

2.9 Tables Field Strength of Spurious Radiation Test

The attached test data was completed by Tom Roche at the control Design & Testing facility Spotsylvania VA. Along with the data we have inclosed his site cerification letter.

CD&T

FCC ID

RADIATED EMISSIONS					FCC ID:		page 1 of 1	
client RELM Communications					model		proect # 0615	
device transceiver						Test date 02-09-98		
CFR			antenna Dipoles/DRG horn			temp. 19C		
Frequency Radiated MHz.	Peak Reading dBm	Ant Factor dB	Ant Polar	Field Intensity uV/m @ 3m		FCC Limit uV/m @ 3m		
Receiver Local Oscillator - Low Channel								
715.024	-112.39	31.30	V	20		200		
1430.049	-91.42	28.31	V	156		500		
2145.072	-111.35	31.18	H	22		500		
Receiver Local Oscillator - Mid Channel								
725.999	-110.86	31.38	V	24		200		
1451.998	-92.10	28.40	V	146		500		
2177.997	-107.10	31.32	H	36		500		
Receiver Local Oscillator - High Channel								
734.974	-104.86	31.40	V	48		200		
1469.948	-92.07	28.44	V	147		500		
2204.922	-102.37	31.39	H	63		500		

[Signature]

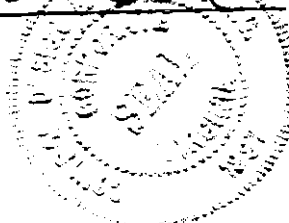
[Circular Stamp]

CD&T

FCC ID

RADIATED EMISSIONS				FCC ID:		page 1 of 3	
client RELM Communications				model		proect # 0615	
device transceiver					Test date 02-08-98		
CFR			antenna Dipoles/DRG horn			temp. 21C	
Frequency Radiated MHz.	Peak Reading dBm	Ant Factor dB	Ant Polar	Field Intensity uV/m @ 3m	Power ref. to 35W dBc	FCC Limit dBc	
Transmitter Carrier = 869.975 Po = 35 Watts							
869.975							
1739.948	-79.42	29.73	V	725	-85.61	-58.44	
2609.921	-61.94	32.08	V	7194	-65.68	-58.44	
3479.895	-98.21	35.56	H	169	-98.26	-58.44	
4349.868	-91.71	37.99	H	411	-90.45	-58.44	
5219.842	-93.32	37.96	H	382	-91.18	-58.44	
6089.816	-101.05	38.63	H	169	-98.26	-58.44	
6959.790	-97.75	39.45	H	272	-94.13	-58.44	
7829.763	-111.27	40.38	V	64	-94.13	-58.44	
8699.737	-112.05	41.47	H	66	-106.43	-58.44	

Shirley L. Rahn

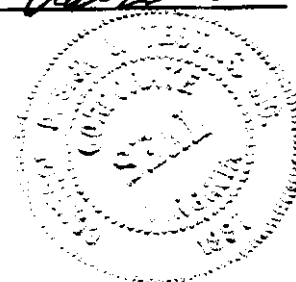


CD&T

FCC ID

RADIATED EMISSIONS				FCC ID:		page 2 of 3	
client RELM Communications				model		proect # 0615	
device transceiver					Test date 02-08-98		
CFR			antenna Dipoles/DRG horn			temp. 21C	
Frequency Radiated MHz.	Peak Reading dBm	Ant Factor dB	Ant Polar	Field Intensity uV/m @ 3m	Power ref. to 35W dBc	FCC Limit dBc	
Transmitter Carrier = 861.001 Po = 35 Watts							
861.001							
1721.997	-78.89	29.72	V	779	-84.99	-58.44	
2582.996	-58.91	32.02	V	10127	-62.71	-58.44	
3443.995	-100.29	35.54	H	130	-100.54	-58.44	
4304.994	-87.94	37.90	H	705	-85.85	-58.44	
5165.992	-94.73	37.88	H	322	-92.66	-58.44	
6026.991	-91.51	38.62	H	508	-88.70	-58.44	
6887.989	-98.71	39.44	H	244	-95.07	-58.44	
7748.988	-100.47	40.36	H	221	-95.93	-58.44	
8609.987	-107.60	41.45	H	110	-101.99	-58.44	

Shen L. Rahn



CD&T

FCC ID

RADIATED EMISSIONS				FCC ID:		page 3 of 3	
client RELM Communications				model		proect # 0615	
device transceiver					Test date 02-09-98		
CFR			antenna Dipoles/DRG horn			temp. 19C	
Frequency Radiated MHz.	Peak Reading dBm	Ant Factor dB	Ant Polar	Field Intensity uV/m @ 3m	Power ref. to 35W dBc	FCC Limit dBc	
Transmitter Carrier = 850.025 Po = 35 Watts							
850.025							
1700.490	-82.89	29.72	V	491	-88.99	-58.44	
2550.071	-61.00	32.02	V	7952	-64.81	-58.44	
3400.947	-91.67	35.59	H	349	-91.96	-58.44	
4250.118	-92.64	37.89	H	410	-90.56	-58.44	
5100.143	-95.84	37.89	H	283	-93.78	-58.44	
5950.116	-89.45	38.60	H	642	-86.67	-58.44	
6800.189	-100.83	39.41	H	191	-97.19	-58.44	
7650.213	-102.68	40.34	H	171	-98.16	-58.44	
8500.237	-110.16	41.43	H	82	-104.54	-58.44	

[Signature]

[Circular Seal]

FEDERAL COMMUNICATIONS COMMISSION

7435 Oakland Mills Road
Columbia, MD 21046
Telephone: 301-725-1585 (ext-218)
Facsimile: 301-344-2050

December 15, 1995

IN REPLY REFER TO
31040/SIT
1300F2

Hyak Laboratories, Inc.
7011 Calamo Street, Suite 107
Springfield, VA 22150

Attention: Rowland S. Johnson

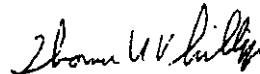
Re: Measurement facility located at Spotsylvania
(3 meter site)

Gentlemen:

Your submission of the description of the subject measurement facility has been reviewed and found to be in compliance with the requirements of Section 2.948 of the FCC Rules. The description has, therefore, been placed on file and the name of your organization added to the Commission's list of facilities whose measurement data will be accepted in conjunction with applications for certification or notification under Parts 15 or 18 of the Commission's Rules. Our list will also indicate that the facility complies with the radiated and AC line conducted test site criteria in ANSI C63.4-1992. Please note that this filing must be updated for any changes made to the facility, and at least every three years the data on file must be certified as current.

Per your request, the above mentioned facility has been also added to our list of those who perform these measurement services for the public on a fee basis. This list is published periodically and is also available on the Laboratory's Public Access Link as described in the enclosed Public Notice.

Sincerely,

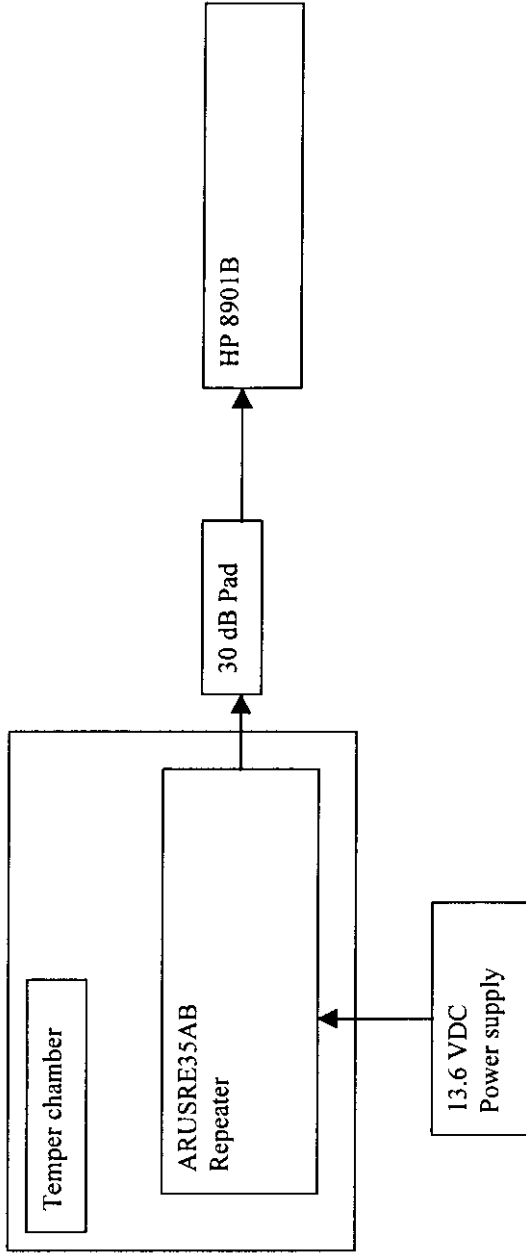


Thomas W. Phillips
Electronics Engineer
Customer Service Branch

Enclosure:
PAL PN

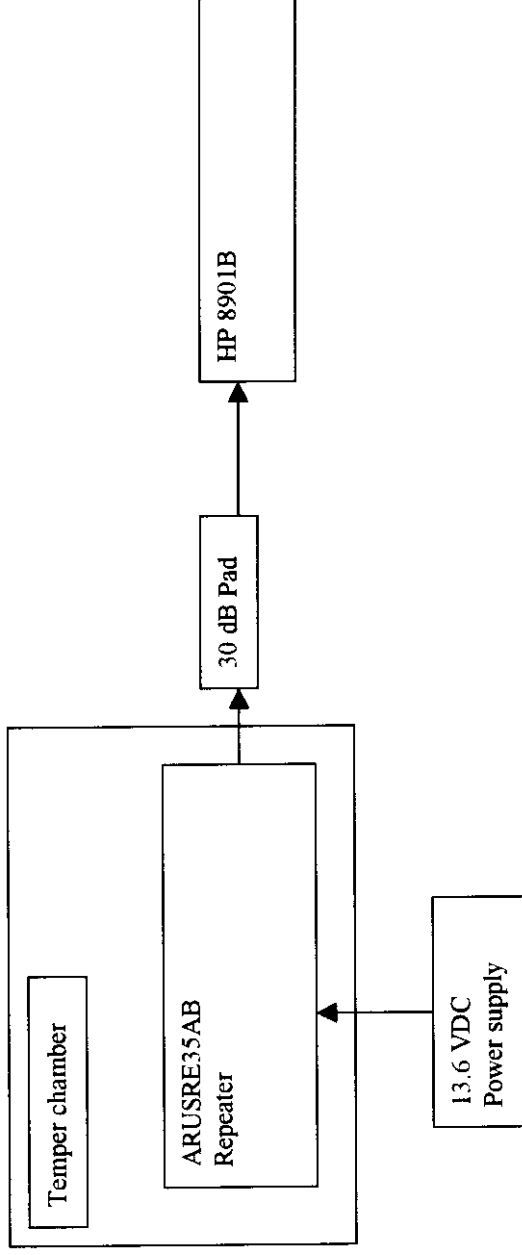
2.10 Figures

2.10.1 Figure 1. This test set up was used to test RF power output and Frequency Stability

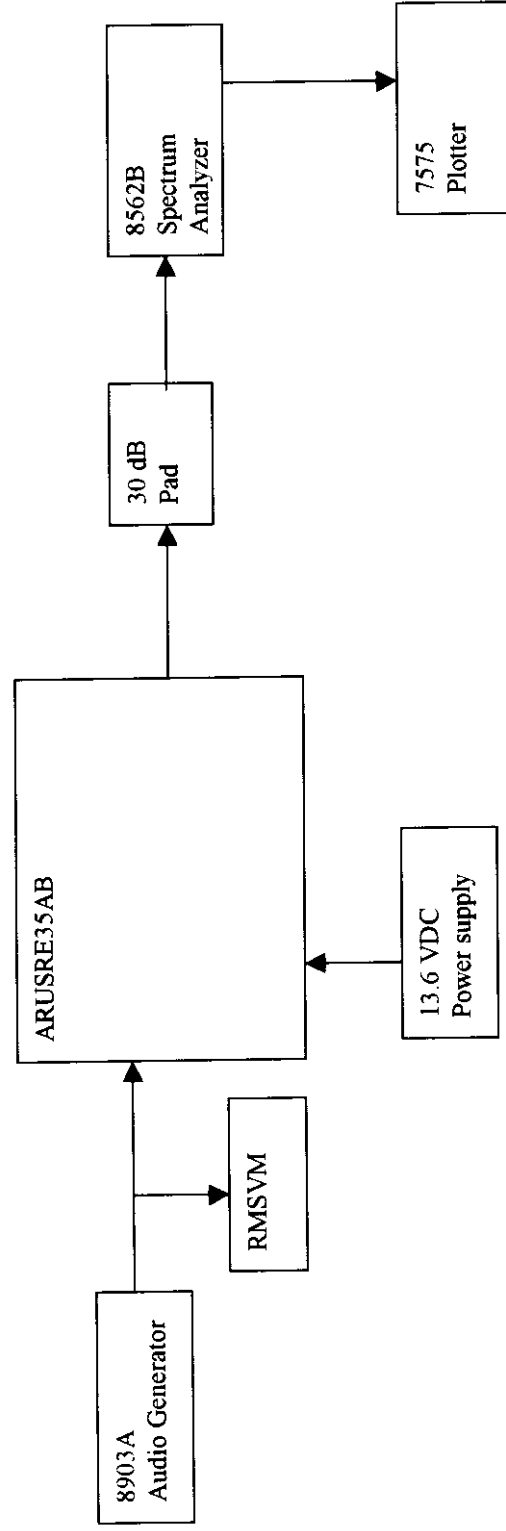


2.10 Figures

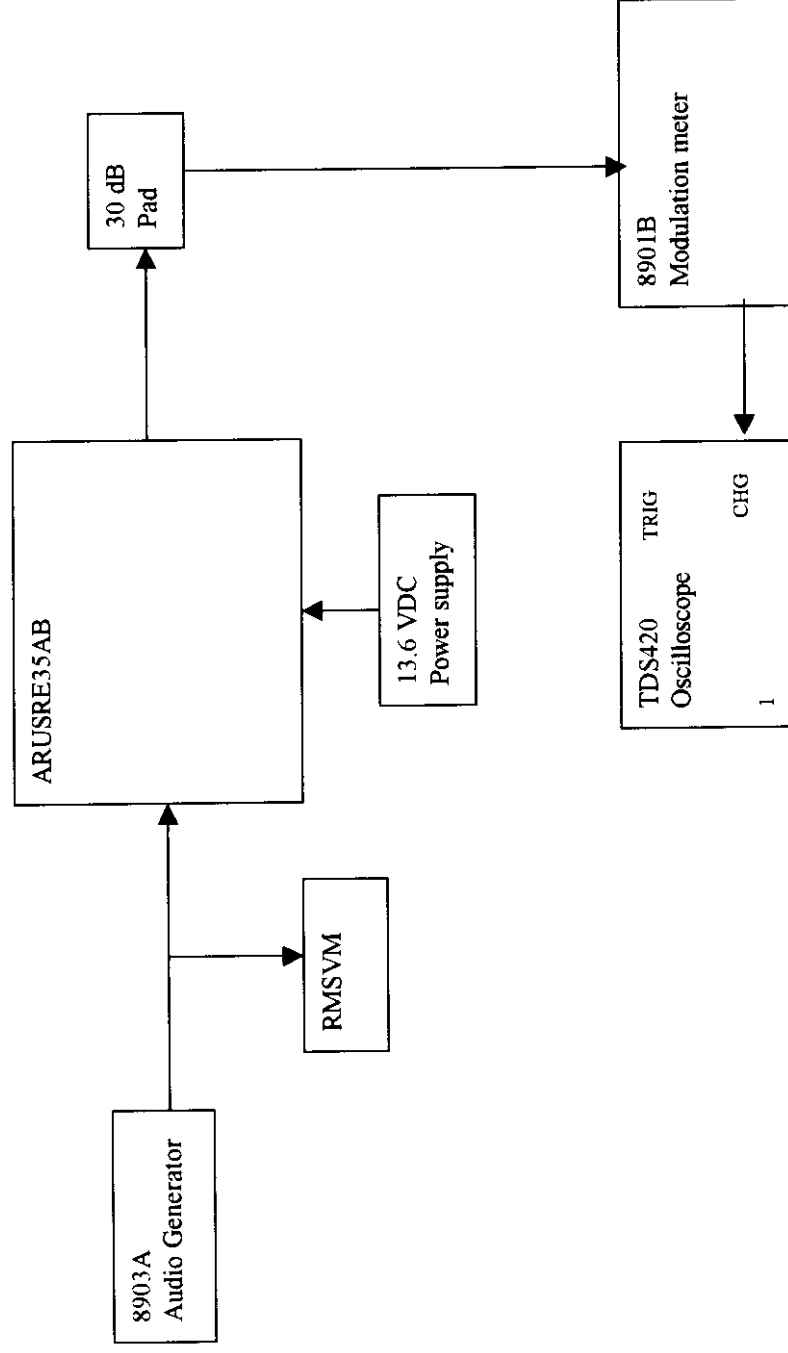
2.10.1 Figure 1. This test set up was used to test RF power output and Frequency Stability



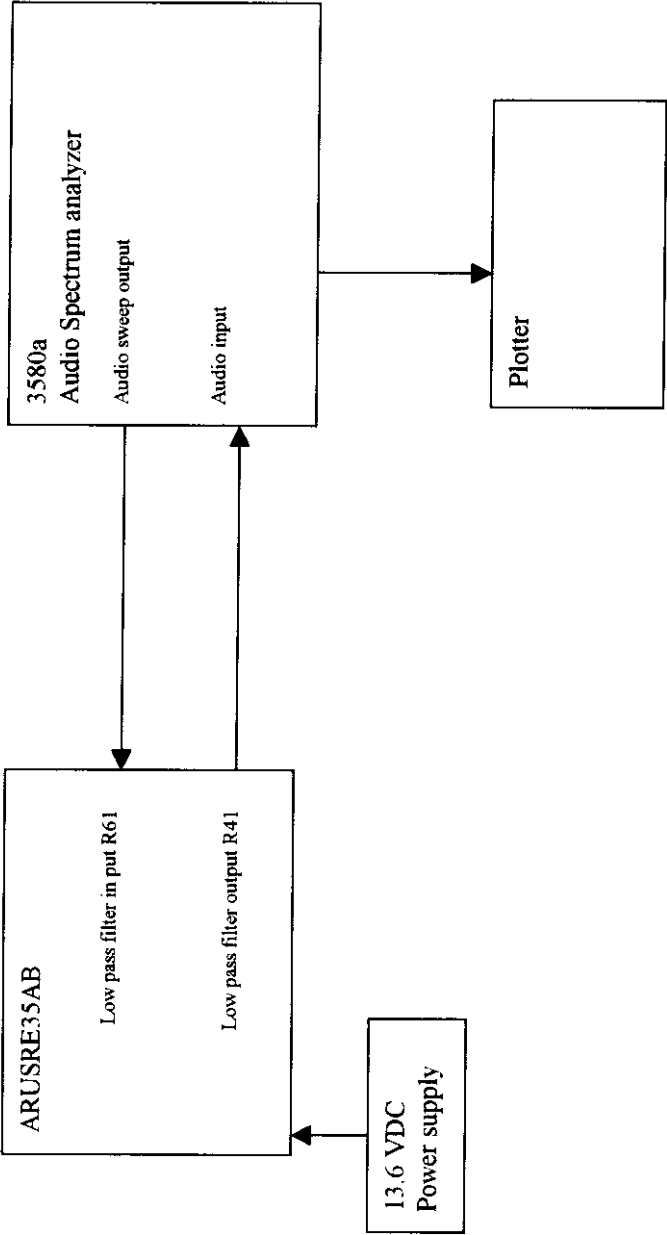
2.10.2 Figure 2. This test set up was used to do the Occupied Bandwidth Test



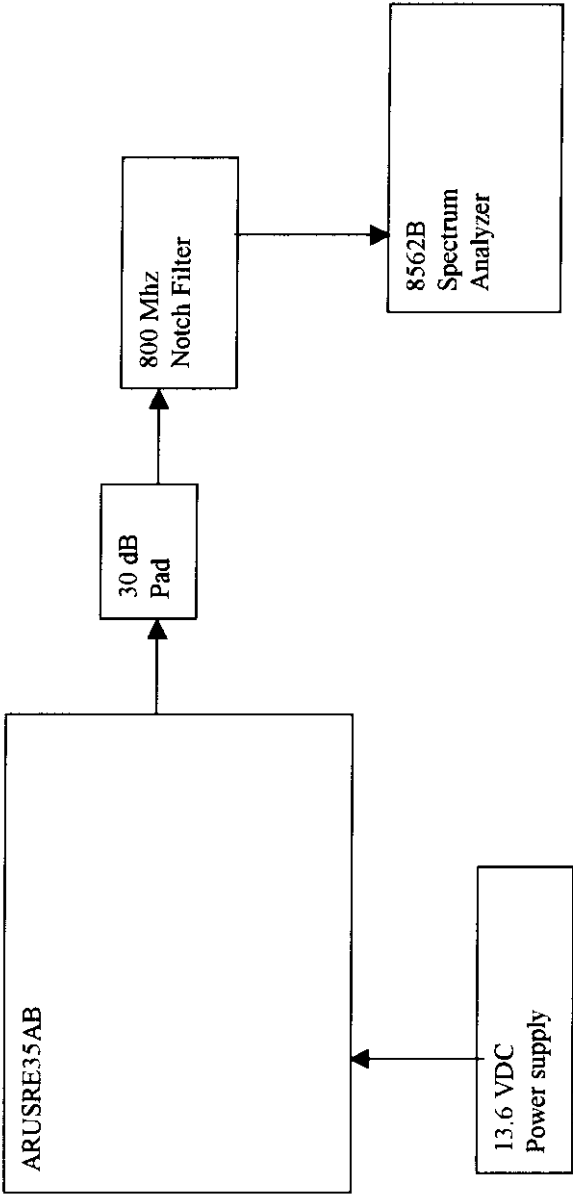
2.10.3 Figure 3. This test set up was used to do the Modulation Deviation Test and the Transmitter Audio Frequency Response Test



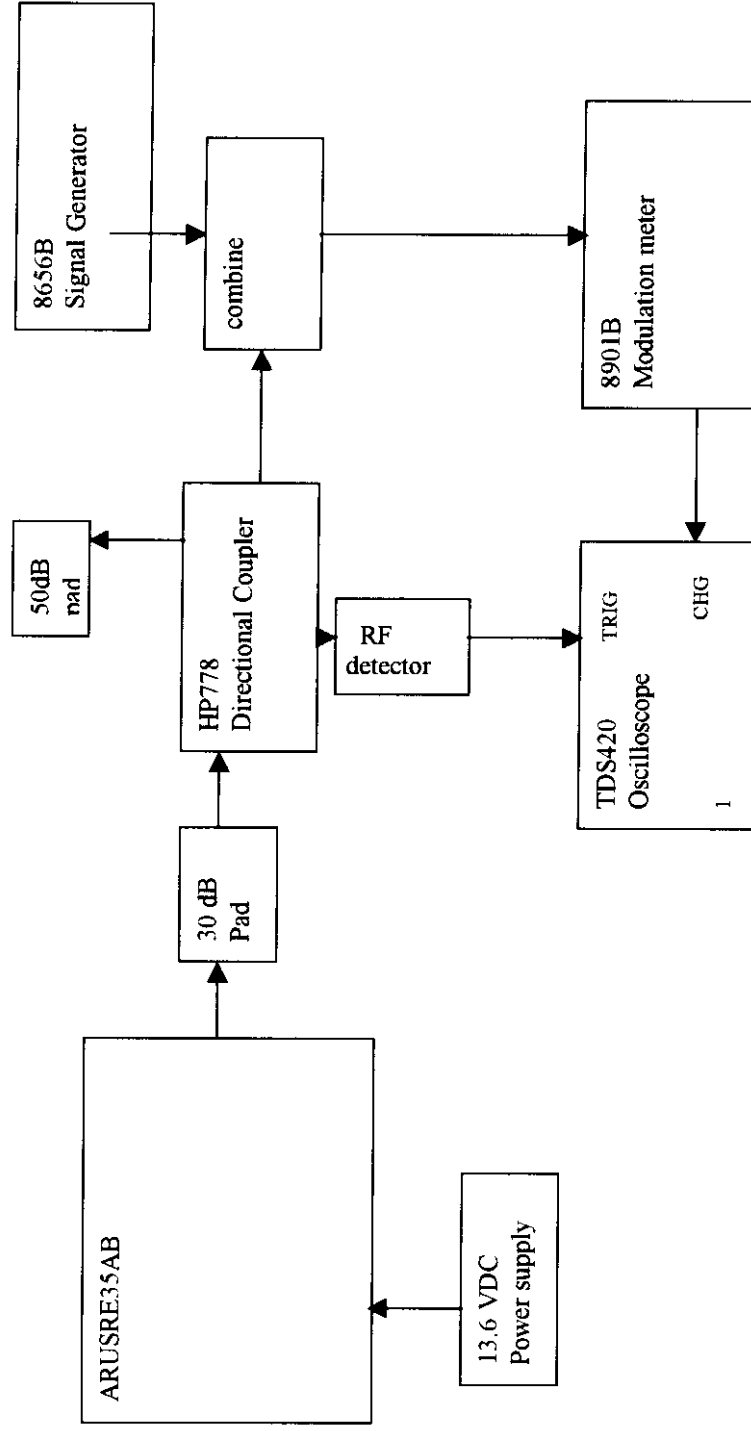
2.10.4 Figure 4 This test set up was used to do the Transmitter low pass filter Test



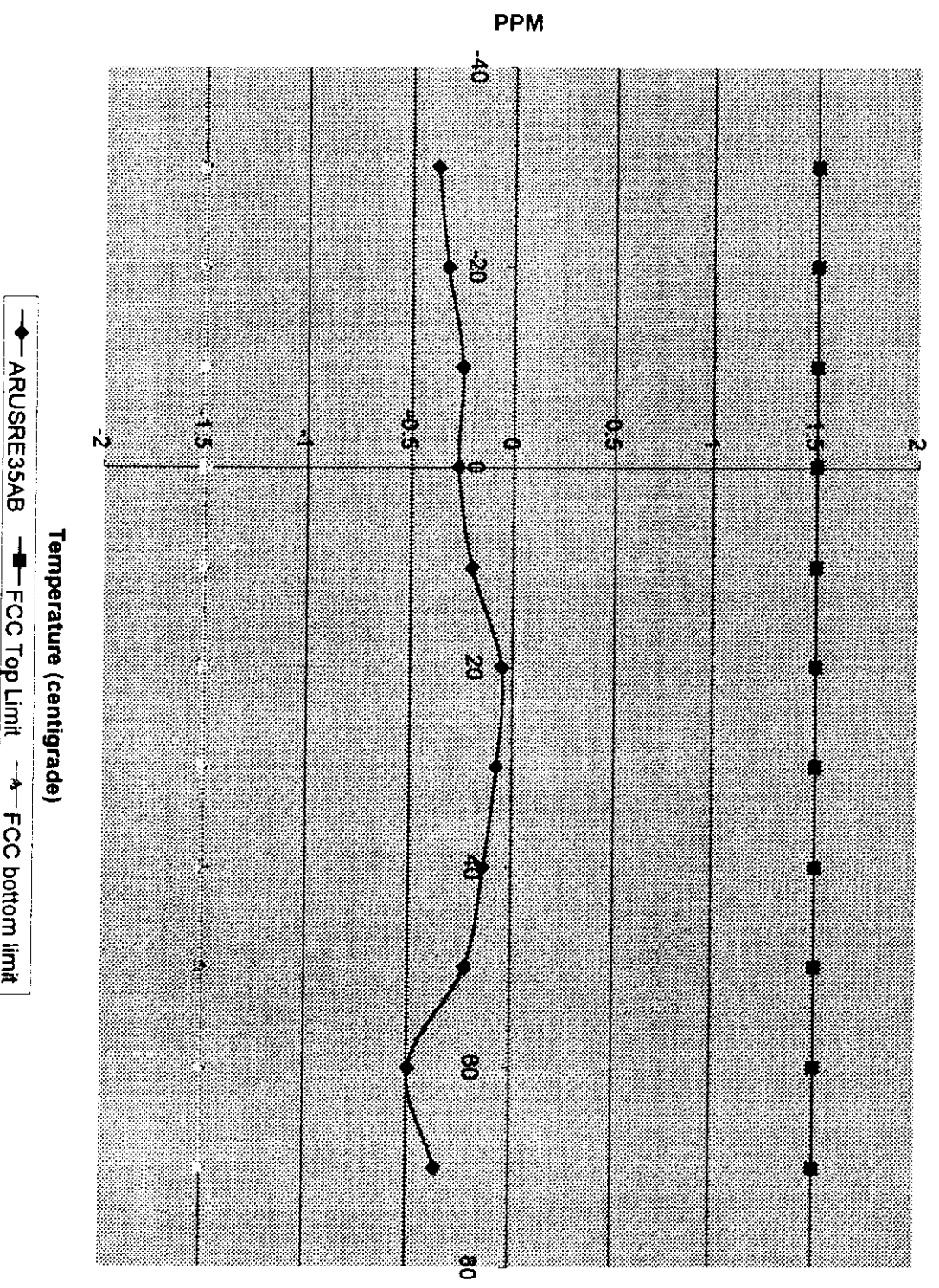
2.10.5 Figure 5. Conducted Emissions Test



2.10.6 Figure 6 This test set up was used to do the Transmitter Transient Behavior test

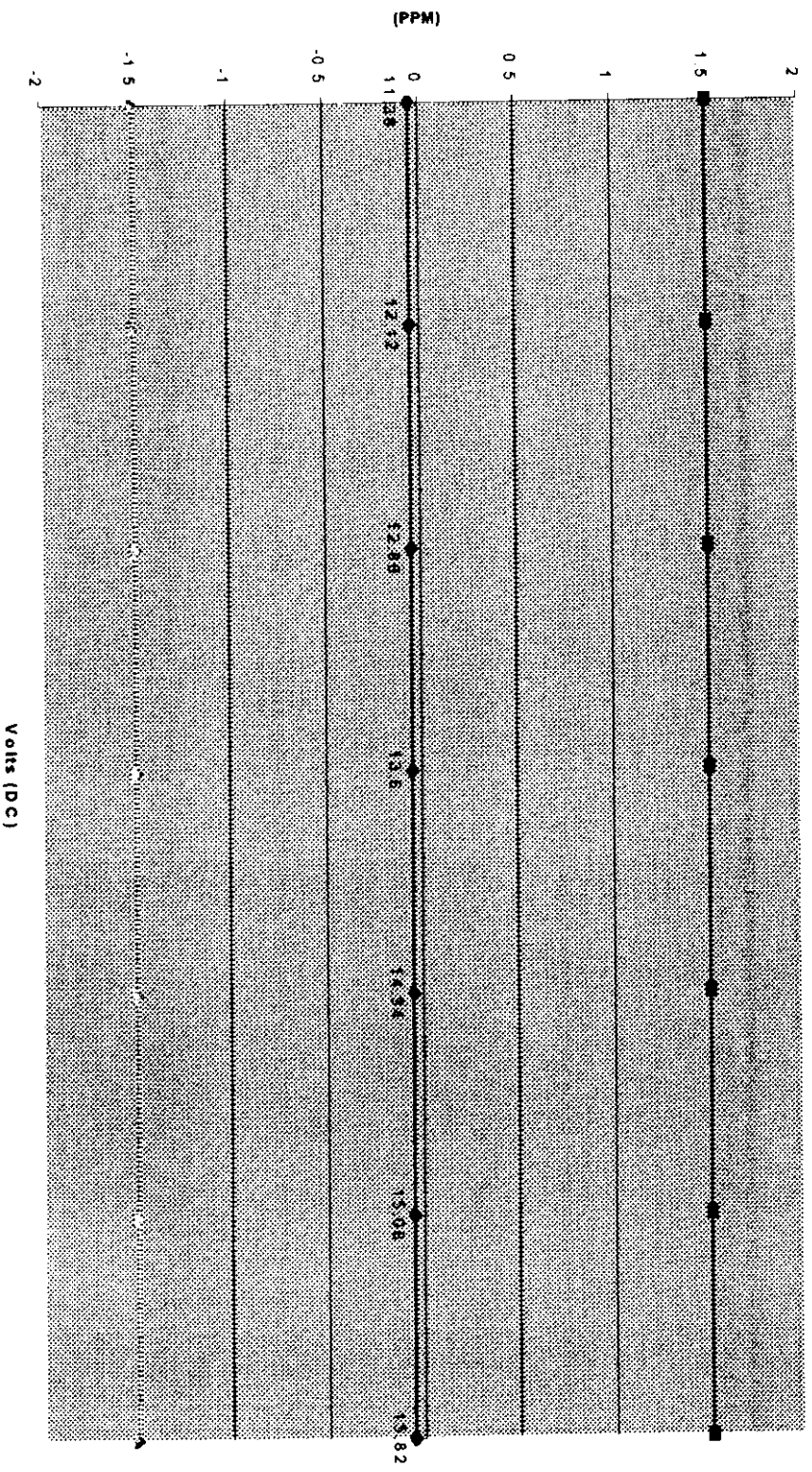


Frequency Stability VS Temperature



2.8.1 Graph 1 Frequency Stability VS temperature

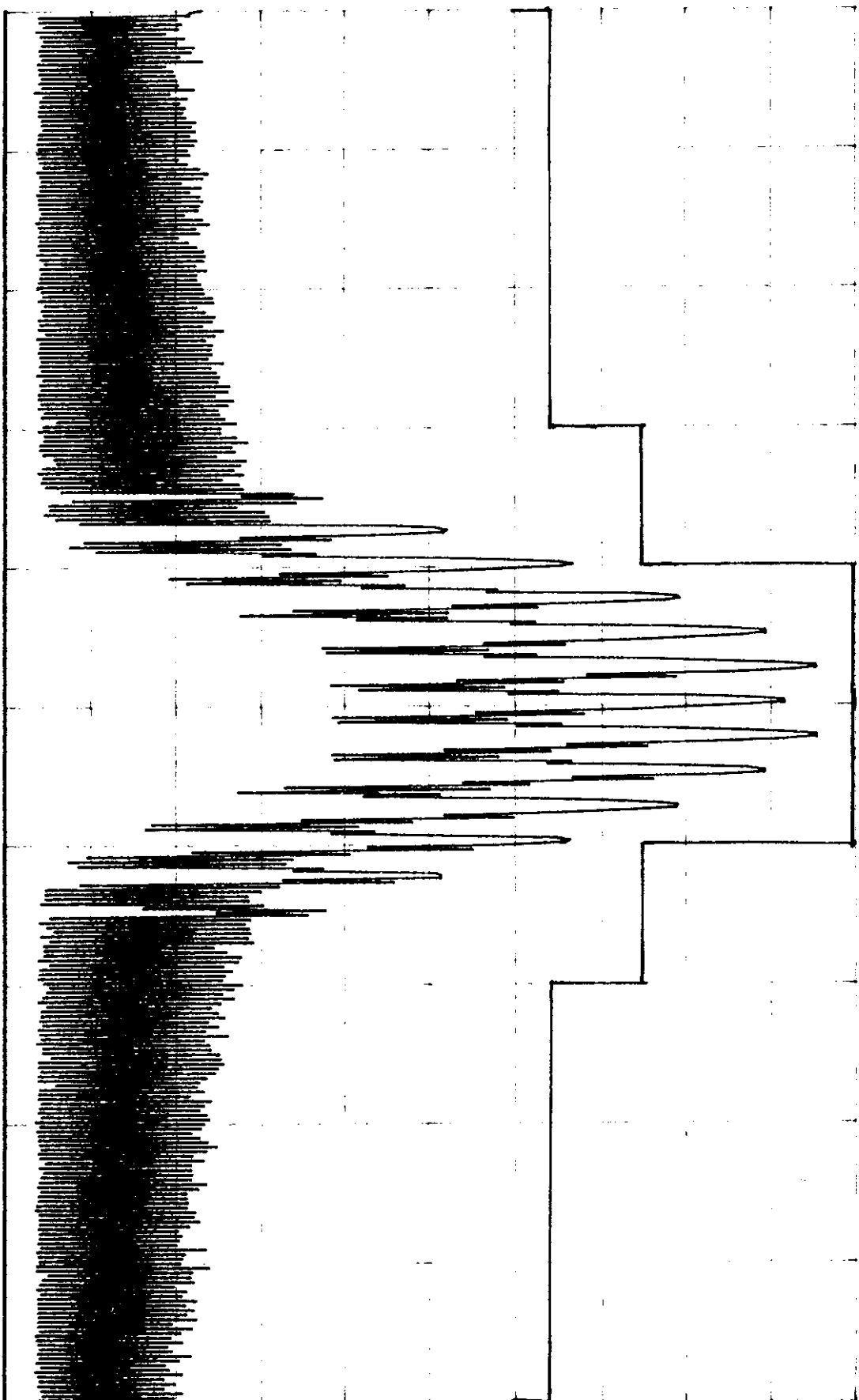
Frequency Stability VS voltage



2.8.2 Graph 2 Frequency Stability VS 13.6 VDC input voltage

*ATTEN 40dB
RL 14.0dBm

10dB/



11

CENTER 861.0000MHz

SPAN 100.0kHz

*RBW 300Hz

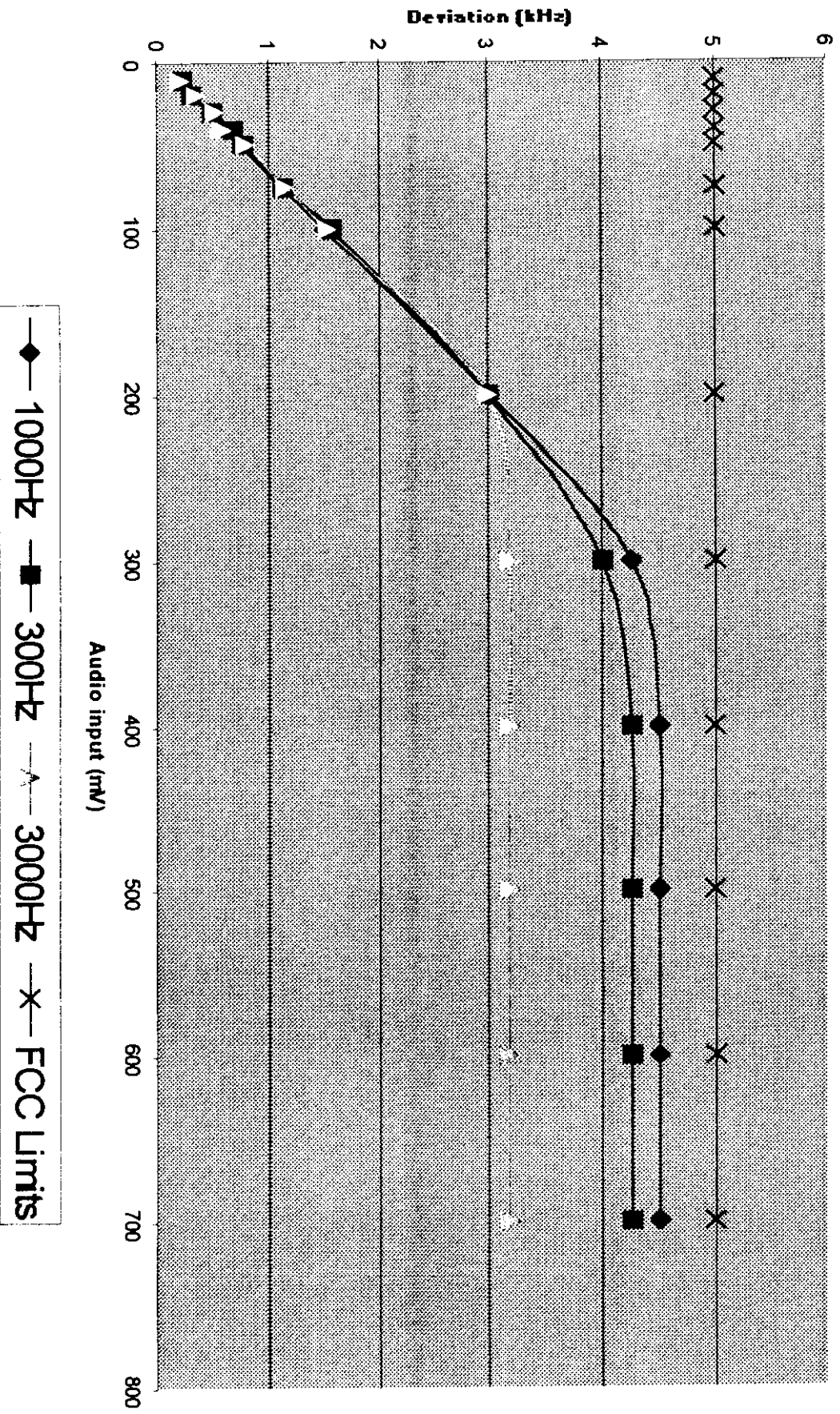
*VBW 3.0kHz

*SMP 25sec

2.8.3 Occupied Bandwidth Test Graph 4

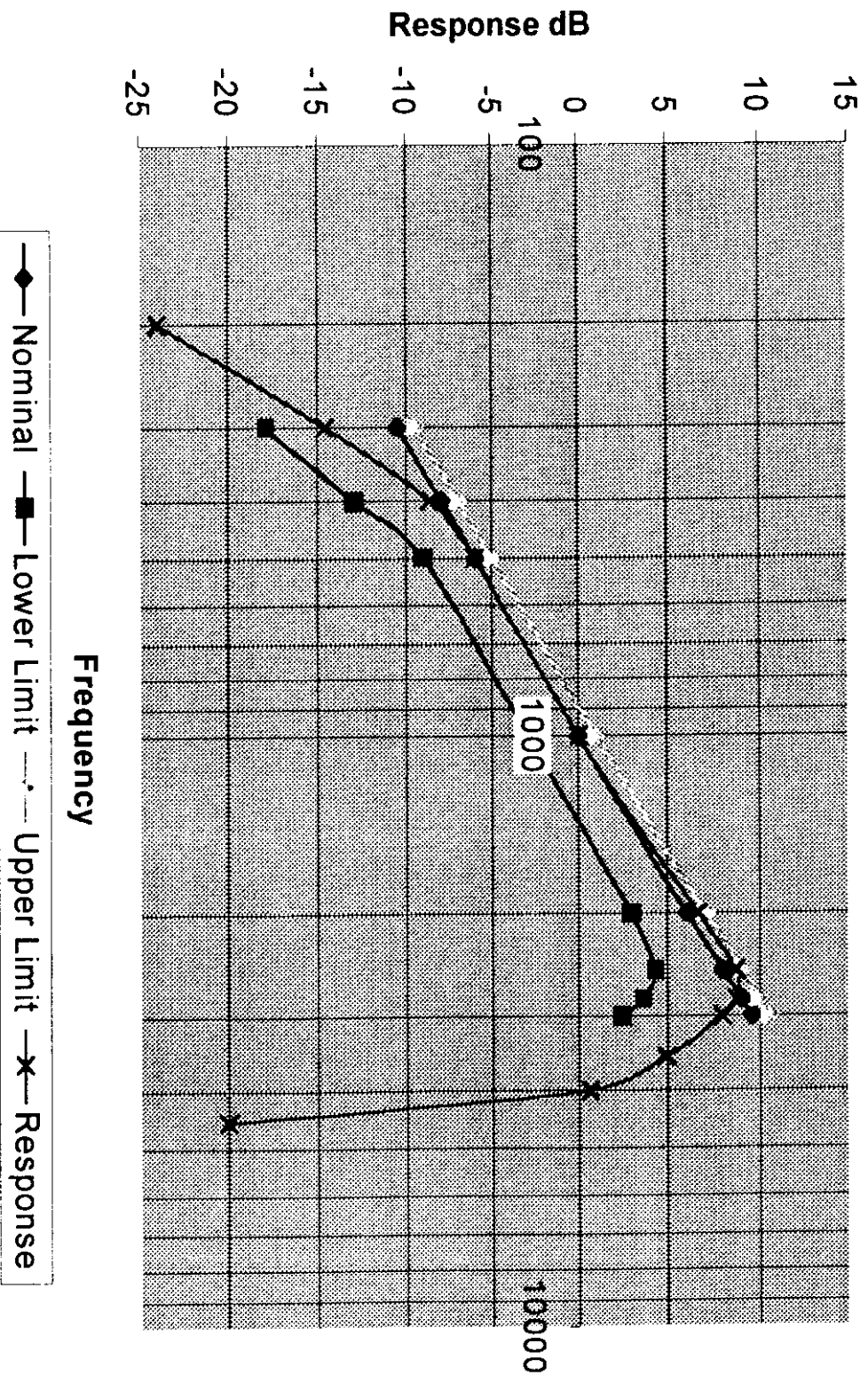
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Modulation Deviation

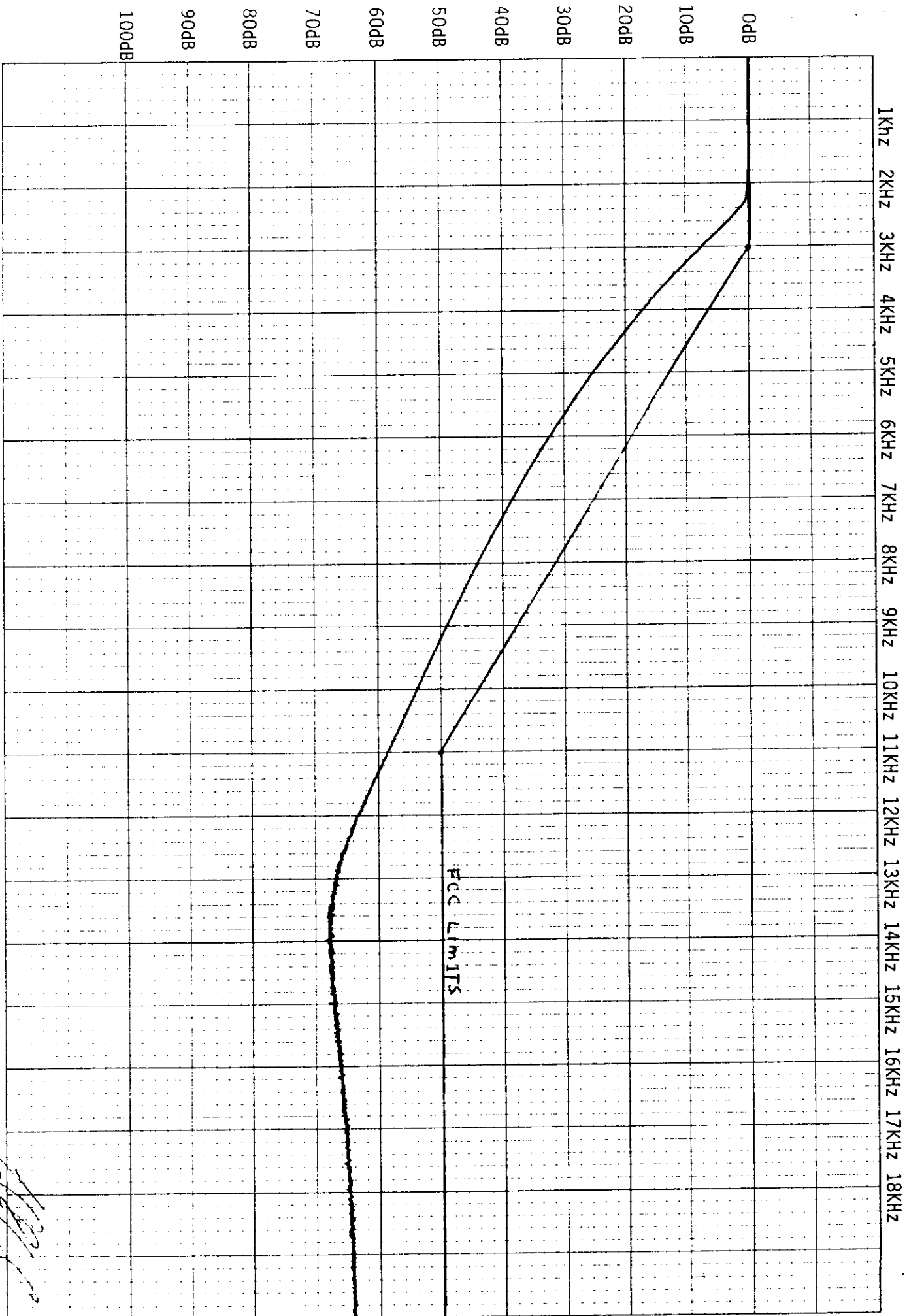


2.8.4 Graph 5 Modulation VS audio input Level

Transmitter Frequency Response



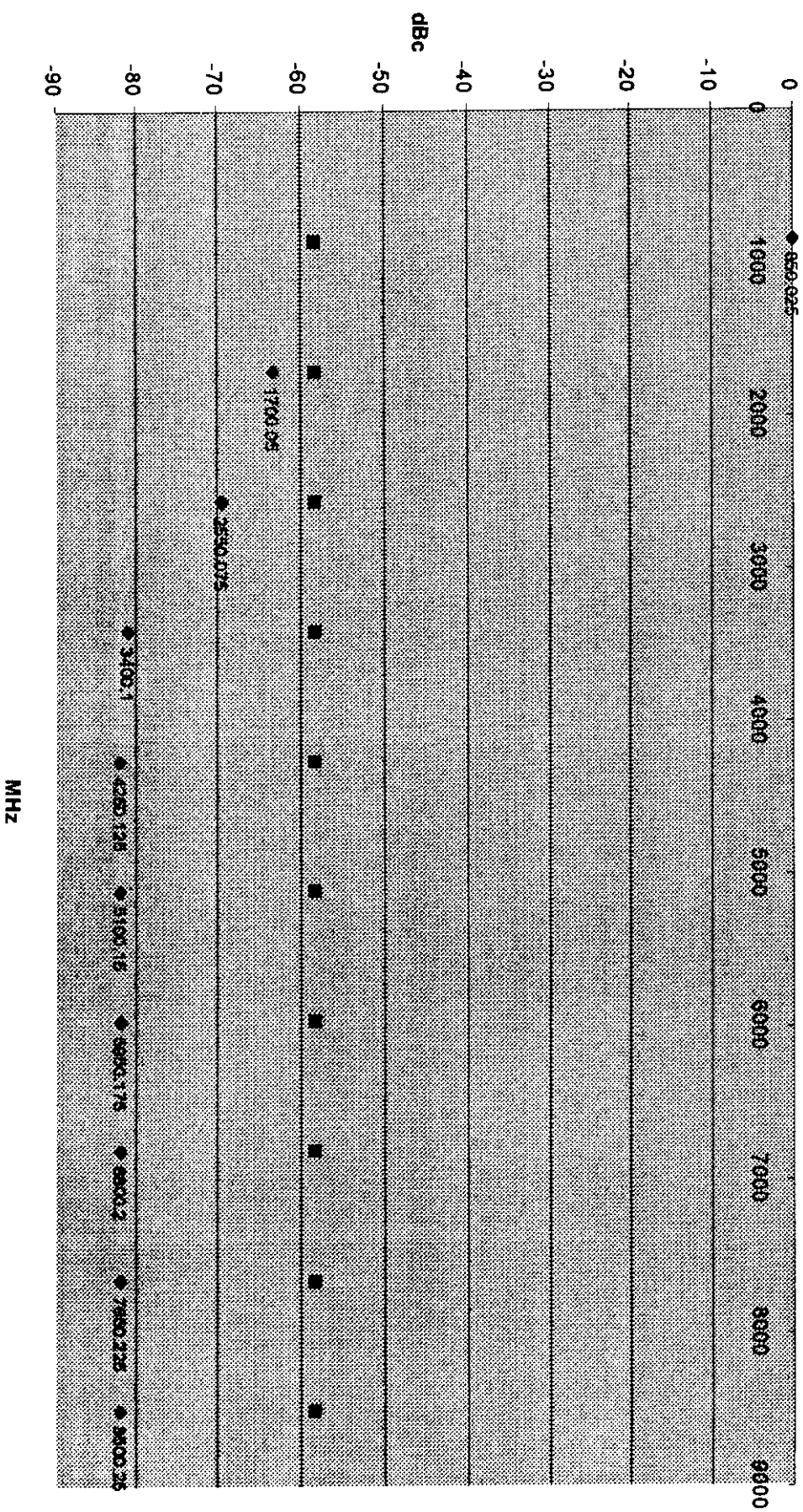
2.8.5 Graph 6 Transmitter Audio Frequency Response



2.8.6 Graph 5 Low Pass Filter Audio Response Test

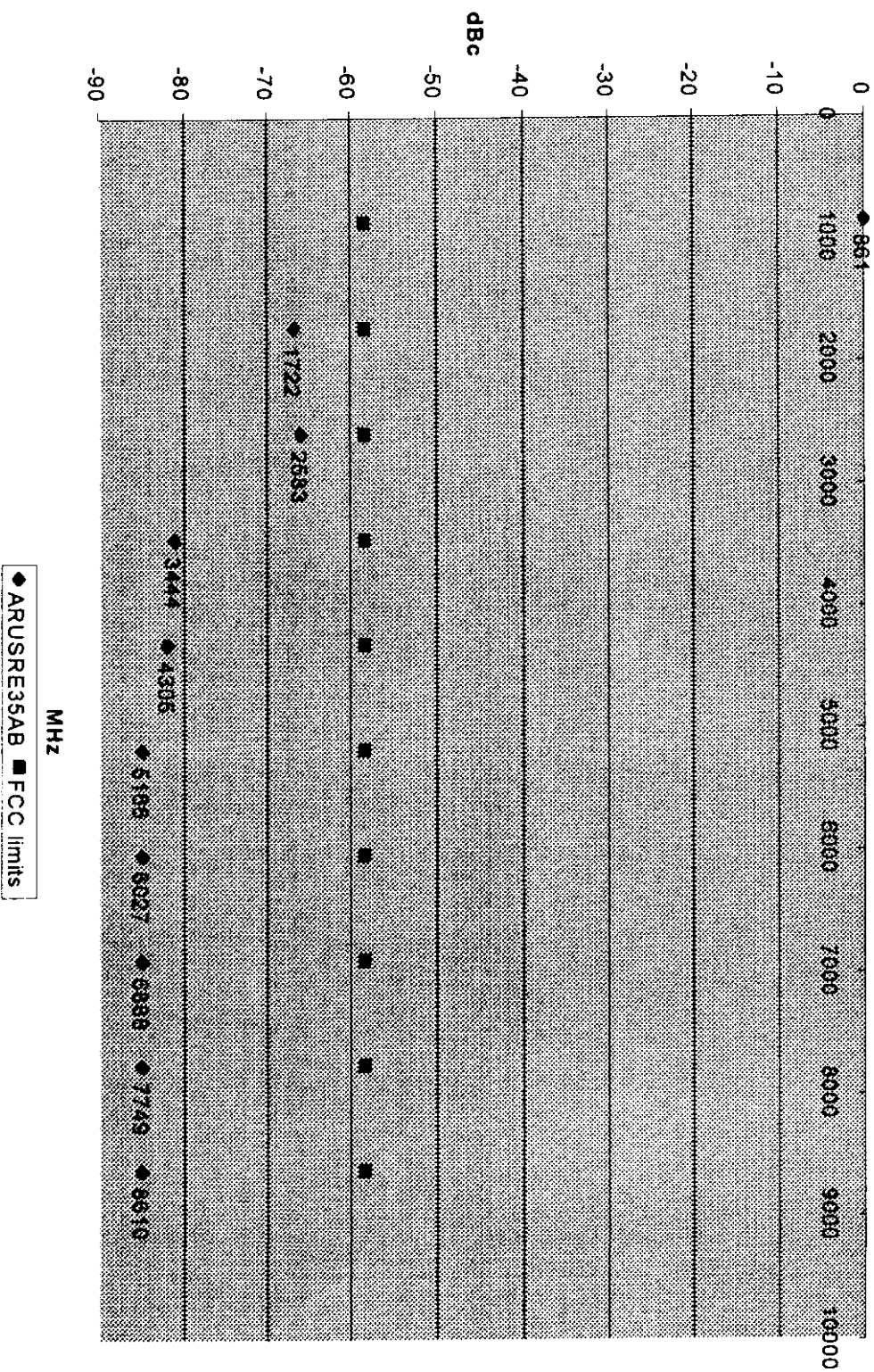
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Conducted Spurious Emissions 850.025 MHz



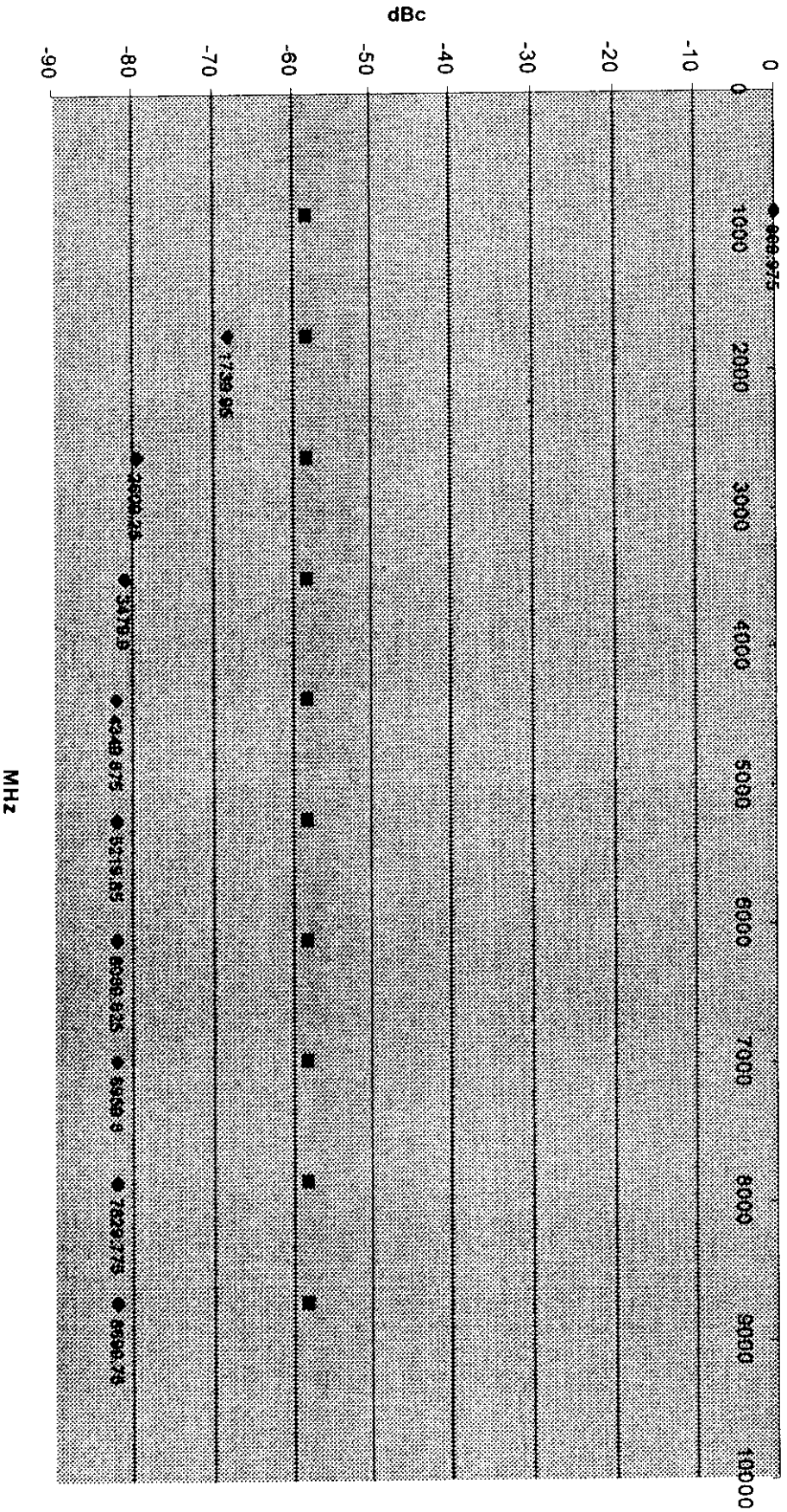
2.8.7.1 Graphs 8a Spurious Emission at antenna terminal Tested at low end Frequency

Conducted Spurious Emissions 861 MHz

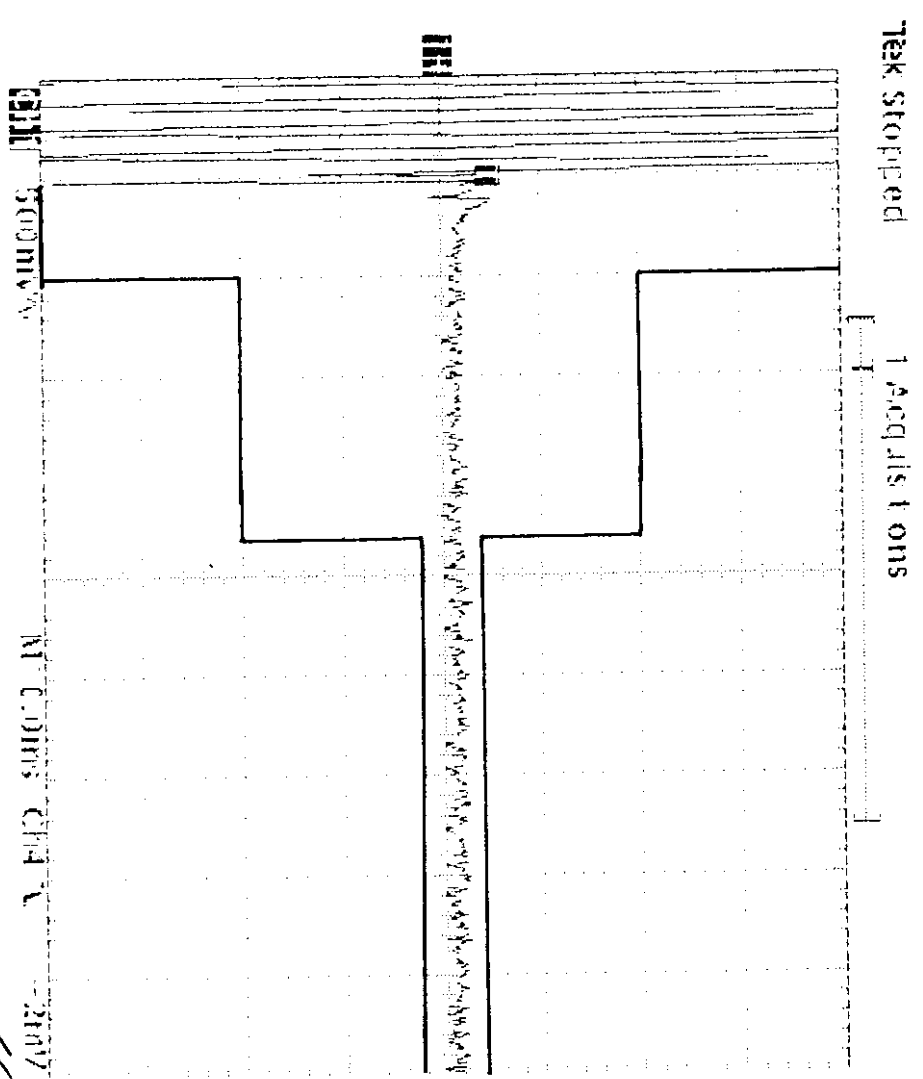


2.8.7.2 Graphs 8b Spurious Emission at antenna terminal Tested at middle Frequency

Conducted Spurious Emissions 869.975 MHz



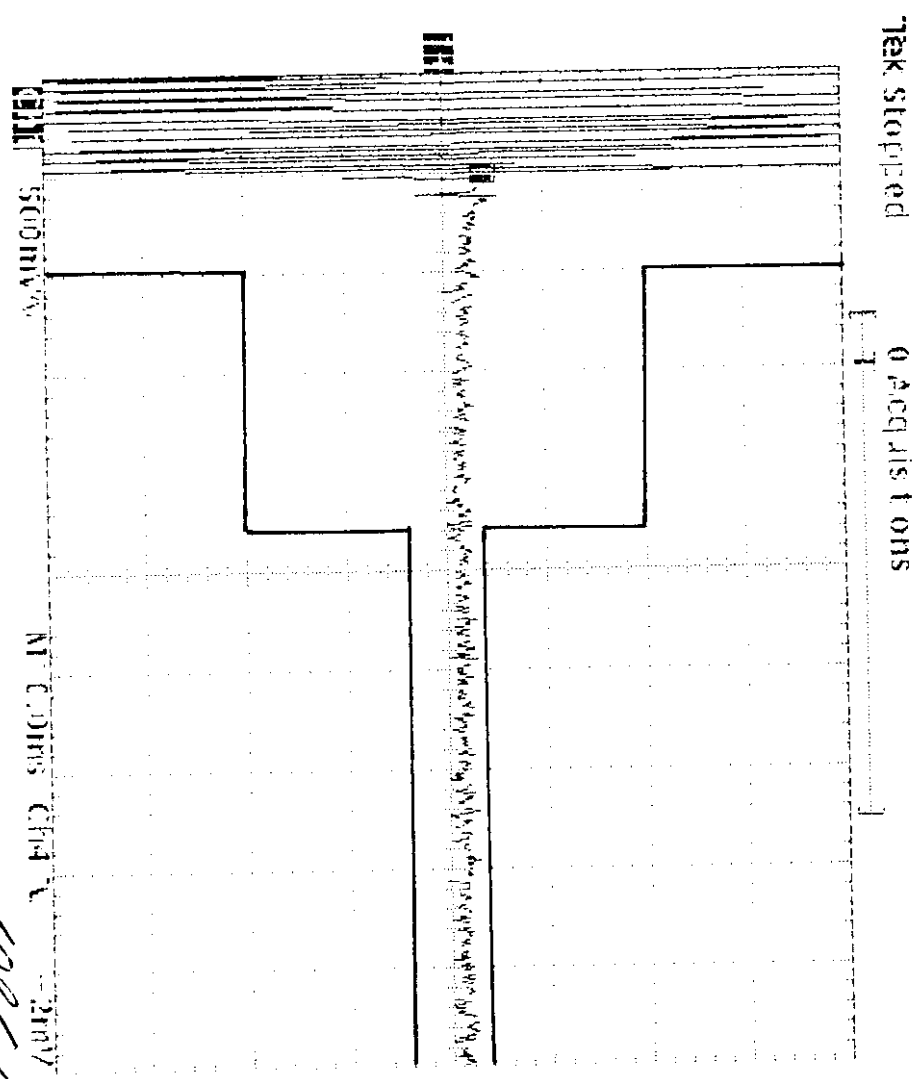
2.8.7.3 Graphs 8c Spurious Emission at antenna terminal Tested at High end Frequency



2.8.9.1 Graph 9-1 Transmitter Transient Behavior Test 400Hz

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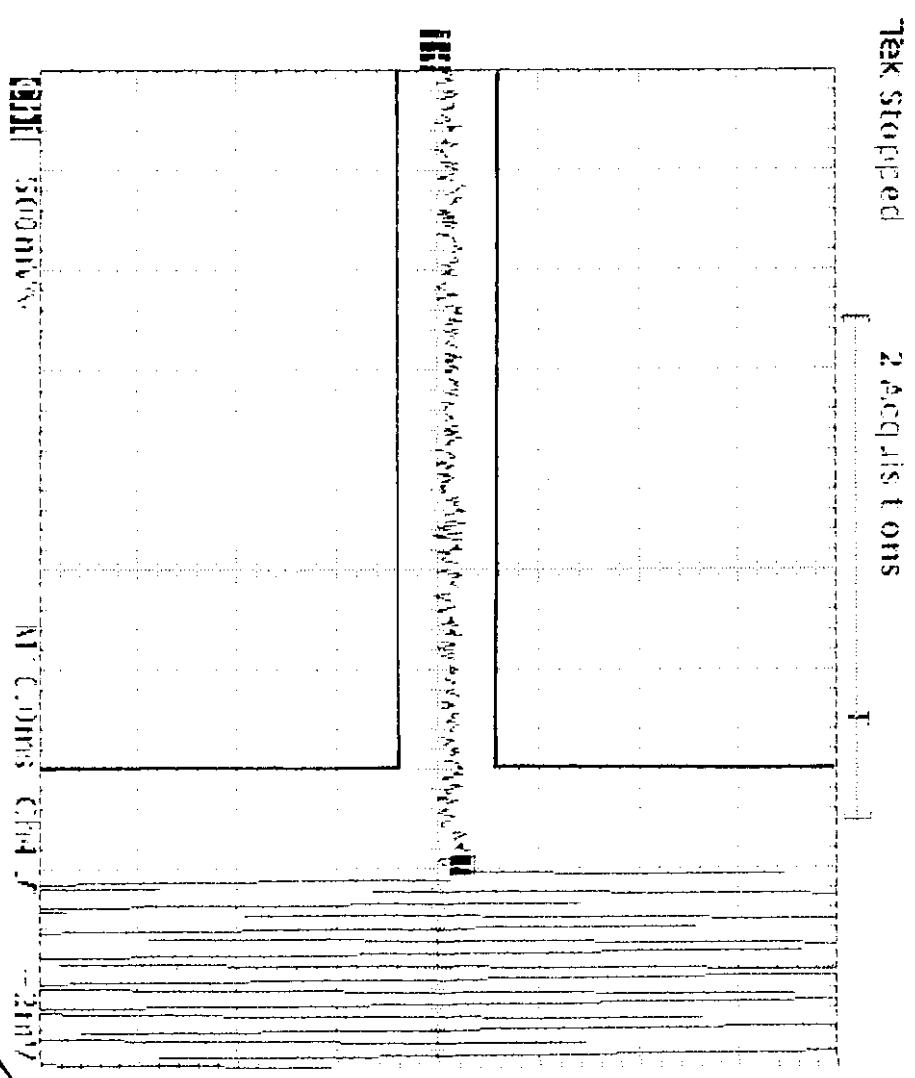
15
VCO on



2.8.9.2 Graph 9-2 Transmitter Transient Behavior Test 1KHz tone

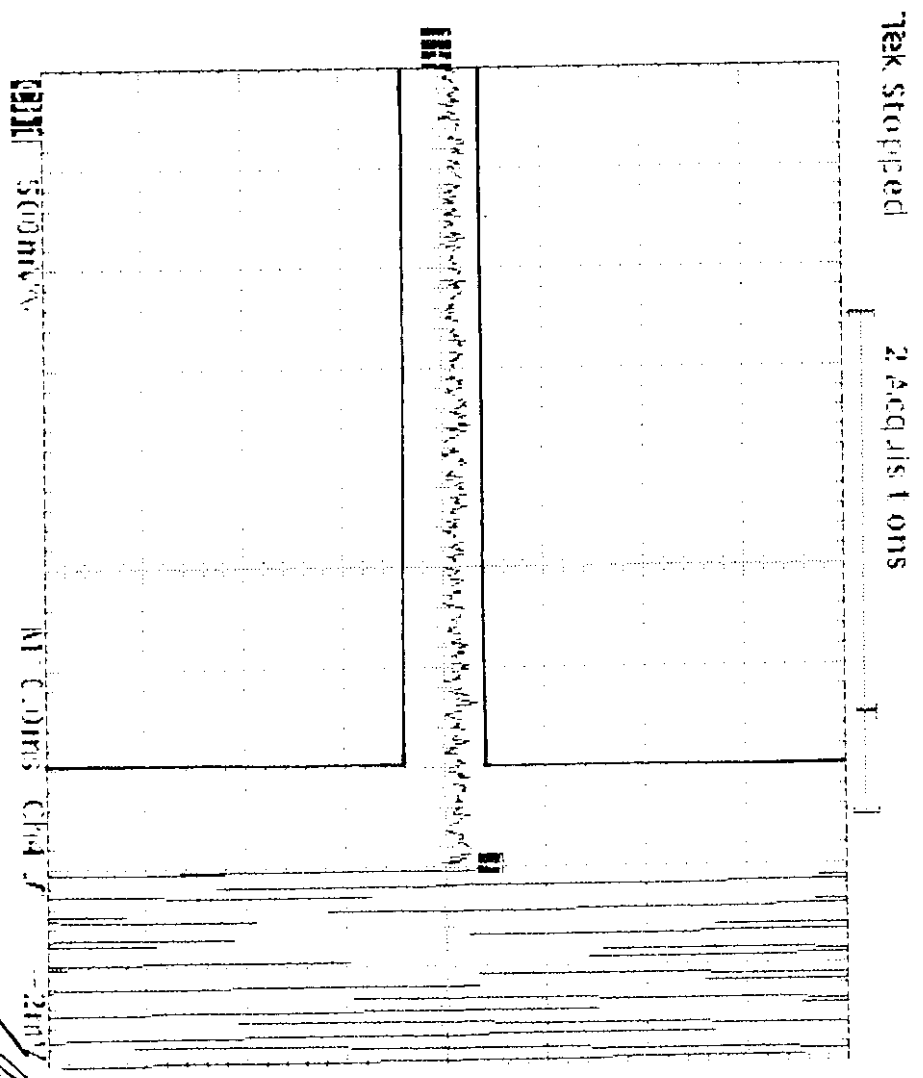
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100
decade



2.8.9.3 Graph 9-3 Transmitter Transient Behavior Test 400 hz

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2.8.9.4 Graph 9-4 Transmitter Transient Behavior Test 1KHz

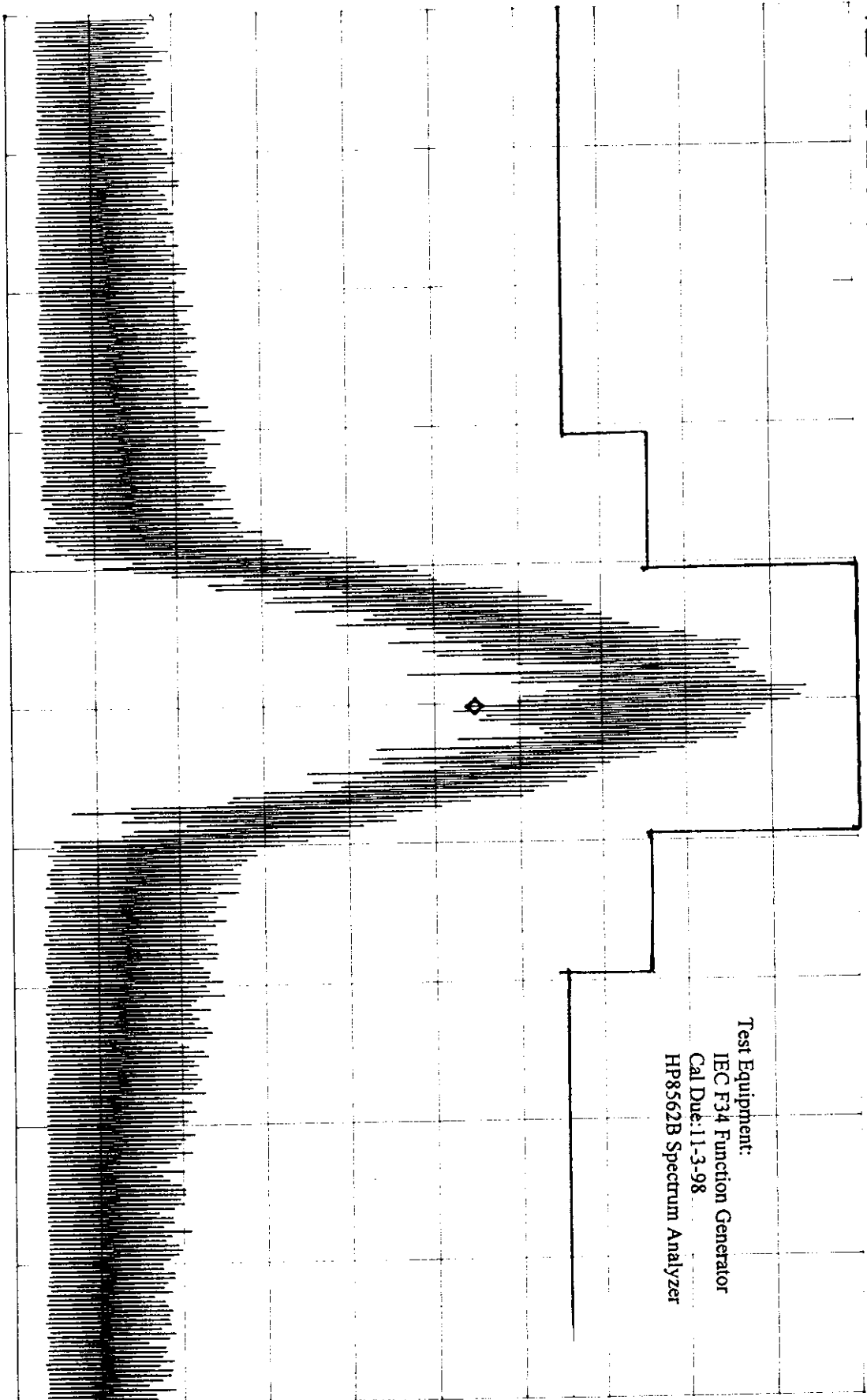
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ATTEN 30dB
FAL 12.0dBm

10dB/

MKR 134.330Bm
850.0502MHz

Test Equipment:
IEC F34 Function Generator
Cal Due: 11-3-98
HP8562B Spectrum Analyzer



CENTER 850.0500MHz
*RBW 300Hz *VBW 3.0KHz
SPAN 100.0KHz
*SWP 25sec

14K8F2D- Data rate=2400bps, Data Carrier=+/-600hz, RF deviation=5khz, Emission BW=2x5+2x2.4=14.8khz

Tested By: Kenneth Klyberg Eng. Tech

Kenneth Klyberg