

ABSTRACT

Optical Communication System is a communication system that use optical fiber as transmission medium. When optical signal passes through optical fiber, they have signal degradation because of attenuation or losses on propagation. To know the degradation of signal, we can use Optical Power Meter to measure the power in receiver. So, Optical Power Meter is a measurement tool to measure the value of power that can be received by receiver.

This thesis is designed an Optical Power Meter based on microcontroller with display in Android. Generally, Optical Power Meter has 3 main block. There are Photodetector, Microcontroller, and Android. Optical signal is transmitted by transmitter and passes through optical fiber into receiver. There is photodetector to convert the optical signal into electrical signal. Electrical signal that produced from photodetector is current, and then the current is converted into voltage by front end circuit. The voltage is detected by microcontroller and then the microcontroller process and display the result in Android by using Bluetooth communication.

Optical Power Meter that designed in this thesis have an accuracy about 96,706% and average deviation about 0,00247. The result of measurement that display on Android is optical signal on nano watt (nW).

Keywords: Photodetector, ATMEGA16 AVR Microcontroller, Analog to Digital Converter(ADC), Bluetooth, and Android.