Compact wideband multilayer microstrip coupled lines bandpass filter for X-band application

ABSTRACT

A wideband bandpass filter for X-band application using multilayer microstrip coupled lines is presented in this article. Strong coupling required for wideband filter is realized by arranging multiple layers of microstrip lines on two different dielectric substrates and by overlapping these lines. The filter is fabricated on 0.254 mm thickness R/T Duroid 6010 and R/T Duroid 5880 with dielectric constant 10.2 and 2.2, respectively, by using standard photolithography process. Good results are obtained where the frequency responses exhibit that the filter successfully covers whole X-band frequencies by producing 44% bandwidth at 10.2 GHz center frequency with fifth-order Chebyshev response. Measured responses show good agreement with the simulated responses. The measured insertion loss for the multilayer filter is better than 2.5 dB, and the passband return loss is better than −12.4 dB. ©2009 Wiley Periodicals, Inc. Microwave Opt Technol Lett 52: 448–450, 2010; Published online in Wiley InterScience (www.interscience. wiley.com). DOI 10.1002/mop.24916

Keyword: wideband bandpass filter, coupled lines, resonator, multilayer microstrip