HYSPEC MEMO NO. 3

TEST PROCEDURE FOR FILTER MODULE OF HYBRID SPECTROMETER

S. Weinreb

January 10, 1986

Zero Test:

Command "zero test", no input, adjust LSB and USB Z pots for < 1 mV at test points TP6 and TP1.

L.O. Test:

Command frequencies 450 to 562.5 MHz in 18.75 MHz steps and measure frequency and L.O. output power at each frequency.

Sweep Test:

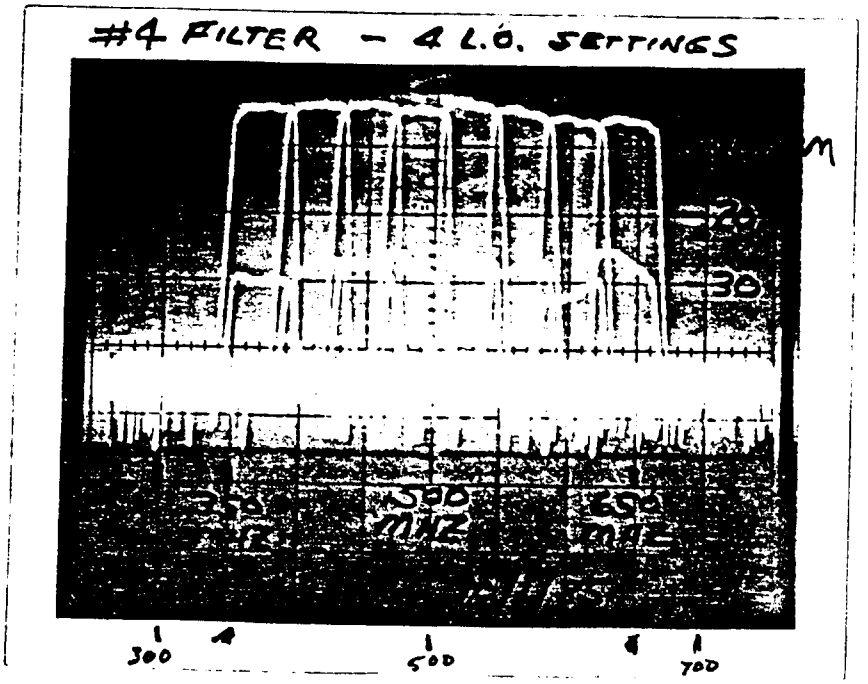
1) Select an initial L.O. frequency of 525 MHz.

2) Command VCA's to minimum attenuation by giving "set level" command with no input to module.

Connect Wavetek sweep generator with -35 dBm output and sweeping 250-750 MHz to filter module input.

3) Connect Wiltron 560A log display with two detectors to module output. Use dBm mode, 10 dB per division, and offset at 0 dBm.

4) Adjust image rejection R and C for maximum sideband rejection. Photograph display superimposing photographs with the four L.O. settings and compare with Figure 1, below.



Noise Test:

1) Connect NRAO 10-1000 MHz noise generator to module input with generator attenuator set for -17 dBm/300 MHz output. (This is -40 dBm/3 MHz on spectrum analyzer or -15 dBm = 31 μW on power meter.)

2) Select L.O. frequency for optimization.

3) Command "set level" and adjust detector gains for -2 dBm = 0.63 mW outputs. Check ALC operation for input level range of -3 to +10 dB from -28 dBm/50 MHz.

4) Install covers on module.

5) Connect Tektronix spectrum analyzer to LSB and USB outputs. Photograph each output with:

(a) 10 dB/DIV, -10 dBm REF LEVEL, 100 MHz/DIV, 500 MHz center frequency, 3 MHz resolution, 30 kHz video filter, and 5 ms/div sweep speed. Superimpose photographs at all four L.O. settings.

(b) 2 dB/DIV, -10 dBm REF LEVEL, 10 MHz/DIV, 75 MHz center frequency on output, 300 kHz resolution, 10 Hz video filter, and 1 s/div sweep speed. Set L.O. at 525 MHz.

Compare photographs with Figure 2.

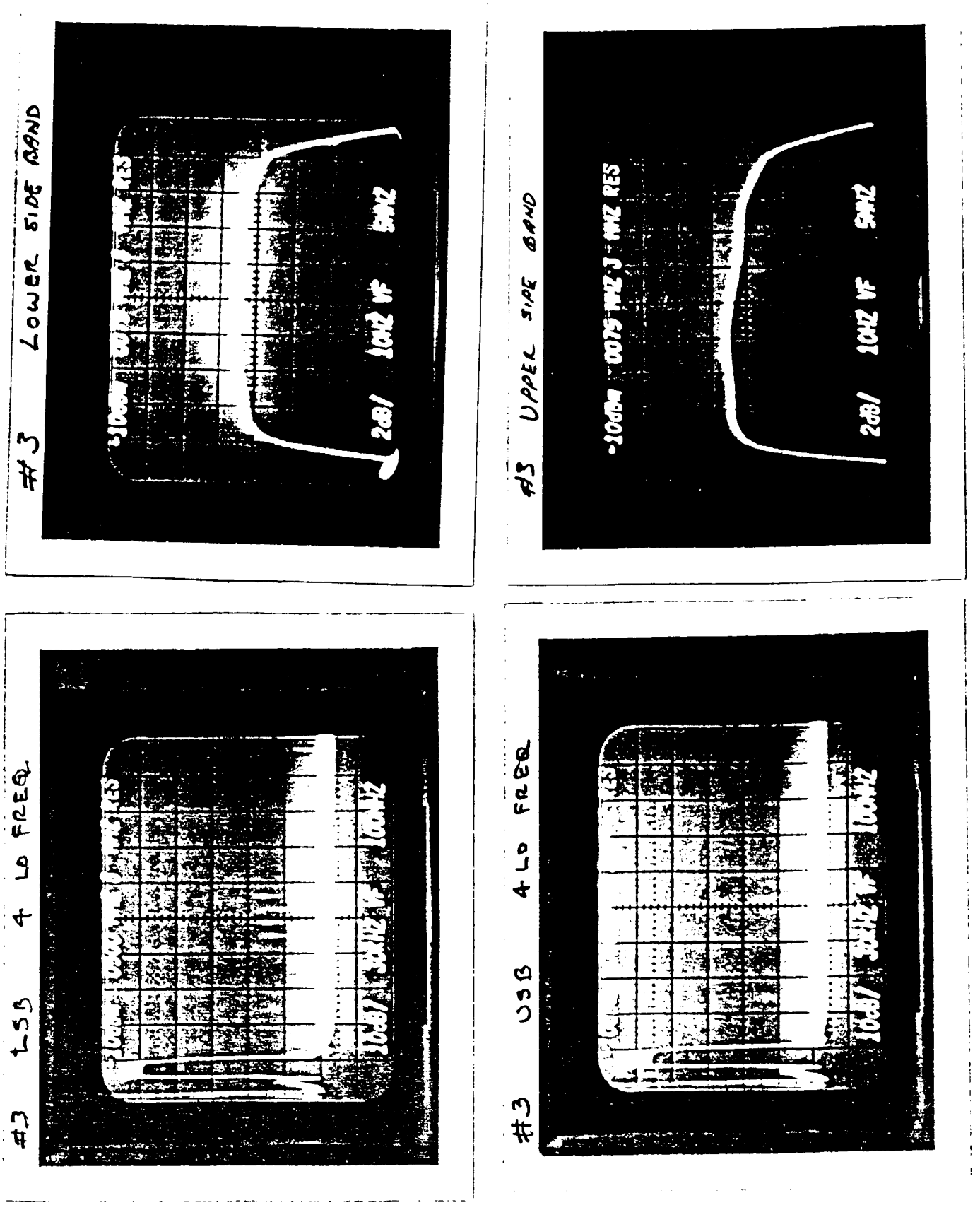


Fig. 2. Spectrum analyzer displays of filter output.