SUBMITTED MEASURED DATA

MEASUREMENT		EXHIBIT	NUMBER OF PAGES
I	RF Power Output Data	6A	1
II	Audio Response & Low Pass Filter Response	6B & 6C	3
III	Modulation Limiting	6D	2
IV	Occupied Bandwidth	6E	7
V	Conducted Spurious Emissions	6F	3
VI	Radiated Spurious Emissions	6G	3
VII	Frequency Stability		
	A. Temperature	6H-1	1
	B. Supply Voltage	6H-2	1
VIII	Transient Frequency Behavior	6 I	4

RF POWER OUTPUT DATA

The RF power output was measured with the indicated voltage applied to and current into the final RF amplifying device.

Measured RF output	5.0 Watts
Nominal DC voltage	7.5 Volts
Nominal DC Current	1.80 A
Primary Supply Voltage	7.5 Volts

Measured RF output	3.0 Watts
Nominal DC voltage	7.5 Volts
Nominal DC Current	1.37 A
Primary Supply Voltage	7.5 Volts

Measured RF output	1.0 Watt
Nominal DC voltage	7.5 Volts
Nominal DC Current	0.85 A
Primary Supply Voltage	7.5 Volts

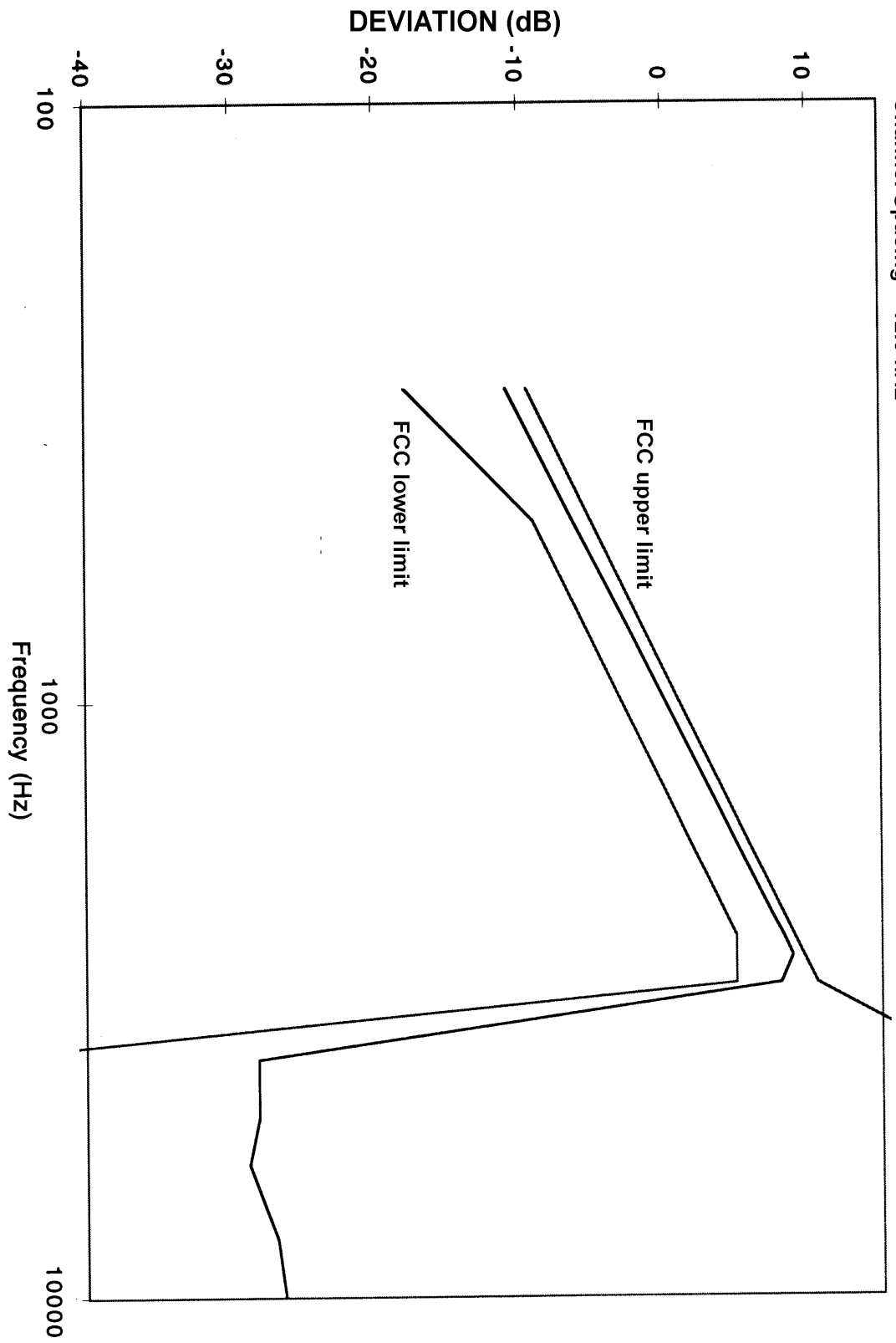

DEVIATION (dB)
10
0
-10
-20
-30
-40
100
1000
10000
Frequency (Hz)
Frequency = 450.025 MHz
Channel Spacing = 12.5 kHz
TX AUDIO FREQUENCY RESPONSE
FCC upper limit
FCC lower limit

EXHIBIT 6B

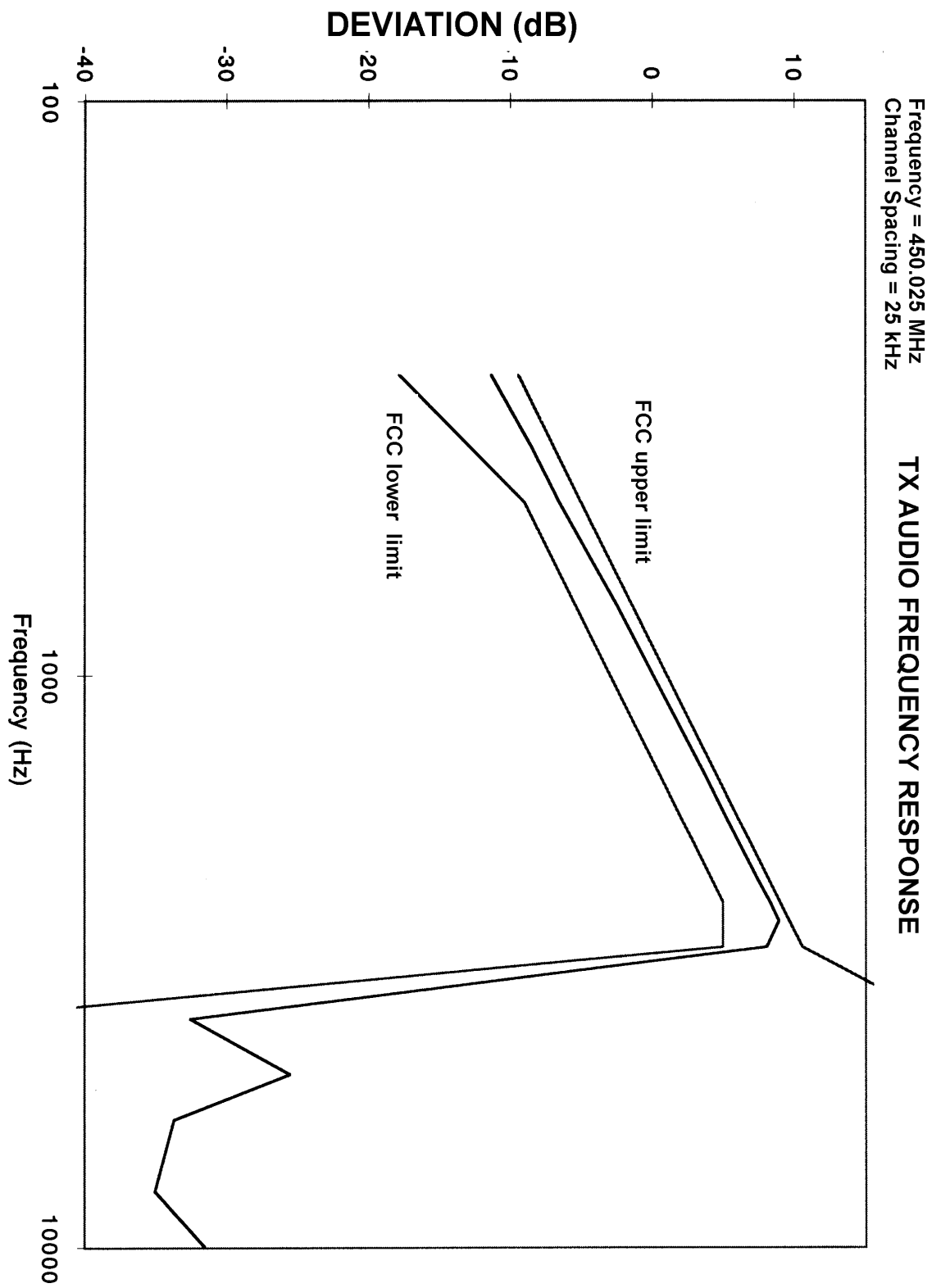

TX AUDIO FREQUENCY RESPONSE
Frequency = 450.025 MHz
Channel Spacing = 25 kHz
DEVIATION (dB)
10
0
-10
-20
-30
-40
FCC upper limit
FCC lower limit
100
1000
10000
Frequency (Hz)

EXHIBIT 6B

The XTS 3500 UHF Range 2 portable radio is a digital radio. All the audio filtering is done by a digital signal processor (DSP). It is not possible at the radio level to look at the response of the post limiter low pass filter circuit since the filter is just a series of 1's and 0's. The post limiter low pass filter is the splatter filter of Exhibit 8B. Exhibit 9D shows the frequency response of the splatter filter.

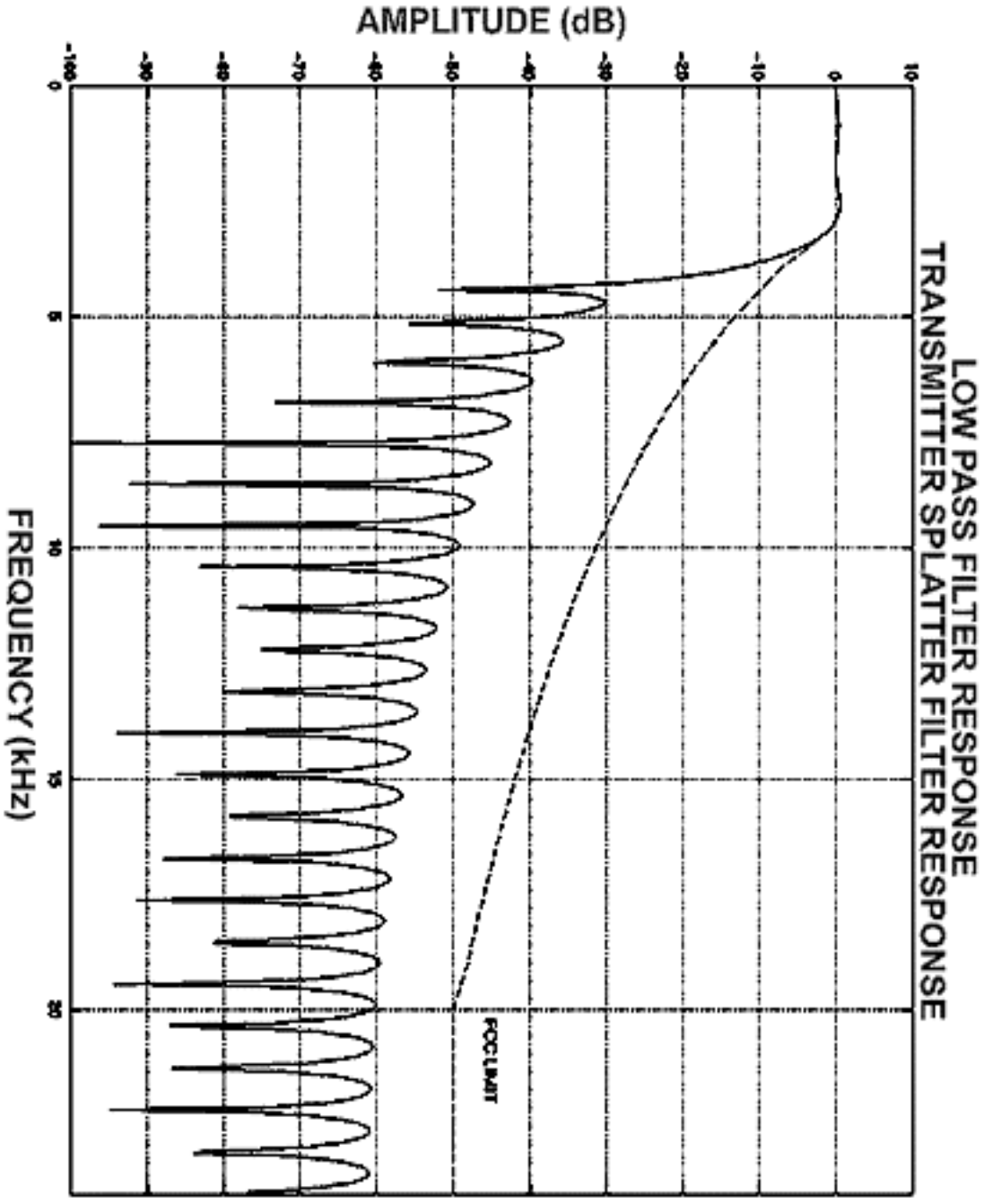


EXHIBIT 6C

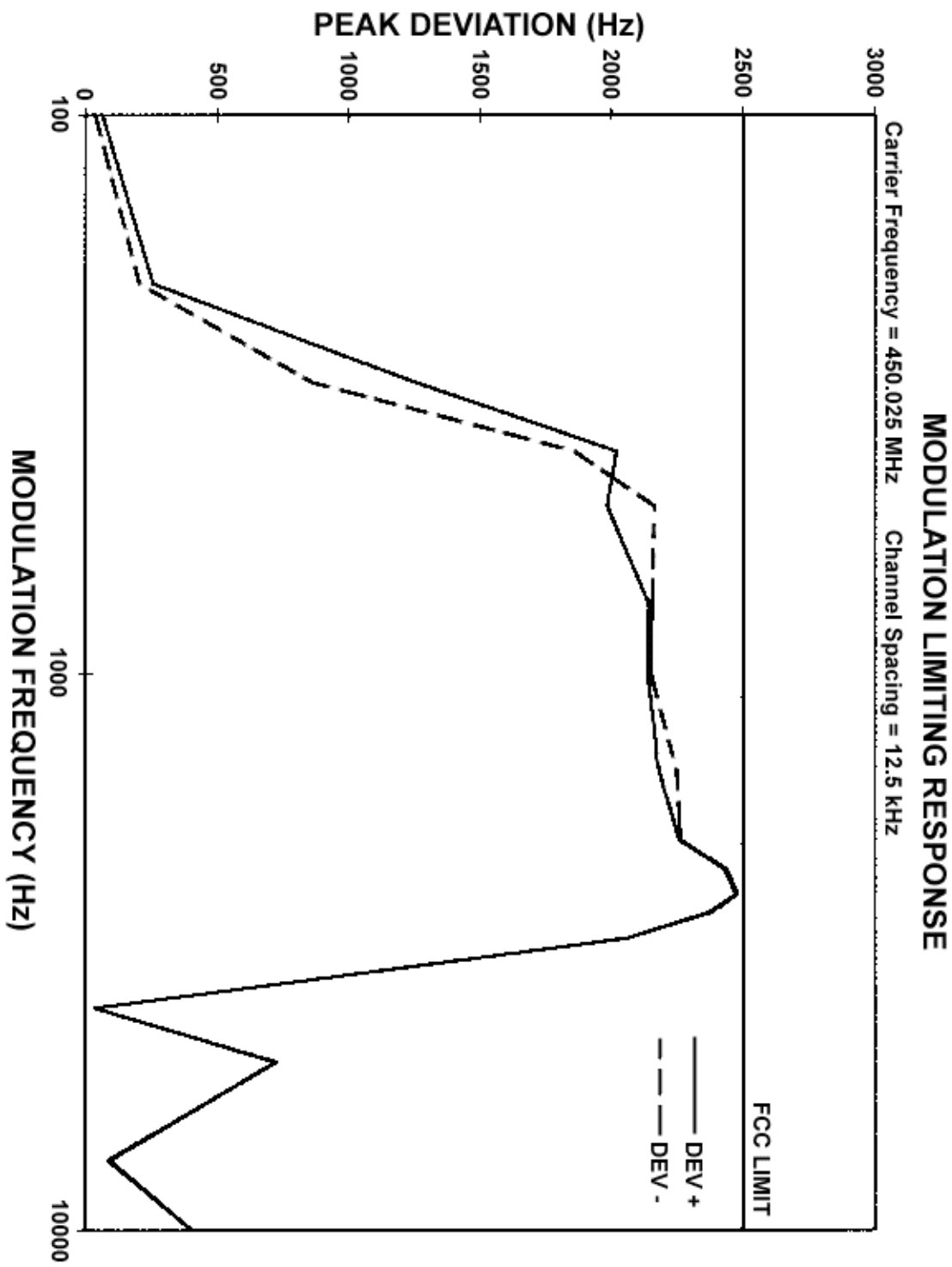

MODULATION LIMITING RESPONSE
Carrier Frequency = 450.025 MHz Channel Spacing = 12.5 kHz
PEAK DEVIATION (Hz)
3000
2500
2000
1500
1000
500
0
FCC LIMIT
DEV +
DEV -
MODULATION FREQUENCY (Hz)
100
1000
10000

EXHIBIT 6D

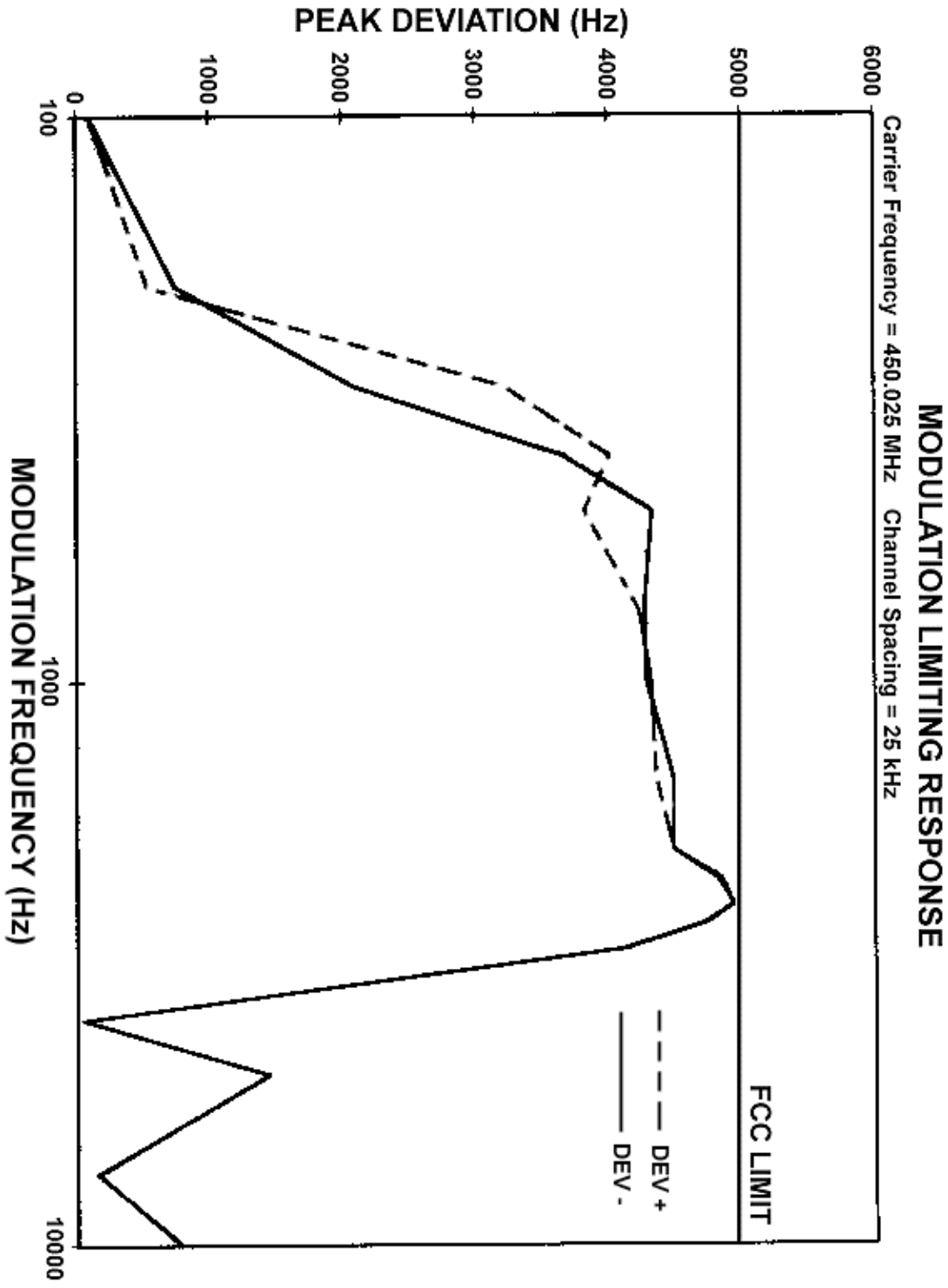


EXHIBIT 6D

OCCUPIED BANDWIDTH DATA

BANDWIDTH CALCULATIONS**:**

Carson's Rule for FM modulation is utilized to compute the bandwidth shown in the FCC emission designator. Carson's Rule is:

BW = 2 * (M + D) where: BW = Bandwidth
M= Maximum modulating frequency
D = Deviation

Shown below are the calculations required for FCC ID: AZ489FT4828.

EXHIBIT 9E-1
Standard Audio Modulation (25 kHz Channelization, Analog Voice):
Emission Designator 16K0F3E

In this case, the maximum modulating frequency is 3 kHz with a 5 kHz deviation.

BW = 2(M+D) = 2*(3 kHz + 5 kHz) = 16 kHz ===> 16K0
F3E portion of the designator indicates voice.

Therefore, the entire designator for 25 kHz channelization analog voice is 16K0F3E.

EXHIBIT 9E-2
Standard Audio Modulation (12.5 kHz Channelization, Analog Voice):
Emission Designator 11K0F3E

In this case, the maximum modulating frequency is 3.0 kHz with a 2.5 kHz deviation.

BW = 2(M+D) = 2*(3.0 kHz + 2.5 kHz) = 11 kHz ===> 11K0
F3E portion of the designator indicates voice.

Therefore, the entire designator for 12.5 KHz channelization analog voice is 11K0F3E.

EXHIBIT 9E-3
Digital (12.5 kHz Channelization, Digital Voice):
Emission Designator 8K10F1E

Measurements per Rule Part 2.202 Section C (4) were done because Part 2.202 Section g Table III A, 1 formulation produces an excessive result using the value of K recommended in the Table. Therefore, the 99% energy rule (title 47CFR 2.989) was used for digital mode and is more accurate than Carson's rule. It basically states that 99% of the modulation energy falls within X KHz, in this case, 8.10 kHz. Measurements were empirically performed in accordance with TIA/EIA TSB102.CAAB Section 2.2.5.2. The emission mask was that in TIA/EIA TSB102.CAAB Section 3.2.5.2.

F1E portion of the designator indicates digital voice.

Therefore, the entire designator for 12.5 kHz channelization digital voice is 8K10F1E.

EXHIBIT 6E

Digital (12.5 kHz Channelization, Digital Data):

Emission Designator 8K10F1D

Measurements per Rule Part 2.202 Section C (4) were done because Part 2.202 Section g Table III A, 1 formulation produces an excessive result using the value of K recommended in the Table. Therefore, the 99% energy rule (title 47CFR 2.989) was used for digital mode and is more accurate than Carson's rule. It basically states that 99% of the modulation energy falls within X KHz, in this case, 8.10 kHz Measurements were empirically performed in accordance with TIA/EIA TSB102.CAAB Section 2.2.5.2. The emission mask was that in TIA/EIA TSB102.CAAB Section 3.2.5.2.

F1D portion of the designator indicates digital data.

Therefore, the entire designator for 12.5 kHz channelization digital data is 8K10F1D.

EXHIBIT 9E-5
SECURE MODE (25 kHz Channelization, Digital Voice Encryption):
Emission Designator 20K0F1E

Voice encryption is transmitted at 12 kbps rate which requires a 6 kHz bandwidth. Voice deviation is set to 4 kHz.

BW = 2(M+D) = 2*(6 kHz + 4 kHz) = 20 kHz ====> 20K0

F1E portion of the designator indicates digital voice.

Therefore, the entire designator for secure mode (digital voice encryption) is 20K0F1E.

Note: The 90.203(j) efficiency standard for "F1D" emission is met by sending 2 bits at a time, at a rate of 4800 symbols/second. This yields 9600 bits/second, which is achieved using the modulation technique described in the note below. Modulation results from one of the digital 4-level standard symbol patterns applied to the modulation at a rate of 9600 bits/second. The modulation technique is 4-level FM. The information bits are commonly represented by a symbol which corresponds to one of 4 levels of FM deviation according to the following table.

Information Bits	Symbol	C4FM Deviation
01	+3	+1.8 kHz
00	+1	+0.6 kHz
10	-1	-0.6 kHz
11	-3	-1.8 kHz

For example, an 8-bit binary pattern of 0010 1101 would be sent as symbols +1, -1, -3, +3, which would cause a modulation signal (Frequency-Shift-Keyed) of +1.8 kHz, -600 Hz, -1.8 kHz, and +1.8 kHz. This results in 9600 bits/second of information being sent on a 12.5 kHz channel, which is the equivalent of 4800 bits/second per 6.25 kHz.

Note: The "F1D" and "F1E" signal parameter is described as follows: The modulation is 4-level FSK with +/-600 Hz and +/-1.8 kHz shifting (+/-600 Hz and +/-1.8 kHz are the 4 distinct levels of signals). The deviation is tuned to 2.83 kHz +/-10% using a signal consisting of a 1.2 kHz sine wave. This sine wave is generated by a bit sequence of ....(0,1)(0,1)(1,1)(1,1)(0,1)(0,1)(1,1)(1,1). Since the voice is digitized before any processing, both data and voice masks look similar.

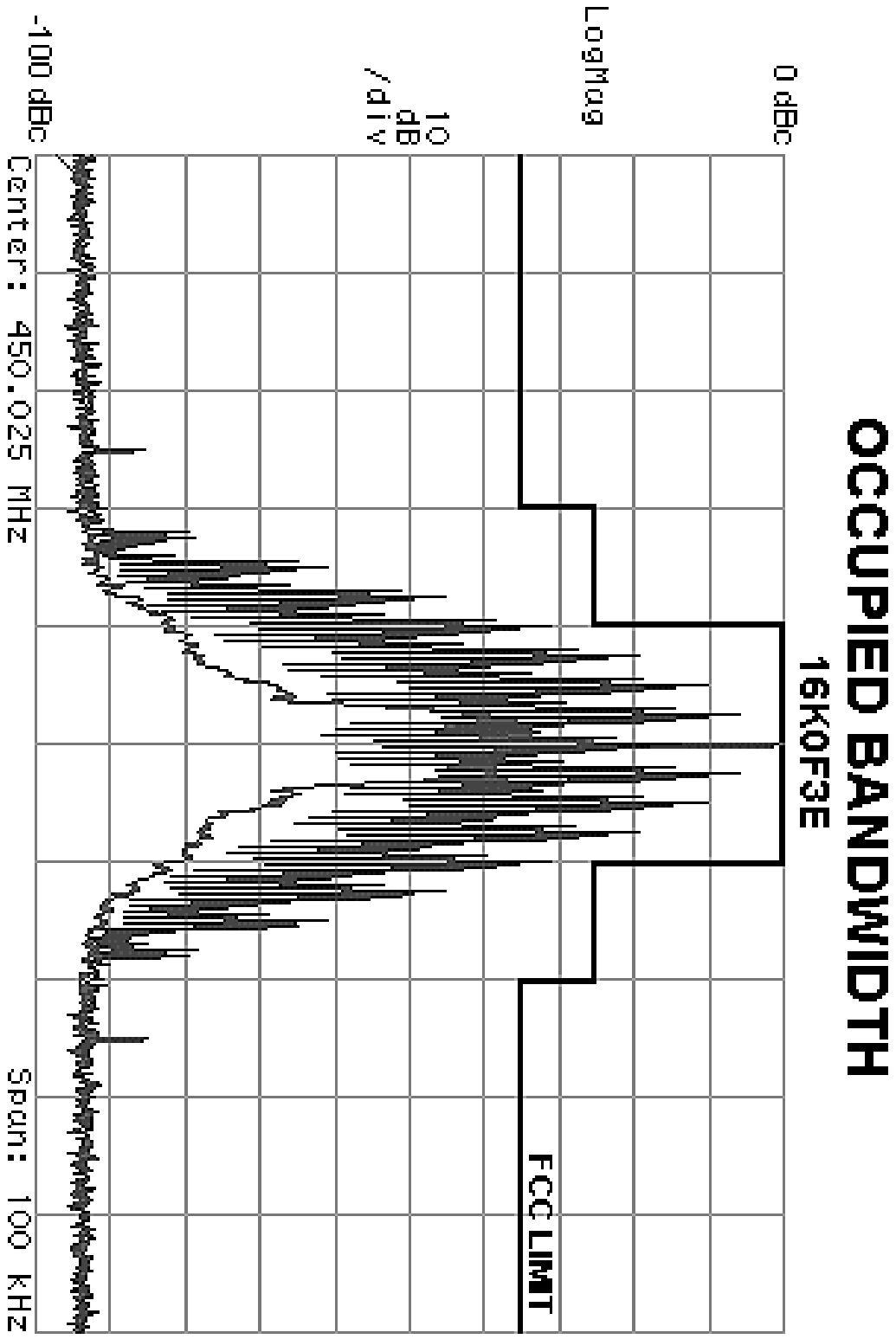

OCCUPIED BANDWIDTH
16K0F3E
0 dBc
Log Mag
10 dB /div
-100 dBc
Center: 450.025 MHz
Span: 100 kHz
FCC LIMIT

EXHIBIT 6E

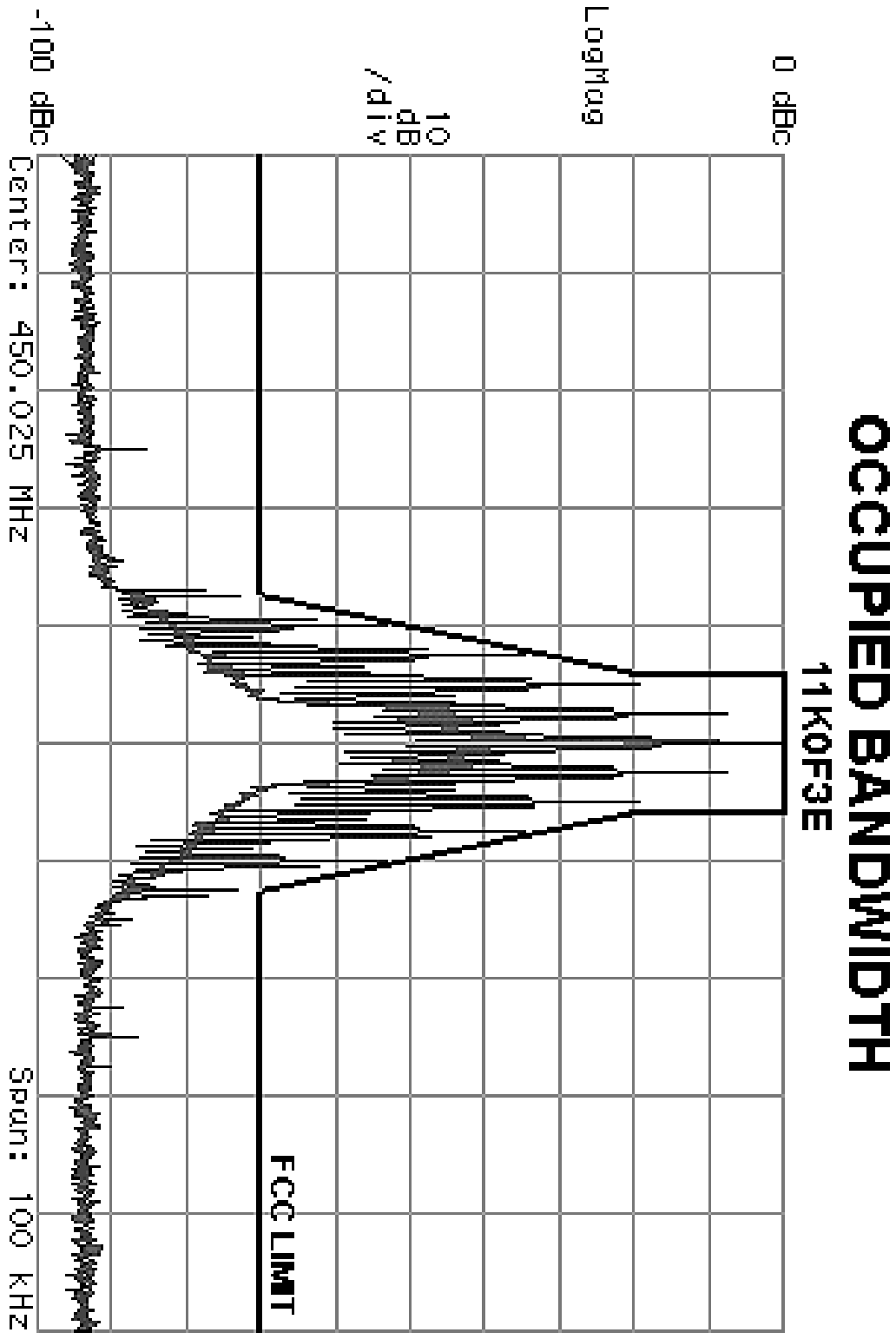

OCCUPIED BANDWIDTH
11K0F3E
0 dBc
Log/Mag
10 dB /div
-100 dBc
Center: 450.025 MHz
Span: 100 kHz
FCC LIMIT

EXHIBIT 6 E

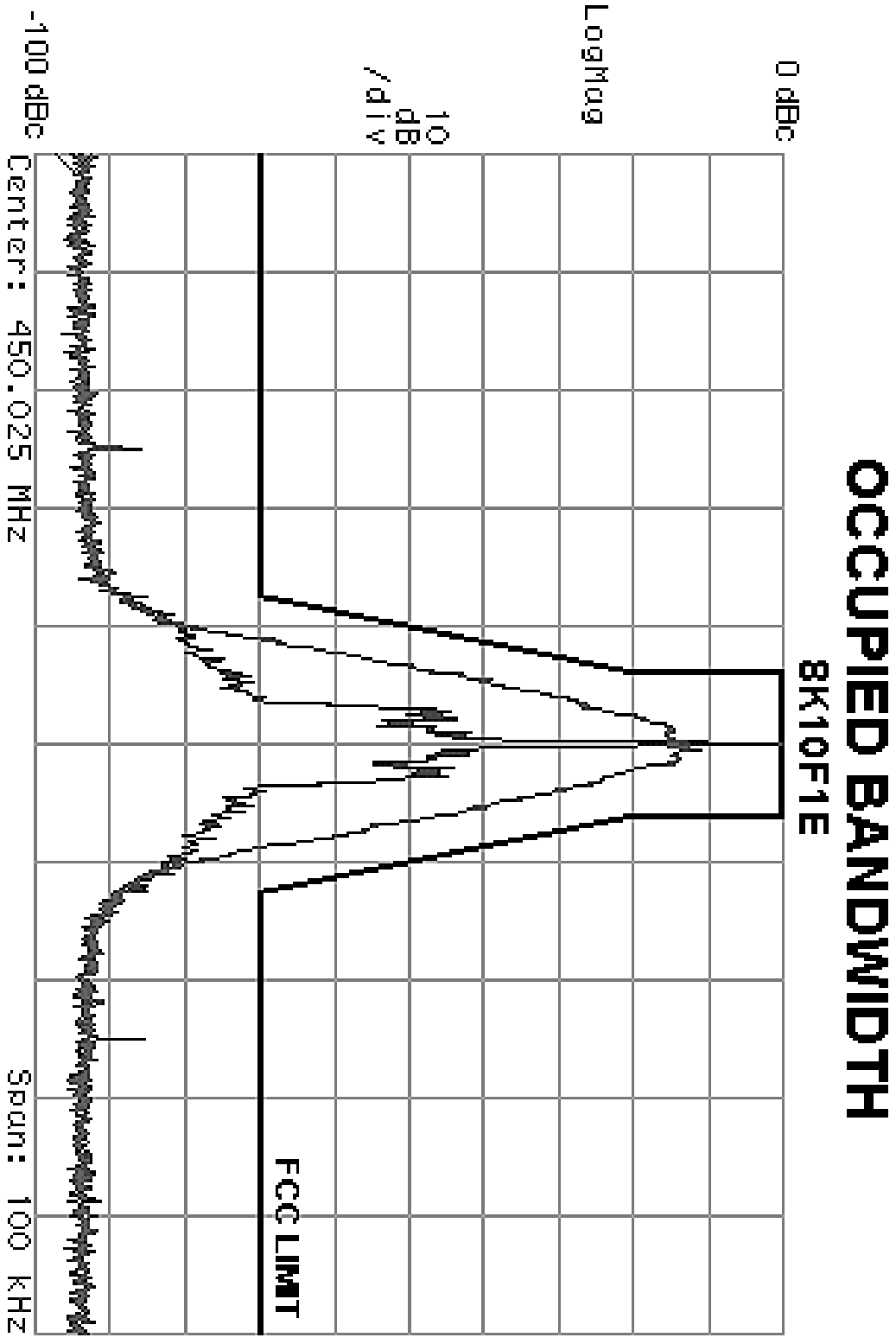

OCCUPIED BANDWIDTH
8K10F1E
0 dBc
Log/Mag
10 dB /div
-100 dBc
Center: 450.025 MHz
Span: 100 kHz
FCC LIMIT

EXHIBIT 6 E

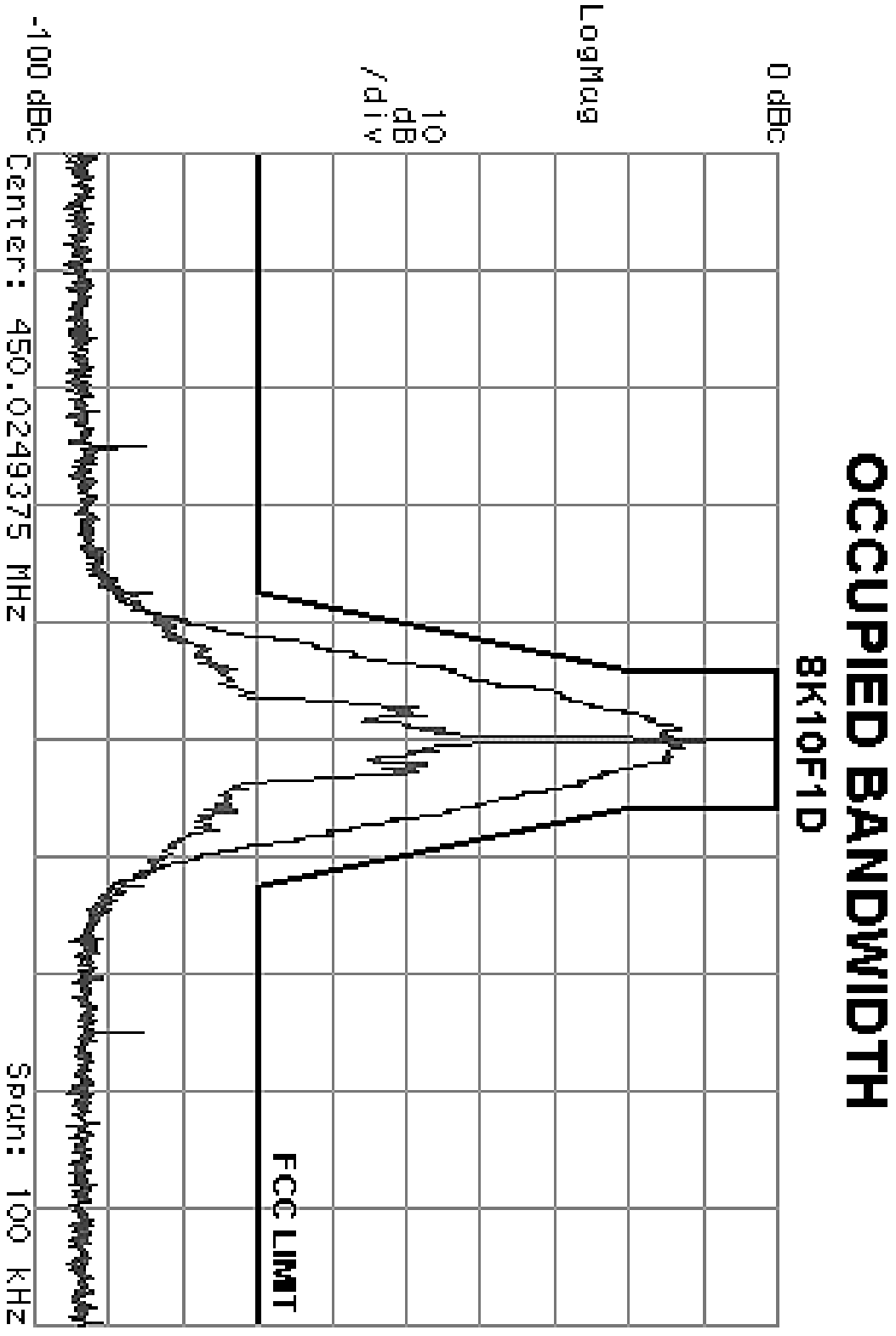

OCCUPIED BANDWIDTH
8K10F1D
0 dBc
Log Mag
10 dB /div
-100 dBc
Center: 450.0249375 MHz
Span: 100 kHz
FCC LIMIT

EXHIBIT 6 E

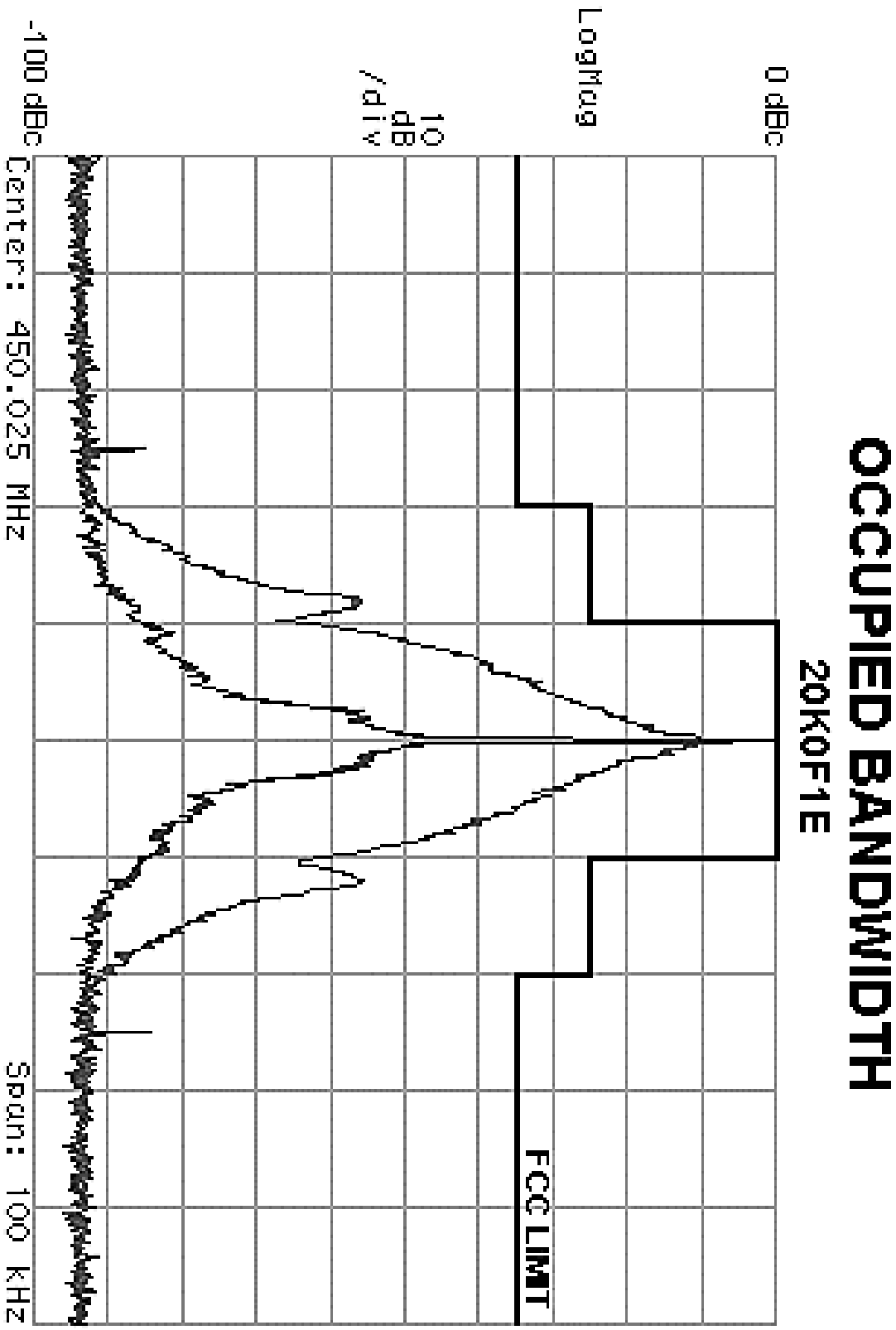

OCCUPIED BANDWIDTH
20K0F1E
0 dBc
Log Mag
10 dB /div
-100 dBc
Center: 450.025 MHz
Span: 100 kHz
FCC LIMIT

EXHIBIT 6 E

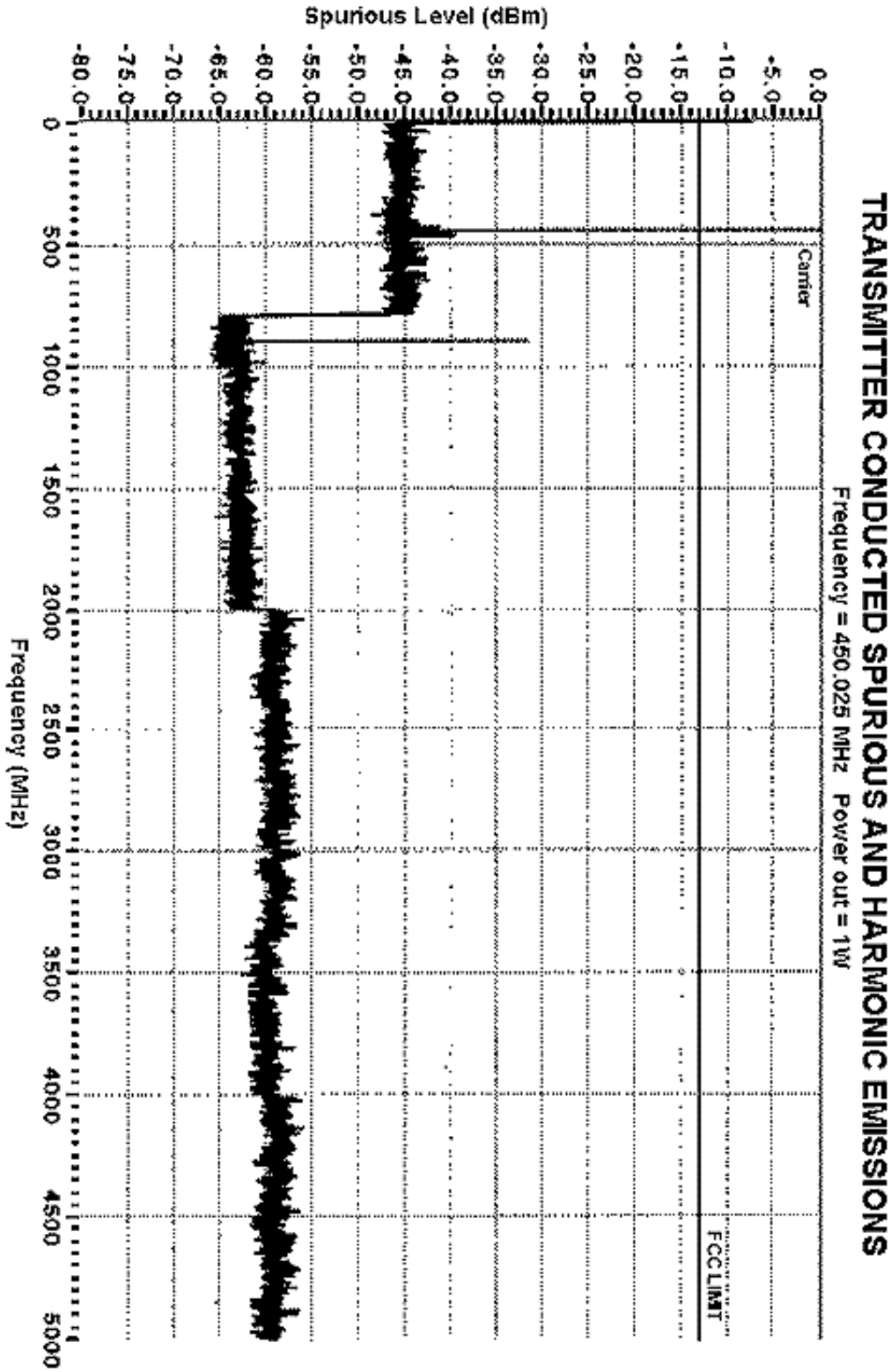

TRANSMITTER CONDUCTED SPURIOUS AND HARMONIC EMISSIONS
Frequency = 450.025 MHz Power out = 1W
Spurious Level (dBm)
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
-30.0
-35.0
-40.0
-45.0
-50.0
-55.0
-60.0
-65.0
-70.0
-75.0
-80.0
Carrier
FCC LIMIT
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
Frequency (MHz)

EXHIBIT 6 F

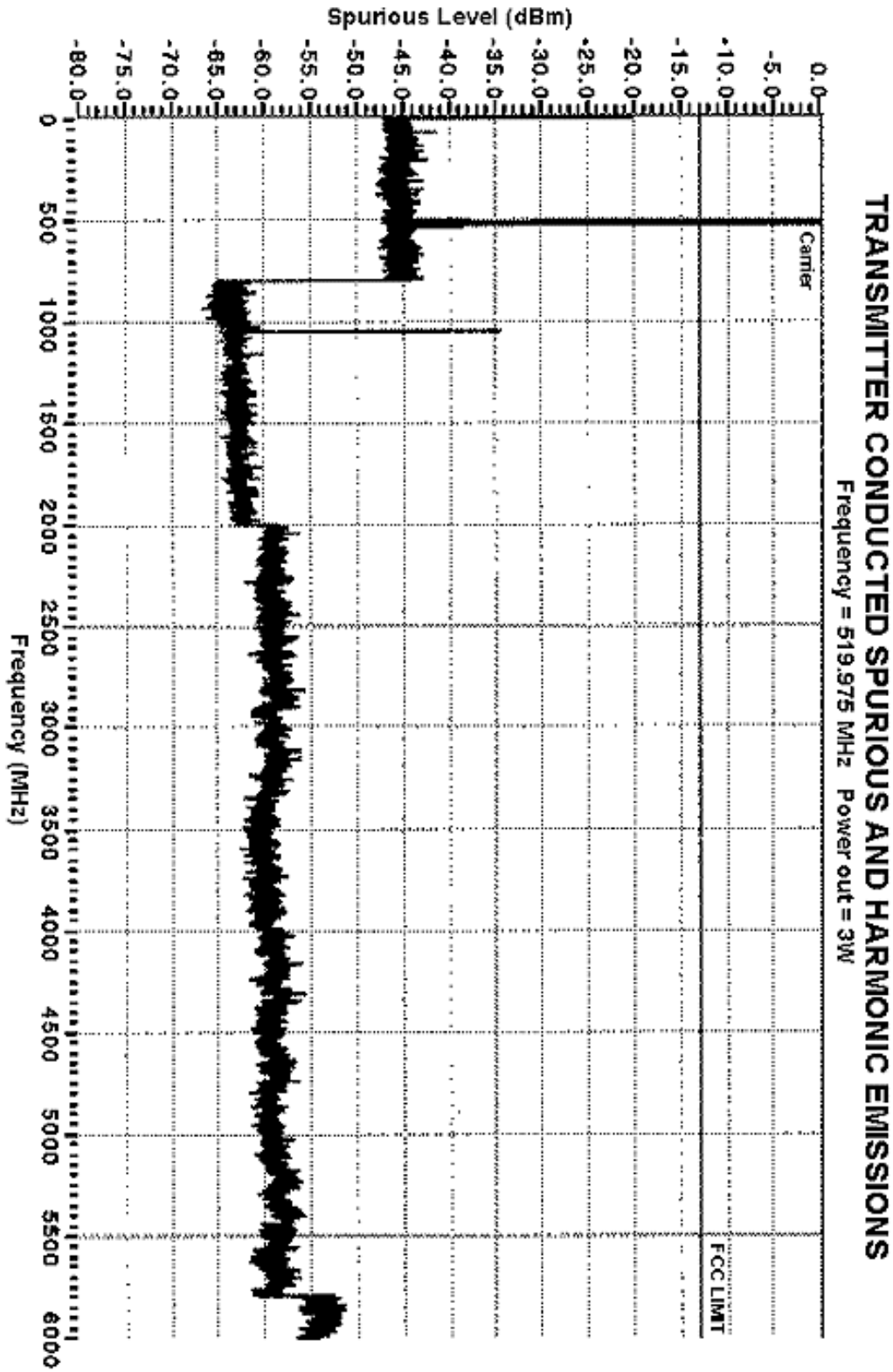

TRANSMITTER CONDUCTED SPURIOUS AND HARMONIC EMISSIONS
Frequency = 519.975 MHz Power out = 3W
Spurious Level (dBm)
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
-30.0
-35.0
-40.0
-45.0
-50.0
-55.0
-60.0
-65.0
-70.0
-75.0
-80.0
Carrier
FCC LIMT
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
Frequency (MHz)

EXHIBIT 6 F

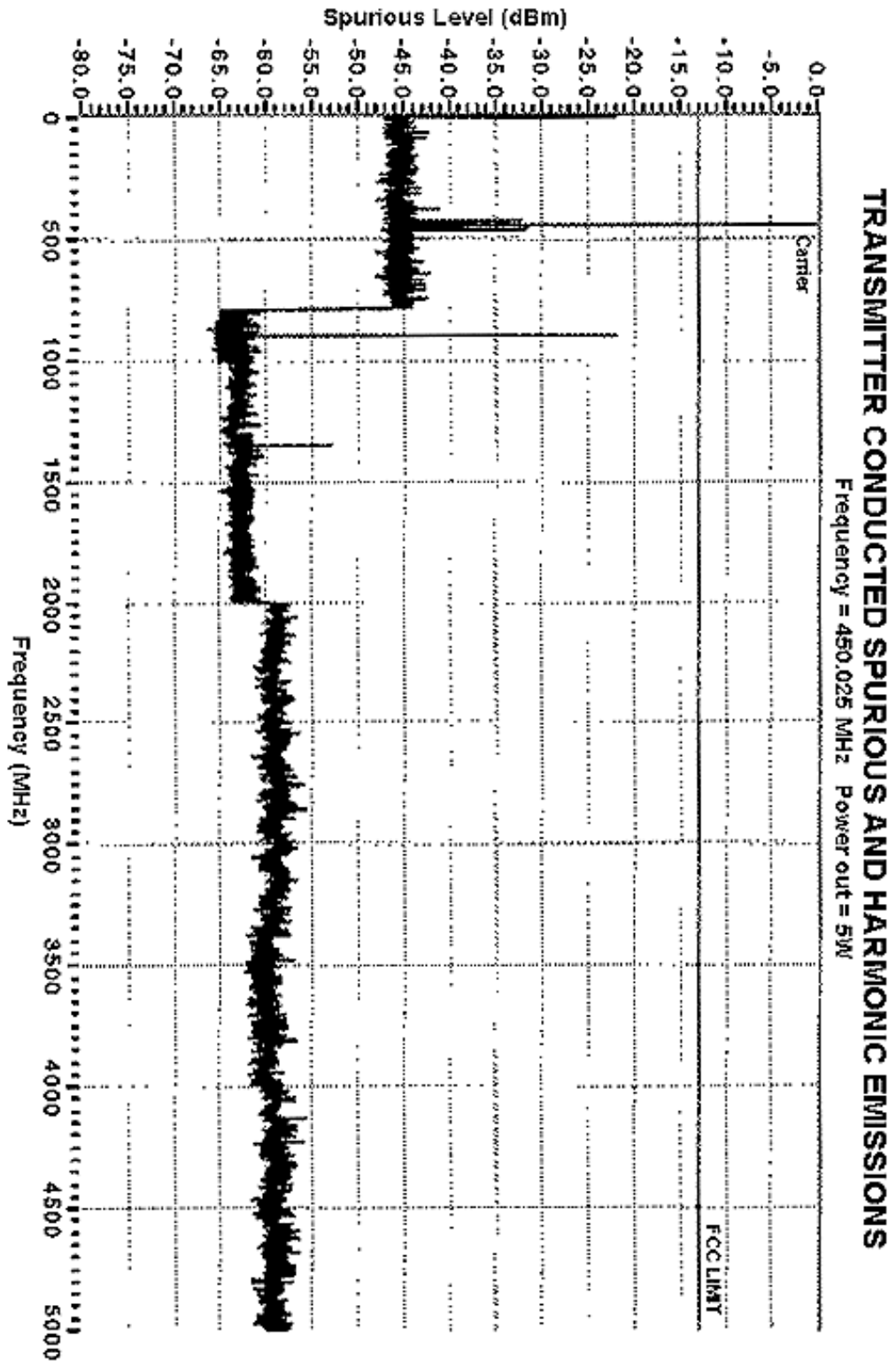

TRANSMITTER CONDUCTED SPURIOUS AND HARMONIC EMISSIONS
Frequency = 450.025 MHz Power out = 5W
Spurious Level (dBm)
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
-30.0
-35.0
-40.0
-45.0
-50.0
-55.0
-60.0
-65.0
-70.0
-75.0
-80.0
Carrier
FCC LIMIT
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
Frequency (MHz)

EXHIBIT 6 F

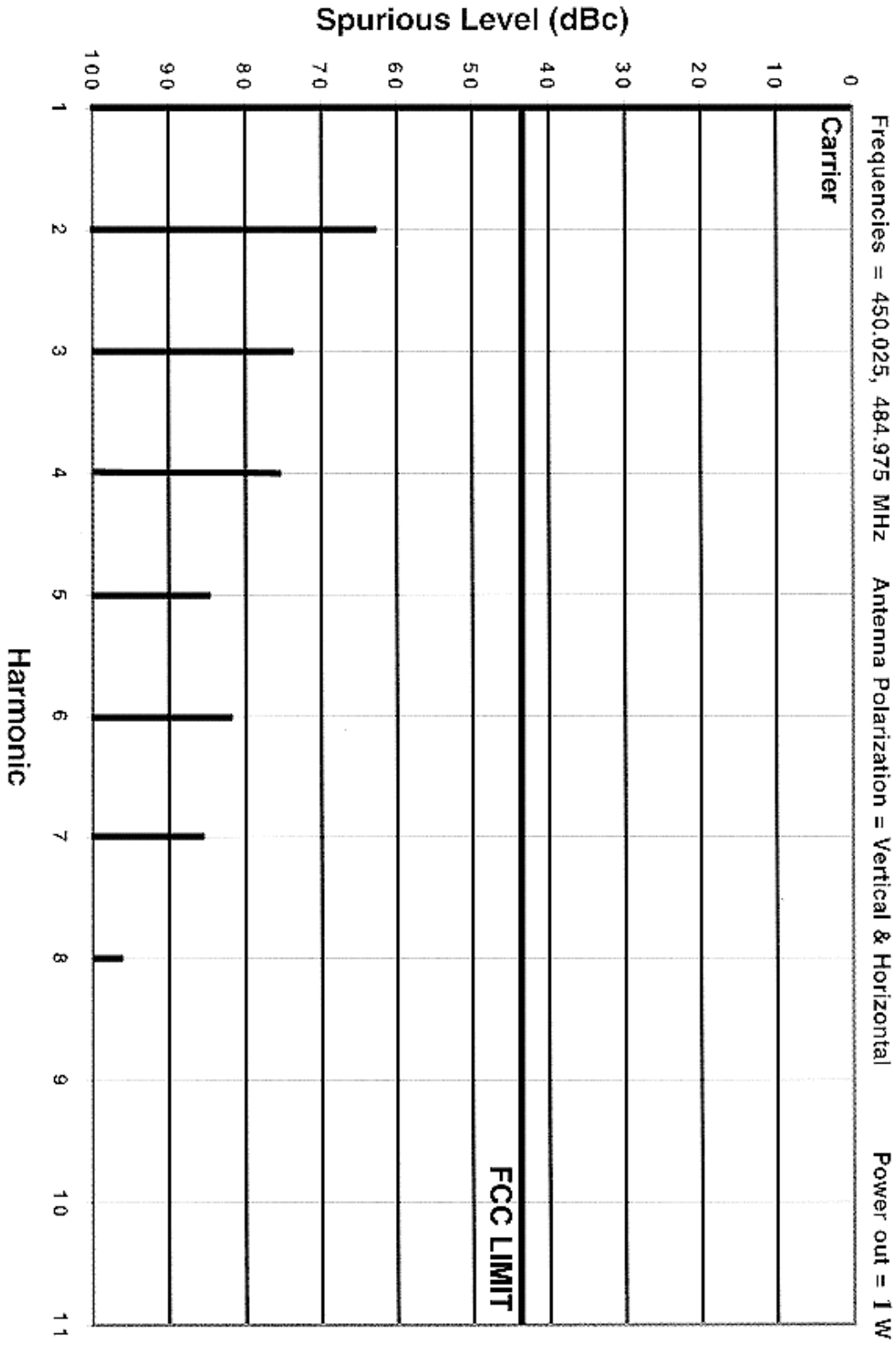

Transmitter Radiated Spurious and Harmonic Emissions
Frequencies = 450.025, 484.975 MHz Antenna Polarization = Vertical & Horizontal Power out = 1 W
Spurious Level (dBc)
0
10
20
30
40
50
60
70
80
90
100
Carrier
FCC LIMIT
1
2
3
4
5
6
7
8
9
10
11
Harmonic

EXHIBIT 6 G

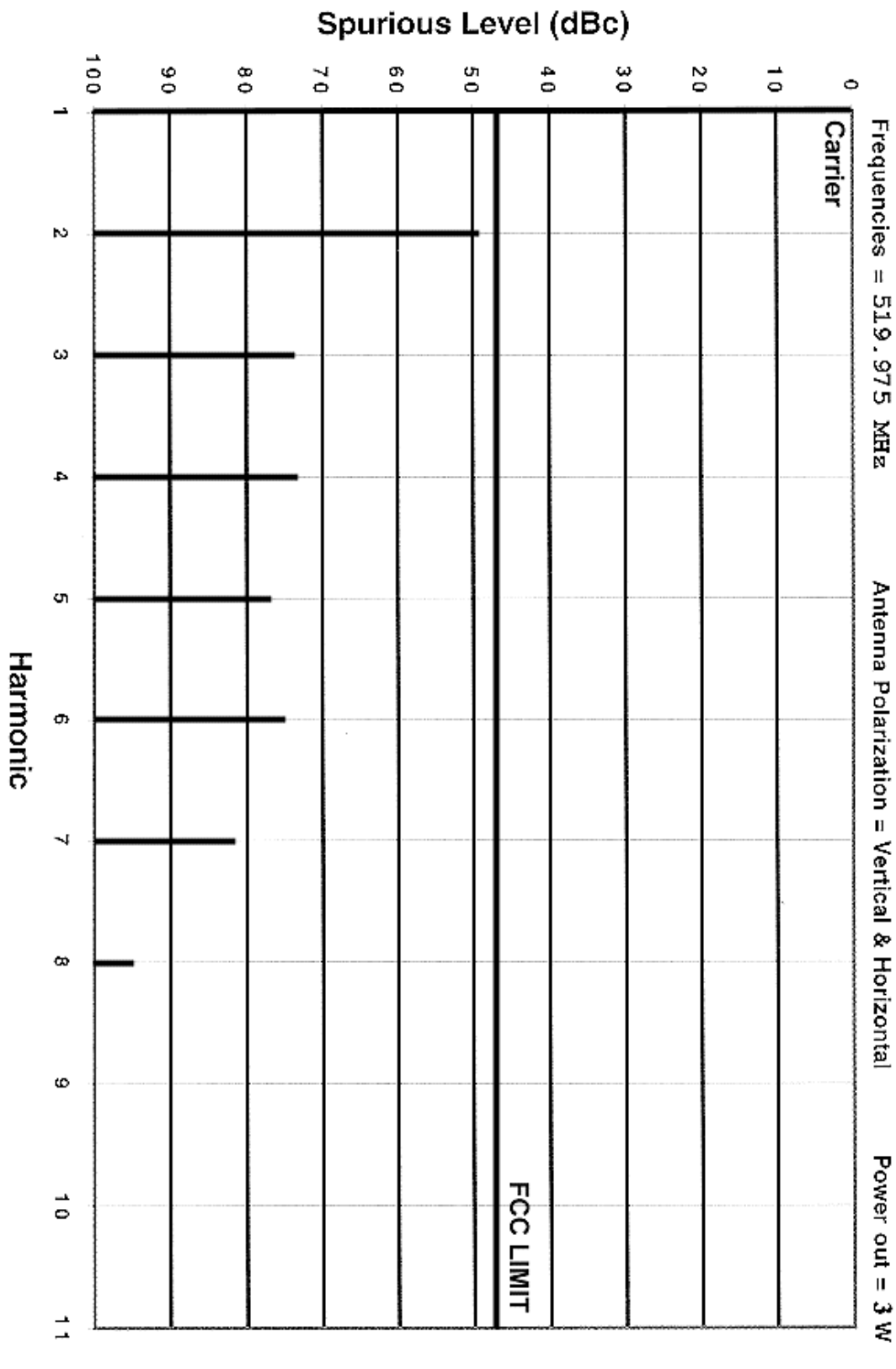

Transmitter Radiated Spurious and Harmonic Emissions
Frequencies = 519.975 MHz
Antenna Polarization = Vertical & Horizontal
Power out = 3 W
Spurious Level (dBc)
0
10
20
30
40
50
60
70
80
90
100
Carrier
FCC LIMIT
1
2
3
4
5
6
7
8
9
10
11
Harmonic

EXHIBIT 6 G

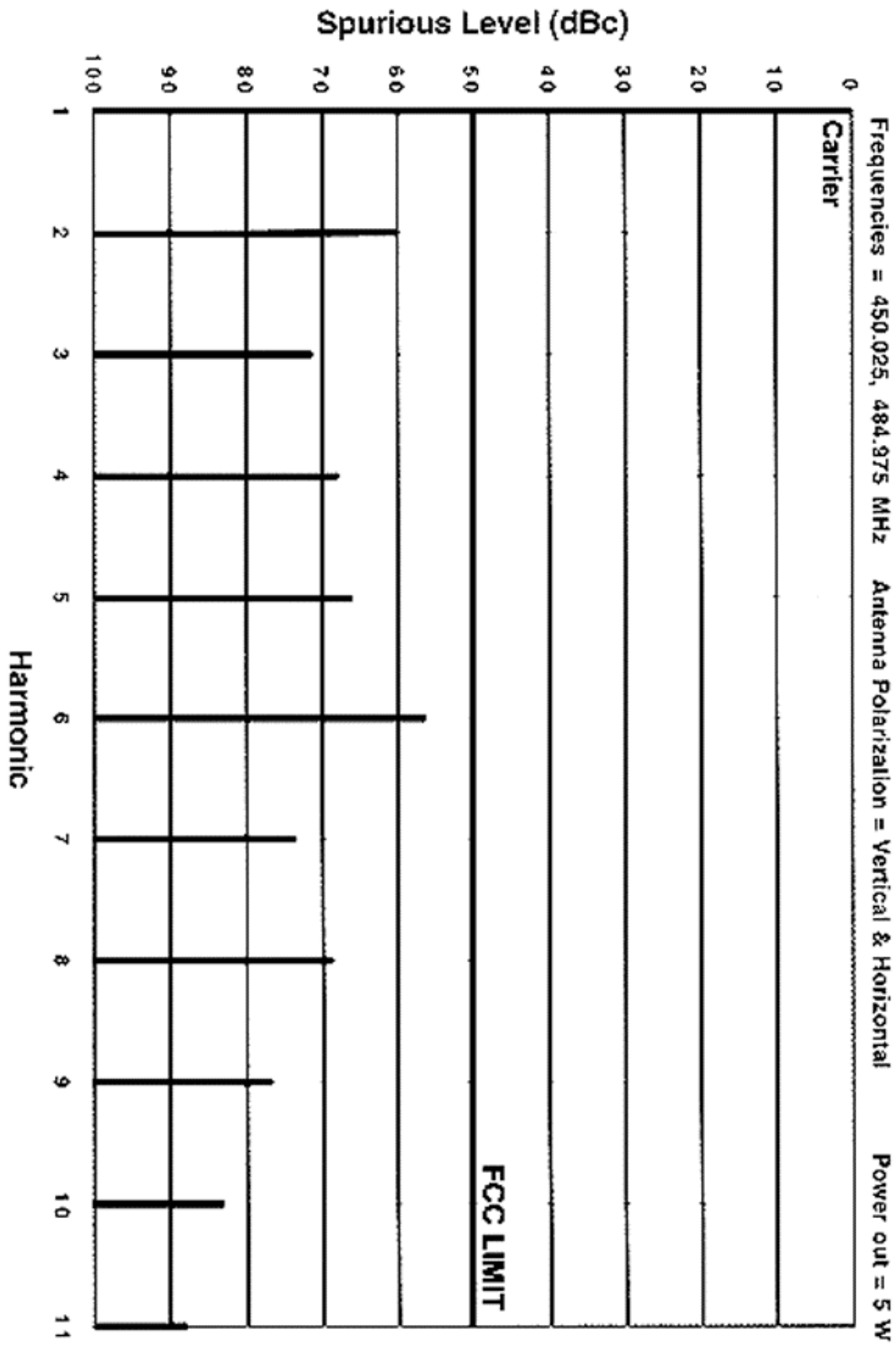

Transmitter Radiated Spurious and Harmonic Emissions
Frequencies = 450.025, 484.975 MHz Antenna Polarization = Vertical & Horizontal Power out = 5 W
Spurious Level (dBc)
0
10
20
30
40
50
60
70
80
90
100
Carrier
FCC LIMIT
1
2
3
4
5
6
7
8
9
10
11
Harmonic

EXHIBIT 6 G

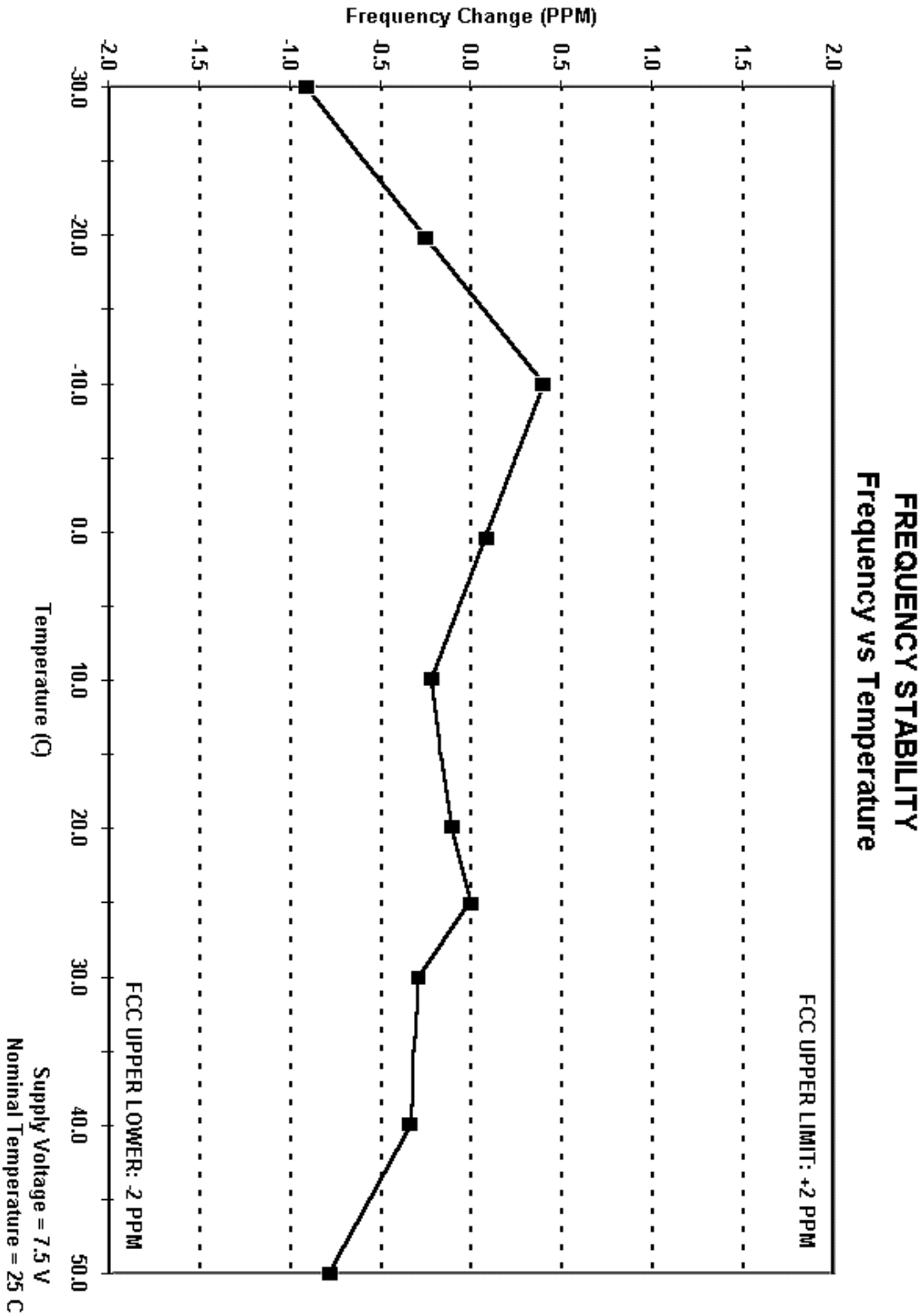
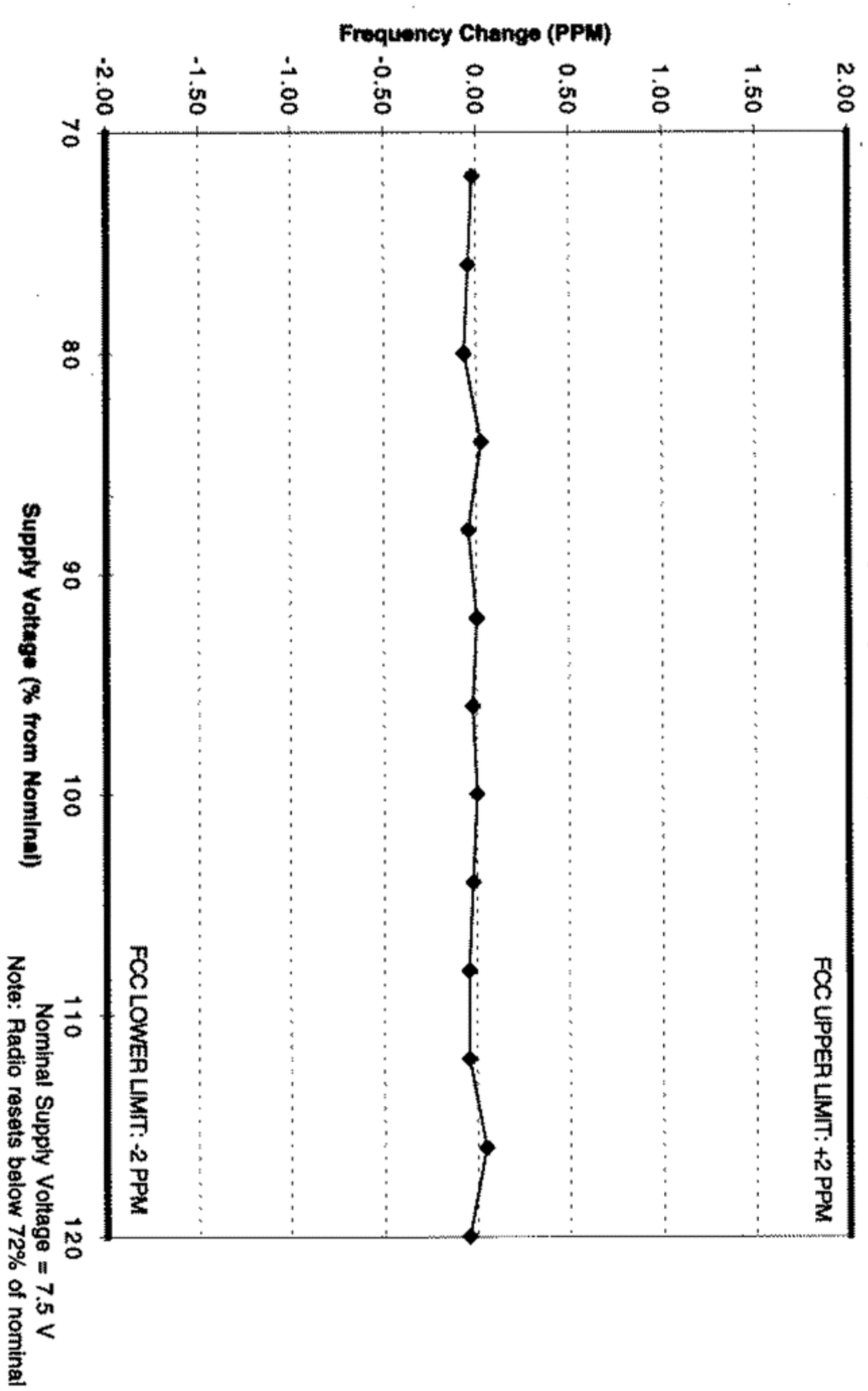
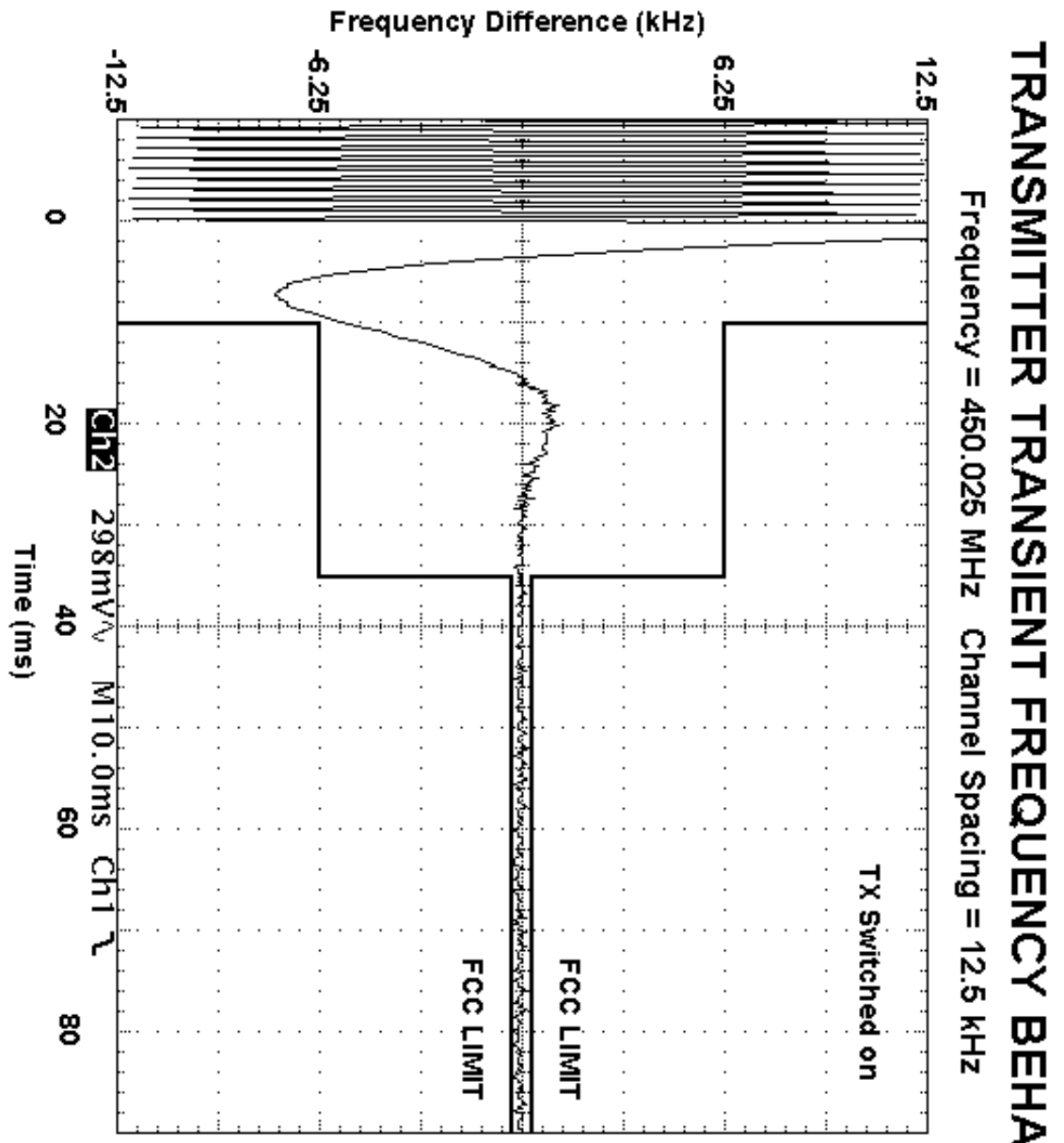
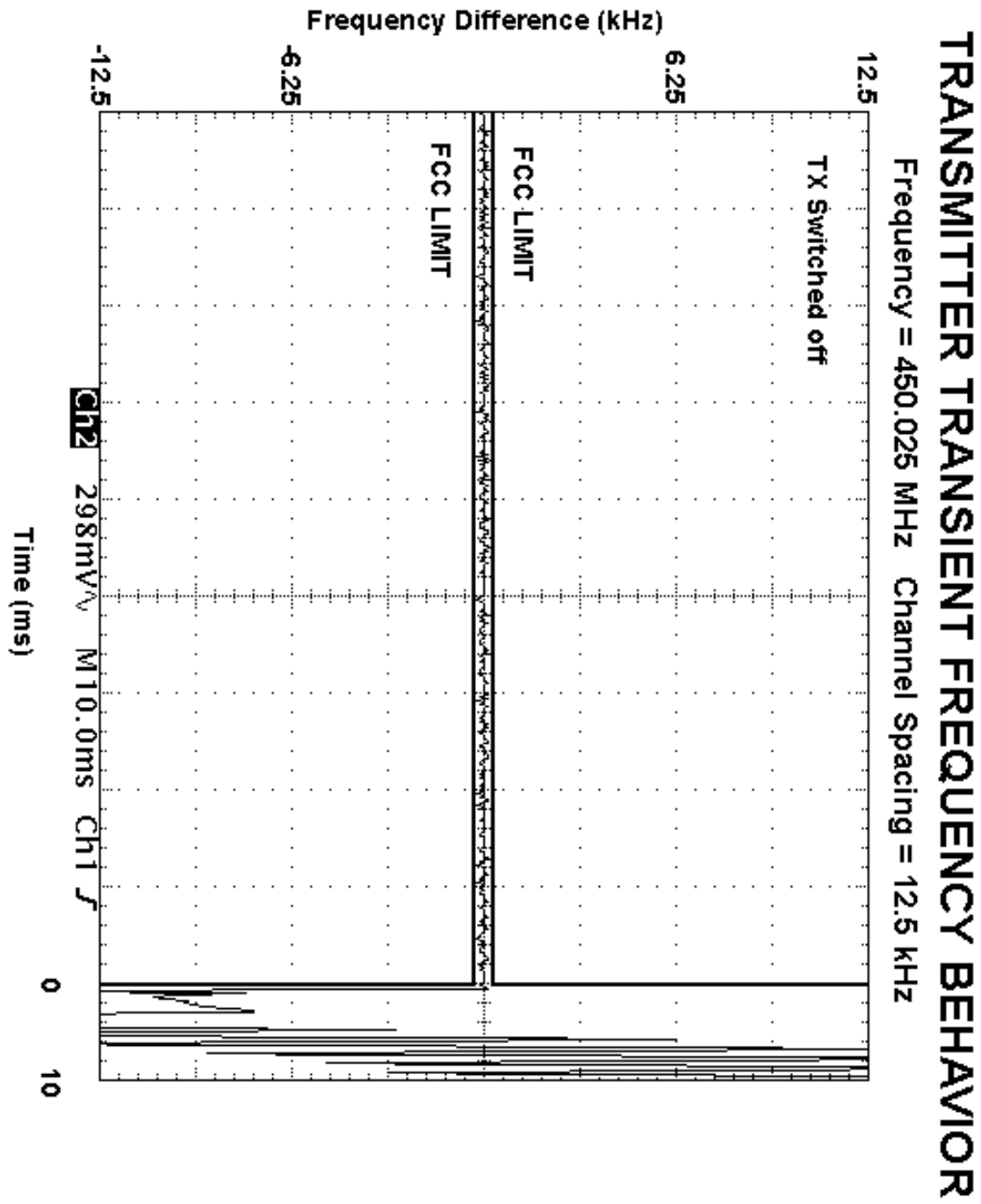

FREQUENCY STABILITY
Frequency vs Temperature
Frequency Change (PPM)
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
-1.5
-2.0
FCC UPPER LIMIT: +2 PPM
FCC UPPER LOWER: -2 PPM
-30.0
-20.0
-10.0
0.0
10.0
20.0
30.0
40.0
50.0
Temperature (C)
Supply Voltage = 7.5 V
Nominal Temperature = 25 C

EXHIBIT 6 H-1


FREQUENCY STABILITY
Frequency vs Supply Voltage
Frequency Change (PPM)
2.00
1.50
1.00
0.50
0.00
-0.50
-1.00
-1.50
-2.00
FCC UPPER LIMIT: +2 PPM
FCC LOWER LIMIT: -2 PPM
70
80
90
100
110
120
Supply Voltage (% from Nominal)
Nominal Supply Voltage = 7.5 V
Note: Radio resets below 72% of nominal


TRANSMITTER TRANSIENT FREQUENCY BEHAVIOR
Frequency = 450.025 MHz Channel Spacing = 12.5 kHz
Frequency Difference (kHz)
12.5
6.25
-6.25
-12.5
TX Switched on
FCC LIMIT
FCC LIMIT
0
20
40
60
80
Time (ms)
Ch2 298mV M10.0ms Ch1


TRANSMITTER TRANSIENT FREQUENCY BEHAVIOR
Frequency = 450.025 MHz Channel Spacing = 12.5 kHz
Frequency Difference (kHz)
12.5
6.25
-6.25
-12.5
TX Switched off
FCC LIMIT
FCC LIMIT
Ch2 298mV
M10.0ms Ch1
Time (ms)
0
10

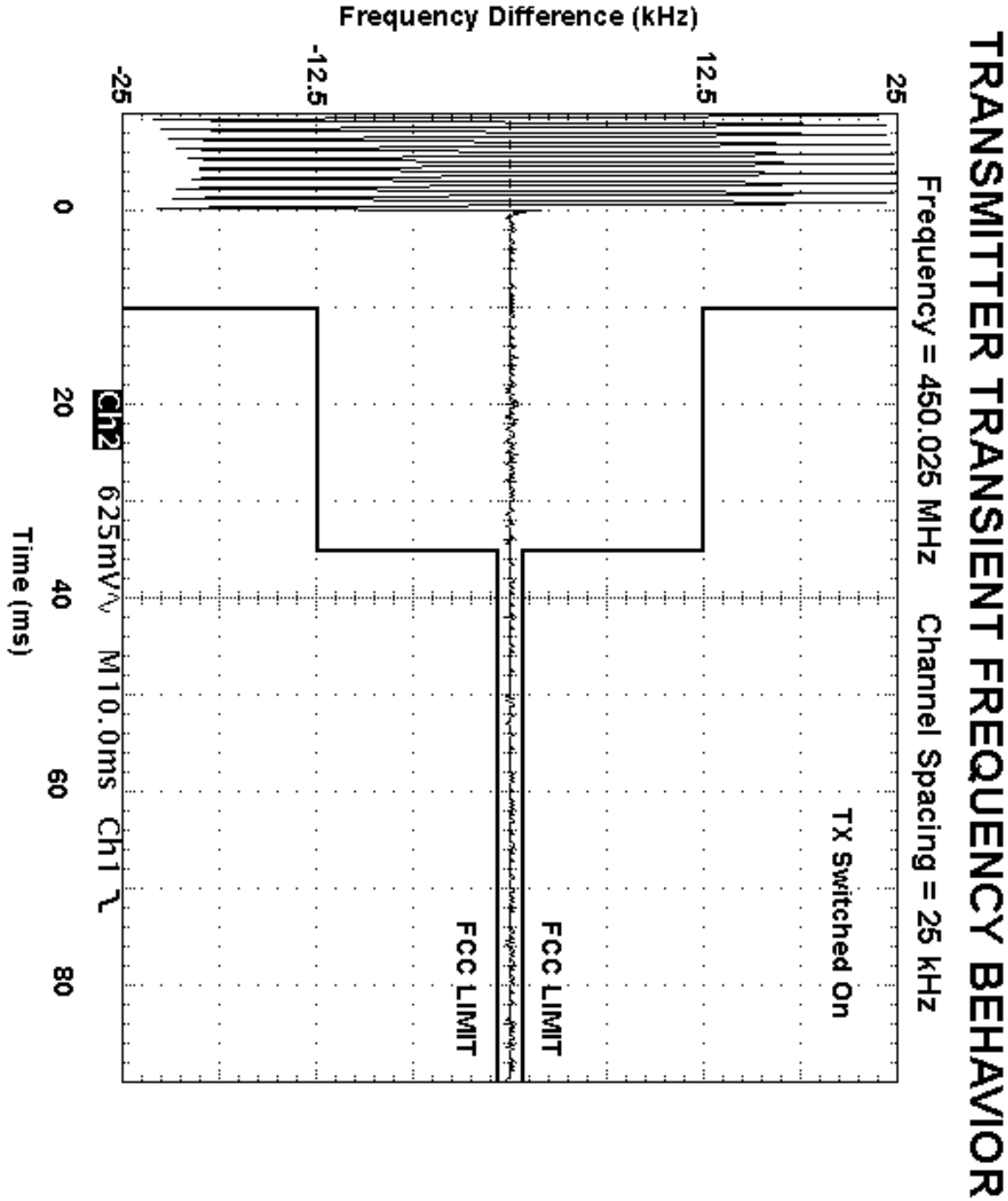
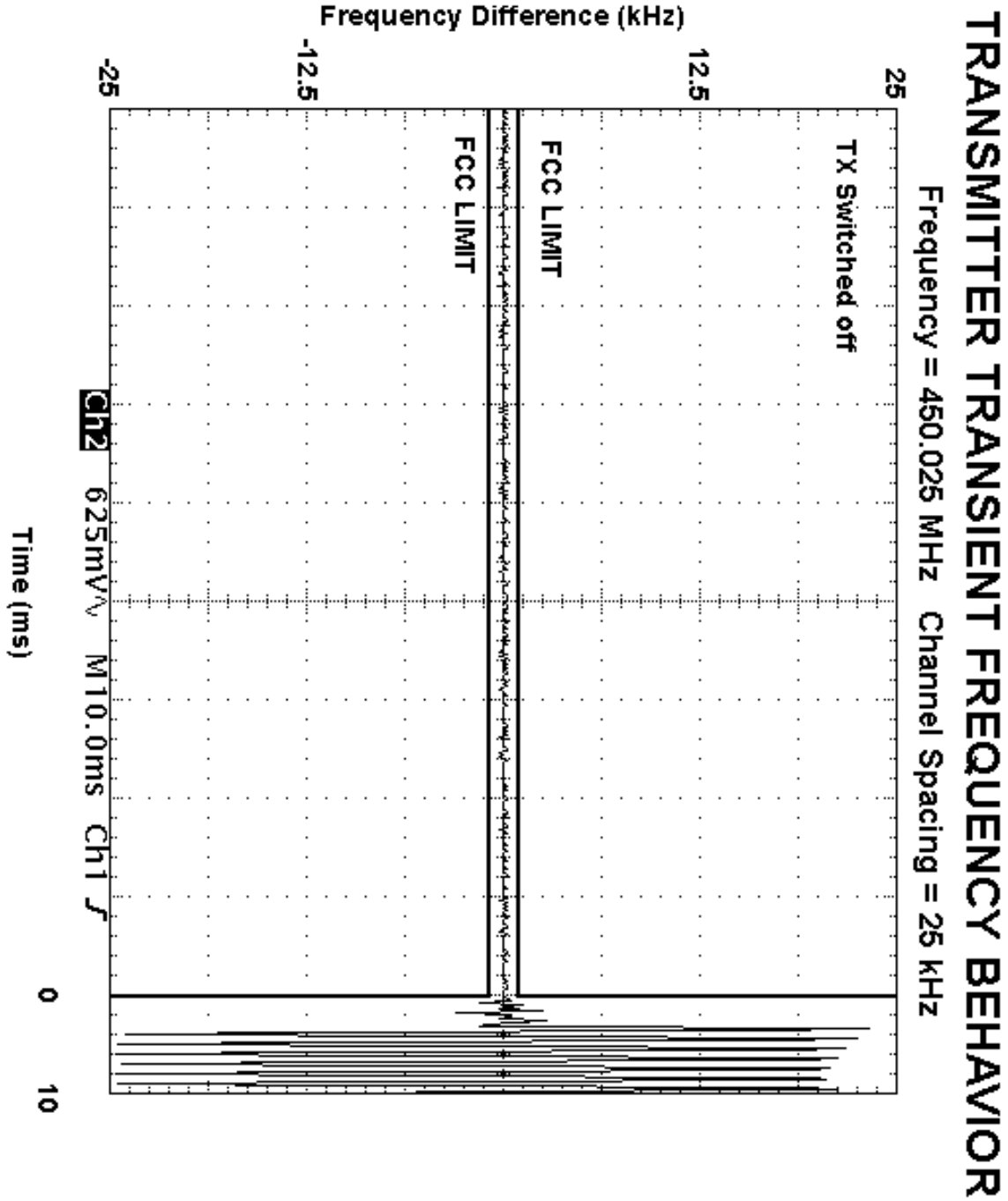

TRANSMITTER TRANSIENT FREQUENCY BEHAVIOR
Frequency = 450.025 MHz Channel Spacing = 25 kHz
Frequency Difference (kHz)
25
12.5
-12.5
-25
TX Switched On
FCC LIMIT
FCC LIMIT
0
20
40
60
80
Time (ms)
Ch2 625mV M10.0ms Ch1

EXHIBIT 6 I


TRANSMITTER TRANSIENT FREQUENCY BEHAVIOR
Frequency = 450.025 MHz Channel Spacing = 25 kHz
Frequency Difference (kHz)
25
12.5
-12.5
-25
TX Switched off
FCC LIMIT
FCC LIMIT
Ch2 625mV
M10.0ms Ch1
Time (ms)
0
10