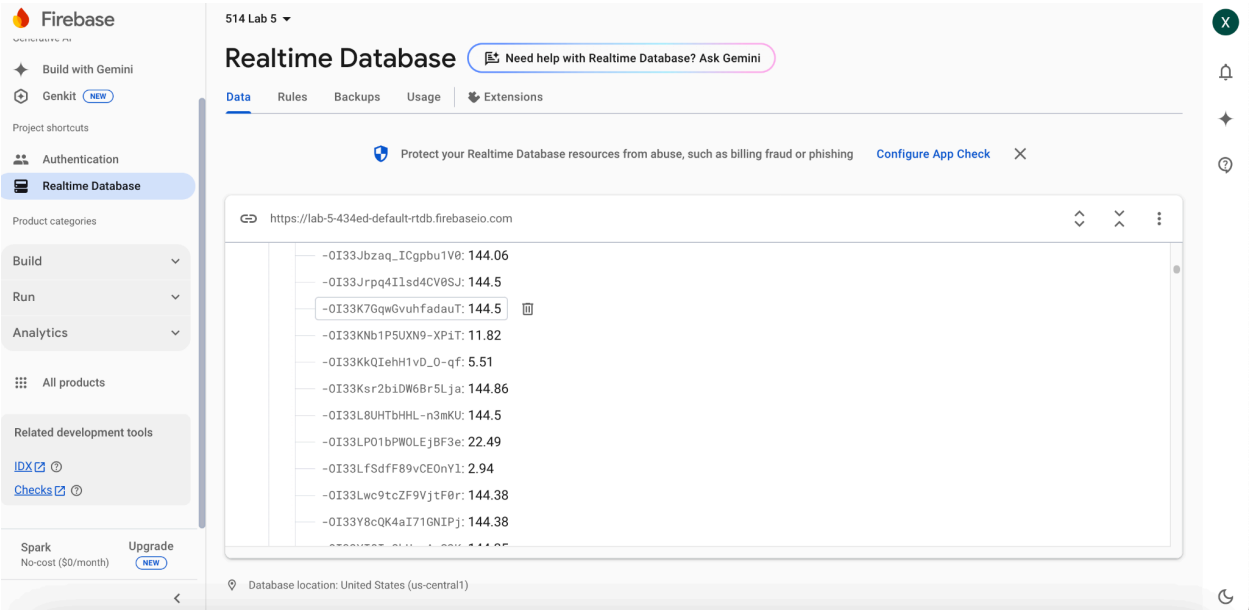
Screenshots of Firebase data



Annotated screenshot on PPK for 5 stages

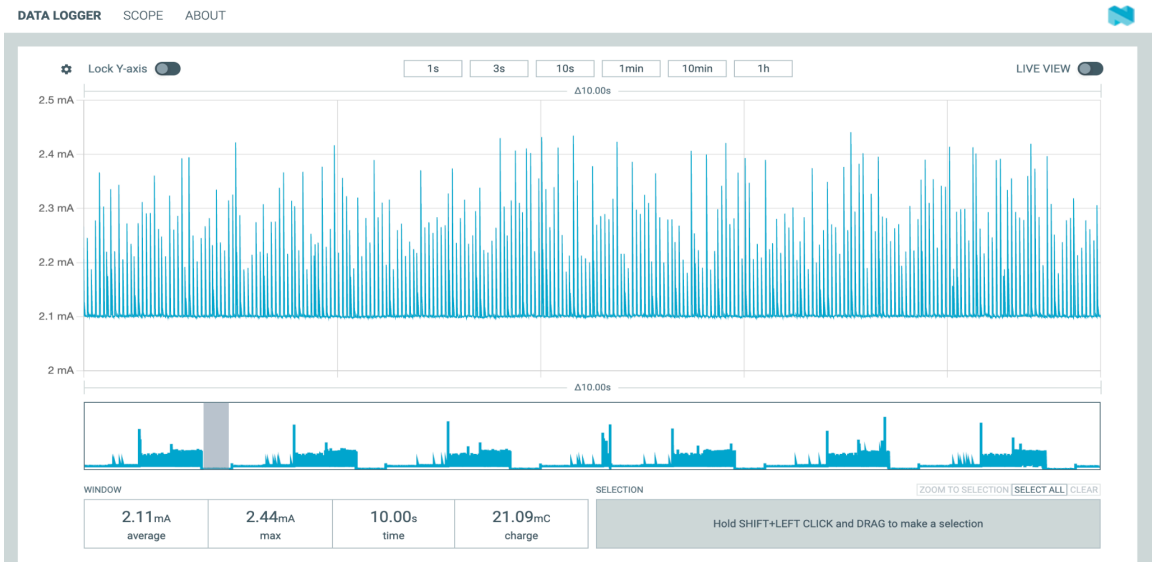
Calculations of power consumption and estimated battery-lasting time

Deep sleep

Average current: 2.11mA;

Power consumption: 0.00211 * 5 = 0.011 W

Battery-lasting: 500/2.11 = 236.967 hours

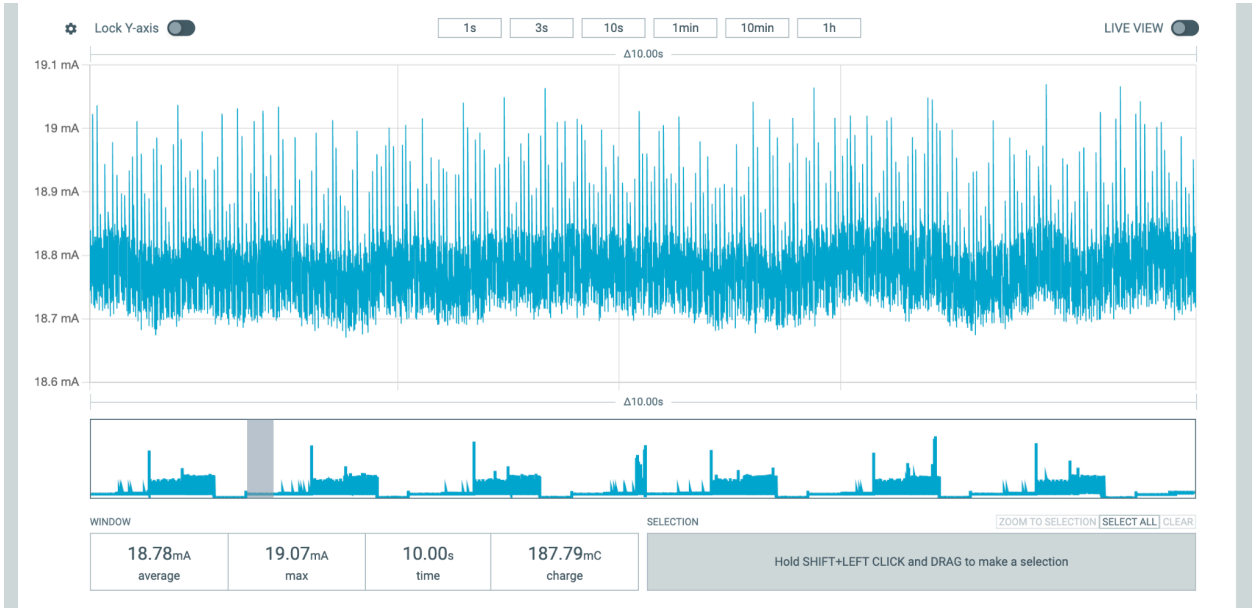


Idle

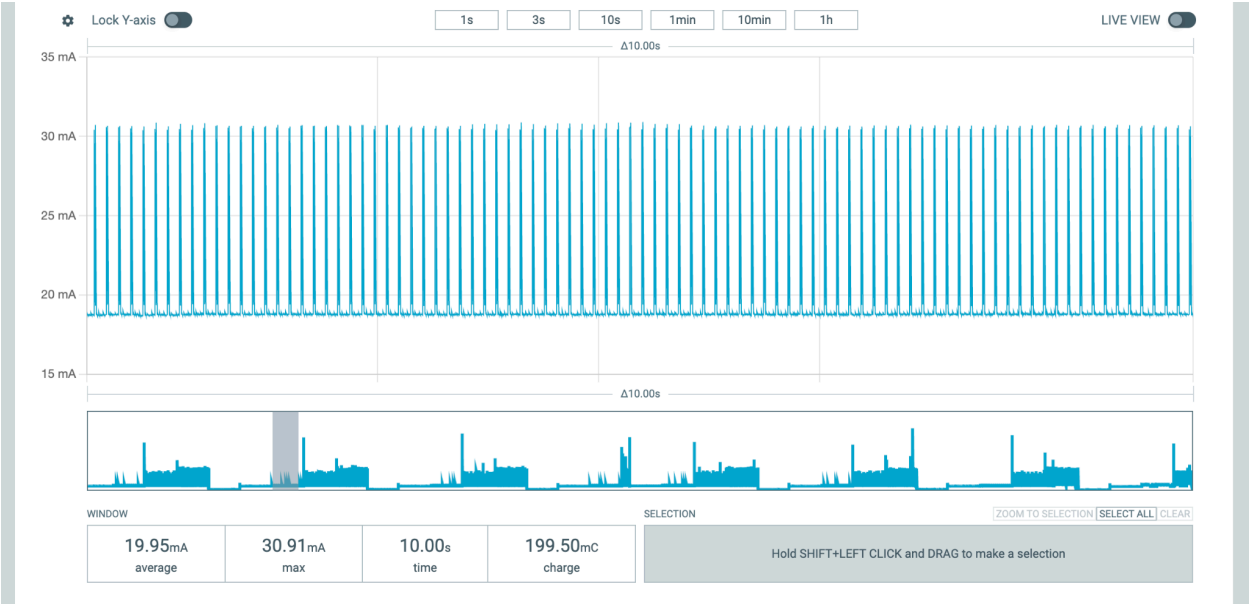
Average current: 18.78mA;

Power consumption: 0.01878 * 5 = 0.094 W

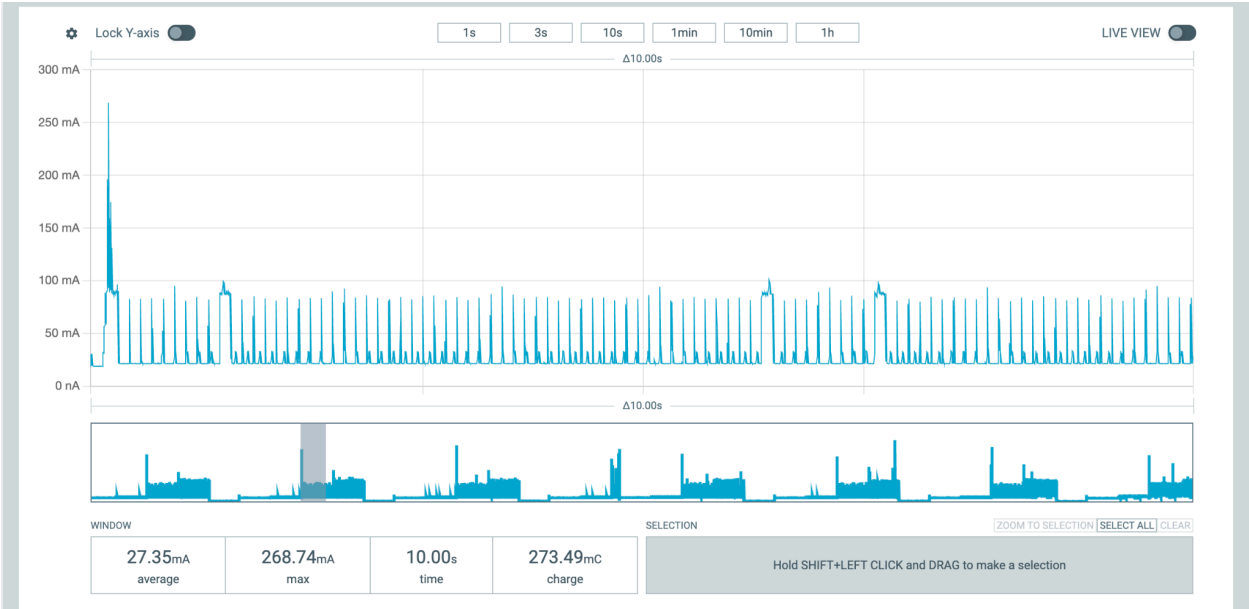
Battery-lasting: 500/18.78 = 26.624 hours



Ultrasonic Only
Average current: 19.95mA;
Power consumption: 0.01995 * 5 = 0.1 W
battery-lasting: 500/19.95 = 25.06 hours

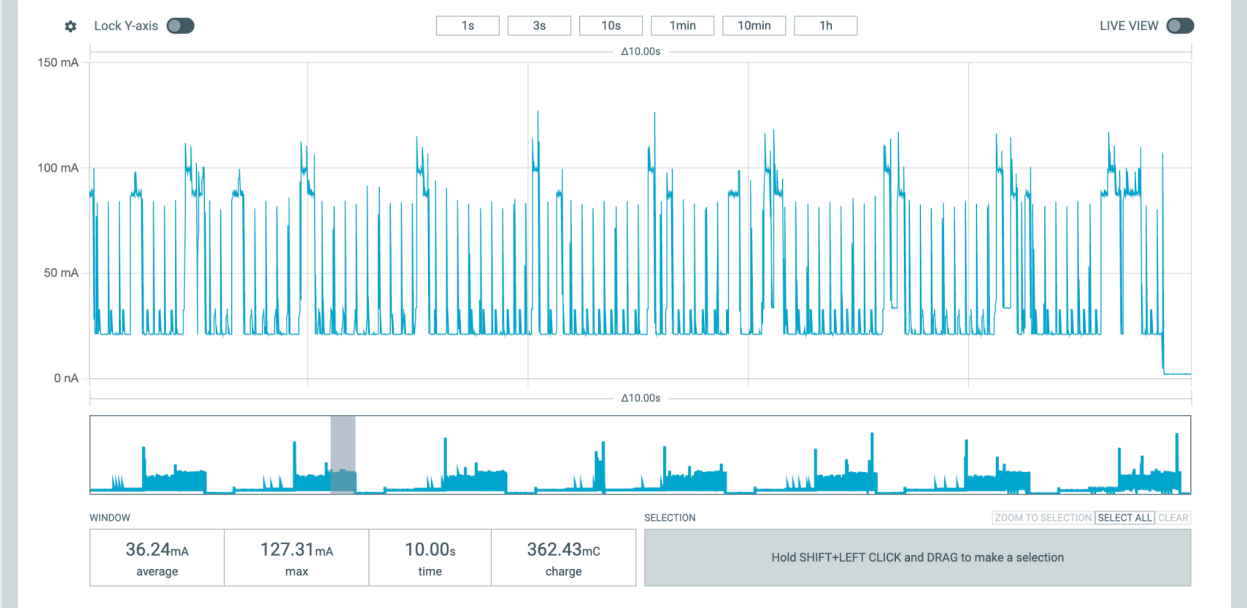


Ultrasonic + WIFI
Average current: 27.35mA;
Power consumption: 0.02735 * 5 = 0.137 W
battery-lasting: 500/27.35 = 18.28 hours



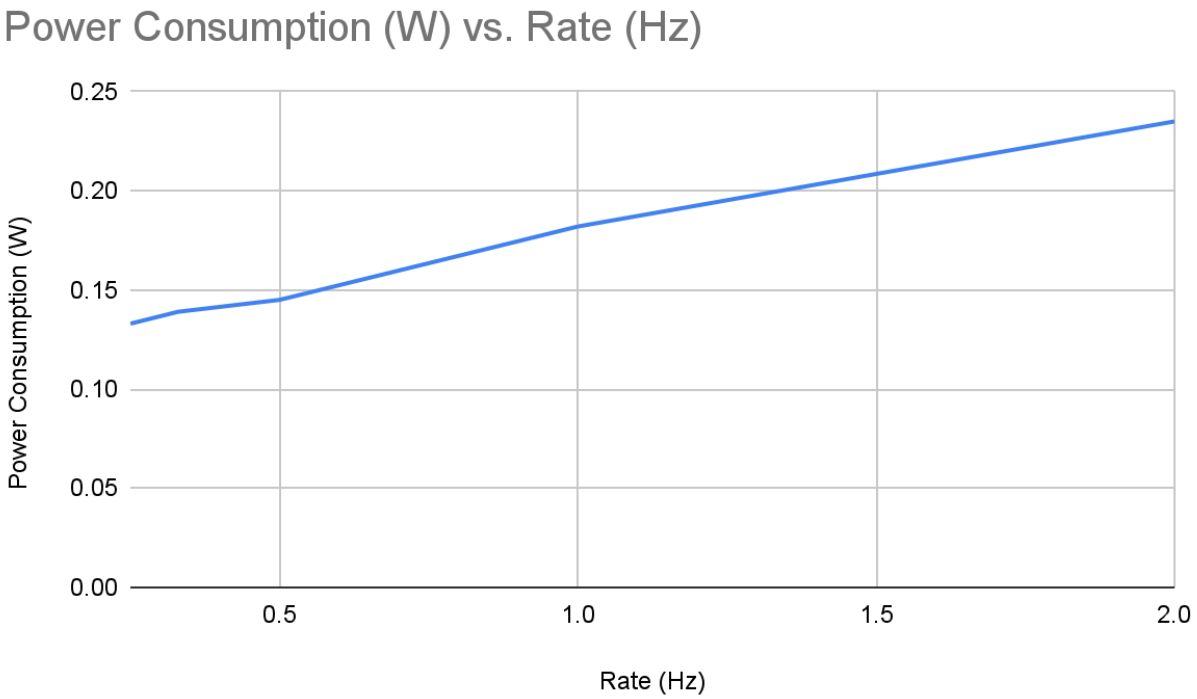
Ultrasonic + WiFi + Firebase

Average current: 36.24mA;
Power consumption: 0.03624 * 5 = 0.181 W
battery-lasting: 500/36.24 = 13.79 hours



Upload Rate and Power Consumption

1. 2 times per second (2 Hz)
    a. Avg: 47.09 mA
    b. Power consumption: 0.04709 * 5 = 0.235 W
2. 1 time per second (1 Hz)
    a. Average: 36.37 mA
    b. Power consumption: 0.03637 *5 = 0.182 W
3. Once every 2 seconds (0.5 Hz)
    a. Avg: 29.03 mA
    b. Power consumption: 0.02903 * 5 = 0.145 W
4. Once every 3 seconds (0.333 Hz)
    a. Avg: 27.77mA
    b. Power consumption: 0.02777 * 5 = 0.139 W
5. Once every 4 seconds (0.25 Hz)
    a. Avg: 26.68mA
    b. Power consumption: 0.02668 * 5 = 0.133 W


Power Consumption (W) vs. Rate (Hz)
Power Consumption (W)
0.25
0.20
0.15
0.10
0.05
0.00
0.5
1.0
1.5
2.0
Rate (Hz)

Strategy


DATA LOGGER
SCOPE
ABOUT
Lock Y-axis
1s
3s
10s
1min
10min
1h
LIVE VIEW
Δ6:15.4m
400 mA
300 mA
200 mA
100 mA
0 nA
Deep Sleep
Idle
Ultra Only
Ultra + WIFI
Ultra + WIFI + Data
Δ1:11.6m
WINDOW
18.11mA average
318.93mA max
6:15.4m time
6.80C charge
SELECTION
ZOOM TO SELECTION
SELECT ALL
CLEAR
15.26mA average
318.93mA max
1:11.6m time
1.09C charge
0
1

The strategy is to deep sleep first for 30 seconds for every circle. For the next 4 stages, each last 10 seconds. The transmission rate of data is every 5 seconds.

The average current is 15.26 mA as demonstrated above. Therefore, the battery should last 500/15.26 = 32.765 hours, more than 24 hours.