

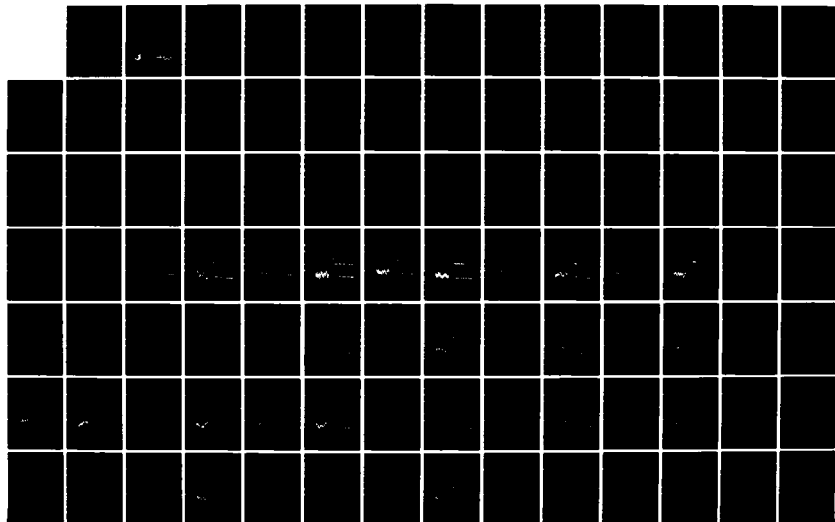
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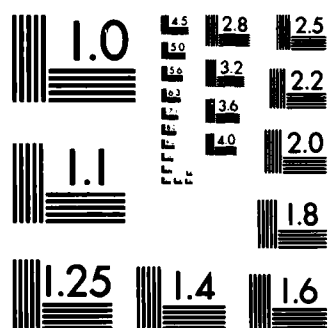
SELECTIVE AUTOMATIC FIRE EXTINGUISHER FOR CLASS A WITH
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SELECTIVE AUTOMATIC FIRE EXTINGUISHER FOR CLASS A WITH NOTIFICATION (SAFE CAN). VOLUME II: APPENDICES

CHRISTOPHER W. WILSON
THOMAS M. TRUJILLO
DENNIS ZALLEN

NEW MEXICO ENGINEERING RESEARCH INSTITUTE
BOX 25, UNIVERSITY OF NEW MEXICO
ALBUQUERQUE, NEW MEXICO 87131

MAY 1983

FINAL REPORT
MAY 1981 - MARCH 1983

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Fire Suppression Fire Extinguisher Waste Receptacle Halon	Electronic Facility Administrative Computer Facility Local	Alarm Acoustic Alarm Acoustic Coupling Receiver Detection Notification Automatic
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Currently, fire protection in electronic and computer facilities is provided by full flooding Halon or water sprinkler systems. These systems are expensive and/or damaging to electronic equipment. An original, compact, portable, automatic extinguisher and alarm unit for local extinguishment, such as waste receptacles, is described. An acoustic receiver which detects the alarm and provides fire department notification is also described. Environmental, component, and system testing is discussed and test data presented. This report is divided into two volumes. Volume I consists of the text, and Volume II consists of appendices.		

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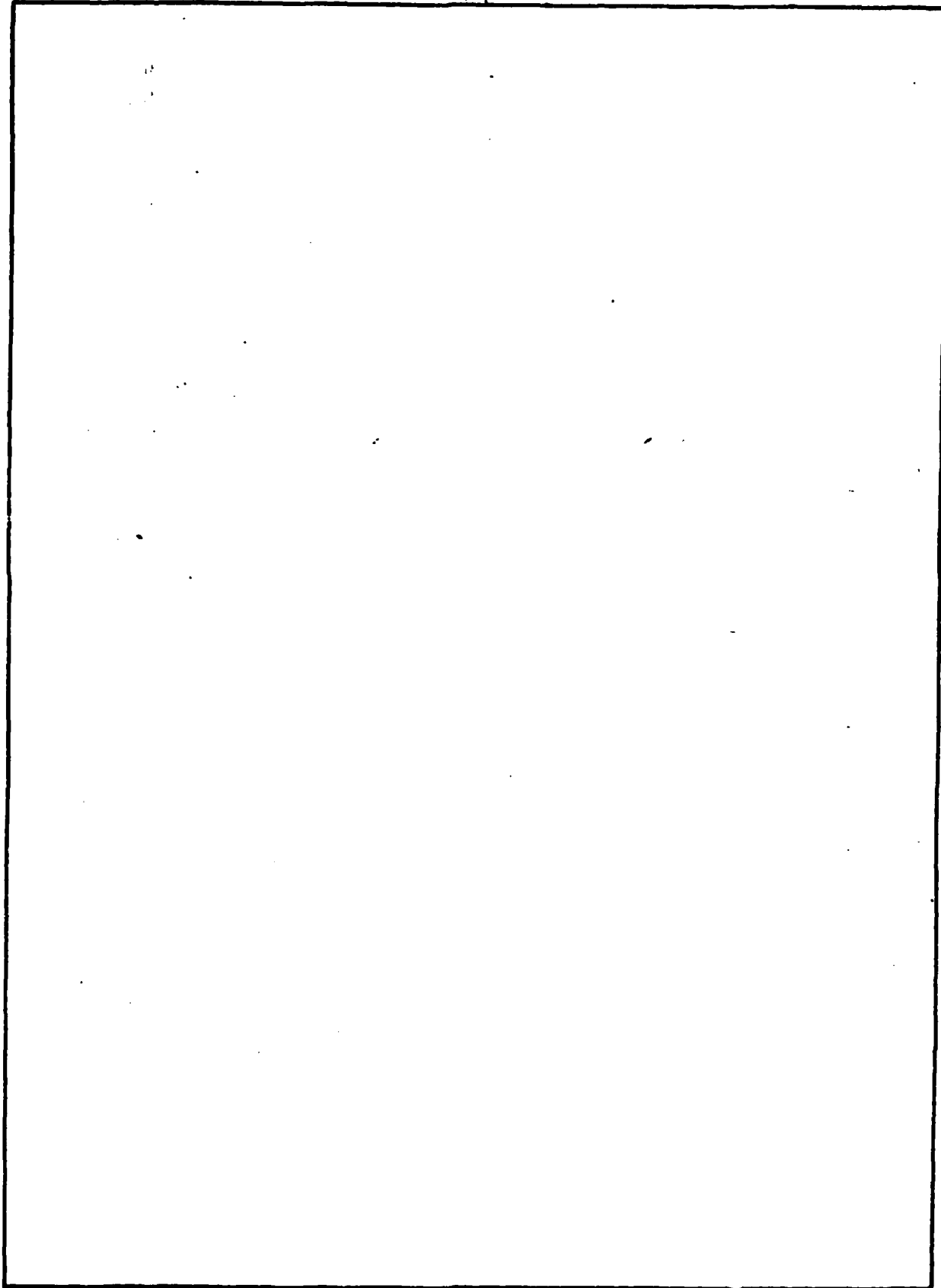
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PREFACE

This report was prepared by the New Mexico Engineering Research Institute, University of New Mexico, at the Eric H. Wang Civil Engineering Research Facility, Kirtland Air Force Base, New Mexico, under Contract F29601-81-C-0013, Job Order Number 25051014 for the Engineering and Services Laboratory, Headquarters Air Force Engineering and Services Center, (AFESC/RD), Tyndall Air Force Base, Florida.

This report summarizes work done between 7 May 1981 and 31 March 1983. Mr. Joseph L. Walker was the AFESC/RDCS Project Officer.

The authors would like to thank Professor Ahmed Shouman of New Mexico State University for assistance in concept generation; Mr. Glenn Baird of the New Mexico Engineering Research Institute for Fourier spectrum analysis; Ms. Betty Nusser of the New Mexico Research Institute for toxicity analysis; Mr. Dan Kutz, and Mr. George Stewart of the New Mexico Engineering Research Institute for the design and implementation of the acoustic receiver; Mr. Penn Davis, Mr. Vince Cassino, and Mr. Tom Escobedo for technical assistance; and Ms. Herminia Hemmitt for clerical assistance.

This report is published in two volumes. Volume I contains the Technical Report while Volume II contains Appendices A, B, and C.

This report has been reviewed by the Information Office and is releasable to the National Technical Information Service (NTIS). At NTIS it will be available to the general public, including foreign nationals.

This technical report has been reviewed and is approved for publication.

Joseph L. Walker
MR. JOSEPH L. WALKER
Project Officer, Fire Technology

John E. Goin
JOHN E. GOIN, Lt Col, USAF
Chief, Engineering Research Division

Francis B. Crowley III
FRANCIS B. CROWLEY III, Col, USAF
Director, Engineering & Services Laboratory

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APPENDIX A

INDUSTRY CONTACTS AND RELATED PATENTS

INDUSTRY CONTACTS

1. Alarm Device Mfg., Co., 165 Eileen Way, Syosset, NY 11791.
2. Alarm Supply Co., Inc., 12551 Globe Rd., Livonia, MI 48150.
3. Atlas Sound, 10 Pomeroy Rd., Parsippany, NJ 07054.
4. Chatham Controls Corp., 33 River Rd., Chatham, NJ 07928.
5. Chloride Pyrotection, 333 Lincoln St., Hingham, MA 02043.
6. Detector Electronics Corp., 7351 Washington Ave. S., Minneapolis, MN 55435.
7. E. I. duPont de Nemours & C., Inc., Wilmington, DE 19898.
8. Falcon Safety Products, In., P.O. Box 1071, Mountainside, NJ 07092.
9. Federal Signal Corp., 136th & Western Ave., Blue Island, IL 60406.
10. Fire-Lite Alarms, P.O. Box 823, New Haven, CT 06504.
11. Firemaster, Division of Kiddle, Inc., 435 Forbes Blvd., San Francisco, CA 94080.
12. Henschel Corp., 14 Cedar St., Amesbury, MA 01913.
13. Hydraulics Research, Division of Textron, Inc., 10445 Glenoaks Blvd., Pacoima, CA 91331.
14. ICI Americas, Inc., Wilmington, DE 19897.
15. Kahlenberg Bros., Co., P.O. Box 358, Two Rivers, WI 54241.
16. Larse Corp., 4600 Patrick Henry Dr., Santa Clara, CA 95050.
17. Lorsted Mfg., Inc., 3300 Airport Way S., Seattle, WA 98134.
18. Marine and Industrial Fire Protection, 70 Hudson ST., P.O. Box M-646, Hoboken, NJ 07030.
19. Monaco Enterprises, Inc., E. 14820 Sprague Ave., Spokane, WA 99215.
20. Moore Systems, Inc., 1730 Technology Dr., San Jose, CA 95110.
21. MRL, Inc., 7644 Fulerton Rd., Springfield, VA 22153.
22. Mountain West Alarm Supply Co., Box 10780, Phoenix, AZ 85064.
23. Peerless Tube Co., 58-76 Locust Ave., Bloomfield, NJ 07003.
24. The Peterzell Co., Winter Park, FL 92790.
25. Precision Valve Corp., P.O. Box 309, Yonkers, NY 10702.

INDUSTRY CONTACTS (Concluded)

26. The Protectowrie Co., P.O. Box A, Hanover, MA 02339.
27. Qualco Products Co., Fanwood, NJ 07023.
28. Robert Shaw Controls Co., 3000 S. Highland, Las Vegas, NV 89109.
29. Simplex Time Recorder Co., 4206 Lead S.E., Albuquerque, NM 87108.
30. Space Age Electronics, Inc., 31 Springhill Ave., Marlborough, MA 01752.
31. Unitec, 3990 S. Windermere, Englewood, CO 80110.
32. Vanwell Electronics, Inc., 310 Route 17, Upper Saddle River, NJ 07458.
33. Walter Kiddle and Co., Inc., Velleville, NJ 07109.
34. The W.L. Jenkins Co., 1445 Whipple Rd., S.W., Canton, OH 44708.

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2. 1,510,649, Harrison H. Boyce, Forest Hills, New York, Fire Extinguishers, October 7, 1924.
3. 2,016,663, Orville E. Current and Arthur J. Earl, Des Moines, Iowa, Chemical Sprinkler Unit, October 8, 1935.
4. 2,070,942, Frank M. Engard and Arthur J. Earl, Des Moines, Iowa, Fire Extinguisher, February 16, 1937.
5. 2,166,277, Charles L. Adams, Cape May, New Jersey, Fire Extinguisher, July 18, 1939.
6. 2,218,855, William L. Roessner, Denver, Colorado, Fire Extinguisher, October 22, 1940.
7. 2,498,131, Charles J. Marchell, Torrington, Connecticut, Fire Extinguisher, February 21, 1950.
8. 2,519,350, Clarence Noel Cahusac, Newark, New Jersey, Automatic Remotely Controlled Fire Extinguisher, August 22, 1950.
9. 2,526,159, Arthur C. Rowley, Drexel Hill, Pennsylvania, Automatic Sprinkler Head, October 17, 1950.
10. 2,585,039, George F. Rooke, Providence, Rhode Island, Local Automatic Fire Extinguishing System, February 12, 1952.
11. 2,723,722, Marcus Troy Hicks, Kenton, Tennessee, Automatic Fire Extinguisher, November 15, 1955.
12. 2,751,986, Leonard C. Dego, Lewiston, Idaho, Automatic and Manual Fire Extinguisher, June 26, 1956.
13. 2,824,614, Hyman D. Bowman, Raleigh, North Carolina, Fire Extinguishers, February 25, 1958.
14. 2,857,971, Edmund A. Ferris, Eau Claire, Wisconsin, Fire Extinguishers, October 28, 1958.
15. 2,876,845, Billy E. Boyce, O'Fallen, Illinois, Fire Extinguishers, March 10, 1959.
16. 3,010,520, Ernest E. Seaberg, Elmsford, New York, Valve for Dry Powder Fire Extinguishers, November 28, 1961.
17. 3,245,473, Jose Garcia Hita, Madrid, Spain, Fire Extinguisher, Particularly for Motor Cars, April 12, 1966.

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20. 3,447,609, James Harvey, Browns Mills, New Jersey, Fast-Acting Deluge-Type Fire Extinguisher System, June 3, 1969.
21. 3,486,563, Roger R. Cholin, Poundridge, New York and Kenneth E. Guest, Thornwood, New York, Fire Extinguishing Blanket, December 30, 1969.
22. 3,520,368, John A. Hayes, Philadelphia, Pennsylvania, Automatic Fire Alarm and Extinguisher Apparatus, July 14, 1970.
23. 3,536,139, Richard A. Berti and Eric Bruckner, Santa Barbara, California, Discharge Assembly for Fire Extinguisher, October 27, 1970.
24. 3,572,443, Author B. Guise, Marinette, Wisconsin, and Garry O. Hanson, Menominee, Michigan, Method of and Apparatus for Producing A Stream of Dry Chemical Particles, March 30, 1971.
25. 3,664,430, Abdul N. Sitabkhan, El Monte, California, Electrical Monitor For Fire Extinguisher, May 23, 1972.
26. 3,670,689, Michael Pappas, Irvington, New Jersey, Tilt-Operated Hand Held Gas Powered Acoustic Device, June 20, 1972.
27. 3,670,690, Robert E. Swanson, British Columbia, Canada, Aerosol Operated Horn, June 20, 1972.
28. 3,719,231, Kenneth S. Haggard, McMinnville, Oregon, Attachment for Automatic Override of Manually Operated Compressed Gas Fire Extinguishers and Alarms, March 6, 1973.
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30. 3,741,310, Arne Hansen, New York, New York, Safety Head Arrangement for Fire Extinguisher, June 26, 1973.
31. 3,757,731, Michael Pappas, Irvington, New Jersey, Paul A. Witte, Thomas Johnson, both Hopewell, New Jersey, Gas Power Operated Hand-Held Acoustic Devices, September 11, 1973.
32. 3,796,267, Earl C. Hunter, Ernest L. Peterson, both Indianapolis, Indiana, Wastepaper Basket Fire Extinguisher, March 12, 1974.

LIST OF RELATED PATENTS (Continued)

33. 3,800,878, Edward J. Poitras, Holliston, Massachusetts, Release Mechanism for Pressurized Vessels, April 2, 1974.
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35. 3,874,458, Robert A. Williams, Fort Worth, Texas, Fire Extinguisher, April 1, 1975.
36. 3,889,752, Byron G. Dunn, Dallas, Texas, Motor Vehicle Fire Extinguisher, June 17, 1975.
37. 3,889,754, Byron G. Dunn, Dallas, Texas, Fire Extinguishing System, June 17, 1975.
38. 3,889,755, Byron G. Dunn, Dallas, Texas, Electrical Appliance Fire Extinguisher, June 17, 1975.
39. 3,889,756, Byron G. Dunn, Dallas, Texas, Marine Vessel Fire Extinguisher, June 17, 1975.
40. 3,990,757, Byron G. Dunn, Dallas, Texas, Commercial Cooking Unit Fire Extinguisher, June 17, 1975.
41. 3,907,037, Oronzo L. Linsalato, San Marino, California, Edward Pesout, Jr., Newbury Park, California, Disposable Fire Extinguisher, September 23, 1975.
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45. 4,013,127, Kenneth S. Tenney, Michael A. Roby, both Winchester, Virginia, Fire Extinguisher Package for Waste Receptacle, March 22, 1977.
46. 4,034,813, Norman C. LeDay, Garden Grove, California, Combined Extinguisher and Audible Alarm, July 12, 1977.
47. 4,037,665, Larry R. Hopper, St. Louis, Missouri, Fire Extinguisher Containing a High Internal Phase Ratio Emulsion as Fire Extinguishing Agent, July 26, 1977.
48. 4,081,964, Hellmut Bandler, Ruth-Dammbach, Germany, Auton Bretfeld, Nuremberg, Germany, Apparatus For the Thermal and Electrical Initiation of Fire Protection Devices, April 4, 1978.

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50. 4,098,343, John L. Carroll, Portland, Oregon, Automatically and Manually Controlled Fire Extinguisher, July 4, 1978.
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52. 4,194,569, Richard C. Heath, Surrey, England, Fire Extinguishers, March 25, 1980.
53. 4,226,728, Shin H. Kung, Bayside, New York, Fire Extinguisher and Fire Extinguishing Composition, October 7, 1980.
54. 4,256,181, Charles C. Searcy, Wauchula, Florida, Automatic Stove Top Fire Extinguisher, May 17, 1981.

APPENDIX B
SAFE CAN ALARM DETECTION CIRCUIT

The circuit shown in the schematic diagram in Figure B-1 was designed to achieve the following objectives:

1. Detect audio signals greater than or equal to a predetermined decibel level.
2. Detect signals in a small portion of the audiofrequency spectrum while ignoring signals existing outside this spectrum, even if they meet the first criterion.

The circuit must then be able to:

3. Verify that the first two conditions exist for a minimum period of time (adjustable--20 seconds typical) and
4. Allow the first two conditions to be absent for a very short period of time (adjustable--0.25 second typical).

To accomplish these objectives a microphone is used to detect audio signals. The output of the microphone drives a two-stage audio amplifier (LM3900) whose first stage has a fixed gain of 20; the second-stage gain is variable with a maximum gain of 100, giving the overall gain from input to output (of the amplifier stage) a maximum value of 2000. The amplified output can now be calibrated to represent a specified decibel level.

This amplified output is fed to the input of a frequency-sensitive device (LM567 phase-locked loop) designed to function as a bandpass filter. The center frequency of this filter is adjustable by means of a potentiometer

(2650 Hz typical), with a varying bandwidth (± 100 00 Hz typical). Up to this point the signals have been in an analog format. The LM567 converts these signals to a digital format used to drive the timing circuitry, changing from a high (H) state when the first two conditions are not met to a low (L) state when a signal of the specified frequency and decibel level is detected (true signal).

When the output of the LM567 goes low, this triggers three timing circuits and a LED visual indicator. There are two short time-constant timers whose outputs are combined logically to form a reset line when a true signal dropout longer than the time specified in Condition 4 (0.25 second typical) is detected. The third timing circuit is used to produce a pulsed input to start the long time-constant (20 seconds typical) timer used to meet Condition 3.

The first short time-constant timer (1/2 NE556) can be adjusted by means of a potentiometer to allow the true signal to drop out for the period of time specified by Condition 4. The output of this timer starts low and switches to high when a true signal is detected. This output is then inverted (1/4 DM7400N, low = high and high = low) to give the proper logic states to drive one input of a NAND gate (1/4 DM7400N).

The other input of the NAND gate is driven by the output of a second short time-constant timer (1/2 74LS123N) whose function is to allow repetitive short-duration dropouts, which would have an absent signal at the end of the previously described timer's cycle.

The long time-constant (1/2 NE556--20 seconds typical) timer is started by the output of a very short (1 ms typical) timer (1/2 74LS123N). This pulsed input to the long time-constant timer is necessary to allow the long time-constant timer to return to its initial state at the end of its timing cycle. The output of this timer changes from low to high for the period of time specified by Condition 3. The reset line switches from a low state to a

high state when a true signal is detected. Finally, the output of the long time-constant timer and the reset line are compared by a J-K flip flop circuit (1/2 LM7473N). If the reset line is high (reflecting that the true signal is still being detected) when the long time-constant timer switches from high to low (at the end of its completed timing cycle), then an alarm signal is generated, indicating all four conditions have been satisfied.

COUNTER CIRCUIT

To keep track of the number of signals generated, a counter was added to the output of the J-K flip flop circuit. The alarm signal is fed to the input of a 74L5390 counter. The counter outputs the count in a binary coded decimal (BCD) format. The BCD signals are decoded by a DM7447A BCD decoder/-segment driver that drives two 7-segment digital displays, enabling the device to count to 99 before resetting itself to 00. A manual reset is also provided.

POWER SUPPLY

The circuits are powered by an AC to DC converter that provides 9 volts DC at 300 ma. A LM309K voltage regulator provides the regulated 5 volts DC necessary to power the integrated circuits (the 7-segment displays use 9 volts DC and are not powered by the regulator).

Printed circuit board dip switches are provided to remove power from the digital displays without affecting the count, greatly reducing the amount of current needed from the power supply. For noise reduction, each individual integrated circuit is decoupled from the power supply by a 0.1 μ f capacitor.

IMPROVEMENTS

While the boards do basically what they were originally designed to do, some improvements can be made in operation of these boards.

One event known to exist was the effect of the input voltage expanding the passband of the LM567 chip as it increased. To prevent this, the final design circuit will have a clamping circuit that will prevent the input voltage to the chip from exceeding a predetermined value. Since this voltage is dependent upon a certain decibel level that will be chosen, based on the results of experimental testing of these units, this circuit could not be added at this time.

Another event that was encountered also involved the LM567 integrated circuit. On the edges of the passband the output of this chip would oscillate (i.e., switch from a high state to a low state at a very high rate of speed). Since all the boards exhibited this fault, it was concluded that this is a characteristic of this type of integrated circuit. One improvement is to use a passive bandpass filter prior to this stage, preventing the integrated circuit from operating in a range where it will be oscillating. The use of a different integrated circuit should also be investigated for this function.

A third event noted during the operation of the boards was that the counter, at times, would tend to jump counts (i.e., count from 2 to 5 in less than 1 second, while, theoretically, the minimum time between counts should be the time specified in Condition 3 [20 seconds typical]). This event appears to be caused by the ability of the counter chip to count faster than the time required for the rest of the logic circuits to change state. One possible solution would be to put a capacitor between the input of the counter chip and circuit ground whose time-constant is such that the minimum time between counts must be greater than 1 second (this is still a great deal smaller than the time specified by Condition 3 and should not affect the ability of the board to count true signals).

CALIBRATION PROCEDURES

The timing circuits were calibrated using a Tektronix 549 storage oscilloscope as a time reference. The outputs of the various timers were observed and recorded using the scope. The short time-constant timers were set at 0.25 second, and the long time-constant timers were set at 20 seconds. The delay timer was set at approximately 1 ms. The frequency sensitivity of the phase-locked loop was set by adjusting the gain pot of the audio amplifier (LM 3900) to its maximum position. The microphone of the board under test was placed in close proximity to a horn-type loudspeaker connected to a Hewlett Packard audio oscillator. The dial was set at the desired center frequency and the center frequency adjustment potentiometer was set so that the passband was centered around this frequency. The passband was then checked by rotating the frequency selector dial of the audio oscillator and noting upper and lower band edges. If the response was incorrect, the center frequency was again adjusted, and band edge checked (note: band edge was considered to be the point at which the output of the LM 567 started to oscillate).

Finally, the sensitivity of the two-stage audio oscillator was calibrated to correspond to a given decibel reference level. Originally, the decibel reference level was obtained by the placement of the microphones from the boards and the microphone of the B&K sound level meter as close to each other and a horn-type loudspeaker as possible. The loudspeaker was still connected to a Hewlett-Packard audio oscillator, and this time the output level of the audio oscillator was increased until the sound level meter indicated the desired decibel level. The sensitivity of the boards was adjusted so that the output of the bandpass filter went low and stayed low (no oscillation). This procedure was later modified. A test jig was built, placing the reference microphone and the microphone under test 1 foot from the center of the horn. This test jig was then placed in a wooden box, and each board calibrated individually against the B&K sound level meter and the sensitivity set for the same criterion as before. This last method proved to be far superior as it gave repeatable results and the test jig had the additional capability of allowing the microphone to be set at different interception angles from the reference audio signal.

TABLE B-1. CONDITION OF TEST POINTS

Test point No.	True signal present	True signal absent	Comments
1	High	Low	Short time-constant (1/4 second dropout timer)
2	Low	High	True signal detector
3	High	Low	Reset line (stays high 1/4 second after removal of true signal)
4	High	Low	Long time-constant timer (20 seconds)
5	Low	High	Delay timer (low only 1 ms)

APPENDIX C

TEST DATA

TEMPERATURE TESTS

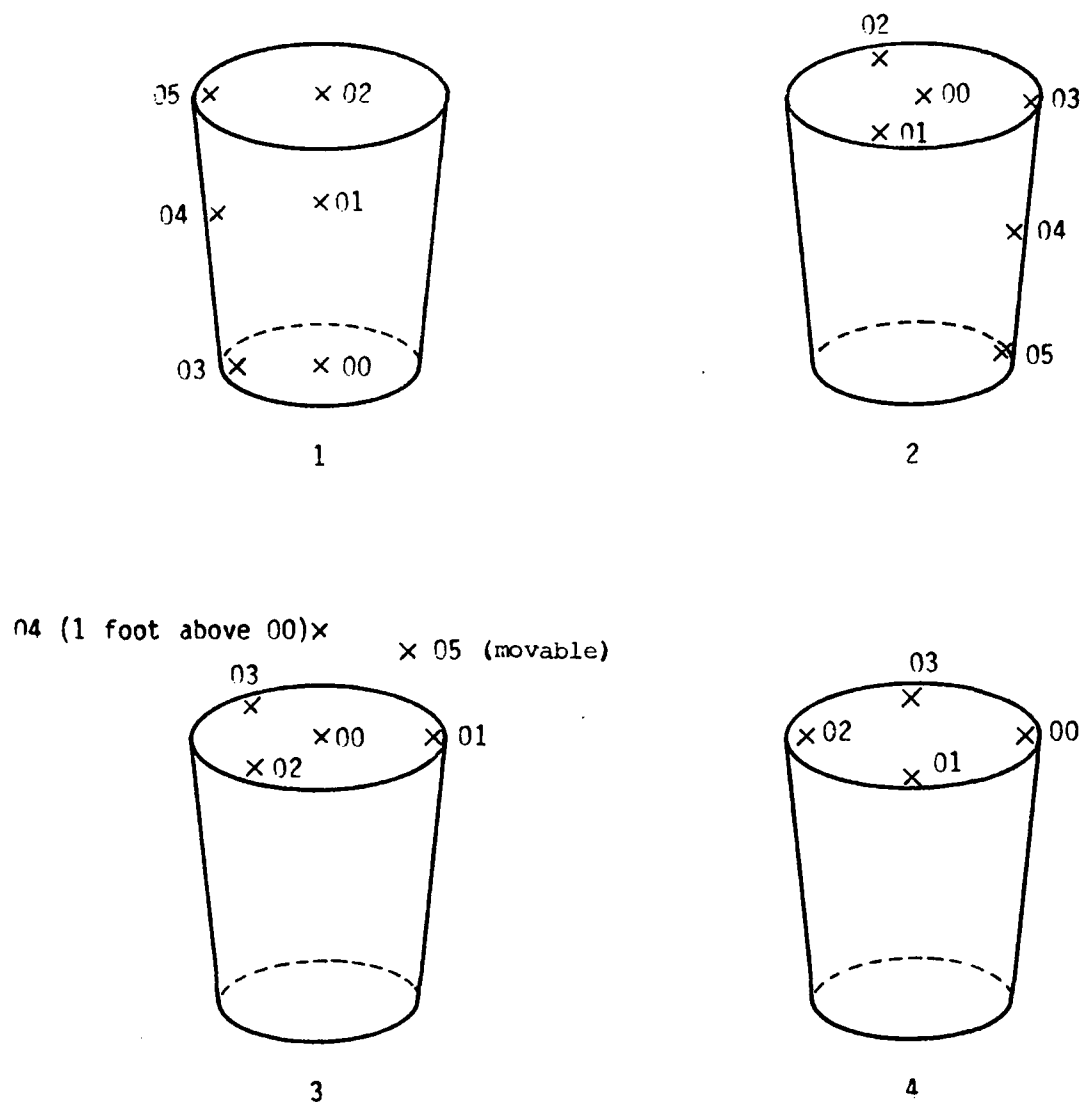


Figure C-1. Temperature versus Time Tests--Thermocouple Arrangements

Temperature Test No. 1
 Size Small Can
 Fuel Load 12 11" X 15 " sheets
 Sensor Arrangement (2)
 Time from Ignition to Time "0" 40 seconds
 High Peak Temp. 1312 at 24 sec. Sensor 01
 Low Peak Temp. 337 at 12 sec. Sensor 02

Sensor Time						
	00	01	02	03	04	05
0 (Sec)	194	112	203	131	83	57
6	755	356	260	226	120	58
12	957	658	337	327	178	60
18	878	1118	281	628	694	69
24	816	1312	229	700	1035	127
30	789	1275	179	701	1235	187
36	671	1052	151	695	1159	301
42	585	1033	140	646	1203	577
48	559	957	152	680	1183	699
54	509	974	181	659	1183	810
60	457	783	183	553	1020	908
66	377	748	180	510	870	1155
72	319	540	155	424	670	1293
78	263	442	151	371	494	1174
84	238	367	137	311	422	1061

Temperature Test No. 2
 Size Small Can
 Fuel Load 12 sheets
 Sensor Arrangement (2)
 Time from Ignition to Time "0" 30 seconds
 High Peak Temp. 1412 at 108 sec. Sensor 05
 Low Peak Temp. 452 at 6 sec. Sensor 02

Sensor Time						
	00	01	02	03	04	05
0	161	102	263	88	68	67
6	153	106	452	107	74	60
12	180	127	355	110	79	61
18	260	353	266	103	85	61
24	811	744	261	633	177	62
30	940	1047	362	1170	430	63
36	913	1143	380	1269	748	80
42	1179	1300	282	1055	761	93
48	1033	1151	315	1084	940	177
54	946	1076	279	1087	1113	249
60	974	1206	320	925	990	318
66	947	912	276	905	995	354
72	935	968	304	862	1066	434
78	951	920	331	929	1012	645
84	863	978	325	943	1071	813
90	814	933	298	831	973	1078
96	630	732	252	670	907	1153
102	536	758	251	559	759	1388
108	426	605	245	463	563	1412
114	346	488	231	389	447	1262
120	287	391	220	338	363	1074
126	225	297	214	277	292	729

Temperature Test No. 3
 Size Small Can
 Fuel Load 12 sheets
 Sensor Arrangement (2)
 Time from Ignition to Time "0" 9 seconds
 High Peak Temp. 1274 at 42 sec. Sensor 03
 Low Peak Temp. 478 at 48 sec. Sensor 02

Sensor Time						
	00	01	02	03	04	05
0	351	60	60	61	61	61
6	1219	62	66	64	61	61
12	1510	65	71	67	62	61
18	1598	69	76	77	61	61
24	1207	137	117	115	63	61
30	854	268	213	211	69	61
36	886	395	276	970	71	59
42	1048	815	424	1274	208	63
48	1011	1226	478	1223	669	116
54	1114	1174	471	1077	874	283
60	1028	1093	444	1152	968	236
66	843	913	390	946	1012	301
72	864	1165	400	915	1091	531
78	886	1172	385	855	1071	650
84	1021	1249	369	818	1107	793
90	920	1185	374	764	978	934
96	718	972	349	603	709	784
102	587	721	318	493	578	680
108	454	552	306	439	475	595

Temperature Test No. 4
 Size Small can
 Fuel Load 12 sheets
 Sensor Arrangement (2)
 Time from Ignition to Time "0" 21 seconds
 High Peak Temp. 1204 at 24 sec. Sensor 04
 Low Peak Temp. 406 at 36 sec. Sensor 02

Time	Sensor					
	00	01	02	03	04	05
0	204	98	203	138	83	69
6	671	283	296	379	165	73
12	1033	650	356	579	843	94
18	1030	771	383	670	938	122
24	1032	939	380	668	1204	159
30	1077	976	398	732	1145	227
36	1132	953	406	788	1287	291
42	1068	892	400	824	1098	339
48	986	905	380	917	1022	375
54	927	907	310	840	1060	434
60	955	813	338	791	967	492
72	1017	781	314	802	858	573
78	951	794	286	670	710	751
84	753	622	242	611	707	930
90	638	578	215	483	480	990
96	486	502	206	410	431	847
102	426	420	180	365	371	765
108	356	361	163	351	371	703

Temperature Test No. 5
 Size Small can
 Fuel Load 12 sheets
 Sensor Arrangement (2)
 Time from Ignition to Time "0" 12 sec.
 High Peak Temp. 1328 at 30 sec. Sensor 01
 Low Peak Temp. 369 at 18 sec. Sensor 02

Sensor Time						
	00	01	02	03	04	05
0	653	85	85	98	69	68
6	972	781	160	733	390	122
12	1054	1118	308	927	593	358
18	1019	1204	369	996	690	527
24	882	1302	286	862	889	896
30	848	1328	300	658	764	1065
36	810	1177	320	642	814	1209
42	709	1046	318	598	822	1169
48	680	812	267	631	763	1189
54	589	896	251	502	796	950
60	530	961	238	497	685	698
66	440	918	264	439	700	643
72	352	757	276	402	594	522

Temperature Test No. 6
 Size Small Can
 Fuel Load 12 sheets
 Sensor Arrangement (2)
 Time from Ignition to Time "0" 9 seconds
 High Peak Temp. 1331 at 90 sec. Sensor 04
 Low Peak Temp. 563 at 96 sec. Sensor 05

Time	Sensor					
	00	01	02	03	04	05
0	377	58	60	65	56	55
6	773	61	61	69	56	55
12	711	70	70	85	56	55
18	750	80	72	108	56	55
24	761	119	79	129	57	55
30	902	191	107	206	59	55
36	1180	690	410	409	73	55
42	1127	974	565	612	113	56
48	1095	1128	679	668	213	59
54	992	1028	782	774	331	65
60	960	1107	809	664	654	82
66	1014	1084	687	490	826	93
72	1108	1089	609	581	1035	108
78	978	1075	628	534	1153	145
84	810	932	609	496	1285	251
90	666	814	576	434	1331	497
96	471	697	397	390	816	563
102	406	585	337	325	696	526
108	345	494	294	266	599	461
114	291	428	269	226	448	411

Temperature Test No. 7
 Size Small Can
 Fuel Load 12 sheets
 Sensor Arrangement (2)
 Time from Ignition to Time "0" 18 seconds
 High Peak Temp. 1209 at 18 sec. Sensor 00
 Low Peak Temp. 398 at 24 sec. Sensor 02

Time	Sensor					
	00	01	02	03	04	05
0	377	141	125	370	351	62
6	1089	650	111	728	493	73
12	1195	932	178	770	628	87
18	1209	1060	287	633	898	96
24	998	1069	398	602	1055	100
30	897	998	341	547	861	104
36	954	1015	374	473	654	127
42	898	1005	315	438	479	236
48	730	856	385	402	452	315
54	657	728	287	403	502	388
60	498	655	225	385	636	423
66	434	604	208	351	577	457
72	399	622	163	421	699	499
78	368	558	141	368	526	486
84	330	485	120	324	415	503
90	297	419	134	297	325	460
102	200	269	120	214	218	369

Temperature Test No. 8
 Size Small can
 Fuel Load 12 sheets
 Sensor Arrangement (2)
 Time from Ignition to Time "0" 9 seconds
 High Peak Temp. 1418 at 24 sec. Sensor 00
 Low Peak Temp. 448 at 24 sec. Sensor 02

Time	Sensor					
	00	01	02	03	04	05
0	112	57	56	57	57	64
6	736	60	57	60	57	63
12	1233	106	65	78	59	63
18	1289	285	192	124	65	63
24	1418	669	448	348	76	63
30	1192	1049	343	868	150	64
36	1101	1001	319	1028	286	66
42	1244	958	342	834	431	75
48	1134	1031	340	810	789	97
54	930	1019	315	809	905	225
60	1030	1136	306	776	878	527
66	988	1192	303	624	740	693
72	1074	1082	266	501	588	587
78	853	916	330	404	491	487
84	746	735	274	343	406	399
90	511	637	200	279	312	305
96	403	574	183	250	263	271
102	349	495	162	231	235	238

Temperature Test No. 9
 Size Small Can
 Fuel Load 12 sheets
 Sensor Arrangement (2)
 Time from Ignition to Time "0" 15 seconds
 High Peak Temp. 1268 at 12 sec. Sensor 00
 Low Peak Temp. 328 at 54 sec. Sensor 02

Sensor Time						
	00	01	02	03	04	05
0	603	203	144	114	103	67
6	932	434	165	480	191	75
12	1268	934	213	648	356	88
18	1173	1202	252	606	673	94
24	1226	1245	261	562	1124	98
30	1003	1319	275	491	902	111
36	1038	1255	296	439	682	271
42	939	1141	300	415	647	645
48	967	1216	332	382	510	719
54	849	1139	328	360	441	606
60	678	848	327	303	380	519
66	520	685	312	271	305	429
72	395	526	292	241	256	373
78	278	351	256	212	213	285

Temperature Test No. 10
 Size Small Can
 Fuel Load 12 sheets
 Sensor Arrangement (2)
 Time from Ignition to Time "0" 6 seconds
 High Peak Temp. 1461 at 78 sec. Sensor 05
 Low Peak Temp. 785 at 36 sec. Sensor 02

Sensor Time						
	00	01	02	03	04	05
0	651	84	76	60	61	66
6	905	263	220	438	121	71
12	1227	463	528	951	180	82
18	1227	835	709	824	457	90
24	1140	938	710	923	636	99
30	1011	948	764	1002	900	103
36	947	952	785	915	1272	120
42	941	823	733	886	1315	135
48	793	769	686	710	1118	175
54	670	689	546	715	1095	200
60	740	629	507	575	873	257
66	734	640	515	490	707	482
72	691	720	482	478	787	1392
78	625	675	466	382	593	1461
84	570	610	446	346	505	1428
90	524	385	318	406	500	1249
100	338	362	265	237	290	674

Temperature Test No. 11 Liquid Fire (Kerosene)
 Size Small Can
 Fuel Load 40 ml
 Sensor Arrangement (2)
 Time from Ignition to Time "0" 24 seconds
 High Peak Temp. 861 at 6 sec Sensor 05
 Low Peak Temp. 326 at 12 sec Sensor 03

Sensor Time						
	00	01	02	03	04	05
0	135	110	98	84	154	209
6	262	225	127	247	318	861
12	499	357	260	326	383	841
18	598	397	325	331	371	706
24	567	372	389	278	341	522
30	452	323	329	247	300	425
36	342	254	248	176	259	329

Temperature Test No. 12 Liquid Fire (Alcohol)
 Size Small Can
 Fuel Load 40 ml
 Sensor Arrangement (2)
 Time from Ignition to Time "0" 3 seconds
 High Peak Temp. 1032 at 24 sec Sensor 05
 Low Peak Temp. 138 at 24 sec Sensor 02

Sensor Time						
	00	01	02	03	04	05
0	55	55	54	56	62	147
6	135	178	84	152	455	758
12	231	272	98	230	451	853
18	241	314	114	254	470	1113
24	376	376	138	256	556	1032
30	366	422	136	338	758	953
36	386	419	152	305	550	798
42	316	401	145	252	555	710
48	233	343	122	188	447	708
54	187	267	101	148	323	450

Temperature Test No. 13 Liquid Fire (Naptha)
 Size Small Can
 Fuel Load 40 ml
 Sensor Arrangement (2)
 Time from Ignition to Time "0" 0 seconds
 High Peak Temp. 991 at 54 Sensor 05
 Low Peak Temp. 402 at 72 Sensor 02

Time	Sensor					
	00	01	02	03	04	05
0	76	59	67	59	59	60
6	76	67	70	63	61	72
12	83	76	68	66	62	75
18	85	85	67	67	62	75
24	100	95	66	75	67	86
30	111	102	70	83	71	107
36	196	152	109	140	108	505
42	304	246	91	224	155	663
48	371	322	185	258	178	780
54	352	328	151	322	232	991
60	606	493	193	420	311	921
66	648	561	334	475	384	834
72	645	541	402	470	407	680
78	489	472	360	331	386	444
84	370	365	262	256	359	328

Temperature Test No. 52
 Size Large Can
 Fuel Load 12 sheets
 Sensor Arrangement (3)
 Time from Ignition to Time "0" 0 sec.
 High Peak Temp. 781 at 25 sec. Sensor 01
 Low Peak Temp. 461 at 35 sec. Sensor 02

Sensor Time						
	00	01	02	03	04	05
0	82	75	76	73	72	71
5	112	75	97	74	93	70
10	164	150	98	96	133	85
15	409	372	96	307	290	333
20	577	685	291	489	479	529
25	646	781	452	488	511	609
30	706	780	368	614	551	648
35	688	732	461	520	457	548
40	628	689	394	476	414	498
45	597	602	438	484	378	464
50	539	623	410	435	353	427
55	512	593	374	454	348	389
60	467	528	329	434	317	355

Temperature Test No. 53
 Size Large Can
 Fuel Load 12 sheets
 Sensor Arrangement (3)
 Time from Ignition to Time "0" 30 seconds
 High Peak Temp. 817° at 35 sec. Sensor 01
 Low Peak Temp. 480° at 50 sec. Sensor 02

Sensor Time						
	00	01	02	03	04	05
0	87	82	82	80	73	73
5	97	81	116	78	83	85
10	104	79	183	77	84	121
15	106	81	185	128	97	137
20	164	112	157	236	139	137
25	305	431	189	323	312	303
30	612	602	302	417	424	441
35	701	817	374	435	542	611
40	764	776	396	437	533	569
45	762	694	420	488	471	519
50	676	567	480	568	403	414
55	641	585	412	499	442	418
60	673	662	420	501	451	481

Temperature Test No. 54
 Size Large Can
 Fuel Load 12 sheets
 Sensor Arrangement (3)
 Time from Ignition to Time "0" 0 seconds.
 High Peak Temp. 798° at 30 sec. Sensor 00
 Low Peak Temp. 449° at 50 sec. Sensor 02

<i>Sensor</i> Time	00	01	02	03	04	05
0 (Sec)	78	79	79	79	74	71
5	84	79	85	80	83	70
10	98	77	131	112	101	106
15	179	80	161	243	191	181
20	376	252	192	428	312	362
25	609	389	185	563	406	464
30	798	592	227	551	459	467
35	727	620	321	580	457	546
40	759	584	354	693	449	622
45	712	550	427	674	429	560
50	647	594	449	512	380	472
55	628	558	416	522	384	488
60	513	560	371	549	389	503
65	538	523	323	486	344	437

Temperature Test No. 55
 Size Large Can
 Fuel Load 36 sheets
 Sensor Arrangement (3)
 Time from Ignition to Time "0" 10 seconds
 High Peak Temp. 1332° at 35 sec. Sensor 00
 Low Peak Temp. 598° at 60 sec. Sensor 02

Time	Sensor					
	00	01	02	03	04	05
0	78	76	75	75	78	78
5	131	175	79	236	207	352
10	591	781	101	430	604	677
15	1211	908	262	719	614	611
20	1262	955	339	635	628	728
25	1254	983	472	564	582	633
30	1230	1001	520	618	530	569
35	1332	1134	528	545	590	448
40	1263	1248	590	604	700	529
45	1217	1307	516	713	790	781
50	1167	1286	584	709	817	906
55	1057	1305	559	696	774	823
60	1033	1274	598	761	807	879
65	1017	1203	591	741	785	598
70	984	1089	573	755	654	582
75	945	1084	544	638	656	494

Temperature Test No. 56
 Size Large Can
 Fuel Load 60 sheets
 Sensor Arrangement (3)
 Time from Ignition to Time "0" 0 seconds
 High Peak Temp. 1623° at 70 sec. Sensor 01
 Low Peak Temp. 855° at 40 sec. Sensor 02

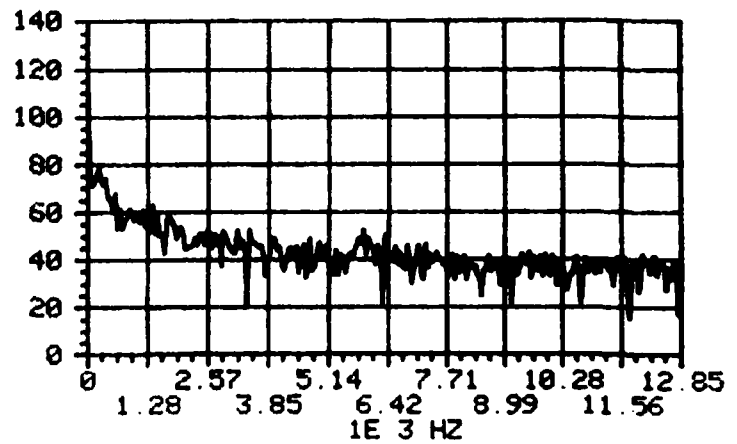
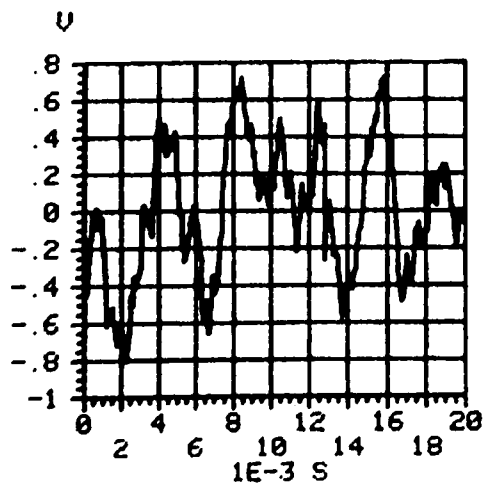
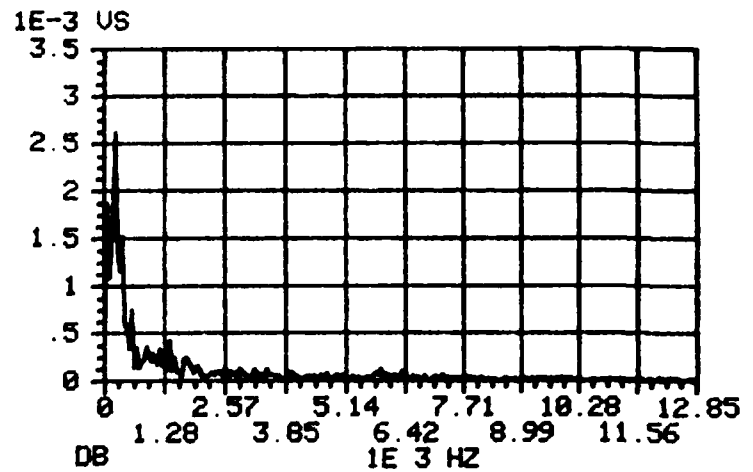
Sensor Time						
	00	01	02	03	04	05
0	73	72	73	72	73	72
5	133	76	79	74	73	72
10	160	75	111	75	76	73
15	378	77	157	208	94	529
20	510	329	307	828	516	902
25	881	870	477	794	693	920
30	893	1188	741	856	652	755
35	906	1209	827	947	610	663
40	944	1269	855	1049	531	651
45	933	1239	819	1137	518	598
50	1051	1285	619	1052	499	512
55	1109	1199	610	1027	592	686
60	1144	1393	650	1118	705	772
65	1146	1543	557	950	1073	1125
70	1132	1623	540	891	1256	1434
75	1185	1565	518	774	1227	1385
80	1131	1483	618	738	1096	1092
85	1067	1311	496	718	1041	1004

Temperature Test No. 57
 Size Large Can
 Fuel Load 6 reams paper
 Sensor Arrangement (3)
 Time from Ignition to Time "0" 30 seconds
 High Peak Temp. 1009° at 85 sec. Sensor 00
 Low Peak Temp. 381° at 105 sec. Sensor 02

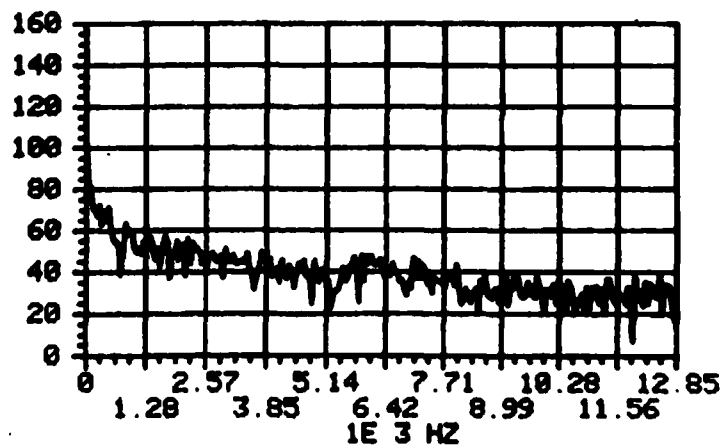
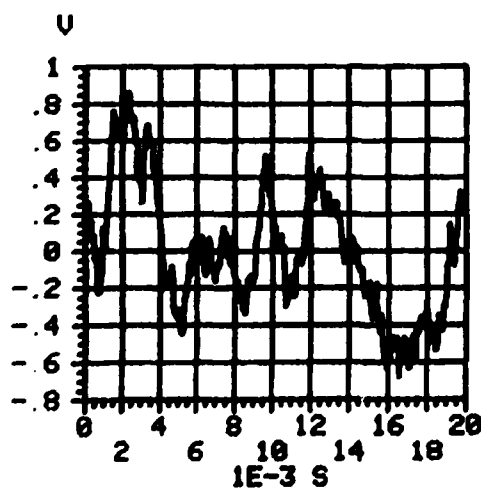
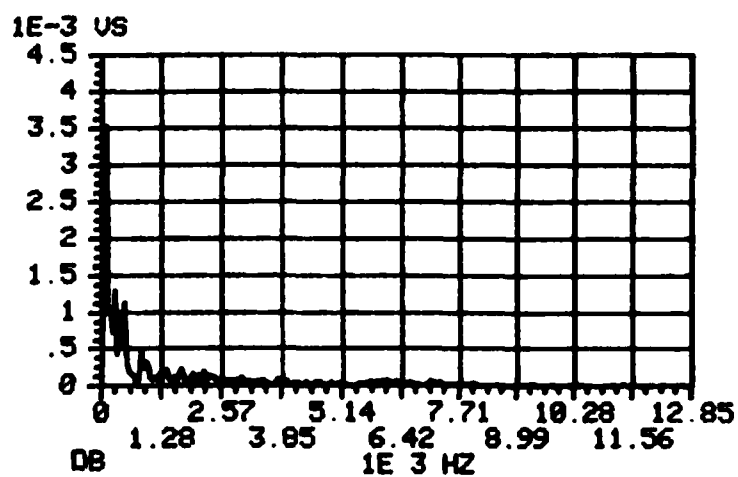
Time	Sensor					
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0	94	104	93	78	73	74
5	104	114	90	79	78	75
10	116	111	91	110	82	75
15	137	98	143	135	85	80
20	185	165	111	188	131	199
25	233	250	122	208	163	202
30	324	250	170	251	150	212
35	423	285	152	250	164	243
40	496	303	149	210	155	284
45	482	354	163	209	143	277
50	448	342	163	221	149	267
55	444	362	217	204	147	295
60	596	418	232	493	166	534
65	665	566	271	631	182	560
70	846	622	348	605	207	530
80	929	664	296	706	265	546
85	1009	698	351	707	320	425
90	992	801	340	645	465	401
95	995	772	348	672	388	375
100	938	816	317	632	327	371
105	822	749	381	551	366	308
110	783	742	347	552	365	301
115	773	704	303	519	323	272
120	739	708	311	436	305	261

ENVIRONMENTAL NOISE TESTS

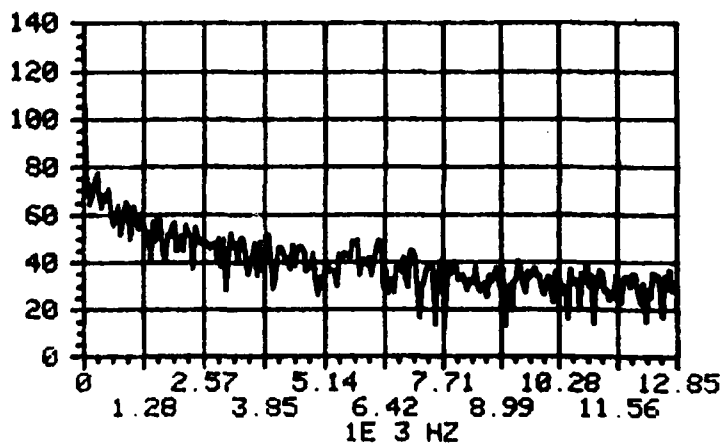
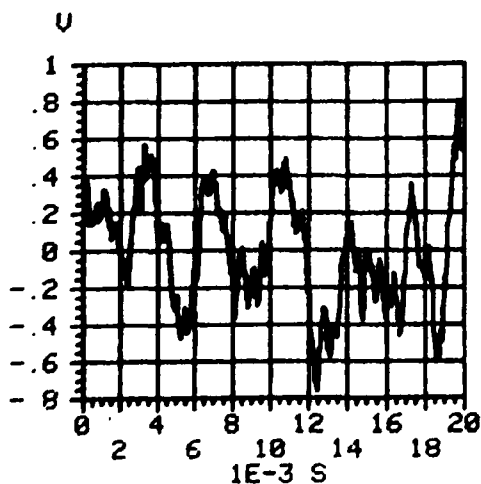
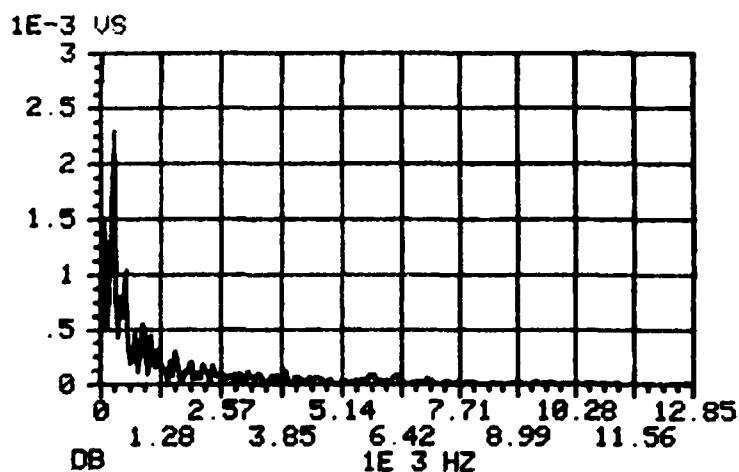
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 Location: NW Corner
 Meter Setting 70 dB
 Meter Reading 68 dB



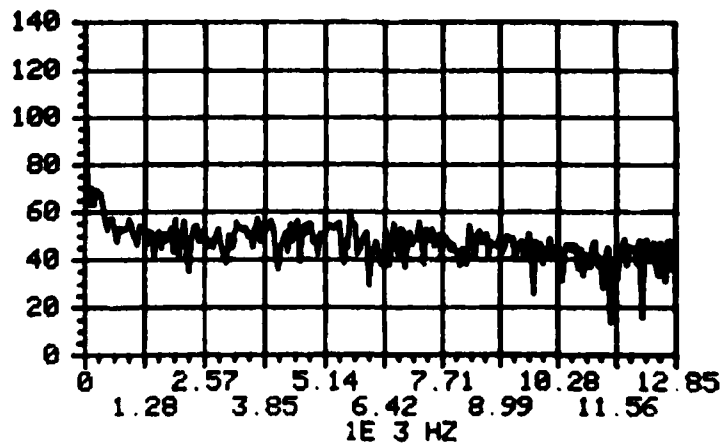
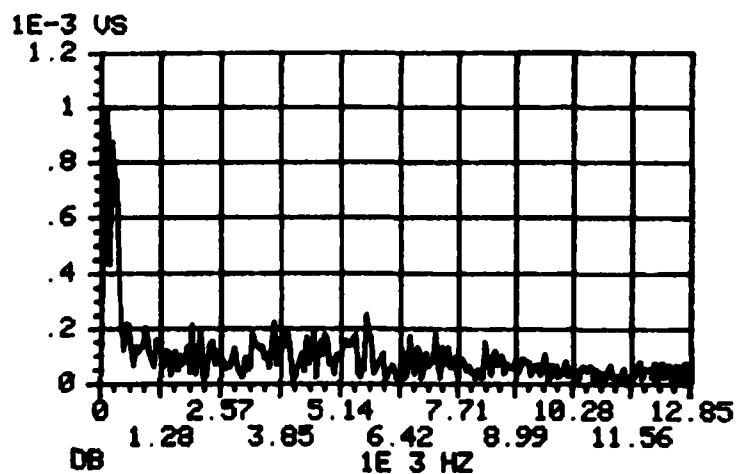
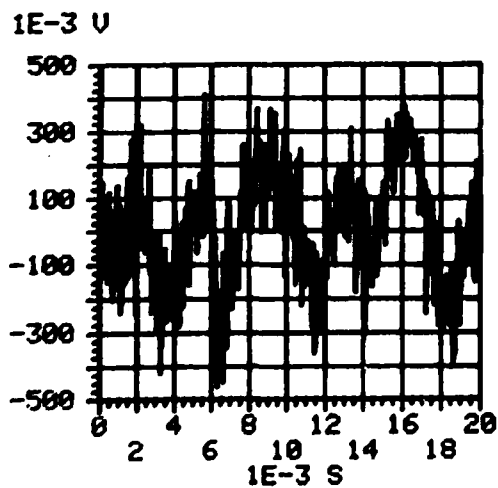
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 Location: NW Corner
 Meter Setting 70 dB
 Meter Reading 68 dB



Noise Test No. 1
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 Location: NW Corner
 Meter Setting 70 dB
 Meter Reading 68 dB



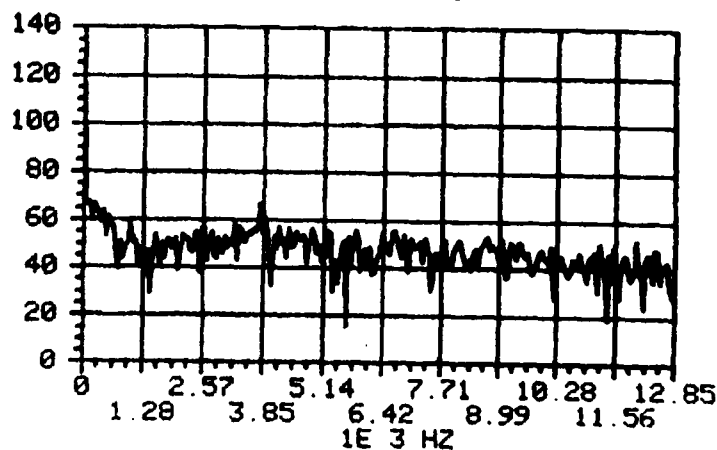
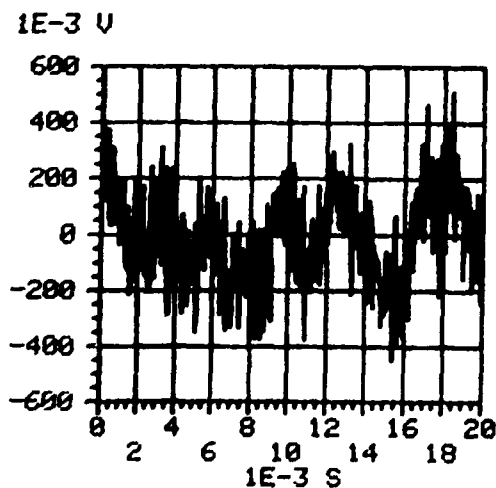
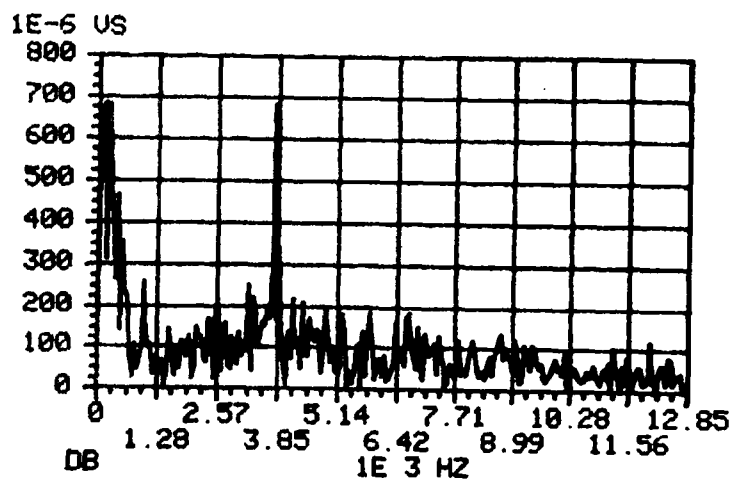
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 Location: NE Corner, 7 Feet
from Printer
 Meter Setting 70 dB
 Meter Reading 71 dB



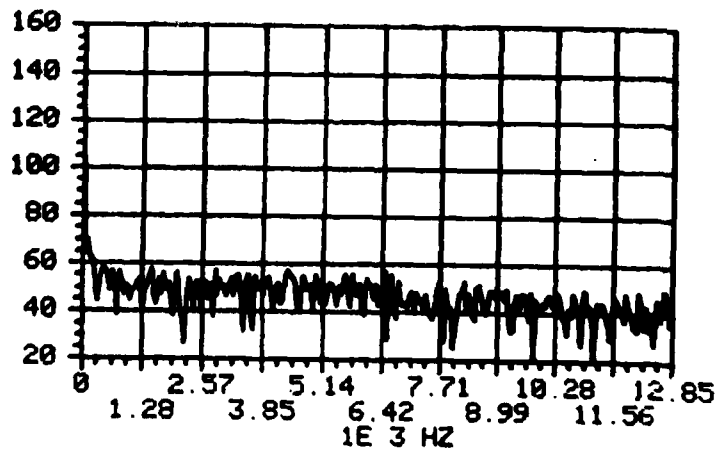
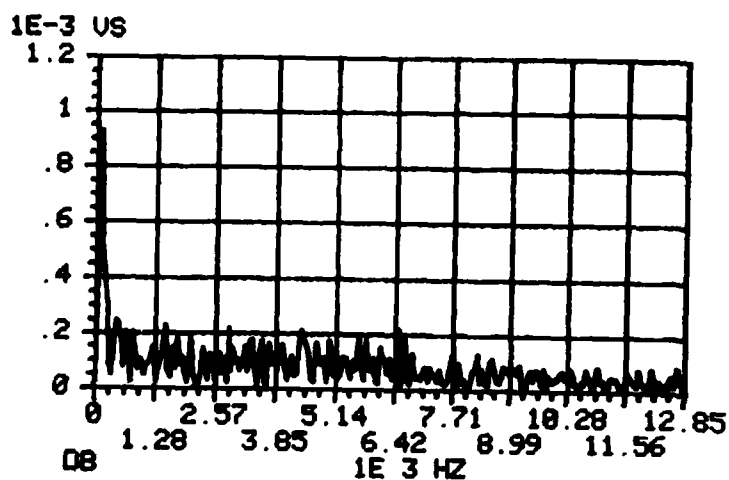
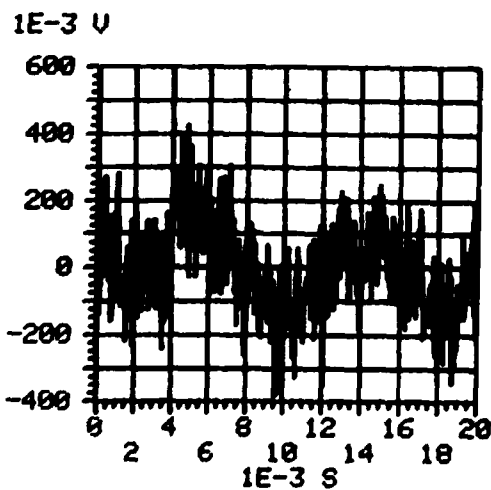
Noise Test No. 2
 Facility: AFWL Computer Ctr.

Location: NE Corner, 7 Feet
from Printer

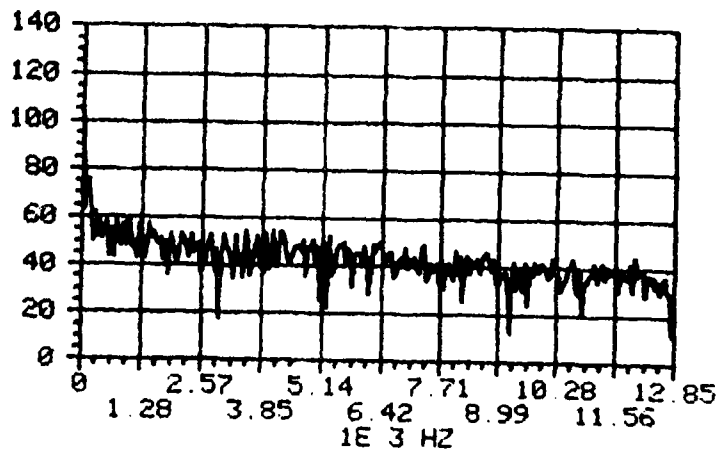
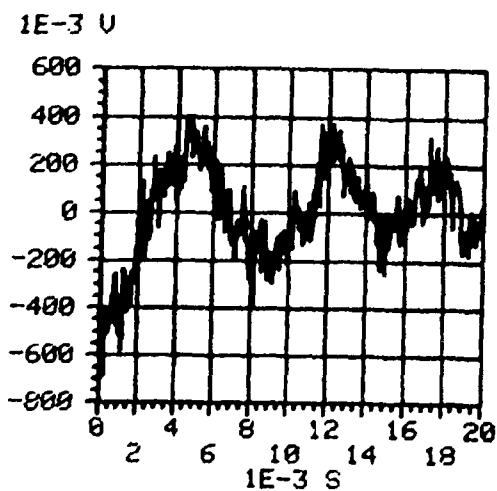
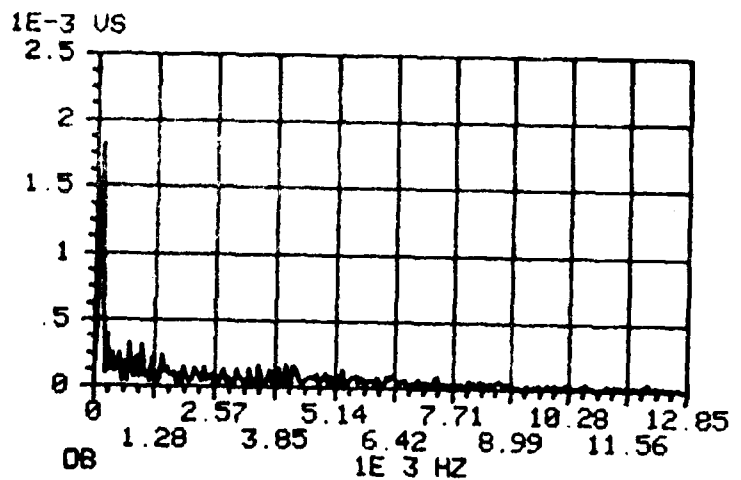
Meter Setting 70 dB
 Meter Reading 71 dB



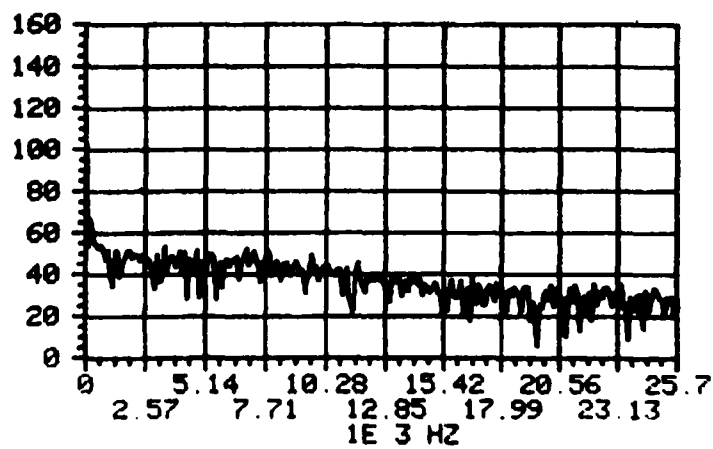
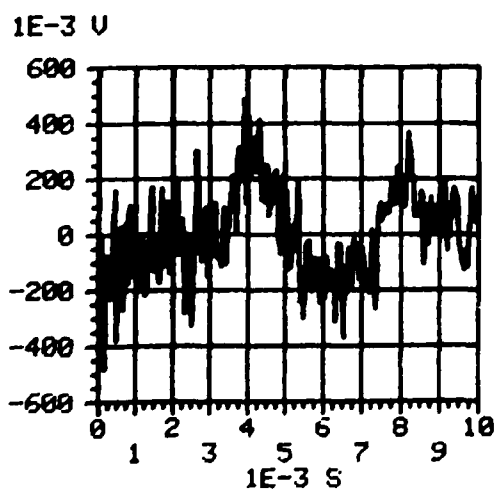
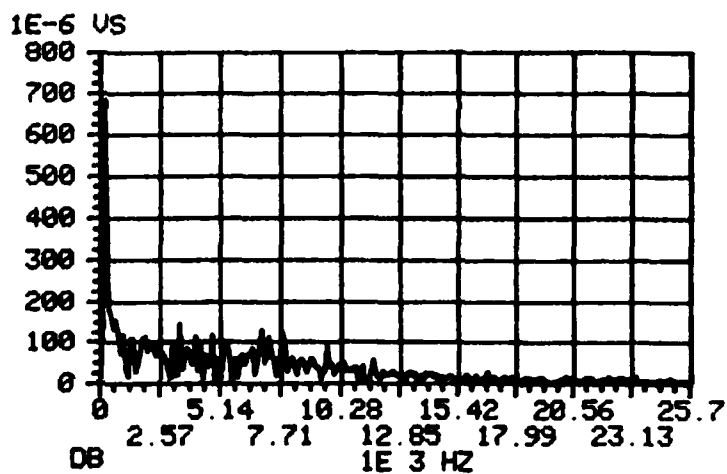
Noise Test No. 2
 Facility: AFWI Computer Ctr.
 Location: NE Corner, 7 Feet
from Printer
 Meter Setting 70 dB
 Meter Reading 71 dB



Noise Test No. 2
 Facility: AFWL Computer Ctr.
 Location: NE Corner, 7 Feet
 from Printer
 Meter Setting 70 dB
 Meter Reading 71 dB



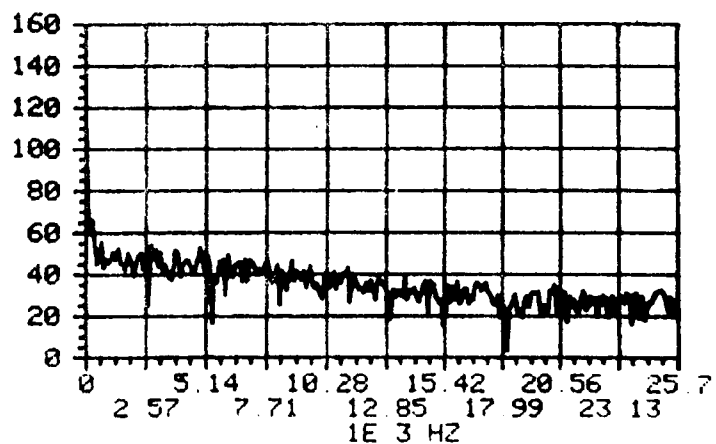
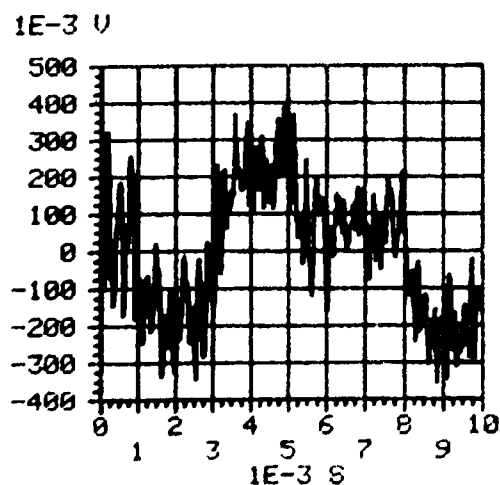
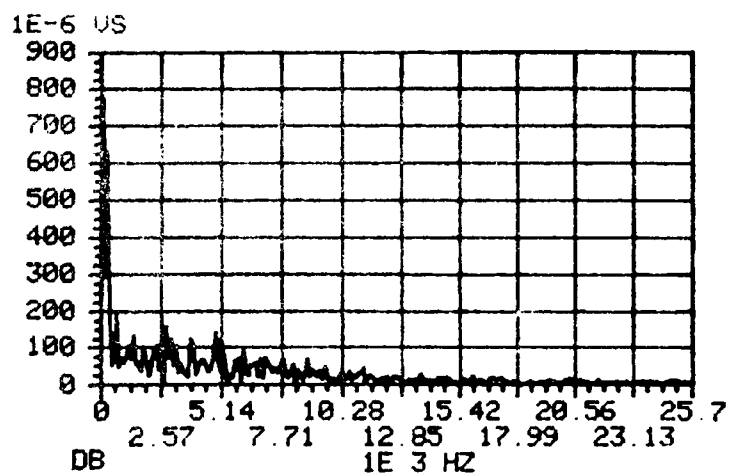
Noise Test No. 2
 Facility: AFW Computer Ctr.
 Location: NE Corner, 7 Feet
 from Printer
 Meter Setting 70 dB
 Meter Reading 71 dB



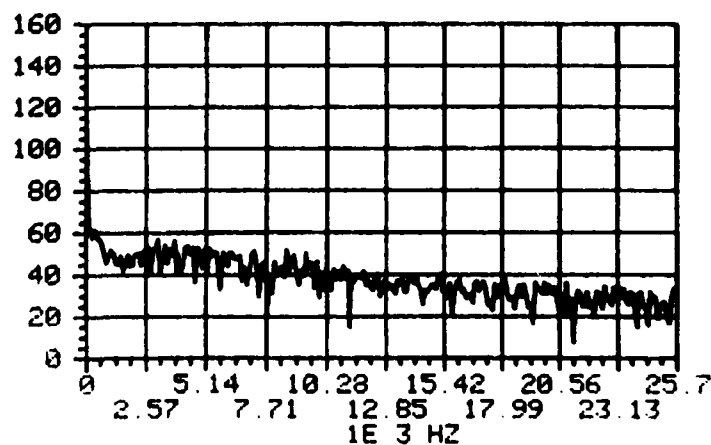
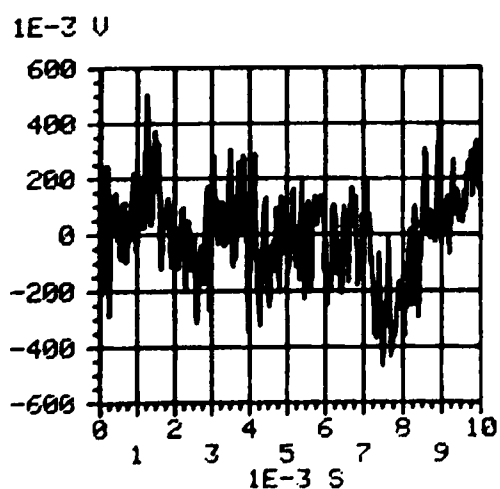
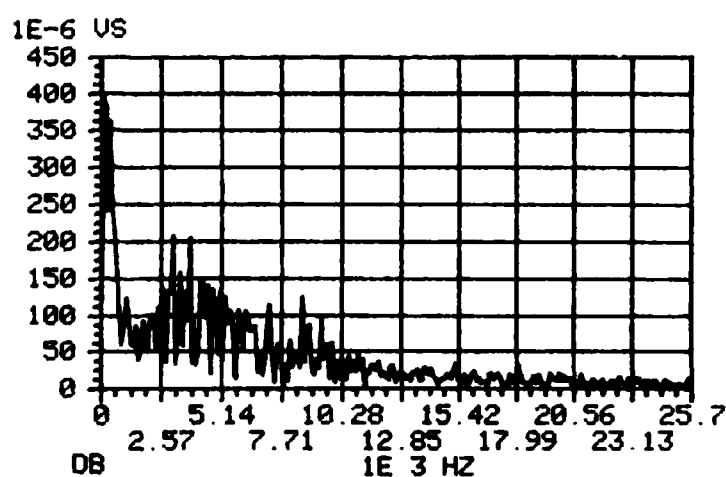
Noise Test No. 2
 Facility: AFWL Computer Ctr.

Location: NE Corner, 7 Feet
 from Printer

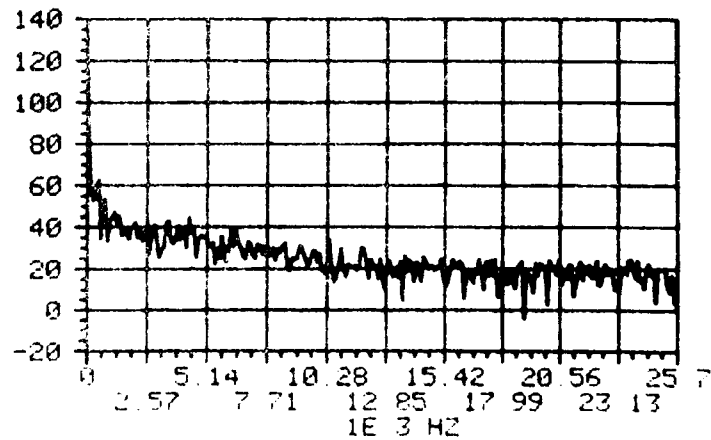
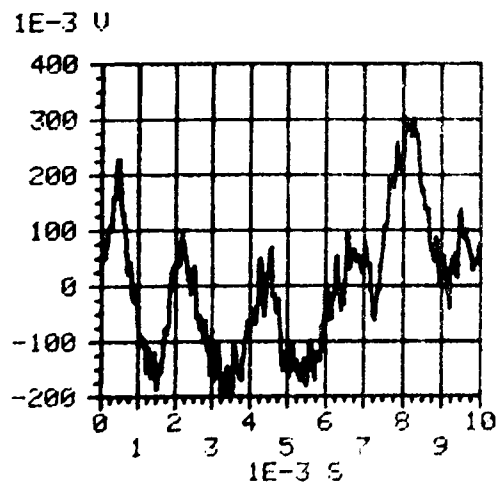
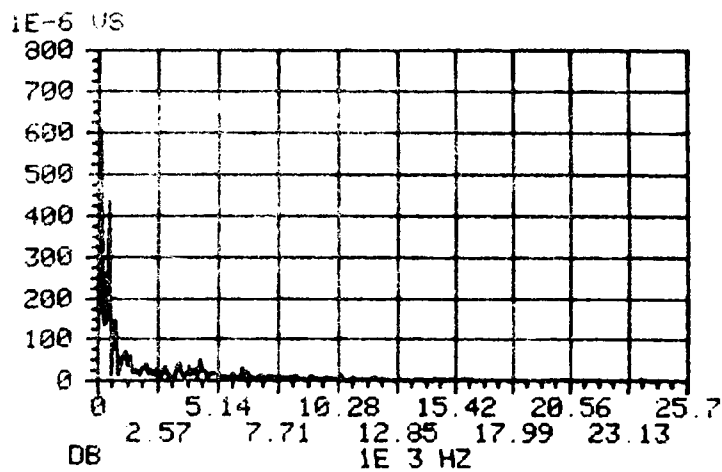
Meter Setting 70 dB
 Meter Reading 71 dB



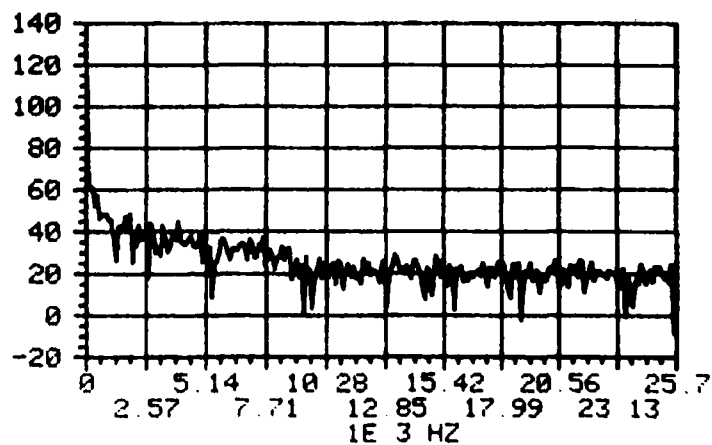
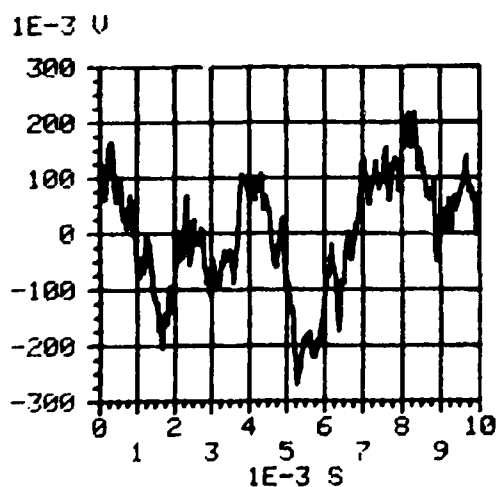
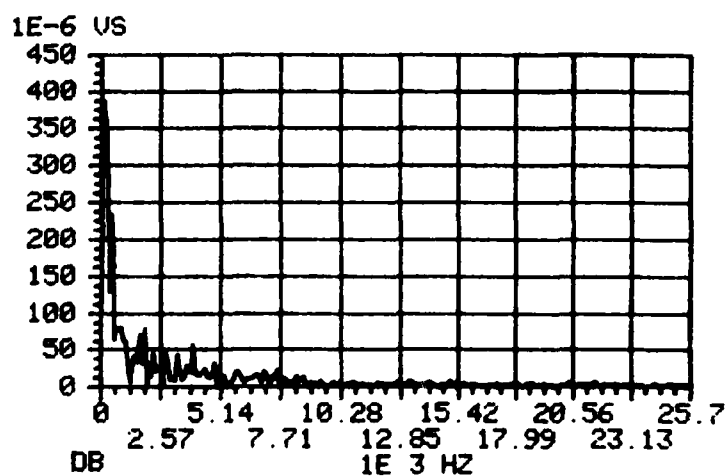
Noise Test No. 2
 Facility: AEWL Computer Ctr.
 Location: NE Corner, 7 Feet
 from Printer
 Meter Setting 70 dB
 Meter Reading 71 dB



Noise Test No. 3
 Facility: AFWL Computer Ctr.
 Location: SW Corner
 Meter Setting 70 dB
 Meter Reading 69 dB

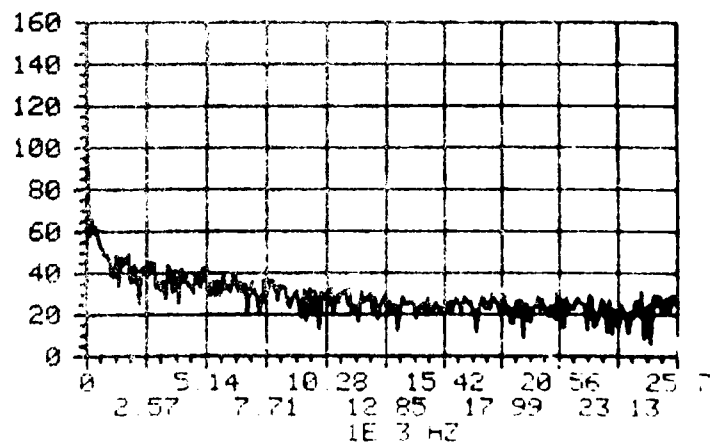
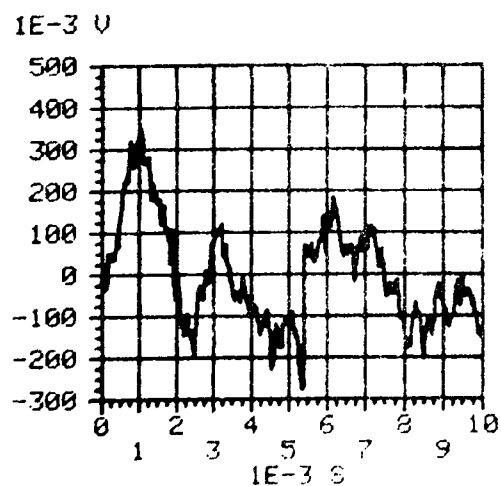
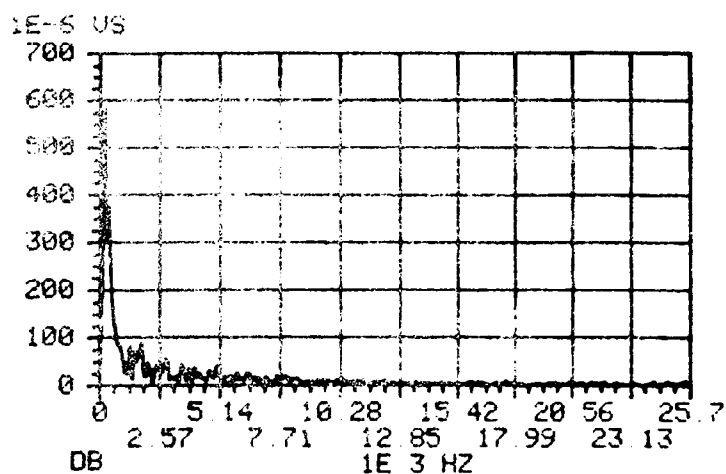


Noise Test No. 3
 Facility: AFWL Computer Ctr.
 Location: SW Corner
 Meter Setting 70 dB
 Meter Reading 69 dB



Noise Test No. 12
 Facility: AFWL Computer ctr.
 Location: SW Corner

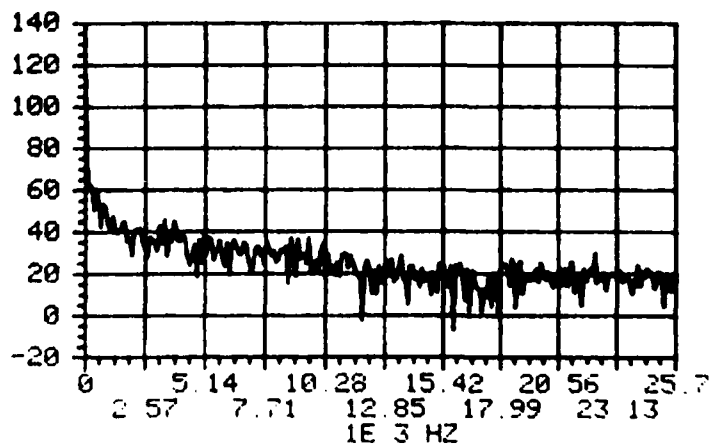
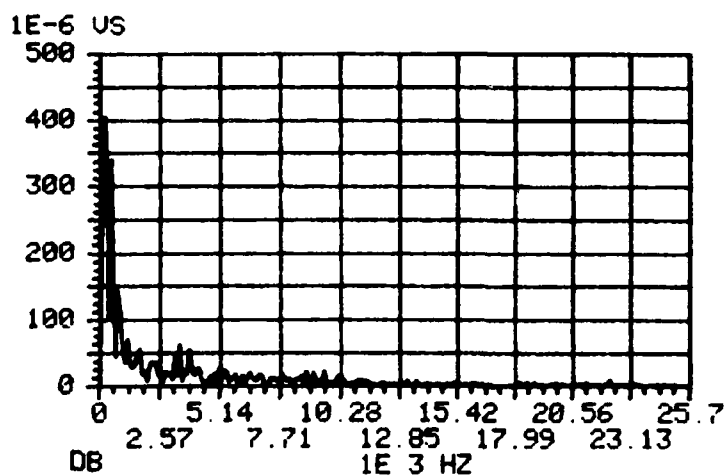
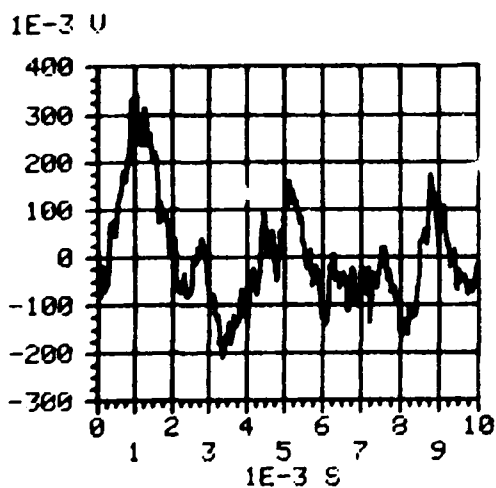
Meter Setting 70 dB
 Meter Reading 69 dB



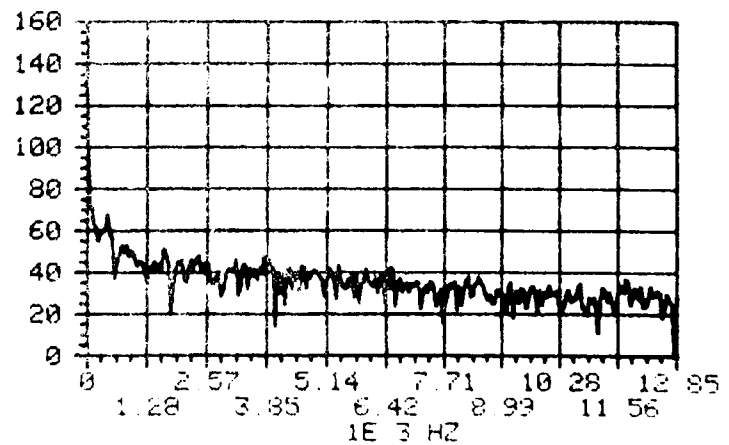
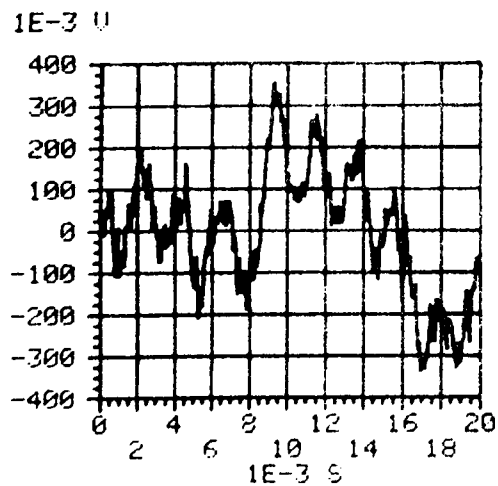
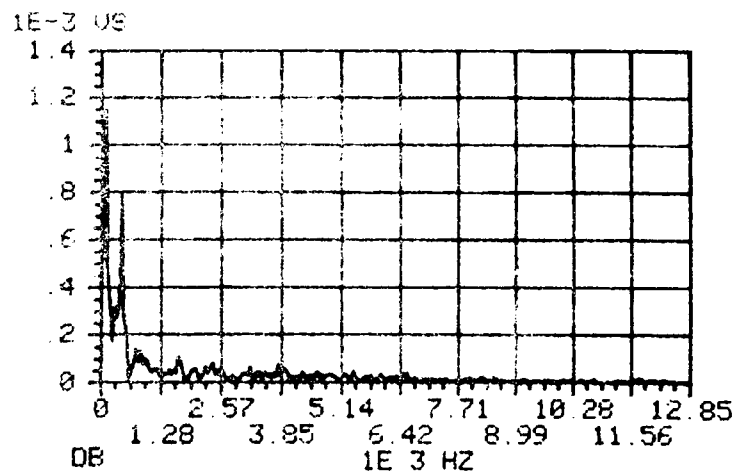
Noise Test No. 3
 Facility: AFWL Computer Ctr.

Location: SW Corner

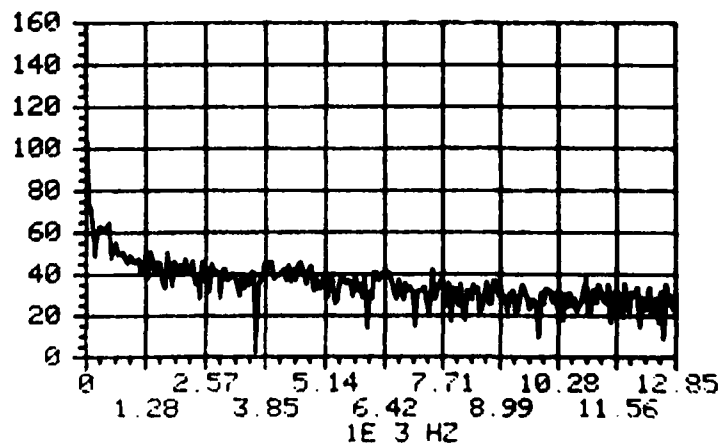
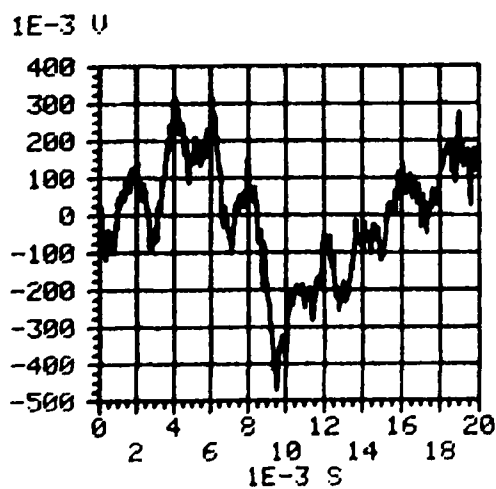
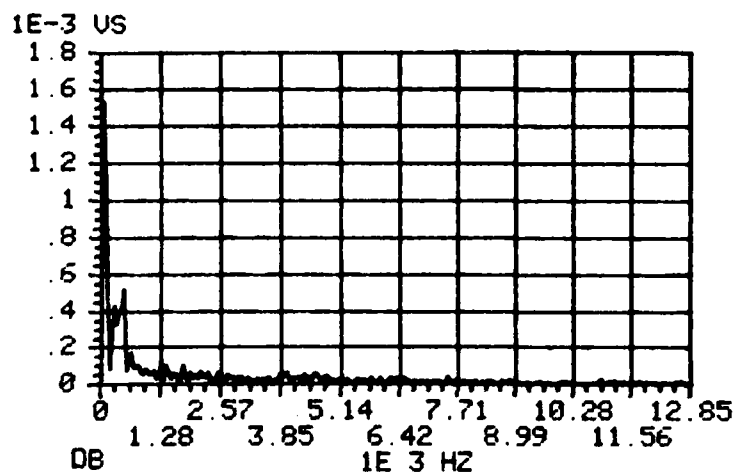
Meter Setting 70 dB
 Meter Reading 69 dB



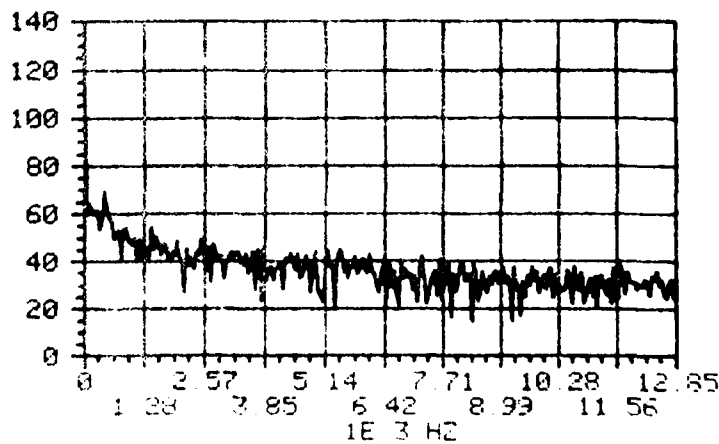
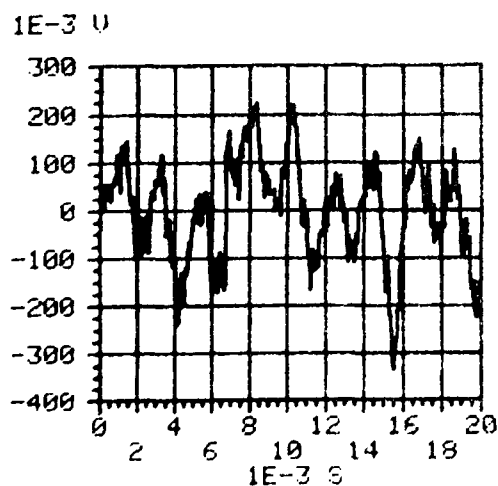
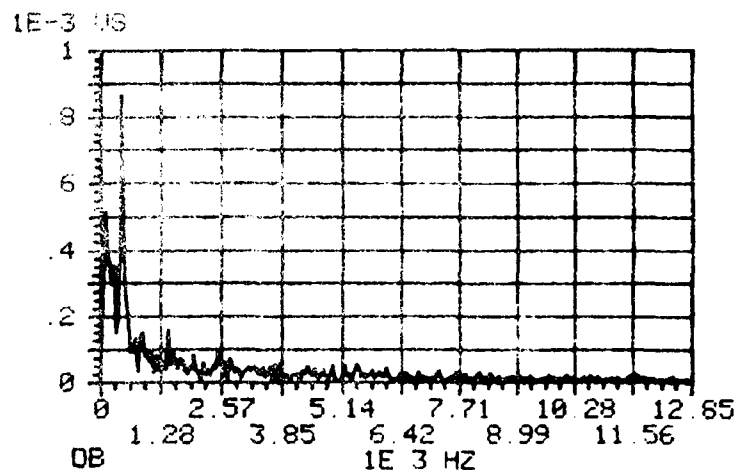
Noise Test No. 3
 Facility: AFWL Computer Ctr.
 Location: SW Corner
 Meter Setting 70 dB
 Meter Reading 69 dB



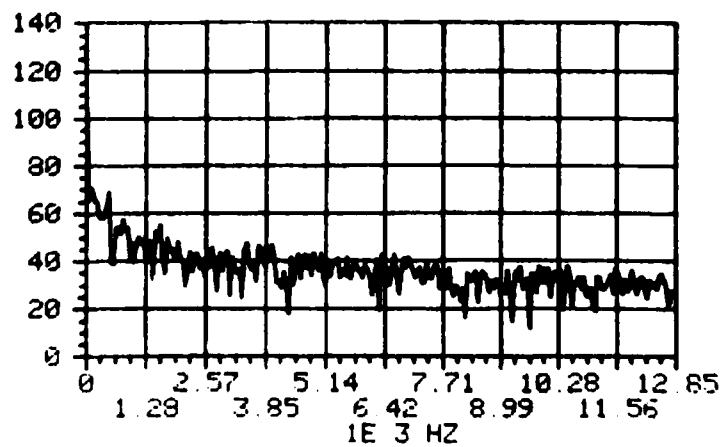
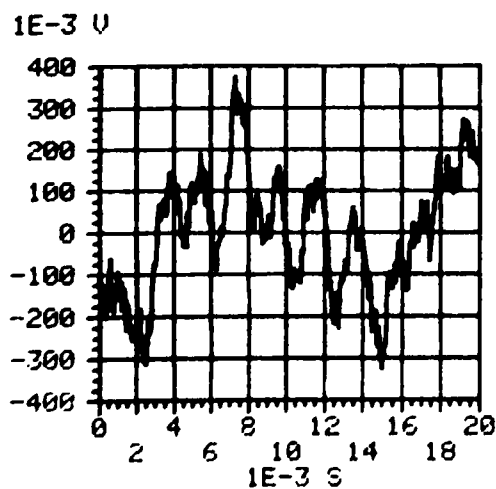
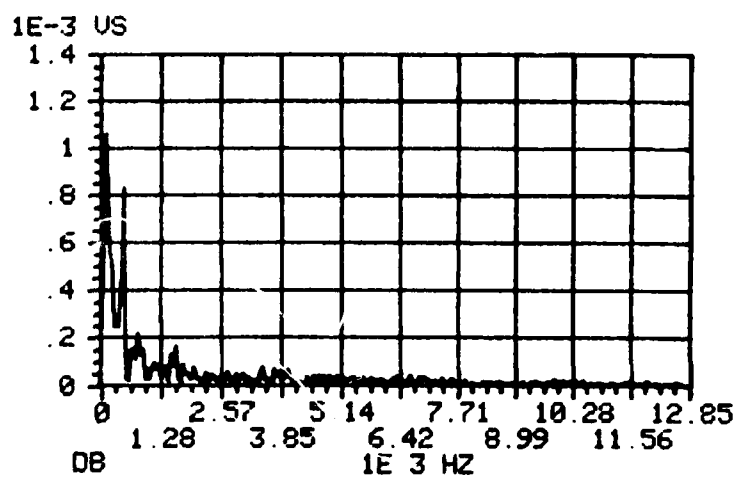
Noise Test No. 3
 Facility: AFWL Computer Ctr.
 Location: SW Corner
 Meter Setting 70 dB
 Meter Reading 69 dB



Noise Test No. 3
 Facility: AFWL Computer Ctr.
 Location: SW Corner
 Meter Setting 70 dB
 Meter Reading 69 dB



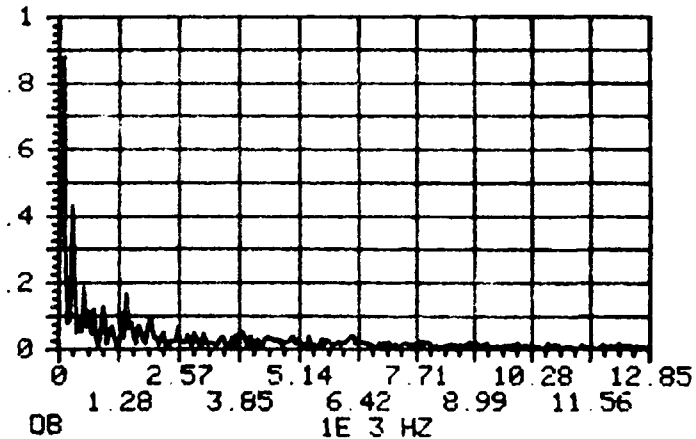
Noise Test No. 3
 Facility: AFWL Computer Ctr.
 Location: SW Corner
 Meter Setting 70 dB
 Meter Reading 69 dB



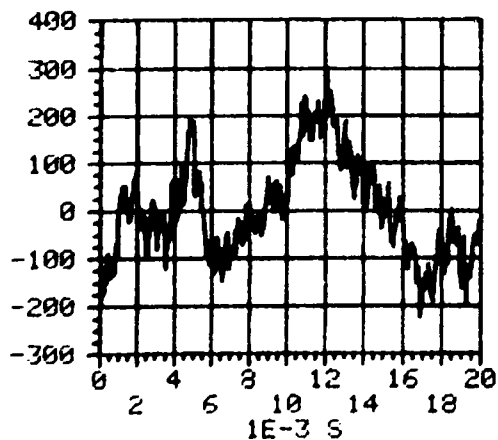
Noise Test No. 4
 Facility: AFWL Computer Ctr.
 Location: SE Corner

Meter Setting 70 dB
 Meter Reading 71 dB

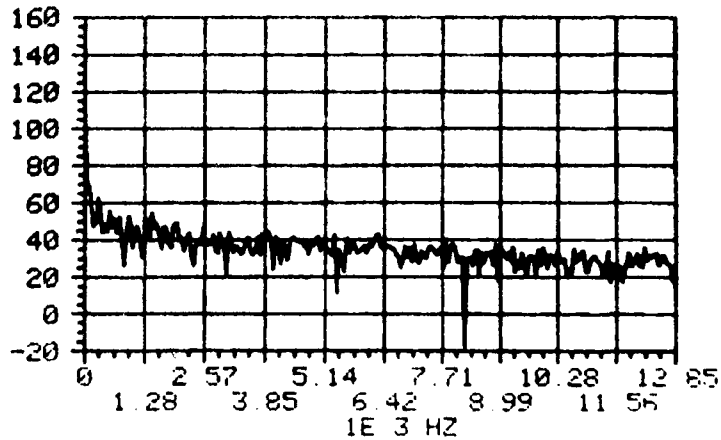
1E-3 US



1E-3 U



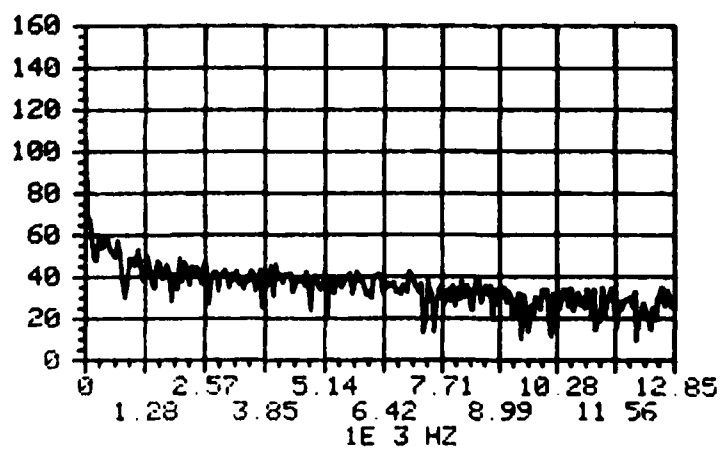
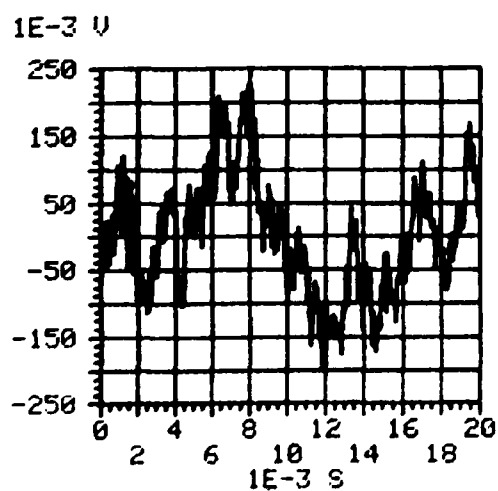
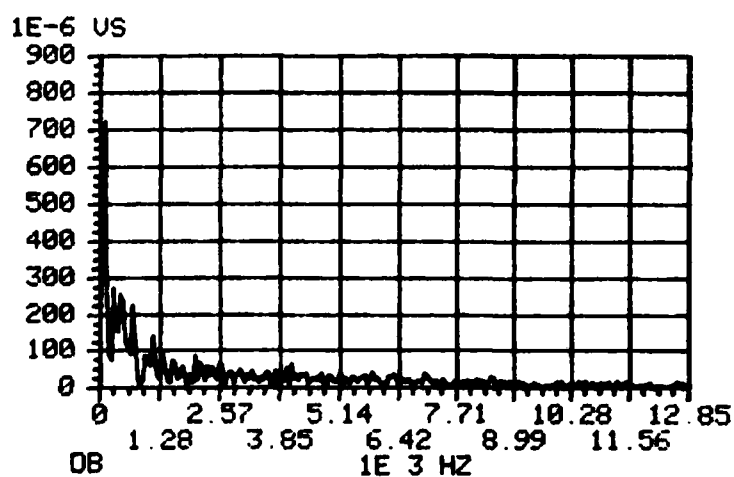
DB



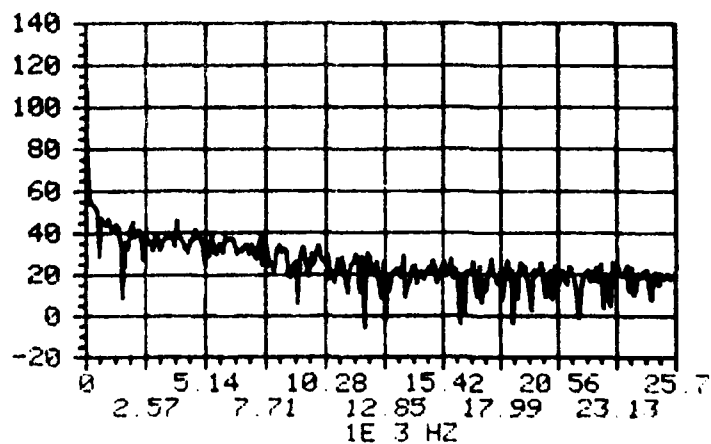
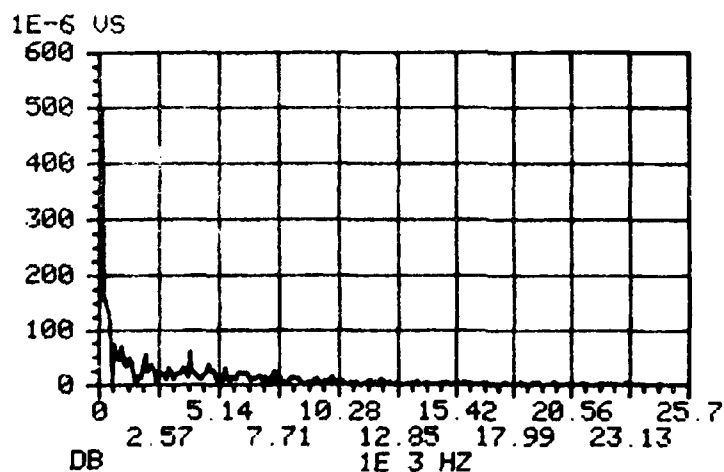
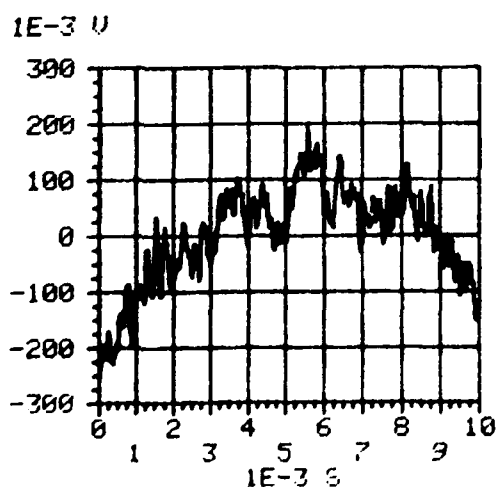
Noise Test No. 4
Facility: AFWL Computer Ctr.

Location: SE Corner

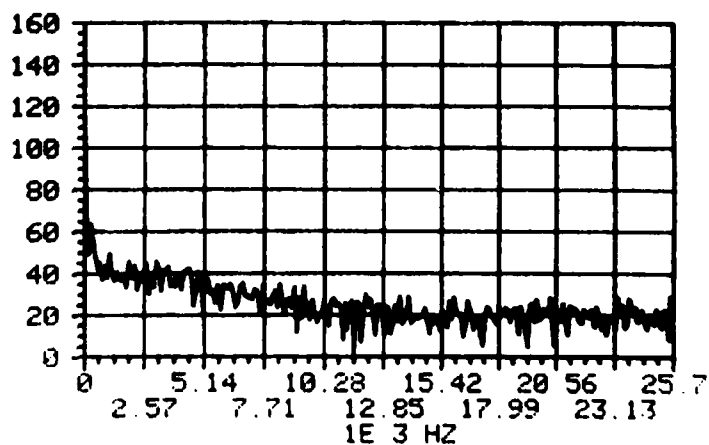
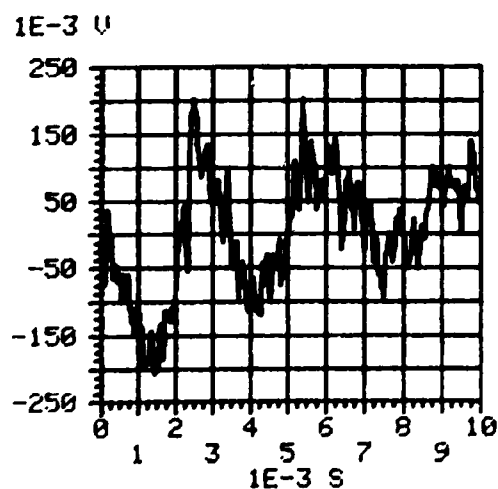
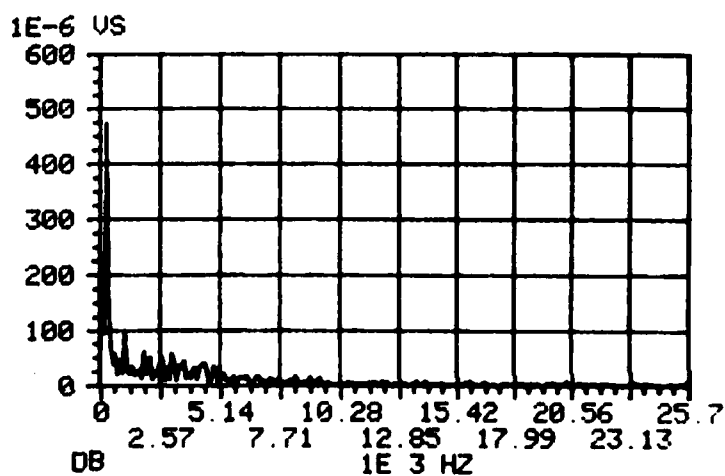
Meter Setting 70 dB
Meter Reading 71 dB



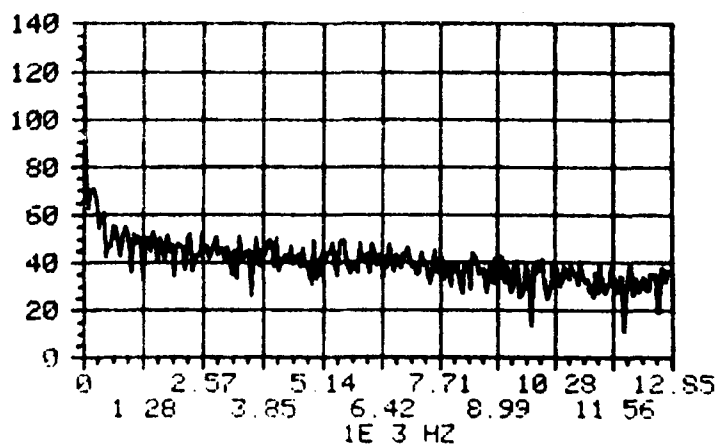
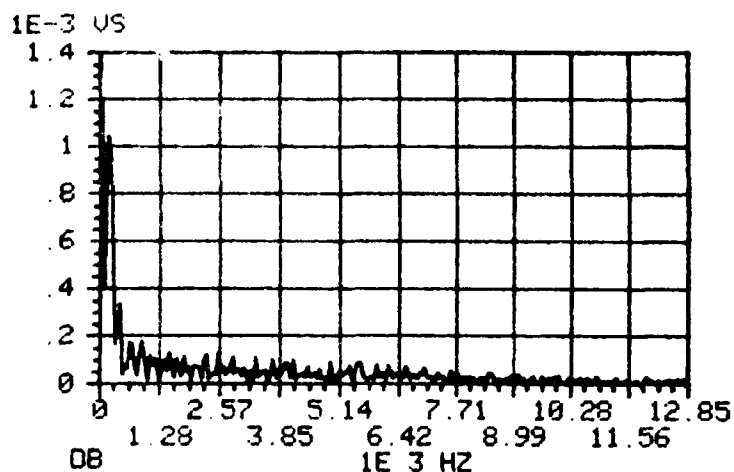
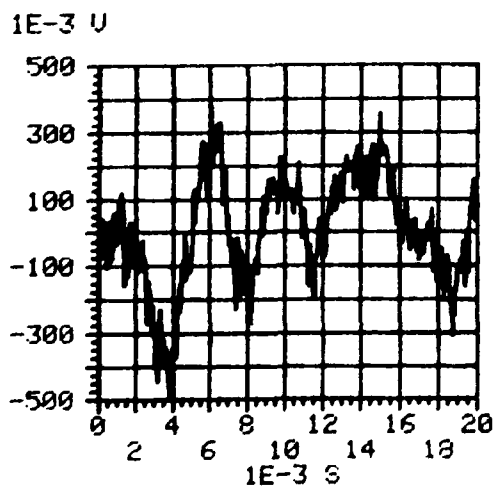
Noise Test No. 4
 Facility: AFWL Computer Ctr.
 Location: SE Corner
 Meter Setting 70 dB
 Meter Reading 71 dB



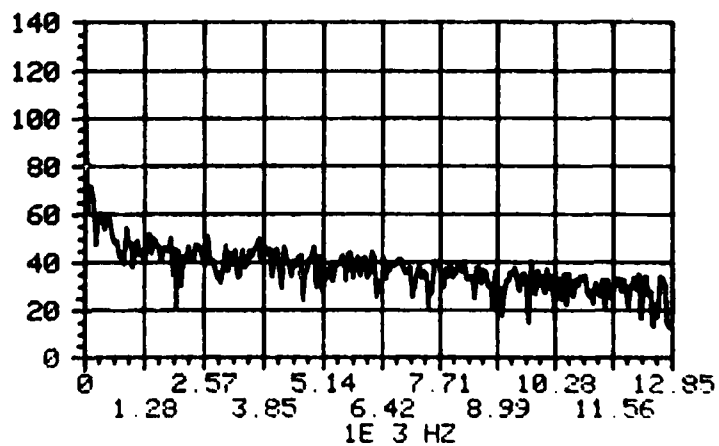
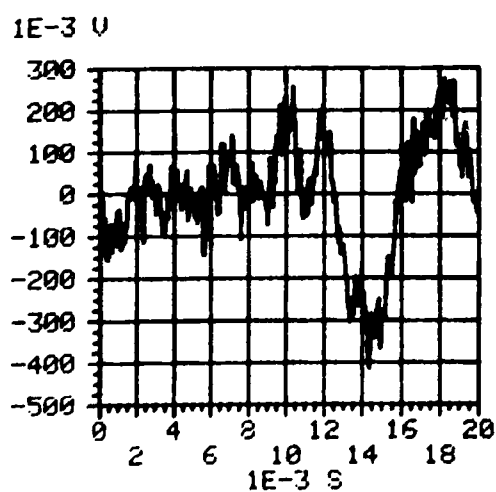
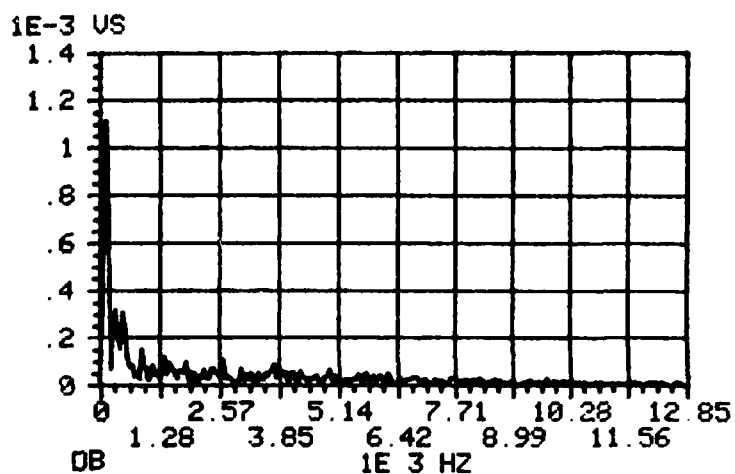
Noise Test No. 4
 Facility: AFWL Computer Ctr.
 Location: SE Corner
 Meter Setting 70 dB
 Meter Reading 71 dB



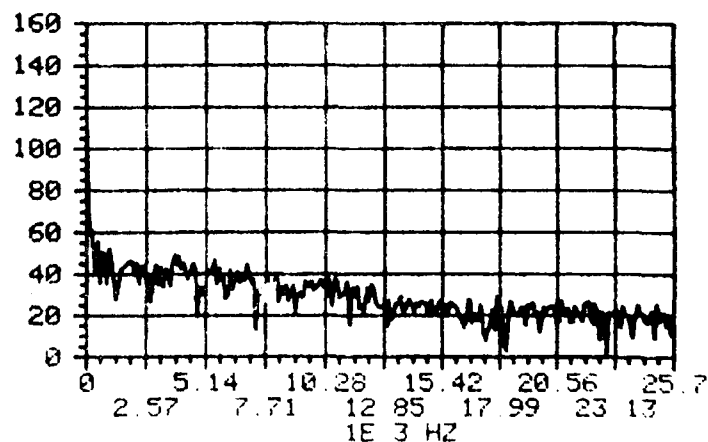
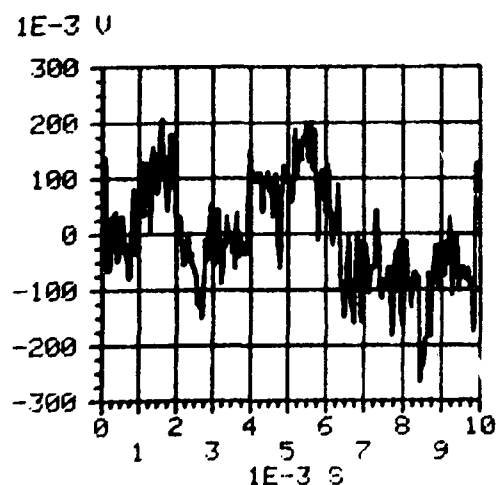
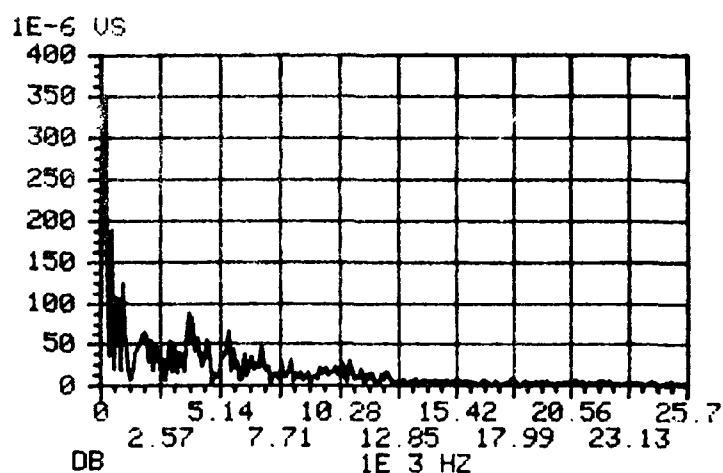
Noise Test No. 5
 Facility: AFWI Computer Ctr.
 Location: Center of Room
 Meter Setting 70 dB
 Meter Reading 71 dB



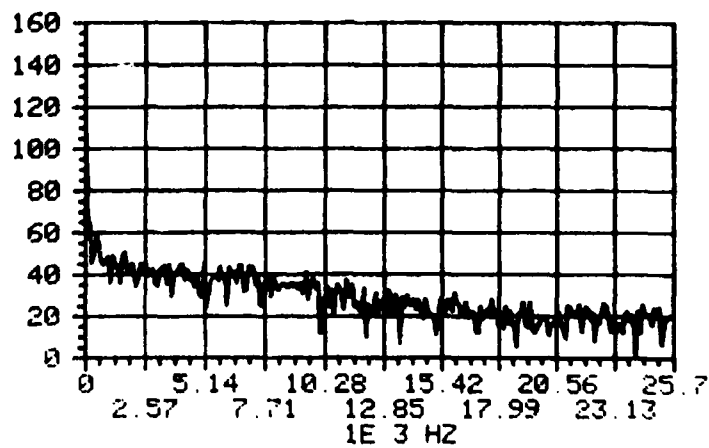
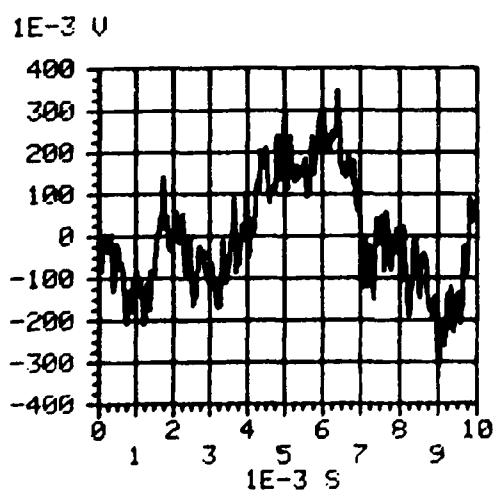
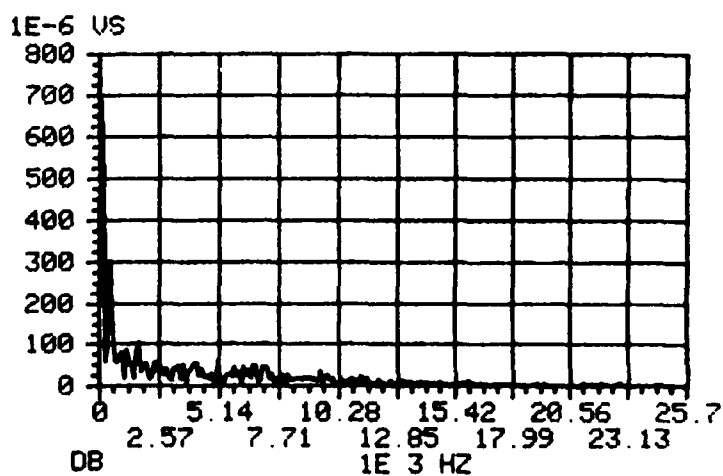
Noise Test No. 5
 Facility: AFW Computer Ctr.
 Location: Center of Room
 Meter Setting 70 dB
 Meter Reading 71 dB



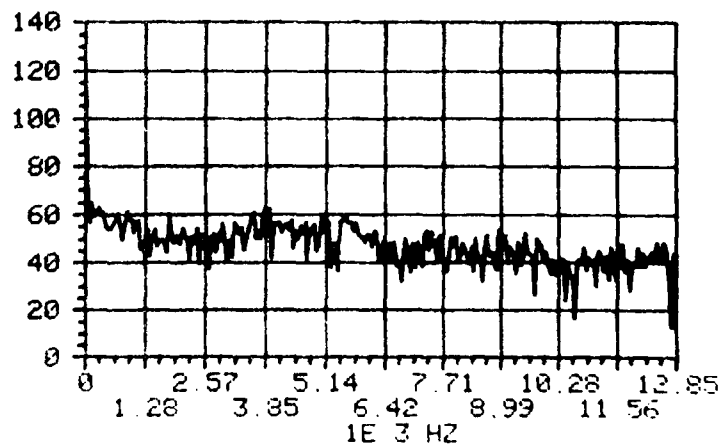
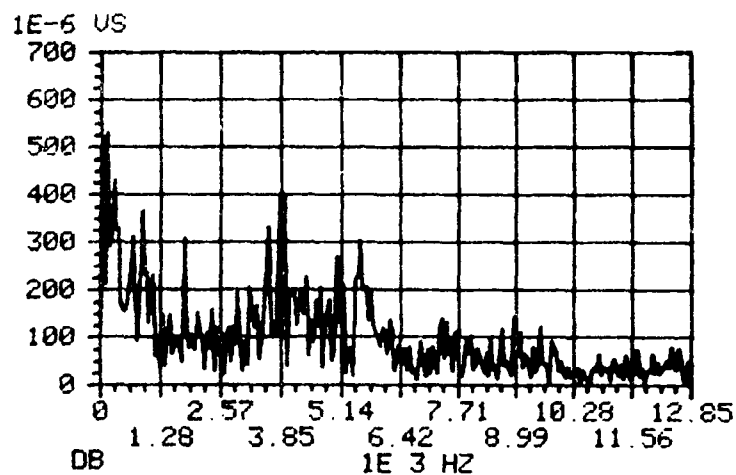
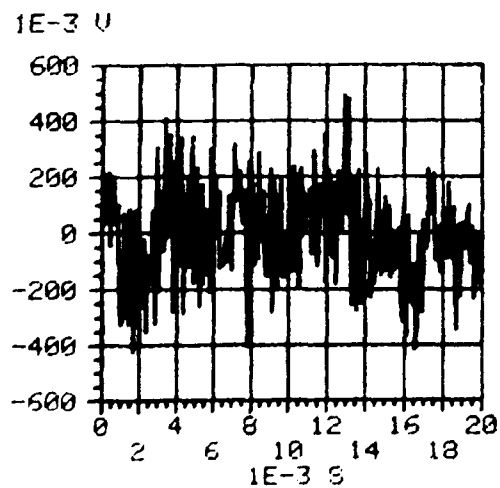
Noise Test No. 5
 Facility: AFW Computer Ctr.
 Location: Center of Room
 Meter Setting 70 dB
 Meter Reading 71 dB



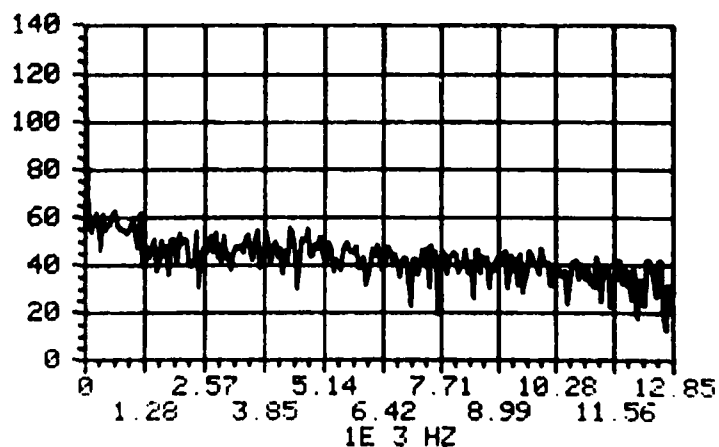
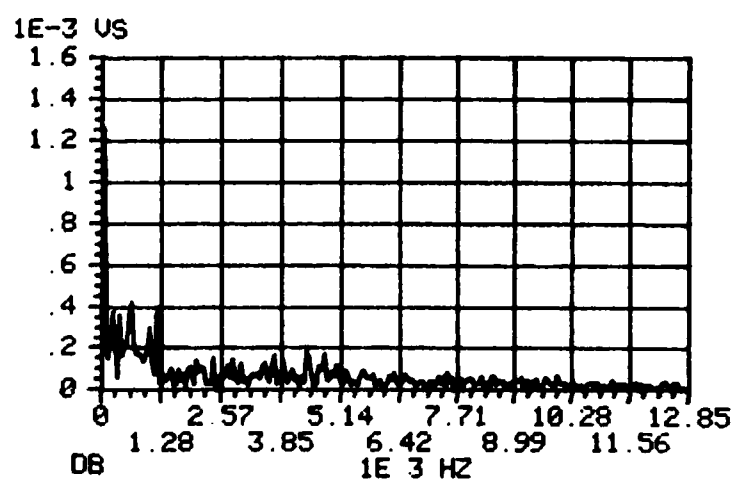
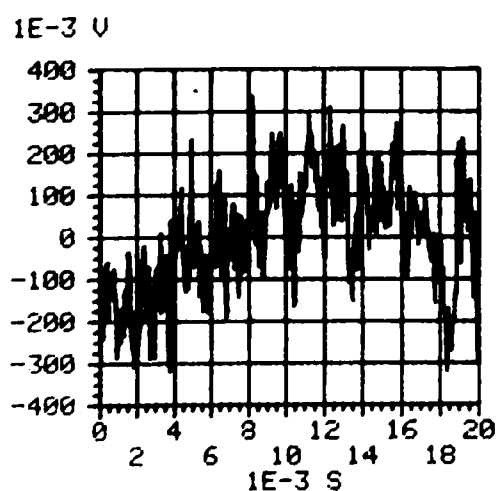
Noise Test No. 5
 Facility: AFWL Computer Ctr.
 Location: Center of Room
 Meter Setting 70 dB
 Meter Reading 71 dB



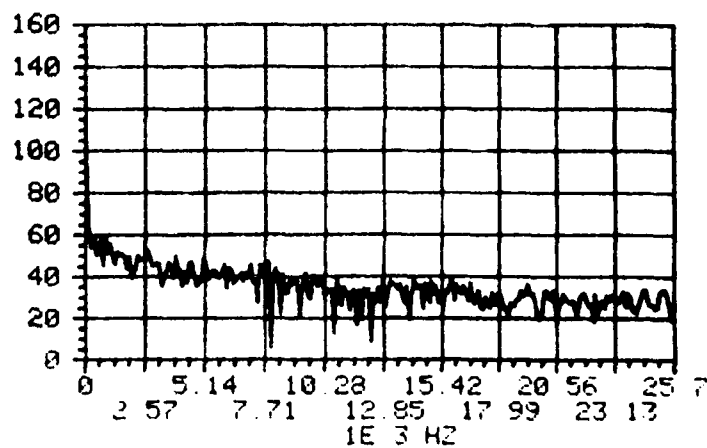
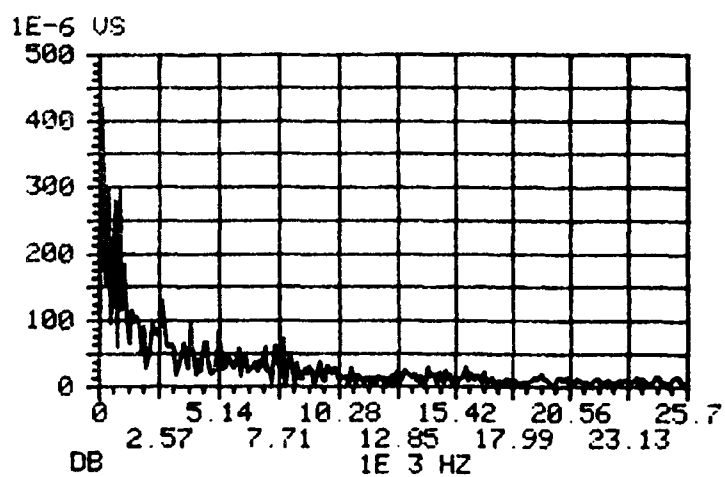
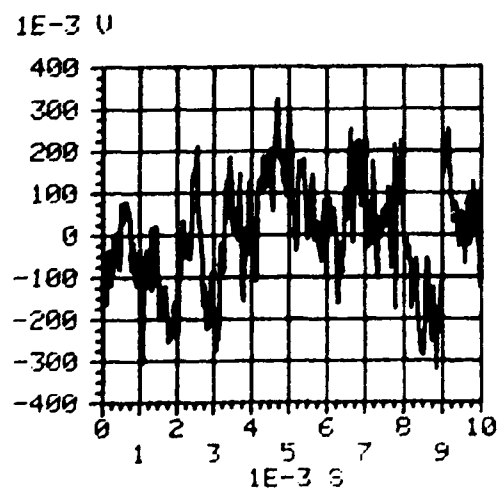
Noise Test No. 6
 Facility: AFWL Computer Ctr.
 Location: 6 Feet Card Reader
 Meter Setting 80 dB
 Meter Reading 72 dB



Noise Test No. 6
 Facility: AFWL Computer Ctr.
 Location: 6 Feet Card Reader
 Meter Setting 80 dB
 Meter Reading 72 dB



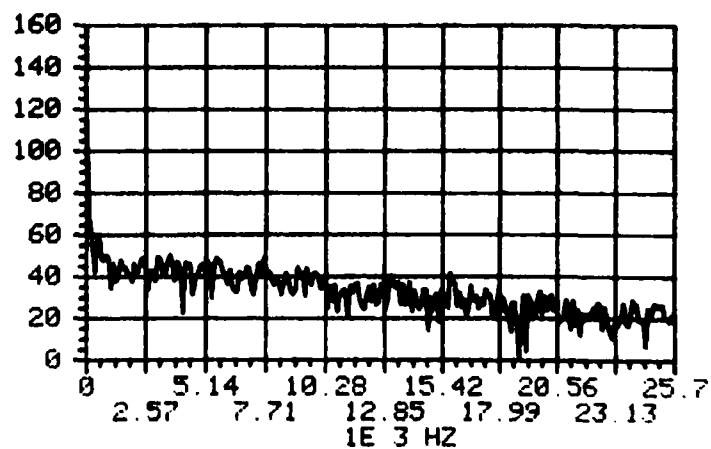
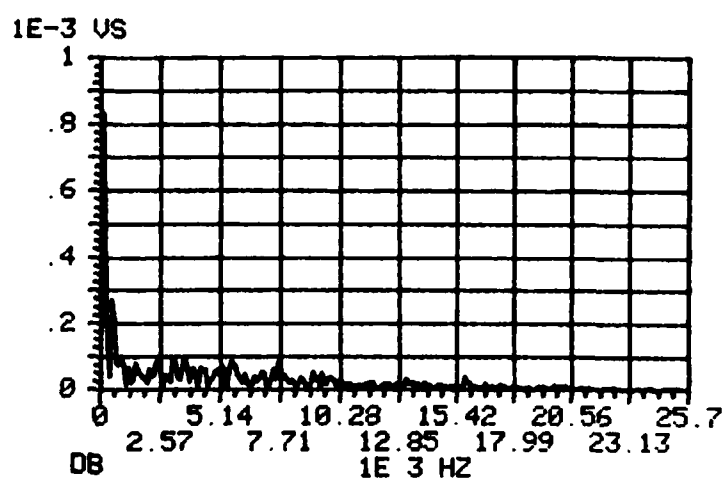
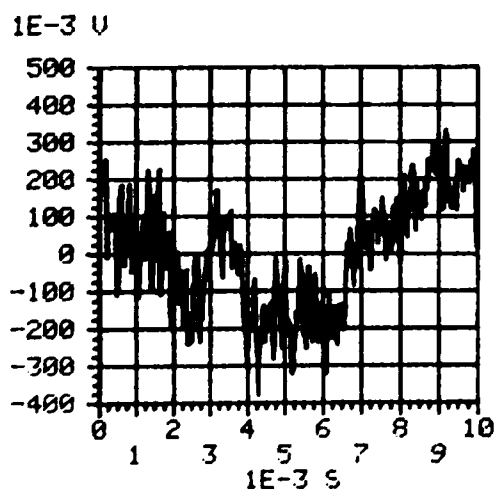
Noise Test No. 6
 Facility: AFWL Computer Ctr.
 Location: 6 Feet Card Reader
 Meter Setting 80 dB
 Meter Reading 72 dB



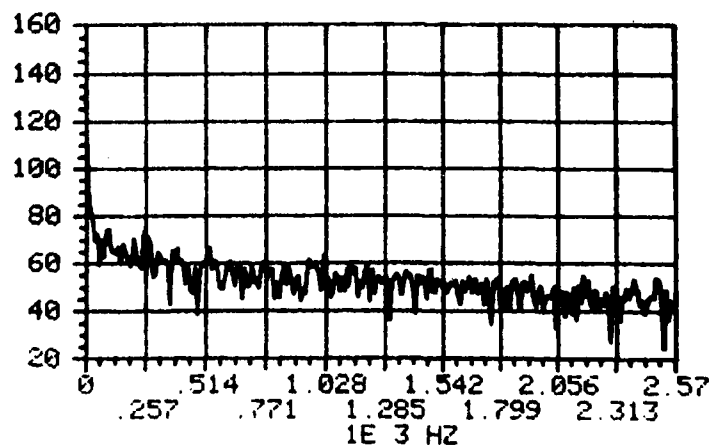
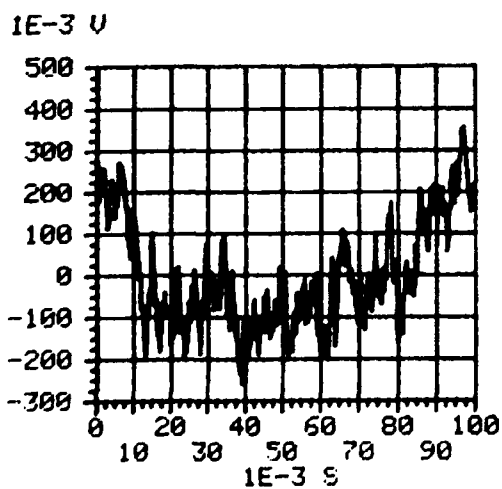
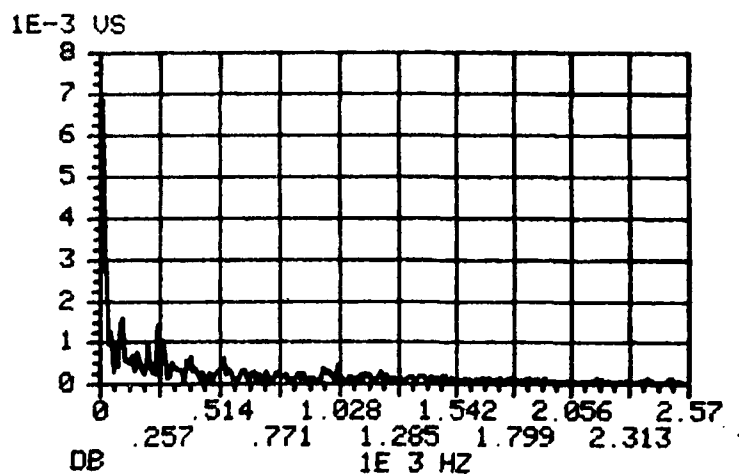
Noise Test No. 6
Facility: AFWL Computer Ctr.

Location: 6 Feet Card Reader

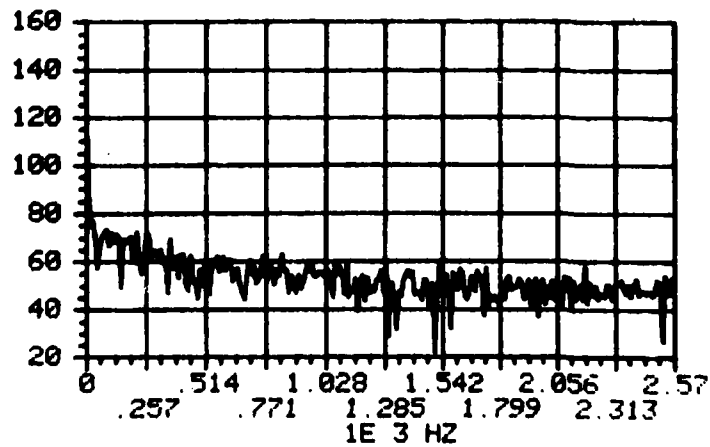
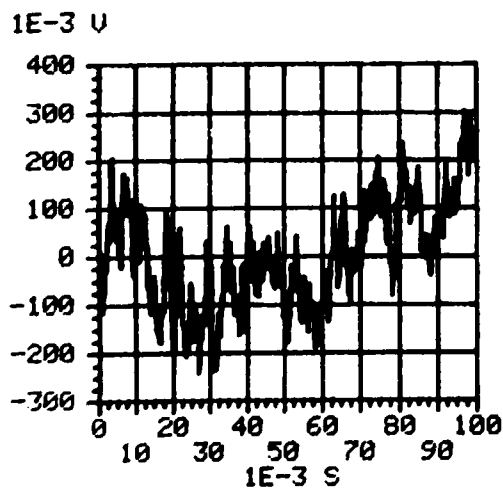
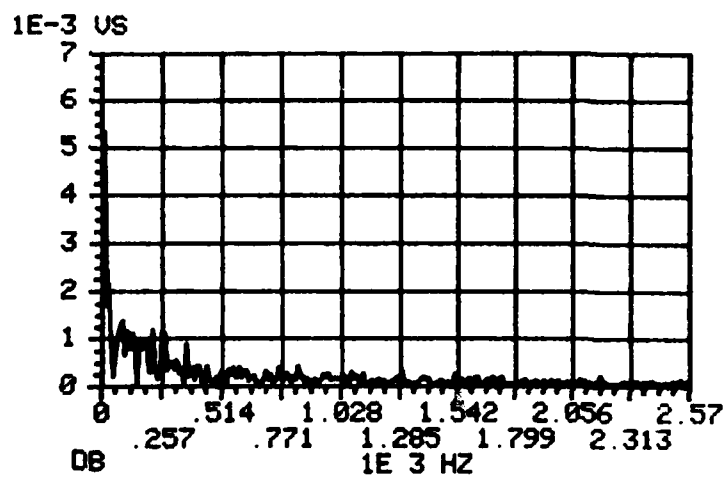
Meter Setting 80 dB
Meter Reading 72 dB



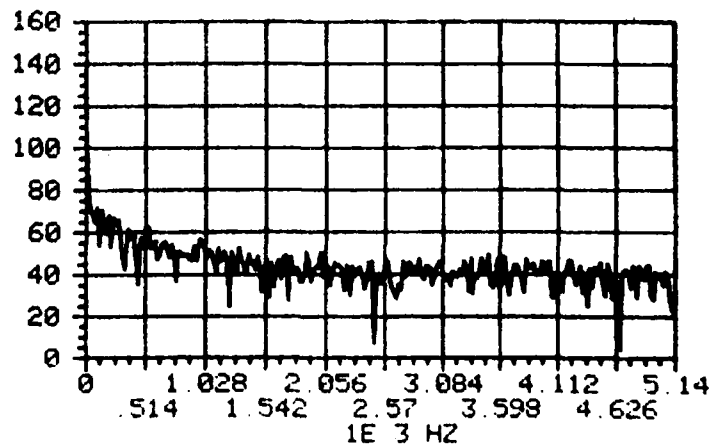
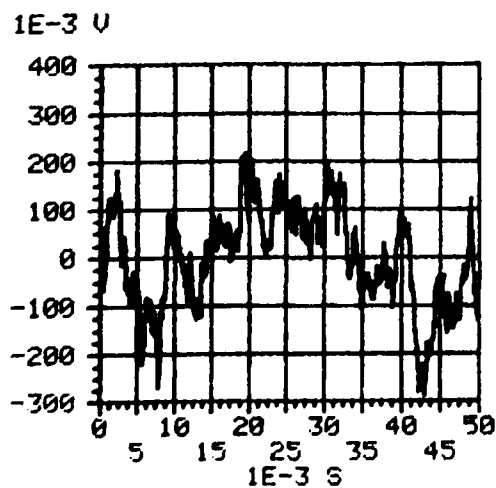
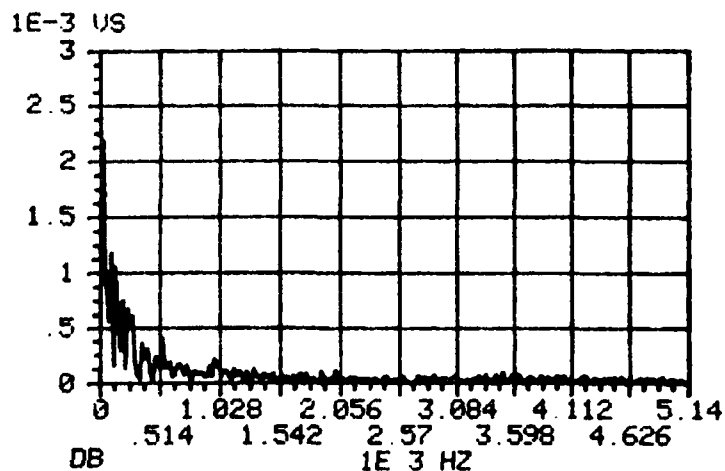
Noise Test No. 7
 Facility: ADDE Computer Room
 Location: SE Corner
 Meter Setting 70 dB
 Meter Reading 69 dB



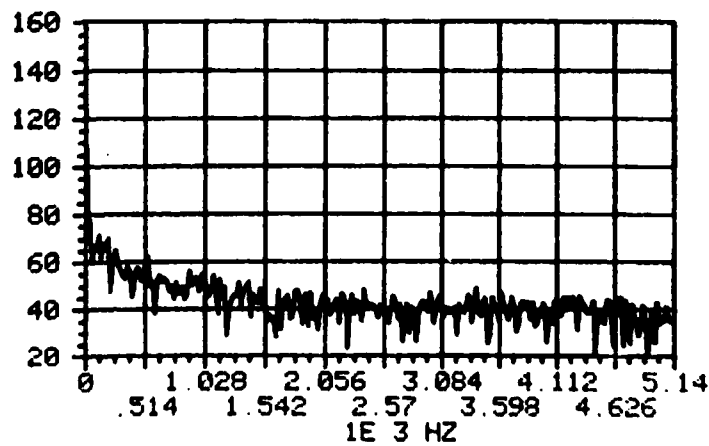
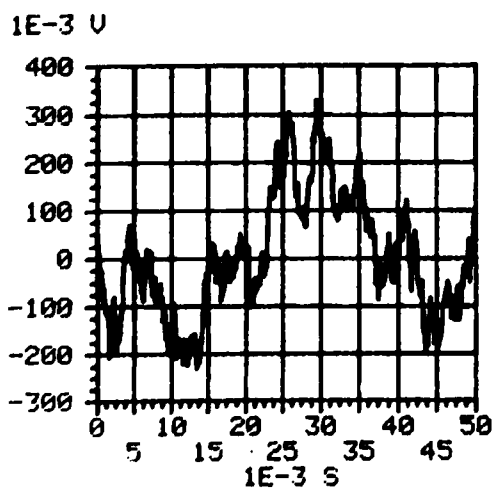
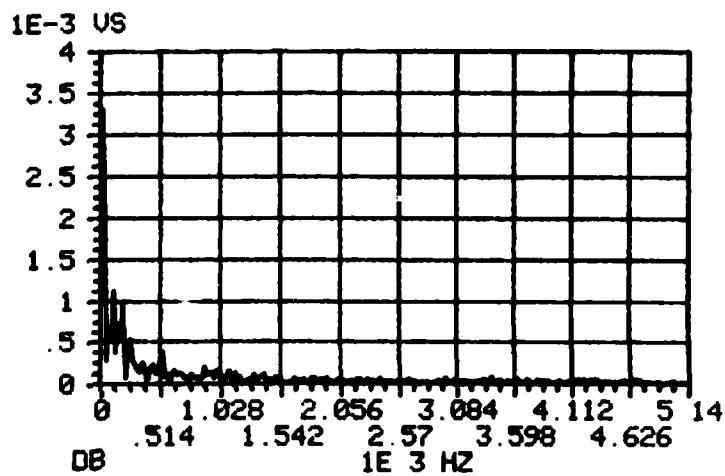
Noise Test No. 7
 Facility: ADDE Computer Room
 Location: SE Corner
 Meter Setting 70 dB
 Meter Reading 69 dB



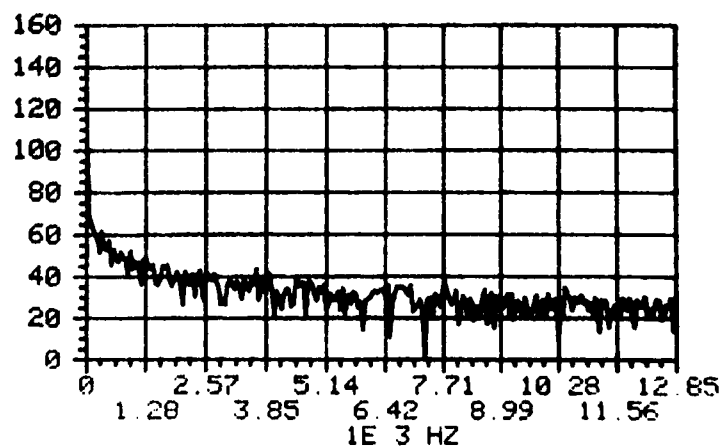
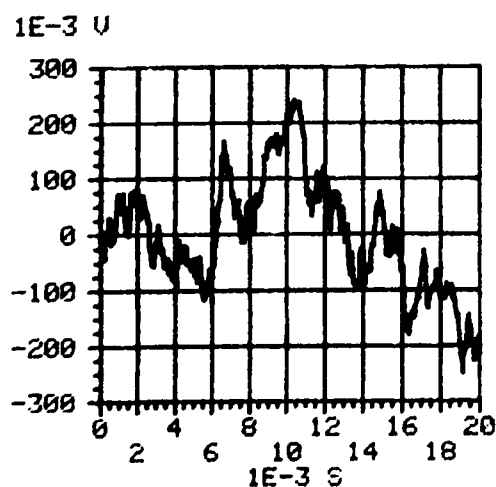
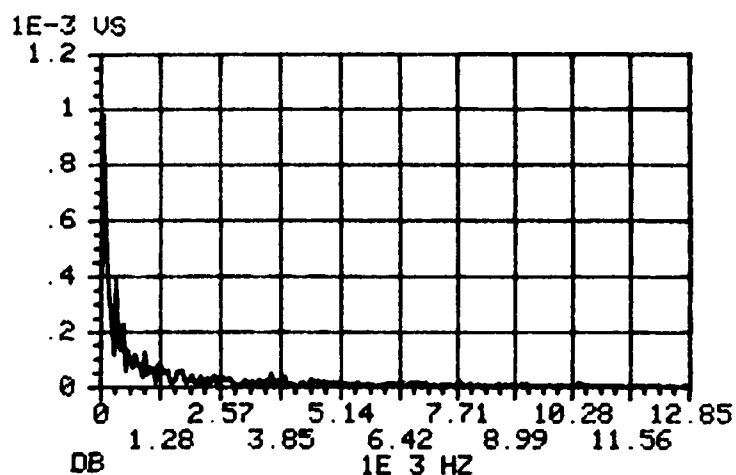
Noise Test No. 7
 Facility: ADDF Computer Room
 Location: SE Corner
 Meter Setting 70 dB
 Meter Reading 69 dB



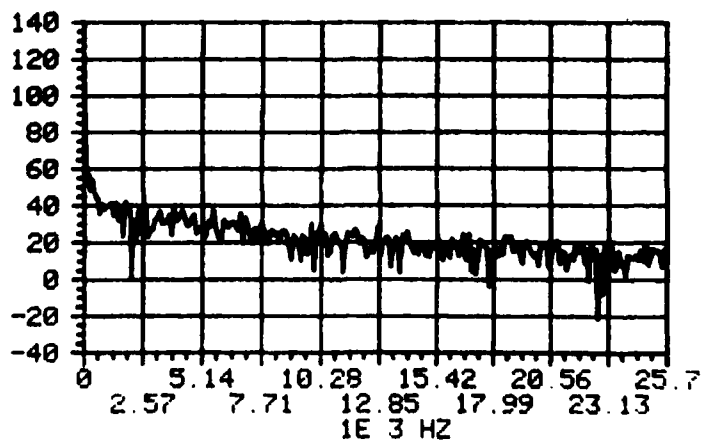
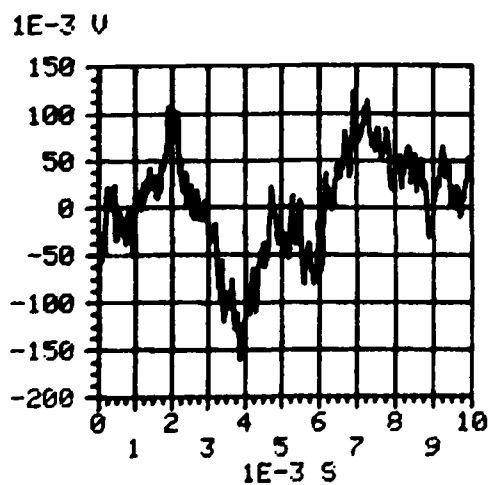
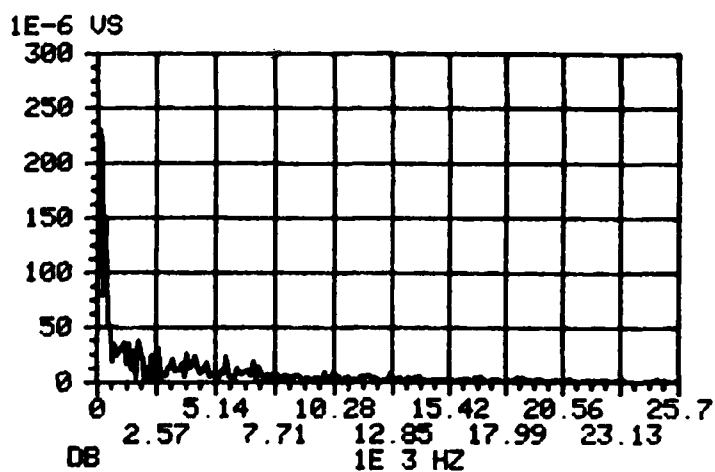
Noise Test No. 7
 Facility: ADDE Computer Room
 Location: SE Corner
 Meter Setting 70 dB
 Meter Reading 69 dB



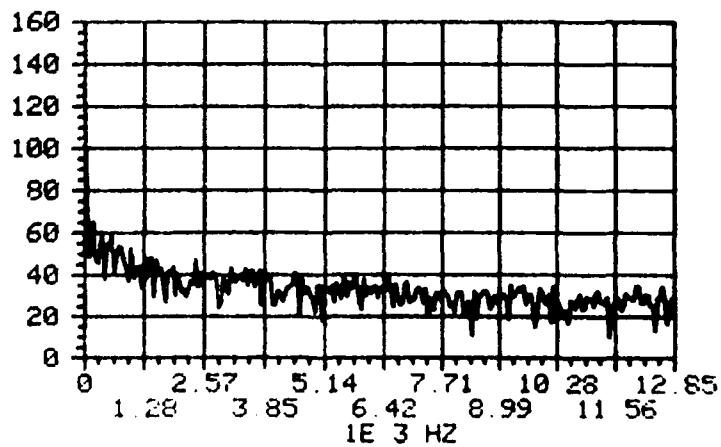
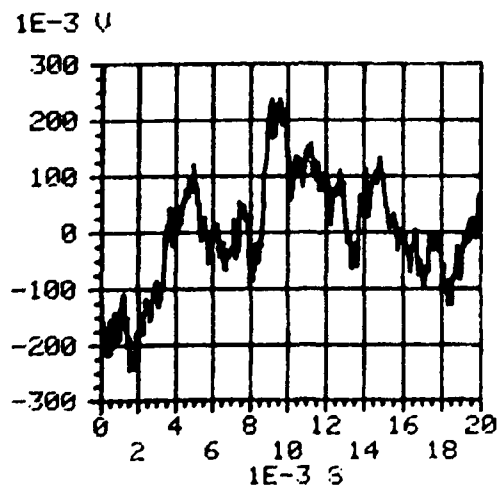
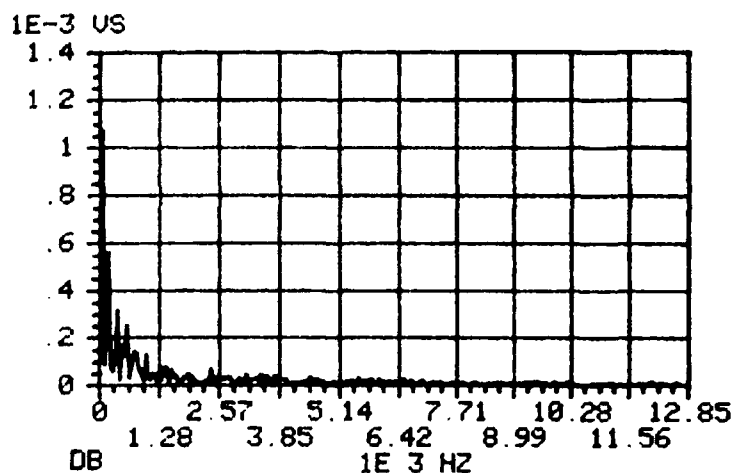
Noise Test No. 7
 Facility: ADDE Computer Room
 Location: SE Corner
 Meter Setting 70 dB
 Meter Reading 69 dB



Noise Test No. 7
 Facility: ADDE Computer Room
 Location: SE Corner
 Meter Setting 70 dB
 Meter Reading 69 dB



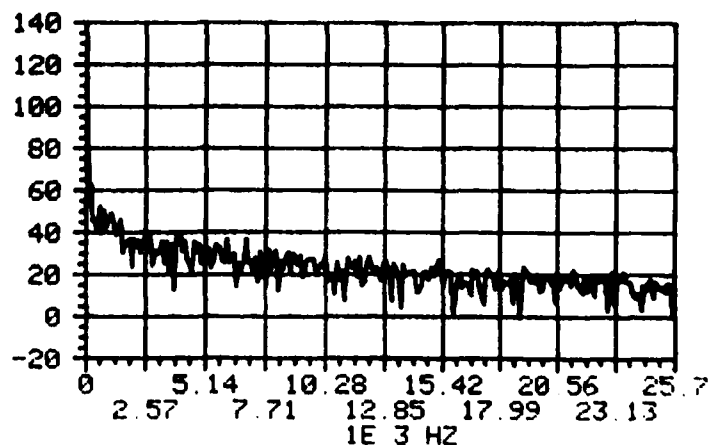
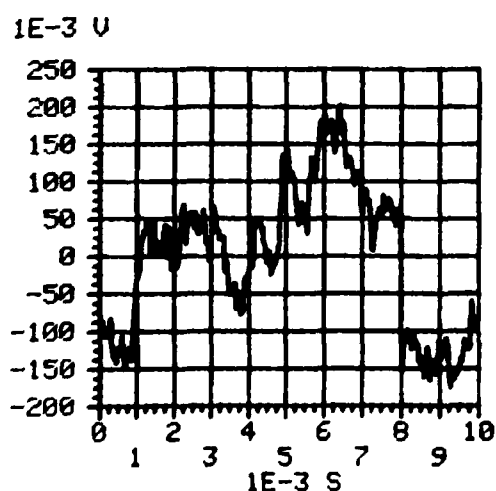
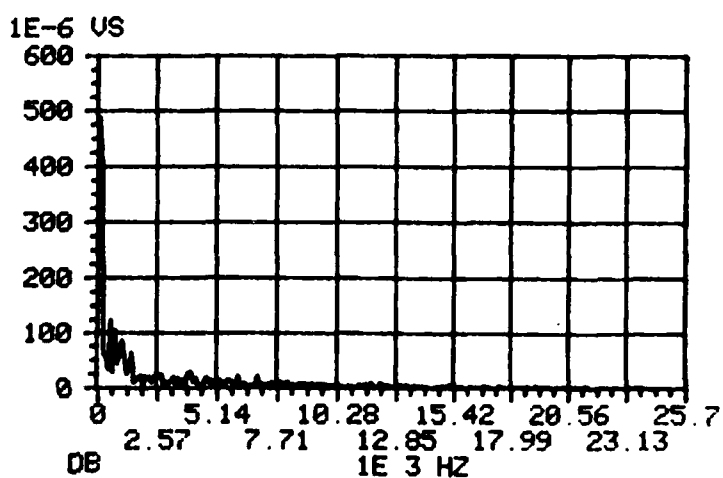
Noise Test No. 7
 Facility: ADDE Computer Room
 Location: SE Corner
 Meter Setting 70 dB
 Meter Reading 69 dB



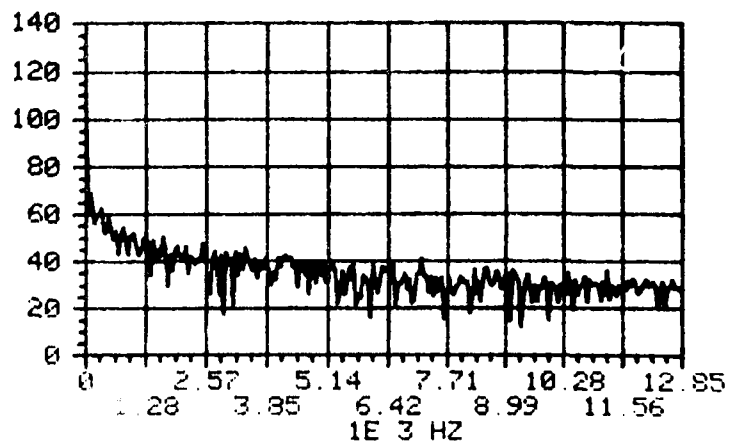
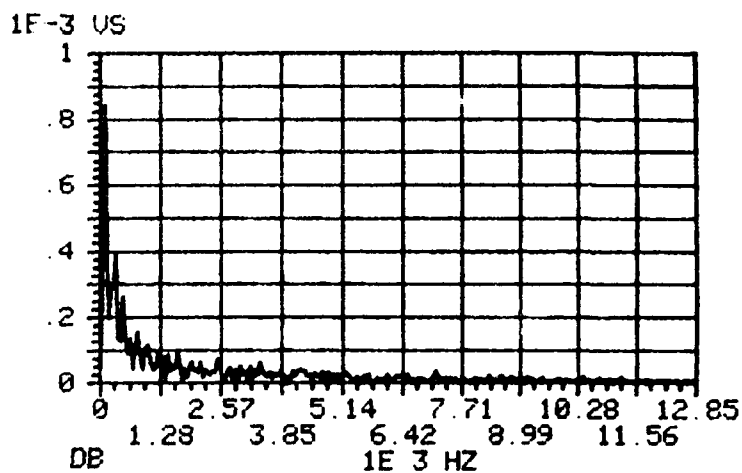
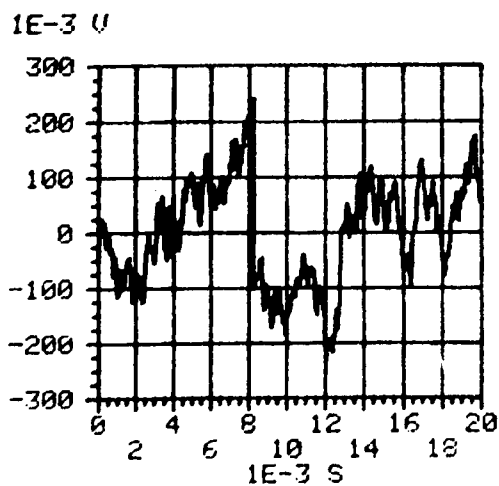
Noise Test No. 7
Facility: ADDE Computer Room

Location: SE Corner

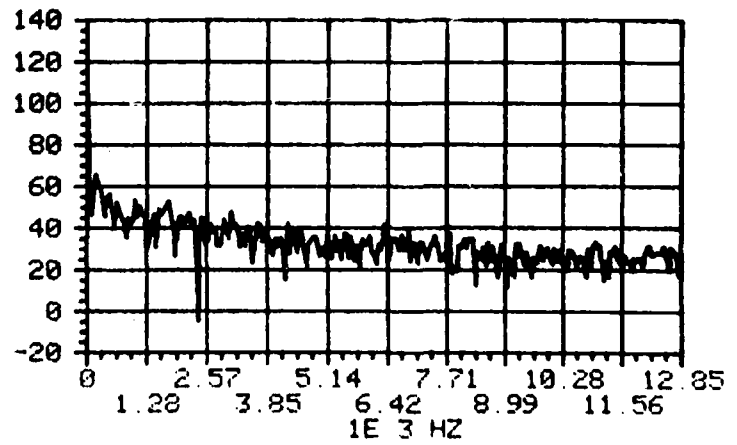
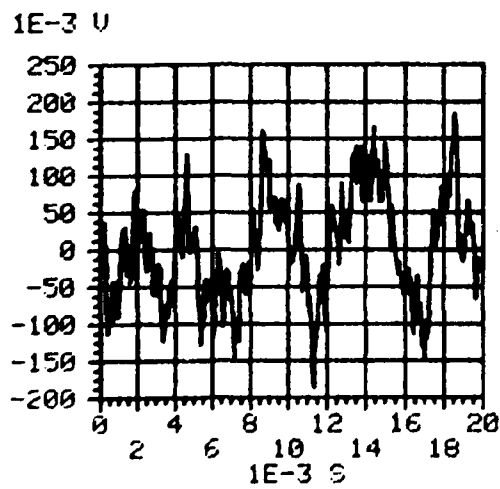
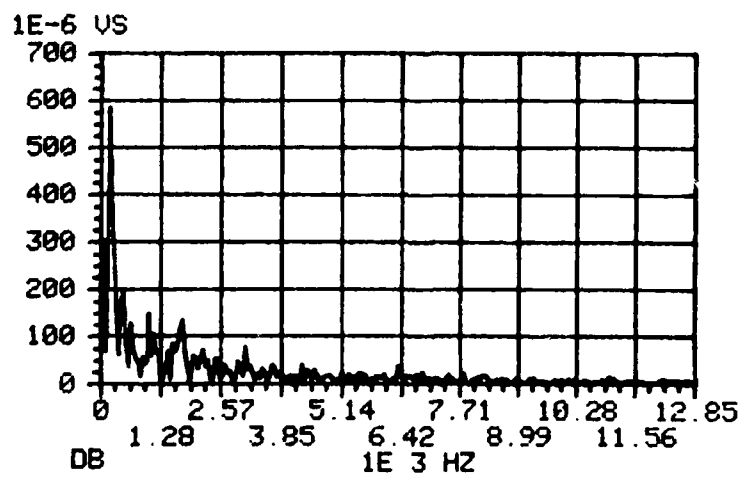
Meter Setting 70 dB
Meter Reading 69 dB



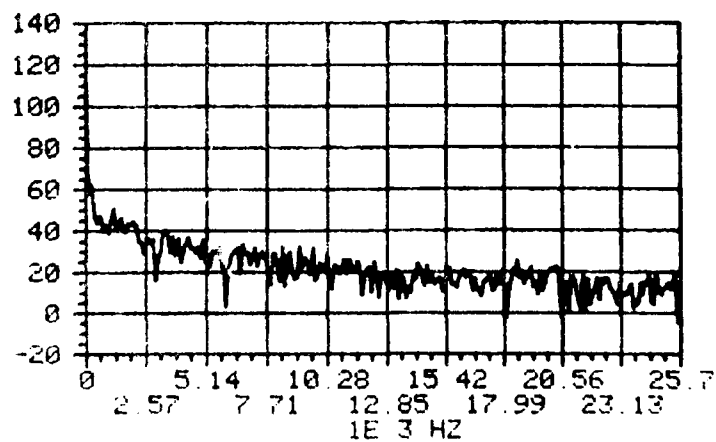
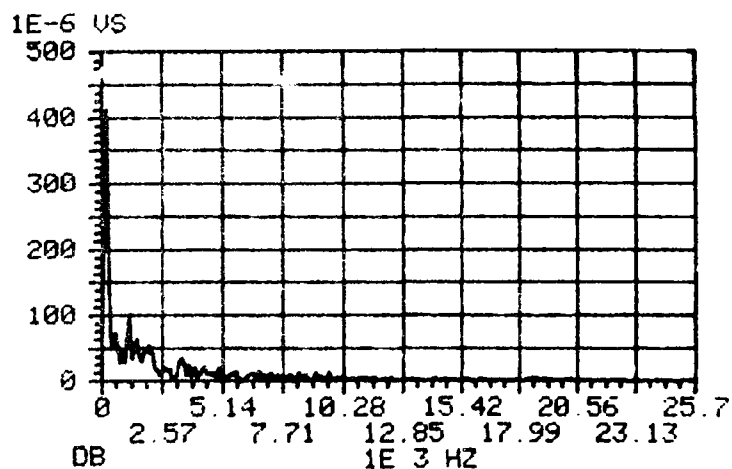
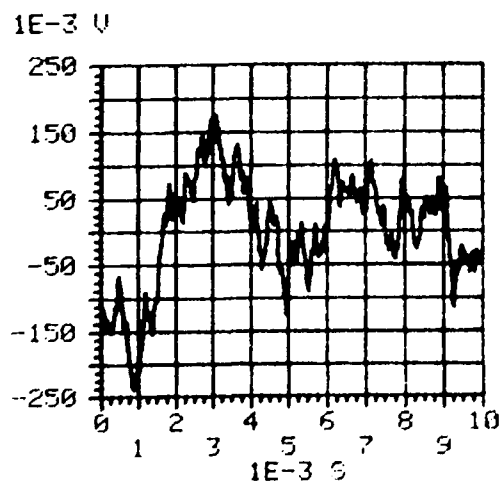
Noise Test No. 8
 Facility: ADDE Computer Room
 Location: SW Corner
 Meter Setting 70 dB
 Meter Reading 72 dB



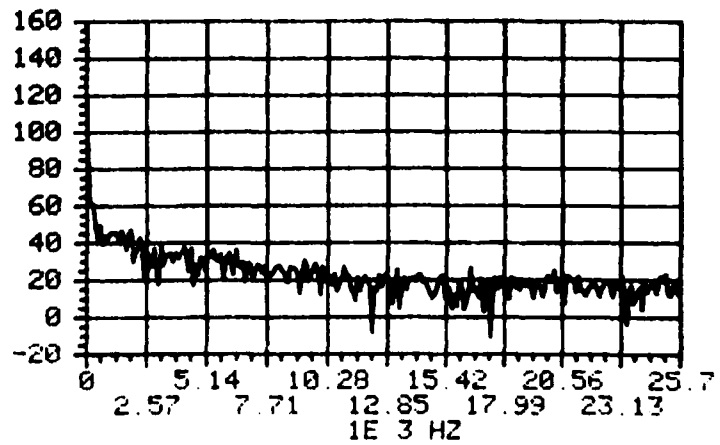
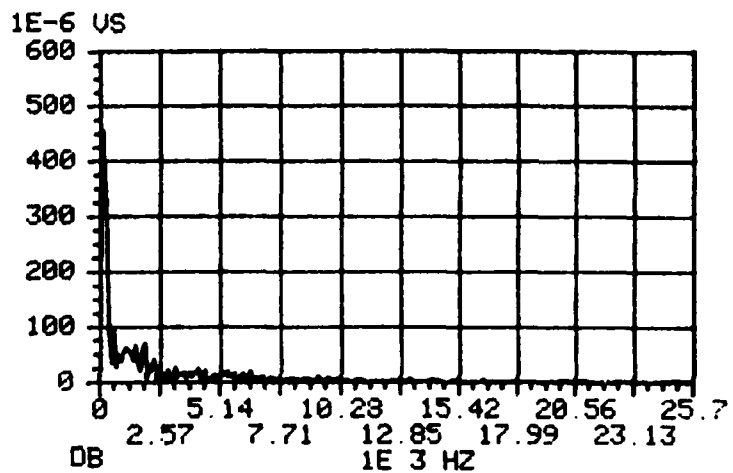
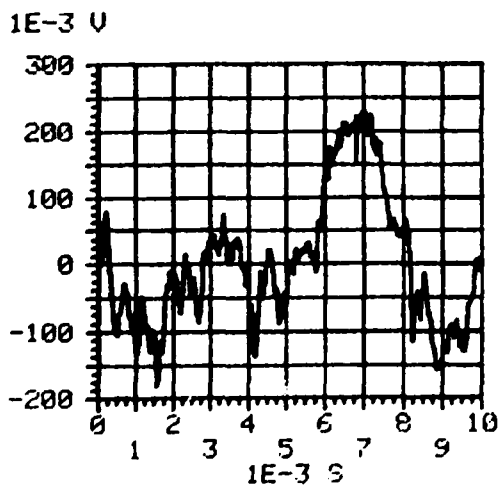
Noise Test No. 8
 Facility: ADDE Computer Room
 Location: SW Corner
 Meter Setting 70 dB
 Meter Reading 72 dB



Noise Test No. 8
 Facility: ADDE Computer Room
 Location: SW Corner
 Meter Setting 70 dB
 Meter Reading 72 dB

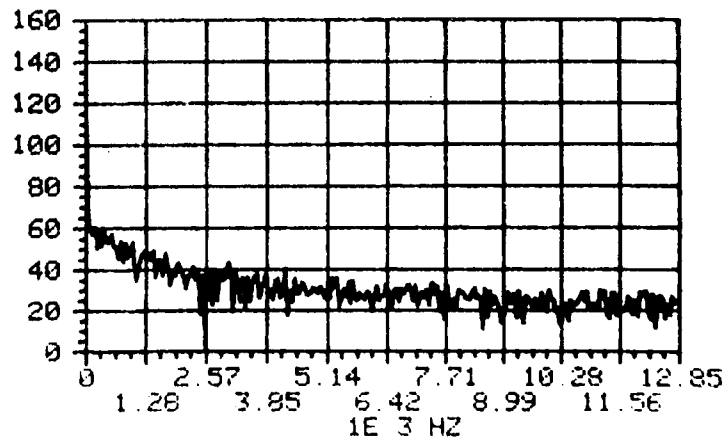
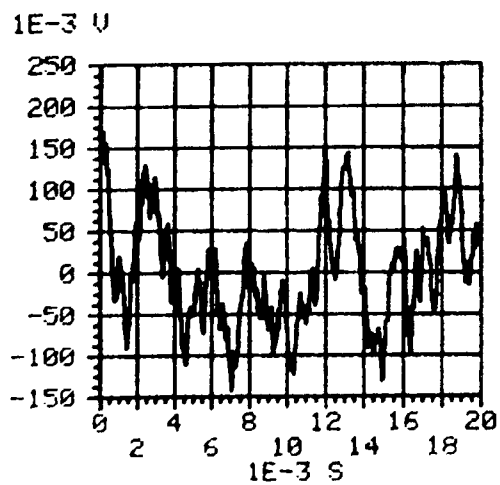
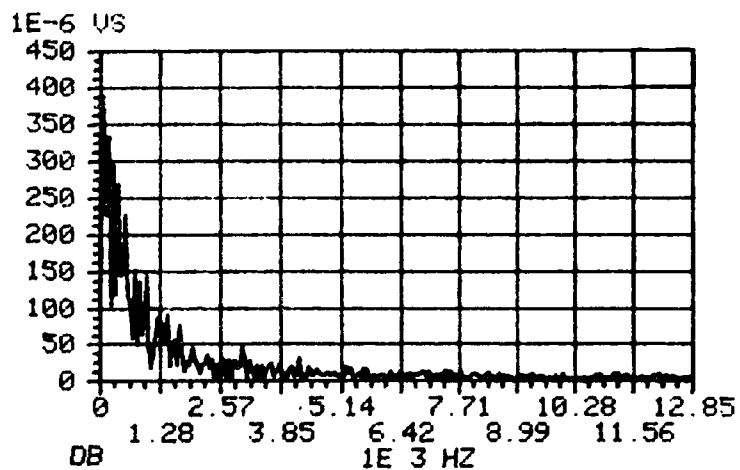


Noise Test No. 8
 Facility: ADDE Computer Room
 Location: SW Corner
 Meter Setting 70 dB
 Meter Reading 72 dB

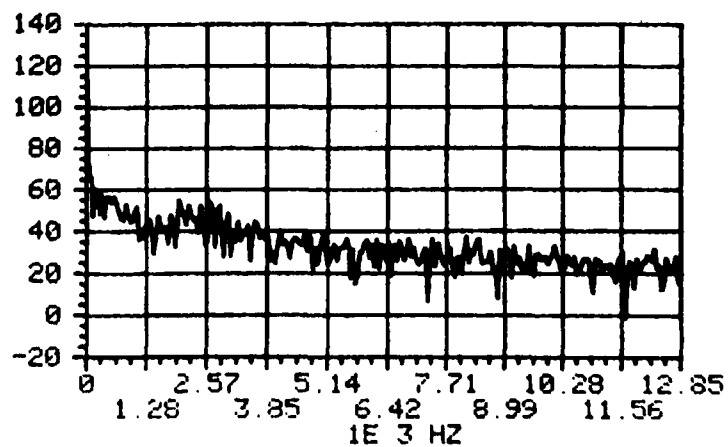
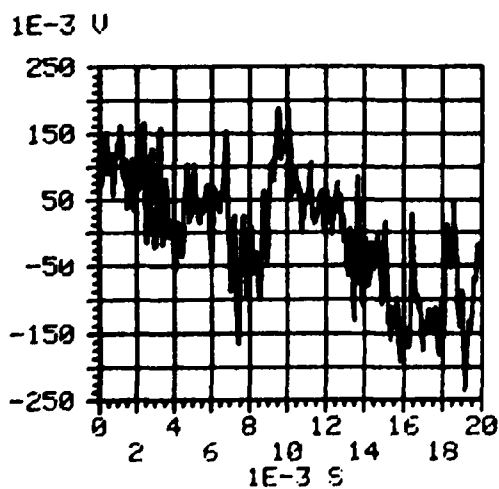
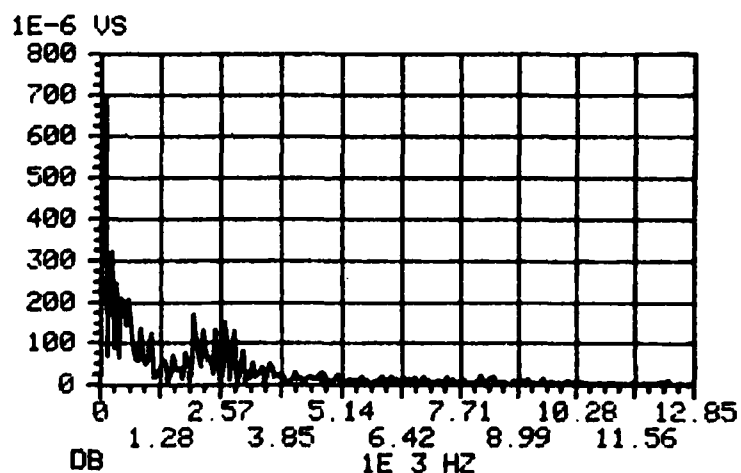


Noise Test No. 9
 Facility: ADDE Computer Room
 Location: NW Corner

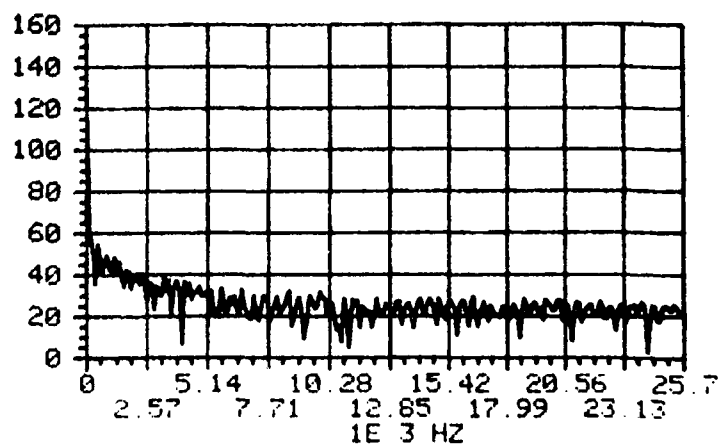
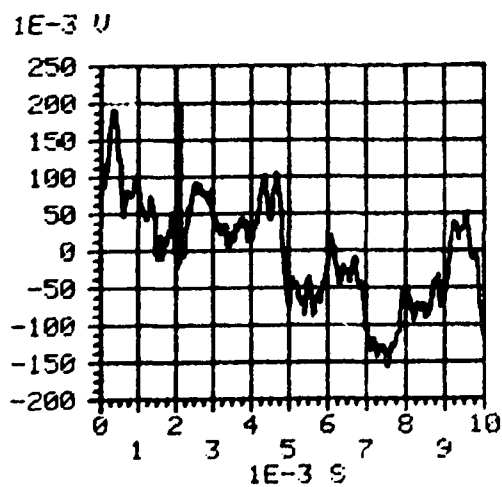
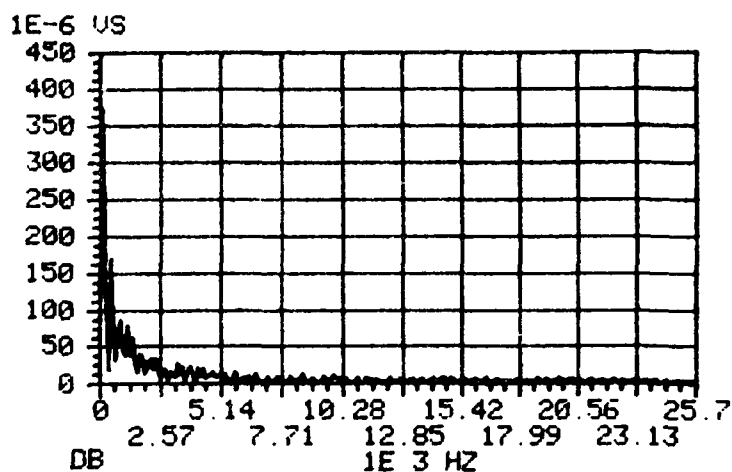
Meter Setting 70 dB
 Meter Reading 73 dB



Noise Test No. 9
 Facility: ADDE Computer Room
 Location: NW Corner
 Meter Setting 70 dB
 Meter Reading 73 dB

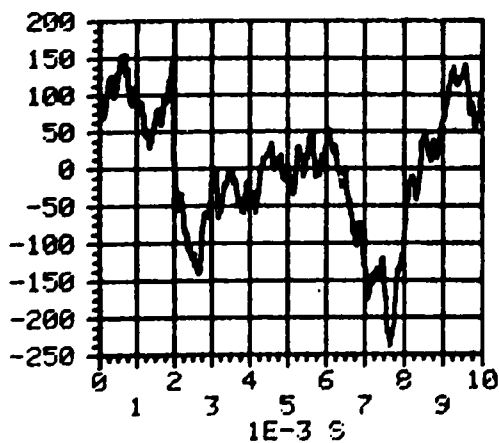


Noise Test No. 9
 Facility: ADDE Computer Room
 Location: NW Corner
 Meter Setting 70 dB
 Meter Reading 73 dB

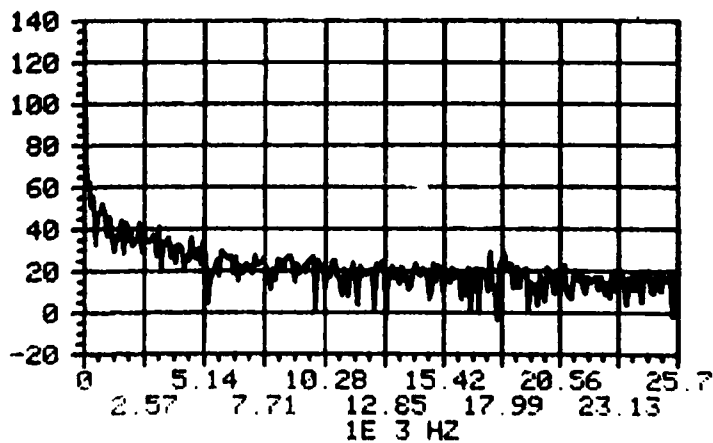
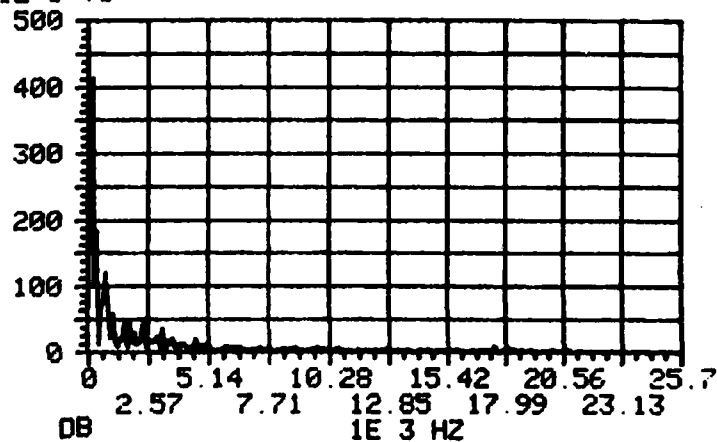


Noise Test No. 9
 Facility: ADDE Computer Room
 Location: NW Corner
 Meter Setting 70 dB
 Meter Reading 73 dB

1E-3 V

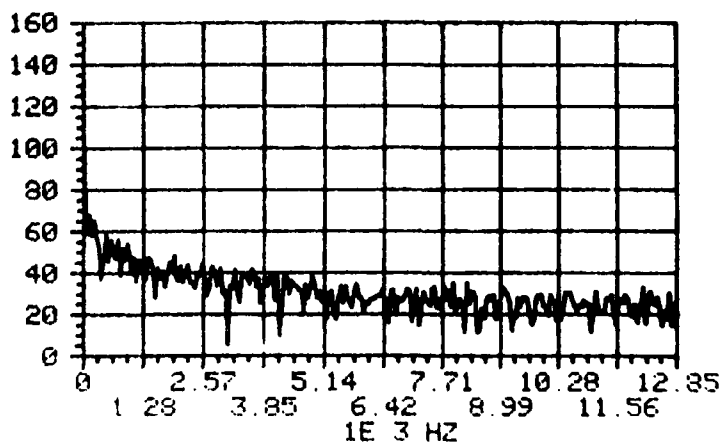
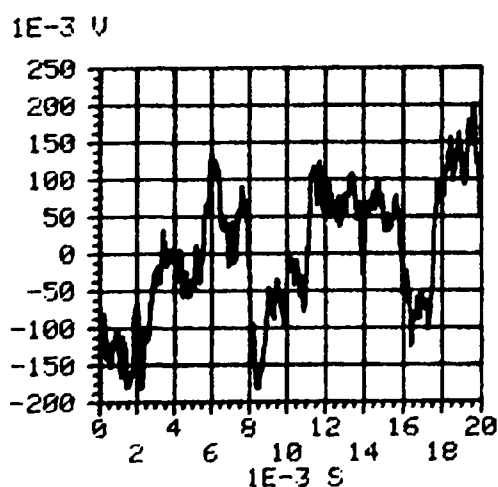
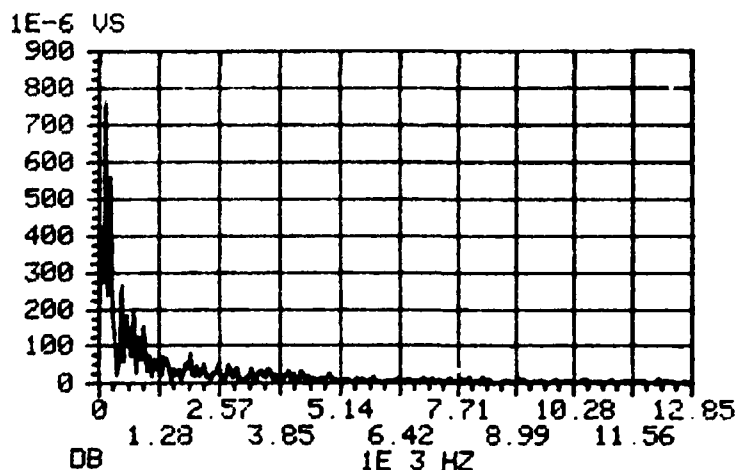


1E-6 US

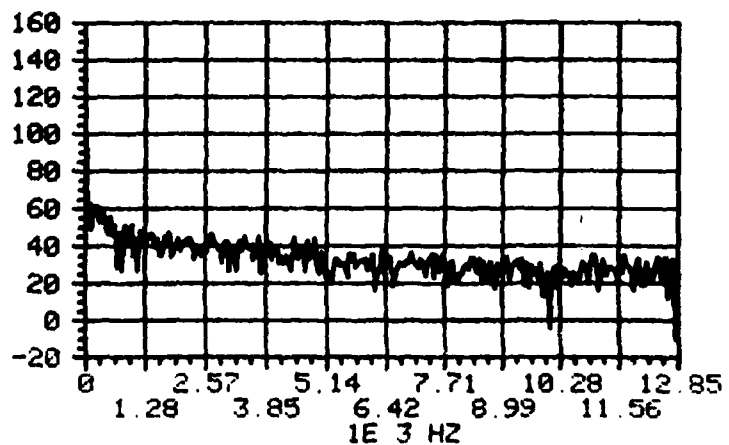
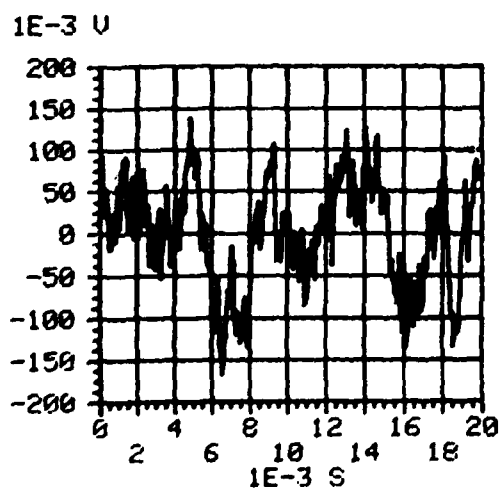
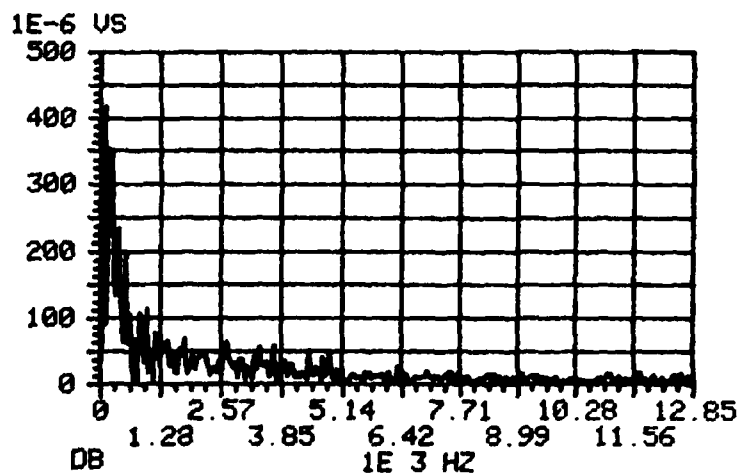


Noise Test No. 10
 Facility: ADDE Computer Room
 Location: NE Corner

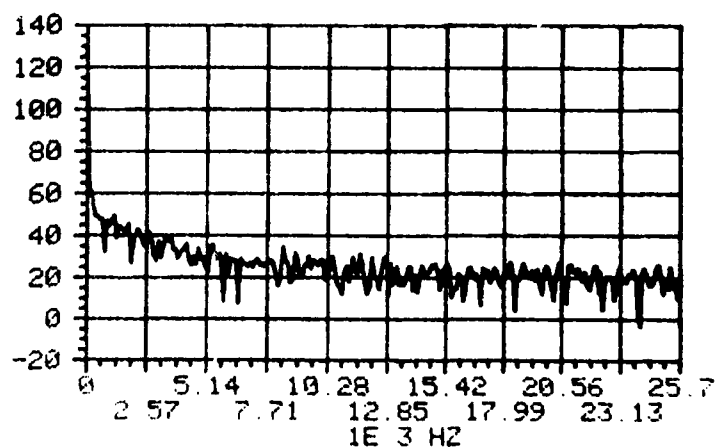
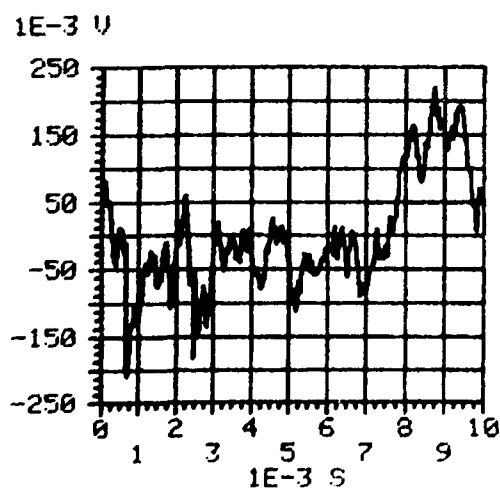
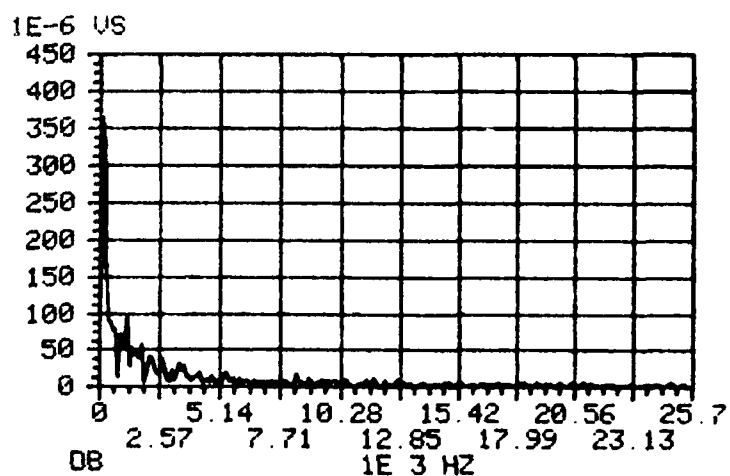
Meter Setting 70 dB
 Meter Reading 68 dB



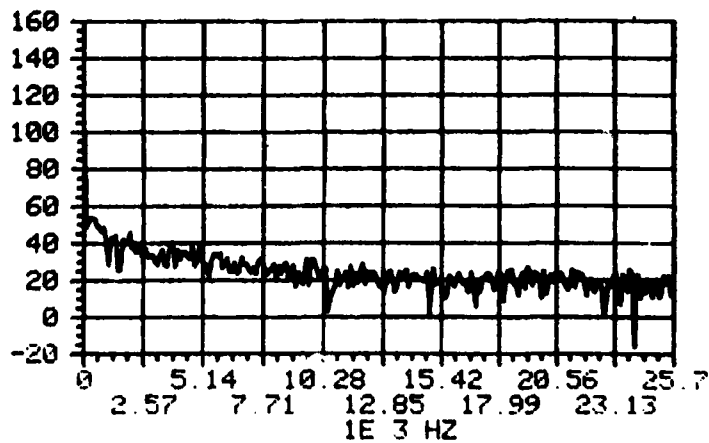
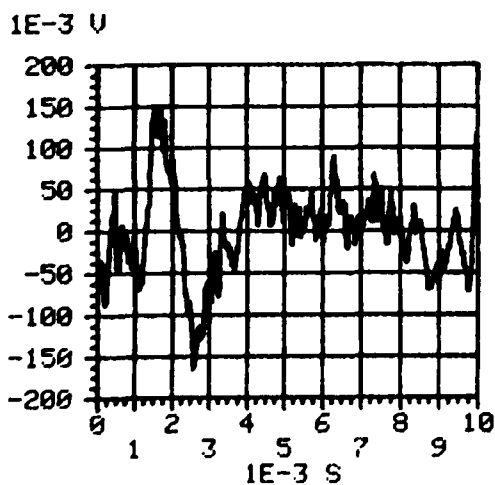
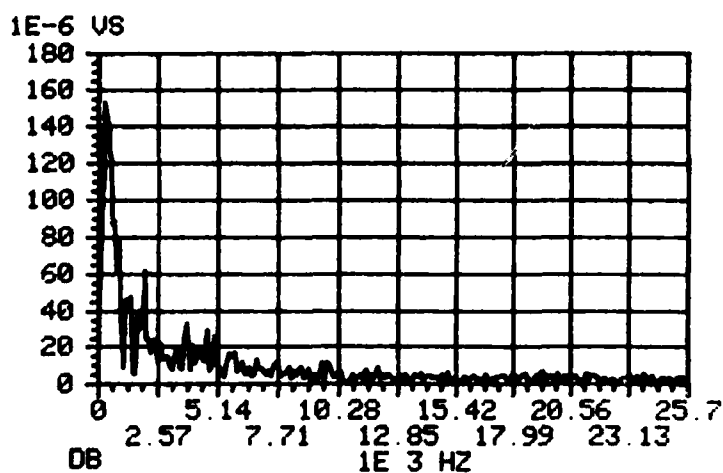
Noise Test No. 10
 Facility: ADDE Computer Room
 Location: NE Corner
 Meter Setting 70 dB
 Meter Reading 68 dB



Noise Test No. 10
 Facility: ADDE Computer Room
 Location: NE Corner
 Meter Setting 70 dB
 Meter Reading 68 dB



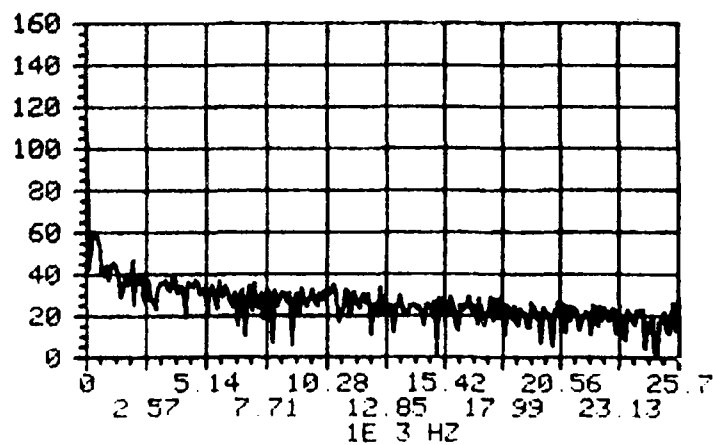
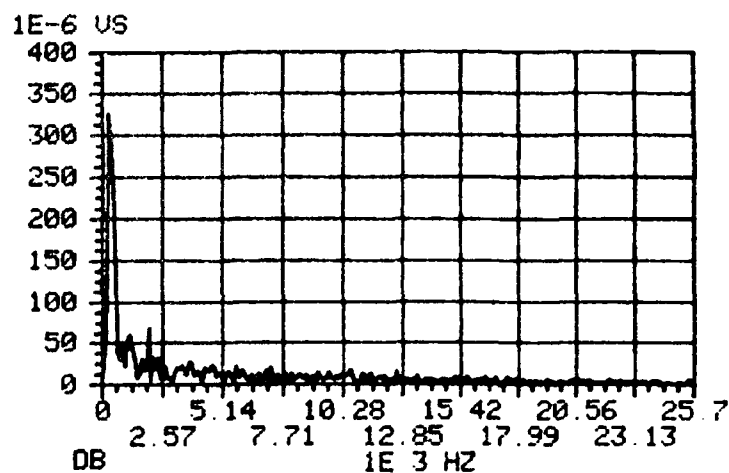
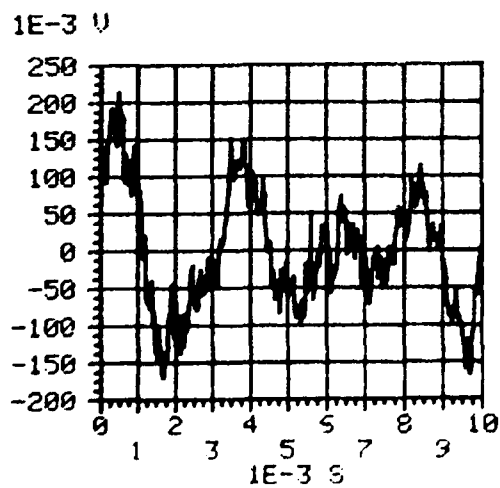
Noise Test No. 10
 Facility: ADDF Computer Room
 Location: NE Corner
 Meter Setting 70 dB
 Meter Reading 68 dB



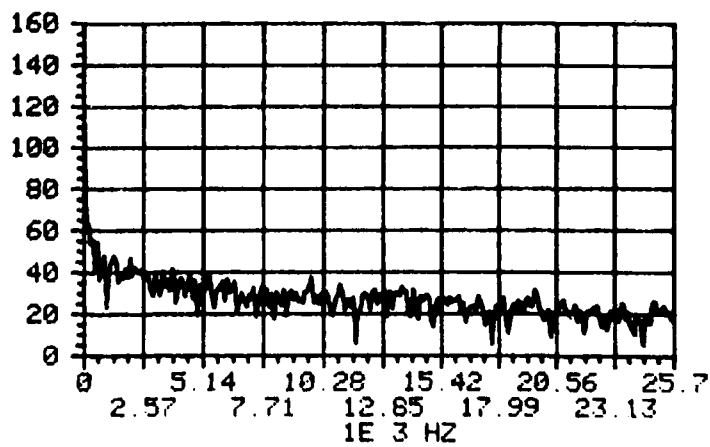
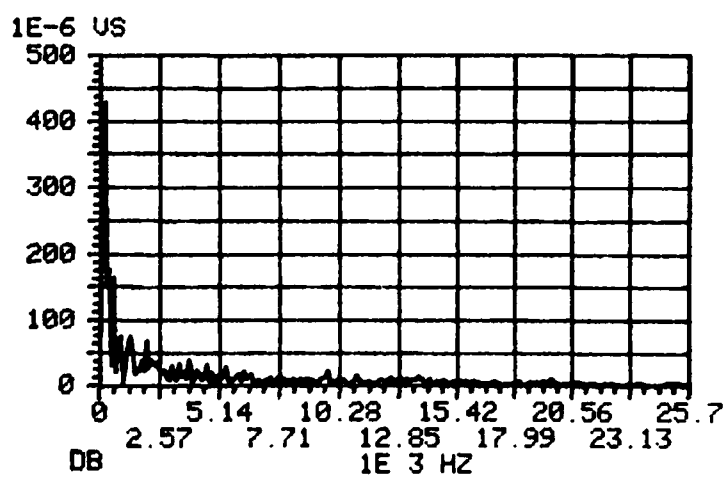
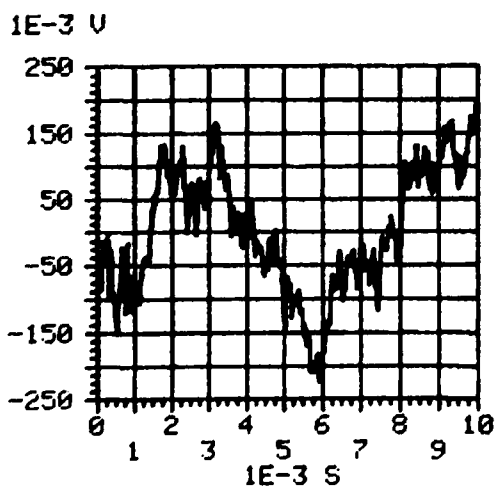
Noise Test No. 11
 Facility: ADDE Computer Room

Location: Center of Room

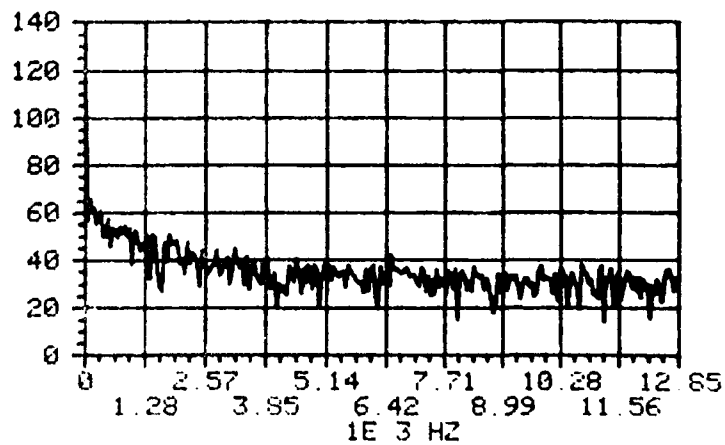
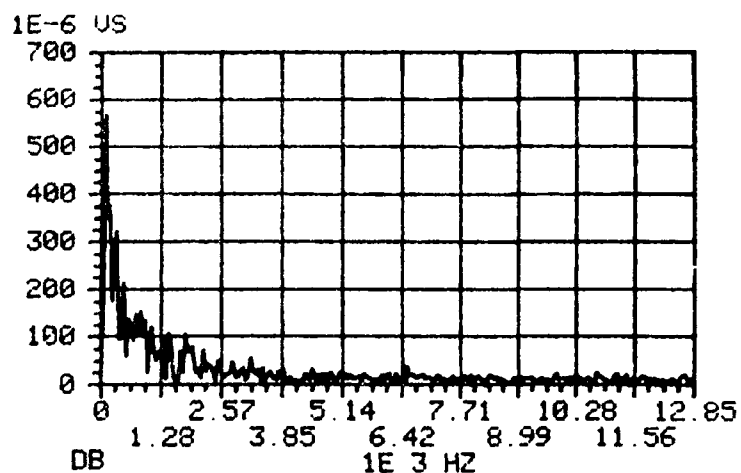
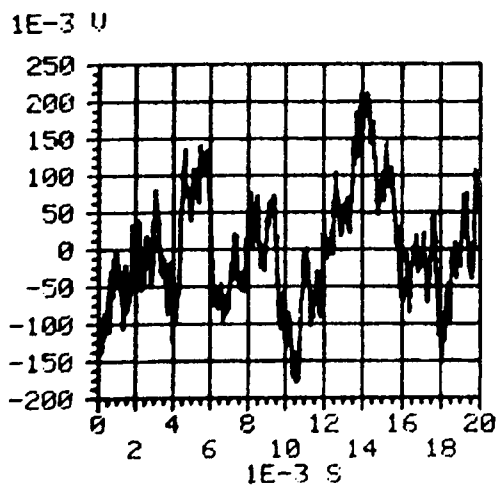
Meter Setting 70 dB
 Meter Reading 70 dB



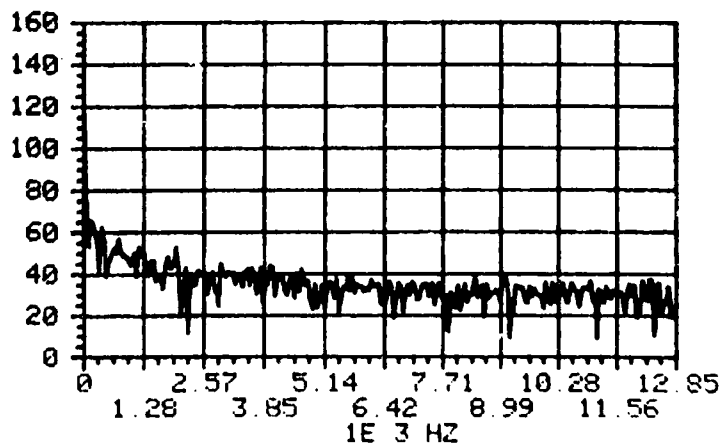
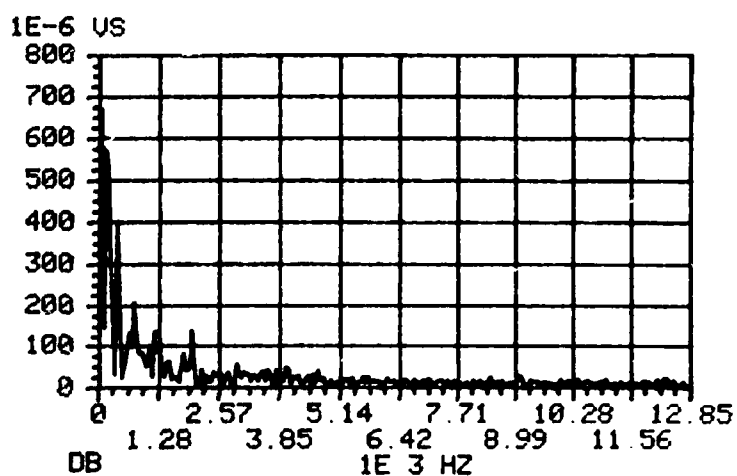
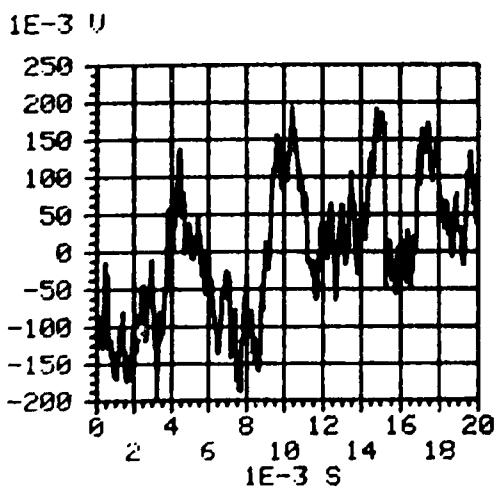
Noise Test No. 11
 Facility: ADDE Computer Room
 Location: Center of Room
 Meter Setting 70 dB
 Meter Reading 70 dB



Noise Test No. 11
 Facility: ADDE Computer Room
 Location: Center of Room
 Meter Setting 70 dB
 Meter Reading 70 dB



Noise Test No. 11
 Facility: ADDE Computer Room
 Location: Center of Room
 Meter Setting 70 dB
 Meter Reading 70 dB



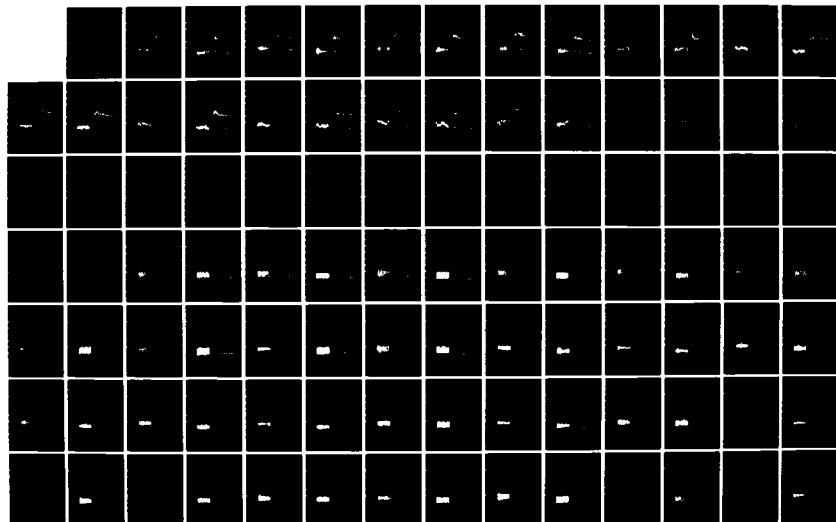
AD-A130 331

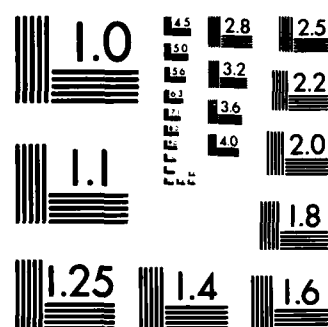
SELECTIVE AUTOMATIC FIRE EXTINGUISHER FOR CLASS A WITH
NOTIFICATION (SAFE.. (U) NEW MEXICO ENGINEERING RESEARCH
INST ALBUQUERQUE C W WILSON ET AL. MAY 83

2/ 40

UNCLASSIFIED

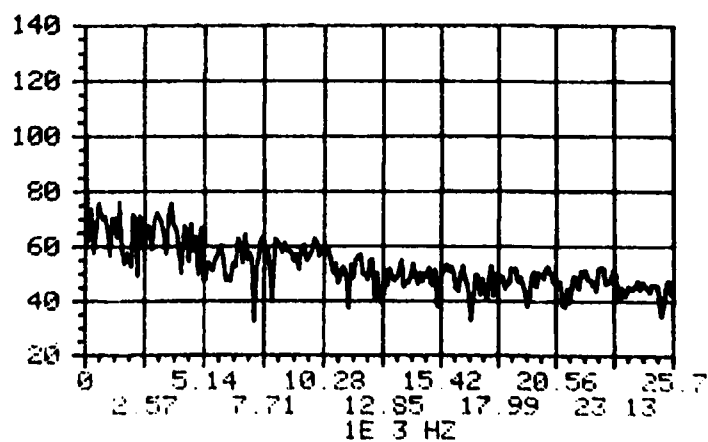
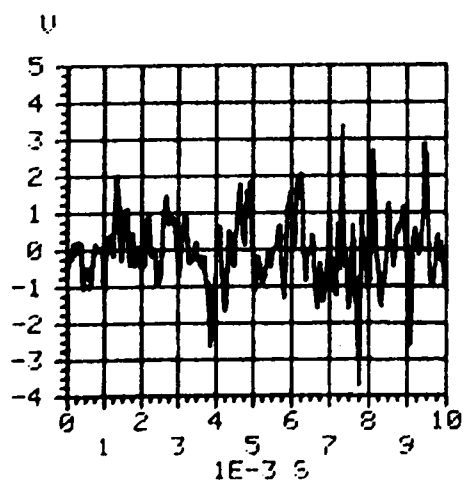
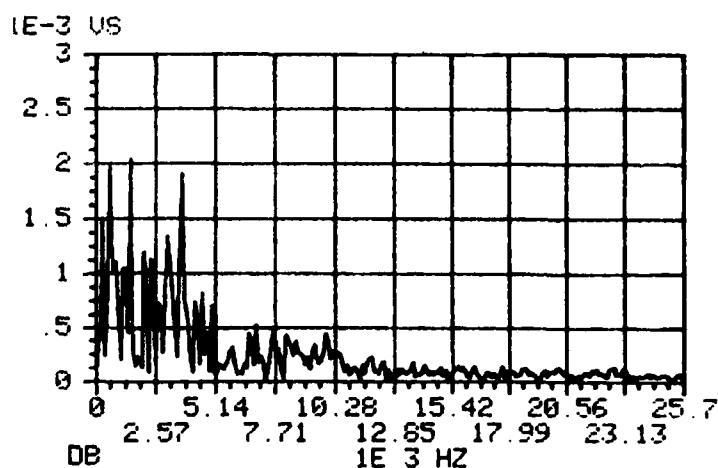
NNERI-TA3-1-VOL-2 AFESC/ESL-TR-83-07-VOL-2 F/G 13/12 NL





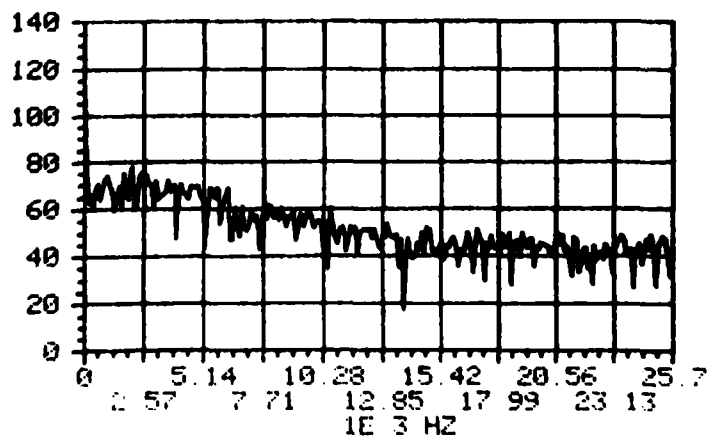
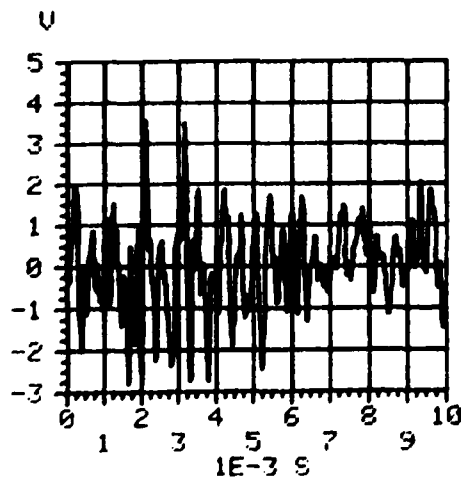
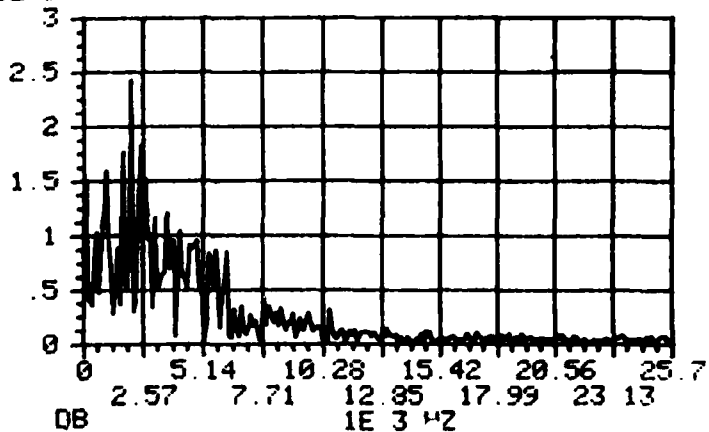
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

Noise Test No. 12
 Facility: ADDE Computer Room
 Location: 3 Feet from Printer
w/top open
 Meter Setting 70 dB
 Meter Reading 79 dB

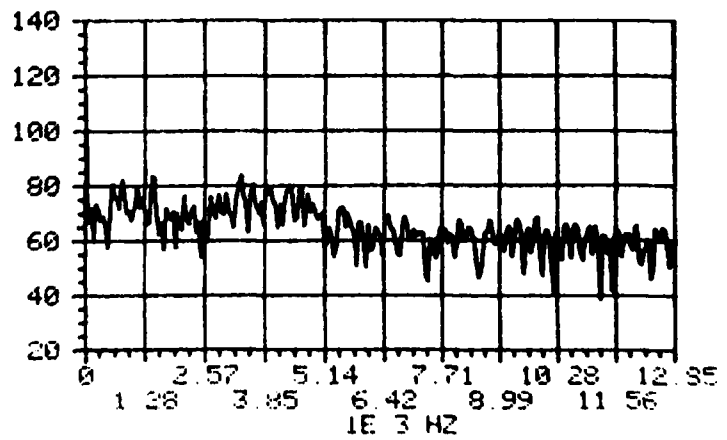
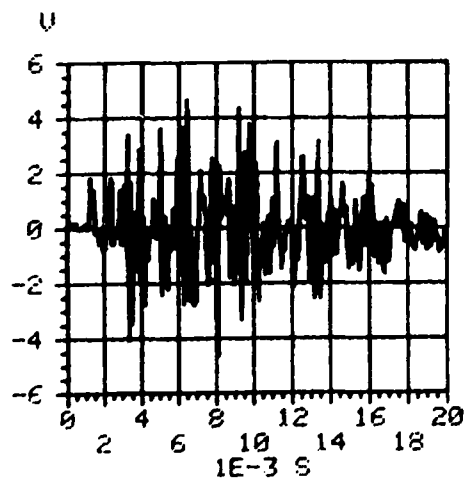
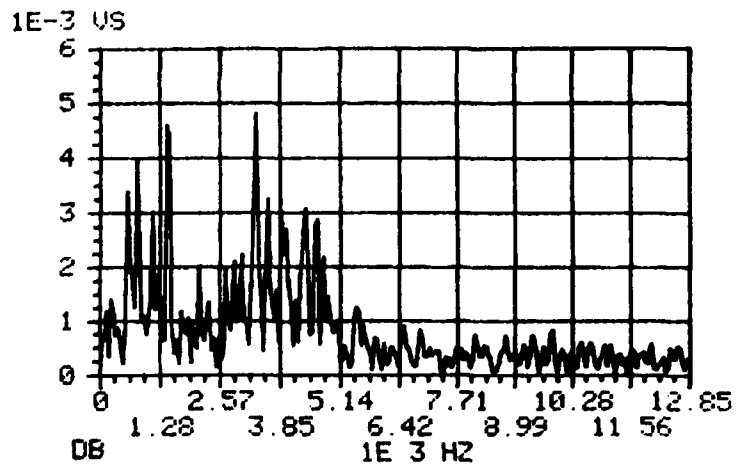


Noise Test No. 12
 Facility: ADDE Computer Room
 Location: 3 Feet from Printer
 w/top open
 Meter Setting 70 dB
 Meter Reading 79 dB

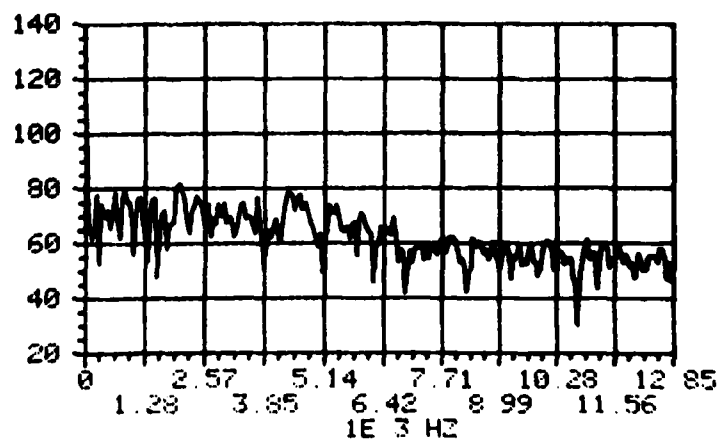
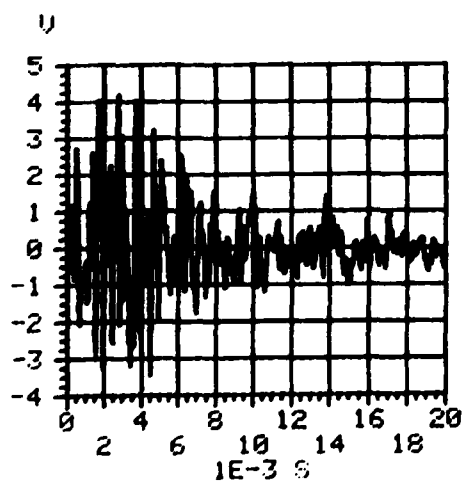
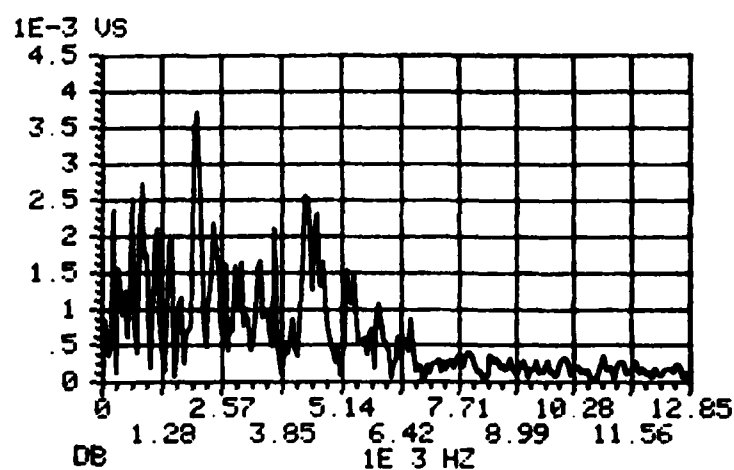
1E-3 US



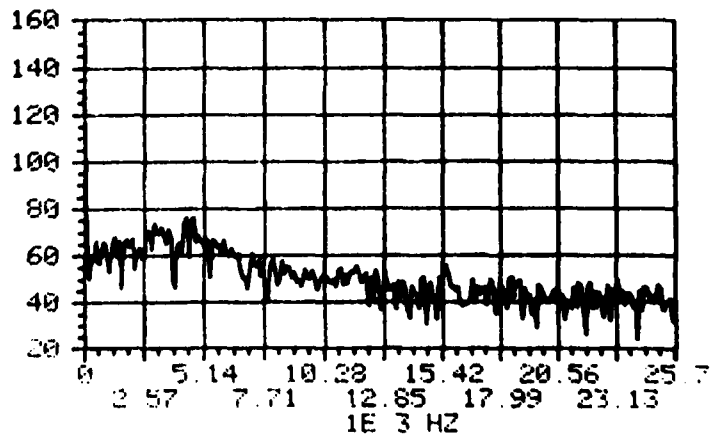
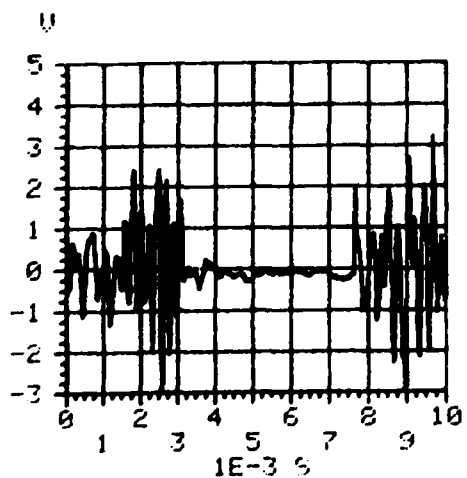
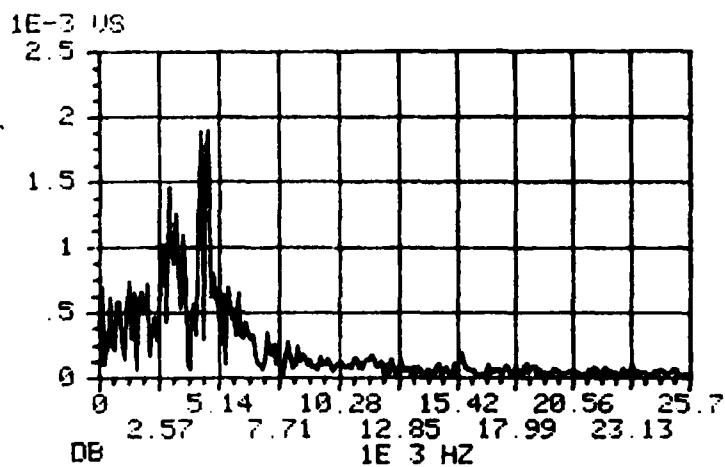
Noise Test No. 12
 Facility: ADDE Computer Room
 Location: 3 Feet from Printer
w/top open
 Meter Setting 70 dB
 Meter Reading 79 dB



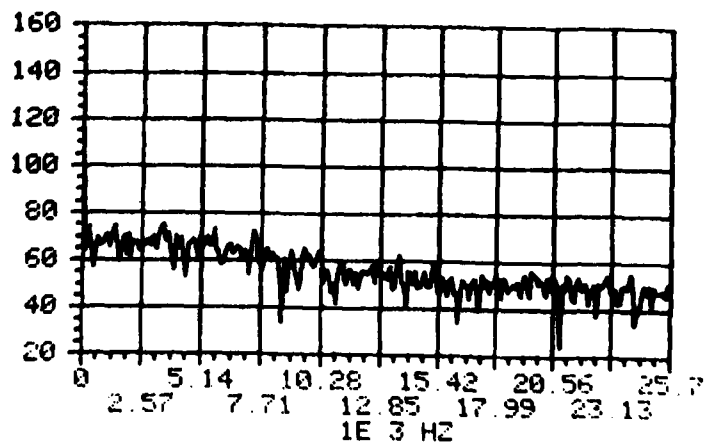
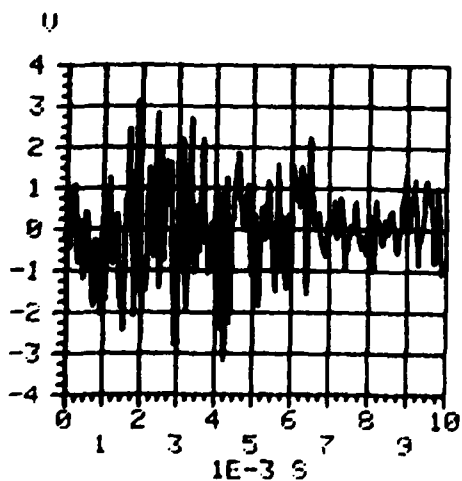
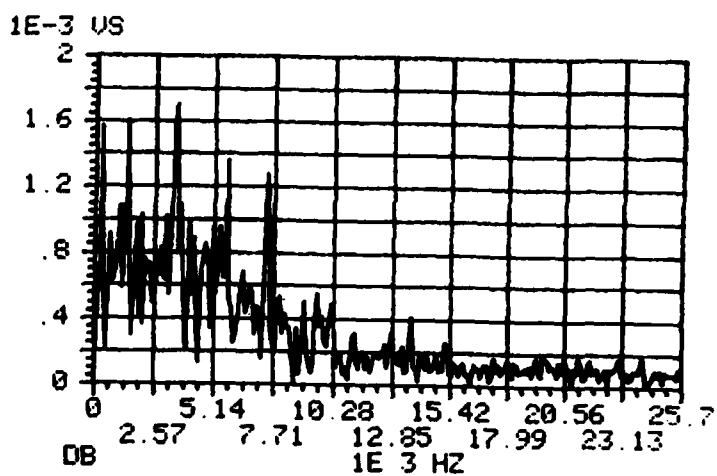
Noise Test No. 12
 Facility: ADDE Computer Room
 Location: 3 Feet from Printer
w/top open
 Meter Setting 70 dB
 Meter Reading 79 dB



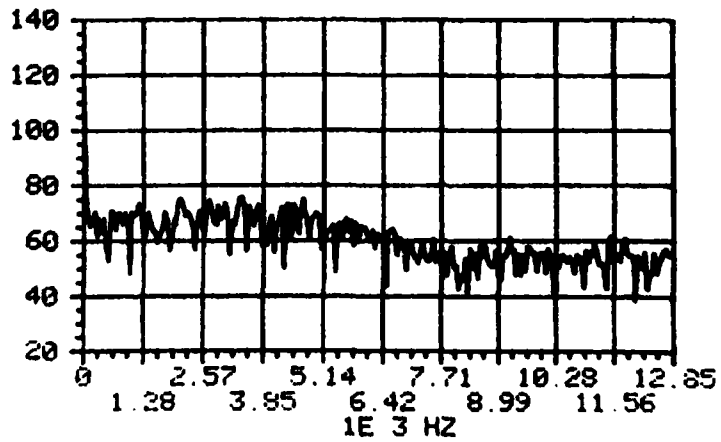
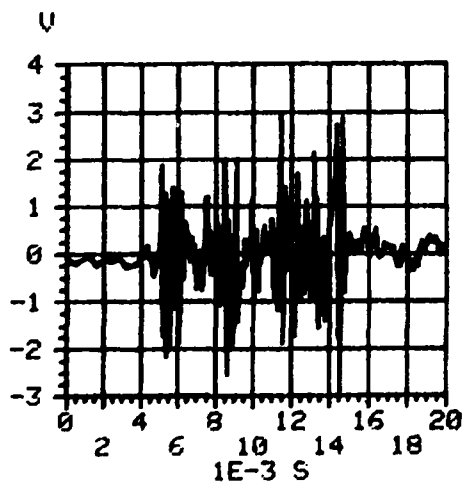
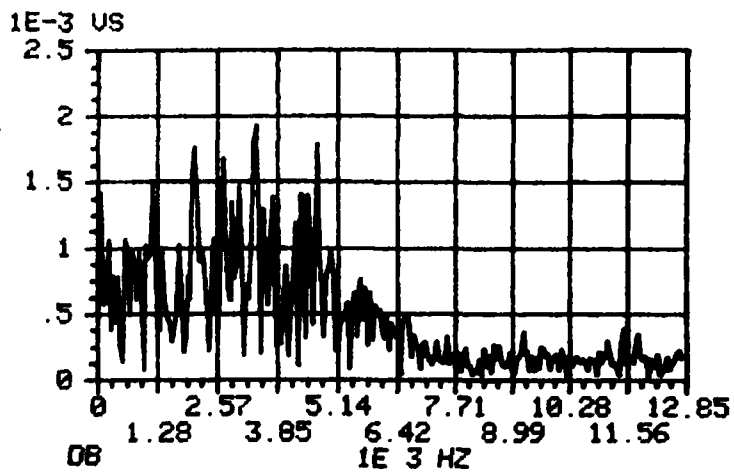
Noise Test No. 12
 Facility: ADDE Computer Room
 Location: 3 Feet from Printer
w/top open
 Meter Setting 70 dB
 Meter Reading 79 dB



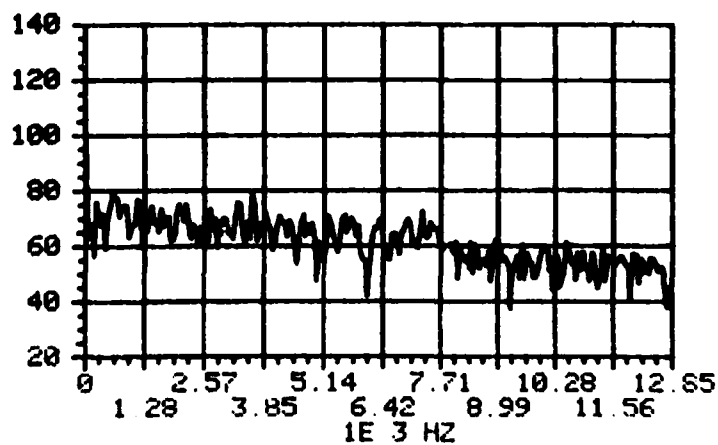
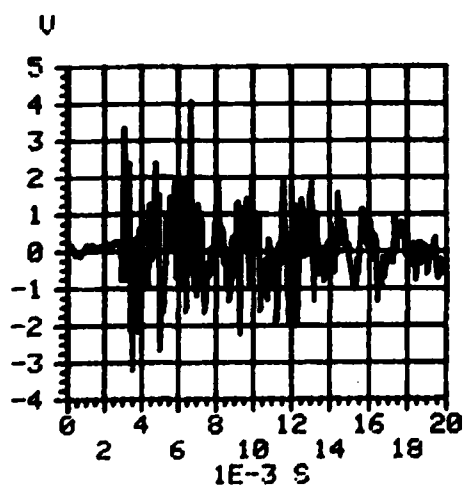
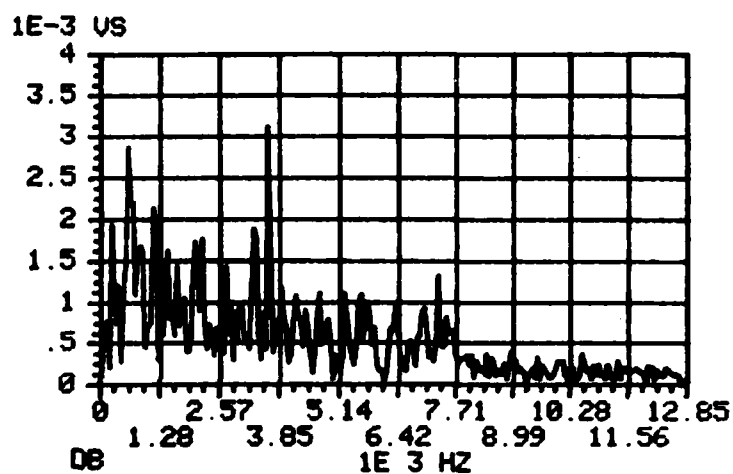
Noise Test No. 12
 Facility: ADDE Computer Room
 Location: 3 Feet from Printer
w/top open
 Meter Setting 70 dB
 Meter Reading 79 dB



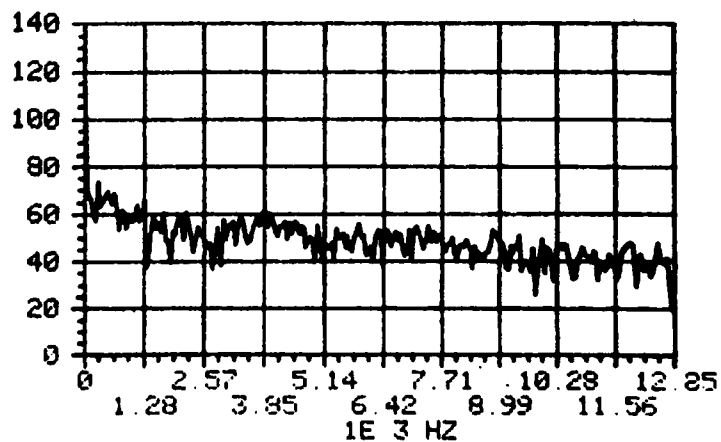
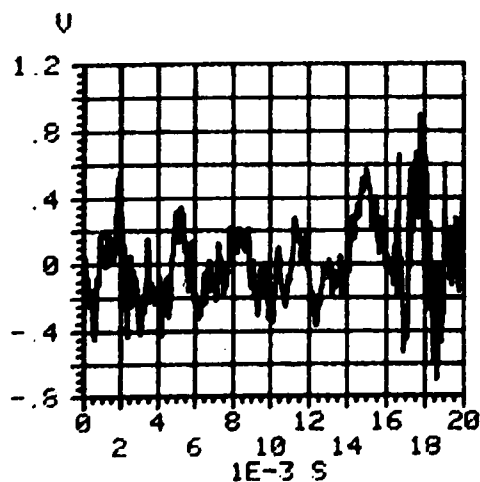
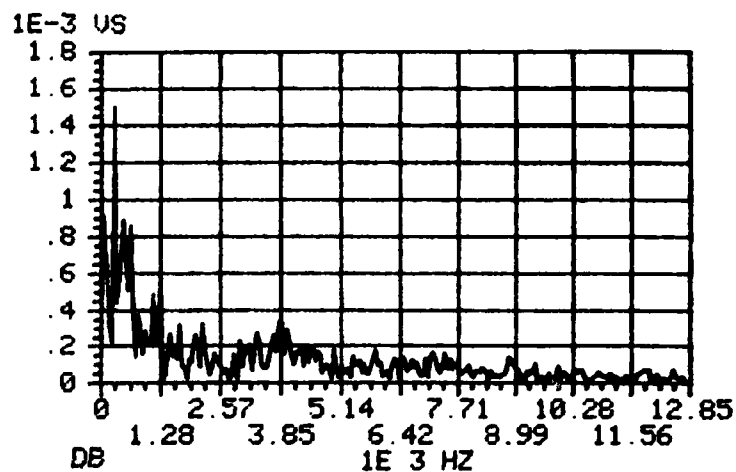
Noise Test No. 12
 Facility: ADDE Computer Room
 Location: 3 Feet from Printer
w/top open
 Meter Setting 70 dB
 Meter Reading 79 dB



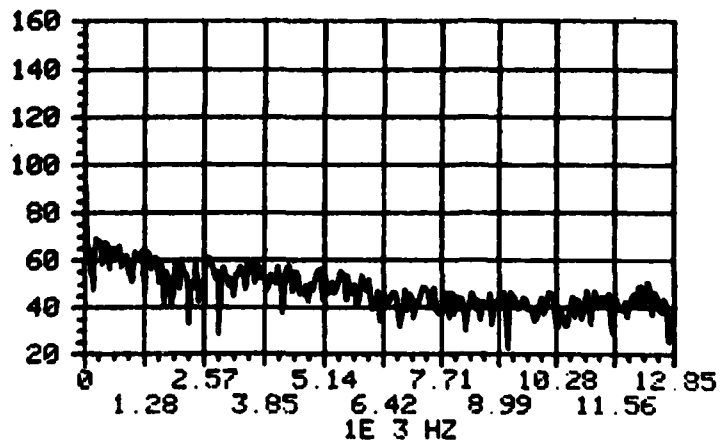
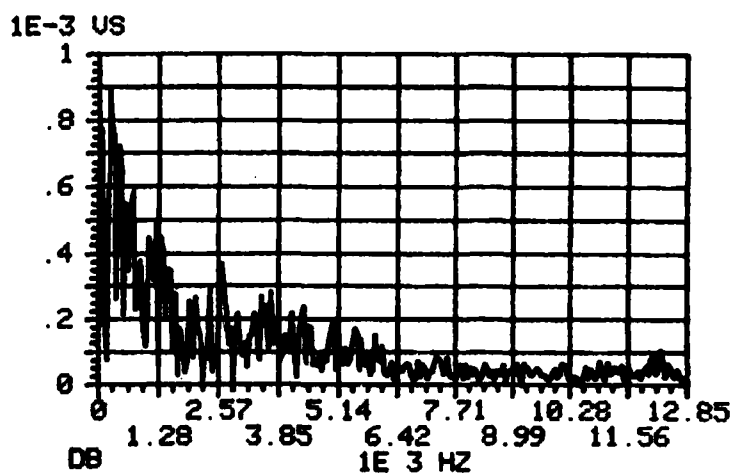
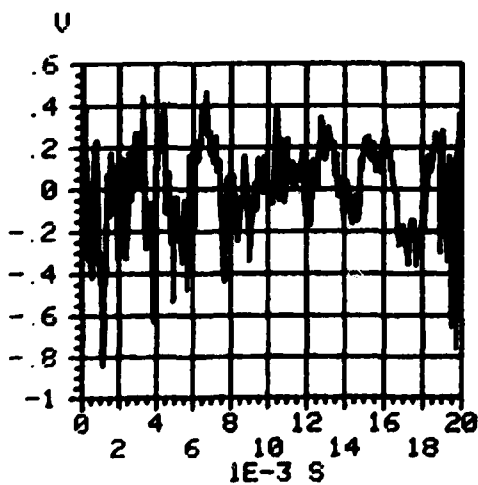
Noise Test No. 12
 Facility: ADDE Computer Room
 Location: 3 Feet from Printer
w/top open
 Meter Setting 70 dB
 Meter Reading 79 dB



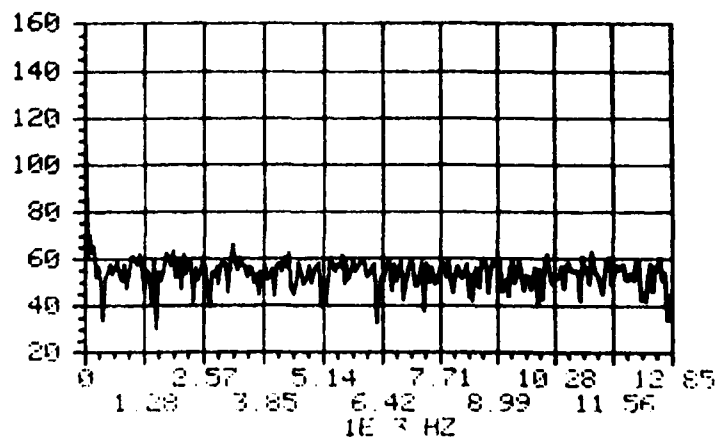
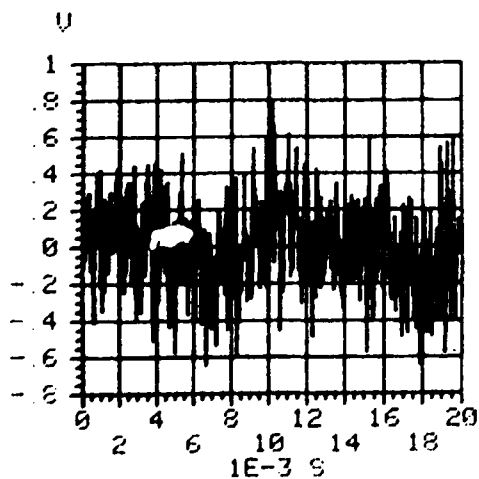
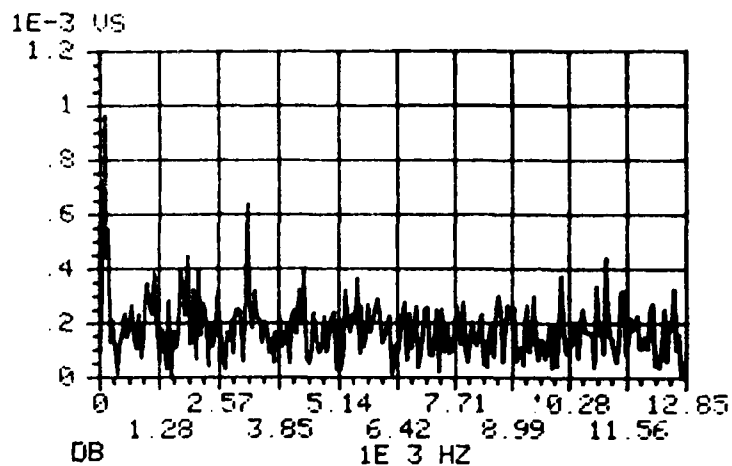
Noise Test No. 12
 Facility: ADDE Computer Room
 Location: 3 Feet from Printer
w/top open
 Meter Setting 70 dB
 Meter Reading 79 dB



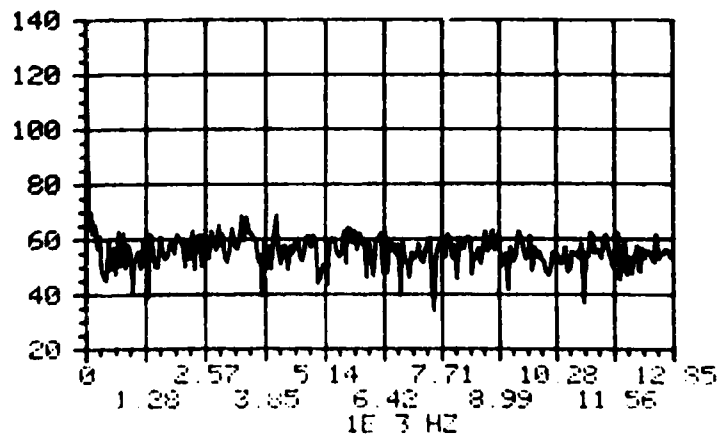
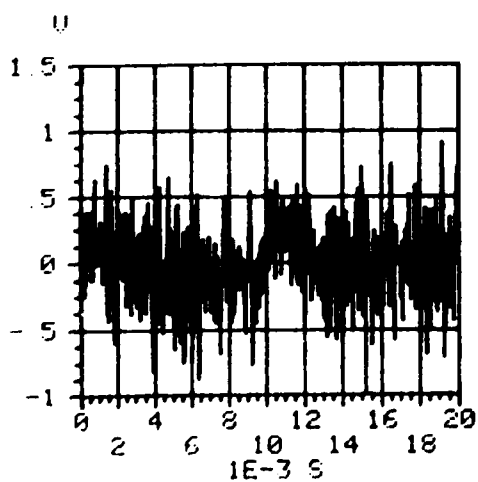
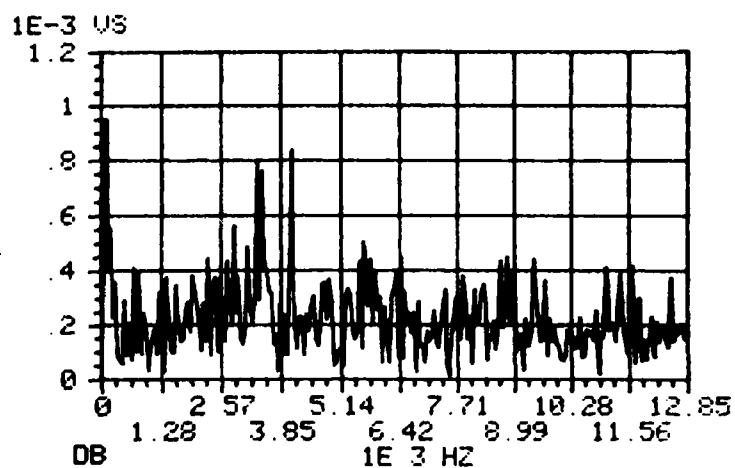
Noise Test No. 12
 Facility: ADDE Computer Room
 Location: 3 Feet from Printer
 w/top open
 Meter Setting 70 dB
 Meter Reading 79 dB



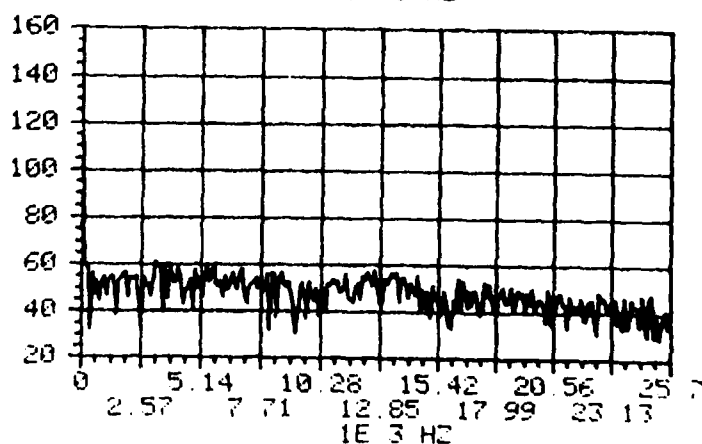
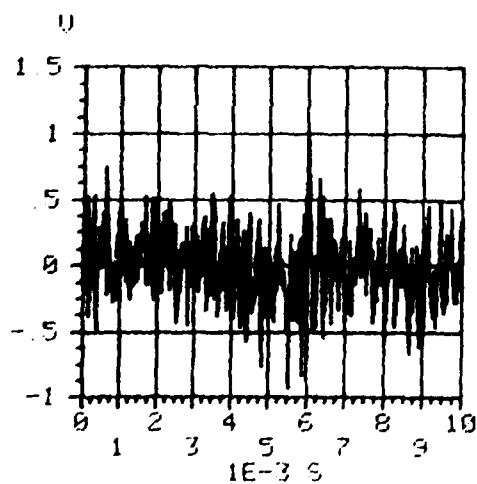
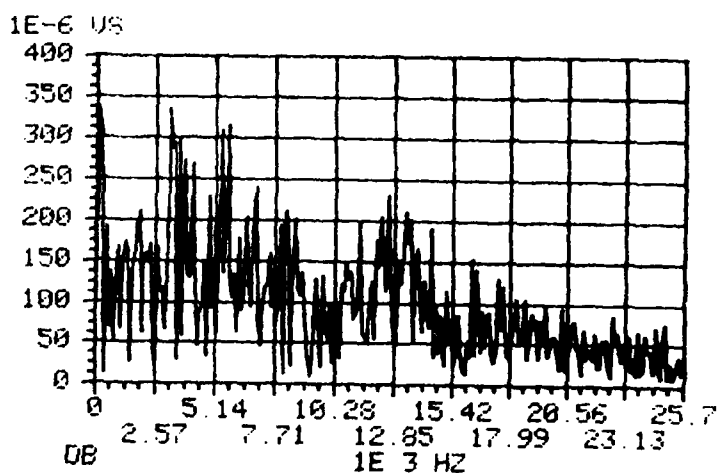
Noise Test No. 13
 Facility: UNM Computing Center
 Location: 3 Feet from Printer w/top open
 Meter Setting 70 dB
 Meter Reading 75 dB



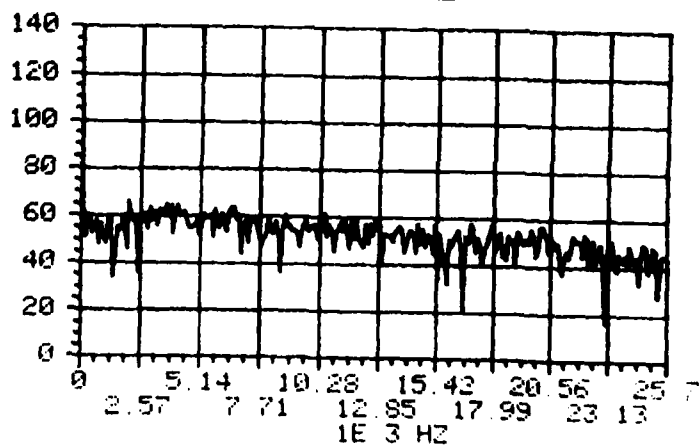
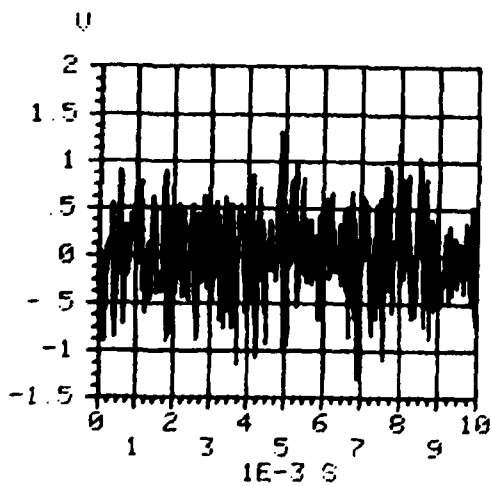
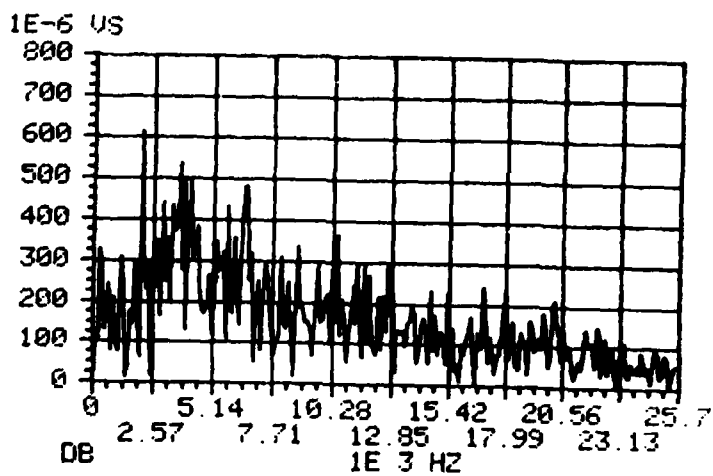
Noise Test No. 13
 Facility: UNM Computing Center
 Location: 3 Feet from Printer w/top open
 Meter Setting 70 dB
 Meter Reading 75 dB



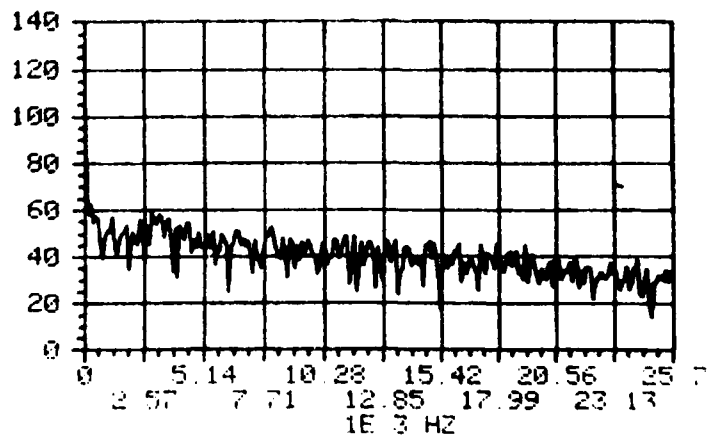
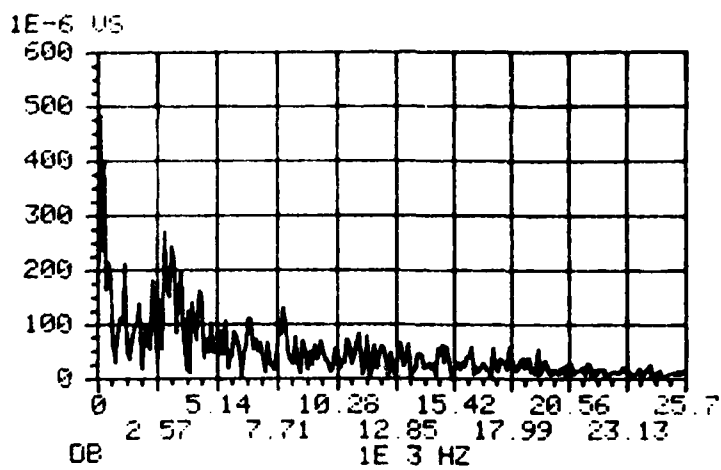
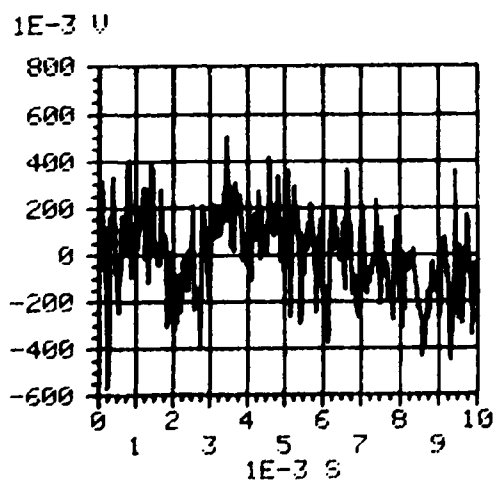
Noise Test No. 13
 Facility: UNM Computing Center
 Location: 3 Feet from Printer w/top open
 Meter Setting 70 dB
 Meter Reading 75 dB



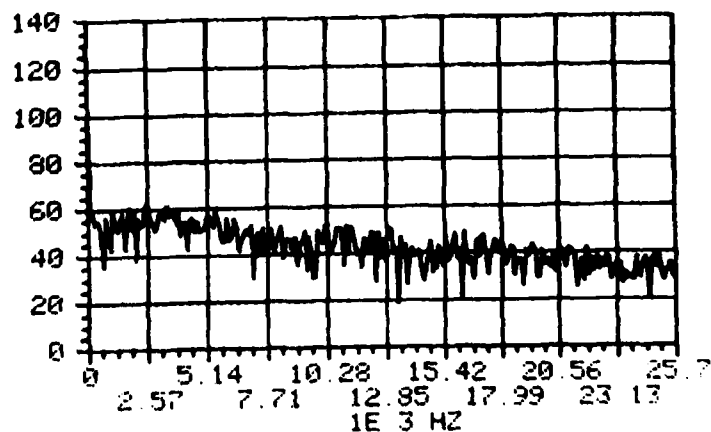
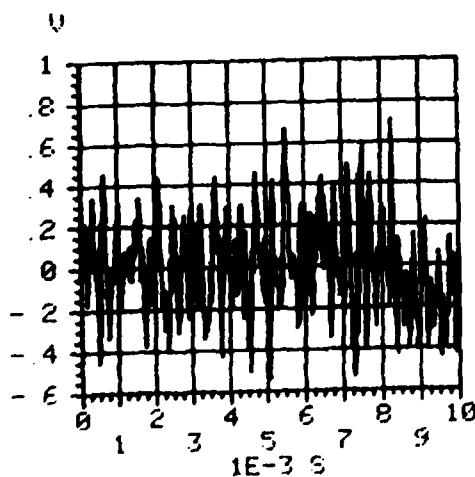
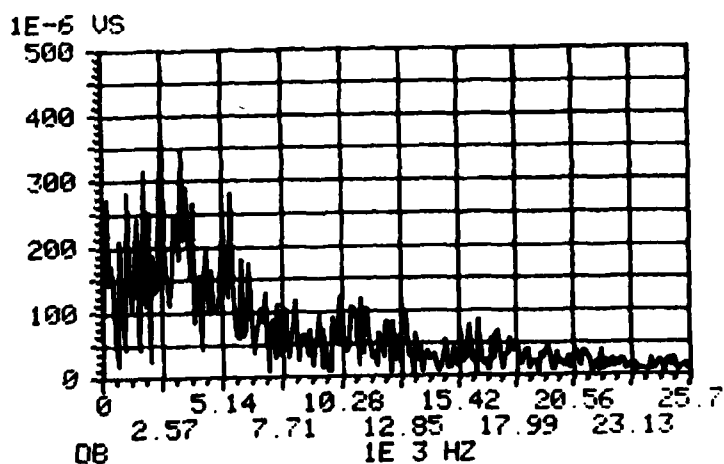
Noise Test No. 13
 Facility: UNM Computing Center
 Location: 3 Feet from Printer w/top open
 Meter Setting 70 dB
 Meter Reading 75 dB



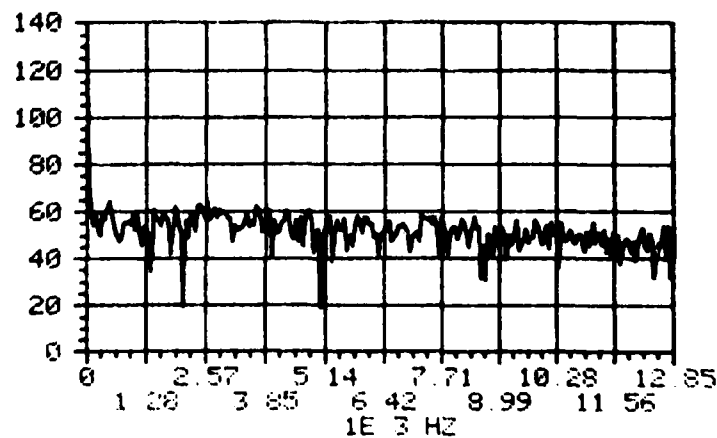
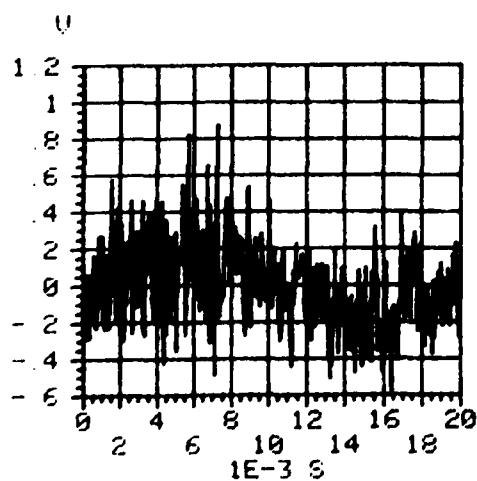
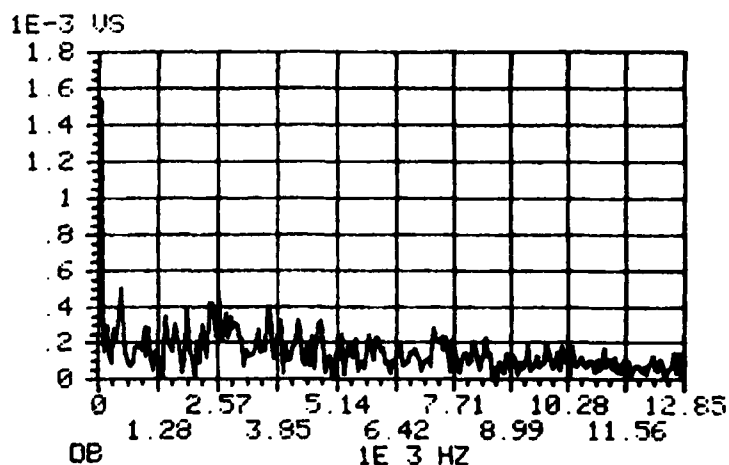
Noise Test No. 14
 Facility: UNM
 Computing Center
 Location: 6 Feet From
 Printer
 Meter Setting 70 dB
 Meter Reading 74 dB



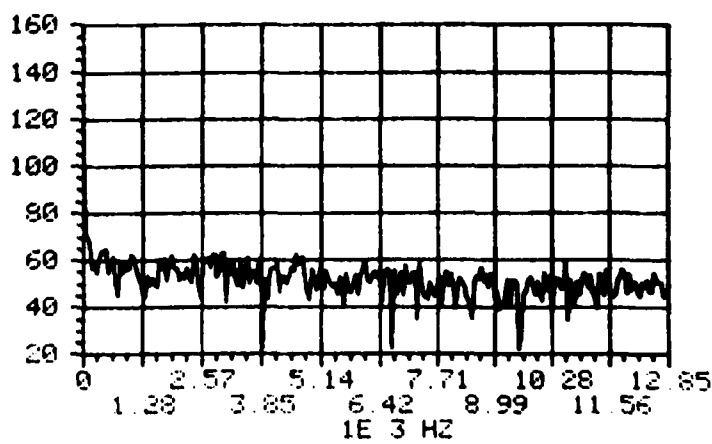
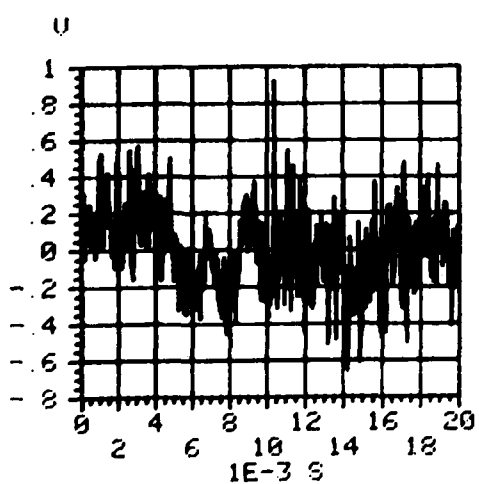
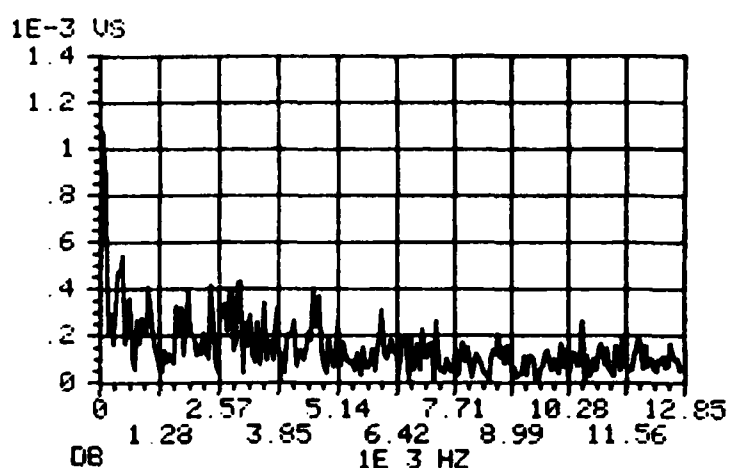
Noise Test No. 14
 Facility: UNM
 Computing Center
 Location: 6 Feet From
 Printer
 Meter Setting 70 dB
 Meter Reading 74 dB



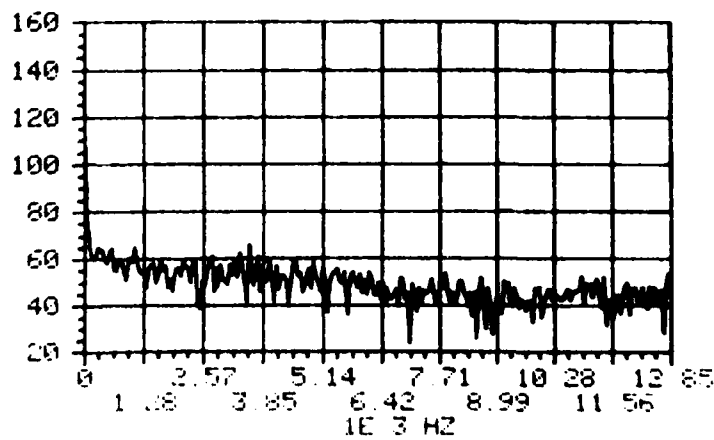
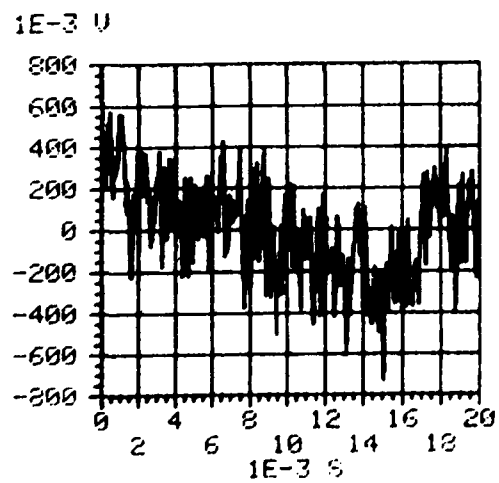
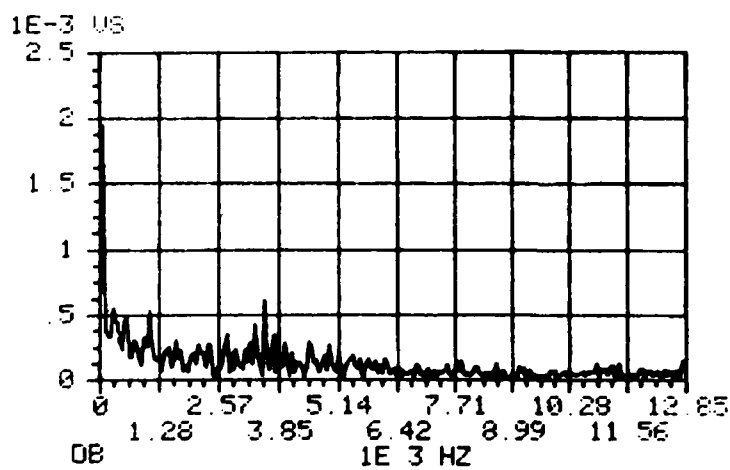
Noise Test No. 14
 Facility: UNM
 Computing Center
 Location: 6 Feet From
 Printer
 Meter Setting 70 dB
 Meter Reading 74 dB



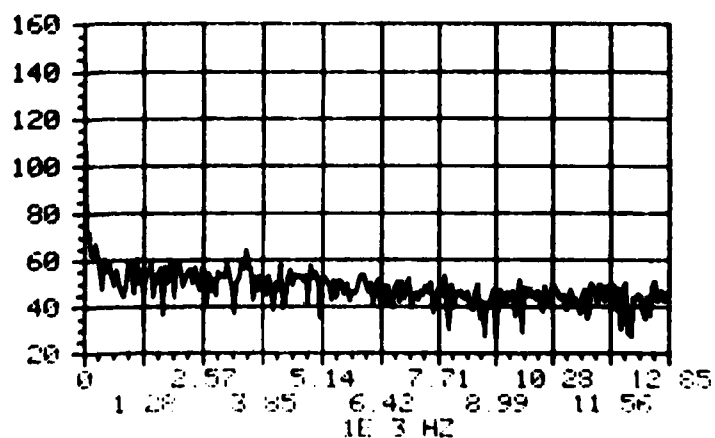
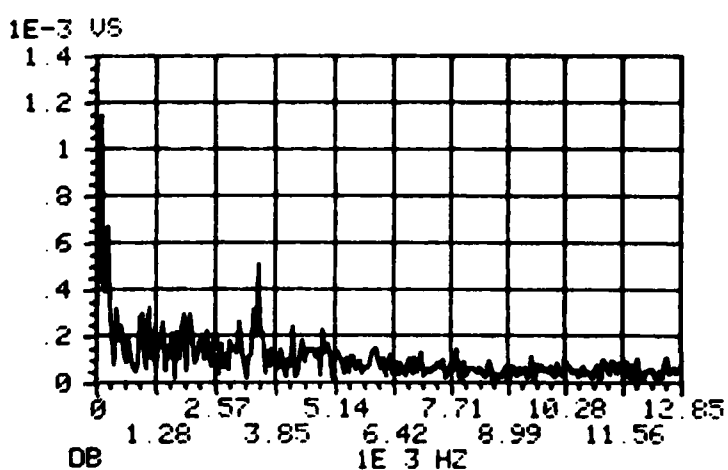
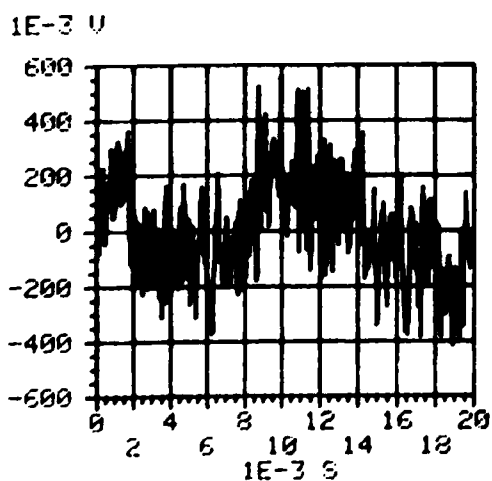
Noise Test No. 14
 Facility: UNM
 Computing Center
 Location: 6 Feet From
 Printer
 Meter Setting 70 dB
 Meter Reading 74 dB



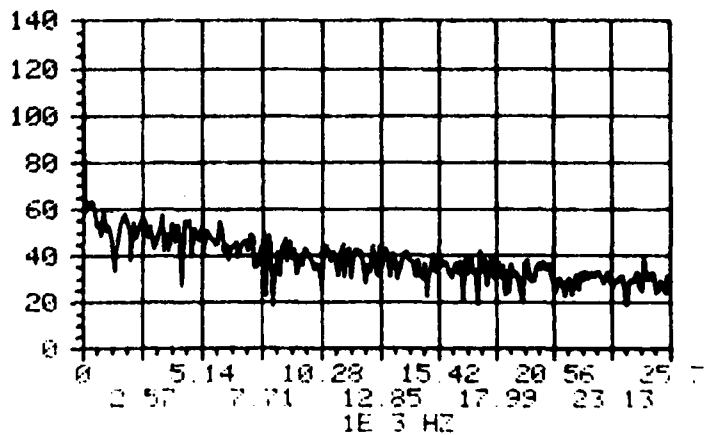
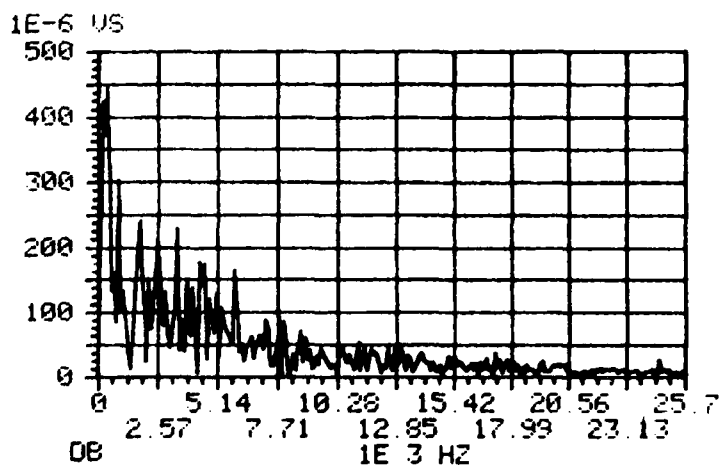
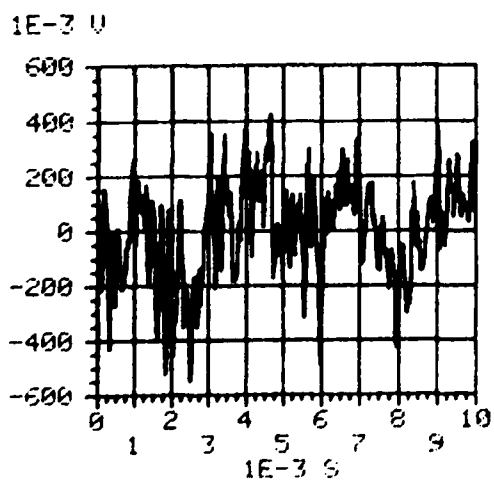
Noise Test No. 15
 Facility: UNM COMPUTING
 CENTER
 Location: 6 FEET FROM
 PRINTER
 Meter Setting 70 dB
 Meter Reading 74 dB



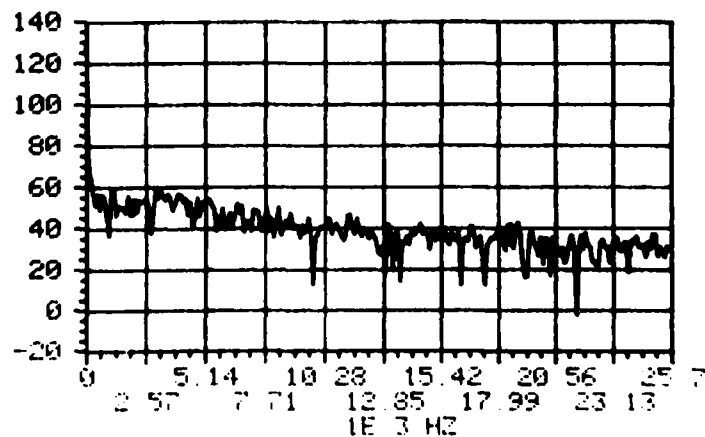
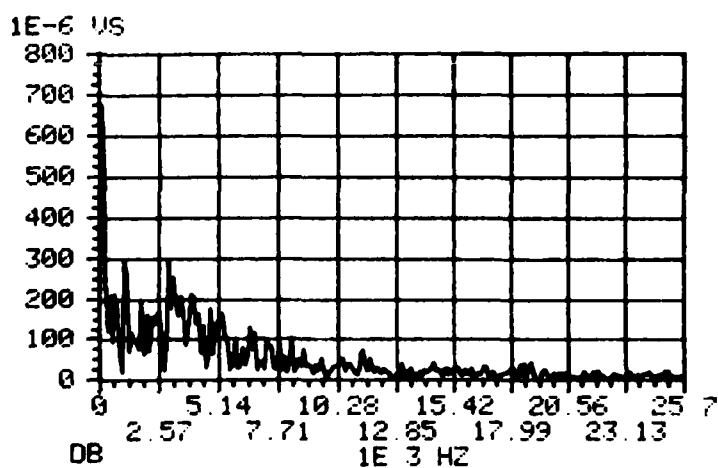
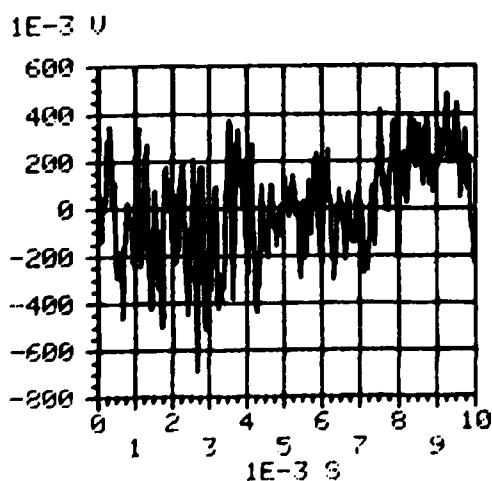
Noise Test No. 15
 Facility: UNM COMPUTING
 CENTER
 Location: 6 FEET FROM
 PRINTER
 Meter Setting 70 dB
 Meter Reading 74 dB



Noise Test No. 15
 Facility: UNM COMPUTING
 CENTER
 Location: 6 FEET FROM
 PRINTER
 Meter Setting 70 dB
 Meter Reading 74 dB

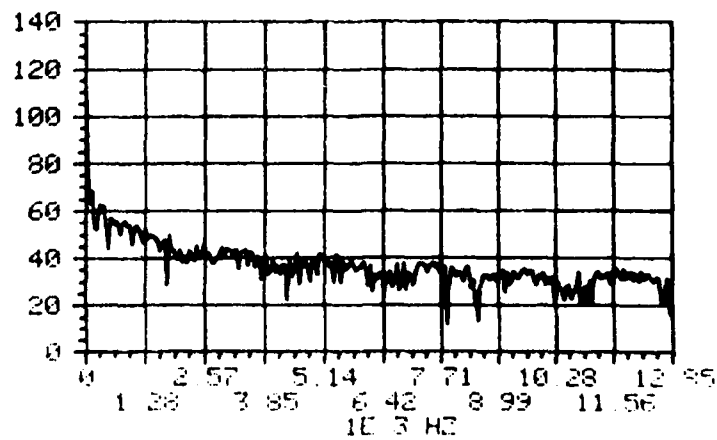
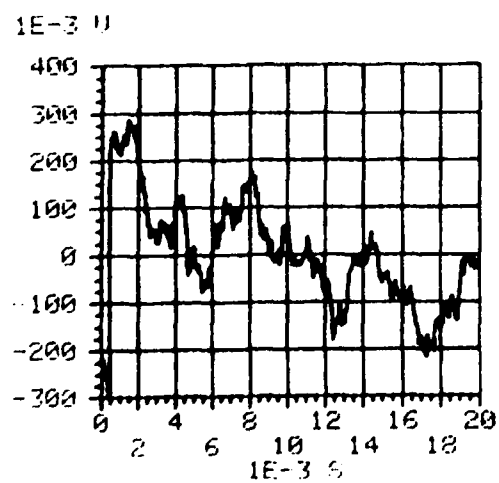
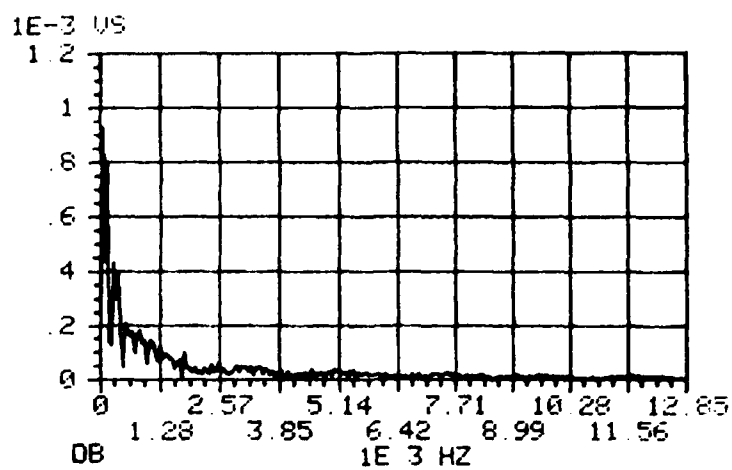


Noise Test No. 15
 Facility: UNM COMPUTING
 CENTER
 Location: 6 FEET FROM
 PRINTER
 Meter Setting 70 dB
 Meter Reading 74 dB

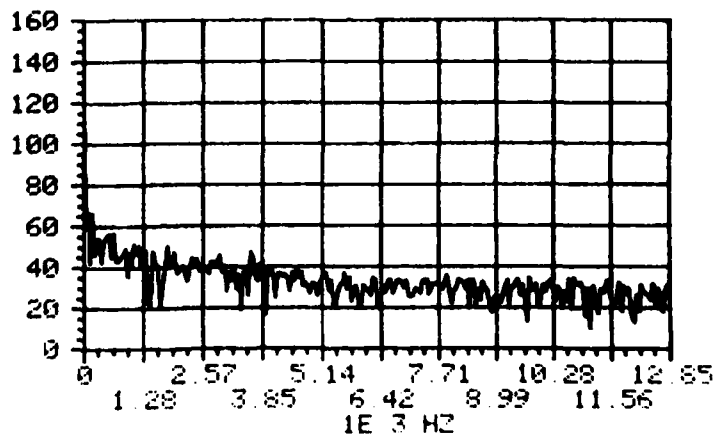
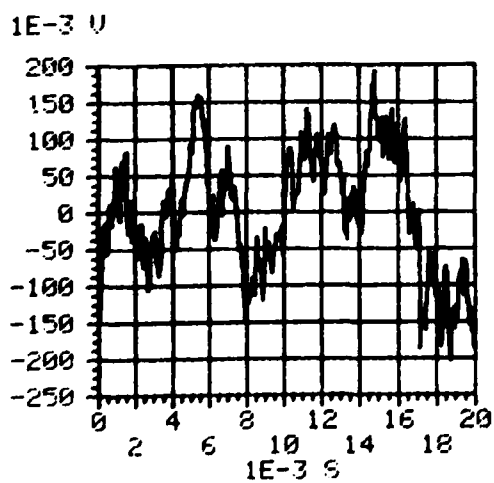
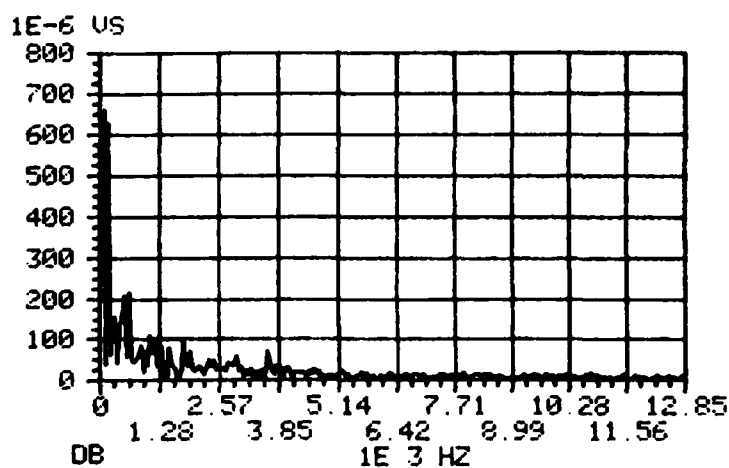


Noise Test No. 16
 Facility: UNM COMPUTING
 CENTER
 Location: CENTER OF ROOM

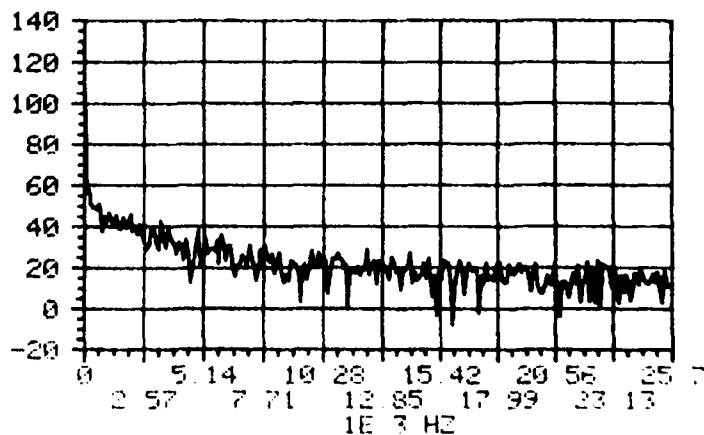
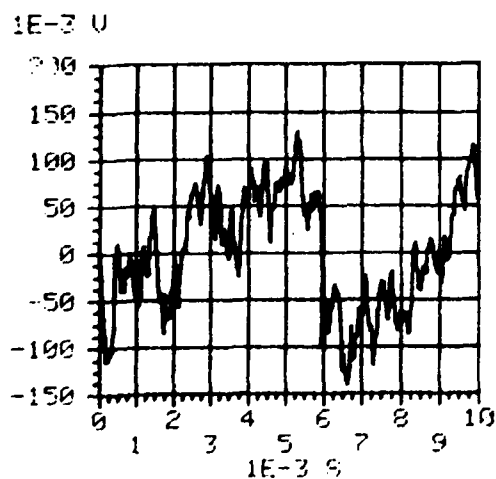
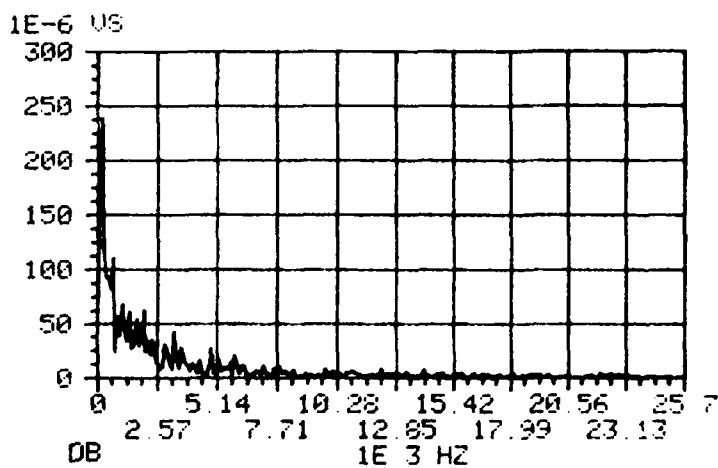
Meter Setting 70 dB
 Meter Reading 71 dB



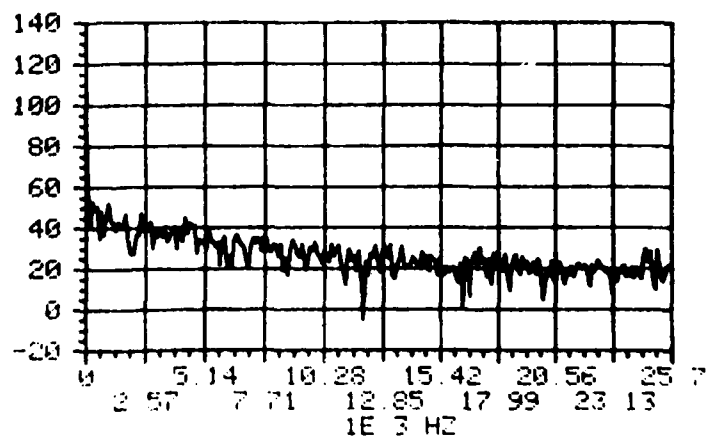
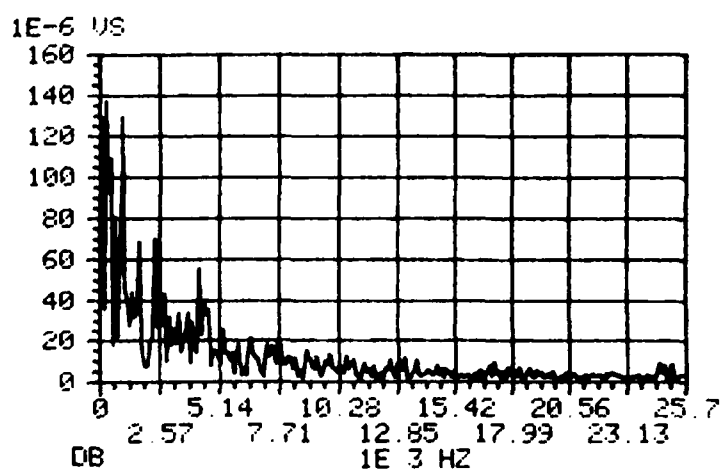
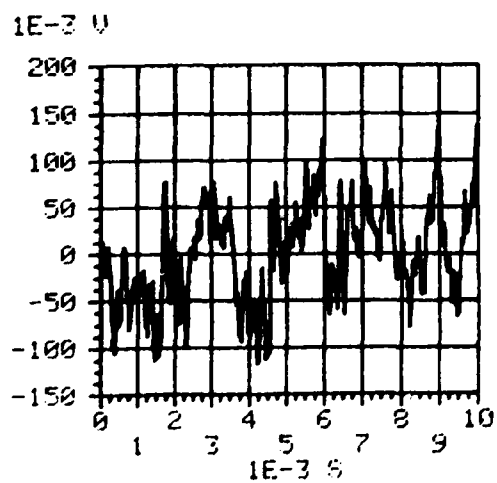
Noise Test No. 16
 Facility: UNM COMPUTING
 CENTER
 Location: CENTER OF ROOM
 Meter Setting 70 dB
 Meter Reading 71 dB



Noise Test No. 16
 Facility: UNM COMPUTING
 CENTER
 Location: CENTER OF ROOM
 Meter Setting 70 dB
 Meter Reading 71 dB



Noise Test No. 16
 Facility: UNM COMPUTING
 CENTER
 Location: CENTER OF ROOM
 Meter Setting 70 dB
 Meter Reading 71 dB



FUSIBLE ALLOY TESTS

TEST NO.	CONFIGURATION	TOTAL MASS g	OVEN TEMP. °F	ALLOY TEMP. °F	RESPONSE TIME s (PARTIAL RELEASE)
1	Thick wall 3 X 1/64 in. holes	320 (est.)	390	117	89
2	Thick wall 3 X 1/16 in. holes	320 (est.)	390	117	30
3	Thick wall 5 X 1/16 in. holes	320 (est.)	392	117	30
4	Thick wall 3 X 1/8 in. holes	320 (est.)	395	117	37
5	Thick wall 3 X 1/16 in. holes	321	400	117	33
6	Thick wall 3 X 1/64 in. holes	316	395	117	31
7	Thick wall 5 X 1/16 in. holes	315	395	117	25
8	Thick wall 3 X 1/8 in. holes	320	396	117	34
9	Circle Tube	298	396	117	15 (9)
10	Thin wall 3 X 1/16 in. holes	57	396	117	5
11	Thin wall 3 X 1/64 in. holes	63	398	117	4
12	Extension tube 12 in. X 1/8 in.	22	400	117	6
13	Extension tube 12 in. X 1/4 in.	47	397	117	6
14	Thick wall 5 X 1/16 in. holes	317	197	117	143 (105)
15	Thick wall 3 X 1/8 in. holes	315	198	117	124
16	Thin wall 3 X 1/16 in. holes	59	197	117	20
17	Thin wall 3 X 1/64 in. holes	56	198	117	22
18	Thick wall 3 X 1/64 in. holes	313	198	117	102
19	Thick wall 3 X 1/16 in. holes	320 (est)	198	117	14
20	Isotip Vapor	7 (est)	198	117	58

(continued)

FUSIBLE ALLOY TESTS
(continuation)

TEST NO.	CONFIGURATION	TOTAL MASS	OVEN TEMP. °F	ALLOY TEMP. °F	RESPONSE TIME s (PARTIAL RELEASE)
21	Isotip liquid	7 (est)	198	117	122
22	Thick wall 5 X 1/16 in. holes	419	200	117	144
23	Extension Tube 12 in. X 1/4 in.	47	200	117	27
24	Extension Tube 4 in. X 1/8 in.	13	200	117	16
25	Thin wall 3 X 1/16 in. holes	139	200	117	91
26	Isotip Vapor	7	200	117	62
27	Isotip Liquid	7	200	117	140
28	Isotip Vapor	7	200	117	57
29	Isotip Liquid	7	200	117	101
30	Extension Tube 12 in. X 1/18 in.	22	300	117	7
31	Thick 3 X 1/8 in. holes	365	300	117	52 (32)
32	Thick wall 3 X 1/64 in. holes	378	400	117	63
33	Thick wall 3 X 1/16 in. holes	414	398	117	76
34	Isotip (plus) Vapor	7	401	117	26
35	Isotip (foil) Vapor	7	398	117	12
36	Thin wall 3 X 1/64 in. holes	131	397	117	36
37	Thick wall 3 X 1/64 in. holes	418	400	158	150
38	Thick wall 3 X 1/16 in. holes	382	400	158	65
39	Isotip (foil) Liquid	7	395	158	58
40	Isotip (foil) Vapor	7	400	158	35

FUSIBLE ALLOY TESTS
(continuation)

TEST NO.	CONFIGURATION	TOTAL MASS	OVEN TEMP. °F	ALLOY TEMP. °F	RESPONSE TIME s (PARTIAL RELEASE)
41	Extension Tube 12 in. X 1/8 in.	33 (est)	400	158	15
42	Isotip (foil) Vapor	7	300	158	65
43	Isotip (foil) Vapor	7	300	158	85
44	Thick wall 3 X 1/16 in. holes	416	200	158	396
45	Thick wall 5 X 1/16 in. holes	377 (est)	200	158	260
46	Thin wall 3 X 1/16 in. holes	109	200	158	49
47	Thin wall 3 X 1/64 in. holes	138	200	158	280
48	Extension Tube 12 in. X 1/4 in.	47	200	158	50
49	Extension tube 4 in. X 1/8 in.	13	200	158	36
50	Isotip (foil) Vapor	7	200	158	137
51	Isotip (foil) Liquid	7	200	158	239
52	Thick wall 3 X 1/8 in. holes	379	400	158	63
53	Thick wall 3 X 1/64 in. holes	418	395	136	98
54	Thick wall 3 X 1/8 in. holes	381	395	136	44
55	Extension tube 13 in. X 1/8 in.	33 (est)	395	136	8
56	Isotip (foil) Vapor	7	395	136	42
57	Isotip (foil) Liquid	7	395	136	56
58	Isotip (foil) Vapor	7	300	136	53
59	Isotip (foil) Liquid	7	300	136	72
60	Thick wall 3 X 1/16 in. holes	416 (est)	200	136	250

(continued)

FUSIBLE ALLOY TESTS
(continuation)

TEST NO.	CONFIGURATION	TOTAL MASS	OVEN TEMP. °F	ALLOY TEMP. °F	RESPONSE TIME s (PARTIAL RELEASE)
61	Thick wall 5 X 1/16 in. holes	377	377	136	150
62	Thin wall 3 X 1/16 in. holes	110	200	136	21
63	Thin wall 3 X 1/64 in. holes	139	200	136	145
64	Isotip (foil) Vapor	7	200	136	115
65	Isotip (foil) Liquid	7	200	130	161
66	Extension Tube 12 in. X 1/4 in.	47	200	136	30
67	Extension tube 12 in. X 1/8 in.	13	200	136	30
68	Extension tube 12 in. X 1/4 in.	49	395	255	35
69	Extension tube 12 in. X 1/8 in.	22	395	255	26
70	Thin wall 3 X 1/16 in. holes	110 (est)	395	255	119
71	Thick wall 3 X 1/16 in. holes	382 (est)	395	255	186
72	Copper clad		395	117	112
73	Nylon tube		400	Nylon	15

VAPORIZING LIQUID SENSOR TESTS (VLS)

Bourdon Tube Pressure Gage Tests

TEST NO.	HALON	OVEN TEMP. °F	SENSOR ^a	PRESSURE PSIG	TIME (SEC)
1	1211	200 ⁰ F		15	0
				20	1.8
				25	18.1
				30	25.4
				35	43.1
				40	93
				45	157
				48	311
2	1211	140 ⁰	1	15	0
				20	29.0
				25	78
				30	162
				34	295
3	1211	100 ⁰ F	1	10	0
				15	44.5
				20	135
				21	381
4	2402	100 ⁰	1	0	0
				1	360
5	2402	100 ⁰	2	0	0
				.5	480
6	2402	100 ^c	3	0	0
				1	600
7	2402	100 ⁰	4	0	0
				.25	480
8	2402	120 ⁰	1	0	0
				.5	600
9	2402	120 ⁰	2	0	0
				.5	600
10	2402	140 ⁰	1	0	0
				2	420
11	2402	140 ⁰	2	0	0
				1	420
12	2402	140 ⁰	3	0	0
				5	116
				6	600
13	2402	140 ⁰	4	0	0
				.5	600
14	2402	160 ⁰	1	0	0
				5	309
				5	420

(continued)

(continuation) VAPORIZING LIQUID SENSOR TESTS (VLS)
Bourdon Tube Pressure Gage Tests

TEST NO.	HALON	OVEN TEMP. °F	SENSOR ^d	PRESSURE PSIG	TIME (SEC)
15	2402	160 ⁰	2	0 1	0 420
16	2402	200 ⁰	1	0 5 7	0 68 390
17	2402	200 ⁰	2	0 .5	0 300
18	2402	200 ⁰	3	0 5 10 10	0 33 160 300
19	2402	200 ⁰	4	0 1	0 300
20	2402	240 ⁰	2	0 .5	0 300

SENSORS^a

1. 1/4" diameter straight copper tube 20" length - 255⁰F fusible link.
2. 1/8" diameter straight copper tube 20" length - 255⁰F fusible link.
3. 1/4" diameter copper tube 40" length with 180⁰ bend at midpoint 255⁰F fusible link.
4. 1/8" diameter straight copper tube 10" length 255⁰F fusible link.

ELECTRONIC PRESSURE TRANSDUCER^a TESTS

TEST NO.	HALON/FILL %	OVEN TEMP °F	SENSOR ^b	PRESSURE PSIG	TIME (SEC)
21	1211/80	100	1	27.0	0
				27.8	5
				27.9	10
				28.2	15
				29.5	20
				29.8	25
				31.6	30
				33.0	35
				33.1	40
				34.0	45
				34.6	50
				35.2	55
				35.7	60
				36.2	65
				36.7	70
				37.4	75
				38.0	80
				38.4	85
				38.9	90
				39.2	95
				39.5	100
				39.8	105
				39.9	110
				40.3	115
				40.6	120
				41.6	140
				42.6	160
				43.3	190
				44.1	260
				44.6	320
				44.6	380
				44.9	440

(continuation) ELECTRONIC PRESSURE TRANSDUCER^a TESTS

TEST NO.	HALON/FILL %	OVEN TEMP °F	SENSOR ^b	PRESSURE PSIG	TIME (SEC)
22	1211/80	200	1	24.9	0
				27.8	5
				35.1	10
				43.9	15
				51.6	20
				59.1	25
				67.2	30
				73.1	25
				80.7	40
				86.6	45
				93.1	50
				99.0	55
				103.0	60
				109.5	65
				113.2	70
				118.2	75
				121.8	80
				125.7	85
				129.2	90
				132.2	95
				133.5	100
				138.8	105
				141.1	110
				142.2	115
				145.3	120
				152.4	140
				158.2	160
				164.4	190
				188.9	260

(continuation) ELECTRONIC PRESSURE TRANSDUCER^a TESTS

TEST NO.	HALON/FILL %	OVEN TEMP °F	SENSOR ^b	PRESSURE PSIG	TIME (SEC)
22 (continued)	1211/80	200	1	193.1	320
				194.6	380
				196.7	450
				197.6	510
				199.0	570
				199.0	630
23	2402/80	100	1	0.5	0
				0.7	5
				0.9	10
				1.0	15
				1.1	20
				1.3	25
				1.4	30
				1.6	35
				1.6	40
				1.8	45
				1.9	50
				2.0	60
				2.6	90
				3.0	120
				3.5	150
				3.7	180
24	2402/80	200	1	4.1	240
				4.2	300
				4.3	360
				0.6	0
				1.2	5
				2.5	10

(continuation) ELECTRONIC PRESSURE TRANSDUCER^a TESTS

TEST NO.	HALON/FILL %	OVEN TEMP °F	SENSOR ^b	PRESSURE PSIG	TIME (SEC)
24	2402/80	200	1	4.6	15
(continued)				5.7	20
				6.7	25
				8.2	30
				10.0	35
				11.6	40
				13.8	45
				15.7	50
				18.3	55
				20.0	60
				22.5	65
				23.7	70
				25.6	75
				26.9	80
				28.0	85
				29.3	90
				30.2	95
				31.2	100
				33.5	105
				35.7	110
				36.4	115
				37.1	120
				39.6	140
				42.0	160
				44.5	190
				47.7	260
				48.4	320
				49.1	380
				49.3	440

(continuation) ELECTRONIC PRESSURE TRANSDUCER^a TESTS

TEST NO.	HALON/FILL %	OVEN TEMP °F	SENSOR ^b	PRESSURE PSIG	TIME (SEC)
25	2402/50	100	4	0.3	0
				0.8	5
				1.2	10
				1.6	15
				1.7	20
				1.8	25
				2.0	30
				2.1	40
				2.2	50
				2.3	60
				2.4	90
				2.5	120
				2.5	150
26	2402/50	200	4 (1/2 in oven)	0.0	0
				2.5	5
				7.2	10
				9.4	15
				11.3	20
				12.4	25
				13.3	30
				14.6	35
				15.3	40
				15.9	45
				16.1	50
				16.3	55
				16.4	60
				16.8	65
				17.3	70
				17.1	75

(continuation) ELECTRONIC PRESSURE TRANSDUCER^a TESTS

TEST NO.	HALON/FILL %	OVEN TEMP °F	SENSOR ^b	PRESSURE PSIG	TIME (SEC)
26	2402/50	200	4	17.8	80
(continued)			(1/2 in oven)	17.8	85
				17.9	90
				18.2	95
				18.0	100
				18.4	105
				17.9	110
				18.7	115
				18.8	120
				19.8	140
				20.8	160
				22.3	200
				22.8	260
				23.0	320
				23.5	380
				24.4	440
				24.4	500
27	2402/50	200	4	0.0	0
				2.5	5
				4.5	10
				8.8	15
				10.4	20
				12.5	25
				13.0	30
				13.5	35
				14.2	40
				15.3	45
				16.1	50
				17.2	55

(continuation) ELECTRONIC PRESSURE TRANSDUCER^a TESTS

TEST NO.	HALON/FILL %	OVEN TEMP °F	SENSOR ^b	PRESSURE PSIG	TIME (SEC)
27	2402/50	200	4	18.6	60
(continued)				19.0	65
				20.3	70
				20.7	75
				21.4	80
				22.2	85
				23.0	90
				28.0	95
				29.2	100
				27.0	105
				27.2	110
				27.8	115
				28.6	120
				30.0	140
				31.0	160
				36.1	200
				37.2	250
				38.4	310
				39.0	370
				39.8	430
				39.8	490
28	2402/50	100	1	0.1	0
				1.5	5
				2.9	10
				3.3	15
				3.8	20
				3.9	25
				4.1	30

(continuation) ELECTRONIC PRESSURE TRANSDUCER^a TESTS

TEST NO.	HALON/FILL %	OVEN TEMP °F	SENSOR ^b	PRESSURE PSIG	TIME (SEC)
28 (continued)	2402/50	100	1	4.6	60
				5.0	90
				5.2	120
				5.2	150
				5.3	180
				5.3	240
29	2402/50	150	1	0.0	0
				2.5	5
				3.9	10
				6.4	15
				7.3	20
				7.8	25
				8.0	30
				9.6	40
				10.3	50
				11.0	60
				15.0	90
				16.2	120
				16.6	160
				15.1	220
30	2402/50	200	1	15.0	280
				0.3	0
				2.0	5
				5.1	10
				6.7	15
				8.5	20
				10.2	25
				12.5	30
				15.6	40

(continuation) ELECTRONIC PRESSURE TRANSDUCER^a TESTS

TEST NO.	HALON/FILL %	OVEN TEMP °F	SENSOR ^b	PRESSURE PSIG	TIME (SEC)
30	2402/50	200	1	18.9	50
(continued)				21.8	60
				29.7	90
				35.0	120
				37.1	150
				38.7	180
				40.0	210
				41.3	240
				43.0	290
				43.7	350
				43.9	410
				44.2	470
31	2402/50	200	1	0.1	0
			(1/2 in oven)	2.0	5
				2.5	10
				3.2	15
				4.4	20
				6.0	25
				7.8	30
				9.7	40
				14.0	50
				16.1	60
				21.3	90
				23.5	120
				25.0	150
				25.9	180
				26.5	210
				27.2	250
				27.5	310
				28.0	370

(continuation) ELECTRONIC PRESSURE TRANSDUCER^a TESTS

TEST NO.	HALON/FILL %	OVEN TEMP °F	SENSOR ^b	PRESSURE PSIG	TIME (SEC)
31	2402/50	200	1	28.5	430
(continued)				28.7	490
				28.9	550
				28.8	610

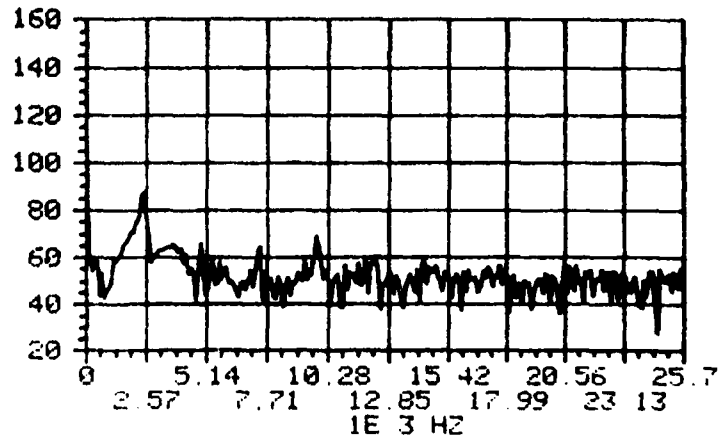
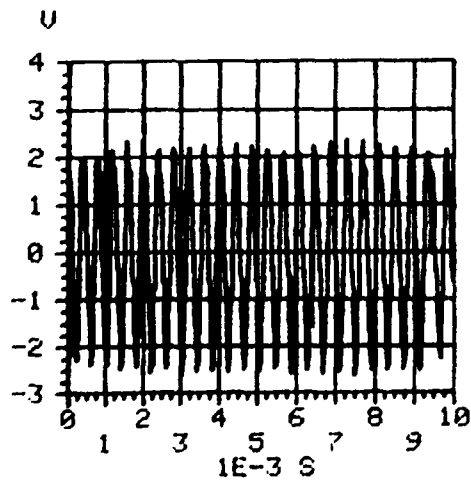
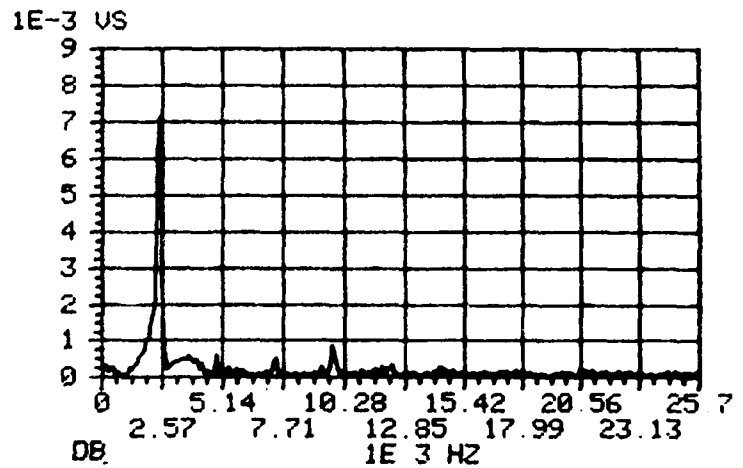
^aKulite Model XST-190-1000

SENSORS^b

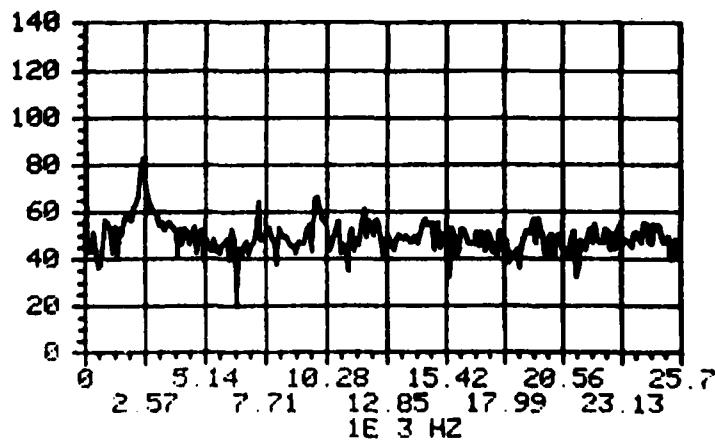
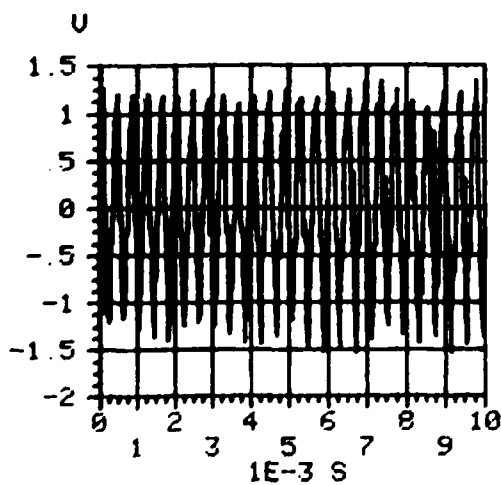
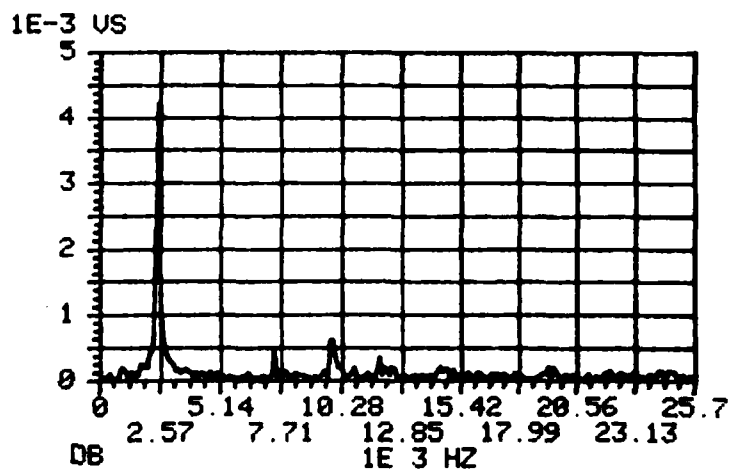
1. 1/4" diameter straight copper tube 20" length - 255°F fusible link.
2. 1/8" diameter straight copper tube 20" length - 255°F fusible link.
3. 1/4" diameter copper tube 40" length with 180° bend at midpoint
255°F fusible link.
4. 1/8" diameter straight copper tube 10" length 255°F fusible link.

ACOUSTIC COUPLING ALARM TESTS

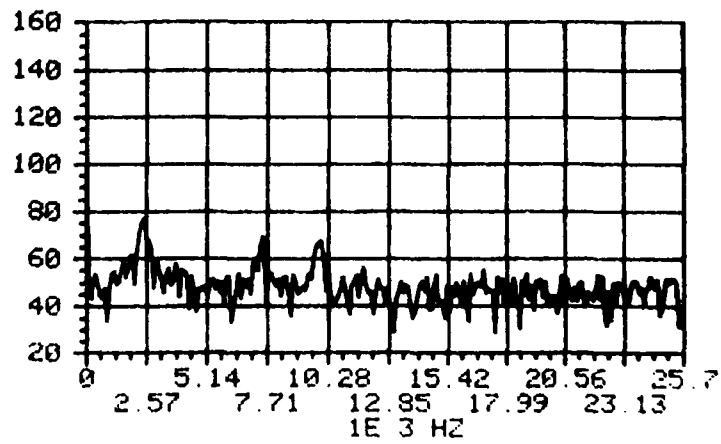
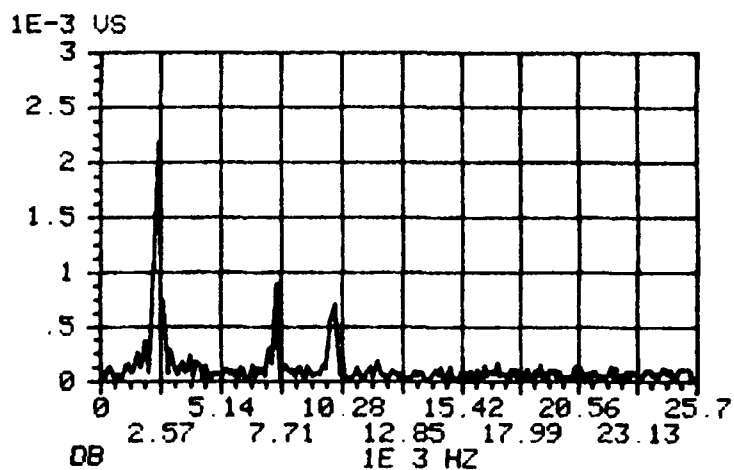
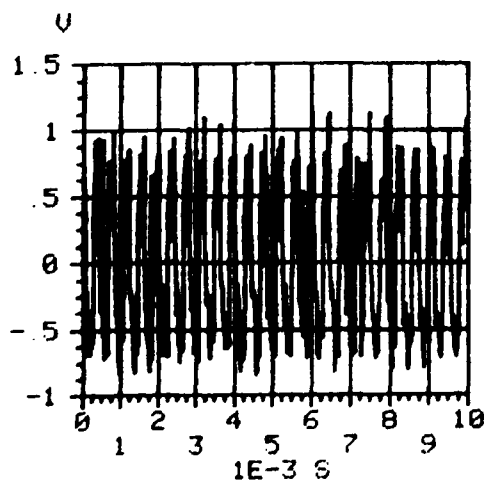
Alarm Test No. 1
 Alarm Type: PETERZELL CO.
 Driving Vapor HALON 1211
 Temperature (RM. TEMP.) °F
 Pressure - psig
 Flowrate (1 hole valve) std 1/m
 Meter Setting 70 dB



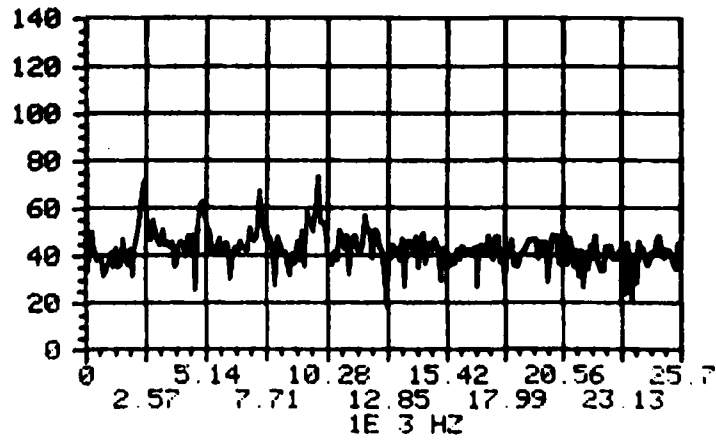
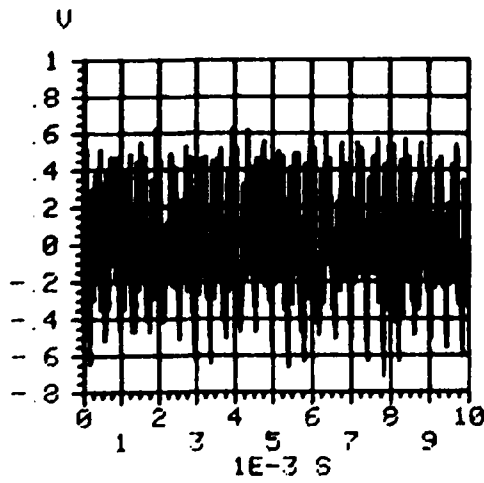
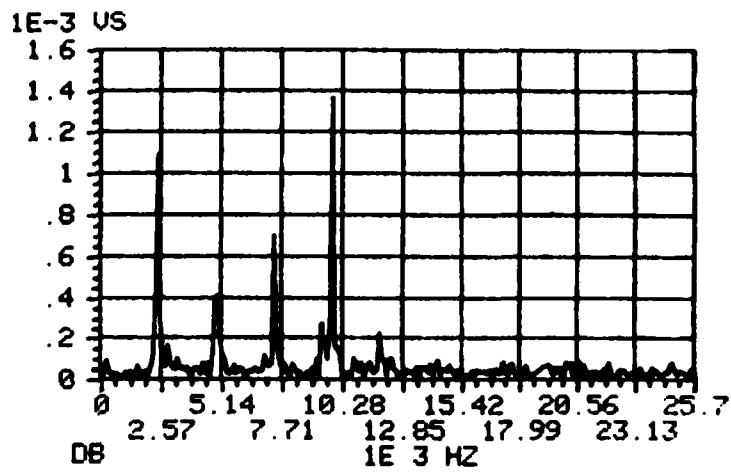
Alarm Test No. 1
 Alarm Type: PETERZELL CO.
 Driving Vapor HALON 1211
 Temperature (RM. TEMP.) °F
 Pressure - psig
 Flowrate (1 hole valve) std l/m
 Meter Setting 70 dB



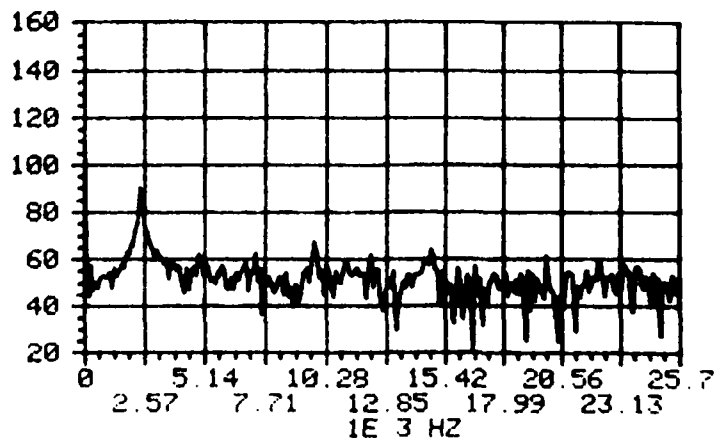
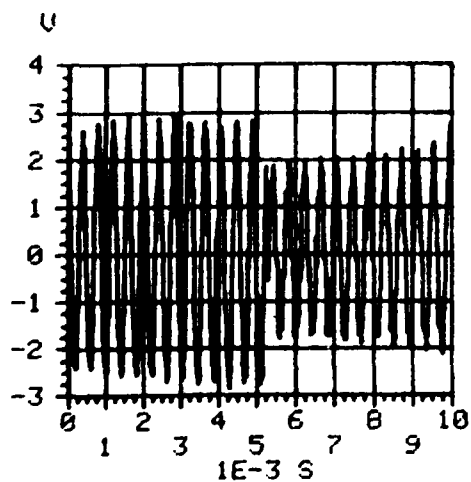
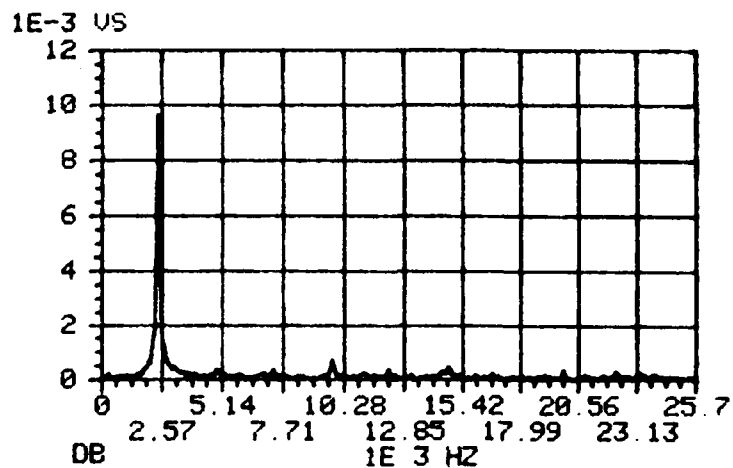
Alarm Test No. 1
 Alarm Type: PETERZELL CO.
 Driving Vapor HALON 1211
 Temperature (RM. TEMP.) °F
 Pressure - psig
 Flowrate (1 hole valve) std 1/m
 Meter Setting 70 dB



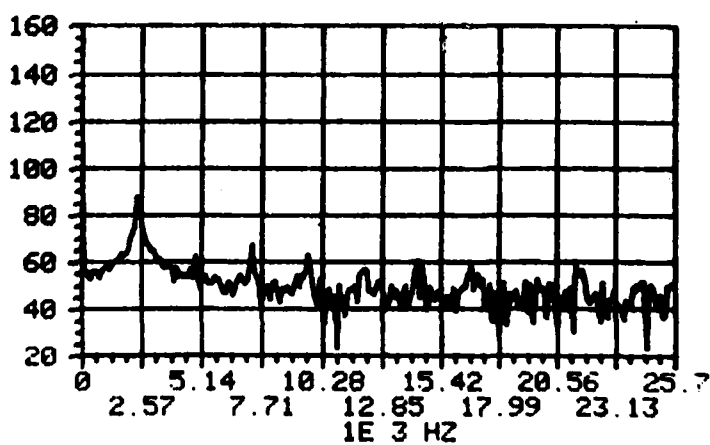
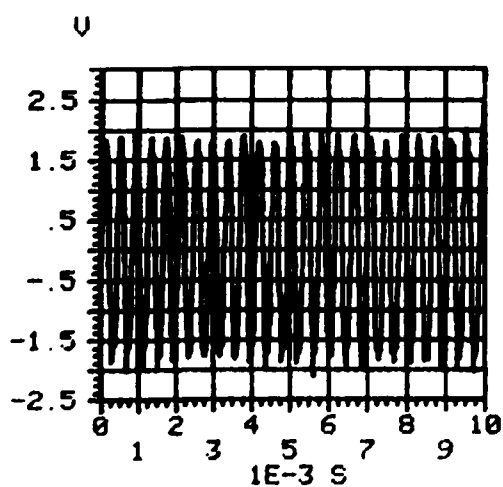
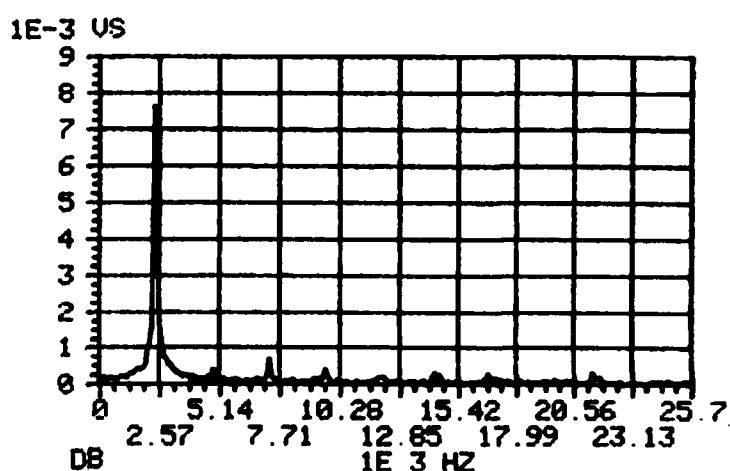
Alarm Test No. 1
 Alarm Type: PETERZELL CO.
 Driving Vapor HALON 1211
 Temperature (RM. TEMP.) °F
 Pressure - psig
 Flowrate (1 hole valve) std l/m
 Meter Setting 70 dB



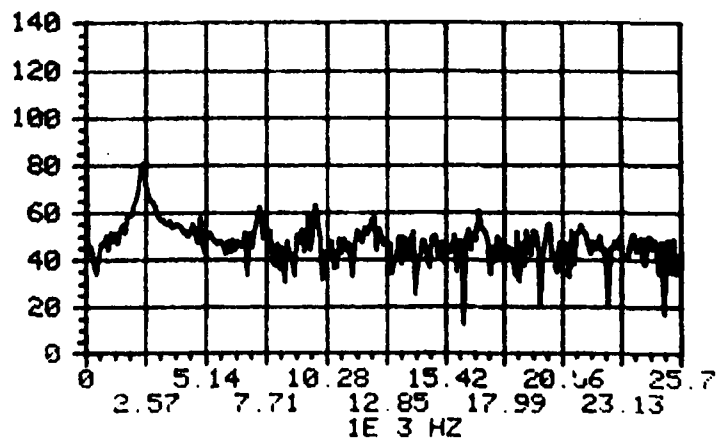
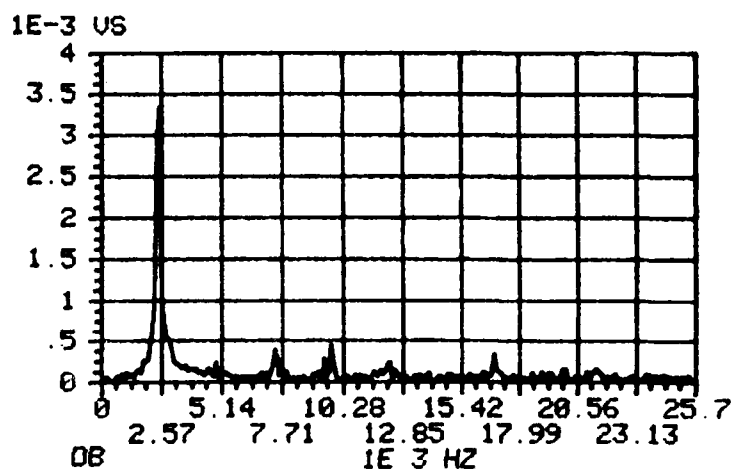
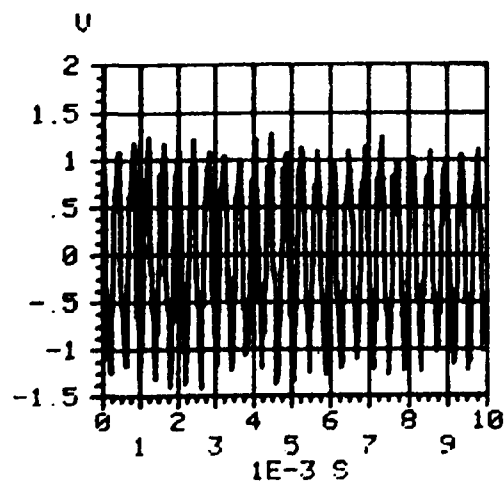
Alarm Test No. 2
 Alarm Type: PETERZELL CO.
 Driving Vapor: HALON 1211
 Temperature (RM. TEMP) °F
 Pressure - psig
 Flowrate (2 hole valve) std l/m
 Meter Setting 70 dB



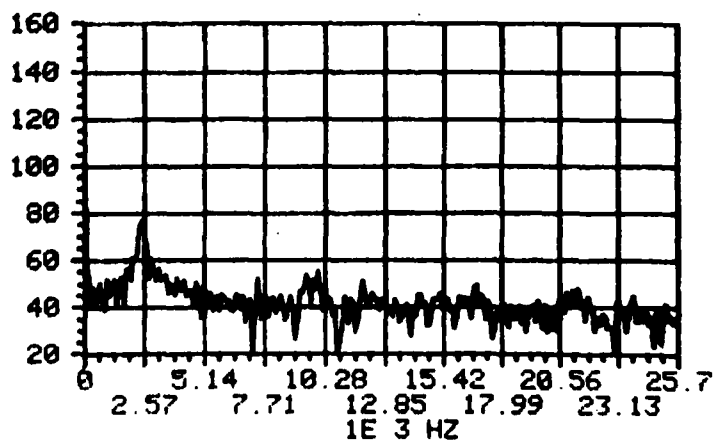
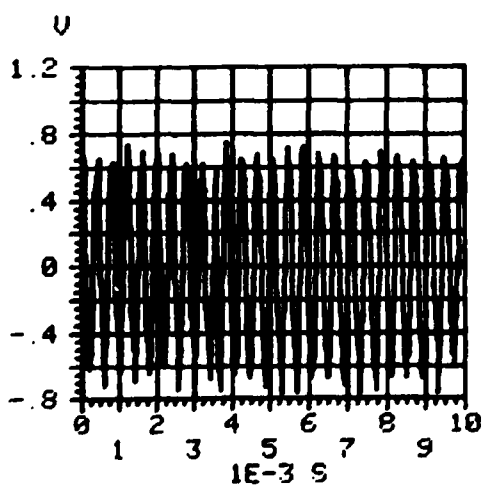
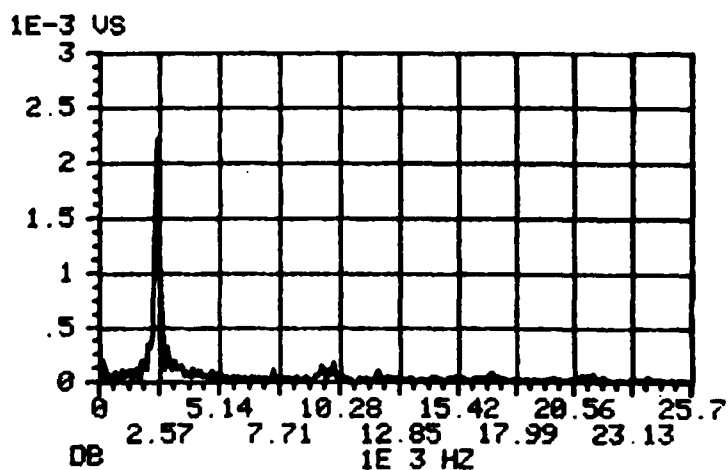
Alarm Test No. 2
 Alarm Type: PETERZELL CO.
 Driving Vapor HALON 1211
 Temperature (RM. TEMP) °F
 Pressure - psig
 Flowrate (2 hole valve) std l/m
 Meter Setting 70 dB



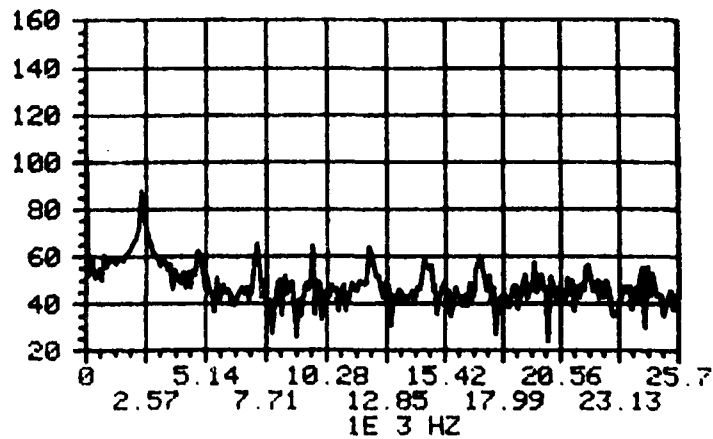
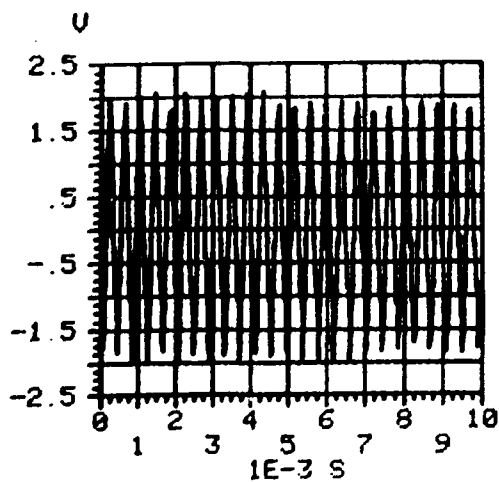
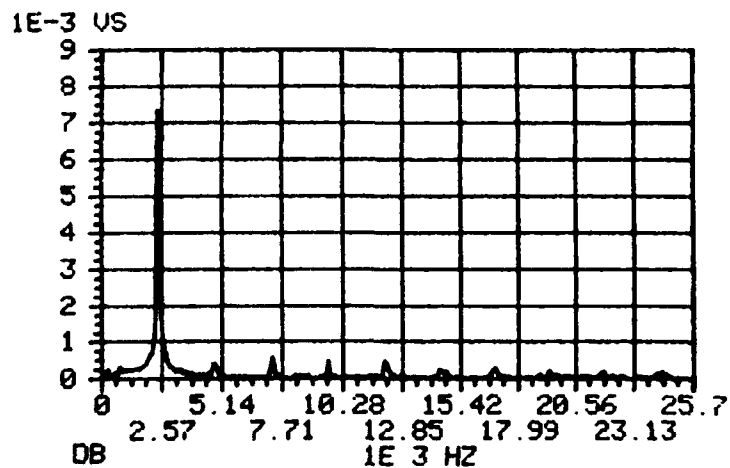
Alarm Test No. 2
 Alarm Type: PETERZELL CO.
 Driving Vapor HALON 1211
 Temperature (RM. TEMP) °F
 Pressure - psig
 Flowrate (2 hole valve) std l/m
 Meter Setting 70 dB



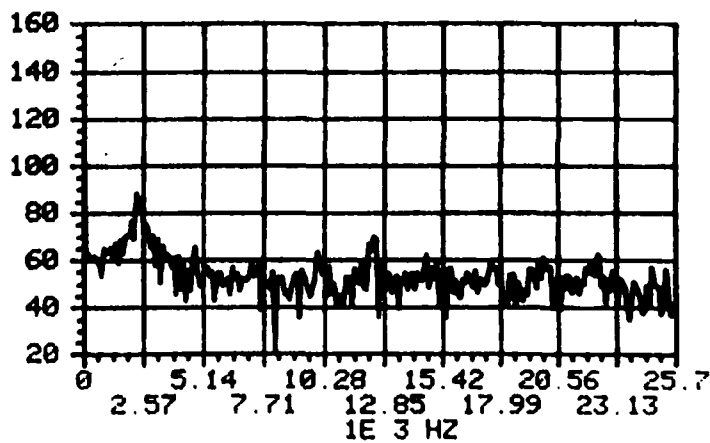
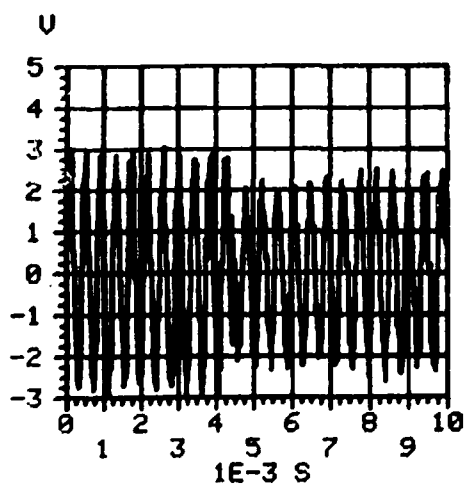
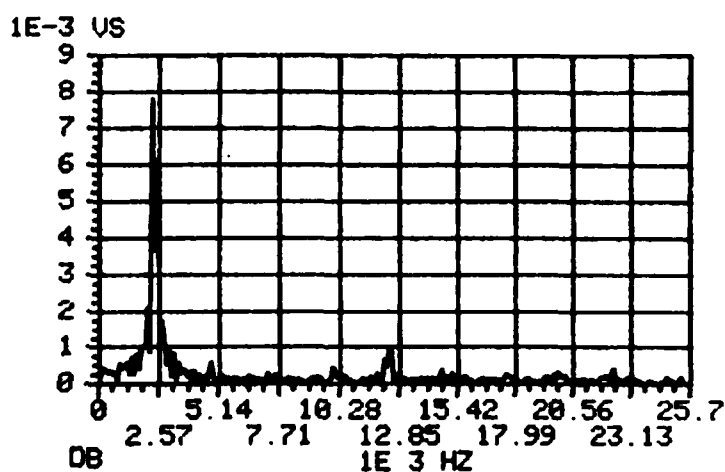
Alarm Test No. 2
 Alarm Type: PETERZELL CO.
 Driving Vapor HALON 1211
 Temperature (RM. TEMP) °F
 Pressure - psig
 Flowrate (2 hole valve) std l/m
 Meter Setting 70 dB



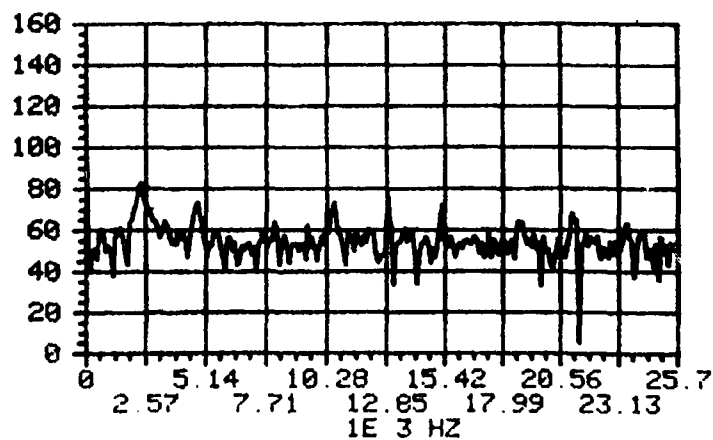
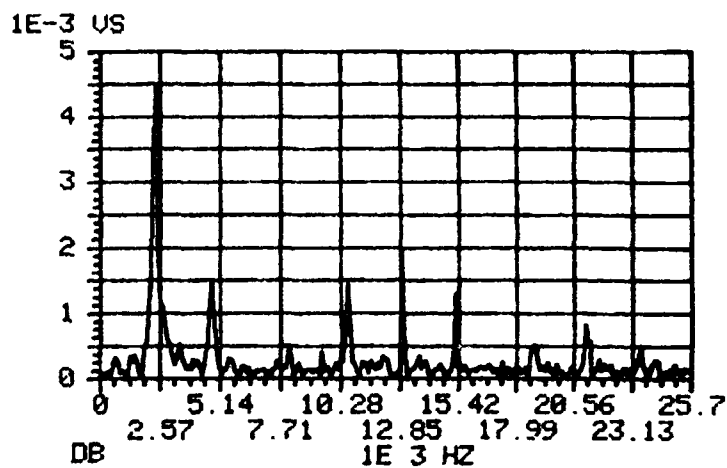
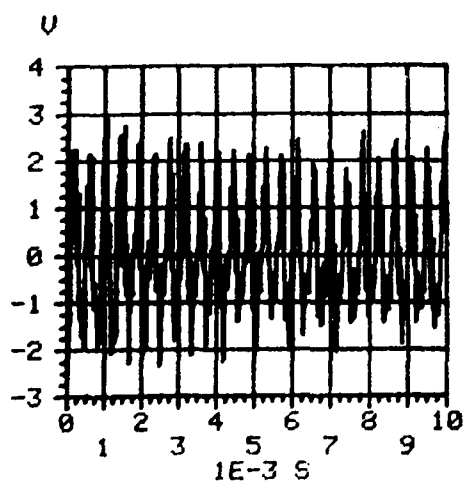
Alarm Test No. 3
 Alarm Type: PETERZELL CO.
 Driving Vapor HALON 1211
 Temperature (RM, TEMP) °F
 Pressure - psig
 Flowrate(3 hole valve) std l/m
 Meter Setting 70 dB



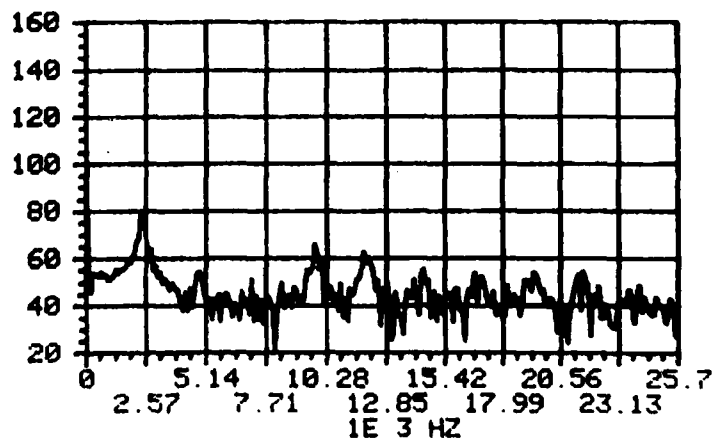
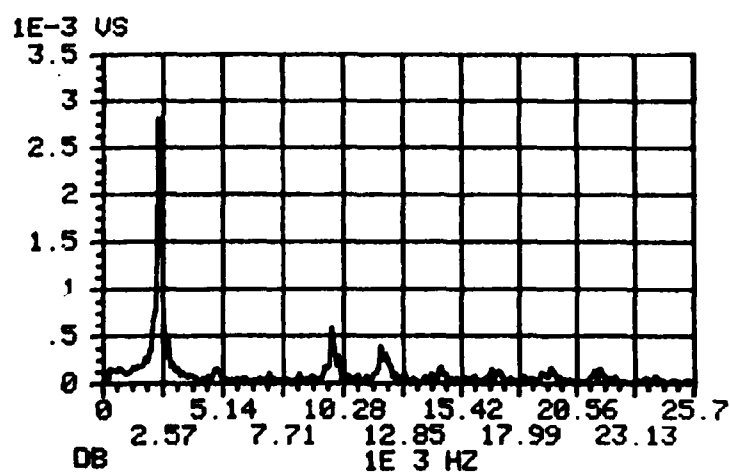
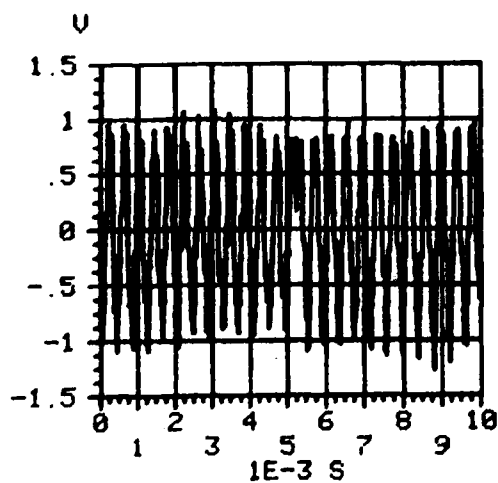
Alarm Test No. 3
 Alarm Type: PETERZELL CO.
 Driving Vapor HALON 1211
 Temperature (RM. TEMP) °F
 Pressure - psig
 Flowrate(3 hole valve) std l/m
 Meter Setting 70 dB



Alarm Test No. 3
 Alarm Type: PETERZELL CO.
 Driving Vapor HALON 1211
 Temperature (RM. TEMP) °F
 Pressure - psig
 Flowrate(3 hole valve) std l/m
 Meter Setting 70 dB

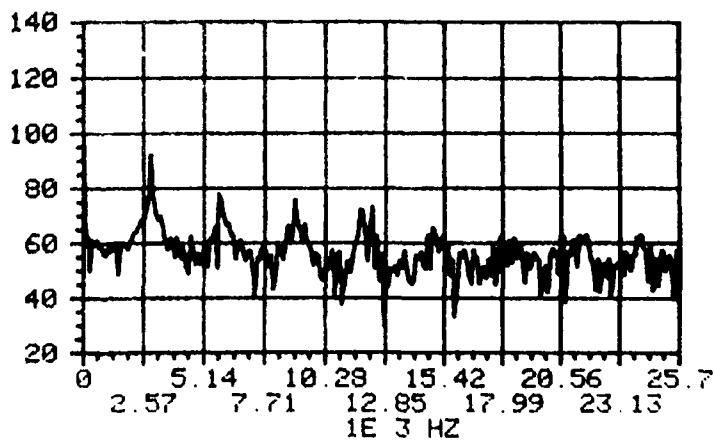
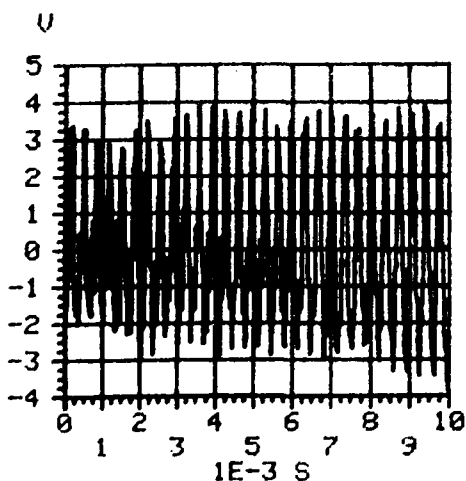
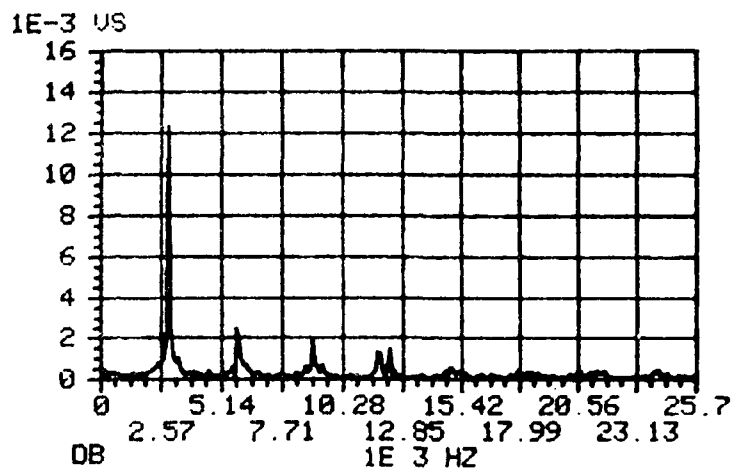


Alarm Test No. 3
 Alarm Type: PETERZELL CO.
 Driving Vapor HALON 1211
 Temperature (RM. TEMP) °F
 Pressure - psig
 Flowrate(3 hole valve) std l/m
 Meter Setting 70 dB

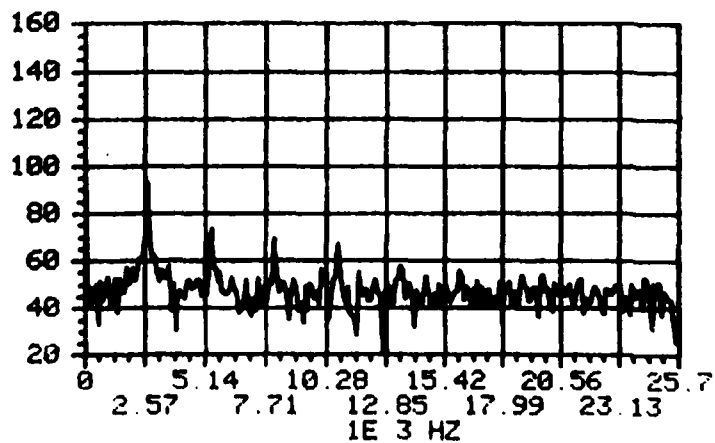
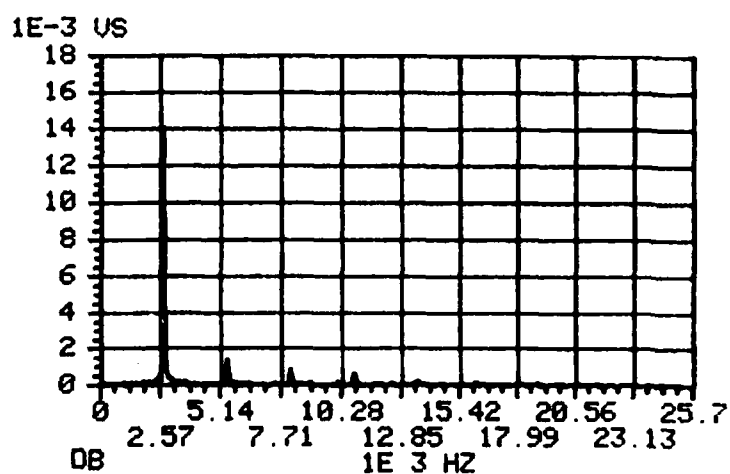
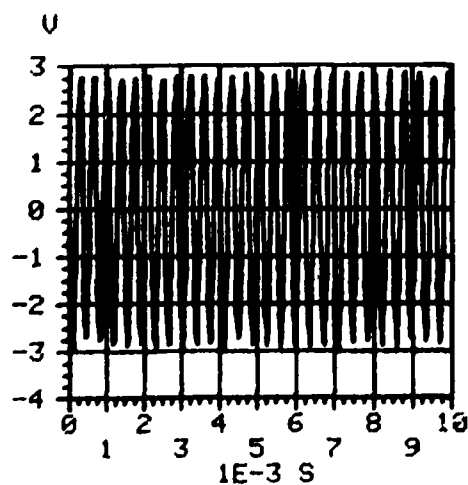


Alarm Test No. 4
 Alarm Type: PETERZELL CO.

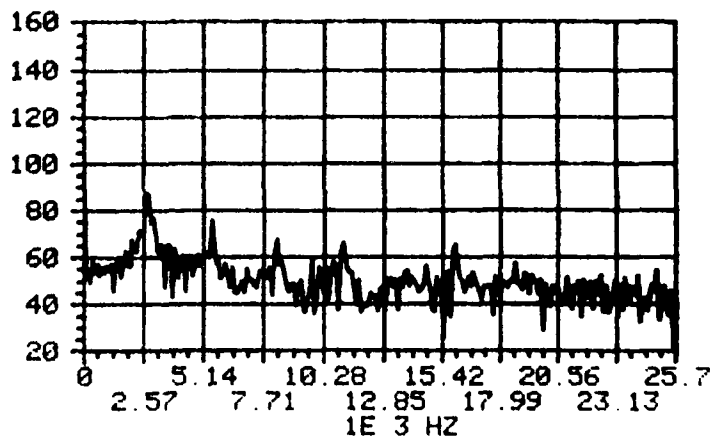
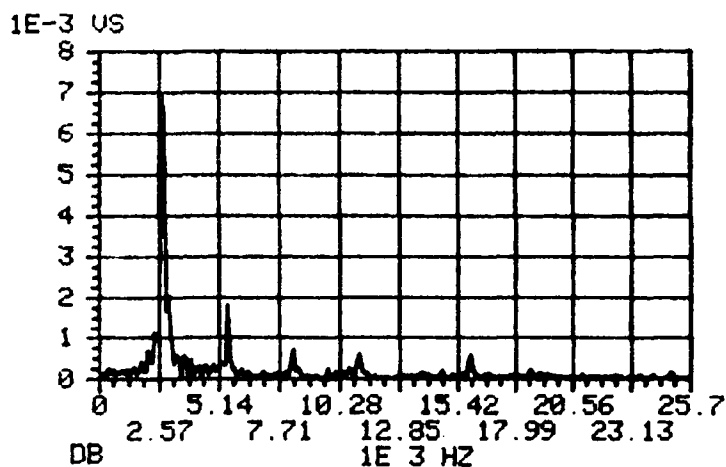
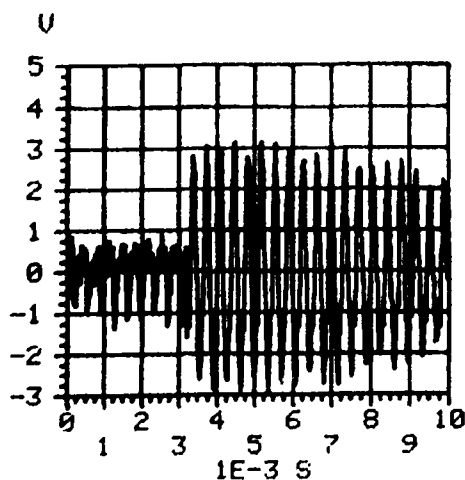
Driving Vapor: FREON 12
 Temperature: (RM. TEMP) °F
 Pressure: psig
 Flowrate (2 hole valve) std l/m
 Meter Setting: 70 dB



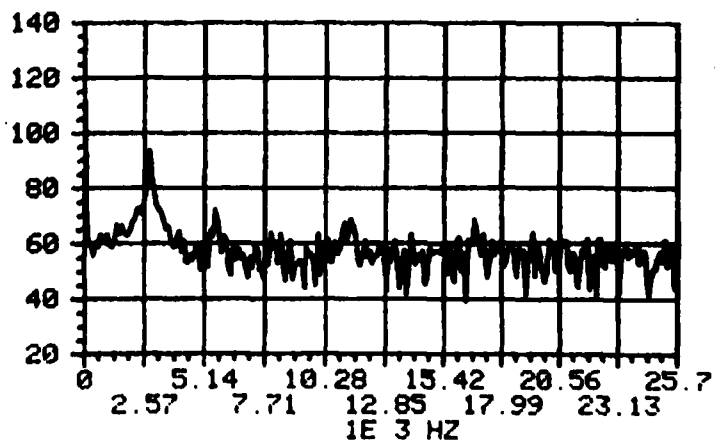
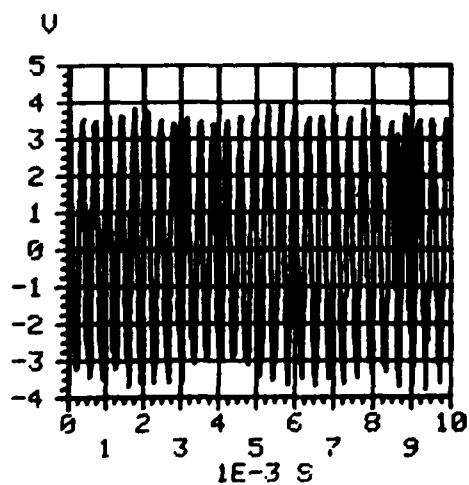
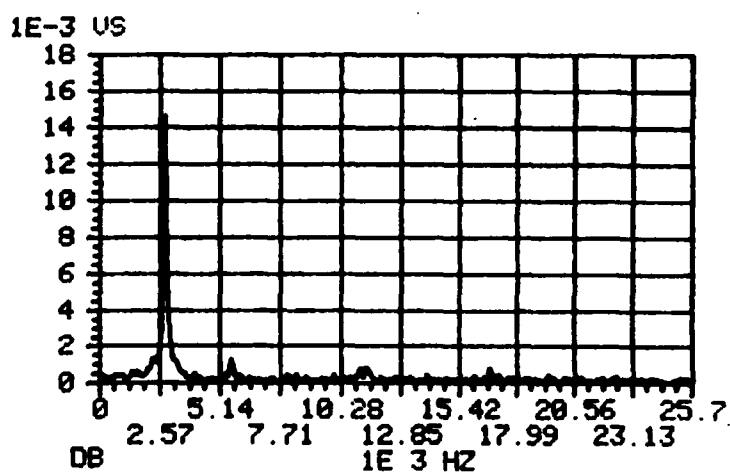
Alarm Test No. 4
 Alarm Type: PETERZELL CO.
 Driving Vapor FREON 12
 Temperature (RM. TEMP) °F
 Pressure - psig
 Flowrate (2 hole valve) std l/m
 Meter Setting 70 dB



Alarm Test No. 4
 Alarm Type: PETERZELL CO.
 Driving Vapor FREON 12
 Temperature (RM. TEMP) 71
 Pressure - psig
 Flowrate (2 hole valve) std l/m
 Meter Setting 70 dB

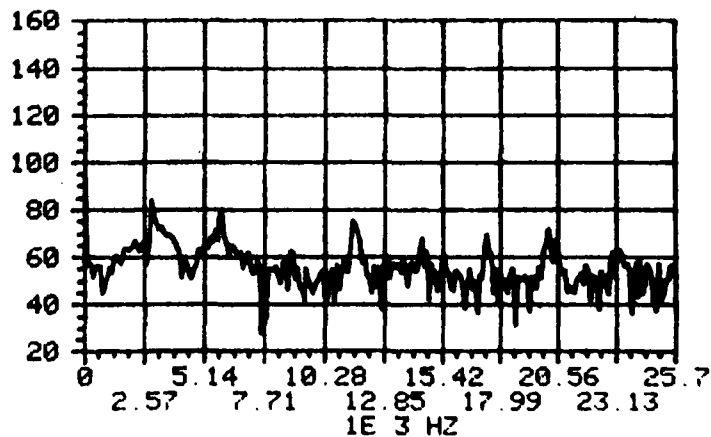
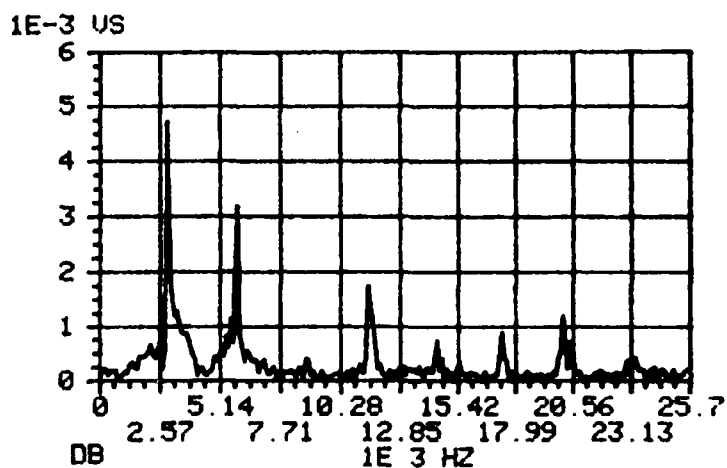
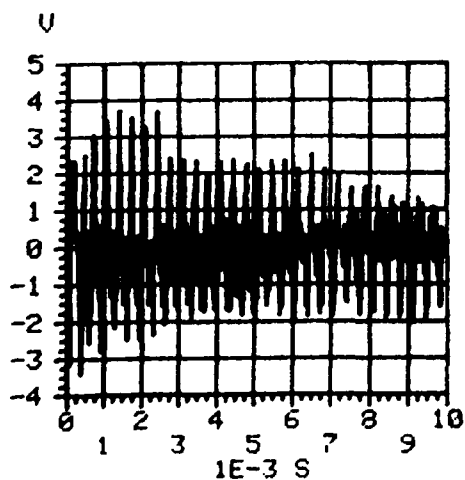


Alarm Test No. 4
 Alarm Type: PETERZELL CO.
 Driving Vapor FREON 12
 Temperature (RM. TEMP) °F
 Pressure - psig
 Flowrate (2 hole valve) std l/m
 Meter Setting 70 dB



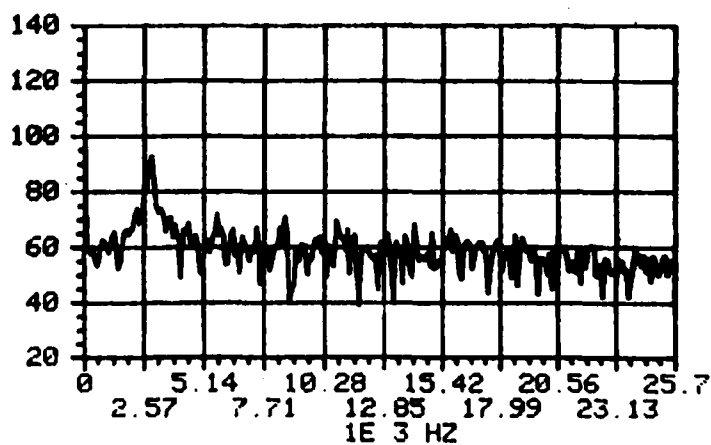
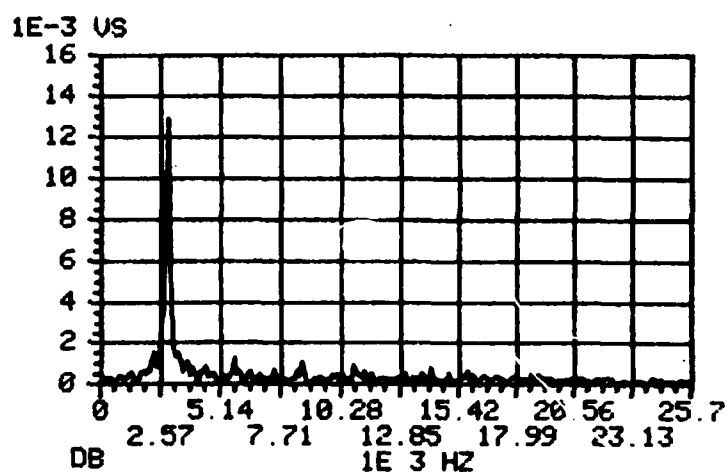
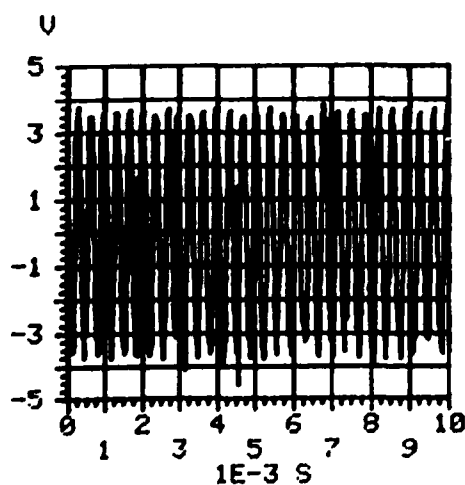
Alarm Test No. 5
Alarm Type: PETERZELL CO.

Driving Vapor FREON 12
Temperature (RM. TEMP.) °F
Pressure - psig
Flowrate (3 hole valve) Std l/m
Meter Setting 70 dB



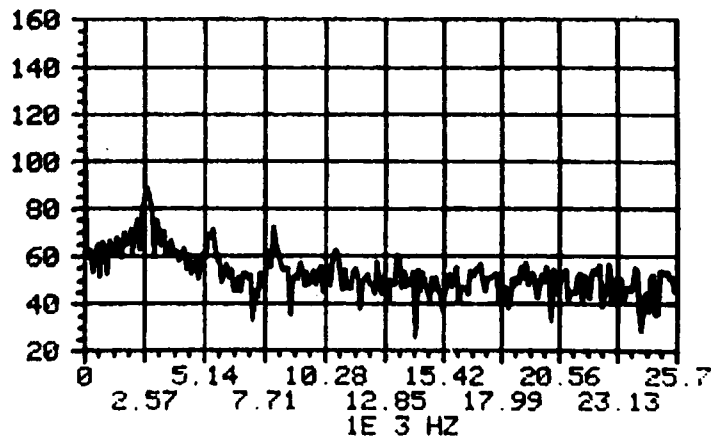
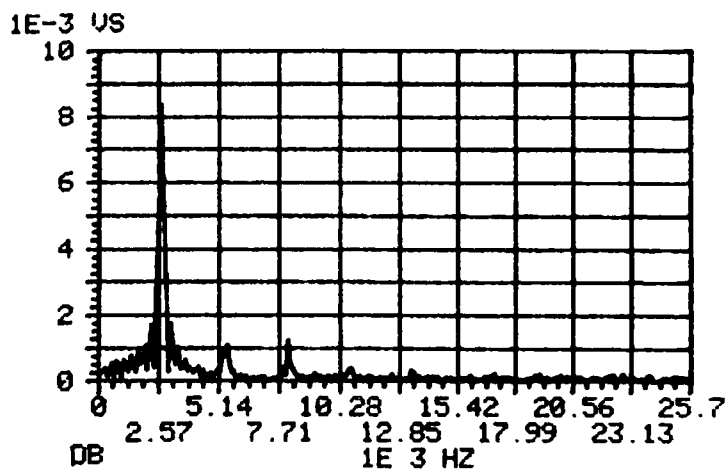
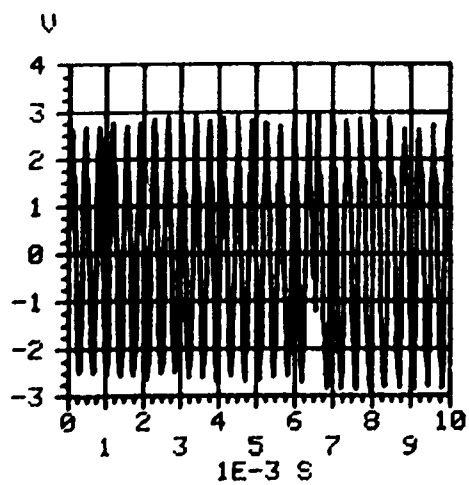
Alarm Test No. 5
 Alarm Type: PETERZELL CO.

Driving Vapor FREON 12
 Temperature (RM. TEMP.) °F
 Pressure psig
 Flowrate (3 hole valve) std l/m
 Meter Setting 70 dB

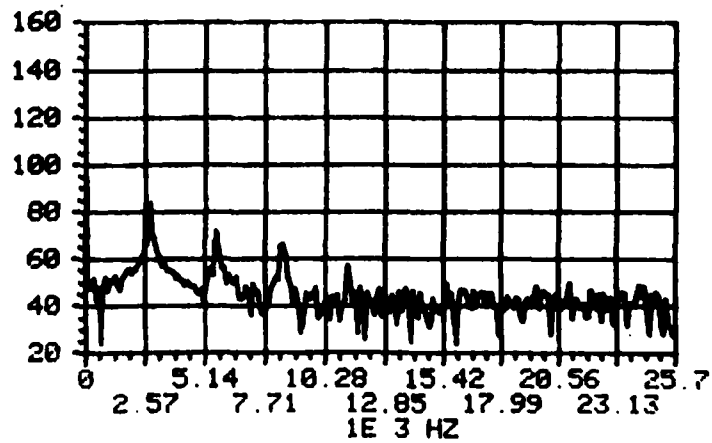
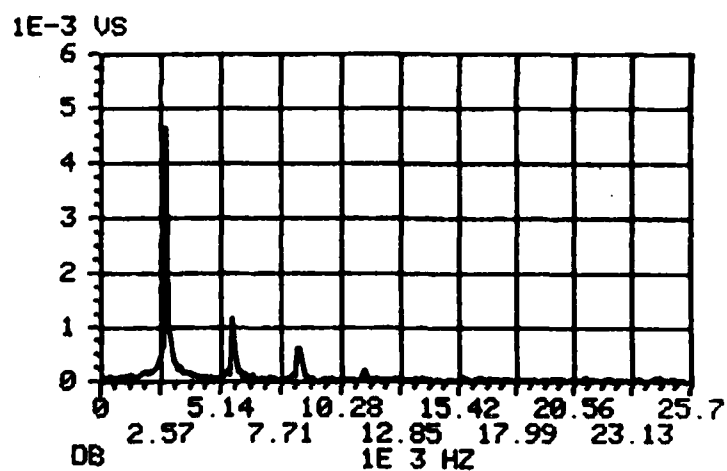
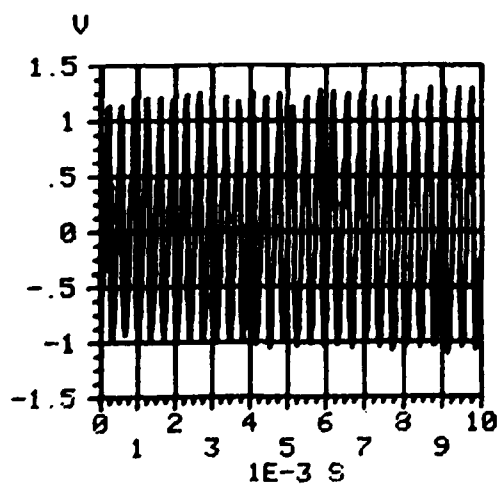


Alarm Test No. 5
Alarm Type: PETERZELL CO.

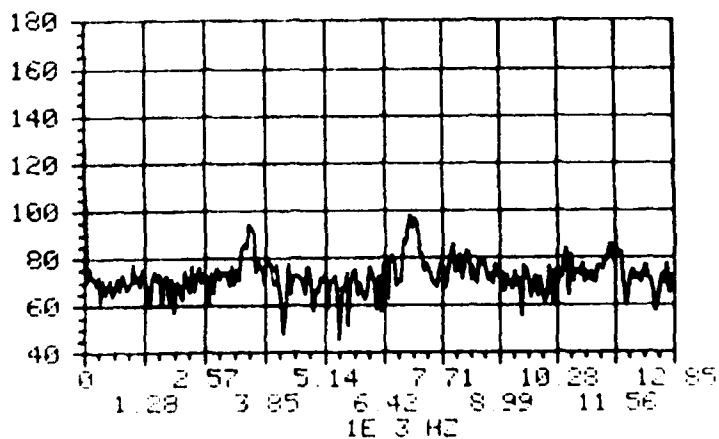
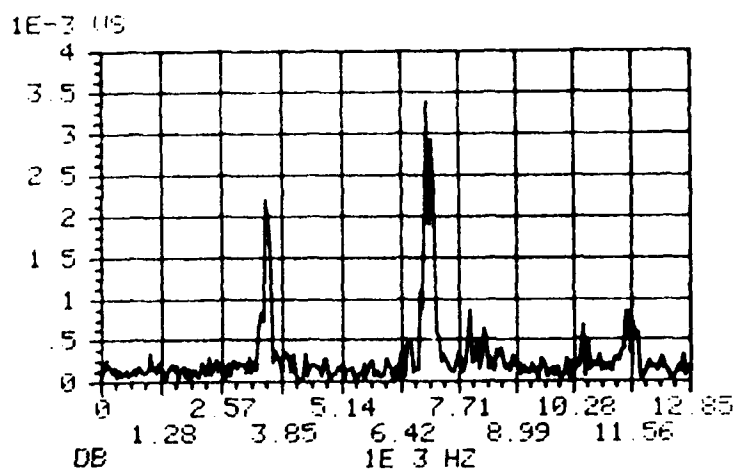
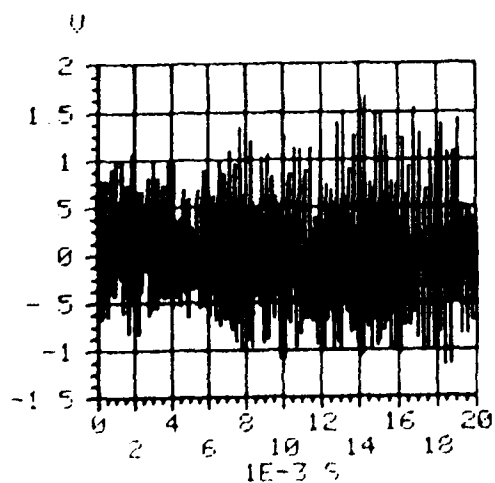
Driving Vapor FREON 12
Temperature (RM. TEMP.) °F
Pressure - psig
Flowrate (3 hole valve) l/m
Meter Setting 70 dB



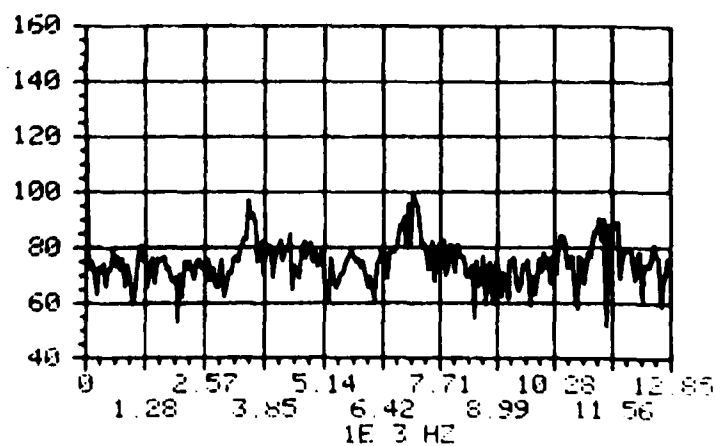
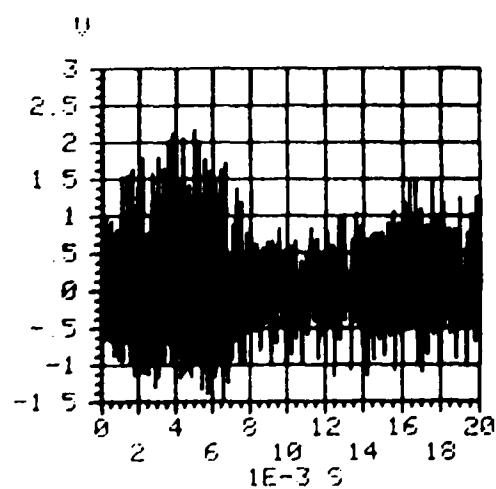
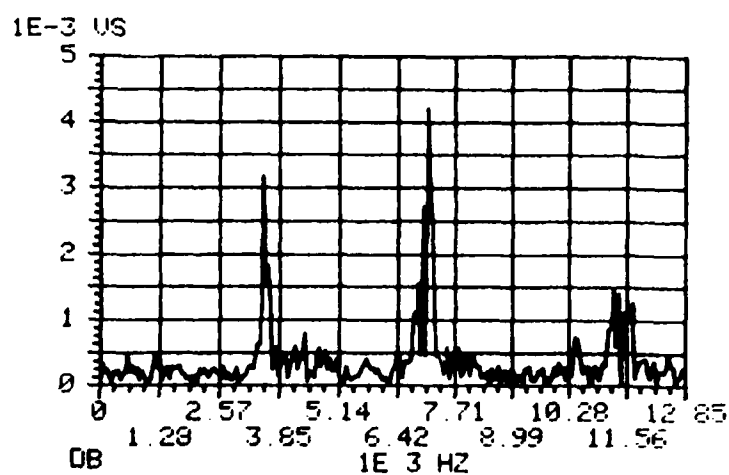
Alarm Test No. 5
 Alarm Type: PETERZELL CO.
 Driving Vapor FREON 12
 Temperature (RM. TEMP.) °F
 Pressure - psig
 Flowrate (3 hole valve) std l/m
 Meter Setting 70 dB



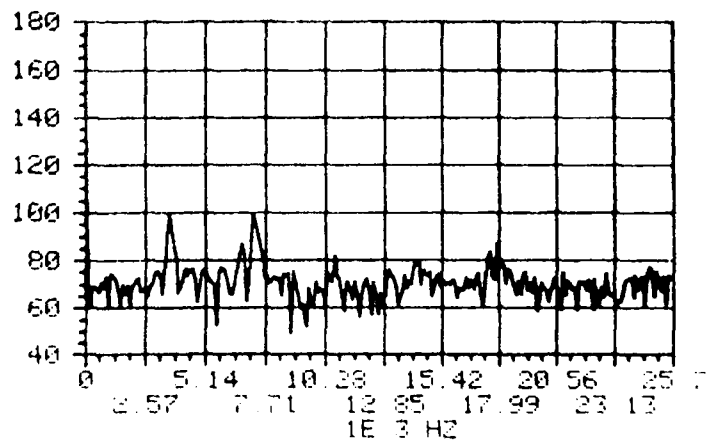
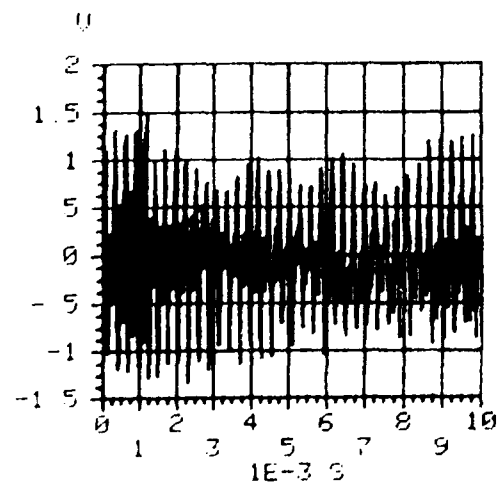
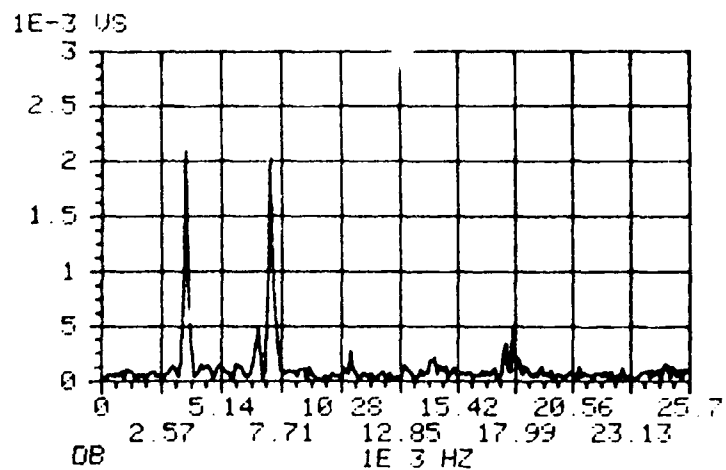
Alarm Test for 6A
 Alarm Type: QUALCO
 PRODUCTS CO.
 Driving Vapor: FREON 12
 Temperature: 77 °F
 Pressure: 26 psig
 Flowrate: 19.7 std l/min
 Meter Setting: 90 dB



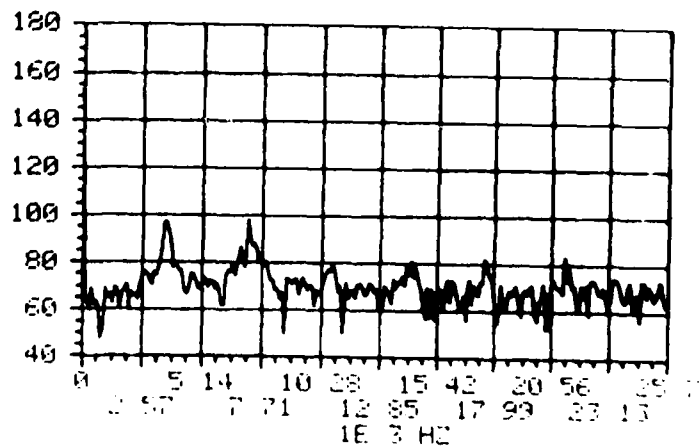
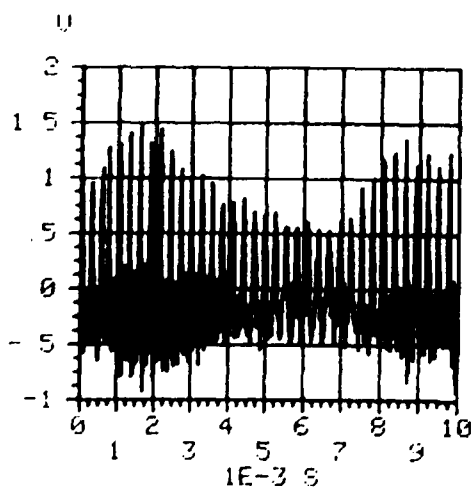
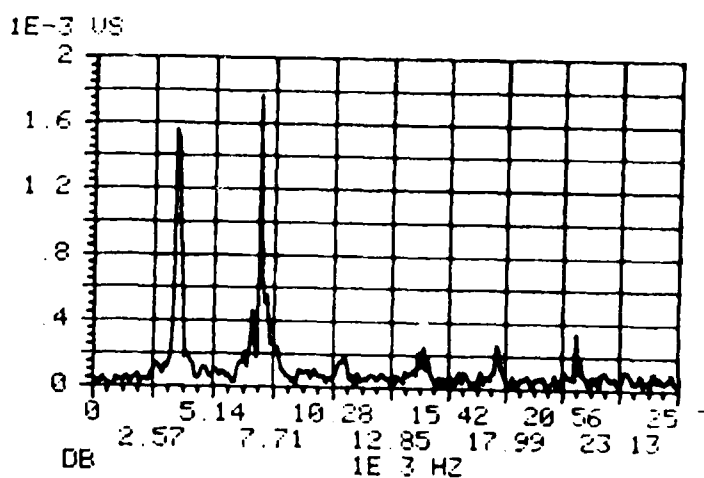
Alarm Test No.	6A
Alarm Type:	QUALCO
PRODUCTS CO.	
Driving Vapor	FREON 12
Temperature	77 °F
Pressure	26 psig
Flowrate	19.7 std l/m
Meter Setting	90 dB



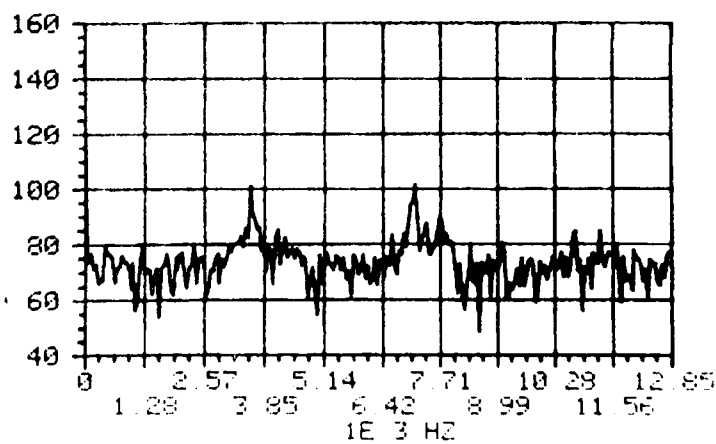
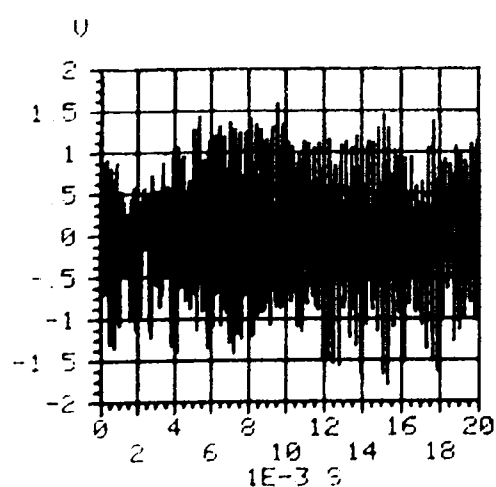
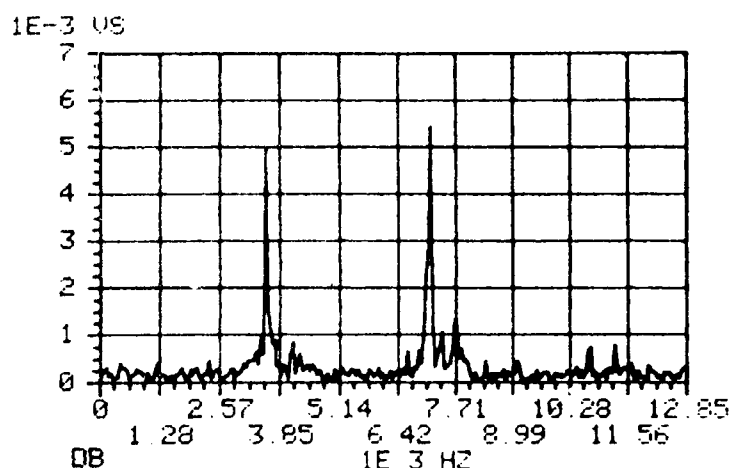
Alarm Test No. 6A
 Alarm Type: QUALCO
 PRODUCTS CO.
 Driving Vapor: FREON 12
 Temperature: 77
 Pressure: 26 psig
 Flowrate: 19.7 Std L/hr
 Meter Setting: 90 dB



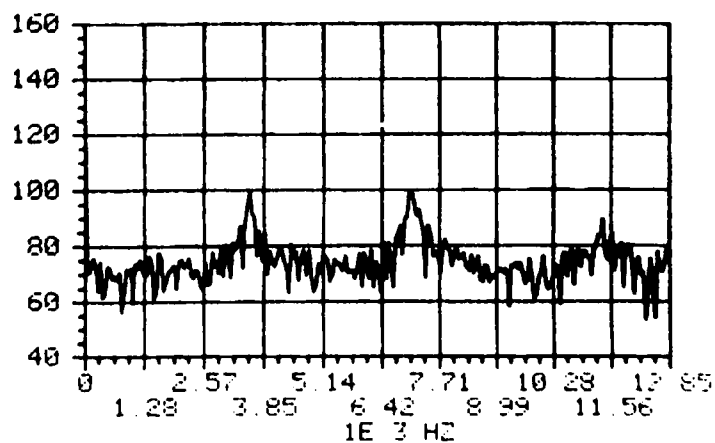
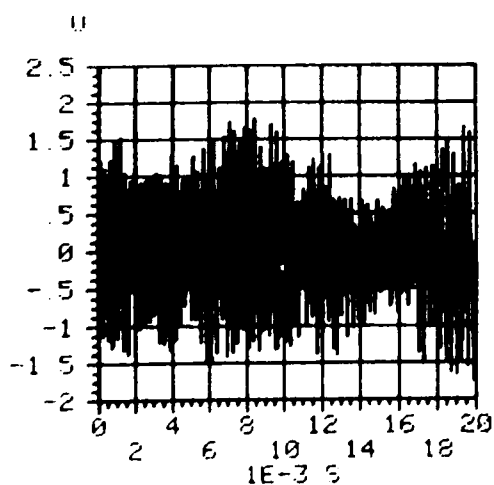
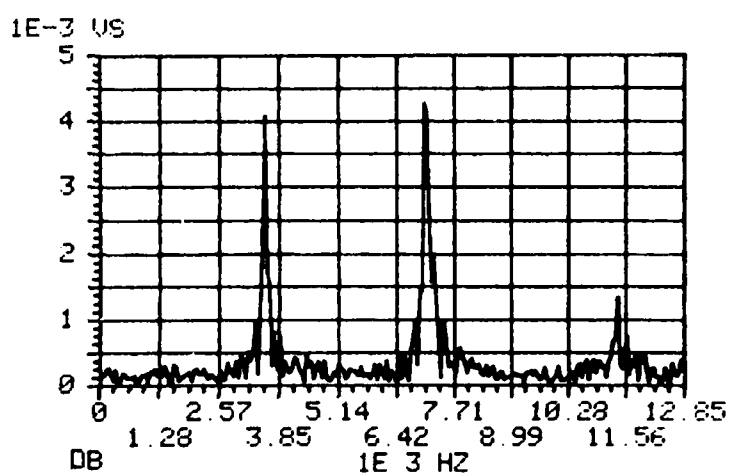
Alarm Test No.	6A
Alarm Type:	QUALCO
PRODUCTS CO.	
Driving Vapor	FREON 12
Temperature	77 °F
Pressure	26 psig
Flowrate	19.7 std l/m
Meter Setting	90 dB



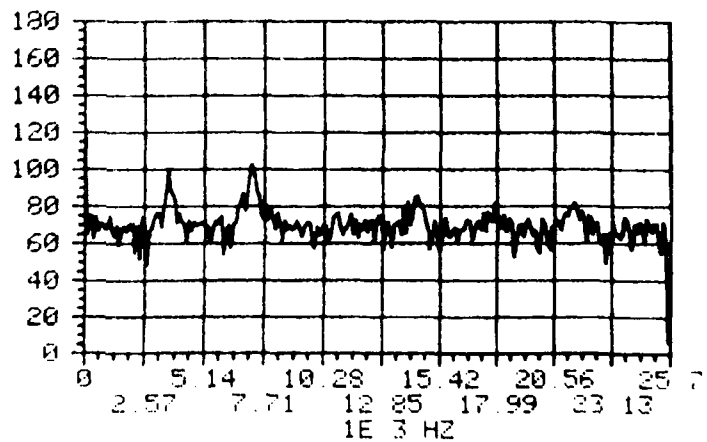
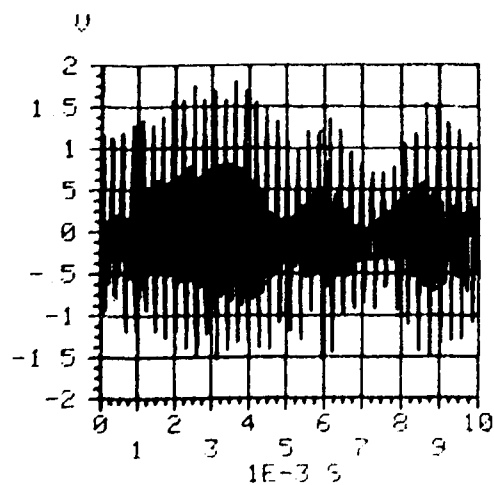
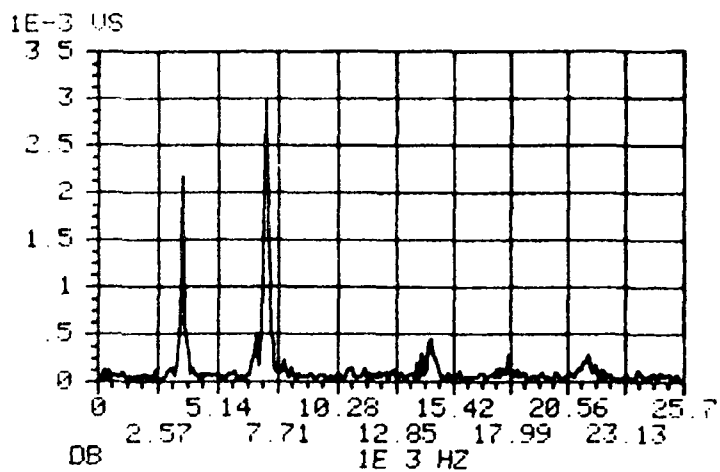
Alarm Test No. 6B
 Alarm Type: QUALCO
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 78 °F
 Pressure 25.5 psig
 Flowrate 19.7 std l/m
 Meter Setting 90 dB



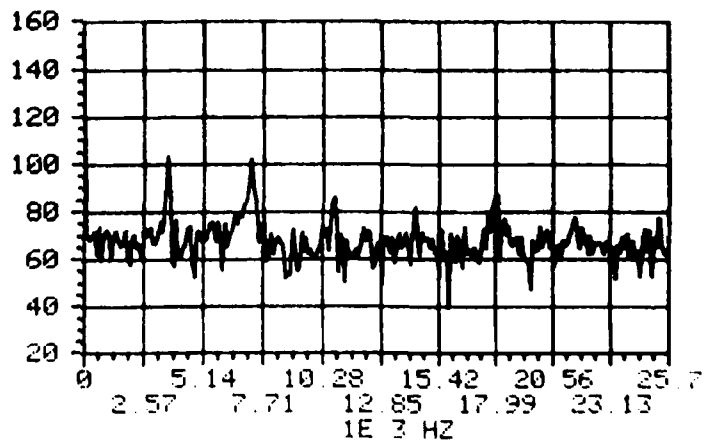
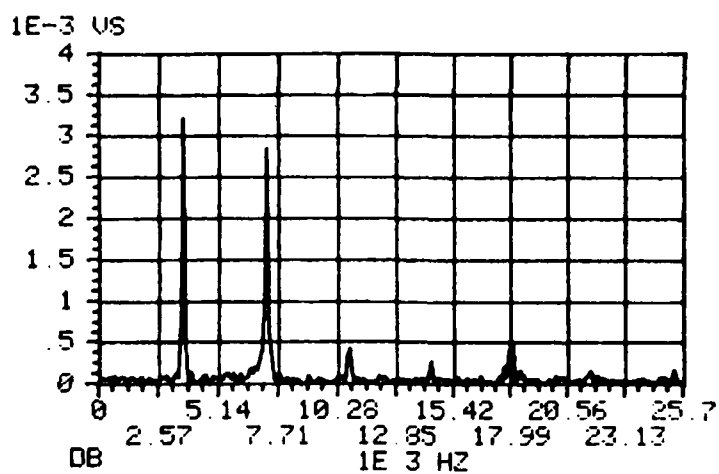
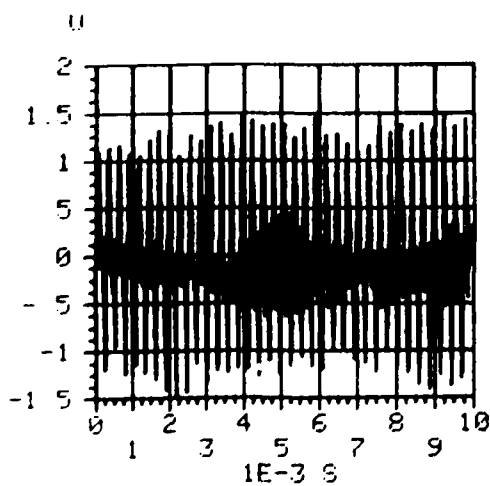
Alarm Test No.	6B
Alarm Type:	QUALCO
PRODUCTS CO.	
Driving Vapor	FREON 12
Temperature	78 °F
Pressure	25.5 psig
Flowrate	19.7 std l/m
Meter Setting	90 dB



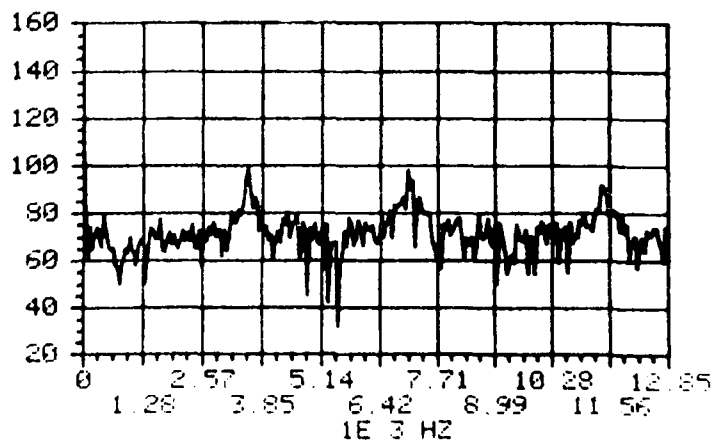
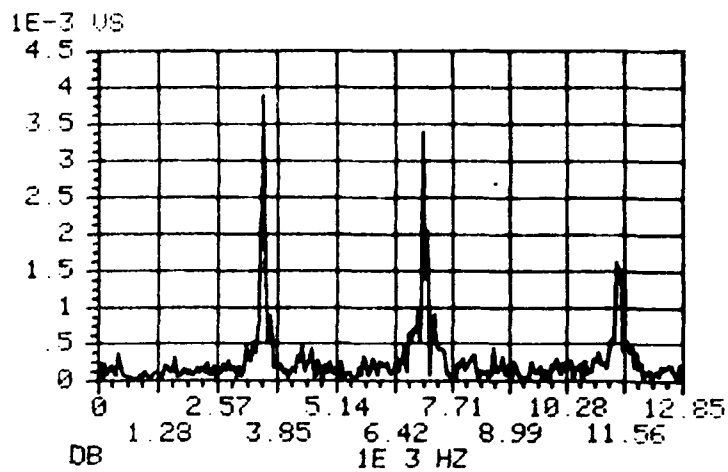
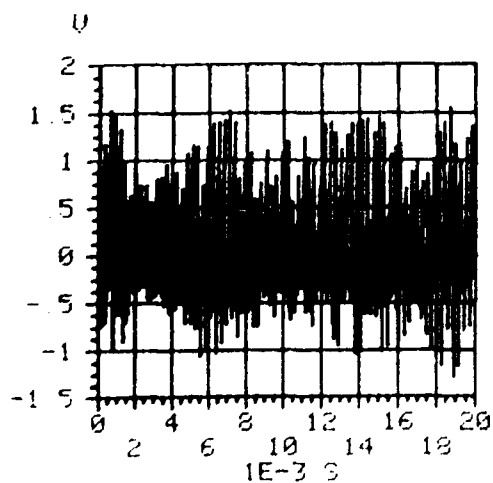
Alarm Test No. 68
 Alarm Type: QUALCO
 PRODUCTS CO.
 Driving Vapor: FREON 12
 Temperature: 78 °F
 Pressure: 25.5 psig
 Flowrate: 19.7 std l/m
 Meter Setting: 90 dB



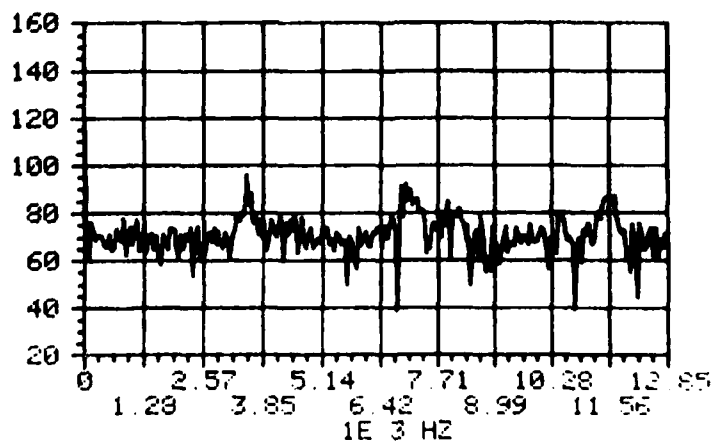
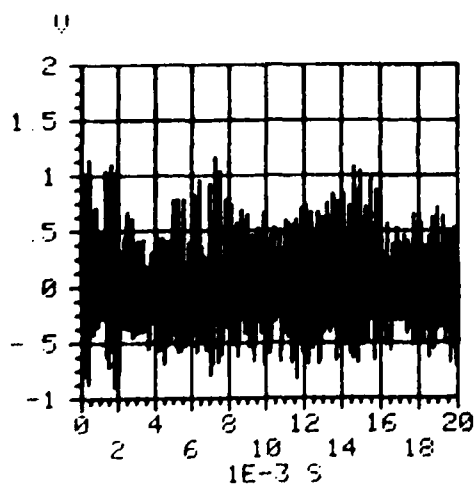
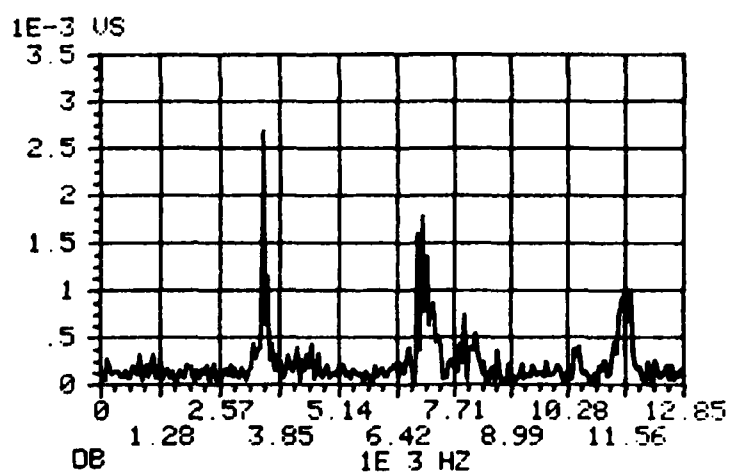
Alarm Test No.	6B
Alarm Type:	QUALCO
PRODUCTS CO.	
Driving Vapor	FREON 12
Temperature	78 °F
Pressure	25.5 psig
Flowrate	19.7 std l/m
Meter Setting	90 dB



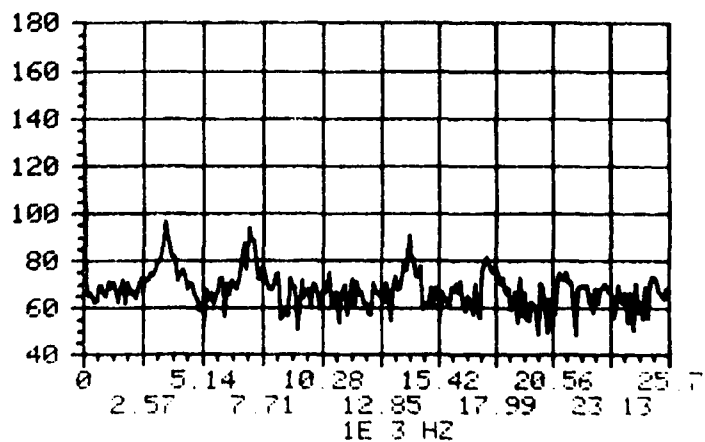
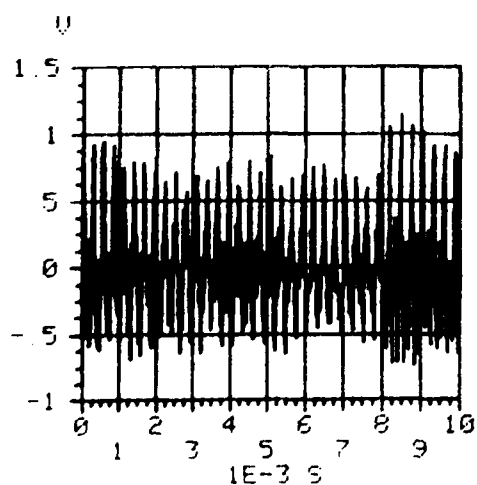
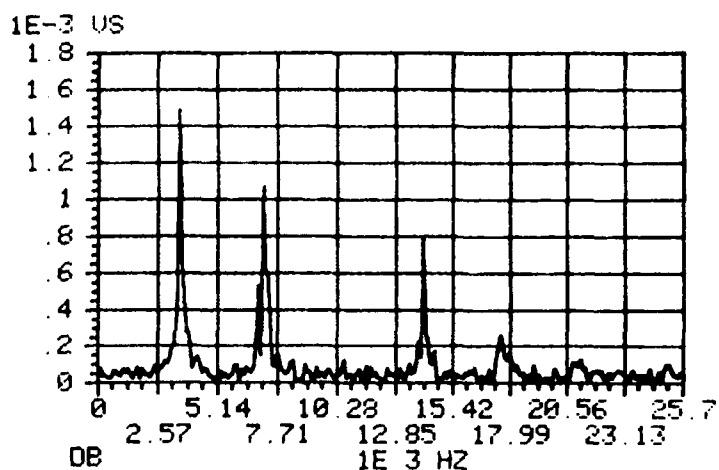
Alarm Test No. 6C
 Alarm Type: QUALCO
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 75 °F
 Pressure 21.25 psig
 Flowrate 17.9 std l/m
 Meter Setting 90 dB



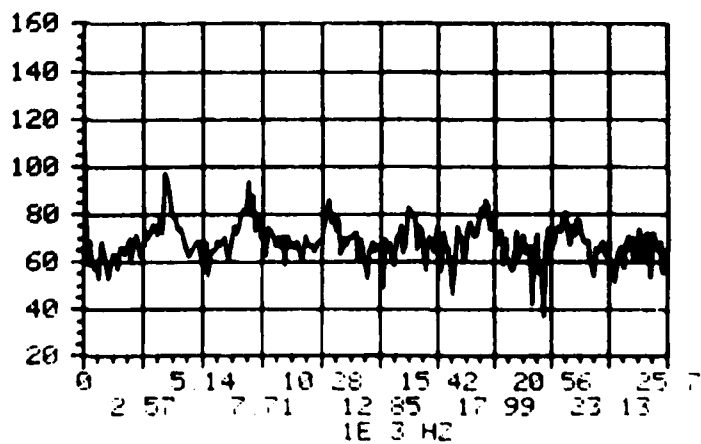
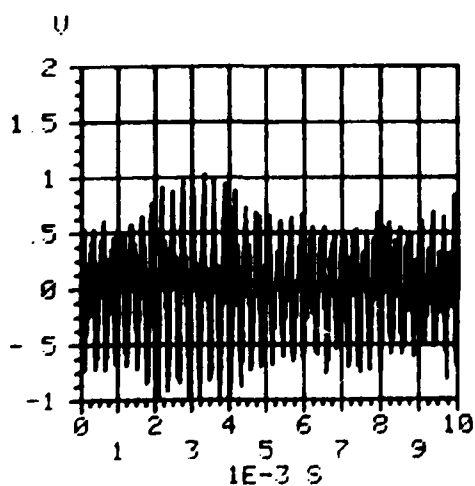
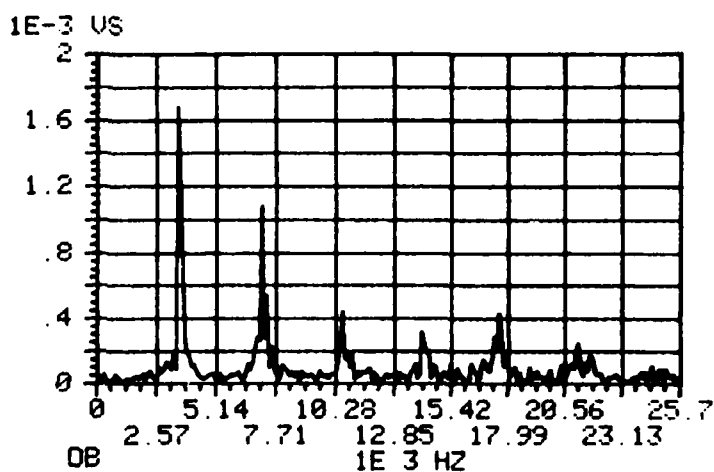
Alarm Test No.	6C
Alarm Type:	QUALCO
PRODUCTS CO.	
Driving Vapor	FREON 12
Temperature	75 °F
Pressure	21.25 psig
Flowrate	17.9 std l/m
Meter Setting	90 dB



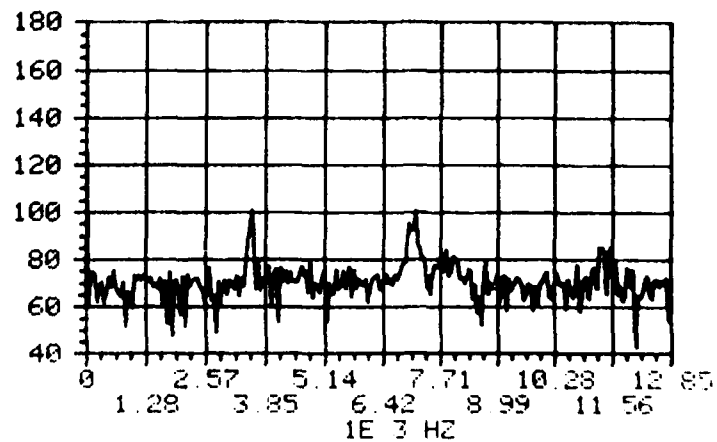
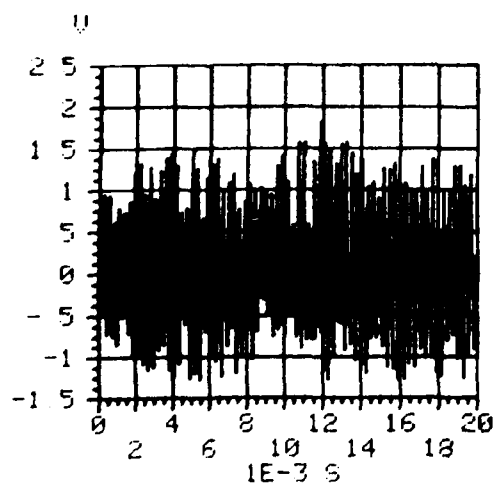
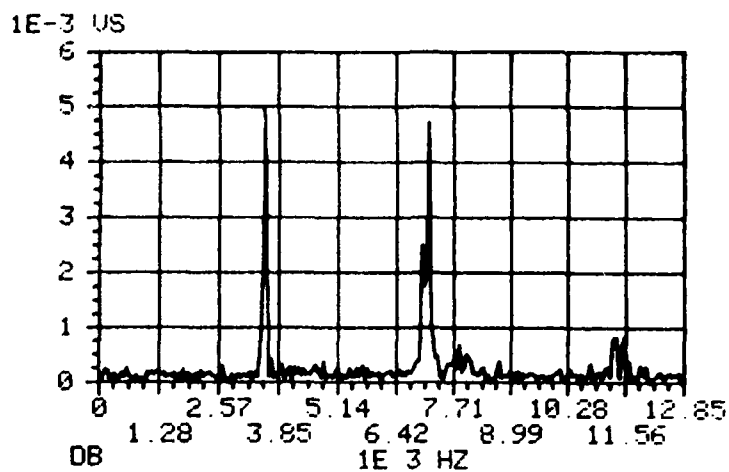
Alarm Test No.	6C
Alarm Type:	QUALCO
PRODUCTS CO.	
Driving Vapor	FREON 12
Temperature	75 °F
Pressure	21.25 psig
Flowrate	17.9 std l/m
Meter Setting	90 dB



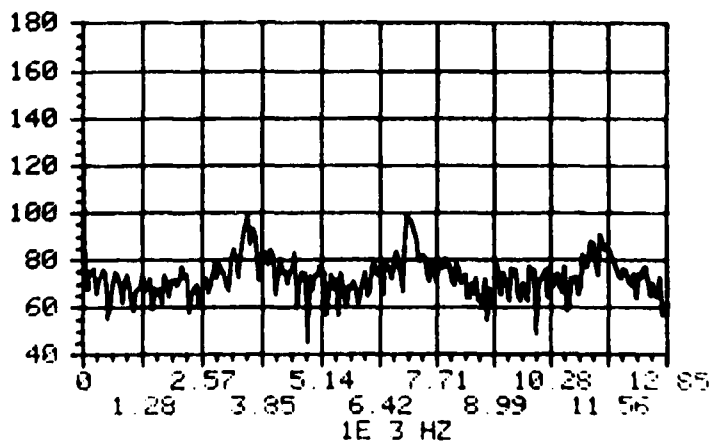
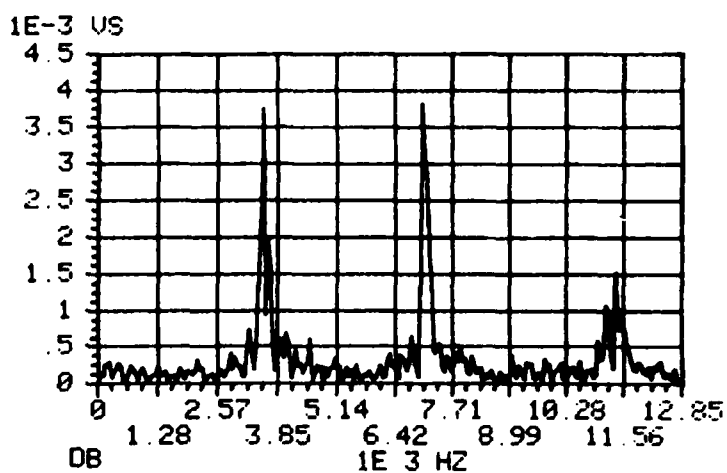
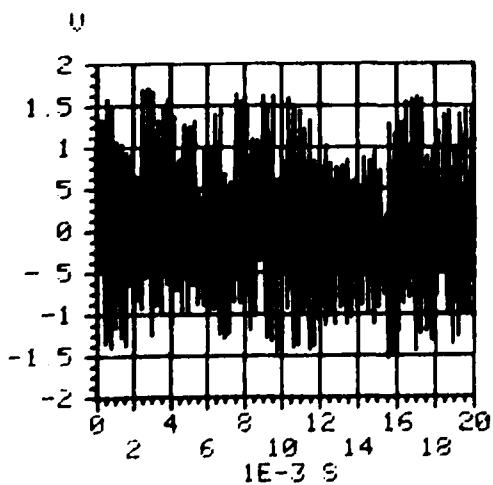
Alarm Test No.	6C		
Alarm Type:	QUALCO		
	PRODUCTS CO.		
Driving Vapor	FREON 12		
Temperature	75		°F
Pressure	21.25		psig
Flowrate	17.9		std l/m
Meter Setting	90		dB



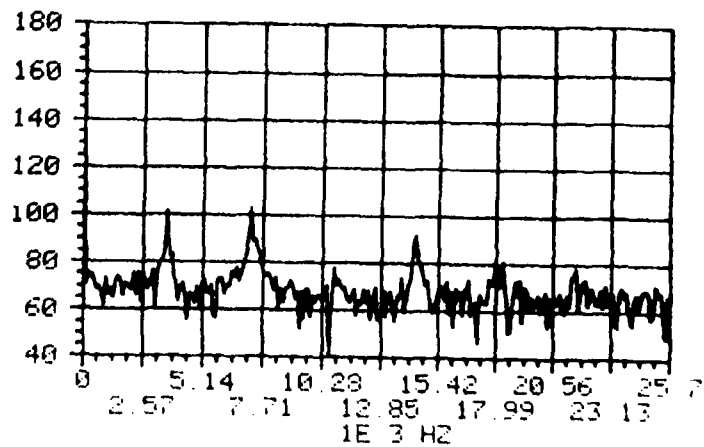
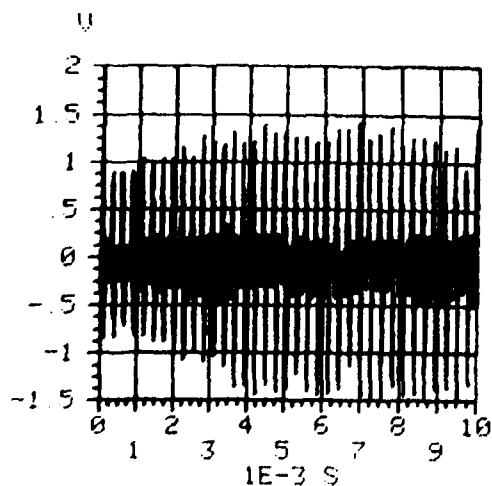
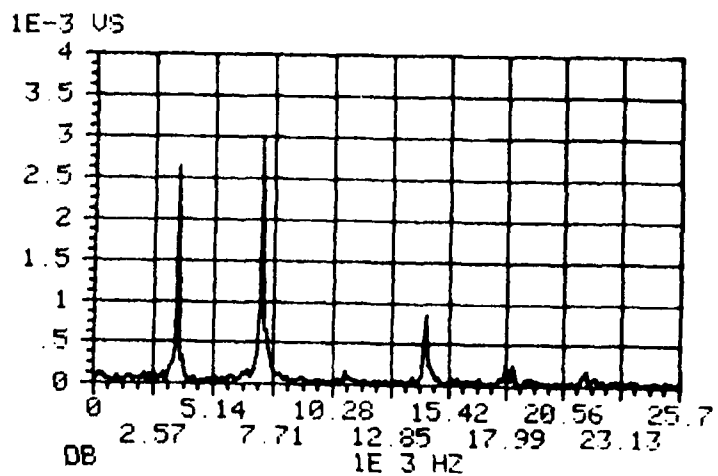
Alarm Test No.	6D
Alarm Type:	QUALCO
PRODUCTS CO.	
Driving Vapor	FREON 12
Temperature	79 °F
Pressure	17 psig
Flowrate	16 std l/m
Meter Setting	90 dB



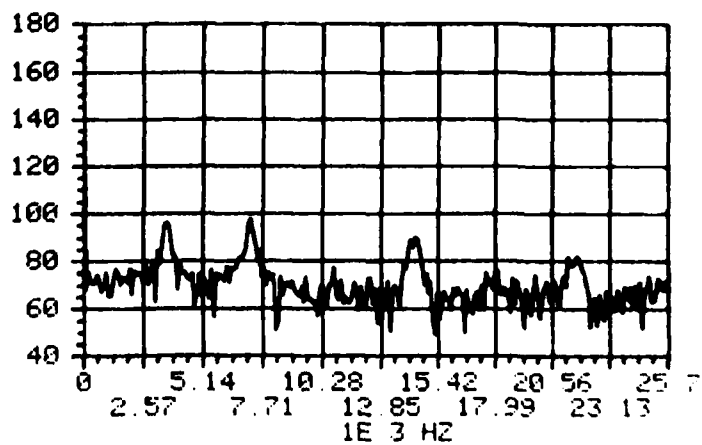
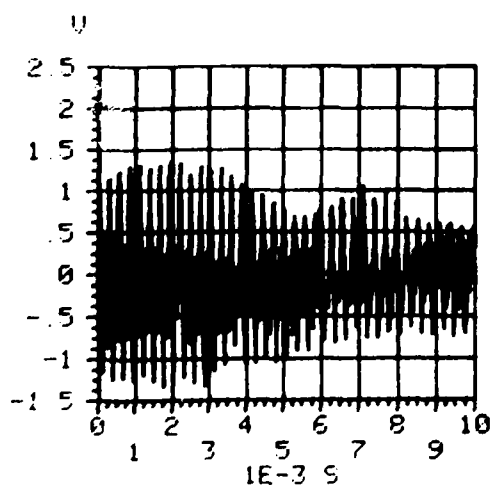
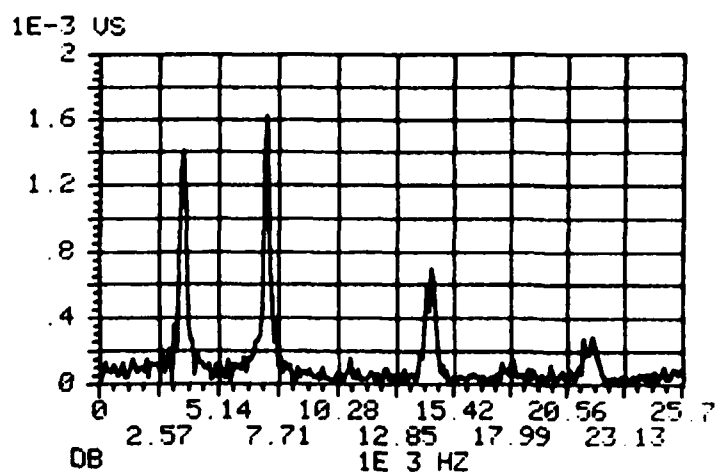
Alarm Test No. 60
 Alarm Type: QUALCO
PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 79 °F
 Pressure 17 psig
 Flowrate 16 std l/m
 Meter Setting 90 dB



Alarm Test No.	60
Alarm Type:	QUALCO
PRODUCTS CO.	
Driving Vapor	FREON 12
Temperature	79 °F
Pressure	17 psig
Flowrate	16 std l/m
Meter Setting	90 dB

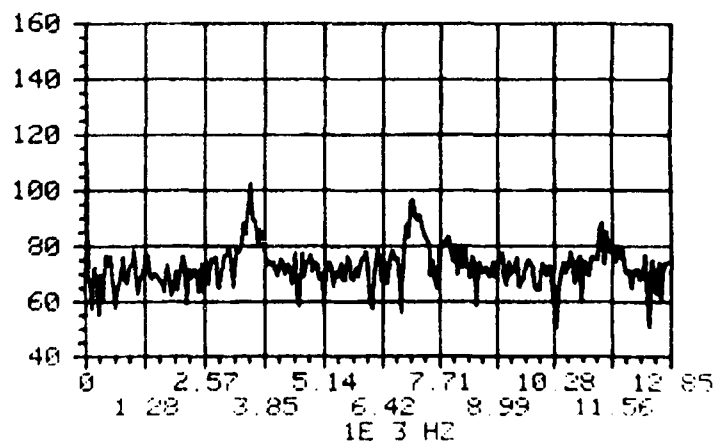
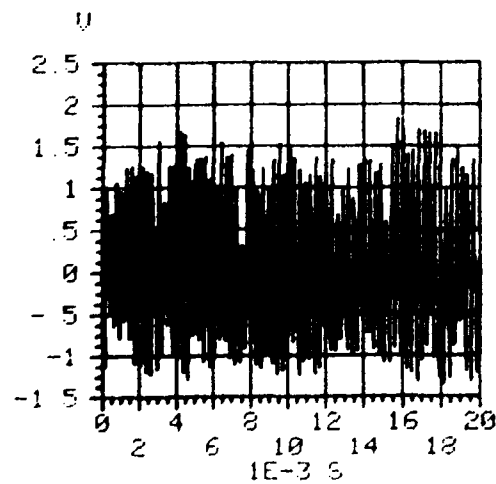
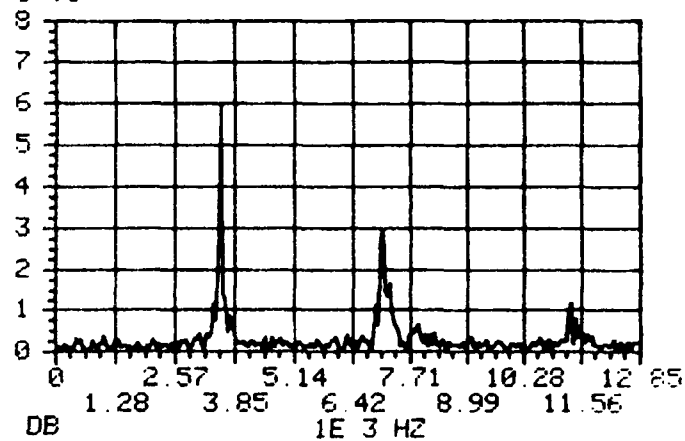


Alarm Test No.	6D	
Alarm Type:	QUALCO	
PRODUCTS CO.		
Driving Vapor	FREON 12	
Temperature	79	°F
Pressure	17	psig
Flowrate	16	std l/m
Meter Setting	90	dB

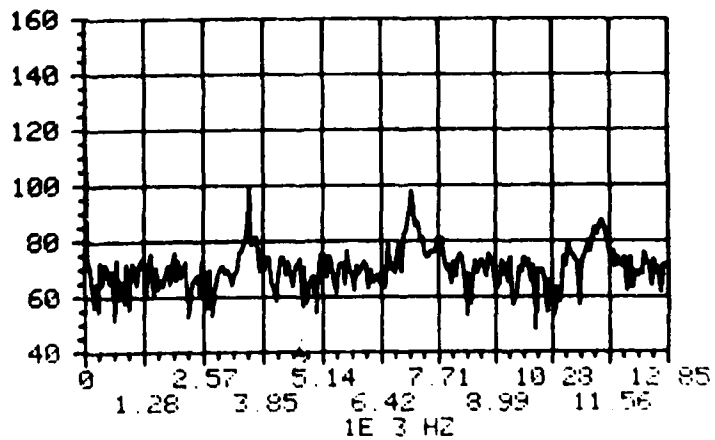
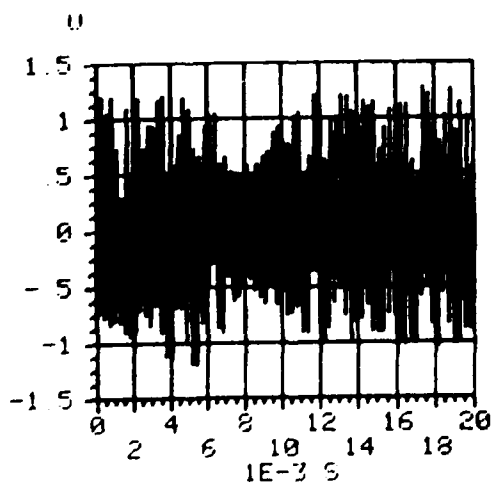
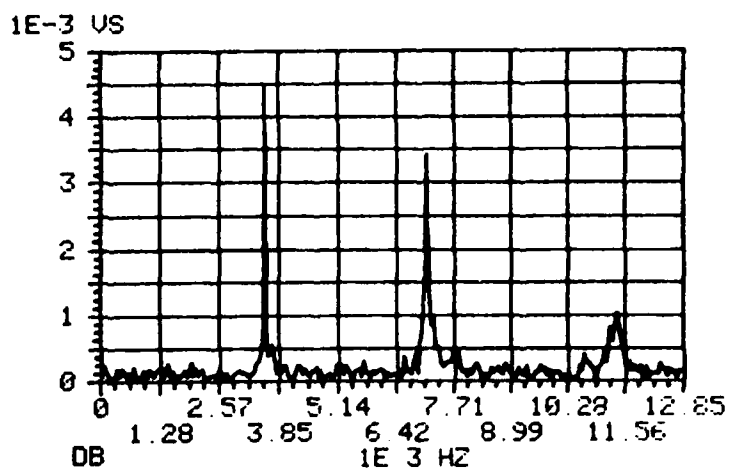


Alarm Test No.	6E
Alarm Type:	QUALCO
	PRODUCTS CO.
Driving Vapor	FREON 12
Temperature	81 °F
Pressure	12.75 psig
Flowrate	14.08 std l/m
Meter Setting	90 dB

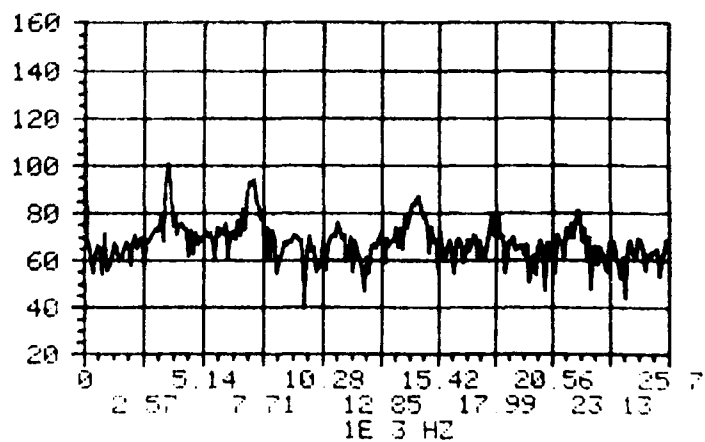
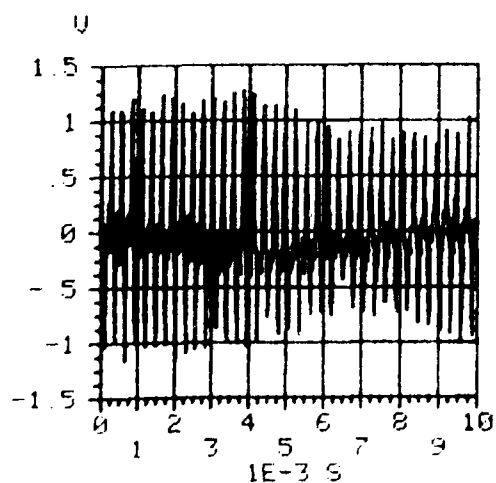
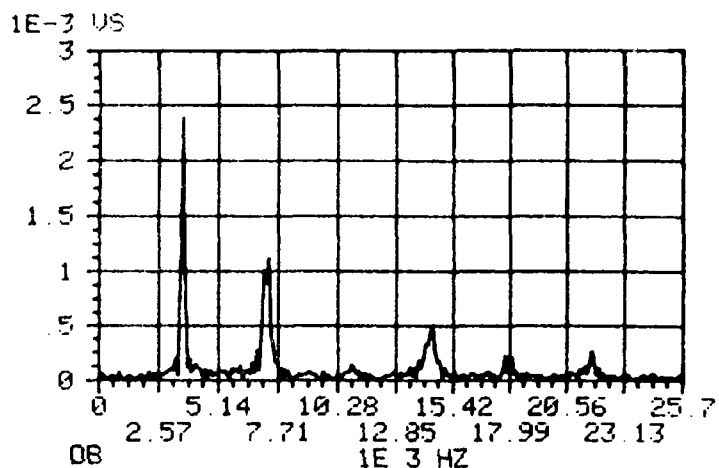
1E-3 US



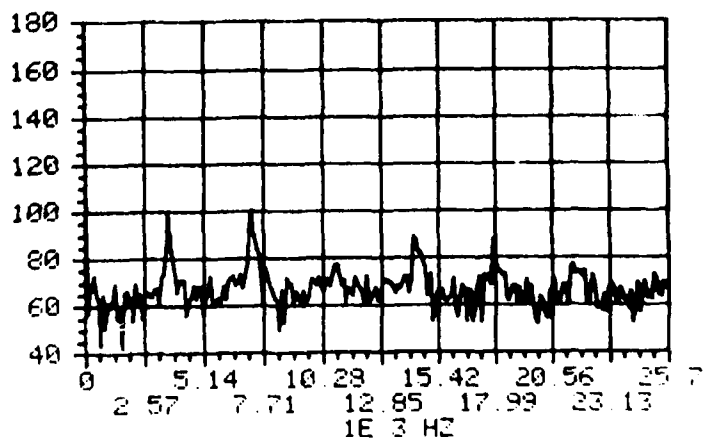
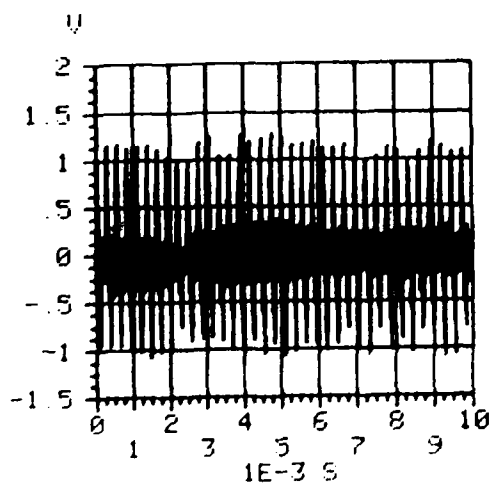
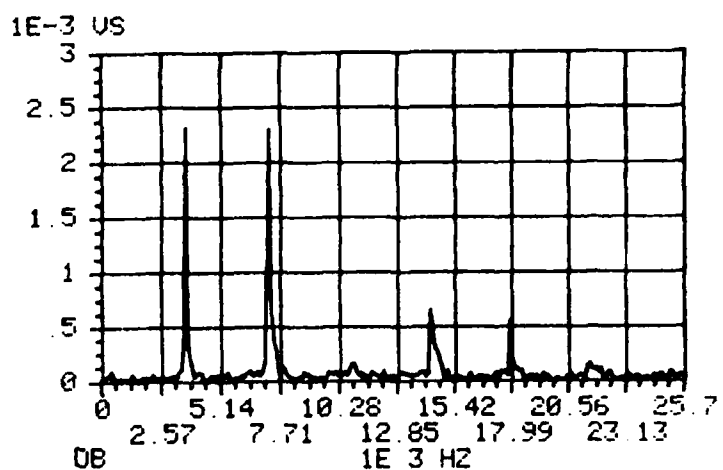
Alarm Test No.	6E
Alarm Type:	QUALCO
PRODUCTS CO.	
Driving Vapor	FREON 12
Temperature	81 °F
Pressure	12.75 psig
Flowrate	14.08 std l/m
Meter Setting	90 dB



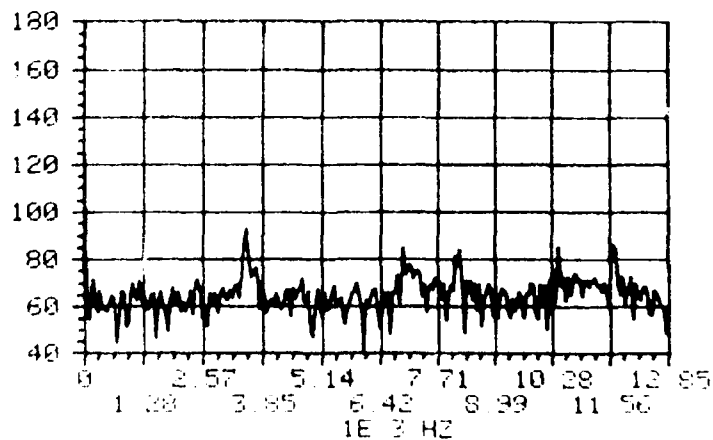
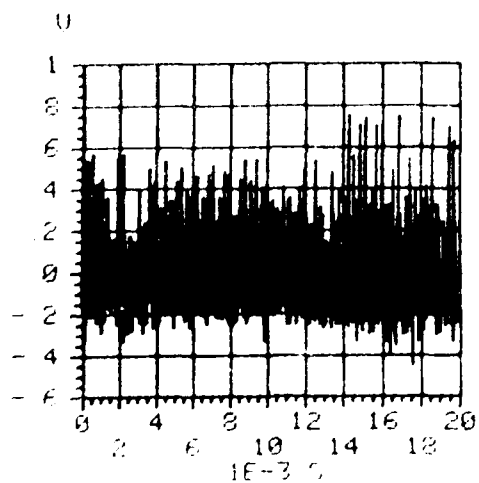
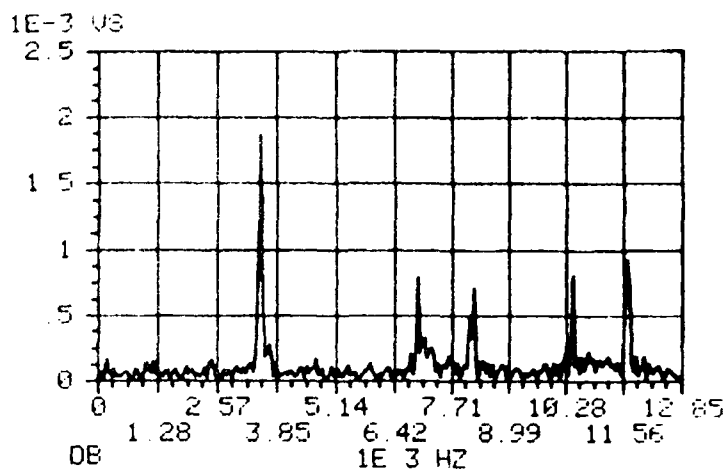
Alarm Test No.	6L
Alarm Type:	QUALCO
PRODUCTS CO.	
Driving Vapor	FREON 12
Temperature	81 °F
Pressure	12.75 psig
Flowrate	14.08 std l/m
Meter Setting	90 dB



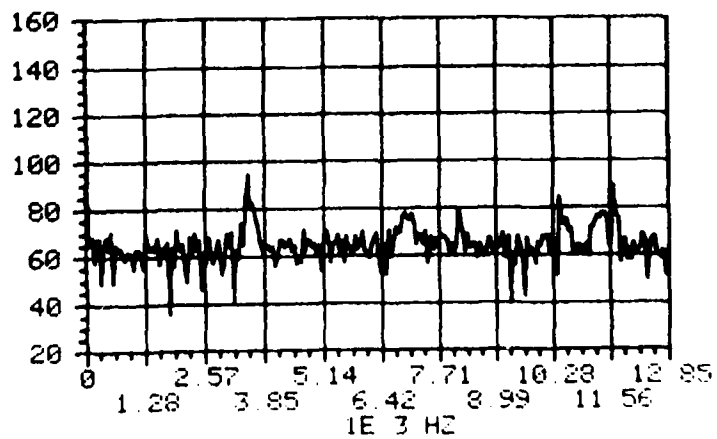
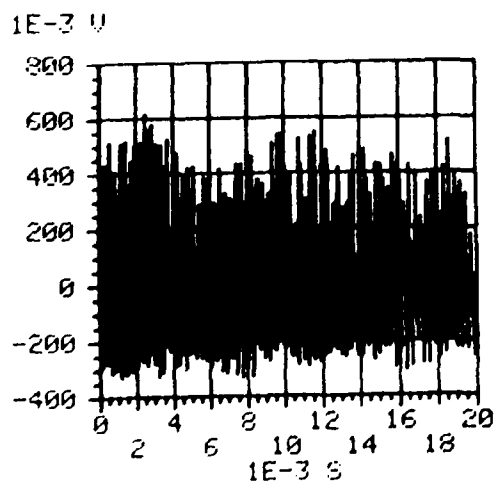
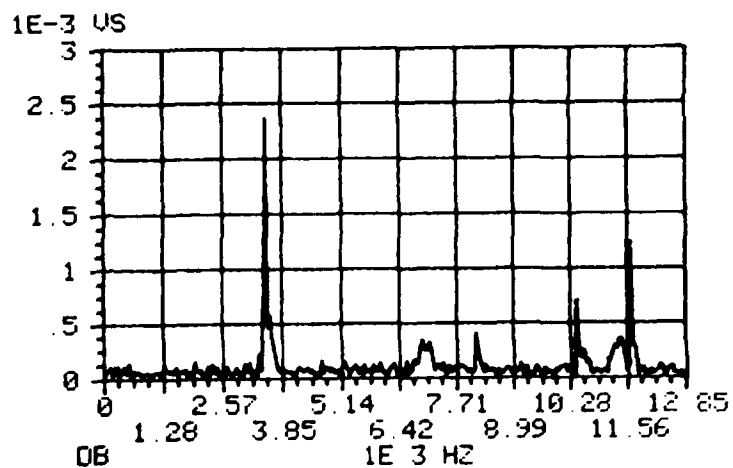
Alarm Test No.	6E
Alarm Type:	QUALCO
	PRODUCTS CO.
Driving Vapor	FREON 12
Temperature	81 °F
Pressure	12.75 psig
Flowrate	14.08 std l/m
Meter Setting	90 dB



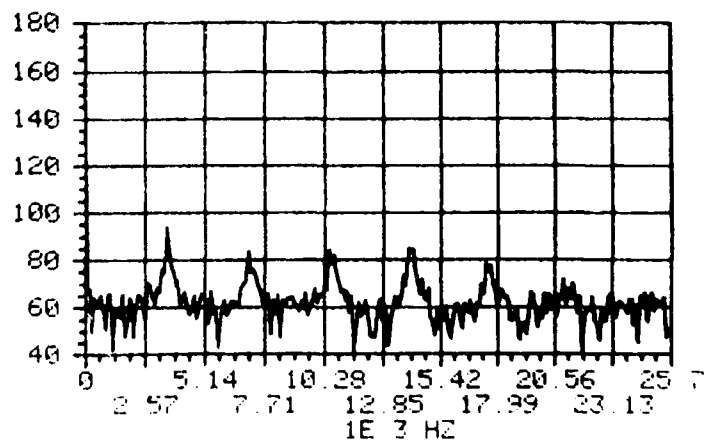
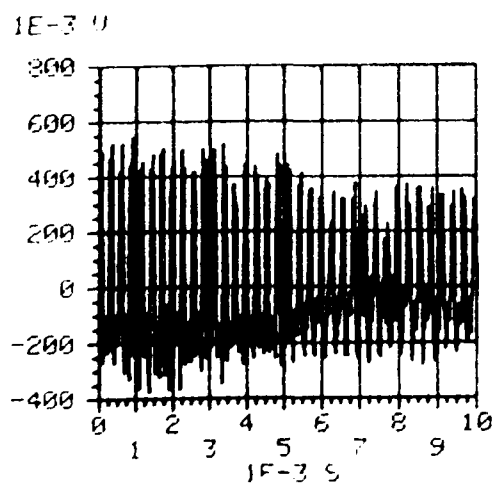
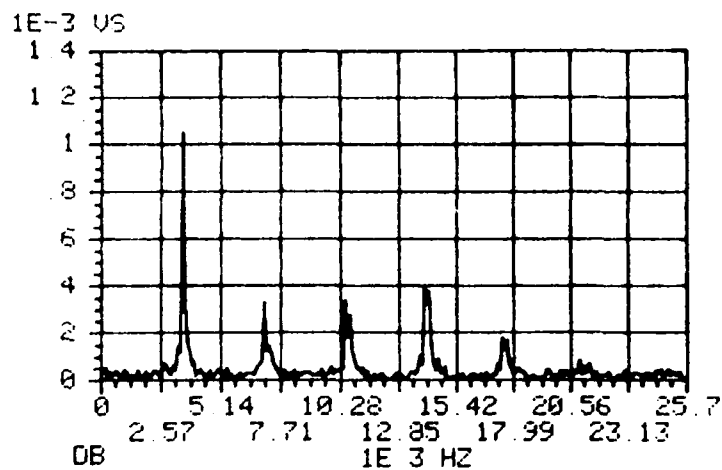
Alarm Test No. 61
 Alarm Type: QUALCO
 PRODUCTS CO.
 Driving Vapor: FREON 12
 Temperature: 76
 Pressure: 8.5 psia
 Flowrate: 10.9 g/min
 Meter Setting: 90



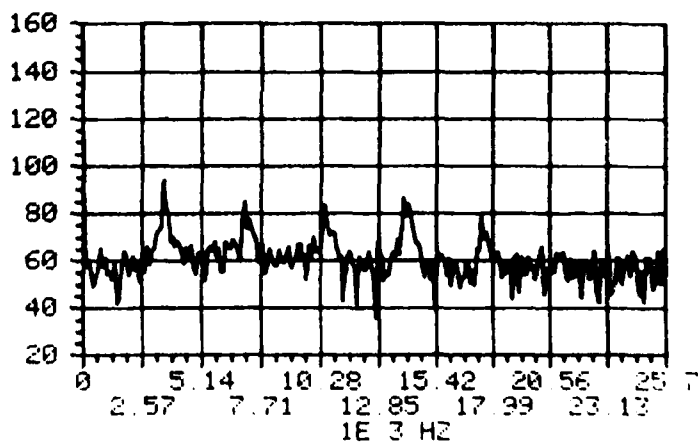
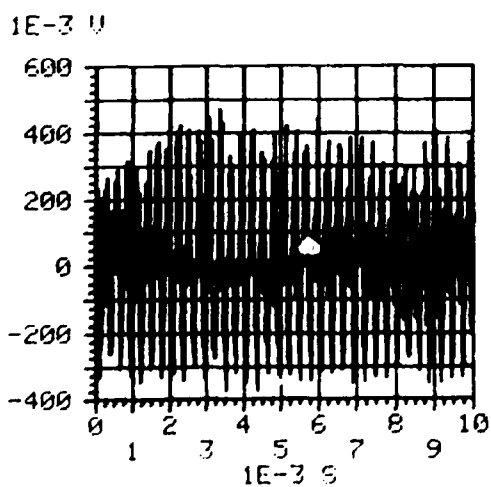
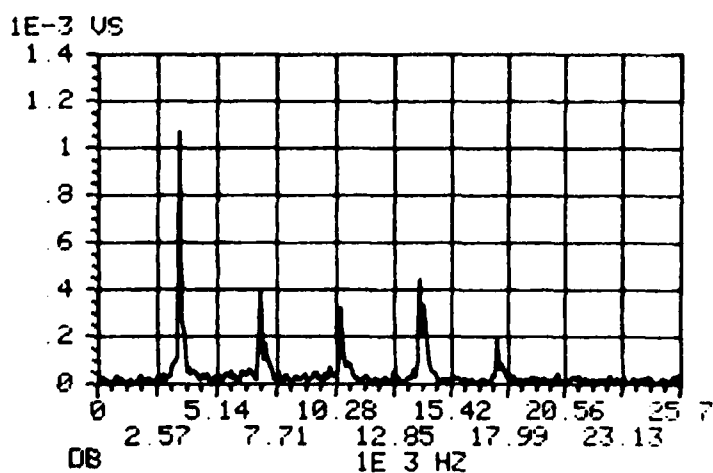
Alarm Test No. 6F
 Alarm Type: QUALCO
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 76 °F
 Pressure 8.5 psig
 Flowrate 10.9 std l/m
 Meter Setting 90 dB



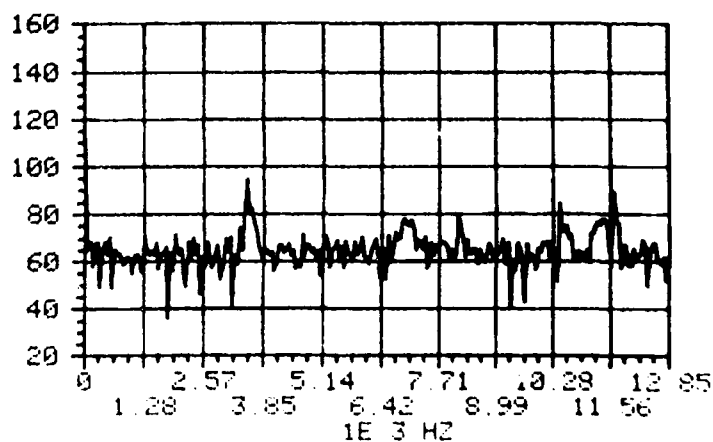
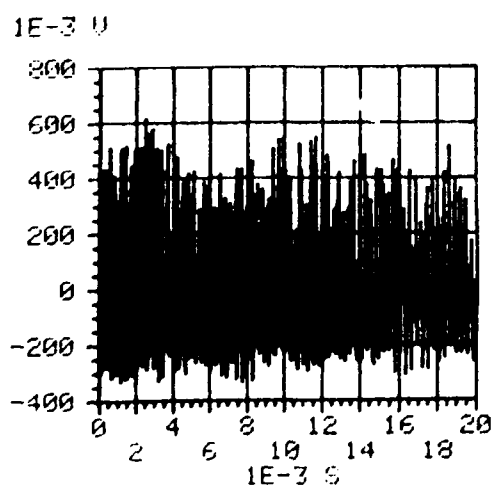
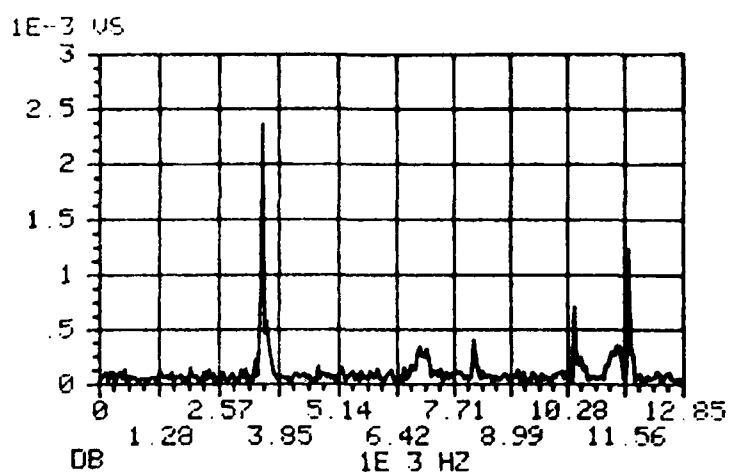
Alarm Test No. 6F
 Alarm Type: QUALCO
 PRODUCTS CO.
 Driv. Vapor: FREON 12
 Temperature: 76
 Pressure: 8.5 psig
 Flowrate: 10.9 gpm
 Meter Setting: 90



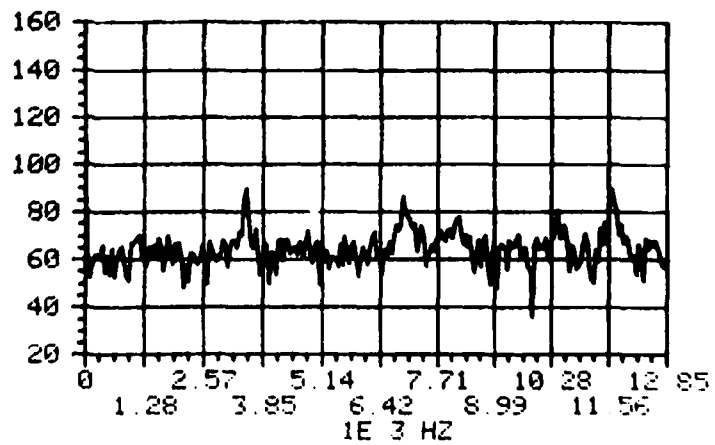
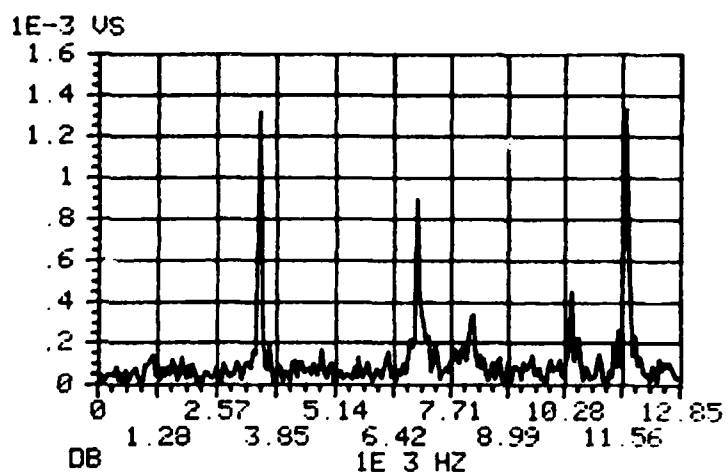
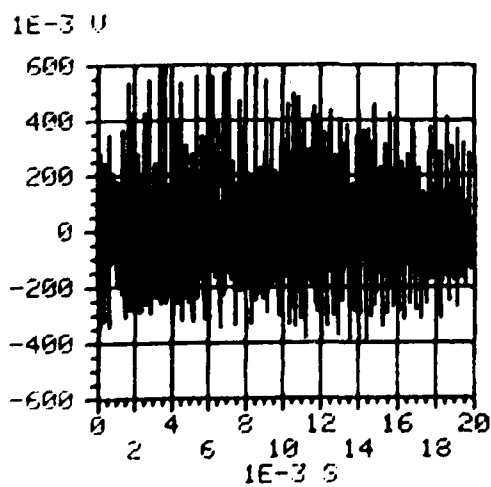
Alarm Test No. 6F
 Alarm Type: QUALCO
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 76 °F
 Pressure 8.5 psig
 Flowrate 10.9 std l/m
 Meter Setting 90 dB



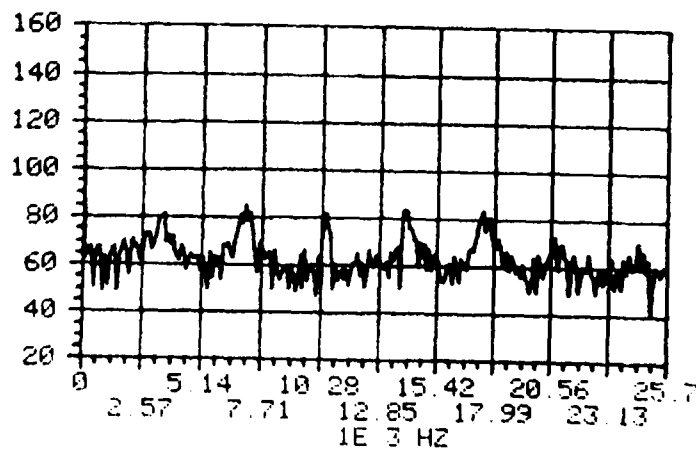
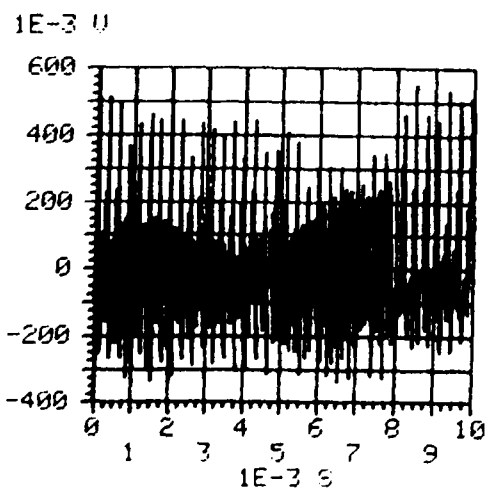
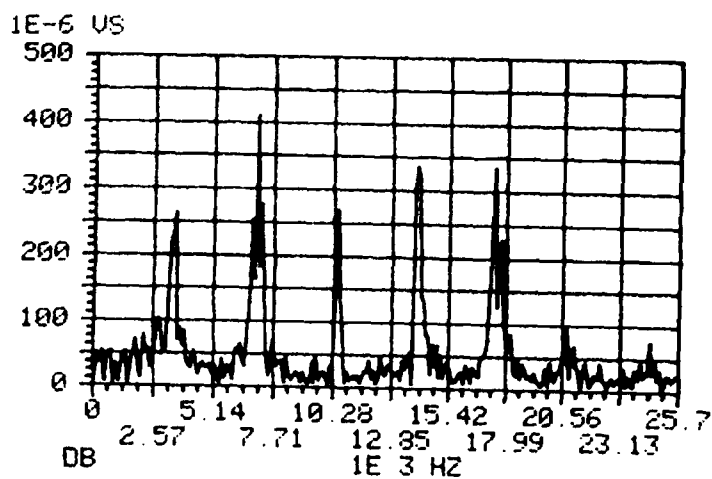
Alarm Test No. 6G
 Alarm Type: QUALCO
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 76 °F
 Pressure 8.25 psig
 Flowrate 10.9 std l/m
 Meter Setting 90 dB



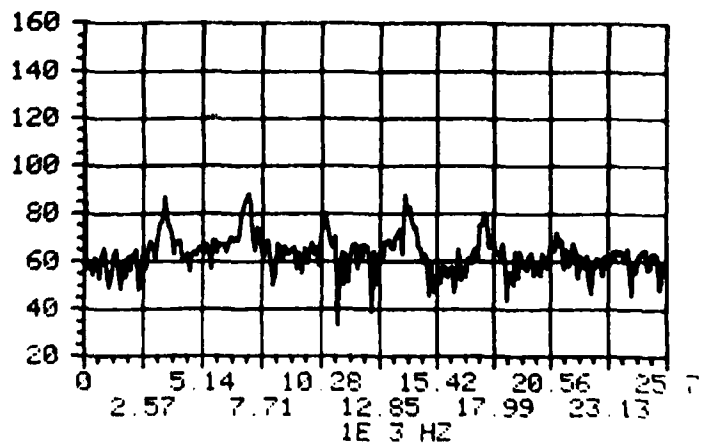
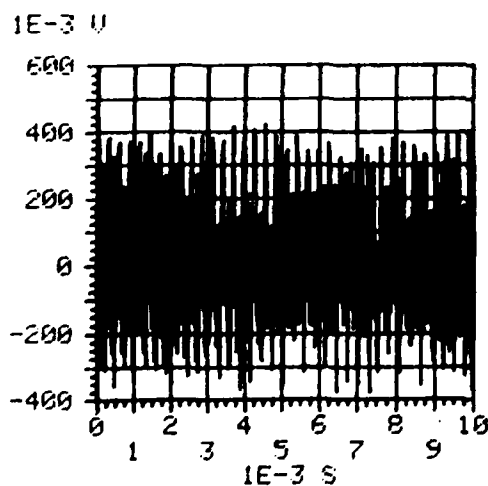
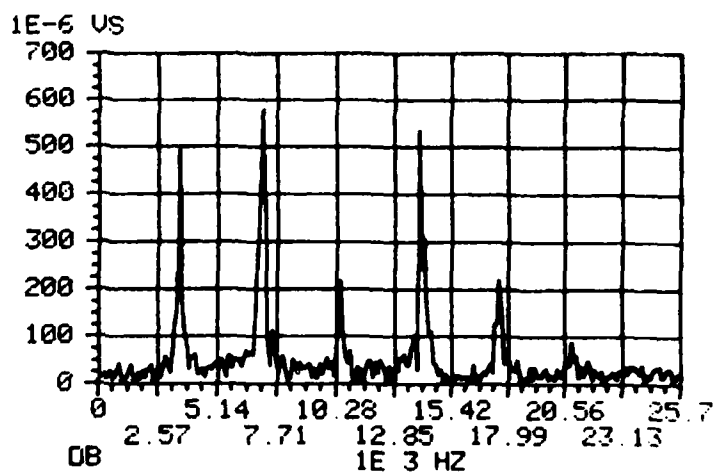
Alarm Test No. 6G
 Alarm Type: QUALCO
PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 76 °F
 Pressure 8.25 psig
 Flowrate 10.9 std l/m
 Meter Setting 90 dB



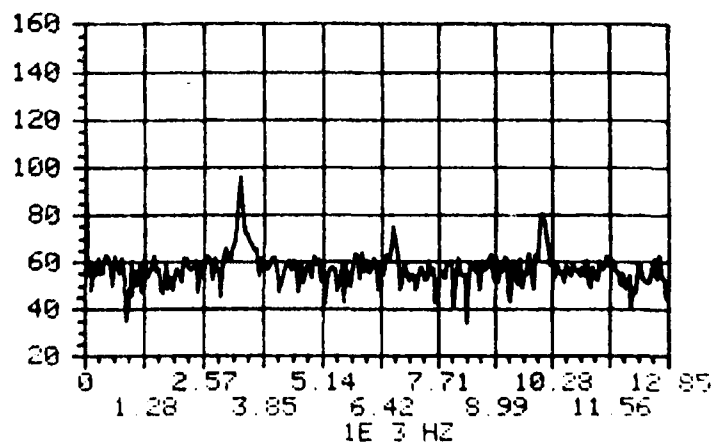
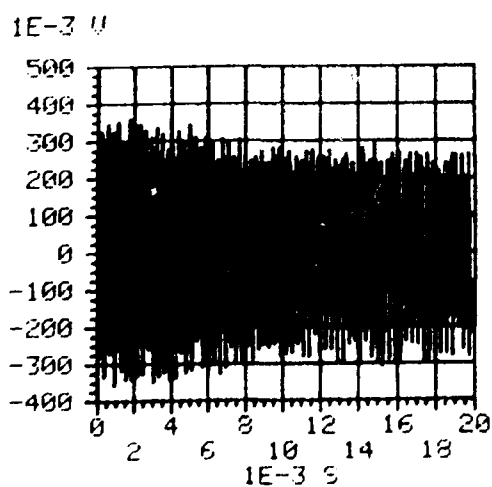
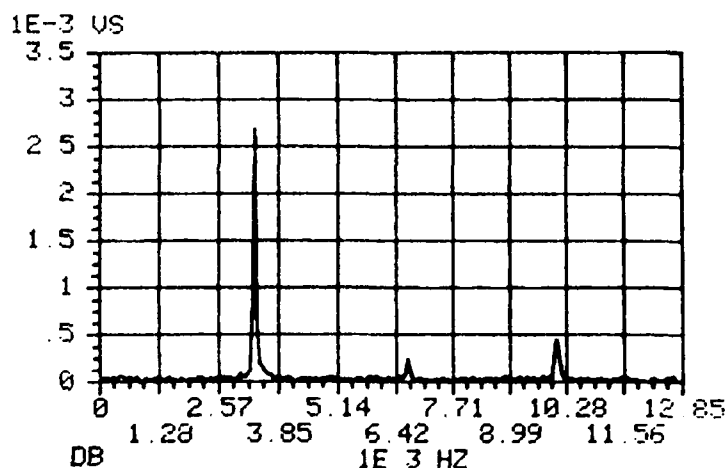
Alarm Test No. 6G
 Alarm Type: QUALCO
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 76 °F
 Pressure 8.25 psig
 Flowrate 10.9 std l/m
 Meter Setting 90 dB



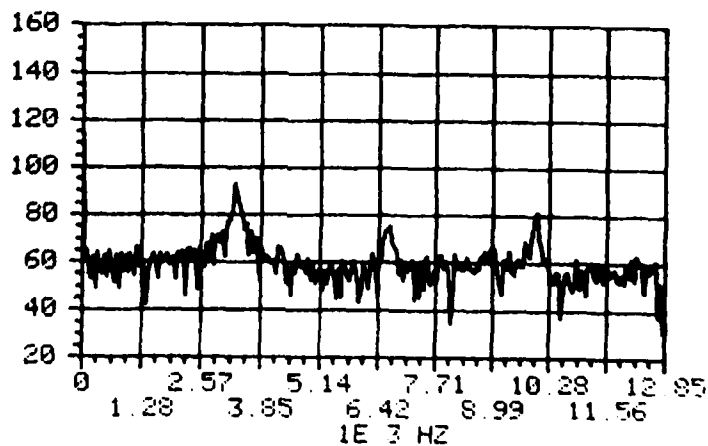
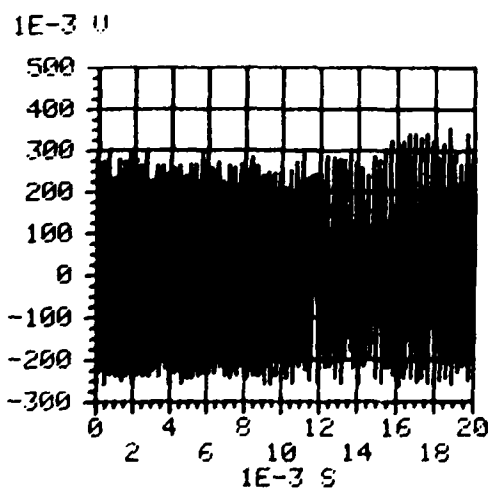
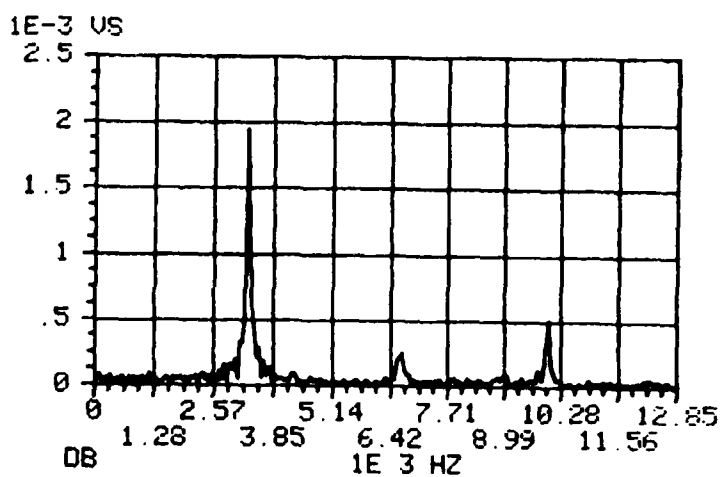
Alarm Test No. 6G
 Alarm Type: QUALCO
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 76 °F
 Pressure 8.25 psig
 Flowrate 10.9 std l/m
 Meter Setting 90 dB



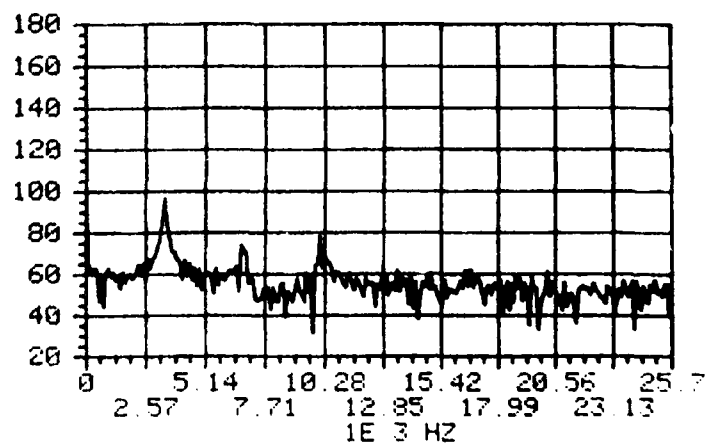
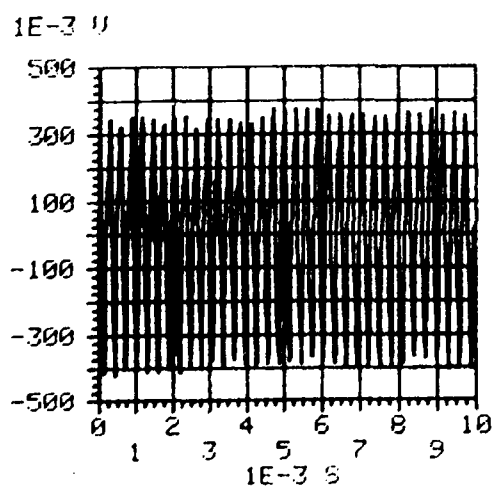
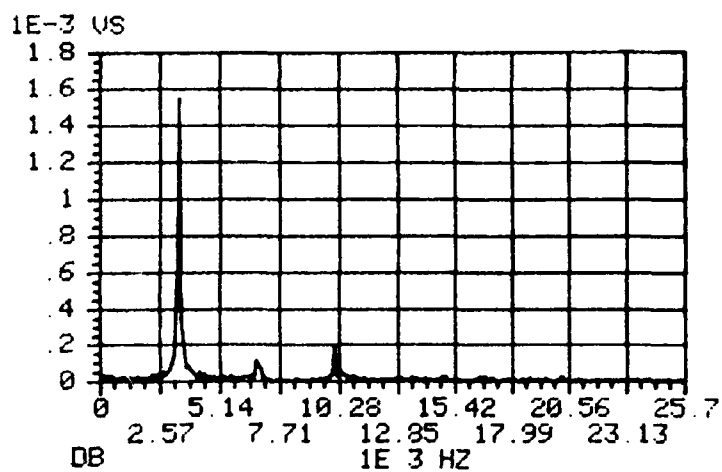
Alarm Test No.	6H
Alarm Type:	QUALECO
PRODUCTS CO.	
Driving Vapor	FREON
Temperature	78 °F
Pressure	4.25 psig
Flowrate	5.12 std l/m
Meter Setting	90 dB



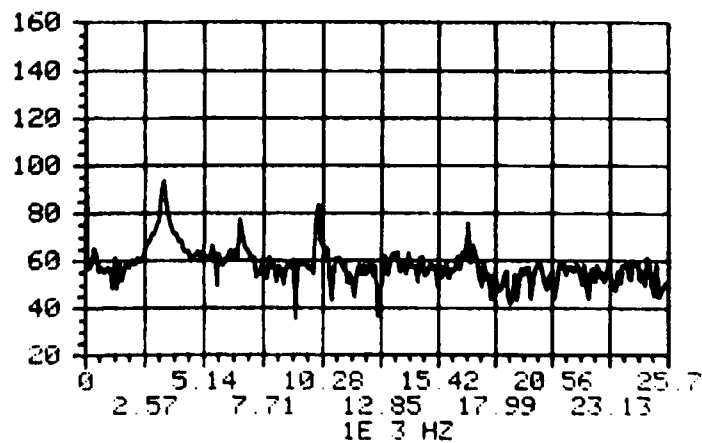
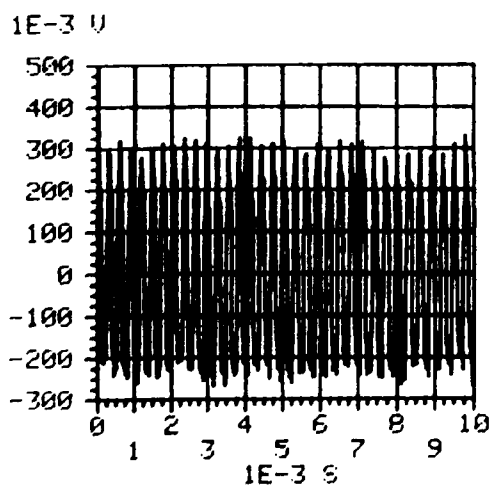
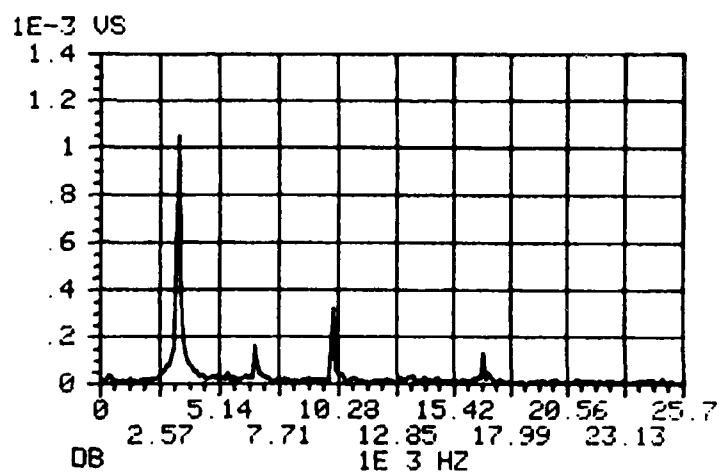
Alarm Test No.	6H
Alarm Type:	QUALCO
PRODUCTS CO.	
Driving Vapor	FREON
Temperature	78 °F
Pressure	4.25 psig
Flowrate	5.12 std l/m
Meter Setting	90 dB



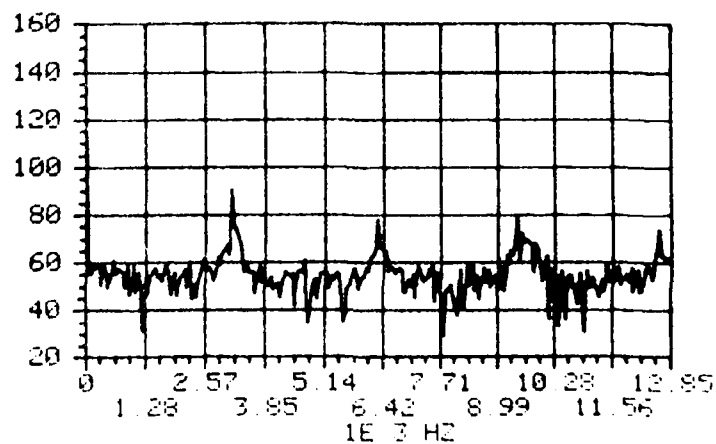
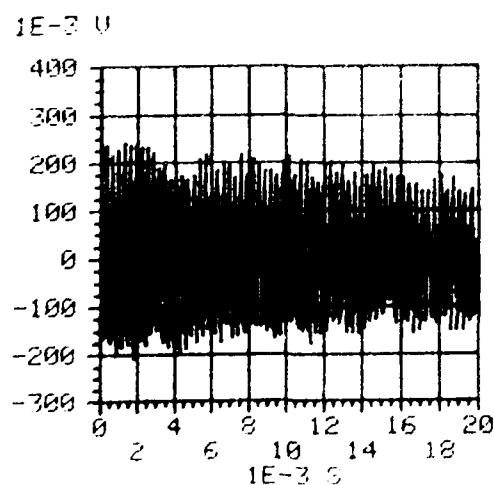
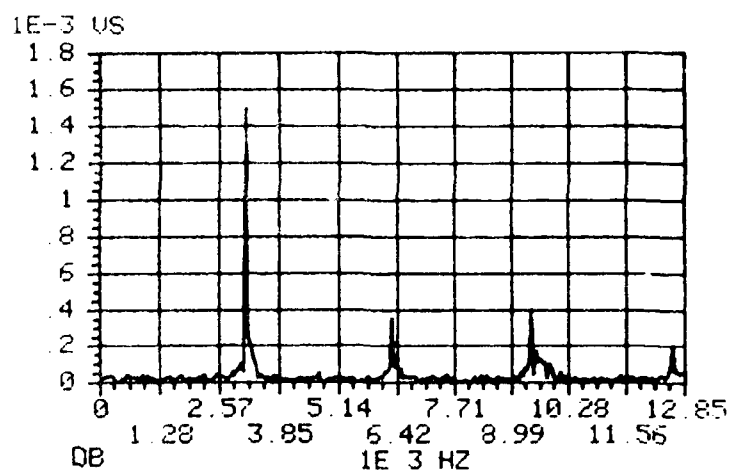
Alarm Test No. 6H
 Alarm Type: QUALCO
 PRODUCTS CO.
 Driving Vapor FREON
 Temperature 78 °F
 Pressure 4.25 psig
 Flowrate 5.12 std l/m
 Meter Setting 90 dB



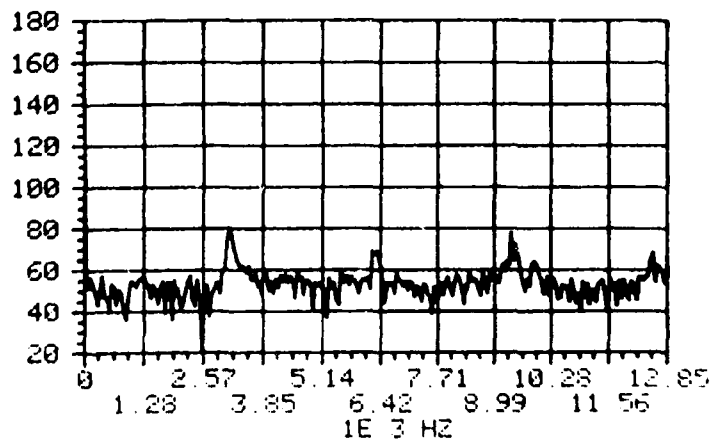
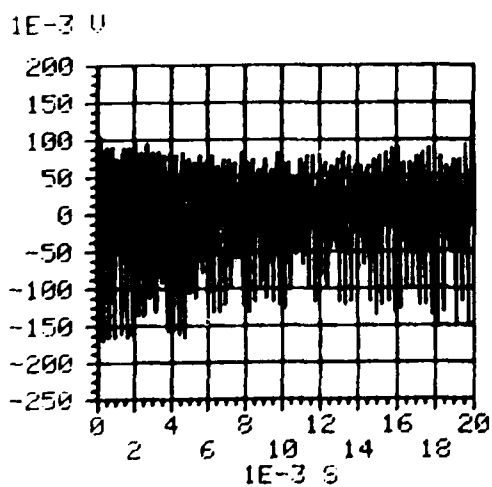
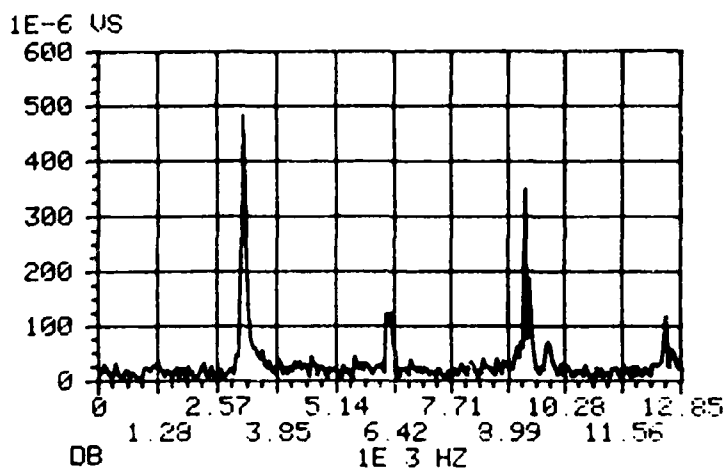
Alarm Test No.	6H
Alarm Type:	QUALCO
PRODUCTS CO.	
Driving Vapor	FREON
Temperature	78 °F
Pressure	4.25 psig
Flowrate	5.12 std l/m
Meter Setting	90 dB



Alarm Test No.	61
Alarm Type:	QUALCO
PRODUCTS CO.	
Driving Vapor	REFON 12
Temperature	73 °F
Pressure	2.5 psig
Flowrate	1.92 std l/m
Meter Setting	90 dB



Alarm Test No.	61
Alarm Type:	QUALCO
PRODUCTS CO.	
Driving Vapor	FREON 12
Temperature	73 °F
Pressure	2.5 psig
Flowrate	1.92 std l/m
Meter Setting	90 dB



AD-A130 331

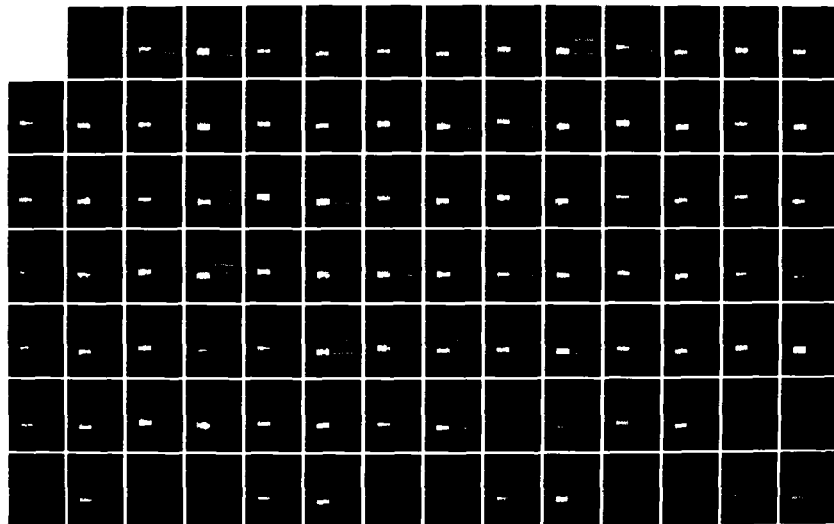
SELECTIVE AUTOMATIC FIRE EXTINGUISHER FOR CLASS A WITH
NOTIFICATION (SAFE) (U) NEW MEXICO ENGINEERING RESEARCH
INST ALBUQUERQUE C W WILSON ET AL. MAY 83

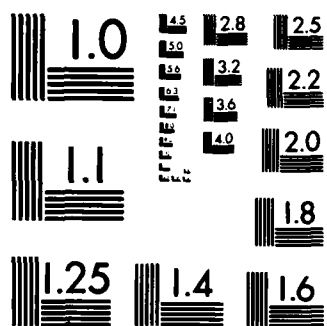
3/4

UNCLASSIFIED

NMERI-TA3-1-VOL-2 AFESC/ESL-TR-83-07-VOL-2 F/G 13/12

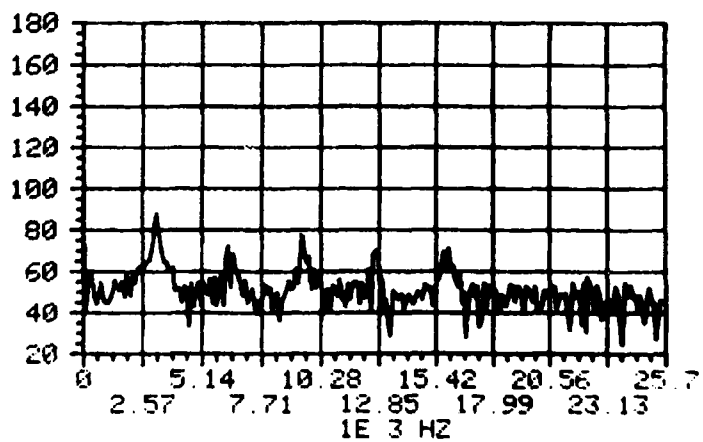
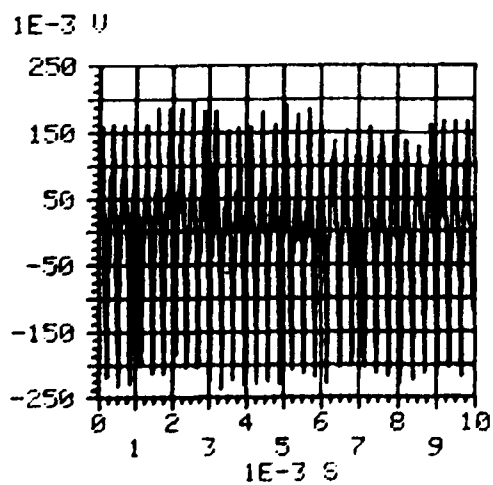
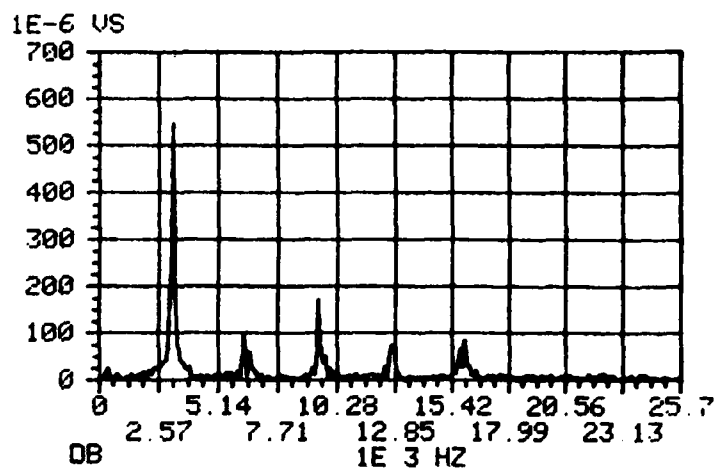
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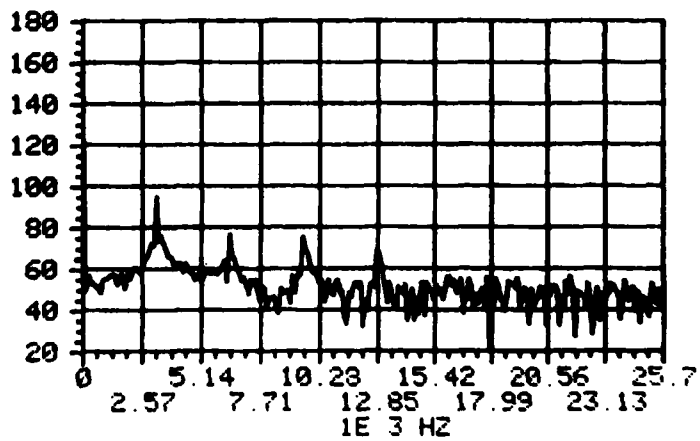
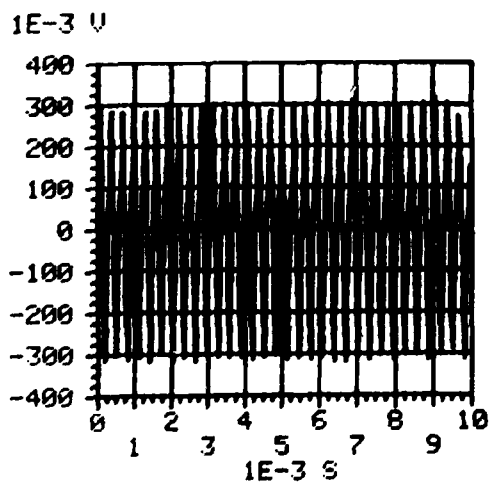
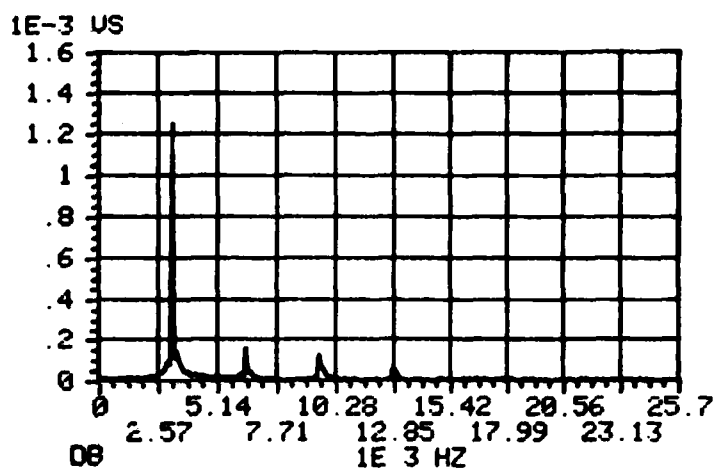


MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

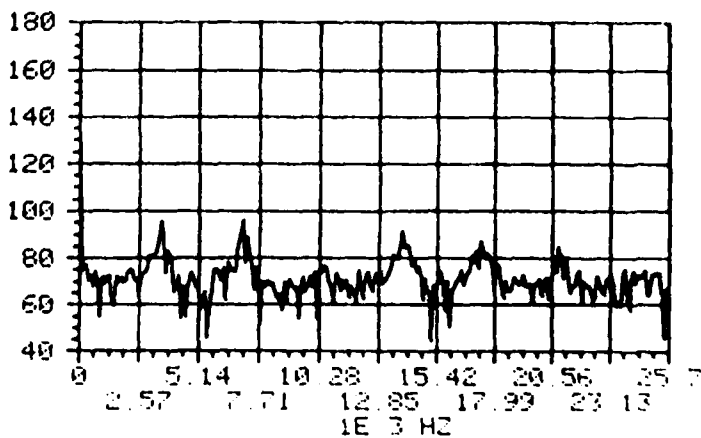
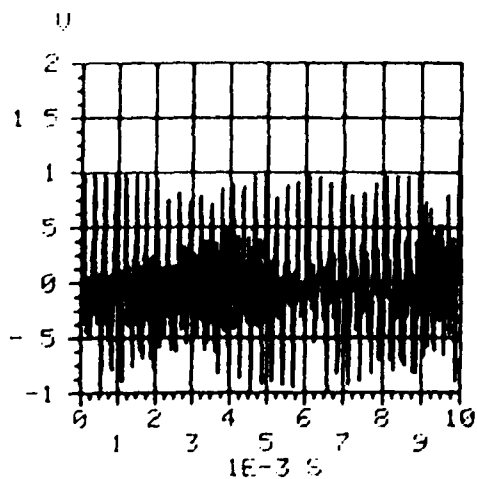
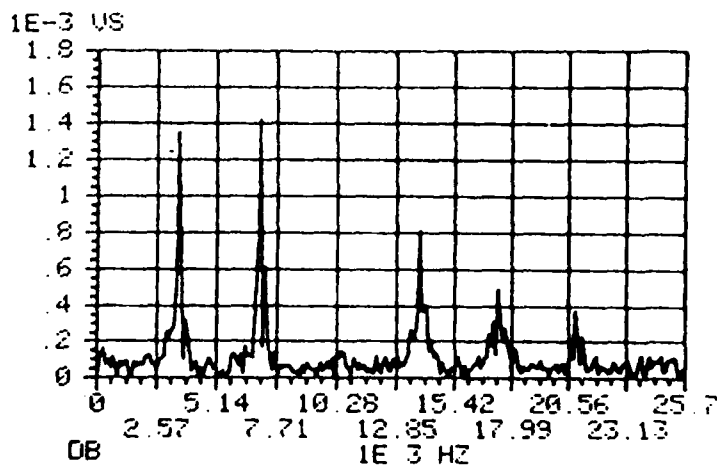
Alarm Test No. 61
 Alarm Type: QUALCO
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 73 °F
 Pressure 2.5 psig
 Flowrate 1.92 std l/m
 Meter Setting 90 dB



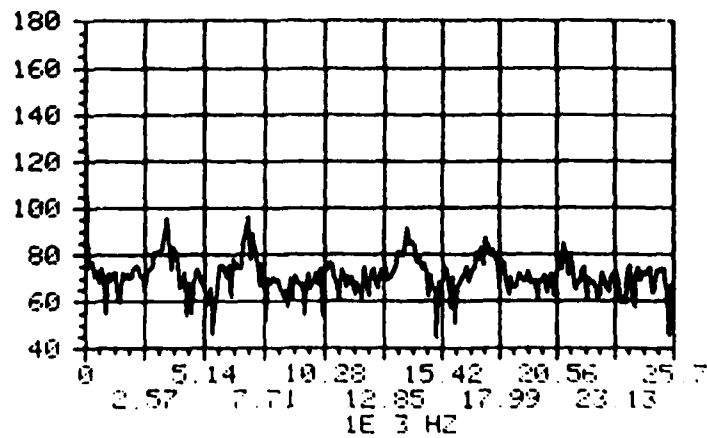
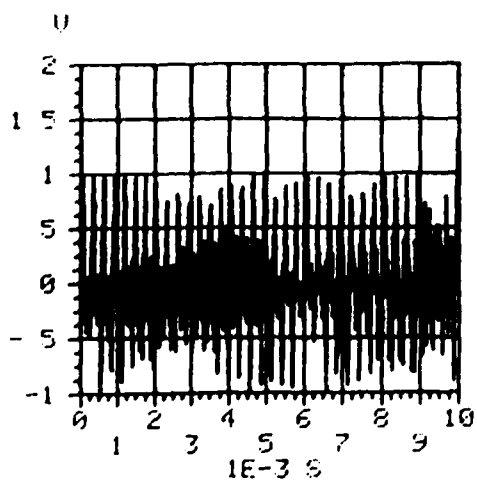
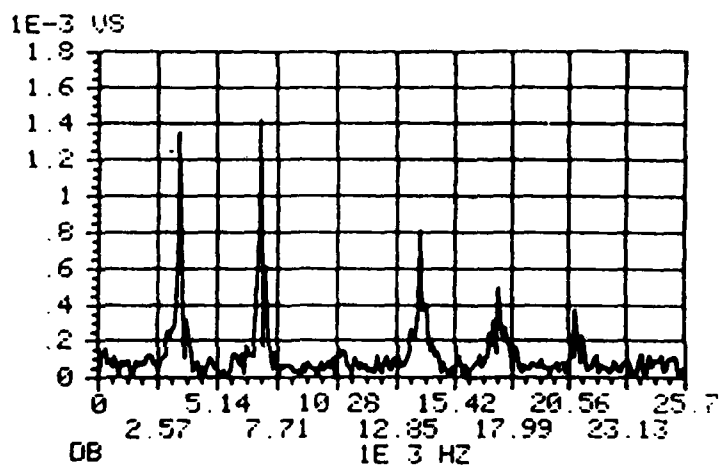
Alarm Test No. 61
 Alarm Type: QUALCO
PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 73 °F
 Pressure 2.5 psig
 Flowrate 1.92 std l/m
 Meter Setting 90 dB



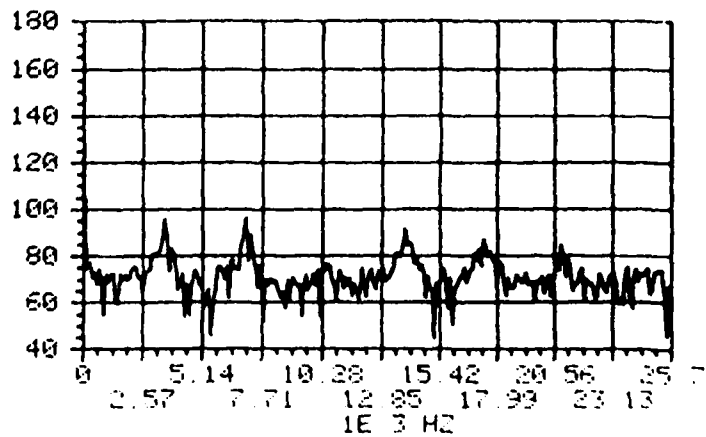
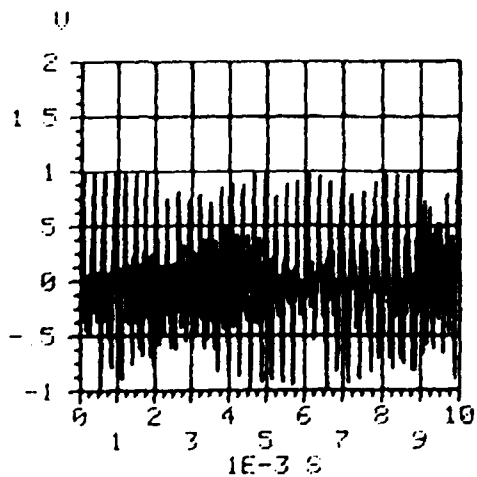
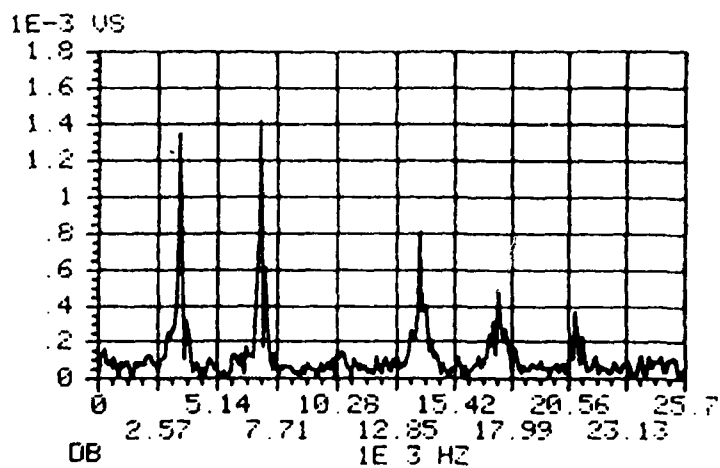
Alarm Test No.	7A
Alarm Type:	QUALCO
PRODUCTS CO.	
Driving Vapor	FREON 12
Temperature	64 °F
Pressure	23 psig
Flowrate	19.2 std l/m
Meter Setting	90 dB



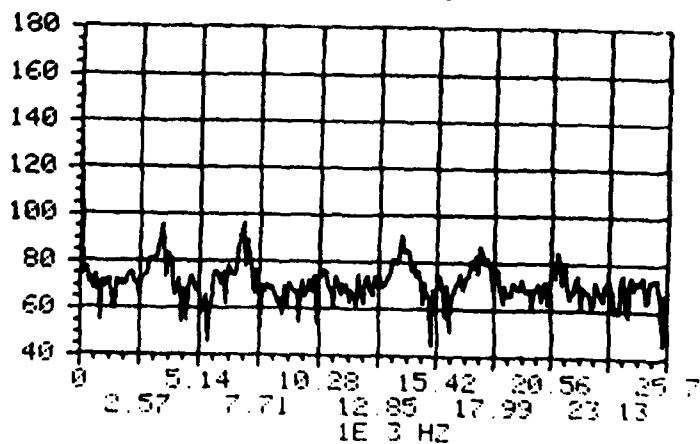
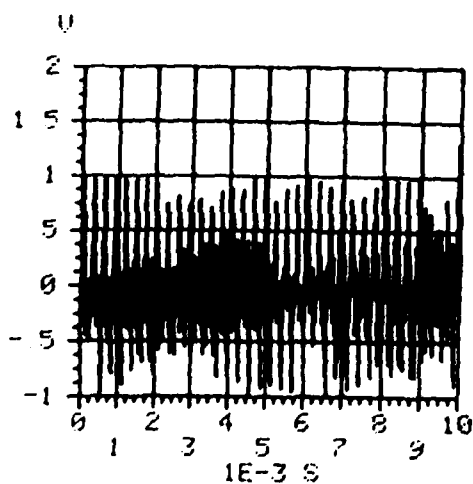
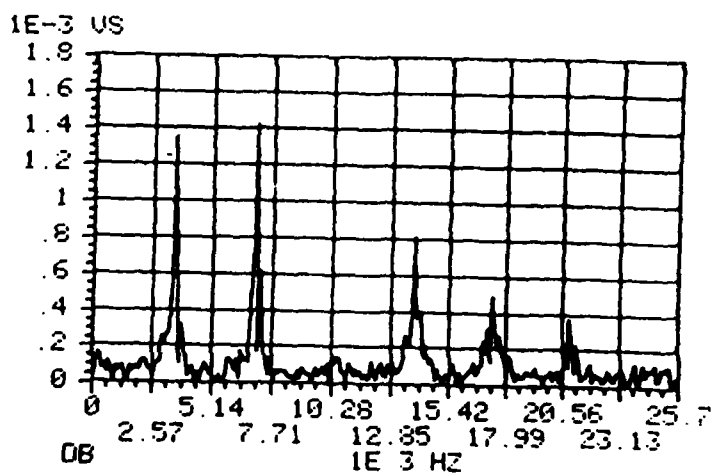
Alarm Test No. 7A
 Alarm Type: QUALCO
PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 64 °F
 Pressure 23 psig
 Flowrate 19.2 std l/m
 Meter Setting 90 dB



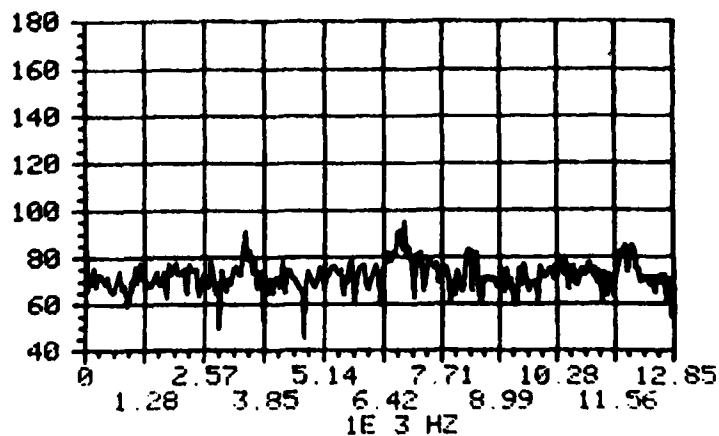
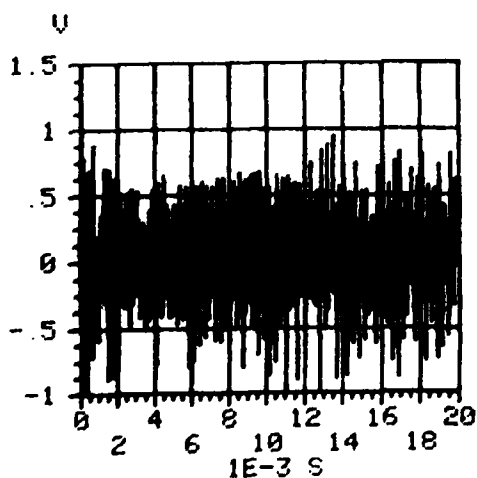
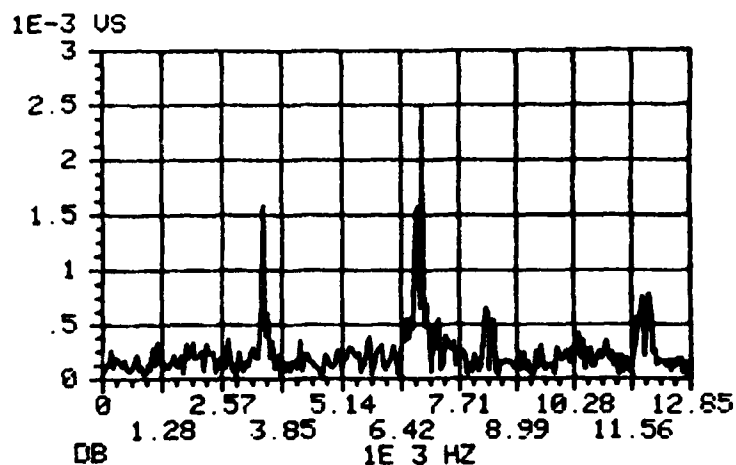
Alarm Test No.	7A
Alarm Type:	QUALCO
PRODUCTS CO.	
Driving Vapor	FREON 12
Temperature	64 °F
Pressure	23 psig
Flowrate	19.2 std l/m
Meter Setting	90 dB



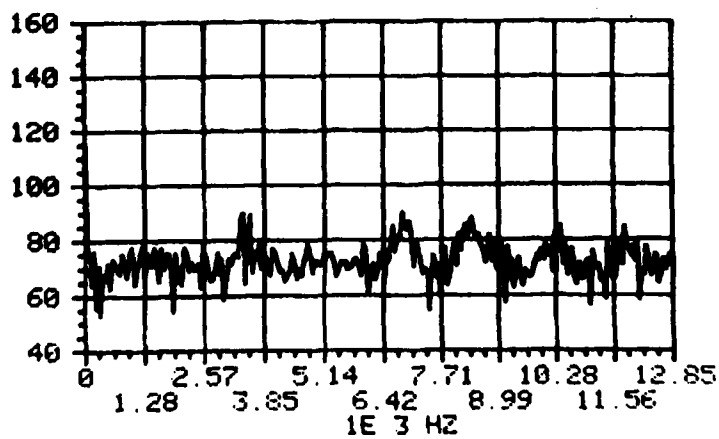
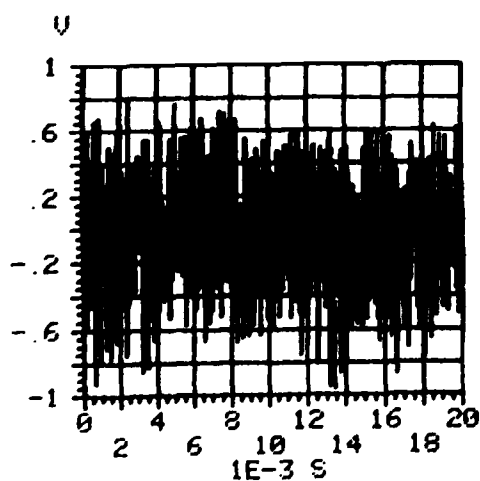
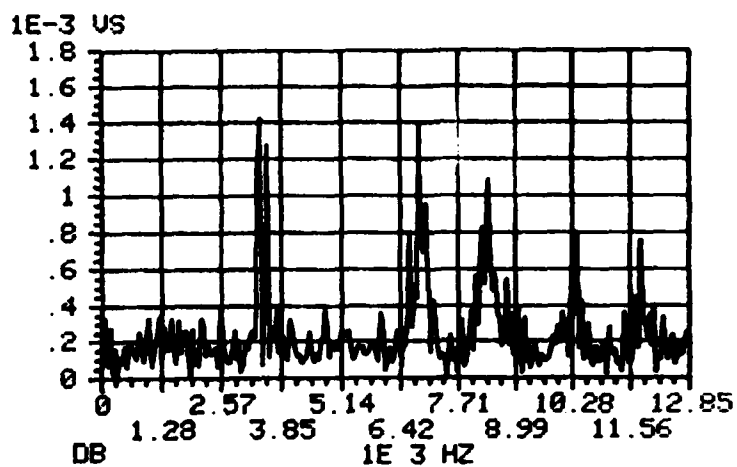
Alarm Test No. 7A
 Alarm Type: QUALCO
PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 64 °F
 Pressure 23 psig
 Flowrate 19.2 std l/m
 Meter Setting 90 dB



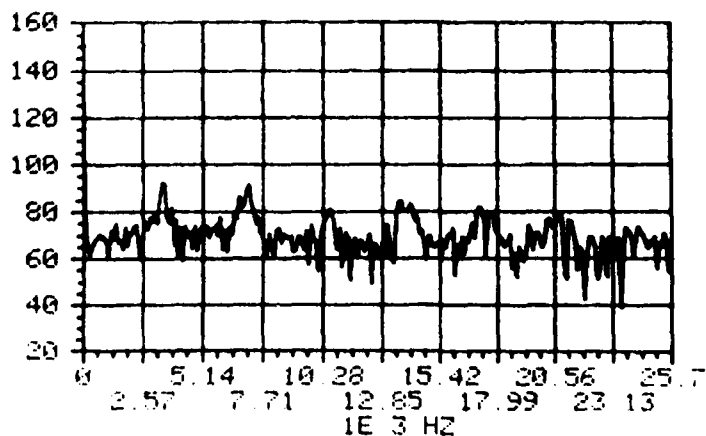
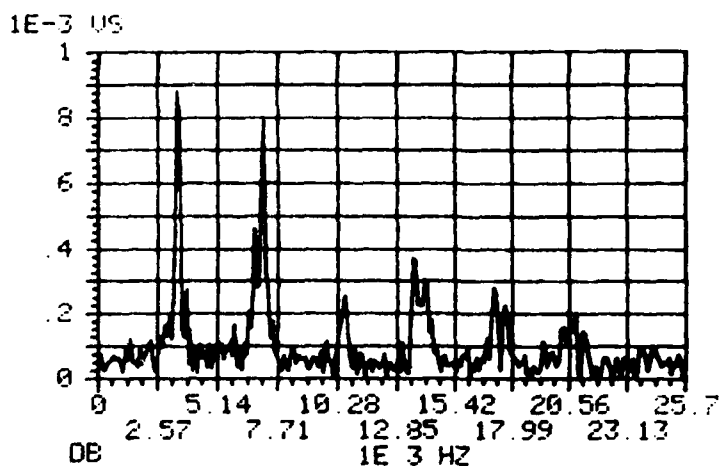
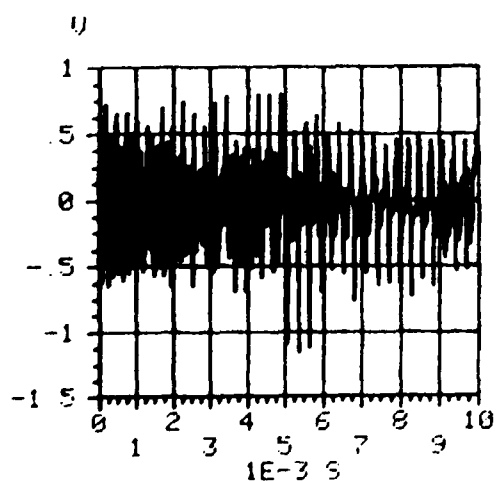
Alarm Test No. 7B
 Alarm Type: QUALCO
 PRODUCTS
 Driving Vapor FREON 12
 Temperature 77 °F
 Pressure 24 psig
 Flowrate 18.56 std l/m
 Meter Setting 90 dB



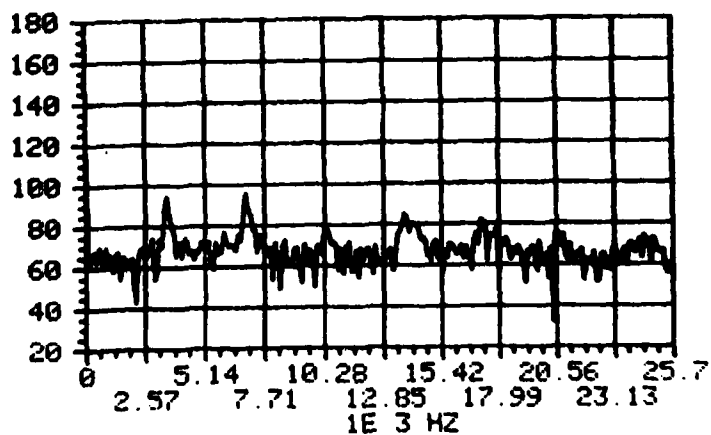
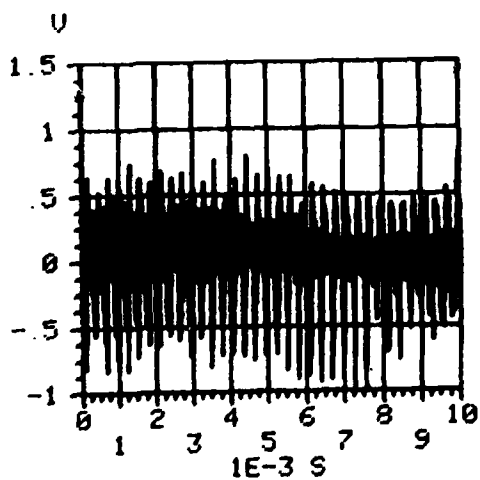
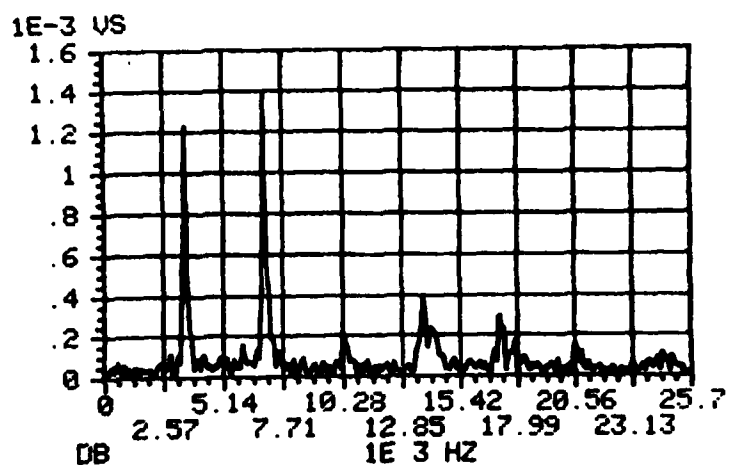
Alarm Test No. 7B
 Alarm Type: QUALCO
 PRODUCTS
 Driving Vapor FREON 12
 Temperature 77 °F
 Pressure 24 psig
 Flowrate 18.56 std l/m
 Meter Setting 90 dB



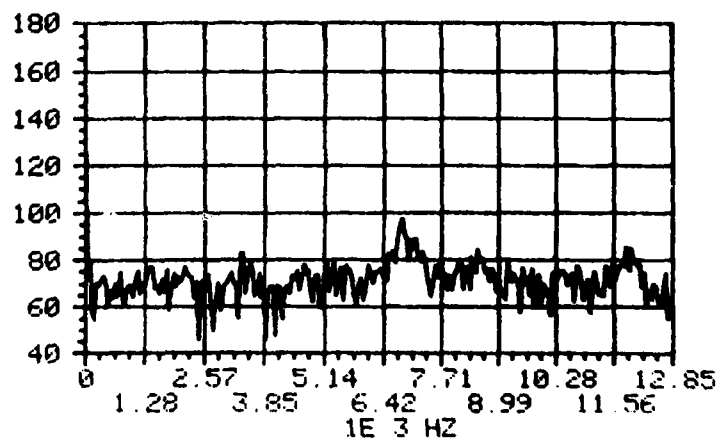
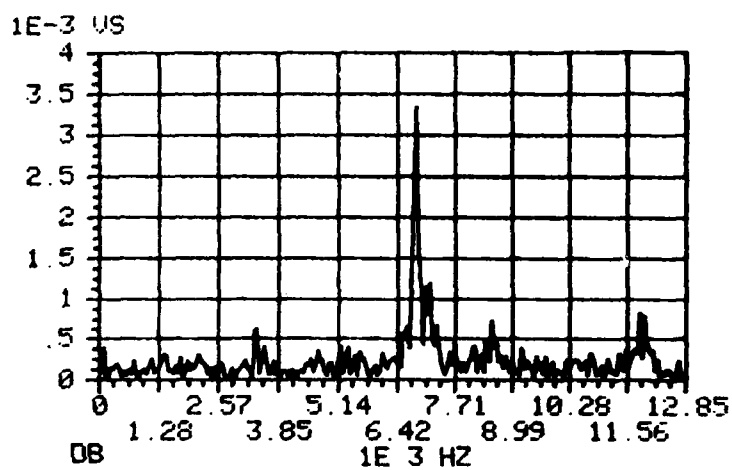
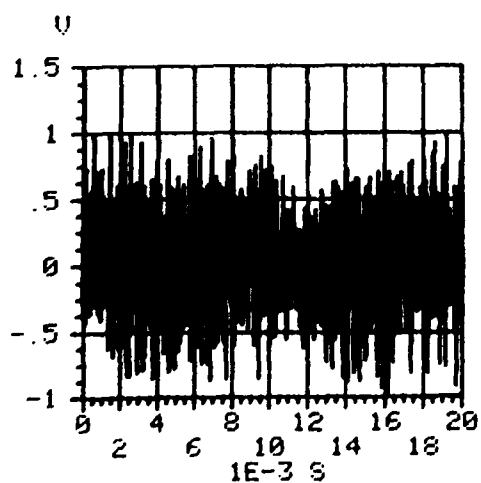
Alarm Test No. 7B
 Alarm Type: QUALCO
 PRODUCTS
 Driving Vapor FREON 12
 Temperature 77
 Pressure 24 psig
 Flowrate 18.56 std l/m
 Meter Setting 90 dB



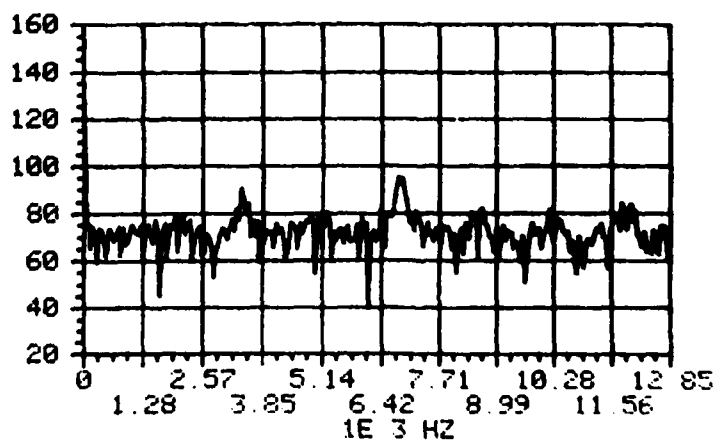
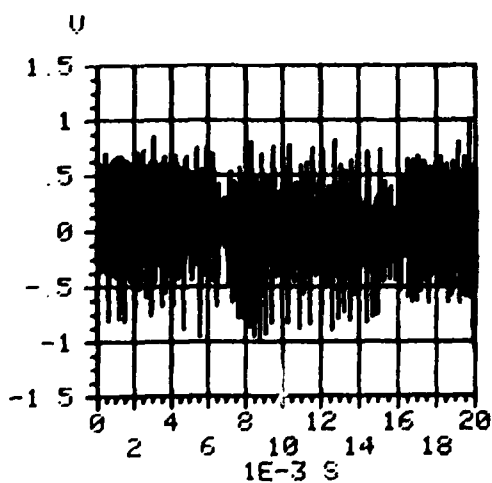
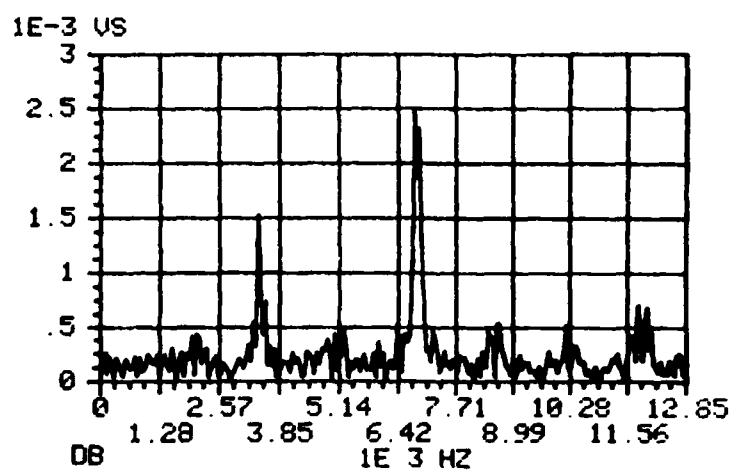
Alarm Test No.	78
Alarm Type:	QUALCO
PRODUCTS	
Driving Vapor	FREON 12
Temperature	77 °F
Pressure	24 psig
Flowrate	18.56 std l/m
Meter Setting	90 dB



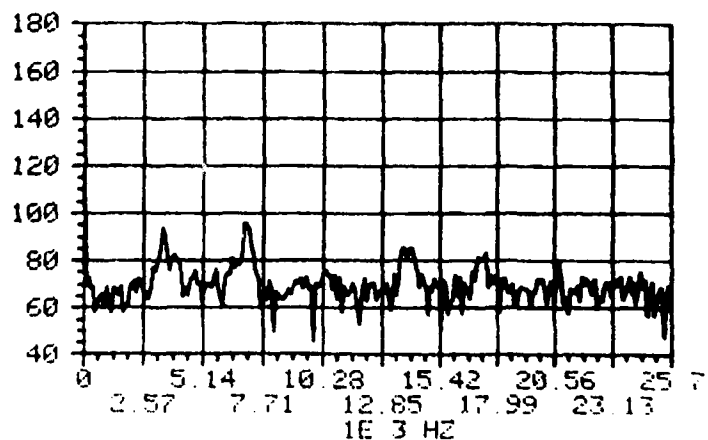
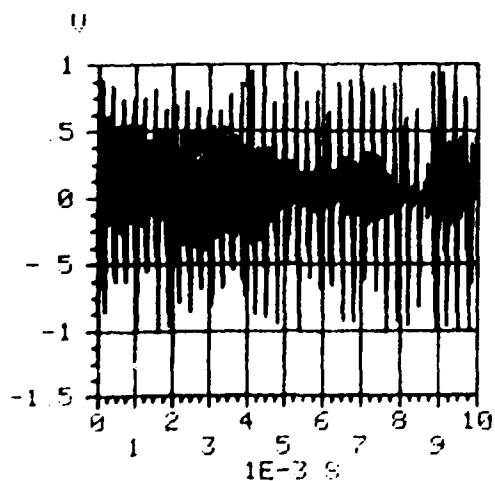
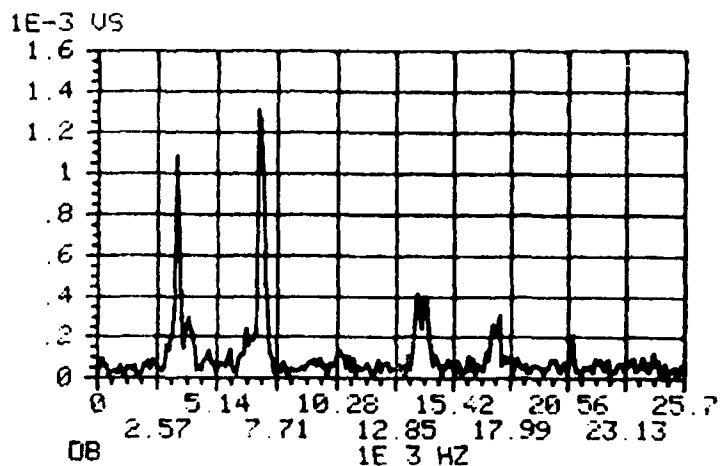
Alarm Test No. 7C
 Alarm Type: QUALCO PRODUCTS
CO.
 Driving Vapor FREON 12
 Temperature 74 °F
 Pressure 23 psig
 Flowrate 18.56 std l/m
 Meter Setting 90 dB



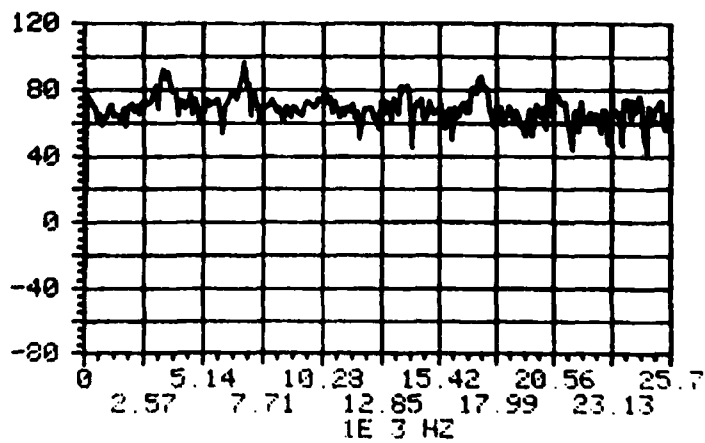
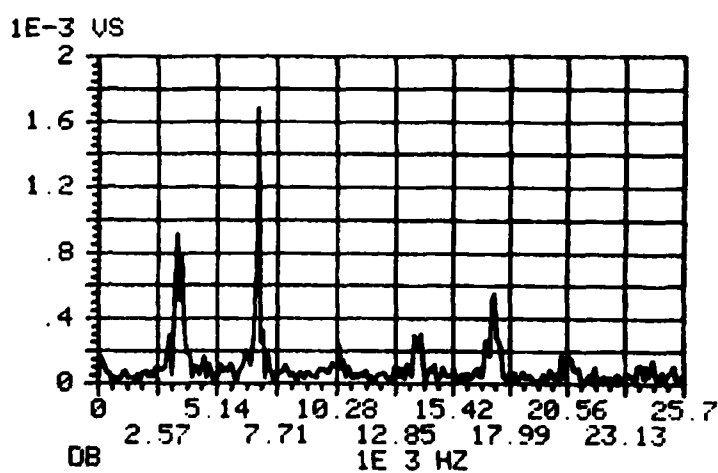
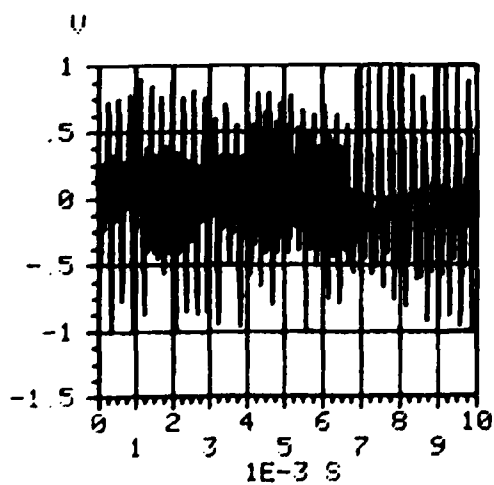
Alarm Test No. 7C
 Alarm Type: QUALCO PRODUCTS
CO.
 Driving Vapor FREON 12
 Temperature 74 °F
 Pressure 23 psig
 Flowrate 18.56 std l/m
 Meter Setting 90 dB



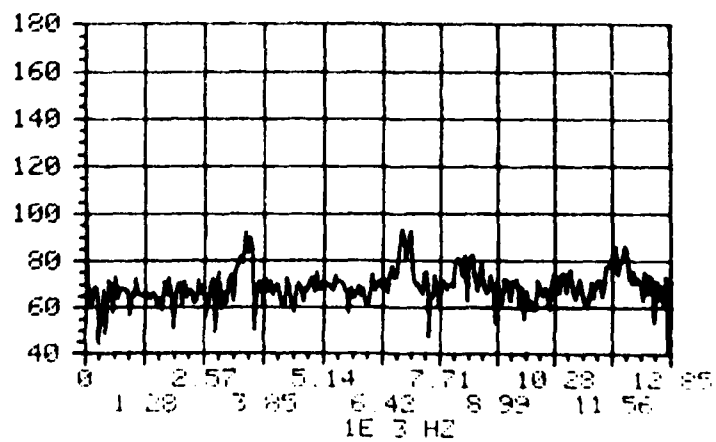
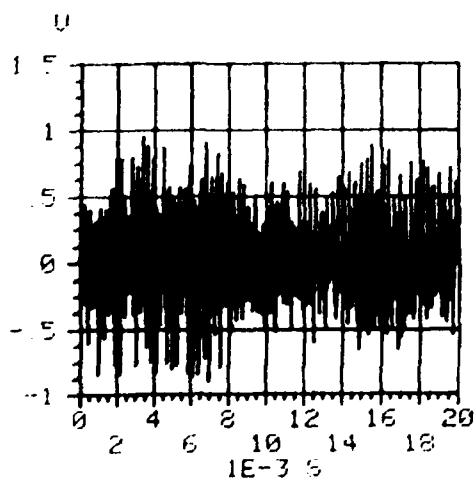
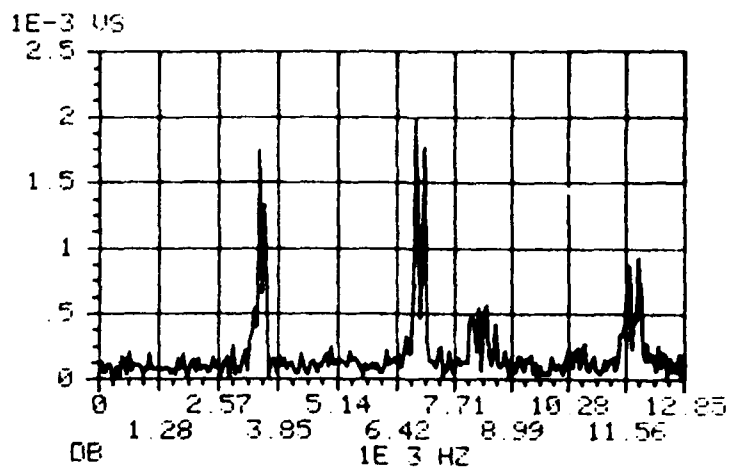
Alarm Test No. 7C
 Alarm Type. QUALCO PRODUCTS
 CO.
 Driving Vapor FREON 12
 Temperature 74 °F
 Pressure 23 psia
 Flowrate 18.56 std l/m
 Meter Setting 90 dB



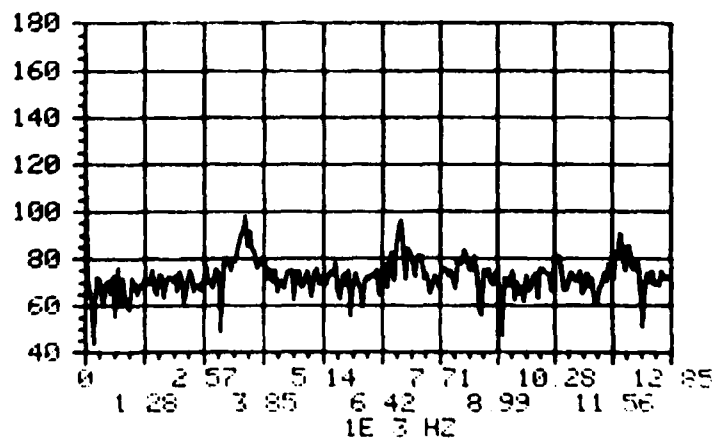
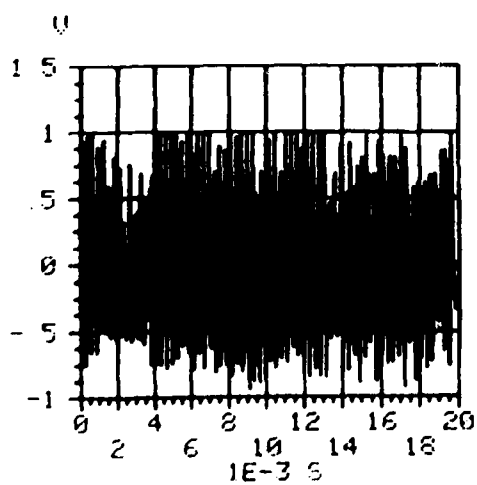
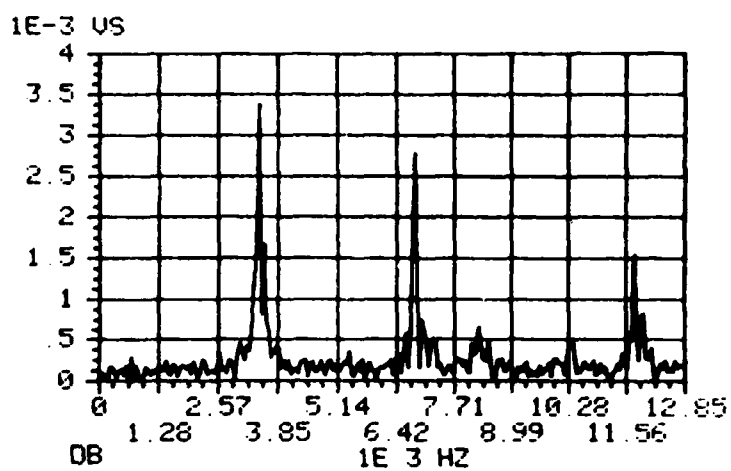
Alarm Test No. 7C
 Alarm Type: QUALCO PRODUCTS
CO.
 Driving Vapor FREON 12
 Temperature 74 °F
 Pressure 23 psig
 Flowrate 18.56 std l/m
 Meter Setting 90 dB



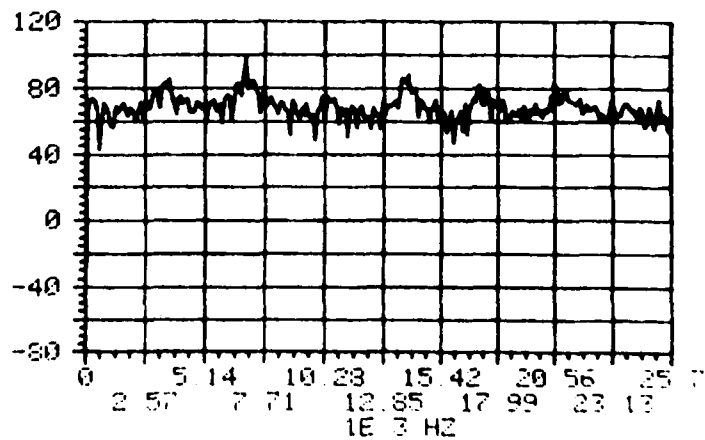
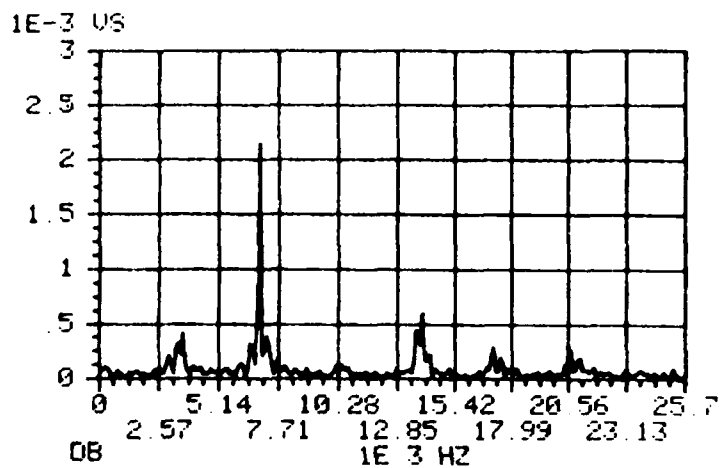
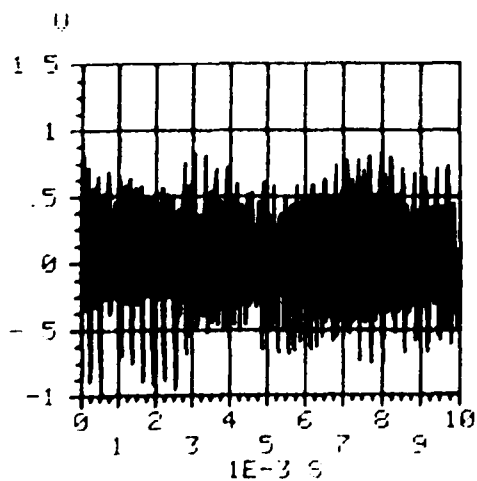
Alarm Test No. 70
 Alarm Type: QUALCO
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 75
 Pressure 20.5 psig
 Flowrate 17.28 Std l/m
 Meter Setting 90 dB



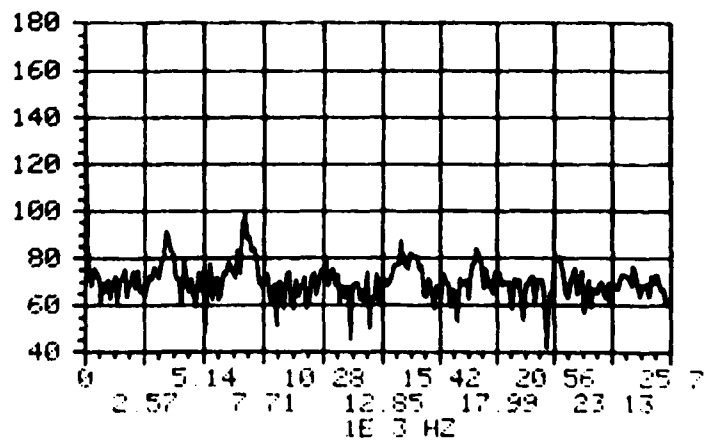
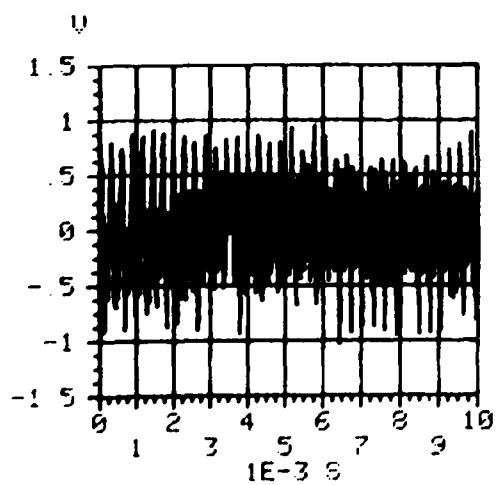
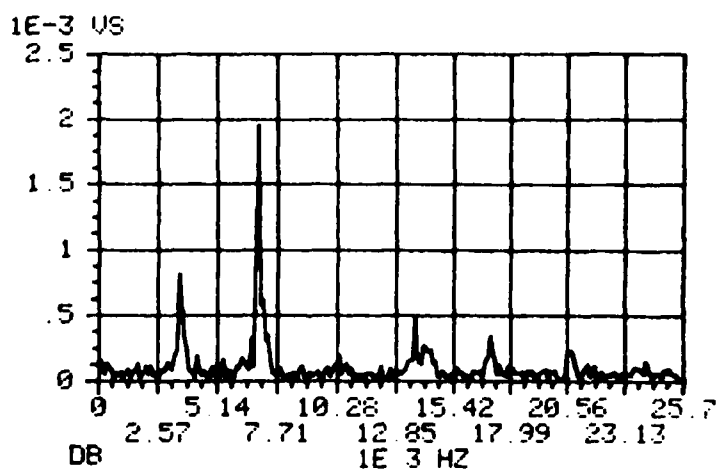
Alarm Test No. 70
 Alarm Type: QUALCO
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 75 °F
 Pressure 20.5 psig
 Flowrate 17.28 std l/m
 Meter Setting 90 dB



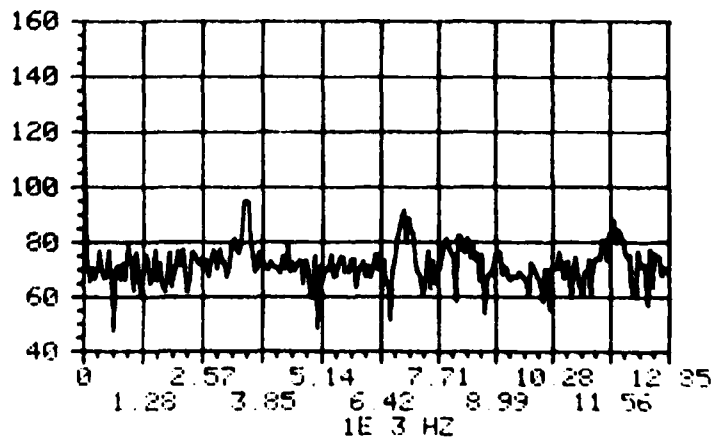
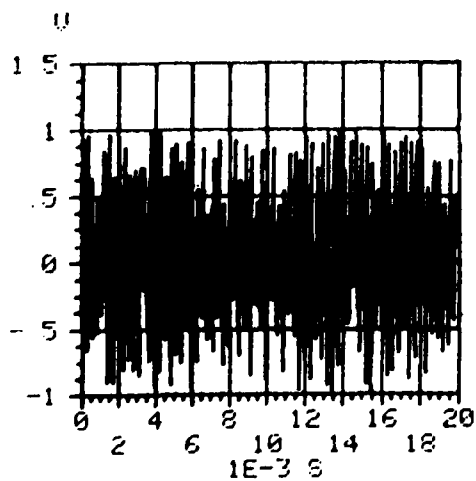
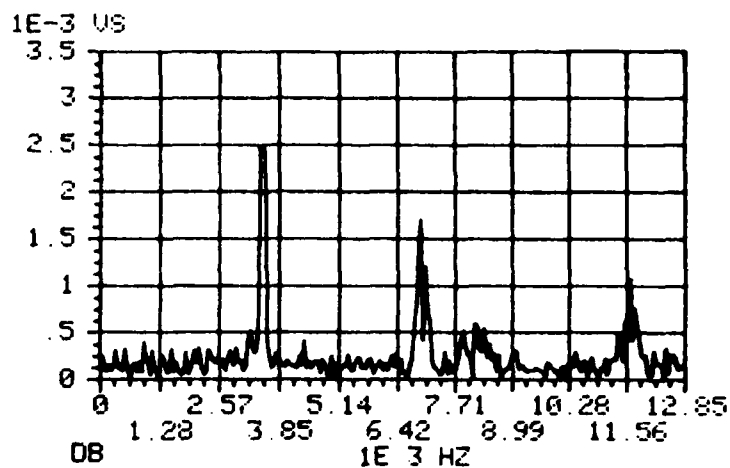
Alarm Test No. 7D
 Alarm Type: QUALCO
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 75
 Pressure 20.5 psig
 Flowrate 17.28 std l/m
 Meter Setting 90 dB



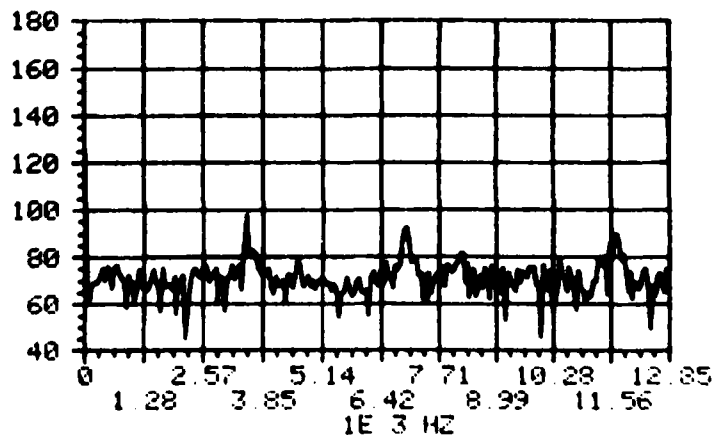
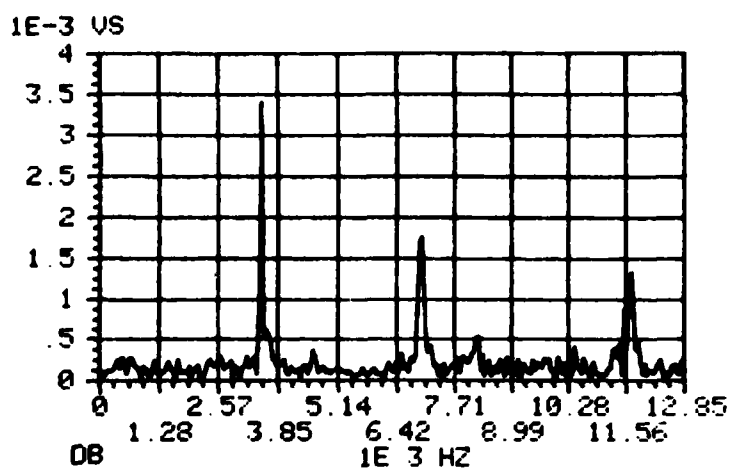
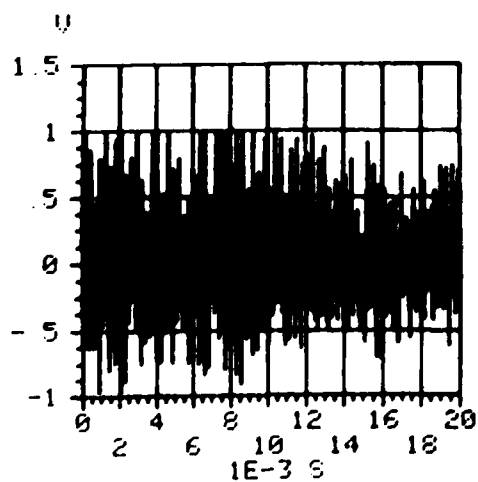
Alarm Test No. 70
 Alarm Type: QUALCO
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 75 °F
 Pressure 20.5 psig
 Flowrate 17.28 std l/m
 Meter Setting 90 dB



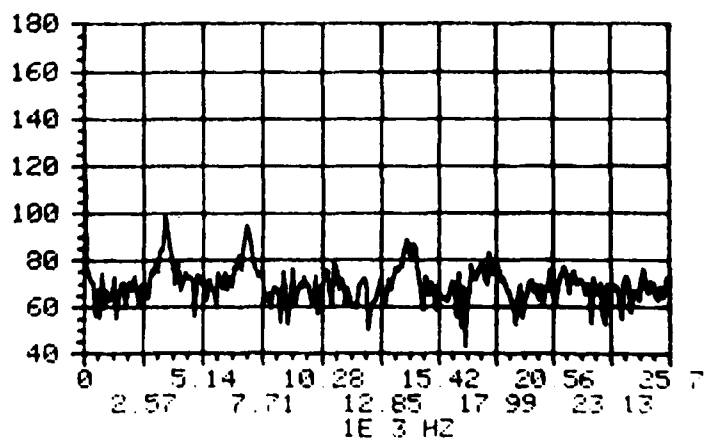
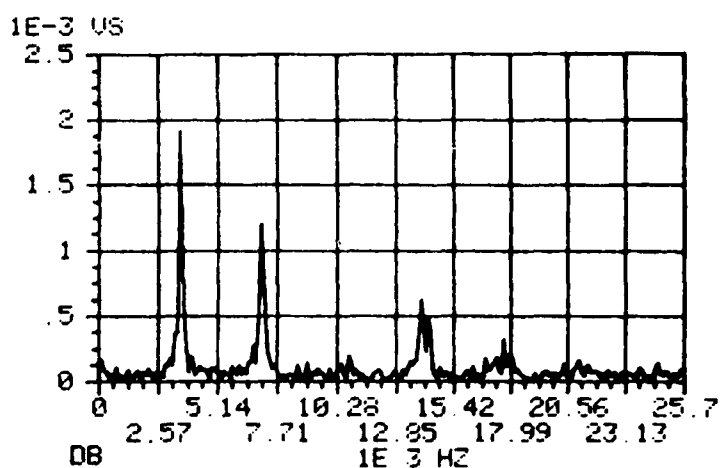
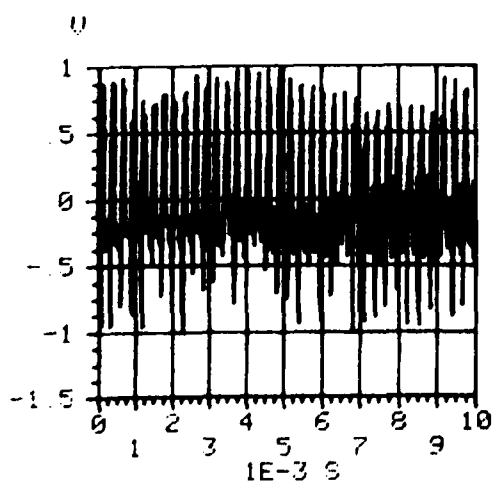
Alarm Test No.	7E
Alarm Type:	QUALCO
PRODUCTS. CO.	
Driving Vapor	FREON 12
Temperature	76 °F
Pressure	16 psig
Flowrate	15.36 std l/m
Meter Setting	90 dB



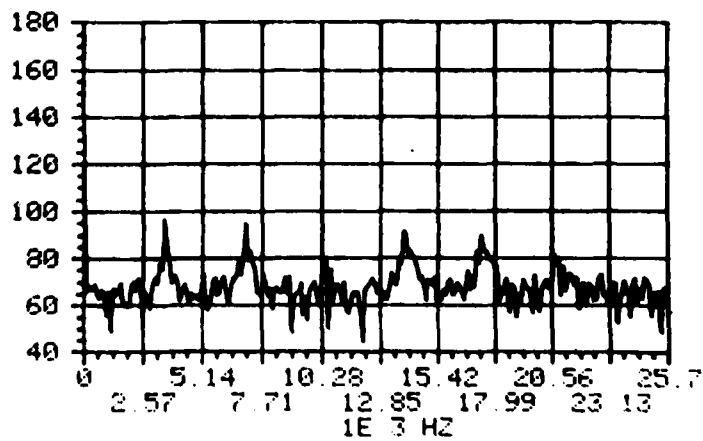
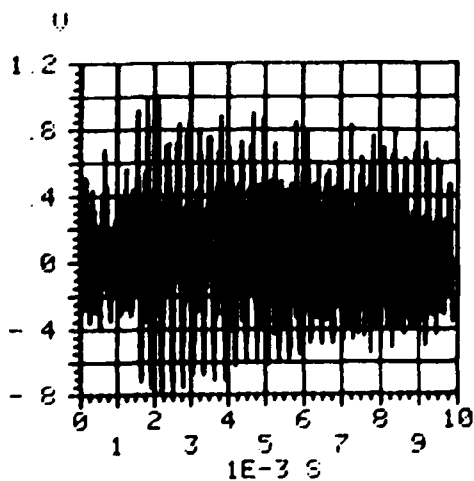
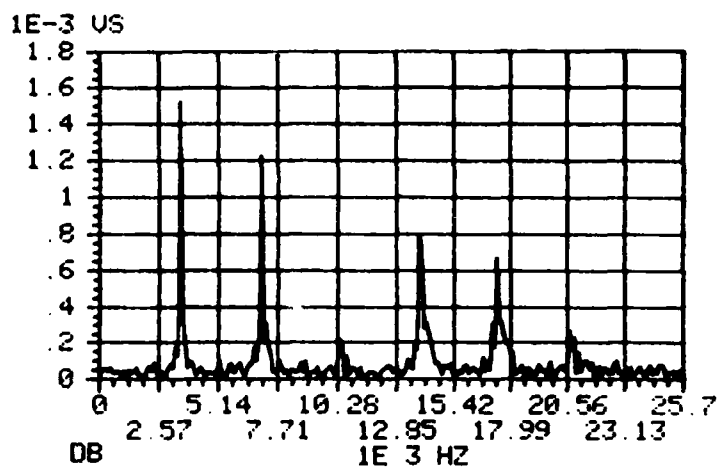
Alarm Test No. 7E
 Alarm Type: QUALCO
 PRODUCTS. CO.
 Driving Vapor FREON 12
 Temperature 76 °F
 Pressure 16 psig
 Flowrate 15.36 std l/m
 Meter Setting 90 dB



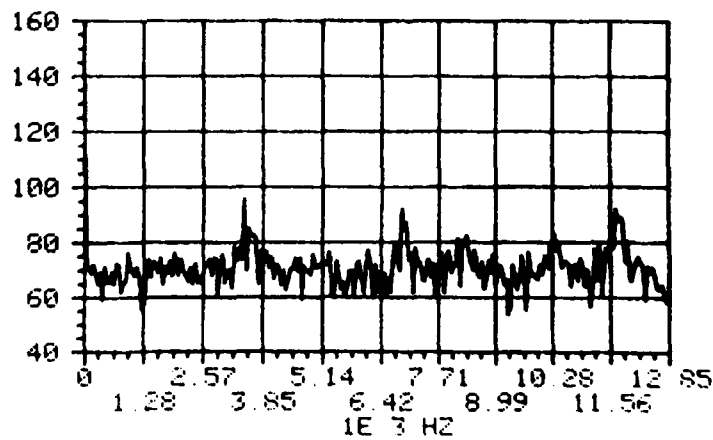
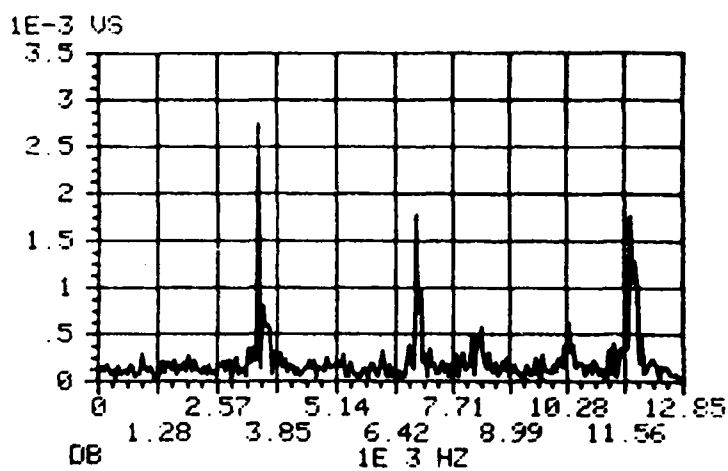
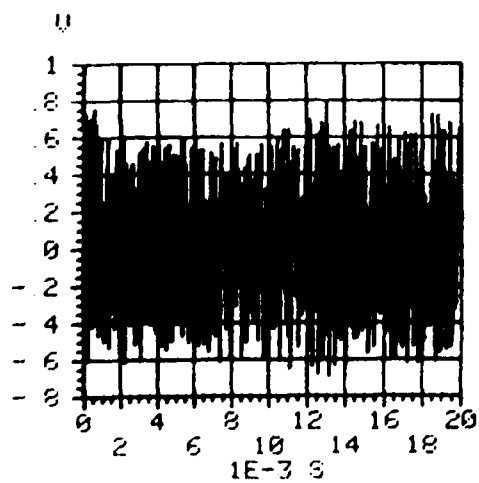
Alarm Test No. 7E
 Alarm Type: QUALCO
 PRODUCTS. CO.
 Driving Vapor FREON 12
 Temperature 76 °F
 Pressure 16 psig
 Flowrate 15.36 std l/m
 Meter Setting 90 dB



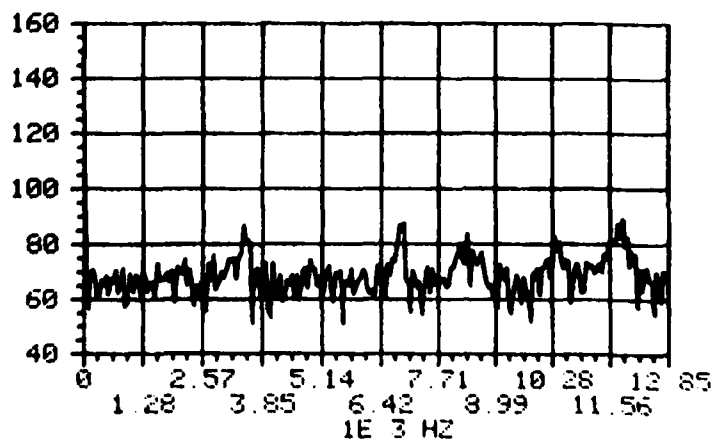
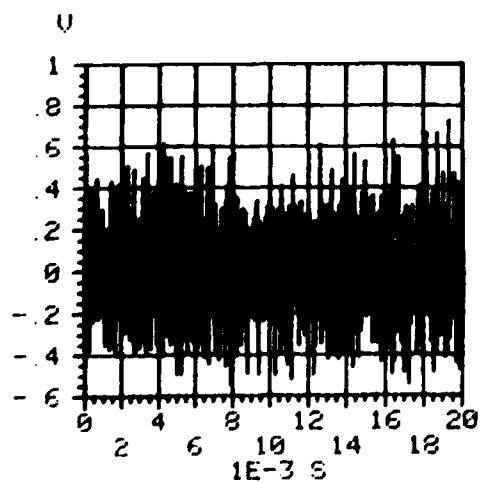
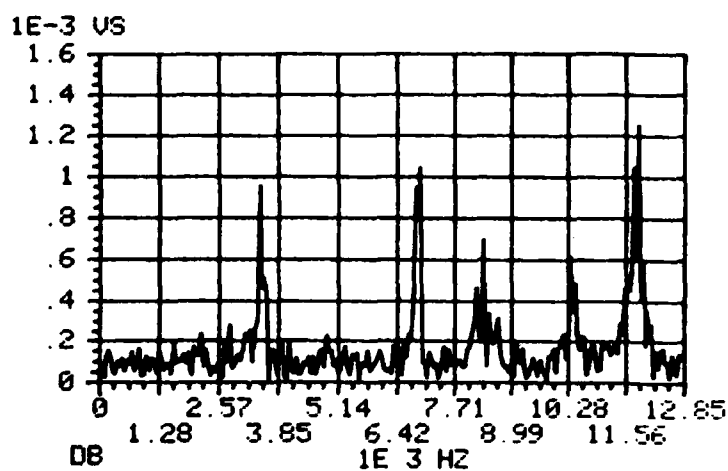
Alarm Test No.	7E
Alarm Type:	QUALCO
PRODUCTS. CO.	
Driving Vapor	FREON 12
Temperature	76 °F
Pressure	16 psig
Flowrate	15.36 std l/m
Meter Setting	90 dB



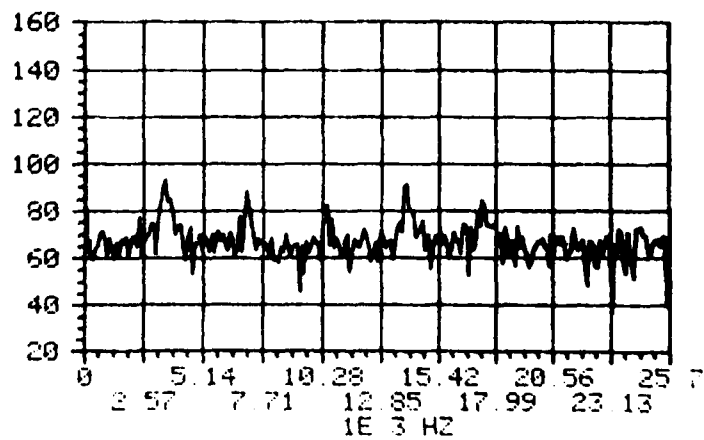
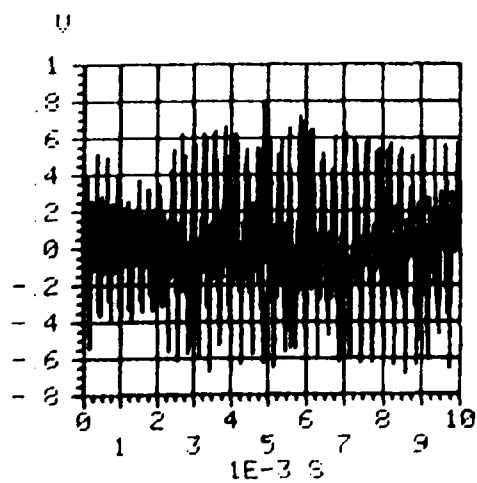
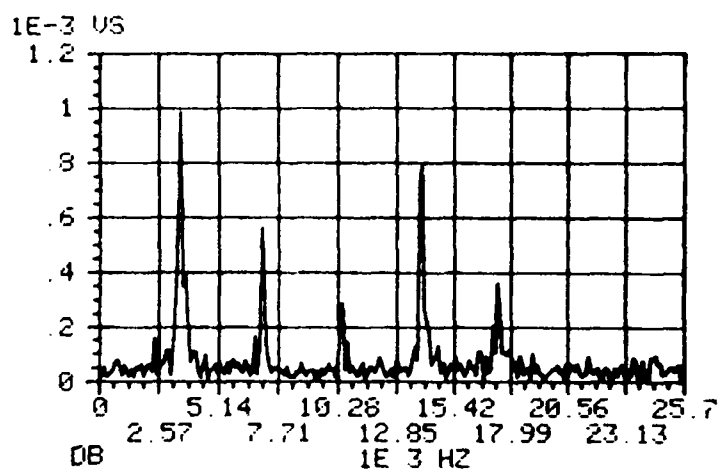
Alarm Test No.	7F	
Alarm Type:	QUALCO	
PRODUCTS CO.		
Driving Vapor	FREON 12	
Temperature	75	°F
Pressure	11.75	psig
Flowrate	13.44	std l/m
Meter Setting	90	dB



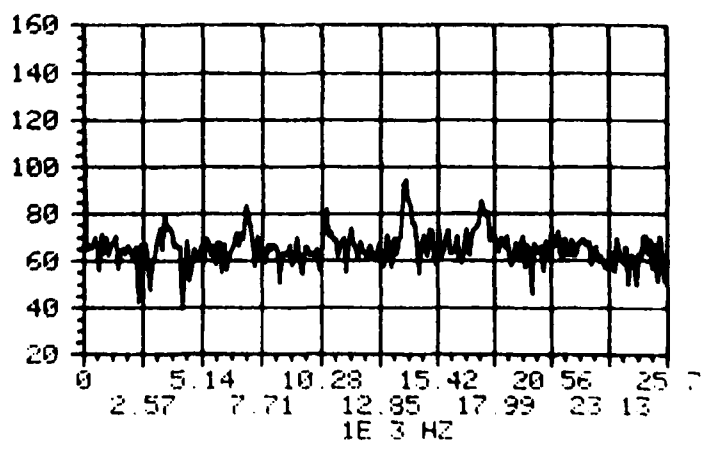
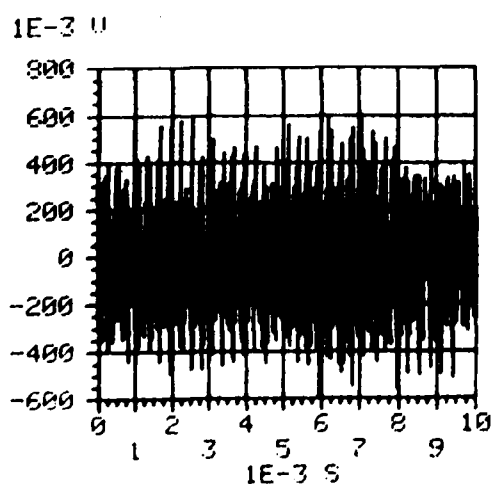
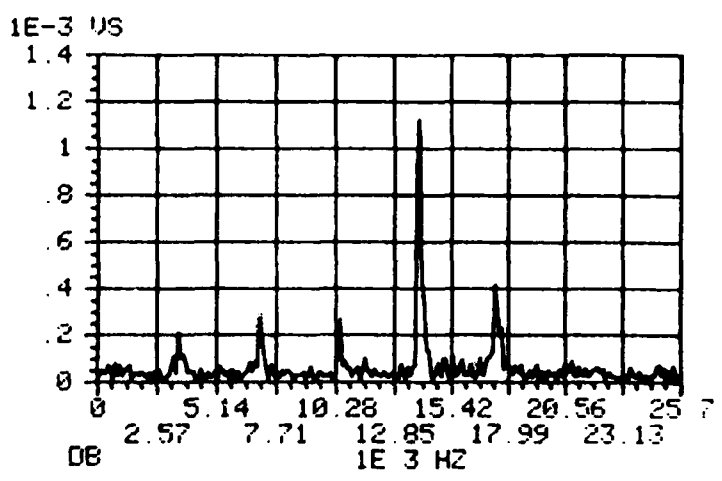
Alarm Test No.	7F
Alarm Type:	QUALCO
PRODUCTS CO.	
Driving Vapor	FREON 12
Temperature	75 °F
Pressure	11.75 psig
Flowrate	13.44 std l/m
Meter Setting	90 dB



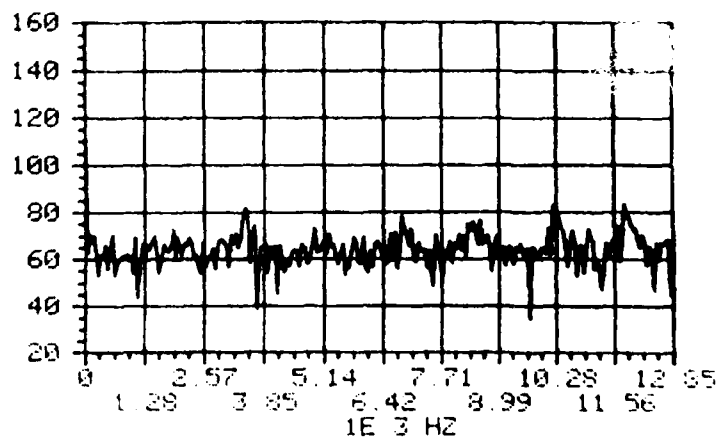
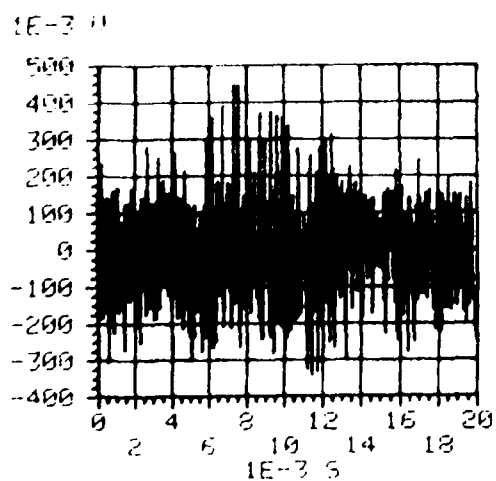
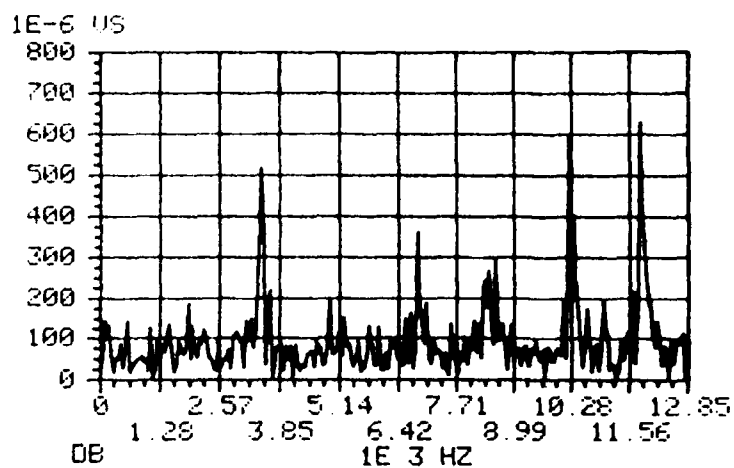
Alarm Test No.	7F	
Alarm Type:	QUALCO	
PRODUCTS CO.		
Driving Vapor	FREON 12	
Temperature	75	°F
Pressure	11.75	psig
Flowrate	13.44	std l/m
Meter Setting	90	dB



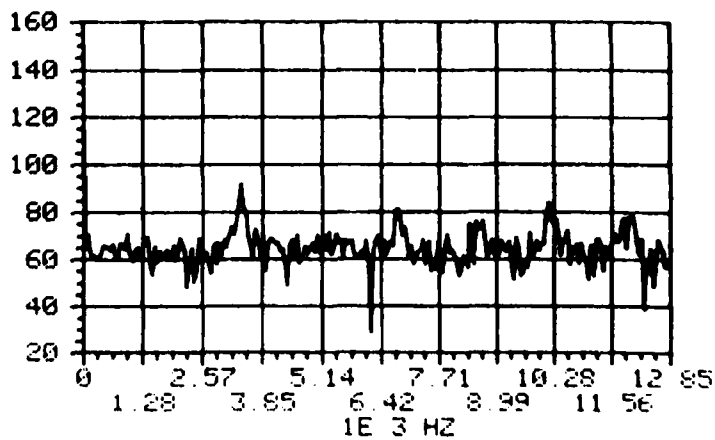
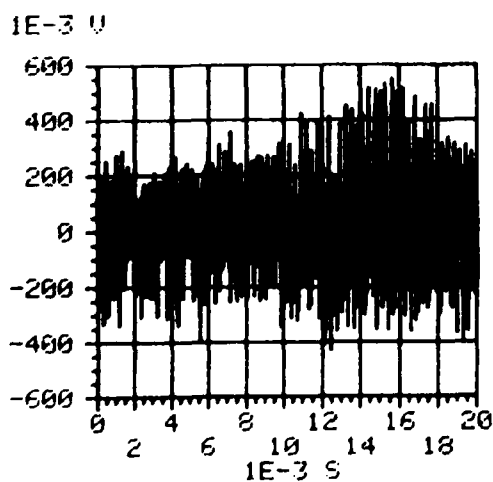
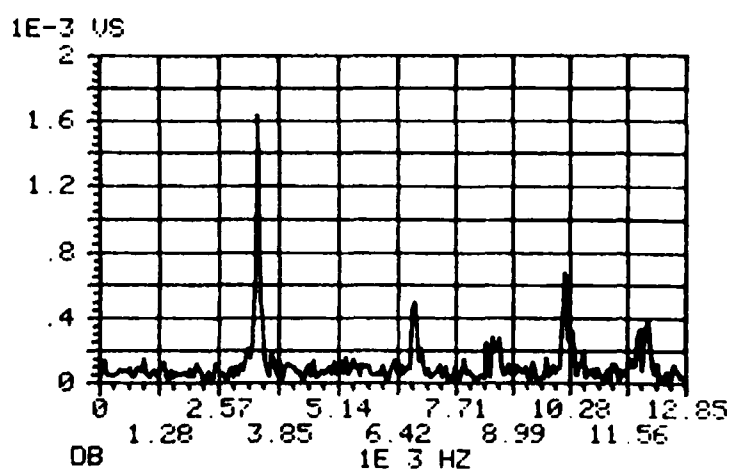
Alarm Test No.	7F	
Alarm Type:	QUALCO	
	PRODUCTS CO.	
Driving Vapor	FREON 12	
Temperature	75	°F
Pressure	11.75	psig
Flowrate	13.44	std l/m
Meter Setting	90	dB



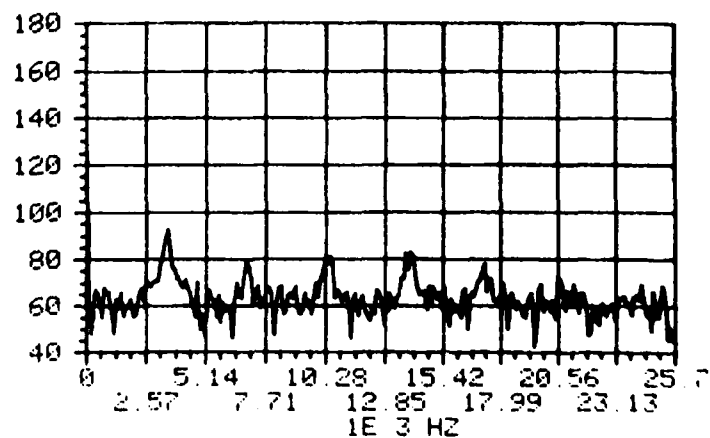
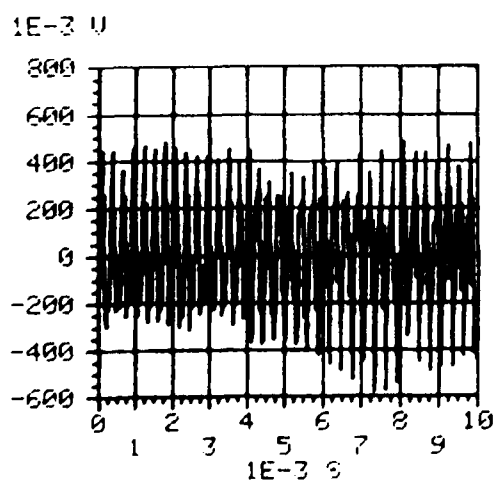
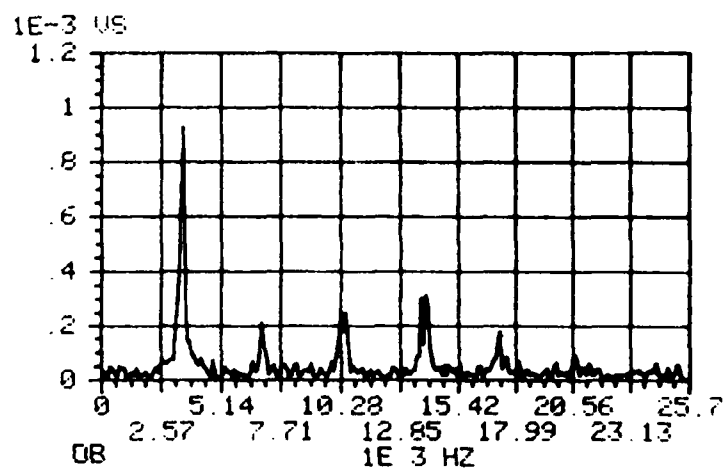
Alarm Test No.	76
Alarm Type:	QUALCO
PRODUCTS CO.	
Driving Vapor	FREON 12
Temperature	76 F
Pressure	7.5 psig
Flowrate	10.88 std l/m
Meter Setting	90 dB



Alarm Test No.	7G
Alarm Type:	QUALCO
PRODUCTS CO.	
Driving Vapor	FREON 12
Temperature	76 °F
Pressure	7.5 psig
Flowrate	10.88 std l/m
Meter Setting	90 dB

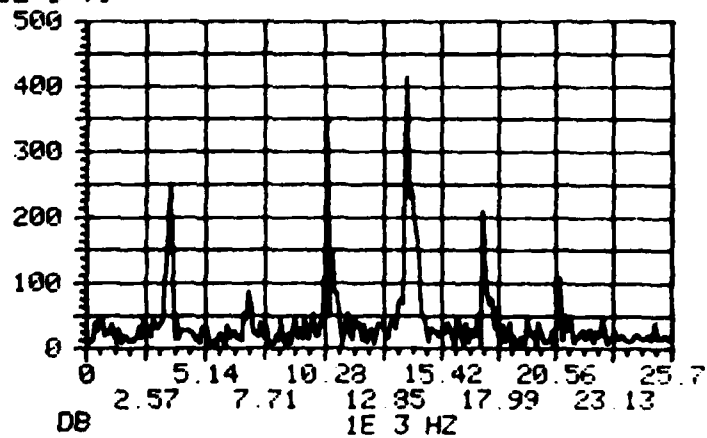


Alarm Test No. 7G
 Alarm Type: QUALCO
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 76 °F
 Pressure 7.5 psig
 Flowrate 10.88 std l/m
 Meter Setting 90 dB

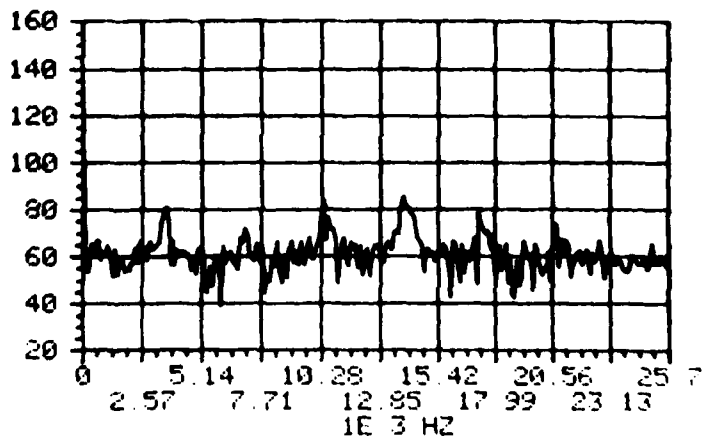
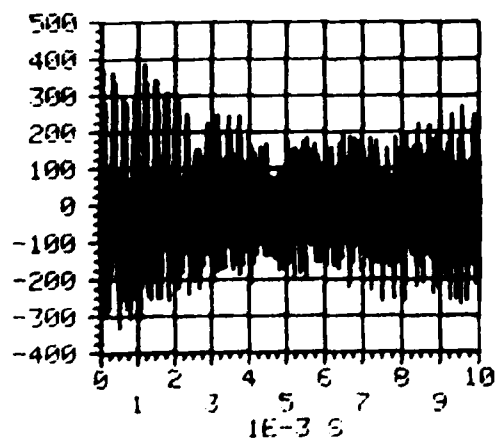


Alarm Test No.	7G
Alarm Type:	QUALCO
PRODUCTS CO.	
Driving Vapor	FREON 12
Temperature	76 °F
Pressure	7.5 psig
Flowrate	10.88 std l/m
Meter Setting	90 dB

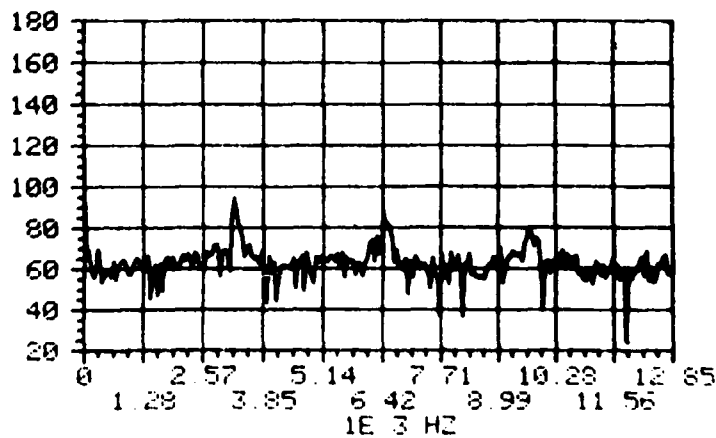
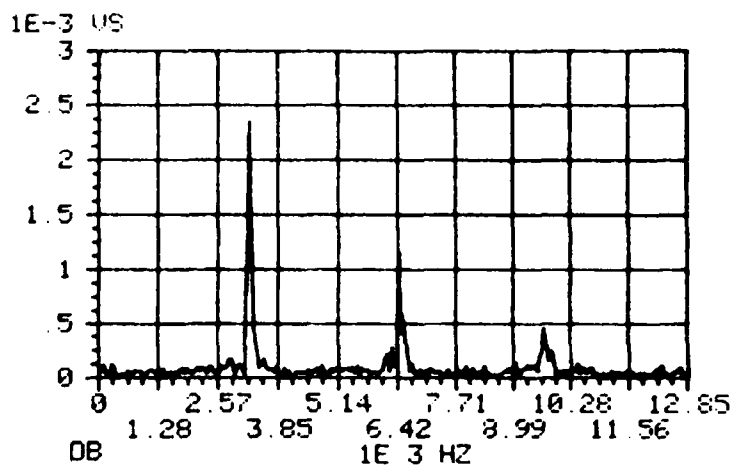
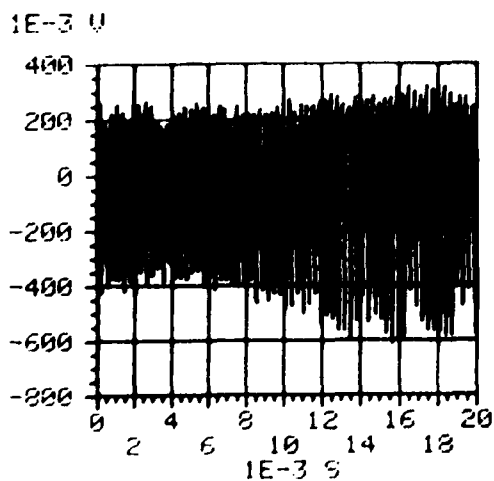
1E-6 US



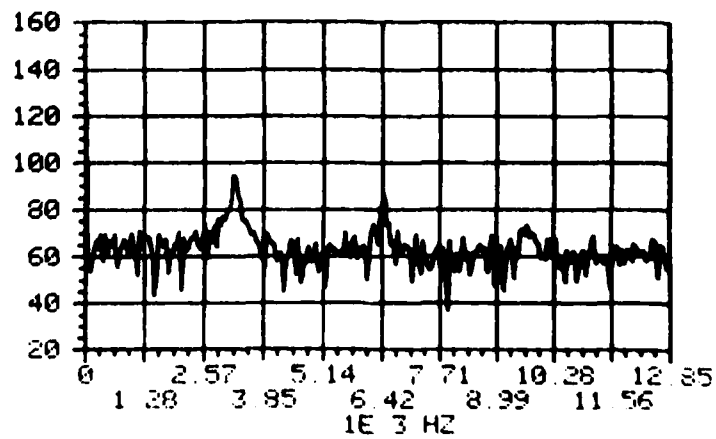
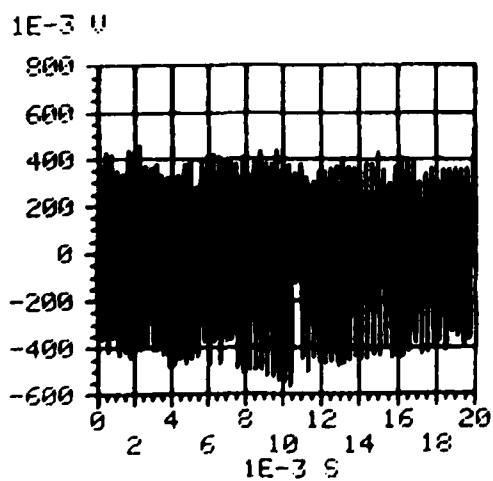
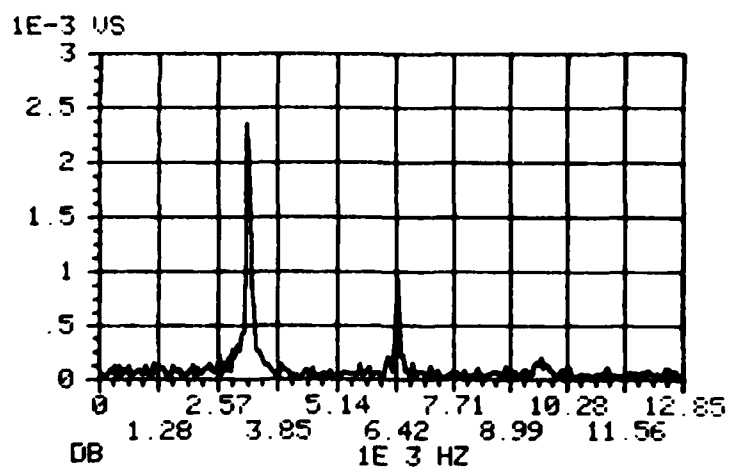
1E-3 U



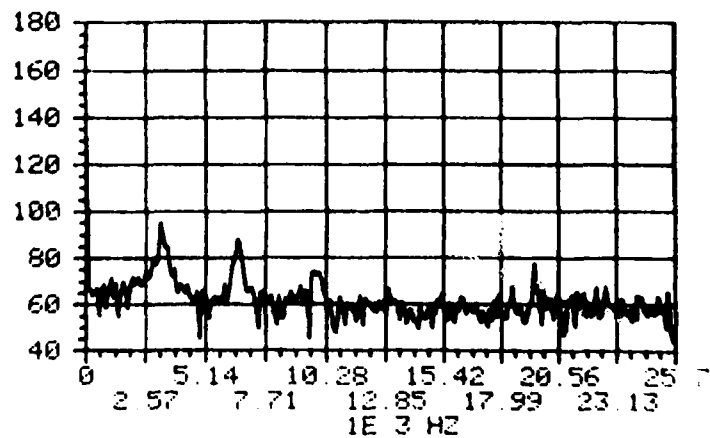
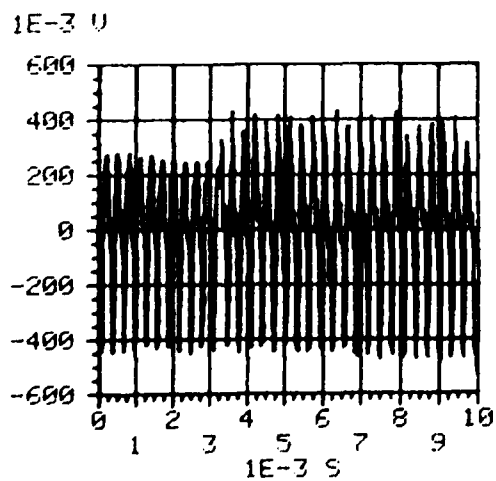
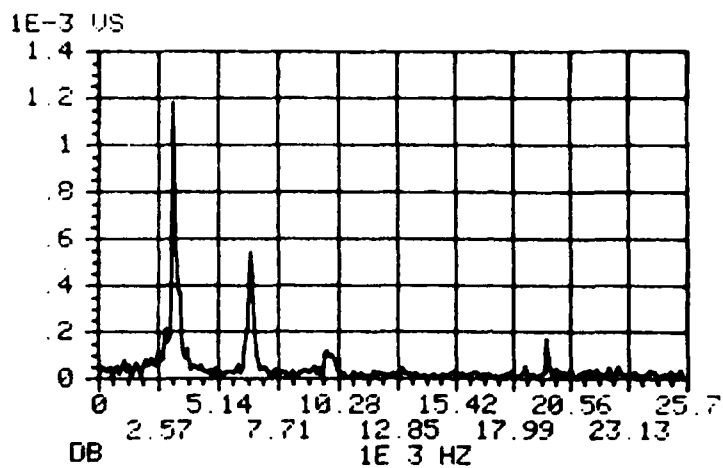
Alarm Test No. 7H
 Alarm Type: QUALCO
 PRODUCTS CO.
 Driving Vapor: FREON 12
 Temperature 76 °F
 Pressure 3.75 psig
 Flowrate 6.4 STD l/m
 Meter Setting 90 dB



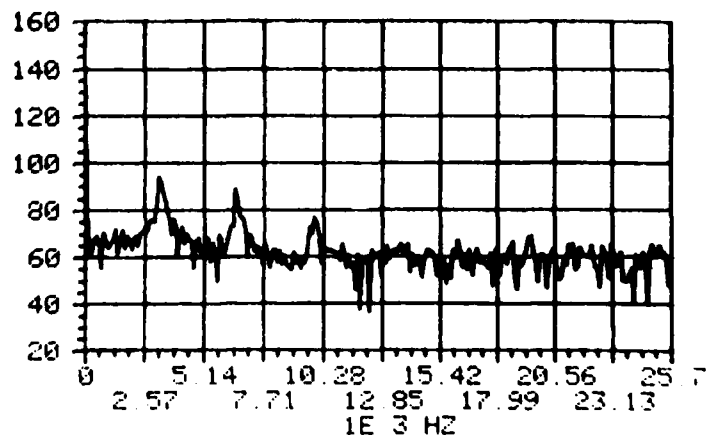
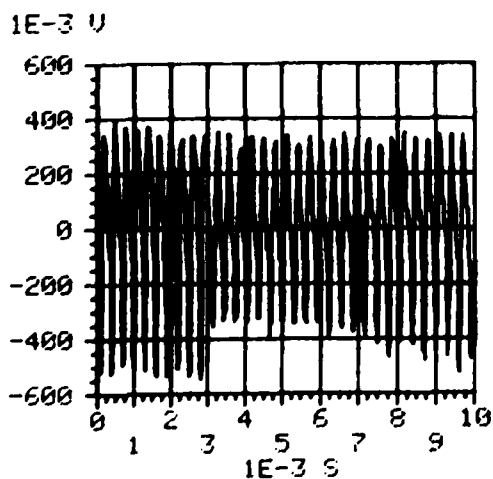
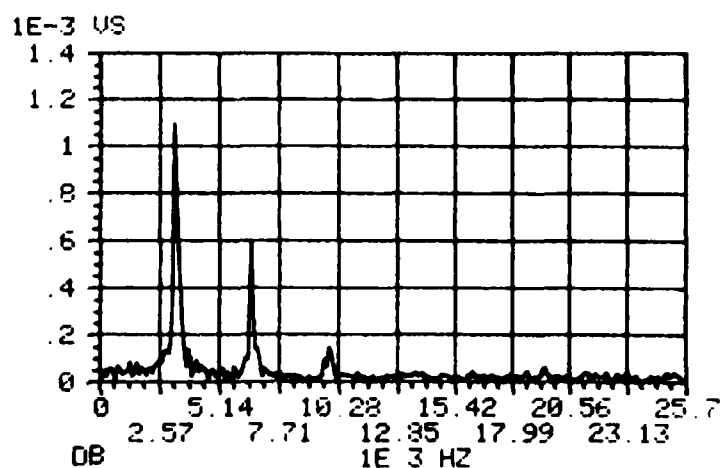
Alarm Test No.	7H
Alarm Type:	QUALCO
PRODUCTS CO.	
Driving Vapor	FREON 12
Temperature	76 °F
Pressure	3.75 psig
Flowrate	6.4 std l/m
Meter Setting	90 dB



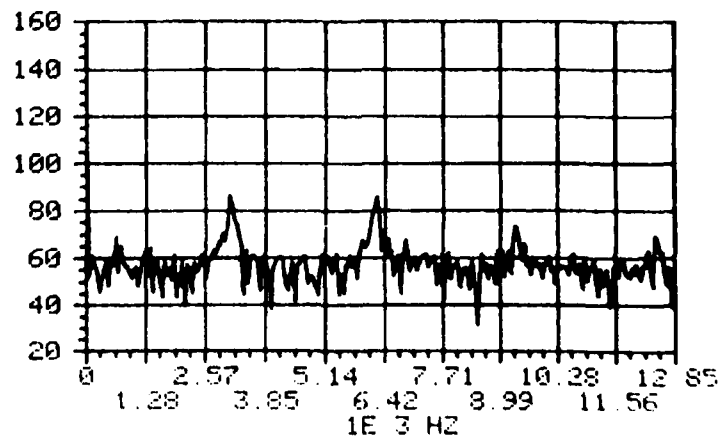
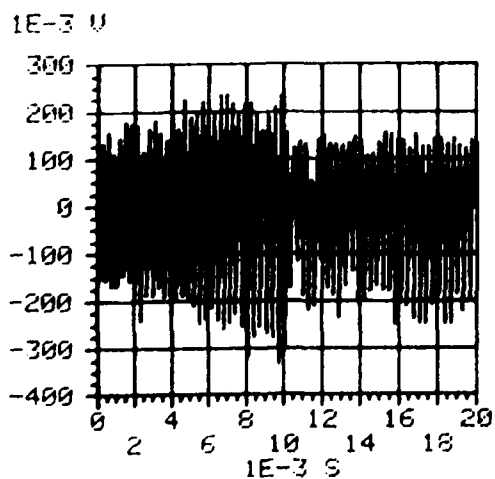
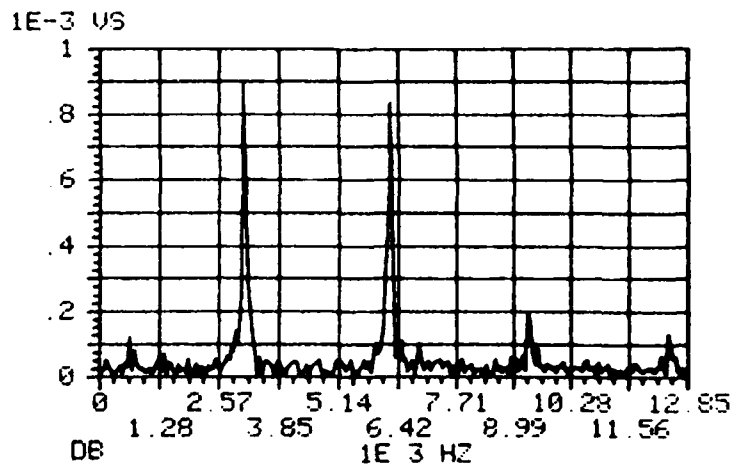
Alarm Test No. 7H
 Alarm Type: QUALCO
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 76 °F
 Pressure 3.75 psig
 Flowrate 6.4 std l/min
 Meter Setting 90 dB



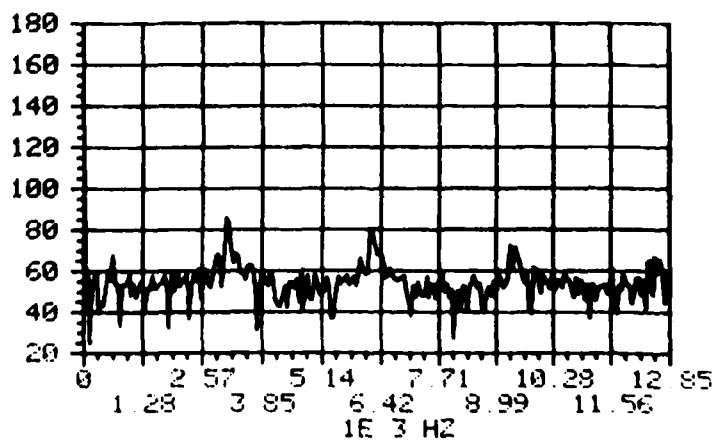
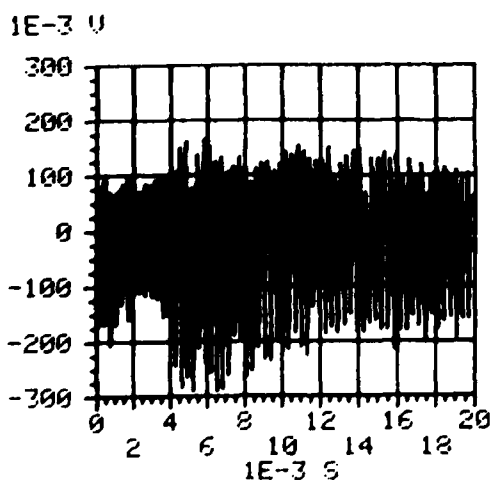
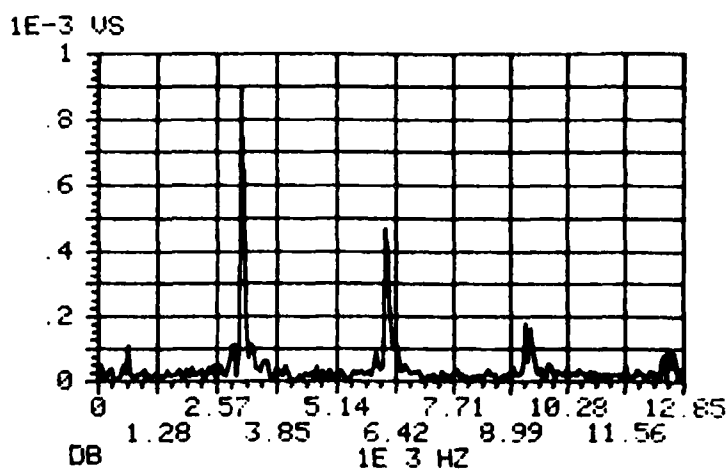
Alarm Test No.	7H
Alarm Type:	QUALCO
PRODUCTS CO.	
Driving Vapor	FREON 12
Temperature	76 °F
Pressure	3.75 psig
Flowrate	6.4 std l/m
Meter Setting	90 dB



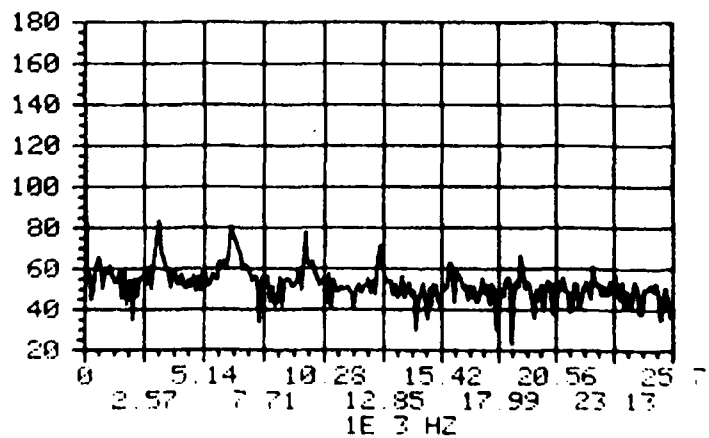
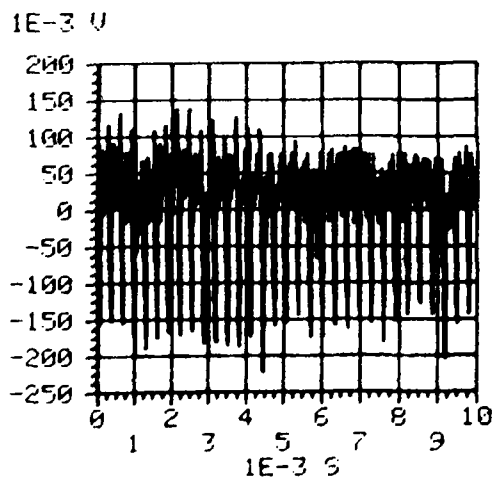
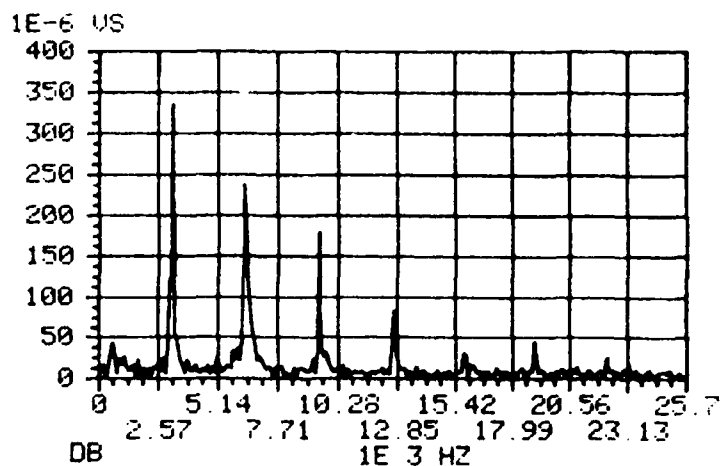
Alarm Test No.	71
Alarm Type:	QUALCO
PRODUCTS CO.	
Driving Vapor	FREON 12
Temperature	70 °F
Pressure	2 psig
Flowrate	4.48 std l/m
Meter Setting	90 dB



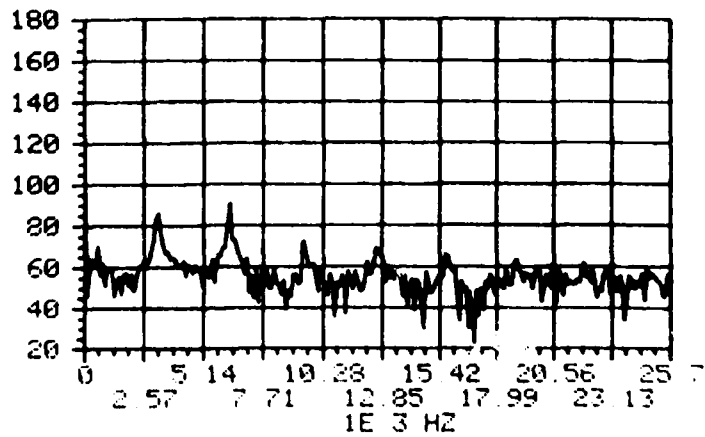
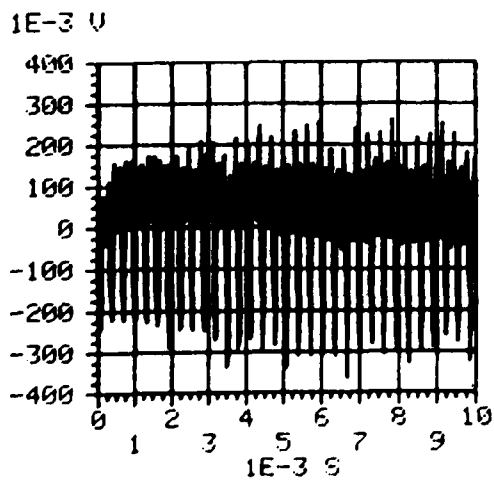
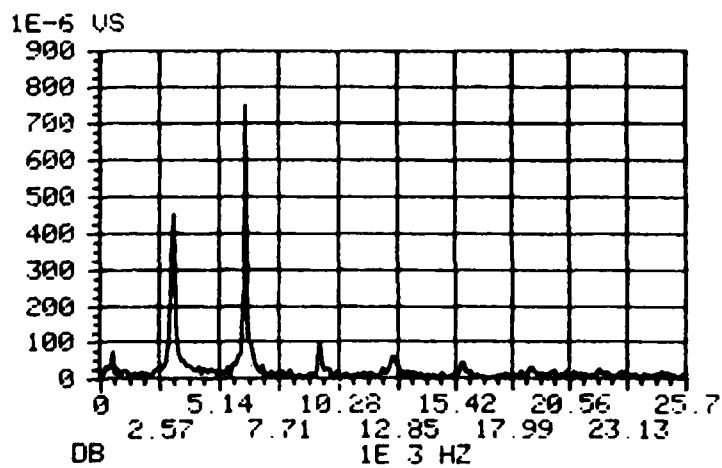
Alarm Test No.	71
Alarm Type:	QUALCO
PRODUCTS CO.	
Driving Vapor	FREON 12
Temperature	70 °F
Pressure	2 psig
Flowrate	4.48 std l/m
Meter Setting	90 dB



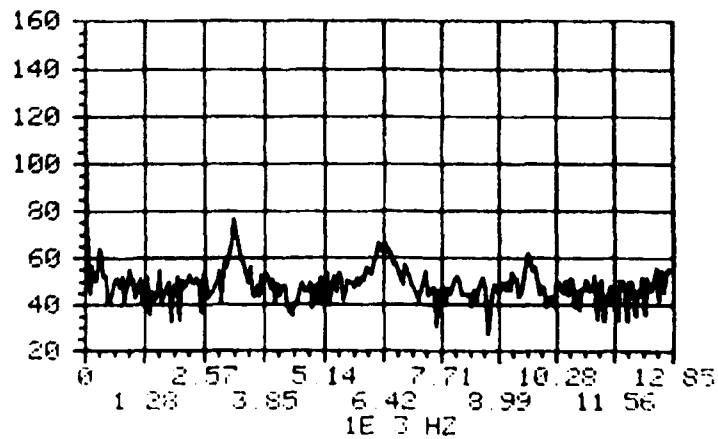
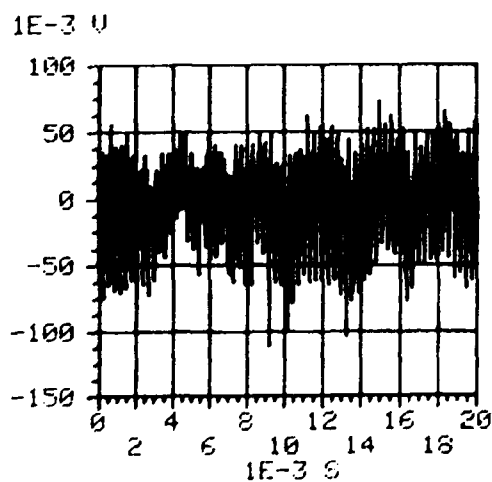
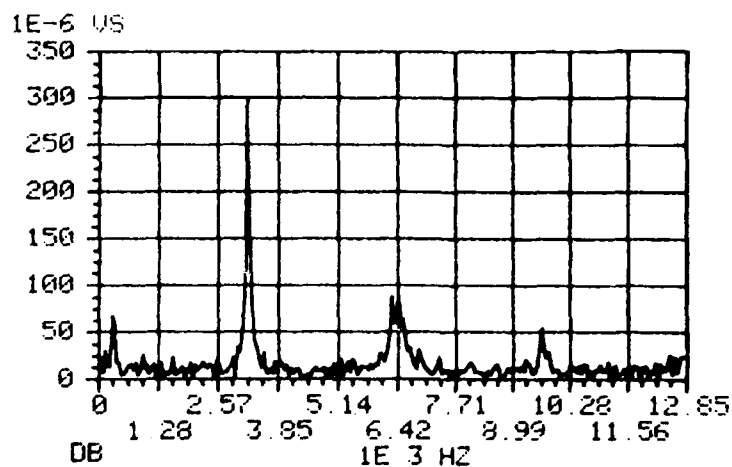
Alarm Test No.	71
Alarm Type:	QUALCO
PRODUCTS CO.	
Driving Vapor	FREON 12
Temperature	70 °F
Pressure	2 psig
Flowrate	4.48 std l/m
Meter Setting	90 dB



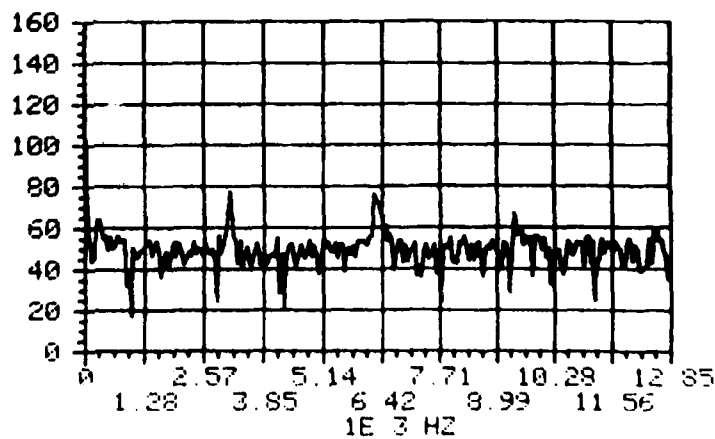
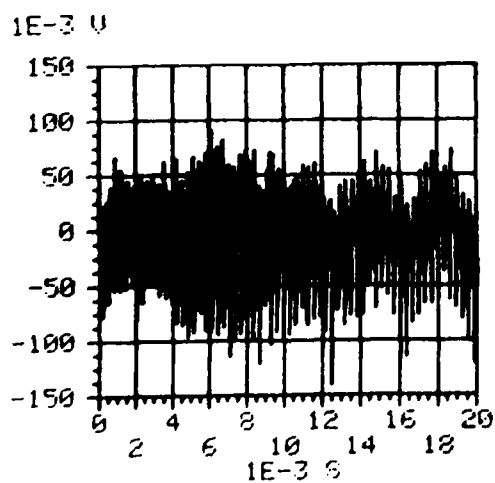
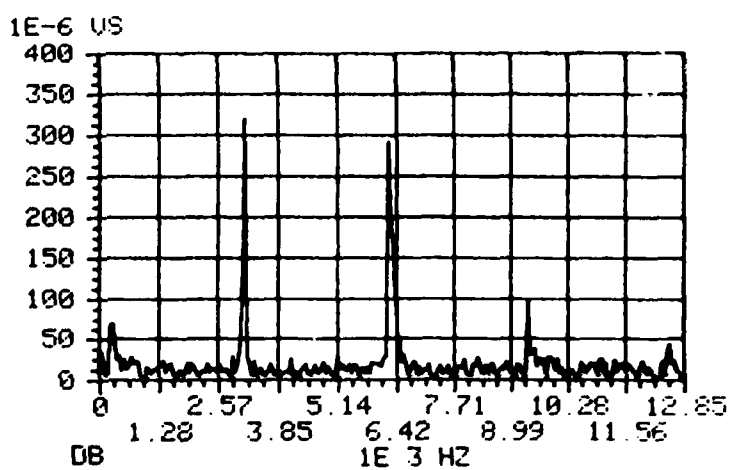
Alarm Test No.	7I
Alarm Type:	QUALCO
PRODUCTS CO.	
Driving Vapor	FREON 12
Temperature	70 °F
Pressure	2 psig
Flowrate	4.48 std l/m
Meter Setting	90 dB



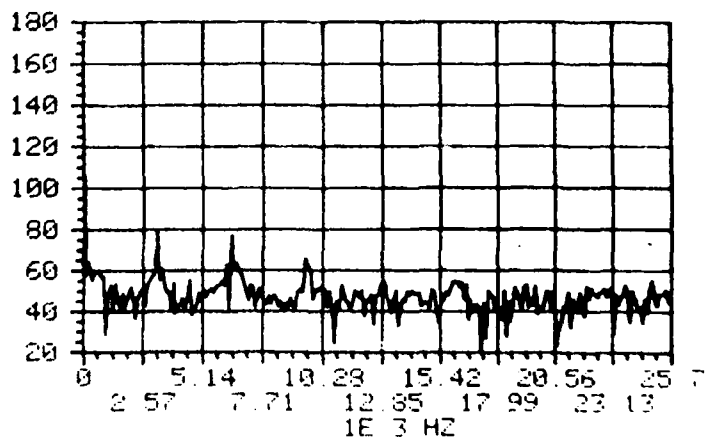
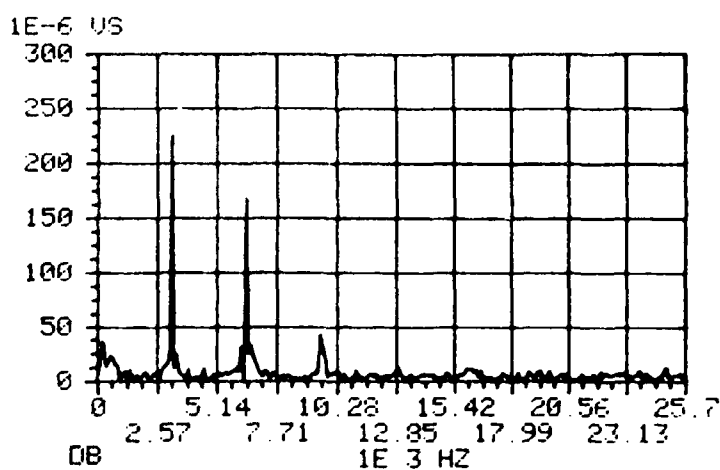
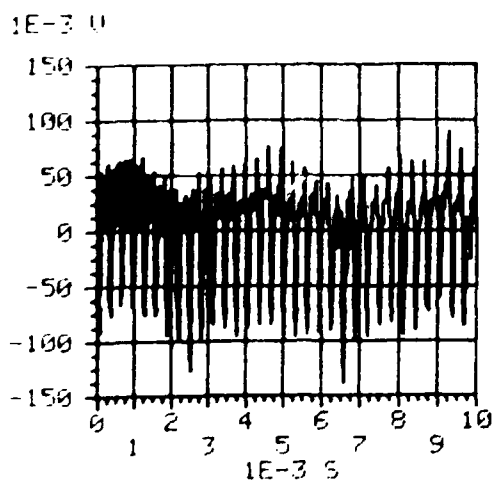
Alarm Test No. 7J
 Alarm Type: QUALCO
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 70 °F
 Pressure 1 psig
 Flowrate 3.20 std l/m
 Meter Setting 90 dB



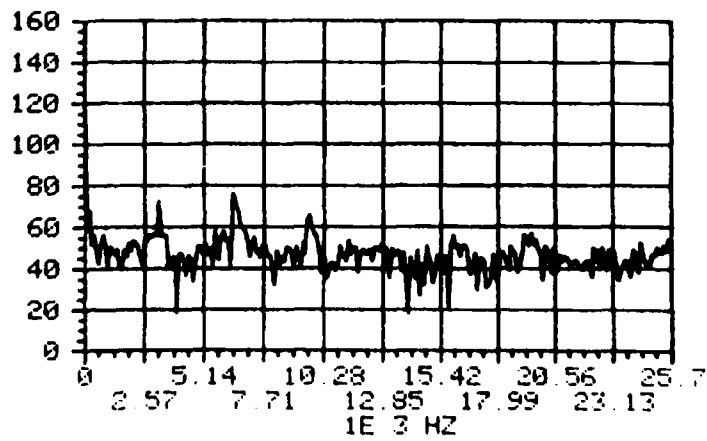
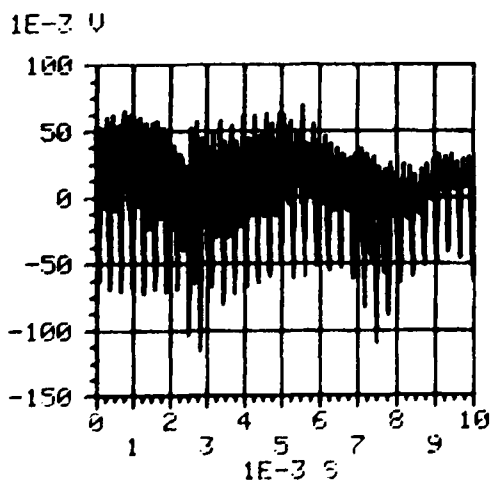
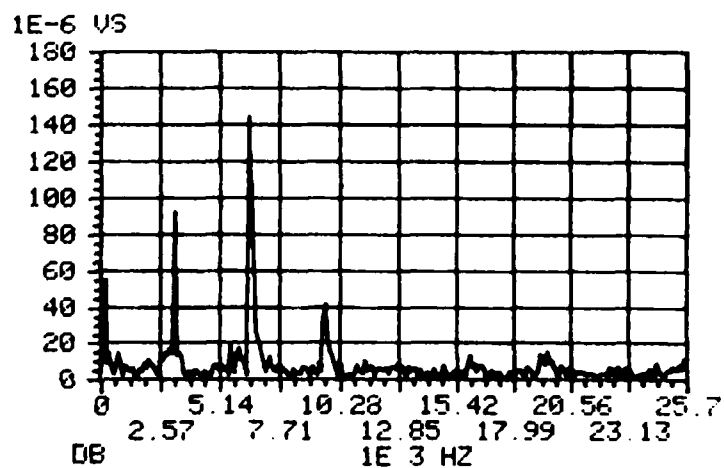
Alarm Test No. 7J
 Alarm Type: QUALCO
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 70 °F
 Pressure 1 psig
 Flowrate 3.20 std l/m
 Meter Setting 90 dB



Sample No. 7J
 Alarm Type: QUALCO
 PRODUCTS CO.
 Working Vapor: FREON 12
 Temperature: 70 F
 Pressure: 1 psig
 Flowrate: 3.20 std l/min
 Meter Setting: 90 dB

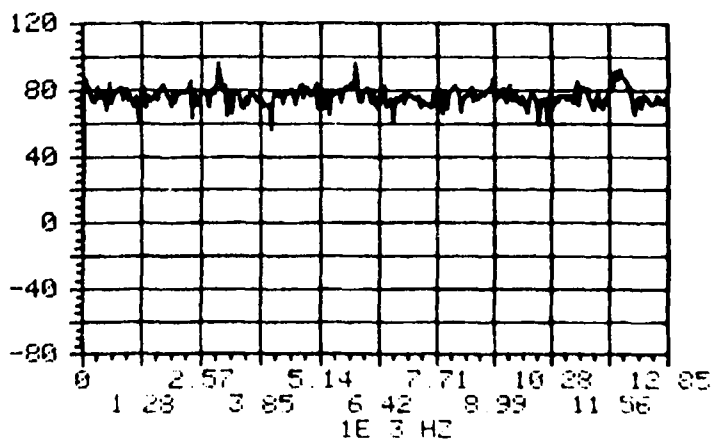
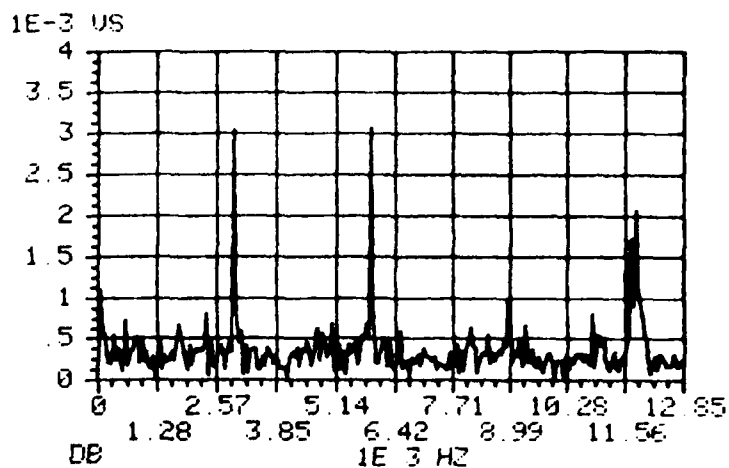
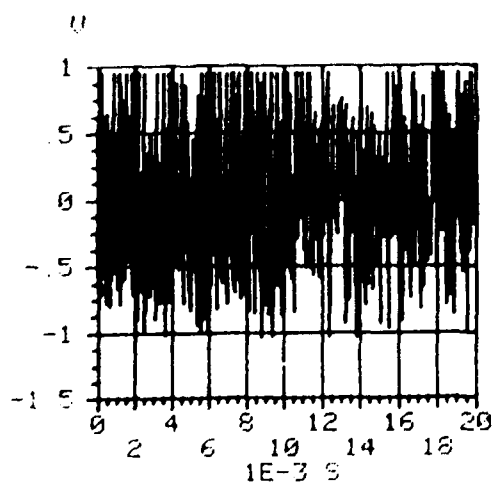


Alarm Test No. 7J
 Alarm Type: QUALCO
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 70 °F
 Pressure 1 psig
 Flowrate 3.20 std l/m
 Meter Setting 90 dB



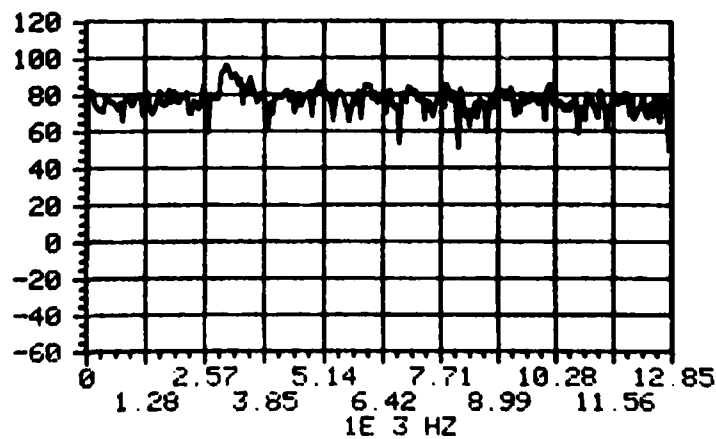
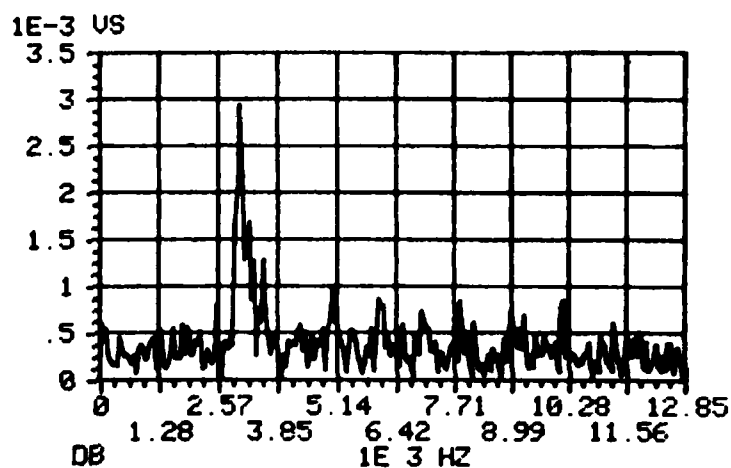
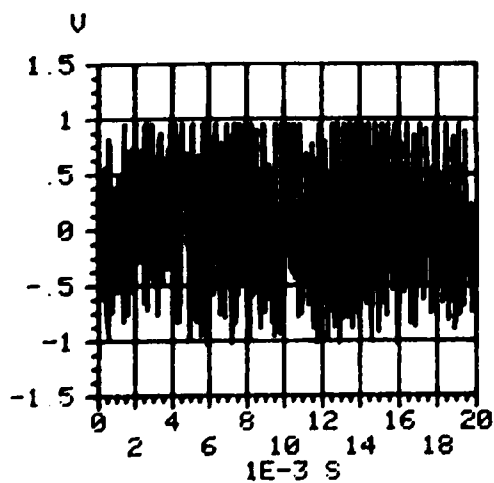
Alarm Test No. 8A
 Alarm Type: PETERZELL CO.

Driving Vapor FREON 12
 Temperature 83 °F
 Pressure 25.25 psig
 Flowrate 16.64 std l/m
 Meter Setting 90 dB

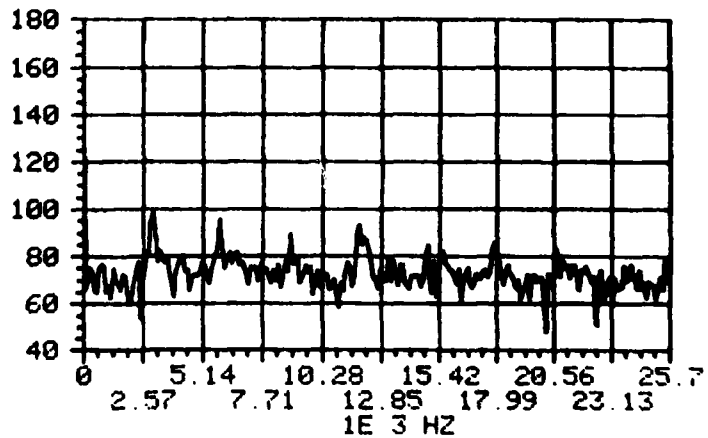
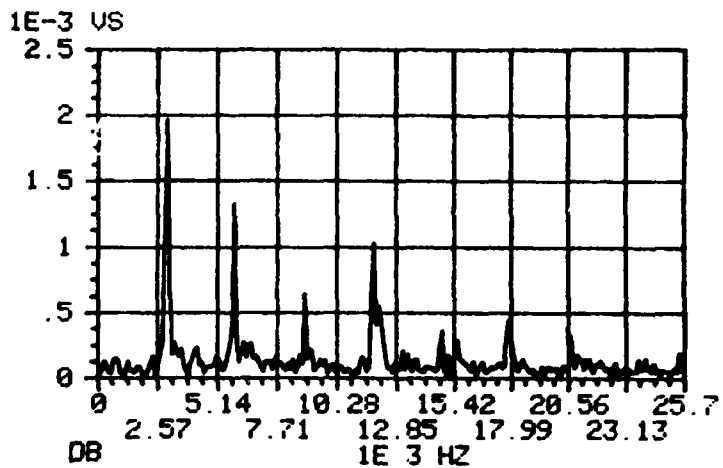
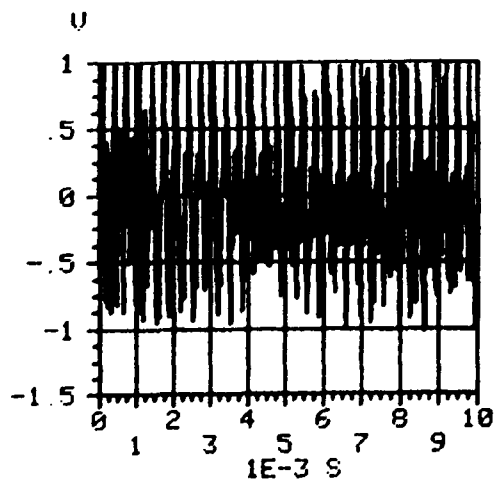


Alarm Test No. 8A
Alarm Type: PETERZELL CO.

Driving Vapor FREON 12
Temperature 83 °F
Pressure 25.25 psig
Flowrate 16.64 std l/m
Meter Setting 90 dB

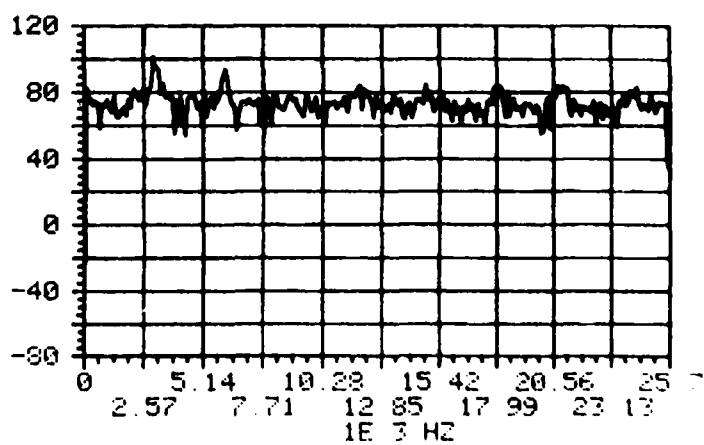
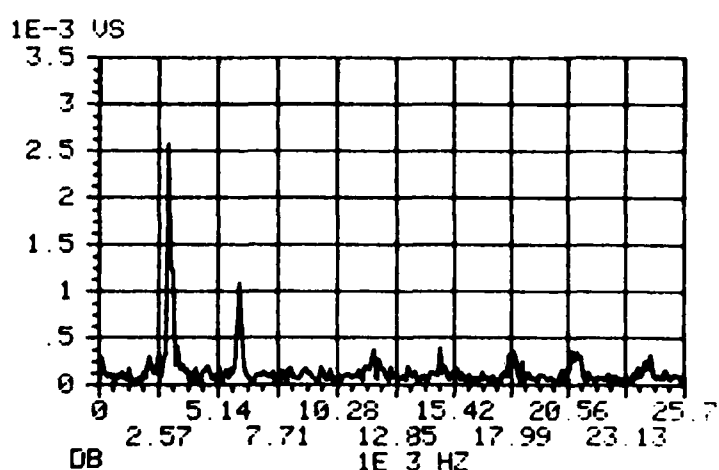
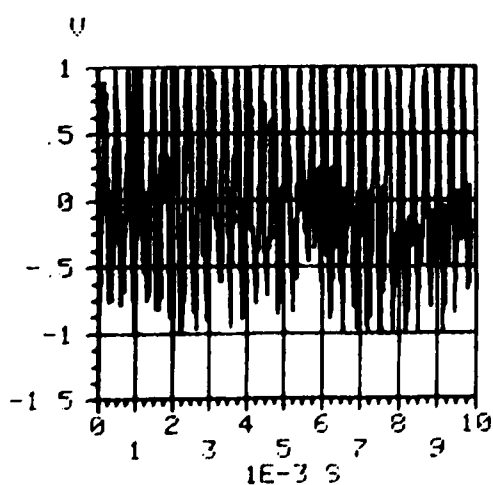


Alarm Test No. 8A
 Alarm Type: PETERZELL CO.
 Driving Vapor FREON 12
 Temperature 83 °F
 Pressure 25.25 psig
 Flowrate 16.64 std l/m
 Meter Setting 90 dB

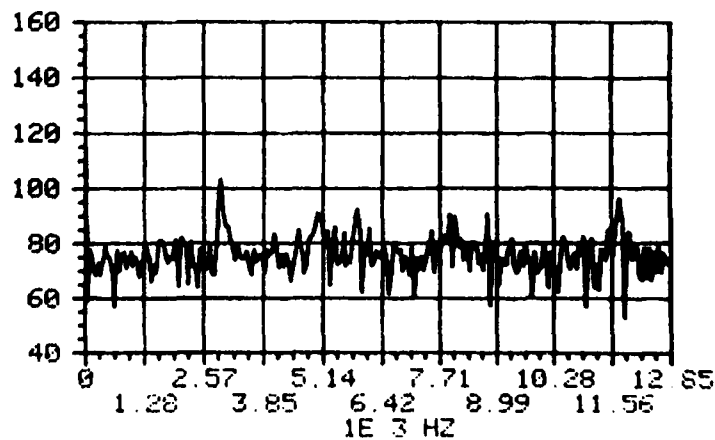
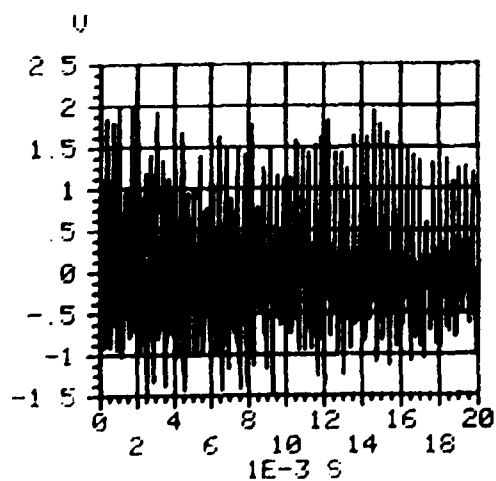
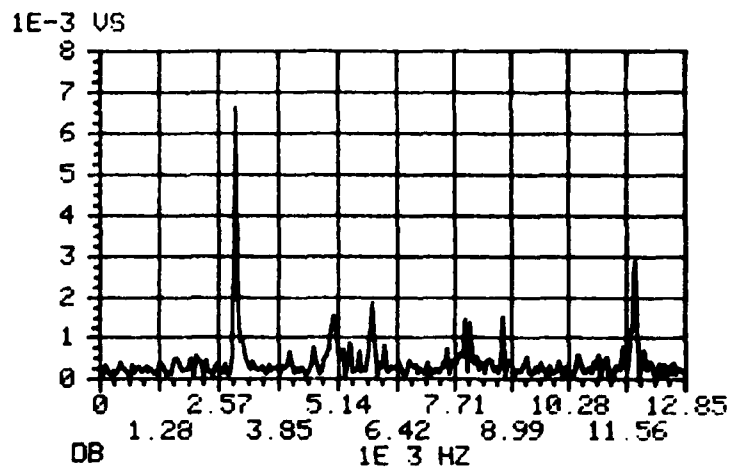


Alarm Test No. 8A
 Alarm Type: PETERZELL CO.

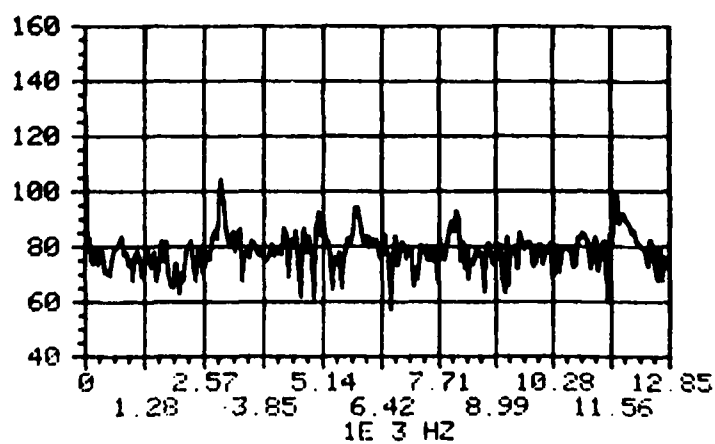
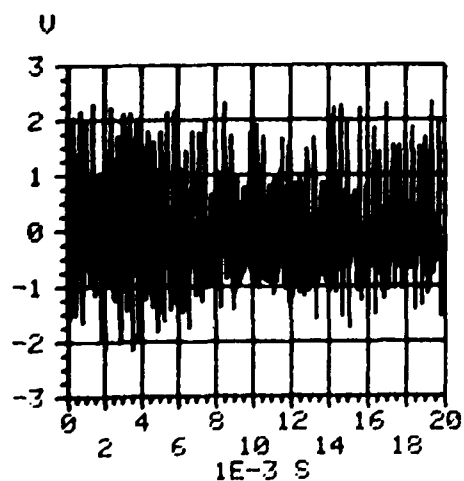
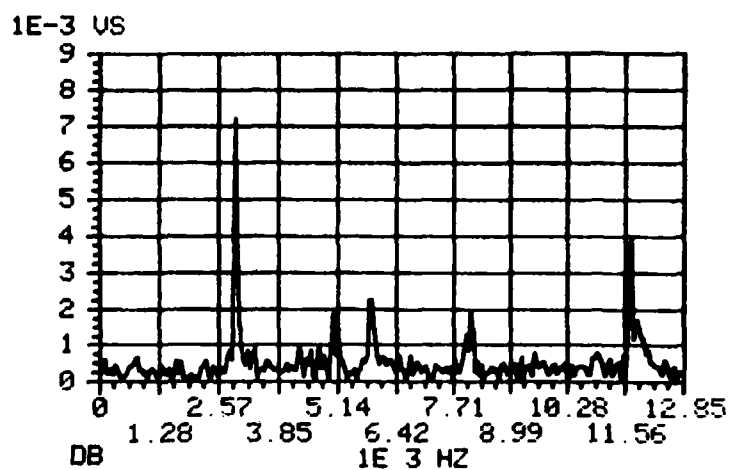
Driving Vapor FREON 12
 Temperature 83 °F
 Pressure 25.25 psig
 Flowrate 16.64 std l/m
 Meter Setting 90 dB



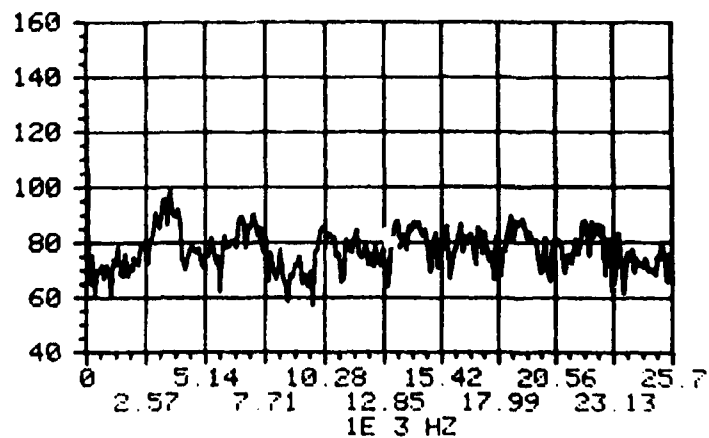
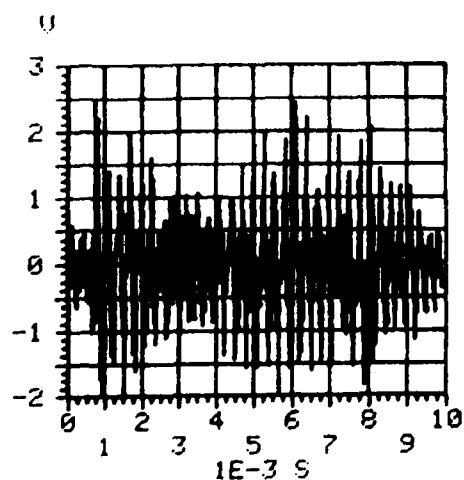
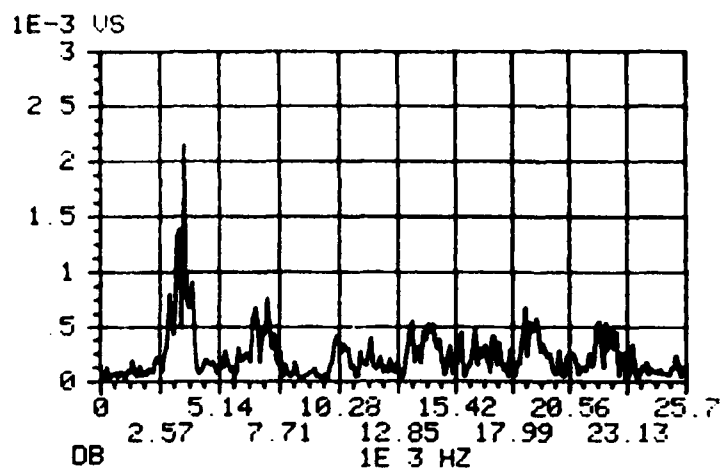
Alarm Test No. 8B
 Alarm Type: PETERZELL
CO.
 Driving Vapor FREON 12
 Temperature 79 °F
 Pressure 24 psig
 Flowrate 15.36 std l/m
 Meter Setting 90 dB



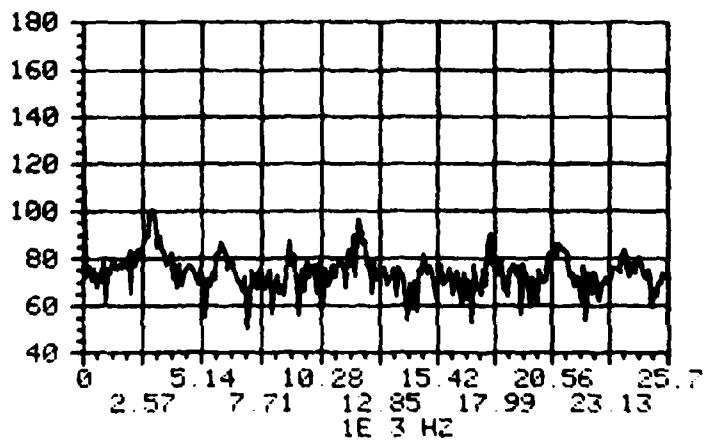
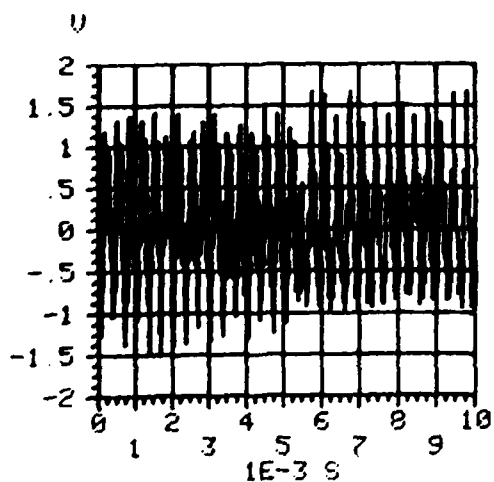
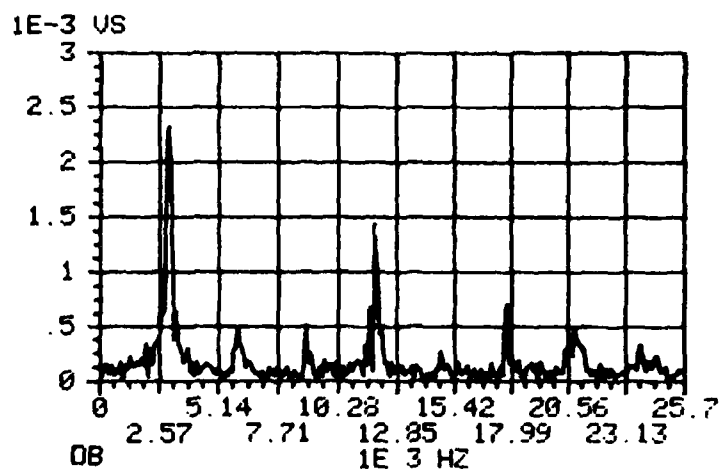
Alarm Test No. 8B
 Alarm Type: PETERZELL
CO.
 Driving Vapor FREON 12
 Temperature 79 °F
 Pressure 24 psig
 Flowrate 15.36 std l/m
 Meter Setting 90 dB



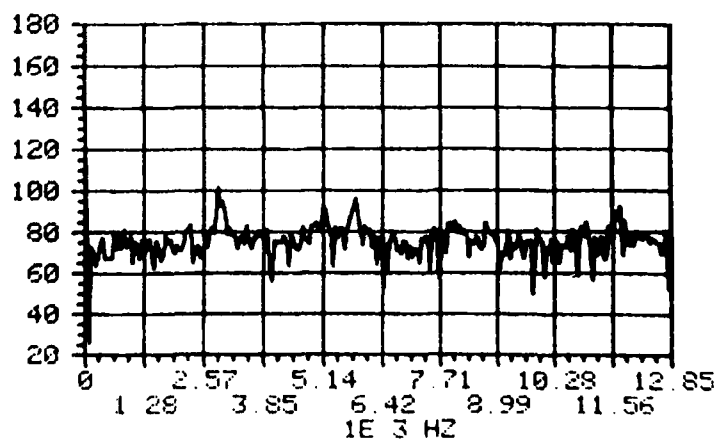
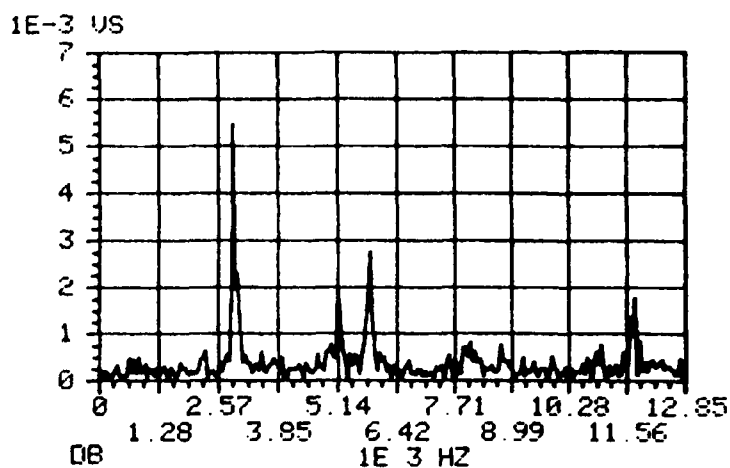
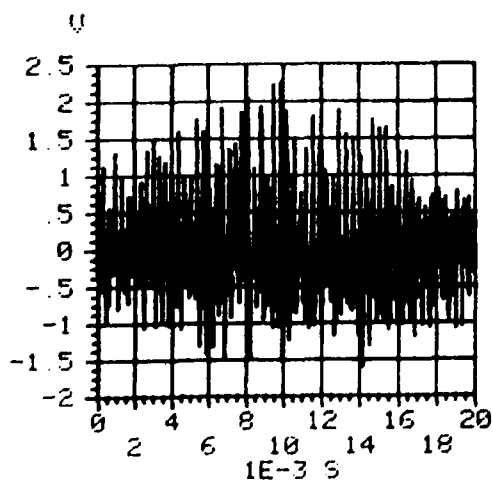
Alarm Test No. 8B
 Alarm Type: PETERZELL
CO.
 Driving Vapor FREON 12
 Temperature 79 °F
 Pressure 24 psig
 Flowrate 15.36 std l/m
 Meter Setting 90 dB



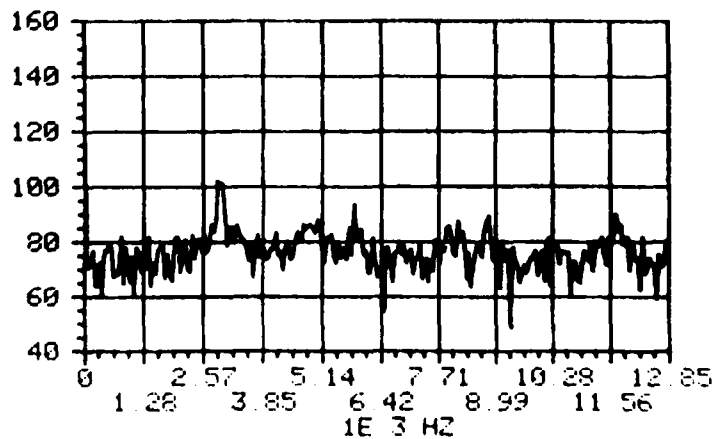
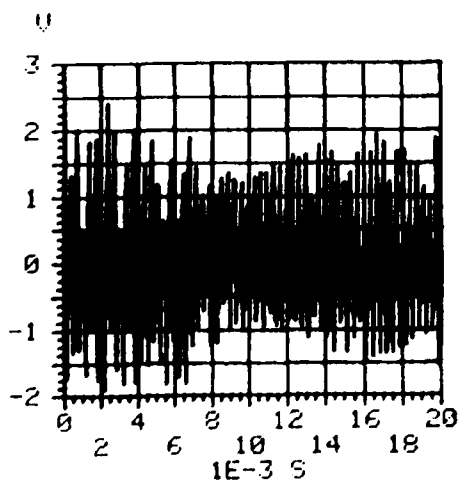
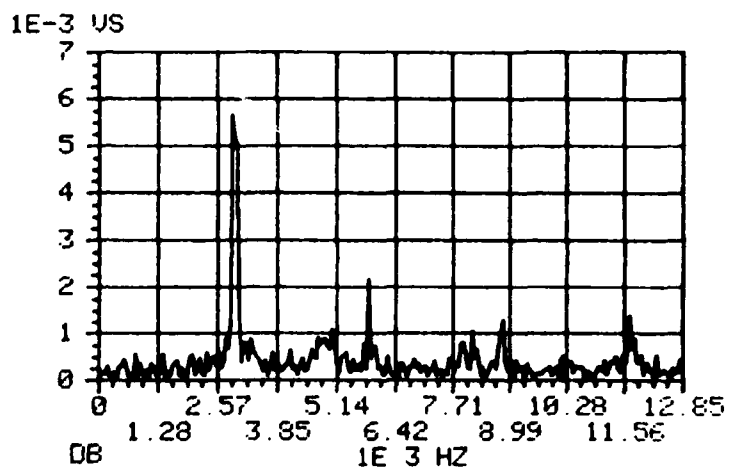
Alarm Test No. 8B
 Alarm Type: PETERZELL
CO.
 Driving Vapor FREON 12
 Temperature 79 °F
 Pressure 24 psig
 Flowrate 15.36 std l/m
 Meter Setting 90 dB



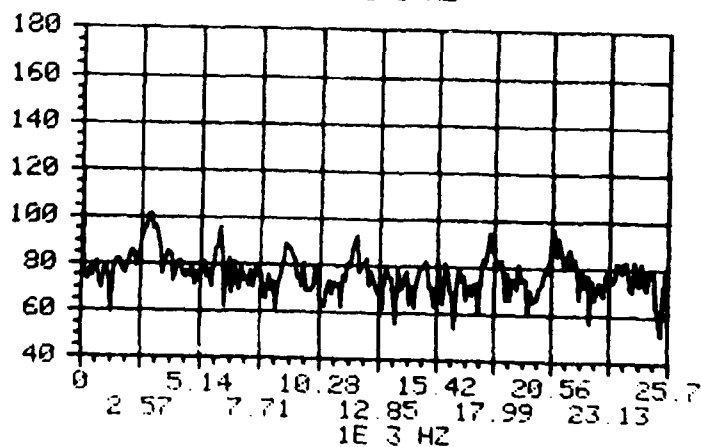
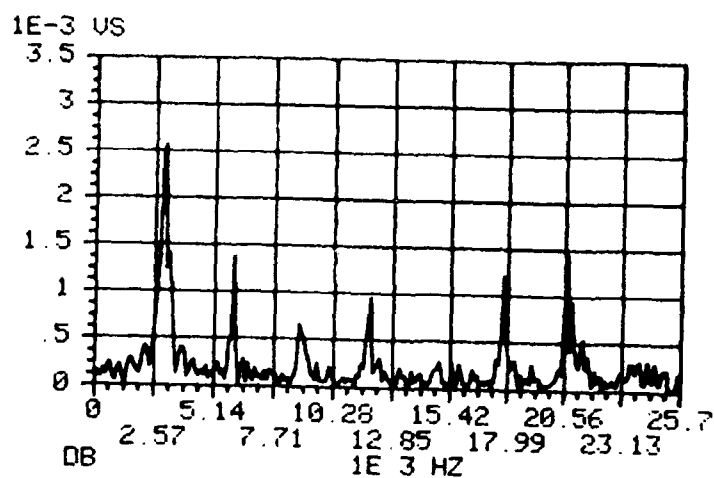
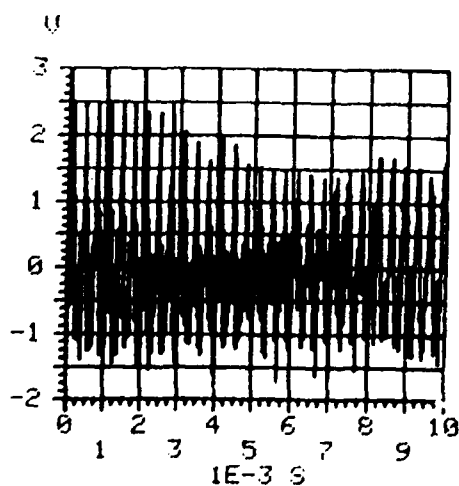
Alarm Test No. 8C
 Alarm Type: PETERZELL CO.
 Driving Vapor FREON 12
 Temperature 79 °F
 Pressure 24 psig
 Flowrate 15.36 std l/m
 Meter Setting 90 dB



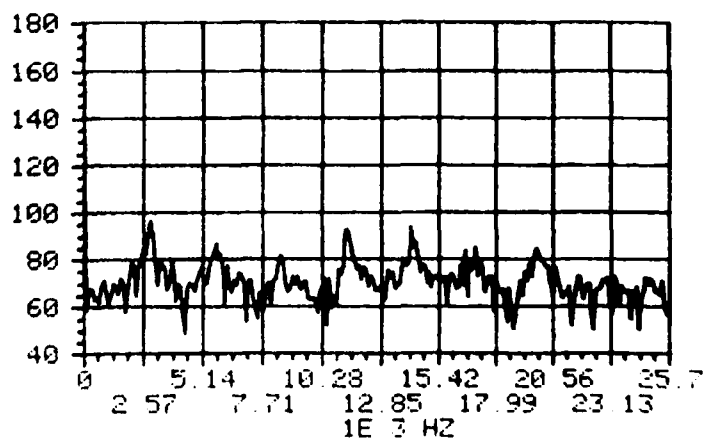
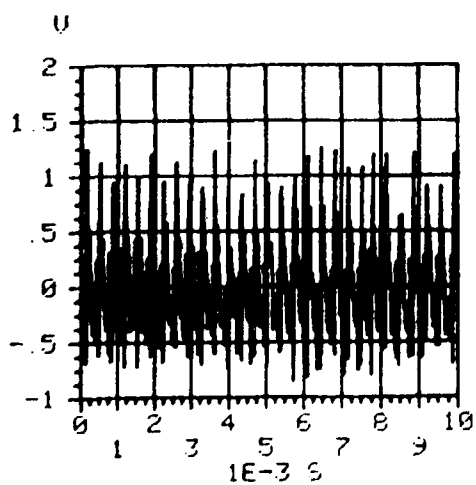
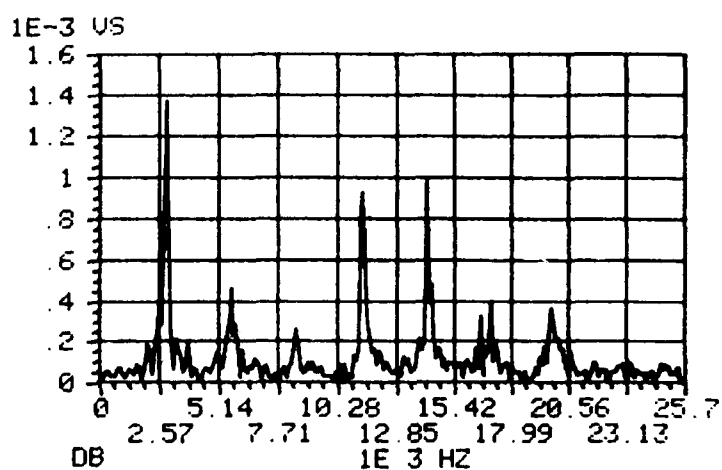
Alarm Test No. 8C
 Alarm Type: PETERZELL CO.
 Driving Vapor FREON 12
 Temperature 79 °F
 Pressure 24 psig
 Flowrate 15.36 std l/m
 Meter Setting 90 dB



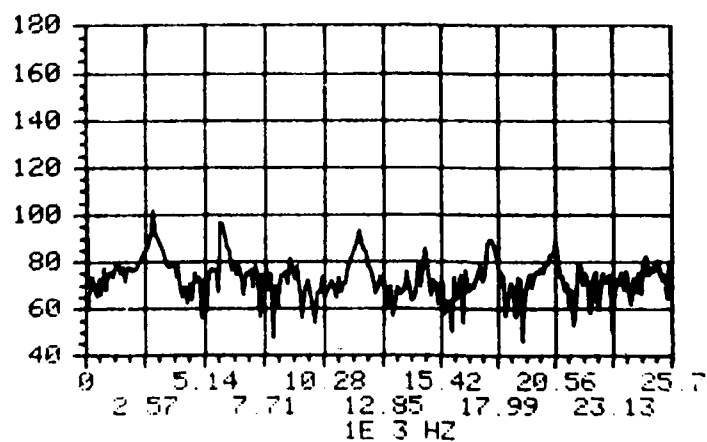
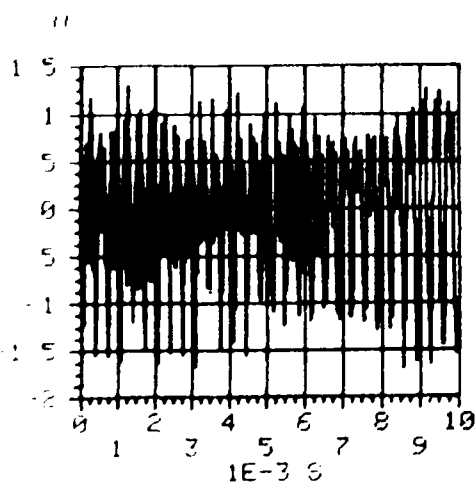
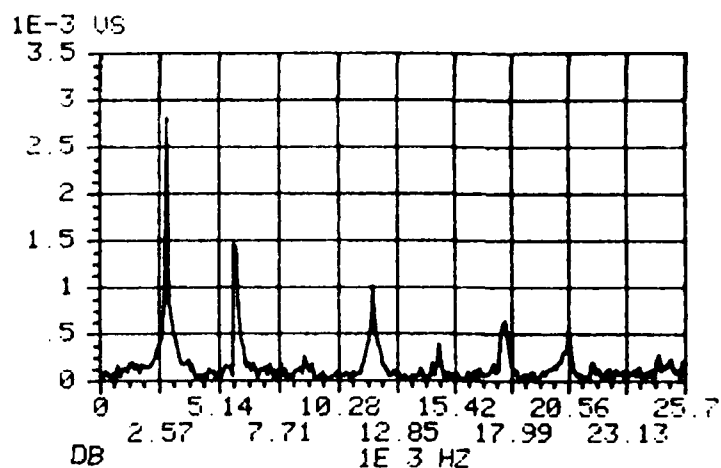
Alarm Test No. 8C
 Alarm Type: PETERZELL CO.
 Driving Vapor FREON 12
 Temperature 79 °F
 Pressure 24 psig
 Flowrate 15.36 std l/m
 Meter Setting 90 dB



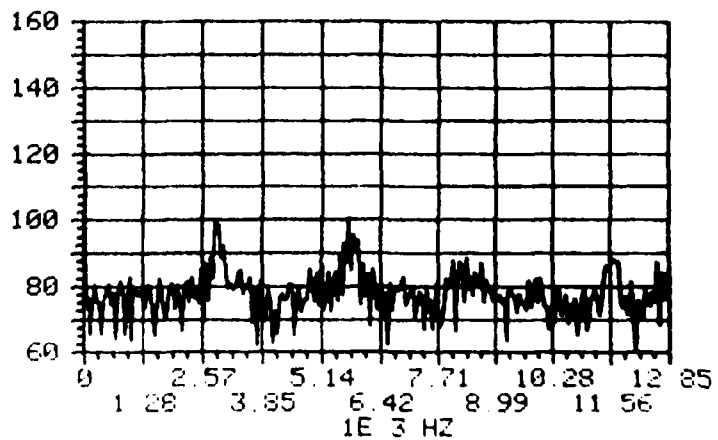
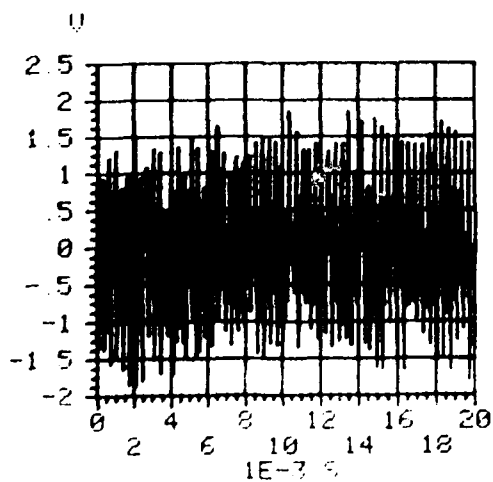
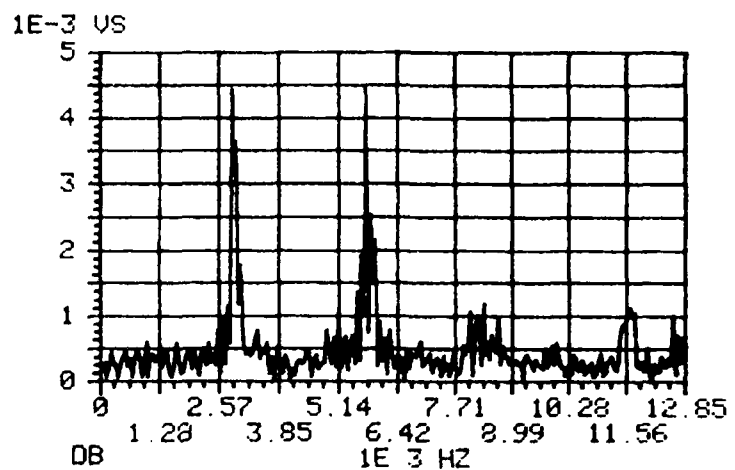
Alarm Test No. 8C
 Alarm Type: PETERZELI CO.
 Driving Vapor FREON 12
 Temperature 79 °F
 Pressure 24 psig
 Flowrate 15.36 std l/m
 Meter Setting 90 dB



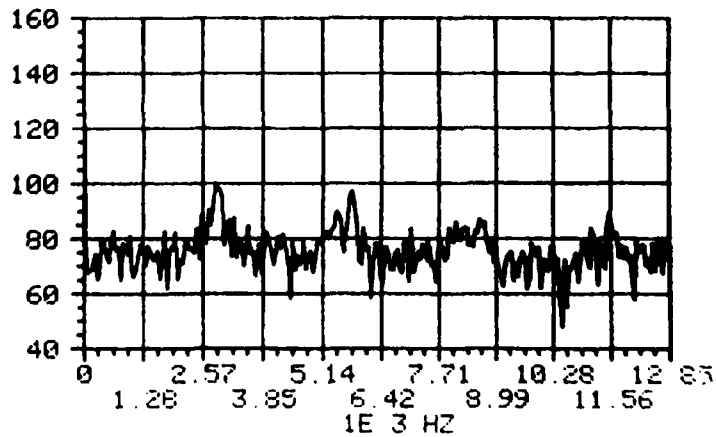
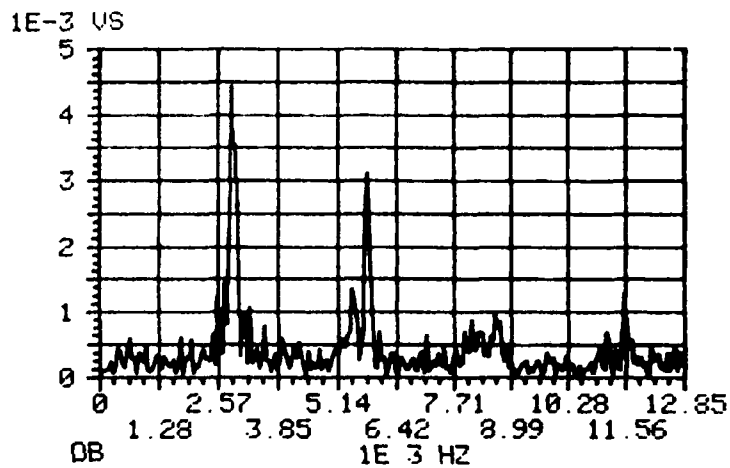
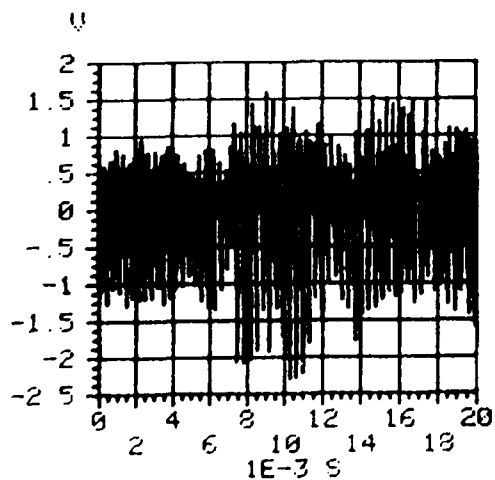
8C
 PETERZELL CO.
 FREON 12
 79
 24
 15.36
 90



Alarm Test No. 80
 Alarm Type: PETERZELL CO.
 Driving Vapor FREON 12
 Temperature 74 °F
 Pressure 21 psig
 Flowrate 13.44 std l/m
 Meter Setting 90 dB

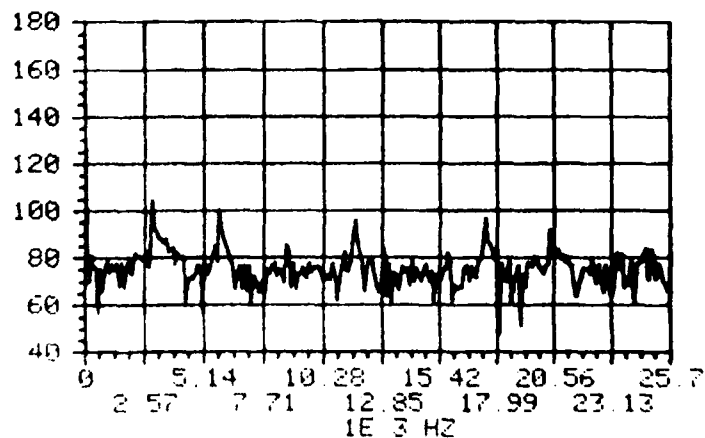
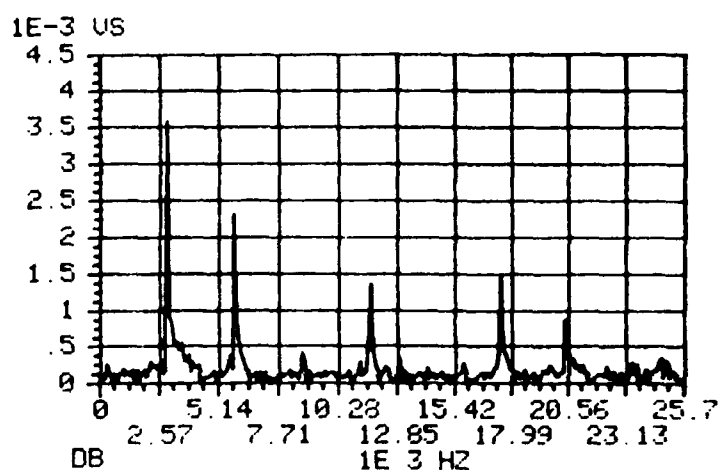
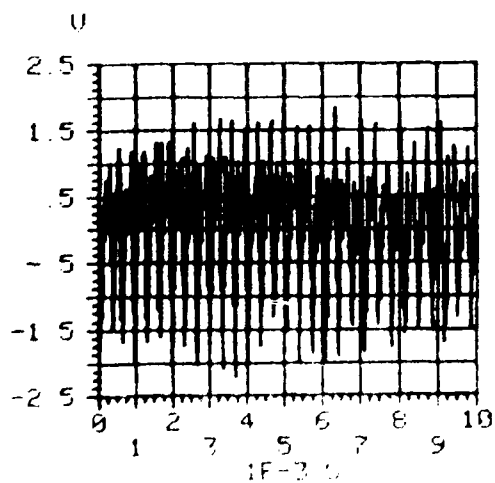


Alarm Test No. 80
 Alarm Type: PETERZELL CO.
 Driving Vapor FREON 12
 Temperature 74 °F
 Pressure 21 psig
 Flowrate 13.44 std l/m
 Meter Setting 90 dB

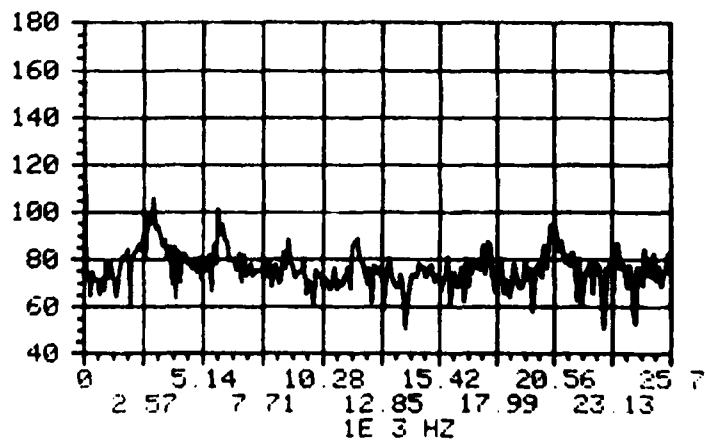
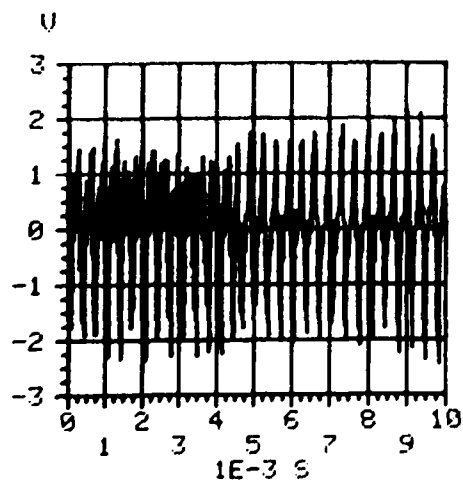
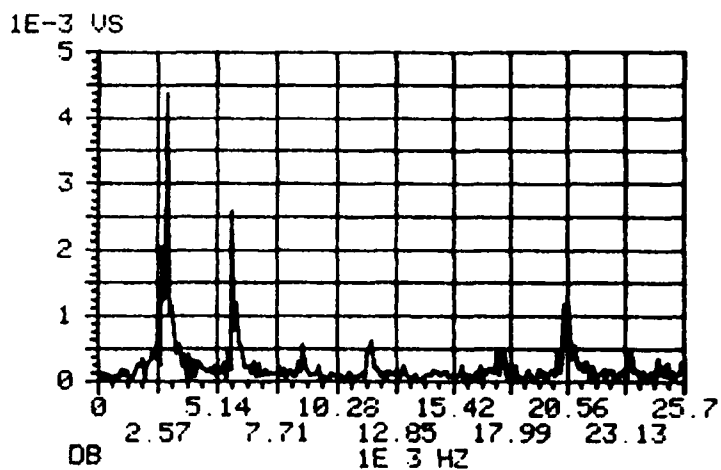


Alarm Test No. 8D
 Alarm Type: PETERZELL CO.

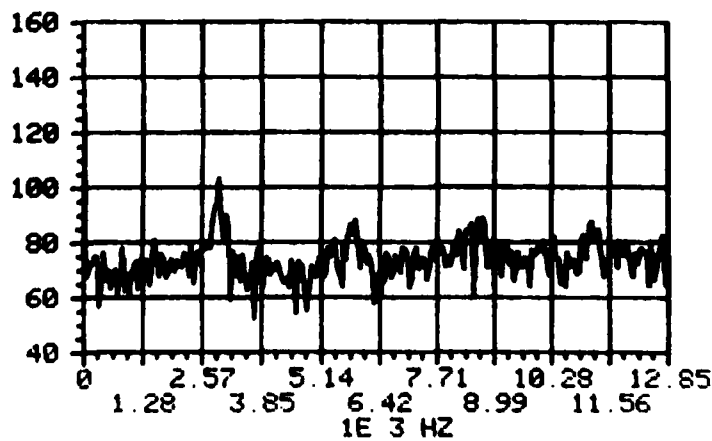
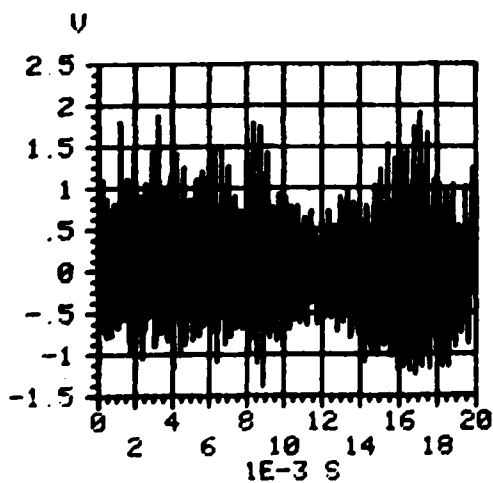
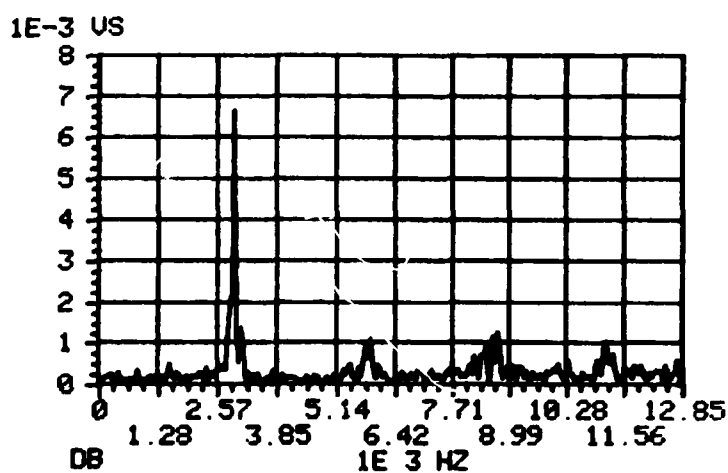
Driving Vapor FREON 12
 Temperature 74 °F
 Pressure 21 psig
 Flowrate 13.44 std l/m
 Meter Setting 90 dB



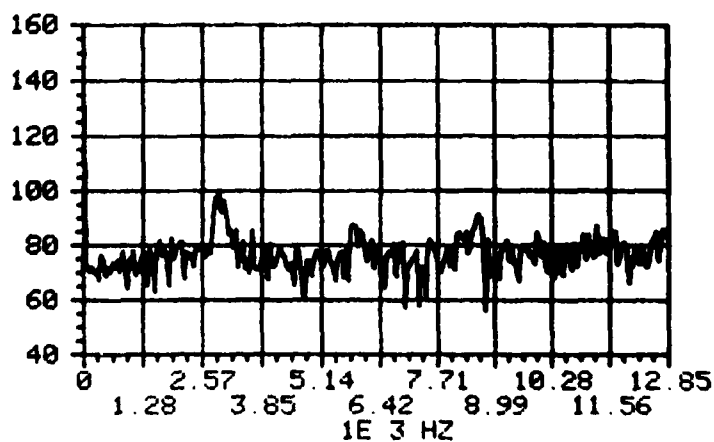
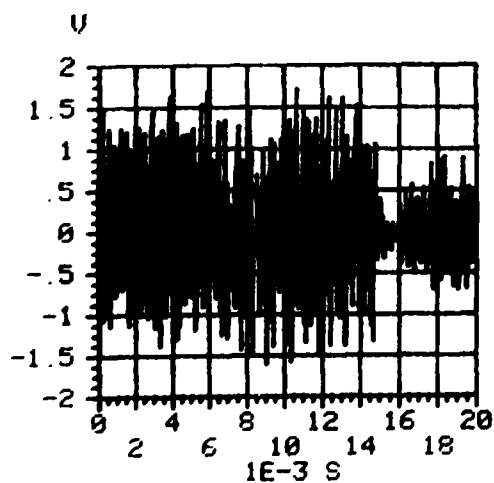
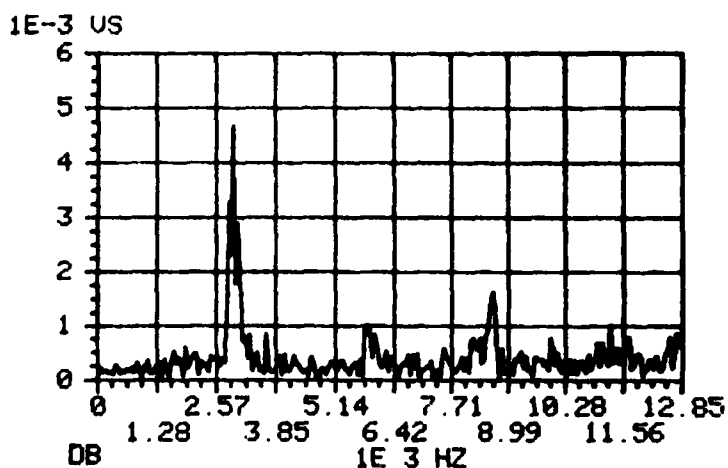
Alarm Test No. 8D
 Alarm Type: PETERZELL CO.
 Driving Vapor FREON 12
 Temperature 74 °F
 Pressure 21 psig
 Flowrate 13.44 std l/m
 Meter Setting 90 dB



Alarm Test No. 8E
 Alarm Type: PETERZELL CO.
 Driving Vapor FREON 12
 Temperature 75 °F
 Pressure 17 psig
 Flowrate 10.88 std l/m
 Meter Setting 90 dB

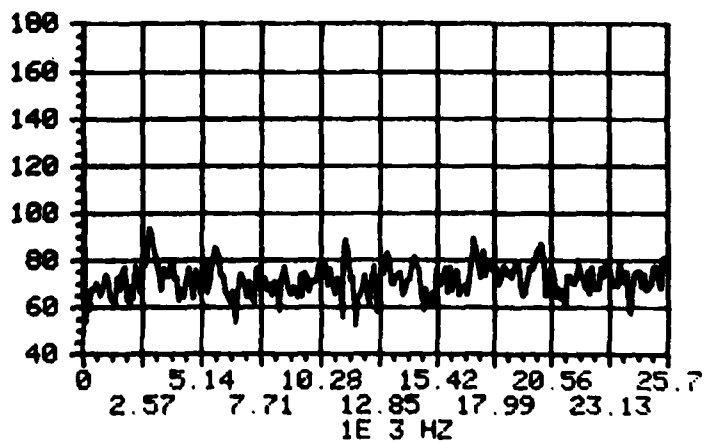
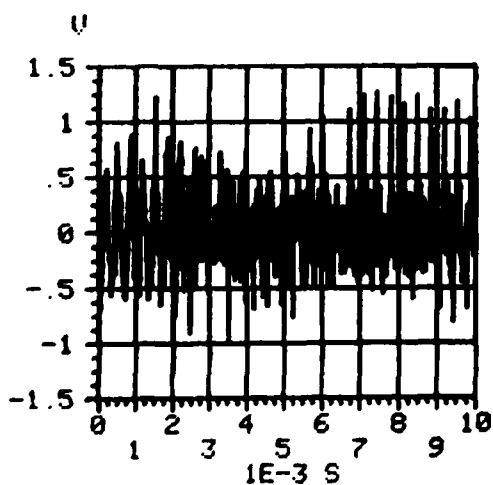
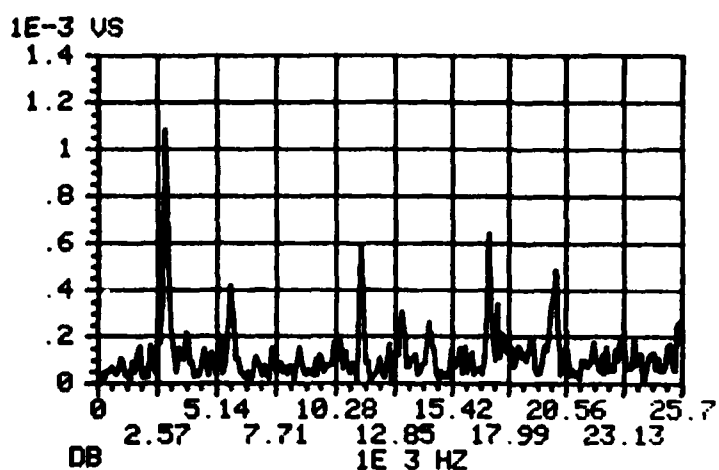


Alarm Test No. 8E
 Alarm Type: PETERZELL CO.
 Driving Vapor FREON 12
 Temperature 75 °F
 Pressure 17 psig
 Flowrate 10.88 std l/m
 Meter Setting 90 dB

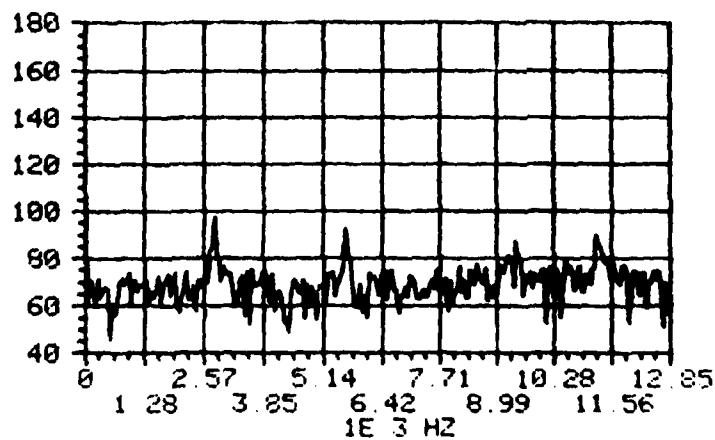
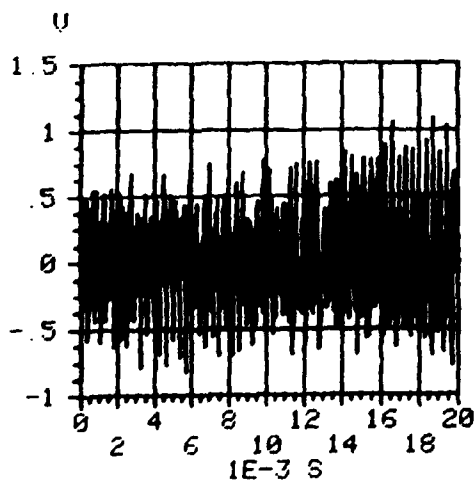
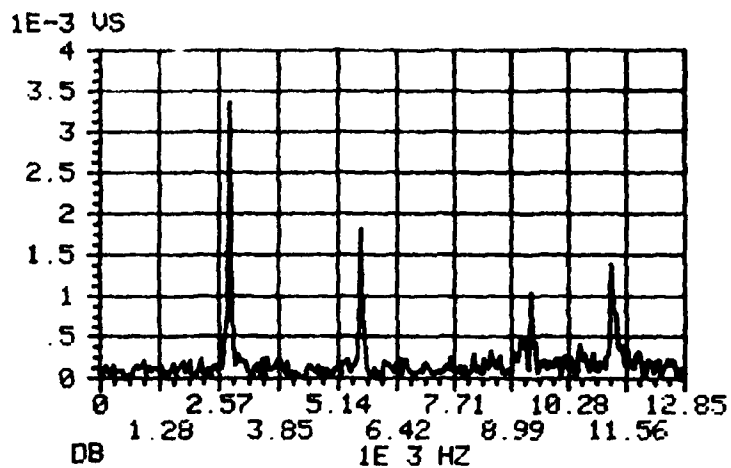


Alarm Test No. 8E
 Alarm Type: PETERZELL CO.

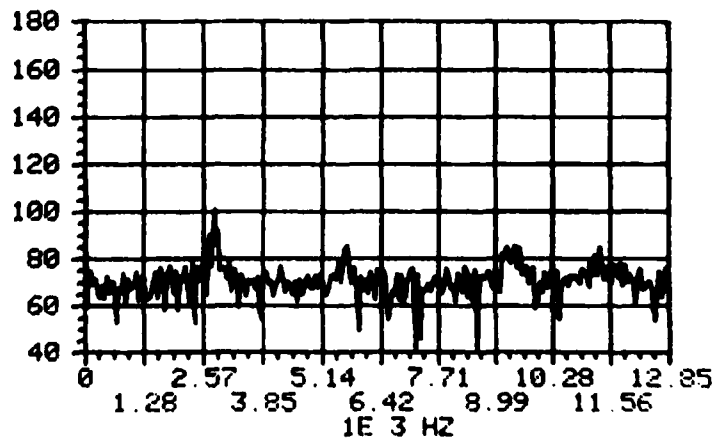
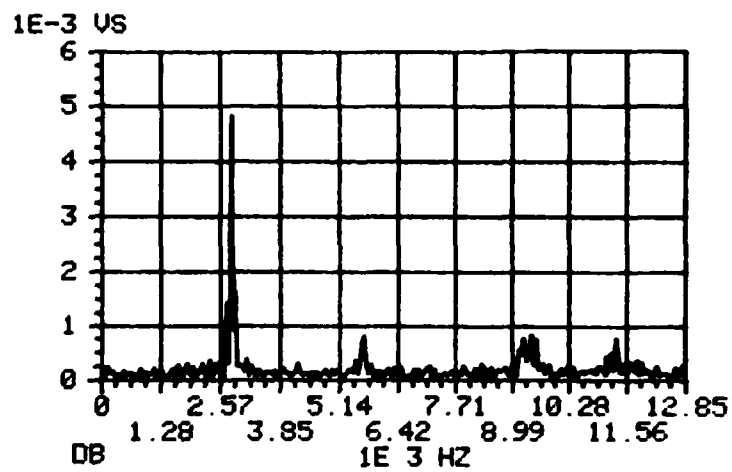
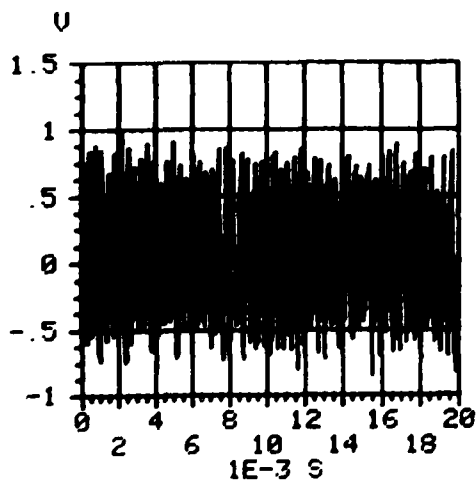
 Driving Vapor FREON 12
 Temperature 75 °F
 Pressure 17 psig
 Flowrate 10.88 std l/m
 Meter Setting 90 dB



Alarm Test No. 8F
 Alarm Type: PETERZELL CO.
 Driving Vapor FREON 12
 Temperature 83 °F
 Pressure 13 psig
 Flowrate 8.96 std l/m
 Meter Setting 90 dB

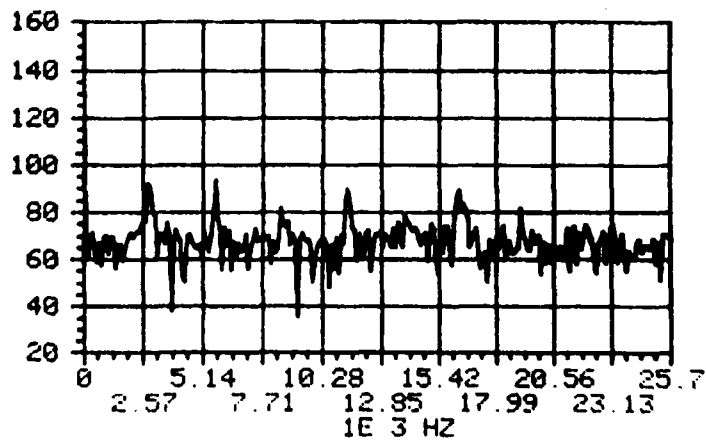
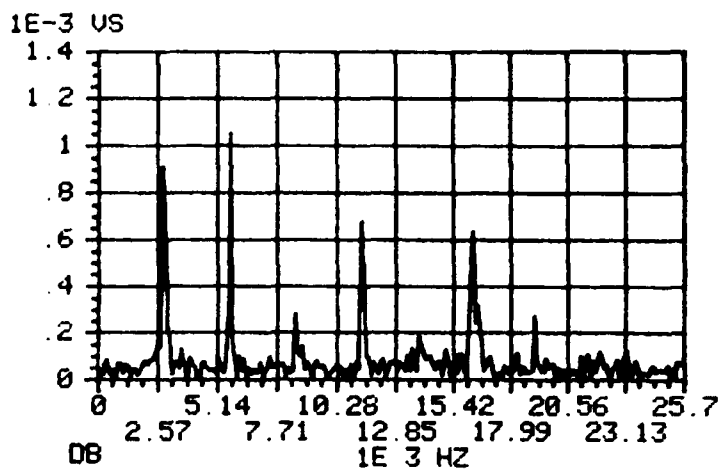
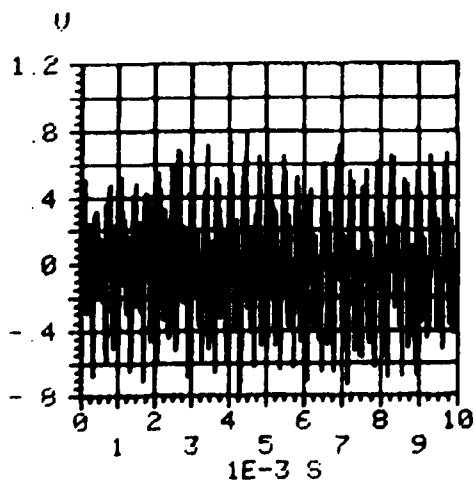


Alarm Test No. 8F
 Alarm Type: PETERZELL CO.
 Driving Vapor FREON 12
 Temperature 83 °F
 Pressure 13 psig
 Flowrate 8.96 std l/m
 Meter Setting 90 dB

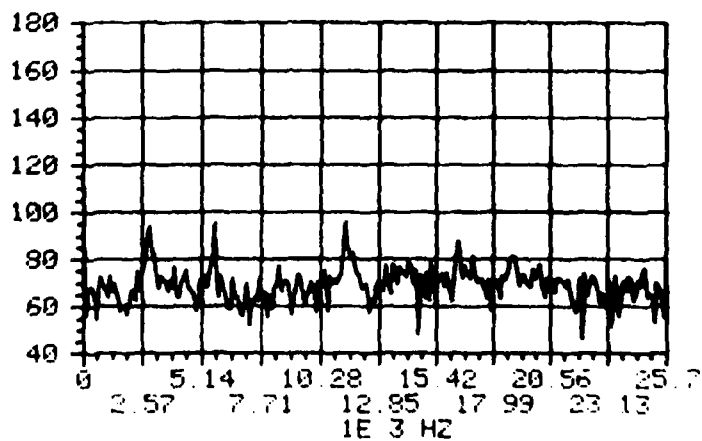
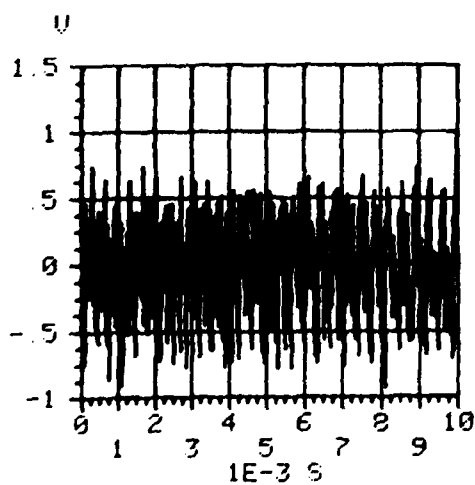
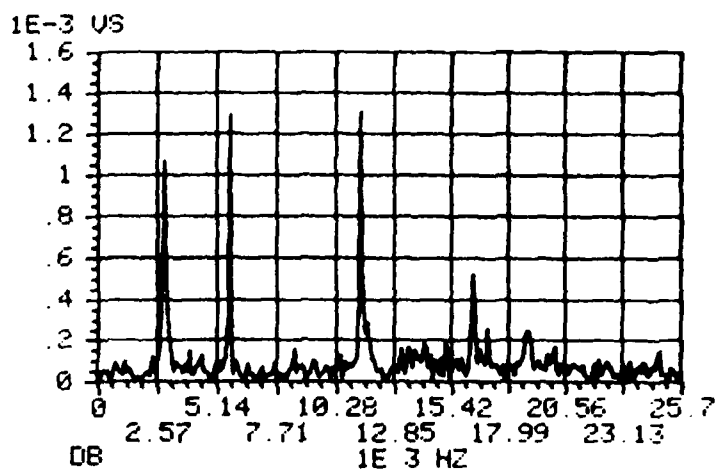


Alarm Test No. 8F
 Alarm Type: PETERZELL CO.

Driving Vapor FREON 12
 Temperature 83 °F
 Pressure 13 psig
 Flowrate 8.96 std l/m
 Meter Setting 90 dB

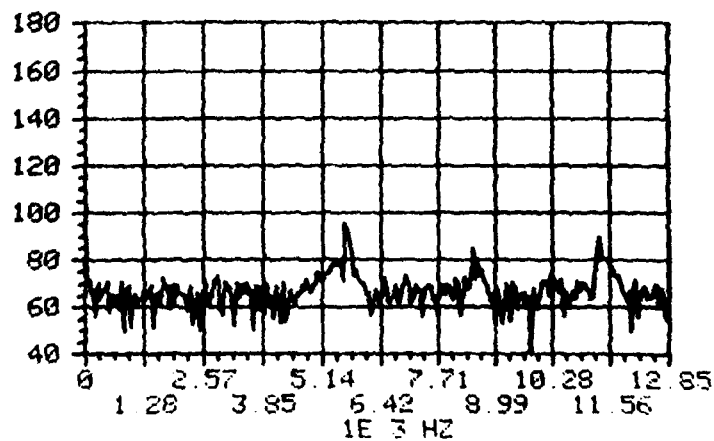
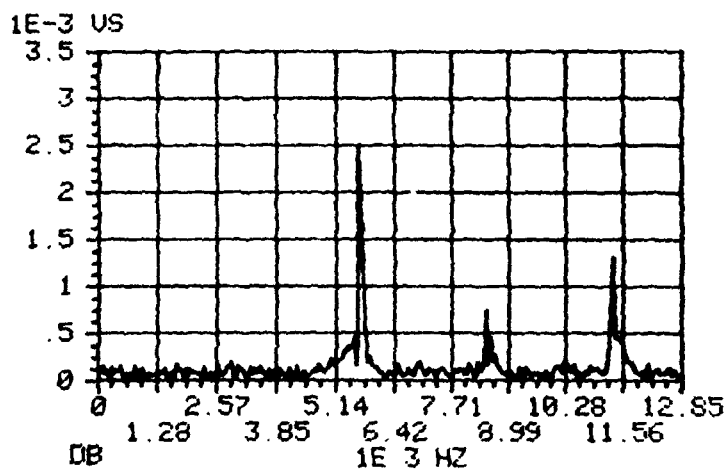
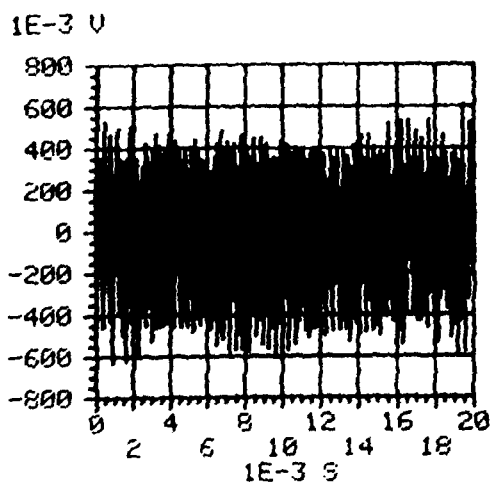


Alarm Test No. 8F
 Alarm Type: PETERZELL CO.
 Driving Vapor FREON 12
 Temperature 83 °F
 Pressure 13 psig
 Flowrate 8.96 std l/m
 Meter Setting 90 dB



Alarm Test No. 8G
Alarm Type: PETERZELL CO.

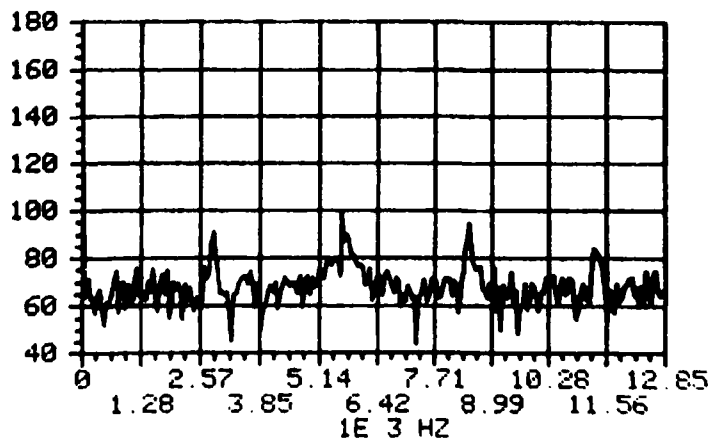
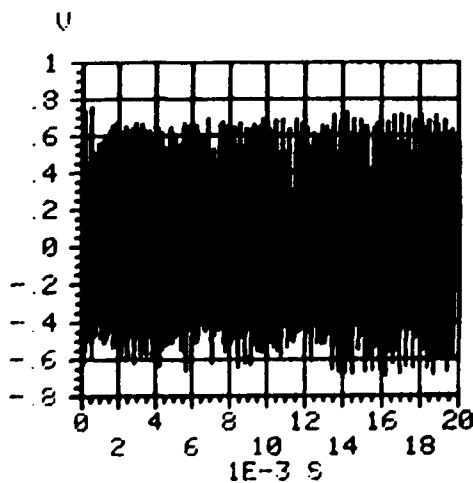
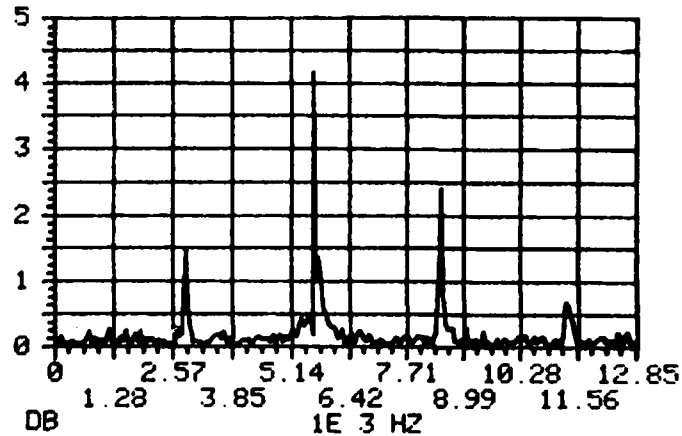
Driving Vapor FREON 12
Temperature 81 °F
Pressure 8.25 psig
Flowrate 5.12 std l/m
Meter Setting 90 dB



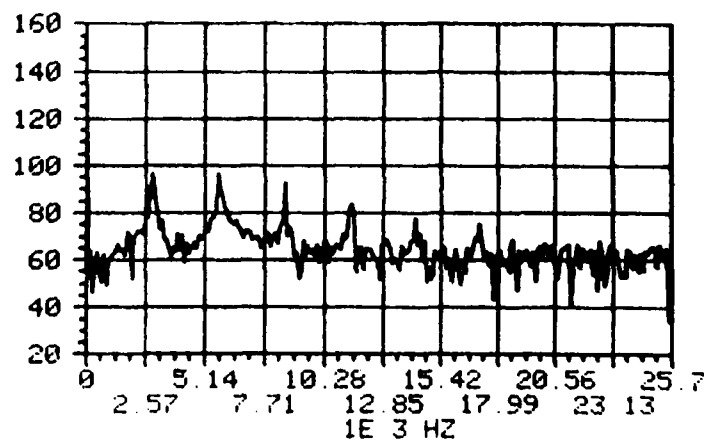
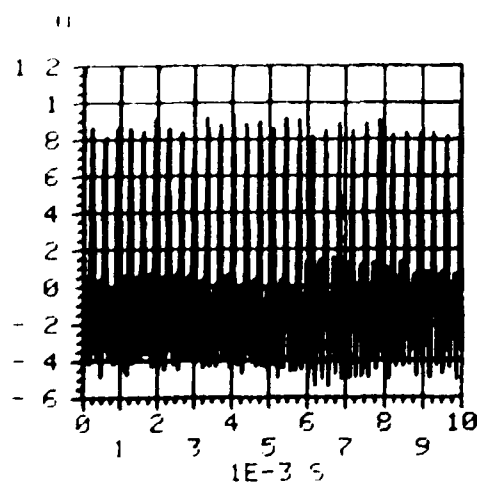
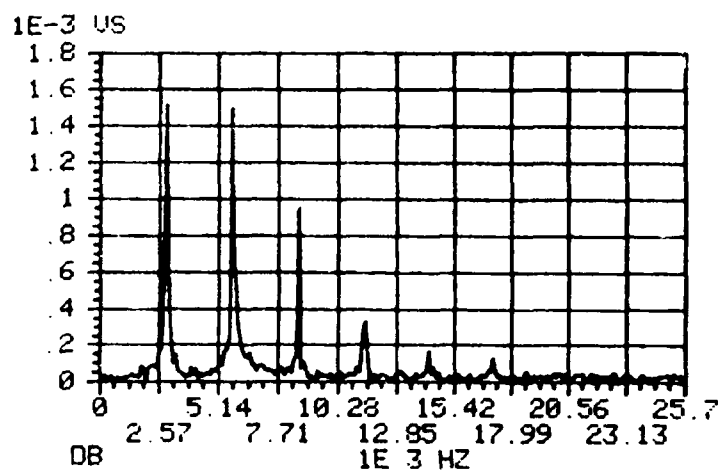
Alarm Test No. 8G
Alarm Type: PETERZELL CO.

Driving Vapor FREON 12
Temperature 81 °F
Pressure 8.25 psig
Flowrate 5.12 std l/m
Meter Setting 90 dB

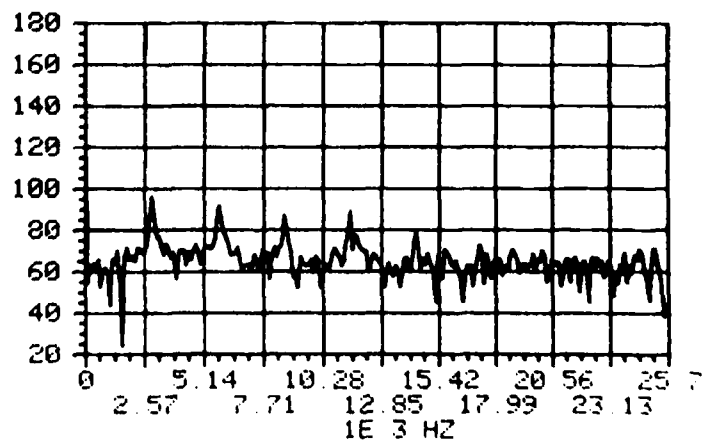
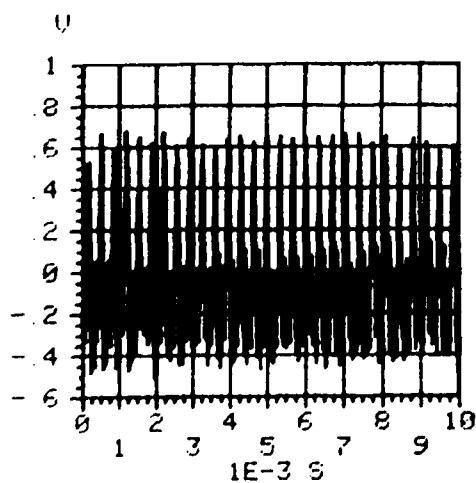
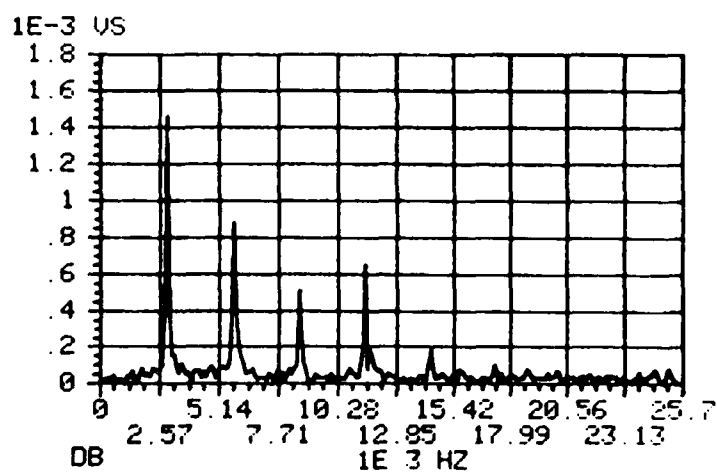
1E-3 US



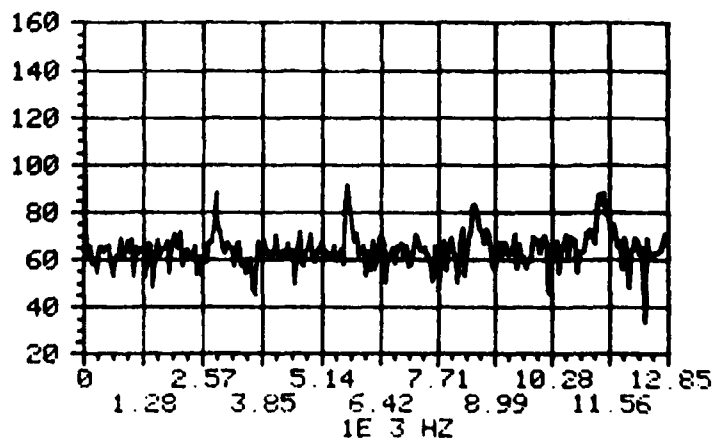
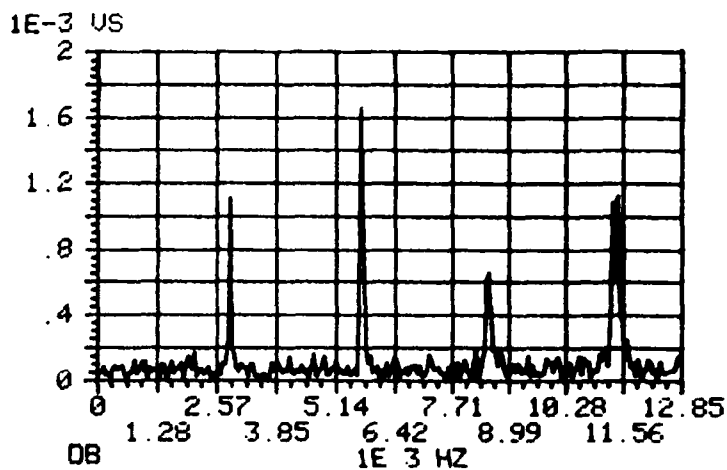
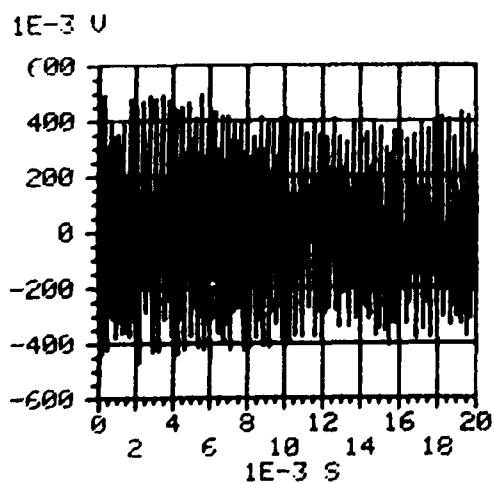
Model: 86
 Manufacturer: PETERZELL CO.
 Frequency: 12
 Amplitude: 81
 Phase: 8.25
 Width: 5.12
 Modulation: 90



Alarm Test No. 8G
 Alarm Type: PETERZELL CO.
 Driving Vapor FREON 12
 Temperature 81 °F
 Pressure 8.25 psig
 Flowrate 5.12 std l/m
 Meter Setting 90 dB

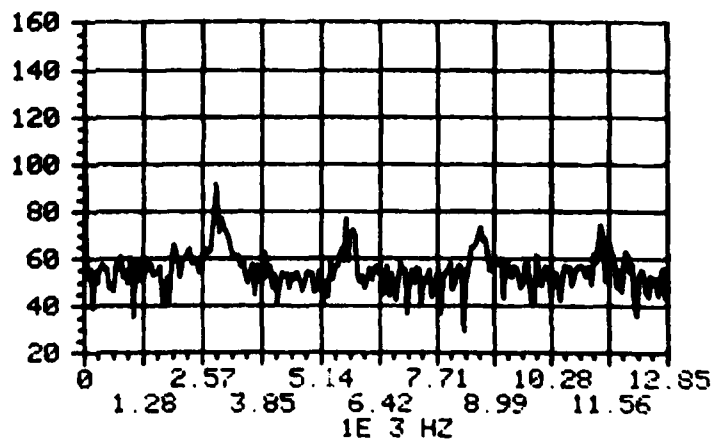
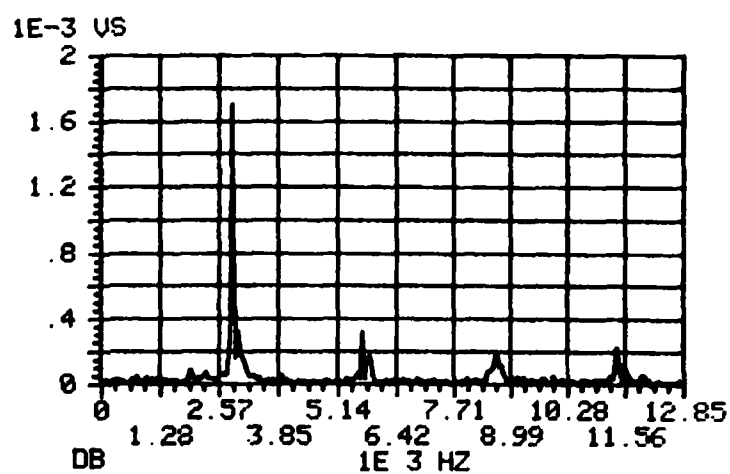
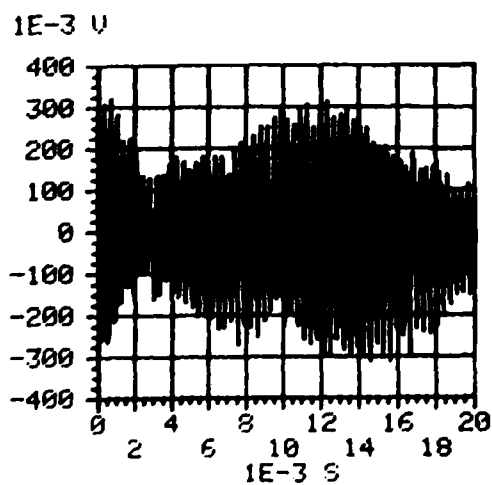


Alarm Test No. 8H
 Alarm Type: PETERZELL CO.
 Driving Vapor FREON 12
 Temperature 78 °F
 Pressure 8.0 psig
 Flowrate 3.84 std l/m
 Meter Setting 90 dB



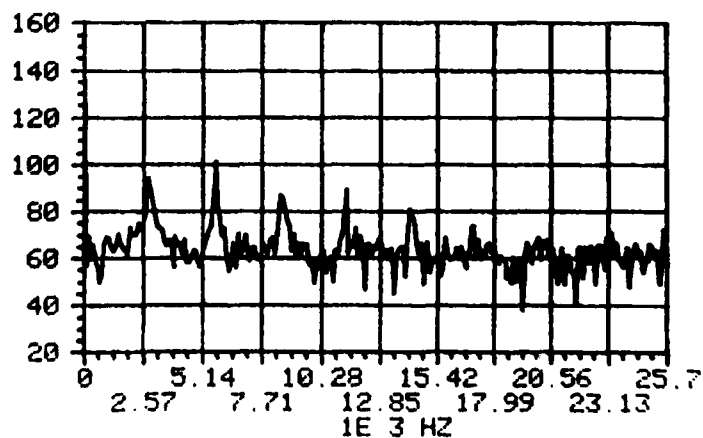
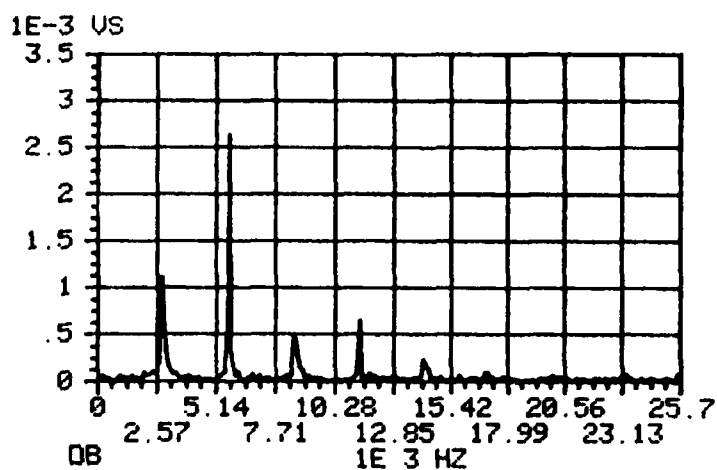
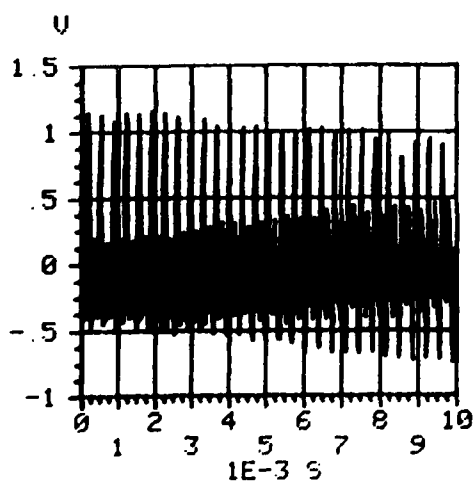
Alarm Test No. 8H
 Alarm Type: PETERZELL CO.

 Driving Vapor FREON 12
 Temperature 78 °F
 Pressure 8.0 psig
 Flowrate 3.84 std l/m
 Meter Setting 90 dB

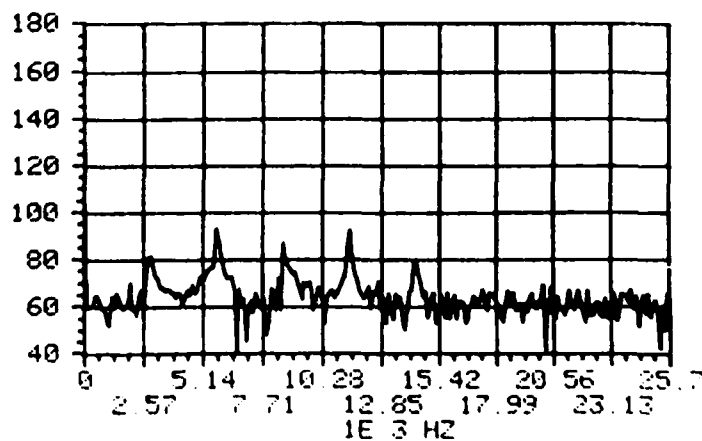
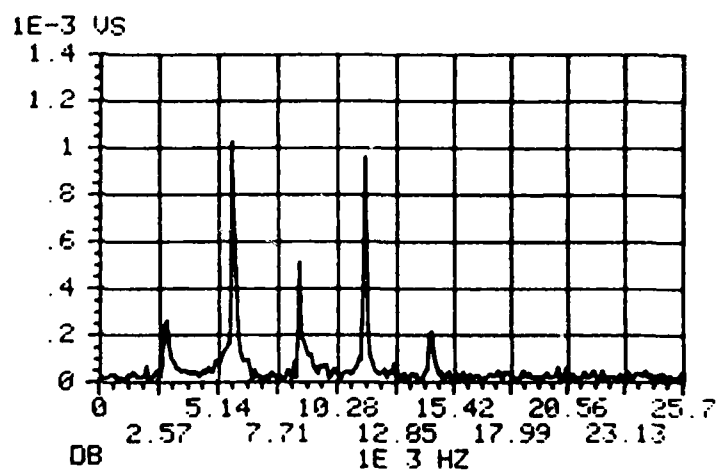
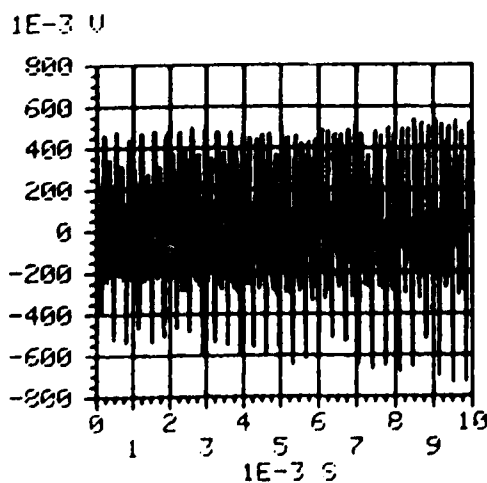


Alarm Test No. 8H
 Alarm Type: PETERZELL CO.

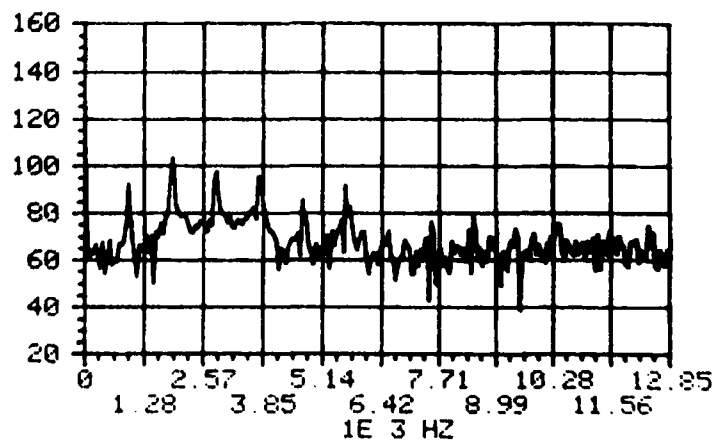
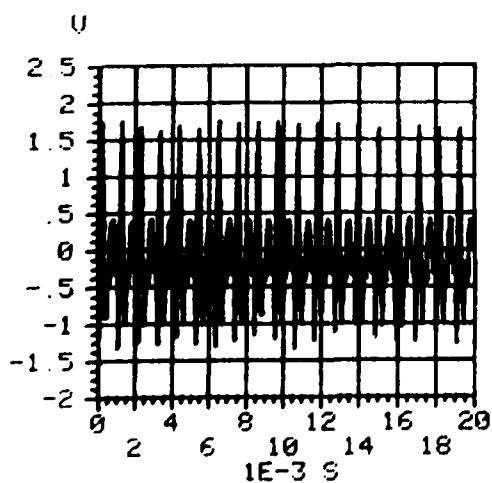
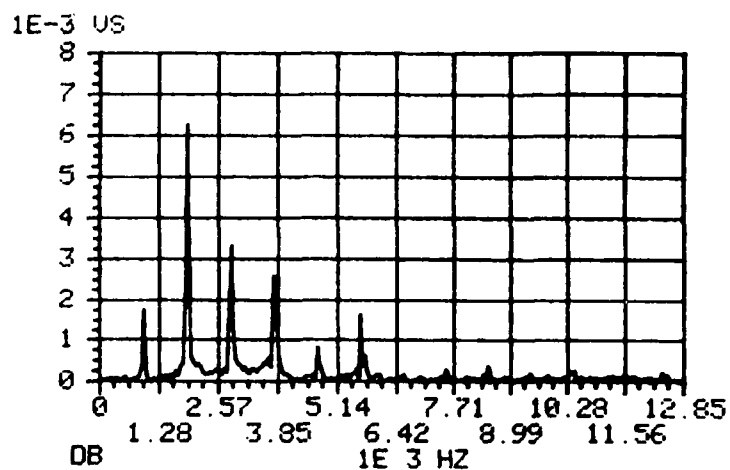
Driving Vapor FREON 12
 Temperature 78 °F
 Pressure 8.0 psig
 Flowrate 3.84 std l/m
 Meter Setting 90 dB



Alarm Test No. 8H
 Alarm Type: PETERZELL CO.
 Driving Vapor FREON 12
 Temperature 78 °F
 Pressure 8.0 psig
 Flowrate 3.84 std l/m
 Meter Setting 90 dB

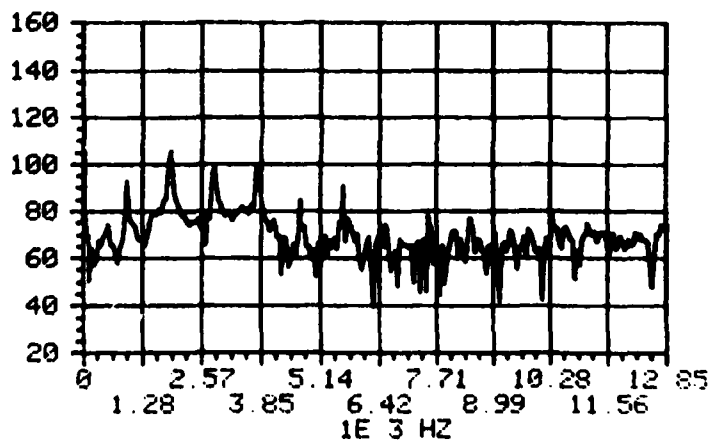
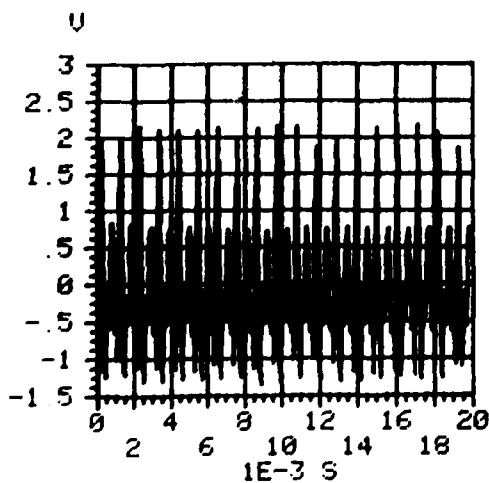
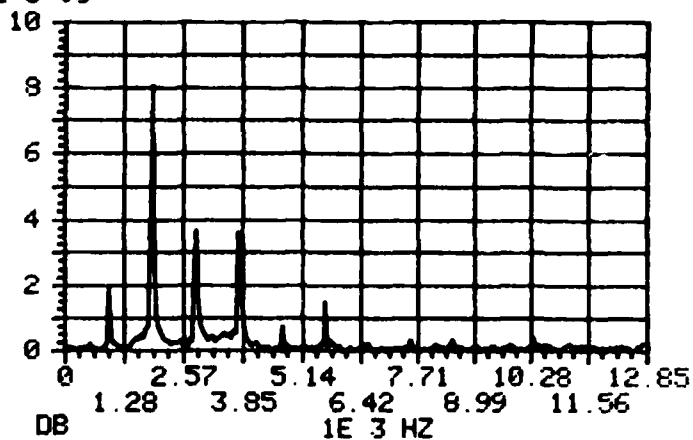


Alarm Test No. 9A
 Alarm Type: FALCON SAFETY
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 70 °F
 Pressure 36 psig
 Flowrate 9.6 std l/m
 Meter Setting 90 dB



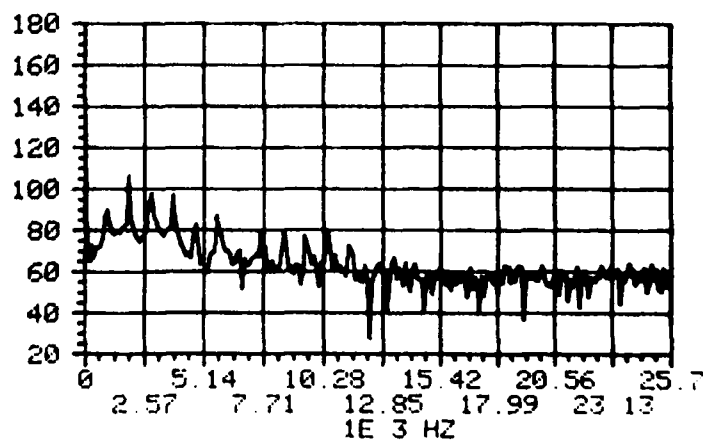
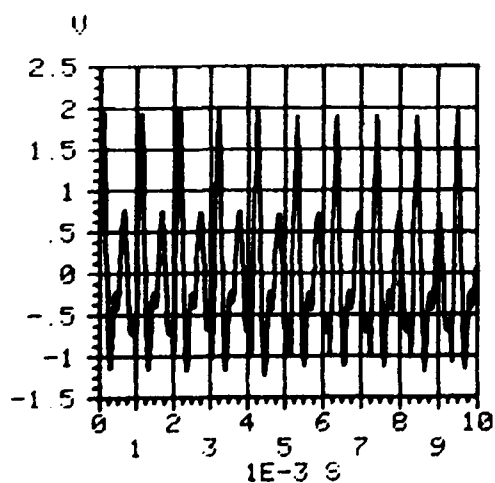
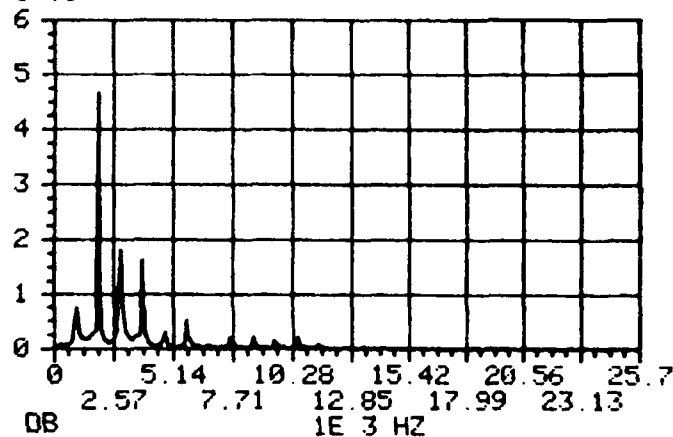
Alarm Test No. 9A
 Alarm Type: FALCON SAFETY
PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 70 °F
 Pressure 36 psig
 Flowrate 9.6 std l/m
 Meter Setting 90 dB

1E-3 US

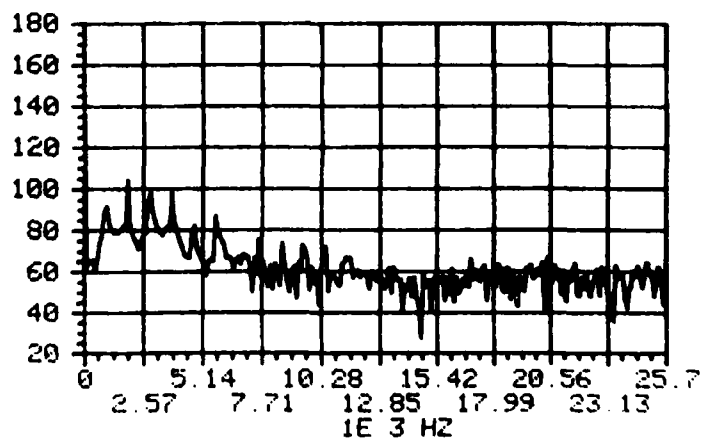
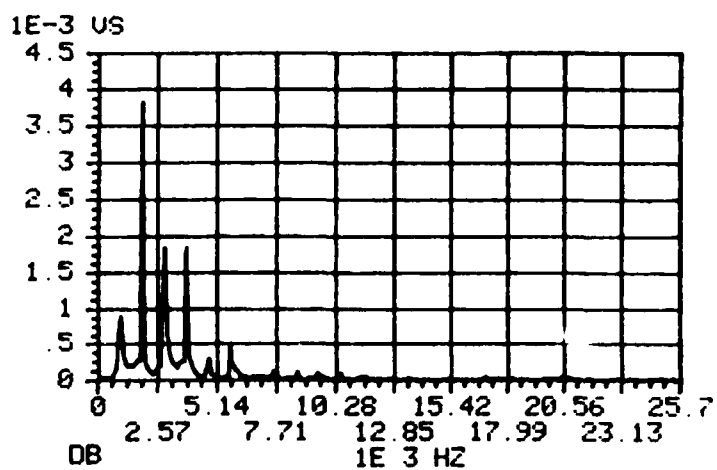
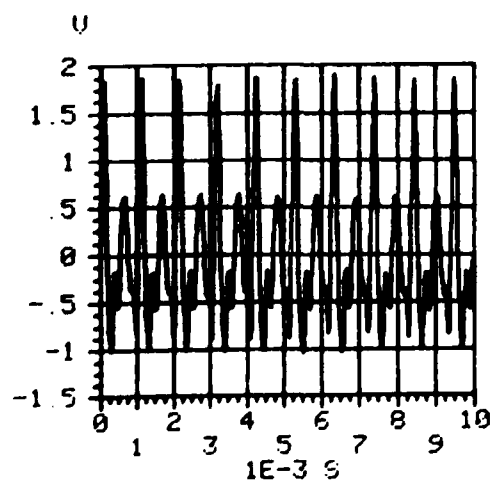


Alarm Test No. 9A
 Alarm Type: FALCON SAFETY
PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 70 °F
 Pressure 36 psig
 Flowrate 9.6 std l/m
 Meter Setting 90 dB

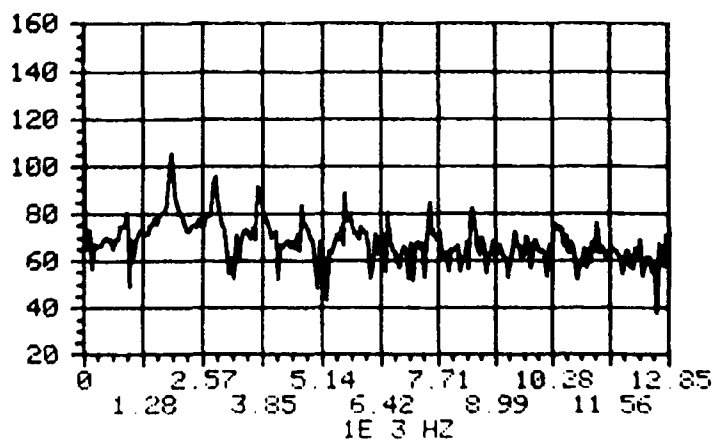
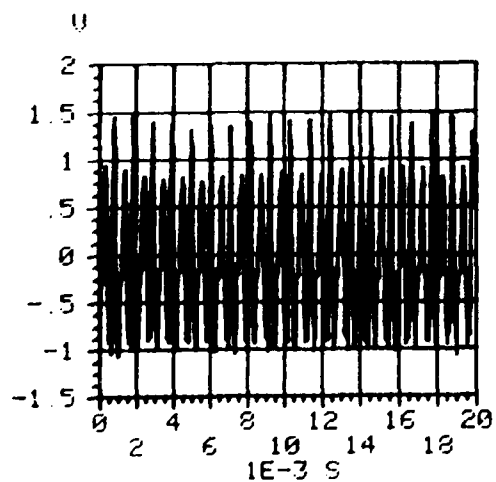
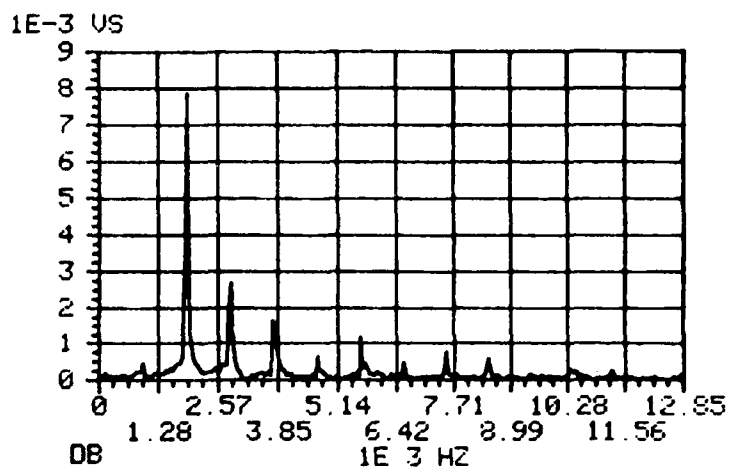
1E-3 US



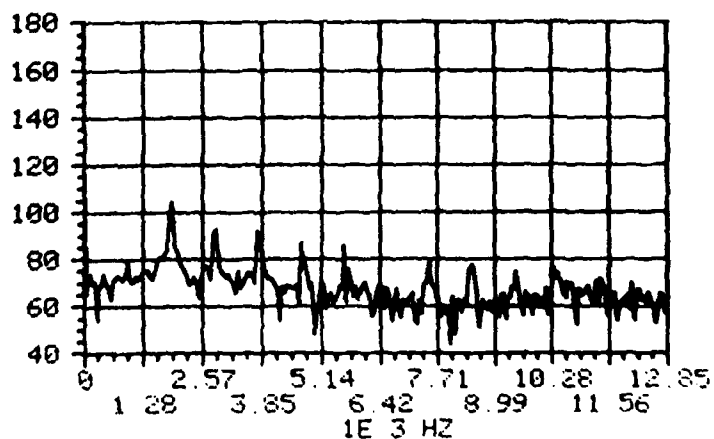
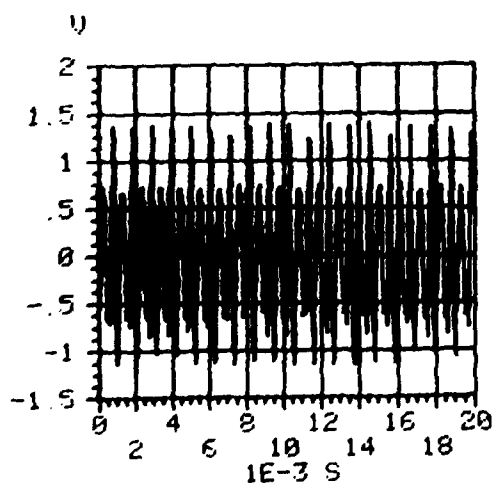
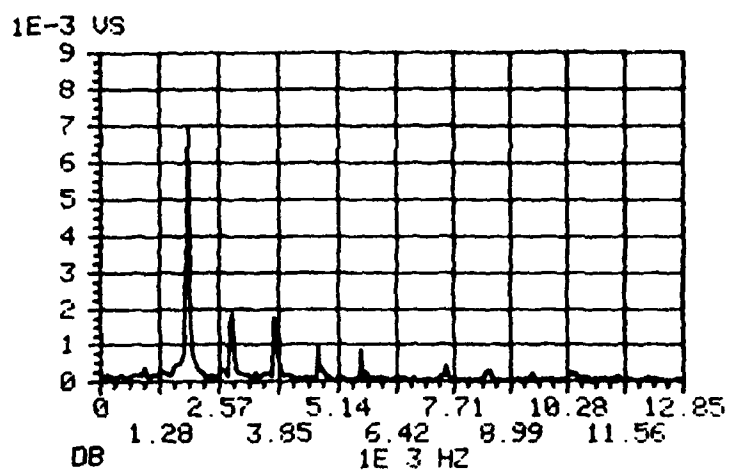
Alarm Test No. 9A
 Alarm Type: FALCON SAFETY
PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 70 °F
 Pressure 36 psig
 Flowrate 9.6 std l/m
 Meter Setting 90 dB



Alarm Test No. 9B
 Alarm Type: FALCON SAFETY
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 69 °F
 Pressure 32 psig
 Flowrate 8.32 std l/m
 Meter Setting 90 dB

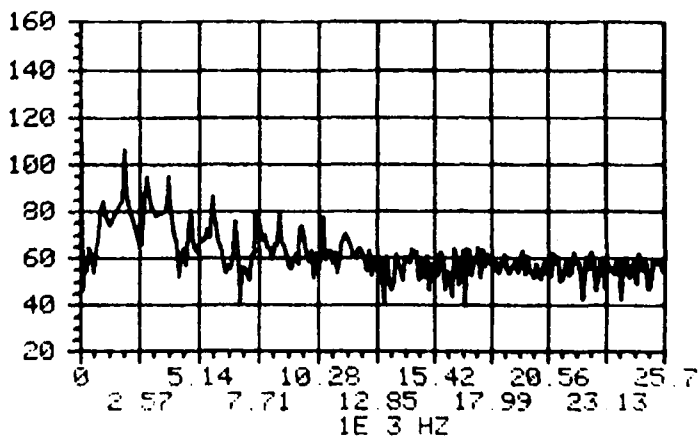
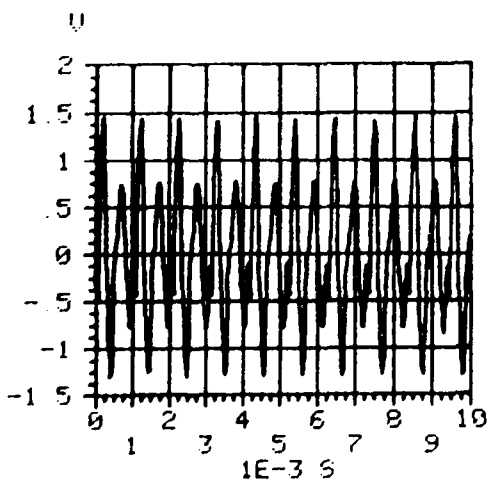
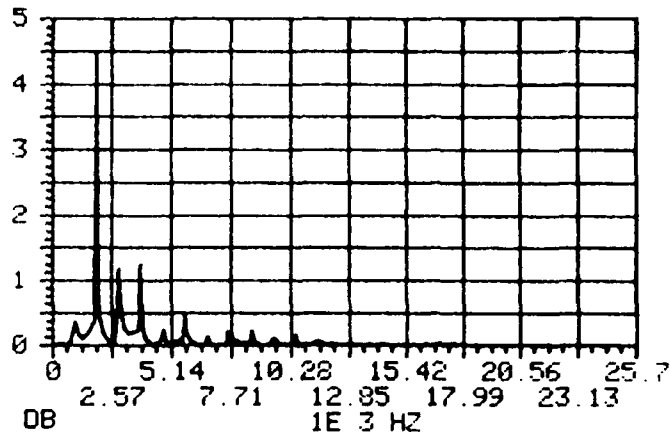


Alarm Test No. 9B
 Alarm Type: FALCON SAFETY
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 69 °F
 Pressure 32 psig
 Flowrate 8.32 std l/m
 Meter Setting 90 dB

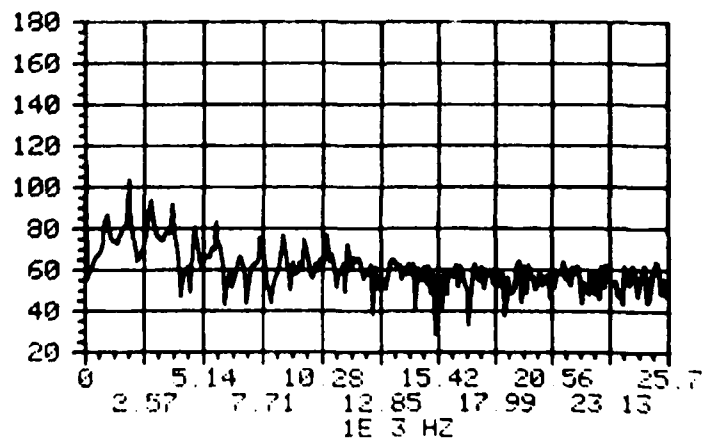
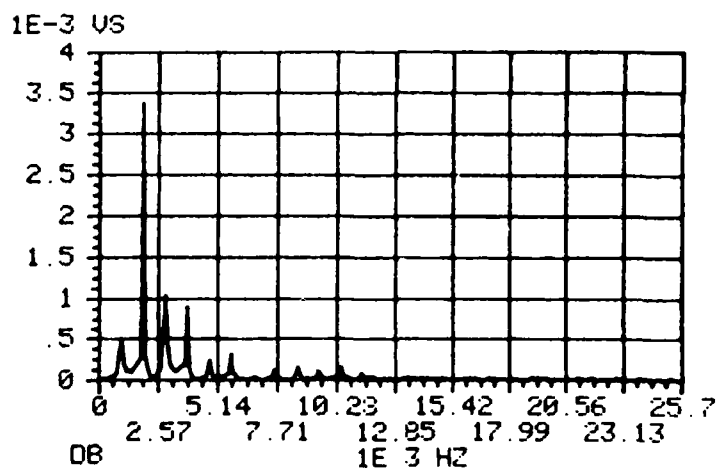
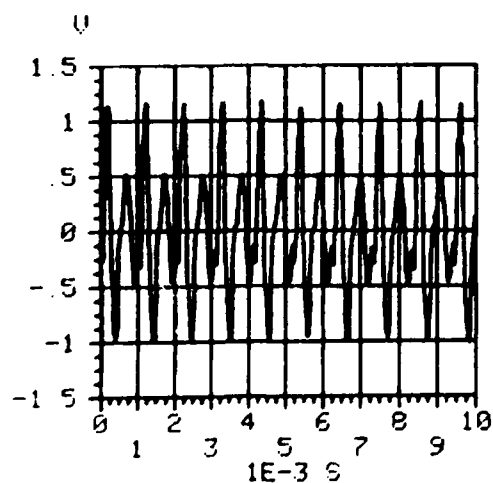


Alarm Test No. 9B
 Alarm Type: FALCON SAFETY
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 69 °F
 Pressure 32 psig
 Flowrate 8.32 std l/m
 Meter Setting 90 dB

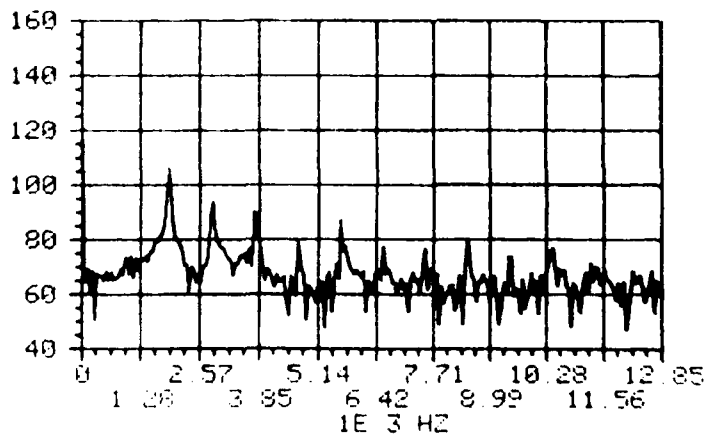
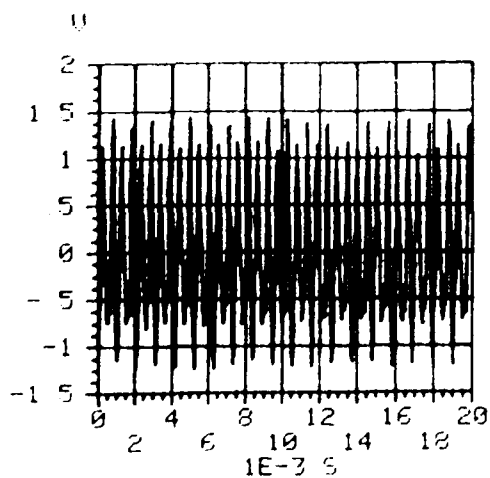
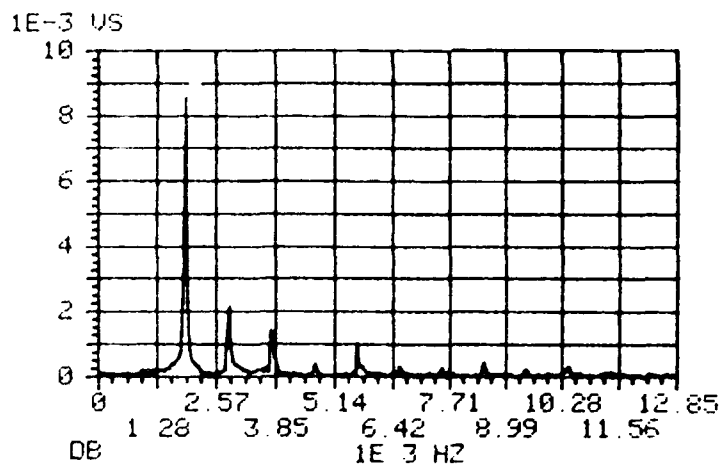
1E-3 VS



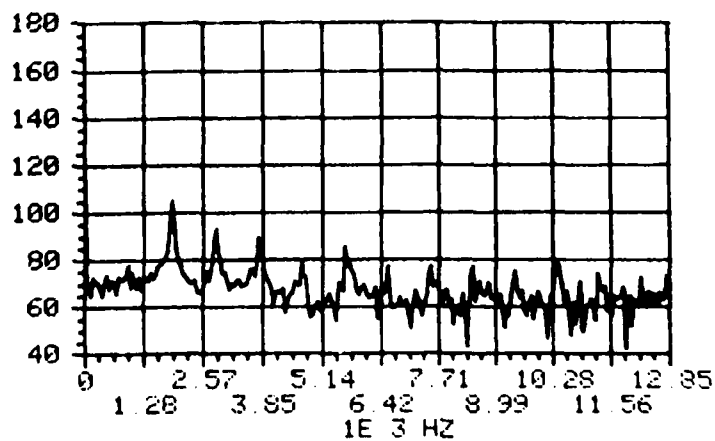
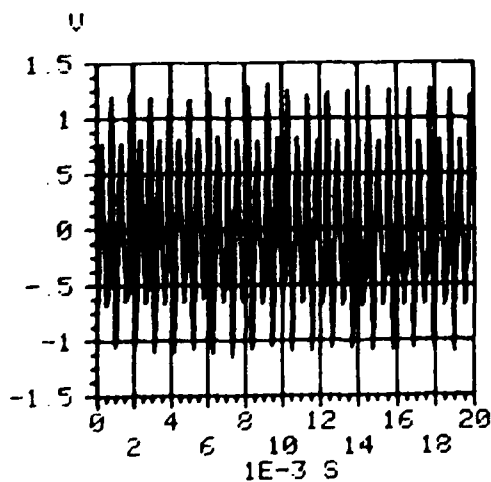
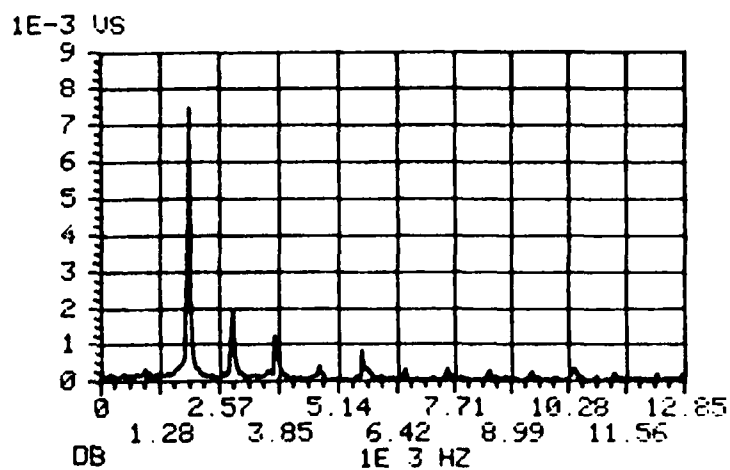
Alarm Test No. 98
 Alarm Type: FALCON SAFETY
PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 69 °F
 Pressure 32 psig
 Flowrate 8.32 std l/m
 Meter Setting 90 dB



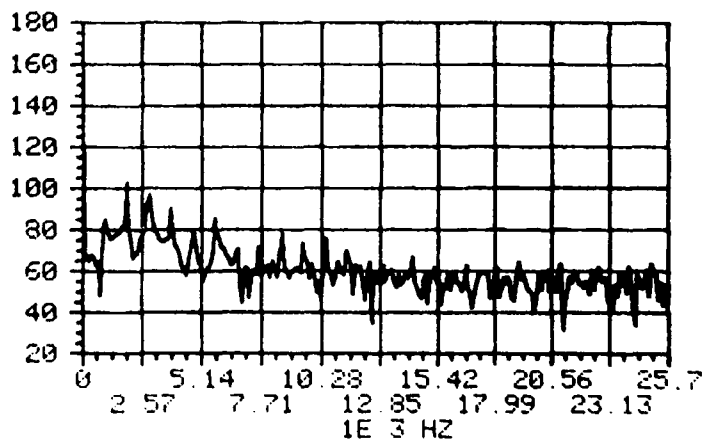
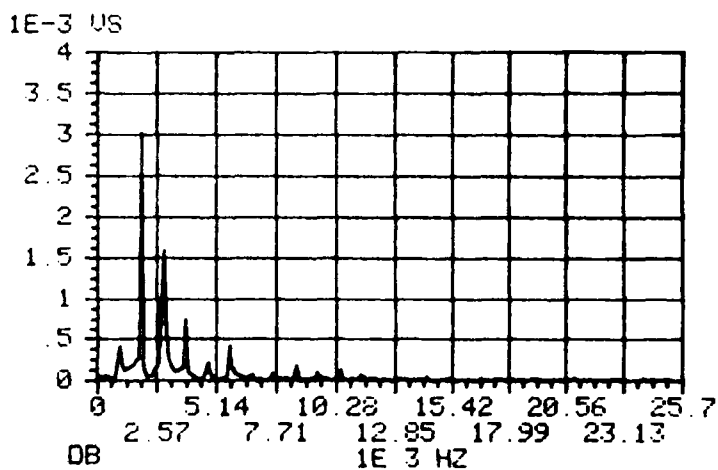
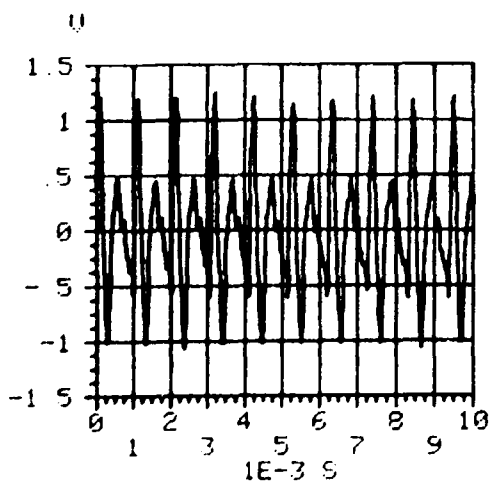
Model: 1000-1000
 Status: OK
 Safety: ACTIVE
 Frequency: 1000.12
 Temperature: 21
 Pressure: 100.00
 Humidity: 100.00
 Meter setting: 00



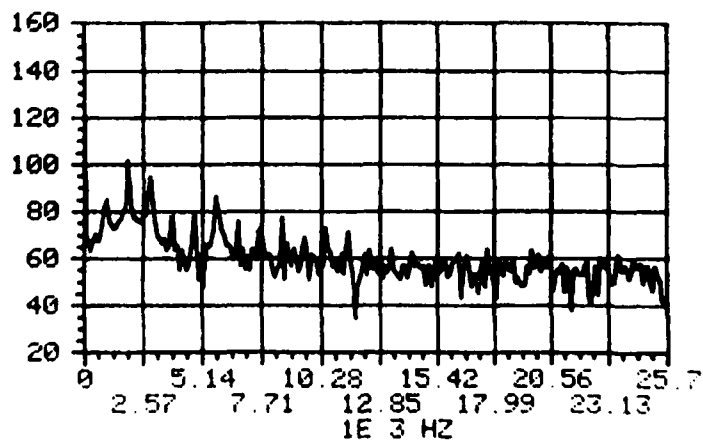
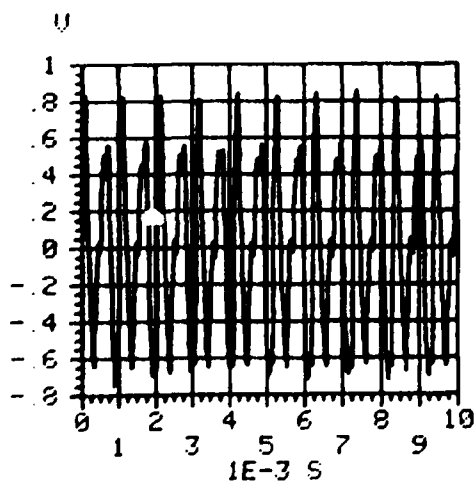
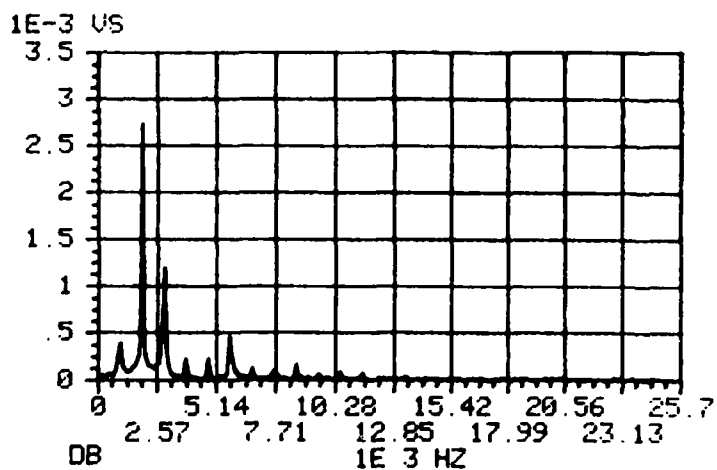
Alarm Test No. 9C
 Alarm Type: FALCON SAFETY
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 61 °F
 Pressure 30 psig
 Flowrate 7.6 std l/m
 Meter Setting 90 dB



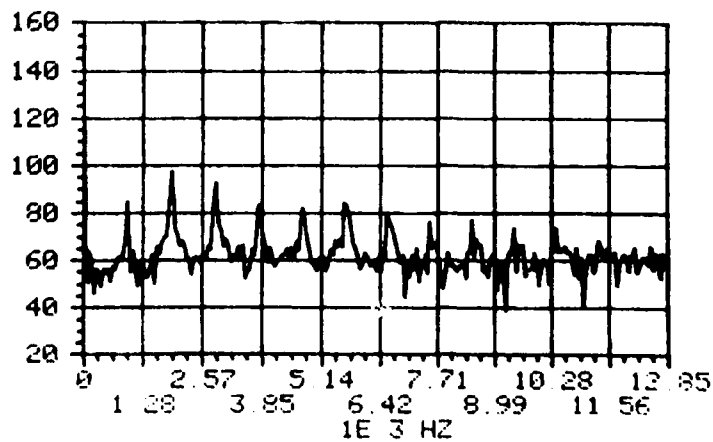
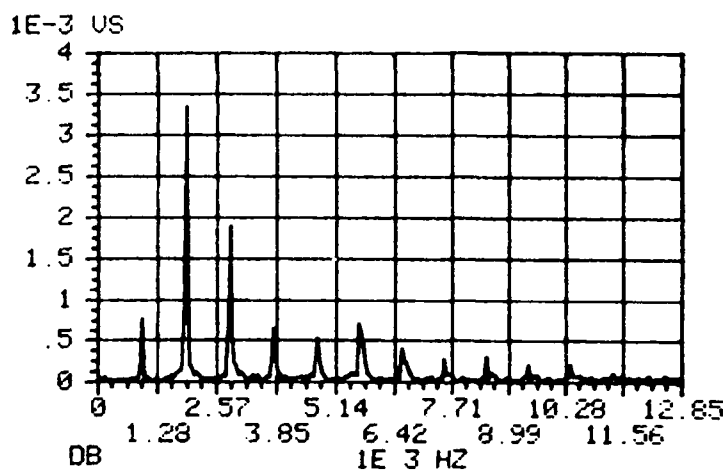
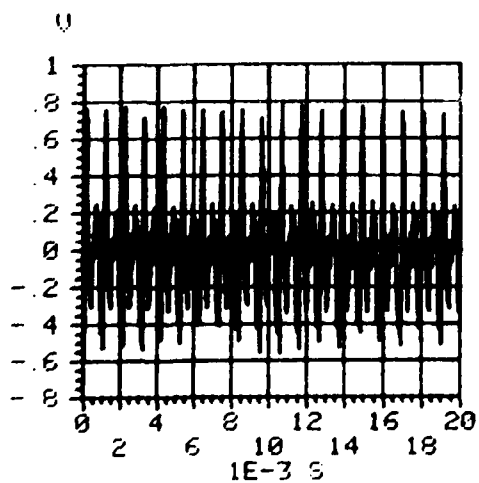
Alarm Test No. 90
 Alarm Type: FALCON SAFETY
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 61 °F
 Pressure 30 psig
 Flowrate 7.6 std l/m
 Meter Setting 90 dB



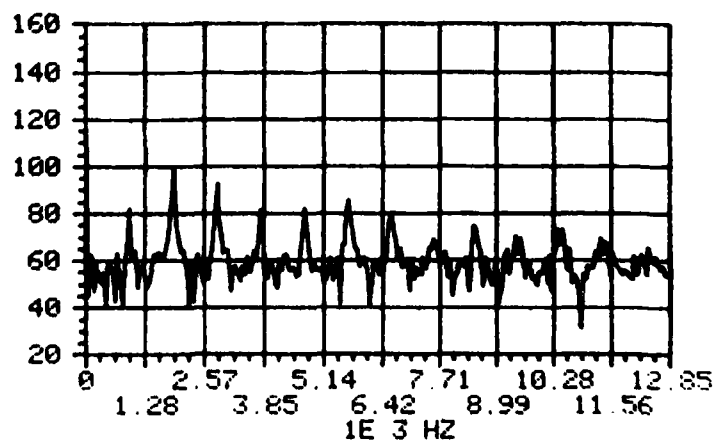
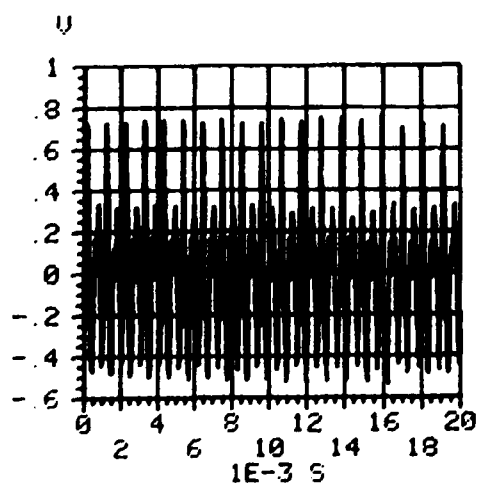
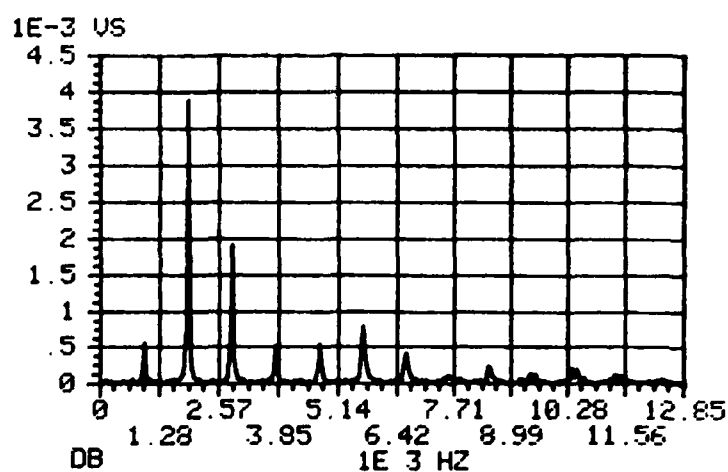
Alarm Test No. 9C
 Alarm Type: FALCON SAFETY
PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 61 °F
 Pressure 30 psig
 Flowrate 7.6 std l/m
 Meter Setting 90 dB



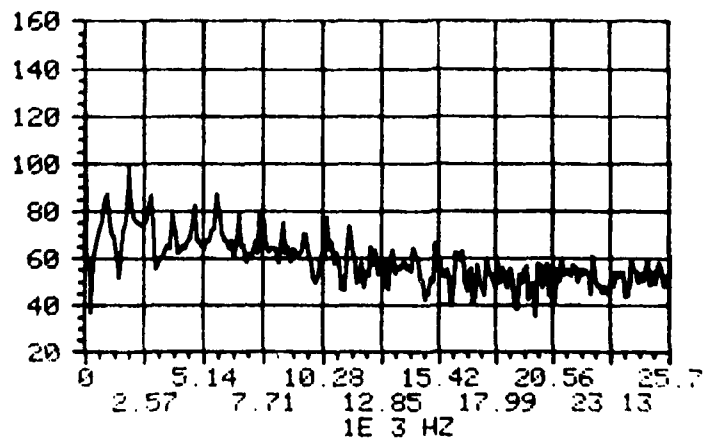
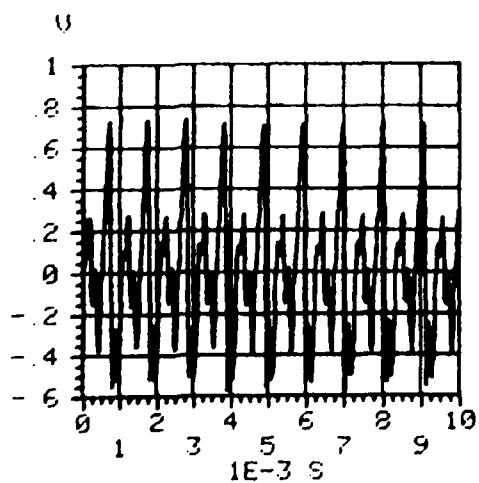
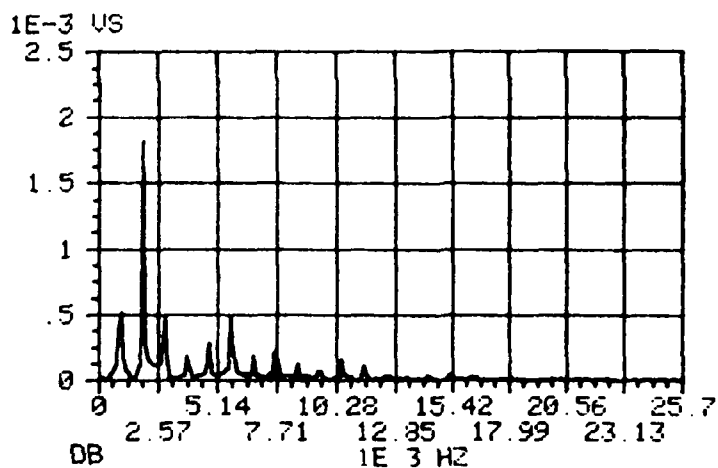
Alarm Test No. 9D
 Alarm Type: FALCON SAFETY
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 57 °F
 Pressure 20 psig
 Flowrate 5.12 std l/m
 Meter Setting 90 dB



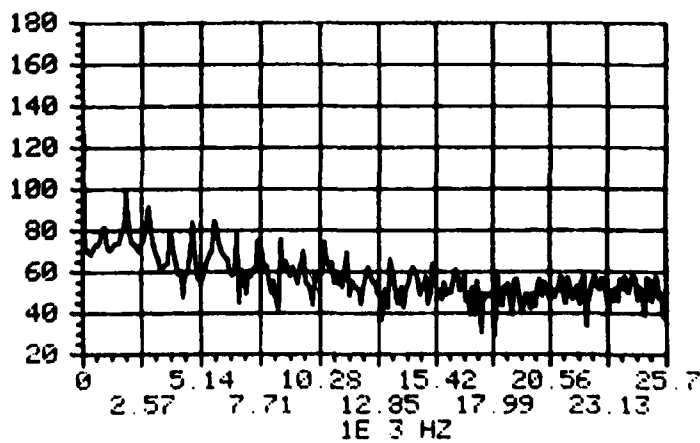
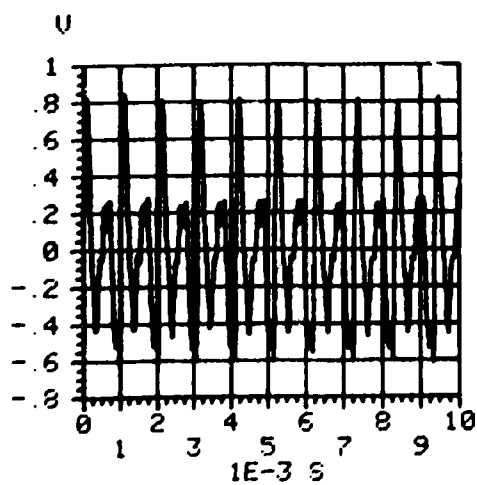
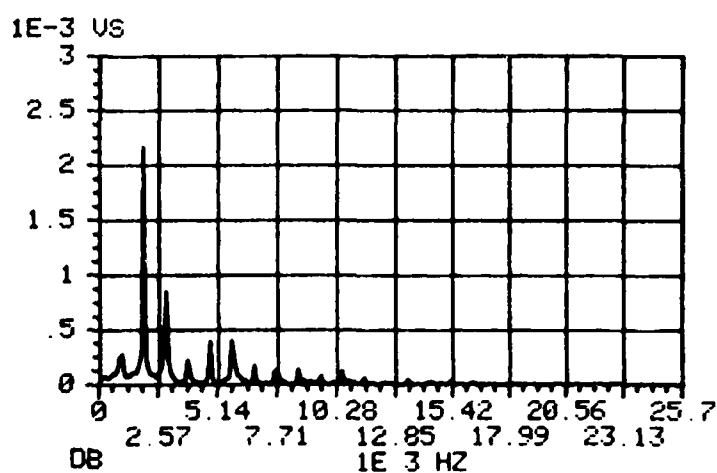
Alarm Test No. 90
 Alarm Type: FALCON SAFETY
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 57 °F
 Pressure 20 psig
 Flowrate 5.12 std l/m
 Meter Setting 90 dB



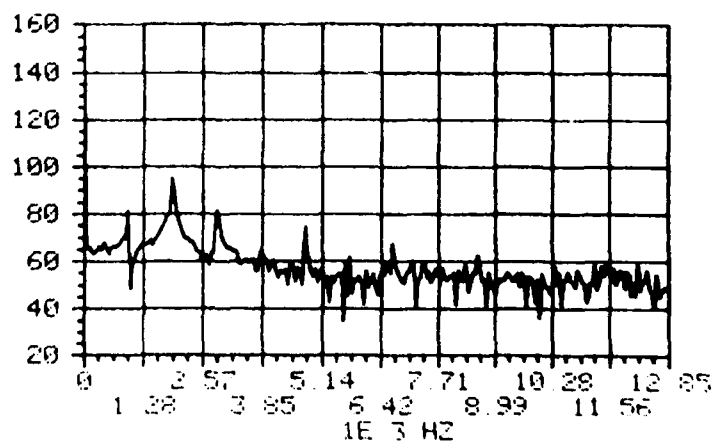
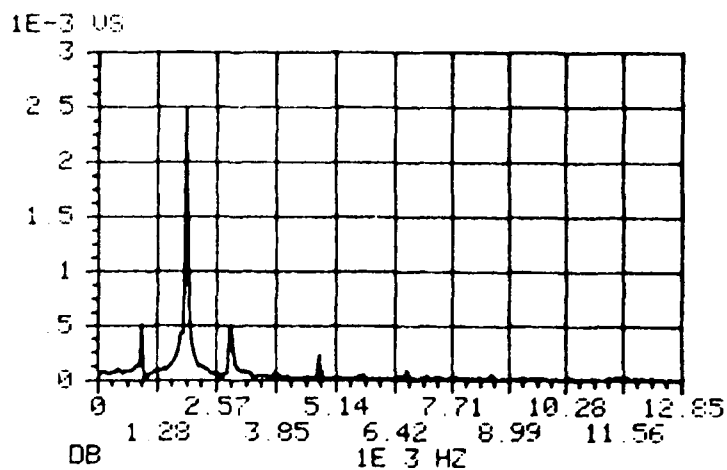
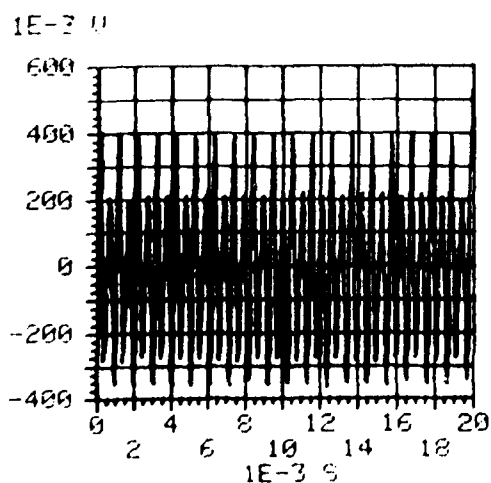
Alarm Test No. 90
 Alarm Type: FALCON SAFETY
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 57 °F
 Pressure 20 psig
 Flowrate 5.12 std l/m
 Meter Setting 90 dB



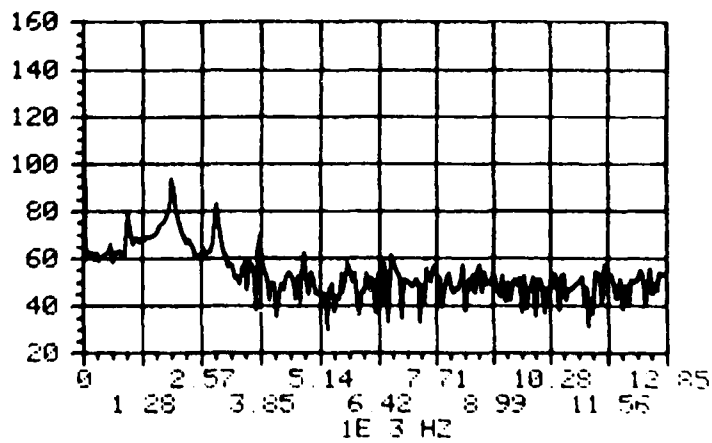
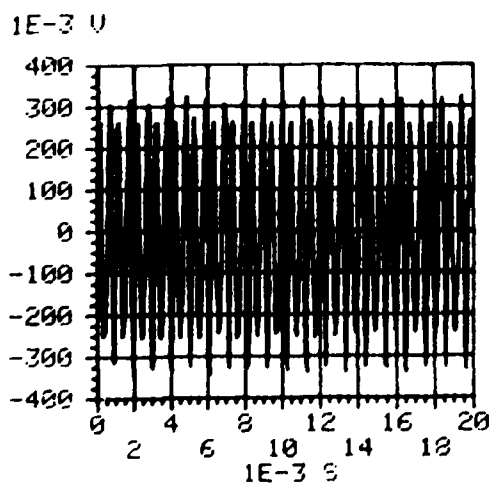
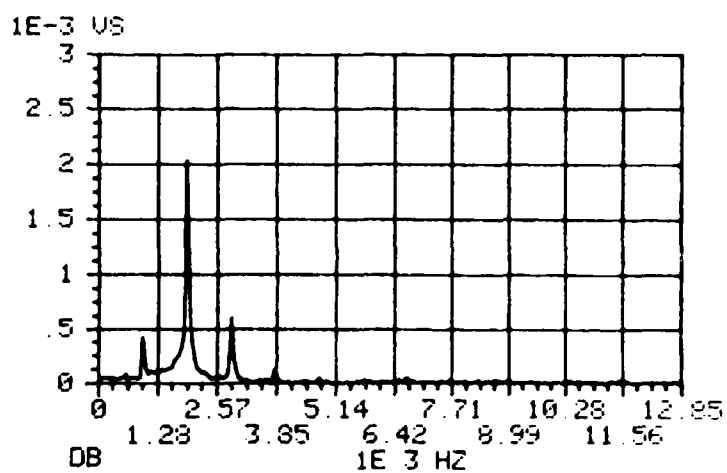
Alarm Test No. 90
 Alarm Type: FALCON SAFETY
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 57 °F
 Pressure 20 psig
 Flowrate 5.12 std l/m
 Meter Setting 90 dB



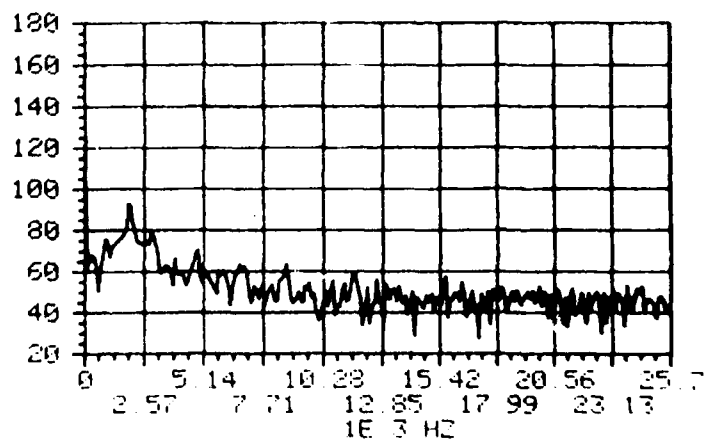
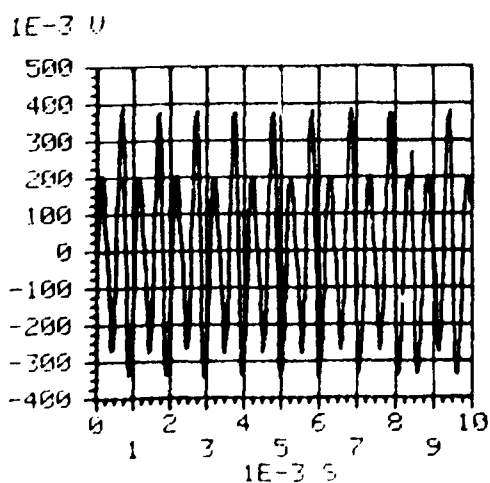
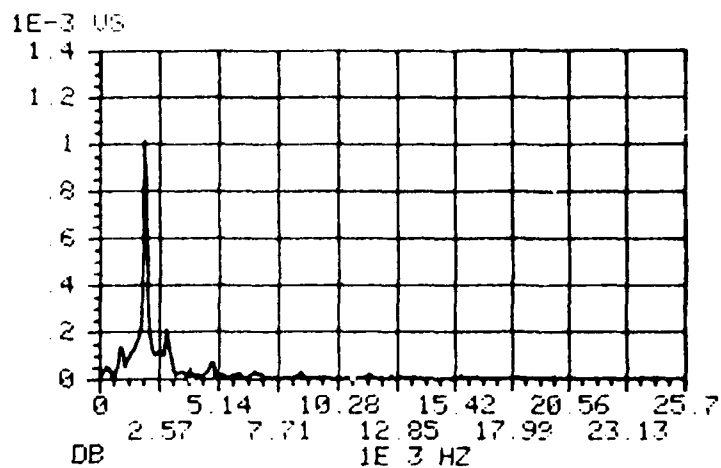
Alarm Test No. 9E
 Alarm Type: FALCON SAFETY
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 80 °F
 Pressure 5 - 7 psig
 Flowrate 3.2 std l/m
 Meter Setting 90 dB



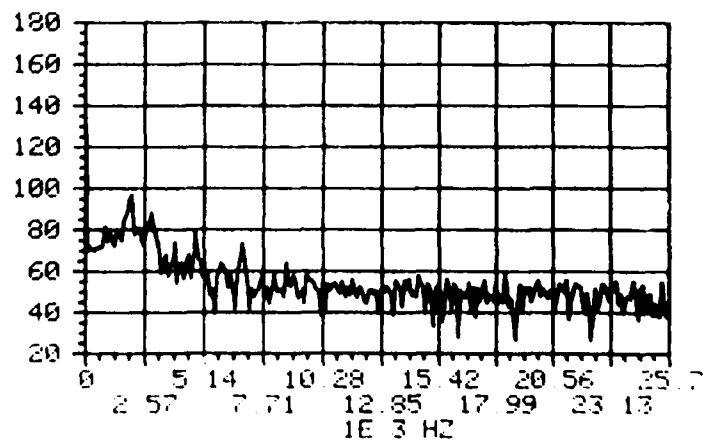
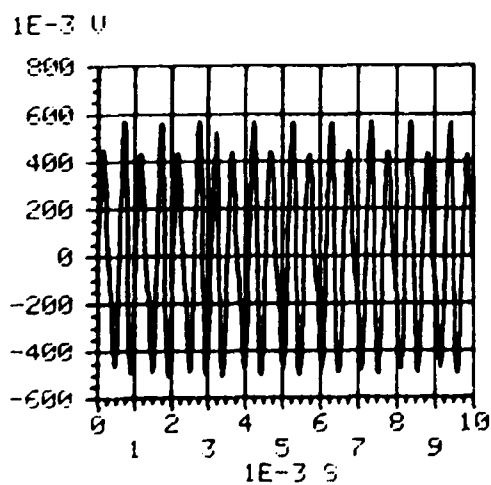
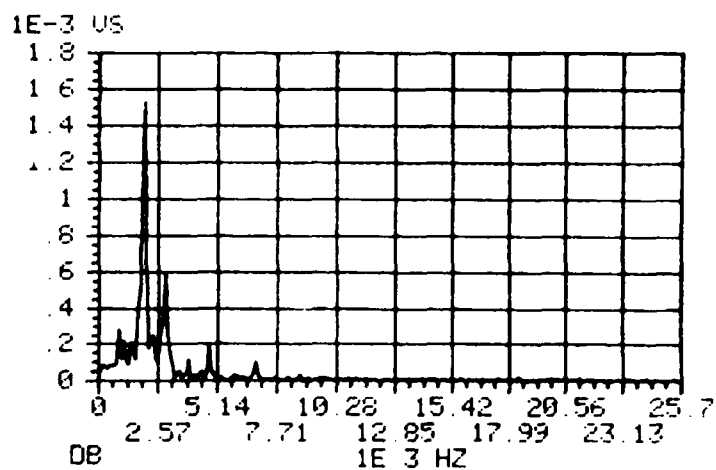
Alarm Test No. 9E
 Alarm Type: FALCON SAFETY
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 80 °F
 Pressure 5 - 7 psig
 Flowrate 3.2 std l/m
 Meter Setting 90 dB



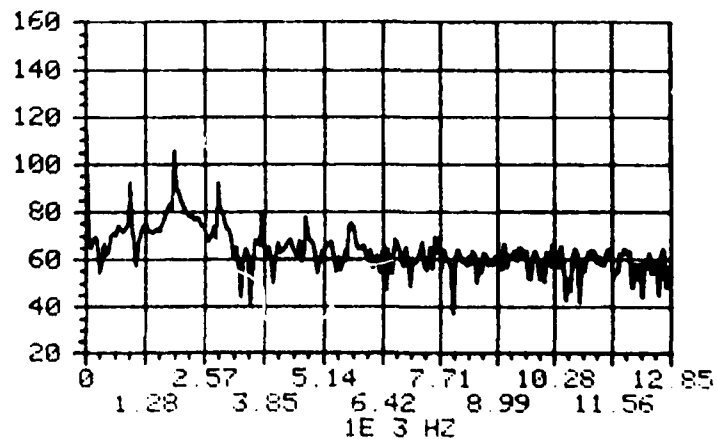
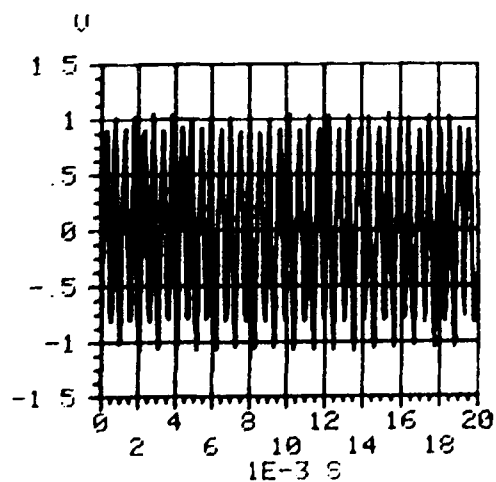
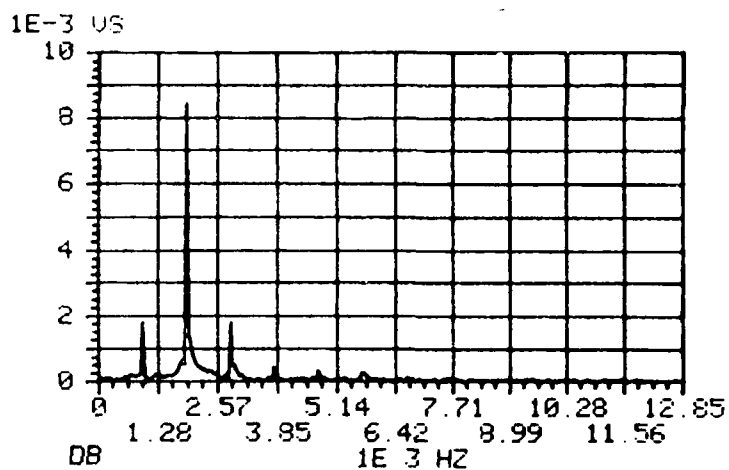
Alarm Test No. 9E
 Alarm Type: FALCON SAFETY
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 80 °F
 Pressure 5 - 7 psig
 Flowrate 3.2 std l/m
 Meter Setting 90 dB



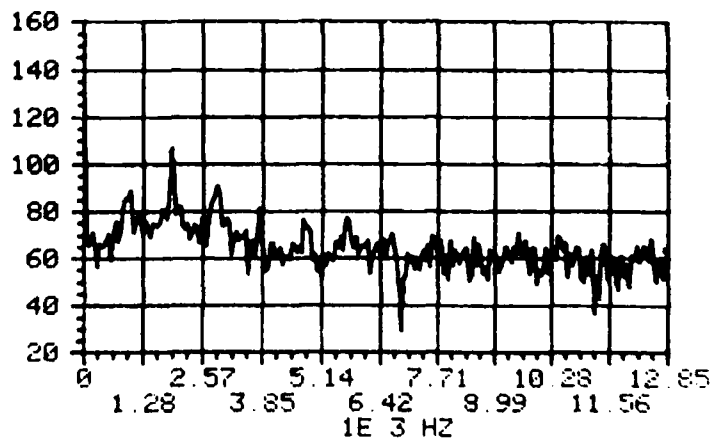
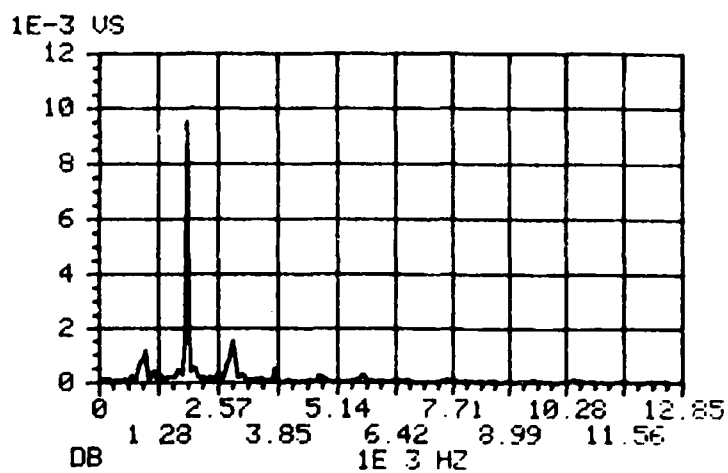
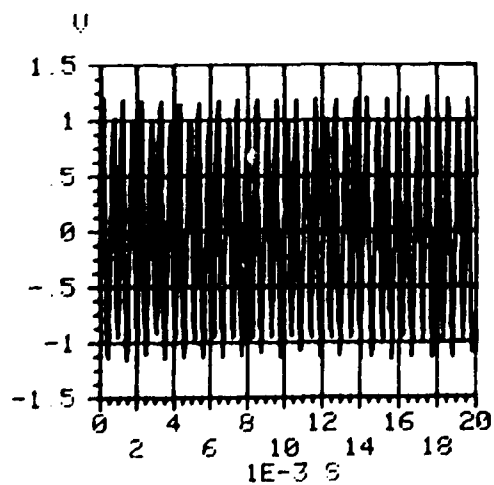
Alarm Test No. 9E
 Alarm Type: FALCON SAFETY
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 80 °F
 Pressure 5 - 7 psig
 Flowrate 3.2 std l/m
 Meter Setting 90 dB



Alarm Test No. 10A
 Alarm Type: FALCON
 SAFETY PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 77 °F
 Pressure 25 psig
 Flowrate 6.4 std l/m
 Meter Setting 90 dB



Alarm Test No. 10A
 Alarm Type: FALCON
SAFETY PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 77 °F
 Pressure 25 psig
 Flowrate 6.4 std l/m
 Meter Setting 90 dB



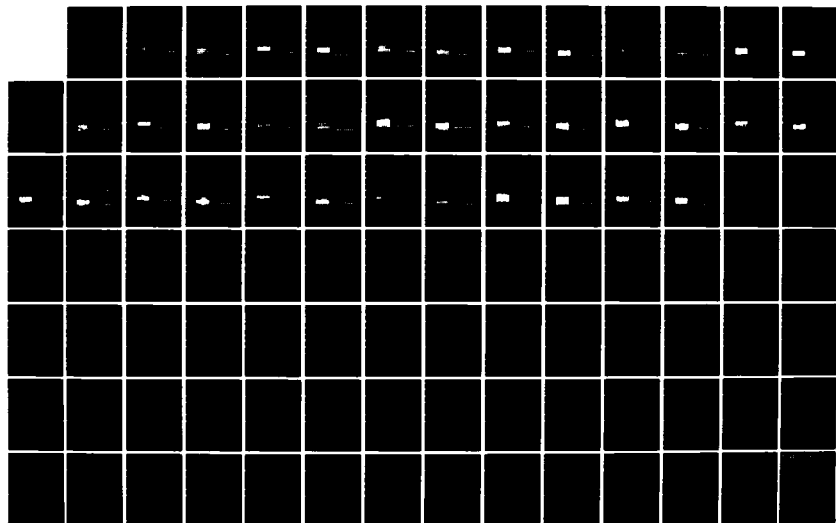
AD-A130 331

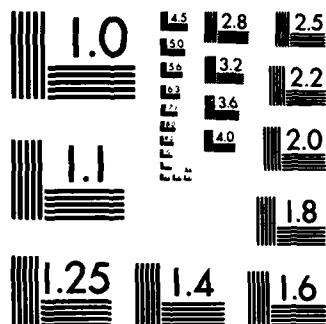
SELECTIVE AUTOMATIC FIRE EXTINGUISHER FOR CLASS A WITH
NOTIFICATION (SAFE.. (U) NEW MEXICO ENGINEERING RESEARCH
INST ALBUQUERQUE C W WILSON ET AL. MAY 83

4/ 41

UNCLASSIFIED

NMERI-TA3-1-VOL-2 AFESC/ESL-TR-83-07-VOL-2 F/G 13/12 NL

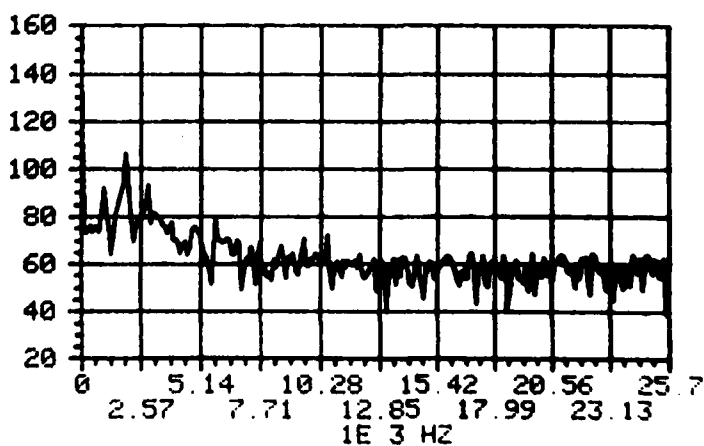
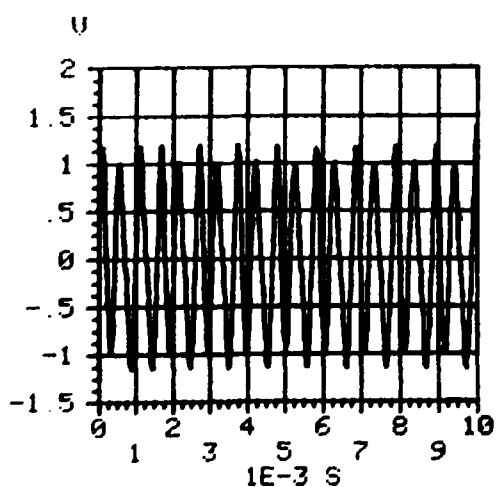
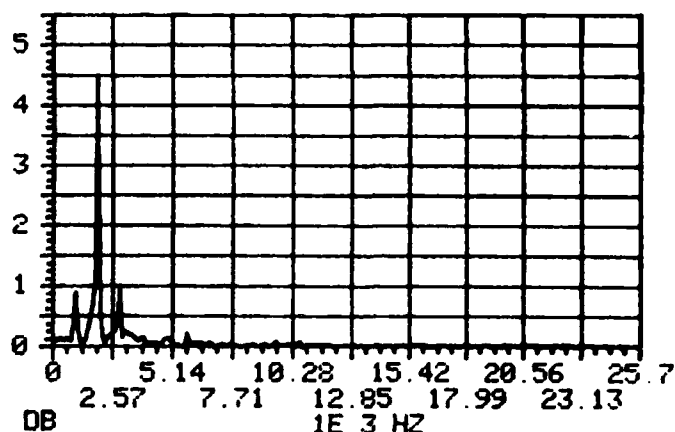




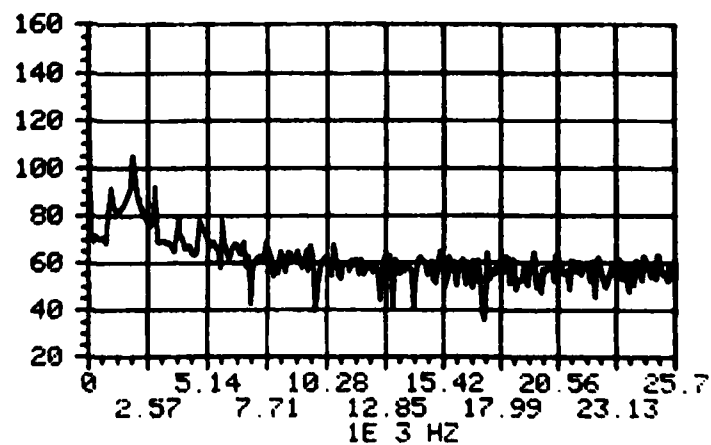
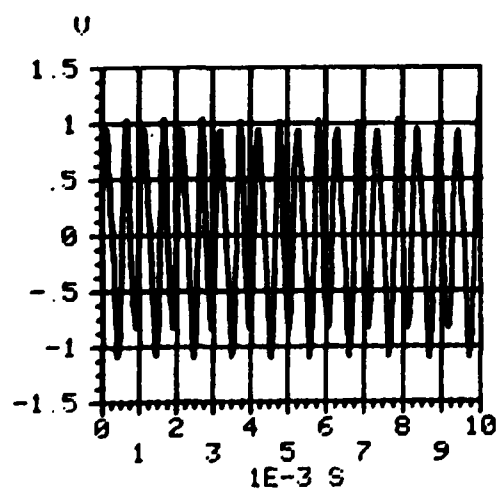
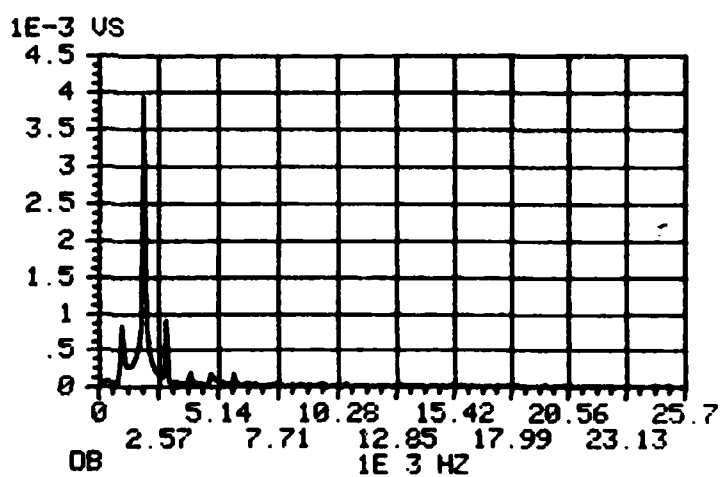
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

Alarm Test No. 10A
 Alarm Type: FALCON
SAFETY PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 77 °F
 Pressure 25 psig
 Flowrate 6.4 std l/m
 Meter Setting 90 dB

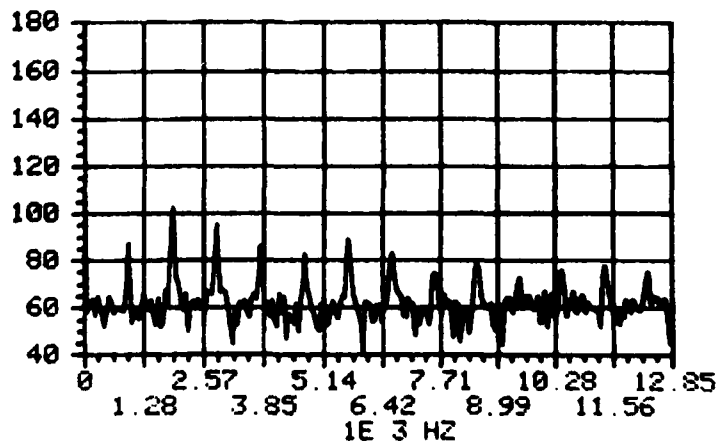
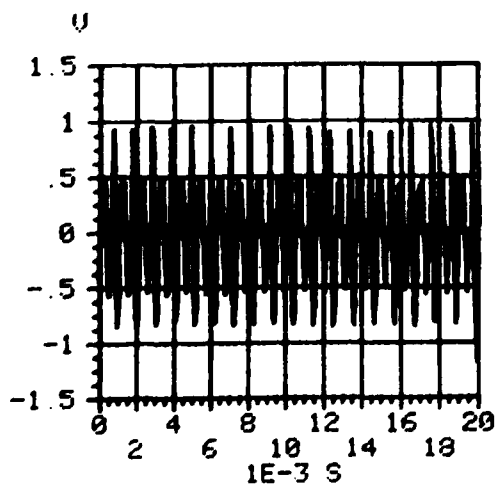
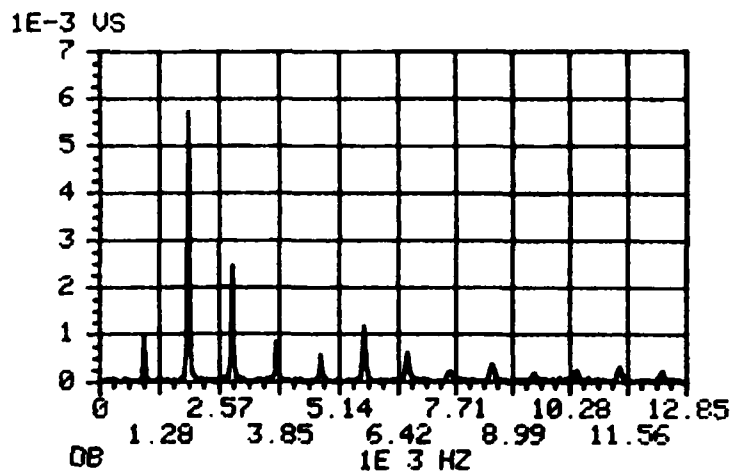
1E-3 US



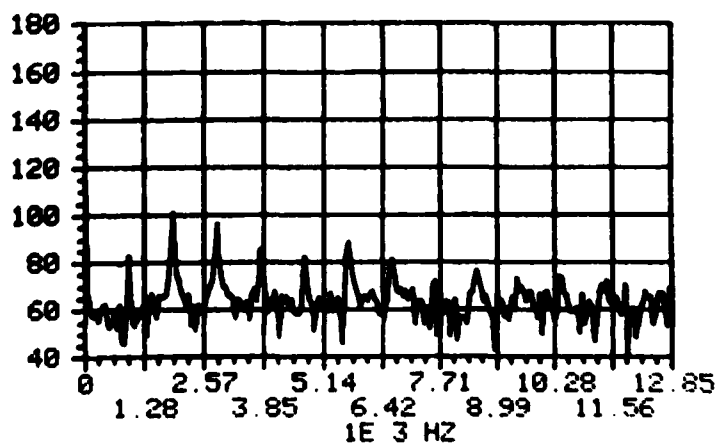
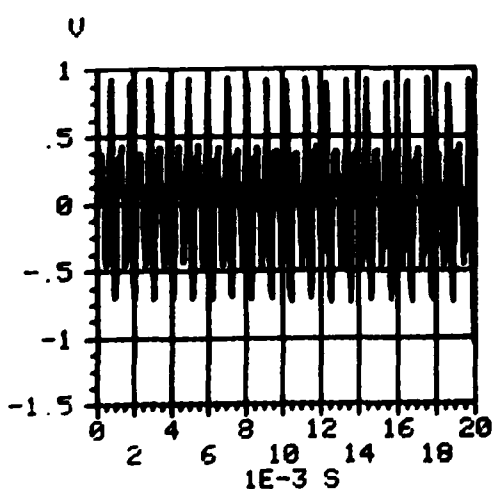
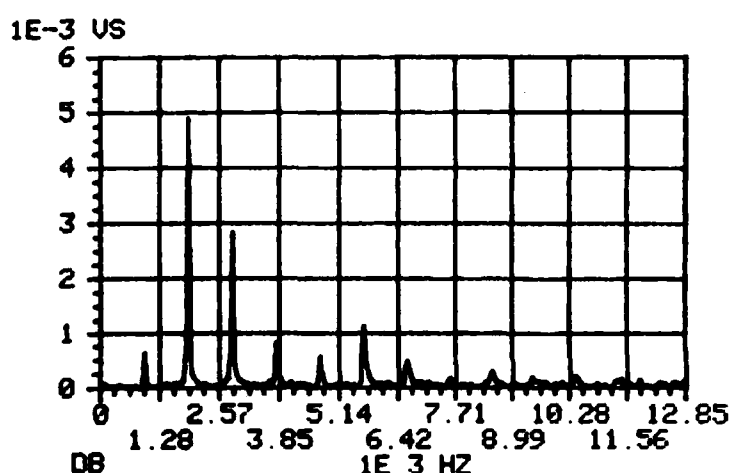
Alarm Test No. 10A
 Alarm Type: FALCON
 SAFETY PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 77 °F
 Pressure 25 psig
 Flowrate 6.4 std l/m
 Meter Setting 90 dB



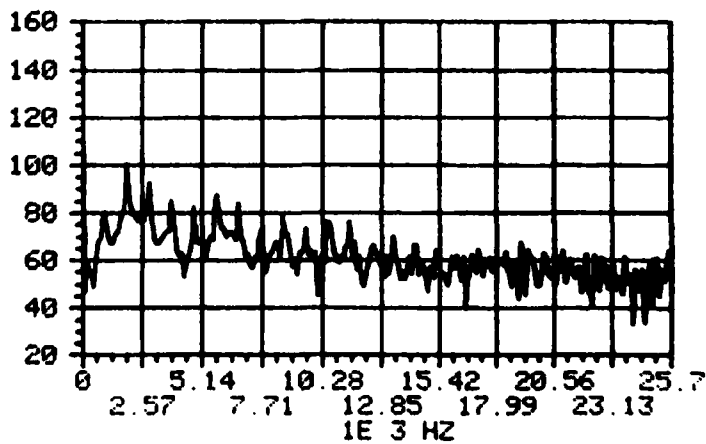
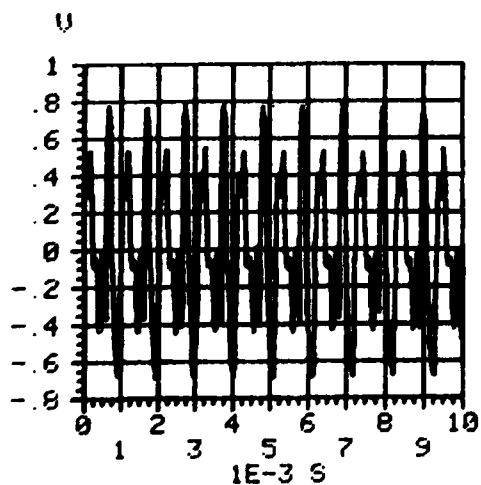
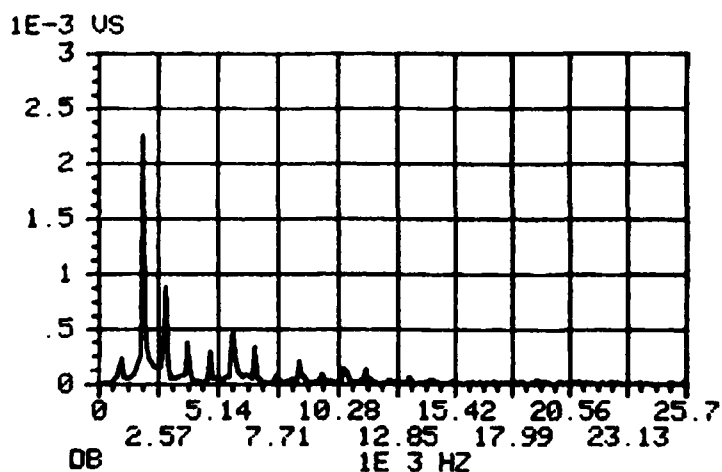
Alarm Test No. 10B
 Alarm Type: FALCON
SAFETY PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 77 °F
 Pressure 20 psig
 Flowrate 5.76 std l/m
 Meter Setting 90 dB



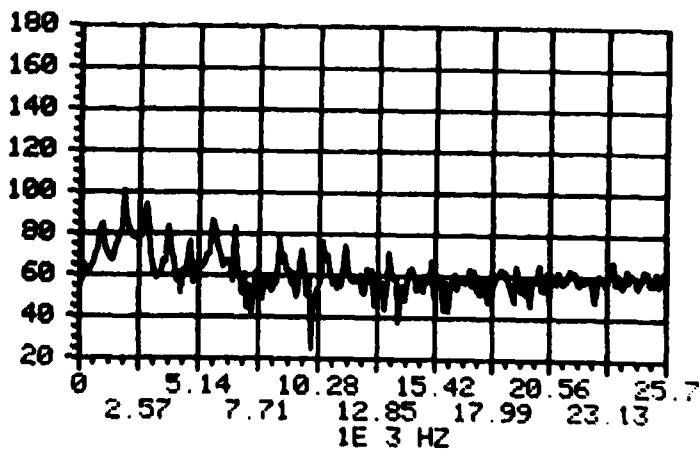
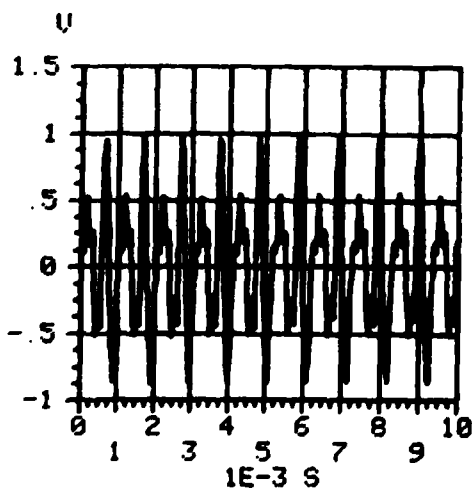
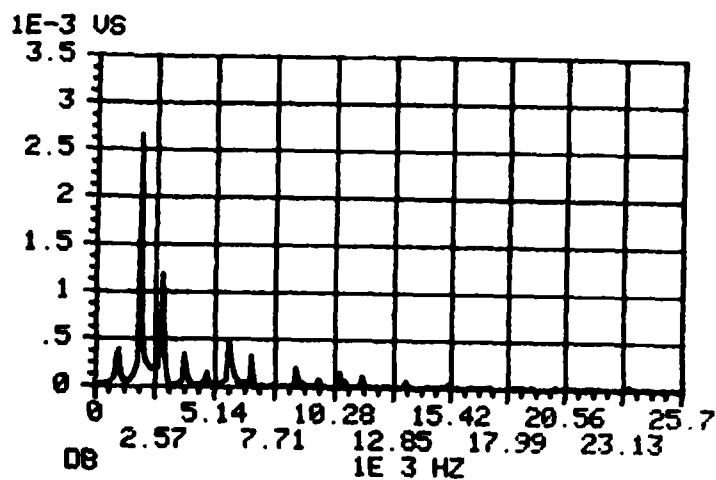
Alarm Test No. 108
 Alarm Type: FALCON
SAFETY PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 77 °F
 Pressure 20 psig
 Flowrate 5.76 std l/m
 Meter Setting 90 dB



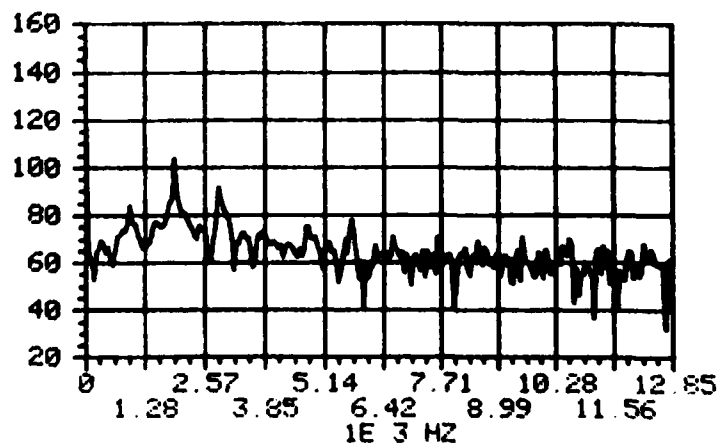
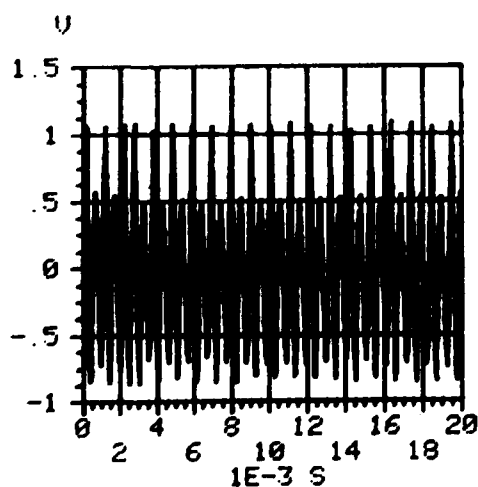
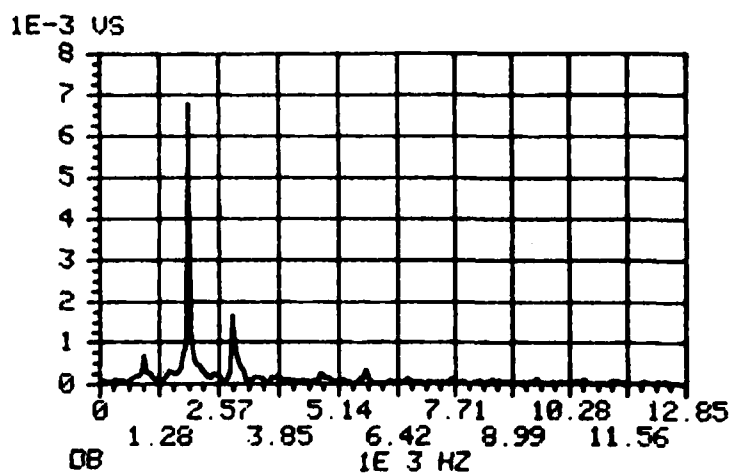
Alarm Test No. 108
 Alarm Type: FALCON
 SAFETY PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 77 °F
 Pressure 20 psig
 Flowrate 5.76 std l/m
 Meter Setting 90 dB



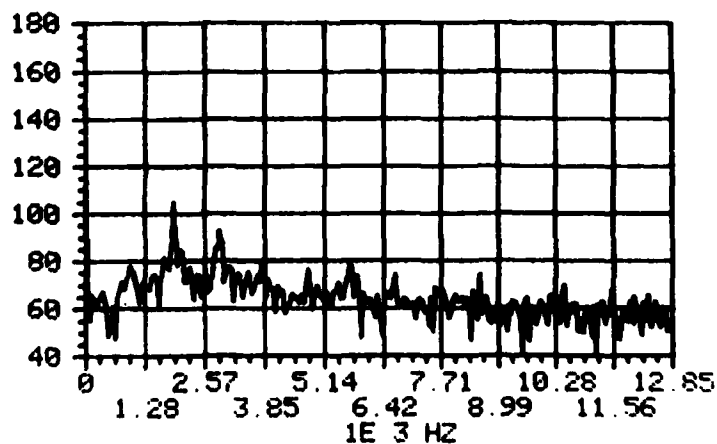
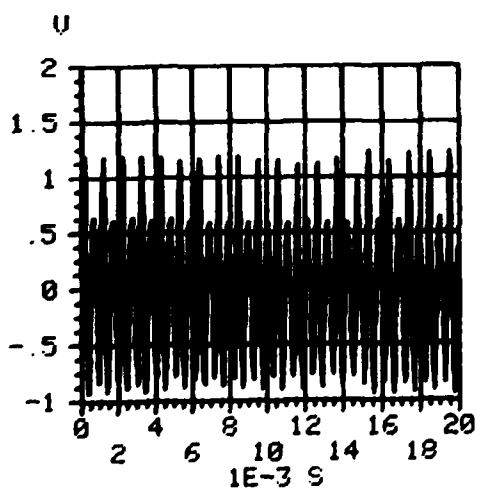
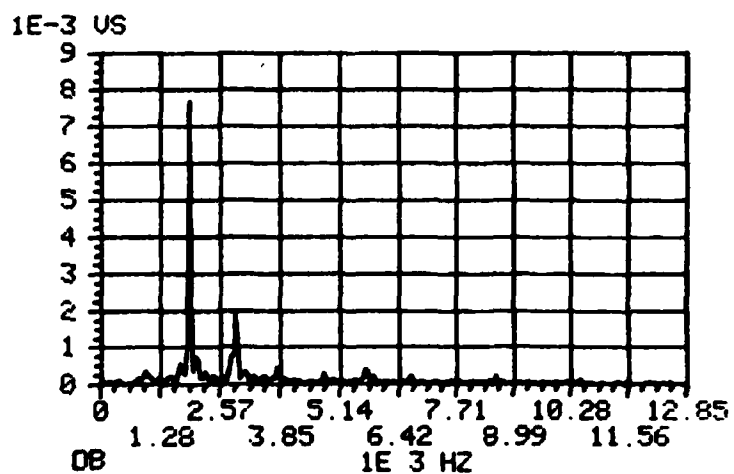
Alarm Test No. 10B
 Alarm Type: FALCON
SAFETY PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 77 °F
 Pressure 20 psig
 Flowrate 5.76 std l/m
 Meter Setting 90 dB



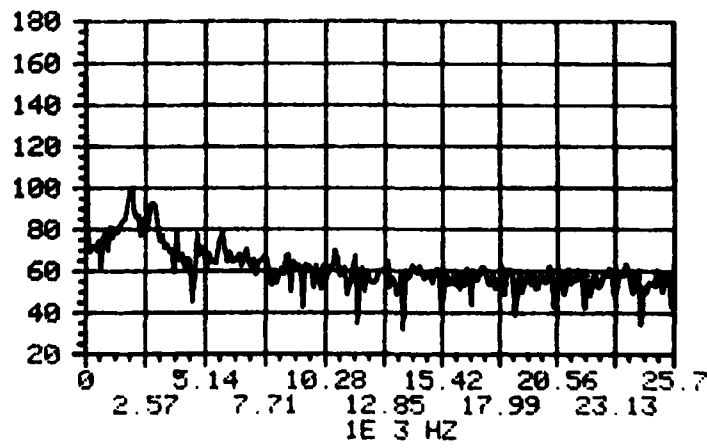
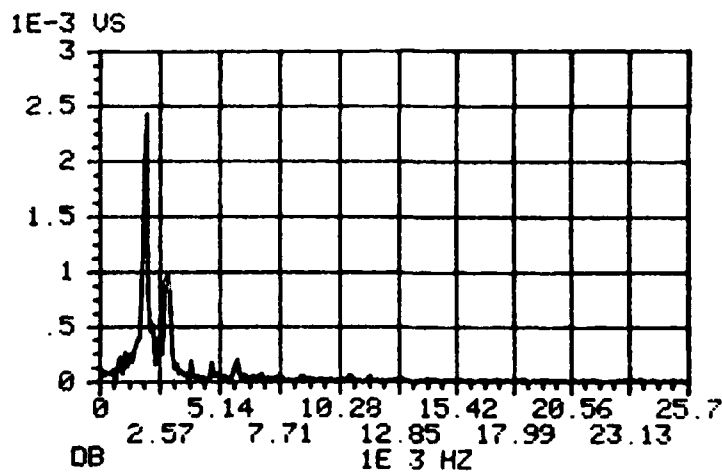
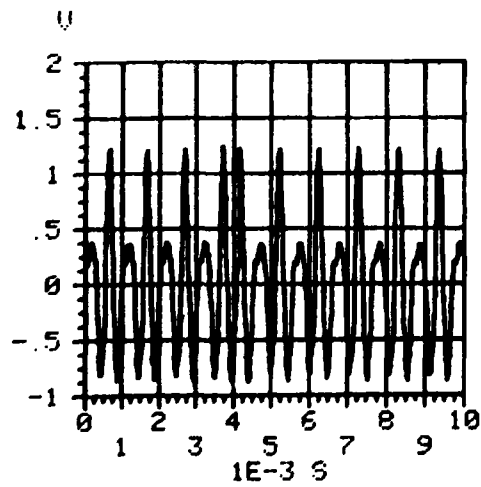
Alarm Test No. 10C
 Alarm Type: FALCON
SAFETY PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 76 °F
 Pressure 15 psig
 Flowrate 5.76 std l/m
 Meter Setting 90 dB



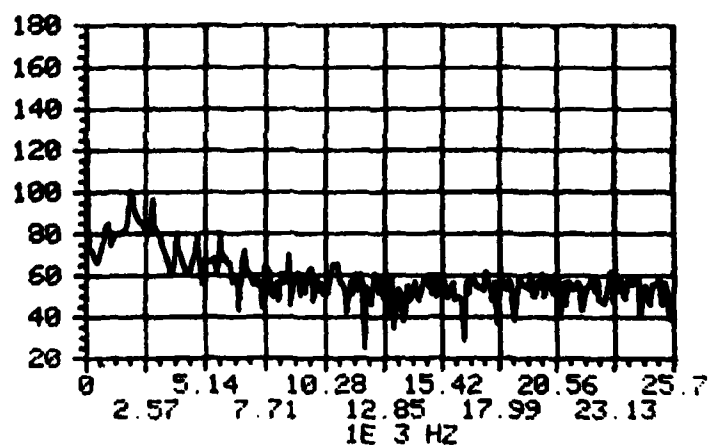
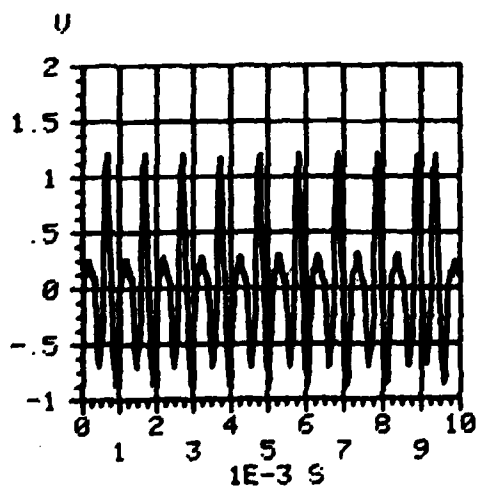
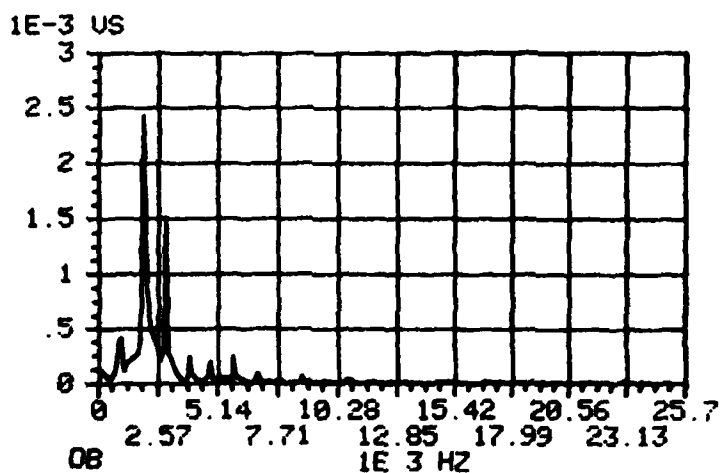
Alarm Test No. 10C
 Alarm Type: FALCON
SAFETY PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 76 °F
 Pressure 15 psig
 Flowrate 5.76 std l/m
 Meter Setting 90 dB



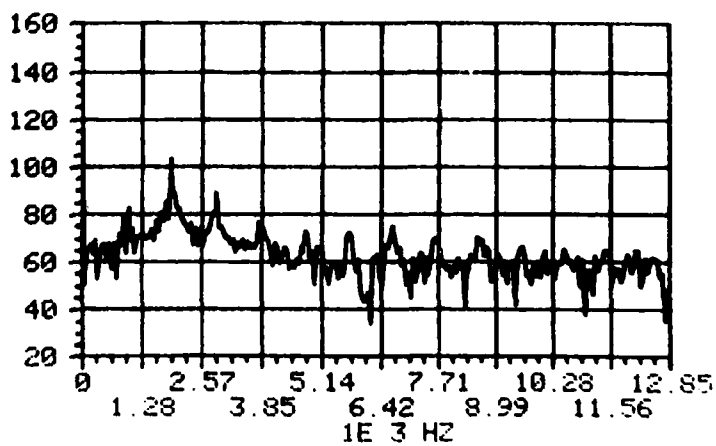
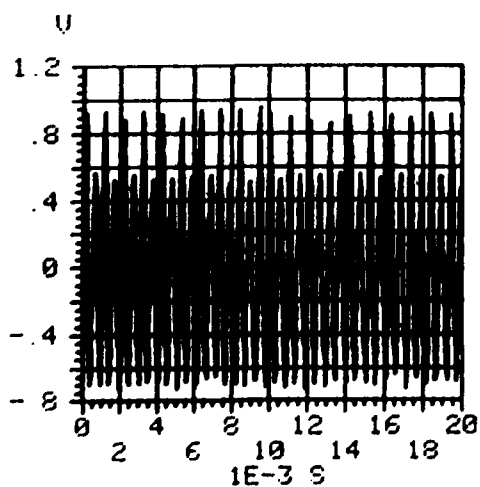
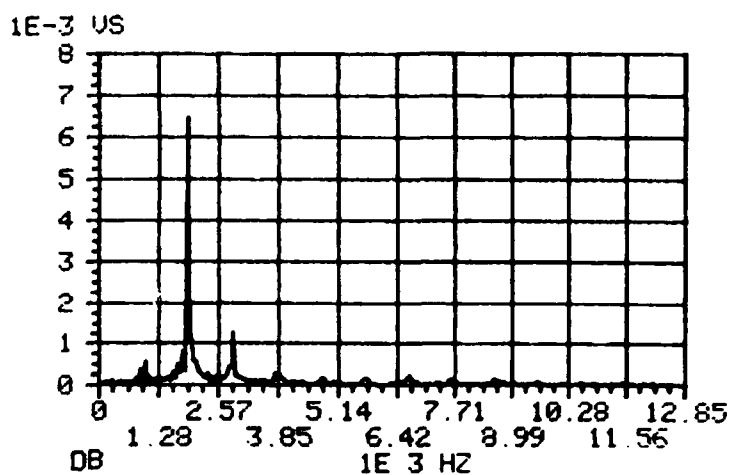
Alarm Test No. 10C
 Alarm Type: FALCON
SAFETY PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 76 °F
 Pressure 15 psig
 Flowrate 5.76 std l/m
 Meter Setting 90 dB



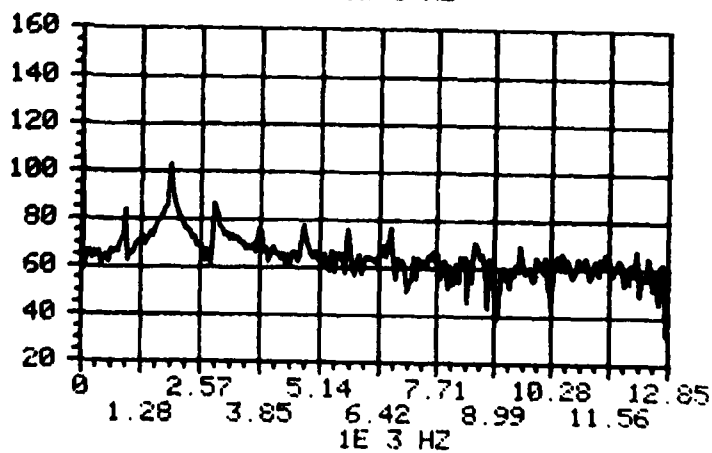
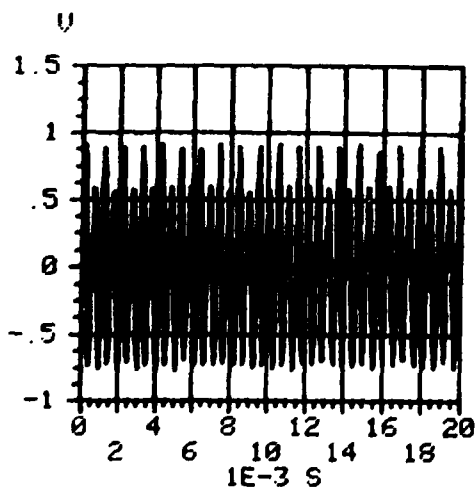
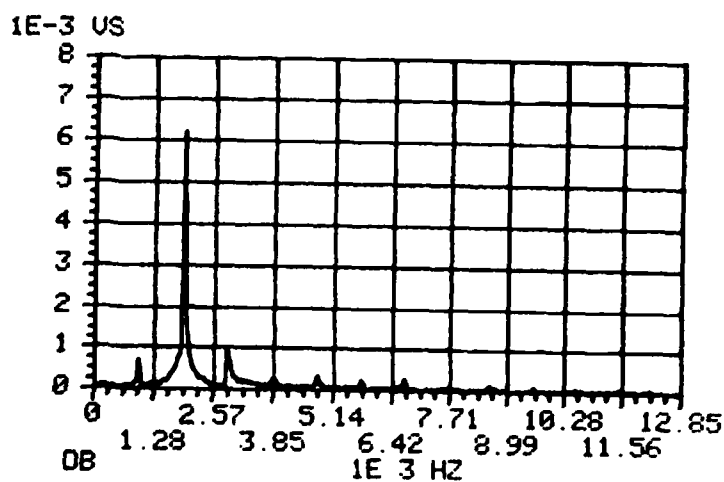
Alarm Test No. 10C
 Alarm Type: FALCON
SAFETY PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 76 °F
 Pressure 15 psig
 Flowrate 5.76 std l/m
 Meter Setting 90 dB



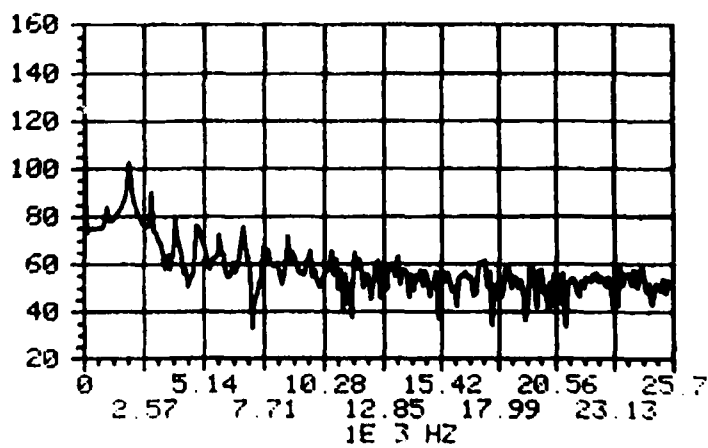
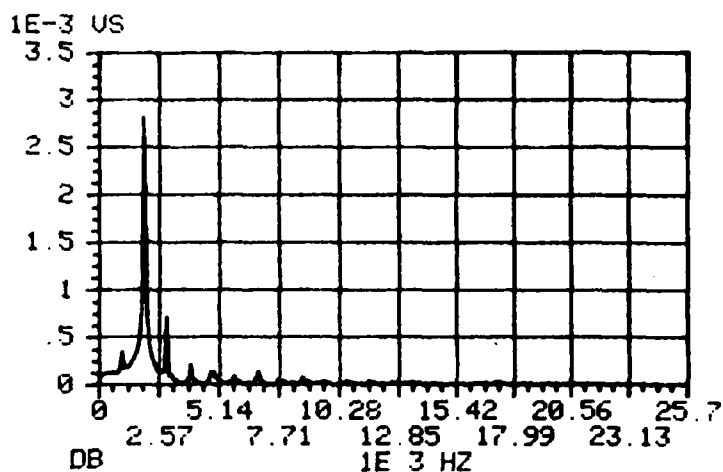
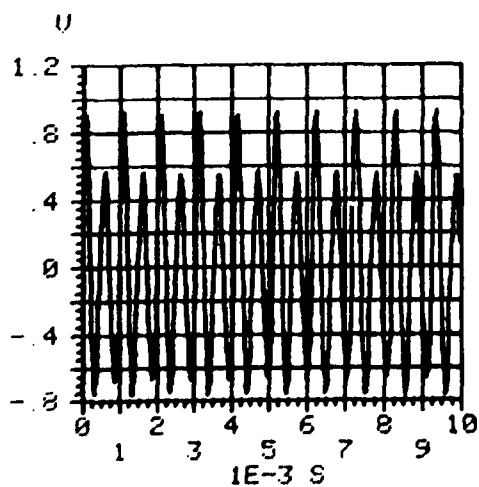
Alarm Test No. 10D
 Alarm Type: FALCON SAFETY
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 78 °F
 Pressure 11 psig
 Flowrate 3.84 std l/m
 Meter Setting 90 dB



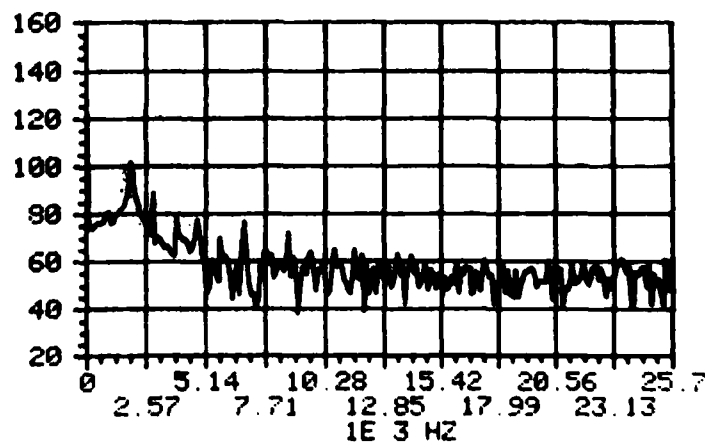
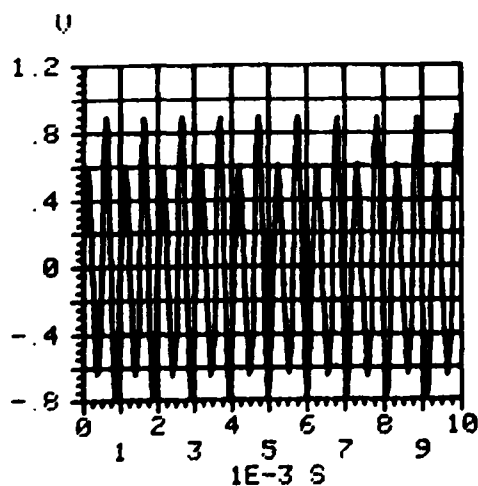
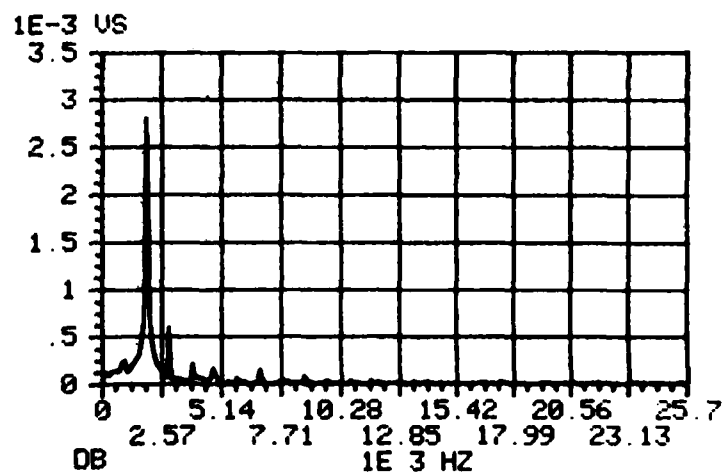
Alarm Test No. 100
 Alarm Type: FALCON SAFETY
PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 78 °F
 Pressure 11 psig
 Flowrate 3.84 std l/m
 Meter Setting 90 dB



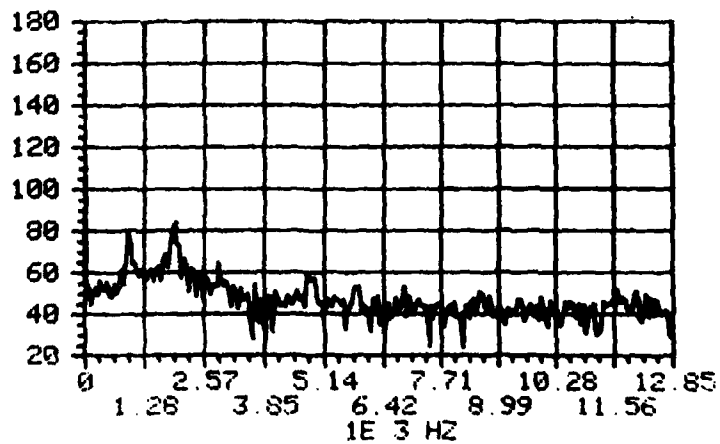
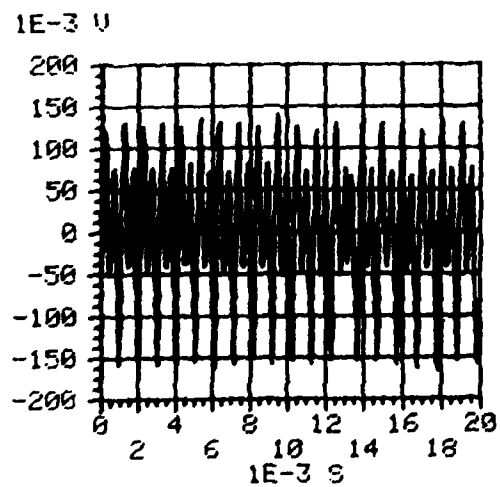
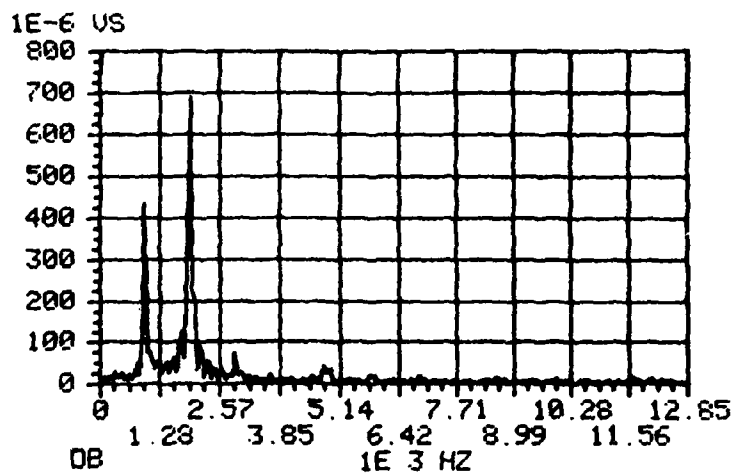
Alarm Test No. 10D
 Alarm Type: FALCON SAFETY
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 78 °F
 Pressure 11 psig
 Flowrate 3.84 std l/m
 Meter Setting 90 dB



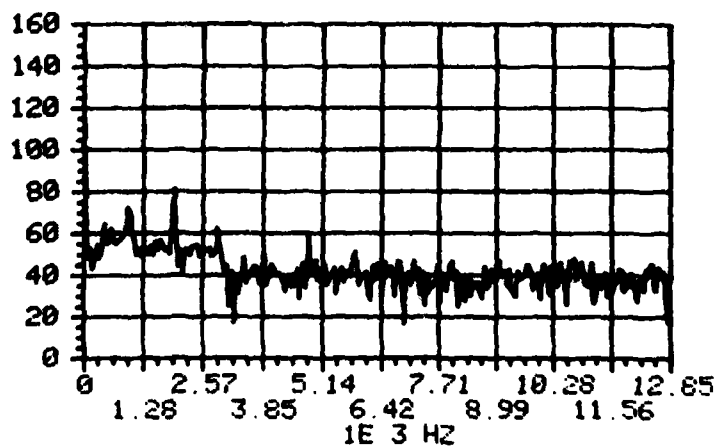
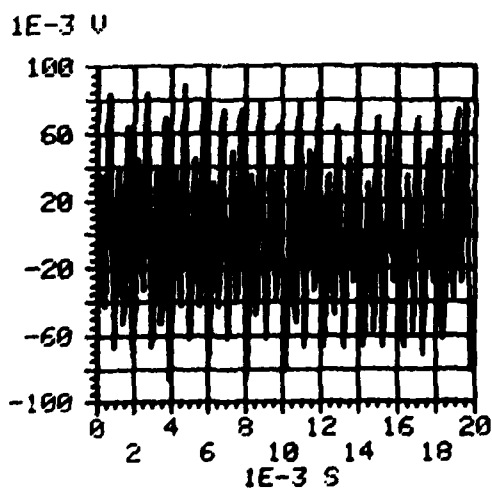
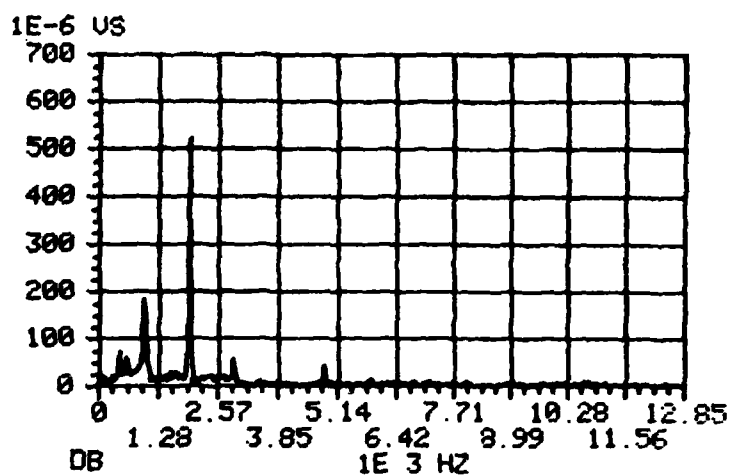
Alarm Test No. 10D
 Alarm Type: FALCON SAFETY
PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 78 °F
 Pressure 11 psig
 Flowrate 3.84 std l/m
 Meter Setting 90 dB



Alarm Test No. 10E
 Alarm Type: FALCON
 SAFETY PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 74 °F
 Pressure 4 psig
 Flowrate .64 std l/m
 Meter Setting 90 dB

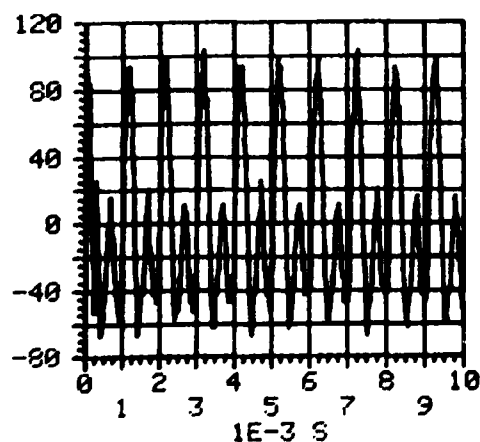


Alarm Test No. 10E
 Alarm Type: FALCON
 SAFETY PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 74 °F
 Pressure 4 psig
 Flowrate .64 std l/m
 Meter Setting 90 dB

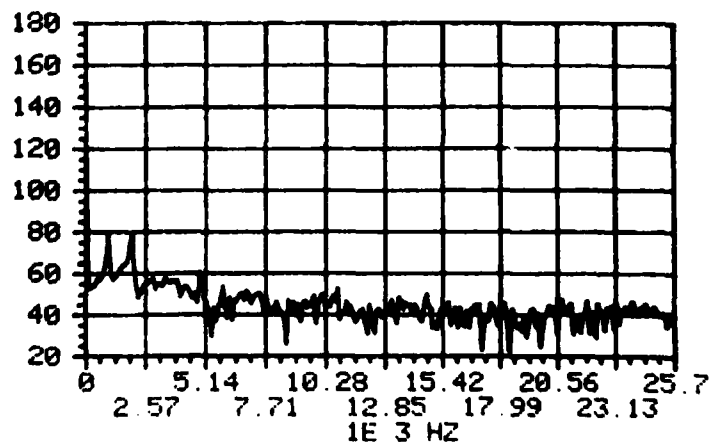
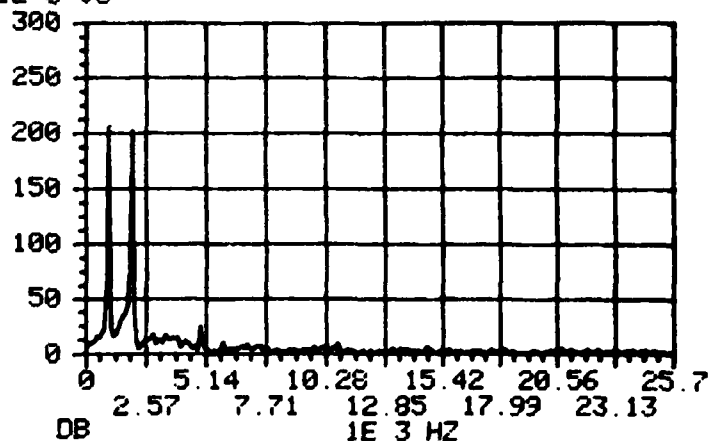


Alarm Test No. 10E
 Alarm Type: FALCON
SAFETY PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 74 °F
 Pressure 4 psig
 Flowrate .64 std l/m
 Meter Setting 90 dB

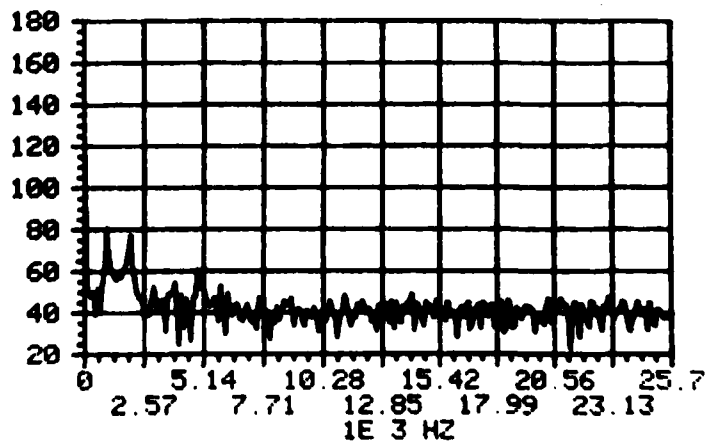
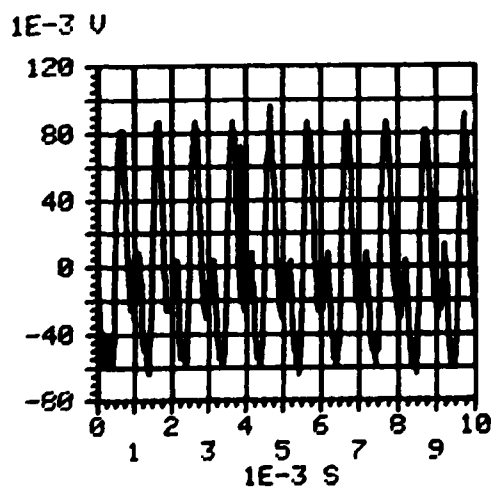
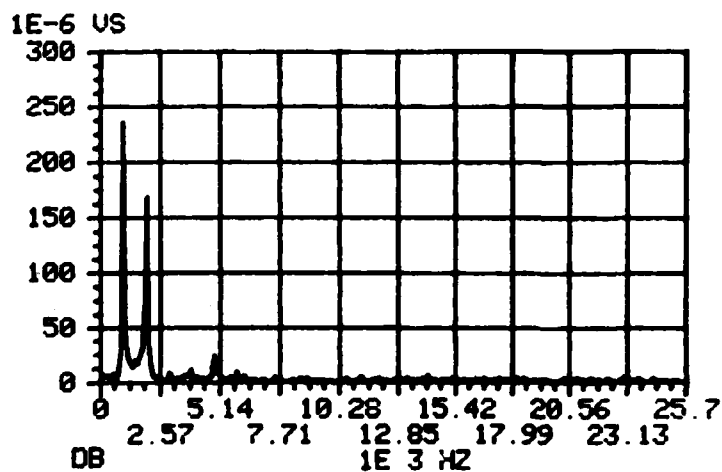
1E-3 V



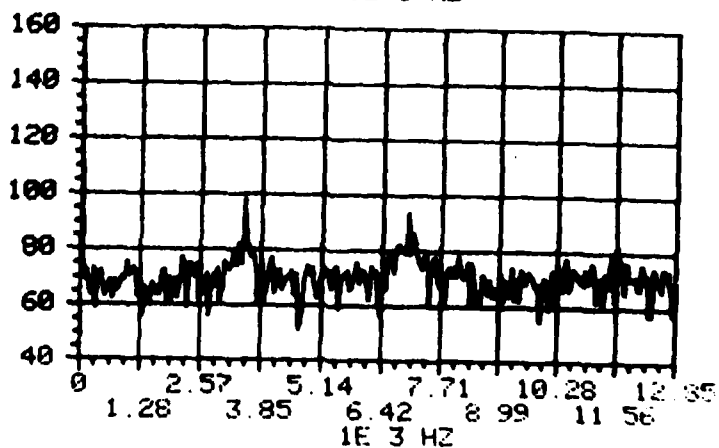
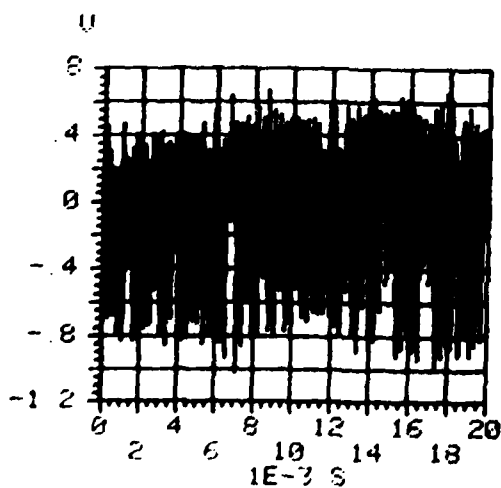
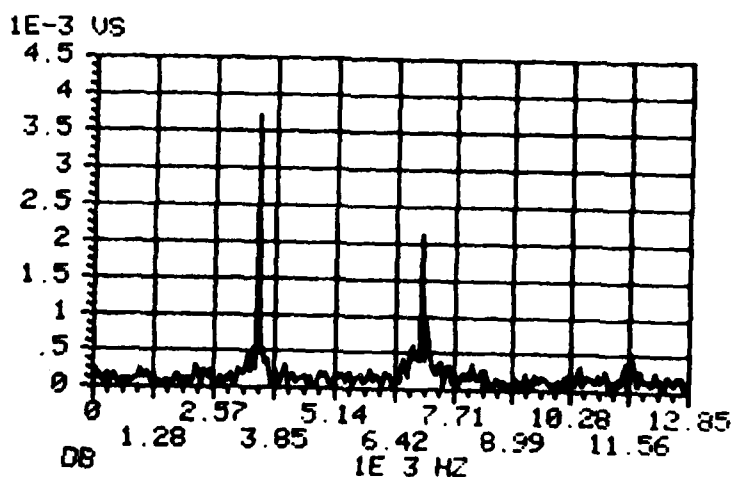
1E-6 US



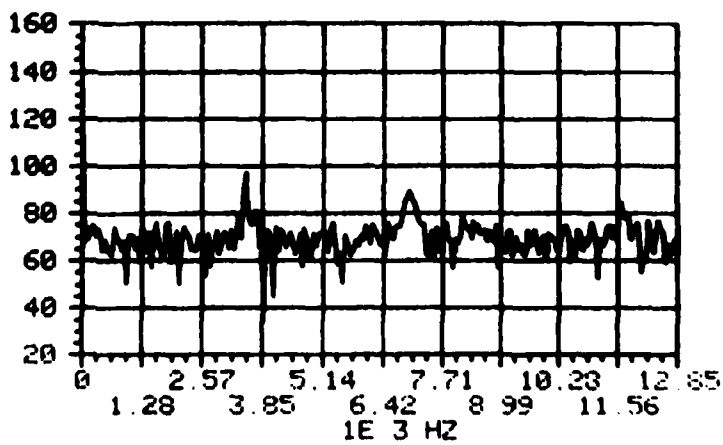
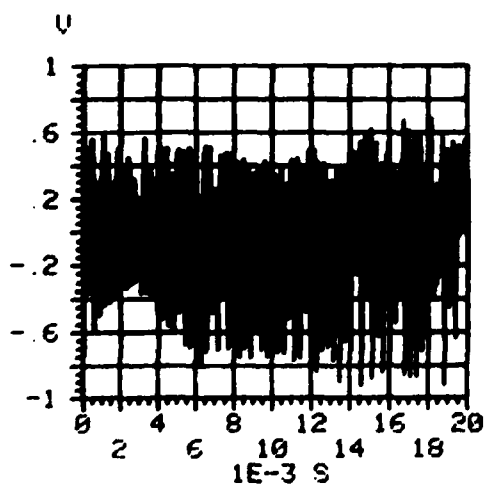
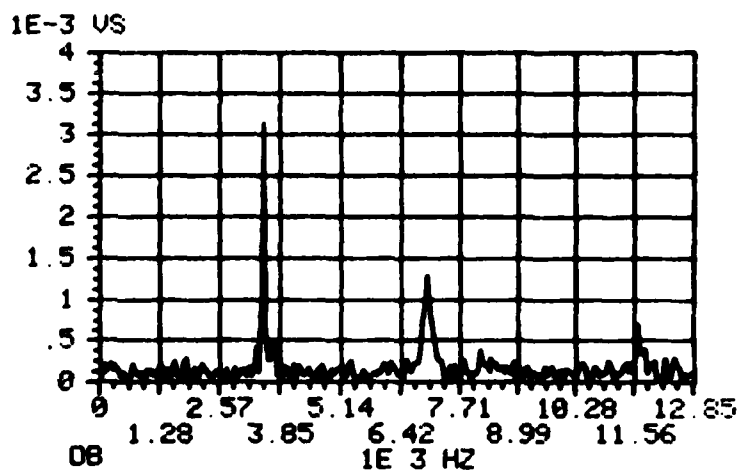
Alarm Test No. 10E
 Alarm Type: FALCON
SAFETY PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 74 °F
 Pressure 4 psig
 Flowrate .64 std l/m
 Meter Setting 90 dB



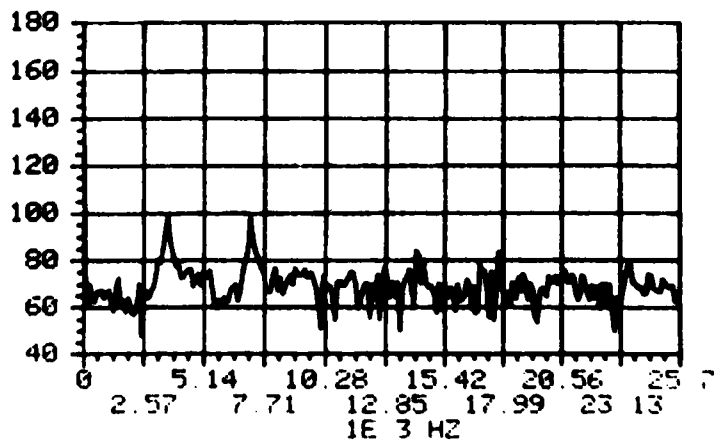
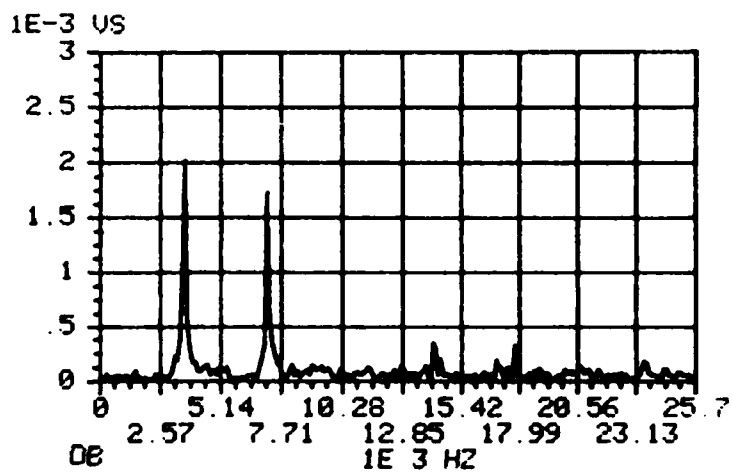
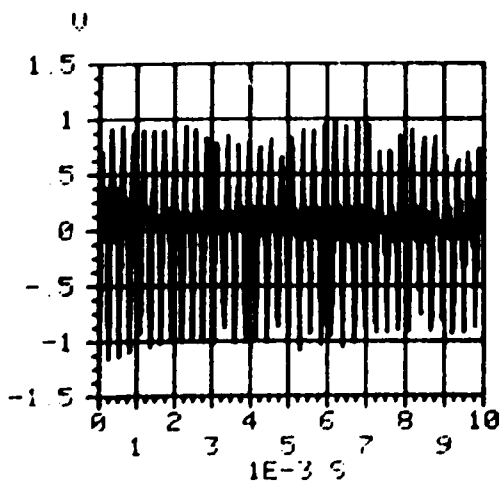
Alarm Test No. 11A
 Alarm Type: QUALCO
PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 75 °F
 Pressure 17 psig
 Flowrate 16.00 std l/m
 Meter Setting 90 dB



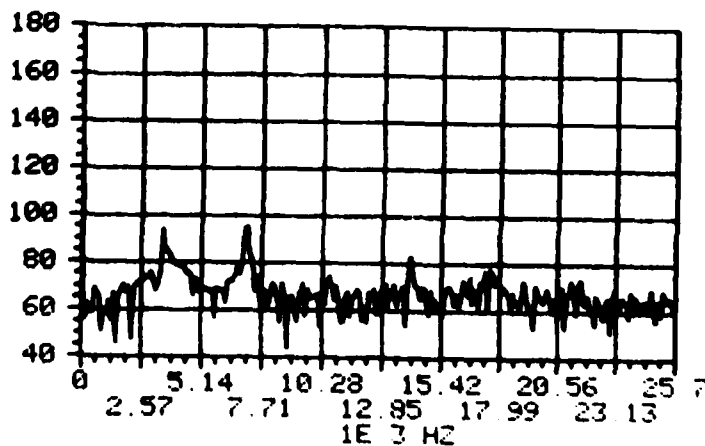
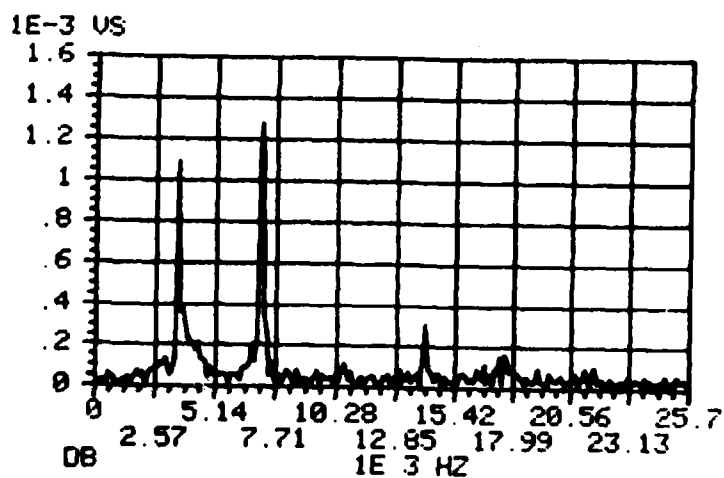
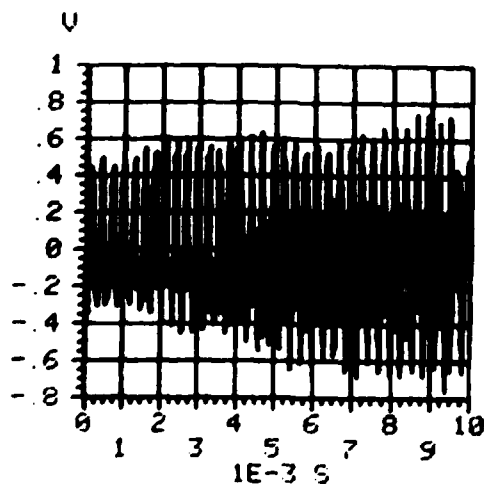
Alarm Test No. 11A
 Alarm Type: QUALCO
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 75 °F
 Pressure 17 psig
 Flowrate 16.00 std l/m
 Meter Setting 90 dB



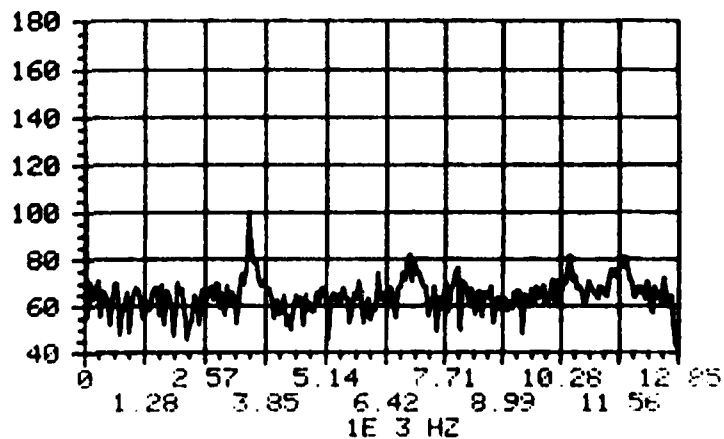
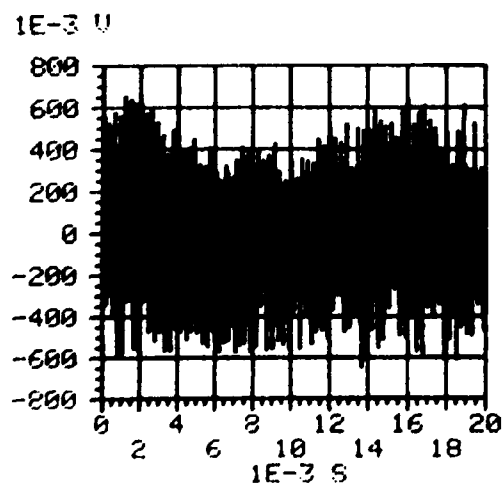
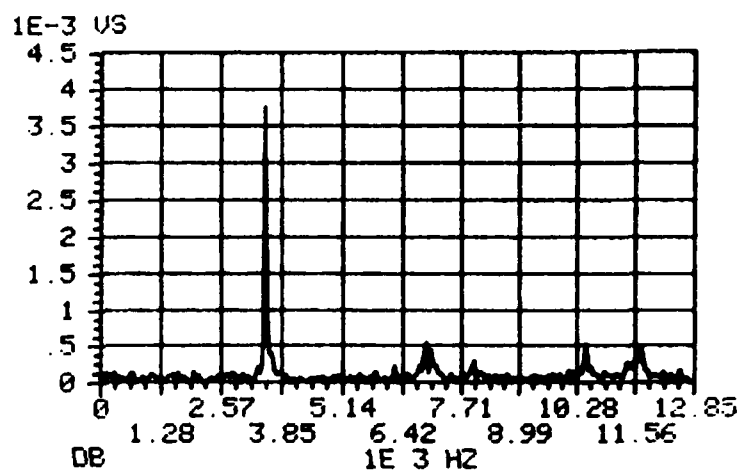
Alarm Test No. 11A
 Alarm Type: QUALCO
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 75 °F
 Pressure 17 psig
 Flowrate 16.00 std l/m
 Meter Setting 90 dB



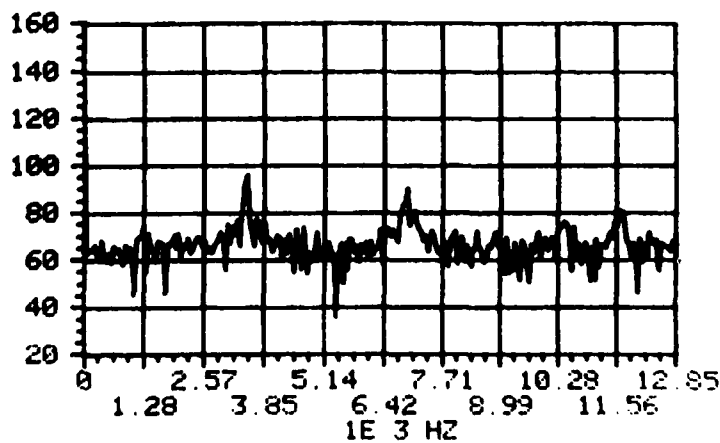
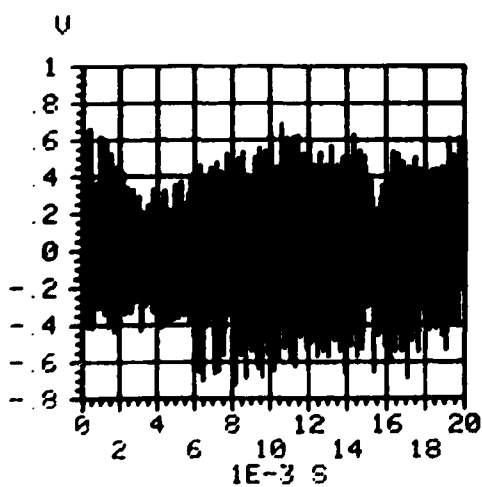
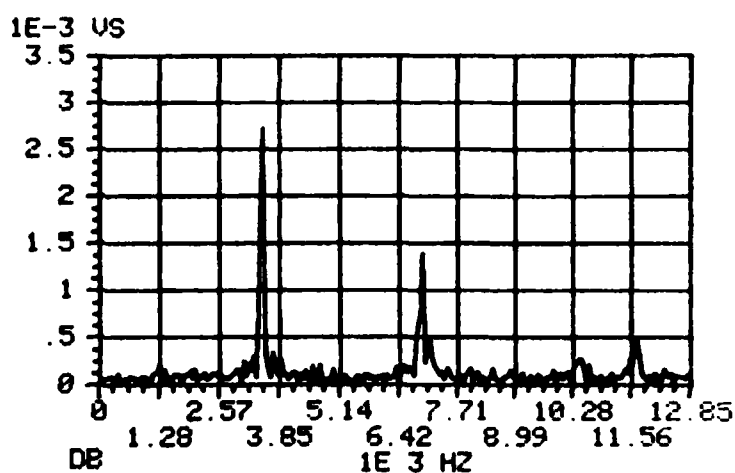
Alarm Test No. 11A
 Alarm Type: QUALCO
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 75 °F
 Pressure 17 psig
 Flowrate 16.00 std l/m
 Meter Setting 90 dB



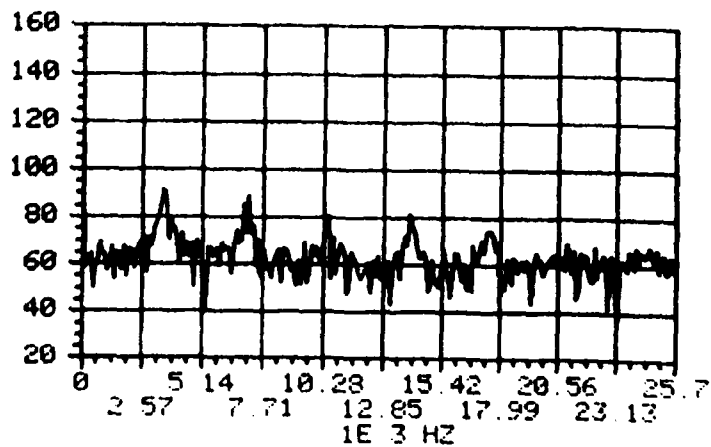
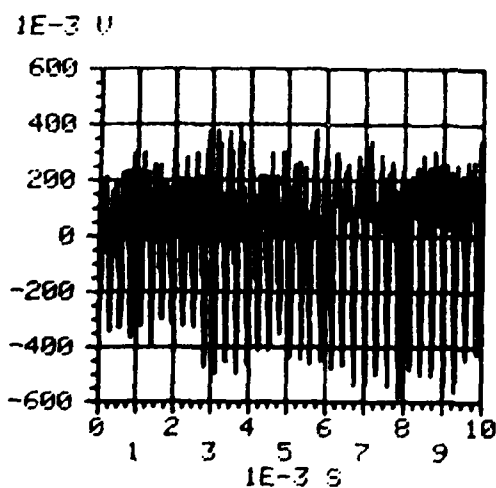
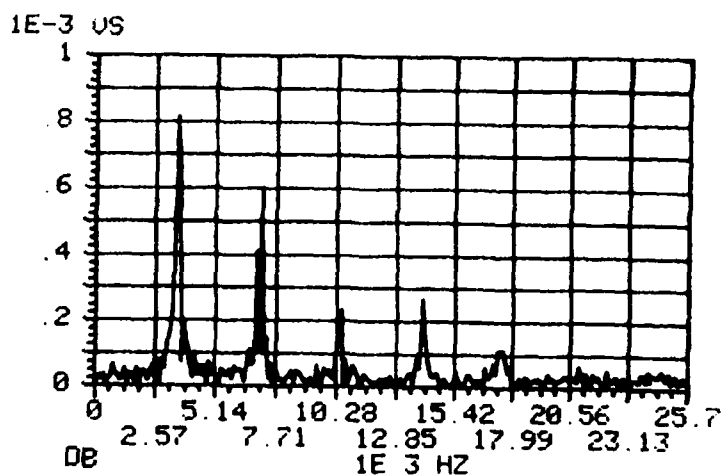
Alarm Test No. 11B
 Alarm Type: QUALCO
PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 70 °F
 Pressure 16 psig
 Flowrate 15.36 std l/m
 Meter Setting 90 dB



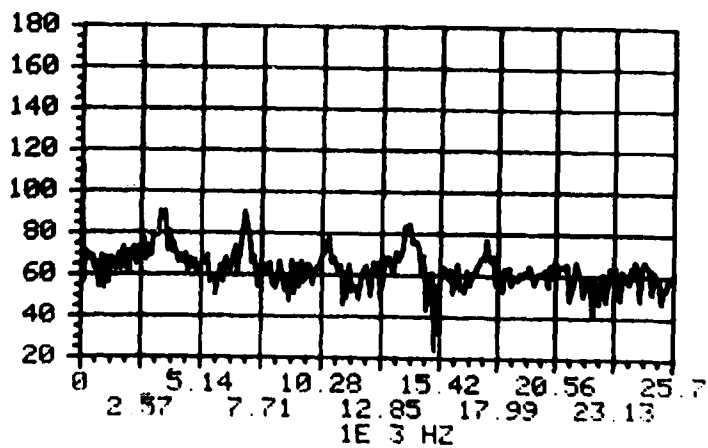
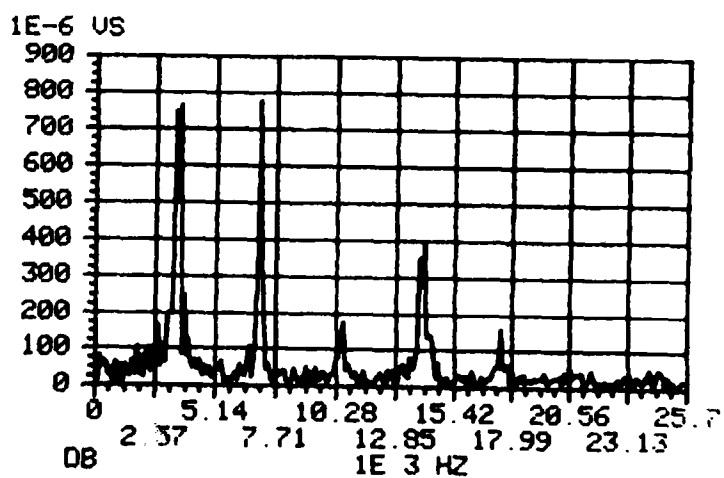
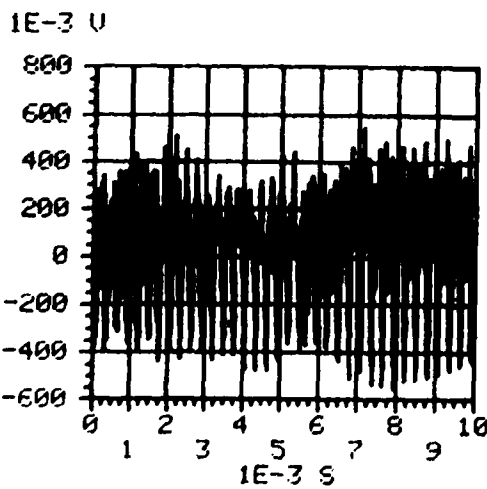
Alarm Test No. 11B
 Alarm Type: QUALCO
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 70 °F
 Pressure 16 psig
 Flowrate 15.36 std l/m
 Meter Setting 90 dB



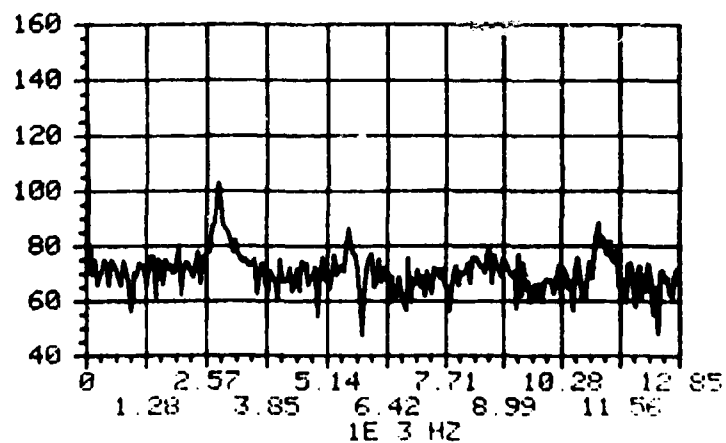
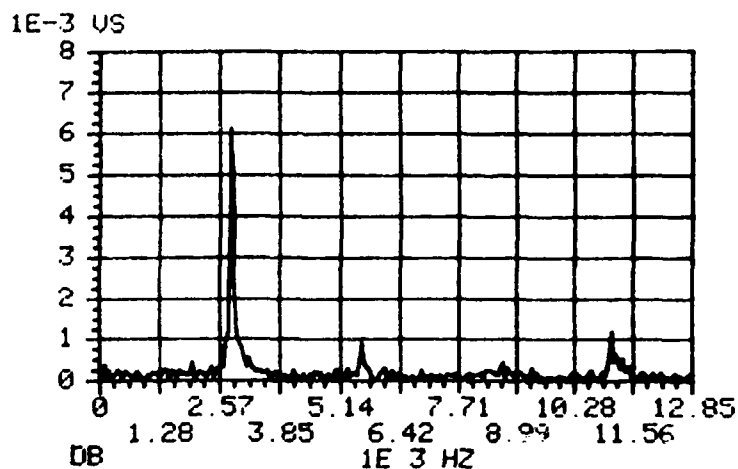
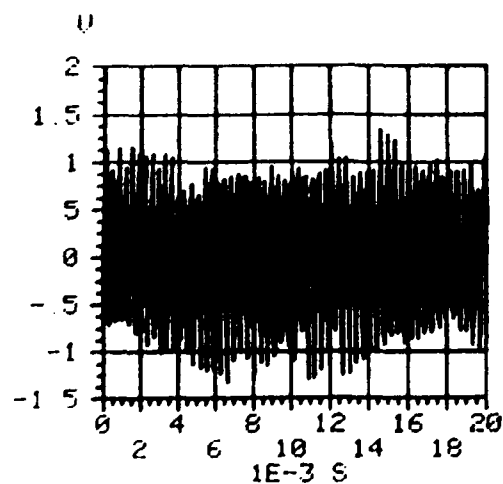
Alarm Test No. 11B
 Alarm Type: QUALCO
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 70 °F
 Pressure 16 psig
 Flowrate 15.36 std l/m
 Meter Setting 90 dB



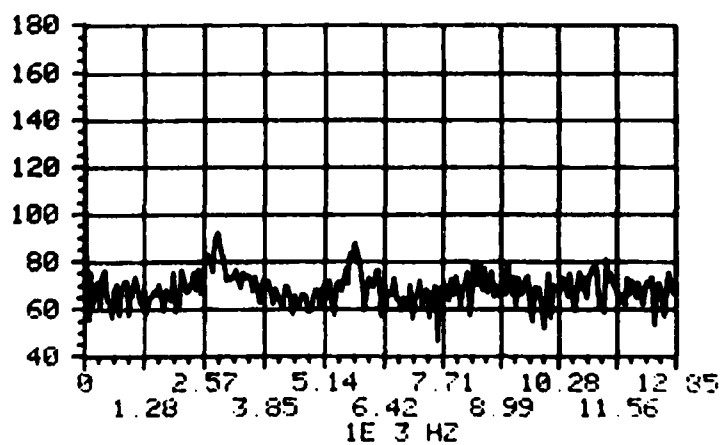
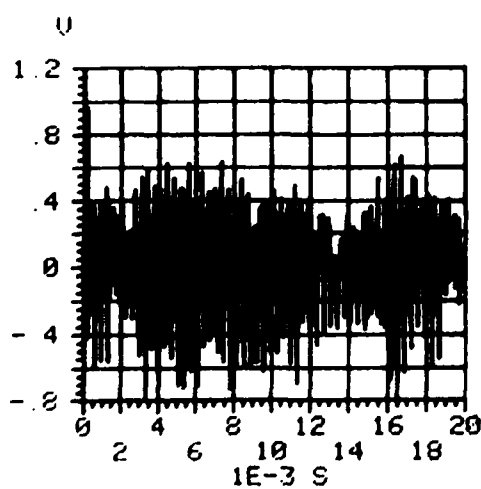
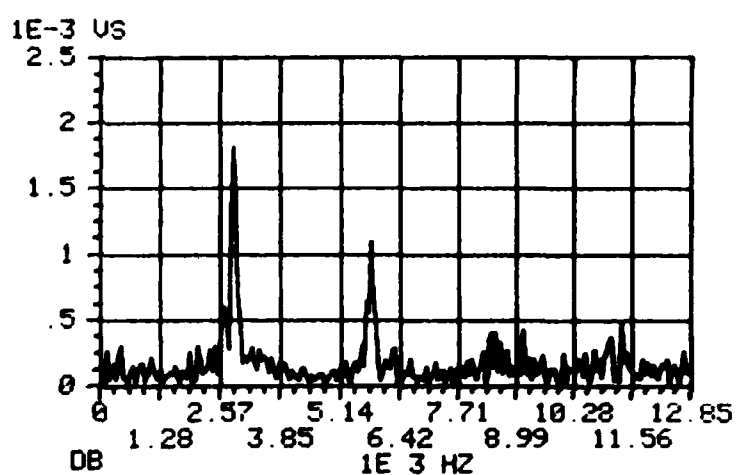
Alarm Test No. 11B
 Alarm Type: QUALCO
PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 70 °F
 Pressure 16 psig
 Flowrate 15.36 std l/m
 Meter Setting 90 dB



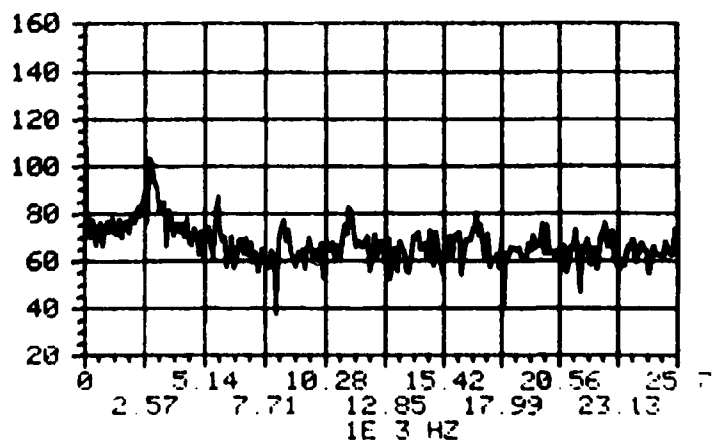
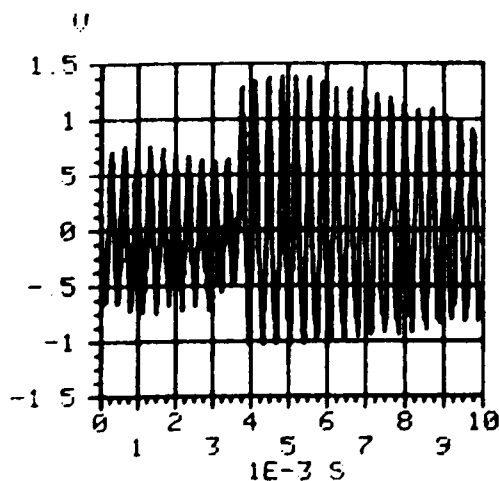
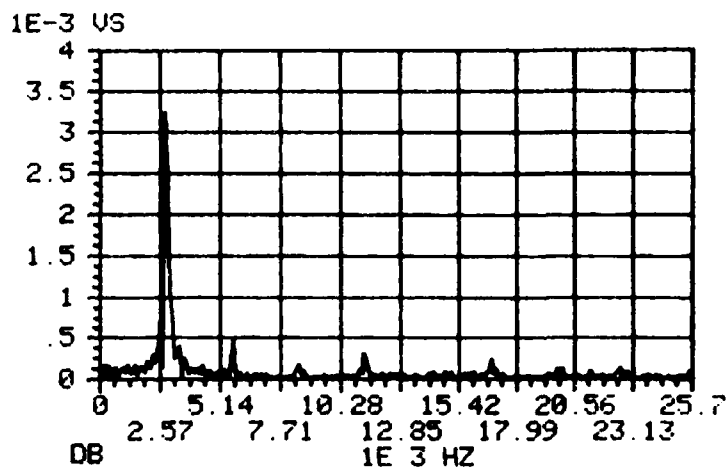
Alarm Test No. 11C
 Alarm Type: PETERZELL CO.
 Driving Vapor FREON 12
 Temperature 72 °F
 Pressure 17 psig
 Flowrate 10.24 std l/m
 Meter Setting 90 dB



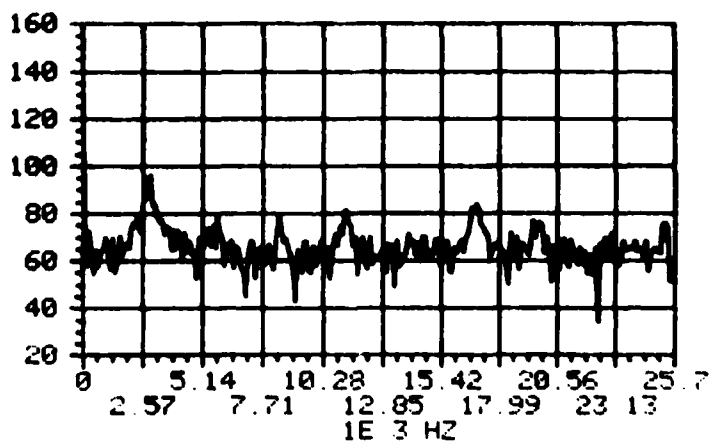
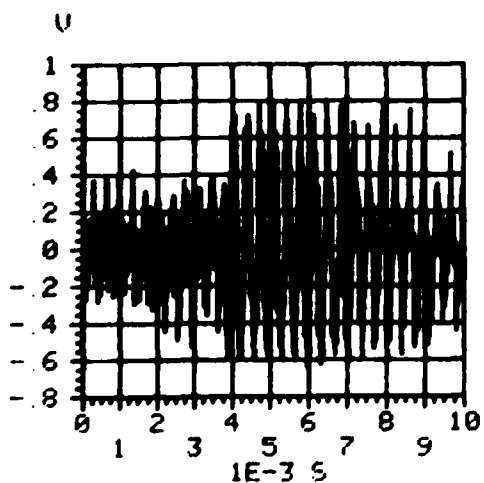
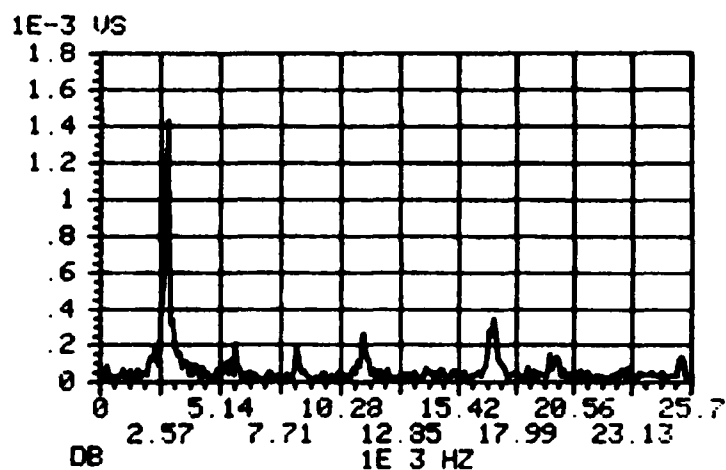
Alarm Test No. 11C
 Alarm Type: PETERZELL CO.
 Driving Vapor FREON 12
 Temperature 72 °F
 Pressure 17 psig
 Flowrate 10.24 std l/m
 Meter Setting 90 dB



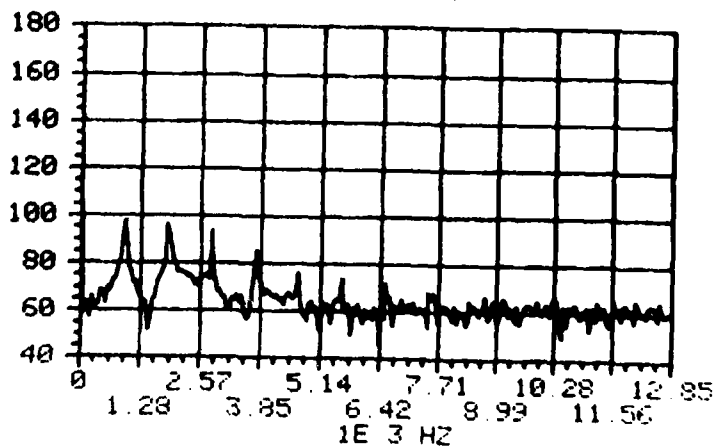
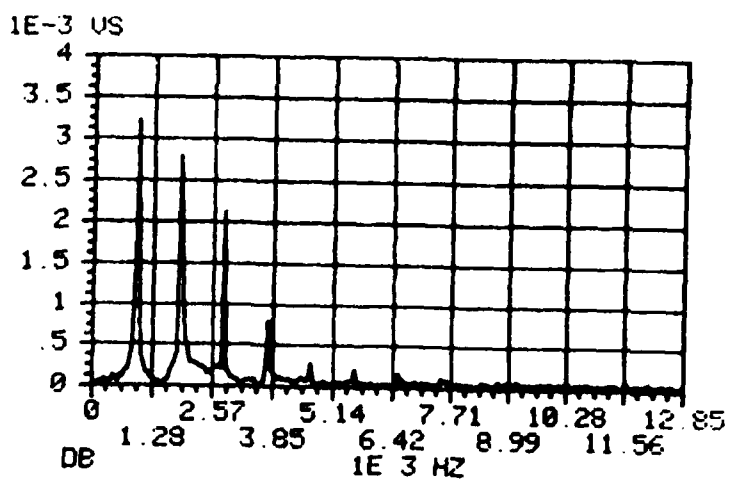
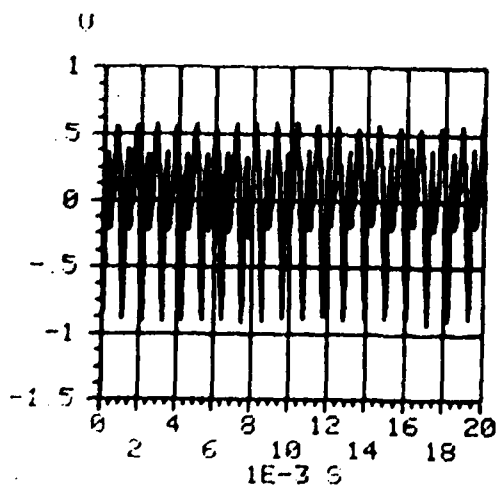
Alarm Test No. 11C
 Alarm Type: PETERZELL CO.
 Driving Vapor FREON 12
 Temperature 72 °F
 Pressure 17 psig
 Flowrate 10.24 std l/m
 Meter Setting 90 dB



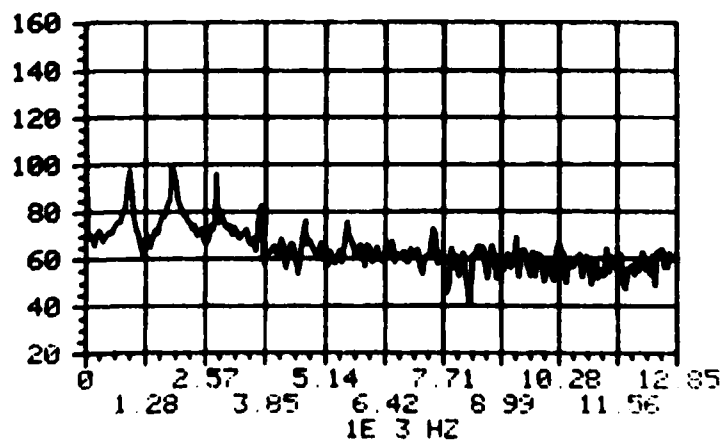
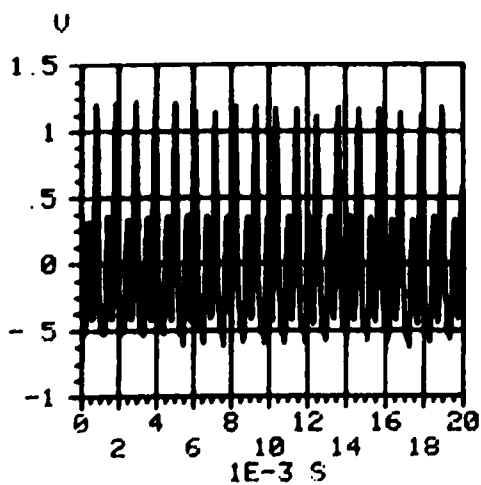
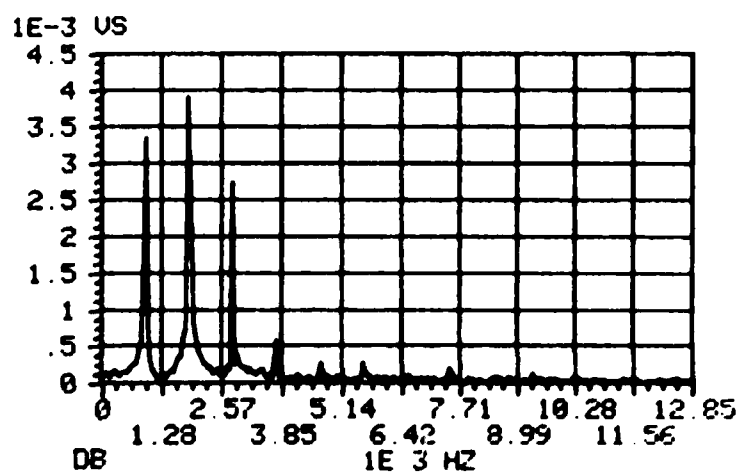
Alarm Test No.	11C
Alarm Type:	PETERZELL CO.
Driving Vapor	FREON 12
Temperature	72 °F
Pressure	17 psig
Flowrate	10.24 std l/m
Meter Setting	90 dB



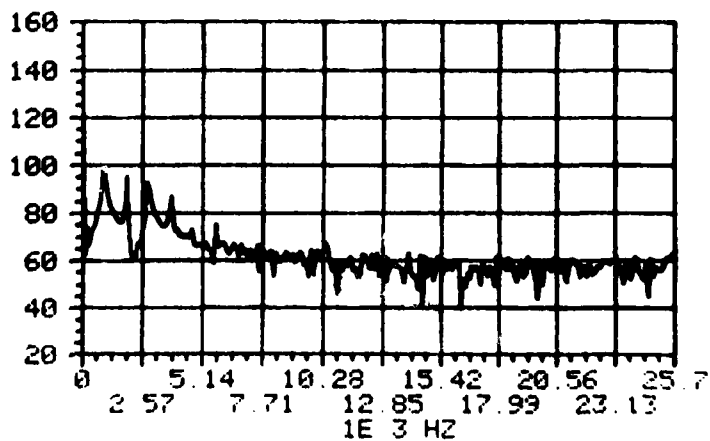
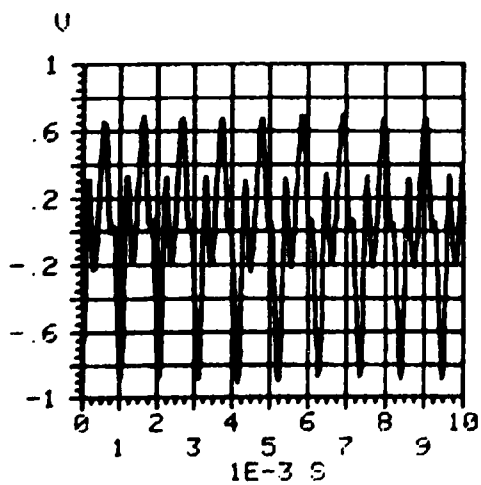
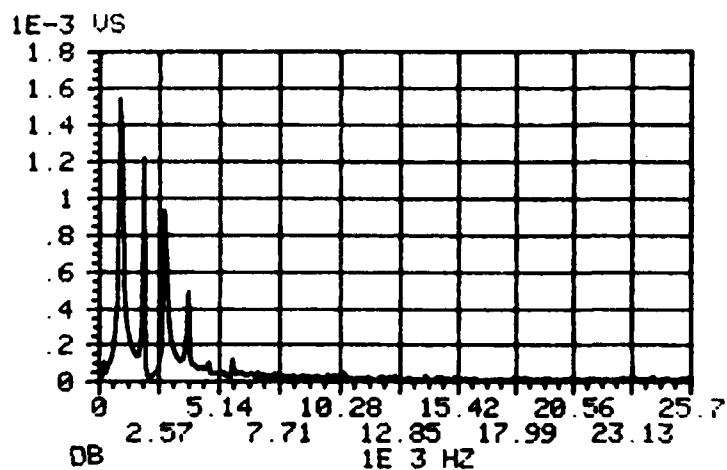
Alarm Test No. 11D
 Alarm Type: FALCON SAFETY
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 73 °F
 Pressure 25 psig
 Flowrate 5.76 std l/m
 Meter Setting 90 dB



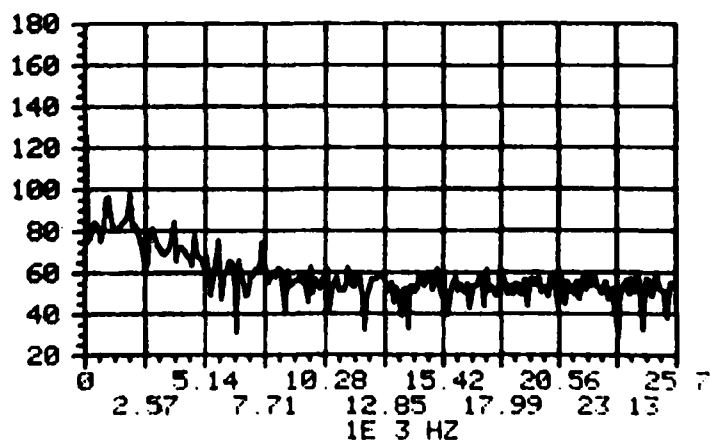
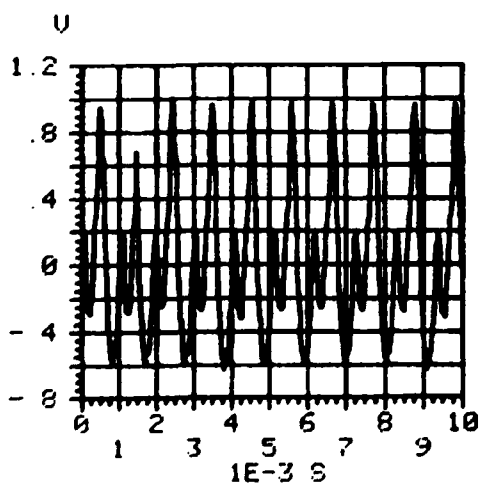
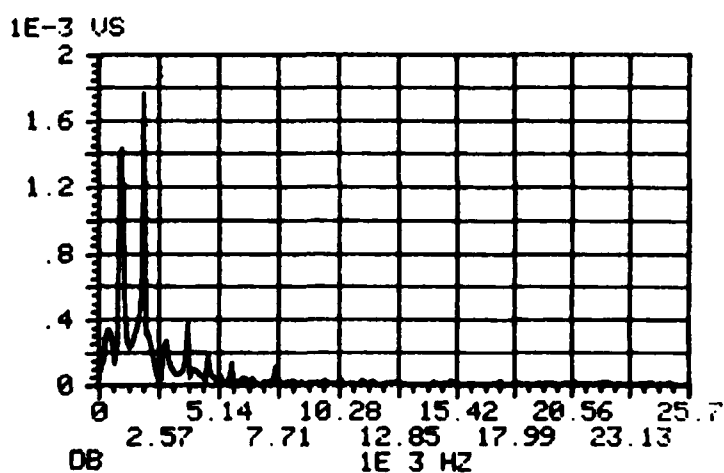
Alarm Test No. 110
 Alarm Type: FALCON SAFETY
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 73 °F
 Pressure 25 psig
 Flowrate 5.76 std l/m
 Meter Setting 90 dB



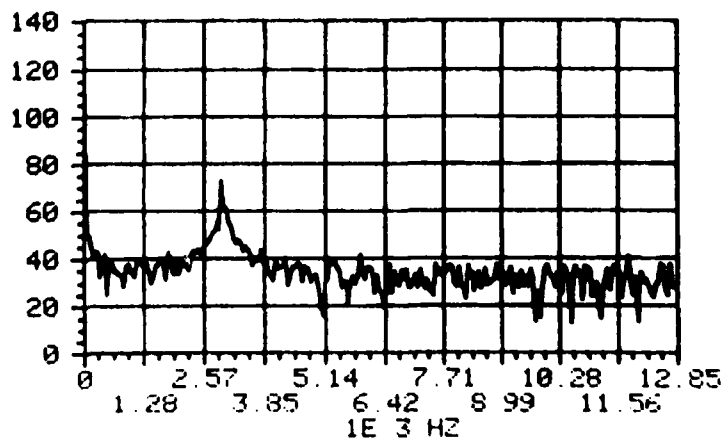
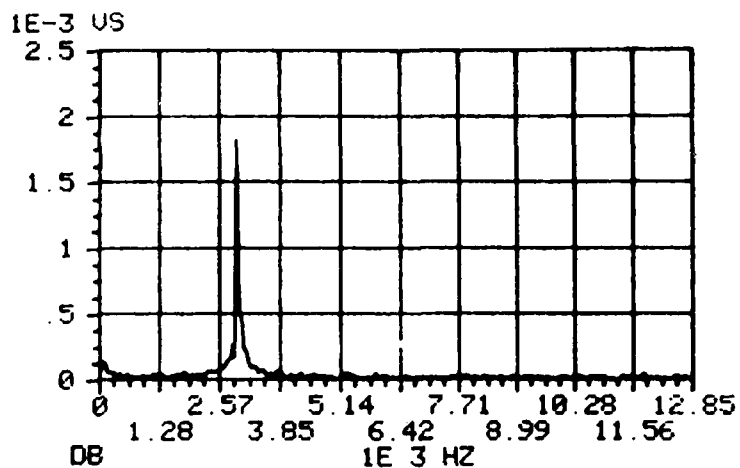
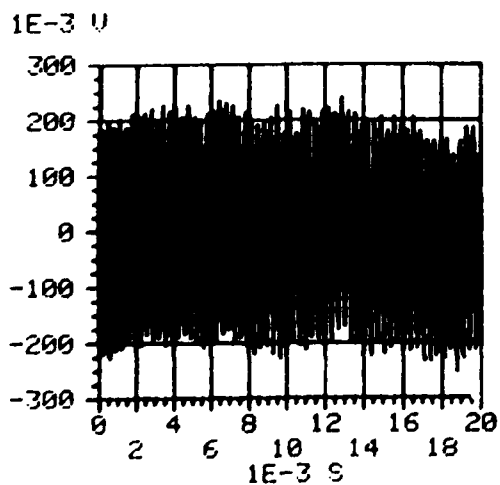
Alarm Test No. 110
 Alarm Type: FALCON SAFETY
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 73 °F
 Pressure 25 psig
 Flowrate 5.76 std l/m
 Meter Setting 90 dB



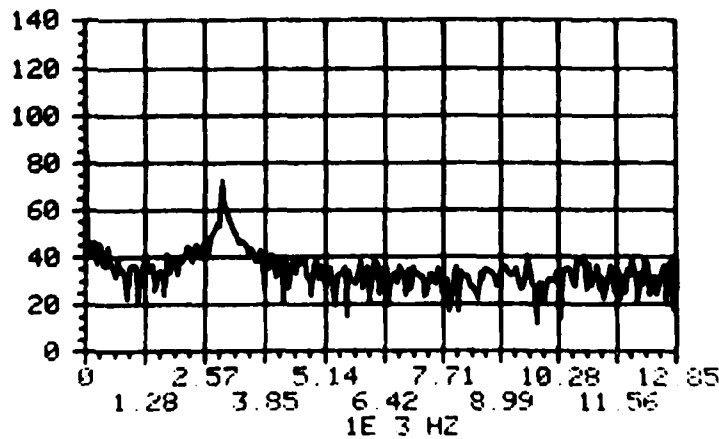
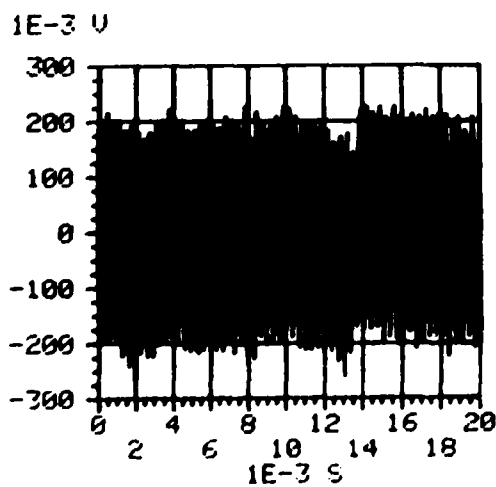
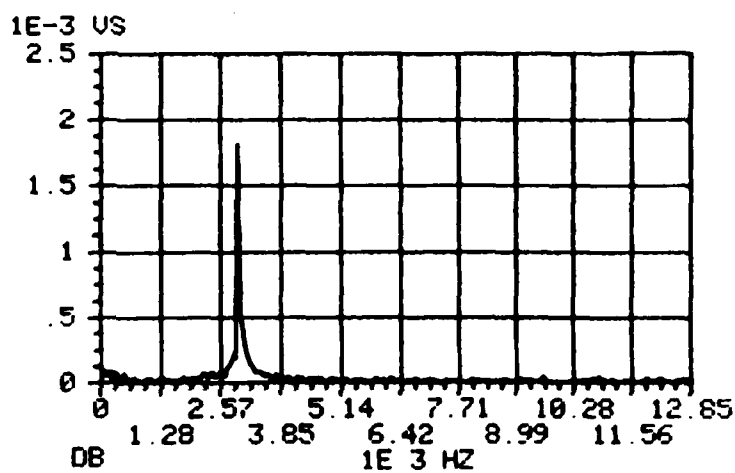
Alarm Test No. 11D
 Alarm Type: FALCON SAFETY
 PRODUCTS CO.
 Driving Vapor FREON 12
 Temperature 73 °F
 Pressure 25 psig
 Flowrate 5.76 std l/m
 Meter Setting 90 dB



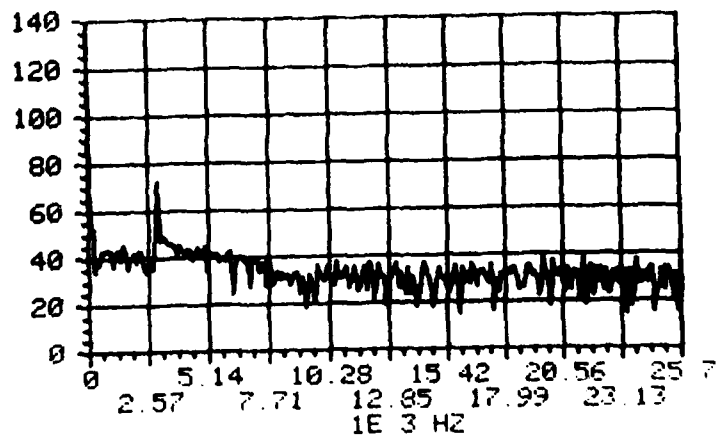
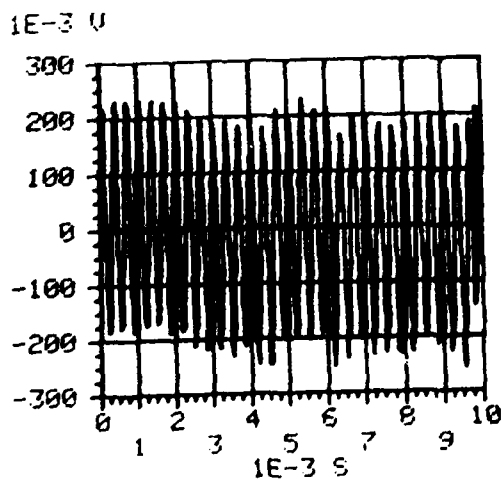
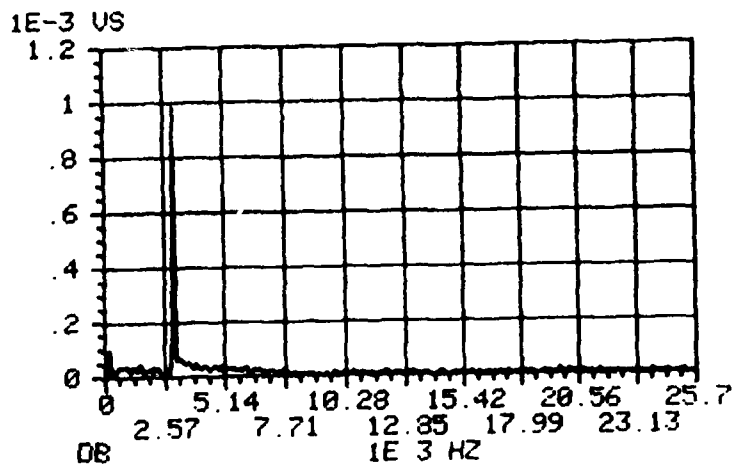
Alarm Test No. CAL TEST
 Alarm Type: _____
 Driving Vapor FREON 12
 Temperature _____ °F
 Pressure _____ psig
 Flowrate _____ std l/m
 Meter Setting 70 dB



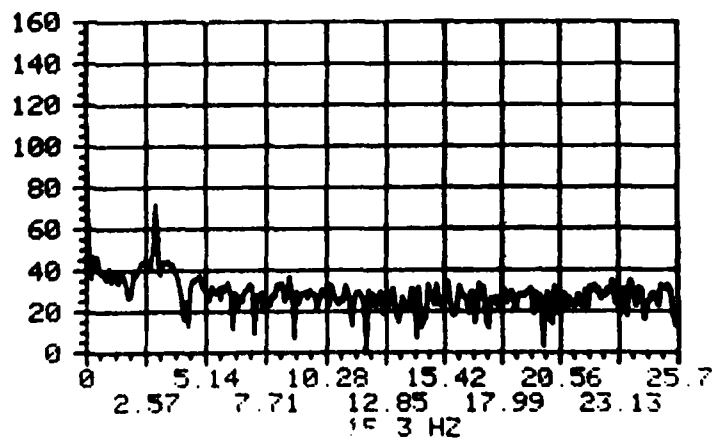
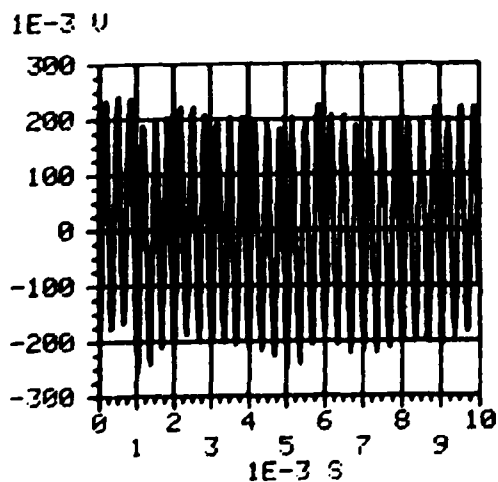
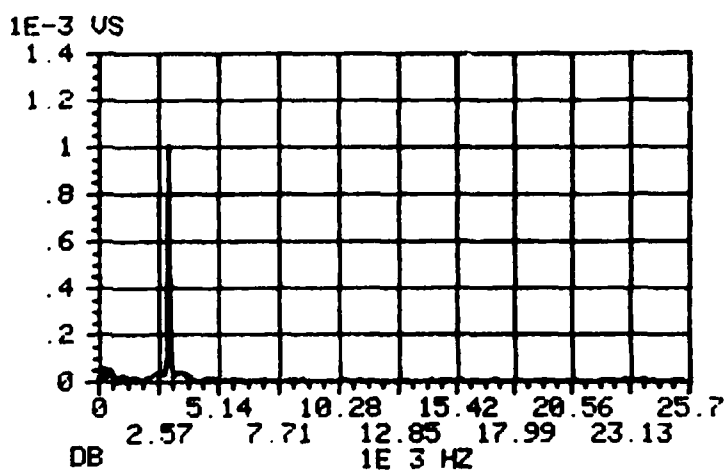
Alarm Test No. CAL TEST
 Alarm Type: _____
 Driving Vapor FREON 12
 Temperature _____ °F
 Pressure _____ psig
 Flowrate _____ std l/m
 Meter Setting 70 dB



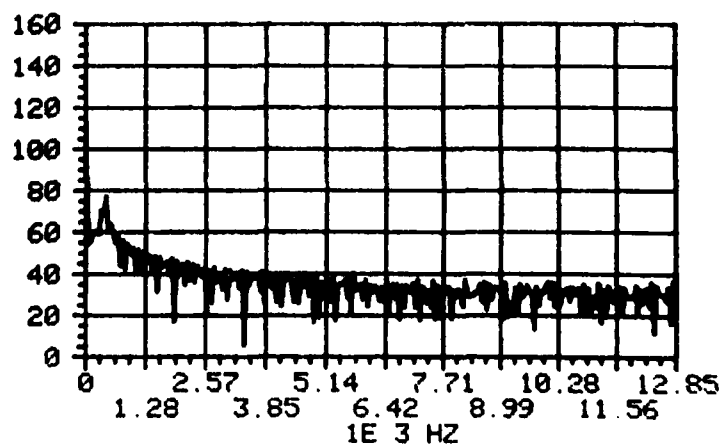
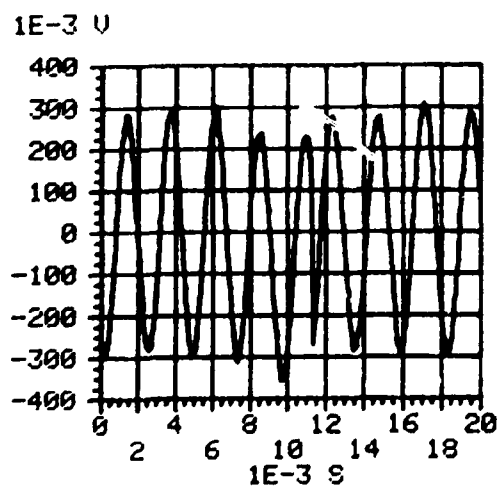
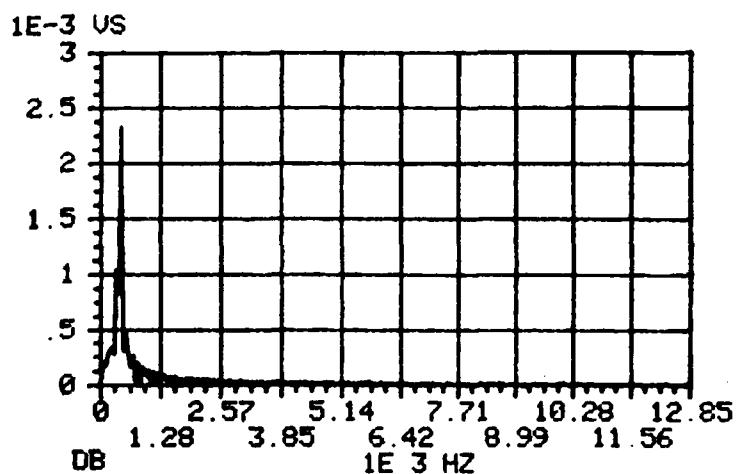
Alarm Test No. CAL TEST
 Alarm Type: _____
 Driving Vapor FREON 12
 Temperature _____ °F
 Pressure _____ psig
 Flowrate _____ std l/m
 Meter Setting 70 dB



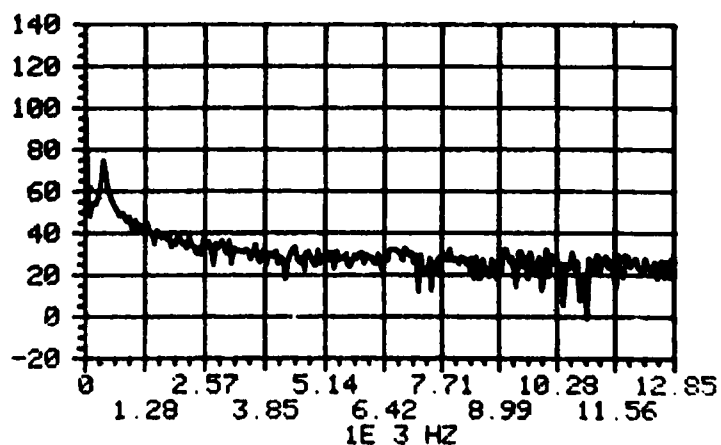
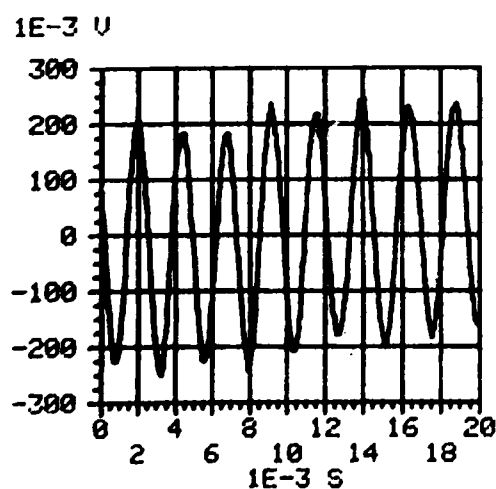
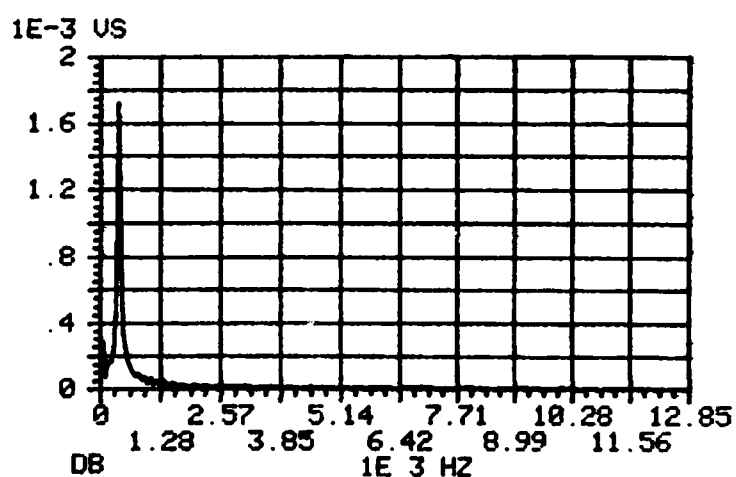
Alarm Test No. CAL TEST
 Alarm Type: _____
 Driving Vapor FREON 12
 Temperature _____ °F
 Pressure _____ psig
 Flowrate _____ std l/m
 Meter Setting 70 dB



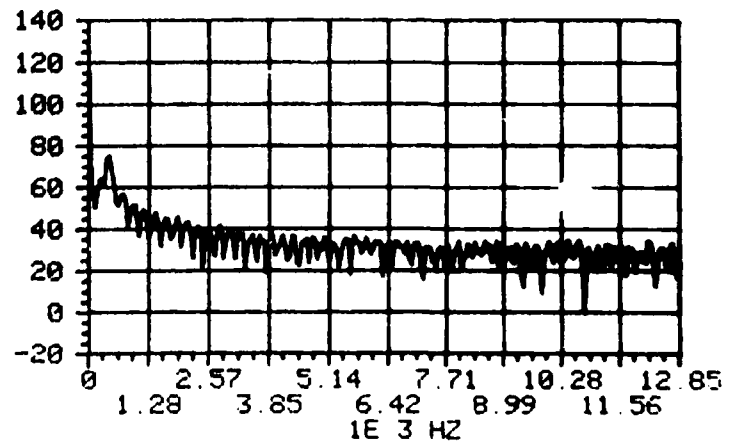
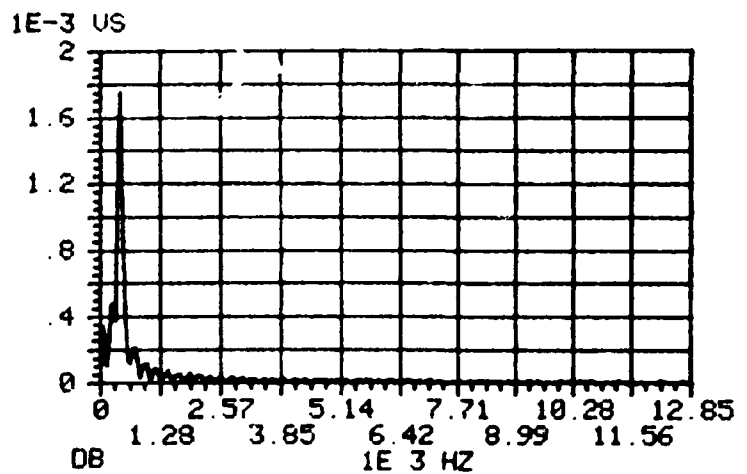
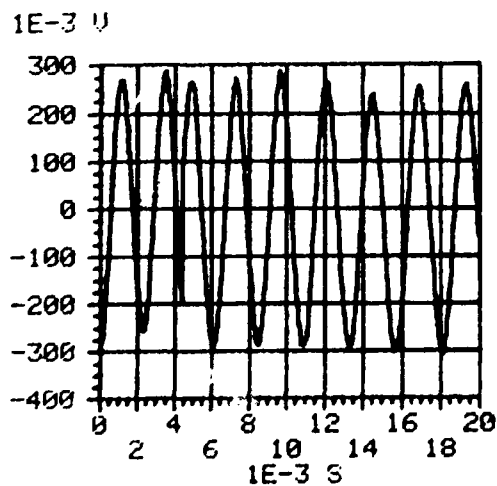
Alarm Test No. CAL TEST
 Alarm Type: _____
 Driving Vapor FREON 12
 Temperature _____ °F
 Pressure _____ psig
 Flowrate _____ std l/m
 Meter Setting 70 dB



Alarm Test No. CAL TEST
 Alarm Type: _____
 Driving Vapor FREON 12
 Temperature _____ °F
 Pressure _____ psig
 Flowrate _____ std l/m
 Meter Setting 70 dB



Alarm Test No. CAL TEST
 Alarm Type: _____
 Driving Vapor FREON 12
 Temperature _____ °F
 Pressure _____ psig
 Flowrate _____ std l/m
 Meter Setting 70 dB



```

1000 DELETE B1,B$,A,AA
1005 PAGE\PRINT "INPUT DB RANGE";\INPUT DB
1010 PAGE\PRINT "ENTER SIGNAL LOCATION ";\INPUT B1,B$
1015 WAVEFORM A IS RAK(511),SA,HA$,UA$
1020 GET A FROM #B1,B$
1025 A=A-MEAK(A)
1030 DELETE AR,RA,AI,IA
1035 WAVEFORM AR IS RAK(256),S1,H1$,V1$
1040 WAVEFORM AI IS IAK(256),S2,H2$,V2$
1045 RFFT A,AR,AI
1050 POLAR AR,AI
1055 IF DB=70 THEN 1065
1060 IF DB=90 THEN 1090
1065 IF S1<75 THEN 1080
1070 C=15.2
1075 GOTO 1115
1080 C=14.6741
1085 GOTO 1115
1090 IF S1<75 THEN 1105
1095 C=17.6261
1100 GOTO 1115
1105 C=16.9473
1110 GOTO 1115
1115 IA=20*(LOG(RA)+C)/LOG(10)
1120 V2$="DB"
1125 INITG
1130 PRINT\PRINT "SIGNAL LOCATION ";B1,B$
1135 PRINT "DB RANGE=";DB
1140 VIEWPORT 75,400,75,363
1145 SETGR VIEW
1150 GRAPH A
1155 VIEWPORT 500,1000,463,750
1160 SETGR VIEW
1165 GRAPH AR

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1170 VIEWPORT 500,1000,75,363
1175 SETGR VIEW
1180 GRAPH AI-WAIT
1185 GOTO 1010

READY
*

AGENT DISCHARGE TESTS

TEST No.	FUEL LOAD	RELEASE	AGENT MASS g	DISPENSER TYPE, ORIENTATION, LIQUID (L) OR VAPOR (V)	EXTINGUISHED FIRE?
1	paper 12 sheets	ign. + 28 s.	95 (est)	thin wall 1/16 in. holes, horizontal into receptacle, V	yes
2	paper 12 sheets	ign. + 37 s.	95 (est)	thin wall 1/64 in. holes, horizontal into receptacle, V	no
3	paper 12 sheets	200°F + 15 s.	7.8	1/8 in. tubing 12 in. long, 45° angle down tangent, V	no
4	paper 12 sheets	200°F + 15 s.	29.4	1/8 in. tubing 12 in. long, 45° angle down tangent, L	yes
5	paper 24 sheets	350°F + 0 s.	57 (est) (30 ml)	1/4 in. tubing 12 in. long, vertical downward, L	yes
6	paper 24 sheets	200°F + 15 s.	57 (est) (30 ml)	1/4 in. tubing 12 in. long, vertical downward, V	yes
7	paper 24 sheets	300°F + 15 s.	57 (est) (30 ml)	1/8 in. tubing 12 in. long, vertical downward, L	yes
8	paper 24 sheets	300°F + 15 s.	57 (est) (30 ml)	1/8 in. tubing 12 in. long, vertical downward, V	no
9	paper 24 sheets	300°F + 15 s.	57 (est) (30 ml)	1/4 in. tubing with "I", horizontal tangent opposed, V	no
10	paper 6 reams (72 sheets)	1090°F + 0 s.	57 (est) (30 ml)	1/4 in. tubing 12 in. long, vertical downward, L	yes
11	paper 6 reams (72 sheets)	900°F + 0 s. (deep seated)	57 (est) (30 ml)	1/4 in. tubing 12 in. long, vertical downward, V	

(continued)

AGENT DISCHARGE TESTS
(continuation)

TEST No.	FUEL LOAD	RELEASE	AGENT MASS q	DISPENSER TYPE, ORIENTATION, LIQUID (L) OR VAPOR (V)	EXTINGUISHED FIRE?
12	paper 6 reams (72 sheets)	600° F + 0 s. (deep seated)	57 (est) (30 ml)	1/8 in. tubing 12 in. long, vertical downward, L	yes
13	paper 6 reams (72 sheets)	900° F + 0 s. (deep seated)	57 (est) (30 ml)	1/8 in. tubing 12 in. long, vertical downward, V	no
14	paper 40 sheets	ign. + 33 sec.	33.5 (est)	piston valve extinguisher/alarm, 60° downward tangential, L	yes

SYSTEM EVALUATION TESTS

SAFE CAN Test No. 1
 Receptacle Size small can Fuel Load 12 sheets
 SAFE CAN Size small can Unit No. 1 Alarm No. 1
 Empty Wt. (g) 248.1 gm.
 Bottom Full Wt. (g) 349.2 gm.
 Top Full Wt. (g) 409.9 g.
 Receiver Mike at 120° and 9 feet from alarm
 Time "0" is 20 seconds after ignition
 Response Time 35 seconds
 Alarm Duration 80 seconds
 Fire Extinguished? yes
 Alarm Detected? yes
 Peak Temp. 1346 at 10 sec. Sensor 03
 Thermocouple Arrangement No. 4

Sensor Time	TEMP °F			
	01	02	03	04
0	73	70	1047	89
5	75	72	1270	106
10	79	79	1346	174
15	80	120	1184	788
20	288	234	989	1022
25	622	279	690	1004
30	958	461	740	1018
35	434	435	419	422

SAFE CAN Test No. 2
 Receptacle Size Large can Fuel Load 40 sheets
 SAFE CAN Size Large Unit No. 2 Alarm No. 2
 Empty Wt. (g) 296.8 gms.
 Bottom Full Wt. (g) 500.1 gms.
 Top Full Wt. (g) 552.6 gms.
 Receiver Mike at 90⁰ and 9 feet from alarm
 Time "0" is 15 seconds after ignition
 Response Time 23 seconds
 Alarm Duration 55 seconds
 Fire Extinguished? yes
 Alarm Detected? yes
 Peak Temp. 1058 at 10 sec. Sensor 03
 Thermocouple Arrangement No. 4

Sensor Time	TEMP °F			
	01	02	03	04
0	91	137	242	95
5	186	597	922	197
10	340	822	1058	331
20	583	964	992	714
25	557	649	662	463
30	385	397	373	290

SAFE CAN Test No. 3
 Receptacle Size Large can Fuel Load 40 sheets
 SAFE CAN Size Large Unit No. 4 Alarm No. 4
 Empty Wt. (g) 298.7 gms.
 Bottom Full Wt. (g) 502.6 gms.
 Top Full Wt. (g) 549.9 gms.
 Receiver Mike at 180⁰ and 9 feet from alarm
 Time "0" is 5 sec. seconds after ignition
 Response Time 40 sec. seconds
 Alarm Duration 10 seconds
 Fire Extinguished? yes
 Alarm Detected? no
 Peak Temp. 1165°F at 10 sec Sensor 03
 Thermocouple Arrangement No. 4

Sensor Time	TEMP °F			
	01	02	03	04
0	77	78	497	81
5	79	126	1133	85
10	89	785	1165	167
15	233	885	1015	316
20	391	958	857	704
25	519	941	739	704
30	635	883	813	837
35	777	849	738	740
40	419	505	429	352

SAFE CAN Test No. 4
 Receptacle Size Small Can Fuel Load 12 sheets
 SAFE CAN Size Small Can Unit No. 1 Alarm No. 1
 Empty Wt. (g) 249.0 gm.
 Bottom Full Wt. (g) 344.2
 Top Full Wt. (g) 411.8
 Receiver Mike at 120° and 9 feet from alarm
 Time "0" is 0 seconds after ignition
 Response Time 30 seconds
 Alarm Duration 5 seconds
 Fire Extinguished? yes
 Alarm Detected? no
 Peak Temp. 1167 at 25 sec. Sensor 02
 Thermocouple Arrangement No. 4

Sensor Time	TEMP °F			
	01	02	03	04
0	76	75	225	77
5	79	85	687	87
10	85	585	1011	105
15	86	1011	1085	115
20	93	1008	940	517
25	204	1167	995	965
30	19	1019	1053	882
35	10	602	523	440
40	38	415	390	300

SAFE CAN Test No. 5
 Receptacle Size Large Can Fuel Load 40 sheets
 SAFE CAN Size Large Can Unit No. 2 Alarm No. 2
 Empty Wt. (g) 297.3 gm.
 Bottom Full Wt. (g) 498.6 gm.
 Top Full Wt. (g) 550.9 gm.
 Receiver Mike at 90⁰ and 9 feet from alarm
 Time "0" is 10 seconds after ignition
 Response Time 35 sec. seconds
 Alarm Duration 112 seconds
 Fire Extinguished? yes
 Alarm Detected? yes
 Peak Temp. 1186 at 20 Sensor 03
 Thermocouple Arrangement No. 4

Sensor Time	TEMP °F			
	01	02	03	04
0	73	91	320	146
5	76	99	474	634
10	78	106	744	692
15	80	435	984	759
20	125	1015	1186	1038
25	360	1110	1067	1029
30	690	959	1051	1064
35	28	753	697	627

SAFE CAN Test No. 6
 Receptacle Size Small Can Fuel Load 12 sheets
 SAFE CAN Size Small Can Unit No. 1 Alarm No. 3
 Empty Wt. (g) 247.7
 Bottom Full Wt. (g) 346.2
 Top Full Wt. (g) 441.3
 Receiver Mike at 180⁰ and 9 feet from alarm
 Time "0" is 5 seconds after ignition
 Response Time 30 seconds
 Alarm Duration 65 seconds
 Fire Extinguished? yes
 Alarm Detected? yes
 Peak Temp. 933 at 15 sec. Sensor 03
 Thermocouple Arrangement No. 4

Sensor Time	TEMP °F			
	01	02	03	04
0	77	83	209	76
5	80	96	510	80
10	90	544	847	82
15	105	603	933	92
20	131	574	864	127
25	440	424	924	565
30	14	401	756	752
35	12	357	438	411

SAFE CAN Test No. 7
 Receptacle Size Large Can Fuel Load 40 sheets
 SAFE CAN Size Large Can Unit No. 2 Alarm No. 2
 Empty Wt. (g) 296.2 gm
 Bottom Full Wt. (g) 499.0 gm.
 Top Full Wt. (g) 591.7 gm.
 Receiver Mike at 45⁰ and 9 feet from alarm
 Time "0" is 0 seconds after ignition
 Response Time 35 seconds
 Alarm Duration 67 seconds
 Fire Extinguished? yes
 Alarm Detected? yes
 Peak Temp. 1422 at 15 sec Sensor 03
 Thermocouple Arrangement No. 4

Sensor Time	TEMP °F			
	01	02	03	04
0	75	78	236	76
5	77	82	1110	77
10	82	94	1400	80
15	137	166	1422	535
20	232	378	1343	1206
25	405	742	970	1320
30	706	882	775	1208
35	9	502	464	549
40	9	278	256	269

SAFE CAN Test No. 8
 Receptacle Size Large Can Fuel Load 40 sheets
 SAFE CAN Size Large Can Unit No. 4 Alarm No. 2
 Empty Wt. (g) 300.1 gm.
 Bottom Full Wt. (g) 503.4 gm.
 Top Full Wt. (g) 584.0 gm
 Receiver Mike at 90⁰ and 9 feet from alarm
 Time "0" is 0 seconds after ignition
 Response Time 40 seconds
 Alarm Duration 245 seconds
 Fire Extinguished? yes
 Alarm Detected? yes
 Peak Temp. 1372 at 10 sec. Sensor 03
 Thermocouple Arrangement No. 4

Sensor Time	TEMP °F			
	01	02	03	04
0	77	77	410	77
5	80	82	718	82
10	83	87	1372	105
15	93	152	1372	436
20	118	287	1280	414
25	408	521	1126	1016
30	710	869	1111	1147
35	826	1122	1209	1210
40	13	892	926	788
45	12	441	466	387

SAFE CAN Test No. 9

Receptacle Size Small Can Fuel Load 12 sheets

SAFE CAN Size Small Can Unit No. 1 Alarm No. 3

Empty Wt. (g) 248.2 g.

Bottom Full Wt. (g) 347.8 g

Top Full Wt. (g) 445.0 g

Receiver Mike at 90° and 10 feet from alarm

Time "0" is 0 seconds after ignition

Response Time 50 seconds

Alarm Duration 59 seconds

Fire Extinguished? yes

Alarm Detected? yes

Peak Temp. 1380 at 35 sec. Sensor 03

Thermocouple Arrangement No. 4

Sensor Time	TEMP °F			
	01	02	03	04
0	74	74	355	75
5	74	74	933	773
10	78	79	1209	76
15	81	82	1262	81
20	86	87	1253	89
25	93	94	1038	114
30	104	100	1204	141
35	111	112	1380	159
40	204	135	1277	349
45	541	466	993	770
50	10	551	797	569
55	9	393	415	207

SAFE CAN Test No. 10
 Receptacle Size Large Can Fuel Load 40 sheets
 SAFE CAN Size Large Can Unit No. 2 Alarm No. 2
 Empty Wt. (g) 296.9 g
 Bottom Full Wt. (g) 498.4
 Top Full Wt. (g) 592.2 g.
 Receiver Mike at 45 ⁰ and 9 feet from alarm
 Time "0" is 20 seconds after ignition
 Response Time 35 seconds
 Alarm Duration 200 seconds
 Fire Extinguished? yes
 Alarm Detected? Yes
 Peak Temp. 1321°F at 15 sec Sensor 02
 Thermocouple Arrangement No. 4

Sensor Time	TEMP °F			
	01	02	03	04
0	72	389	145	73
5	78	1043	221	76
10	87	866	655	85
15	135	1321	875	135
20	471	1264	973	424
25	693	1139	933	640
30	870	1075	1016	812
35	450	792	605	445

SAFE CAN Test No. 11
 Receptacle Size Small Can Fuel Load 12 sheets
 SAFE CAN Size Small Can Unit No. 3 Alarm No. 3
 Empty Wt. (g) 254.6
 Bottom Full Wt. (g) 341.0
 Top Full Wt. (g) 440.8
 Receiver Mike at 108° and 10 feet from alarm
 Time "0" is 20 seconds after ignition
 Response Time 30 sec. seconds
 Alarm Duration 30 seconds
 Fire Extinguished? yes
 Alarm Detected? yes
 Peak Temp. 1087 at 0 sec. Sensor 04
 Thermocouple Arrangement No. 4

Sensor Time	TEMP °F			
	01	02	03	04
0	79	76	148	1087
5	126	82	705	1081
10	351	88	732	1023
15	492	272	775	882
20	532	407	717	793
25	622	318	591	865
30	-13	358	403	531
35	-28	303	275	278

SAFE CAN Test No. 12

Receptacle Size Large Can Fuel Load 40 sheets

SAFE CAN Size Large Can Unit No. 4 Alarm No. 1

Empty Wt. (g) 299.7

Bottom Full Wt. (g) 500.5

Top Full Wt. (g) 594.8

Receiver Mike at 90° and 10 feet from alarm

Time "0" is 15 seconds after ignition

Response Time 30 seconds

Alarm Duration Failed seconds

Fire Extinguished? yes

Alarm Detected? no

Peak Temp. 1279 at 15 sec. Sensor 02

Thermocouple Arrangement No. 4

Sensor Time	TEMP °F			
	01	02	03	04
0	71	302	119	72
5	77	1211	669	87
10	82	1132	1096	113
15	102	1279	968	426
20	363	1193	992	768
25	954	990	796	953
30	15	755	567	614
35	15	381	282	234

SAFE CAN Test No. 13
 Receptacle Size Large Can Fuel Load 40 sheets
 SAFE CAN Size Large Can Unit No. 6 Alarm No. 4
 Empty Wt. (g) 294.3
 Bottom Full Wt. (g) 490.2
 Top Full Wt. (g) 584.9
 Receiver Mike at 30 ⁰ and 10 feet from alarm
 Time "0" is 10 seconds after ignition
 Response Time 45 seconds
 Alarm Duration 5 seconds
 Fire Extinguished? yes
 Alarm Detected? no
 Peak Temp. 1099 at 20 sec. Sensor 03
 Thermocouple Arrangement No. 4

Sensor Time	TEMP °F			
	01	02	03	04
0	66	68	231	66
5	66	69	677	66
10	66	69	1053	66
15	67	71	970	66
20	72	89	1099	78
25	85	546	961	369
30	114	930	1074	595
35	489	962	828	523
40	650	857	852	891
45	842	923	849	879
50	486	570	489	485

SAFE CAN Test No. 14
 Receptacle Size Small can Fuel Load 12 sheets
 SAFE CAN Size Small Can Unit No. 1 Alarm No. 4
 Empty Wt. (g) 254.36
 Bottom Full Wt. (g) 352.8
 Top Full Wt. (g) 442.2
 Receiver Mike at 180° and 10 feet from alarm
 Time "0" is 25 seconds after ignition
 Response Time 20 seconds
 Alarm Duration Failed seconds
 Fire Extinguished? yes
 Alarm Detected? no
 Peak Temp. 862 at 10 sec Sensor 03
 Thermocouple Arrangement No. 4

Sensor Time	TEMP °F			
	01	02	03	04
0	68	61	641	63
5	162	120	775	264
10	676	366	862	481
15	345	637	699	756
20	-19	488	520	730
25	-14	445	352	454
30	-12	363	262	303

SAFE CAN Test No. 15
 Receptacle Size Large Can Fuel Load 40 sheets
 SAFE CAN Size Large Can Unit No. 2 Alarm No. 4
 Empty Wt. (g) 295.9
 Bottom Full Wt. (g) 498.8
 Top Full Wt. (g) 592.0
 Receiver Mike at 4' ⁰ and 10 feet from alarm
 Time "0" is 15 seconds after ignition
 Response Time 35 seconds
 Alarm Duration 420 seconds
 Fire Extinguished? yes
 Alarm Detected? yes
 Peak Temp. 1192 at 20 sec. Sensor 03
 Thermocouple Arrangement No. 4

Sensor Time	TEMP °F			
	01	02	03	04
0	63	68	255	62
5	65	79	759	64
10	70	105	1139	68
15	75	420	925	127
20	98	735	1192	183
25	146	862	1112	373
30	375	893	916	917
35	12	837	714	913
40	5	453	343	441

SAFE CAN Test No. 16
 Receptacle Size Small Can Fuel Load 12 sheets
 SAFE CAN Size Small Can Unit No. 3 Alarm No. 2
 Empty Wt. (g) 254.3
 Bottom Full Wt. (g) 341.3
 Top Full Wt. (g) 440
 Receiver Mike at 180° and 10 feet from alarm
 Time "0" is 20 seconds after ignition
 Response Time 55 seconds
 Alarm Duration 302 seconds
 Fire Extinguished? yes
 Alarm Detected? yes
 Peak Temp. 981 at 45 sec. Sensor 03
 Thermocouple Arrangement No. 4

Sensor Time	TEMP °F			
	01	02	03	04
0	54	76	216	53
5	54	101	639	53
10	55	151	715	67
15	56	627	608	72
20	59	753	788	94
25	119	909	969	121
30	386	892	909	617
35	363	951	867	939
40	395	898	804	731
45	328	960	981	654
50	303	896	905	672
55	11	544	491	463
60	4	416	341	307

SAFE CAN Test No. 17
 Receptacle Size Large can Fuel Load 40 sheets
 SAFE CAN Size Large Unit No. 4 Alarm No. 2
 Empty Wt. (g) 299.5
 Bottom Full Wt. (g) 500.0
 Top Full Wt. (g) 595.1
 Receiver Mike at 90⁰ and 10 feet from alarm
 Time "0" is 15 seconds after ignition
 Response Time 35 seconds
 Alarm Duration 48 seconds
 Fire Extinguished? yes
 Alarm Detected? yes
 Peak Temp. 1129 at 20 sec. Sensor 03
 Thermocouple Arrangement No. 4

Sensor Time	TEMP °F			
	01	02	03	04
0	55	55	597	55
5	60	61	828	68
10	84	72	725	396
15	81	255	990	318
20	108	400	1129	291
25	484	542	814	569
30	741	706	769	846
35	-7	624	549	572
40	-6	338	284	284

SAFE CAN Test No. 18
Receptacle Size Small Can Fuel Load 10 cloth rags
SAFE CAN Size Small Can Unit No. 1 Alarm No. 1
Empty Wt. (g) 253.6
Bottom Full Wt. (g) 353.0
Top Full Wt. (g) 442.3
Receiver Mike at 45° and 10 feet from alarm
Time "0" is 183 (smouldering) seconds after ignition
Response Time 0 seconds
Alarm Duration 10 seconds
Fire Extinguished? yes
Alarm Detected? no
Peak Temp. 187 at _____ Sensor 01
Thermocouple Arrangement No. 4

Sensor Time	TEMP °F			
	01	02	03	04

NOTE: FIRE NEVER WENT OVER 200°F

SAFE CAN Test No. 19
 Receptacle Size Small Can Fuel Load 10 cloth rags/2 oz. isoprpopyl alcohol
 SAFE CAN Size Small Unit No. 5 Alarm No. 3
 Empty Wt. (g) 247.6
 Bottom Full Wt. (g) 345.0
 Top Full Wt. (g) 443.3
 Receiver Mike at 45⁰ and 10 feet from alarm
 Time "0" is 5 seconds after ignition
 Response Time 90 seconds
 Alarm Duration failed seconds
 Fire Extinguished? yes
 Alarm Detected? no
 Peak Temp. 1220 at 40 sec. Sensor 03
 Thermocouple Arrangement No. 4

Sensor Time	TEMP °F			
	01	02	03	04
0	65	66	464	75
5	76	76	652	85
10	75	82	807	85
15	82	90	949	102
20	92	111	1001	116
25	89	101	1053	108
30	85	100	1129	110
35	81	92	1211	108
40	82	94	1220	110
45	85	98	832	238
50	88	95	696	339
60	91	96	693	411
65	181	144	716	517
70	361	249	658	511
75	519	317	702	514
80	601	230	647	517
85	545	268	474	436
90	717	266	400	408
95	-9	288	348	349
100				

SAFE CAN Test No. 20 / 2402 & Freon 12
 Receptacle Size Large Fuel Load 40 sheet
 SAFE CAN Size Large Unit No. 2 Alarm No. 1A
 Empty Wt. (g) 287.8
 Bottom Full Wt. (g) 498.1
 Top Full Wt. (g) 546.7
 Receiver Mike at 90 ° and 10 ft from alarm
 Time "0" is 10 seconds after ignition
 Response Time 15 seconds
 Alarm Duration Failed seconds
 Fire Extinguished? Yes
 Alarm Detected No
 Peak Temp. 694°F at 5 sec Sensor 03
 Thermocouple Arrangement No. 4

Sensor Time Sec.	TEMP °F			
	01	02	03	04
0	148	106	422	78
5	648	465	694	180
10	438	309	377	197
15	279	217	224	146
20	216	174	180	131

SAFE CAN Test No. 21 / 2402 & Freon 12
 Receptacle Size Large Fuel Load 7 reams
 SAFE CAN Size Large Unit No. 2 Alarm No. 1B
 Empty Wt. (g) 294.8
 Bottom Full Wt. (g) 499.2
 Top Full Wt. (g) 544.3
 Receiver Mike at 180 ° and 10 ft from alarm
 Time "0" is 15 sec seconds after ignition
 Response Time 50 seconds
 Alarm Duration 170 seconds
 Fire Extinguished? Flames put down, but continued to smolder
 Alarm Detected Yes
 Peak Temp. 543°F at 35 sec Sensor 03
 Thermocouple Arrangement No. 4

Sensor Time Sec.	TEMP °F			
	01	02	03	04
0	95	78	129	221
5	104	99	165	357
10	209	231	179	428
15	301	223	171	427
20	327	209	205	499
25	272	242	283	448
30	240	197	325	498
35	184	295	543	461
40	284	533	470	442
45	319	440	425	491
50	254	332	415	572

SAFE CAN Test No. 22 / 2402 & Freon 12
 Receptacle Size Large Fuel Load 1/2 Full cloth
 SAFE CAN Size Large Unit No. 2 Alarm No. 1B
 Empty Wt. (g) 298.0
 Bottom Full Wt. (g) 502.1
 Top Full Wt. (g) 544.2
 Receiver Mike at 180 ° and 10 ft from alarm
 Time "0" is 10 seconds after ignition
 Response Time 80 seconds
 Alarm Duration 56 seconds
 Fire Extinguished? Yes
 Alarm Detected Yes
 Peak Temp. 966 F at 30 sec Sensor 03
 Thermocouple Arrangement No. 4

Sensor Time Sec.	TEMP °F			
	01	02	03	04
0	65	71	224	75
10	69	250	435	74
20	72	298	811	86
30	205	258	966	459
40	174	365	897	502
50	351	448	772	645
60	445	610	952	785
70	653	637	788	589
80	447	417	461	438

SAFE CAN Test No. 23 / 2402 & Freon 12
 Receptacle Size Small Fuel Load 12 sheets
 SAFE CAN Size Small Unit No. 1 Alarm No. 1C
 Empty Wt. (g) 250.0
 Bottom Full Wt. (g) 351.2
 Top Full Wt. (g) 410.8
 Receiver Mike at 180 ° and 10 ft from alarm
 Time "0" is 15 seconds after ignition
 Response Time 10 seconds
 Alarm Duration 42 seconds
 Fire Extinguished? Yes
 Alarm Detected Yes
 Peak Temp. 510 F at 0 sec Sensor 02
 Thermocouple Arrangement No. 4

Sensor Time Sec.	TEMP °F			
	01	02	03	04
0	305	510	83	222
5	125	498	426	396
10	8	274	225	178

SAFE CAN Test No. 24/2402 & Freon 12
 Receptacle Size Small Fuel Load 4 reams
 SAFE CAN Size Small Unit No. 1 Alarm No. 1D
 Empty Wt. (g) 245.6
 Bottom Full Wt. (g) 350.4
 Top Full Wt. (g) 410.9
 Receiver Mike at 90 ° and 10 ft from alarm
 Time "0" is 40 seconds after ignition
 Response Time 5 seconds
 Alarm Duration Failed seconds
 Fire Extinguished? Yes
 Alarm Detected No
 Peak Temp. 351 at 0 sec Sensor 01
 Thermocouple Arrangement No. 4

Sensor Time Sec.	TEMP °F			
	01	02	03	04
0	351	109	144	71
5	18	136	251	89
10	14	135	237	100

SAFE CAN Test No. 25
 Receptacle Size Small Fuel Load 4 reams
 SAFE CAN Size Small Unit No. 3 Alarm No. 2A
 Empty Wt. (g) 247.2
 Bottom Full Wt. (g) 349.0
 Top Full Wt. (g) 406.1
 Receiver Mike at 180 ° and 10 ft from alarm
 Time "0" is 15 seconds after ignition
 Response Time 25 seconds
 Alarm Duration 25 seconds
 Fire Extinguished? Yes
 Alarm Detected Yes
 Peak Temp. 840 F at 15 sec Sensor 03
 Thermocouple Arrangement No. 4

Sensor Time Sec.	TEMP °F			
	01	02	03	04
0	59	56	66	227
5	67	62	250	347
10	90	71	703	525
15	182	78	840	632
20	92	208	713	827
25	-20	172	403	459

SAFE CAN Test No. 26
 Receptacle Size Small Fuel Load 4 reams
 SAFE CAN Size Small Unit No. 1 Alarm No. 1F
 Empty Wt. (g) 246.8
 Bottom Full Wt. (g) 348.1
 Top Full Wt. (g) 405.2
 Receiver Mike at 180 ° and 10 ft from alarm
 Time "0" is 20 seconds after ignition
 Response Time 70 seconds
 Alarm Duration 35 seconds
 Fire Extinguished? Yes
 Alarm Detected Yes
 Peak Temp. 1063 F at 25 sec Sensor 02
 Thermocouple Arrangement No. 4

Sensor \ Time Sec.	TEMP °F			
	01	02	03	04
0	65	271	94	61
5	65	447	98	61
10	67	631	127	63
15	83	904	169	66
20	87	1020	241	70
25	102	1063	613	80
30	114	912	943	97
35	182	887	838	133
40	281	883	796	194
45	339	838	852	178
50	319	868	851	165
55	268	960	796	159
60	263	850	642	157
65	204	850	705	354
70	116	344	328	228

SAFE CAN Test No. 27
 Receptacle Size Large Fuel Load 1/2 Full of cloth
 SAFE CAN Size Large Unit No. 2 Alarm No. 1E
 Empty Wt. (g) 296.1
 Bottom Full Wt. (g) 497.1
 Top Full Wt. (g) 548.2
 Receiver Mike at 90 ° and 10 ft from alarm
 Time "0" is 10 seconds after ignition
 Response Time 30 seconds
 Alarm Duration 30 seconds
 Fire Extinguished? Yes
 Alarm Detected Yes
 Peak Temp. 510 F at 25 sec Sensor 03
 Thermocouple Arrangement No. 4

Sensor Time Sec.	TEMP °F			
	01	02	03	04
0	94	160	263	110
5	135	272	265	122
10	152	349	444	188
15	491	362	349	357
20	431	458	486	350
25	491	455	510	480
30	1	420	417	397

SAFE CAN Test No. 28
 Receptacle Size Large Fuel Load 1/2 Full of cloth
 SAFE CAN Size Large Unit No. 4 Alarm No. 1E
 Empty Wt. (g) 297.1
 Bottom Full Wt. (g) 501.1
 Top Full Wt. (g) 547.1
 Receiver Mike at 180 ° and 10 ft from alarm
 Time "0" is 50 seconds after ignition
 Response Time 55 seconds
 Alarm Duration 54 seconds
 Fire Extinguished? Flames were put down, but continued to smolder
 Alarm Detected Yes
 Peak Temp. 572 F at 40 Sensor 03
 Thermocouple Arrangement No. 4

Sensor Time Sec.	TEMP °F			
	01	02	03	04
0	88	200	221	112
5	96	263	260	126
10	108	316	341	141
15	183	307	320	186
20	213	343	389	236
25	174	374	468	262
30	161	361	525	310
35	252	470	536	265
40	255	452	572	377
45	322	456	555	345
50	-5	414	427	340
55				

SAFE CAN Test No. 29
 Receptacle Size Large Fuel Load 1/2 Full of cloth
 SAFE CAN Size Large Unit No. 4 Alarm No. 1C
 Empty Wt. (g) 194.8
 Bottom Full Wt. (g) 500.2
 Top Full Wt. (g) 545.1
 Receiver Mike at 180 ° and 10 ft from alarm
 Time "0" is 30 seconds after ignition
 Response Time 20 seconds
 Alarm Duration 35 seconds
 Fire Extinguished? Yes
 Alarm Detected Yes
 Peak Temp. 383°F at 15 sec Sensor 01
 Thermocouple Arrangement No. 4

Sensor Time Sec.	TEMP °F			
	01	02	03	04
0	183	237	63	81
5	164	256	65	114
10	268	234	63	159
15	383	206	64	257
20	0	142	65	227
25	-16	72	63	148

SAFE CAN Test No. 30
 Receptacle Size Small Fuel Load 1/2 Full of cloth
 SAFE CAN Size Small Unit No. 1 Alarm No. 1D
 Empty Wt. (g) 249.3
 Bottom Full Wt. (g) 350.0
 Top Full Wt. (g) 403.0
 Receiver Mike at 180 ° and 10 ft from alarm
 Time "0" is 25 seconds after ignition
 Response Time 20 seconds
 Alarm Duration 35 seconds
 Fire Extinguished? Yes
 Alarm Detected Yes
 Peak Temp. 379 F at 10 sec Sensor 01
 Thermocouple Arrangement No. 4

Sensor Time Sec.	TEMP °F			
	01	02	03	04
0	199	113	69	98
5	357	124	75	128
10	379	132	75	182
15	-4	129	86	167

SAFE CAN Test No. 31
 Receptacle Size Small Fuel Load 1/2 Full of cloth
 SAFE CAN Size Small Unit No. 3 Alarm No. 1D
 Empty Wt. (g) 248.7
 Bottom Full Wt. (g) 348.8
 Top Full Wt. (g) 407.2
 Receiver Mike at 180 ° and 10 ft from alarm
 Time "0" is 35 seconds after ignition
 Response Time 5 seconds
 Alarm Duration 45 seconds
 Fire Extinguished? Yes
 Alarm Detected Yes
 Peak Temp. 504 F at 0 sec Sensor 01
 Thermocouple Arrangement No. 4

Sensor Time Sec.	TEMP °F			
	01	02	03	04
0	504	119	107	109
5	10	99	126	122

SAFE CAN Test No. 32
 Receptacle Size Large Fuel Load 40 sheets
 SAFE CAN Size Large Unit No. 2 Alarm No. 1E
 Empty Wt. (g) 296.3
 Bottom Full Wt. (g) 499.0
 Top Full Wt. (g) 547.1
 Receiver Mike at 90 ° and 180 ft from alarm
 Time "0" is 20 seconds after ignition
 Response Time 10 seconds
 Alarm Duration 35 seconds
 Fire Extinguished? Yes
 Alarm Detected Yes
 Peak Temp. 591°F at 5 sec Sensor 04
 Thermocouple Arrangement No. 4

Sensor Time Sec.	TEMP °F			
	01	02	03	04
0	139	111	206	343
5	422	163	328	591
10	12	315	479	526

SAFE CAN Test No. 33
 Receptacle Size Large Fuel Load 7 reams
 SAFE CAN Size Large Unit No. 4 Alarm No. 1F
 Empty Wt. (g) 295.2
 Bottom Full Wt. (g) 499.2
 Top Full Wt. (g) 546.1
 Receiver Mike at 90 ° and 10 ft from alarm
 Time "0" is 25 seconds after ignition
 Response Time 10 seconds
 Alarm Duration 40 seconds
 Fire Extinguished? Yes
 Alarm Detected Yes
 Peak Temp. 518°F at 0 sec Sensor 01
 Thermocouple Arrangement No. 4

Sensor Time Sec.	TEMP °F			
	01	02	03	04
0	518	59	116	236
5	515	95	198	304
10	3	87	156	188

SAFE CAN Test No. 34
 Receptacle Size Large Fuel Load 7 reams
 SAFE CAN Size Large Unit No. 4 Alarm No. 1D
 Empty Wt. (g) 295.1
 Bottom Full Wt. (g) 499.2
 Top Full Wt. (g) 547.2
 Receiver Mike at 180 ° and 10 ft from alarm
 Time "0" is 35 seconds after ignition
 Response Time 25 seconds
 Alarm Duration 42 seconds
 Fire Extinguished? Yes
 Alarm Detected Yes
 Peak Temp. 463 at 15 sec Sensor 03
 Thermocouple Arrangement No. 4

Sensor Time Sec.	TEMP °F			
	01	02	03	04
0	76	107	309	160
5	109	99	415	199
10	123	162	379	298
15	104	215	463	374
20	313	195	462	454
25	-18	216	390	417

SAFE CAN Test No. 35
 Receptacle Size small Fuel Load 1/2 full cloth
 SAFE CAN Size small Unit No. 3 Alarm No. 1C
 Empty Wt. (g) 248.5
 Bottom Full Wt. (g) 348.7
 Top Full Wt. (g) 406.6
 Receiver Mike at 90 ° and 10 ft from alarm
 Time "0" is 15 seconds after ignition
 Response Time 20 seconds
 Alarm Duration 62 seconds
 Fire Extinguished? yes
 Alarm Detected yes
 Peak Temp. 835 at 15 sec Sensor 01
 Thermocouple Arrangement No. 4

Sensor Time Sec.	TEMP °F			
	01	02	03	04
0	211	159	97	55
5	470	202	128	58
10	768	184	99	92
15	835	293	200	97
20	-34	185	121	91

SAFE CAN Test No. 36
 Receptacle Size small Fuel Load 4 reams
 SAFE CAN Size small Unit No. 1 Alarm No. 1D
 Empty Wt. (g) 247.5
 Bottom Full Wt. (g) 350.1
 Top Full Wt. (g) 406.1
 Receiver Mike at 90 ° and 10 ft from alarm
 Time "0" is 35 seconds after ignition
 Response Time 25 seconds
 Alarm Duration 43 seconds
 Fire Extinguished? yes
 Alarm Detected yes
 Peak Temp. 918 at 10 sec Sensor 04
 Thermocouple Arrangement No. 4

Sensor Time Sec.	TEMP °F			
	01	02	03	04
0	135	56	58	320
5	234	60	81	650
10	257	76	92	918
15	648	166	139	953
20	659	243	173	752
25	461	203	151	563
30	259	150	117	388

SAFE CAN Test No. 37
 Receptacle Size small Fuel Load 4 reams
 SAFE CAN Size small Unit No. 1 Alarm No. 1C
 Empty Wt. (g) 246.8
 Bottom Full Wt. (g) 350.5
 Top Full Wt. (g) 405.6
 Receiver Mike at 90 ° and 10 ft from alarm
 Time "0" is 10 seconds after ignition
 Response Time 55 seconds
 Alarm Duration 33 seconds
 Fire Extinguished? yes
 Alarm Detected yes
 Peak Temp. 971°F at 5 sec Sensor 03
 Thermocouple Arrangement No. 4

Sensor Time Sec.	TEMP °F			
	01	02	03	04
0	59	62	472	84
5	59	65	971	107
10	83	69	830	309
15	103	70	749	610
20	113	74	586	645
25	111	81	418	807
30	119	85	629	768
35	136	91	549	772
40	140	97	533	782
45	211	107	469	826
50	469	203	386	771
55	16	388	348	698

SAFL CAN Test No. 38
 Receptacle Size small fuel Load 4 reams
 SAFL CAN Size small Unit No. 3 Alarm No. 1C
 Empty Wt. (g) 247.2
 Bottom Full Wt. (g) 348.8
 Top Full Wt. (g) 406.7
 Receiver Mike at 30 " and 10 ft from alarm
 Time "0" is 40 seconds after ignition
 Response Time 105 seconds
 Alarm Duration 3% seconds
 Extinguished? flames put down, but continued to smoulder
 Alarm Detected yes
 Ignition at 50 sec Sensor 04
 Sample Arrangement No. 4

	TEMP °F			
Time (sec)	01	02	03	04
0	72	162	288	125
10	76	171	421	175
20	77	209	510	475
30	77	286	480	686
40	80	333	511	1148
50	86	1183	522	974
60	89	1296	644	1211
70	92	1033	596	1348
80	98	697	645	1314
90	139	463	597	1116
100	162	824	753	1153
110	209	703	797	941
120	303	961	573	1022
130	3	515	406	706

SAFE CAN Test No. 39
 Receptacle Size large Fuel Load 7 reams
 SAFE CAN Size large Unit No. 2 Alarm No. 1C
 Empty Wt. (g) 297.2
 Bottom Full Wt. (g) 500.4
 Top Full Wt. (g) 545.2
 Receiver Mike at 180 ° and 10 ft from alarm
 Time "0" is 15 seconds after ignition
 Response Time 75 sec seconds
 Alarm Duration 115 seconds
 Fire Extinguished? flames were put down, but continued to smoulder
 Alarm Detected yes
 Peak Temp. 1126°F at 30 sec Sensor 02
 Thermocouple Arrangement No. 4

Sensor Time Sec.	TEMP °F			
	01	02	03	04
0	62	259	324	63
10	70	665	510	409
20	82	667	694	573
30	105	1126	757	547
40	111	923	817	912
50	186	772	858	995
55	367	685	626	931
60	322	643	618	818
70	75	570	558	814
80	-28	565	581	876

SAFE CAN Test No. 40
 Receptacle Size large Fuel Load 7 reams
 SAFE CAN Size large Unit No. 4 Alarm No. 1E
 Empty Wt. (g) 297.1
 Bottom Full Wt. (g) 500.3
 Top Full Wt. (g) 545.0
 Receiver Mike at 90 ° and 10 ft from alarm
 Time "0" is 80 seconds after ignition
 Response Time 30 seconds
 Alarm Duration 30 seconds
 Fire Extinguished? yes
 Alarm Detected yes
 Peak Temp. 450⁰F at 30 sec Sensor 02
 Thermocouple Arrangement No. 4

Sensor Time Sec.	TEMP °F			
	01	02	03	04
0	200	202	228	111
5	205	221	255	183
10	230	266	305	184
15	260	351	347	227
20	305	374	391	195
25	334	328	404	299
30	43	450	385	307

SAFE CAN Test No. 41
 Receptacle Size large Fuel Load 7 reams
 SAFE CAN Size large Unit No. 2 Alarm No. 1E
 Empty Wt. (g) 295.8
 Bottom Full Wt. (g) 498.2
 Top Full Wt. (g) 546.3
 Receiver Mike at 90 ° and 10 ft from alarm
 Time "0" is 20 seconds after ignition
 Response Time 40 seconds
 Alarm Duration 28 sec seconds
 Fire Extinguished? yes
 Alarm Detected yes
 Peak Temp. 802°F at 30 sec Sensor 04
 Thermocouple Arrangement No. 4

Sensor Time Sec.	TEMP °F			
	01	02	03	04
0	80	79	224	120
5	82	88	289	125
10	105	112	337	137
15	116	133	416	356
20	121	162	685	465
25	149	155	589	673
30	170	149	566	802
35	392	395	499	609
40	-6	183	284	335

SAFE CAN Test No. 42
 Receptacle Size small Fuel Load 4 reams
 SAFE CAN Size small Unit No. 3 Alarm No. 10
 Empty Wt. (g) 246.5
 Bottom Full Wt. (g) 348.3
 Top Full Wt. (g) 405.1
 Receiver Mike at 90 ° and 10 ft from alarm
 Time "0" is 15 seconds after ignition
 Response Time 15 seconds
 Alarm Duration 40 sec. seconds
 Fire Extinguished? yes
 Alarm Detected yes
 Peak Temp. 326 °F at 10 sec Sensor 01
 Thermocouple Arrangement No. 4

Sensor Time Sec.	TEMP °F			
	01	02	03	04
0	204	101	68	63
5	280	92	69	64
10	326	91	71	68
15	12	135	107	88

SAFE CAN Test No. 43
 Receptacle Size Small Fuel load 12 sheets
 SAFE CAN Size Small Unit No. 1 Alarm No. 1E
 Empty Wt. (g) 245.4
 Bottom Full Wt. (g) 350.0
 Top Full Wt. (g) 425.8
 Receiver Mike at 90 ° and 10 ft from alarm
 Time "0" is 15 seconds after ignition
 Response Time 20 seconds
 Alarm Duration 50 seconds
 Fire Extinguished? yes
 Alarm Detected yes
 Peak Temp. 1071 °F at 5 sec Sensor 04
 Thermocouple Arrangement No. 4

Sensor Time Sec.	TEMP °F			
	01	02	03	04
0	414	160	172	729
5	542	672	472	1071
10	785	636	637	983
15	581	670	713	948
20	14	524	455	501

SAFE CAN Test No. 44
 Receptacle Size Small Fuel Load 12 sheets
 SAFE CAN Size Small Unit No. 3 Alarm No. 1D
 Empty Wt. (g) 251.2
 Bottom Full Wt. (g) 340.6
 Top Full Wt. (g) 430.3
 Receiver Mike at 20 " and 10 ft from alarm
 Time "0" is 5 seconds after ignition
 Response Time 20 seconds
 Alarm Duration 150 seconds
 Fire Extinguished? yes
 Alarm Detected yes
 Peak Temp. 1319°F at 10 sec. Sensor 03
 Thermocouple Arrangement No. 4

Time Sec.	Sensor			
	TEMP °F			
	01	02	03	04
0	52	60	626	79
5	67	136	1016	233
10	257	608	1319	658
15	666	679	1171	775
20	6	493	604	374

SAFE CAN Test No. 45
 Receptacle Size Large Fuel load 40 sheets
 SAFE CAN Size Large Unit No. 4 Alarm No. 1E
 Empty Wt. (g) 300.2
 Bottom Full Wt. (g) 510.1
 Top Full Wt. (g) 574.5
 Receiver Mike at 45⁰ " and 9 ft from alarm
 Time "0" is 10 seconds after ignition
 Response Time 15 seconds
 Alarm Duration 45 seconds
 Fire Extinguished? yes
 Alarm Detected yes
 Peak Temp. 927⁰F at 10 sec Sensor 04
 Thermocouple Arrangement No. 4

Sensor Time Sec.	TEMP °F			
	01	02	03	04
0	90	91	82	251
5	401	120	305	709
10	738	646	576	927
15	13	513	473	592
20	14	312	273	346

SAFE CAN Test No. 46
 Receptacle Size Large Fuel Load 40 sheets
 SAFE CAN Size Large Unit No. 6 Alarm No. 1F
 Empty Wt. (g) 295.6
 Bottom Full Wt. (g) 515.7
 Top Full Wt. (g) 581.3
 Receiver Mike at 90 " and 9 ft from alarm
 Time "0" is 10 seconds after ignition
 Response Time 20 seconds
 Alarm Duration 57 seconds
 Fire Extinguished? yes
 Alarm Detected yes
 Peak Temp. 1163°F at 20 sec Sensor 04
 Thermocouple Arrangement No. 4

Sensor Time Sec.	TEMP °F			
	01	02	03	04
0	103	88	195	215
5	398	161	388	613
10	512	403	746	920
15	345	792	755	1155
20	82	902	977	1163
25	12	511	473	584

SAFE CAN Test No. 47
 Receptacle Size Small Fuel Load 12 sheets
 SAFE CAN Size Small Unit No. 3 Alarm No. 1
 Empty Wt. (g) 255.3
 Bottom Full Wt. (g) 349.1
 Top Full Wt. (g) 435.8
 Receiver Mike at 45 ° and 9 ft from alarm
 Time "0" is 15 seconds after ignition
 Response Time 10 seconds
 Alarm Duration 65 seconds
 Fire Extinguished? yes
 Alarm Detected yes
 Peak Temp. 949⁰F at 5 sec Sensor 04
 Thermocouple Arrangement No. 4

Sensor Time Sec.	TEMP °F			
	01	02	03	04
0	246	73	60	672
5	710	128	101	949
10	-12	268	235	520

TOXICITY TESTS

TEST NO.	RECEPTACLE /FUEL	TEST VOLUME ft ³	HALON	BAROMETRIC PRESSURE in Hg	RELATIVE HUMIDITY ^a %	SAMPLE TEMP ^a °F	SAMPLED COMPOUND	CONCENTRATION, ppm		
								INDICATED	CORRECTED	NORMALIZED ^b
1	large/ paper	248	1211	30.13	NR	NR	CO CO ₂	350 15000	414 17700	103 4390
2	large/ paper	248	none	29.76	NR	NR	CO CO ₂	2600 16000	3122 19200	774 4762
3	small/ paper	248	1211	29.50	NR	NR	CO CO ₂	100 10000	121 12139	30 3010
4	small/ paper	248	none	29.50	NR	NR	CO CO ₂	250 10000	303 12139	75 3010
5	large/ cloth	248	1211	29.50	NR	NR	CO CO ₂	250 5000	303 6070	75 1505
6	large/ cloth	248	none	29.50	NR	NR	CO CO ₂	1500 25000	1821 30348	452 7526
7	large/ paper	968	1211	29.78	17	70 70 67	HF HCl COCl ₂	20 5 0	5 4 0	5 4 0
8	large/ paper	968	1211	30.05	39	51 51 50	HF HCl COCl ₂	24 3 0	12 5 0	12 5 0

^aNR = no correction required.

^bConcentration normalized to 1000 ft³ volume.

TOXICITY TESTS (Continued)

TEST NO.	RECEPTACLE / FUEL	TEST VOLUME ft ³	HALON	BAROMETRIC PRESSURE in Hg	RELATIVE HUMIDITY ^a	SAMPLE TEMP ^a °F	SAMPLED COMPOUND	CONCENTRATION, ppm		
								INDICATED	CORRECTED	NORMALIZED ^b
9	large/ paper	968	1211	30.05	33	51	HF	22	8	8
						51	HCl	2	3	3
						51	COCl ₂	0	0	0
10	large/ paper	968	1211	30.05	33	52	HF	22	8	8
						52	HCl	4	4	4
						52	COCl ₂	0	0	0
11	large/ paper	968	2402	30.04	25	58	HF	26	8	8
						58	HCl	6	6	6
						58	COCl ₂	0	0	0
12	large/ paper	968	2402	30.04	25	61	HF	26	8	8
						61	HCl	6	6	6
						61	COCl ₂	0	0	0
13	large/ cloth	968	1211	30.02	51	62	HF	40 ^a	37	36
						62	HCl	9	13	13
						55	COCl ₂	0	0	0
14	large/ cloth	968	2402	30.17	37	74	HF	6	4	4
						74	HCl	1	1	1
						69	COCl ₂	0	0	0

^aNR = no correction required.

^bConcentration normalized to 1000 ft³ volume.

TOXICITY TESTS (Concluded)

TEST NO.	RECEPTACLE /FUEL	TEST VOLUME ft ³	HALON	BAROMETRIC PRESSURE in Hg	RELATIVE HUMIDITY ^a	SAMPLE TEMP ^a °F	SAMPLED COMPOUND	CONCENTRATION, ppm		
								INDICATED	CORRECTED	NORMALIZED ^b
15	large/cloth	968	1211	30.17	37	62	HF	24	13	13
						62	HCl	7	8	8
						59	COCl ₂	0	0	0
16	large/cloth	968	2402	30.17	37	67	HF	70 ^a	38	37
						67	HCl	11	12	12
						61	COCl ₂	0	0	0
17	large/cloth	968	2402	30.11	25	65	HF	52 ^a	17	16
						65	HCl	11	10	10
						61	COCl ₂	0	0	0
18	large/cloth	963	1211	30.11	25	66	HF	44 ^a	15	15
						66	HCl	14	13	13
						64	COCl ₂	0	0	0

^aNR = no correction required.

^bConcentration normalized to 1000 ft³ volume.

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