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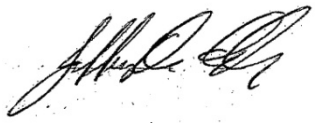
October 17, 2012

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

Dear Ron:

Enclosed is the Wireless Test Report for the Kilo II asset tag by RF Code, Inc. This report can be used to demonstrate compliance with FCC requirements for wireless devices in the United States.

Sincerely,



Jeffrey A. Lenk
President

Enclosure

Project 14183-10

RF Code, Inc.
Kilo II asset tag

Wireless Certification Report

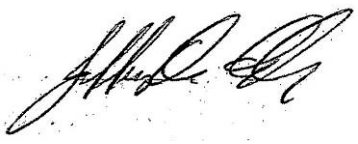
Prepared for:
RF Code, Inc.
9229 Waterford Centre Boulevard, Suite 500
Austin, Texas 78758

By

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

October 17, 2012

Reviewed by



Jeffrey A. Lenk
President

Written by

Jesse Banda
EMC Engineer

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Applicant: RF Code, Inc.
Applicant's Address: 9229 Waterford Centre Boulevard, Suite 500, Austin, Texas 78758
FCC ID: P6FX
Project Number: 14183-10
Test Dates: September 27, 2012 and September 28, 2012

The **RF Code, Inc., Kilo II asset tag** 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	Frequency (MHz)	Level @ 10m	Limit @ 10m	Margin (dB)
Transmitter	433.9	61.5dBµV	70.3 dBµV/m	-8.8
Unwanted Emission	461.0	44.0dBµV	50.3 dBµV/m	-6.3
Occupied Bandwidth				
433.92 MHz 20 dB = 224 kHz				
15.231 (c) Limit = 1.085 MHz				

I, Jesse Banda, 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.

Jesse Banda
EMC 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 and KDB Publication No. 558074 were utilized for making all emissions measurements.

1.2 EUT Description

The RF Code Kilo II asset tag is a radio frequency identification (RFID) tag having a permanent internal fixed and operates at 433.92 MHz. Operating on a battery, the tag has a microprocessor (with a 32.768 kHz resonator clock) that activates a SAW oscillator and loop antenna output.

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	RF Code, Inc.
Model Number	M174 Kilo II
Serial Number	N/A
FCC ID	P6FX
Power Supply	3VDC from Battery
Modulation Type (433 MHz)	ASK
Antenna Type	Integrated

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	
KDB Publication No. 558074	Guidance on Measurements for Digital Transmission Systems (47 CFR 15.247)	April 16, 2007

1.6 Applicable Tests

Test	Rule
Fundamental Field Strength	15.231(b)
Occupied Bandwidth	15.231(c)
Transmission Time	15.231(a)(1)
Out of Band Spurious Emissions	15.205(a), 15.209(a), 15.231(b)
Antenna Requirements	15.203

2.0 Fundamental Field Strength

Fundamental field strength measurements were made on the fundamental transmits 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 Fundamental Field Strength Test Procedure

Radiated emission measurements were made of the fundamental field strength level for the EUT. For fundamental 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 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 10 meters, as measured from the closest point of the EUT. The field strength emissions were maximized by rotating the EUT. The fundamental field strength test was measured in all 3-axis and the worst is displayed below. A diagram showing the test setup is given as Figure 2.1.1.

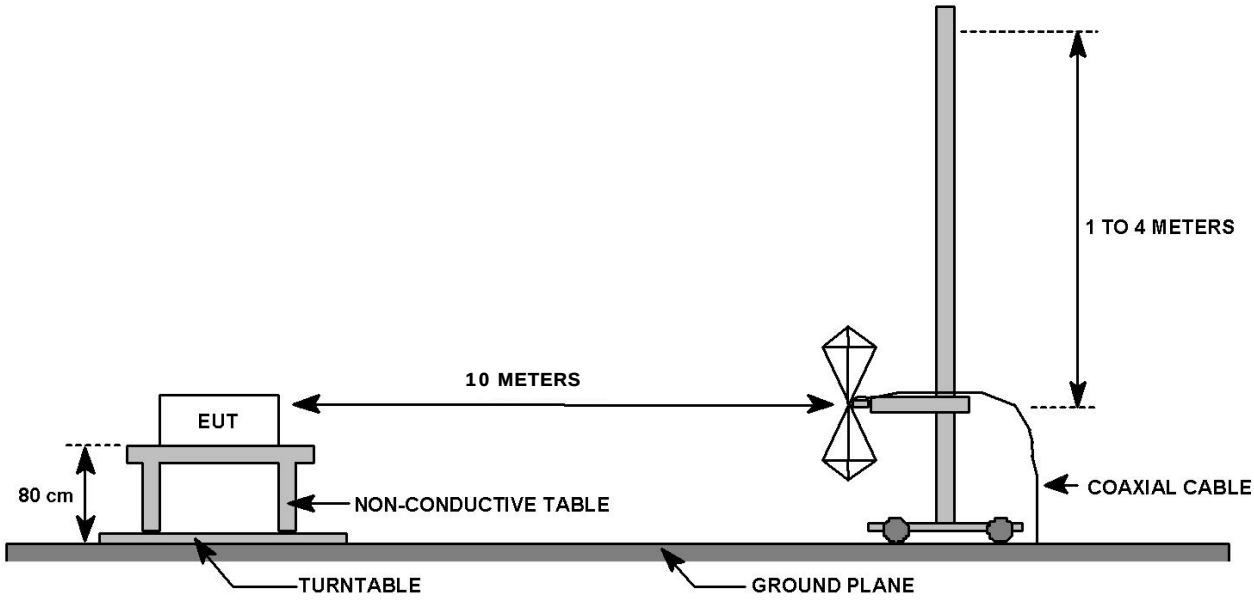


Figure 2.1.1: Field Strength Test Setup

2.2 Fundamental Field Strength 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
- 3m distance

The field strength of the fundamental was calculated to be 10958.33 (µV/m) for a fundamental frequency of 433.9 MHz. The field strength was extrapolated to a 10m limit as shown below.

Fundamental Frequency (MHz)	Field Strength of Fundamental (Microvolts/Meter)	3m Limit (dBµV/m)	10m Limit (dBµV/m)
433.9	10958.33	80.8	70.3

2.3 Fundamental Field Strength Test Equipment

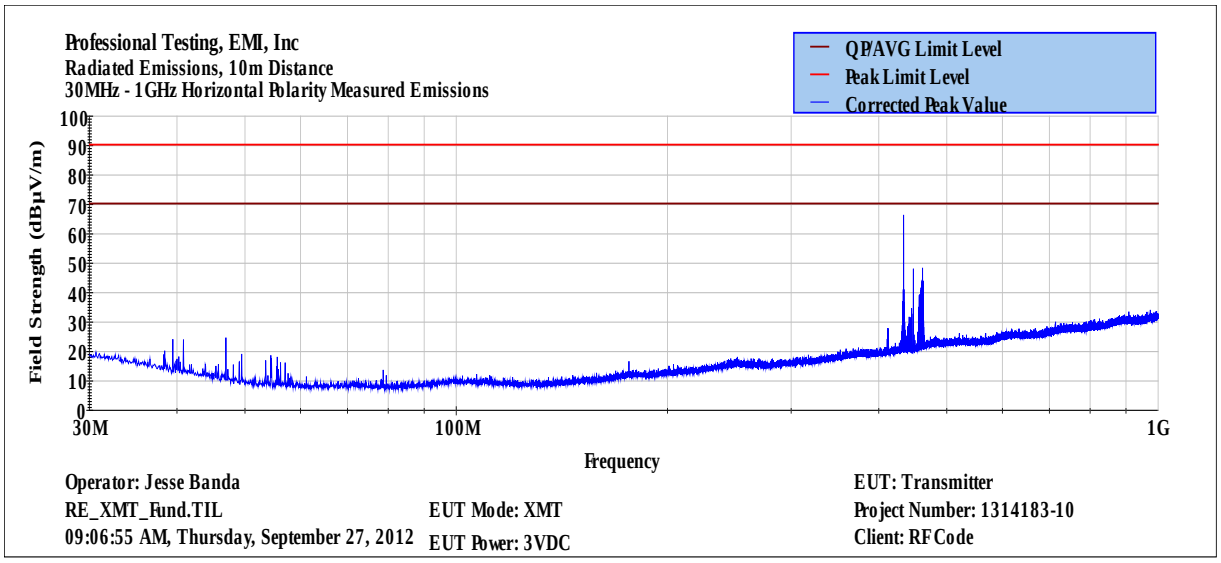
Asset #	Manufacturer	Model #	Description	Calibration Due
1509A	Braden	N/A	TDK 10M Chamber, NSA < 1 GHz	7/27/2013
0586	HP	8447D	Preamp, 0.1-1300MHz, 26dB	12/21/2012
1930	Agilent	E4440A-239	Spectrum Analyzer, 3 Hz - 26.5 GHz	6/19/2013
Rental	ETS-Lindgren	3142D	Antenna, Biconilog, 26 MHz - 6 GHz	5/8/2013
C027	N/A	RG214	Cable Coax, N-N, 25m	9/7/2013
1509B	Braden	N/A	TDK 10M Chamber, VSWR > 1 GHz	4/8/2013
1594	Miteq	AFS44-00102650	Amplifier, 1-26.5GHz, 42dB	2/15/2013
2004	Miteq	AFS44-00101800-2S-10P-44	Amplifier, 40dB, .1-18GHz	10/12/2012

2.4 Fundamental Field Strength Test Results, Horizontal Polarization

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 15.231 - Code of Federal Regulations Part 47, Periodic operation in the band 40.66-40.70 MHz and above 70 MHz**		
Section:	**15.231(b)**		
Test Date(s):	**9/27/2012**	**EUT Model #:**	**M174 Kilo II**
Customer:	**RF Code, Inc.**	**EUT Serial #:**	**N/A**
Project Number:	**14183-10**	**Test Engineer:**	**Jesse Banda**
EUT:	**Kilo II Asset Tag**	**Supervisor:**	**Rob McCollough**
Temperature:	**24.1°C**	**Humidity:**	**39%**

Fundamental Field Strength			
EUT Line Voltage:	3 VDC	**EUT Mode of Operation**	Transmitting
Modulation	ASK	**Test Method**	Radiated
Test Results	PASS	**Modifications**	None

Frequency Measured (MHz)	Test Distance (Meters)	Detector Function	Recorded Amplitude (dBµV)	Corrected Level (dBµV/m)	Limit Level (dBµV/m)	Margin (dB)
433	10	Peak	73.5	69.1	90.3	-21.2
433	10	Quasi-peak	65.9	61.5	70.3	-8.8

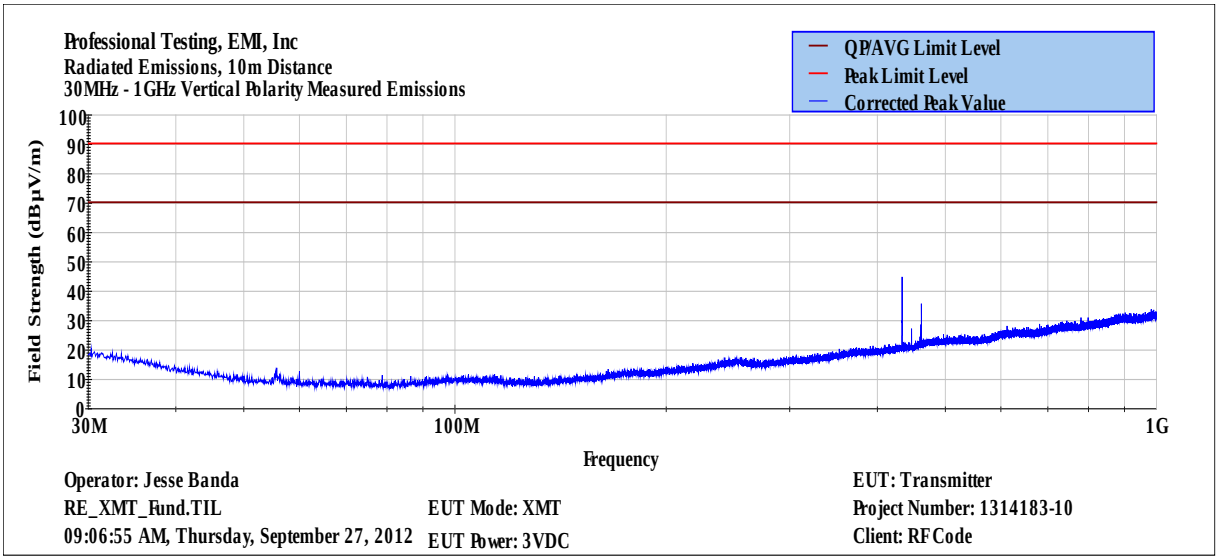


2.5 Fundamental Field Strength Test Results, Vertical Polarization

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 15.231 - Code of Federal Regulations Part 47, Periodic operation in the band 40.66-40.70 MHz and above 70 MHz**		
Section:	**15.231(b)**		
Test Date(s):	**9/27/2012**	**EUT Model #:**	**M174 Kilo II**
Customer:	**RF Code, Inc.**	**EUT Serial #:**	**N/A**
Project Number:	**14183-10**	**Test Engineer:**	**Jesse Banda**
EUT:	**Kilo II Asset Tag**	**Supervisor:**	**Rob McCollough**
Temperature:	**24.1°C**	**Humidity:**	**39%**

Fundamental Field Strength			
EUT Line Voltage:	3 VDC	**EUT Mode of Operation**	Transmitting
Modulation	ASK	**Test Method**	Radiated
Test Results	PASS	**Modifications**	None

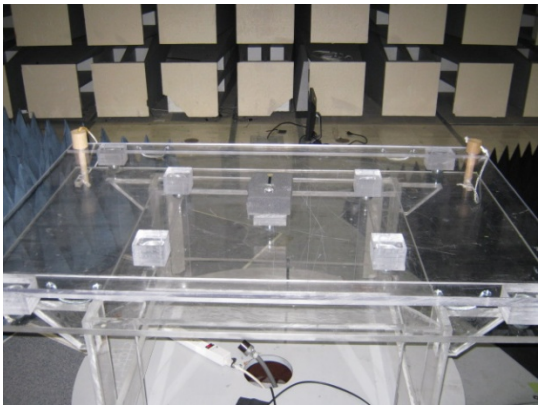
Frequency Measured (MHz)	Test Distance (Meters)	Detector Function	Recorded Amplitude (dBµV)	Corrected Level (dBµV/m)	Limit Level (dBµV/m)	Margin (dB)
433	10	Peak	48.6	44.2	90.3	-46.1
433	10	Quasi-peak	42.1	37.7	70.3	-32.6

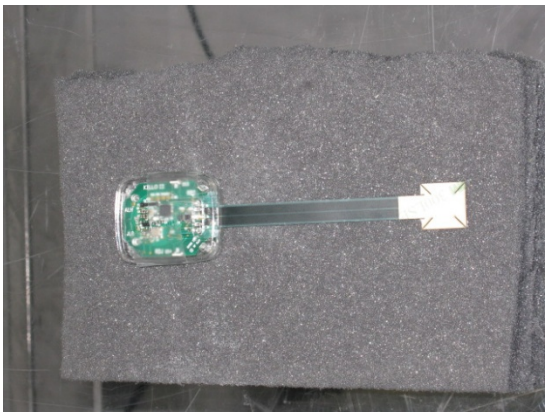


2.6 Fundamental Field Strength Photographs

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 15.231 - Code of Federal Regulations Part 47, Periodic operation in the band 40.66-40.70 MHz and above 70 MHz**		
Section:	**15.231(b)**		
Test Date(s):	**9/27/2012**	**EUT Model #:**	**M174 Kilo II**
Customer:	**RF Code, Inc.**	**EUT Serial #:**	**N/A**
Project Number:	**14183-10**	**Test Engineer:**	**Jesse Banda**
EUT:	**Kilo II Asset Tag**	**Supervisor:**	**Rob McCollough**
Temperature:	**24.1°C**	**Humidity:**	**39%**

Fundamental Field Strength Photographs





3.0 Occupied Bandwidth

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

3.1 Occupied Bandwidth 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 3.1.1.

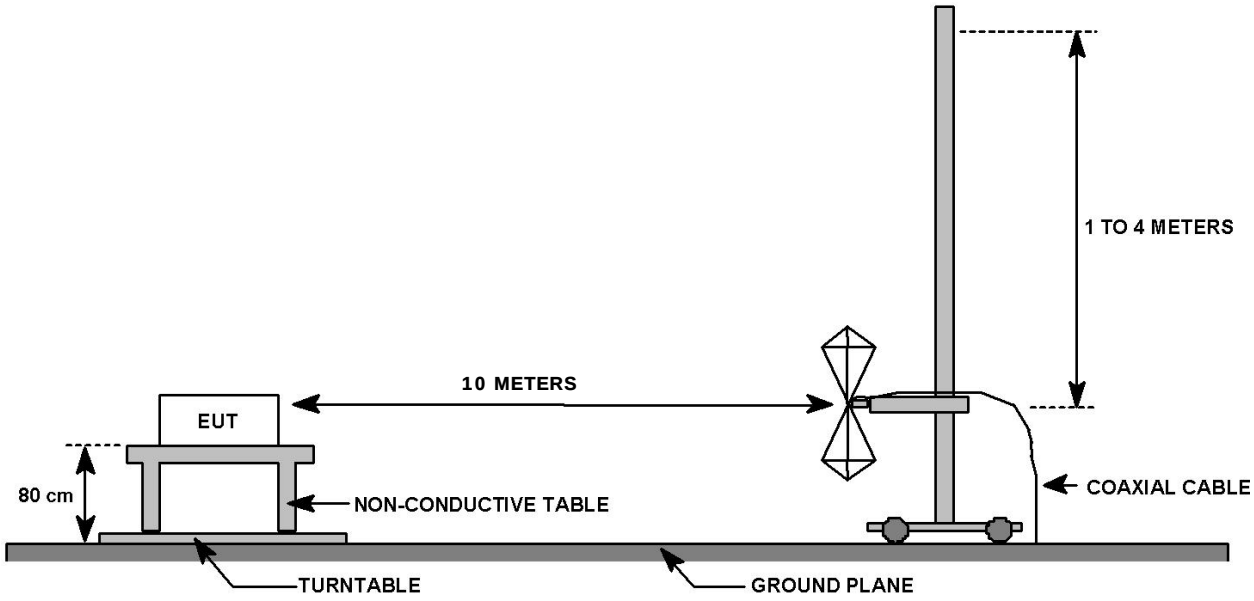


Figure 3.1.1: Field Strength Test Setup

3.2 Occupied Bandwidth Test Criteria

According to 47 CFR, Part 15.231(c) (which applies to the Kilo II asset tag), 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 Occupied Bandwidth Test Equipment

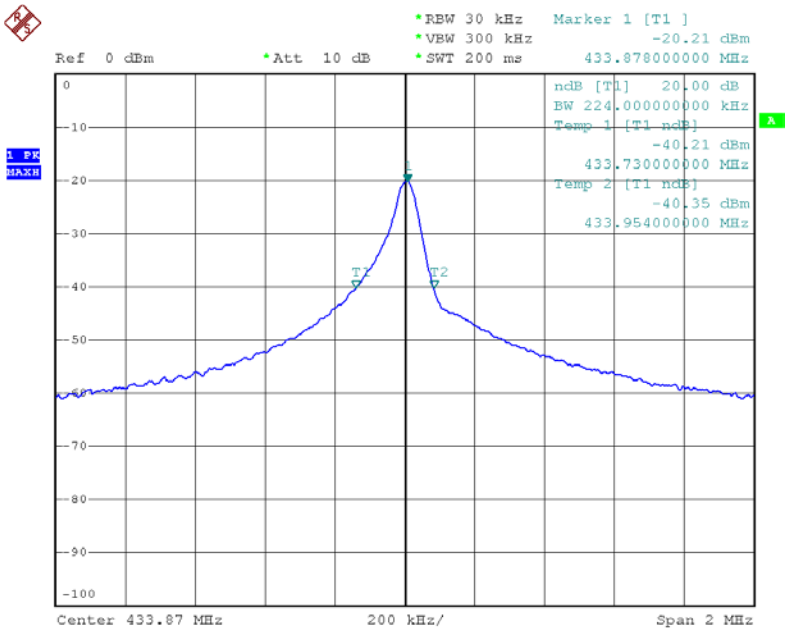
Asset #	Manufacturer	Model #	Description	Calibration Due
1509A	Braden	N/A	TDK 10M Chamber, NSA < 1 GHz	7/27/2013
0586	HP	8447D	Preamp, 0.1-1300MHz, 26dB	12/21/2012
1930	Agilent	E4440A-239	Spectrum Analyzer, 3 Hz - 26.5 GHz	6/19/2013
Rental	ETS-Lindgren	3142D	Antenna, Biconilog, 26 MHz - 6 GHz	5/8/2013
C027	N/A	RG214	Cable Coax, N-N, 25m	9/7/2013
1509B	Braden	N/A	TDK 10M Chamber, VSWR > 1 GHz	4/8/2013
1594	Miteq	AFS44-00102650	Amplifier, 1-26.5GHz, 42dB	2/15/2013
2004	Miteq	AFS44-00101800-2S-10P-44	Amplifier, 40dB, .1-18GHz	10/12/2012

3.4 Occupied Bandwidth Test Results

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 15.231 - Code of Federal Regulations Part 47, Periodic operation in the band 40.66-40.70 MHz and above 70 MHz**		
Section:	**15.231(c)**		
Test Date(s):	**9/27/2012**	**EUT Model #:**	**M174 Kilo II**
Customer:	**RF Code, Inc.**	**EUT Serial #:**	**N/A**
Project Number:	**14183-10**	**Test Engineer:**	**Jesse Banda**
EUT:	**Kilo II Asset Tag**	**Supervisor:**	**Rob McCollough**
Temperature:	**24.1°C**	**Humidity:**	**39%**

Occupied Bandwidth			
EUT Line Voltage:	3 VDC	**EUT Mode of Operation**	Transmitting
Modulation	ASK	**Test Method**	Radiated
Test Results	PASS	**Modifications**	None

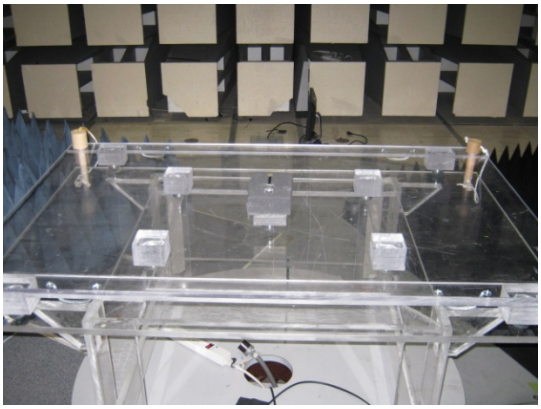
Frequency Measured (MHz)	Detector Function	dB Down from Carrier	Lower Frequency (MHz)	Upper Frequency (MHz)	Measured Occupied Bandwidth (MHz)	Occupied Bandwidth Limit (kHz)
433.9	Peak	20 dB	433.730	433.954	0.224	1.085

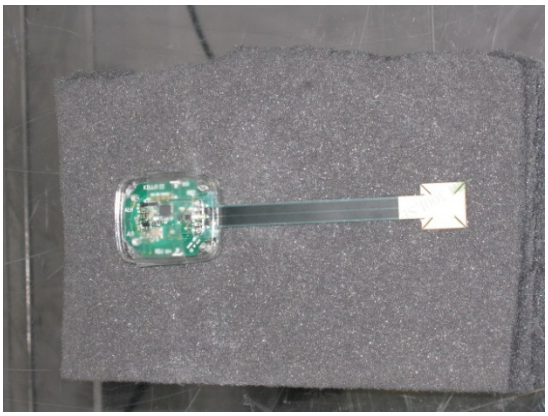


3.5 Occupied Bandwidth Photographs

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 15.231 - Code of Federal Regulations Part 47, Periodic operation in the band 40.66-40.70 MHz and above 70 MHz**		
Section:	**15.231(c)**		
Test Date(s):	**9/27/2012**	**EUT Model #:**	**M174 Kilo II**
Customer:	**RF Code, Inc.**	**EUT Serial #:**	**N/A**
Project Number:	**14183-10**	**Test Engineer:**	**Jesse Banda**
EUT:	**Kilo II Asset Tag**	**Supervisor:**	**Rob McCollough**
Temperature:	**24.1°C**	**Humidity:**	**39%**

Occupied Bandwidth Photographs





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 Out of Band Spurious Emissions Test Procedure

Out of band spurious emission were measured from 30 MHz to 5 GHz since the fundamental frequency of the transmitter is 433 MHz.

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 3 or 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 3 meters. 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 4.1.1.

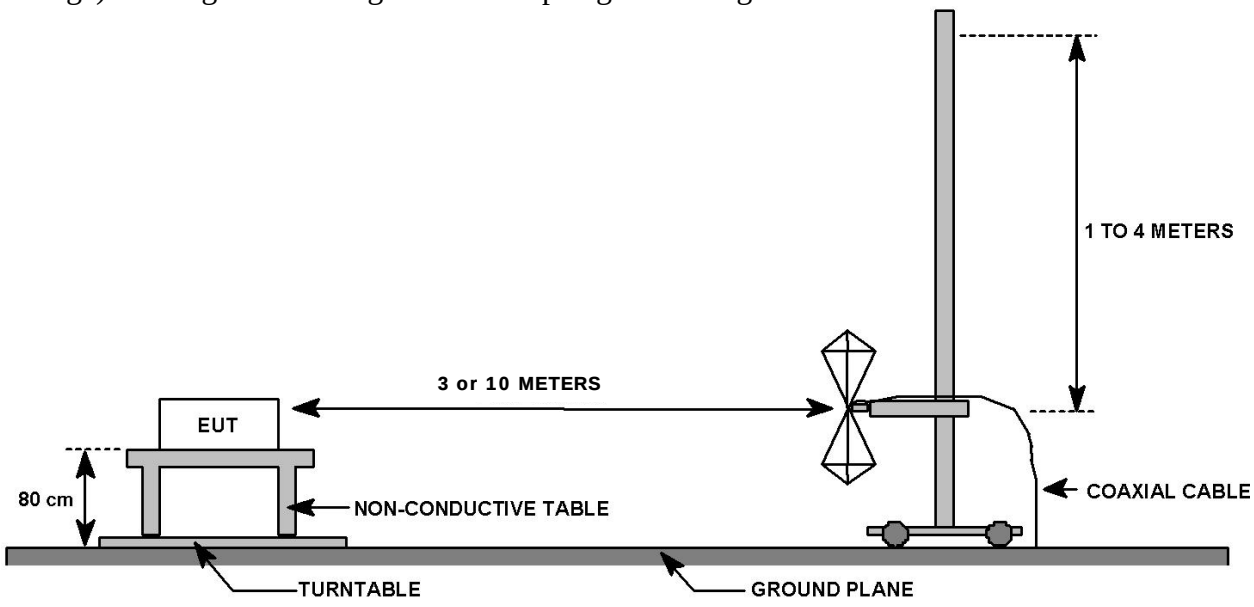


Figure 4.1.1: Out of Band Test Setup

4.2 Out of Band Spurious Emissions 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

The field strength of the spurious was calculated to be 1095.83 (µV/m) for a fundamental frequency of 433.9 MHz. The spurious field strength was extrapolated to a 10m limit as shown below.

Fundamental Frequency (MHz)	Field Strength of Spurious (Microvolts/Meter)	3m Limit (dBµV/m)	10m Limit (dBµV/m)
433.9	1095.83	60.8	50.3

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			

4.3 Out of Band Spurious Emissions Test Equipment

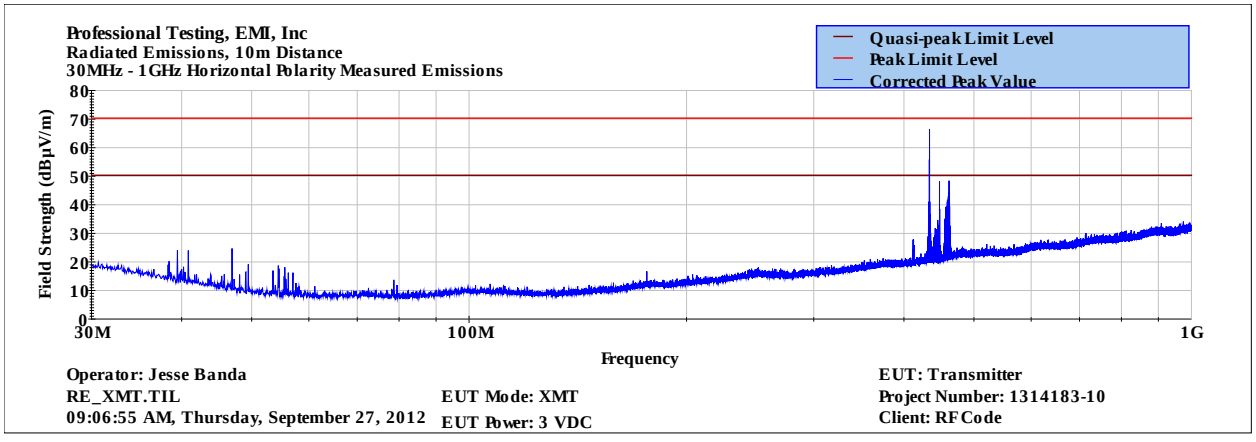
Asset #	Manufacturer	Model #	Description	Calibration Due
1509A	Braden	N/A	TDK 10M Chamber, NSA < 1 GHz	7/27/2013
0586	HP	8447D	Preamp, 0.1-1300MHz, 26dB	12/21/2012
1930	Agilent	E4440A-239	Spectrum Analyzer, 3 Hz - 26.5 GHz	6/19/2013
Rental	ETS-Lindgren	3142D	Antenna, Biconilog, 26 MHz - 6 GHz	5/8/2013
C027	N/A	RG214	Cable Coax, N-N, 25m	9/7/2013
1509B	Braden	N/A	TDK 10M Chamber, VSWR > 1 GHz	4/8/2013
1594	Miteq	AFS44-00102650	Amplifier, 1-26.5GHz, 42dB	2/15/2013
2004	Miteq	AFS44-00101800-2S-10P-44	Amplifier, 40dB, .1-18GHz	10/12/2012

4.4 Out of Band Spurious Emissions Test Results, Horizontal Polarization

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 15.231 - Code of Federal Regulations Part 47, Periodic operation in the band 40.66-40.70 MHz and above 70 MHz**		
Section:	**15.231(b)**		
Test Date(s):	**9/27/2012**	**EUT Model #:**	**M174 Kilo II**
Customer:	**RF Code, Inc.**	**EUT Serial #:**	**N/A**
Project Number:	**14183-10**	**Test Engineer:**	**Jesse Banda**
EUT:	**Kilo II Asset Tag**	**Supervisor:**	**Rob McCollough**
Temperature:	**24.1°C**	**Humidity:**	**39%**

Out of Band Spurious Emission			
EUT Line Voltage:	3 VDC	**EUT Mode of Operation**	Transmitting
Modulation	ASK	**Test Method**	Radiated
Test Results	PASS	**Modifications**	None

Frequency Measured (MHz)	Test Distance (Meters)	Detector Function	Recorded Amplitude (dBµV)	Corrected Level (dBµV/m)	Limit Level (dBµV/m)	Margin (dB)
411.7	10	Quasi-peak	27.1	22.1	50.3	-28.2
441.2	10	Quasi-peak	34.6	30.4	50.3	-19.9
448	10	Quasi-peak	40.1	36.0	50.3	-14.3
461	10	Quasi-peak	47.3	44.0	50.3	-6.3



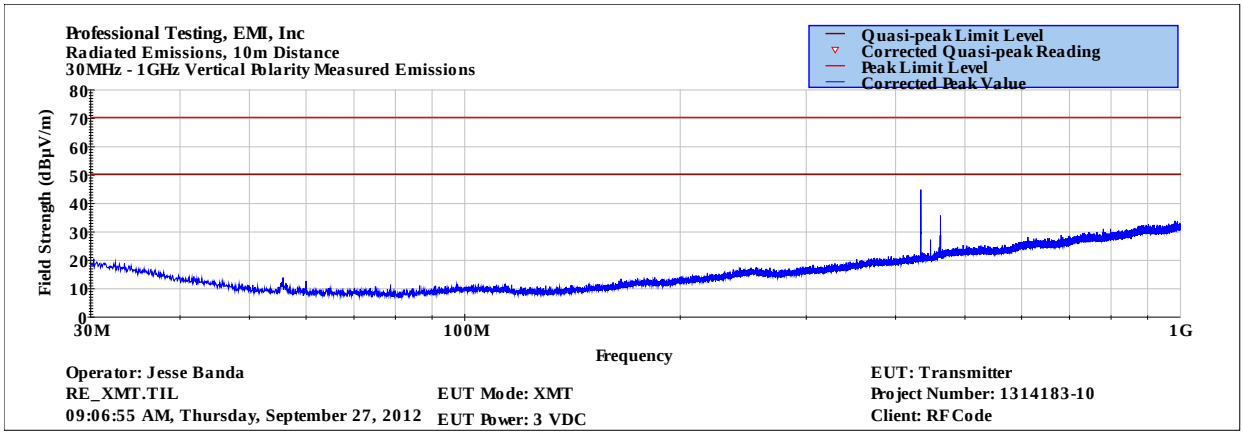
There were no signals above 1 GHz to investigate

4.5 Out of Band Spurious Emissions Test Results, Vertical Polarization

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 15.231 - Code of Federal Regulations Part 47, Periodic operation in the band 40.66-40.70 MHz and above 70 MHz**		
Section:	**15.231(b)**		
Test Date(s):	**9/27/2012**	**EUT Model #:**	**M174 Kilo II**
Customer:	**RF Code, Inc.**	**EUT Serial #:**	**N/A**
Project Number:	**14183-10**	**Test Engineer:**	**Jesse Banda**
EUT:	**Kilo II Asset Tag**	**Supervisor:**	**Rob McCollough**
Temperature:	**24.1°C**	**Humidity:**	**39%**

Out of Band Spurious Emission			
EUT Line Voltage:	3 VDC	**EUT Mode of Operation**	Transmitting
Modulation	ASK	**Test Method**	Radiated
Test Results	PASS	**Modifications**	None

Frequency Measured (MHz)	Test Distance (Meters)	Detector Function	Recorded Amplitude (dBµV)	Corrected Level (dBµV/m)	Limit Level (dBµV/m)	Margin (dB)
55	10	Quasi-peak	24.6	8.2	50.3	-42.1
448	10	Quasi-peak	23.5	19.4	50.3	-30.9
462	10	Quasi-peak	32.9	29.7	50.3	-20.6
600	10	Quasi-peak	18.9	19.6	50.3	-30.7

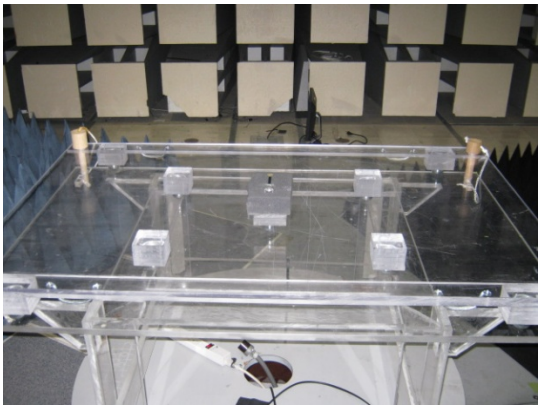


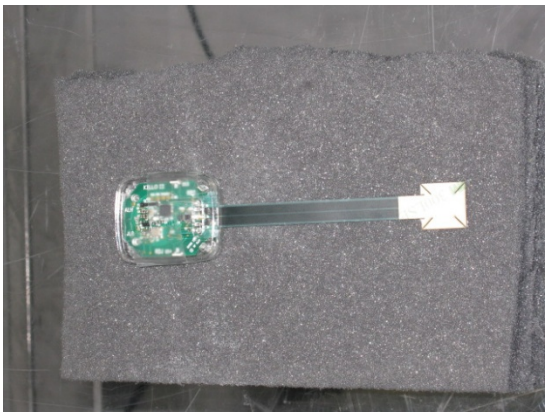
There were no signals above 1 GHz to investigate

4.6 Out of Band Spurious Emissions 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 15.231 - Code of Federal Regulations Part 47, Periodic operation in the band 40.66-40.70 MHz and above 70 MHz**		
Section:	**15.231(b)**		
Test Date(s):	**9/27/2012**	**EUT Model #:**	**M174 Kilo II**
Customer:	**RF Code, Inc.**	**EUT Serial #:**	**N/A**
Project Number:	**14183-10**	**Test Engineer:**	**Jesse Banda**
EUT:	**Kilo II Asset Tag**	**Supervisor:**	**Rob McCollough**
Temperature:	**24.1°C**	**Humidity:**	**39%**

Out of Band Spurious Emission Photographs





5.0 Total Transmission Time Measurements

Total Transmission Time measurements were performed on the EUT to determine compliance to 47 CFR, Part 15.231(a)(3).

5.1 Total Transmission Time Measurements Test Procedure

The Total Transmission Time measurement was determined by calculating the maximum transmission time in an hour. First, a single pulse width in a period was measured. The pulse width was then multiplied by the number of pulses in a period to get the total transmission time in a period. The total transmission time in a period was then multiplied the number of periods in a minute to determine the total transmission time in a minute. Since the EUT transmits every 10 seconds, the number of periods the EUT can transmit in a minute is 6. The total transmission time in a minute was multiplied by 60 to determine the total transmission time in an hour.

5.2 Total Transmission Time Measurements Test Criteria

Polling and supervision transmission, including data to determine system integrity of transmitters used in security or safety applications are allowed if the total duration of transmissions does not exceed more than two seconds per hour for each transmitter according to .

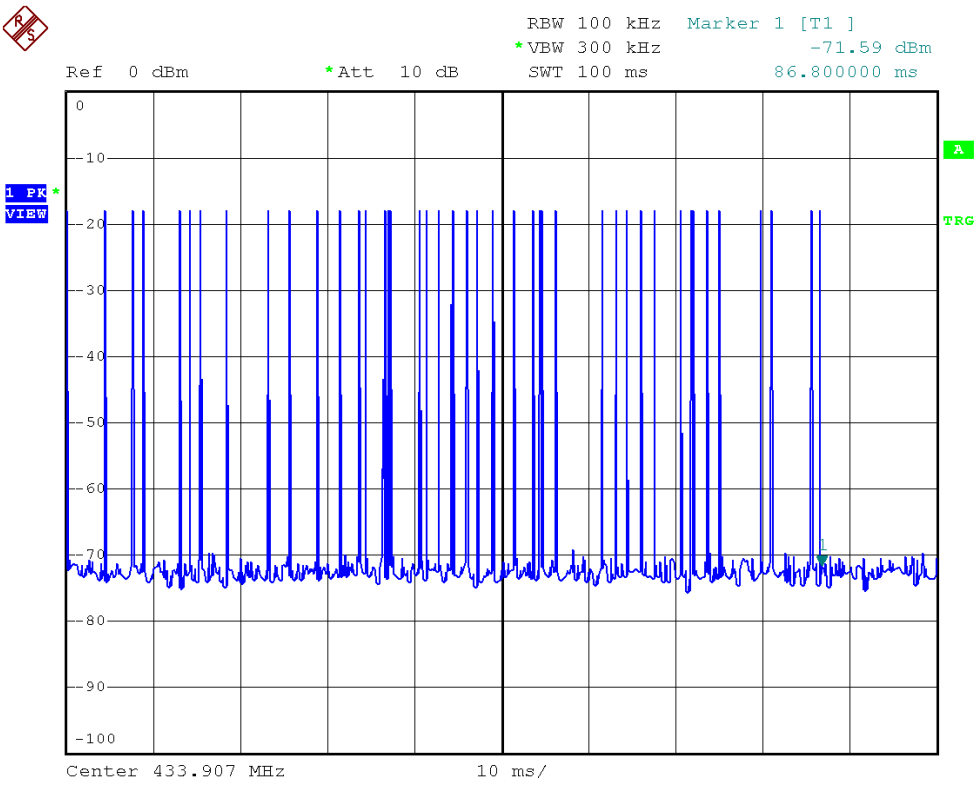
5.3 Total Transmission Time Measurements Test Equipment

Asset #	Manufacturer	Model #	Description	Calibration Due
Rental	Rohde & Schwartz	FSP	Spectrum Analyzer, 9 kHz - 30 GHz	12/22/2012
C182	Times Fiber Communications, Inc.	RG223	Cable, RF, BNC-BNC, 43", Black	8/31/2013
273	EMCO	7405	Near-Field Probe Set	N/A

5.4 Total Transmission Time Measurements Test Results, Number of Pulses

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 15.231 - Code of Federal Regulations Part 47, Periodic operation in the band 40.66-40.70 MHz and above 70 MHz**		
Section:	**15.231(a)(3)**		
Test Date(s):	**9/28/2012**	**EUT Model #:**	**M174 Kilo II**
Customer:	**RF Code, Inc.**	**EUT Serial #:**	**N/A**
Project Number:	**14183-10**	**Test Engineer:**	**Jesse Banda**
EUT:	**Kilo II Asset Tag**	**Supervisor:**	**Rob McCollough**
Temperature:	**24.1°C**	**Humidity:**	**39%**

Total Transmission Time Measurements, Number of Pulses in a Period			
EUT Line Voltage:	3 VDC	**EUT Mode of Operation**	Transmitting
Modulation	ASK	**Test Method**	Radiated
Test Results	PASS	**Modifications**	None

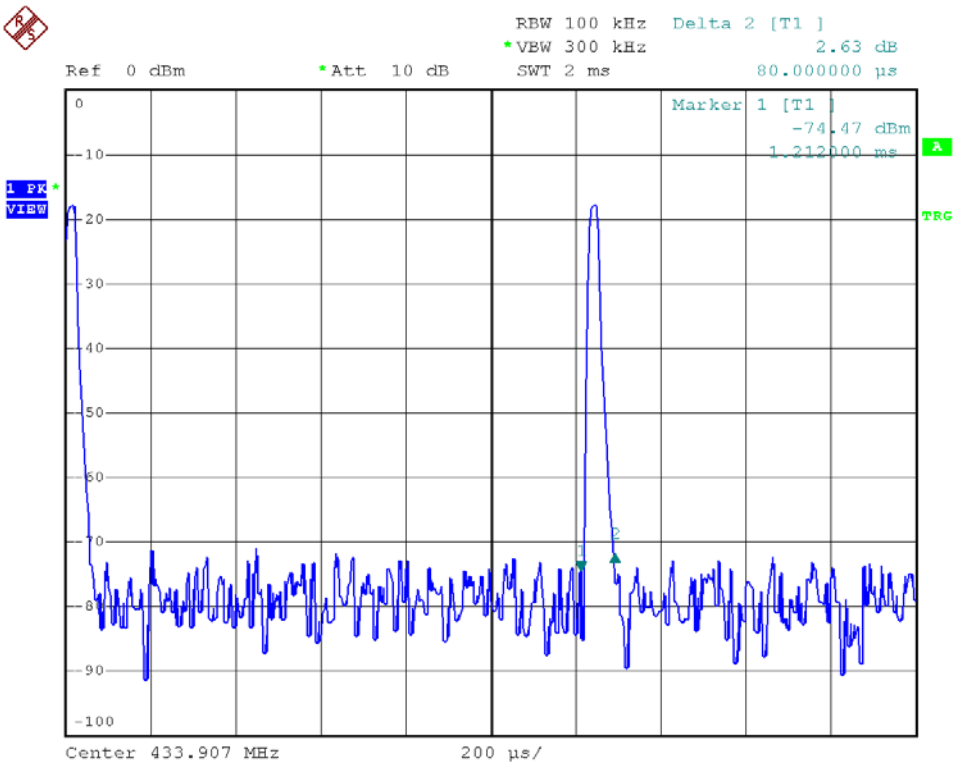


Number of Pulses = 40

5.5 Total Transmission Time Measurements Test Results, Pulse Width

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 15.231 - Code of Federal Regulations Part 47, Periodic operation in the band 40.66-40.70 MHz and above 70 MHz**		
Section:	**15.231(a)(3)**		
Test Date(s):	**9/28/2012**	**EUT Model #:**	**M174 Kilo II**
Customer:	**RF Code, Inc.**	**EUT Serial #:**	**N/A**
Project Number:	**14183-10**	**Test Engineer:**	**Jesse Banda**
EUT:	**Kilo II Asset Tag**	**Supervisor:**	**Rob McCollough**
Temperature:	**24.1°C**	**Humidity:**	**39%**

Total Transmission Time Measurements, Pulse Width			
EUT Line Voltage:	3 VDC	**EUT Mode of Operation**	Transmitting
Modulation	ASK	**Test Method**	Radiated
Test Results	PASS	**Modifications**	None

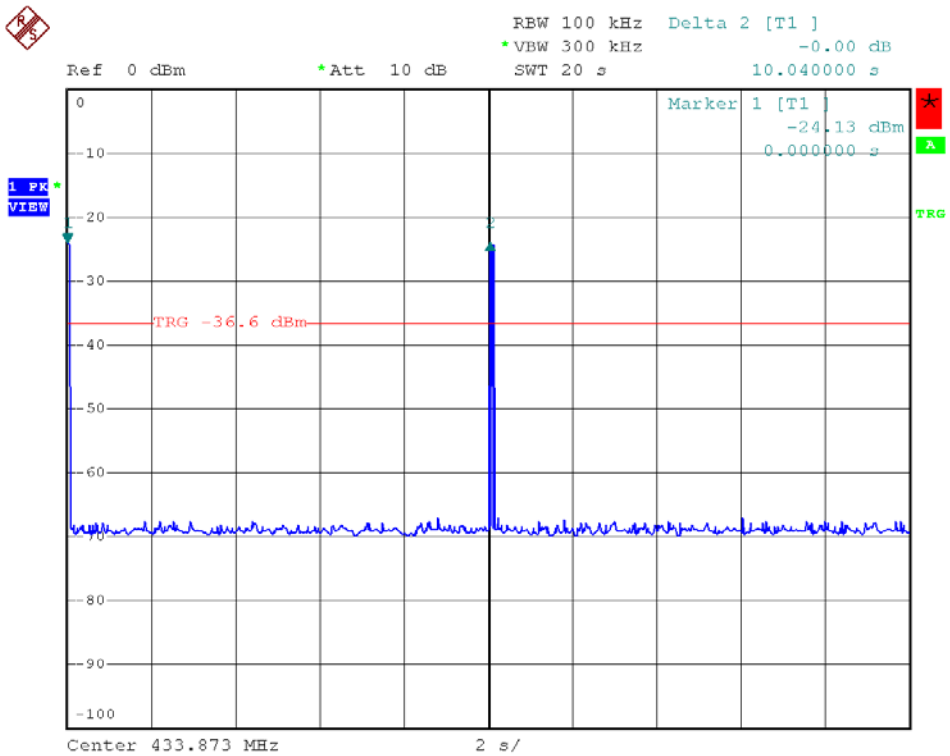


Pulse Width = 80 µs

5.6 Total Transmission Time Measurements Test Results, Time between Transmission

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 15.231 - Code of Federal Regulations Part 47, Periodic operation in the band 40.66-40.70 MHz and above 70 MHz**		
Section:	**15.231(a)(3)**		
Test Date(s):	**9/28/2012**	**EUT Model #:**	**M174 Kilo II**
Customer:	**RF Code, Inc.**	**EUT Serial #:**	**N/A**
Project Number:	**14183-10**	**Test Engineer:**	**Jesse Banda**
EUT:	**Kilo II Asset Tag**	**Supervisor:**	**Rob McCollough**
Temperature:	**24.1°C**	**Humidity:**	**39%**

Total Transmission Time Measurements, Time between Transmission			
EUT Line Voltage:	3 VDC	**EUT Mode of Operation**	Transmitting
Modulation	ASK	**Test Method**	Radiated
Test Results	PASS	**Modifications**	None



Time between Transmission = 10 sec

5.7 Total Transmission Time Measurements Test Results, Calculation

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 15.231 - Code of Federal Regulations Part 47, Periodic operation in the band 40.66-40.70 MHz and above 70 MHz**		
Section:	**15.231(a)(3)**		
Test Date(s):	**9/28/2012**	**EUT Model #:**	**M174 Kilo II**
Customer:	**RF Code, Inc.**	**EUT Serial #:**	**N/A**
Project Number:	**14183-10**	**Test Engineer:**	**Jesse Banda**
EUT:	**Kilo II Asset Tag**	**Supervisor:**	**Rob McCollough**
Temperature:	**24.1°C**	**Humidity:**	**39%**

Total Transmission Time Measurements, Calculation			
EUT Line Voltage:	3 VDC	**EUT Mode of Operation**	Transmitting
Modulation	ASK	**Test Method**	Radiated
Test Results	PASS	**Modifications**	None

Number of pulses	Pulse width (µs)	Time between Transmission (sec)	Total Transmission Time in a Period (ms)	Total Transmission Time in 1min (ms)	Total Transmission Time in 1 hour (sec)	Transmission Time limit in 1 hour (sec)
40	80	10	3.2	19.2	1.152	2.000

Total Transmission Time in a Period = (Number of Pulse) * (Pulse Width)
Total Transmission Time in 1 min = (Total Transmission Time in a Period) * 6
Total Transmission Time in 1 hour = (Total Transmission Time in 1 min) *60

5.8 Total Transmission Time Measurements 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 15.231 - Code of Federal Regulations Part 47, Periodic operation in the band 40.66-40.70 MHz and above 70 MHz**		
Section:	**15.231(b)**		
Test Date(s):	**9/28/2012**	**EUT Model #:**	**M174 Kilo II**
Customer:	**RF Code, Inc.**	**EUT Serial #:**	**N/A**
Project Number:	**14183-10**	**Test Engineer:**	**Jesse Banda**
EUT:	**Kilo II Asset Tag**	**Supervisor:**	**Rob McCollough**
Temperature:	**24.1°C**	**Humidity:**	**39%**

Total transmission Time Photographs

6.0 Cease Time of Transmission

Cease time of transmission was performed on the EUT to determine compliance with 47 CFR, Part 15.231(a)(2).

6.1 Cease Time of Transmission Test Procedure

Cease Time of Transmission was measured by setting the analyzer to a zero hertz span with a sweep time of 5 seconds and measuring the time the transmission stops.

6.2 Cease Time of Transmission Test Criteria

A transmitter activated automatically shall cease transmission within 5 seconds after activation

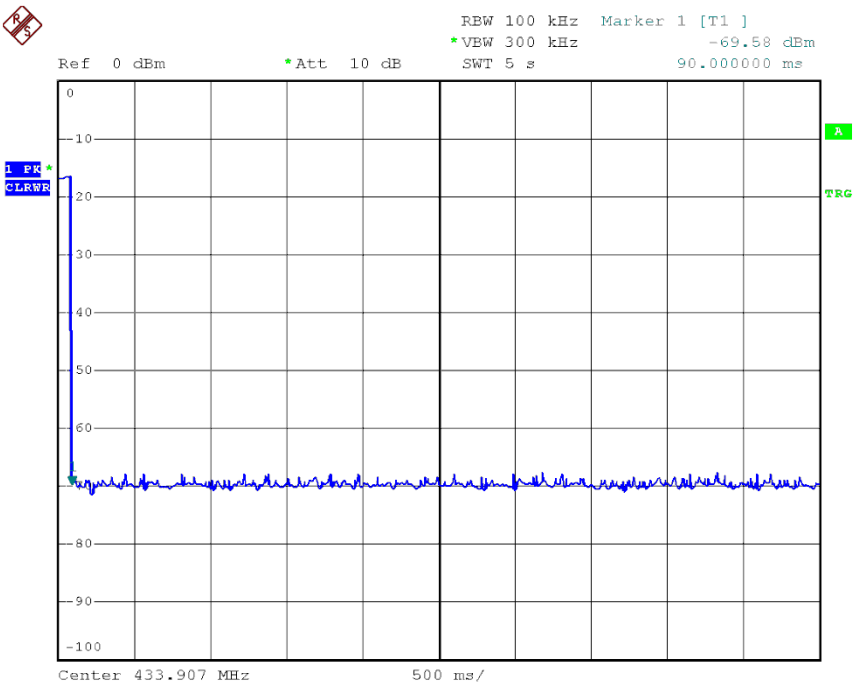
6.3 Cease Time of Transmission Test Equipment

Asset #	Manufacturer	Model #	Description	Calibration Due
Rental	Rohde & Schwartz	FSP	Spectrum Analyzer, 9 kHz - 30 GHz	12/22/2012
C182	Times Fiber Communications, Inc.	RG223	Cable, RF, BNC-BNC, 43", Black	8/31/2013
273	EMCO	7405	Near-Field Probe Set	N/A

6.4 Cease Time of Transmission Test Results

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 15.231 - Code of Federal Regulations Part 47, Periodic operation in the band 40.66-40.70 MHz and above 70 MHz**		
Section:	**15.231(a)(3)**		
Test Date(s):	**9/28/2012**	**EUT Model #:**	**M174 Kilo II**
Customer:	**RF Code, Inc.**	**EUT Serial #:**	**N/A**
Project Number:	**14183-10**	**Test Engineer:**	**Jesse Banda**
EUT:	**Kilo II Asset Tag**	**Supervisor:**	**Rob McCollough**
Temperature:	**24.1°C**	**Humidity:**	**39%**

Cease Time of Transmission			
EUT Line Voltage:	3 VDC	**EUT Mode of Operation**	Transmitting
Modulation	ASK	**Test Method**	Radiated
Test Results	PASS	**Modifications**	None



Transmission ceases after 90 ms

6.5 Cease Time of Transmission Test 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 15.231 - Code of Federal Regulations Part 47, Periodic operation in the band 40.66-40.70 MHz and above 70 MHz**		
Section:	**15.231(b)**		
Test Date(s):	**9/28/2012**	**EUT Model #:**	**M174 Kilo II**
Customer:	**RF Code, Inc.**	**EUT Serial #:**	**N/A**
Project Number:	**14183-10**	**Test Engineer:**	**Jesse Banda**
EUT:	**Kilo II Asset Tag**	**Supervisor:**	**Rob McCollough**
Temperature:	**24.1°C**	**Humidity:**	**39%**

Cease Time of Transmission Photographs

7.0 Antenna Requirements

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

7.1 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.

7.2 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.

7.3 Evaluation Results

The Kilo II asset tag met the criteria of this rule by virtue of having an internal antenna inaccessible to the user. Therefore, the EUT is compliant.

End of Report

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