

Abstract

Filter is a transmitting device that has a function to pass a specific frequency by passing the desired frequency (passband) and reduce unwanted frequencies (stopband). Frequency that is passed on these devices in accordance with the type of filter used with different characteristics.

Compline-filter is usually used at microwave frequencies, ie at frequencies between 300 MHz - 300 GHz. In my final project aims to design and bandpass-filter meimplementasikan compline for Wi-fi receiver used to receive and process signals received by the transmitter that works at the center frequency of 5.8 GHz. Filters are made of compline bandpass filters using rod-shaped cylindrical resonator (slabline) made of brass and air as dielectric. Damping characteristic form filter is designed based on mathematical approach Chebychev prototype. Design to determine the capacitance (self capacitance) and capacitance together (coupling capacitance) based on the equations of GL Matthaei. While the dimensions of the filter design based on curves BF Nicholson who is the development of EG Cristal. Pengukuran filter curve is done by the Network Analyzer ADVENTEST R3770 to obtain information about the performance and characteristics of the prototypes are made. Parameters that have been tested from the prototype BPF include frequency response, bandwidth, standing wave ratio (SWR), insertion loss, return loss, changes in the response phase, and terminal impedance.

The results of measurements of the characteristics of this filter are: center frequency 5.8 GHz with insertion loss = 2.5 dB (max \approx 9 dB), 3dB bandwidth = 150 MHz, VSWR = 1.602 in the input and output to the 1.7, return loss at input and 6.38 dB 5.85dB for the output, input terminal impedance = $55.58 + j35.041\Omega$ and output: $48.859 + j25.942\Omega$, the resulting constant phase response.

Keyword: BPF, compline, Butterworth, slabline, Wi-Fi