Abstracts

The Use of Composite Junctions in the Design of High Power Stripline Circulators

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The concept of composite ferrite junctions has been in existence almost since the beginning of the ferrite device art. If a standard junction is defined as one in which the ferrite material itself fills the entire waveguide or stripline region between the metallic walls or ground planes, one then can then call a composite junction, any junction made up as a combination of ferrite and magnetically inactive dielectric materials, including air. An example of an early composite structure is the waveguide circulator design using a ferrite triangle sandwiched between two teflon sheets. The more recent concept in waveguide circulators of having two ferrite pieces, one on top and one on the bottom of the junction with an air dielectric separation is also an example of a composite junction. In this paper, we would like to show how an extension of these ideas leads one to a considerable improvement in the power handling capability of stripline junction circulators.

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