

**MINIATURIZED DUAL-STUB RESONATOR OF BANDSTOP
FILTER**

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ABSTRACT

In this study, capacitor is proposed to tune the resonant frequency of dual-stub resonator of band stop filter to miniaturize the circuit size. The capacitors is attach to an open circuit dual-stub to tune the 2 GHz dual-stub resonant to lower frequency which is 1 GHz. A capacitor can store electric energy when disconnected from its charging circuit, so it can be used like a temporary battery using Advance Design System (ADS) 2009 software, a microstrip of dual-stub resonator of band stop filter has been designed. The stub length is $\lambda/4$ with the center frequency at 2 GHz. Simulation was done using ADS 2009 circuit simulator on the effect of adding capacitor to determine the frequency response of the band stop dual-stub resonator and the effect to the circuit size. Then, fabrication is done for dual stub resonator at 2 GHz with 3.3pF capacitor microstrip structure on the FR4 substrate. Measurement is done using Vector Network Analysis (VNA) to obtain the frequency response for S_{11} and S_{12} that will be compared with the simulation result. The layout dimension for 1 GHz dual-stub resonator is also compared with the dimension of 2 GHz dual-stub resonator. It is proven that capacitor can reduced frequency value of higher dual-stub resonator as well as the circuit size. As conclusion, the 2 GHz dual-stub resonator has achieved 50.2% circuit miniaturized compared to 1 GHz resonator dimension. It is suitable for processor and wireless network system applications.

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