Abstracts

A Large Signal Analysis Leading to Intermodulation Distortion Prediction in Abrupt Junction Varactor Upconverters (Comments)

A.I. Grayzel, S.M. Perlow and B.S. Perlman. "A Large Signal Analysis Leading to Intermodulation Distortion Prediction in Abrupt Junction Varactor Upconverters (Comments)." 1967 Transactions on Microwave Theory and Techniques 15.3 (Mar. 1967 [T-MTT]): 183-184.

In the above paper by Perlow and Perlman, the authors use steps that are not mathematically correct and which lead to incorrect results. The authors write the matrix equations for the three-frequency upconverter relating the Fourier coefficients i/sub 1/, i/sub 2/, and i/sub 3/ to the Fourier coefficients of the pump and signal voltages. They then derive an expression for the gain G/sub i/ as a function of i/sub 1/ the Fourier coefficient of the signal current. After expanding G/sub i/ in a power series they substitute a time function for the Fourier coefficient i/sub 1/ which is clearly not permissible. They further substitute for i/sub 1/ the sum of two sinusoids although (1) and (2) are valid for only a single sinusoid at the input.

❑ Return to main document.