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March 24, 2011

Martin Phillips
Wireless Computing, Inc.
3703 Peak Lookout Drive
Austin, Texas 78738

Dear Martin:

Enclosed is the Wireless Test Report for the RF-600 Mechanical Wireless Keyboard by Wireless Computing, Inc. This report can be used to demonstrate compliance with FCC and IC requirements for wireless devices in the United States and Canada.

If you have any questions, please contact me.

Sincerely,

Jeffrey A. Lenk
President

Enclosure

Project 12232-10

**Wireless Computing, Inc.
RF-600 Mechanical Wireless Keyboard**

Wireless Certification Report

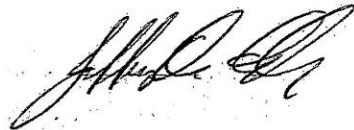
Prepared for:
Wireless Computing, Inc.
3703 Peak Lookout Drive
Austin, Texas 78738

By

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

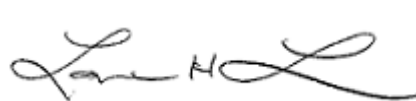
March 24, 2011
Revised March 31, 2011

Reviewed by



Jeffrey A. Lenk
President

Written by



Layne Lueckemeyer
Product Development Engineer

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THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, WITHOUT THE WRITTEN APPROVAL OF PROFESSIONAL TESTING (EMI), INC.

NOTICE: (1) This Report must not be used to claim product endorsement, by NVLAP, NIST, the FCC or any other Agency. This report also does not warrant certification by NVLAP or NIST.

(2) This report shall not be reproduced except in full, without the written approval of Professional Testing (EMI), Inc.

(3) The significance of this report is dependent on the representative character of the test sample submitted for evaluation and the results apply only in reference to the sample tested. The manufacturer must continuously implement the changes shown herein to attain and maintain the required degree of compliance.



Applicant: Wireless Computing, Inc.
 Applicant's Address: 3703 Peak Lookout Drive
 Austin, Texas 78738
 FCC ID: L7MR600
 Project Number: 12232-10
 Test Dates: March 7 and 9, 2011

The **Wireless Computing RF-600 Mechanical Wireless Keyboard** was tested to and found to be in compliance with FCC 47 CFR Part 15 and IC RSS-210 issue 8.

The highest emissions generated by the above equipment are listed below:

Parameter	Frequency (MHz)	Level	Limit	Margin (dB)
Transmitter: Fundamental Field Strength at 3m	916.5	93.5 dBuV/m @ 3 m	94 dBuV/m	-0.5
Transmitter: Radiated Spurious	1833	48.9 dB μ V/m @ 1 m	63.5 dB μ V/m	-14.6
Occupied Bandwidth				
20 dB		26 dB		
352.564 kHz		359.744 kHz		

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 Wireless Computing, Inc. The undersigned is responsible for ensuring that this device will continue to comply with the FCC and IC rules.

Representative of Wireless Computing, 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.

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

1.2 EUT Description

The RF-600 Mechanical Wireless Keyboard is a 104-key keyboard that operates on two AA batteries and transmits wirelessly to operate a Windows, Macintosh or Linux computer. The EUT was tested while in a continuous transmit mode. The EUT was tuned to a low, middle, and high channel to perform power, occupied bandwidth, and harmonic tests. The EUT was tuned to a middle channel to perform spurious tests. The EUT continuously transmitted at maximum power. The system tested consisted of the following:

Manufacturer	Model	FCC ID Number
Wireless Computing, Inc.	RF-600 Mechanical Wireless Keyboard	L7MR600

The following rules apply to the operation of the EUT:

Guidelines	FCC Rules	IC Rules	
	Part 15	RSS-GEN Issue 3	RSS-210 Issue 8
Transmitter Characteristics	15.249	4.1-4.6, 7	2.2, 2.6-2.7, A2.9, A8, A9
Spurious Radiated Power	15.209	4.2, 4.7, 4.8, 6, 7	2.2, 2.6-2.7, A2.9, A8, A9
Antenna Requirement	15.203	7.1, 7.1.4	

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, IC 3036B-1) in Austin, Texas. This site is registered with the FCC under Section 2.948 and Industry Canada per RS-212, 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 C63.10	American National Standard for Testing Unlicensed Wireless Devices	2009
47 CFR	Part 15 – Radio Frequency Devices Subpart C -Intentional Radiators	
RSS-210	Low-power License-exempt Radio communication Devices (All Frequency Bands): Category I Equipment	Issue 8
RSS-Gen	General Requirements and Information for the Certification of Radio Communication Equipment	Issue 3

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.

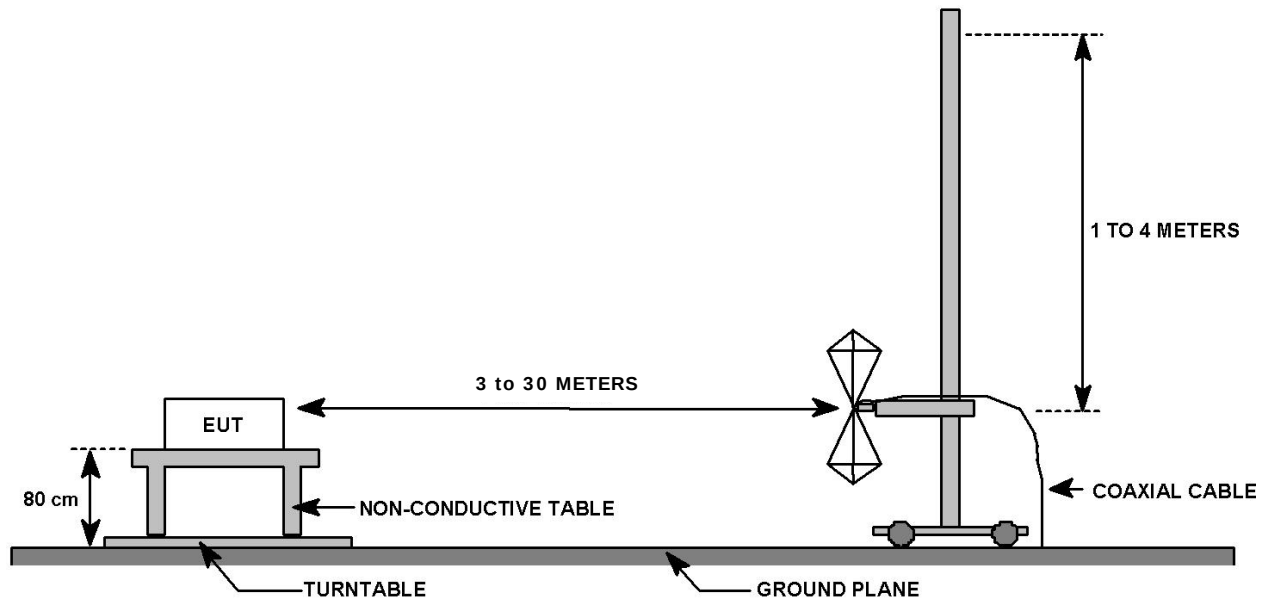


Figure 2.1.1: Radiated Emission Test Setup

2.2 Test Criteria

The maximum field strength of the fundamental frequency is 94 dBuV/m at 3 m for devices operating in the frequency range 902 to 928 MHz, according to FCC Section 15.249 and RSS-210.

2.3 Test Results

Radiated emission measurements of the fundamental field strength level for the EUT were taken on March 7, 2011, and the EUT was found to be in compliance with applicable requirements.

Table 2.3.1: Radiated Emissions Test Equipment

Asset #	Manufacturer	Model #	Description	Calibration Due
0085	HP	85650A	Quasi-peak Adapter (high band)	July 28, 2011
0949	HP	85662A	Spectrum Analyzer Display (high band)	NCR
1841	HP	8566B	Spectrum Analyzer (high band)	June 8, 2011
0990	HP	85685A	RF Preselector (high band)	March 24, 2011
1281	HP	85650A	Quasi-peak Adapter (low band)	January 20, 2012
1834	HP	85662A	Spectrum Analyzer Display (low band)	NCR
1145	HP	8568B	Spectrum Analyzer (low band)	July 28, 2011
1035	HP	85685A	RF Preselector (low band)	April 3, 2011
1454	HP	8447D	RF Preamplifier	July 06, 2011
1497	Emco	3108	Biconical Antenna	August 4, 2011
1486	Emco	3147	Log Periodic Dipole Array Antenna	August 4, 2011
C026	none	none	Coaxial Cable (low band)	August 02, 2011
C027	none	none	Coaxial Cable (high band)	August 02, 2011

Table 2.3.2: Microwave Radiated Emissions Test Equipment

Asset #	Manufacturer	Model #	Description	Calibration Due
1780	ETS-Lindgren	3117	Ridge Guide Antenna	November 11, 2011
1529	Miteq	Antenna Mounted	Microwave Preamplifier (preamp 1)	July 16, 2011
1841	HP	8566B	Spectrum Analyzer	June 8, 2011
0949	HP	85662A	Spectrum Analyzer Display	NCR
1530	Miteq	None	Microwave Preamplifier (preamp 2)	July 16, 2011
C030	None	None	Coaxial Cable (MRE band)	March 22, 2011

Asset #	Manufacturer	Model #	Description	Calibration Due
XXXX	Pasternack	LLS	2 sections, total 12ft	Cal Before Use
0819	EMCO	3115	Ridge Guide Antenna	October 15, 2011
0897	Miteq	AFS44-00102650	Microwave Preamplifier (preamp 1)	July 14, 2011
(Rental unit)	Rohde & Schwarz	FSQ	Spectrum Analyzer	August 24, 2011
1542	A.H. Systems	SAS 572	Antenna, Horn 18-26.5GHz	NCR

Table 2.3.3: Radiated Emissions on the Fundamental Strength Test Results

PROJECT #	DATE	RULE	DISTANCE	ANTENNA	RBW	VBW	DETECTOR
12232-10	March 7, 2011	15.249	3m	Log Periodical	1 MHz	1 MHz	Peak
COMMENT		Transmitting					

Vertical Polarization

Frequency Measured (MHz)	Test Distance (Meters)	EUT Direction (Degrees)	Antenna Height (Meters)	Detector Function	Recorded Amplitude (dB μ V)	Corrected Level (dB μ V/m)	Limit Level (dB μ V/m)	Margin (dB)
916.5	3	340	1	Peak	91.8	91.5	94.0	-2.5

Horizontal Polarization

Frequency Measured (MHz)	Test Distance (Meters)	EUT Direction (Degrees)	Antenna Height (Meters)	Detector Function	Recorded Amplitude (dB μ V)	Corrected Level (dB μ V/m)	Limit Level (dB μ V/m)	Margin (dB)
916.5	3	340	1	Peak	93.8	93.5	94.0	-0.5

3.0 Occupied Bandwidth

Occupied bandwidth measurements were performed on the EUT to determine compliance with FCC 15.249 and RSS-210.

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 or 26 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 or 26 dB bandwidth. A diagram showing the test setup is given as Figure 2.1.1.

3.2 Test Criteria

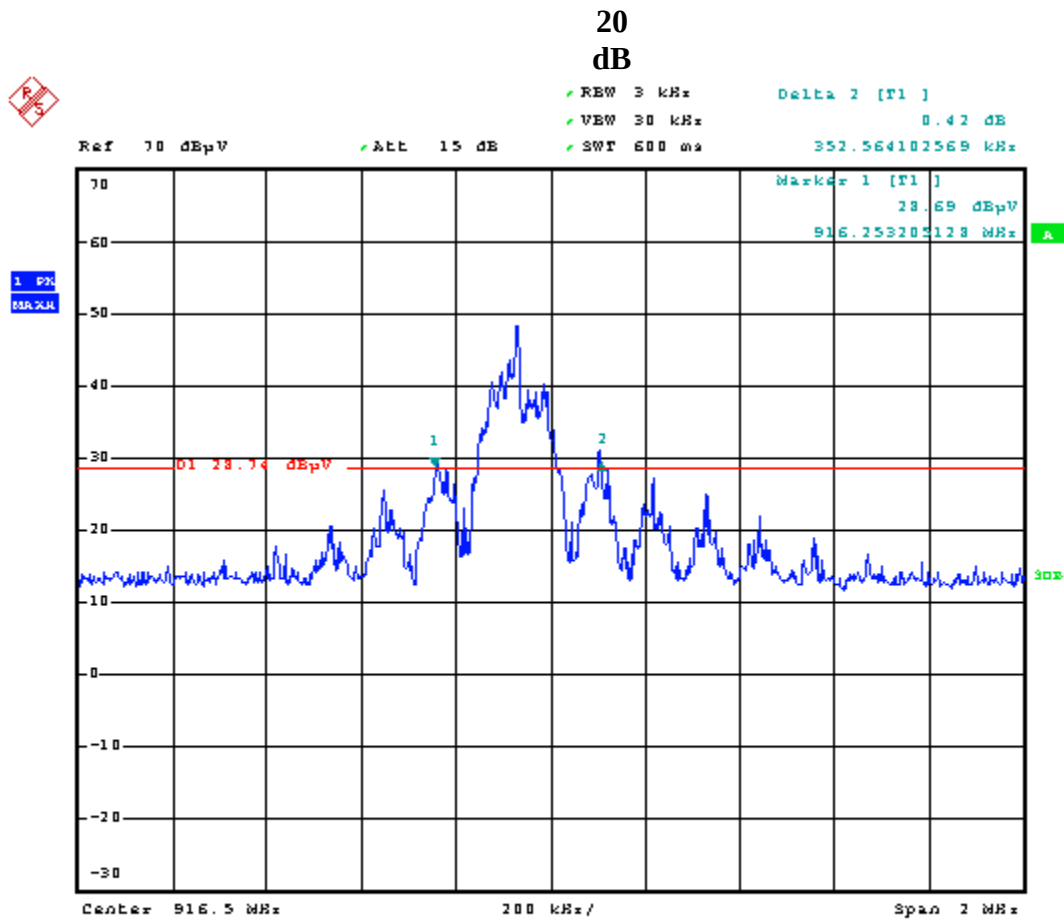
According to FCC Part 15.249, the emission must remain in the defined band.

3.3 Test Results

Occupied bandwidth measurements were taken on March 7 and 9, 2011, and the EUT was found to be in compliance with applicable requirements. Test equipment used to perform this test is given in Tables 2.3.1 and 2.3.2.

Table 3.3.1: Occupied Bandwidth Test Results, Data Sheet 1

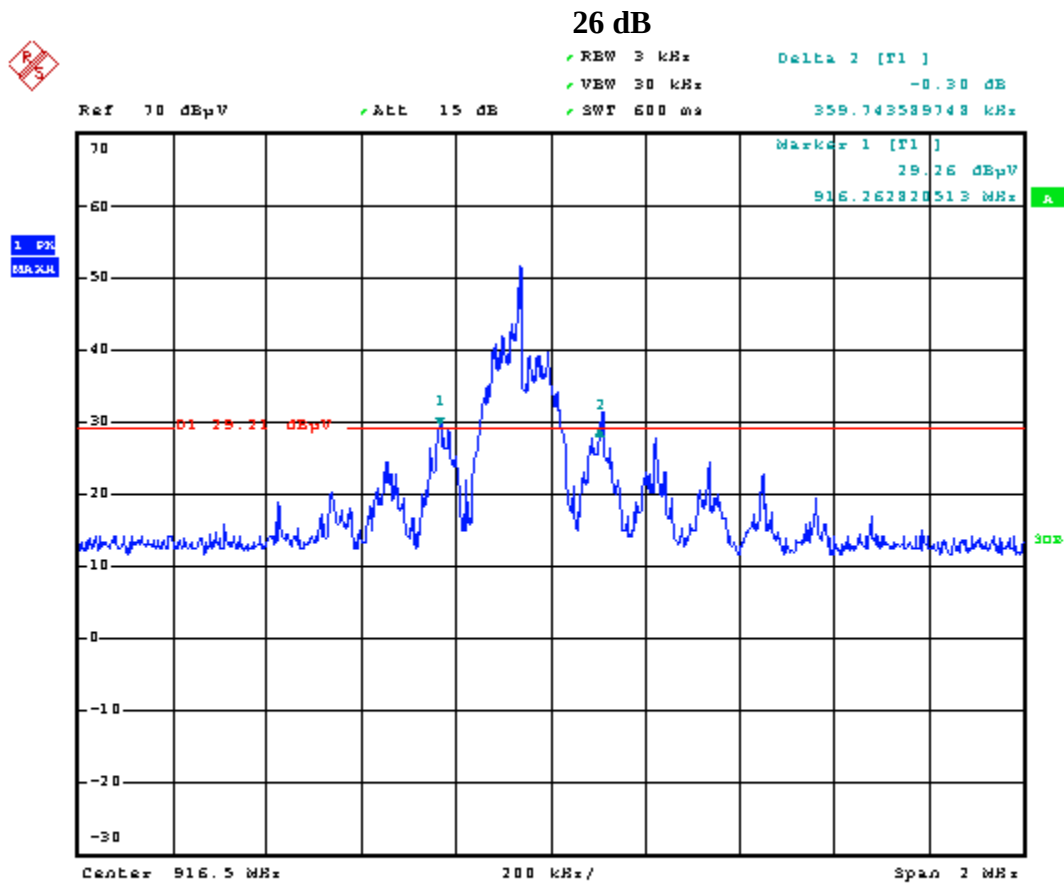
PROJECT #	DATE	RULE	DISTANCE	ANTENNA	RBW	VBW	DETECTOR
12232-10	March 7, 2011	15.249	1 m	Log Periodical	3 kHz	30 kHz	Peak
COMMENT	Transmitting 20 dB Bandwidth – 352.564 kHz						



Date: 7.MAR.2011 22:09:33

Table 3.3.2: Occupied Bandwidth Test Results, Data Sheet 2

PROJECT #	DATE	RULE	DISTANCE	ANTENNA	RBW	VBW	DETECTOR
12232-10	March 9, 2011	15.249	1 m	Log Periodical	3 kHz	30 kHz	Peak
COMMENT	Transmitting 20 dB Bandwidth – 359.744 kHz						



Date: 9.MAR.2011 20:45:34

4.0 Out of Band Spurious Emissions

Out of band spurious/harmonic emissions measurements were performed on the EUT to determine compliance to FCC sections 15.249(c), 15.209 and RSS-210.

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

The radiated limits of FCC 15.209 and RSS-210 are shown below. The limits specified are at 3 meters. The limits are quasi-peak for emissions below 1 GHz and average for emissions above 1 GHz. Also above 1 GHz, the peak limit is 20 dB above the average limit.

Frequency MHz	Specification Distance (Meters)	Field Strength (dBuV/m)	Test Distance (Meters)	Field Strength (dBuV/m)
30 to 88	3	40.0	10	29.5
88 to 216	3	43.5	10	33
216 to 960	3	46.0	10	35.5
Above 960	3	54.0	1	63.5

4.3 Test Results

Out of band spurious emissions measurements were taken on March 7, 2011, and the EUT was found to be in compliance with applicable requirements. Test equipment used to perform this test is given in Tables 2.3.1 and 2.3.2.

Table 4.3.1: Out of Band Spurious Emissions Test Results, 30 MHz to 1 GHz, Horizontal Polarization

PROJECT #	DATE	CLASS	DISTANCE	ANTENNA	RBW	VBW	DETECTOR
12232-10	March 7, 2011	FCC B	10 m	Bicon Log	CISPR 120 kHz	1 MHz	Quasi Peak
COMMENT		Transmitting					

Frequency Measured (MHz)	Test Distance (Meters)	EUT Direction (Degrees)	Antenna Height (Meters)	Detector Function	Recorded Amplitude (dB μ V)	Corrected Level (dB μ V/m)	Limit Level (dB μ V/m)	Margin (dB)
31.53	10	Noise	Floor	Quasi-peak	21.8	9.4	29.5	-20.1
156.31	10	Noise	Floor	Quasi-peak	21.6	10.7	33.0	-22.3
199.83	10	Noise	Floor	Quasi-peak	21.4	12.1	33.0	-20.9
566.4	10	Noise	Floor	Quasi-peak	26.8	20.3	35.5	-15.2
841.6	10	Noise	Floor	Quasi-peak	26.1	24.6	35.5	-10.9
993.6	10	Noise	Floor	Quasi-peak	26.5	26.9	35.5	-8.6

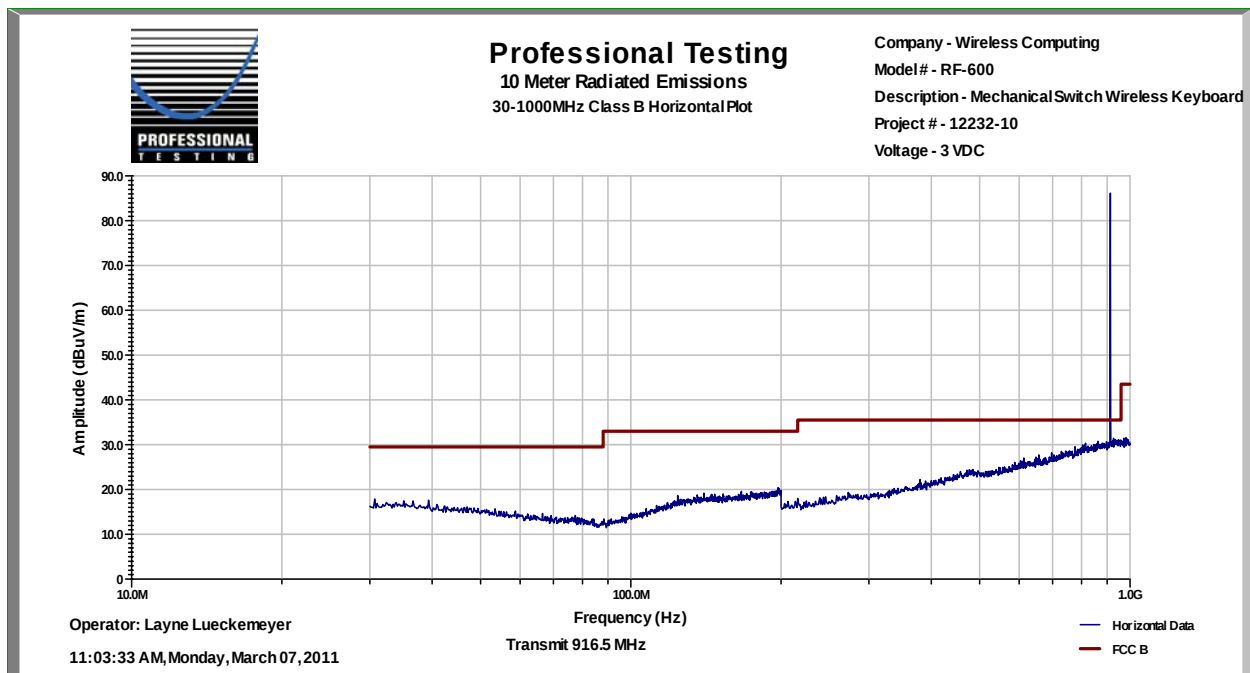
**Result = Pass**

Table 4.3.2: Out of Band Spurious Emissions Test Results, 30 MHz to 1 GHz, Vertical Polarization

PROJECT #	DATE	CLASS	DISTANCE	ANTENNA	RBW	VBW	DETECTOR
12232-10	March 7, 2011	FCC B	10 m	Bicon Log	CISPR 120 kHz	1 MHz	Quasi Peak
COMMENT		Transmitting					

Frequency Measured (MHz)	Test Distance (Meters)	EUT Direction (Degrees)	Antenna Height (Meters)	Detector Function	Recorded Amplitude (dB μ V)	Corrected Level (dB μ V/m)	Limit Level (dB μ V/m)	Margin (dB)
31.53	10	Noise	Floor	Quasi-peak	21.8	9.4	29.5	-20.1
156.31	10	Noise	Floor	Quasi-peak	21.6	10.7	33.0	-22.3
199.83	10	Noise	Floor	Quasi-peak	21.4	12.1	33.0	-20.9
566.4	10	Noise	Floor	Quasi-peak	26.8	20.3	35.5	-15.2
841.6	10	Noise	Floor	Quasi-peak	26.1	24.6	35.5	-10.9
993.6	10	Noise	Floor	Quasi-peak	26.5	26.9	35.5	-8.6

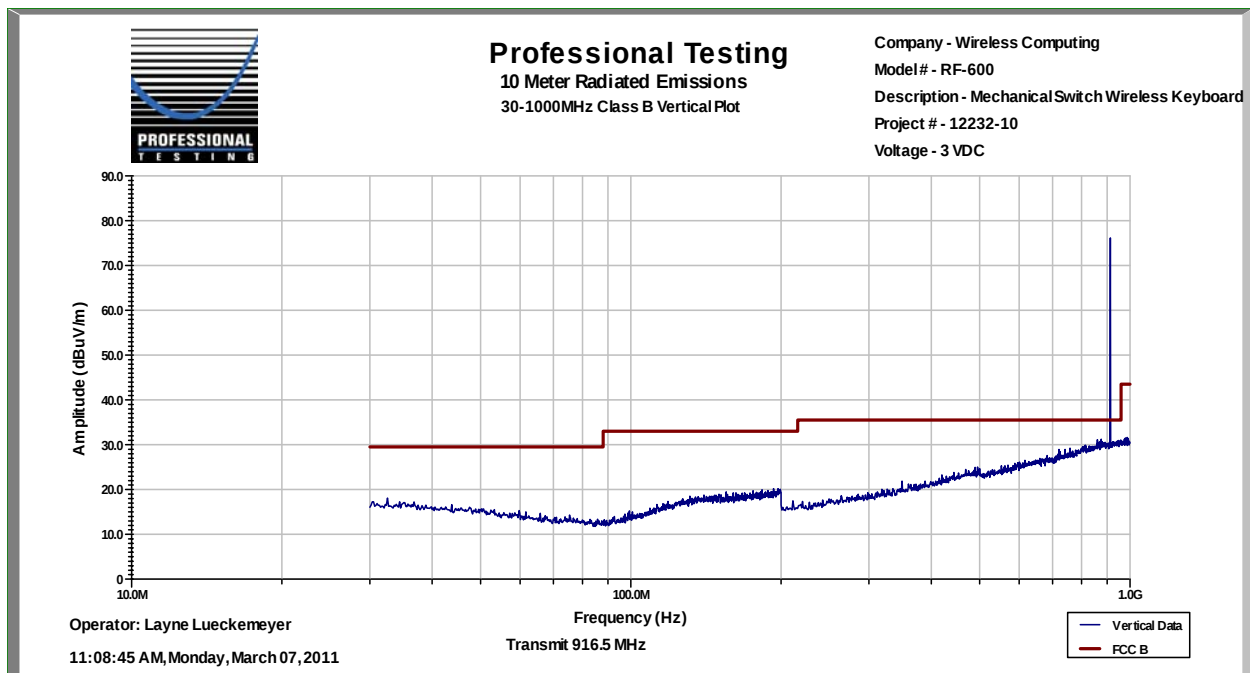
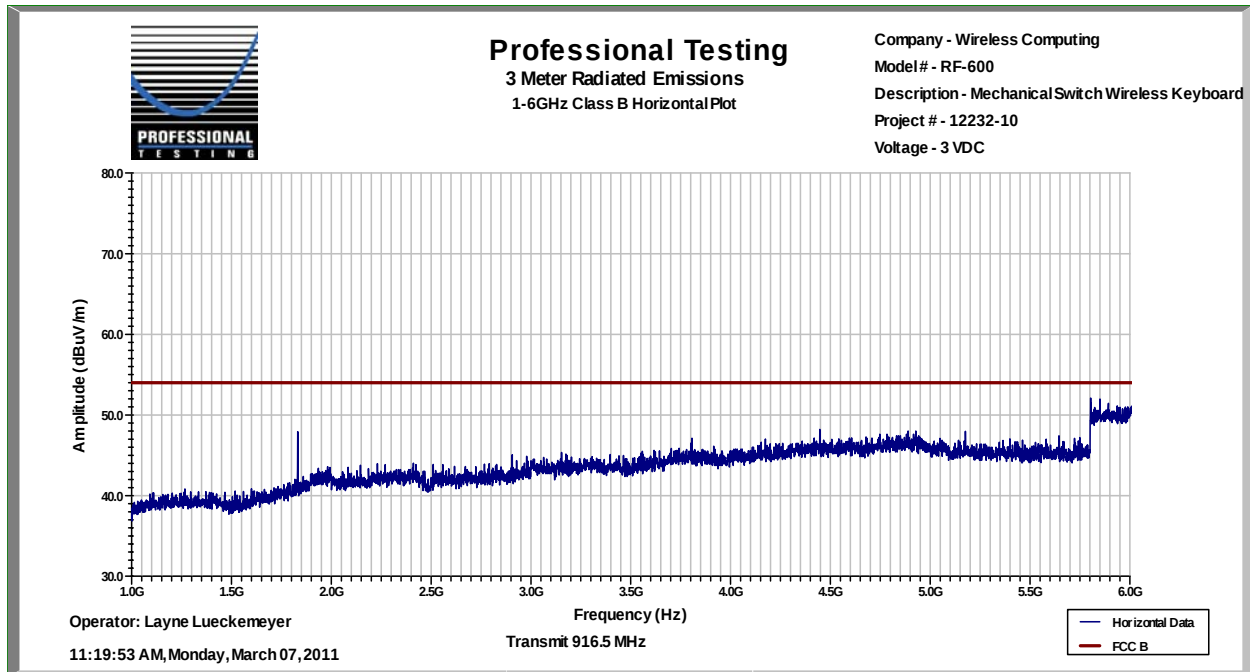
**Result = Pass**

Table 4.3.3: Out of Band Spurious Emissions Test Results, 1 GHz to 6 GHz, Horizontal Polarization

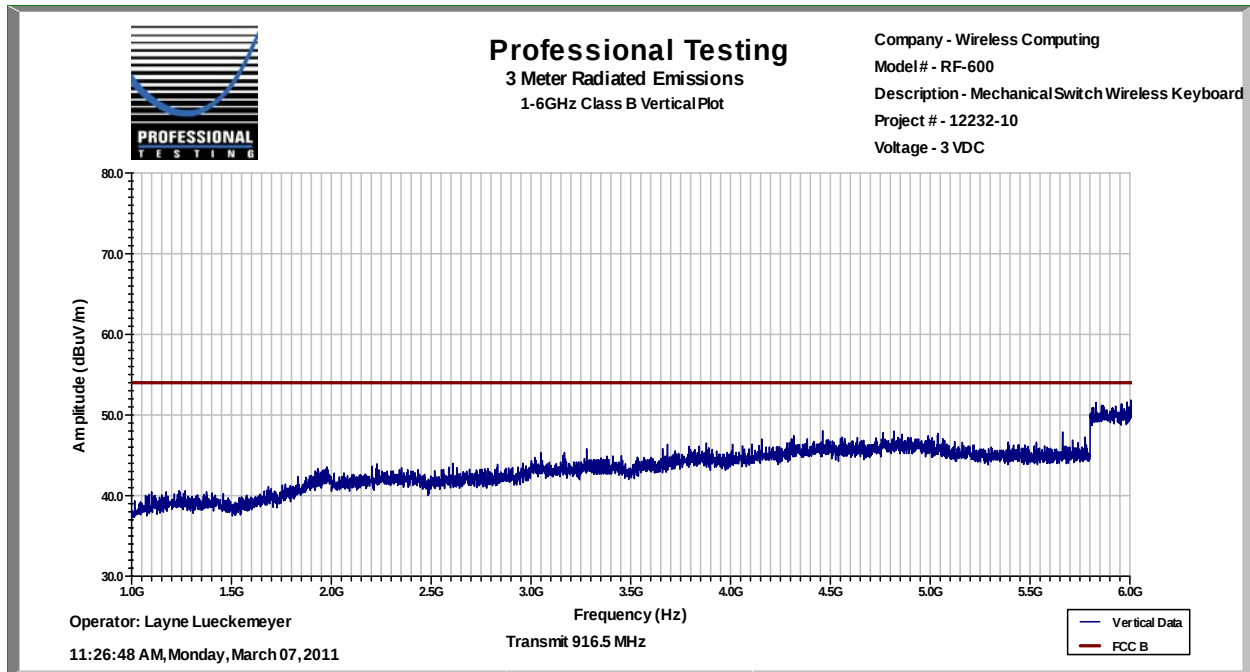
PROJECT #	DATE	CLASS	DISTANCE	ANTENNA	RBW	VBW	DETECTOR
12232-10	March 7, 2011	FCC B	3 m	Horn	1 MHz	1 MHz	Average
COMMENT		Transmitting					



NOTE: Graphical data for overview only. Pre-scan used to determine if spurious signals other than harmonics were present.

Table 4.3.4: Out of Band Spurious Emissions Test Results, 1 GHz to 6 GHz, Vertical Polarization

PROJECT #	DATE	CLASS	DISTANCE	ANTENNA	RBW	VBW	DETECTOR
12232-10	March 7, 2011	FCC B	3 m	Horn	1 MHz	1 MHz	Average
COMMENT		Transmitting					



NOTE: Graphical data for overview only. Pre-scan used to determine if spurious signals other than harmonics were present.

Table 4.3.5: Out of Band Spurious Emissions Test Results, 1 GHz to 10 GHz, Horizontal and Vertical Polarizations

PROJECT #	DATE	CLASS	DISTANCE	ANTENNA	RBW	VBW	DETECTOR
12232-10	March 7, 2011	FCC B	1 m	Horn	1 MHz	1 MHz	Peak
COMMENT		Transmitting 916.5 MHz Harmonics and spurious investigated up to 10 GHz					

Horizontal Polarization

Frequency Measured (MHz)	EUT Direction (Degrees)	Antenna Height (Meters)	Recorded Level (dBµV)	Amplifier Gain (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Corrected Level (dBµV/m)	Limit Level (dBµV/m)	Margin (dB)	Detector Function
1.833	0	1	42.6	24.4	27.7	2.9	48.7	63.5	-14.8	Peak
2.7495	Noise	Floor	44	28.0	29.4	3.0	48.4	63.5	-15.1	Peak
3.666	Noise	Floor	43.8	25.8	32.1	3.3	53.4	63.5	-10.1	Peak
4.5825	Noise	Floor	41.3	24.7	32.7	4.2	53.4	63.5	-10.1	Peak
5.499	Noise	Floor	41.7	21.5	34.7	4.7	59.6	63.5	-3.9	Peak
6.4155	Noise	Floor	41.8	22.3	35.6	4.5	59.5	63.5	-4.0	Peak
7.332	Noise	Floor	41.3	23.9	36.8	5.1	59.3	63.5	-4.2	Peak
8.2485	Noise	Floor	41.9	22.8	37.2	5.0	61.3	63.5	-2.2	Peak
9.165	Noise	Floor	41.4	26.0	37.6	5.2	58.1	63.5	-5.4	Peak

Vertical Polarization

Frequency Measured (MHz)	EUT Direction (Degrees)	Antenna Height (Meters)	Recorded Level (dBμV)	Amplifier Gain (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Corrected Level (dBμV/m)	Limit Level (dBμV/m)	Margin (dB)	Detector Function
1.833	0	1	42.8	24.4	27.7	2.9	48.9	63.5	-14.6	Peak
2.7495	Noise	Floor	44	28.0	29.4	3.0	48.4	63.5	-15.1	Peak
3.666	Noise	Floor	43.8	25.8	32.1	3.3	53.4	63.5	-10.1	Peak
4.5825	Noise	Floor	41.3	24.7	32.7	4.2	53.4	63.5	-10.1	Peak
5.499	Noise	Floor	41.7	21.5	34.7	4.7	59.6	63.5	-3.9	Peak
6.4155	Noise	Floor	41.8	22.3	35.6	4.5	59.5	63.5	-4.0	Peak
7.332	Noise	Floor	41.3	23.9	36.8	5.1	59.3	63.5	-4.2	Peak
8.2485	Noise	Floor	41.9	22.8	37.2	5.0	61.3	63.5	-2.2	Peak
9.165	Noise	Floor	41.4	26.0	37.6	5.2	58.1	63.5	-5.4	Peak

Result = Pass

5.0 Antenna Requirements

An antenna evaluation was performed on the EUT to determine compliance with FCC sections 15.203, 15.249(b) and RSS-210.

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 RF-600 Mechanical Wireless Keyboard 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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