Abstracts

On the Wave Propagation and Mode Conversion in a Helically Corrugated Multimode Circular Waveguide

C.C.H. Tang. "On the Wave Propagation and Mode Conversion in a Helically Corrugated Multimode Circular Waveguide." 1966 Transactions on Microwave Theory and Techniques 14.6 (Jun. 1966 [T-MTT]): 275-284.

For specific forms of excitations, the normal modes and mode coefficients of a lossless helically corrugated circular multimode waveguide are determined from the appropriate boundary conditions. Because of the multiplicity of the roots of the characteristic dispersion equation obtained, care must be exercised in the evaluation of the equation and in the interpretation of the omega-beta diagram. For the TE/sub 11/ mode excitation, it is shown that increasing either the depth or the width of the corrugation enhances the conversion into the TM/sub 11/ mode, whereas increasing the pitch reduces the TM/sub 11/ mode conversion. Mode conversion always increases with increasing frequency. The theoretical results are in agreement with the results of measurement.

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