Exhibit B: Test Report
Wireless Computing, Inc.
RF220 Wireless Keyboard

Project Number: 05082-10

Prepared for:
Wireless Computing
14101 West Highway 290, Bldg. 700
Austin, «State» 78737

By

Professional Testing (EMI), Inc.
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Round Rock, Texas 78664

August 2004

CERTIFICATION
Electromagnetic Interference Test Report
Wireless Computing
RF220 Wireless Keyboard

(Intentional Radiator Portion)

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Certificate Of Compliance

Applicant:	Wireless Computing
Applicant's Address:	14101 West Highway 290, Bldg. 700 Austin, Texas 78737
FCC ID:	L7MR220
Project Number:	05082-10
Test Dates:	August 16, 2004

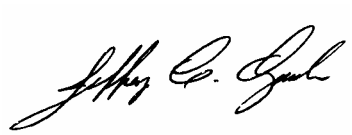
I, Jeffrey A. Lenk, for Professional Testing (EMI), Inc., being familiar with the FCC rules and test procedures have reviewed the test setup, measured data and this report. I believe them to be true and accurate.

The **Wireless Computing RF220 Wireless Keyboard** was tested to and found to be in compliance with FCC Part 15 Subpart C for an Intentional Radiator.

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

	Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)
Fundamental	916.5	90.0	94.0	-4.0
Harmonics	1832.9	46.4	63.5	-17.1
Spurious	198	25.2	43.5	-18.3

Occupied Bandwidth .537



NVLAP
Lab Code 200062-0

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Jeffrey A. Lenk
President

This report has been reviewed and accepted by **Wireless Computing**. The undersigned is responsible for ensuring that **Wireless Computing RF220 Wireless Keyboard** will continue to comply with the FCC rules.

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1.0 EUT Description

The **Wireless Computing RF220 Wireless Keyboard** (EUT) is a PC peripheral used to form a wireless link to a companion PC. As the user types on the keyboard data is sent wirelessly to the host PC's base station. The base station decodes the transmission and delivers the key commands to the PC. Both the keyboard and the base station are transceivers so that error checking may take place to ensure that the data arrives as it is intended to.

47 CFR 15.249	Fundamental Transmit Power
47 CFR 15.249	Harmonics Power
47 CFR 15.205 & 15.249	Spurious Radiated Power
47 CFR 2.1049	Occupied Bandwidth
47 CFR 15.203	Antenna Requirements

The system tested consisted of the following:

Manufacturer & Model	**Serial #**	**FCC ID #**	**Description**
Wireless Computing RF220	04070000	L7MR220	Wireless Keyboard

1.1 EUT Operation

The **Wireless Computing RF220 Wireless Keyboard** was tested using two AA size alkaline batteries to power the keyboard. The frequency of the transmitting signal is 916.5 MHz. This signal is transmitted intermittently as data transfer requires. For the purpose of tests for emission strength, the transmitter was forced to transmit continuously.

2.0 Electromagnetic Emissions Testing

Professional Testing (EMI), Inc. (PTI), follows the guidelines of NIST for all uncertainty calculations, estimates and expressions thereof for EMC testing.

2.1 Radiated Emissions Measurements

Radiated emission measurements were made of the Fundamental and Spurious Emission levels for the **Wireless Computing RF220 Wireless Keyboard.** Measurements of the occupied bandwidth were also made.

Measurements of the maximum emission levels for the fundamental and the spurious/harmonic emissions of the **Wireless Computing RF220 Wireless Keyboard** were made at the Professional Testing "Open Field" Site 3, located in Round Rock, Texas to determine the radio noise radiated from the EUT. A "Description of Measurement Facilities" has been submitted to the FCC and approved pursuant to Section 2.948 of CFR 47 of the FCC rules.

2.1.1 Test Procedure

The EUT was placed on a non-conductive table 0.8 meters above the ground plane. The table was centered on a motorized turntable, which allows 360-degree rotation. For measurements of the fundamental signal and below 1 GHz, a measurement antenna was positioned at a distance of 3 meters as measured from the closest point of the EUT. For spurious/harmonic measurements above 1 GHz, the measurement antenna was placed 1 meter from the EUT. Rotating the EUT maximized the radiated emissions.

A Spectrum Analyzer with quasi-peak detection was used to find the maximums of the radiated emissions below 1 GHz. A drawing showing the test setup is given as Figure 1.

For emissions above 1 GHz the peak was measured to determine if the level emitted fell in the range of 20 dB over the average limit listed in 15.209. If the emission fell under the average limit specified it was reported as is. For emissions not more than 20 dB over the average limit, an average calculation was made over one pulse train as specified in 15.35(c).

2.1.2 Test Criteria

The table below shows FCC Part 15.249 radiated limits for an intentional radiator operating at 902-928 MHz band. FCC Part 15.249 allows the use of its spurious limit, which is higher than the limits normally associated with the restricted bands outlined in 15.205. The transmitter transmitting in the band of 902-928 MHz is limited to a fundamental field strength of 50 millivolts per meter for the fundamental emission, and 500 microvolts per meter for the strength of the harmonics. The measurements of the harmonics were performed to the 10th harmonic of the fundamental. The reference distance for each limit is also shown in this table.

	Test Distance	Field Strength	
Signal Type	(Meters)	(μV/m)	(dBμV/m)
Fundamental 916.5 MHz	3	50,000	94
Harmonics Up to 10 GHz	3	500	54

Note: Radiated emissions above 1000 MHz were measured at 1 meter and the limit was increased by 9.5 dB.

2.1.3 Test Results

The radiated test data for the fundamental and spurious output is included in Appendix A. Quasi-Peak detection was used during the test. The radiated emission test data for the harmonics is included in Appendix A. The emissions were maximized at each frequency and the highest emissions identified were measured using average detection. The radiated emissions generated by the **Wireless Computing RF220 Wireless Keyboard** are below the FCC Part 15.249 maximum emission criteria.

3.0 Occupied Bandwidth Measurements

Measurements of the occupied bandwidth for the fundamental signals were made at Professional Testing's Round Rock, Texas site. All measurements were made in a controlled indoor environment in a configuration which did not present measurement distortion or ambient interference. A plot of occupied bandwidth is included in Appendix B.

4.0 Antenna Requirement

An analysis of the **Wireless Computing RF220 Wireless Keyboard** was performed to determine compliance with Section 15.203 of the Rules. This section requires specific handling and control of antennas used for devices subject to regulations under the Intentional Radiator portions of Part 15.

4.1 Evaluation Procedure

The structure and application of the **Wireless Computing RF220 Wireless Keyboard** were analyzed with respect to the rules. The antenna is an internal antenna, which is etched into the PCB 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 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.

4.3 Evaluation Results

The **Wireless Computing RF220 Wireless Keyboard** meets the criteria of this rule by virtue of having an internal antenna etched in the PCB not accessible to the user. The EUT is therefore compliant with §15.203.

5.0 Modifications to Equipment

Modifications were made to the **Wireless Computing RF220 Wireless Keyboard** in the R6 resistor location. The value of this resistor was adjusted to achieve maximum radiated power while still falling under the limits of §15.249. The final resistor value was 7.5K ohm.

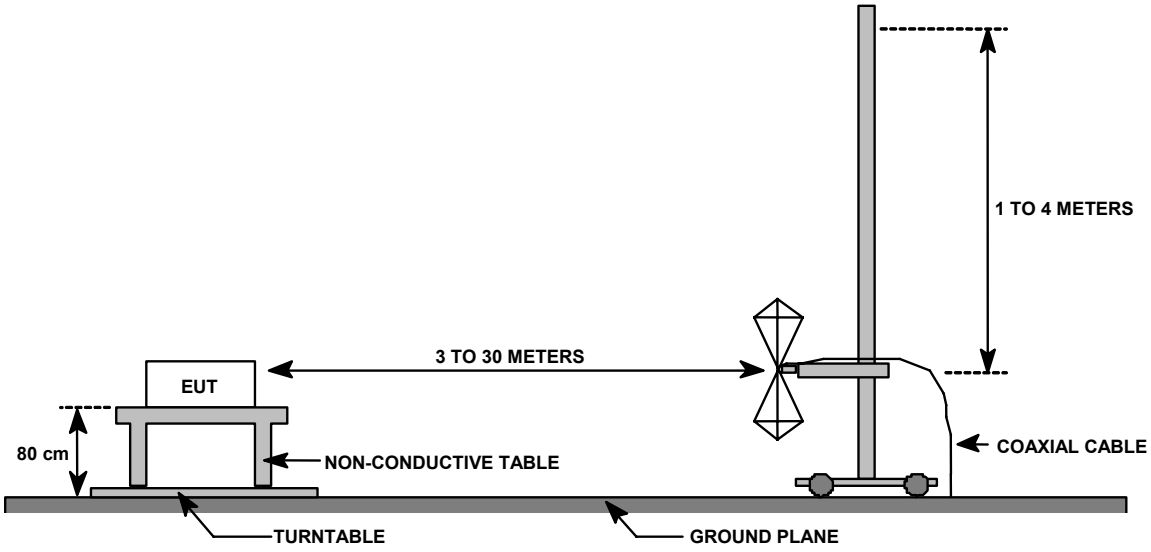
6.0 List of Test Equipment

A list of the test equipment utilized to perform the testing is given below. The date of calibration is given for each.

Electromagnetic Emissions Test Equipment

Device	Description	Calibration Due
EMCO 3146	Log Periodic Antenna	December 2004
HP 85650A	Quasi Peak Adapter	November 2004
HP 8566B	Spectrum Analyzer	November 2004
HP 8447D	Preamplifier	November 2004
Compliance Design B-100	Biconical Antenna	December 2004
Cond. EMI Cable	RG-223	November 2004
Tektronix 2706	RF Preselctor	January 2005
MITEQ	18GHz 20dB Preamplifier	July 2005
EMCO 3115	Ridge Guide Antenna	July 2005

FIGURE 1: Radiated Emissions Test Setup



Appendix A Emissions Data Sheets

Radiated Data Sheet
Fundamental and Spurious
Wireless Computing RF220 Wireless Keyboard
QuasiPeak Detection, BW = 120 kHz

Test Date: August 16, 2004
Measurement Distance (Meters): 3

Horizontal

Corrected Level = Recorded Level - Amplifier Gain + Antenna Factor + Cable Loss

Freq. (MHz)	EUT Dir (Deg.)	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)
198	0	1.5	28.6	26.5	16.3	6.8	25.2	43.5	-18.3
80	noise	floor	25.1	26.4	7.3	4.1	10.1	40	-29.9
207	noise	floor	22.8	26.6	11.6	7.0	14.8	43.5	-28.7
300	noise	floor	23.4	26.9	14.9	8.2	19.6	46	-26.4
425	noise	floor	22.5	27.3	16.2	9.4	20.7	46	-25.3
504	noise	floor	22.8	27.6	17.7	10.3	23.1	46	-22.9
633	noise	floor	24.5	26.6	19.6	11.0	28.5	46	-17.5
916.5	0	2	79.1	26.0	22.7	14.2	90.0	94	-4.0
916.5	90	2	60.1	26.0	22.7	14.2	71.0	94	-23.0
916.5	180	2	71.7	26.0	22.7	14.2	82.6	94	-11.4
916.5	270	2	61.4	26.0	22.7	14.2	72.3	94	-21.7

Vertical

Corrected Level = Recorded Level - Amplifier Gain + Antenna Factor + Cable Loss

Freq. (MHz)	EUT Dir (Deg.)	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)
75	noise	floor	23.7	26.4	6.6	4.0	7.9	40	-32.1
207	noise	floor	24.8	26.6	11.6	7.0	16.8	43.5	-26.7
300	noise	floor	26.1	26.9	14.9	8.2	22.3	46	-23.7
425	noise	floor	24.1	27.3	16.2	9.4	22.3	46	-23.7
504	noise	floor	24.6	27.6	17.7	10.3	24.9	46	-21.1
633	noise	floor	25.5	26.6	19.6	11.0	29.5	46	-16.5
916.5	20	2	67.8	26.0	22.7	14.2	78.7	94	-15.3
916.5	0	2	61.3	26.0	22.7	14.2	72.2	94	-21.8
916.5	90	2	63.4	26.0	22.7	14.2	74.3	94	-19.7
916.5	180	2	64.5	26.0	22.7	14.2	75.4	94	-18.6
916.5	270	2	71.4	26.0	22.7	14.2	82.3	94	-11.7

TEST ENGINEER: Jason Anderson

Radiated Data Sheet
Spurious Emissions
Wireless Computing RF220 Wireless Keyboard
Peak Detection and Average Calculation, RBW = 1 MHz, VBW = 3MHz

Test Date: August 16, 2004
Measurement Distance (Meters): 1

Horizontal

Corrected Level = Recorded Level - Amplifier Gain + Antenna Factor + Cable Loss

Freq. (MHz)	EUT Dir (Deg.)	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)	Peak or Average
1832.9	0	1	62.1	22.9	26.8	2.4	68.4	83.5	-15.1	peak
2749.4	0	1	56.1	22.6	29.5	3.0	66.0	83.5	-17.5	peak
3665.9	0	1	47.8	22.9	32.1	3.6	60.7	83.5	-22.8	peak
4582.3	noise	floor	47.4	23.2	33.5	4.1	61.8	83.5	-21.7	peak
5498.9	noise	floor	48.3	23.0	35.0	4.4	64.7	83.5	-18.8	peak
6415.4	noise	floor	54.3	22.2	35.1	5.2	72.5	83.5	-11.0	peak
1832.9	0	1	56.1	22.9	26.8	2.4	62.4	63.5	-1.1	Average
2749.4	0	1	50.1	22.6	29.5	3.0	60.0	63.5	-3.5	Average
3665.9	0	1	41.8	22.9	32.1	3.6	54.7	63.5	-8.8	Average

Vertical

Corrected Level = Recorded Level - Amplifier Gain + Antenna Factor + Cable Loss

Freq. (MHz)	EUT Dir (Deg.)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/M)	Cable Loss (dB)	Corrected Level (dBuV/M)	Limit (Average) (dBuV/M)	Margin (dB)	Peak or Average
1832.9	250	1	38.6	22.9	26.8	2.4	44.9	83.5	-38.6	peak
2749.4	250	1	36.7	22.6	29.5	3.0	46.6	83.5	-36.9	peak
3665.9	250	1	36.6	22.9	32.1	3.6	49.5	83.5	-34.0	peak
4582.3	noise	floor	34.5	23.2	33.5	4.1	48.9	83.5	-34.6	peak

5498.9	noise	floor	33.8	23.0	35.0	4.4	50.2	83.5	-33.3	peak
6415.4	noise	floor	37.4	22.2	35.1	5.2	55.6	83.5	-27.9	peak
1832.9	250	1	32.6	22.9	26.8	2.4	38.9	63.5	-24.6	average
2749.4	250	1	30.7	22.6	29.5	3.0	40.6	63.5	-22.9	average
3665.9	250	1	30.6	22.9	32.1	3.6	43.5	63.5	-20.0	average

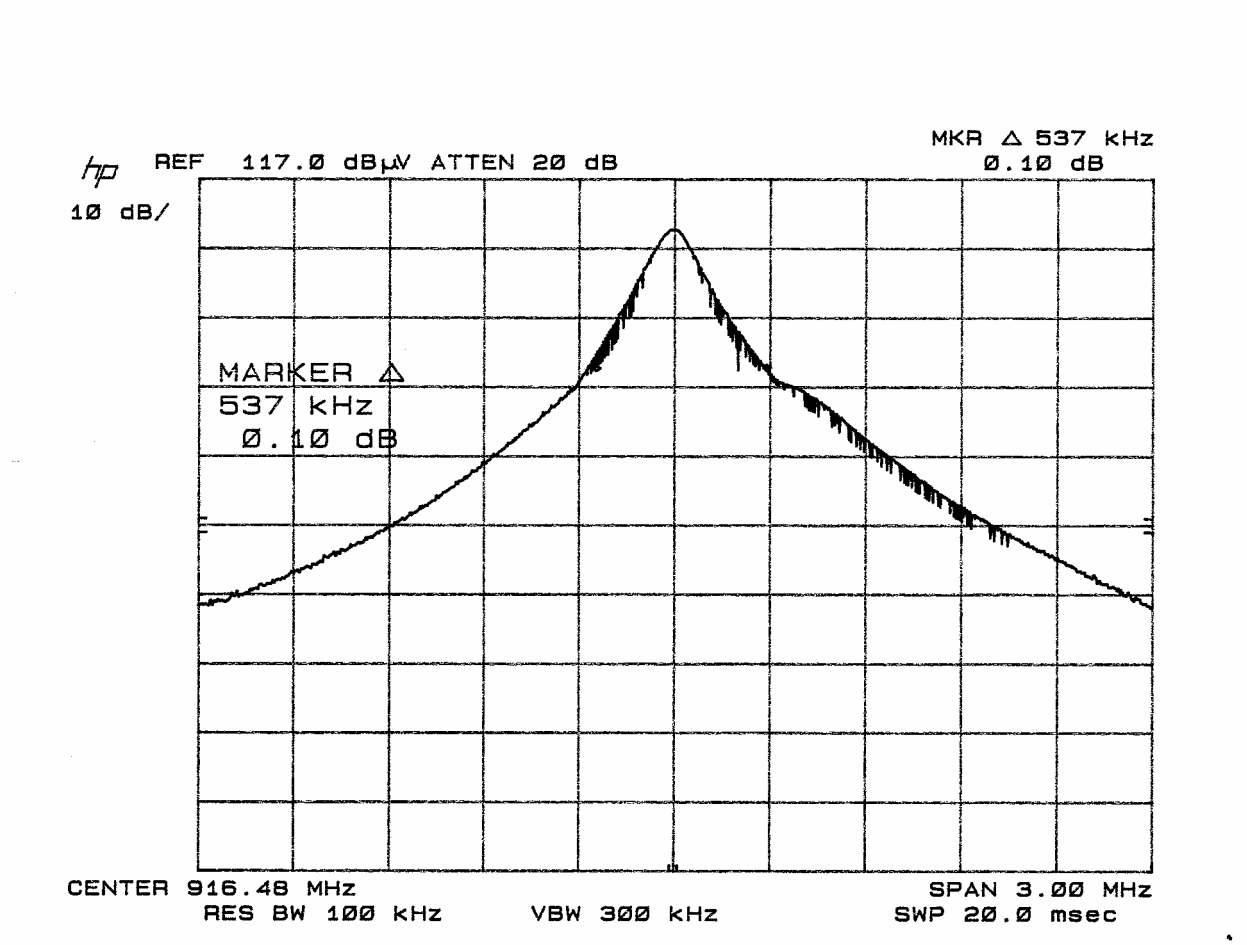
TEST ENGINEER: Jason Anderson

Appendix B Occupied Bandwidth Data Sheet

Occupied Bandwidth Datasheet
Wireless Computing RF220 Wireless Keyboard

Test Date: August 16, 2004

Occupied Bandwidth

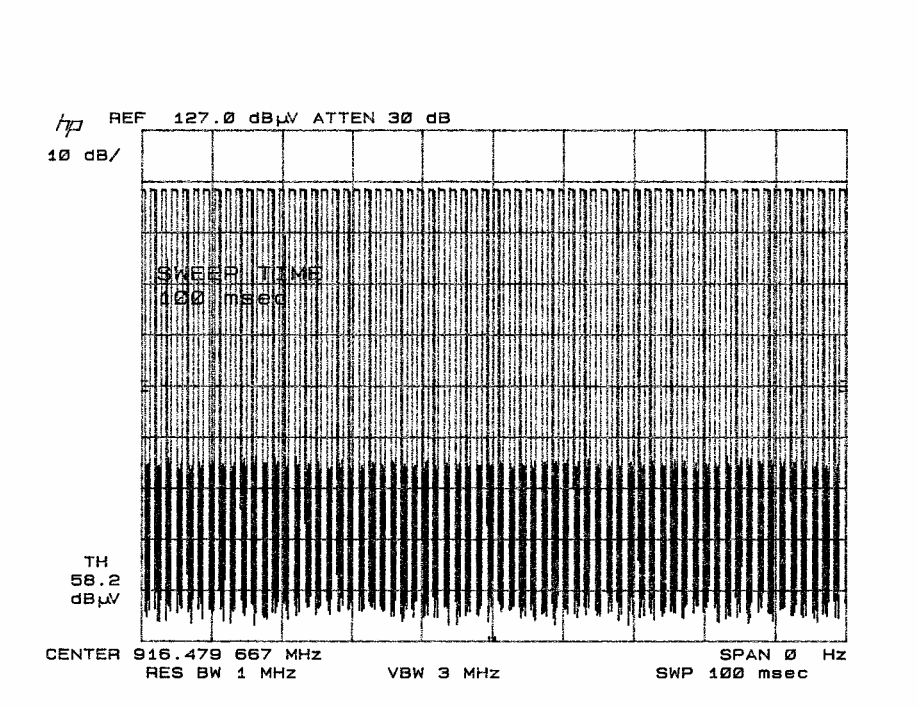


TEST ENGINEER: Jason Anderson

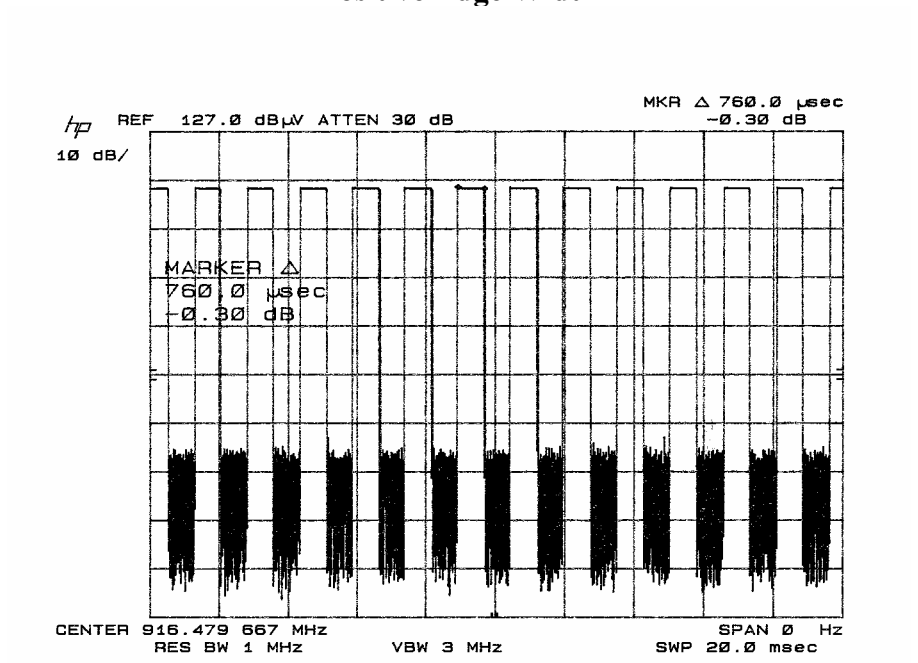
Appendix C Average Data Sheets and Calculations

Average Data Sheets

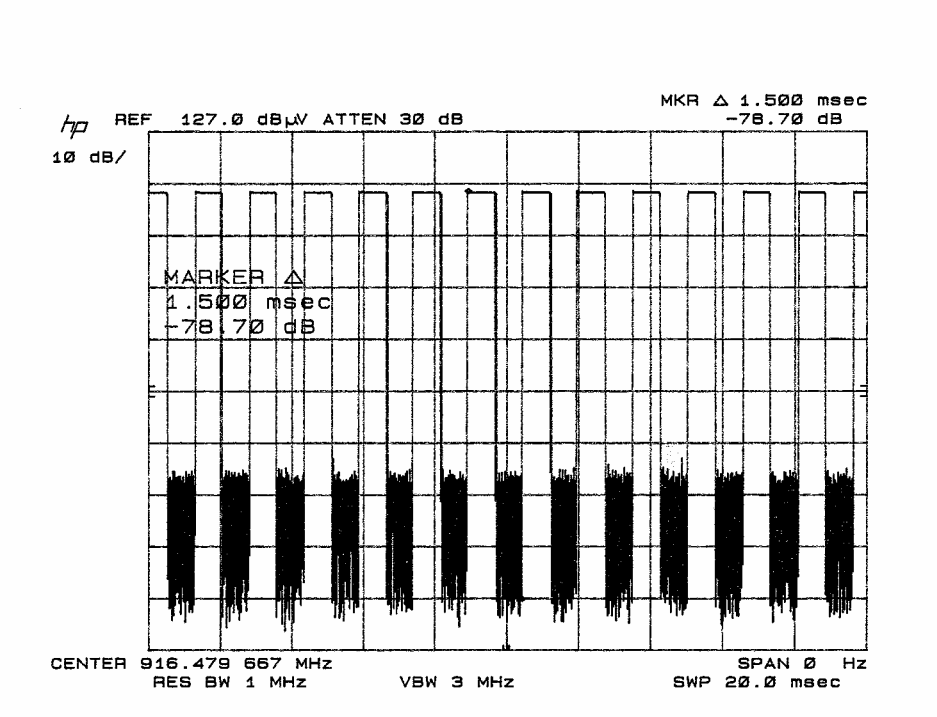
0.1 Second Acquisition



Positive Edge Width



Complete Period Width



Average Formula

$$Average.Correction = 20 * \log(\frac{pos.edge.width}{comp.period.width})$$

$$Average = Peak - Average.Correction$$

Average Calculation

$$Average.Correction = 20 * \log(\frac{760}{1500}) \approx 6dB$$

$$Average \approx Peak - 6dB$$

TEST ENGINEER: Jason Anderson