

7. PARTS LIST/TUNE-UP INFO

7.1 Parts List

The transmitter, can be subdivided as follows:

QAM Modulator Tray

Upconverter/Amplifier Tray:

- IF Processor Assembly
- Control/Monitoring Assembly
- L.O. / Upconverter Assembly
- Power Amplifier Assembly
- Power Supply Assembly

7.2 Tune-up Information

In the following procedure, the complete transmitter is adjusted for optimum performance, beginning with the start up procedure of the modulator, followed by the upconverter/amplifier, starting at the IF input and adjusting each circuit for its specified performance while observing the appropriate output parameters of the board or subassembly being adjusted.

Because of the broadband nature of most of the amplifier stages, this is a straightforward procedure, easily accomplished if base-band, IF, and RF test equipment is available. In this procedure, the input signals are first connected and each circuit is adjusted in sequence by connecting the test equipment to the specified point.

Adjust the spectrum analyzer for the following settings:

1. Resolution Bandwidth = 30 KHz
2. Video Averaging (On) = 10
3. Span = 20 MHz
4. Video Bandwidth = 30 KHz
5. Center frequency = 44 MHz

The average power of a modulated QAM digital signal, with the specified analyzer settings, is +23 dB higher than the displayed signal. The measurements in this alignment procedure will be given in average levels.

Example: Analyzer reading of -30 dBm.
Average Power = -30 dBm + 23 dBm = - 7 dBm.

7.2.1 QAM Modulator Tray

See modulator manual for tune-up information.

7.2.2 Upconverter/Amplifier Tray

Using a spectrum analyzer verify the proper level (-11 to -6 dBm average) and frequency of the spectrum at the IF output port of the Modulator.

7.2.2.1 Control/Monitoring Assembly

Set front panel configuration DIP switches as follows:

| | | | |
|-----|------------------------------|-----|-----------------------------|
| SW1 | Open (no external amplifier) | SW5 | Open (not used) |
| SW2 | Open (external modulator) | SW6 | Open (not used) |
| SW3 | Open (not used) | SW7 | Open (not used) |
| SW4 | Open (not used) | SW8 | Open (English language LCD) |

7.2.2.2 IF Processor Assembly

1. Select 75 Ω input impedance, using jumpers J28 and J29.
2. Select Low Input Impedance using jumpers J8, J9, J10 and J11.
3. Enable Peak Vs. Average detection by placing J30 into the "In" position.
4. Enable Frequency Response Correction by placing J2 and J3 into the "In" position.
5. Set Delay Equalizers and Attenuation Equalizers as follows:

| | |
|-----------------------------------|-----|
| Delay Equalizer1 (J35, J36) | Out |
| Attenuation Equalizer1 (J37, J38) | Out |
| Delay Equalizer2 (J43, J44) | Out |
| Delay Equalizer3 (J31, J32) | Out |
| Attenuation Equalizer3 (J33, J34) | Out |

6. Set filter circuit to Band Pass Filter by placing jumpers J19, J20, J22 and J23 into the "SAW" position.
7. Select High Output Gain by placing jumpers J26 and J27 into the High position.
8. Remove linear equalization by placing front panel Linear Equalization toggle switch into the "Out" position.
9. Select Manual Gain by placing Gain Selection toggle switch into the "Manual" position.

7.2.2.3 L.O. / Upconverter Assembly

1. Place Reference jumper J1 into the External position.

7.2.2.4 Power Amplifier Assembly

1. Select Average Detection by placing J2 into the Average position on the Dual Power Detector Module.

7.2.2.5 Power Supply Assembly

The power supply assembly contains no adjustments and requires no set-up.

7.2.3 Power Setup/Meter Calibration

1. Apply power to the tray by placing the rear panel power switch (CB1) into the on position.
2. Measure voltage on Forward Detector Level test point on the Power Amplifier module front panel and adjust for 0 volts using the Forward Zero potentiometer.
3. Measure voltage on Reflective Detected Level test point on the Power Amplifier module front panel and adjust for 0 volts using the Reflected Zero potentiometer.
4. Verify that no faults are displayed on the LCD display on the front panel of the tray.
5. Place the transmitter into "operate" by pressing the Operate button below the LCD display.
6. Adjust Manual Gain potentiometer on front panel of IF Processing module for 5 watts

(average) as observed on RF power meter.

7. Measure voltage on Forward Detected test point on front panel of Power Amplifier module and adjust for 1 volt using the Forward Level potentiometer.
8. Place the transmitter into "standby" by pressing the Standby button below the front panel LCD display.
9. Remove cable connection from RF output jack (J8) of tray.
10. Place the transmitter into "operate" mode by pressing the "operate" button below the front panel, LCD display.
11. Measure Reflective Detected Level test point and adjust for 1V using Reflected Level potentiometer.
12. Place the transmitter into "standby" by pressing the "standby" button below the front panel LCD display.
13. Reconnect cable to RF output jack (J8) of the tray.
14. Place the transmitter into the "operate" mode by pressing the "operate" button below the front panel, LCD display.
15. Adjust ALC potentiometer on front panel of IF Processing module for 1 volt on the Forward Detected Level test point on power Amplifier Module.

7.2.4 RF Response

Adjust Spectrum Analyzer for the following settings.

| | |
|------------------|-------------------|
| Span | 10MHz |
| Resolution BW | 100KHz |
| Video BW | 100 KHz |
| Center Frequency | Channel Frequency |

Adjust the four Frequency Response potentiometers on the front panel of the IF Processing module for flat response on spectrum analyzer.

The Transmitter is ready for normal operation.

This completes the tune-up procedures for the 5724 transmitter.