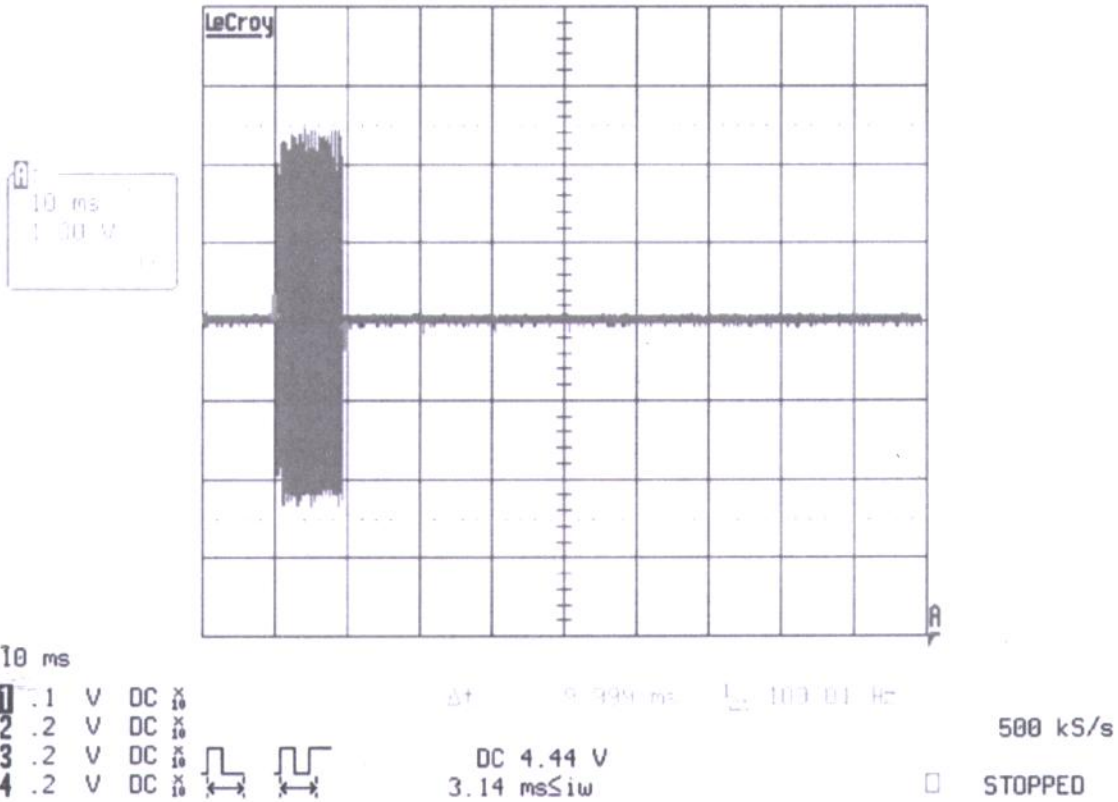




4-May-05
7:43:59

Reading Floppy Disk Drive



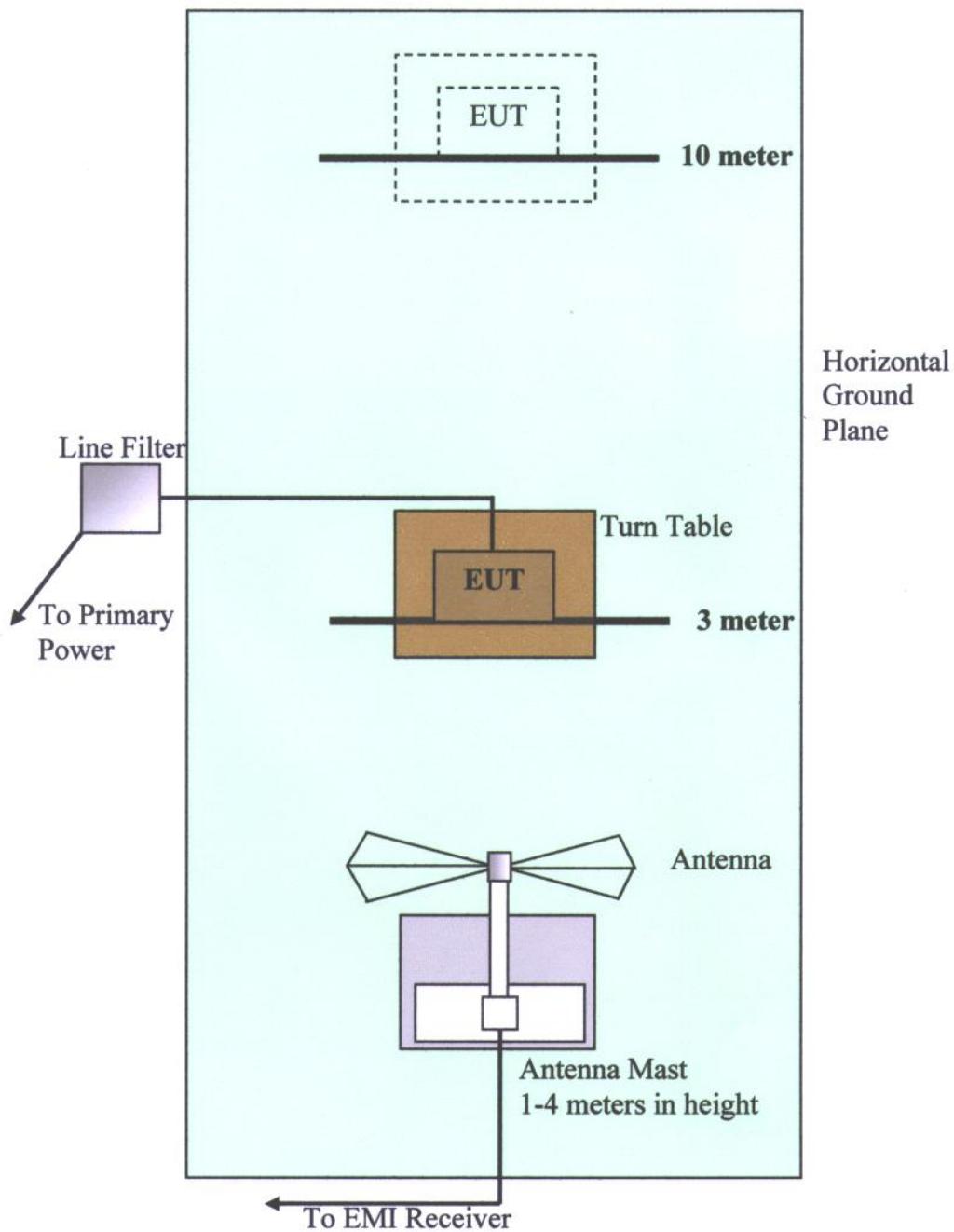
Duty Cycle Correction Factor Calculation:

Total Number of Pulses counted in 100ms

Total Time On = 9.999ms

$$\begin{aligned}
 \text{Duty Cycle Correction Factor} &= 20 \log [\text{Time On} / (\text{Time On} + \text{Time Off})] \\
 &= 20 \log [9.999 \text{ ms} / 100 \text{ ms}] \\
 &= 20 \log [0.1] \\
 &= -20 \text{ dB}
 \end{aligned}$$

Duty Cycle Correction Factor
Figure 23



**Radiated Emissions Test Setup Diagram
Figure 24**



Radiated Emissions Test Setup Photographs
Figure 25



Electromagnetic Emission Test

E U T	Manufacturer: Lutron Electronics		Date: 4/25/2006		Test Code RE			
	Model#: HRT-3LD		Test Instruments: RSI # 391, 75, 80, 708, 501, 502, 503		Technician JK			
	Serial #: 030071303095		Frequency Range: 30– 1000MHz		Engineer			
	Mode: Receive 431MHz.							
Temperature: 61.1°F Humidity: 31%			Additional Info:			Test Spec: FCC Part 15 Class B Unintentional Radiators		
Radiated Distance: 3 meter Antenna: Bicon / Log			☒ HORIZ. ☐ BB ☐ NB ☒ VERT. ☐ H ☒ E		Conducted Line: Function:			
					☐ BB ☐ NB			
FREQ.	IND. Level	Pre-Amp Factor	Correction Factors		Final Level	Antenna Height	EUT Azimuth	Remarks
MHz	dBμV	dB	ANT. dB	Cable loss dB	dBμV/m	Meters	Degree	
52.6	19.6		9.6	1.1	30.3	1.0	0.0	Vert/Bicon
52.9	19.4		9.6	1.1	30.1			
120.0	5.1		11.2	1.9	18.2			
200.0	1.5		14.6	2.3	18.4			
427.72	13.5		17.4	3.6	34.5			Vert/Log. P.
500.0	-1.6		17.9	4.0	20.3			
861.384	2.4		22.4	5.4	30.2			
1000.0	-0.2		24.2	5.8	29.8			
1292.0	46.9	-31.0	25.0	1.0	41.9			
1723.0	49.0	-33.0	26.3	1.0	43.3			
2153.0	44.6	-29.0	28.0	1.0	44.6			
72.0	21.4		8.5	1.4	31.3	2.43	180.0	Horiz./Bicon
75.6	24.2		8.8	1.4	34.4	2.43	180.0	
120.0	9.0		11.0	1.9	21.9	2.33	180.0	
200.0	7.2		14.0	2.3	23.5	1.65	180.0	
427.72	15.0		17.2	3.6	35.8	1.00	125.0	Horiz/Log .P
500.0	-1.6		18.2	4.0	20.6	1.00	0.0	
861.384	2.4		23.3	5.4	31.1	1.00	0.0	
1000.0	-0.2		24.6	5.8	30.2	1.00	0.0	
1292.0	46.6	-31.0	25.0	1.0	41.6	1.00	0.0	
1723.0	48.7	-33.0	26.6	1.0	43.3	1.00	0.0	
2153.0	45.5	-29.0	28.0	1.0	45.5	1.00	0.0	

Figure 26

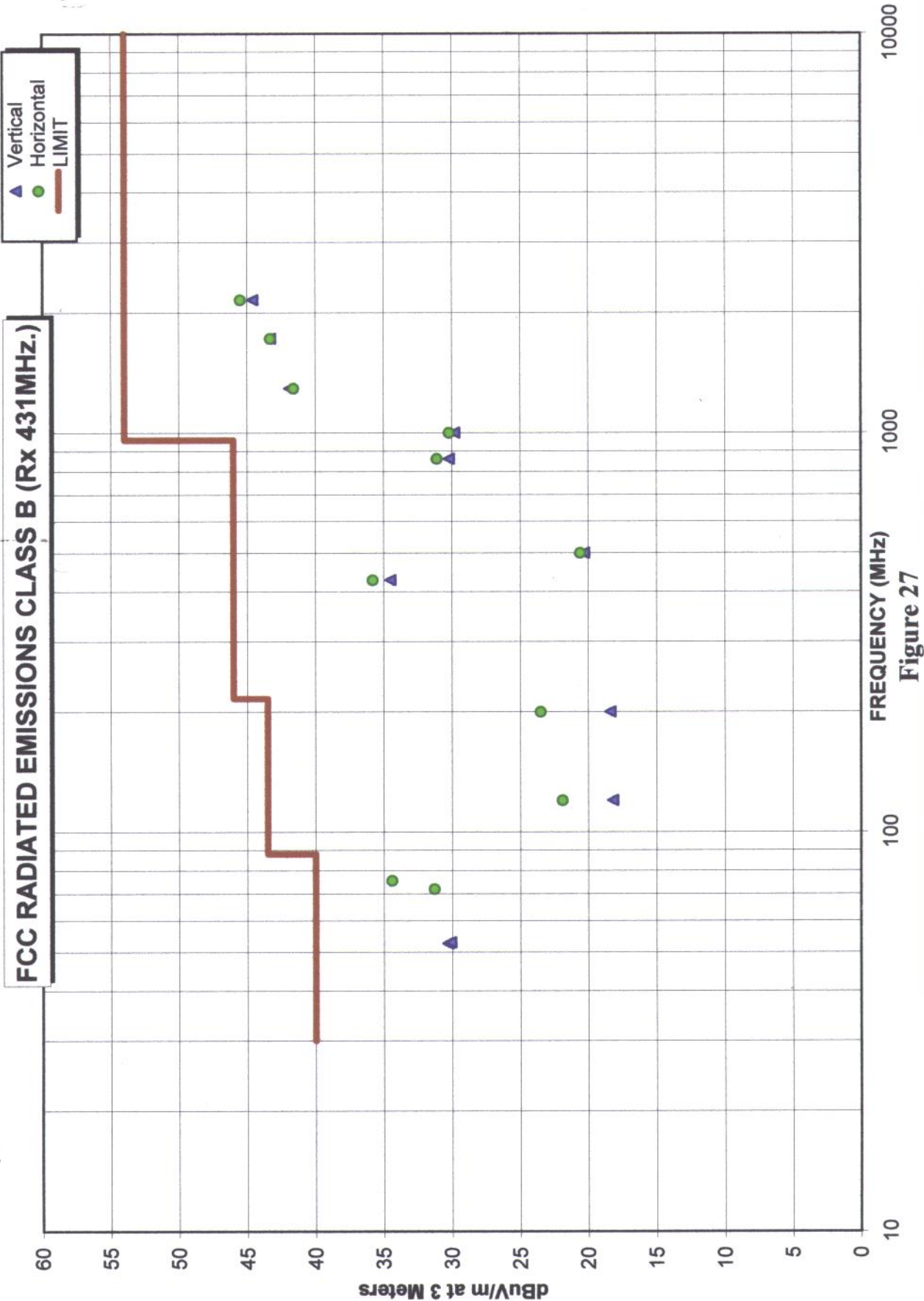


Figure 27



Electromagnetic Emission Test

E U T	Manufacturer: Lutron Electronics		Date: 4/25/06		Test Code RE			
	Model#: HRT-3LD		Test Instruments: RSI # 391, 75, 80, 708, 501, 502, 503		Technician JK			
	Serial #: 030071303095		Frequency Range: 30 – 1000MHz		Engineer			
	Mode: Receive 437MHz.							
Temperature: 61°F Humidity: 31%			Additional Info:			Test Spec: FCC Part 15 Class B Unintentional Radiators		
Radiated Distance: 3.0 meter Antenna: Bicon / Log			☒ HORIZ. ☐ BB ☐ NB ☒ VERT. ☐ H ☒ E		Conducted Line: Function:			
					☐ BB ☐ NB			
FREQ.	IND. Level	Pre-Amp Level	Correction Factors		Final Level	Antenna Height	EUT Azimuth	Remarks
MHz	dBμV	dB	ANT.	Cable loss	dBμV/m	Meters	Degree	
52.6	19.3		9.6	1.1	30.0	1.00	0.0	Vertical/Bicon
120.0	17.6		11.1	1.9	30.6	1.00	0.0	↓
192.0	4.4		14.2	2.2	20.8	1.00	0.0	
200.0	1.7		14.6	2.3	18.6	1.00	0.0	↓
300.0	-1.4		14.8	3.0	16.4	1.00	0.0	Vertical/Log.P
434.0	14.4		17.4	3.6	35.4	1.00	0.0	↓
442.4	20.0		17.4	3.6	41.0	1.00	0.0	↓
500.0	-1.6		17.9	4.0	20.3	1.00	0.0	↓
873.384	2.4		22.8	5.4	30.6	1.00	0.0	↓
1000.0	-0.2		24.2	5.8	29.8	1.00	88.0	↓
1310.0	47.0	-31.0	25.1	1.0	42.1	1.00	0.0	Vertical/Horn
1747.0	49.0	-33.0	26.3	1.0	43.3	1.00	0.0	↓
2183.0	48.5	-29.0	28.0	1.0	48.5	1.00	0.0	↓
52.9	25.2		10.5	1.1	36.8	2.78	178.4	Horiz./Bicon.
75.0	24.8		8.8	1.4	35.0	2.39	135.7	↓
120.0	8.0		11.0	1.9	20.9	2.21	0.0	↓
200.0	6.8		14.0	2.3	23.1	2.21	0.0	↓
300.0	1.2		15.2	3.0	19.4	1.00	0.0	Horiz./Log.P.
442.4	19.0		17.1	3.7	39.8	1.00	125.0	↓
500.0	-1.1		18.2	4.0	21.1	1.00	0.0	↓
873.386	2.4		23.3	5.4	31.1	1.00	0.0	↓
1000.0	-0.2		24.6	5.8	30.2	1.00	0.0	Horiz./Horn
1310.0	47.0	-31.0	25.0	1.0	42.0	1.00	0.0	↓
1747.0	49.5	-33.0	26.0	1.0	43.5	1.00	0.0	↓
2183.0	48.5	-29.0	28.0	1.0	48.5	1.00	0.0	↓

Figure 28

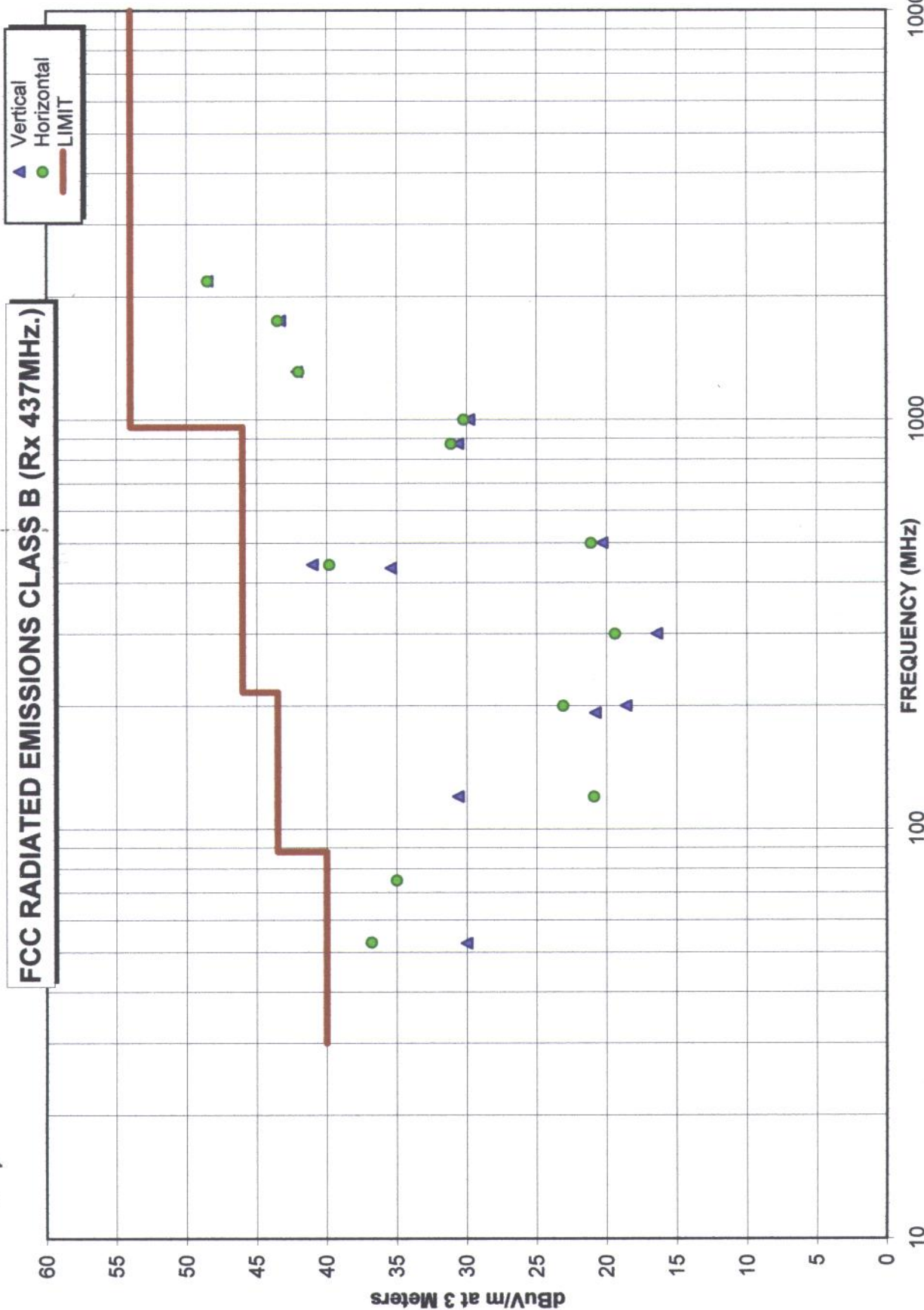


Figure 29

Test Personnel: J. Kavalusky
Date: 4/25/2006

Figure 30

Test Personnel: J. Kavalusky JK
Date: 4/25/2006

[illegible]

Figure 31

Test Personnel: J. Kavalusky JK
Date: 4/25/2006

Figure 32

Test Personnel: J. Kavalusky
Date: 4/25/2006

Figure 33

Company: Lutron Electronics
Model # HRT-3LD
Fund. Freq.: 431MHz
Mode: Tx (CW)

Test Personnel: J. Kavalusky JK
Date: 4/25/2005

Radiated Emission for Intentional Radiators

Frequency (MHz)	Polarity	Antenna Height (Meters)	Antenna Azimuth (Degrees)	Indicated Level (dBuV)	Antenna Factor (dB)	Pre-Amp Gain Factor (dB)	Cable Loss (dB)	Averaging Factor (dB)	Field Strength @ 3m (dBuV/m)	Limits @ 3m (dBuV/m)	Margin (dB)
431	Vert	1.00	238.9	63.5	17.4	0.0	3.6	-20.0	64.5	80.73	-16.2
862	Vert	1.00	238.9	49.0	22.5	0.0	5.4	-20.0	56.9	61.93	-5.0
1293	Vert	1.00	0	56.00	25.0	-31.0	1.0	-20.0	31.00	61.93	-30.9
1724	Vert	1.00	0	54.40	26.3	-33.0	1.0	-20.0	28.70	61.93	-33.2
2155	Vert	1.00	0	48.1	28.0	-29.0	1.0	-20.0	28.1	61.93	-33.8
2586	Vert	1.00	0	46.00	30.0	-32.0	1.0	-20.0	25.00	61.93	-36.9
3017	Vert	1.00	0	42.00	30.3	-27.0	1.0	-20.0	26.30	61.93	-35.6
3448	Vert	1.00	0	41.0	31.3	-25.0	1.0	-20.0	28.3	61.93	-33.6
3879	Vert	1.00	0	41.5	32.4	-23.3	1.0	-20.0	31.60	54.0	-22.4
4310	Vert	1.00	0	41.5	32.5	-22.0	1.0	-20.0	33.0	54.0	-21.0
431	Horiz	1.00	238.9	71.6	17.3	0.0	3.6	-20.0	72.5	80.73	-8.2
862	Horiz	1.00	238.9	45.4	22.8	0.0	5.4	-20.0	53.6	61.93	-8.3
1293	Horiz	1.00	198	56.7	25.0	-31.0	1.0	-20.0	31.7	61.93	-30.2
1724	Horiz	1.00	0	50.4	26.6	-33.0	1.0	-20.0	25.0	61.93	-36.9
2155	Horiz	1.00	0	47.40	28.0	-29.0	1.0	-20.0	27.40	61.93	-34.5
2586	Horiz	1.00	0	45.70	29.9	-32.0	1.0	-20.0	24.6	61.93	-37.3
3017	Horiz	1.00	0	44.50	30.4	-27.0	1.0	-20.0	28.90	61.93	-33.0
3448	Horiz	1.00	0	41.40	31.4	-25.0	1.0	-20.0	28.80	61.93	-33.1
3879	Horiz	1.00	0	41.50	32.5	-23.3	1.0	-20.0	31.70	54.0	-22.3
4310	Horiz	1.00	0	41.50	32.5	-22.0	1.0	-20.0	33.00	54.0	-21.0

Figure 34



Company: Lutron Electronics
Model # HRT-3LD
Fund. Freq.: 437MHz
Mode: Tx (CW)

Test Personnel: J. Kavalusky JK
Date: 4/25/2006

Radiated Emission for Intentional Radiators

Frequency (MHz)	Polarity	Antenna Height (Meters)	Antenna Azimuth (Degrees)	Indicated Level (dBuV)	Antenna Factor (dB)	Pre-Amp Gain Factor (dB)	Cable Loss (dB)	Averaging Factor (dB)	Field Strength @ 3m (dBuV/m)	Limits @ 3m (dBuV/m)	Margin (dB)
437	Vert	1.28	242.9	69.9	17.4	0.0	3.6	-20.0	70.9	80.3	-9.4
874	Vert	3.50	242.9	40.0	22.8	0.0	5.4	-20.0	48.2	61.9	-13.7
1311	Vert	1.00	0	53.20	25.1	-32.0	1.0	-20.0	27.3	61.9	-34.6
1748	Vert	1.00	0	50.00	26.3	-33.0	1.0	-20.0	24.30	54.0	-29.7
2185	Vert	1.00	0	40.3	28.2	-29.0	1.0	-20.0	20.5	61.9	-41.4
2622	Vert	1.00	0	39.20	30.0	-32.0	1.0	-20.0	18.20	61.9	-43.7
3059	Vert	1.00	0	39.50	30.3	-27.0	1.0	-20.0	23.80	61.9	-38.1
3496	Vert	1.00	0	38.2	31.4	-25.0	1.0	-20.0	25.6	54.0	-28.4
3933	Vert	1.00	0	35.9	32.44	-23.3	1.0	-20.0	26.04	54.0	-28.0
4370	Vert	1.00	0	35.3	32.5	-22.0	1.0	-20.0	26.8	54.0	-27.2
437	Horiz	1.00	242.9	63.5	17.3	0.0	3.6	-20.0	64.4	80.3	-15.9
874	Horiz	1.00	242.9	40.0	23.3	0.0	5.4	-20.0	48.7	61.9	-13.2
1311	Horiz	1.00	98	54.70	25.1	-32.0	1.0	-20.0	28.80	61.9	-33.1
1748	Horiz	1.00	0	51.20	26.6	-33.0	1.0	-20.0	25.80	54.0	-28.2
2185	Horiz	1.00	0	37.40	28.2	-29.0	1.0	-20.0	17.6	61.9	-44.3
2622	Horiz	1.00	0	38.00	29.9	-32.0	1.0	-20.0	16.90	61.9	-45.0
3059	Horiz	1.00	0	37.20	30.4	-27.0	1.0	-20.0	21.80	61.9	-40.3
3496	Horiz	1.00	0	37.90	31.5	-25.0	1.0	-20.0	25.40	54.0	-28.6
3933	Horiz	1.00	0	35.90	32.54	-23.3	1.0	-20.0	26.14	54.0	-27.9
4370	Horiz	1.00	0	33.60	32.5	-22.0	1.0	-20.0	25.10	54.0	-28.9

Figure 35



4.3 Bandwidth Measurements, Paragraph 15.231

Bandwidth measurements were made at the three transmit frequencies of 431 and 437MHz.

RSI used an HP 8566 Spectrum Analyzer to perform bandwidth measurements. Bandwidth plots are shown on data sheets.

The requirement states that the bandwidth shall be no wider than .25% of the center frequency at the 20dB down points. Results of testing are shown in Figures 36 through 43.

THE BANDWIDTH MEASUREMENTS COMPLIED WITH THE FCC REQUIREMENTS SET FORTH IN PARAGRAPH 15.231.



Company: Lutron Electronics
Model # HRT-3LD
Fund. Freq.: 431MHz

Test Personnel: J. Kavalusky ^{JK}
Date: 04/26/2006

Bandwidth of Fundamental Frequency

	Frequency (MHz)	Measurement (dBuV/m)
Center Frequency	431.000	71.80
20 dB down	431.010	52.55
20 dB down	430.987	51.85

The bandwidth is 36kHz.

Allowable Bandwidth: 0.25% of Fundamental Frequency
For 431MHz: $\pm 0.5388\text{MHz}$

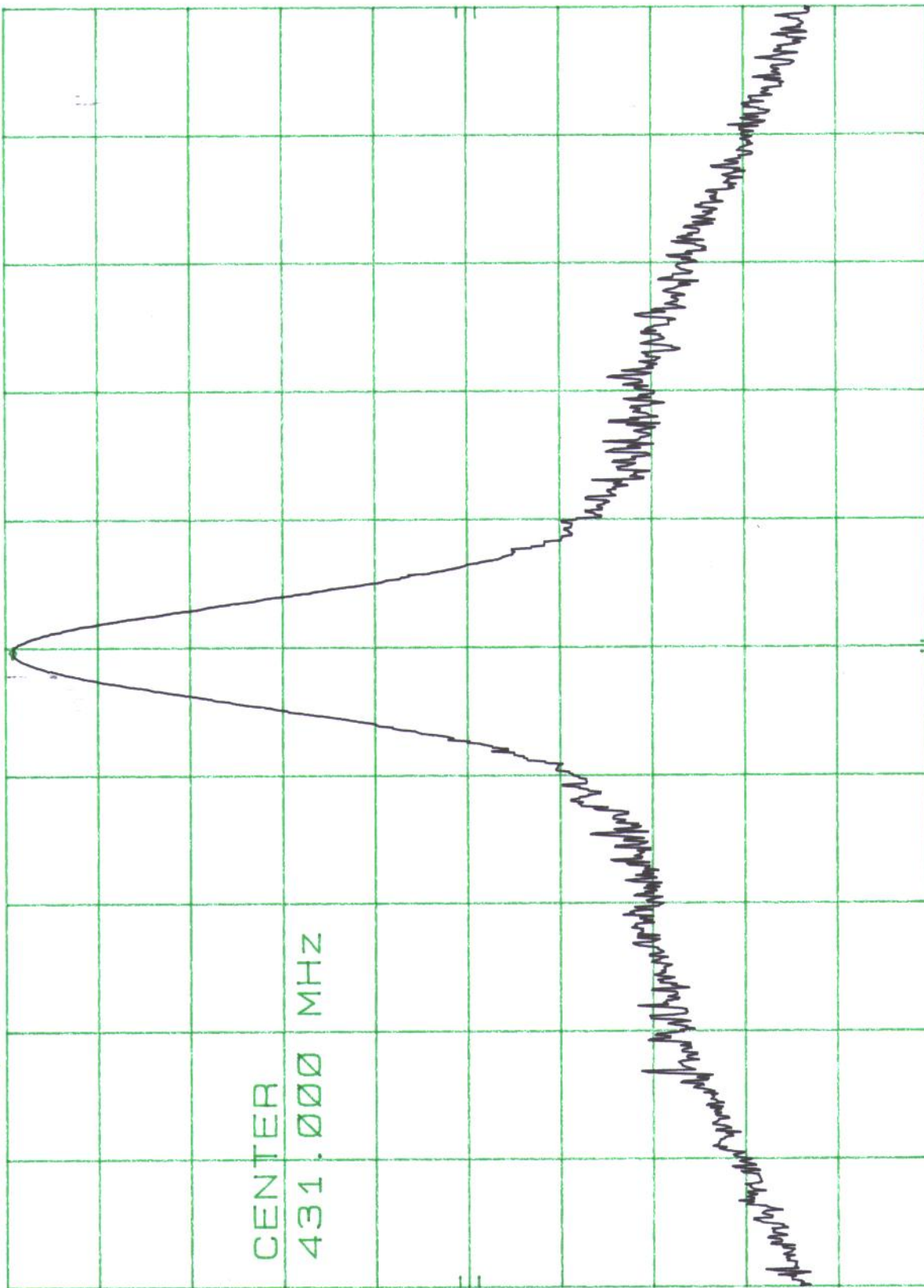
Figure 36

MKR 430.999 2 MHz
71.80 dBμV

h_p REF 72.2 dBμV ATTN 0 dB

5 dB/

CENTER
431.000 MHz



SPAN 200 KHZ
SWP 48.0 msec

VBW 100 KHZ

CENTER 431.000 MHz
RES BW 10 KHZ (i)

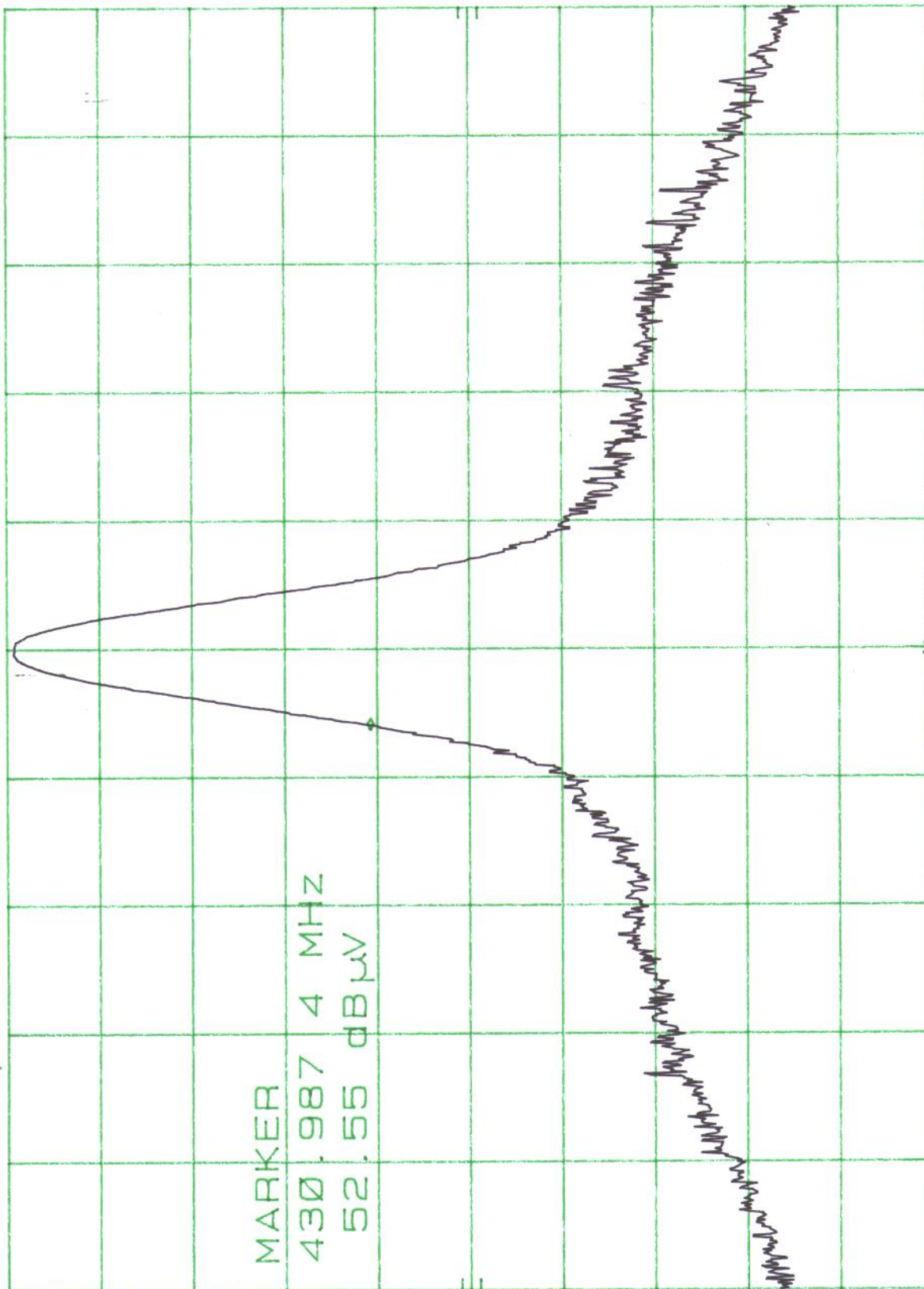
FIGURE 37

MR 430.987 4 MHz
52.55 dBμV

REF 72.2 dBμV ATTN 0 dB

h_p
5 dB/

MARKER
430.987 4 MHz
52.55 dBμV



SPAN 200 KHz
SWP 48.0 msec

VBW 100 KHz

RES BW 10 KHz (i)

CENTER 430.999 MHz

FIGURE 38