Abstracts

A Multikilowatt X Band Nanosecond Source (1967 [MWSYM])

H. Goldie. "A Multikilowatt X Band Nanosecond Source (1967 [MWSYM])." 1967 G-MTT International Microwave Symposium Program and Digest 67.1 (1967 [MWSYM]): 192-193.

We have recently investigated several possible methods of generating nanosecond pulses of relatively large amplitude. By employing a 25-kilowatt magnetron X-band pulser, a four-port circulator, and two thyratron waveguide switches, we have generated a 19-kilowatt ouput pulse (see figure 1) the half-power pulsewidth of which is 10 nanoseconds. The risetimes and falltimes are 2 and 4 nanoseconds, respectively. The width at -10, -13, -20, and -23 dB dawn from the peak value is 12.5, 15, 20, and 22 nanoseconds, respectively. Increasing the peak power level to 50 kW resulted in a narrower pulse (~7 nanoseconds) with a risetime of 1.5 nanoseconds. Though the experiment was Iimited by the maximum power output of the Iaboratory magnetron, theory indicates even shorter pulses with steeper skirts at higher power levels (~1/4 megawatt in X-band).

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