Abstracts

Intermodulation Distortion Analysis Using a Frequency-Domain Harmonic Balance Technique

J.H. Haywood and Y.L. Chow. "Intermodulation Distortion Analysis Using a Frequency-Domain Harmonic Balance Technique." 1988 Transactions on Microwave Theory and Techniques 36.8 (Aug. 1988 [T-MTT]): 1251-1257.

A simple approach to the technique of harmonic balance for nonlinear circuit analysis is presented. The algorithm operates solely in the frequency domain to simplify the resolution of the intermodulation products of two input tones with narrow frequency spacing. A description of the technique and its implementation is given. The harmonic and intermodulation products of a single FET amplifier are calculated and the results compared with a Volterra series analysis and experimentally measured values. A second single FET amplifier is analyzed to show the accuracy of the prediction of gain compression with this technique. The accuracy of this technique is shown to equal that of the Volterra series analysis used in the comparison. The ability of the frequency-domain technique to routinely analyze arbitrary circuit topologies, however, provides a definite advantage over the Volterra series method.

❑ Return to main document.