EXHIBIT 6

RF POWER OUTPUT, §2.1046(b,c), 90.205, 90.209(b)(5) and 90.729(b)

PROCEDURE

Please refer to Figure 6.1 for the test setup.

The transmitter power output was tested on 221.0025 MHz. The radio was tuned-up in accordance with the alignment procedure in the instruction manual. The transmitter was loaded into a 50 ohm resistive termination.

For voice modulation tests, 500 and 2400 Hz tones internally generated by the radio DSP were applied to the modulation system and adjusted so that the power emitted at each of the principal tone frequencies was equal and the total emitted power was 20W PEP.

For data modulation tests in the internally generated 2x600 bps BPSK mode, no modulation was applied to the data jack input. The data randomizer in the DSP provides a pseudorandom modulating bit pattern regardless of the input. The amplitudes of the two BPSK data signals, FSK trunking data signal, and pilot tone are emitted at constant levels that combine for PEP of 20W under all input conditions.

For data modulation tests in the external modulation mode, the drive level into the data jack was adjusted so that the PEP was 20W. The following modulation sources were alternately applied to the data jack in this mode:

Data Modulation Type	Abbrev	Data Rate (bits/sec)	Filter Type/Shape	Modulation Source
binary phase shift keying	BPSK	2400	RRC	DSP board
quadrature phase shift keying	QPSK	4800	RRC	DSP board
8-phase shift keying	8PSK	7200	RRC	DDS modem
16-quadrature amplitude mod	16QAM	9600	RRC	DDS modem

Note: RRC = root raised cosine filter. All filters are embodied in the modulation source.

The DSP board modulation source is an Analog Devices ADSP-2181 EZ-Kit Lite DSP development board with SEA-developed firmware to produce the test modulations. The DDS modem is a unit manufactured by Digital Dispatch Systems, Inc.

Both the DSP board and the DDS modem are external modulation sources not embodied in the ESP604. An audio amplifier and step attenuator were connected between the DSP board or DDS modem and the ESP604 to vary the drive level into the ESP604.

The radio was powered through its normally supplied power cable by a laboratory power supply. Power supply voltage was set to 13.6 VDC at the power supply terminals with the ESP604 on but not transmitting.

Prior to making the actual transmitter power measurements, the test setup was calibrated to determine the spectrum analyzer level that represented 20W PEP. The ESP604 was keyed up in CW test mode at 221.0025 MHz into a calibrated wattmeter, cable, and load set in accordance with the transmitter tune-up procedure. The ESP604 CW test mode provides a single full power test tone at the channel center. In CW test mode the peak envelope power can be read directly from a wattmeter. While transmitting into the calibrated wattmeter, cables, and load set, the transmitter power was adjusted so that the calibrated wattmeter reached the level which the calibration laboratory certified as 20W at 220 MHz.

The wattmeter, cables, and attenuators used for actual transmitter RF power measurements were then substituted for the calibrated equipment and connected between the ESP604 and the HP4396A spectrum analyzer. The ESP604 was keyed again in CW mode without changing its power setting. The spectrum analyzer was centered at 221.0025 MHz with 10kHz resolution and video bandwidths and placed in peak hold mode. The display peak was noted as 2.1 dBm. The spectrum analyzer reference level was set to 2.1 dBm, representing 20W PEP, for the actual transmitter RF power measurements.

For all modulation types except for 1200 bps internally generated 2x600 bps BPSK, the modulation level was adjusted until the peak of the spectrum analyzer display when set to 10 kHz resolution and video bandwidths touched the top of the screen. When the proper modulation level was obtained, the spectrum analyzer was set to 100 Hz resolution and video bandwidths and placed in peak hold mode. After several sweeps, the display was plotted.

RESULTS:

Please see the following spectrum plots.

Figure 6.2	Internally generated two tone modulation
Figure 6.3	Internally generated 2x600 bps BPSK
Figure 6.4	2400 bps BPSK modulation, data jack
Figure 6.5	4800 bps QPSK modulation, data jack
Figure 6.6	7200 bps 8PSK modulation, data jack
Figure 6.7	9600 bps 16QAM modulation, data jack

Test Setup
RF POWER OUTPUT
§2.1046(b,c), 90.205, 90.209(b)(5) and 90.729(b)

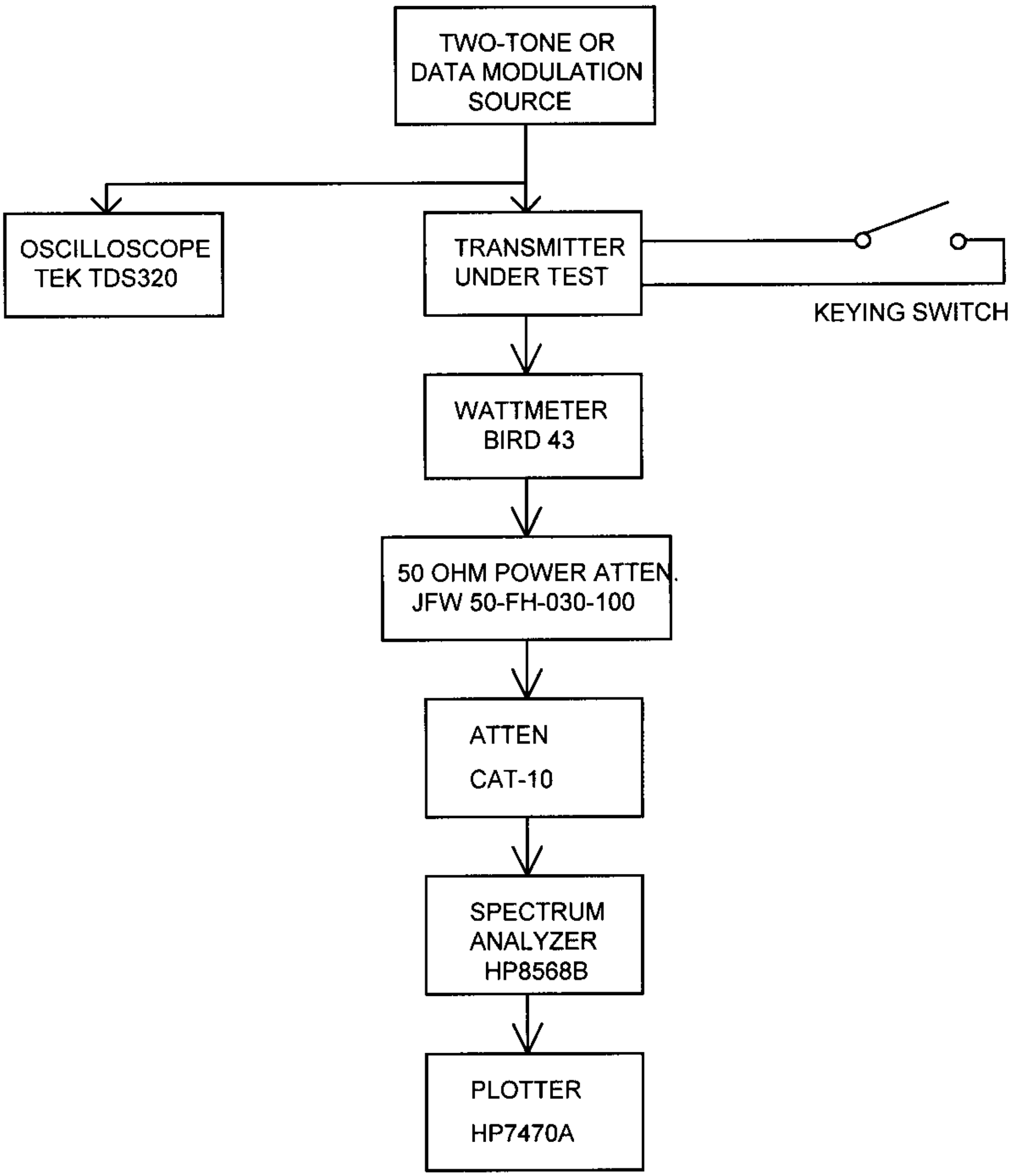

Figure 6.1

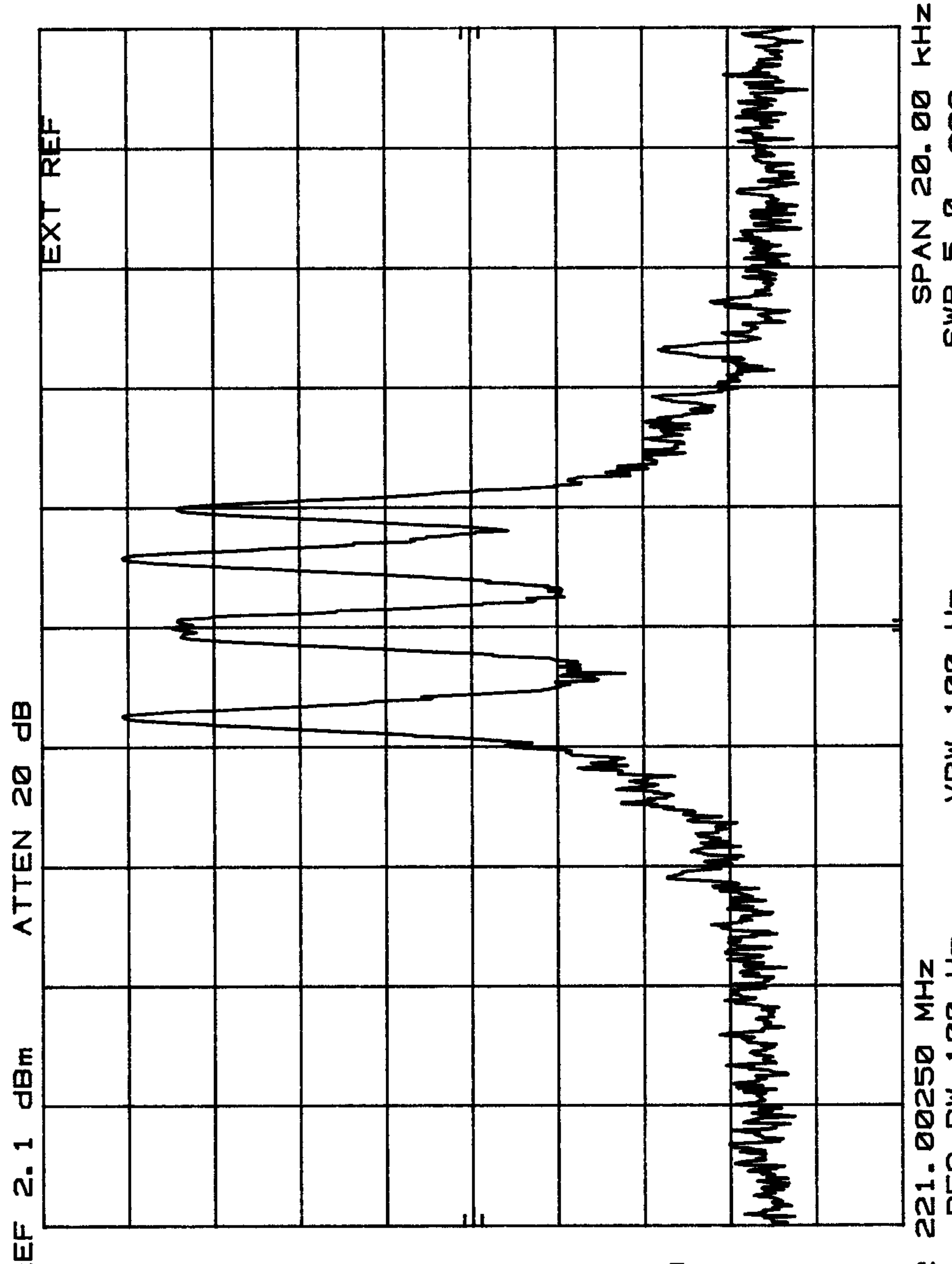

Figure 6.2
Internally generated two tone modulation
FCC ID: BZ6ESP604

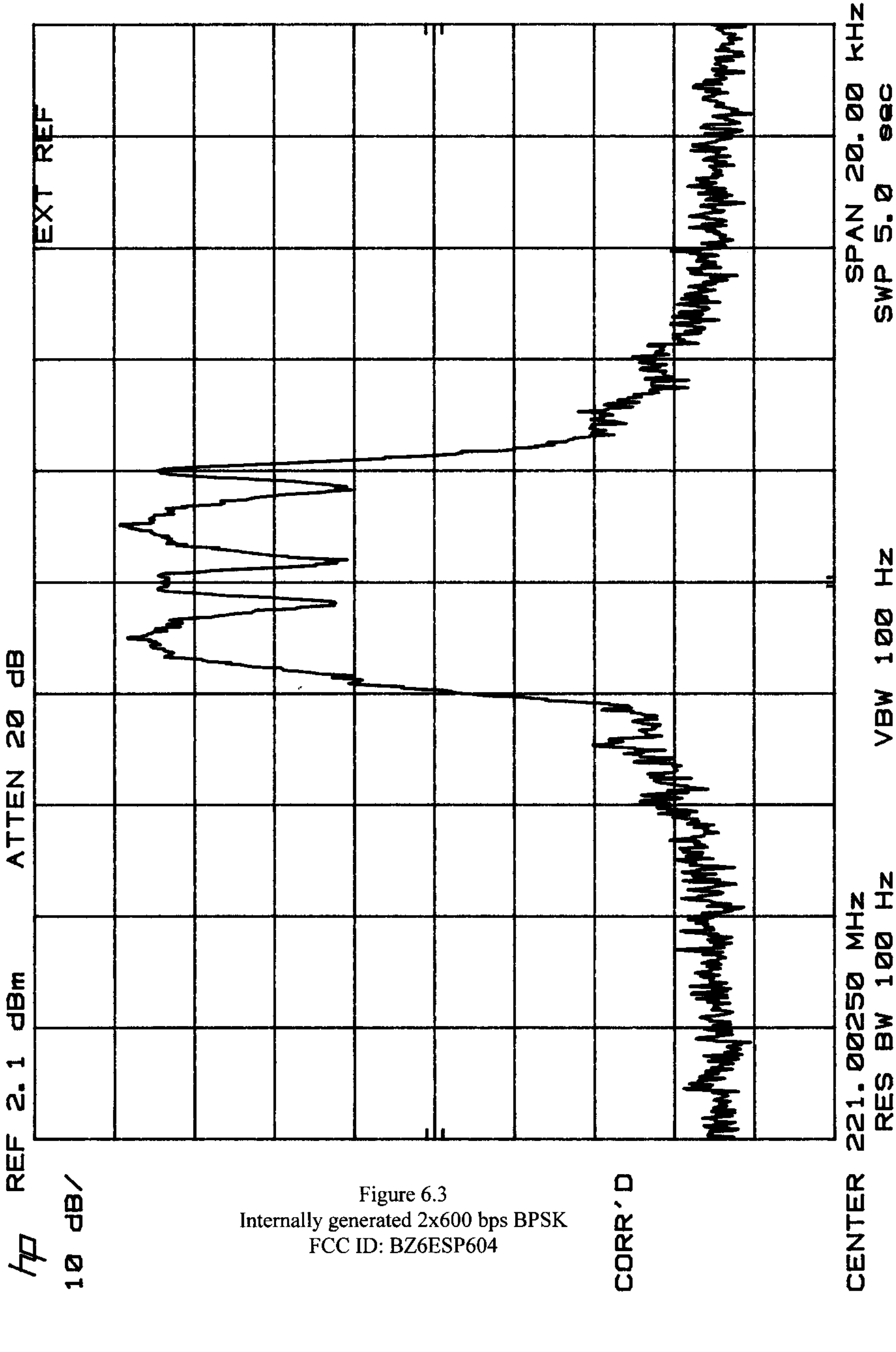

Figure 6.3
Internally generated 2x600 bps BPSK
FCC ID: BZ6ESP604

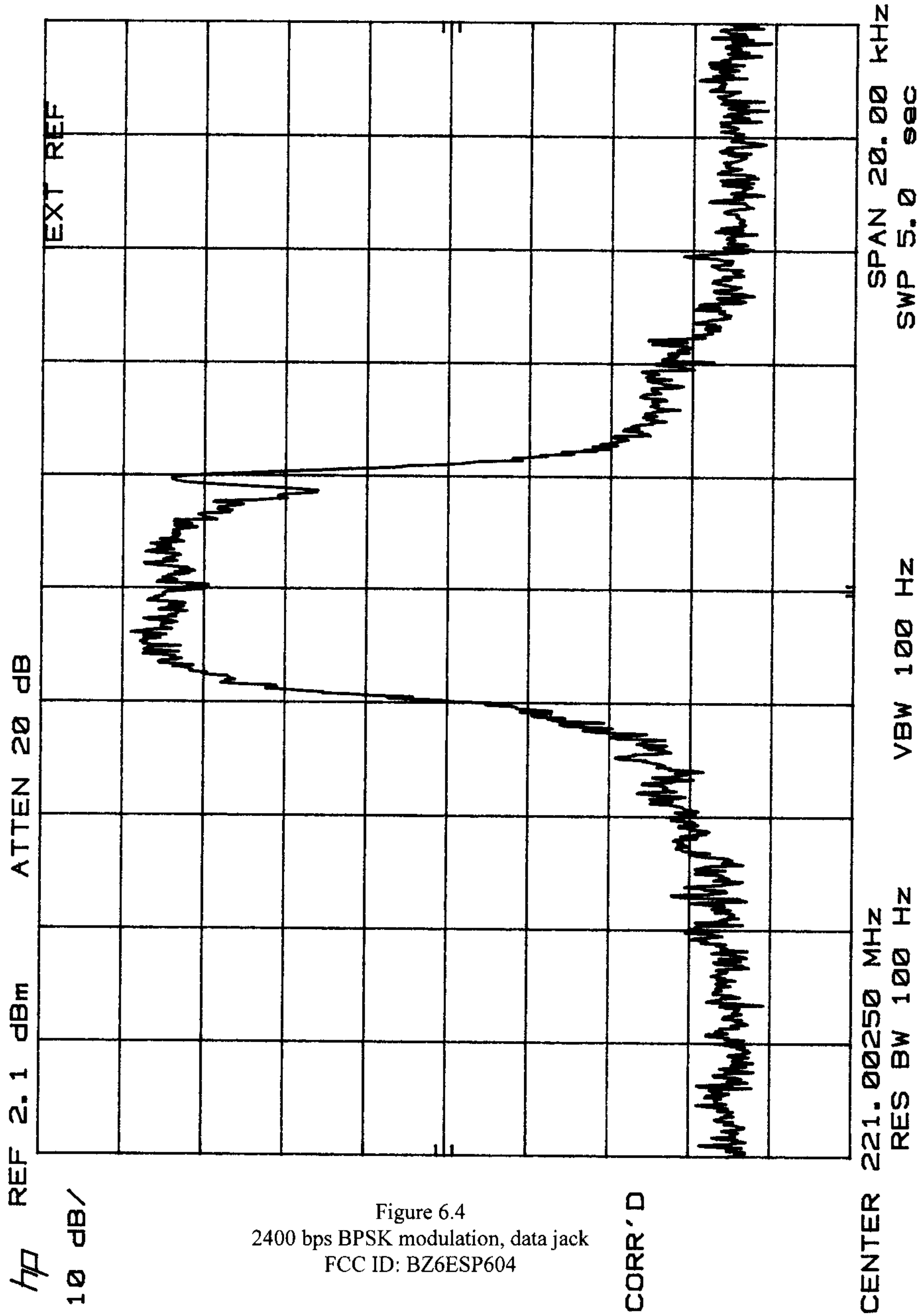

Figure 6.4
2400 bps BPSK modulation, data jack
FCC ID: BZ6ESP604

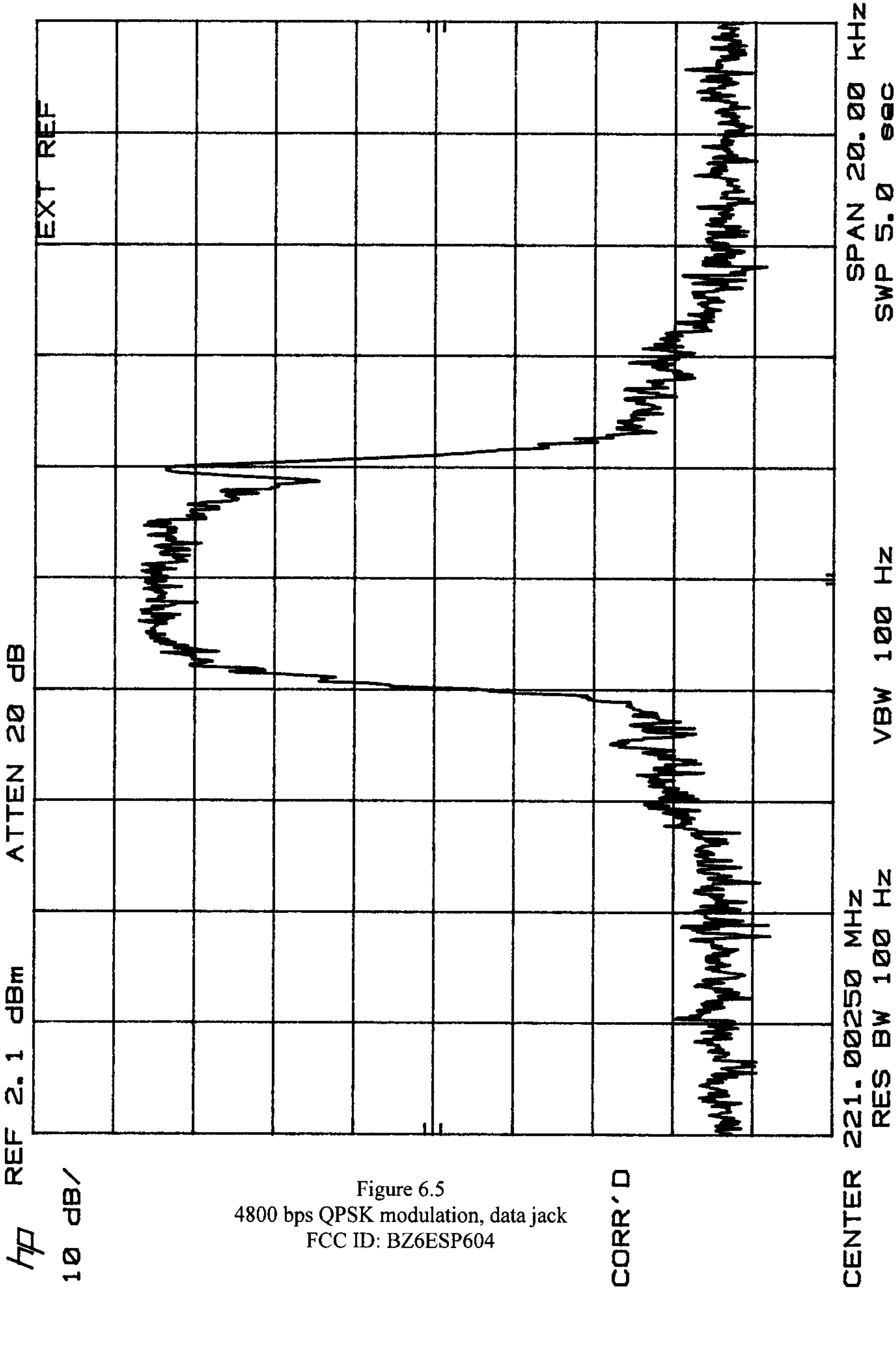

Figure 6.5
4800 bps QPSK modulation, data jack
FCC ID: BZ6ESP604

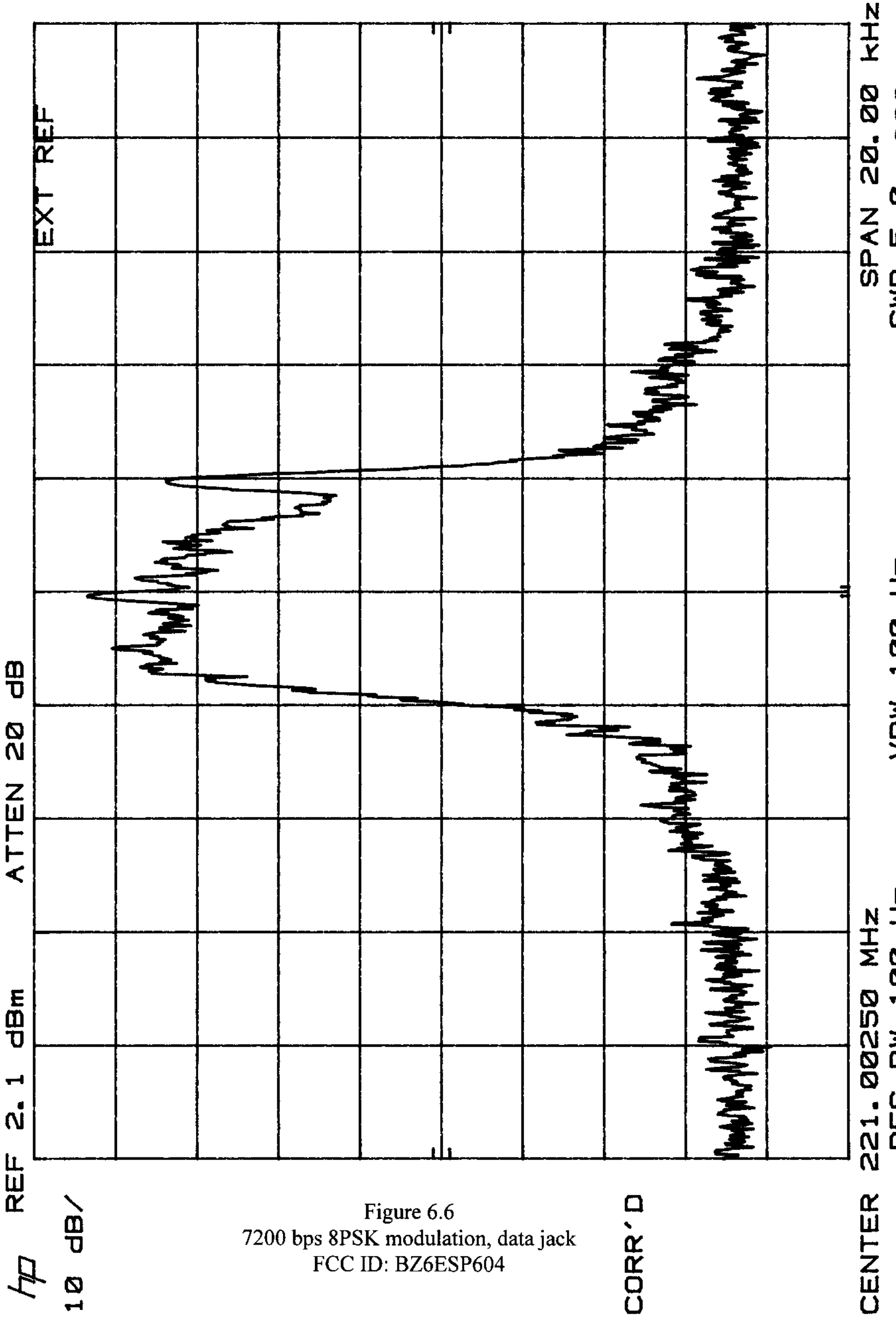

Figure 6.6
7200 bps 8PSK modulation, data jack
FCC ID: BZ6ESP604

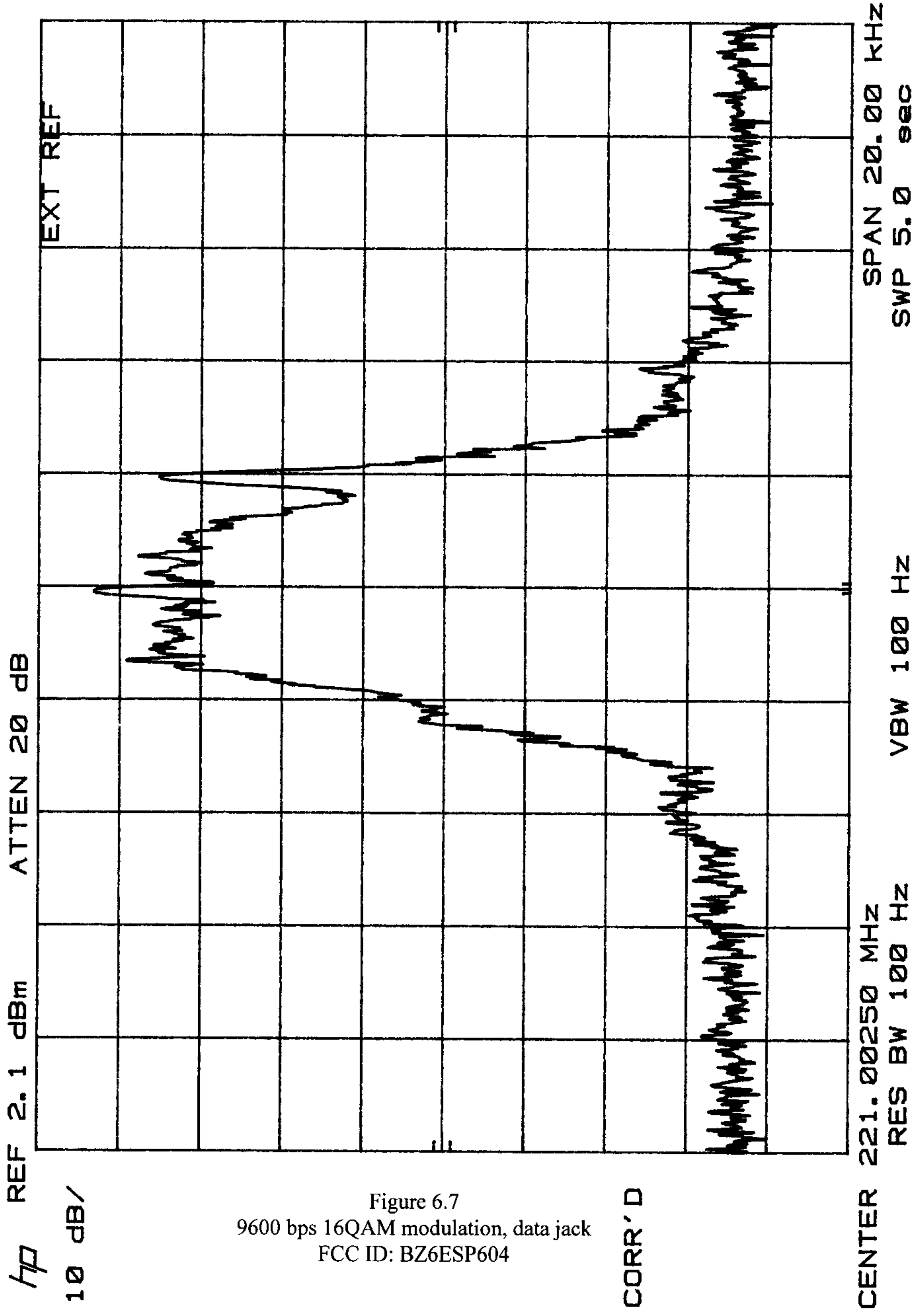

Figure 6.7
9600 bps 16QAM modulation, data jack
FCC ID: BZ6ESP604

EXHIBIT 7

MODULATION FREQUENCY RESPONSE AND MODULATION LIMITING, §2.1047(a),(b)

PROCEDURE

The transmitter and test equipment were set up as shown in Figure 6.1. The test setup was the same as for the Power Output Test (Exhibit 6 herein) but an externally applied DSP audio tone generator was used as the modulation source. The transmitter was previously tuned up and the test system was calibrated as described in Exhibit 6.

The frequency span of the spectrum analyzer was set to display frequencies from 221.0000 MHz to 221.005 MHz, a 5 kHz span. The peak hold mode was used and one sweep was made at each audio drive frequency. The test was performed using the microphone jack and the data jack.

1. Microphone jack input: The transmitter was modulated by stepping the frequency of the audio tone generator in 100 Hz steps from 100 Hz to 5 kHz. Three spectrum plots were produced, each the result of a different fixed audio tone drive level into the microphone jack. These levels encompass the range of levels expected from a microphone.

Low drive: The modulation frequency was set to 2.4 kHz and the modulation level was slowly increased until the pilot tone power was reduced approximately 1 dB from its rest level with no modulation, or 11 dB below 20W PEP. 2.4 kHz was determined to be the audio input frequency with highest system gain (due to preemphasis filtering).

Medium drive: The modulation level was set so that at 2.4 kHz modulation input, the pilot power just reached its minimum level of 16 dB below rated PEP (6 dB total reduction from rest level). Due to amplitude compression, this input level was 15 dB higher than the low drive level.

High drive: The modulation level was set so that at 400 Hz modulation input frequency, the pilot reached its minimum level at 16 dB below 20W PEP. Due to amplitude compression and preemphasis filtering, this input level was 25 dB higher than the medium drive level.

2. Data jack input: Again the transmitter was modulated with the DSP audio tone generator, but the three drive levels were chosen to encompass the range of peak-to-peak levels expected into the data jack, 0.1 to 5 V. An oscilloscope was used to monitor the peak-to-peak modulation level into the data jack.

Low drive: The modulation frequency was set to 2.4 kHz and the modulation level was slowly increased until the pilot tone power was reduced approximately 1 dB from its rest level with no modulation, or 11 dB below 20W PEP.

Medium drive: The modulation level was set so that at 2.4 kHz modulation input, the pilot power just reached its minimum level of 15 dB below rated PEP (5 dB total reduction from rest level). This input level was 20 dB higher than the low drive level.

High drive: The modulation level was set 10 dB higher than the medium drive case.

RESULTS

Frequency response plots, Figures 7.1, 7.2, and 7.3, show the power output in 100 Hz audio frequency increments when the tone modulation is input to the microphone jack. Figures 7.4, 7.5, and 7.6, show the power output in 100 Hz audio frequency increments when the tone modulation is input to the data jack. The spectrum analyzer reference level was set to 2.1 dBm. The pilot tone is the highest frequency tone at the right of each plot. The pilot power reduction could not be illustrated in peak hold mode because the pilot peaked at its maximum level of 10 dB below PEP whenever the modulation frequency was too low or too high to pass through the audio bandlimiting filters (below 300 Hz or above 3600 Hz) and into the compressor magnitude detector in the DSP. Each plot shows the pilot at its maximum level of 10 dB below PEP.

SSB PEAK ENVELOPE POWER LIMITING, §2.1047(c)

PROCEDURE

The transmitter and test equipment were set up as shown in Figure 6.1. The transmitter was previously tuned up and the test system was calibrated as described in Exhibit 6.

Two tone (500 & 2400 Hz) modulation was input to the mic jack and each type of data modulation drive was applied to the data jack to conduct the tests. In each case, the maximum modulation drive level was set to provide drive levels up to 20 dB in excess of that required to develop 20W PEP output.

PEP output levels at each modulation input level setting were measured in the same manner as the RF Power Output Test, Exhibit 6. That is to say, the spectrum analyzer was set to 10 kHz resolution and video bandwidths in the peak hold mode allowing integration of peak envelope power (indicated in dBm) over several sweeps at each modulation input level setting.

RESULTS

Figure 7.7 was recorded with two tone drive into the microphone jack. Figures 7.8 through 7.11 were recorded with various data modulations into the data jack.

Figure 7.7	PEP vs input level, two tone modulation (microphone jack)
Figure 7.8	PEP vs input level, 2400 bps BPSK modulation
Figure 7.9	PEP vs input level, 4800 bps QPSK modulation
Figure 7.10	PEP vs input level, 7200 bps 8PSK modulation
Figure 7.11	PEP vs input level, 9600 bps 16QAM modulation

The 0 dB Relative Drive Level point on the horizontal axis in each figure is the level at which the transmitter develops 20W PEP output in each case. The 0 dB PEP Change point on the vertical axis represents 20W PEP output. At low input levels the PEP output is dominated by the pilot signal (and trunking data signal when using the microphone jack) which is internally generated by the transmitter. External modems to be used with the ESP604 normally contain an adjustment for the drive level into the radio transmitter. SEA documentation will specify peak-to-peak drive levels necessary for the ESP604 transmitter to develop 20W PEP for a given data modulation type. It is considered improper operation to exceed SEA's recommended drive levels. Nevertheless, it can be seen from each figure that output PEP rises less than 1.5 dB for 20 dB excess drive.

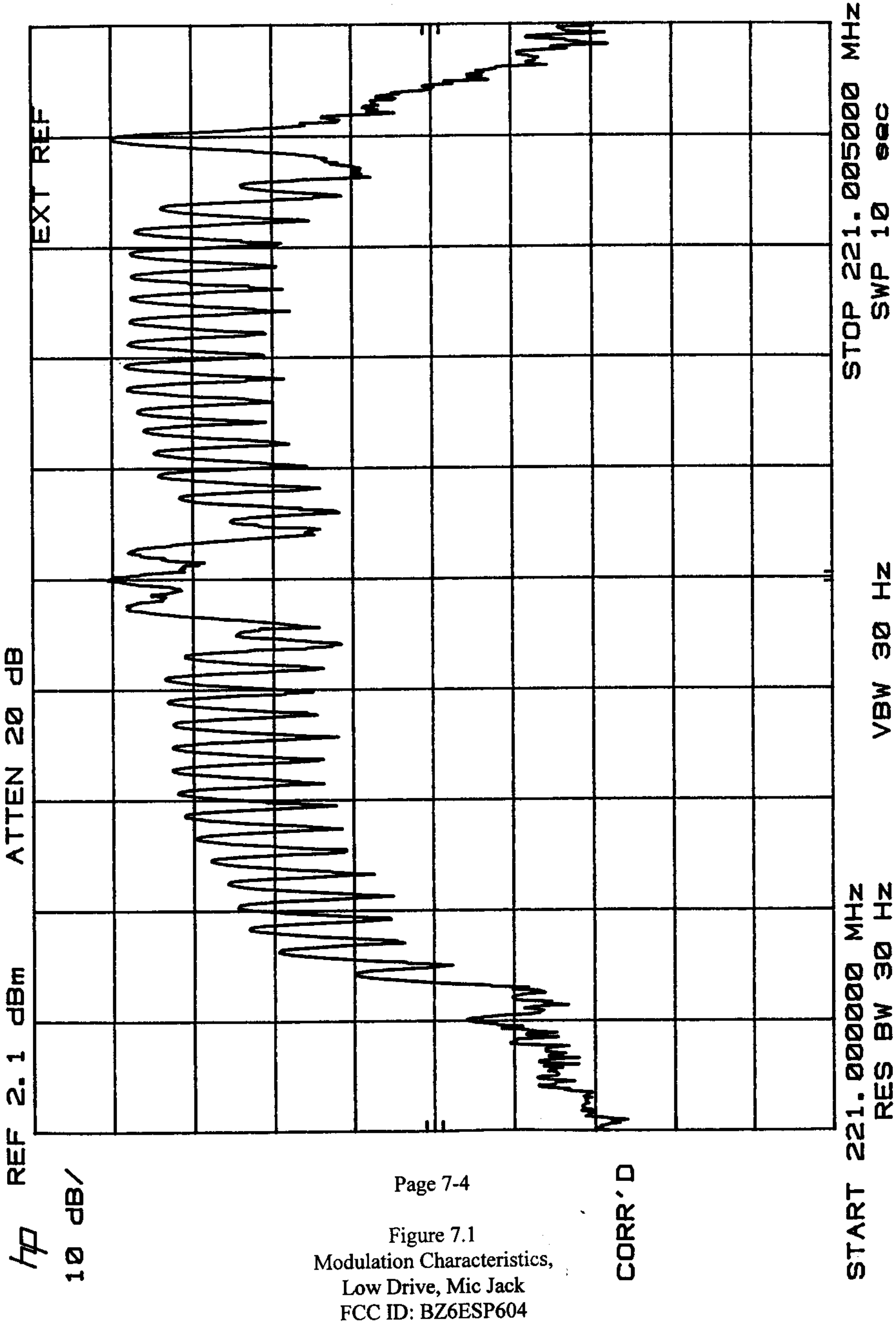

Figure 7.1
Modulation Characteristics,
Low Drive, Mic Jack
FCC ID: BZ6ESP604

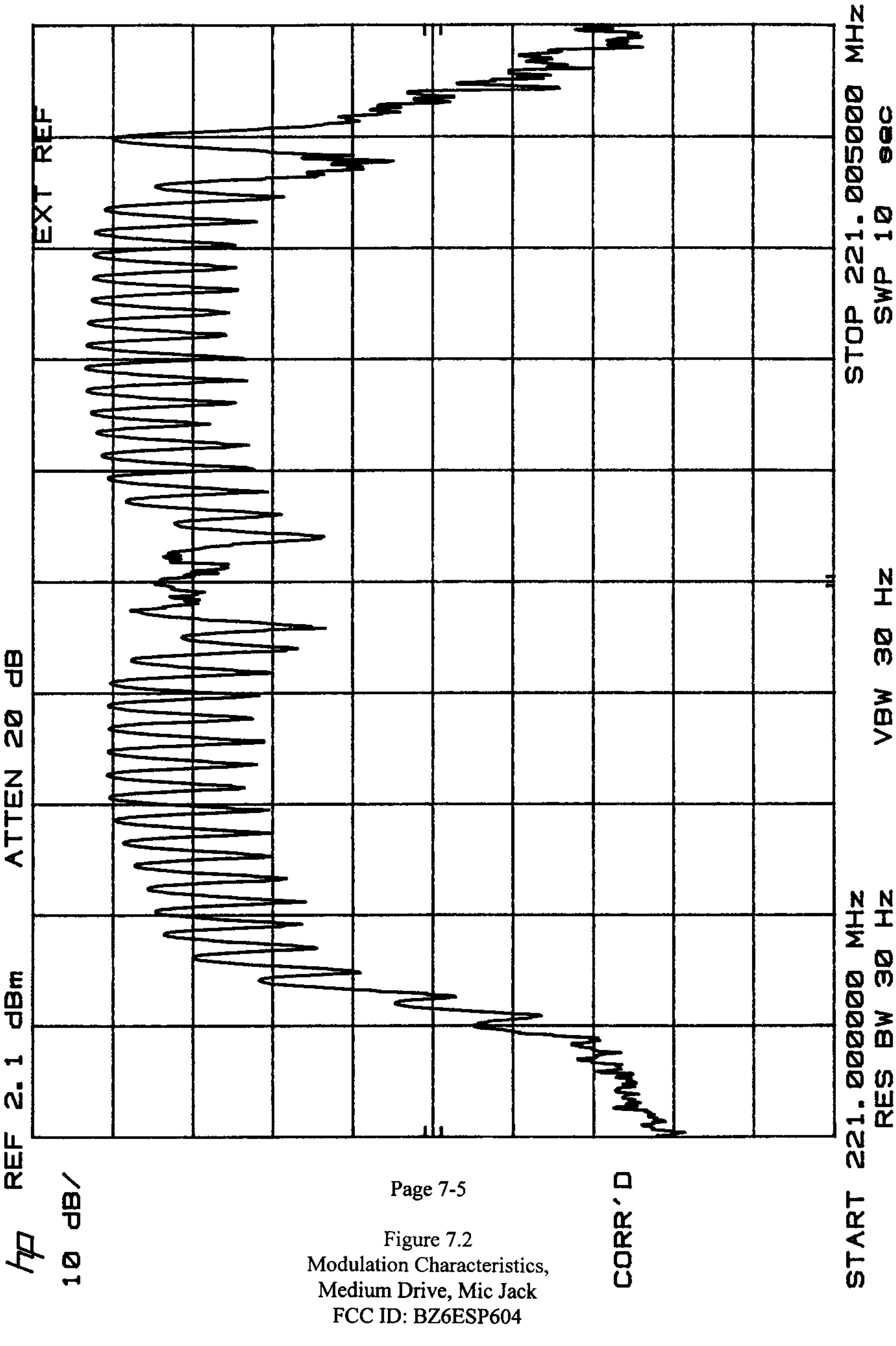

Figure 7.2
Modulation Characteristics,
Medium Drive, Mic Jack
FCC ID: BZ6ESP604

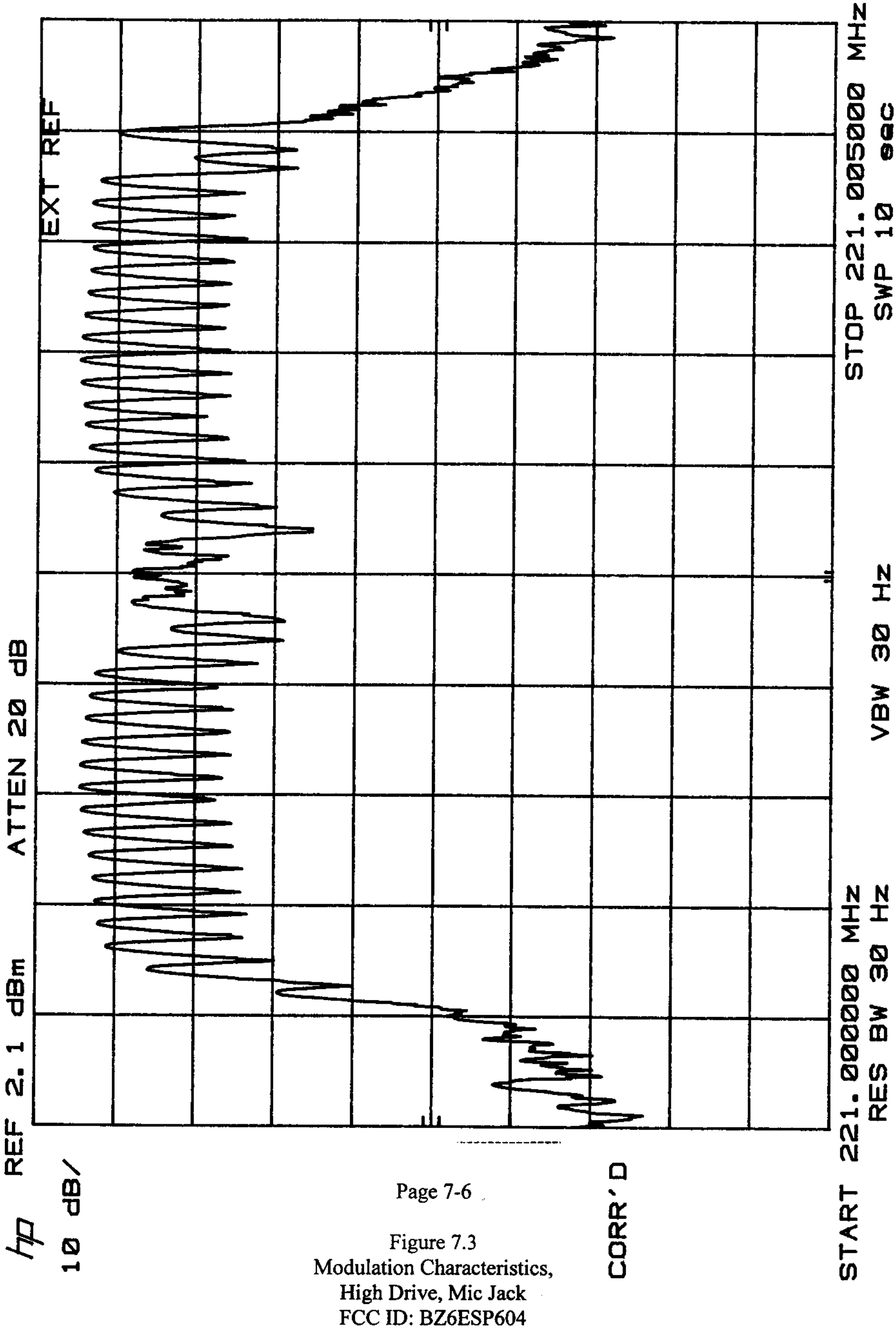

Figure 7.3
Modulation Characteristics,
High Drive, Mic Jack
FCC ID: BZ6ESP604

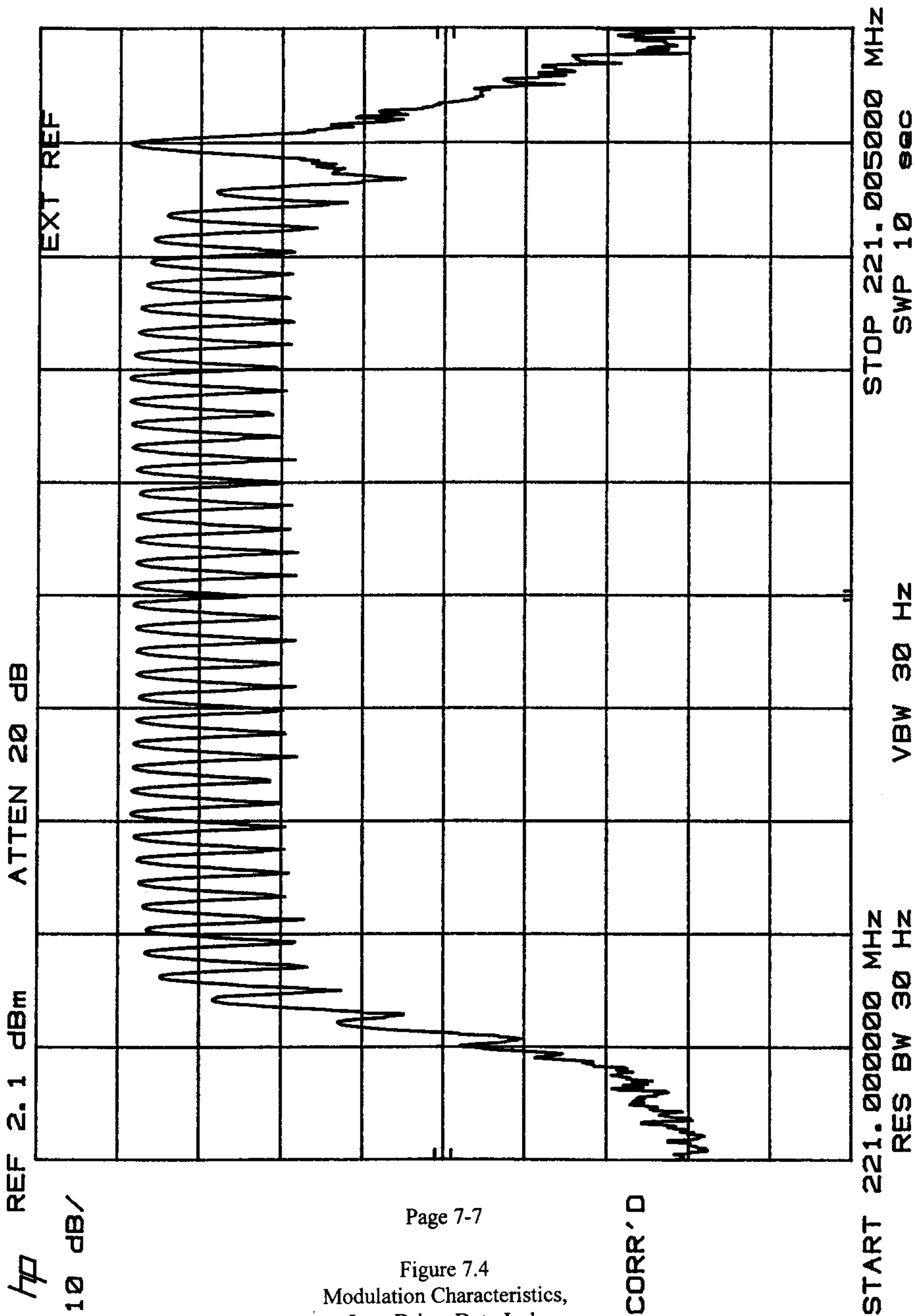

Figure 7.4
Modulation Characteristics,
Low Drive, Data Jack
FCC ID: BZ6ESP604

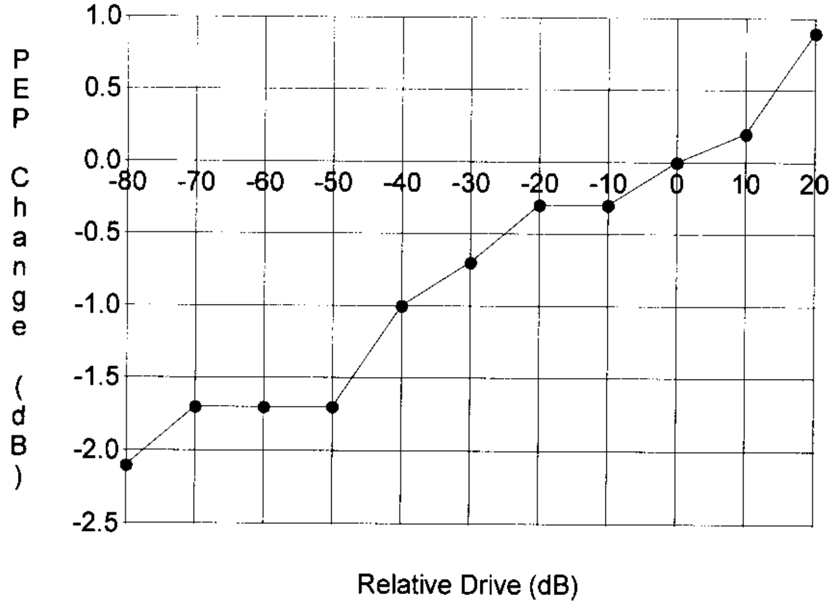

Figure 7.7 PEP vs input level, two tone modulation (mic jack)

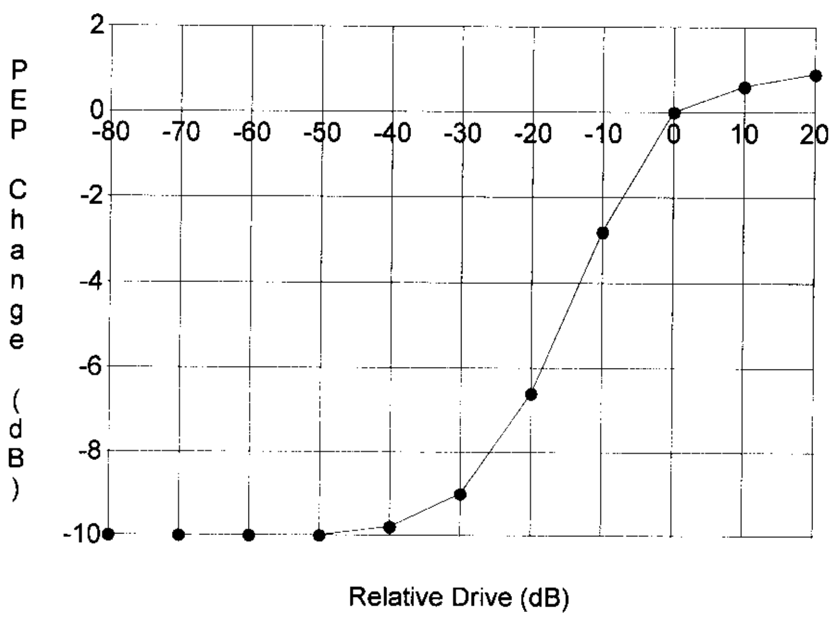

Figure 7.8 PEP vs input level, 2400 BPSK modulation

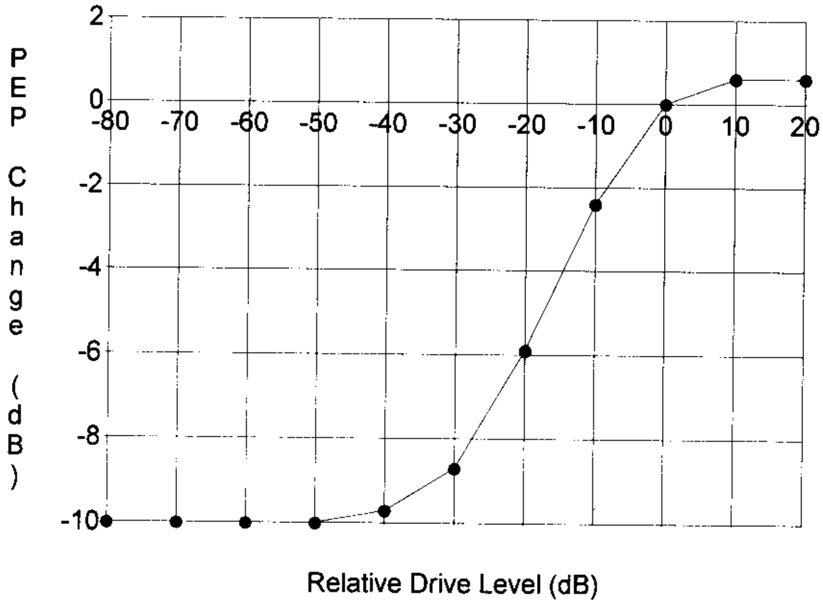

Figure 7.9 PEP vs input level, 4800 QPSK modulation

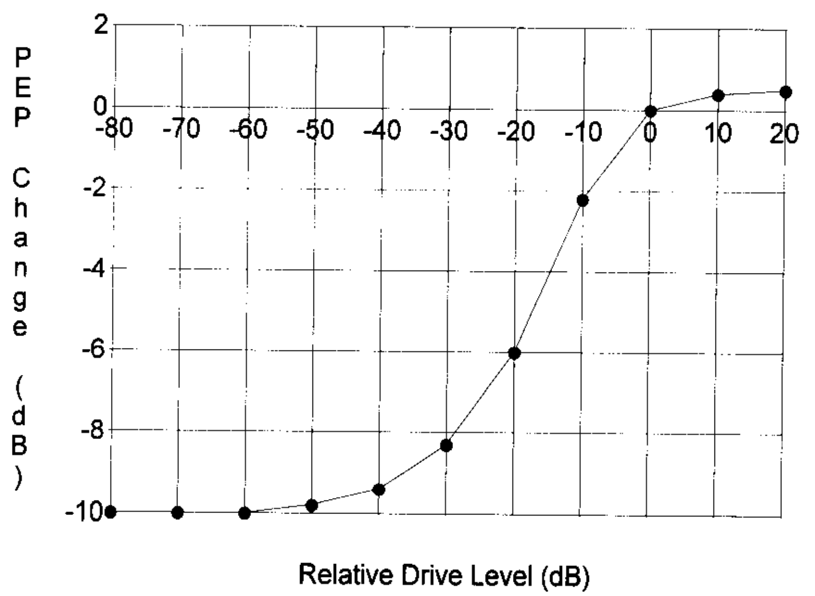

Figure 7.10 PEP vs input level, 7200 bps 8PSK modulation

EXHIBIT 8

OCCUPIED BANDWIDTH, §2.1049(c)(2)

Authorized bandwidth is 4 kHz per §90.209(b)(5). Emission limits are specified in §90.210(f).

PROCEDURE:

Please refer to Figure 6.1 (RF Power Output Test) for the test setup used. The test setup is identical to the test setup used in the RF Power Output Test, Exhibit 6, except for increased modulation input level.

The test was performed at 221.0025 MHz, representing the center of the transmitter tuning range. Two tone (500 & 2400 Hz) modulation was input to the mic jack and each type of data modulation drive (see Exhibit 6) was applied to the data port to conduct the tests. In each case, the maximum modulation drive level was set to provide drive levels up to 10 dB in excess of that required to develop 20W PEP output.

The radio was powered as described in Exhibit 6.

The spectrum analyzer was calibrated as described in Exhibit 6. Resolution and video bandwidths were both set to 100 Hz. One extra plot was made (Figure 8.2) with a 30 Hz resolution bandwidth to demonstrate that the pilot tone at the far right of each plot is in fact a single tone.

RESULTS:

Spectrum plots for the measurements are presented in the following figures:

Figure 8.1	Two tone modulation, microphone jack input
Figure 8.2	Two tone modulation, microphone jack input, 30 Hz Res BW
Figure 8.3	Internally generated 2x600 bps BPSK
Figure 8.4	2400 bps BPSK modulation, data port input
Figure 8.5	4800 bps QPSK modulation, data port input
Figure 8.6	7200 bps 8PSK modulation, data port input
Figure 8.7	9600 bps 16QAM modulation, data port input

The emission limit mask is also plotted in each case with the top of the mask set at the top of the highest emission per §90.210(f). The bottom horizontal line segments of the mask are at an absolute power level -25 dBm in each case. This level is set relative to the highest emission power (P) by the relation 55 + 10logP = 55+(P in dBW).

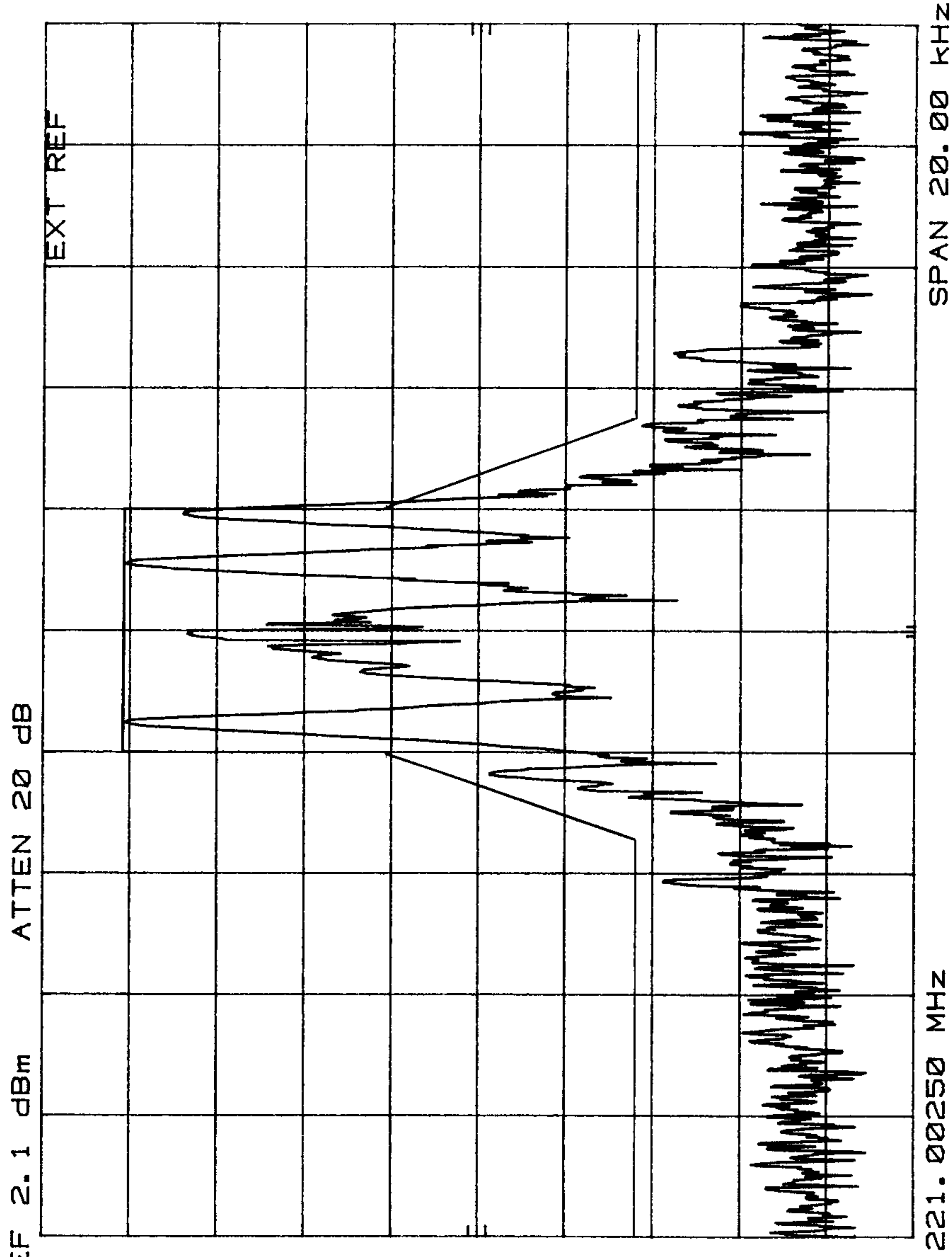

Figure 8.1
Two tone modulation, microphone jack input
FCC ID: BZ6ESP604

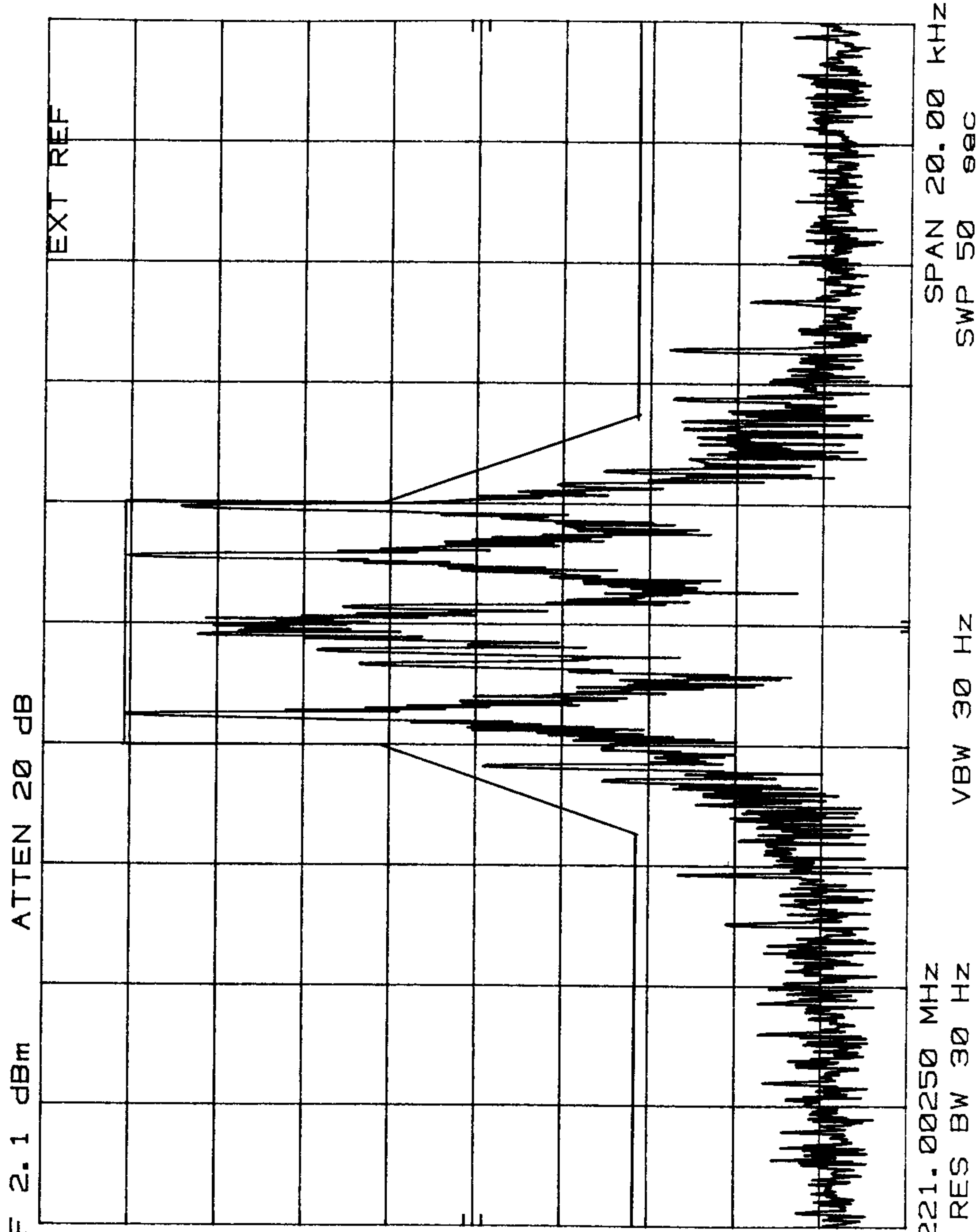

Figure 8.2
Two tone modulation, microphone jack input
30 Hz Res BW
FCC ID: BZ6ESP604

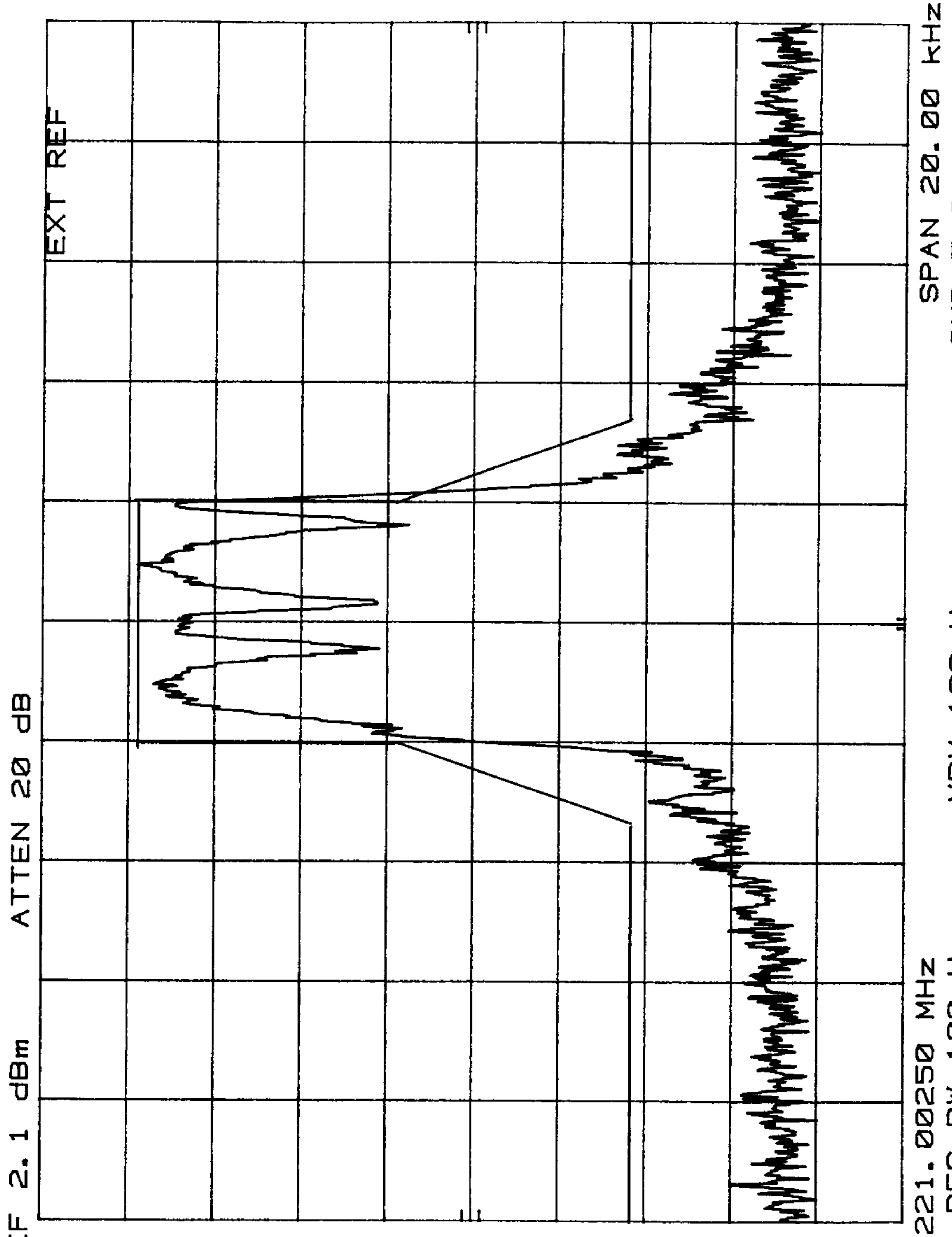

Figure 8.3
Internally Generated
2x600 bps BPSK modulation, data port input
FCC ID: BZ6ESP604

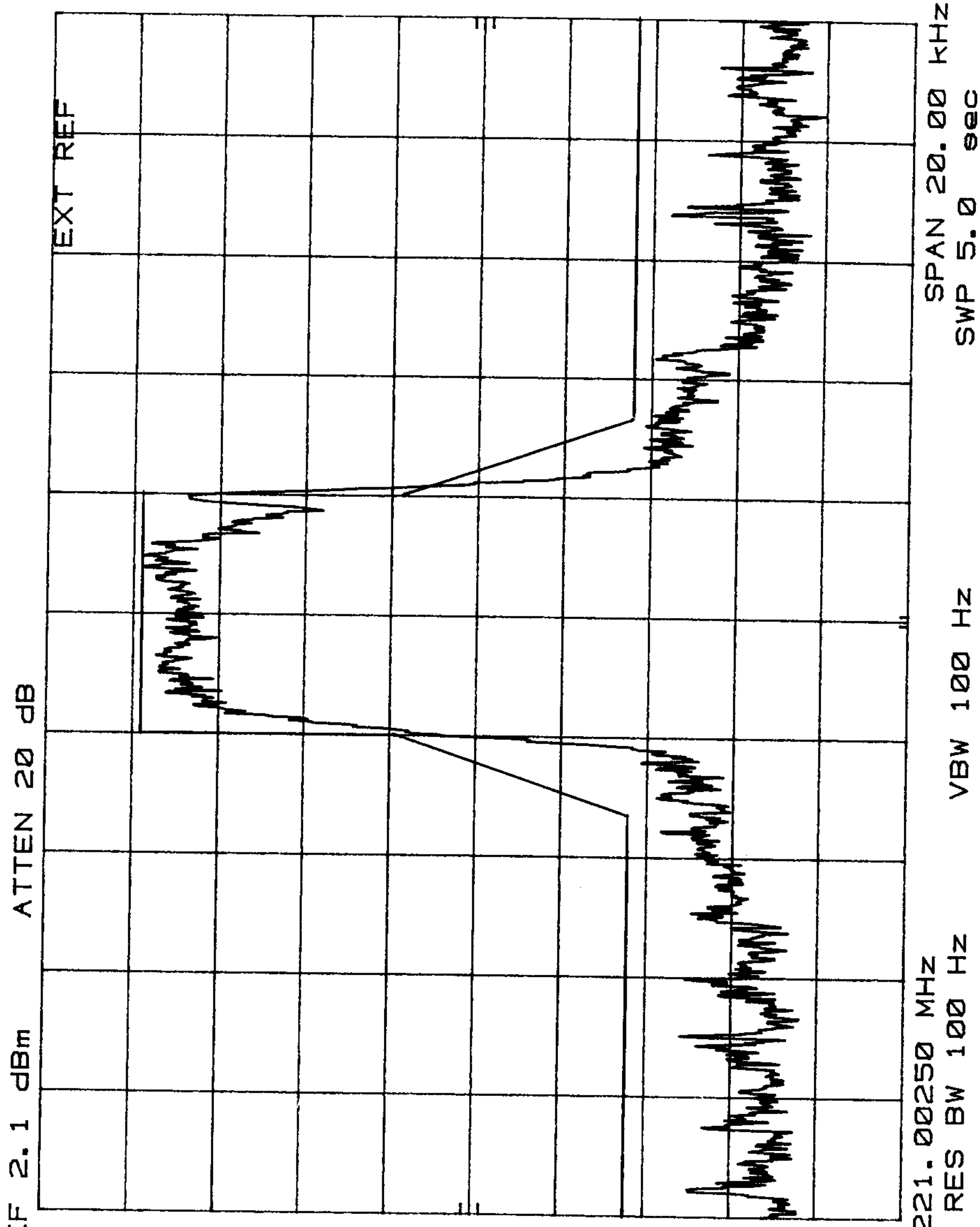

Figure 8.4
2400 bps BPSK modulation, data port input
FCC ID: BZ6ESP604

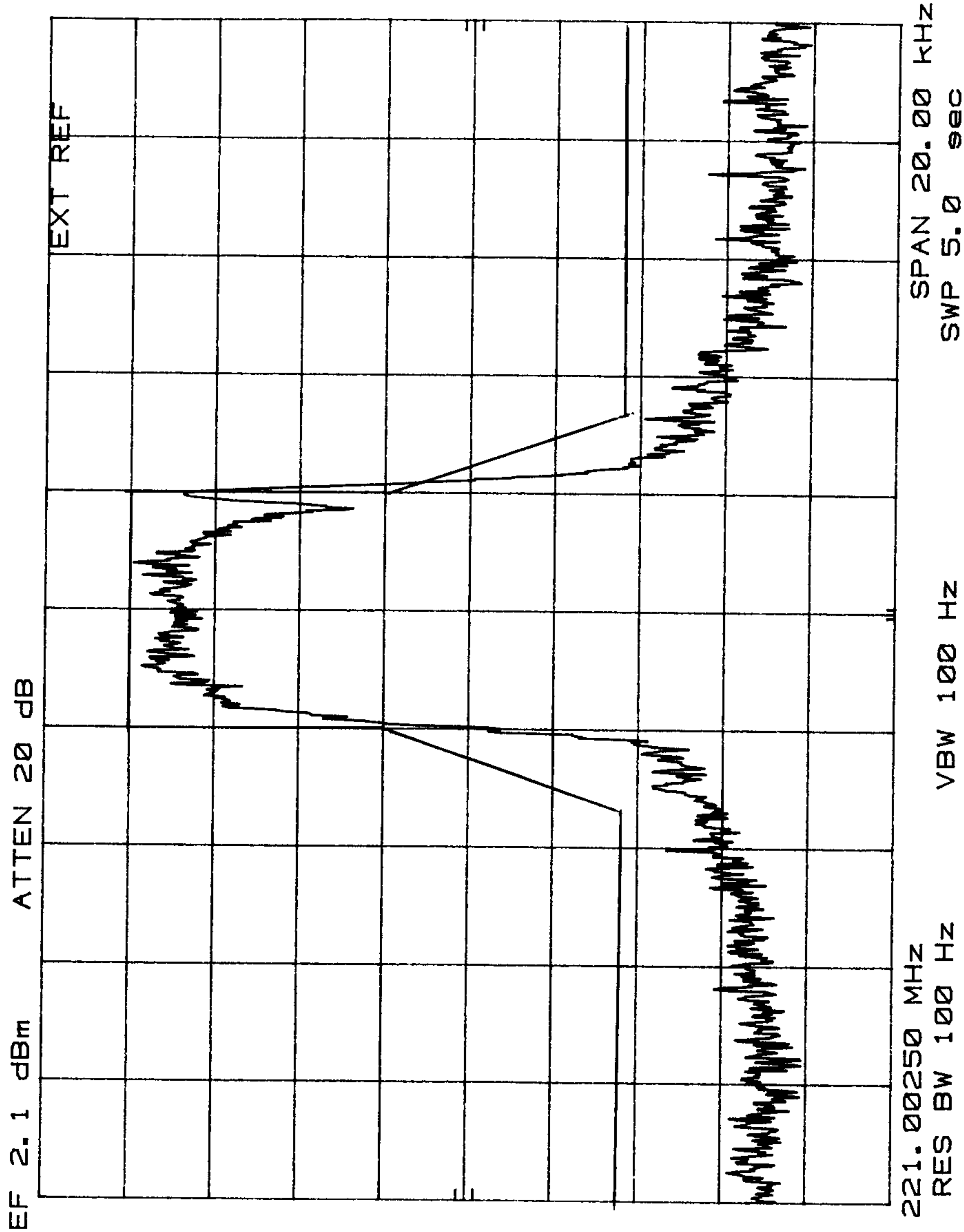

Figure 8.5
4800 bps QPSK modulation, data port input
FCC ID: BZ6ESP604

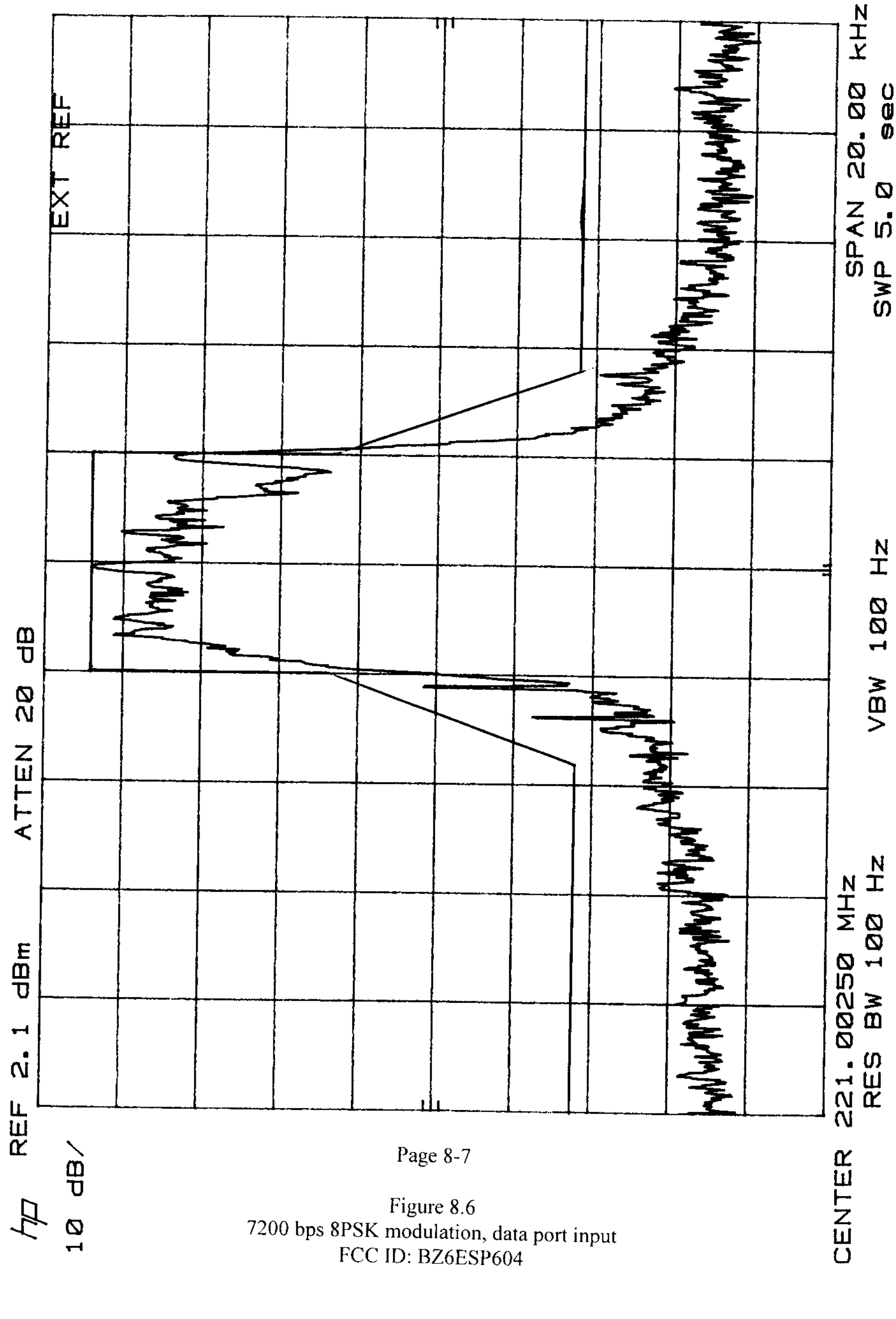

Figure 8.6
7200 bps 8PSK modulation, data port input
FCC ID: BZ6ESP604

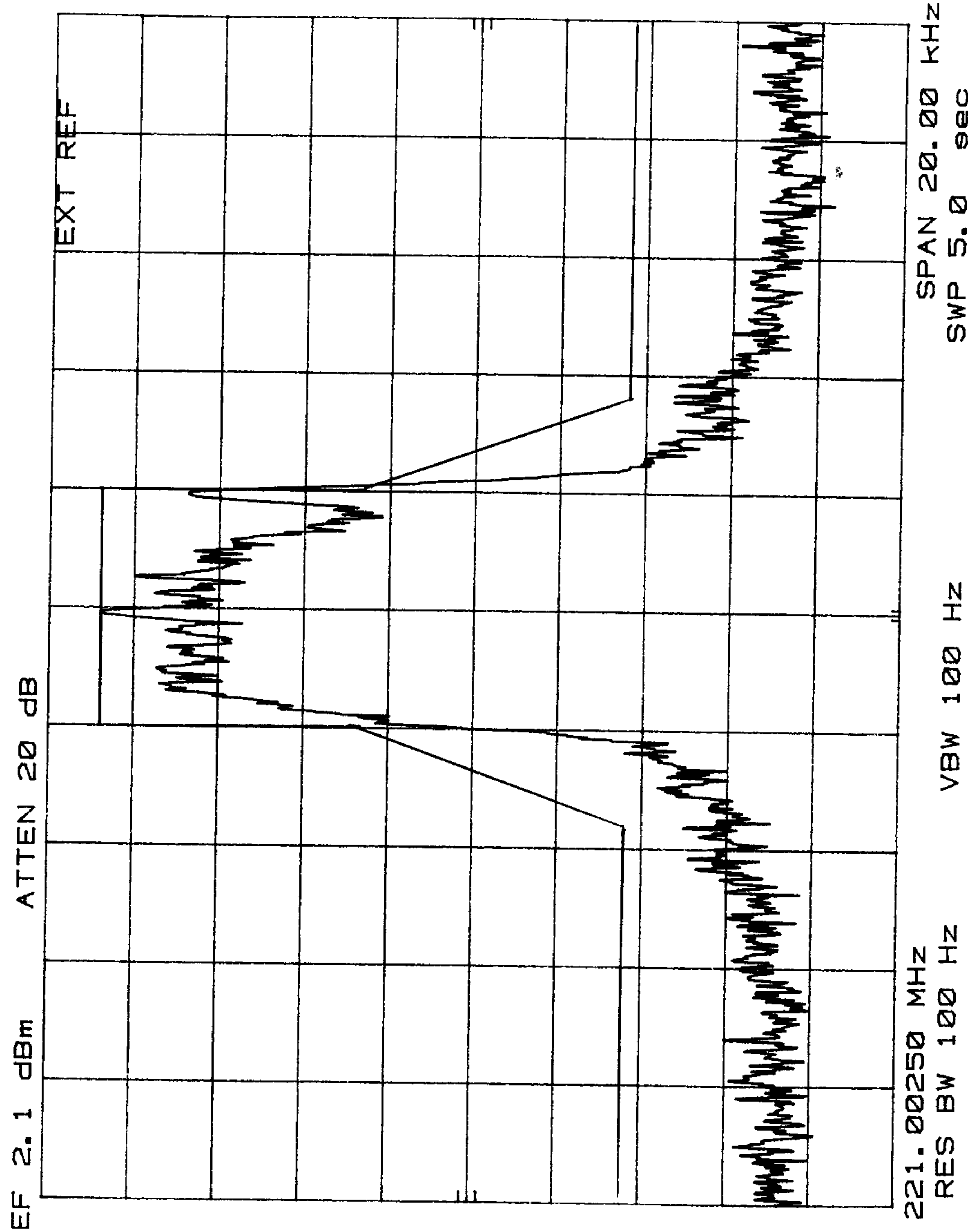

Figure 8.7
9600 bps 16QAM modulation, data port input
FCC ID: BZ6ESP604

EXHIBIT 9

SPURIOUS EMISSIONS AT ANTENNA TERMINALS, § 2.1051

PROCEDURE:

Please refer to Figure 9.1 for the test setup diagram.

Spurious emission tests were performed at 221.0025 MHz. The transmitter dc power supply and modulation conditions were the same as those used for the Occupied Bandwidth Test, Exhibit 6, using two-tone 500 Hz and 2400 Hz inputs at the microphone terminals with input level set 10 dB above that required to develop 20 watts rated PEP.

The HP8568B spectrum analyzer was used up to 1500 MHz. The HP70000 spectrum analyzer was substituted for frequencies from 1500 MHz up to the 10th harmonic of the transmitter emission at 2.2 GHz. The spectrum analyzer resolution and video bandwidths were set in accordance with §90.210(m) for each frequency range. Peak hold function was enabled.

The spectrum investigation included but was not limited to the following list of frequencies (fo = authorized emission frequency):

Frequency	Description
14.7456 MHz = fpo	Microprocessor and DSP clock oscillator.
2fpo, 3fpo, etc.	Harmonics of the above.
12.8 MHz = fmo	Master carrier crystal oscillator.
2fmo, 3fmo, etc.	Harmonics of the above.
45.4555 MHz = foo	I. F. offset oscillator
2foo, 3foo, etc.	Harmonics of the above.
flo = fo	Local oscillator (authorized emission frequency), near 221 MHz
2flo, 3flo, etc.	Harmonics of the above frequency up to the 10th.

Test Setup
SPURIOUS EMISSIONS AT ANTENNA TERMINALS
§2.1051

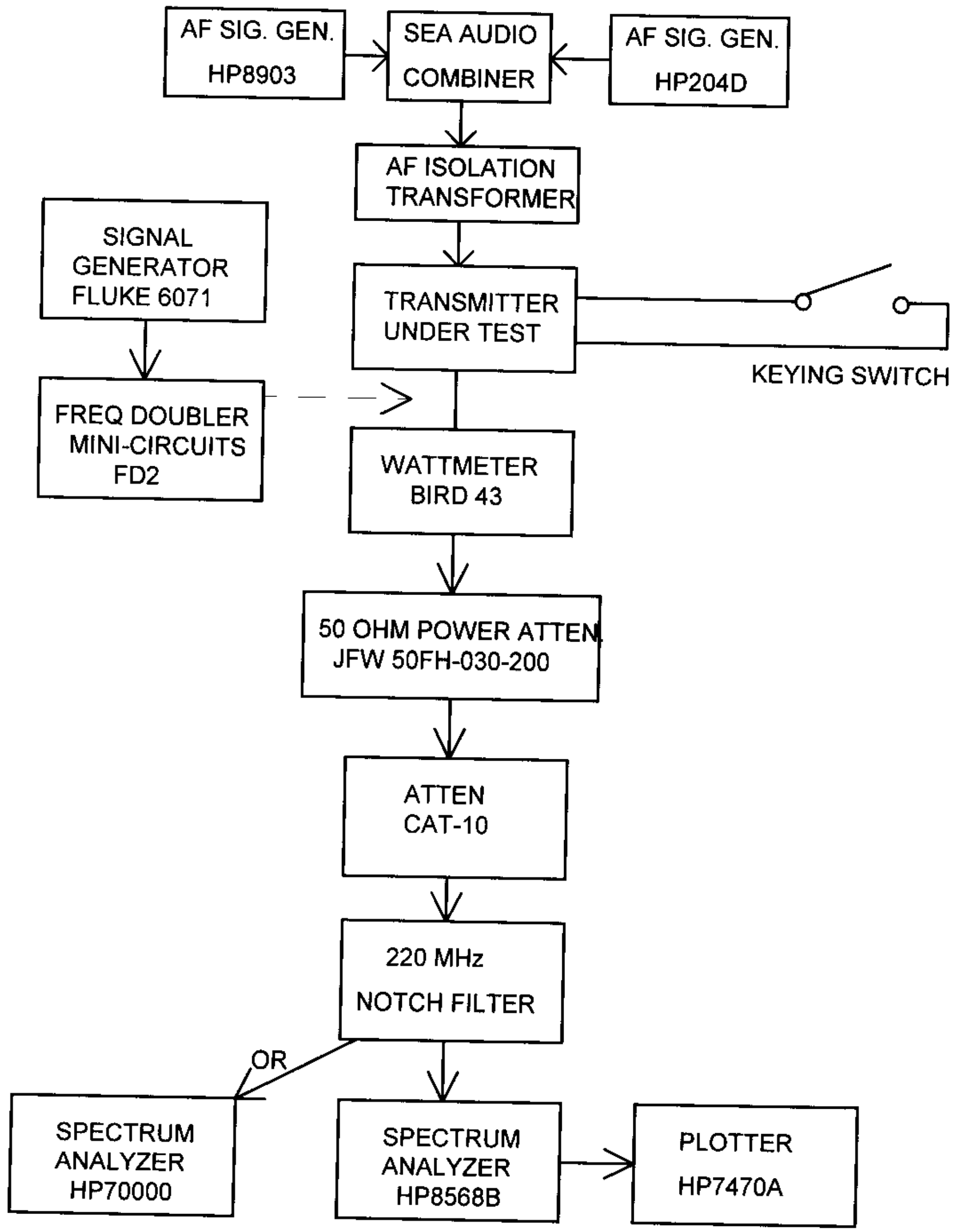

Figure 9.1

EXHIBIT 10

FIELD STRENGTH OF SPURIOUS RADIATION, §2.1053

ALLOWABLE LIMIT, Per §90.210(f)(3):

The attenuation referenced to amplitude P required on any frequency beyond 3.75 kHz removed from the center of the authorized bandwidth is 55 + 10 log (P), where P = the highest emission in the authorized bandwidth. For any value of P this will result in an absolute limit of -25 dBm. Measurements are to be made with spectrum analyzer display set to a resolution bandwidth of 10 kHz, and video bandwidth of no less than 10 kHz as per §90.209(l)(4).

FREQUENCY RANGE OF MEASUREMENTS, §2.1057:

Given that: (1) the spurious emissions tests of Exhibit 9 revealed no significant energy conducted to the antenna port below 30 MHz, (2) the device under test does not facilitate effective radiators for energy below 30 MHz (wavelength > 10 m) and, (3) measuring antennas are somewhat impractical for use below 30 MHz, the tester limited the search for spurious radiation to frequencies above 30 MHz. The test equipment used was capable of measurements up to 2000 MHz, which was the upper limit of the measurements made.

TEST PROCEDURE USED,:

EIA/TIA TSB-78 Clause 2.2.12, similar to TIA/EIA-603 clause 2.2.12.

TEST EQUIPMENT LIST, §2.947(d): See Acme site equipment list on page 10-4.

MEASUREMENT PROCEDURE

General: Radiated spurious emissions are emissions from the equipment when transmitting into a non-radiating load on a frequency or frequencies which are outside a defined occupied bandwidth.

Radiation test site information: Please see Figure 10.1 for the radiation test site plan. Tests were performed at Acme Testing (Acme, WA) with the equipment inside of a 75-foot diameter (23m) non-metallic radome shelter. The site was on a level surface of uniform electrical characteristics, clear of metal objects and overhead wires. The site was situated in a rural area, largely free of undesired signals such as ignition noise and other transmitter emissions. The device under test was placed on a 1 meter high platform resting on a turntable essentially flush with the groundplane. The platform was remotely controllable so the tester was able to search different radials about the device for undesired emissions. A conductive ground plane extended well beyond 3 meters away from both the device under test and the measuring antenna pole.

Measuring antenna information: The measuring antenna in use was mounted to a non-conductive pole with a moveable horizontal boom. The boom permitted the tester to raise and lower the center of the measuring antenna from 1m to 4m above ground level. The pole was spaced such that the measuring antenna would be 3 meters from the device under test while the antenna was raised to 1 meter above the groundplane. The measuring antenna cable was laid horizontally with the boom back to the supporting mast where it continued downward to the spectrum analyzer positioned under the groundplane. A tabulation of attenuation versus frequency for the cables connected between the spectrum analyzer and the measuring antenna was prepared prior to testing. No reflecting objects were within 3 meters of either the device under test or the measuring antenna while measurements were made. Three different antennas were used for searching each frequency band of spurious measurements (see test equipment list). Each antenna used was linearly polarized and correlated to an equivalent dipole.

Equipment installation: Please see Figure 10.2 for the equipment test setup. The optional external speaker and palm microphone were also plugged in to the unit. The transmitter had been tuned up on the desired test frequency. A 50 watt, 50 ohm dummy load was connected directly to the rf output port of the transmitter. This combined equipment was placed on the platform and power was applied. The transmitter was modulated with 500 Hz and 2400 Hz tones under the conditions specified by § 2.1049(c), **i.e.**, audio input 10 dB greater than that required to develop the rated 20 watts PEP. For convenience, these tones were generated internally by the built-in digital signal processor special test software.

Test frequencies: The search for radiated spurious emissions was conducted with the transmitter operating on the following channel frequencies:

220.0025 MHz, 221.9975 MHz

Test Procedure: For each frequency band of spurious measurement, the appropriate measuring antenna was installed. Testing for spurious emissions was performed at a distance of 3 meters. (At 3 meters, no spurious products were detectable in the range 30 MHz to 200 MHz, so no 10 meter measurements were necessary.) For each spurious frequency of interest, the measuring antenna was raised and lowered on the mast to obtain a maximum reading on the spectrum analyzer with the measuring antenna horizontally polarized. The turntable was then rotated to obtain a maximum reading. Each maximum reading was recorded. This process was repeated with the measuring antenna vertically polarized. All levels were recorded in dBuV/m and then mathematically converted to the dipole equivalent ERP. The test site 3 meter field strength calibration is maintained on a regular basis by Acme Testing personnel in accordance with ANSI C63.4.

Investigated frequencies included but were not limited to the following:

Frequency	Description
38.4 MHz	3rd harmonic of the master oscillator (fmo)
4fmo, 5fmo, etc.	other harmonics of the master oscillator
59.0 MHz	4th harmonic of the microprocessor clock (fpo)
5fpo, 6fpo, etc.	other harmonics of the microprocessor clock
45.4555 MHz	I. F. offset oscillator (foo)
2foo, 3foo, etc.	Harmonics of the above.
flo = fo + fmo	Local oscillator (channel frequency), 440-444 MHz
2flo, 3flo, etc.	Harmonics of the above frequency up to the 10th.

MEASUREMENT RESULTS

Transmitter frequency: fc = 220.0025 MHz

The tabulated results below include all detected spurious emissions up to 10 x fc MHz.

				Maximized Spectrum Analyzer Readings		
Frequency (MHz)	Signal Description	Antenna Polarization	Spec limit (dBuV/m)	Meas. Level (dBuV/m)	Calculated Margin, (dB)	level, (dBm)
440.0050	2xfc	H	72.4	64.9	7.5	-32.5
660.0075	3xfc	H	72.4	54.7	17.7	-42.7
880.0100	4xfc	H	72.4	55.0	17.4	-42.4
1100.0125	5xfc	H	72.4	50.5	21.9	-46.9
1320.0150	6xfc	H	72.4	64.5	7.9	-32.9
1540.0175	7xfc	H	72.4	60.4	12.0	-37.0
1760.0200	8xfc	H	72.4	59.3	13.1	-38.1
1980.0225	9xfc	H	72.4	66.7	5.7	-30.7
2200.0250	10xfc	H	72.4	52.3	20.1	-45.1

*Sample calculation at 2 x fc = 440.0050 MHz (horizontal polarization):

Maximized S.A. reading was 64.9 dBuV/m . The dipole equivalent ERP limit is -25 dBm which converts conservatively to 72.4 dBuV/m max allowed or 76.7 dBuV/m max allowed if the 4.3 dB reflection-factor for 3 meter distance is included. The conservative limit was used in the tabulation above.

Spurious margin below allowed maximum is 72.4 - 64.9 = 7.5 dB

Dipole equivalent ERP = -25 dBm - 7.5 = -32.5 dBm

Acme Test Equipment List

Spectrum Analyzer: Hewlett-Packard 8566B, Serial Number 2747A-05662, Calibrated: 9 September 1998, Calibration due Date: 9 September 1999

RF Preselector: Hewlett-Packard 85685A, Serial Number 2510A-00106, Calibrated: 9 September 1998, Calibration due Date: 9 September 1999

Quasi Peak Adapter: Hewlett-Packard 85650A, Serial Number 2521A-00931, Calibrated:
9 September 1998, Calibration due Date: 9 September 1999

Line Impedance Stabilization Network: Rhode & Schwarz ESH2-Z5, Serial Number ACMERS1, Calibrated: 1 March 1999, Calibration due Date: 1 July 1999

Broadband Biconical Antenna (20 MHz to 200 MHz): EMCO 3110, Serial Number 1115, Calibrated: 27 June 1998, Calibration due Date: 27 June 1999

Broadband Log Periodic Antenna (200 MHz to 1000 MHz): EMCO 3146, Serial Number 2853, Calibrated: 27 June 1998, Calibration due Date: 27 June 1999

EUT Turntable Position Controller: EMCO 1061-3M 9003-1441, No Calibration Required

Antenna Mast: EMCO 1051 9002-1457, No Calibration Required

2 GHz to 10 GHz Low Noise Preamplifier: Milliwave 593-2898, Serial Number 2494, Calibrated: 31 December 1998, Calibration due Date: 31 December 1999

Double Ridge Guide Horn Antenna: EMCO 3115, Serial Number 5534, Calibrated: 28 December 1998, Calibration due Date: 28 December 1999

ACME SITE PLAN

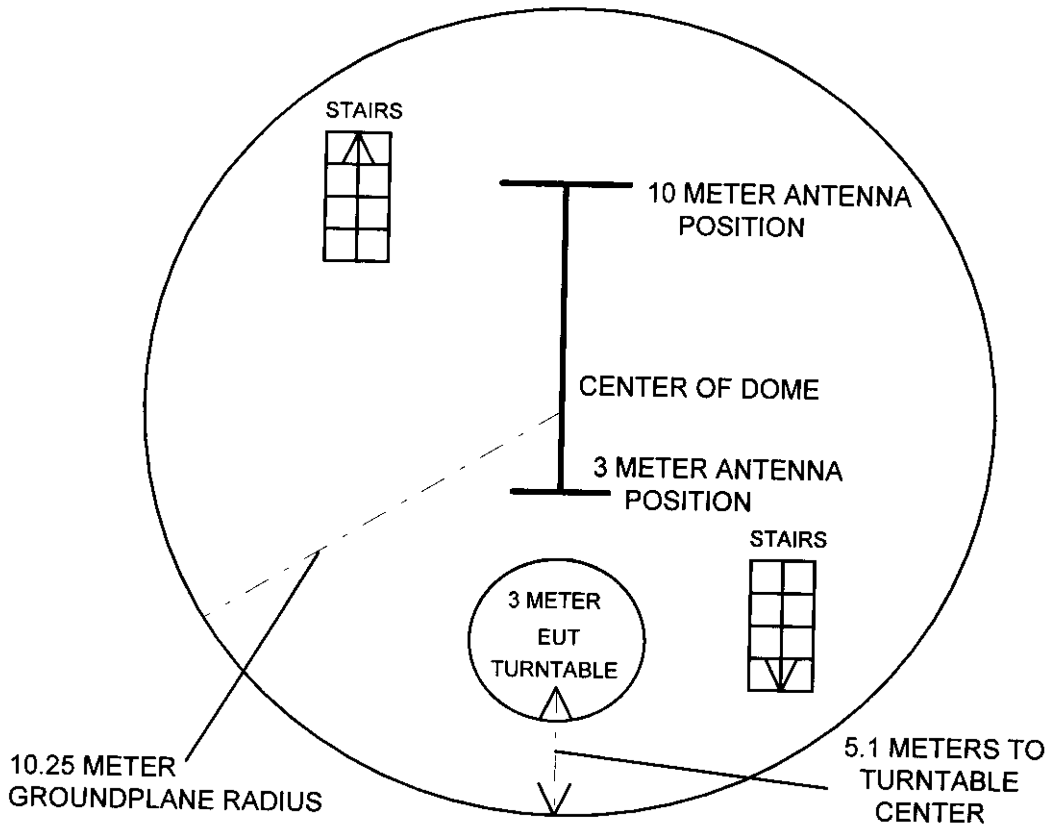

Figure 10.1

FIELD STRENGTH OF SPURIOUS RADIATION
FIELD TEST SETUP
§2.1053

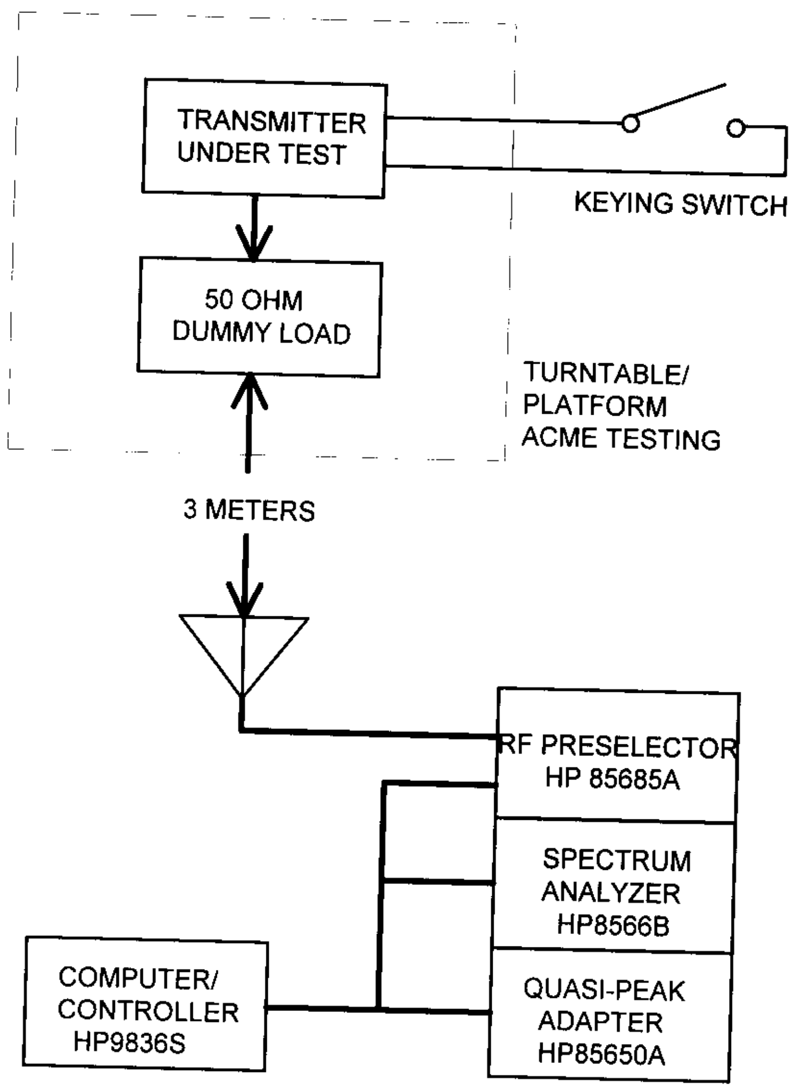

FIGURE 10.2

EXHIBIT 11

FREQUENCY STABILITY MEASUREMENTS, § 2.1055(a)(1) and (d)(1)

INTRODUCTION:

Required mobile transmitter frequency stability in the 220-222 MHz band is +/-.00015 per cent (+/-1.5 ppm) per the table in §90.213(a).

All frequency stability measurements in this exhibit were performed at a nominal channel frequency, fo = 220.0025 MHz. No external modulation was applied to the transmitter. The transmitter was operated in a test mode which causes it to emit a CW signal at the assigned center channel frequency.

FREQUENCY STABILITY VS. TEMPERATURE, § 2.1055(a)(1)

PROCEDURE:

The transmitter was previously tuned up and was enclosed in the environmental chamber. It was connected to and monitored by the equipment shown in the test setup diagram, Figure 11.1. Power supply voltage was set to 13.6 volts d.c. with the transmitter off. The chamber was first stabilized at 20°C and an initial transmitter frequency reading was taken as a zero error reference point. The chamber was then lowered to -30° C and sufficient time was allowed for the temperature to stabilize. The transmitter was keyed and its output frequency was recorded. The frequency was monitored for a period of time sufficient to observe any significant frequency change due to keying. The procedure was repeated in 10° C increments up to and including +60° C.

RESULTS:

The initial transmitter frequency at 20° C was 220.002507 MHz.

The plot of frequency error (relative to the initial frequency) versus temperature is presented in Figure 11.3 along with 1.5 ppm limit lines demonstrates compliance with §2.1055(a) and (b). The allowable drift at 220.0025 MHz is +/-330 Hz. There were no noticeable effects on the frequency due to keying. The frequency stability is within the allowable limits.

FREQUENCY STABILITY VERSUS PRIMARY SUPPLY VOLTAGE, § 2.1055(d)(1)

PROCEDURE:

The transmitter and associated test equipment were setup as shown in Figure 11.2. The power cable normally supplied with the equipment was connected between the power supply and the transmitter. The power supply was set to 100% of the nominal supply voltage, the transmitter was keyed and the frequency recorded. The primary supply voltage was then varied from 85% to 115% of the nominal supply voltage in 5% increments. The time required for the transmitter frequency to stabilize after setting the power supply to each new voltage was negligible.

RESULTS:

The initial transmitter frequency reading at 100% of nominal supply voltage was 220.0025 MHz.

The results of the test are tabulated below. The maximum frequency deviation from the initial value above was 136 Hz which is equivalent to .16 ppm. There were no noticeable effects on the frequency due to keying and unkeying the transmitter.

% Nominal Supply	Volts	Frequency, MHz
100	13.60	220.002465
85	11.56	220.002466
90	12.24	220.002465
95	12.92	220.002465
100	13.60	220.002465
105	14.28	220.002465
110	14.96	220.002465
115	15.64	220.002464

Test Setup
FREQUENCY STABILITY VERSUS TEMPERATURE
§2.1055(a)(b)

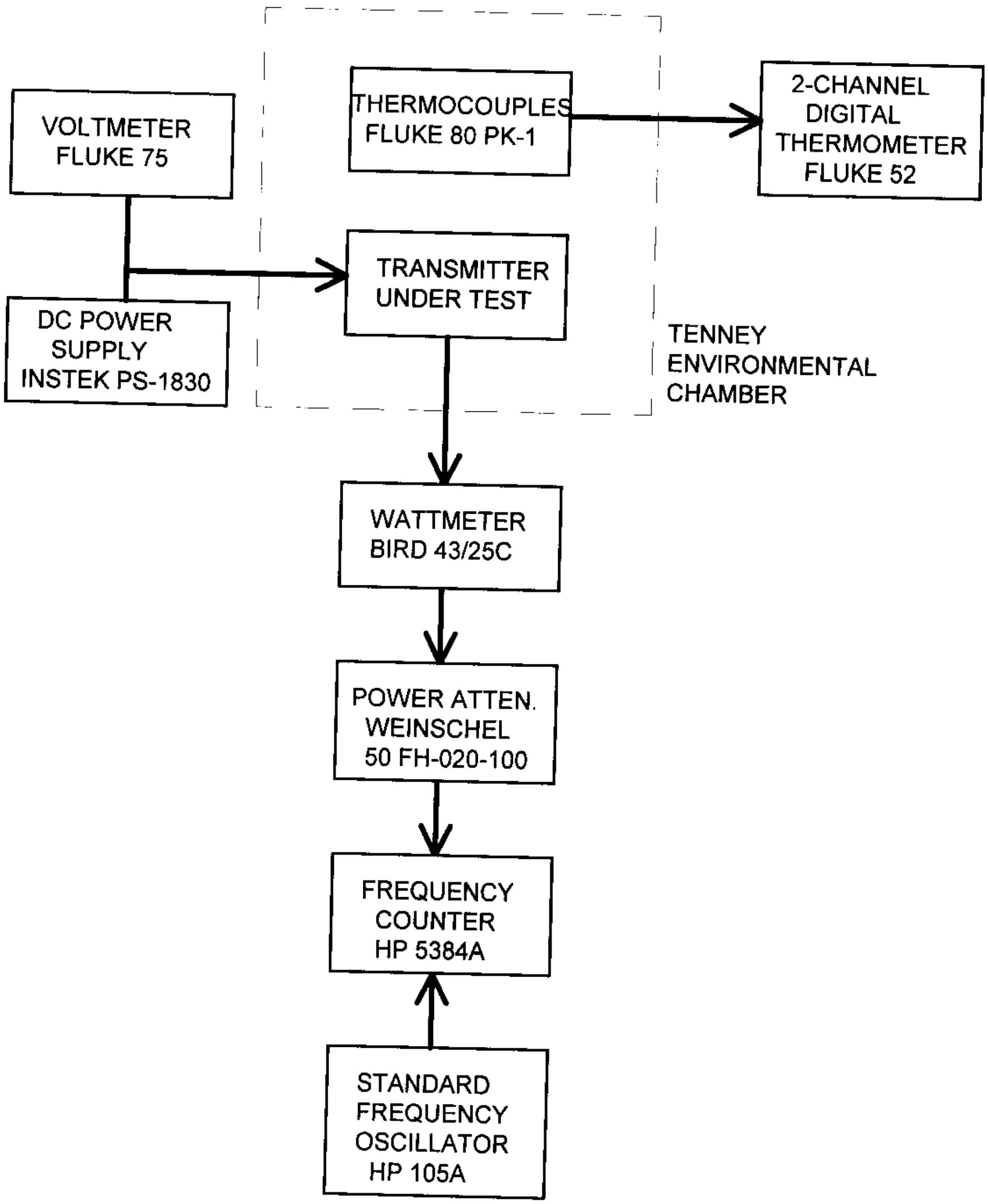

Figure 11.1

Test Setup
FREQUENCY STABILITY VERSUS PRIMARY SUPPLY VOLTAGE 2.1055(d)(1),(3)

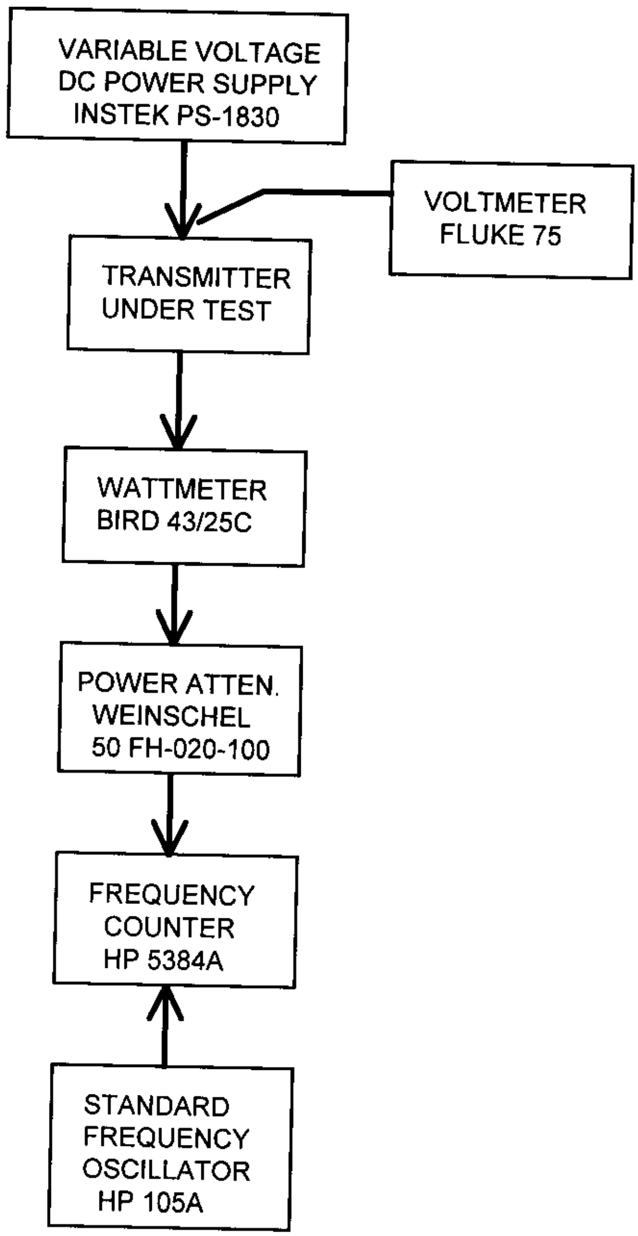

Figure 11.2

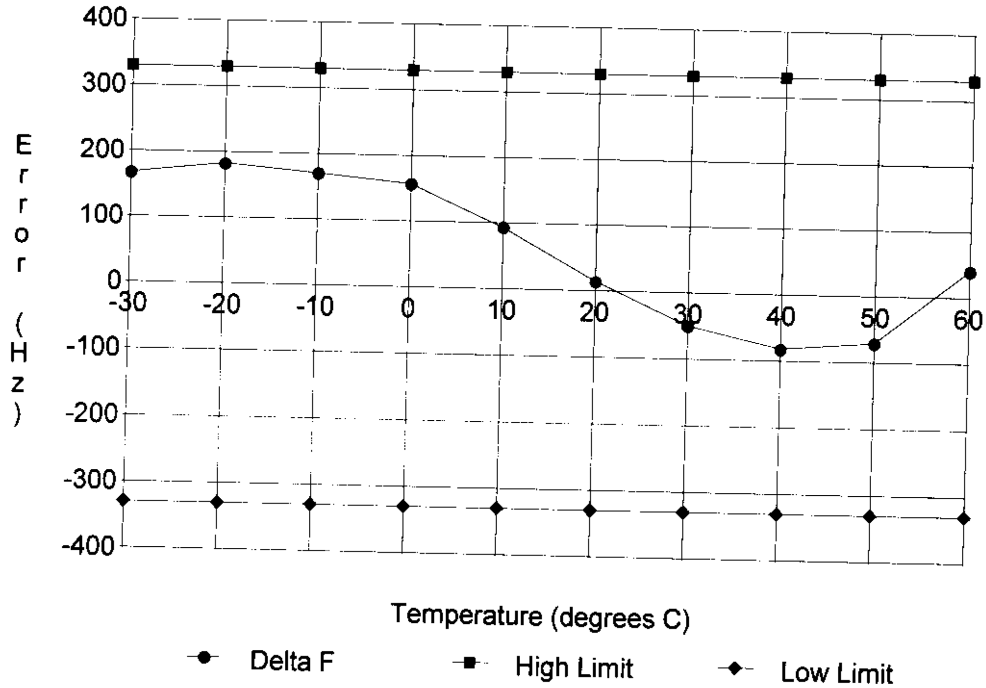

Figure 11.3 Frequency Stabilty vs. Temperature