ABSTRACT

A 137 GHz gyrotron with a high Q (~6000) cavity has been built and tested in short pulse operation. Output power of 0.1 to 20 kW and efficiency of up to 26% were observed in 65 kV, 0.03 to 1.4 A operation in the TE_{031} mode. Frequency pulling of 2 kHz per volt was measured. This small frequency pulling value indicates that a long pulse or cw gyrotron with high stability (< 1 MHz bandwidth) is possible. Operation at currents of 3 to 5 A, which is very far above threshold, resulted in the excitation of many higher axial modes.