Abstracts

Computer Analysis of E-Plane Resonance Isolators

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E-plane ferrite resonance isolators are commonly used in most medium-power waveguide systems, allowing to effectively decouple successive stages. The study of propagation in this type of structure leads to a set of transcendental equations, for which exact theoretical results have not been available so far. The design of these devices has been done experimentally, which is time consuming and does not allow for achievement of optimal performance due to the large number of parameters involved. The present study considers the TE/sub m0/, modes in an isolator structure. A matrix formalism is used to derive the dispersion relation, which is then solved with the help of a computer program. Experimental results for a simple structure show good agreement with the computed values. The influence of ferrite parameters on the isolation and forward losses is presented. Higher order modes in the structure and the methods to avoid them are discussed. Finally, the field distribution in the device is determined, showing a large concentration of the fields within the loading material.

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