Project Number: 09176-10

Prepared for:

Fountain People, Inc.

P.O. Box 807
San Marcos, Texas 78667

By
Professional Testing (EMI), Inc.
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March 2009

Revised July 23, 2009

CERTIFICATION
Electromagnetic Interference Test Report
Fountain People, Inc.
Wireless Receiver

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Certificate Of Compliance

Applicant:	Fountain People, Inc.
Applicant's Address:	P.O. Box 807 San Marcos, TX 78667
FCC ID:	WIM0000020
IC:	7978A-0000020
Project Number:	09176-10
Test Dates:	March 12, 2009; July 16, 2009

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

The **Fountain People, Inc., Wireless Receiver** was tested to and found to be in compliance with FCC 15.249 and RSS-210 A2.9.

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

	Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)
Fundamental	915	93.8	94.0	-0.2
Harmonics	1830	62.6	63.5	-0.9
Occupied Bandwidth	622.2 kHz (20 dB)	644.4 kHz (26 dB)		

Jason Anderson
Director of Testing Services

This report has been reviewed and accepted by Fountain People, Inc. The undersigned is responsible for ensuring that **Fountain People, Inc., Wireless Receiver** will continue to comply with the FCC and IC rules.

1.0 Introduction

1.1 Scope

Testing performed on the Fountain People, Inc. Wireless Activator is to support a modular approval for an intentional radiator operating in the United States and Canada under FCC and IC rules respectively. All exhibits including this test report should be used to support the claim of compliance to the appropriate standards shown below.

1.2 EUT Description

The Fountain People, Inc. Wireless Receiver is part of a system used to remotely control water features in a water park or playground. The Wireless Receiver which receives and decodes commands to activate various water features. The device transmits in the ISM band at 915 MHz. The device employs frequency shift keying to transmit and receive binary data from remote devices. The system tested consisted of the following:

Manufacturer & Model	FCC ID	IC Number	Description
Fountain People, Inc., Wireless Receiver	WIM0000020	7978A-0000020	Wireless Receiver

1.3 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.	2003
47 CFR	Part 15 – Radio Frequency Devices Subpart C -Intentional Radiators	

1.4 Applicable Rules

Guidelines	FCC Rules, Part 15	IC Rules	
		RSS-GEN Issue 1	RSS-210 Issue 7
Transmitter Characteristics	15.249	4.1, 4.2, 4.4, 4.9	A2.9
Spurious Radiated Power*	15.205, 15.209, 15.249	4.2, 4.7	A2.9, 2.7 Table 2
Powerline Conducted Limit	15.207	4.2, 4.7, 7.2.2	
Antenna Requirement	15.203	7.1, 7.1.4	

1.5 EUT Operation

The EUT was operated in continuous transmit mode at max power fsk modulated with a worst case bit pattern to measure fundamental, harmonics, and spurious radiation. The EUT was tested in the configuration in which the device will operate to simulate the actual usage as closely as possible.

2.0 Electromagnetic Emissions Testing

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 Burnett Rd., Austin, Texas, 78758 while the main office is located at 1601 N. A.W. Grimes Blvd., Suite B, Round Rock, Texas, 78665. 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 C63.4:2003 were utilized for making all emissions measurements.

2.1 Conducted Emissions Measurements

2.1.1 Test Procedure

The EUT was configured and operated in a manner consistent with typical applications. The EUT power cord in excess of one meter was folded back and forth forming a bundle 30 to 40 cm long in the approximate center of the cable. Power supply cords for the peripheral equipment were powered from an auxiliary LISN. Excess interface cable lengths were separately bundled in a non-inductive arrangement at the approximate center of the cable with the bundle 30 to 40 centimeters in length. The conducted emissions were maximized, by varying the operating states and configuration of the EUT.

The tests were performed in a 12’ x 8’ RayProof modular shielded room. The EUT was placed on a non-metallic table 0.4 meters from a vertical metal reference plane and 0.8 meters from a horizontal metal reference plane. A drawing showing the test setup is given as Figure 1.

2.1.2 Test Criteria

The FCC Part 15 Class B conduction limits are given below.

Frequency (MHz)	Conducted Limits (dBuV)	
	Average	Quasi-Peak
0.15 – .50	66-56*	56 – 46*
.50 - 5	56	46
5 – 30	60	50

The tighter limit shall apply at the edge between two frequency bands.
*Decreases with the logarithm of the frequency.

2.1.3 Test Results

The conducted emissions data is included as Appendix A. The conducted emissions generated by the EUT as measured on the mains terminals are below the FCC and IC limits

2.2 Radiated Emissions Measurements

2.2.1 Test Procedure

Radiated emission measurements were made of the Fundamental and Spurious Emission levels 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 which allows 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 radiated emissions were maximized by rotating the EUT. The fundamental emissions of the device were measured with the antenna of the device in three orthogonal axes.

A pre scan was performed at 10 meters to determine the overall emissions profile emanating from the EUT. Final measurements were taken at 3 meters for compliance with the emission limits.

A Spectrum Analyzer with peak detection was used to find the maximums of the radiated emissions during the variability testing. A drawing showing the test setup is given as Figure 2.

2.2.2 Test Criteria

The table below shows FCC radiated limits for an intentional radiator operating under the provisions of part 15.249. The measurement of the harmonics was performed to 10 GHz. The reference distance for each limit is also shown in this table.

Frequency MHz	Test Distance (Meters)	Field Strength (dBuV/m)@Test Distance
30 to 88	3	40.0
88 to 216	3	43.5
216 to 960	3	46.0
960 and above	3	54
Fundamental	3	94
Harmonics	1	63.5

Note: Fundamental Limit is expressed in Quasi Peak field strengths. Harmonics are expressed as Average limits. The spurious limits are expressed in Quasi-Peak.

2.2.3 Test Results

The radiated test data for the fundamental is included in Appendix A. Peak detection was used during the test for the fundamental and harmonics. Quasi-Peak detection was used for spurious emissions below 1 GHz. The radiated emission test data is included in Appendix A. The radiated emissions generated by the Wireless Receiver are below the FCC and IC limits.

3.0 Occupied Bandwidth Measurement

3.1 Test Procedure

The EUT was placed on a non-conductive table 0.8 meters above the floor. The occupied bandwidth was based on a 20 dB and 26 dB criteria (20 dB and 26 dB down either side of the emission from the peak emission). A drawing showing the test setup is given as Figure 2.

3.2 Test Criteria

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

3.3 Test Results

The occupied bandwidth test data is included in Appendix A. The maximum occupied bandwidth for the fundamental frequency 915 MHz is 622.2 kHz (20 dB) and 644.4 kHz (26 dB). This occupied bandwidth complies with the FCC and IC requirement.

4.0 Antenna Requirement

An analysis of the Wireless Receiver was performed to determine compliance with FCC Section 15.203. This section requires specific handling and control of antennas used for devices subject to regulations.

4.1 Evaluation Procedure

The structure and application of the Wireless Receiver was analyzed with respect to the rules. The antenna is an internal antenna, and is not accessible to the user. An auxiliary antenna port is not present.

4.2 Evaluation Criteria

Section 15.203 of the rules states that the subject device must meet at least one of the following criteria:

(a) Antenna must be 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.

4.3 Evaluation Results

The Wireless Receiver meets the criteria of this rule by virtue of having an internal antenna inaccessible to the user. The EUT is therefore compliant.

5.0 Modifications to Equipment

No modifications were made to the EUT.

6.0 List of Test Equipment

Conducted Test Equipment

Asset #	Manufacturer	Model #	Description	Calibration Due
0939	HP	85650A	Quasi-peak Adapter	July 7, 2009
1629	HP	85662A	Spectrum Analyzer Display	NCR
1145	HP	8568B	Spectrum Analyzer	July 7, 2009
1086	PTI	PTI-ALF2	Attenuator, Limiter, Filter	March 26, 2009
1185	Emco	3825/2	Line Impedance Stabilization Network	September 13, 2009
81	ELGAR	1751SL	AC Power Supply	NCR
1173	PTI	100KHz HPF	High Pass Filter	March 26, 2009

Radiated Test Equipment

Asset #	Manufacturer	Model #	Description	Calibration Due
0275	HP	85650A	Quasi-peak Adapter (high band)	July 03, 2009
1273	HP	85662A	Spectrum Analyzer Display (high band)	NCR
84	HP	8566B	Spectrum Analyzer (high band)	March 14, 2009
0990	HP	85685A	RF Preselector (high band)	March 18, 2009
1239	HP	85650A	Quasi-peak Adapter (low band)	January 22, 2009
1274	HP	85662A	Spectrum Analyzer Display (low band)	NCR
1270	HP	8568B	Spectrum Analyzer (low band)	January 22, 2009
1035	HP	85685A	RF Preselector (low band)	January 22, 2009
1453	HP	8447D	RF Preamplifier	June 23, 2009
1389	Emco	3108	Biconical Antenna	April 16, 2009
1486	Emco	3147	Log Periodic Dipole Array Antenna	April 16, 2009
C026	none	none	Coaxial Cable (low band)	July 02, 2009
C027	none	none	Coaxial Cable (high band)	July 02, 2009

Asset #	Manufacturer	Model #	Description	Calibration Due
0582	EMCO	3115	Ridge Guide Antenna	September 30, 2009
1529	Miteq	Antenna Mounted	Microwave Preamplifier (preamp 1)	June 30, 2009
84	HP	85666B	Spectrum Analyzer	March 14, 2009
83	HP	8566B	Spectrum Analyzer Display	NCR
1530	Miteq	None	Microwave Preamplifier (preamp 2)	June 30, 2009
C030	None	None	Coaxial Cable (MRE band)	June 30, 2009

FIGURE 1: Conducted Emissions Mains Terminal Measurements

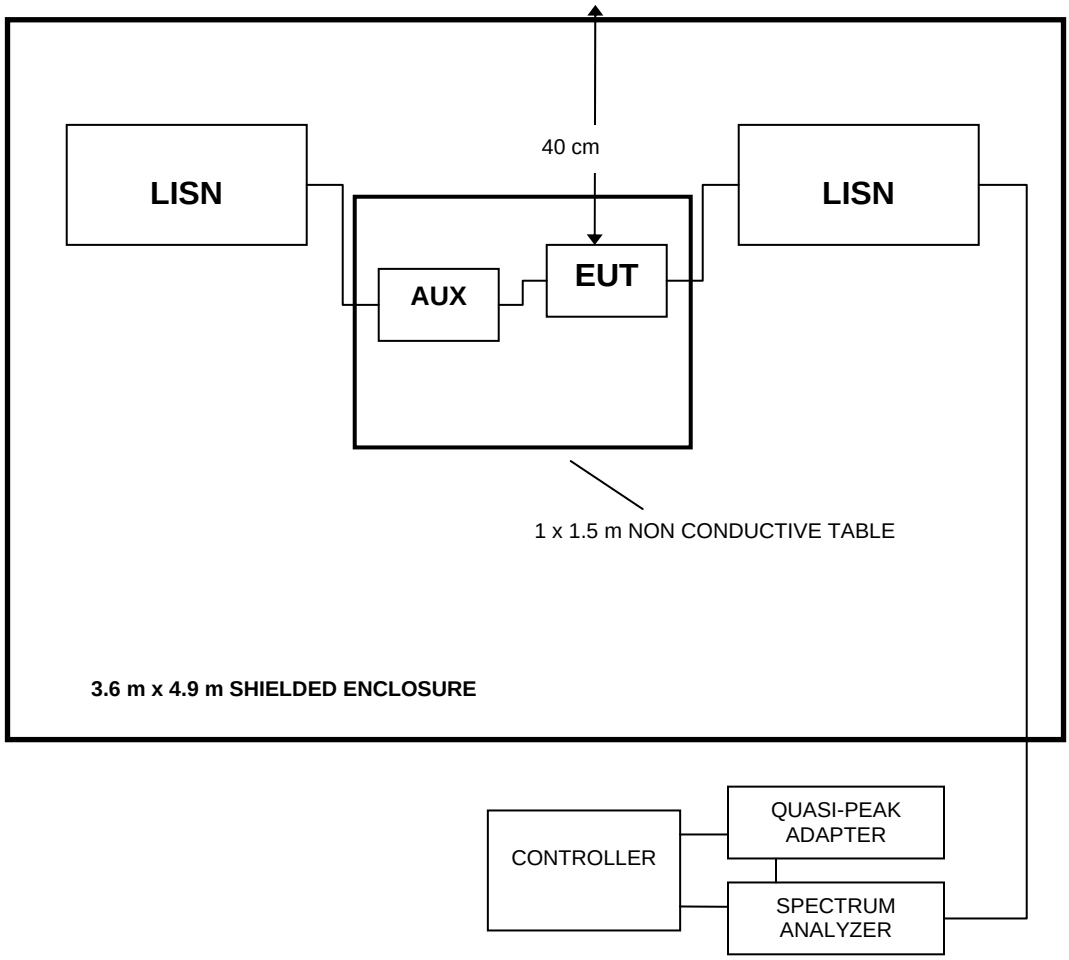
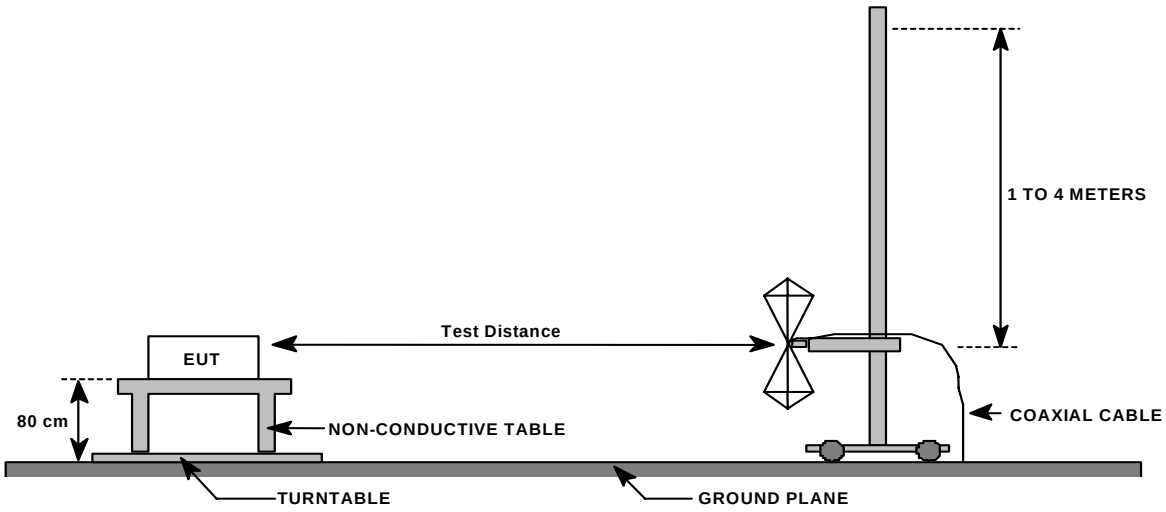


FIGURE 2: Radiated Emissions Test Setup



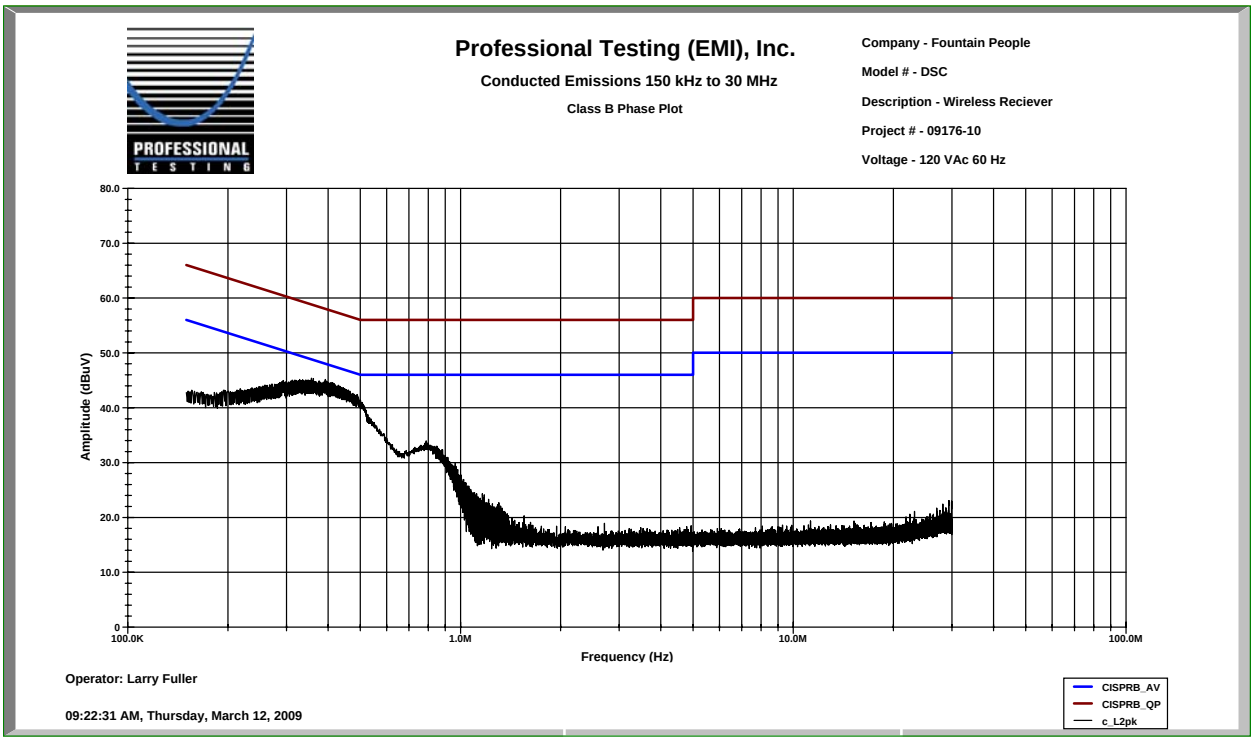
APPENDIX A EMISSIONS DATA SHEET

Conducted Data Sheet
Transmit Mode
Fountain People, Inc.
Wireless Receiver

LINE MEASURED: Phase
DETECTOR FUNCTION: Quasi-Peak and Avg
RBW: CISPR 9 kHz
VBW: 100 kHz, 10 Hz Avg

DATE: March 12, 2009
PROJECT #: 09176-10

Frequency Reading (MHz)	Quasi-peak Reading (dBuV)	Average Reading (dBuV)	Quasi-peak Limit (dBuV)	Quasi-peak Margin (dB)	Average Limit (dBuV)	Average Margin (dB)
0.33596	39.9	9.2	60.7	-20.8	50.7	-41.4
0.96718	20.5	-0.3	56	-35.5	46	-46.3
0.97035	20.5	-0.2	56	-35.5	46	-46.2
1.00459	18.4	1.2	56	-37.6	46	-44.8
1.01714	17.9	1.4	56	-38.1	46	-44.6
29.3109	18.5	15.4	60	-41.5	50	-34.6

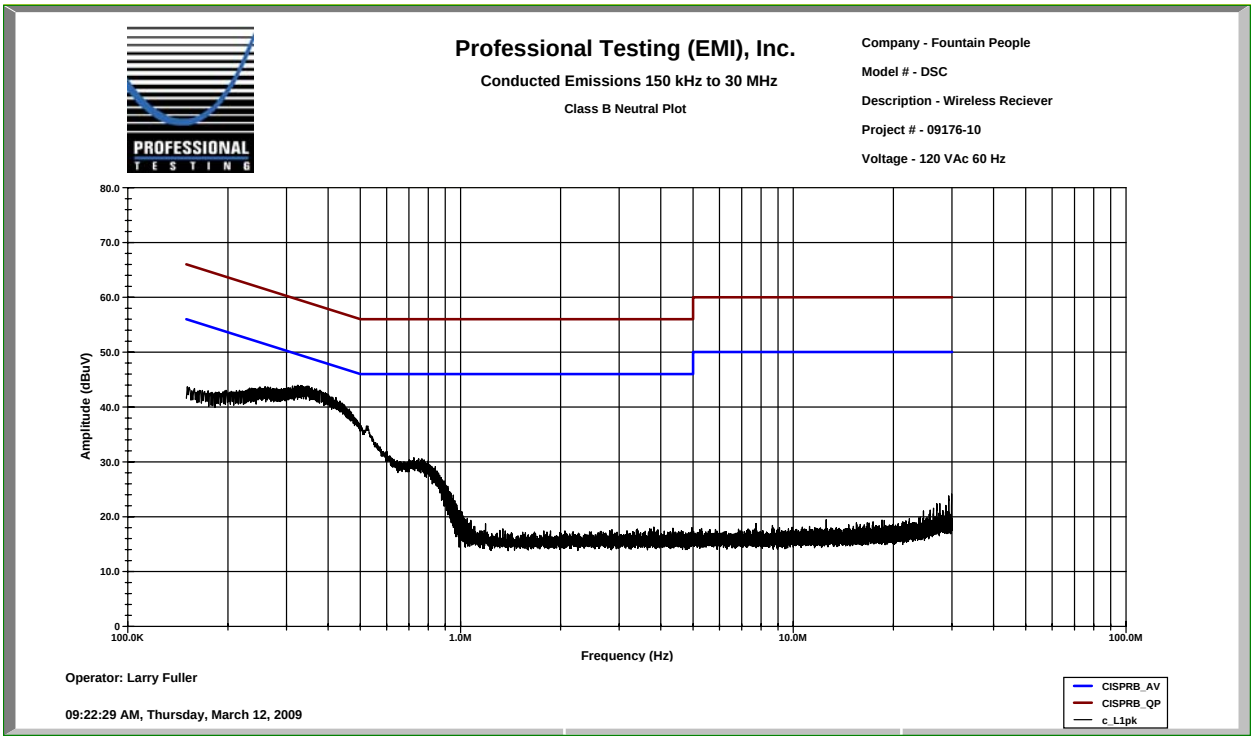


Conducted Data Sheet
Transmit Mode
Fountain People, Inc.
Wireless Receiver

LINE MEASURED: Neutral
DETECTOR FUNCTION: Quasi-Peak and Avg
RBW: CISPR 9 kHz
VBW: 100 kHz, 10 Hz Avg

DATE: March 12, 2009
PROJECT #: 09176-10

Frequency Reading (MHz)	Quasi-peak Reading (dBuV)	Average Reading (dBuV)	Quasi-peak Limit (dBuV)	Quasi-peak Margin (dB)	Average Limit (dBuV)	Average Margin (dB)
0.3317	36.7	5.6	60.8	-24.1	50.8	-45.2
0.94368	14.1	3.2	56	-41.9	46	-42.8
29.311	20.1	17.2	60	-39.9	50	-32.8
29.8944	20.8	17	60	-39.2	50	-33

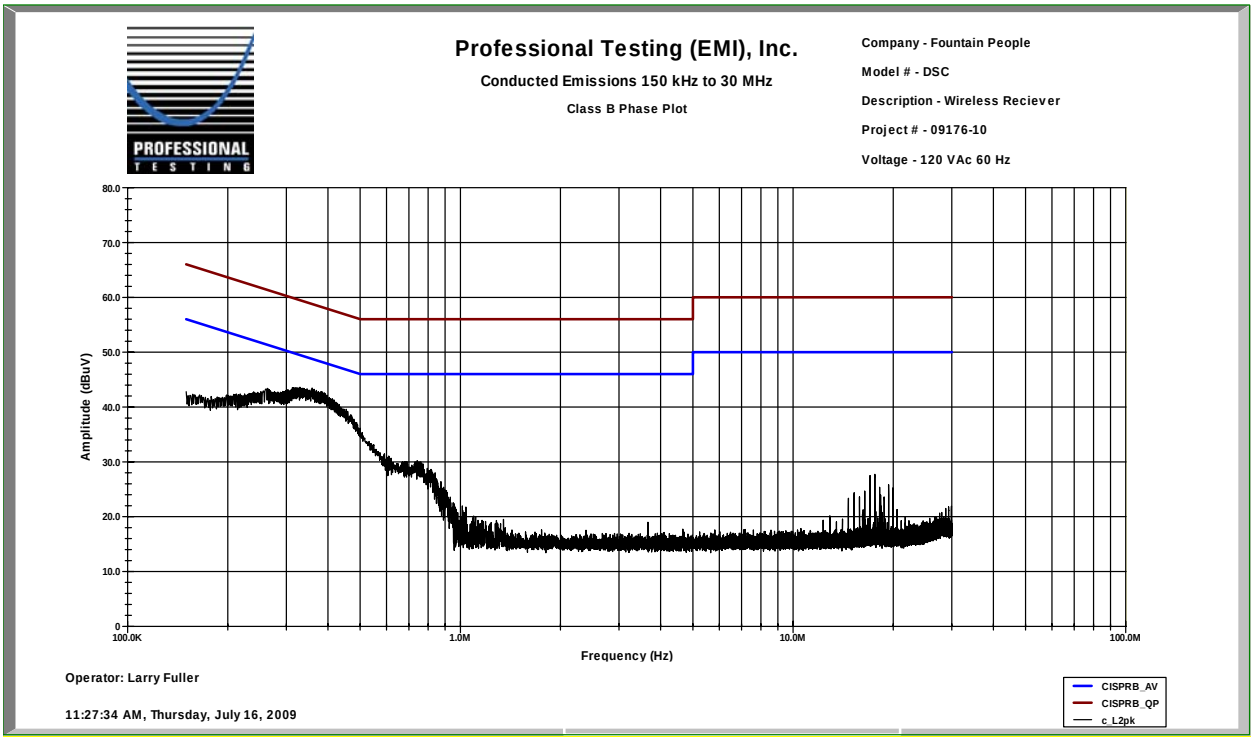


Conducted Data Sheet
Receive Mode
Fountain People, Inc.
Wireless Receiver

LINE MEASURED: Phase
DETECTOR FUNCTION: Quasi-Peak and Avg
RBW: CISPR 9 kHz
VBW: 100 kHz, 10 Hz Avg

DATE: July 16, 2009
PROJECT #: 09176-10

Frequency Reading (MHz)	Quasi-peak Reading (dBuV)	Average Reading (dBuV)	Quasi-peak Limit (dBuV)	Quasi-peak Margin (dB)	Average Limit (dBuV)	Average Margin (dB)
0.32305	38.9	7.1	61.1	-22.1	51.1	-43.9
0.90945	14	4.7	56	-42	46	-41.3
0.92909	13.1	4.7	56	-42.9	46	-41.3
0.9697	11.3	5	56	-44.7	46	-41
1.01502	10.7	5.1	56	-45.3	46	-40.9
17.0105	22.1	19	60	-37.9	50	-31
17.5997	26	25.3	60	-34	50	-24.7
18.1811	25.8	24.5	60	-34.2	50	-25.5
19.3553	19.6	17.1	60	-40.4	50	-32.9
19.944	22.8	20.7	60	-37.2	50	-29.3

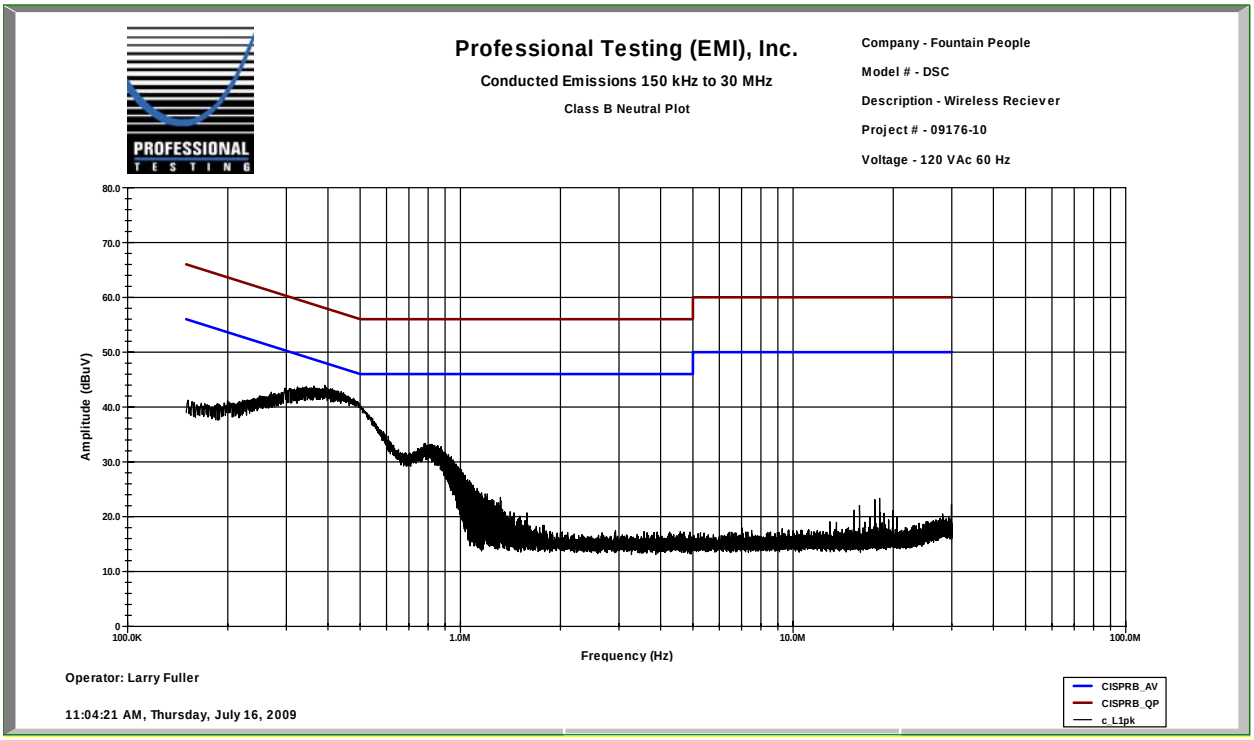


Conducted Data Sheet
Transmit Mode
Fountain People, Inc.
Wireless Receiver

LINE MEASURED: Neutral
DETECTOR FUNCTION: Quasi-Peak and Avg
RBW: CISPR 9 kHz
VBW: 100 kHz, 10 Hz Avg

DATE: July 16, 2009
PROJECT #: 09176-10

Frequency Reading (MHz)	Quasi-peak Reading (dBuV)	Average Reading (dBuV)	Quasi-peak Limit (dBuV)	Quasi-peak Margin (dB)	Average Limit (dBuV)	Average Margin (dB)
0.40023	40.7	11.1	58.9	-18.1	48.9	-37.7
0.87203	28.5	-0.2	56	-27.5	46	-46.2
0.88245	27.9	-0.3	56	-28.1	46	-46.3
0.91069	26.7	-0.6	56	-29.3	46	-46.6
0.92509	26.4	0	56	-29.6	46	-46
15.2544	18.4	15.5	60	-41.6	50	-34.5
15.8413	18.7	15.9	60	-41.3	50	-34.1
17.5977	20.8	19.1	60	-39.2	50	-30.9
18.1839	21	19.2	60	-39	50	-30.8
19.9413	18.1	15.6	60	-41.9	50	-34.4



Radiated Data Sheet
Fundamental
Fountain People, Inc.
Wireless Receiver

MEASUREMENT DISTANCE (m): 3
DETECTOR FUNCTION: Peak
RBW: CISPR 120 kHz
VBW: 1 MHz

DATE: March 12, 2009
PROJECT #: 09176-10

Vertical

Frequency (MHz)	EUT Direction (degrees)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Corrected Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
915	76	1	63.6	0.0	23.4	5.3	92.3	94	-1.7

Horizontal

Frequency (MHz)	EUT Direction (degrees)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Corrected Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
915	360	1	65.1	0.0	23.4	5.3	93.8	94	-0.2

Note: Prescan performed at 10 meters. Final compliance data taken at 3 meters.

Radiated Data Sheet
Spurious/Harmonics <1 Ghz
Fountain People, Inc.
Wireless Receiver

MEASUREMENT DISTANCE (m): 3
DETECTOR FUNCTION: Peak
RBW: CISPR 120 kHz
VBW: 1 MHz

DATE: March 12, 2009
PROJECT #: 09176-10

Vertical

Frequency (MHz)	EUT Direction (degrees)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Corrected Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
133.87	180	1.0	55.6	25.4	9.0	1.0	40.2	43.5	-3.3
200	Noise	Floor	38.7	36.0	10.9	1.9	15.5	43.5	-28.0
300	Noise	Floor	34	36.5	13.9	2.5	13.9	46	-32.1
400	Noise	Floor	32.8	36.6	16.6	3.0	15.8	46	-30.2
500	Noise	Floor	32.3	36.6	18.9	3.4	17.9	46	-28.1
600	Noise	Floor	32.5	36.6	19.7	3.7	19.4	46	-26.6

Horizontal

Frequency (MHz)	EUT Direction (degrees)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Corrected Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
133.87	180	3.5	45.8	25.4	9.0	1.0	30.3	43.5	-13.2
200	Noise	Floor	38.7	36.0	10.9	1.9	15.5	43.5	-28.0
300	Noise	Floor	34	36.5	13.9	2.5	13.9	46	-32.1
400	Noise	Floor	32.8	36.6	16.6	3.0	15.8	46	-30.2
500	Noise	Floor	32.3	36.6	18.9	3.4	17.9	46	-28.1
600	Noise	Floor	32.5	36.6	19.7	3.7	19.4	46	-26.6

Note: Prescan performed at 10 meters. Final compliance data taken at 3 meters.

Radiated Data Sheet
Spurious Emissions Prescan
Fountain People, Inc.
Wireless Activator

MEASUREMENT DISTANCE (m): 10
DETECTOR FUNCTION: Peak
RBW: CISPR 120 kHz
VBW: 1 MHz

DATE: March 12, 2009
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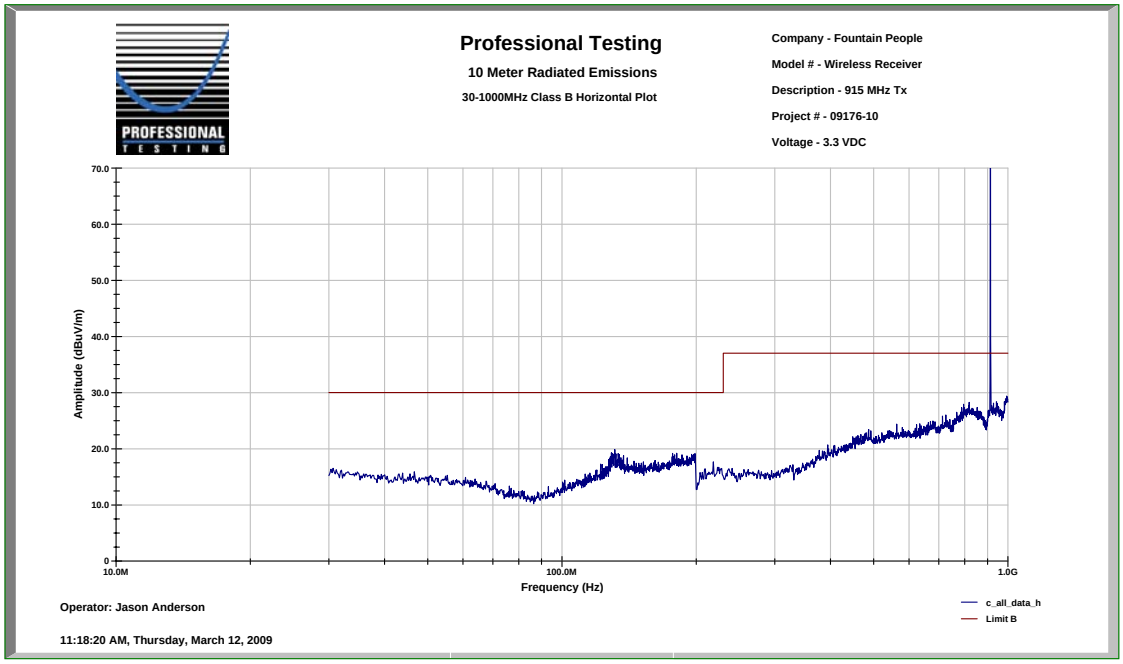
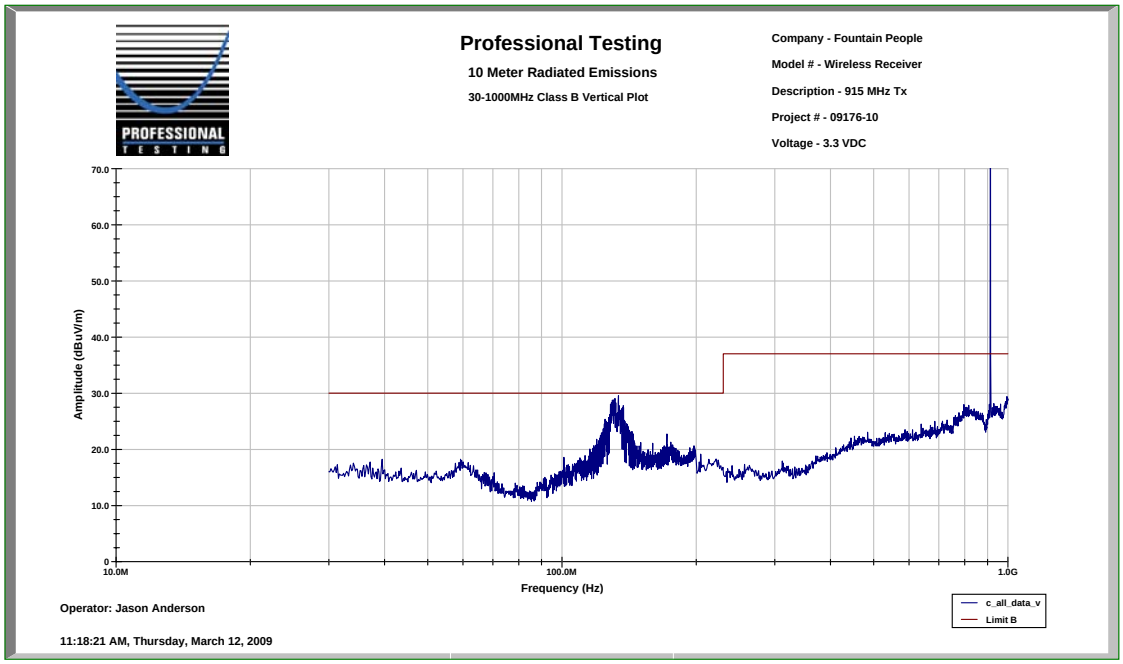
Horizontal



Vertical



Radiated Data Sheet
Spurious/Harmonics >1 GHz
Fountain People, Inc.
Wireless Receiver

MEASUREMENT DISTANCE (m): 1
DETECTOR FUNCTION: Peak, Avg
RBW: 1 MHz
VBW: 1 MHz, 10 Hz Avg

DATE: March 12, 2009
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Vertical

Frequency (MHz)	EUT Direction (degrees)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Corrected Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Function
1.83	30	1	75.1	40.2	27.6	2.9	65.4	83.5	-18.1	peak
1.83	30	1	71.2	40.2	27.6	2.9	61.5	63.5	-2.0	avg
2.745	330	1	70.1	40.6	29.6	3.0	62.1	63.5	-1.4	peak
3.66	noise	floor	47.9	40.7	32.3	3.3	42.7	63.5	-20.8	peak
4.575	noise	floor	48.8	41.5	33.9	3.9	45.1	63.5	-18.4	peak
5.49	noise	floor	49.1	42.3	34.8	4.7	46.3	63.5	-17.2	peak
6.405	noise	floor	48.8	42.9	35.9	4.5	46.2	63.5	-17.3	peak
7.32	noise	floor	48.8	42.5	37.3	5.1	48.7	63.5	-14.8	peak
8.235	noise	floor	47.9	41.4	38.4	5.0	49.9	63.5	-13.6	peak
9.15	noise	floor	47.4	40.5	38.0	4.9	49.8	63.5	-13.7	peak

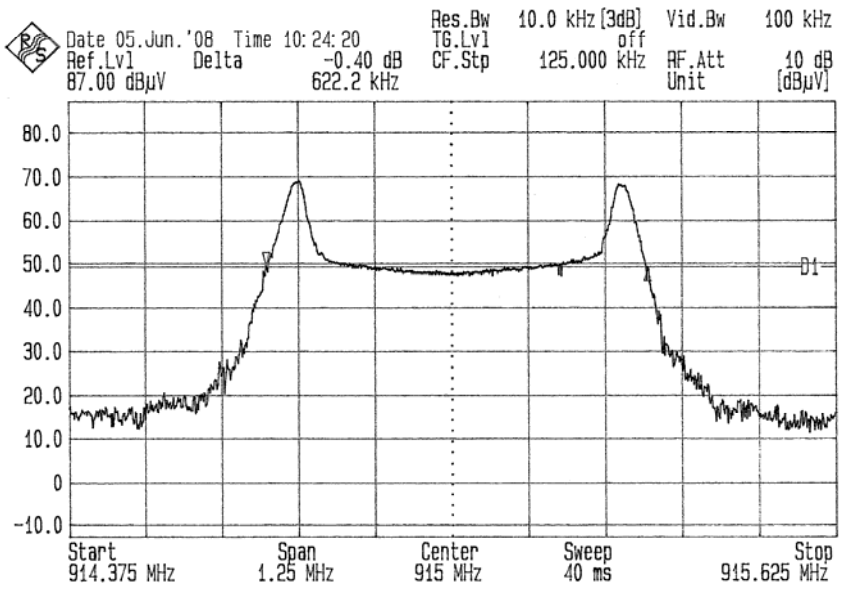
Horizontal

Frequency (MHz)	EUT Direction (degrees)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Corrected Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Function
1.83	0	1	72.3	40.2	27.6	2.9	62.6	63.5	-0.9	peak
2.745	0	1	67.3	40.6	29.6	3.0	59.3	63.5	-4.2	peak
3.66	noise	floor	47.9	40.7	32.3	3.3	42.7	63.5	-20.8	peak
4.575	noise	floor	48.8	41.5	33.9	3.9	45.1	63.5	-18.4	peak
5.49	noise	floor	49.1	42.3	34.8	4.7	46.3	63.5	-17.2	peak
6.405	noise	floor	48.8	42.9	35.9	4.5	46.2	63.5	-17.3	peak
7.32	noise	floor	48.8	42.5	37.3	5.1	48.7	63.5	-14.8	peak
8.235	noise	floor	47.9	41.4	38.4	5.0	49.9	63.5	-13.6	peak
9.15	noise	floor	47.4	40.5	38.0	4.9	49.8	63.5	-13.7	peak

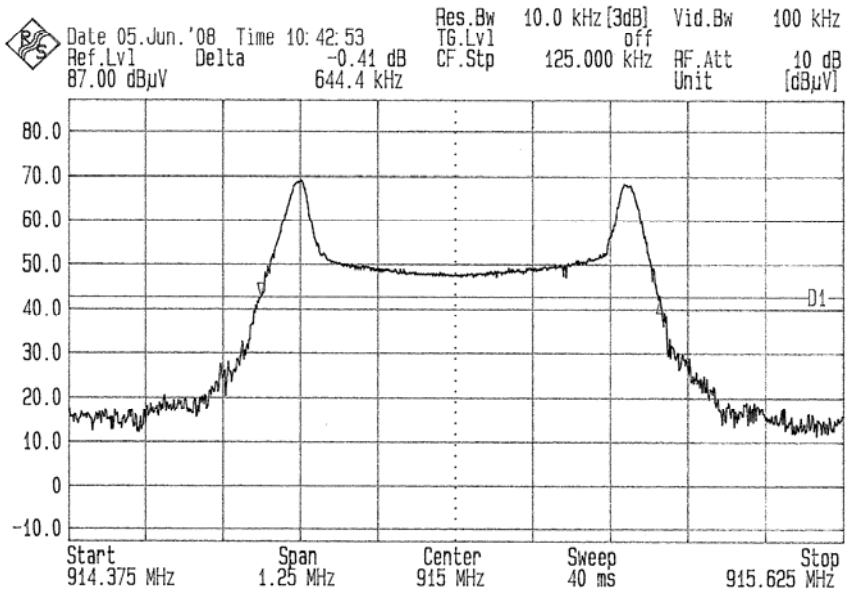
Occupied Bandwidth Datasheet
Fountain People, Inc.
Wireless Receiver

Test Date: March 12, 2009

20 dB Bandwidth



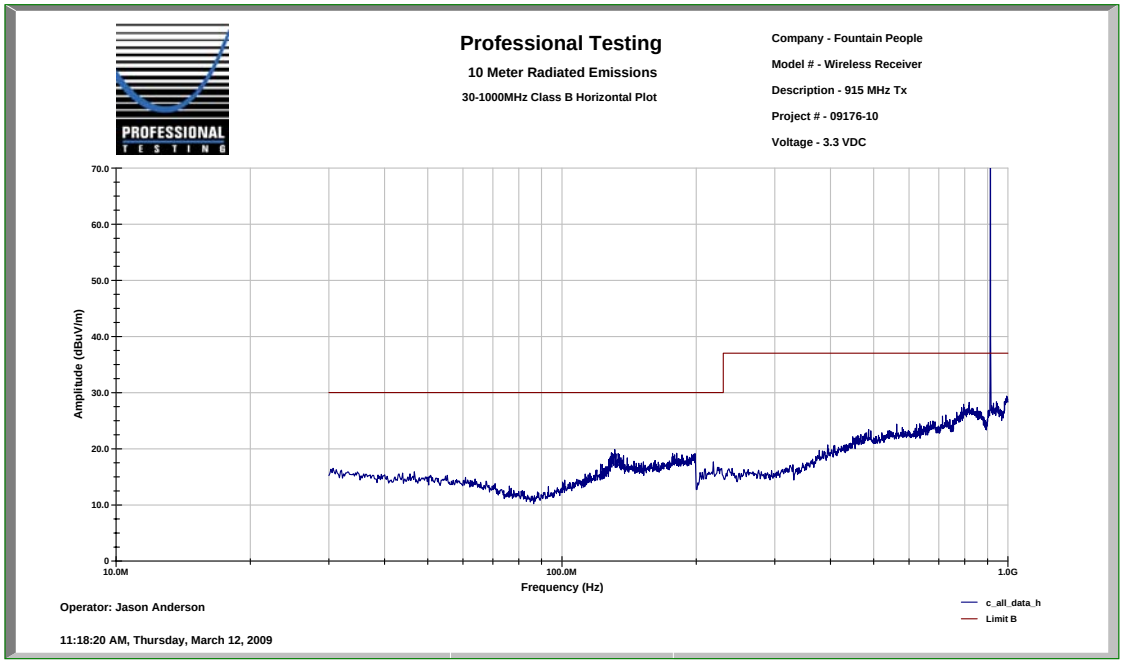
26 dB Bandwidth



Spurious Radiated Data Sheet
Receive Mode
Fountain People, Inc.
Wireless Activator

MEASUREMENT DISTANCE (m): 10 DATE: March 12, 2009
DETECTOR FUNCTION: Quasi-Peak PROJECT #: 09176-10
RBW: CISPR 120 kHz
VBW: 1 MHz

Horizontal



Frequency (MHz)	EUT Direction (degrees)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Corrected Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
137.126	1	3.5	35.3	25.8	12.1	1.4	23.0	30	-7.0
199.976	6	2.5	35.5	25.5	13.7	1.9	25.6	30	-4.4

Spurious Radiated Data Sheet
Receive Mode
Fountain People, Inc.
Wireless Activator

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DETECTOR FUNCTION: Quasi-Peak
RBW: CISPR 120 kHz
VBW: 1 MHz

DATE: March 12, 2009
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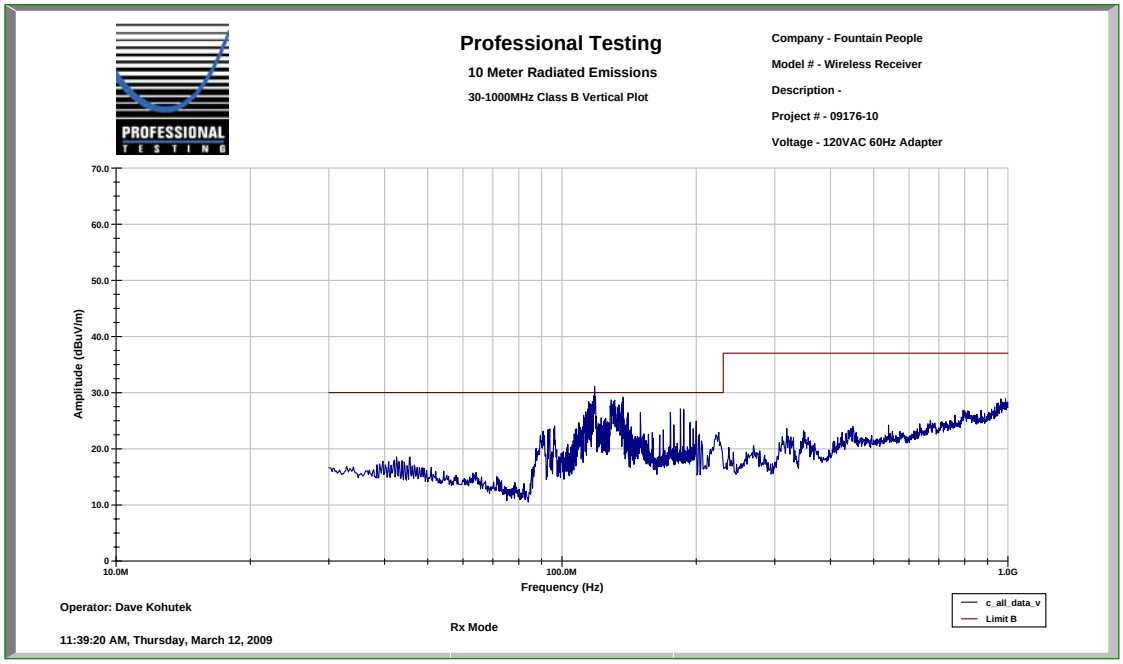
Vertical



Frequency (MHz)	EUT Direction (degrees)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Corrected Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
118.335	54	1	39.8	25.8	10.9	1.2	26.0	30	-4.0
128.94	289	1.4	40.1	25.8	11.7	1.4	27.5	30	-2.5
137.126	99	1	40.4	25.8	12.1	1.4	28.1	30	-1.9
187.479	15	1	36.5	25.5	13.1	1.7	25.8	30	-4.2