Abstracts

Carrier Pulses at Microwave and Millimeter-Wave Frequencies

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This paper discusses some recent experimental results obtained using special gallium arsenide point-contact diodes for the generation of phase-locked carrier pulses in the microwave and millimeter-wave bands. Several methods of generating such pulses are described. 11.2-Gc microwave phase-locked carrier pulses of about 1.0-nanosecond base duration have been generated at a 160-megabit/second rate. These microwave pulses, which are generated directly from a baseband signal, normally have peak power levels in excess of 0.5 mw. Millimeter-wave phase-locked carrier pulses have also been generated at 56 Gc. These very high frequency pulses have a base duration as short as 0.25 nanosecond and occur at a 160-megabit/second rate. Furthermore, phase-locked carrier pulses have been generated at frequencies as high as 89.6 Gc. A simple method of generating nonphase-locked 0.3-nanosecond millimeter-wave carrier pulses directly from 1.92 gigabit/second rate baseband pulses has also been investigated. The experimental arrangement used to demonstrate the "turn on" and "turn off" principle of transient carrier pulse generation is described.

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