Power Amplifier Design for E-band Wireless System Communications - DTU Orbit (22/04/2019)

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E-band wireless communications will become important as the microwave backhaul for high-speed data transmission. One of the most critical components is the front-end power amplifier in this system. The paper analyzes different technologies with potential in the E-band frequency range and present a power amplifier design satisfying the E-band system specifications. The designed power amplifier achieves a maximum output power of ges 20 dBM with a state-of-the-art power-added efficiency of 15%. The power is realized using InP DHBT technology. To the best of our knowledge it is the highest output power and efficiency reported for an InP HBT power amplifier in this frequency range. The predicted power-added efficiency is higher than that of power amplifiers based on SiGe HBT and GaAs pHEMT technologies. The design shows the capabilities of InP DHBT for power amplifier applications as an alternative to HEMT based technologies in the millimeter-wave frequency range.

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