

# TEST REPORT



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

XM Radio  
7777 Glades Road  
Boca Raton, FL 33434

Report Issue Date: 18 APR 05  
Sample S/N: M18CA04V  
Sample Receipt Date: April 04, 2005

Test Report Number: 05F170B  
Model Designation: GEX-AIRWARE1  
Product Description: Satellite Radio  
Receiver

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 18 APR 05

**Reviewed by:**  
Approved Signatory John E. Johnson Date 18 APR 05

This report may only be reproduced in full with written permission from Product Safety Engineering, Inc.

Test Report Number 05F170B

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

# DIRECTORY - EMISSIONS

		Page(s)
<b>A) Documentation</b>		
Test report		1 - 10
Directory		2
Test Regulations		3
General Remarks		10
Test-setups (Photos)		11 - 12
<b>B) Test data</b>		
Conducted emissions	10/150 kHz - 30 MHz	5, 9
Radiated emissions	10 kHz - 30 MHz	5, 9
Radiated emissions	30 MHz - 1000 MHz	6, 9
Interference power	30 MHz - 300 MHz	6, 9
Equivalent Radiated emissions	1 GHz - 18 GHz	7, 9
Antenna Disturbance Voltage	30 MHz - 1,000 MHz	7, 9
<b>C) Appendix A</b>		
Test Equipment Calibration Information		A2
Test Data Sheets		A3 - A10
<b>D) Appendix B</b>		
System Under Test Description		B2 - B4
<b>E) Appendix C</b>		
Measurement Protocol		C1 - C2

Test Report Number 05F170B

## EMISSIONS TEST REGULATIONS :

The emissions tests were performed according to following regulations:

- EN 61000-6-3:2001
- EN 61000-6-4:2001
  
- EN 55011 : 1998 / A1:1999
  - Group 1
  - Group 2
  - Class A
  - Class B
- EN 55013 : 1990 / A12:1994 / A13:1996 / A14:1999
  
- EN 55014 -1: 2001
  - Household appliances and similar
  - Portable tools
  - Semiconductor devices
  
- EN 55022 : 1998
  - Class A
  - Class B
- AS/NZS 3548:1995
  - Class A
  - Class B
- ICES-003
  - Class A
  - Class B
- CNS 13438
  - Class A
  - Class B
- VCCI : 1999
  - Class A
  - Class B
- FCC Part 15
  - Class A
  - Class B
  - Certification (Intentional Radiator portion only)
  - Verification
  - Declaration of Conformity
  
- FCC Part 18

Test Report Number 05F170B

**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                      : 110 Volts 60 Hz SINGLE phase

**Sign Explanations:**

- not applicable
- applicable

*Test Report Number 05F170B*

## 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
<input checked="" type="checkbox"/>	8028-50	Solar	50 $\Omega$ LISN	829012, 829022
<input type="checkbox"/>	3825/2	Solar	50 $\Omega$ 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 $\Omega$ LISN	903725, 903726
<input type="checkbox"/>	FCC-TLISN-T4	Fisher Custom Com.	Telecom ISN	20072

## 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
<input type="checkbox"/>	96005	Eaton	Log Periodic Antenna	1099
<input type="checkbox"/>	BIA-25	Electro-Metrics	Biconical Antenna	4283
<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"/>	ALR-30M	Electro-Metrics	Loop Antenna	824
<input type="checkbox"/>	8447D	Hewlett Packard	Preamplifier	2944A06832
<input type="checkbox"/>	EMC-30	Electro-Metrics	EMI Receiver	191
<input type="checkbox"/>	ALA-130/A	Antenna Research	Loop Antenna	106

Test Report Number 05F170B

**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 checked="" type="checkbox"/> - LPA30	eElectro-Metrics	Log Periodic Antenna	2280
<input checked="" type="checkbox"/> - BIA-30	Electro-Metrics	Biconical Antenna	3852
<input checked="" type="checkbox"/> - 8566B	Hewlett-Packard	Spectrum Analyzer	2421A00526
<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"/> - 8447D	Hewlett-Packard	Preamplifier (26dB)	2944A06832
<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
<input type="checkbox"/> - 96005	Eaton	Log Periodic	1099
<input type="checkbox"/> - BIA 25	Electro-Metrics	Biconical Antenna	4283

**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
<input type="checkbox"/> - MDS-21	Rhode&Schwarz	Absorbing Clamp	8608447020
<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"/> - 8447D	Hewlett-Packard	Amplifier (26 dB)	2944A06832
<input type="checkbox"/> - EMC-30	Electro-Metrics	EMI Receiver	191

Test Report Number 05F170B

**The EQUIVALENT RADIATED EMISSIONS measurements in the frequency range 1 GHz - 1.1 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 :**

	<b>Model Number</b>	<b>Manufacturer</b>	<b>Description</b>	<b>Serial Number</b>
<input checked="" type="checkbox"/>	8566B	Hewlett-Packard	Spectrum Analyzer	2421A00526
<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"/>	8449B	Hewlett-Packard	Preamplifier	3008A00320
<input checked="" 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**

	<b>Model Number</b>	<b>Manufacturer</b>	<b>Description</b>	<b>Serial Number</b>
<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"/>				

Test Report Number 05F170B

**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

---

---

---

---

---

*Test Report Number 05F170B*



## Emission Test Results:

### Conducted emissions 150 kHz - 30 MHz

The requirements are  - MET  - NOT MET  
Minimum limit margin 5.0 dB at 0.150 MHz  
Remarks:

### Radiated emissions (magnetic field) 10 kHz - 30 MHz

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

### Radiated emissions (electric field) 30 MHz - 1000 MHz

The requirements are  - MET  - NOT MET  
Minimum limit margin 1.7 dB at 107.5 MHz  
Remarks: Measured with the Mobile Docking configuration

### 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 1 GHz - 1.08 GHz

The requirements are  - MET  - NOT MET  
Minimum limit margin >20 dB at all GHz  
Remarks:

### Antenna Terminal Disturbance Voltage 30 MHz - 1,000 MHz

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

Test Report Number 05F170B

**GENERAL REMARKS:**

The EUT's were tested in (3) orthogonal planes.

Measurements were made up to the tenth harmonic of the highest frequency transmitted.

There are (3) separate configurations that were tested.

- (1) Home installation uses home style antenna and internal antenna and home style cradle
- (2) Mobile installation uses vehicle style antenna & internal antenna and vehicle style cradle
- (3) Battery operated portable installation using internal antenna and no cradle

The EUT only transmits on 88.1, 88.3, 88.5, 88.7, 88.9, 106.7, 106.9, 107.1, 107.3, 107.5, 107.7 & 107.9 MHz.

We test all (3) configurations at both 88.7 & 107.5 MHz. Data is reported for the two worst case configurations; Home and Mobile. The emissions levels for the Portable installation are lower because there is no external antenna attached in this case.

The line out port was never cabled during this "intentional radiator" testing because it shuts off the transmitter.

**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 April 4, 2005

Testing End Date: April 6, 2005

- PRODUCT SAFETY ENGINEERING INC -

*Test Report Number 05F170B*

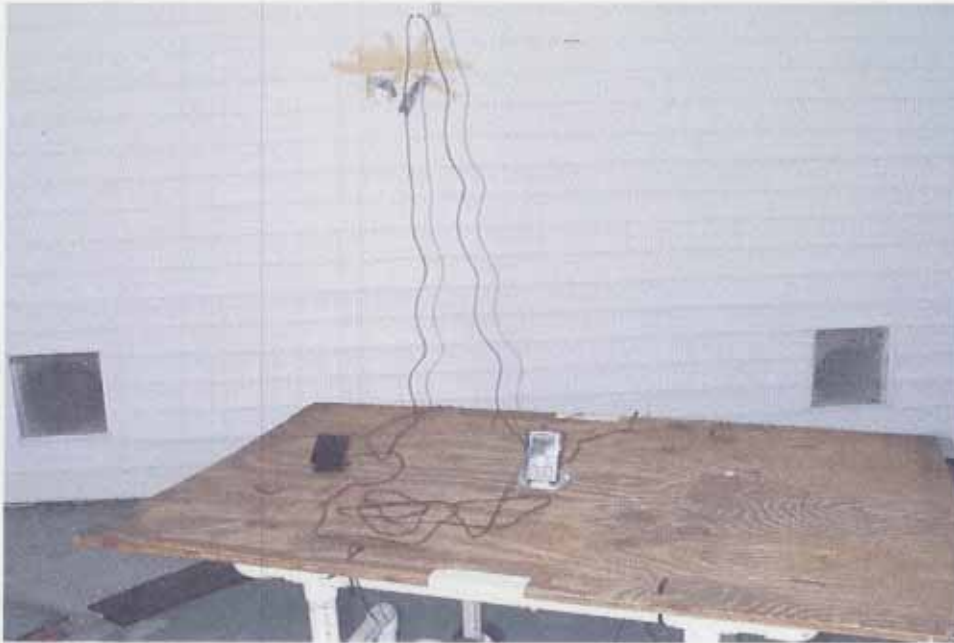
Test-setup photo(s):  
Conducted emission 450/150 kHz - 30 MHz



*Test Report Number 05F170B*

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

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



*Test Report Number 05F170B*

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

Page 12 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	08/12/05
Hewlett Packard	85662A	Display	2403A07352	08/12/05
Hewlett Packard	85650A	Quasi-Peak Adapter	2043A00209	08/12/05
Hewlett Packard	8447D	Preamp 0.1 - 1,000 MHz	2944A06832	12/13/05
Hewlett Packard	8568B	Spectrum Analyzer	2407A03213	08/12/05
Hewlett Packard	85662A	Display	2340A05806	08/12/05
Hewlett Packard	85650A	Quasi-Peak Adapter	2043A00358	08/12/05
Hewlett Packard	8447D	Preamp 0.1 - 1,000 MHz	2944A06901	08/12/05
Hewlett Packard	8447D	Preamp 0.1 - 1,000 MHz	1937A03247	08/12/05
Hewlett Packard	8449B	Preamp 1 - 26.5 GHz	3008A00320	12/13/05
Hewlett Packard	8648B	Signal Generator	3443U00312	05/04/05
Hewlett Packard	8672A	Signal Generator	2211A02426	12/13/05
Eaton	96005	Log Periodic Antenna	1099	02/05/05
Electro-Metrics	LPA 30	Log Periodic Antenna	2280	01/11/06
Electro-Metrics	BIA 30	Biconical Antenna	3852	01/11/06
Electro-Metrics	BIA 25	Biconical Antenna	4283	02/04/05
Electro-Mechanics	3115	Double Ridge Guide Ant.	3810	11/25/05
Electro-Metrics	ALR30M	Magnetic Loop Antenna	824	01/10/06
Solar	8012	LISN	924840	12/24/04
Solar	8028	LISN	829012/809022	12/15/05
Solar	8028	LISN	903725/903726	12/15/05
Schwartzbeck	MDS-21	Absorbing Clamp	02581	12/09/05
Leader	LFG1310	Function Generator	8060233	05/04/05
Electro-Metrics	EMC-30	EMI Receiver	191	05/04/05
Antenna Research	ALA-130/A	Loop Antenna	106	05/03/05
Radio Shack	63-867	Temp/Hygrometer	N/A	05/04/05
Radio Shack	63-867A	Temp/Hygrometer	N/A	05/04/05

No	EMISSION FREQUENCY MHz	SPEC LIMIT dBuV/m	MEASUREMENTS			POL	SITE		CORR FACTOR dB	COMMENTS
			ABS	dLIM dB	MODE		HGT cm	AZM deg		
* 1	88.704	43.5	43.3	-0.2*	QP	H	300	1	-19.6	
* 2	107.451	43.5	46.3	2.8*	QP	H	300	1	-15.2	
3	177.400	43.5	23.9	-19.6	PK	H	300	1	-10.6	
4	215.000	43.5	20.0	-23.5	PK	H	300	1	-13.2	
5	266.100	46.0	13.2	-32.8	PK	H	300	1	-12.3	
6	322.500	46.0	17.8	-28.2	PK	H	300	1	-10.5	
7	354.795	46.0	17.1	-29.0	PK	H	300	1	-10.4	
8	430.000	46.0	18.8	-27.2	PK	H	300	1	-9.2	
9	443.500	46.0	19.8	-26.2	PK	H	300	1	-8.9	
10	532.200	46.0	22.3	-23.7	PK	H	300	1	-7.7	
11	537.500	46.0	20.9	-25.1	PK	H	300	1	-7.7	
12	620.900	46.0	20.1	-25.9	PK	H	300	1	-6.4	
13	645.000	46.0	23.8	-22.2	PK	H	300	1	-5.8	
14	709.600	46.0	24.3	-21.7	PK	H	300	1	-3.4	
15	752.500	46.0	24.4	-21.7	PK	H	300	1	-3.4	
16	798.299	46.0	25.5	-20.5	PK	H	300	1	-3.4	
17	860.000	46.0	24.4	-21.6	PK	H	300	1	-2.	
18	887.000	46.0	27.2	-18.8	PK	H	300	1	-1.3	
19	967.500	54.0	28.5	-25.5	PK	H	300	1	0.9	
20	1000.00	54.0	29.3	-24.7	PK	H	300	1	1.5	Mkr @ 1075 MHz

\* PER 15.239 THE LIMIT FOR FUNDAMENTALS IS 48.0 dBuV/m THEREFORE THE ABOVE SIGNALS ARE NOT OVER THE LIMIT. THE LIMITS AS STATED ABOVE ARE FOR THE HARMONICS ONLY.

A3



PRODUCT EMISSIONS

PRODUCT SAFETY ENGINEERING

Data File: PIONEER HOME FCC-B LOG 4-4-2005

No	EMISSION FREQUENCY MHz	SPEC LIMIT dBuV/m	MEASUREMENTS			MODE	POL	SITE		CORR FACTOR dB	COMMENTS
			ABS	dLIM dB				HGT cm	AZM deg		
*1	88.713	43.5	42.1	-1.4*	QP	V	100	1	-19.6		
*2	107.513	43.5	45.2	1.7*	QP	V	100	1	-15.2		
3	177.400	43.5	24.4	-19.1	PK	V	100	1	-10.6		
4	215.000	43.5	21.9	-21.6	PK	H	300	1	-13.2		
5	266.100	46.0	13.7	-32.3	PK	H	300	1	-12.3		
6	322.500	46.0	17.4	-28.6	PK	H	300	1	-10.5		
7	354.800	46.0	15.8	-30.3	PK	H	300	1	-10.4		
8	430.000	46.0	20.1	-25.9	PK	H	300	1	-9.2		
9	443.500	46.0	17.0	-29.0	PK	H	300	1	-8.9		
10	532.200	46.0	29.5	-16.5	PK	H	300	1	-7.7		
11	537.500	46.0	21.0	-25.0	PK	H	300	1	-7.7		
12	620.900	46.0	19.6	-26.4	PK	H	300	1	-6.4		
13	645.000	46.0	22.3	-23.7	PK	H	300	1	-5.8		
14	709.600	46.0	25.2	-20.8	PK	H	300	1	-3.4		
15	752.500	46.0	25.4	-20.7	PK	H	300	1	-3.4		
16	798.300	46.0	25.0	-21.0	PK	H	300	1	-3.4		
17	860.000	46.0	14.6	-31.4	PK	H	300	1	-2.		
18	887.000	46.0	27.0	-19.0	PK	H	300	1	-1.3		
19	967.500	54.0	25.0	-29.0	PK	H	300	1	0.9		
20	1000.00	54.0	27.4	-26.6	PK	H	300	1	1.5	Mkr @ 1075 MHz	

\* PER 15.239 THE LIMIT FOR FUNDAMENTALS IS 48.0 dBuV/m THEREFORE THE ABOVE SIGNALS ARE NOT OVER THE LIMIT. THE LIMITS AS STATED ABOVE ARE FOR THE HARMONICS ONLY.

A4



# Product Safety Engineering

XM RADIO

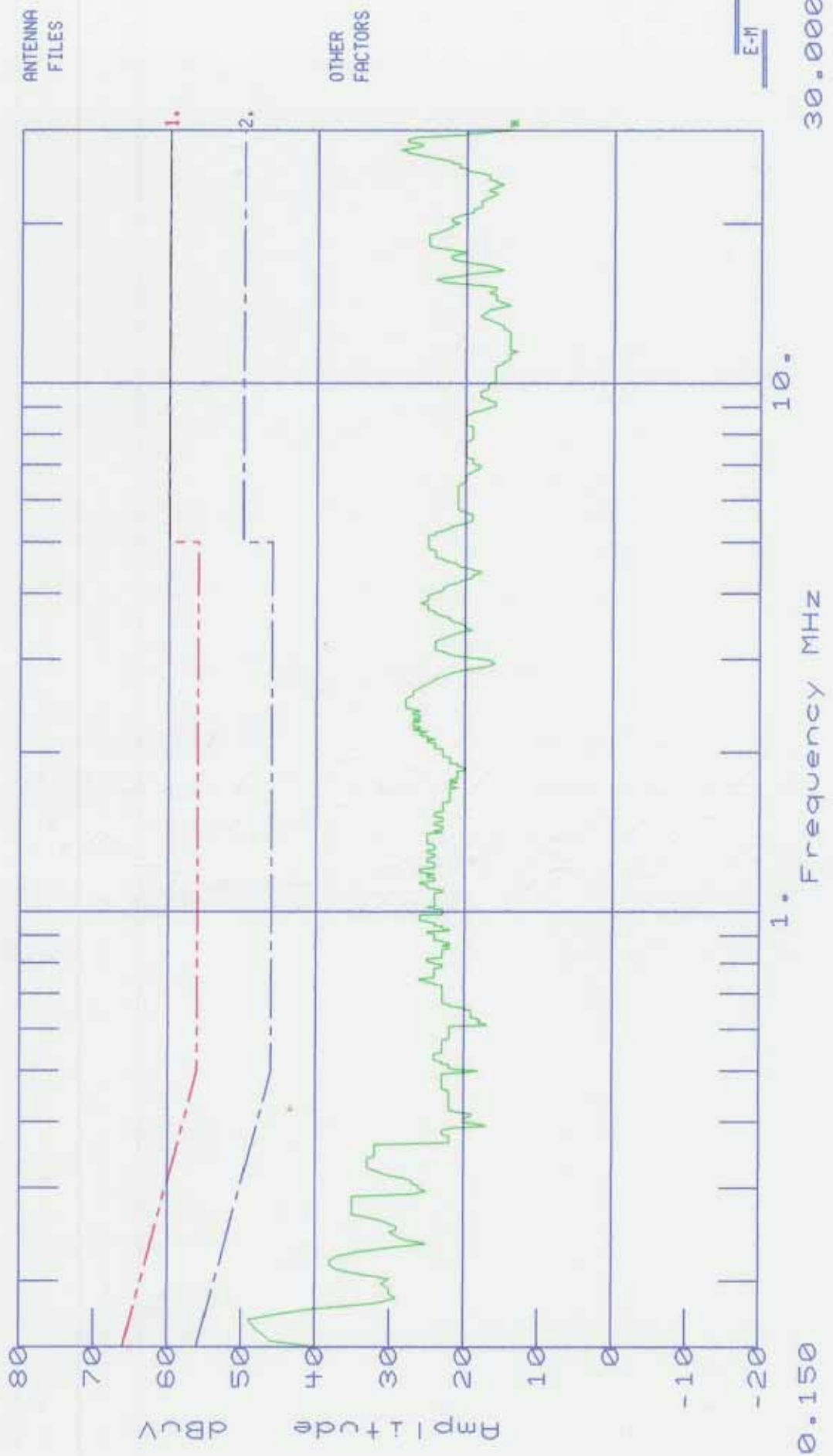
Date : 04/06/05  
 Technician : JACK GARNER  
 Test Method : EN55022 CLASS B  
 Equipment : PIONEER AIRWAVE  
 Mode of Op. : NORMAL  
 Serial No. : M18CA04V

Time : 14:52:49.21  
 Test Equip. : EMC-30  
 Test Number : 1  
 Sensor Loc. : LINE  
 Sensor Pol. :  
 Ext. Atten. : 0 dB

EMC-30 SETTINGS  
 Detector QuasiPeak  
 Bandwidth CISPR  
 Dump/Due 11N/A  
 RF Atten. 10 dB  
 IF Atten. 10 dB

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

Comment : 120 VAC / 60 HZ



TEST TITLE:XM RADIO  
DATA FILE :XM\_L.D30  
Amplitude Units : dBuV

Threshold -16 dB

PAGE 1  
Freq.(MHz)  
0.1500

Freq(MHz)	Amp	C22BQP.S30 vs Spec(dB)	C22BAVG.S30 vs Spec(dB)
0.1500	40.0		-16.000 *
0.1542	46.0		-9.771 *
0.1583	47.0		-8.553 *
0.1625	48.0		-7.335 *
0.1689	49.0		-6.014 *
0.1730	45.0		-9.815 *
0.1770	40.0		-14.625 *
0.2145	38.0		-15.029 *
0.2187	38.0		-14.868 *
0.2228	37.0		-15.714 *
0.2743	35.0		-15.987 *
0.2778	35.0		-15.881 *
0.2812	35.0		-15.780 *
0.2856	35.0		-15.651 *
0.2891	35.0		-15.550 *

AB

# Product Safety Engineering

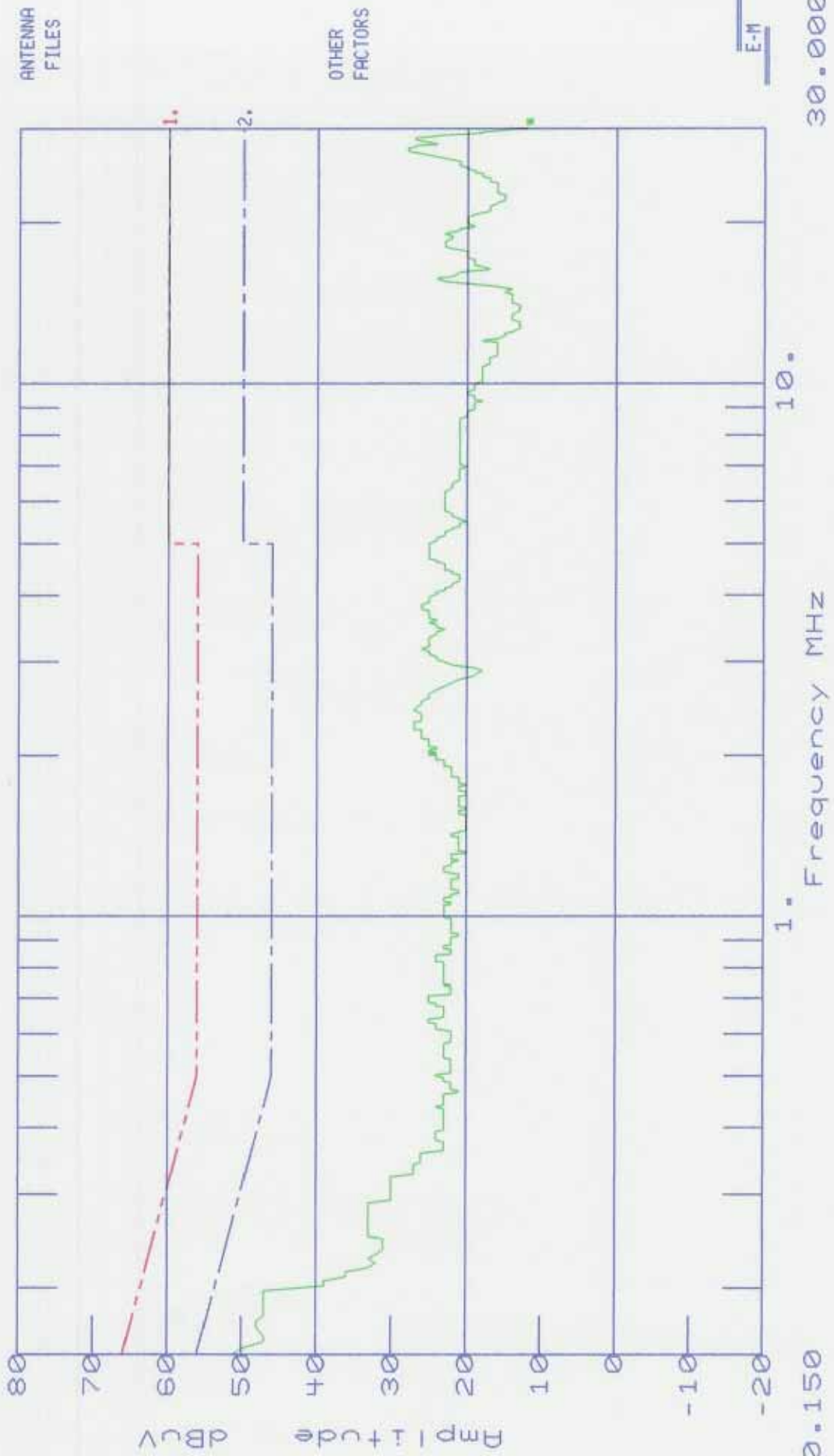
XM RADIO

Date : 04/06/05  
 Technician : JACK GARNER  
 Test Method : EN5022 CLASS B  
 Equipment : PIONEER AIRWAVE  
 Mode of Op. : NORMAL  
 Serial No. : M18C04V  
 Time : 14:39:30.82  
 Test Equip. : EMC-30  
 Test Number : 1  
 Sensor Loc. : NEUTRAL  
 Sensor Pol. :  
 Ext. Atten. : 0 dB

EMC-30 SETTINGS  
 Defector QuasiPeak  
 Bandwidth CISPR  
 Dump/Due | IN/A  
 RF Atten. 10 dB  
 IF Atten. 10 dB

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

Comment : 120 VAC / 60 HZ



30.000

10.

1. Frequency MHz

0.150

TEST TITLE:XM RADIO  
DATA FILE :XM\_N.D30  
Amplitude Units : dBuV

Threshold -16 dB

PAGE 1  
Freq.(MHz)  
0.1500

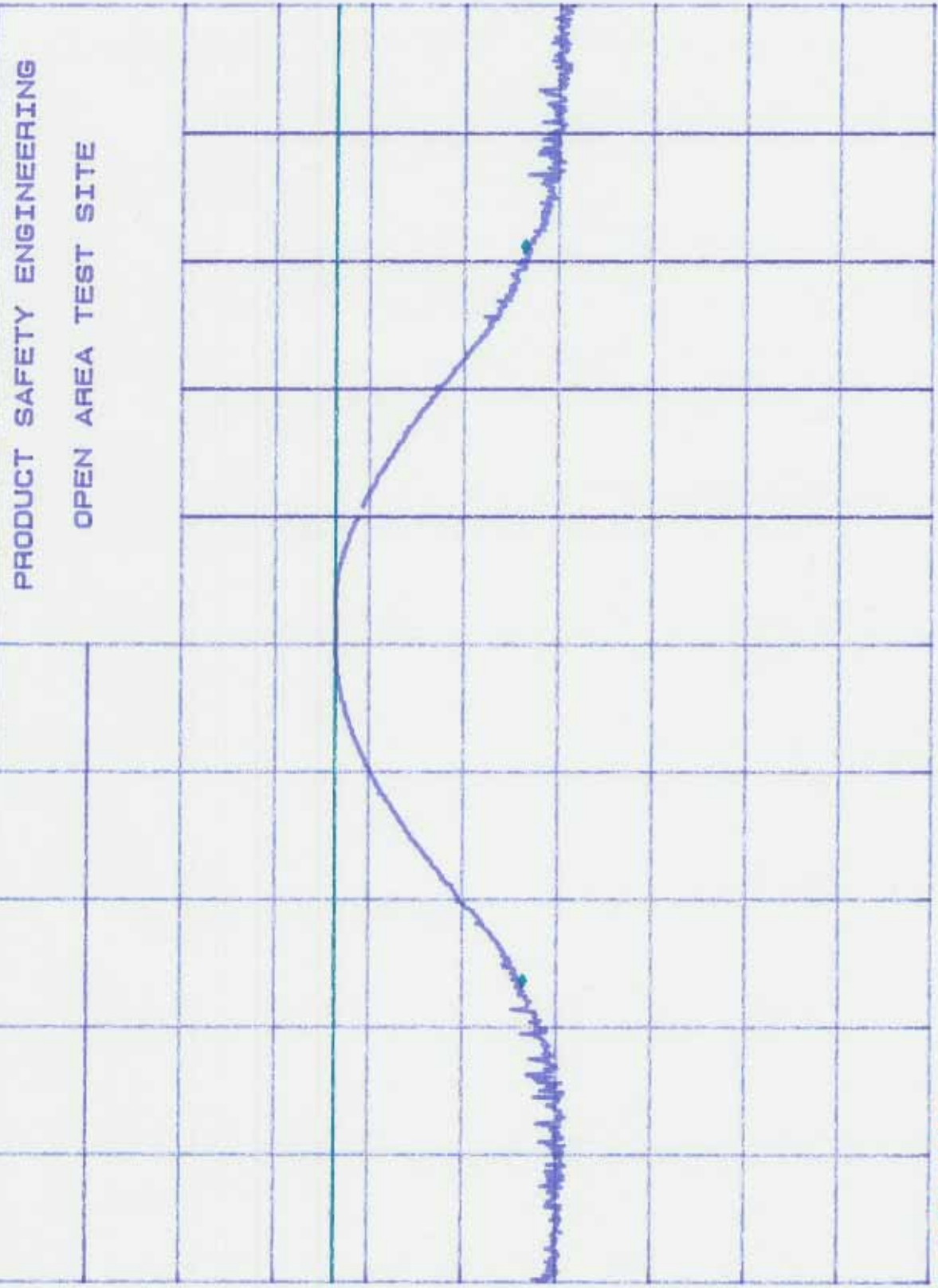
Freq(MHz)	Amp	C22BQP.S30 vs Spec(dB)	C22BAVG.S30 vs Spec(dB)
0.1500	51.0	-15.000 *	-5.000 *
0.1542	50.0	-15.771 *	-5.771 *
0.1583	47.0		-8.553 *
0.1625	47.0		-8.335 *
0.1689	48.0		-7.014 *
0.1730	48.0		-6.815 *
0.1770	47.0		-7.625 *
0.1812	47.0		-7.430 *
0.1854	47.0		-7.240 *
0.1892	47.0		-7.072 *
0.1933	47.0		-6.894 *
0.1975	47.0		-6.715 *
0.2021	39.0		-14.524 *
0.2062	39.0		-14.357 *

AS

PRODUCT SAFETY ENGINEERING  
REF 97.0 dB $\mu$ V ATTEN 0 dB

MKR  $\Delta$  115.2 KHZ  
0.00 dB

10 dB/  
POS PK



DL  
60.5  
dB $\mu$ V

START 88.000 MHZ  
RES BW 30 KHZ  
STOP 88.200 MHZ  
SWP 100 msec  
VBW 30 KHZ

A9



PRODUCT SAFETY ENGINEERING  
REF 97.0 dB $\mu$ V ATTEN 0 dB

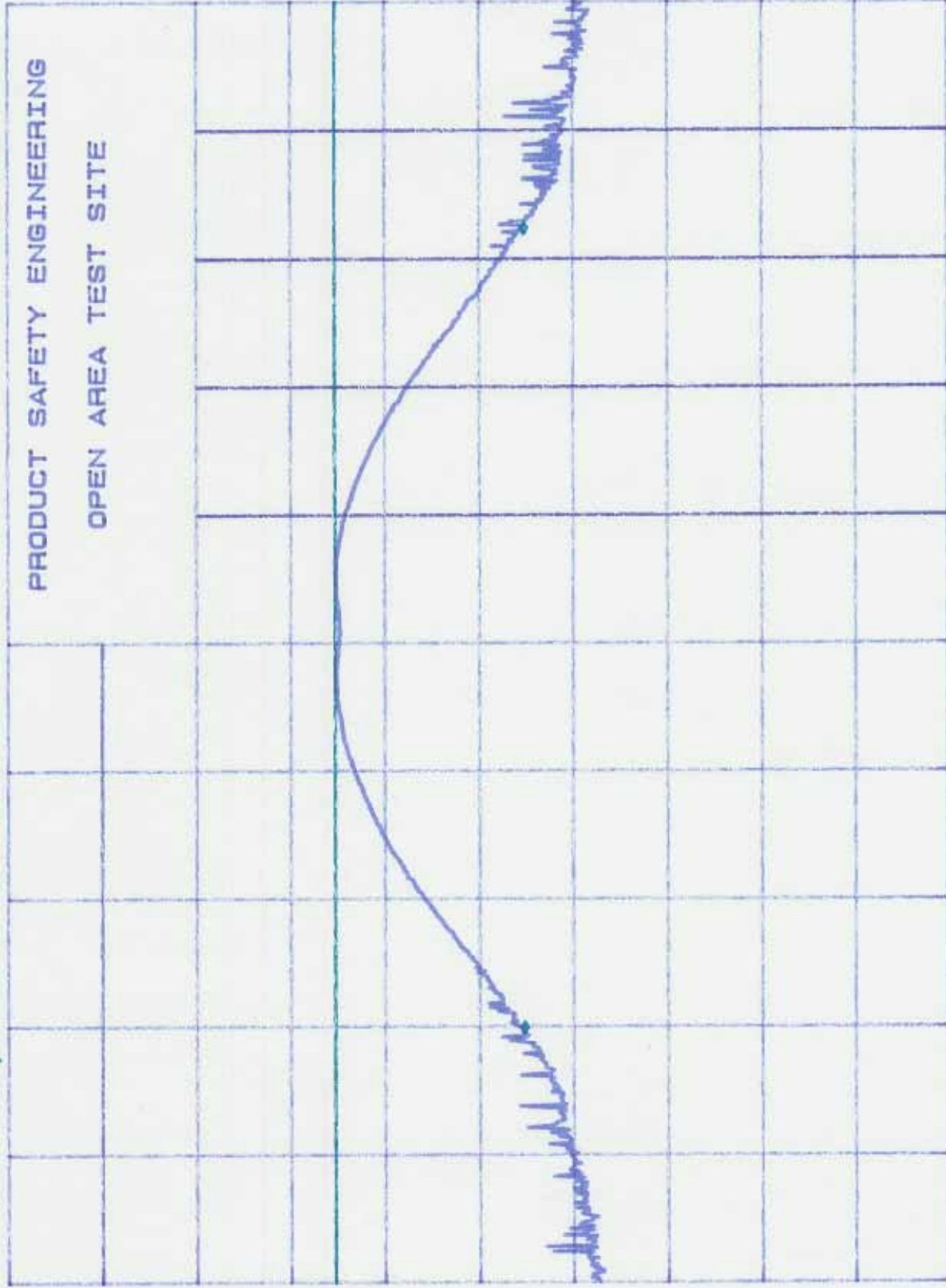
MKR  $\Delta$  125.0 KHZ  
0.00 dB

HP

10 dB/

POS PK

DL  
62.2  
dB $\mu$ V



A10

# **APPENDIX**

## **B**

### **System Under Test Description**

## SYSTEM COMPONENTS

\*\*\*\*\*

DEVICE TYPE: EUT, XM RADIO GEX-AIRWARE1  
S/N: M18CA04V

\*\*\*\*\*

DEVICE TYPE: EUT, XM RADIO GEX-AIRWARE1 MOBILE DOCK

\*\*\*\*\*

DEVICE TYPE: EUT, XM RADIO GEX-AIRWARE1 HOME DOCK

\*\*\*\*\*

DEVICE TYPE: EUT, XM RADIO AC POWER SUPPLY, MODEL# SMPS5V2A-XM

\*\*\*\*\*

DEVICE TYPE: EUT, XM RADIO GEX-AIRWARE1 MOBILE ANTENNA

\*\*\*\*\*

DEVICE TYPE: EUT, XM RADIO GEX-AIRWARE1 HOME ANTENNA

\*\*\*\*\*



## INTERFACE CABLES

\*\*\*\*\*

DEVICE TYPE: HOME ANTENNA  
SHIELD: COAX  
LENGTH: 7 METERS  
CONNECTOR TYPE: DEDICATED TO COAXIAL PLUG  
PORT: ANTENNA IN ON GEX-AIRWARE1

\*\*\*\*\*

DEVICE TYPE: MOBILE ANTENNA  
SHIELD: COAX  
LENGTH: 7 METERS  
CONNECTOR TYPE: DEDICATED TO COAXIAL PLUG  
PORT: ANTENNA IN ON GEX-AIRWARE1

\*\*\*\*\*

**AC LINE CORDS**

\*\*\*\*\*

DEVICE TYPE: POWER SUPPLY (AC SIDE)  
SHIELD: NO  
LENGTH: N/A  
CONNECTOR TYPE: 2 PIN POLARIZED WALL PLUG

\*\*\*\*\*

DEVICE TYPE: POWER SUPPLY (DC SIDE)  
SHIELD: NO  
LENGTH: 8 FEET  
CONNECTOR TYPE: DEDICATED TO MINI COAXIAL PLUG TO EITHER DOCK

\*\*\*\*\*

# **APPENDIX**

## **C**

### **Measurement Protocol**

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 (dB $\mu$ V) + Antenna Correction Factor (dB/M) + Cable Loss (dB) - Preamp Gain (dB) = Actual Level in dB $\mu$ V/M.

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

Observed Level		<b>62.9</b>	dB $\mu$ V	
ACF	+	<b>8.1</b>	dB/M	
Cable Loss	+	<b>1.3</b>	dB	
Preamp Gain	-	<b><u>26.0</u></b>	dB	
Actual Level		<b>46.3</b>	dB $\mu$ V/M	@ 107.5 MHz

**Please have a company official review this report and sign.**

---