

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

Report Issue Date: 08 Jan 2015

Sample S/N: See Appendix B

Sample Receipt Date: 30 Apr 2014

Sample Test Date: see data sheets

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 Name David Foerstner

Title Engineering Group Leader Date 08 Jan 2015

Reviewed by:

Approved Signatory Date 08 Jan 2015

Steve Hoke (EMC Site Manager)

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Test Report Number 14F238B1

Product Safety Engineering, Inc 12955 Bellamy Brothers Blvd. Dade City, FL 33525
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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 15.209

- Verification

- Declaration of Conformity

■ - RSS-210 Issue 8

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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 indicated 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 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
□ - 8012	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
■ - LI-125	Com-Power	50 Ω LISN	191080/191081

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	2532A02418
■ - 85662A	Hewlett-Packard	Analyzer Display	2403A07352
■ - 85650A	Hewlett-Packard	Quasi-Peak Adapter	2043A00209
■ - ALR-30M	Electro-Metrics	Loop Antenna	824
■ - 8447D	Hewlett Packard	Preamplifier	2944A06901
□ - 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
<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
□ -			
□ -			

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	<input checked="" type="checkbox"/> - MET	<input type="checkbox"/> - NOT MET
Minimum limit margin	2.0 dB	at 13.6 MHz
Remarks:		

Radiated emissions (magnetic field) 10 kHz - 30 MHz

The requirements are	<input checked="" type="checkbox"/> - MET	<input type="checkbox"/> - NOT MET
Minimum limit margin	23.7 dB	at 0.125 MHz
Remarks:		

Radiated emissions (electric field) 30 MHz - 1000 MHz

The requirements are	<input checked="" type="checkbox"/> - MET	<input type="checkbox"/> - NOT MET
Minimum limit margin	>10 dB	at All MHz
Remarks:		

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

The requirements are	<input type="checkbox"/> - MET	<input type="checkbox"/> - NOT MET
Minimum limit margin	dB	at MHz
Remarks:		

Radiated emissions GHz - GHz

The requirements are	<input type="checkbox"/> - MET	<input type="checkbox"/> - NOT MET
Minimum limit margin	dB	at GHz
Remarks:		

Conducted Emissions - Telecommunications Port 150kHz - 30 MHz

The requirements are	<input type="checkbox"/> - MET	<input type="checkbox"/> - NOT MET
Minimum limit margin	dB	at MHz
Remarks:		

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

12 Jun 2014

Testing End Date:

19 Jun 2014

- PRODUCT SAFETY ENGINEERING INC -

Test Report Number 14F238B1

Test-setup photo(s):

Conducted emission 150 kHz - 30 MHz



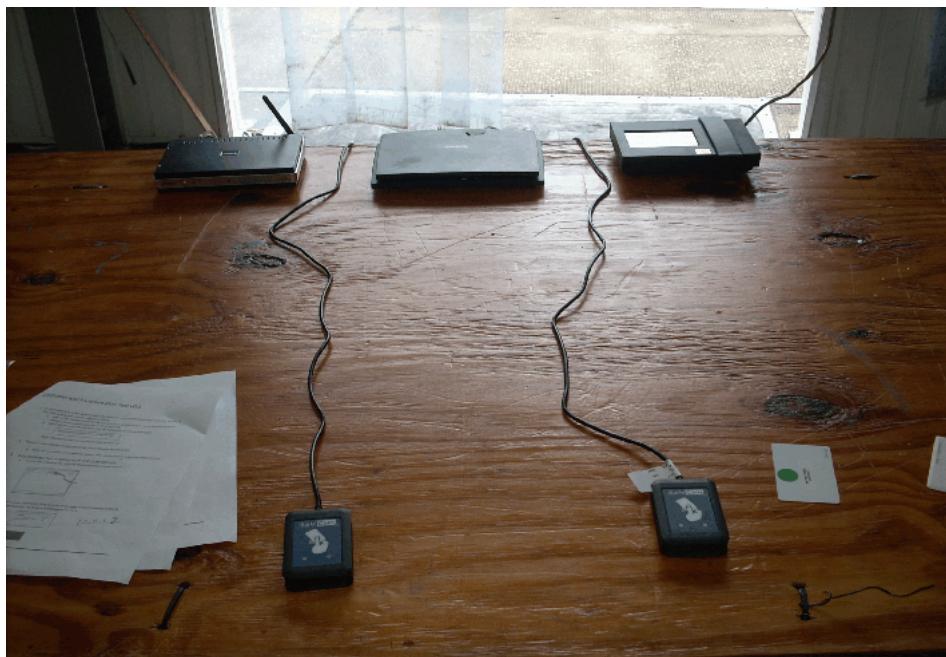
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Test-setup photo(s):

Radiated emission 30 MHz - 1000 MHz



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APPENDIX

A

Test Equipment Calibration Information

&

Test Data Sheets

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TEST EQUIPMENT CALIBRATION INFORMATION							
Manufacturier	Model	Description	Serial Number	Cal Due *			
Hewlett Packard	8566B	Spectrum Analyzer	2421A00526				
Hewlett Packard	85662A	Display	2151A03667				
Hewlett Packard	85650A	Quasi-peak Adapter	2043A00209	11/5/2014			
Hewlett Packard	8566B	Spectrum Analyzer	2532A02418	11/5/2014			
Hewlett Packard	85662A	Display	2403A07352	11/5/2014			
Hewlett Packard	85650A	Quasi-peak Adapter	2043A00358				
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				
Electro-Metrics	EMC-30	EMI Receiver	191	7/9/2014			
Electro-Metrics	3115	Double Ridge Guide Antenna	3810				
Solar	8028	LISN	829012/809022				
Com-Power	LI-125	LISN	191180/191181	9/16/2014			
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 device are on a 2 year calibration cycle							

Test Data Radiated Emissions

(125) kHz

Limit per FCC Part 15.209

$(2,400 / F(\text{kHz})) \text{ uV/m} @ (300) \text{ meters} = (2,400 / 125) = (19.2) \text{ uV/m} @ (300) \text{ meters}$

$20 \text{ Log} (19.2) = (25.7) \text{ dBuV/m} @ (300) \text{ meters}$

Limit adjustment extrapolated to (10) meters = $40 \text{ Log} (300/10) = (59.1) \text{ dB}$

Limit @ (10) meters = $(25.7) + (59.1) = (84.8) \text{ dBuV/m}$

Compliance Data

Measured field strength = dBuV + ACF + Cable loss - Preamp Gain

$27.5 \text{ dBuV} + 57.6 \text{ dB} + 1.0 - 25 \text{ dB} = 61.1$

Measured field strength of signal @ (125) kHz = (61.1) dBuV/m

Limit - field strength = margin

Margin = $(84.8) - (61.1) = (23.7) \text{ dB}$

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 (125) kHz 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.

The maximum H-field strengths for certain frequency bands are given in 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 - see table below

Frequency Band (kHz)	Limit dBuA/m @ 10 m	Frequency Measured (kHz)	H-Field dBuA/m	Margin (dB)
119 - 135	66.0	125.06	9.6	>20

Measurements made at (10) metres

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.1, The fundamental frequency was only 9.6 dB_uA/m and no other emissions were observed.

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_uA/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 _u A/m at 9 kHz descending 3 dB/oct	-3,5 dB _u A/m
Standby	5,5 dB _u A/m at 9 kHz descending 3 dB/oct	-25 dB _u A/m

Compliance data - No spurious emissions observed between 9kHz and 30 MHz

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.

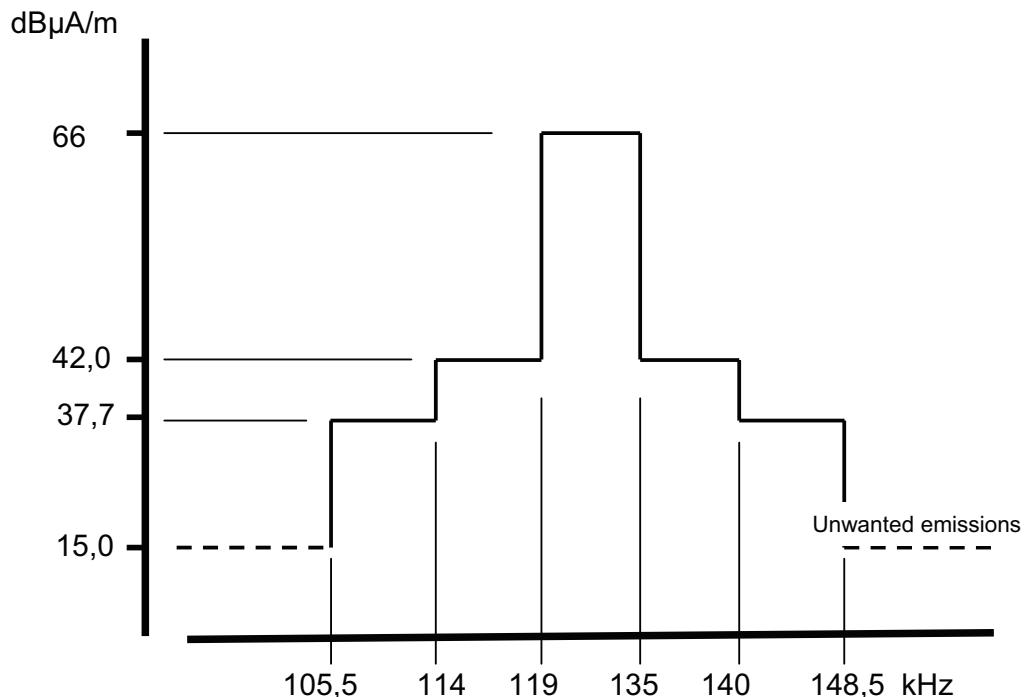
State	47 MHz to 74 MHz 87,5 MHz to 118 MHz 174 MHz to 230 MHz 470 MHz to 862 MHz	Other frequencies between 30 MHz to 1 000 MHz
Operating	4 nW	250 nW
Standby	2 nW	2 nW

[Compliance data - no spurious emissions related to transmitter observed above \(30\) MHz](#)

Annex G (normative): Transmitter emission levels and spectrum mask measurements

The present document allows transmitter spectrum measurements to be made. The measurements may be relevant for SRDs operating between 9 kHz to 30 MHz.

The radiated spectrum mask shall be declared by the manufacturer, shall comply with the limits in table 4, clause 7.4.3 and figures G.1 and G.2. For further information, see the appropriate annex of CEPT/ERC/REC 70-03 [i.1] as implemented through National Radio Interfaces (NRI) and additional NRI as relevant.

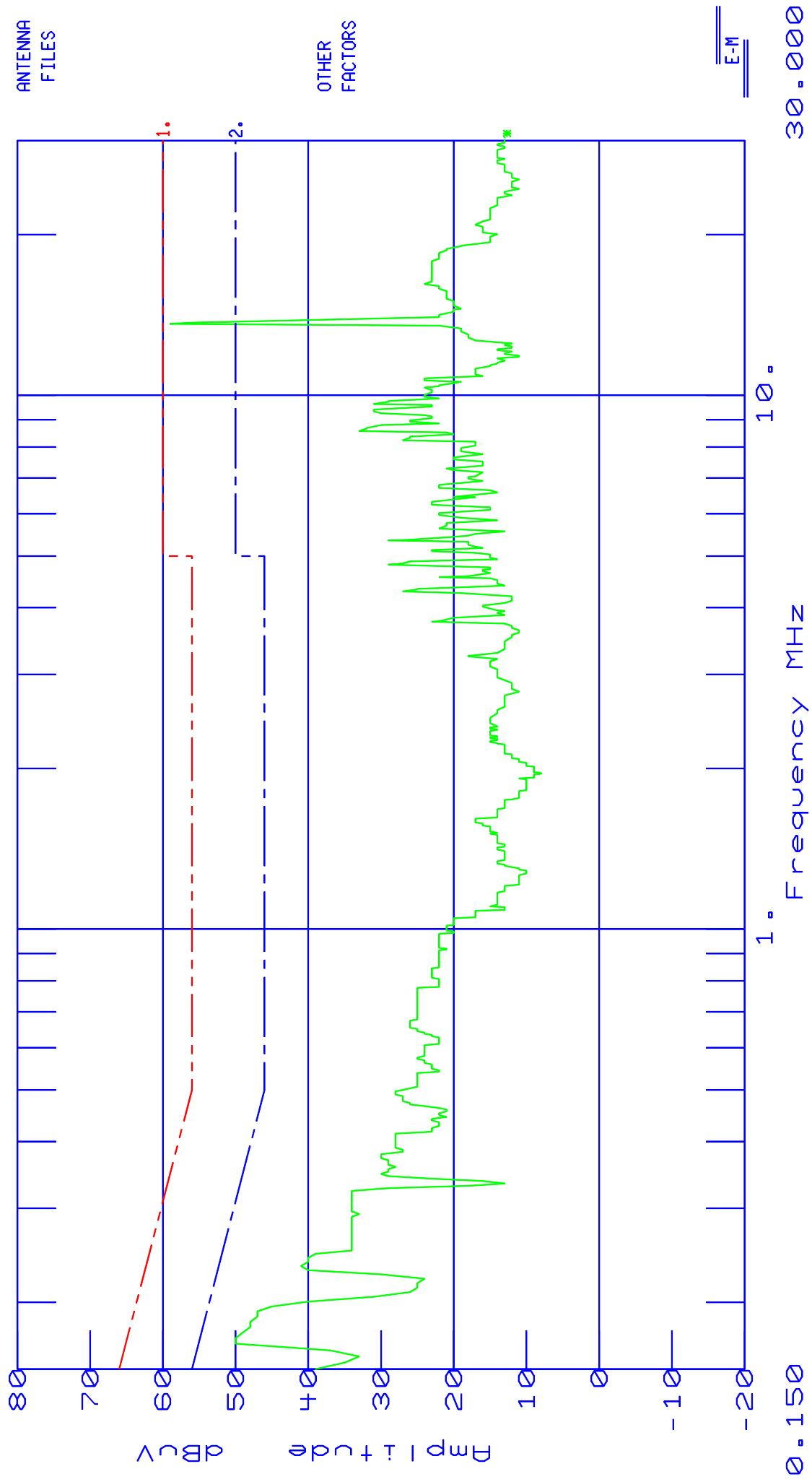


NOTE: The limit at 129,1 kHz \pm 500 Hz is maximum 42 dB μ A/m at 10 m.

Figure G.1: Boundary for LF RFID systems

Product Safety Engineering

EQUIITRAC		EMC-30 SETTINGS		SPECS	
Date :	06/16/14	Time :	11:35:07.61	1) CISPR	22 Quasi Peak
Technician :	CHIP FOERSTNER	Test Equip. :	EMC-30	2) CISPR	22 AVG
Test Method :	FCC CLASS B	Test Number :	1	3)	
Equipment :	SAFECOM MX	Sensor Loc. :	LINE	4)	
Mode of Op. :	NORMAL TRANSMIT	Sensor Pol. :			
Serial No. :		Ext. Atten. :	0 dB		
Comment :	120 VAC / 60 HZ				



TEST TITLE: EQUI TRAC
DATA FILE : 14238BL.D30
Amplitude Units : dBuV

Threshold 6 dB

PAGE 1
Freq. (MHz)
0.1500

		C22BQP. S30		C22BAVG. S30	
Freq (MHz)	Amp	vs Spec (dB)	vs Spec (dB)	vs Spec (dB)	vs Spec (dB)
13.6093	59.0			9.000 *	
13.6797	56.0			6.000 *	

Product Safety Engineering

EQUITRAC Date : 06/16/14 Comment : 120 VAC / 60 HZ
Technician : CHIP FOERSTNER
Test Method : FCC CLASS B
Equipment : SAFECOM MX
Mode of Op. : NORMAL TRANSMIT
Serial No. :

Time : 12:26:15.70
Test Equip. : EMC-30
Test Number : 1
Sensor Loc. : LINE
Sensor Pol. :
Ext. Atten. : 0 dB

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

SPECS
1) CIS
2) CIS
3)
4)

The figure is a spectral plot showing the frequency response of an antenna. The x-axis is labeled "Frequency MHz" and ranges from 3.400 to 13.800. The y-axis is labeled "Amp 1 I + Ude" and ranges from -2.0 to 1.0 dBm. The plot displays two main lobes: a lower lobe centered around 4.5 MHz with a peak amplitude of approximately 0.5 dBm, and an upper lobe centered around 10.5 MHz with a peak amplitude of approximately 0.8 dBm. A central null is visible at approximately 7.5 MHz. The plot is annotated with several labels: "ANTENNA FILES" at the top left, "OTHER FACTORS" in the center, "E-N" at the top right, and "1." and "2." on the left side. A red vertical line is drawn at 6.0 MHz, and a green line with a star at its peak is drawn at 10.5 MHz.

TEST TITLE: EQUI TRAC
DATA FILE : 14238BLA.D30
Amplitude Units : dBuV

Threshold -4 dB

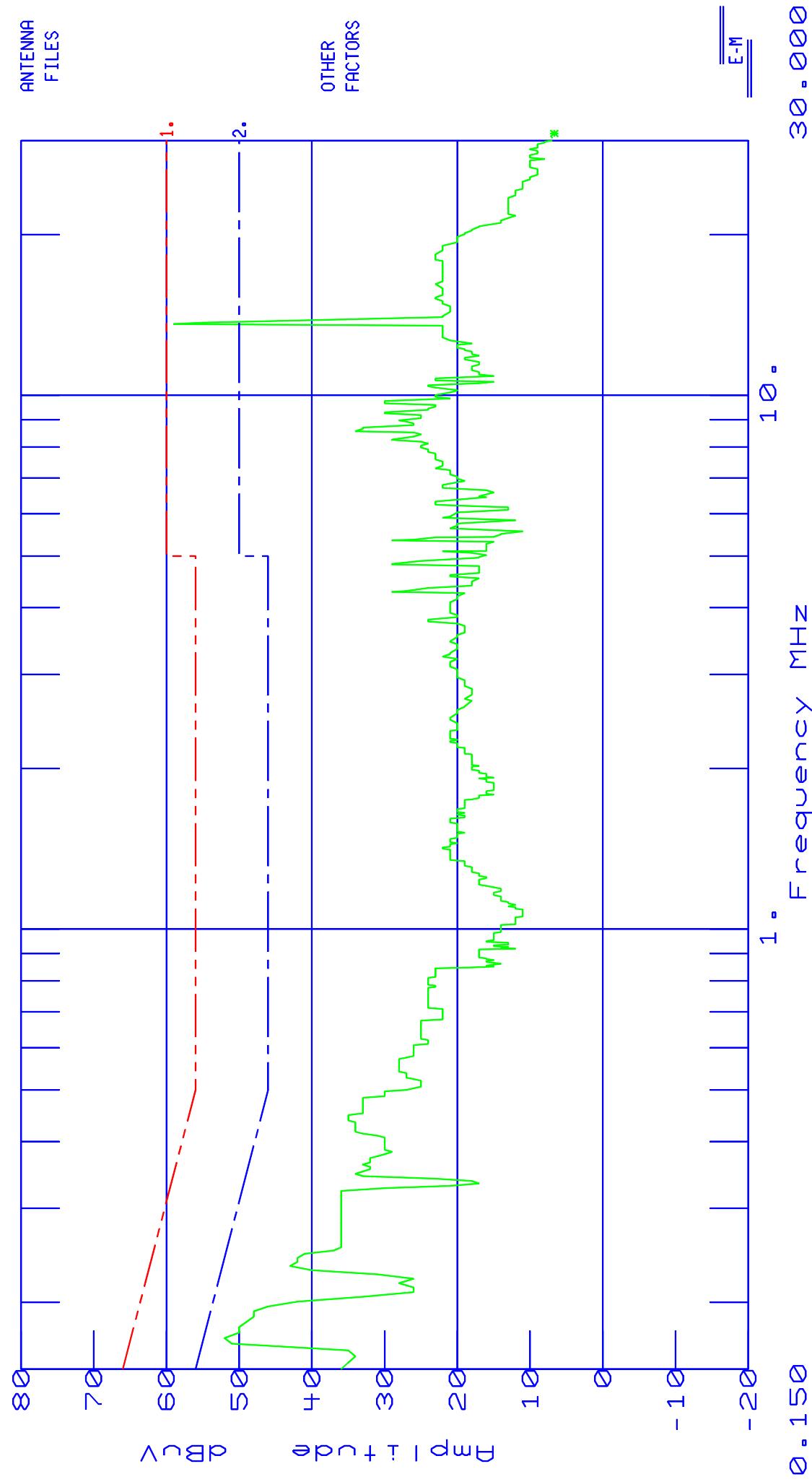
PAGE 1
Freq. (MHz)
13.4000

Freq(MHz)	Amp	C22BQP. S30		C22BAVG. S30	
		vs Spec(dB)	Spec(dB)	vs Spec(dB)	Spec(dB)
13.5441	46.0			-4.000	*
13.5843	47.0			-3.000	*
13.5910	48.0			-2.000	*
13.6178	46.0			-4.000	*
13.6212	46.0			-4.000	*
13.6514	46.0			-4.000	*
13.6581	46.0			-4.000	*

Product Safety Engineering

EQUITRAC
Date : 06/16/14 Time : 12:08:56.07
Technician : CHIP FOERSTNER Test Equip. : EMC-30
Test Method : FCC CLASS B Test Number : 1
Equipment : SAFECOM MX Sensor Loc. : NEUTRAL
Mode of Op. : NORMAL TRANSMIT Sensor Pol. :
Serial No. : Ext. Atten. : 0 dB
Comment : 120 VAC / 60 HZ

SPECS
1) CISPR 22 Quasi Peak
2) CISPR 22 AVG
3)
4)



30 . 000

1 . Frequency MHz

0 . 150

1 . E-N

TEST TITLE: EQUI TRAC
DATA FILE : 14238BN.D30
Amplitude Units : dBuV

Threshold 7 dB

PAGE 1
Freq. (MHz)
0.1500

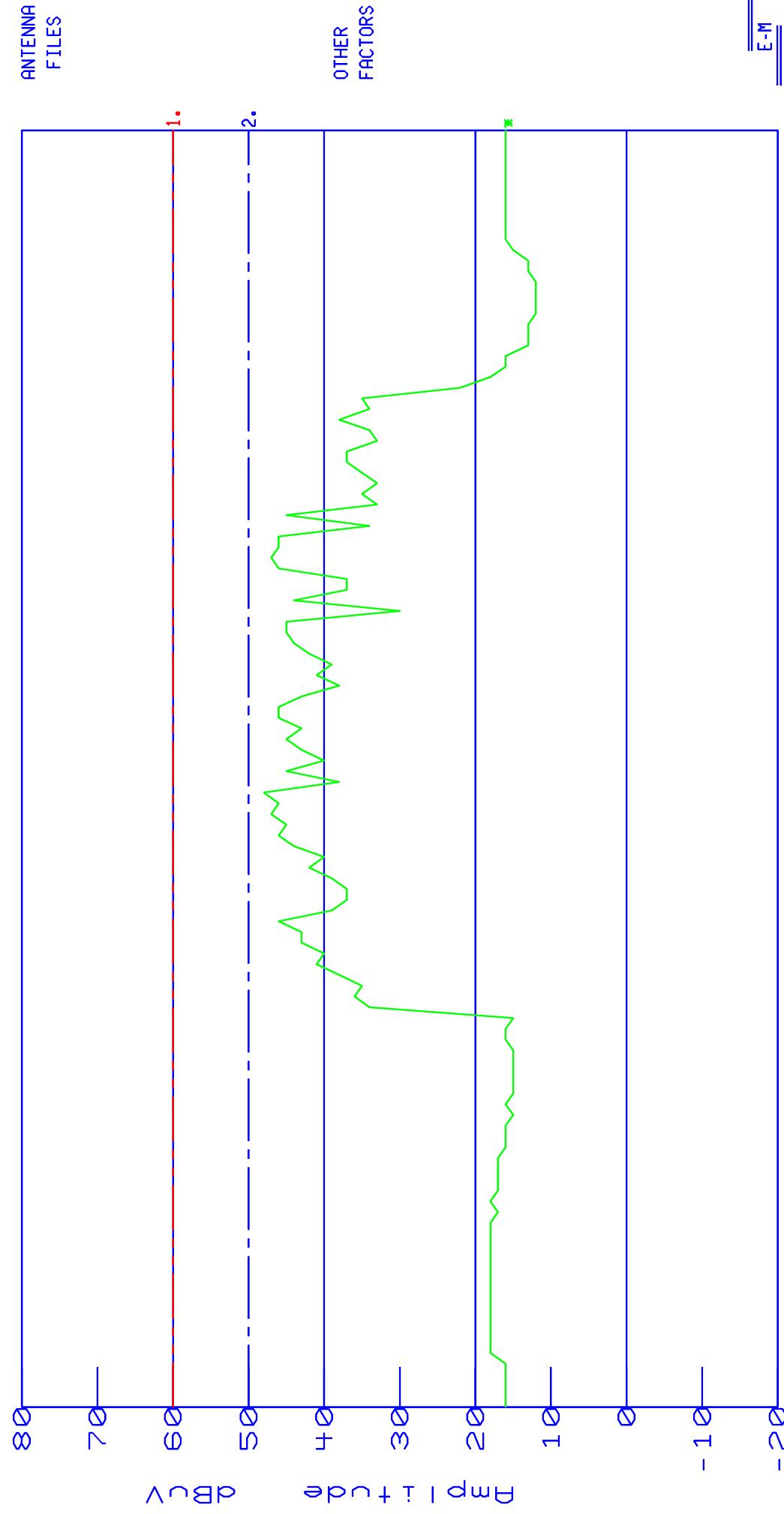
		C22BQP. S30		C22BAVG. S30	
Freq (MHz)	Amp	vs Spec (dB)	vs Spec (dB)		
13.5926	59.0			9.000 *	

Product Safety Engineering

EQUITRAC
Date : 06/16/14 Time : 12:23:34.55
Technician : CHIP FOERSTNER
Test Method : FCC CLASS B
Equipment : SAFECOM MX
Mode of Op. : NORMAL TRANSMIT
Serial No. :
Comment : 120 VAC / 60 HZ

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

SPECS
1) CISPR 22 Quasi Peak
2) CISPR 22 AVG
3)
4)



TEST TITLE: EQUI TRAC
DATA FILE : 14238BNA.D30
Amplitude Units : dBuV

Threshold -4 dB

PAGE 1
Freq. (MHz)
13.4000

Freq(MHz)	Amp	C22BQP. S30		C22BAVG. S30	
		vs Spec(dB)	Spec(dB)	vs Spec(dB)	Spec(dB)
13.5508	46.0			-4.000	*
13.5776	46.0			-4.000	*
13.5843	47.0			-3.000	*
13.5877	46.0			-4.000	*
13.5910	48.0			-2.000	*
13.6145	46.0			-4.000	*
13.6178	46.0			-4.000	*
13.6614	46.0			-4.000	*
13.6648	47.0			-3.000	*
13.6681	46.0			-4.000	*
13.6715	46.0			-4.000	*

APPENDIX

B

System Under Test Description

Page B1 of B3

Test Report Number 14F238B1

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

SYSTEM COMPONENTS

DEVICE TYPE: EUT, SafeCom Controller G56033-A09 sn 25933737

Front end G10199-A02 sn 15940170

Power supply 3A-183WP12

DEVICE TYPE: Readers (2X), P/N 674120 S/N 38718554 S/N 38717044

DEVICE TYPE: DLink Router

DEVICE TYPE: Lenovo laptop

INTERFACE CABLES

DEVICE TYPE: Front end

SHIELD: Yes

LENGTH: 6 feet

CONNECTOR TYPE: DIN type

PORT: serial

DEVICE TYPE: Readers (2X)

SHIELD: Yes

LENGTH: 6 feet

CONNECTOR TYPE: dedicated to USB

PORT: USB

DEVICE TYPE: Controller

SHIELD: No

LENGTH: 10 feet (25 cm for conducted immunity)

CONNECTOR TYPE: RJ45

PORT: LAN to router (DHCP enabled)

DEVICE TYPE: Controller

SHIELD: No

LENGTH: 10 feet (25 cm for conducted immunity)

CONNECTOR TYPE: RJ45

PORT: RJ45 nearest power to laptop

AC LINE CORDS

DEVICE TYPE: EUT PS (**DC side of plug in PS**)

SHIELD: No

LENGTH: 6 feet

CONNECTOR TYPE: Dedicated to mini plug

Page B3 of 3

Test Report Number 13F253I

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