Transit Time Isolation of a High Power Microwave Amplifier

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We report experimental results from a high power X-band traveling wave tube amplifier designed to eliminate sidebands due to reflections from its output. The amplifier has a very low energy velocity, such that the time it takes a wave to be reflected from the output to the input is of the order of, or greater than, the electron beam pulse duration. The bandwidth of the output spectrum is limited by the very narrow passband of the periodic structure. The amplifier has been operated at power levels of up to 160 MW at 9 GHz for pulse durations of 50 ns.

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