Abstracts

Field Theory Based S-Parameter Analysis of Circular Ridged Waveguide Discontinuities

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This paper describes a radial mode matching algorithm for the S-parameter computation of circular ridged waveguide (CRW) discontinuities. By shaping the ridge section conically, the coupling integrals in the discontinuity region can be solved analytically. This approach avoids the use of a mixed coordinate system and leads to a fast algorithm which is suitable for computer-aided design of CRW components like filters, septum polarizers and waveguide transformers. A comparison between measured and computed S-parameters shows excellent agreement. To illustrate the capability of the algorithm, a circular double ridged waveguide filter in a below cutoff waveguide and a CRW transformer have been optimized.

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