

3.3~3.9 GHz 宽带 Doherty 功率放大器的设计

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摘要: 本文实现了一款 GaN 宽带 Doherty 功率放大器.基于 CCGH40025 管芯, 在 ADS(Advanced Design system)中进行微带线建模与模型的电磁场仿真.利用双阻抗匹配的原理, 使用 ADS 中随机优化以及梯度优化的方法, 进行微带线的优化仿真, 设计一款工作在 3.3~3.9 GHz 的 Doherty 宽带功率放大器.仿真实现最大输出功率 48 dBm, 效率 65% 以上, 功率回退 6 dB, 输出功率 42 dBm, 效率 47% 以上.这种设计方法可应用于宽带射频通信系统中.

关键词: Doherty; 效率; 功率放大器

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The Design of A 3.3~3.9 GHz Broadband Doherty Power Amplifier

Module

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Abstract: In this paper, a GaN broadband Doherty power amplifier is designed. A broadband power amplifier of 3.3~3.9 GHz based on CGH40025 chip model is designed, with modeling and electromagnetic field simulation of micro-strip in ADS (Advanced Design system). Using random optimization and gradient optimization method in the ADS with the principle of double impedance matching. The simulation result show that the broadband power amplifier module have a good performance in the wide band of 3.3~3.9 GHz, the gain is 12-13 dB, the maximum output power is 47.7 dBm, and the efficiency is above 65%, the power is back 6dB, the output power is 41.7dBm, and the efficiency is above 47%. The design method can be applied to the broadband radio frequency communication system.

Key words: Doherty; efficiency; power amplifier

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