TABLE of CONTENTS

SECTION 1

RF POWER OUTPUT

2.985 (A) The RF Power measured at the output terminals:

AXATR-307-A2 Variable 45- 90 Watts

Method: The measurement was made per TIA/EIA-603 using the following equipment::

A 50 ohm load is attached to the output terminal through a directional coupler.. The power is measured on a HP436A power meter.

SECTION 2

MODULATION CHARACTERISTICS

Ref. Par. 2.987 (a, b, d) the frequency and amplitude response to audio inputs measured per TIA/EIA 603 are shown on the following sheet

406-450, 470-512 Mhz

Section 2B Audio Frequency Response

Section 2C,D Modulation Versus Modulation Input Voltage (25 ,12.5kHz)

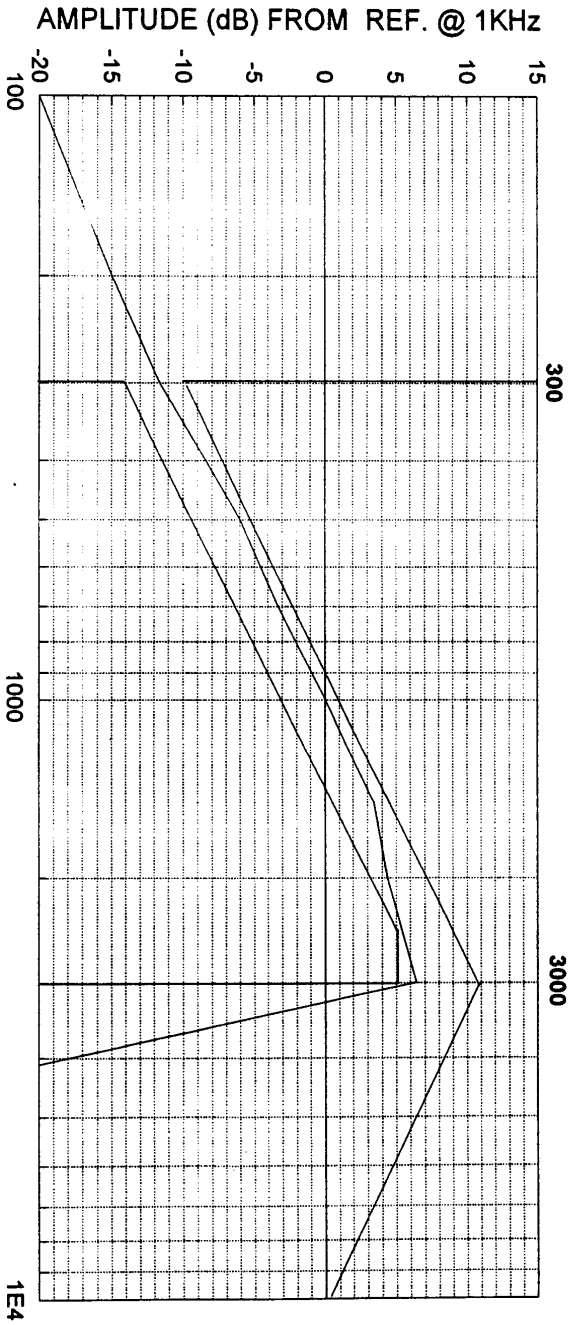
Equipment used was:

Marconi Instruments Ltd. FM/AM Modulation Meter TF2300B
Hewlett Packard Audio Signal Generator 204D
Hewlett Packard Distortion Analyzer 333A

At those modulation frequencies at which the transmitter is not capable of producing 30% of system deviation, audio response is calculated from measurement of input voltage producing a lesser deviation.

TRANSMITTER AUDIO FREQUENCY RESPONSE

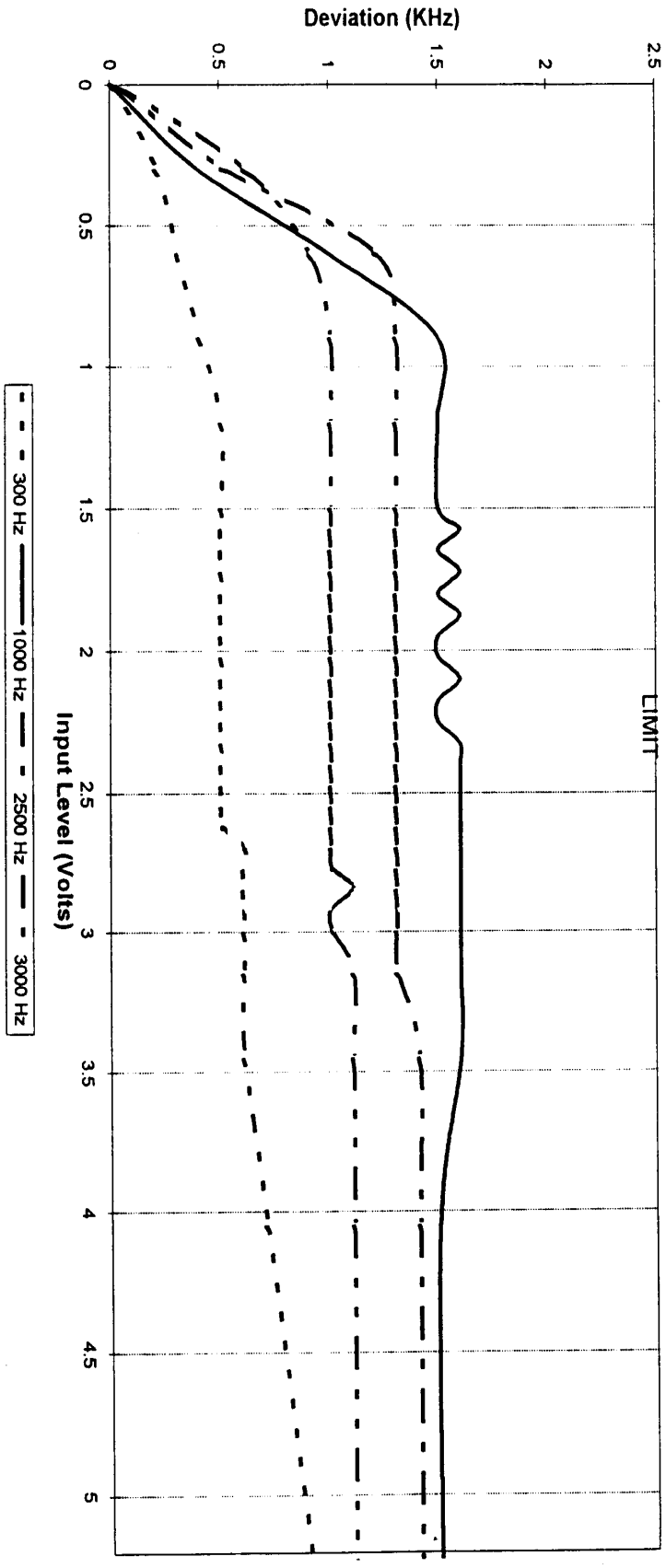
AXATR-307-X2



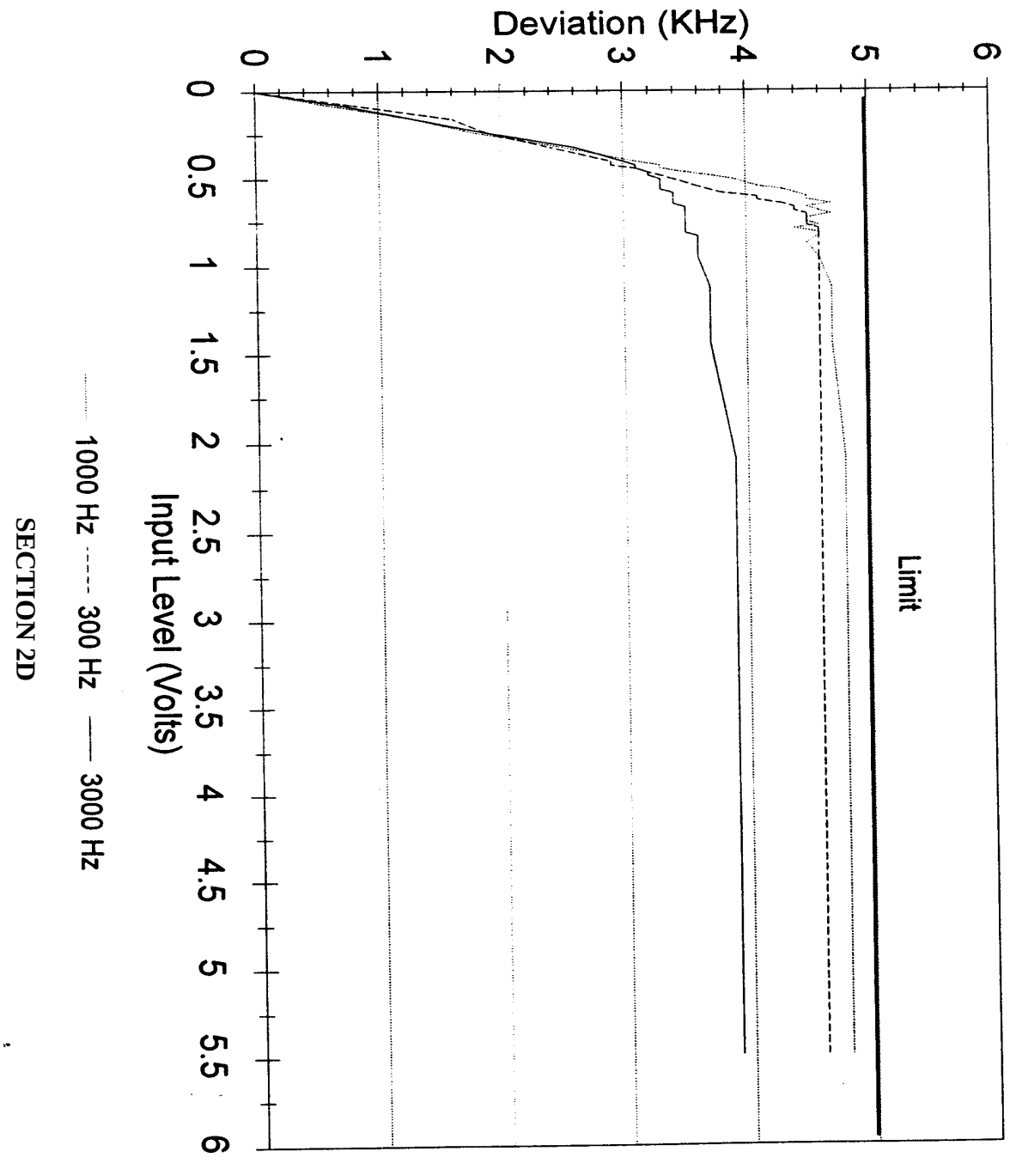
SECTION 2B

Modulation Limiting

AXATR-307-X2



SECTION 2C


Modulation Limiting
AXATR-307-X2
Deviation (KHz)
0
1
2
3
4
5
6
Limit
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
5.5
6
Input Level (Volts)
1000 Hz
300 Hz
3000 Hz

SECTION 2D

SECTION 3

OCCUPIED BANDWIDTH

Per 2.989 (c, 1) the measurements were made per TIA/EIA 603.

470 Mhz

SECTION 3B, C (25 kHz)
SECTION 3D, E (12.5 kHz, 50 & 150 kHz spans, voice)
SECTION 3E, F (12.5kHz, 50 &150kHz spans, 9600 bps data)

SECTION 3

OCCUPIED BANDWIDTH

(FOR 25 kHz CHANNELIZATION)

Method of Measurement Per 2.989 (c,1) Data on Occupied Bandwidth is presented in the form of a spectrum analyzer plot which illustrates the transmitter sidebands. A plot is taken of the carrier sideband modulated with a 2500 Hz tone at a level 16 dB greater than that required to produce 50 percent modulation. (The spectrum analyzer grid indicates the reference level of the carrier unmodulated in all exhibits.)

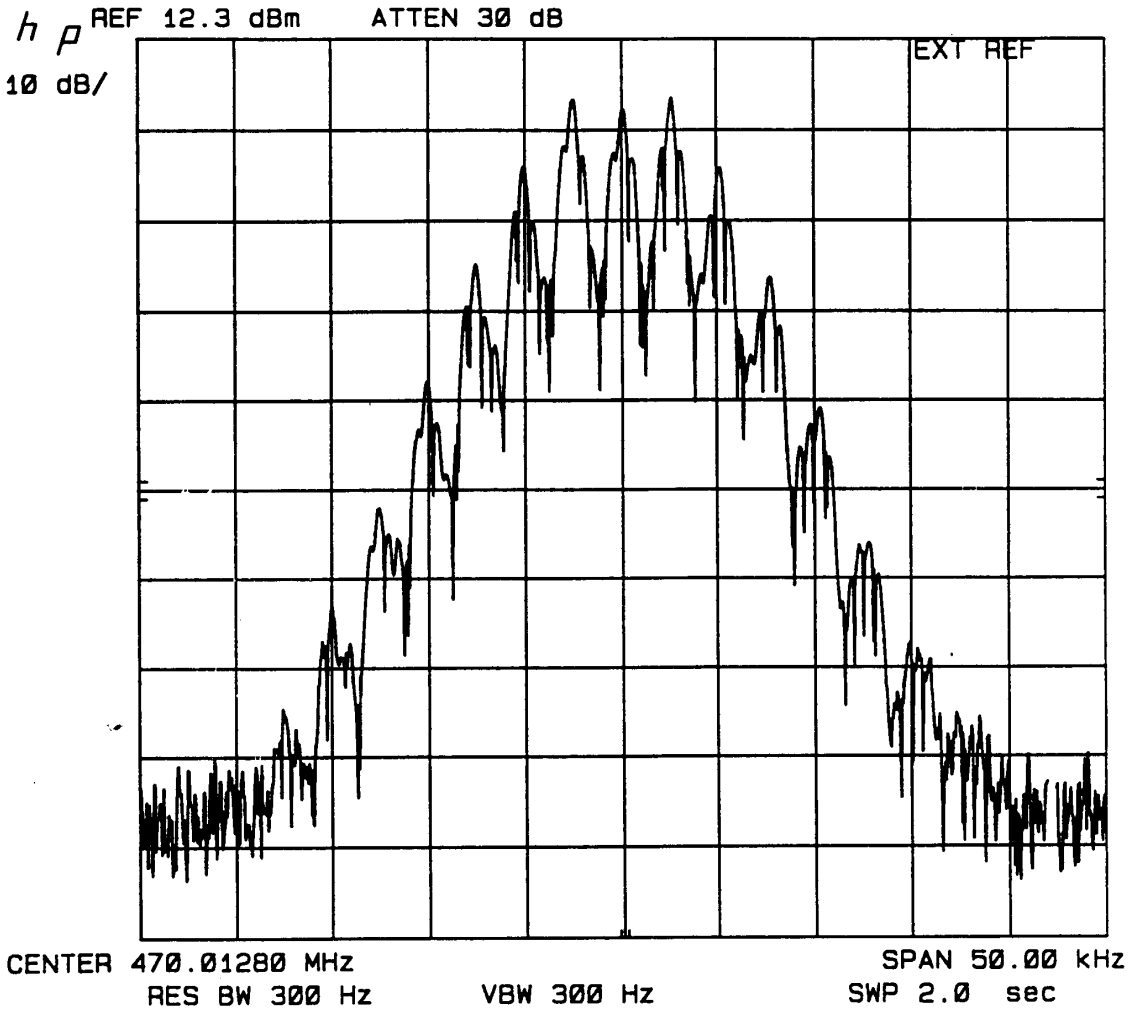
SECTION 3B Bn = 2M + 2DK where M = 3000 Hz
Telephony D = 5000 Hz
K= 1(assumed)

Bn = 16000 Hz
Therefore, Emission Designator = 16K0F3E

SECTION 3C Bn = 2(B/2) + 2DK where B = 9600 Hz
Telephony D = 3200 Hz
K = 1(assumed)

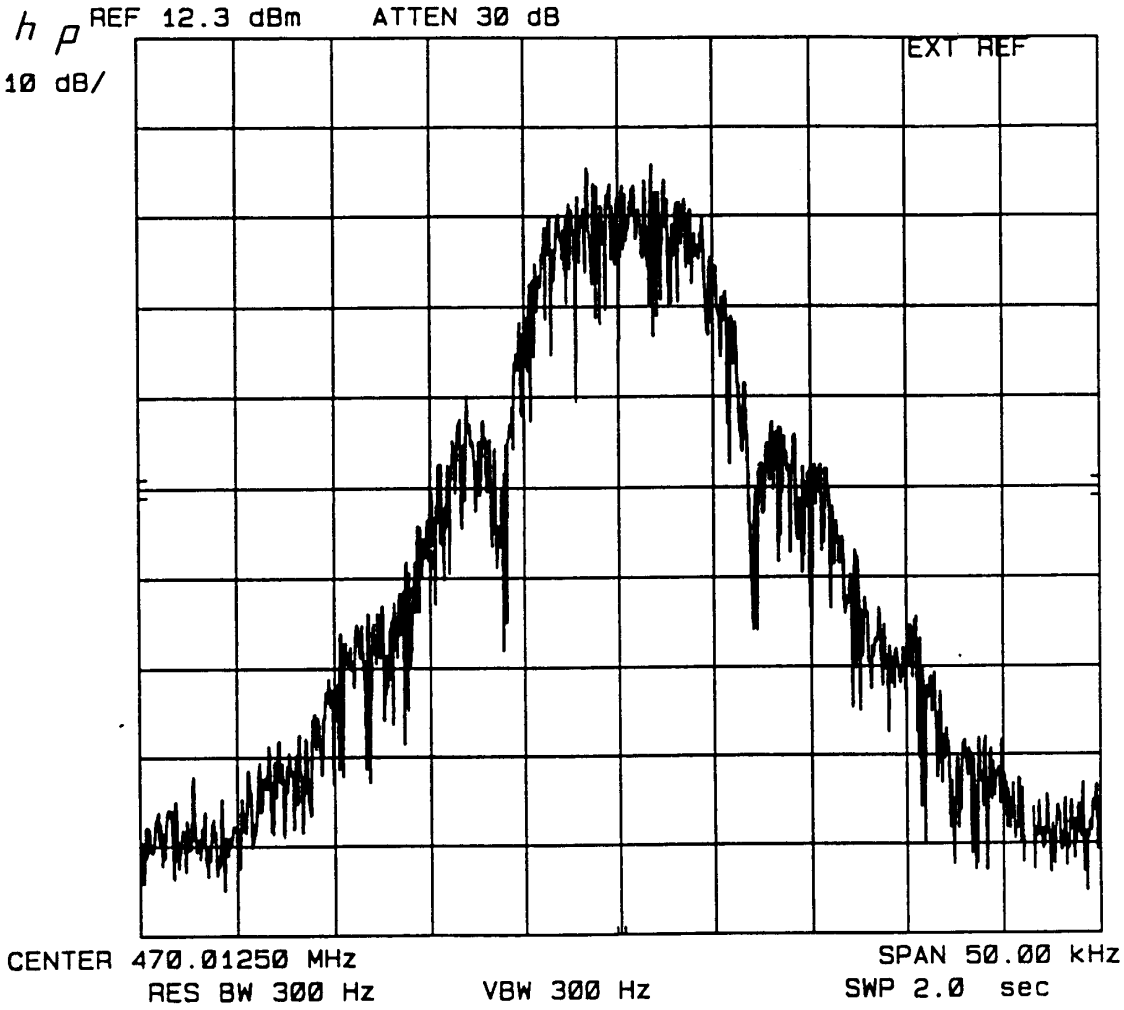
Bn = 16000 Hz
Therefore, Emission Designator = 16K0F1D(Data),
16K0F1E(Digital Voice)

SECTION 3B



Referenced to the Unmodulated Carrier
Modulated with 2500 Hz @ 3Khz Dev.
Analyzer: Vertical = 10 dB/Div.

SECTION 3C



Referenced to the Unmodulated Carrier
Modulated with Pseudorandom Data 9600 Baud
Analyzer: Vertical = 10 dB/Div.

SECTION 3

OCCUPIED BANDWIDTH

(FOR 12.5 kHz CHANNELIZATION)

Method of Measurement Per Data on Occupied Bandwidth is presented in the form of a spectrum analyzer plot which illustrates the transmitter sidebands. A plot is taken of the carrier sideband modulated with a 2500 Hz tone at a level 16 dB greater than that required to produce 50 percent modulation. (The spectrum analyzer grid indicates the reference level of the carrier unmodulated in all exhibits.)

Section D,E
Telephony

Bn = 2M+2DK where

M = 3000 Hz
D = 2000 Hz
K = 1 (assumed)

Bn = 10000 Hz
Therefore, Emission Designator = 10K0F3E

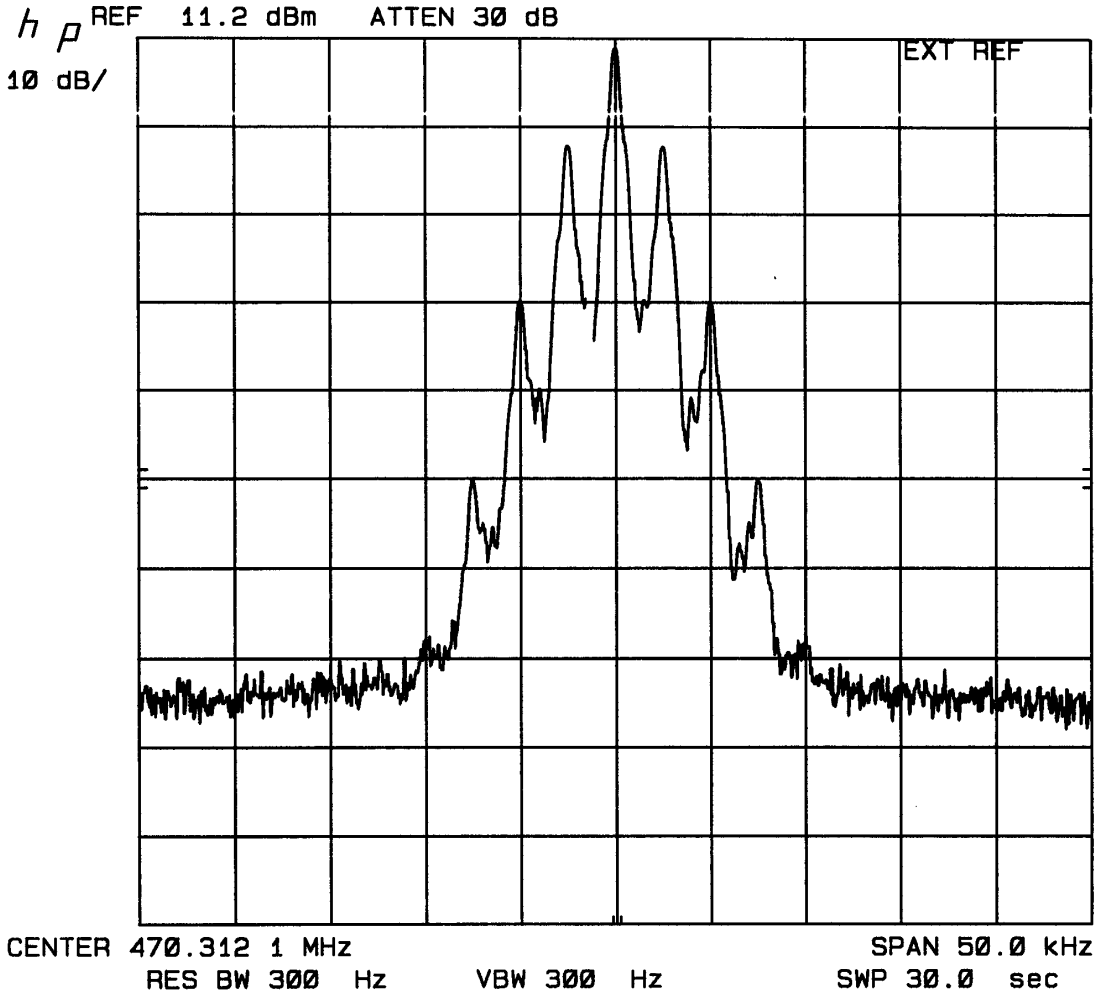
Section E,F

Bn = 2(B/2) + 2DK where

B = 4800 bps
D = 1800 bps
K =1 (assumed)

Bn = 8400 Hz
Therefore, Emission Designator = 8K0F1D
Control Channel Data only

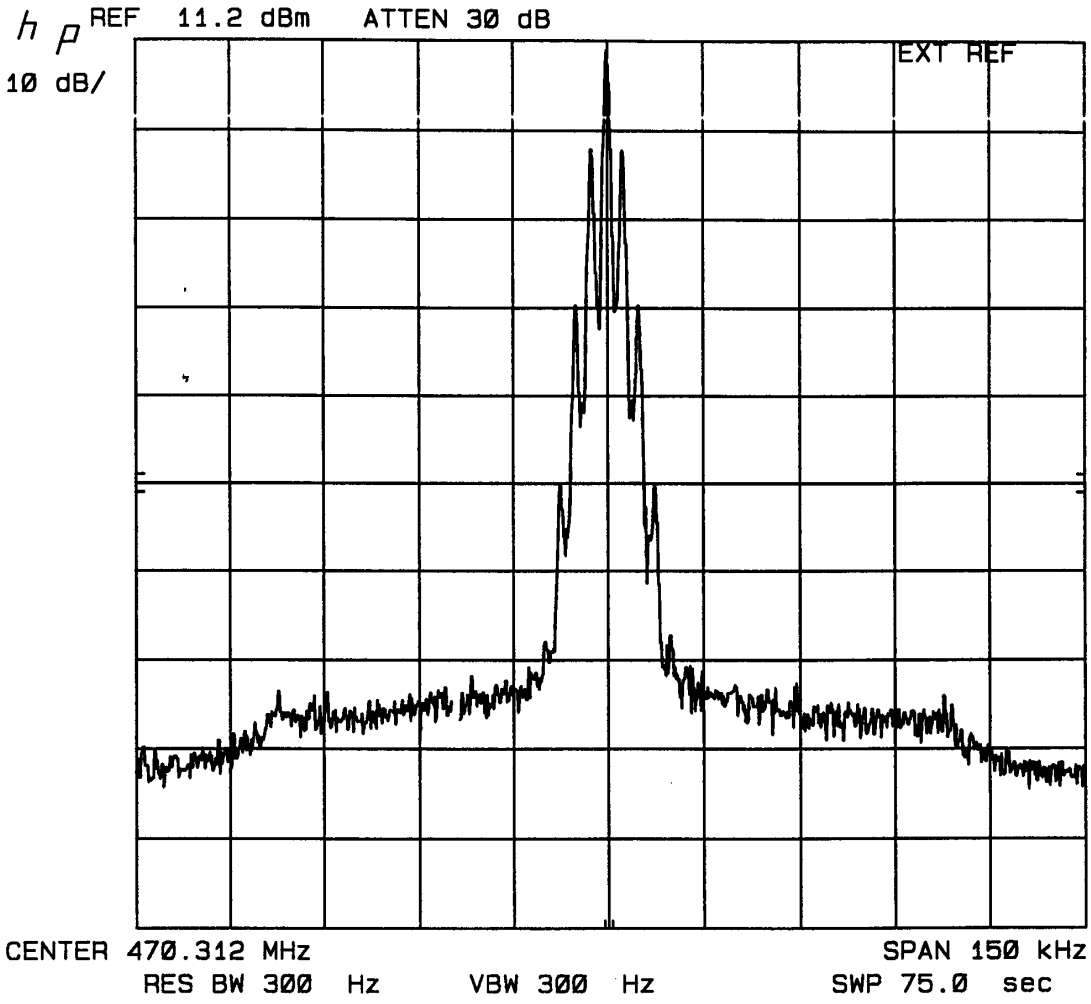
SECTION 3D



Referenced to the Unmodulated Carrier
Modulated with 2500 HZ PER 2.989 (C) (I)

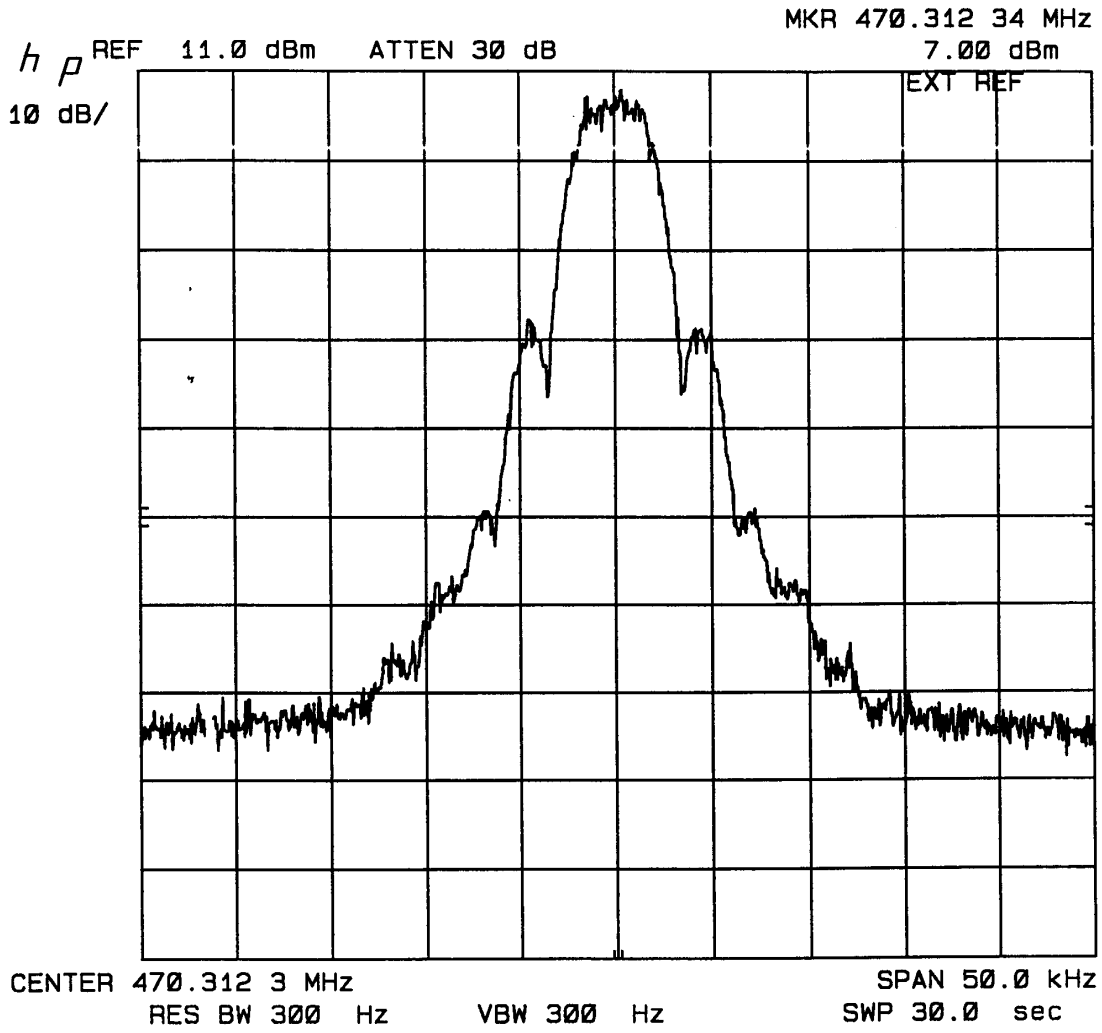
Analyzer: Vertical = 10 dB/Div.

SECTION 3E



Referenced to the Unmodulated Carrier
Modulated with 2500 HZ PER 2.989 (C) (I)
Analyzer: Vertical = 10 dB/Div.

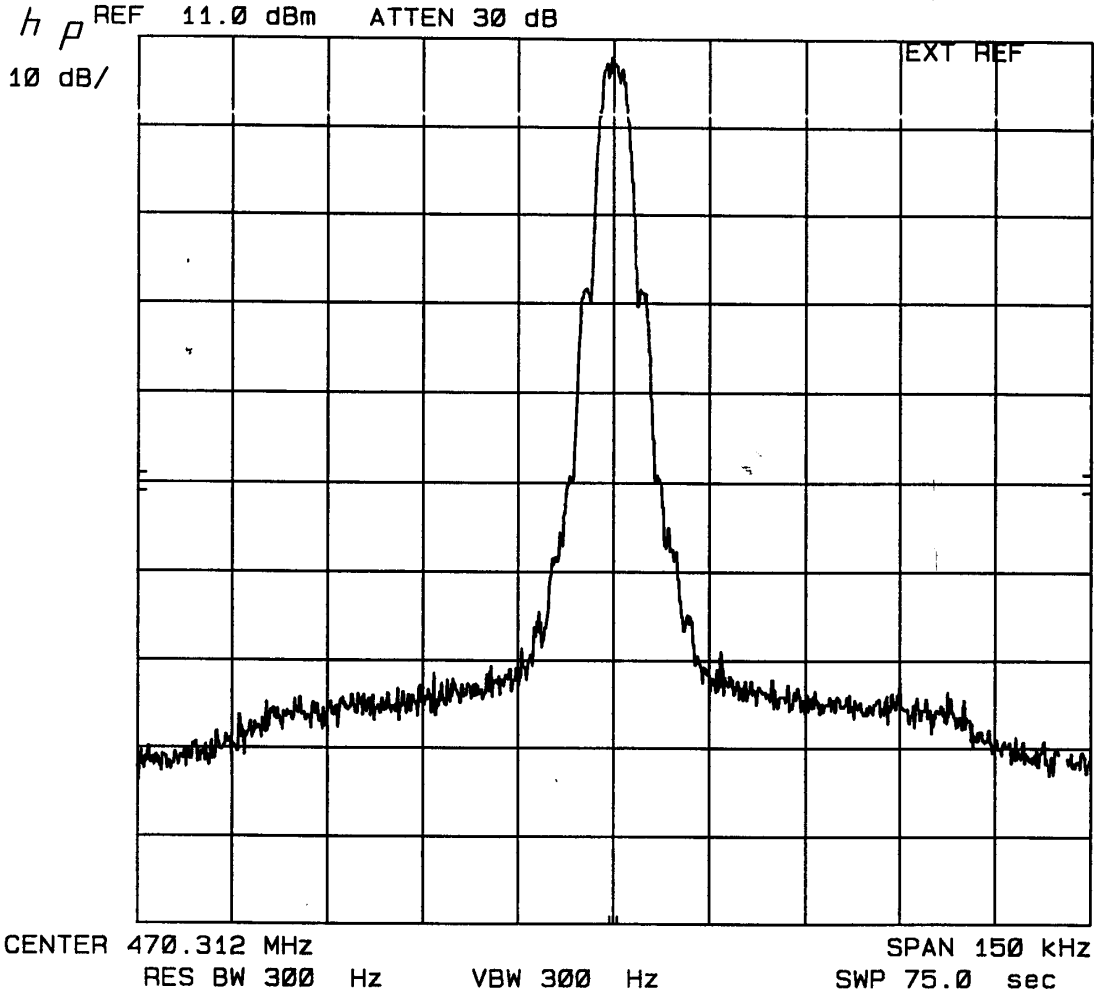
SECTION 3F



Referenced to the Unmodulated Carrier
Modulated with 4800 BPS RANDOM DATA

Analyzer: Vertical = 10 dB/Div.

SECTION G



Referenced to the Unmodulated Carrier
Modulated with 4800 BPS PSEURANDOM DATA

Analyzer: Vertical = 10 dB/Div.

SECTION 4

SPURIOUS EMISSIONS

Reference 2.991 spurious emissions at the antenna terminals when properly loaded with an appropriate artificial antenna were measured per TIA\EIA 603.

Results are as shown in the following Exhibits:

Conducted Emissions

Exhibit		Carrier Frequency*	
4B	AXATR-307-X2	470.125MHz	45 Watts
4C	AXATR-307-X2	470.125 MHz	90 Watts
4D	AXATR-307-X2	489.9875 MHz	45 Watts
4E	AXATR-307-X2	489.9875MHz	90Watts

Equipment used was:

Hewlett Packard Spectrum Analyzer 140T Display, 8554-B-RF, 8552B-IF.

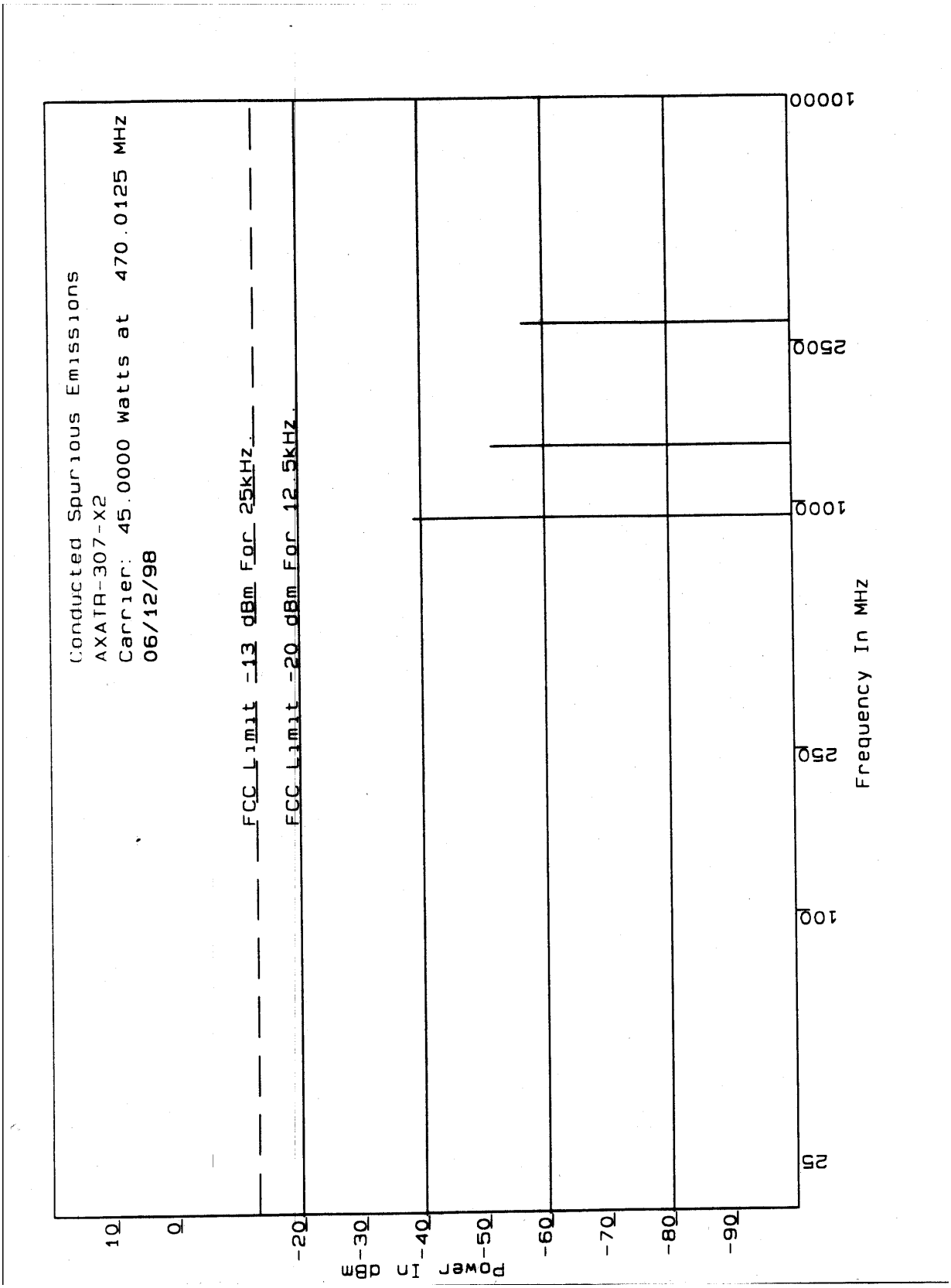
Reference 2.993 field strength of spurious radiation was measured on our three meter range. The site and equipment are described in the site description and attenuation measurements for the Ericsson Inc. three meter radiation site #2 filed with the FCC in Columbia, Maryland, in November of 1990. The measurement procedure is per TIA/EIA 603, but done on a three meter test site. Results are shown on the following exhibits:

Radiated Emissions

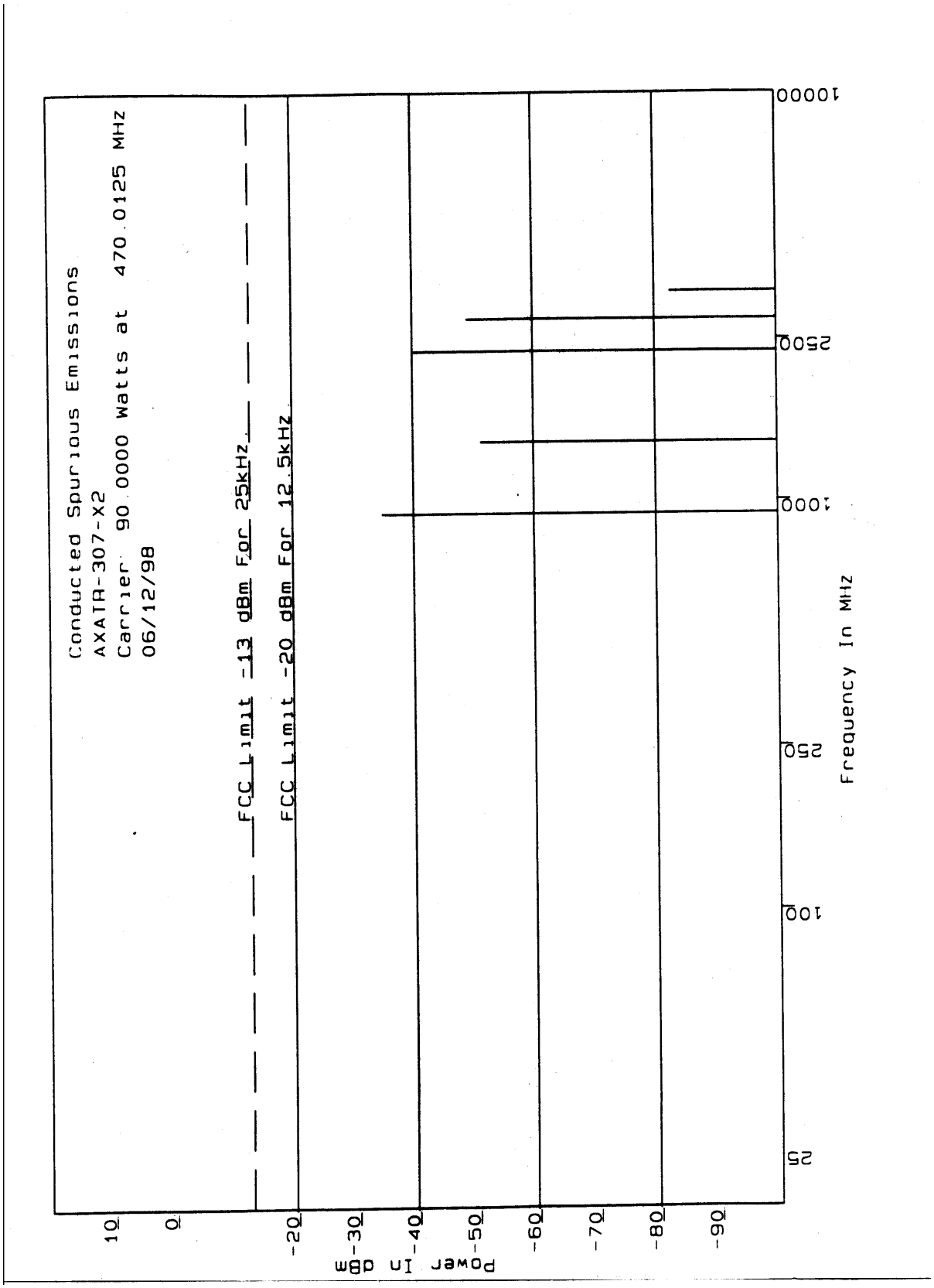
Exhibits		Carrier Frequency*	
4F	AXATR-307-X2	470.125 MHz	45 Watts
4G	AXATR-307-X2	470.125 MHz	90 Watts
4H	AXATR-307-X2	486.9875MHz	45 Watts
4I	AXATR-307-X2	486.9875 MHz	90 Watts

*SAME AS FOR 25 OR 12.5 kHz modes.

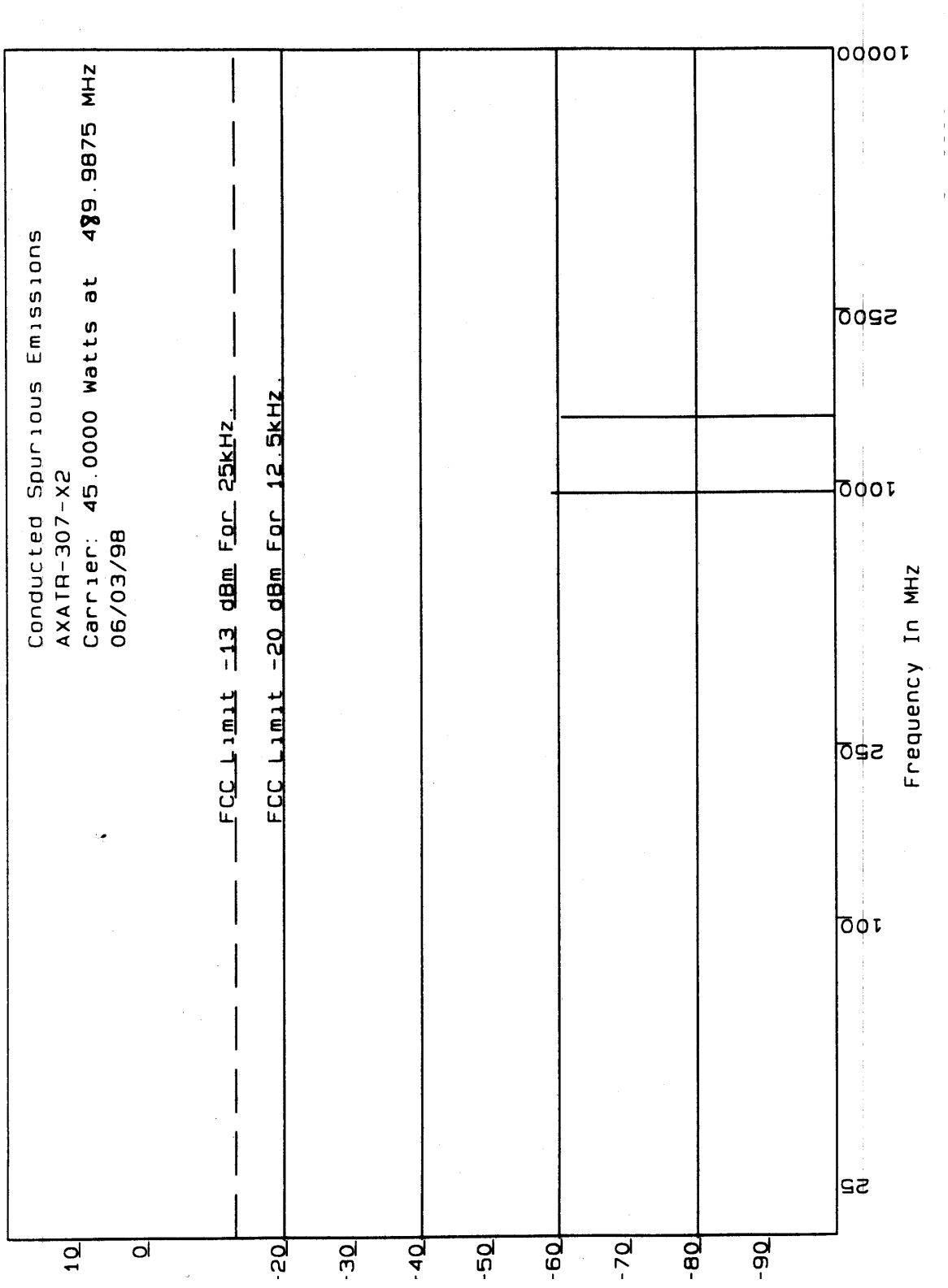
SECTION 4B


Conducted Spurious Emissions
AXATR-307-X2
Carrier: 45.0000 Watts at 470.0125 MHz
06/12/98
FCC Limit -13 dBm For 25kHz
FCC Limit -20 dBm For 12.5kHz
Power In dBm
10
0
-20
-30
-40
-50
-60
-70
-80
-90
25
100
250
1000
2500
10000
Frequency In MHz

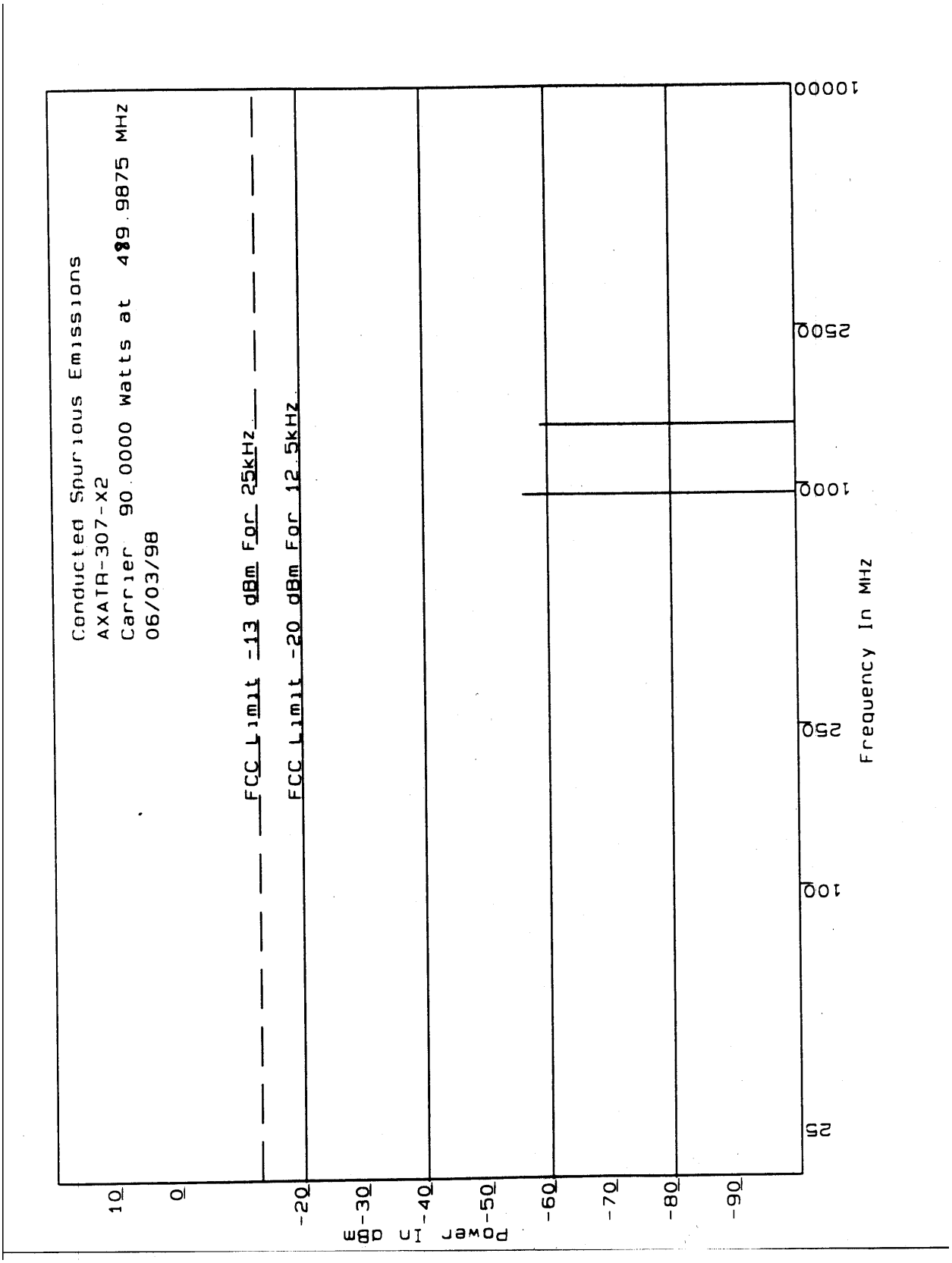
SECTION 4C


Conducted Spurious Emissions
AXATR-307-X2
Carrier 90.0000 Watts at 470.0125 MHz
06/12/98
FCC Limit -13 dBm For 25kHz
FCC Limit -20 dBm For 12.5kHz
Power In dBm
10
0
-20
-30
-40
-50
-60
-70
-80
-90
25
100
250
1000
2500
10000
Frequency In MHz

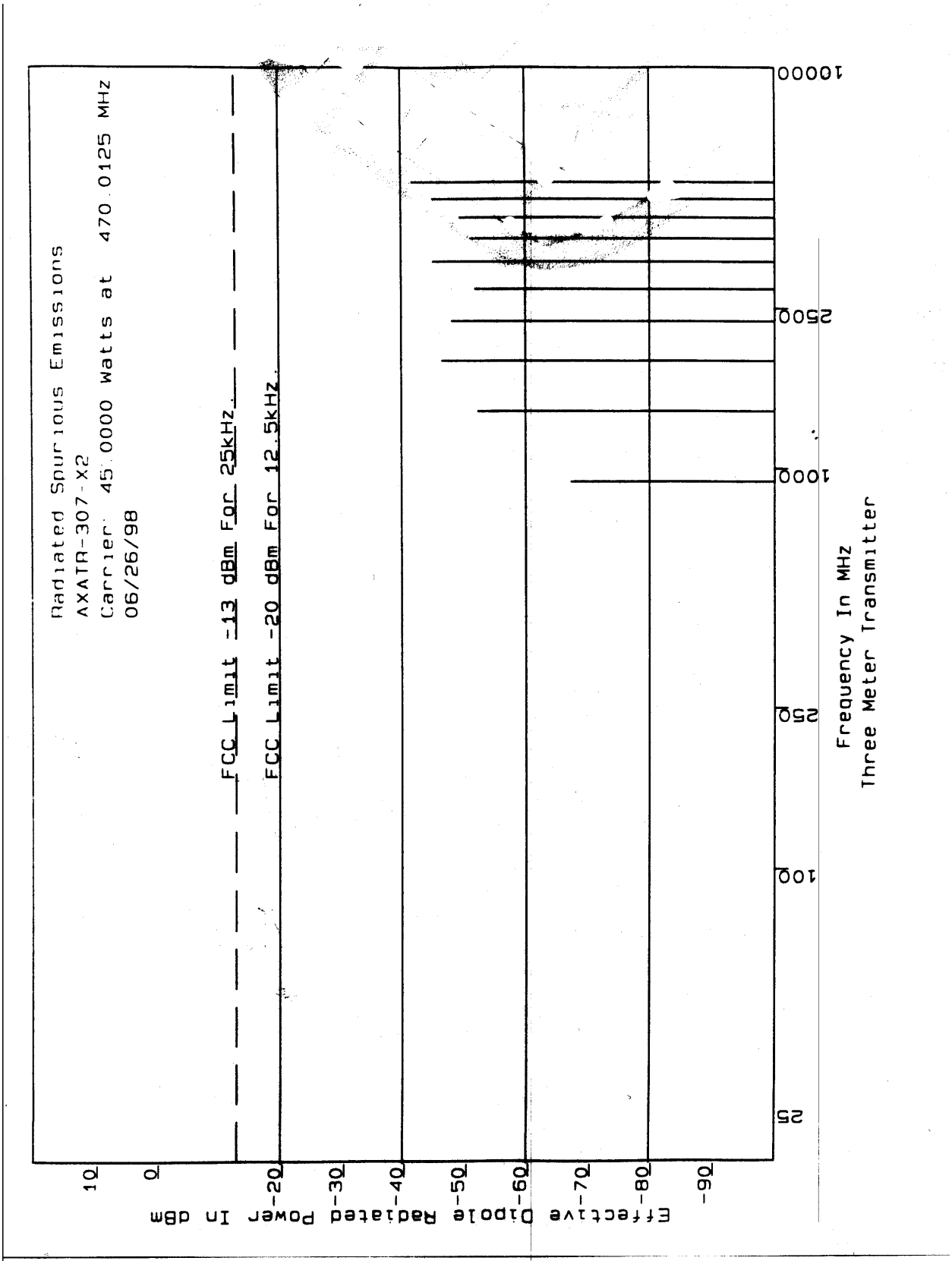
SECTION 4D


Conducted Spurious Emissions
AXATR-307-X2
Carrier: 45.0000 Watts at 489.9875 MHz
06/03/98
FCC Limit -13 dBm For 25kHz.
FCC Limit -20 dBm For 12.5kHz.
10
0
-20
-30
-40
-50
-60
-70
-80
-90
25
100
250
1000
2500
10000
Frequency In MHz

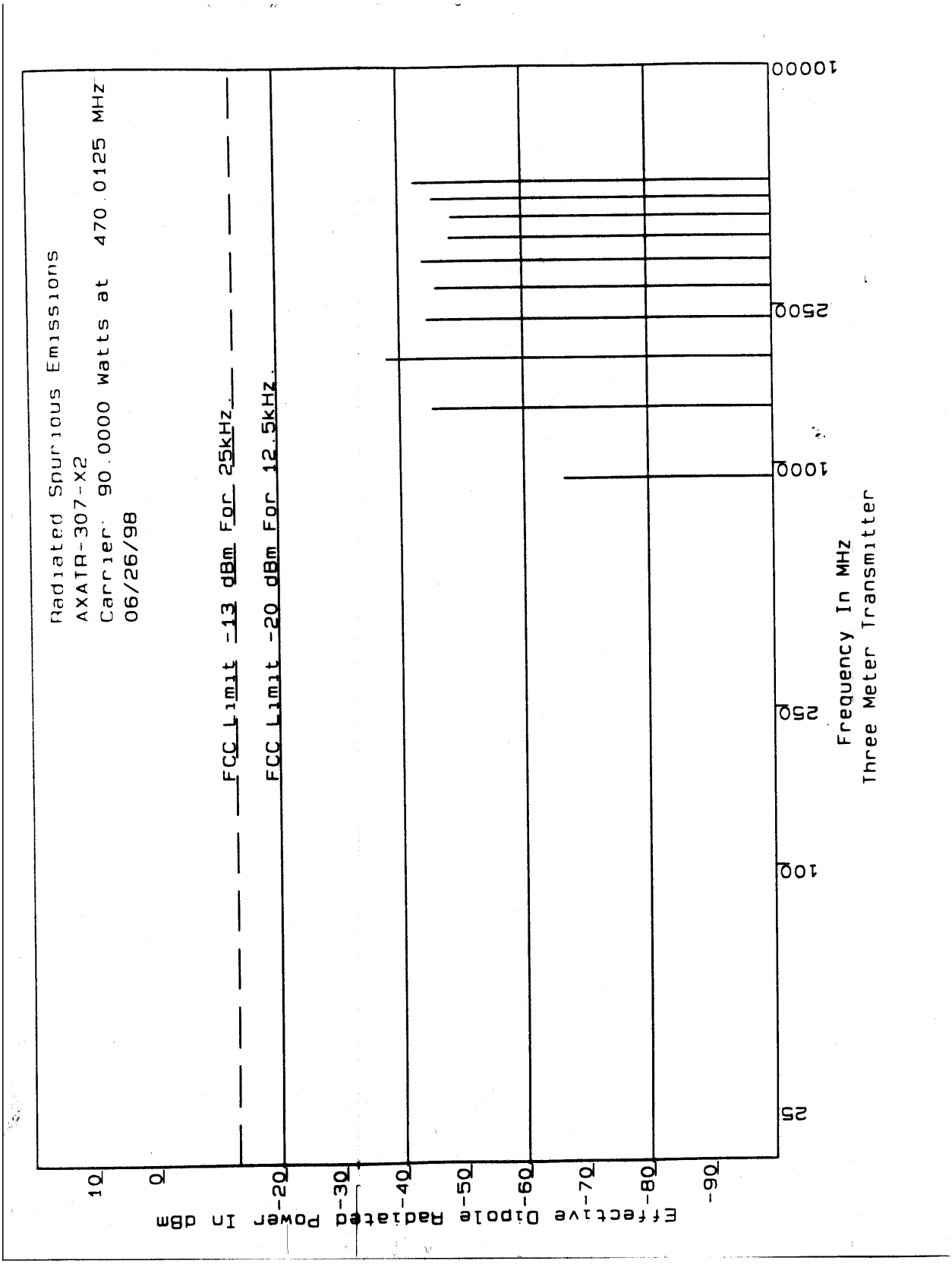
SECTION 4E


Conducted Spurious Emissions
AXATR-307-X2
Carrier 90.0000 Watts at 489.9875 MHz
06/03/98
FCC Limit -13 dBm For 25kHz
FCC Limit -20 dBm For 12.5kHz
Power In dBm
10
0
-20
-30
-40
-50
-60
-70
-80
-90
25
100
250
1000
2500
10000
Frequency In MHz

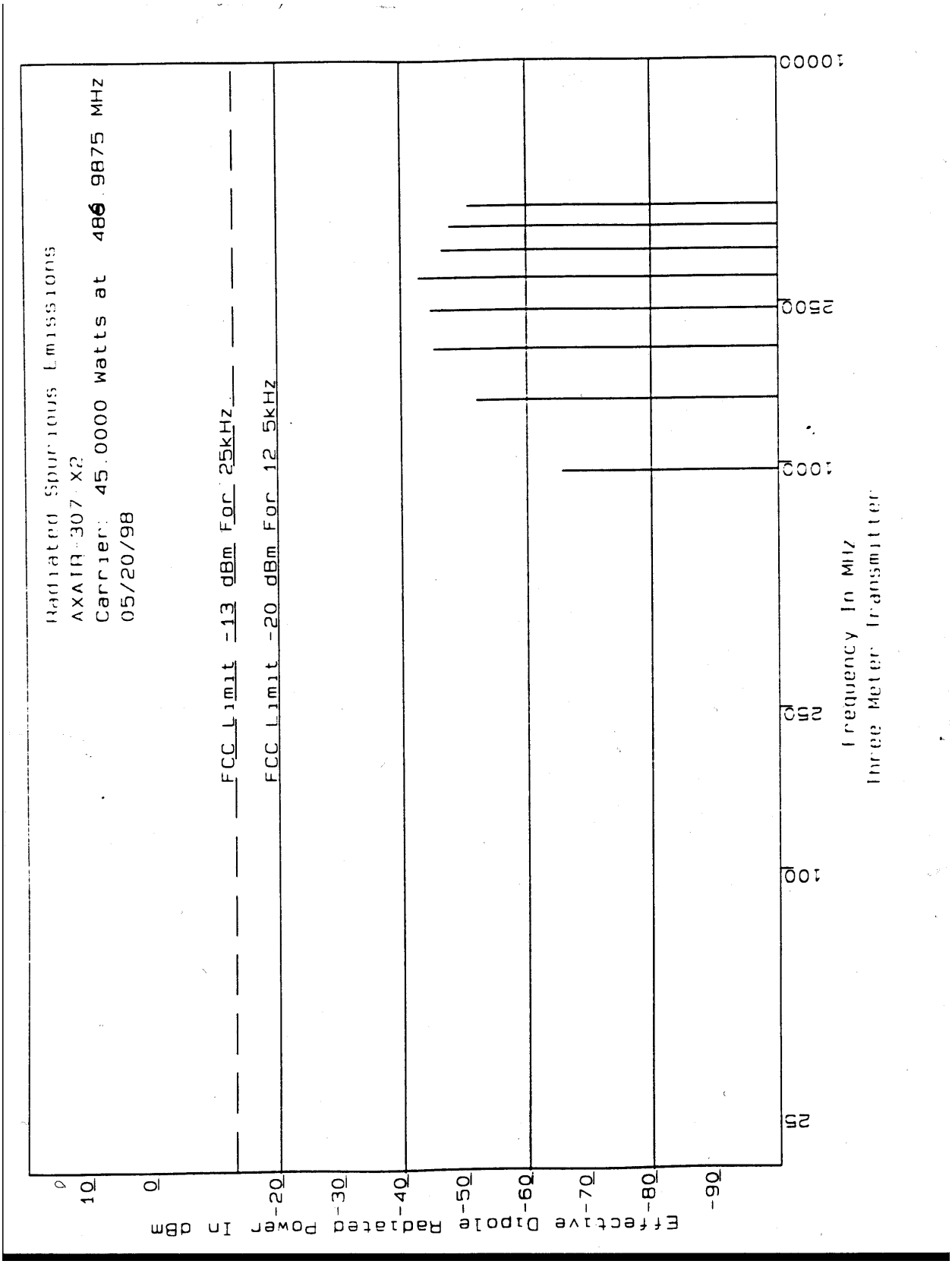
SECTION 4F


Radiated Spurious Emissions
AXATR-307-X2
Carrier 45.0000 Watts at 470.0125 MHz
06/26/98
FCC Limit -13 dBm For 25kHz.
FCC Limit -20 dBm For 12.5kHz.
Effective Dipole Radiated Power In dBm
10
0
-20
-30
-40
-50
-60
-70
-80
-90
25
100
250
1000
2500
10000
Frequency In MHz
Three Meter Transmitter

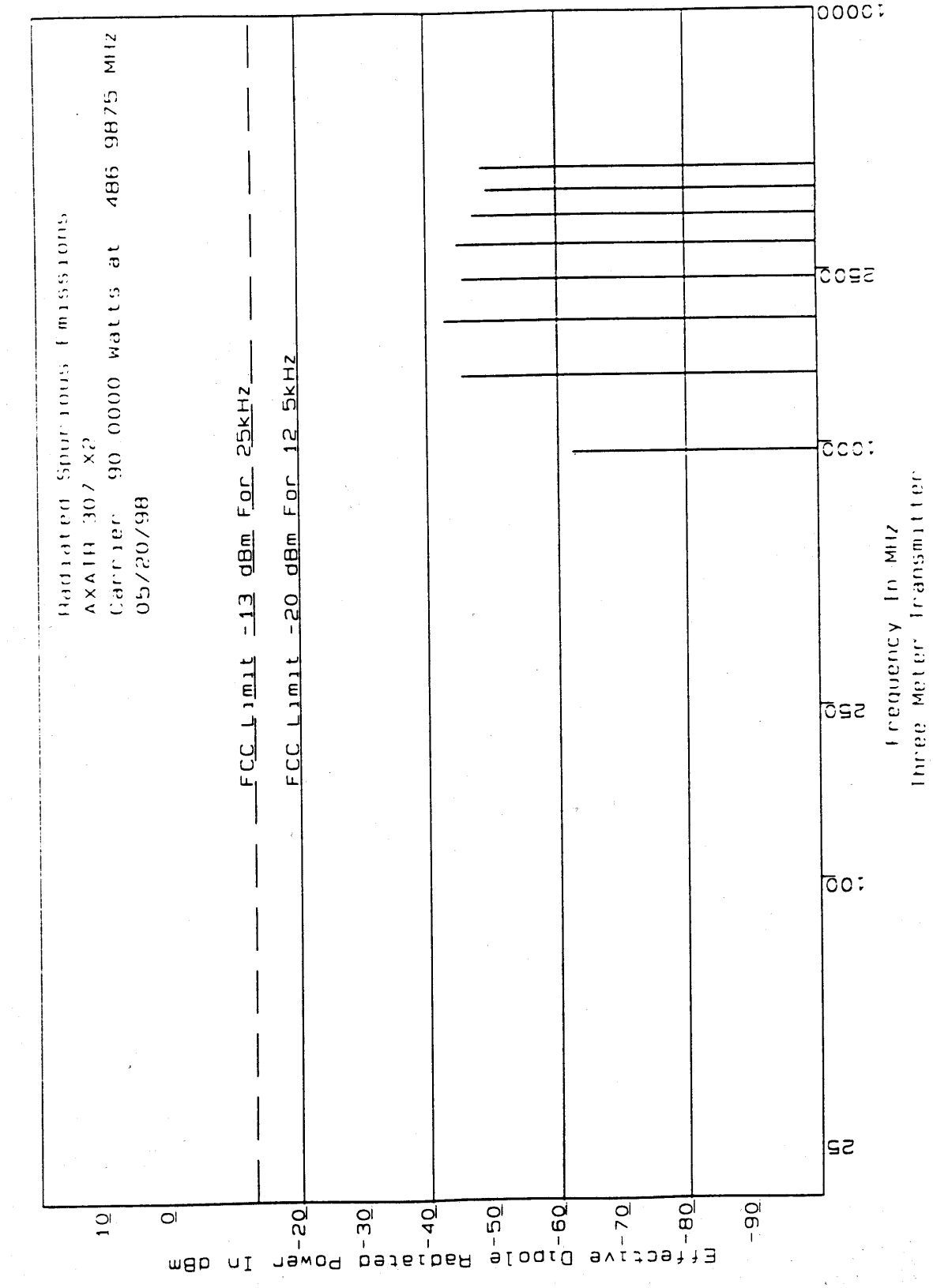
SECTION 4G


Radiated Spurious Emissions
AXATR-307-X2
Carrier 90.0000 Watts at 470.0125 MHz
06/26/98
FCC Limit -13 dBm For 25kHz
FCC Limit -20 dBm For 12.5kHz.
Effective Dipole Radiated Power In dBm
10
0
-20
-30
-40
-50
-60
-70
-80
-90
25
100
250
1000
2500
10000
Frequency In MHz
Three Meter Transmitter

SECTION 4H


Radiated Spurious Emissions
AXATR-307-X2
Carrier: 45.0000 Watts at 486.9875 MHz
05/20/98
FCC Limit -13 dBm For 25kHz
FCC Limit -20 dBm For 12.5kHz
Effective Dipole Radiated Power In dBm
10
0
-20
-30
-40
-50
-60
-70
-80
-90
25
100
250
1000
1500
10000
Frequency In MHz
Three Meter Transmitter

SECTION 4I


Radiated Spurious Emissions
AXATR 307 X2
Carrier 90 0000 Watts at 486 9875 MHz
05/20/98
FCC Limit -13 dBm For 25kHz
FCC Limit -20 dBm For 12 5kHz
Effective Dipole Radiated Power In dBm
10
0
-20
-30
-40
-50
-60
-70
-80
-90
25
00
00
00
00
Frequency In MHz
Three Meter Transmitter

SECTION 5

FREQUENCY STABILITY

Par. 2.995 (a,1) (b) (d, 1) variation of output frequency as a result of either temperature or voltage variation is reported in the graphs on the following sheets: (The battery is rated from 6 to 9 volts.)

Exhibit 12B Carrier Frequency Vs Temperature

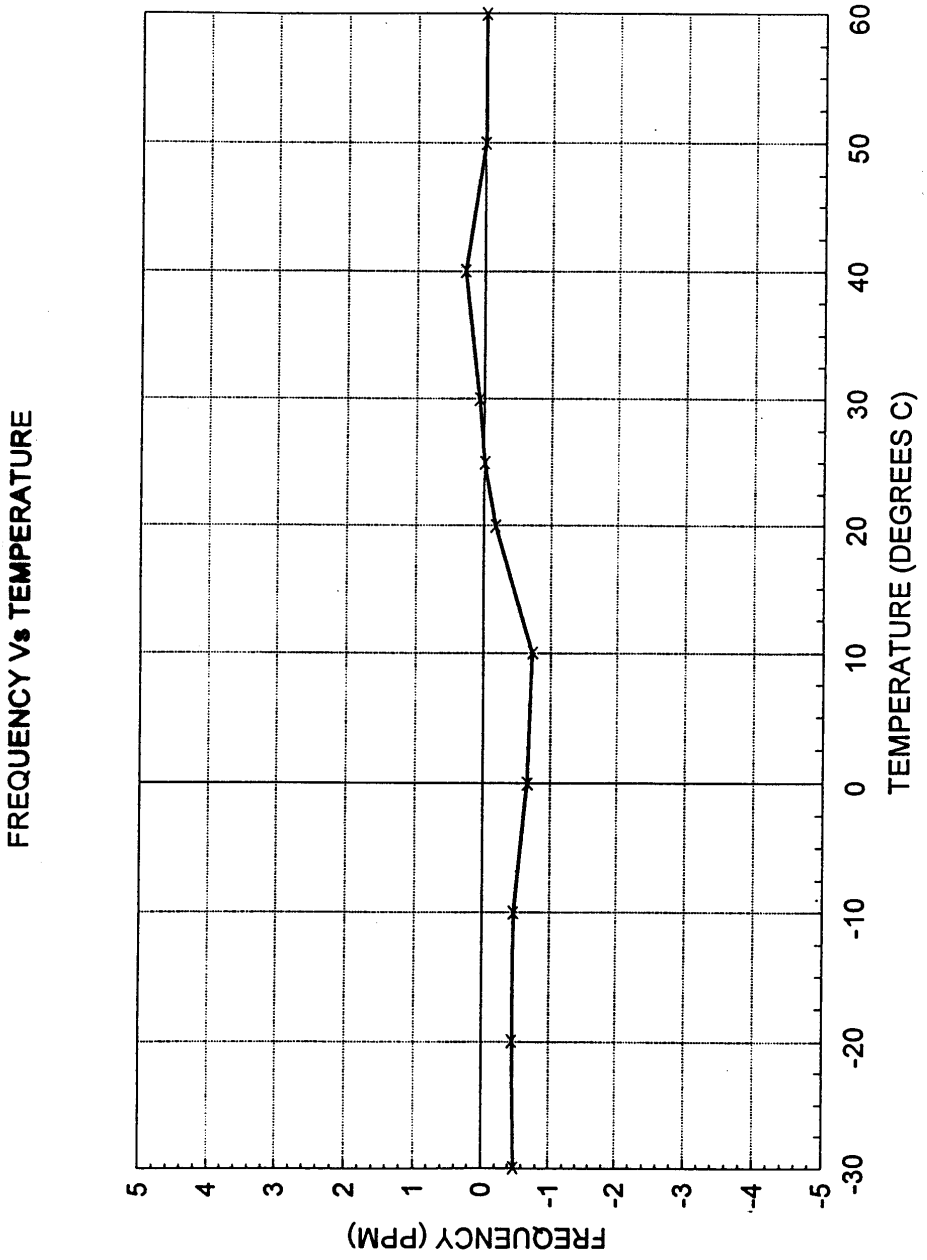
Exhibit 12C Carrier Frequency Vs Voltage

The Equipment used is:

Hewlett Packard QUARTZ Thermometer Model 2804A
Takeda Counter TR5823AK
Takeda Digital Multimeter TR6878
Tabai Temperature chamber PL-2G

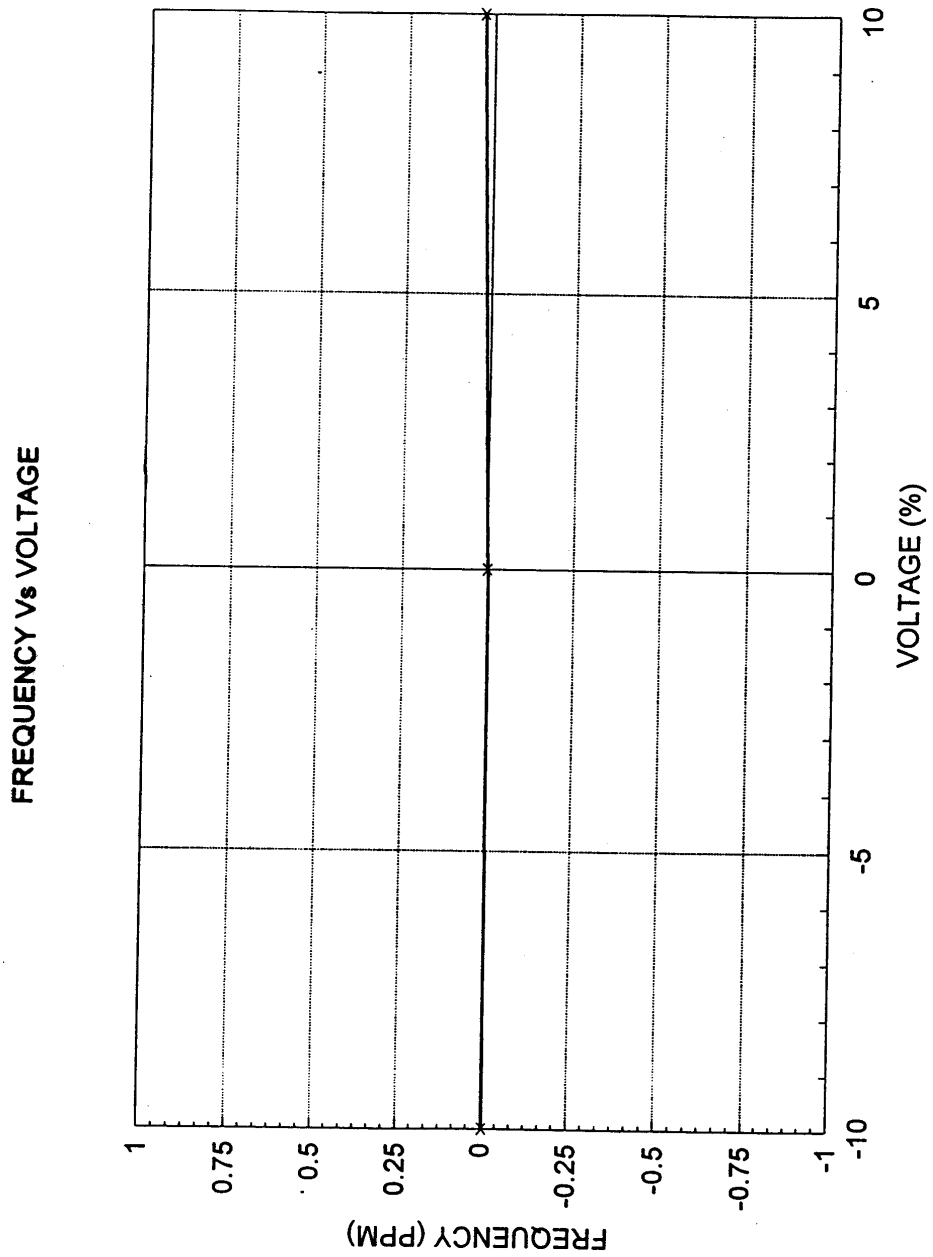
SECTION 5B

AXATR-307-X2



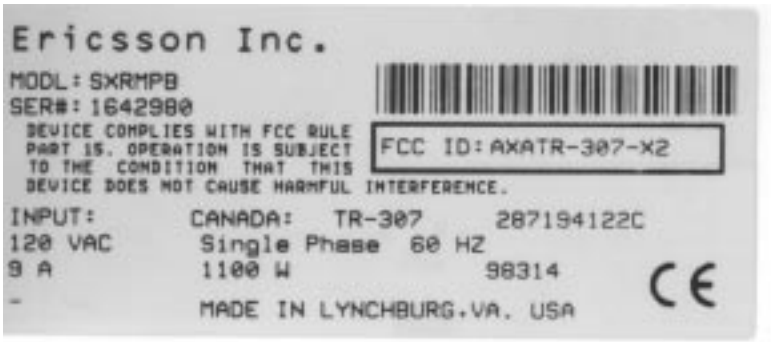
SECTION 5C

AXATR-307-X2



SECTION 6

INDENTIFICATION NAMEPLATE



SECTION 7

TRANSIENT FREQSUENCY BEHAVIOR

PER PT 90.214 USING EIA/TIA 603, THE FOLLOWING MEASUREMENTS WERE MADE:

SECTION	FREQUENCY	BANDWIDTH
7A	486.9875	12.5 kHz
7B	486.9875	12.5 kHz

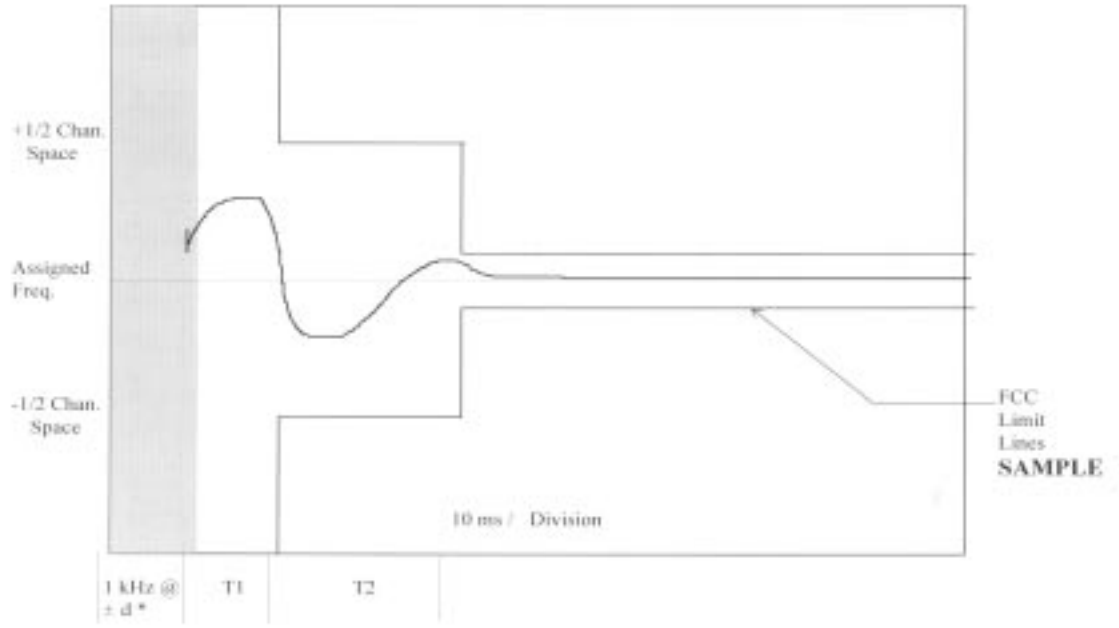
The Measurements taken are representative of the entire frequency band.

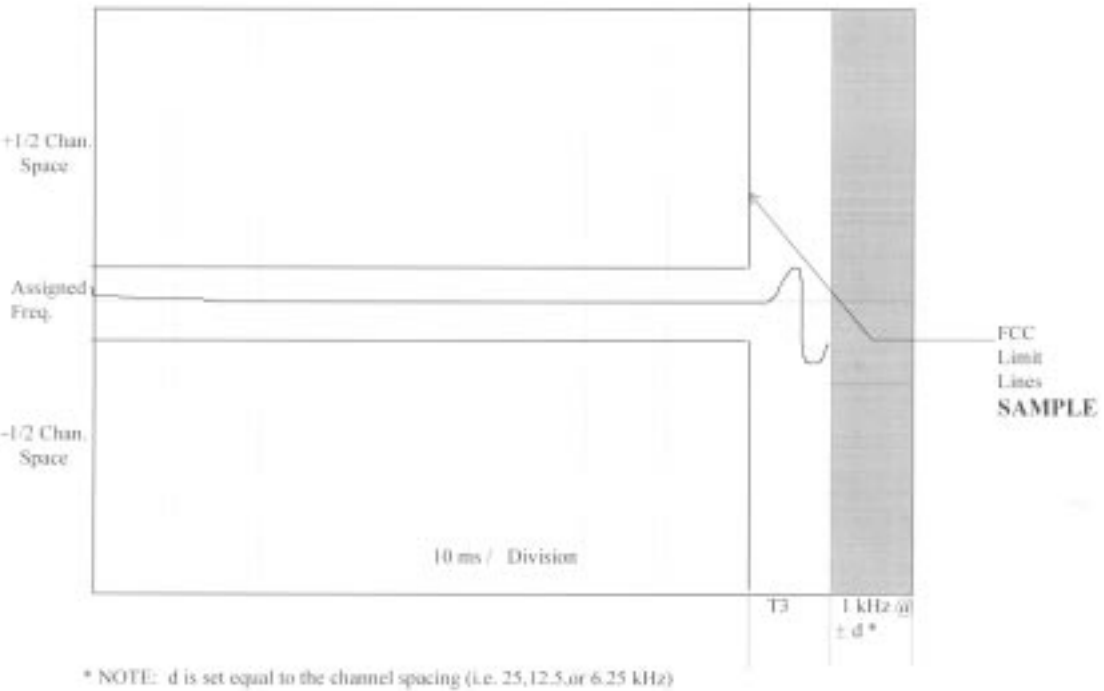
Table 1: List of Equipment

HP 778D DUAL DIRECTIONAL COUPLER	HP432A RF DETECTOR
TEKTRONIX 2232 OSCILLOSCOPE	HP8657A SIGNAL GENERATOR
HP 8901A MODULATION ANALYZER	HP436A POWER METER
HP 8482A POWER SENSOR	6261 DC POWER SUPPLY
KEITHLY 179 TRMS DIGITAL MULTIMETER	TEKTRONIX HC100 PLOTTER
NARDA ATTENUATORS	MINICIRCUITS 15542 ZFRSC-2050

SECTION 7

TRANSIENT FREQUENCY BEHAVIOR

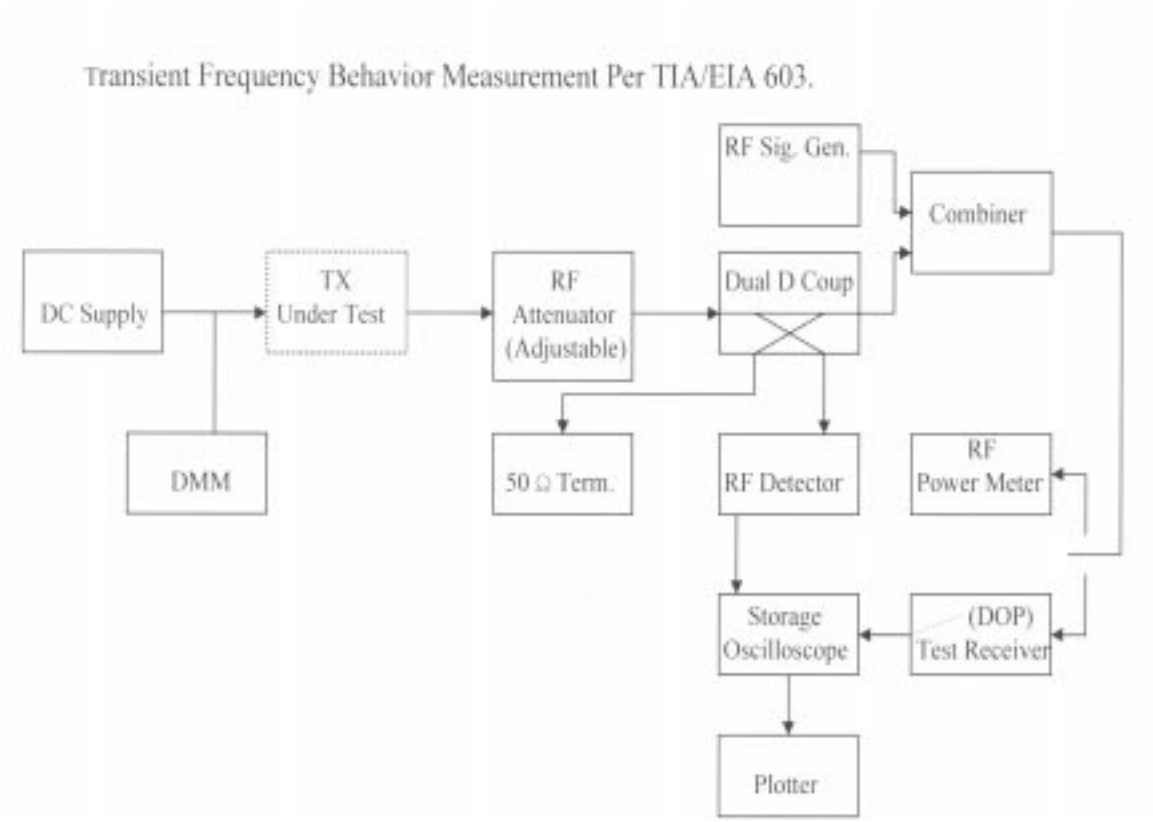




* NOTE: d is set equal to the channel spacing (i.e. 25,12.5,or 6.25 kHz)

SECTION 7

TTRANSIENT FREQUENCY BEHAVIOR



1. Equipment is connected as illustrated above.
2. Connect the test receiver's Demodulator Output Port (DOP) to the vertical input chan nel of the storage Oscilloscope. Connect the output of the RF detector the external trig- ger of the oscilloscope. Connect the output of the RF combiner the RF power meter.
3. Set the test receiver to measure FM deviation with the audio bandwidth set at =50 Hz to =15,000 Hz and tune the RF frequency to the transmitter assigned frequency.
4. Turn on the TUT (Transmitter Under Test). Adjust the RF attenuator to provide an input level of 20 dBm which is 10 dB below the maximum allowed input power to the test receiver. (TIA/EIA 603 first sets the level to 40 dB below the maximum allowed input level of the test receiver, then increases the level by 30 dB to 10 dB below the maxi- mum allowed input level. The maximum input level of our test receiver is 30 dBm.) Turn off the TUT.
5. Set the signal generator to the assigned TX frequency and modulate it with a 1 kHz tone at +/- d, deviation equal to the Channel Spacing (i.e. 25,12.5, or 6.25 kHz) and set its power to -30 dBm (50 dB below the level of the TUT).
6. Disconnect the RF power meter and connect the output of the RF combiner network to the input of the test receiver.

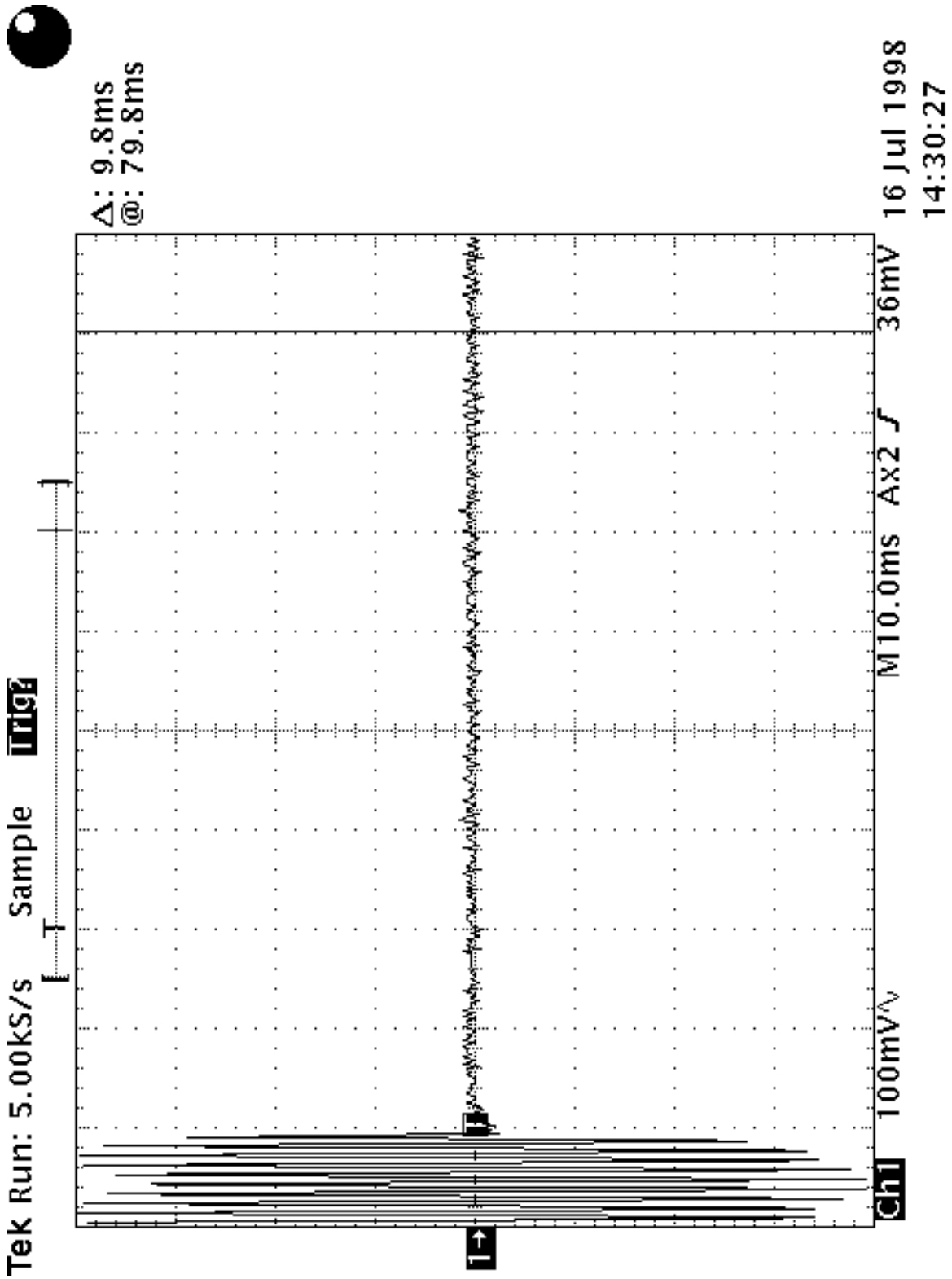
SECTION 7

TRANSIENT FREQUENCY BEHAVIOR

7. Set the horizontal sweep rate on the storage oscilloscope to 10 milliseconds per division and adjust the display to continuously view the 1000 Hz tone from the DOP. Adjust the vertical amplitude control of the oscilloscope to display the 1000 Hz at +/-4 divisions vertically centered on the display.
8. Adjust the oscilloscope so it will trigger on an increasing magnitude from the RF peak detector at 1 division from the left side of the display, when the transmitter is turned on. Set the controls to store the display.
9. Turn on the TUT and observe the stored display. The output at the DOP, due to the change in ratio of power between the signal generator input power and the transmitter output power will, because of the capture effect of the test receiver, produce a change in display: For the first part of the sweep it will show the 1 kHz test signal. Then once the receiver's demodulator has been captured by the transmitter power, the display will show the frequency difference from the assigned frequency to the actual transmitter frequency versus time. The instant when the 1 kHz test signal is completely suppressed (including any capture time due to phasing) is considered to be "t on". 10. To test the transient frequency during the period of "t 3", the transmitter shall be switched on. 11. Adjust the oscilloscope so it will trigger on a decreasing magnitude from the RF peak detector at 1 division from the right side of the display, when the transmitter is turned off. Set the controls to store the display.
12. The transmitter shall be switched off.
13. Observe the display. The trace should remain with in the allowed divisions during the period "t 3", according to the specifications in 90.213,90.214.

SECTION 7A

TRANSIENT FREQUENCY BEHAVIOR



SECTION 7B

TRANSIENT FREQUENCY BEHAVIOR