TESTING
CERT #803.01, 803.02, 803.05, 803.06

CIMARRON SYSTEMS LLC TEST REPORT

FOR THE

WIRELESS SENSOR NETWORK MODULE, 915-1000-0-NIU

FCC PART 15 SUBPART B SECTIONS 15.107 & 15.109 CLASS B, FCC PART 15 SUBPART C SECTIONS 15.207 & 15.247 & RSS-210 ISSUE 7

TESTING

DATE OF ISSUE: DECEMBER 8, 2008

PREPARED FOR:

Cimarron Systems LLC
20311Spoonwood Drive
Humble, TX 77346

PREPARED BY:

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

P.O. No.: CSLLC-1004
W.O. No.: 88433

Date of test: November 30, 2008

Report No.: FC08-113

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ADMINISTRATIVE INFORMATION

DATE OF TEST: November 30, 2008

DATE OF RECEIPT: November 30, 2008

REPRESENTATIVE: Bill Mathews

MANUFACTURER:
Cimarron Systems LLC
20311Spoonwood Drive
Humble, TX 77346

TEST LOCATION:
CKC Laboratories, Inc.
110 Olinda Place
Brea, CA 92823

TEST METHOD: ANSI C63.4 (2003), RSS-210 Issue 7 & RSS-GEN Issue 2

PURPOSE OF TEST: To perform the testing of the Wireless Sensor Network Module, 915-1000-0-NIU with the requirements for FCC Part 15 Subpart C Sections 15.207 & 15.247, Subpart B Sections 15.107 & 15.109 Class B and RSS 210 devices.

APPROVALS

Steve Behm, Director of Engineering Services

TEST PERSONNEL:

Eddie Wong, Senior EMC Engineer

SUMMARY OF RESULTS

Test	Specification/Method	Results
Mains Conducted Emissions	FCC Part 15 Subpart B Section 15.107 Class B	Pass
Radiated Emissions	FCC Part 15 Subpart B Section 15.109 Class B	Pass
Mains Conducted Emissions	FCC Part 15 Subpart C Section 15.207	Pass
6 dB Bandwidth	FCC Part 15.247(a)(1)	Pass
Carrier Frequency Separation	FCC Part 15.247(a)(1)	Pass
Number of Hopping Frequencies	FCC Part 15.247(a)(1)(iii)	Pass
RF Power Output	FCC Part 15.247(b)(2)	Pass
Band Edge	FCC Part 15.247(d)	Pass
OATS Radiated Spurious Emissions	FCC Part 15.247(d)	Pass
99% Bandwidth	RSS-210	Pass
Site Filing Nos.	FCC Site No. 90473 Industry of Canada File No. IC 3172-A	

CONDITIONS DURING TESTING

Added a SAW filter between the output of the transceiver and the input of the power amplifier. Mounting holes are isolated from the ground plane. The board is screwed to the standoffs. A 10MOhm resistor was added between the analog input amplifier and ground.

FCC 15.31(e) Voltage Variations
AC power level was varied + - 15 %. RF Output power remained unchanged.

FCC 15.31(m) Number Of Channels
Tested in low, middle and high frequencies.

FCC 15.33(a) Frequency Ranges Tested
15.107 Conducted Emissions: 150 kHz – 30 MHz
15.109 Radiated Emissions: 30 MHz – 10 GHz
15.207 Conducted Emissions: 150 kHz – 30 MHz
15.247 Radiated Emissions: 9 kHz – 10GHz

FCC 15.203 Antenna Requirements
The antenna is attached with an MMCX connector. This meets the 15.203 requirement per DA 00-2225.

EUT Operating Frequency
The EUT was operating at 916-926 MHz.

The EUT is a frequency hopping spread spectrum device operating in the 902 – 928 MHz band.

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The customer declares the EUT tested by CKC Laboratories was representative of a production unit. The EUT collects data from analog transducers and switch contacts and transmits via ad hoc mesh network to a central data collection unit. All modules use the same PC board and have identical RF properties. The different model numbers are the result of differing network functions performed. The unit tested by CKC was: **Wireless Data Collection System, 915-1000-0-NIU.** Since the time of testing the manufacturer has chosen to use the following model name in its place. **Wireless Sensor Network Module, 915-1000-0-NIU**

The manufacturer states that the following additional models are identical electrically to the one which was tested, or any differences between them do not affect their EMC characteristics, and therefore they meet the level of testing equivalent to the tested models:

915-1000-0-DCU
915-1000-0-PRI
915-1000-0-SEC
915-1000-0-NTU

EQUIPMENT UNDER TEST

Wireless Sensor Network Module

Manuf:	Cimarron Systems LLC
Model:	915-1000-0-NIU
Serial:	NA
FCC ID:	WK5-915-1000-0 (pending)
IC #:	7893A-91510000

PERIPHERAL DEVICES

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

Pressure Transducer

Manuf:	Omegadyne
Model:	PX-319-200GV
Serial:	091906D028

Pressure Transducer

Manuf:	Omegadyne
Model:	PX-319-1KGV
Serial:	053007D300

Power Supply

Manuf:	Cincon
Model:	TR1505
Serial:	NA

REPORT OF EMISSIONS MEASUREMENTS

TESTING PARAMETERS

TEMPERATURE AND HUMIDITY DURING TESTING

The temperature during testing was within +15°C and + 35°C.
The relative humidity was between 20% and 75%.

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. When conducted emissions testing was performed, a 10 dB external attenuator was used with internal offset correction in the analyzer.

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 were 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

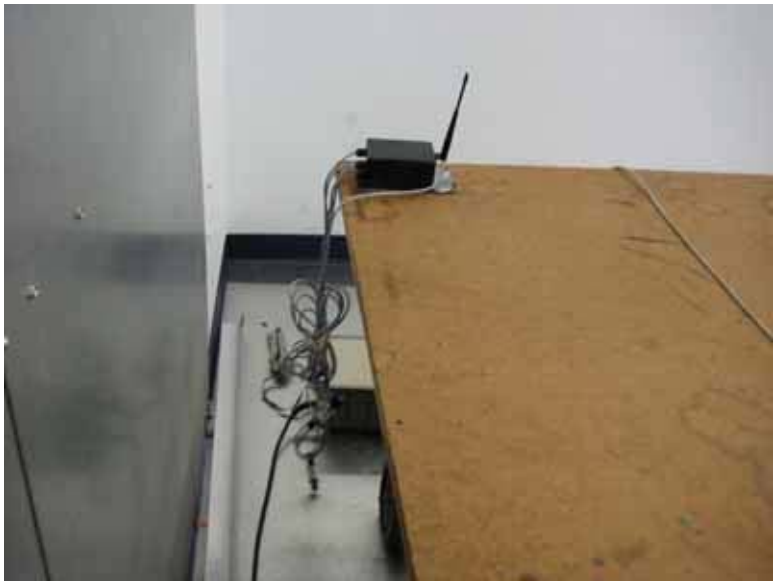
When the true peak values exceeded or were within 2 dB of the specification limit, quasi-peak measurements were taken using the quasi-peak detector.

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.

FCC 15.107 – AC CONDUCTED EMISSIONS

Test Setup Photos



Test Data Sheets

Test Location: CKC Laboratories, Inc. •110. N. Olinda Place. • Brea, CA 92821 • (714) 993-6112

Customer:	**Cimarron Systems LLC**		
Specification:	**FCC 15.107 Class B COND [AVE]**		
Work Order #:	**88433**	Date:	11/30/2008
Test Type:	**Conducted Emissions**	Time:	16:03:54
Equipment:	**Wireless Data Collection System**	Sequence#:	12
Manufacturer:	Cimarron Systems LLC	Tested By:	E. Wong
Model:	915-1000-0-NIU		110V 60Hz
S/N:	NA		

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer	US44300438	07/23/2008	07/23/2010	02672
6dB Attenuator	None	10/14/2008	10/14/2010	P05886
150kHz HPF	G7755	01/09/2008	01/09/2010	02610
Conducted Emission Cable	Cable #21	05/12/2008	05/12/2010	P04358
LISN	1102	05/11/2007	05/11/2009	00848

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

Function	Manufacturer	Model #	S/N
Wireless Data Collection System*	Cimarron Systems LLC	915-1000-0-NIU	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Pressure transducer	Omegadyne	PX-319-200GV	091906D028
Pressure transducer	Omegadyne	PX-319-1KGV	053007D300
Power Supply	Cincon	TR1505	NA

Test Conditions / Notes:

FCC15.107(2007)

The EUT is placed on the wooden table. The serial port is connected to a support 5V AC-DC power supply and a remotely located support laptop.

Two analog inputs are connected to support pressure transducers. Four discrete inputs are connected to a section of unterminated cable. All four cables are of shielded cable.

Freq range : 916MHz - 926MHz
Mode: RX
Test software setting: Transceiver power = -8
PA Gain voltage: 1.8

The device is to be used in three different orientations, with transmit antenna perpendicular to the ground reference plane. The emission profile of all three device orientations will be tested and worse case emission presented.

Note: In normal application, this low transmit duty cycle device has a transmit interval in the order of once a minute. The primary power source is non-rechargeable and rechargeable battery with external AC-DC power supply or solar panel. To support continuous transmit in test mode, a support 5V AC-DC power supply is used to simulate testing with a new battery.

AC Cond emission:
Modification:
Added a SAW filter between the output of the transceiver and the input of the power amplifier.
Mounting holes are isolated from the ground plane. The board is screwed to the standoffs.
A 10MOhm resistor was added between the analog input amplifier and ground.

Transducer Legend:

T1=150kHz HPF AN02610_010910	T2=Cable #21 -P04358- Site A 05/12/10
T3=6dB Attenuator	T4=(L1) LISN Insertion Loss 00848

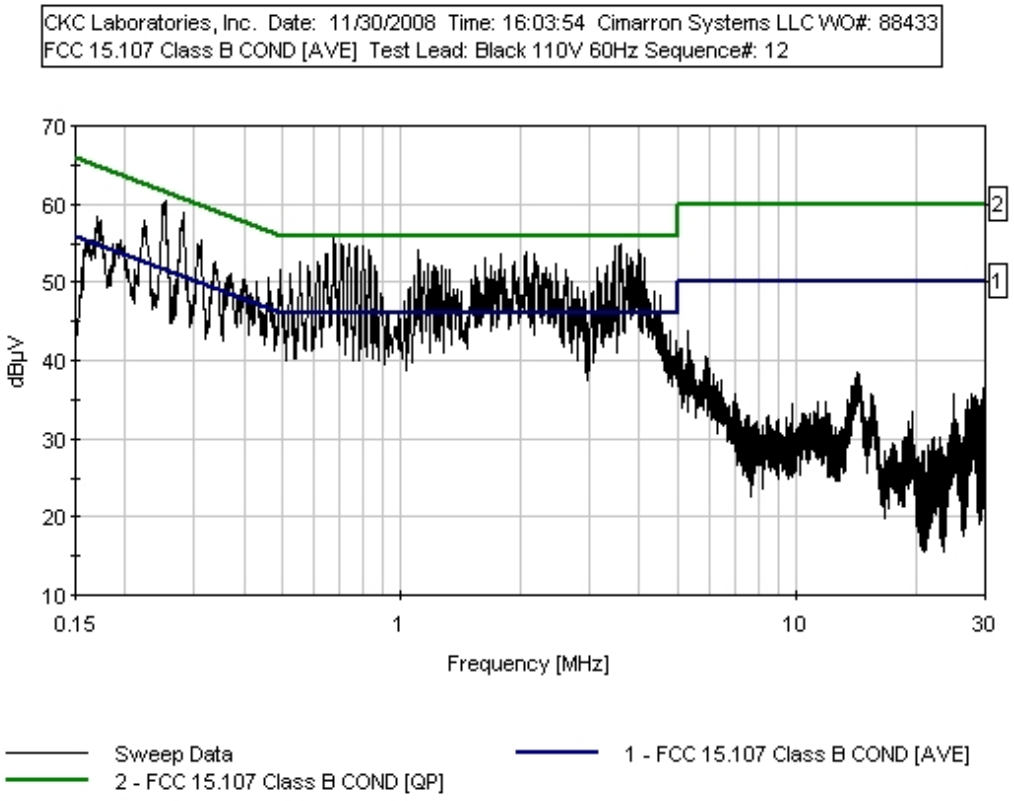
Measurement Data: Reading listed by margin. Test Lead: Black

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	680.670k QP	45.4	+0.2	+0.0	+6.0	+0.0	+0.0	51.6	56.0	-4.4	Black
^	675.770k	49.4	+0.2	+0.0	+6.0	+0.0	+0.0	55.6	46.0	+9.6	Black
3	708.494k Ave	32.5	+0.3	+0.0	+6.0	+0.0	+0.0	38.8	46.0	-7.2	Black
^	708.494k	48.6	+0.3	+0.0	+6.0	+0.0	+0.0	54.9	46.0	+8.9	Black
5	679.140k Ave	32.0	+0.2	+0.0	+6.0	+0.0	+0.0	38.2	46.0	-7.8	Black
6	770.307k Ave	31.4	+0.3	+0.0	+6.0	+0.0	+0.0	37.7	46.0	-8.3	Black
^	770.307k	48.4	+0.3	+0.0	+6.0	+0.0	+0.0	54.7	46.0	+8.7	Black
8	276.447k Ave	36.1	+0.2	+0.0	+6.0	+0.0	+0.0	42.3	50.9	-8.6	Black
9	802.304k Ave	31.0	+0.3	+0.0	+6.0	+0.0	+0.0	37.3	46.0	-8.7	Black
^	802.304k	48.4	+0.3	+0.0	+6.0	+0.0	+0.0	54.7	46.0	+8.7	Black
11	646.682k Ave	30.9	+0.2	+0.0	+6.0	+0.0	+0.0	37.1	46.0	-8.9	Black
^	646.682k	47.4	+0.2	+0.0	+6.0	+0.0	+0.0	53.6	46.0	+7.6	Black
13	3.127M Ave	29.1	+0.2	+0.1	+6.0	+0.1	+0.0	35.5	46.0	-10.5	Black
^	3.127M	45.4	+0.2	+0.1	+6.0	+0.1	+0.0	51.8	46.0	+5.8	Black
15	1.141M Ave	28.7	+0.3	+0.1	+6.0	+0.0	+0.0	35.1	46.0	-10.9	Black
^	1.141M	45.0	+0.3	+0.1	+6.0	+0.0	+0.0	51.4	46.0	+5.4	Black
17	1.264M Ave	28.7	+0.3	+0.1	+6.0	+0.0	+0.0	35.1	46.0	-10.9	Black
^	1.264M	45.7	+0.3	+0.1	+6.0	+0.0	+0.0	52.1	46.0	+6.1	Black
19	1.787M Ave	28.2	+0.2	+0.1	+6.0	+0.0	+0.0	34.5	46.0	-11.5	Black
^	1.787M	47.4	+0.2	+0.1	+6.0	+0.0	+0.0	53.7	46.0	+7.7	Black
21	583.415k Ave	28.2	+0.2	+0.0	+6.0	+0.0	+0.0	34.4	46.0	-11.6	Black
^	583.415k	45.9	+0.2	+0.0	+6.0	+0.0	+0.0	52.1	46.0	+6.1	Black
23	858.299k	27.5	+0.3	+0.1	+6.0	+0.0	+0.0	33.9	46.0	-12.1	Black

	Ave										
^	858.299k	45.6	+0.3	+0.1	+6.0	+0.0	+0.0	52.0	46.0	+6.0	Black
25	4.114M Ave	27.4	+0.2	+0.1	+6.0	+0.1	+0.0	33.8	46.0	-12.2	Black
^	4.114M	46.7	+0.2	+0.1	+6.0	+0.1	+0.0	53.1	46.0	+7.1	Black
27	1.694M Ave	27.3	+0.2	+0.1	+6.0	+0.0	+0.0	33.6	46.0	-12.4	Black
^	1.694M	45.9	+0.2	+0.1	+6.0	+0.0	+0.0	52.2	46.0	+6.2	Black
29	1.634M Ave	27.0	+0.2	+0.1	+6.0	+0.0	+0.0	33.3	46.0	-12.7	Black
^	1.634M	46.8	+0.2	+0.1	+6.0	+0.0	+0.0	53.1	46.0	+7.1	Black
31	280.897k Ave	31.2	+0.2	+0.0	+6.0	+0.0	+0.0	37.4	50.8	-13.4	Black
^	280.897k	52.7	+0.2	+0.0	+6.0	+0.0	+0.0	58.9	50.8	+8.1	Black
33	1.383M Ave	26.1	+0.3	+0.1	+6.0	+0.0	+0.0	32.5	46.0	-13.5	Black
^	1.383M	42.8	+0.3	+0.1	+6.0	+0.0	+0.0	49.2	46.0	+3.2	Black
35	521.602k Ave	26.2	+0.2	+0.0	+6.0	+0.0	+0.0	32.4	46.0	-13.6	Black
^	521.602k	44.8	+0.2	+0.0	+6.0	+0.0	+0.0	51.0	46.0	+5.0	Black
37	369.616k Ave	28.3	+0.2	+0.0	+6.0	+0.0	+0.0	34.5	48.5	-14.0	Black
^	369.616k	44.8	+0.2	+0.0	+6.0	+0.0	+0.0	51.0	48.5	+2.5	Black
39	432.156k Ave	26.5	+0.2	+0.0	+6.0	+0.0	+0.0	32.7	47.2	-14.5	Black
^	432.156k	43.8	+0.2	+0.0	+6.0	+0.0	+0.0	50.0	47.2	+2.8	Black
41	310.713k Ave	29.3	+0.2	+0.0	+6.0	+0.0	+0.0	35.5	50.0	-14.5	Black
^	310.713k	49.3	+0.2	+0.0	+6.0	+0.0	+0.0	55.5	50.0	+5.5	Black
43	3.948M Ave	25.1	+0.2	+0.1	+6.0	+0.1	+0.0	31.5	46.0	-14.5	Black
^	3.948M	45.6	+0.2	+0.1	+6.0	+0.1	+0.0	52.0	46.0	+6.0	Black
45	2.795M Ave	24.9	+0.2	+0.1	+6.0	+0.1	+0.0	31.3	46.0	-14.7	Black
^	2.795M	43.0	+0.2	+0.1	+6.0	+0.1	+0.0	49.4	46.0	+3.4	Black
47	2.332M Ave	24.3	+0.2	+0.1	+6.0	+0.1	+0.0	30.7	46.0	-15.3	Black
^	2.332M	45.4	+0.2	+0.1	+6.0	+0.1	+0.0	51.8	46.0	+5.8	Black
49	2.162M	24.2	+0.2	+0.1	+6.0	+0.0	+0.0	30.5	46.0	-15.5	Black

	Ave										
^	2.162M	45.1	+0.2	+0.1	+6.0	+0.0	+0.0	51.4	46.0	+5.4	Black
51	3.837M Ave	23.6	+0.2	+0.1	+6.0	+0.1	+0.0	30.0	46.0	-16.0	Black
^	3.837M	46.1	+0.2	+0.1	+6.0	+0.1	+0.0	52.5	46.0	+6.5	Black
53	2.412M Ave	23.2	+0.2	+0.1	+6.0	+0.1	+0.0	29.6	46.0	-16.4	Black
^	2.412M	43.4	+0.2	+0.1	+6.0	+0.1	+0.0	49.8	46.0	+3.8	Black
55	3.301M Ave	23.2	+0.2	+0.1	+6.0	+0.1	+0.0	29.6	46.0	-16.4	Black
^	3.301M	45.8	+0.2	+0.1	+6.0	+0.1	+0.0	52.2	46.0	+6.2	Black
57	3.722M Ave	22.9	+0.2	+0.1	+6.0	+0.1	+0.0	29.3	46.0	-16.7	Black
^	3.722M	47.2	+0.2	+0.1	+6.0	+0.1	+0.0	53.6	46.0	+7.6	Black
59	1.983M Ave	22.7	+0.2	+0.1	+6.0	+0.0	+0.0	29.0	46.0	-17.0	Black
^	1.983M	43.6	+0.2	+0.1	+6.0	+0.0	+0.0	49.9	46.0	+3.9	Black
61	885.710k Ave	22.0	+0.3	+0.1	+6.0	+0.0	+0.0	28.4	46.0	-17.6	Black
^	885.710k	42.2	+0.3	+0.1	+6.0	+0.0	+0.0	48.6	46.0	+2.6	Black
63	688.132k Ave	22.1	+0.2	+0.0	+6.0	+0.0	+0.0	28.3	46.0	-17.7	Black
^	688.132k	42.9	+0.2	+0.0	+6.0	+0.0	+0.0	49.1	46.0	+3.1	Black
65	2.651M Ave	21.8	+0.2	+0.1	+6.0	+0.1	+0.0	28.2	46.0	-17.8	Black
^	2.651M	43.4	+0.2	+0.1	+6.0	+0.1	+0.0	49.8	46.0	+3.8	Black
67	169.635k Ave	30.6	+0.4	+0.0	+6.0	+0.0	+0.0	37.0	55.0	-18.0	Black
^	169.635k	51.9	+0.4	+0.0	+6.0	+0.0	+0.0	58.3	55.0	+3.3	Black
69	3.318M Ave	21.4	+0.2	+0.1	+6.0	+0.1	+0.0	27.8	46.0	-18.2	Black
^	3.318M	45.7	+0.2	+0.1	+6.0	+0.1	+0.0	52.1	46.0	+6.1	Black
71	1.528M Ave	21.2	+0.2	+0.1	+6.0	+0.0	+0.0	27.5	46.0	-18.5	Black
^	1.528M	42.5	+0.2	+0.1	+6.0	+0.0	+0.0	48.8	46.0	+2.8	Black
73	3.476M Ave	20.1	+0.2	+0.1	+6.0	+0.1	+0.0	26.5	46.0	-19.5	Black
^	3.476M	42.6	+0.2	+0.1	+6.0	+0.1	+0.0	49.0	46.0	+3.0	Black
75	4.364M	19.2	+0.2	+0.1	+6.0	+0.1	+0.0	25.6	46.0	-20.4	Black

	Ave										
^	4.364M	42.3	+0.2	+0.1	+6.0	+0.1	+0.0	48.7	46.0	+2.7	Black
77	4.518M	18.3	+0.2	+0.1	+6.0	+0.1	+0.0	24.7	46.0	-21.3	Black
	Ave										
^	4.518M	42.0	+0.2	+0.1	+6.0	+0.1	+0.0	48.4	46.0	+2.4	Black



Test Location: CKC Laboratories, Inc. •110. N. Olinda Place. • Brea, CA 92821 • (714) 993-6112

Customer:	**Cimarron Systems LLC**		
Specification:	**FCC 15.107 Class B COND [AVE]**		
Work Order #:	**88433**	Date:	11/30/2008
Test Type:	**Conducted Emissions**	Time:	15:44:39
Equipment:	**Wireless Data Collection System**	Sequence#:	11
Manufacturer:	Cimarron Systems LLC	Tested By:	E. Wong
Model:	915-1000-0-NIU		110V 60Hz
S/N:	NA		

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer	US44300438	07/23/2008	07/23/2010	02672
6dB Attenuator	None	10/14/2008	10/14/2010	P05886
150kHz HPF	G7755	01/09/2008	01/09/2010	02610
Conducted Emission Cable	Cable #21	05/12/2008	05/12/2010	P04358
LISN	1102	05/11/2007	05/11/2009	00848

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

Function	Manufacturer	Model #	S/N
Wireless Data Collection System*	Cimarron Systems LLC	915-1000-0-NIU	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Pressure transducer	Omegadyne	PX-319-200GV	091906D028
Pressure transducer	Omegadyne	PX-319-1KGV	053007D300
Power Supply	Cincon	TR1505	NA

Test Conditions / Notes:

FCC15.107(2007)

The EUT is placed on the wooden table The serial port is connected to a support 5V AC-DC power supply and a remotely located support laptop.

Two analog inputs are connected to support pressure transducers. Four discrete inputs are connected to a section of unterminated cable. All four cables are of shielded cable.

Freq range : 916MHz - 926MHz
Mode: RX
Test software setting: Transceiver power = -8
PA Gain voltage: 1.8

The device is to be used in three different orientations, with transmit antenna perpendicular to the ground reference plane. The emission profile of all three device orientations will be tested and worse case emission presented.

Note: In normal application, this low transmit duty cycle device has a transmit interval in the order of once a minute. The primary power source is non-rechargeable and rechargeable battery with external AC-DC power supply or solar panel. To support continuous transmit in test mode, a support 5V AC-DC power supply is used to simulate testing with a new battery.

AC Cond emission:
Modification:
Added a SAW filter between the output of the transceiver and the input of the power amplifier.
Mounting holes are isolated from the ground plane. The board is screwed to the standoffs.
A 10MOhm resistor was added between the analog input amplifier and ground.

Transducer Legend:

T1=150kHz HPF AN02610_010910	T2=Cable #21 -P04358- Site A 05/12/10
T3=6dB Attenuator	T4=(L2) LISN Insertion Loss 00848

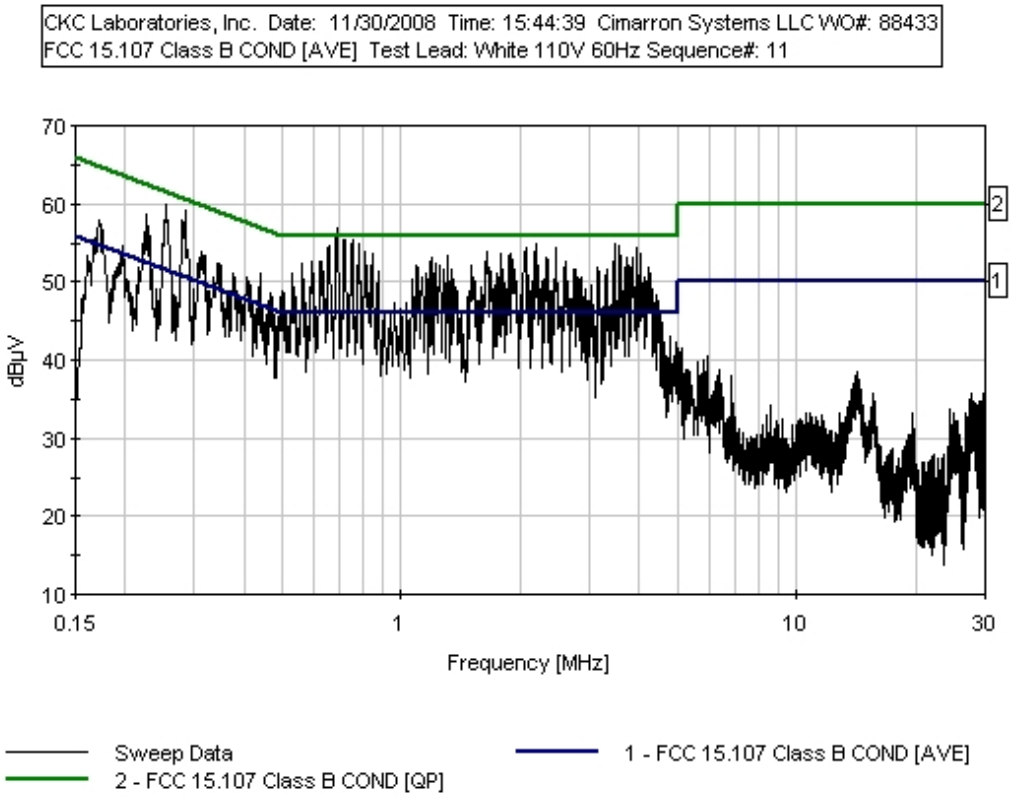
Measurement Data: Reading listed by margin. Test Lead: White

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	684.604k QP	45.7	+0.2	+0.0	+6.0	+0.0	+0.0	51.9	56.0	-4.1	White
2	715.201k Ave	27.9	+0.3	+0.0	+6.0	+0.0	+0.0	34.2	46.0	-11.8	White
^	719.402k	49.1	+0.3	+0.0	+6.0	+0.0	+0.0	55.4	46.0	+9.4	White
4	3.459M Ave	24.0	+0.2	+0.1	+6.0	+0.2	+0.0	30.5	46.0	-15.5	White
^	3.459M	48.4	+0.2	+0.1	+6.0	+0.2	+0.0	54.9	46.0	+8.9	White
6	687.405k Ave	23.1	+0.2	+0.0	+6.0	+0.0	+0.0	29.3	46.0	-16.7	White
^	687.405k	50.6	+0.2	+0.0	+6.0	+0.0	+0.0	56.8	46.0	+10.8	White
8	638.682k Ave	22.8	+0.2	+0.0	+6.0	+0.0	+0.0	29.0	46.0	-17.0	White
^	638.682k	45.2	+0.2	+0.0	+6.0	+0.0	+0.0	51.4	46.0	+5.4	White

10	1.514M Ave	22.5	+0.2	+0.1	+6.0	+0.1	+0.0	28.9	46.0	-17.1	White
^	1.511M	45.6	+0.2	+0.1	+6.0	+0.1	+0.0	52.0	46.0	+6.0	White
12	2.064M Ave	22.3	+0.2	+0.1	+6.0	+0.1	+0.0	28.7	46.0	-17.3	White
^	2.064M	47.9	+0.2	+0.1	+6.0	+0.1	+0.0	54.3	46.0	+8.3	White
14	3.986M Ave	21.5	+0.2	+0.1	+6.0	+0.2	+0.0	28.0	46.0	-18.0	White
^	3.986M	43.8	+0.2	+0.1	+6.0	+0.2	+0.0	50.3	46.0	+4.3	White
16	3.152M Ave	20.3	+0.2	+0.1	+6.0	+0.1	+0.0	26.7	46.0	-19.3	White
^	3.152M	44.9	+0.2	+0.1	+6.0	+0.1	+0.0	51.3	46.0	+5.3	White
18	1.753M Ave	19.9	+0.2	+0.1	+6.0	+0.1	+0.0	26.3	46.0	-19.7	White
^	1.753M	44.6	+0.2	+0.1	+6.0	+0.1	+0.0	51.0	46.0	+5.0	White
20	719.402k Ave	19.6	+0.3	+0.0	+6.0	+0.0	+0.0	25.9	46.0	-20.1	White
21	1.809M Ave	19.4	+0.2	+0.1	+6.0	+0.1	+0.0	25.8	46.0	-20.2	White
^	1.809M	45.2	+0.2	+0.1	+6.0	+0.1	+0.0	51.6	46.0	+5.6	White
23	2.340M Ave	19.2	+0.2	+0.1	+6.0	+0.1	+0.0	25.6	46.0	-20.4	White
^	2.340M	46.4	+0.2	+0.1	+6.0	+0.1	+0.0	52.8	46.0	+6.8	White
25	2.276M Ave	18.8	+0.2	+0.1	+6.0	+0.1	+0.0	25.2	46.0	-20.8	White
^	2.276M	43.8	+0.2	+0.1	+6.0	+0.1	+0.0	50.2	46.0	+4.2	White
27	3.565M Ave	18.7	+0.2	+0.1	+6.0	+0.2	+0.0	25.2	46.0	-20.8	White
^	3.565M	48.2	+0.2	+0.1	+6.0	+0.2	+0.0	54.7	46.0	+8.7	White
29	1.923M Ave	18.6	+0.2	+0.1	+6.0	+0.1	+0.0	25.0	46.0	-21.0	White
^	1.923M	46.5	+0.2	+0.1	+6.0	+0.1	+0.0	52.9	46.0	+6.9	White
31	3.863M Ave	18.4	+0.2	+0.1	+6.0	+0.2	+0.0	24.9	46.0	-21.1	White
^	3.863M	46.6	+0.2	+0.1	+6.0	+0.2	+0.0	53.1	46.0	+7.1	White
33	3.701M Ave	18.3	+0.2	+0.1	+6.0	+0.2	+0.0	24.8	46.0	-21.2	White
^	3.701M	46.6	+0.2	+0.1	+6.0	+0.2	+0.0	53.1	46.0	+7.1	White
35	2.595M Ave	17.5	+0.2	+0.1	+6.0	+0.1	+0.0	23.9	46.0	-22.1	White

^	2.595M	46.1	+0.2	+0.1	+6.0	+0.1	+0.0	52.5	46.0	+6.5	White
37	781.215k Ave	17.6	+0.3	+0.0	+6.0	+0.0	+0.0	23.9	46.0	-22.1	White
^	781.215k	48.6	+0.3	+0.0	+6.0	+0.0	+0.0	54.9	46.0	+8.9	White
39	1.375M Ave	17.2	+0.3	+0.1	+6.0	+0.0	+0.0	23.6	46.0	-22.4	White
^	1.375M	42.9	+0.3	+0.1	+6.0	+0.0	+0.0	49.3	46.0	+3.3	White
41	4.279M Ave	16.9	+0.2	+0.1	+6.0	+0.2	+0.0	23.4	46.0	-22.6	White
^	4.279M	44.7	+0.2	+0.1	+6.0	+0.2	+0.0	51.2	46.0	+5.2	White
43	313.621k Ave	20.8	+0.2	+0.0	+6.0	+0.0	+0.0	27.0	49.9	-22.9	White
^	313.621k	47.6	+0.2	+0.0	+6.0	+0.0	+0.0	53.8	49.9	+3.9	White
45	4.041M Ave	16.1	+0.2	+0.1	+6.0	+0.2	+0.0	22.6	46.0	-23.4	White
^	4.041M	44.3	+0.2	+0.1	+6.0	+0.2	+0.0	50.8	46.0	+4.8	White
47	1.315M Ave	15.9	+0.3	+0.1	+6.0	+0.0	+0.0	22.3	46.0	-23.7	White
^	1.315M	47.0	+0.3	+0.1	+6.0	+0.0	+0.0	53.4	46.0	+7.4	White
49	563.780k Ave	15.0	+0.2	+0.0	+6.0	+0.0	+0.0	21.2	46.0	-24.8	White
^	563.780k	46.1	+0.2	+0.0	+6.0	+0.0	+0.0	52.3	46.0	+6.3	White
51	3.943M Ave	14.1	+0.2	+0.1	+6.0	+0.2	+0.0	20.6	46.0	-25.4	White
^	3.943M	47.9	+0.2	+0.1	+6.0	+0.2	+0.0	54.4	46.0	+8.4	White
53	438.701k Ave	14.6	+0.2	+0.0	+6.0	+0.0	+0.0	20.8	47.1	-26.3	White
^	438.701k	44.8	+0.2	+0.0	+6.0	+0.0	+0.0	51.0	47.1	+3.9	White
55	532.510k Ave	12.9	+0.2	+0.0	+6.0	+0.0	+0.0	19.1	46.0	-26.9	White
^	532.510k	45.0	+0.2	+0.0	+6.0	+0.0	+0.0	51.2	46.0	+5.2	White
57	4.339M Ave	12.5	+0.2	+0.1	+6.0	+0.2	+0.0	19.0	46.0	-27.0	White
^	4.339M	42.5	+0.2	+0.1	+6.0	+0.2	+0.0	49.0	46.0	+3.0	White
59	1.124M Ave	12.1	+0.3	+0.1	+6.0	+0.0	+0.0	18.5	46.0	-27.5	White
^	1.124M	44.2	+0.3	+0.1	+6.0	+0.0	+0.0	50.6	46.0	+4.6	White
61	227.084k Ave	17.9	+0.2	+0.0	+6.0	+0.0	+0.0	24.1	52.6	-28.5	White

^	227.084k	52.5	+0.2	+0.0	+6.0	+0.0	+0.0	58.7	52.6	+6.1	White
63	172.543k Ave	19.3	+0.4	+0.0	+6.0	+0.0	+0.0	25.7	54.8	-29.1	White
^	172.543k	51.4	+0.4	+0.0	+6.0	+0.0	+0.0	57.8	54.8	+3.0	White
65	1.247M Ave	10.2	+0.3	+0.1	+6.0	+0.0	+0.0	16.6	46.0	-29.4	White
^	1.247M	45.6	+0.3	+0.1	+6.0	+0.0	+0.0	52.0	46.0	+6.0	White
67	2.821M Ave	9.7	+0.2	+0.1	+6.0	+0.1	+0.0	16.1	46.0	-29.9	White
^	2.821M	44.0	+0.2	+0.1	+6.0	+0.1	+0.0	50.4	46.0	+4.4	White
69	347.800k Ave	12.7	+0.2	+0.0	+6.0	+0.0	+0.0	18.9	49.0	-30.1	White
^	347.800k	46.2	+0.2	+0.0	+6.0	+0.0	+0.0	52.4	49.0	+3.4	White
71	2.914M Ave	9.3	+0.2	+0.1	+6.0	+0.1	+0.0	15.7	46.0	-30.3	White
^	2.914M	42.6	+0.2	+0.1	+6.0	+0.1	+0.0	49.0	46.0	+3.0	White
73	874.297k Ave	8.8	+0.3	+0.1	+6.0	+0.0	+0.0	15.2	46.0	-30.8	White
^	874.297k	45.0	+0.3	+0.1	+6.0	+0.0	+0.0	51.4	46.0	+5.4	White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60
50
40
30
20
10
dBµV
0.15
1
10
30
Frequency [MHz]
2
1
Sweep Data
2 - FCC 15.107 Class B COND [QP]
1 - FCC 15.107 Class B COND [AVE]

FCC 15.109 – RADIATED EMISSIONS

Test Setup Photos

Front - X Orientation

Back - X Orientation

Front - Y Orientation

Back - Y Orientation

Test Data Sheets

Test Location: CKC Laboratories, Inc. •110. N. Olinda Place. • Brea, CA 92821 • (714) 993-6112

Customer: **Cimarron Systems LLC**
Specification: **FCC 15.109 Class B**
Work Order #: **88433** Date: 11/30/2008
Test Type: **Radiated Scan** Time: 12:18:04
Equipment: **Wireless Data Collection System** Sequence#: 5
Manufacturer: Cimarron Systems LLC Tested By: E. Wong
Model: 915-1000-0-NIU
S/N: NA

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer	US44300438	07/23/2008	07/23/2010	02672
Bilog Antenna	2451	01/21/2008	01/21/2010	01995
Pre amp to SA Cable	Cable #10	05/16/2007	05/16/2009	P05050
Cable	Cable15	01/05/2007	01/05/2009	P05198
Pre Amp	1937A02548	05/02/2008	05/02/2010	00309
Horn Antenna	6246	06/06/2008	06/06/2010	00849
Microwave Pre-amp	3123A00281	07/28/2008	07/28/2010	00786
2'-40GHz cable	NA	09/18/2007	09/18/2009	P2948
Heliax Antenna Cable	P5565	09/04/2008	09/04/2010	P05565
Cable, 36" 2.92mm 40GHz	NA	09/18/2007	09/18/2009	P02945

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

Function	Manufacturer	Model #	S/N
Wireless Data Collection System*	Cimarron Systems LLC	915-1000-0-NIU	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Pressure transducer	Omegadyne	PX-319-200GV	091906D028
Pressure transducer	Omegadyne	PX-319-1KGV	053007D300
Power Supply	Cincon	TR1505	NA

Test Conditions / Notes:

FCC15.109(2007)

The EUT is placed on the wooden table with Styrofoam padding of 10 cm thickness. The serial port is connected to a support 5V AC-DC power supply and a remotely located support laptop.

Two analog inputs are connected to support pressure transducers. Four discrete inputs are connected to a section of unterminated cable. All four cables are of shielded cable.

Freq range : 916MHz - 926MHz
Mode: RX
Test software setting: Transceiver power = -8
PA Gain voltage: 1.8

The device is to be used in three different orientations, with transmit antenna perpendicular to the ground reference plane. The emission profile of all three device orientations will be tested and worse case emission presented.

Note: In normal application, this low transmit duty cycle device has a transmit interval in the order of once a minute.. The primary power source is non-rechargeable and rechargeable battery with external AC-DC power supply or solar panel. To support continuous transmit in test mode, a support 5V AC-DC power supply is used to simulate testing with a new battery.

Frequency range of measurement = 30MHz- 10 GHz.
Frequency 30 MHz- 1000 MHz RBW=120 kHz, VBW=120 kHz; 1000 MHz-10,000 MHz RBW=1 MHz, VBW=1 MHz.
Modification:
Added a SAW filter between the output of the transceiver and the input of the power amplifier.
Mounting holes are isolated from the ground plane. The board is screwed to the standoffs.
A 10MOhm resistor was added between the analog input amplifier and ground.

Transducer Legend:

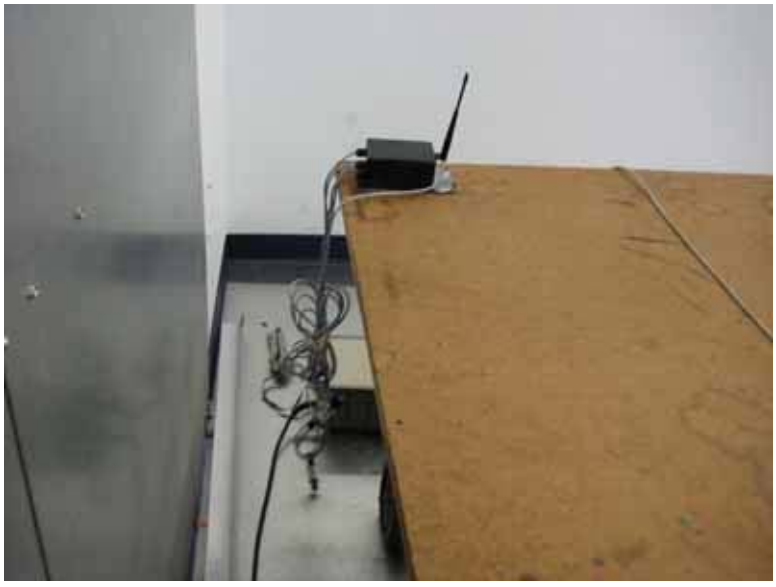
T1=Bilog-AN01995 BILOG_012110	T2=Cable #10_P05050_ 051609
T3=Cable #15_P05198_ Site A, 010509	T4=Pre_amp_HP8447D-AN00309-050210
T5=Heliax Cable_54'_ 091808 P05565_091808	T6=HF_pre AMP-1-26GHz_AN00786-072810.TRN
T7=Horn Ant AN00849 060610	T8=Hi Freq_40GHz_3ft_CAB-ANP02945-091809

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

#	Freq	Rdng	T1 T5	T2 T6	T3 T7	T4 T8	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	142.700M	45.9	+11.6 +0.0	+0.2 +0.0	+2.1 +0.0	-27.9 +0.0	+0.0	31.9	43.5	-11.6	Horiz
2	170.150M	44.8	+9.7 +0.0	+0.3 +0.0	+2.4 +0.0	-27.9 +0.0	+0.0	29.3	43.5	-14.2	Horiz
3	122.942M	40.9	+11.7 +0.0	+0.3 +0.0	+2.0 +0.0	-27.9 +0.0	+0.0	27.0	43.5	-16.5	Horiz
4	76.958M	42.1	+7.3 +0.0	+0.1 +0.0	+1.6 +0.0	-28.0 +0.0	+0.0	23.1	40.0	-16.9	Horiz
5	171.449M	41.8	+9.6 +0.0	+0.3 +0.0	+2.4 +0.0	-27.9 +0.0	+0.0	26.2	43.5	-17.3	Vert
6	2014.180M	40.7	+0.0 +3.2	+0.0 -38.0	+0.0 +27.4	+0.0 +0.5	+0.0	33.8	54.0	-20.2	Horiz
7	140.899M	36.2	+11.7 +0.0	+0.2 +0.0	+2.1 +0.0	-27.9 +0.0	+0.0	22.3	43.5	-21.2	Vert

FCC 15.207 – AC CONDUCTED EMISSIONS

Test Setup Photos



Test Data Sheets

Test Location: CKC Laboratories, Inc. •110. N. Olinda Place. • Brea, CA 92821 • (714) 993-6112

Customer:	**Cimarron Systems LLC**		
Specification:	**FCC 15.207 COND [AVE]**		
Work Order #:	**88433**	Date:	11/30/2008
Test Type:	**Conducted Emissions**	Time:	14:58:23
Equipment:	**Wireless Data Collection System**	Sequence#:	9
Manufacturer:	Cimarron Systems LLC	Tested By:	E. Wong
Model:	915-1000-0-NIU		110V 60Hz
S/N:	NA		

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer	US44300438	07/23/2008	07/23/2010	02672
6dB Attenuator	None	10/14/2008	10/14/2010	P05886
150kHz HPF	G7755	01/09/2008	01/09/2010	02610
Conducted Emission Cable	Cable #21	05/12/2008	05/12/2010	P04358
LISN	1102	05/11/2007	05/11/2009	00848

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

Function	Manufacturer	Model #	S/N
Wireless Data Collection System*	Cimarron Systems LLC	915-1000-0-NIU	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Pressure transducer	Omegadyne	PX-319-200GV	091906D028
Pressure transducer	Omegadyne	PX-319-1KGV	053007D300
Power Supply	Cincon	TR1505	NA

Test Conditions / Notes:

FCC15.207(2007)

The EUT is placed on the wooden table with Styrofoam padding of 10 cm thickness. The serial port is connected to a support 5V AC-DC power supply and a remotely located support laptop.

Two analog inputs are connected to support pressure transducers. Four discrete inputs are connected to a section of unterminated cable. All four cables are of shielded cable.

Freq range : 916MHz - 926MHz
Mode: TX
Test software setting: Transceiver power = -8
PA Gain voltage: 1.8

The device is to be used in three different orientations, with transmit antenna perpendicular to the ground reference plane. The emission profile of all three device orientations is to be testes and worse case emission is presented.

Note: In normal application, this low transmit duty cycle device has a transmit interval in the order of once a minute.. The primary power source is non-rechargeable and rechargeable battery with external AC-DC power supply or solar panel. To support continuous transmit in test mode, a support 5V AC-DC power supply is used to simulate testing with a new battery.

AC Cond emission: TX mode, Hopping
Modification:
Added a SAW filter between the output of the transceiver and the input of the power amplifier.
Mounting holes are isolated from the ground plane. The board is now screwed to the standoffs.
A 10MOhm resistor was added between the analog input amplifier and ground.

Transducer Legend:

T1=150kHz HPF AN02610_010910	T2=Cable #21 -P04358- Site A 05/12/10
T3=6dB Attenuator	T4=(L1) LISN Insertion Loss 00848

Measurement Data: Reading listed by margin. Test Lead: Black

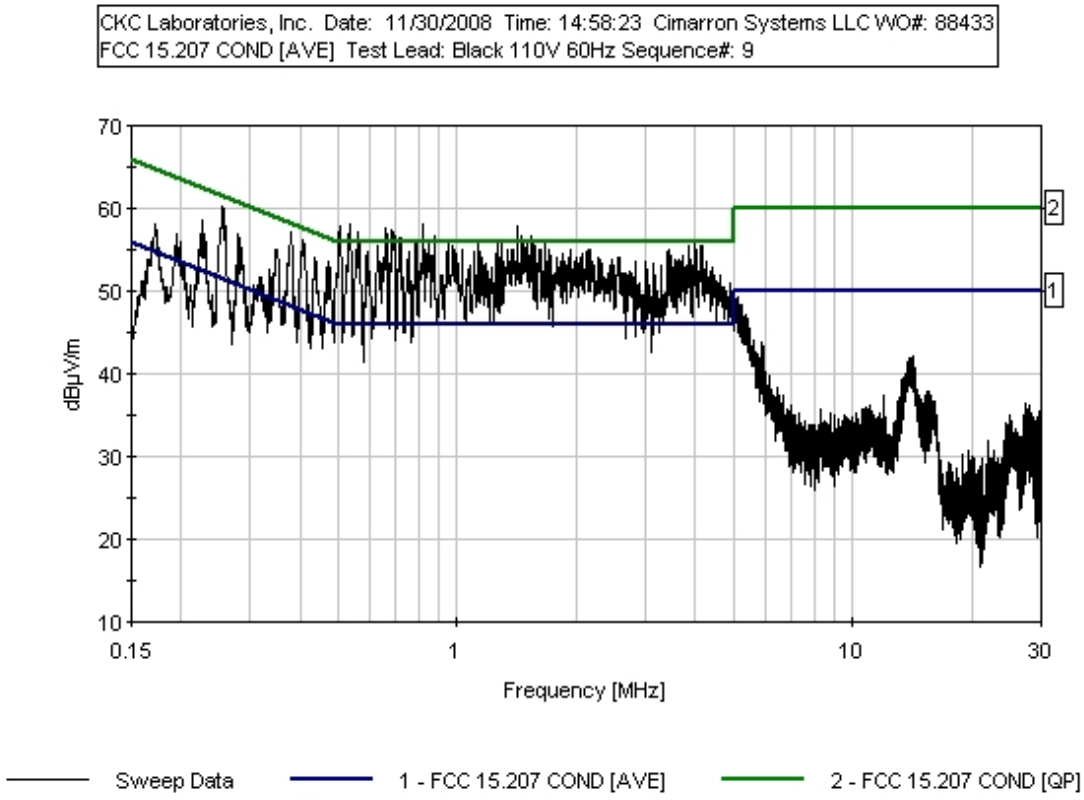
#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1 QP	536.146k	48.8	+0.2	+0.0	+6.0	+0.0	+0.0	55.0	56.0	-1.0	Black
^	536.146k	51.9	+0.2	+0.0	+6.0	+0.0	+0.0	58.1	46.0	+12.1	Black
3 QP	663.401k	48.7	+0.2	+0.0	+6.0	+0.0	+0.0	54.9	56.0	-1.1	Black
^	659.771k	51.5	+0.2	+0.0	+6.0	+0.0	+0.0	57.7	46.0	+11.7	Black
5 QP	819.757k	47.5	+0.3	+0.0	+6.0	+0.0	+0.0	53.8	56.0	-2.2	Black
^	819.757k	51.7	+0.3	+0.0	+6.0	+0.0	+0.0	58.0	46.0	+12.0	Black
7 QP	1.454M	47.5	+0.2	+0.1	+6.0	+0.0	+0.0	53.8	56.0	-2.2	Black
^	1.451M	50.4	+0.2	+0.1	+6.0	+0.0	+0.0	56.7	46.0	+10.7	Black
9 QP	503.422k	46.9	+0.2	+0.0	+6.0	+0.0	+0.0	53.1	56.0	-2.9	Black

^	503.422k	51.6	+0.2	+0.0	+6.0	+0.0	+0.0	57.8	46.0	+11.8	Black
11	564.076k QP	46.7	+0.2	+0.0	+6.0	+0.0	+0.0	52.9	56.0	-3.1	Black
^	562.326k	50.9	+0.2	+0.0	+6.0	+0.0	+0.0	57.1	46.0	+11.1	Black
13	562.326k QP	46.7	+0.2	+0.0	+6.0	+0.0	+0.0	52.9	56.0	-3.1	Black
14	849.572k QP	45.2	+0.3	+0.1	+6.0	+0.0	+0.0	51.6	56.0	-4.4	Black
^	849.572k	49.9	+0.3	+0.1	+6.0	+0.0	+0.0	56.3	46.0	+10.3	Black
16	716.493k QP	45.2	+0.3	+0.0	+6.0	+0.0	+0.0	51.5	56.0	-4.5	Black
17	685.224k QP	44.9	+0.2	+0.0	+6.0	+0.0	+0.0	51.1	56.0	-4.9	Black
^	685.224k	51.2	+0.2	+0.0	+6.0	+0.0	+0.0	57.4	46.0	+11.4	Black
19	536.146k Ave	34.7	+0.2	+0.0	+6.0	+0.0	+0.0	40.9	46.0	-5.1	Black
20	663.401k Ave	34.0	+0.2	+0.0	+6.0	+0.0	+0.0	40.2	46.0	-5.8	Black
21	1.454M Ave	33.7	+0.2	+0.1	+6.0	+0.0	+0.0	40.0	46.0	-6.0	Black
22	1.545M QP	43.6	+0.2	+0.1	+6.0	+0.0	+0.0	49.9	56.0	-6.1	Black
^	1.545M	50.4	+0.2	+0.1	+6.0	+0.0	+0.0	56.7	46.0	+10.7	Black
24	819.757k Ave	33.2	+0.3	+0.0	+6.0	+0.0	+0.0	39.5	46.0	-6.5	Black
25	503.422k Ave	33.2	+0.2	+0.0	+6.0	+0.0	+0.0	39.4	46.0	-6.6	Black
26	406.704k Ave	34.8	+0.2	+0.0	+6.0	+0.0	+0.0	41.0	47.7	-6.7	Black
^	406.704k	50.0	+0.2	+0.0	+6.0	+0.0	+0.0	56.2	47.7	+8.5	Black
28	564.076k Ave	33.1	+0.2	+0.0	+6.0	+0.0	+0.0	39.3	46.0	-6.7	Black
29	562.326k Ave	32.9	+0.2	+0.0	+6.0	+0.0	+0.0	39.1	46.0	-6.9	Black
30	1.672M QP	42.3	+0.2	+0.1	+6.0	+0.0	+0.0	48.6	56.0	-7.4	Black
^	1.672M	49.8	+0.2	+0.1	+6.0	+0.0	+0.0	56.1	46.0	+10.1	Black
32	379.797k Ave	34.7	+0.2	+0.0	+6.0	+0.0	+0.0	40.9	48.3	-7.4	Black
^	379.797k	50.9	+0.2	+0.0	+6.0	+0.0	+0.0	57.1	48.3	+8.8	Black
34	412.412k Ave	33.8	+0.2	+0.0	+6.0	+0.0	+0.0	40.0	47.6	-7.6	Black
35	633.491k Ave	31.6	+0.2	+0.0	+6.0	+0.0	+0.0	37.8	46.0	-8.2	Black

^	630.683k	49.3	+0.2	+0.0	+6.0	+0.0	+0.0	55.5	46.0	+9.5	Black
37	849.572k Ave	30.6	+0.3	+0.1	+6.0	+0.0	+0.0	37.0	46.0	-9.0	Black
38	437.974k Ave	31.8	+0.2	+0.0	+6.0	+0.0	+0.0	38.0	47.1	-9.1	Black
^	437.974k	47.8	+0.2	+0.0	+6.0	+0.0	+0.0	54.0	47.1	+6.9	Black
40	630.683k Ave	30.5	+0.2	+0.0	+6.0	+0.0	+0.0	36.7	46.0	-9.3	Black
41	255.445k Ave	36.0	+0.2	+0.0	+6.0	+0.0	+0.0	42.2	51.6	-9.4	Black
^	255.445k	54.0	+0.2	+0.0	+6.0	+0.0	+0.0	60.2	51.6	+8.6	Black
43	280.170k Ave	35.0	+0.2	+0.0	+6.0	+0.0	+0.0	41.2	50.8	-9.6	Black
^	280.170k	50.8	+0.2	+0.0	+6.0	+0.0	+0.0	57.0	50.8	+6.2	Black
^	283.079k	50.2	+0.2	+0.0	+6.0	+0.0	+0.0	56.4	50.7	+5.7	Black
46	716.493k Ave	30.0	+0.3	+0.0	+6.0	+0.0	+0.0	36.3	46.0	-9.7	Black
^	716.494k	50.1	+0.3	+0.0	+6.0	+0.0	+0.0	56.4	46.0	+10.4	Black
48	685.224k Ave	30.0	+0.2	+0.0	+6.0	+0.0	+0.0	36.2	46.0	-9.8	Black
49	3.123M Ave	29.7	+0.2	+0.1	+6.0	+0.1	+0.0	36.1	46.0	-9.9	Black
^	3.123M	46.9	+0.2	+0.1	+6.0	+0.1	+0.0	53.3	46.0	+7.3	Black
51	787.760k Ave	29.8	+0.3	+0.0	+6.0	+0.0	+0.0	36.1	46.0	-9.9	Black
^	787.760k	49.4	+0.3	+0.0	+6.0	+0.0	+0.0	55.7	46.0	+9.7	Black
53	348.527k Ave	32.8	+0.2	+0.0	+6.0	+0.0	+0.0	39.0	49.0	-10.0	Black
^	348.527k	48.8	+0.2	+0.0	+6.0	+0.0	+0.0	55.0	49.0	+6.0	Black
55	592.141k Ave	29.4	+0.2	+0.0	+6.0	+0.0	+0.0	35.6	46.0	-10.4	Black
^	592.141k	48.5	+0.2	+0.0	+6.0	+0.0	+0.0	54.7	46.0	+8.7	Black
57	1.545M Ave	29.3	+0.2	+0.1	+6.0	+0.0	+0.0	35.6	46.0	-10.4	Black
58	1.928M Ave	29.2	+0.2	+0.1	+6.0	+0.0	+0.0	35.5	46.0	-10.5	Black
^	1.928M	48.6	+0.2	+0.1	+6.0	+0.0	+0.0	54.9	46.0	+8.9	Black
60	4.118M Ave	28.9	+0.2	+0.1	+6.0	+0.1	+0.0	35.3	46.0	-10.7	Black
^	4.118M	49.1	+0.2	+0.1	+6.0	+0.1	+0.0	55.5	46.0	+9.5	Black

62	472.879k Ave	29.5	+0.2	+0.0	+6.0	+0.0	+0.0	35.7	46.5	-10.8	Black
^	472.880k	47.3	+0.2	+0.0	+6.0	+0.0	+0.0	53.5	46.5	+7.0	Black
64	4.118M Ave	28.5	+0.2	+0.1	+6.0	+0.1	+0.0	34.9	46.0	-11.1	Black
65	945.249k Ave	28.3	+0.3	+0.1	+6.0	+0.0	+0.0	34.7	46.0	-11.3	Black
^	945.249k	49.2	+0.3	+0.1	+6.0	+0.0	+0.0	55.6	46.0	+9.6	Black
67	945.249k Ave	28.3	+0.3	+0.1	+6.0	+0.0	+0.0	34.7	46.0	-11.3	Black
68	975.018k Ave	28.2	+0.3	+0.1	+6.0	+0.0	+0.0	34.6	46.0	-11.4	Black
69	1.672M Ave	28.3	+0.2	+0.1	+6.0	+0.0	+0.0	34.6	46.0	-11.4	Black
70	975.018k Ave	28.0	+0.3	+0.1	+6.0	+0.0	+0.0	34.4	46.0	-11.6	Black
^	975.018k	49.0	+0.3	+0.1	+6.0	+0.0	+0.0	55.4	46.0	+9.4	Black
72	873.570k Ave	27.2	+0.3	+0.1	+6.0	+0.0	+0.0	33.6	46.0	-12.4	Black
^	873.570k	50.2	+0.3	+0.1	+6.0	+0.0	+0.0	56.6	46.0	+10.6	Black
^	877.205k	47.2	+0.3	+0.1	+6.0	+0.0	+0.0	53.6	46.0	+7.6	Black
75	2.302M Ave	27.1	+0.2	+0.1	+6.0	+0.1	+0.0	33.5	46.0	-12.5	Black
^	2.302M	47.4	+0.2	+0.1	+6.0	+0.1	+0.0	53.8	46.0	+7.8	Black
77	3.994M Ave	27.0	+0.2	+0.1	+6.0	+0.1	+0.0	33.4	46.0	-12.6	Black
^	3.994M	49.2	+0.2	+0.1	+6.0	+0.1	+0.0	55.6	46.0	+9.6	Black
79	2.302M Ave	26.7	+0.2	+0.1	+6.0	+0.1	+0.0	33.1	46.0	-12.9	Black
80	756.490k Ave	26.6	+0.3	+0.0	+6.0	+0.0	+0.0	32.9	46.0	-13.1	Black
^	756.490k	48.4	+0.3	+0.0	+6.0	+0.0	+0.0	54.7	46.0	+8.7	Black
82	996.281k Ave	26.1	+0.3	+0.1	+6.0	+0.0	+0.0	32.5	46.0	-13.5	Black
^	996.281k	48.2	+0.3	+0.1	+6.0	+0.0	+0.0	54.6	46.0	+8.6	Black
84	3.748M Ave	25.8	+0.2	+0.1	+6.0	+0.1	+0.0	32.2	46.0	-13.8	Black
^	3.748M	46.1	+0.2	+0.1	+6.0	+0.1	+0.0	52.5	46.0	+6.5	Black
86	3.748M Ave	25.7	+0.2	+0.1	+6.0	+0.1	+0.0	32.1	46.0	-13.9	Black
87	3.416M Ave	25.7	+0.2	+0.1	+6.0	+0.1	+0.0	32.1	46.0	-13.9	Black

^	3.416M	48.5	+0.2	+0.1	+6.0	+0.1	+0.0	54.9	46.0	+8.9	Black
89	318.712k Ave	29.0	+0.2	+0.0	+6.0	+0.0	+0.0	35.2	49.7	-14.5	Black
^	318.712k	45.5	+0.2	+0.0	+6.0	+0.0	+0.0	51.7	49.7	+2.0	Black
91	1.230M Ave	24.9	+0.3	+0.1	+6.0	+0.0	+0.0	31.3	46.0	-14.7	Black
^	1.230M	46.4	+0.3	+0.1	+6.0	+0.0	+0.0	52.8	46.0	+6.8	Black
93	4.883M Ave	24.4	+0.2	+0.1	+6.0	+0.1	+0.0	30.8	46.0	-15.2	Black
^	4.883M	44.5	+0.2	+0.1	+6.0	+0.1	+0.0	50.9	46.0	+4.9	Black
95	226.357k Ave	31.1	+0.2	+0.0	+6.0	+0.0	+0.0	37.3	52.6	-15.3	Black
^	226.357k	52.4	+0.2	+0.0	+6.0	+0.0	+0.0	58.6	52.6	+6.0	Black
97	1.030M Ave	24.2	+0.3	+0.1	+6.0	+0.0	+0.0	30.6	46.0	-15.4	Black
^	1.030M	48.6	+0.3	+0.1	+6.0	+0.0	+0.0	55.0	46.0	+9.0	Black
99	417.612k Ave	25.7	+0.2	+0.0	+6.0	+0.0	+0.0	31.9	47.5	-15.6	Black
^	417.612k	43.4	+0.2	+0.0	+6.0	+0.0	+0.0	49.6	47.5	+2.1	Black
101	195.087k Ave	29.8	+0.2	+0.0	+6.0	+0.0	+0.0	36.0	53.8	-17.8	Black
^	195.087k	50.8	+0.2	+0.0	+6.0	+0.0	+0.0	57.0	53.8	+3.2	Black
103	2.676M Ave	21.5	+0.2	+0.1	+6.0	+0.1	+0.0	27.9	46.0	-18.1	Black
^	2.676M	45.8	+0.2	+0.1	+6.0	+0.1	+0.0	52.2	46.0	+6.2	Black
105	274.352k Ave	26.6	+0.2	+0.0	+6.0	+0.0	+0.0	32.8	51.0	-18.2	Black
^	274.352k	45.3	+0.2	+0.0	+6.0	+0.0	+0.0	51.5	51.0	+0.5	Black
107	336.165k Ave	23.9	+0.2	+0.0	+6.0	+0.0	+0.0	30.1	49.3	-19.2	Black
^	336.165k	46.4	+0.2	+0.0	+6.0	+0.0	+0.0	52.6	49.3	+3.3	Black
^	340.528k	45.4	+0.2	+0.0	+6.0	+0.0	+0.0	51.6	49.2	+2.4	Black
^	333.983k	45.1	+0.2	+0.0	+6.0	+0.0	+0.0	51.3	49.4	+1.9	Black
111	172.543k Ave	25.7	+0.4	+0.0	+6.0	+0.0	+0.0	32.1	54.8	-22.7	Black
^	172.543k	51.6	+0.4	+0.0	+6.0	+0.0	+0.0	58.0	54.8	+3.2	Black


CKC Laboratories, Inc. Date: 11/30/2008 Time: 14:58:23 Cimarron Systems LLC WO#: 88433
FCC 15.207 COND [AVE] Test Lead: Black 110V 60Hz Sequence#: 9
70
60
50
40
30
20
10
dBµV/m
0.15
1
10
30
Frequency [MHz]
2
1
Sweep Data
1 - FCC 15.207 COND [AVE]
2 - FCC 15.207 COND [QP]

Test Location: CKC Laboratories, Inc. •110. N. Olinda Place. • Brea, CA 92821 • (714) 993-6112

Customer:	**Cimarron Systems LLC**		
Specification:	**FCC 15.207 COND [AVE]**		
Work Order #:	**88433**	Date:	11/30/2008
Test Type:	**Conducted Emissions**	Time:	15:22:49
Equipment:	**Wireless Data Collection System**	Sequence#:	10
Manufacturer:	Cimarron Systems LLC	Tested By:	E. Wong
Model:	915-1000-0-NIU		110V 60Hz
S/N:	NA		

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer	US44300438	07/23/2008	07/23/2010	02672
6dB Attenuator	None	10/14/2008	10/14/2010	P05886
150kHz HPF	G7755	01/09/2008	01/09/2010	02610
Conducted Emission Cable	Cable #21	05/12/2008	05/12/2010	P04358
LISN	1102	05/11/2007	05/11/2009	00848

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

Function	Manufacturer	Model #	S/N
Wireless Data Collection System*	Cimarron Systems LLC	915-1000-0-NIU	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Pressure transducer	Omegadyne	PX-319-200GV	091906D028
Pressure transducer	Omegadyne	PX-319-1KGV	053007D300
Power Supply	Cincon	TR1505	NA

Test Conditions / Notes:

FCC15.207(2007)

The EUT is placed on the wooden table with Styrofoam padding of 10 cm thickness. The serial port is connected to a support 5V AC-DC power supply and a remotely located support laptop.

Two analog inputs are connected to support pressure transducers. Four discrete inputs are connected to a section of unterminated cable. All four cables are of shielded cable.

Freq range : 916MHz - 926MHz
Mode: TX
Test software setting: Transceiver power = -8
PA Gain voltage: 1.8

The device is to be used in three different orientations, with transmit antenna perpendicular to the ground reference plane. The emission profile of all three device orientations is to be testes and worse case emission is presented.

Note: In normal application, this low transmit duty cycle device has a transmit interval in the order of once a minute.. The primary power source is non-rechargeable and rechargeable battery with external AC-DC power supply or solar panel. To support continuous transmit in test mode, a support 5V AC-DC power supply is used to simulate testing with a new battery.

AC Cond emission: TX mode, Hopping
Modification:
Added a SAW filter between the output of the transceiver and the input of the power amplifier.
Mounting holes are isolated from the ground plane. The board is now screwed to the standoffs.
A 10MOhm resistor was added between the analog input amplifier and ground.

Transducer Legend:

T1=150kHz HPF AN02610_010910	T2=Cable #21 -P04358- Site A 05/12/10
T3=6dB Attenuator	T4=(L2) LISN Insertion Loss 00848

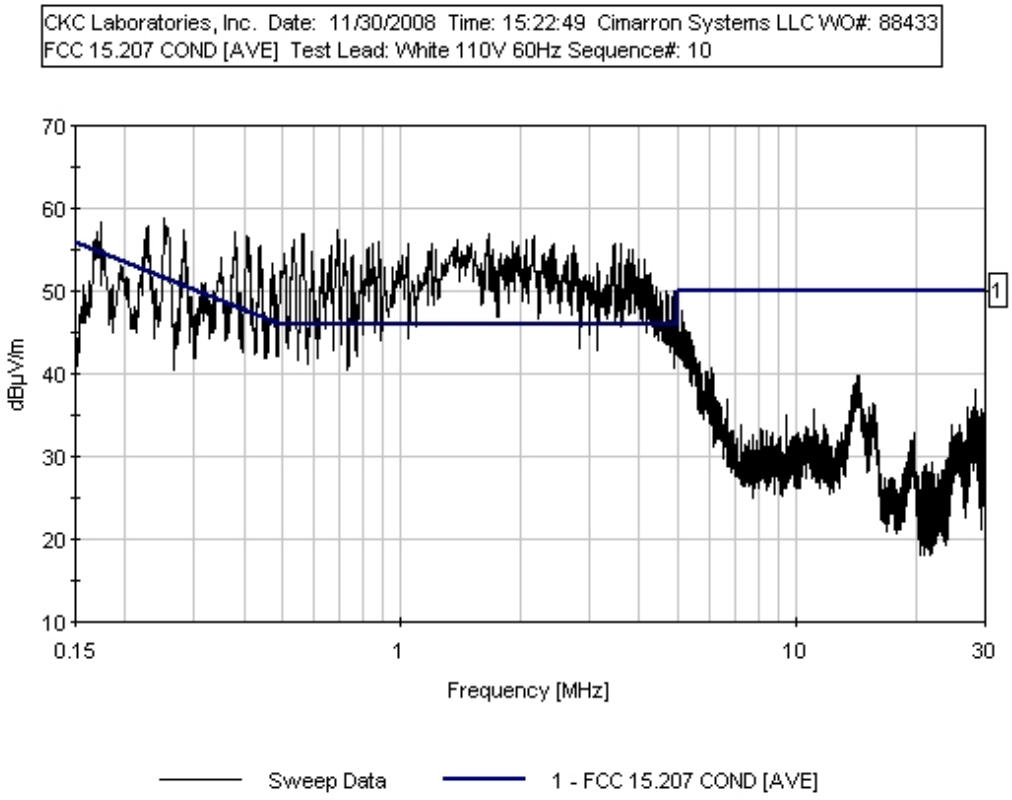
Measurement Data: Reading listed by margin. Test Lead: White

#	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	563.780k QP	46.5	+0.2	+0.0	+6.0	+0.0	+0.0	52.7	56.0	-3.3	White
2	692.030k QP	45.9	+0.2	+0.0	+6.0	+0.0	+0.0	52.1	56.0	-3.9	White
3	1.915M QP	43.6	+0.2	+0.1	+6.0	+0.1	+0.0	50.0	56.0	-6.0	White
^	1.915M	49.6	+0.2	+0.1	+6.0	+0.1	+0.0	56.0	46.0	+10.0	White
5	2.162M QP	43.3	+0.2	+0.1	+6.0	+0.1	+0.0	49.7	56.0	-6.3	White
6	3.127M Ave	29.9	+0.2	+0.1	+6.0	+0.1	+0.0	36.3	46.0	-9.7	White
^	3.127M	47.0	+0.2	+0.1	+6.0	+0.1	+0.0	53.4	46.0	+7.4	White
8	3.454M Ave	29.8	+0.2	+0.1	+6.0	+0.2	+0.0	36.3	46.0	-9.7	White
^	3.454M	49.1	+0.2	+0.1	+6.0	+0.2	+0.0	55.6	46.0	+9.6	White
10	563.780k	28.3	+0.2	+0.0	+6.0	+0.0	+0.0	34.5	46.0	-11.5	White

	Ave										
^	563.780k	50.8	+0.2	+0.0	+6.0	+0.0	+0.0	57.0	46.0	+11.0	White
12	695.405k Ave	28.3	+0.2	+0.0	+6.0	+0.0	+0.0	34.5	46.0	-11.5	White
^	695.405k	49.9	+0.2	+0.0	+6.0	+0.0	+0.0	56.1	46.0	+10.1	White
14	408.885k Ave	29.9	+0.2	+0.0	+6.0	+0.0	+0.0	36.1	47.7	-11.6	White
^	408.885k	50.4	+0.2	+0.0	+6.0	+0.0	+0.0	56.6	47.7	+8.9	White
16	506.331k Ave	28.1	+0.2	+0.0	+6.0	+0.0	+0.0	34.3	46.0	-11.7	White
^	506.331k	48.3	+0.2	+0.0	+6.0	+0.0	+0.0	54.5	46.0	+8.5	White
18	2.468M Ave	27.8	+0.2	+0.1	+6.0	+0.1	+0.0	34.2	46.0	-11.8	White
^	2.468M	47.4	+0.2	+0.1	+6.0	+0.1	+0.0	53.8	46.0	+7.8	White
20	3.782M Ave	27.0	+0.2	+0.1	+6.0	+0.2	+0.0	33.5	46.0	-12.5	White
^	3.782M	48.6	+0.2	+0.1	+6.0	+0.2	+0.0	55.1	46.0	+9.1	White
22	2.630M Ave	26.8	+0.2	+0.1	+6.0	+0.1	+0.0	33.2	46.0	-12.8	White
^	2.629M	47.8	+0.2	+0.1	+6.0	+0.1	+0.0	54.2	46.0	+8.2	White
24	3.994M Ave	25.7	+0.2	+0.1	+6.0	+0.2	+0.0	32.2	46.0	-13.8	White
^	3.994M	47.4	+0.2	+0.1	+6.0	+0.2	+0.0	53.9	46.0	+7.9	White
26	541.237k Ave	25.9	+0.2	+0.0	+6.0	+0.0	+0.0	32.1	46.0	-13.9	White
^	541.237k	47.2	+0.2	+0.0	+6.0	+0.0	+0.0	53.4	46.0	+7.4	White
28	2.162M Ave	25.1	+0.2	+0.1	+6.0	+0.1	+0.0	31.5	46.0	-14.5	White
^	2.162M	50.2	+0.2	+0.1	+6.0	+0.1	+0.0	56.6	46.0	+10.6	White
30	2.536M Ave	24.7	+0.2	+0.1	+6.0	+0.1	+0.0	31.1	46.0	-14.9	White
^	2.536M	45.6	+0.2	+0.1	+6.0	+0.1	+0.0	52.0	46.0	+6.0	White
32	949.501k Ave	24.7	+0.3	+0.1	+6.0	+0.0	+0.0	31.1	46.0	-14.9	White
^	949.501k	46.5	+0.3	+0.1	+6.0	+0.0	+0.0	52.9	46.0	+6.9	White
34	1.711M Ave	24.7	+0.2	+0.1	+6.0	+0.1	+0.0	31.1	46.0	-14.9	White
^	1.711M	48.7	+0.2	+0.1	+6.0	+0.1	+0.0	55.1	46.0	+9.1	White
36	2.818M	24.6	+0.2	+0.1	+6.0	+0.1	+0.0	31.0	46.0	-15.0	White

	Ave										
	^ 2.816M	45.0	+0.2	+0.1	+6.0	+0.1	+0.0	51.4	46.0	+5.4	White
38	790.668k Ave	24.3	+0.3	+0.0	+6.0	+0.0	+0.0	30.6	46.0	-15.4	White
	^ 790.669k	46.9	+0.3	+0.0	+6.0	+0.0	+0.0	53.2	46.0	+7.2	White
40	2.230M Ave	24.0	+0.2	+0.1	+6.0	+0.1	+0.0	30.4	46.0	-15.6	White
	^ 2.230M	45.8	+0.2	+0.1	+6.0	+0.1	+0.0	52.2	46.0	+6.2	White
42	877.205k Ave	23.8	+0.3	+0.1	+6.0	+0.0	+0.0	30.2	46.0	-15.8	White
	^ 877.205k	49.5	+0.3	+0.1	+6.0	+0.0	+0.0	55.9	46.0	+9.9	White
44	350.709k Ave	26.8	+0.2	+0.0	+6.0	+0.0	+0.0	33.0	48.9	-15.9	White
	^ 350.709k	47.8	+0.2	+0.0	+6.0	+0.0	+0.0	54.0	48.9	+5.1	White
46	595.050k Ave	23.6	+0.2	+0.0	+6.0	+0.0	+0.0	29.8	46.0	-16.2	White
	^ 595.050k	48.6	+0.2	+0.0	+6.0	+0.0	+0.0	54.8	46.0	+8.8	White
48	4.467M Ave	23.1	+0.2	+0.1	+6.0	+0.2	+0.0	29.6	46.0	-16.4	White
	^ 4.467M	40.7	+0.2	+0.1	+6.0	+0.2	+0.0	47.2	46.0	+1.2	White
50	470.698k Ave	23.9	+0.2	+0.0	+6.0	+0.0	+0.0	30.1	46.5	-16.4	White
	^ 470.698k	46.4	+0.2	+0.0	+6.0	+0.0	+0.0	52.6	46.5	+6.1	White
52	2.391M Ave	22.8	+0.2	+0.1	+6.0	+0.1	+0.0	29.2	46.0	-16.8	White
	^ 2.391M	48.5	+0.2	+0.1	+6.0	+0.1	+0.0	54.9	46.0	+8.9	White
54	3.578M Ave	22.5	+0.2	+0.1	+6.0	+0.2	+0.0	29.0	46.0	-17.0	White
	^ 3.578M	49.2	+0.2	+0.1	+6.0	+0.2	+0.0	55.7	46.0	+9.7	White
56	2.919M Ave	22.5	+0.2	+0.1	+6.0	+0.1	+0.0	28.9	46.0	-17.1	White
57	2.919M Ave	22.2	+0.2	+0.1	+6.0	+0.1	+0.0	28.6	46.0	-17.4	White
	^ 2.919M	45.5	+0.2	+0.1	+6.0	+0.1	+0.0	51.9	46.0	+5.9	White
59	752.854k Ave	22.3	+0.3	+0.0	+6.0	+0.0	+0.0	28.6	46.0	-17.4	White
	^ 752.854k	48.1	+0.3	+0.0	+6.0	+0.0	+0.0	54.4	46.0	+8.4	White
61	1.536M Ave	22.2	+0.2	+0.1	+6.0	+0.1	+0.0	28.6	46.0	-17.4	White
	^ 1.536M	48.4	+0.2	+0.1	+6.0	+0.1	+0.0	54.8	46.0	+8.8	White

63	1.226M Ave	21.2	+0.3	+0.1	+6.0	+0.0	+0.0	27.6	46.0	-18.4	White
^	1.226M	48.7	+0.3	+0.1	+6.0	+0.0	+0.0	55.1	46.0	+9.1	White
65	911.227k Ave	20.5	+0.3	+0.1	+6.0	+0.0	+0.0	26.9	46.0	-19.1	White
^	911.227k	46.4	+0.3	+0.1	+6.0	+0.0	+0.0	52.8	46.0	+6.8	White
67	4.160M Ave	20.3	+0.2	+0.1	+6.0	+0.2	+0.0	26.8	46.0	-19.2	White
68	1.039M Ave	20.1	+0.3	+0.1	+6.0	+0.0	+0.0	26.5	46.0	-19.5	White
^	1.039M	49.2	+0.3	+0.1	+6.0	+0.0	+0.0	55.6	46.0	+9.6	White
70	4.160M Ave	19.8	+0.2	+0.1	+6.0	+0.2	+0.0	26.3	46.0	-19.7	White
^	4.160M	45.5	+0.2	+0.1	+6.0	+0.2	+0.0	52.0	46.0	+6.0	White
72	4.679M Ave	19.2	+0.2	+0.1	+6.0	+0.2	+0.0	25.7	46.0	-20.3	White
^	4.679M	43.5	+0.2	+0.1	+6.0	+0.2	+0.0	50.0	46.0	+4.0	White
74	277.261k Ave	23.8	+0.2	+0.0	+6.0	+0.0	+0.0	30.0	50.9	-20.9	White
^	277.261k	47.5	+0.2	+0.0	+6.0	+0.0	+0.0	53.7	50.9	+2.8	White
76	4.998M Ave	18.1	+0.2	+0.1	+6.0	+0.2	+0.0	24.6	46.0	-21.4	White
^	4.998M	41.7	+0.2	+0.1	+6.0	+0.2	+0.0	48.2	46.0	+2.2	White
78	603.777k Ave	17.5	+0.2	+0.0	+6.0	+0.0	+0.0	23.7	46.0	-22.3	White
^	603.777k	43.8	+0.2	+0.0	+6.0	+0.0	+0.0	50.0	46.0	+4.0	White
80	482.333k Ave	14.7	+0.2	+0.0	+6.0	+0.0	+0.0	20.9	46.3	-25.4	White
^	482.333k	43.3	+0.2	+0.0	+6.0	+0.0	+0.0	49.5	46.3	+3.2	White
82	228.538k Ave	20.9	+0.2	+0.0	+6.0	+0.0	+0.0	27.1	52.5	-25.4	White
^	228.538k	51.6	+0.2	+0.0	+6.0	+0.0	+0.0	57.8	52.5	+5.3	White
84	393.614k Ave	13.6	+0.2	+0.0	+6.0	+0.0	+0.0	19.8	48.0	-28.2	White
^	393.614k	43.5	+0.2	+0.0	+6.0	+0.0	+0.0	49.7	48.0	+1.7	White
86	173.998k Ave	17.2	+0.4	+0.0	+6.0	+0.0	+0.0	23.6	54.8	-31.2	White
^	173.998k	52.0	+0.4	+0.0	+6.0	+0.0	+0.0	58.4	54.8	+3.6	White


CKC Laboratories, Inc. Date: 11/30/2008 Time: 15:22:49 Cimarron Systems LLC WO#: 88433
FCC 15.207 COND [AVE] Test Lead: White 110V 60Hz Sequence#: 10
70
60
50
40
30
20
10
dBµV/m
0.15
1
10
30
Frequency [MHz]
1
Sweep Data
1 - FCC 15.207 COND [AVE]

FCC Part 15.247(a)(1) - BANDWIDTH PLOT

Test Setup Photos

Test Equipment

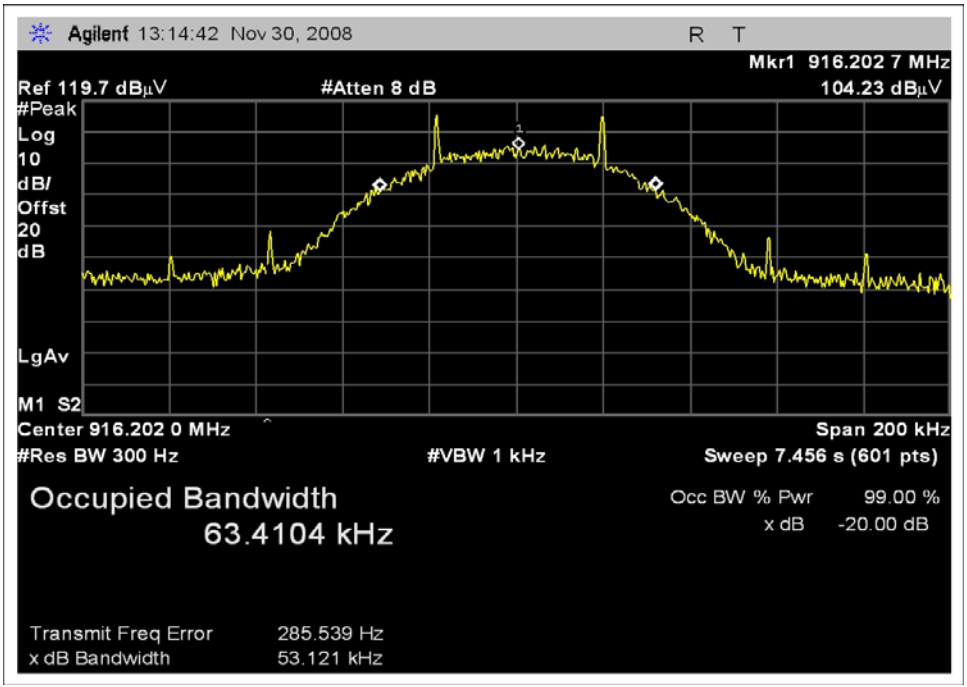
Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02672	Agilent	E4446A	US44300438	072308	072310
36" 40GHz cable	02945	Strolab	NA	NA	091807	091809

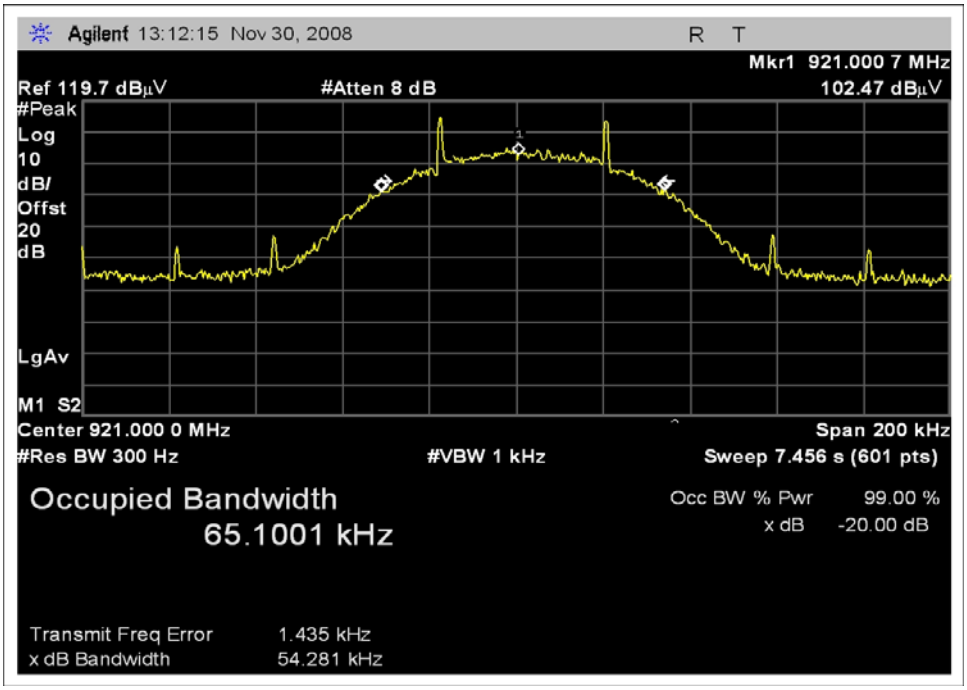
Test Conditions

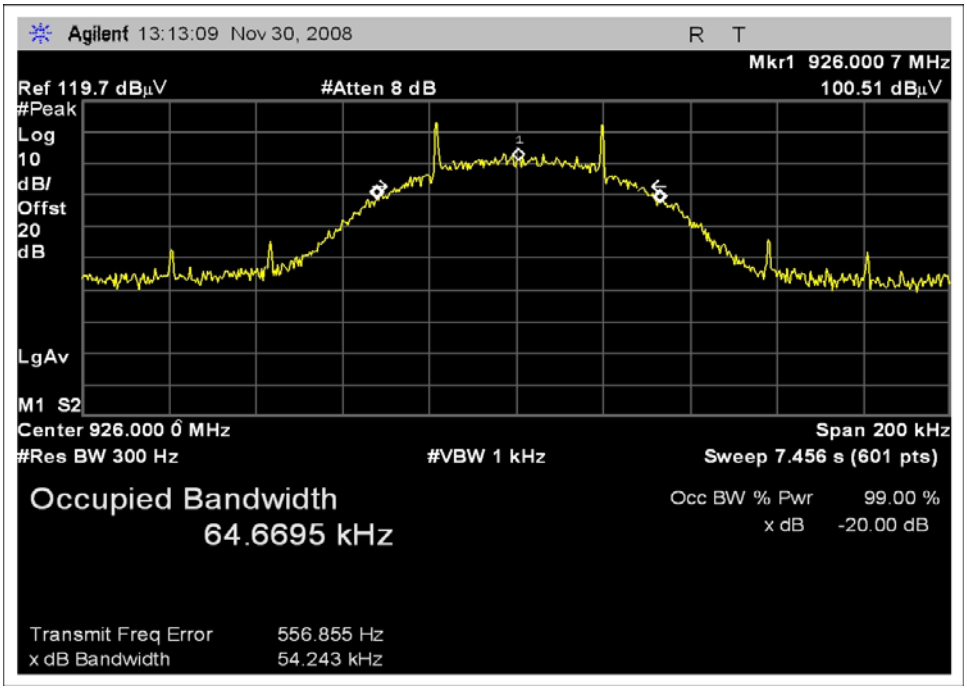
The EUT is placed on the test bench .The serial port is connected to a remotely located support laptop and 5V AC-DC power supply. Two analog inputs are connected to support pressure transducers. Four discrete inputs are connected to a section of unterminated cable. All four cables are of shielded cable.

Freq range : 916MHz – 926MHz
TX = 916MHz, 921MHz, 926MHz
Modulation : 0n
Test software setting: Transceiver power = -8
PA Gain voltage: 1.8
The RF output power is measure at the PCB mounted antenna port with test procedure as prescribed in FCC Document, DA 00-705.
Note: A fresh batter was used for testing. In normal application, this product is a low transmit duty cycle, battery operated device with a transmit interval in the order of once a minute.. To support continuous transmit in testing mode at intended transmit power level, a support 5V AC-DC power supply is used to simulate testing with a new battery.

Test Plots
Tested By: E. Wong




Agilent 13:12:15 Nov 30, 2008
R T
Mkr1 921.000 7 MHz
Ref 119.7 dBµV
#Atten 8 dB
102.47 dBµV
#Peak
Log
10
dB/
Offst
20
dB
LgAv
M1 S2
Center 921.000 0 MHz
Span 200 kHz
#Res BW 300 Hz
#VBW 1 kHz
Sweep 7.456 s (601 pts)
Occupied Bandwidth
65.1001 kHz
Occ BW % Pwr 99.00 %
x dB -20.00 dB
Transmit Freq Error 1.435 kHz
x dB Bandwidth 54.281 kHz


Agilent 13:13:09 Nov 30, 2008
R T
Mkr1 926.000 7 MHz
Ref 119.7 dBµV
#Atten 8 dB
100.51 dBµV
#Peak
Log
10
dB/
Offst
20
dB
LgAv
M1 S2
Center 926.000 0 MHz
Span 200 kHz
#Res BW 300 Hz
#VBW 1 kHz
Sweep 7.456 s (601 pts)
Occupied Bandwidth
64.6695 kHz
Occ BW % Pwr 99.00 %
x dB -20.00 dB
Transmit Freq Error 556.855 Hz
x dB Bandwidth 54.243 kHz

FCC Part 15.247(a)(1) - CARRIER FREQUENCY SPECTRUM

Test Setup Photos

Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02672	Agilent	E4446A	US44300438	072308	072310
36" 40GHz cable	02945	Strolab	NA	NA	091807	091809

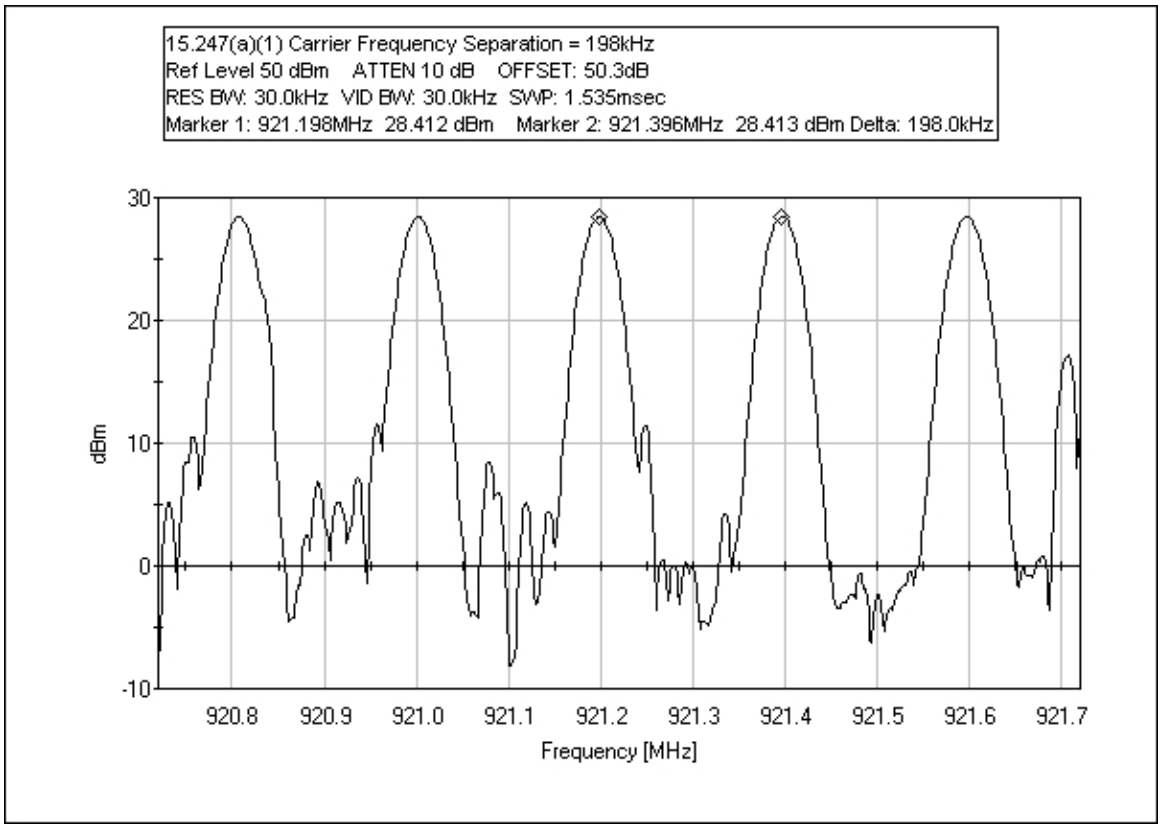
Test Conditions

The EUT is placed on the test bench.The serial port is connected to a remotely located support laptop and 5V AC-DC power supply. Two analog inputs are connected to support pressure transducers. Four discrete inputs are connected to a section of unterminated cable. All four cables are of shielded cable.

Freq range: 916MHz – 926MHz
Modulation: 0n, Hopping.
Test software setting: Transceiver power = -8
PA Gain voltage: 1.8

The Carrier Frequency Separation is measured at the PCB mounted antenna port with test procedure as prescribed in FCC Document, DA 00-705.

Test Plots
Tested By: E. Wong



Note: A fresh battery was used for testing. In normal application, this product is a low transmit duty cycle, battery operated device with a transmit interval in the order of once a minute.. To support continuous transmit in testing mode at intended transmit power level, a support 5V AC-DC power supply is used to simulate testing with a new battery.

FCC Part 15.247(a)(1)(iii) - NUMBER OF HOPPING FREQUENCIES

Test Setup Photos

Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02672	Agilent	E4446A	US44300438	072308	072310
36" 40GHz cable	02945	Strolab	NA	NA	091807	091809

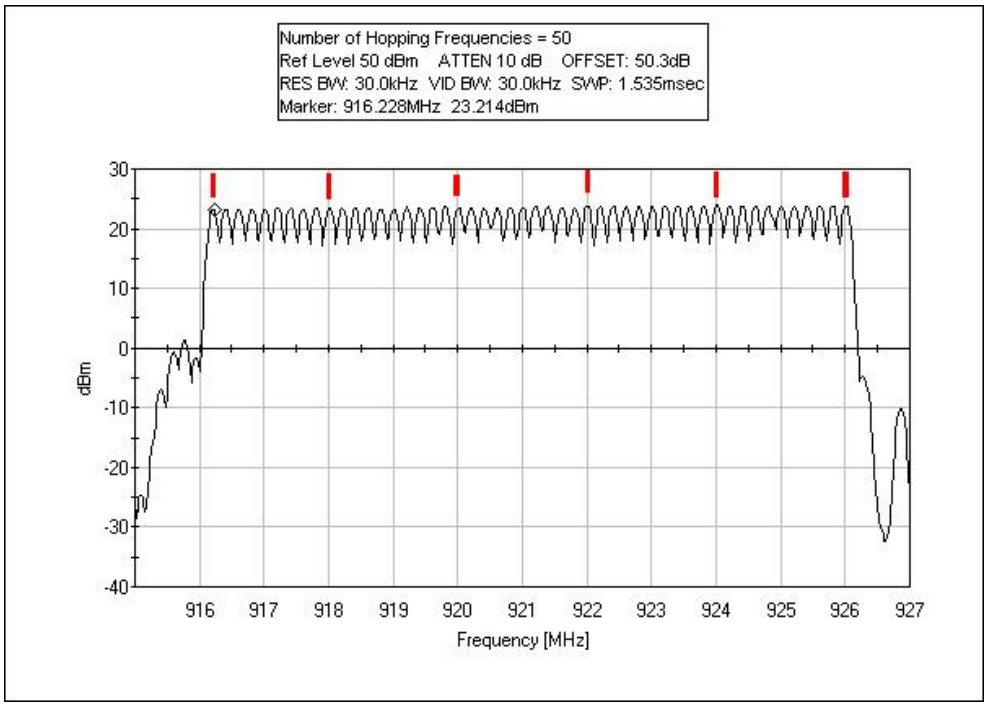
The EUT is placed on the test bench .The serial port is connected to a remotely located support laptop and 5V AC-DC power supply. Two analog inputs are connected to support pressure transducers. Four discrete inputs are connected to a section of unterminated cable. All four cables are of shielded cable.

Freq range: 916MHz – 926MHz
Modulation: 0n, Hopping.
Test software setting: Transceiver power = -15
PA Gain voltage: 2.6

The Number of Hopping Frequencies and Time of occupancies is evaluated at the PCB mounted antenna port with test procedure as prescribed in FCC Document, DA 00-705.

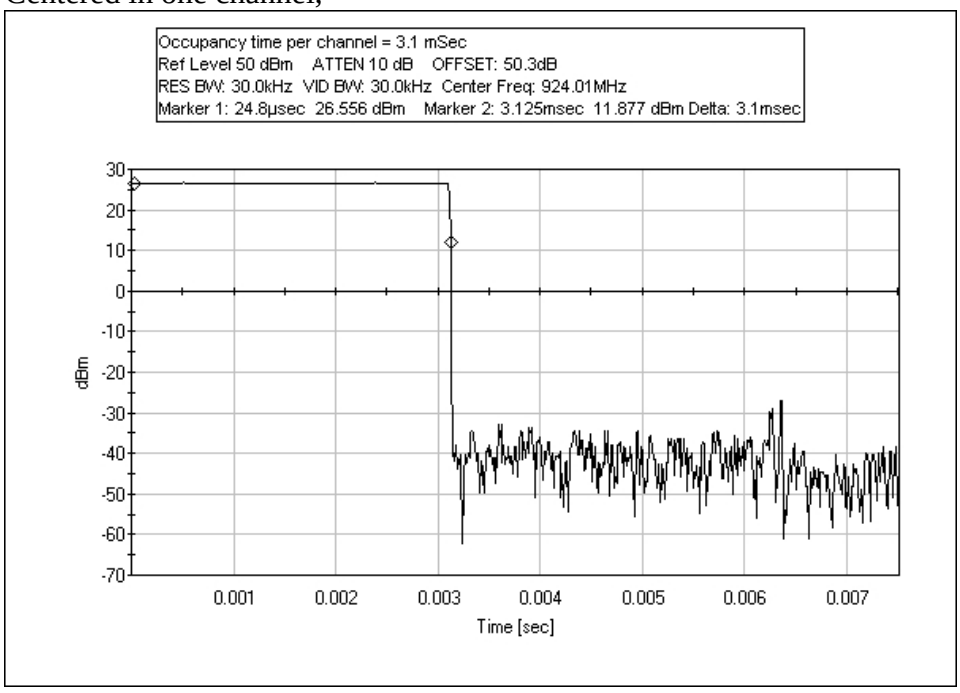
Note: A fresh battery was used for testing. In normal application, this product is a low transmit duty cycle, battery operated device with a transmit interval in the order of once a minute.. To support continuous transmit in testing mode at intended transmit power level, a support 5V AC-DC power supply is used to simulate testing with a new battery.

Test Plots
Tested By: E. Wong

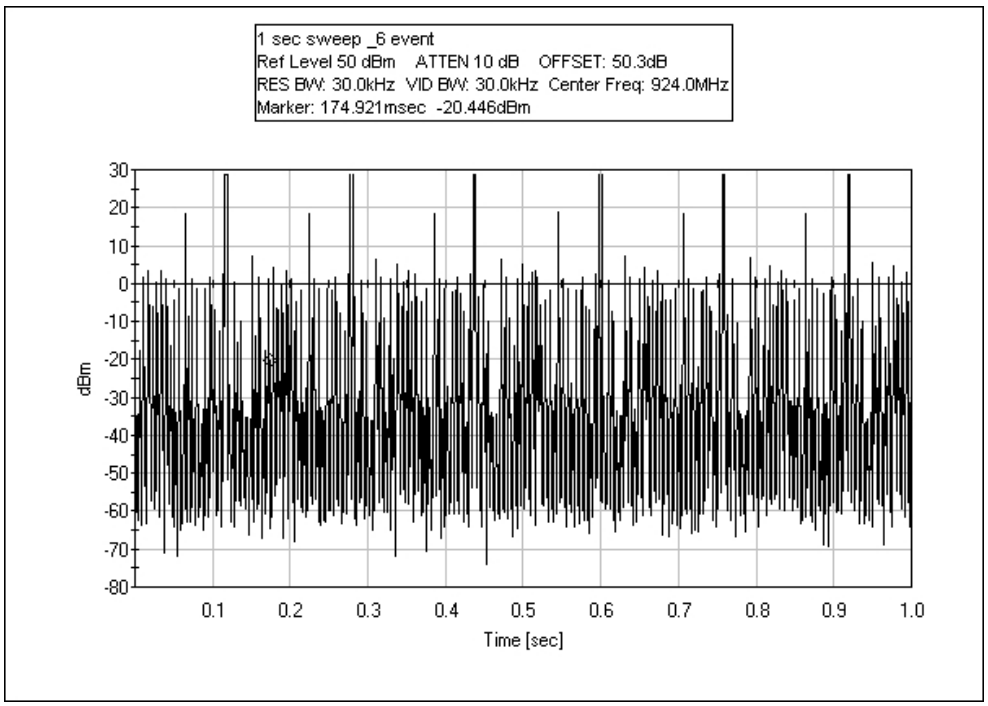


Measured number of hopping frequency = 50.

Centered in one channel,



The measure channel occupancy time is 0.0031 Sec, (per event)



Capturing 10 plots of 1 second sweep, the computed averaging number of events occurred per 1 second sweep = 6.2

In 20 second, total average events occurred = 6.2 x 20 = 124 events.

Total average time of occupancy within 20 second = 124 events x 0.0031 sec =**0.38Sec.**

FCC 15.247(b)(2) – RF POWER OUTPUT

Test Setup Photos

Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02672	Agilent	E4446A	US44300438	072308	072310
36" 40GHz cable	02945	Strolab	NA	NA	091807	091809
Programmable Power Source	01695/ 01696	Pacific Power	345AMX / UPC32	250 / 245	051507	051509

Test Conditions

The EUT is placed on the test bench. The serial port is connected to a remotely located support laptop and 5V AC-DC power supply. Two analog inputs are connected to support pressure transducers. Four discrete inputs are connected to a section of unterminated cable. All four cables are of shielded cable.

Freq range: 916MHz – 926MHz
TX = 916MHz, 921MHz, 926MHz
Modulation: 0n
Test software setting: Transceiver power = -8
PA Gain voltage: 1.8

The RF output power is measured at the PCB mounted antenna port with test procedure as prescribed in FCC Document, DA 00-705.

RBW=1MHz, VBW=3MHz.

Tested By: E. Wong

Frequency	dBm	Watts
916MHz	27.8dBm	0.60W
921 MHz	28.1dBm	0.65W
926MHz	28.4 dBm	0.69W

DC Mode

A fresh battery was used for testing. In DC powered mode, this product is a low transmit duty cycle, battery operated device with a transmit interval in the order of once a minute. To support continuous transmit in testing mode at intended transmit power level, a support 5V AC-DC power supply is used to simulate testing with a new battery.

FCC 15.247(d) – BAND EDGE

Test Setup Photos

Test Equipment

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer	US44300438	07/23/2008	07/23/2010	02672
Bilog Antenna	2451	01/21/2008	01/21/2010	01995
Pre amp to SA Cable	Cable #10	05/16/2007	05/16/2009	P05050
Cable	Cable15	01/05/2007	01/05/2009	P05198
Pre Amp	1937A02548	05/02/2008	05/02/2010	00309

Test Conditions
FCC15.109(2007)
The EUT is placed on the wooden table with Styrofoam padding of 10 cm thickness. The serial port is connected to a support 5V AC-DC power supply and a remotely located support laptop. Two analog inputs are connected to support pressure transducers. Four discrete inputs are connected to a section of unterminated cable. All four cables are of shielded cable.

Freq range: 916MHz - 926MHz Mode:
RX Test software setting: Transceiver power = -8
PA Gain voltage: 1.8

The device is to be used in three different orientations, with transmit antenna perpendicular to the ground reference plane. The emission profile of all three device orientations was tested and worse case emission is presented.

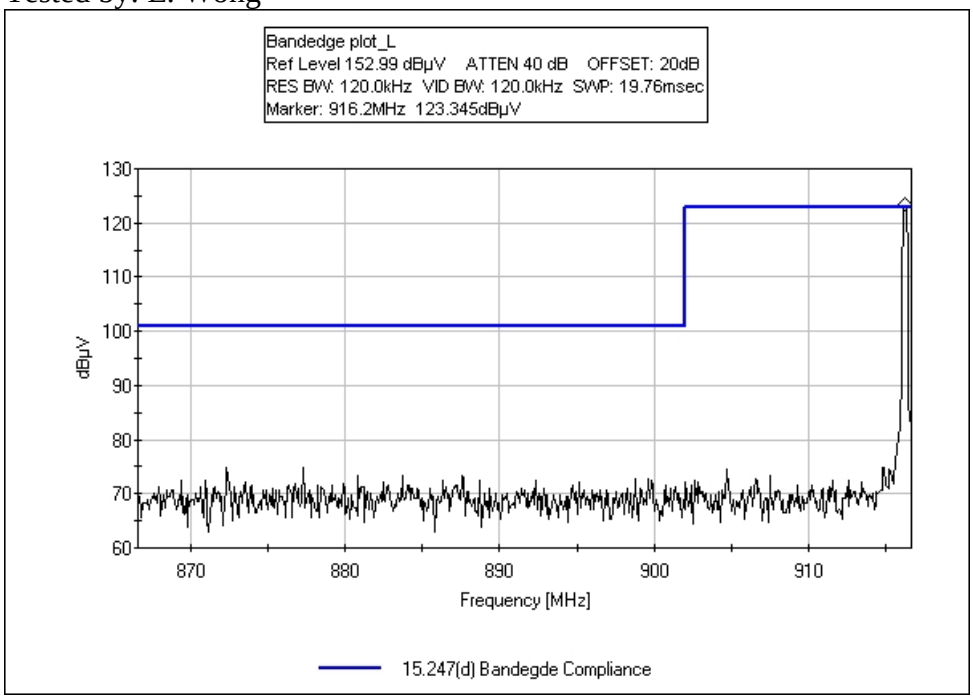
Note: In normal application, this low transmit duty cycle device has a transmit interval in the order of once a minute. The primary power source is non-rechargeable and rechargeable battery with external AC-DC power supply or solar panel. To support continuous transmit in test mode, a support 5V AC-DC power supply is used to simulate testing with a new battery.

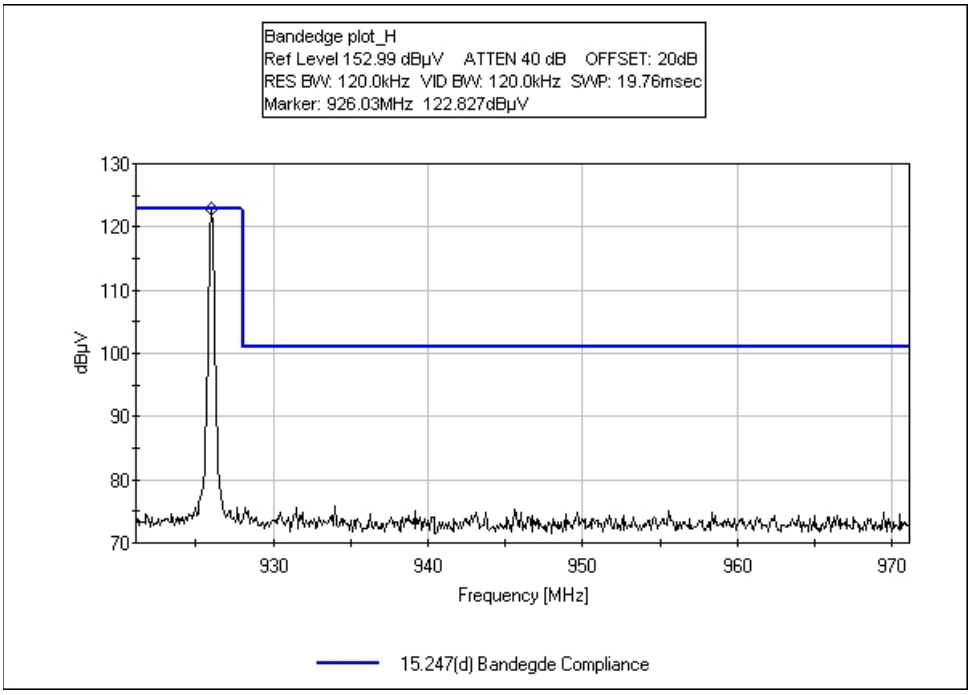
Frequency range of measurement = 30MHz- 10 GHz.
Frequency 30 MHz - 1000 MHz RBW=120 kHz, VBW=120 kHz; 1000 MHz-10,000 MHz RBW=1 MHz, VBW=1 MHz.

Modification: Added a SAW filter between the output of the transceiver and the input of the power amplifier. Mounting holes are isolated from the ground plane. The board is now screwed to the standoffs. A 10MOhm resistor was added between the analog input amplifier and ground.

Plots

Tested by: E. Wong





FCC 15.247(d) – OATS RADIATED SPURIOUS EMISSIONS

Test Setup Photos

Front - X Orientation

Back - X Orientation

Front - Y Orientation

Back - Y Orientation

Test Data Sheets

Test Location: CKC Laboratories, Inc. •110. N. Olinda Place. • Brea, CA 92821 • (714) 993-6112

Customer: **Cimarron Systems LLC**
Specification: **FCC 15.247 (d) (FCC 15.205 restricted band)**
Work Order #: **88433** Date: 11/30/2008
Test Type: **Radiated Scan** Time: 09:42:26
Equipment: **Wireless Data Collection System** Sequence#: 7
Manufacturer: Cimarron Systems LLC Tested By: E. Wong
Model: 915-1000-0-NIU
S/N: NA

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer	US44300438	07/23/2008	07/23/2010	02672
Bilog Antenna	2451	01/21/2008	01/21/2010	01995
Pre amp to SA Cable	Cable #10	05/16/2007	05/16/2009	P05050
Cable	Cable15	01/05/2007	01/05/2009	P05198
Pre Amp	1937A02548	05/02/2008	05/02/2010	00309
Horn Antenna	6246	06/06/2008	06/06/2010	00849
Microwave Pre-amp	3123A00281	07/28/2008	07/28/2010	00786
2'-40GHz cable	NA	09/18/2007	09/18/2009	P2948
1.0 GHz HPF	1	01/11/2008	01/11/2010	02749
Loop Antenna	2014	06/16/2008	06/16/2010	00314
Heliax Antenna Cable	P5565	09/04/2008	09/04/2010	P05565

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

Function	Manufacturer	Model #	S/N
Wireless Data Collection System*	Cimarron Systems LLC	915-1000-0-NIU	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Pressure transducer	Omegadyne	PX-319-200GV	091906D028
Pressure transducer	Omegadyne	PX-319-1KGV	053007D300
Power Supply	Cincon	TR1505	NA

Test Conditions / Notes:

FCC15.247 (2007)

The EUT is placed on the wooden table with Styrofoam padding of 10 cm thickness. The serial port is connected to a support 5V AC-DC power supply and a remotely located support laptop.

Two analog inputs are connected to support pressure transducers. Four discrete inputs are connected to a section of unterminated cable. All four cables are of shielded cable.
Freq range : 916MHz - 926MHz
TX = 916MHz.
Test software setting: Transceiver power = -8
PA Gain voltage: 1.8
The device is to be used in three different orientations, with transmit antenna perpendicular to the ground reference plane. The emission profile of all three device orientations will be tested and worse case emission is presented.

Note: In normal application, this low transmit duty cycle device has a transmit interval in the order of once a minute. The primary power source is non-rechargeable and rechargeable battery with external AC-DC power supply or solar panel. To support continuous transmit in test mode, a support 5V AC-DC power supply is used to simulate testing with a new battery.

Frequency range of measurement = 9 kHz- 10 GHz.
Frequency 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-10,000 MHz RBW=1 MHz, VBW=1 MHz.

Modification:
Added a SAW filter between the output of the transceiver and the input of the power amplifier.
Mounting holes are isolated from the ground plane. The board is screwed to the standoffs.
A 10MOhm resistor was added between the analog input amplifier and ground.

1-10GHz
Duty cycle correction applied. correction = 20 Log Time of occupancy/100ms
measured dwell time per channel = 3.1ms,
20 Log (3.1/100) = -30

Transducer Legend:

T1=Bilog-AN01995 BILOG_012110	T2=Cable #10_P05050_ 051609
T3=Cable #15_P05198_ Site A, 010509	T4=Pre_amp_HP8447D-AN00309-050210
T5=Heliax Cable 54' ANP05565 090410	T6=HF_pre AMP-1-26GHz_AN00786-072810.TRN
T7=Hi Freq_40GHz_2ft-ANP02948-091809	T8=Horn Ant AN00849 060610
T9=K&L 1GHz HPF AN02749_011110	T10=Time of Occupancy Corr -30dB

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

#	Freq	Rdng	T1 T5 T9	T2 T6 T10	T3 T7	T4 T8	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	973.575M	44.2	+24.4 +0.0 +0.0	+0.7 +0.0 +0.0	+6.2 +0.0	-27.3 +0.0	+0.0	48.2	54.0	-5.8	Vert
2	960.075M QP	42.1	+24.2 +0.0 +0.0	+0.7 +0.0 +0.0	+6.1 +0.0	-27.2 +0.0	+0.0	45.9	54.0	-8.1	Vert
^	960.075M	45.3	+24.2	+0.7	+6.1	-27.2	+0.0	49.1	54.0	-4.9	Vert

			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0							
4	2748.596M	56.4	+0.0	+0.0	+0.0	+0.0	+0.0	23.0	54.0	-31.0	Horiz
	Ave		+4.1	-37.8	+0.4	+29.3					
			+0.6	-30.0							
^	2748.596M	67.4	+0.0	+0.0	+0.0	+0.0	+0.0	34.0	54.0	-20.0	Horiz
			+4.1	-37.8	+0.4	+29.3					
			+0.6	-30.0							
6	2748.588M	54.7	+0.0	+0.0	+0.0	+0.0	+0.0	21.3	54.0	-32.7	Vert
	Ave		+4.1	-37.8	+0.4	+29.3					
			+0.6	-30.0							
^	2748.588M	63.0	+0.0	+0.0	+0.0	+0.0	+0.0	29.6	54.0	-24.4	Vert
			+4.1	-37.8	+0.4	+29.3					
			+0.6	-30.0							
8	1832.431M	90.0	+0.0	+0.0	+0.0	+0.0	+0.0	52.6	101.0	-48.4	Horiz
			+3.2	-38.0	+0.3	+26.7					
			+0.4	-30.0							
9	1832.388M	74.2	+0.0	+0.0	+0.0	+0.0	+0.0	36.8	101.0	-64.2	Horiz
			+3.2	-38.0	+0.3	+26.7					
			+0.4	-30.0							

Test Location: CKC Laboratories, Inc. •110. N. Olinda Place. • Brea, CA 92821 • (714) 993-6112

Customer: **Cimarron Systems LLC**
Specification: **FCC 15.247 (d) (FCC 15.205 restricted band)**
Work Order #: **88433** Date: 11/30/2008
Test Type: **Radiated Scan** Time: 10:08:08
Equipment: **Wireless Data Collection System** Sequence#: 8
Manufacturer: Cimarron Systems LLC Tested By: E. Wong
Model: 915-1000-0-NIU
S/N: NA

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer	US44300438	07/23/2008	07/23/2010	02672
Bilog Antenna	2451	01/21/2008	01/21/2010	01995
Pre amp to SA Cable	Cable #10	05/16/2007	05/16/2009	P05050
Cable	Cable15	01/05/2007	01/05/2009	P05198
Pre Amp	1937A02548	05/02/2008	05/02/2010	00309
Horn Antenna	6246	06/06/2008	06/06/2010	00849
Microwave Pre-amp	3123A00281	07/28/2008	07/28/2010	00786
2'-40GHz cable	NA	09/18/2007	09/18/2009	P2948
1.0 GHz HPF	1	01/11/2008	01/11/2010	02749
Loop Antenna	2014	06/16/2008	06/16/2010	00314
Heliax Antenna Cable	P5565	09/04/2008	09/04/2010	P05565

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

Function	Manufacturer	Model #	S/N
Wireless Data Collection System*	Cimarron Systems LLC	915-1000-0-NIU	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Pressure transducer	Omegadyne	PX-319-200GV	091906D028
Pressure transducer	Omegadyne	PX-319-1KGV	053007D300
Power Supply	Cincon	TR1505	NA

Test Conditions / Notes:

FCC15.247 (2007)

The EUT is placed on the wooden table with Styrofoam padding of 10 cm thickness. The serial port is connected to a support 5V AC-DC power supply and a remotely located support laptop.

Two analog inputs are connected to support pressure transducers. Four discrete inputs are connected to a section of unterminated cable. All four cables are of shielded cable.
Freq range : 916MHz - 926MHz
TX = 921MHz.
Test software setting: Transceiver power = -8
PA Gain voltage: 1.8
The device is to be used in three different orientations, with transmit antenna perpendicular to the ground reference plane. The emission profile of all three device orientations will be tested and worse case emission is presented.

Note: In normal application, this low transmit duty cycle device has a transmit interval in the order of once a minute. The primary power source is non-rechargeable and rechargeable battery with external AC-DC power supply or solar panel. To support continuous transmit in test mode, a support 5V AC-DC power supply is used to simulate testing with a new battery.

Frequency range of measurement = 9 kHz- 10 GHz.
Frequency 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-10,000 MHz RBW=1 MHz, VBW=1 MHz.

Modification:
Added a SAW filter between the output of the transceiver and the input of the power amplifier.
Mounting holes are isolated from the ground plane. The board is screwed to the standoffs.
A 10MOhm resistor was added between the analog input amplifier and ground.

1-10GHz
Duty cycle correction applied. correction = 20 Log Time of occupancy/100ms
measured dwell time per channel = 3.1ms,
20 Log (3.1/100) = -30

Transducer Legend:

T1=Bilog-AN01995 BILOG_012110	T2=Cable #10_P05050_ 051609
T3=Cable #15_P05198_ Site A, 010509	T4=Pre_amp_HP8447D-AN00309-050210
T5=Heliax Cable 54' ANP05565 090410	T6=HF_pre AMP-1-26GHz_AN00786-072810.TRN
T7=Hi Freq_40GHz_2ft-ANP02948-091809	T8=Horn Ant AN00849 060610
T9=K&L 1GHz HPF AN02749_011110	T10=Time of Occupancy Corr -30dB

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

#	Freq	Rdng	T1 T5 T9	T2 T6 T10	T3 T7	T4 T8	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	960.000M	42.1	+24.2	+0.7	+6.1	-27.2	+0.0	45.9	54.0	-8.1	Vert
	QP		+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0							
^	960.000M	45.6	+24.2	+0.7	+6.1	-27.2	+0.0	49.4	54.0	-4.6	Vert
			+0.0	+0.0	+0.0	+0.0					
			+0.0	+0.0							
3	2763.046M	66.6	+0.0	+0.0	+0.0	+0.0	+0.0	33.3	54.0	-20.7	Horiz

			+4.1	-37.7	+0.4	+29.4					
			+0.5	-30.0							
4	2762.995M	64.7	+0.0	+0.0	+0.0	+0.0	+0.0	31.4	54.0	-22.6	Vert
			+4.1	-37.7	+0.4	+29.4					
			+0.5	-30.0							
5	1842.046M	65.7	+0.0	+0.0	+0.0	+0.0	+0.0	28.3	101.0	-72.7	Horiz
			+3.2	-38.0	+0.3	+26.7					
			+0.4	-30.0							
6	1841.995M	65.5	+0.0	+0.0	+0.0	+0.0	+0.0	28.1	101.0	-72.9	Vert
			+3.2	-38.0	+0.3	+26.7					
			+0.4	-30.0							

Test Location: CKC Laboratories, Inc. •110. N. Olinda Place. • Brea, CA 92821 • (714) 993-6112

Customer: **Cimarron Systems LLC**
Specification: **FCC 15.247 (d) (FCC 15.205 restricted band)**
Work Order #: **88433** Date: 11/30/2008
Test Type: **Radiated Scan** Time: 10:22:10
Equipment: **Wireless Data Collection System** Sequence#: 9
Manufacturer: Cimarron Systems LLC Tested By: E. Wong
Model: 915-1000-0-NIU
S/N: NA

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer	US44300438	07/23/2008	07/23/2010	02672
Bilog Antenna	2451	01/21/2008	01/21/2010	01995
Pre amp to SA Cable	Cable #10	05/16/2007	05/16/2009	P05050
Cable	Cable15	01/05/2007	01/05/2009	P05198
Pre Amp	1937A02548	05/02/2008	05/02/2010	00309
Horn Antenna	6246	06/06/2008	06/06/2010	00849
Microwave Pre-amp	3123A00281	07/28/2008	07/28/2010	00786
2'-40GHz cable	NA	09/18/2007	09/18/2009	P2948
1.0 GHz HPF	1	01/11/2008	01/11/2010	02749
Loop Antenna	2014	06/16/2008	06/16/2010	00314
Heliax Antenna Cable	P5565	09/04/2008	09/04/2010	P05565

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

Function	Manufacturer	Model #	S/N
Wireless Data Collection System*	Cimarron Systems LLC	915-1000-0-NIU	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Pressure transducer	Omegadyne	PX-319-200GV	091906D028
Pressure transducer	Omegadyne	PX-319-1KGV	053007D300
Power Supply	Cincon	TR1505	NA

Test Conditions / Notes:

FCC15.247 (2007)

The EUT is placed on the wooden table with Styrofoam padding of 10 cm thickness. The serial port is connected to a support 5V AC-DC power supply and a remotely located support laptop.

Two analog inputs are connected to support pressure transducers. Four discrete inputs are connected to a section of unterminated cable. All four cables are of shielded cable.
Freq range : 916MHz - 926MHz
TX = 926MHz.
Test software setting: Transceiver power = -8
PA Gain voltage: 1.8
The device is to be used in three different orientations, with transmit antenna perpendicular to the ground reference plane. The emission profile of all three device orientations will be tested and worse case emission is presented.

Note: In normal application, this low transmit duty cycle device has a transmit interval in the order of once a minute. The primary power source is non-rechargeable and rechargeable battery with external AC-DC power supply or solar panel. To support continuous transmit in test mode, a support 5V AC-DC power supply is used to simulate testing with a new battery.

Frequency range of measurement = 9 kHz- 10 GHz.
Frequency 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-10,000 MHz RBW=1 MHz, VBW=1 MHz.

Modification:
Added a SAW filter between the output of the transceiver and the input of the power amplifier.
Mounting holes are isolated from the ground plane. The board is screwed to the standoffs.
A 10MOhm resistor was added between the analog input amplifier and ground.

1-10GHz
Duty cycle correction applied. correction = 20 Log Time of occupancy/100ms
measured dwell time per channel = 3.1ms,
20 Log (3.1/100) = -30

Transducer Legend:

T1=Heliax Cable 54' ANP05565 090410	T2=HF_pre AMP-1-26GHz_AN00786-072810.TRN
T3=Hi Freq_40GHz_2ft-ANP02948-091809	T4=Horn Ant AN00849 060610
T5=K&L 1GHz HPF AN02749_011110	T6=Time of Occupancy Corr -30dB

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	2778.018M	65.5	+4.1 +0.5	-37.7 -30.0	+0.4	+29.4	+0.0	32.2	54.0	-21.8	Horiz
2	2768.018M	63.0	+4.1 +0.5	-37.7 -30.0	+0.4	+29.4	+0.0	29.7	54.0	-24.3	Vert
3	1852.035M	66.2	+3.2 +0.4	-38.0 -30.0	+0.3	+26.8	+0.0	28.9	101.0	-72.1	Horiz
4	1847.018M	64.9	+3.2 +0.4	-38.0 -30.0	+0.3	+26.7	+0.0	27.5	101.0	-73.5	Vert

RSS-210 – 99% BANDWIDTH

Test Setup Photos

Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02672	Agilent	E4446A	US44300438	072308	072310
36" 40GHz cable	02945	Strolab	NA	NA	091807	091809

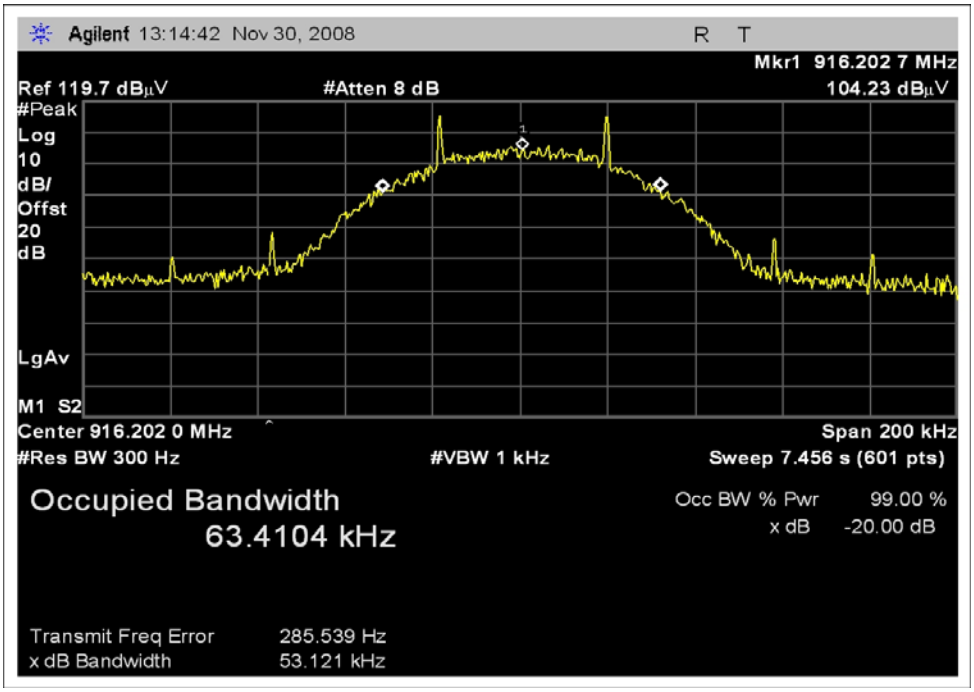
Test Conditions

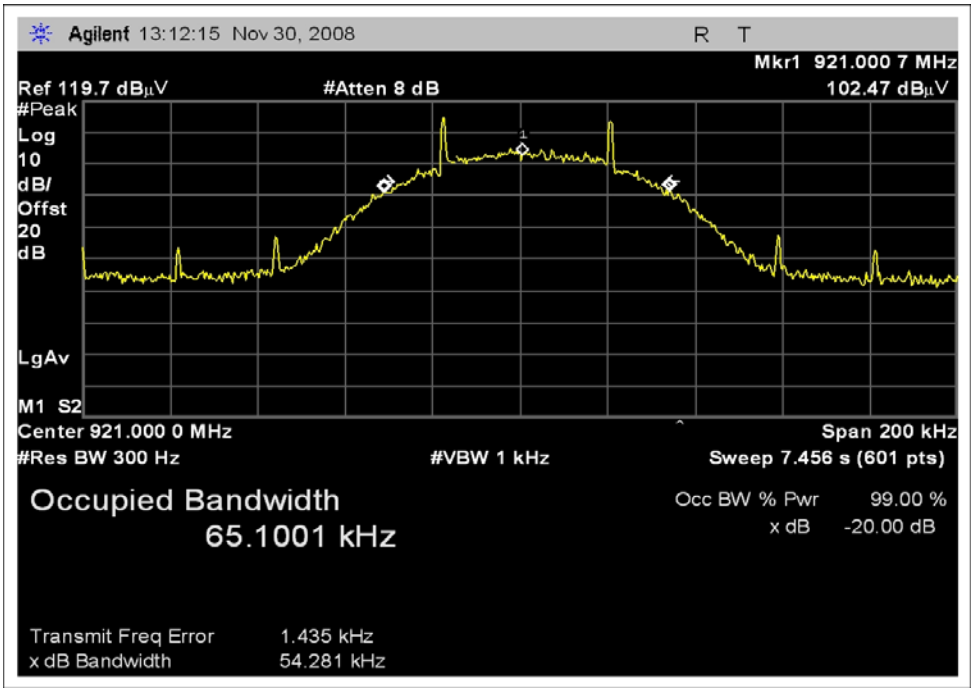
The EUT is placed on the test bench. The serial port is connected to a remotely located support laptop and 5V AC-DC power supply. Two analog inputs are connected to support pressure transducers. Four discrete inputs are connected to a section of unterminated cable. All four cables are of shielded cable. The PCB is attached to the chassis using double sided sticking tape. The ground pad of the PCB is intentionally isolated from the chassis.

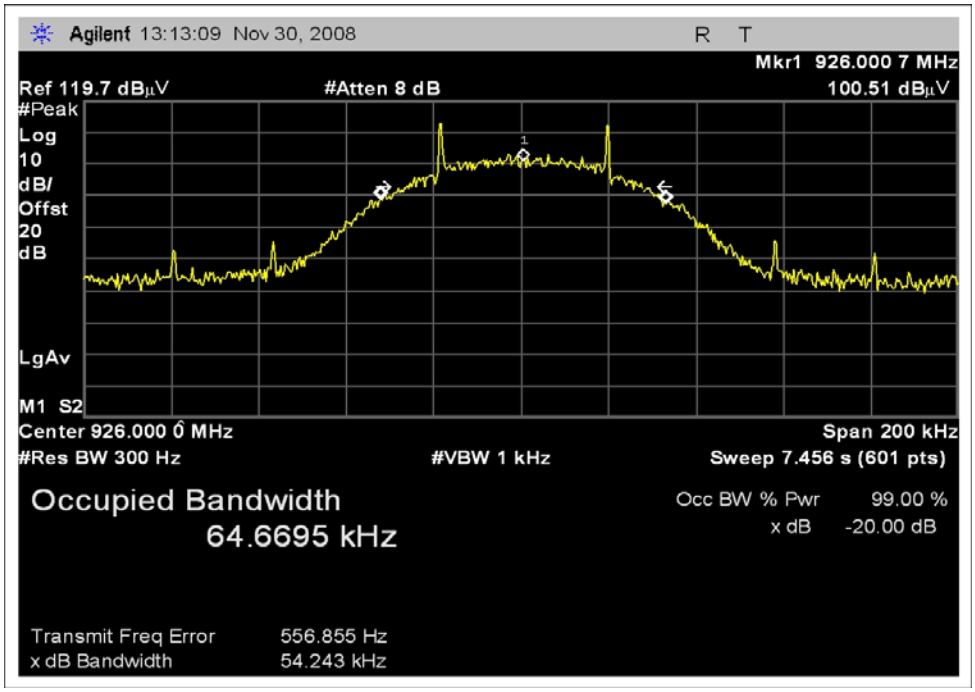
Freq range : 916MHz – 926MHz
TX = 916MHz, 921MHz, 926MHz
Modulation : 0n
Test software setting: Transceiver power = -8
PA Gain voltage: 1.8

Note: A fresh battery was used for testing. In normal application, this product is a low transmit duty cycle, battery operated device with a transmit interval in the order of once a minute. To support continuous transmit in testing mode at intended transmit power level, a support 5V AC-DC power supply is used to simulate testing with a new battery.

Plot
Tested by: E. Wong



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Ref 119.7 dBµV
#Atten 8 dB
100.51 dBµV
#Peak
Log
10
dB/
Offst
20
dB
LgAv
M1 S2
Center 926.000 0 MHz
Span 200 kHz
#Res BW 300 Hz
#VBW 1 kHz
Sweep 7.456 s (601 pts)
Occupied Bandwidth
64.6695 kHz
Occ BW % Pwr 99.00 %
x dB -20.00 dB
Transmit Freq Error 556.855 Hz
x dB Bandwidth 54.243 kHz