

Test and Alignment Procedure

Series 2600 transmitter

The tuning of the transmitter consists of four (4) adjustments. The carrier center frequency is adjusted via a trimmer capacitor contained within TCXO reference module U9. The modulation level which controls deviation is set by R4, R5 and R54. These three adjustments also work together to control modulation fidelity of the phase lock loop. The final adjustment factory presets RF output power via setting R52.

1. The RF center frequency is adjusted by monitoring the VCO output without modulation. The operating frequency is counted and adjusted to within +/- 200 Hz.
2. The frequency deviation and modulation fidelity are measured with a nominal 250 Hz (one fourth data rate) square wave provided and the microprocessor modulation output pin. Demodulation of the transmitted data on a service monitor provides a scope readout of the deviation. Adjust R4, R5 for symmetrical deviation of 4 kHz peak.
4. Modulation fidelity, the rise and fall time of the data modulation signal, is observed on the service monitor. Adjustment of the compensation control R54 controls the undershoot and overshoot of the waveform to ensure flat response.
5. With these adjustments made, deviation is limited and held constant, since the signal level swings are limited and constant as set by the controller logic. With the data fidelity set and checked the modulation bandwidth is limited by a combination of data filters and phase lock loop bandwidth.
6. RF final output power is measured into a 50 ohm system load at antenna terminal and is adjusted by a factory preset adjustment R52. Power output is set at +33 dBm (2 watts maximum).

Major Component and Active Devices on transmitter section

U20 Voltage regulator + 9 volts	I78scv
U1 Voltage regulator + 5 volts	lm7805
U3 Analog switch	CD4053
U4 Quad Operational Amplifier	LMC6582
U8 RS-232 Serial Interface integrated circuit	MAX232A
U6 RF Power Module Hybrid integrated circuit	RA07N4047M
U7 PLL synthesizer integrated circuit	ADF4110
U8 Buffer amp	MAV11BSM
U9 TCXO Hybrid integrated circuit	TEW TX1824M
Y3 Voltage control oscillator VCO hybrid	RTVCA450-10
Q2 Digital Transistor	BCX17
Q3 Power control voltage follower	MMBV2222