

ABSTRACT

Filter is a device which can pass signals with a specific frequency and reduce other signals. In other words, the desired frequency pass filter (passband) and reduce unwanted frequencies (stopband). Frequency to be passed in accordance with the type of filter used with different characteristics. The application of these filters can be used in a wide range of technology for communication systems. One is wimax technology. In the wimax technology, laying block filters can be sending and receiving block. WiMAX stands for Worldwide Interoperability for Microwave Access, is a wireless broadband access technology (broadband wireless access or BWA abbreviated) who have high-speed access to a wide range.

In this final project made a Bandpass Filter for WiMAX technology that works in the receiving system block, using microstrip lines, the transmission line consisting of a strip conductor (patch) and groundplane are separated by a substrate with characteristics of a particular material. With the approach and methods combine Chebyshev response. Strip conductor (patch) and groundplane made of copper with a thickness of 0.035 mm, with Epoxy FR4 substrate with dielectric thickness 1.65 mm and a relative permittivity ($\epsilon_r = 4.4$). In the filter design will be done with the counting process to obtain the ideal dimension of the filter, then the filter is simulated with software AWR Design Environment 8.06, after which the filter is printed in the form of hardware.

For the testing process on the filters to be able to pass the desired frequency is measured using a Network Analyzer. The parameters of the prototypes tested this 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 the BPF are: center frequency 2300 MHz with a bandwidth of 230 MHz (at 5112 dB), 8644 dB insertion loss, $VSWR \leq 1.5$, changes in the frequency of non-linear phase, and a 48 601-j9.301 terminal impedance (input) .

Key words: Bandpass Filter, Wimax, Mikrostrip, Chebyshev, Combine, Standing Wave Ratio, Network Analyzer