

Wide-band/Multi-band Voltage Controlled Oscillator

ABSTRACT

A variable frequency signal generator, in the form of a voltage controlled oscillator, provides wide-band and/or multi-band output frequency operation using two control voltage inputs. A pair of LC oscillator circuits are cross-coupled through a transconductance control circuit. The oscillator circuits provide quadrature output frequency signals. The oscillator circuits include MOSFET varactors controllable by a first control voltage which can be used to drive the varactors into inversion or depletion operating modes which correspond to respective output signal frequency bands. A second control voltage is provided to the transconductance control circuit to control currents injected from each oscillator to the other, thereby selecting a particular output frequency within the range of the frequency band determined by the first control voltage. A control voltage compensation circuit is included to prevent variations in the second control voltage from altering the frequency band range selected by the first control voltage. Output signals with frequencies in the range 850 MHz to 2.4 GHz with favorable harmonic content and low phase noise are possible with relatively low supply voltages.

Figure 6