Abstracts

Millimeter-wave amplitude-phase modulator

A.E. Martynyuk, N.A. Martynyuk, S.N. Khotiaintsev and V.S. Vountesmeri. "Millimeter-wave amplitude-phase modulator." 1997 Transactions on Microwave Theory and Techniques 45.6 (Jun. 1997 [T-MTT]): 911-917.

A millimeter-wave amplitude-phase modulator, using Fox's (polarization) principle of phase changing has been developed. Using this modulator, it is possible to perform the following types of phase modulation: binary phase-shift keying (BPSK), quadrature phase-shift keying (QPSK), differential QPSK (DQPSK), /spl pi//4-DQPSK with peak phase error 5/spl deg/ (rms error: 2/spl deg/), and peak amplitude error 2% (rms error: 1%) in the frequency range of 36-37.5 GHz. The achievable switching time is less than 35 ns. A low level of insertion loss (1 dB) is achieved. The modulator is able to switch up to 25 dBm of RF power. This modulator can also be used for changing the amplitude of the output wave from 0 to -6 dB with an accompanying phase modulation less than 3/spl deg/. The modulator is suitable for use in high-speed millimeter-wave communication systems.

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