CERTIFICATE OF COMPLIANCE

APPLICABLE SPECIFICATIONS:

47 CFR PART 2, SUBPART J, SECTION 2.907
47 CFR PART 15, SUBPART C, SECTION 15.225
INDUSTRY CANADA RADIO STANDARD RSS-210 ISSUE 5

Report Number: 2457-1, Dated 10/5/05

I hereby certify that the measurements shown on this report were made in accordance with the procedures of American National Standards Institute (ANSI) Specification C63.4-2003. The voltages conducted along its power leads and electric fields radiated by the equipment listed below meets the Commissions Limits for a Class B RFID Contact / Contactless Reader.

Company:	***SCM Microsystems***
Street Address:	***37400 Kato Road***
City, State & ZIP	***Fremont, CA 94560***
Equipment under Test:	***RFID Contact / Contactless Reader***
Model Number:	***PAT 1121 /1111***
Serial Number:	***001***

EMCE Engineering, Inc. has been placed on the Federal Communications Commission's list of recognized facilities for Parts 15 and 18 DoC approvals. Per the request of EMCE Engineering, Inc., the facility has been added to the list of those who perform Measurement Services for the public on a fee basis. This list is published periodically and is also available on the FCC World Wide Web. Additionally, EMCE Engineering, Inc. has been approved by the National Institute for Standards and Technology under the NVLAP program (Lab Code 200092-0). The Line Conducted emissions (CFR 47, 15.207) and Spurious Radiated emissions (CFR 47, 15.109) results presented in this report fall under EMCE's Scope of Accreditation.

Certified By:

President
EMCE Engineering

Disclaimer

EMCE Engineering, Inc., assumes no responsibility for the continuing validity of test data when the Equipment under Test is not under the continuous physical control of EMCE. The signature below attests to the fact that all measurements reported herein were performed by myself or were made under my supervision, and are correct to the best of my knowledge and belief as of the date specified. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them. Tests were conducted by qualified EMCE Engineering, Inc. personnel utilizing test equipment maintained in a "current" state of calibration with traceability to NIST.

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ELECTROMAGNETIC INTERFERENCE TEST REPORT

Report Number: ***2457-1***
Report Date: ***10/5/05***
Applicable Specification:
47 CFR Part 15, Subpart C, Section 15.225
Certification of a Class B RFID Contact / Contactless Reader

Equipment under Test:	*RFID Contact / Contactless Reader*
Model Number:	*PAT 1121 /1111*
Serial Number:	*001*

Prepared for:
SCM Microsystems
37400 Central Court
Newark, CA 94560

Tested by: ***Scott Parr***

Prepared by:
Bob Cole
EMCE Engineering, Inc.
44366 S. Grimmer Blvd.
Fremont, CA 94538
Phone: 510-490-4307
Fax: 510-490-3441

Note:

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1.0 SCOPE

This test report describes the equipment setup, test methods employed and results obtained during electromagnetic interference (EMI) testing of a Class B RFID Contact / Contactless Reader as defined in Part 15, Subpart A, paragraph 15.3 (o). The tests described herein measured the RF radiated (RFI Field Strength) emissions of the equipment under test (EUT) as installed in a typical "Host" environment. The tests conformed to the measurement and test site requirements of ANSI C63.4-2003.

1.1 Objective

The tests described herein were performed to establish that the EUT is capable of compliance with the requirements of Part 15, Subpart B, Section 15.225 for Intentional Radiators (a Class B RFID Contact / Contactless Reader).

1.2 Description of EUT

The EUT is a ***RFID Contact / Contactless Reader*** *Model Number:* ***PAT 1121 /1111*** *Serial Number:* ***001,*** *manufactured by SCM Microsystems. The EUT contained the following options: No Options.*

Model Differences:
The PAT 1121 has the pinpad installed. The PAT 1111 does not incorporate the pinpad.

1.3 Results/Modifications

The EUT passed FCC Class B conducted and radiated emissions tests. No modification was necessary. The manufacturer may declare the EUT as complying with the FCC requirements.

1.4 Test Limits

FCC Class B Line Conducted and Unintentional Radiated emission limits are as follows:

Conducted Emission Limits (Quasi-peak)		***Radiated Emission Limits @3-meters***	
0.450 – 30 MHz	*48 dBuV*	*30 – 88 MHz*	*40.0 dBuV/m*
		88 – 216 MHz	*43.5 dBuV/m*

216 – 960 MHz	*46.0 dBuV/m*
960 – 1000 MHz	*54.0 dBuV/m*

Note: *In accordance with paragraph 15.107(e) and 15.109(g), CISPR 22 Class B limits are acceptable as an alternate to FCC Class B limits for conducted and radiated emissions.*

2.0 APPLICABLE DOCUMENTS

2.1 FCC Documents

Document	***Title***
Title 47 CFR	*TELECOMMUNICATION*
Part 2	*Frequency Allocations and Radio Treaty Matters; General Rules and Regulations.*
Part 15	*Radio Frequency Devices.*

2.2 Other Documents

ANSI C63.4-2003	*American National Standards for Methods of Measurement of Radio-Noise Emissions From Low-Voltage Electrical and Electronic Equipment In the Range of 9kHz to 40GHz.*
ANSI C63.5-1988	*American National Standards for Calibration of Antennas Used for Radiated Emissions Measurement.*
CISPR 22: 2003	*Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement. By the International Electrotechnical Commission (IEC).*

3.0 GENERAL SETUP AND TEST CONDITIONS

3.1 Test Facility

The tests described herein were performed at:

EMCE Engineering, Inc.
44366 S. Grimmer Blvd.
Fremont, CA 94538

This laboratory has one semi-anechoic chamber, one electromagnetic shielded enclosure and a 3-meter and 10-meter Open Area Test Site (OATS). A computer controlled spectrum analyzer with quasi-peak adapter, and printer were used for gathering and recording test data. Figure 1 shows the test site layout for conducted and radiated measurements.

3.2 Description of Open Area Test Site (OATS)

The 3 and 10 meter site is located out-of-doors in an open field whose size is 212 feet long by 206 feet wide. The dimensions of the test area are 66 feet wide by 59 feet long (20m x 18m). The description of the 3 and 10-meter site is on file with the FCC according to the requirements of Part 2.948.

3.3 Site Attenuation

The site attenuation for radiated measurements has been determined for this test site using the method described in ANSI C63.4 Paragraph 5.4.6 and sub paragraphs. The site attenuation is measured annually. Site attenuation was last measured and reported to the FCC in January 2005.

3.4 Ground Plane (Ground Screen)

The site has a 3900 square foot (20m x 18m) floor area of poured reinforced concrete, 6 to 8 inches thick. A 20m x 18m (66ft x 59ft) solid 24 gauge galvanized sheet steel ground plane is centered on the test area with its long dimension along the major axis of the test site. The antenna mast and turntable are located 3 meters apart on the centerline of the major axis so that each is greater than 3 meters from the edges of the

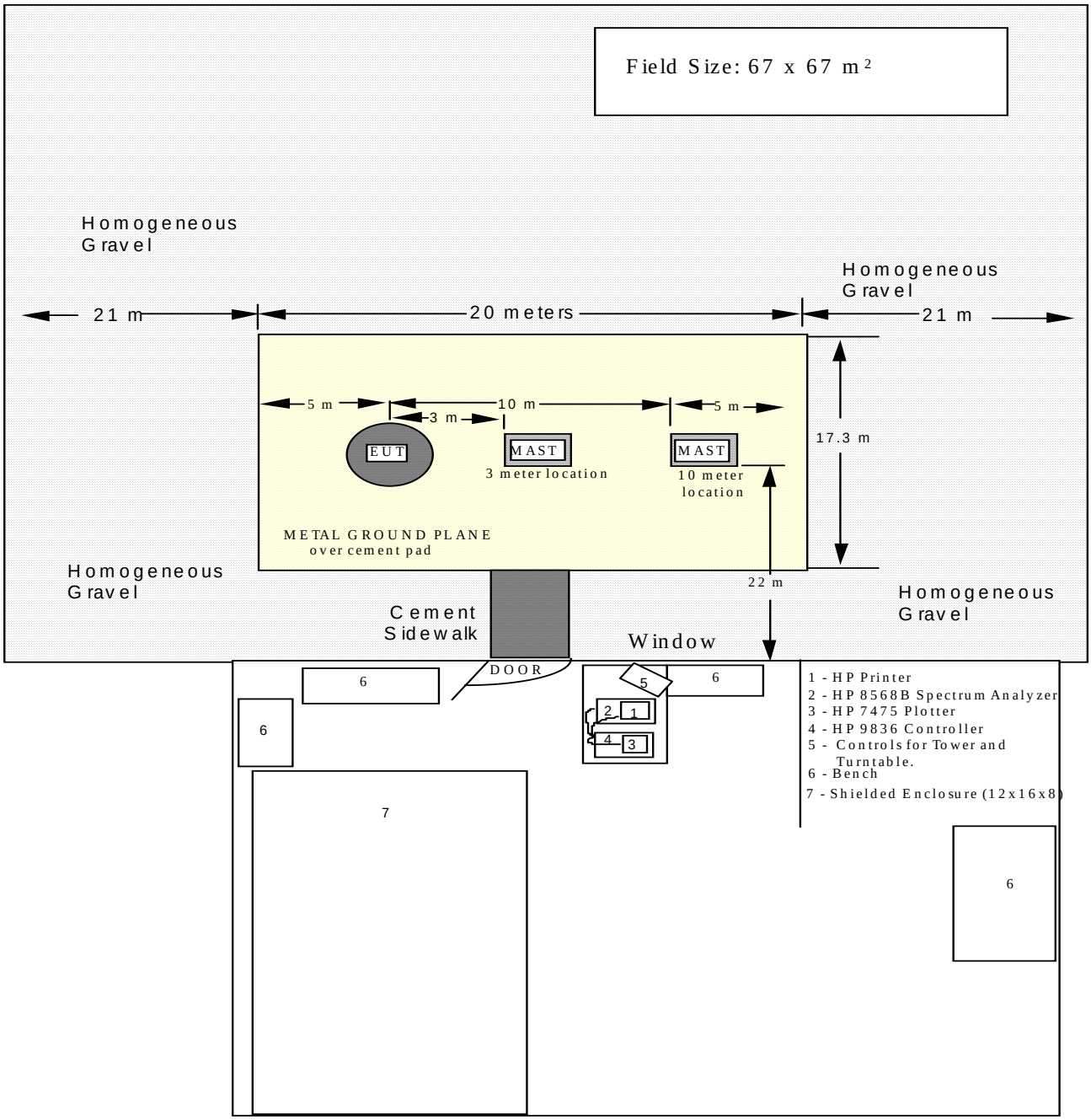


FIGURE 1. TEST SITE LAYOUT.

ground plane. The ground plane is connected to a nine-foot long earth ground rod at each corner of the ground plane.

3.5 Input Power for EUT

Electricity for the EUT is provided through buried power lines in metallic conduit with an outlet box placed near the EUT. Power for the EUT is taken from the outlet box of either of two "shielded enclosure" quality power line filters located on the ground plane near the EUT. The filters are electrically bonded to the ground plane.

3.6 Accessory Equipment Precautions

Care was taken that accessory equipment or adjacent equipment did not produce unacceptable interference so as to contaminate the final test data. The EMI receiver and its associated computer, printer and plotter were located greater than 15 meters away from the EUT during testing and were powered from a separately filtered power source.

3.7 Ambient Interference

Ambient interference from radio and television stations, vehicles, mobile radio, etc. was present at the open test site during testing. Care was taken to assure that ambient interference did not overload the measurement receiver or mask emissions from the EUT. The method of measurement used to deal with ambient noise during radiated emission testing is described in Paragraph 5.2.1.

3.8 Personnel

All testing was performed by EMCE Engineering personnel who are properly trained for the instruments and procedures used. The test data sheets have been signed-off by the attending EMCE Test Engineer.

3.9 Use of Interference Measurement Equipment

All of the emission measurements and field strength measurements were performed with a Hewlett-Packard 8566B Spectrum Analyzer System. The Spectrum Analyzer System utilizes the following basic instruments:

1. *Fujitsu Lifebook Computer*
2. *EMITest measurement software*
2. *HP-85650A Quasi Peak Adapter*

Test results are recorded on tabular data sheets and show final corrected values compared to the specification limit. Sample calculations show how the antenna factors, cable losses, amplifier gain, etc. are combined in the automatic analyzer program to produce the final corrected values shown on the graphs and data sheets.

3.10 Calibration of Measuring Equipment

The EMI Receiver (spectrum analyzer) is calibrated by an outside calibration laboratory on a 12-month basis. The laboratory provides certification with traceability to NIST. Antenna factors are measured at 1-year interval by EMCE Engineering using the reference antenna method of ANSI C63.5-1988. Cable losses as well as amplifier gains are swept at least every month to verify accurate values.

4.0 PREPARATION OF EUT FOR TEST

4.1 Identification of EUT

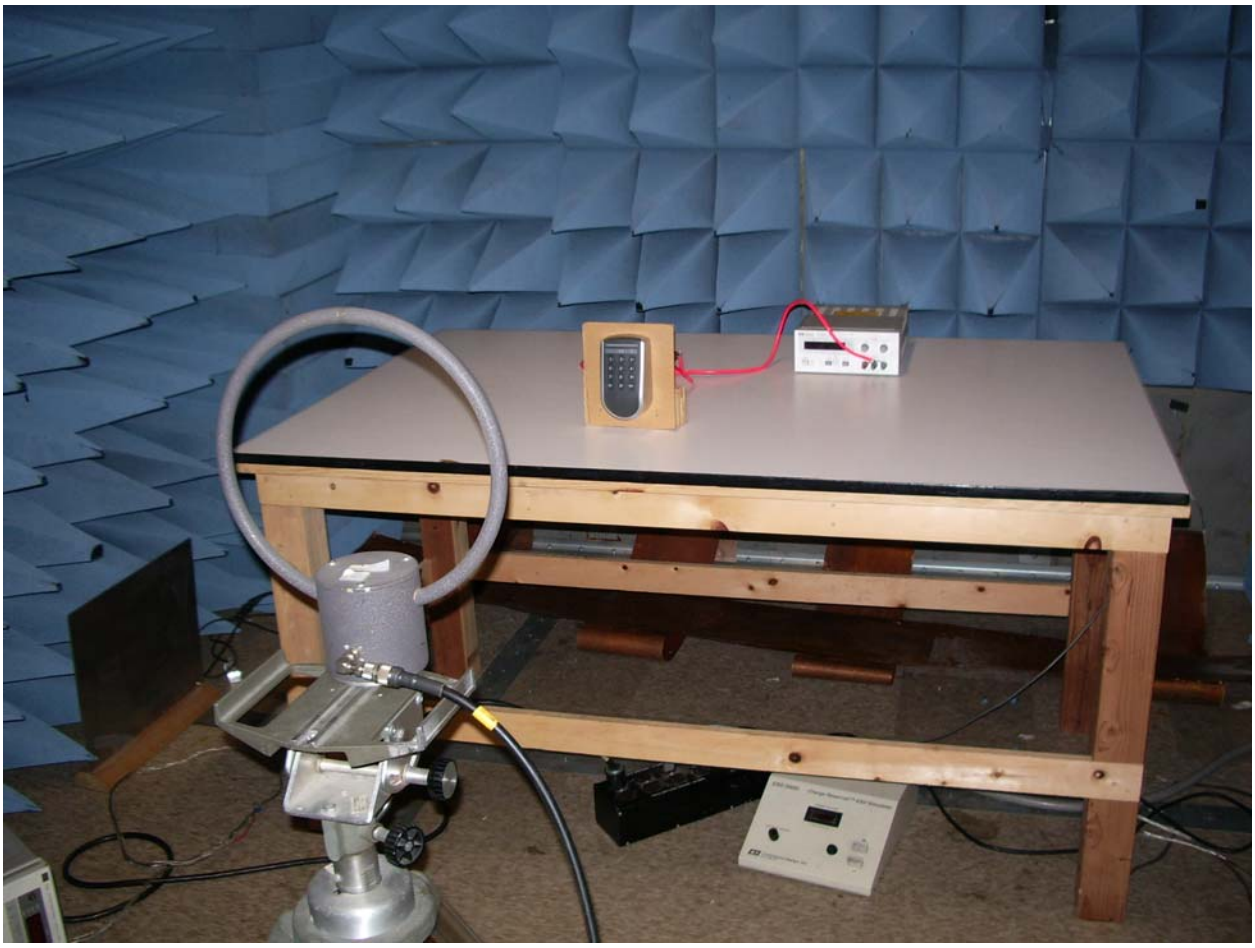
Equipment under Test: ***RFID Contact / Contactless Reader***
Model Number: ***PAT 1121 /1111***
Serial Number: ***001***

4.2 Setup of EUT

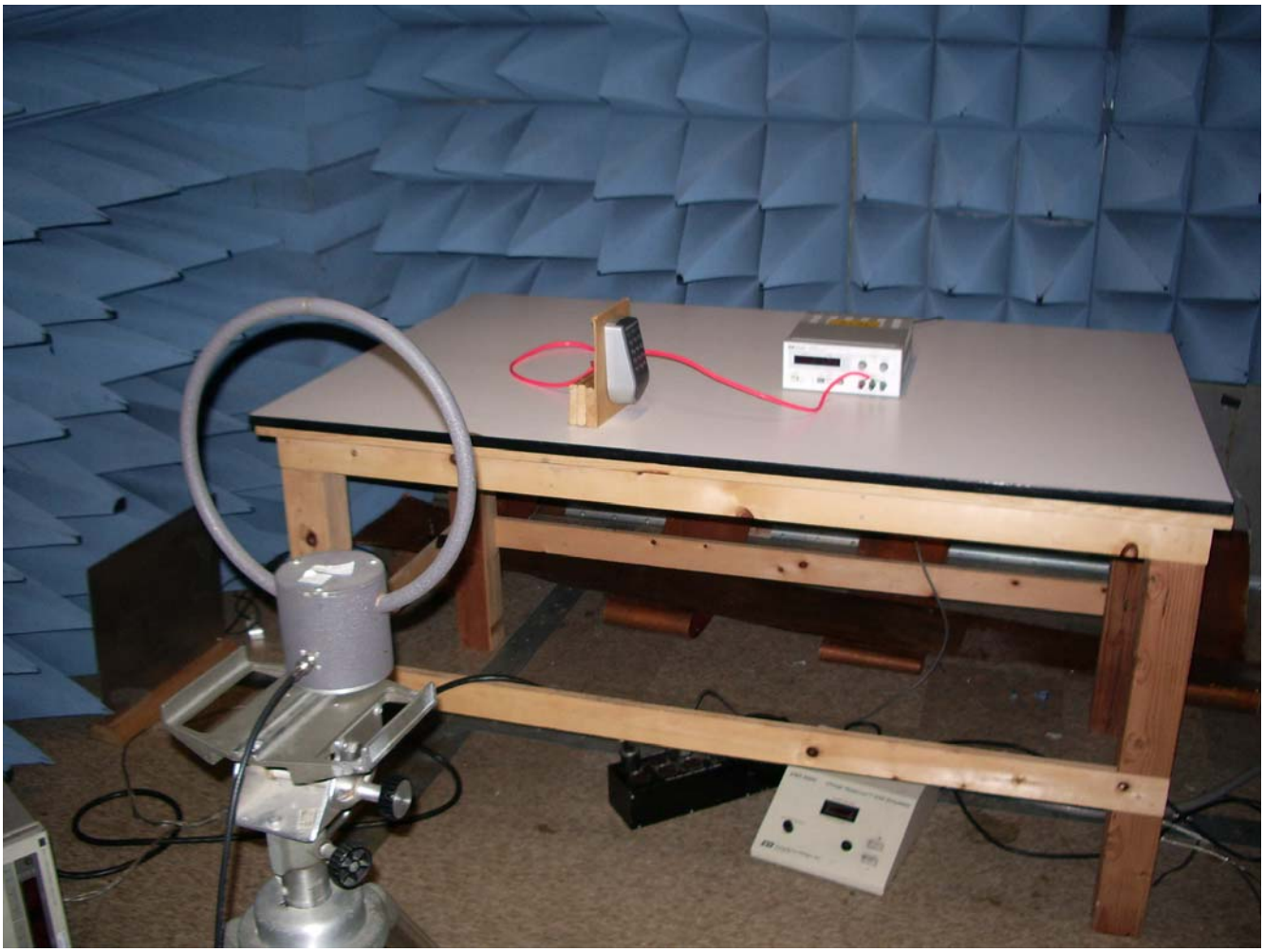
Power to EUT: ***Power Supply***
Grounding of EUT: ***DC Ground***
Special Software: ***None***
Orientation of EUT: Per CFR 47, 15.31 and ANSI 63.4-2003, for all measurements the EUT was evaluated in the X, Y, and Z orthogonal axes.

TEST SETUP ORIENTATIONS

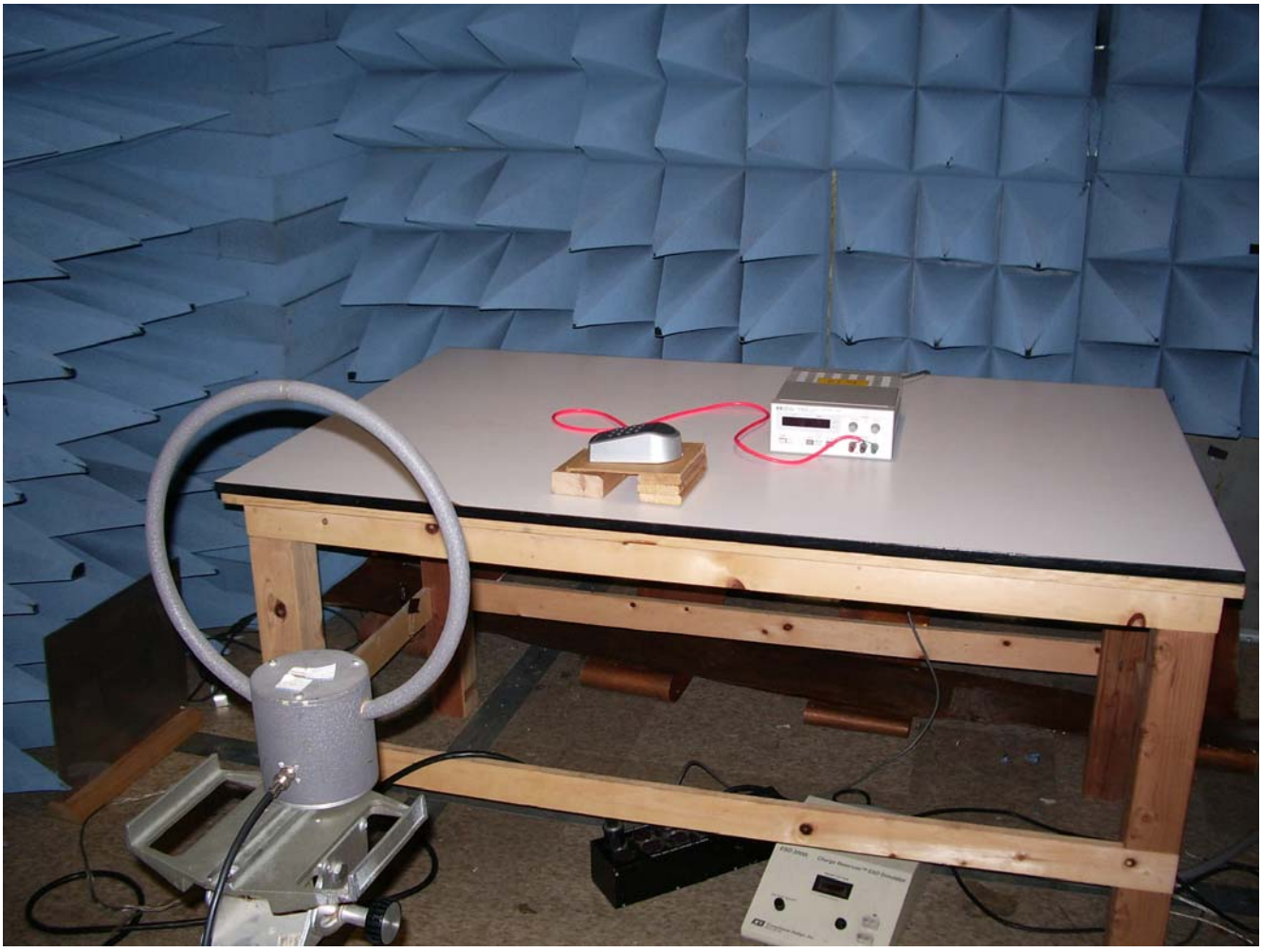
X Orientation



Y Orientation



Z Orientation



4.3 Interfaces & Cabling

The following cables were connected during test:

Interface	*Source Port*	*Load Port*	*Length Cable*	*Conductors Number*	*Cable Type*	*Connector Material*
Power	*DC Power Supply*	*EUT*	*1M*	*3*	*Unshielded*	*Plastic*

4.4 Peripherals

The following peripherals were attached and operating during the tests:

Nomenclature	***Mfgr & Model***	***Serial No***
N/A		

5.0 TEST PROCEDURES

5.1 Conducted Emissions, Power Leads, 150 kHz to 30 MHz

Conducted emissions were measured from 150kHz to 30MHz on the power and return leads of the EUT according to the methods defined in ANSI C63.4, Section 7.0 and the limits found in CFR 47, 15.107. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane and removed from the vertical ground plane by 40-cm as shown in Appendix D, Photographs of Test Setup. The interface cables and equipment positioning were varied within limits of reasonable application per Figure 9A of ANSI C63.4 to determine the position producing maximum conducted emissions.

The LISN and high pass filter were connected through 20 feet of RG-214 coaxial cable to the spectrum analyzer input. The switch on the LISN was set to the Supply Line position and the power was applied. The EUT was operated as described in Paragraph 4.0 in a mode, which was intended to produce maximum emissions for normal operation.

The switch in the LISN was then set to the Return Line position and the interference scan was repeated and an additional set of data sheets and plot charts were prepared for the return lead.

5.1.1 Test Results

Not Applicable due to product type.

5.1.2 Test Instrumentation

See Appendix I – 1,2,3,4,10

5.1.3 Recommendations

Due to the fact that there were no test failures, there are no recommendations.

5.2 Radiated Emissions Test, 30 MHz to 1000 MHz

Radiated emissions were measured from 30 MHz to 1000 MHz. The measurement bandwidth was 120 kHz according to the methods defined in ANSI C63.4 Section 8.0. The EUT was placed on a nonmetallic stand in the open-field site, 0.8 meters above the ground plane, as shown in Appendix D, Photographs of Test Setup.

The EUT was operated as described in Paragraph 4.0, in a mode, which was intended to produce maximum emissions. Preliminary scans of the frequency range were used to determine the cable configurations and equipment positions which produce maximum emissions. These configurations were then kept intact while both angle of rotation of the EUT with respect to the antenna and antenna height were scanned for maximum readings. The angles and antenna polarization are shown on the data sheets in Appendix C.

5.2.1 Vertical Polarization Measurements

Radiated emission measurements were started with the antenna in a vertical orientation at 1.5 meter in height and 1.0 meters from the EUT and with the front of the EUT facing the antenna. The measurement antenna was connected to the preamplifier and spectrum analyzer through 75 feet of RG-214 coaxial cable.

A data sheet is printed out listing the "Final FCC B Radiated Results". This lists those signals which were within X dB of the limit, where is selectable and which were actually attributed to the EUT. Along with other information the data sheet indicates signal level, limit, turntable angle and antenna height.

Data sheets of vertical polarized radiated emissions are shown in Appendix C. A sample-calculation on the data sheet shows how antenna factors, cable loss and amplifier gains are processed by the computer.

5.2.2 Horizontal Polarization Measurements

The full electric field frequency range from 30 MHz to 1000 MHz was scanned with the EUT operating and the measurement antenna oriented in a horizontal polarization. A set of radiated emission readings were collected, evaluated, stored and printed out using the same procedure described above for vertical polarization. The data sheets are contained in Appendix C.

5.2.3 Test Results

The EUT passed both vertical and horizontal radiated emissions tests.

5.2.4 Test Instrumentation

See Appendix I – 1-10

5.2.5 Recommendations

Because there were no test failures, there are no recommendations.

APPENDIX A

Certifications

EMCE NVLAP Accreditation

EMCE Engineering
44366 S. Grimmer Blvd Fremont, CA 94538
510-490-4307 / 510-490-3441 Fax

National Institute of Standards and Technology — NVLAP® — National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation

DEPARTMENT OF COMMERCE * UNITED STATES OF AMERICA *

Page: 1 of 2

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

NVLAP LAB CODE 200092-0

UNIVERSAL COMPLIANCE LABS DBA EMCE ENGINEERING
44366 South Grimmer Boulevard
Fremont, CA 94538-6385
Mr. Bob Cole
Phone: 510-490-4307 Fax: 510-490-3441
E-Mail: bob@universalcompliance.com
URL: http://www.universalcompliance.com

NVLAP Code	*Designation / Description*
Emissions Test Methods:	
12/CIS22	IEC/CISPR 22 (1997) & EN 55022 (1998) + A1(2000): Limits and methods of measurement of radio disturbance characteristics of information technology equipment
12/CIS22a	IEC/CISPR 22 (1993) and EN 55022 (1994): Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1 (1995) and Amendment 2 (1996)
12/CIS22b	CNS 13438 (1997): Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
12/FCC15b1	ANSI C63.4 (2003) with FCC Method 47 CFR Part 15, Subpart B: Unintentional Radiators
12/T51	AS/NZS CISPR 22 (2002) and AS/NZS 3548 (1997): Electromagnetic Interference - Limits and Methods of Measurement of Information Technology Equipment

December 31, 2005
Effective through

For the National Institute of Standards and Technology

NVLAP-01S (06-01)

National Institute of Standards and Technology **NVLAP®** National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
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Scope of Accreditation

DEPARTMENT OF COMMERCE * UNITED STATES OF AMERICA *

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

NVLAP LAB CODE 200092-0

UNIVERSAL COMPLIANCE LABS DBA EMCE ENGINEERING

NVLAP Code	*Designation / Description*
Immunity Test Methods:	
12/I01	IEC 61000-4-2, Ed. 2.1 (2001), A1, A2; EN 61000-4-2: Electrostatic Discharge Immunity Test
12/I03	IEC 61000-4-4(1995), A1(2000), A2(2001); EN 61000-4-4: Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical Fast Transient/Burst Immunity Test
12/I04	IEC 61000-4-5, Ed. 1.1 (2001-04); EN 61000-4-5: Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test
12/I05	IEC 61000-4-6, Ed. 2.0 (2003-05); EN 61000-4-6: Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields
12/I06	IEC 61000-4-8, Ed. 1.1 (2001); EN 61000-4-8: Electromagnetic compatibility (EMC) - Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test
12/I07	IEC 61000-4-11, Ed. 1.1 (2001-03); EN 61000-4-11: Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests

December 31, 2005
Effective through

For the National Institute of Standards and Technology

NVLAP-01S (06-01)

United States Department of Commerce
National Institute of Standards and Technology

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ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

UNIVERSAL COMPLIANCE LABS DBA EMCE ENGINEERING
FREMONT, CA

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ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

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For the National Institute of Standards and Technology
NVLAP Lab Code: 200092-0

NVLAP-01C (06-01)

APPENDIX B

Test Data Sheets

Conducted Emissions
Radiated Emissions

EMCE Engineering
44366 S. Grimmer Blvd Fremont, CA 94538
510-490-4307 / 510-490-3441 Fax

LINE CONDUCTED EMISSIONS TEST

Not Applicable Due to Product Type

UNINTENTIONAL RADIATED EMISSIONS TEST

Test Location: EMCE Engineering •44366 S. Grimmer Blvd • Fremont, CA 94538 • 510-490-4307

Customer: **SCM Microsystems**
Specification: **FCC 15_209 RADIATED**
Work Order #: **2442** Date: 9/28/2005
Test Type: **Radiated Scan** Time: 12:32:46
Equipment: **Physical Access Control Terminal** Sequence#: 5
Manufacturer: SCM Microsystems Tested By: Bob Cole
Model: PAT 1121
S/N: N/A

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 8566B	EMCE 1	12/03/2004	12/03/2005	Spectrum Analyzer
HP 85650A	N/A	12/03/2004	12/03/2005	Quasi Peak Adaptor
HP 8744F	N/A	07/21/2005	12/03/2005	Pre Amp
AH Systems	199	06/15/2005	06/15/2007	Bicon Antenna
AH Systems	853	06/15/2005	06/15/2007	Log Periodic Antenna

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Physical Access Control Terminal*	SCM Microsystems	PAT 1121	N/A

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Hewlett-Packard	E3611A	N/A

Test Conditions / Notes:

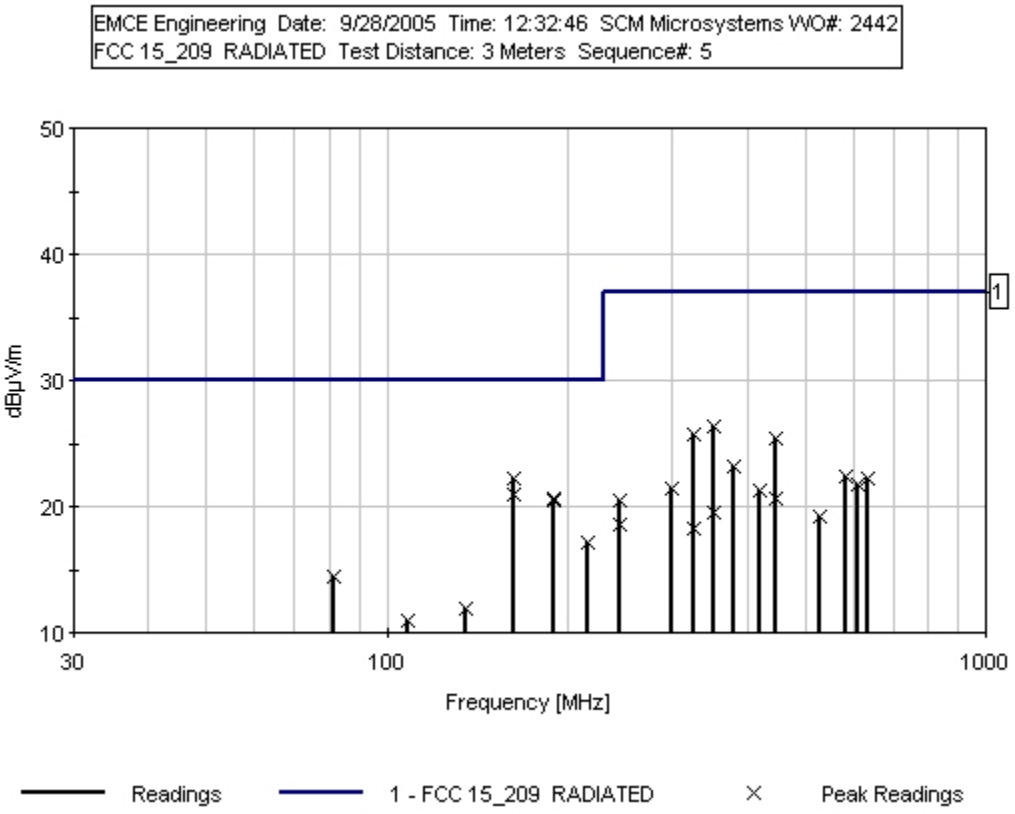
Transducer Legend:

T1=AH SAS-200/543 S/N: 199	T2=AH Log P SAS-200_510 S-N853
T3=EMCE Y1 Cable - Radiated Site	T4=8447 Pre-Amp

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	162.713M	43.6	+12.8	+0.0	+2.4	+26.6	-10.0	22.2	30.0	-7.8	Vert
2	162.717M	42.3	+12.8	+0.0	+2.4	+26.6	-10.0	20.9	30.0	-9.1	Horiz
3	189.833M	40.7	+14.1	+0.0	+2.5	+26.6	-10.0	20.7	30.0	-9.3	Vert
4	189.837M	40.5	+14.1	+0.0	+2.5	+26.6	-10.0	20.5	30.0	-9.5	Horiz
5	352.555M	45.1	+0.0	+14.4	+3.6	+26.8	-10.0	26.3	37.0	-10.7	Horiz
6	325.435M	45.5	+0.0	+13.6	+3.4	+26.8	-10.0	25.7	37.0	-11.3	Horiz
7	447.475M	41.2	+0.0	+17.2	+3.8	+26.8	-10.0	25.4	37.0	-11.6	Horiz
8	216.953M	36.9	+14.3	+0.0	+2.7	+26.7	-10.0	17.2	30.0	-12.8	Vert

9	379.675M	41.7	+0.0	+14.5	+3.8	+26.8	-10.0	23.2	37.0	-13.8	Horiz
10	583.075M	36.7	+0.0	+18.6	+4.0	+26.9	-10.0	22.4	37.0	-14.6	Vert



APPENDIX C

Test Data Sheets

Intentional Radiator Results

EMCE Engineering
44366 S. Grimmer Blvd Fremont, CA 94538
510-490-4307 / 510-490-3441 Fax

INTENTIONAL RADIATOR

Maximum allowed field strength in the frequency range of 13.553-13.567 MHz is 15,848 microvolts per meter, or 84 dBuV/M at a test distance of 30 meters. Test distance for this measurement is 1 meter. The calculation for determining the field strength limit at 1 meter is as follows:

Correction Factor = 40 log (distance 1 / distance 2)
Correction Factor = 40 log (30/1)
Correction Factor = 59.1 dBuV/M

Therefore, the limit used for this measurement is 143.1 dBuV/M

The plot on the following page shows the peak power output of the EUT as being 70.9 dBuV/M. at 13.56 MHz, which is the fundamental transmit frequency for this device.

Test results show compliance to the limits called out in CFR 47, Section 15.225 (a), (b), (c), (d) and (e), as well as RSS-210 6.2.2(e) as follows:

TEST RESULTS

Peak Output Power

Per CFR 47, Section 15.225 and RSS-210 Issue 5 Section 6.2.2(e)

Test Location: EMCE Engineering •44366 S. Grimmer Blvd • Fremont, CA 94538 • 510-490-4307

Customer: **SCM Microsystems**
Specification: **RFID Band 13.110-14.010 MHz**
Work Order #: **2452** Date: 9/27/2005
Test Type: **Radiated Scan** Time: 3:42:51 PM
Equipment: **Physical Access Control Terminal** Sequence#: 2
Manufacturer: SCM Microsystems Tested By: Test Engineer
Model: PAT 1121
S/N: N/A

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 8566B	EMCE 3	12/03/2004	12/03/2005	Spectrum Analyzer
Empire Devices Loop Antenna	N/A	09/19/2005	12/20/2005	LP-105

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Physical Access Control Terminal*	SCM Microsystems	PAT 1121	N/A

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Hewlett-Packard	E3611A	N/A

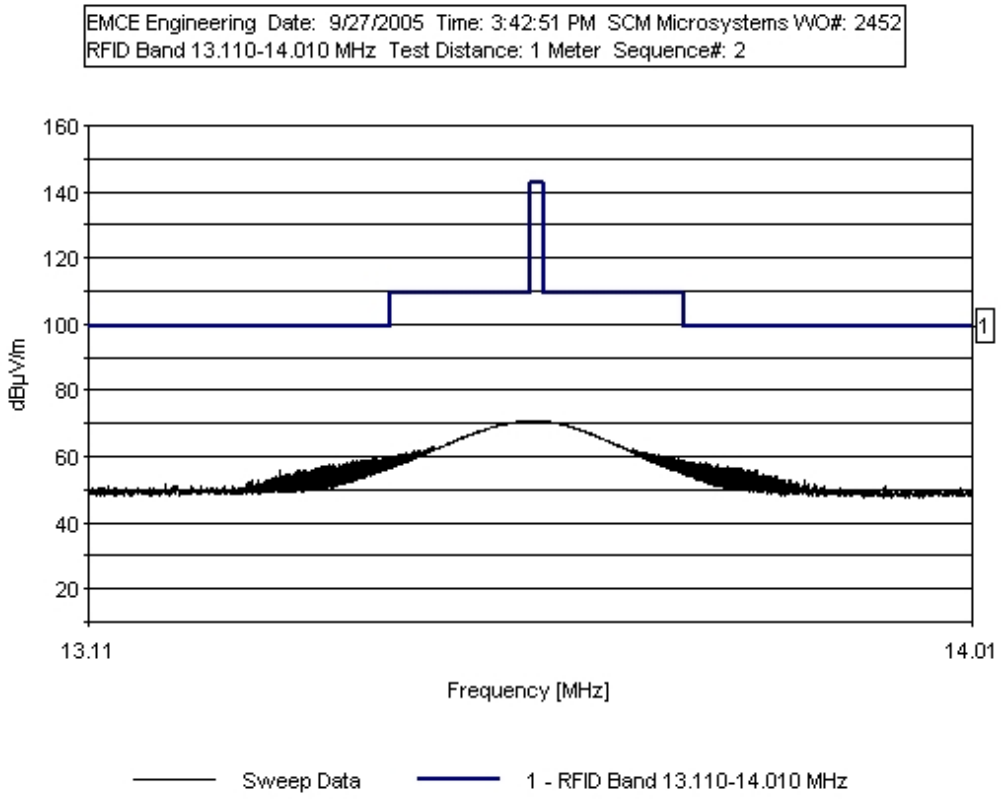
Test Conditions / Notes:

Transducer Legend:

T1=LP-105 Loop Antenna	T2=Chamber Receive Cable to 1 GHz

Measurement Data: Reading listed by margin. Test Distance: 1 Meter

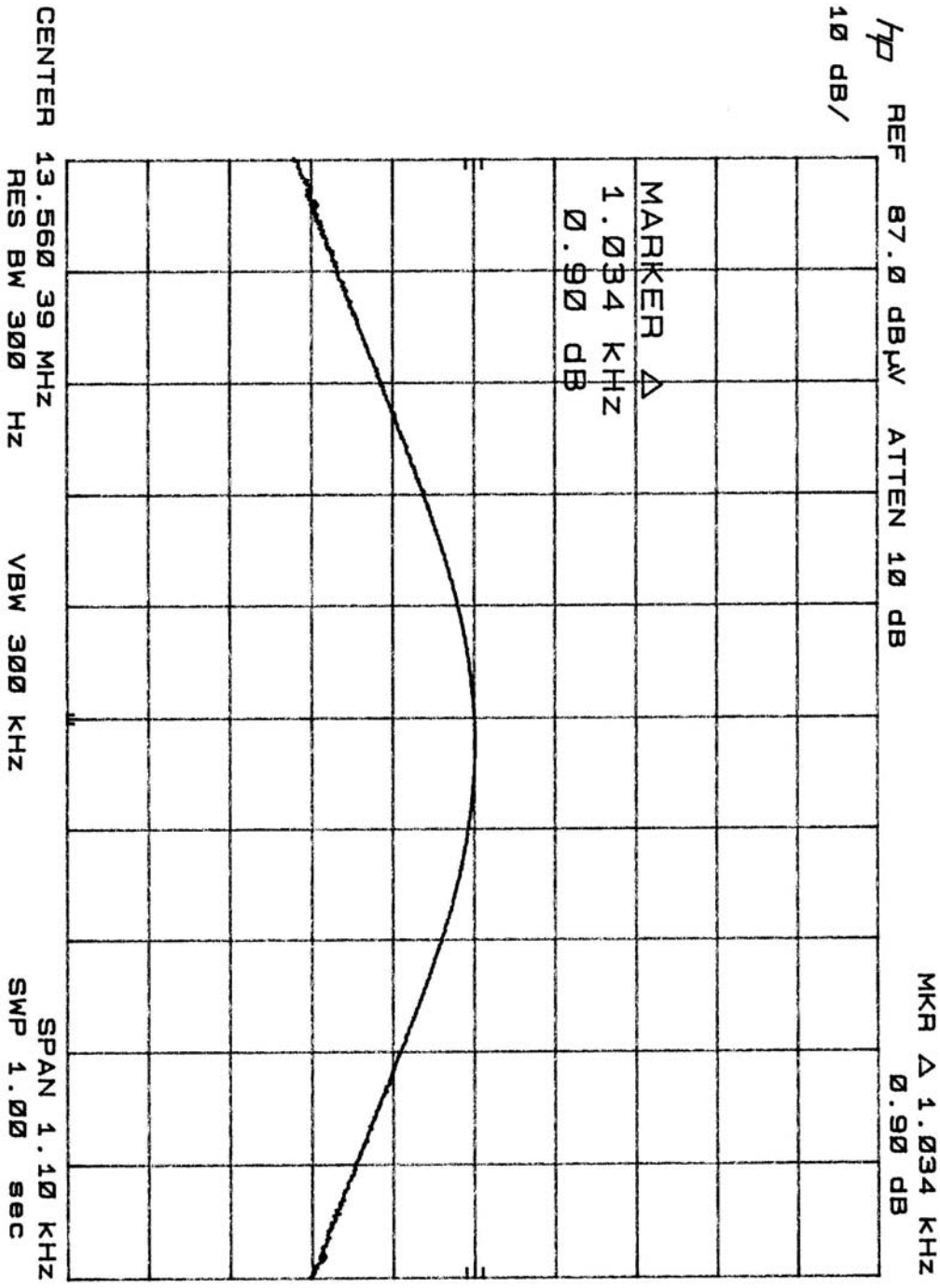
#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	**13.560M**	**50.5**	**+19.7**	**+0.7**			**+0.0**	**70.9**	**109.5**	**-38.6**	**Max**
2	13.410M	39.7	+19.7	+0.7			+0.0	60.1	99.5	-39.4	Max
3	13.406M	39.5	+19.7	+0.7			+0.0	59.9	99.5	-39.6	Max
4	13.405M	39.4	+19.7	+0.7			+0.0	59.8	99.5	-39.7	Max
5	13.397M	39.2	+19.8	+0.7			+0.0	59.7	99.5	-39.8	Max
6	13.403M	39.2	+19.7	+0.7			+0.0	59.6	99.5	-39.9	Max
7	13.408M	39.2	+19.7	+0.7			+0.0	59.6	99.5	-39.9	Max


EMCE Engineering Date: 9/27/2005 Time: 3:42:51 PM SCM Microsystems WO#: 2452
RFID Band 13.110-14.010 MHz Test Distance: 1 Meter Sequence#: 2
160
140
120
100
80
60
40
20
dBµV/m
1
13.11
14.01
Frequency [MHz]
Sweep Data
1 - RFID Band 13.110-14.010 MHz

20 dB Bandwidth

Per RSS-210, Section 5.9.1

20 dB BW = 1.034 kHz



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Frequency Stability

CFR 47, Section 15.225(e) and Sec 15.31(e), RSS-210 Sec 6.2.2(e) and 6.4

Temperature (Celcius)	Voltage (AC)	Transmit Frequency (MHz)	Upper Limit (MHz)	Lower Limit (MHz)	Pass / Fail
Ambient	12.0	13.560	13.6180	13.4823	PASS
Ambient	10.8	13.557	13.6180	13.4823	PASS
Ambient	13.2	13.558	13.6180	13.4823	PASS
+50	12.0	13.564	13.6180	13.4823	PASS
-20	12.0	13..557	13.6180	13.4823	PASS

Field Strength of Harmonics

CFR 47, Section 15.225(d), RSS-210 Sec 6.3
Limits from CFR 47, Section 15.209
Test Distance: 3 meters

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490.....	2400/F(kHz)	300
0.490-1.705.....	24000/F(kHz)	30
1.705-30.0.....	30	30
30-88.....	100 **	3
88-216.....	150 **	3
216-960.....	200 **	3
Above 960.....	500	3

Test Location: EMCE Engineering •44366 S. Grimmer Blvd • Fremont, CA 94538 • 510-490-4307

Customer: **SCM Microsystems**
Specification: **FCC 15_209 RADIATED**
Work Order #: **2442** Date: 9/28/2005
Test Type: **Radiated Scan** Time: 12:32:46
Equipment: **Physical Access Control Terminal** Sequence#: 5
Manufacturer: SCM Microsystems Tested By: Bob Cole
Model: PAT 1121
S/N: N/A

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 8566B	EMCE 1	12/03/2004	12/03/2005	Spectrum Analyzer
HP 85650A	N/A	12/03/2004	12/03/2005	Quasi Peak Adaptor
HP 8744F	N/A	07/21/2005	12/03/2005	Pre Amp
AH Systems	199	06/15/2005	06/15/2007	Bicon Antenna
AH Systems	853	06/15/2005	06/15/2007	Log Periodic Antenna

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Physical Access Control Terminal*	SCM Microsystems	PAT 1121	N/A

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Hewlett-Packard	E3611A	N/A

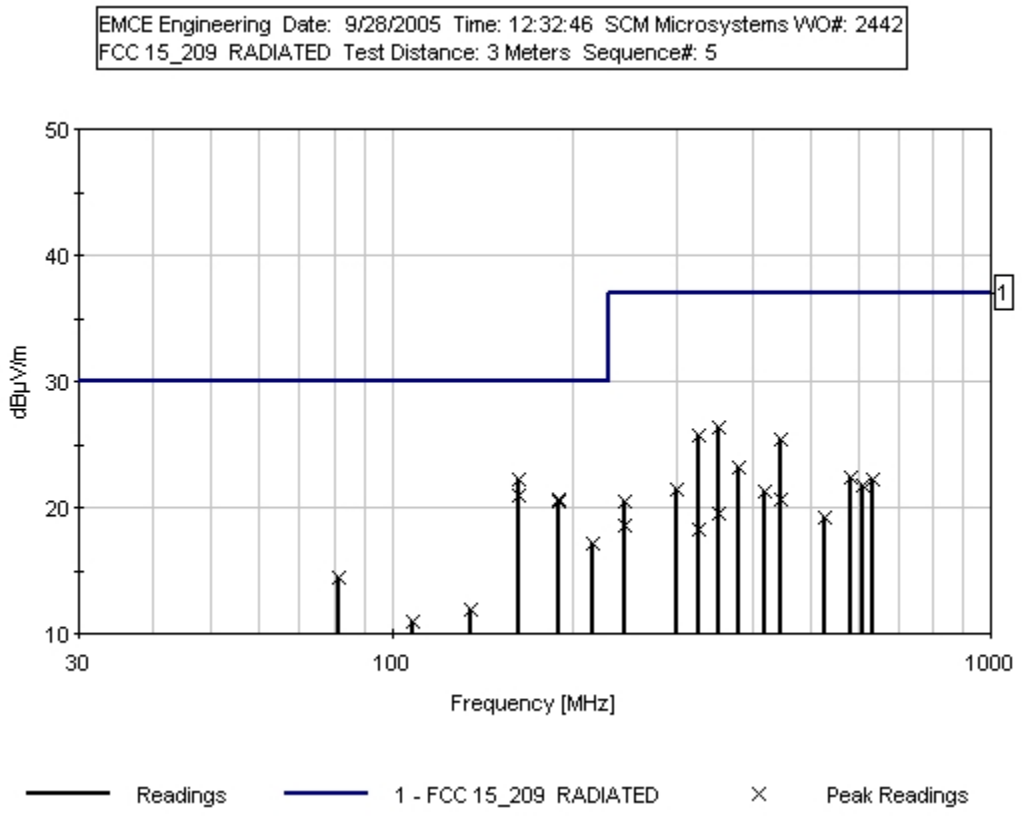
Test Conditions / Notes:

Transducer Legend:

T1=AH SAS-200/543 S/N: 199	T2=AH Log P SAS-200_510 S-N853
T3=EMCE Y1 Cable - Radiated Site	T4=8447 Pre-Amp

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	162.713M	43.6	+12.8	+0.0	+2.4	+26.6	-10.0	22.2	30.0	-7.8	Vert
2	162.717M	42.3	+12.8	+0.0	+2.4	+26.6	-10.0	20.9	30.0	-9.1	Horiz
3	189.833M	40.7	+14.1	+0.0	+2.5	+26.6	-10.0	20.7	30.0	-9.3	Vert
4	189.837M	40.5	+14.1	+0.0	+2.5	+26.6	-10.0	20.5	30.0	-9.5	Horiz
5	352.555M	45.1	+0.0	+14.4	+3.6	+26.8	-10.0	26.3	37.0	-10.7	Horiz
6	325.435M	45.5	+0.0	+13.6	+3.4	+26.8	-10.0	25.7	37.0	-11.3	Horiz
7	447.475M	41.2	+0.0	+17.2	+3.8	+26.8	-10.0	25.4	37.0	-11.6	Horiz
8	216.953M	36.9	+14.3	+0.0	+2.7	+26.7	-10.0	17.2	30.0	-12.8	Vert
9	379.675M	41.7	+0.0	+14.5	+3.8	+26.8	-10.0	23.2	37.0	-13.8	Horiz
10	583.075M	36.7	+0.0	+18.6	+4.0	+26.9	-10.0	22.4	37.0	-14.6	Vert



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APPENDIX E

EUT MODIFACTION LIST AND PHOTOS

N/A - NO modifications necessary

APPENDIX F

CERTIFICATION LABELING AND COMPLIANCE INFORMATION

CERTIFICATION LABELING AND COMPLIANCE INFORMATION

If a product must be tested and require Certification, a Compliance Information Statement shall be supplied with the product at the time of marketing or importation. The compliance information statement shall contain the information as shown:

COMPLIANCE INFORMATION STATEMENT

Product Name: *RFID Contact / Contactless Reader*
Product Model Number: *PAT 1121 /1111*

> *This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.*

Identification

Devices subject Certification shall be uniquely identified by the responsible party. This identification shall be of a format consisting of the FCC Identifier, e.g.,:

FCC ID: MBPPAT11211000

Labeling Requirements

Product authorizations subject to Certification shall have a label as follows:

The label shall be located in a conspicuous location on the device and shall contain as a minimum the unique identification of "Trade Name" and "Model Number" along with the FCC 2 part statement, as well as the FCC Identifier noted in F1.2

Retention of Records

For each product subject to Certification, the responsible party shall maintain the records listed below:

A) A record of the original design drawings and specifications and all changes that have been made that may affect compliance with the FCC requirements.

B) A record of the procedures used for production inspection and testing (if tests were performed) to insure the continuous conformance required. (Statistical production line emission testing is not required).

C) A record of the measurements made on an appropriate test site that demonstrates compliance with the applicable regulations.

APPENDIX G

Measuring Equipment Error Analysis

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MEASURING EQUIPMENT ERROR ANALYSIS

Radiated Emissions Measurement

Table 1 shows the calculated measurement accuracy for radiated emissions test (30MHz-1000MHz). The radiated emissions amplitude accuracy is determined as follows: Antenna Factor Error + Cable Loss Error + Pre-amplifier Gain Error + Spectrum Analyzer Amplitude Error. The spectrum analyzer amplitude error is obtained from the manufacturer's specification sheet. Antenna factors are measured at 1 year intervals by EMCE Engineering, and cable losses as well as amplifier gains are swept at least every month by EMCE Engineering to verify accurate values. The measurement accuracy for these are determined by EMCE.

Table 1
Radiated Emissions Measurement Accuracy

Equipment	Manufacturer	Model	Accuracy
Spectrum Analyzer	*Hewlett-Packard*	*8568B*	*+/- 1.6dB*
Antennas	*EMCO/Roberts*	*3104/Empire*	*+/- 1.0dB*
Pre-amplifier	*Hewlett-Packard*	*8447D*	*+/- 0.5dB*
Double Shielded Coax Cable	*50 ohm, Type N*	*50 feet*	*+/- 0.5dB*
			= +/- 3.6dB

Conducted Emissions Measurement

Table 2 shows the calculated measurement accuracy for conducted emissions test (150kHz-30MHz). The conducted emissions amplitude accuracy is determined as follows: LISN Attenuation Error + Cable Loss Error + Spectrum Analyzer Amplitude Error. The spectrum analyzer amplitude error and LISN attenuation error are obtained from the manufacturer's specification sheet. Cable loss below 30MHz is negligible therefore error presented by the cable is not considered.

Table 2
Conducted Emissions Measurement Accuracy

Equipment	Manufacturer	Model	Accuracy
Spectrum Analyzer	*Hewlett-Packard*	*8568B*	*+/- 1.6dB*
LISN	*EMCO*	*3816/2*	*+/- 0.5dB*
			= +/- 2.1dB

APPENDIX H

TEST EQUIPMENT LIST

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Test Equipment List

Name	Manufacturer	Model	Cal. Due Date	Designator
Spectrum Analyzer	*Hewlett-Packard*	*8568B*	*12/3/05*	*1*
Quasi-Peak Adapter	*Hewlett-Packard*	*85650A*	*12/3/05*	*2*
LISN	*EMCO*	*3816/2*	*12/3/05*	*3*
Antenna Mast	*EMCO*	*1050*	*N/A*	*4*
Rotating Table	*EMCO*	*1060*	*N/A*	*5*
Antenna, Biconical	*Electro-Metrics*	*BIA-30*	*12/30/05*	*6*
Antenna, Log-periodic	*Electro-Metrics*	*LPA-30*	*12/30/05*	*7*
Antenna, Loop	*Empire Devices*	*LP-105*	*12/20/05*	*8*
Preamplifier	*Hewlett-Packard*	*8447D*	*12/3/05*	*9*
Computer Controller	*Fujitsu / EMITest*	*Lifebook*	*N/A*	*10*