Abstracts

Microwave Phase Modulation Using Frequency Multipliers

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For communication by radio links, satellites, waveguides etc. a pulse code modulation that is realized by phase reversal (phase shift keyed) has advantages as compared to a pulse amplitude modulation because the signal-to-noise ratio can be 6 db less for the same error probability. The phase shift keying of the microwaves should be rapid (< 1ns) and the modulation losses should be small. A suitable semiconductor element for such a phase modulator is a voltage dependent capacitance diode. A simple circuit for a reflection type modulator is obtained when the diode terminates a transmission line. Then the phase of the reflected wave can be shifted by a change of the bias voltage. The lossless tuner in figure 1a is adjusted so that any residual amplitude modulation is minimized.

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