Abstracts

A Two-Step Synthesis of Broadband Ridged Waveguide Bandpass Filters with Improved Performances (Dec. 1991 [T-MTT])

J.-C. Nanan, J.-W. Tao, H. Baudrand, B. Theron and S. Vigneron. "A Two-Step Synthesis of Broadband Ridged Waveguide Bandpass Filters with Improved Performances (Dec. 1991 [T-MTT])." 1991 Transactions on Microwave Theory and Techniques 39.12 (Dec. 1991 [T-MTT] (1991 Symposium Issue)): 2192-2197.

A quarter-wave broadband ridged waveguide band-pass filter with improved attenuation has been designed and realized. The two-steps synthesis uses first an equivalent network whose parameters are obtained with a multimodal variational approach which characterizes the discontinuities involved in the structure. It is shown that the frequency behavior of the filter is determined at this step by the chosen filter prototype. The structure is then optimized taking into account all side effects (higher order modes, dispersion), and also the rectangular to ridged waveguides transformer. Predicted data are compared with measured data and a good agreement is observed. It is shown how the use of lambda/4 resonators improves the attenuation in the upper stop-band and reduces the filter volume, which is very important in the aboard satellite telecommunication systems.

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