

Design of a Compact and High-Efficiency 5.8 GHz Microwave Power Amplifier for Wireless Communication Systems

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- Luong Duy Manh (1) Email author (duymanhcs2@mta.edu.vn)
- Nguyen Thanh Hung (1)
- Nguyen Thi Anh (1)
- Dai Xuan Loi (2)
- Nguyen Huy Hoang (1)

1. Le Quy Don Technical University, , Hanoi, Vietnam
2. Military Institute of Science and Technology, , Hanoi, Vietnam

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Abstract

In this paper, a compact and low-cost, high-efficiency microwave power amplifier is proposed and designed. The proposed amplifier operates at the 5.8 GHz band for wireless communications systems. The amplifier is designed on a low-cost 5 W GaN HEMT transistor from Qorvo and a RO4350B substrate from Rogers. The high-efficiency can be obtained by treating the second harmonic at the input side. The output side is treated up to the third harmonic. Both small-signal and large-signal performance of the proposed amplifier were evaluated by both simulation and experiment. The simulated and measured results validate that the designed power amplifier can be realized in a compact size and delivered 5 W power with a high-efficiency at 5.8 GHz band.

Keywords

Power amplifier GaN HEMT High-efficiency

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