



## Amendment A to EMC Test Report RP-4749

Tests Performed on an RF Ideas  
 Card Reader, Model pcProx-USB  
 Radiometrics Document RP-4749



*Product Detail:*

FCC ID: **M9MPCPROXHUSB100**  
 Equipment type: Low power 125 kHz Transmitter

*Test Standards:*

US CFR Title 47, Chapter I, FCC Part 15 Subpart C  
 FCC Part 15 CFR Title 47: 2001

This report concerns: Original Grant for Certification  
 FCC Part 15 Subpart C

*Tests Performed For:*

**RF Ideas**  
 4238 B Arlington Heights Rd., #244  
 Arlington Heights, IL 60004  
 Phone: (847) 870-1723

*Test Facility:*

**Radiometrics Midwest Corporation**  
 12 East Devonwood  
 Romeoville, IL 60446  
 Phone: (815) 293-0772  
 e-mail: info@radiomet.com

*Test Date(s): (Month-Day-Year)*

February 19 and 20, 2002

Document RP-4749 Amendment A Revisions:

Rev.	Issue Date	Affected Pages	Revised By	Authorized Signature for Revision
0	June 20, 2002			

<b>RADIOMETRICS MIDWEST CORPORATION - EMC Test Report</b>		
<i>Equipment Tested (Company, Model, Product Name):</i> RF Ideas, pcProx-USB, card reader	<i>Document No.:</i> RP-4749A Rev. 0	<i>Page:</i> 2 of 9

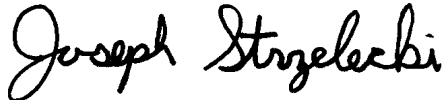
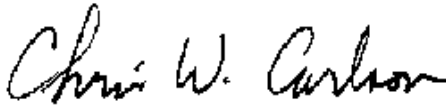
## Table of Contents

<a href="#">1 ADMINISTRATIVE DATA</a> .....	3
<a href="#">2 TEST SUMMARY AND RESULTS</a> .....	3
<a href="#">3 EQUIPMENT UNDER TEST (EUT) DETAILS</a> .....	3
<a href="#">3.1 EUT Description</a> .....	3
<a href="#">4 TESTED SYSTEM DETAILS</a> .....	4
<a href="#">4.1 Tested System Configuration</a> .....	4
<a href="#">4.2 Special Accessories</a> .....	4
<a href="#">5 TEST SPECIFICATIONS AND RELATED DOCUMENTS</a> .....	4
<a href="#">6 RADIOMETRICS' TEST FACILITIES</a> .....	5
<a href="#">7 DEVIATIONS AND EXCLUSIONS FROM THE TEST SPECIFICATIONS</a> .....	5
<a href="#">8 TEST PROCEDURES</a> .....	5
<a href="#">8.1 H-field Radiated RF Emissions Measurement Procedures</a> .....	5
<a href="#">8.1.1 Band Edge Emissions Test</a> .....	5
<a href="#">9 CERTIFICATION</a> .....	6
<a href="#">10 TEST EQUIPMENT TABLE</a> .....	6
<a href="#">11 TEST SETUP DOCUMENTATION</a> .....	7
<a href="#">Figure 1. Configuration of Tested System</a> .....	7
<a href="#">12 DETAILED TEST RESULTS</a> .....	8
<a href="#">12.1 Magnetic Field Radiated Emissions Results (0.009 to 30 MHz)</a> .....	8
<a href="#">12.1.1 Band Edge Plot</a> .....	8
<a href="#">12.2 Occupied Bandwidth Plot</a> .....	9

Notice: This report must not be reproduced (except in full) without the written approval of Radiometrics Midwest Corporation.

RADIOMETRICS MIDWEST CORPORATION - EMC Test Report		
<i>Equipment Tested (Company, Model, Product Name):</i> RF Ideas, pcProx-USB, card reader	<i>Document No.:</i> RP-4749A Rev. 0	<i>Page:</i> 3 of 9

## 1 ADMINISTRATIVE DATA

<i>Equipment Under Test:</i> An RF Ideas, card reader Model: pcProx-USB, Serial Number: none This will be referred to as the EUT in this Report	
<i>Date EUT Received at Radiometrics: (Month-Day-Year)</i> February 28, 2002	<i>Test Date(s): (Month-Day-Year)</i> June 19 and 20, 2002
<i>Test Report Written By:</i> Joseph Strzelecki Radiometrics Midwest Corp.	<i>Test Witnessed By:</i> The tests were not witnessed by RF Ideas
<i>Radiometrics' Personnel Responsible for Test:</i> 	<i>Test Report Approved By</i> 
Joseph Strzelecki Senior EMC Engineer NARTE EMC-000877-NE	Chris W. Carlson Director of Engineering NARTE EMC-000921-NE

## 2 TEST SUMMARY AND RESULTS

The EUT (Equipment Under Test) is a card reader, Model pcProx-USB, manufactured by RF Ideas. The detailed test results are presented in a separate section. The following is a summary of the test results.

### Emissions Tests Results

Environmental Phenomena	Frequency Range	FCC Section	Test Result
Bandwidth	125 kHz	15	Pass
Band edge emissions for Restricted band	9k to 150 kHz	15.209	Pass

## 3 EQUIPMENT UNDER TEST (EUT) DETAILS

### 3.1 EUT Description

The EUT is a card reader, Model pcProx-USB, manufactured by RF Ideas. The EUT was in good working condition during the tests, with no known defects.

RADIOMETRICS MIDWEST CORPORATION - EMC Test Report		
<i>Equipment Tested (Company, Model, Product Name):</i> RF Ideas, pcProx-USB, card reader	<i>Document No.:</i> RP-4749A Rev. 0	<i>Page:</i> 4 of 9

## 4 TESTED SYSTEM DETAILS

### 4.1 Tested System Configuration

The system was configured for testing in a typical fashion. The EUT was placed on an 80-cm high, nonconductive test stand. The testing was performed in conditions as close as possible to installed conditions. Wiring was consistent with manufacturer's recommendations. The system was configured for testing in a typical fashion (as a customer would normally use it). Power was supplied to the host computer at 115 VAC, 60 Hz single-phase. The EUT was powered from the host computer.

#### Tested System Configuration List

Item	Description	Type*	Manufacturer	Model Number	Serial Number
1	card reader	E	RF Ideas	pcProx-USB	none
2	VAIO Notebook PC	H	Sony, Inc.	PCG-9251	28310531 4024706
3	VAIO Power supply	H	Sony, Inc.	N50	0954552P
4	Printer	P	Star	NX-1001	510010542390

\* Type: E = EUT, P = Peripheral, S = Support Equipment; H = Host System

#### List of System Cables

QTY	Length (m)	Cable Description	Connected to (Item #)	Shielded?
1	1.85	USB Serial	#1 and #2	Yes
1	0.8	AC Cord to Computer power supply	#3	No
1	1.8	Low voltage power cord to Notebook	#2 and #3	No
1	1.8	Printer Cable	#2 and #4	Yes

### 4.2 Special Accessories

No special accessories were used during the tests in order to achieve compliance.

## 5 TEST SPECIFICATIONS AND RELATED DOCUMENTS

#### Test Specifications

Document	Date	Title
FCC CFR Title 47	1999	Code of Federal Regulations Title 47, Chapter 1, Federal Communications Commission, Part 15 - Radio Frequency Devices
ANSI C63.4-1992	1992	Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

The test procedures used are in accordance with the ANSI document C63.4-1992, (July 17, 1992) "Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz". The specific procedures are described herein. Radiated testing was performed at an antenna to EUT distance of 3 meters. The antenna was raised and lowered from 1 to 4 meters.

RADIOMETRICS MIDWEST CORPORATION - EMC Test Report		
<i>Equipment Tested (Company, Model, Product Name):</i>	<i>Document No.:</i>	<i>Page:</i>
RF Ideas, pcProx-USB, card reader	RP-4749A Rev. 0	5 of 9

## 6 RADIOMETRICS' TEST FACILITIES

The results of these tests were obtained at Radiometrics Midwest Corp. in Romeoville, Illinois, USA. Radiometrics has been accredited by A2LA (American Association for Laboratory Accreditation) to conform to ISO/IEC 17025: 1999 "General Requirements for the Competence of Calibration and Testing Laboratories". Radiometrics' Lab Code is 121191 and Certification Number is 1495.01. Radiometrics' scope of accreditation includes all of the "basic standards" listed herein. A copy of the accreditation can be accessed on our web site ([www.radiomet.com](http://www.radiomet.com)). Radiometrics accreditation status can be verified at A2LA's web site ([www.a2la.org](http://www.a2la.org)).

The Open Area Test Site (OATS): Is located on 8625 Helmar Road in Newark, Illinois, USA and measures 56' L X 24' W X 17' H. The entire open field test site has a metal ground screen. The FCC has accepted these sites as test site number 31040/SIT 1300F2. The FCC test site Registration Number is 90897. Details of the site characteristics are on file with the Industry Canada as file number IC3124.

A complete list of the test equipment is provided herein. The calibration due dates are indicated on the equipment list. The equipment is calibrated in accordance to ANSI/NCSL Z540-1 with traceability to the National Institute of Standards and Technology (NIST).

## 7 DEVIATIONS AND EXCLUSIONS FROM THE TEST SPECIFICATIONS

There were no deviations or exclusions from the test specifications.

## 8 TEST PROCEDURES

The test procedures used are in accordance with the Industry Canada RSS-212 and ANSI document C63.4-1992, (July 17, 1992) "Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz". The specific procedures are described herein. Radiated testing was performed at an antenna to EUT distance of 3 meters. The antenna was raised and lowered from 1 to 4 meters.

### 8.1 H-field Radiated RF Emissions Measurement Procedures

Radiated emission measurements were performed with Shielded Loop broadband antennas. The radiated emission measurements were performed with a spectrum analyzer. The bandwidth used from 9 kHz to 150 kHz is 1 kHz and from 450 kHz to 30 MHz the bandwidth is 9 or 10 kHz. A 10 dB linearity check is performed prior to start of testing in order to determine if an overload condition exists.

The tests open area test site at a test distance of 3 meters. Measurements were performed using the peak or quasi-peak detector function. The detected emission levels were maximized by rotating the EUT, adjusting the positions of all cables, and by scanning the measurement antenna from 1 to 4 meters above the ground.

#### 8.1.1 Band Edge Emissions Test

The spectrum analyzer was set to the "MAX HOLD" mode to record the worst case of the modulation at the band-edge, with the EUT set to the lowest frequency. The trace was allowed to stabilize.

**RADIOMETRICS MIDWEST CORPORATION - EMC Test Report***Equipment Tested (Company, Model, Product Name):*

RF Ideas, pcProx-USB, card reader

*Document No.:*

RP-4749A Rev. 0

*Page:*

6 of 9

**9 CERTIFICATION**

Radiometrics Midwest Corporation certifies that the data contained herein was taken under conditions that meet or exceed the requirements of the test specification. The results relate only to the EUT listed herein. Any modifications made to the EUT subsequent to the indicated test date will invalidate the data and void this certification.

**10 TEST EQUIPMENT TABLE**

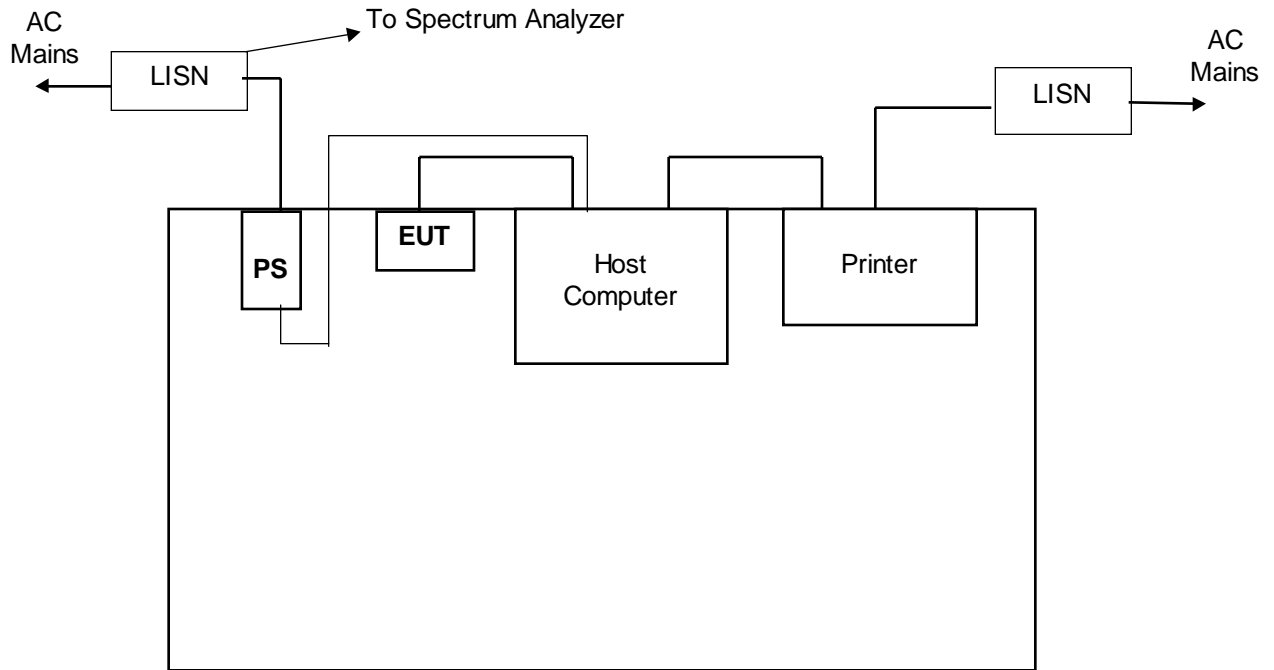
RMC ID	Manufacturer	Description	Model No.	Serial No.	Frequency Range	Cal Period	Cal Date
AMP-12	MITEQ	Pre-amplifier	AM-1431	530935	0.01-1000MHz	12 Mo.	12/28/01
ANT-28	Empire	Loop Antenna	LG-105	102	10-150kHz	24 Mo.	10/24/00
ANT-29	Empire	Loop Antenna	LP-105	656	0.15-30MHz	24 Mo.	10/24/00
HPF-01	Solar	High Pass Filter	7930-100	HPF-1	0.15-30MHz	24 Mo.	12/28/00
LSN-01	Electrometrics	LISN	FCC/VDE 50/2	1001	0.01-30MHz	24 Mo.	01/04/01
LSN-02	Electrometrics	LISN	LISN 25/3	1063	0.01-30MHz	24 Mo.	03/30/01
LSN-03	Farnell	LISN	1EXLSN30B	000314	0.01-30MHz	24 Mo.	01/04/01
REC-03	Anritsu	Spectrum Analyzer	MS2601B	MT94589	0.01-2200MHz	12 Mo.	10/12/01
THM-01	Extech Inst.	Temp/Humid Meter	4465CF	001106557	N/A	12 Mo.	12/26/01

Note: All calibrated equipment is subject to periodic checks.

NCR – No Calibration Required. Device monitored by calibrated equipment. N/A: Not Applicable.

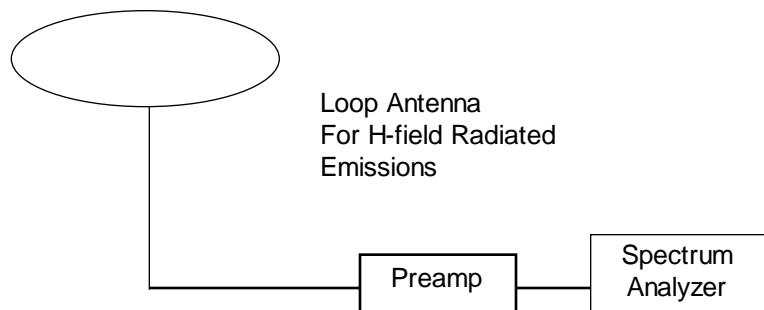
## 11 TEST SETUP DOCUMENTATION

**Figure 1. Configuration of Tested System**



1x1.5m surface 80 cm above  
Flush-mount Turntable

- Notes:**
- Not to Scale



RADIOMETRICS MIDWEST CORPORATION - EMC Test Report		
Equipment Tested (Company, Model, Product Name):	Document No.:	Page:
RF Ideas, pcProx-USB, card reader	RP-4749A Rev. 0	8 of 9

## 12 DETAILED TEST RESULTS

### 12.1 Magnetic Field Radiated Emissions Results (0.009 to 30 MHz)

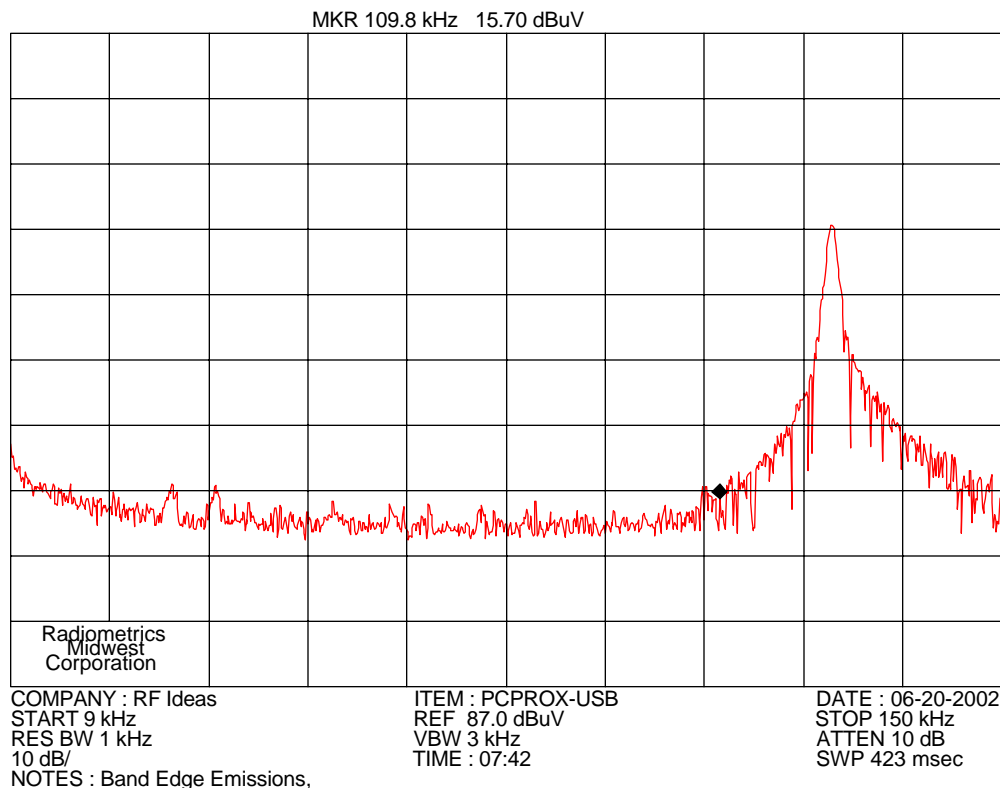
Manufacturer	RF Ideas	Specification	FCC 15.209
Model	pcProx-USB	Test Date	3/14/2002
Serial Number	none	Test Distance	3 Meters
Notes	Corr. Factors = cable loss - preamp gain - distance factor. Amplifier gain is 36 dB Decay Exponent = 2; Shielded Loop Antennas were used for this test.		
Abbreviations	P = peak; Q = QP		

Freq. kHz	Meter Reading dBuV	Antenna Factor dB	Corr. Factors dB	Field Strength dBuV/m		Margin Under Limit dB
				EUT	Limit	
125	58.9 Q	50.1	-116.0	-7.0	25.7	32.7

No emissions were detected from 9 kHz to 30 MHz with 15 dB of the Limit  
Judgement: Passed by at least 15.0 dB.

#### 12.1.1 Band Edge Plot

The fundamental emission (125 kHz) was under the limit and all other emissions were lower in amplitude.





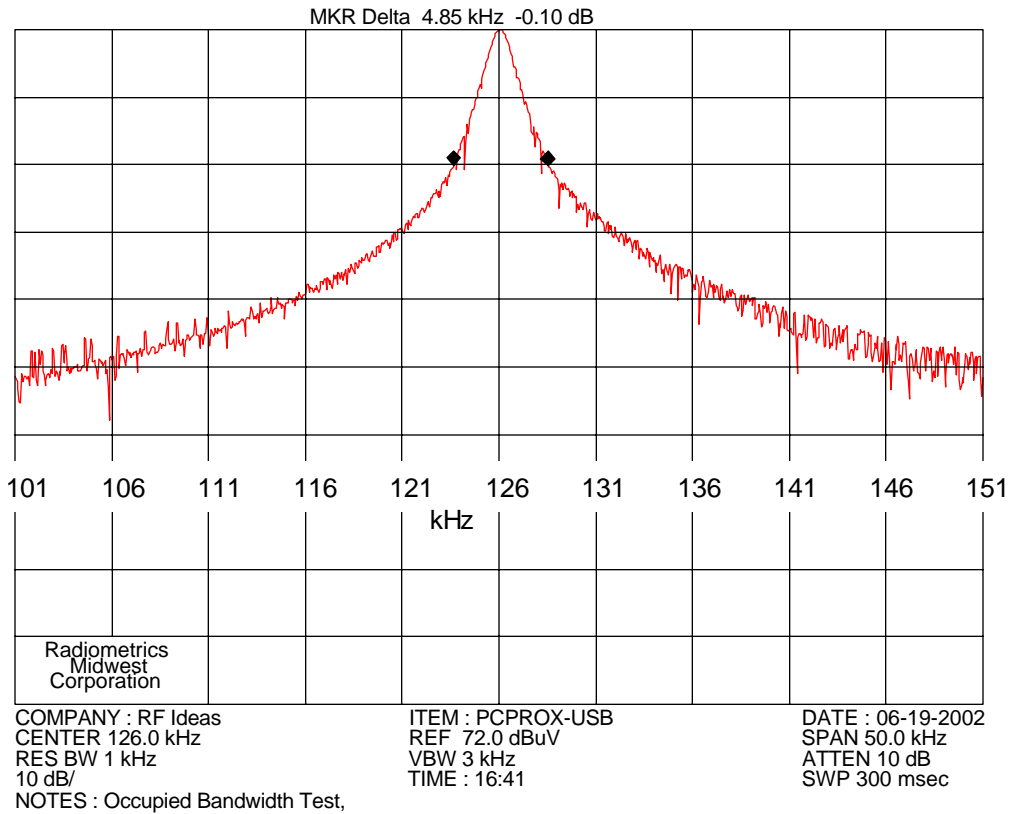
**RADIOMETRICS MIDWEST CORPORATION - EMC Test Report**

<i>Equipment Tested (Company, Model, Product Name):</i> RF Ideas, pcProx-USB, card reader	<i>Document No.:</i> RP-4749A Rev. 0	<i>Page:</i> 9 of 9
--	---	------------------------

**12.2 Occupied Bandwidth Plot**

The spectrum analyzer was set to the "MAX HOLD" mode to record the worst case of the modulation. The EUT was transmitting at its maximum data rate. The trace was allowed to stabilize.

The marker-to-peak function was set to the peak of the emission. Then the marker-delta function was used to measure 20 dB down one side of the emission. The marker-delta function was reset and then moved to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 20 dB bandwidth of the emission.



The 20 dB bandwidth is 4.9 kHz