Abstracts

A theoretical and experimental study on low-voltage bias voltage controlled oscillators

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In this paper a theoretical and experimental study on phase noise and power performance of low-voltage Colpitts type voltage controlled oscillators (VCOs) is introduced. A phase noise analysis theory is developed to provide a clear understanding and a design approach for VCO circuits. VCOs at 2.4 GHz using 1.5 V bias have been developed to investigate the phase noise and power performance at low-voltages. The experimental results demonstrate a 10 dB improvement in phase noise, a 6 dB increase in output power, as well as a 10 dB reduction in frequency pushing in an optimum design using the theory.

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