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TEST REPORT
FCC Part 22 Type Acceptance

Spectrian
Power Amplifier
Model: MCPS2350-4-800

FCC ID: I2OMCPS2000

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FCC Part 22

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Table of Contents

1.0 **Introduction**

1.1 **Test Summary**

FCC RULE	DESCRIPTION OF TEST	RESULT	PAGE
2.985	RF Power Output	Pass	4
22.913	Effective Radiated Power	N/A	8
2.989(c), 22.917(b)(d)	Emission Limitation, Occupied Bandwidth.	Pass	9
22.917(e)	Spurious emissions at antenna terminals	Pass	13
2.993, 15.109	Field Strength of Spurious Radiation	Pass	27
15.107	Line Conducted Emissions	N/A	31
2.995(a)	Frequency Stability vs. Temperature	N/A	32
2.995(d)(2)	Frequency Stability vs. Voltage	N/A	33

November 30, 1998

Barry Smith
Test Engineer

Date

1.2 Product Description

The Spectrian Model MCPS2350-4-800 is a power amplifier operating in the frequency range 869 MHz - 894 MHz

For more details, refer to the users manual.

2.0 **RF Power Output**, FCC §2.985(a)

2.1 Test Procedure

The amplifier's output was connected to a power meter and spectrum analyzer through a calibrated coaxial attenuator and directional coupler. The FM test signal was applied to the amplifier's input from a signal generator, and the input level was adjusted to obtain 55.4 dBm average output power.

2.2 Test Equipment

Hewlett Packard 8482A Power Sensor, 438A Power Meter
Hewlett Packard 8594E Spectrum Analyzer, 9 kHz - 2.9 GHz

2.3 Test Results

The average output power is 55.4 dBm (or 350W) measured with a power meter. See also plots attached.

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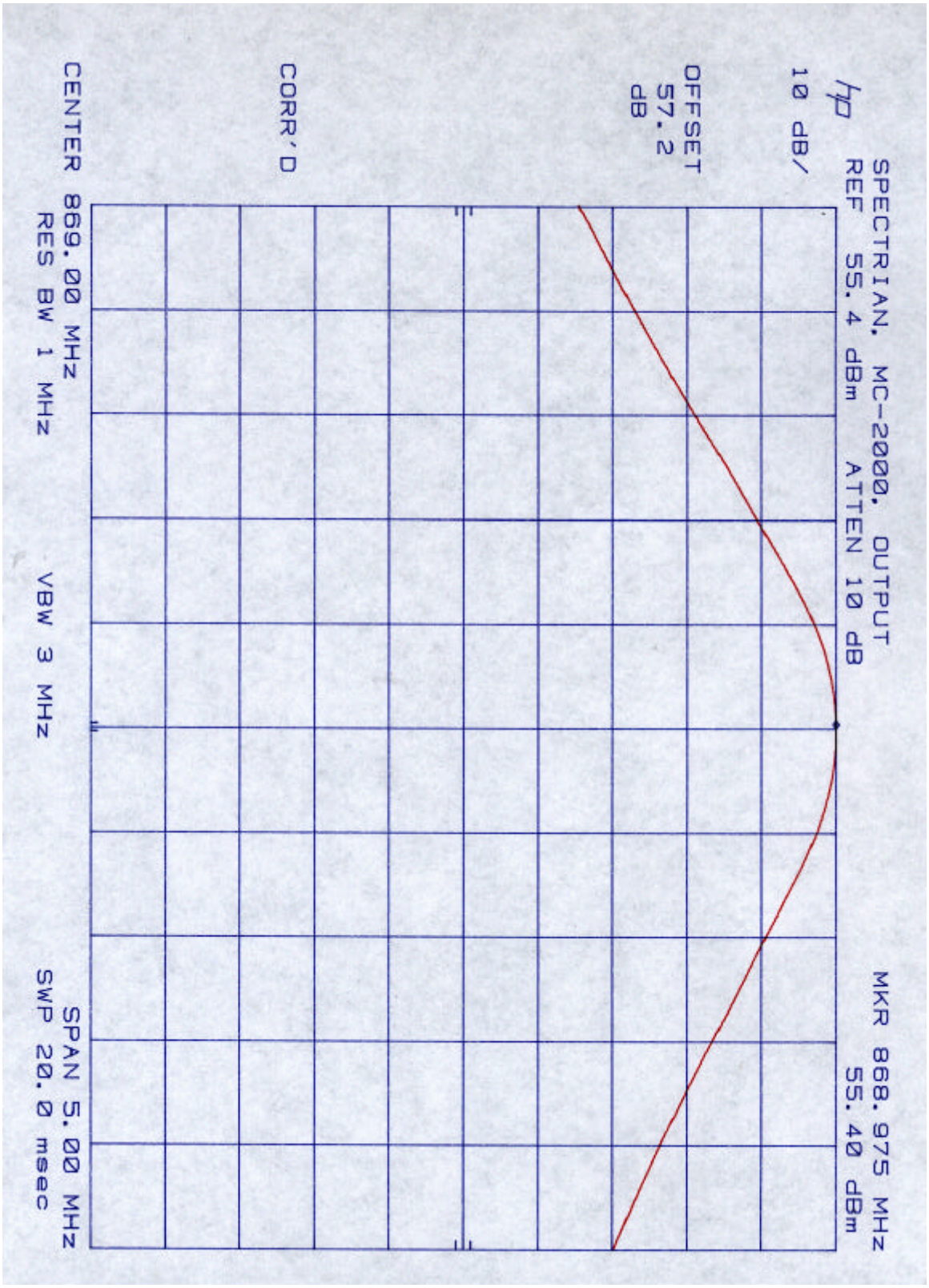
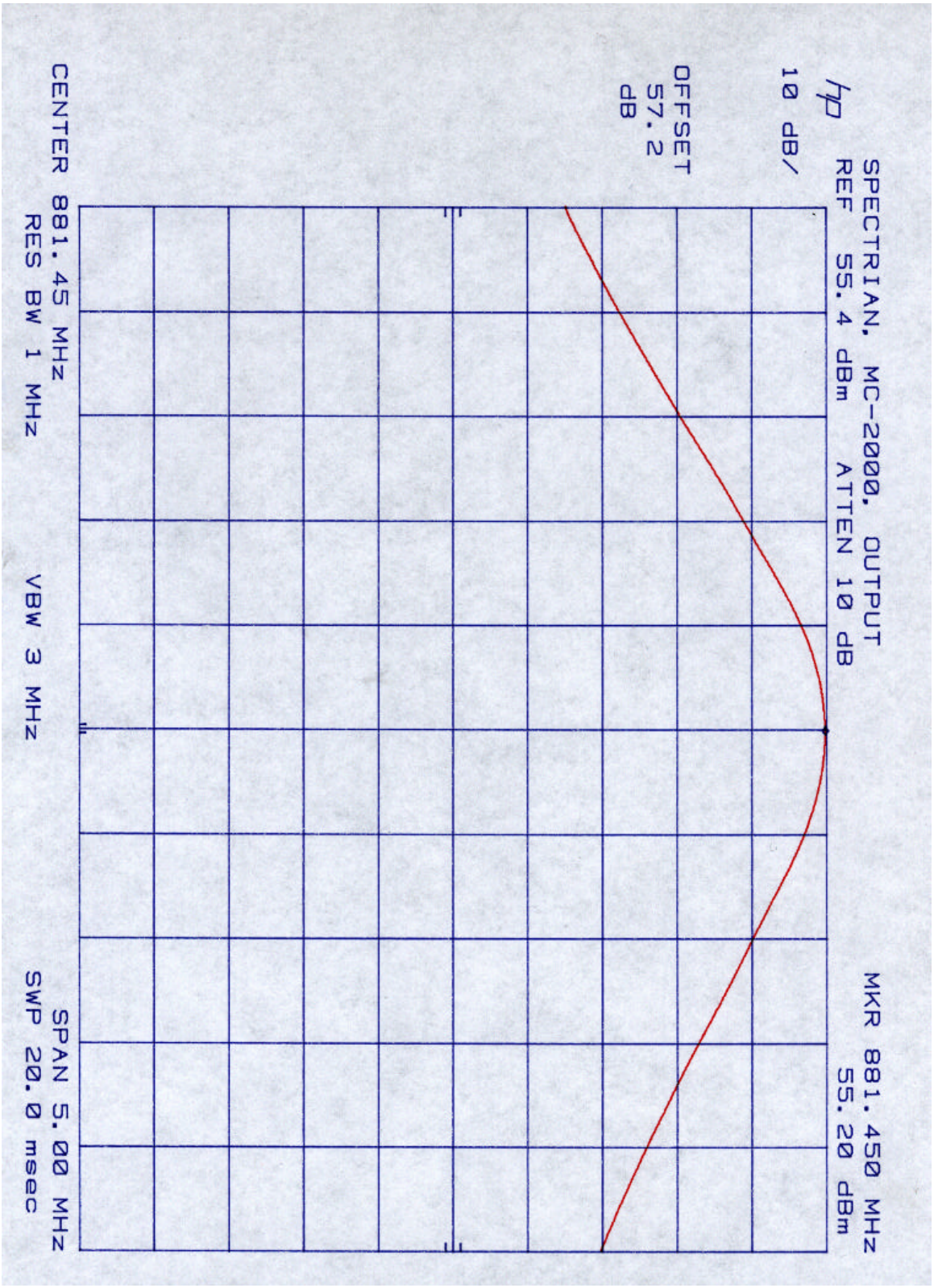
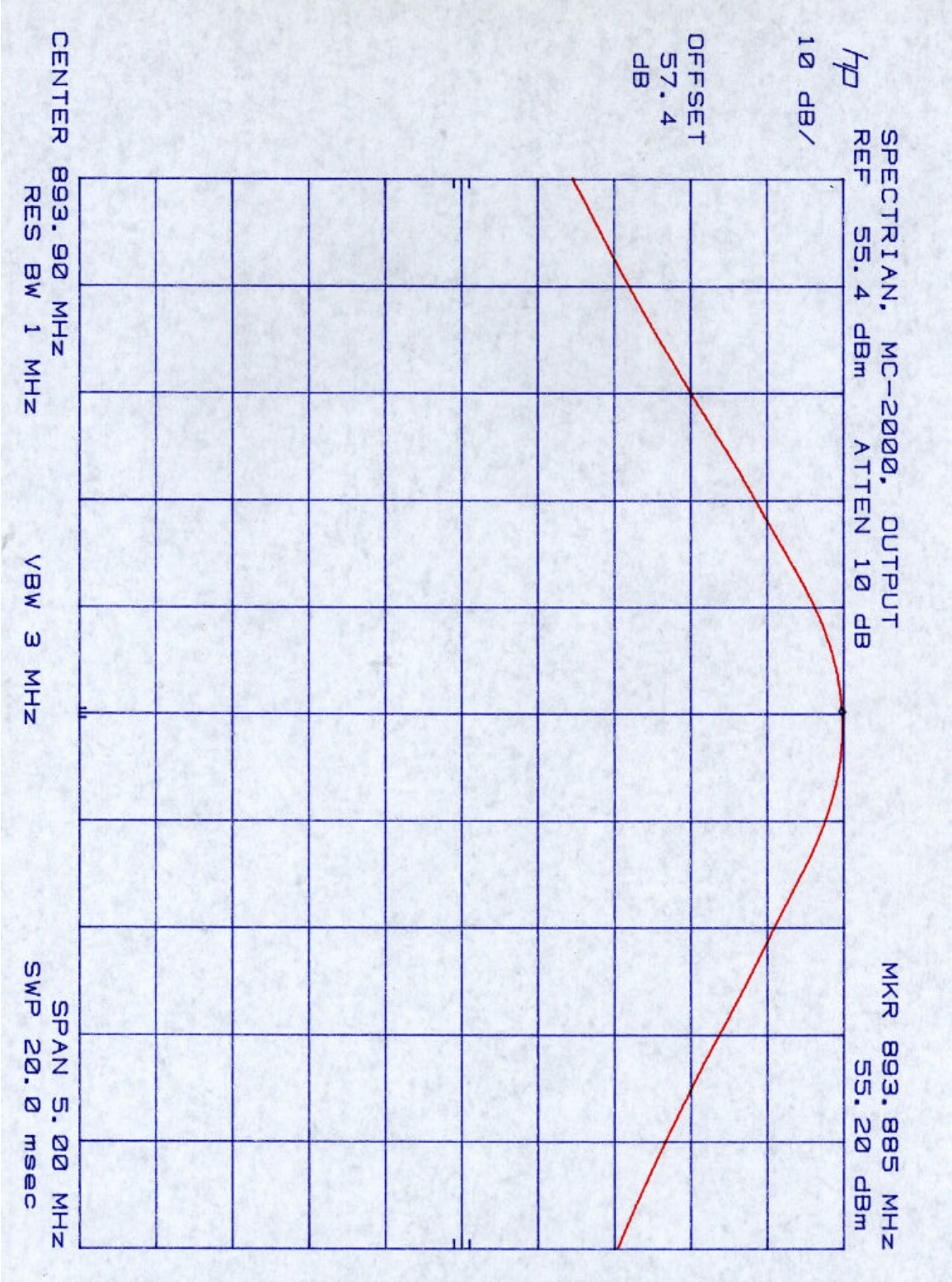

SPECTRIAN. MC-2000. OUTPUT
REF 55.4 dBm ATTEN 10 dB
10 dB/
OFFSET
57.2
dB
CORR'D
MKR 868.975 MHz
55.40 dBm
CENTER 869.00 MHz
RES BW 1 MHz
VBW 3 MHz
SPAN 5.00 MHz
SWP 20.0 msec


SPECTRIAN, MC-2000, OUTPUT
REF 55.4 dBm ATTEN 10 dB
10 dB/
OFFSET
57.2
dB
MKR 881.450 MHz
55.20 dBm
CENTER 881.45 MHz
RES BW 1 MHz
VBW 3 MHz
SPAN 5.00 MHz
SWP 20.0 msec


SPECTRIAN, MC-2000, OUTPUT
REF 55.4 dBm ATTEN 10 dB
10 dB/
OFFSET
57.4
dB
MKR 893.885 MHz
55.20 dBm
CENTER 893.90 MHz
RES BW 1 MHz
VBW 3 MHz
SPAN 5.00 MHz
SWP 20.0 msec

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

Requirement: The Effective Radiated Power (ERP) must not exceed 500 Watts.

3.1 Test Procedure

Assuming that the EUT has an ideal matching to an antenna the ERP can be calculated as follows:

$ERP_{(dBm)} = P_{(dBm)} + 10 \log G = 55.4 + 2.15 = 57.6$ dBm

where: G is the gain of a half-wave dipole

3.2 Test Results

Not Applicable

4.0 **Occupied Bandwidth**, **Emission Limitations.** FCC §2.989(I), §22.917

4.1 Test Procedure

The RF output of the EUT was connected to the input of the spectrum analyzer through sufficient attenuation. The spectrum with no modulation was plotted.

The EUT was set up to transmit a FM signal and the spectrum with modulation was plotted.

4.2 Test Equipment

Gigatronics 8542C Power Meter
HP 8566B Spectrum Analyzer, 100 Hz - 22 GHz
Tektronix 2784 Spectrum Analyzer, 100 Hz - 40 GHz
HP 7470A Plotter

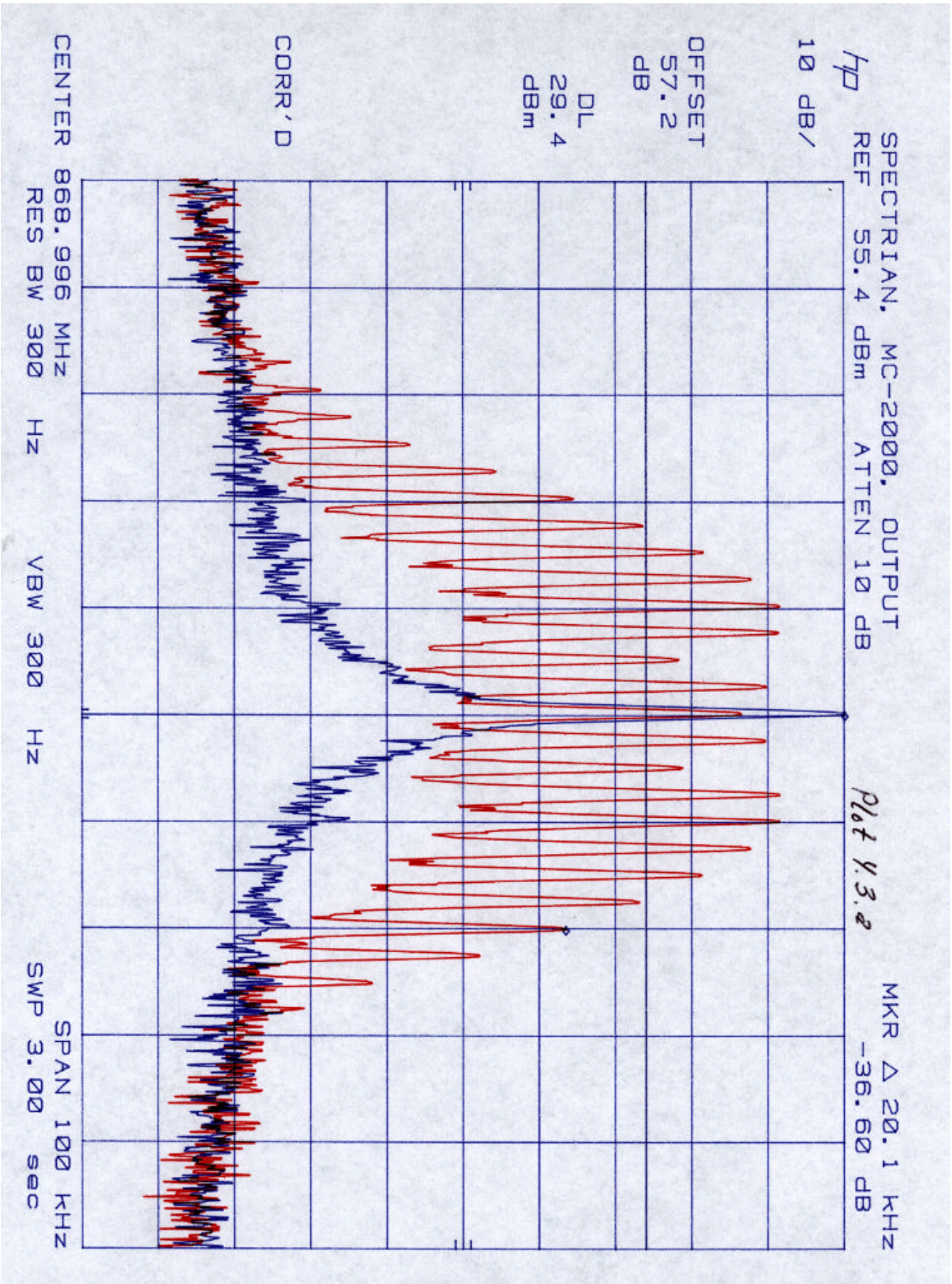
4.3 Test Results

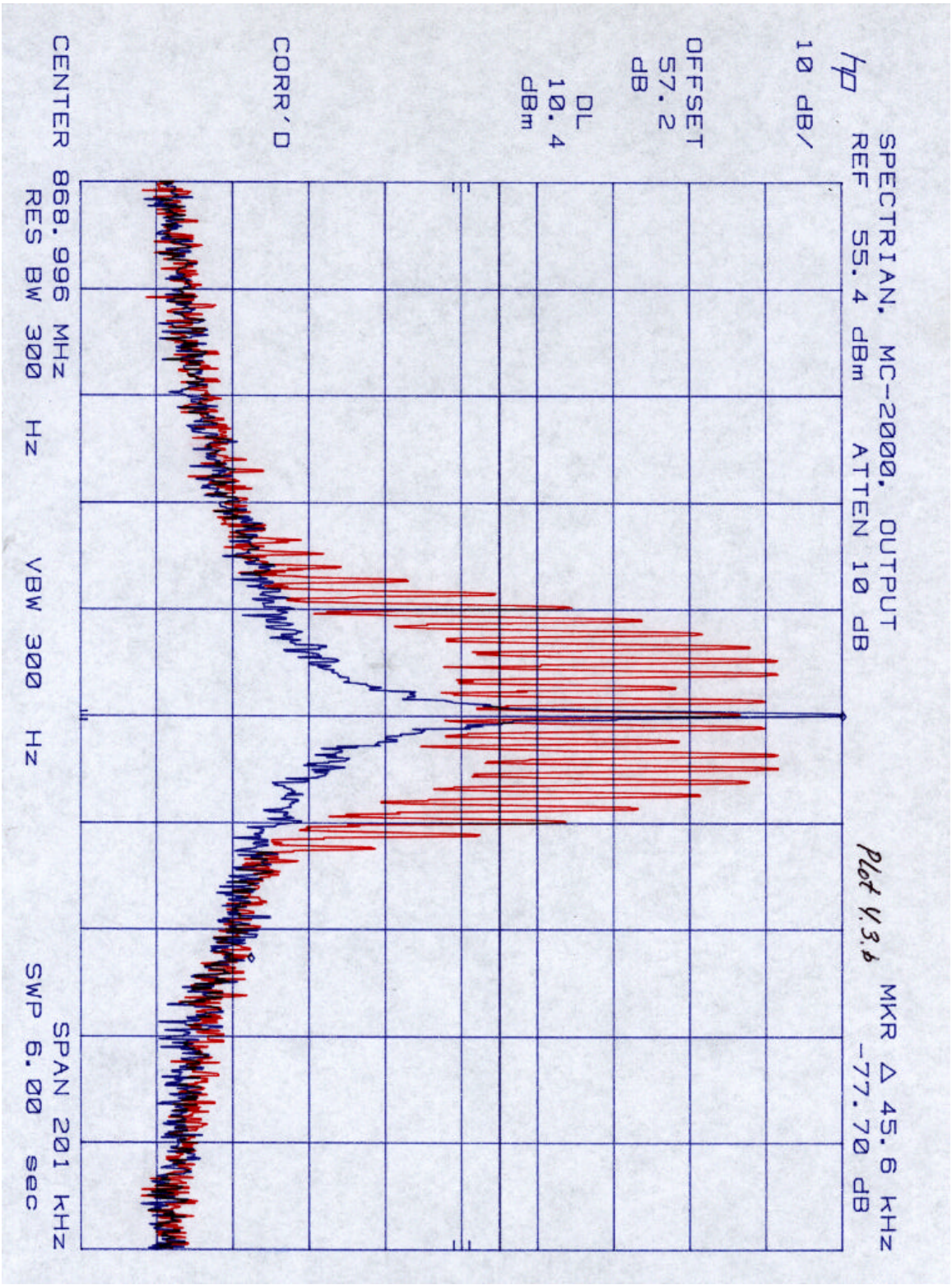
For test results refer to the attached plots 4.3.a, 4.3.b showing the emissions on the amplifier's output.

The EUT passed the F3E emission mask tests.

Emission Limitations, Occupied Bandwidth Plots:

Plot Number	Description
4.3.a	Output, 869 MHz, FM Modulation, 2.5 kHz Tone, 12 kHz Deviation, span 100 kHz.
4.3.b	Output, 869 MHz, FM Modulation, 2.5 kHz Tone, 12 kHz Deviation, span 200 kHz.


SPECTRIAN, MC-2000, OUTPUT
hp
REF 55.4 dBm ATTEN 10 dB
10 dB/
OFFSET
57.2
dB
DL
29.4
dBm
CORR'D
MKR Δ 20.1 kHz
-36.60 dB
Plot Y.3.2
CENTER 868.996 MHz
RES BW 300 Hz VBW 300 Hz SPAN 100 kHz
SWP 3.00 sec


SPECTRIAN, MC-2000, OUTPUT
REF 55.4 dBm ATTEN 10 dB
10 dB/
OFFSET 57.2 dB
DL 10.4 dBm
CORR'D
MKR Δ 45.6 kHz
-77.70 dB
Plot 4.3.6
CENTER 868.996 MHz
RES BW 300 Hz
VBW 300 Hz
SPAN 201 kHz
SWP 6.00 sec

5.0 **Out of Band Emissions at Antenna Terminals** , FCC §2.991, §22.917 (e)

Out of Band Emissions:

The power of emissions must be attenuated below the 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.

5.1 Test Procedure

The RF output of the EUT was connected to a spectrum analyzer through appropriate attenuation. The FM modulation signal was set up. Sufficient scans were also taken to show the any out-of-band emissions up to 10th harmonic for 3 fundamental frequences: 869 MHz, 881.5 MHz, and 894 MHz.

5.2 Test Equipment

HP 8566B Spectrum Analyzer, 100 Hz - 22 GHz
Tektronix 2784 Spectrum Analyzer, 100 Hz - 40 GHz

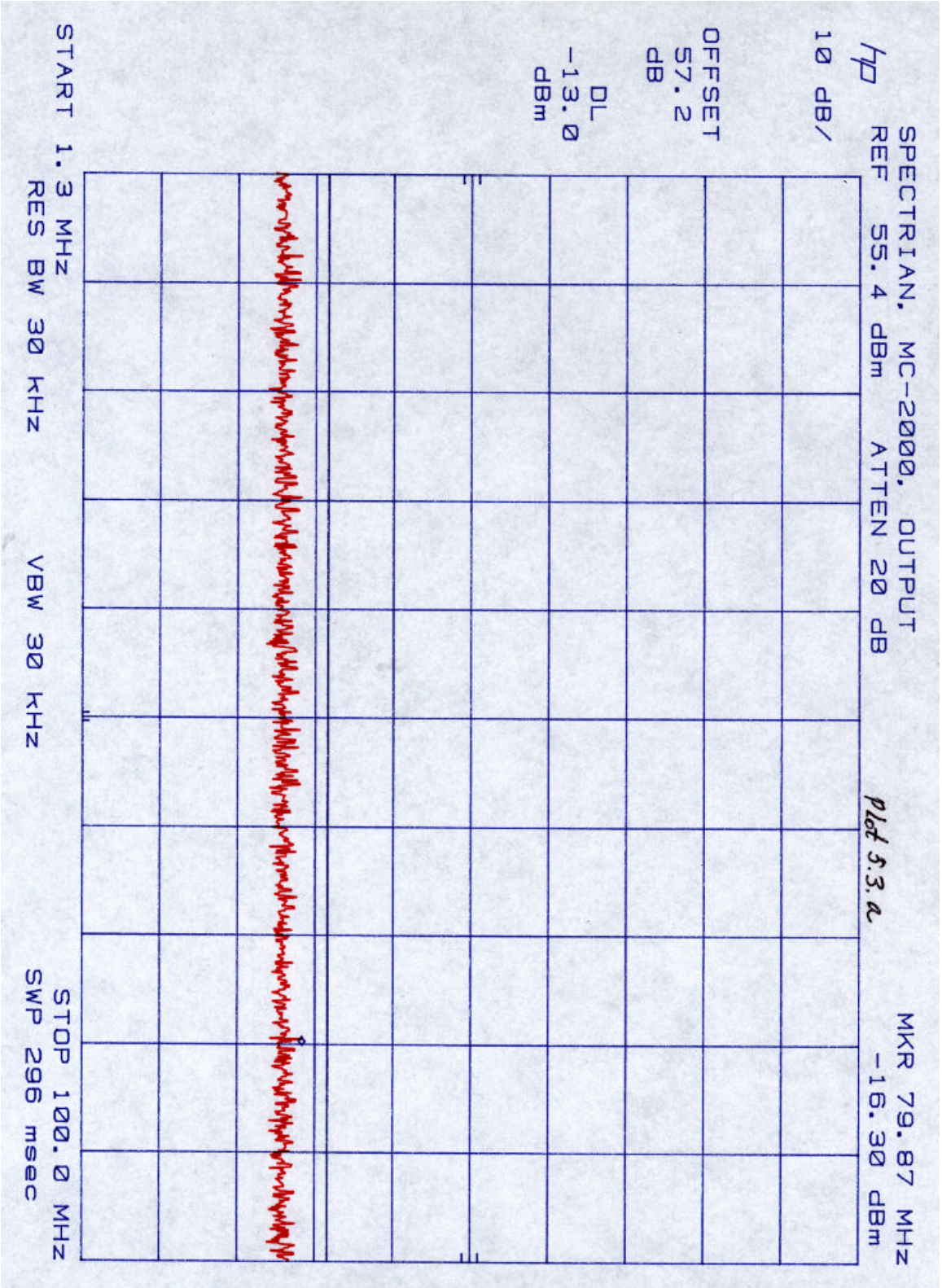
5.3 Test Results

There are no emissions detected above the specified lmit.

The EUT passed the test. For test results, refer to the attached plots.

Plots of Out-of-Band Emissions at Antenna Terminal are attached.

PLOT NUMBER	DESCRIPTION
5.3.a	869 MHz, Scan 1 MHz - 100 MHz
5.3.b	869 MHz, Scan 100 MHz - 1 GHz
5.3.c	869 MHz, Scan 1 GHz - 2.5 GHz
5.3.d	869 MHz, Scan 2.5 GHz - 10 GHz
5.3.e	881.5 MHz, Scan 1 MHz - 100MHz
5.3.f	881.5 MHz, Scan 100 MHz - 1 GHz
5.3.g	881.5 MHz, Scan 1 GHz - 2.5 GHz
5.3.h	881.5 MHz, Scan 2.5 GHz - 10 GHz
5.3.i	894 MHz, Scan 1 MHz - 100 MHz
5.3.j	894 MHz, Scan 100 MHz - 1 GHz
5.3.k	894 MHz, Scan 1 GHz - 2.5 GHz
5.3.l	894 MHz, Scan 2.5 GHz - 10 GHz


SPECTRIAN. MC-2000. OUTPUT
REF 55.4 dBm ATTEN 20 dB
10 dB/
OFFSET 57.2 dB
DL -13.0 dBm
MKR 79.87 MHz -16.30 dBm
Plot 5.3.a
START 1.3 MHz
RES BW 30 kHz
VBW 30 kHz
STOP 100.0 MHz
SWP 296 msec