

# Experiment No. 10

## Introduction to LiFi

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## 1. INTRODUCTION

In simple terms, Li-Fi can be thought of as a light-based Wi-Fi (wireless fidelity). It uses light instead of radio waves to transmit information. It uses the existing lighting infrastructure for the dual purpose of lighting and data transmission. Instead of Wi-Fi modems, Li-Fi uses lighting source such as an LED as a transmitter and photodetector/solar panel to receive information. Since simple light bulbs are used, there can technically be any number of access points. This technology uses a part of the visible spectrum that still needs to be extensively utilized.

## 2. APPARATUS REQUIRED:

LEDs, pen LASER, solar panel (1), aux cables (2), breadboard (1), voltage source (1), and speaker (1)

## 3. SCHEMATIC DIAGRAM:

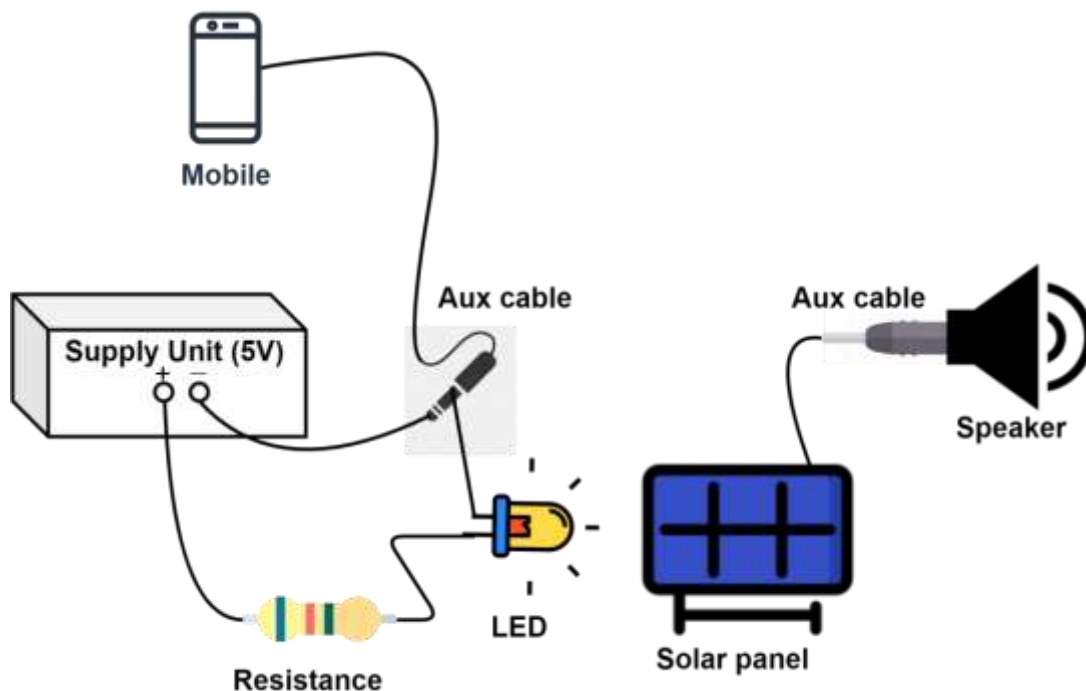


Figure 1

#### 4. OBSERVATIONS:

- Place the experimental setup outside/inside the dark box and observe the sound quality at the speaker.
- **#Does the dark box improve the sound quality? If yes, perform the below observations inside the dark box also.**
- For the schematic shown in Fig. 1, vary the distance between the transmitter (LED) and solar panel and observe the sound quality at the speaker.
- Replace the LED with pen LASER and increase the distance between pen laser and solar panel. Now, observe the sound quality of the speaker.
- Block the link between LED and solar panel and observe the speaker sound.
- With reference to Fig. 1, replace the single LED with an LED array (2, 4, and 8 LEDs). For a fixed distance between the LED array and solar panel, observe the sound quality at the speaker for the different LED arrays.

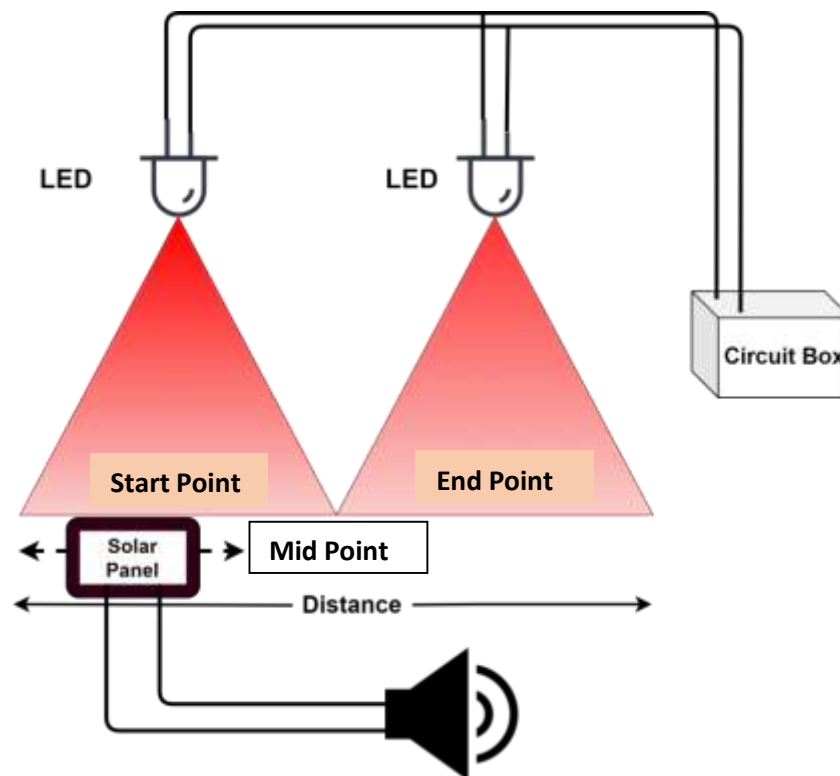


Figure 2

- See Fig. 2 and vary the solar panel position between the two LEDs and observe the effect of sound quality at start point, mid-point, and end point.

**AUX CABLE SPECIFICATION:**

