Abstracts

A low cost traveling wave tube for wireless communications

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Demand for high data rate wireless communications is pushing up amplifier power, bandwidth and frequency requirements. Some systems are using vacuum electron devices again because solid-state power amplifiers are not able to efficiently meet the new requirements. The traveling wave tube is the VED of choice because of its excellent broadband capability as well as high power efficiency and frequency. However, TWTs are very expensive on a per watt basis below about 200 watts of output power. We propose a new traveling wave tube that utilizes cathode ray tube construction technology and electrostatic focusing. We believe the tube can be built in quantity for under $1,000 each. We discuss several traveling wave tube slow wave circuits that lend themselves to the new construction. We present modeling results and data on prototype devices.

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