Abstracts

Quasi-Linear Amplification Using Self Phase Distortion Compensation Technique

H. Hayashi, M. Nakatsugawa and M. Muraguchi. "Quasi-Linear Amplification Using Self Phase Distortion Compensation Technique." 1995 Transactions on Microwave Theory and Techniques 43.11 (Nov. 1995 [T-MTT]): 2557-2564.

This paper demonstrates a self phase distortion compensation technique to realize linear power amplifiers, in which the positive phase deviation from a common-source FET and the negative phase deviation from a common-gate FET cancel each other. It is confirmed both theoretically and experimentally that increasing the drain-to-source conductance, G/sub d/, causes the self phase distortion compensation effect. An experimental power amplifier for L-band personal communications systems, which employs the cascode connection, shows good phase deviation performance. More than 20-dB gain, 21-dBm output power, and 50% power added efficiency are obtained along with the adjacent channel interference of -52 dBc in 192-kHz bands at 600-kHz offset frquency from 1.9 GHz at the operating voltage of only 3 V. The demonstrated performances satisfy the specifications for the 1.9-GHz Japanese Personal Handy-phone System (PHS) utilizing the pi/4-shift QPSK modulation scheme. The proposed technique is suitable for MMIC design, and allows the design of handsets that are small, lightweight, and have long operating times.

❑ Return to main document.