Abstracts

A new approach to the design of dual-mode rectangular waveguide filters with distributed coupling

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A synthesis procedure for a new configuration of four-pole dual-mode waveguide filters with distributed coupling is presented. In this configuration the dual-mode coupling is obtained by exploiting the well-known fact that the diagonal polarizations are coupled in an almost square waveguide. The obvious advantage of this type of structure is that the cross sections of all the discontinuities are rectangular, hence the global prediction of the filter is more accurate. The synthesis approach is based on a scattering matrix formulation where the dual-mode coupling is described in terms of a 2/spl times/2 propagation matrix. Universal design charts, which directly yield the scattering parameters of the various junctions, have been obtained. Comparisons with experimental results of a four-pole filter are also presented.

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