Abstracts

High Efficiency Amplifiers for 8 GHz Band

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This paper describes newly devised high efficiency amplifiers. They are single and push-pull power amplifiers operating in 8 GHz band. In the single amplifier, a trapezoidal voltage waveform is produced at an FET1 in the first stage of the circuit, and the operating angle is set to 74°. This voltage is amplified in the exciting stage and the power amplification is performed by a power FET in the final stage. Using an FET whose characteristics are the same as those of an FET used in the proposed amplifier, the conventional class A and class C power amplifiers are also constructed. For the three (new and conventional) amplifiers, the comparison is made in the output power and the power added efficiency, and the predominance of a new high efficiency power amplifier is demonstrated. The operating frequency is in 8 GHz band, and the output power is 2 W, 2.35 W, and 3 W for class A and class C amplifiers, and a new amplifier, respectively. For these amplifiers, the power added efficiency is 30 %, 48.5 %, and 60 %. A high efficiency push-pull power amplifier is also constructed, and the maximum power 7 W and the power added efficiency 76 % are obtained.

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