

Via-Less" UWB Filter Using Patched Microstrip Stubs

Abstract

This paper presents an Ultra-Wide Band (UWB) microstrip filter which is initially modeled from a quarter-wavelength short-circuited stubs, without the use of any vias. All vias that provide short circuit stubs are replaced by microstrip patches which have low impedance at high frequency. The purposes of substituting the vias are to simplify the fabrication process and reduce losses due to capacitive effects of vias. The microstrip patch impedance is determined by calculation and simulation in such a way that optimum S-parameters and frequency responses are obtained. The measured S-parameters have shown encouraging results of -3 dB cut-off frequencies from 3.58 GHz to 10.57 GHz with minimum magnitude of insertion loss better than 1 dB and return loss of better than -16.9 dB in the passband. The final dimension of "via-less" UWB microstrip filter is measured at 41.0 × 15.1 mm².