

# 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: 31 Aug 04  
Sample S/N: 50KR50CW  
Sample Receipt Date: August 23, 2004  
Sample Test Date: see data sheets

Test Report Number: 04F394B  
Model Designation: Sky Fi 2  
Product Description: Satellite Radio Receiver  
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 30 Aug 04

**Reviewed by:**  
Approved Signatory *John E. Hale* Date 31 Aug 04

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Test Report Number 04F394B

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 - A14
<b>D) Appendix B</b>		
System Under Test Description		B2 - B4
<b>E) Appendix C</b>		
Measurement Protocol		C1 - C2

Test Report Number 04F394B

## 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
- Verification
- Declaration of Conformity
  
  
- FCC Part 18

Test Report Number 04F394B

**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 Volts 60 Hz SINGLE phase

**Sign Explanations:**

- not applicable
- applicable

*Test Report Number 04F394B*

## 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 04F394B

## Emissions Test Conditions: RADIATED EMISSIONS (Electric Field)

The *RADIATED EMISSIONS (ELECTRIC FIELD)* measurements, in the frequency range of 30 MHz-1071 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 04F394B

The *EQUIVALENT RADIATED EMISSIONS* measurements in the frequency range      GHz -      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
<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"/> - 8449B	Hewlett-Packard	Preamplifier	3008A00320
<input 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

Model Number	Manufacturer	Description	Serial Number
<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 04F394B

**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*

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*Test Report Number 04F394B*



## Emission Test Results:

### Conducted emissions 150 kHz - 30 MHz

The requirements are  - MET  - NOT MET  
Minimum limit margin 5.0 dB at 0.15 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 - 1071 MHz

The requirements are  - MET  - NOT MET  
Minimum limit margin 0.9 dB at 88.7 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  
Remarks:

### Radiated emissions GHz - GHz

The requirements are  - MET  - NOT MET  
Minimum limit margin dB at 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 04F394B



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



*Test Report Number 04F394B*

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Test-setup photo(s):  
Radiated emission 30 MHz - 1071 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	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	12/10/04
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	12/02/04
Hewlett Packard	8648B	Signal Generator	3443U00312	05/04/05
Hewlett Packard	8672A	Signal Generator	2211A02426	10/17/04
Eaton	96005	Log Periodic Antenna	1099	02/05/05
Electro-Metrics	LPA 30	Log Periodic Antenna	2280	01/12/05
Electro-Metrics	BIA 30	Biconical Antenna	3852	01/13/05
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	01/12/05
Solar	8012	LISN	924840	12/24/04
Solar	8028	LISN	829012/809022	12/12/04
Solar	8028	LISN	903725/903726	12/01/04
Schwartzbeck	MDS-21	Absorbing Clamp	02581	09/18/04
Leader	LFG1310	Function Generator	8060233	05/04/05
IFR Systems	A-8000	Spectrum Analyzer	1306	12/08/04
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

PRODUCT EMISSIONS

PRODUCT SAFETY ENGINEERING

Data File: XM RADIO "HOME" FCC FINAL 8-23-04

No	EMISSION	SPEC LIMIT dBuV/m	MEASUREMENTS			MODE	SITE		CORR FACTOR dB	COMMENTS
	FREQUENCY MHz		ABS	dLIM dB	POL		HGT cm	AZM deg		
1	88.713	43.5	45.6	2.1	PK	V	100	45	-19.6	LIMIT=48 dBuV/M
2	107.105	43.5	46.7	3.2	QP	V	100	90	-15.2	LIMIT=48 dBuV/M
3	177.400	43.5	37.9	-5.6	PK	V	125	90	-10.6	
4	214.214	43.5	30.6	-12.9	PK	V	125	90	-13.2	
5	266.400	46.0	34.7	-11.3	PK	H	125	1	-12.3	
6	321.279	46.0	26.1	-19.9	PK	H	125	180	-10.5	
7	355.100	46.0	22.9	-23.1	PK	H	125	1	-10.4	
8	428.449	46.0	25.2	-20.8	PK	H	100	180	-9.2	
9	443.500	46.0	18.3	-27.7	PK	H	125	1	-8.9	
10	532.200	46.0	26.2	-19.8	PK	H	125	1	-7.7	
11	535.500	46.0	31.5	-14.5	PK	H	100	180	-7.7	
12	620.900	46.0	26.2	-19.8	PK	H	125	1	-6.4	
13	642.600	46.0	27.3	-18.7	PK	H	100	180	-5.8	
14	709.600	46.0	22.3	-23.7	PK	H	125	1	-3.4	
15	749.700	46.0	22.0	-24.1	PK	H	100	180	-3.5	
16	798.300	46.0	23.4	-22.6	PK	H	125	1	-3.4	
17	856.800	46.0	28.0	-18.0	PK	H	100	180	-2.1	
18	887.000	46.0	25.0	-21.0	PK	H	125	1	-1.3	
19	963.900	54.0	26.7	-27.3	PK	H	100	180	0.9	
20	975.700	54.0	26.2	-27.8	PK	H	100	180	1.1	
21	1000.00	54.0	26.9	-27.1	PK	H	100	180	1.5	Mkr @ 1071 MHz

A3



PRODUCT EMISSIONS

PRODUCT SAFETY ENGINEERING

Data File: XM RADIO "MOBILE" FCC FINAL 8/23

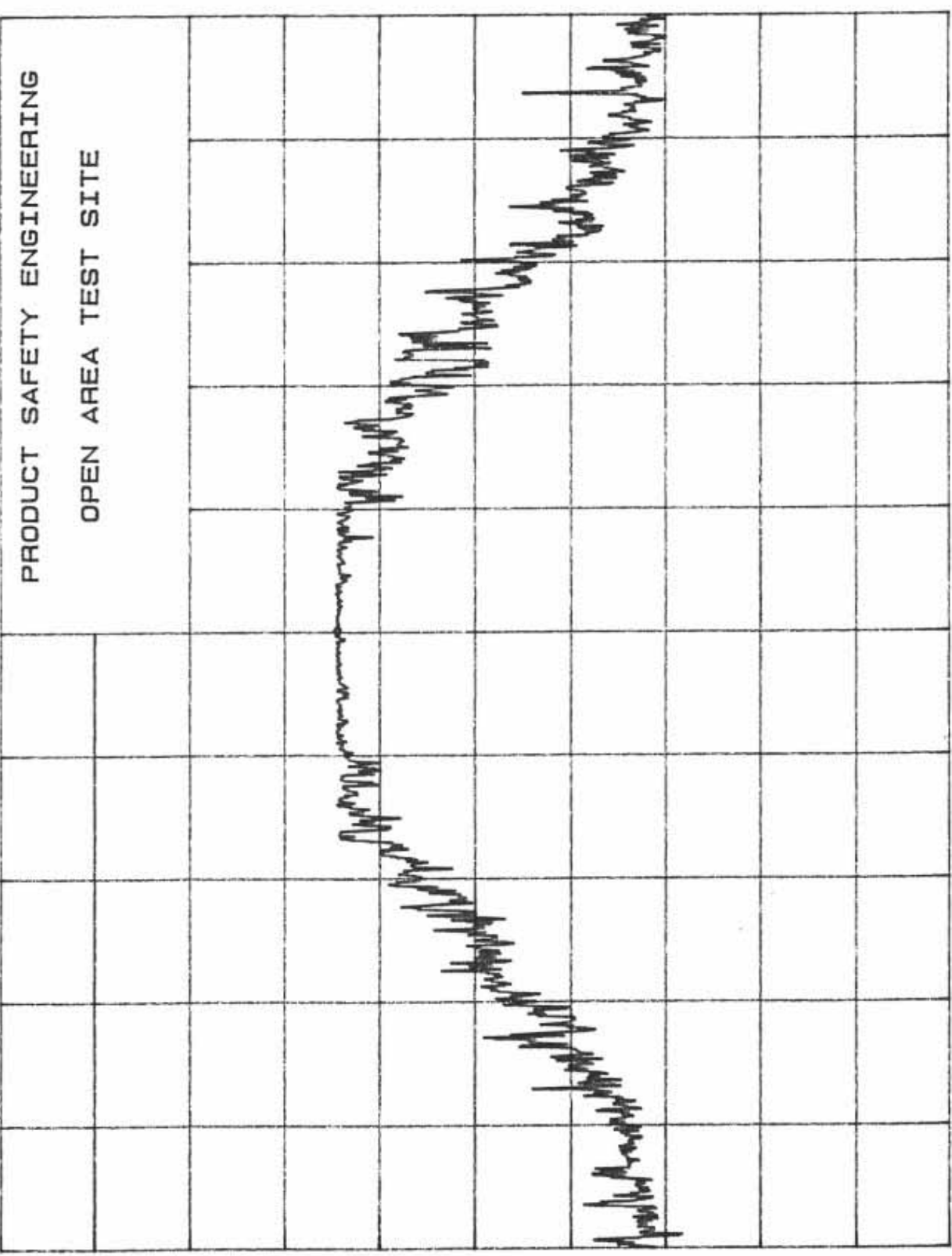
No	EMISSION FREQUENCY MHz	SPEC LIMIT dBuV/m	MEASUREMENTS			MODE	SITE		CORR FACTOR dB	COMMENTS
			ABS	dLIM dB	POL		HGT cm	AZM deg		
1	88.704	43.5	47.1	3.6	QP	V	100	1	-19.6	LIMIT=48 dBuV/M
2	107.096	43.5	46.7	3.2	QP	V	100	1	-15.2	LIMIT=48 dBuV/M
3	214.214	43.5	25.0	-18.5	PK	V	100	45	-13.2	
4	266.400	46.0	34.7	-11.3	PK	H	125	1	-12.3	
5	321.279	46.0	26.1	-19.9	PK	H	125	180	-10.5	
6	355.100	46.0	22.9	-23.1	PK	H	125	1	-10.4	
7	428.449	46.0	25.2	-20.8	PK	H	100	180	-9.2	
8	443.500	46.0	18.3	-27.7	PK	H	125	1	-8.9	
9	532.200	46.0	26.2	-19.8	PK	H	125	1	-7.7	
10	535.500	46.0	31.5	-14.5	PK	H	100	180	-7.7	
11	620.900	46.0	26.2	-19.8	PK	H	125	1	-6.4	
12	642.600	46.0	30.0	-16.0	PK	H	200	45	-5.8	
13	709.600	46.0	22.3	-23.7	PK	H	125	1	-3.4	
14	749.700	46.0	22.0	-24.1	PK	H	100	180	-3.5	
15	798.300	46.0	23.4	-22.6	PK	H	125	1	-3.4	
16	856.800	46.0	28.0	-18.0	PK	H	100	180	-2.1	
17	887.000	46.0	25.0	-21.0	PK	H	125	1	-1.3	
18	963.900	54.0	26.7	-27.3	PK	H	100	180	0.9	
19	975.700	54.0	26.2	-27.8	PK	H	100	180	1.1	
20	1000.00	54.0	26.9	-27.1	PK	H	100	180	1.5	Mkr @ 1071 MHz

A4



XM RADIO BANDWIDTH PLOT @ 107.9 MHz

PRODUCT SAFETY ENGINEERING MKR 107.900 0 MHz  
REF 97.0 dBµV ATTN 0 dB 61.40 dBµV



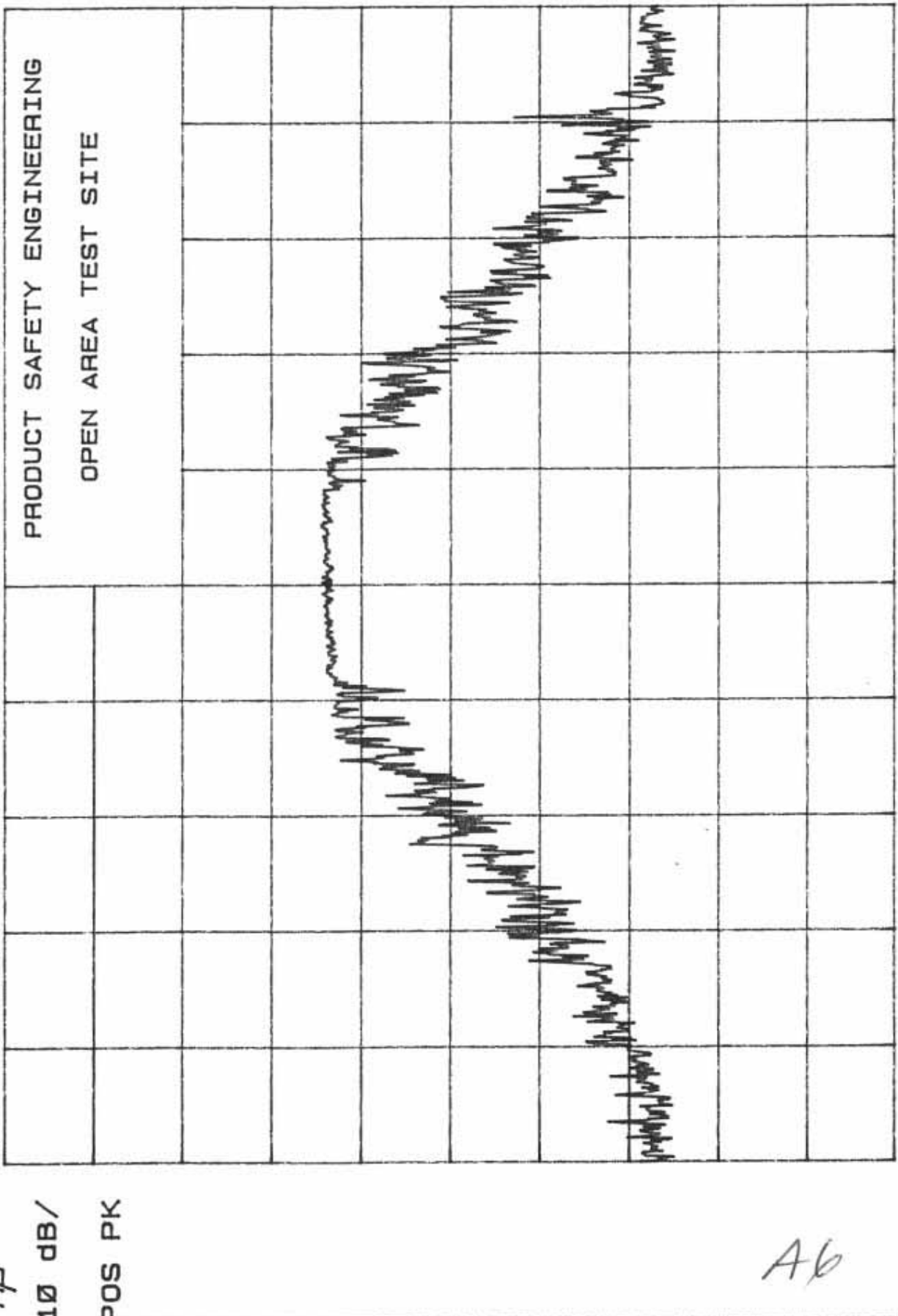
HP  
10 dB/  
POS PK

A5

CENTER 107.900 MHz SPAN 200 kHz  
RES BW 10 kHz VBW 100 kHz SWP 100 msec

# XM RADIO BANDWIDTH PLOT @ 88.1 MHz

PRODUCT SAFETY ENGINEERING MKR 88.100 0 MHz  
REF 97.0 dBµV ATTN 0 dB 60.60 dBµV



HP  
10 dB /  
POS PK

Ab

START 88.000 MHz  
RES BW 10 KHZ  
VBW 100 KHZ  
STOP 88.200 MHz  
SWP 100 msec

# Product Safety Engineering

XM RADIO

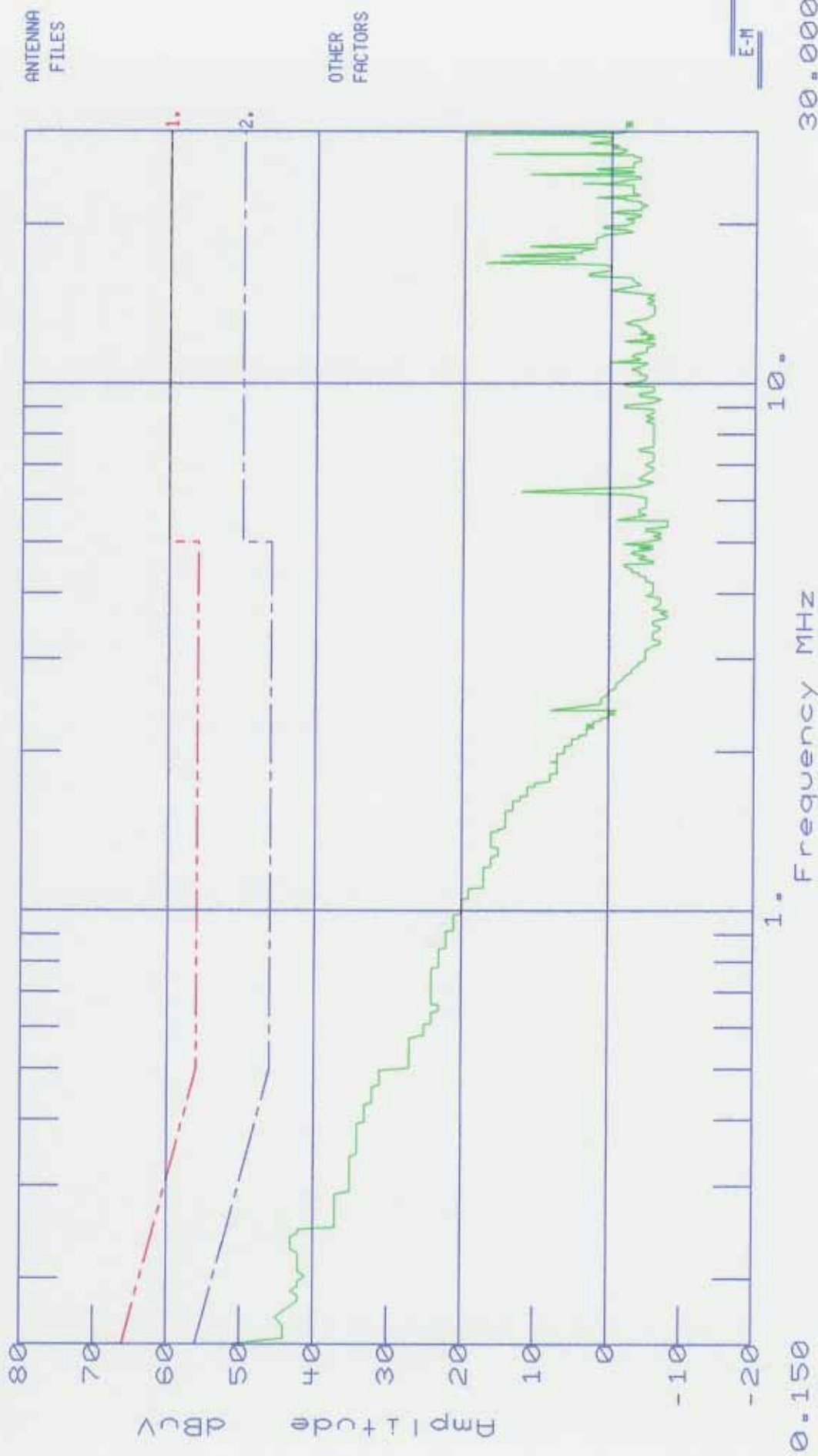
Date : 08/23/04  
 Technician : CHIP FOERSTNER  
 Test Method : EN55022 CLASS B  
 Equipment : SA10101  
 Mode of Op. : TX @ 107.1 MHZ  
 Serial No. : 50KR50C4

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) CISPR 22 AVG
- 3)
- 4)

Comment : POWER SUPPLY CUI MODEL 41-6-1000D 120VAC/60HZ



30.000

A7

TEST TITLE:XM RADIO  
DATA FILE :XM107\_L.D30  
Amplitude Units : dBuV

Threshold -13 dB

PAGE 1  
Freq.(MHz)  
0.1500

Freq(MHz)	Amp	C22BQP.S30 vs Spec(dB)	C22BAVG.S30 vs Spec(dB)
0.1500	51.0		-5.000 *
0.1542	44.0		-11.771 *
0.1583	44.0		-11.553 *
0.1625	44.0		-11.335 *
0.1689	45.0		-10.014 *
0.1730	44.0		-10.815 *
0.1770	43.0		-11.625 *
0.1812	42.0		-12.430 *
0.1854	42.0		-12.240 *
0.1892	43.0		-11.072 *
0.1933	42.0		-11.894 *
0.1975	42.0		-11.715 *
0.2021	41.0		-12.524 *
0.2062	42.0		-11.357 *
0.2104	42.0		-11.190 *
0.2145	42.0		-11.029 *
0.2187	42.0		-10.868 *
0.2228	42.0		-10.714 *
0.2274	43.0		-9.544 *
0.2316	43.0		-9.392 *
0.2357	43.0		-9.246 *
0.2395	43.0		-9.114 *
0.2437	42.0		-9.969 *
0.2478	42.0		-9.831 *

AB

# Product Safety Engineering

XM RADIO

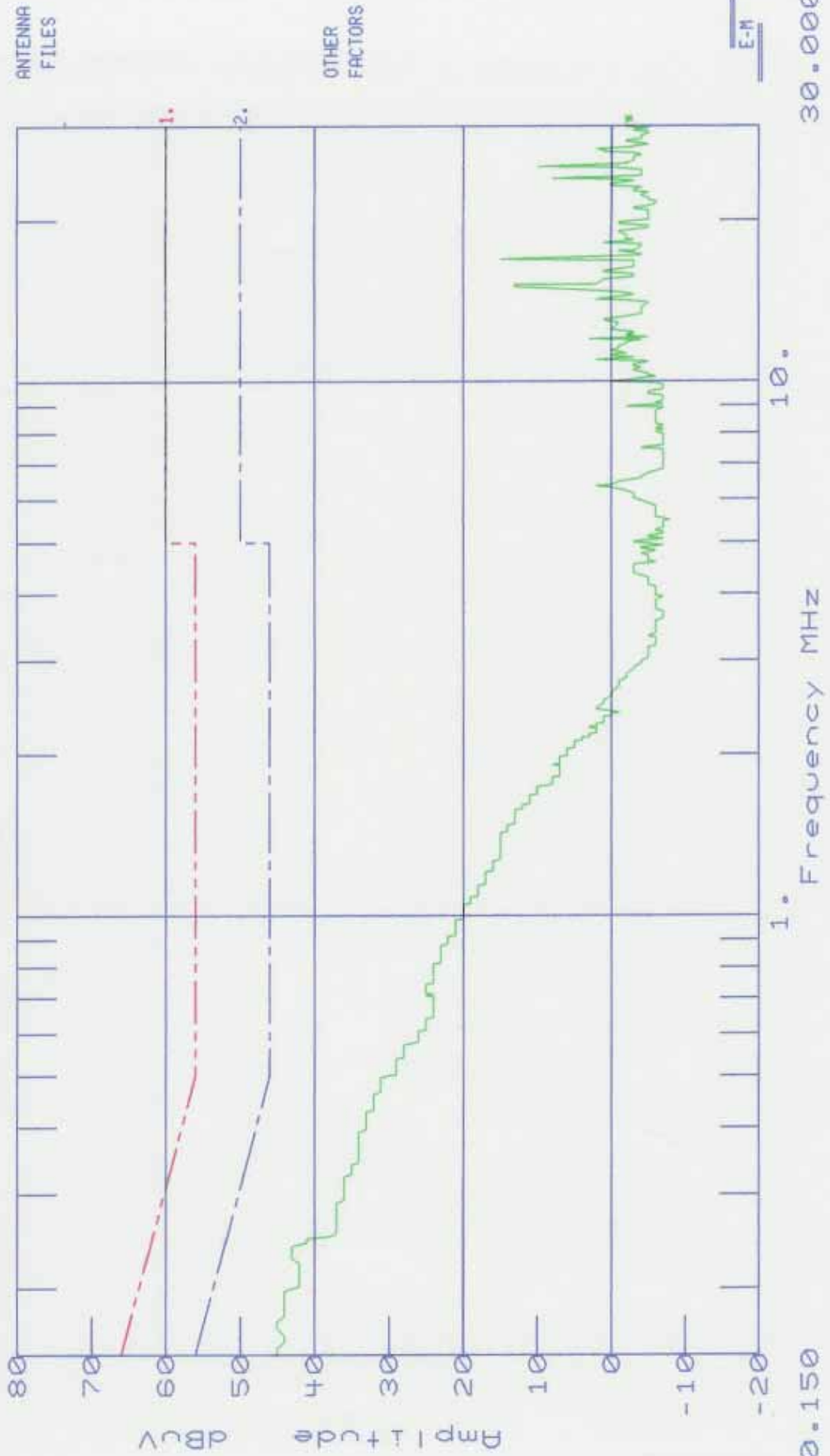
Date : 08/24/04  
 Technician : CHIP FOERSTNER  
 Test Method : EN55022 CLASS B  
 Equipment : SA10101  
 Mode of Op. : TX @107.1 MHZ  
 Serial No. : 50KR50CH  
 Time : 13:33:59.41  
 Test Equip. : EMC-30  
 Test Number : 1  
 Sensor Loc. : NEUTRAL  
 Sensor Pol. :  
 Ext. Atten. : 0 dB

Comment : POWER SUPPLY CUI MODEL 41-6-1000D 120VAC/60HZ

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) CISPR 22 AVG
- 3)
- 4)



A9

TEST TITLE:XM RADIO	PAGE 1
DATA FILE :XM107_N.D30	Freq.(MHz)
Amplitude Units : dBuV	0.1500
Threshold -13 dB	

Freq(MHz)	Amp	C22BQP.S30 vs Spec(dB)	C22BAVG.S30 vs Spec(dB)
0.1500	45.0		-11.000 *
0.1542	45.0		-10.771 *
0.1583	44.0		-11.553 *
0.1625	44.0		-11.335 *
0.1689	45.0		-10.014 *
0.1730	45.0		-9.815 *
0.1770	44.0		-10.625 *
0.1812	44.0		-10.430 *
0.1854	44.0		-10.240 *
0.1892	44.0		-10.072 *
0.1933	44.0		-9.894 *
0.1975	44.0		-9.715 *
0.2021	42.0		-11.524 *
0.2062	42.0		-11.357 *
0.2104	42.0		-11.190 *
0.2145	42.0		-11.029 *
0.2187	42.0		-10.868 *
0.2228	42.0		-10.714 *
0.2274	43.0		-9.544 *
0.2316	43.0		-9.392 *
0.2357	43.0		-9.246 *
0.2395	43.0		-9.114 *
0.2437	41.0		-10.969 *
0.2478	41.0		-10.831 *

A10



# Product Safety Engineering

XM RADIO

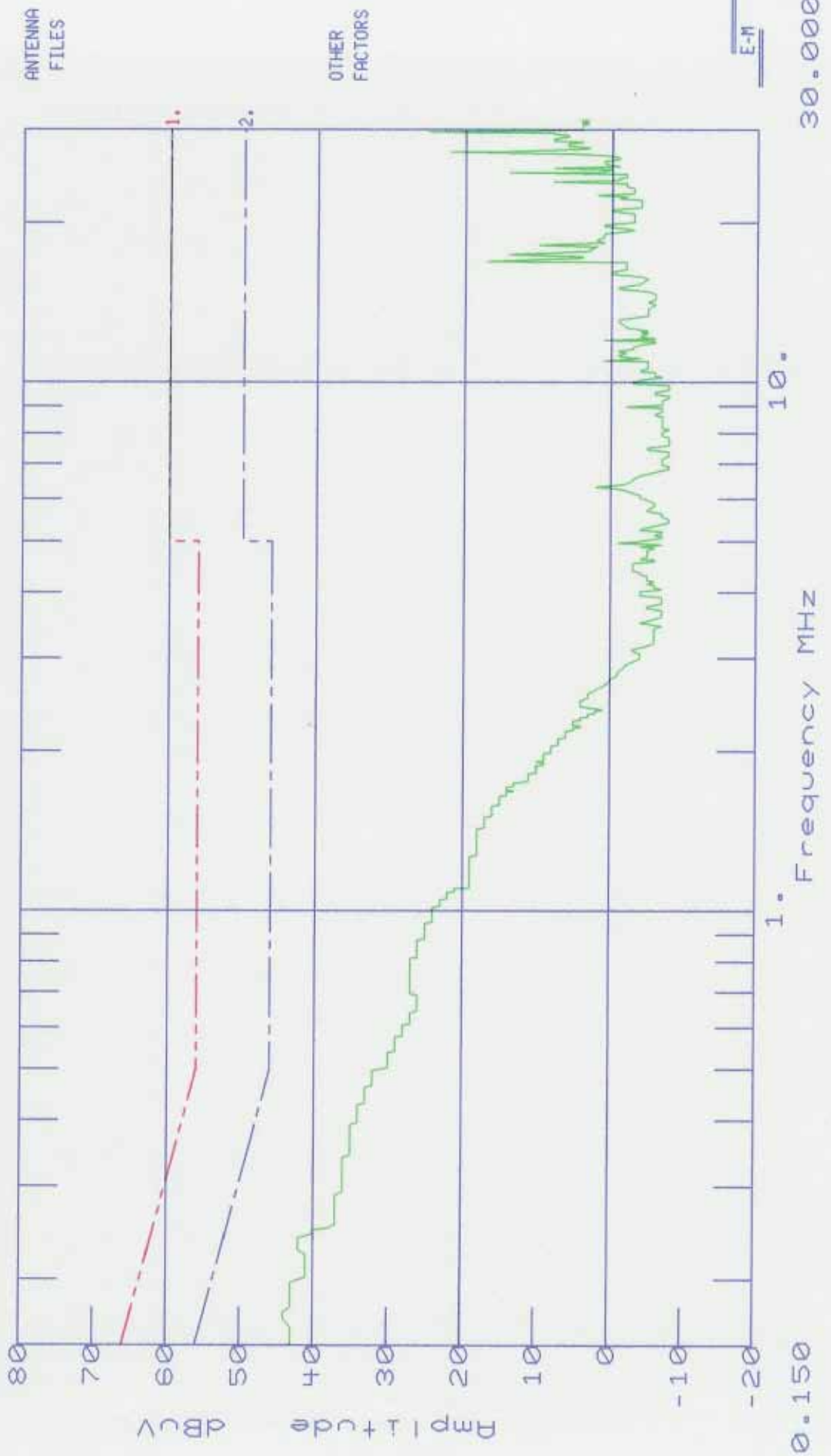
Date : 08/23/04  
 Technician : CHIP FOERSTNER  
 Test Method : EN55022 CLASS B  
 Equipment : SAI0101  
 Mode of Op. : TX @ 88.7 MHZ  
 Serial No. : 50KR50CU

Time : 16:07:49.64  
 Test Equip. : EMC-30  
 Test Number : 1  
 Sensor Loc. : LINE  
 Sensor Pol. :  
 Ext. Atten. : 0 dB

Comment : POWER SUPPLY CUI MODEL 41-6-1000D 120VAC/60HZ

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) CISPR 22 AVG  
 3)  
 4)



AI

0.150

1. Frequency MHz

10.

30.000

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

Threshold -13 dB

PAGE 1  
Freq.(MHz)  
0.1500

Freq(MHz)	Amp	C22BQP.S30 vs Spec(dB)	C22BAVG.S30 vs Spec(dB)
0.1500	44.0		-12.000 *
0.1542	44.0		-11.771 *
0.1583	44.0		-11.553 *
0.1625	44.0		-11.335 *
0.1689	45.0		-10.014 *
0.1730	45.0		-9.815 *
0.1770	44.0		-10.625 *
0.1812	44.0		-10.430 *
0.1854	44.0		-10.240 *
0.1892	44.0		-10.072 *
0.1933	44.0		-9.894 *
0.1975	44.0		-9.715 *
0.2021	42.0		-11.524 *
0.2062	42.0		-11.357 *
0.2104	42.0		-11.190 *
0.2145	42.0		-11.029 *
0.2187	42.0		-10.868 *
0.2228	42.0		-10.714 *
0.2274	43.0		-9.544 *
0.2316	43.0		-9.392 *
0.2357	43.0		-9.246 *
0.2395	43.0		-9.114 *
0.2437	42.0		-9.969 *
0.2478	42.0		-9.831 *

A12



# Product Safety Engineering

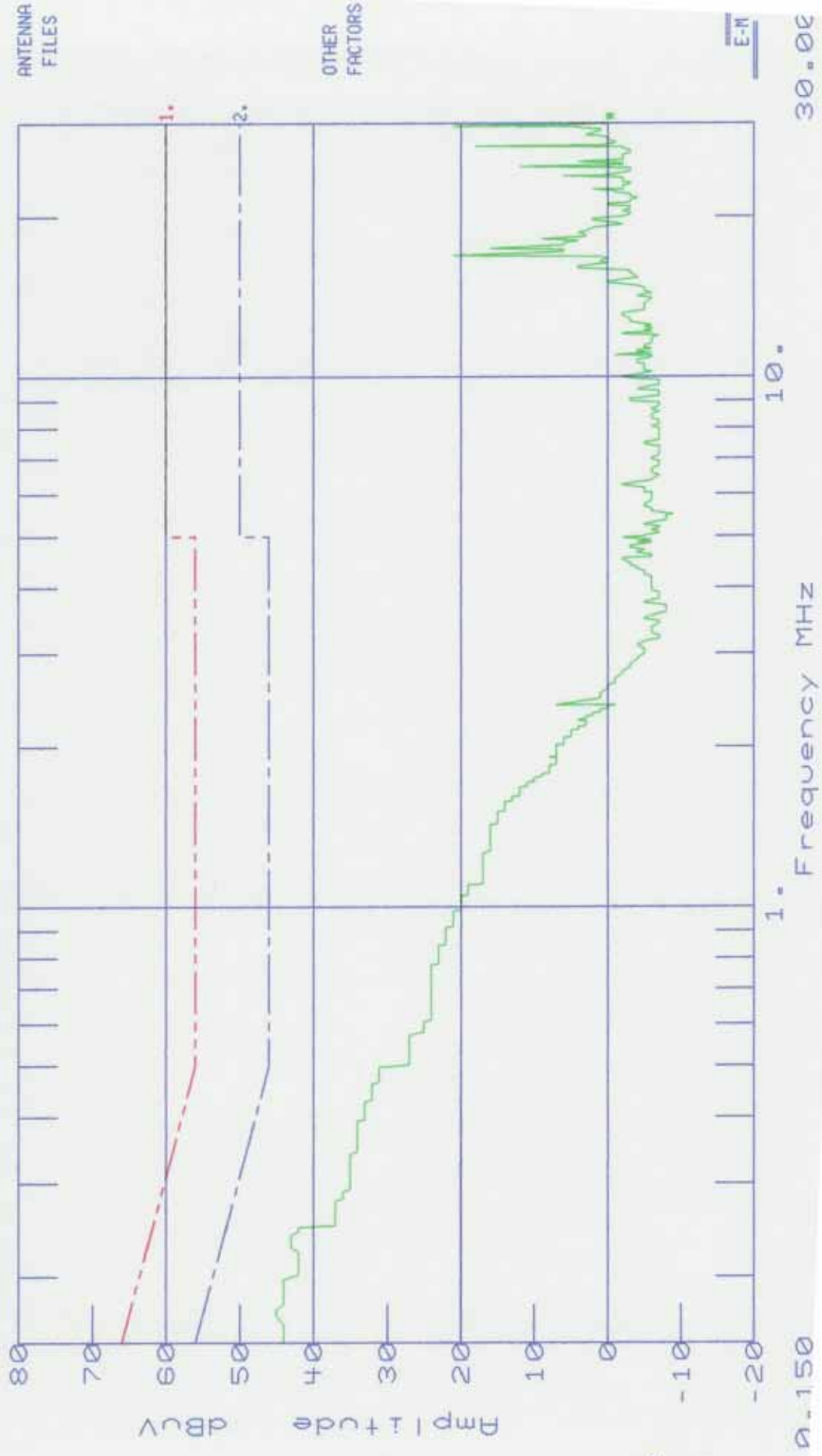
XM RADIO

Date : 08/23/04  
 Time : 16:20:04.05  
 Technician : CHIP FOERSTNER  
 Test Equip. : EMC-30  
 Test Method : EN55022 CLASS B  
 Test Number : 1  
 Equipment : SR10101  
 Sensor Loc. : NEUTRAL  
 Mode of Op. : TX @ 88.7 MHZ  
 Sensor Pol. :  
 Serial No. : 50KRS0CH  
 Ext. Atten. : 0 dB

Comment : POWER SUPPLY CUI MODEL 41-6-1000D 120VAC/60HZ

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) CISPR 22 AVG  
 3)  
 4)



A73

Freq(MHz)	Amp	C22BQP.S30 vs Spec(dB)	C22BAVG.S30 vs Spec(dB)
0.1500	43.0		-13.000 *
0.1542	43.0		-12.771 *
0.1583	43.0		-12.553 *
0.1625	43.0		-12.335 *
0.1689	44.0		-11.014 *
0.1730	44.0		-10.815 *
0.1770	43.0		-11.625 *
0.1812	43.0		-11.430 *
0.1854	43.0		-11.240 *
0.1892	43.0		-11.072 *
0.1933	43.0		-10.894 *
0.1975	43.0		-10.715 *
0.2021	41.0		-12.524 *
0.2062	41.0		-12.357 *
0.2104	41.0		-12.190 *
0.2145	41.0		-12.029 *
0.2187	41.0		-11.868 *
0.2228	41.0		-11.714 *
0.2274	42.0		-10.544 *
0.2316	42.0		-10.392 *
0.2357	42.0		-10.246 *
0.2395	42.0		-10.114 *
0.2437	40.0		-11.969 *
0.2478	40.0		-11.831 *

A14

# **APPENDIX**

## **B**

### **System Under Test Description**

**SYSTEM COMPONENTS**

\*\*\*\*\*

DEVICE TYPE: EUT, XM RADIO SKY FI 2  
S/N: 50KR50CW

\*\*\*\*\*

DEVICE TYPE: EUT, SKY FI 2 MOBILE DOCK

\*\*\*\*\*

DEVICE TYPE: EUT, SKY FI 2 HOME DOCK

\*\*\*\*\*

DEVICE TYPE: EUT, SKY FI 2 AC POWER SUPPLY, DELPHI 41-6-1000D

\*\*\*\*\*

DEVICE TYPE: EUT, SKY FI MOBILE ANTENNA

\*\*\*\*\*

DEVICE TYPE: EUT, SKY FI HOME ANTENNA

\*\*\*\*\*

DEVICE TYPE: SPEAKERS

\*\*\*\*\*

## INTERFACE CABLES

\*\*\*\*\*

DEVICE TYPE: SPEAKERS  
SHIELD: NO  
LENGTH: 1 METER  
CONNECTOR TYPE: DEDICATED TO MINI PLUG  
PORT: LINE OUT ON SKY FI 2

\*\*\*\*\*

DEVICE TYPE: ANTENNA (EITHER)  
SHIELD: COAX  
LENGTH: 7 METERS  
CONNECTOR TYPE: DEDICATED TO COAXIAL PLUG  
PORT: ANTENNA IN ON SKY FI 2

\*\*\*\*\*

**AC LINE CORDS**

\*\*\*\*\*

DEVICE TYPE: EUT

SHIELD: NO

LENGTH: 1 METER

CONNECTOR TYPE: DEDICATED TO COAXIAL PLUG

\*\*\*\*\*

# **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>62.8</b>	dB $\mu$ V	
ACF	+	<b>9.2</b>	dB/M	
Cable Loss	+	<b>1.1</b>	dB	
Preamp Gain	-	<b>26.0</b>	dB	
Actual Level		<b>47.1</b>	dB $\mu$ V/M	@ 88.7 MHz

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

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