Portable Mini-UPS

for WI-FI routers

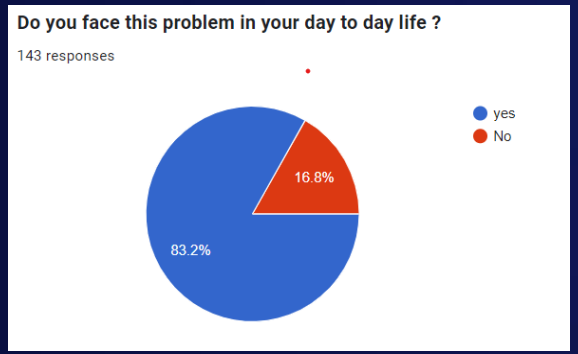
By ECLIPSE

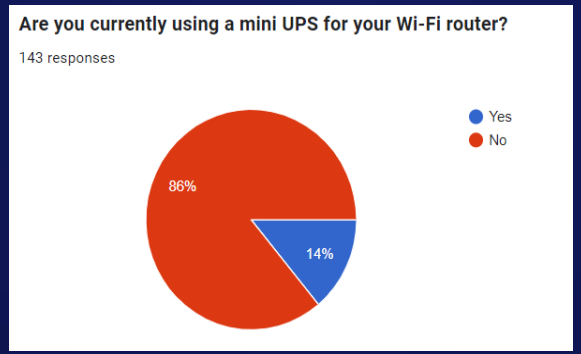
Problem

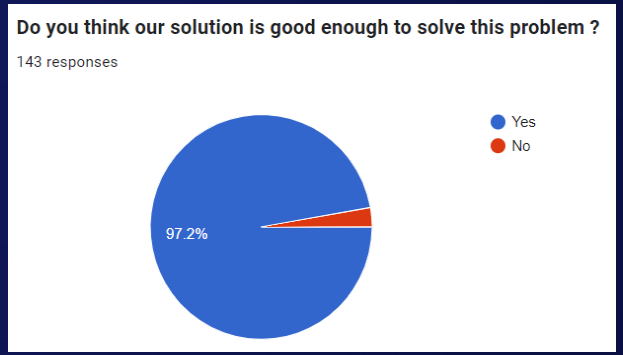
- Frequent power outages that disrupt internet connectivity.
- Lack of affordable small UPSs in the market that supports Wi-Fi routers that require 9V and 12V voltages.

Solution

- An affordable mini ups that supports both 9V and 12V Wi-Fi routers.

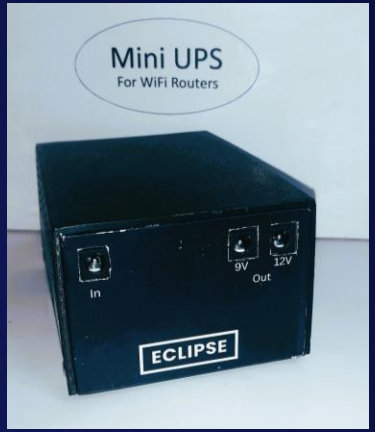


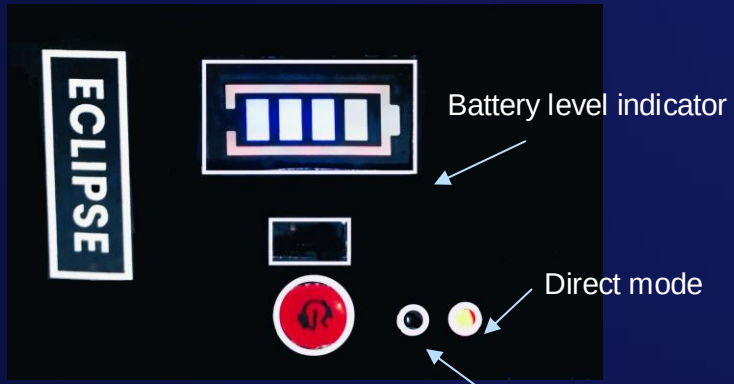




Our product

- An affordable ,rechargeable mini-UPS that supports both 9V and 12V Wi-Fi routers.
- **Additional features**
  – Battery level indicator
  – Mode indicator





Front view

Back view

Why Choose Our Mini UPS?

- **Uninterrupted connectivity** : Enjoy up to 6 hours of continuous internet access during power failures.
- **Compact and Efficient** : Small in size but big on performance, with over 90% power conversion efficiency.
- **User Friendly Features** : Includes easy-to-read battery level indicators and seamless switching between power modes.
- **Versatile Compatibility** : Works with a wide range of Wi-Fi routers, making it the perfect addition to any home or office.

Perfect for :

- **Remote Workers**: Stay connected with colleagues and clients, no matter what.

- **Students**: Keep up with online learning and assignments without interruptions.

- **Entertainment Lovers**: Stream your favorite shows and play games without a hitch.

Product Architecture

INPUT

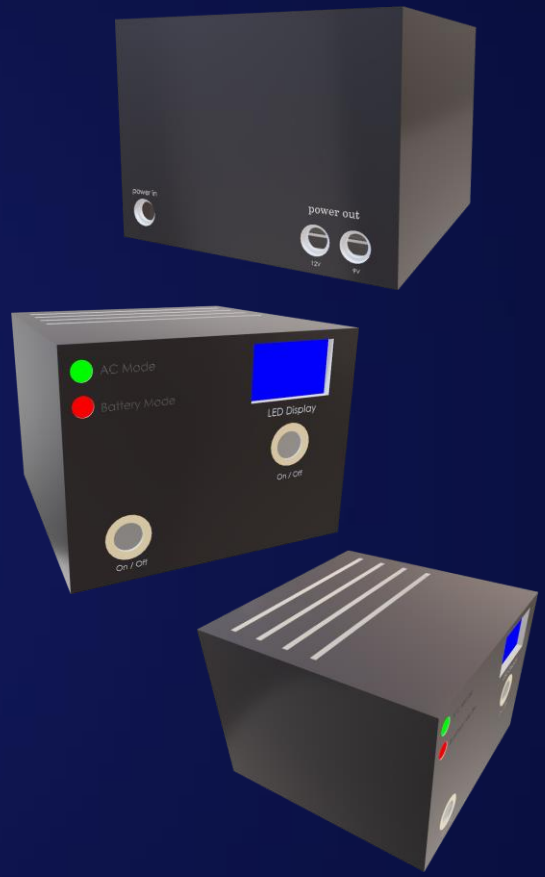
- Would be taken from the 12V adapter.

OUTPUT

- Depending on the user's requirement output can be taken as either 9v or 12V.
- Would be taken from the Buck Boost converter.
  12V -From the Boost converter.
  9V- Above 12V will be further stepped down and taken from the Buck converter.

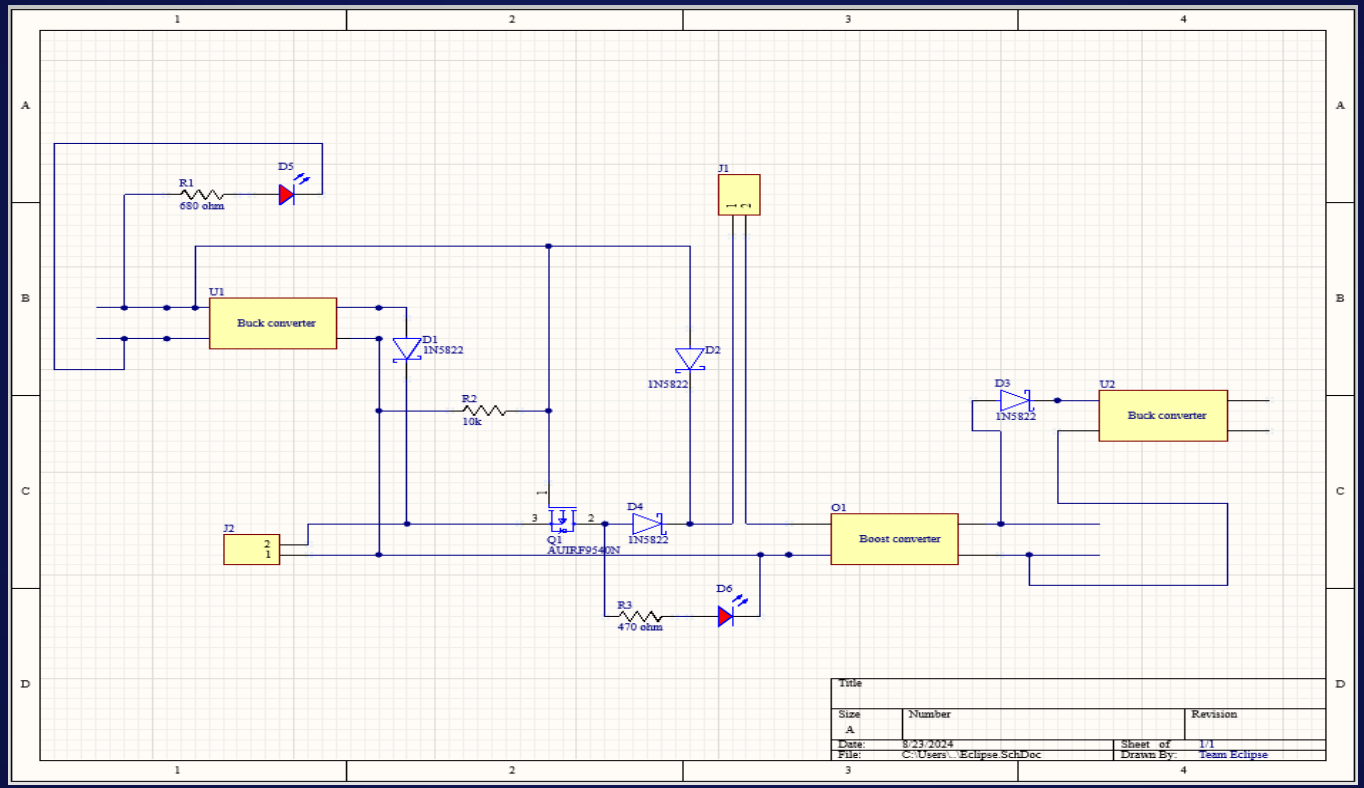
INDICATORS

- Two LEDs - Indicate the mode the UPS is working on. (Direct mode or using the battery.)
- LED screen- Indicate the battery level of the UPS.

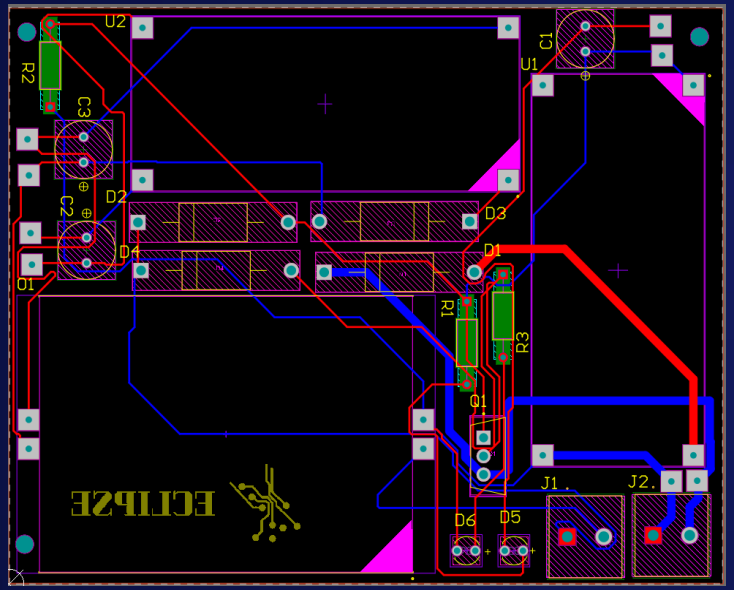


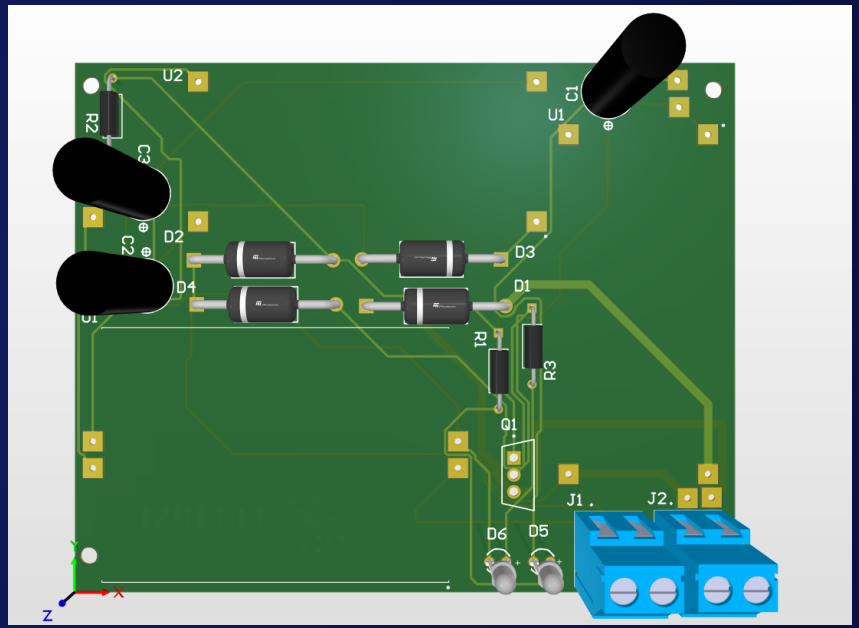
Computer Aided Design

Schematic

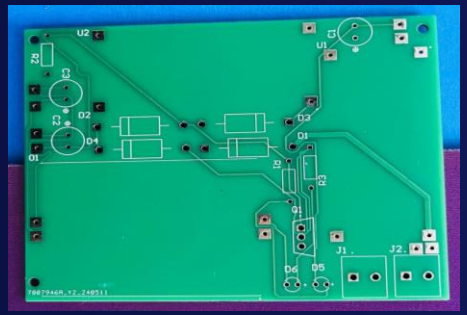

R1
680 ohm
D5
J1
U1
Buck converter
D1
1N5822
D2
1N5822
R2
10k
D3
1N5822
U2
Buck converter
J2
Q1
AUIRF9540N
D4
1N5822
O1
Boost converter
R3
470 ohm
D6
Title
Size
A
Number
Revision
Date:
8/23/2024
Sheet of
1/1
File:
C:\Users\...\Eclipse.SchDoc
Drawn By:
Team Eclipse

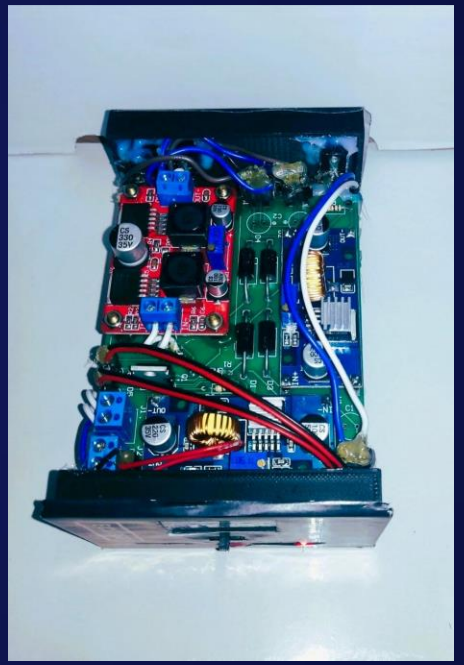
PCB design & 3D view



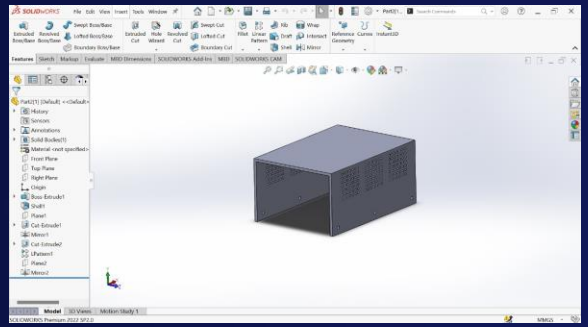


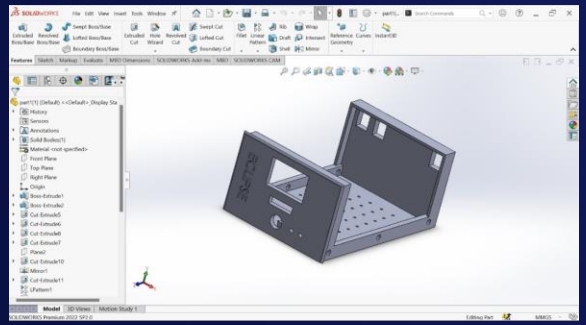
Completed PCB Assembly

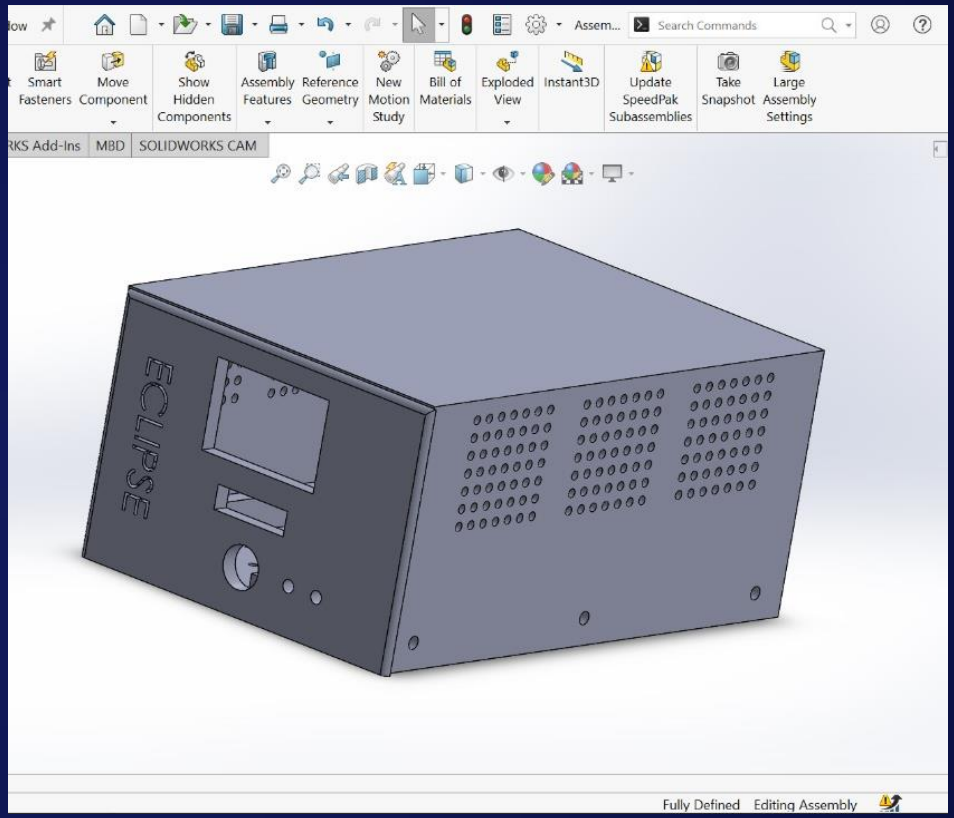




Enclosure






Smart Fasteners
Move Component
Show Hidden Components
Assembly Features
Reference Geometry
New Motion Study
Bill of Materials
Exploded View
Instant3D
Update SpeedPak Subassemblies
Take Snapshot
Large Assembly Settings
Search Commands
MBD
SOLIDWORKS CAM
ECLIPSE
Fully Defined
Editing Assembly

- Material used – PLA
- Dimensions - 12cm x 9cm x 6cm [Length x Width x Height]

Product Enclosure

Durability

The material effectively manages heat, safeguarding internal components from damage. Additionally, It’s electro-inductive properties minimize electric hazards, ensuring safe operation in diverse environments without interference risks.

Safety

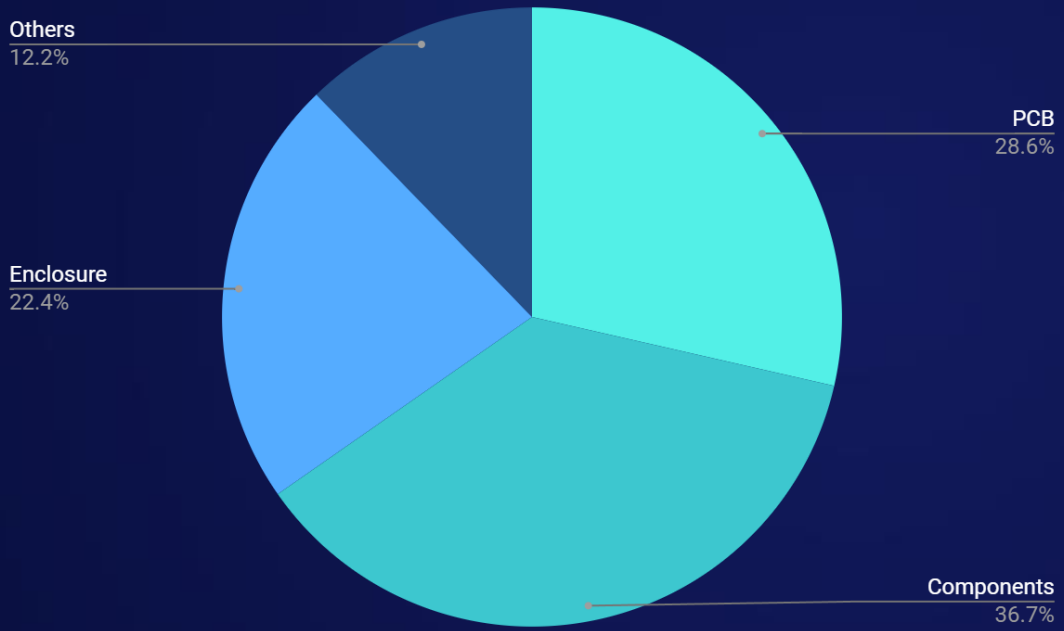
The 3D-printed material used for our UPS enclosure is extremely durable, assuring long-term dependability and protecting interior components from wear and tear.

Simple

Our UPS enclosure, measuring 12×9×6 centimeters, provides enough space for component housing. Its simplified form provides easy installation and perfect integration into a variety of settings.

Final product

Project expenses



- PCB
- Components
- Enclosure
- Other

Market Price

$45

(LKR 13500/=)

Avg. Importing Cost
Of a Portable UPS

+LKR10000/=

Only 12V support UPSs' Price
In Sri Lankan Market

LKR9000/=

Value of Our Prototype
(Has both 9V,12V outputs
With battery level indicator)

Marketing Sales and Beyond

Task Allocation and Our Team

- Bandara I.W.T.N. 220061H:
  - Circuit Design and PCB Layout
  - Assembly and Testing

- Senaweera S.A.H.D. 220596C:
  - Enclosure Design and 3D Printing
  - Assembly and Testing

- Fernando D.S. 220163X:
  - PCB design (Altium)
  - Documentation and Report Writing

- Wijenayaka M.B.T.I. 220711D:
  - Marketing and Sales Strategy
  - Enclosure Design and 3D Printing

Thank You!