Abstracts

Design of a low-supply-voltage high-efficiency class-E voltage-controlled MMIC oscillator at C-band

F. Ellinger, U. Lott and W. Bachtold. "Design of a low-supply-voltage high-efficiency class-E voltage-controlled MMIC oscillator at C-band." 2001 Transactions on Microwave Theory and Techniques 49.1 (Jan. 2001 [T-MTT] (Mini-Special Issue on 2000 Radio-Frequency Integrated Circuits (RFIC) Conference and Automatic Radio Frequency Techniques Group (ARFTG) Meeting)): 203-206.

In this paper, a monolithically integrated voltage-controlled class-E tuned oscillator for C-band has been designed and measured. Large-signal optimization was performed using analytically calculated starting values to reach high efficiencies at ultra-low supply voltages down to 0.9 V. The range of the tuning voltage is from 0 to the supply voltage. With a supply voltage of 1.8 V, an output power of 6.5 dBm, an efficiency of 43%, and a tuning range of 150 MHz is achieved at a center frequency of 4.4 GHz. With a supply voltage of only 0.9 V, the efficiency is 36%, with an output power of 1.1 dBm,and a tuning range of 80 MHz at a frequency of 3.6 GHz. Chip size is less than 1 mm/sup 2/.

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