

## ABSTRACT

At present Optical Power Meter (OPM) is widely used in fiber optic communication system. OPM is a device that serves to measure the power value of a transmitted optical signal. Generally OPM is used to determine the quality of a network of fiber optic communication systems that have been built. Therefore OPM can be classified as an important tool in fiber optic communication system. However, OPM has several weaknesses. In addition to being included in expensive tools, OPM also can not display the measurement results on other platforms/devices.

From the weaknesses that exist in the OPM, then in this final project will develop and implement and analyze a tool that is more efficient, more affordable and can be made by yourself. In addition it has the ability of monitoring system of optical signal measurement results which are then transmitted through the network of Internet of Things (IoT). The OPM measurement system in this final project utilizes the Small-form Factor Pluggable (SFP) module that is integrated with NodeMCU ESP8266.

After the implementation and analysis got the conclusion of photodetector sensor accuracy with 99% value, with system working on condition of LOS reach 120m and NLOS condition reach 40m. This application and testing is done with QoS at level 0 getting average delay from broker to subscriber at 17ms and throughput sebesar 63Bytes/s. In addition, the broker is still working well after undergoing endurance testing for 30 days.

**Keyword :** OPM, Monitoring, SFP, NodeMCU ESP8266, MQTT