

This paper presents a novel compact microstrip band-stop filter (BSF) based on octagonal defected ground structure (DGS) along with interdigital and compensated capacitors. The proposed BSF has lower and higher cut-off frequencies of 3.4 GHz and 5.3 GHz, respectively. A comparison between simulation and measurement results confirms the validity of the BSF configuration and the design procedure. The compact filter occupies an area of  $(0.45\lambda_g \times 0.35\lambda_g)$  with  $g = 0.044$  m on an  $r = 3.66$  substrate and shows a 44% bandwidth (2GHz) and a return loss of 0.1 dB. The experimental results show the excellent agreement with theoretical simulation results