Abstracts

200, 400 and 800 GHz Schottky diode "substrateless" multipliers: design and results

E. Schlecht, G. Chattopadhyay, A. Maestrini, A. Fung, S. Martin, D. Pukala, J. Bruston and I. Mehdi. "200, 400 and 800 GHz Schottky diode "substrateless" multipliers: design and results." 2001 MTT-S International Microwave Symposium Digest 01.3 (2001 Vol. III [MWSYM]): 1649-1652 vol.3.

Several sub-millimeter doubler circuits have been designed and built using a new fabrication technology. To reduce the RF losses in the passive circuitry, the substrate under the transmission lines is etched away, leaving the metal suspended in air held by its edges on a GaAs frame. This allows the circuit to be handled and mounted easily, and makes it very robust. To demonstrate this technology, broadband balanced planar doublers have been built and tested at 400 GHz. The next generation 200, 400 and 800 GHz doublers with improved performance are also discussed. The 368-424 GHz circuits were measured and achieved 20% efficiency at 387 GHz. The 3 dB bandwidth of the fix-tuned doubler is around 9%. The maximum output power measured is around 8 mW and drops down to 1 mW at 417 GHz. This represents the highest frequency waveguide based planar doubler to date in the literature.

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