Abstracts

TE/sub 11/ to HE/sub11/ Cylindrical Waveguide Mode Converters Using Ring-Loaded Slots

G.L. James and B.M. Thomas. "TE/sub 11/ to HE/sub11/ Cylindrical Waveguide Mode Converters Using Ring-Loaded Slots." 1982 Transactions on Microwave Theory and Techniques 30.3 (Mar. 1982 [T-MTT]): 278-285.

A theoretical parameter study is given of a TE/sub 11/ to HE/sub 11/ mode converter consisting of a section of cylindrical corrugated waveguide with ring-loaded slots. The analysis, using modal field-matching techniques to determine the scatter matrix of the converter, allows the return loss to be computed accurately. For a wide range of waveguide sizes it is shown that a bandwidth ratio of 1.5 with a return loss better than 30 dB is possible. The low-frequency performance of the converter is limited by the deterioration in return loss, while at high frequencies the generation of a small amount of unwanted EH/sub 12/ mode is the restriction. If the effects of this mode can be neglected, operation over a wider bandwidth is possible, particularly for larger waveguide size.

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