REPORT

of

RADIO

INTERFERENCE

TEST

on

FIFTH DIMENSION

INC.

MULTICODER

MODEL NUMBER

HDA4M-839

Serial No. 7243

9-4590

REPORT OF RADIO INTERFERENCE TEST
ON
FIFTH DIMENSION INCORPORATED
MULTICODER MODEL NO. HDA4M-839
SERIAL NO. 7243

Harold Herget
Vincent Sheehan
Louis Bozzella
Frederick J. Sain
ALL-TRONICS, INCORPORATED
Westbury, New York
Report Number 6387E1244
December 1965

NOTICES

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ADMINISTRATIVE DATA

	December 9, 1965
PURPOSE OF TEST	To determine compliance of the Multicoder to radio interference requirements of Component Type Qualification procedure Part III-Electromagnetic Interference and Susceptibility Test
MANUFACTURER	Fifth Dimension Incorporated
MODEL	HDA4M-839
SPECIFICATION	Fifth Dimension Component Type Qualification Procedure Part III
QUANTITY OF ITEMS TESTED	One
SECURITY CLASSIFICATION	Unclassified
DATE TEST COMPLETED	December 3, 1965
DISPOSITION OF SPECIMEN	Returned to Fifth Dimension, Inc.
ABSTRACT	"None"

FACTUAL DATA

Test Apparatus

The test equipment consisted of basic radio noise and field intensity meters with interchangeable tuning units and pickup devices for the various frequency ranges. These instruments and calibration information are shown on Data Sheet 1, Appendix 1.

Test Frequencies

The interference measuring instruments and signal generators were slowly tuned through each continuous tuning range. Each frequency where a maximum of interference or susceptibility was observed, was selected as a test frequency.

Where no peaks above interference levels of adjacent frequencies were observed, a frequency at the low, middle and high end of each frequency octave was selected as a test frequency.

The screen room is a shielded 12' X 16' X 10' cell type laboratory.

The ground plane is 7 feet long by 30 inches wide of 0.030 copper bonded to the screen room at 24" intervals and at both ends.

The detector function used was peak or carrier.

Ambient interference levels were at least 6 db below the specification limits.

Sample Calculations

Typical for TA Antenna

Interference Measuring Equipment	NF 105
Frequency of Broadband Measurement	0.15 MC
Antenna Factor	37 db
Cable Loss Correction Factor	0 db
Meter Reading	33 dbmc

Interference level equals meter reading plus cable loss plus antenna factor equals 37 plus 0 plus 33 equals 70 dbmc.

Typical for DM Antenna

Interference Measuring Equipment	NF 105
Frequency of Broadband Measurement	250 MC
Antenna Factor "DM"	8 db
Cable Loss Correction Factor	2 db
Meter Reading	33 dbmc

Interference level equals meter reading plus cable loss plus antenna factor equals 33 plus 8 plus 2 equals 43 dbuc.

Test Procedure

The unit was set up on the ground plane and connected to 28 VDC through line stabilization networks. The unit was bonded to the ground plane and was tested in its normal full load mode of operation.

Conducted Interference - Line Stabilization Network

The interference measuring instrument was connected to the noise meter terminal of the line stabilization network with a six foot 50 ohm double shielded coaxial cable. The frequency range was 0.15 to 25 MC.

Conducted Interference - Current Probe

The interference measuring instrument was connected to the current probe with six feet of 50 ohm double shielded coaxial cable. Positioning of the probe had no apparent effect on the magnitude of interference. All measurements were made with the current probe positioned approximately 24 inches from the unit under test. The D.C. Power Leads were tested in the frequency range from 30 cps to 150 KC. The signal leads were tested in the frequency range from 15 KC to 25 MC.

Radiated Interference

The antenna was positioned one foot from the unit under test for frequency range of 0.15 to 1,000 MC and three feet from one to ten GC. Broadband interference was measured from 0.15 to 400 MC. All frequencies from 0.15 to 10,000 MC were scanned for "CW" or pulsed "CW" type interference.

Susceptibility

The following characteristics and instruments were used for monitoring susceptibility:

CHARACTERISTIC	INSTRUMENT
1. Frame Rate	Hewlett-Packard Electronic Counter
2. Input Current	Sensitive Research Poly-Ranger
3. P.A.M. Zero and full scale output	Tektronix Oscilloscope
4. P.D.M. Zero and full scale pulse width	Tektronix Oscilloscope
5. D.P.D.M. Output	Tektronix Oscilloscope
6. P.A.M. Noise	Tektronix Oscilloscope
7. P.D.M. Jitter	Tektronix Oscilloscope
8. Channel Presence	Tektronix Oscilloscope

Radio Frequency Conducted Susceptibility

An R.F. voltage of 100,000 microvolts, was injected into the noise meter terminal of the line stabilization network. The frequency range was 0.15 to 10,000 MC. The signal was modulated 30% with 400 cps for the frequency range of 0.15 to 1,000MC and square wave modulated with 1,000 cps from 1 to 10 GC.

An R.F. voltage of three volts R.M.S. open circuited in the frequency range from 50 KC to 150 KC was injected into the input power leads.

This test was also performed with a coil and condensor in place of the line stabilization network.

Audio Frequency Conducted Susceptibility

A three volt RMS open circuit signal was injected into the power lines. The frequency range was 30 to 50,000 cps.

Radio Frequency Radiated Susceptibility

A loop antenna was used as a hand probe in the frequency range from 15 to 150 KC. This signal was not modulated from 15 to 50 KC.

The antennas were positioned one foot from the test sample in the frequency range of 0.15 to 1,000 MC and three feet from one to ten GC.

The signal was modulated 30% with 400 cps for the frequency range of 50 KC to 1,000 MC and square wave modulated with 1,000 cps from 1 to 10 GC.

Frequency	Microvolts	Antenna
0.15 to 25 MC	100,000	41 inch rod
25 to 35 MC	100,000	35 MC Dipole
35 to 1,000 MC	100,000	Tuned Dipole
1000 to 10,000 MC	100,000	Non-Directive Antenna

The voltages specified are those calculated to exist across the antenna terminals.

Transient Conducted Susceptibility

A positive and negative pulse was inserted on the power input leads. The pulses were 50 volts in amplitude, 10 microseconds in width and had a repetition rate of 10 pulses per second.

Test Results

Conducted Interference Using Line Stabilization Networks

Interference exceeding the normal specification limits was observed. This is shown on Data Sheet 3 and Figure 1.

Conducted Interference - Current Probe

Broadband interference exceeding the normal specification limits was observed.in the frequency range from 30 cps to 15 KC. This is shown on Data Sheet 4.

No broadband interference exceeding the normal specification limits was observed in the frequency range from 15 to 150 KC.

This is shown on Data Sheets 5, 6, and Figures 2, 3, and 4.

"CW" type interference exceeding the normal specification limits was observed. This is shown on Data Sheet 5.

No interference exceeding the normal specification limits was observed in the frequency range of 0.15 to 25 MC. This is shown on Data Sheet 7 and 8, Figures 5 and 6.

Radiated Interference

No broadband interference exceeding the normal specification limits was observed. This is shown on Data Sheets 9, 10, 11 and Figure 7. No "CW" or pulsed "CW" type interference was observed. This is shown on Data Sheet 12.

Susceptibility

Radio Frequency Conducted Susceptibility

No change in indication, malfunction, or degradation of performance in the frequency range of 50 to 150 KC was observed. This is shown on Data Sheet 14.

A change in indication in the frequency range of 0.15 to 30 MC was observed. This is shown on Data Sheet 15. No other change in indication was observed.

Audio Frequency Conducted Susceptibility

All frequencies were scanned. No change in indication, malfunction, or degradation of performance was observed.. This is shown on Data Sheet 13.

Radio Frequency Radiated Susceptibility

All frequencies were scanned. No change in indication, malfunction, or degradation of performance was observed. This is shown on Data Sheet 17.

Transient Conducted Susceptibility

No change in indication, malfunction, or degradation of performance was observed. This is shown on Data Sheet 16.

Recommendations

"None" data merely submitted.

Vincent Sheehan
Test Engineer
ALL-TRONICS, INC.

Louis Bozzella
Test Engineer
ALL-TRONICS, INC.

Harold Herget
Test Engineer
ALL-TRONICS, INC.

Frederick J. Sain
Testing Service Supervisor
ALL-TRONICS, INC.

Harold P. Westman, Jr.
President
ALL-TRONICS, INC.

APPENDIX 1

Data Sheets including sketch of

test set up and observed data.

TEST LOCATION: ALL-TRONICS, INC.
WESTBURY, NEW YORK

SPECIFICATION: Fifth Dimension Component Type
Qualification Procedure Part III

TEST SAMPLE:

TYPE:	Multicoder
MFG:	Fifth Dimension Incorporated
MODEL:	HDA4M-839
SERIAL NO:	7243
INPUT:	28 VDC
PURCHASE ORDER #:	B5811

TEST EQUIPMENT: RADIO INTERFERENCE AND FIELD INTENSITY METERS

MODEL:	NM40A	NF105	NF112
FREQ:	30 to 15,000 cps	0.015 to 1,000 MC	1 to 10 GC
SERIAL:	352-45	1321	129
CAL:	November 4, 1965	November 2, 1965	November 2, 1965
PICKUP:	Current Probe 91550-1	VX-105 VA-105 DM-105-T1-T2-T3 Current Probe 91550-1 L.S.N.	Pyramidal Antenna AT112

TEST EQUIPMENT: SIGNAL GENERATORS

MODEL:	Sig. Osc. #605cs	General Radio Standard Signal Generator 805A
FREQ:	0.09 to 50 MC	16 KC to 50 MC
SERIAL:	2156	136
CAL:	November 24, 1965	October 14, 1965

MODEL:	H.P. Audio Oscillator 200D	General Radio Unit Oscillator 1215-C
FREQ:	4 to 70,000 cps	50 to 250 MC
SERIAL:	90	4453
CAL:	November 24, 1965	December 1, 1965

MODEL:	General Radio Unit Oscillator 1209-CL
FREQ:	180 to 600 MC
SERIAL:	6816
CAL:	November 2, 1965

MODEL:	General Radio UHF Oscillator 1361-A	Narda Signal Source 451
FREQ:	450 to 1,000 MC	750 to 2750 MC
SERIAL:	621	13-109
CAL:	October 14, 1965	October 6, 1965

MODEL:	Polarad Signal Source 1206	FXR Test Osc.	FXR Test Osc.
FREQ:	2.0 to 4.0 GC	4 to 8 GC	7 to 11 GC
SERIAL:	1-7	388	382
CAL:	October 14, 1965	October 6, 1965	October 6, 1965

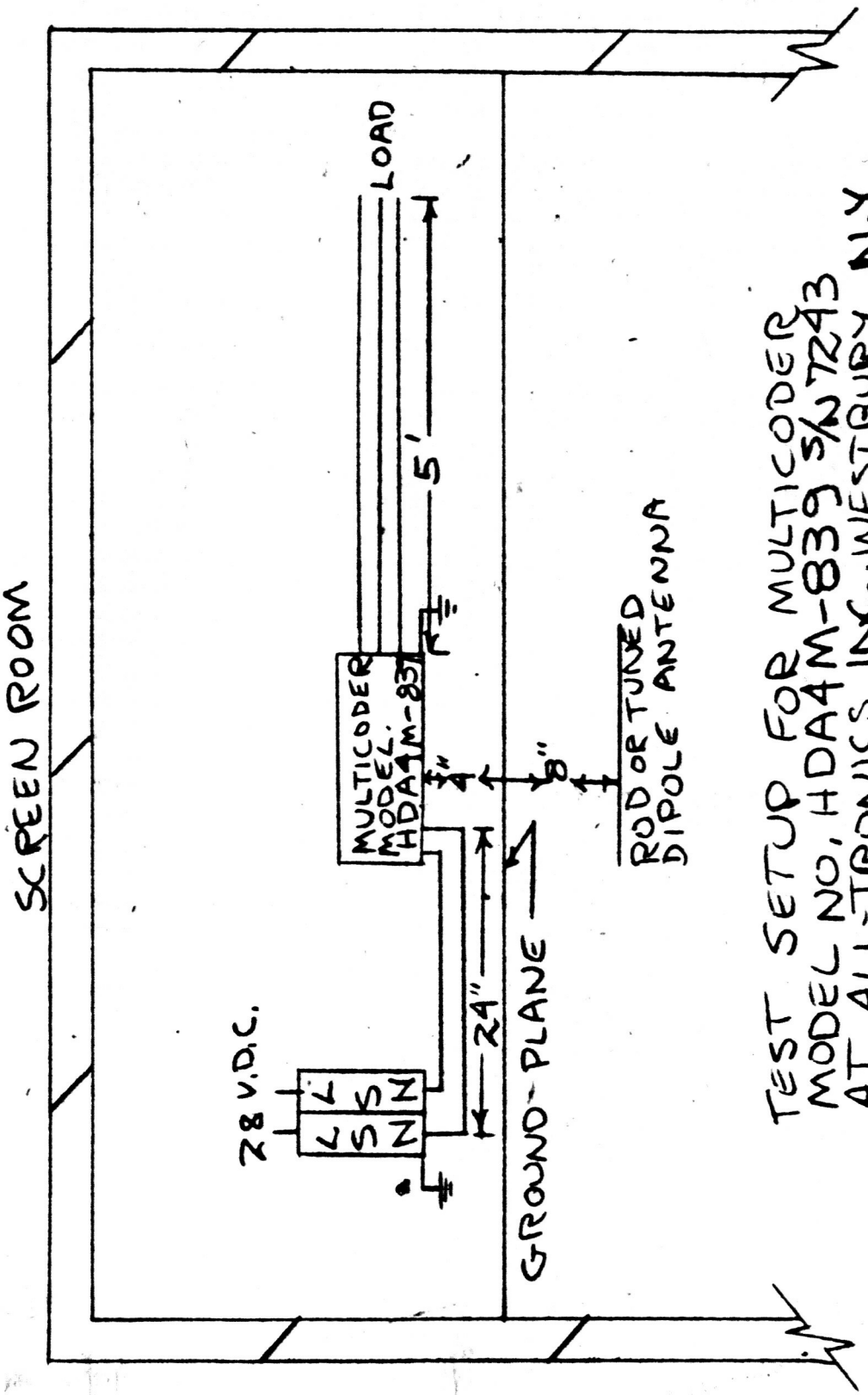
CUSTOMER'S TEST EQUIPMENT:

MFG:	Tektronix	Tektronix	Tektronix
MODEL:	545 A Oscilloscope	535 A Oscilloscope	535 A Oscilloscope
SERIAL:	20244	26409	27206
CAL:	October 7, 1965	September 3, 1965	November 15, 1965
DUE:	January 7, 1965	December 3, 1965	February 15, 1965

MFG:	Hewlett-Packard	Sensitive Research
MODEL:	5230 Electronic Counter	Model C Poly-Ranger
SERIAL:	139-00986	905290
CAL:	September 16, 1965	November 17, 1965
DUE:	December 16, 1965	February 17, 1965

BY_____ DATE_____ SUBJECT DATA SHEET SHEET NO. 3 OF 17

CHKD. BY_____ DATE_____ JOB NO. 6387E1294



ALL-TRONICS, INCORPORATED

SHEET NO. 3 OF 17
JOB NO. 6387E1244
DATE DECEMBER 1, 1965

DATA SHEET

CONDUCTED INTERFERENCE

TEST EQUIPMENT: 015 TO 25 MC
MODEL: NF-10.5
SERIAL: 1321
PICKUP: C.S.N.

TEST SAMPLE: MULTICODER MODEL NO. HDA4m-839
SERIAL NO. 7243

FREQ MC	CORR FACTOR	PEAK DBMC HIGH	PEAK DBMC LOW	LIMIT DBMC
0.15	0	115	120	115
0.20	0	119	116	111
0.30	0	113	100	105
0.40	0	106	88	102
0.50	0	104	80	98
0.60	0	100	93	96
0.80	0	99	90	93
1.2	0	93	76	88
1.6	0	89	70	84
2.4	0	86	68	81
3.2	0	82	66	81
4.8	0	78	63	81
6.4	0	77	67	81
4.0	0	78	68	81
12	0	77	76	81
18	0	80	80	81
20	0	84	85	91
25	0	93	92	81

TESTED BY Harold Hengst

ALL-TRONICS, INC.
WESTBURY N. Y.

ALL-TRONICS, INCORPORATED

SHEET NO 4 OF 17
JOB NO 6387 E1244
DATE DECEMBER 2, 1965

DATA SHEET

CONDUCTED INTERFERENCE

TEST EQUIPMENT:	30 CPS TO 15 KC
MODEL:	NM-40A
SERIAL:	352-45
PICKUP:	CURRENT PROBE

INPUT : 28VDC

TEST SAMPLE: MULTICODER MODEL MDA4M-839
SERIAL NO. 7243

FREQ. CPS	PEAK DB +28V DC	PEAK DB -28V DC	LIMIT
30 ↓ 15,000	260	220	100

BROADBAND 20 KC BANDWIDTH READINGS ARE DB ABOVE ONE MICROAMPERE.

ALL FREQUENCIES SCANNED IN SELECTIVE MODE, NO "CW" OR PULSED "CW" TYPE INTERFERENCE WAS OBSERVED.

TESTED BY Vincent Shuba

ALL-TRONICS, INC.
WESTBURY, N. Y.

ALL-TRONICS, INCORPORATED

SHEET NO. 6 OF 17
JOB NO. 6387E1244
DATE DECEMBER 2, 1965

DATA SHEET

CONDUCTED INTERFERENCE

TEST EQUIPMENT:	0.015 TO 0.15 MC	INPUT: 28VDC
MODEL:	NF-105	
SERIAL:	1321	
PICK UP:	CURRENT PROBE	

TEST SAMPLE: MULTICODER MODEL NDA 4M-839
SERIAL NO. 7243

FREQ. MC	CORR. FACTOR	PEAK DB/μA/MC +28V DC	PEAK DB/μA/MC -28V DC	LIMIT DB/μA/MC
0.015	0	117	116	180
0.020	0	120	119	171
0.030	0	120	120	158
0.040	0	127	123	149
0.060	0	121	121	136
0.080	0	126	120	126
0.120	0	110	112	112
	"CW" TYPE INTERFERENCE			
0.026	0	59	55	83
0.039	0	62	60	74
0.052	0	63	61	69
0.066	0	68	57	65
0.078	0	61	58	62
0.093	0	64	61	59
0.106	0	65	64	56
0.118	0	66	64	54
0.131	0	66	64	52
0.144	0	66	64	51

TESTED BY Vincent Hahn

ALL-TRONICS, INC.
WESTBURY, N. Y.

ALL-TRONICS, INCORPORATED

SHEET NO 6 OF 17
JOB NO 6387E1244
DATE DECEMBER 3 1965

DATA SHEET

CONDUCTED INTERFERENCE

TEST EQUIPMENT:	0.015 TO 0.15 MC
MODEL:	NF-105
SERIAL:	1321
PICKUP:	CURRENT PROBE

TEST SAMPLE: MULTICODER SERIAL NO. 7243 MODEL HDA 4M-839

FREQ. MC	CORR. FACTOR	PEAK DB/μA/MC PDM SHIELDED	PEAK DB/μA/MC PAM SHIELDED	PEAK DB/μA/MC DPDM SHIELDED	PEAK DB/μA/MC FRAME SYNC SHIELDED	PEAK DB/μA/MC SIGNAL INPUT	LIMIT DB/μA/MC
0.015	0	107	99	110	113	48	180
0.020	0	104	99	108	114	42	171
0.030	0	104	96	108	115	37	158
0.040	0	81	97	109	114	38	149
0.060	0	91	91	105	112	39	136
0.080	0	89	84	100	109	39	126
0.120	0	79	85	98	104	49	112

TESTED BY Vincent Schuler

ALL-TRONICS, INC.
WESTBURY, N. Y.

ALL-TRONICS, INCORPORATED

SHEET NO. 7 OF 17
JOB NO 6387 EM44
DATE DECEMBER 2, 1965

DATA SHEET

CONDUCTED INTERFERENCE

TEST EQUIPMENT: 0.15 TO 25 MC
MODEL: NF-105
SERIAL: 1321
PICK UP: CURRENT PROBE

TEST SAMPLE: MULTICODER SERIAL NO. 7243 MODEL NO. HDA 4M-839

FREQ MC	CORR FACTOR -DB	PEAK IND DB/MA/MC PDM SHIELDED	PEAK CORR DB/MA/MC PDM	PEAK IND DB/MA/MC PAM SHIELDED	PEAK CORR DB/MA/MC PAM	PEAK IND DB/MA/MC DPDM SHIELDED	PEAK CORR DB/MA/MC DPDM	LIMIT DB/MA/MC
0.152	5.0	33	28	33	28	35	30	102
0.20	7.0	33	26	30	23	32	25	96
0.30	9.0	30	21	28	19	30	21	86
0.40	10	32	22	26	16	30	20	80
0.50	11	34	23	28	17	35	24	76
0.60	12	32	20	26	14	33	21	71
0.80	13	32	19	26	13	33	20	65
1.2	13	33	20	28	15	35	22	56
1.6	14	30	16	27	13	35	21	50
2.4	14	28	14	26	12	34	20	50
3.2	14	26	12	26	12	35	21	50
4.8	14	28	14	25	11	35	21	49
6.4	14	30	16	28	14	34	20	49
9.0	14	28	14	27	13	30	16	49
10.4	14	30	16	26	12	28	14	46
18	14	40	26	24	10	32	18	46
20	13	46	33	33	20	40	27	46
23	13	57	44	42	29	53	40	46

TESTED BY Harold Knight

ALL-TRONICS, INC.
WESTBURY, N. Y

ALL-TRONICS, INCORPORATED

SHEET NO. 8 OF 17
JOB NO 6387 E 1244
DATE DECEMBER 2, 1965

DATA SHEET

CONDUCTED INTERFERENCE

TEST EQUIPMENT: 0.15 TO 25 MC
MODEL: NF-105
SERIAL: 1321
PICKUP: CURRENT PROBE

TEST SAMPLE: MULTICODER SERIAL NO. 7243 MODEL NO. HDA 4m-839

FREQ. MC	CORR. FACTOR -DB	PEAK IND DB/MA/MC FRAME SHIELDED	PEAK CORR. DB/MA/MC SYNC	PEAK IND DB/MA/MC SIGNAL	PEAK CORR DB/MA/MC INPUT	LIMIT DB/MA/MC
0.152	5.0	36	31	50	45	102
0.20	7.0	32	25	51	44	96
0.30	9.0	30	21	52	43	86
0.40	10	28	18	56	46	80
0.50	11	30	19	57	46	76
0.60	12	25	13	57	45	71
0.80	13	24	11	57	44	65
1.2	13	28	15	59	46	56
1.6	14	28	14	59	45	50
2.4	14	27	13	59	45	50
3.2	14	26	12	57	43	50
4.8	14	27	13	61	47	49
6.4	14	30	16	60	46	49
9.0	14	28	14	60	46	49
10.4	14	27	13	54	40	46
18	14	43	29	49	35	46
20	13	47	34	55	42	46
23	13	57	44	44	31	46

TESTED BY Harold Stengel

ALL-TRONICS, INC.
WESTBURY N. Y.

ALL-TRONICS, INCORPORATED

SHEET NO. 9 OF 17
JOB NO. 6387E1244
DATE DECEMBER 3, 1965

DATA SHEET

RADIATED INTERFERENCE

TEST EQUIPMENT:	0.015 TO 0.15 MC
MODEL:	NF-105
SERIAL:	1321
PICKUP:	ROD ANTENNA

TEST SAMPLE: MULTICODER MODEL HDA4M-839
SERIAL NO. 7243

FREQ. MC	CORR. FACTOR	PEAK IND DBMC	PEAK CORR DBMC	LIMIT DBMC
0.015	46	54	100	107
0.020	44	52	96	103
0.030	43	47	90	98
0.040	39	49	88	94
0.060	33	53	86	89
0.080	38	45	83	85
0.120	32	46	78	81

TESTED BY Vincent Shelton

ALL-TRONICS, INC.
WESTBURY, N. Y.

ALL-TRONICS, INCORPORATED

SHEET NO. 10 OF 17
JOB NO 687 E 1214
DATE DECEMBER 2, 1965

DATA SHEET

RADIATED INTERFERENCE

TEST EQUIPMENT: 0.15 TO 30MC
MODEL: NF-105
SERIAL: 1321
PICKUP: ROD ANTENNA

TEST SAMPLE: MULTICODER MODEL NO. HDA 4m-839
SERIAL NO. 7243

FREQ. MC	CORR FACTOR	PEAK READ DB/MC	PEAK CORR DB/MC	LIMIT DB/MC
0.15	30	30	60	77
0.20	32	33	65	75
0.30	34	30	64	73
0.40	30	25	55	71
0.50	29	27	56	70
0.60	29	26	55	70
0.80	29	27	56	69
1.2	22	30	52	69
1.6	22	26	48	69
2.4	20	27	47	68
3.2	19	27	46	68
4.8	20	26	46	68
6.4	19	30	49	67
9.0	19	28	47	67
12	20	27	47	67
18	12	26	38	66
20	12	26	38	66
25	13	33	46	66

TESTED BY Harold Sergot

ALL-TRONICS, INC.
WESTBURY, N. Y.

ALL-TRONICS, INCORPORATED

SHEET NO. 11 OF 17
JOB NO 6387 E 1244
DATE DECEMBER 2, 1965

DATA SHEET

RADIATED INTERFERENCE

TEST EQUIPMENT: 30 TO 400 MC
MODEL: NF-105
SERIAL: 1321
PICKUP: TUNED DIPOLE ANTENNA

TEST SAMPLE: MULTICODER MODEL NO. HDA 4M-839
SERIAL NO. 9243

FREQ MC	CORR FACTOR	PEAK IND DB/MC	PEAK CORR DB/MC	LIMIT DB/MC
30	8	30	38	47
40	8	26	34	51
60	8	30	38	52
80	9	35	44	52
100	9	27	36	53
150	9	33	42	54
200	10	33	43	55
250	10	35	45	56
300	10	36	46	57
400	10	36	46	58

TESTED BY Harold Leonard

ALL-TRONICS, INC.
WESTBURY, N. Y.

ALL-TRONICS, INCORPORATED

SHEET NO. 12 OF 17
JOB NO 6387 & 1244
DATE DECEMBER 2, 1965

DATA SHEET

RADIATED INTERFERENCE

TEST EQUIPMENT:	0.015 TO 1,000 MC	1,000 TO 10,000 MC
MODEL:	NF-105	NF-112
SERIAL:	1321	129

PICKUPS: ROD, TUNED DIPOLE, AND AT-112 ANTENNAE

TEST SAMPLE: MULTICODER MODEL NO. MDA4M-839 SERIAL NO. 7243

FREQ. MC	
0.015 ↓ 10,000	ALL FREQUENCIES SCANNED, NO "CW" OR PULSED "CW" TYPE INTERFERENCE WAS OBSERVED

TESTED BY Harold Herget

ALL-TRONICS, INC.
WESTBURY, N. Y.

ALL-TRONICS, INCORPORATED

SHEET NO. 13 OF 17
JOB NO. 6387E1244
DATE DECEMBER 2, 1965

DATA SHEET

TEST EQUIPMENT: AUDIO FREQUENCY CONDUCTED SUSCEPTIBILITY
MODEL:
SERIAL:

TEST SAMPLE: MULTICODER MODEL HDA4M-839
SERIAL NO. 7243

FREQ. CPS	+28 VDC	-28 VDC
30 ↓ 50,000	PAM OUTPUT WAS MONITORED FOR CHANGE WITH A TEKTRONIX TYPE 545 A OSCILLOSCOPE S/N 20244. PDM AND DPDM OUTPUT WAS MONITORED FOR CHANGE WITH A TEKTRONIX TYPE 535A OSCILLOSCOPE S/N 26409. CHANNEL PRESENCE WAS MONITORED FOR CHANGE WITH A TEKTRONIX TYPE 535 A OSCILLOSCOPE S/N 27206. FRAME RATE WAS MONITORED FOR CHANGE WITH A HEWLETT-PACKARD ELECTRONIC COUNTER MODEL 523D S/N 139-00986. INPUT VOLTAGE AND CURRENT WAS MONITORED FOR CHANGE WITH A SENSITIVE RESEARCH POLY-RANGER MODEL C S/N 905290. ALL FREQUENCIES SCANNED, NO CHANGE IN INDICATION, MALFUNCTION OR DEGRADATION OF PERFORMANCE WAS OBSERVED.	

TESTED BY Louis Bozzella
ALL-TRONICS, INC.
WESTBURY, N.Y.

ALL-TRONICS, INCORPORATED

SHEET NO. 14 OF 17
JOB NO 6387 E1244
DATE DECEMBER 2 1965

DATA SHEET

TEST EQUIPMENT:
MODEL: R.F. CONDUCTED SUSCEPTIBILITY
SERIAL:

TEST SAMPLE: MULTICODER MODEL HDA4M-839
SERIAL NO. 7243

FREQ. KC	+28VDC	-28VDC
50 ↑	ALL FREQUENCIES SCANNED, NO CHANGE IN INDICATION, MALFUNCTION, OR DEGRADATION OF PERFORMANCE WAS OBSERVED.	
↓ 150		

TESTED BY Louis Bozzella
ALL-TRONICS, INC.
WESTBURY N. Y.

ALL-TRONICS, INCORPORATED

SHEET NO. 14 OF 17
JOB NO. 6387E1244
DATE DECEMBER 2, 1965

DATA SHEET

TEST EQUIPMENT:
MODEL: R.F. CONDUCTED SUSCEPTIBILITY
SERIAL:

TEST SAMPLE: MULTICODER MODEL HDA4M-839
SERIAL NO. 7243

FREQ. MC	+28VDC	NOISE LEVEL OF PAM OUTPUT MV	THRESHOLD LEVEL MV
0.65		30	20,000
1.3		55	20,000
4.1 ↕ 5.1		25	20,000
6.5		25	20,000
8.4		40	20,000
20		50	20,000
0.15 ↕ 10,000			

ALL FREQUENCIES SCANNED, NO OTHER CHANGE IN INDICATION, MALFUNCTION, OR DEGRADATION OF PERFORMANCE WAS OBSERVED

TESTED BY Vincent Hudson

ALL-TRONICS, INC.
WESTBURY, N. Y.

ALL-TRONICS, INCORPORATED

SHEET NO 16 OF 17
JOB NO 6387E1244
DATE DECEMBER 2,1965

DATA SHEET

TEST EQUIPMENT:
MODEL: TRANSIENT CONDUCTED SUSCEPTIBILITY
SERIAL:

TEST SAMPLE: MULTICODER MODEL HDA4M-839
SERIAL NO. 7243

	+28VDC	-28VDC
	AMPLITUDE: ± 50 VOLTS WIDTH: 10 μ SECONDS REP. RATE: 10 PPS DURATION: 2 MIN.	

NO CHANGE IN INDICATION, MALFUNCTION, OR DEGRADATION OF PERFORMANCE WAS OBSERVED.

TESTED BY Vincent Schuster

ALL-TRONICS INC.
WESTBURY N. Y.

ALL-TRONICS, INCORPORATED

SHEET NO. 17 OF 17
JOB NO. 6387E1244
DATE DECEMBER 1, 1965

DATA SHEET

TEST EQUIPMENT:
MODEL: R.F. RADIATED SUSCEPTIBILITY
SERIAL:

TEST SAMPLE: MULTICODER MODEL HDA4M-839
SERIAL NO. 7243

FREQ. MC	
0.015 ▲	ALL FREQUENCIES SCANNED, NO CHANGE IN INDICATION, MALFUNCTION, OR DEGRADATION OF PERFORMANCE WAS OBSERVED.
▼ 10,000	

TESTED BY Harold Herget

ALL-TRONICS, INC.
WESTBURY N. Y.

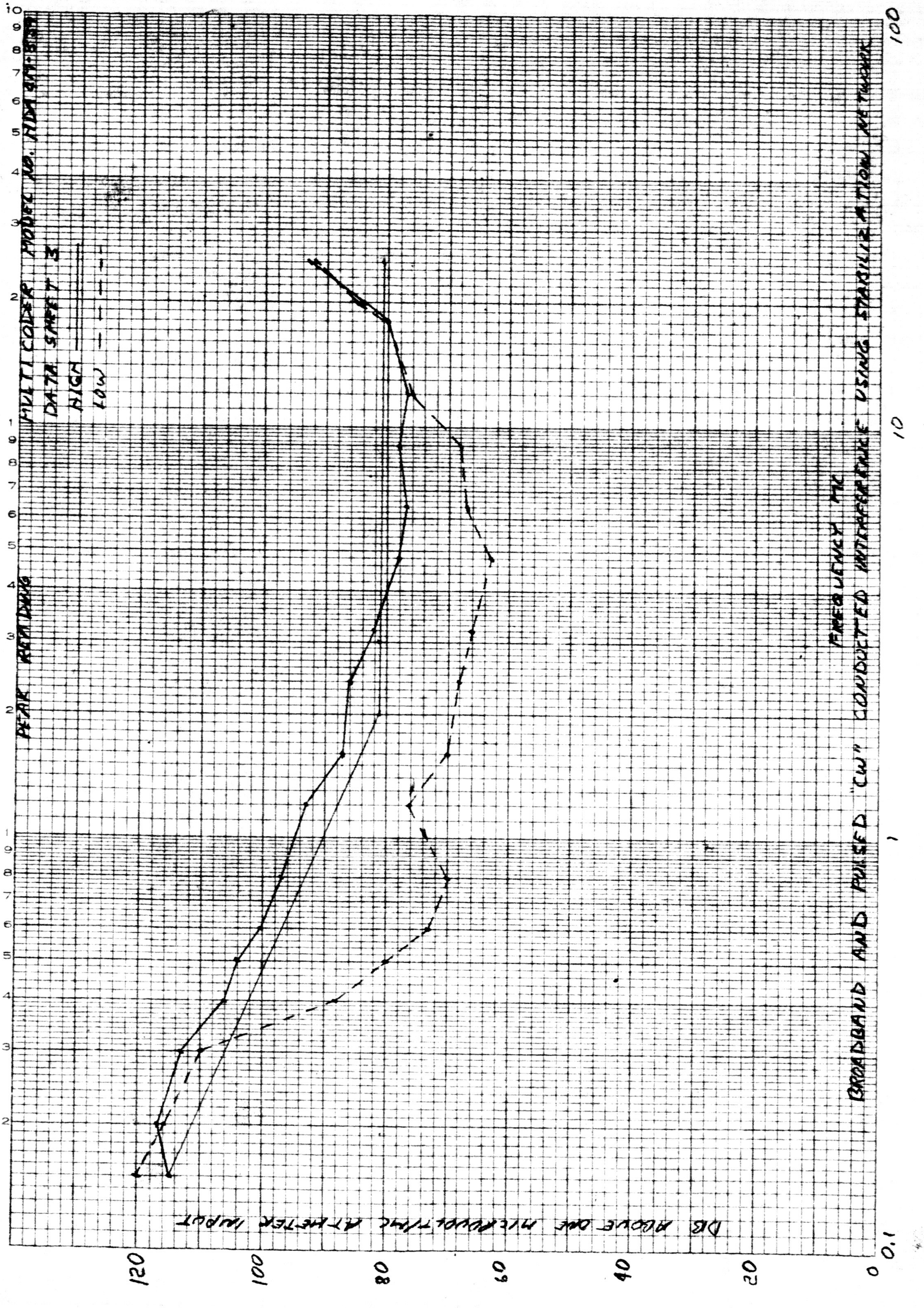
APPENDIX 2

Photographs of unit mounted in test area.

APPENDIX 3

Graphical presentation including interference observed and specification limits.

FIGURE 1



MULTICODER MODEL NO. HDA
DATA SHEET 3
HIGH ——
LOW - - -
PEAK READING
FREQUENCY MC
BROADBAND AND PULSED "CW" CONDUCTED INTERFERENCE USING STABILIZATION NETWORK
DB ABOVE ONE MICROVOLT/MC AT METER INPUT
120
100
80
60
40
20
0
0.1
1
10
100

FIGURE 2

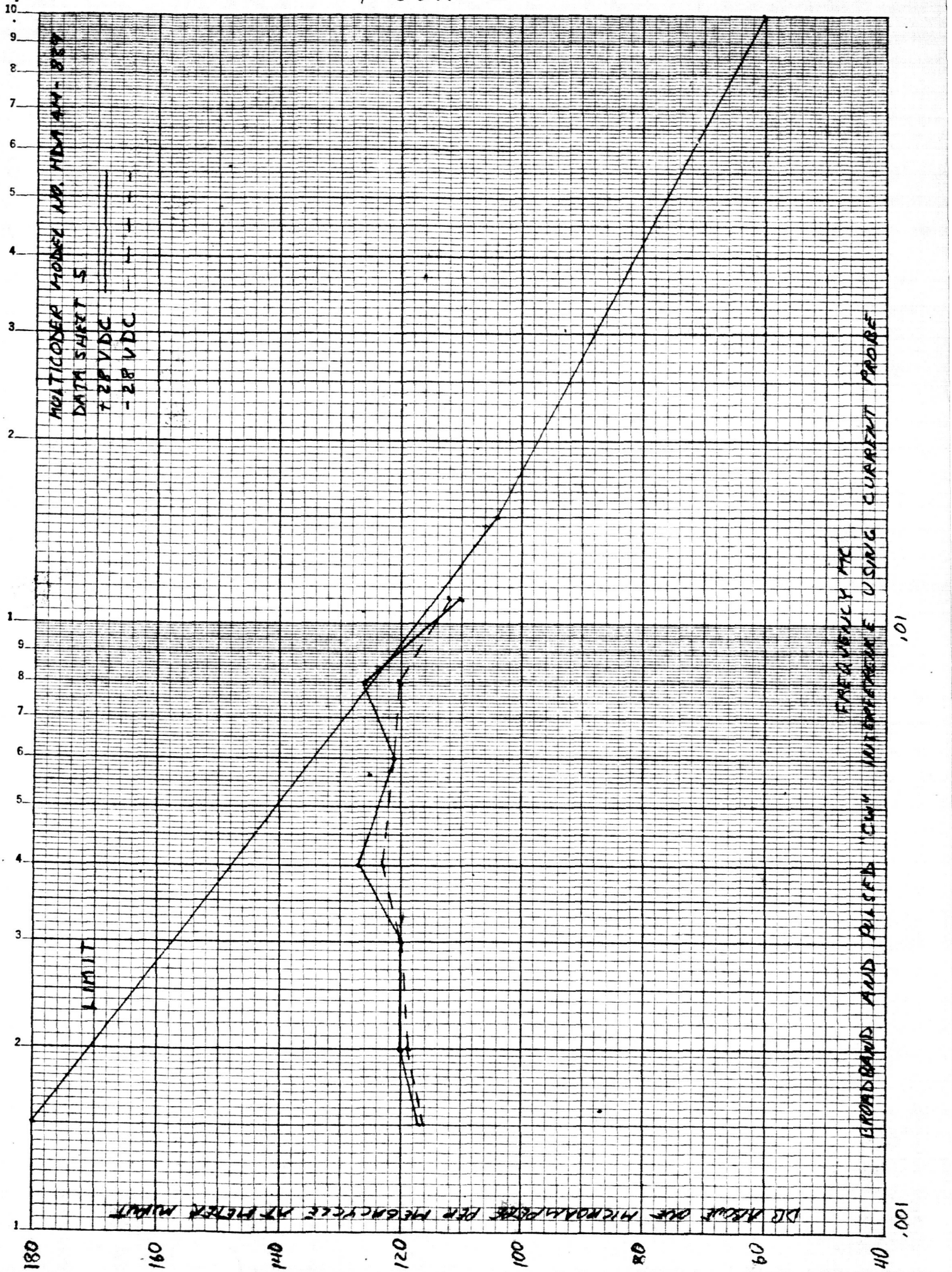

MULTICOUPLER MODEL NO. MCA 4W-822
DATA SHEET 5
+28 VDC
-28 VDC
LIMIT
DB ABOVE ONE MICROAMPERE PER MEGACYCLE AT METER MOUNT
FREQUENCY MC
BROADBAND AND PULSED "CW" INTERFERENCE USING CURRENT PROBE
10
9
8
7
6
5
4
3
2
1
180
160
140
120
100
80
60
40
.001
.01
.1
1

FIGURE 3

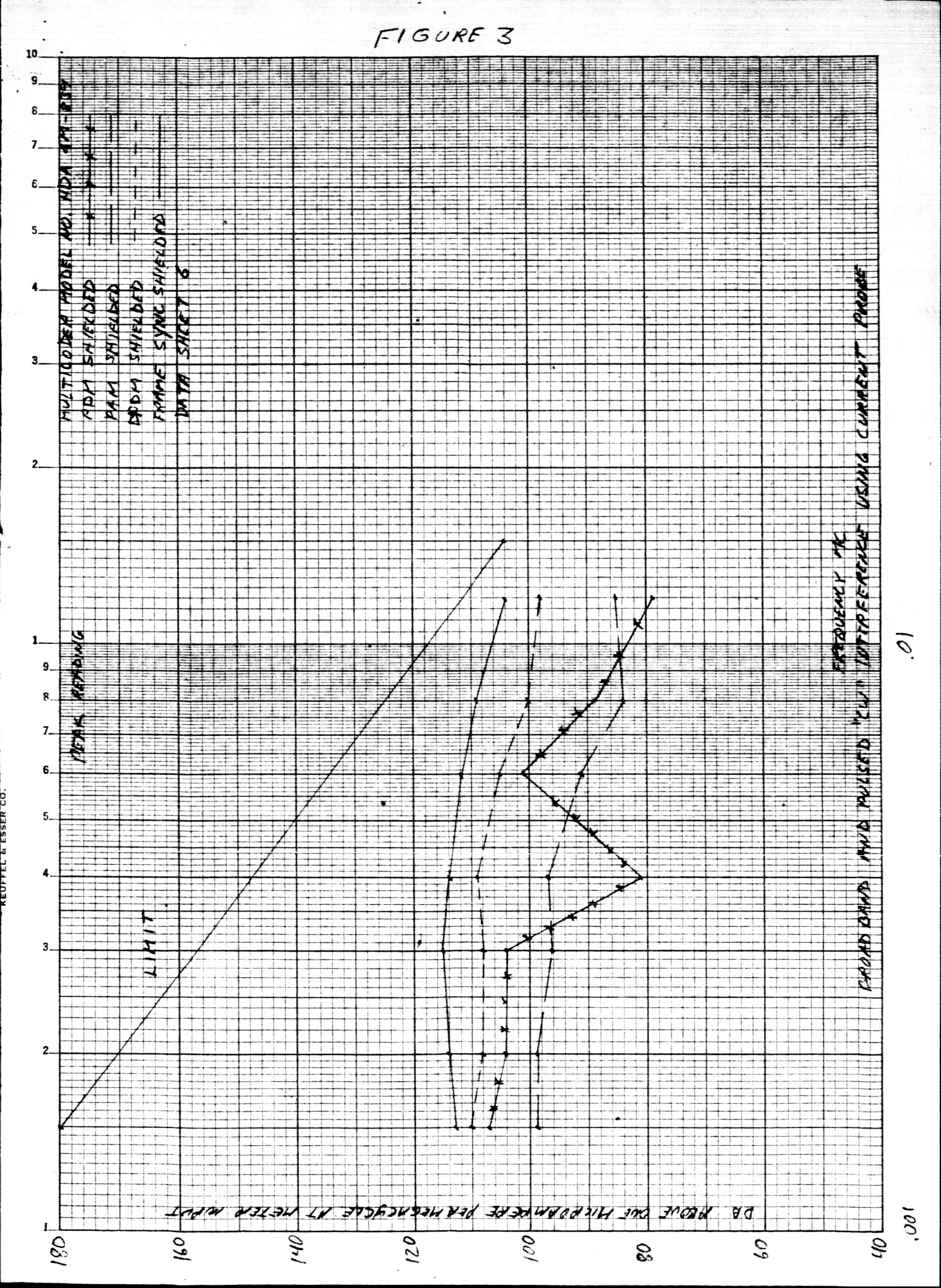


FIGURE 4

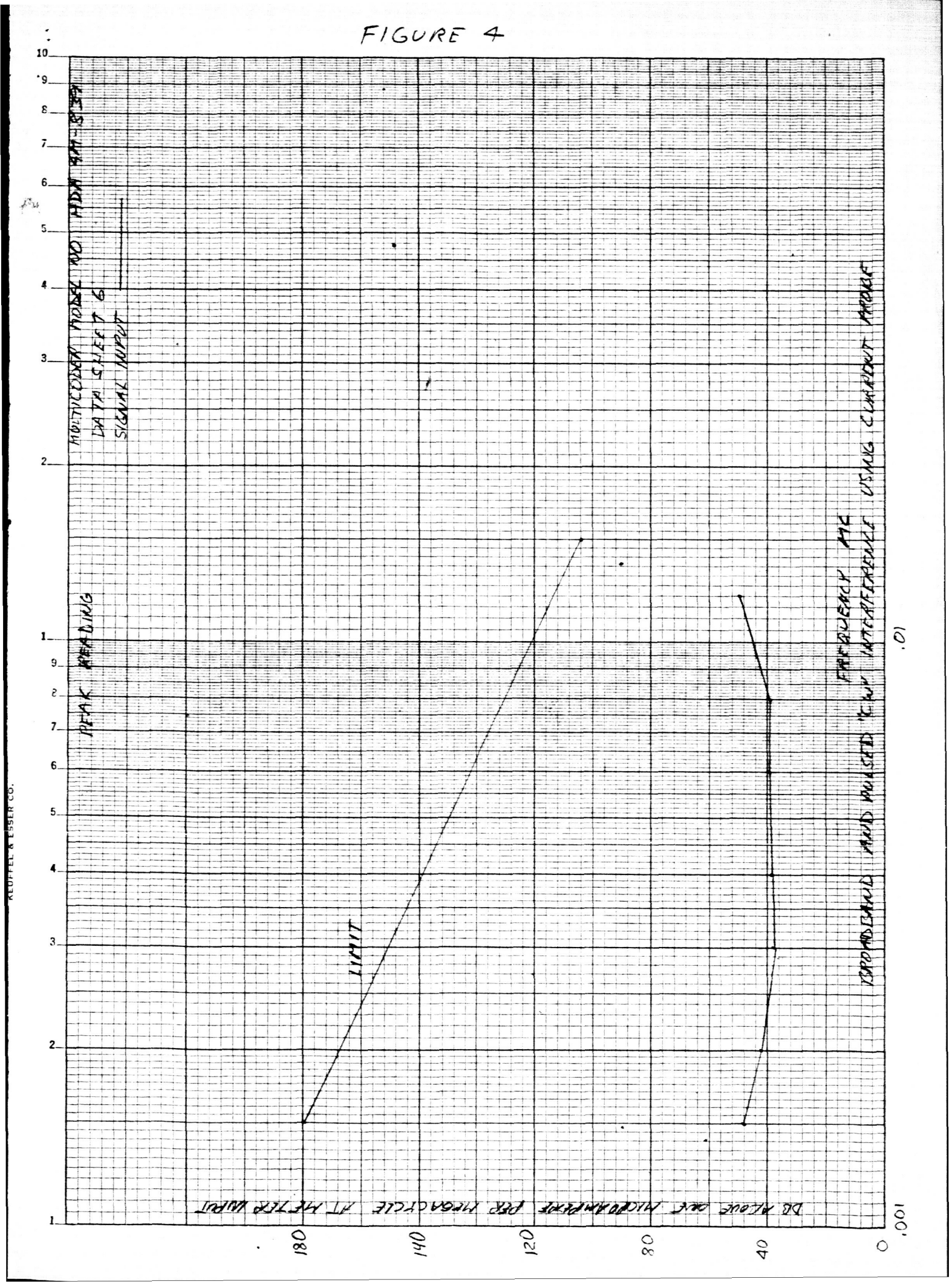

BROADBAND MUD PULSED "E-W" INTERFERENCE USING CURRENT PROBE
FOR FEEDBACK PIC
.01
.001
DB ABOVE ONE MICROAMPERE PER MEGACYCLE AT METER INPUT
180
140
120
80
40
0
LIMIT
PEAK READING
MULTICOLOR MODEL 400
DATA SHEET 6
SIGNAL INPUT
REUFFEL & ESSER CO.

FIGURE 5

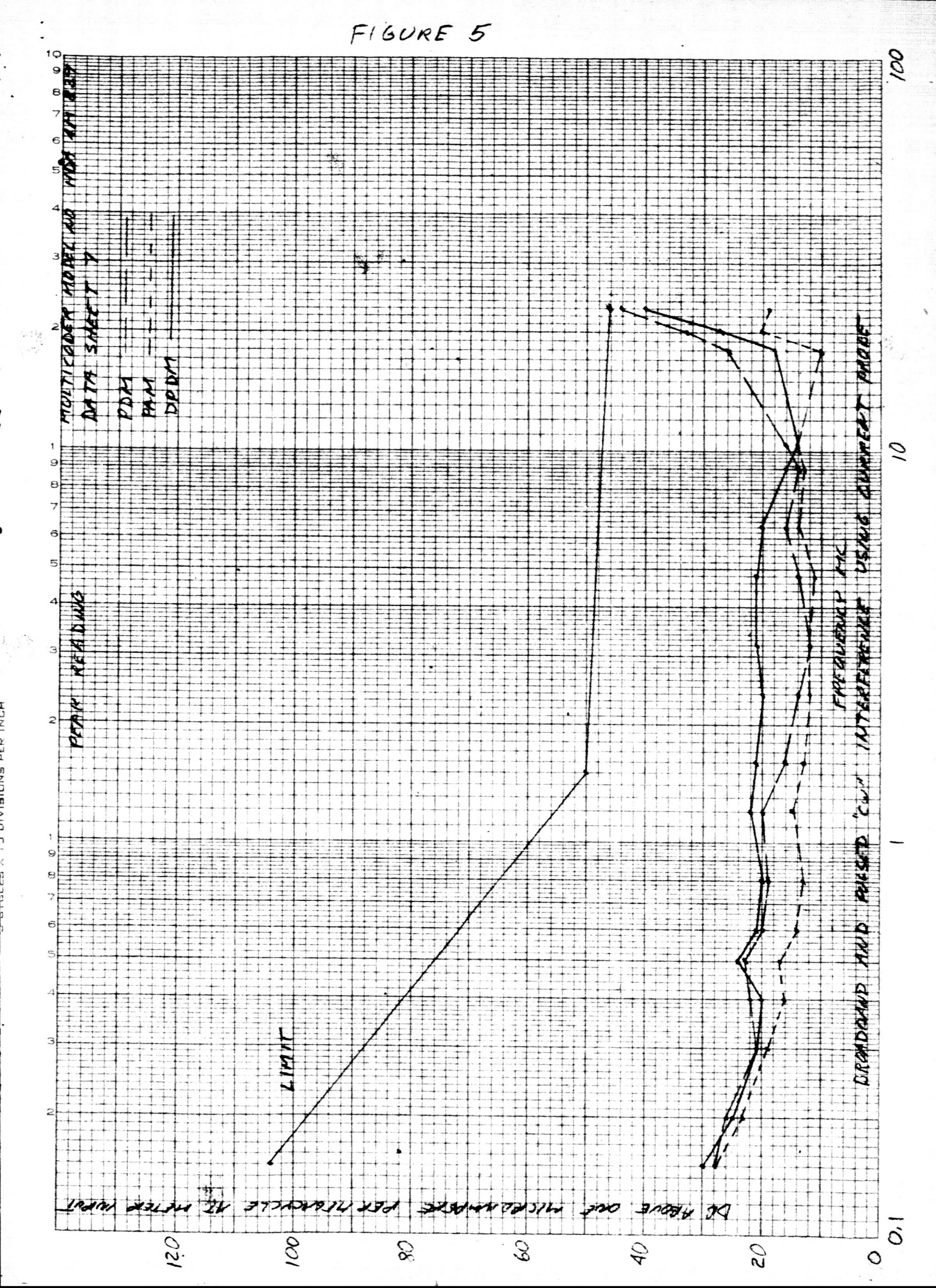
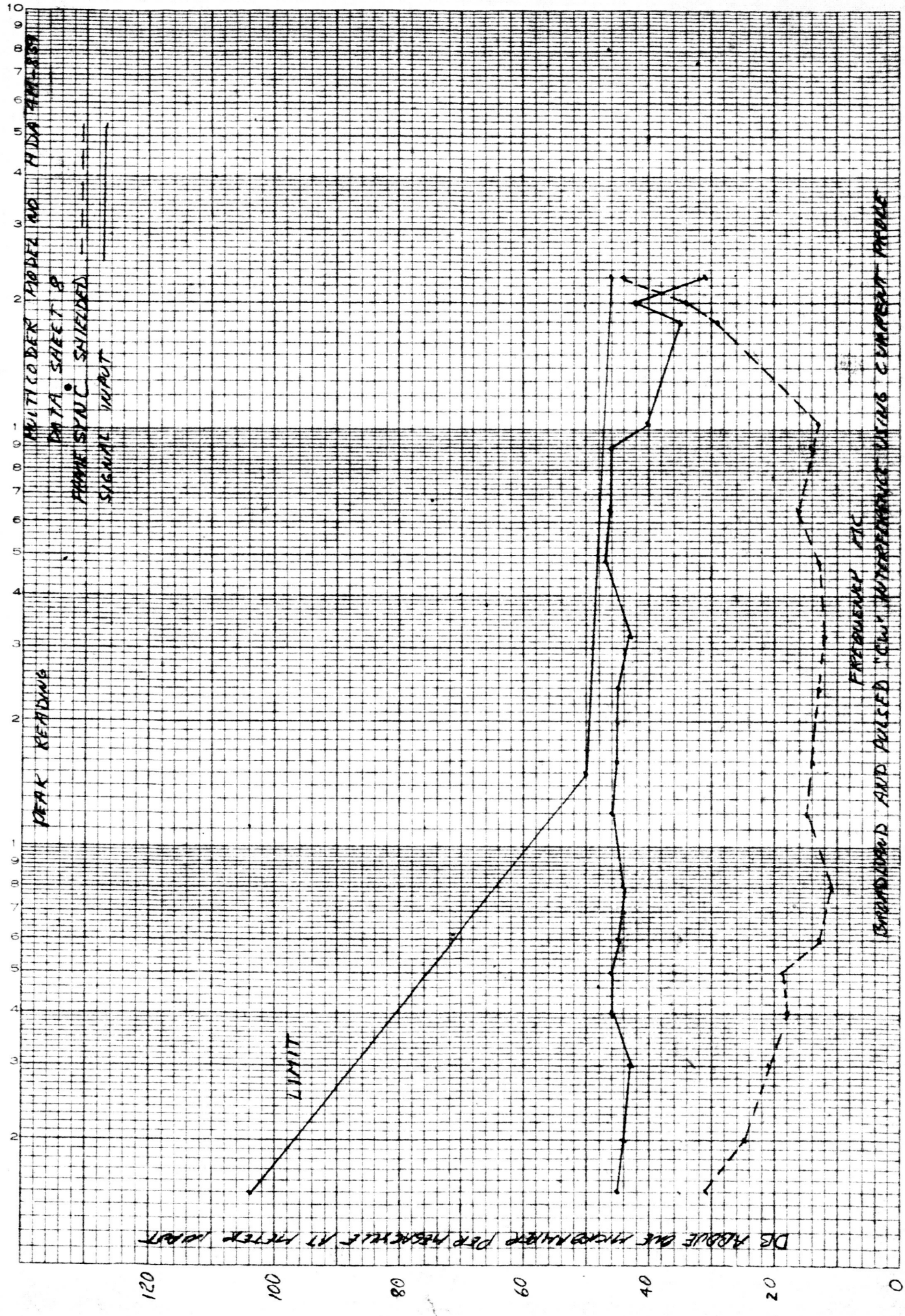

MULTICOUPLER MODEL AM MOBILE ANTENNA
DATA SHEET 7
PDA
FAM
DPDM
PEAK READINGS
LIMIT
DB ABOVE ONE MICROAMPERE PER MEGACYCLE AT METER INPUT
FREQUENCY IN MC
INTERFERENCE VOLTAGE CURRENT PROBE
BROADBAND AND PRESET "C"
120
100
80
60
40
20
0
100
10
1
0.1

FIGURE 6


MULTICOBER MODEL NO DATA SHEET &
PHASE SYNC SHIELDED
SIGNAL INPUT
PEAK READING
LIMIT
DE PULSE DUE MICROAMPS PER MEGACYCLE AT METER POINT
EMBEDDED AND PULSED "CW" INTERFERENCE USING CURRENT PROBE
FREQUENCY MC
120
100
80
60
40
20
0
100
10
1
0.1

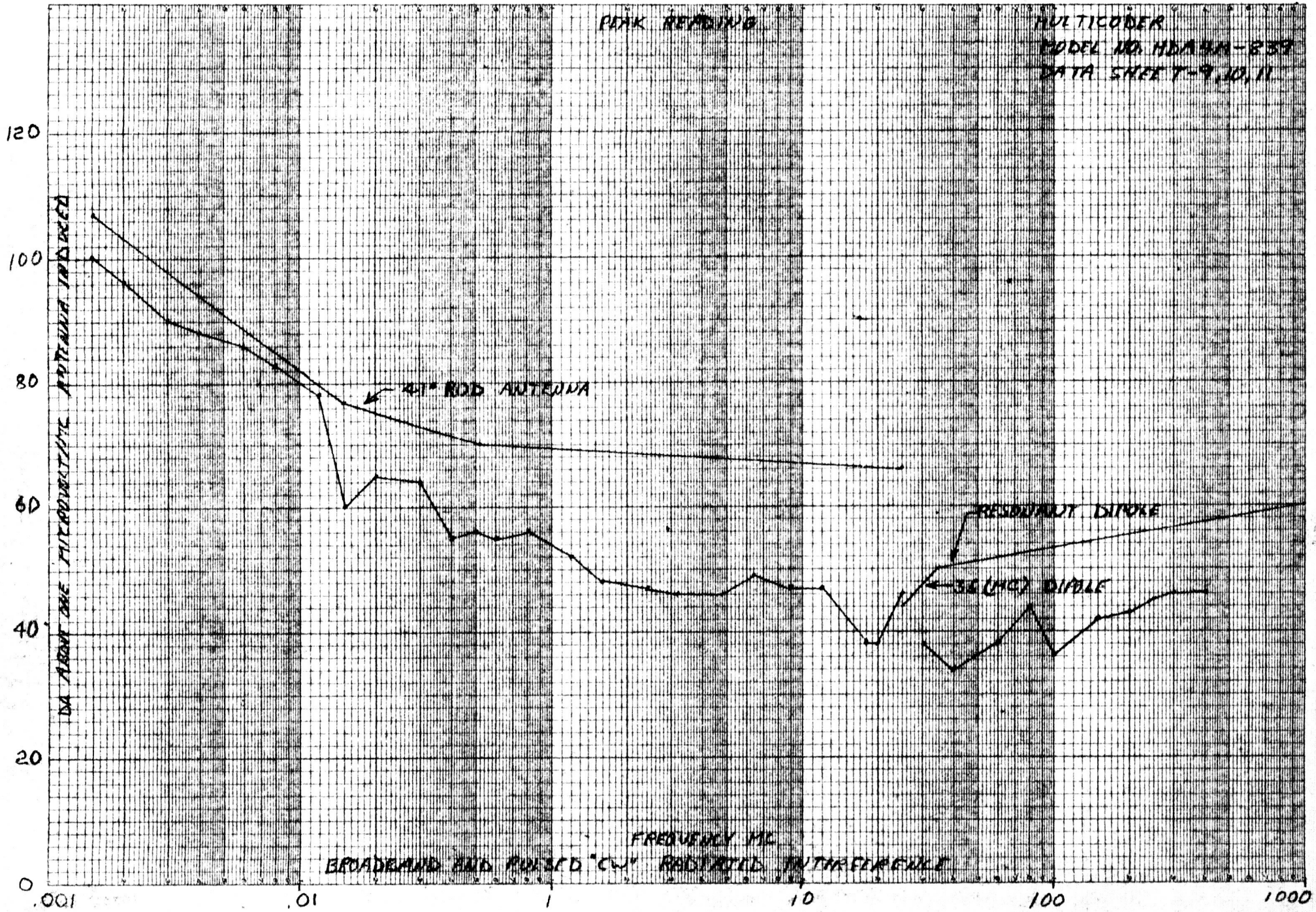

PEAK READING
HULTICODER
MODEL NO. HDA 9A-239
DATA SHEET 7-9, 10, 11
120
100
80
60
40
20
0
DB ABOVE ONE PICOWATT APPARENT INPUT
"41" ROD ANTENNA
RESONANT DIPOLE
~36 (HC) DIPOLE
.001
.01
1
10
100
1000
FREQUENCY MC
BROADBAND AND PULSED "CW" RADIATED INTERFERENCE

FIGURE 8