

EXHIBIT 6

TECHNICAL REPORT

FCC ID # NZWTXM12

TEST REPORT



Accredited by the National Voluntary Laboratory Accreditation Program for the specific scope of accreditation under Lab Code 200074-0

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

JM Electronics
970 Sunshine Lane
Bldg E
Altamonte Springs, FL 32714

Report Issue Date: 47 OCT 98

Test Report Number: 98F287A

Sample S/N: JME051298

Model Designation: Mini TX

Sample Receipt Date: 03 June 1998

Product Description: Transmitter

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 David Foerstner Name David Foerstner

Title Engineering Group Leader Date 47 OCT 98

Reviewed by: Steve E. Hale Date 47 OCT 98
Approved Signatory Steve E. Hale Date 47 OCT 98

This report may only be reproduced in full with written permission from Product Safety Engineering, Inc.
This report is not to be used to claim product endorsement by NVLAP or any agency of the U.S. Government.

Test Report Number 98F287A

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

DIRECTORY - EMISSIONS

	Page(s)
A) Documentation	
Test report	1 - 10
Directory	2
Test Regulations	3
General Remarks	10
Test-setups (Photos)	11 - 12
B) Test data	
Conducted emissions	10/150 kHz - 30 MHz
Radiated emissions	10 kHz - 30 MHz
Radiated emissions	30 MHz - 1000 MHz
Interference power	30 MHz - 300 MHz
Equivalent Radiated emissions	1 GHz - 18 GHz
C) Appendix A	
Test Equipment Calibration Information	A2
Test Data Sheets	A3 - A5
D) Appendix B	
System Under Test Description	B2 - B2
E) Appendix C	
Measurement Protocol	C1 - C2

Test Report Number 98F287A

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

EMISSIONS TEST REGULATIONS :

The emissions tests were performed according to following regulations:

- EN 50081-1 : 1992

- EN 50081-2 : 1995

- EN 55011 : 1991

- Group 1

- Group 2

- Class A

- Class B

- EN 55014 : 1993

- Household appliances and similar

- Portable tools

- Semiconductor devices

- EN 55022 : 1994 / A1:1995

- Class A

- Class B

- AS/NZS 3548:1992

- Class A

- Class B

- VCCI : 1986

- Class A

- Class B

- FCC Part 15

- Class A

- Class B

- Certification

- Verification

- Notification

- Declaration of Conformity

- FCC Part 18

Test Report Number 98F287A

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

Page 3 of 12

Environmental conditions during testing:

	LAB	OATS
Temperature:	_____	: _____
Relative Humidity	_____	: _____
Atmospheric pressure	_____	: _____ millibars
Power supply system	: <u>9</u> Volts <u>DC</u> Hz Internal Battery	<u>SINGLE</u> phase

Sign Explanations:

- not applicable
 - applicable

Test Report Number 98F287A

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

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

Test Report Number 98F287A

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

Test Report Number 98F287A

The **EQUIVALENT RADIATED EMISSIONS** measurements in the frequency range 1 GHz - 4.2 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	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

Test Report Number 98F287A

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

Page 7 of 12

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

Test Report Number 98F287A

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

Emission Test Results:

Conducted emissions 10/150/450 kHz - 30 MHz

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

Radiated emissions (magnetic field) 10 kHz - 30 MHz

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

Radiated emissions (electric field) 30 MHz - 1000 MHz

The requirements are	<input checked="" type="checkbox"/> - MET	<input type="checkbox"/> - NOT MET
Minimum limit margin	29.0 dB	at
Maximum limit exceeding	dB	at
Remarks: Intentional Signal margin = 3.5 dB @ 418.0 MHz		

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
Maximum limit exceeding	dB	at
Remarks:		

Radiated emissions 1 GHz - 4.2 GHz

The requirements are	<input checked="" type="checkbox"/> - MET	<input type="checkbox"/> - NOT MET
Minimum limit margin	0.5 dB	at
Maximum limit exceeding	dB	at
Remarks:		

Test Report Number 98F287A

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 June 18, 1998

Testing End Date: June 18, 1998

- PRODUCT SAFETY ENGINEERING INC -

Test Report Number 98F287A

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

Test-setup photo(s):

Conducted emission 450/150 kHz - 30 MHz

N/A

Test Report Number 98F287A

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

Page 11 of 12

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	12/29/98
Hewlett Packard	85662A	Display	2403A07352	12/29/98
Hewlett Packard	85650A	Quasi-Peak Adapter	2043A00209	12/29/98
Hewlett Packard	8447D	Preamp 0.1 - 1,000 MHz	2944A06832	01/28/99
Hewlett Packard	8568B	Spectrum Analyzer	2407A03213	12/17/98
Hewlett Packard	85662A	Display	2340A05806	12/17/98
Hewlett Packard	85650A	Quasi-Peak Adapter	2043A00358	12/10/98
Hewlett Packard	8447D	Preamp 0.1 - 1,000 MHz	2944A06901	10/08/98
Hewlett Packard	8447D	Preamp 0.1 - 1,000 MHz	1937A03247	10/16/98
Hewlett Packard	8449B	Preamp 1 - 26.5 GHz	3008A00320	12/02/98
Hewlett Packard	8648B	Signal Generator	3443U00312	04/24/00
Hewlett Packard	8672A	Signal Generator	2211A02426	11/27/98
Hewlett Packard	6842A	Harmonic / Flicker Tester	3531A00149	12/19/98
Eaton	96005	Log Periodic Antenna	1099	09/16/98
Electro-Metrics	LPA 30	Log Periodic Antenna	2280	08/25/98
Electro-Metrics	BIA 30	Biconical Antenna	3852	08/25/98
Electro-Metrics	BIA 25	Biconical Antenna	4283	09/16/98
Electro-Mechanics	3115	Double Ridge Guide Ant.	3810	04/15/99
Electro-Metrics	ALR30M	Magnetic Loop Antenna	824	10/13/98
Solar	8012	LISN	924840	09/14/98
Solar	8028	LISN	829012/809022	09/01/98
Solar	8028	LISN	903725/903726	08/25/99
Schwartzbeck	MDS-21	Absorbing Clamp	02581	10/02/98
Haefely-Trench	PSD25B	ESD Tester	082999-38	01/06/99
Haefely-Trench	PEFT-1	EFT/B Tester	082628-29	01/13/99
Leader	LFG1310	Function Generator	8060233	10/03/98
Haefely-Trench	Psurge 4	Surge Tester	083372-13	10/08/98
Holaday Ind.	HI 4422	Isotropic Probe	90310	03/17/99
IFR Systems	A-8000	Spectrum Analyzer	1306	04/29/99
Fischer Custom	F-33-1	RF Current Probe	360	09/30/99
Electro-Metrics	EMC-30	EMI Receiver	191	09/22/98
Boonton	4220A	RF Power Meter	204103AA	10/15/98
Boonton	51011	RF Power Meter	28823	10/15/98

PRODUCT EMISSIONS

PRODUCT SAFETY ENGINEERING

Data File: MINI TX FCC-B FINAL 6-18-98

No	EMISSION FREQUENCY MHz	SPEC LIMIT dBuV/m	MEASUREMENTS			POL	SITE HGT cm	AZM deg	CORR FACTOR dB	COMMENTS
			ABS	ΔLIM	MODE					
1	249.540	46.0	11.2	-34.8	PK	H	150	225		
2	408.551	46.0	16.1	-29.9	PK	H	150	225		
3	417.997	46.0(1)	76.5	30.5	PK	H	100	315		
4	454.241	46.0	15.4	-30.6	PK	H	150	225		
5	476.772	46.0	17.0	-29.0	PK	H	150	225		
6	836.050	46.0(2)	49.3	3.3	PK	H	100	315		

(1) LIMIT = 80.3, ΔLIM = -3.5dB

(2) LIMIT = 60.3, ΔLIM = -11.0dB

A3

JM Electronics MINI TX

Measured @ 3 Meters

Frequency (GHz)	Spec Limit (dB μ V/M)	Measurement (dB μ V/M)	Δ Limit	Polarity	Height (cm)
1.25	60.3	42.2	-18.1	Vertical	100
1.67	60.3	45.2	-15.1	Vertical	100
2.09	60.3	59.8	-0.5	Vertical	100
2.51	60.3	54.5	-5.8	Vertical	100
2.93	60.3	58.2	-2.1	Vertical	100
3.34	60.3	51.7	-8.6	Horizontal	100
3.76	60.3	51.9	-8.4	Horizontal	100
4.18	60.3	51.7	-8.6	Horizontal	100


6-18-08

SM ELECTRONICS
6-18-98

PRODUCT SAFETY ENGINEERING

MKA 417.988 MHz
64.70 dB μ V

μ V REF 97.0 dB μ V ATTN 0 dB

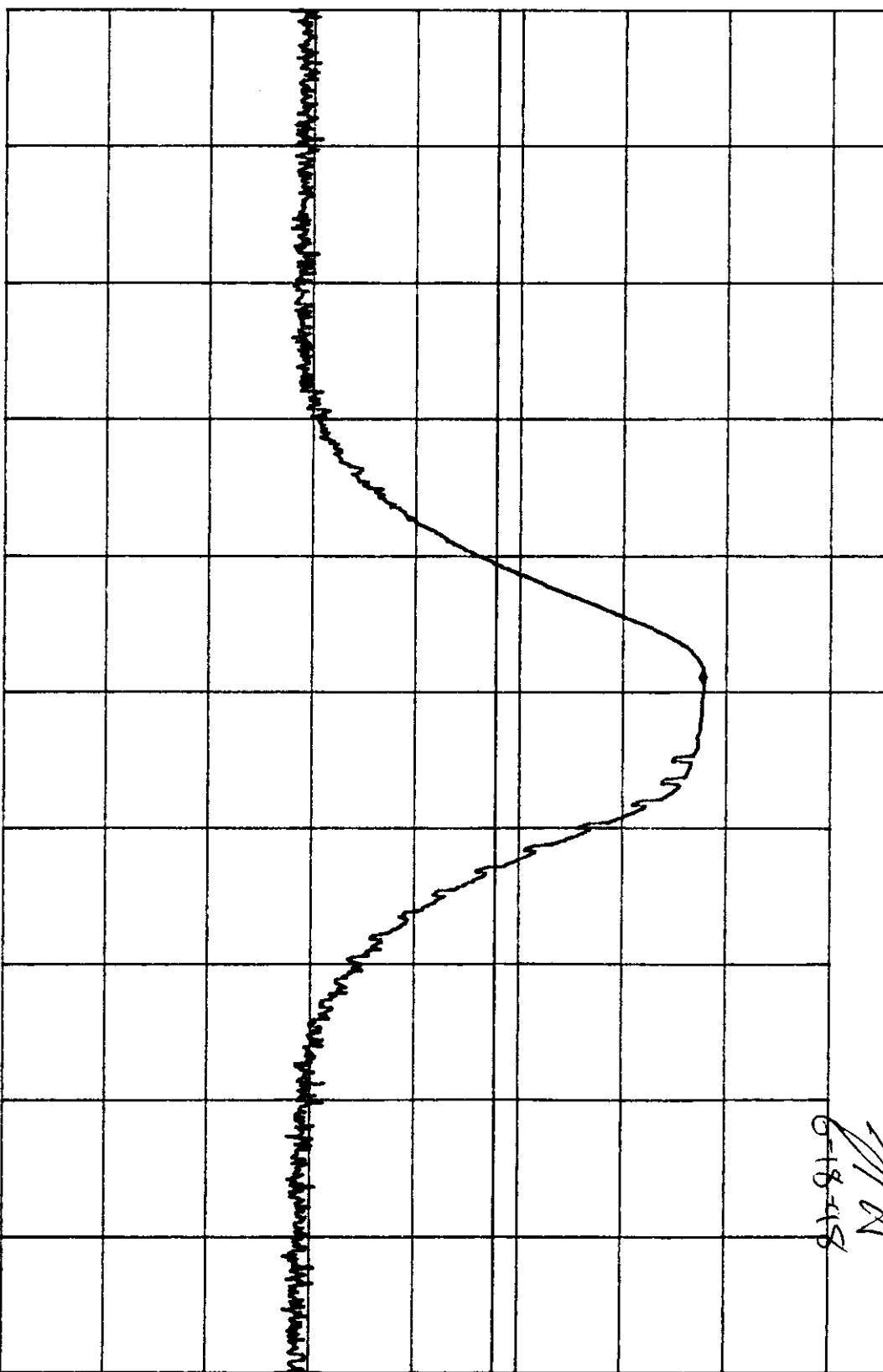
10 dB/

POS PK

PRODUCT SAFETY ENGINEERING

OPEN AREA TEST SITE

6-18-98



CENTER 418.00 MHz

RES BW 1 MHz

VBW 1 MHz

SPAN 1.00 MHz

SWP 1.00 sec

APPENDIX

B

System Under Test Description

Page B1 of B2

SYSTEM COMPONENTS

DEVICE TYPE: EUT, JM ELECTRONICS MINI TX

S/N : JME051298

INTERFACE CABLES

DEVICE TYPE: **NONE**

SHIELD:

LENGTH:

CONNECTOR TYPE:

PORT:

AC LINE CORDS

DEVICE TYPE: **NONE**

SHIELD:

LENGTH:

CONNECTOR TYPE:

APPENDIX

C

Measurement Protocol

Page C1 of C2

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 Class B 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	22.0	dB μ V	
ACF	+	18.3	dB/M
Cable Loss	+	2.7	dB
Preamp Gain	-	<u>26.0</u>	dB
Actual Level		17.0	dB μ V/M @ 476.8 MHz

Please have a company official review this report and sign.
