

TEST REPORT



Testing 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

Equitrac Corporation
1000 Sawgrass Corporate Parkway
Suite 305
Sunrise, FL 33323

Report Issue Date: 16 Jan 2015

Sample S/N: See Appendix B

Sample Receipt Date: 30 Apr 2014

Sample Test Date: see data sheets

Test Report Number: 14F119B

Model Designation: PCT-IMUL

Product Description: PageControl Touch

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

Estimated Measurement Uncertainty: *See page 9. This uncertainty represents and expanded uncertainty expressed at approximately 95% confidence level using a coverage factor of k=2.*

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 item identified above. It is the manufacturer's responsibility to assure that additional production units 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

A handwritten signature in black ink, appearing to read 'David Foerstner', written over a horizontal line.

Name David Foerstner

Title Engineering Group Leader

Date 16 Jan 2015

Reviewed by:

A handwritten signature in black ink, appearing to read 'Steve Hoke', written over a horizontal line.

Approved Signatory

Date 16 Jan 2015

Steve Hoke (EMC Site Manager)

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Test Report Number 14F119B

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

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EMISSIONS TEST REGULATIONS :

The emissions tests were performed according to following regulations:

☐ - EN 61000-6-3:2007

☐ - EN 61000-6-4:2007

☐ - EN 55011 : 2009/A1:2010

☐ - Group 1

☐ - Group 2

☐ - Class A

☐ - Class B

■ - EN 300-330 v1.5.1 & EN 300-330 V1.7.1

☐ - EN 55014 -1: 2006/A2:2011

☐ - Household appliances and similar

☐ - Portable tools

☐ - Semiconductor devices

☐ - EN 55022:2010/AC:2011

☐ - Class A

☐ - Class B

☐ - CISPR 22:2008

☐ - Class A

☐ - Class B

☐ -AS/NZS CISPR 22:2009

☐ - Class A

☐ - Class B

☐ - ICES-003

☐ - Class A

☐ - Class B

☐ - CNS 13438

☐ - Class A

☐ - Class B

☐ - VCCI V-3/2010.4

☐ - Class A

☐ - Class B

■ - FCC Part 15 (per ANSI C63.4)

☐ - Class A

☐ - Class B

■ - Certification per 15.225

☐ - Verification

☐ - Declaration of Conformity

■ - RSS-210 Issue 8

■ - RSS-GEN Issue 4

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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 : 120 / 230 Volts 60 / 50 Hz SINGLE phase

Sign Explanations:

- ☐ - not applicable
- ☒ - applicable

Models Defined:

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Emissions Test Conditions: CONDUCTED EMISSIONS (Interference Voltage)

The *CONDUCTED EMISSIONS (INTERFERENCE VOLTAGE)* measurements between 0.15 to 30 MHz 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
<input type="checkbox"/>	8028-50	Solar	50 Ω LISN	829012, 829022
<input type="checkbox"/>	8012	Solar	50 Ω LISN	924840
<input checked="" type="checkbox"/>	EMC-30	Electro-Metrics	EMI Receiver	191
<input type="checkbox"/>	8566B	Hewlett-Packard	Spectrum Analyzer	2421A00526
<input type="checkbox"/>	85650A	Hewlett-Packard	Quasi-Peak Adapter	2043A00209
<input type="checkbox"/>	85662A	Hewlett Packard	Analyzer Display	2403A07352
<input type="checkbox"/>	8028-50	Solar	50 Ω LISN	903725, 903726
<input type="checkbox"/>	FCC-TLISN-T4-02	Fisher Custom Com.	Telecom ISN	20454
<input type="checkbox"/>	FCC-TLISN-T8-02	Fisher Custom Com.	Telecom ISN	20452
<input checked="" type="checkbox"/>	LI-125	Com-Power	50 Ω LISN	191080/191081

Emissions Test Conditions: RADIATED EMISSIONS (Magnetic Field)

The *RADIATED EMISSIONS (MAGNETIC FIELD)* measurements between 0.010 to 30 MHz 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
<input type="checkbox"/>	3148	EMCO	Log Periodic Antenna	00044783
<input type="checkbox"/>	BIA-25	Electro-Metrics	Biconical Antenna	4283
<input checked="" type="checkbox"/>	8566B	Hewlett-Packard	Spectrum Analyzer	2532A02418
<input checked="" type="checkbox"/>	85662A	Hewlett-Packard	Analyzer Display	2403A07352
<input checked="" type="checkbox"/>	85650A	Hewlett-Packard	Quasi-Peak Adapter	2043A00209
<input checked="" type="checkbox"/>	ALR-30M	Electro-Metrics	Loop Antenna	824
<input checked="" type="checkbox"/>	8447D	Hewlett Packard	Preamplifier	2944A06901
<input type="checkbox"/>	EMC-30	Electro-Metrics	EMI Receiver	191
<input type="checkbox"/>	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
<input checked="" type="checkbox"/> - 8447D	Hewlett-Packard	Preamplifier (26dB)	2944A06901
<input checked="" type="checkbox"/> - 8566B	Hewlett-Packard	Spectrum Analyzer	2532A02418
<input checked="" type="checkbox"/> - 85662A	Hewlett-Packard	Analyzer Display	2403A07352
<input checked="" type="checkbox"/> - 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"/> - 8566B	Hewlett Packard	Spectrum Analyzer	2532A02418
<input type="checkbox"/> - 85650A	Hewlett Packard	Quasi-Peak Adapter	2043A00358
<input type="checkbox"/> - 85662A	Hewlett Packard	Analyzer Display	2403A06604
<input type="checkbox"/> - LPA30	Electro-Metrics	Log Periodic	2280
<input checked="" type="checkbox"/> - 3104C	Emco	Biconical Antenna	00075927
<input checked="" type="checkbox"/> - 3148	ETS Lindgren	Log Periodic Antenna	75741

Emissions Test Conditions): DISTURBANCE POWER

The *DISTURBANCE 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
<input type="checkbox"/> - MDS-21	Rhode&Schwarz	Absorbing Clamp	8608447020
<input type="checkbox"/> - 8566B	Hewlett-Packard	Spectrum Analyzer	2532A02418
<input type="checkbox"/> - 85662A	Hewlett-Packard	Analyzer Display	2403A07352
<input type="checkbox"/> - 85650A	Hewlett-Packard	Quasi-Peak Adapter	2043A00358
<input type="checkbox"/> - 8447D	Hewlett-Packard	Amplifier (26 dB)	2944A06901

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The *EQUIVALENT RADIATED EMISSIONS* measurements in the frequency range 1 GHz - 2 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	2532A02418
□ - 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

Emissions Test Conditions): CONDUCTED EMISSIONS - TELECOMMUNICATIONS PORT 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
□ - FCC-TLISN-T8-02	Fischer Custom Com	T-LISN	20452
□ - FCC-TLISN-T4-02	Fischer Custom Com	T_LISN	20454
□ -			
□ -			

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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 C63.4:2003

Emission Test Results:

Conducted emissions 150 kHz - 30 MHz

The requirements are ☒ - MET ☐ - NOT MET
Minimum limit margin 2.0 dB at 13.54 MHz
MU: 5.3 dB

Radiated emissions (magnetic field) 10 kHz - 30 MHz

The requirements are ☒ - MET ☐ - NOT MET
Minimum limit margin 12.8 dB at 13.6 MHz
MU: NA

Radiated emissions (electric field) 30 MHz - 1000 MHz

The requirements are ☒ - MET ☐ - NOT MET
Minimum limit margin 0.1 dB at 40.68 MHz
MU: 5.2 dB

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

The requirements are ☐ - MET ☐ - NOT MET
Minimum limit margin dB at MHz
MU: NA

Radiated emissions 1 GHz - 2 GHz

The requirements are ☐ - MET ☐ - NOT MET
Minimum limit margin dB 6.1 at GHz 1.13
MU: 4.9 dB

Emissions Test Conditions): CONDUCTED EMISSIONS - TELECOMMUNICATIONS PORT 0.15 to 30 MHz

The requirements are ☐ - MET ☐ - NOT MET
Minimum limit margin dB 4.0 at MHz 23.1
MU: NA

MU = Measurement Uncertainty

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GENERAL REMARKS:

Conducted emissions - Exploratory measurements are used to identify the frequency of the emission that has the highest amplitude relative to the limit by operating the EUT in a range of typical modes of operation, cable positions, and with a typical system equipment configuration and arrangement. For each mode of operation and for each ac power current-carrying conductor, cable manipulation is performed within the range of likely configurations. For this measurement or series of measurements, the frequency spectrum of interest is monitored looking for the emission that has the highest amplitude relative to the limit. Once that emission is found for each current-carrying conductor of each power cord associated with the EUT (but not the cords associated with non-EUT equipment in the overall system), the one and arrangement and mode of operation that produces the emission closest to the limit across all the measured conductors is recorded. Software used is Electro metrics OS-30-CAT ver 1.10

Radiated emissions - The equipment under test is oriented at (0) degrees azimuth with respect to the measuring antenna. The antenna is placed in the vertical polarity and the software performs an automated set of measurements across the frequency range of interest. When complete, a database of all signals labeled "suspects" is displayed and the test engineer manually investigates any signal that is within (15) dB of the limit. Those determined to be from the EUT are placed on a separate database labeled "finals" and those not from the EUT are placed in the ambient database. The EUT is then rotated (90) degrees and the process is repeated. Upon completion of (4) scans, the antenna polarity is changed to horizontal, the EUT orientation is set to (45) degrees and the process is repeated (4) additional times. After every scan, the final list is completed re-measured and updated for amplitude and polarity if higher in amplitude.

Once all (8) scans are complete, the highest (6) signals are re-measured by maximizing the amplitude with cable manipulation, antenna height and EUT azimuth. The final (6) six signals are included in the test report. Software used is HP 85870A Opt655/Rev A.02.01.

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 29 Sep 2014

Testing End Date: 13 Oct 2014

- PRODUCT SAFETY ENGINEERING INC -

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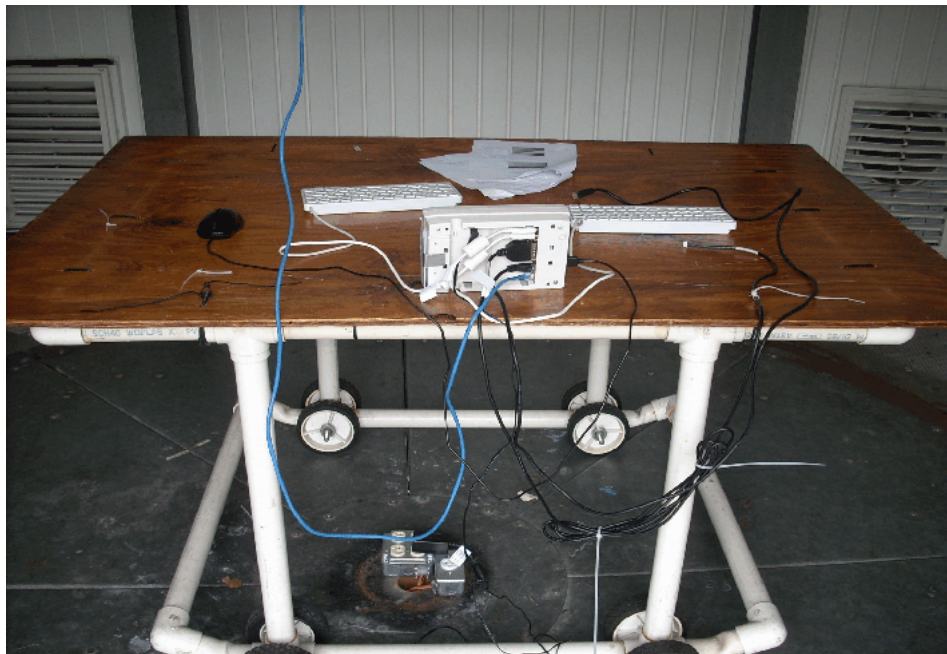
Test-setup photo(s):
Conducted emission 150 kHz - 30 MHz



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



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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	
Hewlett Packard	85662A	Display	2151A03667	
Hewlett Packard	85650A	Quasi-peak Adapter	2043A00209	
Hewlett Packard	8566B	Spectrum Analyzer	2532A02418	11/5/2015
Hewlett Packard	85662A	Display	2403A07352	11/5/2015
Hewlett Packard	85650A	Quasi-peak Adapter	2043A00358	11/5/2015
Hewlett Packard	8447D	Preamp 0.1 - 1,000 MHz	2944A06832	
Hewlett Packard	8447D	Preamp 0.1 - 1,000 MHz	2944A06901	12/10/2014
Hewlett Packard	8449B	Preamp 1 - 26.5 GHz	3008A00320	
Hewlett Packard	E7402A	Portable Spectrum Analyzer	US40240204	
ETS Lindgren	3148	Log Periodic Antenna	75741	** 2/7/2016
Electro-Metrics	BIA-30	Biconical Antenna	3852	
EMCO	3104C	Biconical Antenna	75927	** 5/14/2016
Electro-Metrics	ALR30M	Magnetic Loop Antenna	824	** 7/15/2015
Electro-Metrics	EMC-30	EMI Receiver	191	7/11/2015
Electro-Metrics	3115	Double Ridge Guide Antenna	3810	
Solar	8028	LISN	829012/809022	
Com-Power	LI-125	LISN	191080/191081	9/22/2015
Schwartzbeck	MDS-21	Absorbing Clamp	2581	
Fisher Custom	FCC-TLISN-T4-02	T LISN	20454	
Fisher Custom	FCC-TLISN-T8-02	Fisher Custom	20452	
ATM	42-441-6	Stanard Gain Horn Antenna	E531612-01	
Electro-Metrics	3117	Double Ridge Guide Antenna	109296	
Solar	7334-1	Loop Sensor	32317	
Sun Systems	EC127	Enviromental Chamber	EC0154	
Fluke	52	Digital Thermometer	447553	
		* Cal Due Date Format = MM/DD/YYYY		
All equipment was calibrated one year prior to the cal due date listed unless otherwise indicated				
** These devices are on a (2) year calibration cycle				

PRODUCT EMISSIONS

HP 85870A Rev. A.02.00 Data File: PCT W/RADIO CISA@10M 29SEPT2014

No	EMISSION	SPEC	MEASUREMENTS			SITE			CORR	COMMENTS
	FREQUENCY MHz	LIMIT dBuV/m	ABS	dLIM dB	MODE	POL	HGT cm	AZM deg	FACTOR dB	
1	30.627	40.0	33.4	-6.6	PK	V	125	225	-18.6	
2	32.598	40.0	32.7	-7.3	PK	V	100	270	-18.3	
3	34.667	40.0	33.9	-6.1	PK	V	100	270	-17.9	
4	39.992	40.0	33.2	-6.8	PK	V	100	135	-17.	
5	40.687	40.0	35.1	-4.9	PK	V	100	315	-17.	
6	54.226	40.0	37.7	-2.4	QP	V	100	225	-17.8	
7	58.715	40.0	34.7	-5.3	PK	V	100	180	-18.7	
8	69.001	40.0	33.1	-6.9	PK	V	100	135	-21.3	
9	71.974	40.0	35.3	-4.7	PK	V	125	225	-21.6	
10	74.008	40.0	33.5	-6.5	PK	V	100	180	-21.7	
11	77.552	40.0	36.8	-3.2	QP	V	100	135	-21.8	
12	83.100	40.0	37.5	-2.5	QP	V	150	270	-20.9	
13	86.059	40.0	34.0	-6.0	PK	V	150	135	-19.9	
14	87.180	40.0	32.1	-7.9	PK	V	150	135	-19.5	
15	99.999	40.0	34.6	-5.4	PK	V	100	90	-16.6	
16	105.139	40.0	36.8	-3.2	QP	V	100	225	-16.1	
17	110.817	40.0	39.2	-0.8	QP	V	100	135	-15.6	
18	116.300	40.0	37.6	-2.4	QP	V	100	225	-15.5	
19	121.792	40.0	37.0	-3.0	PK	V	100	225	-15.6	
20	127.410	40.0	35.2	-4.9	PK	H	300	135	-15.9	
21	132.891	40.0	36.0	-4.0	PK	V	100	225	-16.2	
22	155.004	40.0	35.8	-4.2	PK	V	100	270	-13.7	
23	160.599	40.0	36.9	-3.1	QP	V	100	180	-12.5	
24	166.133	40.0	36.5	-3.5	PK	V	100	270	-11.6	
25	188.159	40.0	36.9	-3.1	PK	V	100	180	-10.	
26	199.352	40.0	33.3	-6.7	PK	V	100	135	-11.1	
27	199.967	40.0	35.4	-4.6	PK	V	100	180	-11.2	
28	202.634	40.0	29.0	-11.0	PK	H	250	315	-16.	
29	221.494	40.0	31.6	-8.4	PK	V	150	135	-15.5	
30	232.567	47.0	39.3	-7.7	PK	V	100	315	-15.3	
31	249.973	47.0	36.8	-10.2	PK	H	300	135	-14.9	
32	354.362	47.0	30.8	-16.2	PK	H	250	180	-12.3	
33	365.486	47.0	34.6	-12.4	PK	H	200	180	-12.3	
34	431.934	47.0	32.2	-14.8	PK	H	100	135	-11.4	
35	464.081	47.0	36.5	-10.5	PK	V	100	270	-10.5	

RADIATED DATA SHEET
Equitrac PCT

FCC Rule Part	Frequency Range MHz	Limit dBuV/M	Limit Dist meters	Measured Freq. (MHz)	Level dBuV/M	Margin dB
15.225 (a)	13.553 - 13.567	84	30	13.56	38.1	45.9
15.225 (b)	13.410 - 13.553	50.5	30	13.51	35.4	15.1
15.225 (b)	13.567 - 13.710	50.5	30	13.60	37.7	12.8
15.225 (c)	13.110 - 13.410	40.5	30	13.39	21.8	18.7
15.225 (c)	13.710 - 14.010	40.5	30	13.75	24.2	16.3
15.225 (d)	1.705 - 13.110	29.5	30	3.15	7.6	21.9
15.225 (d)	14.010 - 30.0	29.5	30	27.12	13.9	15.6
15.225 (d)	>30	40.0	3	40.68	39.9	0.1
15.225 (d)	>30	40.0	3	54.23	34.0	6.0
15.225 (d)	>30	40.0	3	67.80	32.0	8.0
15.225 (d)	>30	40.0	3	81.36	32.8	7.2
15.225 (d)	>30	43.5	3	94.92	35.1	8.4
15.225 (d)	>30	43.5	3	108.49	33.4	10.1
15.225 (d)	>30	43.5	3	122.04	30.0	13.5
15.225 (d)	>30	43.5	3	135.6	26.6	16.9

Note: The same limits are stated in the RSS-210 (A2.6) for Canada.

EN 300 330 Per Table G.2

Frequency Range MHz	Limit dBuV/M	Limit Dist meters	Measured Freq. (MHz)	Level dBuV/M	Margin dB
13.553 - 13.567	92.4	30	13.56	38.1	54.3
13.410 - 13.553	41.4	30	13.51	35.4	6.0
13.567 - 13.710	41.4	30	13.60	37.7	3.7
13.110 - 13.410	28.9	30	13.39	21.8	7.1
13.710 - 14.010	28.9	30	13.75	24.2	4.7
12.66 - 13.110	22.4	30	-	-	22.4
14.010 - 14.46	22.4	30	-	-	22.4
1.705 - 12.66	16.4	30	3.15	7.6	8.8
14.46 - 30.0	16.4	30	27.12	13.9	2.5

EN 300 330-2 V1.5.1

Section 4 TECHNICAL REQUIREMENT SPECIFICATIONS

4.2.1.1 Permitted range of operating frequencies

The permitted range of operating frequencies shall not exceed the limits specified in clause 7.3.3 of EN 300 330-1 v1.7.1.

7.3.3 Limits

The permitted range of the modulation bandwidth shall be within the limits of the assigned frequency band.

[Compliance data - All measured emissions related to the \(13.56\) MHz radiator were within the 0.09 to 30 MHz band.](#)

4.2.1.2 Limits for transmitters in the range from 9 kHz to 30 MHz

The maximum radiated field strength and RF carrier current shall not exceed the limits specified in clause 7.2.1.3 of EN 300 330-1 v1.7.1.

7.2.1.3 Limits

The limits presented in the present document are the required field strengths to allow satisfactory operation of inductive systems. The limit for a low level generic H-field strength is given in annexes G & H.

[Compliance data - Not applicable](#)

The maximum H-field strengths for certain frequency bands are given in table 5.

[Compliance data - see table 5](#)

The maximum RF carrier current shall not exceed the limits specified in clause 7.2.2.3 of EN 300 330-1 v1.7.1.

[Compliance data - Not applicable](#)

7.2.2.3 Limits

The limit for the RF carrier current multiplied with the antenna area for Product Class 3 Large size loop transmitters is given in table 5.

[Compliance data - Not applicable](#)

4.2.1.3 Limits for the permitted range of modulation bandwidth

The maximum range of modulation bandwidth shall not exceed the limits as specified in clause 7.4.3 of EN 300 330-1v1.7.1.

7.4.3 Limits

The permitted range of the modulation bandwidth shall be within the assigned frequency band see table 1 or $\pm 7,5\%$ of the carrier frequency whichever is the smallest. For RFID and EAS Systems, the permitted modulation bandwidth shall be within the transmitter emission boundary of figure G.1, respectively the spectrum mask of figure G.2.

[Compliance data - see table G.2.](#)

4.2.1.4 Transmitter spurious and out-of-band emissions

The transmitter unwanted emissions, i.e. spurious and out-of-band emissions, shall not exceed the limits specified in clauses 7.5.2.2, 7.5.2.4 or 7.5.3.2 and 7.5.4.2 of EN 300 330-1v1.7.1.

7.5.2 Conducted spurious emissions (Product class 3 only)

7.5.3 Radiated field strength - Magnetic Emissions

7.5.3.2 Limits

The radiated field strength of the spurious domain emissions below 30 MHz shall not exceed the generated H-field dB μ A/m at 10 m given in table below.

State	Frequency $9\text{ kHz} \leq f < 10\text{ MHz}$	Frequency $10\text{ MHz} \leq f < 30\text{ MHz}$
Operating	27 dB μ A/m at 9 kHz descending 3 dB/oct	-3,5 dB μ A/m
Standby	5,5 dB μ A/m at 9 kHz descending 3 dB/oct	-25 dB μ A/m

[Compliance data -](#) We measured one signal that was under (30) MHz at (27.12) MHz. The level measured at (10) meters was 32.8 dB μ V/m or (-18.7) dB μ A/m. Margin = (15.2) dB.

7.5.4 Effective radiated power - Substitution Method

7.5.4.2 Limits

The power of any radiated emission shall not exceed the values given in table below.

State	47 MHz to 74 MHz 87,5 MHz to 118 MHz 174 MHz to 230 MHz 470 MHz to 862 MHz	Other frequencies between 30 MHz to 1 000 MHz
Operating	4 nW	250 nW
Standby	2 nW	2 nW

[Compliance data](#) - See table below. There is no standby mode.

Freq (MHz)	Limit (pw)	Measured (pw)
40.68	250	2.9
54.24	4	0.75
67.8	4	0.48
81.36	250	0.57
94.9	4	0.97
108.5	4	0.66
122.0	250	0.3
135.6	250	0.14

TABLE 5

Frequency range (MHz)	H-field strength limit (Hf) dBμA/m at 10 m
$0,009 \leq f < 0,090$	72 descending 3 dB/oct above 0,03 MHz or according to note 1 (see note 5)
$0,09 \leq f < 0,119$	42
$0,119 \leq f < 0,135$	66 descending 3 dB/oct above 0,119 MHz or according to note 1 (see notes 3 and 5)
$0,135 \leq f < 0,140$	42
$0,140 \leq f < 0,1485$	37,7
$0,1485 \leq f < 30$	-5 (see note 4)
$0,315 \leq f < 0,600$	-5
$3,155 \leq f < 3,400$	13,5
4,234	9
4,516	7
$7,400 \leq f < 8,800$	9
$10,2 \leq f < 11,00$	9
$12,5 \leq f \leq 20$	-7
$6,765 \leq f \leq 6,795$ $13,553 \leq f \leq 13,567$ $26,957 \leq f \leq 27,283$	42 (see note 3)
$13,553 \leq f \leq 13,567$	60 (see notes 2 and 3)
27,095	42
<p>NOTE 1: For the frequency ranges 9 kHz to 135 kHz, the following additional restrictions apply to limits above 42 dBμA/m: -for loop coil antennas with an area $\geq 0,16$ m² table 5 applies directly; -for loop coil antennas with an area between 0,05 m² and 0,16 m² table 5 applies with a correction factor. The limit is: table value + $10 \times \log(\text{area}/0,16 \text{ m}^2)$; -for loop coil antennas with an area $< 0,05$ m² the limit is 10 dB below table 5.</p>	
NOTE 2: For RFID and EAS applications only.	
NOTE 3: Spectrum mask limit, see annex G.	
NOTE 4: For further information see annex H.	
NOTE 5: Limit is 42 dBμA/m for the following spot frequencies: 60 kHz \pm 250 Hz, 66,6 kHz \pm 750 Hz, 75 kHz \pm 250 Hz, 77,5 kHz \pm 250 Hz, and 129,1 kHz \pm 500 Hz.	



Product Safety Engineering

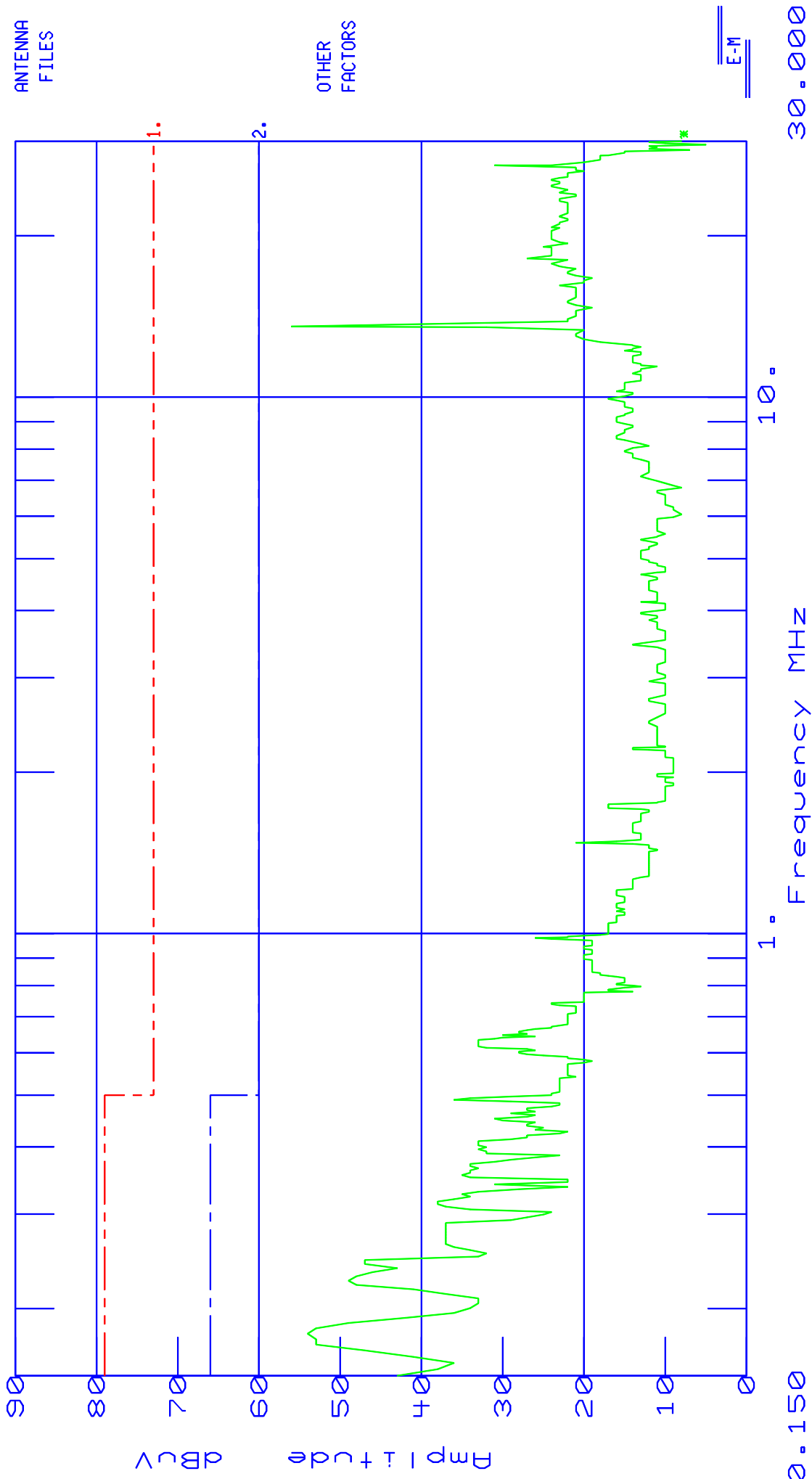
EQUITRAC

Date : 09/30/14 Time : 14:41:23.14
Technician : CHIP FOERSTNER Test Equip.: EMC-30
Test Method : EN55022-A & FCC-A Test Number :
Equipment : PCT Sensor Loc. : SIDE 1
Mode of Op. : WEB BROWSER ON Sensor Pol. :
Serial No. : Ext. Atten. : 0 dB

Comment : 230VAC 50HZ POWER SUPPLY CUI EMSA240125

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

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



TEST TITLE: EQUI TRAC				PAGE 1	
DATA FILE : 14129_1.D30				Freq. (MHz)	
Amplitude Units : dBuV				0.1500	
Threshold -8 dB					
		C22AQP. S30		C22AAVG. S30	
Freq(MHz)		Amp vs Spec(dB)		vs Spec(dB)	
13.5356		56.0		-4.000 *	

Product Safety Engineering

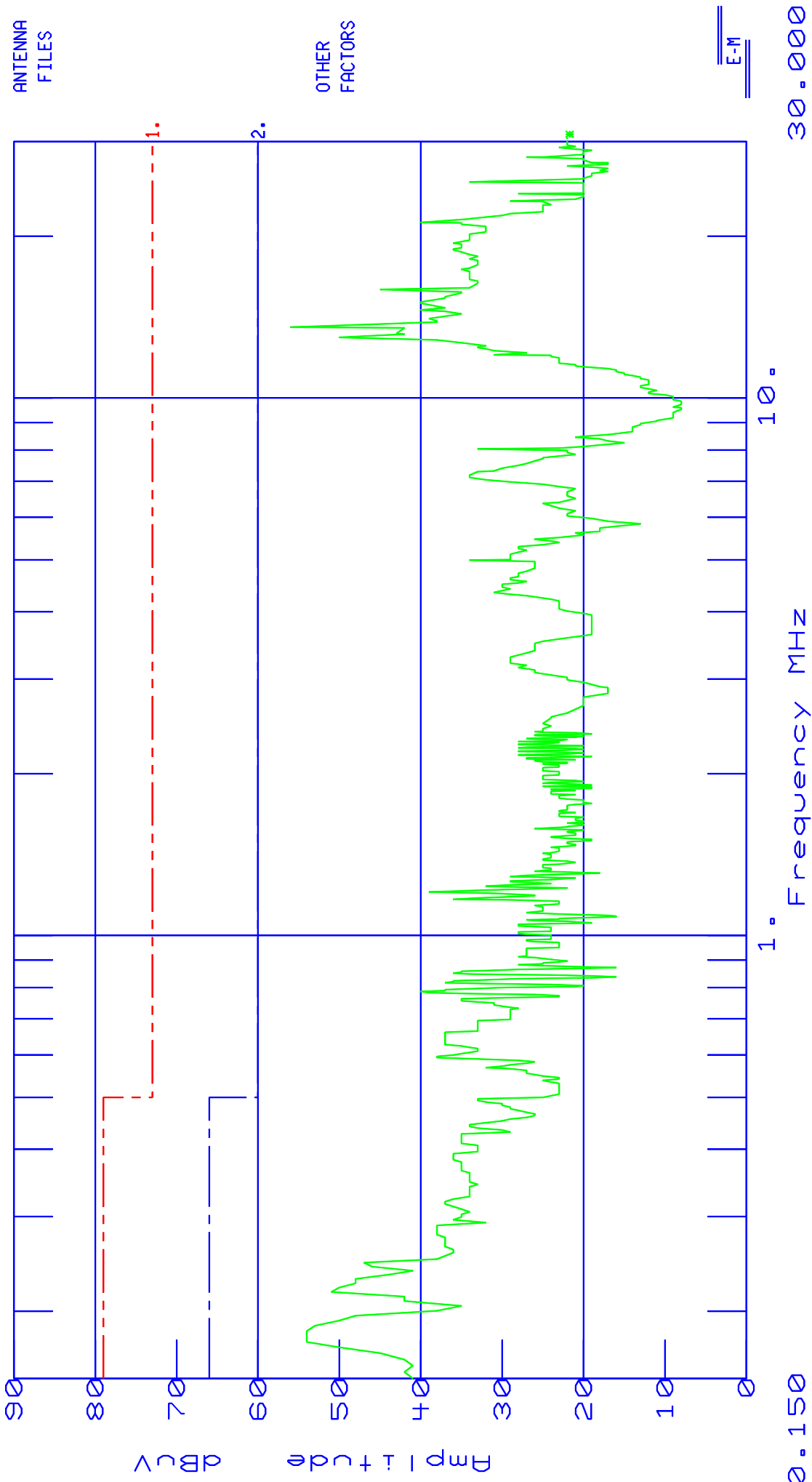
EQUITRAC

Date : 09/30/14 Time : 10:28:13.82
Technician : CHIP FOERSTNER Test Equip. : EMC-30
Test Method : EN55022-A & FCC-A Test Number :
Equipment : PCT Sensor Loc. : SIDE 2
Mode of Op. : WEB BROSER ON Sensor Pol. :
Serial No. : Ext. Atten. : 0 dB

Comment : 230VAC 50HZ POWER SUPPLY CUI EMSA240125

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

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



0.150

1. 10. 30.000

Frequency MHz

30.000

E-M

TEST TITLE: EQUI TRAC				PAGE 1	
DATA FILE : 14129_2.D30				Freq. (MHz)	
Amplitude Units : dBuV				0.1500	
Threshold -8 dB					
		C22AQP. S30		C22AAVG. S30	
Freq(MHz)		Amp vs Spec(dB)		vs Spec(dB)	
13.5356		56.0		-4.000 *	

Product Safety Engineering

EQUITRAC

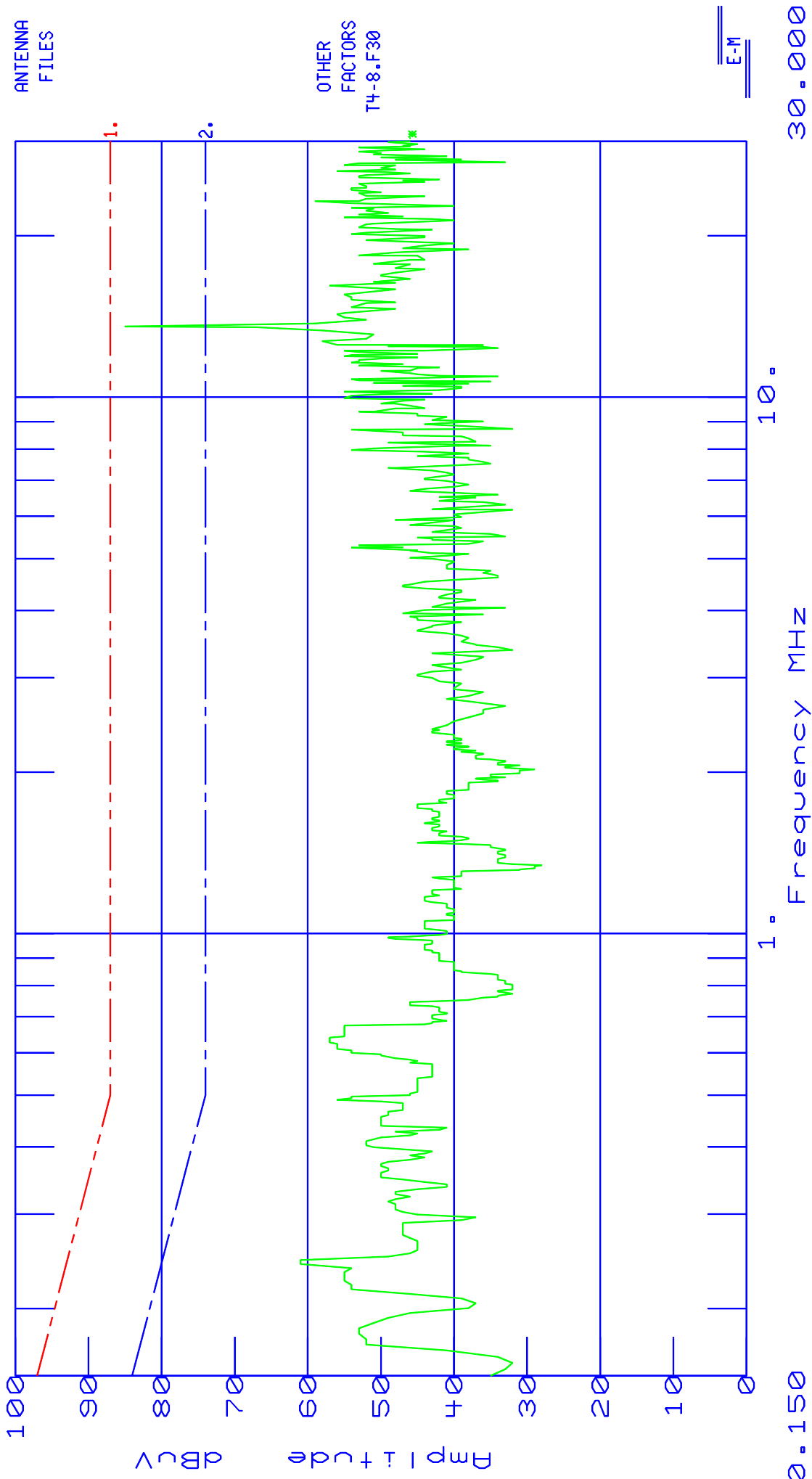
Date : 09/30/14
Technician : CHIP FOERSTNER
Test Method : EN55022 CLASS A
Equipment : PCT
Mode of Op. : NORMAL
Serial No. :

Time : 14:58:48.26
Test Equip. : EMC-30
Test Number : 1
Sensor Loc. : ETHERNET
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) Default Spec (same as V885)
2) Default Spec (same as V885)
3)
4)

Comment : 230 VAC / 50 HZ



TEST TITLE: EQUI TRAC	PAGE 1
DATA FILE : 14129_E.D30	Freq. (MHz)
Amplitude Units : dBuV	Threshold 7 dB
	0.1500

Freq(MHz)	Amp	ETHAQP. S30 vs Spec(dB)	ETHAAVG. S30 vs Spec(dB)
13.5390	85.0		11.000 *

Product Safety Engineering

EQUITRAC

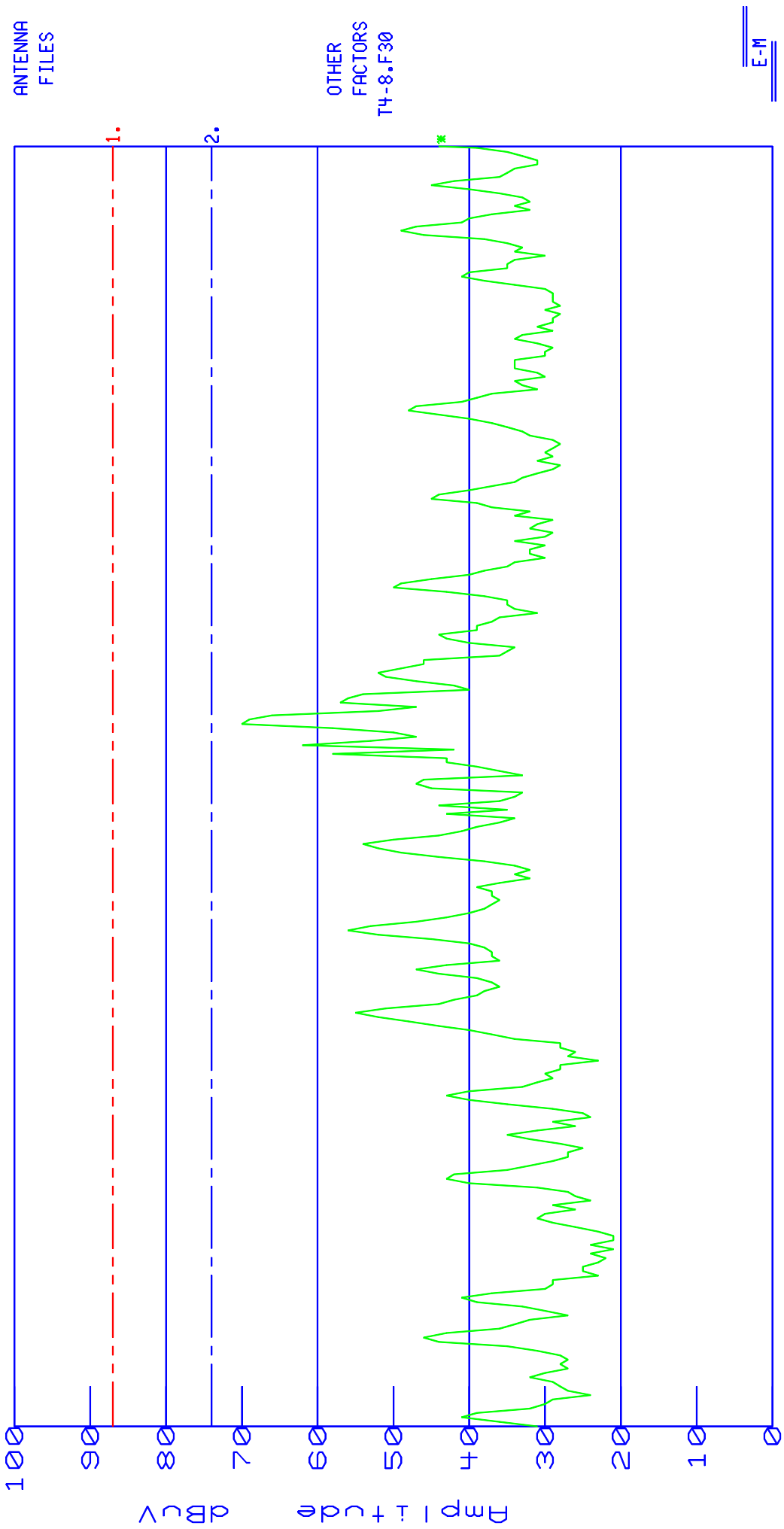
Date : 09/30/14
Technician : CHIP FOERSTNER
Test Method : EN55022 CLASS A
Equipment : PCT
Mode of Op. : NORMAL
Serial No. :

Time : 15:29:42.71
Test Equip. : EMC-30
Test Number : 1
Sensor Loc. : ETHERNET
Sensor Pol. :
Ext. Atten. : 0 dB

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

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

Comment : 230 VAC / 50 HZ



13.000

Frequency MHz

14.000

E-M

TEST TITLE: EQUI TRAC	PAGE 1
DATA FILE : 14129_EA. D30	Freq. (MHz)
Amplitude Units : dBuV	Threshold -8 dB
	13.0000

Freq(MHz)	Amp	ETHAQP. S30 vs Spec(dB)	ETHAAVG. S30 vs Spec(dB)
13.5396	70.0		-4.000 *
13.5429	69.0		-5.000 *
13.5463	66.0		-8.000 *

Product Safety Engineering

EQUITRAC

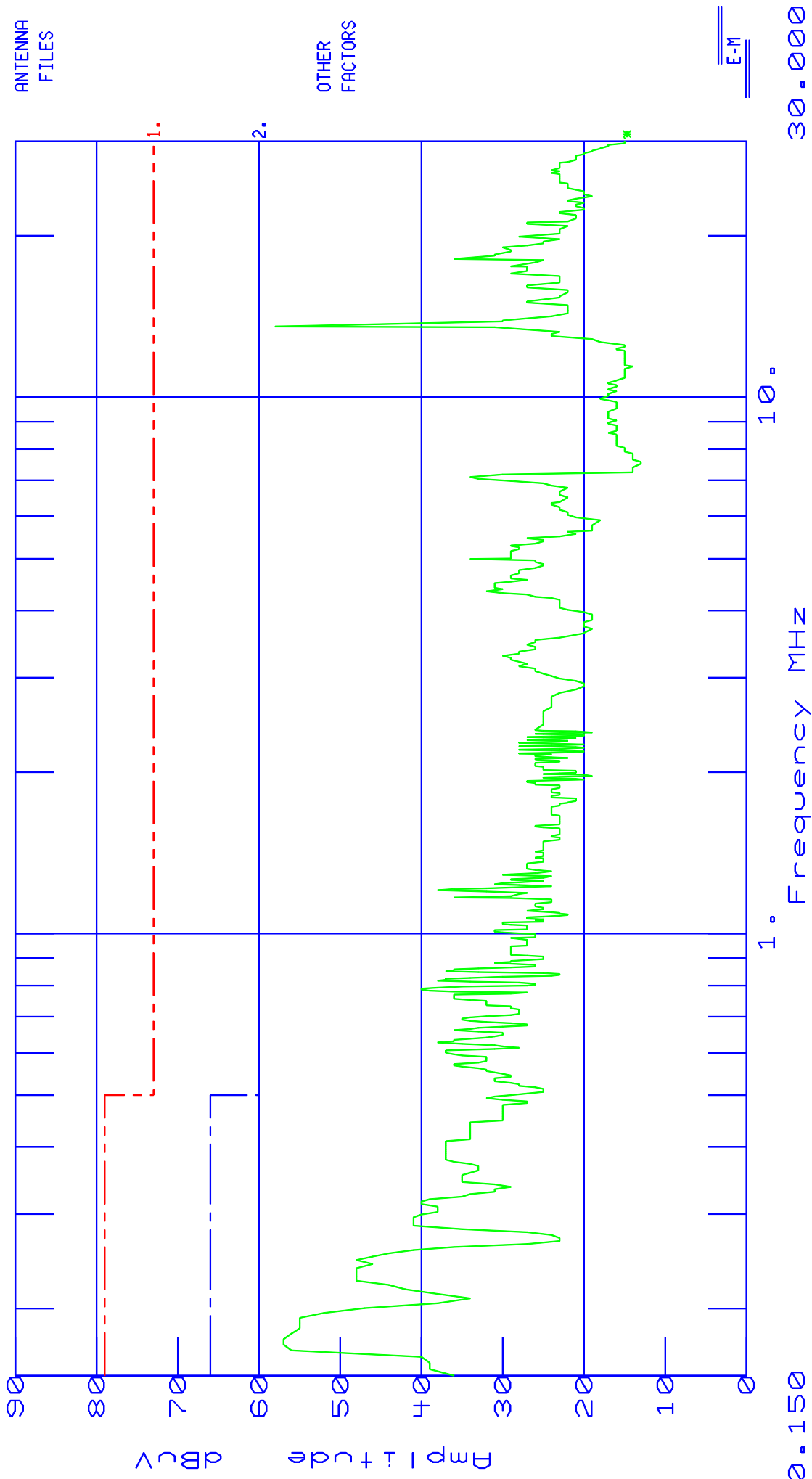
Date : 09/30/14
Technician : CHIP FOERSTNER
Test Method : EN55022-A & FCC-A
Equipment : PCT
Mode of Op. : WEB BROWSER ON
Serial No. :

Time : 09:57:53.65
Test Equip. : EMC-30
Test Number :
Sensor Loc. : LINE
Sensor Pol. :
Ext. Atten. : 0 dB

Comment : 120VAC 60HZ POWER SUPPLY CUI EMSA240125

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

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



0.150

1. 10. 30.000

Frequency MHz

E-M

TEST TITLE: EQUI TRAC				PAGE 1	
DATA FILE : 14129_L.D30				Freq. (MHz)	
Amplitude Units : dBuV				Threshold -8 dB	
				0.1500	
		C22AQP. S30		C22AAVG. S30	
Freq(MHz)		Amp vs Spec(dB)		vs Spec(dB)	
13.5356		58.0		-2.000 *	

Product Safety Engineering

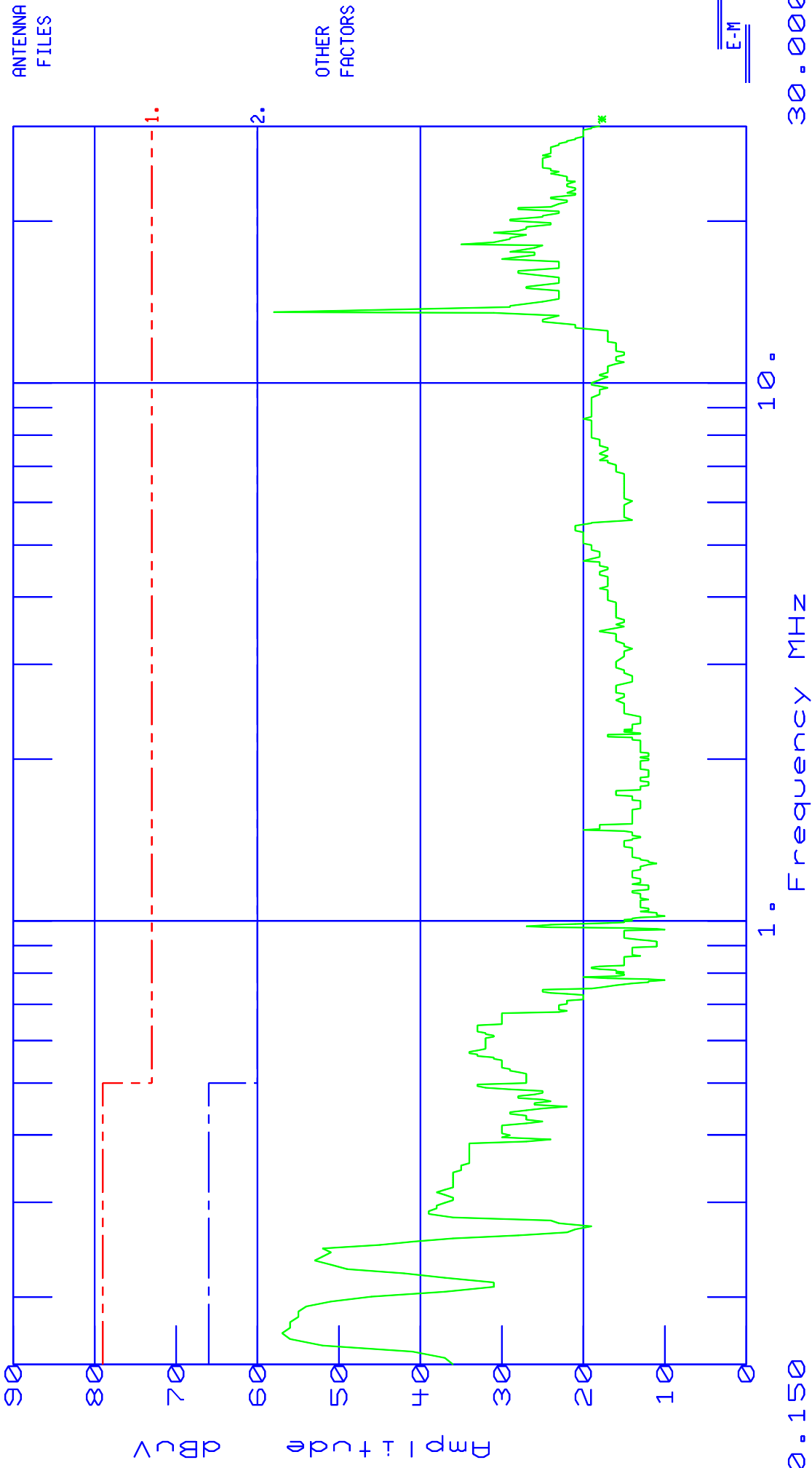
EQUITRAC

Date : 09/30/14 Time : 10:14:08.25
Technician : CHIP FOERSTNER Test Equip.: EMC-30
Test Method : EN55022-A & FCC-A Test Number :
Equipment : PCT Sensor Loc. : NEUTRAL
Mode of Op. : WEB BROSER ON Sensor Pol. :
Serial No. : Ext. Atten. : 0 dB

Comment : 120VAC 60HZ POWER SUPPLY CUI EMSA240125

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

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



TEST TITLE: EQUI TRAC				PAGE 1	
DATA FILE : 14129_N.D30				Freq. (MHz)	
Amplitude Units : dBuV				0.1500	
Threshold -8 dB					
		C22AQP. S30		C22AAVG. S30	
Freq(MHz)		Amp vs Spec(dB)		vs Spec(dB)	
13.5356		58.0		-2.000 *	

APPENDIX

B

System Under Test Description

SYSTEM COMPONENTS

DEVICE TYPE: EUT, PCT with CUI Power Supply P/N: 593-0005

DEVICE TYPE: Keyboards **(2X)** KB-20002965

DEVICE TYPE: mouse

DEVICE TYPE: laptop and router

INTERFACE CABLES

DEVICE TYPE: EUT

SHIELD: Yes

LENGTH: 4 meters

CONNECTOR TYPE: Dsub 26 pin to unterminated molex type

PORT: Copy Control

DEVICE TYPE: KB **(2X)**

SHIELD: Yes

LENGTH: 1 meter

CONNECTOR TYPE: USB ferrites

PORT: USB on back

DEVICE TYPE: Mouse

SHIELD: Yes

LENGTH: 2 meters

CONNECTOR TYPE: USB

PORT: USB on side

DEVICE TYPE: EUT **(2X)**

SHIELD: No

LENGTH: 10 feet

CONNECTOR TYPE: RJ 45

PORT: Laptop and router

AC LINE CORDS

DEVICE TYPE: Power supply plug in type **(DC side)**

SHIELD: No

LENGTH: 8 feet ferrite

CONNECTOR TYPE: miniplug

APPENDIX

C

Environmental Testing

FCC DATA SHEET

Frequency tolerance §15.225

(e) The frequency tolerance of the carrier signal shall be maintained within +/-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	13,557,433	$13,557,740 - 13,557,600 = 307$
+ 50 C	13,558,024	$13,557,740 - 13,558,120 = -284$
+ 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

