Patent Search

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Abstract:

The present invention discloses a Li-Fi based wireless communication system that utilizes visible light from LED sources for high-speed data transmission. The system an LED transmitter, a photodiode receiver, a microcontroller, and signal processing circuitry to encode, transmit, and decode data using light signals. Unlike conventio based systems, the proposed system offers enhanced security, higher bandwidth, and reduced interference. The system employs modulation techniques such as On- to transmit data through rapid light intensity variations, which are imperceptible to the human eye. The received optical signals are converted into electrical signals a to retrieve original data. The proposed system demonstrates efficient performance for indoor communication, IoT applications, and smart environments. Its dual fun lighting and communication makes it an energy-efficient and scalable solution for next-generation wireless networks.

Complete Specification

Description:The proposed Li-Fi system consists of the following components:
1. LED Transmitter
An LED light source acts as a transmitter by rapidly switching ON and OFF to encode binary data.
2. Microcontroller Unit
Controls modulation of LED based on input data signals.
3. Photodiode Receiver
Detects incoming light signals and converts them into electrical signals.
4. Signal Processing Circuit
Amplifies and conditions the received signals for accurate decoding.
5. Decoder / Output Interface
Converts electrical signals back into readable digital data.
, Claims:• A wireless communication system using visible light comprising an LED transmitter, photodiode receiver, microcontroller, and signal processing unit, v data is transmitted through modulated light signals.
- The system as claimed in claim 1, wherein the LED acts as both an illumination source and a communication transmitter.
- The system as claimed in claim 1, wherein the receiver uses a photodiode to convert optical signals into electrical signals

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