Abstracts

Field Theory CAD of L-Shaped IRIS Coupled Mode Launchers and Dual-Mode Filters

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A rigorous field theory design method for L-shaped iris coupled TE/sub 10/-to-TE/sub 01/-mode launchers and dual-mode filters is presented. The theory is based on the full-wave mode-matching key-building block S-parameter description of the L-shaped iris in rectangular waveguides and allows, associated with the generalized S-matrix technique, the complete three-dimensional modeling of L-shaped structures and cascaded discontinuities. Arbitrary obstacle location and finite thickness are rigorously taken into account. An optimized design example of a very compact Ku-band (12-18 GHz) mode-launcher achieves 5% bandwidth with more than 20 dB return loss at the 90°- twisted WR62 in- and output waveguides. The computer optimized design of a Ku-band L-shaped iris coupled 4-pole dual-mode filter demonstrates good elliptic function behavior. The theory is verified by measurements.

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