Rohrback Cosasco Systems

TEST REPORT FOR

Data-logger with Bluetooth Communication, MWT-3905-MDL-BT

Tested To The Following Standards:

FCC Part 15 Subpart C Sections 15.247
and
RSS-210 Issue 8

Report No.: 92136-13

Date of issue: August 8, 2011

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.

TABLE OF CONTENTS

Administrative Information 3
Test Report Information 3
Report Authorization 3
Test Facility Information 4
Site Registration & Accreditation Information 4
Summary of Results 5
Conditions During Testing 5
Equipment Under Test 6
Peripheral Devices 6
FCC Part 15 Subpart C 7
15.31(e) Voltage Variations 7
15.207 AC Conducted Emissions 8
15.247 Bandedge 9
15.247(a)(1) Average Time of Occupancy 14
Frequency Separation 15
-20 dB Bandwidth 16
Number of Hopping Channels 17
Average Time of Occupancy 19
15.247(b)(1) RF Power Output 23
15.247(d) Radiated Spurious Emissions 26
RSS-210 33
99 % Bandwidth 33
Supplemental Information 37
Measurement Uncertainty 37
Emissions Test Details 37

ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

Rohrback Cosasco Systems
11841 East Smith Ave.
Santa Fe Springs, CA 90670

Representative: Daljit Singh
Customer Reference Number:

REPORT PREPARED BY:

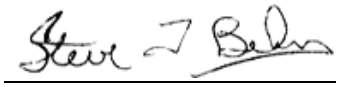
Dianne Dudley
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Project Number: 92136

DATE OF EQUIPMENT RECEIPT: July 18, 2011
DATE(S) OF TESTING: July 18-22, 2011

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.
110 Olinda Place
Brea, CA 92823

Site Registration & Accreditation Information

Location	CB #	Japan	Canada	FCC
Brea A	US0060	R-2945, C-3248 & T-1572	3082D-1	90473

SUMMARY OF RESULTS

Standard / Specification: FCC Part 15 Subpart C 15.247 and RSS-210 Issue 8

Description	Test Procedure/Method	Results
Voltage Variations	FCC Part 15 Subpart C Section 15.31(e)	Pass
AC Conducted Emissions	FCC Part 15 Subpart C Section 15.207	NA
Bandedge	FCC Part 15 Subpart C Section 15.247 / DA 00-705 & ITU-R 55/1	Pass
Average Time of Occupancy	FCC Part 15 Subpart C Section 15.247(a)(1) / DA 00-705 & ITU-R 55/1	Pass
RF Power Output	FCC Part 15 Subpart C Section 15.247(b)(1) / DA 00-705 & ITU-R 55/1	Pass
Radiated Spurious Emissions	FCC Part 15 Subpart C Section 15.247(d) / 15.209 / DA 00-705 & ITU-R 55/1	Pass
99% Occupied Bandwidth	RSS-210 Issue 8	Pass

NA = Not applicable

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

Data-logger with Bluetooth Communication
Manuf: Rohrback Cosasco Systems
Model: MWT-3905-MDL-BT
Serial: 1199

PERIPHERAL DEVICES

The EUT was tested with the following peripheral device(s):

Laptop
Manuf: HP
Model: N3435
Serial: NA

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

The EUT is placed on the test bench, measurement is performed at the antenna port, the RF path includes two internal RF cable and Intrinsic Safety board. The service port is connected to a laptop for testing configuration purposes.

Frequency= 2402MHz, 2441MHz, 2480MHz
Rate power = 4 dBm
Continuous transmit.
Firmware power setting 255, 50.
Measured power= -1.7dBm (0.0007W), -1.8 dBm (0.0007W), -2.7 dBm(0.0005W)
Frequency range of measurement = 2402-2480MHz

Test method: FCC measurement guideline DA 00-705

22°C, 64% Relative Humidity

15.31(e) A fresh battery is used.

20dB External attenuation compensated as amplitude offset entered into the spectrum analyzer.

Engineer Name: E. Wong

Test Equipment					
Asset/Serial #	**Description**	**Model**	**Manufacturer**	**Cal Date**	**Cal Due**
02672	Spectrum Analyzer	E4446A	Agilent	8/9/2010	8/9/2012
02945	Cable	32022-2-2909K-36TC	AstroLab	9/21/2009	9/21/2011

15.207 AC Conducted Emissions

NA= AC Conducted Emissions is not applicable because the EUT is battery powered.

15.247 Bandedge

Test Conditions / Setup

The EUT is placed on the wooden table lined with Styrofoam of 10 cm thickness; the service port is connected to a laptop via a serial cable for testing configuration purposes. Ground cable is connected. EUT orientated in intended installation position. A test plug is connected to the sensor port.

Frequency= 2402MHz, 2441MHz, 2480MHz
Rate power = 4 dBm
Firmware power setting 255, 50
Continuous transmit.
Measured power= -1.7dBm (0.0007W), -1.8 dBm (0.0007W), -2.7 dBm (0.0005W)

22°C, 64% Relative Humidity

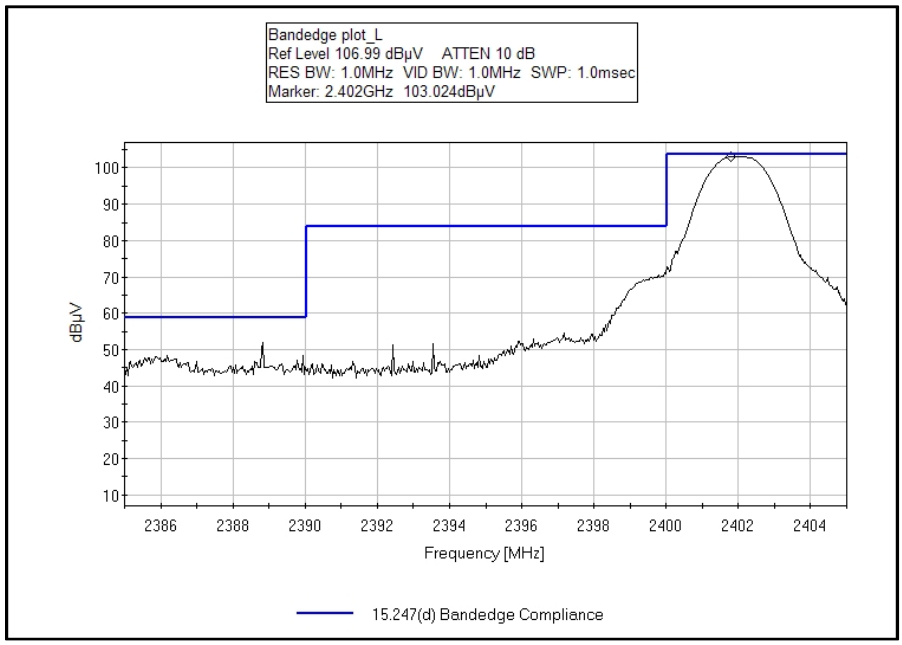
15.31(e) A fresh battery is used.

Emission profile of the EUT with transmitting antenna positioned in both the vertical and horizontal orientation was evaluated.

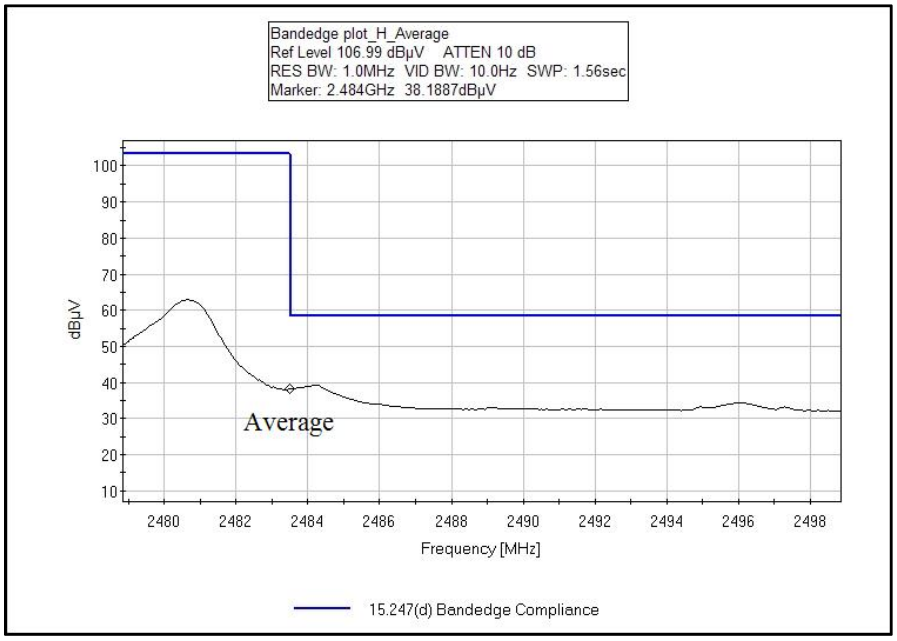
Engineer Name: E. Wong

Test Equipment					
Asset/Serial #	**Description**	**Model**	**Manufacturer**	**Cal Date**	**Cal Due**
02672	Spectrum Analyzer	E4446A	Agilent	8/9/2010	8/9/2012
00849	Horn Antenna	3115	ETS	4/23/2010	4/23/2012
00786	Preamp	83017A	HP	8/5/2010	8/5/2012
02948	Cable	32022-2-2909K-24TC	AstroLab	9/21/2009	9/21/2011
P05421	Cable	Sucoflex 104A	Huber & Suhner	2/12/2010	2/12/2012
P05563	Cable	ANDL-1-PNMN-48	Andrews	9/3/2010	9/3/2012

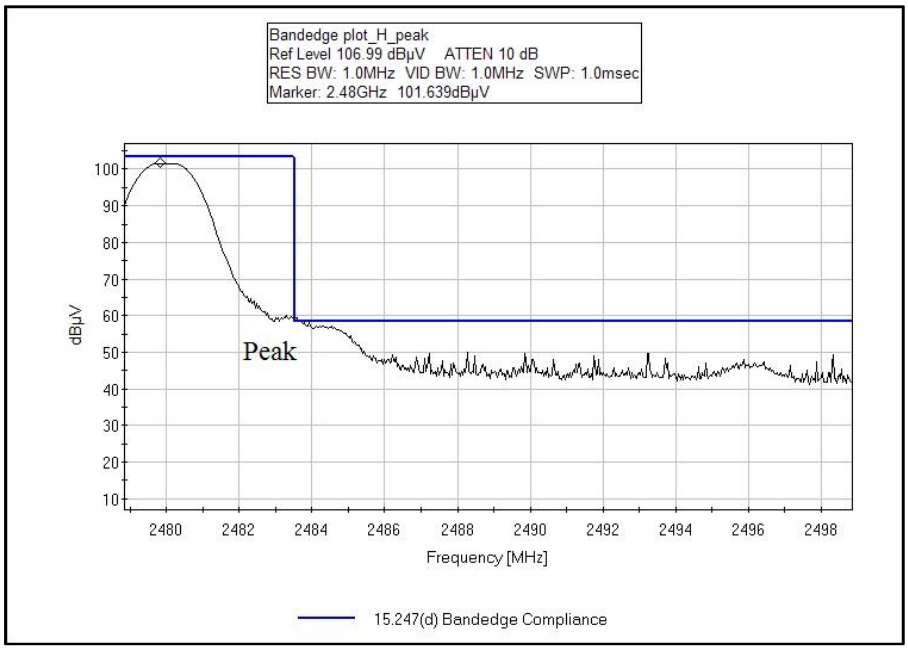
Test Plots



BANDEDGE PLOT_ L



BANDEDGE PLOT _H _AVERAGE



BANDEDGE PLOT _H _PEAK

Test Setup Photos

15.247(a)(1) Average Time of Occupancy

Test Conditions / Setup

The EUT is placed on the test bench, measurement is performed at the antenna port, the RF path includes two internal RF cable and Intrinsic Safety board.
The service port is connected to a laptop for testing configuration purposes.

Frequency= 2402MHz, 2441MHz, 2480MHz
Rate power = 4 dBm
Continuous transmit.
Firmware power setting 255, 50.
Measured power= -1.7dBm (0.0007W),-1.8 dBm (0.0007W),-2.7 dBm(0.0005W)
Frequency range of measurement = 2402-2480MHz

Test method: FCC measurement guideline DA 00-705

22°C, 64% Relative Humidity

15.31(e) a fresh battery is used.

20dB External attenuation compensated as amplitude offset entered into the spectrum analyzer.

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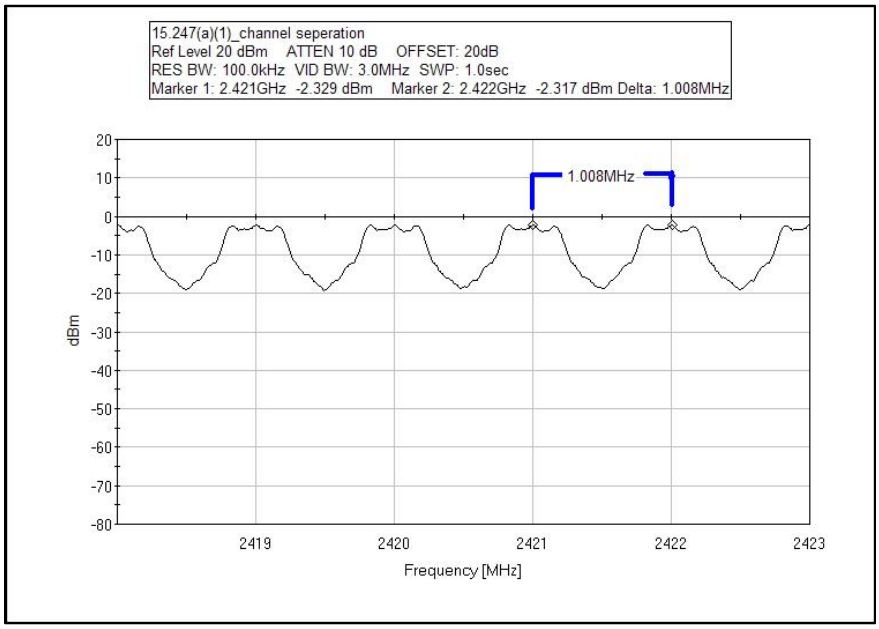
Test Equipment					
Asset/Serial #	**Description**	**Model**	**Manufacturer**	**Cal Date**	**Cal Due**
02672	Spectrum Analyzer	E4446A	Agilent	8/9/2010	8/9/2012
02945	Cable	32022-2-2909K-36TC	AstroLab	9/21/2009	9/21/2011

Frequency Separation

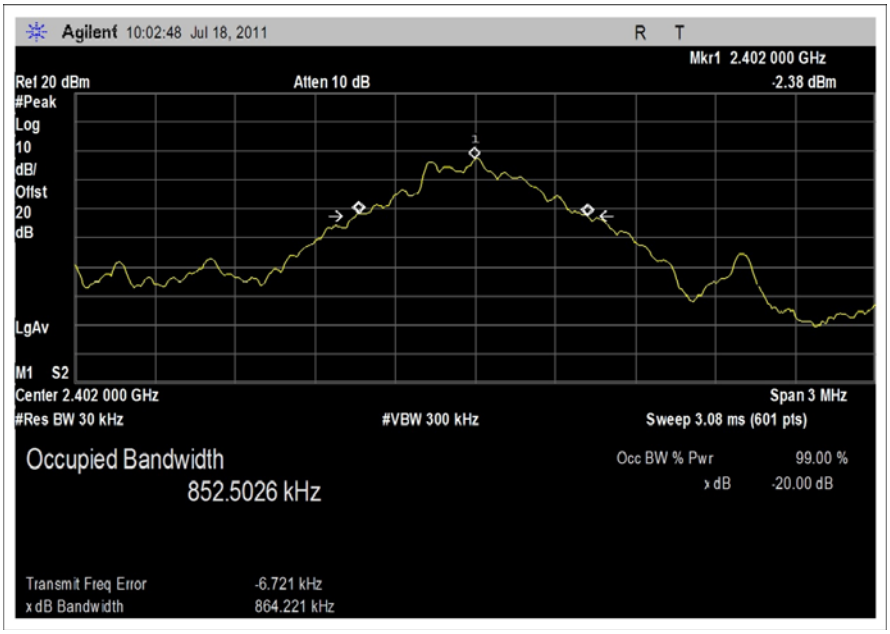
Test Plot



CHANNEL SEPARATION = 1.008MHz

-20 dB Bandwidth

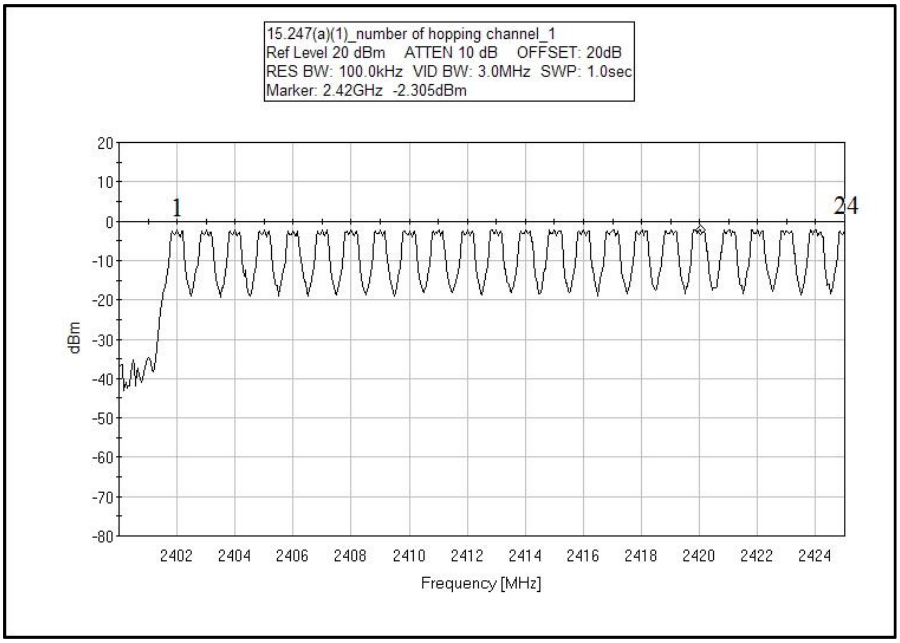
Test Plot

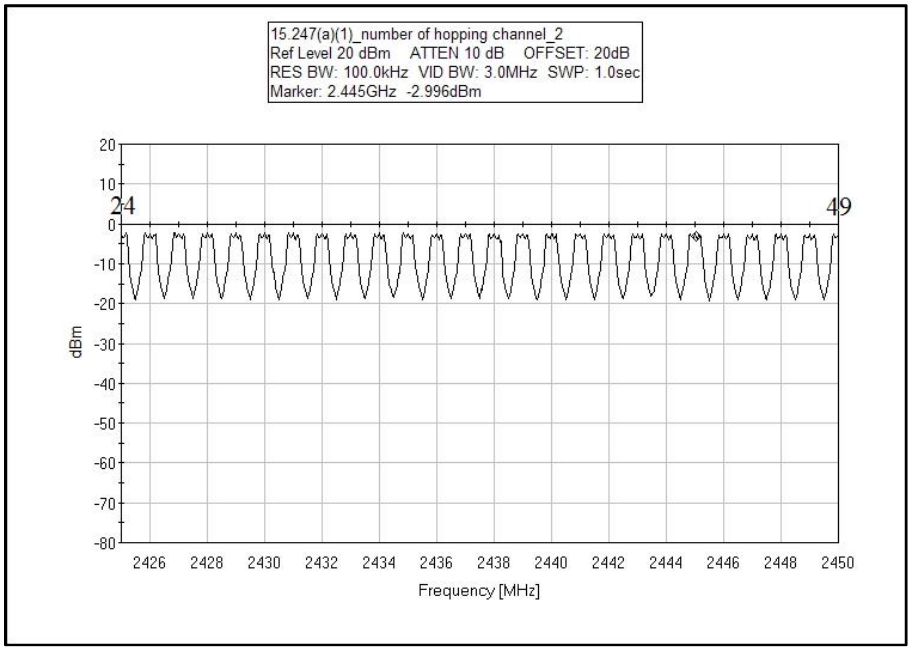


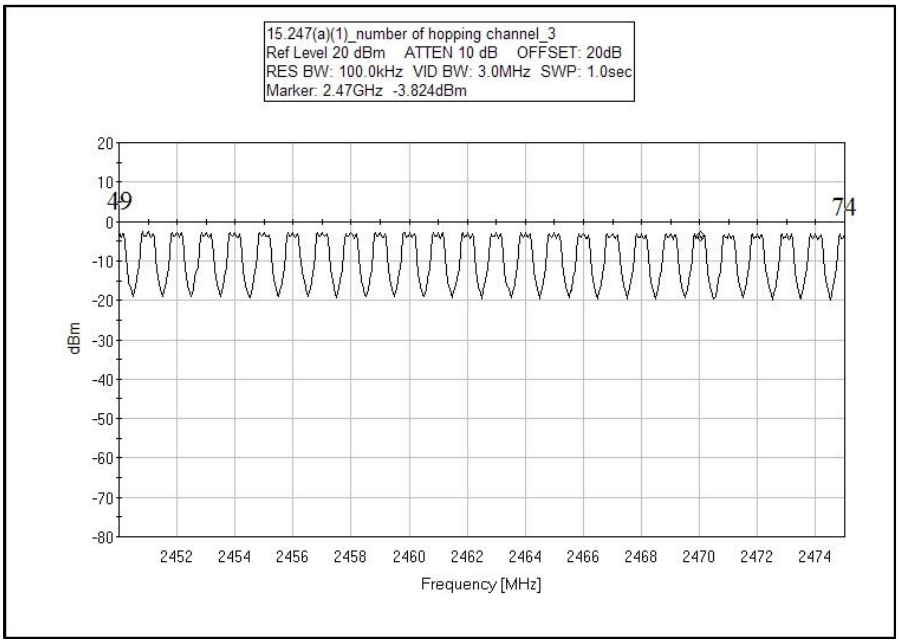
-20dB BW= 0.864MHz

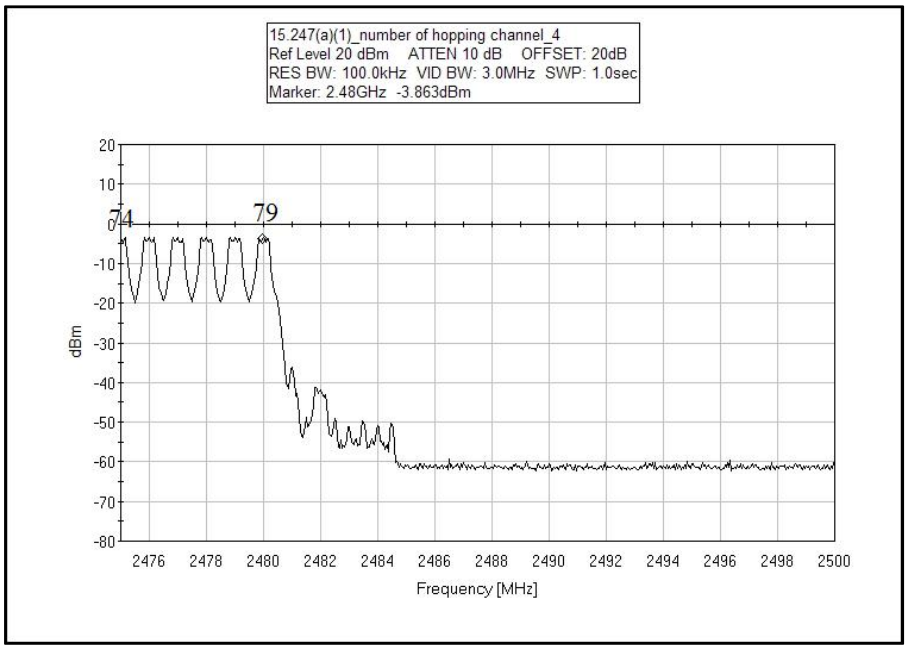
Number of Hopping Channels

Test Plot



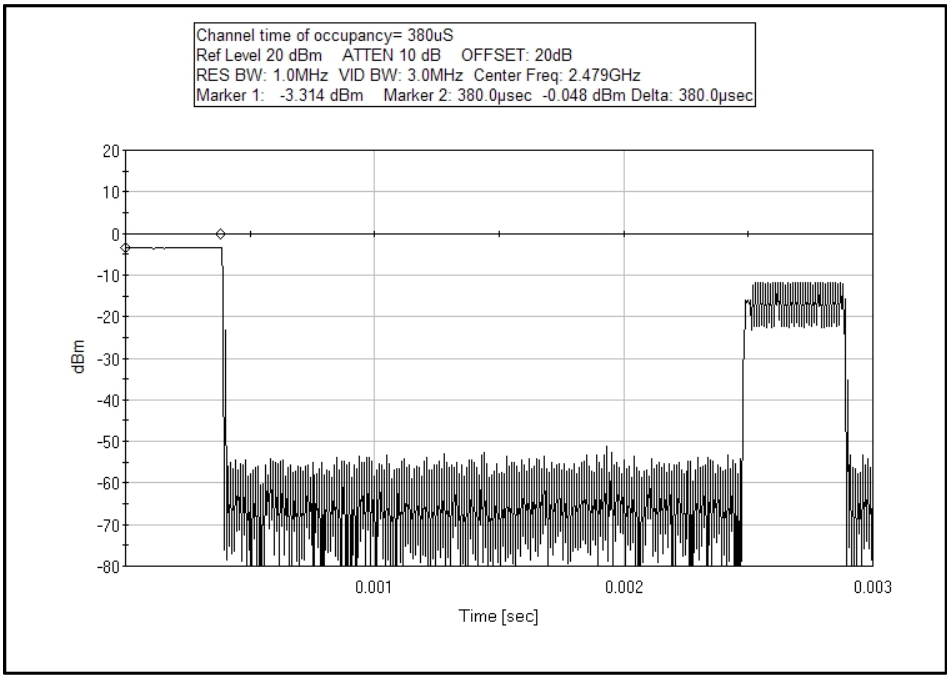




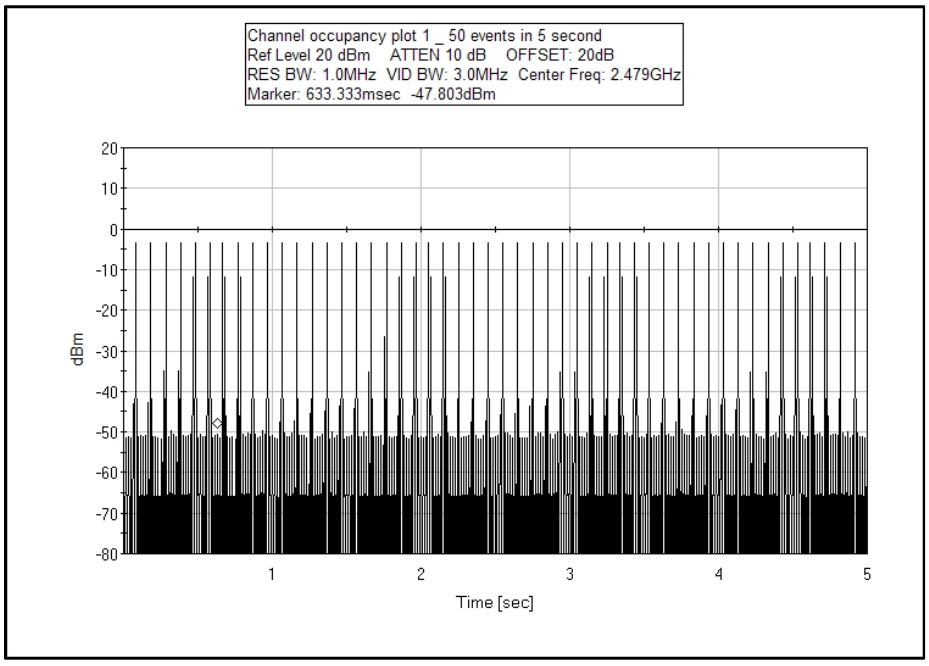


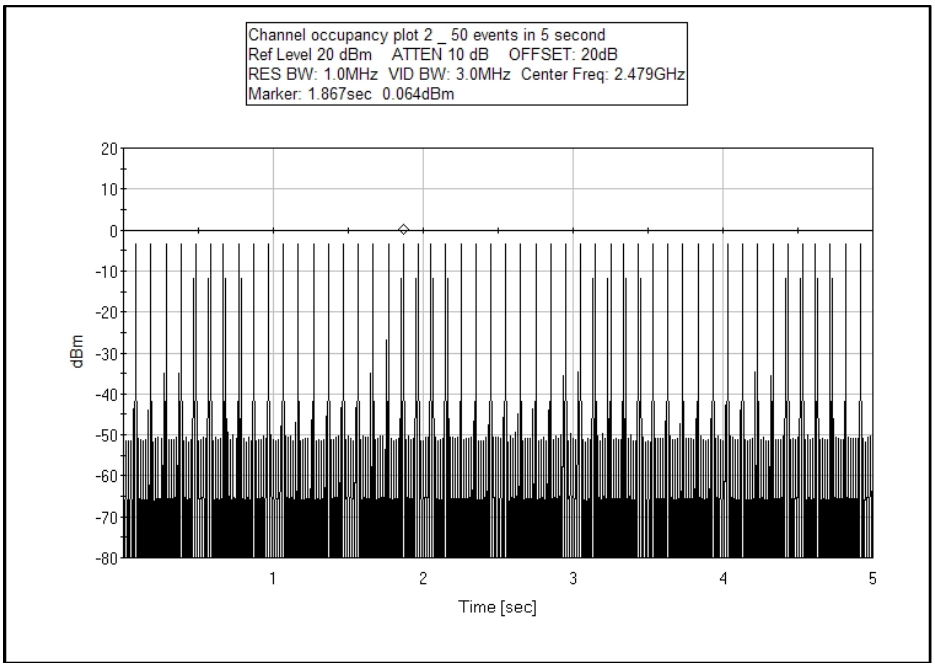
TOTAL NUMBER OF HOPPING CHANNEL = 79.

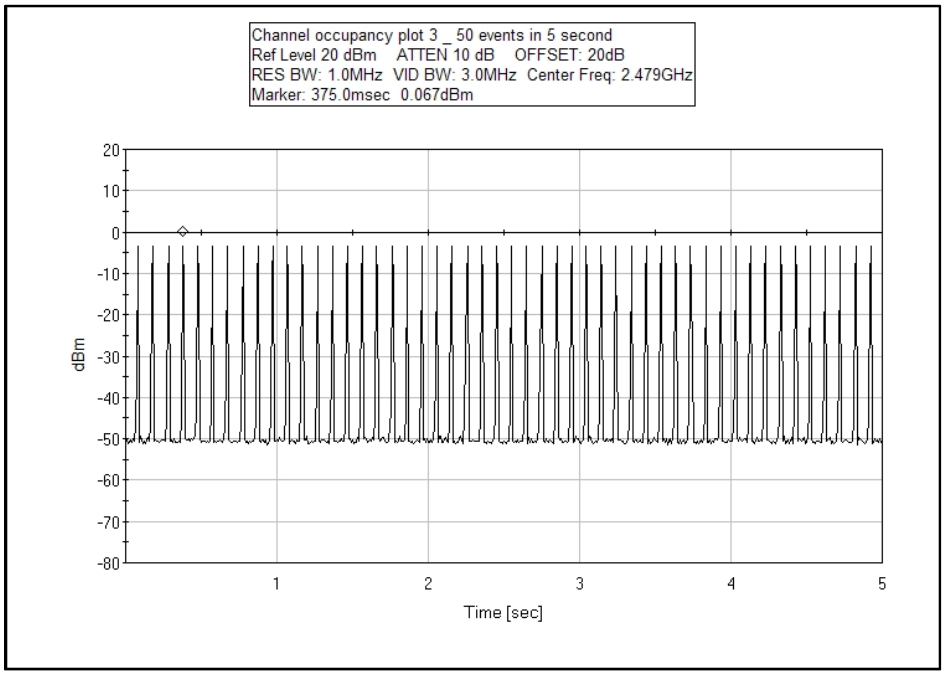
Average Time of Occupancy



Centered In One Hopping Channel, The Event On Time Was Measured.
EVENT ON TIME =380uS.


Channel occupancy plot 1 _ 50 events in 5 second
Ref Level 20 dBm ATTEN 10 dB OFFSET: 20dB
RES BW: 1.0MHz VID BW: 3.0MHz Center Freq: 2.479GHz
Marker: 633.333msec -47.803dBm
dBm
Time [sec]


Channel occupancy plot 2 _ 50 events in 5 second
Ref Level 20 dBm ATTEN 10 dB OFFSET: 20dB
RES BW: 1.0MHz VID BW: 3.0MHz Center Freq: 2.479GHz
Marker: 1.867sec 0.064dBm
dBm
Time [sec]



- Three separate sweeps at 5 second were acquired, averaging 50 events per 5 second sweep.
- 50 events/ 5 second, 10 events per second.
- Limit: On time **shall not exceed 0.4 second**, in 0.4 sec x 79 channels (31.6 Sec)
- Each events on time = 380 uS,
- Therefore, in 31.6 second, total on time = 31.6 sec x 10 events /sec x 380uS/event = **0.12 sec.**

Test Setup Photos

15.247(b)(1) RF Power Output

Test Data Sheets

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer:	**Rohrback Cosasco Systems**		
Specification:	**15.247(b) Power Output (2400-2483.5 MHz FHSS >75 Channels)**		
Work Order #:	**92136**	Date:	7/18/2011
Test Type:	**Conducted Emissions**	Time:	09:48:51
Equipment:	**Data-logger with Bluetooth Communication**	Sequence#:	1
Manufacturer:	Rohrback Cosasco Systems	Tested By:	E. Wong
Model:	MWT-3905-MDL-BT		7.2V battery
S/N:	1199		

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02672	Spectrum Analyzer	E4446A	8/9/2010	8/9/2012
T1	AN02945	Cable	32022-2-2909K-36TC	9/21/2009	9/21/2011

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

Function	Manufacturer	Model #	S/N
Data-logger with Bluetooth Communication*	Rohrback Cosasco Systems	MWT-3905-MDL-BT	1199

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop	HP	N3435	NA

Test Conditions / Notes:

The EUT is placed on the test bench, RF output measurement is performed at the antenna port, the RF path includes two internal RF cable and Intrinsic Safety board. The service port is connected to a laptop for testing configuration purposes.

Frequency= 2402MHz, 2441MHz, 2480MHz
Rate power = 4 dBm
Continuous transmit.
Firmware power setting 255, 50.
Measured power= -1.7dBm (0.0007W), -1.8 dBm (0.0007W), -2.7 dBm(0.0005W)
Frequency range of measurement = 2402-2480MHz
RBW=VBW=3MHz

22°C, 64% Relative Humidity

15.31(e) A fresh battery is used.
20dB External attenuation compensated as amplitude offset entered into the spectrum analyzer.

Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Lead: Antenna port

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBm	Spec dBm	Margin dB	Polar Ant
1	2401.900M	-2.3	+0.6				+0.0	-1.7	30.0	-31.7	Anten
2	2440.900M	-2.4	+0.6				+0.0	-1.8	30.0	-31.8	Anten
3	2479.770M	-3.3	+0.6				+0.0	-2.7	30.0	-32.7	Anten

Test Setup Photos

15.247(d) Radiated Spurious Emissions

Test Data Sheet

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Rohrback Cosasco Systems**
Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
Work Order #: **92136** Date: 7/19/2011
Test Type: **Radiated Scan** Time: 10:50:12
Equipment: **Data-logger with Bluetooth Communication** Sequence#: 2
Manufacturer: Rohrback Cosasco Systems Tested By: E. Wong
Model: MWT-3905-MDL-BT
S/N: 1199

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02672	Spectrum Analyzer	E4446A	8/9/2010	8/9/2012
T2	AN00309	Preamp	8447D	5/7/2010	5/7/2012
T3	AN01995	Biconilog Antenna	CBL6111C	3/8/2010	3/8/2012
T4	ANP05050	Cable	RG223/U	3/21/2011	3/21/2013
T5	ANP05198	Cable	8268	12/21/2010	12/21/2012
T6	AN00849	Horn Antenna	3115	4/23/2010	4/23/2012
T7	AN00786	Preamp	83017A	8/5/2010	8/5/2012
T8	AN02948	Cable	32022-2-2909K-24TC	9/21/2009	9/21/2011
T9	ANP05421	Cable	Sucoflex 104A	2/12/2010	2/12/2012
T10	ANP05563	Cable	ANDL-1-PNMN-48	9/3/2010	9/3/2012
	AN00314	Loop Antenna	6502	6/30/2010	6/30/2012
T11	AN02744	High Pass Filter	11SH10-3000/T10000-O/O	3/5/2010	3/5/2012
T12	AN02746	Low Pass Filter	11SL10-2000/U6000-O/O	11/20/2009	11/20/2011
	AN01413	Horn Antenna-ANSI C63.5 Antenna Factors (dB)	84125-80008	12/2/2010	12/2/2012
	AN01413	Horn Antenna-1 Meter Antenna Factors (dB) - SAE ARP 958	84125-80008	12/2/2010	12/2/2012

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

Function	Manufacturer	Model #	S/N
Data-logger with Bluetooth Communication*	Rohrback Cosasco Systems	MWT-3905-MDL-BT	1199

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop	HP	N3435	NA

Test Conditions / Notes:

The EUT is placed on the wooden table lined with Styrofoam of 10 cm thickness; the service port is connected to a laptop via a serial cable for testing configuration purposes. Ground cable is connected. EUT orientated in intended installation position. A test plug is connected to the sensor port.

Frequency= 2402MHz, 2441MHz, 2480MHz
Rate power = 4 dBm
Firmware power setting 255, 50
Continuous transmit.
Measured power= -1.7dBm (0.0007W), -1.8 dBm (0.0007W), -2.7 dBm(0.0005W)

22°C, 64% Relative Humidity

Frequency range of measurement = 9 kHz- 25GHz.
9 kH -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-2500 MHz; RBW=1 MHz, VBW=1 MHz.

15.31(e) A fresh battery is used.
Emission profile of the EUT with transmitting antenna positioned in both the vertical and horizontal orientation was evaluated.

Ext Attn: 0 dB

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

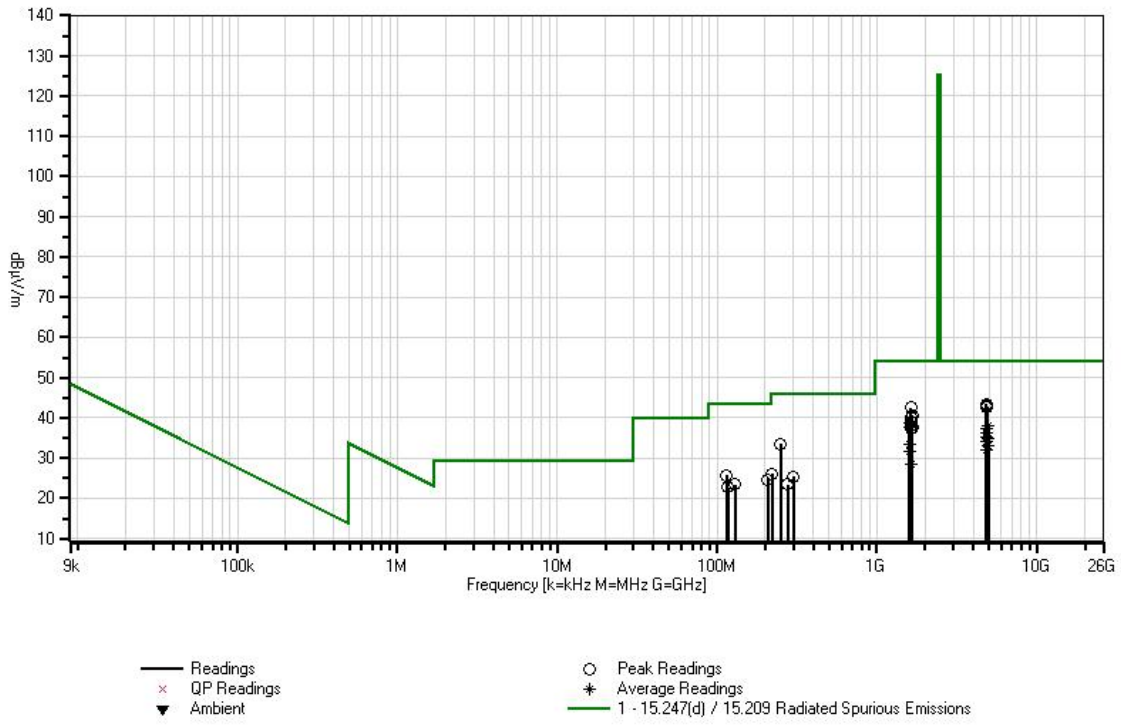
#	Freq	Rdng	T1 T5 T9	T2 T6 T10	T3 T7 T11	T4 T8 T12	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	4804.000M	40.0	+0.0 +0.0 +1.9	+0.0 +33.0 +4.4	+0.0 -37.1 +0.5	+0.0 +0.7 +0.0	+0.0	43.4	54.0 TX ant Horiz	-10.6	Vert
2	4882.167M	39.3	+0.0 +0.0 +1.9	+0.0 +33.1 +4.5	+0.0 -37.1 +0.4	+0.0 +0.7 +0.0	+0.0	42.8	54.0 TX ant Vert	-11.2	Horiz
3	1625.983M	50.4	+0.0 +0.0 +1.0	+0.0 +26.1 +2.5	+0.0 -38.2 +0.0	+0.0 +0.4 +0.4	+0.0	42.6	54.0 TX ant Vert	-11.4	Vert
4	4803.667M	39.2	+0.0 +0.0 +1.9	+0.0 +33.0 +4.4	+0.0 -37.1 +0.5	+0.0 +0.7 +0.0	+0.0	42.6	54.0 TX ant Vert	-11.4	Horiz
5	249.242M	45.7	+0.0 +2.8 +0.0	-27.8 +0.0 +0.0	+12.6 +0.0 +0.0	+0.2 +0.0 +0.0	+0.0	33.5	46.0 TX ant Vert	-12.5	Horiz
6	1654.067M	48.0	+0.0 +0.0 +1.0	+0.0 +26.2 +2.6	+0.0 -38.2 +0.0	+0.0 +0.4 +0.4	+0.0	40.4	54.0 TX ant Horiz	-13.6	Horiz

7	1652.050M	47.9	+0.0	+0.0	+0.0	+0.0	+0.0	40.3	54.0	-13.7	Vert
			+0.0	+26.2	-38.2	+0.4			TX ant Vert		
			+1.0	+2.6	+0.0	+0.4					
8	1628.100M	46.9	+0.0	+0.0	+0.0	+0.0	+0.0	39.1	54.0	-14.9	Vert
			+0.0	+26.1	-38.2	+0.4			TX ant Horiz		
			+1.0	+2.5	+0.0	+0.4					
9	1599.983M	46.8	+0.0	+0.0	+0.0	+0.0	+0.0	38.7	54.0	-15.3	Horiz
	Ave		+0.0	+25.9	-38.2	+0.4			TX ant horiz		
			+1.0	+2.5	+0.0	+0.3					
10	1625.983M	45.9	+0.0	+0.0	+0.0	+0.0	+0.0	38.1	54.0	-15.9	Horiz
			+0.0	+26.1	-38.2	+0.4			TX ant Vert		
			+1.0	+2.5	+0.0	+0.4					
11	4959.800M	34.3	+0.0	+0.0	+0.0	+0.0	+0.0	38.0	54.0	-16.0	Horiz
	Ave		+0.0	+33.2	-37.0	+0.7			TX ant Horiz		
			+1.9	+4.5	+0.4	+0.0					
^	4959.800M	46.2	+0.0	+0.0	+0.0	+0.0	+0.0	49.9	54.0	-4.1	Horiz
			+0.0	+33.2	-37.0	+0.7			TX ant Horiz		
			+1.9	+4.5	+0.4	+0.0					
13	1654.000M	45.3	+0.0	+0.0	+0.0	+0.0	+0.0	37.7	54.0	-16.3	Vert
			+0.0	+26.2	-38.2	+0.4			TX ant Horiz		
			+1.0	+2.6	+0.0	+0.4					
14	1599.983M	45.8	+0.0	+0.0	+0.0	+0.0	+0.0	37.7	54.0	-16.3	Vert
	Ave		+0.0	+25.9	-38.2	+0.4			TX ant Vert		
			+1.0	+2.5	+0.0	+0.3					
15	4803.833M	34.0	+0.0	+0.0	+0.0	+0.0	+0.0	37.4	54.0	-16.6	Horiz
	Ave		+0.0	+33.0	-37.1	+0.7			TX ant Horiz		
			+1.9	+4.4	+0.5	+0.0					
^	4803.833M	44.4	+0.0	+0.0	+0.0	+0.0	+0.0	47.8	54.0	-6.2	Horiz
			+0.0	+33.0	-37.1	+0.7			TX ant Horiz		
			+1.9	+4.4	+0.5	+0.0					
17	1652.050M	44.8	+0.0	+0.0	+0.0	+0.0	+0.0	37.2	54.0	-16.8	Horiz
			+0.0	+26.2	-38.2	+0.4			TX ant Vert		
			+1.0	+2.6	+0.0	+0.4					
18	4881.950M	32.9	+0.0	+0.0	+0.0	+0.0	+0.0	36.4	54.0	-17.6	Horiz
	Ave		+0.0	+33.1	-37.1	+0.7			TX ant Horiz		
			+1.9	+4.5	+0.4	+0.0					
^	4881.950M	45.1	+0.0	+0.0	+0.0	+0.0	+0.0	48.6	54.0	-5.4	Horiz
			+0.0	+33.1	-37.1	+0.7			TX ant Horiz		
			+1.9	+4.5	+0.4	+0.0					
20	115.020M	40.1	+0.0	-27.8	+11.5	+0.2	+0.0	25.8	43.5	-17.7	Horiz
			+1.8	+0.0	+0.0	+0.0			TX ant Vert		
			+0.0	+0.0	+0.0	+0.0					
21	4803.667M	31.8	+0.0	+0.0	+0.0	+0.0	+0.0	35.2	54.0	-18.8	Vert
	Ave		+0.0	+33.0	-37.1	+0.7			TX ant Vert		
			+1.9	+4.4	+0.5	+0.0					
^	4803.667M	44.4	+0.0	+0.0	+0.0	+0.0	+0.0	47.8	54.0	-6.2	Vert
			+0.0	+33.0	-37.1	+0.7			TX ant Vert		
			+1.9	+4.4	+0.5	+0.0					
23	206.542M	40.0	+0.0	-27.7	+9.6	+0.2	+0.0	24.6	43.5	-18.9	Vert
			+2.5	+0.0	+0.0	+0.0			TX ant Vert		
			+0.0	+0.0	+0.0	+0.0					

24	4960.333M	31.3	+0.0	+0.0	+0.0	+0.0	+0.0	35.0	54.0	-19.0	Vert
	Ave		+0.0	+33.2	-37.0	+0.7			TX ant Vert		
			+1.9	+4.5	+0.4	+0.0					
^	4960.333M	43.0	+0.0	+0.0	+0.0	+0.0	+0.0	46.7	54.0	-7.3	Vert
			+0.0	+33.2	-37.0	+0.7			TX ant Vert		
			+1.9	+4.5	+0.4	+0.0					
26	4960.000M	31.1	+0.0	+0.0	+0.0	+0.0	+0.0	34.8	54.0	-19.2	Horiz
	Ave		+0.0	+33.2	-37.0	+0.7			TX ant Vert		
			+1.9	+4.5	+0.4	+0.0					
^	4960.000M	42.5	+0.0	+0.0	+0.0	+0.0	+0.0	46.2	54.0	-7.8	Horiz
			+0.0	+33.2	-37.0	+0.7			TX ant Vert		
			+1.9	+4.5	+0.4	+0.0					
28	4881.583M	30.6	+0.0	+0.0	+0.0	+0.0	+0.0	34.1	54.0	-19.9	Vert
	Ave		+0.0	+33.1	-37.1	+0.7			TX ant Vert		
			+1.9	+4.5	+0.4	+0.0					
^	4881.583M	43.2	+0.0	+0.0	+0.0	+0.0	+0.0	46.7	54.0	-7.3	Vert
			+0.0	+33.1	-37.1	+0.7			TX ant Vert		
			+1.9	+4.5	+0.4	+0.0					
30	130.120M	37.3	+0.0	-27.8	+11.9	+0.2	+0.0	23.5	43.5	-20.0	Horiz
			+1.9	+0.0	+0.0	+0.0			TX ant Horiz		
			+0.0	+0.0	+0.0	+0.0					
31	221.600M	40.3	+0.0	-27.8	+10.7	+0.2	+0.0	26.0	46.0	-20.0	Horiz
			+2.6	+0.0	+0.0	+0.0			TX ant Horiz		
			+0.0	+0.0	+0.0	+0.0					
32	1599.983M	41.7	+0.0	+0.0	+0.0	+0.0	+0.0	33.6	54.0	-20.4	Vert
	Ave		+0.0	+25.9	-38.2	+0.4			TX ant horiz		
			+1.0	+2.5	+0.0	+0.3					
^	1599.983M	56.4	+0.0	+0.0	+0.0	+0.0	+0.0	48.3	54.0	-5.7	Vert
			+0.0	+25.9	-38.2	+0.4			TX ant Vert		
			+1.0	+2.5	+0.0	+0.3					
^	1599.983M	52.8	+0.0	+0.0	+0.0	+0.0	+0.0	44.7	54.0	-9.3	Vert
			+0.0	+25.9	-38.2	+0.4			TX ant horiz		
			+1.0	+2.5	+0.0	+0.3					
35	300.525M	36.5	+0.0	-27.8	+13.3	+0.2	+0.0	25.3	46.0	-20.7	Horiz
			+3.1	+0.0	+0.0	+0.0			TX ant Vert		
			+0.0	+0.0	+0.0	+0.0					
36	117.120M	36.9	+0.0	-27.8	+11.6	+0.2	+0.0	22.7	43.5	-20.8	Horiz
			+1.8	+0.0	+0.0	+0.0			TX ant Horiz		
			+0.0	+0.0	+0.0	+0.0					
37	4960.000M	29.3	+0.0	+0.0	+0.0	+0.0	+0.0	33.0	54.0	-21.0	Vert
	Ave		+0.0	+33.2	-37.0	+0.7			TX ant Horiz		
			+1.9	+4.5	+0.4	+0.0					
^	4960.000M	43.3	+0.0	+0.0	+0.0	+0.0	+0.0	47.0	54.0	-7.0	Vert
			+0.0	+33.2	-37.0	+0.7			TX ant Horiz		
			+1.9	+4.5	+0.4	+0.0					
39	4881.700M	28.4	+0.0	+0.0	+0.0	+0.0	+0.0	31.9	54.0	-22.1	Vert
	Ave		+0.0	+33.1	-37.1	+0.7			TX ant Horiz		
			+1.9	+4.5	+0.4	+0.0					
^	4881.700M	38.7	+0.0	+0.0	+0.0	+0.0	+0.0	42.2	54.0	-11.8	Vert
			+0.0	+33.1	-37.1	+0.7			TX ant Horiz		
			+1.9	+4.5	+0.4	+0.0					

41	275.870M	35.0	+0.0	-27.7	+13.0	+0.3	+0.0	23.5	46.0	-22.5	Horiz
			+2.9	+0.0	+0.0	+0.0			TX ant Horiz		
			+0.0	+0.0	+0.0	+0.0					
42	1600.000M	39.6	+0.0	+0.0	+0.0	+0.0	+0.0	31.5	54.0	-22.5	Horiz
	Ave		+0.0	+25.9	-38.2	+0.4			TX ant Vert		
			+1.0	+2.5	+0.0	+0.3					
^	1599.983M	58.2	+0.0	+0.0	+0.0	+0.0	+0.0	50.1	54.0	-3.9	Horiz
			+0.0	+25.9	-38.2	+0.4			TX ant horiz		
			+1.0	+2.5	+0.0	+0.3					
^	1600.000M	51.4	+0.0	+0.0	+0.0	+0.0	+0.0	43.3	54.0	-10.7	Horiz
			+0.0	+25.9	-38.2	+0.4			TX ant Vert		
			+1.0	+2.5	+0.0	+0.3					
45	1625.400M	36.3	+0.0	+0.0	+0.0	+0.0	+0.0	28.5	54.0	-25.5	Horiz
	Ave		+0.0	+26.1	-38.2	+0.4			TX ant Horiz		
			+1.0	+2.5	+0.0	+0.4					
^	1625.400M	51.5	+0.0	+0.0	+0.0	+0.0	+0.0	43.7	54.0	-10.3	Horiz
			+0.0	+26.1	-38.2	+0.4			TX ant Horiz		
			+1.0	+2.5	+0.0	+0.4					

CKC Laboratories, Inc. Date: 7/19/2011 Time: 10:50:12 Rohrback Cosasco Systems WO#: 92136
15.247(d) / 15.209 Radiated Spurious Emissions Test Distance: 3 Meters Sequence#: 2 Ext ATTN: 0 dB



Test Setup Photos

RSS-210

99 % Bandwidth

Test Conditions / Setup

The EUT is placed on the test bench, measurement is performed at the antenna port, the RF path includes two internal RF cable and Intrinsic Safety board. The service port is connected to a laptop for testing configuration purposes.

Frequency= 2402MHz, 2441MHz, 2480MHz
Rate power = 4 dBm
Continuous transmit.
Firmware power setting 255, 50.
Measured power= -1.7dBm (0.0007W), -1.8 dBm (0.0007W), -2.7 dBm(0.0005W)
Frequency range of measurement = 2402-2480MHz
22DegC, 64%rh

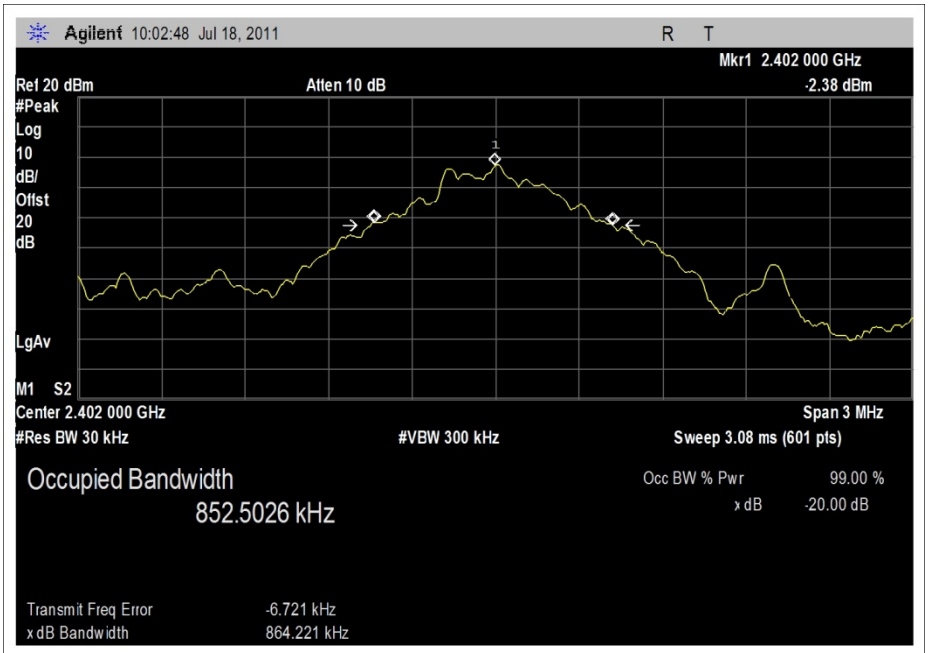
15.31(e) A fresh battery is used.
20dB External attenuation compensated as amplitude offset entered into the spectrum analyzer.

Engineer Name: E. Wong

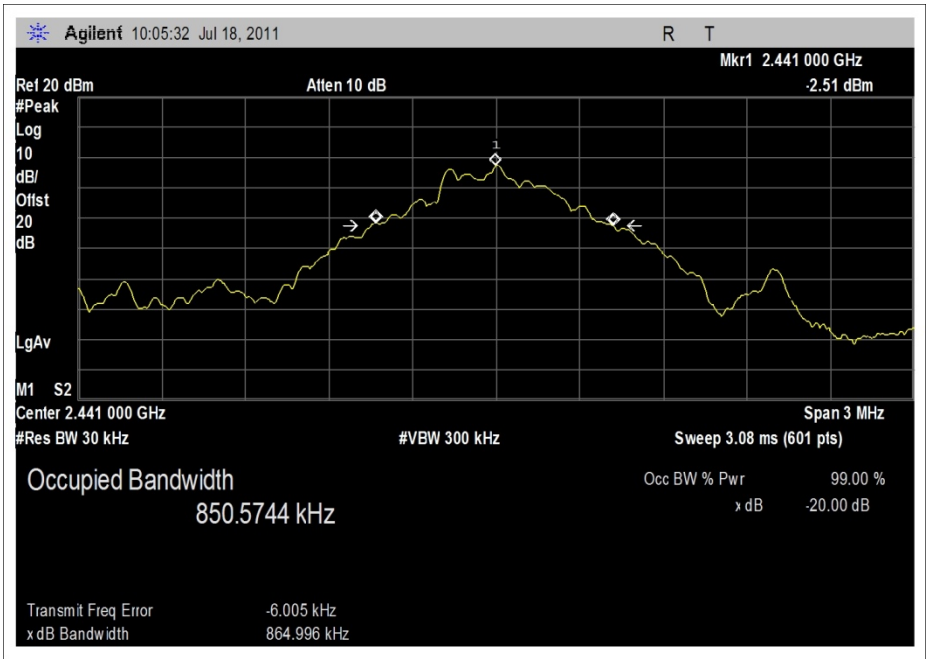
Test Equipment

Asset/Serial #	Description	Model	Manufacturer	Cal Date	Cal Due
02672	Spectrum Analyzer	E4446A	Agilent	8/9/2010	8/9/2012
02945	Cable	32022-2-2909K-36TC	AstroLab	9/21/2009	9/21/2011

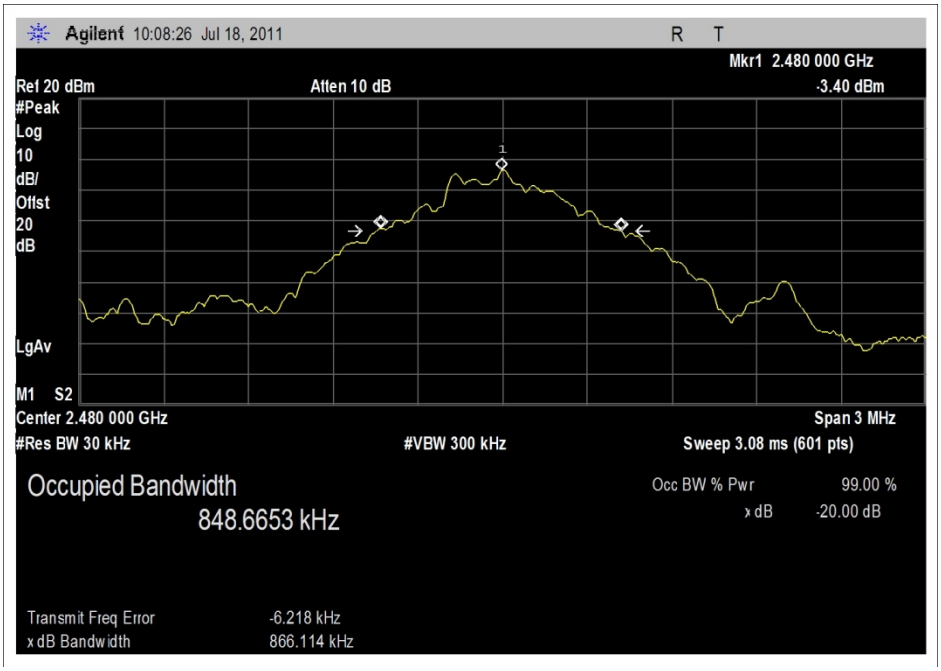
Test Plots



99%BW_2402MHz



99%BW_2441MHz



99%BW_2480MHz

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

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. 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	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 "Peak" mode. Whenever a "Quasi-Peak" or "Average" reading is listed as one of the highest readings, this is indicated as a "QP" or an "Ave" on the appropriate rows of the data sheets. 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/receiver readings recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the measuring device called "peak hold," the measuring device had the ability to measure transients 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

When the true peak values exceeded or were within 2 dB of the specification limit, quasi-peak measurements were taken using the quasi-peak detector.

Average

For certain frequencies, average measurements may be made using the spectrum analyzer/receiver. 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.