Abstracts

Analysis and experimental study of an L-band new topology Doherty amplifier

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This paper describes the first design of an L-band unbalanced-topology Doherty amplifier fabricated with FET devices. In the proposed topology and unlike the standard one, the carrier amplifier operates (at low input drive levels) into a load impedance three times larger than its optimum. Thus, theoretically the Doherty amplifier achieves 78.5% of efficiency at 7.24 dB back-off. At 11 dB back-off from the maximum output power of 26.7 dBm, the measured Doherty amplifier power added efficiency achieves 35.2% at 1.9 GHz that is 18.5% higher than that of a class-B amplifier. Optimum values of Doherty amplifier load and quarter-wave transformer characteristic-impedance were determined. The theory and design of this amplifier with its new topology are discussed.

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