

## ABSTRACT

With the existence of radio frequency limitation in communication system which is used a lot during this time, a new solution as an alternative substitution is needed. Light wave use is an alternative substitution for radio frequency use.

Optical communication system is generally similar to other communication systems; thereby peripherals such as transmitter, channel/medium of transmission, and receiver are needed. In this final project, two PCs (Personal Computers) are used to realize data transmitting and receiving technique. LED represents transmitter of the visible light, free space (air) in the form of channel/medium transmission, and multi-photo detector as receiver. Appliance realization is made by uniting transmitter and receiver become transceiver, therefore communication among 2 PCs is able to be created by using two transceivers.

This optical wireless communication system works by sending data serially from PC-1. Data goes out from serial port is processed by LED transmitter where data bits in the form of electric current is turned into light. Free space represents propagation channel in term of *point-to-point* and *LOS (Line of Sight)* conditions. Receiver in the form of multi-photo detector in PC-2 catches the visible light which has been joined with data. Later, multi-photo detector alters that light into electric current. At last, ICL-232 standardizes voltage level of RS-232 port with voltage level of outer component (TTL or CMOS). Electric current received then be altered back into data.

Pursuant to measurement, using multi-photo detectors yield further distance that is 0,5 m with baud rate 1200, while using single photo detector reaches only 30 cm with baud rate 300 and yields still fine data.