ABSTRACT

Filter is a device which belongs to the important thing in telecommunication field. If we do not use filter, the input signals can not be selected. Generally, the function of filter is to pass the wanted frequency (*pass-band frequency)* and attenuate the unwanted frequency (stop-band frequency).

The purpose of this final project is reporting the process of designing ang realization a filter, which operate in 2,3-2,5 GHz. The frequency (2,3 – 2,4 GHz) is frequency range where WiMAX (*Worldwide Interoperability for Microwave Access*) application operate. One of the method to make filter is Interdigital, which has resonator (formed in strip-line) between two ground planes (up and down). Dielectric medium used in this filter is air (cavity), as air is already exist. The form of attenuation characteristic produced by filter is designed based on Chebyshev mathematical approach.

The measuring of filter uses Network Analayzer to get the information about the effectifness of its process and characteristic of prototype made. A part some of BPF protoype parameters, which have been tested, are frequency response, bandwidth, insertion los, standing wave ratio, alteration phase, and terminal impedance. In this final project, the measurments were done twice because the results in early measuring were not appropriate with bandwidth specification expected.   The results of the first BPF characteristic measuring are: the center frequency is 2.35 GHz while 300MHz bandwidth, 1.297 dB insertion loss (input) and 1.598 dB insertion loss (output), 2.477 VSWR (input) and 2.157 VSWR (output), phase alteration has constnce changing, and terminal impedance 24.688 - j19.271 Ω (input) dan 42.273 + j36.929 Ω (output). And the results of second BPF characteristic measuring are: the center frequency is 2.35 GHz while 100MHz bandwidth, insertion loss = 3.111dB (input) dan 3.568 dB (output), 3.856 VSWR (input) and 3.515 VSWR (output), phase alteration has constnce changning, and terminal impedance 15.935 - j22.642 Ω (input) 12.939 - j10.143Ω (output).

Key Word: BPF, Interdigital, *Strip-Line*