Abstracts

A novel time domain characterization technique of intermodulation in microwave transistors: application to the visualization of the distortion of high efficiency power amplifiers

D. Barataud, A. Mallet, J.P. Fraysse, F. Blache, M. Campovecchio, J.M. Nebus, J.P. Villotte and J. Verspecht. "A novel time domain characterization technique of intermodulation in microwave transistors: application to the visualization of the distortion of high efficiency power amplifiers." 1997 MTT-S International Microwave Symposium Digest 3. (1997 Vol. III [MWSYM]): 1687-1690.

Along with the increasing necessity of improving the large signal characterization of microwave transistors and the validation of nonlinear models, a novel characterization has emerged based on a time domain approach. As explained and illustrated in this paper, this method allows the visualization and the accurate determination of amplifier distortions at low, medium and large RF power levels. The extraction of single tone and multitone voltage/current waveforms from a dedicated measurement system enhances the novel characterization technique proposed and the validation of non linear electrothermal model for CAD. Examples of measured and simulated results of GaAs FETs and GaInP/GaAs HBTs are given to demonstrate the great possibilities offered by the characterization procedure. Its use to optimize trade-offs between efficiency and linearity of power amplifiers is clearly demonstrated by the display and the visualization of the envelop and carrier distortions of the signals at both ports of power FETs and HBTs.

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