

Evaluation and Analysis of Light Emitting Diode Distribution in an Indoor Visible Light Communication

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Abstract : Communication using visible light VLC is considered a cutting-edge technology used for data transmission and illumination since it uses less energy than radio frequency (RF) technology and has a large bandwidth, extended lifespan, and high security. The room's irregular distribution of small base stations, or LED array distribution, is the cause of the obscured area, minimum signal-to-noise ratio (SNR), and received power. In order to maximize the received power distribution and SNR at the center of the room for an indoor VLC system, the researchers offer an innovative model for the placement of eight LED array distributions in this work. We have investigated the arrangement of the LED array distribution with regard to receiving power to fill the open space in the center of the room. The suggested LED array distribution saved 36.2% of the transmitted power, according to the simulation findings. Aside from that, the entire room was equally covered. This leads to an increase in both received power and SNR.

Keywords : visible light communication (VLC), light emitted diodes (LED), optical power distribution, signal-to-noise ratio (SNR).

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