Abstracts

Efficient, Linear Amplification of Varying-Envelope Signals Using FET's with Parabolic Transfer Characteristics

A.A.M. Saleh and M.F. Wazowicz. "Efficient, Linear Amplification of Varying-Envelope Signals Using FET's with Parabolic Transfer Characteristics." 1985 Transactions on Microwave Theory and Techniques 33.8 (Aug. 1985 [T-MTT]): 703-710.

A linear, high-efficiency mode of operation is described for FET power amplifiers of varying envelope signals (e.g., single-sideband, quadrature-amplitude-modulation, and multicarrier signals). It makes use of FET's having parabolic transfer characteristics (PTC). It is shown theoretically and experimentally that the efficiency of the PTC mode is about 2 dB higher than that of the standard class-A mode. For example, two-tone, 4-GHz measurements on a Western Electric FET model 131-L showed that, for an output power of about 1.5 W and for a relative third-order intermodulation level of -35 dB, the power-added efficiency of the PTC mode was 20 percent, while that of the class-A mode was 13 percent. Comparisons are also made with other high-efficiency modes of operation proposed elsewhere.

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