Abstracts

Waveguide Discontinuity Analysis with a Coupled Finite-Boundary Element Method

A new numerical method for the analysis of waveguide discontinuities is proposed. The proposed approach is based upon the coupling of the finite element and boundary element methods. The respective merits of these methods are extracted to yield much faster solution and to enhance computation efficiency. A general procedure is described using a quadratic elements approximation, and the validity and efficiency of the method are demonstrated in the cases of a 3-port H-plane ferrite waveguide Y junction and of a right-angle corner bend with and without dielectric loading. Comparisons of the present results with those obtained using the finite element approach are made and shown to be in good agreement. An experimental result is also presented and the validity of the technique can be easily verified.

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