

First Texas Products LLC

ADDENDUM TEST REPORT FOR 91407-7

Metal Detector, GoldBug

Tested To The Following Standards:

FCC Part 15 Subpart C Sections 15.209
and
RSS 210 Issue 8

Report No.: 91407-7A

Date of issue: July 20, 2011

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.



TESTING
CERT #803.01, 803.02,
803.05, 803.06

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.

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ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

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Representative: Art Nemirov
Customer Reference Number: 012015-00

REPORT PREPARED BY:

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Mariposa, CA 95338

Project Number: 91407

DATE OF EQUIPMENT RECEIPT:
DATE(S) OF TESTING:

November 22, 2010
November 22 – December 2, 2010

Revision History

Original: Testing of the Metal Detector, GoldBug to FCC Part 15 Subpart C Sections 15.209 and RSS 210 Issue 8.
Addendum A: To add to the test conditions for all testing that the EUT was testing in accordance with 15.31e.

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.
5046 Sierra Pines Drive
Mariposa, CA 95338

Site Registration & Accreditation Information

Location	CB #	Japan	Canada	FCC
Mariposa A	US0103	R-563, C-578, T-1492 & G-87	3082A-2	90477

SUMMARY OF RESULTS

Standard / Specification: FCC Part 15 Subpart C 15.209 and RSS-210 Issue 8

Description	Test Procedure/Method	Results
Maximum Radiated Output	FCC Part 15 Subpart C Section 15.209/ ANSI C63.4 (2003)	Pass
Spurious Radiated Emissions	FCC Part 15 Subpart C Section 15.209 / ANSI C63.4 (2003)	Pass
99% Occupied Bandwidth	RSS-210 Issue 8	Pass

Conditions During Testing

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

Summary of Conditions
None

EQUIPMENT UNDER TEST (EUT)

EQUIPMENT UNDER TEST

Metal Detector

Manuf: First Texas Products, LLC

Model: GoldBug

Serial: None

PERIPHERAL DEVICES

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

Headphones

Manuf: Fisher Labs

Model: 89723-99960

Serial: None

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.

15.209 Maximum Radiated Output

Test Location: CKC Laboratories, Inc. • 5046 Sierra Pines Drive • Mariposa, CA 95338 • (209) 966-5240

Customer: **First Texas Products**
 Specification: **15.209 Radiated Emissions**
 Work Order #: **91407** Date: **12/7/2010**
 Test Type: **Maximized Emissions** Time: **14:33:11**
 Equipment: **Metal Detector** Sequence#: **2**
 Manufacturer: First Texas Products, LLC Tested By: Chuck Kendall
 Model: GoldBug
 S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANMA10M	Cable		5/10/2009	5/10/2011
T2	AN00226	Loop Antenna	6502	4/10/2009	4/10/2011
	AN02111	Spectrum Analyzer	8593EM	3/6/2009	3/6/2011

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Metal Detector*	First Texas Products, LLC	GoldBug	None

Support Devices:

Function	Manufacturer	Model #	S/N
Headphones	Fisher Labs	89723-99960	None

Test Conditions / Notes:

Metal detector is vertical, horizontal or perpendicular atop an 80cm high wooden turn table and there is a wooden rotating disk with a coin atop it. When the rotating disk spins the coin comes in contact with the detector antenna and the audio sounds an alarm.

Frequencies of interest is 19.2 kHz

In accordance with 15.31e, testing was performed with new batteries installed.

RBW = 200 Hz & the VBW = 200 Hz

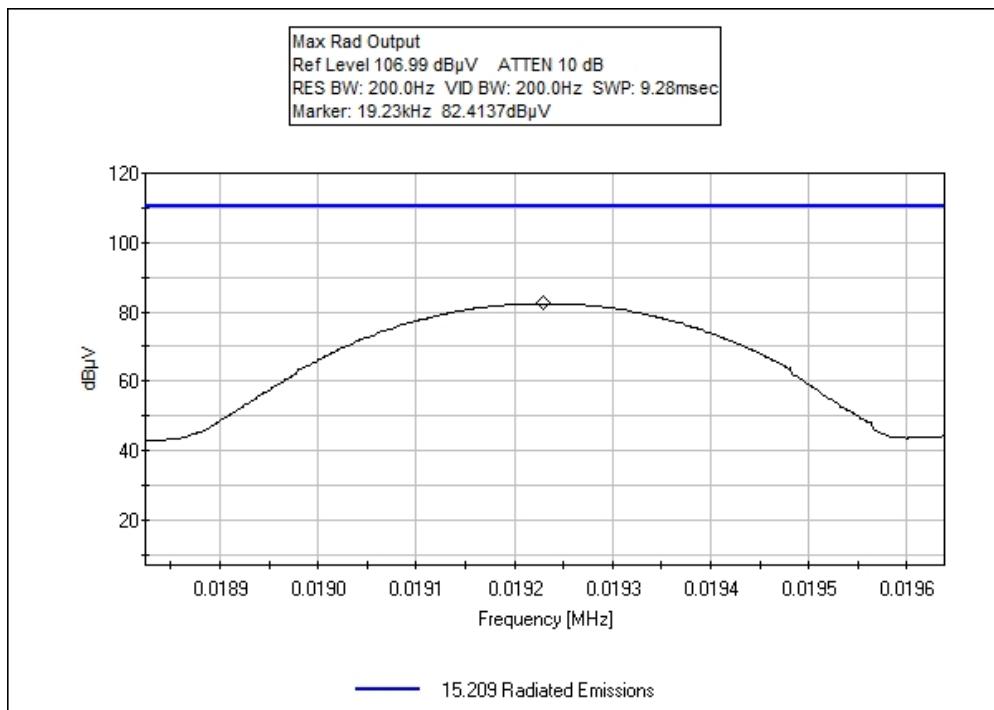
Temp = 40°F

Relative Humidity= 40 %

Ext Attn: 0 dB

Measurement Data:				Reading listed by margin.				Test Distance: 3 Meters			
#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T2 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant	
1	19.228k	82.4	+0.0	+11.4		-80.0	13.8	41.9	-28.1	Vert	
								EUT horizontal on table with large antenna parallel to receive antenna.			
2	19.230k	73.5	+0.0	+11.4		-80.0	4.9	41.9	-37.0	Horiz	
								EUT vertical with coil parallel to receive antenna.			
3	19.228k	72.0	+0.0	+11.4		-80.0	3.4	41.9	-38.5	Vert	
								EUT horizontal with ant parallel to loop antenna-small antenna			
4	19.230k	63.6	+0.0	+11.4		-80.0	-5.0	41.9	-46.9	Vert	
								EUT horizontal with antenna perpendicular to receive antenna.			

Test Data



Test Setup Photos



15.209 Radiated Spurious Emissions

Test Data Sheets

Test Location: CKC Laboratories, Inc. • 5046 Sierra Pines Drive • Mariposa, CA 95338 • (209) 966-5240

Customer: **First Texas Products**
 Specification: **15.209 Radiated Emissions**
 Work Order #: **91407** Date: 11/22/2010
 Test Type: **Radiated Scan** Time: 4:17:08 PM
 Equipment: **Metal Detector** Sequence#: 7
 Manufacturer: First Texas Products, LLC Tested By: Chuck Kendall
 Model: GoldBug
 S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00226	Loop Antenna	6502	4/10/2009	4/10/2011
T2	ANMA10M	Cable		5/10/2009	5/10/2011
	AN02111	Spectrum Analyzer	8593EM	3/6/2009	3/6/2011

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Metal Detector*	First Texas Products, LLC	GoldBug	None

Support Devices:

Function	Manufacturer	Model #	S/N
Headphones	Fisher Labs	89723-99960	None

Test Conditions / Notes:

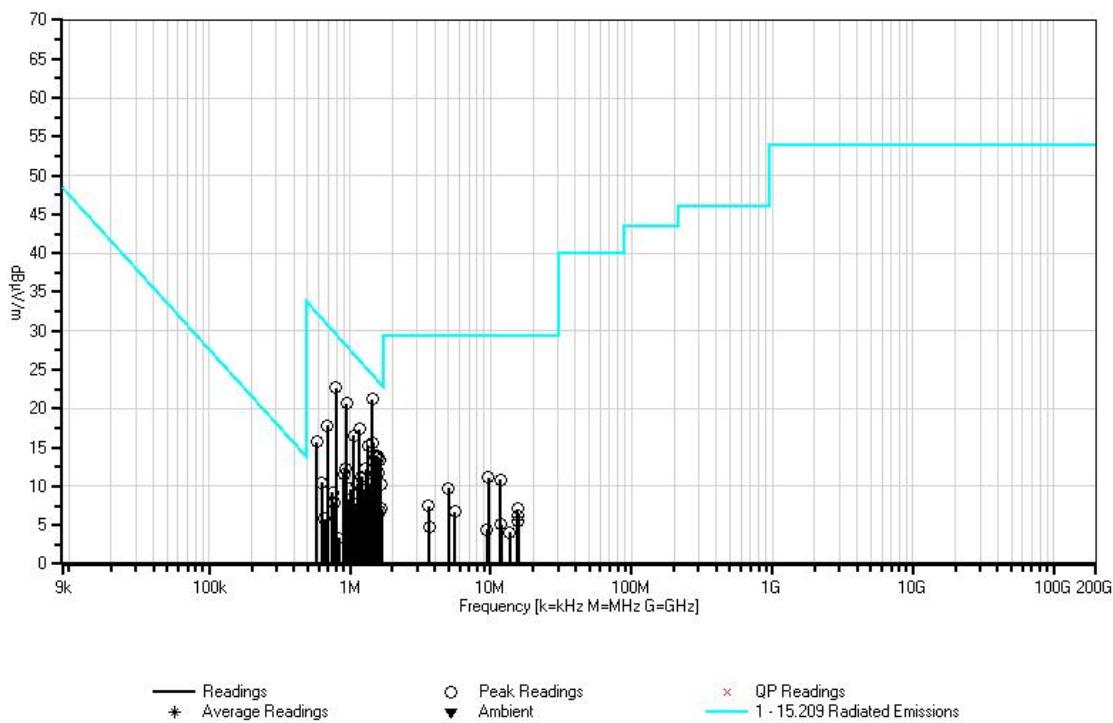
15.209 Radiated Emissions
 Metal detector is sitting vertically atop an 80cm high wooden turn table and there is a wooden rotating disk with a coin atop it. When the rotating disk spins the coin comes in contact with the detector antenna and the audio sounds an alarm.
 In accordance with 15.31e, testing was performed with new batteries installed.
 Frequencies of interest are from 9kHz to 30MHz and the RBW = 200Hz, VBW=1kHz from 9-150kHz and RBW=9kHz, VBW=30kHz from 150kHz to 30MHz.
 Temp = 40°F
 Relative Humidity = 40 %
 EUT is Horizontal during testing.

Ext Attn: 0 dB

#	Freq MHz	Rdng dB μ V	Reading listed by margin.			Test Distance: 3 Meters				
			T1 dB	T2 dB	dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	1.440M	50.9	+10.1	+0.2		-40.0	21.2	24.4	-3.2	Vert
2	789.755k	52.3	+10.3	+0.1		-40.0	22.7	29.6	-6.9	Vert
3	940.285k	50.3	+10.3	+0.1		-40.0	20.7	28.1	-7.4	Vert
4	1.459M	45.3	+10.1	+0.2		-40.0	15.6	24.3	-8.7	Vert
5	1.168M	47.1	+10.2	+0.1		-40.0	17.4	26.2	-8.8	Vert
6	1.340M	45.0	+10.1	+0.2		-40.0	15.3	25.0	-9.7	Vert
7	1.599M	43.4	+10.1	+0.2		-40.0	13.7	23.5	-9.8	Vert
8	1.559M	43.6	+10.1	+0.2		-40.0	13.9	23.7	-9.8	Vert
9	1.641M	43.1	+10.1	+0.2		-40.0	13.4	23.2	-9.8	Vert
10	1.530M	43.4	+10.1	+0.2		-40.0	13.7	23.8	-10.1	Vert
11	1.059M	46.2	+10.2	+0.1		-40.0	16.5	27.1	-10.6	Vert
12	1.580M	41.4	+10.1	+0.2		-40.0	11.7	23.6	-11.9	Vert
13	1.509M	41.2	+10.1	+0.2		-40.0	11.5	24.0	-12.5	Vert
14	1.659M	39.9	+10.1	+0.2		-40.0	10.2	23.1	-12.9	Vert
15	689.401k	47.4	+10.3	+0.1		-40.0	17.8	30.8	-13.0	Vert
16	1.300M	42.0	+10.1	+0.1		-40.0	12.2	25.3	-13.1	Vert
17	1.400M	40.0	+10.1	+0.2		-40.0	10.3	24.6	-14.3	Vert
18	1.210M	41.0	+10.1	+0.1		-40.0	11.2	25.9	-14.7	Vert
19	1.680M	36.8	+10.1	+0.2		-40.0	7.1	23.0	-15.9	Vert
20	919.378k	41.8	+10.4	+0.1		-40.0	12.3	28.3	-16.0	Vert
21	1.231M	39.4	+10.1	+0.1		-40.0	9.6	25.7	-16.1	Vert
22	1.131M	40.0	+10.2	+0.1		-40.0	10.3	26.5	-16.2	Vert
23	1.620M	36.5	+10.1	+0.2		-40.0	6.8	23.3	-16.5	Vert
24	580.685k	45.4	+10.2	+0.1		-40.0	15.7	32.3	-16.6	Vert

25	900.562k	41.1	+10.4	+0.1	-40.0	11.6	28.5	-16.9	Vert
26	998.825k	39.4	+10.2	+0.1	-40.0	9.7	27.6	-17.9	Vert
27	1.490M	35.9	+10.1	+0.2	-40.0	6.2	24.1	-17.9	Vert
28	9.637M	41.3	+9.1	+0.7	-40.0	11.1	29.5	-18.4	Vert
29	11.664M	40.4	+9.7	+0.8	-40.0	10.9	29.5	-18.6	Vert
30	1.101M	37.4	+10.2	+0.1	-40.0	7.7	26.7	-19.0	Vert
31	1.252M	36.4	+10.1	+0.1	-40.0	6.6	25.6	-19.0	Vert
32	980.009k	38.0	+10.2	+0.1	-40.0	8.3	27.7	-19.4	Vert
33	4.997M	39.8	+9.6	+0.4	-40.0	9.8	29.5	-19.7	Vert
34	1.078M	35.9	+10.2	+0.1	-40.0	6.2	26.9	-20.7	Vert
35	1.032M	36.2	+10.2	+0.1	-40.0	6.5	27.3	-20.8	Vert
36	747.941k	38.8	+10.3	+0.1	-40.0	9.2	30.1	-20.9	Vert
37	628.771k	40.2	+10.2	+0.1	-40.0	10.5	31.6	-21.1	Vert
38	766.757k	37.5	+10.3	+0.1	-40.0	7.9	29.9	-22.0	Vert
39	3.601M	37.4	+9.8	+0.3	-40.0	7.5	29.5	-22.0	Vert
40	15.430M	35.7	+10.5	+0.9	-40.0	7.1	29.5	-22.4	Vert
41	5.574M	36.8	+9.5	+0.4	-40.0	6.7	29.5	-22.8	Vert
42	15.619M	35.0	+10.4	+0.9	-40.0	6.3	29.5	-23.2	Vert
43	15.556M	34.2	+10.4	+0.9	-40.0	5.5	29.5	-24.0	Vert
44	11.880M	34.6	+9.7	+0.8	-40.0	5.1	29.5	-24.4	Vert
45	3.673M	34.7	+9.8	+0.3	-40.0	4.8	29.5	-24.7	Vert
46	9.421M	34.6	+9.1	+0.7	-40.0	4.4	29.5	-25.1	Vert
47	658.041k	35.4	+10.3	+0.1	-40.0	5.8	31.2	-25.4	Vert
48	13.583M	33.1	+10.2	+0.8	-40.0	4.1	29.5	-25.4	Vert
49	1.147M	30.3	+10.2	+0.1	-40.0	0.6	26.4	-25.8	Vert
50	831.569k	32.9	+10.3	+0.1	-40.0	3.3	29.2	-25.9	Vert

CKC Laboratories, Inc. Date: 11/22/2010 Time: 4:17:08 PM First Texas Products WO#: 91407
 15.209 Radiated Emissions Test Distance: 3 Meters Sequence#: 7 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 5046 Sierra Pines Drive • Mariposa, CA 95338 • (209) 966-5240

Customer: **First Texas Products**
 Specification: **15.209 Radiated Emissions**
 Work Order #: **91407** Date: 11/23/2010
 Test Type: **Maximized Emissions** Time: 13:13:34
 Equipment: **Metal Detector** Sequence#: 9
 Manufacturer: First Texas Products, LLC Tested By: Chuck Kendall
 Model: GoldBug
 S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANMA10M	Cable		5/10/2009	5/10/2011
T2	AN01991	Biconilog Antenna	CBL6111C	10/9/2009	10/9/2011
T3	AN00062	Preamp	8447D	6/23/2010	6/23/2012
	AN02111	Spectrum Analyzer	8593EM	3/6/2009	3/6/2011

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Metal Detector*	First Texas Products, LLC	GoldBug	None

Support Devices:

Function	Manufacturer	Model #	S/N
Headphones	Fisher Labs	89723-99960	None

Test Conditions / Notes:

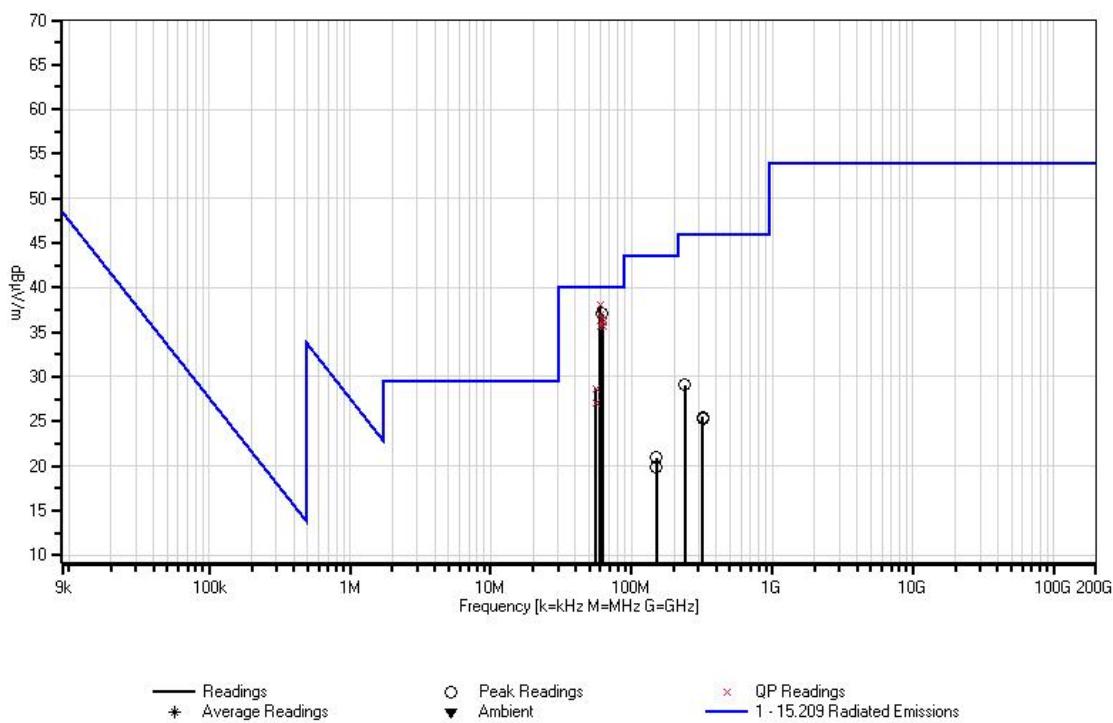
15.209 Radiated Emissions
Metal detector is sitting horizontally atop an 80cm high wooden turn table and there is a wooden rotating disk with a coin atop it. When the rotating disk spins the coin comes in contact with the detector antenna and the audio sounds an alarm.
In accordance with 15.31e, testing was performed with new batteries installed.
Frequencies of interest are from 30 MHz to 1 GHz.
RBW = 120 kHz & the VBW = 360 kHz
Temp = 60°F
Relative Humidity = 40 %
EUT is Horizontal during testing with large antenna attached. Headphones are attached.
Vertical position and horizontal position investigated.

Ext Attn: 0 dB

#	Freq MHz	Reading listed by margin.			Test Distance: 3 Meters					
		Rdng dB μ V	T1 dB	T2 dB	T3 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	59.994M QP	60.6	+1.8	+6.5	-30.9	+0.0	38.0	40.0	-2.0	Vert EUT Horizontal
2	62.231M	59.5	+1.9	+6.6	-30.9	+0.0	37.1	40.0	-2.9	Horiz EUT vertical
3	59.992M QP	59.6	+1.8	+6.5	-30.9	+0.0	37.0	40.0	-3.0	Vert EUT vertical
^	59.996M	63.4	+1.8	+6.5	-30.9	+0.0	40.8	40.0	+0.8	Vert EUT vertical
^	60.008M	62.2	+1.8	+6.5	-30.9	+0.0	39.6	40.0	-0.4	Vert EUT Horizontal
6	62.780M QP	58.8	+1.9	+6.6	-30.9	+0.0	36.4	40.0	-3.6	Horiz EUT vertical

7	62.753M	58.6	+1.9	+6.6	-30.9	+0.0	36.2	40.0	-3.8	Vert
QP								EUT Horizontal		
8	62.740M	58.1	+1.9	+6.6	-30.9	+0.0	35.7	40.0	-4.3	Vert
QP								EUT vertical		
^	62.750M	61.3	+1.9	+6.6	-30.9	+0.0	38.9	40.0	-1.1	Vert
								EUT Horizontal		
^	62.650M	56.7	+1.9	+6.6	-30.9	+0.0	34.3	40.0	-5.7	Vert
								EUT vertical		
11	59.995M	58.2	+1.8	+6.5	-30.9	+0.0	35.6	40.0	-4.4	Horiz
QP								EUT Horizontal		
^	59.985M	61.3	+1.8	+6.5	-30.9	+0.0	38.7	40.0	-1.3	Horiz
								EUT Horizontal		
13	62.771M	58.0	+1.9	+6.6	-30.9	+0.0	35.6	40.0	-4.4	Horiz
QP								EUT Horizontal		
^	62.771M	60.4	+1.9	+6.6	-30.9	+0.0	38.0	40.0	-2.0	Horiz
								EUT Horizontal		
15	55.882M	50.4	+1.8	+7.4	-30.9	+0.0	28.7	40.0	-11.3	Horiz
QP								EUT Horizontal		
^	55.878M	56.1	+1.8	+7.4	-30.9	+0.0	34.4	40.0	-5.6	Horiz
								EUT Horizontal		
17	55.967M	48.8	+1.8	+7.3	-30.9	+0.0	27.0	40.0	-13.0	Vert
QP								EUT Horizontal		
^	55.958M	59.4	+1.8	+7.3	-30.9	+0.0	37.6	40.0	-2.4	Vert
								EUT Horizontal		
19	240.000M	43.3	+3.7	+12.1	-30.0	+0.0	29.1	46.0	-16.9	Horiz
								EUT vertical		
20	240.000M	43.3	+3.7	+12.1	-30.0	+0.0	29.1	46.0	-16.9	Horiz
								EUT Horizontal		
21	320.000M	36.7	+4.5	+14.2	-29.9	+0.0	25.5	46.0	-20.5	Horiz
								EUT vertical		
22	320.002M	36.5	+4.5	+14.2	-29.9	+0.0	25.3	46.0	-20.7	Horiz
								EUT Horizontal		
23	149.737M	36.5	+2.9	+12.1	-30.6	+0.0	20.9	43.5	-22.6	Horiz
								EUT vertical		
24	149.637M	35.4	+2.9	+12.1	-30.6	+0.0	19.8	43.5	-23.7	Horiz
								EUT Horizontal		

CKC Laboratories, Inc. Date: 11/23/2010 Time: 13:13:34 First Texas Products WO#: 91407
15.209 Radiated Emissions Test Distance: 3 Meters Sequence#: 9 Ext ATTN: 0 dB



Test Setup Photos



RSS 210

99% Occupied Bandwidth

Test Conditions:

Metal detector is vertical, horizontal or perpendicular atop an 80cm high wooden turn table and there is a wooden rotating disk with a coin atop it. When the rotating disk spins the coin comes in contact with the detector antenna and the audio sounds an alarm.

In accordance with 15.31e, testing was performed with new batteries installed.

Frequencies of interest is 19.2 kHz

RBW = 15 Hz & the VBW = 300 kHz

Temp = 40°F

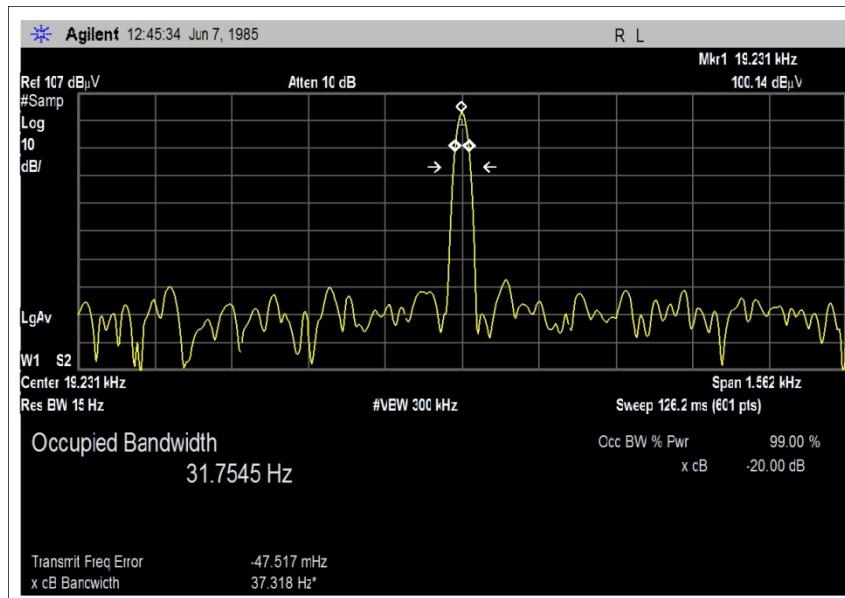
Relative Humidity = 40 %

Engineer Name: C. Kendall

Test Equipment

Asset/Serial #	Description	Model	Manufacturer	Cal Date	Cal Due
ANMA10M	Cable	NA	NA	5/10/2009	5/10/2011
AN00226	Loop Antenna	6502	EMCO	4/10/2009	4/10/2011
AN02111	Spectrum Analyzer	8593EM	HP	3/6/2009	3/6/2011

Test Data



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 dB μ V/m, the spectrum analyzer reading in dB μ V was corrected by using the following formula. This reading was then compared to the applicable specification limit.

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