

Tuning Procedures

A temperature-compensated 10.000 MHz crystal oscillator provides the frequency reference for the synthesizer. The oscillator frequency is divided down to 25 kHz and remultiplied in the synthesizer to one of the 256 transmit frequencies as selected by the operator via the microcontroller. The output signal is generated by an integrated VCO.

The reference oscillator is a temperature-compensated, voltage-controlled crystal oscillator. During manufacturing of the transmitter, the potentiometer that sets the control voltage is adjusted so that the reference frequency is 10.0000 MHz. This is accomplished by adjusting a representative transmit frequency to its correct value by means of a frequency counter. Typical frequency tolerance using this method is +/- <0.001%.

The VCO and power amplifier operate from precision regulated power supplies. These, and the use of close-tolerance components, fix the output power level. During manufacture the output power level is confirmed with a wattmeter, and adjusted when necessary by changing the value of the resistor which biases the RF power amplifier.