1601 North A.W. Grimes Blvd., Suite B
Round Rock, TX 78665
e-mail: info@ptitest.com
(512) 244-3371 Fax: (512) 244-1846

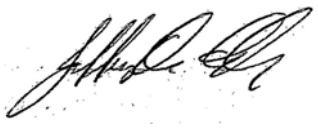
October 27, 2011

Ron Graczyk
RF Code, Inc.
9229Waterford Centre Boulevard
Suite 500
Austin, Texas 78758

Dear Ron:

Enclosed is the Wireless Test Report for the Jupiter Series 433.92 MHz Transmitter by RF Code, Inc. This report can be used to demonstrate compliance with FCC requirements for wireless devices in the United States and Canada. This report must be used in conjunction with the accompanying RF Code Letter of Attestation, Rev. D. If you have any questions, please contact me.

Sincerely,



Jeffrey A. Lenk
President

Enclosure

Project 12687-10

RF Code, Inc.
Jupiter Series 433.92 MHz Transmitter

Wireless Certification Report

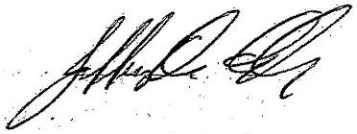
Prepared for:
RF Code, Inc.
9229 Waterford Centre Boulevard, Suite 500
Austin, Texas 78758

By

Professional Testing (EMI), Inc.
1601 N. A.W. Grimes Blvd., Suite B
Round Rock, Texas 78665

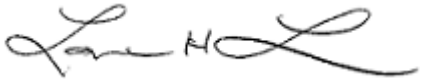
October 27, 2011

Reviewed by



Jeffrey A. Lenk
President

Written by



Layne Lueckemeyer
Product Development Engineer

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Applicant: RF Code, Inc.
Applicant's Address: 9229 Waterford Centre Boulevard, Suite 500, Austin, Texas 78758
FCC ID: P6FPROXRF
Project Number: 12687-10
Test Dates: August 29, 2011, through September 2, 2011

The **RF Code, Inc., Jupiter Series 433.92 MHz Transmitter** was tested to and found to be in compliance with FCC 47 CFR, Part 15. The highest emissions generated by the above equipment are listed below:

Parameter	Level	Limit	Margin (dB)
Jupiter Series 433.92 MHz Transmitter: Radiated Spurious Emissions	3472 MHz: 74.0 dBµV/m @ 3 m	80.8 dBµV/m	-6.8
Jupiter Series 433.92 MHz Transmitter: Output Power at 3 meters	80.3 dBµV/m	80.8 dBµV/m	-0.5
Occupied Bandwidth			
433.92 MHz 20 dB = 602.4 kHz			
15.231 (c) Limit = 1.0848 MHz			

I, Layne Lueckemeyer, for Professional Testing (EMI), Inc., being familiar with the FCC rules and test procedures have reviewed the test setup, measured data, and this report. I believe them to be true and accurate.

Layne Lueckemeyer
Product Development Engineer

This report has been reviewed and accepted by RF Code, Inc. The undersigned is responsible for ensuring that this device will continue to comply with the FCC rules.

_____
Representative of RF Code, Inc.

1.0 Introduction

1.1 Scope

This report describes the extent of the equipment under test (EUT) conformance to the intentional radiator requirements of the United States and Canada. This report must be used in conjunction with the accompanying RF Code Letter of Attestation, Rev. D.

Professional Testing (EMI), Inc. (PTI), follows the guidelines of NIST for all uncertainty calculations, estimates, and expressions thereof for EMC testing. The procedures of ANSI C63.4: 2009 were utilized for making all emissions measurements.

1.2 EUT Description

The Jupiter Series 433.92 MHz Transmitter is a device that combines:

- Active RFID, which delivers data to the wide area network (WAN) via an active RFID reader
- A second radio frequency (RF) communications channel for proximity detection and data exchange
- Proximity decision software

The Jupiter Series 433.92 MHz Transmitter provides the utility of reporting the proximity of assets or people to fixed or mobile locations. For example, the wall unit scans the proximity of a hospital area using a second RF communications channel, and upon detecting one or more assets that are 'listening' for the RF interaction, makes a decision using several metrics about which assets are nearest and which asset most likely triggered the dispenser.

The EUT was tested while in a continuous transmit mode. The EUT was tuned to a fixed channel to perform power, occupied bandwidth, spurious, and harmonic tests. The EUT continuously transmitted at maximum power. The system tested consisted of the following:

	Manufacturer	Model	Model Numbers	FCC ID Number	Description
EUT	RF Code, Inc.	Jupiter Series 433.92 MHz Transmitter	A760-002 A760-003	P6FPROXRF	Jupiter Series 433.92 MHz Transmitter
Oscillator Frequencies					
433 MHz					

The following rules apply to the operation of the EUT:

Guidelines	FCC Rules, 47 CFR, Part 15
Transmitter Characteristics for 433 MHz Transmitter	15.231
Spurious Radiated Power	15.209
Antenna Requirement	15.203

1.3 Modifications

No modifications were made to the EUT during the performance of the test program.

1.4 Test Site

Measurements were made at the PTI semi-anechoic facility designated Site 45 (FCC 459644) in Austin, Texas. This site is registered with the FCC under Section 2.948, and is subsequently confirmed by laboratory accreditation (NVLAP). The test site is located at 11400 Burnet Road, Austin, Texas, 78758, while the main office is located at 1601 N. A.W. Grimes Blvd., Suite B, Round Rock, Texas, 78665.

1.5 Applicable Documents

Document	Title	Release
ANSI C63.4	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low Voltage Electrical and Electronic Equipment	2009
ANSI 63.10	American National Standard for Testing Unlicensed Wireless Devices	2009
47 CFR	Part 15 – Radio Frequency Devices Subpart C – Intentional Radiators	
RF Code Letter of Attestation	RF Code Letter of Attestation, Rev. D	October 20, 2011

1.6 Applicable Tests

Test	Rule
Fundamental Field Strength	15.231(b)
Occupied Bandwidth	15.231(c)
Out of Band Spurious Emissions	15.205(a), 15.209(a), 15.231(b)
Antenna Requirements	15.203

2.0 Fundamental Field Strength Measurements

Fundamental field strength measurements were made on the selected fundamental transmit frequency of the EUT. Tests of the fundamental field strength of the EUT also determined the worse case polarization of the device. The emissions of the device were measured with the EUT in three orthogonal axes.

2.1 Test Procedure

Radiated emission measurements were made of the fundamental field strength level for the EUT. The EUT was placed on a non-conductive table 0.8 meters above the ground plane. The table was centered on a motorized turntable that enables 360-degree rotation. For measurements of the fundamental signal, a measurement antenna was positioned at a distance of 3 meters, as measured from the closest point of the EUT. The field strength emissions were maximized by rotating the EUT. A diagram showing the test setup is given as Figure 2.1.1.

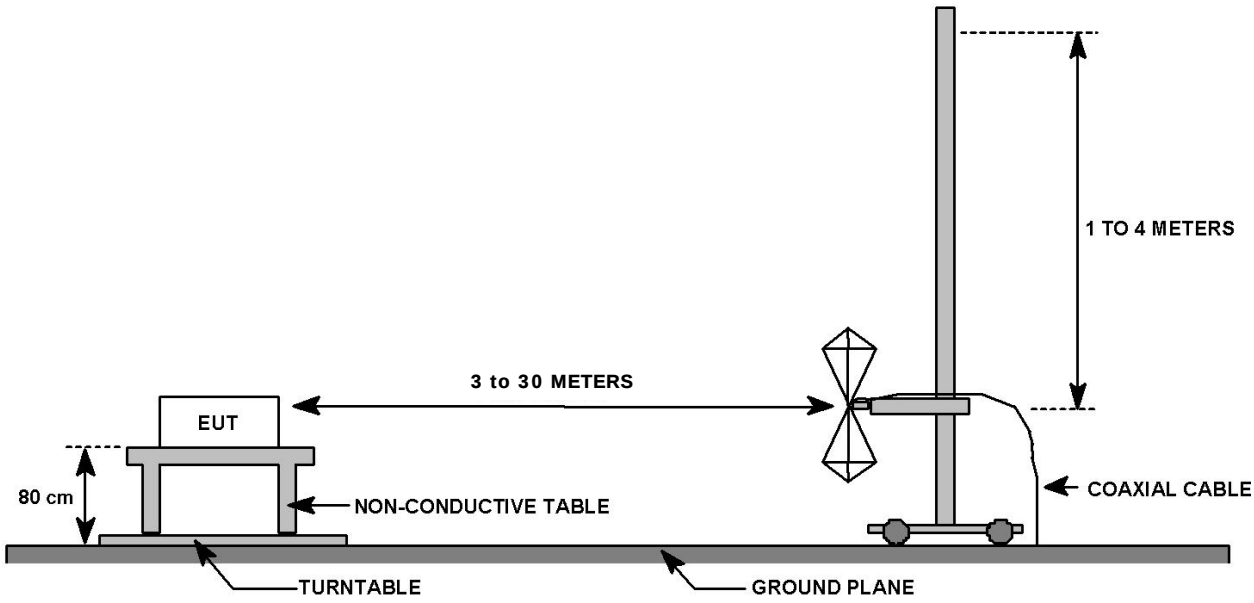


Figure 2.1.1: Radiated Emission Test Setup

2.2 Test Criteria

According to 47 CFR, 15.231(b), the field strength of emissions from intentional radiators operated under this section should not exceed the following:

Fundamental Frequency (MHz)	Field Strength of Fundamental (Microvolts/Meter)	Field Strength of Spurious Emissions (Microvolts/Meter)
40.66 – 40.70	2,250	225
70 – 130	1,250	125
130 – 174	1,250 to 3,750[1]	125 to 375[1]
174 – 260	3,750	375
260 – 470	3,750 to 12,500[1]	375 to 1,250[1]
Above 470	12,500	1,250

[1]Linear interpolations

2.3 Test Results

Radiated emission measurements of the fundamental field strength level for the EUT were taken on August 30, 2011, and the EUT was found to be in compliance with applicable requirements.

Table 2.3.1: Radiated Emissions Measurements of the Fundamental Field Strength Level – Test Equipment

Professional Testing, EMI, Inc.			
Test Method:	**ANSI C63.4 – 2009: Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (incorporated by reference, see §15.38)**		
In accordance with:	**FCC Part 15.231 – Code of Federal Regulations Part 47**		
Test Date(s):	**8/30/2011**	**EUT Serial #:**	**None**
Customer:	**RF Code, Inc.**	**EUT Part #:**	**None**
Project Number:	**12687-10**	**Test Technician:**	**Jesse Banda**
Purchase Order #:	**8180**	**Supervisor:**	**Jason Haley**
Equip. Under Test:	**Jupiter Series 433.92 MHz Transmitter**	**Witness' Name:**	**Ron Graczyk**

Radiated Emissions Test Equipment List					
Tile! Software Version:	**3.4.K.11, June 7, 2006, 07:49:00 PM**				
Test Profile:	**Radiated Emissions_updated_12-16-10.til**				
Asset #	**Manufacturer**	**Model**	**Equipment Nomenclature**	**Serial Number**	**Calibration Due Date**
1509A	Braden	N/A	TDK 10 m Chamber, NSA < 1 GHz	DAC-012915-005	8/10/2012
1529	Miteq	AFS4-01001800	Amplifier, 1-26.5 GHz, 36 dB	None	7/28/2012
1930	Agilent	E4440A	PSA Series Spectrum Analyzer	MY45304903	5/20/2012
1926	ETS-Lingren	3142D	Antenna, Biconilog, 26 MHz-6 GHz	135454	4/5/2012
C027	N/A	RG214	Cable Coax, N-N, 25 m	None	5/27/2012
1486	EMCO	3147	Antenna, Log Periodic, .2-5 GHz	9112-1052	9/4/2011

Table 2.3.2: Radiated Emissions Measurements of the Fundamental Field Strength Level Bandwidth and Measurement Time Used for Testing – Peak Scan

Professional Testing, EMI, Inc.			
Test Method:	**ANSI C63.4 – 2009: Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (incorporated by reference, see §15.38)**		
In accordance with:	**FCC Part 15.231 – Code of Federal Regulations Part 47**		
Test Date(s):	**8/30/2011**	**EUT Serial #:**	**None**
Customer:	**RF Code, Inc.**	**EUT Part #:**	**None**
Project Number:	**12687-10**	**Test Technician:**	**Jesse Banda**
Purchase Order #:	**8180**	**Supervisor:**	**Jason Haley**
Equip. Under Test:	**Jupiter Series 433.92 MHz Transmitter**	**Witness' Name:**	**Ron Graczyk**

Radiated Emissions Bandwidth and Measurement Time Used for Testing – Peak Scan				
Frequency Band Start (MHz)	**Frequency Band Stop (MHz)**	**6 dB Bandwidth (kHz)**	**Number of ranges used**	**Measurement Time per Range**
0.009	0.15	0.3	2	Multiple Sweeps
0.15	30	9	6	Multiple Sweeps
30	200	120	1	Multiple 800 mS Sweeps
200	1000	120	1	Multiple 800 mS Sweeps
1000	18000	1000	17	Multiple Sweeps

*Notes:
1. The settings above are specifically calculated for the HP856X series of spectrum analyzers, which have 1,000 data points per range.
2. The measurement receiver resolution bandwidth setting was 300 Hz for Qquasi-peak measurements from 9-150 kHz.
3. The measurement receiver resolution bandwidth setting was 9 kHz for quasi-peak measurements from 0.15-30 MHz.
4. The measurement receiver resolution bandwidth setting was 120 kHz for quasi-peak measurements from 30-1,000 MHz.
5. The measurement receiver resolution bandwidth setting was 1 MHz for average measurements from 1-18 GHz.

Table 2.3.3: Radiated Emissions Measurements of the Fundamental Field Strength Level Test Results – Horizontal Antenna Polarity ≤ 1 GHz

Professional Testing, EMI, Inc.			
Test Method:	ANSI C63.4 – 2009: Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (incorporated by reference, see §15.38)		
In accordance with:	FCC Part 15.231 – Code of Federal Regulations Part 47		
Test Date(s):	8/30/2011	EUT Serial #:	None
Customer:	RF Code, Inc.	EUT Part #:	None
Project Number:	12687-10	Test Technician:	Jesse Banda
Purchase Order #:	8180	Supervisor:	Jason Haley
Equip. Under Test:	Jupiter Series 433.92 MHz Transmitter	Witness' Name:	Ron Graczyk

Radiated Emissions Test Results Data Sheet – Horizontal Antenna Polarity ≤ 1 GHz									
EUT Line Voltage:	3.3	VDC			EUT Line Frequency:	N/A			
EUT Mode of Operation:					Transmit Max Power				
Frequency Measured (MHz)	Test Distance (Meters)	EUT Direction (Degrees)	Antenna Height (Meters)	Detector Function	Recorded Amplitude (dBµV)	Corrected Level (dBµV/m)	Limit Level (dBµV/m)	Margin (dB)	Test Results
433	3	90	1	Peak	62.5	84.6	100.8	-16.2	Pass
433	3	90	1	Average	58.2	80.3	80.8	-0.5	Pass

Table 2.3.4: Radiated Emissions Measurements of the Fundamental Field Strength Level Test Results – Vertical Antenna Polarity ≤ 1 GHz

Professional Testing, EMI, Inc.			
Test Method:	ANSI C63.4 – 2009: Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (incorporated by reference, see §15.38)		
In accordance with:	FCC Part 15.231 – Code of Federal Regulations Part 47		
Test Date(s):	8/30/2011	EUT Serial #:	None
Customer:	RF Code, Inc.	EUT Part #:	None
Project Number:	12687-10	Test Technician:	Jesse Banda
Purchase Order #:	8180	Supervisor:	Jason Haley
Equip. Under Test: Jupiter Series 433.92 MHz Transmitter		Witness' Name:	Ron Graczyk

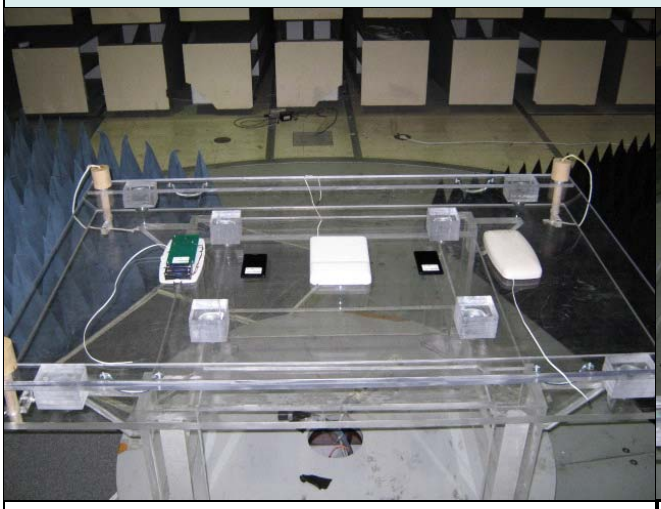
Radiated Emissions Test Results Data Sheet – Vertical Antenna Polarity ≤ 1 GHz				
EUT Line Voltage:	3.3	VDC	EUT Line Frequency:	N/A
EUT Mode of Operation:			Transmit Max Power	

Frequency Measured (MHz)	Test Distance (Meters)	EUT Direction (Degrees)	Antenna Height (Meters)	Detector Function	Recorded Amplitude (dBµV)	Corrected Level (dBµV/m)	Limit Level (dBµV/m)	Margin (dB)	Test Results
433	3	90	1	Peak	56.9	79.0	100.8	-21.8	Pass
433	3	90	1	Average	50.3	72.4	80.8	-8.4	Pass

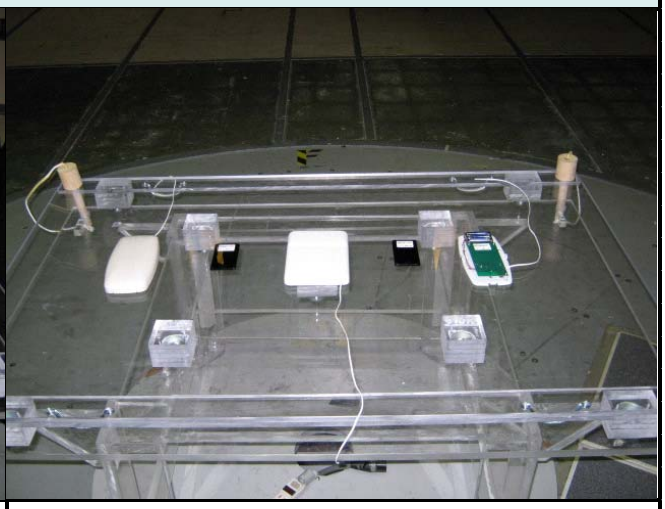
Table 2.3.5: Radiated Emissions Measurements of the Fundamental Field Strength Level Test Setup Photographs

Professional Testing, EMI, Inc.			
Test Method:	ANSI C63.4 – 2009: Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (incorporated by reference, see §15.38)		
In accordance with:	FCC Part 15.231 – Code of Federal Regulations Part 47		
Test Date(s):	8/30/2011	EUT Serial #:	None
Customer:	RF Code, Inc.	EUT Part #:	None
Project Number:	12687-10	Test Technician:	Jesse Banda
Purchase Order #:	8180	Supervisor:	Jason Haley
Equip. Under Test:	Jupiter Series 433.92 MHz Transmitter	Witness' Name:	Ron Graczyk

Radiated Emissions Photographs



EUT Front



EUT Rear

3.0 Occupied Bandwidth

Occupied bandwidth measurements were performed on the EUT to determine compliance with 47 CFR, Part 15.231(c).

3.1 Test Procedure

The occupied bandwidth was measured with a spectrum analyzer connected to a double-ridged guide horn while the EUT was operating in continuous transmit mode at the appropriate center frequency. The analyzer center frequency was set to the EUT carrier frequency. Display line and marker delta functions were used to measure the occupied bandwidth of the EUT. However, the 20 dB bandwidth is referenced to a peak power measurement taken at the entire bandwidth or more for RBW, then using 1% RBW for the 20 dB bandwidth. A diagram showing the test setup is given as Figure 2.1.1.

3.2 Test Criteria

According to 47 CFR, Part 15.231(c), the bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

3.3 Test Results

Occupied bandwidth measurements were taken on August 30, and September 1, 2011, and the EUT was found to be in compliance with applicable requirements.

Table 3.3.1: Radiated Emissions Measurements of Occupied Bandwidth for the Jupiter Series 433.92 MHz Transmitter – Test Equipment

Professional Testing, EMI, Inc.			
Test Method:	**ANSI C63.4 – 2009: Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (incorporated by reference, see §15.38)**		
In accordance with:	**FCC Part 15.231 – Code of Federal Regulations Part 47**		
Test Date(s):	**9/1/2011**	**EUT Serial #:**	**None**
Customer:	**RF Code, Inc.**	**EUT Part #:**	**None**
Project Number:	**12687-10**	**Test Technician:**	**Jesse Banda**
Purchase Order #:	**8180**	**Supervisor:**	**Jason Haley**
Equip. Under Test:	**Jupiter Series 433.92 MHz Transmitter**	**Witness' Name:**	**Ron Graczyk**

Radiated Emissions Test Equipment List	
Tile! Software Version:	**3.4.K.11, June 7, 2006, 07:49:00 PM**
Test Profile:	**Radiated Emissions_updated_12-16-10.til**

Asset #	Manufacturer	Model	Equipment Nomenclature	Serial Number	Calibration Due Date
1509A	Braden	N/A	TDK 10 m Chamber, NSA < 1 GHz	DAC-012915-005	8/10/2012
1529	Miteq	AFS4-01001800	Amplifier, 1-26.5 GHz, 36 dB	None	7/28/2012
1930	Agilent	E4440A	PSA Series Spectrum Analyzer	MY45304903	5/20/2012
1926	ETS-Lingren	3142D	Antenna, Biconilog, 26 MHz-6 GHz	135454	4/5/2012
C027	N/A	RG214	Cable Coax, N-N, 25 m	None	5/27/2012
1486	EMCO	3147	Antenna, Log Periodic, .2-5 GHz	9112-1052	9/4/2011

Table 3.3.2: Radiated Emissions Measurements of Occupied Bandwidth for the Jupiter Series 433.92 MHz Transmitter Test Results

Professional Testing, EMI, Inc.			
Test Method:	ANSI C63.4 – 2009: Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (incorporated by reference, see §15.38)		
In accordance with:	FCC Part 15.231 – Code of Federal Regulations Part 47		
Test Date(s):	9/1/2011	EUT Serial #:	None
Customer:	RF Code, Inc.	EUT Part #:	None
Project Number:	12687-10	Test Technician:	Jesse Banda
Purchase Order #:	8180	Supervisor:	Jason Haley
Equip. Under Test: Jupiter Series 433.92 MHz Transmitter		Witness' Name:	Ron Graczyk

Radiated Emissions Test Results Data Sheet – Occupied Bandwidth Test Results

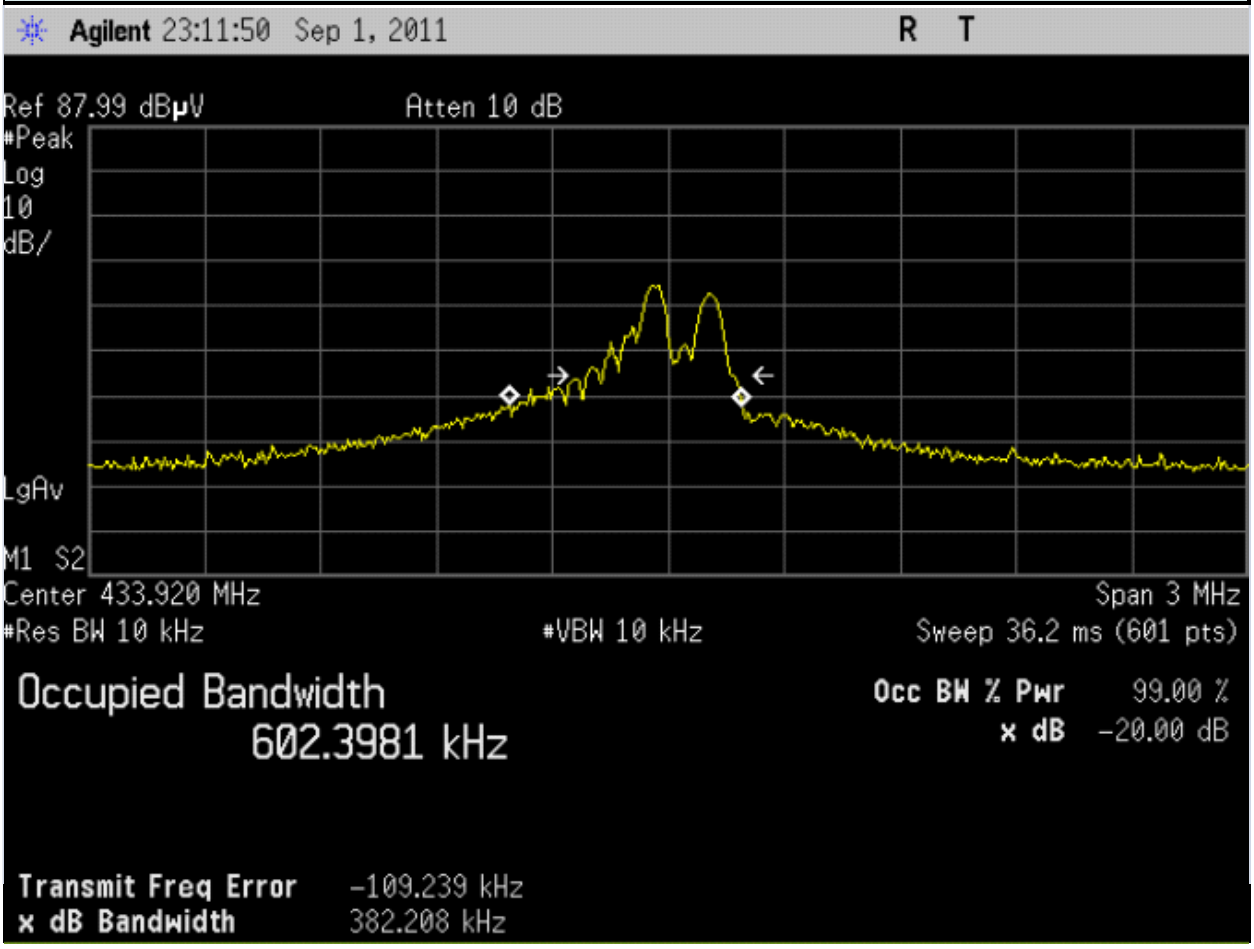
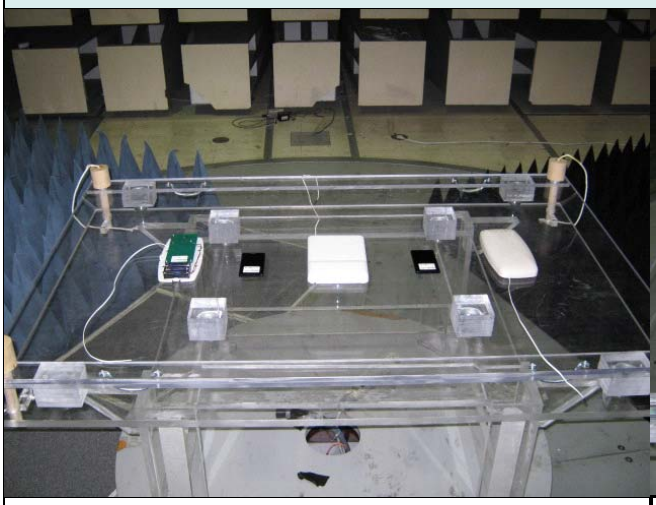


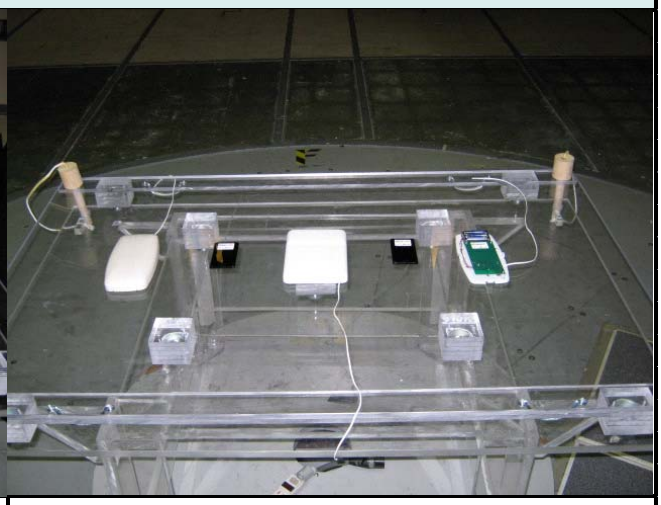
Table 3.3.3: Radiated Emissions Measurements of Occupied Bandwidth for the Jupiter Series 433.92 MHz Transmitter Test Setup Photographs

Professional Testing, EMI, Inc.			
Test Method:	ANSI C63.4 – 2009: Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (incorporated by reference, see §15.38)		
In accordance with:	FCC Part 15.231 – Code of Federal Regulations Part 47		
Test Date(s):	9/1/2011	EUT Serial #:	None
Customer:	RF Code, Inc.	EUT Part #:	None
Project Number:	12687-10	Test Technician:	Jesse Banda
Purchase Order #:	8180	Supervisor:	Jason Haley
Equip. Under Test:	Jupiter Series 433.92 MHz Transmitter	Witness' Name:	Ron Graczyk

Radiated Emissions Photographs



EUT Front



EUT Rear

4.0 Out of Band Spurious Emissions

Out of band spurious/harmonic emissions measurements were performed on the EUT to determine compliance to 47 CFR, Parts 15.231(b), and 15.209.

4.1 Test Procedure

The EUT was placed on a non-conductive table 0.8 meters above the ground plane. The table was centered on a rotating turntable at a distance of 10 meters from the measurement antenna.

For spurious emissions below 1 GHz, quasi-peak detection was used with a resolution bandwidth of 120 kHz. All measurements below 1 GHz were normalized to 3 meters using a 20 dB/decade distance extrapolation. The emissions were maximized by rotating the EUT and raising and lowering the measurement antenna from 1 to 4 meters.

Spurious/harmonic emissions above 1 GHz peak were measured with average and peak detection with a resolution bandwidth of 1 MHz and measured at a distance of 1 meter. Average detection was used to determine compliance of the EUT if the peak did not meet the average limit. Non-harmonic emissions must satisfy the average limit and the peak limit (20 dB above average). A diagram showing the test setup is given as Figure 2.1.1. Above 1 GHz, testing was completed at the transmit frequency to determine compliance.

4.2 Test Criteria

According to 47 CFR, Part 15.231, field strength of emissions from intentional radiators operated under this section shall not exceed the limits in the table below. The limits specified are at 3 meters.

Fundamental Frequency (MHz)	Field Strength of Fundamental (Microvolts/Meter)	Field Strength of Spurious Emissions (Microvolts/Meter)
40.66 – 40.70	2,250	255
70 – 130	1,250	125
130 – 174	1,250 to 3,750[1]	125 to 375[1]
174 – 260	3,750	375
260 – 470	3,750 to 12,500[1]	375 to 1,250[1]
Above 470	12,500	1,250

[1]Linear interpolations

Restricted bands of operation per 15.205(a) are shown below.

MHz	MHz	MHz	GHz
0.090–0.110	16.42–16.423	399.9–410	4.5–5.15
[1]0.495–0.505	16.69475–16.69525	608–614	5.35–5.46
2.1735–2.1905	16.80425–16.80475	960–1240	7.25–7.75
4.125–4.128	25.5–25.67	1300–1427	8.025–8.5
4.17725–4.17775	37.5–38.25	1435–1626.5	9.0–9.2
4.20725–4.20775	73–74.6	1645.5–1646.5	9.3–9.5
6.215–6.218	74.8–75.2	1660–1710	10.6–12.7
6.26775–6.26825	108–121.94	1718.8–1722.2	13.25–13.4
6.31175–6.31225	123–138	2200–2300	14.47–14.5
8.291–8.294	149.9–150.05	2310–2390	15.35–16.2
8.362–8.366	156.52475–156.52525	2483.5–2500	17.7–21.4
8.37625–8.38675	156.7–156.9	2690–2900	22.01–23.12
8.41425–8.41475	162.0125–167.17	3260–3267	23.6–24.0
12.29–12.293	167.72–173.2	3332–3339	31.2–31.8
12.51975–12.52025	240–285	3345.8–3358	36.43–36.5
12.57675–12.57725	322–335.4	3600–4400	([2])
13.36–13.41			

[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
[2] Above 38.6

4.3 Test Results

Out of band spurious emissions measurements were taken on August 29, 2011, and the EUT was found to be in compliance with applicable requirements.

Table 4.3.1: Out of Band Spurious Emissions Measurements for the Jupiter Series 433.92 MHz Transmitter – Test Equipment

Professional Testing, EMI, Inc.			
Test Method:	**ANSI C63.4 – 2003: Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (incorporated by reference, see §15.38)**		
In accordance with:	**FCC Part 15.209 – Code of Federal Regulations Part 47, Subpart B – Radiated Emission Limits; General Requirements**		
Section:	**15.109**		
Test Date(s):	**8/29/2011**	**EUT Serial #:**	**N/A**
Customer:	**RF Code, Inc.**	**EUT Part #:**	**N/A**
Project Number:	**12687-10**	**Test Technician:**	**Jesse Banda**
Purchase Order #:	**8180**	**Supervisor:**	**Jason Haley**
Equip. Under Test:	**Jupiter Series 433.92 MHz Transmitter**	**Witness' Name:**	**Ron Graczyk**

Radiated Emissions Test Equipment List	
Tile! Software Version:	**3.4.K.11, June 7, 2006, 07:49:00 PM**
Test Profile:	**Radiated Emissions_updated_12-16-10.til**

Asset #	Manufacturer	Model	Equipment Nomenclature	Serial Number	Calibration Due Date
1509A	Braden	N/A	TDK 10 m Chamber, NSA < 1 GHz	DAC-012915-005	8/10/2012
1529	Miteq	AFS4-01001800	Amplifier, 1-26.5 GHz, 36 dB	None	7/28/2012
1930	Agilent	E4440A	PSA Series Spectrum Analyzer	MY45304903	5/20/2012
1926	ETS-Lingren	3142D	Antenna, Biconilog, 26 MHz-6 GHz	135454	4/5/2012
C027	N/A	RG214	Cable Coax, N-N, 25 m	None	5/27/2012
1509B	Braden	N/A	TDK 10 m Chamber, VSWR > 1 GHz	DAC-012915-005	4/7/2012
1594	Miteq	AFS4-01001800	Amplifier, 1-26.5 GHz, 42 dB	None	1/28/2012
1529	Miteq	AFS4-01001800	Amplifier, 1-26.5 GHz, 36 dB	None	7/28/2012
C030	N/A	0	Cable Coax, N-N, 30 m	None	5/27/2012
1780	ETS-Lindgren	3117	Antenna, DRG Horn, 1-18 GHz	1110313	1/14/2012

Table 4.3.2: Bandwidth and Measurement Time Used for Out of Band Spurious Emissions Testing – Peak Scan, Jupiter Series 433.92 MHz Transmitter

Professional Testing, EMI, Inc.			
Test Method:	**ANSI C63.4 – 2003: Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (incorporated by reference, see §15.38)**		
In accordance with:	**FCC Part 15.209 – Code of Federal Regulations Part 47, Subpart B – Radiated Emission Limits; General Requirements**		
Section:	**15.109**		
Test Date(s):	**8/29/2011**	**EUT Serial #:**	**N/A**
Customer:	**RF Code, Inc.**	**EUT Part #:**	**N/A**
Project Number:	**12687-10**	**Test Technician:**	**Jesse Banda**
Purchase Order #:	**8180**	**Supervisor:**	**Jason Haley**
Equip. Under Test:	**Jupiter Series 433.92 MHz Transmitter**	**Witness' Name:**	**Ron Graczyk**

Radiated Emissions Bandwidth and Measurement Time Used for Testing – Peak Scan				
Frequency Band Start (MHz)	**Frequency Band Stop (MHz)**	**6 dB Bandwidth (kHz)**	**Number of ranges used**	**Measurement Time per Range**
0.009	0.15	0.3	2	Multiple Sweeps
0.15	30	9	6	Multiple Sweeps
30	200	120	1	Multiple 800 mS Sweeps
200	1000	120	1	Multiple 800 mS Sweeps
1000	18000	1000	17	Multiple Sweeps

*Notes:
1. The settings above are specifically calculated for the HP856X series of spectrum analyzers, which have 1,000 data points per range.
2. The measurement receiver resolution bandwidth setting was 300 Hz for quasi-peak measurements from 9-150 kHz.
3. The measurement receiver resolution bandwidth setting was 9 kHz for quasi-peak measurements from 0.15-30 MHz.
4. The measurement receiver resolution bandwidth setting was 120 kHz for quasi-peak measurements from 30-1,000 MHz.
5. The measurement receiver resolution bandwidth setting was 1 MHz for average measurements from 1-18 GHz.

Table 4.3.3: Out of Band Spurious Emissions Measurements for the Jupiter Series 433.92 MHz Transmitter Test Results – Horizontal Antenna Polarity ≤ 1 GHz

Professional Testing, EMI, Inc.			
Test Method:	**ANSI C63.4 – 2003: Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (incorporated by reference, see §15.38)**		
In accordance with:	**FCC Part 15.209 – Code of Federal Regulations Part 47, Subpart B – Radiated Emission Limits; General Requirements**		
Section:	**15.109**		
Test Date(s):	**8/29/2011**	**EUT Serial #:**	**N/A**
Customer:	**RF Code, Inc.**	**EUT Part #:**	**N/A**
Project Number:	**12687-10**	**Test Technician:**	**Jesse Banda**
Purchase Order #:	**8180**	**Supervisor:**	**Jason Haley**
Equip. Under Test:	**Jupiter Series 433.92 MHz Transmitter**	**Witness' Name:**	**Ron Graczyk**

Radiated Emissions Test Results Data Sheet – Horizontal Antenna Polarity ≤ 1 GHz			
EUT Line Voltage:	**3.3 VDC**	**EUT Line Frequency:**	**N/A**
EUT Mode of Operation:		**Transmit Normal Mode**	

Frequency Measured (MHz)	Test Distance (Meters)	EUT Direction (Degrees)	Antenna Height (Meters)	Detector Function	Recorded Amplitude (dBµV)	Corrected Level (dBµV/m)	Limit Level (dBµV/m)	Margin (dB)	Test Results
43.3	10	0	4	Quasi-peak	24.1	8.8	29.5	-20.7	Pass
38.6	10	0	4	Quasi-peak	24	11.0	29.5	-18.5	Pass
44.9	10	40	4	Quasi-peak	25.4	9.4	29.5	-20.1	Pass
452.812	10	64	1.5	Quasi-peak	44.4	34.9	81.4	-46.5	Pass
452.812	10	64	1.5	Average	55.2	45.7	81.4	-35.7	Pass
480.866	10	250	1.2	Quasi-peak	32.21	24.5	35.6	-11.1	Pass
900	10	0	1	Quasi-peak	24.9	25.3	35.6	-10.3	Pass

Table 4.3.4: Out of Band Spurious Emissions Measurements for the Jupiter Series 433.92 MHz Transmitter Test Results – Vertical Antenna Polarity ≤ 1 GHz

Professional Testing, EMI, Inc.			
Test Method:	ANSI C63.4 – 2003: Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (incorporated by reference, see §15.38)		
In accordance with:	FCC Part 15.209 – Code of Federal Regulations Part 47, Subpart B – Radiated Emission Limits; General Requirements		
Section:	15.109		
Test Date(s):	8/29/2011	EUT Serial #:	N/A
Customer:	RF Code, Inc.	EUT Part #:	N/A
Project Number:	12687-10	Test Technician:	Jesse Banda
Purchase Order #:	8180	Supervisor:	Jason Haley
Equip. Under Test:	Jupiter Series 433.92 MHz Transmitter	Witness' Name:	Ron Graczyk

Radiated Emissions Test Results Data Sheet – Vertical Antenna Polarity ≤ 1 GHz									
EUT Line Voltage:	3.3	VDC			EUT Line Frequency:	N/A			
EUT Mode of Operation:					Transmit Normal Mode				
Frequency Measured (MHz)	Test Distance (Meters)	EUT Direction (Degrees)	Antenna Height (Meters)	Detector Function	Recorded Amplitude (dBµV)	Corrected Level (dBµV/m)	Limit Level (dBµV/m)	Margin (dB)	Test Results
50	10	0	1	Quasi-peak	24.1	5.9	29.5	-23.6	Pass
100	10	0	1	Quasi-peak	24	4.8	33.1	-28.3	Pass
180	10	0	1	Quasi-peak	24.4	6.9	33.1	-26.2	Pass
452.8	10	300	1	Average	27.1	17.6	81.4	-63.8	Pass
600	10	0	1	Quasi-peak	24.9	19.8	35.6	-15.8	Pass
800	10	0	1	Quasi-peak	25	22.8	35.6	-12.8	Pass

Table 4.3.5: Out of Band Spurious Emissions Measurements for the Jupiter Series 433.92 MHz Transmitter Test Results – Horizontal Antenna Polarity ≥ 1 GHz

Professional Testing, EMI, Inc.			
Test Method:	ANSI C63.4 – 2003: Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (incorporated by reference, see §15.38)		
In accordance with:	FCC Part 15.109 – Code of Federal Regulations Part 47, Subpart B - Unintentional Radiators, Radiated Emissions Limits		
Section:	15.109		
Test Date(s):	8/29/2011	EUT Serial #:	N/A
Customer:	RF Code, Inc.	EUT Part #:	N/A
Project Number:	12687-10	Test Technician:	Jesse Banda
Purchase Order #:	8180	Supervisor:	Jason Haley
Equip. Under Test:	Jupiter Series 433.92 MHz Transmitter	Witness' Name:	Ron Graczyk

Radiated Emissions Test Results Data Sheet – Horizontal Antenna Polarity ≥ 1 GHz				
EUT Line Voltage:	3.3	VDC	EUT Line Frequency:	N/A
EUT Mode of Operation:			Transmit Normal Mode	

Frequency Measured (MHz)	Test Distance (Meters)	EUT Direction (Degrees)	Antenna Height (Meters)	Detector Function	Recorded Amplitude (dBµV)	Corrected Level (dBµV/m)	Limit Level (dBµV/m)	Margin (dB)	Test Results
2603.52	3	0	1	Peak	97.97	66.2	80.8	-14.6	Pass
2603.52	3	0	1	Average	69.69	37.9	60.8	-22.9	Pass
3906.3	3	60	1	Peak	94.11	65.2	74.0	-8.8	Pass
3906.3	3	60	1	Average	63.8	34.9	54.0	-19.1	Pass

Table 4.3.6: Out of Band Spurious Emissions Measurements for the Jupiter Series 433.92 MHz Transmitter Test Results – Vertical Antenna Polarity ≥ 1 GHz

Professional Testing, EMI, Inc.			
Test Method:	ANSI C63.4 – 2003: Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (incorporated by reference, see §15.38)		
In accordance with:	FCC Part 15.109 – Code of Federal Regulations Part 47, Subpart B - Unintentional Radiators, Radiated Emissions Limits		
Section:	15.109		
Test Date(s):	8/29/2011	EUT Serial #:	N/A
Customer:	RF Code, Inc.	EUT Part #:	N/A
Project Number:	12687-10	Test Technician:	Jesse Banda
Purchase Order #:	8180	Supervisor:	Jason Haley
Equip. Under Test:	Jupiter Series 433.92 MHz Transmitter	Witness' Name:	Ron Graczyk

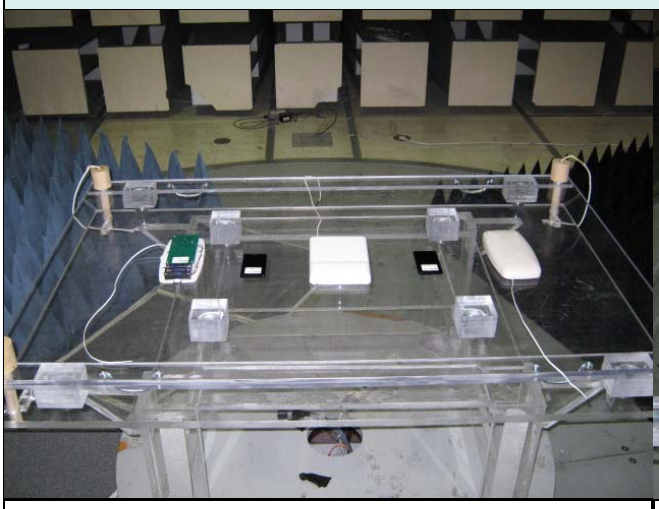
Radiated Emissions Test Results Data Sheet – Vertical Antenna Polarity ≥ 1 GHz			
EUT Line Voltage:	3.3 VDC	EUT Line Frequency:	N/A
EUT Mode of Operation:		Transmit Normal Mode	

Frequency Measured (MHz)	Test Distance (Meters)	EUT Direction (Degrees)	Antenna Height (Meters)	Detector Function	Recorded Amplitude (dBµV)	Corrected Level (dBµV/m)	Limit Level (dBµV/m)	Margin (dB)	Test Results
1736	3	220	1	Peak	103.81	69.0	80.8	-11.8	Pass
1736	3	220	1	Average	69.8	35.0	60.8	-25.8	Pass
2170	3	0	1	Peak	86.1	53.4	74.0	-20.6	Pass
2170	3	0	1	Average	63	30.3	54.0	-23.7	Pass
2603	3	0	1	Peak	100.21	68.5	80.8	-12.3	Pass
2603	3	0	1	Average	68.02	36.3	60.8	-24.5	Pass
3472	3	90	1	Peak	104.12	74.0	80.8	-6.8	Pass
3472	3	90	1	Average	69.4	39.3	60.8	-21.5	Pass

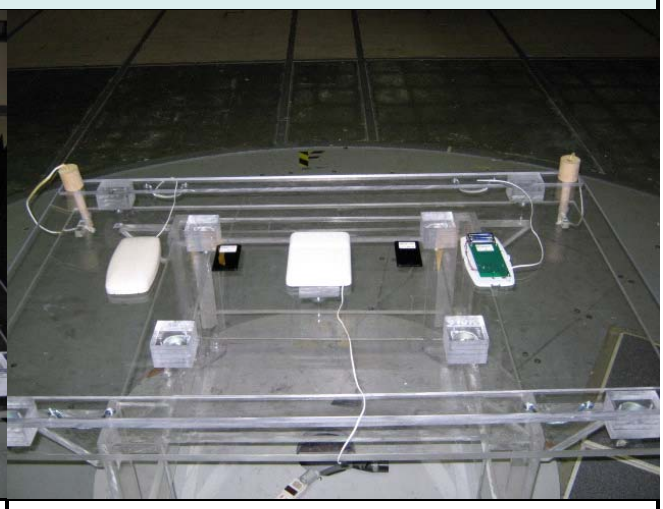
Table 4.3.7: Out of Band Spurious Emissions Measurements for the Jupiter Series 433.92 MHz Transmitter Test Setup Photographs

Professional Testing, EMI, Inc.			
Test Method:	ANSI C63.4 – 2003: Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (incorporated by reference, see §15.38)		
In accordance with:	FCC Part 15.209 – Code of Federal Regulations Part 47, Subpart B – Radiated Emission Limits; General Requirements		
Section:	15.109		
Test Date(s):	8/29/2011	EUT Serial #:	N/A
Customer:	RF Code, Inc.	EUT Part #:	N/A
Project Number:	12687-10	Test Technician:	Jesse Banda
Purchase Order #:	8180	Supervisor:	Jason Haley
Equip. Under Test:	Jupiter Series 433.92 MHz Transmitter	Witness' Name:	Ron Graczyk

Radiated Emissions Photographs



EUT Front



EUT Rear

5.0 Antenna Requirements

An antenna evaluation was performed on the EUT to determine compliance with 47 CFR, Part 15.203.

5.1 Evaluation Procedure

The design of the EUT antenna was evaluated for conformance to engineering requirements for gain and to prevent substitution of unapproved antennae. Gain of the antenna was assessed by reviewing the antenna manufacturer's data sheet.

5.2 Evaluation Criteria

The antenna design must meet at least one of the following criteria:

a) Antenna is permanently attached to the unit.
b) Antenna must use a unique type of connector to attach to the EUT.
c) Unit must be professionally installed. Installer shall be responsible for verifying that the correct antenna is employed with the unit.

5.3 Evaluation Results

The Jupiter Series 433.92 MHz Transmitter met the criteria of this rule by virtue of having an internal antenna inaccessible to the user. Therefore, the EUT is compliant.

6.0 Compliance with FCC 15.231(a)(2) and FCC 15.231(a)(3)

The RF Code Jupiter Series is compliant with FCC 15.231(a)(2) per RF Code Inc. Letter of Attestation Rev D. The Letter of Attestation Rev D is referenced in the Operational Description.

15.231(a) (2) Statement:
The 433 MHz Jupiter Series ceases transmission within 5 seconds after activation per 15.231(a)(2).

15.231(a)(3) Statement:
For the purpose of determining system integrity, specifically for security and safety applications, the 433Mhz transmitter emits supervisory and polling transmissions, including data. However, the total duration of these transmissions are limited such that they do not exceed more than 2 seconds per hour.

End of Report

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