Abstracts

Integrated-antenna push-pull power amplifiers

W.R. Deal, V. Radisic, Yongxi Qian and T. Itoh. "Integrated-antenna push-pull power amplifiers." 1999 Transactions on Microwave Theory and Techniques 47.8 (Aug. 1999 [T-MTT] (Mini-Special Issue on Low-Power/Low-Noise Technologies for Mobile Wireless Communications)): 1418-1425.

In this paper, the integrated-antenna concept is applied to push-pull power amplifiers (PAs). In this approach, the antenna serves as an out-of-phase power combiner and tuned load for higher harmonics. This new architecture effectively has a near-zero loss output hybrid, and results in a high-efficiency PA. The first example is a narrow-band push-pull amplifier integrated with a dual-feed patch antenna. At an operating frequency of 2.5 GHz, a maximum measured power-added efficiency (PAE) of 55% is achieved. The second example is a broadband push-pull amplifier integrated with a dual-feed slot antenna amplifier operating at 2.46 GHz which has a peak PAE of 63%, and PAE better than 55% in an 8% bandwidth. Additionally, 48% PAE is achieved with code-division multiple-access modulation and adjacent-channel power ratio better than -42 dBe at a 1.25-MHz offset.

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