

EXHIBIT B.6

REPORT OF RADIATED AND CONDUCTED EMISSION MEASUREMENTS.

ENGINEERING, Inc.
Electro Magnetic Controlled Environment

Stephen A. Sawyer, NCE

CERTIFICATE OF COMPLIANCE

REPORT NUMBER: HAR1299

REPORT DATE: 13 January 1999

FCC REQUIREMENT

Title 47 CFR Part 2, Paragraph 2.1033

&

Title 47 CFR Part 15, Paragraph 15.247

PREPARED FOR:

The Harris Corporation, Farinon Division

330 Twin Dolphin Drive

Redwood Shores, CA 94065

I Hereby Certify that the measurements shown on this test record were made in accordance with the procedures of American National Standards Institute (ANSI) Document C63.4:1992. The equipment listed below was found to be within the Applicable Limits. Tests were performed on Dec. 2, 1998

<u>Equipment Under Test</u>	<u>Model Number</u>	<u>Serial Numbers</u>
Digital Microwave Spread Spectrum Radios	AURORA 2400-3&4	000001

EMCE Engineering, Inc. assumes no responsibility for the continuing validity of test data when the Equipment Under Test is not under the continuous physical control of EMCE.

The signature below attests to the fact that all measurements reported herein were performed by me or were made under my supervision, and are correct to the best of my knowledge and belief as of the date specified. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

All tests were conducted by qualified EMCE personnel utilizing test equipment maintained in a "current" state of calibration with traceability to NIST.

CERTIFIED BY:
EMCE ENGINEERING, INC.



STEPHEN A. SAWYER, NCE NO. EMC-000347-NE
PRESIDENT

TEST RECORD

FCC Part 15.247 Emissions.

Report Number:	HAR1299
Report Date:	13 JANUARY 1999
Test Record For:	Harris Corporation, Farinon Division
Equipment Under Test (EUT):	Digital Microwave Spread Spectrum Radio Transmitter
Model Number:	AURORA 2400-3&4
Serial Number:	001
Test Performed By:	EMCE Engineering, Inc. 44366 S. Grimmer Blvd. Fremont, CA 94538 Phone: 510-490-4307 Fax: 510-490-3441
Test Authorized By:	Harris Corporation Farinon Division 330 Twin Dolphin Drive Redwood Shores, CA 94065
Test Initiated:	Dec 2, 1998
Test Completed:	Dec 2, 1998
Test Engineer:	Jim Ballard

TABLE OF CONTENTS

<u>Paragraph</u>	<u>Title</u>	<u>Page</u>
1.0	INTRODUCTION	135
1.1	Scope	135
1.2	Purpose	135
1.3	Summary	135
1.4	Testing Requirements	136
2.0	TEST ENVIRONMENT	136
2.1	Test Sample Description	136
2.2	Test Facilities	137
2.2.1	Emissions Test Site	137
2.3	Test Equipment	138
3.0	TEST RESULTS	140
3.1	Emissions Testing	140
3.1.1	Test Description	140
3.1.2	Test Configuration	140
3.1.3	Test Procedure	141
3.1.4	Test Results	141
4.0	CONCLUSIONS	142
4.1	Conducted and Radiated Emissions	142

LIST OF FIGURES

<u>Figure</u>	<u>Title</u>	<u>Page</u>
3.1.1	Conducted Emissions Test Setup	11
3.1.2	Radiated Emissions Test Setup	12

LIST OF TABLES

<u>Table</u>	<u>Title</u>	<u>Page</u>
1.3.1	Results Summary/Modifications	1
1.4.1	Test Parameters/Compliance Criteria	2
2.3.1	Test Equipment	4
3.1.1	Test Configuration	6

LIST OF APPENDICES

<u>Appendix</u>	<u>Title</u>	<u>Page</u>
A	Conducted Emissions Test Data.....	A1-4
B	Radiated Emissions Test Data	B1-4
C	Radiated Emissions >1 GHz.....	C1-2
D	Coaxial Cable Calibration.....	D1-2
E	Photographs of Test Setup.....	E1-3

1.0 INTRODUCTION

1.1 Scope

This record is intended to document conformance with the FCC requirements of CERTIFICATION for SPREAD SPECTRUM TRANSMITTERS.

1.2 Purpose

Testing was performed to evaluate the emissions performance of the EUT with respect to FCC Part 15, Subpart C, paragraph 15.205, 15.207, 15.209 and Part 2.1033, paragraph (b)(6).

1.3 Summary

The EUT was found to be in compliance with the emissions requirements. Table 1.3.1 lists the test results and all modifications that were made if necessary.

Table 1.3.1

**Results Summary/Modifications
Paragraph 15.205, 15.207 & 15.209 Emissions**

Results

Modifications

Passes radiated emissions (Para. 15.205 & 209)

None

Passes conducted emissions (Para. 15.207)

None

1.4 Test Requirements

Testing was performed using procedures and criteria contained in American National Standards Institute (ANSI) Document C63.4:1992. Table 1.4.1 contains specifics pertaining to testing parameters.

Table 1.4.1

Test Parameters/Compliance Criteria

15.205 Restricted Bands Emissions

15.209 Radiated Emission Limits

General Requirements

15.207 Conducted Limits

Power mains conducted emissions limits

2.0 TEST ENVIRONMENT

2.1 Test Sample Description

The EUT is a Model AURORA 2400, S/N: 00001, Spread Spectrum Transmitter manufactured by the Harris Corporation, Farinon Division.

2.2 Test Facilities

2.2.1 Emissions Test Site

Emissions testing was performed on an Open Area Test Site (OATS). The 3 and 10 meter site is established on a cleared level site of one acre square. The remainder of ground is comprised of gravel with stones no larger than 1 inch in diameter. The site has a 3900 square foot (20m x 18m) floor area of poured reinforced concrete, 6 to 8 inches thick. A 20m x 18m solid 24 gauge galvanized sheet steel ground plane is centered on the test area with its long dimension along the major axis of the test site. It is made up of 4 foot wide sheets overlapped one inch on each other and MIG welded at 18 inch intervals. The antenna mast and turntable are located 3 meters apart on the center line of the major axis so that each is >3 meters from the edges of the ground plane. The ground plane is connected to a nine foot long earth ground rod at each corner of the ground plane.

2.2.1 Emissions Test Site Cont'd

Electricity for the EUT is provided by buried power lines in metallic conduit with an outlet box placed near the EUT. Power for the EUT is taken from the outlet box of either of two "shielded enclosure" quality power line filters located on the ground plane near the EUT. The filters are electrically bonded to the ground plane. The typical Radiated test setup is found in Figure 3.1.1. The typical Conducted setup is found in Figure 3.1.2.

Care was taken that accessory equipment or adjacent equipment did not produce unacceptable interference so as to contaminate the final test data. The EMI receiver and its associated computer, printer and plotter were located >15 meters away from the EUT during testing and were powered from a separately filtered power source.

2.3 Test Equipment

Table 2.3.1 contains a list of the test equipment used during radiated and conducted emissions testing.

Table 2.3.1

Test Equipment

The following equipments were used for conducted emissions test.

Name	<u>Manufacturer</u>	<u>Model</u>	<u>Cal. Due Date</u>
Controller/Computer	Hewlett-Packard	9836	N/A
Spectrum Analyzer	Hewlett-Packard	8566A	12/14/98
Quasi-Peak Adapter	Hewlett-Packard	85650A	12/14/98
LISN	Solar	8012-50-R-24	12/14/98
250uHy Choke	Solar	8410-250-R-24	N/A
Highpass Filter	Solar	76205-0.35	N/A
Plotter	Hewlett-Packard	7475A	N/A
Printer	Hewlett-Packard	2673A	N/A

The following equipments were used for radiated emissions test.

<u>Name</u>	<u>Manufacturer</u>	<u>Model</u>	<u>Cal. Due Date</u>
Controller/Computer	Hewlett-Packard	9836	N/A
Spectrum Analyzer	Hewlett-Packard	8566A	12/14/98
Quasi-Peak Adapter	Hewlett-Packard	85650A	12/14/98
LISN	Solar	8012-50-R-24	12/14/98
Antenna Mast	EMCO	1050	N/A
Rotating Table	EMCO	1060	N/A
Antenna Biconical	EMCO	3104	5/27/99
Antenna Dipole Set	CDI	A100	N/A

3.0 TEST RESULTS

3.1 Emissions Testing

3.1.1 Test Description

ANSI C63.4:1992, American National Standard for Methods of Radio-Noise Emissions from Low Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz. was the guiding document for this test. The EUT's radiated emissions from 30MHz to 24000 MHz and its power mains conducted emissions from 450kHz to 30MHz were measured.

3.1.2 Test Configuration

Figures 3.1.1 and 3.1.2 contained in the back of this document show the test setups used. Table 3.1.1 shows the test configuration with peripherals connected during testing.

Table 3.1.1
Test Configuration
Power to EUT: **115 VAC, 60 Hz**
Grounding of EUT: **Chassis**
Interfaces: **Power**
Special Software: **None**

The -3 model served as a Test set peripheral for the -4 test and the -4 model served as a test set peripheral for the -3 test.

The following cables were connected during test.

<u>Name</u>	<u>Source</u>	<u>Load</u>	<u>Length</u>	<u># Conductors</u>	<u>Type Connector</u>
Power	DC Lab Supply	EUT	3 feet	3 unshielded	Metal
Antenna	EUT	Antenna	3 Feet	RG-214 Coax	Type - N, Metal

3.1.3 Test Procedure

For radiated emissions testing the EUT is placed on a 0.8 meter high non-conductive turntable 3 meters from the receiving antenna mast. The EUT is fully exercised during the test to maximize emissions. The receiving antenna is scanned over the height range of 1 to 4 meters in both vertical and horizontal polarities and the turntable is rotated for maximum indication. Emissions frequency and level are recorded for the six highest interference signals observed. Also recorded is the polarity and height of the measuring antenna position when the emission is maximized. During the process the EUT configuration is also modified by moving the interconnecting cables to find the typical configuration that maximizes emissions at each frequency. The frequency range from 30MHz to 1000MHz is explored. Measurement data is compared to the Subpart C limit.

For conducted emissions testing the EUT is placed on a 0.4 meter high platform and the EUT is powered from the LISN. Both sides of the DC line are measured and the results compared to the Subpart C limit. Only peak readings were taken as the EUT's emissions met the average limit when measured with the peak detector.

3.1.4 Test Results

The EUT passed the Subpart C conducted emissions test for both power lines. The conducted emissions test data is contained in Appendix A. The EUT passed the Subpart C radiated emissions test for both horizontal and vertical polarizations. The radiated emissions test data is contained in Appendix A.

4.0 CONCLUSIONS

4.1 Conducted and Radiated Emissions

The EUT complies with the requirements of FCC Part 15, Subpart C for conducted and radiated emissions.

EXHIBIT B.8

Description of Peripheral Equipments Used in Test

(Peripheral equipments are described in EXHIBIT B.6.)

EXHIBIT B.9

Intentions per Transition Provisions of Paragraph 15.37.

**This application is not subject to the transition as described
in paragraph 15.37.**

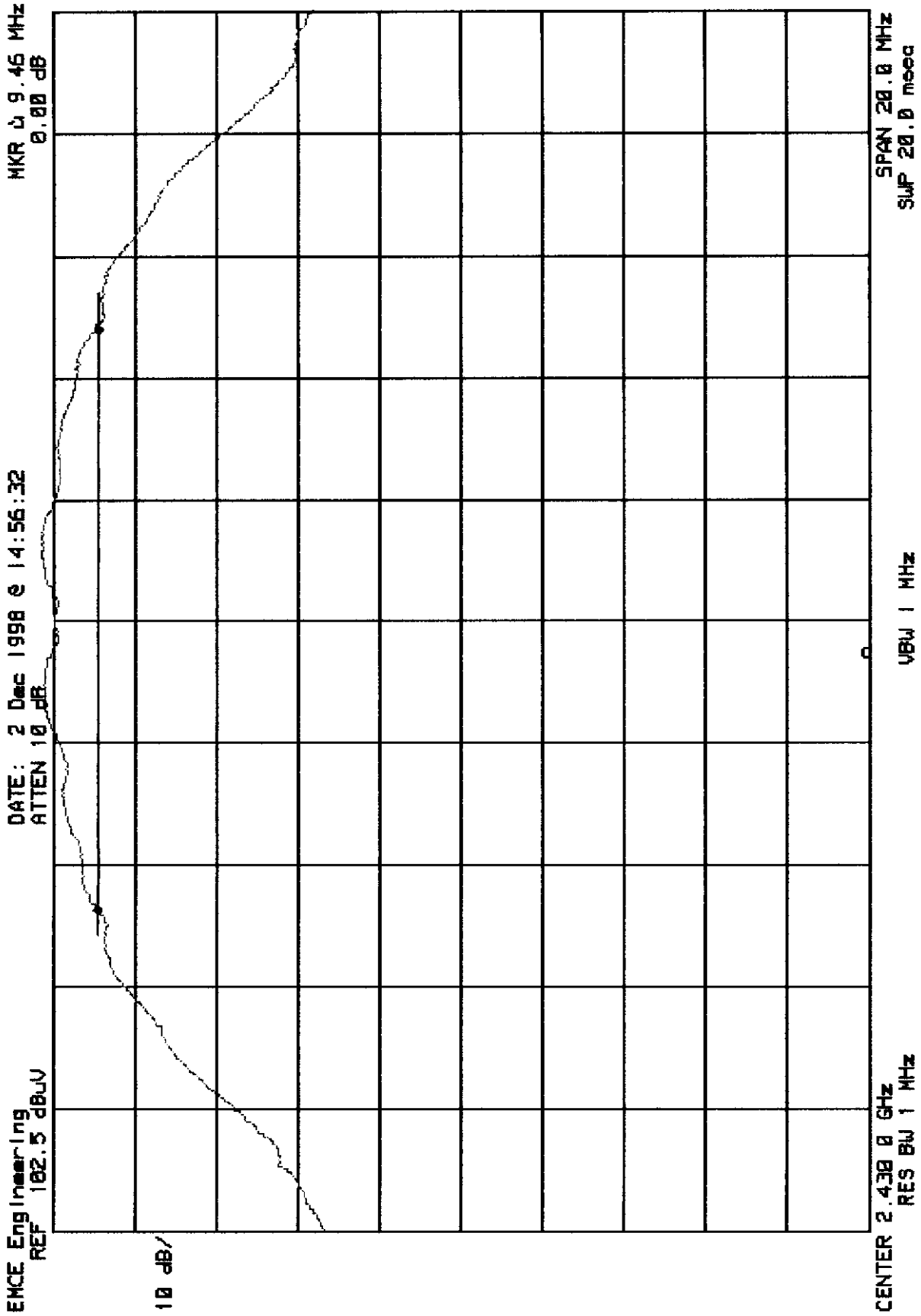
FCC ID: BCK9GKAUR2401T1-2
Date: 13 Jan 1999
Page: 278

EXHIBIT C.1

Minimum 6 dB Bandwidth

(Ref 15.247 (a)(2))

6dB Bandwidth for 2430 Unit, BW₆ = 9.46 MHz



1 dB Bandwidth for 2469 Unit BW₆ = 9.5411 Hz

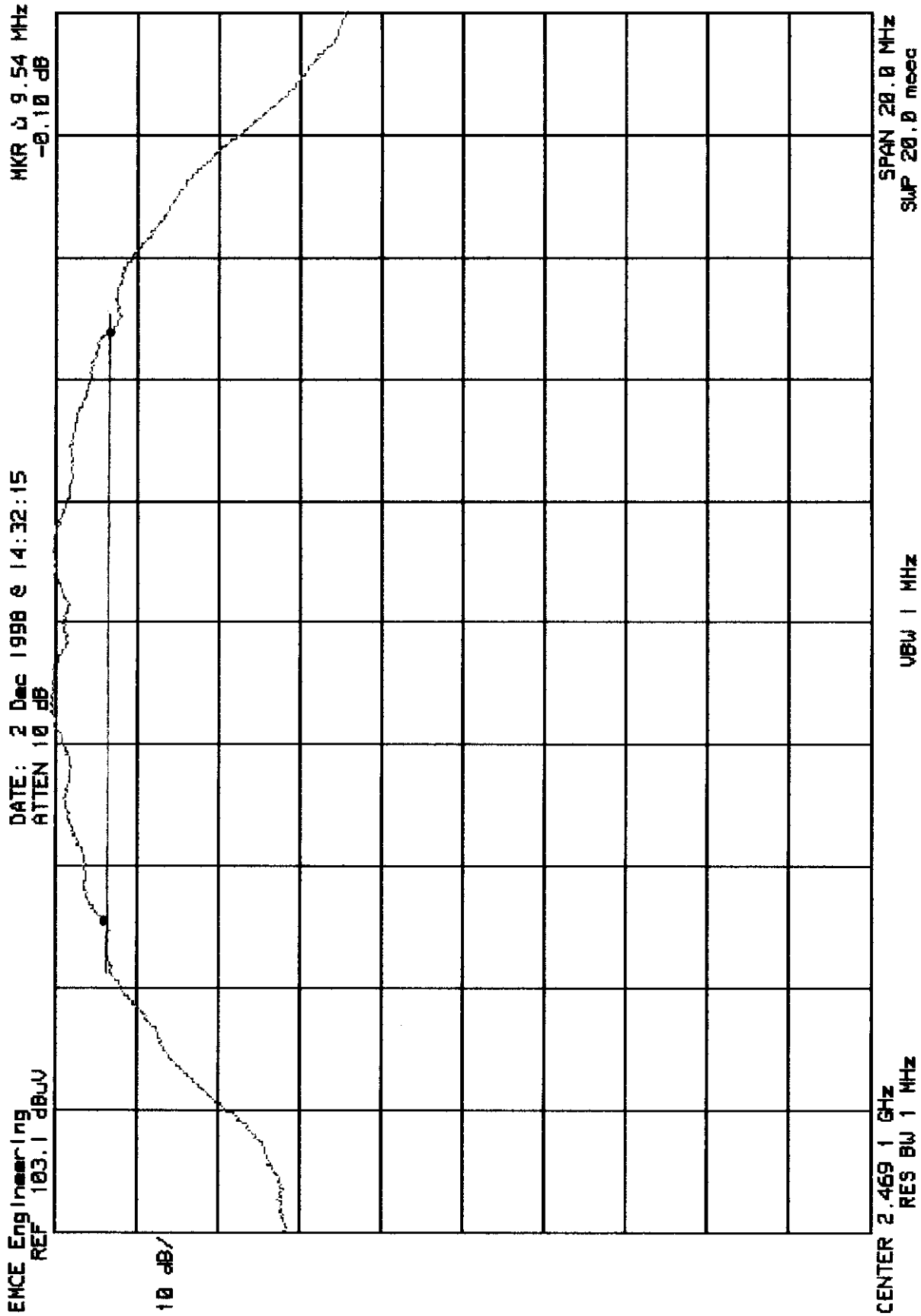


EXHIBIT C.2

Maximum Peak Power of Tx
(Paragraph 15.247(b))

Title 47 CFR Part 15, Para 15.247 (b)

Harris Farinon Spread Spectrum Transmitters (2430 & 2469.1 MHz)

<u>MODEL</u>	<u>SERIAL NO.</u>	<u>OPERATING FREQ</u>	<u>MEASURED POWER</u>
AURORA 2400-3	1	2430 MHz	+25.1 dBm
AURORA 2400-4	1	2469.1 MHz	+25.1 dBm

Measured with HP-435A Power Meter, S/N 2015A10321, with 8431H Power Sensor,
S/N 1925A03979 Calibration Due: July 1999

EXHIBIT C.3

SPURIOUS RF OUTPUT POWER Transmitter Radiated Emissions Above 1 GHz

(Paragraph 15.247(c))

**Tx Frequency
2410 MHz
&
2469.1 MHz**

**Refer to Appendix C of EMI
Test Report**

FCC ID: BCK9GKAUR2401T1-2
Date: 13 Jan 1999
Page: 241

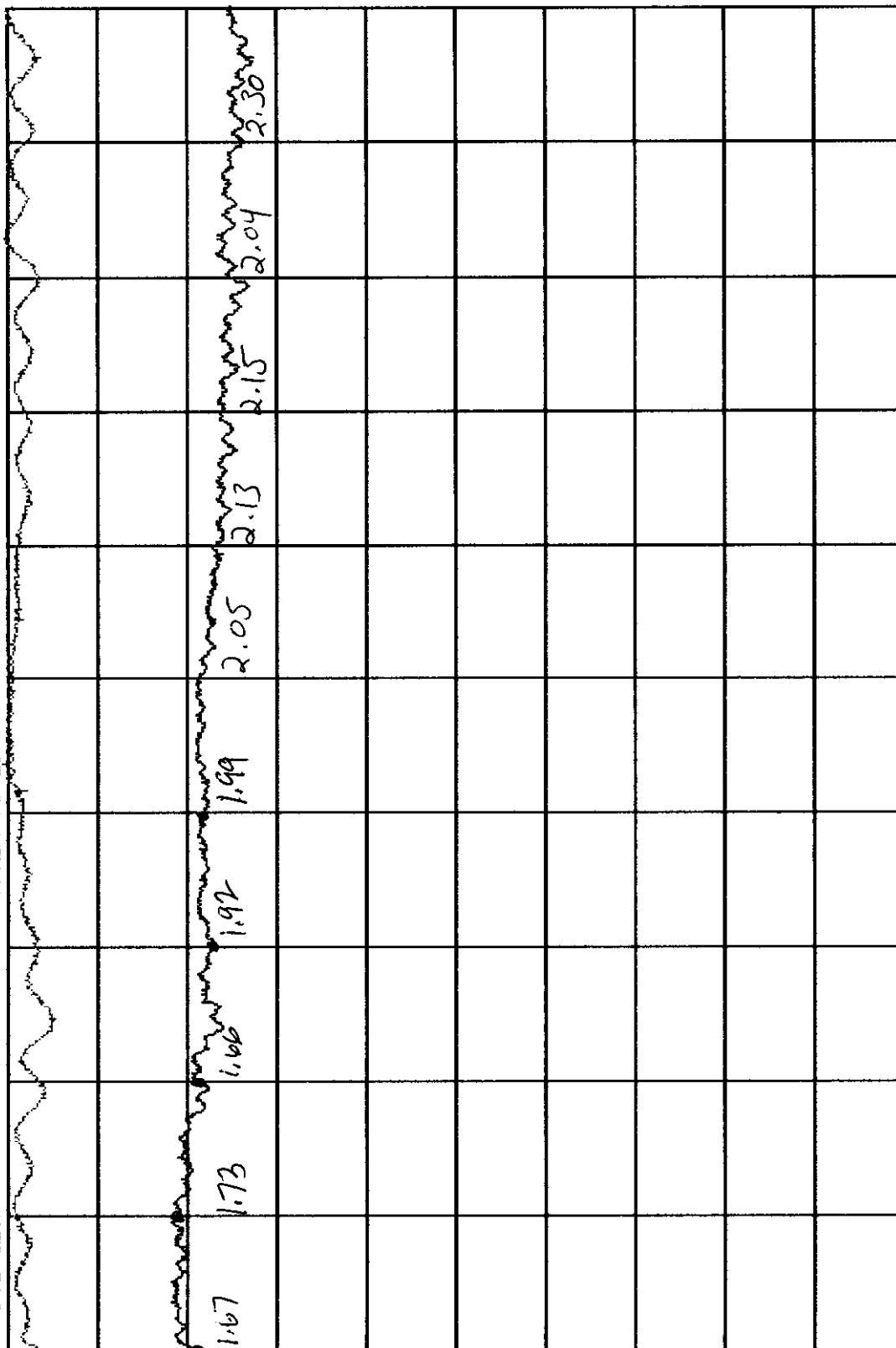
APPENDIX D

Coaxial Cable Calibration

EMCE Engineering
REF 0.0 dBm

DATE: 2 Dec 1998 @ 16:15:49
ATTEN 10 dB

1 dB/



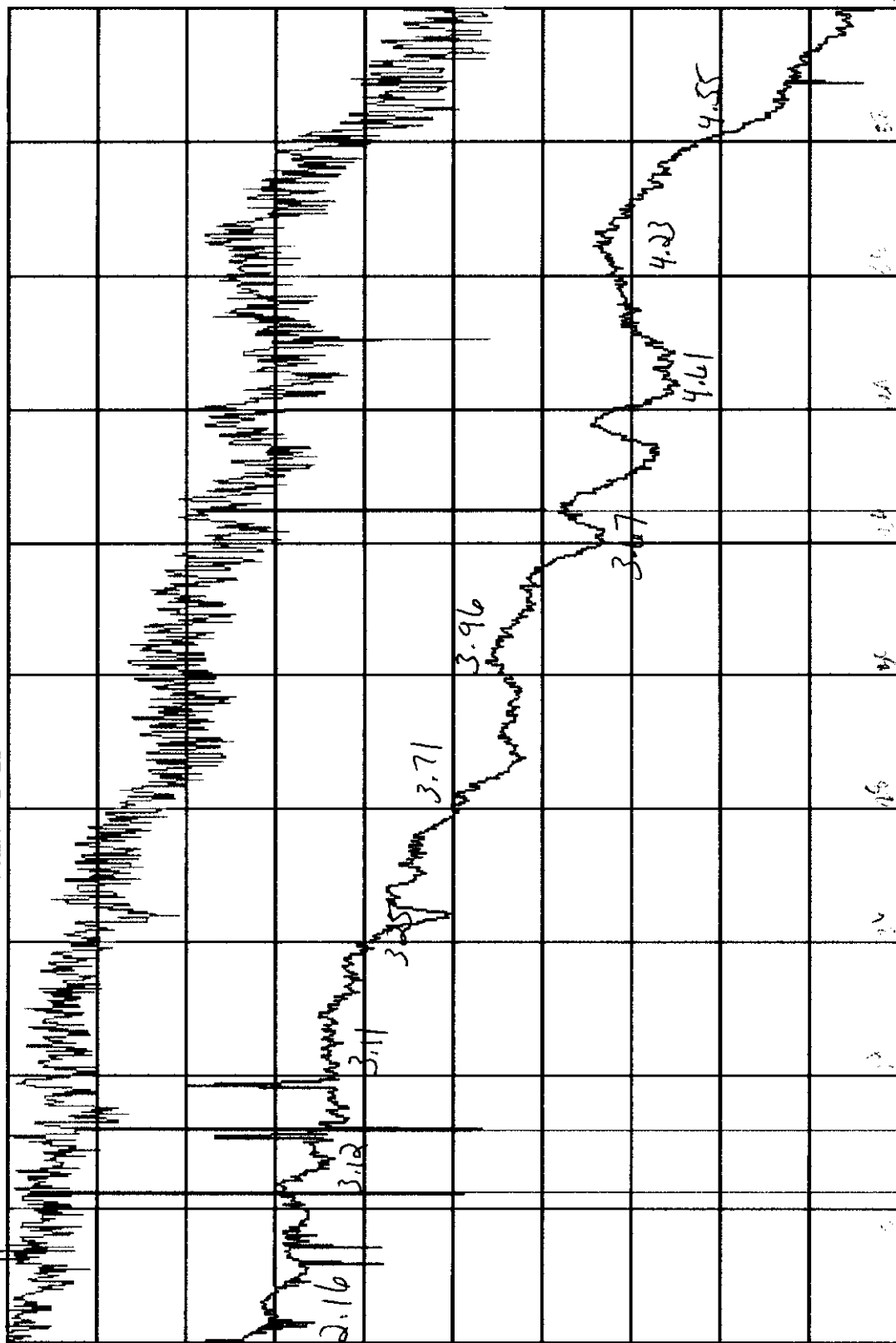
START 1.00 GHz
RES BW 3 MHz

VBW 3 MHz

STOP 2.00 GHz
SUP 25.0 msec

EMCE Engineering
REF 0.0 dBm

DATE: 2 Dec 1998 @ 16:52:28
ATTEN 10 dB



START 2.00 GHz
RES BW 3 MHz

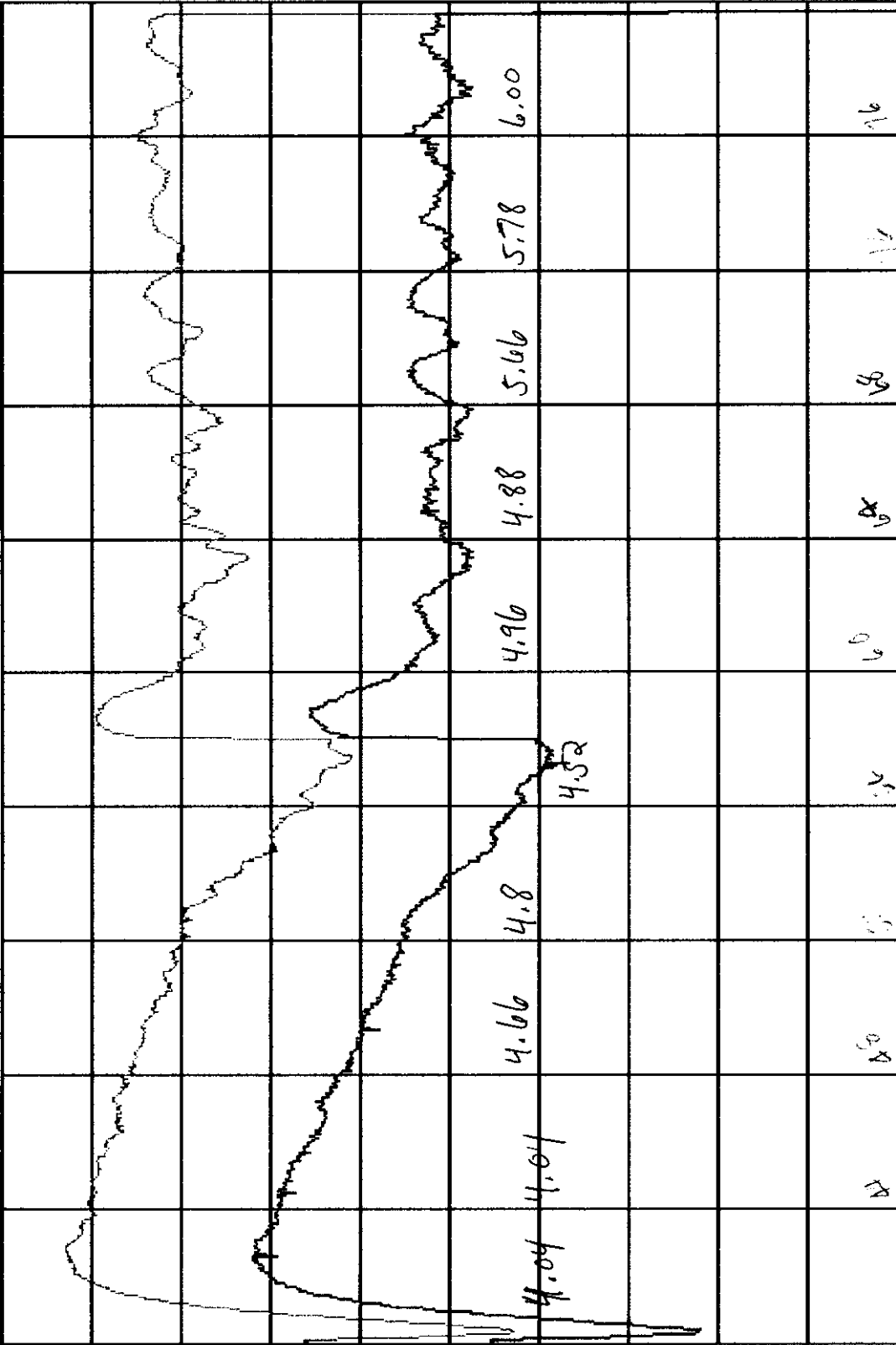
VBW 3 MHz

STOP 4.00 GHz
SWP 100 sec

FC : BCK9GKAUR2401T1-2
Da: 13 Jan 1999
Pa: 243

EMCE Engineering
REF 0.0 dBm

DATE: 3 Dec 1998 @ 09:19:35
ATTEN 10 dB



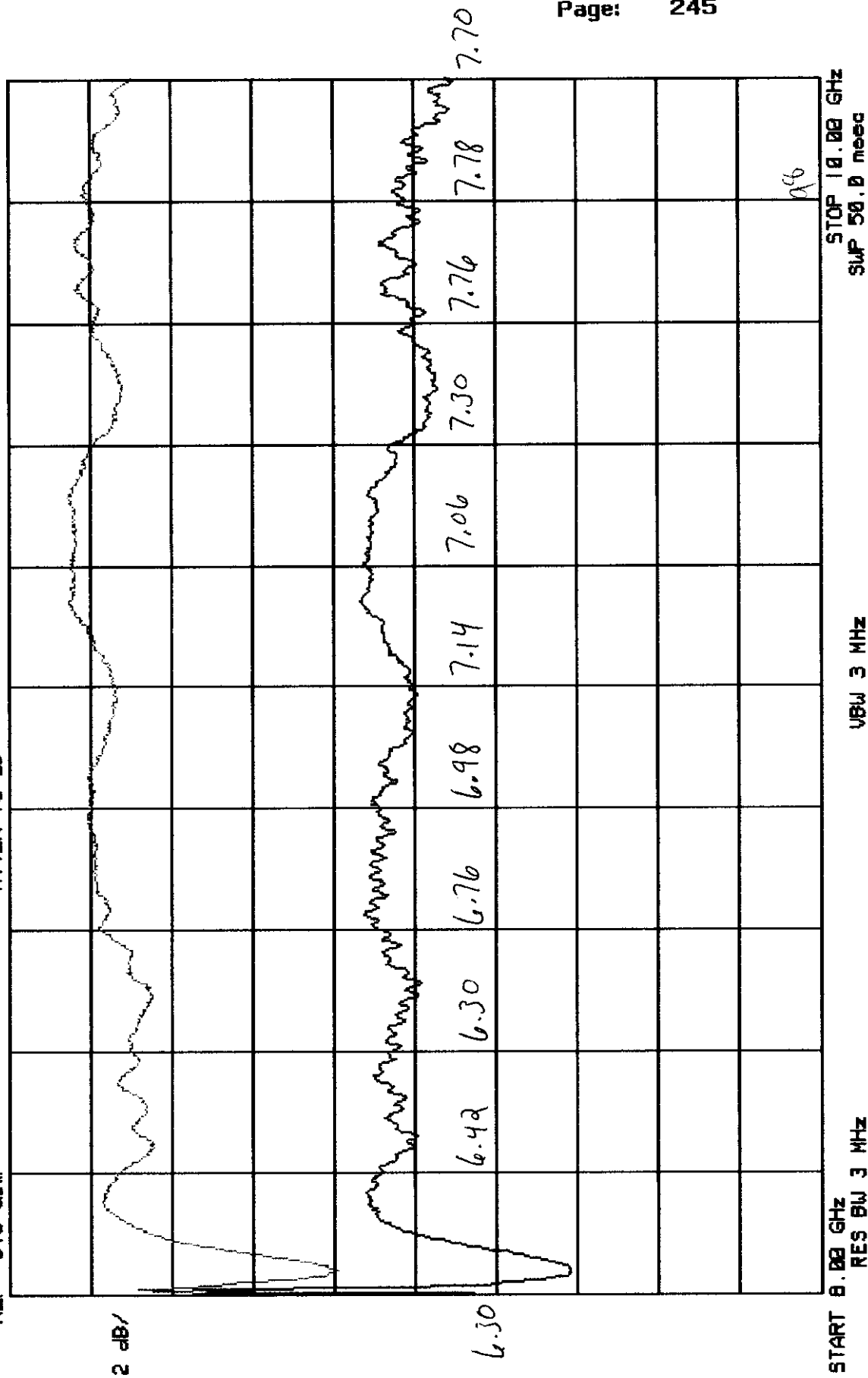
2 dB/

START 4.00 GHz
RES BW 3 MHz

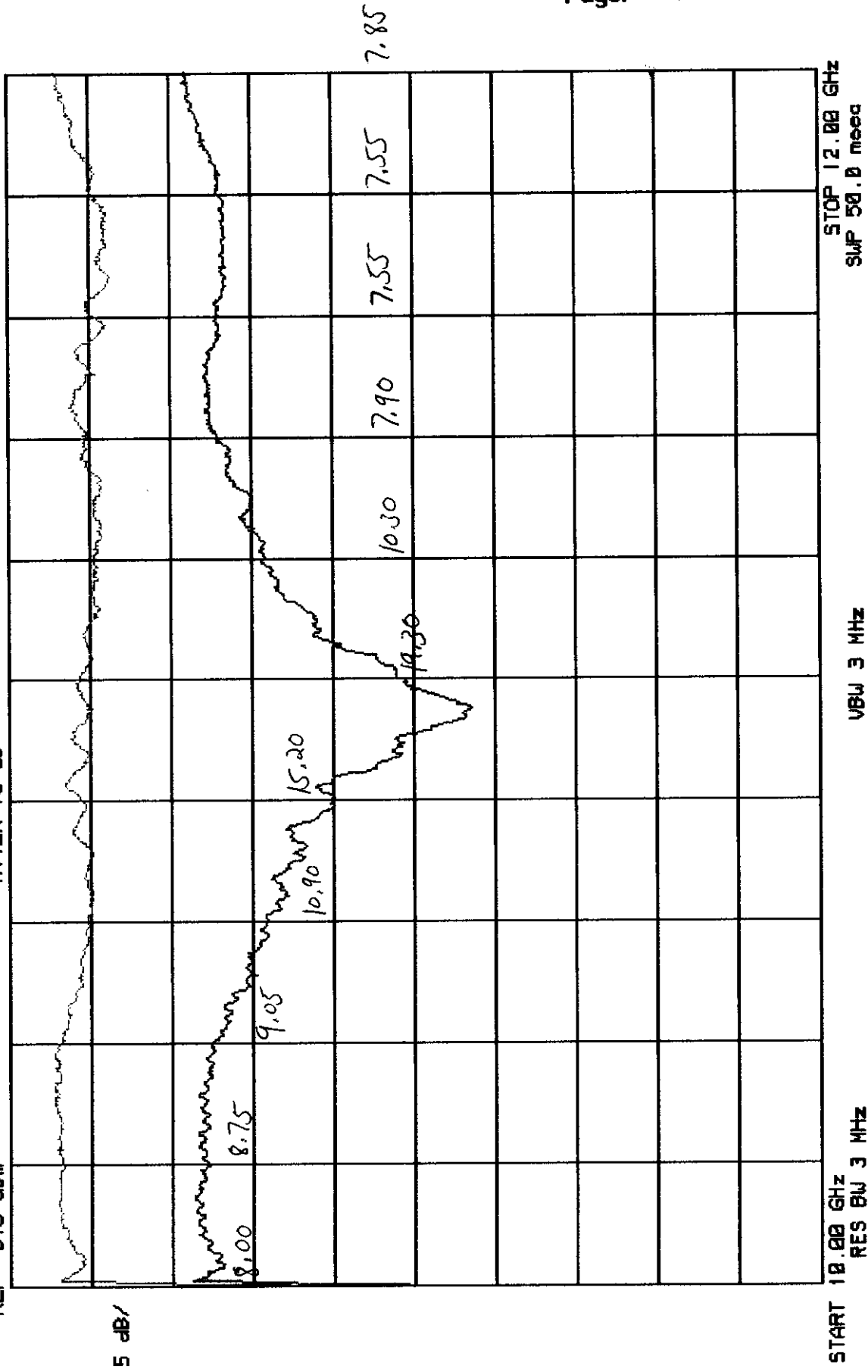
VBW 3 MHz

STOP 6.00 GHz
SWP 100 msec

EMCE Engineering
 REF 0.0 dBm
 DATE: 3 Dec 1998 @ 09:46:14
 ATTN 10 dB



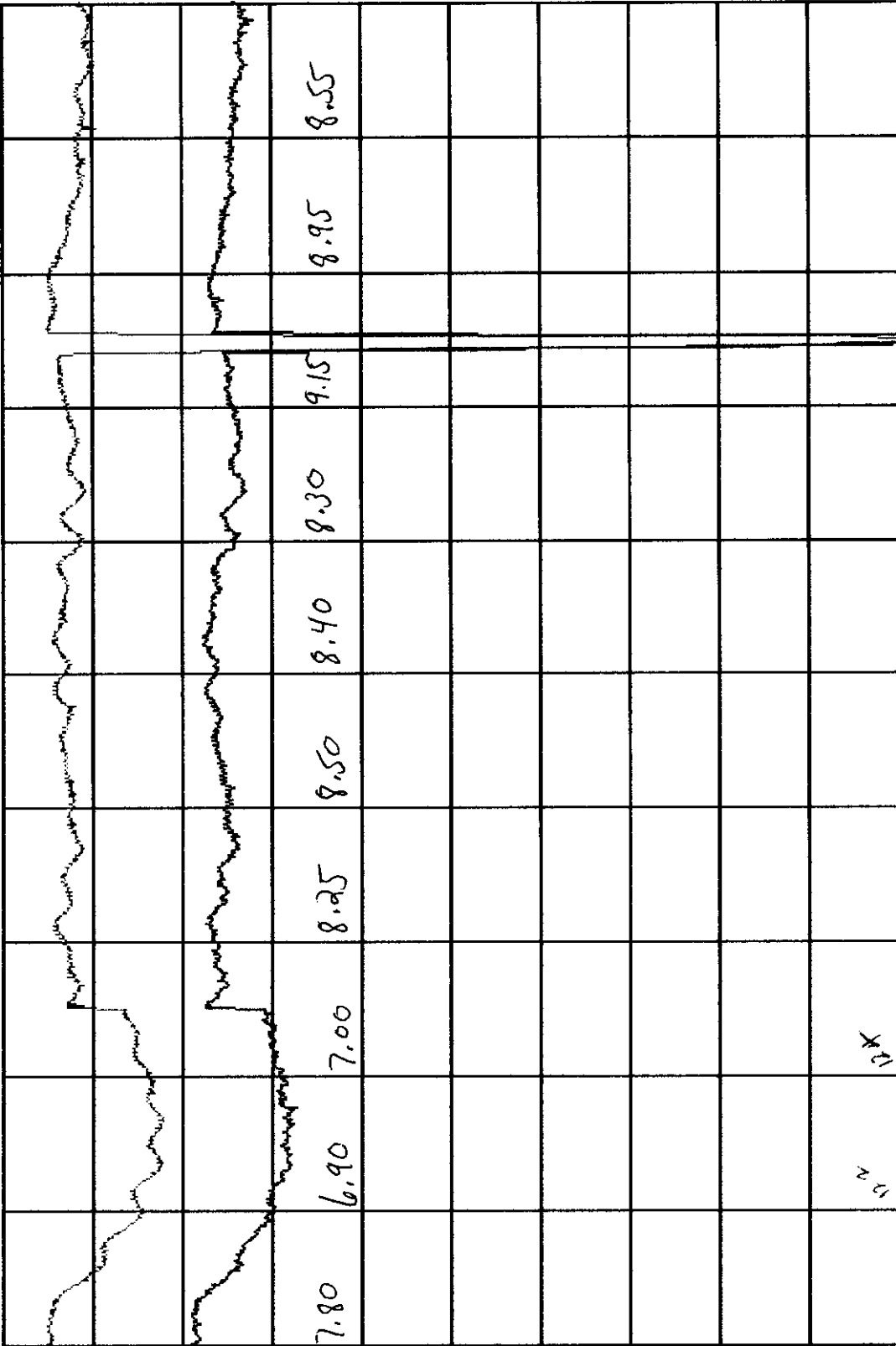
EMCE Engineering
REF 0.0 dBm
DATE: 3 Dec 1998 @ 10:28:58
ATTEN 10 dB



EMCE Engineering
REF 0.0 dBm

DATE: 3 Dec 1998 @ 10:47:11
ATTEN 10 dB

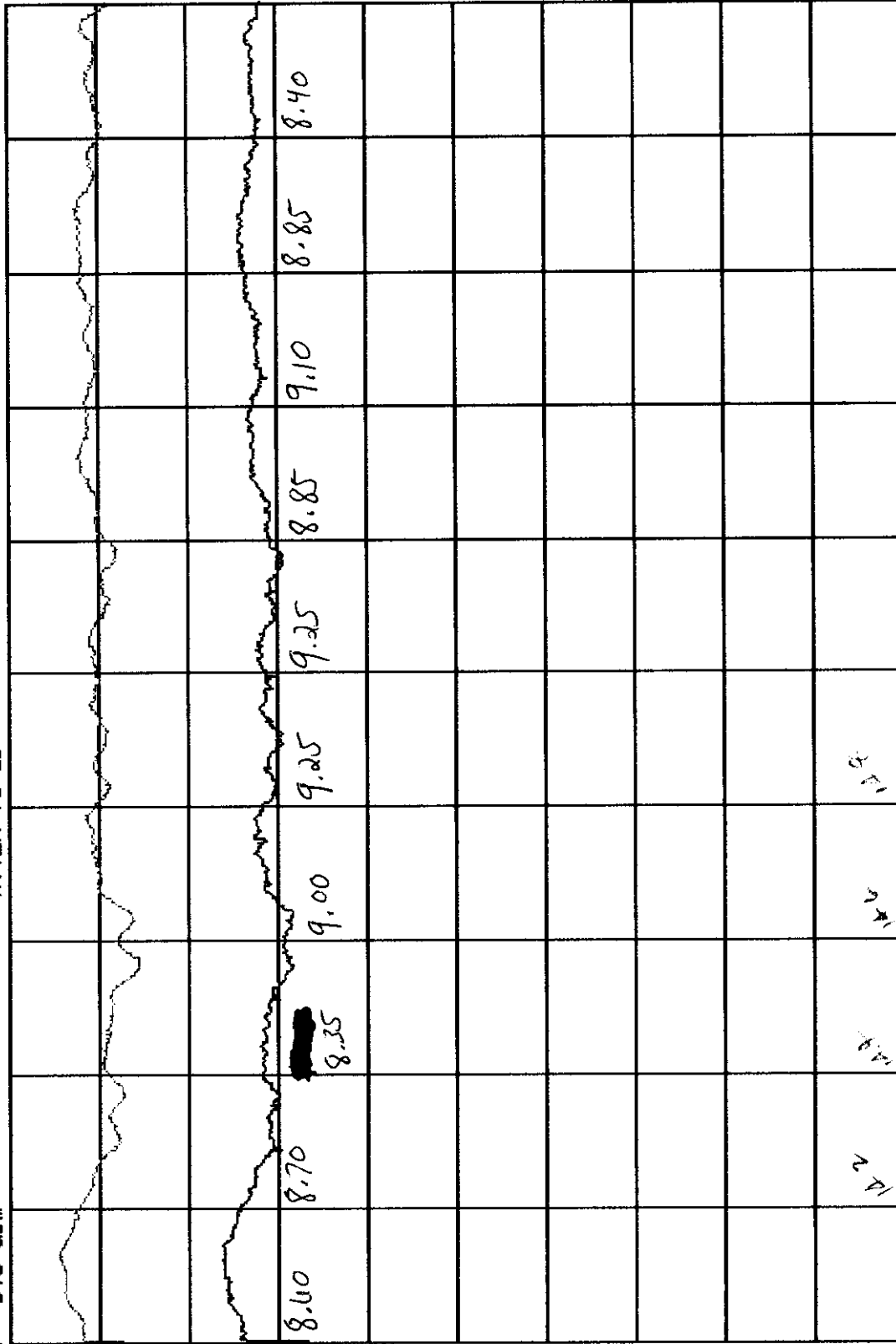
5 dB/



START 12.00 GHz
RES BW 3 MHz

VBW 3 MHz

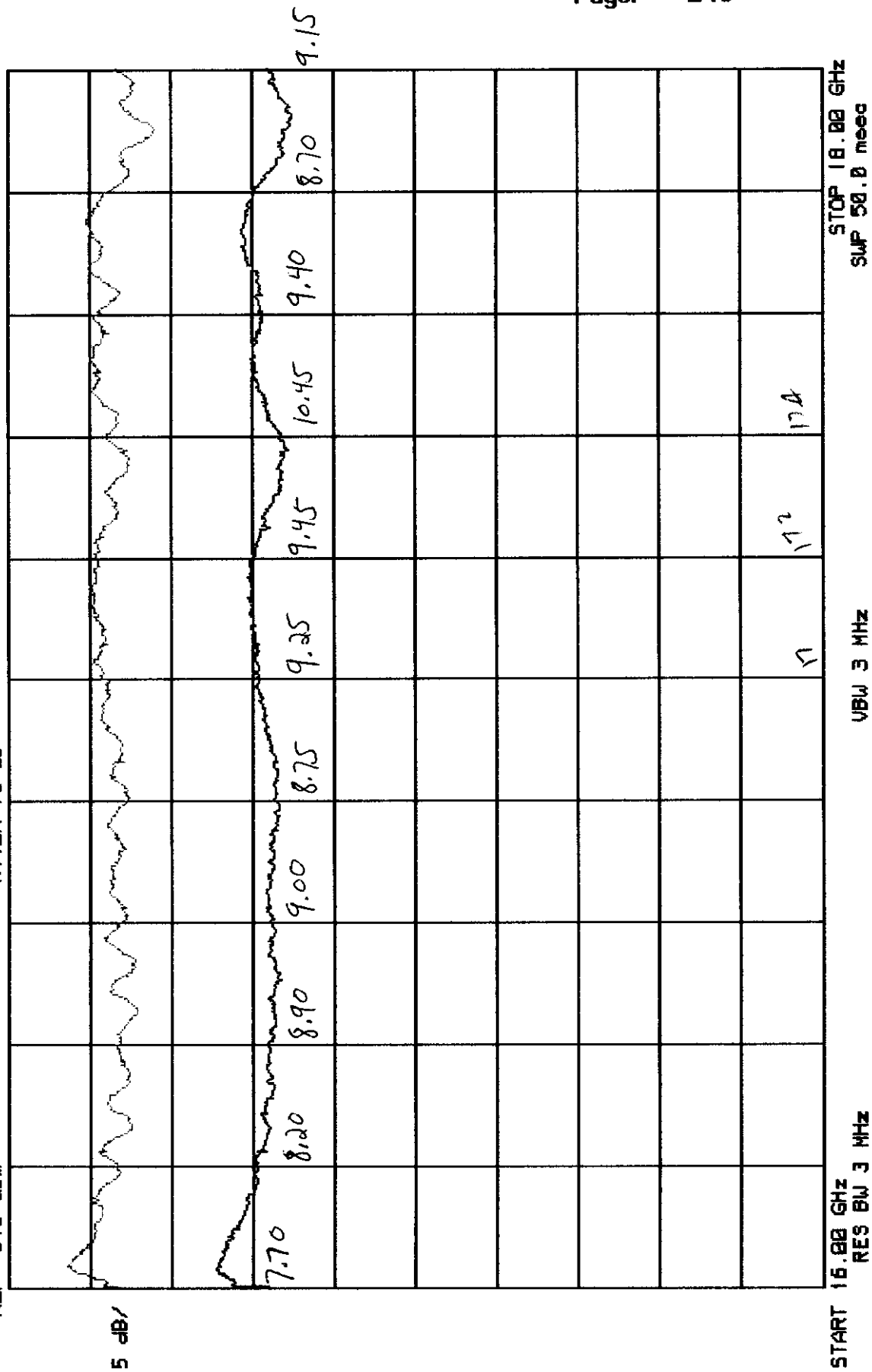
STOP 14.00 GHz
SWP 50.0 mhz



START 14.00 GHz
RES BW 3 MHz

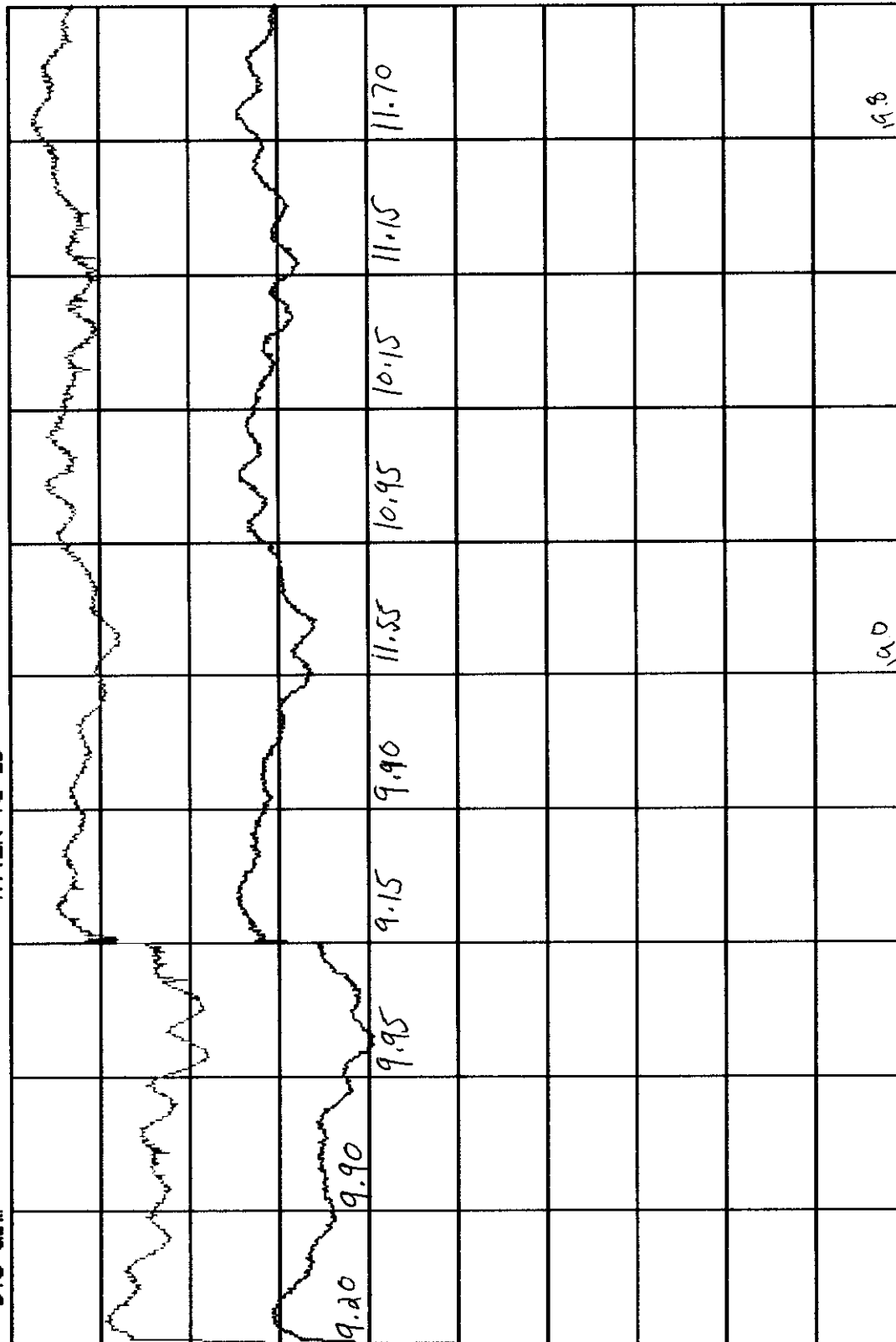
VBW 3 MHz

STOP 16.00 GHz
SUP 50.0 msec



EMCE Engineering
REF 0.0 dBm

DATE: 3 Dec 1998 @ 11:43:59
ATTEN 10 dB



START 10.00 GHz
RES BW 3 MHz

VBW 3 MHz

STOP 20.00 GHz
SUP 50.0 mV

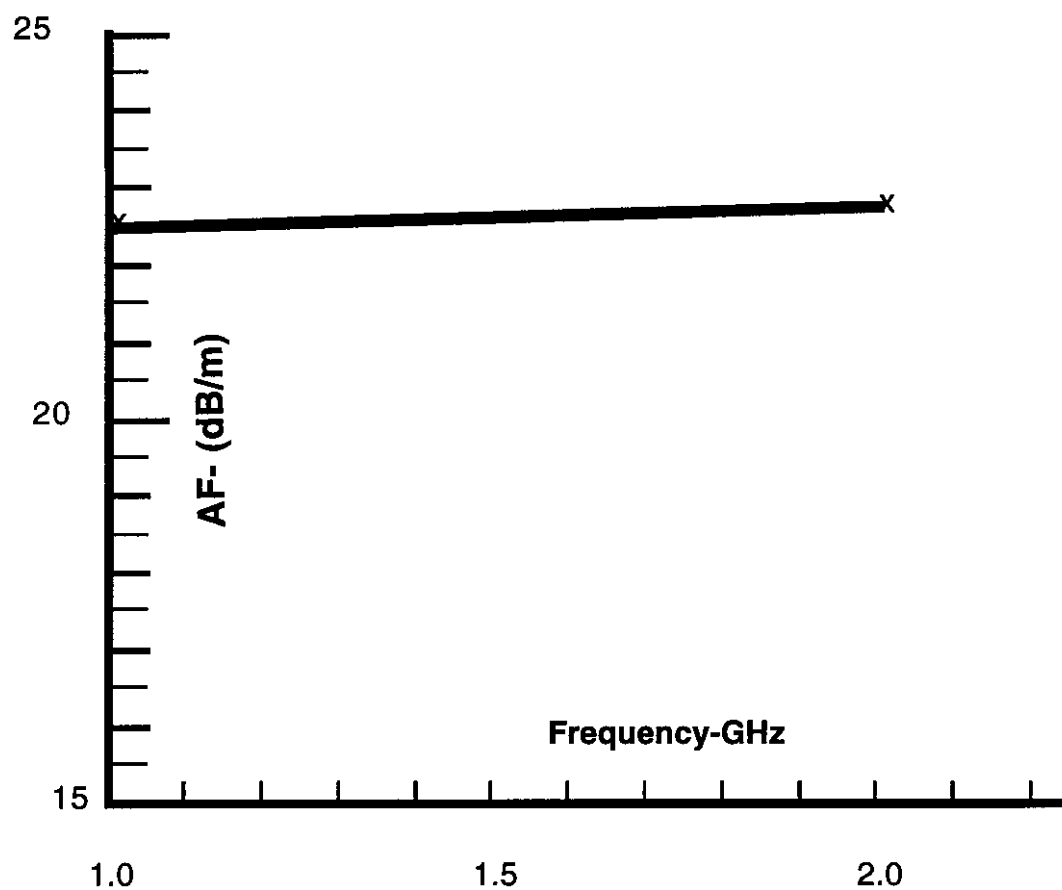


Figure 1. Antenna Factor for Polarad CA-L.

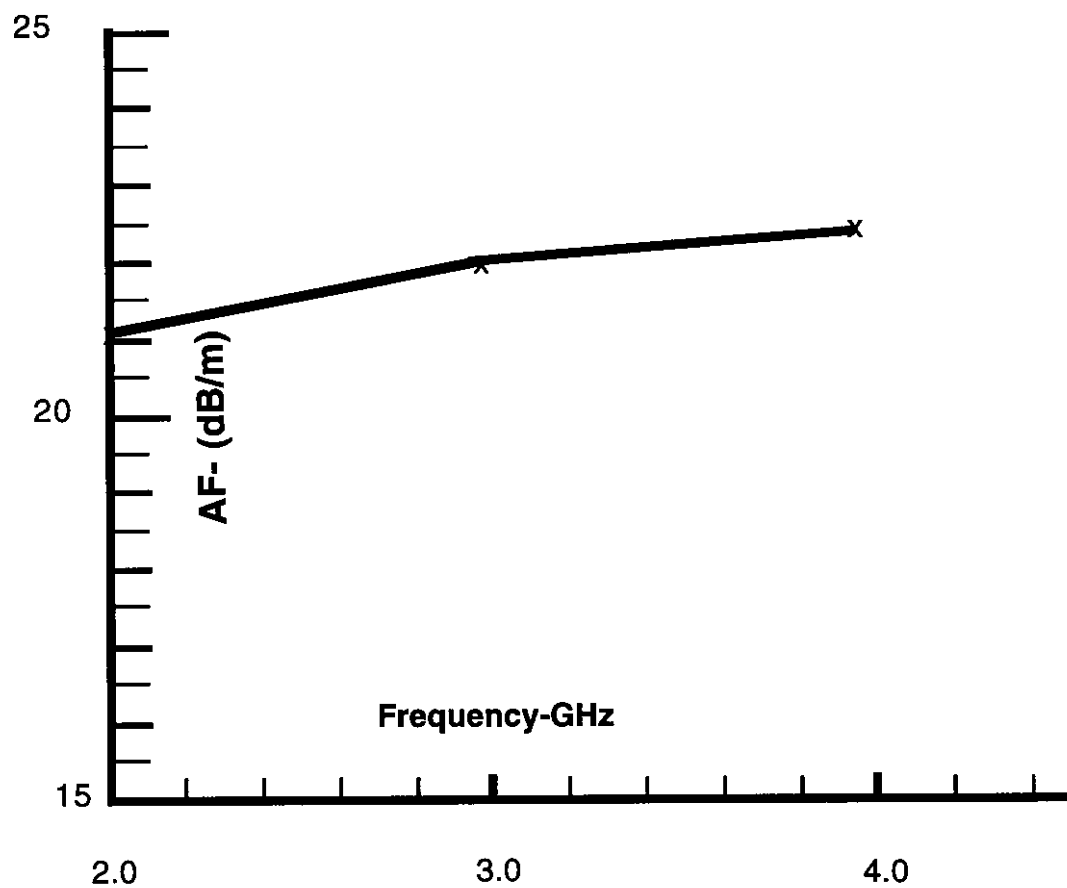


Figure 2. Antenna Factor for Polarad CA-S

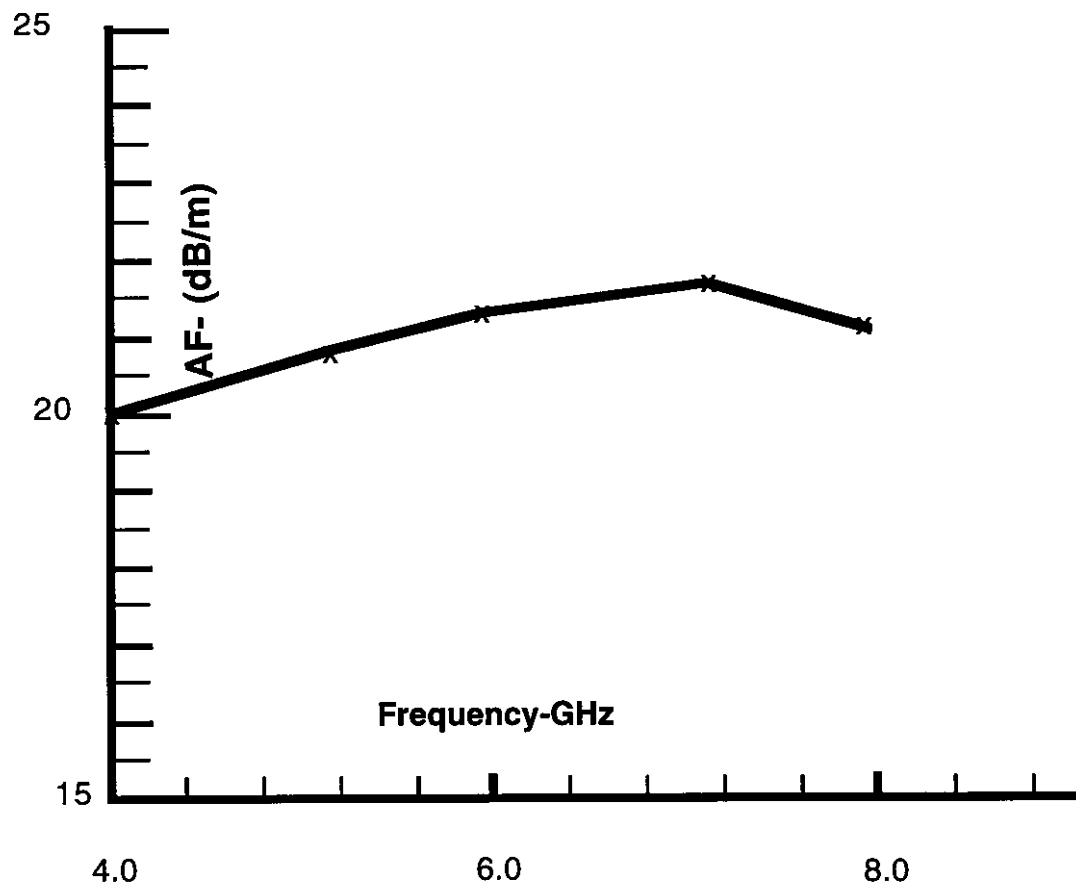


Figure 3. Antenna Factor for Polarad CA-M W/CA-R2 Reflector.

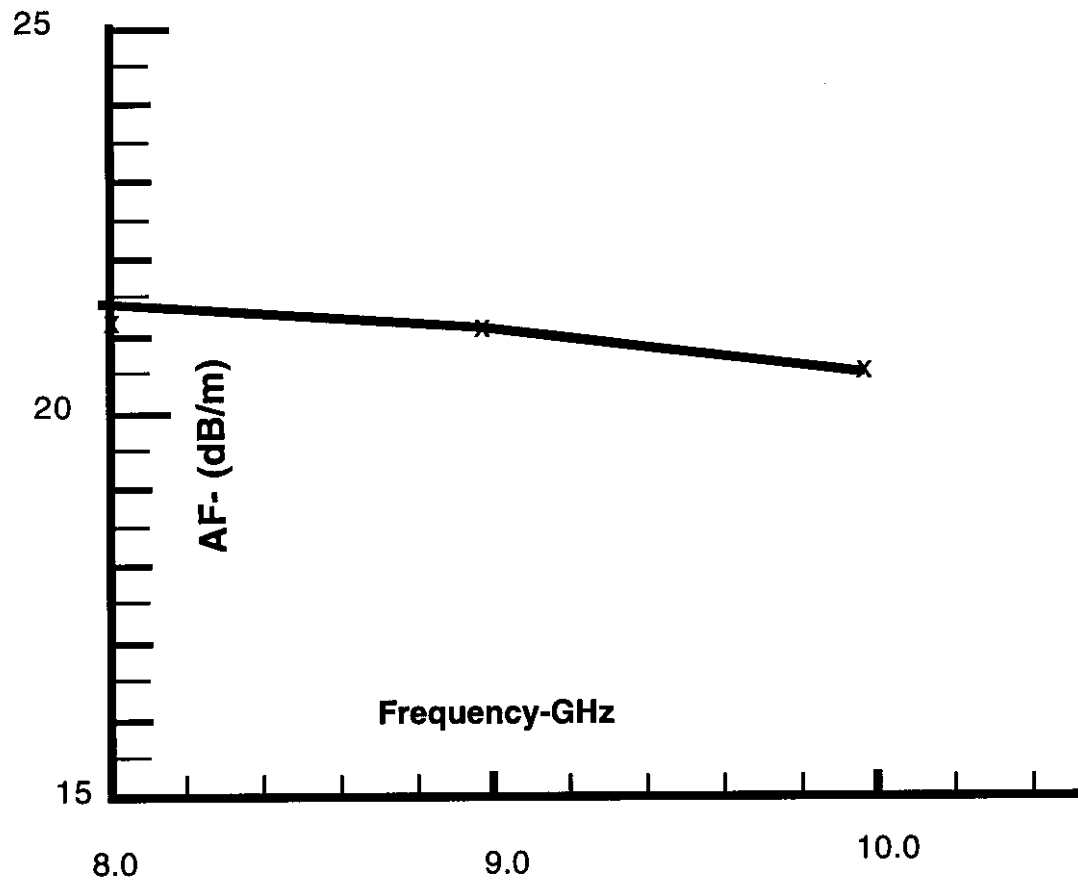


Figure 4. Antenna Factor for Polarad CA-X W/CA-R2 Reflector.

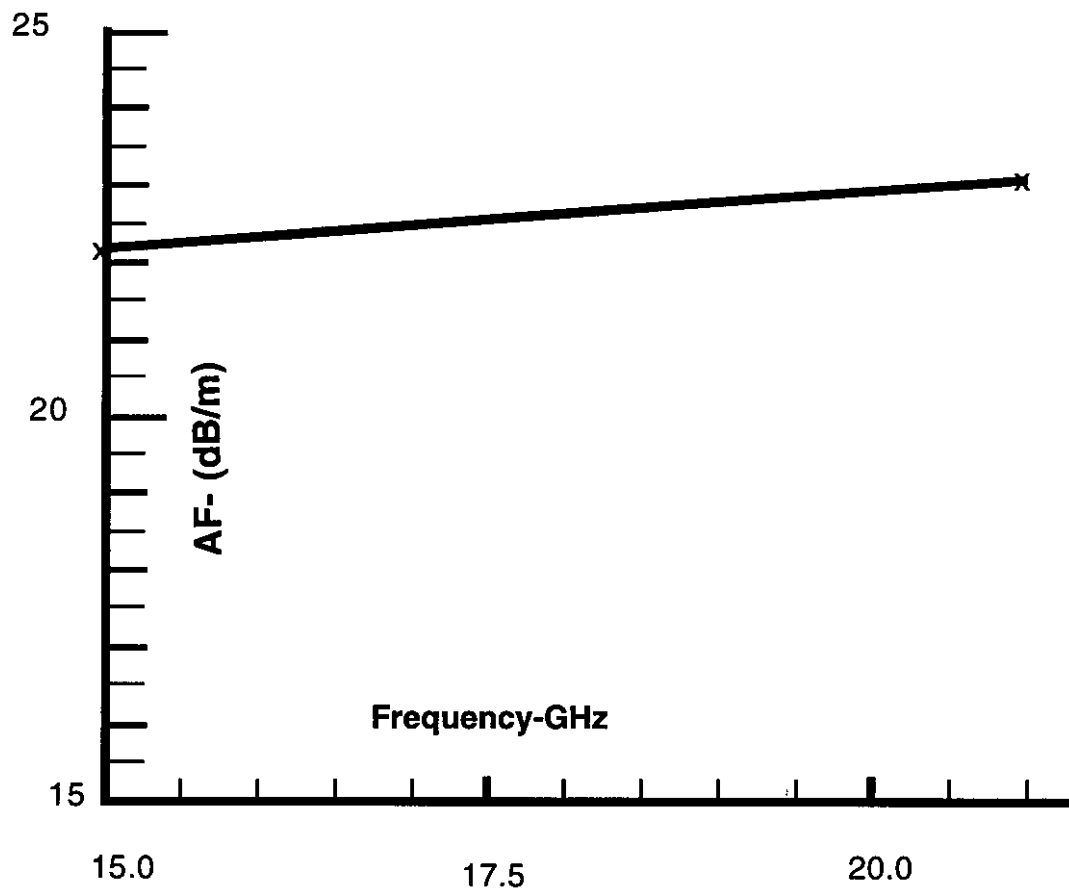


Figure 6. Antenna Factor for Polarad CA-KU W/CA-R2 Reflector.

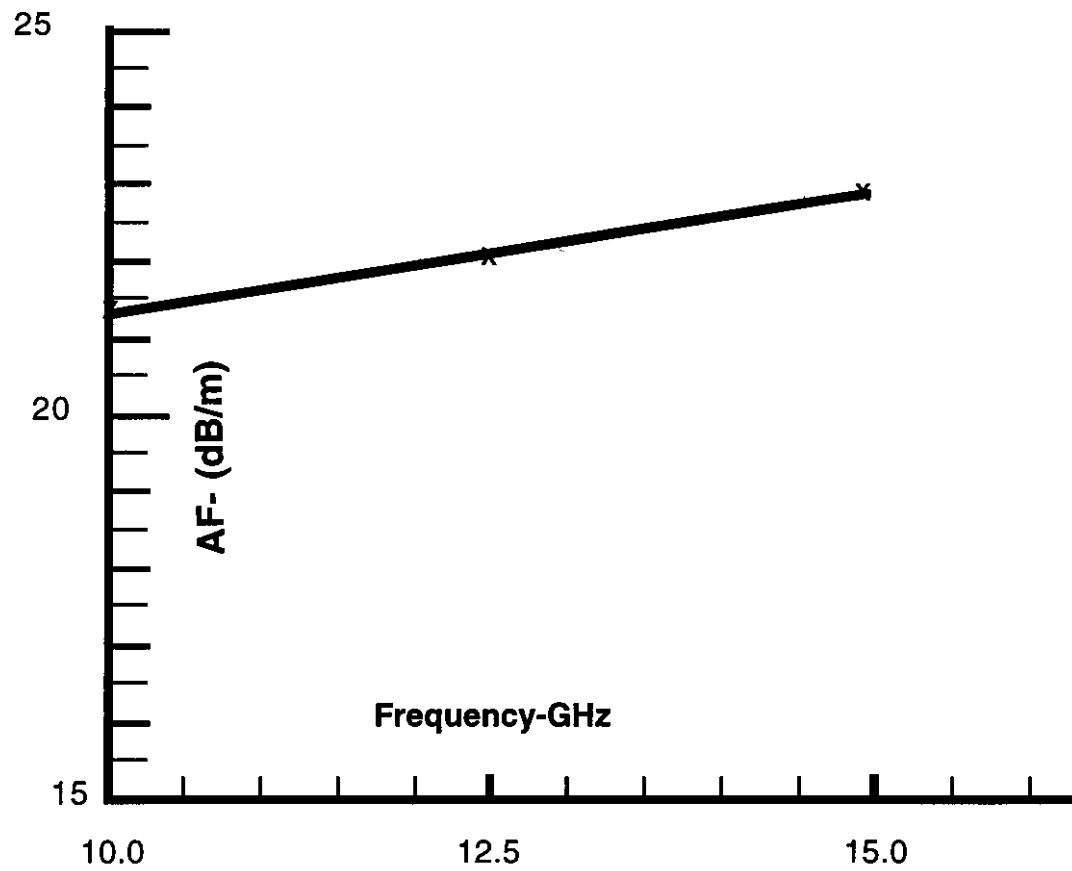


Figure 5. Antenna Factor for Polarad CA-KS W/CA-R2 Reflector.

APPENDIX E

Photographs of Test Setups