

Tottori Sanyo Electric Co., Ltd., Cellular Phone  
FCC ID: NRNDMC200

Date of Test: May 27 & 28, 1999 & July 7, 1999

## 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

**Passed**

Refer to the attached plots.

| Antenna Output Conducted Emissions Spectrum Analyzer Plots - AMPS |                              |
|-------------------------------------------------------------------|------------------------------|
| Plot Number                                                       | Description                  |
| 7.3.a                                                             | 1 MHz - 1 GHz Low Channel    |
| 7.3.b                                                             | 1 MHz - 1 GHz Middle Channel |
| 7.3.c                                                             | 1 MHz - 1 GHz High Channel   |
| 7.3.d                                                             | 1 - 2.5 GHz Low Channel      |
| 7.3.e                                                             | 1 - 2.5 GHz Middle Channel   |
| 7.3.f                                                             | 1-2.5 GHz High Channel       |
| 7.3.g                                                             | 2.5 - 10 GHz Low Channel     |
| 7.3.h                                                             | 2.5 - 10 GHz Middle Channel  |
| 7.3.g                                                             | 2.5 - 10 GHz High Channel    |
| 7.3.s                                                             | 869 - 894 MHz Low Channel    |
| 7.3.t                                                             | 869 - 894 MHz Middle Channel |
| 7.3.u                                                             | 869 - 894 MHz High Channel   |

7.3.2

HP

REF 26.5 dBm

ATTEN 30 dB

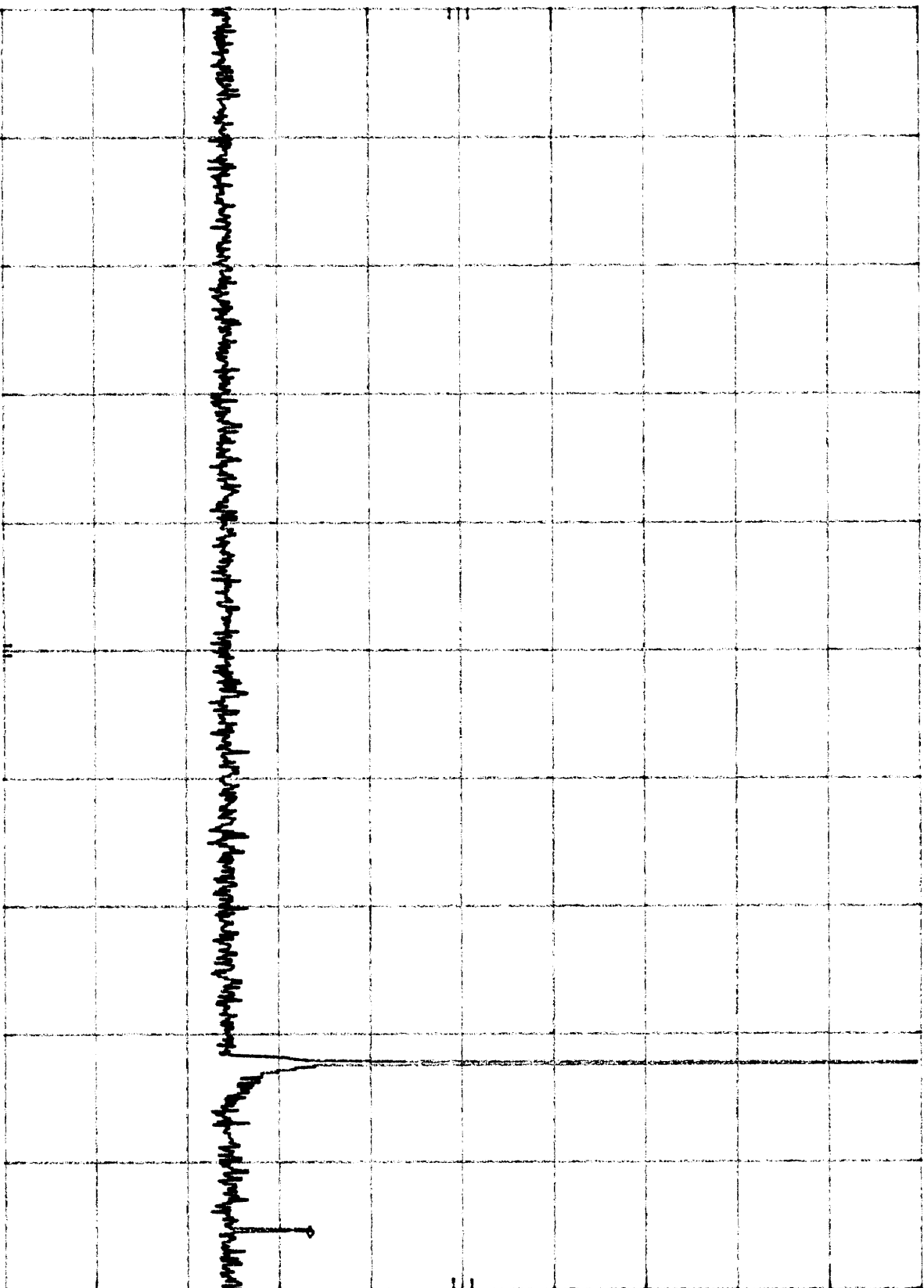
MKR 954 MHz  
-40.20 dBm

10 dB/

OFFSET

10.0

dB



START 1 MHz

RES BW 100 kHz

VBW 100 kHz

STOP 1.00 GHz  
SWP 300 msec

7.3.6

HP

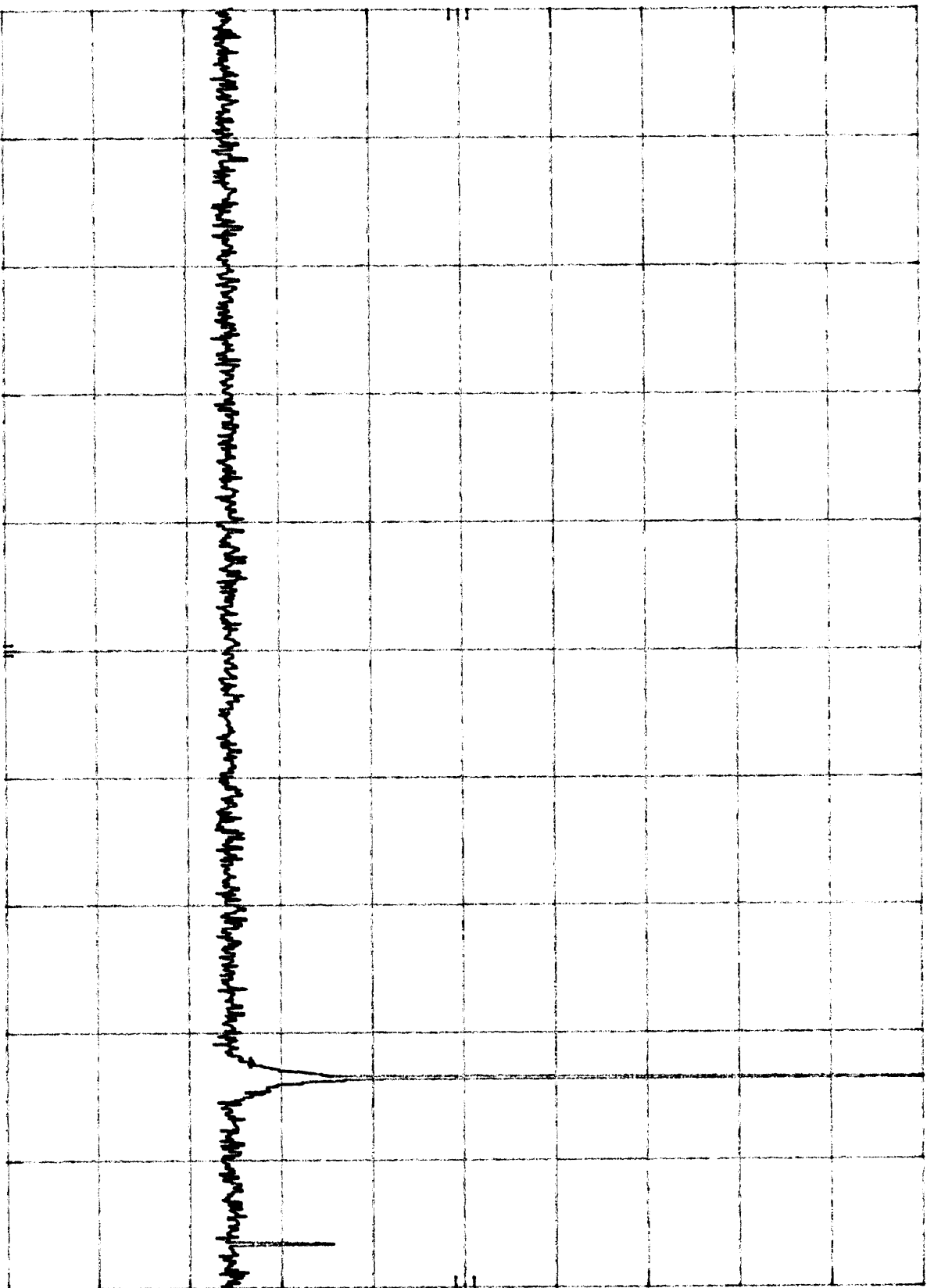
REF 26.5 dBm

ATTEN 30 dB

MKR 823 MHz  
-46.80 dBm

10 dB/

OFFSET  
10.0  
dB



START 1 MHz  
RES BW 100 kHz  
VBW 100 kHz  
STOP 1.00 GHz  
SWP 300 msec

7,3,c

HP

REF 26.5 dBm

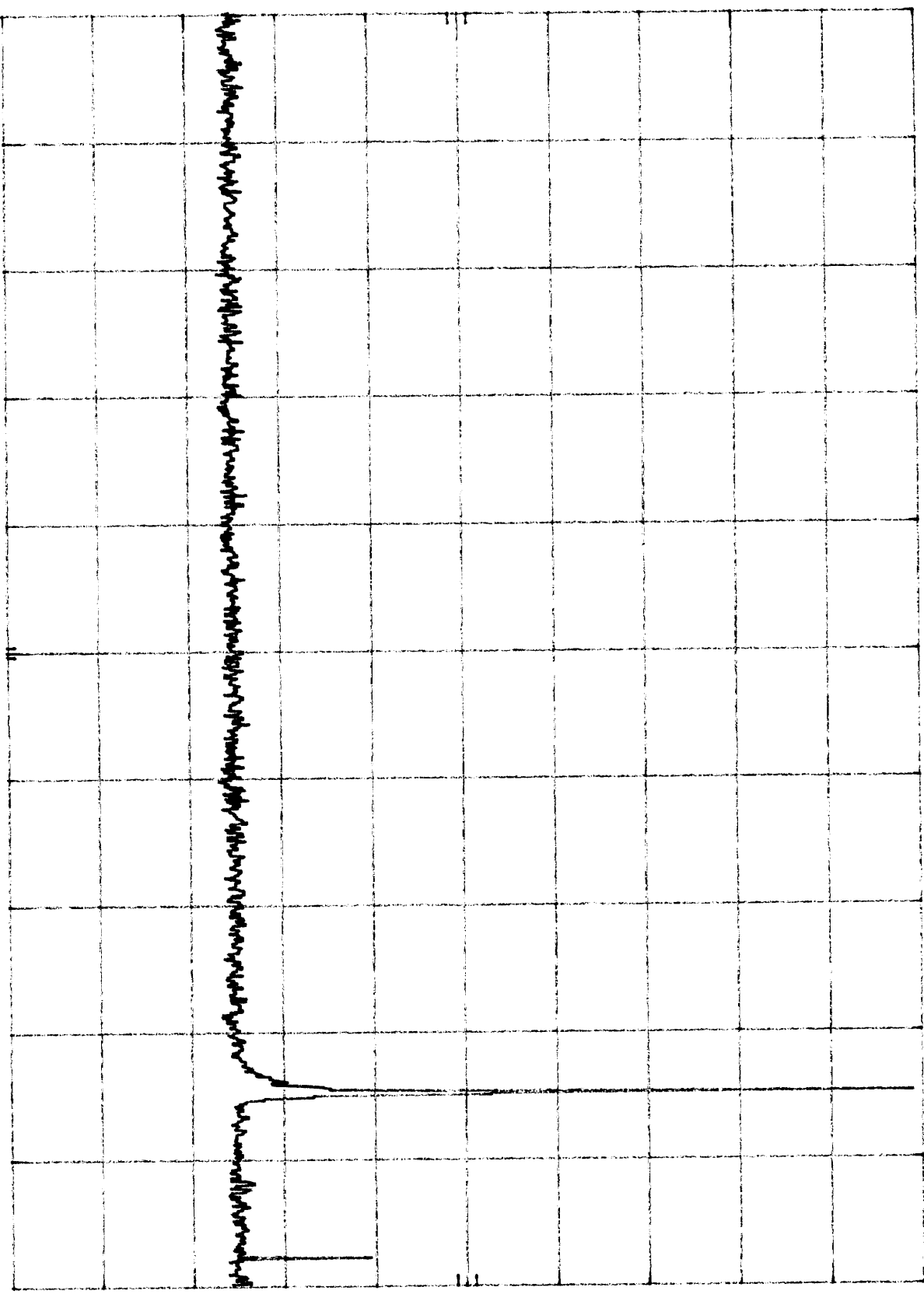
ATTEN 30 dB

MKR 507 MHz  
--49.20 dBm

10 dB/

OFFSET  
10.0

dB



START 1 MHz

RES BW 100 kHz

VBW 100 kHz

STOP 1.00 GHz  
SWP 300 msec

7.3, d

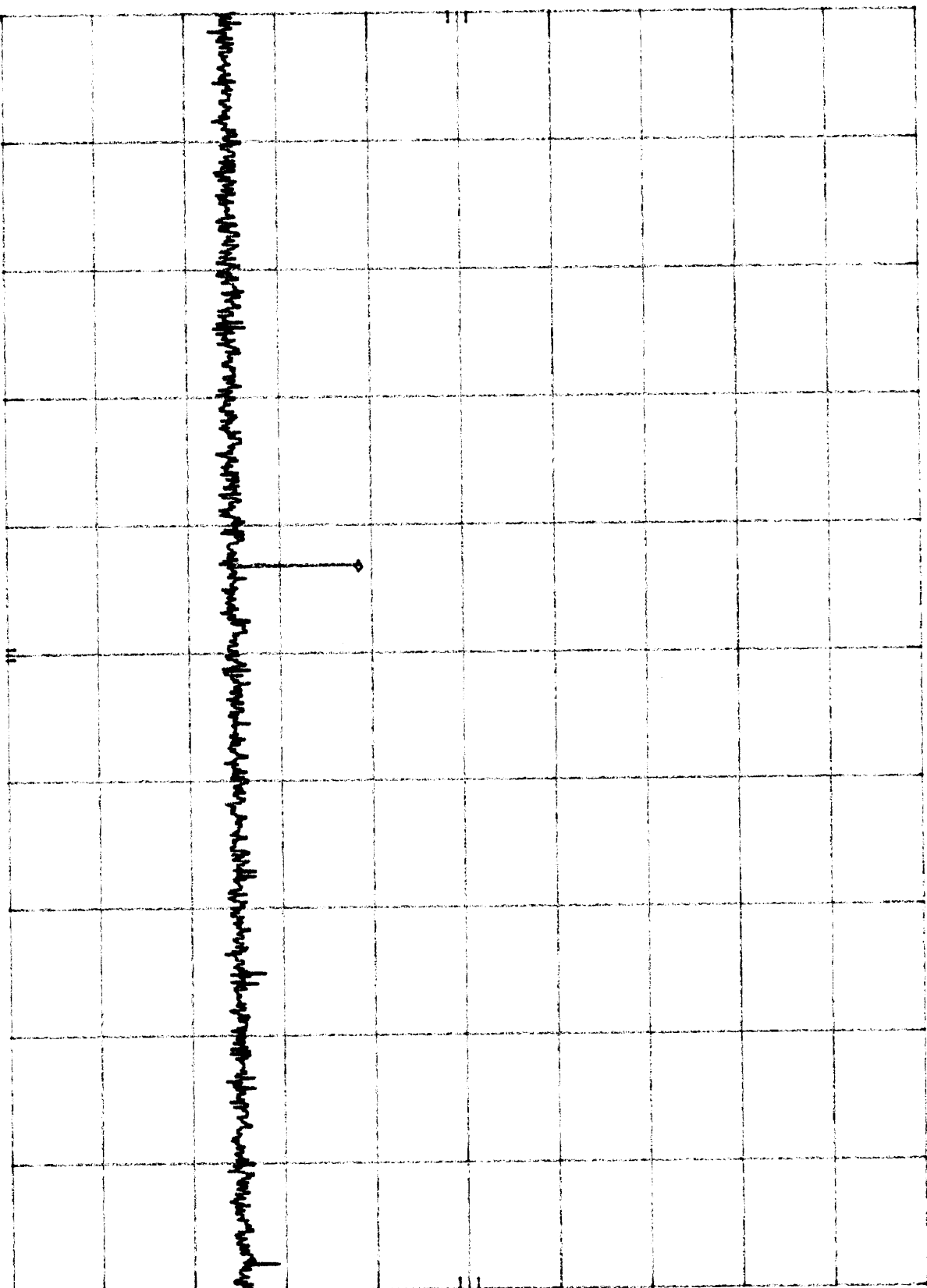
HP

REF 26.5 dBm    ATTEN 30 dB

MKR 1.648 GHz  
-34.90 dBm

10 dB/

OFFSET  
10.0  
dB



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

7.2.2

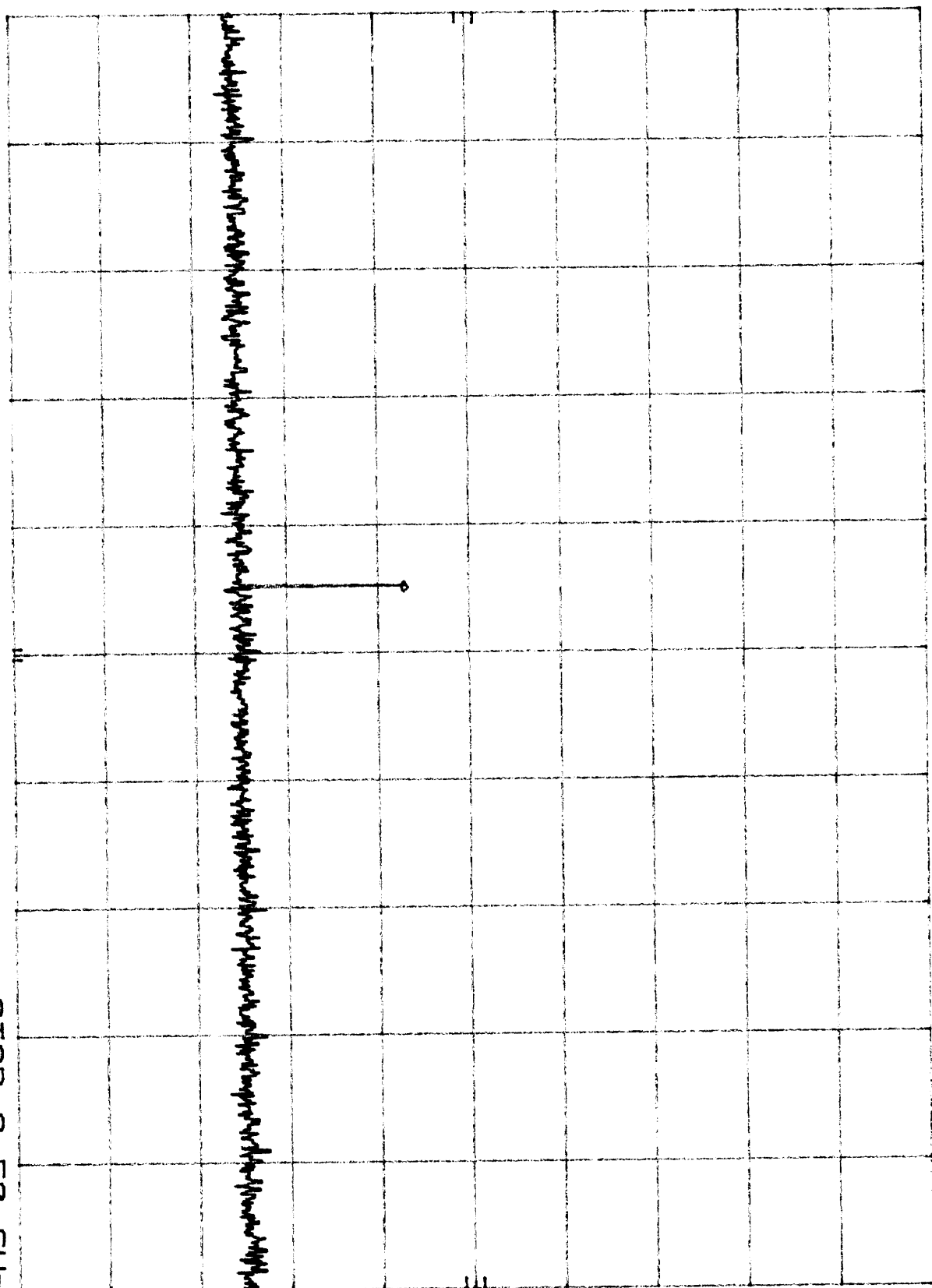
HP

REF 26.5 dBm ATTEN 30 dB

MKR 1.672 GHz  
-30.60 dBm

10 dB/

OFFSET  
10.0  
dB



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

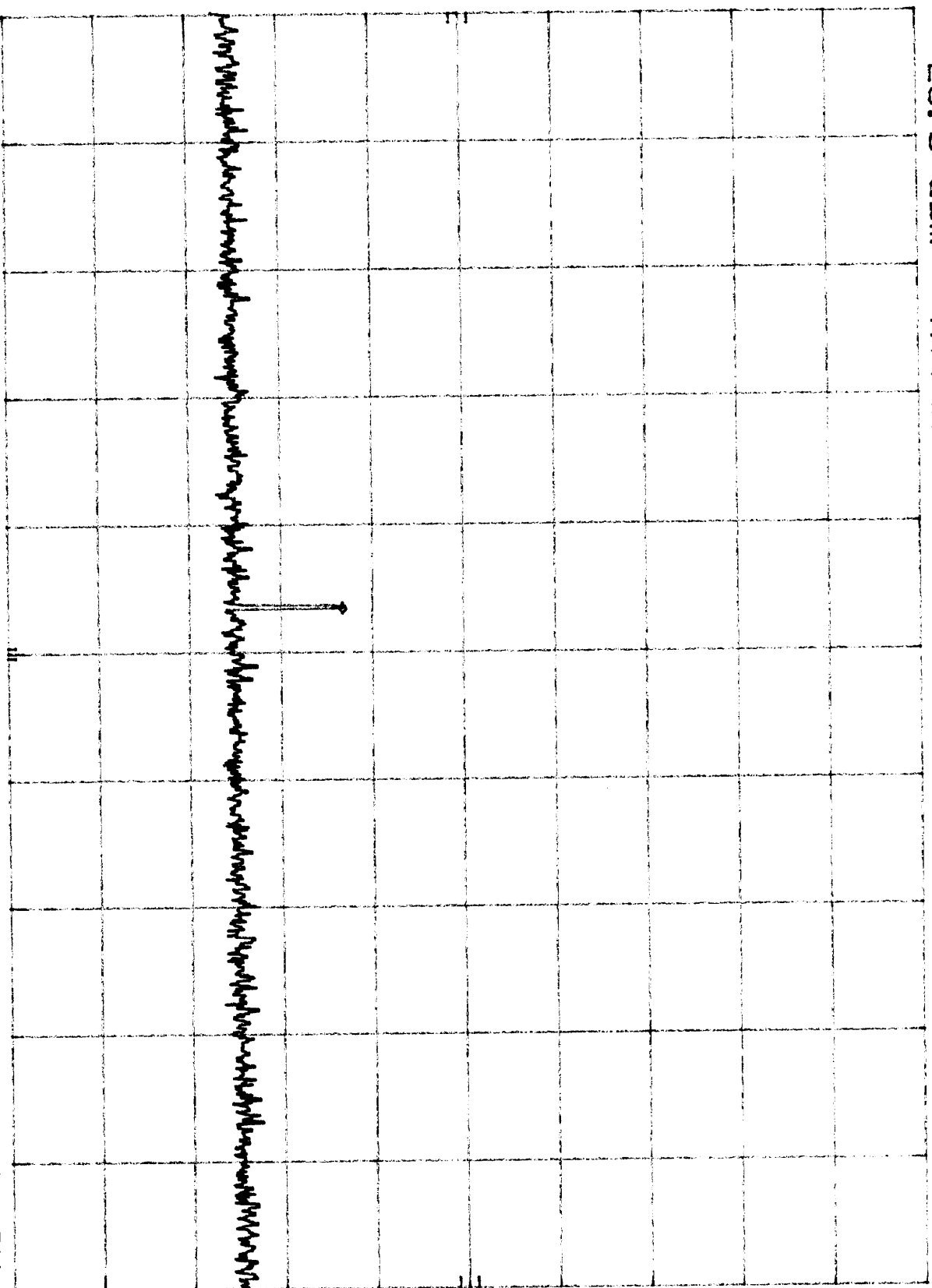
HP

REF 26.5 dBm ATTEN 30 dB

MKR 1.698 GHz  
-36.70 dBm

10 dB/

OFFSET  
10.0  
dB



START 1.00 GHz RES BW 100 KHz VBW 100 KHz STOP 2.50 GHz  
SWP 450 msec

132

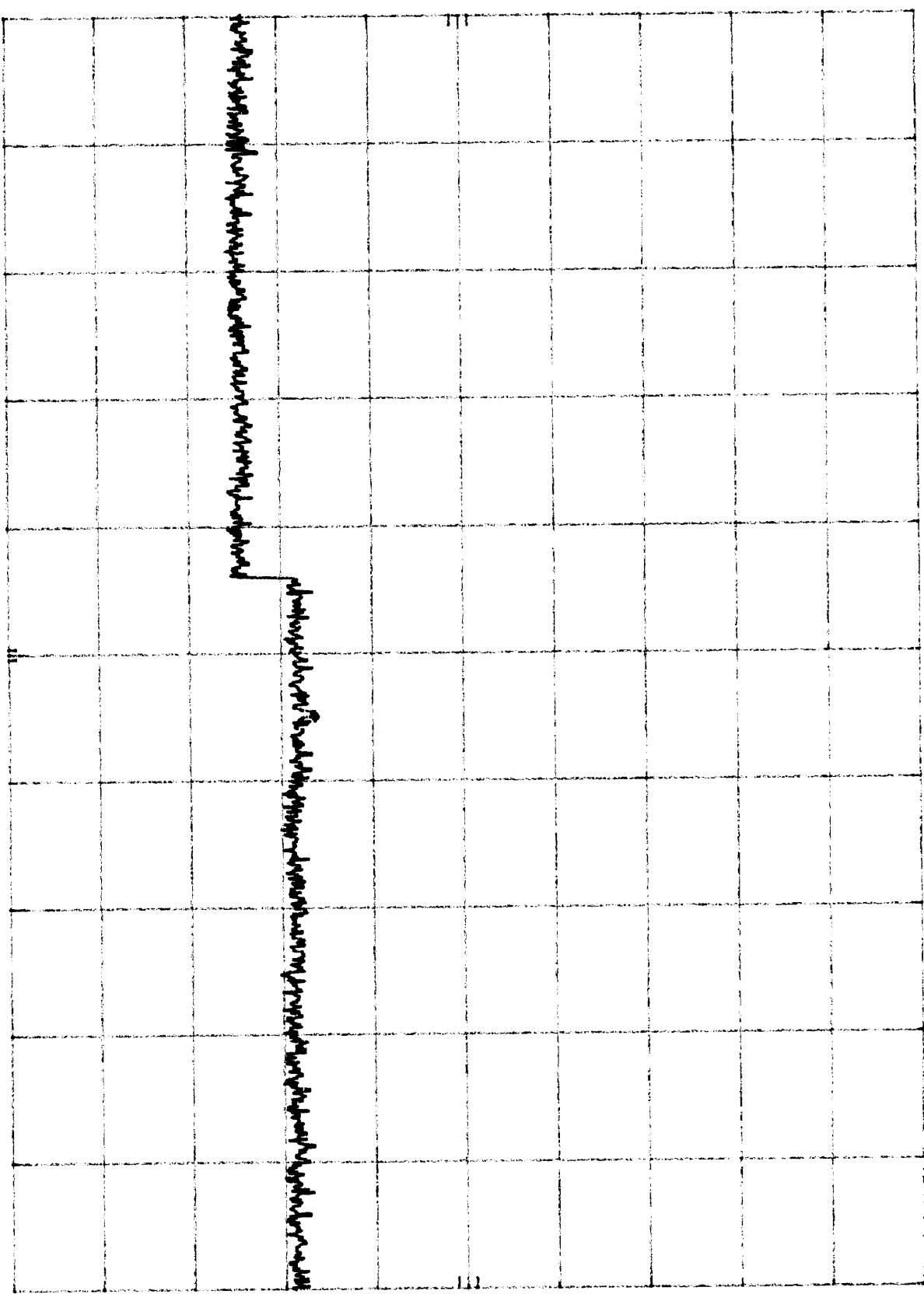
HP

REF 26.5 dBm ATTEN 30 dB

MKR 6.618 GHz  
-39.80 dBm

10 dB/

OFFSET  
10.0  
dB



START 2.50 GHz RES BW 100 kHz VBW 100 kHz STOP 10.00 GHz  
SWP 2.25 sec

7211

HP

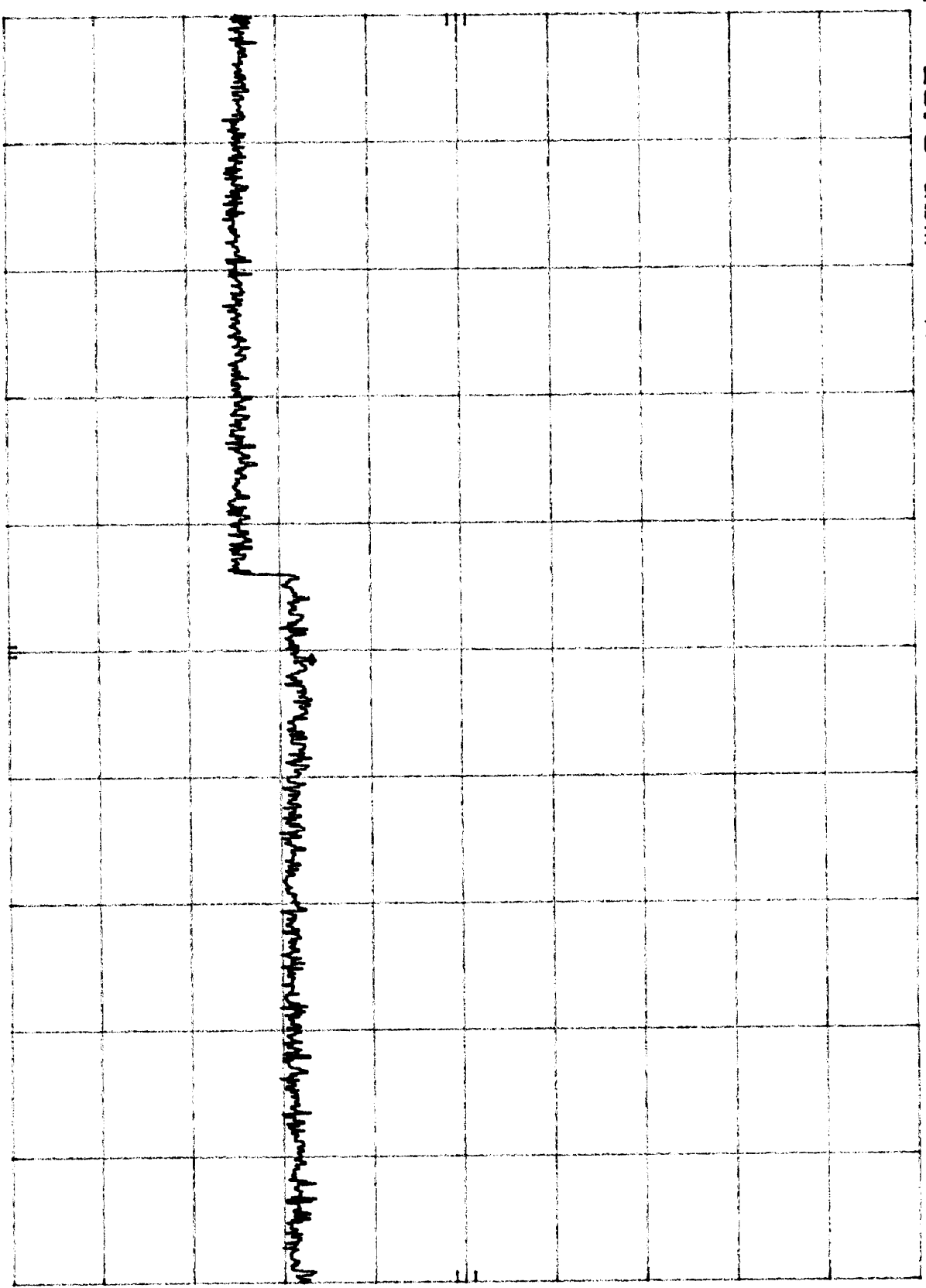
REF 26.5 dBm ATTEN 30 dB

MKR 6.303 GHz  
-40.00 dBm

10 dB/

OFFSET  
10.0

dB



START 2.50 GHz RES BW 100 KHz VBW 100 KHz STOP 10.00 GHz  
SWP 2.25 sec

7/22

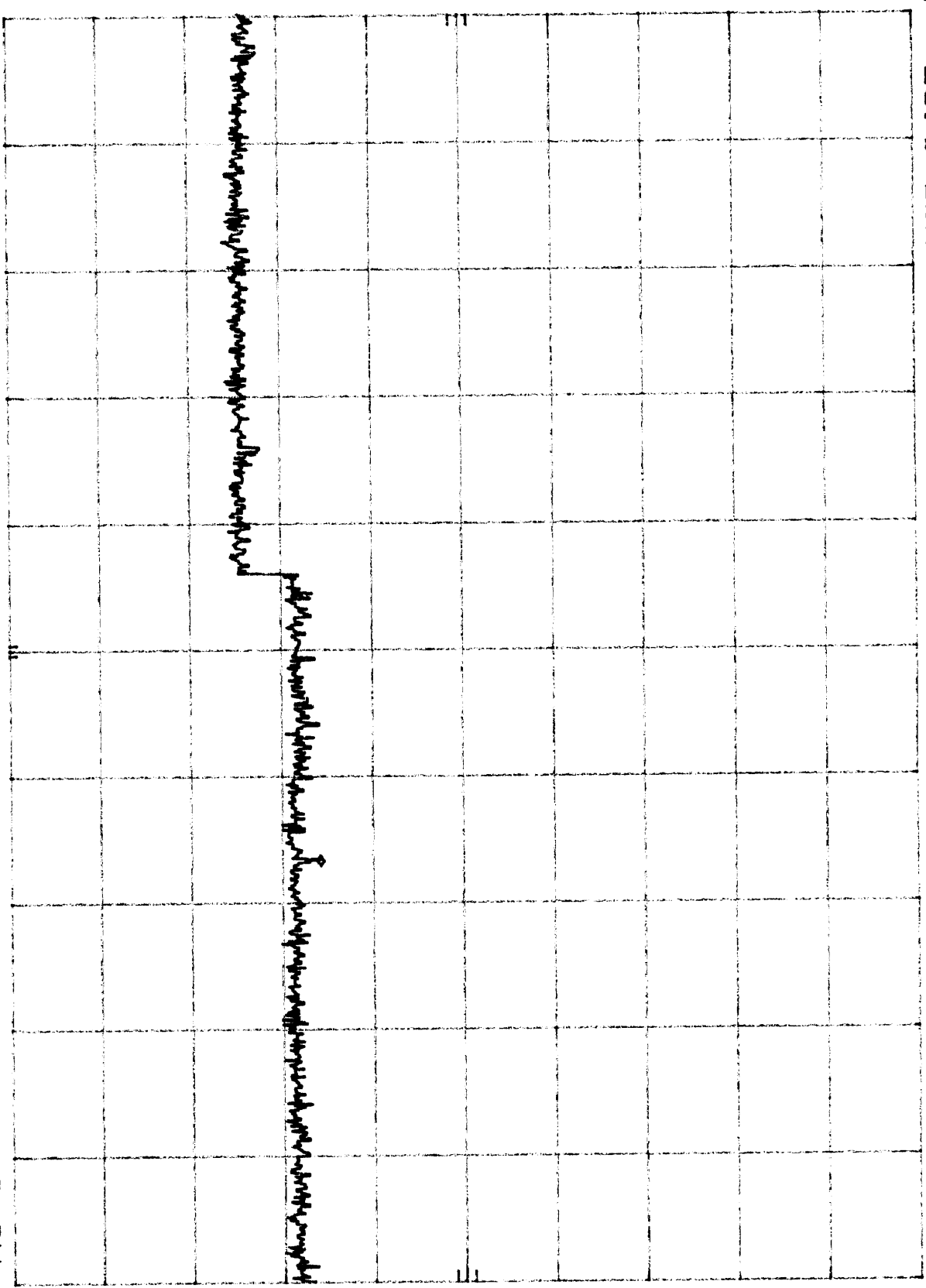
HP

REF 26.5 dBm ATTEN 30 dB

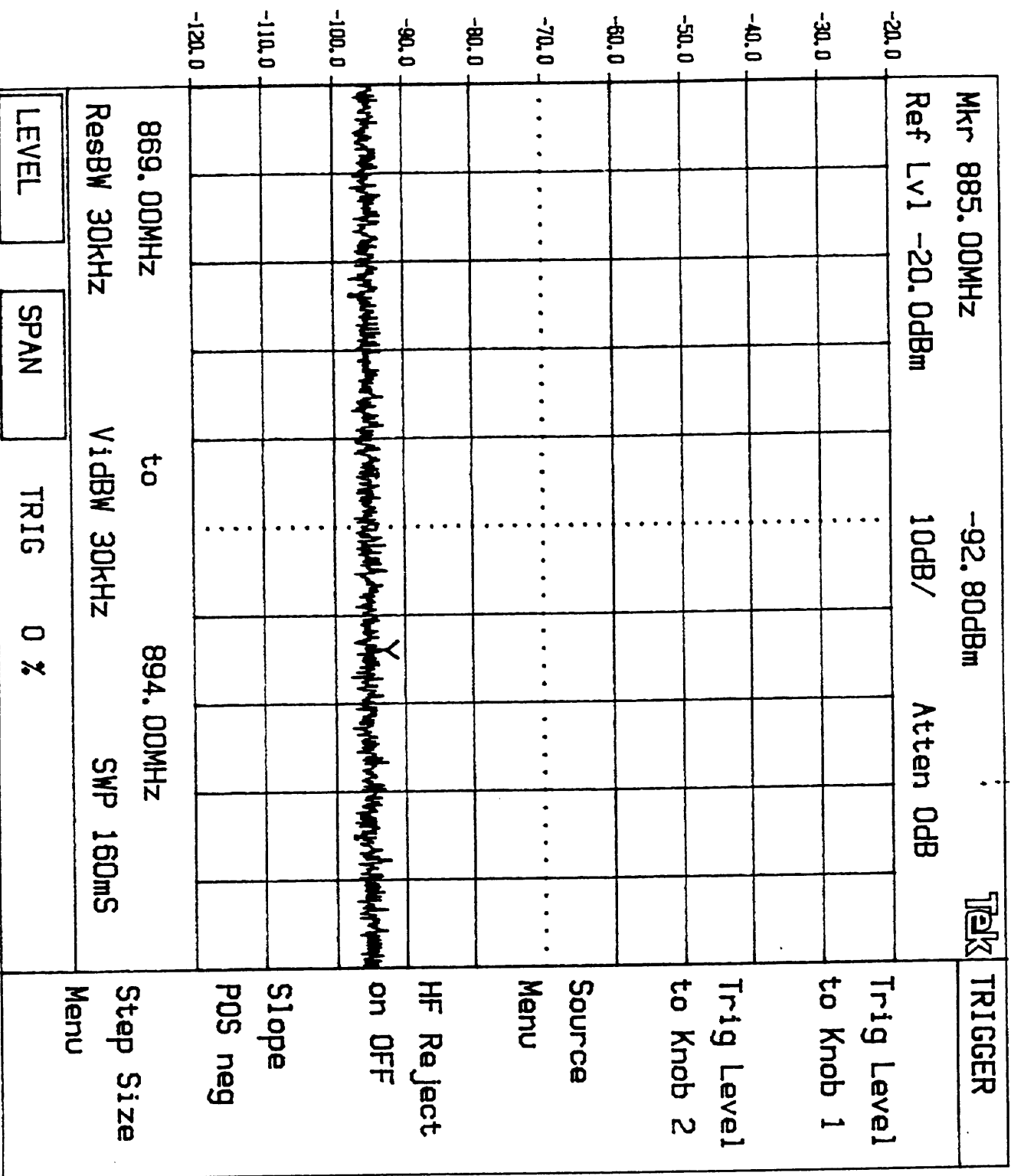
MKR 7.495 GHz  
-39.30 dBm

10 dB/

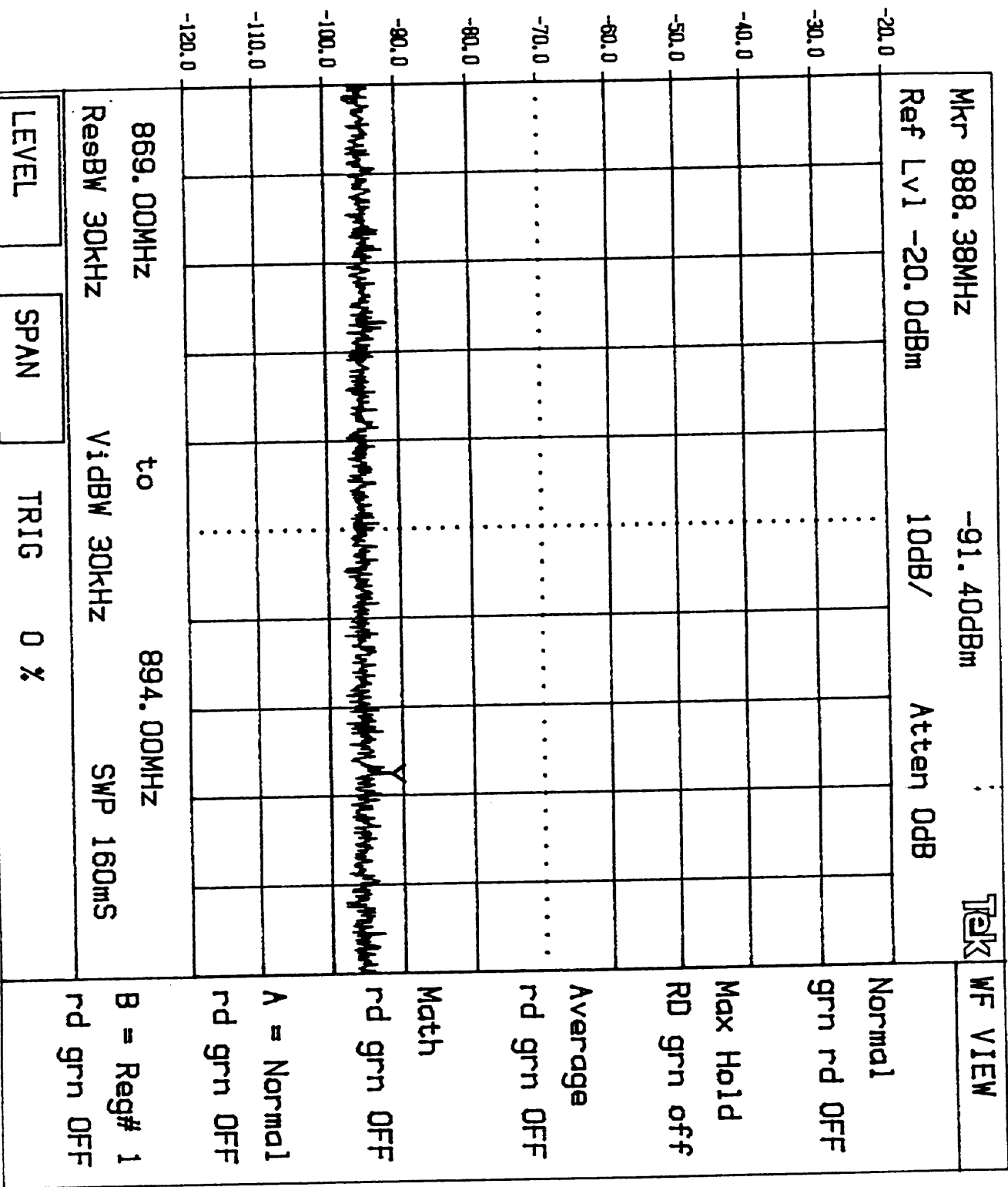
OFFSET  
10.0  
dB



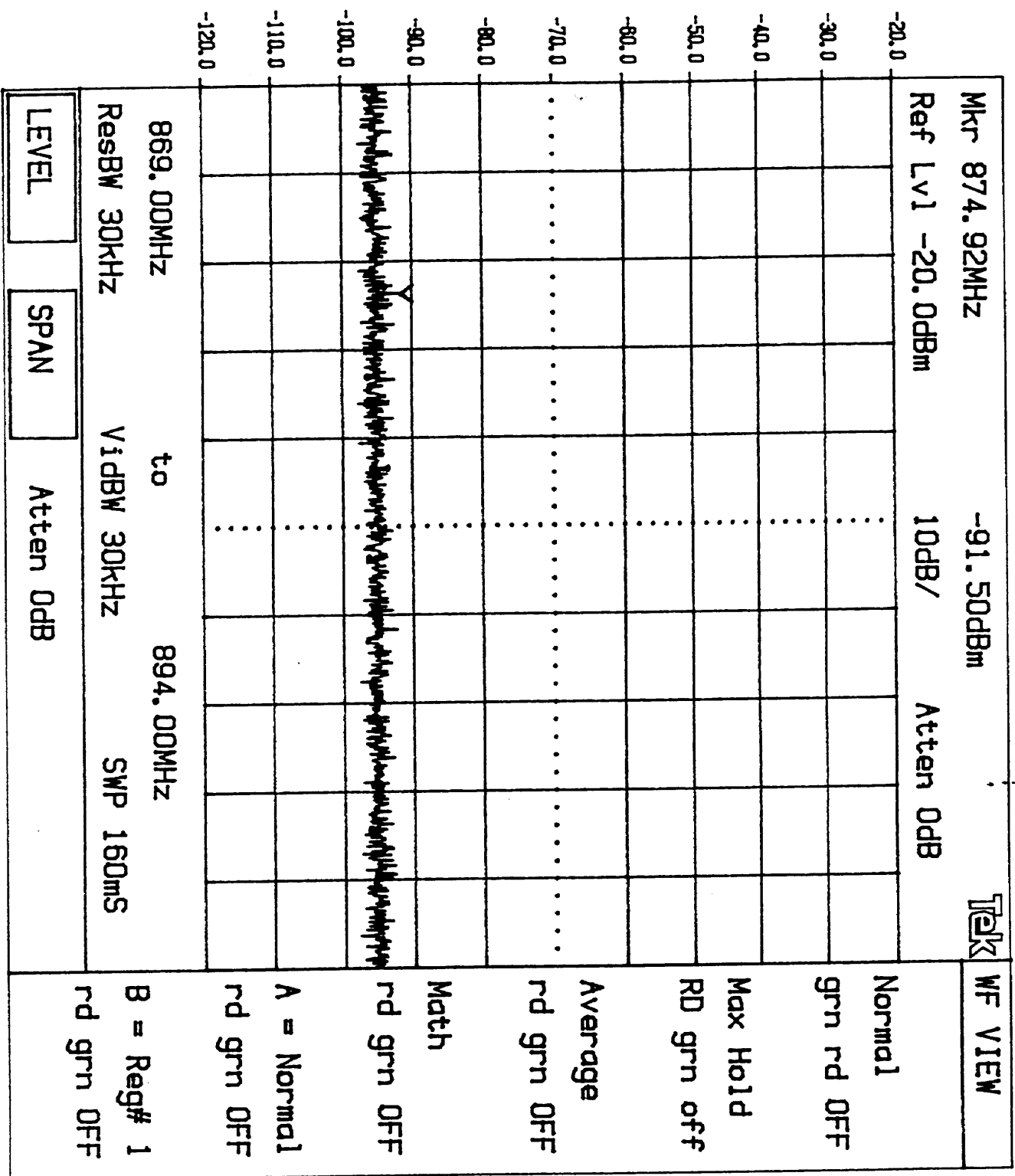
START 2.50 GHz  
RES BW 100 KHZ  
VBW 100 KHZ  
STOP 10.00 GHz  
SWP 2.25 sec



PLOT NO.: 7.3.t



KN0B 2      KN0B 1      KEYPAD      Tektronix      2784



| Antenna Output Conducted Emissions Spectrum Analyzer Plots - CDMA |                              |
|-------------------------------------------------------------------|------------------------------|
| Plot Number                                                       | Description                  |
| 7.3.j                                                             | 1 - 100 MHz Low Channel      |
| 7.3.k                                                             | 1 - 100 MHz Middle Channel   |
| 7.3.l                                                             | 1 - 100 MHz High Channel     |
| 7.3.m                                                             | 1 - 2.5 GHz Low Channel      |
| 7.3.n                                                             | 1 - 2.5 GHz Middle Channel   |
| 7.3.o                                                             | 1 - 2.5 GHz High Channel     |
| 7.3.p                                                             | 2.5 - 10 GHz Low Channel     |
| 7.3.q                                                             | 2.5 - 10 GHz Middle Channel  |
| 7.3.r                                                             | 2.5 - 10 GHz High Channel    |
| 7.3.v                                                             | 869 - 894 MHz High Channel   |
| 7.3.w                                                             | 869 - 894 MHz Middle Channel |
| 7.3.x                                                             | 869 - 894 MHz High Channel   |

7.3.1

HP

REF

20.0 dBm

ATTEN 30 dB

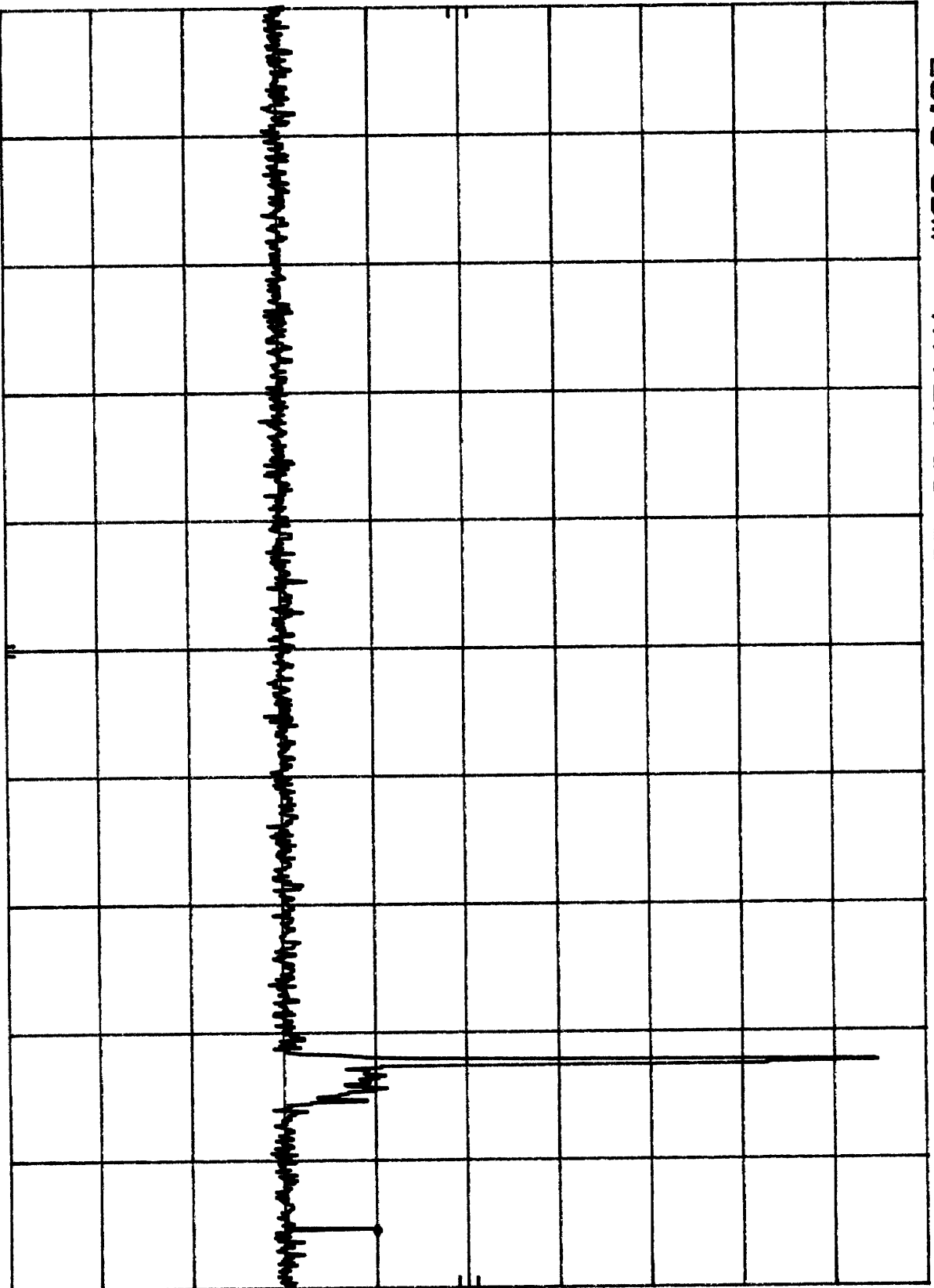
MKR 954 MHz  
-40.00 dBm

10 dB/

OFFSET

10.0

dB



START 1

MHz

RES BW 100 kHz

VBW 100 kHz

STOP 1.00 GHz  
SWP 300 msec

7.3.16

10 dB

10 dB

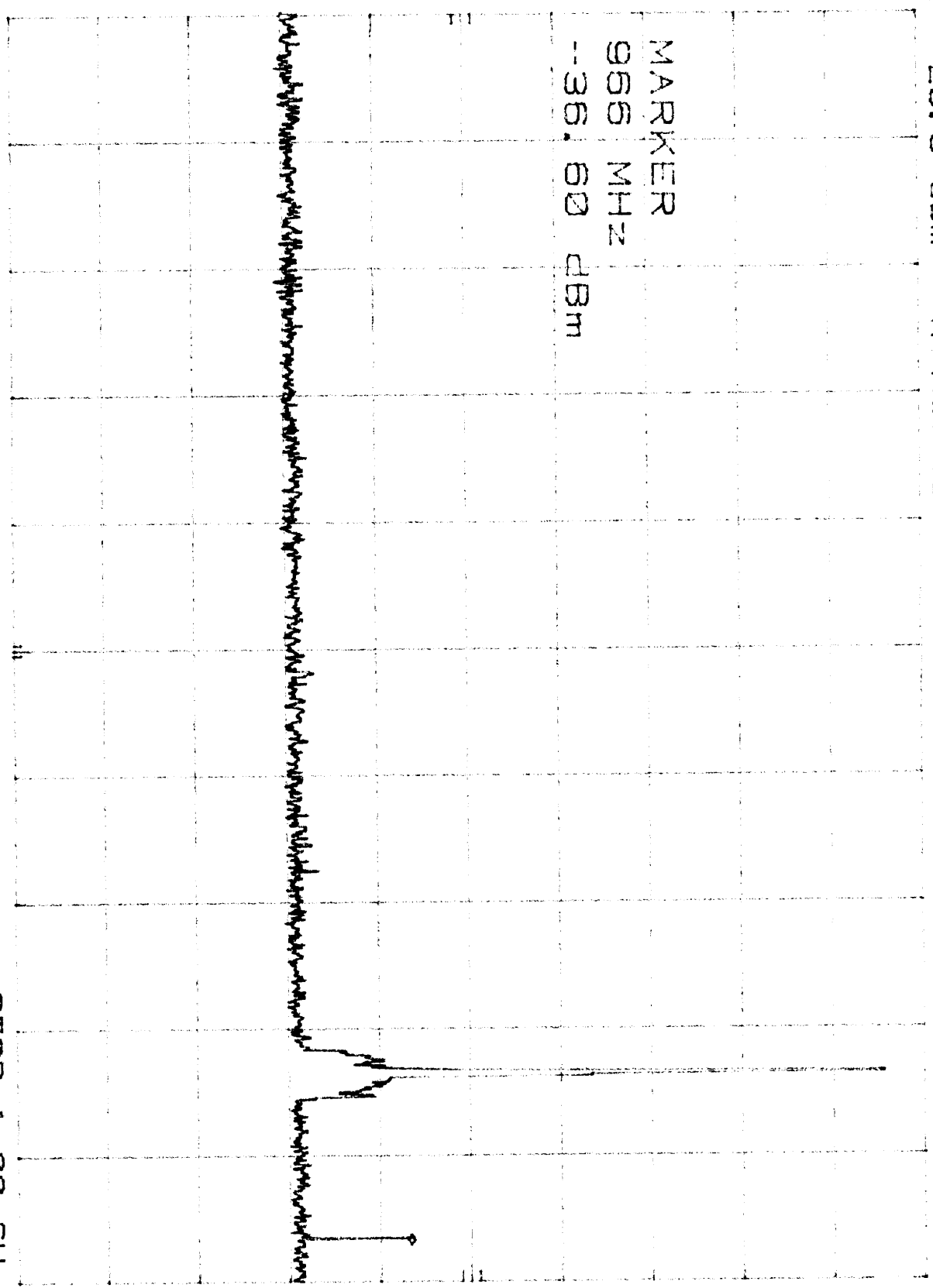
OFFSET  
10.0  
dB

REF 20.0 dBm

ATTEN 30 dB

MARKER  
966 MHz  
-36.60 dBm

MKR 966 MHz  
-36.60 dBm



START 1 MHz  
RES BW 100 kHz  
VBW 100 kHz  
STOP 1.00 GHz  
SWP 300 msec

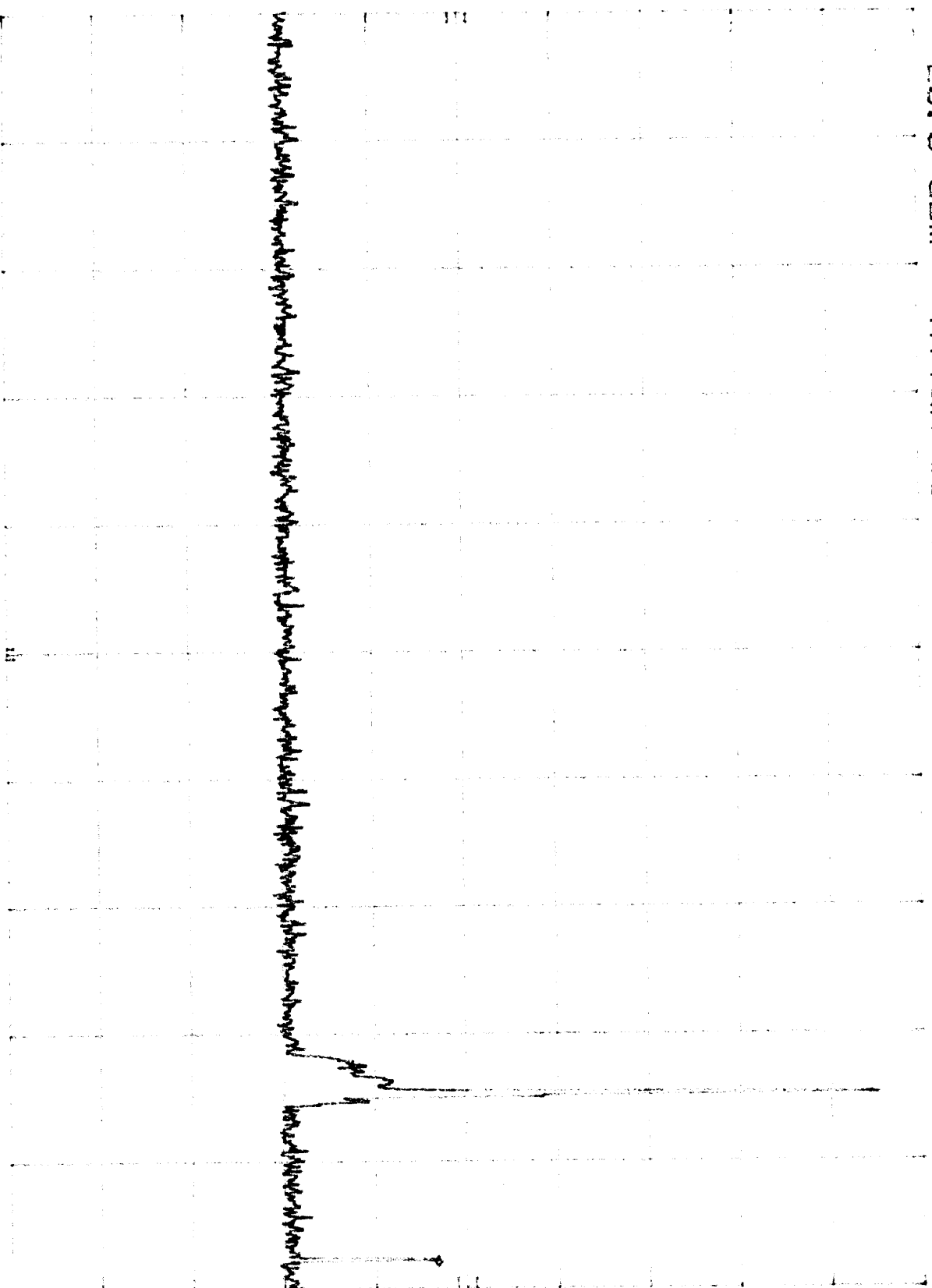
7.3, L

REF 20.0 dBm ATTN 30 dB

10 dB

OFFSET  
10.0  
dB

MKR 978 MHz  
-33.20 dBm



START 1 MHz  
RES BW 100 kHz  
VBW 100 kHz  
STOP 1.00 GHz  
SWP 300 msec

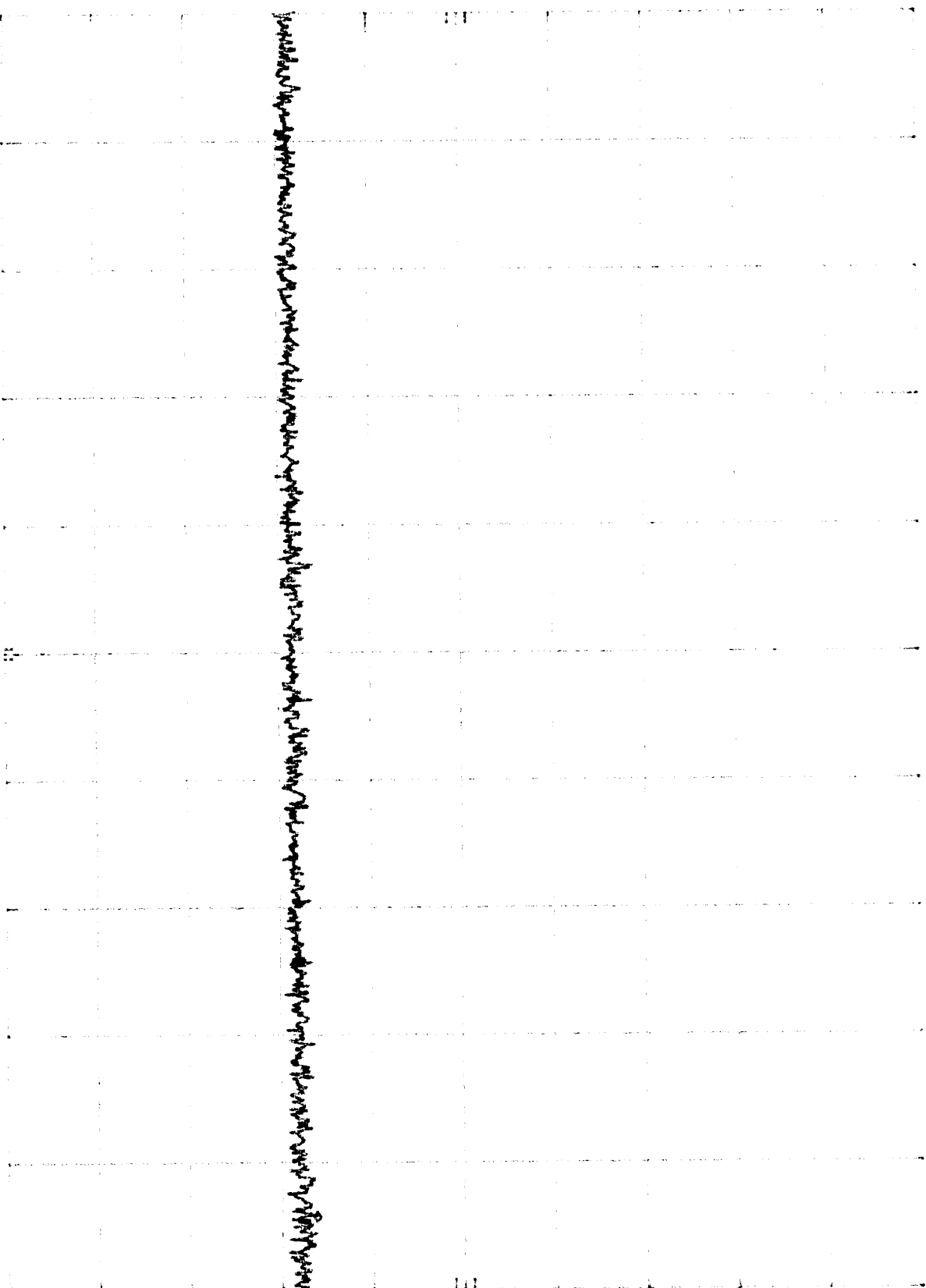
7.3, 24

REF 20.0 dBm ATTN 30 dB

10 dB

OFFSET  
10.0  
dB

MKR 2.413 GHz  
-46.20 dBm



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

7.5, 2

Hz

REF 30.0 dBm

ATTEN 30 dB

MKR 1.996 GHz

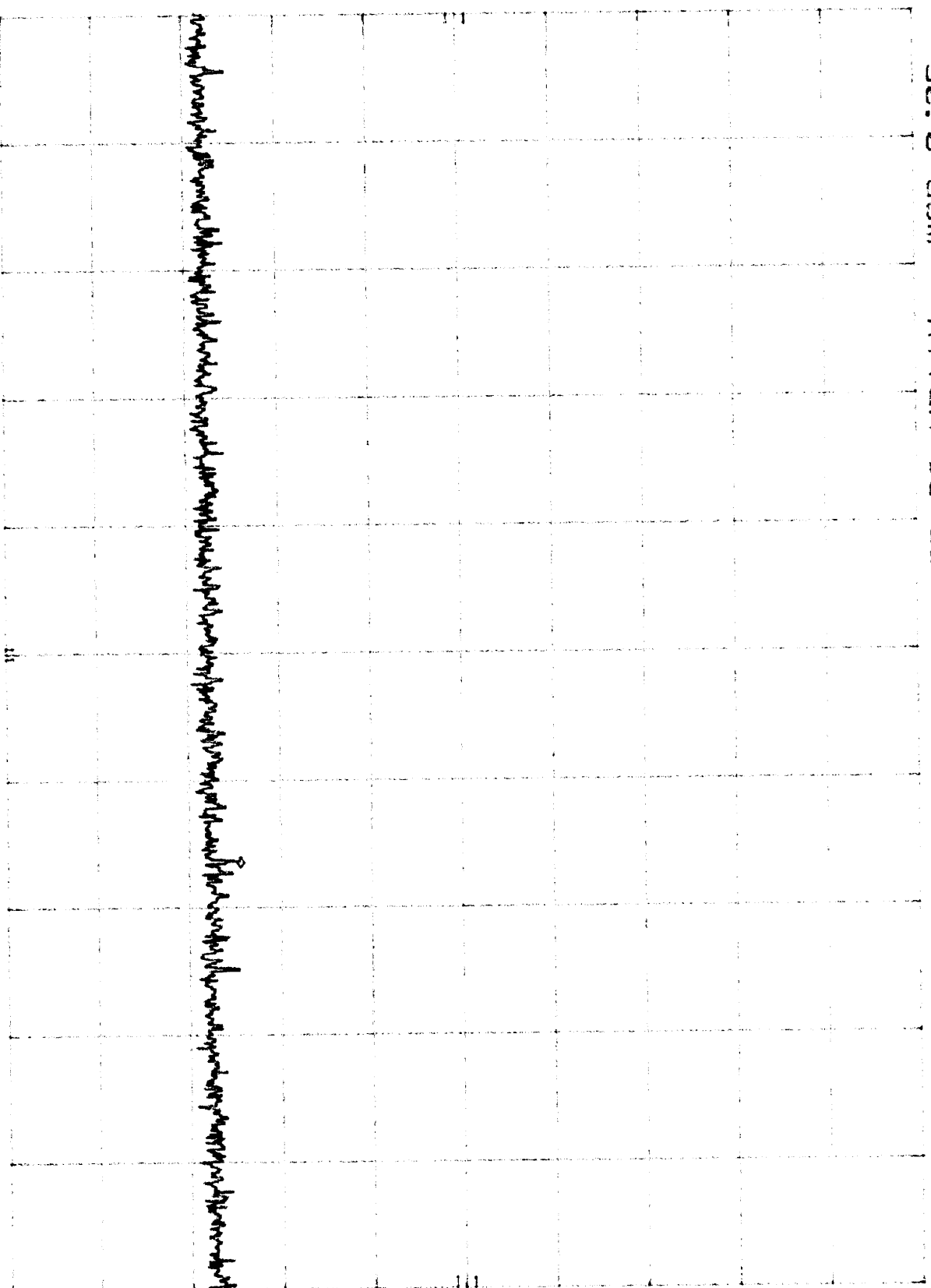
-44.40 dBm

10 dB/

OFFSET

10.0

dB



START 1.00 GHz

RES BW 100 kHz

VBW 100 kHz

STOP 2.50 GHz

SWP 450 msec

7.3.0

APD

REF 20.0 dBm

ATTEN 30 dB

MR 2.499 GHz

-46.20 dBm

10 dB

OFFSET

10.0

dB

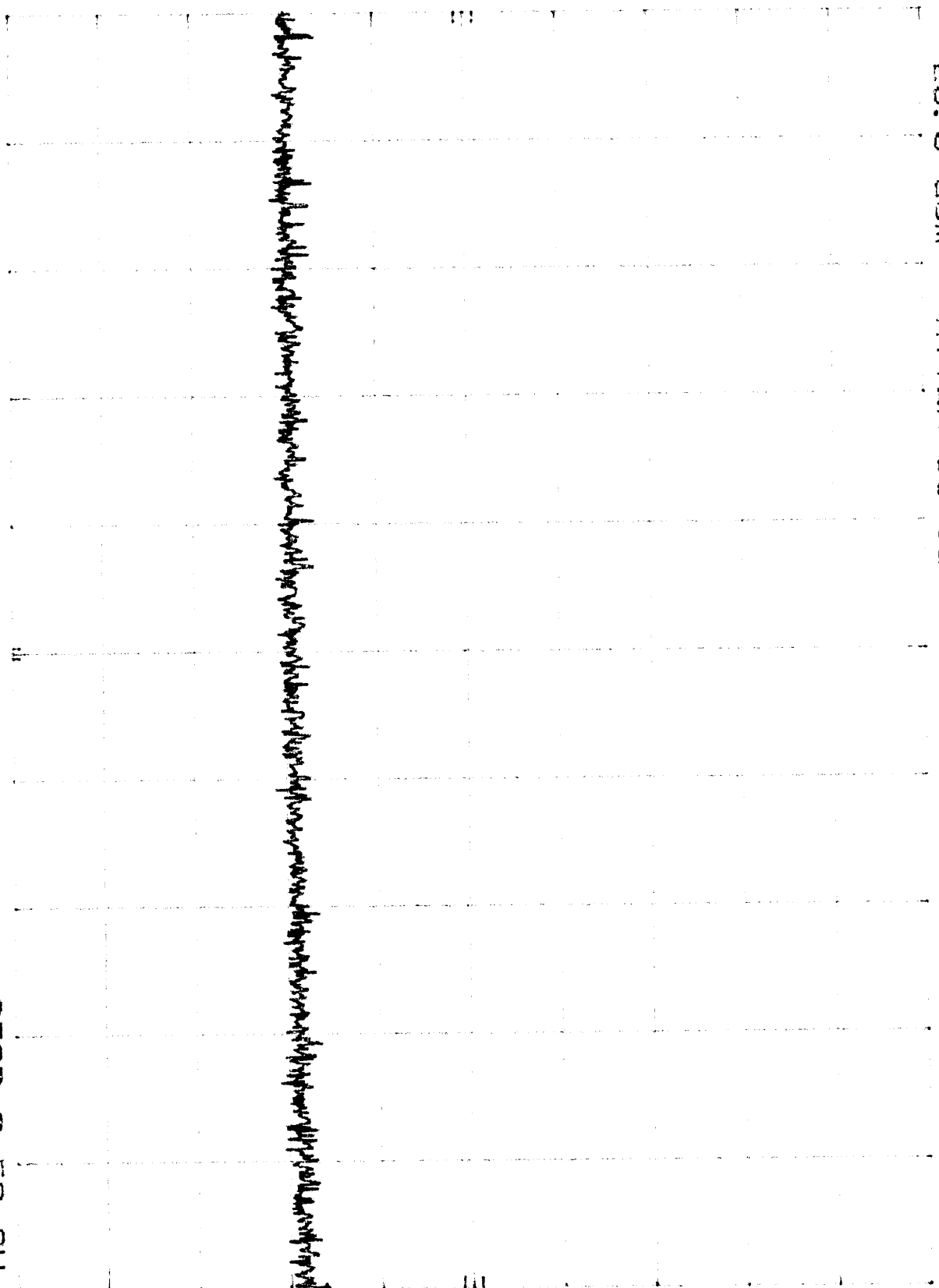
START 1.00 GHz

RES BW 100 kHz

VBW 100 kHz

SWP 450 msec

STOP 2.50 GHz



7.3.0

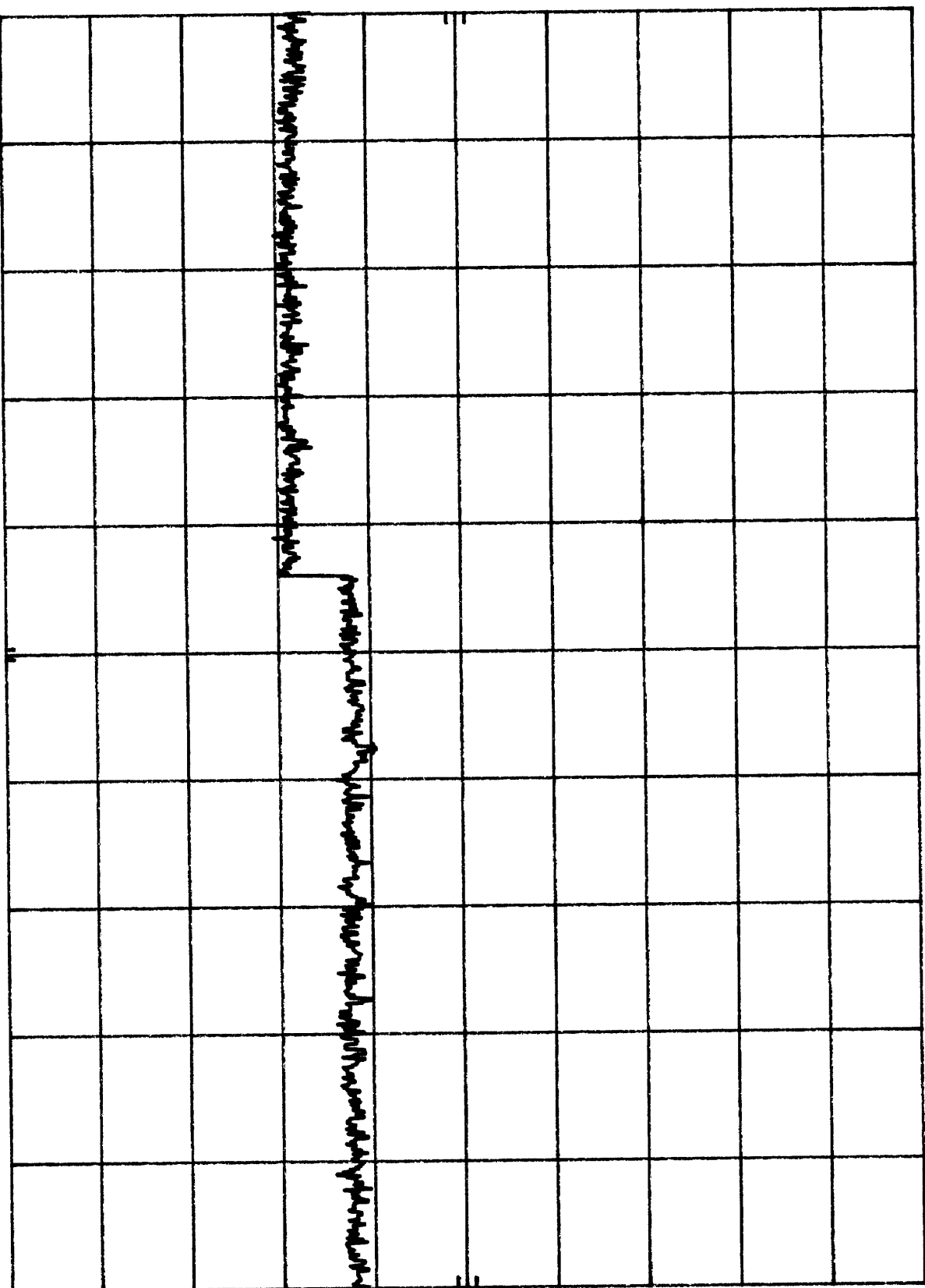
HP

REF 20.0 dBm ATTEN 30 dB

MKR 6.813 GHz  
-39.90 dBm

10 dB/

OFFSET  
10.0  
dB



START 2.50 GHz

RES BW 100 KHz

VBW 100 KHz

STOP 10.00 GHz  
SWP 2.25 sec

7.3.8

Hz

REF 30.0 dBm

ATTEN 30 dB

MKR 6.490 GHz

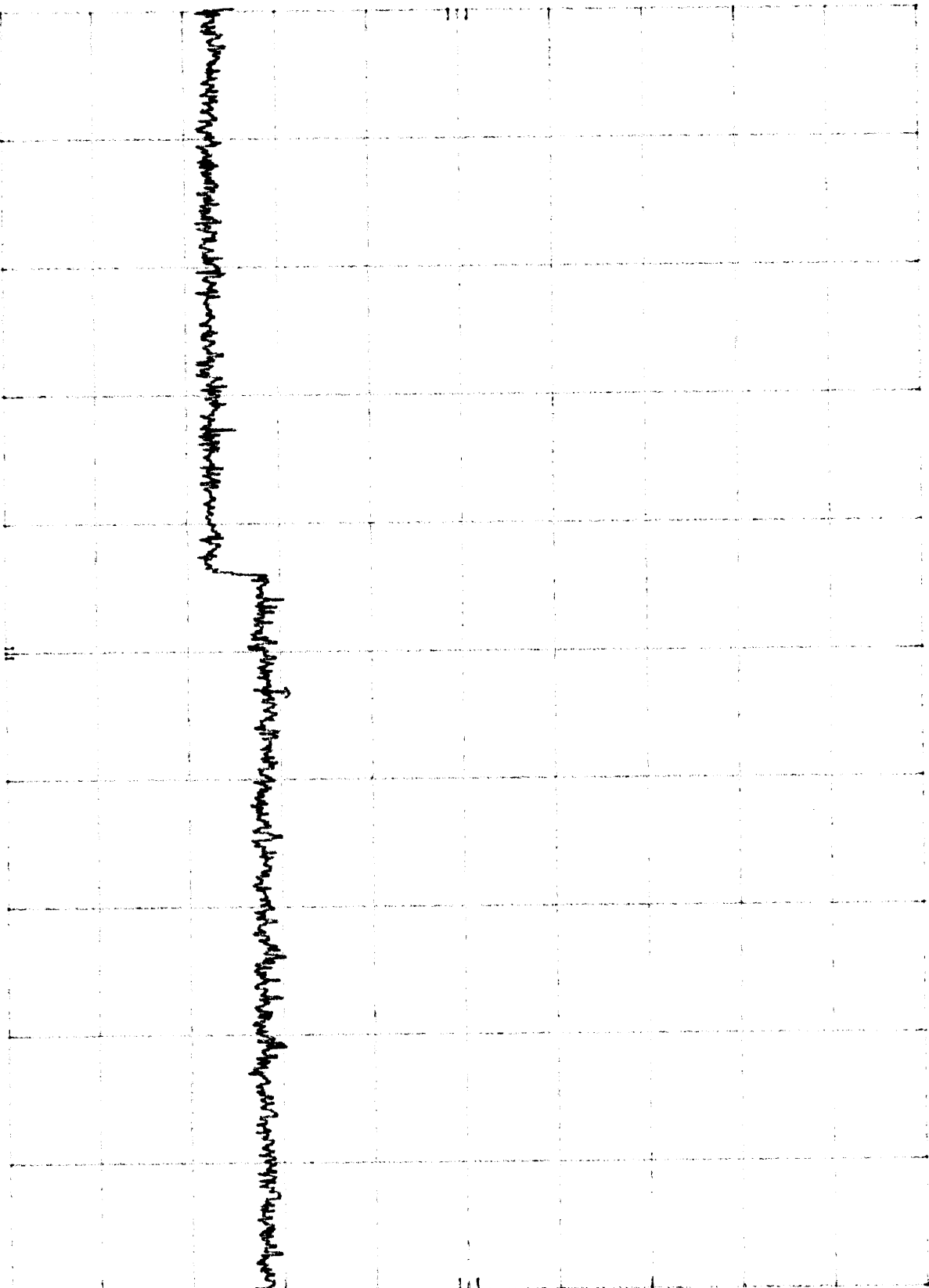
-39.40 dBm

10 dB/

OFFSET

10.0

dB



START 2.50 GHz

RES BW 100 kHz

VBW 100 kHz

STOP 10.00 GHz

SWP 2.25 sec

7.3.1

REF

30.0 dBm

ATTEN 30 dB

MKR 6.108 GHz

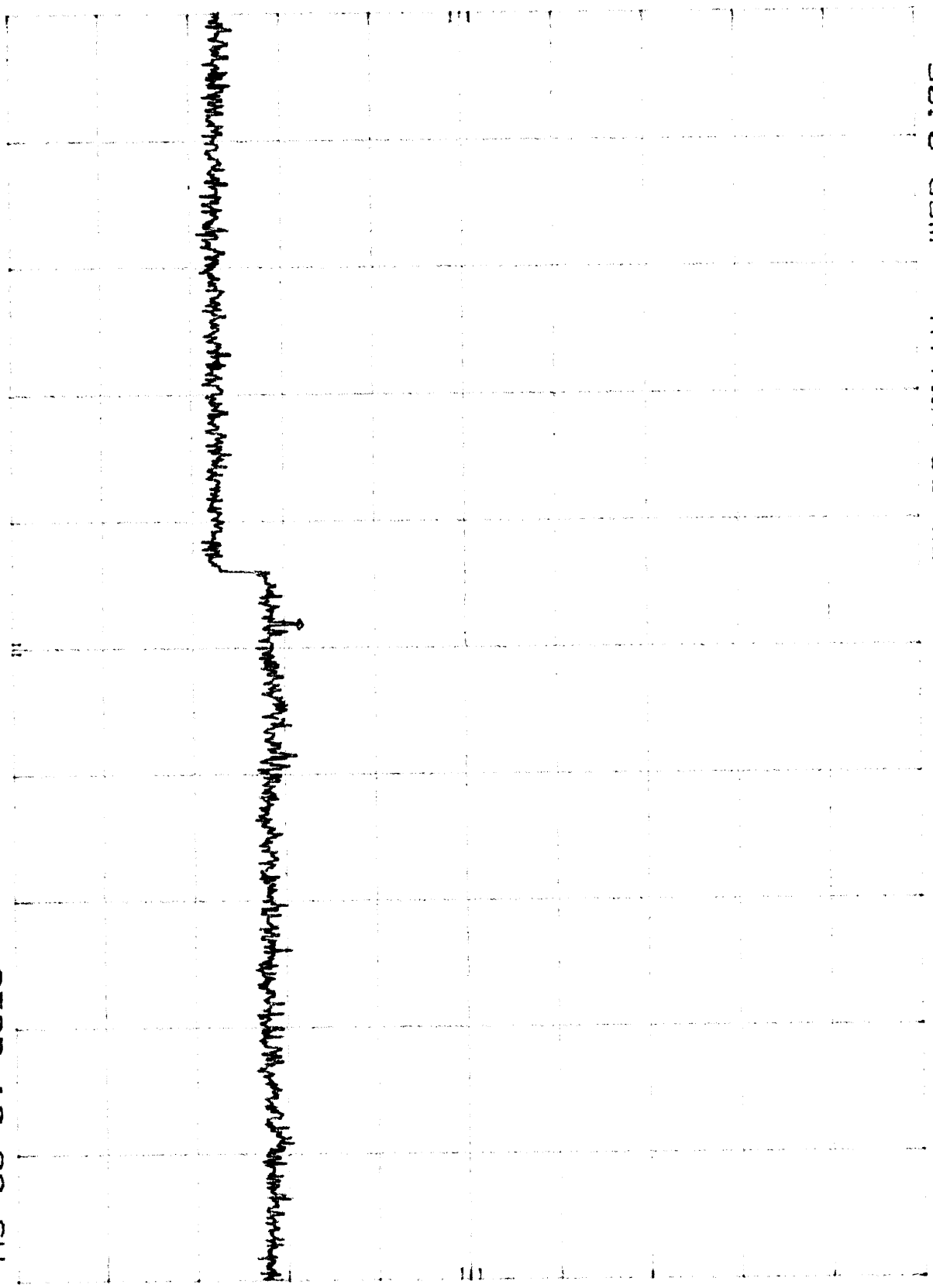
-38.30 dBm

10 dB

OFFSET

10.0

dB

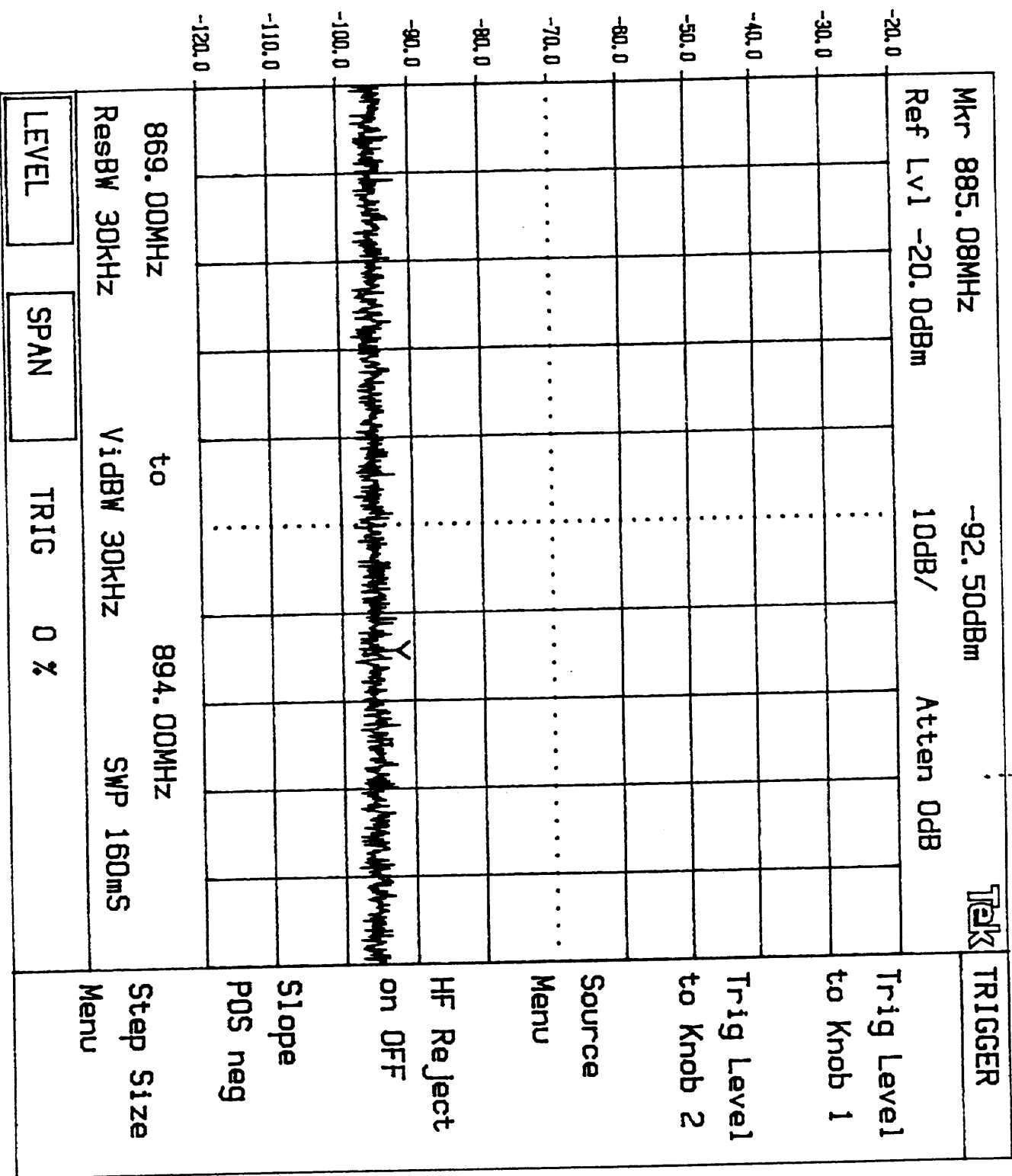


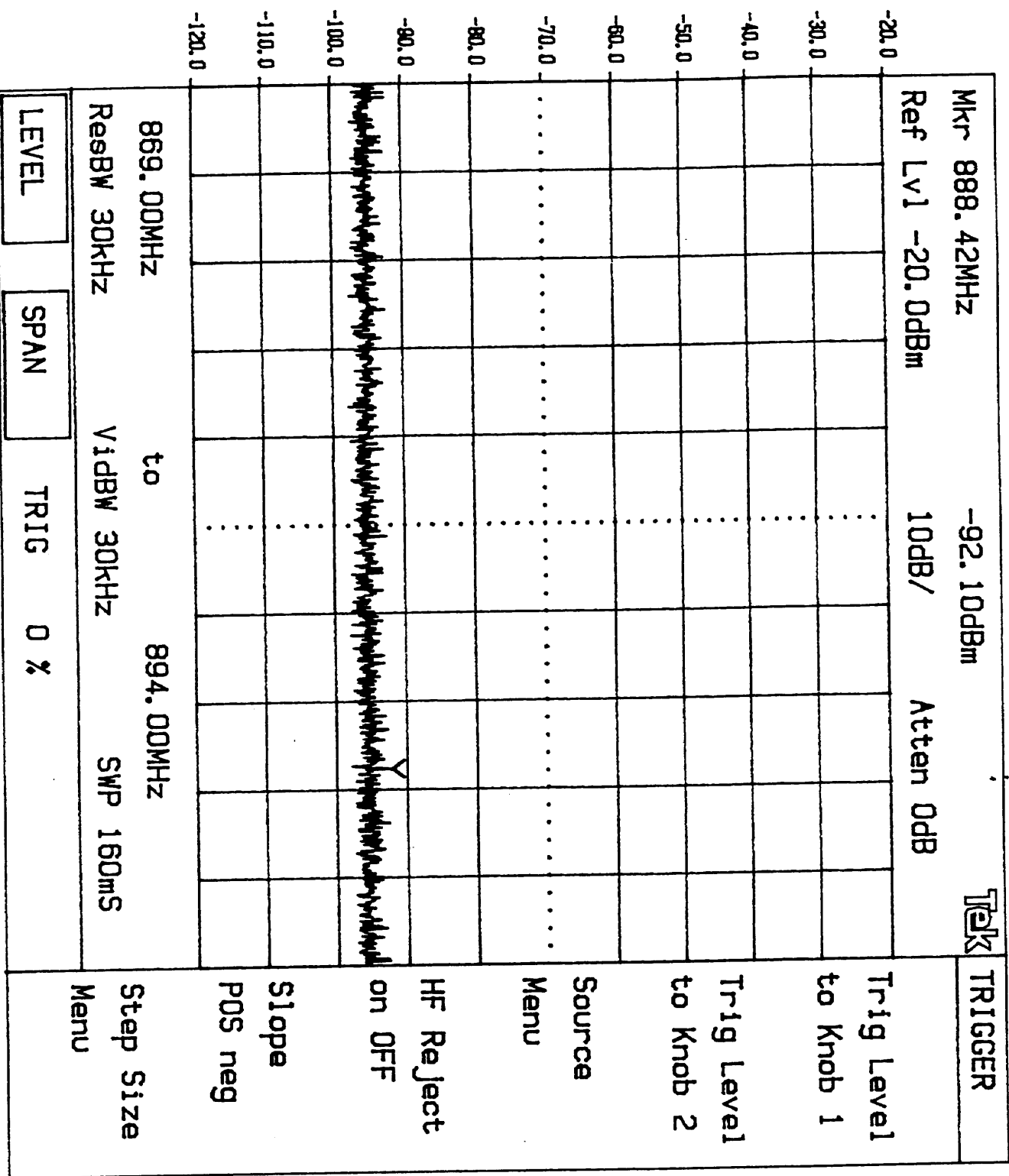
START 2.50 GHz

RES BW 100 kHz

VBW 100 kHz

STOP 10.00 GHz  
SWP 2.25 sec





Tek

TRIGGER

Mkr 878.10MHz

-92.60dBm

Ref Lvl -20.0dBm

10dB/

Atten 0dB

-20.0

-30.0

-40.0

-50.0

-60.0

-70.0

-80.0

-90.0

-100.0

-110.0

-120.0

Trig Level  
to Knob 1

Trig Level  
to Knob 2

Source  
Menu

HF Reject  
on OFF

Slope  
POS neg

Step Size  
Menu

869.00MHz

to

894.00MHz

ResBW 30kHz

ViDBW 30kHz

SWP 160ms

LEVEL

SPAN

TRIG 0 %

KNOB 2

KNOB 1

KEYPAD

Tektronix

2784