

## SERVICE NOTE

Supersedes:  
None**HP 5343A MICROWAVE FREQUENCY COUNTER****ALL SERIAL PREFIXES****IMPROVED IF ADJUSTMENT PROCEDURES**

This service note contains IF adjustment procedures which utilizes a spectrum analyzer instead of an RF voltmeter. These improved procedures are intended to be a substitute for the information contained on pages 5-5 through 5-7 in the Operating and Service Manual. Either procedure will give valid results, and the procedure to use will be dependent upon available equipment.

Perform the tests below in the order they are given. Do not skip any test to perform a later one.

**5-21. IF Adjustment**

Maintain the following counter settings and connections unless otherwise specified:

Impedance ..... 50 ohm  
 Frequency Range ..... 500 MHz - 26.5GHz  
 Sample Rate ..... full ccw  
 Connect rear FREQ STD OUT ..... signal generator EXT REF  
 Connect Input 1 (500MHz-26.5GHz) ..... signal generator output

Set spectrum analyzer to the following settings:

Center frequency ..... 100MHz  
 Frequency span/div ..... 20MHz  
 Bandwidth ..... 300KHz  
 Sweep time ..... 20ms  
 Input attenuation ..... 0dB  
 Reference level ..... 0dBm

I/PM/WN

05/88-02/FEP

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### 5-22. A25A1R7 (balance) adjustment

- Enter a center frequency of 500MHz by keying in SET, MAN, 500, ENTER.
- Apply a 530MHz, 0dBm signal to the 5343A.
- Connect the 5343A rear IF OUT to the spectrum analyzer input.
- Adjust A25A1R7 to minimize the second harmonic signal seen on the spectrum analyzer. The second harmonic will be located at about 140MHz (see *Figure 1*).

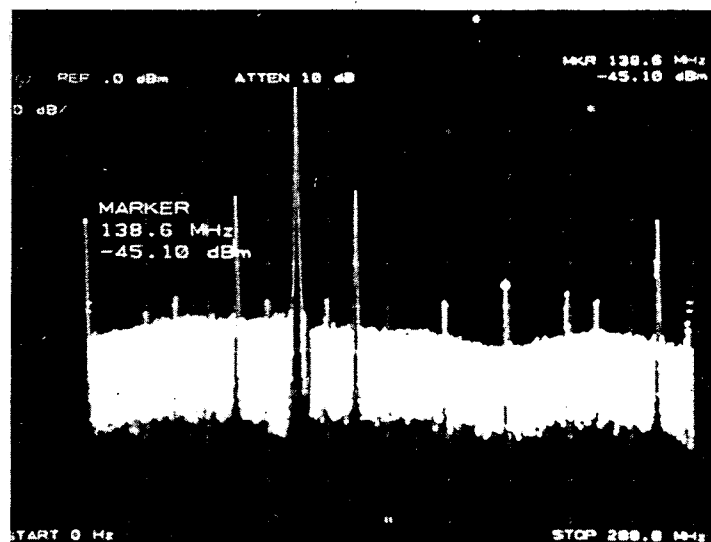
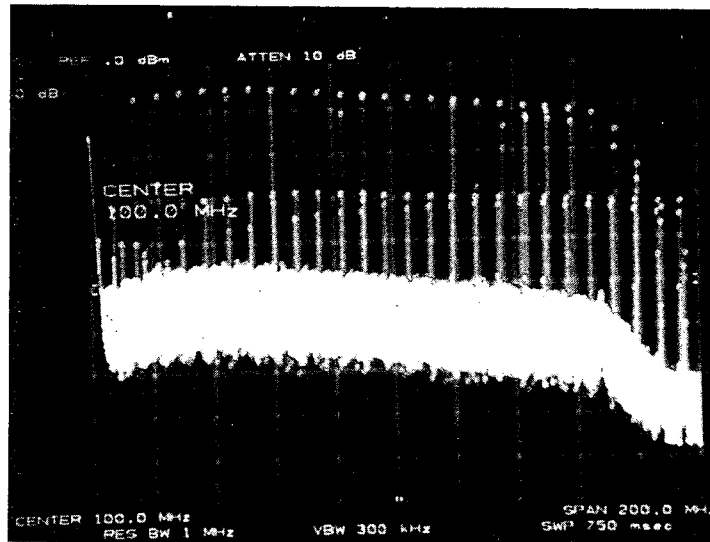


Figure 1

### 5-23. A25A1C19 (175 MHz rolloff) adjustment

- Set frequency mode to AUTO.
- Set sample rate to HOLD (full cw).
- Set diagnostic mode 7 by keying in SET, SET, 7. The counter should display 350.5MHz indicating that the MAIN VCO is at 350.5MHz.
- Set signal generator to -15dBm. Sweep from 10MHz to 200MHz in 5MHz steps.
- Increase the sweep time of the spectrum analyzer to get an IF response similar to *Figure 2*. Note the amplitude of the flat portion of the band. This portion is usually located at about 60MHz - 100MHz.
- Set the signal generator's output to 175MHz.
- Turn the 5343A sample rate ccw and observe the displayed frequency count down. When the display shows 330MHz, turn the sample rate fully cw to the HOLD position. (The reason for adjusting the VCO frequency from 350MHz to 330MHz in this test is to move the second frequency line on the spectrum analyzer away from the 175MHz signal. The signal that doesn't move is the 175MHz signal that is used to make the adjustment.)

- h. Adjust A25A1C19 so that the response signal at 175MHz is  $10(\pm 1)$ dB below the amplitude noted in e. See *Figure 2*.
- i. Press RESET.



*Figure 2*

#### 5-24. A11R1 ("Amp" gain) adjustment

- a. Place A12 on a 22-pin extender board (HP P/N 05342-60034).
- b. Set sample rate fully ccw.
- c. Enter a center frequency of 500MHz by keying in SET, MAN, 500, ENTER.
- d. Apply a 530MHz, -15dBm signal to the 5343A.
- e. Probe A12U2 pin 1 with a spectrum analyzer.
- f. Adjust A11R1 to minimize the second harmonic signal (at about 140MHz) seen on the spectrum analyzer.

#### 5-25. A12R2 and A12R13 (gain) adjustments

- a. Apply a 530MHz, -25dBm signal to the 5343A.
- b. Probe A12U2 pin 5 with a spectrum analyzer.
- c. Adjust A12R2 to minimize the second harmonic signal (at about 140MHz) seen on the spectrum analyzer.
- d. Apply a 530MHz, -35dBm signal to the 5343A.
- e. Probe A12U4 pin 8 with a spectrum analyzer.
- f. Adjust A12R13 to minimize the second harmonic signal (at about 140MHz) seen on the spectrum analyzer.
- g. Remove extender board from A12 slot and insert A12 board.

**5-26. A12R7 (threshold detect) adjustment**

- a. Set 5343A to AUTO.
- b. Pre-set A12R7 maximum cw. Observe that the 5343A is not counting.
- c. Depending on the installed options in your counter, apply the following signal to the 500MHz - 26.5GHz input of the 5343A:  
500MHz, -36dBm ..... STD  
500MHz, -33dBm ..... Option 6
- d. Adjust A12R7 ccw until the counter correctly reads 500 MHz.
- e. Sweep up to 1GHz to assure proper count.
- f. Set synthesizer to -20dBm power level and sweep from 1GHz to 26.5GHz to assure proper count.

Continue with Section 5-27 as stated in the Operating and Service Manual.