Abstracts

E-Plane Integrated Parallel-Strip Screen Waveguide Filters (Short Papers)

F. Arndt, J. Beike, D. Grauerholz, Ch. Lingemann and J. Bornemann. "E-Plane Integrated Parallel-Strip Screen Waveguide Filters (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.7 (Jul. 1985 [T-MTT]): 654-659.

A rigorous field theory design of a class of rectangular waveguide screen filters is presented which achieves improved attenuation in the upper stopband. The method of field expansion into suitable eigenmodes used considers the effects of the finite rectangular E-plane grid thickness and the mutual higher order mode interaction of the single screens. Calculated results up to 55 GHz show that the peak attenuation in the upper stopband for a Ka-band (26-40-GHz) two-resonators filter example with a midband frequency of f/sub 0/= 37 GHz is about 70 dB, whereas its planar circuit single-metal-insert counterpart reaches only about 34 dB. A Ku-band (12- 18-GHz) filter prototype with three metal-etched screens yields a measured passband insertion loss of 0.8 dB at about f/sub 0/= 17 GHz and a measured attenuation in upper stopband of about 50 dB up to 25 GHz.

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