TIMCO ENGINEERING INC.
849 NW State Road 45
Newberry, Florida 32669
http://www.timcoengr.com
888.472.2424 F 352.472.2030 email: sid@timcoengr.com

Test Report

Product Name: CREDITCARD VERIFICATION SYSTEM

FCC ID: B32OMNI7KRFID

Applicant:

VERIFONE
3755 ATHERTON ROAD
ROCKLIN CA 95765

Date Receipt: MAY 6, 2004

Date Tested: MAY 26, 2004

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TABLE OF CONTENTS

APPLICANT: VERIFONE

FCC ID: B32OMNI7KRFID

TEST REPORT CONTAINING:

EXHIBITS INCLUDING:

TIMCO ENGINEERING INC.
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EMC Equipment List

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
3/10-Meter OATS	TEI	N/A	N/A	Listed 3/27/04	3/26/07
3-Meter OATS	TEI	N/A	N/A	Listed 1/13/03	1/13/06
Biconnical Antenna	Eaton	94455-1	1057	CAL 3/18/03	3/18/05
Biconnical Antenna	Eaton	94455-1	1096	CAL 10/1/01	10/1/03
Biconnical Antenna	Electro-Metrics	BIA-25	1171	CAL 4/26/01	4/26/03
Blue Tower Quasi-Peak Adapter	HP	85650A	2811A01279	CAL 4/15/03	4/15/05
Blue Tower RF Preselector	HP	85685A	2620A00294		out for Cal
Blue Tower Spectrum Analyzer	HP	8568B	2928A04729 2848A18049	CAL 4/15/03	4/15/05
LISN	Electro-Metrics	ANS-25/2	2604	CAL 10/9/01	10/9/03
LISN	Electro-Metrics	EM-7820	2682	CAL 3/12/03	3/12/05
Log-Periodic Antenna	Eaton	96005	1243	CAL 5/8/03	5/8/05

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TEST PROCEDURES

GENERAL: This report shall NOT be reproduced except in full without the written approval of TIMCO ENGINEERING, INC.

RADIATION INTERFERENCE: The test procedure used was ANSI STANDARD C63.4-2001 using a HEWLETT PACKARD spectrum analyzer with a pre-selector. In the frequency range 10 kHz to 30 MHz the RBW was 10 kHz and from 30-1000 MHz the RBW of the spectrum analyzer was 100 kHz with an appropriate sweep speed. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The resolution bandwidth was 100 kHz and the video bandwidth was 300 kHz. The ambient temperature of the UUT was 80° with a humidity of 42%.

FORMULA OF CONVERSION FACTORS: The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBuV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB. The gain of the Preselector was accounted for in the Spectrum Analyzer Meter Reading.

Example:
Freq (MHz) METER READING + ACF = FS
33 20 dBuV + 10.36 dB = 30.36 dBuV/m @ 3m

ANSI C63.4-1992 Section 8.2.1 MEASUREMENT PROCEDURES: The EUT was placed on a non-conducting table 80 cm above the ground plane with the EUT located in the center of the table. With the antenna vertical a preliminary scan was done at 1 meters distance, the EUT was moved to a 3.0-meter distance and the antenna height varied and also placed in a horizontal position. The frequency was scanned from 9.0 kHz to 1.0 GHz. When an emission was found, the table was rotated to produce the maximum signal strength. The EUT was measured in three (3) orthogonal planes. The unit was measured at TIMCO ENGINEERING, INC. located at 849 N.W. State Road 45 Newberry, Florida 32669.

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APPLICANT: VERIFONE

FCC ID: B32OMNI7KRFID

NAME OF TEST: RADIATION INTERFERENCE

RULES PART NO: 15.225 and 15.209

REQUIREMENTS: THE FIELD STRENGTH OF ANY EMISSION WITHIN THE BAND OF 13.553-13.57 MHz SHALL NOT EXCEEDS 10,000 uV/m (80 dBuV/m) AT 30 METERS.

THE FIELD STRENGTH OF ANY EMISSIONS APPEARING OUTSIDE OF THIS BAND SHALL NOT EXCEED THE GENERAL RADIATED EMISSION LIMITS SHOWN IN §15.209.

9 to 490 KHz:	2400/F (kHz) uV/m @ 300 METERS
490 to 1705 KHz:	24000/F (kHz) uV/m @ 30 METERS
1705 to 30 MHz:	29.54 dBuV/M @ 30 METERS
30 to 88 MHz:	40.00 dBuV/M @ 3 METERS
88 to 216 MHz:	43.50 dBuV/M
216 to 960 MHz:	46.02 dBuV/M
ABOVE 960 MHz:	54.00 dBuV/M

TEST DATA:

13.56	12	H	0	35.52	47.52	72.48
Emission Frequency MHz	**Meter Reading dBuV**	**Ant. Polarity**	**Coax Loss dB**	**Correction Factor dB**	**Field Strength dBuV/m**	**Margin dB**
57.56	17.5	V	0.53	11.34	29.37	10.63
57.80	12.0	H	0.53	11.32	23.85	16.15
60.00	14.1	H	0.53	11.10	25.73	14.27
60.02	22.4	V	0.53	10.79	33.72	6.28
80.02	12.8	H	0.60	6.30	19.70	20.30
80.02	18.4	V	0.60	7.31	26.31	13.69
94.95	13.3	V	0.64	10.69	24.63	18.87
94.95	16.0	H	0.64	9.49	26.13	17.37
99.53	17.4	H	0.65	11.13	29.18	14.32
100.00	17.2	H	0.65	11.30	29.15	14.35
100.83	16.7	H	0.65	11.40	28.75	14.75
120.00	15.3	V	0.67	13.70	29.67	13.83
120.00	17.9	H	0.67	13.40	31.97	11.53
160.00	17.0	V	0.74	15.50	33.24	10.26
160.00	19.1	H	0.74	14.30	34.14	9.36
200.00	26.1	V	0.90	12.00	39.00	4.50
200.00	30.6	H	0.90	11.90	43.40	0.10
220.00	21.3	V	0.94	11.00	33.24	12.76
220.00	29.9	H	0.94	11.80	42.64	3.36
240.00	19.3	V	0.98	11.70	31.98	14.02
240.00	28.5	H	0.98	12.00	41.48	4.52
244.13	17.7	H	0.99	12.25	30.94	15.06
257.60	19.1	H	1.02	12.90	33.02	12.98

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APPLICANT: VERIFONE

FCC ID: B32OMNI7KRFID

NAME OF TEST: RADIATION INTERFERENCE

RULES PART NO: 15.225 and 15.209

REQUIREMENTS: THE FIELD STRENGTH OF ANY EMISSION WITHIN THE BAND OF 13.553-13.57 MHz SHALL NOT EXCEEDS 10,000 uV/m (80 dBuV/m) AT 30 METERS.

THE FIELD STRENGTH OF ANY EMISSIONS APPEARING OUTSIDE OF THIS BAND SHALL NOT EXCEED THE GENERAL RADIATED EMISSION LIMITS SHOWN IN §15.209.

9 to 490 KHz:	2400/F (kHz) uV/m @ 300 METERS
490 to 1705 KHz:	24000/F (kHz) uV/m @ 30 METERS
1705 to 30 MHz:	29.54 dBuV/M @ 30 METERS
30 to 88 MHz:	40.00 dBuV/M @ 3 METERS
88 to 216 MHz:	43.50 dBuV/M
216 to 960 MHz:	46.02 dBuV/M
ABOVE 960 MHz:	54.00 dBuV/M

TEST DATA:

Emission Frequency MHz	Meter Reading dBuV	Ant. Polarity	Coax Loss dB	Correction Factor dB	Field Strength dBuV/m	Margin dB
260.00	19.8	V	1.02	12.70	33.52	12.48
260.00	25.1	H	1.02	13.00	39.12	6.88
280.00	21.5	V	1.06	13.30	35.86	10.14
280.00	24.6	H	1.06	14.10	39.76	6.24
284.80	20.3	H	1.07	14.10	35.47	10.53
300.00	21.4	V	1.10	13.90	36.40	9.60
300.00	28.7	H	1.10	14.30	44.10	1.90
320.00	14.6	H	1.12	15.20	30.92	15.08
325.47	22.2	H	1.13	15.20	38.53	7.47
325.50	19.0	V	1.13	14.78	34.91	11.09
340.00	22.7	V	1.14	14.50	38.34	7.66
340.00	29.7	H	1.14	15.10	45.94	0.06
352.60	18.3	V	1.15	14.65	34.10	11.90
352.60	27.8	H	1.15	15.17	44.12	1.88
360.00	22.2	H	1.16	15.10	38.46	7.54
366.00	26.9	H	1.17	15.16	43.23	2.77
366.20	19.8	V	1.17	14.80	35.77	10.23
379.70	17.8	V	1.18	14.80	33.78	12.22
379.70	24.8	H	1.18	15.39	41.37	4.63
380.00	20.1	H	1.18	15.40	36.68	9.32
393.30	21.6	V	1.19	15.67	38.46	7.54
393.30	28.5	H	1.19	15.90	45.59	0.41
400.00	17.9	V	1.20	16.00	35.10	10.90
400.00	23.2	H	1.20	16.10	40.50	5.50

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APPLICANT: VERIFONE

FCC ID: B32OMNI7KRFID

NAME OF TEST: RADIATION INTERFERENCE

RULES PART NO: 15.225 and 15.209

REQUIREMENTS: THE FIELD STRENGTH OF ANY EMISSION WITHIN THE BAND OF 13.553-13.57 MHz SHALL NOT EXCEEDS 10,000 uV/m (80 dBuV/m) AT 30 METERS.

THE FIELD STRENGTH OF ANY EMISSIONS APPEARING OUTSIDE OF THIS BAND SHALL NOT EXCEED THE GENERAL RADIATED EMISSION LIMITS SHOWN IN §15.209.

9 to 490 KHz:	2400/F (kHz) uV/m @ 300 METERS
490 to 1705 KHz:	24000/F (kHz) uV/m @ 30 METERS
1705 to 30 MHz:	29.54 dBuV/M @ 30 METERS
30 to 88 MHz:	40.00 dBuV/M @ 3 METERS
88 to 216 MHz:	43.50 dBuV/M
216 to 960 MHz:	46.02 dBuV/M
ABOVE 960 MHz:	54.00 dBuV/M

TEST DATA:

Emission Frequency MHz	Meter Reading dBuV	Ant. Polarity	Coax Loss dB	Correction Factor dB	Field Strength dBuV/m	Margin dB
406.80	18.4	H	1.21	16.30	35.91	10.09
420.00	20.0	H	1.22	16.70	37.92	8.08
434.00	19.2	H	1.23	16.70	37.13	8.87
440.00	16.9	V	1.24	16.40	34.54	11.46
440.00	26.9	H	1.24	16.70	44.84	1.16
447.50	15.4	H	1.25	17.00	33.65	12.35
460.00	16.9	H	1.26	17.40	35.56	10.44
480.00	20.2	H	1.28	18.00	39.48	6.52
500.00	14.1	H	1.30	18.80	34.20	11.80
501.70	14.8	H	1.31	18.85	34.96	11.04
520.00	15.6	H	1.36	19.20	36.16	9.84
528.80	16.1	H	1.39	18.76	36.25	9.75
556.00	14.8	H	1.47	18.98	35.25	10.75

Chamber

TEST PROCEDURE: The procedure used was ANSI C63.4-1992 Section 8.2. The frequency was scanned from 9.0 kHz to 1.0 GHz. When an emission was found, the table was rotated to produce the maximum signal strength. The EUT was measured in three (3) orthogonal planes. The unit was measured at TIMCO ENGINEERING, INC. located at 849 N.W. State Road 45 Newberry, Florida 32669.

TEST RESULTS: THE UNIT DOES MEET THE FCC REQUIREMENTS.

PERFORMED BY: MARIO R de ARANZETA **DATE: JUNE 30,2004**

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849 NW State Road 45
Newberry, Florida 32669
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APPLICANT: VERIFONE

MODEL: B32OMNI7KRFID

NAME OF TEST: POWER LINE CONDUCTED INTERFERENCE (TRANSMITTER ONLY)

RULES PART NO.: 15.107

REQUIREMENTS:

	QUASI-PEAK	**AVERAGE**
.15 – 0.5 MHz	66-56 dBuV	56-46 dBuV
0.5 – 5.0	56	46
5.0 – 30.	60	50

TEST PROCEDURE: ANSI STANDARD C63.4-1992. The spectrum was scanned from .15 to 30 MHz.

TEST DATA:

THE GRAPHS ON THE FOLLOWING PAGES REPRESENT THE EMISSIONS READ FOR POWER LINE CONDUCTED FOR THIS DEVICE.

TEST RESULTS: Both lines were observed. The measurements indicate that the unit DOES appear to meet the FCC requirements for this class of equipment.

PERFORMED BY: MARIO R de ARANZETA DATE: JUNE 29, 2004

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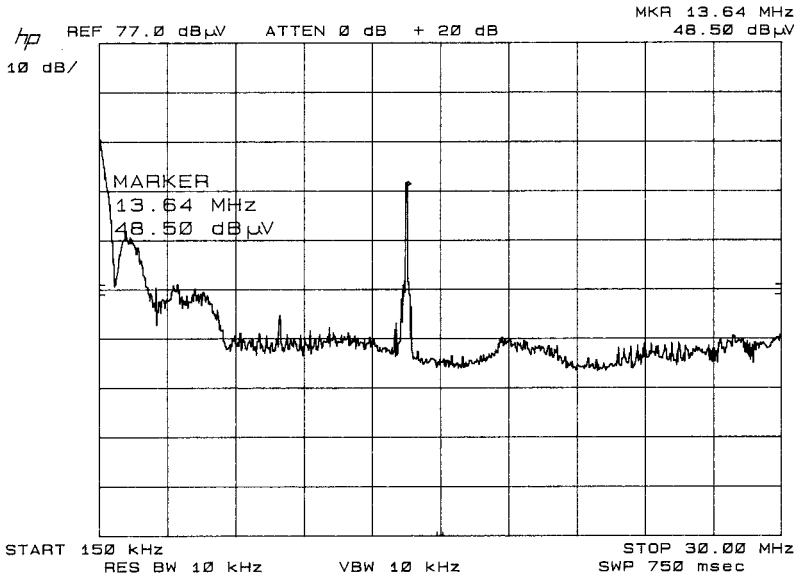
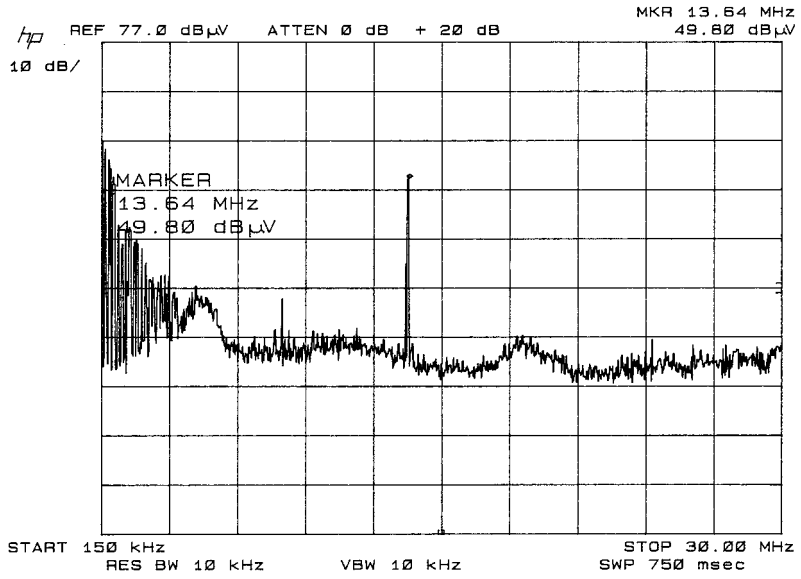
POWER LINE CONDUCTED
PEAK A
LINE 1



LINE 2



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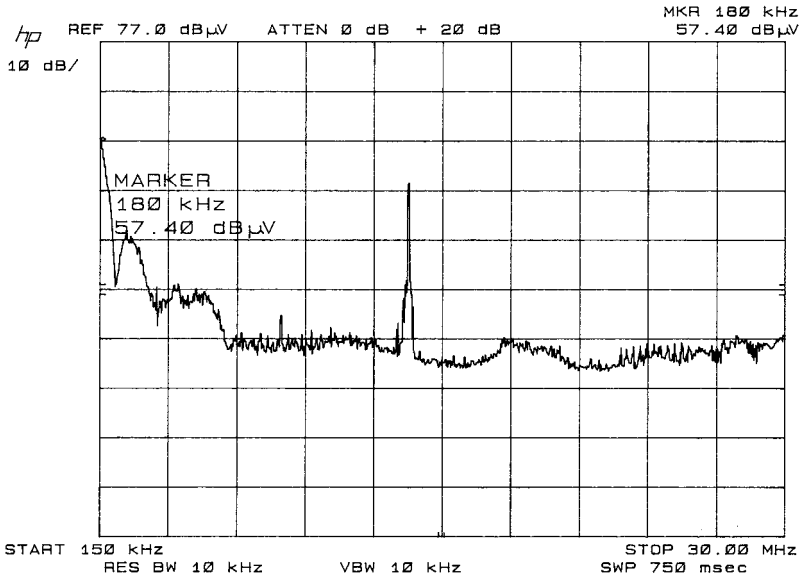
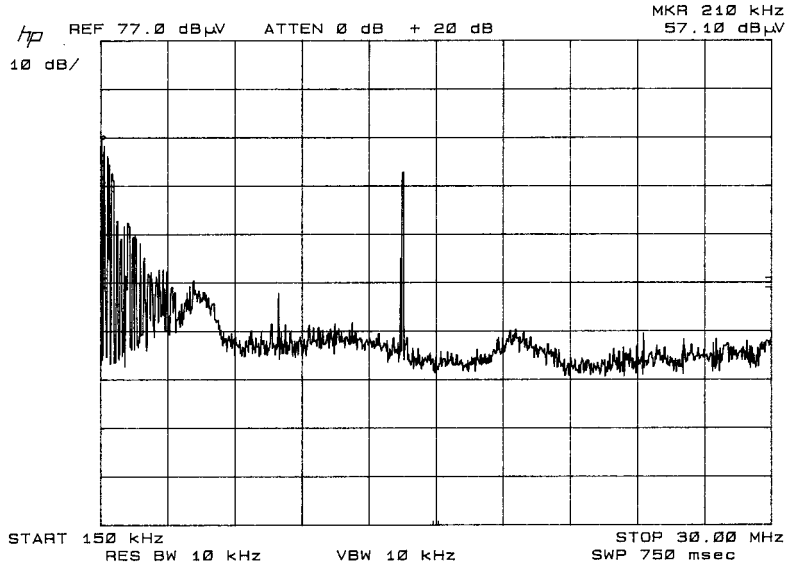
POWER LINE CONDUCTED
PEAK B
LINE 1



LINE 2



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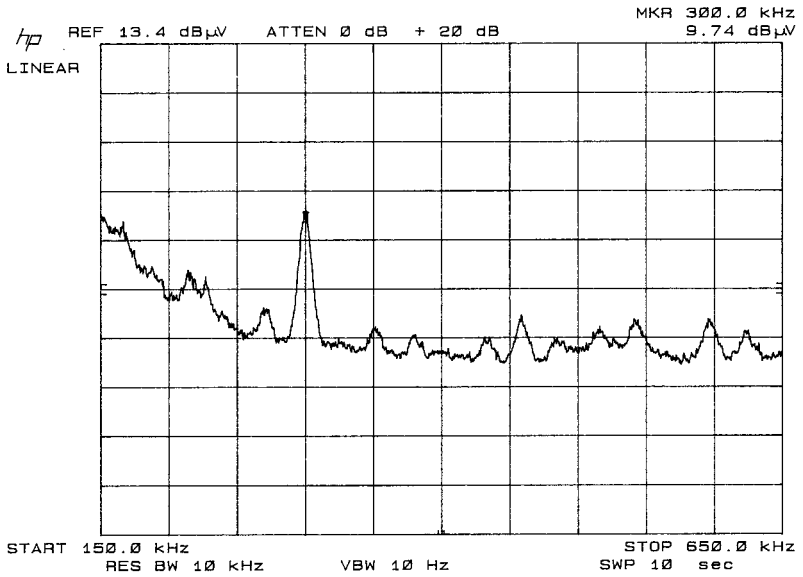
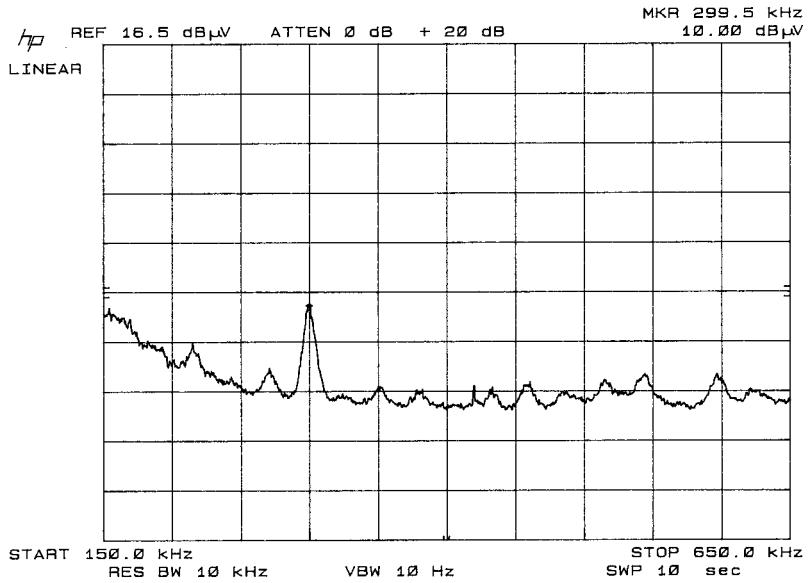
POWER LINE CONDUCTED
LINEAR AVERAGING
LINE 1



LINE 2



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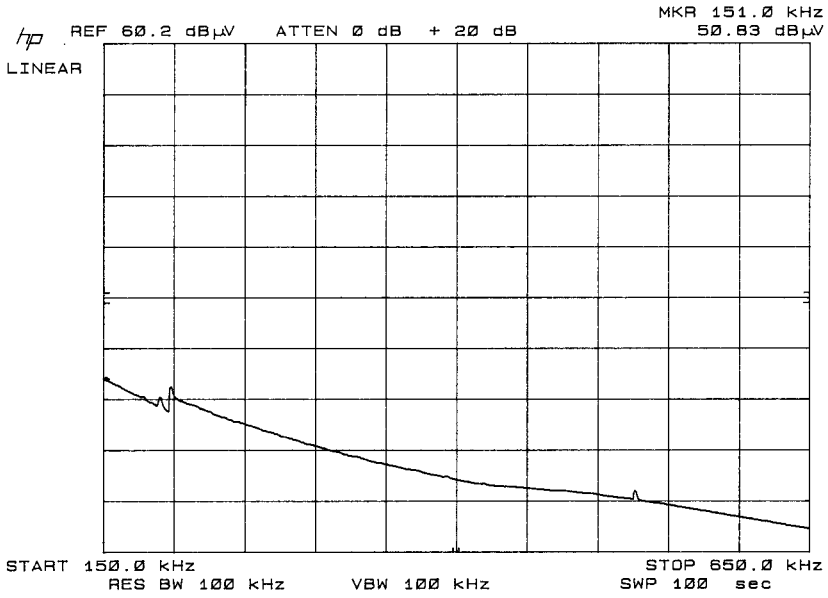
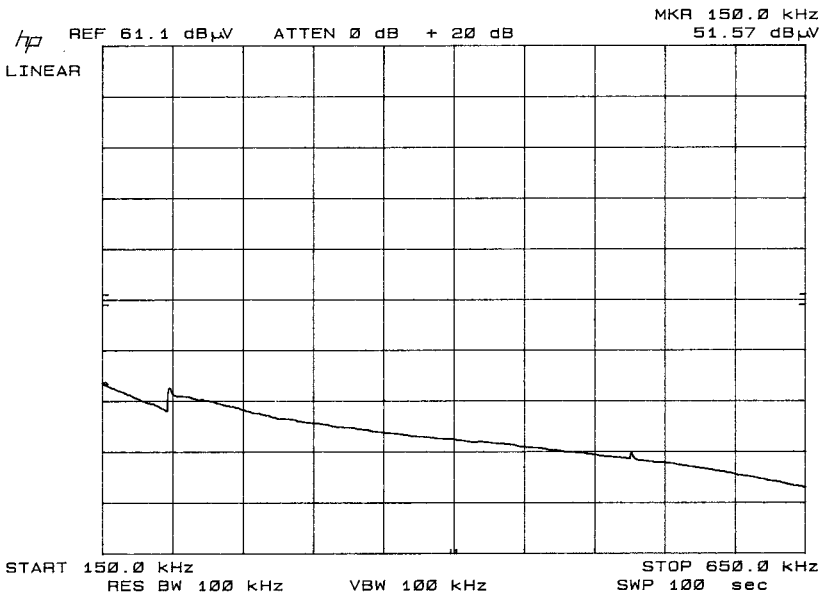
POWER LINE CONDUCTED
QUASI PEAK
LINE 1



LINE 2



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APPLICANT: VERIFONE

FCC ID: B32OMNI7KRFID

NAME OF TEST: Occupied Bandwidth

RULES PART NO.: 15.209

REQUIREMENTS: The field strength of any emissions appearing between the band edges and up to 10 kHz above and below the band edges shall be attenuated at least 26 dB below the level of the unmodulated carrier or to the general limits of 15.209, whichever permits the higher emission levels.

TEST DATA:

THE GRAPH ON THE FOLLOWING PAGE REPRESENTS THE EMISSIONS TAKEN FOR THE OCCUPIED BANDWIDTH FOR THIS DEVICE.

METHOD OF MEASUREMENT: A small sample of the transmitter output was fed into the spectrum analyzer and the above photo was taken. The vertical scale is set to -10 dBm per division. The horizontal scale is set to 5 kHz per division.

TEST RESULTS: The unit DOES meet the FCC requirements.

PERFORMED BY: MARIO R de ARANZETA DATE: JUNE 30, 2004

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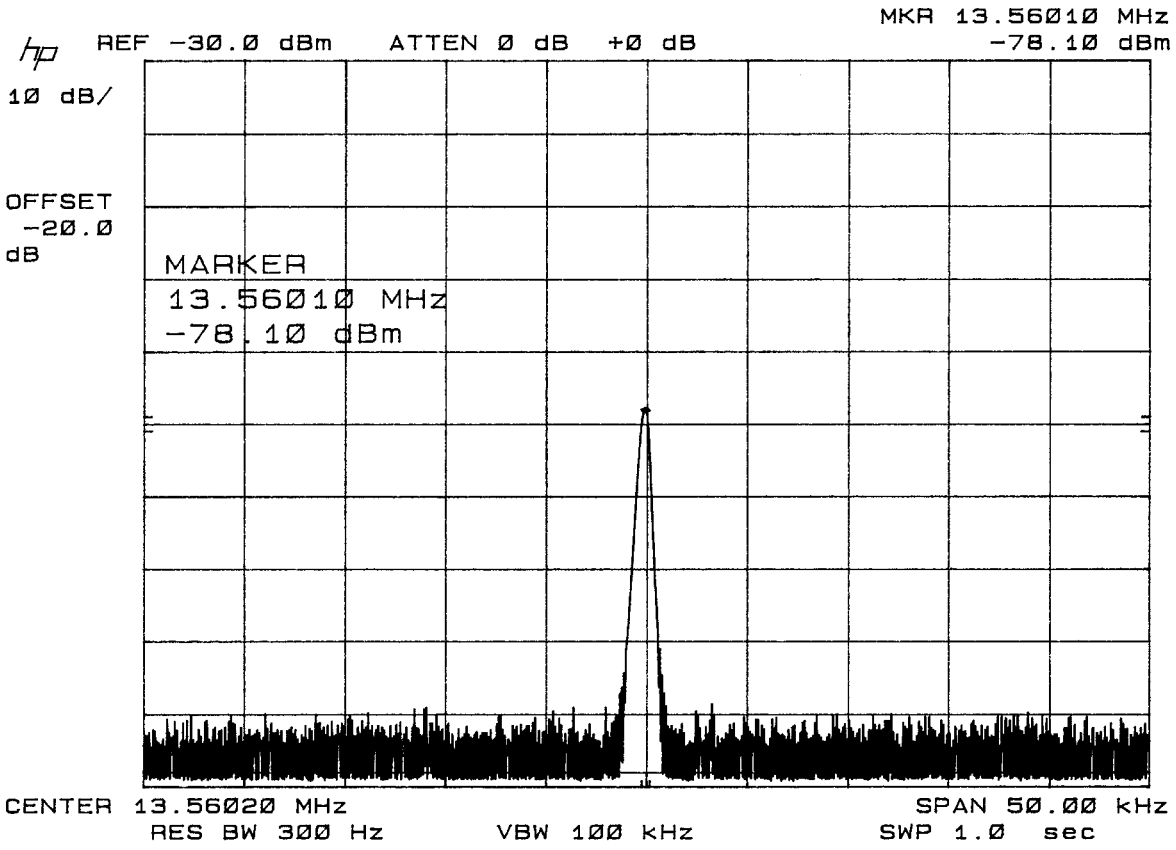
OCCUPIED BANDWIDTH



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2.1055 Frequency stability:

Temperature and voltage tests were performed to verify that the frequency tolerance of the carrier signal remains within the ±0.01% of the operating frequency over a temperature variation of –20 degrees C to +50 degrees C at normal supply voltage and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. The test was conducted as follows: The transmitter was placed in the temperature chamber at 25 degrees C and allowed to stabilize for one hour. The transmitter was keyed ON for one minute during which four frequency readings were recorded at 15-second intervals. The worse case number was taken for temperature plotting. The assigned channel frequency was considered to be the reference frequency. The temperature was then reduced to -20 degrees C after which the transmitter was again allowed to stabilize for one hour. The transmitter was keyed ON for one minute, and again frequency readings were noted at 15-second intervals. The worst-case number was recorded for temperature plotting. This procedure was repeated in 10-degree increments up to +50 degrees C.

Readings were also taken at plus and minus 15% of the battery voltage of 5 VDC.

MEASUREMENT DATA:

Assigned Frequency (Ref. Frequency): 13.560 000 MHz

TEMPERATURE_C	FREQUENCY_MHz	PPM
REFERENCE	13.560 000	00.0
-30	13.56	+ 0.00
-20	13.561 001	+73.82
-10	13.560 906	+66.81
0	13.560 756	+55.75
+10	13.560 405	+29.87
+20	13.560 2	+14.75
+30	13.560 068	+ 5.01
+40	13.559 5	-36.87
+50	13.558 792	-89.09

	VOLTS	Batt. Data	Batt. PPM
-15%	4.25	13.560 063	+ 4.65

RESULTS OF MEASUREMENTS: The test results indicates that the EUT meets the requirements.