Abstracts

A Laser-Induced Traveling-Wave Device for Generating Millimeter Waves

J. Soohoo, S.-K. Yao, J.E. Miller, R.R. Shurtz, II, Y. Taur and RA. Gudmundsen. "A Laser-Induced Traveling-Wave Device for Generating Millimeter Waves." 1981 Transactions on Microwave Theory and Techniques 29.11 (Nov. 1981 [T-MTT]): 1174-1182.

We have investigated a novel device concept for generating CW millimeter waves with output power in the multiwatt range. The concept involves the utilization of modulated laser radiation to induce in a distributed Schottky-diode structure a traveling-wave current which, in turn, synchronously excites the dominant mode of a waveguide structure to generate millimeter power. The induced traveling-wave current is directly proportional to the laser modulation generated by the interference of two overlapping laser beams of millimeter beat frequency. Detailed analysis indicates that the device has both high-output and frequency-tunable characteristics.

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