Abstracts

An Improved Version of the Almost Periodic Fourier Transform Algorithm with Applications in the Large-Signal Domain (Short Papers)

J. Dreifuss, A. Madjar and A. Bar-lev. "An Improved Version of the Almost Periodic Fourier Transform Algorithm with Applications in the Large-Signal Domain (Short Papers)." 1991 Transactions on Microwave Theory and Techniques 39.3 (Mar. 1991 [T-MTT]): 571-575.

The almost periodic Fourier transform (APFT) algorithm is a useful tool in the analysis and design of nonlinear microwave circuits to which several large signals are applied simultaneously. It suffers, however, from a large spread in the calculated results. By combining the waveform balance (WB) approach with a modified form of the APFT algorithm, in which the number of randomly selected sampling points is increased, the overall computation accuracy is enhanced, the spread among results is reduced, and the computation time is practically unchanged. This modified approach is applied to the evaluation of large, signal S parameters of a MESFET and to the calculation of its 1 dB compression power, the intermodulation distortion (IMD) products, and the IP/sub 3/ points for a range of frequencies. The results are in excellent agreement with those parameters that are available from the manufacturer's measurements. The conversion gain of a MESFET mixer is also calculated and the reduced spread among the results is compared with that obtained by use of the original APFT algorithm.

❑ Return to main document.