IoT Temperature Sensor

The aim was to design a device that can sense temperature of the environment and can periodically upload temperature data to a server on a cloud.

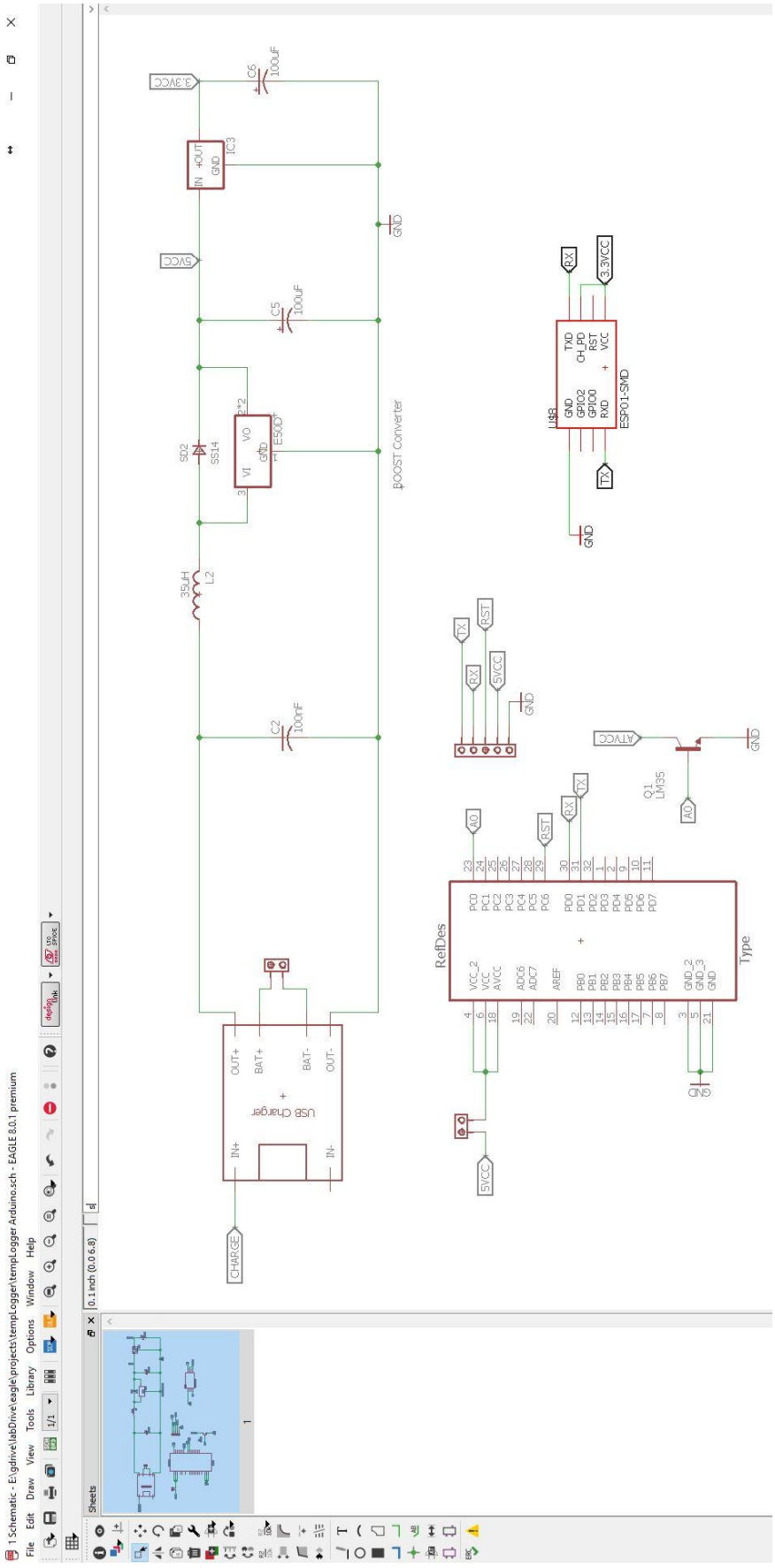
Few features of the device should be:

- Small
- Powered with lithium polymer cell
- Energy efficient
- WiFi Enabled

Components Used:

- TP4056 Module for LIPO battery charging and protection
- ATmega328P – AU (TQFP package for smaller size)
- Boost Converter of 5VDC output
- AMS1117 IC (3.3V linier voltage regulator for WiFi module)
- ESP-01 (ESP8266 based WiFi module)
- LM35 – Temperature sensor
- Lithium Polymer battery (1s)

Schematic Design (In Eagle PCB):



PCB Design (In Eagle PCB):

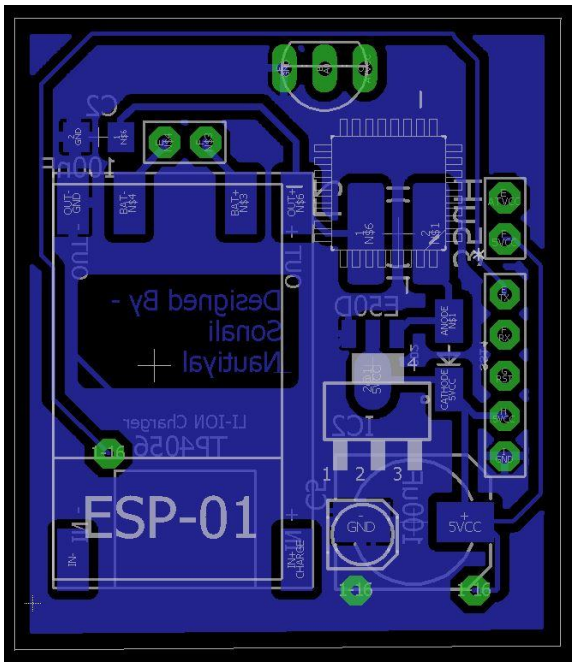


Fig: Bottom Layer

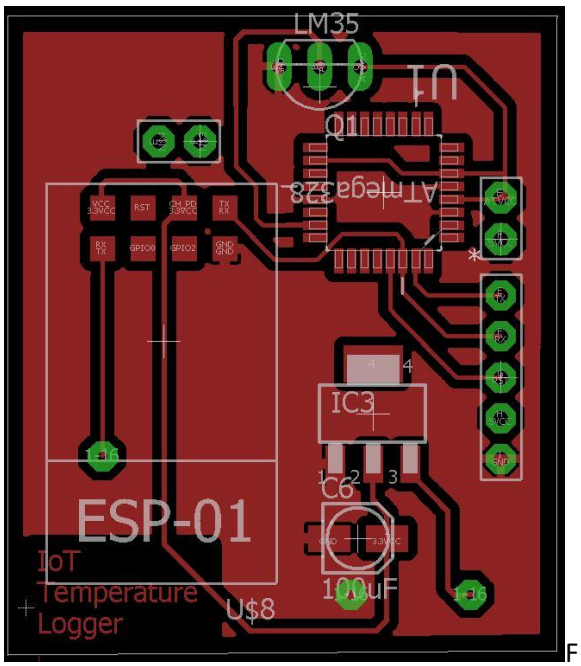


Fig: Top Layer

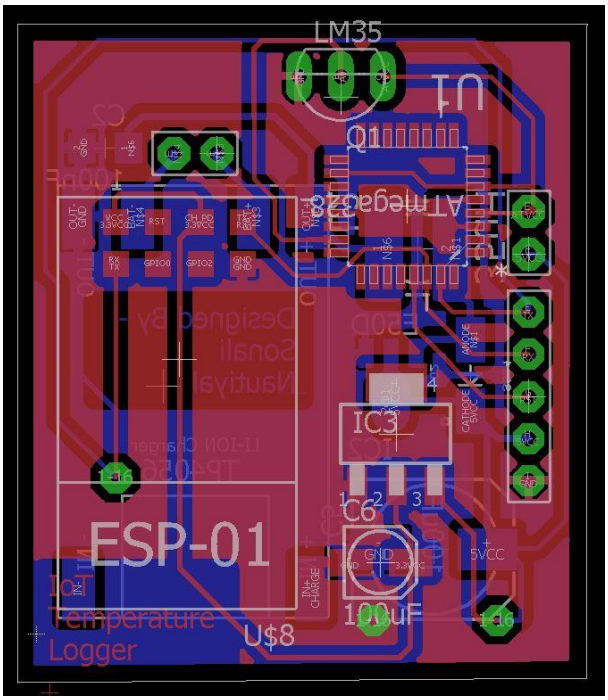


Fig: Dual Layer Design for compact size

PCB Fabrication:

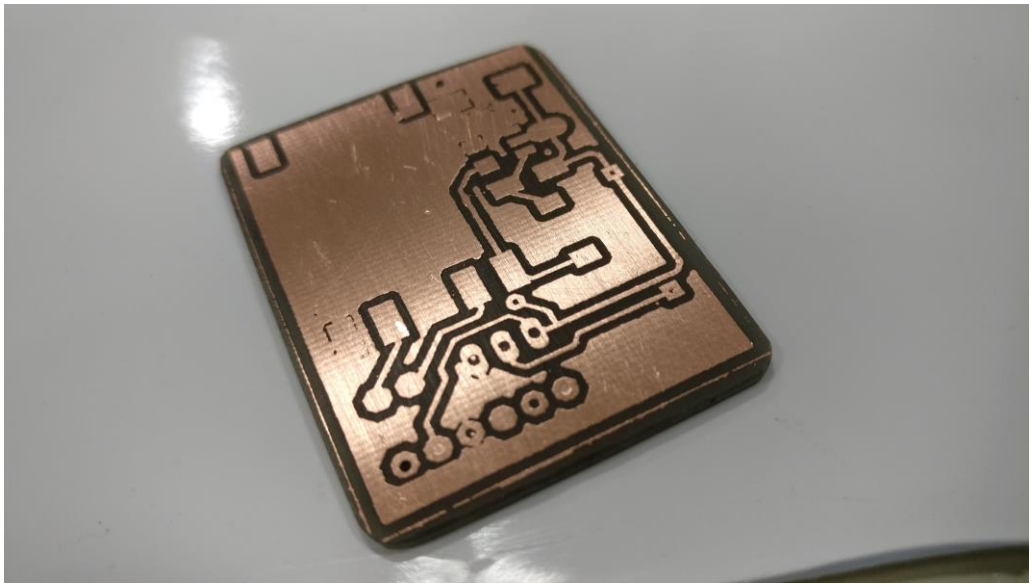


Fig: PCB after etching in ferric chloride (Unpopulated)

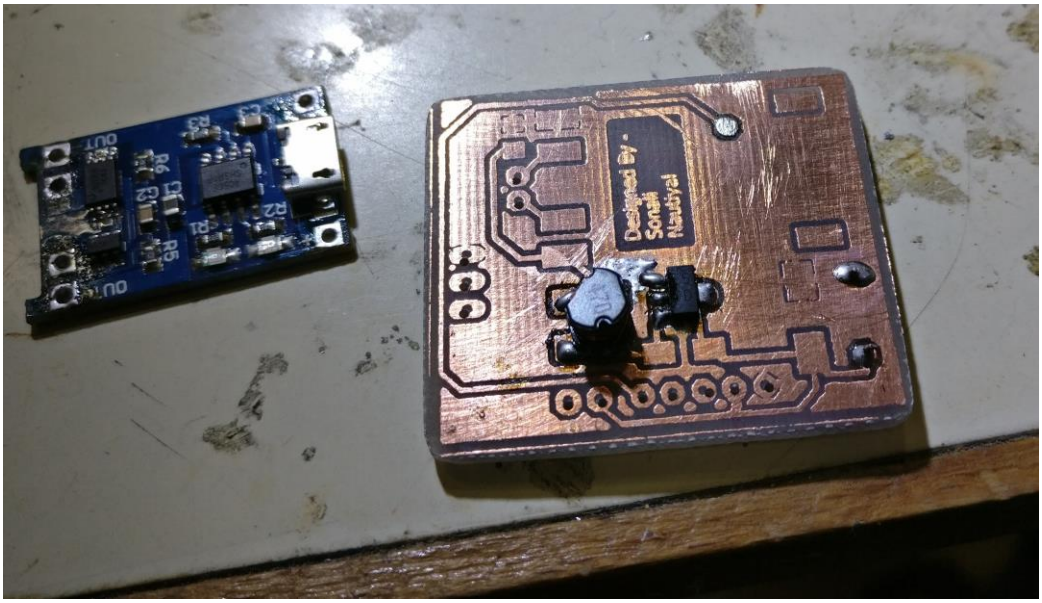
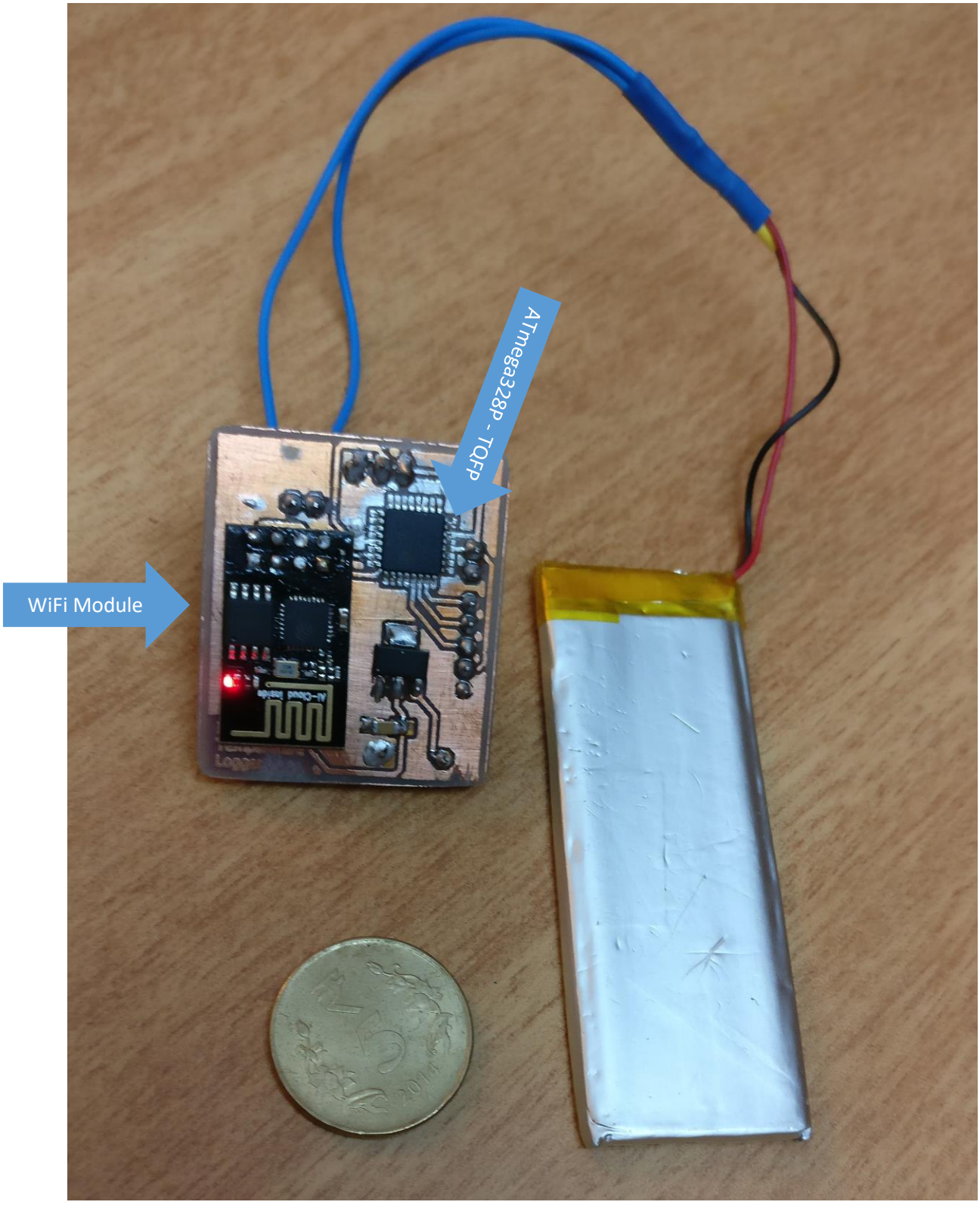
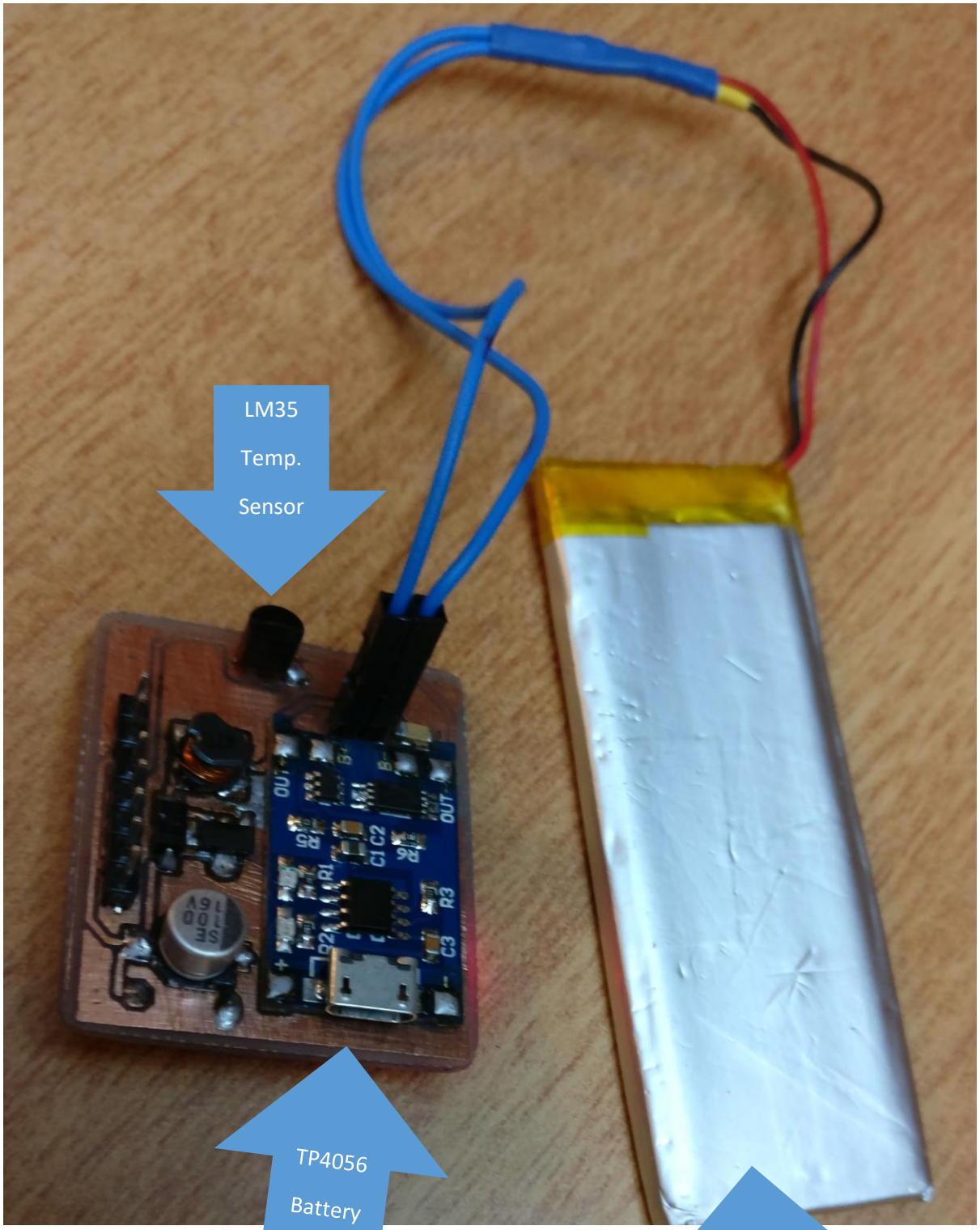


Fig: Soldering SMD components onto the PCB

The Final Device:




LM35
Temp.
Sensor
TP4056
Battery
Charger
LiPo
Battery

Could Access:

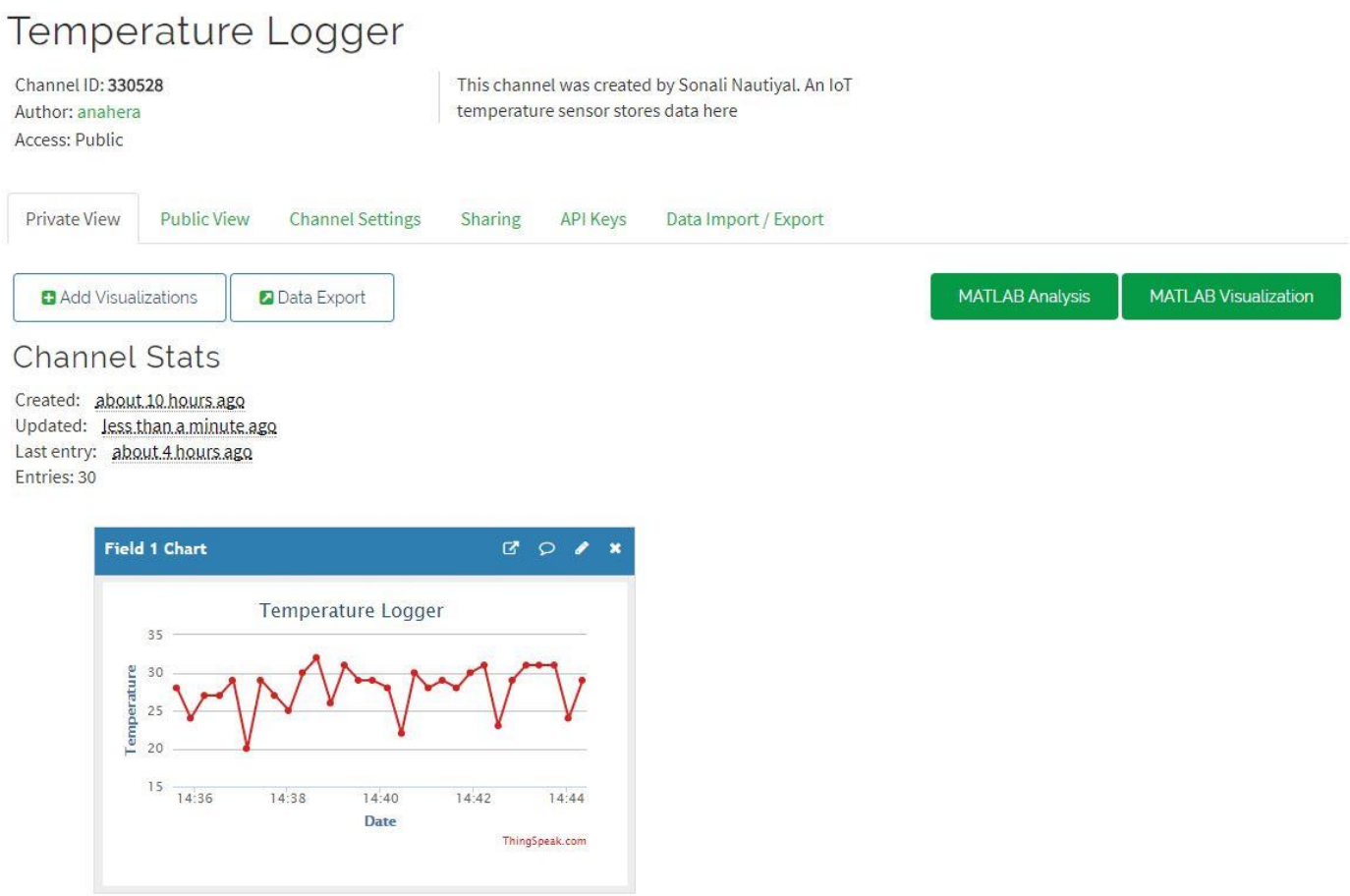


Fig: Accessing real-time temperature data stored in could server

Public Access Link:

https://thingspeak.com/channels/330528