

- e. Remove the P5 connector. This removes the 5.315...MHz signal. The output voltage should drop to near zero. Replace connections to J5 and J2.
- f. Remove cable from J3. Connect test cable and 50-ohm load to J3. Connect RF voltmeter to 50-ohm load. RF voltmeter should read approximately 1 Volt rms.
- g. Remove RF voltmeter and test cable. Reconnect cable to J3. This completes the test. If output signal levels measured above are correct, but there does not appear to be any RF excitation on the A12 RVFR Assembly, the A3 Assembly should be realigned per LOOP ALIGNMENT PROCEDURE, paragraph 5-19.

## TROUBLESHOOTING AND REPAIR

- a. **REALIGNMENT AFTER REPAIR.** When repairs are made within the A3 Assembly, the repaired circuit must be retuned. The following paragraphs give alignment procedures for the various sections. A 100 MHz oscilloscope, a dc voltmeter, an RF voltmeter, a 50-ohm coaxial load, and the Micon-to-BNC test cable provided are required for these adjustments. The following alignment procedures are performed with the A3 assembly removed from the HP 5065A. The assembly must be positioned such that the HP 5065A +20 Volt line (R) and 5 MHz signal input (J2) connectors are accessible during the alignment procedure. After initial alignment is complete and after the A3 Assembly is reinstalled, the instrument should be readjusted as described in LOOP ALIGNMENT PROCEDURE, paragraph 5-19.

### b. ALIGNMENT OF 5 MHZ BUFFER AMPLIFIER STAGE

1. Remove all cables and assembly cover if not removed already.
2. Replace factory-selected resistor R45 with a 20k Ohm resistor. Solder into place, using only enough solder to ensure electrical continuity.
3. Connect a 50-ohm coaxial load to J3 using the test cable provided and connect RF voltmeter to the 50-ohm load.
4. Connect a 50-ohm load to connector J8.
5. Using coaxial extension cable, connect A3P2 to 5 MHz input connector A3J2. Set input 5 MHz signal to a level of 1 Volt rms (if external frequency source is used). Connect +20 Volt line [connector XA4(1)] to A3 input labeled "R".
6. Adjust C9 for maximum signal at the voltmeter. There should be two equivalent signal peaks, each peak within 180 mechanical

degrees of the other. If two signal peaks are not within 180 mechanical degrees of one another, change capacitor C8 selecting from values listed in Section VI of this manual. RF voltmeter at J3 should read approximately 1 V rms.

7. Remove voltmeter and test cable from J3 and reconnect P3 to this jack. If alignment is performed with A3 assembly removed from HP 5065A chassis, terminate J3 connector with 50-ohm load.

### c. ALIGNMENT OF 5 MHZ AMPLIFIER AND PHASE MODULATOR STAGE

1. Connect oscilloscope to collector of Q1.
2. Adjust C10 for maximum signal on oscilloscope display.
3. Disconnect oscilloscope from collector of Q1.

### d. ALIGNMENT OF 5-TO-20 MHZ QUADRUPLER STAGE

1. Connect oscilloscope to gate (metal case) of FET Q4.
2. Adjust C15 to maximum signal on oscilloscope display.
3. Readjust C10 to maximum signal on oscilloscope display.
4. Disconnect oscilloscope from gate (metal case) of Q4.

### e. ALIGNMENT OF 20 MHZ AMPLIFIER STAGE

1. Connect oscilloscope probe to junction of resistors R29 and R32.
2. Connect RF voltmeter to 50-ohm load at J8.
3. Adjust C10, C15, and C38 for maximum signal on oscilloscope display. The waveforms should look like half sinusoids.
4. Adjust C28 to obtain an oscilloscope display of approximately 1.5 V<sub>peak</sub>. Ensure that C10, C15, and C38 are tuned for maximum voltage output. Check C10 so that it is not adjusted at its maximum or minimum adjustment position. Again, there should be two equivalent signal peaks, each peak within 180 mechanical degrees of the other. If two signal peaks are not within 180 mechanical degrees of one another, change capacitor C11 selecting from values listed in Section VI of this manual.

### f. ALIGNMENT OF 20-TO-60 MHZ TRIPLER STAGE

1. Set capacitor C30 to midrange.