Abstracts

The design of serpentine-mode converters for high-power microwave applications

W. Lawson, M.R. Arjona, B.P. Hogan and R.L. Ives. "The design of serpentine-mode converters for high-power microwave applications." 2000 Transactions on Microwave Theory and Techniques 48.5 (May 2000 [T-MTT]): 809-814.

In this paper, we report the design methodology and numerical results for two mode converters that are suitable for high-power microwave applications. Both converters are designed to operate at 11.424 GHz and utilize periodic serpentine structures to convert between modes with different azimuthal-mode indexes. The first converts about 98.5% of an incident linearly polarized TE/sub 12/ mode to the TE/sub 01/ mode when oriented as an H-plane bend, but has just 1% mode conversion to all modes when oriented as an E-plane bend. The second device converts a linearly polarized TE/sub 11/ mode to a TM/sub 01/ mode with over 99.99% effectiveness. The performance of both devices with respect to parametric variations is detailed. Experimental measurements of the radiation patterns from the TE/sub 12/-to-TE/sub 01/-mode converter are consistent with the theoretical predictions.

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