED-3
S/N: ENG1

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02157	Horn Antenna-ANSI C63.5	3115	1/23/2013	1/23/2015
T2	AN03302	Cable	32026-29094K-29094K-72TC	3/21/2012	3/21/2014
T3	ANP01210	Cable	FSJ1P-50A-4A	2/19/2013	2/19/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015
T4	AN03114	Preamp	AMF-7D-00101800-30-10P	4/11/2013	4/11/2015
T5	AN03015	Cable	32022-2-29094K-24TC	5/6/2013	5/6/2015
T6	AN03309	High Pass Filter	11SH10-3000/T10000-O/O	6/12/2012	6/12/2014

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

Function	Manufacturer	Model #	S/N
Remote Control Door Lock*	Electronic Warfare Associates, Inc.	SRCED-3	ENG1

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

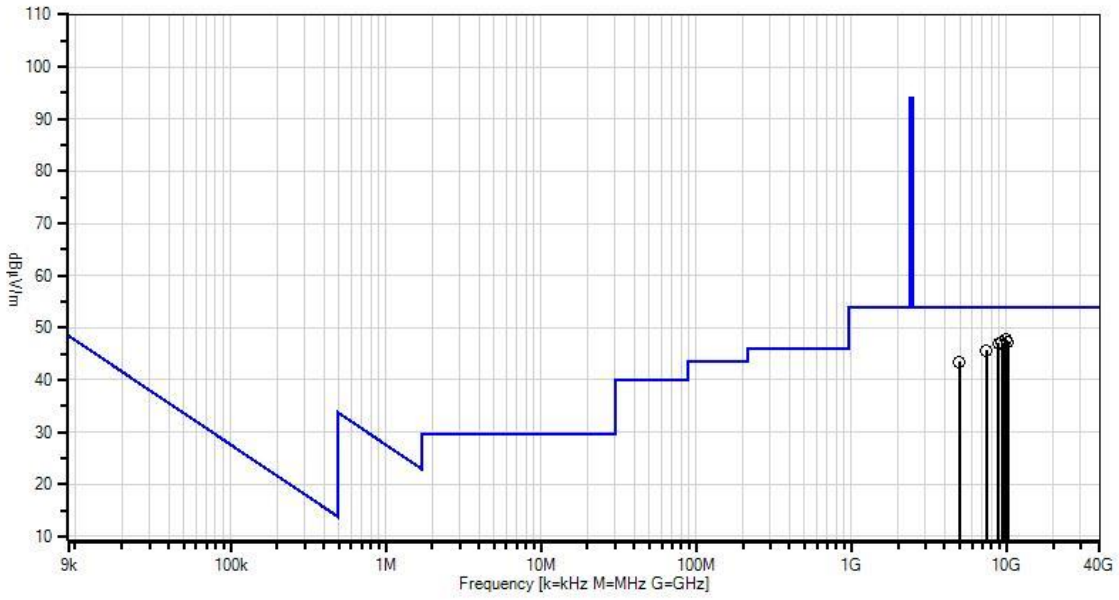
Radiated Spurious Emission
Frequency Range: 1000MHz to 12000MHz
Software Used: C language and burned into memory as binary machine language
Temperature: 22°C, Humidity: 39 %, Atmospheric Pressure: 101.0 kPa
High Clock: 26MHz
Transmitting operating frequency= 2481MHz
RF Output= -2dBm at antenna connector
Gain of the antenna= -1 dBi (outdoor side) and -2.5 dBi (indoor side)
The EUT is a fixed device and operated at 6VDC. It is placed on the 80cm Styrofoam table and at the center of a turn table. The EUT is set in continue transmit.
9 kHz -150 kHz; RBW=200 Hz, VBW=200 Hz
150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz
30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz
1000 MHz-25000MHz; RBW=1 MHz, VBW=1 MHz.

Ext Attn: 0 dB

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

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	9874.868M	56.3	+39.5 +1.3	+2.3 +0.1	+6.2	-57.9	+0.0	47.8	54.0	-6.2	Vert
2	10146.139 M	55.9	+39.7 +1.3	+2.3 +0.1	+6.3	-58.3	+0.0	47.3	54.0	-6.7	Horiz
3	9323.317M	55.9	+38.4 +1.2	+2.2 +0.4	+6.2	-57.2	+0.0	47.1	54.0	-6.9	Horiz
4	8884.879M	55.3	+38.2 +1.4	+2.1 +0.3	+6.0	-56.3	+0.0	47.0	54.0	-7.0	Horiz
5	7442.438M	59.7	+36.8 +1.0	+1.9 +0.2	+5.4	-59.3	+0.0	45.7	54.0	-8.3	Vert
6	4961.960M	61.4	+33.6 +0.7	+1.6 +0.2	+3.9	-57.9	+0.0	43.5	54.0	-10.5	Vert

CKC Laboratories, Inc Date: 7/22/2013 Time: 10:27:25 Electronic Warfare Associates, Inc WO#: 94578
Test Distance: 3 Meters Sequence#: 4



Readings
QP Readings
Ambient
Peak Readings
Average Readings
1 - 15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **Electronic Warfare Associates, Inc.**
Specification: **15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**
Work Order #: **94578** Date: 7/22/2013
Test Type: **Radiated Scan** Time: 11:08:58
Equipment: **Remote Control Door Lock** Sequence#: 7
Manufacturer: Electronic Warfare Associates, Inc. Tested By: Hieu Song Nguyenpham
Model: SRCED-3
S/N: ENG1

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015
T1	ANANT-AN02693-20130221	Active Horn Antenna	AMFW-5F-18002650-20-10P	2/21/2013	2/21/2015
T2	ANP00928	Cable	various	2/10/2012	2/10/2014
T3	ANP06125	Cable	32022-29094K-29094K-72TC	5/6/2013	5/6/2015
T4	ANP06126	Cable	32022-29094K-29094K-168TC	9/7/2011	9/7/2013

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

Function	Manufacturer	Model #	S/N
Remote Control Door Lock*	Electronic Warfare Associates, Inc.	SRCED-3	ENG1

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

Radiated Spurious Emission
Frequency Range: 12000MHz to 18000MHz

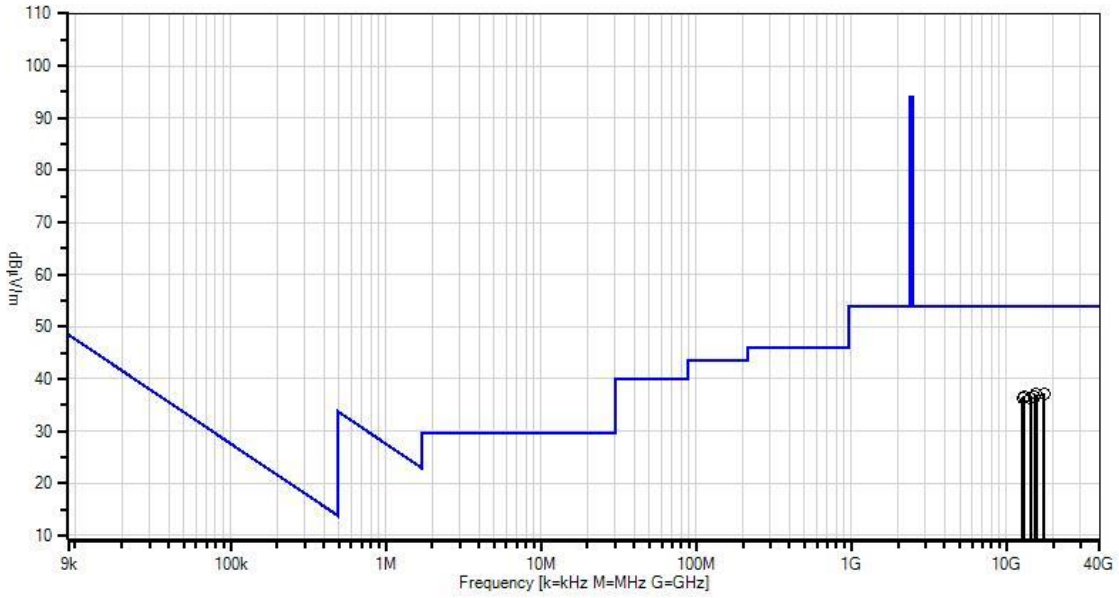
Software Used: C language and burned into memory as binary machine language.
Temperature: 22°C, Humidity: 39 %, Atmospheric Pressure: 101.0 kPa
High Clock: 26MHz
Transmitting operating frequency= 2481MHz
RF Output= -2dBm at antenna connector
Gain of the antenna= -1 dBi (outdoor side) and -2.5 dBi (indoor side)
The EUT is a fixed device and operated at 6VDC. It is placed on the 80cm Styrofoam table and at the center of a turn table. The EUT is set in continue transmit.
9 kHz -150 kHz; RBW=200 Hz, VBW=200 Hz
150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz
30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz
1000 MHz-25000MHz RBW=1 MHz, VBW=1 MHz.

Ext Attn: 0 dB

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

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	17549.265 M	42.7	-14.1	+0.8	+3.1	+4.7	+0.0	37.2	54.0	-16.8	Vert
2	15534.531 M	44.3	-15.8	+1.0	+3.2	+4.4	+0.0	37.1	54.0	-16.9	Vert
3	13006.005 M	45.1	-16.0	+0.9	+2.6	+4.1	+0.0	36.7	54.0	-17.3	Vert
4	15195.192 M	43.6	-15.5	+1.0	+3.1	+4.4	+0.0	36.6	54.0	-17.4	Horiz
5	12770.770 M	44.7	-15.8	+0.9	+2.6	+4.0	+0.0	36.4	54.0	-17.6	Horiz
6	14327.325 M	43.9	-15.6	+0.9	+2.8	+4.3	+0.0	36.3	54.0	-17.7	Horiz

CKC Laboratories, Inc Date: 7/22/2013 Time: 11:08:58 Electronic Warfare Associates, Inc WO#: 94578
Test Distance: 3 Meters Sequence#: 7



Readings
QP Readings
Ambient
Peak Readings
Average Readings
1 - 15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **Electronic Warfare Associates, Inc.**
Specification: **15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)**
Work Order #: **94578** Date: 7/22/2013
Test Type: **Radiated Scan** Time: 11:44:03
Equipment: **Remote Control Door Lock** Sequence#: 10
Manufacturer: Electronic Warfare Associates, Inc. Tested By: Hieu Song Nguyenpham
Model: SRCED-3
S/N: ENG1

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015
T1	ANP06125	Cable	32022-29094K-29094K-72TC	5/6/2013	5/6/2015
T2	ANP06126	Cable	32022-29094K-29094K-168TC	9/7/2011	9/7/2013
T3	AN02694	Horn Antenna-ANSI C63.5 Antenna Factors (dB)	AMFW-5F-18002650-20-10P	2/4/2013	2/4/2015
T4	ANP00929	Cable	various	2/16/2012	2/16/2014

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

Function	Manufacturer	Model #	S/N
Remote Control Door Lock*	Electronic Warfare Associates, Inc.	SRCED-3	ENG1

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

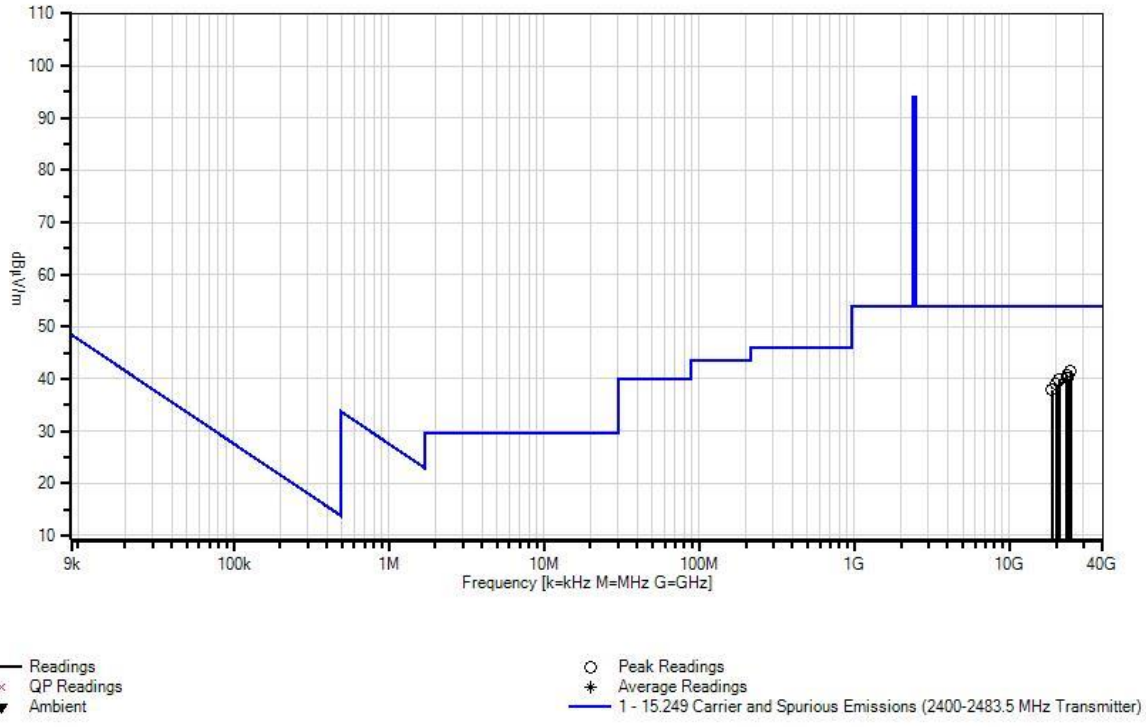
Radiated Spurious Emission
Frequency Range: 18000MHz to 26000MHz
Software Used: C language and burned into memory as binary machine language
Temperature: 22°C, Humidity: 39 %, Atmospheric Pressure: 101.0 kPa
High Clock: 26MHz
Transmitting operating frequency= 2481MHz
RF Output= -2dBm at antenna connector
Gain of the antenna= -1 dBi (outdoor side) and -2.5 dBi (indoor side)
The EUT is a fixed device and operated at 6VDC. It is placed on the 80cm Styrofoam table and at the center of a turn table. The EUT is set in continue transmit.
9 kHz -150 kHz; RBW=200 Hz, VBW=200 Hz
150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz
30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz
1000 MHz-25000MHz; RBW=1 MHz, VBW=1 MHz.

Ext Attn: 0 dB

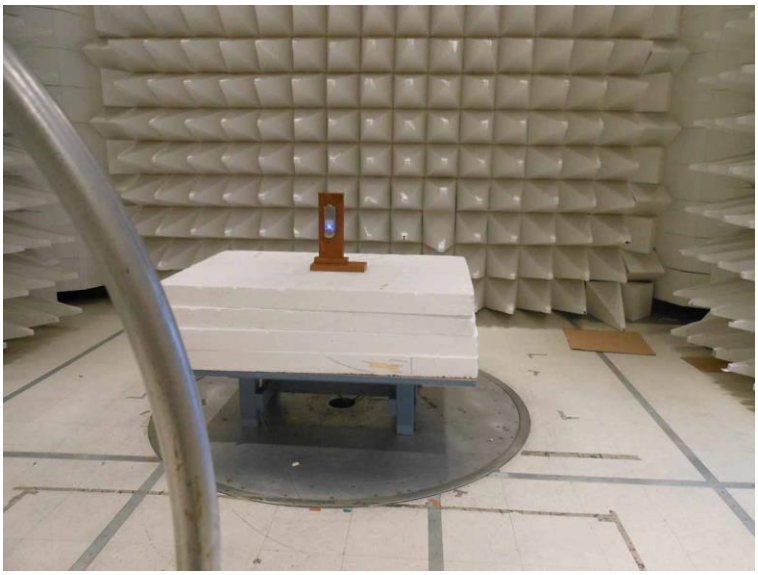
Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	24726.650 M	45.6	+4.4	+5.6	-17.0	+2.9	+0.0	41.5	54.0	-12.5	Vert
2	23375.370 M	45.7	+4.4	+5.4	-17.8	+2.9	+0.0	40.6	54.0	-13.4	Horiz
3	23742.737 M	44.8	+4.4	+5.5	-17.7	+3.0	+0.0	40.0	54.0	-14.0	Vert
4	20979.977 M	44.4	+4.2	+5.1	-17.0	+3.1	+0.0	39.8	54.0	-14.2	Vert
5	19954.953 M	43.8	+3.8	+5.0	-16.8	+3.2	+0.0	39.0	54.0	-15.0	Horiz
6	18713.713 M	42.9	+3.5	+4.8	-16.6	+3.3	+0.0	37.9	54.0	-16.1	Horiz

CKC Laboratories, Inc Date: 7/22/2013 Time: 11:44:03 Electronic Warfare Associates, Inc WO#: 94578
Test Distance: 3 Meters Sequence#: 10

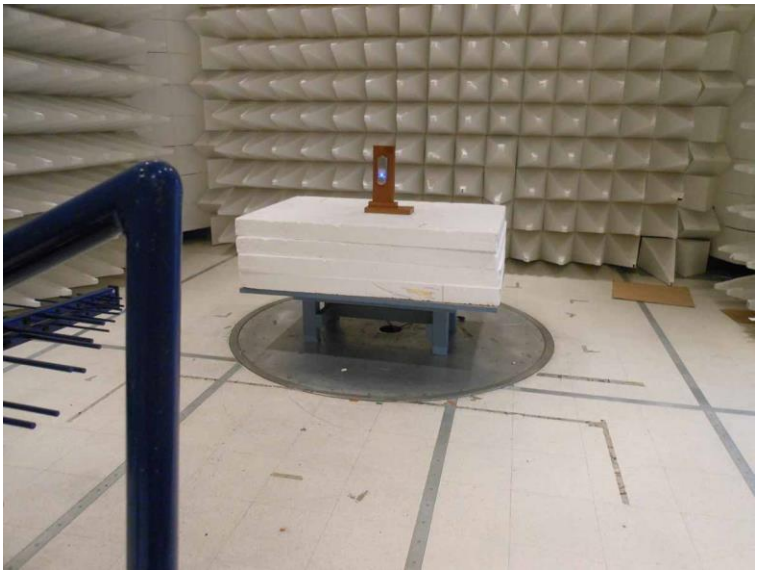


Test Setup Photos

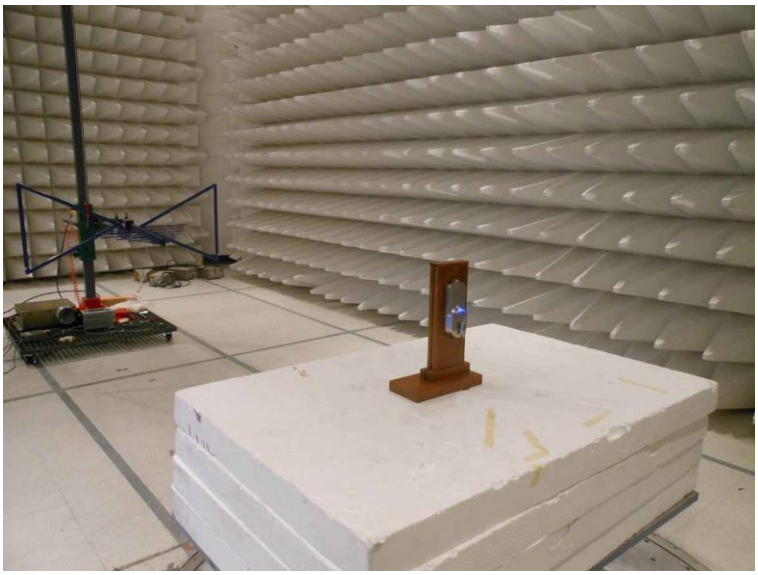


9kHz-30MHz

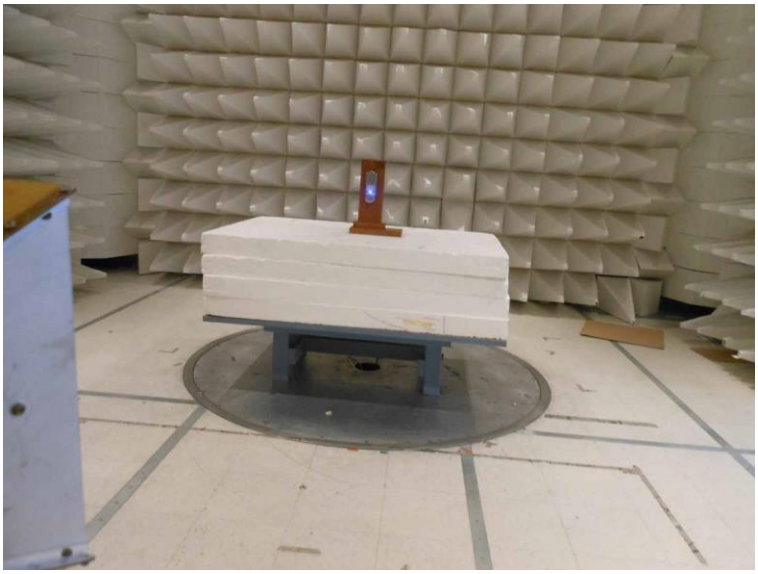
9kHz-30MHz



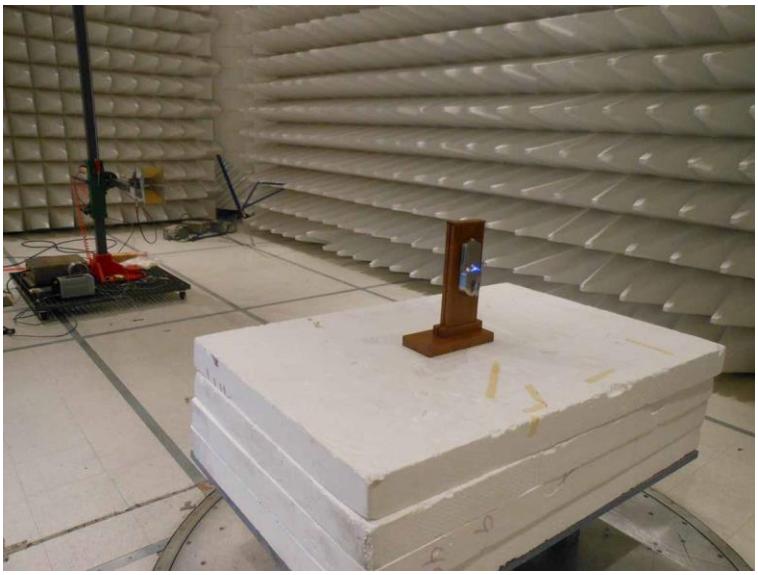
30MHz-1GHz



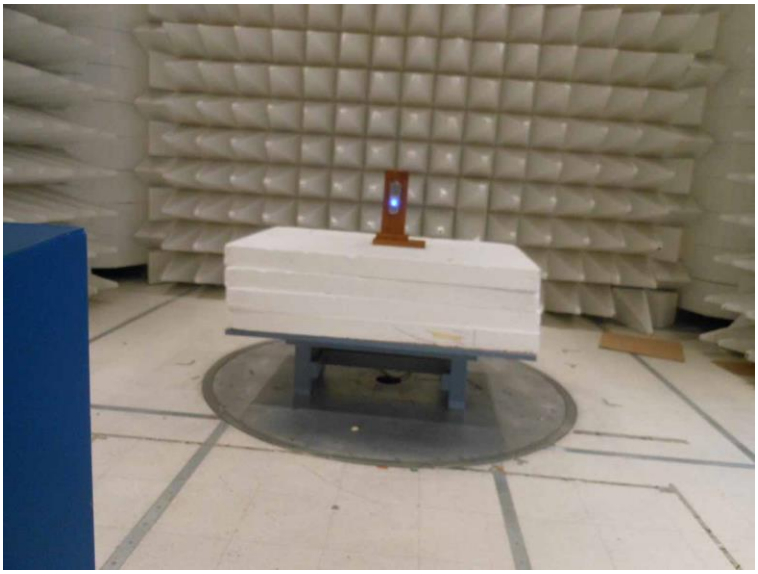
30MHz-1GHz



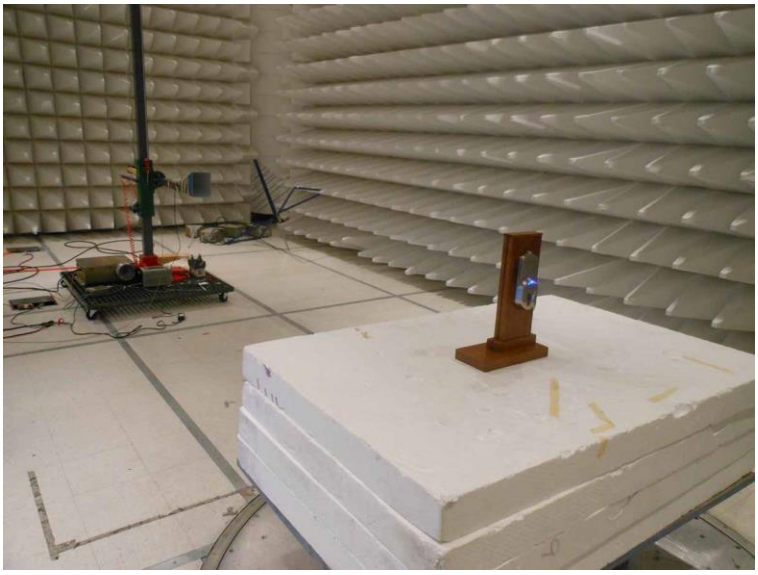
1-12GHz



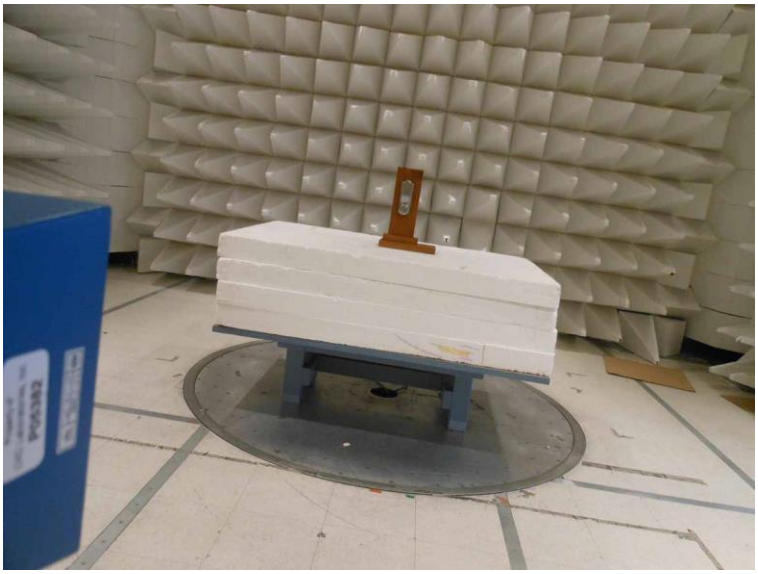
1-12GHz



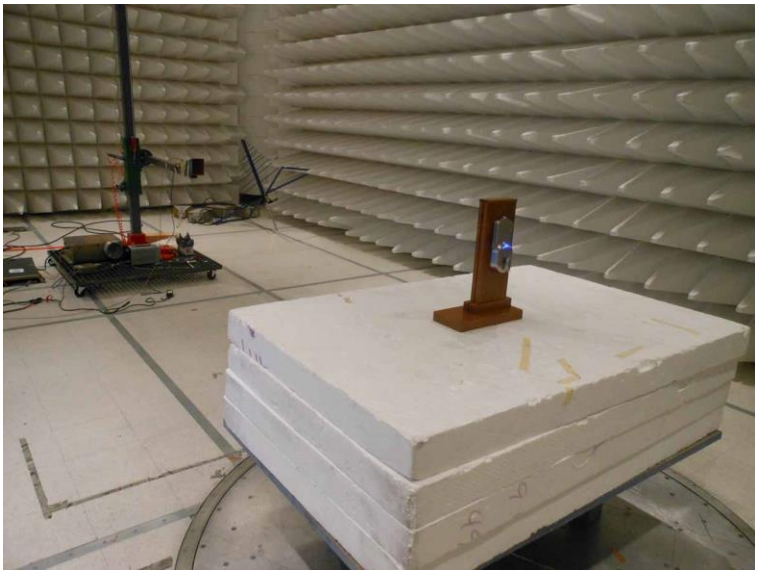
12-18GHz



12-18GHz



18-25GHz



18-25GHz

Bandedge

Test Conditions / Setup

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer:	**Electronic Warfare Associates, Inc.**		
Specification:	**Band Edge**		
Work Order #:	**94578**	Date:	7/22/2013
Test Type:	**Radiated Scan**	Time:	09:42:04
Equipment:	**Remote Control Door Lock**	Sequence#:	1
Manufacturer:	Electronic Warfare Associates, Inc.	Tested By:	Hieu Song Nguyenpham
Model:	SRCED-3		
S/N:	ENG1		

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02157	Horn Antenna-ANSI C63.5	3115	1/23/2013	1/23/2015
T2	AN03302	Cable	32026-29094K-29094K-72TC	3/21/2012	3/21/2014
T3	ANP01210	Cable	FSJ1P-50A-4A	2/19/2013	2/19/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

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

Function	Manufacturer	Model #	S/N
Remote Control Door Lock*	Electronic Warfare Associates, Inc.	SRCED-3	ENG1

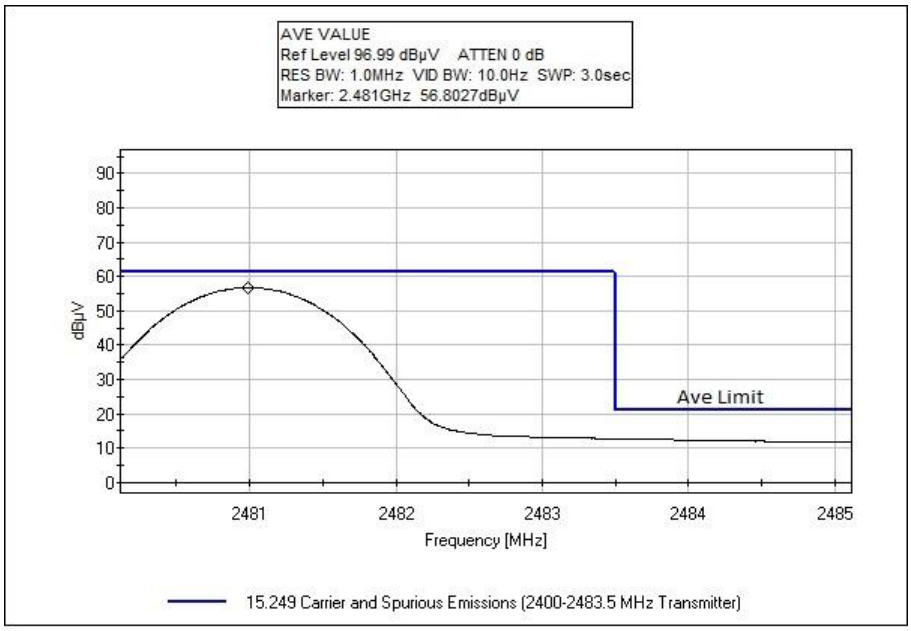
Support Devices:

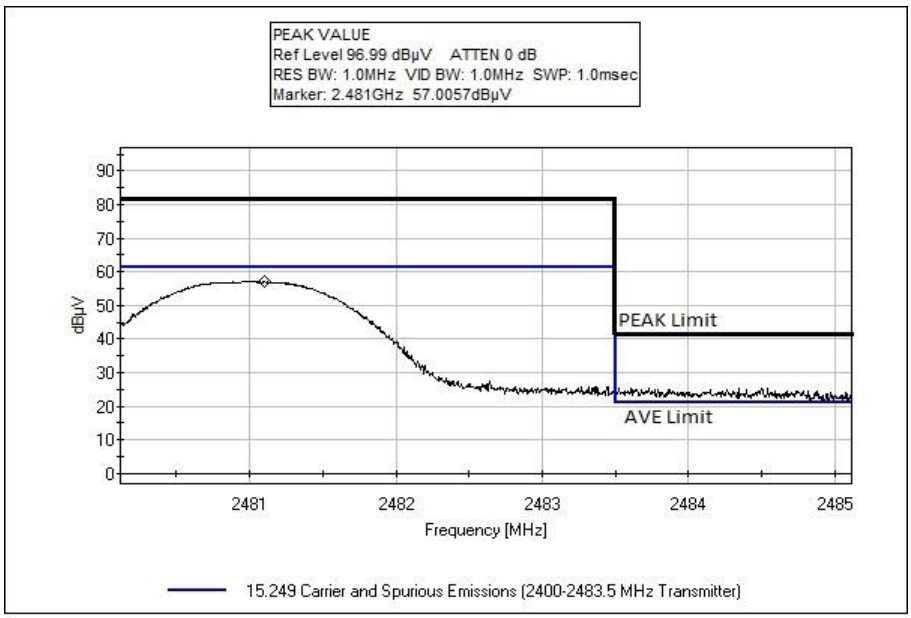
Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

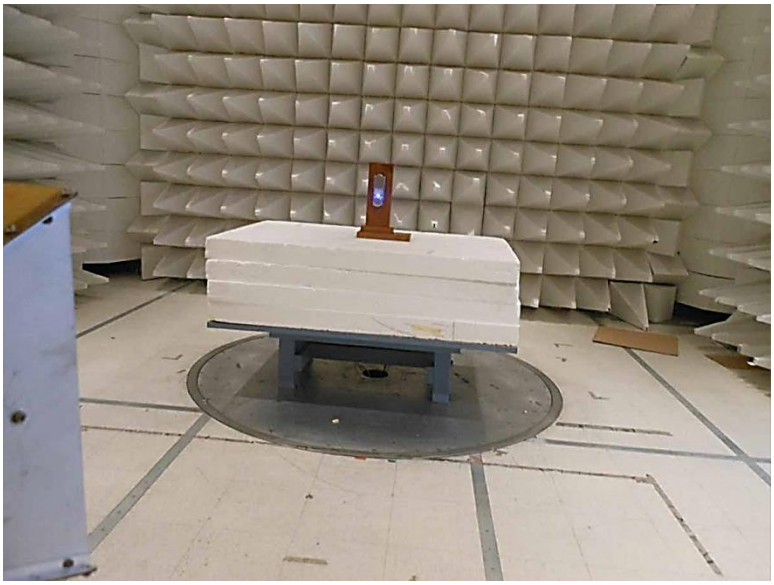
Software Used: C language and burned into memory as binary machine language.
Temperature: 22°C
Humidity: 39 %
Atmospheric Pressure: 101.0 kPa
High Clock: 26MHz
Transmitting operating frequency= 2481MHz
RF Output= -2dBm at antenna connector
Gain of the antenna= -1 dBi (outdoor side) and -2.5 dBi (indoor side)
The EUT is a fixed device and operated at 6VDC. It is placed on the 80cm Styrofoam table and at the center of a turn table. The EUT is set in continue transmit.

Test Data


AVE VALUE
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 10.0Hz SWP: 3.0sec
Marker: 2.481GHz 56.8027dBµV
dBµV
Ave Limit
Frequency [MHz]
15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)


PEAK VALUE
Ref Level 96.99 dBµV ATTEN 0 dB
RES BW: 1.0MHz VID BW: 1.0MHz SWP: 1.0msec
Marker: 2.481GHz 57.0057dBµV
dBµV
PEAK Limit
AVE Limit
Frequency [MHz]
15.249 Carrier and Spurious Emissions (2400-2483.5 MHz Transmitter)

Test Setup Photos



RSS-210

99 % Bandwidth

Test Conditions / Setup

Test Location: CKC Laboratories, Inc. • 1120 Fulton Places • Fremont, CA 94539 • (510) 249-1170

Customer:	**Electronic Warfare Associates, Inc.**		
Specification:	**OBW**		
Work Order #:	**94578**	Date:	7/22/2013
Test Type:	**Radiated Scan**	Time:	09:42:04
Equipment:	**Remote Control Door Lock**	Sequence#:	1
Manufacturer:	Electronic Warfare Associates, Inc.	Tested By:	Hieu Song Nguyenpham
Model:	SRCED-3		
S/N:	ENG1		

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02157	Horn Antenna-ANSI C63.5	3115	1/23/2013	1/23/2015
T2	AN03302	Cable	32026-29094K-29094K-72TC	3/21/2012	3/21/2014
T3	ANP01210	Cable	FSJ1P-50A-4A	2/19/2013	2/19/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

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

Function	Manufacturer	Model #	S/N
Remote Control Door Lock*	Electronic Warfare Associates, Inc.	SRCED-3	ENG1

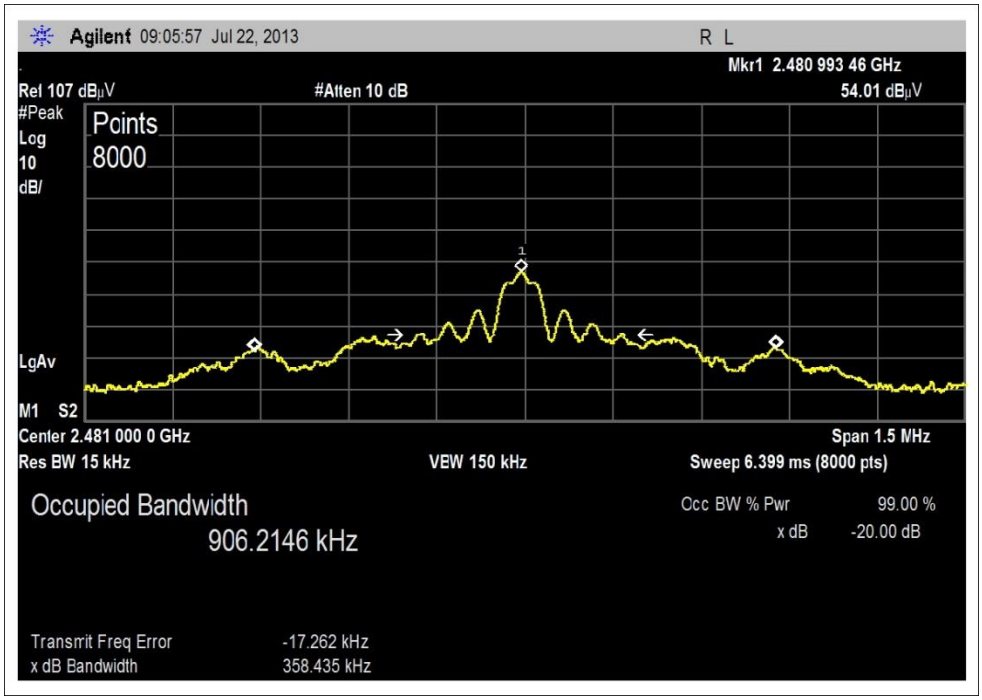
Support Devices:

Function	Manufacturer	Model #	S/N

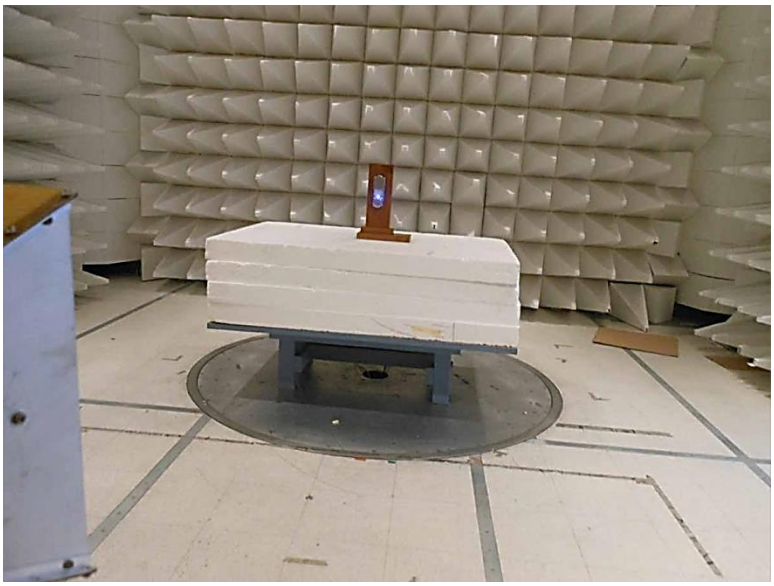
Test Conditions / Notes:

Software Used: C language and burned into memory as binary machine language.
Temperature: 22°C, Humidity: 39 %, Atmospheric Pressure: 101.0 kPa
High Clock: 26MHz
Transmitting operating frequency= 2481MHz
RF Output= -2dBm at antenna connector
Gain of the antenna= -1 dBi (outdoor side) and -2.5 dBi (indoor side)
The EUT is a fixed device and operated at 6VDC. It is placed on the 80cm Styrofoam table and at the center of a turn table. The EUT is set in continue transmit.

Test Data


Agilent 09:05:57 Jul 22, 2013
R L
Mkr1 2.480 993 46 GHz
Ref 107 dBµV
54.01 dBµV
#Atten 10 dB
#Peak
Log
10
dB/
Points
8000
LgAv
M1 S2
Center 2.481 000 0 GHz
Span 1.5 MHz
Res BW 15 kHz
VBW 150 kHz
Sweep 6.399 ms (8000 pts)
Occupied Bandwidth
906.2146 kHz
Occ BW % Pwr 99.00 %
x dB -20.00 dB
Transmit Freq Error -17.262 kHz
x dB Bandwidth 358.435 kHz

Test Setup Photos



SUPPLEMENTAL INFORMATION

Measurement Uncertainty

Uncertainty Value	Parameter
4.73 dB	Radiated Emissions
3.34 dB	Mains Conducted Emissions
3.30 dB	Disturbance Power

The reported measurement uncertainties are calculated based on the worst case of all laboratory environments from CKC Laboratories, Inc. test sites. Only those parameters which require estimation of measurement uncertainty are reported. The reported worst case measurement uncertainty is less than the maximum values derived in CISPR 16-4-2. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k=2. Compliance is deemed to occur provided measurements are below the specified limits.

Emissions Test Details

TESTING PARAMETERS

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

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

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

CORRECTION FACTORS

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

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

TEST INSTRUMENTATION AND ANALYZER SETTINGS

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

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

SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

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

Peak

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

Quasi-Peak

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

Average

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