Abstracts

Low-distortion MMIC power amplifier using a new form of derivative superposition

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Reduction of interchannel interference produced by a power amplifier near 1-dB compression is a key concern for the wireless communications industry. In this paper, we present a 100-mW monolithic-microwave integrated-circuit (MMIC) power amplifier designed using a novel form of the derivative superposition method. The measured results of the MMIC power amplifier showed a two-tone carrier-to-interference (C/I) ratio of 45 dBc with an efficiency of 22.5% when backed off by 4.5 dB from the 1-dB compression point. We demonstrate that the MMIC power amplifier represents a good compromise between C/I ratio, output power, efficiency, and gain at the cost of an increase in total gate width, by comparing it to class-A, class-AB, and class-B single field-effect-transistor amplifiers.

❑ Return to main document.