Scientific Journal of Impact Factor (SJIF): 5.71

e-ISSN (O): 2348-4470
p-ISSN (P): 2348-6406

International Journal of Advance Engineering and Research Development

Technophilia-2018.

Volume 5, Special Issue 04, Feb.-2018 (UGC Approved)

PORTABLE SOLAR MOBILE CHARGER & LI-FI DONGLE SPEAKER

Sheetal M. Gadhave [1], Samidha D. Hadawale[2], Reshma D. Bangar[3], Ameya B. Shinde[4], Ankita A. Shelar [5]

[1]*Diploma student, Dept. of Electronics & Telecommunication, Jaihind Polytechnic, Kuran*
[2]*Diploma student, Dept. of Electronics & Telecommunication, Jaihind Polytechnic, Kuran*
[3]*Diploma student, Dept. of Electronics & Telecommunication, Jaihind Polytechnic, Kuran*
[4]*Diploma student, Dept. of Electronics & Telecommunication, Jaihind Polytechnic, Kuran*
[5]*Lecturer, Dept. of Electronics & Telecommunication, Jaihind polytechnic, Kuran*

Abstract – *Portable mobile charger & Li-Fi dongle speaker. Charger have become one of the basic things needed in day to day life. Solar charger eases the access for charging phone because of its portability. Light fidelity is although similar to wireless fidelity but with huge difference of data transfer rate. This project shows the applications of Li-Fi in audio transmission & automation in domestic as well as industrial purposes for controlling devices.*

Keywords- *Li-Fi: light fidelity, Wi-Fi: wireless fidelity, Solar Panel, Li-Fi dongle, Portable mobile charger*

I. INTRODUCTION

Now a days mobile has become multiultility device with higher performance simultaneously affecting its battery level .Thus one can't plugin charger everywhere one goes such as social places, hotels or while traveling & in uncertain conditions. To overcome this most us carries extra charged batteries but they discharge as well. Thus we can use portable solar mobile charger. Working without power sources for charging it can use to store energy, which further can be used for later use, when sun is not visible, a cloudy day, or at night time. The solar panel harvest energy to charge rechargeable batteries for mobile phone, tablet, I pad, & various devices consisting rechargeable batteries. The charger circuit get energy from solar panel consisting many photovoltaic cells, charger circuit consisting of standards voltage regular integrated circuit (IC chips), transistors, zener diodes , diodes & resistor all of them used the output voltage & current of charger. How energy is generated? We consumed all major preparation of energy extracted from non-renewable resources such as coal, nuclear energy, natural gases. this nonrenewable resources with limited range of fuels available to their effect on environment although promising new technology are emerging such as hydroelectricity, geothermal, tidal energy but execution cost & time is more the solar energy is much reliable.

Table 1. Power Densities of Harvesting Technologies

Energy Scavenging Source	Power Density ($\mu W/cm^3$)	Information Source
Solar (Outdoors)	15,000 – Direct Sun 150 – Cloudy Day	Commonly Available
Solar (Indoors)	6 – Office Desk	Experiments
Vibrations	100 - 200	Roundy et. al.
Acoustic Noise	0.003 @ 75 dB 0.96 @ 100 dB	Theory
Daily Temp. Variation	10	Theory
Temp. Gradient	15 @ 10°Celsius	Stordeur & Stark 1997
Piezo Shoe Inserts	330	Starner 1996

Light fidelity is new parameter in wireless communications. Light fidelity is although similar to wireless fidelity but with huge difference of data transfer rate. Wi-Fi with 150mbps while Li-Fi gives up to 1gbps while Li-Fi is visible light communication, bi-directional & it uses light rather than radio waves. Li-Fi is more reliable & secure for short distance communication with large advantages of home automation thus we have use Li-Fi dongle speaker for streaming audio signals from mobile phone, mp3 players, IPods, Tablets, laptops or other mobile audio system wirelessly to Li-Fi speakers.

It uses a Li-Fi dongle for transmission of audio signals from a source such as audio signals from a source such as mobile phone, & Li-Fi speaker with solar cells at the receiver end to receive transmitted audio signals without wired

communication.Li-Fi dongle is connected to audio jack output available on mobile phones; it has an led through which audio signals are transmitted as light signals. These light signals are captured by the Li-Fi speaker through the solar cell array.

II. LITERATURE SURVEY

Light Fidelity is a wireless communication between devices using light for transmission of data. In its present state only LED lamps can be used for the transmission of visible light. The term was first introduced by Harald Haas during a 2011 TEDGlobal talk in Edinburgh. Li-Fi is a visible light communications system that is capable of transmitting data at high speeds over the visible light spectrum, ultraviolet & infrared radiation.
In terms of its end use the technology is similar to Wi-Fi. The key technical difference is that Wi-Fi uses radio frequency to transmit data. Using light to transmit data allows Li-Fi to offer several advantages like working across higher bandwidth, working in areas susceptible to electromagnetic interference (e.g. aircraft cabins, hospitals), As in sea Wi-Fi does not work, Security is the Advantage as light does not penetrate through walls, Li-Fi solve the issue as shortage range of radio frequency bandwidth & offering higher transmission speeds.

III. FRAME WORK OF PROJECT & WORKING

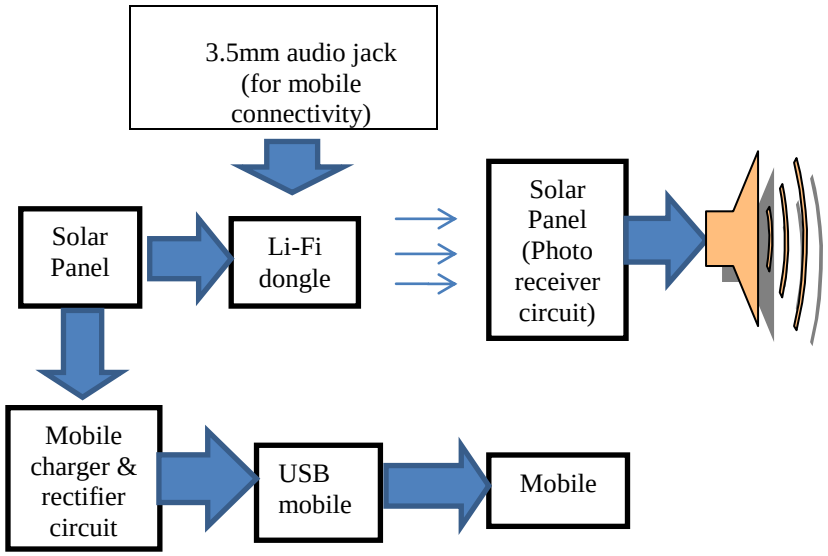

Figure 1. Block diagram of portable solar panel for charger & Li-Fi audio transmission.

Solar Panel: Solar panel is array of cells used for conversion solar energy to electricity), indirectly using concentrated solar energy. Solar power systems use glass to focus a large area of sunlight into a small beam. Photovoltaic cells convert light into an electric current using the photovoltaic effect.

Li-Fi Dongle & Speaker:
In this block Li-Fi receives solar power as input and with 3.5mm audio jack it receive audio signal to be transmitted. While speaker is connected with solar cell array which act as receiver.

Solar Mobile Charger3.4 Mobile: Device to charge via USB cord.

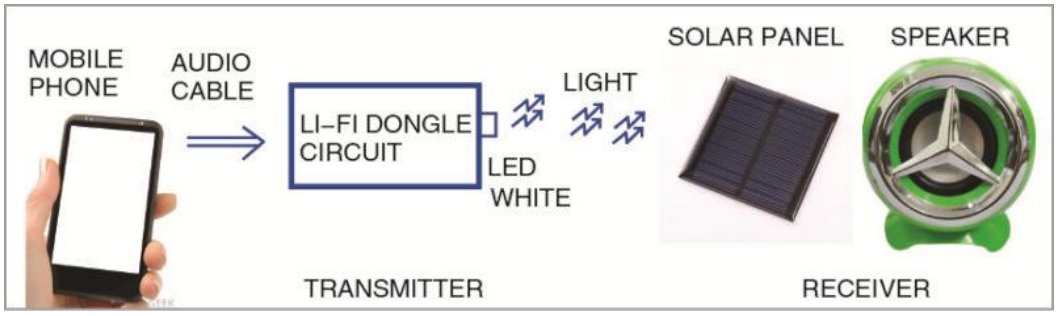

Figure 2. Concept diagram

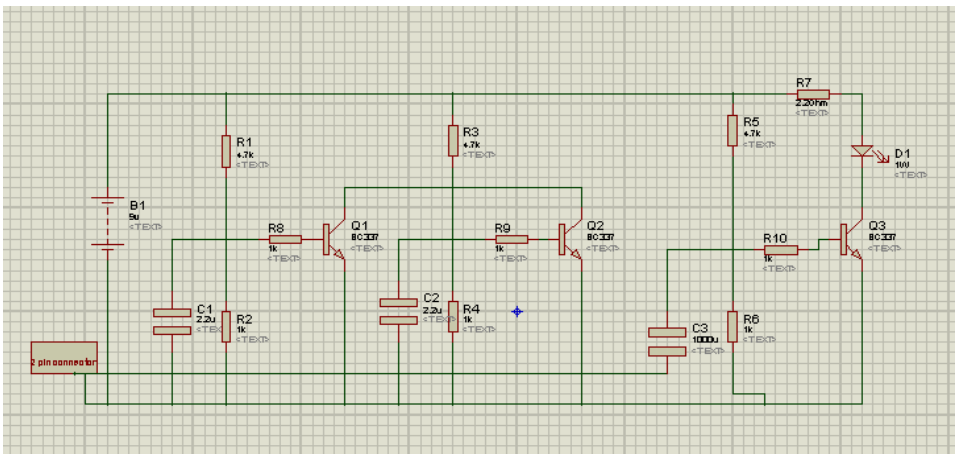

Figure 3 Circuit diagram of Li-Fi dongle

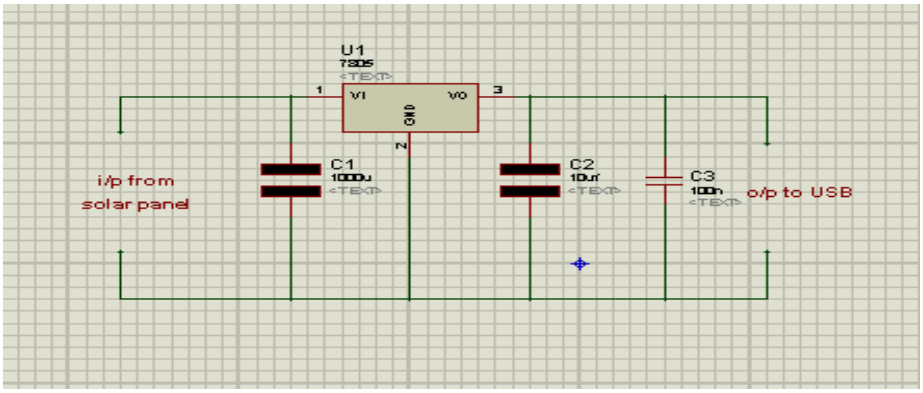

Figure 4 Circuit diagram of solar mobile charger

IV. ADVANTAGES & DISADVANTAGES

It is Bidirectional. There is great amount of energy reduction in lighting industry which uses Li-Fi based devices.
It provides high amount of security as data communication is line of sight (LOS). Uses low input voltage to produce high voltage spikes of output for charging. To save the electricity bill cost in the long run. Useful for users in remote area & portable for traveler. But it has one disadvantage as well. It does not work efficiently on a cloudy day. It can be used for different types of chargers such as Laptop, cell phone & MP3 player. No License is needed for the Li-Fi.

V. APPLICATION & FUTURE SCOPE

It can be used in Medical instruments in chemical departments in petroleum plants etc. It can use Li-Fi in hospital & aircraft.
Millions of street lamps can be transferred to Li-Fi lamps to transfer data. It can be used in educational institutes and in Radio broadcast System.

VI. CONCLUSION

Renewable energy is not a new concept, nevertheless at an exponential growing population, the development & improvement of them are essential to sustain world power hunger. The application of renewable energy at portable devices starts to plays a significant role at global energy saving. Solar chargers are simple, portable & ready to use devices which can be used by anyone especially in remote areas.

REFERENCES

[1].International Advanced Research Journal in Science, Engineering & Technology (IARJSET) National Conference on Renewable Energy & Environment (NCREE-2015) IMS Engineering College, GhaziabadVol. 2, Issue 1, April 2015 by, Satyendra Kumar Gupta, AnuragAgrawal.

[2]. International Journal of Recent Research & Review, Vol. VII, Issue 4, December 2014 ISSN 2277 – 8322 by, Pawan Vijay, TanujManglani, Pankaj Kumar, RamkishanMeena, Anita Khedia Department of Electrical Engineering, YIT, Jaipur, Rajasthan, India E-mail:pawan.vijay12@gmail.com

[3]. International Journal of Innovative Research in Computer Science & Technology (IJIRCST)ISSN: 2347-5552, Volume-2, Issue-4, July-2014, by Rohitkamble, Sameer Yerolkar, Dinesh Shirsath, Bharat Kulkarni.Li-Fi Dongle & Speaker from,