Abstracts

Transmission-line load-network topology for class-E power amplifiers

A.J. Wilkinson and J.K.A. Everard. "Transmission-line load-network topology for class-E power amplifiers." 2001 Transactions on Microwave Theory and Techniques 49.6 (Jun. 2001, Part II [T-MTT] (Special Issue on RF Power Amplification)): 1202-1210.

Class-E amplifiers are a type of switching amplifier offering very high efficiency approaching 100%. In this paper, a topology and design methodology, which could be used for a transmission-line implementation of a class-E power amplifier, is presented. A simple transmission-line class-E load network is proposed that offers combined transformation of the load resistance down to a suitable level, as well as simultaneous suppression of harmonics in the load. The load network was developed and tested with the aid of a time-domain simulator (i.e., SPICE). A microstrip layout was designed and a first prototype was built operating at 1 GHz utilizing a field-effect transistor as the switching device. A drain efficiency of 72% was measured for our prototype after tuning, although better performance can be expected with an improved switching transistor and careful tuning of the load network.

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