Abstracts

A W-band overmoded-waveguide oscillator with Gunn diodes

J. Bae, M. Fujita and K. Mizuno. "A W-band overmoded-waveguide oscillator with Gunn diodes." 2001 Transactions on Microwave Theory and Techniques 49.12 (Dec. 2001 [T-MTT] (Special Issue on 2001 International Microwave Symposium)): 2554-2559.

Spatial power combining of Gunn diodes having an efficiency of greater than 80% has been demonstrated at W-band using an overmoded-waveguide resonator having an array of fundamental mode (TE/sub 10/) waveguides. Nine Gunn diodes contained in the 3/spl times/3 TE/sub 10/-waveguide array have oscillated in a single TE/sub 30/ mode in the overmoded-waveguide resonator, and have produced 0.45-W output power (continuous wave) with a combining efficiency of 55% at 98.8 GHz. This efficiency has been improved to 84% using a small and compact resonator that reduces the number of undesirable modes in the overmoded waveguide. The output mode of TE/sub 30/ in the oscillator has been converted to TE/sub 10/ using a mitered-waveguide junction mode converter.

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