

ABSTRACT

The development of telecommunications technology has driven the renewal of wireless systems, one of which is Light Fidelity (LiFi). LiFi, developed from Visible Light Communication (VLC), uses visible light to transmit data. In the context of digital music services, LiFi offers several significant advantages, such as high data transmission speeds for quality music streaming without buffering, higher levels of security as light cannot penetrate walls, and resistance to electromagnetic interference, making it ideal for environments with many electronic devices.

The LiFi converter works by using visible light to transmit data. The process starts with an LED serving as a transmitter, where digital data from devices such as computers or smartphones is converted into light signals through fast modulation. This modulated light is emitted into the room and captured by the solar panel as a photodetector on the receiving side. The solar panel converts the light signal back into an electrical signal, which is then demodulated into digital data that can be used by the receiving device.

The result of this research is a LiFi-based prototype that can transmit audio signals sourced from digital music platforms such as YouTube and Spotify. The testing scheme that has been carried out proves the success of the system in this study, namely the audio modulated at the transmitter is successfully received by the receiver and successfully demodulated back into the initial signal without any changes. At a distance of 300 cm Tx and Rx can still transmit and receive information. But in the bright room scheme this tool gets a little noise, in contrast to the dark room where there is almost no noise, this happens because of interference from outside light when the room is dark.

Keywords: Converter LiFi, LED, Digital Music, Solar Panel