Abstracts

Computer-aided optimization of adjacent channel power in nonlinear communications amplifiers

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Researchers have developed several efficient methods, suitable for modulated signal excitations, for nonlinear simulation of communications amplifiers; however, few have addressed their application to circuit optimization. To bridge the gap, we introduce a rigorous numerical procedure for automated design of nonlinear amplifiers subject to adjacent channel power, gain, efficiency and similar specifications. It is based on a gradient optimizer with an Envelope solver in the inner loop, and an efficient method for analytical evaluation of parameter-space gradients. This novel approach is illustrated on a common design task-the adjustment of bias levels and terminal impedances for optimal nonlinear performance.

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