

# Intertek Testing Services - Menlo Park

Philips AMPS/NAMPS Cellular Telephone, Model: TCA620-1B

Date of Test: May 14, 1998

## 1.0 Test Summary

| FCC RULE                 | DESCRIPTION OF TEST                                                                    | RESULT | PAGE |
|--------------------------|----------------------------------------------------------------------------------------|--------|------|
| 2.985                    | RF Power Output                                                                        | Pass   | 3    |
| 22.913                   | Effective Radiated Power                                                               | Pass   | 4    |
| 2.987                    | Modulation Requirements                                                                | Pass   | 5    |
| 22.915(d)(1)             | Audio Filter Characteristics                                                           | Pass   | 8    |
| 2.989(c)<br>22.917(b)(d) | Emission Limitation, Occupied Bandwidth                                                | Pass   | 12   |
| 22.917(e)<br>22.917(f)   | Out of Band Emissions at Antenna Terminals<br>Mobile Emissions In Base Frequency Range | Pass   | 15   |
| 2.993                    | Field Strength of Spurious Radiation                                                   | Pass   | 16   |
| 15.107                   | Line Conducted Emissions                                                               | N/A    | N/A  |
| 2.995(a)                 | Frequency Stability vs. Temperature                                                    | Pass   | 18   |
| 2.995(d)(2)              | Frequency Stability vs. Voltage                                                        | Pass   | 20   |

Xi-Ming Yang  
Xi-Ming Yang  
Test Engineer

5-27-98  
Date

## **Intertek Testing Services - Menlo Park**

**Philips AMPS/NAMPS Cellular Telephone, Model: TCA620-1B**

**Date of Test: May 14, 1998**

### **1.2 Product Description**

The Philips Model NRMTCA620-1B is a dual mode AMPS and NAMPS cellular radio telephone.

The receiver section is a dual conversion superheterodyne architecture with a 92.61 MHz first IF and 450 kHz second IF. The transmitter is a cascade of a directly modulated PLL (Phase locked loop) synthesizer, buffer and power amplifier, voice, data, and control signals for the AMPS/NAMPS mode are processed by a baseband processor. Overall control of the radio is handled by a microcontroller.

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Philips AMPS/NAMPS Cellular Telephone, Model: TCA620-1B

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## 2.0 RF Power Output, FCC §2.985(a)

### 2.1 Test Procedure

The transmitter output was connected to a calibrated coaxial attenuator, the other end of which was connected to a spectrum analyzer. Transmitter output was read off the spectrum analyzer in dBm. The power output at the transmitter antenna port was determined by adding the value of the attenuator to the spectrum analyzer reading.

Tests were performed at three frequencies (low, middle, and high channels) and on all power levels which can be setup on the transmitters.

### 2.2 Test Equipment

Hewlett Packard 8481A Power Sensor, 435B Power Meter

Hewlett Packard HP8566B Spectrum Analyzer, 100 Hz - 22 GHz

Tektronix 2782

### 2.3 Test Results

Refer to the attached plots:

Plot #2.3.a

Plot #2.3.b

Plot #2.3.c

| RF POWER OUTPUT |                     |                     |                     |
|-----------------|---------------------|---------------------|---------------------|
| Level           | 824.04 MHz<br>P dBm | 836.52 MHz<br>P dBm | 848.97 MHz<br>P dBm |
| 0, 1, 2         | 26.4                | 26.1                | 27.4                |
| 3               | 22.4                | 22.5                | 22.6                |
| 4               | 18.1                | 18.3                | 18.3                |
| 5               | 14.6                | 14.9                | 15.0                |
| 6               | 10.2                | 10.5                | 10.7                |
| 7               | 4.7                 | 5.3                 | 5.6                 |

# **Intertek Testing Services - Menlo Park**

**Philips AMPS/NAMPS Cellular Telephone, Model: TCA620-1B**

**Date of Test: May 14, 1998**

## **3.0 Effective Radiated Power, FCC § 22.913**

The Effective Radiated Power (ERP) of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

### **3.1 Test Procedure**

The EUT was positioned on a non-conductive turntable, 0.8m above the ground plane on an open test site.

The radiated emission at the fundamental frequency was measured at 3m distance with a test antenna and spectrum analyzer. During the measurement, the resolution and video bandwidths of the spectrum analyzer were set to 100 kHz. The maximum emission was recorded with the rotation of the turntable and the raising and lowering of the test antenna. The spectrum analyzer reading was recorded.

The ERP was calculated as follows:

$$\text{ERP(dBm)} = \text{E(dBuV/m)} + 20 \log D - 10 \log 30 - 10 \log G - 90$$

where D = 3m, distance

G = 1.64, gain of half-wave dipole

The test was performed at three frequencies (low, middle, and high channels).

In addition, the Equivalent Isotropic Radiated Power (EIRP) in dBpW was calculated as follows:

$$\text{EIRP}_{(\text{dBpW})} = \text{ERP}_{(\text{dBm})} + 90 + 10 \log 1.64$$

### **3.2 Test Equipment**

Rhode & Schwartz SMH Signal Generator  
Hewlett Packard HP8566B Spectrum Analyzer  
Attenuator 20 dB

### **3.3 Test Results**

Refer to the attached data sheet. The EUT passed the test.

## **Intertek Testing Services - Menlo Park**

**Philips AMPS/NAMPS Cellular Telephone, Model: TCA620-1B**

**Date of Test: May 14, 1998**

**Mode: Transmitting at 824, 836.5, 849 MHz**

**Test Site: 1**

**Engineer: Xi-Ming-Yang**

### **FCC Part 22, Effective Radiated Power**

| <b>Frequency<br/>MHz</b> | <b>SA Reading<br/>dB(uV)</b> | <b>Antenna<br/>Factor<br/>dB(1/m)</b> | <b>Cable<br/>Loss<br/>dB</b> | <b>Field<br/>Strength<br/>dB(uV/m)</b> | <b>ERP<br/>dBm</b> | <b>EIRP<br/>dB(pW)</b> |
|--------------------------|------------------------------|---------------------------------------|------------------------------|----------------------------------------|--------------------|------------------------|
| 824.0                    | 101.3                        | 22.0                                  | 3.8                          | 127.1                                  | 29.7               | 121.8                  |
| 836.5                    | 97.2                         | 22.0                                  | 3.8                          | 123.0                                  | 25.6               | 117.8                  |
| 849.0                    | 101.7                        | 22.0                                  | 3.8                          | 127.5                                  | 30.1               | 122.2                  |

**Note: All measurements were made at 3 m**

## **Intertek Testing Services - Menlo Park**

**Philips AMPS/NAMPS Cellular Telephone, Model: TCA620-1B**

**Date of Test: May 14, 1998**

### **4.0 Modulation Deviation Limiting, FCC § 2.987, § 22.915(c)s**

#### **4.1 Test Procedure**

The RF output of the transceiver was connected to the input of an FM deviation meter through sufficient attenuation so as not to overload the meter or distort the readings. An audio signal generator with a variable attenuator on the output was coupled into the external microphone jack of the transceiver, or alternatively, the microphone element was removed and the generator output was connected to the microphone wires by clip leads.

At three different modulating frequencies, the output level of the audio generator was varied and the FM deviation level was recorded (Table 4.1a).

#### **4.2 Test Equipment**

Marconi 2955A Radio Communication Test Set  
Leader LFG-1300S Function Generator  
LMV-182 AC Millivoltmeter

#### **4.3 Test Results**

Please refer to the attached data sheets.

The maximum deviation is 11.2 kHz and do not exceed 12 kHz.

The EUT passed the test.

# Intertek Testing Services - Menlo Park

Philips AMPS/NAMPS Cellular Telephone, Model: TCA620-1B

Date of Test: May 14, 1998

| Table 4.1.a<br>Modulation Deviation Limiting |                                                       |         |         |        |
|----------------------------------------------|-------------------------------------------------------|---------|---------|--------|
| Output Level<br>mV                           | FM Deviation in kHz at Indicated Modulating Frequency |         |         |        |
|                                              | 3000 Hz                                               | 2.8 kHz | 1000 Hz | 300 Hz |
| 1                                            | 4.4                                                   | 4.0     | 1.7     | 0.4    |
| 2                                            | 5.7                                                   | 5.6     | 2.0     | 0.6    |
| 5                                            | 8.8                                                   | 8.8     | 3.1     | 0.9    |
| 10                                           | 9.9                                                   | 10.0    | 4.5     | 1.1    |
| 20                                           | 10.3                                                  | 10.5    | 6.1     | 1.5    |
| 30                                           | 10.4                                                  | 10.6    | 7.6     | 1.9    |
| 40                                           | 10.5                                                  | 10.7    | 8.6     | 2.2    |
| 50                                           | 10.5                                                  | 10.7    | 9.3     | 2.4    |
| 60                                           | 10.5                                                  | 10.8    | 9.3     | 2.7    |
| 70                                           | 10.5                                                  | 10.8    | 9.3     | 2.8    |
| 80                                           | 10.5                                                  | 10.8    | 9.3     | 3.1    |
| 90                                           | 10.5                                                  | 10.8    | 9.3     | 3.5    |
| 100                                          | 10.5                                                  | 10.8    | 9.4     | 3.9    |
| 150                                          | 10.5                                                  | 10.8    | 10.2    | 6.7    |
| 200                                          | 10.5                                                  | 10.8    | 10.4    | 8.2    |
| 250                                          | 10.6                                                  | 10.8    | 10.3    | 9.3    |
| 300                                          | 10.6                                                  | 10.8    | 10.4    | 9.8    |
| 400                                          | 10.6                                                  | 10.8    | 10.6    | 10.1   |
| 450                                          | 10.6                                                  | 10.8    | 10.6    | 10.5   |
| 500                                          | 10.6                                                  | 10.8    | 10.6    | 10.8   |
| 600                                          | 10.6                                                  | 10.8    | 10.7    | 11.1   |
| 650                                          | 10.6                                                  | 10.8    | 10.7    | 11.2   |
| 700                                          | 10.6                                                  | 10.8    | 10.7    | 11.2   |
| 800                                          | 10.6                                                  | 10.8    | 10.8    | 11.3   |
| 900                                          | 10.6                                                  | 10.8    | 10.8    | 11.4   |
| 1000                                         | 10.6                                                  | 10.8    | 10.8    | 11.4   |

Test conditions:

Middle channel, 836.52 MHz

# Intertek Testing Services - Menlo Park

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**Table 4.1.b**  
**Peak Frequency Deviation**

| Frequency<br>kHz | Initial Deviation<br>kHz | Peak Deviation<br>kHz | Steady State Deviation<br>kHz |
|------------------|--------------------------|-----------------------|-------------------------------|
| 0.3              | 2.1                      | 9.6                   | 9.6                           |
| 0.5              | 3.9                      | 9.9                   | 9.9                           |
| 0.7              | 5.5                      | 10.2                  | 10.2                          |
| 0.9              | 7.1                      | 10.6                  | 10.6                          |
| 1.0              | 8.0                      | 10.5                  | 10.5                          |
| 1.2              | 9.3                      | 10.3                  | 10.3                          |
| 1.4              | 9.8                      | 10.4                  | 10.4                          |
| 1.6              | 10.0                     | 10.6                  | 10.6                          |
| 1.8              | 10.2                     | 10.7                  | 10.7                          |
| 2.0              | 10.3                     | 10.7                  | 10.7                          |
| 2.4              | 10.4                     | 10.7                  | 10.6                          |
| 2.8              | 10.7                     | 10.8                  | 10.8                          |
| 3.0              | 10.5                     | 10.6                  | 10.6                          |

Test Conditions:

$V_{\text{inp}} = 35 \text{ mV}$

Deviation = 8 kHz at 1 kHz modulation frequency

Middle Channel  $f = 836.52 \text{ MHz}$

# Intertek Testing Services - Menlo Park

Philips AMPS/NAMPS Cellular Telephone, Model: TCA620-1B

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## 10.7 Audio Filter Characteristics, FCC § 22.915(d)

For mobile stations, these signals must be attenuated, relative to the level at 1 kHz, as follows:

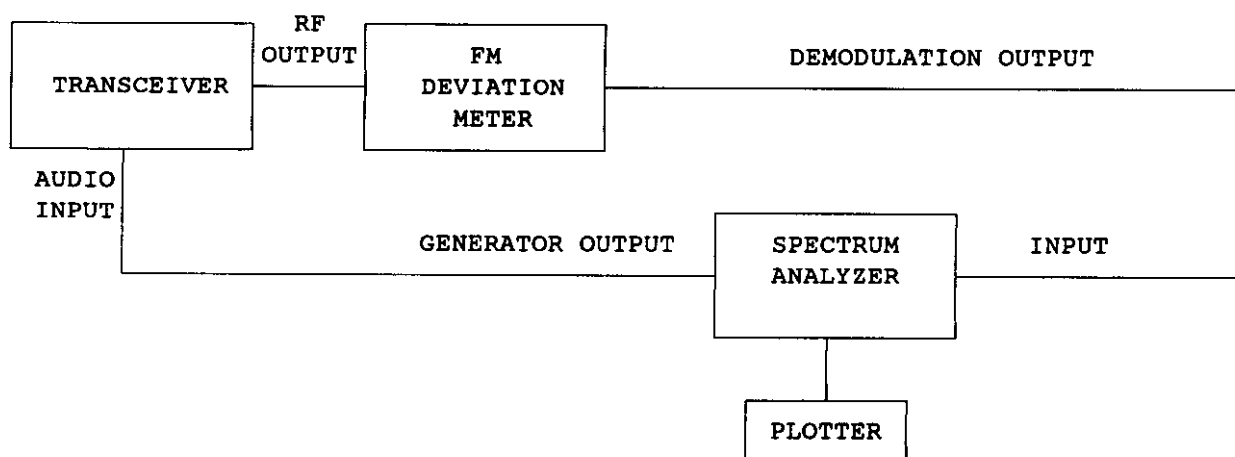
- (I) In the frequency ranges of 3.0 to 5.9 kHz and 6.1 to 15.0 kHz, signals must be attenuated by at least  $40 \log (f/3)$  dB, where  $f$  is the frequency of the signal in kHz.
- (ii) In the frequency range of 5.9 to 6.1 kHz, signals must be attenuated at least 35 dB.
- (iii) In the frequency range above 15 kHz, signals must be attenuated at least 28 dB.

## 5.1 Test Procedure

The RF output of the transceiver was connected to the input of an FM deviation meter through sufficient attenuation so as not to overload the meter or distort the readings. An audio signal generator with a variable attenuator on the output was coupled into the external microphone jack of the transceiver, or alternatively, the microphone element was removed and the generator output was connected to the microphone wires by clip leads.

The audio signal at the transceiver audio input was adjusted to obtain 8-9 kHz deviation at the more sensitive modulation frequency (approximately 2.7 kHz). The audio frequency was varied from 300 Hz to 30 kHz and the deviation was measured while maintaining a constant input level. Using the level measured at 1 kHz as a reference (0 dB), the audio filter response was calculated (See Table 5-1).

The block diagram of the test setup is shown below.



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On that block diagram, the HP 3885A spectrum analyzer having the tracing generator, and the Marconi 2955A Radio Communication Test Set having an output of a demodulator, are used. After the calibration was made (the -20 dBm reading of the spectrum analyzer corresponds to the 9 kHz deviation) the spectrum analyzer was set to scan the frequency from 300 Hz to 30 kHz, with the same audio input level as described above, and with compressor OFF and expander OFF.

The audio filter response was plotted directly from the spectrum analyzer (Refer to Plots # 5.1.a, 5.1.b, & 5.1.c).

## **5.2 Test Equipment**

Marconi Instruments 2955A Radio Communications Test Set  
HP 3588A Spectrum Analyzer  
HP 7470A Plotter  
Leader LFG-1300S Function Generator  
LMV-182 AC Millivoltmeter

## **5.3 Test Results**

Refer to the attached data sheet and plot.

The EUT meets the requirements.

# Intertek Testing Services - Menlo Park

Philips AMPS/NAMPS Cellular Telephone, Model: TCA620-1B

Date of Test: May 14, 1998

**Table 5.1**  
**Audio Filter Characteristic**

| <b>Modulation<br/>Frequency<br/>kHz</b> | <b>Relative Level<br/>dBm</b> | <b>Attenuation<br/>dB</b> |
|-----------------------------------------|-------------------------------|---------------------------|
| 0.3                                     | -40.7                         | 11.9                      |
| 0.4                                     | -37.4                         | 8.6                       |
| 0.5                                     | -35.1                         | 6.3                       |
| 0.6                                     | -33.4                         | 4.6                       |
| 0.7                                     | -32.0                         | 3.2                       |
| 0.8                                     | -30.8                         | 2.0                       |
| 0.9                                     | -29.7                         | 0.9                       |
| 1.0                                     | -28.8                         | 0                         |
| 1.2                                     | -26.9                         | -1.9                      |
| 1.4                                     | -25.3                         | -3.5                      |
| 1.6                                     | -24.0                         | -4.8                      |
| 1.8                                     | -23.0                         | -5.8                      |
| 2.0                                     | -22.2                         | -6.6                      |
| 2.5                                     | -20.7                         | -8.1                      |
| 2.85                                    | -20.3                         | -8.5                      |
| 3.0                                     | -20.6                         | -8.2                      |
| 3.2                                     | -21.8                         | -7.0                      |
| 3.5                                     | -29.0                         | 0.2                       |
| 4.0                                     | -43.6                         | 14.8                      |

# **Intertek Testing Services - Menlo Park**

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**Table 5.1 Audio Filter Characteristic (Continuation)**

| <b>Modulation<br/>Frequency<br/>kHz</b> | <b>Relative Level,<br/>dBm</b> | <b>Attenuation<br/>dB</b> |
|-----------------------------------------|--------------------------------|---------------------------|
| 4.5                                     | -57.6                          | 28.8                      |
| 5.0                                     | -71.3                          | 41.5                      |
| 5.5                                     | -83.1                          | 54.3                      |
| 5.9                                     | -84.8*                         | 56.0                      |
| 6.0                                     | -86.8*                         | 58.0                      |
| 6.1                                     | -81.3*                         | 52.5                      |
| 8.0                                     | -87.0*                         | 58.2                      |
| 10.0                                    | -80.4*                         | 51.6                      |
| 15.0                                    | -89.0*                         | 60.2                      |
| 20.0                                    | -99.3*                         | 70.5                      |
| 30.0                                    | 97.3*                          | 68.5                      |

Test conditions:

Middle Channel, 836.52 MHz

Audio Input Level: 6.5 mV

\*Noise Floor

## **Intertek Testing Services - Menlo Park**

**Philips AMPS/NAMPS Cellular Telephone, Model: TCA620-1B**

**Date of Test: May 14, 1998**

### **6.0 Emission Limitations, Occupied Bandwidth, FCC § 22.917(b)(d), FCC § 2.989(b)(1)**

For F3E/F3D emission mask uses with audio filter, the mean power of emissions must be attenuated below the mean power of the unmodulated carrier wave (P) as follows:

- (1) On any frequency removed from the carrier frequency by more than 20 kHz but not more than 45 kHz: at least 26 dB;
- (2) On any frequency removed from the carrier frequency by more than 45 kHz, up to the first multiple of the carrier frequency: at least 60 dB or  $43 + 10 \log P$  dB, whichever is the lesser attenuation.

For F1D emission mask, the mean power of emissions must be attenuated below the mean power of the unmodulated carrier (P) as follows:

- (1) On any frequency removed from the carrier frequency by more than 20 kHz but no more than 45 kHz: at least 26 dB;
- (2) On any frequency removed from the carrier frequency by more than 45 kHz but not more than 90 kHz: at least 45 dB;
- (2) On any frequency removed from the carrier frequency by more than 90 kHz, up to the first multiple of the carrier frequency: at least 60 dB or  $43 + 10 \log P$  dB, whichever is the lesser attenuation.

### **6.1 Test Procedure**

The RF output of the transceiver was connected to the input of the spectrum analyzer through sufficient attenuation. The audio generator was connected to the audio input of the transceiver.

The spectrum with no modulation was recorded. The audio input signal was adjusted to obtain the frequencies deviation equal 6 kHz at the audio frequency of maximum response which was determined measuring deviation versus frequency from 300 Hz to 3.5 kHz and was found 2.8 kHz. The audio input level was increased by 16 dB. The audio frequency was set to the frequency 2.5 kHz.

The resolution bandwidth of the spectrum analyzer was set at 300 Hz and the spectrum was recorded in the frequency band  $\pm 50$  kHz and  $\pm 100$  kHz from the carrier frequency. The same plots has been done for wideband emissions, SAT, ST, DTMF9, Voice, some of the combinations of these modulating signals and in NAMPS mode.

Note: Some of the plots were only done in the frequency band of  $\pm 50$  kHz since it was clear from these plots, that the levels of emissions were well below the limits.

## **Intertek Testing Services - Menlo Park**

**Philips AMPS/NAMPS Cellular Telephone, Model: TCA620-1B**

**Date of Test: May 14, 1998**

### **6.2 Test Equipment**

HP 8566B Spectrum Analyzer  
Leader LFG-1300S Function Generator  
Leader LMV-182 AC Millivoltmeter  
Marconi 2955A Radio Communication Test Set  
HP 7470A Plotter

### **6.3 Test Results**

Refer to the attached plots.

The EUT passed the test.

# Intertek Testing Services - Menlo Park

Philips AMPS/NAMPS Cellular Telephone, Model: TCA620-1B

Date of Test: May 14, 1998

Emission Limitations, Occupied Bandwidth Plots:

| Plot Number | Description                                              |
|-------------|----------------------------------------------------------|
| 6.3.a       | Wideband emissions (8 kHz deviation), scan 100 kHz       |
| 6.3.b       | Wideband emissions (8 kHz deviation), scan 200 kHz       |
| 6.3.c       | DTMF "9"                                                 |
| 6.3.d       | SAT (6 kHz, 2 kHz deviation)                             |
| 6.3.e.1     | ST (10 kHz, 8 kHz deviation), scan 100 kHz, RBW = 300 Hz |
| 6.3.e.2     | ST (10 kHz, 8 kHz deviation), scan 100 kHz. RBW = 100 Hz |
| 6.3.f       | ST (10 kHz, 8 kHz deviation), scan 200 kHz, RBW = 300 Hz |
| 6.3.g.1     | SAT & ST, RBW = 300 Hz                                   |
| 6.3.g.2     | SAT & ST, RBW = 100 Hz                                   |
| 6.3.h       | DTMF & SAT (8 kHz, 6 kHz deviation), scan 100 kHz        |
| 6.3.i       | DTMF & SAT, Scan 200 kHz                                 |
| 6.3.j       | Voice (2.5 kHz), scan 200 kHz                            |
| 6.3.k       | Voice (2.5 kHz), scan 100 kHz                            |
| 6.3.l       | NAMPS Voice (1 kHz)                                      |
| 3.3.m       | NAMPS Voice (2.5 kHz)                                    |

## **Intertek Testing Services - Menlo Park**

**Philips AMPS/NAMPS Cellular Telephone, Model: TCA620-1B**

**Date of Test: May 14, 1998**

### **7.0 Out of Band Emissions at Antenna Terminals , FCC § 22.917(e), FCC § 22.917(f)**

#### **Out of Band Emissions:**

The mean power of emissions must be attenuated below the mean power of the unmodulated carrier (P) on any frequency twice or more than twice the fundamental frequency by at least  $43 + 10 \log P$  dB.

#### **Mobile Emissions in Base Frequency Range:**

The mean power of any emissions appearing in the base station frequency range from cellular mobile transmitters operated must be attenuated to a level not to exceed -80 dBm at the transmit antenna connector.

### **7.1 Test Procedure**

The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 30 kHz. The audio modulating signal was adjusted like it is described in Section 6.1 of this report. Sufficient scans were taken to show the outband emissions if any up to 10th harmonic.

### **7.2 Test Equipment**

HP 8566B Spectrum Analyzer  
Leader LFG-1300S Function Generator  
Leader LMV-182 AC Millivoltmeter

### **7.3 Test Results**

Refer to the attached plots.

The EUT passed the test.

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Philips AMPS/NAMPS Cellular Telephone, Model: TCA620-1B

Date of Test: May 14, 1998

| ANTENNA OUTPUT CONDUCTED EMISSIONS SPECTRUM ANALYZER PLOTS |                                             |
|------------------------------------------------------------|---------------------------------------------|
| Plot Number                                                | Description                                 |
| 7.3.a - 7.3.c                                              | Low, Middle & High Channels, 1 - 30 MHz     |
| 7.3.d - 7.3.f                                              | Low, Middle & High Channels 30 - 1000 MHz   |
| 7.3.g - 7.3.i                                              | Low, Middle & High Channels, 1 - 2.5 GHz    |
| 7.3.j - 7.3.l                                              | Low, Middle, & High Channels, 2.5 - 10 GHz  |
| 7.3.m - 7.3.o                                              | Low, Middle, & High Channels, 869 - 894 MHz |
| 7.3.p                                                      | NAMPS, Middle Channel, 1 - 30 MHz           |
| 7.3.r                                                      | NAMPS, Middle Channel 30 - 1000 MHz         |
| 7.3.s                                                      | NAMPS, Middle Channel, 1 - 2.5 GHz          |
| 7.3.t                                                      | NAMPS, Middle Channel, 2.0 - 10 GHz         |
| 7.3.q                                                      | NAMPS, Middle Channel, 869 - 894 MHz        |

## **Intertek Testing Services - Menlo Park**

**Philips AMPS/NAMPS Cellular Telephone, Model: TCA620-1B**

**Date of Test: May 14, 1998**

### **8.0 Field Strength of Spurious Radiation, FCC § 2.993, § 22.917(e)**

#### **8.1 Test Procedure**

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT.

The frequency range up to tenth harmonic of each of the three fundamental frequency (low, middle, and high channels) was investigated.

The spurious emissions attenuation was calculated as the difference between EIRP in dB(pW) at the fundamental frequency (See Section 3) and at the spurious emissions frequency.

#### **8.2 Test Equipment**

EMCO 3115 Horn Antenna  
HP 8566B Spectrum Analyzer  
Tektronix 2782 Spectrum Analyzer  
Low Pass Filter  
Preamplifier

#### **8.3 Test Results**

Refer to the attached data sheets.

The EUT passed the test.

## INTERTEK TESTING SERVICES

Company: Philips  
EUT: Cell Phone  
Model: TCA620-1B  
Test Mode: Tx @ 824.04 MHz

Project #: J98014902  
Date of Test: 5/14/98  
Test Site #: 1  
Engineer: Xi-Ming Yang *XY*

### FCC Part 22 Radiated Emissions

| Frequency<br>(MHz) | Antenna<br>Location<br>(m) | Antenna<br>Polariz.<br>H/V | Reading<br>(dBuV) | Antenna<br>Factor<br>(dB/m) | Preamp<br>(dB) | Cable<br>Loss<br>(dB) | Field<br>Strength<br>dBuV/m | Spurious<br>Attenuation<br>(dB) | Margin<br>(dB) |
|--------------------|----------------------------|----------------------------|-------------------|-----------------------------|----------------|-----------------------|-----------------------------|---------------------------------|----------------|
| 1648.1             | 3.0                        | H                          | 46.6              | 24.7                        | 0.0            | 2.1                   | 73.4                        | 53.7                            | -14.1          |
| 2472.3             | 3.0                        | V                          | 45.2              | 24.7                        | 0.0            | 3.6                   | 73.5                        | 53.6                            | -14.0          |
| 3296.2             | 3.0                        | V                          | 43.7              | 24.7                        | -28.1          | 4.1                   | 44.4                        | 82.7                            | -43.1          |
| 4120.2             | 3.0                        | V                          | 53.5              | 24.7                        | -27.6          | 4.5                   | 55.1                        | 72.0                            | -32.4          |
| 4944.2             | 3.0                        | H                          | 59.2              | 24.7                        | -27.8          | 4.7                   | 60.8                        | 66.3                            | -26.7          |
| 5768.3             | 3.0                        | H                          | 58.1              | 24.7                        | -28.0          | 5.1                   | 59.9                        | 67.2                            | -27.6          |
| 6592.3             | 3.0                        | H                          | 44.8              | 24.7                        | -28.5          | 5.7                   | 46.7                        | 80.4                            | -40.8          |
| 7416.3             | 3.0                        | H                          | 40.3              | 24.7                        | -29.0          | 6.1                   | 42.1                        | 85.0                            | -45.4          |
| 8240.4             | 3.0                        | H                          | 44.0              | 24.7                        | -29.0          | 6.3                   | 46.0                        | 81.1                            | -41.5          |

Note: Negative signs (-) in the Margin column signify levels below the limit.  
Field strength at the fundamental frequency equals 127.1 dBuV/m.  
Spurious emissions attenuation limit equals  $43 + 10\log P = 39.6$  dB.

## INTERTEK TESTING SERVICES

Company: Philips  
EUT: Cell Phone  
Model: TCA620-1B  
Test Mode: Tx @ 836.52 MHz

Project #: J98014902  
Date of Test: 5/14/98  
Test Site #: 1  
Engineer: Xi-Ming Yang X.M.

### FCC Part 22 Radiated Emissions

| Frequency<br>(MHz) | Antenna<br>Location<br>(m) | Antenna<br>Polariz.<br>H/V | Reading<br>(dBuV) | Antenna<br>Factor<br>(dB/m) | Preamp<br>(dB) | Cable<br>Loss<br>(dB) | Field<br>Strength<br>dBuV/m | Spurious<br>Attenuation<br>(dB) | Margin<br>(dB) |
|--------------------|----------------------------|----------------------------|-------------------|-----------------------------|----------------|-----------------------|-----------------------------|---------------------------------|----------------|
| 1673.0             | 3.0                        | V                          | 43.9              | 24.7                        | 0.0            | 2.1                   | 70.7                        | 52.3                            | -13.2          |
| 2509.5             | 3.0                        | V                          | 31.8              | 24.7                        | 0.0            | 3.6                   | 60.1                        | 62.9                            | -23.8          |
| 3396.1             | 3.0                        | V                          | 43.4              | 24.7                        | -28.1          | 4.1                   | 44.1                        | 78.9                            | -39.8          |
| 4182.6             | 3.0                        | V                          | 54.2              | 24.7                        | -27.6          | 4.5                   | 55.8                        | 67.2                            | -28.1          |
| 5019.1             | 3.0                        | H                          | 56.7              | 24.7                        | -27.8          | 4.7                   | 58.3                        | 64.7                            | -25.6          |
| 5856.6             | 3.0                        | H                          | 57.3              | 24.7                        | -28.0          | 5.1                   | 59.1                        | 63.9                            | -24.8          |
| 6692.2             | 3.0                        | H                          | 46.8              | 24.7                        | -28.5          | 5.7                   | 48.7                        | 74.3                            | -35.2          |
| 7528.7             | 3.0                        | H                          | 41.1              | 24.7                        | -29.0          | 6.1                   | 42.9                        | 80.1                            | -41.0          |
| 8365.2             | 3.0                        | H                          | 43.8              | 24.7                        | -29.0          | 6.3                   | 45.8                        | 77.2                            | -38.1          |

Note: Negative signs (-) in the Margin column signify levels below the limit.

Field strength at the fundamental frequency equals 123.0 dBuV/m.

Spurious emissions attenuation limit equals  $43 + 10\log P = 39.1$  dB.

## INTERTEK TESTING SERVICES

Company: Philips  
EUT: Cell Phone  
Model: TCA620-1B  
Test Mode: Tx @ 848.97 MHz

Project #: J98014902  
Date of Test: 5/14/98  
Test Site #: 1  
Engineer: Xi-Ming Yang *X.M.*

### FCC Part 22 Radiated Emissions

| Frequency<br>(MHz) | Antenna<br>Location<br>(m) | Antenna<br>Polariz.<br>H/V | Reading<br>(dBuV) | Antenna<br>Factor<br>(dB/m) | Preamplifier<br>(dB) | Cable<br>Loss<br>(dB) | Field<br>Strength<br>dBuV/m | Spurious<br>Attenuation<br>(dB) | Margin<br>(dB) |
|--------------------|----------------------------|----------------------------|-------------------|-----------------------------|----------------------|-----------------------|-----------------------------|---------------------------------|----------------|
| 1697.9             | 3.0                        | V                          | 37.2              | 26.7                        | 0.0                  | 2.1                   | 66.0                        | 61.5                            | -21.1          |
| 2546.9             | 3.0                        | H                          | 42.4              | 30.5                        | 0.0                  | 3.6                   | 76.5                        | 51.0                            | -10.6          |
| 3395.9             | 3.0                        | H                          | 56.5              | 32.7                        | -28.1                | 4.1                   | 65.2                        | 62.3                            | -21.9          |
| 4244.8             | 3.0                        | V                          | 53.1              | 34.0                        | -27.6                | 4.5                   | 64.0                        | 63.5                            | -23.1          |
| 5093.8             | 3.0                        | V                          | 52.3              | 35.1                        | -27.8                | 4.7                   | 64.3                        | 63.2                            | -22.8          |
| 5942.8             | 3.0                        | V                          | 60.3              | 36.1                        | -28.0                | 5.1                   | 73.5                        | 54.0                            | -13.6          |
| 6791.9             | 3.0                        | V                          | 45.6              | 37.2                        | -28.5                | 5.7                   | 60.0                        | 67.5                            | -27.1          |
| 7640.7             | 3.0                        | V                          | 41.6              | 37.8                        | -29.0                | 6.1                   | 56.5                        | 71.0                            | -30.6          |
| 8489.7             | 3.0                        | V                          | 40.2              | 38.8                        | -29.0                | 6.3                   | 56.3                        | 71.2                            | -30.8          |

Note: Negative signs (-) in the Margin column signify levels below the limit.

Field strength at the fundamental frequency equals 127.5 dBuV/m.

Spurious emissions attenuation limit equals  $43 + 10\log P = 40.4$  dB.

# INTERTEK TESTING SERVICES

Company: Philips  
 EUT: Cell Phone  
 Model: TCA620-1B  
 Test Mode: Rx

Project #: J98014902  
 Date of Test: 5/14/98  
 Test Site #: 1  
 Engineer: Xi-Ming Yang X.M.

## FCC Part 15.109 Class B Radiated Emissions

| Frequency<br>(MHz) | Antenna<br>Location<br>(m) | Antenna<br>Polariz.<br>(H=0/V=1) | Reading<br>(dBuV) | Antenna<br>Factor<br>(dB/m) | Preamp<br>(dB) | Correction<br>Factor<br>(dB) | Cable<br>Loss<br>(dB) | Corrected<br>Reading<br>(dBuV/m) | Limit<br>At 3 m<br>(dBuV/m) | Margin<br>(dB) |
|--------------------|----------------------------|----------------------------------|-------------------|-----------------------------|----------------|------------------------------|-----------------------|----------------------------------|-----------------------------|----------------|
| 30.7               | 3.0                        | 0                                | 30.2              | 15.3                        | -22.5          | 0.0                          | 0.8                   | 23.8                             | 40.0                        | -16.2          |
| 46.2               | 3.0                        | 1                                | 37.7              | 9.1                         | -22.5          | 0.0                          | 0.8                   | 25.1                             | 40.0                        | -14.9          |
| 61.4               | 3.0                        | 0                                | 47.7              | 5.8                         | -22.5          | 0.0                          | 1.1                   | 32.1                             | 40.0                        | -7.9           |
| 77.3               | 3.0                        | 0                                | 35.2              | 7.9                         | -22.5          | 0.0                          | 1.5                   | 22.1                             | 40.0                        | -17.9          |
| 93.4               | 3.0                        | 0                                | 19.8              | 7.8                         | -22.5          | 0.0                          | 1.9                   | 7.1                              | 43.5                        | -36.4          |
| 107.3              | 3.0                        | 0                                | 44.9              | 7.3                         | -22.6          | 0.0                          | 2.1                   | 31.7                             | 43.5                        | -11.8          |
| 167.0              | 3.0                        | 0                                | 22.4              | 9.0                         | -22.6          | 0.0                          | 2.3                   | 11.1                             | 43.5                        | -32.4          |
| 971.6              | 3.0                        | 0                                | 33.5              | 24.6                        | -22.2          | 0.0                          | 6.1                   | 42.0                             | 54.0                        | -12.0          |

Note: Negative signs (-) in the Margin column signify levels below the limit.  
 '\*' indicates Local Oscillator.

## **Intertek Testing Services - Menlo Park**

**Philips AMPS/NAMPS Cellular Telephone, Model: TCA620-1B**

**Date of Test: May 14, 1998**

### **9.0 Line Conducted Emissions, FCC § 15.107**

#### **9.1 Test Procedure**

Test procedure described in the ANSI C63.4 Standard was employed.

The EUT was connected to the DC power supply (Topward Electric Instrument, Model No.: TPS 4000), that was connected to the AC line through the LISNs.

Both HOT and NEUTRAL leads were tested.

## **Intertek Testing Services - Menlo Park**

**Philips AMPS/NAMPS Cellular Telephone, Model: TCA620-1B**

**Date of Test: May 14, 1998**

### **9.2 Test Configuration Setup - Line Conducted Emissions**

Not applicable, the EUT is battery operated.

## **Intertek Testing Services - Menlo Park**

**Philips AMPS/NAMPS Cellular Telephone, Model: TCA620-1B**

**Date of Test: May 14, 1998**

### **9.3 Test Results - Line Conducted Emissions**

Not applicable, the EUT is battery operated.

## **Intertek Testing Services - Menlo Park**

**Philips AMPS/NAMPS Cellular Telephone, Model: TCA620-1B**

**Date of Test: May 14, 1998**

### **10.0 Frequency Stability vs Temperature, FCC § 2.995(a), § 22.355**

Frequency Tolerance:  $\pm 2.5$  ppm

#### **10.1 Test Procedure**

The equipment under test was connected to an external DC power supply and the RF output was connected to a frequency counter via feedthrough attenuators. The EUT was placed inside the temperature chamber. The DC leads, RF output cable, and external PTT cable exited the chamber through an opening made for that purpose.

After the temperature stabilized for approximately 20 minutes, the external PTT switch was activated, and the frequency output was recorded from the counter.

#### **10.2 Test Equipment**

Temperature Chamber, -50C to +100C  
Hewlett Packard 5383A Frequency Counter  
Goldstar DC Power Supply, GR303  
Rohde & Schwarz ESVP Test Receiver

## Intertek Testing Services - Menlo Park

Philips AMPS/NAMPS Cellular Telephone, Model: TCA620-1B

Date of Test: May 14, 1998

### 10.3 Test Results

Refer to the test data below.

The EUT passed the test.

Frequency: 836.52 MHz

Tolerance:  $\pm 2091$  Hz

| FREQUENCY STABILITY VS TEMPERATURE |                 |                 |
|------------------------------------|-----------------|-----------------|
| Temperature, C                     | Frequency (MHz) | Difference (Hz) |
| 60                                 | 836.519466      | -534            |
| 50                                 | 836.520110      | 110             |
| 40                                 | 836.519895      | -105            |
| 30                                 | 836.520125      | 125             |
| 20                                 | 836.520290      | 240             |
| 10                                 | 836.520275      | 275             |
| 0                                  | 836.520010      | 10              |
| -10                                | 836.519425      | -575            |
| -20                                | 836.519860      | -140            |
| -30                                | 836.519430      | -570            |

## Intertek Testing Services - Menlo Park

Philips AMPS/NAMPS Cellular Telephone, Model: TCA620-1B

Date of Test: May 14, 1998

11.0 **Frequency Stability vs Voltage**, FCC 2.995(d)(2), §22.355  
Frequency Tolerance:  $\pm 2.5$  ppm

### 11.1 Test Procedure

An external variable DC power supply was connected to the EUT. The frequency of the transmitter was measured for 115% of the DC nominal value and for 85% of the nominal value.

### 11.2 Test Equipment

Hewlett Packard 5383A Frequency Counter

DC Power Supply

Rohde & Schwarz ESVP Test Receiver

### 11.3 Test Results.

Refer to the test data below.

Frequency: 836.52 MHz

Tolerance:  $\pm 2091$  Hz

| Frequency Stability vs. Voltage |                 |                 |
|---------------------------------|-----------------|-----------------|
| Voltage                         | Frequency (MHz) | Difference (Hz) |
| 4.65 ( 85%)                     | 836.519310      | -690            |
| 4.80 (100%)                     | 836.519120      | -880            |
| 4.95 (115%)                     | 836.519310      | -690            |
| 4.40 (Minimum)                  | 836.519910      | -90             |

The EUT passed the test.

Plot 7.3.2

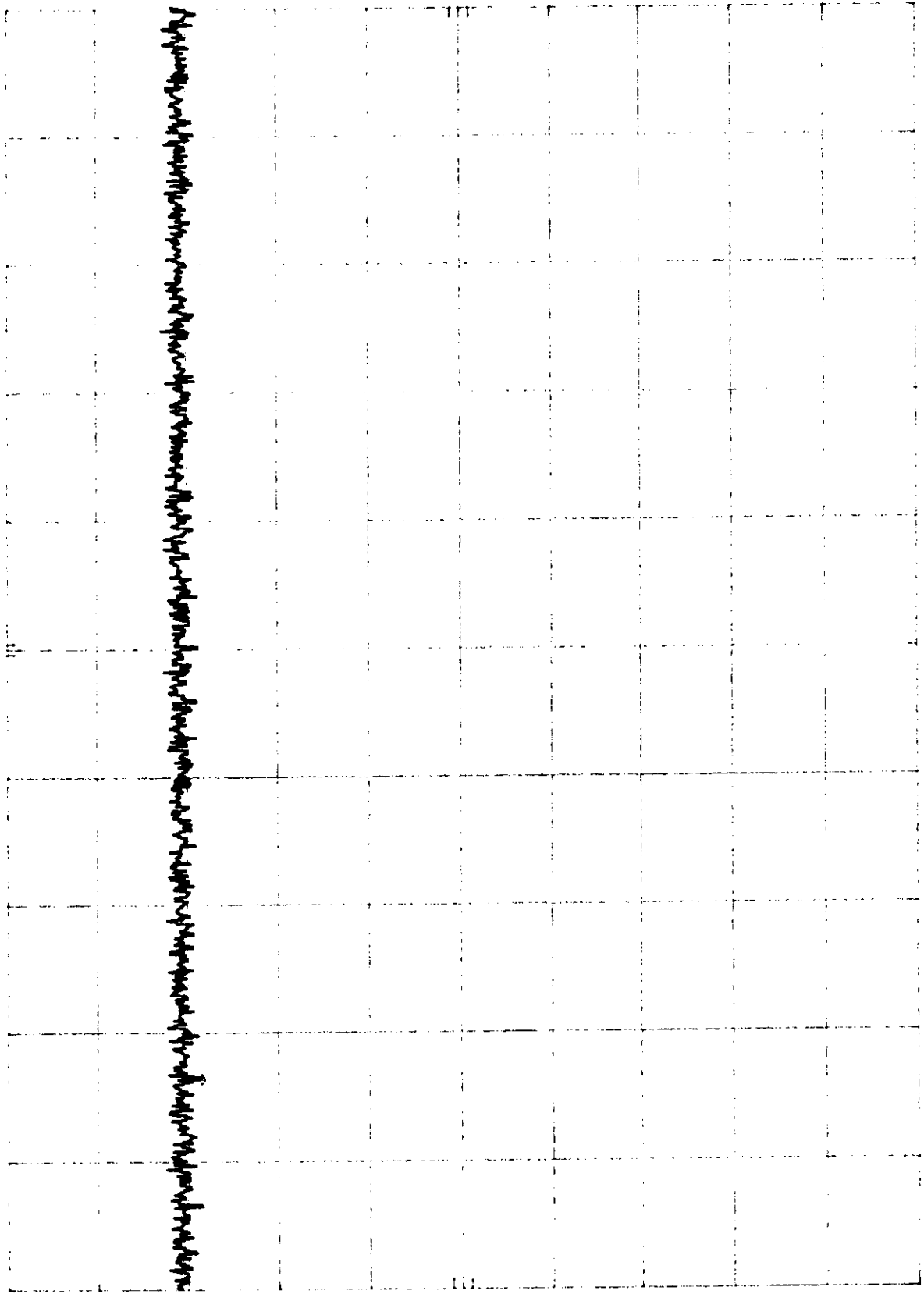
PHILIPS

REF 25.0 dBm

ATTEN 40 dB

MKR 25.22 MHz  
-53.50 dBm

10 dB/



START 1.0 MHz

RES BW 30 kHz

VBW 30 kHz

STOP 30.0 MHz

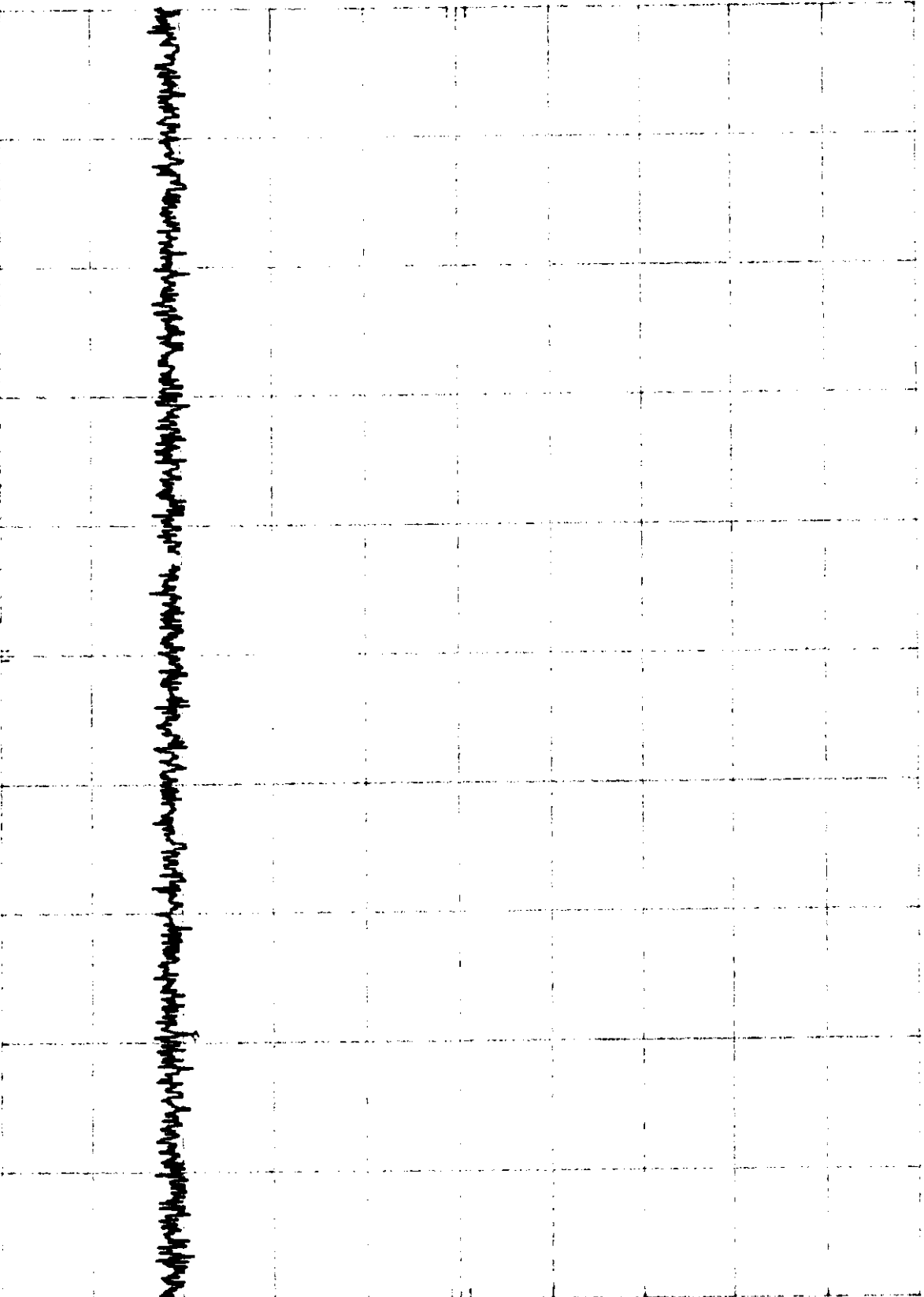
SWP 87.0 msec

PHILIPS  
REF 25.0 dBm

ATTEN 40 dB

Plot 7.3.b  
NMR 24.03 MHz  
53.60 dBm

10 dB



START 1.0 MHz

RES BW 30 kHz

VBW 30 kHz

STOP 30.0 MHz  
SWP 87.0 msec

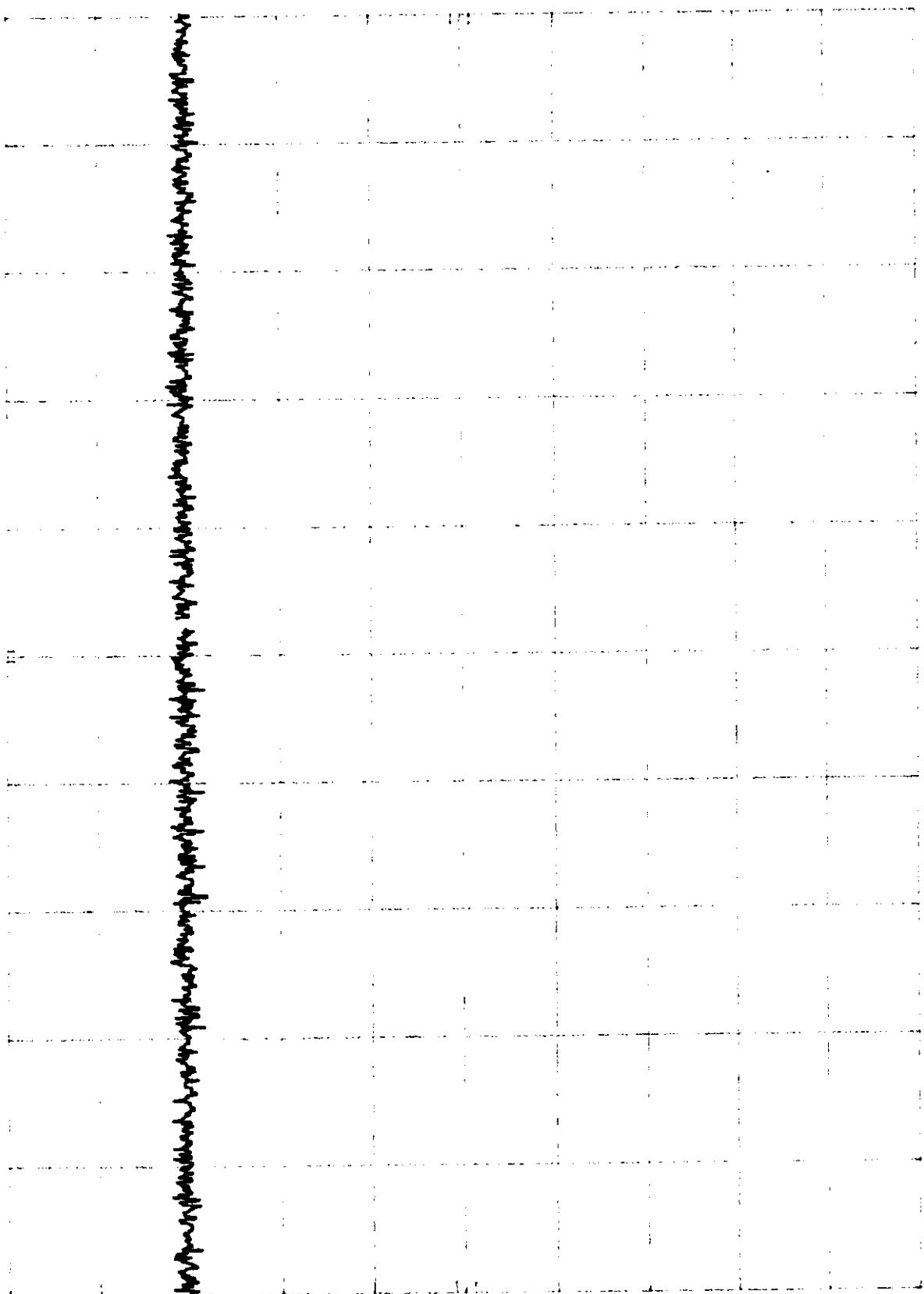
hp

PHILIPS  
REF 25.0 dBm

ATTEN 40 dB

Plot 7.3.C  
MKR 4.39 MHz  
-56.00 dBm

10 dB/



START 1.0 MHz

RES BW 30 kHz

VBW 30 kHz

STOP 30.0 MHz  
SWP 87.0 msec

Plot 7.3.d

PHILIPS

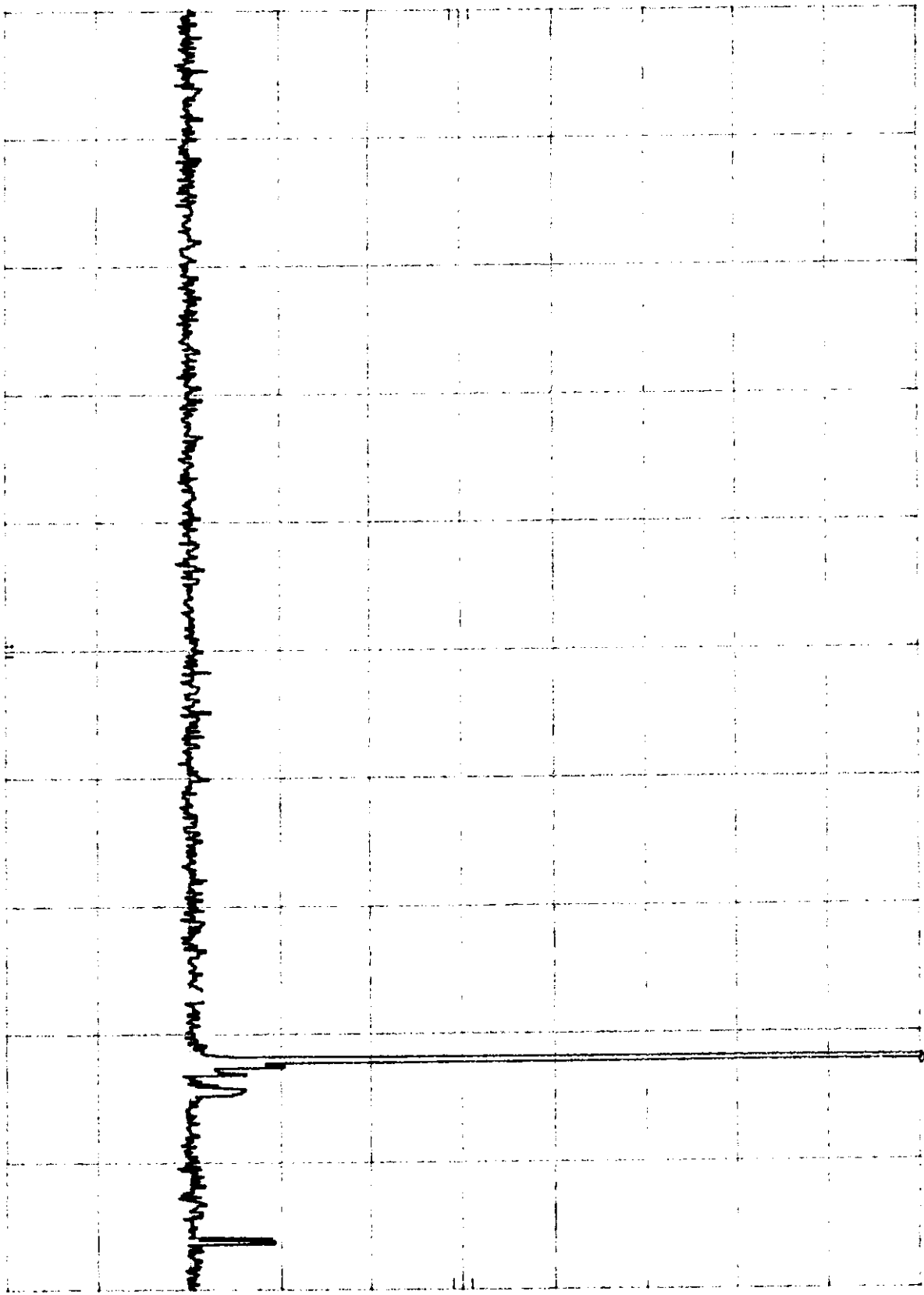
REF 25.0 dBm

ATTEN 40 dB

MKR 825.4 MHz

25.20 dBm

10 dB/



START 30 MHz

RES BW 30 kHz

VBW 30 kHz

STOP 1.000 GHz  
SWP 2.91 sec

Plot 7.3.e

PHILIPS

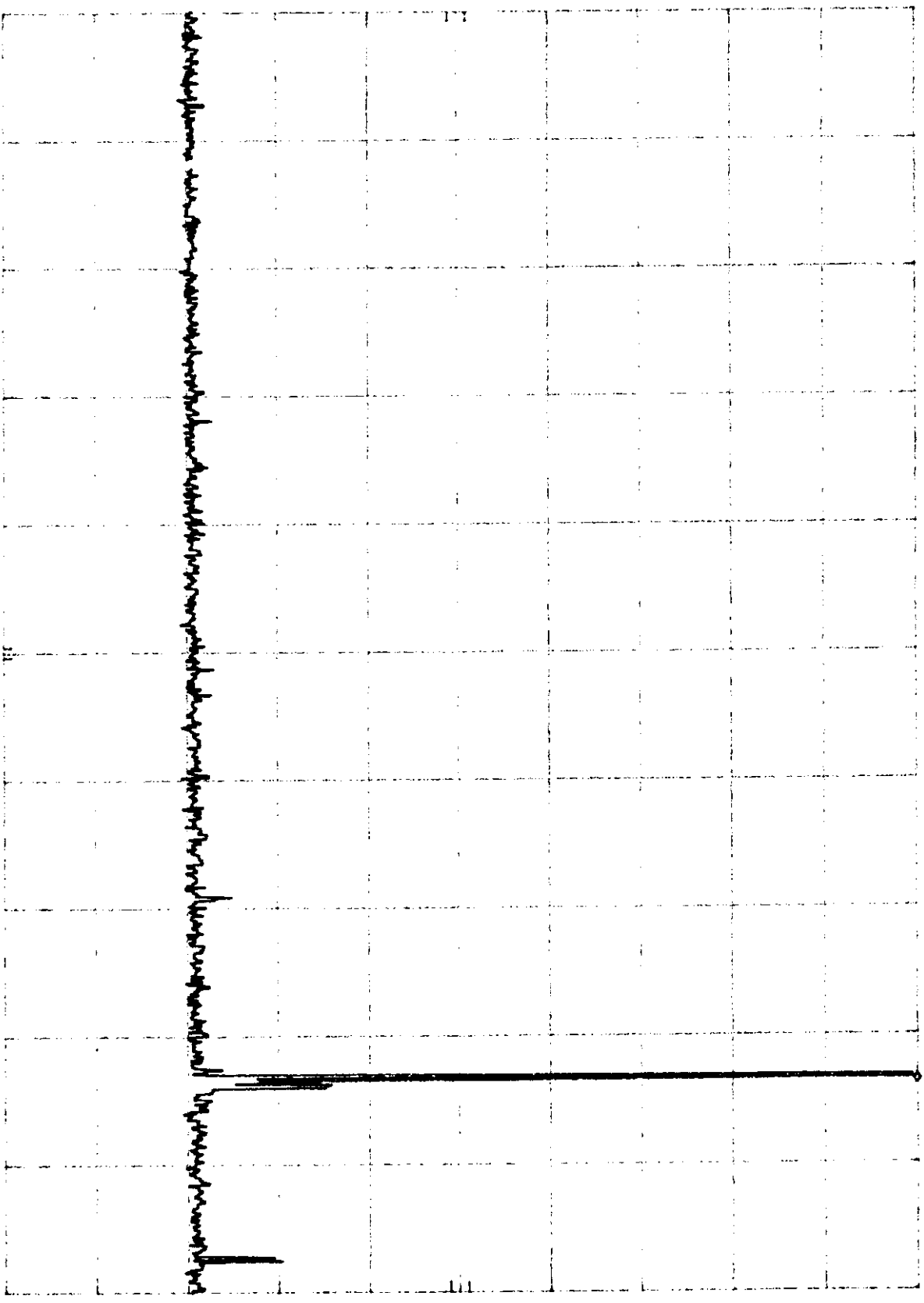
REF 25.0 dBm

ATTEN 40 dB

MKR 839.0 MHz

24.90 dBm

10 dB/



START 30 MHz

RES BW 30 kHz

VBW 30 kHz

STOP 1.000 GHz

SWP 2.91 sec

1/p

10 dB/

PHILIPS

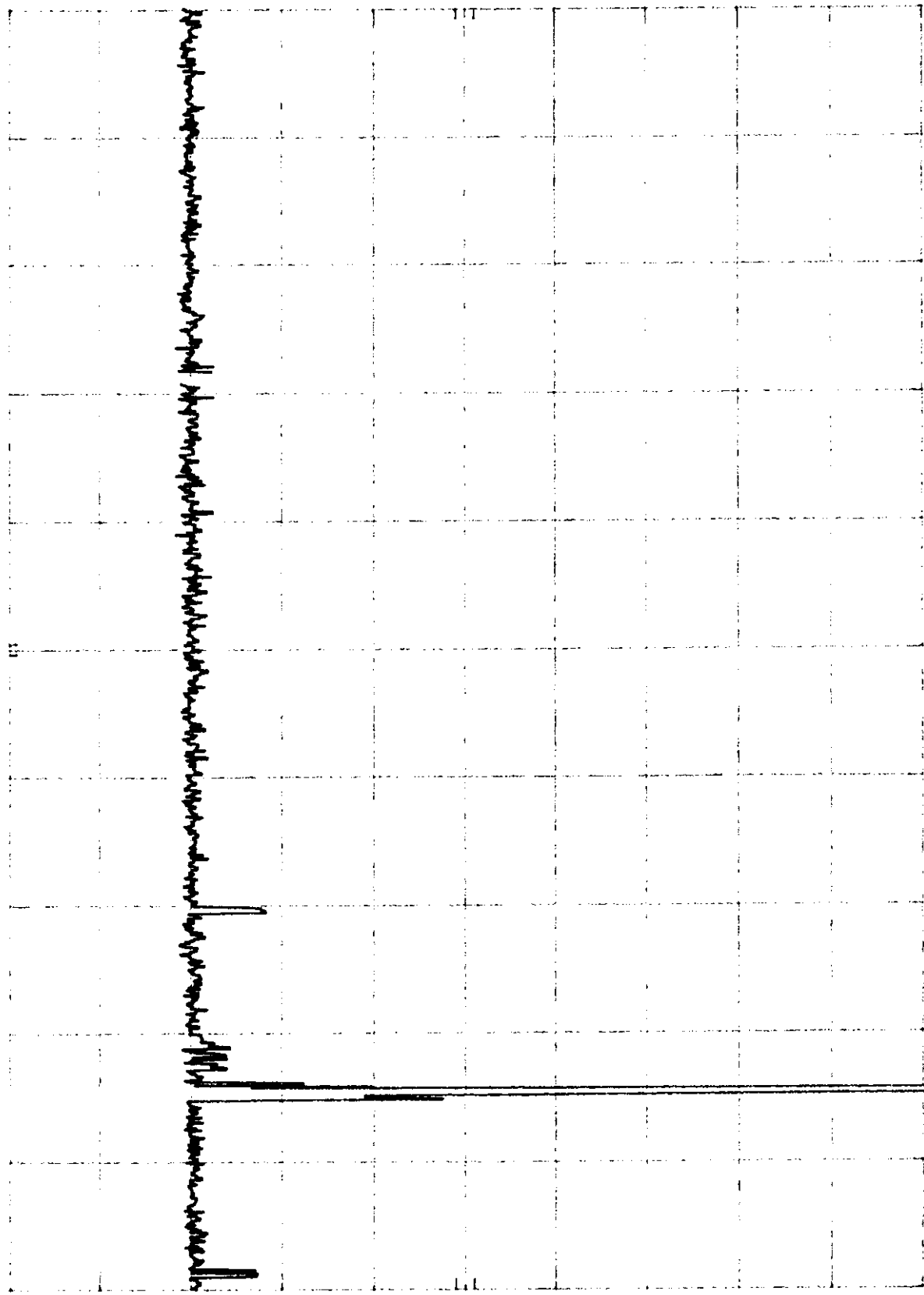
REF 25.0 dBm

ATTEN 40 dB

Plot 7.3.f

MKR 848.7 MHz

25.40 dBm



START 30 MHz

RES BW 30 KHz

VBW 30 KHz

STOP 1.000 GHz

SWP 2.91 sec

Plot 7.3.8

PHILIPS

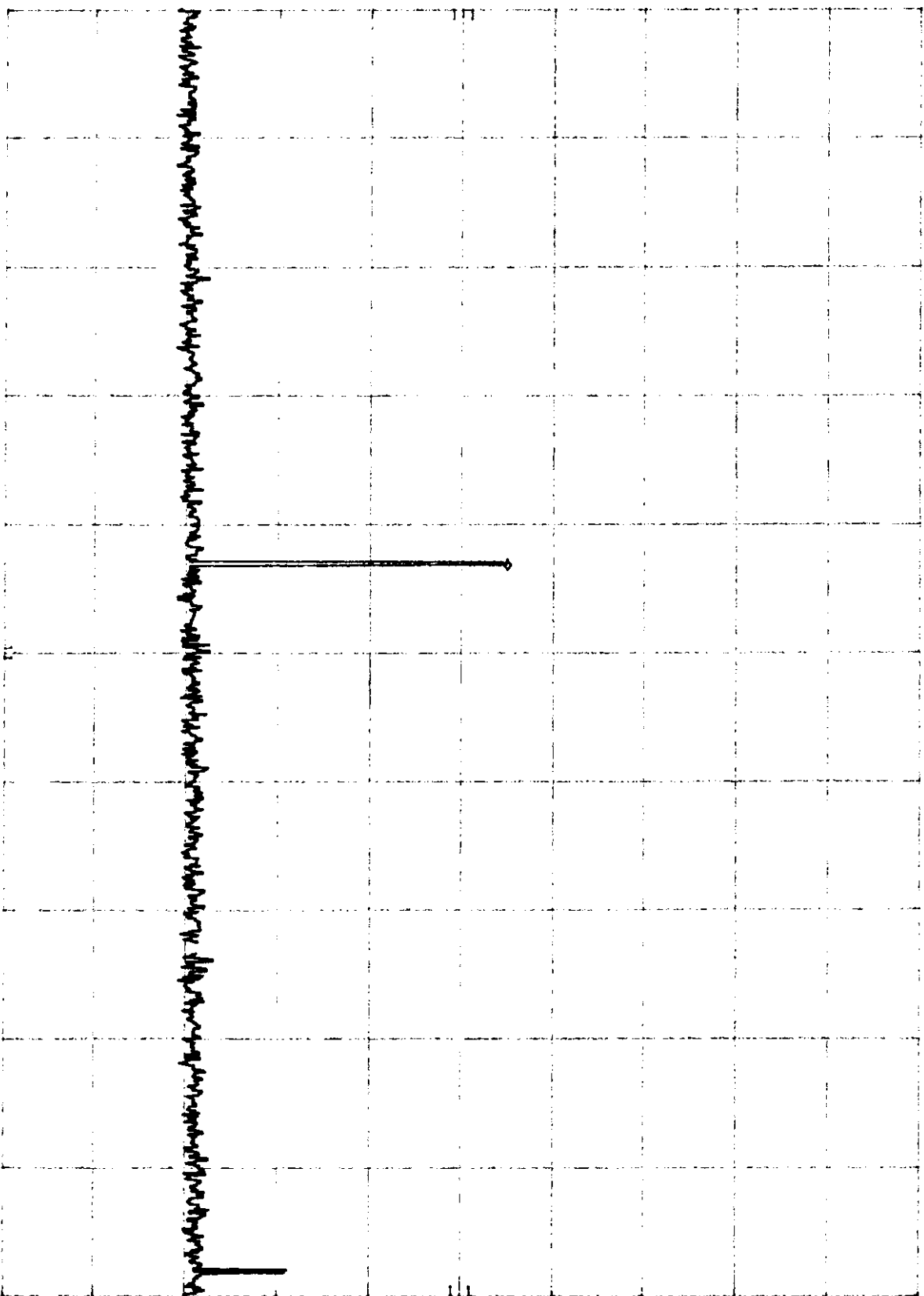
MKR 1.647 GHz

REF 25.0 dBm

ATTEN 40 dB

-20.00 dBm

10 dB/



START 1.00 GHz

RES BW 30 KHz

VBW 30 KHz

STOP 2.50 GHz

SWP 4.50 sec

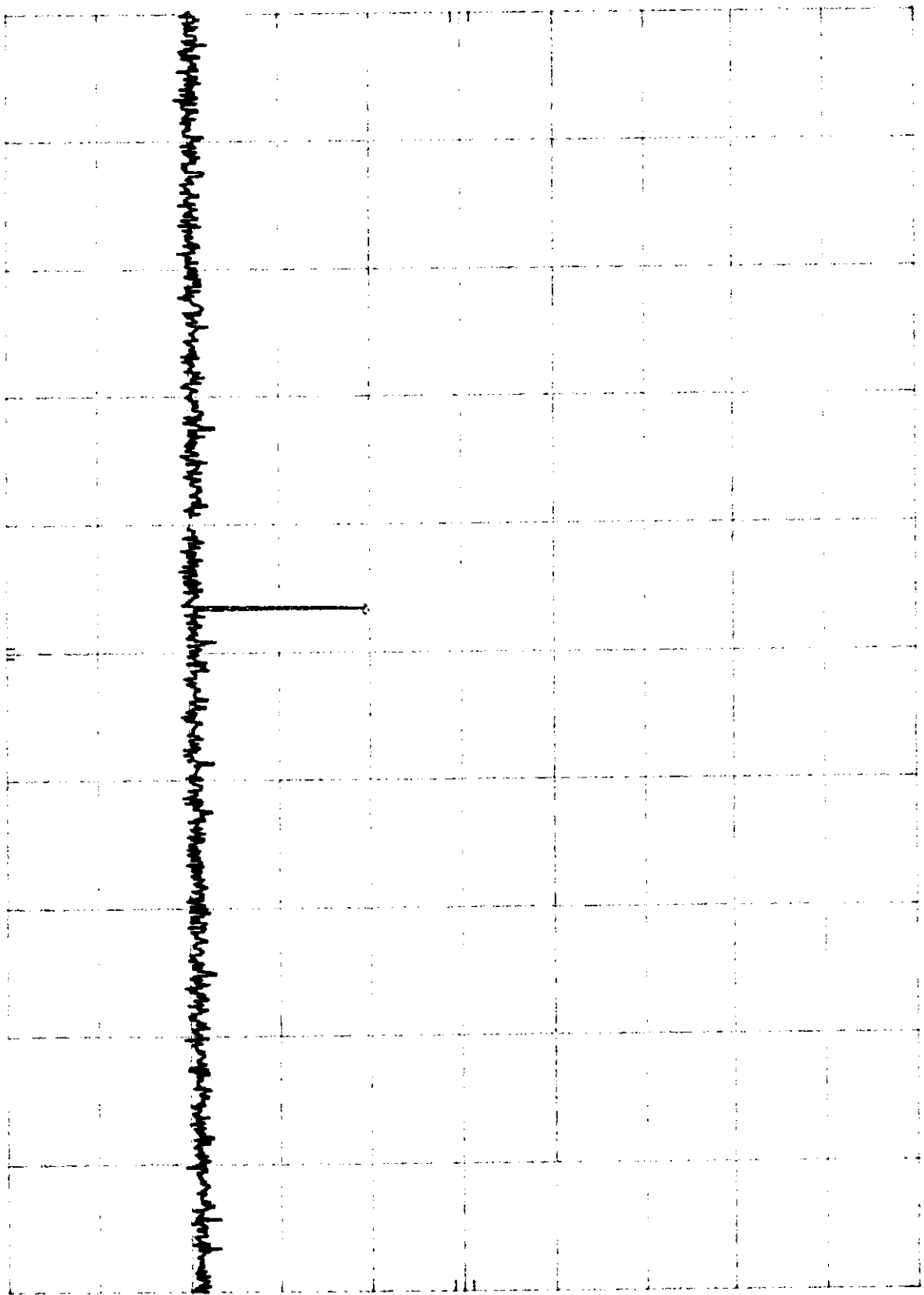
h/p

10 dB/

PHILIPS  
REF 25.0 dBm

ATTEN 40 dB

Plot 7.3.1  
MKR 1.699 GHz  
-35.50 dBm



START 1.00 GHz

RES BW 30 kHz

VBW 30 kHz

STOP 2.50 GHz  
SWP 4.50 sec

PHILIPS

REF 25.0 dBm

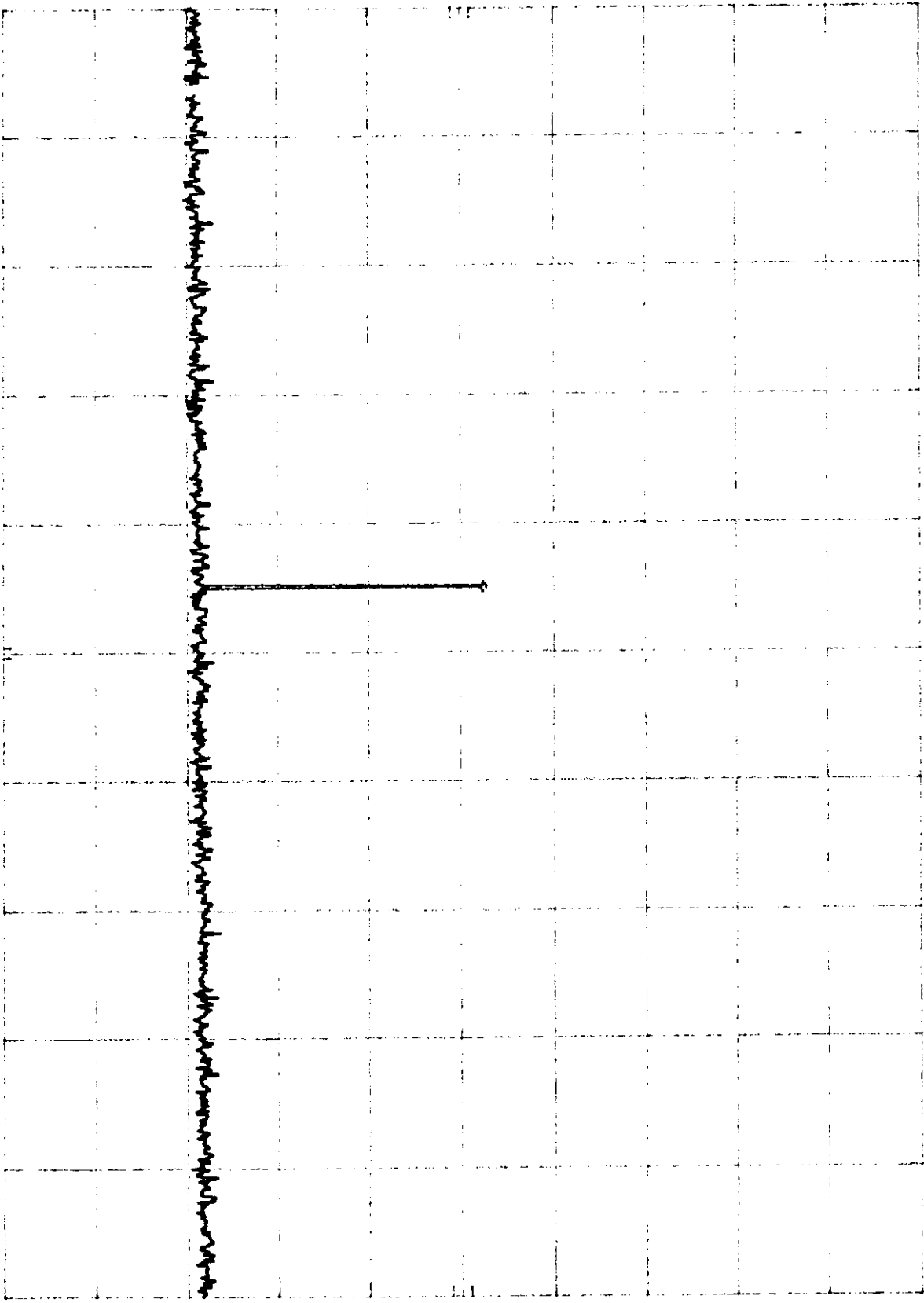
ATTEN 40 dB

MKR 1.674 GHz

-22.60 dBm

Plot 7.3.h

10 dB/



START 1.00 GHz

RES BW 30 KHz

VBW 30 KHz

STOP 2.50 GHz

SWP 4.50 sec

Plot 7.3.L

PHILIPS

MKR 3.378 GHz

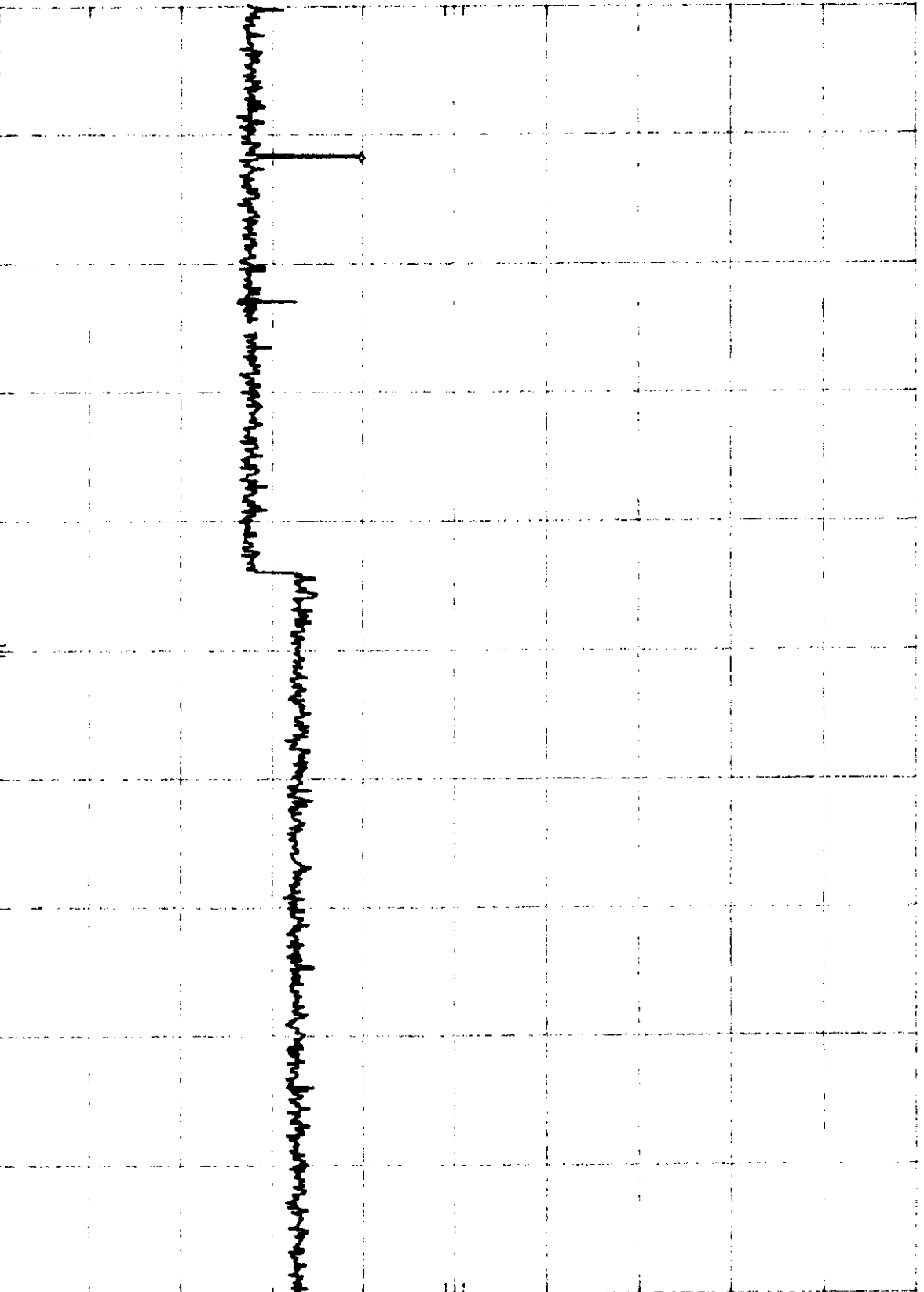
70

REF 25.0 dBm

ATTEN 40 dB

-35.20 dBm

10 dB/



START 2.50 GHz

RES BW 100 kHz

VBW 100 kHz

STOP 10.00 GHz  
SWP 2.25 sec

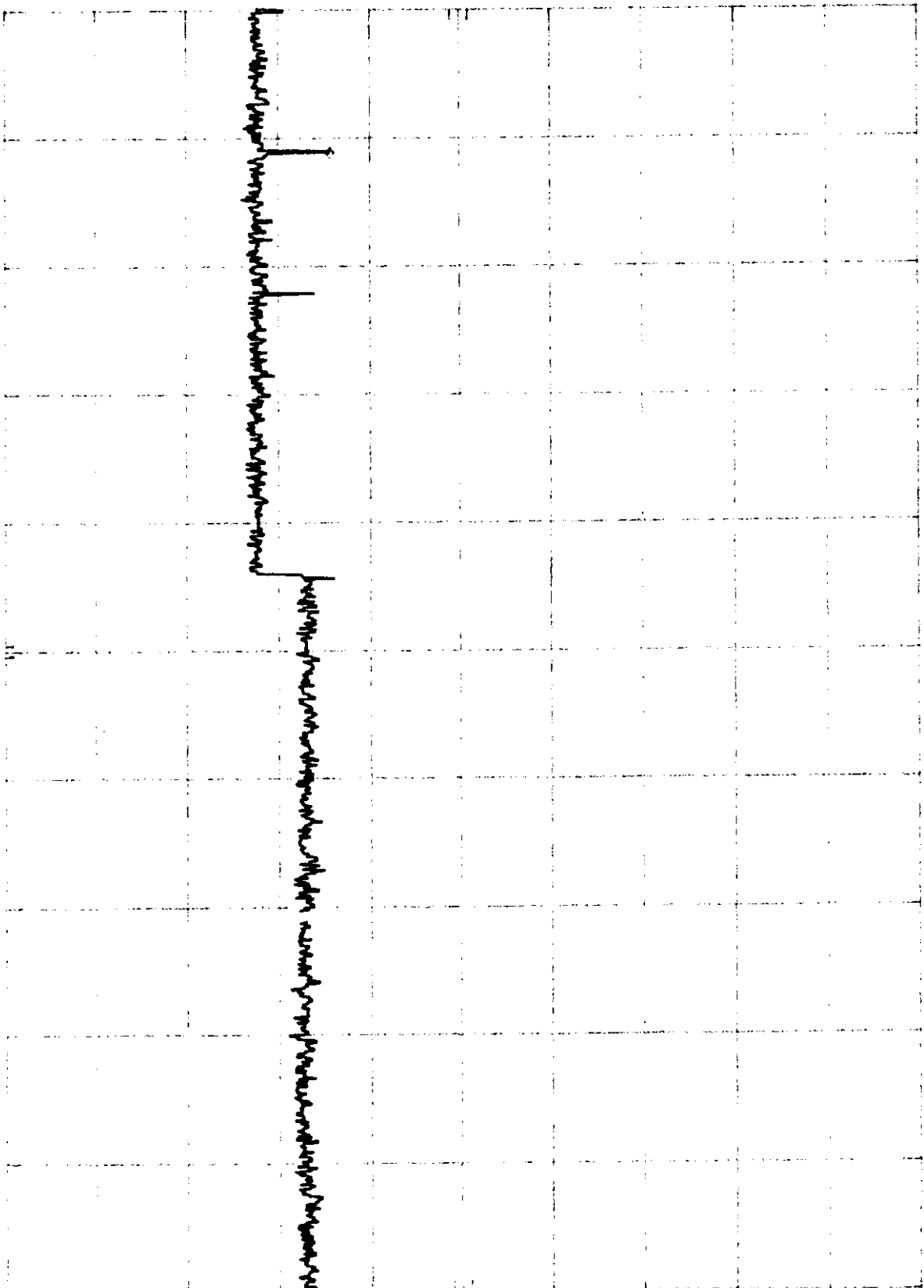
PHILIPS

REF 25.0 dBm

ATTEN 40 dB

Plot 7.3.K  
MKR 3.333 CHX  
-39.30 dBm

10 dB/



START 2.50 CHZ

RES BW 100 KHZ

VBW 100 KHZ

STOP 10.00 CHZ  
SWP 2.25 sec

Plot 7.3.j

PHILIPS

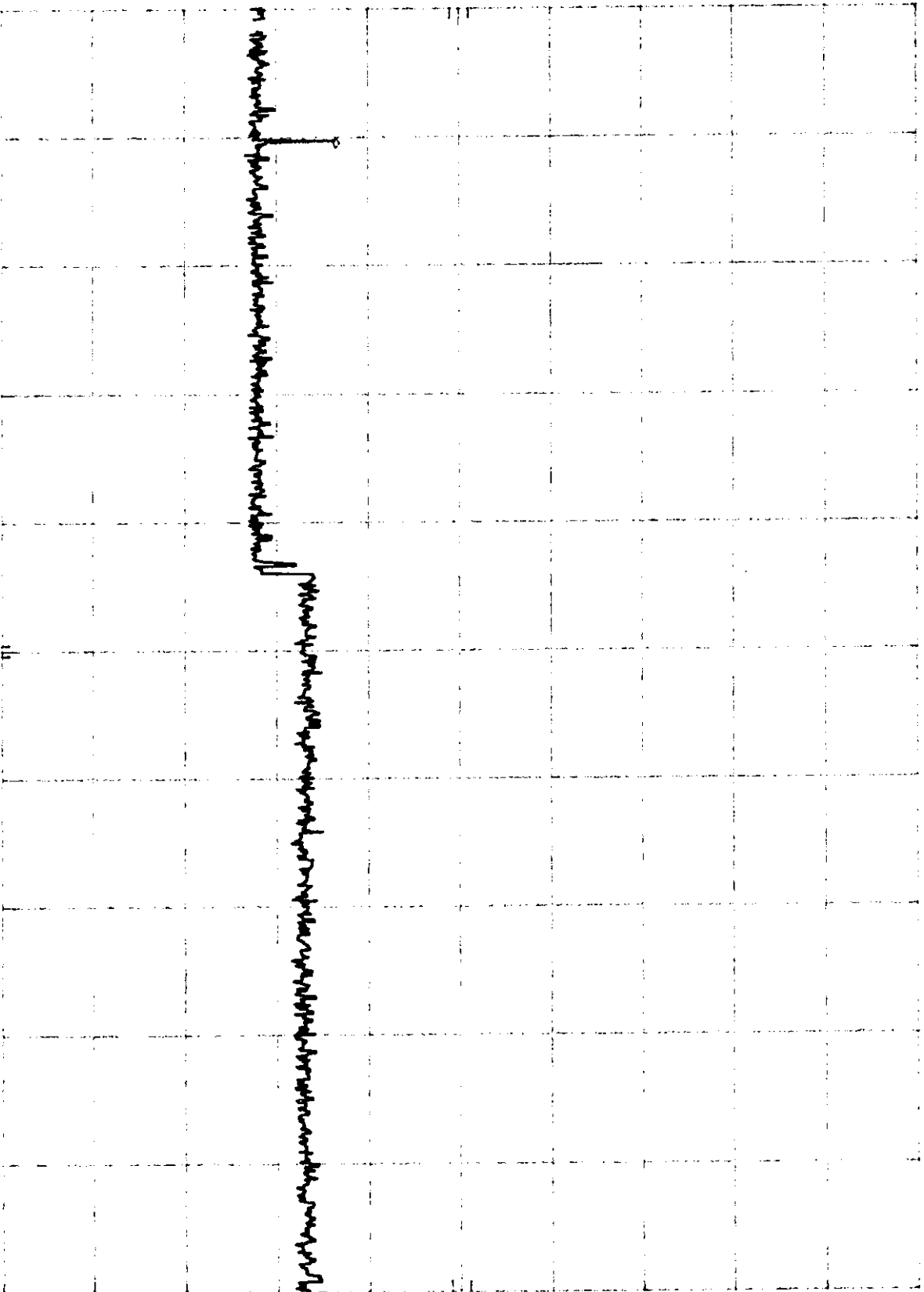
MKR 3.280 GHz

REF 25.0 dBm

ATTEN 40 dB

-38.50 dBm

10 dB/



START 2.50 GHz

RES BW 100 kHz

VBW 100 kHz

STOP 10.00 GHz  
SWP 2.25 sec

PHILIPS

REF -20.0 dBm

ATTEN 10 dB

Plot 7.3. M  
MKR 884.10 MHz  
-82.50 dBm

10 dB

Handwritten signal trace on a grid background.

START 869.0 MHz

RES BW 30 kHz

VBW 30 kHz

STOP 894.0 MHz  
SWP 75.0 msec

PHILIPS

REF -20.0 dBm

ATTEN 10 dB

Plot 7.3.2  
MKR 870.50 MHz  
-83.40 dBm

10 dB



START 869.0 MHz

RES BW 30 kHz

VBW 30 kHz

STOP 894.0 MHz

SWP 75.0 ms

Plot 7.3.P

PHILIPS

NIKEA 11.90 MHz

REF 25.0 dBm

-50.90 dBm

10 dB

Handwritten notes in the center of the page, likely describing the plot or measurement results.

START 1.0 MHz

STOP 30.0 MHz

RES 30 dB

VIEW 30 MHz

SWP 87.0 Hz

PHILIPS

10

REF -20.0 dBm

ATTEN 10 dB

10 dB

Plot 7.3.0

MR 884.68 MHz

-82.90 dBm

Handwritten text across the grid, likely a frequency or measurement value.

START 869.0 MHz

RES BW 30 kHz

VBW 30 kHz

STOP 894.0 MHz

SWP 75.0 mHz

PHILIPS

REF 25.0 dBm

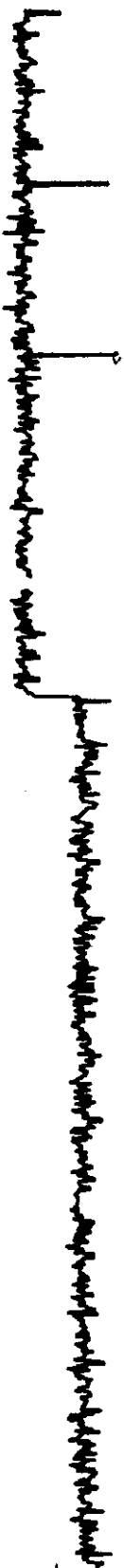
ATTEN 40 dB

Plot 7.3.t

MKR 4.165 GHz

-39.10 dBm

10 dB



START 2.50 GHz

RES BW 100 kHz

VBW 100 kHz

STOP 10.00 GHz

SWP 2.25 sec

Plot 7.3, ~

PHILIPS

MXR 837.0 MHz

REF 25.0 dBm

ATTEN 40 dB

24.70 dBm

10 dBm

START

30 MHz



START 30 MHz

STOP 1.000 GHz

RES BW 30 kHz

VBW 30 kHz

SWP 2.91 sec

Plot 7.3.5

NR 1.074 GHz

-20.30 dBm

PHILIPS

REF 25.0 dBm

ATTEN 40 dB

10 dB

Amplitude vs Frequency

START 1.00 GHz RES BW 100 kHz VBW 100 kHz STOP 2.50 GHz SWP 450 mhz

PHILIPS  
REF (20.0) dbm

ATTEN 10 dB

Plot 7.3.9  
MKR 876.75 MHz  
-83.20 dBm

10 dB

-80-

880.0 MHz  
RES BW 30 kHz  
VBW 30 kHz  
STOP 894.0 MHz  
SWP 75.0 mhz

START 880.0 MHz  
RES BW 30 kHz

VBW 30 kHz

STOP 894.0 MHz  
SWP 75.0 mhz

hp

PHILIPS  
REF 25.5 dBm

ATTEN 40 dB

Plot 6.3.f  
MKR 836.517 2 MHz  
24.00 dBm

10 dB/

CORR'D

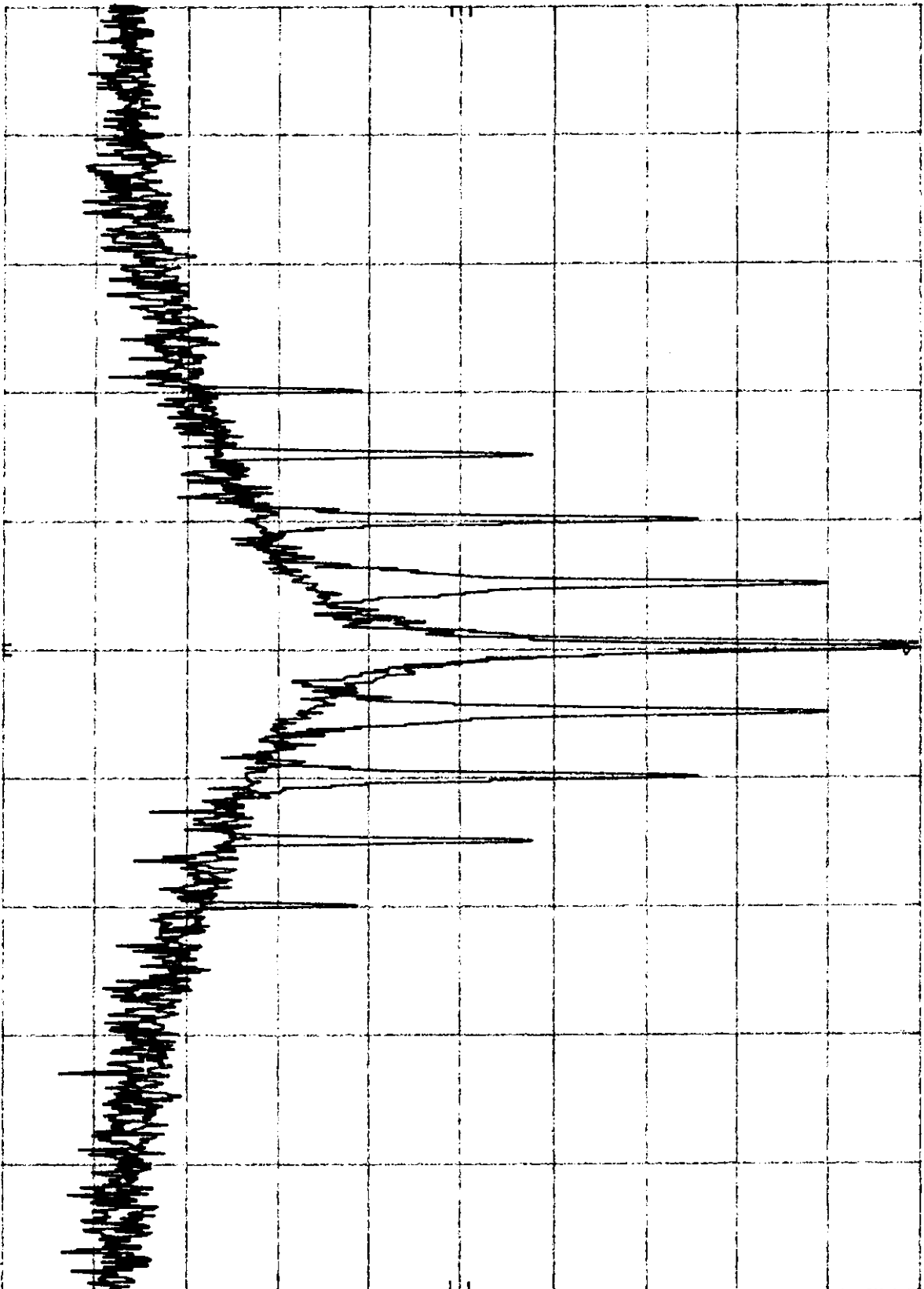
CENTER 836.517 MHz  
RES BW 300 Hz

Hz

VBW 300 Hz

Hz

SPAN 201 kHz  
SWP 6.00 sec



Plot 6.5.g.1

PHILIPS  
hpd REF 25.5 dBm

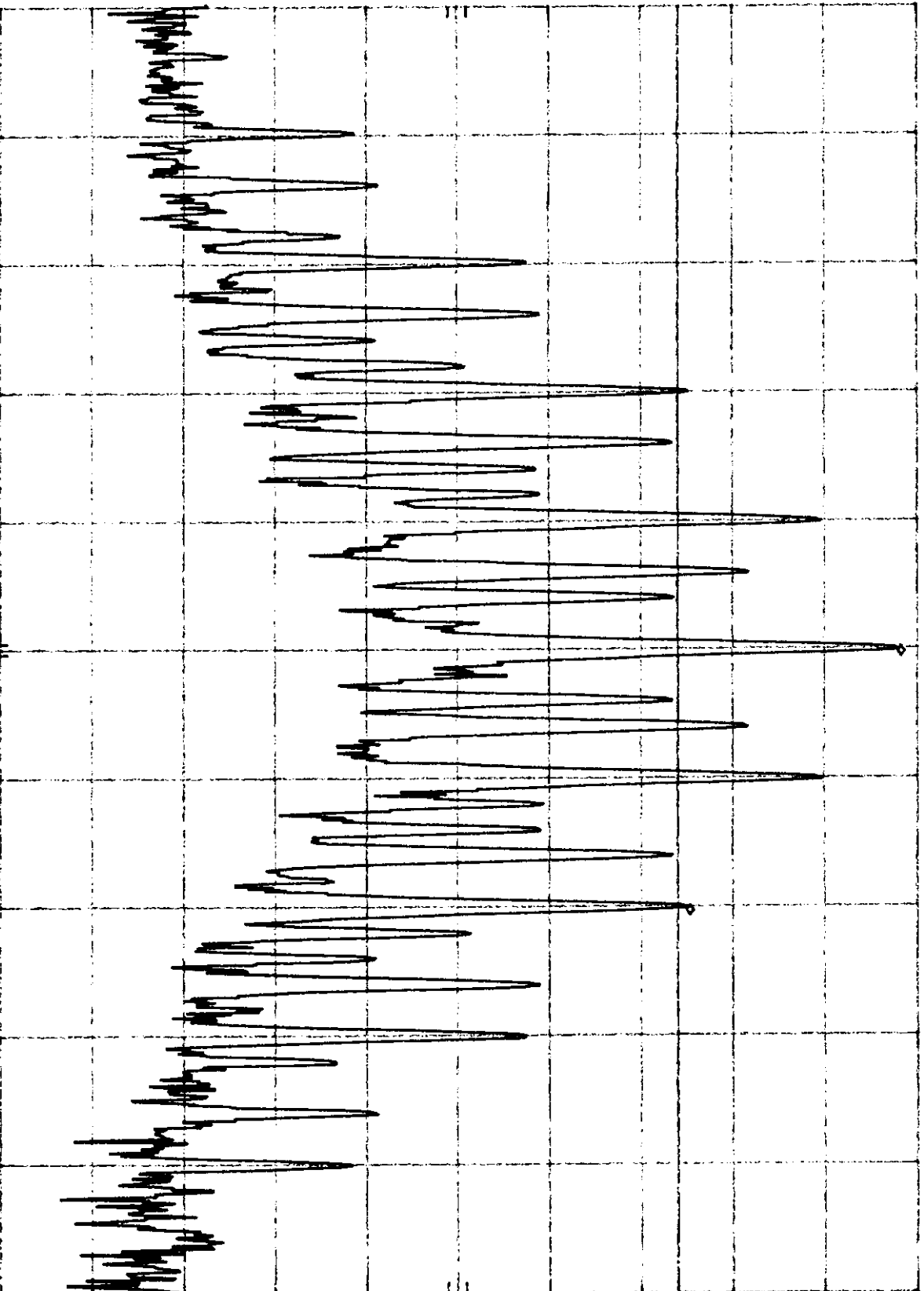
ATTEN 40 dB

MKR  $\Delta$  20.1 kHz  
-22.90 dB

10 dB/

DL  
-0.5  
dBm

CORR'D



CENTER 836.517 MHz  
RES BW 300 Hz

VBW 300 Hz

SPAN 100 kHz  
SWP 3.00 sec

Plot 6.3.g.2

PHILIPS

MKR  $\Delta$  20.1 kHz

hp

REF 25.5 dBm

ATTEN 40 dB

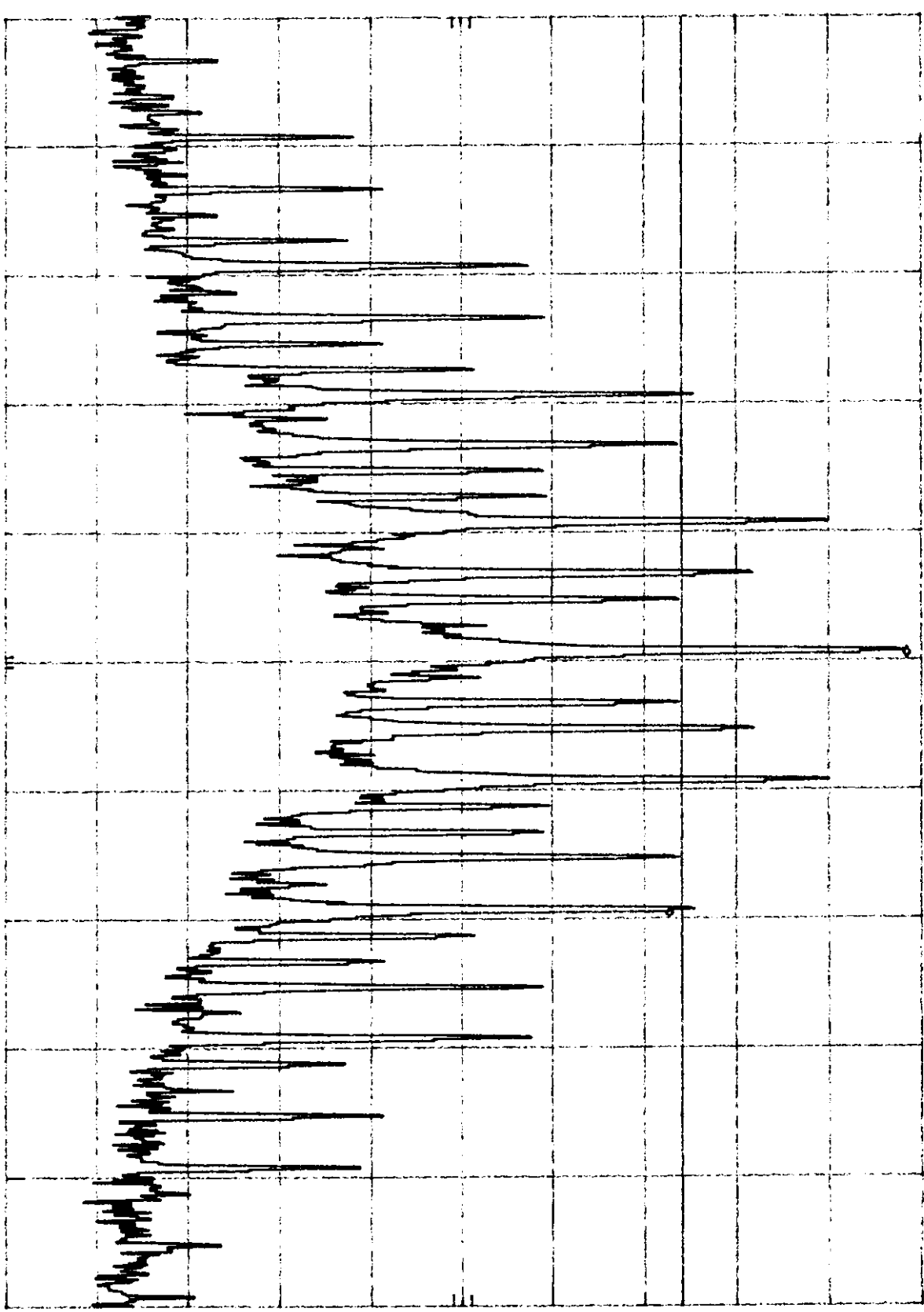
-25.70 dB

10 dB/

DL  
-0.5  
dBm

CORR. 0

CENTER 836.518 MHz  
RES BW 100 Hz  
VBW 100 Hz  
SPAN 100 kHz  
SWP 30.0 sec



PHILIPS  
REF 25.5 dBm

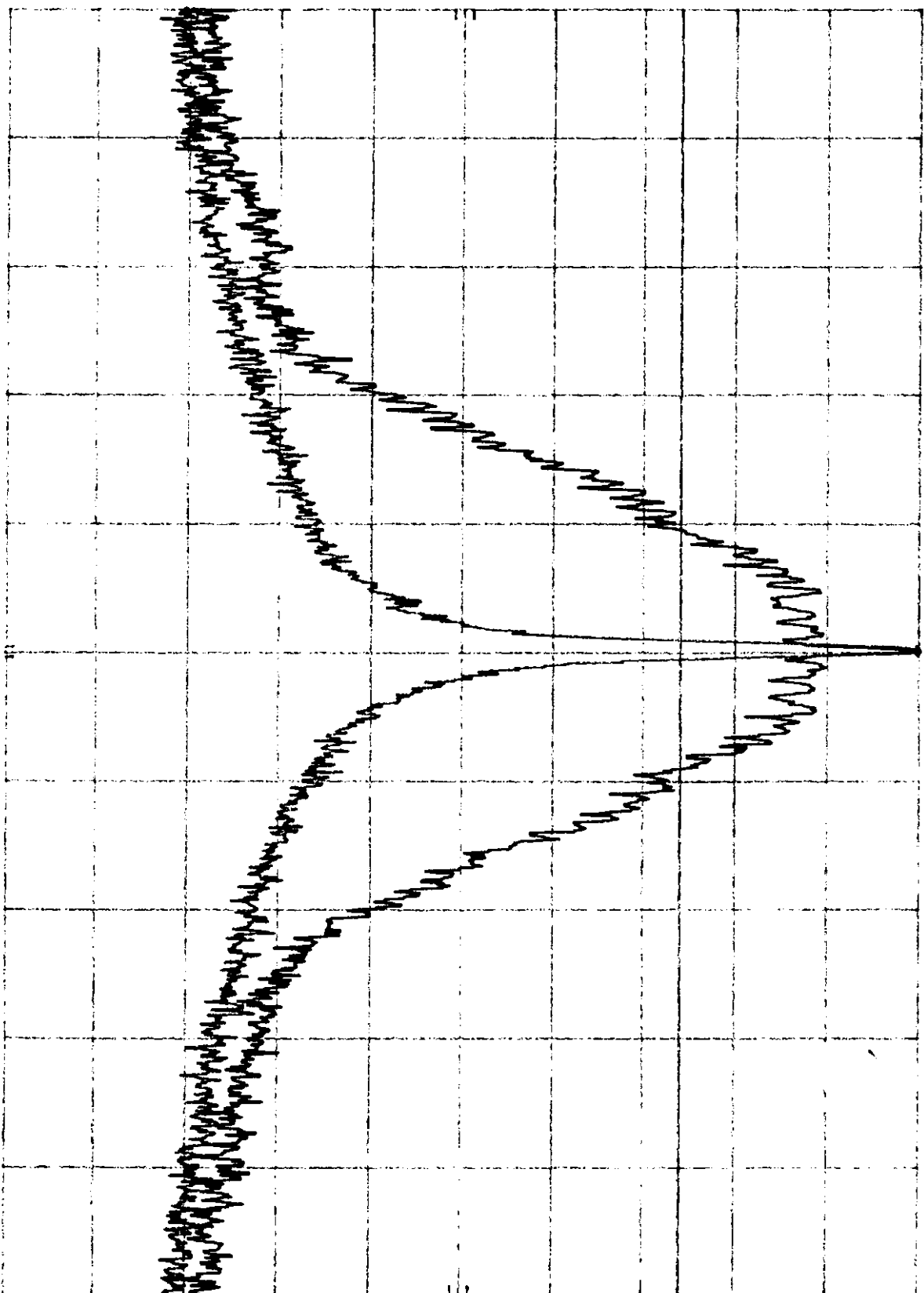
ATTEN 40 dB

Plot 6.3.k  
MKR 836.517 1 MHz  
25.30 dBm

10 dB/

DL  
-0.5  
dBm

CORR'D



CENTER 836.517 MHz

RES BW 300 Hz

VBW 300 Hz

SPAN 100 kHz  
SWP 3.00 sec

HP

10 dB/

PHILIPS  
REF 25.5 dBm  
ATTEN 40 dB

Plot 6.3.1  
MKR 836.517 2 MHz  
16.80 dBm

CORR'D

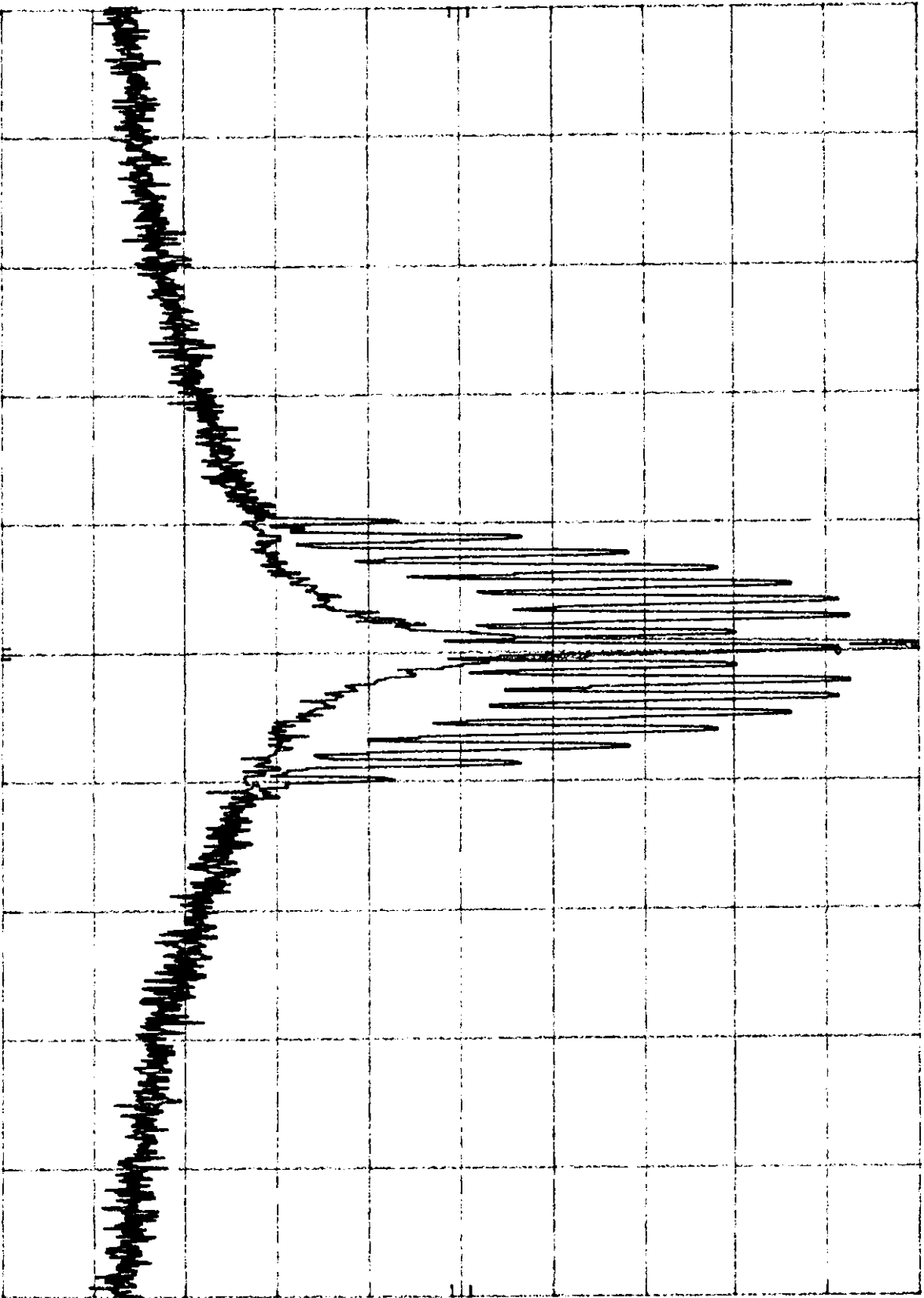
CENTER 836.517 MHz  
RES BW 300 Hz

Hz

VBW 300 Hz

Hz

SPAN 201 kHz  
SWP 6.00 sec



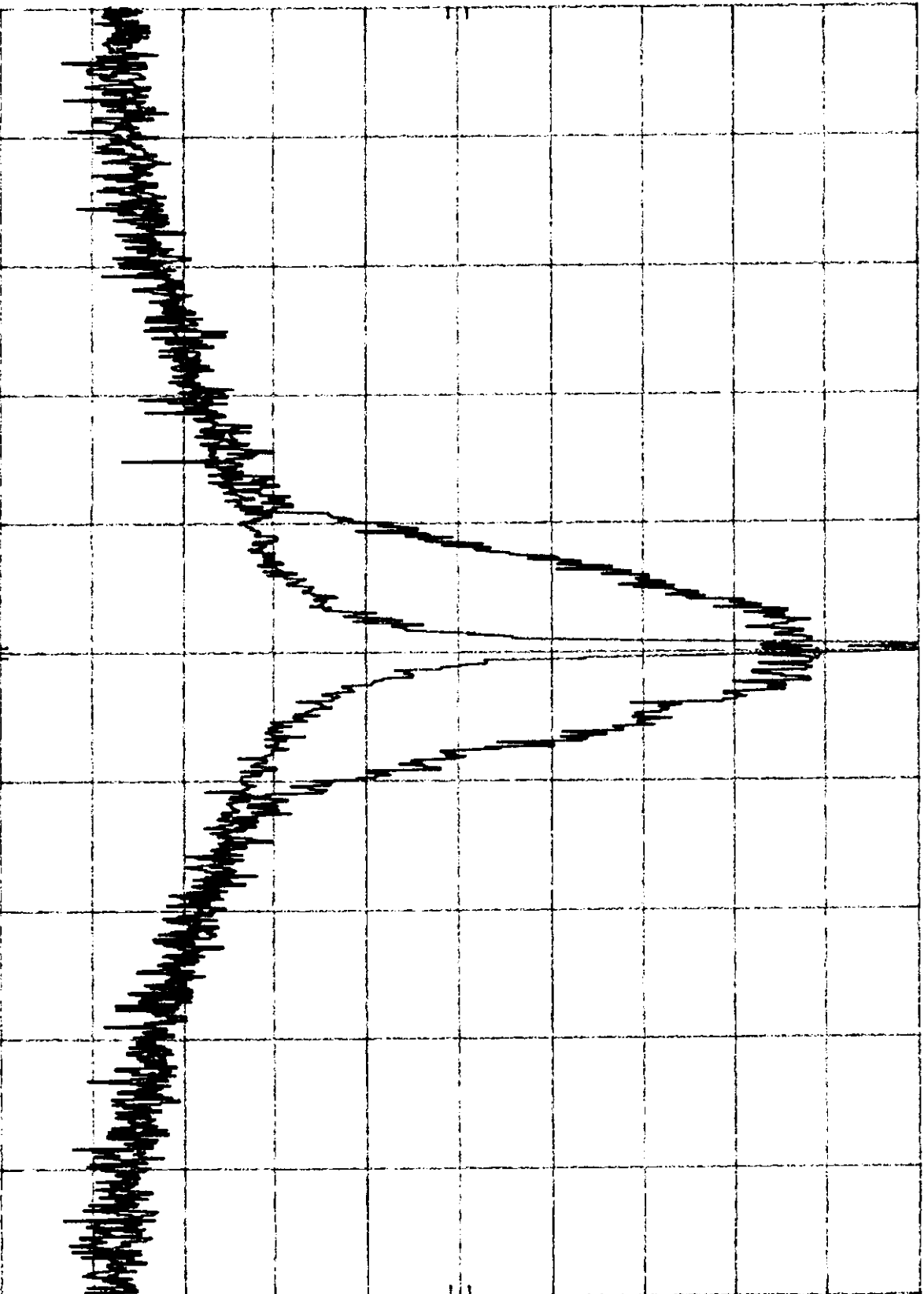
hp

10 dB/

PHILIPS  
REF 25.5 dBm  
ATTEN 40 dB

Plot 6.3.1  
MKR 836.517 6 MHz  
14.60 dBm

CORR'D



CENTER 836.517 MHz  
RES BW 300 Hz

VSW 300 Hz

SPAN 201 kHz  
SWP 6.00 sec

h<sub>2</sub>

10 dB/

PHILIPS

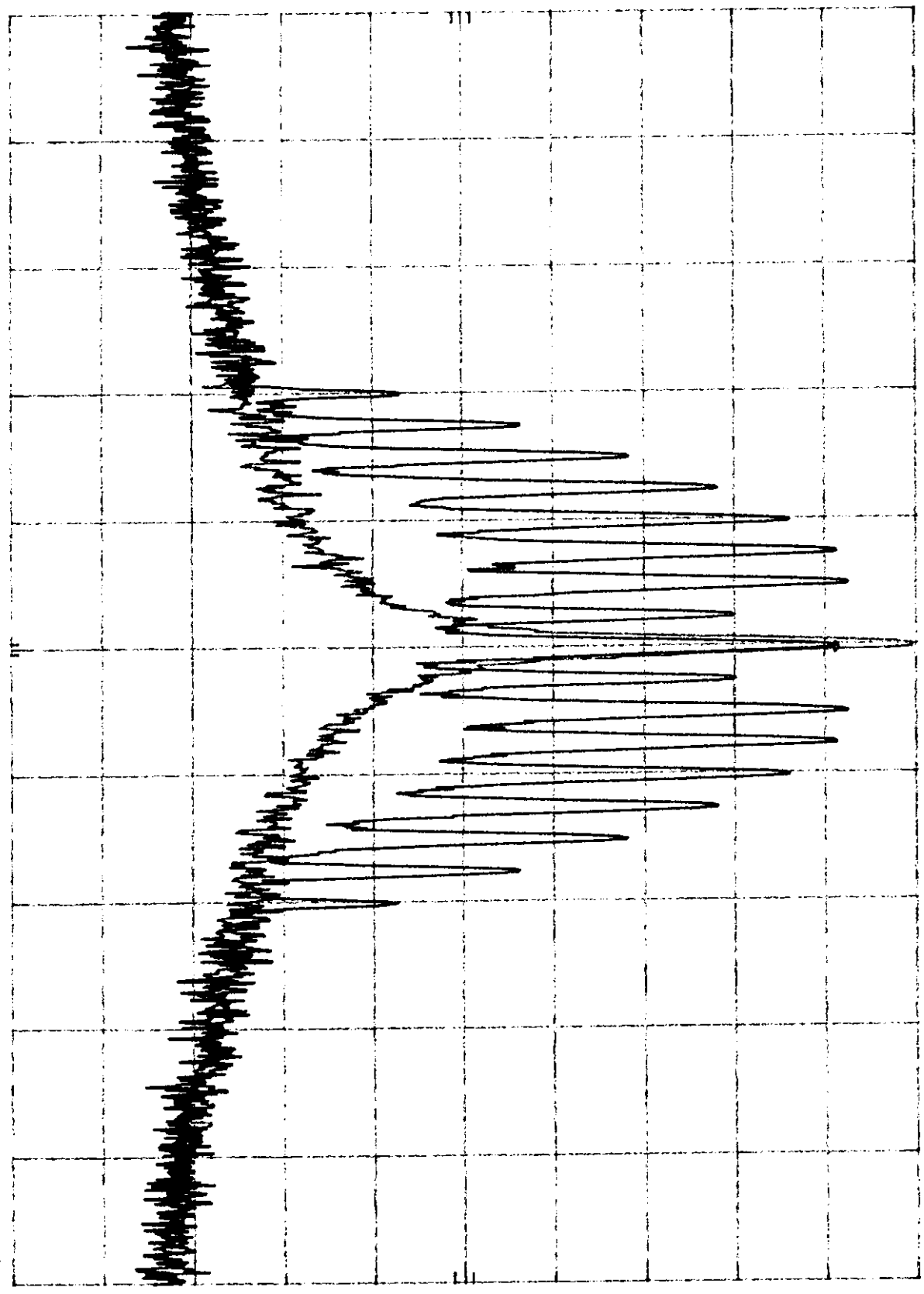
REF 25.5 dBm

ATTEN 40 dB

Plot 6.3.K

MKR 836.517 2 MHz

16.80 dBm



CENTER 836.517 MHz

RES BW 300 Hz

Hz

VBW 300 Hz

Hz

SWP 3.00 sec

SPAN 100 kHz

Plot 6.3.1

PHILIPS

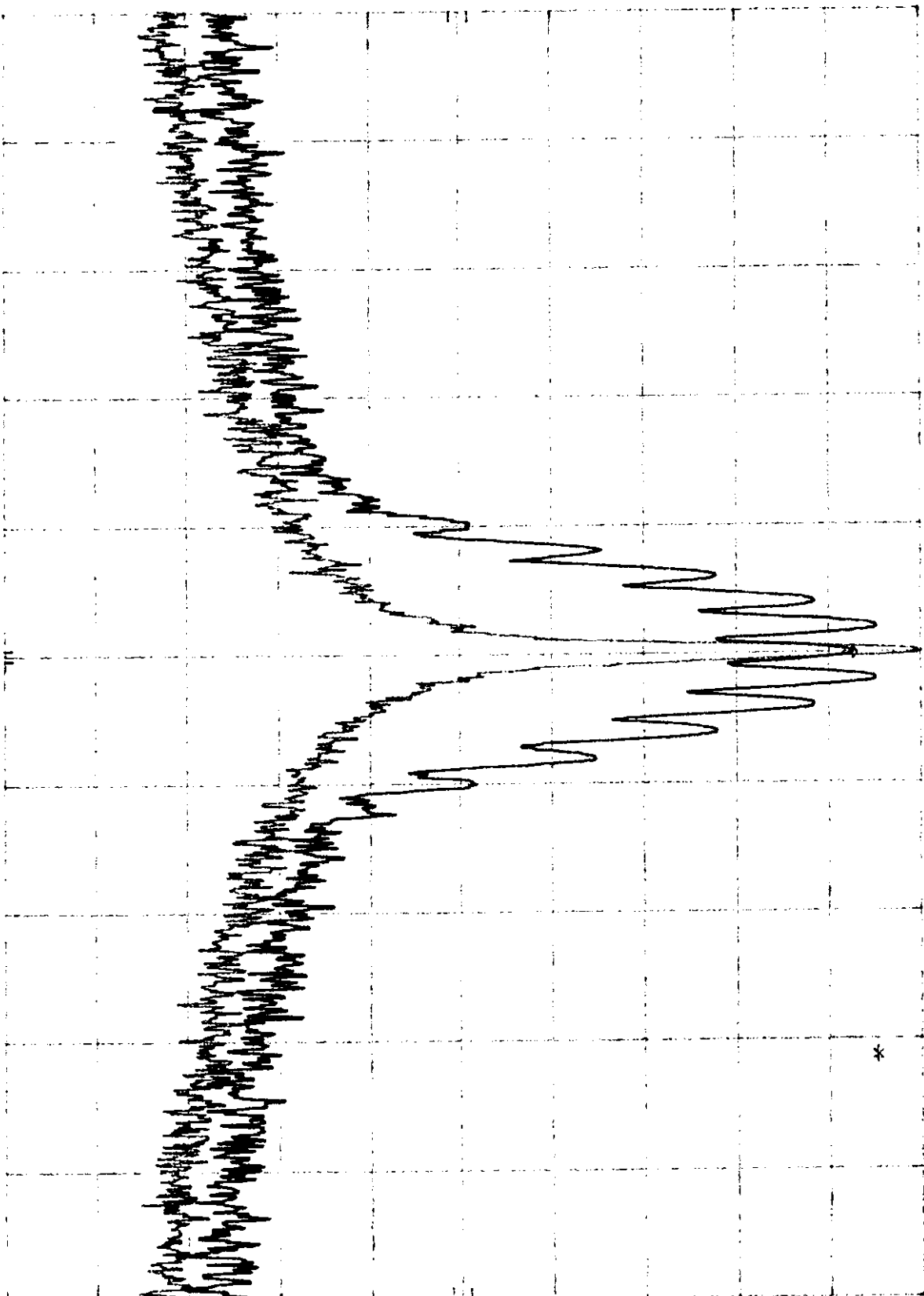
REF 25.5 dBm

ATTEN 40 dB

MKR 836.520 20 MHz

18.20 dBm

10 dB/



CENTER 836.520 2 MHz

RES BW 300 Hz

VBW 300 Hz

SPAN 50.0 kHz

SWP 1.50 sec

*Plot 6.3.m*

PHILIPS

REF 25.5 dBm ATTEN 40 dB

MKR 836.521 6 MHz  
19.90 dBm

*HP*

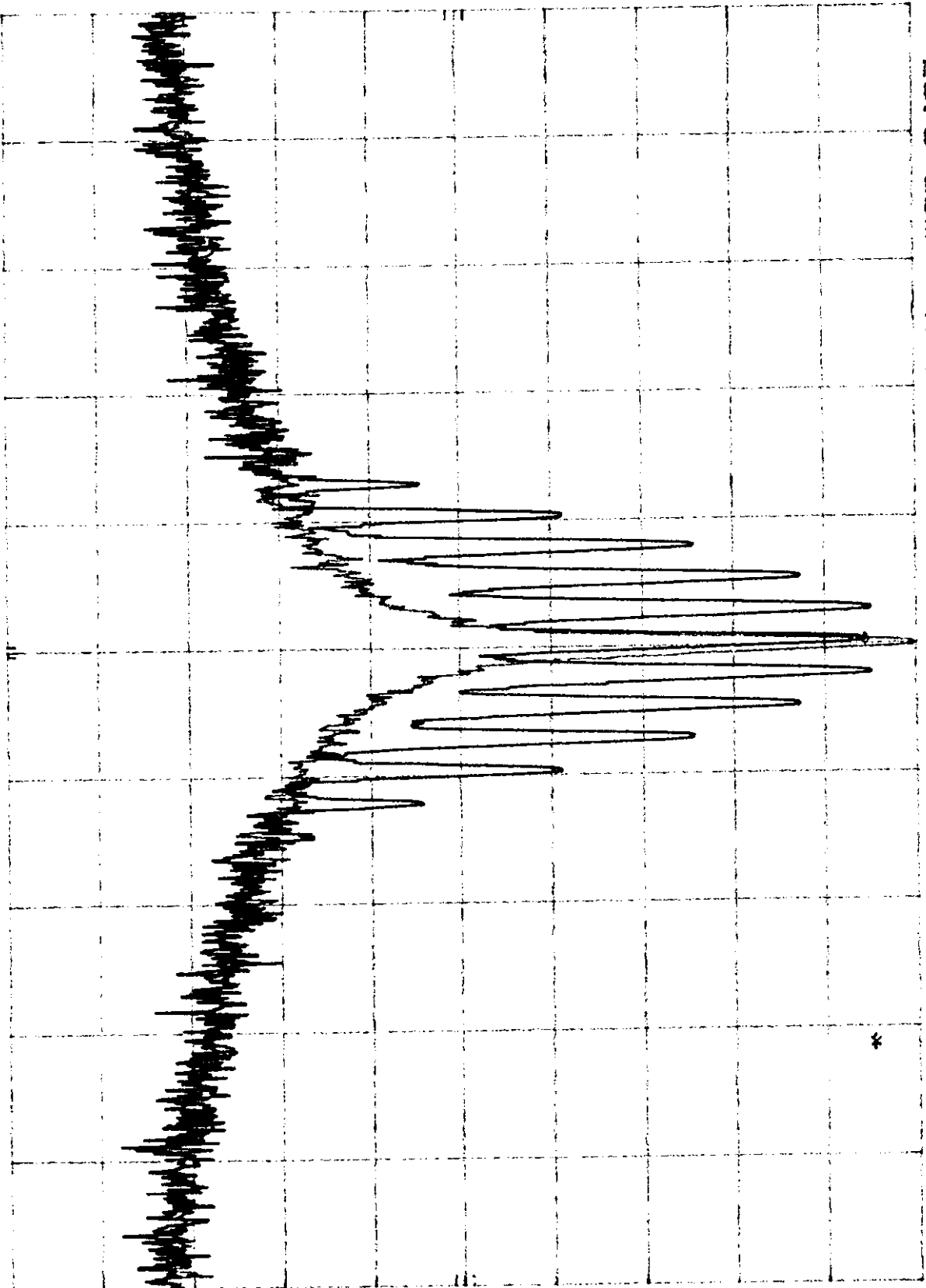
10 dB/

CENTER 836.522 MHz  
RES BW 300 Hz

Hz

VBW 300 Hz

SPAN 100 kHz  
SWP 3.00 sec



Plot 6.3.6

PHILIPS

MKR 836.517 4 MHz

HP

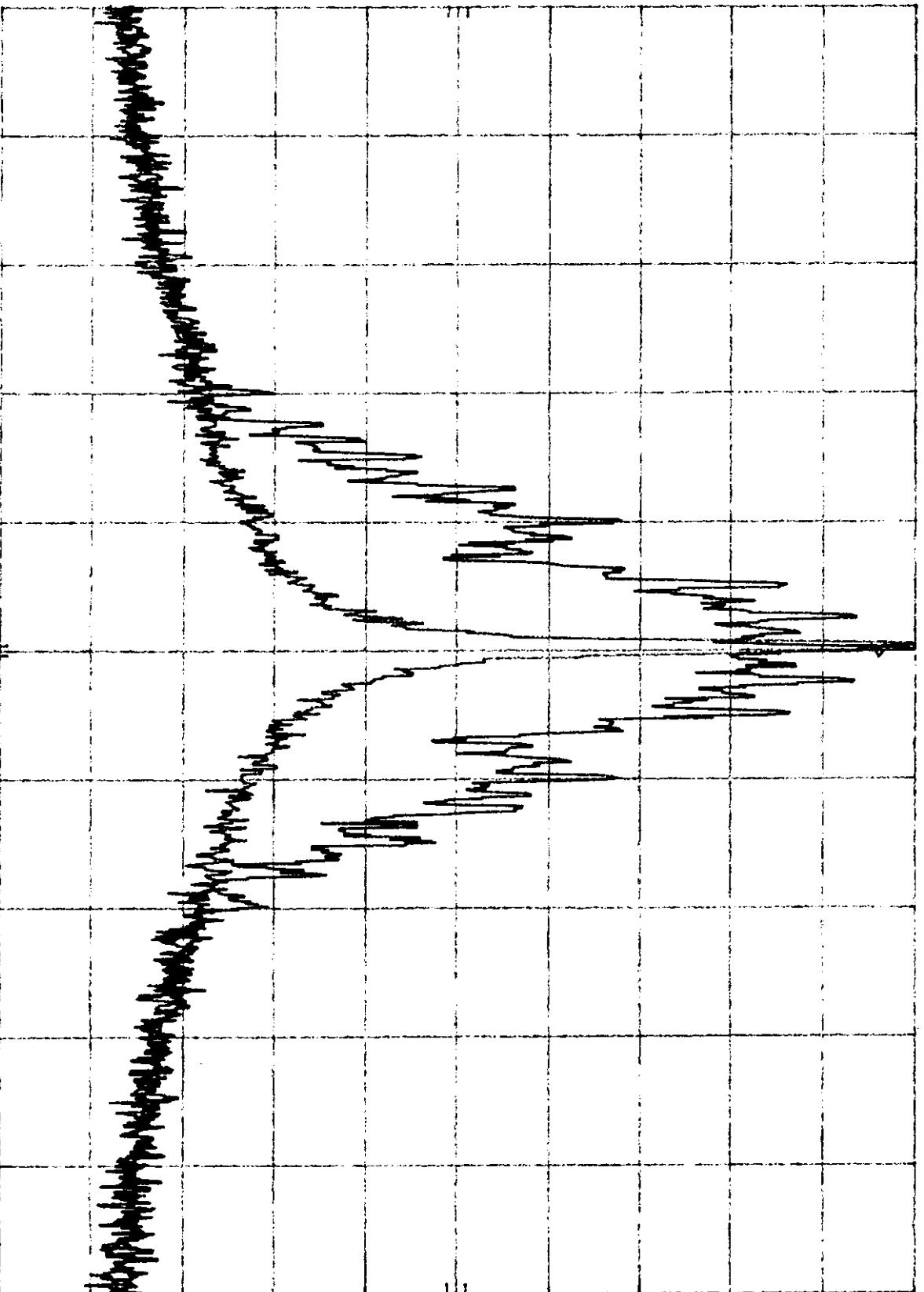
REF 25.5 dBm

ATTEN 40 dB

21.60 dBm

10 dB/

CORR'D



CENTER 836.517 MHz

RES BW 300 Hz

Hz

VBW 300 Hz

Hz

SWP 6.00 sec

sec

SPAN 201 kHz

Plot 6.3.2

MKR 836.517 6 MHz  
25.60 dBm

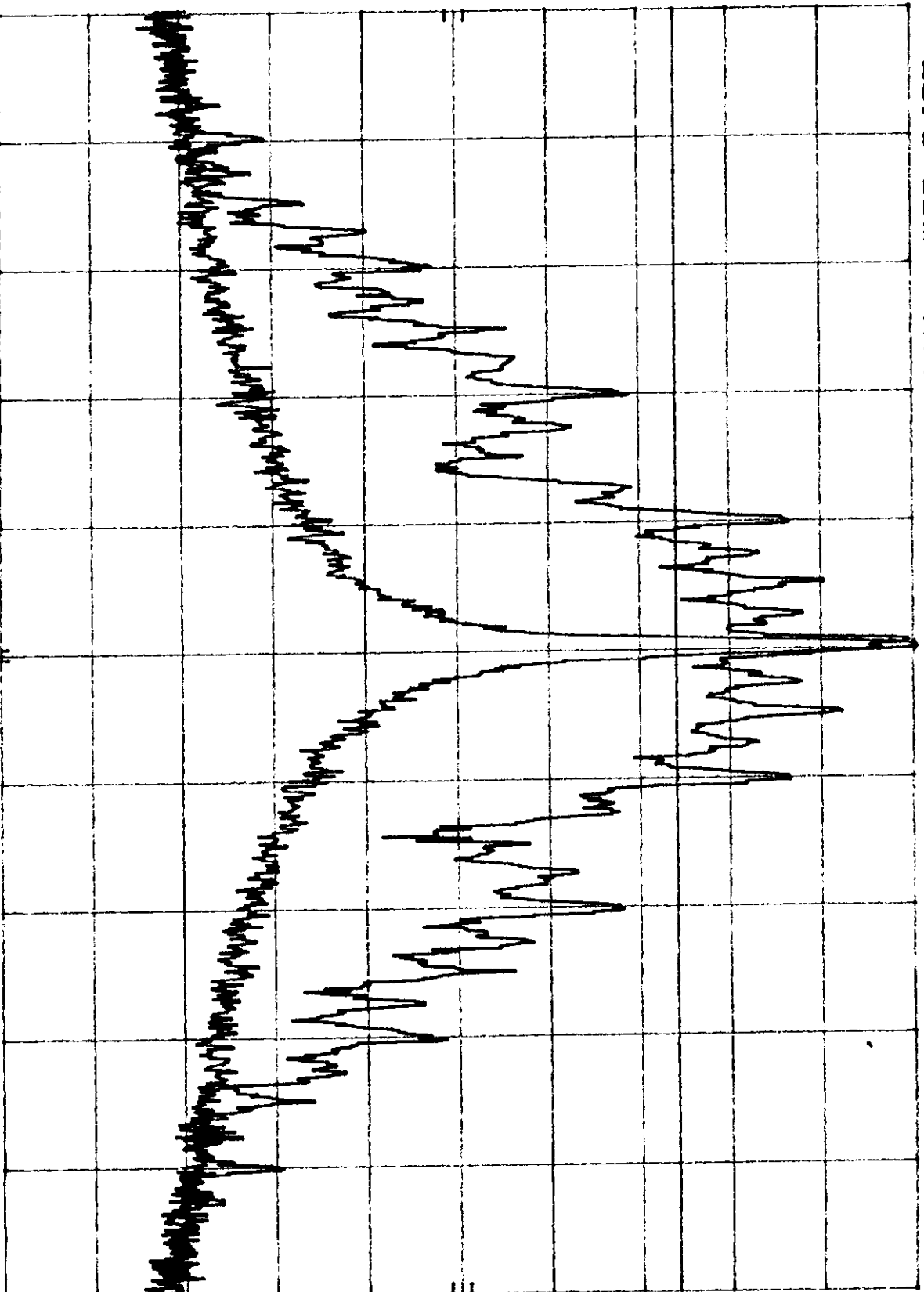
PHILIPS  
REF 25.5 dBm  
ATTEN 40 dB

hp

10 dB/

DL  
-0.5  
dBm

CORR'D



CENTER 836.517 MHz  
RES BW 300 Hz  
VBW 300 Hz  
SPAN 100 kHz  
SMP 3.00 sec

PHILIPS  
REF 25.5 dBm

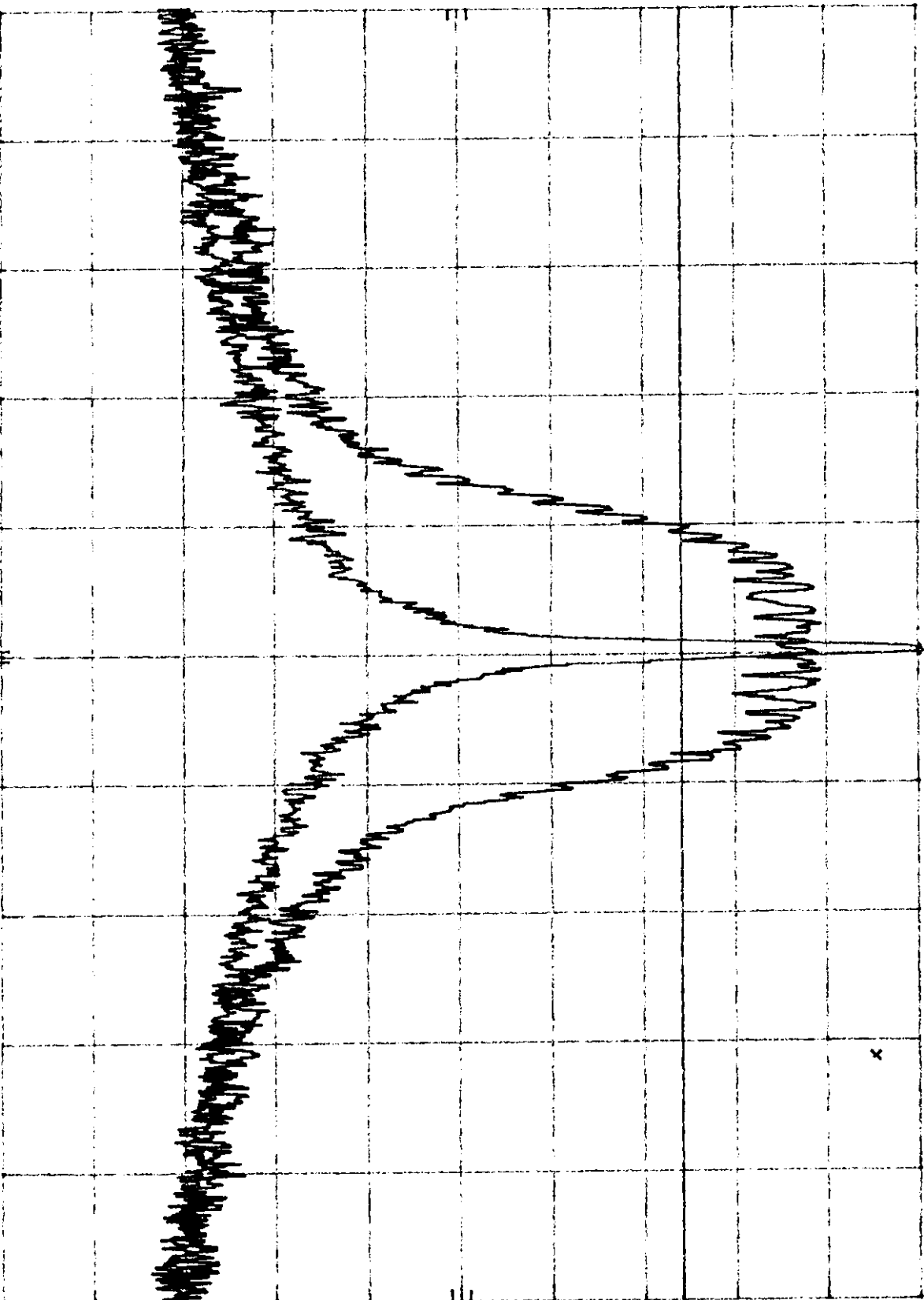
ATTEN 40 dB

Plot 6.3.c  
MKR 836.517 6 MHz  
25.60 dBm

10 dB/

DL  
-0.5  
dBm

CORR'D



CENTER 836.517 MHz  
RES BW 300 Hz

VBW 300 Hz

SPAN 100 kHz  
SWP 3.00 sec

PHILLIPS  
REF 25.5 dBm

ATTEN 40 dB

Plot 6.3.e.2  
MKR Δ 20.1 kHz  
-26.50 dB

10 dB/

DL  
-0.5  
dBm

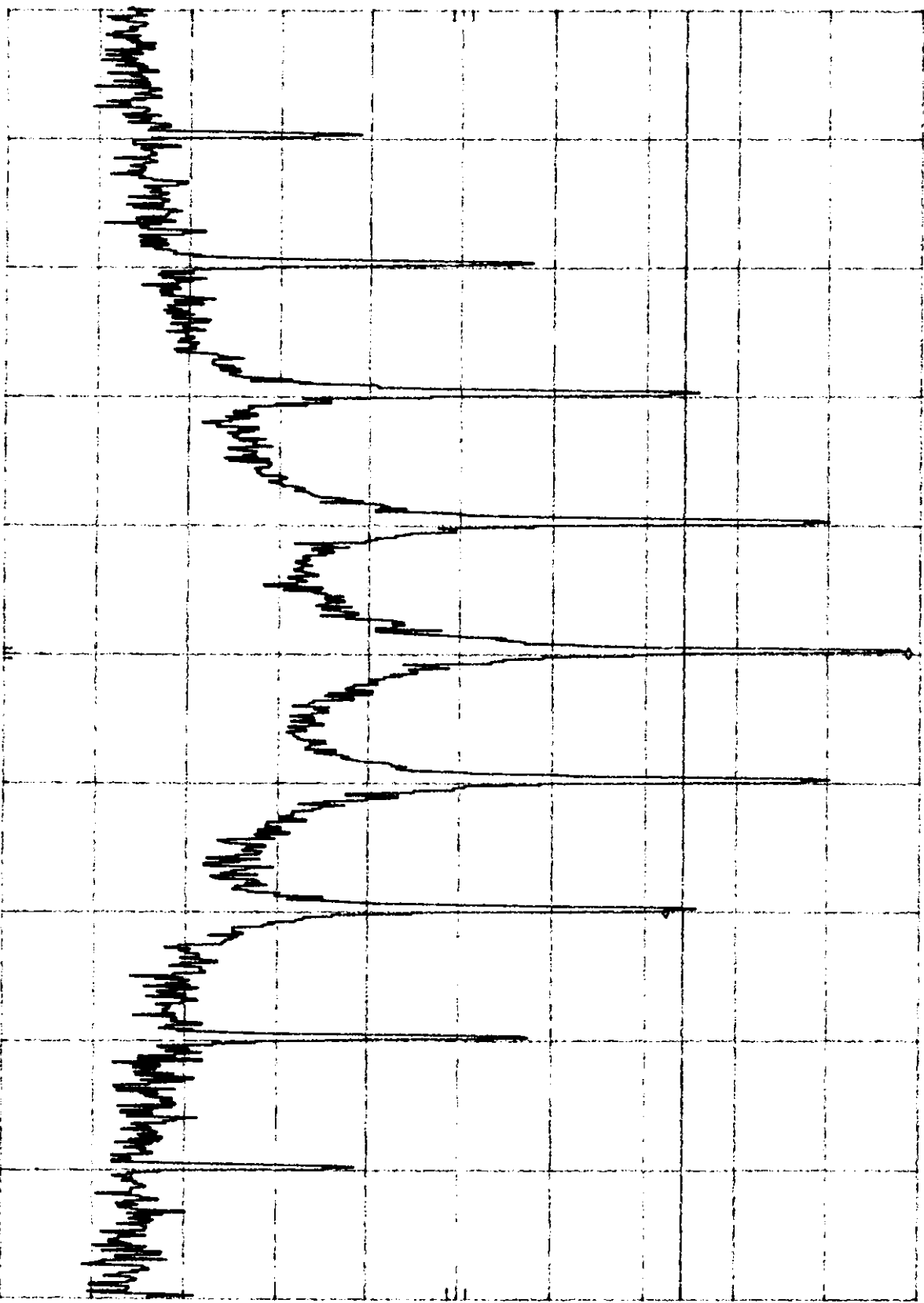
CORR'D

CENTER 836.519 MHz  
RES BW 100 Hz

Hz

VBW 100 Hz

SPAN 100 kHz  
SWP 30.0 sec



h<sub>p</sub>

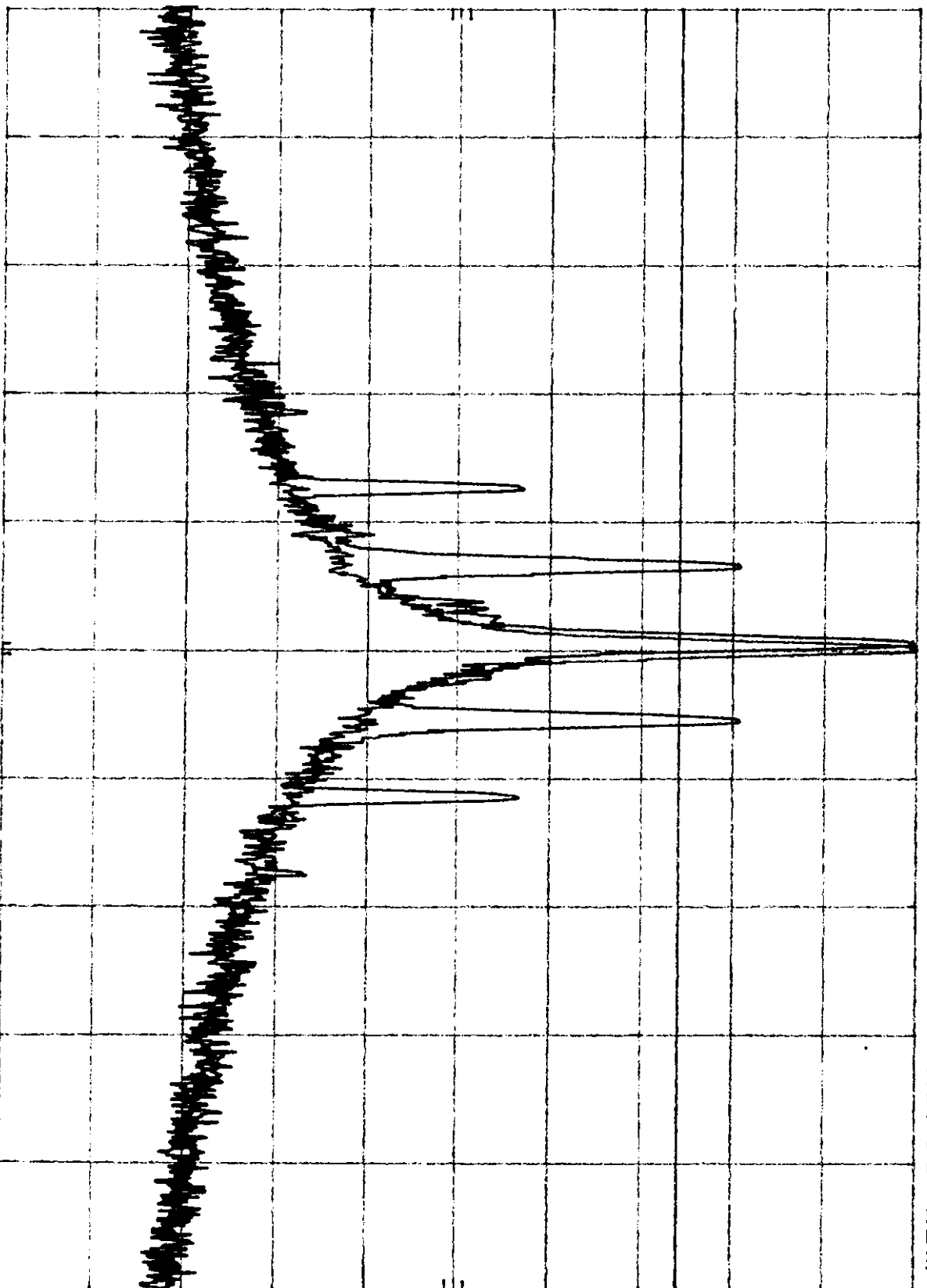
PHILIPS  
REF 25.5 dBm ATTEN 40 dB

*Plot 6.3.d*  
MKR 836.517 3 MHz  
25.10 dBm

10 dB/

DL  
-0.5  
dBm

CORR'D



CENTER 836.517 MHz  
RES BW 300 Hz

VBW 300 Hz

SPAN 100 kHz  
SWP 3.00 sec

Plot 6.3.e.1

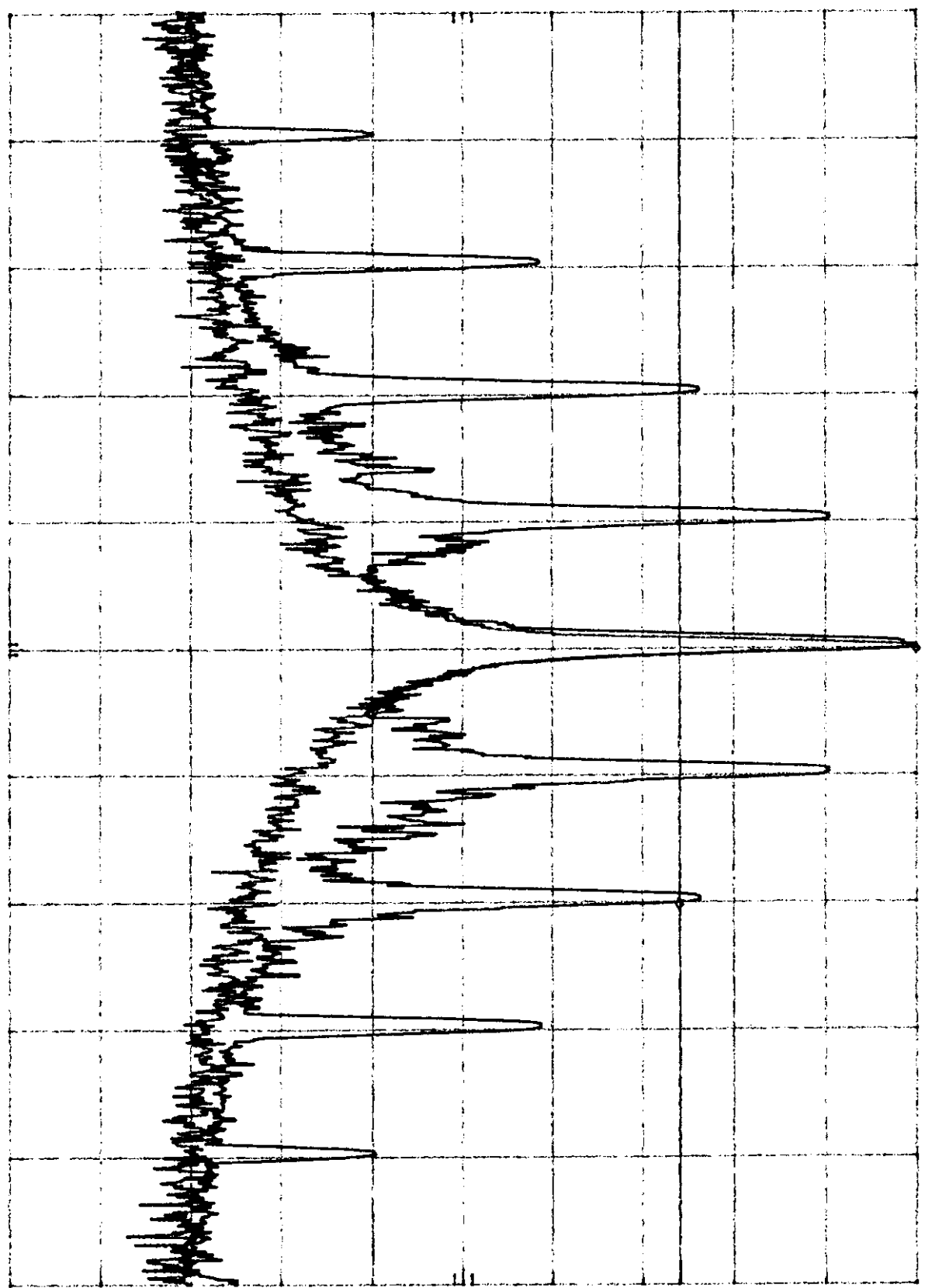
PHILIPS REF 25.5 dBm ATTEN 40 dB MKR Δ 20.1 kHz -25.90 dB

10 dB/

DL  
-0.5  
dBm

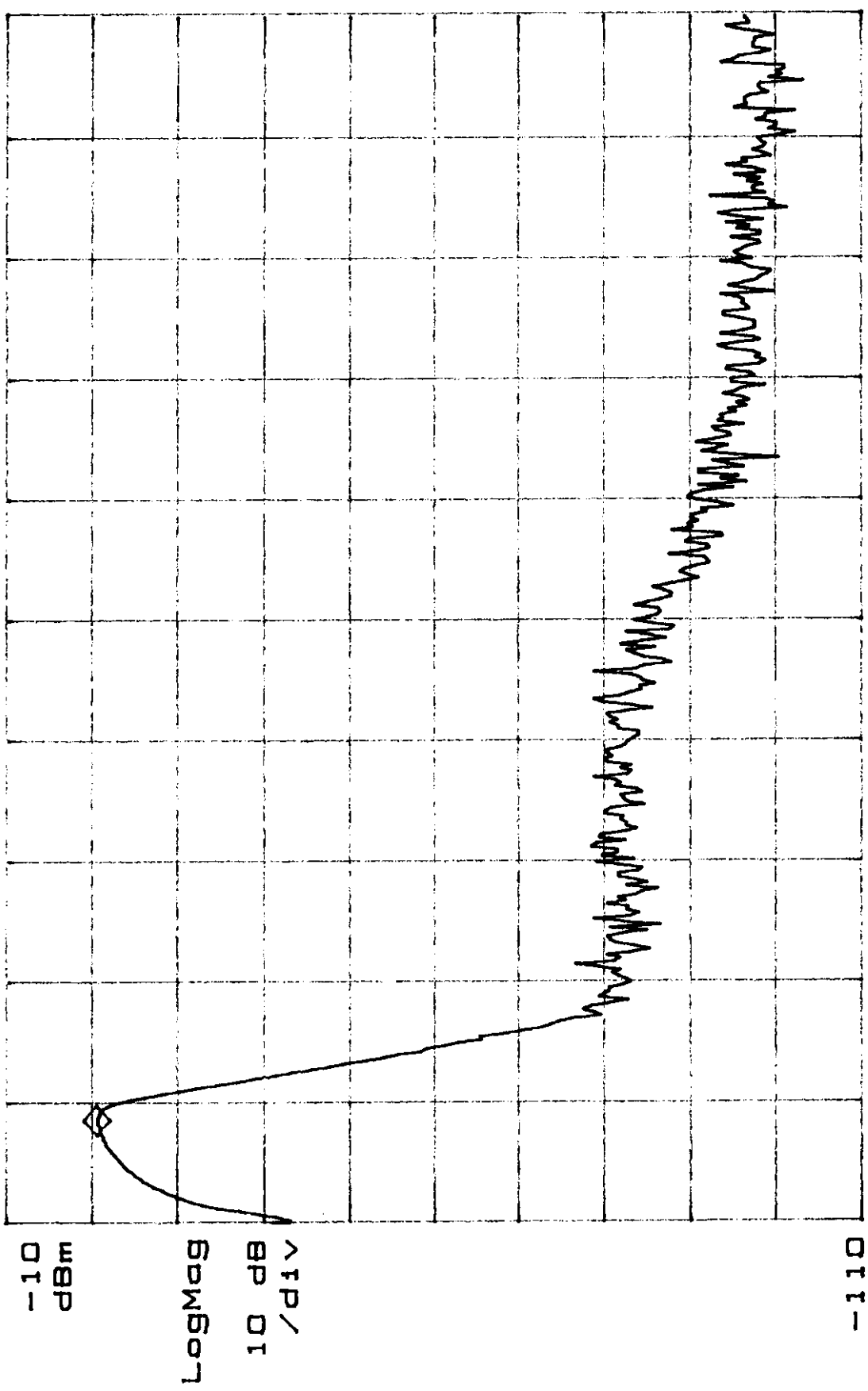
CORR'D

CENTER 836.518 MHz RES BW 300 Hz VBW 300 Hz SPAN 100 kHz SLP 3.00 sec



Plot 5.1.2

Range: -10 dBm  
Res BW: 290 Hz  
A: SWEPT SPECTRUM  
VBW: 180 Hz  
Mkr  
13-May-1997 18:55  
Swp Time: 4.61 Sec  
2 824 Hz -20.42 dBm



Start: 300 Hz  
Stop: 30 000 Hz  
WAITING FOR ARM

Plot 5.1. b

Range: -10 dBm

Res BW: 290 Hz

VBW: 180 Hz

13-May-1997 18:50

Swp Time: 2.36 Sec

A: SWEPT SPECTRUM

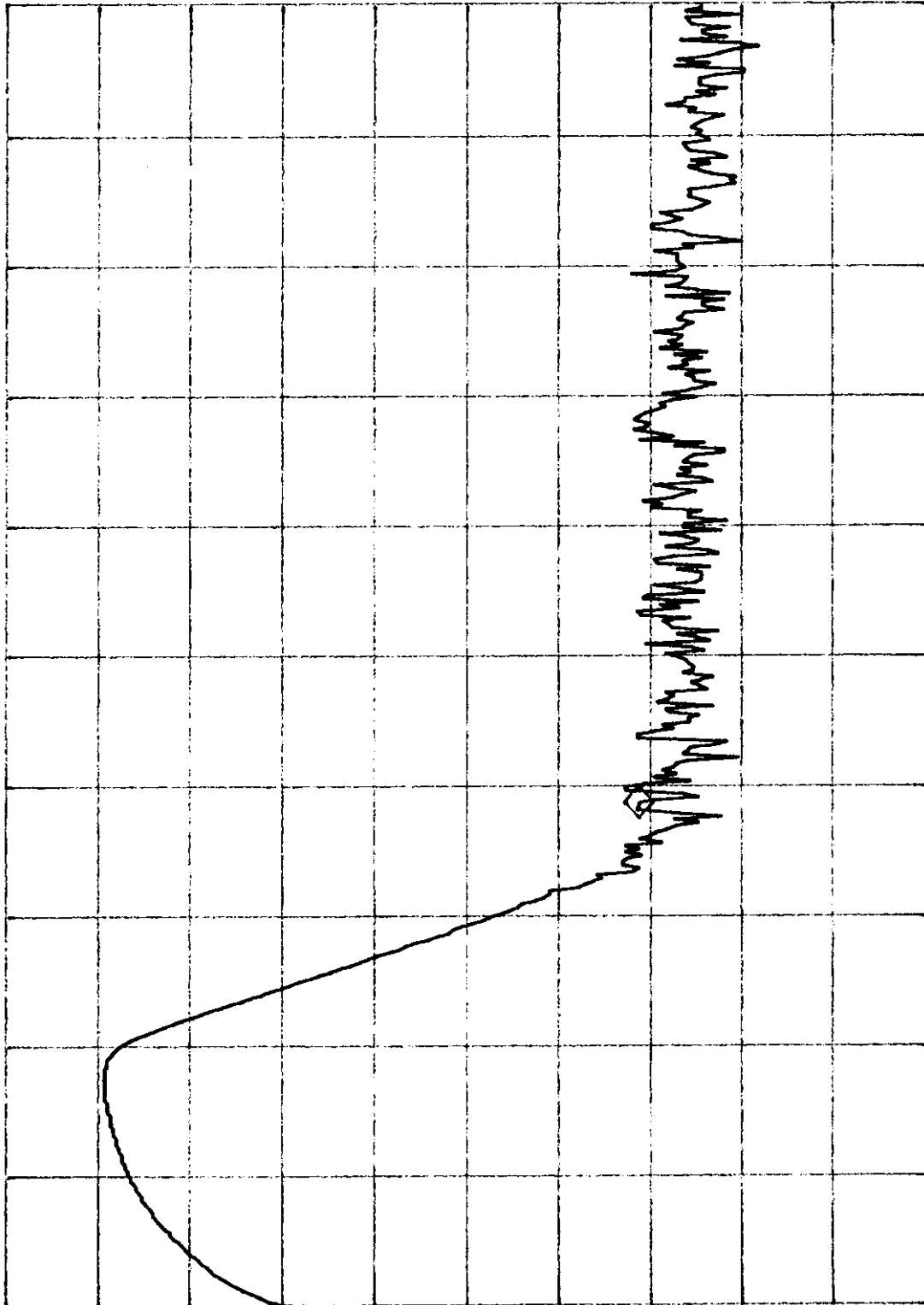
Mkr

5 996 Hz -78.67 dBm

-10  
dBm

LogMag

10 dB  
/div



Start: 300 Hz

Stop: 15 000 Hz

WAITING FOR ARM

Plot 5.1.C

Range: -10 dBm

Res BW: 290 Hz

VBW: 180 Hz

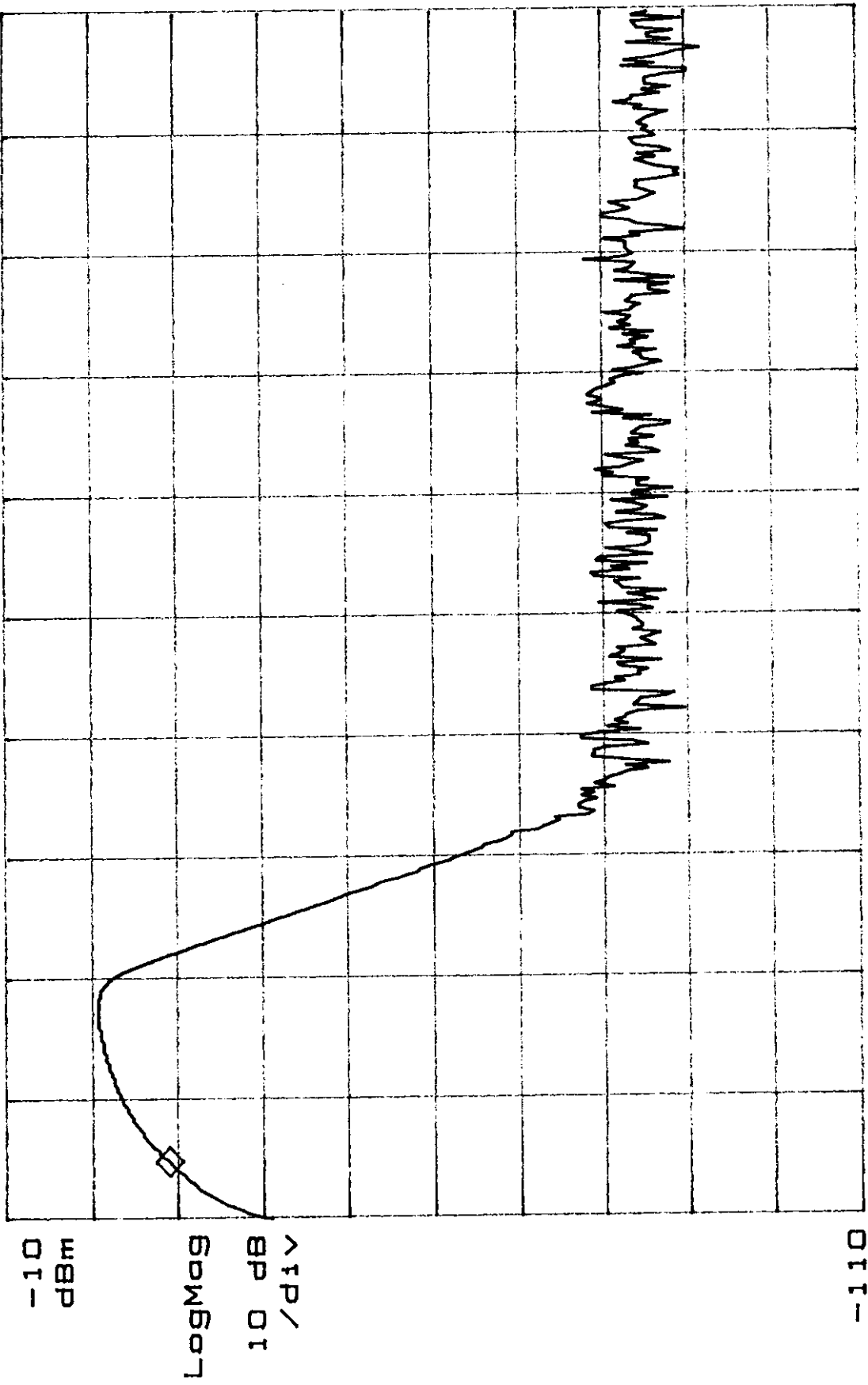
13-May-1997 18:47

Swp Time: 2.36 Sec

A: SWEPT SPECTRUM

Mkr

998 Hz -28.73 dBm



Start: 300 Hz

Stop: 15 000 Hz

WAITING FOR ARM

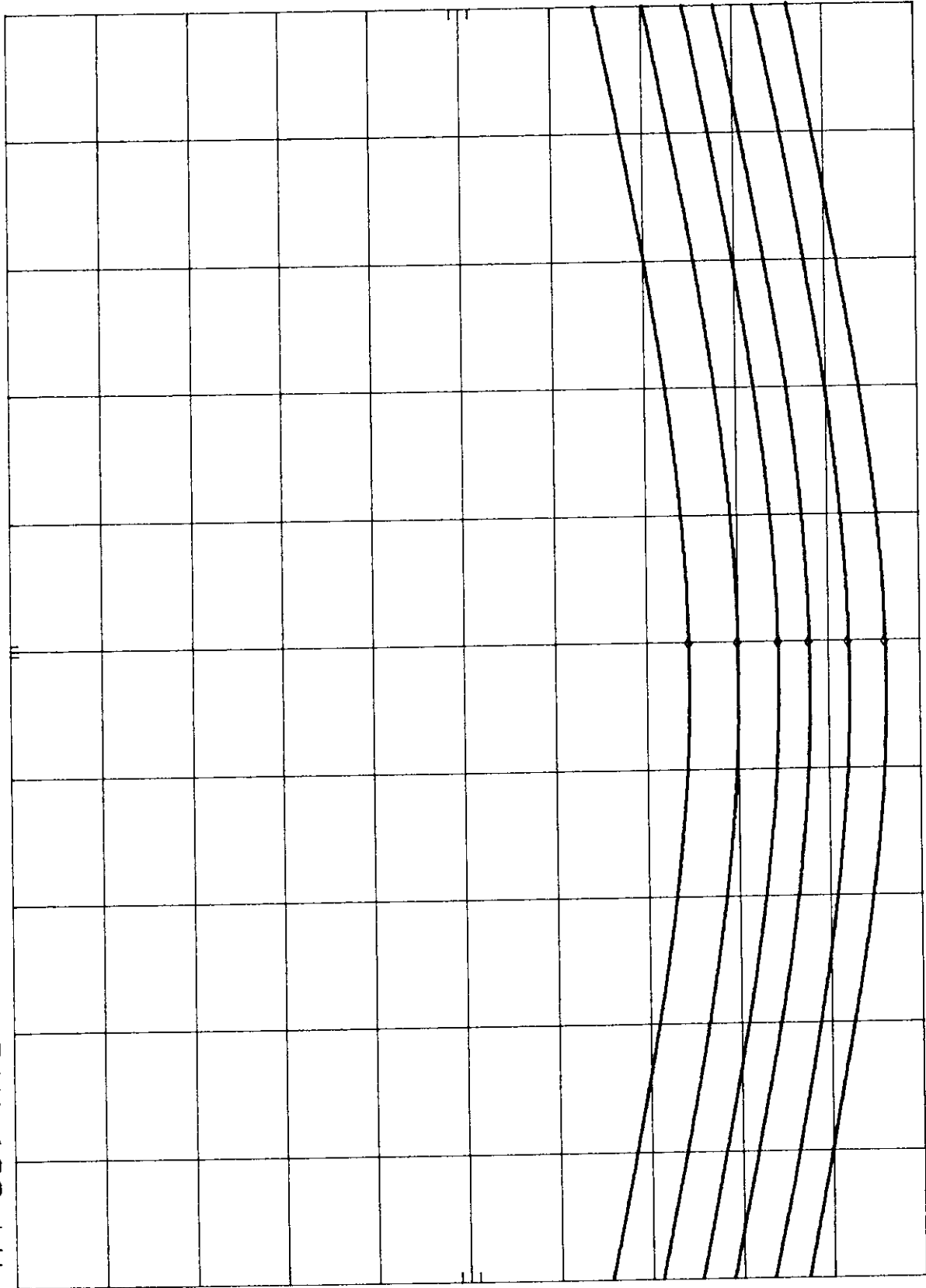
PHILIPS  
REF 30.3 dBm

ATTEN 40 dB

*Plot 2.3.2*  
MKR 824.025 7 MHz  
26.40 dBm

hp  
10 dB/

OFFSET  
0.3  
dB



CENTER 824.025 MHz  
RES BW 100 kHz  
VBW 100 kHz  
SPAN 199 kHz  
SWP 20.0 msec

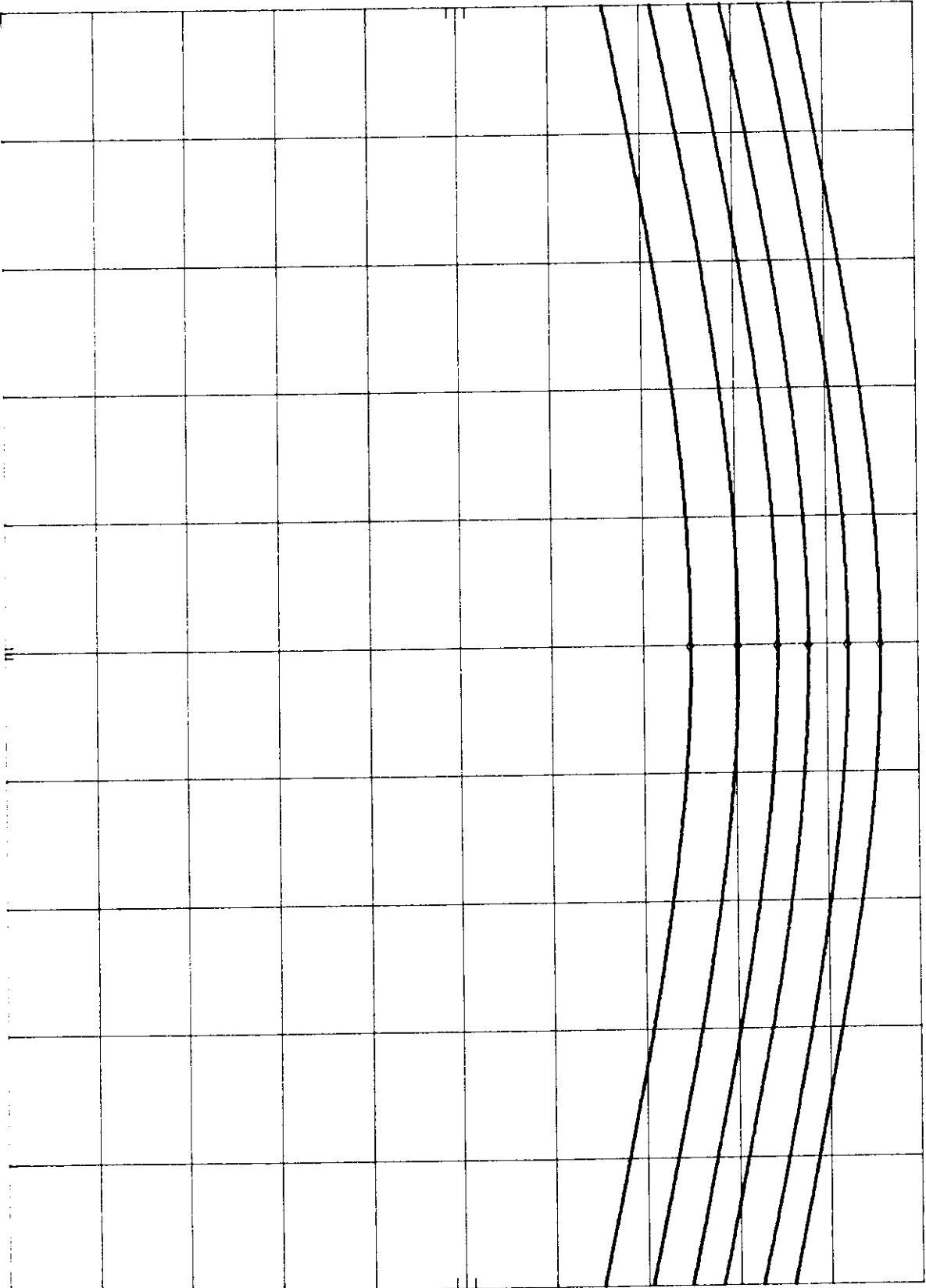
Plot 2.3.6

PHILIPS REF 30.3 dBm ATTEN 40 dB MKR 836.512 0 MHz 26.10 dBm

hp

10 dB/

OFFSET  
0.3  
dB



CENTER 836.511 MHz RES BW 100 kHz VBW 100 kHz SPAN 200 kHz SWP 20.0 msec

Plot 2.3.c

PHILIPS

NRK 848.961 S MHz

PLP 30.2 dBm ATTEN 40 dB

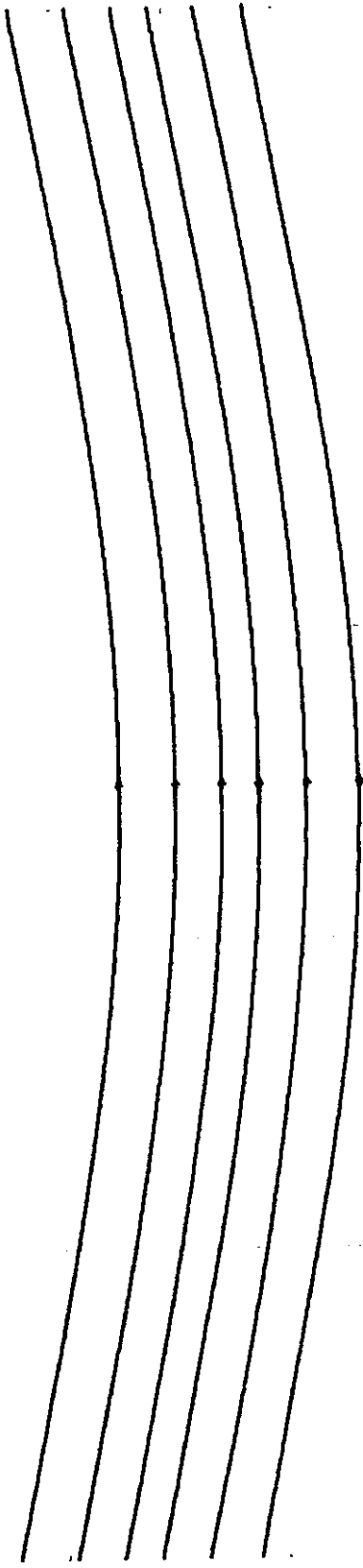
87.40 dBm

10 dB

COMPRESS

0.3

dB



CH1-10R 848.961 MHz  
RES 12K 100 kHz

VIEW 100 kHz

SPAN 199 kHz  
SWP 20.0 msc