Abstracts

110 GHz vector modulator for adaptive software-controlled transmitters

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A 110 GHz MMIC vector modulator for use in low-cost, high-performance, radar and communication transmitters is presented. The circuit consists of two push-pull (bi-phase) attenuators arranged in phase quadrature and has dimensions of 1.7/spl times/ 1.4 mm/sup 2/. The fabricated MMIC has been characterized by means of static S-parameter measurements and shows a minimum insertion loss of 12 dB at 110 GHz, Using these measurements, the required baseband input levels for a 64-QAM static constellation were determined. These levels were then applied at 10 MSample/s, by an arbitrary waveform generator, to demonstrate a 60 Mb/s data rate transmitter operating at 110 GHz. To date, this represents the highest reported RF frequency for direct multilevel carrier modulation using monolithic technology.

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