Abstracts

Multi-harmonic tuning behavior of MOSFET RF power amplifiers

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This paper categorizes, for the first time, multi-harmonic tuning behavior into four basic modes: both odd/even harmonics SHORT (SS), odd harmonics SHORT and even harmonics OPEN (SO), odd harmonics OPEN and even harmonics SHORT (OS), and both odd/even harmonics OPEN (OO). Conventional power amplifiers (class AB, E, F, etc.) can be characterized using these modes of operation in so far as multi-harmonic tuning is concerned and a systematic simulation procedure can be used to find the optimal harmonic terminations. A simulation and experimental study of the multi-harmonic tuning behavior of MOSFET RF power amplifiers reveals that the odd/even harmonics OPEN (OO) mode results in the highest efficiency for such devices.

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