



Improving an S-Band Injection Locked Magnetron Based on Anode Current Regulation

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Magnetrons are compact, with high efficiency and high-power capacity, and are good candidates of high-power microwave sources in wireless power transmission systems. Microwave power combining based on injection locked magnetrons is a key technique for large scale high-power microwave wireless power transmission. The injection locking and phase shifting performance based on anode current regulation of an S-band magnetron were studied. The injection locking performance of the magnetron is improved based on the frequency pushing effects. The dynamic range of magnetron's free-running frequency and power fluctuation are suppressed. The phase jitter of the injection-locked magnetron is reduced, and the phase fluctuation is depressed. The proposed magnetron anode current regulation technique has potential applications in high-power microwave wireless power transmission systems.