

X-band trisection substrate-integrated waveguide quasi-elliptic filter.

ABSTRACT

A narrowband trisection substrate-integrated waveguide elliptic filter with coplanar waveguide (CPW) input and output ports is proposed and demonstrated for X-band applications. The filter is formed by incorporating metallized vias in a substrate (RT/Duroid) to create cross-coupled waveguide resonators. The result is an attenuation pole of finite frequency on the high side of the passband, therefore exhibiting asymmetric frequency response. The fabricated trisection filter with a centre frequency of 10.05 GHz exhibits an insertion loss of 3.16 dB for 3% bandwidth and a return loss of -20 dB. The rejection is larger than 15 dB at 10.37 GHz.

Keyword: Coplanar waveguide; Microwave filter; Trisection; Substrate-integrated.