

Abstract Submitted
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Status of a Miniature W-Band Dielectric Traveling-Wave Tube Development¹ JOSE VELAZCO, Microwave Technologies Inc., WILLI SCHWARZ, George Mason University, CHRISTINE DUONG, Microwave Technologies Inc., PETER CEPERLEY, George Mason University — We will report on the status of the development of a compact W-band dielectric traveling-wave tube (DTWT) amplifier. The DTWT amplifier is based on the interaction between a magnetized electron beam and the fields of a traveling wave inside a very compact dielectric waveguide. A high permittivity dielectric waveguide is used to slow down the wave and replaces helix structures used in conventional traveling-wave tubes. A novel approach in this development is the use of micromachining techniques for the fabrication of the various components of this amplifier. We will present results of RF and beam transport experiments along the W-band DTWT circuit. The DTWT should be capable of producing millimeter-wave radiation for future military battlespace applications.

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