Abstracts

Bandstop Filter Design Using a Dielectric Waveguide Grating

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Precision design techniques are obtained for dieletric waveguide (DW) bandstop filters with bandwidths up into the 5-10-percent range. Dielectric waveguide bandstop filters are realized in the form of a grating in the DW image guide which utilizes notches of varying depth and length. The grating is designed from a transmission-line prototype which has a prescribed stopband and also prescribed Chebyshev passbands. An approximate synthesis procedure for such prototypes is presented. Design data for grating notches were obtained from tests on uniform gratings, while DW dispersion is compensated for by calculations based on the "effective dielectric constant" method. Excellent agreement between computed and measured attenuation response is obtained. Two such grating structures used with loads on one end and a 3-dB coupler can be used to form a bandpass filter.

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