Abstracts

Measurement of Magnitude and Phase of Harmonics Generated in Nonlinear Microwave Two-Ports

U. Lott. "Measurement of Magnitude and Phase of Harmonics Generated in Nonlinear Microwave Two-Ports." 1989 Transactions on Microwave Theory and Techniques 37.10 (Oct. 1989 [T-MTT]): 1506-1511.

A new method for simultaneously measuring the magnitude and phase of the harmonics generated by a microwave two-port is reported. The two-port under test is driven with a sinusoidal microwave signal strong enough to force it into nonlinear operation. Its output harmonics are measured in the frequency domain with a setup which includes a vector network analyzer. For phase calibration at the harmonic frequencies, a millimeter-wave Schottky diode is used as a reference device. Measurement results for the first four harmonics generated in a commercial GaAs MESFET under large-signal operation are presented. To show the validity of the phase measurement, the time-domain waveform constructed from the frequency-domain measurement data is compared to a direct time-domain measurement of the same device with a sampling oscilloscope.

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