Abstracts

Field Theory Design of Ferrite-Loaded Waveguide Nonreciprocal Phase Shifters with Multisection Ferrite or Dielectric Slab Impedance Transformers

J. Uher, F. Arndt and J. Bornemann. "Field Theory Design of Ferrite-Loaded Waveguide Nonreciprocal Phase Shifters with Multisection Ferrite or Dielectric Slab Impedance Transformers." 1987 Transactions on Microwave Theory and Techniques 35.6 (Jun. 1987 [T-MTT]): 552-560.

Impedance-matched ferrite-loaded waveguide nonreciprocal phase shifters are designed using the method of field expansion into eigenmodes, which includes higher order mode interaction between the step discontinuities. Computer-optimized Ku -band ferrite stepped design examples, of 45° and 90° nonreciprocal differential phase shifts, attain typically about 2° phase error and less than -25 dB input reflection within a bandwidth of about 5 percent. Compact designs are achieved by thicker uniform ferrite slabs with dielectric transformer sections at each end. The theory is verified by comparison with available results from measurements and other methods.

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