Abstracts

Nonlinear Design Approach of a Broadband Hybrid Integrated Ku-Band Common-Source GaAs FET VCO

R. Gratzl, J. Hausner and P. Russer. "Nonlinear Design Approach of a Broadband Hybrid Integrated Ku-Band Common-Source GaAs FET VCO." 1990 MTT-S International Microwave Symposium Digest 90.2 (1990 Vol. II [MWSYM]): 739-742.

The design of a hybrid integrated Ku-Band voltage controlled oscillator is described. The oscillator was designed using linear theory based upon a linear FET-model extracted from measured transistor small signal S-parameters and then optimized for output power employing a nonlinear model for the internal FET. In the nonlinear model, the nonlinear transconductance and the nonlinear input admittance, caused by the Schottky-junction of the gate, were taken into account. The oscillator power was calculated by investigation of the amplitude of the fundamental wave caused by the dominating nonlinearities. Higher harmonics were not taken into account. With the optimized circuit and layout a tuning bandwidth from 12 GHz to 17.25 GHz with a corresponding output power of 7 dBm to 13.5 dBm was measured. Output power was within 2 dB of the predicted value over the whole tuning range.

❑ Return to main document.