

TEST REPORT

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

Equitrac Corporation
1000 South Pine Island Rd
Suite 900
Plantation, FL 33325

Report Issue Date: 31 Oct 2011
Sample S/N: PC369667

Test Report Number: 11F361C
Model Designation: PC-Copy See page (10) for additional models

Sample Receipt Date: 21 Sep 2011

Product Description: Page Counter Terminal

Sample Test Date: see data sheets

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  Name Chip Foerstner

Title Test Engineer Date 31 Oct 2011

Reviewed by: 
Approved Signatory Steve Hoke Date 31 Oct 2011

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EMISSIONS TEST REGULATIONS :

The emissions tests were performed according to following regulations:

☐ - EN 61000-6-3:2001

■ - RSS-210 Issue 8

☐ - EN 55011 : 2006 /A2:2007

☐ - Group 1

☐ - Group 2

☐ - Class A

☐ - Class B

■ - EN 300 330-2 V1.5.1

☐ - EN 55014 -1: 2001/A1:2001 A2:2002

☐ - Household appliances and similar

☐ - Portable tools

☐ - Semiconductor devices

■ - EN 55022:2006/A1:2007

■ - Class A

☐ - Class B

■ - CISPR 22:2005/A1:2005

■ - Class A

☐ - Class B

■ - ICES-003

■ - Class A

☐ - Class B

☐ - CNS 13438

☐ - Class A

☐ - Class B

☐ - VCCI V-3/2007.4

☐ - Class A

☐ - Class B

■ - FCC Part 15 Subpart B

■ - Class A

☐ - Class B

☐ - Certification

☐ - Verification

■ - Declaration of Conformity

■ - FCC Part 15.225

■ - Certification

Report Revision History

Release	Issue Date	Comments
Original	10/31/2011	NA

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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 : 115 / 60 & 230 / 50

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-T4-02	Fisher Custom Com.	Telecom ISN	20454
□ -	FCC-TLISN-T8-02	Fisher Custom Com.	Telecom ISN	20452

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
□ -	3148	EMCO	Log Periodic Antenna	00044783
□ -	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
■ -	ALR25M	Electro-Metrics	Loop Antenna	722
■ -	8447D	Hewlett Packard	Preamplifier	2944A06832
□ -	EMC-30	Electro-Metrics	EMI Receiver	191
□ -	ALA-130/A	Antenna Research	Loop Antenna	106

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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
<input type="checkbox"/> -	HLP 3003C	EMC Automation	Hybrid Periodic Antenna	017501
■ -	8447D	Hewlett-Packard	Preamplifier (26dB)	2944A06832
■ -	8566B	Hewlett-Packard	Spectrum Analyzer	2421A00526
■ -	85662A	Hewlett-Packard	Analyzer Display	2403A07352
■ -	85650A	Hewlett-Packard	Quasi-Peak Adapter	2043A00209
<input type="checkbox"/> -	BIA 25	Electro-Metrics	Biconical Antenna	4283
<input type="checkbox"/> -	EMC-30	Electro-Metrics	EMI Receiver	191
<input type="checkbox"/> -	8568B	Hewlett Packard	Spectrum Analyzer	2407A03213
<input type="checkbox"/> -	85650A	Hewlett Packard	Quasi-Peak Adapter	2043A00358
<input type="checkbox"/> -	85662A	Hewlett Packard	Analyzer Display	2340A05806
■ -	LPA30	Electro-Metrics	Log Periodic	2280
■ -	BIA-30	Electro-Metrics	Biconical Antenna	3852
<input type="checkbox"/> -	3104C	EMCO	Biconical Antenna	00075927

Emissions Test Conditions): CONDUCTED EMISSIONS - TELECOMMUNICATIONS PORT

The *INTERFERENCE POWER* measurements were performed in the frequency range 0.15 MHz - 30 MHz at the following test location :

☐ - Test not applicable

- ☐ - Darby Lab
- ☐ -

Test equipment used :

	Model Number	Manufacturer	Description	Serial Number
■ -	EMC-30	Electro-Metrics	EMI Receiver	191
<input type="checkbox"/> -	FCC-TLISN-T8-02	Fischer Custom Com	T-LISN	20452
■ -	FCC-TLISN-T4-02	Fischer Custom Com	T_LISN	20454
<input type="checkbox"/> -				
<input type="checkbox"/> -				
<input type="checkbox"/> -				

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The **EQUIVALENT RADIATED EMISSIONS** measurements in the frequency range GHz - 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
<input type="checkbox"/> -	8566B	Hewlett-Packard	Spectrum Analyzer	2421A00526
<input type="checkbox"/> -	85662A	Hewlett-Packard	Analyzer Display	2403A07352
<input type="checkbox"/> -	85650A	Hewlett-Packard	Quasi-Peak Adapter	2043A00209
<input type="checkbox"/> -	8449B	Hewlett-Packard	Preamplifier	3008A00320
<input type="checkbox"/> -	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
<input type="checkbox"/> -	2F9-3C4-3C5	Wavecom	UHF PAL TV Modulator	185879
<input type="checkbox"/> -	2F1-3C4-3C5	Wavecom	VHF PAL TV Modulator	157728
<input type="checkbox"/> -	A-8000	IFR	Spectrum Analyzer	1306
<input type="checkbox"/> -	8648B	Hewlett-Packard	Signal Generator	3623A01433
<input type="checkbox"/> -	8648B	Hewlett-Packard	Signal Generator	3623A01477
<input type="checkbox"/> -	LMV-182A	Leader	RMS Milli-Voltmeter	8010091
<input type="checkbox"/> -	3202	Krhon-Hite	Active filter	5899
<input type="checkbox"/> -	FMT115	Leaming	FM Modulator	NONE
<input type="checkbox"/> -	371	UDT	Optical power meter	06657
<input type="checkbox"/> -	TSG95	Tektronix	PAL video / Audio generator	B028883
<input type="checkbox"/> -				

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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:

ANSI C63.4

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Emission Test Results:

Conducted emissions 150 kHz - 30 MHz

The requirements are ☒ - MET ☐ - NOT MET
Minimum limit margin 14.0 dB at 0.15 MHz
Remarks:

Radiated emissions (magnetic field) 10 kHz - 30 MHz

The requirements are ☒ - MET ☐ - NOT MET
Minimum limit margin 5.5 dB at 24.0 MHz
Remarks:

Radiated emissions (electric field) 30 MHz - 1000 MHz

The requirements are ☒ - MET ☐ - NOT MET
Minimum limit margin 2.0 dB at 191.6 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 GHz - GHz

The requirements are ☐ - MET ☐ - NOT MET
Minimum limit margin dB at GHz
Remarks:

Conducted Emissions - Telecommunications Port 150kHz - 30 MHz

The requirements are ☒ - MET ☐ - NOT MET
Minimum limit margin 22.0 dB at 16.16 MHz
Remarks:

GENERAL REMARKS:

We made radiated emission measurements between (0.1) MHz and (1,000) MHz. We followed the measurement procedures detailed in ANSI C63.4-2003.

The EUT was placed in the center of a non-conductive table at a height of (0.8) meters above the ground plane. The worst-case radiation for fundamental and spurious radiation was determined by rotating the EUT (360) degrees and scanning the height of the antenna between (1-4) meters for both antenna polarities when measuring above (30) MHz. When measuring below (30) MHz, the loop antenna was at a fixed (1) meter height and rotated (180) degrees. When the highest level was observed, the data was recorded.

All radiated measurements below (30) MHz reported were made with a PEAK detector. All other measurements were made in either peak or quasi-peak as indicated in the test data. The testing was completed with the RFID transmitter operating in a normal mode.

No spurious emissions were found in any restricted bands of operation listed in 15.205.

Models covered by this report:

PC-Copy

PC- XXXXXX

P/N: PC1CFX00-X denotes a Model PC-COPY W/Mifare option only

P/N: PC3CFX00-X denotes a Model PC-COPY W/Mifare and QWERTY

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 September 07, 2011

Testing End Date: October 20, 2011

- PRODUCT SAFETY ENGINEERING INC -

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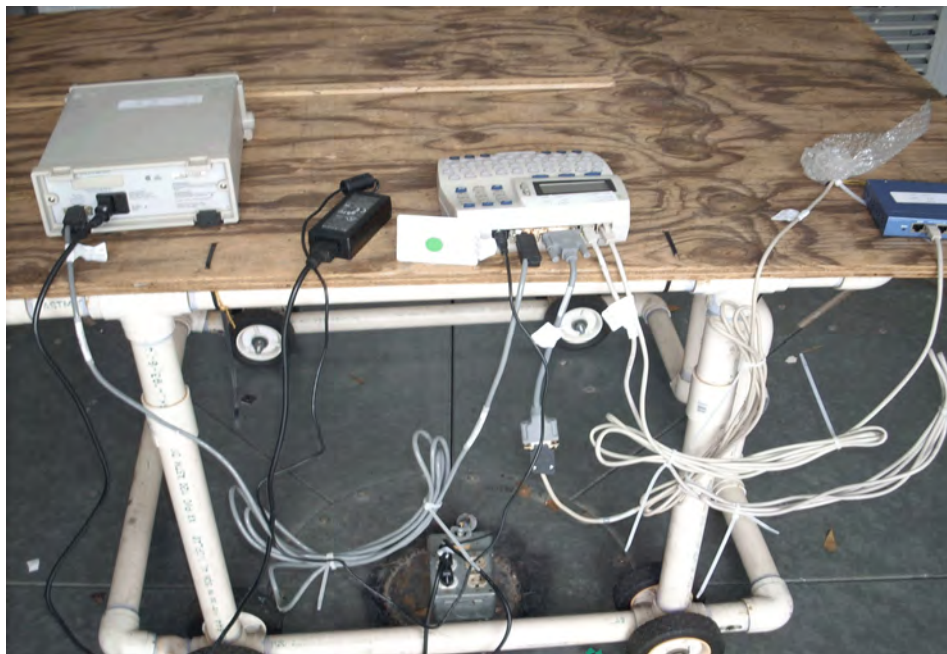
Test-setup photo(s):
Conducted emission 150 kHz - 30 MHz



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Test-setup photo(s):
Radiated emission 30 MHz - 1000 MHz



Test Report Number 11F361C

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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	<u>02/03/12</u>
Hewlett Packard	85662A	Display	2403A07352	<u>02/03/12</u>
Hewlett Packard	85650A	Quasi-Peak Adapter	2043A00209	<u>02/03/12</u>
Hewlett Packard	8447D	Preamp 0.1 - 1,000 MHz	2944A06832	<u>02/10/12</u>
Hewlett Packard	8568B	Spectrum Analyzer	2407A03213	<u> </u>
Hewlett Packard	85662A	Display	2340A05806	<u> </u>
Hewlett Packard	85650A	Quasi-Peak Adapter	2043A00358	<u> </u>
Hewlett Packard	8447D	Preamp 0.1 - 1,000 MHz	2944A06901	<u> </u>
Hewlett Packard	8447D	Preamp 0.1 - 1,000 MHz	1937A03247	<u> </u>
Hewlett Packard	8449B	Preamp 1 - 26.5 GHz	3008A00320	<u> </u>
EMCO	3148	Log Periodic Antenna	00044783	<u> </u>
Electro-Metrics	LPA 30	Log Periodic Antenna	2280	<u>02/14/12</u>
Electro-Metrics	BIA 30	Biconical Antenna	3852	<u>04/01/12</u>
Electro-Metrics	BIA 25	Biconical Antenna	4283	<u> </u>
Electro-Mechanics	3115	Double Ridge Guide Ant.	3810	<u> </u>
Electro-Metrics	ALR30M	Magnetic Loop Antenna	824	<u> </u>
Solar	8012	LISN	924840	<u> </u>
Solar	8028	LISN	829012/809022	<u>03/31/12</u>
Solar	8028	LISN	903725/903726	<u> </u>
Schwartzbeck	MDS-21	Absorbing Clamp	02581	<u> </u>
Electro-Metrics	EMC-30	EMI Receiver	191	<u>07/08/12</u>
Electro-Metrics	ALR25M	Loop Antenna	722	<u>01/08/12</u>
Cole-Palmer	9970-00	Digital Barometer	61493735	<u> </u>
EMC Automation	HLP3003C	Hybrid Log Periodic	017501	<u> </u>
Fischer Custom	FCC-T4-02	Telecom ISN	20454	<u>04/25/12</u>
Fischer Custom	FCC-T8-02	Telecom ISN	20452	<u> </u>

* Cal Due Date Format = MM/DD/YY

PRODUCT EMISSIONS

PSE OPEN AREA TEST SITE

Data File: EQUITRAC PCCOPY MIFARE CISA OCT13

No	EMISSION	SPEC	MEASUREMENTS			SITE			CORR	COMMENTS
	FREQUENCY MHz	LIMIT dBuV/m	ABS	dLIM dB	MODE	POL	HGT cm	AZM deg	FACTOR dB	
1	30.157	40.0	35.8	-4.2	QP	V	100	315	-16.2	
2	32.306	40.0	34.3	-5.7	PK	V	150	180	-16.6	
3	36.005	40.0	35.7	-4.4	PK	V	100	225	-17.3	
4	40.683	40.0	30.9	-9.1	PK	V	100	315	-18.1	
5	45.621	40.0	34.6	-5.4	QP	V	150	180	-18.2	
6	49.999	40.0	36.3	-3.7	PK	V	100	135	-18.2	
7	64.807	40.0	35.2	-4.8	PK	V	100	225	-19.	
8	66.290	40.0	35.6	-4.4	QP	V	100	315	-19.2	
9	71.999	40.0	35.0	-5.0	PK	V	100	225	-20.3	
10	73.33	40.0	36.0	-4.0	PK	V	100	1	-20.5	
11	82.040	40.0	35.2	-4.8	PK	V	100	1	-21.4	
12	100.000	40.0	33.4	-6.6	PK	H	250	90	-16.6	
13	109.19	40.0	34.9	-5.1	PK	V	100	1	-15.4	
14	122.870	40.0	35.6	-4.4	PK	V	100	1	-14.7	
15	125.000	40.0	35.0	-5.0	PK	V	100	225	-14.9	
16	143.995	40.0	32.7	-7.3	PK	V	100	1	-14.2	
17	146.629	40.0	33.4	-6.6	PK	V	100	90	-13.9	
18	150.005	40.0	33.3	-6.7	PK	V	100	135	-13.5	
19	154.484	40.0	34.4	-5.6	PK	V	100	45	-13.6	
20	169.510	40.0	30.7	-9.3	PK	V	100	90	-12.5	
21	175.000	40.0	33.8	-6.2	PK	V	100	135	-12.2	
22	185.776	40.0	36.5	-3.5	PK	V	100	135	-11.2	
23	190.939	40.0	36.7	-3.3	PK	V	150	225	-10.6	
24	191.572	40.0	38.0	-2.0	QP	V	100	180	-10.6	
25	198.513	40.0	36.3	-3.7	PK	V	150	180	-10.7	
26	199.982	40.0	34.0	-6.0	QP	H	300	135	-10.7	
27	200.393	40.0	36.9	-3.1	PK	V	200	180	-16.	
28	201.663	40.0	35.9	-4.1	PK	V	100	180	-15.9	
29	221.196	40.0	37.3	-2.7	QP	V	100	225	-15.1	
30	224.994	40.0	37.5	-2.5	QP	V	100	225	-15.	
31	226.830	40.0	35.8	-4.2	PK	V	100	180	-14.9	
32	229.390	40.0	37.3	-2.7	QP	V	100	225	-14.8	
33	245.761	47.0	42.5	-4.5	QP	H	350	225	-14.2	
34	275.000	47.0	42.8	-4.2	QP	V	150	135	-12.3	
35	294.901	47.0	44.5	-2.5	QP	H	300	225	-11.	
36	299.981	47.0	41.2	-5.8	PK	H	300	135	-10.7	
37	324.983	47.0	42.4	-4.6	PK	H	300	135	-10.9	
38	344.078	47.0	43.5	-3.5	QP	H	100	225	-11.3	
39	374.983	47.0	42.9	-4.1	PK	H	350	180	-11.4	
40	399.995	47.0	40.7	-6.3	PK	V	100	315	-11.2	
41	491.506	47.0	41.3	-5.7	PK	H	250	315	-8.6	
42	500.000	47.0	40.9	-6.1	PK	V	100	270	-8.3	
43	575.006	47.0	41.8	-5.2	PK	H	100	180	-7.3	
44	625.003	47.0	42.5	-4.6	PK	H	100	225	-7.	
45	750.009	47.0	40.6	-6.4	PK	V	100	180	-4.6	
46	875.000	47.0	41.8	-5.2	PK	V	100	180	-1.8	
47	924.992	47.0	41.4	-5.6	PK	H	250	225	-1.3	
48	999.999	47.0	39.5	-7.5	PK	H	100	180	0.6	

FCC DATA SHEET

Frequency tolerance

§15.225

(e) The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency over a temperature variation of -20 degrees 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. For battery operated equipment, the equipment tests shall be performed using a new battery.

Temperature	Frequency (Hz)	Tolerance
-20 C	13,557,790	$13,557,740 - 13,557,790 = -50$
+ 50 C	13,558,150	$13,557,740 - 13,558,150 = -410$
+ 20 C	13,557,740	$0.0001 \times 13,557,740 = 1,356$

The supply voltage to the host computer was varied from (102) to (138) VAC while we monitored the frequency. The frequency did not change during this voltage variation.

PASS

(f) In the case of radio frequency powered tags designed to operate with a device authorized under this section, the tag may be approved with the device or be considered as a separate device subject to its own authorization. Powered tags approved with a device under a single application shall be labeled with the same identification number as the device.

NOT APPLICABLE

RADIATED DATA SHEET

FCC Rule Part	Frequency Range MHz	Limit dBuV/M	Limit Distance meters	Measured Freq. (MHz)	Level dBuV/M	Margin dB
15.225 (a)	13.553 - 13.567	84	30	13.56	56.4	27.6
15.225 (b)	13.410 - 13.553	50.5	30	13.543	36.5	14.0
15.225 (b)	13.567 - 13.710	50.5	30	13.588	36.0	14.5
15.225 (c)	13.110 - 13.410	40.5	30	13.410	23.0	17.5
15.225 (c)	13.710 - 14.010	40.5	30	13.928	22.4	18.1
15.225 (d)	1.705 - 13.110	29.5	30	11.06	19.7	9.8
15.225 (d)	14.010 - 30.0	29.5	30	27.12	24.0	5.5
15.225 (d)	> 30	40.0	10	40.688	37.3	2.7
15.225 (d)	> 30	40.0	10	54.244	33.0	7.0
15.225 (d)	> 30	40.0	10	67.804	36.0	4.0
15.225 (d)	> 30	40.0	10	81.368	30.5	9.5
15.225 (d)	> 30	43.5	10	94.927	37.5	6.0
15.225 (d)	> 30	43.5	10	108.489	31.3	12.2
15.225 (d)	> 30	43.5	10	122.049	28.8	14.7
15.225 (d)	> 30	43.5	10	135.610	37.3	16.2

Compliance Checklist (per EN 300 330-2) V1.3.1

Section 4 TECHNICAL REQUIREMENT SPECIFICATIONS

4.2.1.1 Radiated H-field

The radiated H-field, as defined in EN 300 330-1 [2], clause 7.2.1.1, shall not exceed the limits in EN 300 330-1 [2], clause 7.2.1.3, table 4. This requirement applies to transmitters with an integral or dedicated loop antenna. Testing was performed at both normal and extremes.

Frequency (MHz)	Limit dBuV/m @ 10 m	Frequency (MHz)	Field Strength dBuV/m	Margin (dB)
13.553 -13.567	111.5	13.56	66.4	45.1
13.403 - 13.553	60.5	13.543	46.5	14.0
13.567 -13.717	60.5	13.588	46.0	14.5
12.953 - 13.403	48.0	NA	NA	>20
13.717 - 14.167	48.0	13.928	32.4	15.6
12.053 - 12.953	41.5	NA	NA	>20
14.167 - 15.067	41.5	NA	NA	>20
1.705 -12.053	35.5	11.06	29.7	5.8
15.067 - 30.0	35.5	27.12	34.0	1.5

4.2.1.2 Carrier Current

Not applicable - Product Class 3 only

4.2.1.3 Radiated E-Field

Not applicable - Product Class 4 only

4.2.1.4 Permitted frequency range of modulation bandwidth

The permitted range of the modulation bandwidth shall be within the limits of the assigned frequency band. The EUT complies based on results shown within table of 4.2.1.1. Testing was performed at both normal and extremes.

4.2.1.5 Spurious Emissions

4.2.1.5.1 Conducted spurious emissions at frequencies below 30 MHz

Not applicable - Product Class 3 only

4.2.1.5.2 Conducted spurious emissions at frequencies above 30 MHz

Not applicable - Product Class 3 only

4.2.1.5.3 Radiated spurious emissions at frequencies below 30 MHz

The only spurious emission observed below (30) MHz was the second harmonic at (27.12) MHz. The amplitude of this emission was recorded at (25.0) dBuV/m at a measurement distance of (10) meters. The limit for spurious emissions between (10 - 30) MHz is (-3.5) dBuA/m or (48.0) dBuV/m.

The spurious emission at (27.12) MHz was (23) dB below the limit.

4.2.1.5.4 Radiated spurious emissions at frequencies above 30 MHz

The only spurious emission observed above (30) MHz was at (40.68) MHz. This is the third harmonic. The limit for this emission is (250) nW at (10) meters. Using the substitution method, the ERP at (40.68) MHz was (7.41) nW.

The following formula was used to arrive at the ERP value:

$$\text{ERP} = \text{PG} - \text{CL} + \text{ANT}$$

ERP = Effective Radiated Power (dBm)

PG = Signal Generator Output (dBm)

CL = Cable loss (dB)

ANT = antenna gain (dBd)

dBd = (antenna gain dBi) + (2.2 dB)

$$\text{ERP} = -44 - 1.0 + (-6.3)$$

$$\text{ERP} = -51.3 \text{ dBm}$$

$$\text{ERP} = 0.00000741 \text{ mW}$$

$$\text{ERP} = 7.41 \text{ nW}$$

4.2.1.56 Duty Cycle

The device is declared to be a duty cycle class 4.

Product Safety Engineering

EQUITRAC PAGECOUNTER

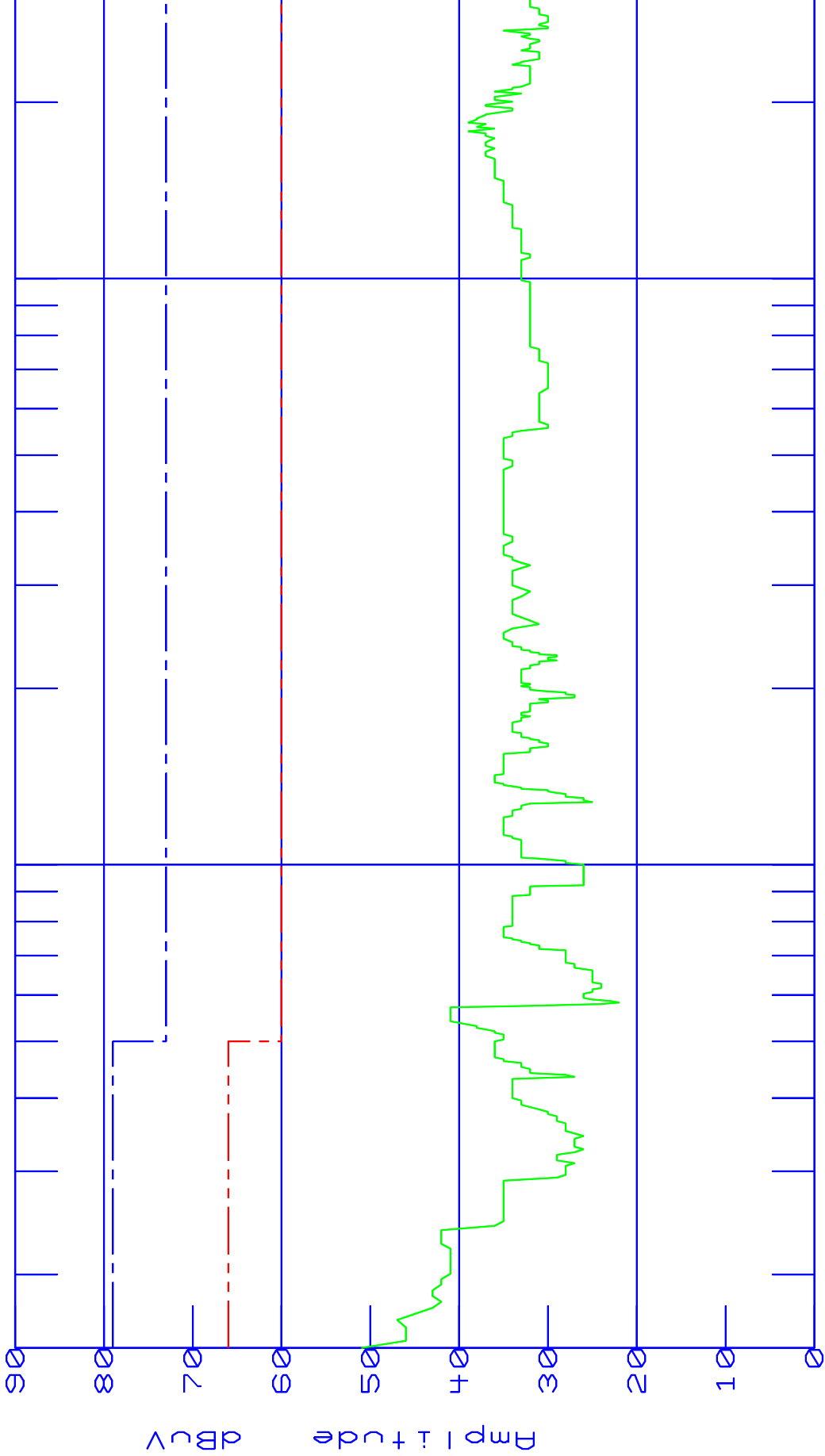
Date : 10/17/11
Technician : CHIP FOERSTNER
Test Method : EN55022 CLASS A
Equipment : PC COPY
Mode of Op. : NORMAL
Serial No. :

Time : 10:31:51.99
Test Equip. : EMC-30
Test Number : 1
Sensor Loc. : LINE
Sensor Pol. :
Ext. Atten. : 0 dB

EMC-30 SETTINGS
Detector QuasiPeak
Bandwidth CISPR
Dump/Dwell IN/A
RF Atten. 10 dB
IF Atten. 10 dB

SPECS
1) CISPR22 AVERAGE
2) CISPR 22 QUASI PEAK
3)
4)

Comment : 120 VAC / 60 HZ SINO-AMERICAN POWER SUPPLY MODEL #SA120G-05V



ANTENNA FILES

OTHER FACTORS

E-M

0.150

1. Frequency MHz

10.

30.000

TEST TITLE: EQUITRAC PAGECOUNTER

DATA FILE : 361_L.D30

Amplitude Units : dBuV

Threshold -20 dB

PAGE 1

Freq. (MHz)

0.1500

Freq(MHz)	Amp	C22AAVG.S30 vs Spec(dB)	C22AQP.S30 vs Spec(dB)
0.1500	51.0	-15.000 *	
0.1542	46.0	-20.000 *	
0.1583	46.0	-20.000 *	
0.1625	46.0	-20.000 *	
0.1673	47.0	-19.000 *	
0.5375	40.0	-20.000 *	
0.5409	41.0	-19.000 *	
0.5443	41.0	-19.000 *	
0.5477	41.0	-19.000 *	
0.5511	41.0	-19.000 *	
0.5545	41.0	-19.000 *	
0.5580	41.0	-19.000 *	
0.5614	41.0	-19.000 *	
0.5648	41.0	-19.000 *	
0.5682	41.0	-19.000 *	
0.5716	41.0	-19.000 *	

Product Safety Engineering

EQUITRAC PAGECOUNTER

Date : 10/18/11

Time : 09:12:40.27

Technician : JACK GARNER

Test Equip. : EMC-30

Test Method : EN55022 CLASS A

Test Number : 1

Equipment : PC COPY

Sensor Loc. : NEUTRAL

Mode of Op. : NORMAL

Sensor Pol. :

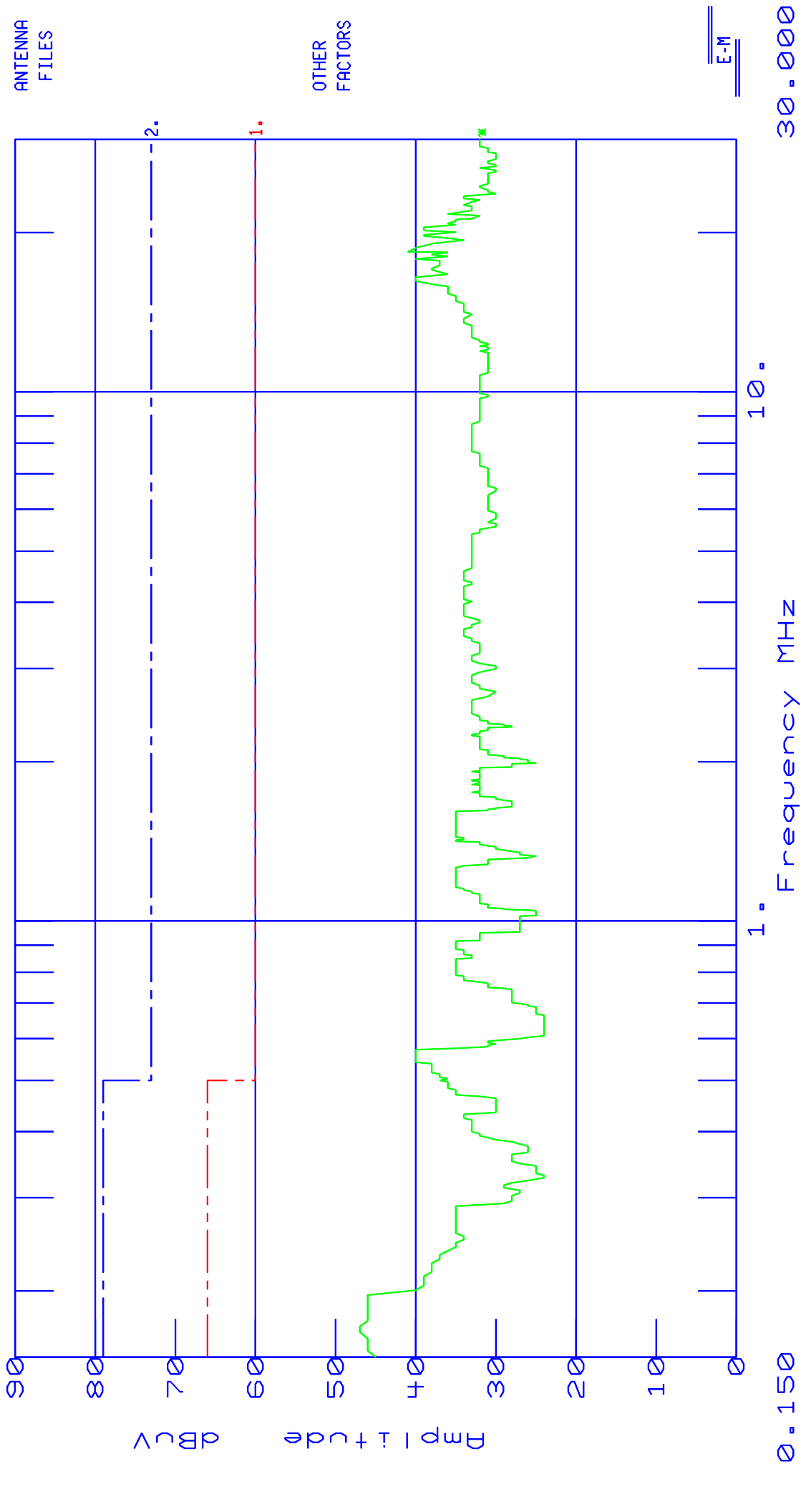
Serial No. :

Ext. Atten. : 0 dB

EMC-30 SETTINGS
Detector QuasiPeak
Bandwidth CISPR
Dump/DwellIN/A
RF Atten. 10 dB
IF Atten. 10 dB

SPECS
1) CISPR22 AVERAGE
2) CISPR 22 QUASI PEAK
3)
4)

Comment : 120 VAC / 60 HZ SINO-AMERICAN POWER SUPPLY MODEL#SA120G-05V



TEST TITLE:EQUITRAC PAGECOUNTER

DATA FILE :361_N.D30

Amplitude Units : dBuV

Threshold -20 dB

PAGE 1

Freq.(MHz)

0.1500

Freq(MHz)	Amp	C22AAVG.S30 vs Spec(dB)	C22AQP.S30 vs Spec(dB)
0.1542	46.0	-20.000 *	
0.1583	46.0	-20.000 *	
0.1625	46.0	-20.000 *	
0.1673	47.0	-19.000 *	
0.1715	47.0	-19.000 *	
0.1755	46.0	-20.000 *	
0.1796	46.0	-20.000 *	
0.1838	46.0	-20.000 *	
0.1881	46.0	-20.000 *	
0.1923	46.0	-20.000 *	
0.1965	46.0	-20.000 *	
0.5409	40.0	-20.000 *	
0.5443	40.0	-20.000 *	
0.5477	40.0	-20.000 *	
0.5511	40.0	-20.000 *	
0.5545	40.0	-20.000 *	
0.5580	40.0	-20.000 *	
0.5614	40.0	-20.000 *	
0.5648	40.0	-20.000 *	
0.5682	40.0	-20.000 *	
0.5716	40.0	-20.000 *	
16.1779	40.0	-20.000 *	
16.3456	40.0	-20.000 *	
16.4664	40.0	-20.000 *	
17.8279	40.0	-20.000 *	
18.3826	41.0	-19.000 *	
18.6834	40.0	-20.000 *	
18.7268	40.0	-20.000 *	

Product Safety Engineering

EQUITRAC PAGECOUNTER

Date : 10/18/11

Time : 10:03:49.29

Technician : JACK GARNER

Test Equip.: EMC-30

Test Method : EN55022 CLASS A

Test Number : 1

Equipment : PC COPY

Sensor Loc. : SIDE 1

Mode of Op. : NORMAL

Sensor Pol. :

Ext. Atten. : 0 dB

Serial No. :

EMC-30 SETTINGS

Detector QuasiPeak

Bandwidth CISPR

Dump/Dwell IN/A

RF Atten. 10 dB

IF Atten. 10 dB

SPECS

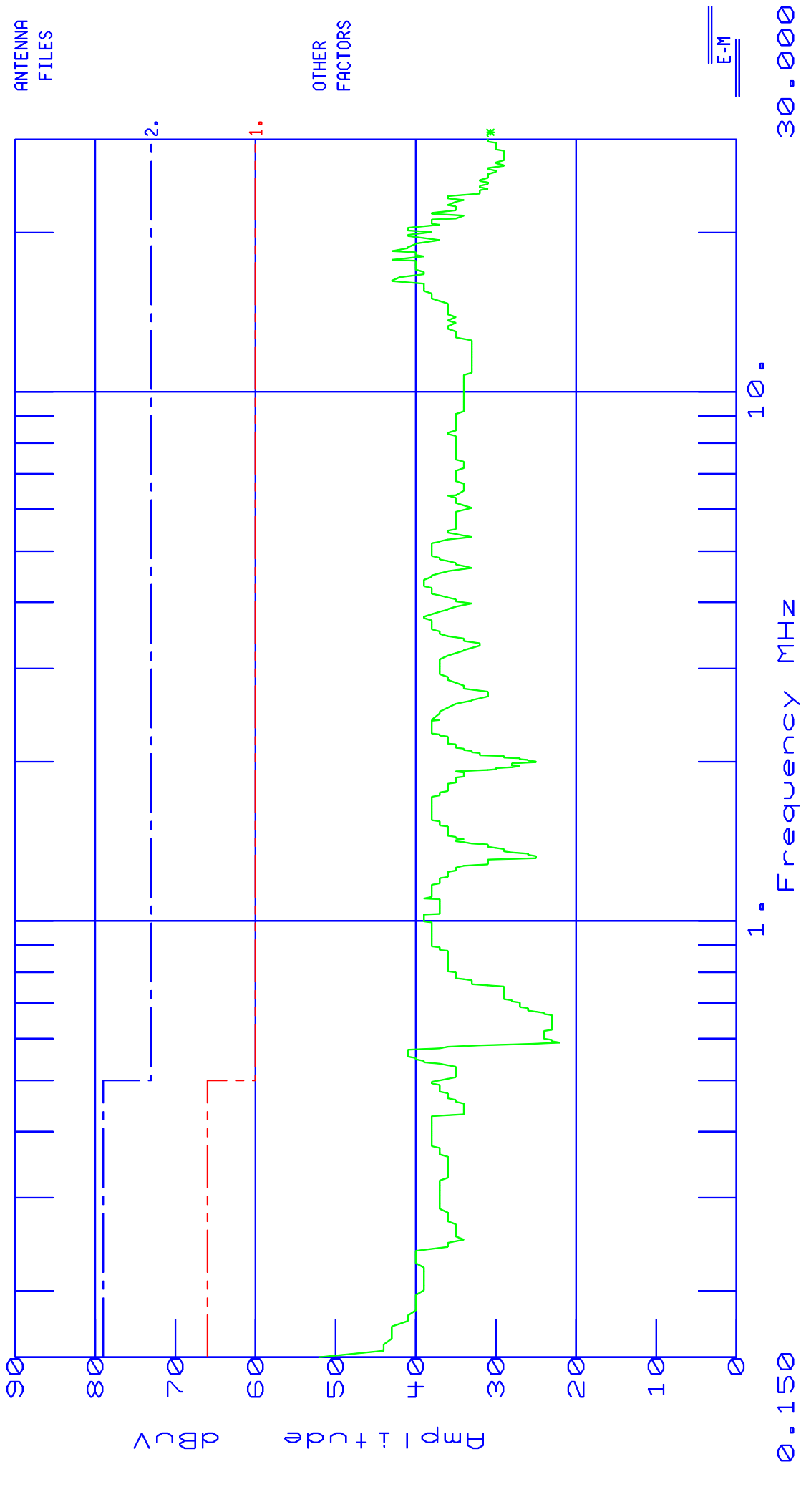
1) CISPR22 AVERAGE

2) CISPR 22 QUASI PEAK

3)

4)

Comment : 230 VAC / 50 HZ SINO-AMERICAN POWER SUPPLY MODEL#SA120G-05V



0.150

1. 10. 30.000

Frequency MHz

0.150

0.150

TEST TITLE:EQUITRAC PAGECOUNTER

DATA FILE :361_1.D30

Amplitude Units : dBuV

Threshold -18 dB

PAGE 1

Freq.(MHz)

0.1500

Freq(MHz)	Amp	C22AAVG.S30	C22AQP.S30
		vs Spec(dB)	vs Spec(dB)
0.1500	52.0	-14.000 *	
16.1779	43.0	-17.000 *	
16.2282	43.0	-17.000 *	
16.4664	42.0	-18.000 *	
17.7644	43.0	-17.000 *	
18.4428	43.0	-17.000 *	

Product Safety Engineering

EQUITRAC PAGECOUNTER

Date : 10/18/11

Time : 09:26:18.72

Technician : JACK GARNER

Test Equip.: EMC-30

Test Method : EN55022 CLASS A

Test Number : 1

Equipment : PC COPY

Sensor Loc. : SIDE 2

Mode of Op. : NORMAL

Sensor Pol. :

Ext. Atten. : 0 dB

Serial No. :

EMC-30 SETTINGS

Detector QuasiPeak

Bandwidth CISPR

Dump/DwellIN/A

RF Atten. 10 dB

IF Atten. 10 dB

SPECS

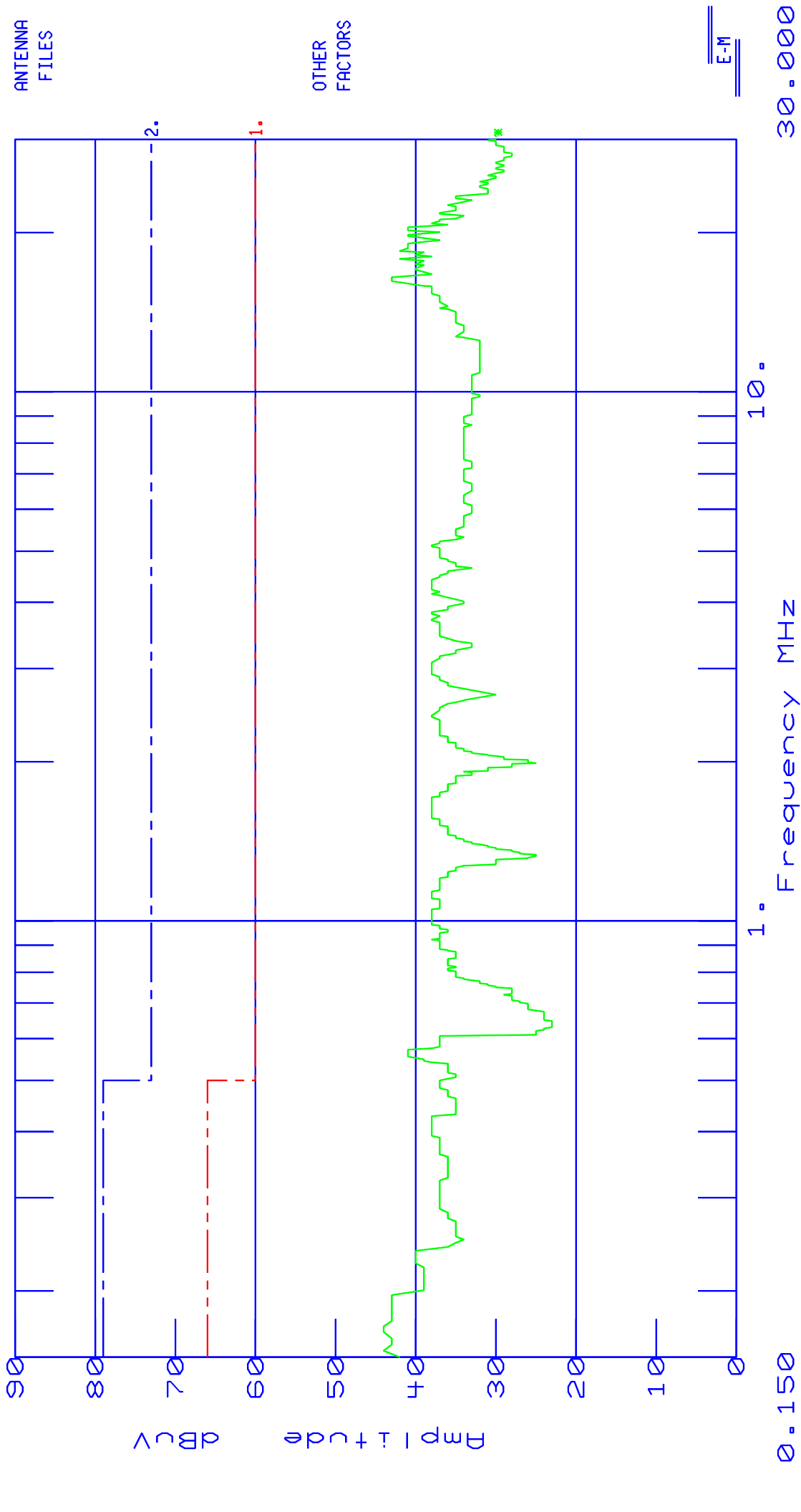
1) CISPR22 AVERAGE

2) CISPR 22 QUASI PEAK

3)

4)

Comment : 230 VAC / 50 HZ SINO-AMERICAN POWER SUPPLY MODEL#SA120G-05V



TEST TITLE: EQUITRAC PAGECOUNTER

DATA FILE : 361_2.D30

Amplitude Units : dBuV

Threshold -18 dB

PAGE 1

Freq. (MHz)

0.1500

Freq (MHz)	Amp	C22AAVG.S30	C22AQP.S30
		vs Spec (dB)	vs Spec (dB)
16.1779	43.0	-17.000 *	
16.3456	43.0	-17.000 *	
16.4664	43.0	-17.000 *	
17.8279	42.0	-18.000 *	
18.4428	42.0	-18.000 *	

Product Safety Engineering

EQUITRAC PAGECOUNTER

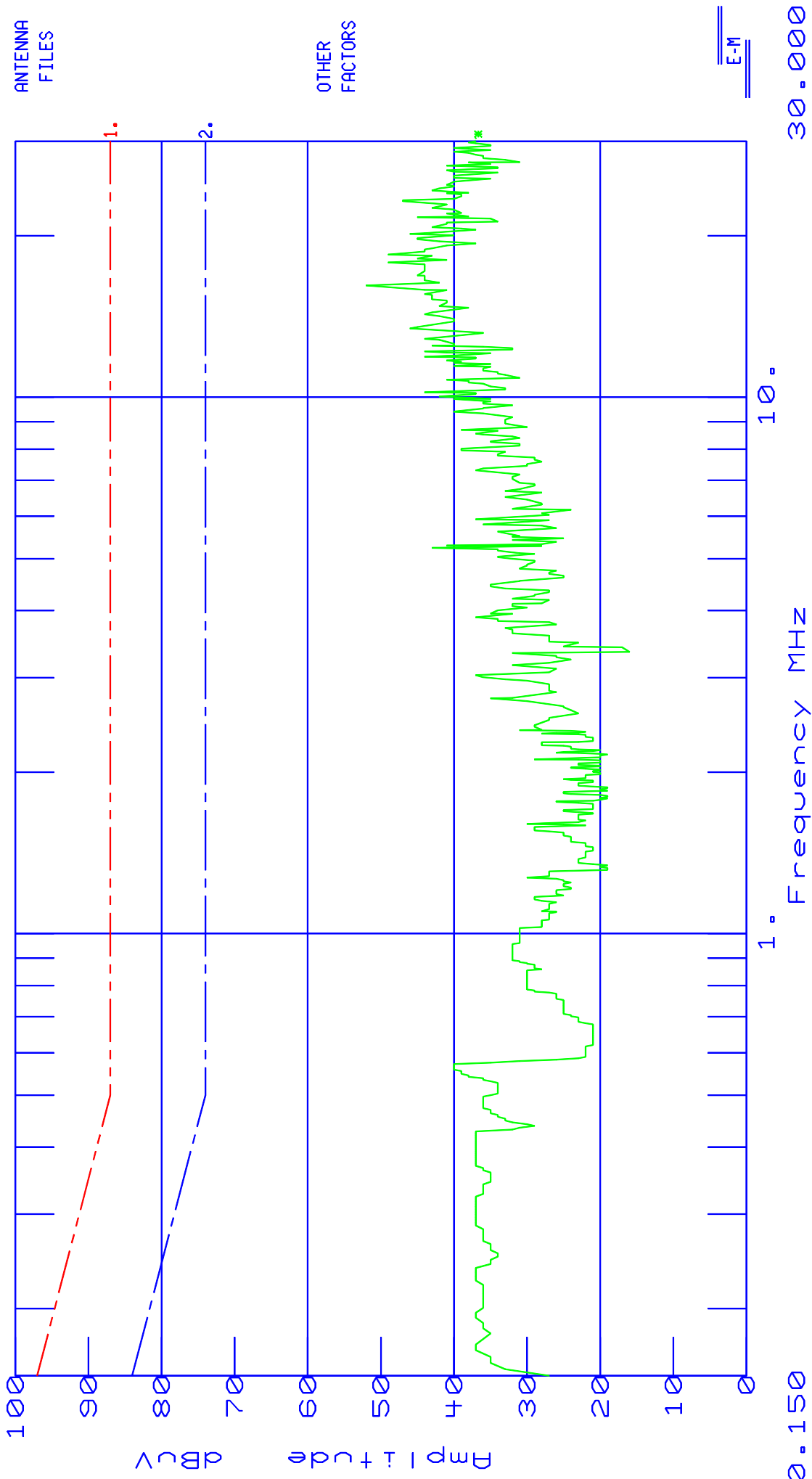
Date : 10/18/11
Time : 10:22:42.13
Technician : JACK GARNER
Test Equip. : EMC-30
Test Method : EN55022 CLASS A
Test Number : 1
Equipment : PC COPY
Sensor Loc. : ETHERNET
Mode of Op. : NORMAL
Sensor Pol. :
Serial No. : PC369667
Ext. Atten. : 0 dB

Comment : 230 VAC / 50 HZ

EMC-30 SETTINGS
Detector QuasiPeak
Bandwidth CISPR
Dump/DwellIN/A
RF Atten. 10 dB
IF Atten. 10 dB

SPECS

- 1) Default Spec (same as V885)
- 2) Default Spec (same as V885)
- 3)
- 4)



TEST TITLE: EQUITRAC PAGECOUNTER

DATA FILE : 361_E.D30

Amplitude Units : dBuV

Threshold -28 dB

PAGE 1

Freq. (MHz)

0.1500

Freq(MHz)	Amp	ETHAQP.S30	ETHAAVG.S30
		vs Spec(dB)	vs Spec(dB)
13.4418	46.0		-28.000 *
16.1612	52.0		-22.000 *
17.8279	49.0		-25.000 *
18.4394	49.0		-25.000 *
20.1548	46.0		-28.000 *
23.1932	47.0		-27.000 *
23.3036	47.0		-27.000 *

Product Safety Engineering

EQUITRAC PAGECOUNTER

Date : 10/18/11

Time : 10:47:41.87

Technician : JACK GARNER

Test Equip. : EMC-30

Test Method : EN55022 CLASS A

Test Number : 1

Equipment : PC COPY

Sensor Loc. : EXPANSION

Mode of Op. : NORMAL

Sensor Pol. :

Serial No. : PC369667

Ext. Atten. : 0 dB

Comment : 230 VAC / 50 HZ

SPECS

- 1) Default Spec (same as V885)
- 2) Default Spec (same as V885)
- 3)
- 4)

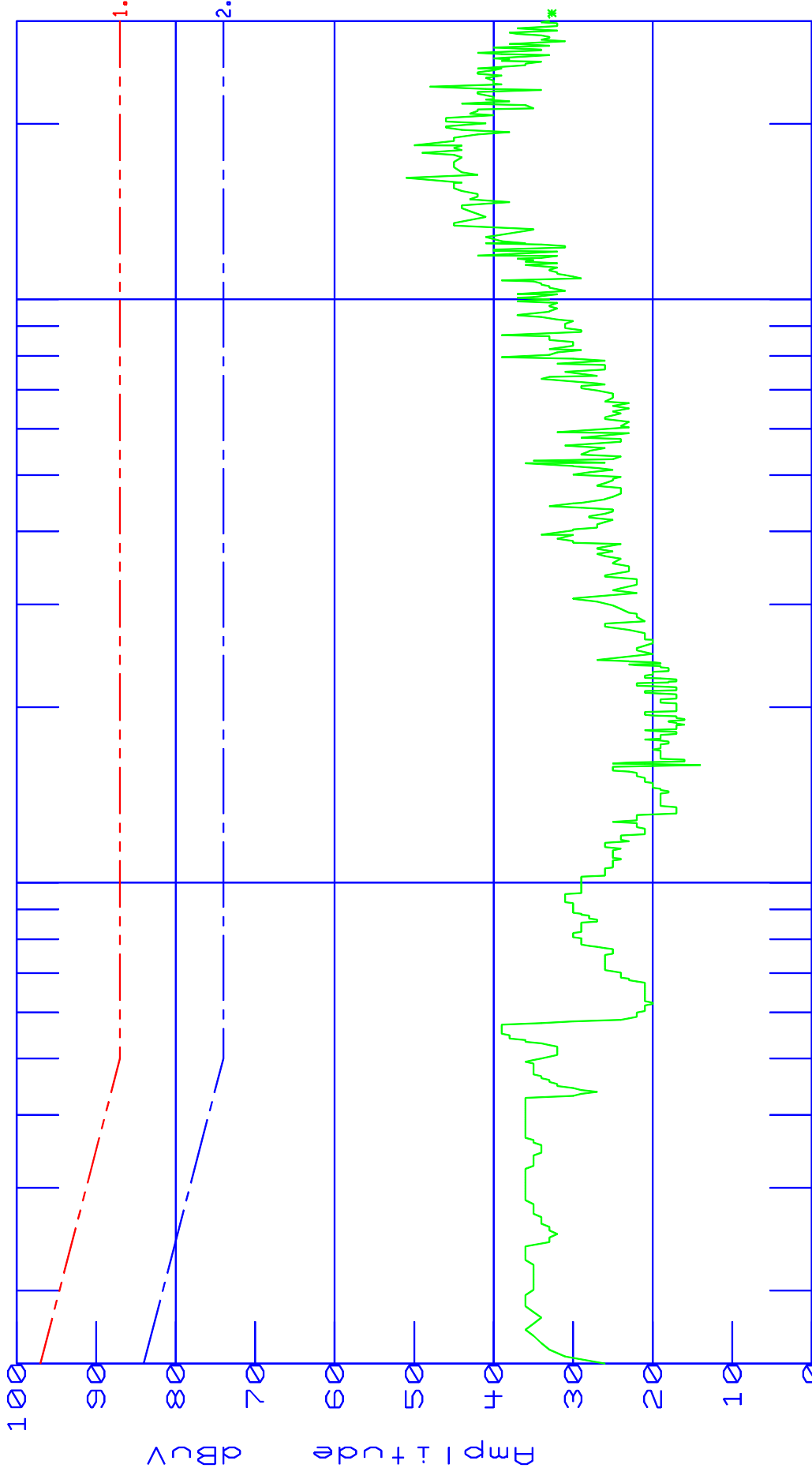
EMC-30 SETTINGS

Detector QuasiPeak
Bandwidth CISPR
Dump/Dwell IN/A
RF Atten. 10 dB
IF Atten. 10 dB

ANTENNA
FILES

OTHER
FACTORS

E-M



0.150

1. Frequency MHz

10.

10.

30.000

TEST TITLE:EQUITRAC PAGECOUNTER

DATA FILE :361_EX.D30

Amplitude Units : dBuV

Threshold -30 dB

PAGE 1

Freq.(MHz)

0.1500

Freq(MHz)	Amp	ETHAQP.S30 vs Spec(dB)	ETHAAVG.S30 vs Spec(dB)
13.3747	45.0		-29.000 *
13.5054	45.0		-29.000 *
14.3366	44.0		-30.000 *
14.4841	44.0		-30.000 *
15.3428	44.0		-30.000 *
15.4970	45.0		-29.000 *
15.6782	45.0		-29.000 *
15.8358	45.0		-29.000 *
15.8492	44.0		-30.000 *
16.1612	51.0		-23.000 *
16.5133	44.0		-30.000 *
16.5167	44.0		-30.000 *
16.8487	45.0		-29.000 *
17.0158	45.0		-29.000 *
17.1829	45.0		-29.000 *
17.2063	45.0		-29.000 *
17.5137	44.0		-30.000 *
17.6808	45.0		-29.000 *
17.8279	49.0		-25.000 *
18.0150	44.0		-30.000 *
18.1721	45.0		-29.000 *
18.3492	44.0		-30.000 *
18.3726	50.0		-24.000 *
18.6834	45.0		-29.000 *
18.8471	45.0		-29.000 *
18.9374	45.0		-29.000 *
19.5176	44.0		-30.000 *
19.6853	46.0		-28.000 *
19.8060	46.0		-28.000 *
20.1883	46.0		-28.000 *
20.3560	46.0		-28.000 *
20.4600	46.0		-28.000 *
21.6556	44.0		-30.000 *
23.1498	48.0		-26.000 *

APPENDIX

B

System Under Test Description

SYSTEM COMPONENTS

DEVICE TYPE: EUT - Equitrac PageCounter model # PC COPY with Mifare reader
Power Supply: Sino-American SA-120G-05V

DEVICE TYPE: TrendNET Router model # TW100-BVR204A (Support Equipment)
Power Supply: AC-DC adapter model # MW41-0900700 9 VDC output

DEVICE TYPE: Fluke 45 Multimeter (Support Equipment)

DEVICE TYPE: EUT - Mifare proximity access card to activate Mifare reader

INTERFACE CABLES

DEVICE TYPE: EUT
SHIELD: No
LENGTH: 1 meter bundle
CONNECTOR TYPE: RJ-45 to TrendNET Router (Router Active On)
PORT: Expansion

DEVICE TYPE: EUT
SHIELD: No
LENGTH: 1 meter bundle
CONNECTOR TYPE: RJ-45 to TrendNET Router (Router Active On)
PORT: Ethernet

DEVICE TYPE: EUT
SHIELD: Yes
LENGTH: 1 meter bundle
CONNECTOR TYPE: 9 pin d-sub to same at Fluke 45 multimeter (Meter powered off)
PORT: Serial port

DEVICE TYPE: EUT
SHIELD: Yes
LENGTH: 1 meter bundle
CONNECTOR TYPE: 26 pin d-sub to resistive 1 KOHM load as terminator
PORT: Copy Control

AC LINE CORDS

DEVICE TYPE: EUT Power Supply
SHIELD: No
LENGTH: 6 FEET
CONNECTOR TYPE: IEC to Dedicated

APPENDIX

C

Measurement Protocol

Page C1 of C2

Test Report Number 11F361C

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

ANSCI C63.4 2003 was the guiding document for test procedures as required by 47 CFR Part 15 Subpart A Section 15.31(a)(3).

The EUT was powered with (230) VAC during the collection of data included within.

The data is compared to the CISPR-22 Class A limits.

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

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

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

Observed Level		45.5	dB μ V	
ACF	+	16.7	dB/M	
Cable Loss	+	1.8	dB	
Preamp Gain	-	<u>26.0</u>	dB	
Actual Level		38.0	dB μ V/M	@ 191.5 MHz

Please have a company official review this report and sign.
