SOL CUFF
WEARABLE POWER

Technical Assistance Request

for the project entitled:

Sol Cuff - Solar Charging Wireless Powering Device

A solar-powered wrist wearable that enables convenient recharging capabilities for wired and wireless charged devices.

Abstract

The global portable solar charger market size was valued at USD 433.8 million in 2018. Supportive initiatives by organizations including International Finance Corporation, Global Off-Grid Association and World Bank on increasing energy accessible to people currently not connected to the electric grid is a main factor driving the market for portable solar charging.

In addition, increasing adoption of environment friendly products is a result of growing awareness campaigns touting the depletion of energy resources and is expected to fuel demand for environmentally friendly products including portable solar chargers well over the next five years. Increasing penetration of smartphone, tablet, and portable electronic devices, coupled with shifting consumer inclination towards sustainable energy resources, is expected to create huge opportunities for portable solar chargers during this period.

Foldable portable solar chargers are expected to expand the fastest CAGR of 22.0% over the period. These types of chargers are easy to carry and light in weight owing to which they are gaining immerse popularity among military and individual users. In addition, the U.S. government is expected to increase the use of off-grid solar power. Moreover, increasing the use of electronic equipment in the defense sector is expected to boost demand for foldable solar chargers.

Small portable solar chargers held a leading market share in 2018. Surging adoption of these chargers on account of increasing penetration of solar torch lighting, batteries, and other appliances. Moreover, increasing penetration of mobile phones in rural areas across the world is expected to provide growth opportunity in upcoming years.

Ref:https://www.grandviewresearch.com/industry-analysis/portable-solar-char

Request Summary:

1. Partner with a Lab to incorporate a US manufactured highly efficient solar cell
2. Perform analysis of typical daily exposure of indoor lighting and outdoor sunlight harvesting
3. Add BLE sensor that monitors LUX and implement power level notification system
4. Identify a suitable energy storage medium alternative and manufacturer for existing lithium polymer battery
5. Implement maximum power point tracking in a charge controller and maximize both wireless power transmission output to 6- 9v, 1 - 1.5 Amps @ 125Khz as well as the wireless receiving arrangement within a flexible circuit (currently have a hybrid of both PCB and flex)
6. Include LED controller in a flex circuit and enable both BLE along with gesture on and off control.
7. Assistance with filling for FCC Certification
8. Reduction to overall form factor using a strong material (high density poly urethane?)
9. Partner with a turn-key based US manufacturer to begin full scale production