

单路反馈射频功放预失真线性化方法

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Single Feedback Predistortion Linearization Method for RF Power Amplifier

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摘要

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摘要 该文基于记忆多项式模型, 提出一种采用单路反馈的射频功放预失真线性化新方法, 只需用正交解调后的IQ信号中的一路, 就可完成对预失真器模型参数的获取。该方法可消除使用正交解调器所带来的增益和相位不平衡问题, 且节省了一路反馈采样电路, 在降低成本、简化设计的同时还能提高预失真线性化的性能。仿真和物理实验结果表明, 该文提出的方法是正确的, 能达到比较好的线性化效果。

关键词: 功率放大器 非线性 记忆多项式 预失真

Abstract: Based on memory polynomial model, this paper proposes a new RF power amplifier predistortion linearization method using single feedback, which only needs the in-phase or quadrature component of the quadrature demodulated IQ signal, and it also can acquire the model parameters of predistorter. This method can eliminate the gain and phase imbalance problems caused by quadrature demodulator, and one feedback sampling circuit is saved, which can reduce the costs, simplify the system design, as well as improve the predistortion linearization performance. Simulation and experiment results show the correctness of the proposed method, which can achieve satisfied linearization performance.

Keywords: Power amplifier Nonlinearity Memory polynomial Predistortion

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