TEST REPORT

ACCREDITED

Certification # 1367-01

Laboratory ID
PRODUCT SAFETY ENGINEERING, INC.
12955 Bellamy Brothers Boulevard
Dade City, Florida 33525 USA
PH (352) 588-2209 FX (352) 588-2544

Submitter ID
Checkpoint Systems Inc.
101 Wolf Drive
Thorofare, NJ 08086

Report Issue Date: 30 JAN 04
Sample S/N: None
Sample Receipt Date: July 26, 2002
Sample Test Date: see data sheets

Test Report Number: 02F340B
Model Designation: OMNI
Product Description: Tag Verifier
Marketing Approval _____

Description of non-standard test method or test practice: ***None***

Estimated Measurement Uncertainty: ***Not Applicable***

Special limitations of use: ***None***

Traceability: ***reference standards of measurement have been calibrated by a competent body using standards traceable to the NIST.***

According to testing performed at Product Safety Engineering, Inc., the above-mentioned unit is in compliance with the electromagnetic compatibility requirements defined in regulations indicated on page (3) of the test report. The test results contained herein relate only to the model(s) identified above. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical characteristics.

As the responsible EMC Project Engineer, I hereby declare that the equipment tested as specified above conforms to the requirements indicated on page (3) of the test report.

Signature David Foerstner Name David Foerstner

Title Engineering Group Leader Date 30 JAN 04

Reviewed by:
Approved Signatory Steven E Hale Date 30 JAN 04

DIRECTORY - EMISSIONS

Product Safety Engineering, Inc 12955 Bellamy Brothers Blvd. Dade City, FL 33525
Tel (352) 588-2209 Fax (352) 588-2544

EMISSIONS TEST REGULATIONS :

The emissions tests were performed according to following regulations:

□ - EN 50081-1 : 1992

□ - EN 50081-2 : 1995

□ - EN 55011 : 1998 / A1:1999 — □ - Group 1 — □ - Group 2; □ - Class A — □ - Class B

□ - EN 55013 : 1990 / A12:1994 / A13:1996

□ - EN 55014 : 1993 /A1:1997 — □ - Household appliances and similar; □ - Portable tools; □ - Semiconductor devices

□ - EN 55022 : 1998 — □ - Class A — □ - Class B

□ -AS/NZS 3548:1995 — □ - Class A — □ - Class B

■ - ICES-003 — □ - Class A — ■ - Class B

□ - CNS 13438 — □ - Class A — □ - Class B

□ - VCCI : 1999 — □ - Class A — □ - Class B

■ - FCC Part 15 — □ - Class A — ■ - Class B

■ - Certification (Intentional Radiator Section)
■ - Verification (Digital Device Section)
□ - Declaration of Conformity

■ - RSS-210

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Environmental conditions during testing:

	LAB	OATS
Temperature: *	_____	: _____
Relative Humidity: **	_____	: _____

* The ambient temperature during the testing was within the range of (50° - 104° F) unless indicted above.
** The humidity levels during the testing was within the range of (10% - 90%) relative humidity unless indicated above.

Power supply system : 7 ½ Volts DC

* EUT powered via internal battery

Sign Explanations:

□ - not applicable
■ - applicable

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Emissions Test Conditions: CONDUCTED EMISSIONS (Interference Voltage)

The *CONDUCTED EMISSIONS (INTERFERENCE VOLTAGE)* measurements were performed at the following test location:

■ - Test not applicable

□ - Darby Test Site (Open Area Test Site)
□ - Darby Laboratory

Test equipment used :

	Model Number	Manufacturer	Description	Serial Number
□ -	8028-50	Solar	50 Ω LISN	829012, 829022
□ -	3825/2	Solar	50 Ω LISN	924840
□ -	EMC-30	Electro-Metrics	EMI Receiver	191
□ -	8566B	Hewlett-Packard	Spectrum Analyzer	2421A00526
□ -	85650A	Hewlett-Packard	Quasi-Peak Adapter	2043A00209
□ -	85662A	Hewlett Packard	Analyzer Display	2403A07352
□ -	8028-50	Solar	50 Ω LISN	903725, 903726
□ -	FCC-TLISN-T4	Fisher Custom Com.	Telecom ISN	20072

Emissions Test Conditions: RADIATED EMISSIONS (Magnetic Field)

The *RADIATED EMISSIONS (MAGNETIC FIELD)* measurements were performed at the following test location:

■ - Darby Test Site (Open Area Test Site)
□ -
□ -

at a test distance of :

□ - 3 meters
■ - 10 meters

- Test not applicable

Test equipment used :

	Model Number	Manufacturer	Description	Serial Number
□ -	96005	Eaton	Log Periodic Antenna	1099
□ -	BIA-25	Electro-Metrics	Biconical Antenna	4283
■ -	8566B	Hewlett-Packard	Spectrum Analyzer	2421A00526
■ -	85662A	Hewlett-Packard	Analyzer Display	2403A07352
■ -	85650A	Hewlett-Packard	Quasi-Peak Adapter	2043A00209
■ -	ALA-130/A	ARA	Loop Antenna	106
□ -	8447D	Hewlett Packard	Preamplifier	2944A06832
□ -	EMC-30	Electro-Metrics	EMI Receiver	191

Emissions Test Conditions: RADIATED EMISSIONS (Electric Field)

The *RADIATED EMISSIONS (ELECTRIC FIELD)* measurements, in the frequency range of 30 MHz-1000 MHz, were tested in a horizontal and vertical polarization at the following test location :

□ - Test not applicable

■ - Darby Site (Open Area Test Site)
□ - Darby Lab
□ -

at a test distance of :

■ - 3 meters
□ - 10 meters
□ - 30 meters

Test equipment used :

	Model Number	Manufacturer	Description	Serial Number
■ -	96005	Eaton	Log Periodic Antenna	1099
■ -	BIA-25	Electro-Metrics	Biconical Antenna	4283
■ -	8566B	Hewlett-Packard	Spectrum Analyzer	2421A00526
■ -	85662A	Hewlett-Packard	Analyzer Display	2403A07352
■ -	85650A	Hewlett-Packard	Quasi-Peak Adapter	2043A00209
■ -	8447D	Hewlett-Packard	Preamplifier (26dB)	2944A06832
□ -	EMC-30	Electro-Metrics	EMI Receiver	191
□ -	8568B	Hewlett Packard	Spectrum Analyzer	2407A03213
□ -	85650A	Hewlett Packard	Quasi-Peak Adapter	2043A00358
□ -	85662A	Hewlett Packard	Analyzer Display	2340A05806
□ -	LPA30	Electro-Metrics	Log Periodic	2280
□ -	BIA 30	Electro-Metrics	Biconical Antenna	3852

Emissions Test Conditions): INTERFERENCE POWER

The *INTERFERENCE POWER* measurements were performed by using the absorbing clamp on the mains and interface cables in the frequency range 30 MHz - 300 MHz at the following test location :

■ - Test not applicable

□ - Darby Lab
□ -

Test equipment used :

	Model Number	Manufacturer	Description	Serial Number
□ -	MDS-21	Rhode&Schwarz	Absorbing Clamp	8608447020
□ -	8566B	Hewlett-Packard	Spectrum Analyzer	2421A00526
□ -	85662A	Hewlett-Packard	Analyzer Display	2403A07352
□ -	85650A	Hewlett-Packard	Quasi-Peak Adapter	2043A00209
□ -	8447D	Hewlett-Packard	Amplifier (26 dB)	2944A06832
□ -	EMC-30	Electro-Metrics	EMI Receiver	191

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The *EQUIVALENT RADIATED EMISSIONS* measurements in the frequency range 1 GHz - 5 GHz were performed in a horizontal and vertical polarization at the following test location :

□ - Darby Test Site (Open Area Test Site)
□ -
□ -
□ -

at a test distance of:

□ - 1 meters
□ - 3 meters
□ - 10 meters

■- **Test not applicable**

Test equipment used :

	Model Number	Manufacturer	Description	Serial Number
□ -	8566B	Hewlett-Packard	Spectrum Analyzer	2421A00526
□ -	85662A	Hewlett-Packard	Analyzer Display	2403A07352
□ -	85650A	Hewlett-Packard	Quasi-Peak Adapter	2043A00209
□ -	8449B	Hewlett-Packard	Preamplifier	3008A00320
□ -	3115	Electro-Mechanics	Double Ridge Guide Horn	3810

The *ANTENNA TERMINAL DISTURBANCE VOLTAGE* in the frequency range 30 MHz - 1,000 MHz were performed.

□ - Darby Test Site (Open Area Test Site)
□ - Laboratory
□ -
□ -

■ - **Test not applicable**

	Model Number	Manufacturer	Description	Serial Number
□ -	2F9-3C4-3C5	Wavecom	UHF PAL TV Modulator	185879
□ -	2F1-3C4-3C5	Wavecom	VHF PAL TV Modulator	157728
□ -	A-8000	IFR	Spectrum Analyzer	1306
□ -	8648B	Hewlett-Packard	Signal Generator	3623A01433
□ -	8648B	Hewlett-Packard	Signal Generator	3623A01477
□ -	LMV-182A	Leader	RMS Milli-Voltmeter	8010091
□ -	3202	Krhon-Hite	Active filter	5899
□-	FMT115	Leaming	FM Modulator	NONE
□ -	371	UDT	Optical power meter	06657
□ -	TSG95	Tektronix	PAL video / Audio generator	B028883
□-				

Equipment Under Test (EUT) Test Operation Mode - Emission tests :

The device under test was operated under the following conditions during emissions testing:

□ - Standby

□ - Test program (H - Pattern)

□ - Test program (color bar)

□ - Test program (customer specific)

■ - Practice operation

□ - Normal Operating Mode

□ -

Configuration of the device under test:

■ - See System Under Test Information in Appendix B

Rationale for EUT setup / configuration:

EUT was in a normal operational mode during the testing. No peripherals were attached

All measurements are made utilizing a quasi-peak detector unless otherwise indicted. All measurements were obtained utilizing CISPR recommended bandwidth settings.

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Emission Test Results:

Conducted emissions 450 kHz - 30 MHz

The requirements are ☐ - **MET** ☐ - **NOT MET**

Minimum limit margin ____ dB at ____ MHz
Remarks:

Radiated emissions (magnetic field) 10 kHz - 30 MHz

The requirements are ■ - **MET** ☐ - **NOT MET**

Minimum limit margin **13.6** dB at **7.6 to 8.7** MHz
Remarks: Fundamental frequency band of Transmitter

Radiated emissions (electric field) 30 MHz - 1000 MHz

The requirements are ■ - **MET** ☐ - **NOT MET**

Minimum limit margin **3.4** dB at **300.4** MHz
Remarks:

Interference Power at the mains and interface cables 30 MHz - 300 MHz

The requirements are ☐ - **MET** ☐ - **NOT MET**

Minimum limit margin ____ dB at ____ MHz
Remarks:

Radiated emissions 1 GHz - 2.5 GHz

The requirements are ☐- **MET** ☐ - **NOT MET**

Minimum limit margin ____ dB at ____ GHz
Remarks:

Antenna Terminal Disturbance Voltage 30 MHz - 1,000 MHz

The requirements are ☐ - **MET** ☐ - **NOT MET**

Minimum limit margin ____ dB at ____ MHz
Remarks:

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GENERAL REMARKS: The EUT was tested in (3) orthogonal positions and the data reflects the worst case. The EUT was tested at (3) different locations in the range of operation. On near the bottom, one near the middle and one near the top. The data reflects the worst case operation. The device operates in (18) different bands. The EUT hops within (16) frequencies on (11) bands and hops within (8) frequencies in the remaining (5) bands. The total number of discrete frequencies of operation is (216) and are listed in the operational description manual. None of these frequencies fall into a restricted band of operation.

SUMMARY:
The requirements according to the technical regulations are

■ - met
□ - **not** met.

The device under test does

■ - fulfill the general approval requirements mentioned on page 3.
□ - **not** fulfill the general approval requirements mentioned on page 3.

Testing Start Date **July 31, 2002**

Testing End Date: **July 31, 2002**

- PRODUCT SAFETY ENGINEERING INC -

Test-setup photo(s):
Conducted emission 450/150 kHz - 30 MHz

N/A

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Test-setup photo(s):
Radiated emission

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APPENDIX

A

Test Equipment Calibration Information

&

Test Data Sheets

TEST EQUIPMENT CALIBRATION INFORMATION

Manufacturer	Model	Description	Serial Number	Cal Due
Hewlett Packard	8566B	Spectrum Analyzer	2421A00526	09/04/02
Hewlett Packard	85662A	Display	2403A07352	09/04/02
Hewlett Packard	85650A	Quasi-Peak Adapter	2043A00209	09/04/02
Hewlett Packard	8447D	Preamp 0.1 - 1,000 MHz	2944A06832	10/17/02
Hewlett Packard	8568B	Spectrum Analyzer	2407A03213	08/20/02
Hewlett Packard	85662A	Display	2340A05806	08/20/02
Hewlett Packard	85650A	Quasi-Peak Adapter	2043A00358	08/20/02
Hewlett Packard	8447D	Preamp 0.1 - 1,000 MHz	2944A06901	07/25/02
Hewlett Packard	8447D	Preamp 0.1 - 1,000 MHz	1937A03247	07/04/02
Hewlett Packard	8449B	Preamp 1 - 26.5 GHz	3008A00320	11/30/02
Hewlett Packard	8648B	Signal Generator	3443U00312	05/13/02
Hewlett Packard	8672A	Signal Generator	2211A02426	12/06/02
Eaton	96005	Log Periodic Antenna	1099	11/29/02
Electro-Metrics	LPA 30	Log Periodic Antenna	2280	11/06/02
Electro-Metrics	BIA 30	Biconical Antenna	3852	10/30/02
Electro-Metrics	BIA 25	Biconical Antenna	4283	12/15/02
Electro-Mechanics	3115	Double Ridge Guide Ant.	3810	11/07/03
ARA	ALA-130	Magnetic Loop Antenna	106	02/10/03
Solar	8012	LISN	924840	01/04/03
Solar	8028	LISN	829012/809022	12/12/02
Solar	8028	LISN	903725/903726	11/20/02
Schwartzbeck	MDS-21	Absorbing Clamp	02581	11/28/01
Leader	LFG1310	Function Generator	8060233	03/09/02
Holaday Ind.	HI 4422	Isotropic Probe	90310	04/26/02
IFR Systems	A-8000	Spectrum Analyzer	1306	06/08/02
Fischer Custom	F-33-1	RF Current Probe	360	09/08/01
Electro-Metrics	EMC-30	EMI Receiver	191	03/29/02
Boonton	4220A	RF Power Meter	204103AA	11/13/02
Boonton	51011	RF Power Meter	28823	11/13/02

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Checkpoint Model# Omni

Intentional Radiator Emissions below 30 MHz
Measured @ 10 Meters

Frequency (MHz)	Spec Limit (FCC) @10 Meters	Measurement (dBμV/M)	Δ Below Limit (dB)
7.6 to 8.7	48.6	35.0	13.6
15.2 to 17.4	48.6	30.0	18.6
22.8 to 26.1	48.6	30.0	18.6

Intentional Radiator Emissions above 30 MHz
Measured @ 3 Meters

See Next Page.

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EMISSION FREQUENCY MHz	SPEC LIMIT dBuV/m	MEASUREMENTS ABS	dLIM dB	MODE	POL	SITE HGT cm	AZM deg	CORR FACTOR dB	COMMENTS
118.934	43.5	27.8	-15.7	PK	V	100	270	-11.1	
119.881	43.5	28.2	-15.3	PK	V	100	270	-11.	
154.266	43.5	33.1	-10.4	PK	V	100	1	-10.8	
159.011	43.5	30.2	-13.4	PK	V	100	270	-10.6	
162.266	43.5	34.9	-8.6	PK	V	100	1	-10.4	
167.421	43.5	25.9	-17.6	PK	V	100	1	-9.8	
200.305	43.5	33.4	-10.1	PK	V	100	1	-12.8	
201.664	43.5	29.4	-14.1	PK	V	100	180	-12.8	
202.000	43.5	37.2	-6.3	PK	V	100	1	-12.8	
213.089	43.5	35.9	-7.6	PK	V	100	1	-12.5	
220.700	46.0	37.1	-8.9	PK	V	100	180	-12.3	
224.507	46.0	36.2	-9.8	PK	V	100	1	-12.3	
228.343	46.0	35.9	-10.1	PK	V	100	1	-12.2	
232.108	46.0	35.8	-10.2	PK	V	100	90	-12.1	
248.201	46.0	34.0	-12.0	QP	V	200	315	-11.7	
248.251	46.0	36.8	-9.2	QP	V	200	315	-11.7	
250.563	46.0	38.1	-7.9	QP	V	200	315	-11.7	
252.121	46.0	35.1	-10.9	QP	V	200	315	-11.6	
262.977	46.0	37.5	-8.5	QP	V	200	315	-11.1	
271.104	46.0	37.3	-8.7	QP	V	200	315	-10.7	
273.747	46.0	36.7	-9.3	QP	V	200	315	-10.6	
278.711	46.0	35.5	-10.6	QP	V	200	315	-10.4	
281.386	46.0	34.4	-11.6	QP	V	200	315	-10.3	
300.442	46.0	42.6	-3.4	QP	V	200	315	-9.4	
316.925	46.0	40.3	-5.7	QP	V	200	315	-9.3	
322.167	46.0	41.4	-4.6	QP	V	200	315	-9.3	
323.022	46.0	41.0	-5.0	QP	V	200	315	-9.3	
331.479	46.0	41.9	-4.1	QP	V	200	315	-9.3	
336.027	46.0	42.3	-3.7	QP	V	200	315	-9.3	
353.839	46.0	39.7	-6.3	QP	V	200	315	-9.1	
361.494	46.0	37.6	-8.4	QP	V	200	315	-8.9	
369.071	46.0	36.7	-9.3	QP	V	200	315	-8.8	
376.698	46.0	41.1	-4.9	PK	V	100	90	-8.6	
388.117	46.0	40.8	-5.2	PK	V	100	1	-8.4	
528.875	46.0	31.8	-14.2	PK	H	200	135	-6.1	
536.486	46.0	33.6	-12.4	PK	H	200	135	-6.1	
544.092	46.0	32.5	-13.5	PK	H	200	135	-6.1	
551.701	46.0	30.9	-15.1	PK	H	200	135	-6.1	
559.310	46.0	31.2	-14.8	PK	H	200	135	-5.9	
608.430	46.0	31.9	-14.1	PK	V	100	1	-4.8	
801.158	46.0	32.4	-13.6	PK	V	100	1	-1.5	

APPENDIX

B

System Under Test Description

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SYSTEM COMPONENTS

****

DEVICE TYPE: EUT, Checkpoint handheld OMNI Verifier

****

INTERFACE CABLES

****

DEVICE TYPE: **NONE**
SHIELD:
LENGTH:
CONNECTOR TYPE:
PORT:

****

AC LINE CORDS

****

DEVICE TYPE: **N/A**
SHIELD:
LENGTH:
CONNECTOR TYPE:

****

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APPENDIX

C

Measurement Protocol

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The test methodology followed during the collection of the data included within this technical report was ANSI C63.4:1992.

The EUT was powered from internal battery during the collection of data included within.

The "unintentional radiator" data below is compared to the FCC Part 15 Class B "digital device" limits.

The "EMI" instrumentation is capable of calculating the final emission level based on the following formula:

Level at the receiver (dBµV) + Antenna Correction Factor (dB/M) + Cable Loss (dB) - Preamp Gain (dB) = Actual Level in dBµV/M.

The sample calculation below is based on the actual test data collected:

Observed Level		**52.1**	dBµV	
ACF	+	**14.8**	dB/M	
Cable Loss	+	**1.7**	dB	
Preamp Gain	-	**26.0**	dB	
Actual Level		**42.6**	dBµV/M	@ 300.4 MHz

Please have a company official review this report and sign.

_____

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