

## ABSTRACT

Zigbee is the latest technology that is focused on data communications system. It has specific character worked on the low data rate, low cost and small power consumption. System monitoring is one of Zigbee technology Implementation. It will be applied to monitor air pollution in environment. Air pollution is one factor that we used in our system monitoring that related with Global warming issue. Global warming is the increase of air temperature at the Earth's surface caused the depletion of the ozone layer, caused by air pollution. The air pollution is become a concern problem in Monitoring of air pollution. It needs to be done to determine the effects of air pollution and immediately followed up.

In this final project, we design and implement of air monitoring system hardware in an open space that has the ability to send data to the wireless network using Zigbee technology. It used to find out the quality of the air pollution, so the impact of air pollution is able to quickly know and can be followed up.

In the air monitoring system uses sensors TGS2442 as the gas content measurement CO (Carbon Monoxide) with 81.61% precision and accuracy of 98.4%. In the data transmission system of CO gas sensing results using Zigbee modules as data transmission device performance testing on the condition of LOS (Line Of Sight) with the maximum distance that is capable of transmitting data taken at 90 meter free space with a value of  $3.9 * 10^{-4}$  BER, RSL with a value of -60 dBm, and -79.089 FSL dB value. And under NLOS (Non Line Of Sight) capable of delivering a maximum distance of 60 meters with a data value that is  $3.3 * 10^{-4}$  BER and RSL with a value of -92.92 dBm. Air monitoring system has been implemented in a free space.

**Keywords: TGS 2442, Global warming, air monitoring, microcontroller**