Index to Submitted Measured Data

This exhibit contains, on the following pages, the measured data for this equipment as follows:

Exhibit 9F - Conducted Spurious Emissions (4 Graphs)
- 9F-1 - 4.4 Watts, 450MHz
- 9F-2 - 4.4 Watts, 474MHz
- 9F-3 - 1 Watt, 450MHz
- 9F-4 - 1 Watt, 474MHz

Exhibit 9G - Radiated Spurious Emissions (4 Graphs)
- 9G-1 - 1 Watt, 462MHz (Horizontal)
- 9G-2 - 1 Watt, 462MHz (Vertical)
- 9G-3 - 4.4 Watts, 462MHz (Horizontal)
- 9G-4 - 4.4 Watts, 462MHz (Vertical)

Exhibit 9H - Frequency Stability vs. Temperature (Graph)

Exhibit 9J - Frequency Stability vs. Voltage (Graph)

Exhibit 9K - Transmitter Transient Frequency Behavior (4 Graphs)
- 9K-1 - Key @ 12.5kHz
- 9K-2 - Key @ 25kHz
- 9K-3 - DeKey @ 12.5kHz
- 9K-4 - DeKey @ 25kHz

Exhibit 9L - Measurement Procedures Used for Submited Data

RF Power Output - Measured Data

The supply voltage to the transmitter was set to 7.5 volts DC. The RF output power was measured with the indicated voltage and current applied into the final RF amplifying device.

MAXIMUM-POWER MODE, FREQUENCY 450.0 MHz

Measured RF Output Power:	4.40 Watts
Measured DC Voltage:	6.96 volts
Measured DC Current:	1.80 Amperes
Measured DC Input Power:	12.5 Watts

MAXIMUM-POWER MODE, FREQUENCY 474.0 MHz

Measured RF Output Power:	4.40 Watts
Measured DC Voltage:	7.15 volts
Measured DC Current:	1.00 Amperes
Measured DC Input Power:	7.15 Watts

MINIMUM-POWER MODE, FREQUENCY 450.0 MHz

Measured RF Output Power:	1.00 Watt
Measured DC Voltage:	7.38 volts
Measured DC Current:	0.90 Amperes
Measured DC Input Power:	6.64 Watts

MINIMUM-POWER MODE, FREQUENCY 474.0 MHz

Measured RF Output Power:	1.00 Watt
Measured DC Voltage:	7.48 volts
Measured DC Current:	0.60 Amperes
Measured DC Input Power:	4.50 Watts

Applicant: Motorola Inc. **Equipment Type: ABZ99FT4073**

MOTOROLA INC.

TRANSMITTER AUDIO RESPONSE CHARACTERISTIC

MODULATION LEVEL vs. AUDIO FREQUENCY

Reference ABZ99FT4073

Method See exhibit 9L

Date 11/12/96

Signature

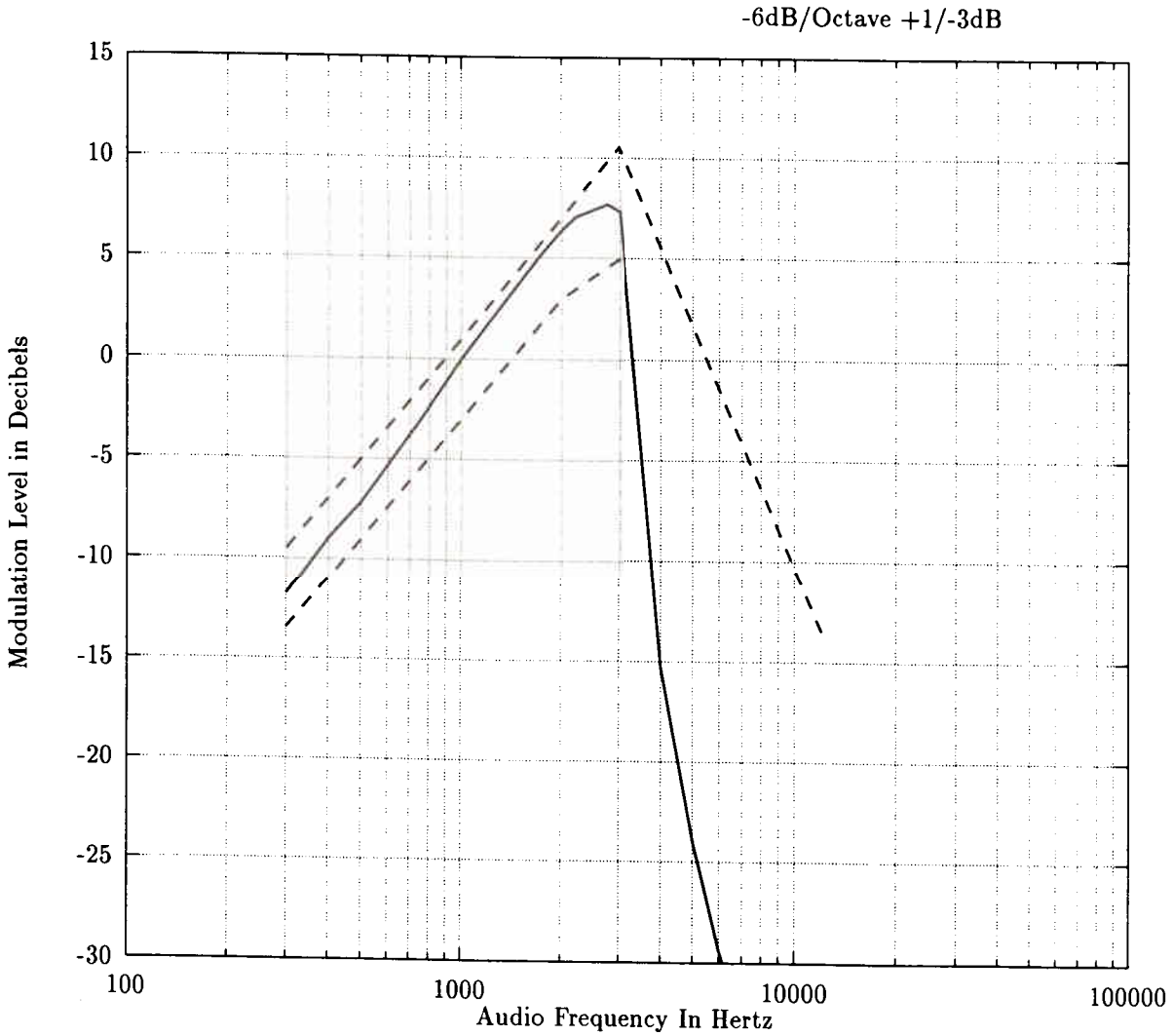


EXHIBIT 9B

Applicant: Motorola Inc. **Equipment Type: ABZ99FT4073**

MOTOROLA INC.

TRANSMITTER AUDIO RESPONSE CHARACTERISTIC

MODULATION LEVEL vs. AUDIO FREQUENCY

Reference ABZ99FT4073

Method see exhibit 9L

Date 11/12/96

Signature

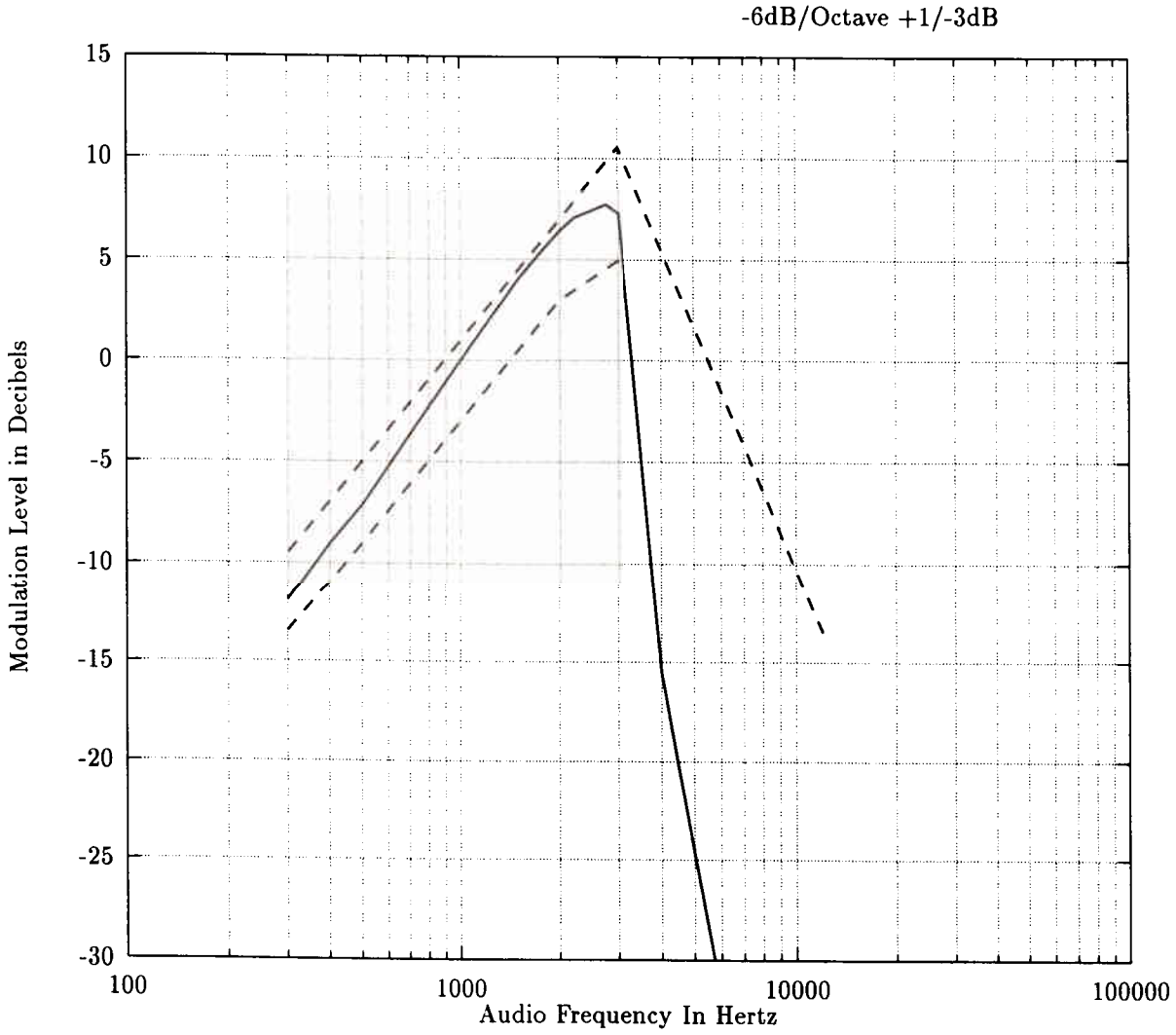


EXHIBIT 9B-1

MOTOROLA INC.

Transmitter

POST-LIMITER AUDIO ROLL OFF FILTER RESPONSE

FILTER OUTPUT vs. AUDIO FREQUENCY

Reference ABZ99FT4073

Method see exhibit 9L

Date 11/12/96

Signature K. Hamilton

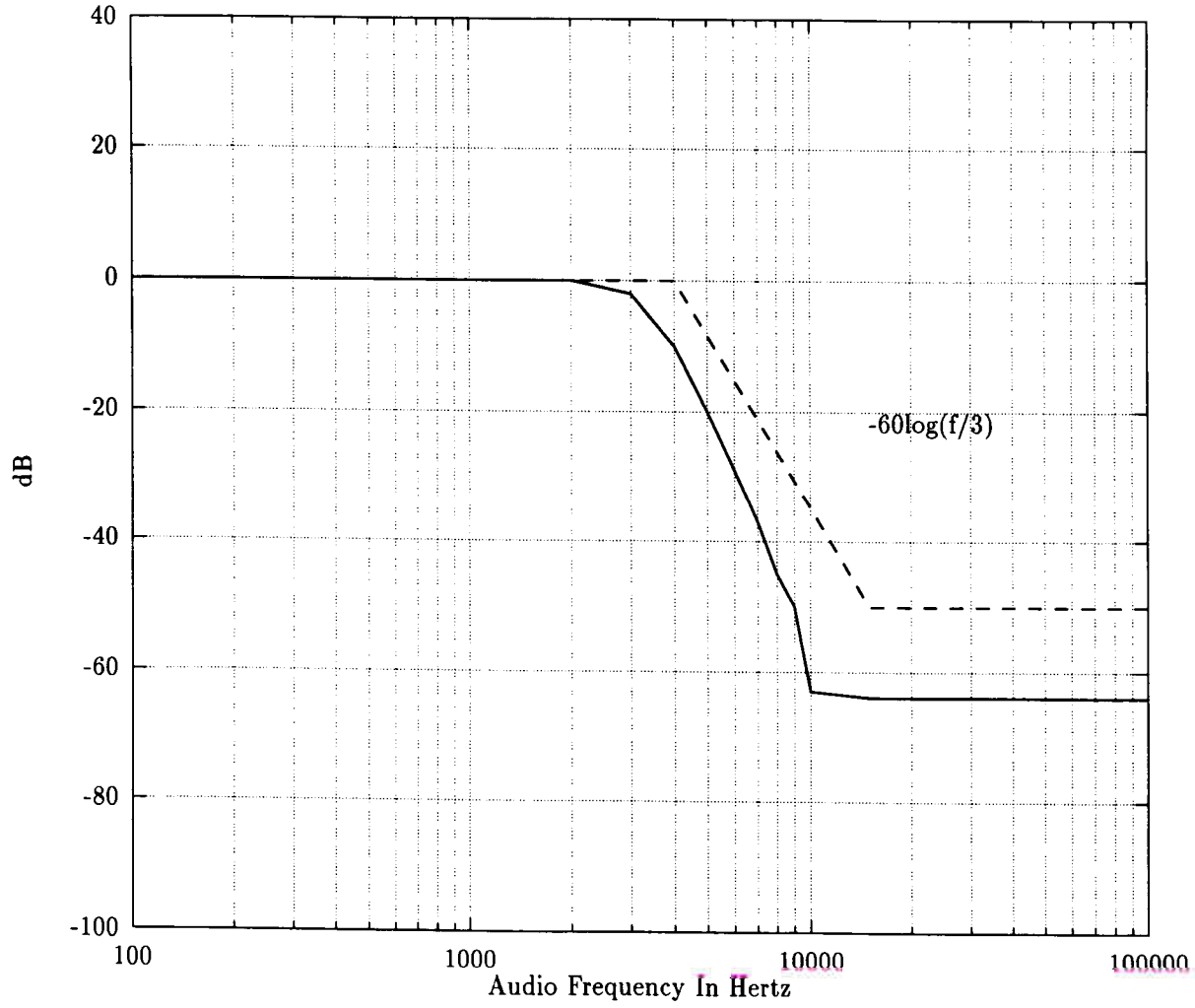


EXHIBIT 9C

MOTOROLA INC.

CARRIER SQUELCH

AUDIO INPUT LEVEL vs. DEVIATION

Reference ABZ99FT4073

Method see exhibit 9L

Date 11/12/96

Signature

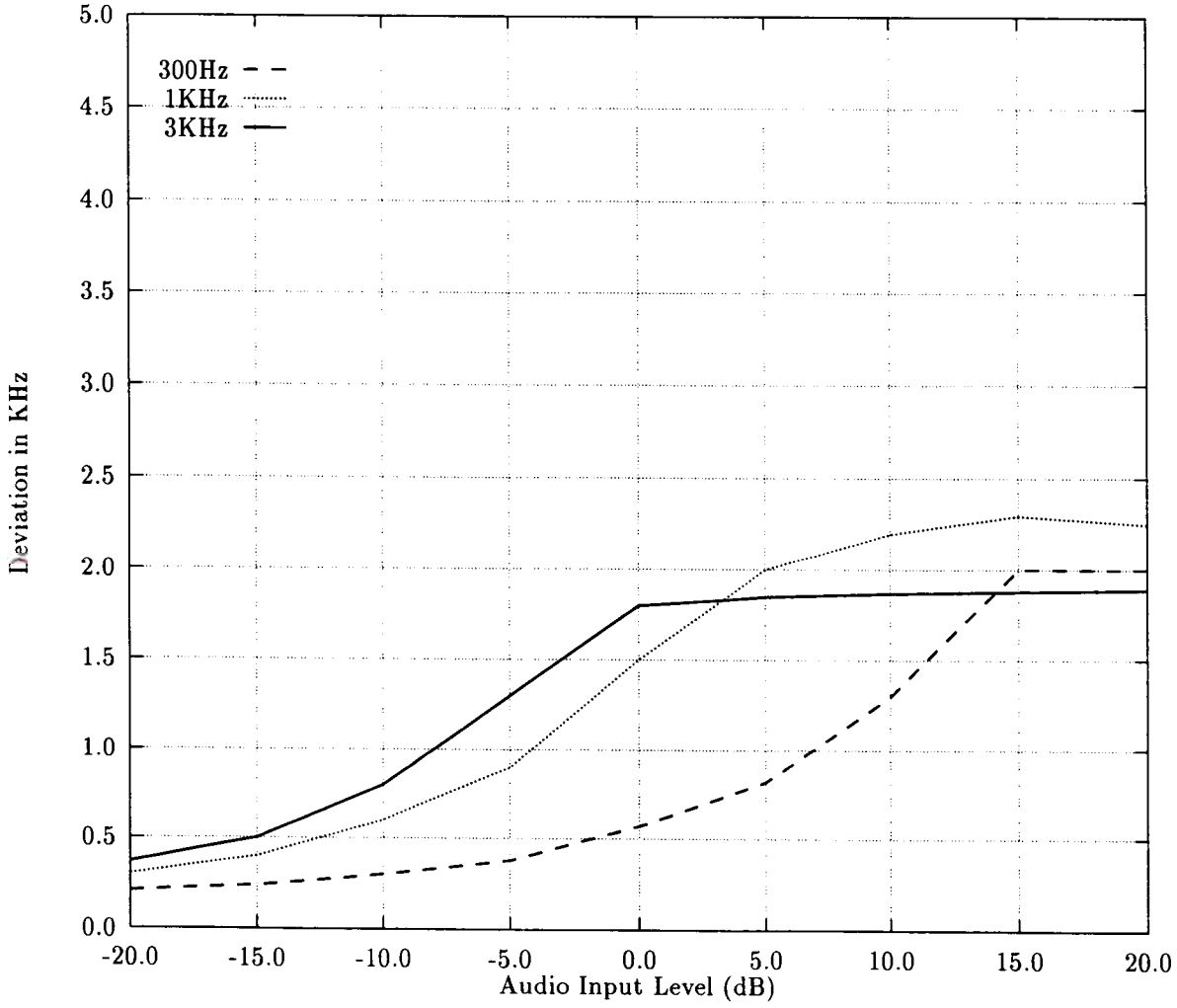


EXHIBIT 9D-1

Applicant: Motorola Inc. **Equipment Type: ABZ99FT4073**

MOTOROLA INC.

Tone with "PL"

AUDIO INPUT LEVEL vs. DEVIATION

Reference ABZ99FT4073

Method see exhibit 9L

Date 11/12/96

Signature

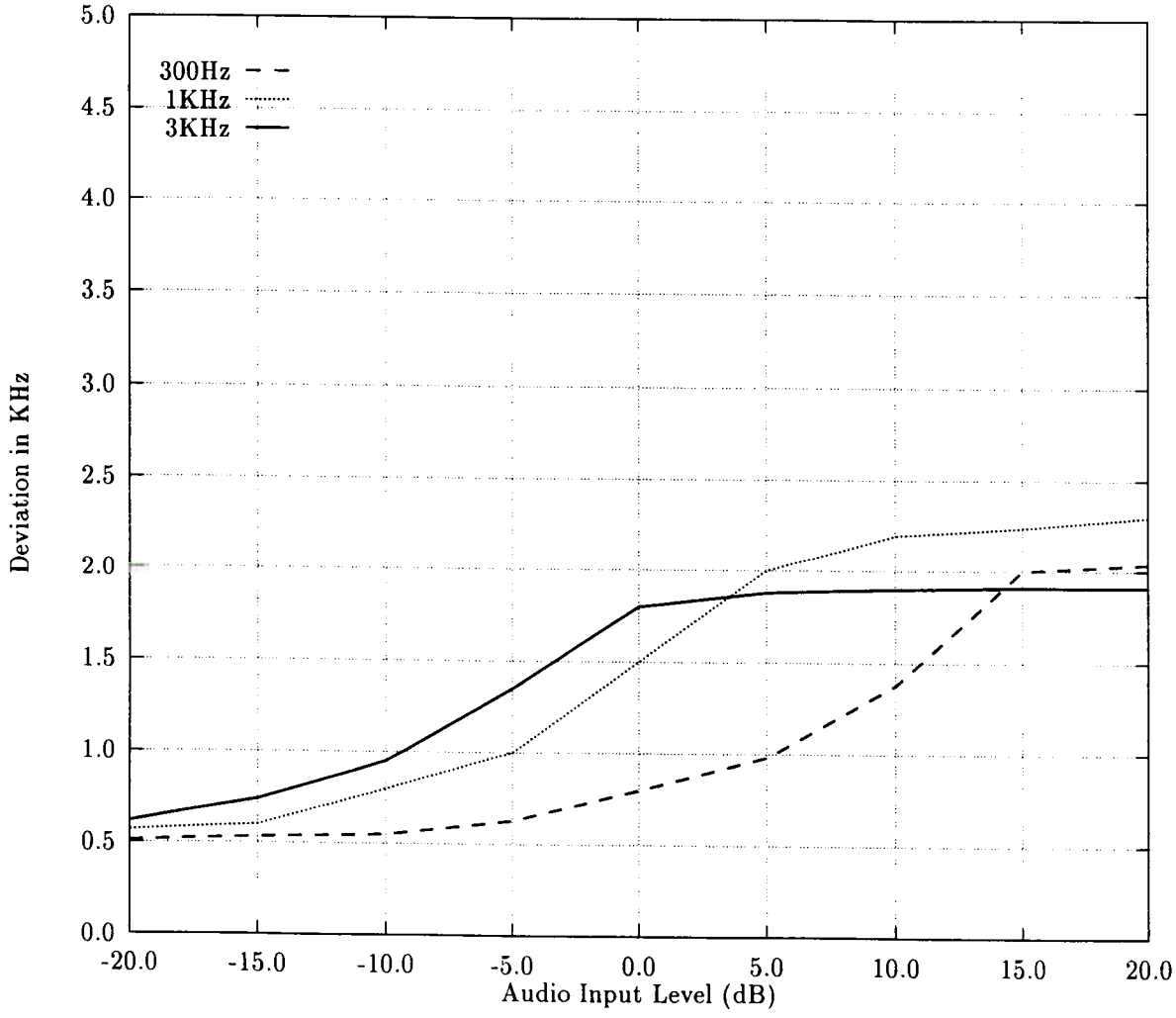


EXHIBIT 9D-2

MOTOROLA INC.

Tone with "DPL"

AUDIO INPUT LEVEL vs. DEVIATION

Reference ABZ99FT4073

Method see exhibit 9L

Date 11/12/96

Signature K. [illegible]

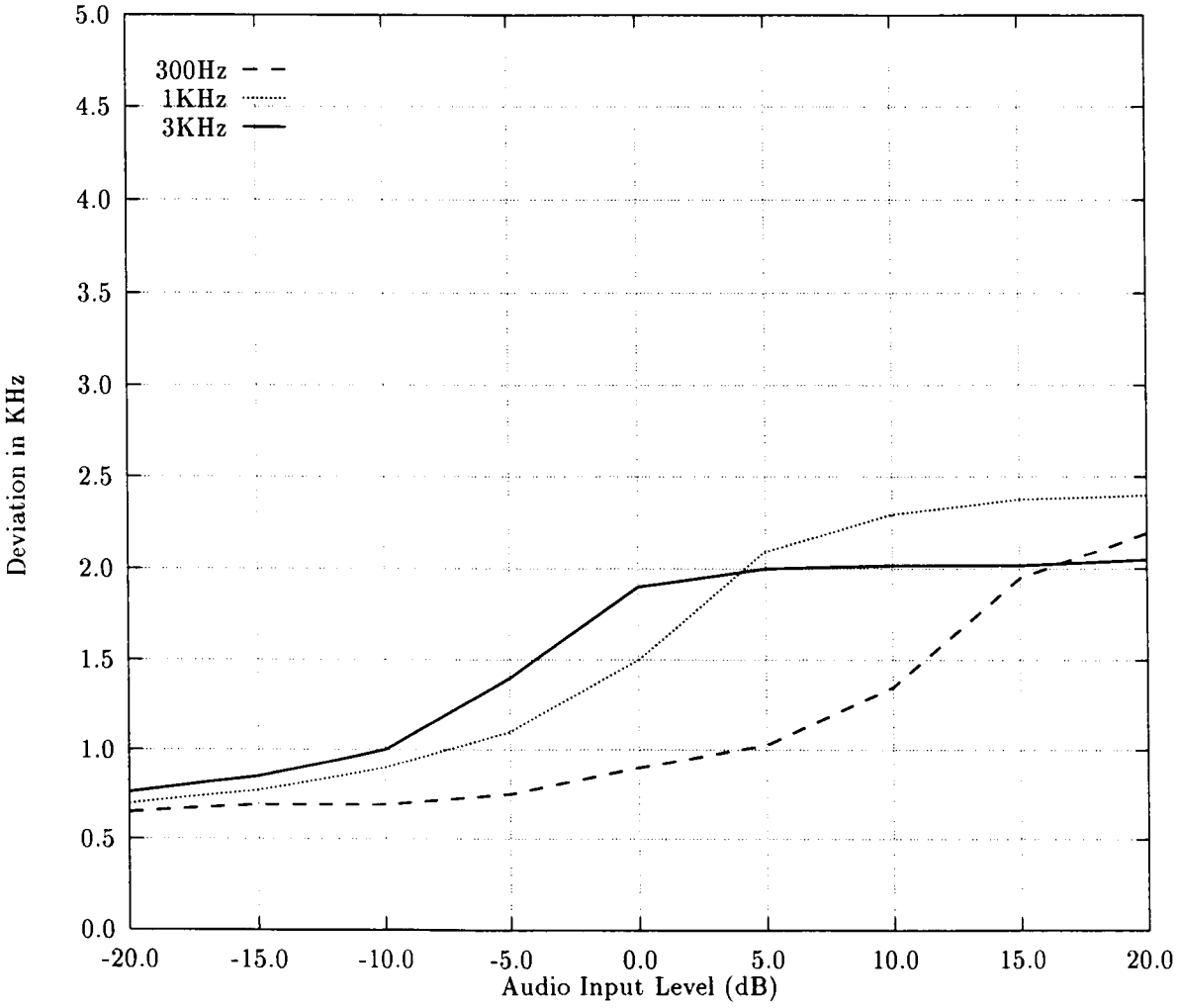


EXHIBIT 9D-3

MOTOROLA INC.

CARRIER SQUELCH

AUDIO INPUT LEVEL vs. DEVIATION

Reference ABZ99FT4073

Method see exhibit 9L

Date 11/12/96

Signature

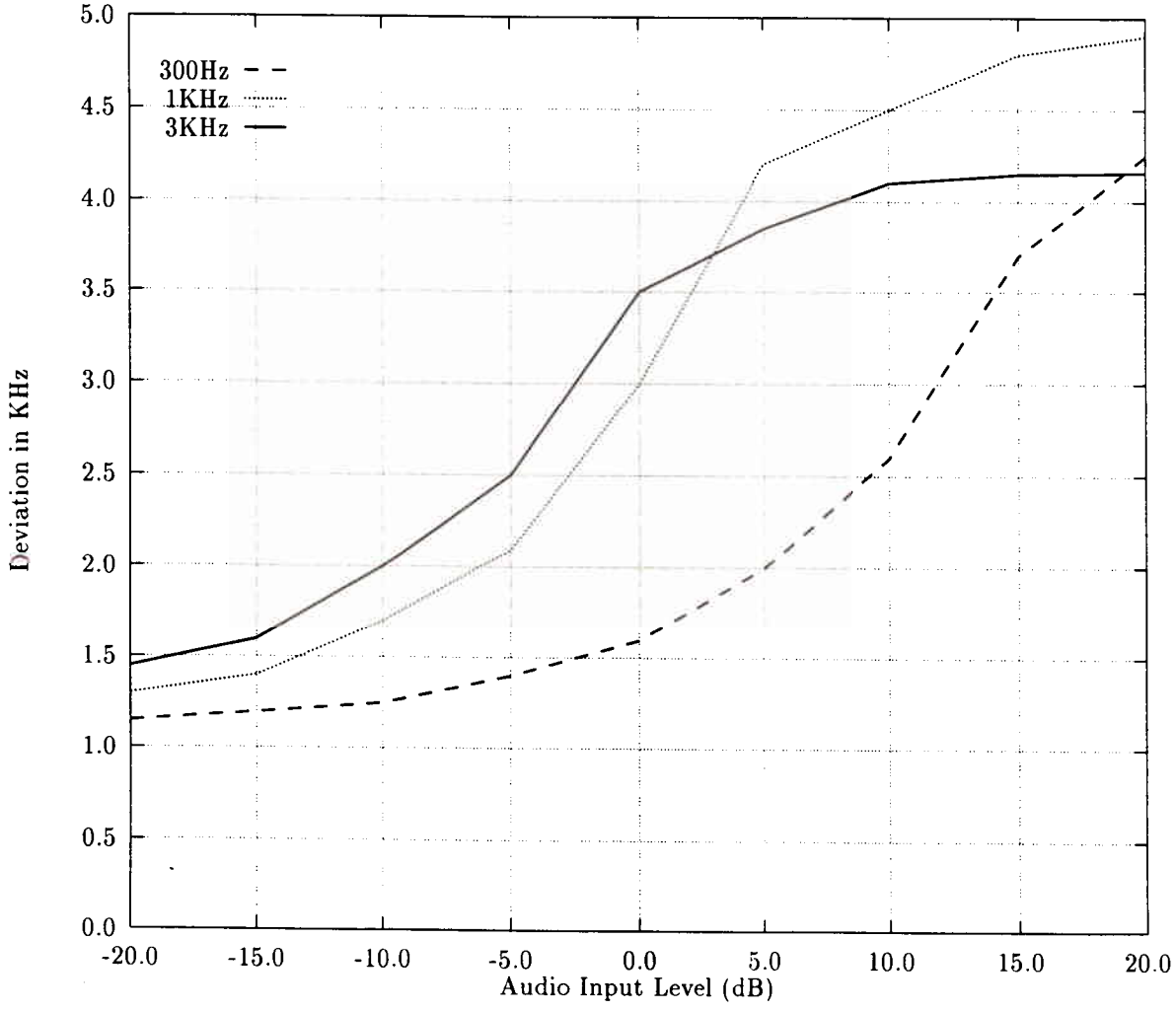


EXHIBIT 9D-1a

Applicant: Motorola Inc. **Equipment Type: ABZ99FT4073**

MOTOROLA INC.

Tone with "PL"

AUDIO INPUT LEVEL vs. DEVIATION

Reference ABZ99FT4073

Method see exhibit 9L

Date 11/12/96

Signature

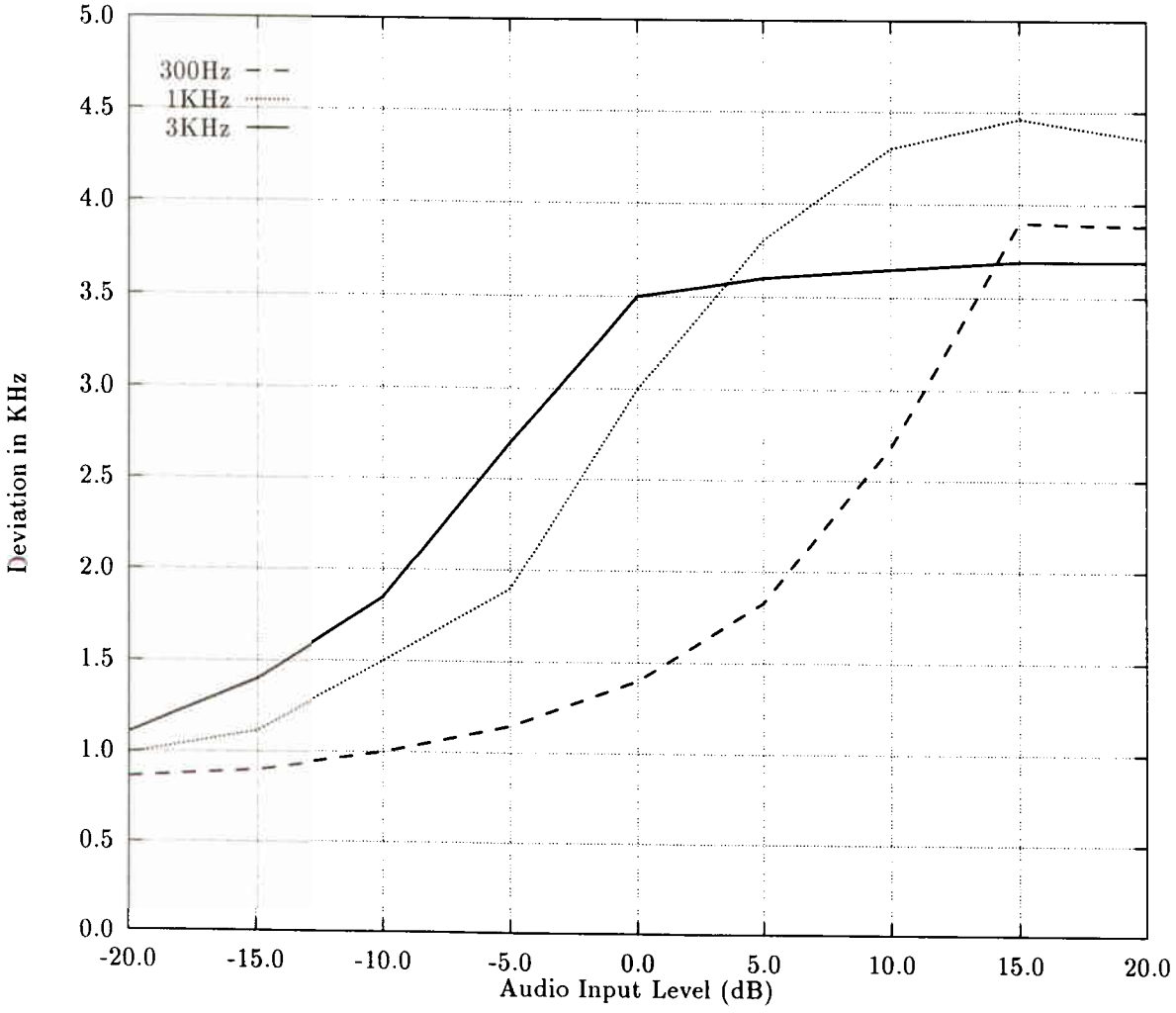


EXHIBIT 9D-2a

Applicant: Motorola Inc. **Equipment Type: ABZ99FT4073**

MOTOROLA INC.

Tone with "DPL"

AUDIO INPUT LEVEL vs. DEVIATION

Reference ABZ99FT4073

Method see exhibit 9L

Date 11/12/96

Signature

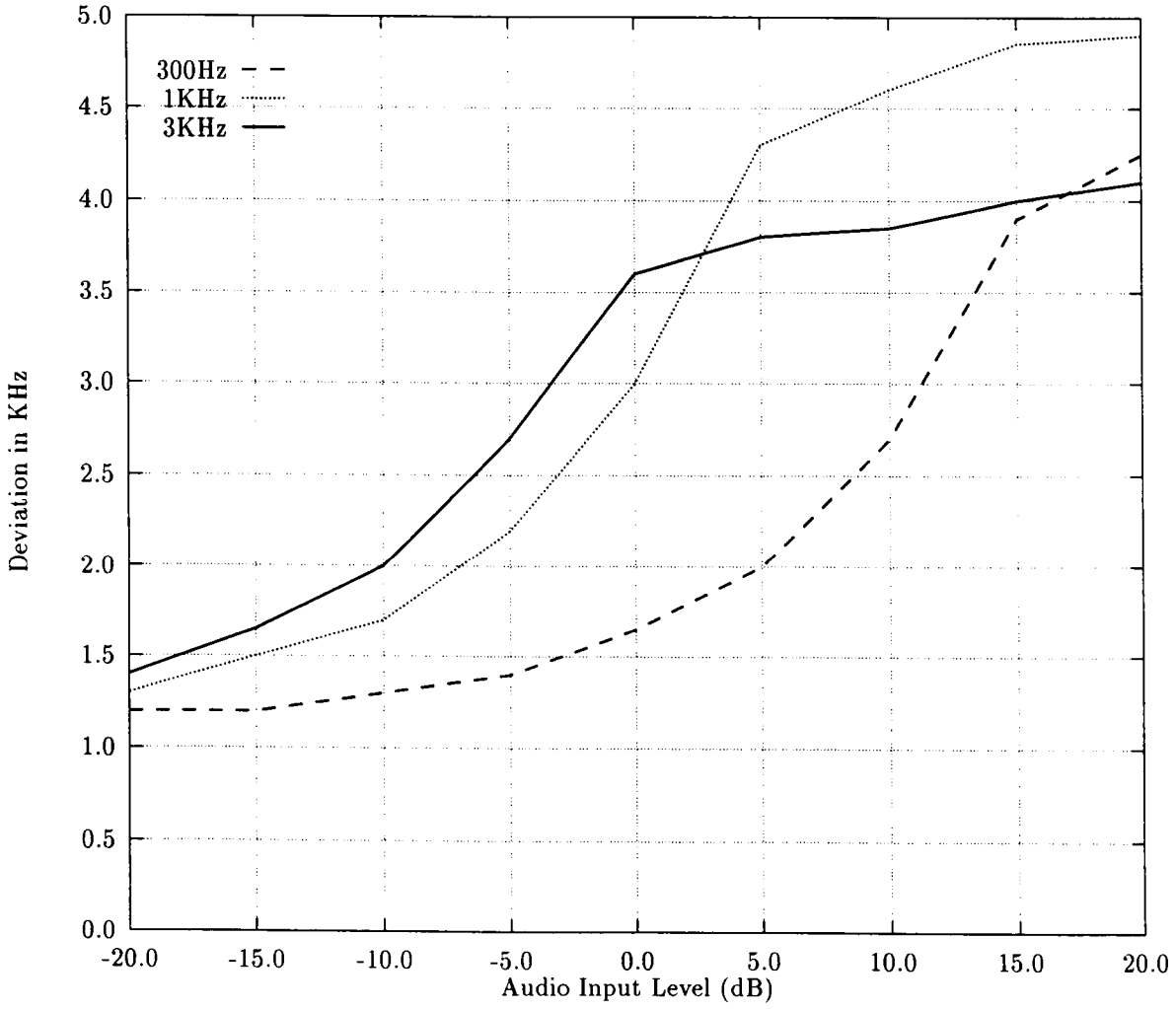
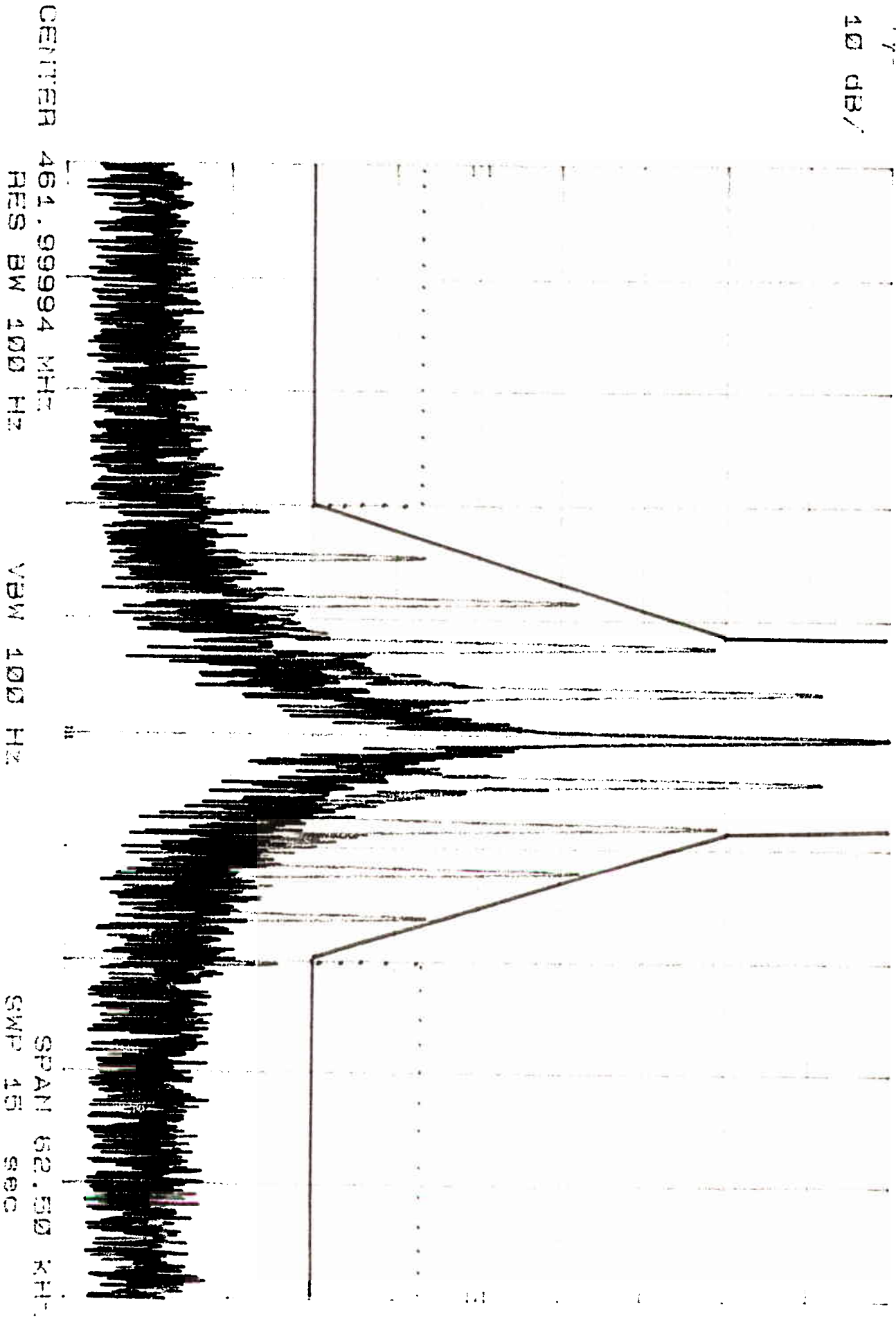
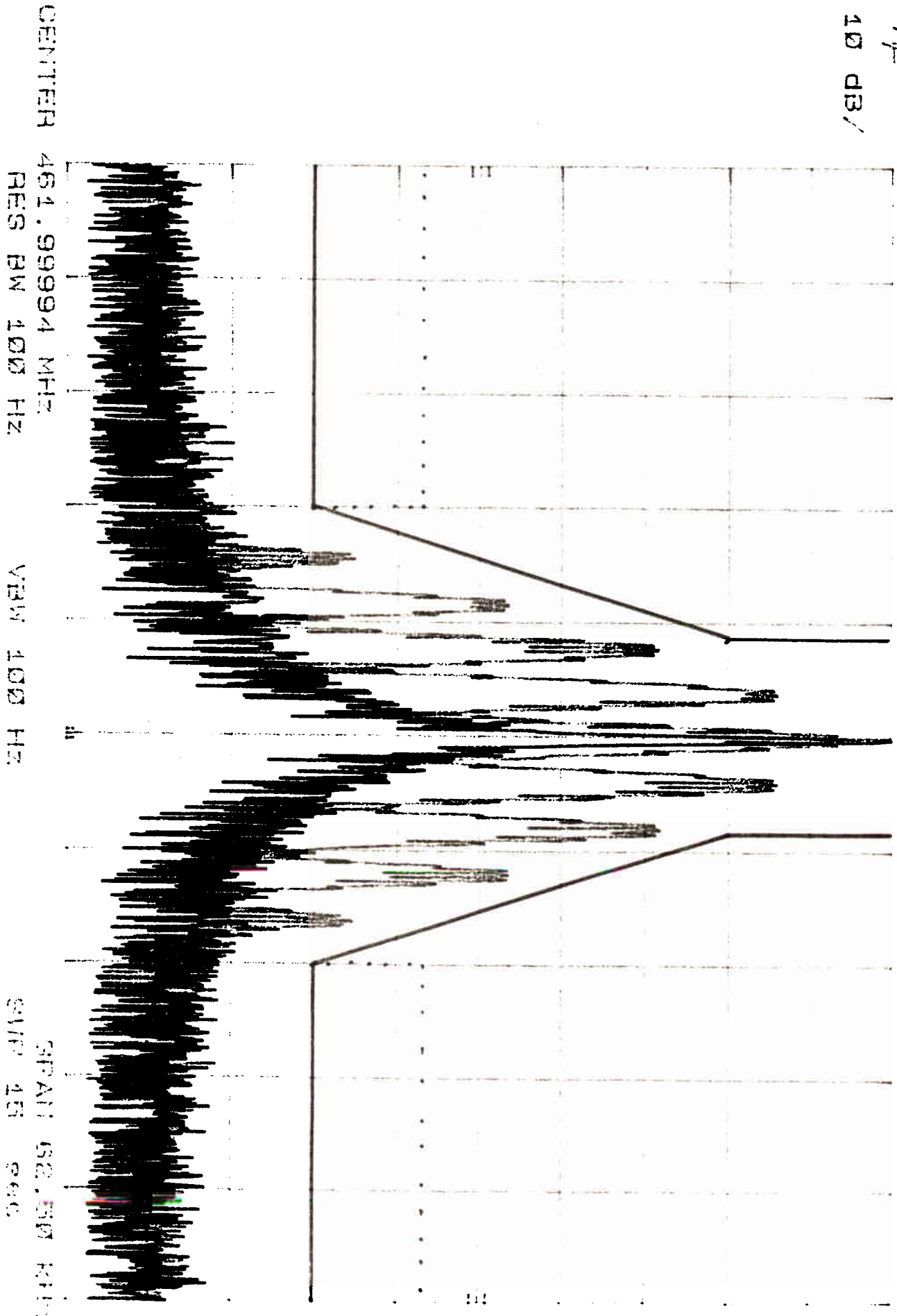


EXHIBIT 9D-3a

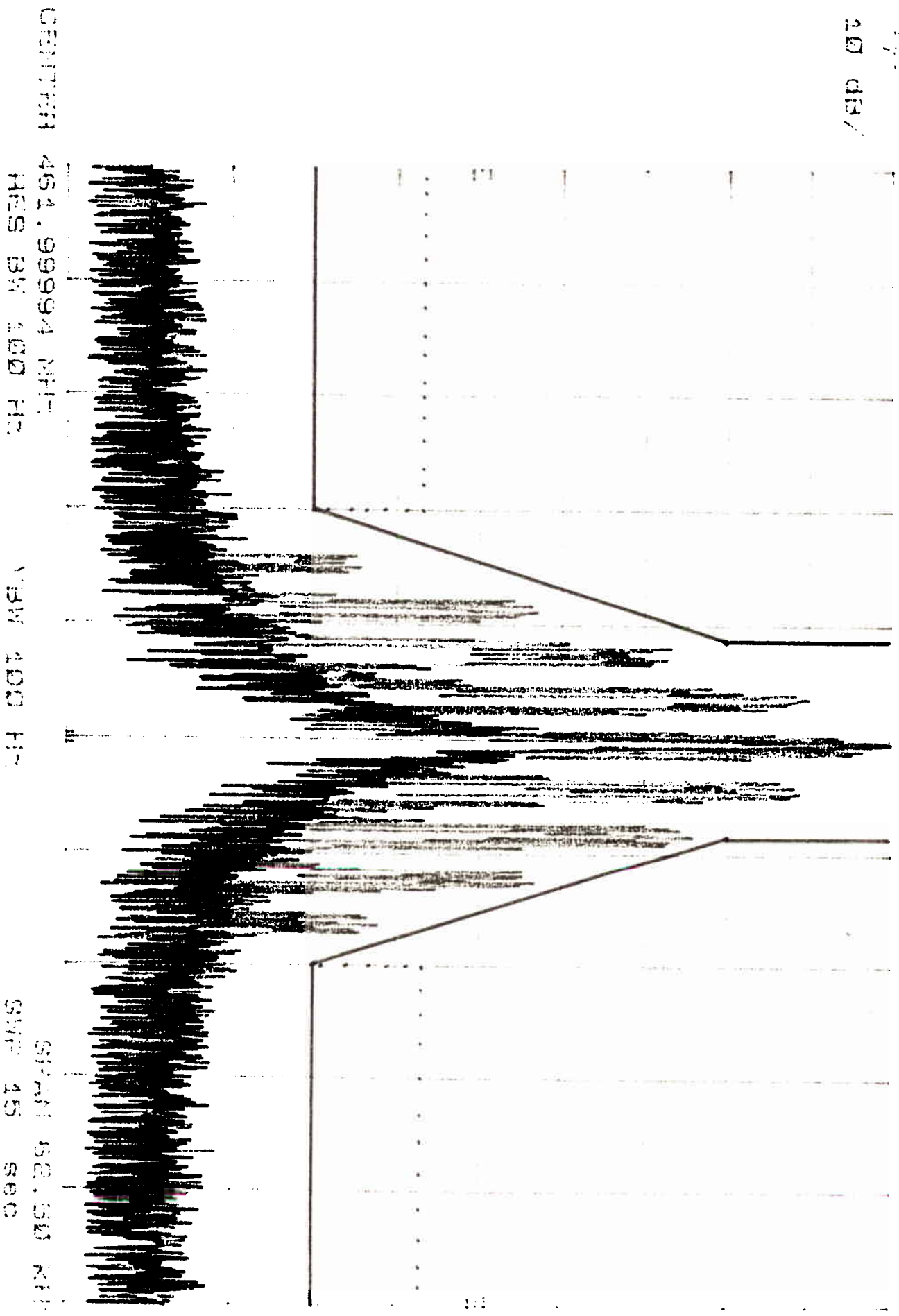


Emission: 11K0F3E - Carrier Squelch Mode - 12.5kHz

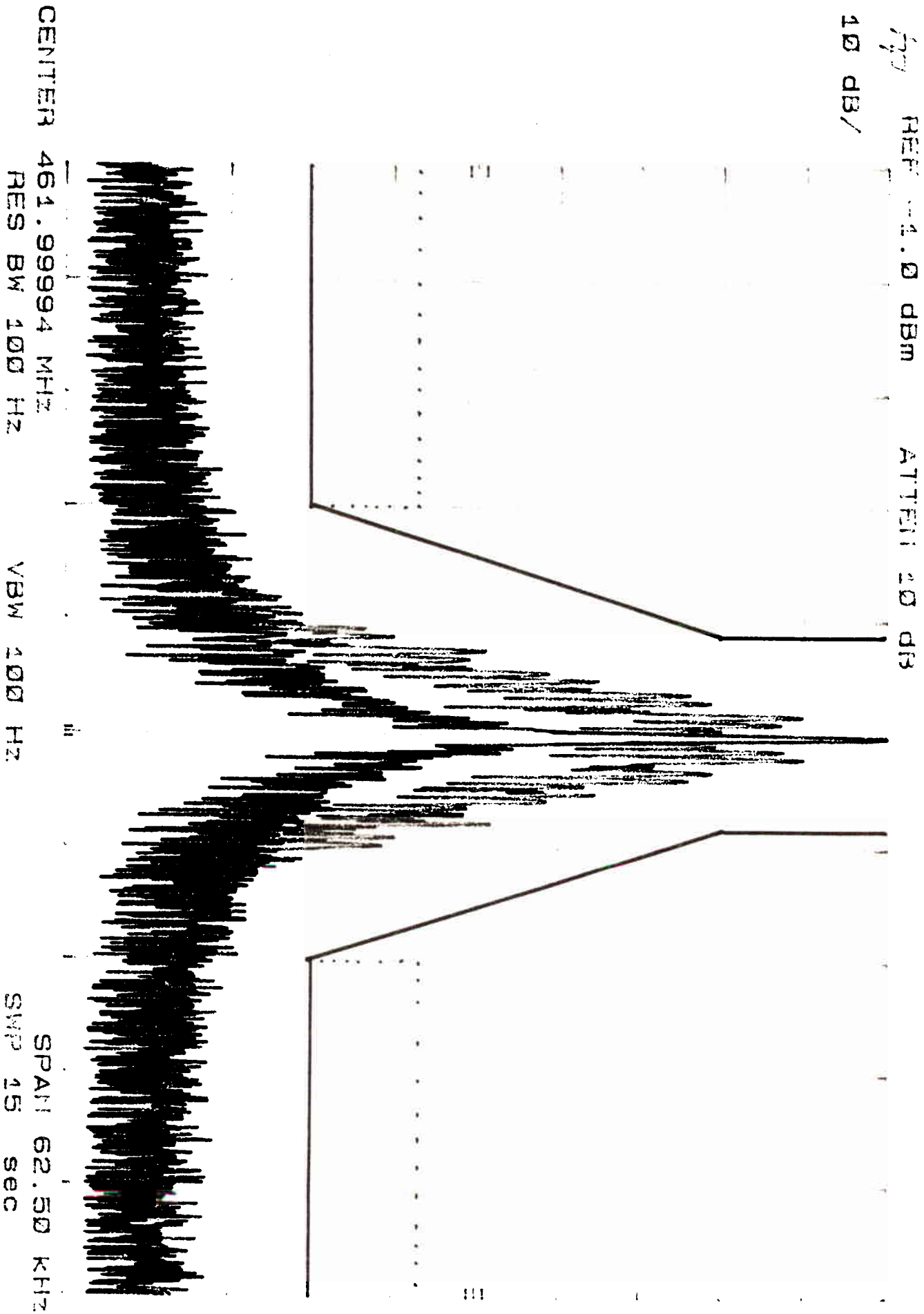
Exhibit 9E-1



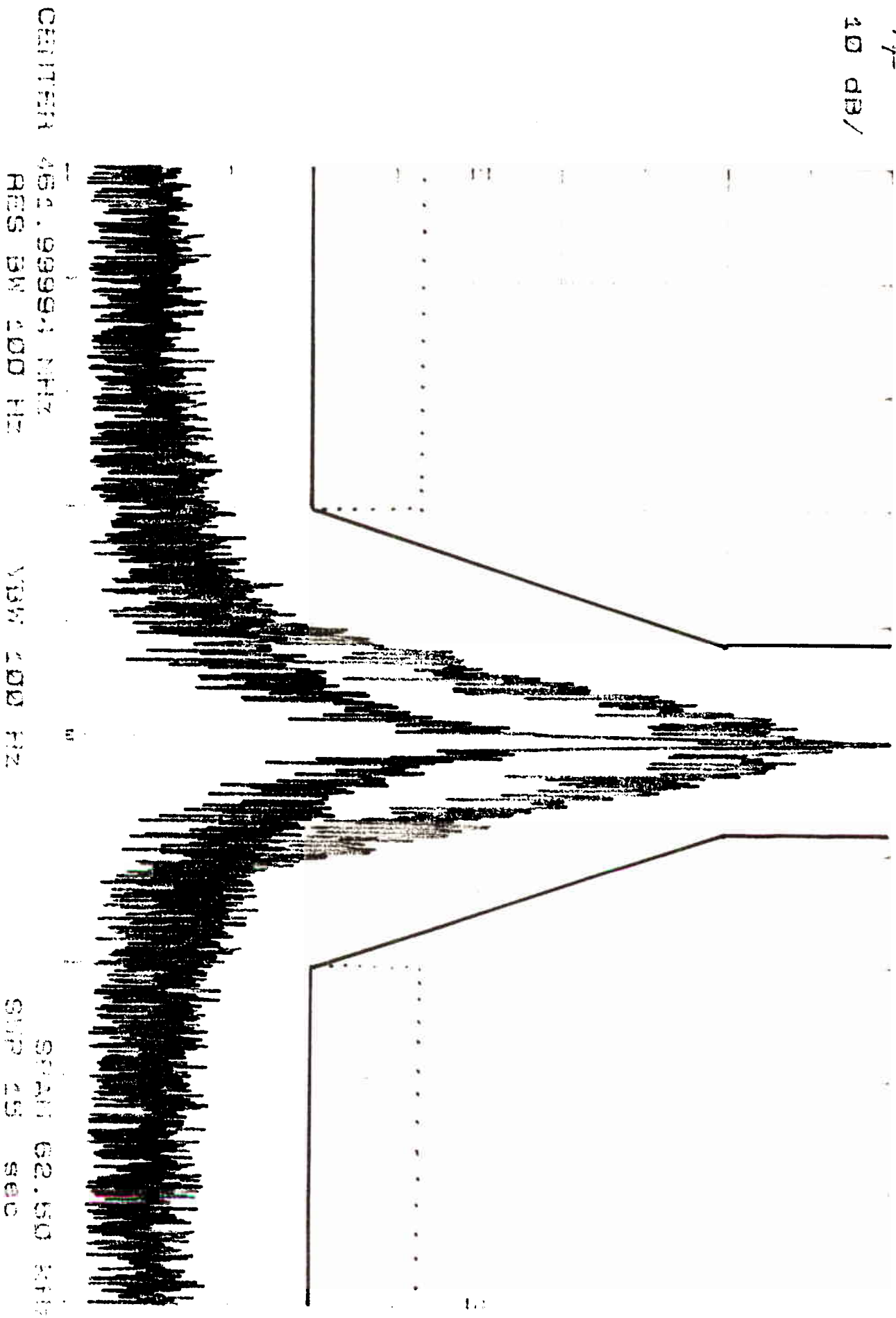
Emission: 11K0F3E - Private Line (PL) Mode - 12.5kHz



Emission: 11K0F3E - Digital Private Line (DPL) Mode - 12.5kHz



Emission: 11KOF3E - DTMF Encoder Transmission Mode - Csq - 12.5kHz



Emission: 11KOF3E - DTMF Encoder Transmission Mode - PL - 12.5kHz

Exhibit 9E-5

Emission: 11KOF3E - DTMF Encoder Transmission Mode - DPL 12.5kHz

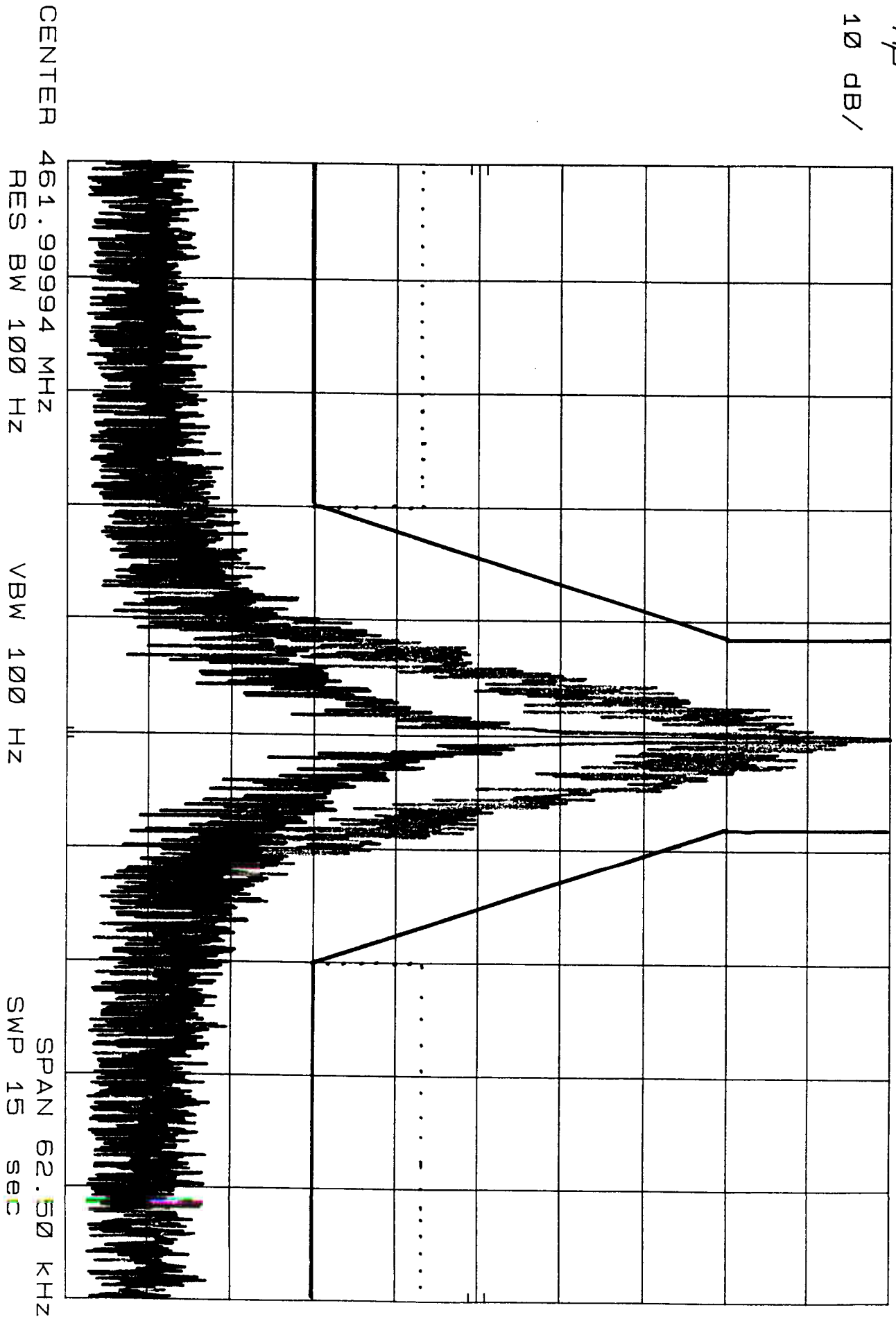


Exhibit 9E-6

Emission: 11K0F3E - MDC-1200 - Csq - 12.5kHz

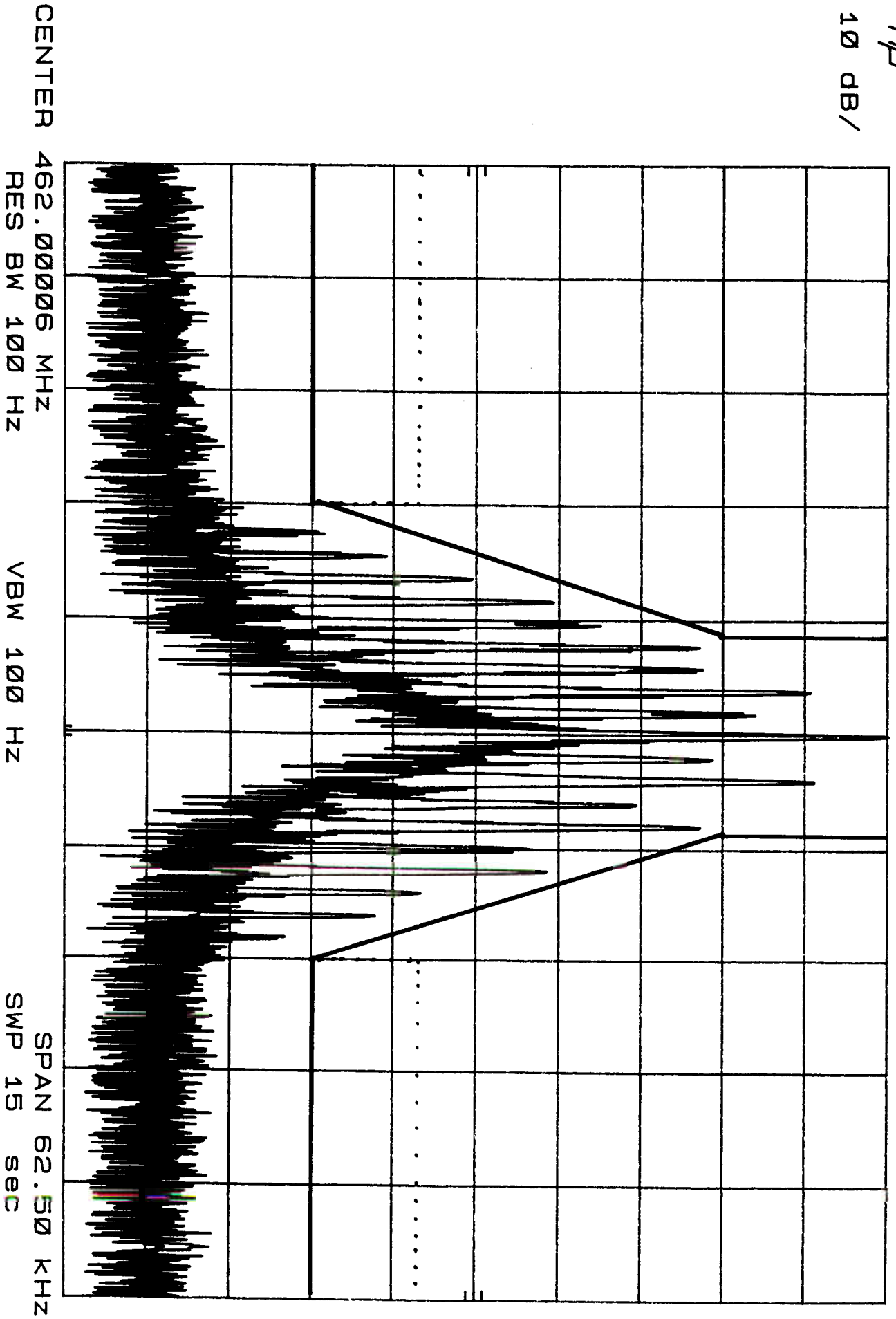


Exhibit 9E-7

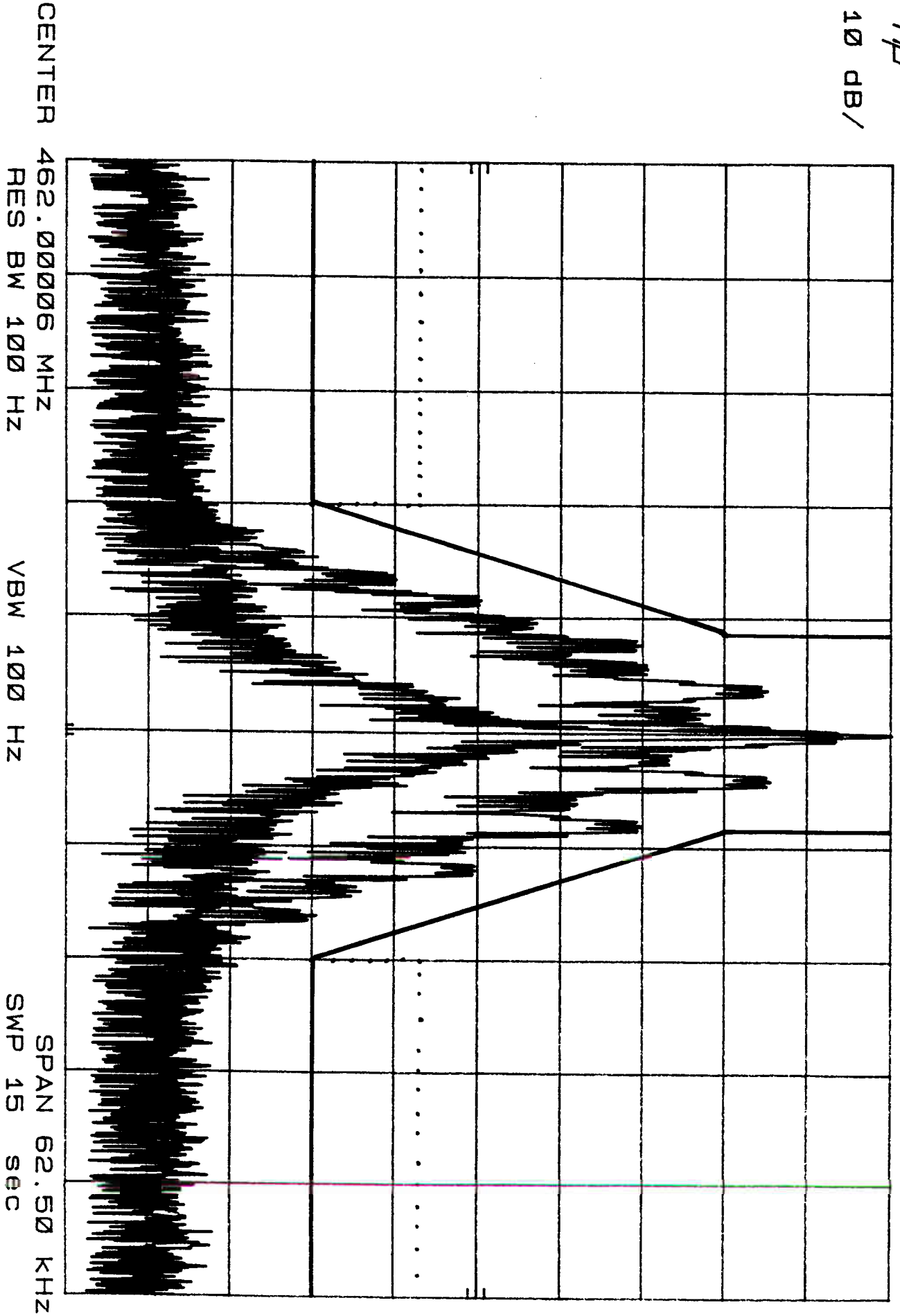
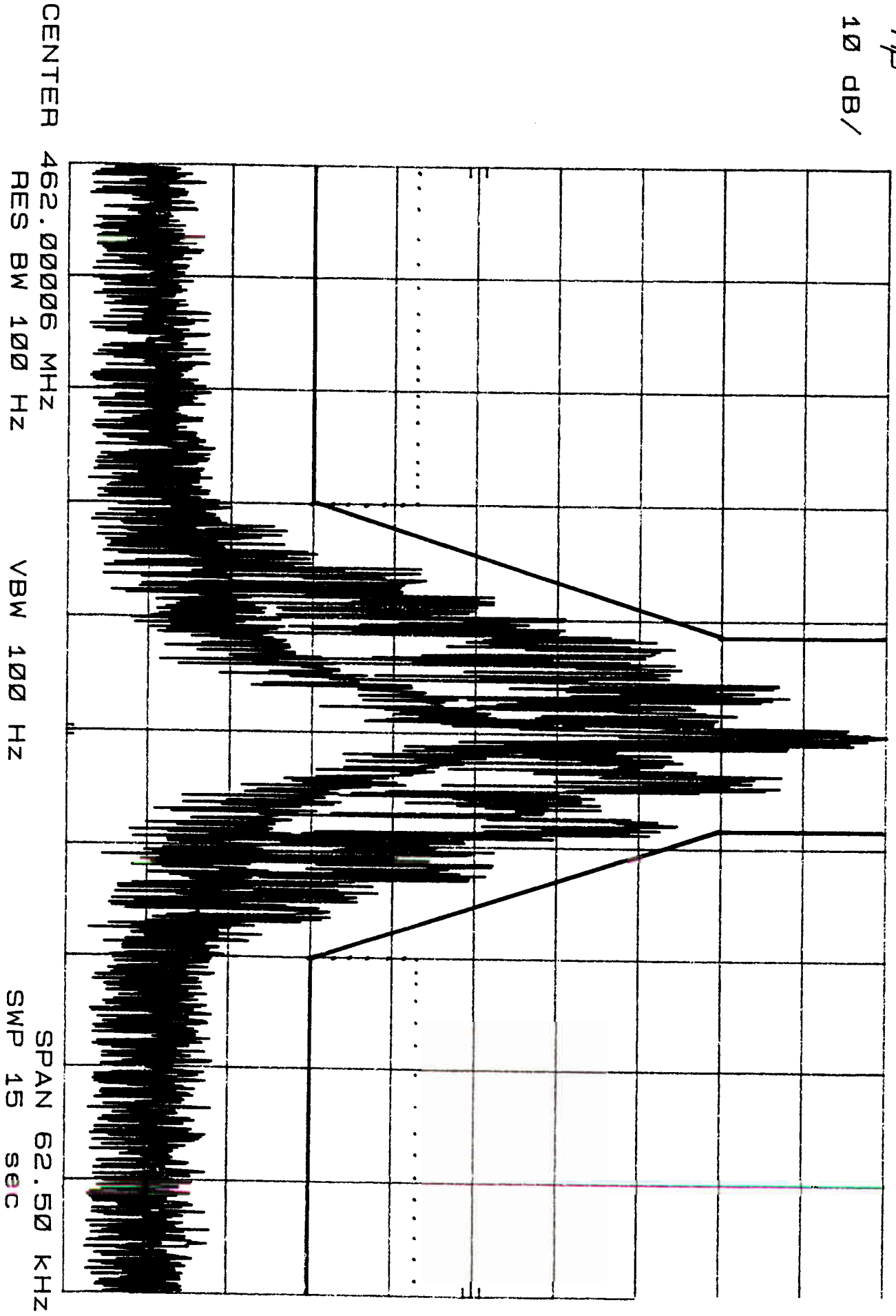

hp
REF -1.0 dBm
ATTEN 10 dB
10 dB/
CENTER 462.00006 MHz
RES BW 100 Hz
VBW 100 Hz
SPAN 62.50 kHz
SWP 15 sec

Exhibit 9E-8


hp
REF -1.0 dBm
ATTEN 10 dB
10 dB/
CENTER 462.00006 MHz
RES BW 100 Hz
VBW 100 Hz
SPAN 62.50 kHz
SWP 15 sec

Emission: 16KOF3E - Carrier Squelch Mode - 25kHz

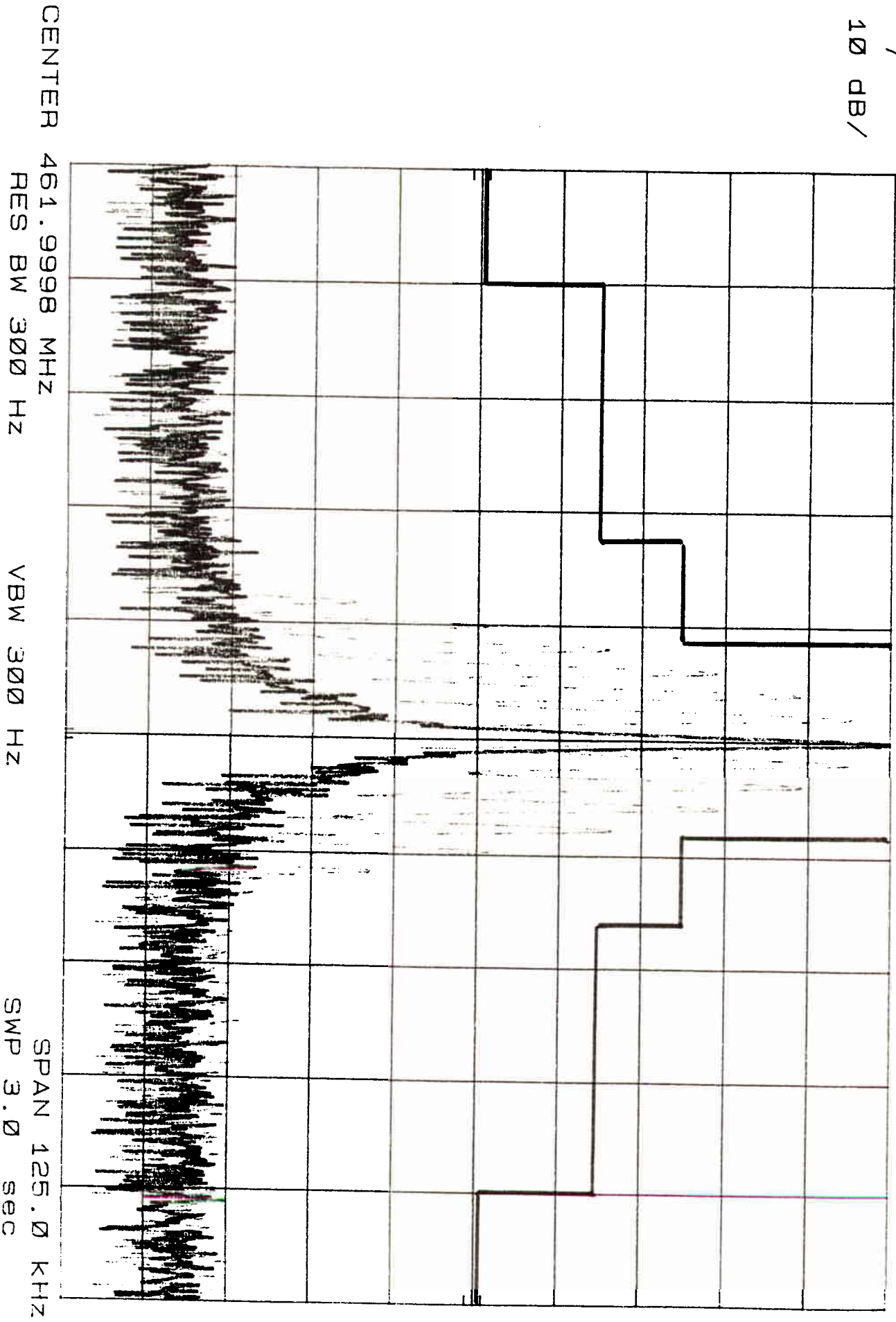
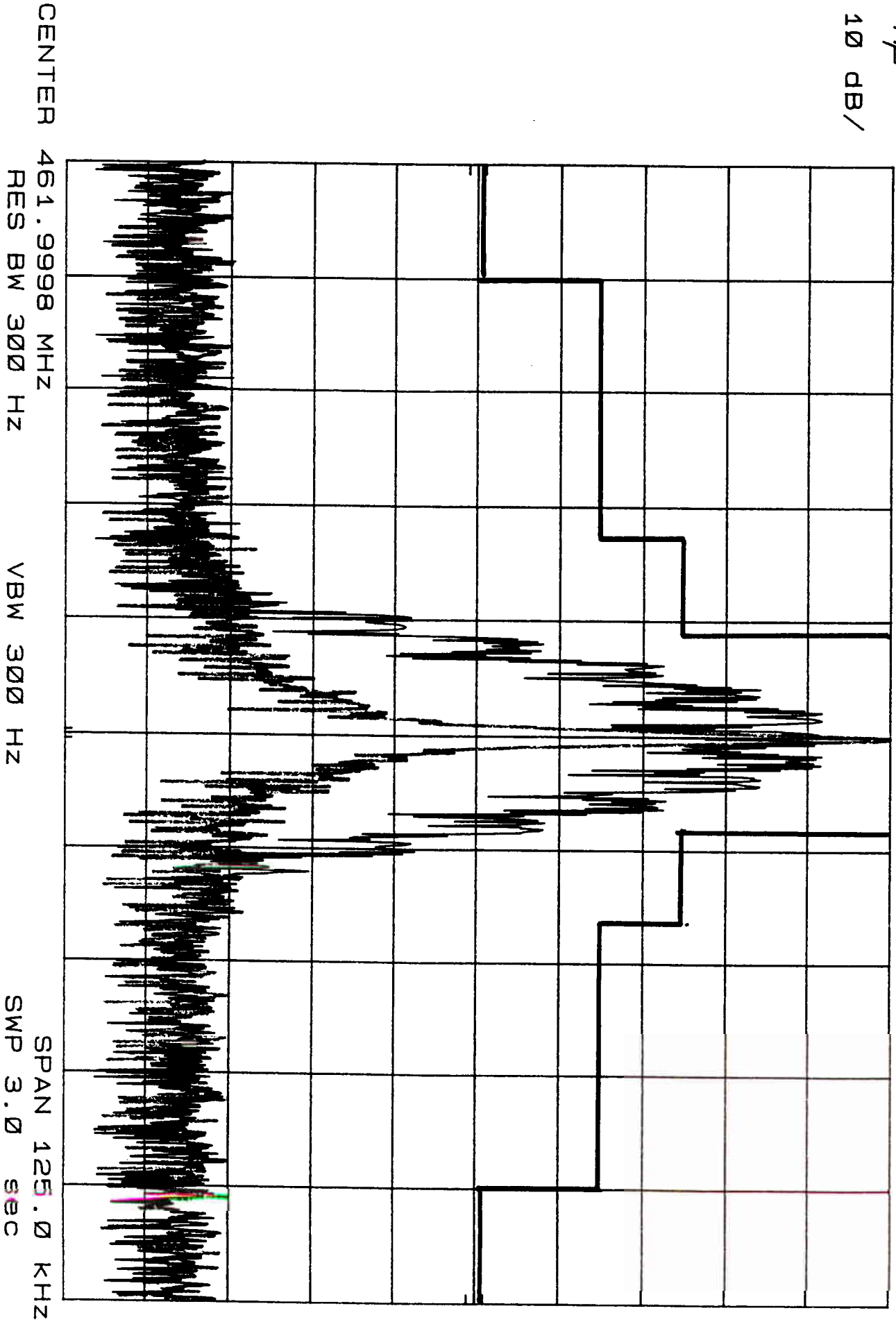
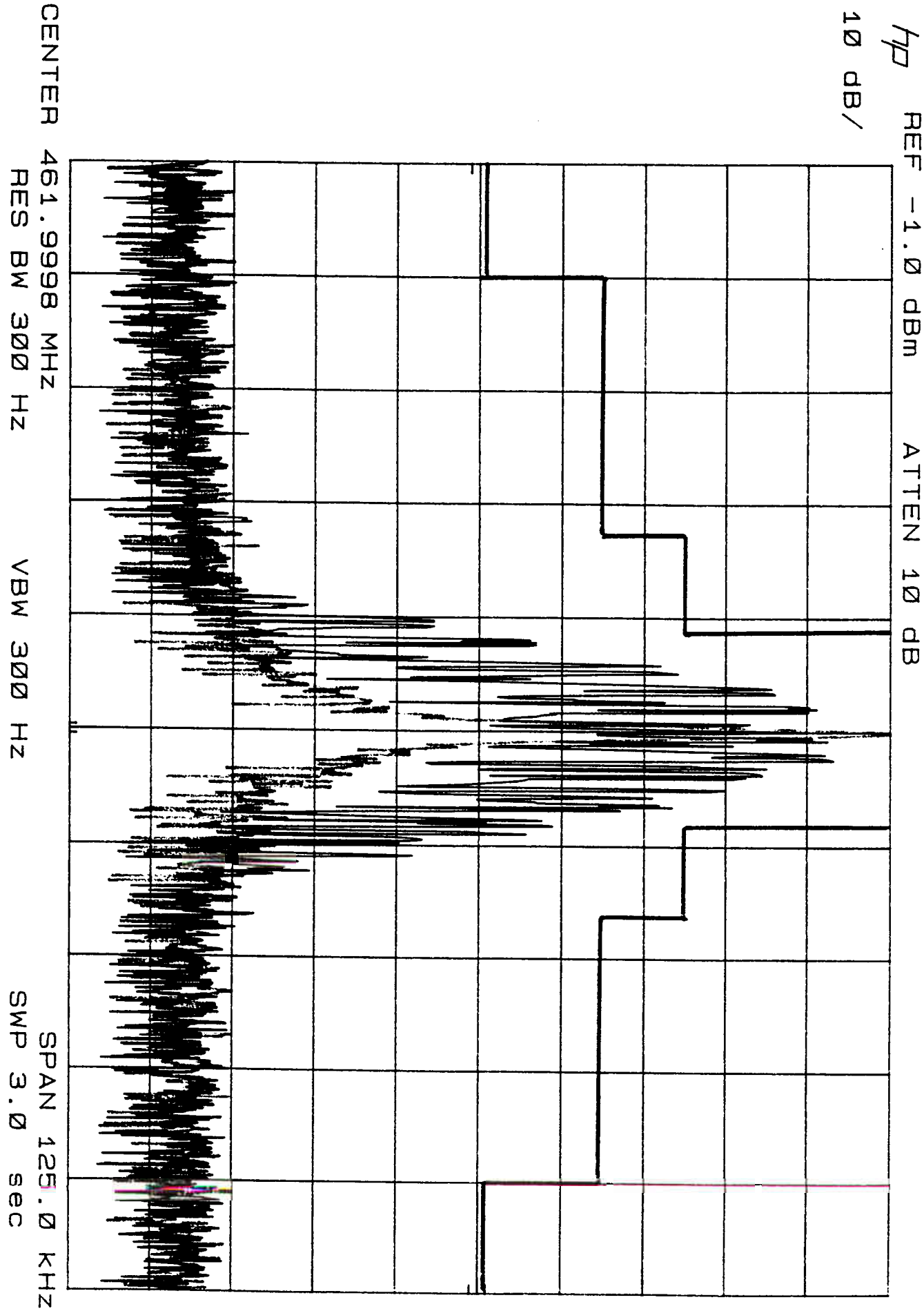


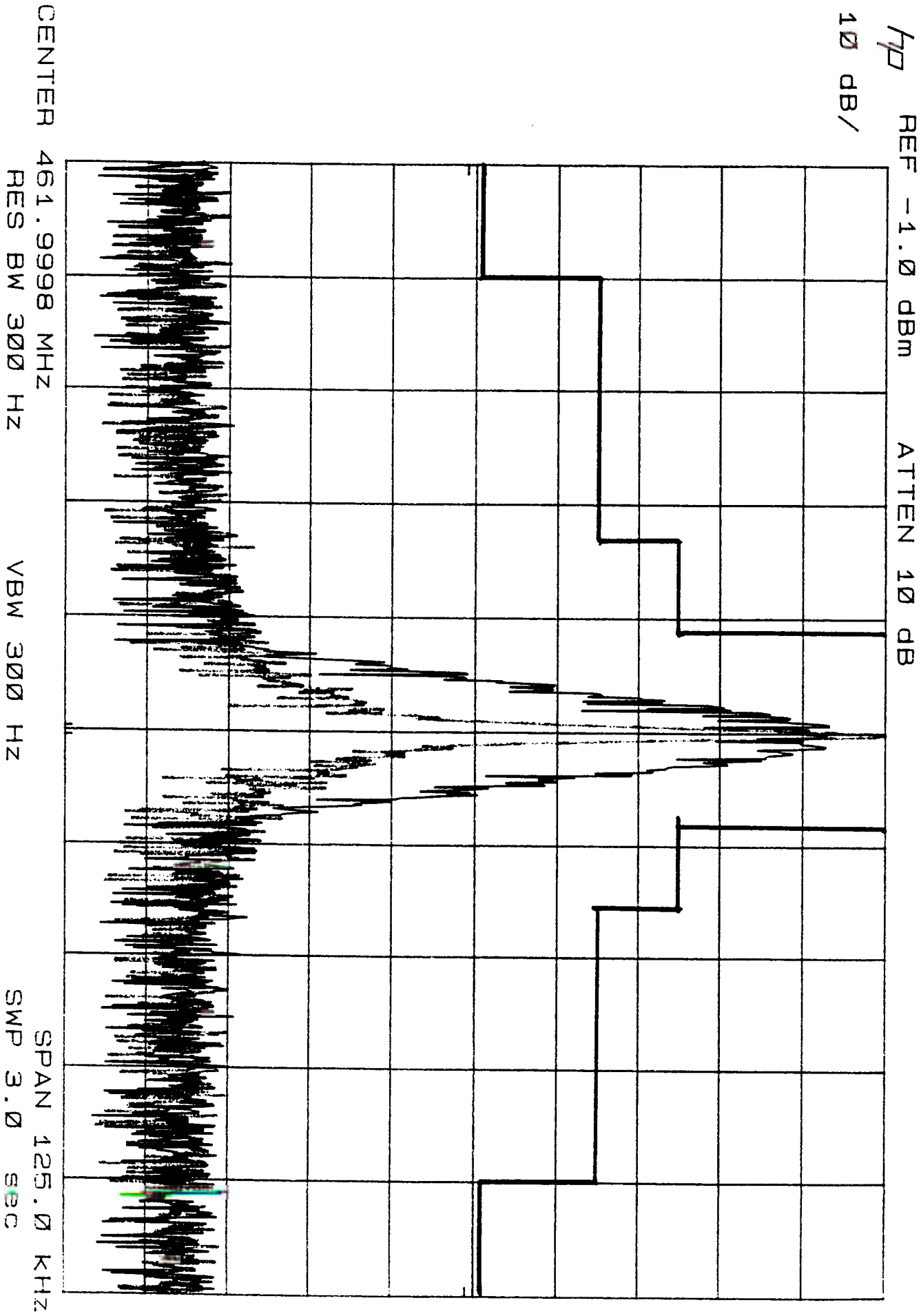
Exhibit 9E-10



Emission: 16KOF3E - Private Line (PL) Mode - 25kHz

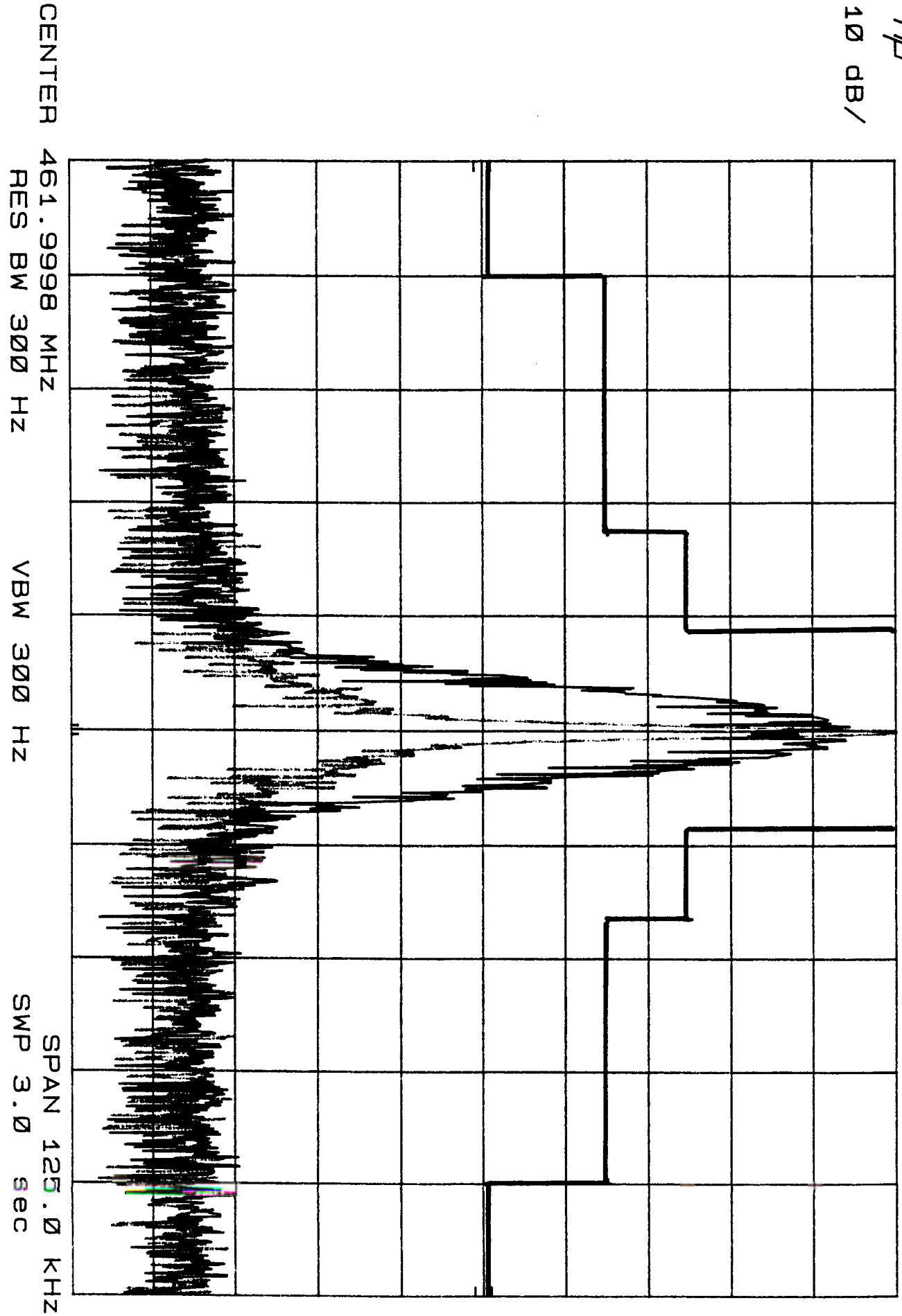


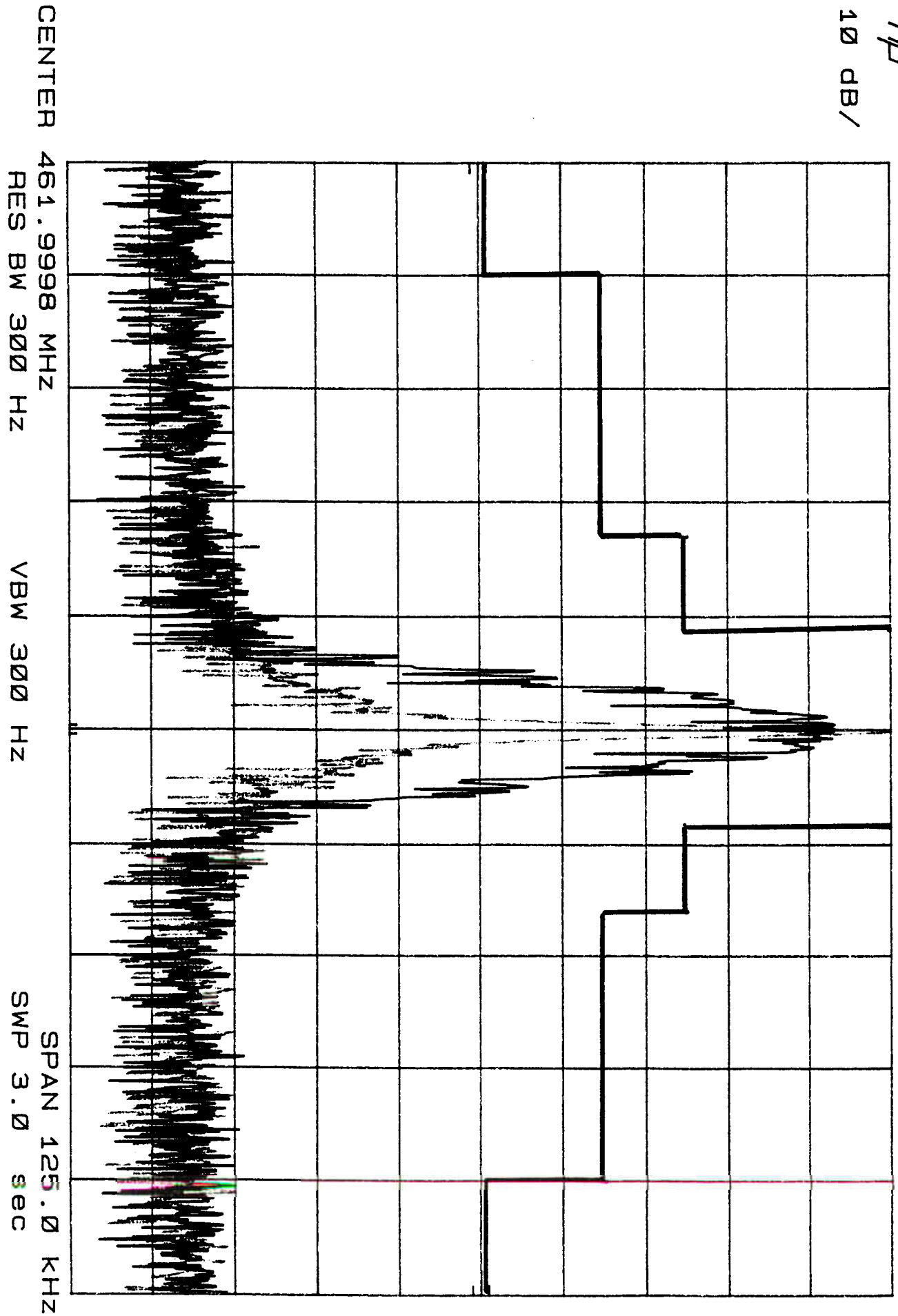
Emission: 16KOF3E - Digital Private Line (DPL) Mode - 25kHz



Emission: 16K0F3E - DTMF Encoder Transmission Mode - Csq - 25kHz

Emission: 16KOF3E - DTMF Encoder Transmission Mode - PL - 25kHz





Emission: 16KOF3E - DTMF Encoder Transmission Mode - DPL 25kHz

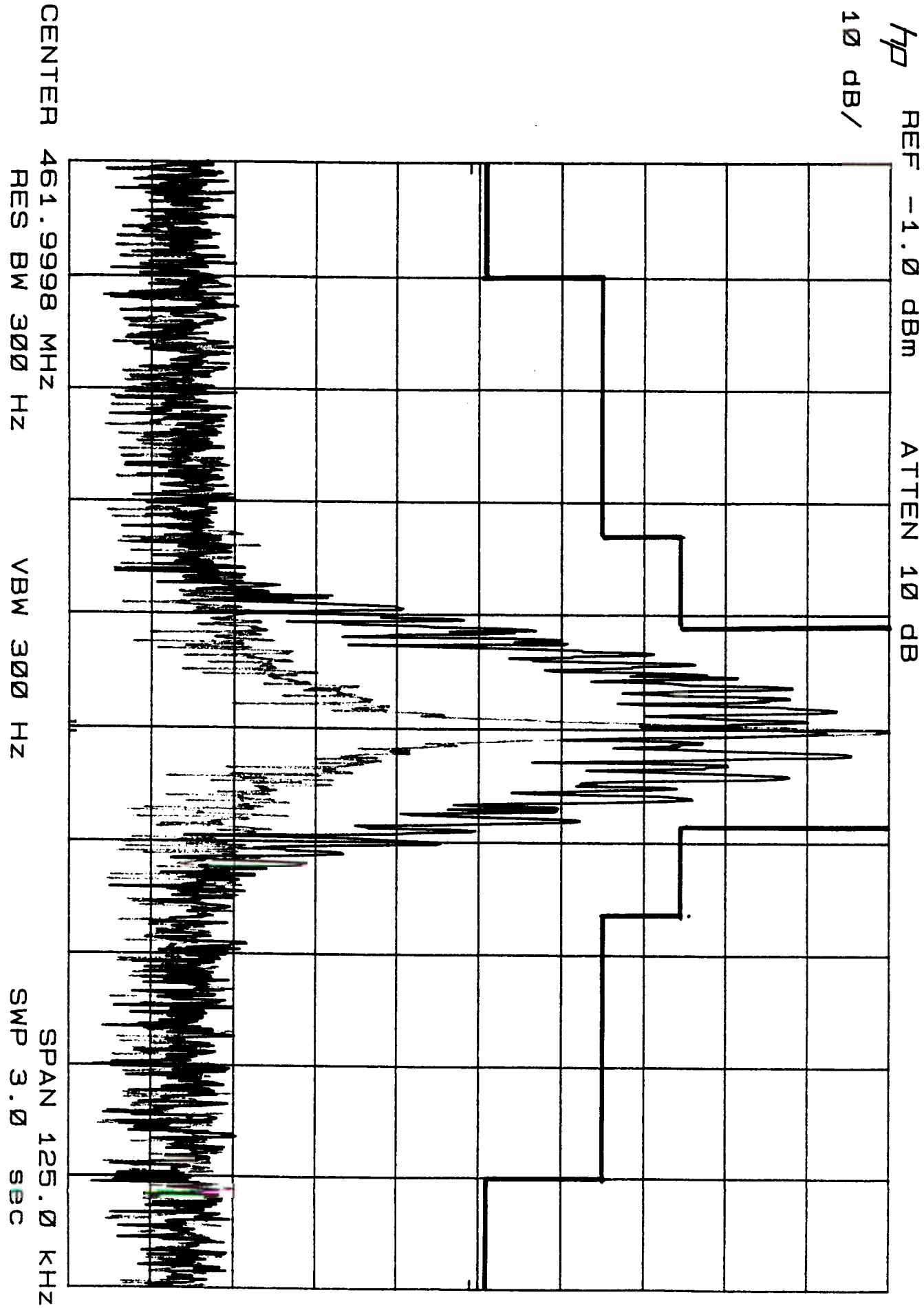


Exhibit 9E-16

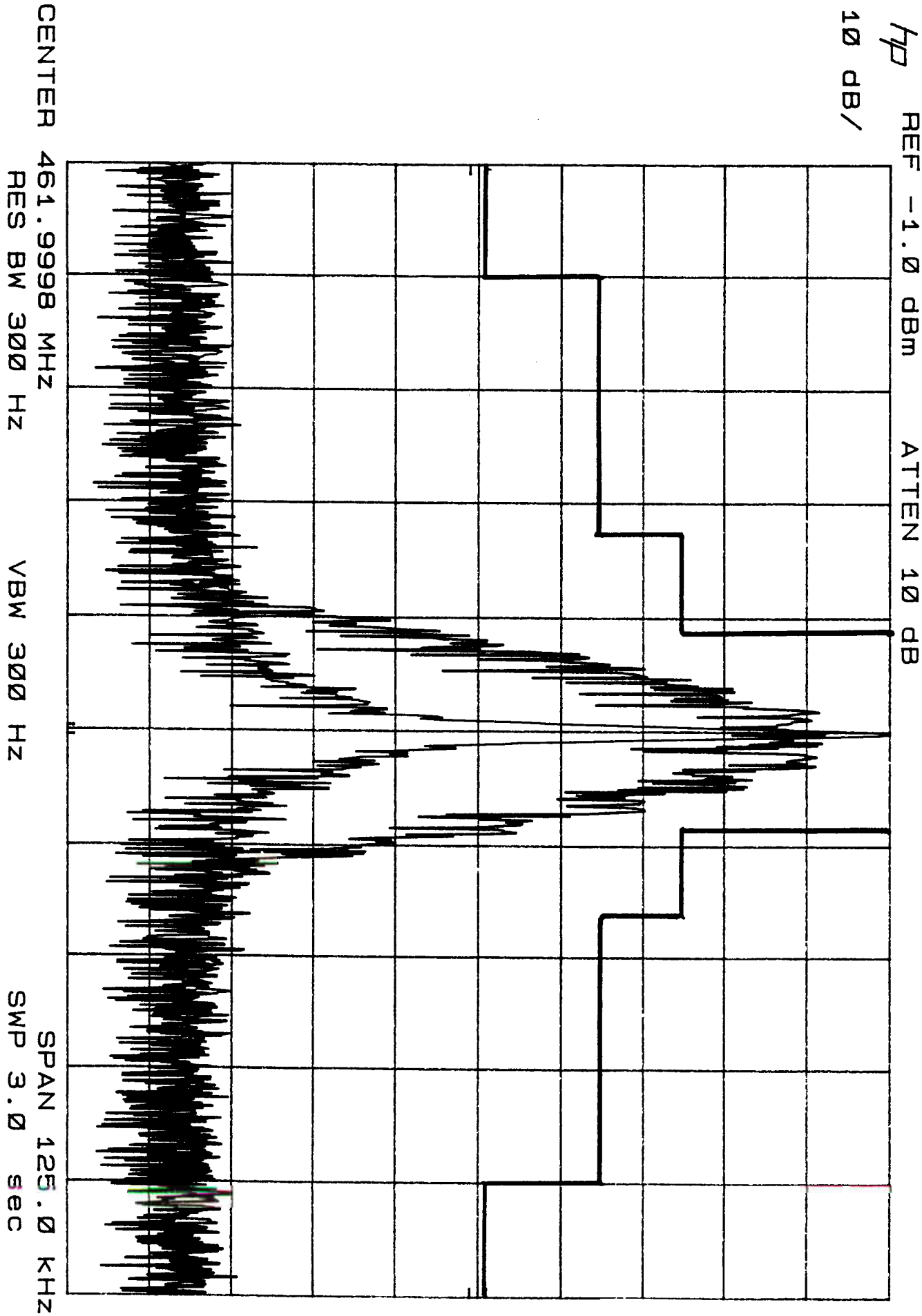
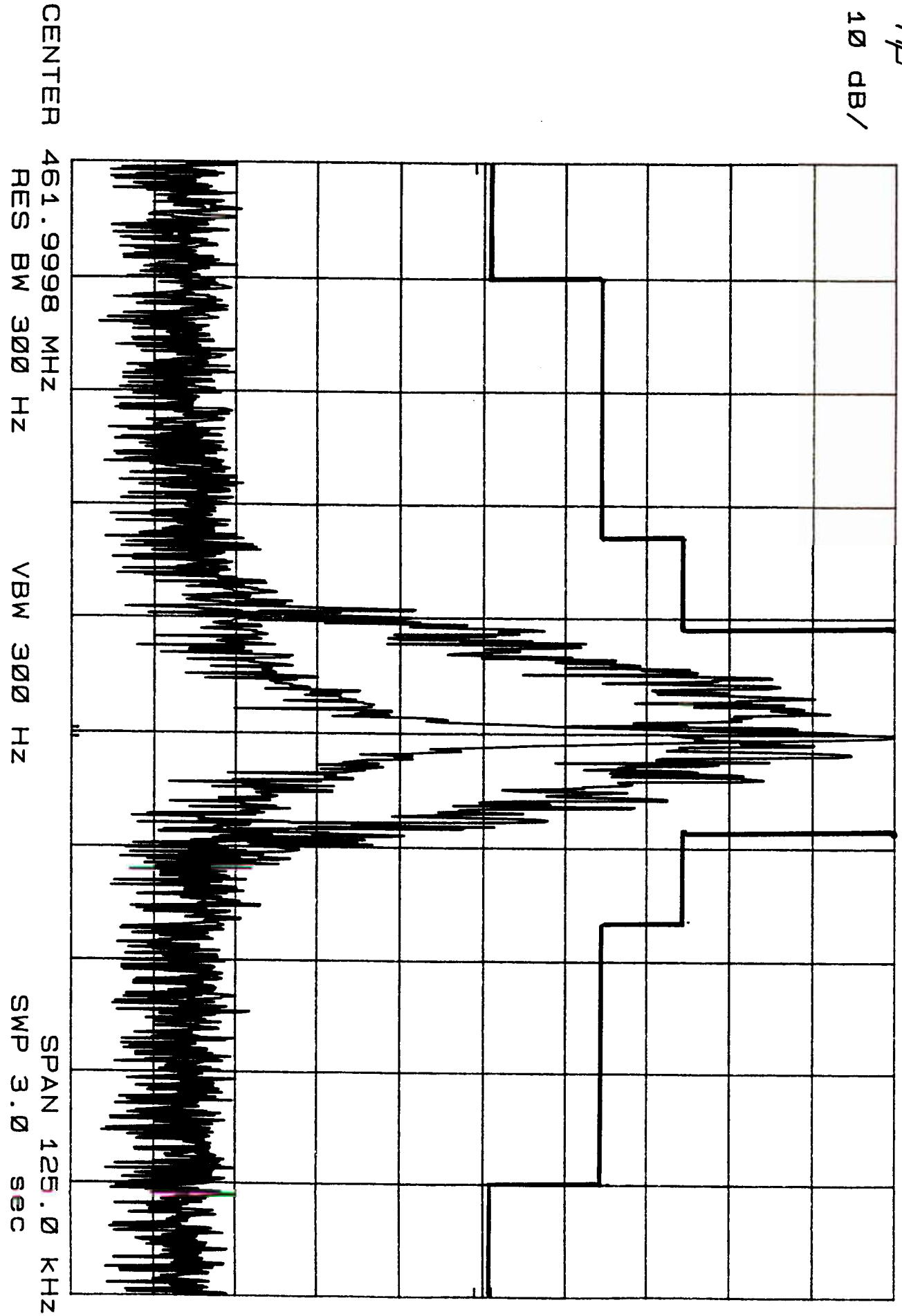


Exhibit 9E-17


hp
REF -1.0 dBm
ATTEN 10 dB
10 dB/
CENTER 461.9998 MHz
RES BW 300 Hz
VBW 300 Hz
SPAN 125.0 kHz
SWP 3.0 sec

Applicant: Motorola Inc. **Equipment Type: ABZ99FT4073**

MOTOROLA INC.

TRANSMITTER SPURIOUS EMISSION CHARACTERISTIC

CONDUCTED SPURIOUS and HARMONIC EMISSIONS

Reference ABZ99FT4073

Method See exhibit 9L

Date 11/12/96

Signature [signature]

Transmitter Type: **See Above**
Power Output: **4.40W at 450.0000MHz**

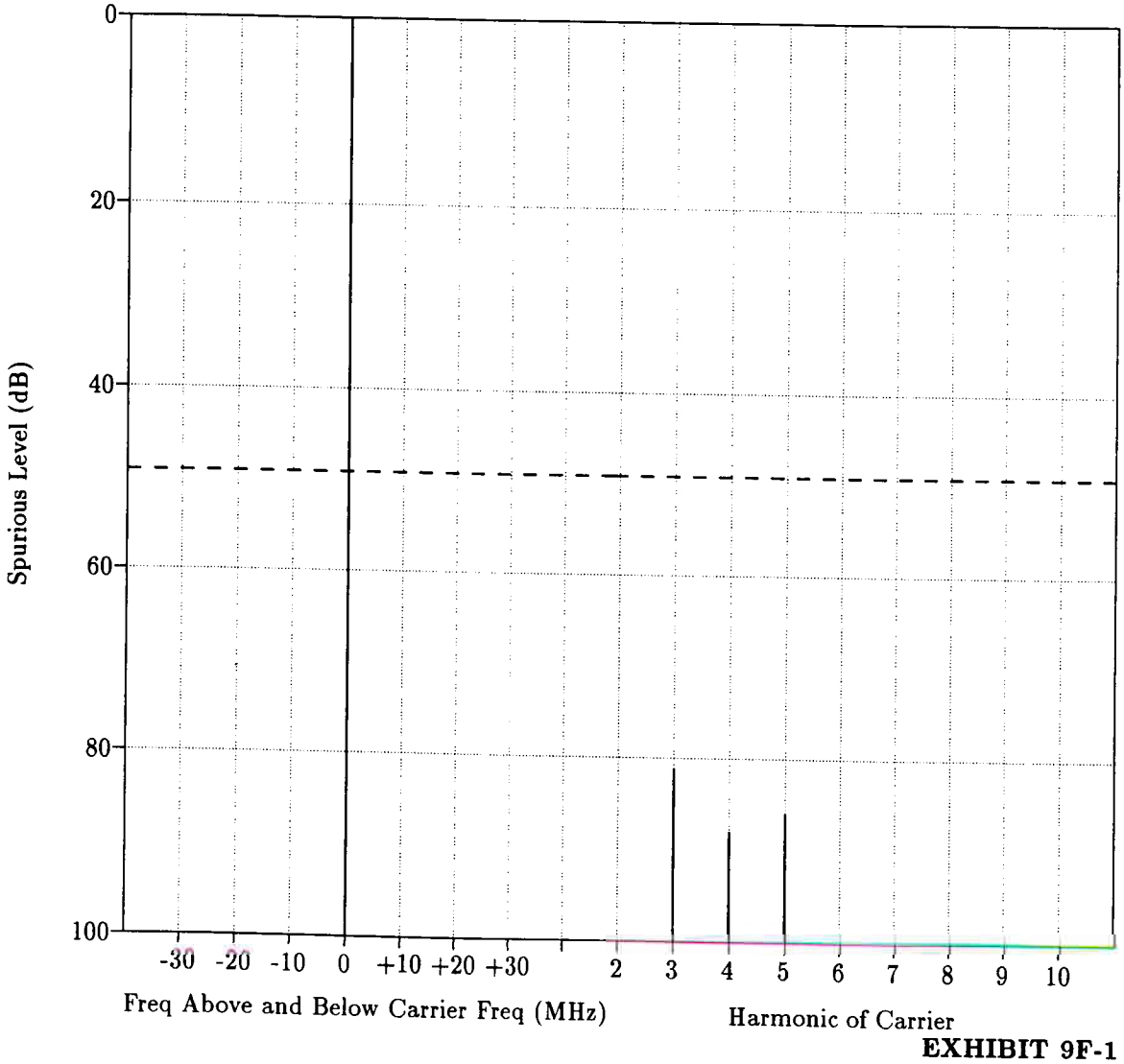


EXHIBIT 9F-1

Applicant: Motorola Inc. **Equipment Type: ABZ99FT4073**

MOTOROLA INC.

TRANSMITTER SPURIOUS EMISSION CHARACTERISTIC

CONDUCTED SPURIOUS and HARMONIC EMISSIONS

Reference ABZ99FT4073

Method See exhibit 9L

Date 11/12/96

Signature

Transmitter Type: **See Above**
Power Output: **4.40W at 474.0000MHz**

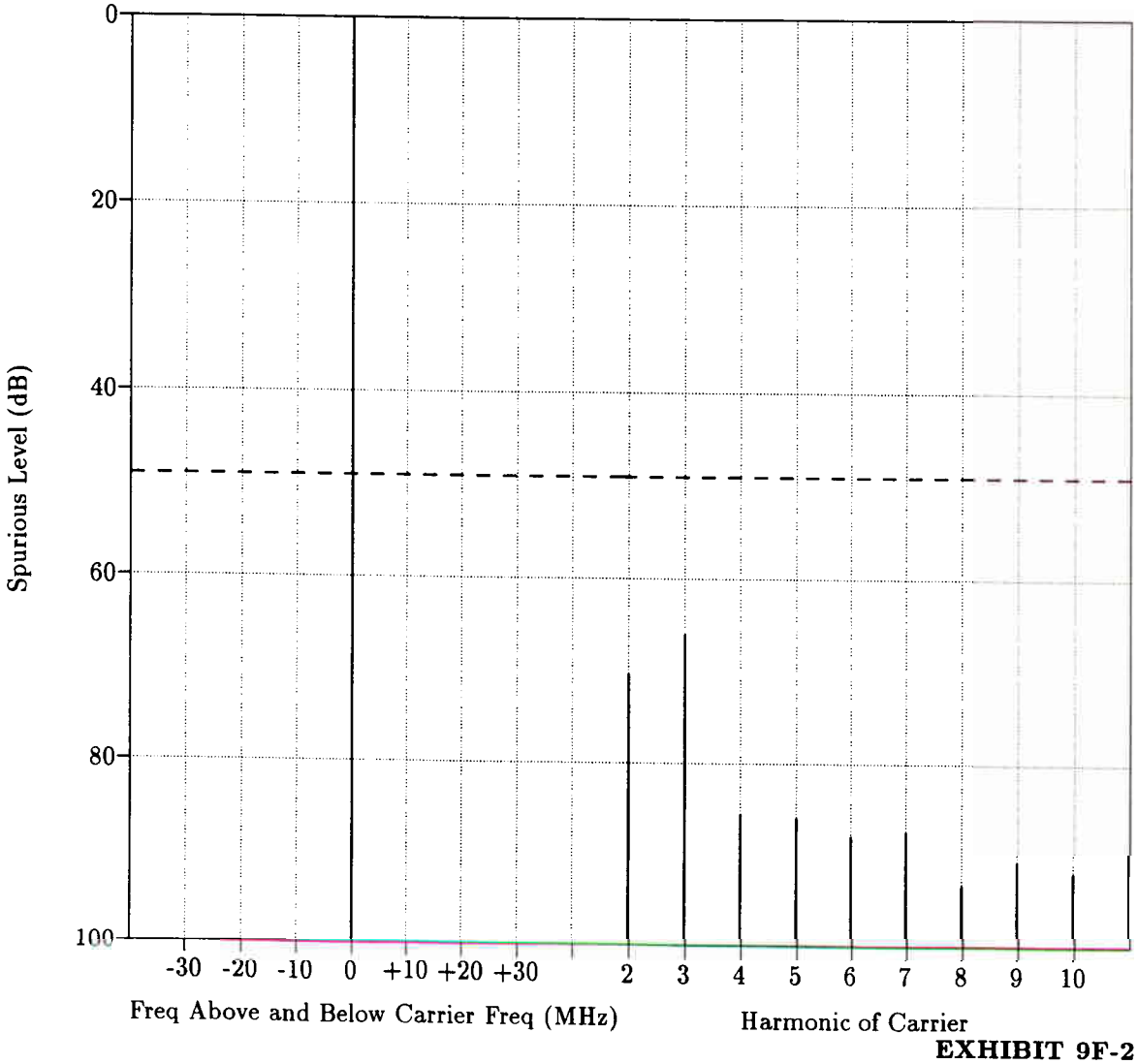


EXHIBIT 9F-2

MOTOROLA INC.

TRANSMITTER SPURIOUS EMISSION CHARACTERISTIC
CONDUCTED SPURIOUS and HARMONIC EMISSIONS

Reference ABZ99FT4073

Method see exhibit 9L

Date 11/12/96

Signature IC

Transmitter Type: **See Above**
Power Output: **1.00W at 450.0000MHz**

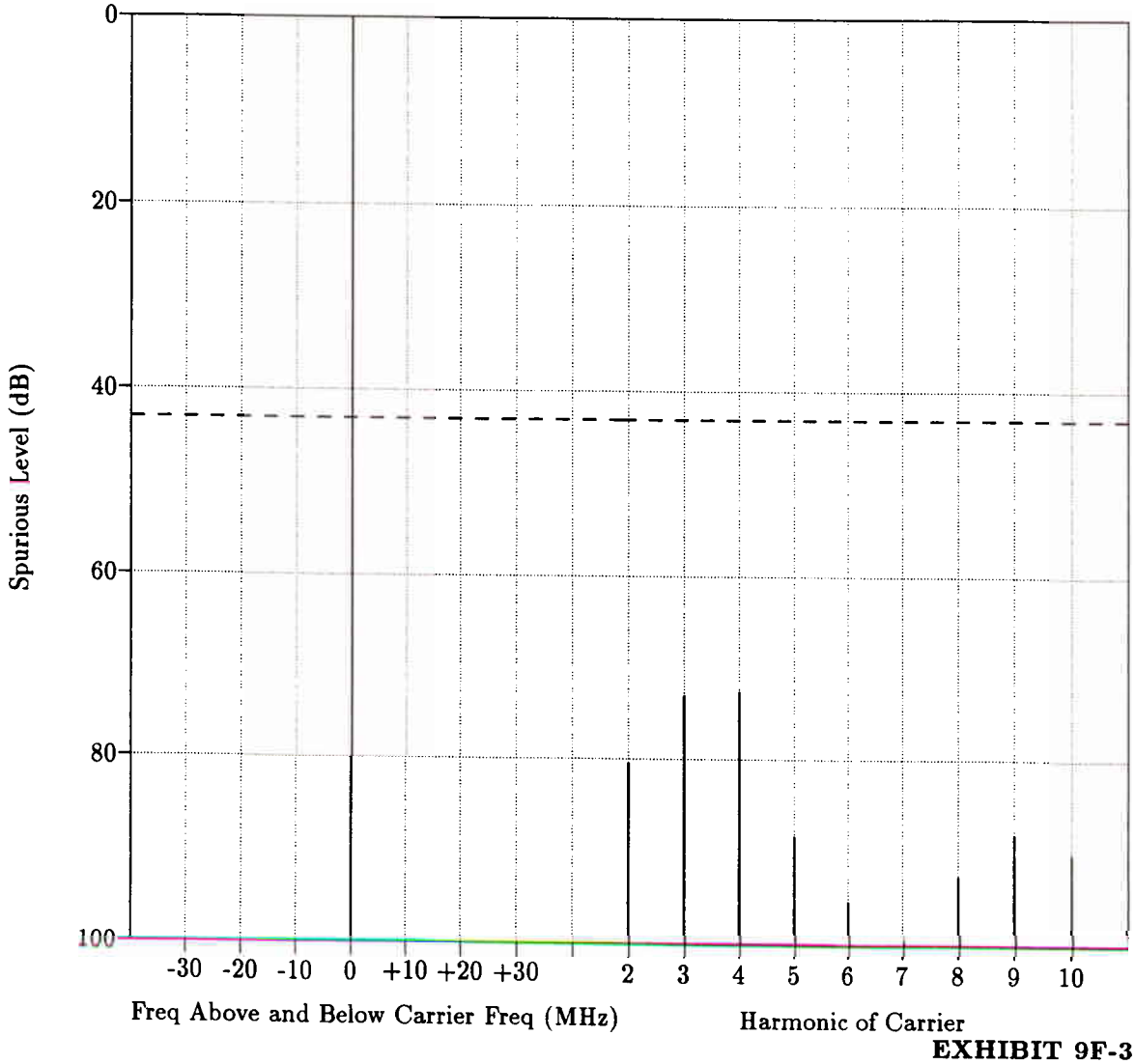


EXHIBIT 9F-3

Applicant: Motorola Inc. **Equipment Type: ABZ99FT4073**

MOTOROLA INC.

TRANSMITTER SPURIOUS EMISSION CHARACTERISTIC

CONDUCTED SPURIOUS and HARMONIC EMISSIONS

Reference ABZ99FT4073

Method See exhibit 7L

Date 11/12/96

Signature IC.

Transmitter Type: **See Above**
Power Output: **1.00W at 474.0000MHz**

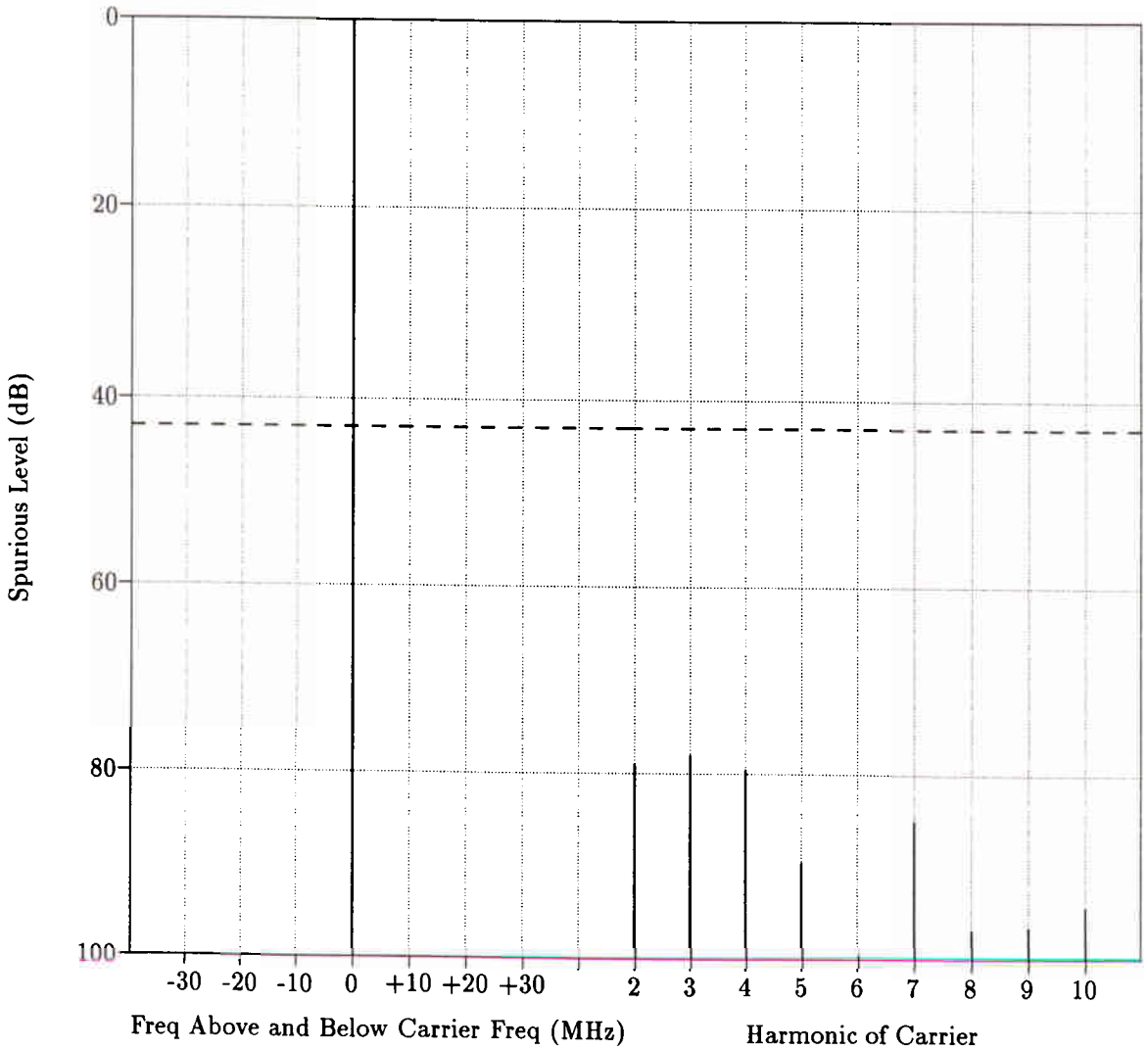


EXHIBIT 9F-4

Applicant: Motorola Inc. **Equipment Type: ABZ99FT4073**

MOTOROLA INC.

TRANSMITTER SPURIOUS EMISSION CHARACTERISTIC

RADIATED SPURIOUS and HARMONIC EMISSIONS

Reference ABZ99FT4073

Method See exhibit 9L

Date 11/12/96

Signature K. [signature]

Antenna Polarization: HORIZONTAL

Power Output: 1.00W at 462.0000MHz

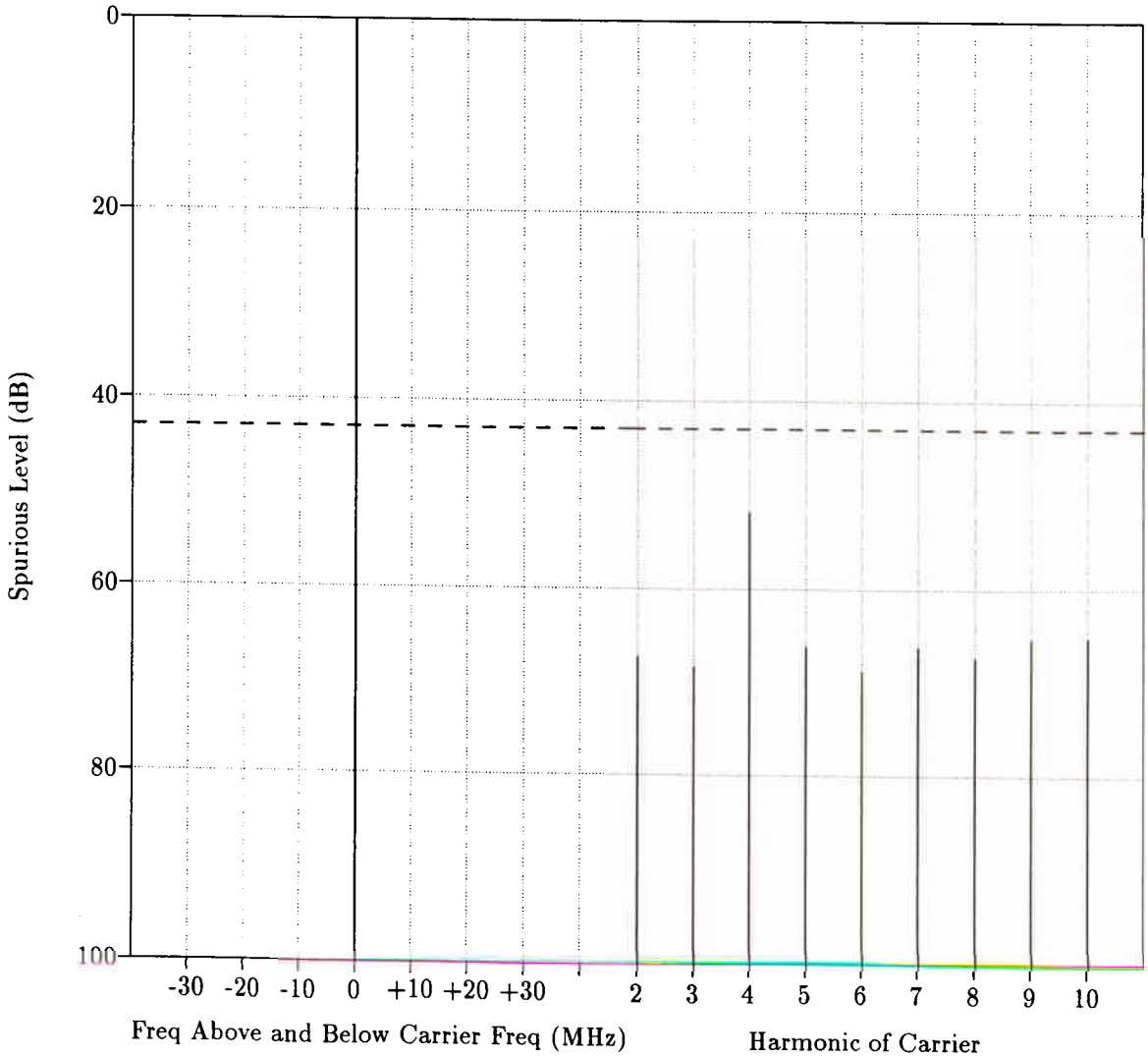


EXHIBIT 9G-1

Applicant: Motorola Inc. **Equipment Type: ABZ99FT4073**

MOTOROLA INC.

TRANSMITTER SPURIOUS EMISSION CHARACTERISTIC

RADIATED SPURIOUS and HARMONIC EMISSIONS

Reference ABZ99FT4073

Method see exhibit 9L

Date 11/12/96

Signature

Antenna Polarization: VERTICAL

Power Output: 1.00W at 462.0000MHz

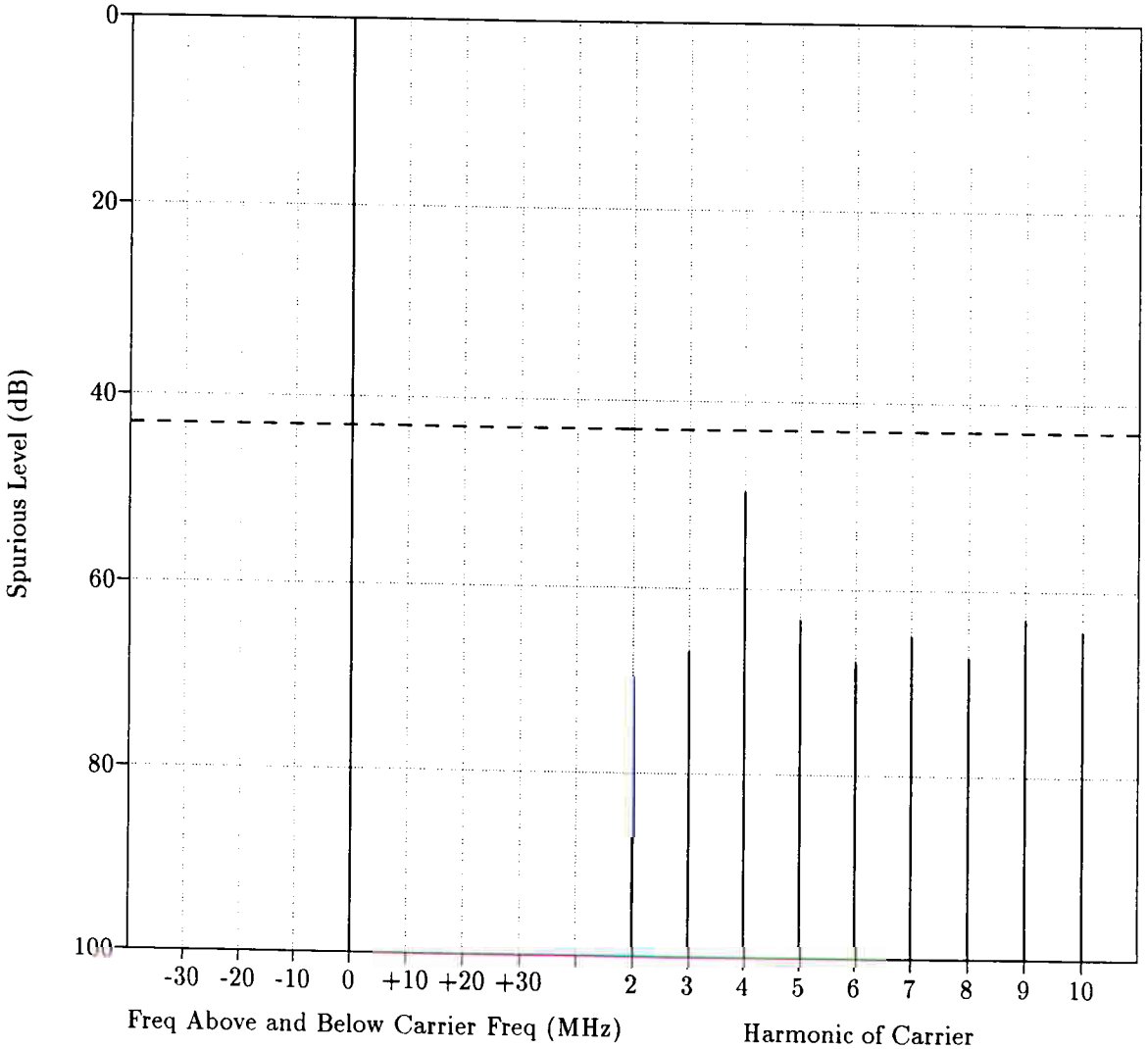


EXHIBIT 9G-2

Applicant: Motorola Inc. **Equipment Type: ABZ99FT4073**

MOTOROLA INC.

TRANSMITTER SPURIOUS EMISSION CHARACTERISTIC

RADIATED SPURIOUS and HARMONIC EMISSIONS

Reference ABZ99FT4073

Method see exhibit 9L

Date 11/12/96

Signature

Antenna Polarization: HORIZONTAL
Power Output: 4.40W at 462.0000MHz

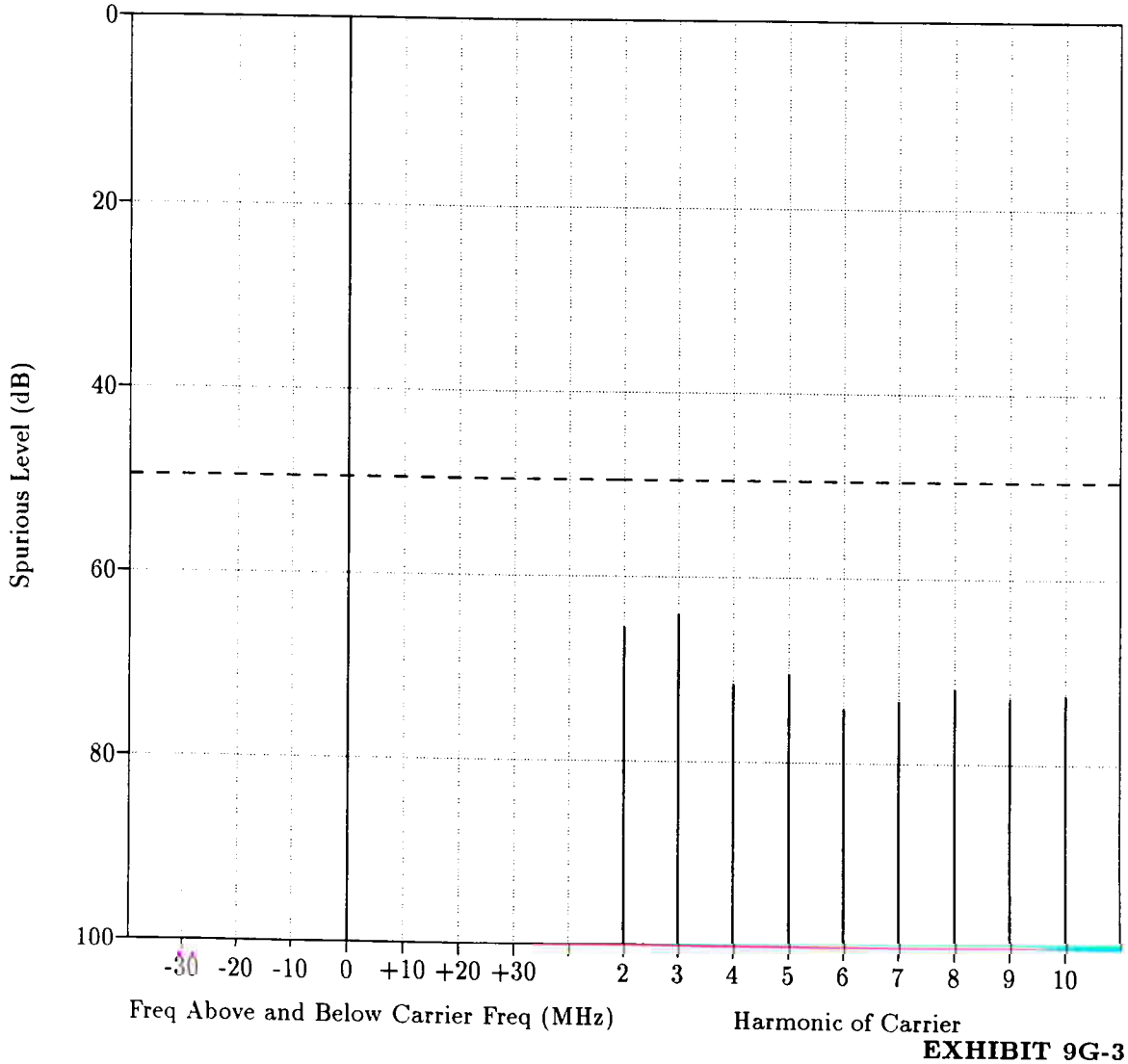


EXHIBIT 9G-3

Applicant: Motorola Inc. **Equipment Type: ABZ99FT4073**

MOTOROLA INC.

TRANSMITTER SPURIOUS EMISSION CHARACTERISTIC

RADIATED SPURIOUS and HARMONIC EMISSIONS

Reference ABZ99FT4073

Method See exhibit 9L

Date 11/12/96

Signature K. [signature]

Antenna Polarization: VERTICAL

Power Output: 4.40W at 462.0000MHz

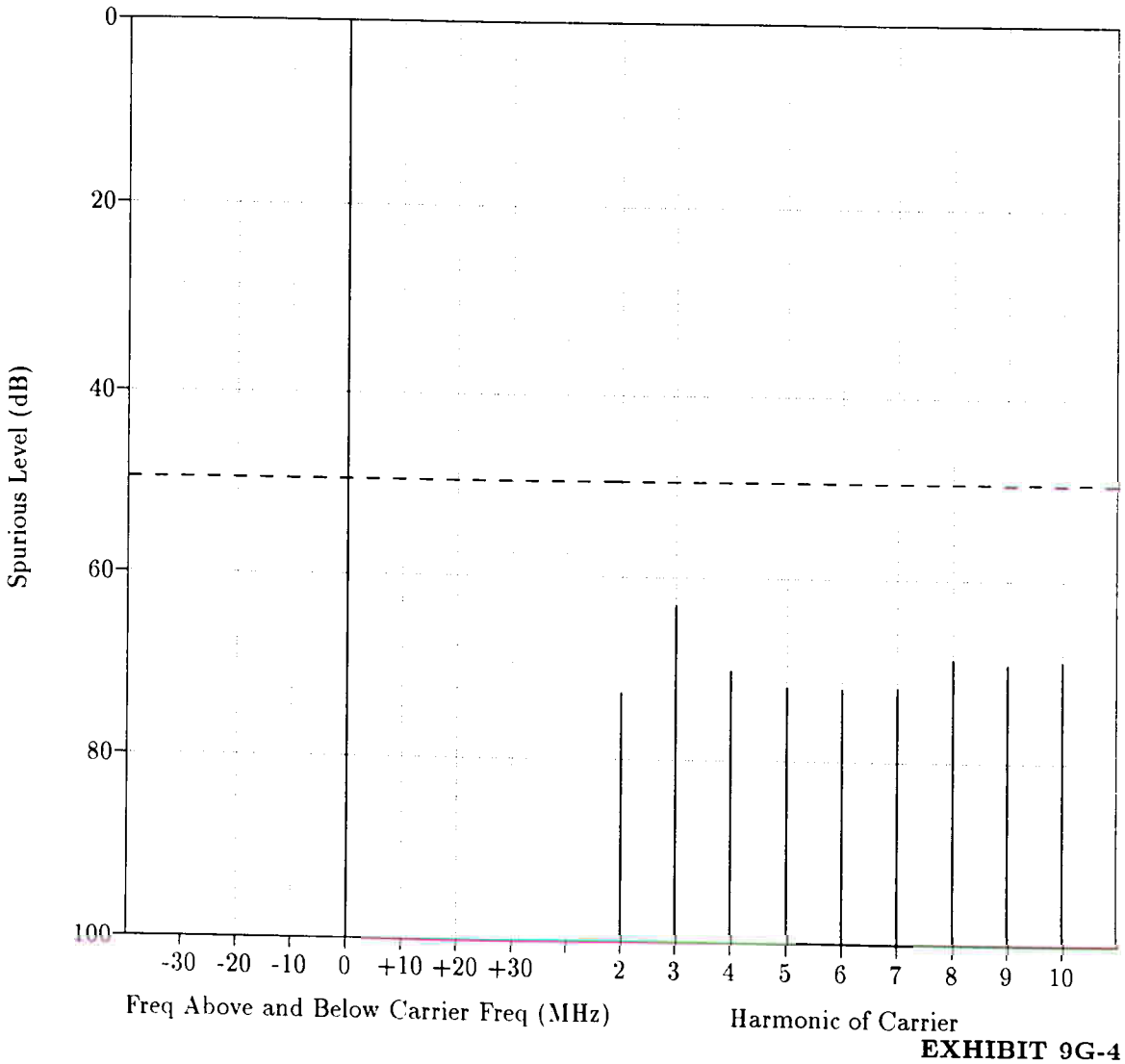


EXHIBIT 9G-4

Applicant: Motorola Inc. **Equipment Type: ABZ99FT4073**

MOTOROLA INC.

CRYSTAL OSCILLATOR STABILITY CHARACTERISTIC

FREQUENCY vs. TEMPERATURE

Reference ABZ99FT4073

Method See Exhibit 9L

Date 11/12/96

Signature Scott Cahill

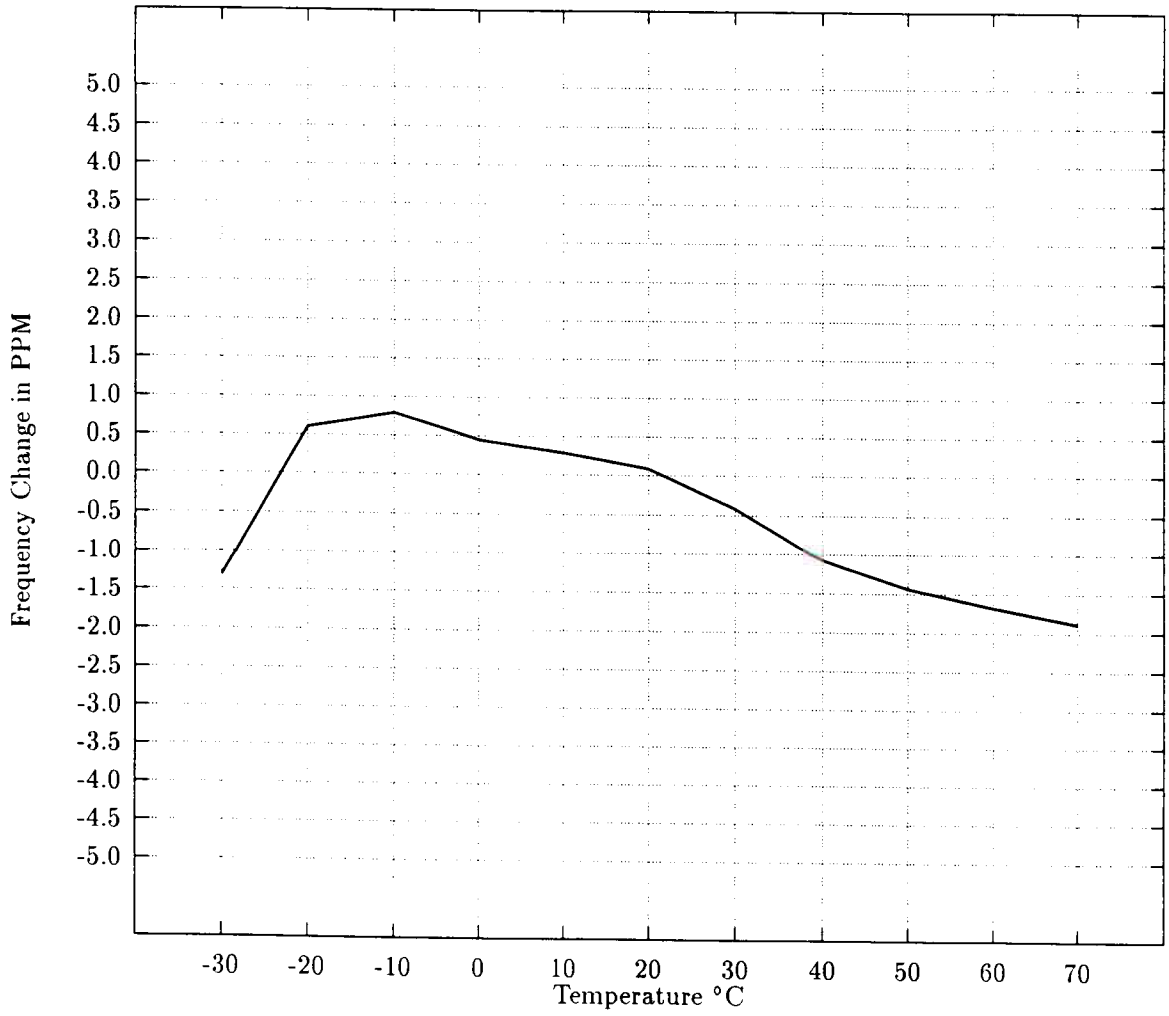


EXHIBIT 9H

Applicant: Motorola Inc. **Equipment Type: ABZ99FT4073**

MOTOROLA INC.

STABILITY CHARACTERISTIC

FREQUENCY vs. VOLTAGE

Reference ABZ99FT4073

Method see exhibit 9L

Date 11/12/96

Signature K. [signature]

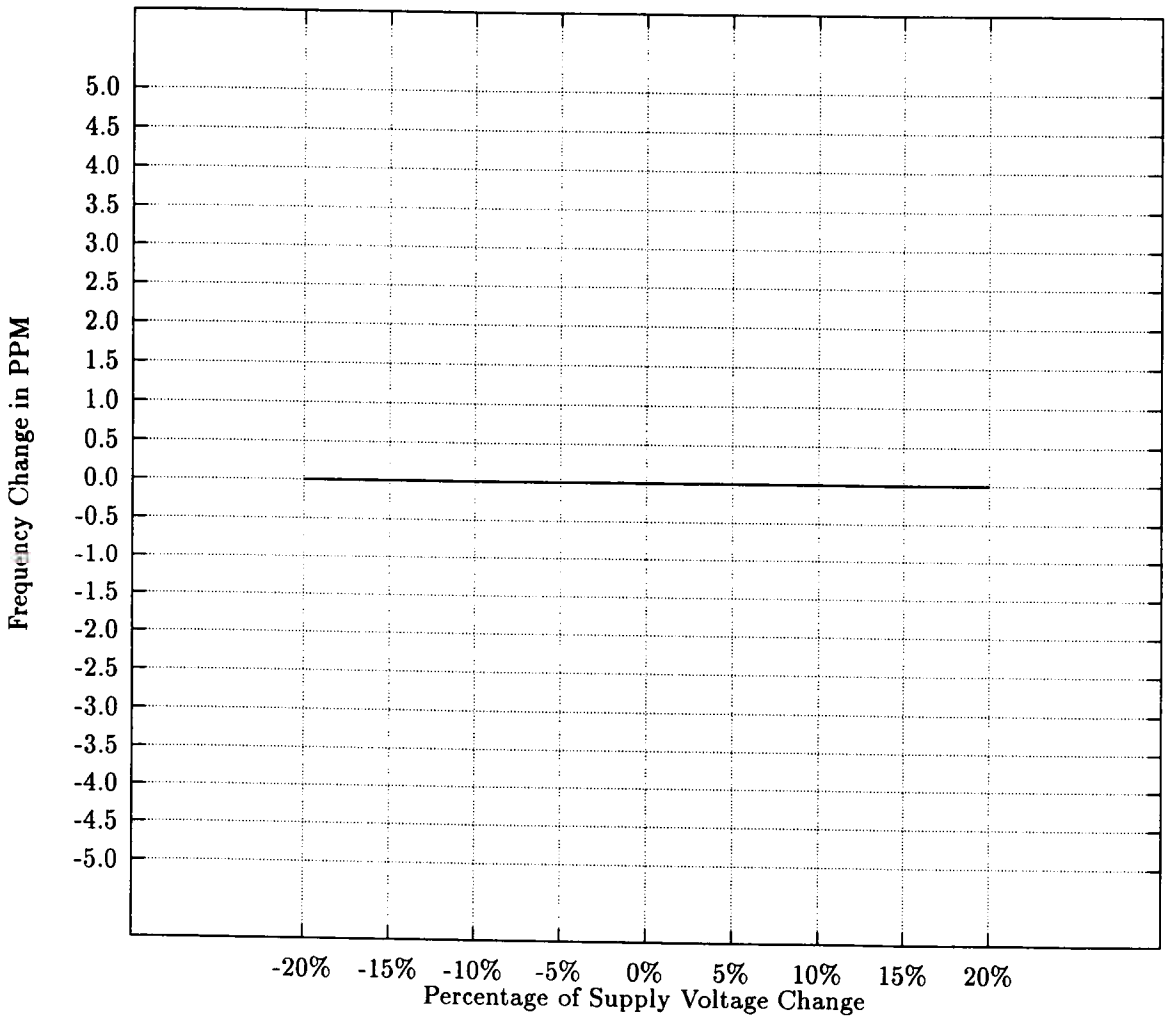


EXHIBIT 9J

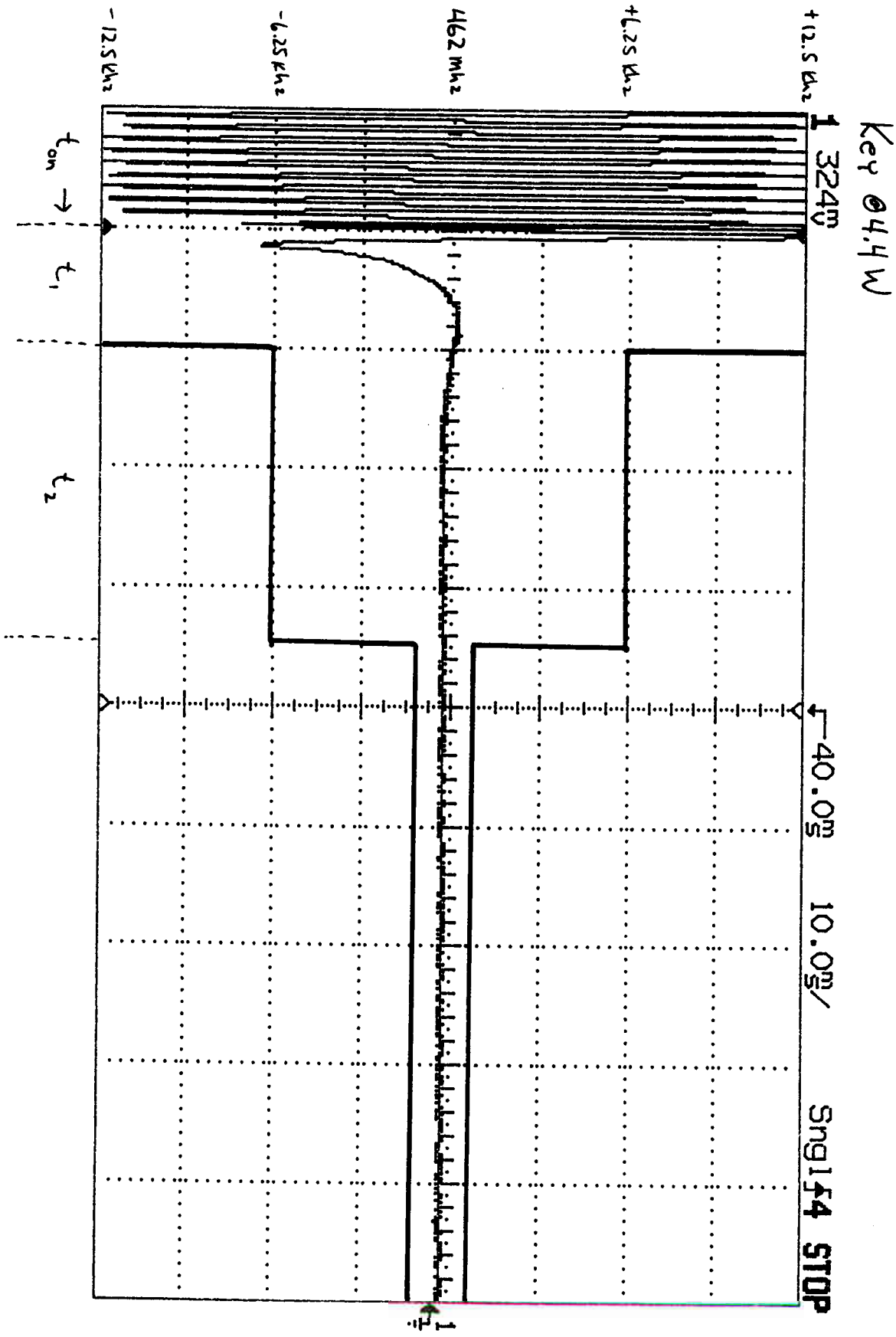

Key @4.4W
-12.5 kHz
-6.25 kHz
462 MHz
+6.25 kHz
+12.5 kHz
1 324m
t_{on}
t_1
t_2
40.0ms
10.0ms/
Sngl
STOP

Exhibit 9K-1

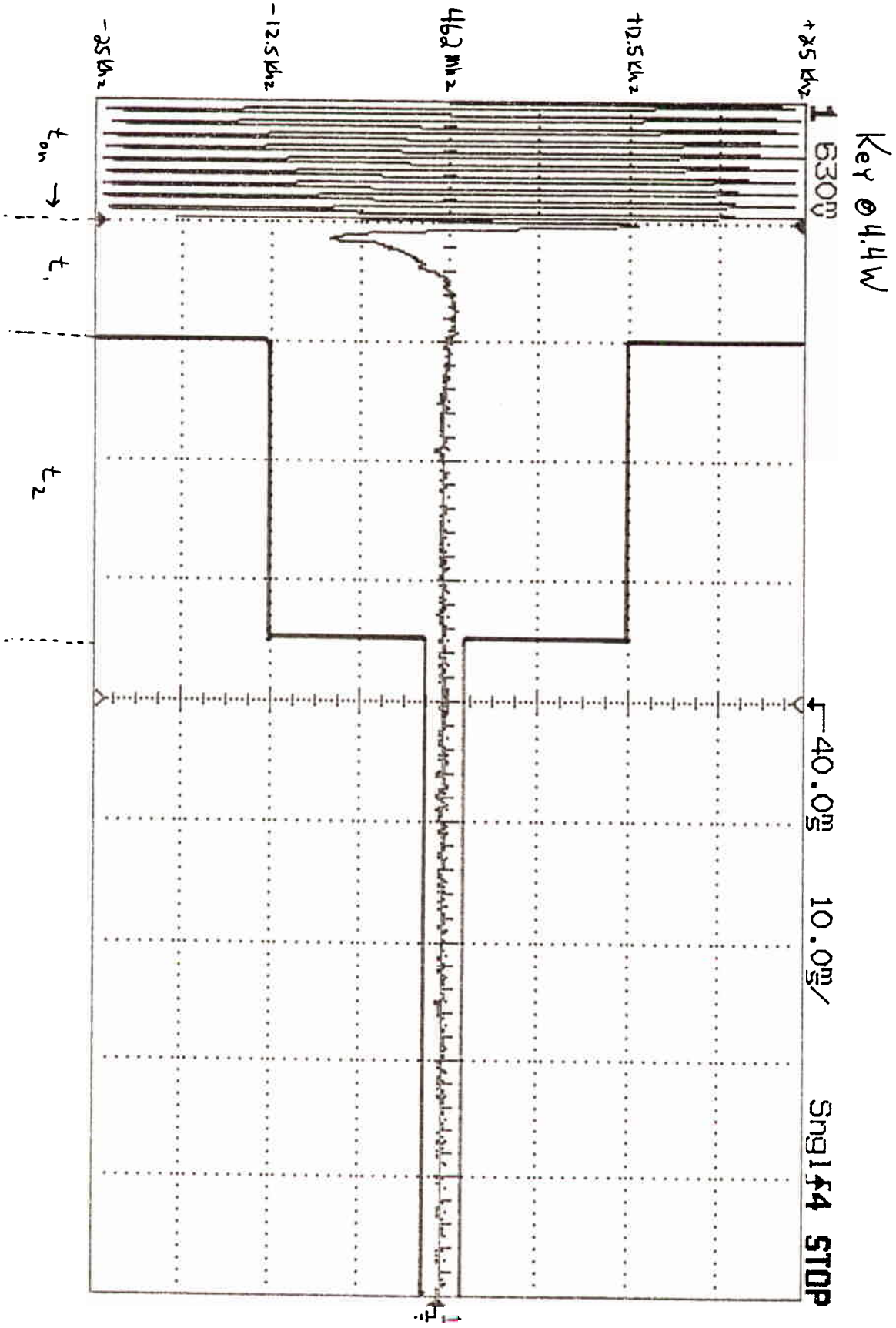

-25kHz
-12.5kHz
462 MHz
+12.5kHz
+25 kHz
1
530mV
Key @ 4.4W
t_{on}
t_1
t_2
40.0ms
10.0ms/
Snp1k4 STOP

Exhibit 9K-2

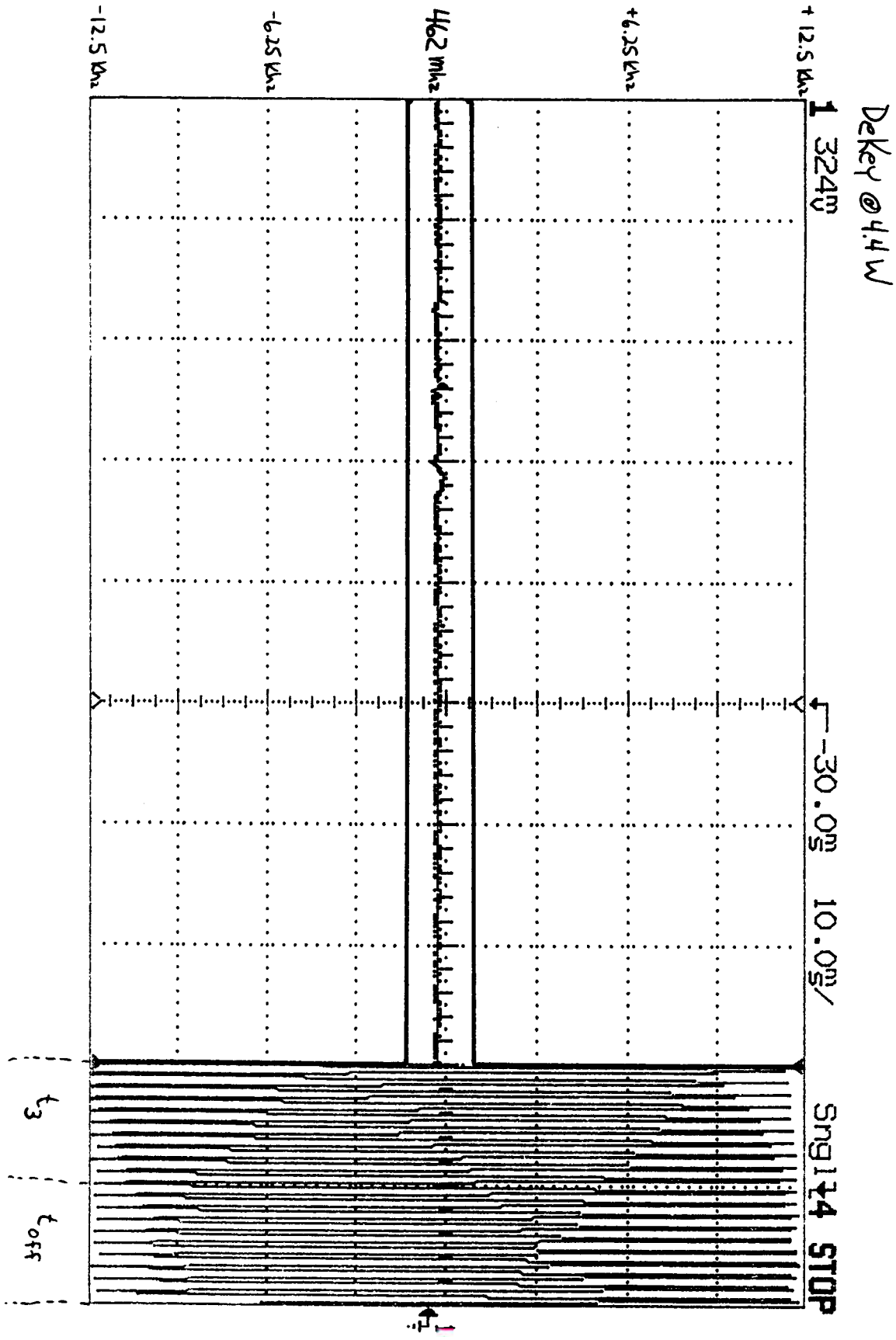

DeKey @4.4W
1 324Ω
+12.5 kHz
+6.25 kHz
462 MHz
-6.25 kHz
-12.5 kHz
-30.0ms 10.0ms/
Sng1+4 STOP
t_3
t_{off}

Exhibit 9K-3

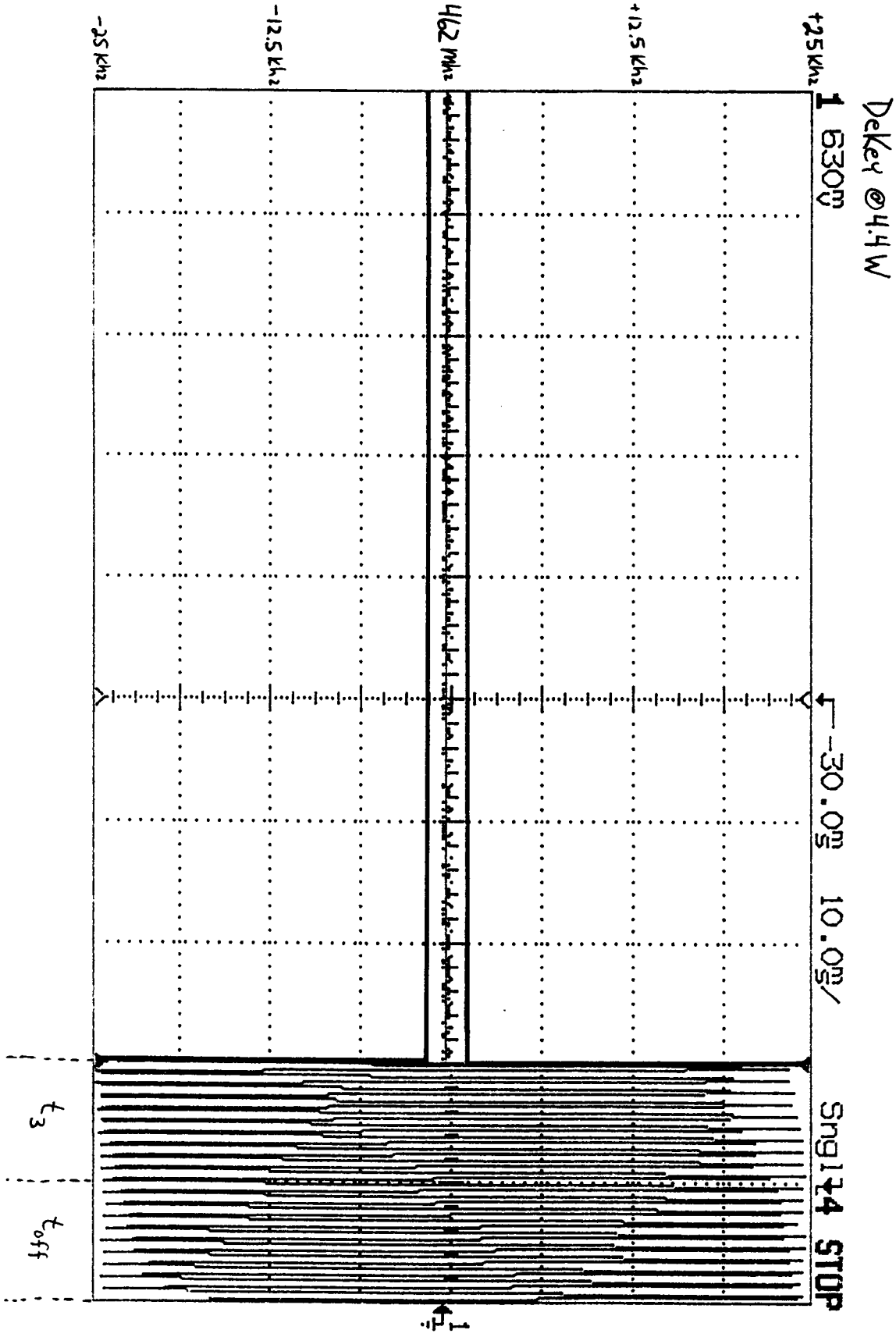

Dekey @4.4W
1 630Ω
+25kHz
+12.5kHz
462.7MHz
-12.5kHz
-25kHz
-30.0ms
10.0ms/
Sng114 STOP
t3
toff
t1

Exhibit 9K-4

Measurement Procedures Used for Submitted Data

EXHIBIT 9A - RF Power Output vs. DC Power Input (FCC Rules Part 2.993)

The transmitter is operated under normal conditions at the specified nominal DC input voltage. The antenna output is terminated into 50 ohms. The current is calculated by measuring the voltage drop across R150, the current sense component for the power control circuit. This is a .1 ohm 1% resistor. The DC voltage is measured at the input to the final device. The DC input power to the final stage, in watts, is computed as the product of the DC current (in amps) times the DC voltage (in volts). This measurement is performed at the upper and lower limits of the frequency range. At each frequency, the measurement is performed at the upper and lower limits of the specified adjustable power range.

EXHIBIT 9B - Transmitter Audio Frequency Response (FCC Rules Part 2.987)

An audio oscillator is connected to the microphone audio input of the transmitter. At a frequency of 1 kHz, the level is adjusted to obtain 20% of full system deviation, to ensure that limiting does not occur at any frequency in the 300-3000 Hz range. A constant input level is then maintained and the oscillator frequency is varied between the range of 100 Hz to 100 kHz. The transmitter output is monitored with an HP8901B modulation analyzer, whose FM demodulator output is fed to an HP8903B audio analyzer which outputs to an HP7090A plotter. De-emphasis or filtering within the test equipment is not used. The audio oscillator signal is derived from the HP8903B audio analyzer. This response measurement is linear at all frequencies, therefore the response above 3000 Hz is not attenuated as rapidly as would be the case with an in-limit response above 3000 Hz as used in EIA-152-C section 7.3. However, this method does not produce a response discontinuity at 3000 Hz.

EXHIBIT 9C - Transmitter Audio Post-Limiter Low-Pass Filter Response (FCC Rules Part 2.987).

An HP35665A Dynamic Signal Analyzer was used for this measurement. The source output of the 35665A is connected to the input of the post-limiter low pass filter and set to a level that results in 60% deviation. This level is maintained constant Vs. frequency during the entire test. The output of the low pass filter is monitored and applied to channel 1 input of the Dynamic Signal Analyzer. The response is measured from 100Hz to 100khz with the results plotted on this exhibit.

Measurement Procedures Used for Submitted Data (continued)

EXHIBIT 9D - Modulation Limiting Characteristic (FCC Rules Part 2.987)

An audio oscillator is connected to the microphone audio input. The transmitter output is monitored with an HP8901B modulation analyzer, whose non-de-emphasized FM demodulator output is fed to an HP8903B audio analyzer. The modulation analyzer's 20 kHz low-pass filter is used to reduce the level of residual high frequency noise. The oscillator level is adjusted, at 1 kHz , to obtain 60% of full system deviation. The oscillator level is then varied over a range of ± 20 dB in 5 dB increments, and the resulting deviation is plotted. This measurement is repeated at 300 Hz and 3 kHz. The above procedure is performed three times, for conditions with Private Line, with Digital Private Line (continuous subaudible signaling formats) and without.

EXHIBIT 9E - Occupied Bandwidth (FCC Rules Part 2.989)

An audio oscillator is connected to the microphone audio input. The frequency is set to 2500 Hz and the amplitude is adjusted to a level 16 dB above that required to produce 50% of full system deviation at the frequency of maximum response of the audio modulating circuit, in accordance with FCC rules Part 2.989(a)(1). The transmitter output is connected, via a suitable attenuator, to an HP8566B spectrum analyzer which outputs to an HPColor-pro plotter. Spectrum analysis of the transmitter output is performed to at least ± 2.5 times the channel spacing, first of the unmodulated carrier to establish a 0–dB reference, then with the modulating signal applied. This measurement is performed separately for conditions with Private Line, with Digital Private Line (continuous subaudible signaling formats) and without. This measurement is then repeated for all types of signaling or data transmission which are used non-simultaneously with voice, in which case the signaling or data modulation replaces the 2500 Hz tone modulation.Measurements are taken at 100Hz resolution bandwidth with the analyzer in Peak Detect mode, with a minimum of four sweeps to develop an accurate emission profile. Spec lines are determined referencing FCC Section 90.210 - Emission Mask D - 12.5kHz channel bandwidth equipment, and Emission Mask B - 25kHz channel bandwidth equipment.

Procedure for Occupied Bandwidth for Data Transmission: An audio function generator capable of voltage control of frequency is connected to the flat (non pre-emphasized) Transmit Audio Input of the transmitter under test. A second function generator producing a square wave output at a frequency of 1200Hz is connected to the voltage control input of the first generator. The first generator is set to produce a sine wave signal at a center frequency of 2500Hz, and the amplitude of the square wave from the second generator is adjusted so that the frequency of the first generator is varied ±500Hz. The resulting output of the first generator is a AFSK sine wave signal which shifts between two discrete frequencies - 2000Hz and 3000Hz - at a rate of 1200Hz. The amplitude of the first generator, which modulates the transmitter, is adjusted for full system deviation, either ± 5kHz or ±2.5kHz.

EXHIBIT 9F - Conducted Spurious Emissions (FCC Rules Part 2.991)

The output of the transmitter is connected, via a suitable attenuator, to the input of an HP8593A spectrum analyzer. After a carrier reference level has been established, a tunable notch filter is inserted between the attenuator and the spectrum analyzer to allow suppression of the carrier level. The effect of the notch filter on other frequencies, if any, is taken into account. The level of spurious emissions, in dB relative to the carrier, is plotted. This data is measured at the upper and lower frequency limits of the frequency range. If transmit power is adjustable, the measurement is repeated at various power levels including minimum and maximum.

Measurement Procedures Used for Submitted Data (continued)

EXHIBIT 9G - Radiated Spurious Emissions (FCC Rules Part 2.993)

Transmitter radiated spurious emissions were measured by Elite Electronic Engineering Company, 1516 Centre Circle, Downers Grove, Illinois 60515, Measurements were made at an approved open field test site constructed in accordance with Appendix B, FCC/OST 55 (982), and were performed in accordance with the FCC Code of Federal Regulations, Title 47, Part 2, paragraph 2.993. The data is plotted as "Radiated Spurious and Harmonic Emissions (Horizontal and Vertical)" on the graphs comprising Exhibit 9G. The specification limit corresponding to a level of 43 dB + 10 log P_{out} below the transmitter's fundamental carrier power is indicated on each graph for reference.

The following additional instruments are used in performing the radiated field strength measurements:

- HP model 8566 spectrum analyzer
- HP model 8350B sweep oscillator
- Empire Devices DM-105/T3 tuned dipole antenna (400-1000 MHz)
- EMCO 3121C-DB4 tuned dipole antenna (400-1000 MHz)
- EMCO 3105 ridged W.G. antennas (1-12.4 GHz)
- Bird model 8130 50-ohm, 50-watt load

EXHIBIT 9H - Frequency Stability vs. Temperature (FCC Rules Part 2.995)

This data is measured in accordance with FCC Rules Part 2.995(a)(1). An HP5061A Cesium Beam Frequency Standard is used as a reference for frequency measurements. The calibration of the temperature measurements of the environmental chamber is referenced to an HP2804A Quartz Thermometer.

EXHIBIT 9J - Frequency Stability vs. Voltage (FCC Rules Part 2.995)

This data is measured in accordance with FCC Rules Part 2.995(d). An HP5061A Cesium Beam Frequency Standard is used as a reference for frequency measurements.

EXHIBIT 9K - Transmitter Transient Frequency Behavior (2.2.19 - EIA/TIA SP-2218)

This data is measured using TIA/EIA-603 2.2.19 Methods of Measurement as a guide. The equipment is set up and connected as described in the aforementioned document. Specifically, the triggering level is set as follows.

The radio is set to rated power and then keyed into an HP438 power meter. A level of -10dbm is set using appropriate attenuation. This level is 40db below the maximum input level to the HP8901B Modulation analyzer which is used as the receiver for this test. Next, an HP8657A Signal Generator modulated with a 1khz tone and set for the proper deviation (12.5 or 25Khz) is adjusted to the same -10dbm level on the power meter. This level is then reduced by 20db and maintained for the remainder of the test. At this point, 30db of attenuation is removed from the radio input path in order to attain the -50dbc triggering point.

An HP54602A storage O-Scope is then used to capture the enclosed plots as outlined in the TIA/EIA procedure and they are plotted on an HP ColorPro Plotter.