ENGINEERING TEST REPORT

ON:
PARADOX SECURITY SYSTEMS
"GPS 880 CARD READER"

FCC ID: N4CPOSIPROX

IN ACCORDANCE WITH:
FCC PART 15, SUBPART C, PARAGRAPH 15.209
GENERAL LIMITS FOR LOW POWER TRANSMITTERS

PROJECT NO.: 8R00488.2

TESTED FOR:

PARADOX SECURITY SYSTEMS
780 INDUSTRIAL BLVD.
STE EUSTACHE, QUEBEC J7R 5V3

TESTED BY:
KTL OTTAWA INC.
3325 RIVER ROAD, R.R. 5
OTTAWA, ONTARIO K1V 1H2

NVLAP LAB CODE: 100351-0

JULY 1998

This document contains 18 pages including this one.

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Section 1. Summary Of Test Results

Manufacturer: GPS 880

Model No.: Item #2

Serial No.: None

General: **All measurements are traceable to national standards.**

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 15, Subpart C for low power devices. All tests were conducted using measurement procedure ANSI C63.4-1992. Radiated Emissions were made on an open area test site.

☒ New Submission ☒ Production Unit

☐ Class II Permissive Change ☐ Pre-Production Unit

THIS TEST REPORT RELATES ONLY TO THE ITEM(S) TESTED.

THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE TEST SPECIFICATIONS HAVE BEEN MADE.
See " Summary of Test Data".

NVLAP LAB CODE: 100351-0

TESTED BY: _____ DATE: _____
Tom Tidwell, Senior Technologist

APPROVED BY: _____ DATE: _____
W. Waterhouse, RF Engineering Lab Manager

Summary Of Test Data

NAME OF TEST	PARA. NO.	RESULT
Powerline Conducted Emissions	15.207	Not Applicable
Radiated Emissions	15.209	Complies
Occupied Bandwidth	Not Specified	Informative Only

Footnotes For N/A's: The E.U.T. connects to a security alarm panel for power.

Test Conditions: Temperature: 25 °C
Humidity: 50 %

Section 2. General Equipment Specification

Frequency Range:	0.125 MHz
Operating Frequency(ies) of Sample:	0.1258 MHz
Modulation:	Pulse Modulated
Emission Designator:	377HP0N

	Yes	**No**
Integral Antenna	☒	☐

Note: *If antenna is not integral to transmitter explain method of attachment and type of unique connector:*

Description of Modification for Class II Permissive Change

NOT APPLICABLE

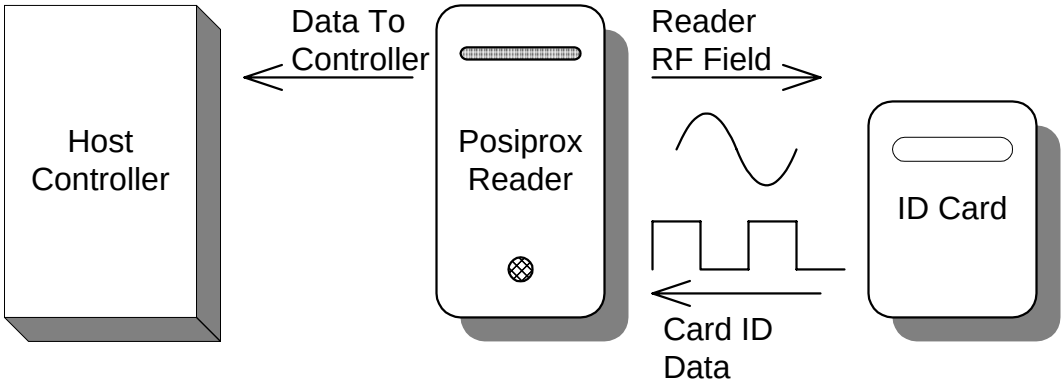
Modifications Made During Testing

NOT APPLICABLE

Theory of Operation

The E.U.T. generates a pulsed carrier at 125 kHz continuously. When the ID card is placed within this field, the card is powered by the 125 kHz field and "wakes up" to transmit its unique ID number. If the ID number is valid it is decoded by the reader and sent to the host controller via data cables. The host controller provides 12.5 Vdc power to the reader.

System Diagram



Section 3. Powerline Conducted Emissions

NAME OF TEST: Powerline Conducted Emissions	PARA. NO.: 15.207
TESTED BY:	DATE:

Test Conditions: Standard Temperature and Humidity
Standard Test Voltage

Minimum Standard:

Frequency (MHz)	Maximum Powerline Conducted RF Voltage (μV)	(dBμV)
0.45 - 30.0	250	48

NOT APPLICABLE

Test Results: Complies / Does not comply. See attached graph(s).

Measurement Data: See attached graph(s).

Method of Measurement: (Proced[illegible] ANSI C63.4-1992)

Measurements were made using a spectrum analyzer with 10 kHz RBW, Peak Detector. Any emissions that are close to the limit are measured using a test receiver with 10 kHz bandwidth, CISPR Quasi-Peak Detector.

Powerline Conducted Photographs (Worst Case Configuration)

SIDE VIEW

FRONT VIEW

Section 4. Radiated Emissions

NAME OF TEST: Radiated Emissions	PARA. NO.: 15.209
TESTED BY: Tom Tidwell	DATE: July 31, 1998

Minimum Standard: The field strength of emissions from the device shall not exceed the following limits.

Fundamental (MHz)	Field Strength (mV/m)	Field Strength (dBμV)
0.009 - 0.490	2400/F(kHz) @ 300m	—
0.490 - 1.705	24000/F(kHz) @ 30m	—
1.705 - 30	30 @ 30m	—
30 - 88	100	40.0
88 - 216	150	43.5
216 - 960	200	46.0
Above 960	500	54.0

Test Results: Complies. The worst-case emission level is 51.5 dBμV/m @ 3m at 0.1258 MHz. This is 33.1 dB below the specification limit.

Measurement Data: **(Procedure ANSI C63.4-1992)**

Maximizing Emission Levels:
For hand held equipment or equipment that may be mounted in a variety of positions, the E.U.T. was tested on three orthogonal axis to determine orientation of worst-case emission levels. Below 30 MHz an active loop antenna is used at a fixed height of 1 meter. The loop is rotated about it's vertical axis to obtain worst-case results.

Spectrum Searched:
The spectrum was searched from the lowest frequency generated in the E.U.T. up to 1000 MHz, or the 10^{th} harmonic of the fundamental emission.

Near-Field Measurement:
Emissions below 30 MHz are measured in the near-field and an extrapolation factor of 40 dB per decade is used to determine the 10m limit.

Example: Measurement Distance = 10m
Specification Distance = 300m

10m Limit: Specified limit (at 300m) - (40 Log $\frac{10}{300}$)

Thus for measurement at 10m the specified limit is increased by 59 dB.

Test Data - Radiated Emissions

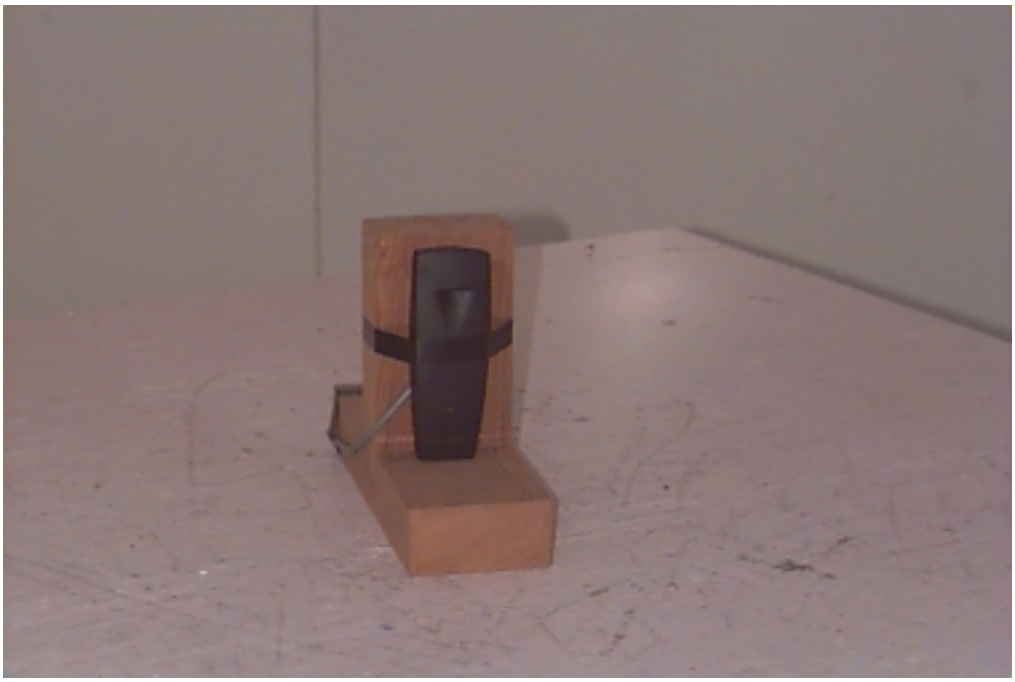
Test Distance (meters) : 10		Range: A Tower		Receiver: ESH-3		RBW(kHz): 10 kHz		Detector: Peak			
Freq. (MHz)	Ant. *	Pol. (V/H)	Ant. HGT. (m)	Table (deg.)	RCVD Signal (dBµV/m)	Ant. Factor (dB)**	Amp. Gain (dB)***	Dist. Corr. (dB)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
0.1258	N/A	1.0			31.5	20			51.5	84.6	33.1
0.250	N/A	1.0			13.4	20			33.4	78.6	45.2
0.375	N/A	1.0			5.6	20			25.6	75.1	49.5
0.500	N/A	1.0			10.0	20			30.0	52.6	22.6
0.624	N/A	1.0			11.0	20			31.0	50.7	19.7
0.750	N/A	1.0			10.0	20			30.0	49.1	19.1
0.874	N/A	1.0			7.0	20			27.0	47.8	20.8
1.000	N/A	1.0			6.9	20			26.9	46.6	19.7
1.125	N/A	1.0			5.7	20			25.7	45.6	19.9

Notes: All emissions not reported were more than 20dB below the specification limit.

B/C = Biconical, B/L = Biconilog, L/P = Log-Periodic, H = Horn, D/P = Dipole
* Re-measured using dipole antenna.
** Includes cable loss when amplifier is not used.
*** Includes cable loss.
( ) Denotes failing emission level.

Radiated Photographs (Worst Case Configuration)

FRONT VIEW



Section 5. Occupied Bandwidth

NAME OF TEST: Occupied Bandwidth	PARA. NO.: N/A
TESTED BY: Tom Tidwell	DATE: July 31, 1998

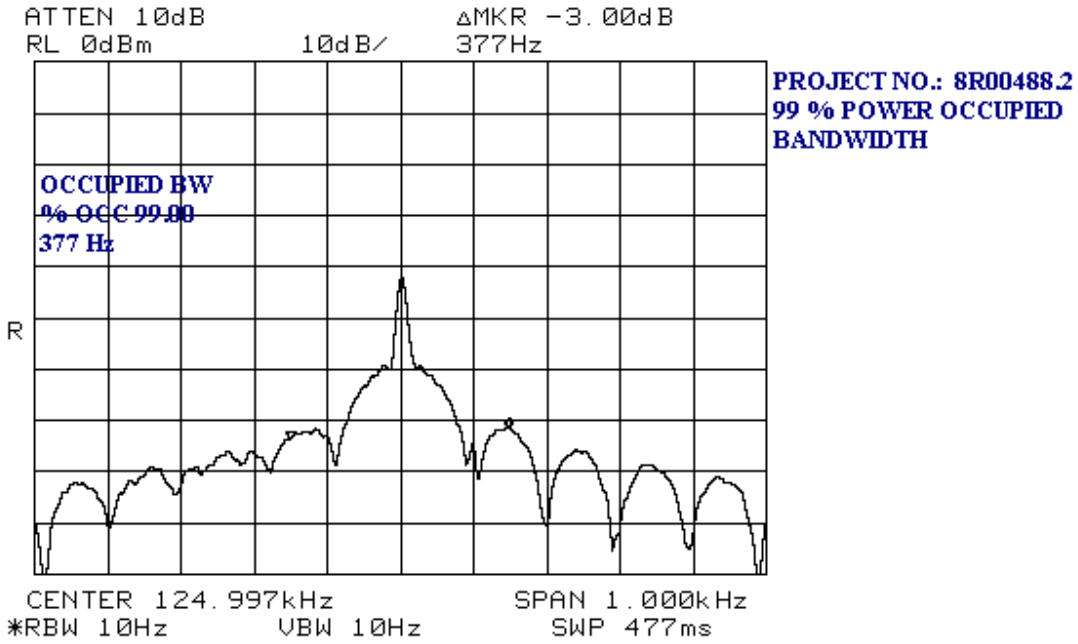
Minimum Standard: Not specified.

Test Results: The 99% power occupied bandwidth is 377 Hz.

Measurement Data: See attached graph(s).

Method of Measurement:

A spectrum analyzer was used to measure the 99% power occupied bandwidth of the fundamental emission. This value is used as the bandwidth for the emission designator.


ATTEN 10dB
RL 0dBm
10dB/
ΔMKR -3.00dB
377Hz
PROJECT NO.: 8R00488.2
99 % POWER OCCUPIED
BANDWIDTH
OCCUPIED BW
% OCC 99.00
377 Hz
R
CENTER 124.997kHz
SPAN 1.000kHz
*RBW 10Hz
VBW 10Hz
SWP 477ms

Section 6. Test Equipment List

Equipment List - Radiated Emissions

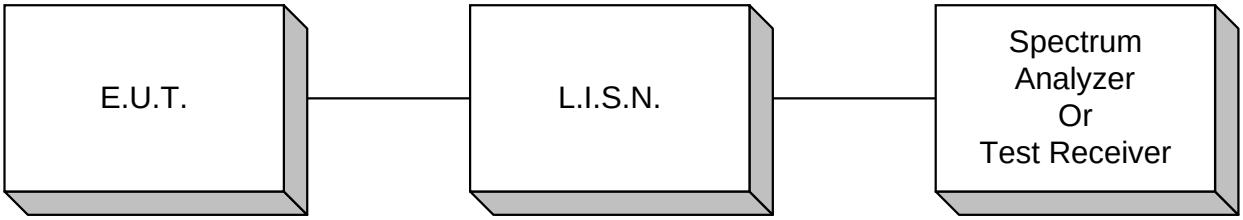
CAL Cycle	Equipment	Manufacturer	Model #	Serial/Asset #	Last Cal.	Next Cal.
1 Year	Biconical (2) Antenna	EMCO	3109	9503-2894	June 2/98	June 2/99
2 Year	Active Loop Antenna	Rohde & Schwarz	HFH2-Z2	FA000631	Feb. 7/96	Feb. 6/00
1 Year	Receiver	Rohde & Schwarz	ESH3	892473/002	July 23/98	July 23/99

Note: N/A = Not Applicable
NCR = No Cal Required

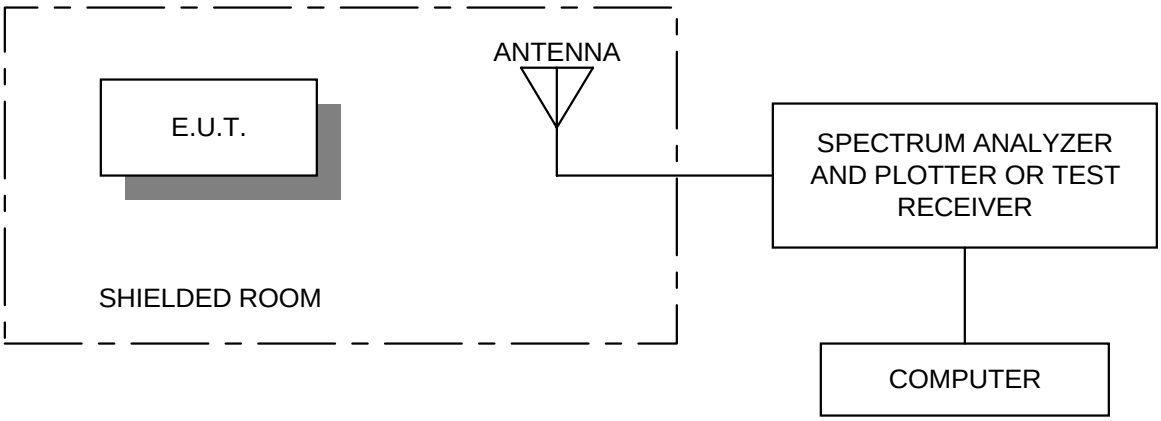
ANNEX A

TEST DIAGRAMS

Conducted Emissions



Radiated Prescan



Test Site For Radiated Emissions