

**EXHIBIT 3**

REPORT OF MEASUREMENTS

PARAGRAPH 2.1033 (b) (6)

# RUBICOM SYSTEMS, INC.

**FCC UNINTENTIONAL RADIATOR  
TEST REPORT  
FOR THE  
NASACO ELECTRONICS  
WIRELESS STERO HEADPHONES  
MODEL HP981  
(900MHz)**



Rubicom Systems, Inc.  
284 West Drive, Suite B  
Melbourne, FL 32904

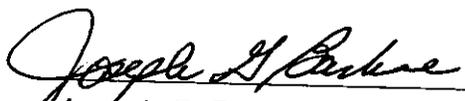
THIS REPORT SHALL NOT BE REPRODUCED  
EXCEPT IN FULL WITHOUT THE WRITTEN  
APPROVAL OF THE TESTING LABORATORY

**FCC TEST REPORT**  
**(UNINTENTIONAL RADIATOR)**  
**FOR THE**  
**NASACO ELECTRONICS**  
**MODEL HP891**  
**WIRELESS STERO HEADPHONES (900MHz)**  
**S/N: 260198501**

Prepared by:

 5/27/99  
Joseph G. Barbee

Tested by:

 5/27/99  
Joseph G. Barbee

Performed by:  
RUBICOM SYSTEMS INC.  
284 West Drive, Suite B  
Melbourne, Florida 32904

Performed for:  
NASACO ELECTRONICS  
11/F, Unit 6, Eastern Ind Ctr  
1065 Kings Road  
Quarry Bay, Hong Kong

Completed: February 11, 1998

TABLE OF CONTENTS

<u>Paragraph</u>	<u>Title</u>	<u>Page</u>
	<b>CERTIFICATION</b> .....	1
	<b>ABSTRACT</b> .....	2
<b>1.0</b>	<b>INTRODUCTION</b> .....	3
1.1	Purpose .....	3
1.2	Requirements .....	3
1.3	Unit Under Test Description .....	4
1.4	Summary of Results .....	4
<b>2.0</b>	<b>APPLICABLE DOCUMENTS</b> .....	5
<b>3.0</b>	<b>TEST SITE DESCRIPTION</b> .....	6
3.1	Environmental Conditions .....	6
<b>4.0</b>	<b>TEST INSTRUMENTATION</b> .....	7
<b>5.0</b>	<b>TEST SAMPLE SETUP AND CONFIGURATIONS</b> .....	8
<b>6.0</b>	<b>PROCEDURES AND RESULTS</b> .....	10
6.1	Radiated Emissions (15.109(a)/15.205) .....	10
6.2	Radiated Emissions .....	10
	<b>FIGURES 6.1-1 - 6.1-37</b> .....	10
<b>APPENDIX A</b>	<b>COMPLIANCE LETTER</b> .....	38
<b>APPENDIX B</b>	<b>RECOTON FAX</b> .....	40

**CERTIFICATION**

Rubicom Systems, Inc. certifies the information obtained in this report was performed consistent with the requirements of ANSI C63.4-1992. The NASACO Electronics Model HP981 (900MHz) Wireless Stereo Headphone complies with the requirements of CFR 47 Part 15, Subpart B for unintentional radiators, specifically 15.109(a).

This data was obtained while testing a Model HP981 headphone, s/n: 260198501, furnished by Recoton Corp. and described in Paragraph 1.3 of this document. Any modifications to the unit as tested may invalidate the data and void this certification.

  
Joseph G. Barbee  
President

NOTE: This report was changed to reflect the NASACO Model HP981 per written request from Recoton, Inc. giving permission to use this data for their own grant.

**ABSTRACT**

This report presents test results of the emanations found emitting from a 900MHz stereo headphone, supplied by Recoton, and the comparison of these emissions to the requirements of the FCC, Title 47, Part 15, Subpart B for (15.109(a) Radiated emissions.

This testing was performed on a 3-meter open area test site at Rubicom Systems, Inc. (RSI). The testing was performed for Recoton Corp. under purchase order 46958 and is filed under JA-1521 at RSI. The results of this test effort demonstrate compliance of the Stereo Headphone to the FCC, Title 47, Part 15.109(a), Subpart B, Unintentional Radiators.

The unit under test was noted with a temporary model number of HP981 and serial number 260198501.

**1.0 INTRODUCTION**

**1.1 Purpose**

The purpose of this report is to show compliance of the NASACO Electronics stereo headphone to the requirements of Part 15 of the FCC Rules and Regulations (47CFR, Part 15, Subpart B) for unintentional radiators. The tests were performed on a three meter site.

**1.2 Requirements**

The test requirements are as follows:

**RADIATED (15.109(a))**

<u>Freq. (MHZ)</u>	<u>3 Meter Field Strength <math>\mu</math>V/M</u>	<u>3 Meter dB<math>\mu</math>V/M</u>
30 - 88	100	40.0 Q.P.
88 - 216	150	43.5 Q.P.
216 - 960	200	46.0 Q.P.
960 - Above	500	54 Avg. 74 Peak

**1.3 Unit Under Test Description**

The Model HP981 Headphone is a 900MHz wireless stereo headphone to be used with a corresponding stereo audio transmitter. The headphone is battery operated only and cannot be operated when the charger is connected, therefore the battery charger was not supplied for testing. The headphone is tunable with a stereo LED indicator and volume was at maximum output during test.

**1.4 Summary of Results**

The HP981 headphone was found to be compliant to the requirements set forth in paragraph 1.2 of this report. Testing was performed to 5GHz to cover 5 times the maximum generated signal of 924MHz.

**2.0 APPLICABLE DOCUMENTS**

herein: The following documents form a part of this report to the extent expressed

FCC Code of Federal Regulations Title 47, Part 15,

FCC Procedure for Measuring RF Emissions from Computing  
Devices FCC/OET MP-4, July 1987

ANSI C63.4-1992

FCC Characteristics of Open Field Test Sites Bulletin  
OET 55, October 1989

**3.0 TEST SITE DESCRIPTION**

This testing was performed at Rubicom Systems, Inc. 3-meter open area test site. The description of the measurement facility was found to be compliant with the requirements of Section 2.948 of the FCC Rules. A copy of the compliance letter is attached to this report as Appendix A.

**3.1 Environmental Conditions**

Environmental conditions during testing of the EUT were as follows:

<b>Date: February 10, 1998</b>	<b>Date: February 11, 1998</b>
<b>Temperature: 70°</b>	<b>Temperature: 76°</b>
<b>Barometer: 28.20 inches</b>	<b>Barometer: 27.30 inches</b>
<b>Humidity: 49%</b>	<b>Humidity: 46%</b>

**4.0 TEST INSTRUMENTATION**

The following test equipment was used to perform this testing.

<u>Qty.</u>	<u>Description</u>	<u>Manufacturer</u>	<u>Model No.</u>	<u>Last Cal.</u>	<u>Cal Cycle</u>
1	Spectrum Analyzer	Advantest	R3271A	07/08/97	1 yr.
1	Bilog Antenna	A.H. Systems	CLB6111B	07/17/97	1 yr.
1	Ridge Guide Horn	Electro Metrics	RGA-180 24-BNC	10/23/97	1 yr.
1	Plotter	Hewlett Packard	7440A	NCR	

**5.0 TEST SAMPLE SETUP AND CONFIGURATIONS**

The HP981 Headphone was placed on the nonconductive 80cm high manual turntable. The unit is internal battery operation only, with no associated cabling. During the emissions test a fresh battery was installed and audio was set to maximum.

Test setup is shown in Photo 1.

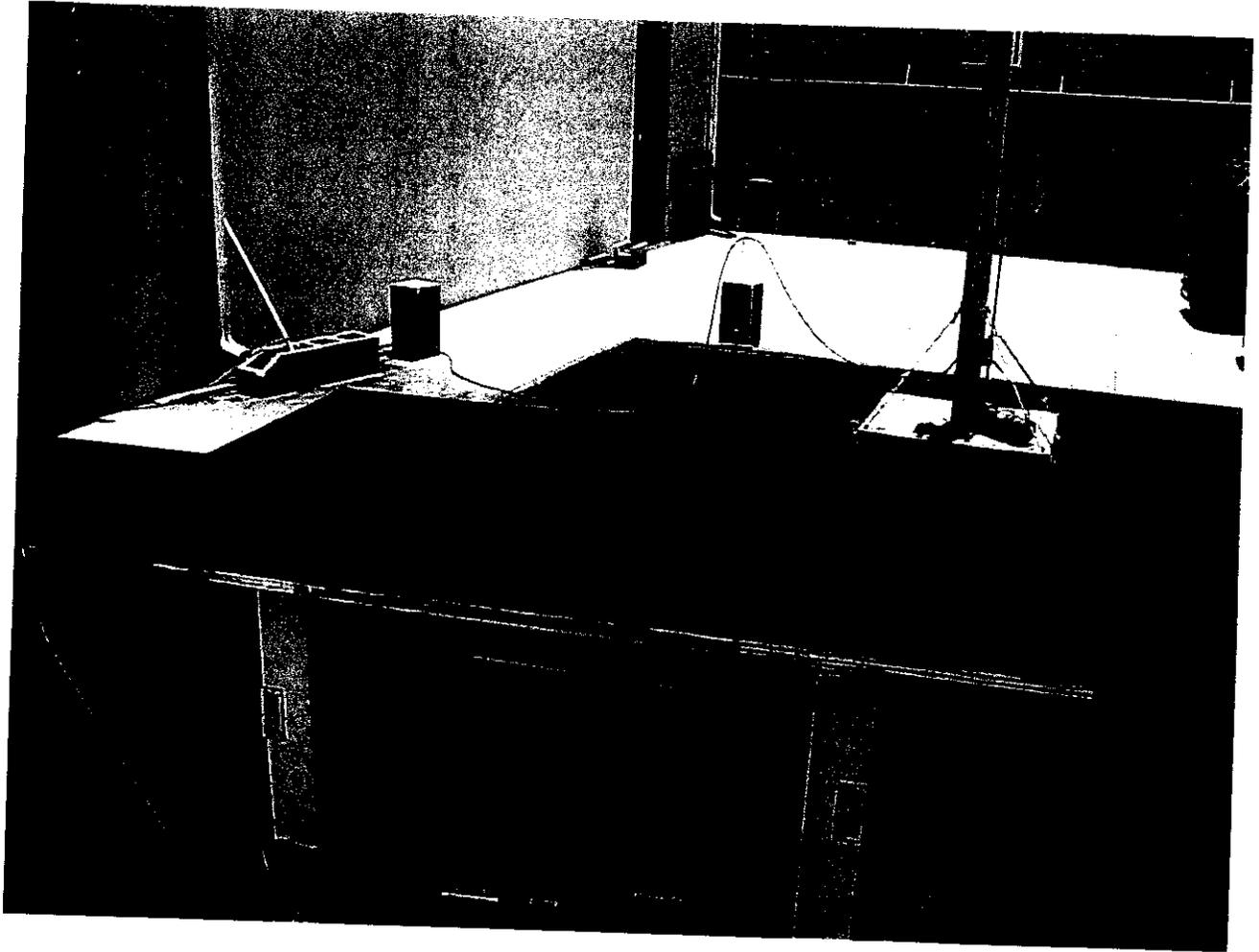


PHOTO #1

**6.0 PROCEDURES AND RESULTS**

**6.1 Radiated Emissions (15.109(a)/15.205)**

Figures 6.1-1 through 6.1-6 present the 30MHz-1GHz prescans made inside the enclosure prior to the open air test site (OATS) testing. Figures 6.1-7 through 6.1-16 present the scans during electric field testing on the open air test site for comparison to the 15.109(a)/15.205 emission. There were no signals detected from the headphone other than the harmonics of the 924MHz oscillator. Figures 6.1-17 through 6.1-26 present ambient scans.

**6.2 Radiated Emissions**

The tabulated levels of the signal detected are presented in Table 6.2-1. The antenna factors and cable loss numbers are stored in a memory card and automatically included in the spectrum analyzer display. The measured level was established at a maximized antenna height and azimuth.

An example of calculations are as follows:

Meter Reading	20 dB $\mu$ V
Antenna Factor	+16 Conversion Factor
Cable Loss	<u>+2</u> Correction Factor
Result	+38 dB $\mu$ V/m

## FCC RADIATED EMISSIONS TABULATED RESULTS

EUT MODEL: HP981 Stereo HeadphoneS/N: 260198501    DATE: 02/10/98    TESTER:

Frequency (MHZ)	Antenna Pol.	Elevation	Azimuth	Measured dB $\mu$ V/m) Average	Limit (dB $\mu$ V/m @ 3 Meters)	Margin (dB)
1.848GHz	V	1.75M	247°	32.8	54	-21.2
2.772GHz*	H	1.75M	247°	35.0	54	-19.0
2.772GHz*	V	1.75M	247°	35.0	54	-19.0

\* Frequency inside Restricted Band, Para. 209 Limits Apply.

TABLE 6.2-1



TEST: FCC RADIATED EUT: RECOTON (NASACO) HP981RX S/N: 260198501  
 FREQ: 30M-100M SPEC: PAR. 15.209A ANT. HT/POL: /m / H  
 DETECTOR: PEAK LINE UNDER TEST: N/A EUT POSITION: front  
 DATE: 2/15/98 TEST SITE: ROOM 1 TESTER: JST

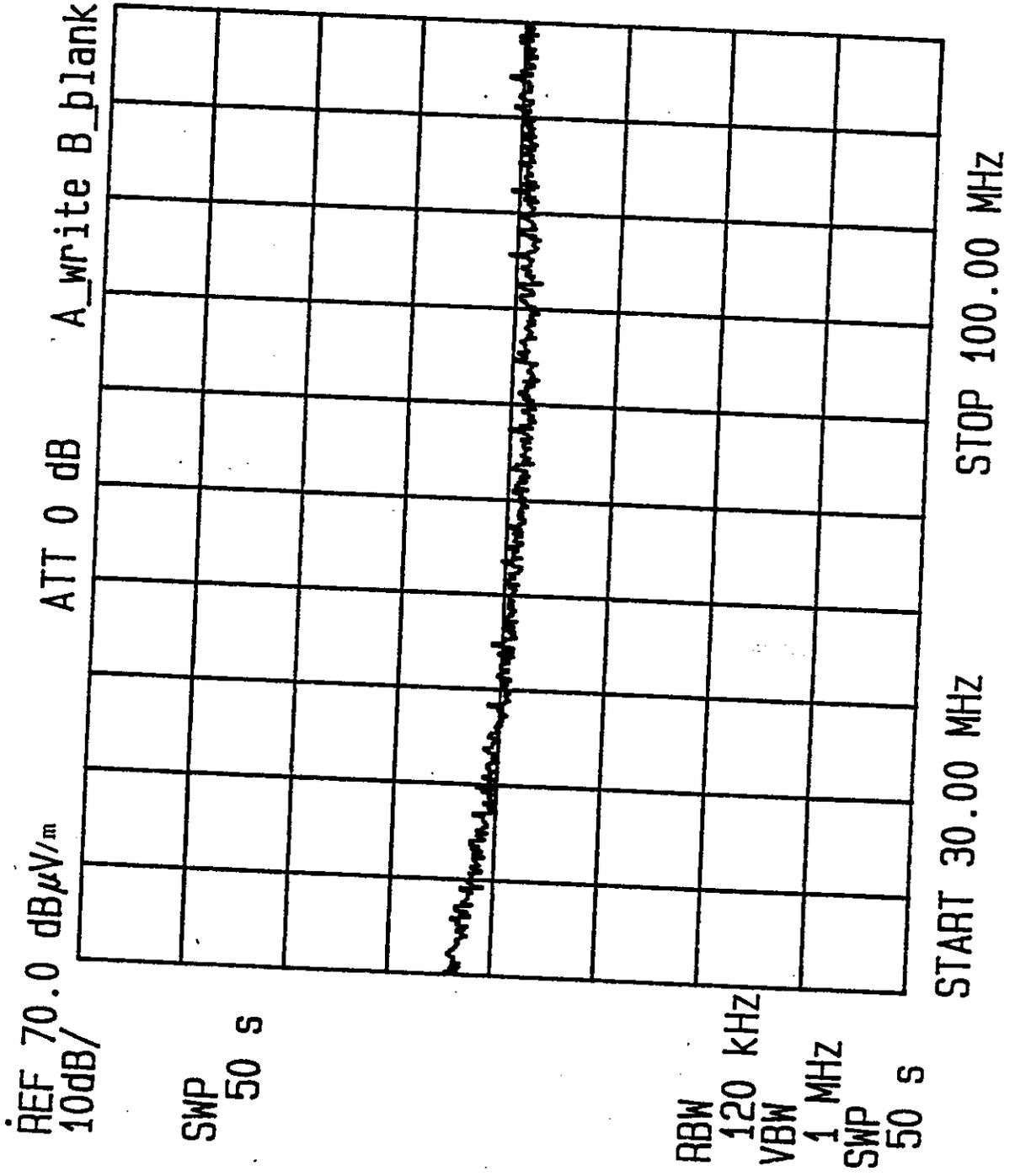


FIGURE 6.1-1



TEST: FCC RADIATED EUT: RECOTON (NASACO) HP981RX S/N: 260198501  
 FREQ: 30M-100M SPEC: PAR. 15.209A ANT. HT/POL: / V  
 DETECTOR: PEAK LINE UNDER TEST: N/A EUT POSITION:  
 DATE: 2/10/08 TEST SITE: ROOM 1 TESTER: *[Signature]*

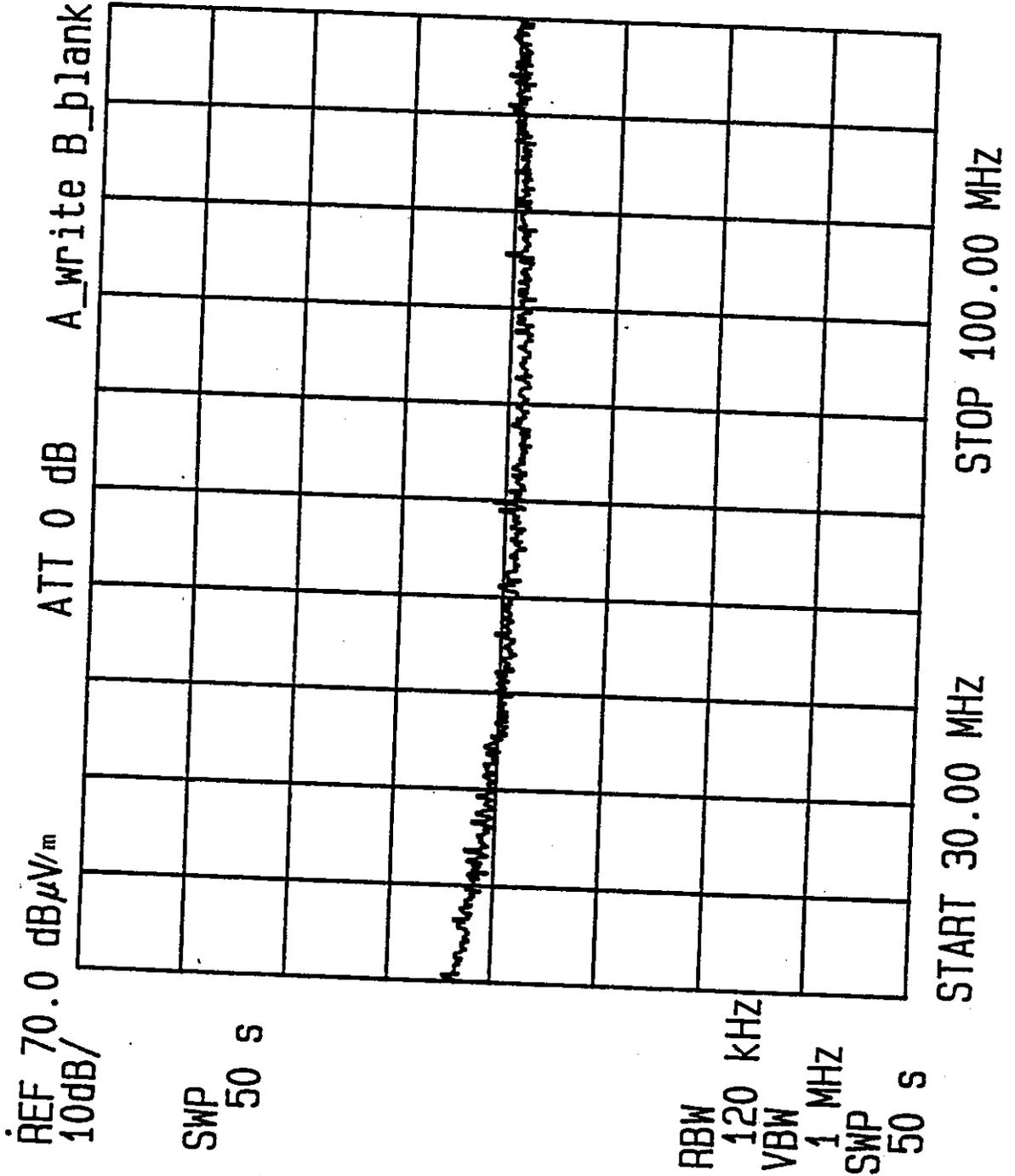


FIGURE 6.1-2



TEST: FCC RADIATED  
 EUT: RECOTON (NASACO) HP981RX S/N: 260198501  
 FREQ: 100M-200M  
 SPEC: PAR. 15.209A  
 DETECTOR: PEAK  
 LINE UNDER TEST: N/A  
 DATE: 1/10/91  
 TEST SITE: ROOM 1  
 ANT. HT/POL: / H  
 EUT POSITION:  
 TESTER:

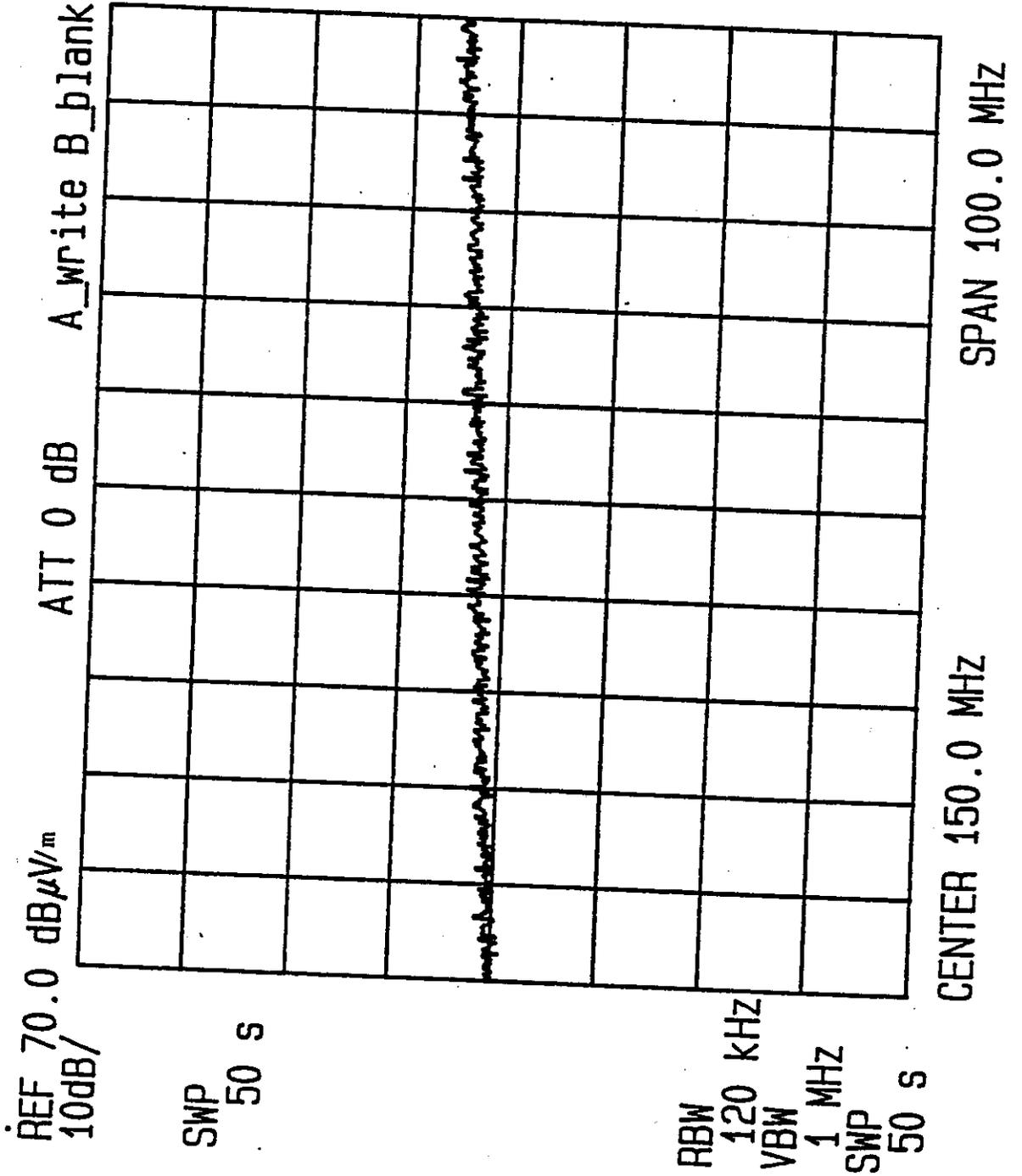


FIGURE 6.1-3



TEST: FCC RADIATED  
 EUT: RECOTON (NASACO) HP981RX S/N: 260198501  
 FREQ: 100M-200M  
 SPEC: PAR. 15.209A  
 DETECTOR: PEAK  
 LINE UNDER TEST: N/A  
 DATE: 2/10/98  
 TEST SITE: ROOM 1  
 ANT. HT/POL: / V  
 EUT POSITION: /  
 TESTER: /

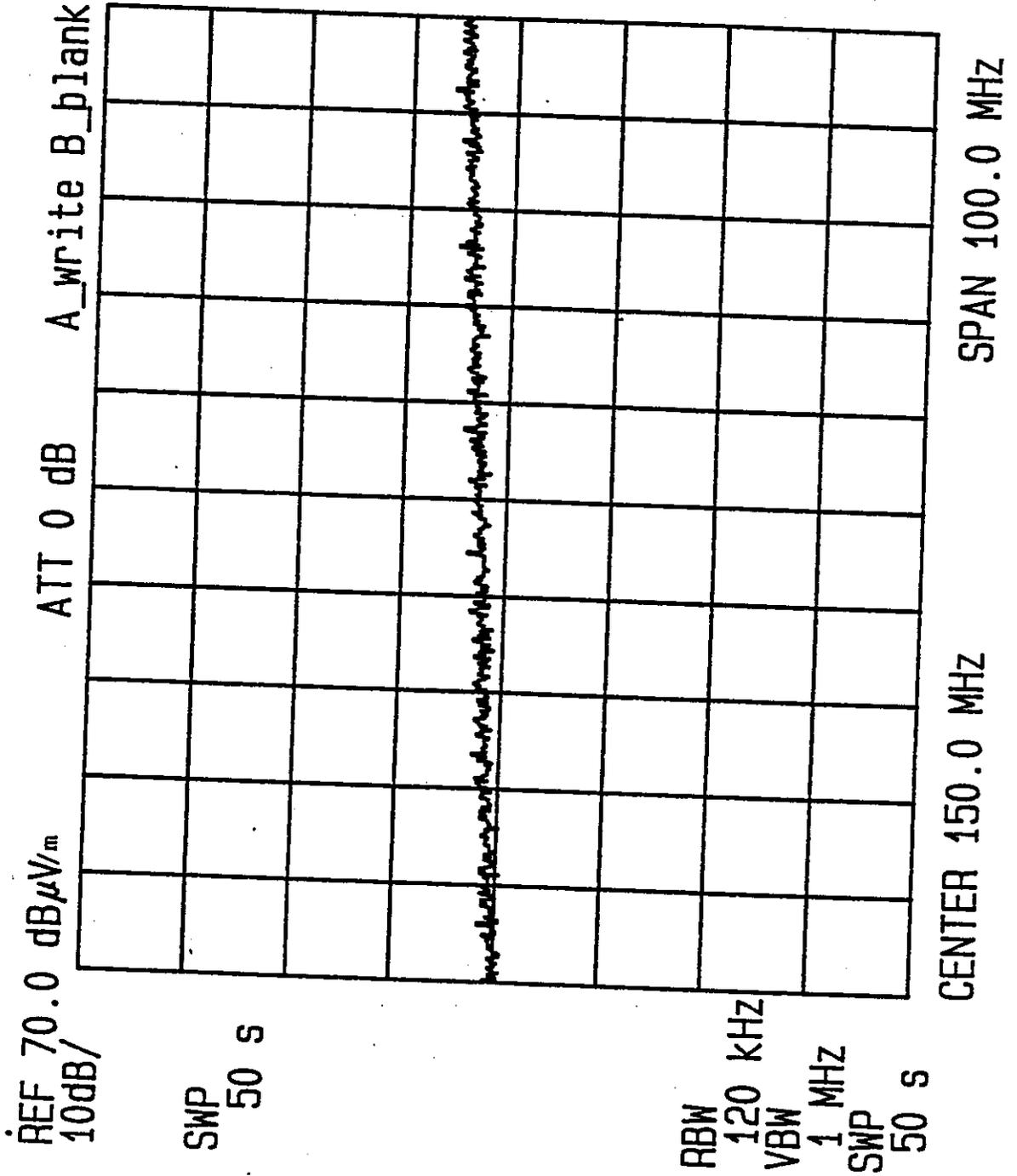


FIGURE 6.1-4



TEST: FCC RADIATED EUT: RECOTON (NASACO) HP981RX S/N: 260198501  
 FREQ: 200M-1G SPEC: PAR. 15.209A ANT. HT/POL: / H  
 DETECTOR: PEAK LINE UNDER TEST: N/A EUT POSITION:  
 DATE: 7/2/98 TEST SITE: ROOM 1 TESTER: [Signature]

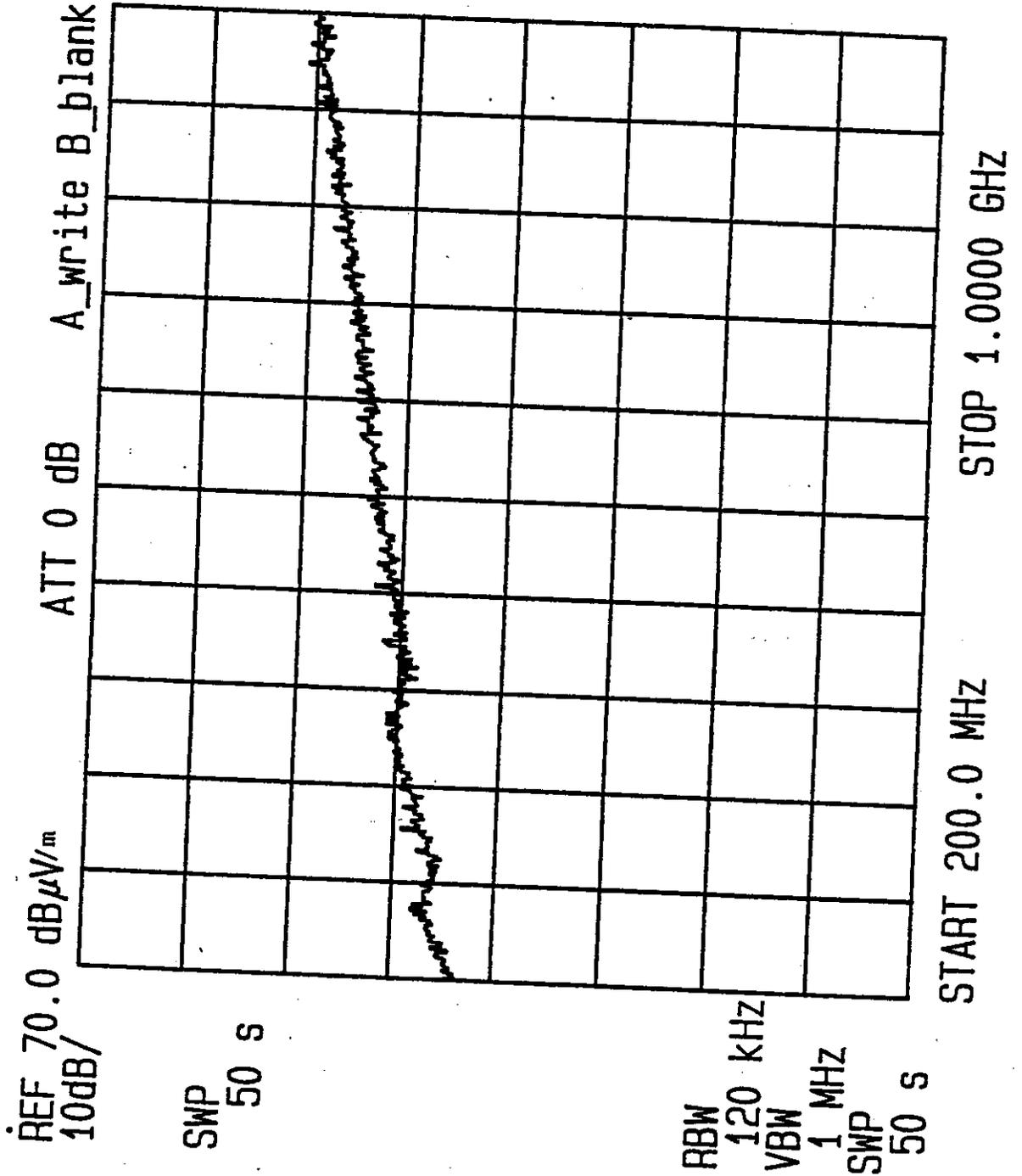


FIGURE 6.1-5



TEST: FCC RADIATED  
 EUT: RECOTON (NASACO) HP981RX S/N: 260198501  
 FREQ: 200M-1G  
 SPEC: PAR. 15.209A  
 DETECTOR: PEAK  
 LINE UNDER TEST: N/A  
 DATE: 2/12/98  
 TEST SITE: ROOM 1  
 ANT. HT/POL: / V  
 EUT POSITION:  
 TESTER:

FCC ID: LLP-110-R

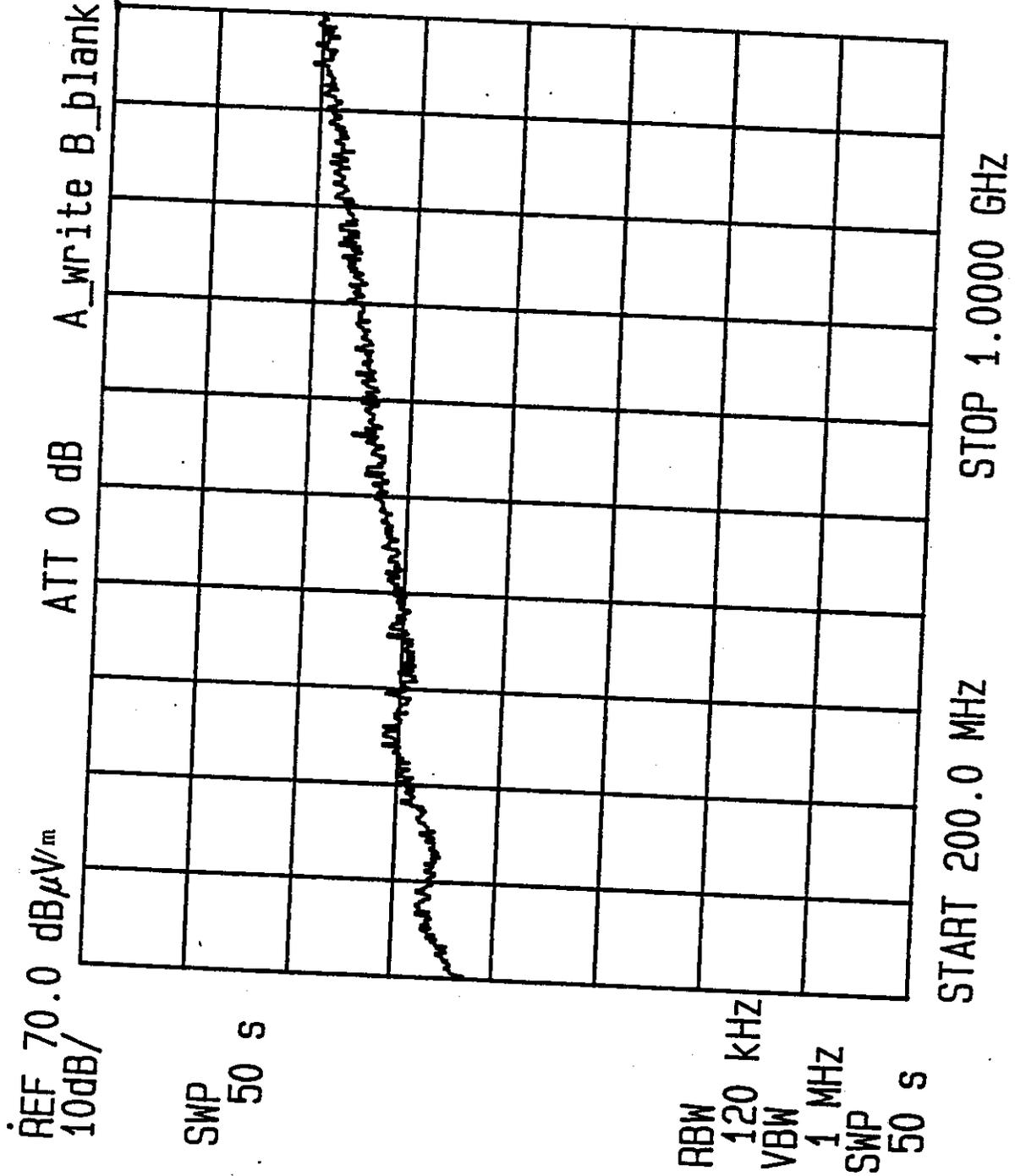


FIGURE 6.1-6



TEST: FCC RADIATED  
 EUT: RECOTON (NASACO) HP981RX S/N: 260198501  
 FREQ: 30M-100M  
 SPEC: PAR. 15.209A  
 DETECTOR: QUASI PEAK  
 LINE UNDER TEST: N/A  
 DATE: 2/2/98  
 TEST SITE: 3 METER  
 ANT. HT/POL: 1.75 /  $\pi$ H  
 EUT POSITION: 2.16'  
 TESTER: [Signature]

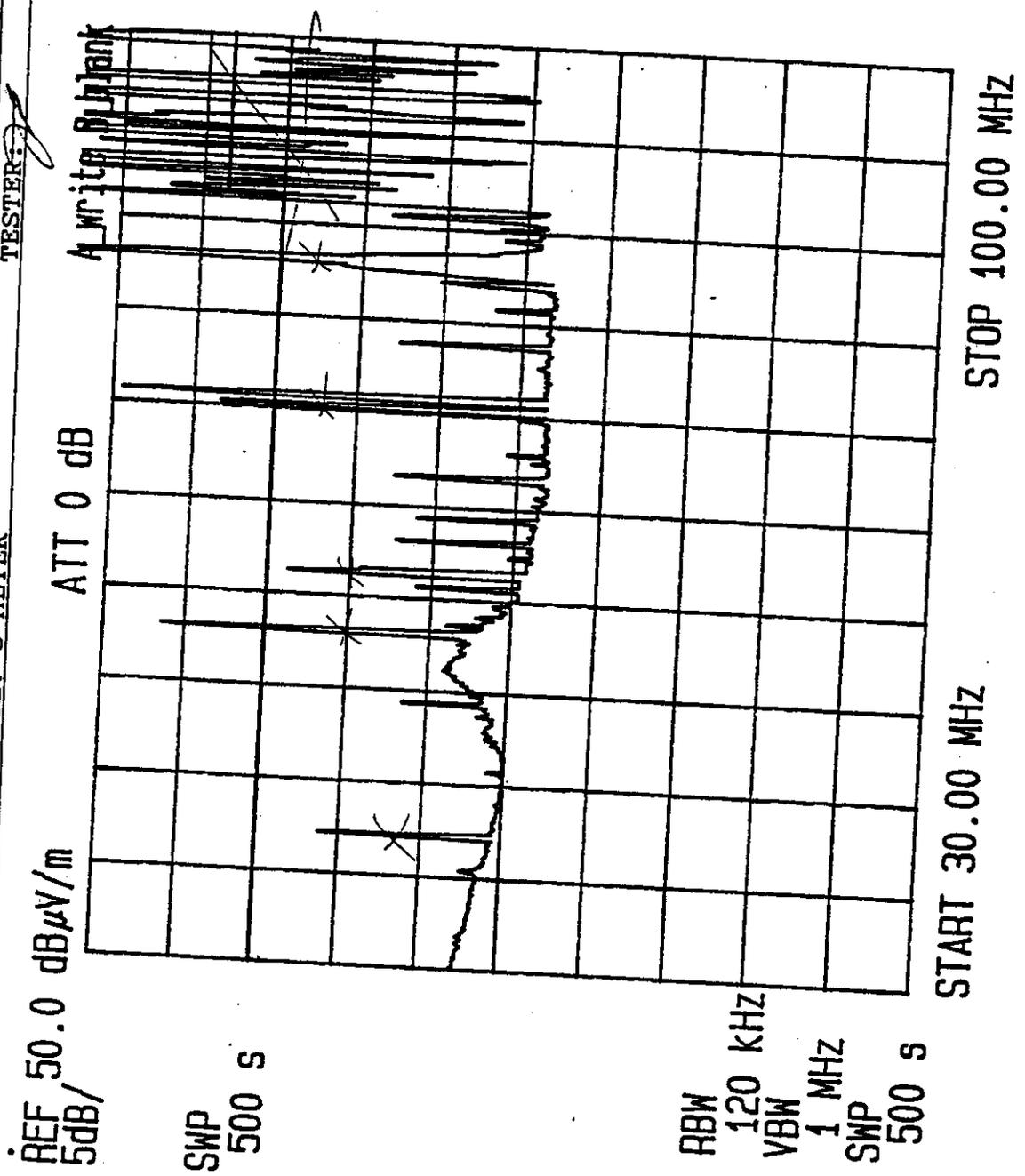


FIGURE 6.1-7



TEST: FCC RADIATED  
 EUT: RECOTON (NASACO) HP981RX S/N: 260198501  
 FREQ: 30M-100M SPEC: PAR. 15.209A  
 DETECTOR: QUASI PEAK LINE UNDER TEST: N/A  
 DATE: 2/10/98 TEST SITE: 3 METER  
 ANT. HT/POL: 1.5' / # V  
 EUT POSITION: 2.78'  
 TESTER:

FCC ID: LLP-110-R

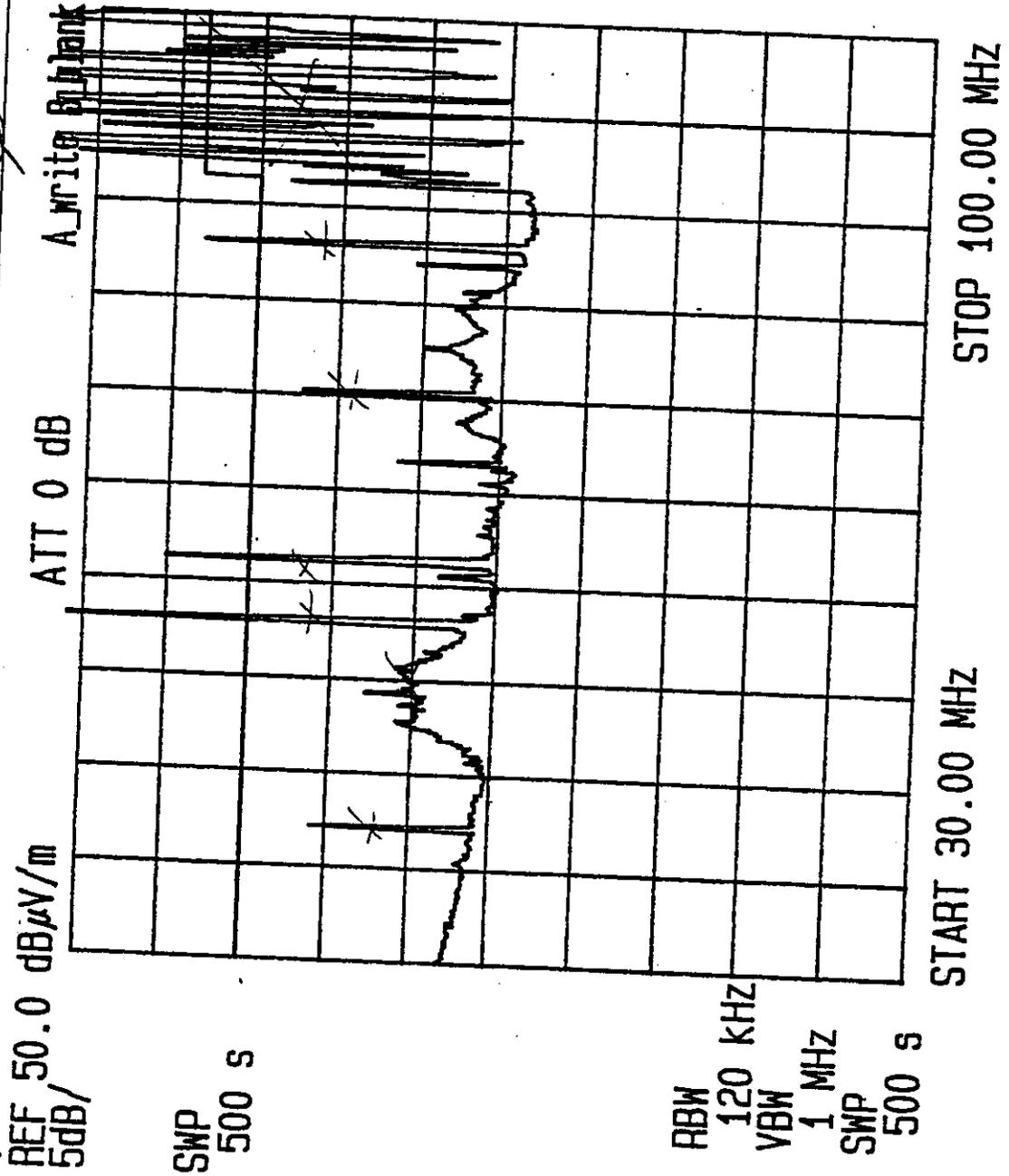


FIGURE 6.1-8



TEST: FCC RADIATED  
 FREQ: 100M-200M  
 DETECTOR: QUASI PEAK  
 DATE: 2/12/91

EUT: RECOTON (NASACO) HP981RX S/N: 260198501  
 SPEC: PAR. 15.209A  
 LINE UNDER TEST: N/A  
 TEST SITE: 3 METER

ANT. HT/POL: 4.75' / H  
 EUT POSITION: 2.70'  
 TESTER: [Signature]

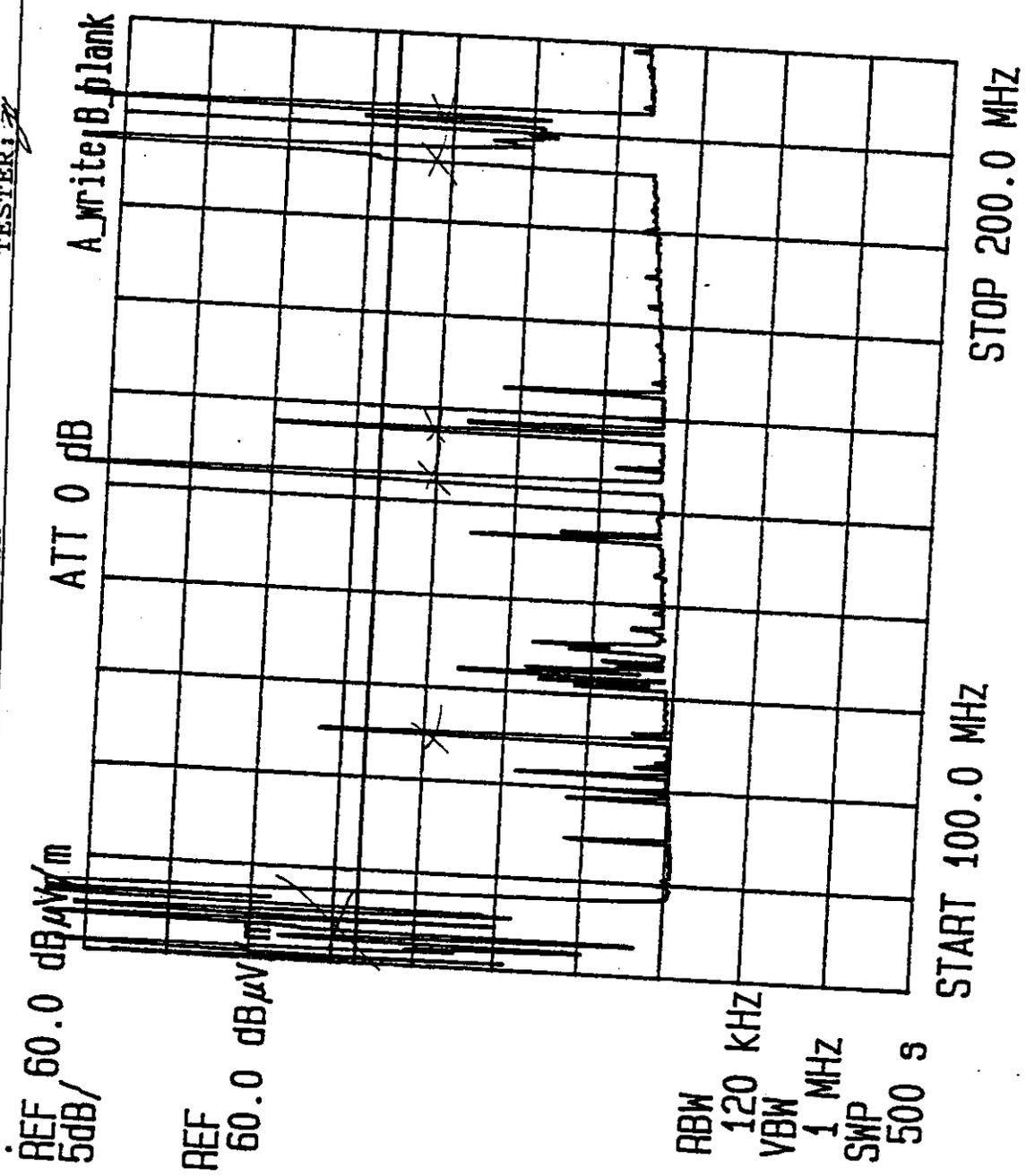


FIGURE 6.1-9



TEST: FCC RADIATED  
 FREQ: 100M-200M  
 DETECTOR: QUASI PEAK  
 DATE: 2/19/88  
 EUT: RECOTON (NASACO) HP981RX S/N: 260198501  
 SPEC: PAR. 15.209A  
 LINE UNDER TEST: N/A  
 TEST SITE: 3 METER  
 ANT. HT/POL: 1.5' / V  
 EUT POSITION: 2.76'  
 TESTER: [Signature]

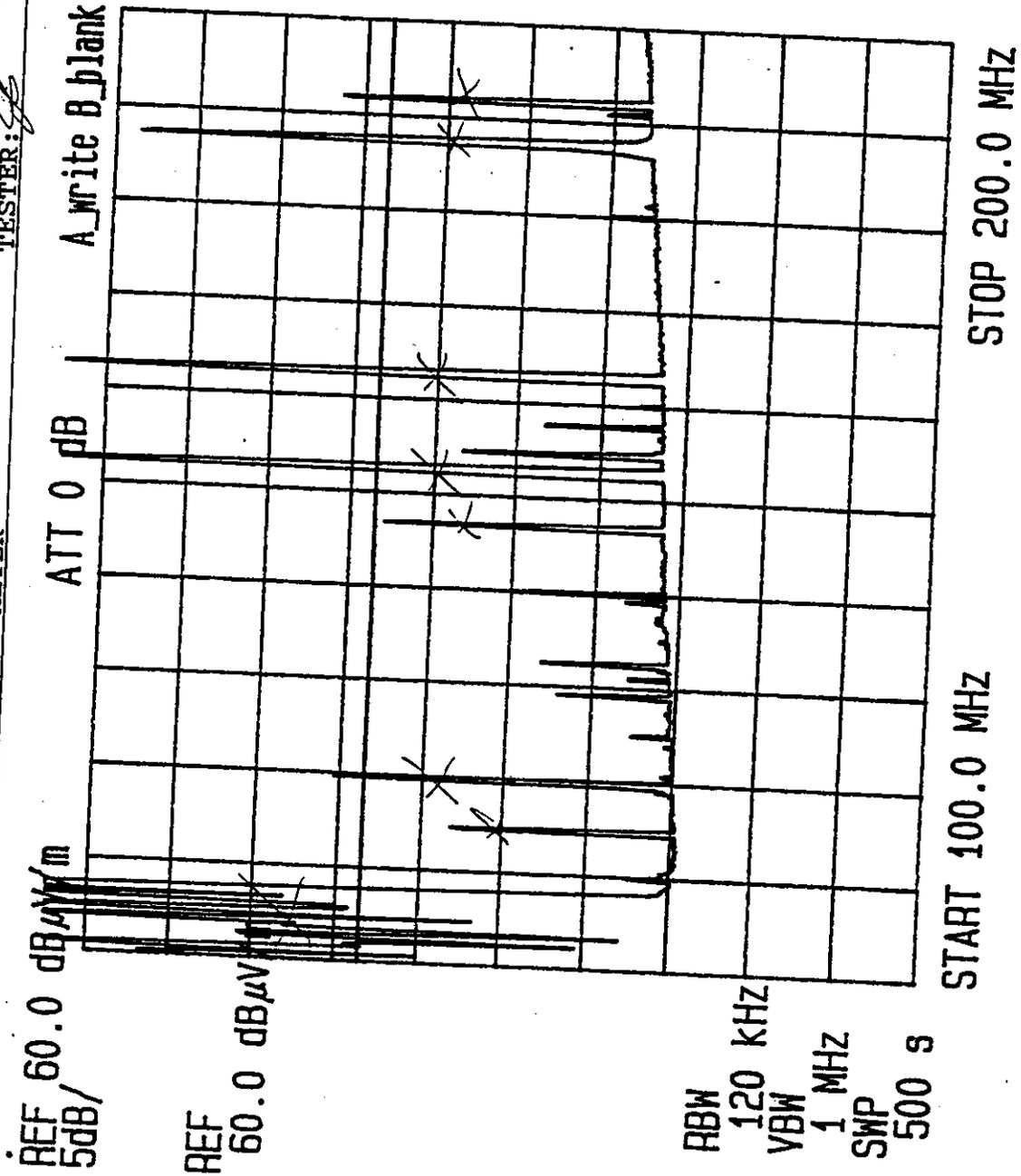


FIGURE 6.1-10

TEST: FCC RADIATED EUT: RECOTON (NASACO) HP981RX S/N: 260198501  
 FREQ: 200M-1G SPEC: PAR. 15.209A ANT. HT/POL: 75° / H  
 DETECTOR: QUASI PEAK LINE UNDER TEST: N/A EUT POSITION: 2.70°  
 DATE: 2/11/97 TEST SITE: 3 METER TESTER: [Signature]

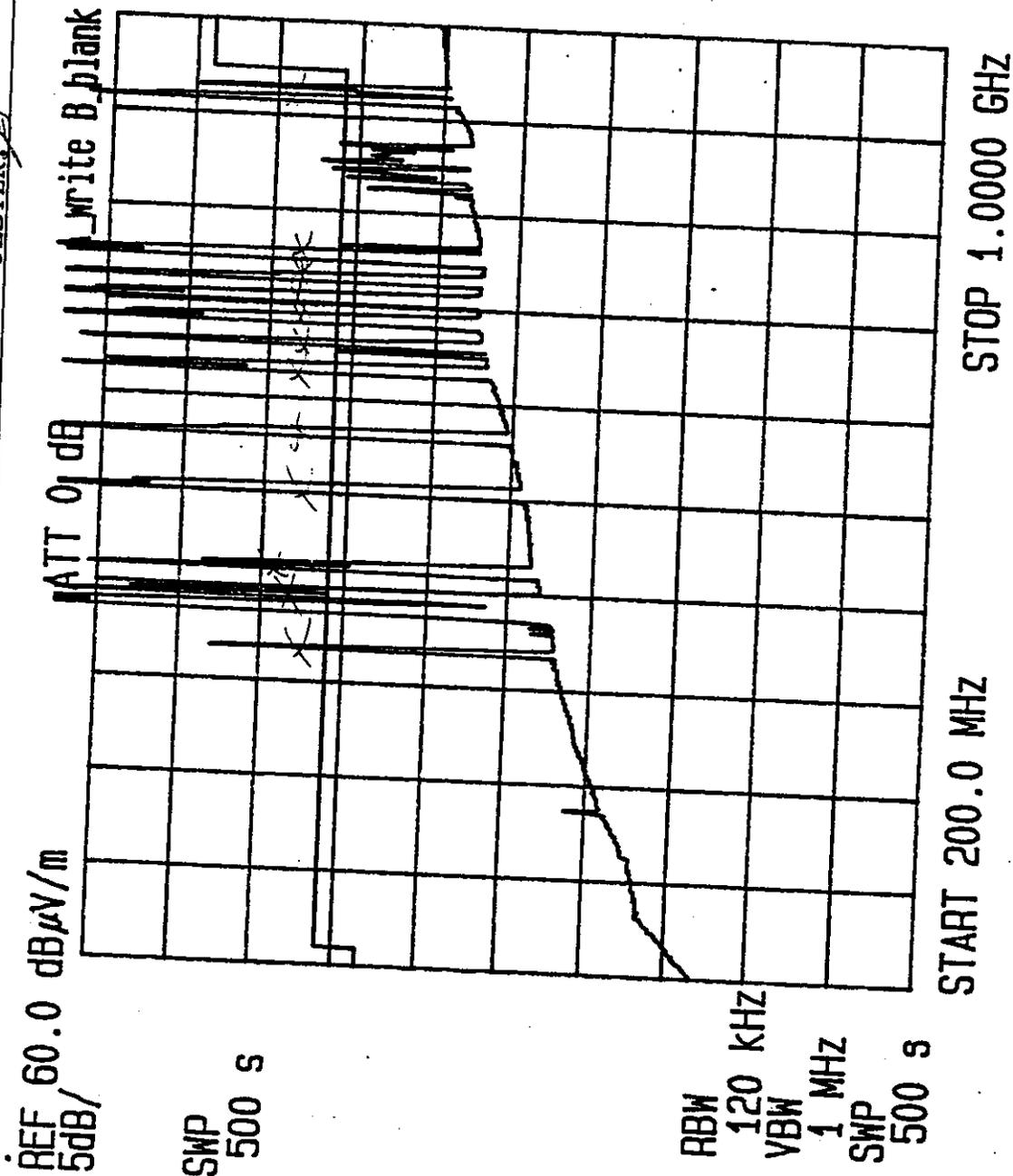


FIGURE 6.1-11

TEST: FCC RADIATED EUT: RECOTON (NASACO) HP981RX S/N: 260198501  
 FREQ: 200M-1G SPEC: PAR. 15.209A ANT. HT/POL: 1.5 V  
 DETECTOR: QUASI PEAK LINE UNDER TEST: N/A EUT POSITION:  
 DATE: 2/11/97 TEST SITE: 3 METER TESTER:

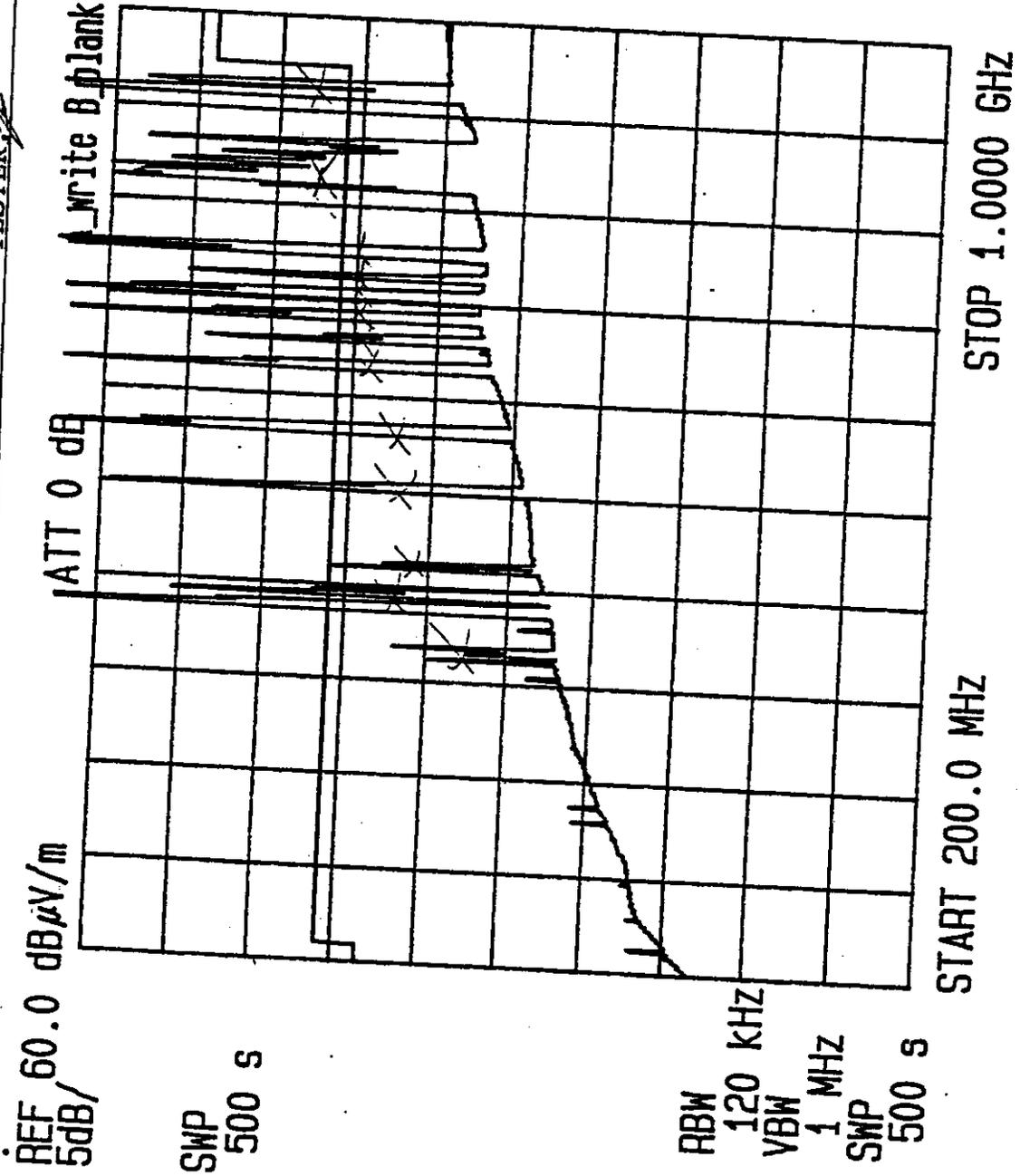


FIGURE 6.1-12





TEST: FCC RADIATED  
 FREQ: 1GHZ-5GHZ  
 DETECTOR: AVERAGE  
 DATE: 2/11/98

EUT: RECOTON MODEL HP981RX  
 SPEC: CFR 15.209A  
 LINE UNDER TEST: N/A  
 TEST SITE: 3 METER

S/N: 260198501  
 ANT. HT/POL: 475° / H  
 EUT POSITION:  
 TESTER: *[Signature]*

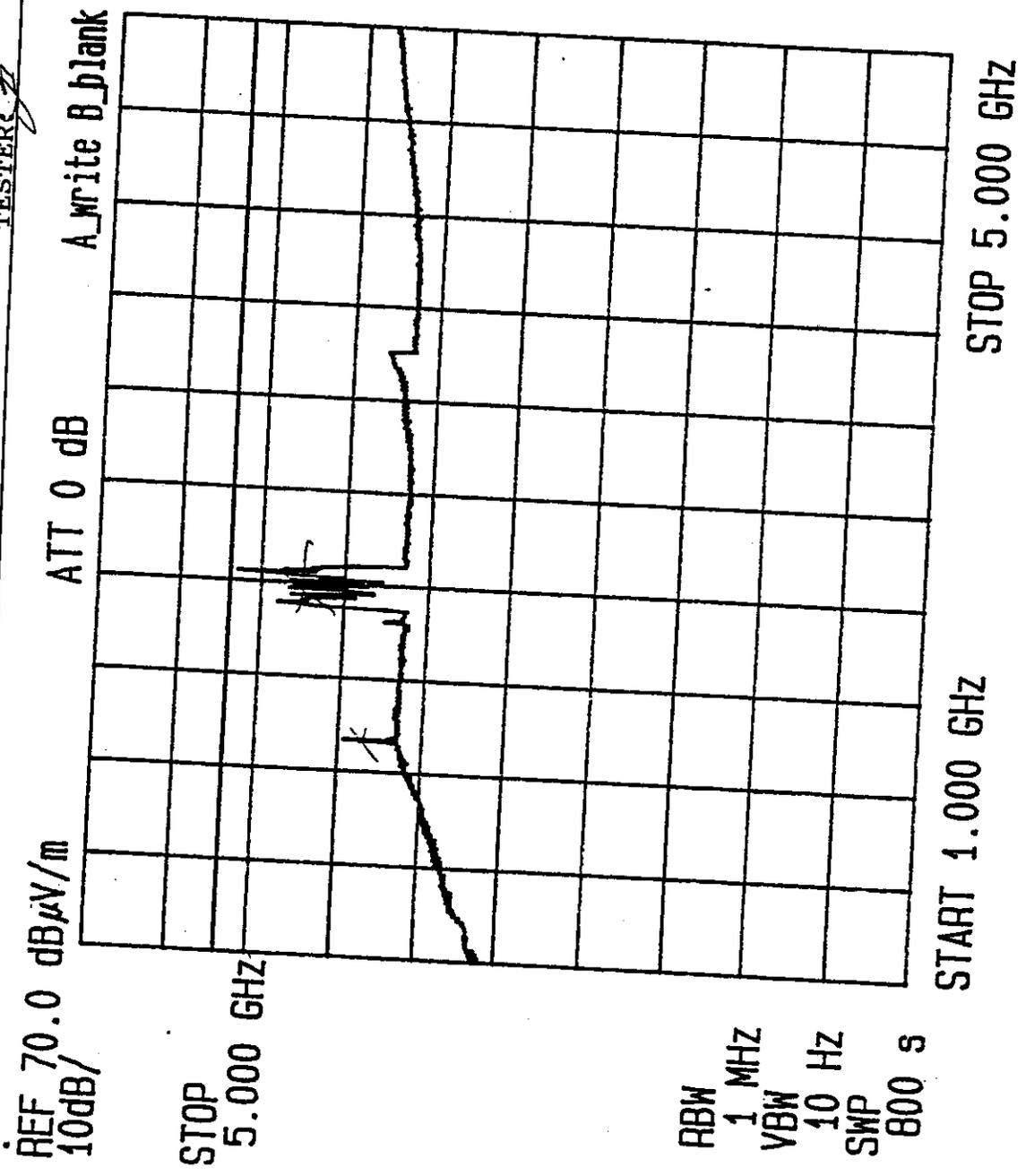


FIGURE 6.1-13



TEST: FCC RADIATED  
 EUT: RECOTON MODEL HP981RX  
 S/N: 260198501  
 FREQ: 1GHz-5GHz  
 SPEC: CFR 15.209A  
 ANT.HT/POL: 45° / V  
 DETECTOR: AVERAGE  
 LINE UNDER TEST: N/A  
 EUT POSITION: 270°  
 DATE: 4/11/97  
 TEST SITE: 3 METER  
 TESTER: [Signature]

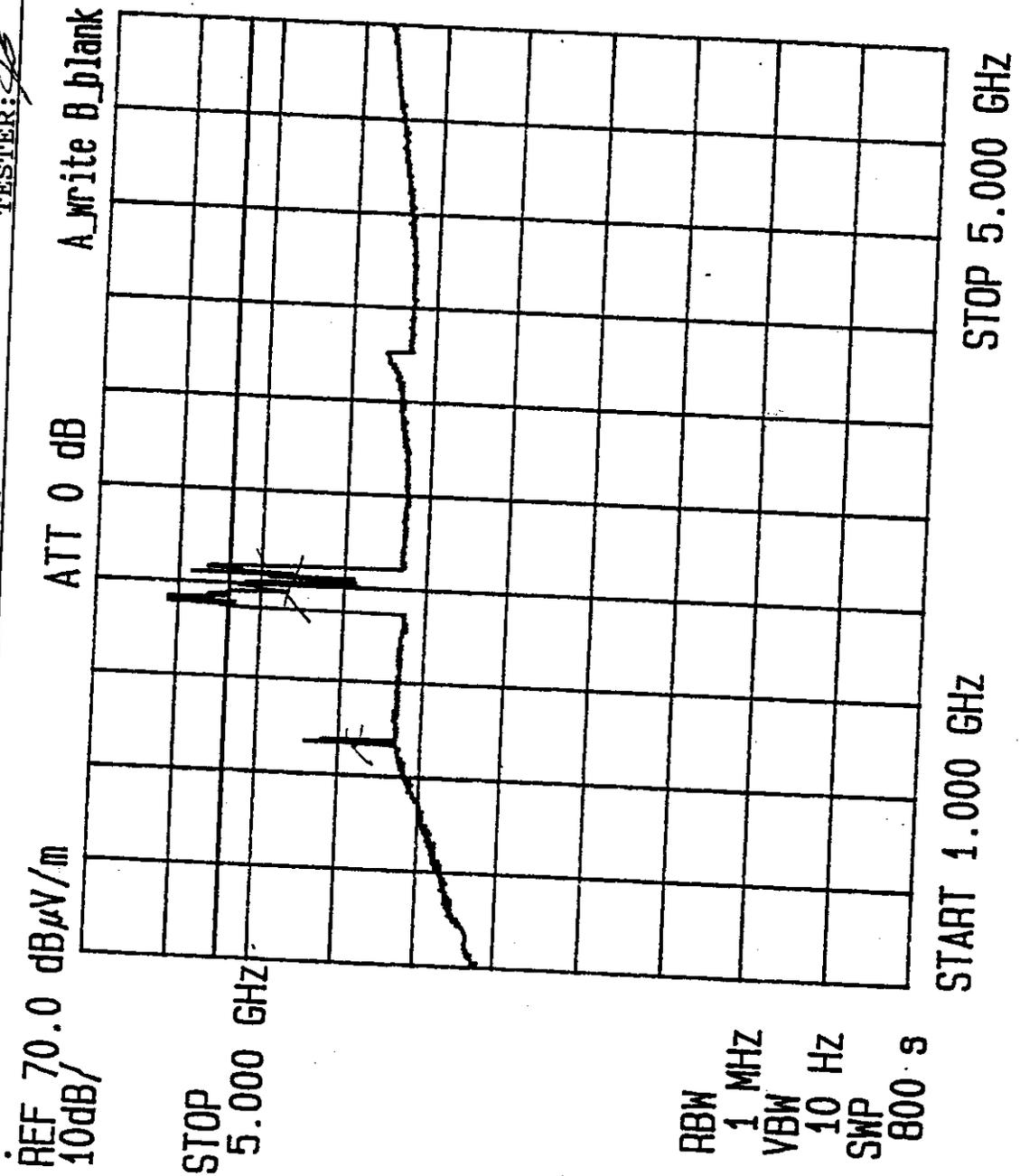


FIGURE 6.1-14

TEST: FCC RADIATED  
 FREQ: 1GHZ-5GHZ  
 DETECTOR: PEAK  
 DATE: 2/11/97  
 EUT: RECOTON MODEL HP981RX  
 SPEC: CFR 15.209A  
 LINE UNDER TEST: N/A  
 TEST SITE: 3 METER  
 S/N: 260198501  
 ANT. HT/POL: 1.73 / H  
 EUT POSITION: 1.70  
 TESTER: J

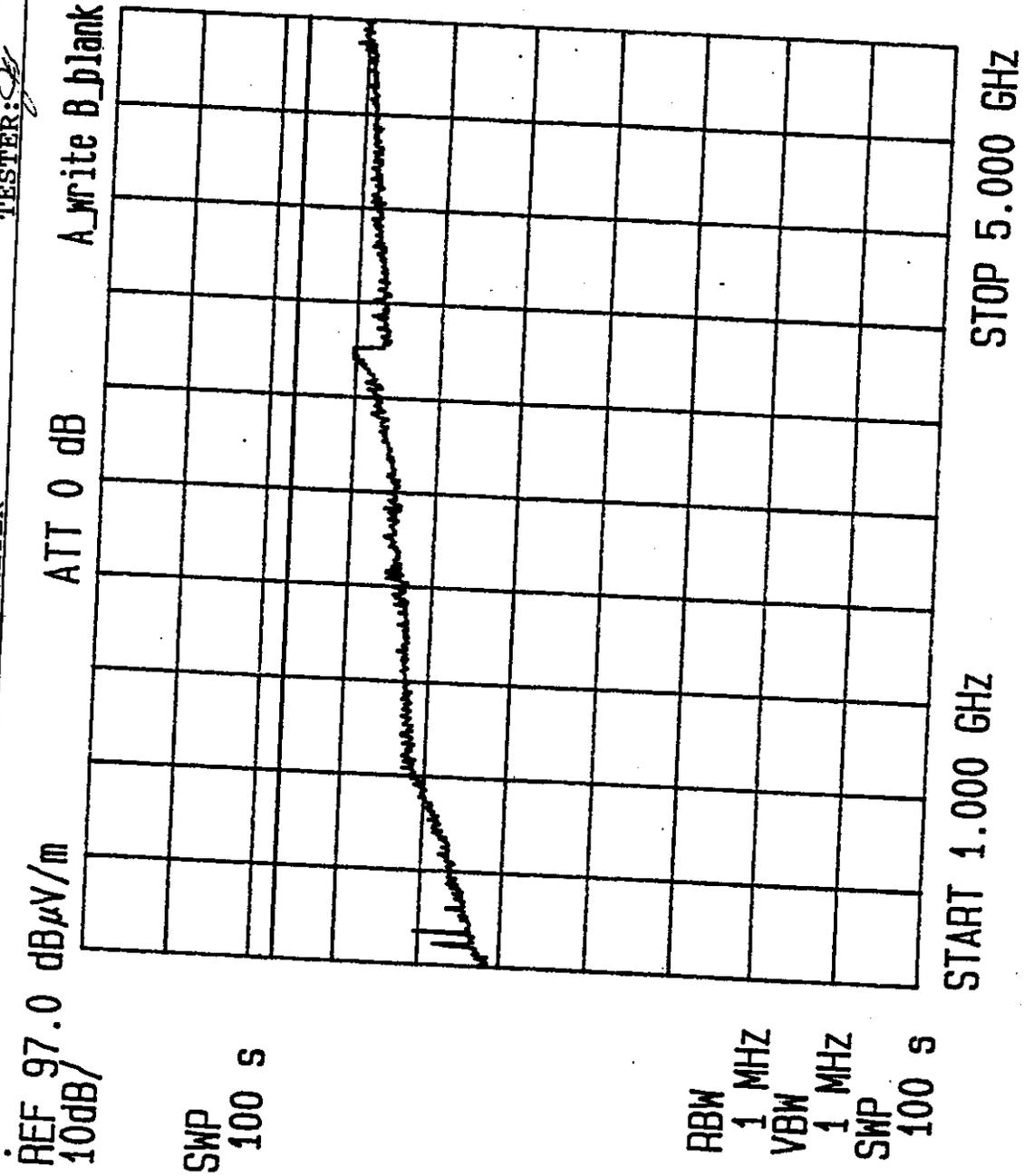


FIGURE 6.1-15

TEST: FCC RADIATED  
 EUT: RECOTON MODEL HP981RX  
 S/N: 260198501  
 FREQ: 1GHz -5GHz  
 SPEC: CFR 15.209A  
 DETECTOR: PEAK  
 LINE UNDER TEST: N/A  
 DATE: 2/11/97  
 TEST SITE: 3 METER  
 ANT. HT/POL: 1.5/V  
 EUT POSITION: 270°  
 TESTER:

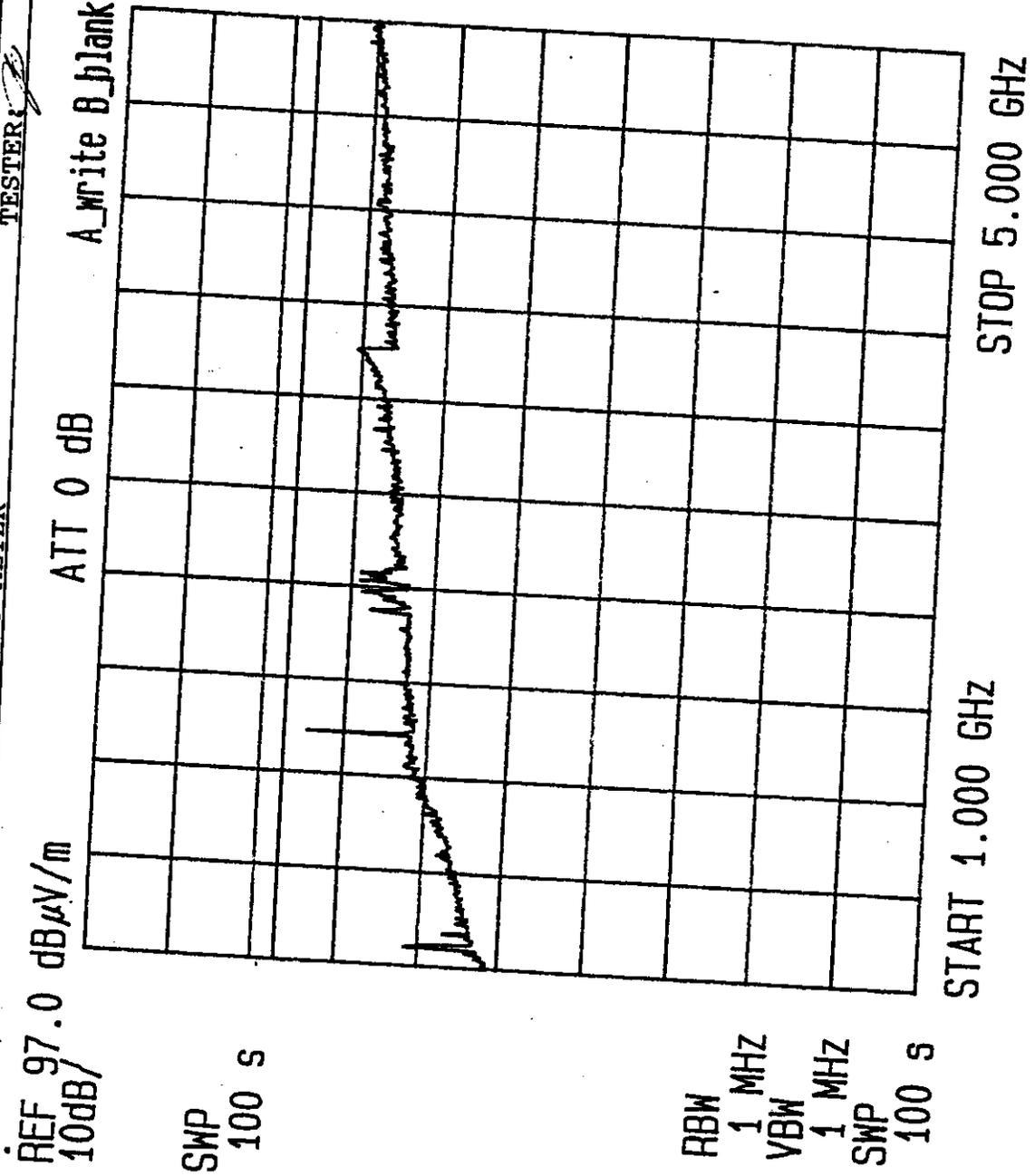


FIGURE 6.1-16

TEST: FCC RADIATED  
 FREQ: 30M-100M  
 DETECTOR: O P AMBIENT  
 DATE: 2/10/98

EUT: RECOTON (NASACO) HP981RX S/N: 260198501  
 SPEC: PAR. 15.209A  
 LINE UNDER TEST: N/A  
 TEST SITE: 3 METER

ANT. HT/POL: / H  
 EUT POSITION: /  
 TESTER: [Signature]

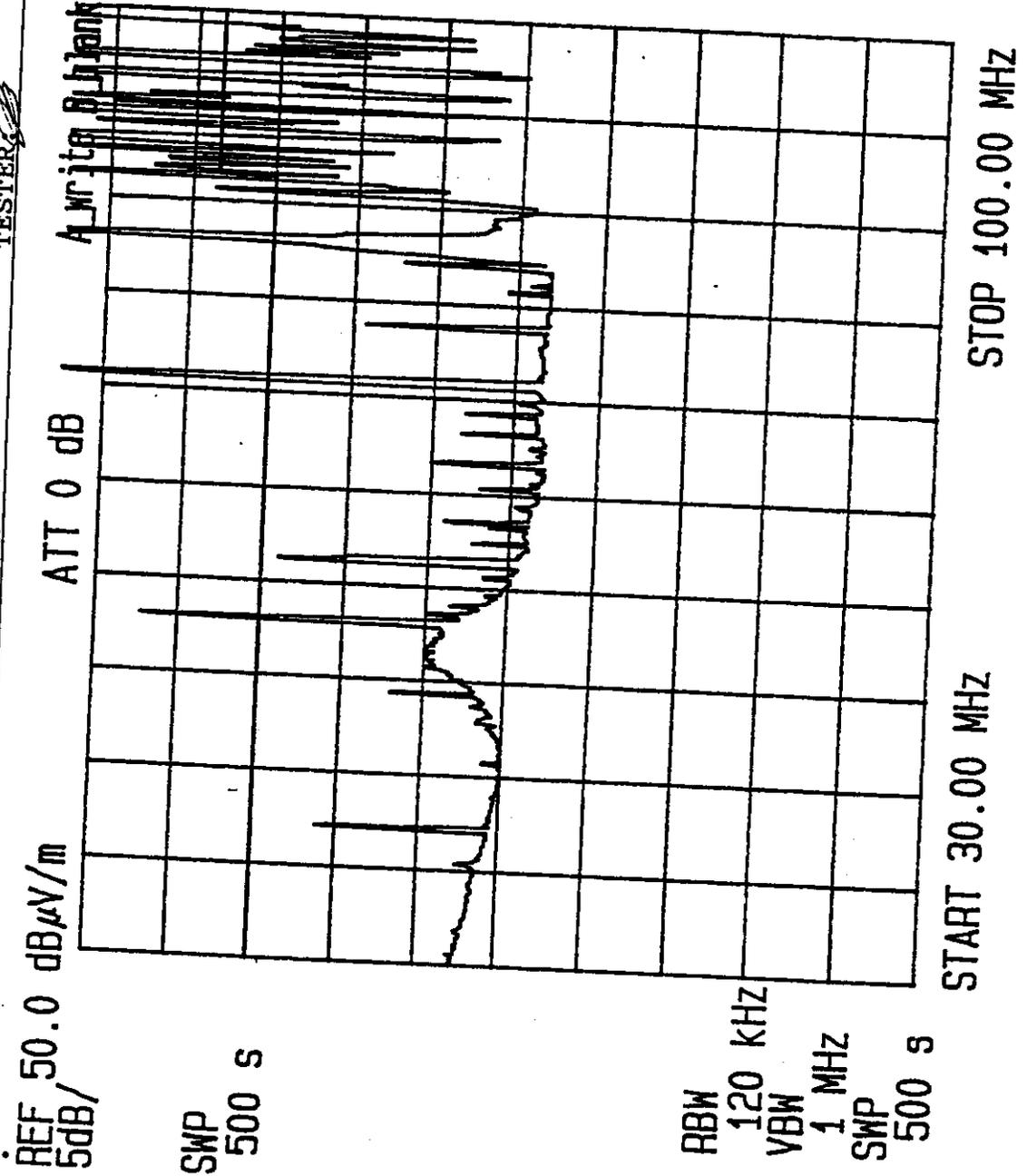


FIGURE 6.1-17





TEST: FCC RADIATED EUT: RECOTON (NASACO) HP981RX S/N: 260198501  
 FREQ: 30M-100M SPEC: PAR. 15.209A ANT. HT/POL: / V  
 DETECTOR: Q P AMBIENT LINE UNDER TEST: N/A EUT POSITION:  
 DATE: 2/10/91 TEST SITE: 3 METER TESTER:

FCC ID: LLP-110-R

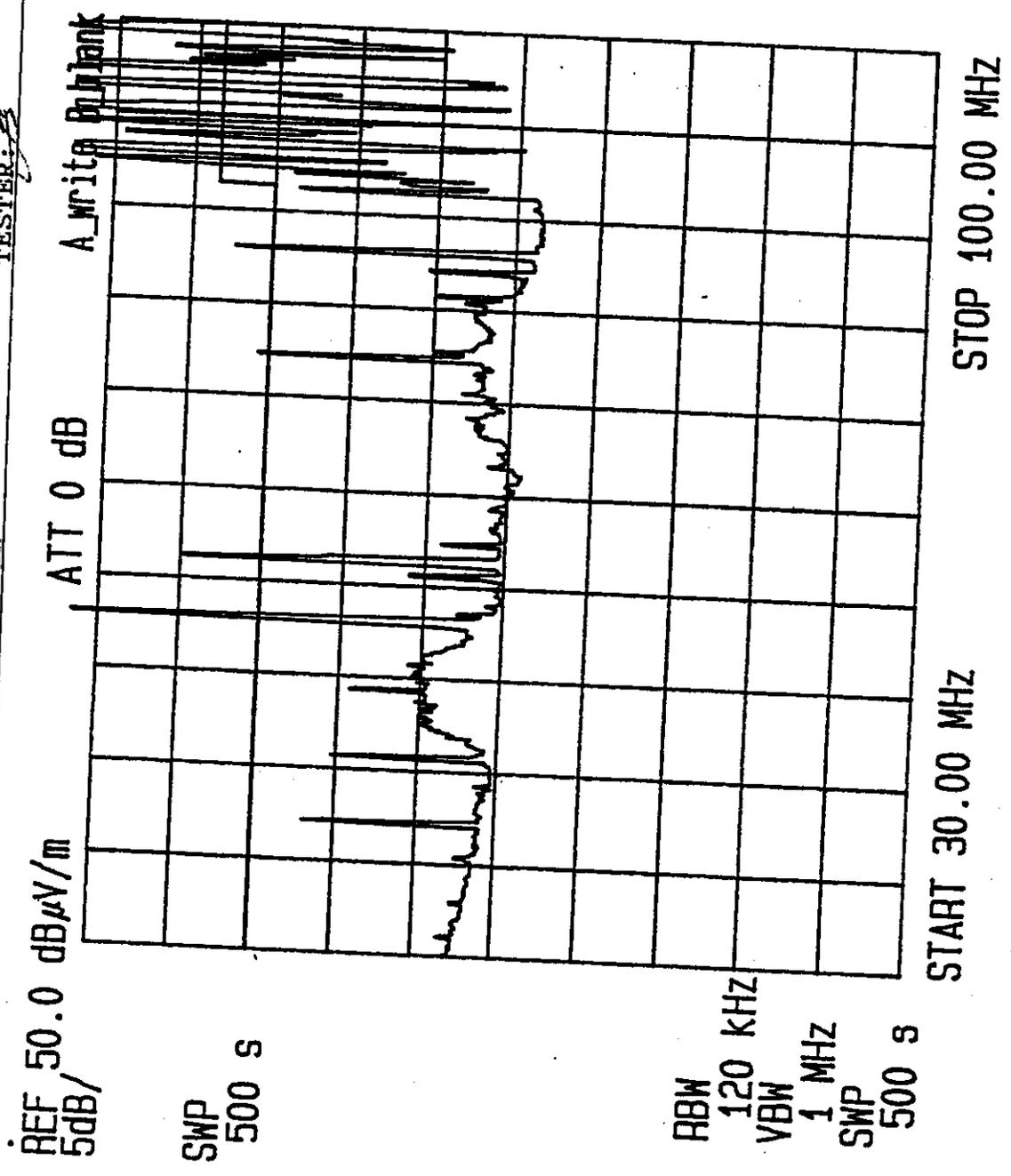


FIGURE 6.1-18

TEST: FCC RADIATED  
 EUT: RECOTON (NASACO) HP981RX S/N: 260198501  
 FREQ: 100M-200M  
 SPEC: PAR. 15.209A  
 DETECTOR: O P AMBIENT  
 LINE UNDER TEST: N/A  
 DATE: 2/12/98  
 TEST SITE: 3 METER  
 ANT. HT/POL: / H  
 EUT POSITION: /  
 TESTER: /

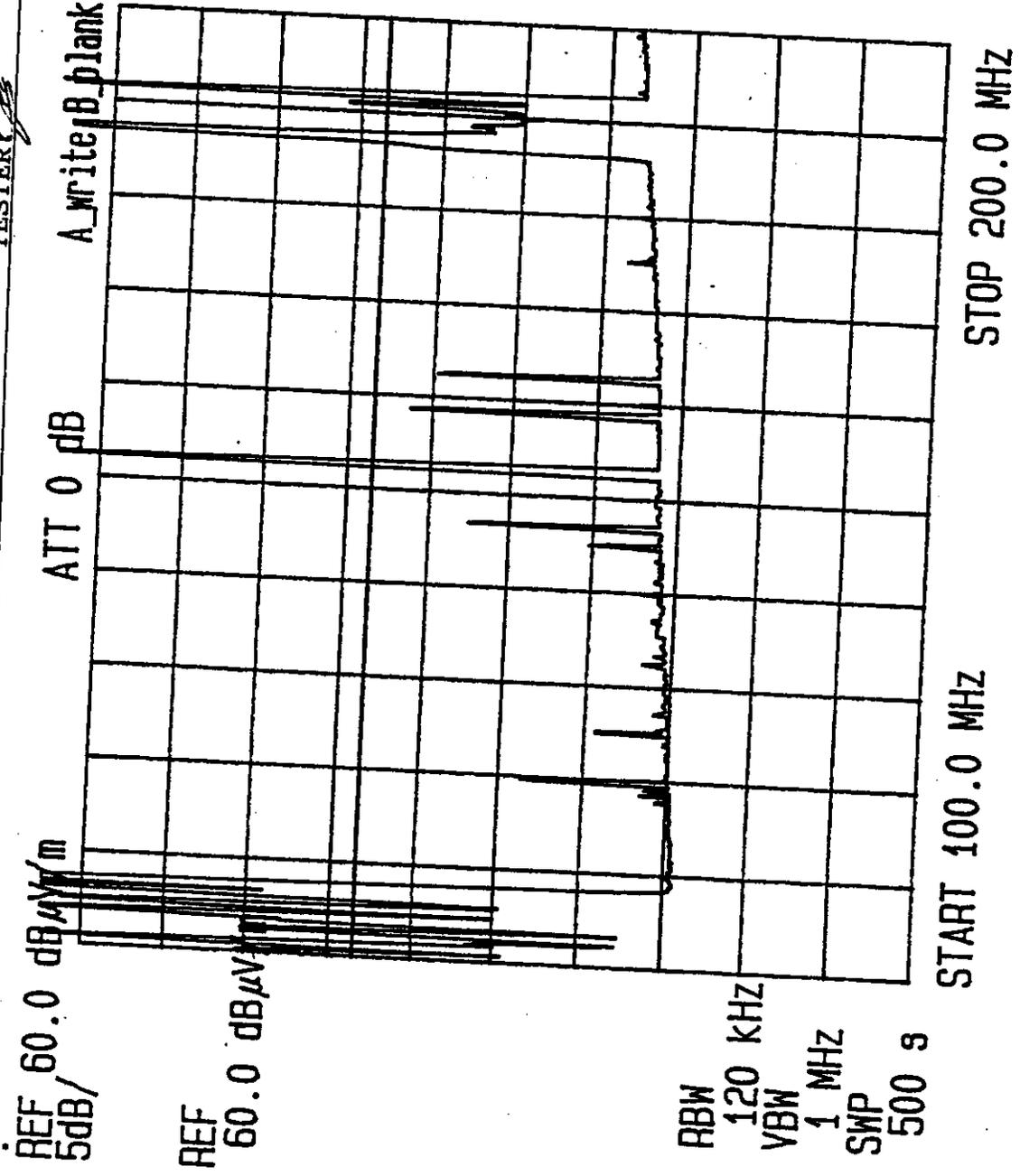


FIGURE 6.1-19





TEST: FCC RADIATED  
 EUT: RECOTON (NASACO) HP981RX S/N: 260198501  
 FREQ: 100M-200M  
 SPEC: PAR. 15.209A  
 DETECTOR: O P AMBIENT  
 LINE UNDER TEST: N/A  
 DATE: 2/15/98  
 TEST SITE: 3 METER  
 ANT. HT/POL: / V  
 EUT POSITION:  
 TESTER:

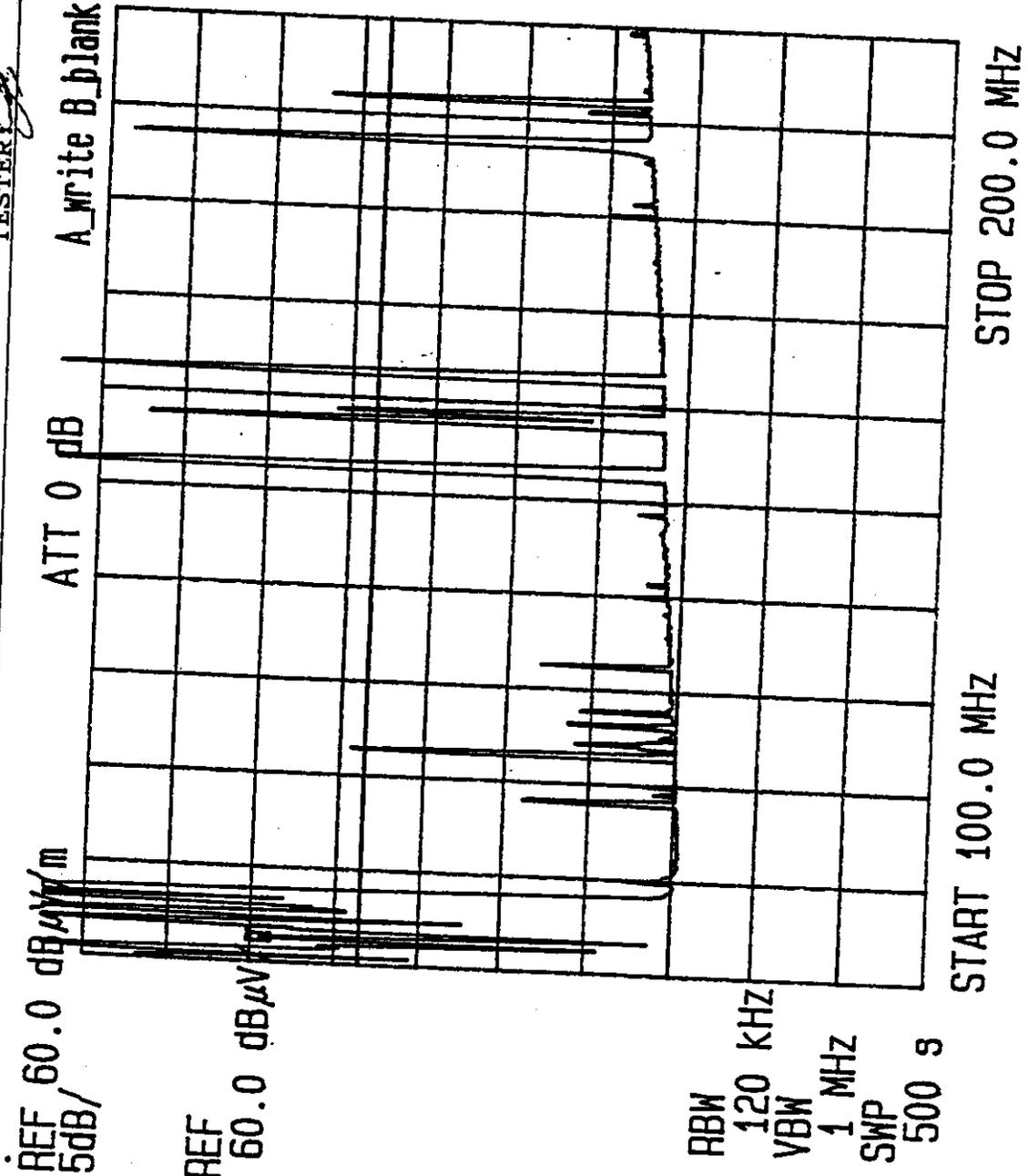


FIGURE 6.1-20



TEST: FCC RADIATED      EUT: RECOTON (NASACO) HP981RX      S/N: 260198501  
 FREQ: 200M-IG      SPEC: PAR. 15.209A  
 DETECTOR: O P AMBIENT      LINE UNDER TEST: N/A      ANT. HT/POL: /      H  
 DATE: 2/11/94      TEST SITE: 3 METER      EUT POSITION: /  
 TESTER: *[Signature]*

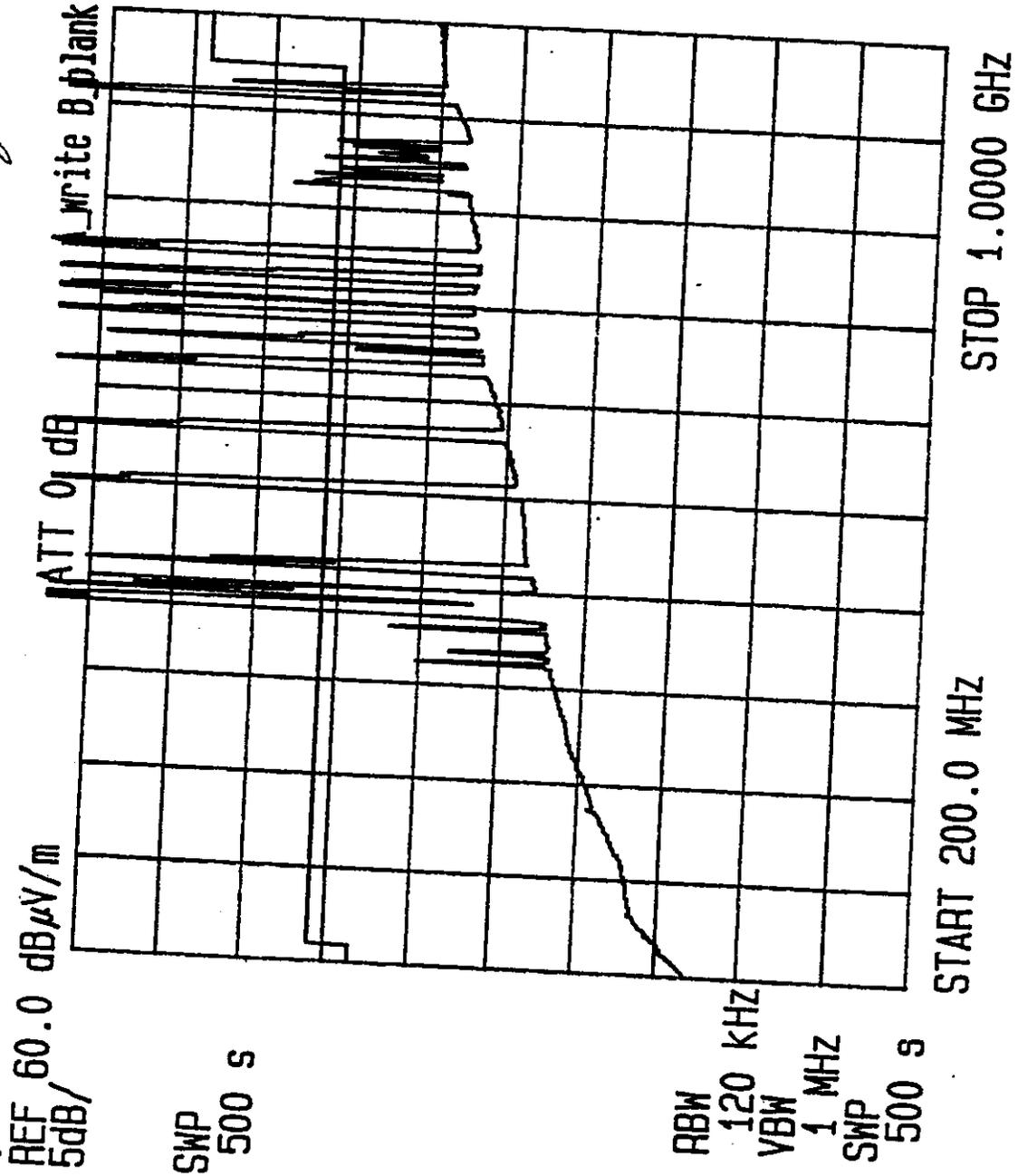


FIGURE 6.1-21



TEST: FCC RADIATED EUT: RECOTON (NASACO) HP981RX S/N: 260198501  
 FREQ: 200M-1G SPEC: PAR. 15.209A ANT. HT/POL: / V  
 DETECTOR: Q P AMBIENT LINE UNDER TEST: N/A EUT POSITION:  
 DATE: 2/11/94 TEST SITE: 3 METER TESTER: [Signature]

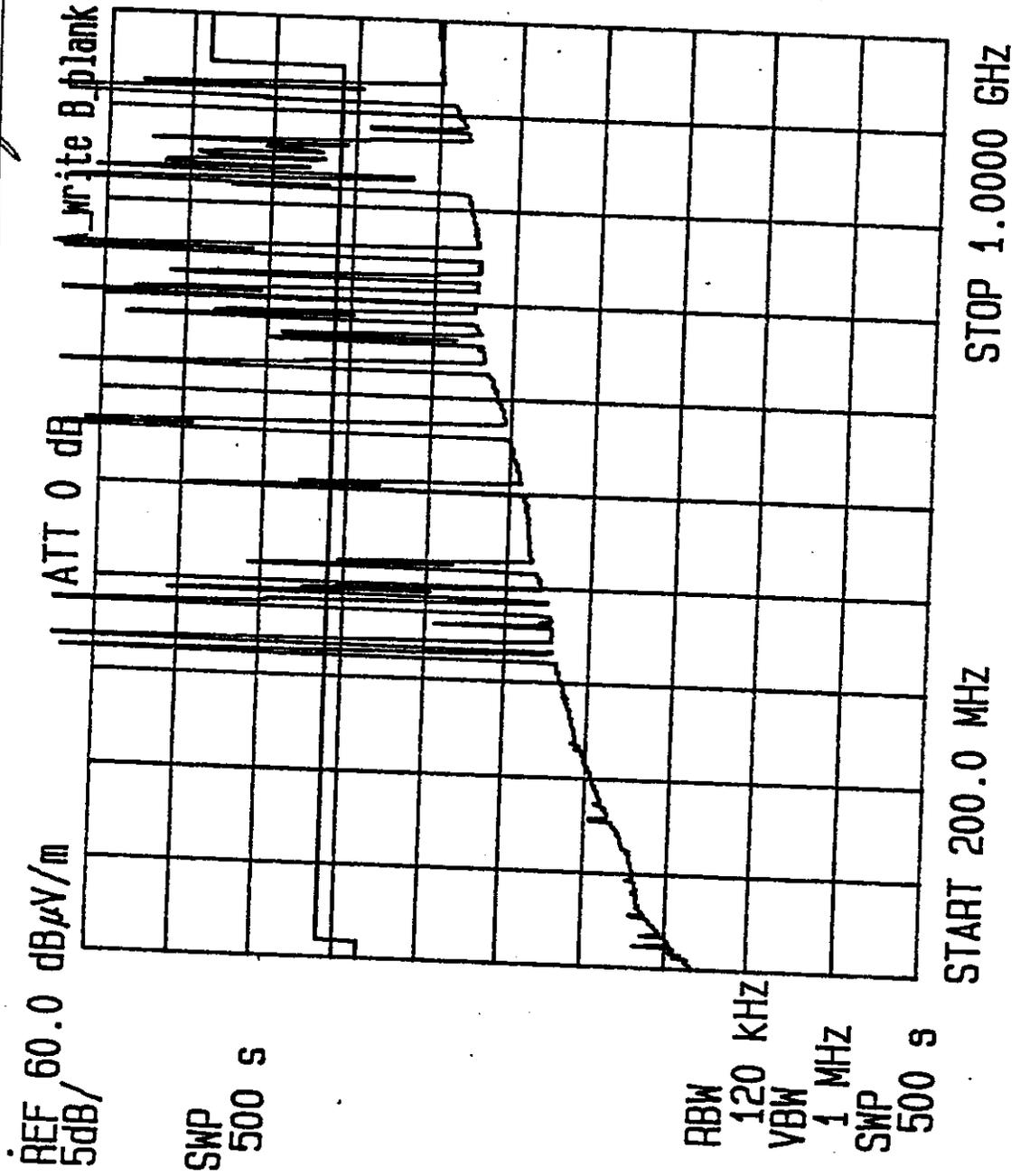


FIGURE 6.1-22

TEST: FCC RADIATED EUT: RECOTON MODEL HP981RX S/N: 260198501  
FREQ: 1GHZ-5GHZ SPEC: CFR 15.209A ANT. HT/POL: /H  
DETECTOR: PEAK AMB. LINE UNDER TEST: N/A EUT POSITION:  
DATE: 3/1/94 TEST SITE: 3 METER TESTER: JB

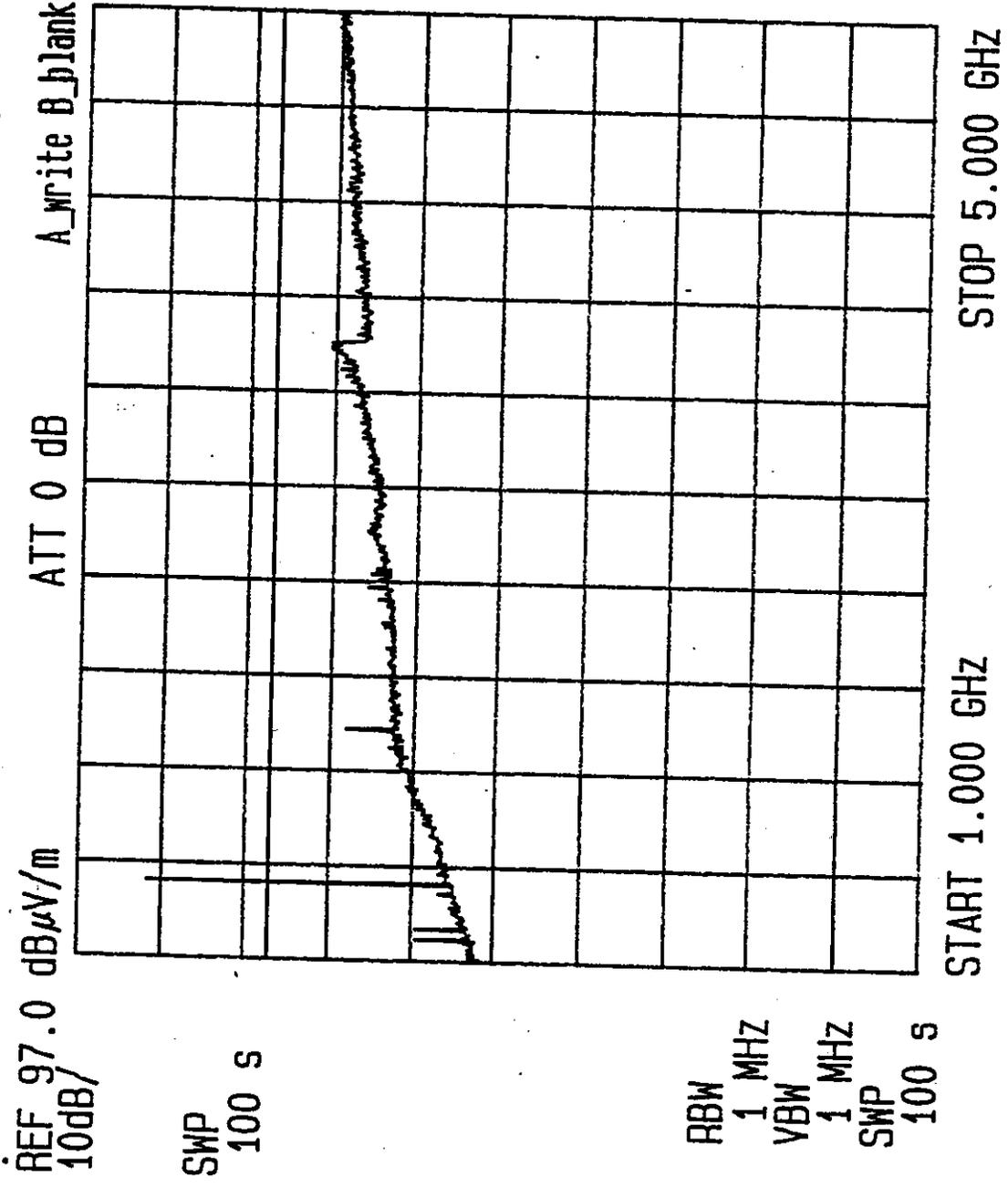
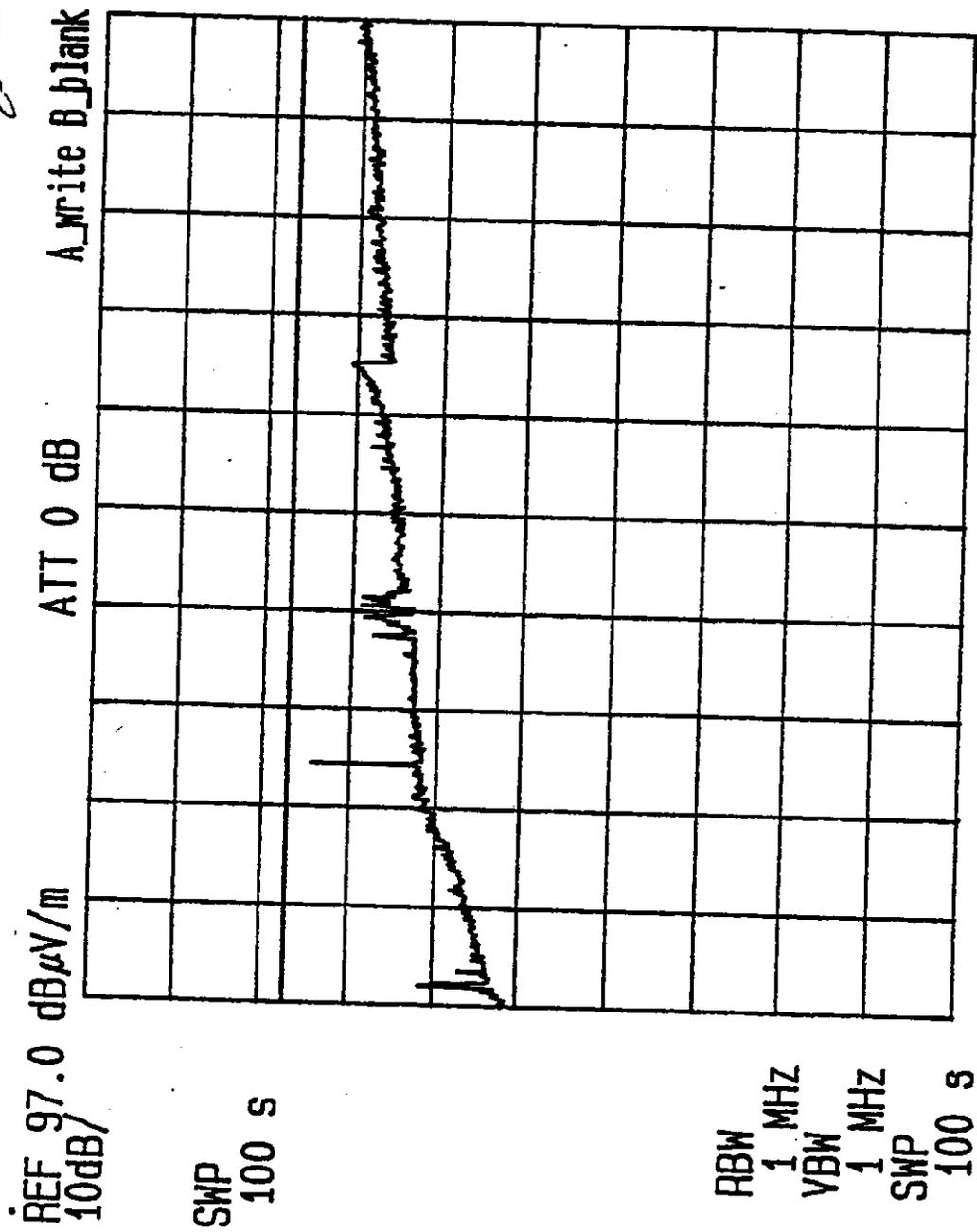


FIGURE 6.1-23



TEST: FCC RADIATED EUT: RECOTON MODEL HP981RX S/N: 260198501  
 FREQ: 1GHz-5GHz SPEC: CFR 15.209A ANT. HT/POL: /V  
 DETECTOR: PEAK AMB. LINE UNDER TEST: N/A EUT POSITION:  
 DATE: 2/1/04 TEST SITE: 3 METER TESTER:



FCC ID: LLP-110-R

FIGURE 6.1-24



TEST: FCC RADIATED EUT: RECOTON MODEL HP981RX S/N: 260198501  
 FREQ: 1GHZ-5GHZ SPEC: CFR 15.209A ANT. HT/POL: /H  
 DETECTOR: AVG. AMB. LINE UNDER TEST: N/A EUT POSITION:  
 DATE: 2/11/97 TEST SITE: 3 METER TESTER: [Signature]

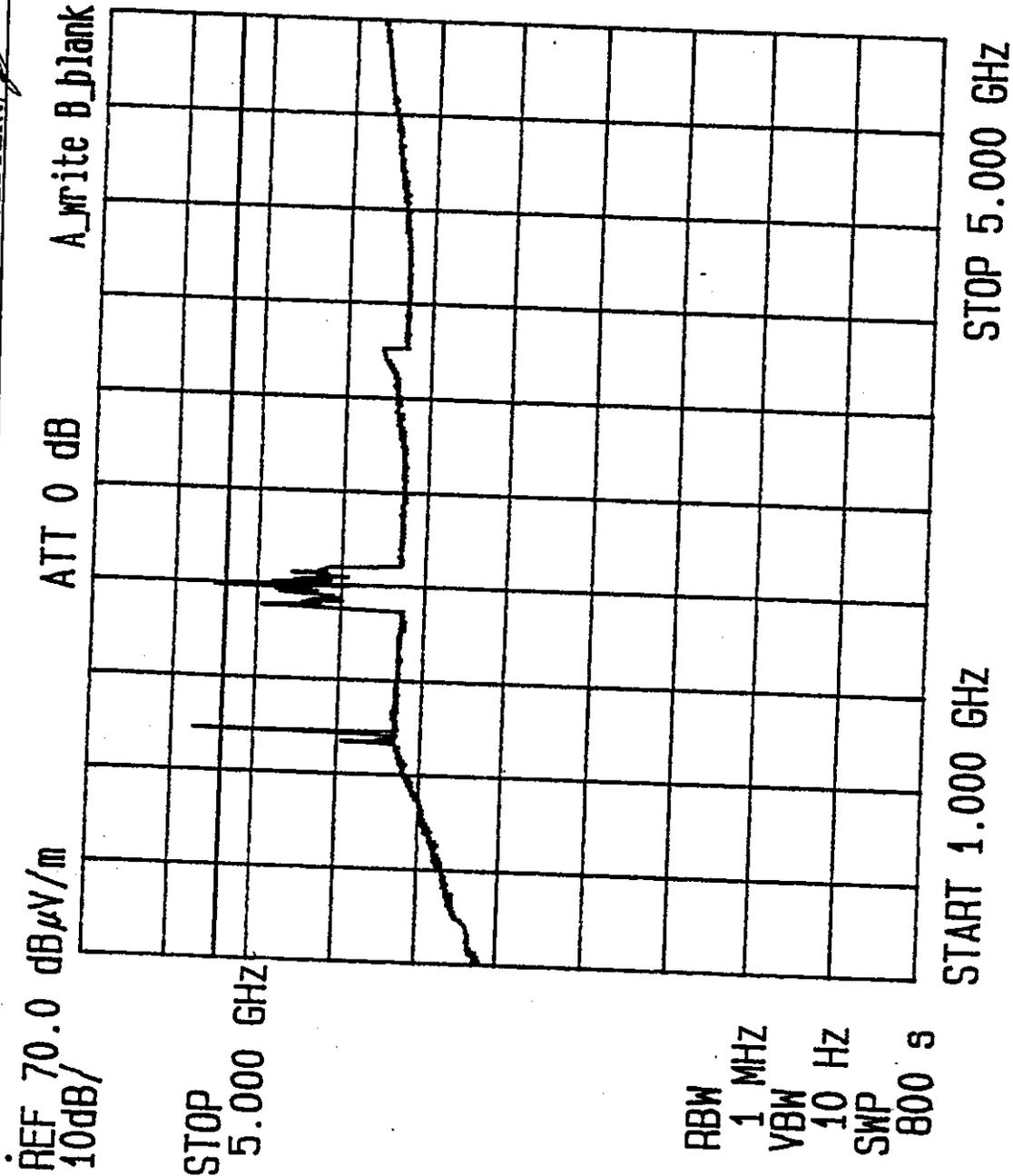


FIGURE 6.1-25



TEST: FCC RADIATED EUT: RECOTON MODEL HP981RX S/N: 260198501  
 FREQ: 1GHZ-5GHZ SPEC: CFR 15.209A ANT.HT/POL: /V  
 DETECTOR: AVG. AMB. LINE UNDER TEST: N/A EUT POSITION:  
 DATE: TEST SITE: 3 METER TESTER:

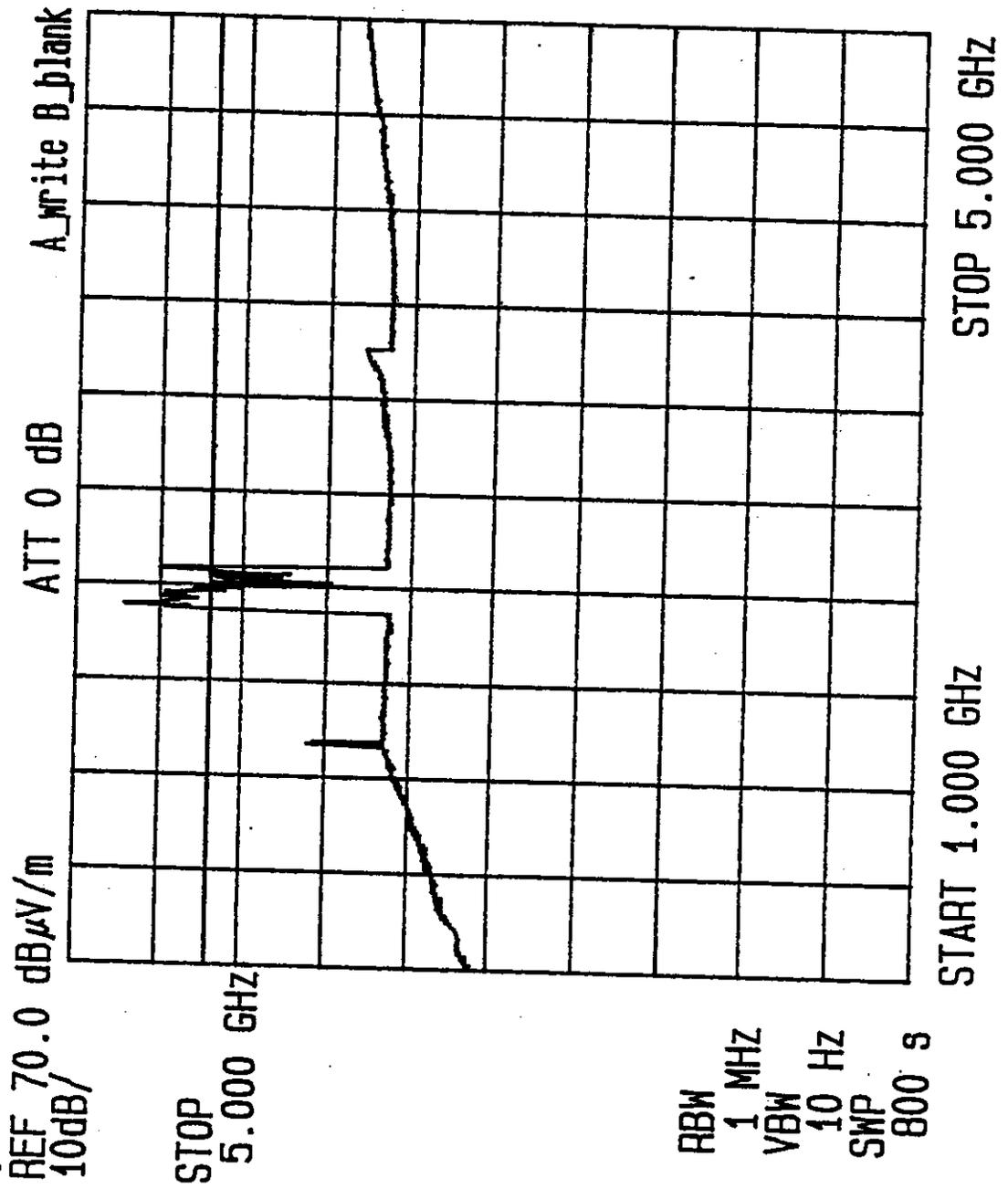


FIGURE 6.1-26

**APPENDIX A**

**COMPLIANCE LETTER**

**FEDERAL COMMUNICATIONS COMMISSION**

7435 Oakland Mills Road  
Columbia, MD 21046  
Telephone: 301-725-1585 (ext-218)  
Facsimile: 301-344-2050

**FCC ID: LLP-110-R**

December 5, 1996

IN REPLY REFER TO  
31040/SIT  
1300F2

Rubicom Systems, Inc.  
284 West Drive, Suite B  
Melbourne, FL 32904

Attention: Joseph G. Barbee

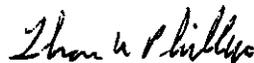
Re: Measurement facility located at above address  
(3 meter site)

Gentlemen:

Your submission of the description of the subject measurement facility has been reviewed and found to be in compliance with the requirements of Section 2.948 of the FCC Rules. The description has, therefore, been placed on file and the name of your organization added to the Commission's list of facilities whose measurement data will be accepted in conjunction with applications for certification or notification under Parts 15 or 18 of the Commission's Rules. Our list will also indicate that the facility complies with the radiated and AC line conducted test site criteria in ANSI C63.4-1992. Please note that this filing must be updated for any changes made to the facility, and at least every three years the data on file must be certified as current.

Per your request, the above mentioned facility has been also added to our list of those who perform these measurement services for the public on a fee basis. This list is published periodically and is also available on the Laboratory's Public Access Link as described in the enclosed Public Notice.

Sincerely,



Thomas W. Phillips  
Electronics Engineer  
Customer Service Branch

Enclosure:  
PAL PN

**APPENDIX B**  
**RECOTON FAX**

**RECOTON, Inc**

2950 Lake Emma Rd

Lake Mary, Fl 32746

Phone: 407 333 8900 Fax 407 333 9563

FCC ID: LLP-110-R

# Just the FAX

To: Joe Barbee, RSI

Fax: 407 951 2362

From: Harvey Gilbert

Date: 05/24/99

Re: NASACO FCC

Pages: 1



Urgent     For Review     Please Comment     Please Reply     Please Recycle

Nasaco paperwork for the receiver. After consulting with NATS (Rich

Manzillo) the FCC ID is: LLP-110-R Model number: HP-981

Recoton gives permission for NASACO to use the data for their own grant.

Their address:

Y.K. So

NASACO Electronics

11/F, unit 6, Eastern Ind Ctr

1085 Kings Road

Quarry Bay, Hong Kong

**CONFIDENTIAL**