ABSTRACT

Along with the development of LED lights, the use of LED lights is increasing. One of the uses of LED lights is as media from visible light communication systems or Visible Light Communication (VLC). This communication system can send information through an LED light that acts as a transmitter. One of the application VLC is communication between vehicles. Communication between vehicles is done by exchanging data between vehicles.

The focus of this final project is to design of transmitters and receivers in communication between vehicles. Communication between vehicles is carried out in two directions and uses two communication systems, namely VLC and infrared. Transmitters used are LED headlight and infrared LED. LEDs are used to transmit data in the form of vehicle speed, throttle request and brake stepping indicator. The receiver used is a light to voltage sensor and an infrared receiver module that functions to receive light containing those data. Communication between these vehicles minimizes accidents when carrying out vehicle convoys.

The realization of this final project is that in communication systems using VLC, between vehicles can exchange data up to 1100cm at night without noise. Tests are also carried out with several conditions, in rainy conditions it does not affect the data reception process. Whereas in smoky conditions, people pass by and other vehicle lights affect the process of receiving data. In infrared communication, vehicles can communicate up to 700cm at night without noise. Testing of environmental conditions such as smoky, rainy and other vehicle lights does not affect the process of receiving data, only on the condition of people passing that affects the process of receiving data.

***Keywords**: Visible Light Communication, Infrared, Convoy vehicles.*