Abstracts

The Transmission-Line High-Efficiency Class-E Amplifier

T.B. Mader and Z.B. Popovic. "The Transmission-Line High-Efficiency Class-E Amplifier." 1995 Microwave and Guided Wave Letters 5.9 (Sep. 1995 [MGWL]): 290-292.

High-efficiency switched-mode (heavily saturated) circuits such as the class-E amplifier are well-known in the MHz frequency range. Here, a microwave transmission-line class-E amplifier is presented. Design equations for the output circuit line lengths and impedances are derived, along with approximate equations predicting power and efficiency for the class-E amplifier. Microstrip circuits using the Siemens CLY5 MESFET demonstrate 80% power-added efficiency (PAE) at 0.5 GHz with 0.55 W of output power and 73% PAE at 1.0 GHz with 0.94 W. Experimental results compare favorably to a simplified design-oriented analysis.

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