

MEASUREMENT AND TECHNICAL REPORT

POWERWAVE TECHNOLOGIES

2026 McGaw Avenue
Irvine, CA 92614

DATE: 31 October 2000

This Report Concerns: Original Grant: X Class II Change:

Equipment Type: 800 MHz MCPA, Model NTGY71AA

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes: No: X
Defer until:

Company Name **agrees to notify the Commission by:** N/A
of the intended date of announcement of the product so that the grant can be issued on that date.

Transition Rules Request per 15.37? Yes: *No:

() FCC Part 2, Paragraphs 2.1046, 2.1051, 2.1053, and Part 22, Paragraph 22.917*

Report Prepared by:

TÜV PRODUCT SERVICE
10040 Mesa Rim Road
San Diego, CA 92121-2912
Phone: 619 546 3999
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1 GENERAL INFORMATION

1.1 Product Description

The NTGY71AA is a linear, multichannel power amplifier that operates in the 25 MHz frequency band from 869 MHz to 894 MHz. It is designed to be mounted in an enclosure with EMI containment. Its flat base plate allows for mounting on a flat thermal-absorbing surface to provide adequate heat dissipation.

Each amplifier module has a power, alarm, and control connector that allows the host system to monitor the amplifier module performance. Primary power for the amplifier is +26 Vdc.

1.1.1 Components of EUT

Description	Model Number	Serial Number	FCC ID Number
800 MHz MCPA	NTGY71AA		E675JS0047

1.2 Operating modes:

70 W output continuous with a WCDMA input signal. 50 dB nominal gain. 25.5 - 26.5 Vdc input.

1.3 EUT I/O Ports and Cables:

1.3.1 I/O Cables

CONNECTION:	± 26 Vdc
SHIELD:	No
CONNECTORS:	Metal
TERMINATION TYPE:	D-Sub
LENGTH:	Not Specified
REMOVABLE:	Yes

CONNECTION:	RF In / Out
SHIELD:	Yes
CONNECTORS:	Metal
TERMINATION TYPE:	SMA
LENGTH:	Not Specified
REMOVABLE:	Yes

1.3.2 Power requirements:

26 VDC 23 Amps

1.4 Oscillator Frequencies

Frequency	EUT Location	Description of use
15 MHz	PCB	Frequency reference

1.5 Description of Enclosure: (including Gasketing, Coatings, Bonding, etc.)

Aluminum Alloy with chem film coating.

1.6 Interfacing and/or Simulators Peripheral Equipment

DESCRIPTION:	RF Signal Generator
MANUFACTURER:	Agilent
MODEL NUMBER:	E4433B
SERIAL NUMBER:	017007
FCC ID:	N/A

DESCRIPTION:	DC Power Supply
MANUFACTURER:	HP
MODEL NUMBER:	6675A
SERIAL NUMBER:	004929
FCC ID:	N/A

DESCRIPTION:	Power Meter
MANUFACTURER:	HP
MODEL NUMBER:	E4419B
SERIAL NUMBER:	017884
FCC ID:	N/A

DESCRIPTION:	Power Sensor
MANUFACTURER:	HP
MODEL NUMBER:	8481A
SERIAL NUMBER:	017948
FCC ID:	N/A

1 GENERAL INFORMATION (continued)

1.2 Related Submittal/Grant

None

1.3 Tested System Details

The FCC IDs for all equipment, plus descriptions of all cables used in the tested system are:

None

1.4 Test Methodology

Purpose of Test: To demonstrate compliance with the ANSI C63.4 setup.

Test Performed:

- X 1. Conducted Emissions, FCC Part 2, Paragraphs 2.1051 and Part 22, Paragraph 22.917
- 2. Radiated Emissions EN55022: 1992 Class B limit, 30 - 1,000 MHz, 10 meters
- X 3. Radiated Emission per FCC Part 2, Paragraph 2.1053, & Part 22, Paragraph 22.917
- 4. Engineering evaluations
- 5. Frequency Stability, Part 2, Paragraph 2.995, and Part 87, Paragraph 87.133
- X 6. RF Output Power, Part 2, Paragraph 2.1046

Both Conducted and radiated testing were performed according to the procedures in FCC/ANSI C63.4 and CSA 108.8 - M1983. Radiated testing was performed at an antenna-to-EUT distance of 3 meters (1 - 10 GHz).

1.5 Test Facility

The open area test site and conducted measurement data were tested by:

TÜV PRODUCT SERVICE
10040 Mesa Rim Road
San Diego, CA 92121-2912
Phone: 619 546 3999
Fax: 619 546 0364

The Test Site Data and performance comply with ANSI 63.4 and are registered with the FCC, 7435 Oakland Mills Rd, Columbia Maryland 21046. All Measurement Data is acquired according to the content of FCC Measurement Procedure and ANSI C63.4, unless supplemented with additional requirements as noted in the test report.

1.6 Part 2 Requirements

Frequency range: 869-894 MHz, RF Power: 0-70W, Frequency tolerance: N/A, Emission designator: F9W, Microprocessor: N/A

Types of emission: Wideband CDMA.

Operating power range: 0-70 W

Maximum power rating: 70 W

Voltages and currents applied: Refer to schematics and block diagram

Schematics and parts list sent separately.

Device is a power amplifier.

RF exposure: N/A, unit meets or exceeds FCC Part 15 limits.

Device is a power amplifier.

2. SYSTEM TEST CONFIGURATION

2.1 Justification

The 800 MHz MCPA was initially tested for FCC emission in the following configuration:

See Block Diagram.

2.2 EUT Exercise Software

None

2.3 Special Accessories

None

2.4 Modification

None

2.5 Configuration of Tested System

See Block Diagram.

3 RADIATED EMISSION DATA

The following data lists the significant emission frequencies, measured levels, correction factor (which includes cable and antenna corrections), the corrected reading, and the limit.

See following page(s).

Emissions Test Conditions: RADIATED EMISSIONS, FCC Part 2, Paragraph 2.1053 and Part 24, Paragraph 24.238

The *RADIATED EMISSIONS* measurements were performed at the following test location :

☐ - Test not applicable

■ - Roof (Small Open Area Test Site)

Testing was performed at a test distance of:

☐ - 1 meters

■ - 3 meters

☐ - 10 meters

Test Equipment Used :

Model No.	Prop. No.	Description	Manufacturer	Serial No.	Cal Date
3115	251	Antenna, Double Ridge Guide	EMCO	9412-4363	10/01
AMF-5D-010180-35-10P	719	Pre-Amplifier (38 dB gain) 1 - 18 GHz	Miteq, Inc.	--	*
8566B	720	Spectrum Analyzer	Hewlett Packard	211500842	03/01
8566B	721	Spectrum Analyzer Display	Hewlett Packard	2112A02185	03/01

Remarks: (*) Verified internally

Radiated Electromagnetic Emissions



Test Report #: **S0390 Run 01**
 Test Method: **Spurious Emissions 2.1053**
 EUT Model #: **NTGY 71AA**
 EUT Serial #:

Test Area: **Site 3 Roof**
 Test Date: **13-Sep-2088**
 EUT Power: **48 Vdc**

Temperature: **25** °C
 Relative Humidity: **45** %
 Air Pressure: **100.1** kPa
 Page: **1** of **3**

Manufacturer: **Powerwave**

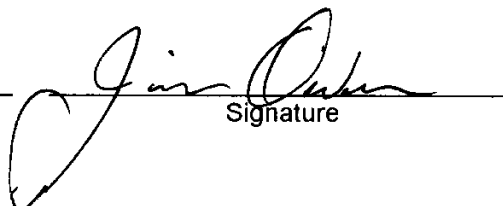
EUT Description: **Wideband CDMA Amplifier**

Notes: **Fundamental measured with 30 kHz RBW + VBW w/ 17 dB offset**
Spurious measured with PK – 1 MHz/1 MHz RBW/VBW and Avg 1 MHz/ 10 Hz RBW/VBW

Level Key	
Pk – Peak	Nb – Narrow Band
Qp – QuasiPeak	Bb – Broad Band
Av – Average	

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dB/m) (dB)	FINAL (dBuV/m)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) FCC Part 22.917	DELTA2 (dB) N/A
869.00	57.9 Av	2.4 / 23.2 / 0.0	83.5	V / 1.0 / 0.0	N/A	N/A
869.00	57.0 Av	2.4 / 23.2 / 0.0	82.6	H / 1.0 / 0.0	N/A	N/A
881.50	56.1 Av	2.3 / 23.2 / 0.0	81.6	H / 1.0 / 0.0	N/A	N/A
881.50	56.2 Av	2.3 / 23.2 / 0.0	81.7	V / 1.0 / 0.0	N/A	N/A
894.00	58.4 Av	2.4 / 23.2 / 0.0	84.0	V / 1.0 / 0.0	N/A	N/A
894.00	56.1 Av	2.4 / 23.2 / 0.0	81.7	H / 1.0 / 0.0	N/A	N/A
high channel						
third harmonic						
2682.00	50.4 Pk	5.3 / 30.9 / 40.4	46.2	V / 1.0 / 0.0	-36.0	N/A
ambient measurements						
3576.00	46.2 Pk	6.7 / 32.9 / 40.5	45.3	V / 1.0 / 0.0	-36.9	N/A
4470.00	48.1 Pk	7.3 / 33.7 / 41.7	47.4	V / 1.0 / 0.0	-34.8	N/A
5364.00	46.8 Pk	7.5 / 35.8 / 40.0	50.1	V / 1.0 / 0.0	-32.1	N/A
6258.00	47.8 Pk	7.8 / 36.7 / 38.5	53.8	V / 1.0 / 0.0	-28.4	N/A
7152.00	46.1 Pk	8.5 / 37.4 / 38.0	54.0	V / 1.0 / 0.0	-28.2	N/A
8046.00	47.6 Pk	9.4 / 38.0 / 38.5	56.6	V / 1.0 / 0.0	-25.6	N/A
8940.00	46.9 Pk	10.1 / 40.1 / 39.1	58.0	V / 1.0 / 0.0	-24.2	N/A
second harmonic						
1788.00	49.8 Pk	4.0 / 28.1 / 40.6	41.4	V / 1.0 / 0.0	-40.8	N/A
ambient measurement						
1788.00	46.9 Pk	4.0 / 28.1 / 40.6	38.5	H / 1.0 / 0.0	-43.7	N/A
third harmonic						
2682.00	53.5 Pk	5.3 / 30.9 / 40.4	49.3	H / 1.0 / 0.0	-32.9	N/A
ambient						
3576.00	45.6 Pk	6.7 / 32.9 / 40.5	44.7	H / 1.0 / 0.0	-37.5	N/A
4470.00	47.6 Pk	7.3 / 33.7 / 41.7	46.9	H / 1.0 / 0.0	-35.3	N/A
5364.00	46.1 Pk	7.5 / 35.8 / 40.0	49.4	H / 1.0 / 0.0	-32.8	N/A
6258.00	48.1 Pk	7.8 / 36.7 / 38.5	54.1	H / 1.0 / 0.0	-28.1	N/A
7152.00	46.3 Pk	8.5 / 37.4 / 38.0	54.2	H / 1.0 / 0.0	-28.0	N/A

Tested by: **Jim Owen**
 Printed


 Signature

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Radiated Electromagnetic Emissions



Test Report #: **S0390 Run 01**
 Test Method: **Spurious Emissions** *2.1053*
 EUT Model #: **NTGY 71AA**
 EUT Serial #:
 Manufacturer: **Powerwave**

Test Area: **Site 3 Roof**
 Test Date: **13-Sep-2088**
 EUT Power: **48 Vdc**

Temperature: **25** °C
 Relative Humidity: **45** %
 Air Pressure: **100.1** kPa
 Page: **2** of **3**

EUT Description: **Wideband CDMA Amplifier**

Notes: **Fundamental measured with 30 kHz RBW + VBW w/ 17 dB offset**

Spurious measured with PK – 1 MHz/1 MHz RBW/VBW and Avg 1 MHz/ 10 Hz RBW/VBW

Level Key	
Pk – Peak	Nb – Narrow Band
Qp – QuasiPeak	Bb – Broad Band
Av - Average	

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dB\m) (dB)	FINAL (dBuV/m)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) FCC Part 22.917	DELTA2 (dB) N/A
8046.00	48.0 Pk	9.4 / 38.0 / 38.5	57.0	H / 1.0 / 0.0	-25.2	N/A
8940.00	47.5 Pk	10.1 / 40.1 / 39.1	58.6	H / 1.0 / 0.0	-23.6	N/A
mid channel						
second harmonic						
1763.00	54.7 Pk	4.0 / 28.0 / 40.6	46.2	H / 1.0 / 0.0	-36.0	N/A
2644.50	50.1 Pk	5.2 / 30.8 / 40.4	45.8	H / 1.0 / 0.0	-36.4	N/A
only ambient above third harmonic						
1763.00	54.3 Pk	4.0 / 28.0 / 40.6	45.8	V / 1.0 / 0.0	-36.4	N/A
2644.50	50.5 Pk	5.2 / 30.8 / 40.4	46.2	V / 1.0 / 0.0	-36.0	N/A
low channel						
1738.00	54.1 Pk	4.0 / 28.0 / 40.6	45.4	V / 1.0 / 0.0	-36.8	N/A
2607.00	4.9 Pk	5.2 / 30.7 / 40.4	0.4	V / 1.0 / 0.0	-81.8	N/A
only ambient above third harmonic						
1738.00	55.7 Pk	4.0 / 28.0 / 40.6	47.0	H / 1.0 / 0.0	-35.2	N/A
2607.00	51.0 Pk	5.2 / 30.7 / 40.4	46.5	H / 1.0 / 0.0	-35.7	N/A

Tested by: Jim Owen
 Printed

Signature

11

Field Strength Calculation

If a preamplifier was used during the Radiated Emission Testing, it is required that the amplifier gain must be subtracted from the Spectrum Analyzer (Meter) Reading. In addition, a correction factor for the antenna , cable used and a distance factor, if any, must be applied to the Meter Reading before a true field strength reading can be obtained. In the automatic measurement, these considerations are automatically presented as a part of the print out. In the case of manual measurements and for greater efficiency and convenience, instead of using these correlation factors for each meter reading, the specification limit was modified to reflect these correlation factors at each frequency value so that the meter readings can be compared directly to the modified specification limit. This modified specification limit is referred to as the "Corrected Meter Reading Limit" or simply the CMRL, which is the actual field strength present at the antenna. The quantity can be derived in the following manner:

$$\text{Corrected Meter Reading Limit (CMRL)} = \text{SAR} + \text{AF} + \text{CL} - \text{AG} - \text{DC}$$

Where, SAR = Spectrum Analyzer Reading

AF = Antenna Factor

CL = Cable Loss

AG = Amplifier Gain (if any)

DC = Distance Correction (if any)

Assume the following situation: A meter reading of 29.4 dBuV was obtained from a Class A computing device measured at 83 MHz. Assume an antenna factor of 9.2 dB, a cable loss of 1.4 dB and amplifier gain of 20.0 dB at 83 MHz. The final field strength would be determined as follows:

$$\text{CMRL} = 29.4 \text{ dBuV} + 9.2 \text{ dB} - 1.4 \text{ dB} - 20 \text{ dB/M} - 0.0 \text{ dB}$$

$$\text{CMRL} = 20.0 \text{ dBuV/M}$$

This result is well below the FCC and CSA Class A limit of 29.5 dbuV/m at 83 MHz.

For the manual mode of measurement, a table of corrected meter reading limit was used to permit immediate comparison of the meter reading to determine if the measure emission amplitude exceeded the specification limit at that specific frequency.

4 CONDUCTED EMISSION DATA

POWERWAVE TECHNOLOGIES

See following page(s).

Emissions Test Conditions: CONDUCTED EMISSIONS, FCC Part 2, Paragraphs 2.1046, 2.1051 and Part 24, Paragraph 24.238

The *CONDUCTED EMISSIONS* measurements were performed at the following test location :

☐ - Test not applicable

■ - SR-3, Shielded Room, 12' x 20' x 8', Metal Chamber

Test Equipment Used :

Signal Generator, Agilent, Model E4433B, Cal: 04/13/01
Circulator, Model, 1-3DF-2354, verified internally
Attenuator (variable), Arra, Model 2-8354-20D, verified internally
Spectrum Analyzer, Model HP8566B, P/N 720, Cal: 03/01
Power Meter, HPE4419B, Cal: 12/11/00
Power Sensor, HP8481A; Cal: 07/28/01
Directional Coupler, Narda, 3022, verified internally

Remarks: _____

POWERWAVE
DATE: 9/12/00

TEST: Conducted Spurious
NOTE: High Channel

SPEC.: FCC Part 2, Para. 2.1051; Part 22 Para. 22.917

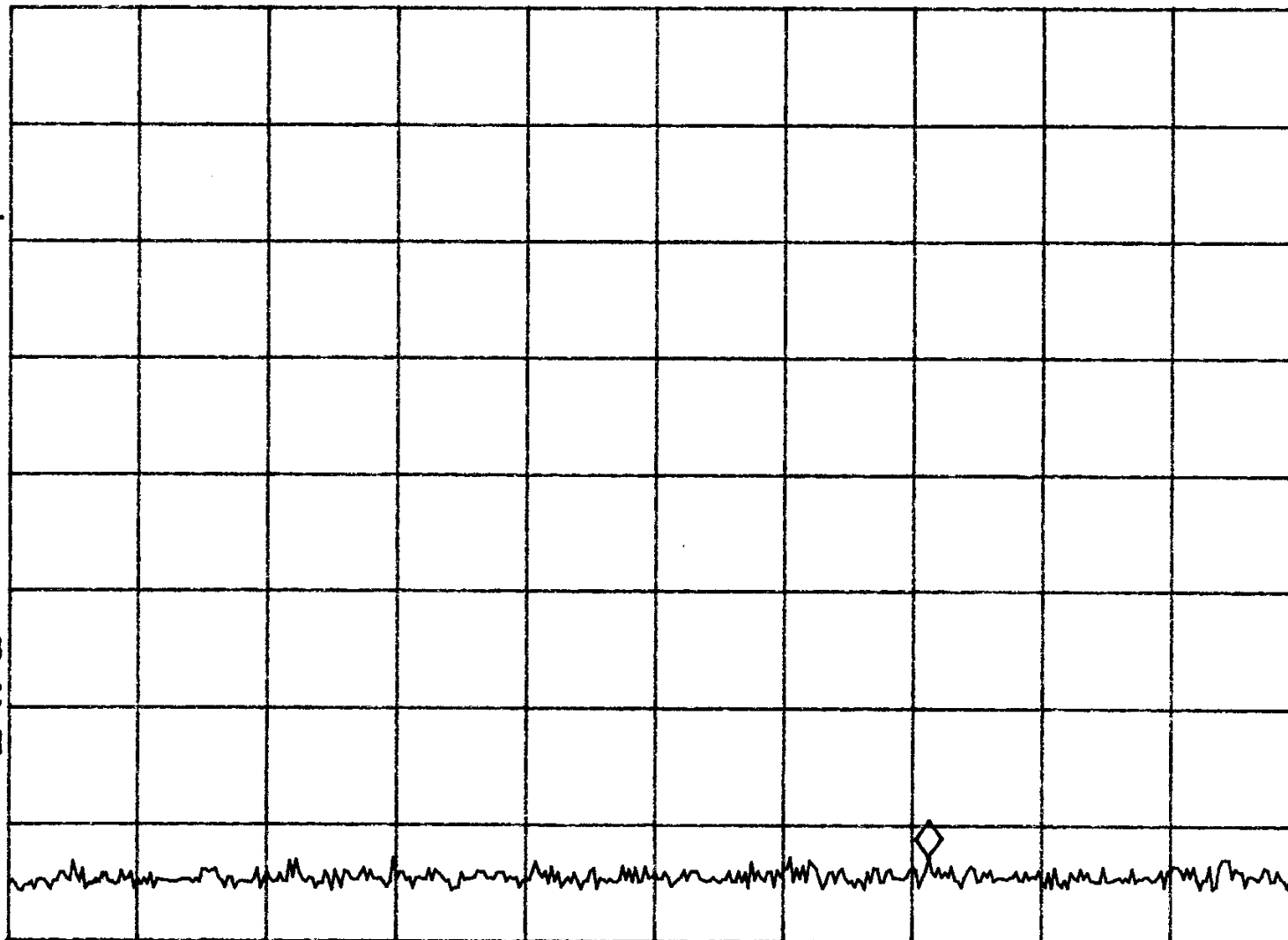
14: 47: 48 SEP 12, 2000
hp

MKR 364.9 MHz
-28.17 dBm

REF 44.5 dBm AT 10 dB

PEAK
LOG
10
dB/
OFFST
54.5
dB

VA SB
SC FC
CORR



START 30.0 MHz

#RES BW 30 kHz

#VBW 100 kHz

STOP 500.0 MHz

SWP 1.57 sec

15

POWERWAVE
DATE: 9/12/00

TEST: Conducted Spurious
NOTE: High Channel

SPEC.: FCC Part 2, Para. 2.1051; Part 22, Para. 22.917

14: 51: 11 SEP 12, 2000
hp

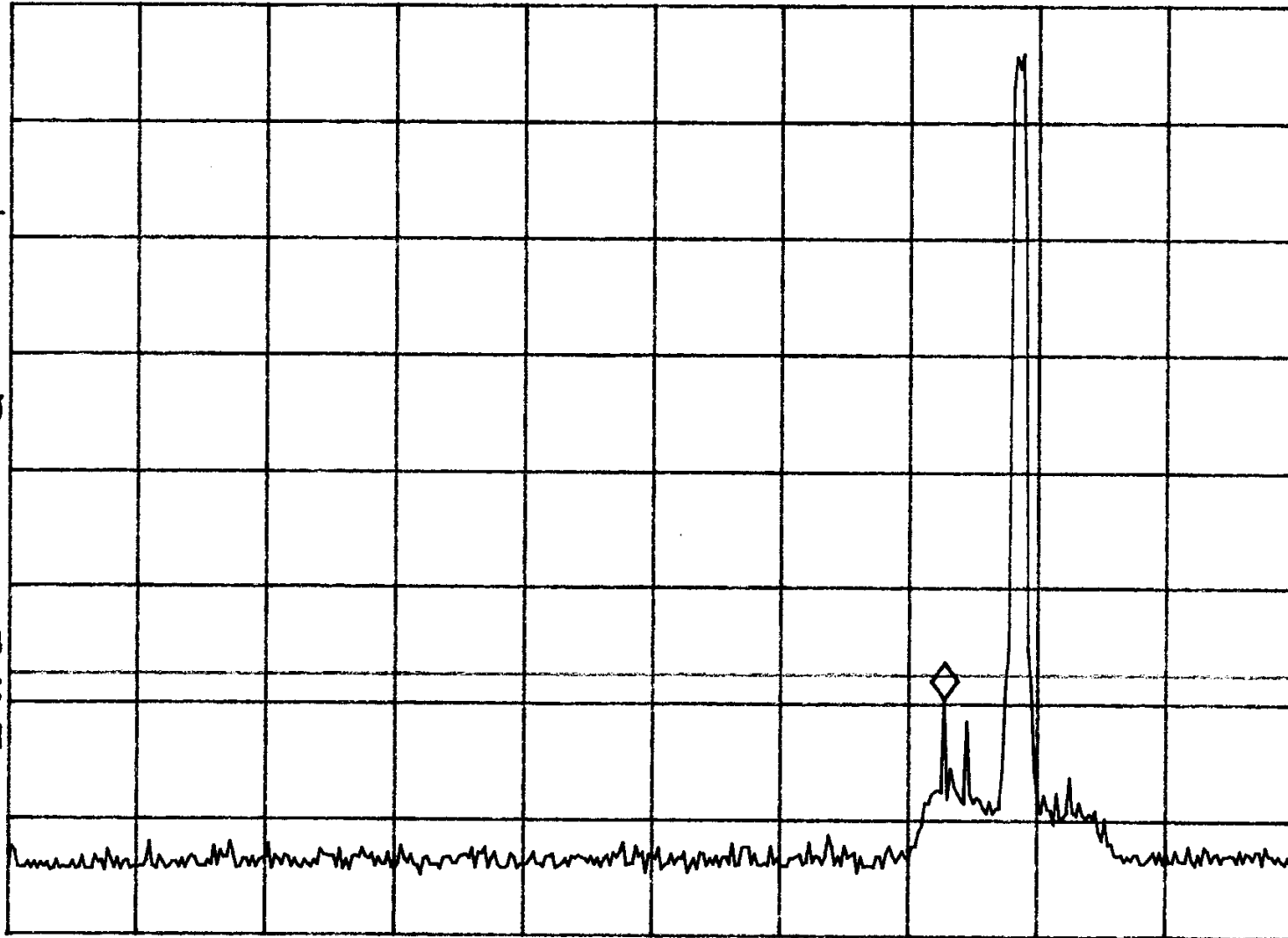
MKR 863.7 MHz
-15.15 dBm

REF 44.5 dBm

AT 10 dB

PEAK
LOG
10
dB/
OFFST
54.5
dB
DL
-13.0
dBm

VA SB
SC FC
CORR



START 500.0 MHz

#RES BW 30 KHz

#VBW 100 KHz

STOP 1.0000 GHz

SWP 1.67 sec

16

POWERWAVE
DATE: 9/12/00

TEST: Conducted Spurious
NOTE: High Channel

SPEC.: FCC Part 2, Para. 2.1051; Part 2~~2~~ Para. 2~~2~~917

14: 55: 06 SEP 12. 2000

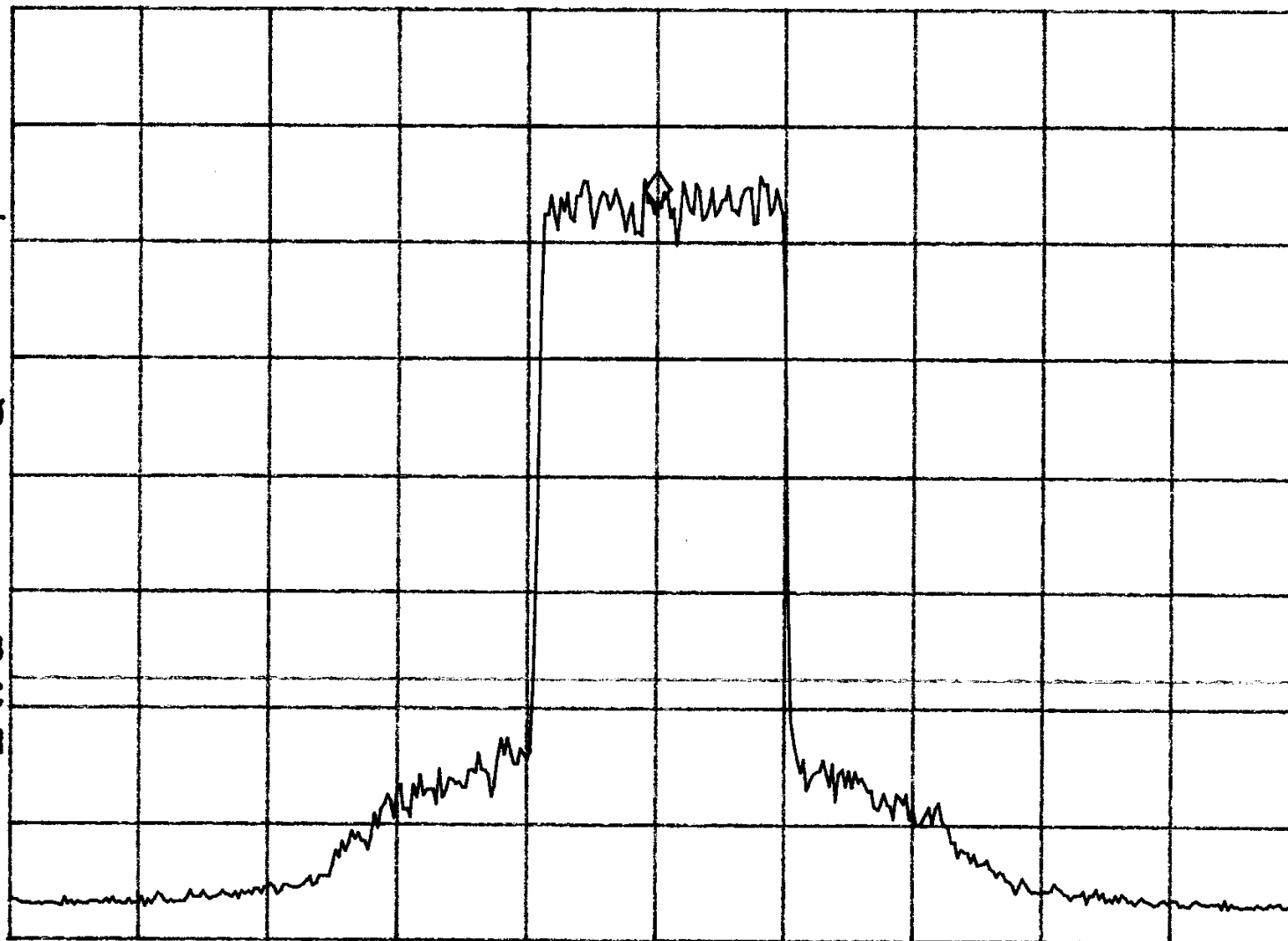
MKR 892.10 MHz

REF 44.5 dBm

AT 10 dB

27.47 dBm

SMPL
LOG
10
dB/
OFFST
54.5
dB
DL
-13.0
dBm
AVG
25
WA SB
SC FC
CORR



CENTER 892.10 MHz

#RES BW 30 kHz

#VBW 100 kHz

SPAN 20.00 MHz

SWP 66.7 msec

17

POWERWAVE
DATE: 9/12/00

TEST: Conducted Spurious
NOTE: High Channel

SPEC.: FCC Part 2, Para. 2.1051; Part 2~~2~~, Para. 2~~2~~.917

MKR 1.788 GHz
-21.50 dBm

hp REF 54.5 dBm ATTN 10 dB

10 dB/

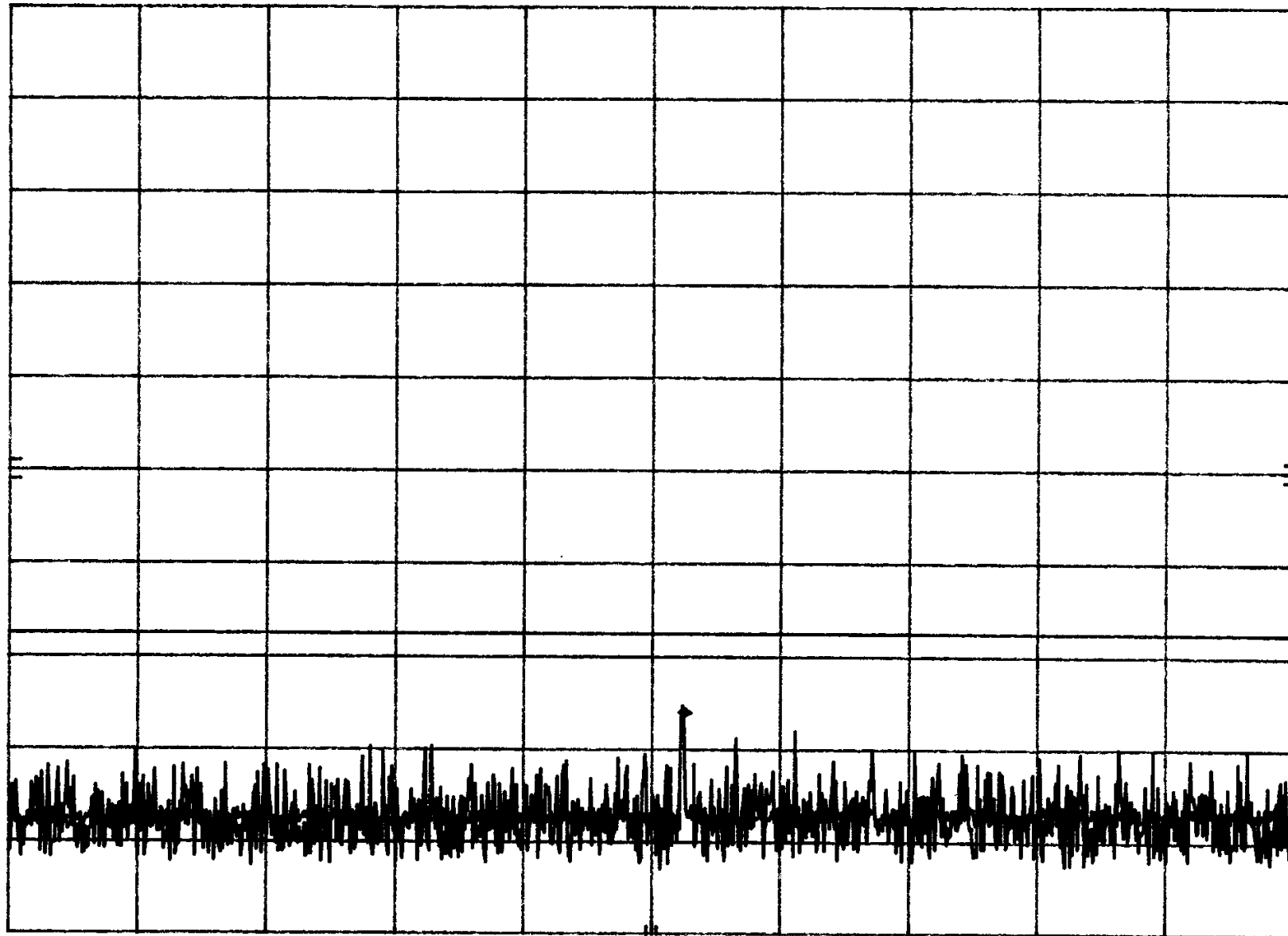
SAMPLE

OFFSET
54.5
dB

DL
-13.0
dBm

VID AVG
25

CORR'D



START 1.00 GHz

RES BW 100 kHz (1) VBW 100 kHz

STOP 2.50 GHz
SWP 1.13 sec 18

POWERWAVE
DATE: 9/12/00

TEST: Conducted Spurious
NOTE: High Channel

SPEC.: FCC Part 2, Para. 2.1051; Part 2~~2~~, Para. 2~~2~~917

MKR 6.200 GHz
-19.00 dBm

hp REF 54.5 dBm ATTEN 10 dB

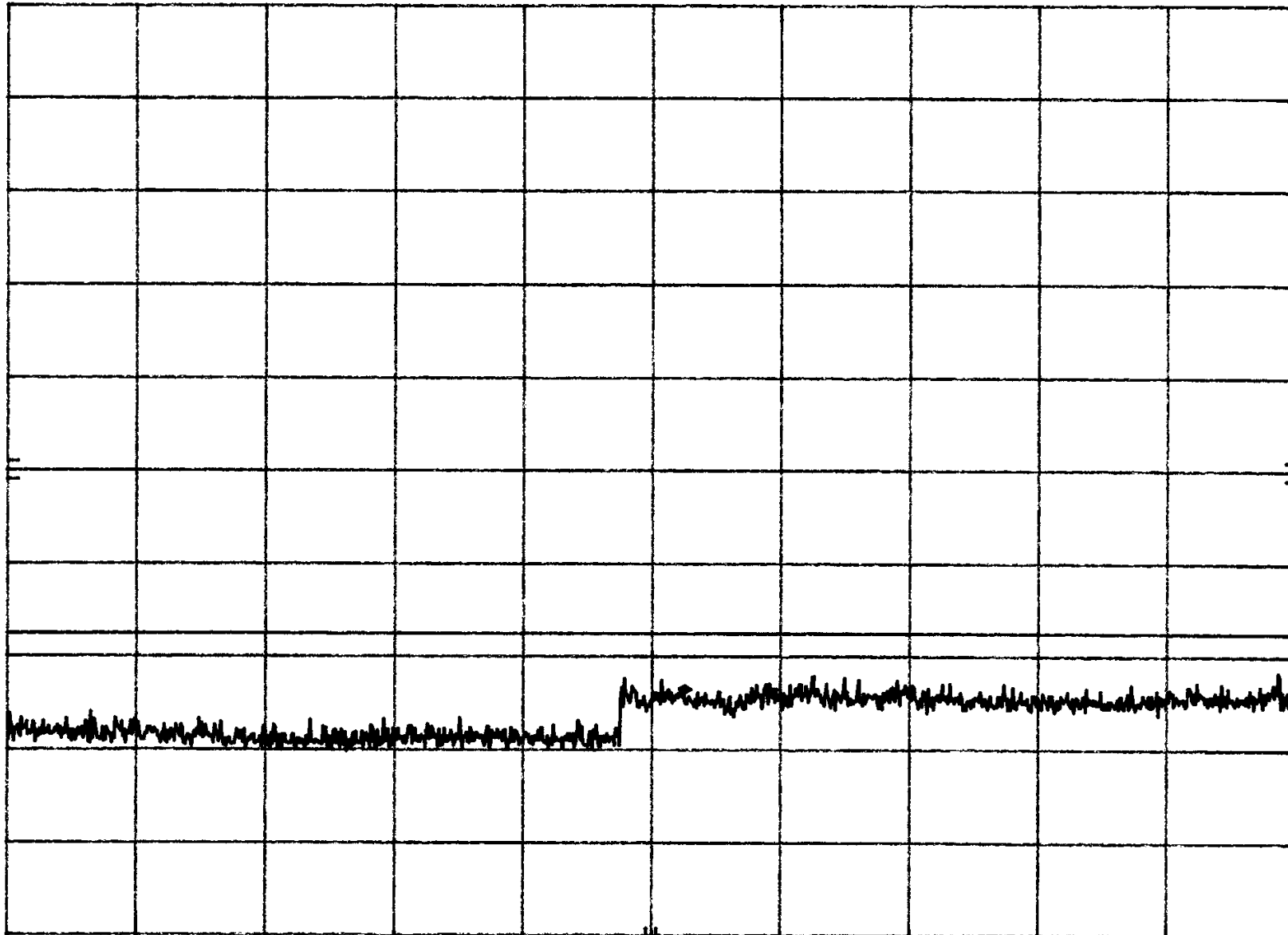
10 dB/

POS PK

OFFSET
54.5
dB

DL
-13.0
dBm

CORR'D



START 2.00 GHz

RES BW 100 kHz (1) VBW 100 kHz

STOP 10.00 GHz

SWP 6.00 sec 19

POWERWAVE
DATE: 9/12/00

TEST: Conducted Spurious
NOTE: Low Channel

SPEC.: FCC Part 2, Para. 2.1051; Part 2~~2~~ Para. 2~~2~~917

14:04:33 SEP 12, 2000

MKR 474.2 MHz

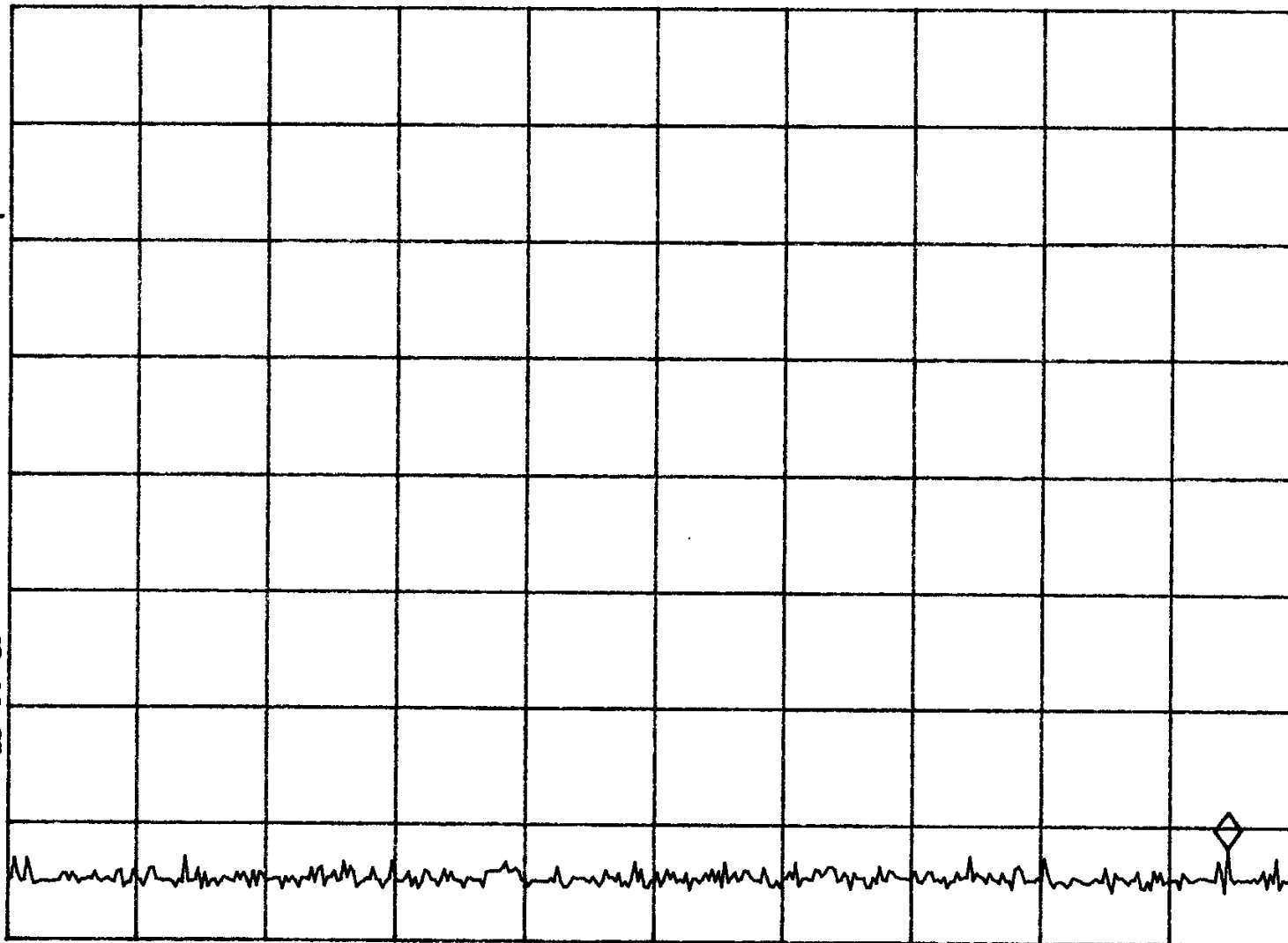
REF 44.7 dBm

AT 10 dB

-27.09 dBm

PEAK
LOG
10
dB/
OFFST
54.7
dB

VA SB
SC FC
CORR



START 30.0 MHz

#RES BW 30 kHz

STOP 500.0 MHz

#VBW 100 kHz

SWP 1.57 sec 20

POWERWAVE
DATE: 9/12/00

TEST: Conducted Spurious
NOTE: Low Channel

SPEC.: FCC Part 2, Para. 2.1051; Part 22, Para. 22.917

14:09:14 SEP 12, 2000
hp

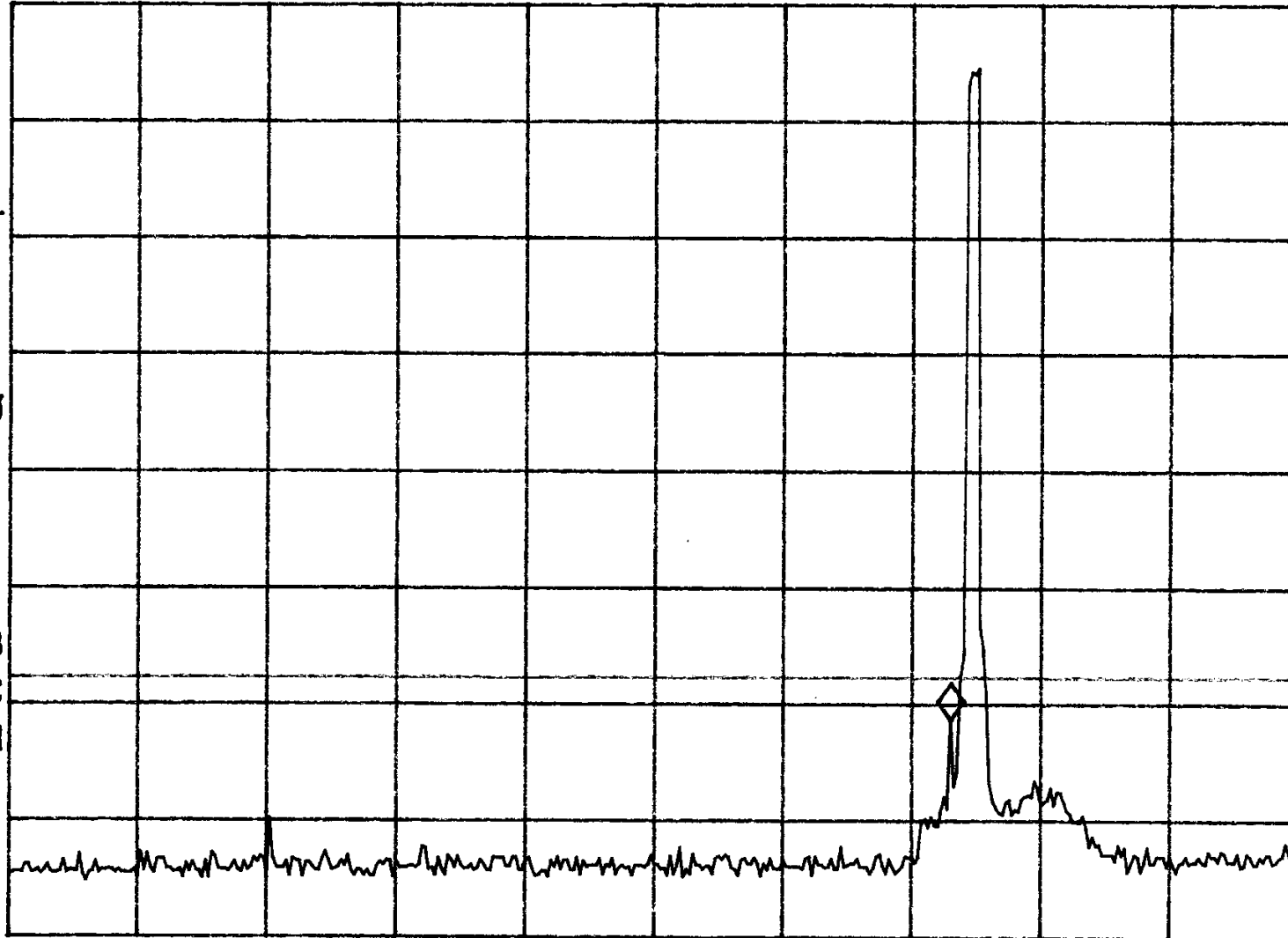
REF 44.7 dBm

AT 10 dB

MKR 863.2 MHz
-16.65 dBm

PEAK
LOG
10
dB/
OFFST
54.7
dB
DL
-13.0
dBm

VA SB
SC FC
CORR



START 500.0 MHz

#RES BW 30 kHz

#VBW 100 kHz

STOP 997.5 MHz

SWP 1.66 sec 21

POWERWAVE
DATE: 9/12/00

TEST: Conducted Spurious
NOTE: Low Channel

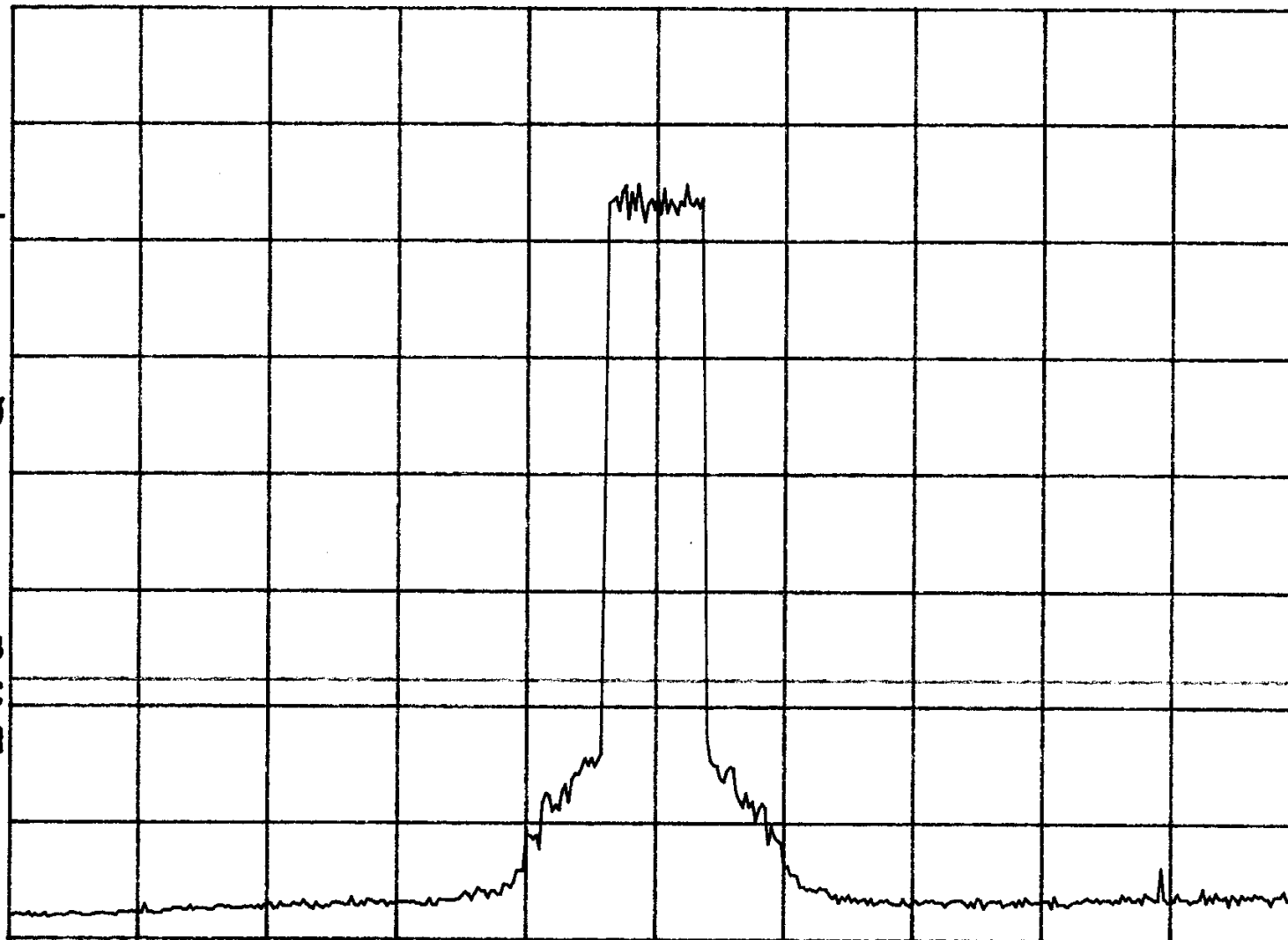
SPEC.: FCC Part 2, Para. 2.1051; Part 22, Para. 22.917

14: 15: 06 SEP 12. 2000

REF 44.7 dBm

AT 10 dB

SMPL
LOG
10
dB/
OFFST
54.7
dB
DL
-13.0
dBm
AVG
25
WA SB
SC FC
CORR



CENTER 871.24 MHz

#RES BW 30 kHz

SPAN 50.00 MHz

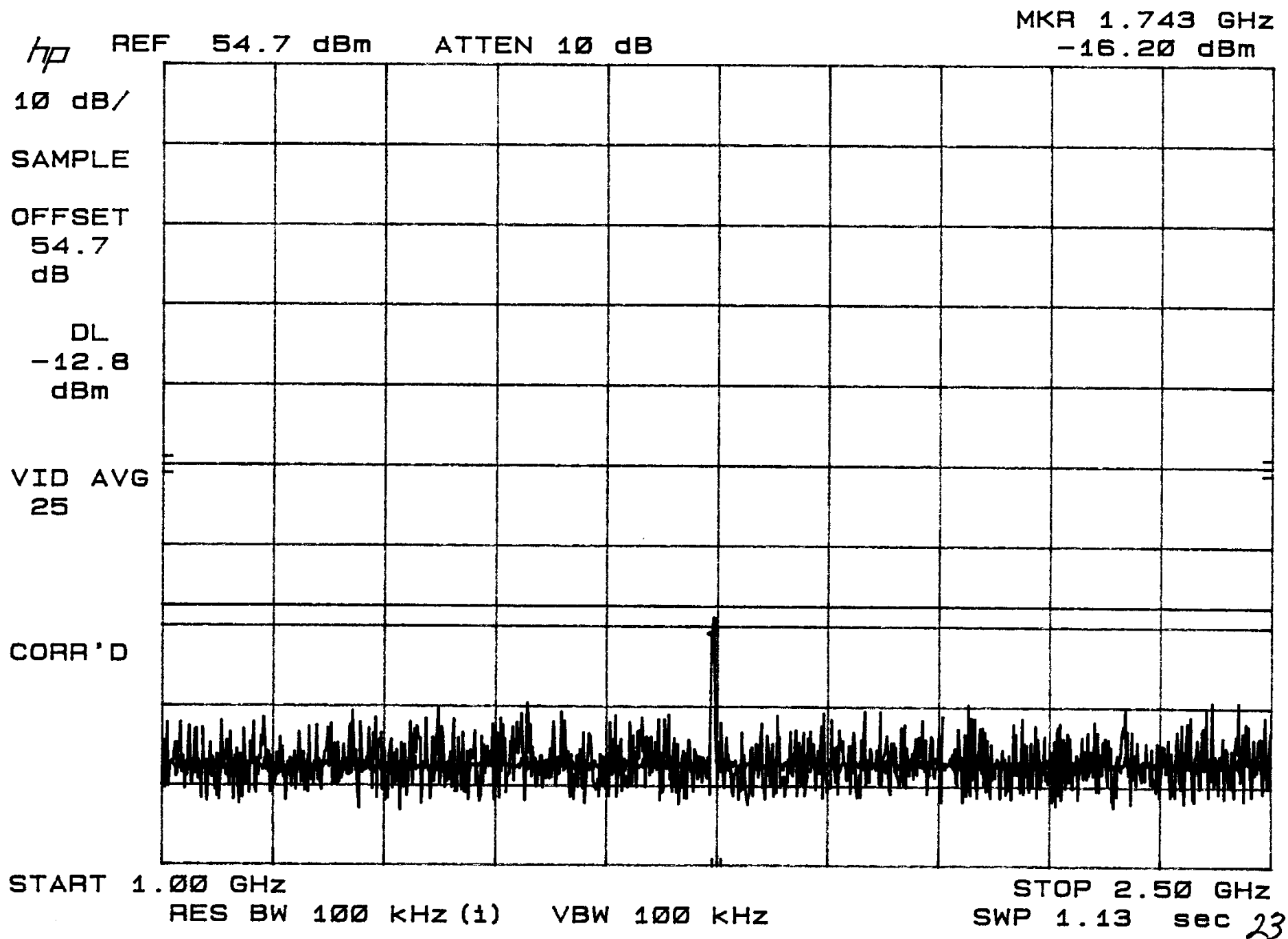
#VBW 100 kHz

SWP 167 msec 22

POWERWAVE
DATE: 9/12/00

TEST: Conducted Spurious
NOTE: Low Channel

SPEC.: FCC Part 2, Para. 2.1051; Part 2~~2~~, Para. 2~~2~~917

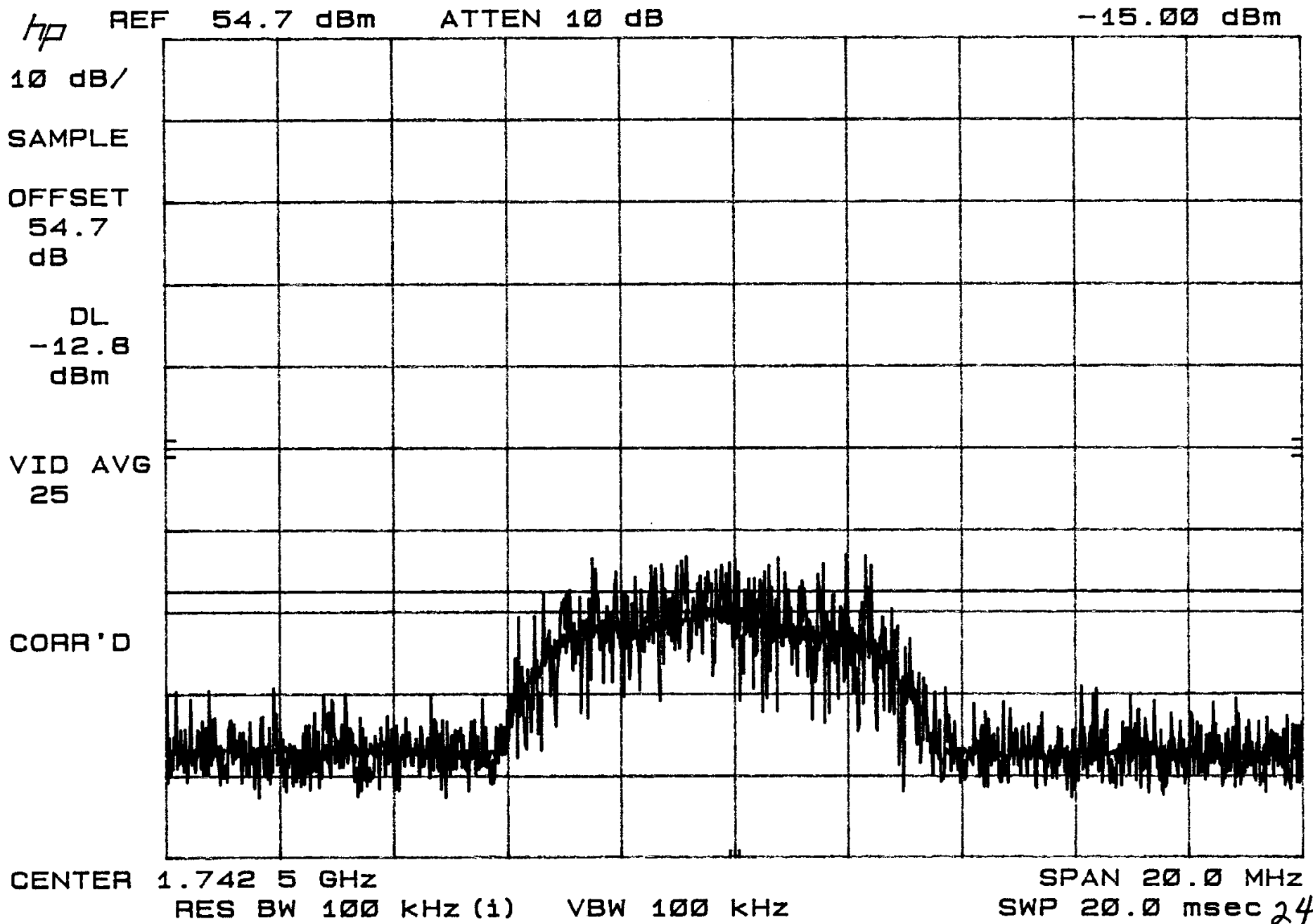


POWERWAVE
DATE: 9/12/00

TEST: Conducted Spurious
NOTE: Low Channel

SPEC.: FCC Part 2, Para. 2.1051; Part 2~~2~~, Para. 2~~2~~917

MKR 1.742 56 GHz
-15.00 dBm



POWERWAVE
DATE: 9/12/00

TEST: Conducted Spurious
NOTE: Low Channel

SPEC.: FCC Part 2, Para. 2.1051; Part 2A, Para. 22.917

MKR 2.613 GHz
-18.20 dBm

hp REF 54.7 dBm ATTEN 10 dB

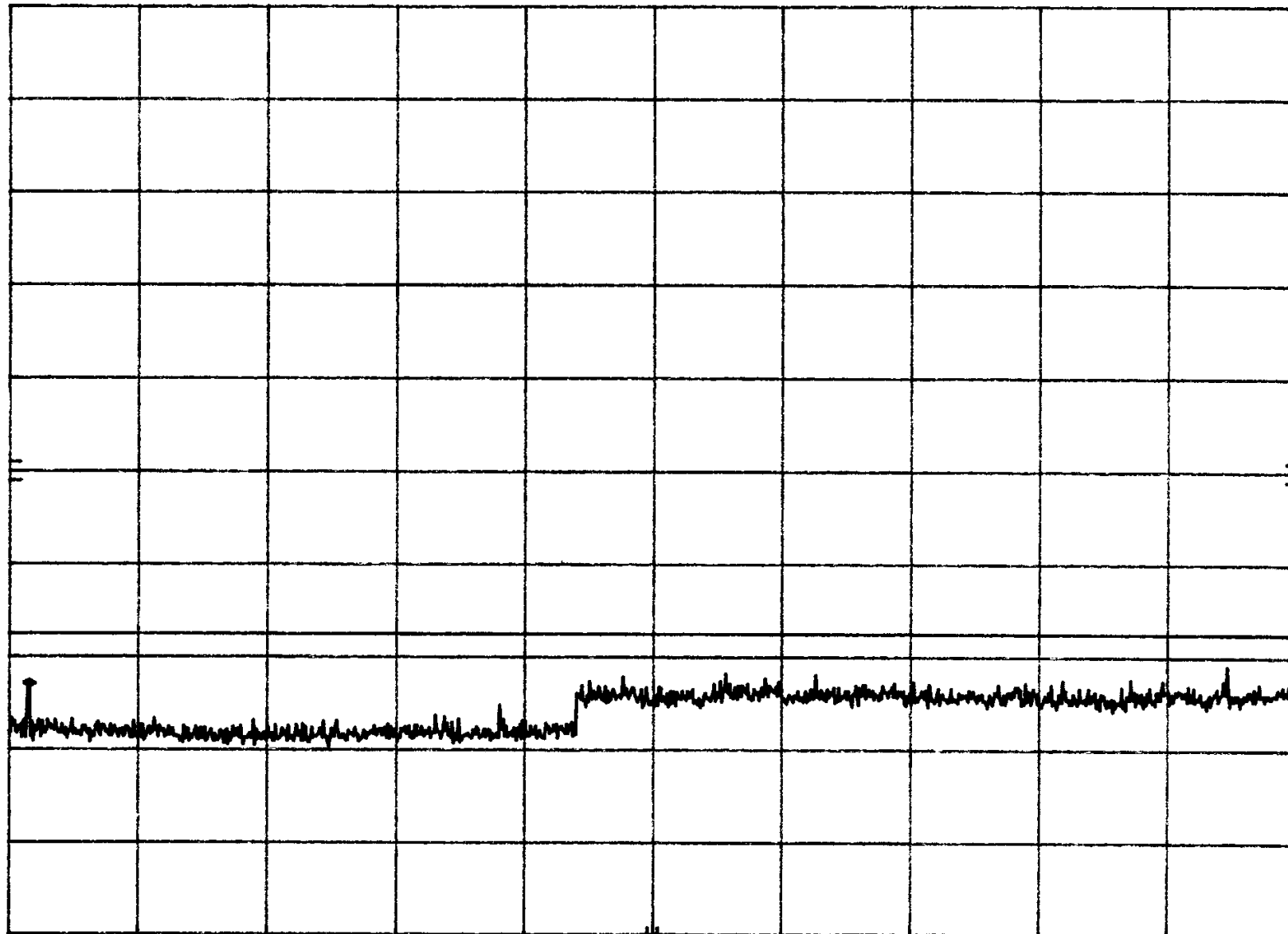
10 dB/

POS PK

OFFSET
54.7
dB

DL
-12.8
dBm

CORR'D



START 2.50 GHz

RES BW 100 kHz (1) VBW 100 kHz

STOP 10.00 GHz
SWP 5.63 sec 25

POWERWAVE
DATE: 9/12/00

TEST: Conducted Spurious
NOTE: Mid Channel

SPEC.: FCC Part 2, Para. 2.1051; Part 2~~1~~, Para. 2~~1~~917

13: 16: 58 SEP 12, 2000
~~10~~

REF 44.5 dBm

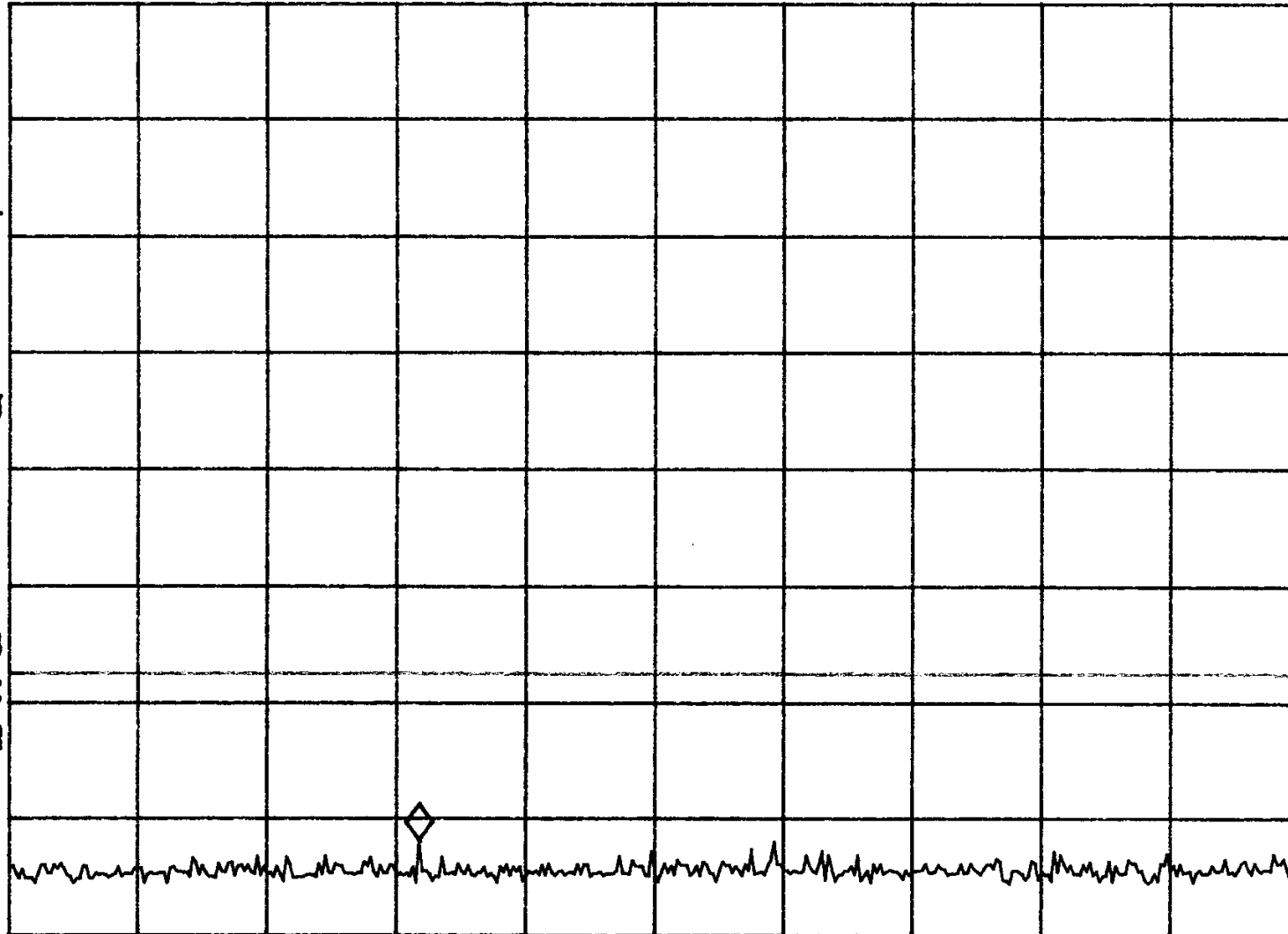
AT 10 dB

MKR 179.2 MHz

-27.37 dBm

PEAK
LOG
10
dB/
OFFST
54.5
dB
DL
-13.0
dBm

VA SB
SC FC
CORR



START 30.0 MHz

#RES BW 30 kHz

STOP 500.0 MHz

#VBW 100 kHz

SWP 1.57 sec

26

POWERWAVE
DATE: 9/12/00

TEST: Conducted Spurious
NOTE: Mid Channel

SPEC.: FCC Part 2, Para. 2.1051; Part 22, Para. 22.917

13: 20: 12 SEP 12, 2000
hp

REF 44.5 dBm

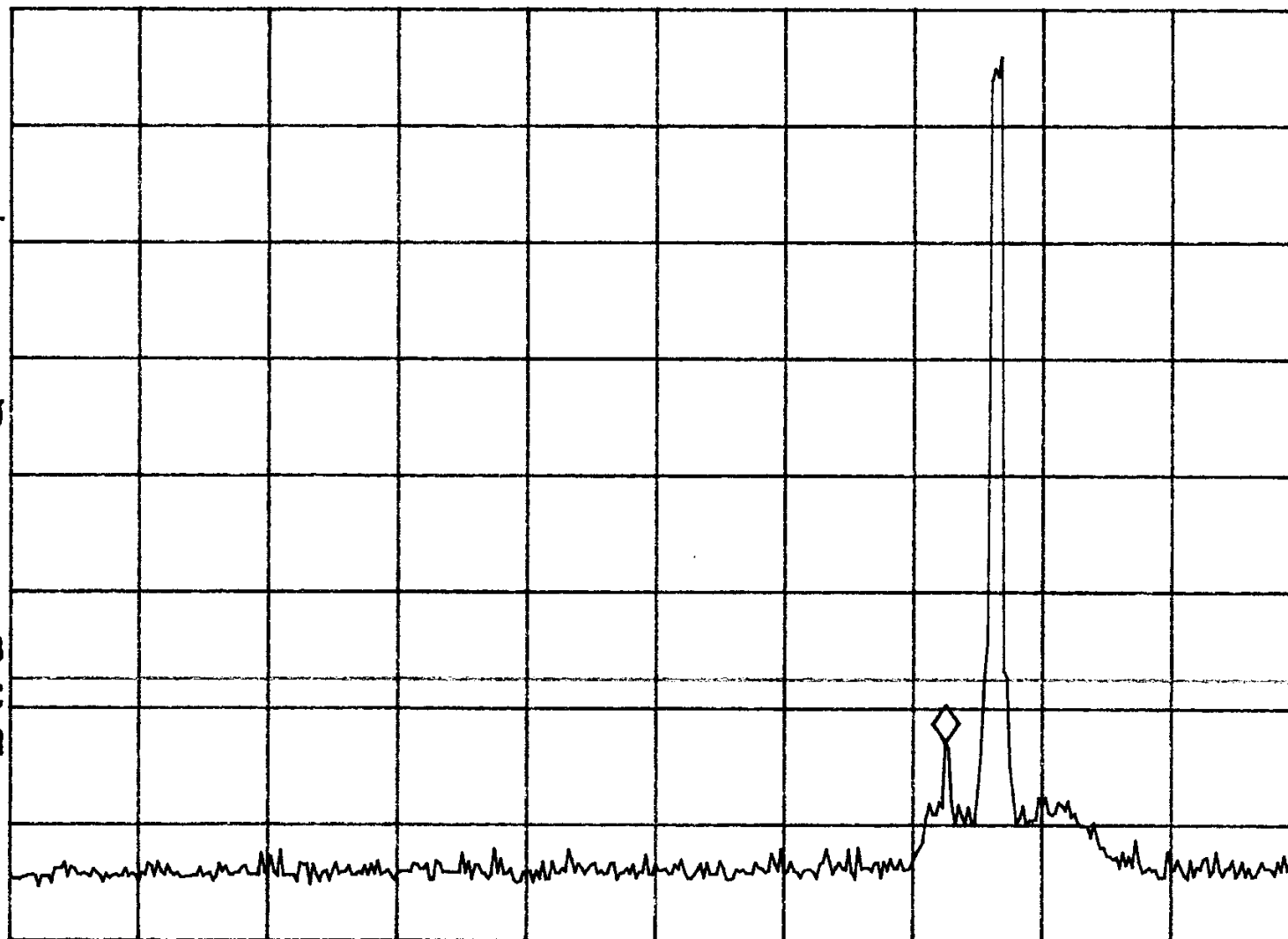
AT 10 dB

MKR 862.5 MHz

-18.37 dBm

PEAK
LOG
10
dB/
OFFST
54.5
dB
DL
-13.0
dBm

VA SB
SC FC
CORR



START 500.0 MHz

#RES BW 30 kHz

STOP 1.0000 GHz

#VBW 100 kHz

SWP 1.67 sec 27

POWERWAVE
DATE: 9/12/00

TEST: Conducted Spurious
NOTE: Mid Channel

SPEC.: FCC Part 2, Para. 2.1051; Part 2~~2~~ Para. 2~~2~~917

13: 23: 31 SEP 12, 2000
~~HP~~

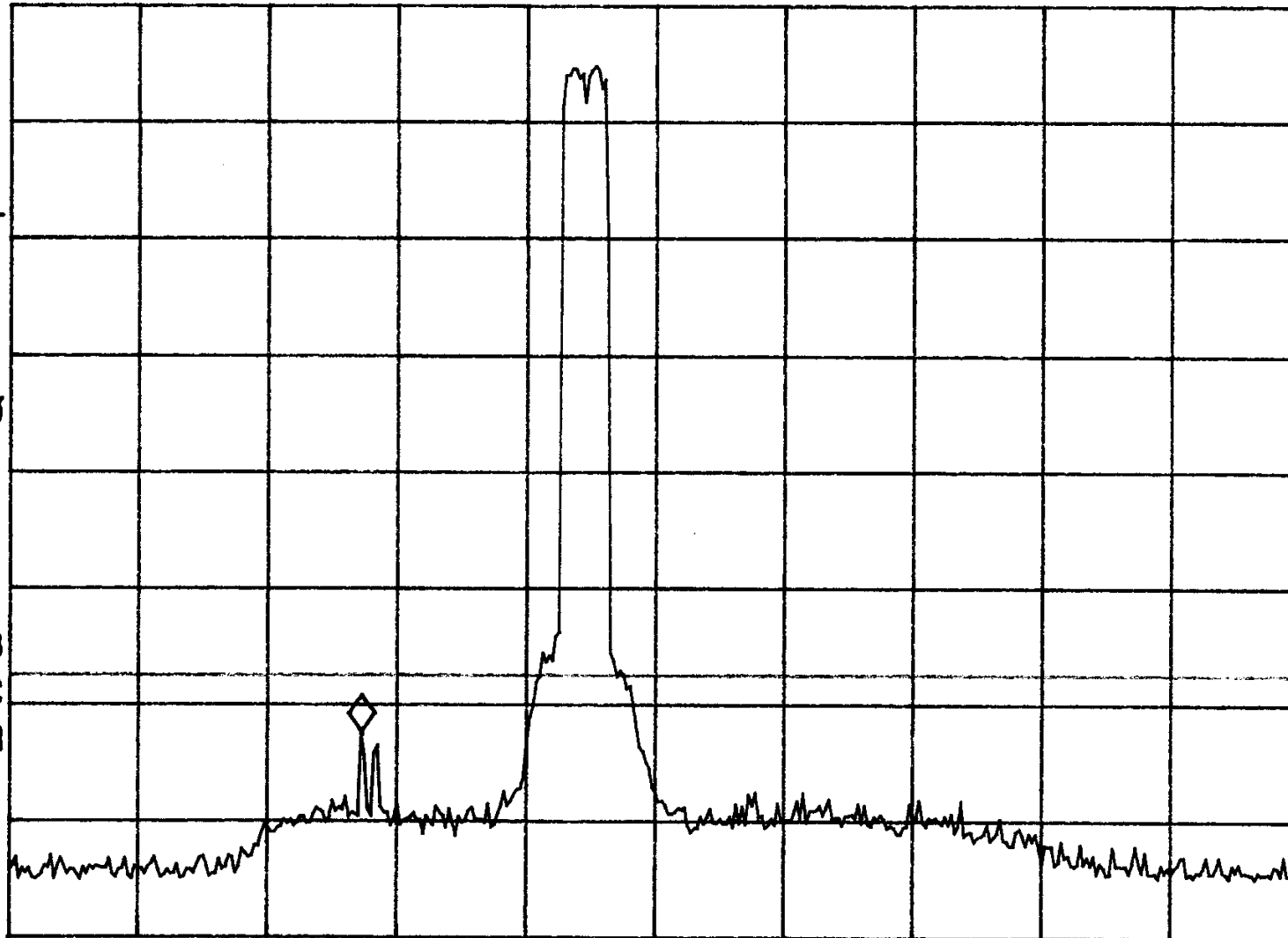
REF 44.5 dBm

AT 10 dB

MKR 861.8 MHz
-17.88 dBm

PEAK
LOG
10
dB/
OFFST
54.5
dB
DL
-13.0
dBm

VA SB
SC FC
CORR



START 830.5 MHz

#RES BW 30 kHz

STOP 945.5 MHz

#VBW 100 kHz

SWP 383 msec 28

POWERWAVE
DATE: 9/12/00

TEST: Conducted Spurious
NOTE: Mid Channel

SPEC.: FCC Part 2, Para. 2.1051; Part 2~~2~~, Para. 2~~2~~.917

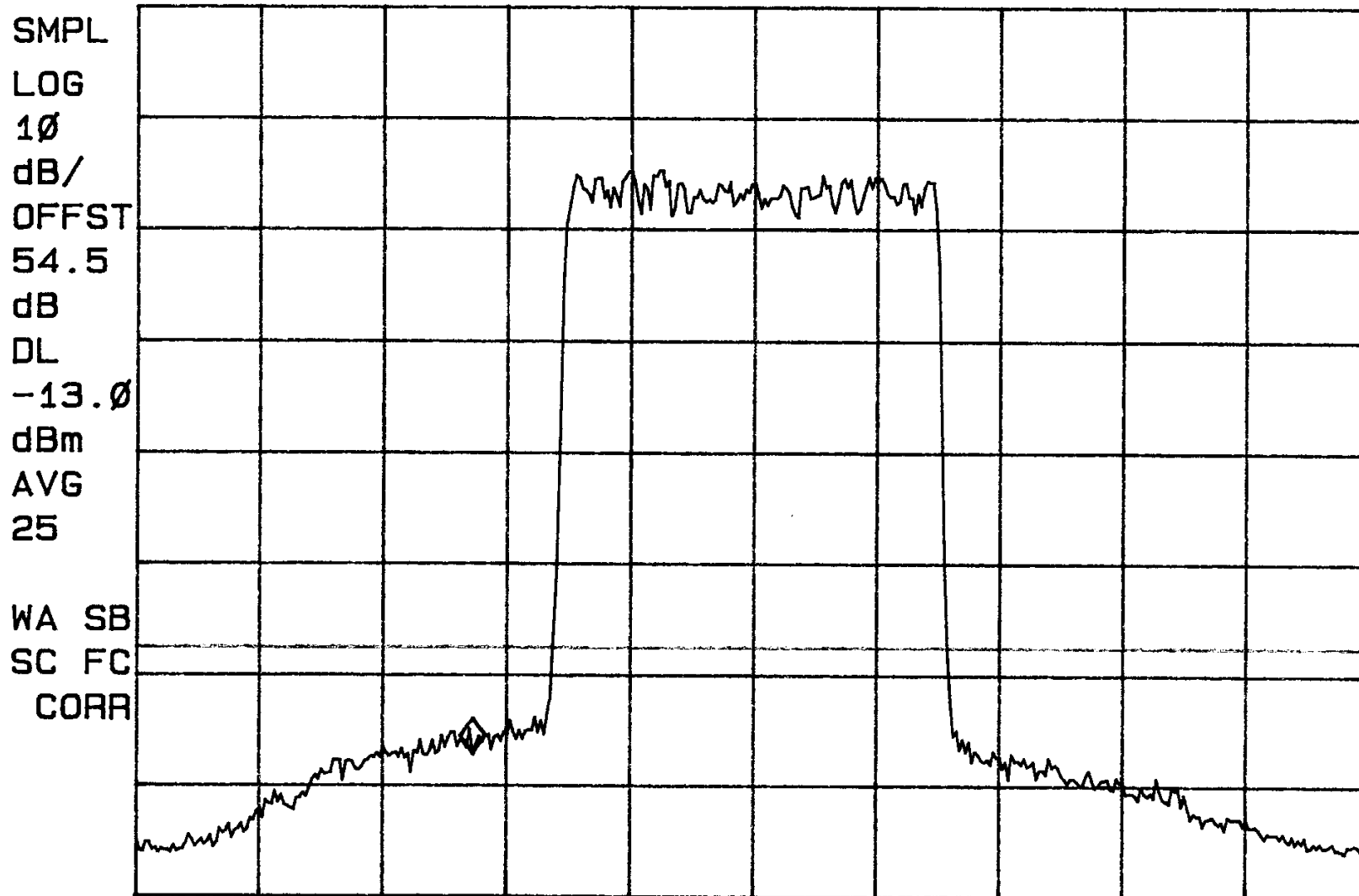
13: 26: 30 SEP 12, 2000
hp

REF 44.5 dBm

AT 10 dB

MKR 878.74 MHz

-22.58 dBm



START 875.36 MHz

#RES BW 30 KHz

STOP 887.78 MHz

#VBW 100 KHz

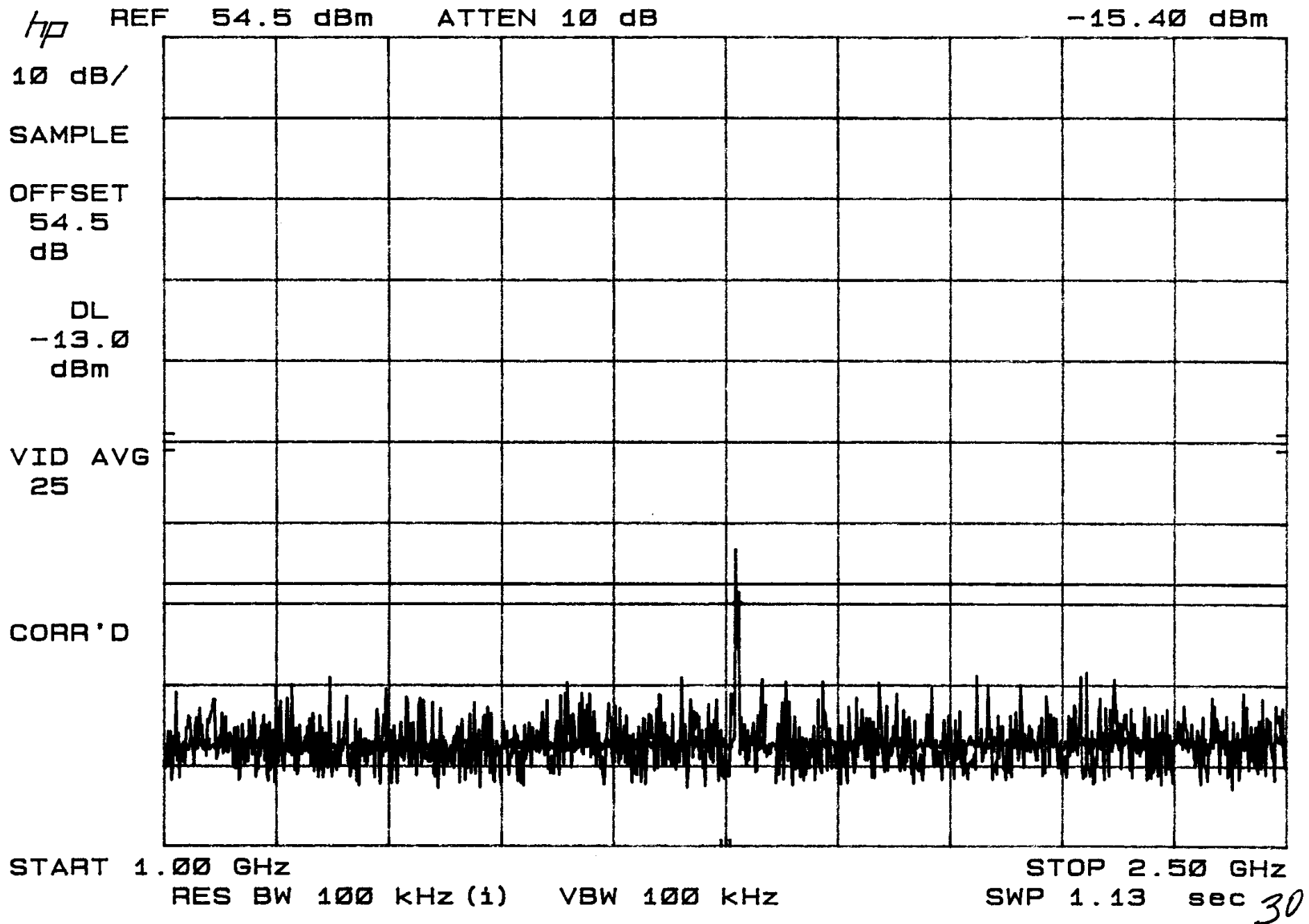
SWP 41.4 msec 29

POWERWAVE
DATE: 9/12/00

TEST: Conducted Spurious
NOTE: Mid Channel

SPEC.: FCC Part 2, Para. 2.1051; Part 2~~2~~, Para. 2~~2~~917

MKR 1.765 GHz
-15.40 dBm



POWERWAVE
DATE: 9/12/00

TEST: Conducted Spurious
NOTE: Mid Channel

SPEC.: FCC Part 2, Para. 2.1051; Part 22, Para. 22.917

MKR 1.763 07 GHz
-15.10 dBm

hp REF 54.5 dBm ATTEN 10 dB

10 dB/

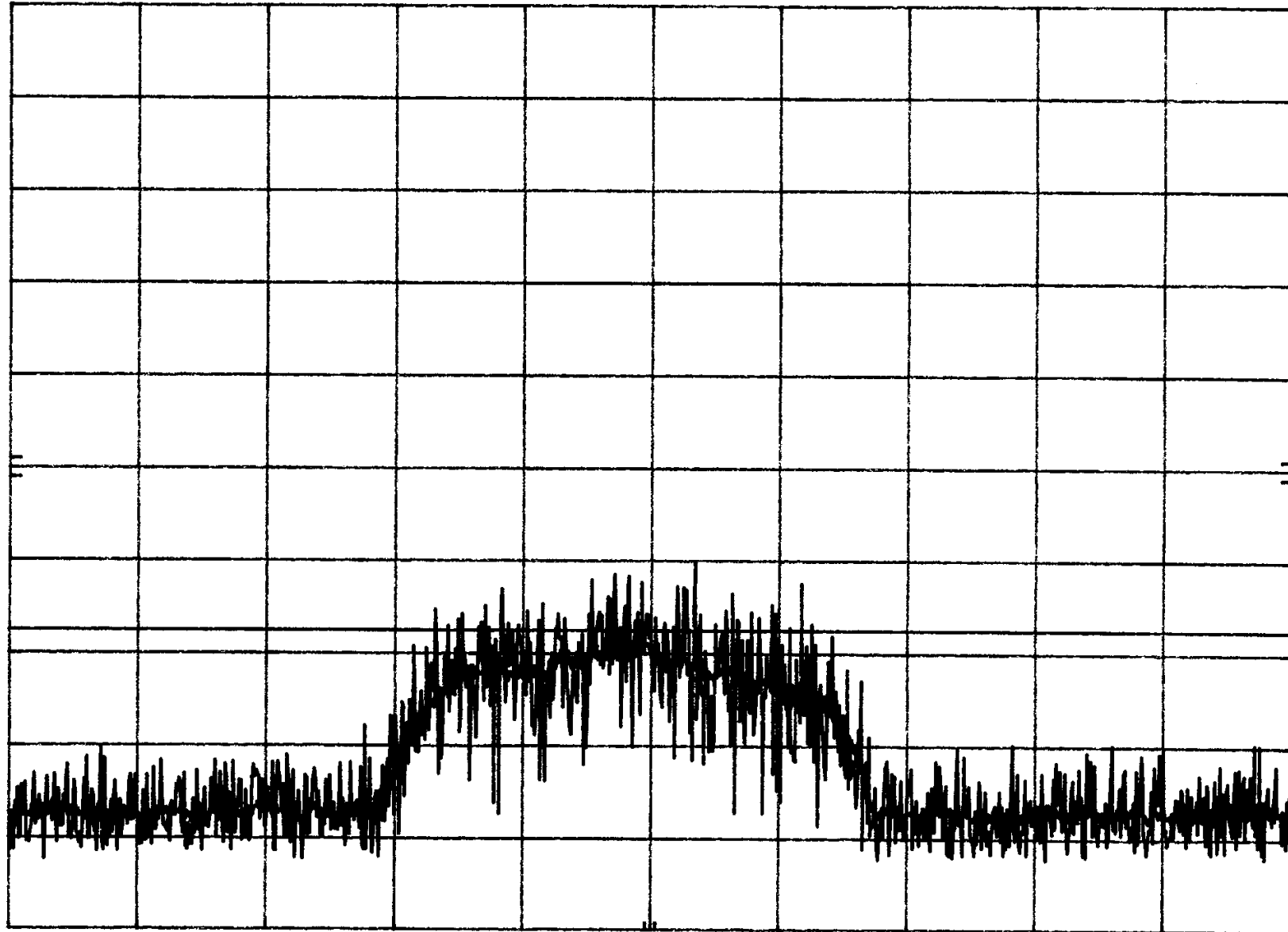
SAMPLE

OFFSET
54.5
dB

DL
-13.0
dBm

VID AVG
25

CORR'D



CENTER 1.763 4 GHz

RES BW 100 kHz (1) VBW 100 kHz

SPAN 20.0 MHz
SWP 20.0 msec

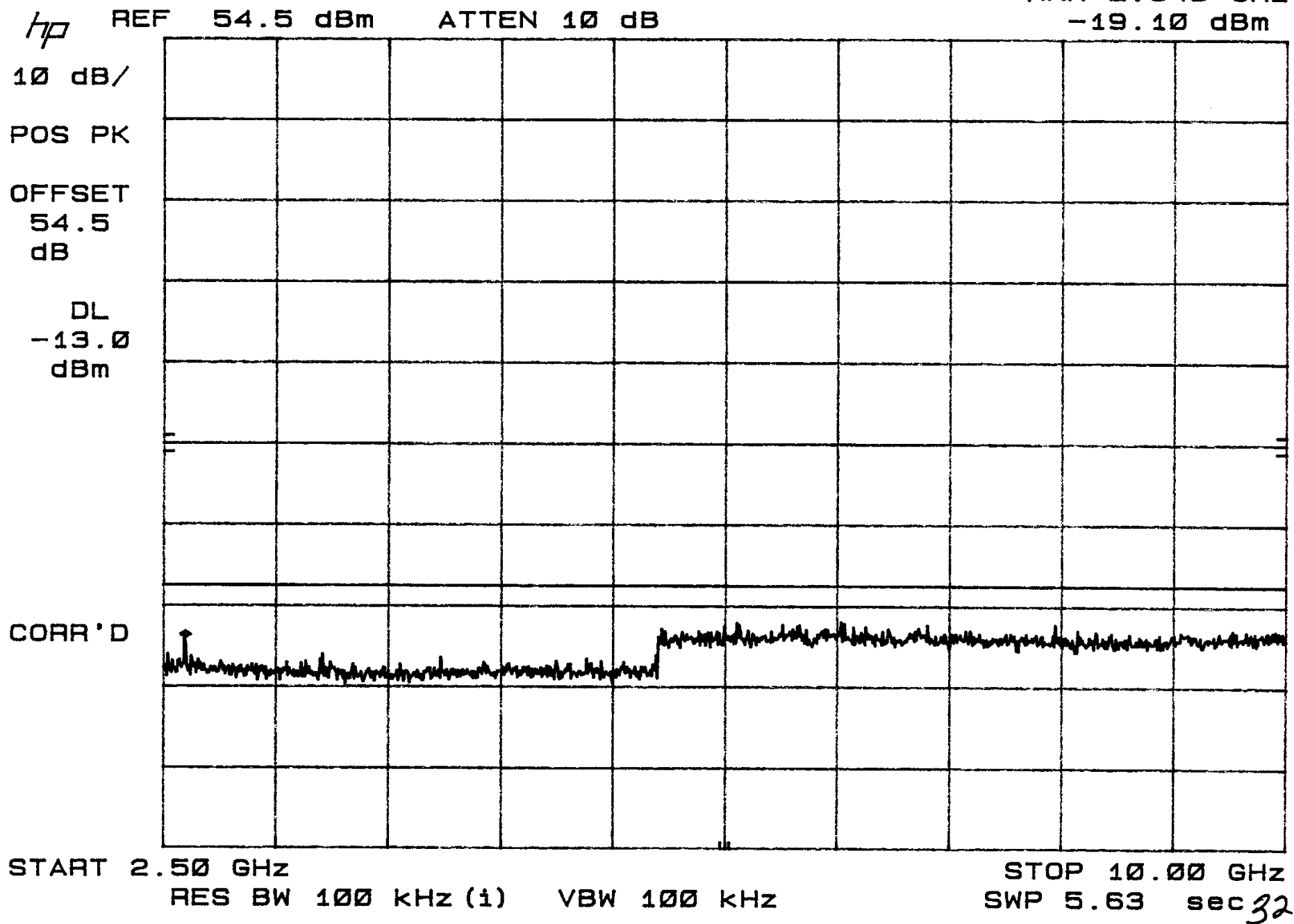
31

POWERWAVE
DATE: 9/12/00

TEST: Conducted Spurious
NOTE: Mid Channel

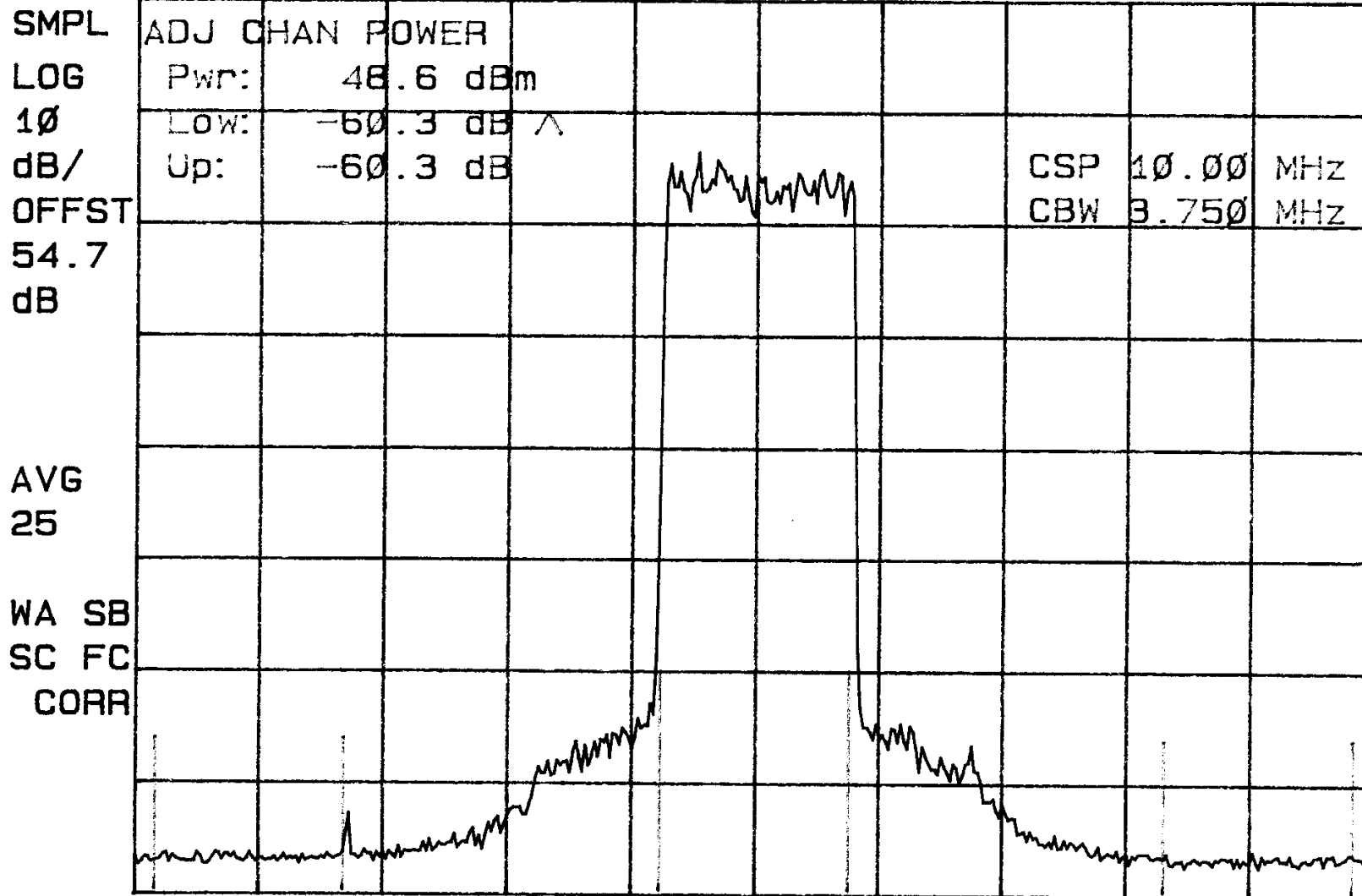
SPEC.: FCC Part 2, Para. 2.1051; Part 2~~2~~, Para. 2~~2~~.917

MKR 2.643 GHz
-19.10 dBm



13: 55: 27 SEP 12, 2000
hp

REF 44.7 dBm AT 10 dB



CENTER 871.10 MHz

#RES BW 30 kHz

#VBW 300 kHz

SPAN 24.54 MHz

SWP 81.8 msec

33

POWERWAVE
DATE: 9/12/00

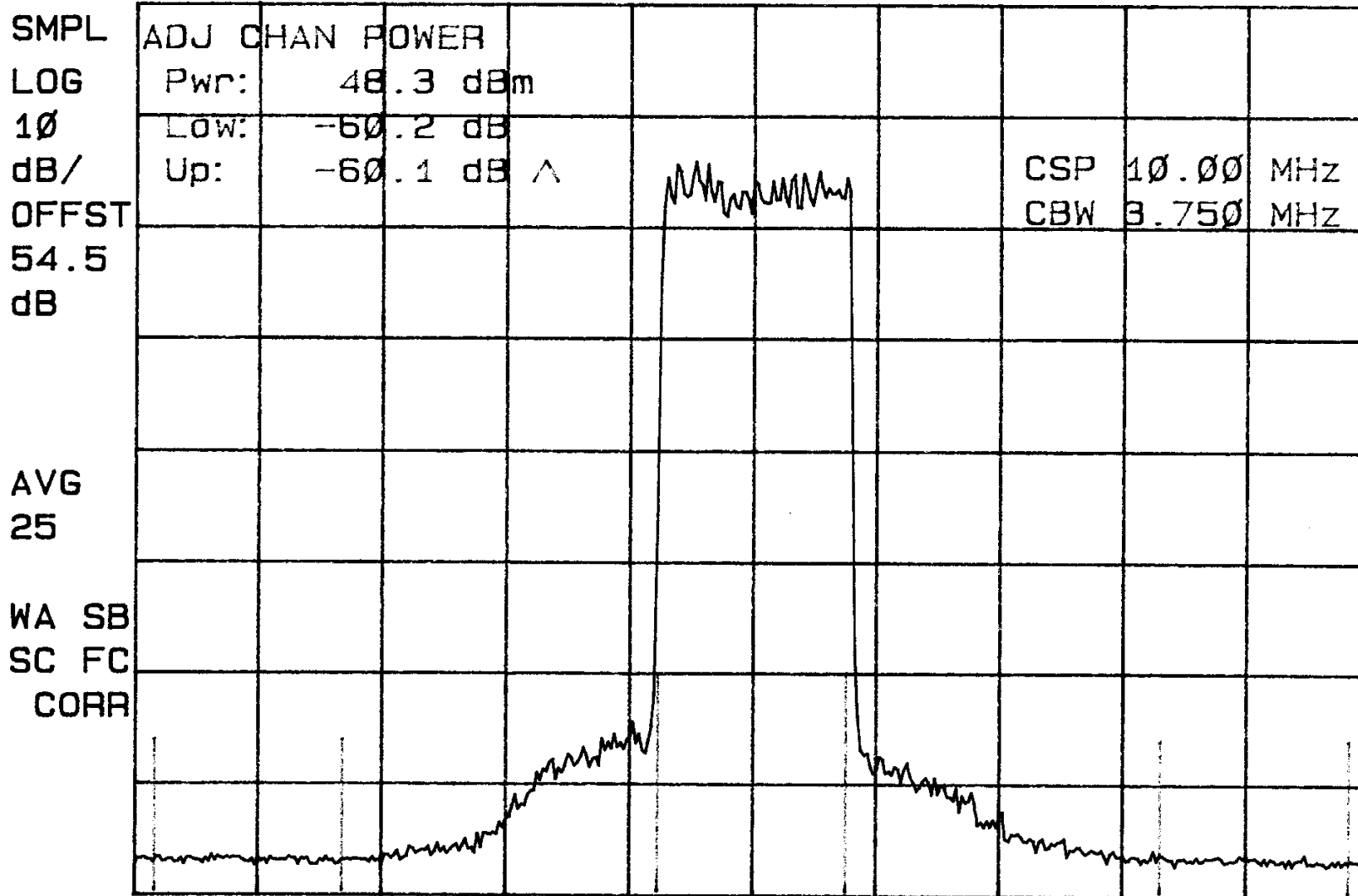
TEST: Adjacent Channel Power
NOTE: Mid Channel

SPEC.: FCC Part 2, Para. 2.1046; Part 2.2, Para. 2.2.917

13: 11: 45 SEP 12, 2000
hp

REF 44.5 dBm

AT 10 dB



CENTER 881.50 MHz

#RES BW 30 kHz

SPAN 24.54 MHz

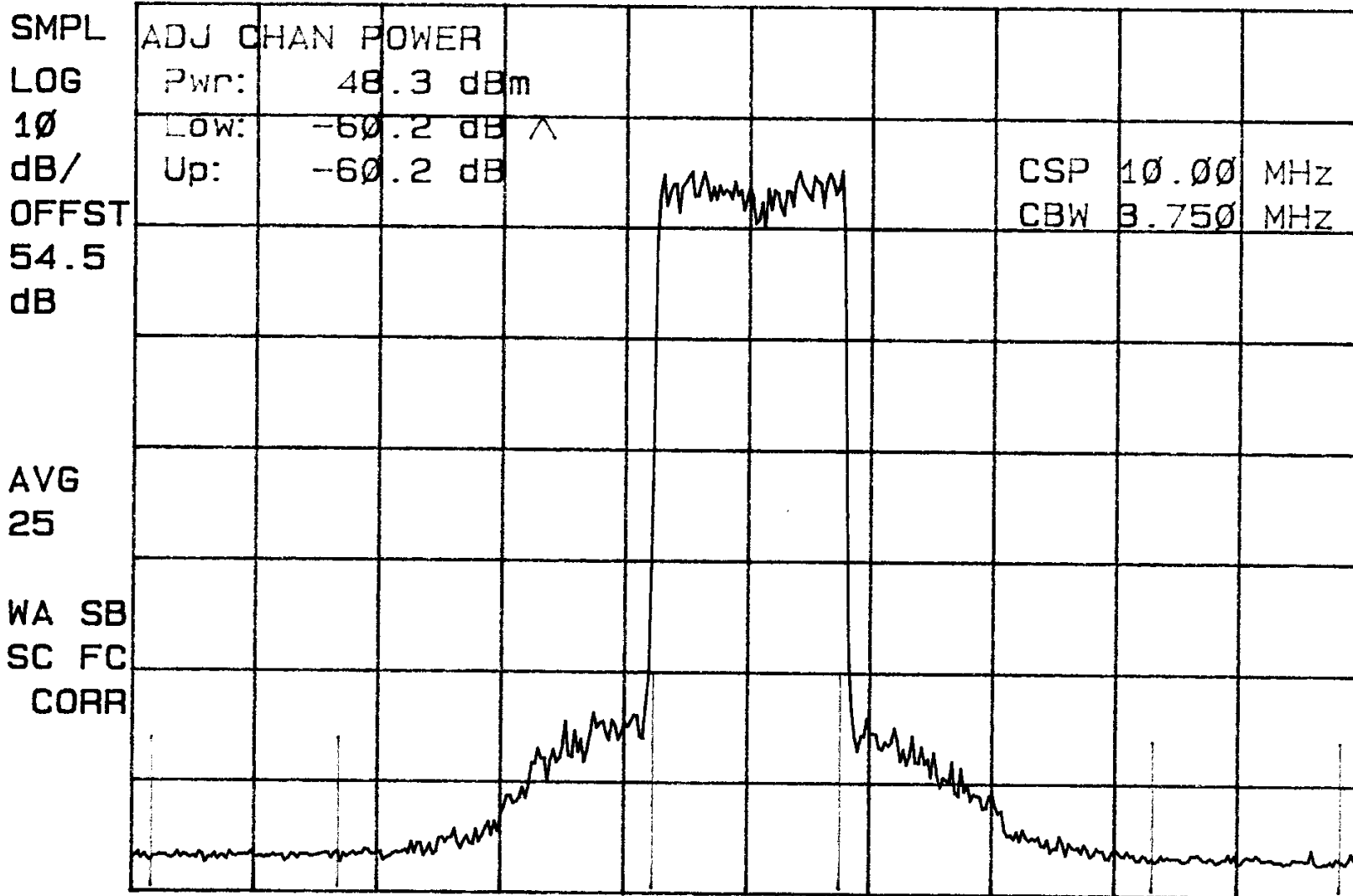
#VBW 300 kHz

SWP 81.8 msec *34*

14: 37: 27 SEP 12, 2000
hp

REF 44.5 dBm

AT 10 dB



CENTER 892.12 MHz

#RES BW 30 kHz

SPAN 24.54 MHz

#VBW 300 kHz

SWP 81.8 msec *35*

POWERWAVE
DATE: 9/12/00

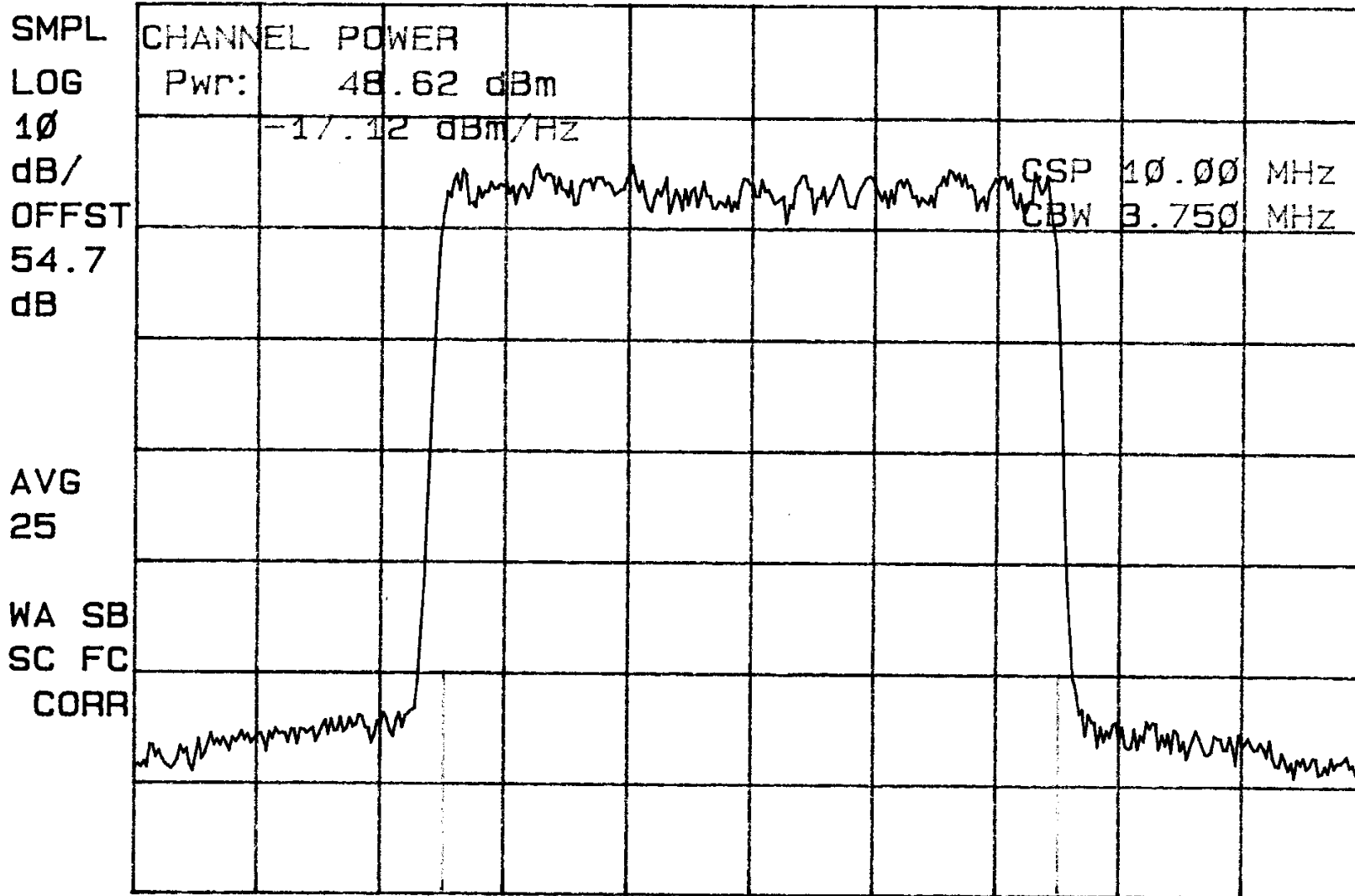
TEST: Adjacent Channel Power
NOTE: Low Channel

SPEC.: FCC Part 2, Para. 2.1046; Part 2.1, Para. 22.917

13: 52: 29 SEP 12. 2000
hp

REF 44.7 dBm

AT 10 dB



CENTER 871.100 MHz

#RES BW 30 KHz

SPAN 7.500 MHz

#VBW 300 KHz

SWP 25.0 msec

36

POWERWAVE
DATE: 9/12/00

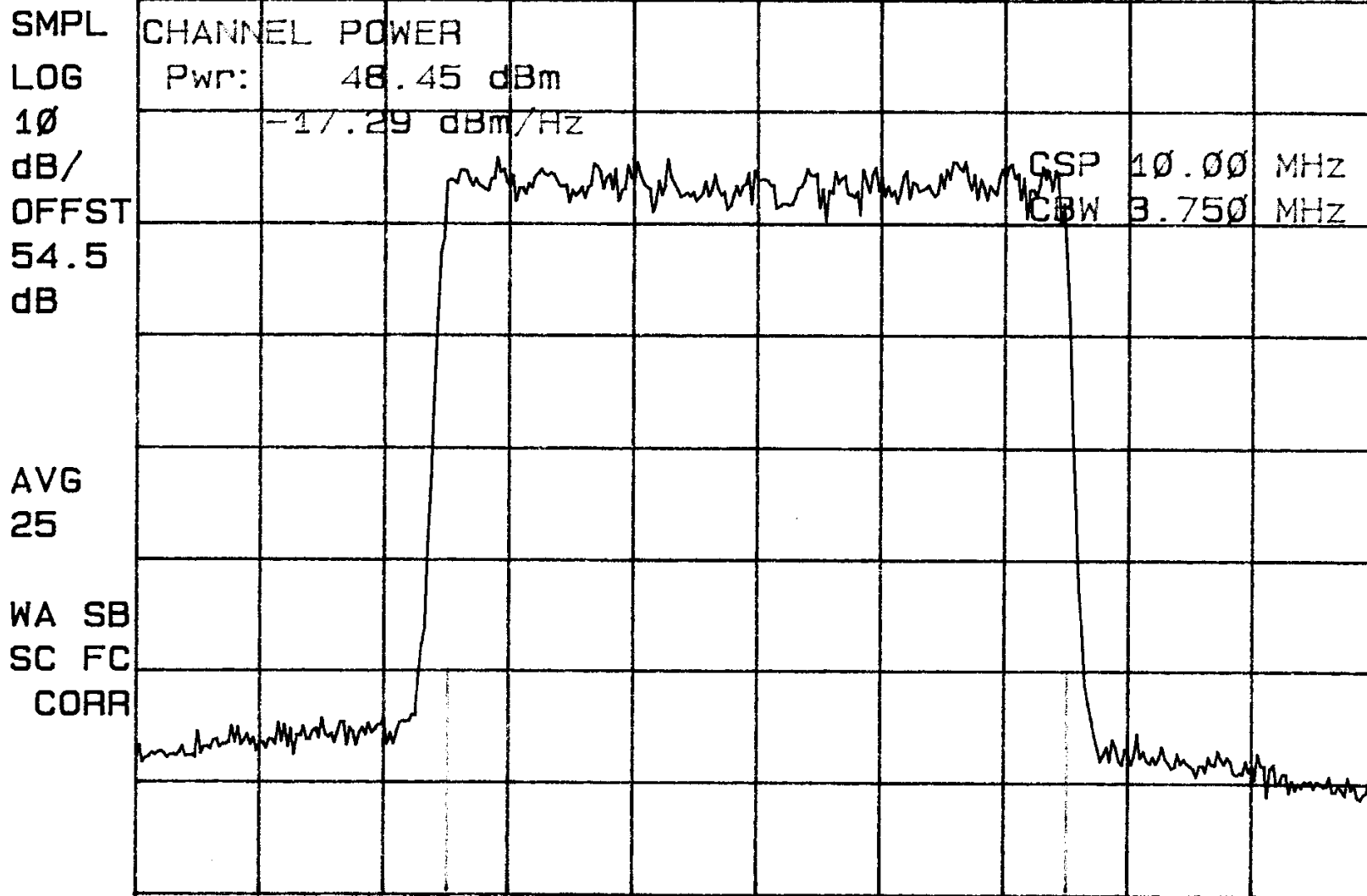
TEST: RF Output Power

SPEC.: FCC Part 2, Para. 2.1046; Part 22, Para. 22.917

13: 03: 41 SEP 12, 2000
hp

REF 44.5 dBm

AT 10 dB



CENTER 881.500 MHz

#RES BW 30 KHz

#VBW 300 KHz

SPAN 7.500 MHz

SWP 25.0 msec

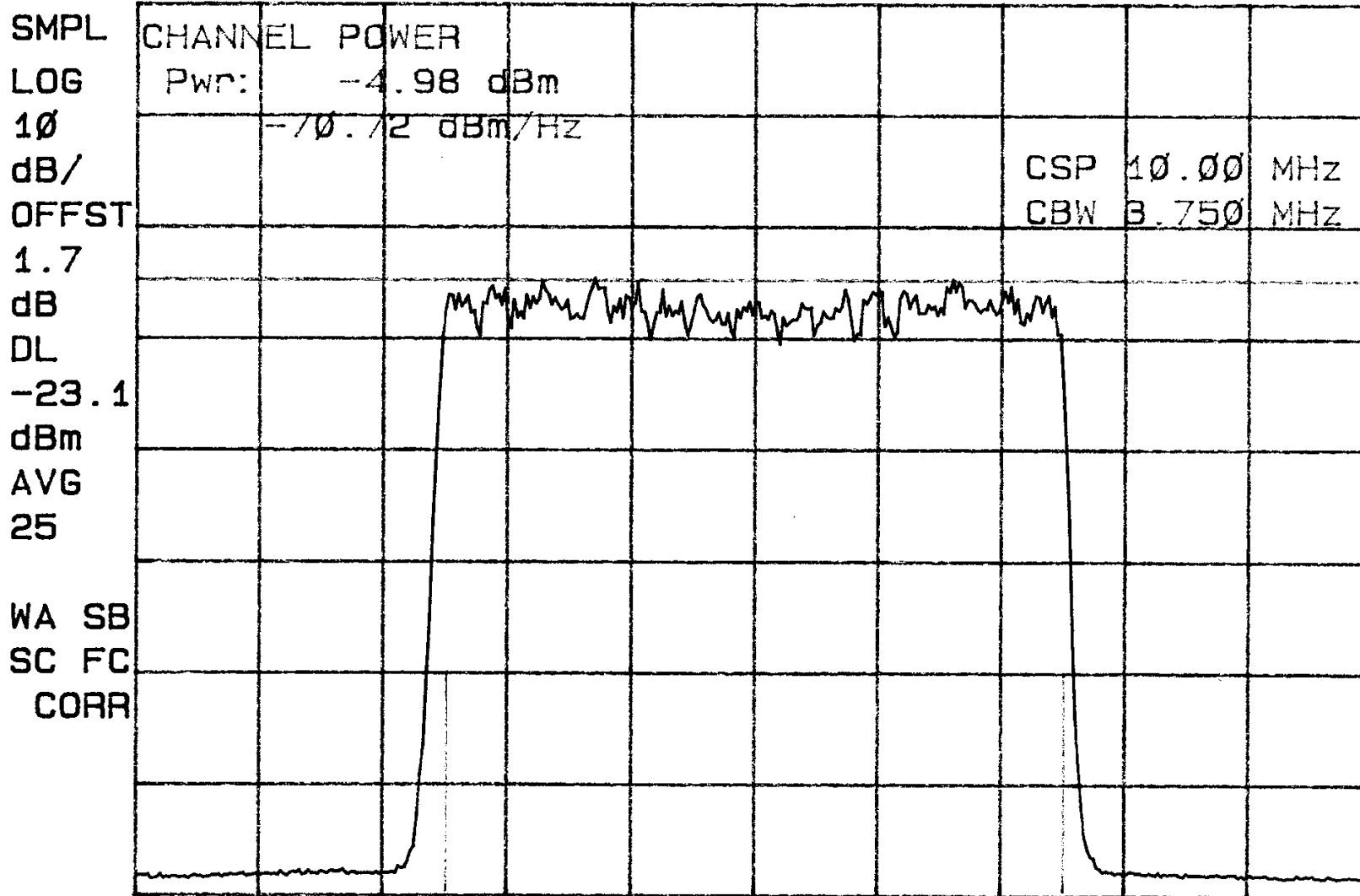
37

SPAN 7.500 MHz
SWP 25.0 msec 38

13: 11: 07 SEP 13, 2000
hp

REF 1.7 dBm

AT 10 dB



CENTER 881.500 MHz

#RES BW 30 kHz

SPAN 7.500 MHz

#VBW 300 kHz

SWP 25.0 msec 39

13: 04: 51 SEP 13, 2000

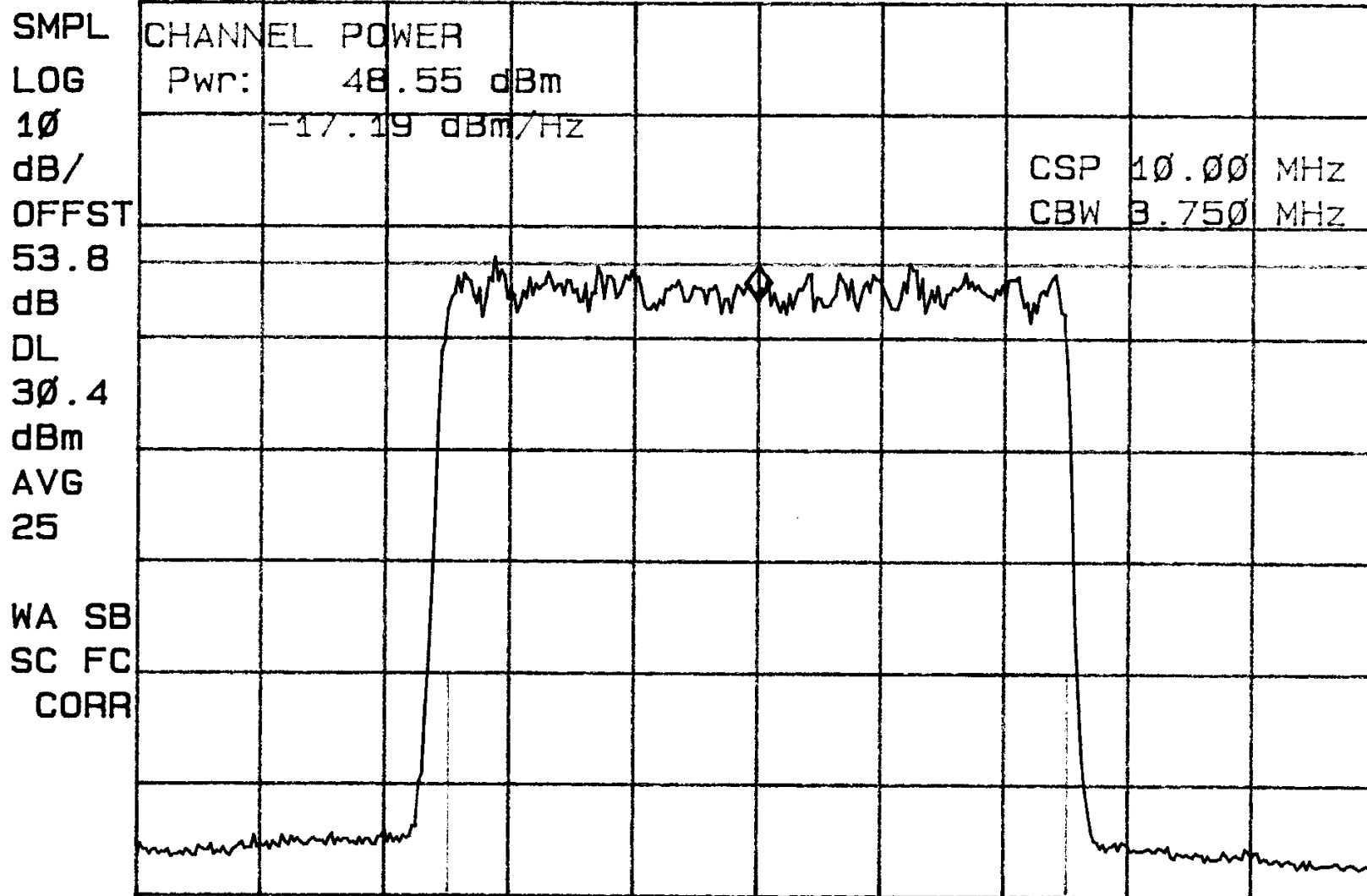
hp

REF 53.8 dBm

AT 10 dB

MKR 881.500 MHz

27.13 dBm



CENTER 881.500 MHz

#RES BW 30 kHz

SPAN 7.500 MHz

#VBW 300 kHz

SWP 25.0 msec 40

5 SIGNATURE PAGE

GENERAL REMARKS:

SUMMARY:

All tests according *FCC Part 2, Paragraphs 2.1046, 2.1051, 2.1053, and Part 22, Paragraph 22.917* were

■ - Performed

The Equipment Under Test

■ - **Fulfills** *FCC Part 2, Paragraphs 2.1046, 2.1051, 2.1053, and Part 22, Paragraph 22.917* requirements.

- TÜV PRODUCT SERVICE, INC. -

Responsible Engineer:

A handwritten signature in black ink, appearing to read "Jim Owen", with a stylized, cursive script.

Jim Owen
(EMC Engineer)