Abstracts

Output harmonic termination techniques for AlGaN/GaN HEMT power amplifiers using active integrated antenna approach

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In this paper, effects of output harmonic terminations on PAE and output power of AlGaN/GaN HEMT power amplifier are investigated. Using a traditional method of harmonic termination, we observe a substantial increase in PAE and output power. Further, we demonstrate the high efficiency AlGaN/GaN HEMT power amplifier with harmonic termination characteristics by using the active integrated antenna approach. For the microstrip-based AlGaN/GaN HEMT power amplifier, large signal measurements and comparisons of PAE and output power were done in class-AB operation with and without output harmonic terminations. For the antenna integrated power amplifier using an AlGaN/GaN HEMT with 1 mm gate periphery, output power of 30 dBm and peak PAE of 55 % with a power gain of 14 dB were achieved at a drain voltage of 18 V and a gate voltage of -2.8 V.

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