(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :05/10/2025
(21) Application No.202511095611 A
(43) Publication Date : 05/12/2025

(54) Title of the invention : A DEVICE FOR DATA TRANSMISSION THROUGH VISIBLE LIGHT COMMUNICATION

(51) International classification	:H04B0010116000, H04B0010114000, H04L0067120000, H04L0007000000, G06K0007100000
(31) Priority Document No	:NA
(32) Priority Date	:NA
(33) Name of priority country	:NA
(86) International Application No Filing Date	: :01/01/1900
(87) International Publication No	: NA
(61) Patent of Addition to Application Number Filing Date	:NA :NA
(62) Divisional to Application Number Filing Date	:NA :NA

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(57) Abstract :
The present invention discloses a device for data transmission through visible light communication, comprising LEDs (101), a driver circuit (106), a photodetector (102), an optical filter (103), an amplification module (104), and a DSP unit (105). The device modulates visible light for high-speed communication, while the receiver captures, filters, amplifies, and demodulates signals to retrieve data. The system provides secure, energy-efficient, and interference-free wireless communication, leveraging existing LED infrastructure for dual illumination and data transfer. The invention is suitable for smart devices, IoT applications, and intelligent transportation systems.

No. of Pages : 14 No. of Claims : 6