

Abstract Submitted
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Characterizing configurable transmission modes in plasma photonic crystals using scanning field mapping BENJAMIN WANG, MARK CAPPELLI, Stanford University — A fully tunable plasma photonic crystal is used to control the propagation of free space electromagnetic waves in the S to X band of the microwave spectrum. A structured array of discharge plasma tubes are arranged in a square crystal lattice with the individual plasma dielectric constant tuned through variation in the plasma density. Microwave field-mapping is used to characterize the transmitted electromagnetic fields of the tunable device operating in waveguiding and bending modes. These modes are obtained by introducing appropriate line defects in the photonic crystal structure by controlling the activity of individual plasma tubes. Comparisons are made of the measured fields to those simulated using commercially-available software.

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