Title: Design of a 1.2 V Low Phase Noise 1.6 GHz CMOS Buffered Quadrature Output VCO with Automatic Amplitude Control

Abstract:
This presentation describes the design of a low phase noise 1.6 GHz CMOS buffered Quadrature VCO with automatic amplitude control. The QO-VCO is operated with a supply voltage of 1.2 V and dissipates a current of less than 10 mA. It is capable of delivering quadrature locked signals with almost constant amplitude in the range from 1.22 GHz to 1.95 GHz with a phase noise response of less than –115 dBc at an offset of 1 MHz from the carrier. The effect of the automatic amplitude control is shown to improve phase noise at high oscillation frequencies and its noise has a negligible effect on phase noise response, even at low offset frequencies from the carrier. Design guidelines for reducing both the loop noise and the AM PM conversion factors of the oscillator are also given during the presentation.