Abstracts

Amplitude and Frequency Modulation of CW Gunn Oscillators

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The use of Gunn oscillators in CW Doppler radar, as local oscillators, and in other system applications often requires automatic frequency and/or phase control, frequency modulation or amplitude modulation. The frequency modulation of CW Gunn oscillators by simultaneously applying ac and dc bias voltages has been described by King and Wasse, who discussed possible modulation mechanisms. Hobson has reported an experimental study of voltage tuning using a biconical cavity. In this paper we present the results of a theoretical and experimental study of AM, FM and AFC of wide-band tunable Gunn oscillators operating in the X-band. The oscillators consist of a Gunn diode mounted on a post in rectangular waveguide. The circuit is loaded with an iris and is tuned over the band with a sliding short located behind the post. The output power as a function of frequency is shown in Fig. 1 for a typical oscillator.

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