Abstracts

High-Efficiency 1-, 2-, and 4-W Class-B FET Power Amplifiers

J.R. Lane, R.G. Freitag, H.-K. Hahn, J.E. Degenford and M. Cohn. "High-Efficiency 1-, 2-, and 4-W Class-B FET Power Amplifiers." 1986 Transactions on Microwave Theory and Techniques 34.12 (Dec. 1986 [T-MTT] (1986 Symposium Issue)): 1318-1326.

X-band GaAs FET amplifiers utilizing the higher efficiency of class-B operation have been designed and fabricated. This paper describes the design of these amplifiers and includes the results of a computer time-domain simulation of one of the topologies, which gives insight into the harmonic content of the output currents in different branches of the FET and amplifier circuit. The performance is presented of 1-W single-ended, 2-W push-pull, and 4-W dual push-pull amplifiers having state-of-the-art power-added efficiencies of 45 percent, 40 percent, and 35 percent, respectively, in a 1-GHz bandwidth, with associated gains of 5.8 dB, 5.4 dB, and 5.0 dB. Data are given for 15-unit lots of the 1-W and 2-W units to show the consistency of their performance. In addition to output power and efficiency data, this paper includes information on AM-to-PM conversion, second-harmonic generation, and intermodulation products.

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