

## ABSTRACT

Visible Light Communication (VLC) is one of wireless communication system using visible light LED as a transmitter. This technology can provide basic communication need like wide bandwidth, high data rate, free from frequency regulation, and so on. Besides, the using of LED on the system which is now adopted in many different aspects makes this technology applicable in many different application too, like FM radio repeater. FM radio broadcasting itself still becoming one of the main broadcasting technology world wide . But sometimes, the FM signal could not penetrate through several area like in a very dense urban residence, or basement. Therefore, this system is hopefully can fulfill the needed of FM radio signal, where radio signal can't cover.

The research is about to implement and analyze the LED-based FM radio repeater. The main concept of the system is to receive the FM signal, demodulate it, and convert the audio signal to light. The light that has been modulated with information signal lumenated the photodetector and convert it into electrical signal. The signal then be modulated and transmitted as an FM radio signal.

The result of the research is this LED-Based FM repeater can provide the radio signal for at least 6x4 metres well-illuminated room. With the luminancy that can be produced by the source, the photodetector can be placed up to 2 meters from the LED and at the same time, provide illumination service. The audio level received, depends on the distance and the angle between the LED and photodetector .

**Keyword: Visible Light Communication, LED, FM Broadcasting, repeater.**