

43.5 to 45.5 GHz Active Times-4 Frequency Multiplier with 1.4 Watt Output Power

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The active multiplier/amplifier described in this paper produces a minimum 1.41 W output power in a 2 GHz band centered at 44.5 GHz. Total dc power consumption is 18.7 W. The entire unit, including drive amplifier, quadruple, EHF power amplifier and high-speed bias control circuitry, is housed in a hermetic 3.8-x1.3-x0.45-inch package weighing 3.7 oz. This represents an order-of-magnitude reduction in size and weight compared to existing IMPATT-based EHF transmitters. The results we present were achieved by using 0.2- μ m GaAs PHEMT MMICs coupled with a low-loss planar combining scheme.

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