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
Orthomatic Adjustable Beds
500 South Faulkenburg Rd.

Tampa, FL 33619

Report Issue Date: 13 Oct 2000
Sample S/N: None
Sample Receipt Date: 04 Oct 2000

Test Report Number: 00F448B
Model Designation: A4002
Product Description: Handheld Transmittter without clock

Sample Test Date: see data sheets

Marketing Approval _____

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

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

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

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

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

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

Signature _____ Name David Foerstner

Title Engineering Group Leader Date _____

Reviewed by:
Approved Signatory _____ Date _____

D I R E C T O R Y - EMISSIONS

EMISSIONS TEST REGULATIONS:

The emissions

tests were performed according to following regu

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☐ - EN 50081-1 : 1992

☐ - EN 50081-2 : 19

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☐ - Class A ☐ - Class B

☐ - ICES-003

☐ - Class A ☐ - Class B

☐ - VCCI: 1999

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□ - FCC Part 18

Environmental conditions during testing:

LAB

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Temperature:

_____ : _____

Relative

Humidity

_____ : _____

Atmospheric pressure

_____ : _____ millibars

Power supply system

: 6 Volts _____ DC ____ phase

Sign Explanations:

□ - not applicable

■ - ap

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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
☐ -				

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
☐ - 30 meters

■- **Test not applicable**

Test equipment used :

	Model Number	Manufacturer	Description	Serial Number
☐ -	96005	Eaton	Log Periodic Antenna	1099
☐ -	BIA-25	Electro-Metrics	Biconical Antenna	4283
☐ -	8566B	Hewlett-Packard	Spectrum Analyzer	2421A00526
☐ -	85662A	Hewlett-Packard	Analyzer Display	2403A07352
☐ -	85650A	Hewlett-Packard	Quasi-Peak Adapter	2043A00209
☐ -	ALR-30M	Electro-Metrics	Loop Antenna	824
☐ -	8447D	Hewlett Packard	Preamplifier	2944A06832
☐ -	EMC-30	Electro-Metrics	EMI Receiver	191

Emissions Test Conditions: RADIATED EMISSIONS (Electric Field)

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

☐ **- Test not applicable**

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

at a test distance of :

■- 3 meters
☐ - 10 meters
☐ - 30 meters

Test equipment used :

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

Emissions Test Conditions): INTERFERENCE POWER

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

■**- Test not applicable**

☐ - Darby Lab
☐ -
☐ -
☐ -
☐ -

Test equipment used :

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

The *EQUIVALENT RADIATED EMISSIONS* measurements in the frequency range 1 GHz - 4 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	2618A02898
■-	85662A	Hewlett-Packard	Analyzer Display	2542A11984
■-	85650A	Hewlett-Packard	Quasi-Peak Adapter	2043A00209
■-	8449B	Hewlett-Packard	Preamplifier	3008A00320
■-	3115	Electro-Mechanics	Double Ridge Guide Horn	3810

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

■ The unit was tested in a stand alone configuration with the transmitter internally wired to operate continuously.

Rationale for EUT setup / configuration:

Per ANSI C63.4

Emission Test Results:

Conducted emissions 10/150/450 kHz - 30 MHz				
The requirements are	☐ **- MET**		☐ **- NOT MET**	
Minimum limit margin		dB	at	MHz
Maximum limit exceeding		dB	at	MHz

Remarks:

Radiated emissions (magnetic field) 10 kHz - 30 MHz				
The requirements are	☐ **- MET**		☐ **- NOT MET**	
Minimum limit margin		dB	at	MHz
Maximum limit exceeding		dB	at	MHz

Remarks:

Radiated emissions (electric field) 30 MHz - 1000 MHz				
The requirements are	■**- MET**		☐ **- NOT MET**	
Minimum limit margin	**4.0**	dB	at	**836** MHz
Maximum limit exceeding		dB	at	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
Maximum limit exceeding		dB	at	MHz

Remarks:

Radiated emissions 1 GHz - 4 GHz

The requirements are	■**- MET**		□ **- NOT MET**		
Minimum limit margin	**20.5**dB	at	**2.090**	GHz	Maximum limit exceeding
	dB	at		GHz	

Remarks:

GENERAL REMARKS:

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.

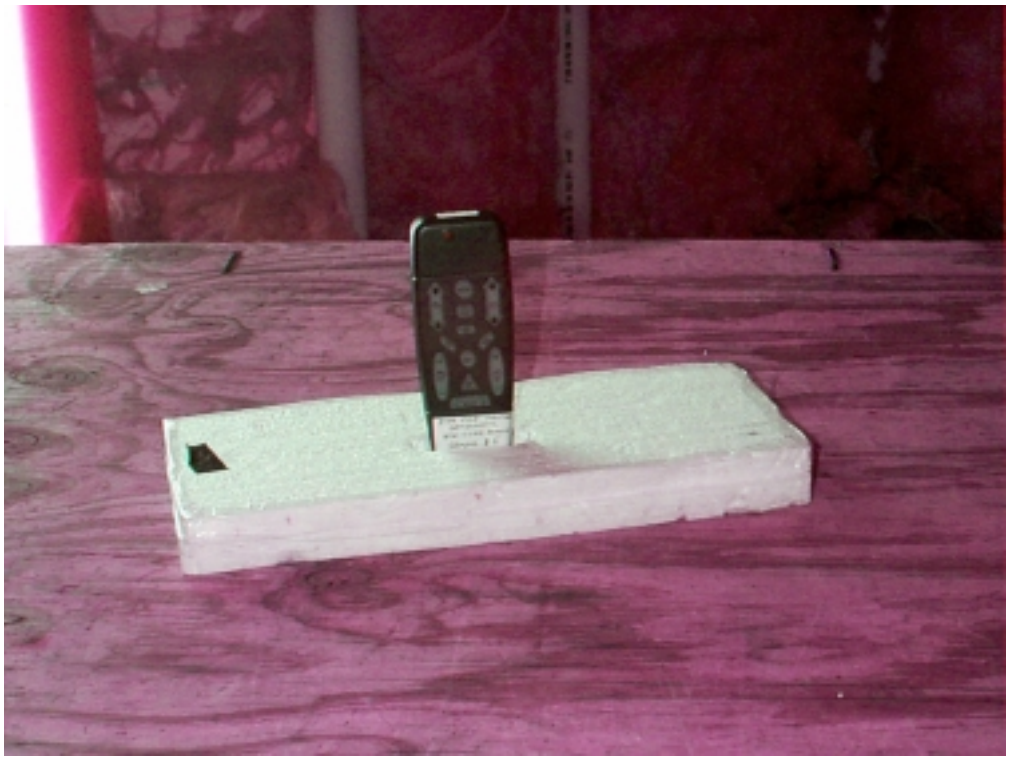
Testing Start Date **9 Oct 2000**

Testing End Date: **9 Oct 2000**

- PRODUCT SAFETY ENGINEERING INC -

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

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



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	02/28/01
Hewlett Packard	85662A	Display	2403A07352	02/28/01
Hewlett Packard	85650A	Quasi-Peak Adapter	2043A00209	02/28/01
Hewlett Packard	8447D	Preamp 0.1 - 1,000 MHz	2944A06832	02/25/01
Hewlett Packard	8568B	Spectrum Analyzer	2407A03213	02/04/01
Hewlett Packard	85662A	Display	2340A05806	02/04/01
Hewlett Packard	85650A	Quasi-Peak Adapter	2043A00358	01/24/01
Hewlett Packard	8447D	Preamp 0.1 - 1,000 MHz	2944A06901	12/07/00
Hewlett Packard	8447D	Preamp 0.1 - 1,000 MHz	1937A03247	12/21/00
Hewlett Packard	8449B	Preamp 1 - 26.5 GHz	3008A00320	12/04/00
Hewlett Packard	8648B	Signal Generator	3443U00312	05/13/01
Hewlett Packard	8672A	Signal Generator	2211A02426	09/21/00
Eaton	96005	Log Periodic Antenna	1099	08/27/01
Electro-Metrics	LPA 30	Log Periodic Antenna	2280	08/12/01
Electro-Metrics	BIA 30	Biconical Antenna	3852	08/12/01
Electro-Metrics	BIA 25	Biconical Antenna	4283	08/27/01
Electro-Mechanics	3115	Double Ridge Guide Ant.	3810	05/27/01
Electro-Metrics	ALR30M	Magnetic Loop Antenna	824	11/08/00
Solar	8012	LISN	924840	09/22/00
Solar	8028	LISN	829012/809022	09/08/00
Solar	8028	LISN	903725/903726	08/25/00
Schwartzbeck	MDS-21	Absorbing Clamp	02581	11/24/00
Leader	LFG1310	Function Generator	8060233	01/26/00
Holaday Ind.	HI 4422	Isotropic Probe	90310	04/18/01
IFR Systems	A-8000	Spectrum Analyzer	1306	06/08/01
Fischer Custom	F-33-1	RF Current Probe	360	09/08/01
Electro-Metrics	EMC-30	EMI Receiver	191	11/01/00
Boonton	4220A	RF Power Meter	204103AA	10/28/00
Boonton	51011	RF Power Meter	28823	10/28/00

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RADIATED EMISSIONS DATA

Freq (MHz)	Amp (dBuV/m)	Peak Limit (dBuV/m)	Adj. For duty cycle	Avg. Limit (dBuV/m)	Delta from Limit
418	87.6	80.3	11.6	91.9	-4.3
836	67.9	60.3	11.6	71.9	-4.0
1,254	48.8	60.3	11.6	71.9	-23.1
1,672	50.5	60.3	11.6	71.9	-21.4
2,090	51.4	60.3	11.6	71.9	-20.5

FIELD STRENGTH LIMIT CALCULATION

Limit (260 - 470) MHz = (3,750 - 12,500) uV/m

470 - 260 = Frequency range of 210 MHz

12,500 - 3,750 = Limit range of 8,750 uV/m

8,750 / 210 = 41.67 uV/m per (1) MHz of change

470 MHz - 418 MHz = 52 MHz

52 MHz * 41.67 = 2,167 uV/m

Limit at 470 MHz = 12,500 uV/m

Limit at 418 MHz = 12,500 - 2,167) = 10,333 uV/m

Peak limit = 80.3 dBuV/m

CALCULATION FOR DUTY CYCLE ADJUSTMENT

Pulse train duration = 23.4 ms (per plot # 1)

Short pulse duration = 380 us (per plot #2)

Long pulse duration = 780 us (per plot # 3)

Total number of long duration pulses = (4)

Total number of short duration pulses = (8)

Total “on” time = (4 @ 780 us) + (8 @ 380 us) = (3.12 ms + 3.04 ms) = (6.16 ms)

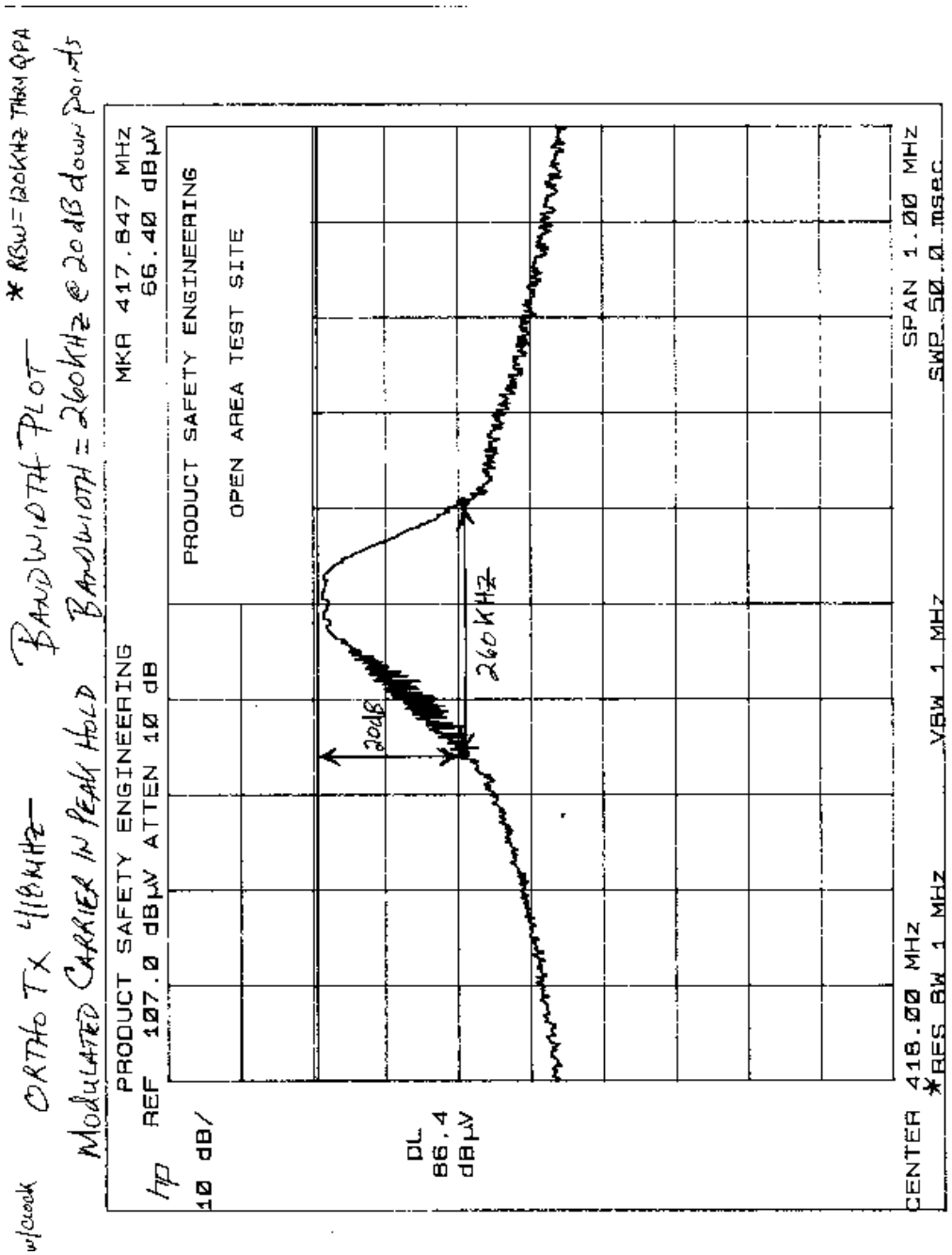
Ratio of “on” time to “off” time = 6.16 / 23.4 = 0.2632

20 Log (0.2632) = (-11.59) dB

Average Limit (fundamental frequency) = (91.89) dBuV/m

Average Limit (spurious emissions) = (71.89) dBuV/m

Occupied Bandwidth Plot



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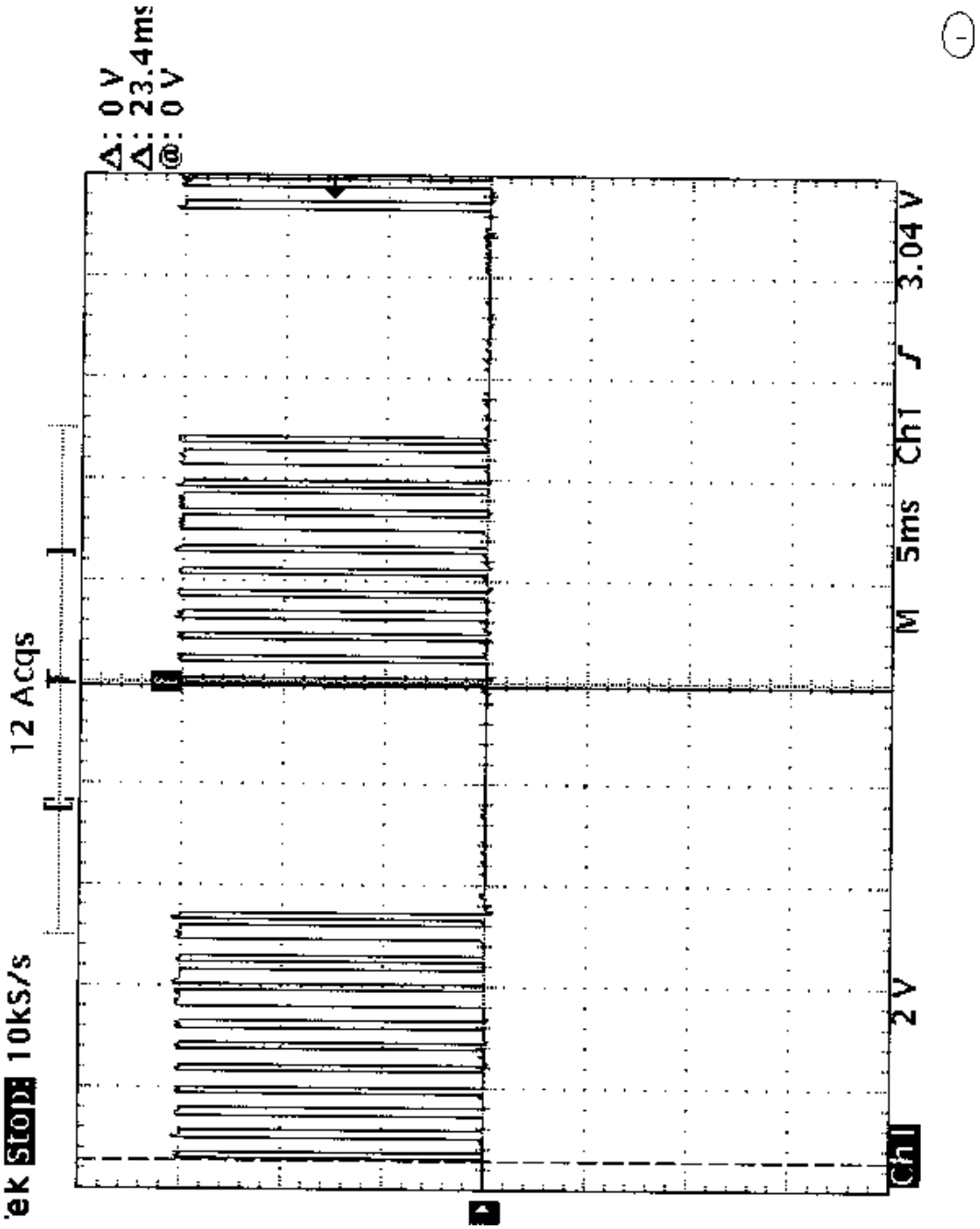

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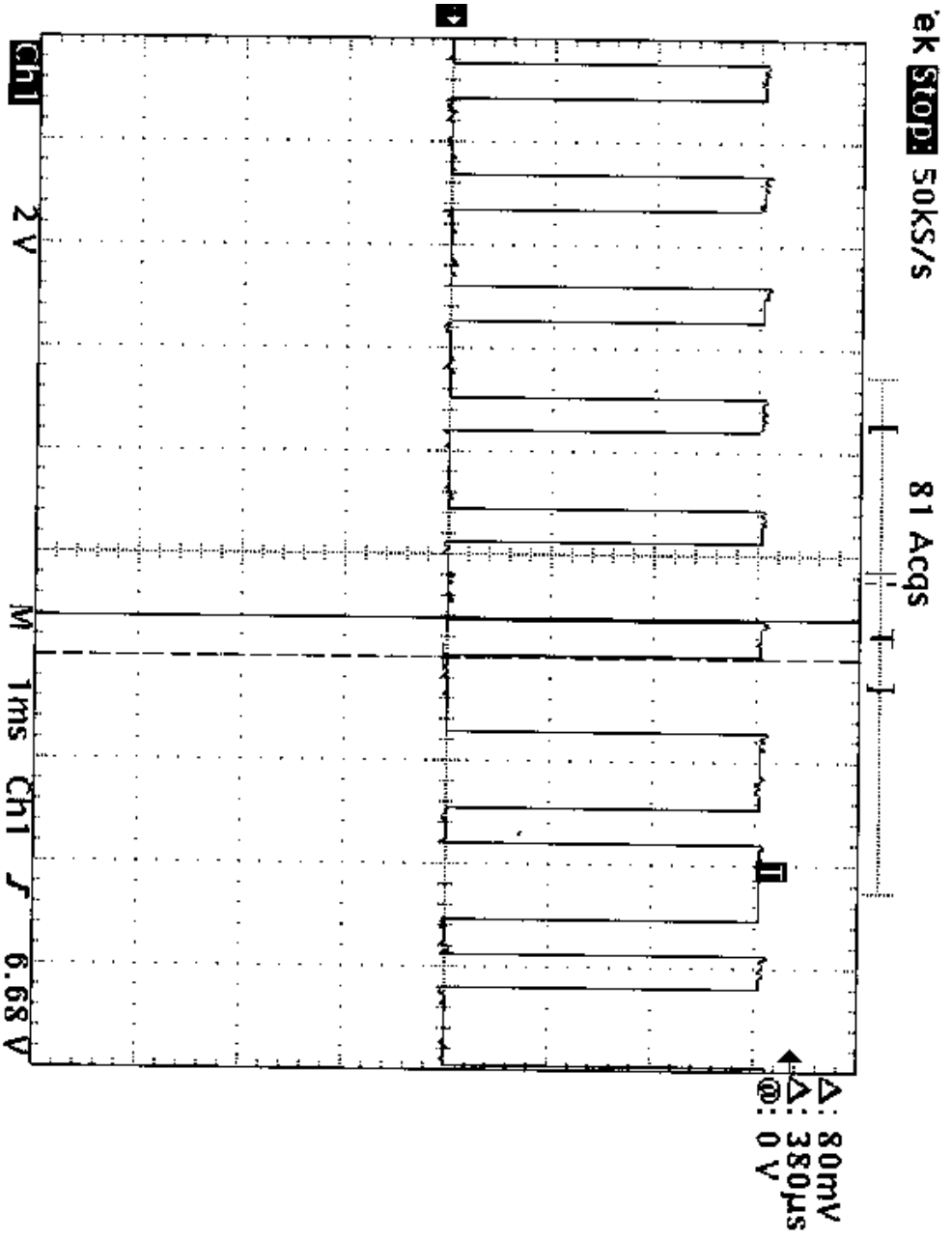

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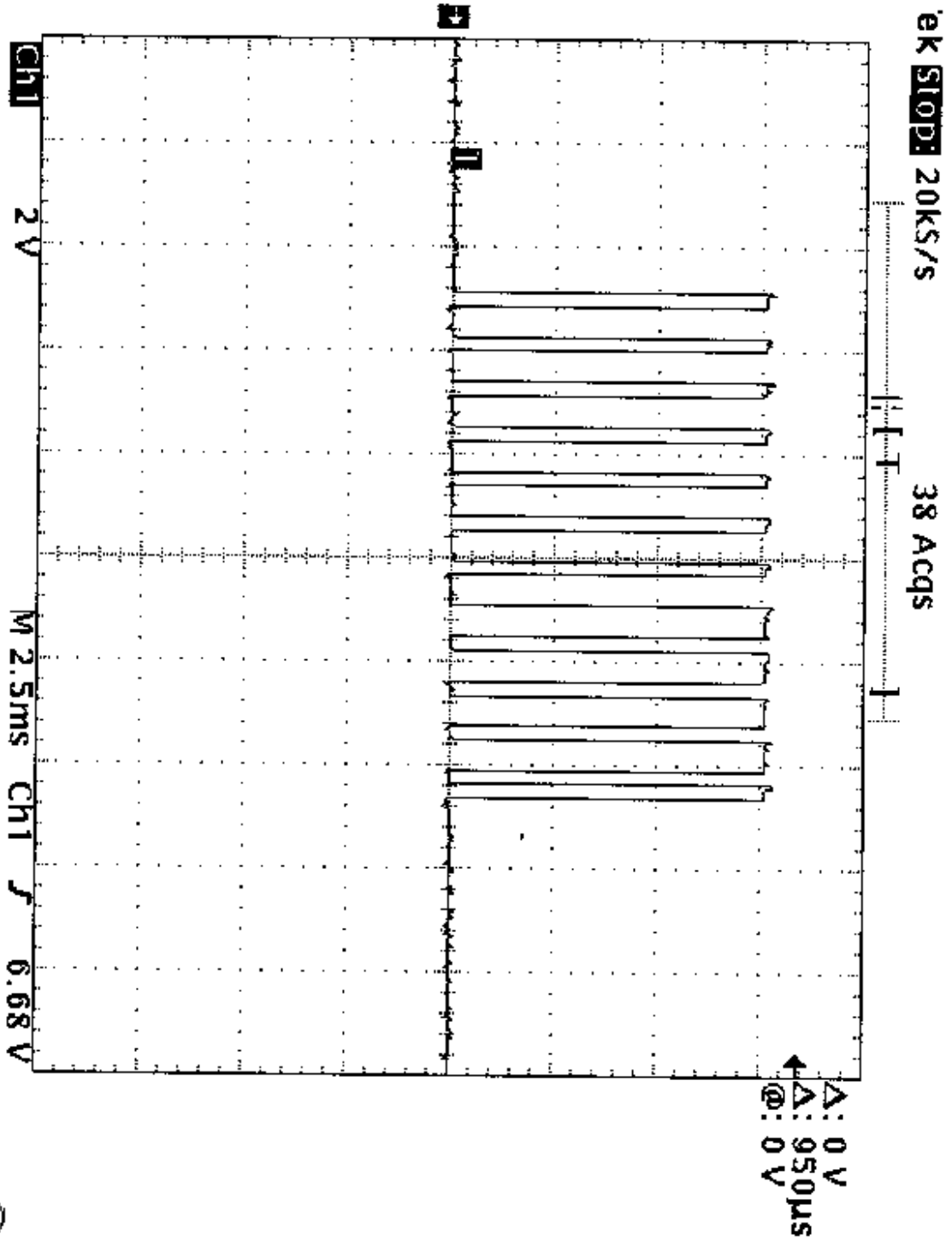

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APPENDIX

B

System Under Test Description

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APPENDIX

C

Measurement Protocol

Product Safety Engineering, Inc 12955 Bellamy Brothers Blvd. Dade City, FL 33525
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The test methodology followed during the collection of the data included within this technical report was ANSI C63.4:1992.

The EUT was powered with (120) VAC / (60) Hz during the collection of data included within.

The data is compared to the FCC Part 15 Class B limits.

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

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

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

Observed Level		**26.0**	dBµV	
ACF	+	**21.8**	dB/M	
Cable Loss	+	**4.0**	dB	
Preamp Gain	-	**26.0**	dB	
Actual Level		**25.8**	dBµV/M	@ 797 MHz

Please have a company official review this report and sign.

_____

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