TEST REPORT

Report Number: 3126763MPK-001
Project Number: 3126763
Report Date: June 29, 2007

Testing performed on the
Proximity Card Access, Reader-Controller
Models: RC-01-IP-HLF-M-STD-NA, RC-01-IP-ILF-M-STD-NA
RC-01-IP-HLF-M-KPD-NA, RC-01-IP-ILF-M-KPD-NA

FCC ID: OCZRC-01

to
FCC Part 15.209

for
Isonas, Inc.

A2LA Certificate Number: 1755-01

Test Performed by:	**Test Authorized by:**
Intertek Testing Services NA, Inc	Isonas, Inc.
1365 Adams Court	6325 Gunpark Dr. Suite 101
Menlo Park, CA 94025	Boulder, CO 80301

Prepared by: _____ **Date:** June 29, 2007
Ollie Moyrong, Operations Manager

Reviewed by: _____ **Date:** June 29, 2007
David Chernomordik, EMC Technical Manager

Report No. 3126763MPK-001

Equipment Under Test:	Card Reader
Trade Name: **Model No.**:	Isonas, Inc. RC-01-IP-HLF-M-STD-NA, RC-01-IP-ILF-M-STD-NA, RC-01-IP-HLF-M-KPD-NA, RC-01-IP-ILF-M-KPD-NA
FCC ID:	OCZRC-01
Applicant: **Contact**: **Address**: **Country**	Isonas, Inc. Roger Matsumoto 6325 Gunpark Drive Suite 101 Boulder, CO 80301 USA
Tel. Number: **Fax number**: **Email:**	303-567-6516 303-657-6991 rogerm@isonas.com
Applicable Regulation:	FCC Part 15, Subpart C
Test Site Location:	ITS – Site 1 1365 Adams Drive Menlo Park, CA 94025
Date of Test:	June 22 – June 29, 2007

We attest to the accuracy of this report:

Ollie Moyrong
Operations Manager

David Chernomordik
EMC Technical Manager

TABLE OF CONTENTS

1.0 Introduction

The Equipment Under Test (EUT) is a proximity card access, reader-controller, operating at 122 kHz. It is permanently connected. The PowerNet reader models connect directly to a LAN via an RJ45 connector and communicates to a PC using standard TCP/IP Protocol. In addition the PowerNet readers can be powered using standard 802.3af technology through a standard Cat5 Ethernet cable or by a 12vdc or 24vdc power source.

Model Numbers:
RC-01-IP-HLF-M-STD-NA – a PowerNet IP HID enabled mullion reader-controller
RC-01-IP-ILF-M-STD-NA – a PowerNet IP mullion reader-controller
RC-01-IP-HLF-M-KPD-NA – a PowerNet IP HID enabled mullion with Keypad reader-controller
RC-01-IP-ILF-M-KPD-NA – a PowerNet IP mullion with Keypad reader-controller

Where mullion is a housing format/size. Currently, we have only one housing size. The models are similar in that the internals of the reader-controller are identical except for the keypad affixed to the front of the reader-controller for the keypad models. The HID enabling feature is implemented in firmware.

This report documents the compliance of the proximity card access, reader-controller with the FCC Part 15.209 requirements.

1.1 Summary of Tests

TEST	REFERENCE FCC Subpart C	RESULTS
Field Strength	15.209	Complies
AC Conducted Emission	15.207	Not Applicable*
Antenna Requirement	15.203	Complies

* The EUT is DC powered and has no direct connection to the public AC network

2.0 General Description

2.1 Product Description

Overview of the Proximity Card Access, Reader-Controller

Frequency Range	122.8 kHz +/- 0.001%
Number of Channel(s)	1
Antenna(s) type	Loop coil

A production version of the sample was received on June 22, 2007 in good condition. As declared by the Applicant, it is identical to production units.

Test start date: June 22, 2007
Test end date: June 28, 2007

2.2 Related Submittal(s) Grants

None.

2.3 Test Methodology

Radiated emissions measurements were performed according to the procedures in ANSI C63.4 (2003). Radiated tests were performed at an antenna to EUT distance of 10 meters, unless stated otherwise in the **"Data Sheet"** of this Application.

2.4 Test Facility

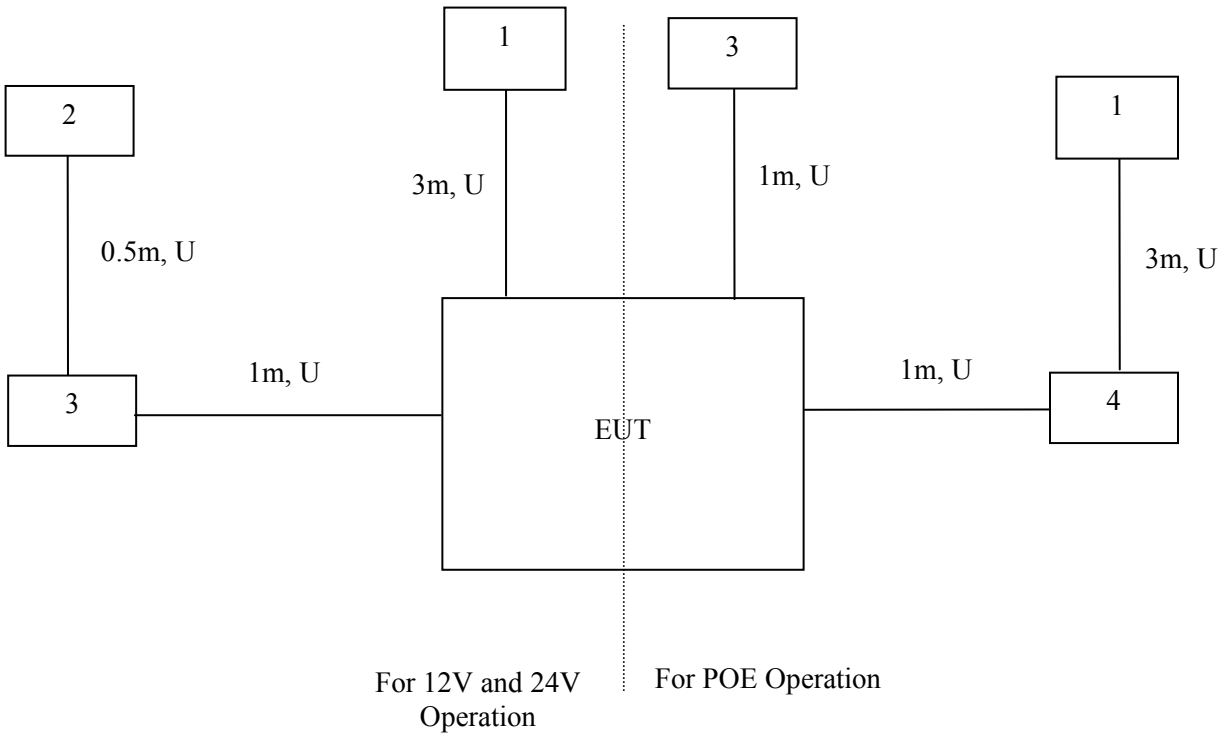
Then radiated emission test site and conducted measurement facility used to collect the data is site 1 located in Menlo Park, California. This test facility and site measurement data have been fully placed on file with the FCC.

3.0 System Test Configuration

3.1 Support Equipment

Item #	Description	Model No.	Serial No.
1	Compaq Laptop	Armada 7400	7933CY570119
2	BK Precision DC Power Supply	1630	146-02817
3	Isonas Test Board	Not Labeled	Not Labeled
4	PowerDSine Power Over Ethernet Supply	PD-3001/AC	BO548050025271001

3.2 Block Diagram of Test Setup



m: Length in meters
U: Unshielded

3.3 Software Exercise Program

During radiated testing, test software provided by the applicant was used to exercise the various system components in a manner similar to a typical use.

3.4 Mode of Operation During Testing

The EUT was tested in 3 configurations:

1. Powered by Power Over Ethernet
2. Powered 12VDC
3. Powered by 24VDC

For each configuration, the EUT was connected to a laptop and program named “Reader Tester” was used to exercise the EUT. The EUT was transmitting at 122 kHz.

3.5 Modifications Required for Compliance

No modifications were installed by Intertek Testing Services during compliance testing in order to bring the product into compliance (Please note that this list does not include changes made specifically by Topcon prior to compliance testing).

4.0 Measurement Results

4.1 Requirement

The emissions shall not exceed the field strength levels specified in the following table:

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

The level of any unwanted emissions shall not exceed the level of the fundamental emission.

4.2 Procedure

For radiated emission measurements the EUT is placed on a non-conductive table. The signal is maximized through rotation and placement in the three orthogonal axes.

The EUT is attached to peripherals and they are connected and operational (as typical as possible). The EUT is wired to transmit full power. During testing, all cables are manipulated to produce worst-case emissions.

For measurements below 30 MHz, a loop antenna is placed at 1 m height above the ground plane. For measurements above 30 MHz, the antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters.

At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations. When performing measurements at a closer distance than specified, the results are extrapolated to the specified distance using the square of an inverse linear distance extrapolation factor (40 dB/decade).

At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified. When performing measurements at a distance other than that specified, the results are extrapolated to the specified distance using the inverse linear distance extrapolation factor (20 dB/decade).

4.3 Test Results

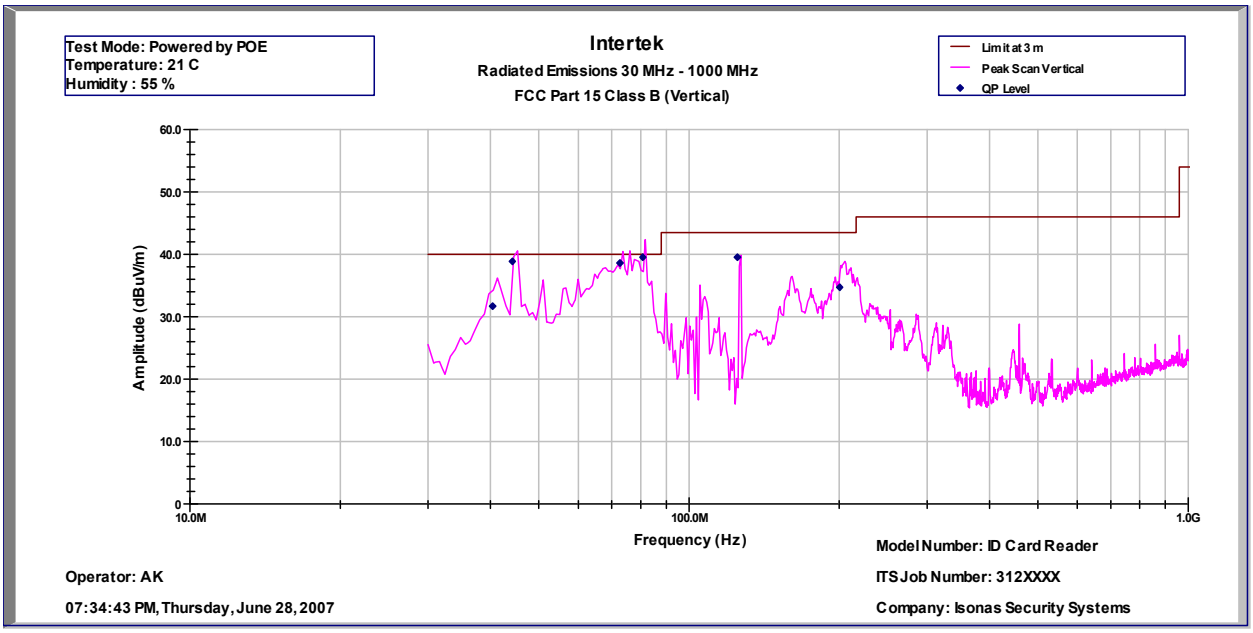
Measurement results for frequencies below 30 MHz

Freq.	SA Reading	Distance	E AF*	E Field	Distance correction Factor	E Field at specified distance	Limit at specified distance	Margin
kHz	dB(uV)	m	dB(1/m)	dB(uV/m)	dB	dB(uV/m)	dB(uV/m)	dB
122.9	54.8	10	16.2	71.0	-59.1	11.9	25.8	-13.9
246.0	47.7	10	15.4	63.1	-59.1	4.0	19.8	-15.8
368.8	43.7	10	18.9	62.6	-59.1	3.5	16.3	-12.8
491.8	41.7	3	15.4	57.1	-40	17.1	33.8	-16.7
614.8	40.2	3	15.4	55.6	-40	15.6	31.8	-16.2
737.8	38.8	3	15.3	54.1	-40	14.1	30.2	-16.1
861.2	37.2	3	15.3	52.5	-40	12.5	28.9	-16.4
984.2	35.3	3	15.3	50.6	-40	10.6	27.7	-17.1
1106.5	35.6	3	15.3	50.9	-40	10.9	26.7	-15.8
1229.5	36.2	3	15.3	51.5	-40	11.5	25.8	-14.3

*E AF = E-field Antenna Factor
Note: Measurements were made with the EUT operating in POE, 12V and 24V modes. The worst-case data is reported.

4.3 Test Results - continued

Measurement result for frequencies above 30 MHz



Intertek Testing Services
Radiated Emissions 30 MHz - 1000 MHz
FCC Part 15 Class B (QP-Vertical)

Operator: AK — Model Number: ID Card Reader

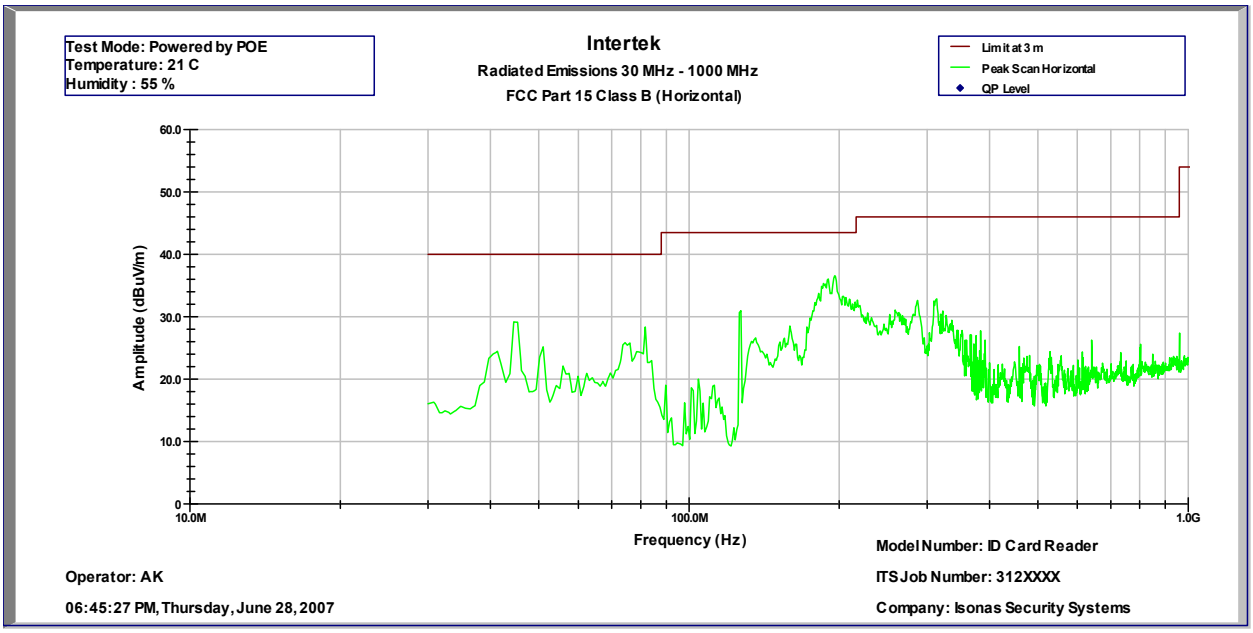
07:33:54 PM, Thursday, June 28, 2007 — Company: Isonas Security Systems

Frequency	Quasi Pk FS	Limit@3m	Margin	RA	Cable	AG	DCF	AF
MHz	dB(uV/m)	dB(uV/m)	dB	dB(uV)	dB	dB	dB	dB(1/m)
40.4	31.7	40	-8.3	43.7	3.8	31.2	0	15.4
44.2	38.9	40	-1.1	51.3	3.8	31.2	0	15
72.7	38.6	40	-1.4	59	4.1	31.2	0	6.8
80.8	39.6	40	-0.4	59.4	4.1	31.2	0	7.2
125.0	39.5	43.5	-4	55.6	4.4	31.2	0	10.7
200.3	34.7	43.5	-8.8	50.6	4.9	31.2	0	10.4

Test Mode: Powered by POE
Temperature: 21 C
Humidity : 55 %

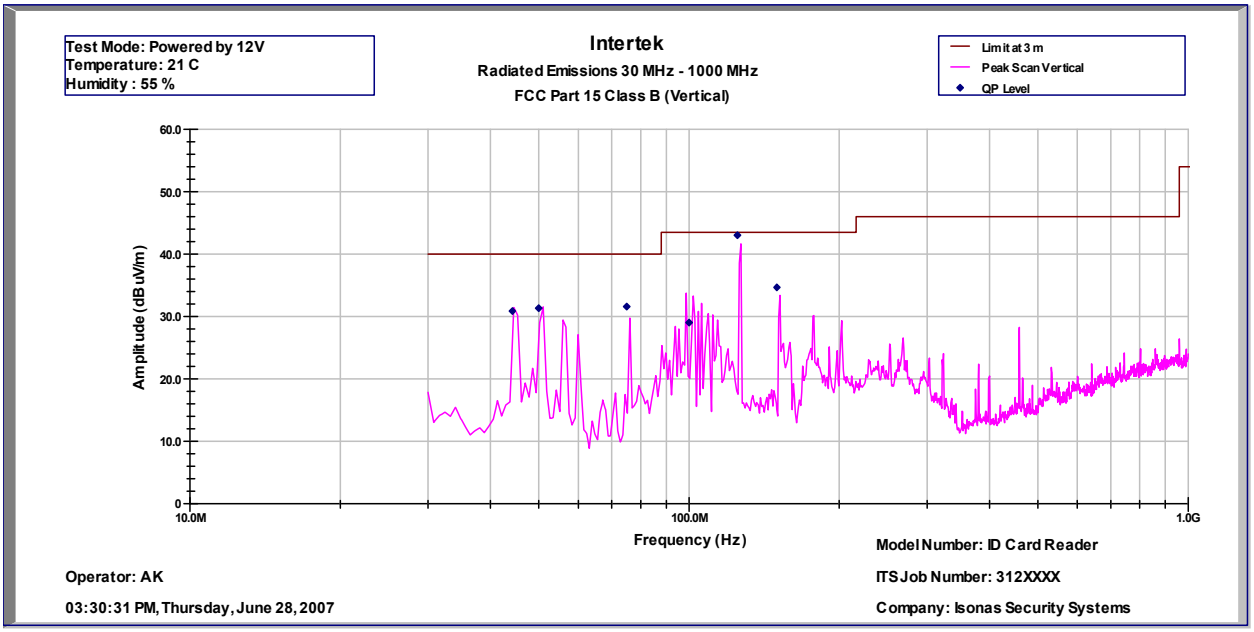
4.3 Test Results - continued

Measurement result for frequencies above 30 MHz



4.3 Test Results - continued

Measurement result for frequencies above 30 MHz



Intertek Testing Services
Radiated Emissions 30 MHz - 1000 MHz
FCC Part 15 Class B (QP-Vertical)

Operator: AK — Model Number: ID Card Reader

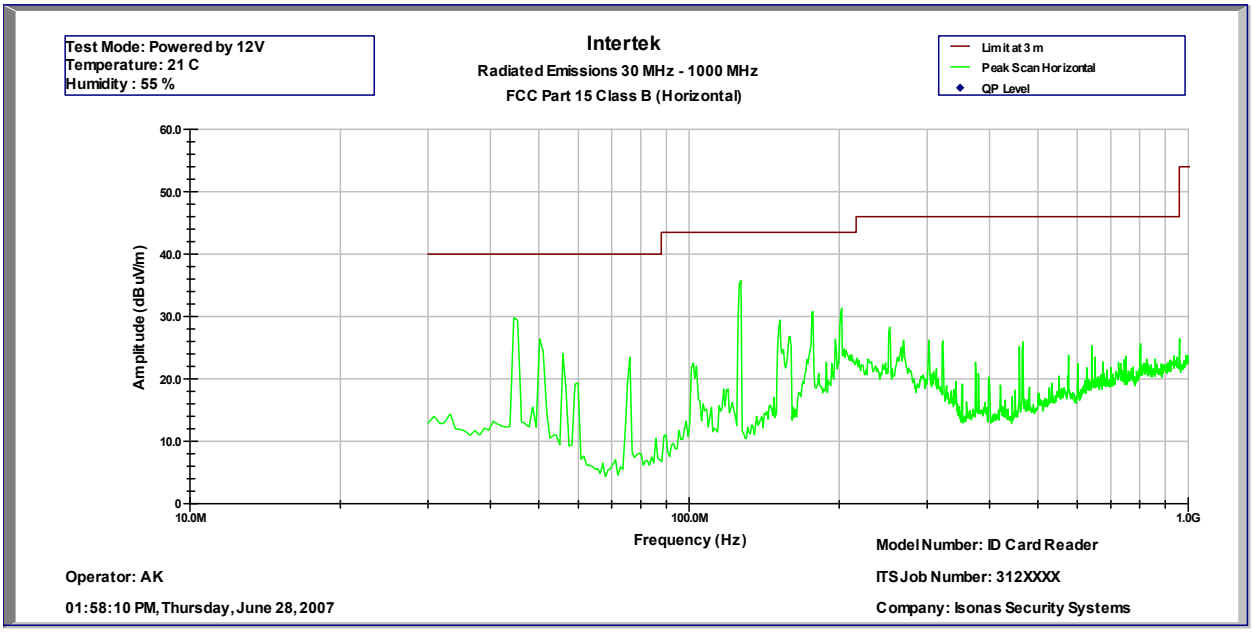
03:30:26 PM, Thursday, June 28, 2007 — Company: Isonas Security Systems

Frequency	Quasi Pk FS	Limit@3m	Margin	RA	Cable	AG	DCF	AF
MHz	dB(uV/m)	dB(uV/m)	dB	dB(uV)	dB	dB	dB	dB(1/m)
44.2	30.9	40	-9.1	43.3	3.8	31.2	0	15
50.0	31.3	40	-8.7	45.3	3.9	31.2	0	13.4
75.0	31.6	40	-8.4	52	4.1	31.2	0	6.7
100.0	29	43.5	-14.5	45.3	4.2	31.2	0	10.7
125.0	43	43.5	-0.5	59.1	4.4	31.2	0	10.7
150.0	34.7	43.5	-8.8	53.1	4.6	31.2	0	8.2

Test Mode: Powered by 12V
Temperature: 21 C
Humidity : 55 %

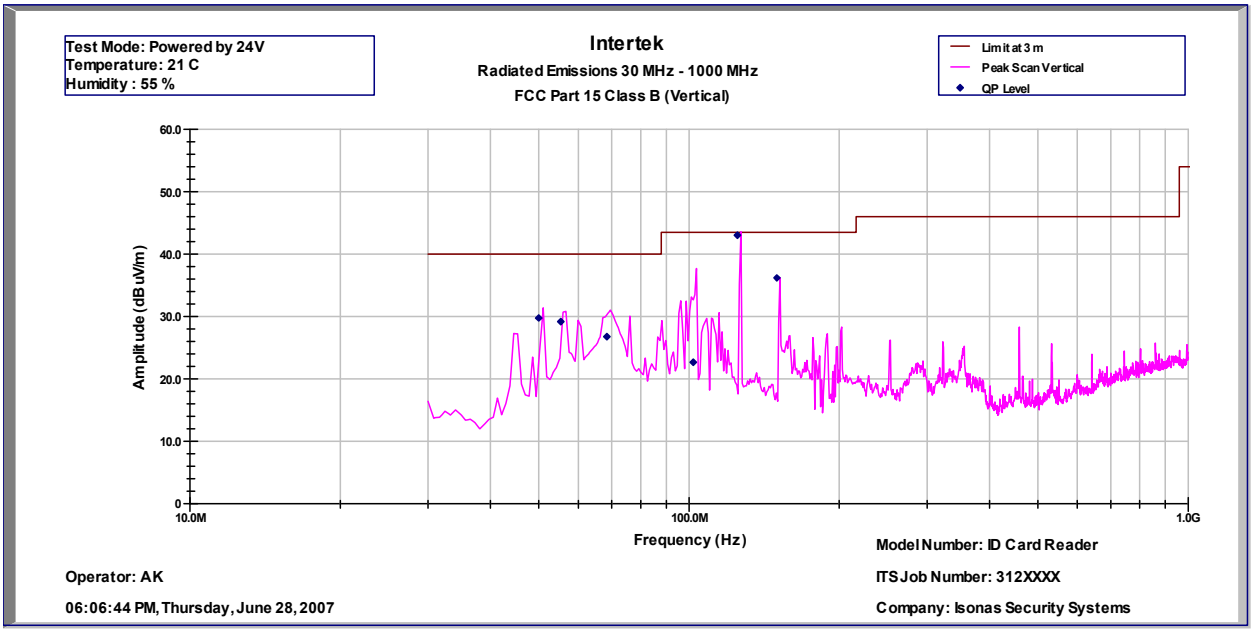
4.3 Test Results - continued

Measurement result for frequencies above 30 MHz



4.3 Test Results - continued

Measurement result for frequencies above 30 MHz



Intertek Testing Services
Radiated Emissions 30 MHz - 1000 MHz
FCC Part 15 Class B (QP-Vertical)

Operator: AK — Model Number: ID Card Reader

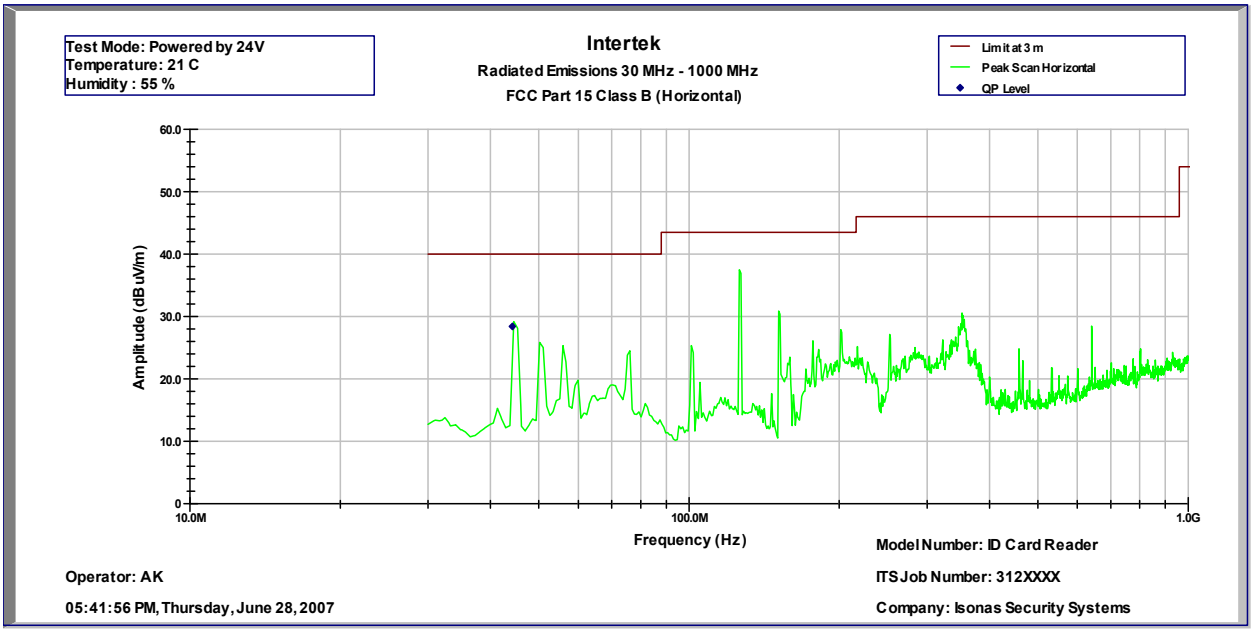
06:05:31 PM, Thursday, June 28, 2007 — Company: Isonas Security Systems

Frequency	Quasi Pk FS	Limit@3m	Margin	RA	Cable	AG	DCF	AF
MHz	dB(uV/m)	dB(uV/m)	dB	dB(uV)	dB	dB	dB	dB(1/m)
50.0	29.8	40	-10.2	43.7	3.9	31.2	0	13.4
55.3	29.2	40	-10.8	45	3.9	31.2	0	11.5
68.4	26.8	40	-13.2	46.2	4	31.2	0	7.7
101.9	22.7	43.5	-20.8	38.7	4.3	31.2	0	10.9
125.0	43	43.5	-0.5	59.1	4.4	31.2	0	10.7
150.0	36.2	43.5	-7.3	54.6	4.6	31.2	0	8.2

Test Mode: Powered by 24V
Temperature: 21 C
Humidity : 55 %

4.3 Test Results - continued

Measurement result for frequencies above 30 MHz



Results:	Complies by 0.4 dB for POE operation Complies by 0.5 dB for 12V operation Complies by 0.5 dB for 24V operation

5.0 List of test equipment

Measurement equipment used for emission compliance testing utilized the equipment on the following list:

Equipment	Manufacturer	Model/Type	Serial #	Cal Int	Cal Due
RF Filter Section	Hewlett Packard	85460A	3448A00267	12	9/11/07
EMI Receiver	Hewlett Packard	8546A	3710A00373	12	9/11/07
BI-Log Antenna	ARA Inc.	LPB-2513/A	1154	12	8/29/07
Pre-Amplifier	Sonoma Inst.	310	185634	12	8/11/07
Loop Antenna	EMCO	6507	9012-1259	12	8/15/07

6.0 Document History

Revision/ Job Number	Writer Initials	Date	Change
1.0 / 3126763	OM	June 29, 2007	Original document