Abstracts

High-Frequency Periodic Time-Domain Waveform Measurement System

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A system is presented for the accurate measurement of high-frequency periodic time-domain voltage and current waveforms of a nonlinear microwave device. The measurements are performed in the time domain using a high-speed sampling oscilloscope. The results are Fourier transformed into the frequency domain for error correction and then back into the time domain. An error correction algorithm is presented enabling one to obtain accurate waveforms in spite of nonideal system components. Practical difficulties in measurement system characterization are also discussed. An accurate circuit model for the measurement fixture is developed and its element values are determined. Measurement results are given showing the waveforms in a microwave transistor operated in the nonlinear region. The errors caused by signal processing are discussed.

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