Abstracts

A New Adaptive Double Envelope Feedback (ADEF) Linearizer for Solid State Power Amplifiers

J.-S. Cardinal and F.M. Ghannouchi. "A New Adaptive Double Envelope Feedback (ADEF) Linearizer for Solid State Power Amplifiers." 1995 Transactions on Microwave Theory and Techniques 43.7 (Jul. 1995, Part I [T-MTT]): 1508-1515.

A new adaptive double envelope feedback (ADEF) linearize using a voltage-controlled phase-shifter for predistortion purpose and a dynamic gate bias for gain stabilization purpose has been developed and implemented on a two-watt MESFET amplifier. A two-tone test around 1.6 GHz shows average in-band intermodulation product below -40 dBc up to saturation with a power-added efficiency of 40% at the 1-dB compression point. Validation of the adaptive features of the ADEF technique is carried out with respect to carrier frequency, temperature, two-tone amplitude offset and spacing. In addition, a new formula, which directly relates the third order intermodulation level to the AM/AM and AM/PM distortion coefficients of solid state nonlinear amplifiers is proposed and its accuracy is assessed using both simulation and experimental results.

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