Abstracts

A distributed heterostructure barrier varactor frequency tripler

S. Hollung, J. Stake, L. Dillner, M. Ingvarson and E. Kollberg. "A distributed heterostructure barrier varactor frequency tripler." 2000 Microwave and Guided Wave Letters 10.1 (Jan. 2000 [MGWL]): 24-26.

We present a broadband nonlinear transmission line (NLTL) frequency multiplier at F-band. The multiplier consists of a finline section periodically loaded with 15 heterostructure barrier varactor (HBV) diodes. Tapered slot antennas are used to couple the fundamental signal from a WR-22 rectangular waveguide to the distributed multiplier as well as radiate the output power into free space. The frequency tripler exhibits 10-dBm peak radiated power at 130.5 GHz with more than 10% 3-dB bandwidth and 7% conversion efficiency. The tripler can be used as an inexpensive broad-band solid-state source for millimeter-wave applications.

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