

Project Overview

The Drifter is a low-maintenance, low-cost datalogging smart buoy. The product is powered through a solar panel, with a rechargeable backup battery for night cycles and less than ideal weather. The Drifter logs various water quality metrics and stores the data locally on a microSD card and displays the readings on an e-Ink display on top of the enclosure. The user can access this data wirelessly using either Bluetooth or Long-Range Signals without having to physically remove The Drifter from the water.

Business Need

NASA's Earth Science & Remote Sensing (ESRS) Unit will use the data provided by The Drifter to help refine data collected by NASA satellites and aircraft and improve the accuracy of NASA models and forecasts.

The Drifter will also be used as an entry level kit to introduce high school students to the world of data logging and water monitoring projects.

Results

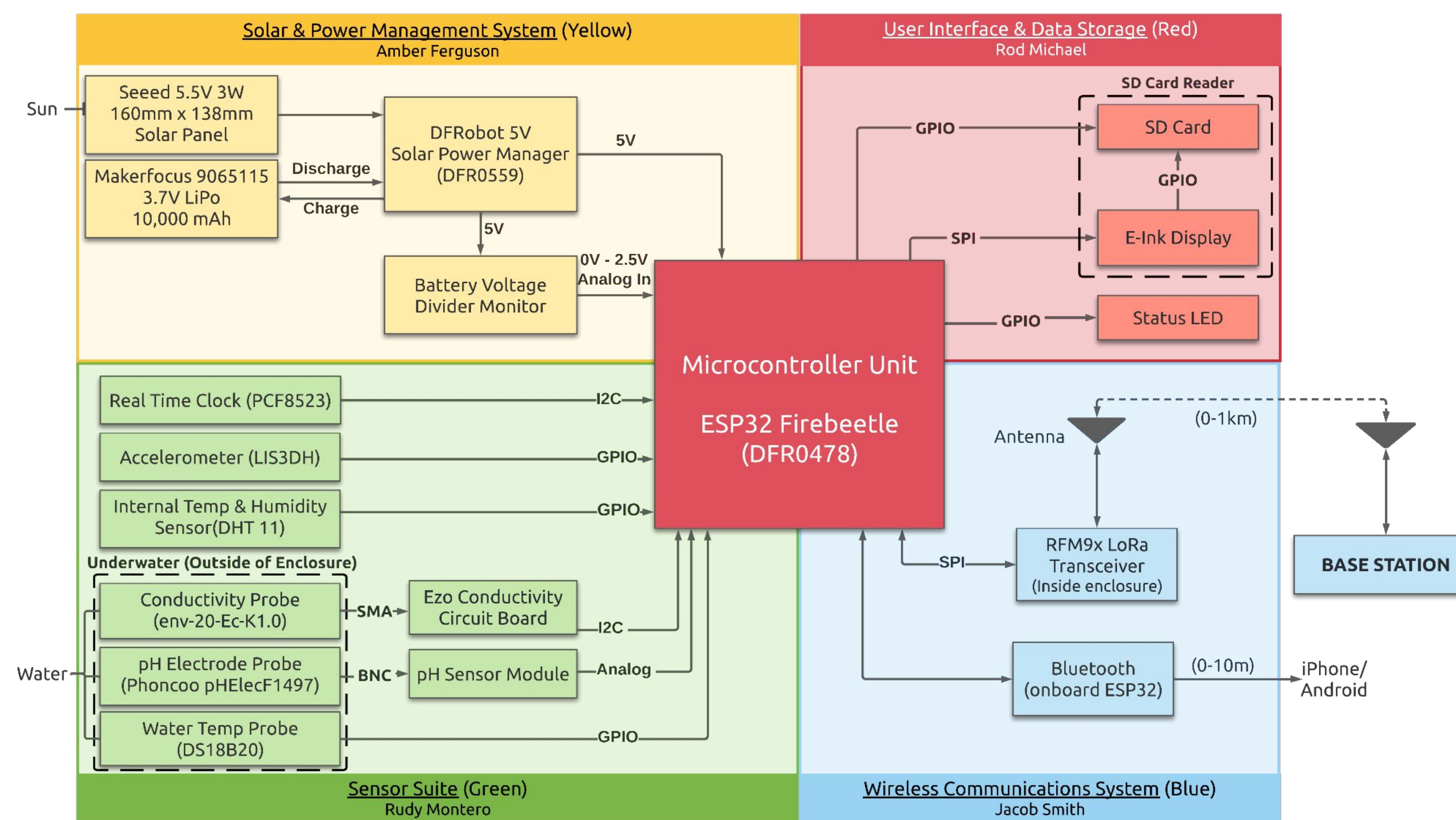
Features

Self-sufficient Solar Power System	Passed
Min 5-day lifespan without Solar	Passed
Water Temperature	Passed
Internal Temperature	Passed
pH Level	Passed
EC / Salinity / TDS	Passed
E-Ink Display	Passed
Data Saved to microSD card	Passed
Wireless access to Data	
Bluetooth	Passed
Long Range (LoRa) Signal	Passed

Performance Criteria

Build option under \$100	Failed
12-month deployment (4-week test)	Passed
Waterproof & Buoyant	Passed
30-minute sampling frequency	Passed
Off-the-shelf Construction	Passed
Easy data retrieval	Passed

Overall Block Diagram

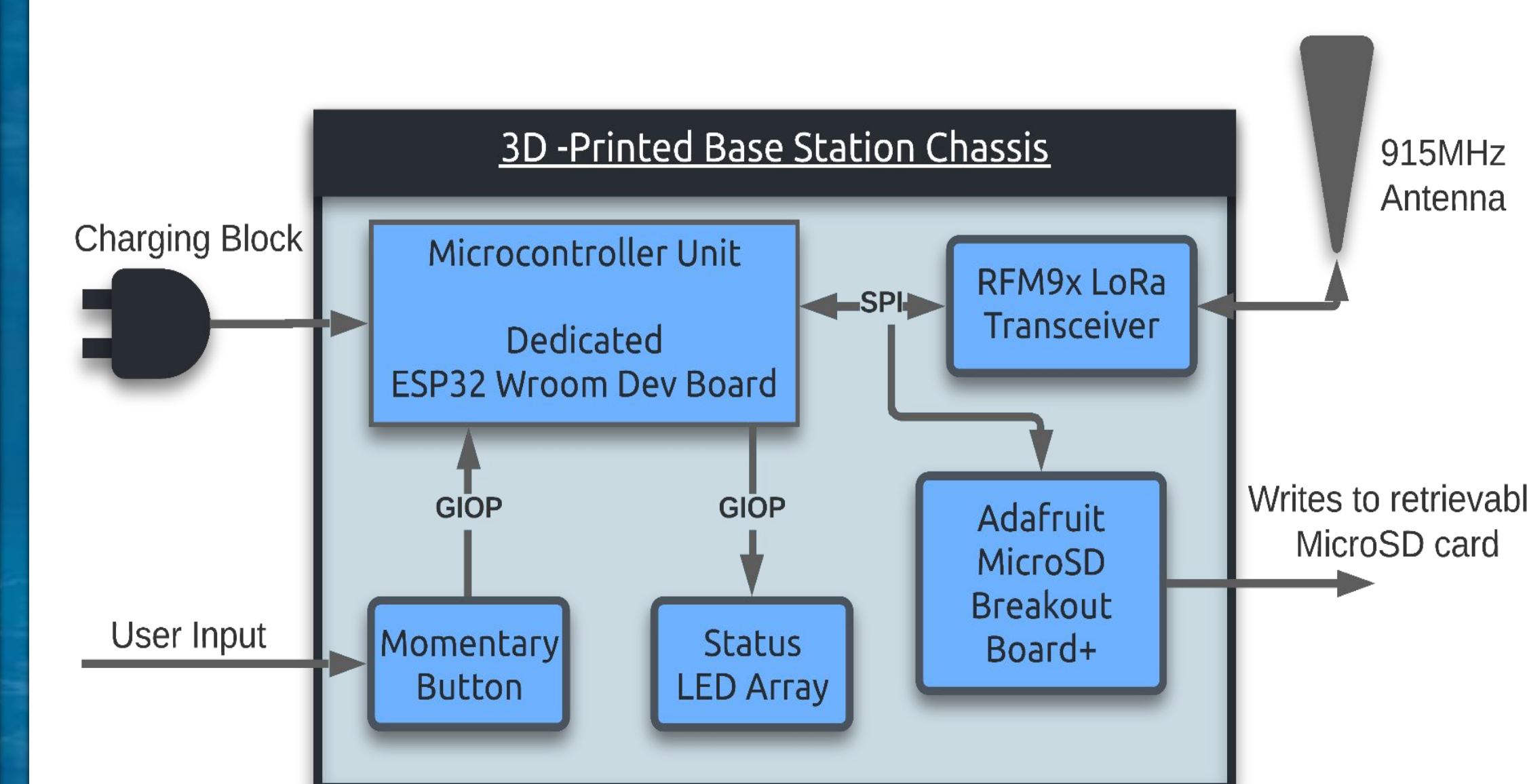


Drifter Team

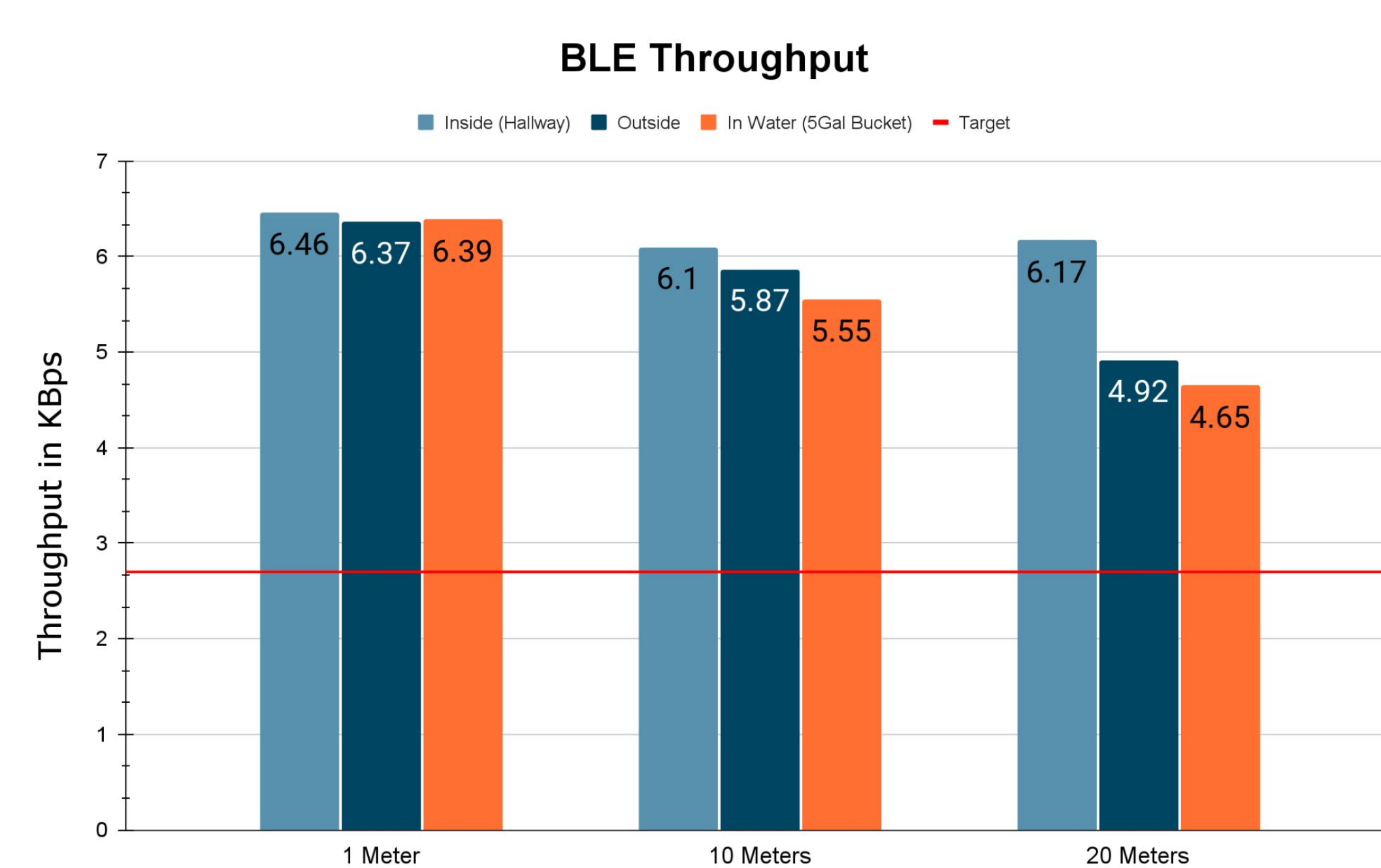


Jacob Smith, Amber Ferguson, Rod Michael, Rodolfo Montero

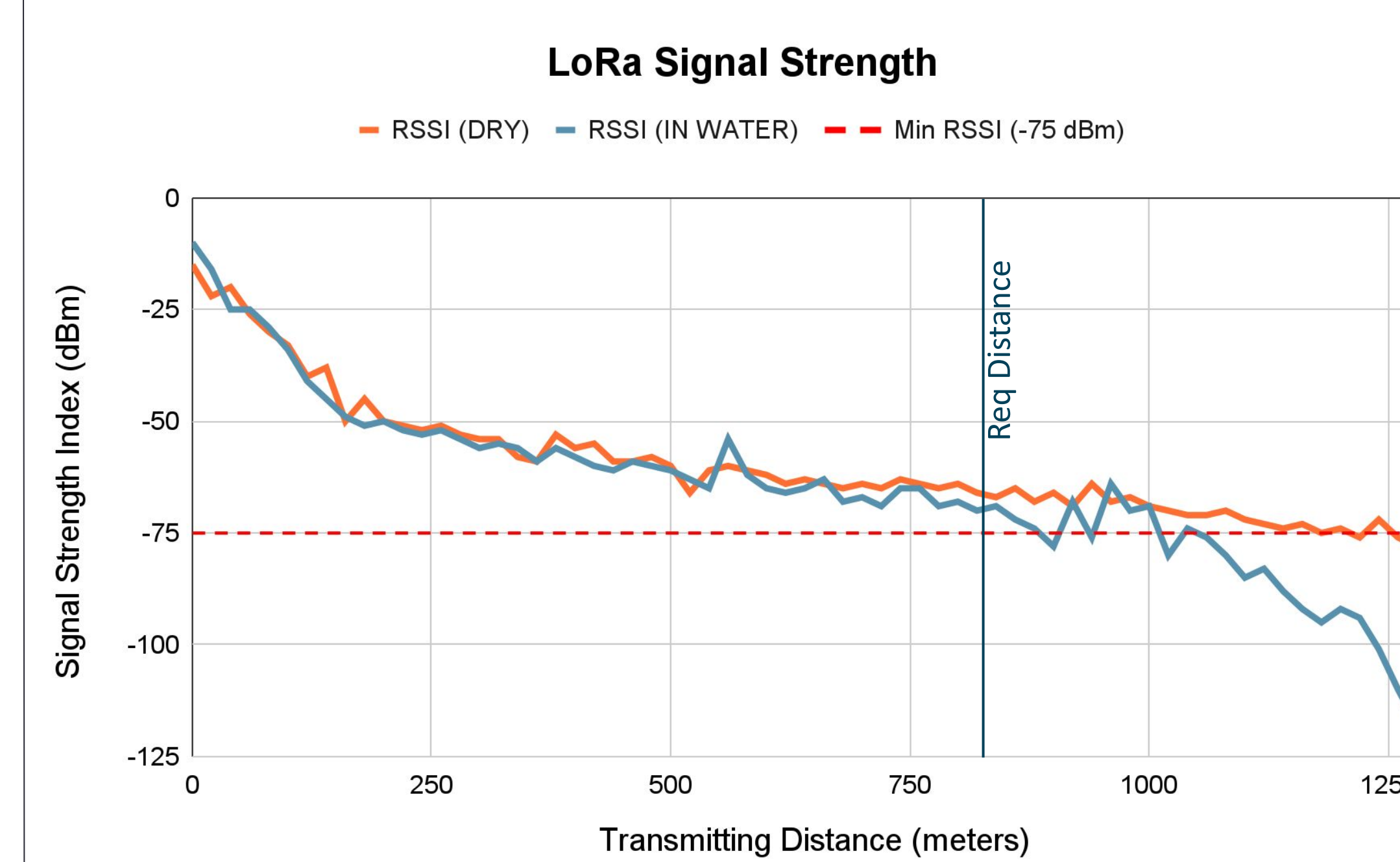
Base Station Block Diagram



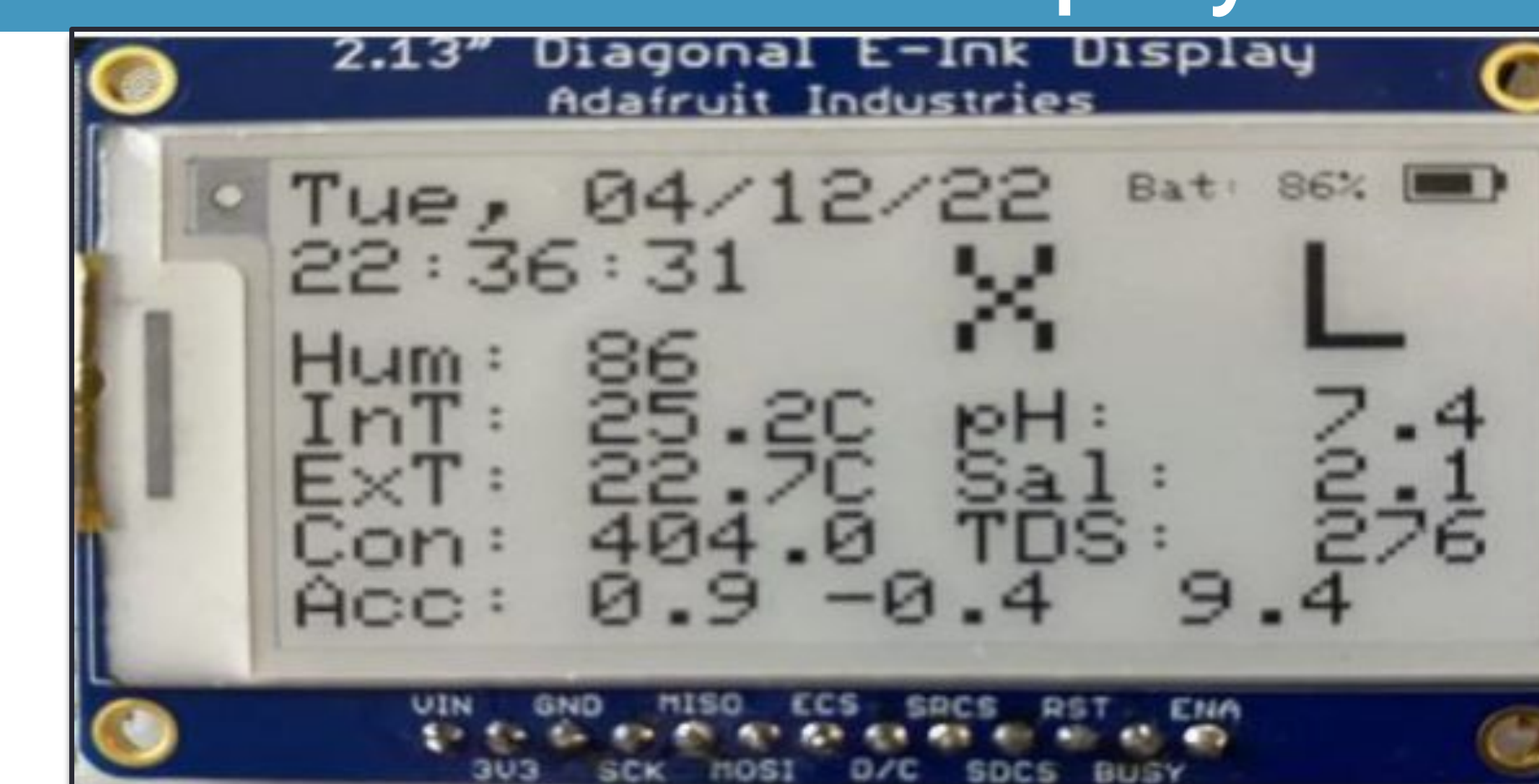
Bluetooth



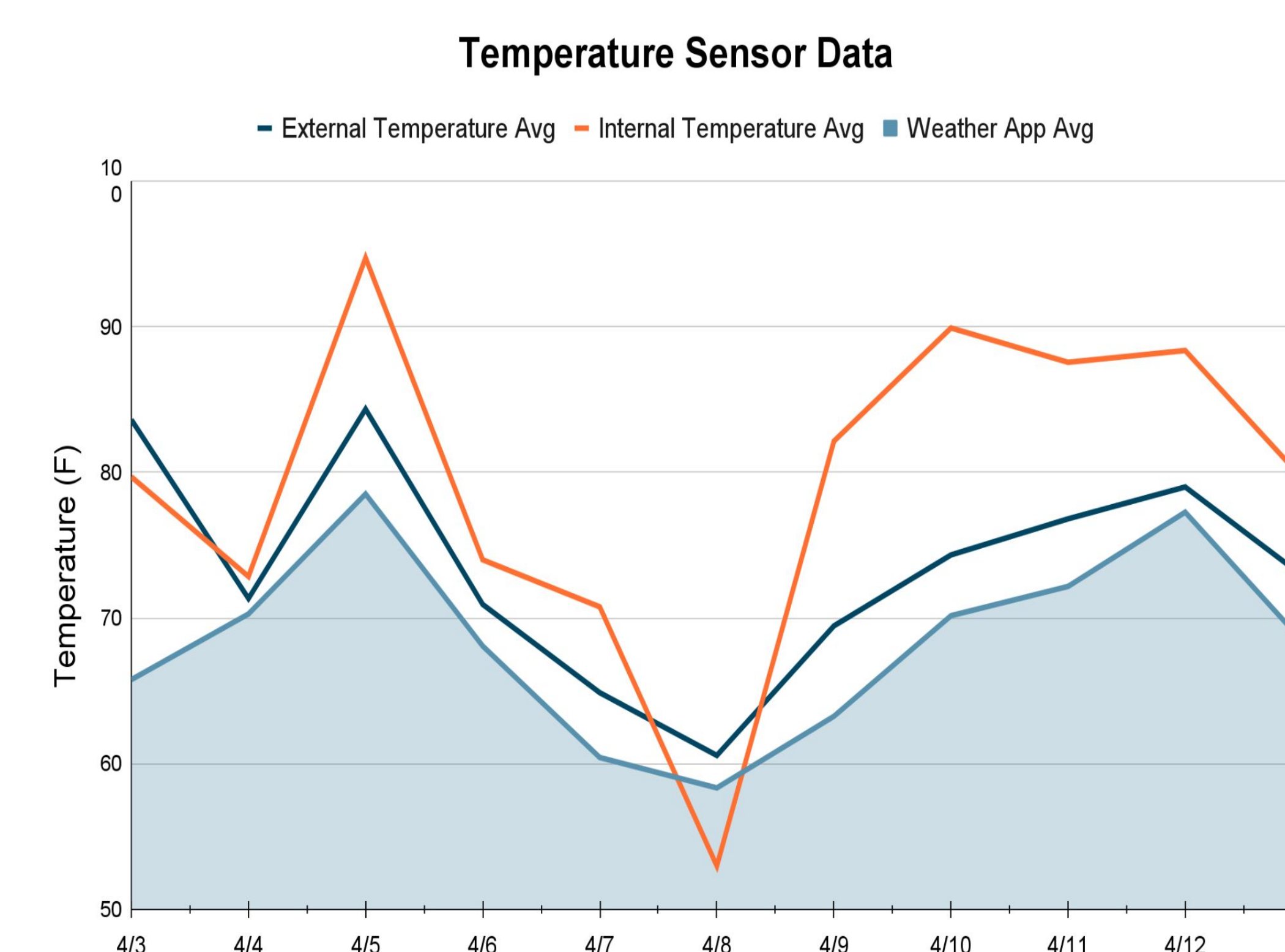
Long Range Wireless Comm.



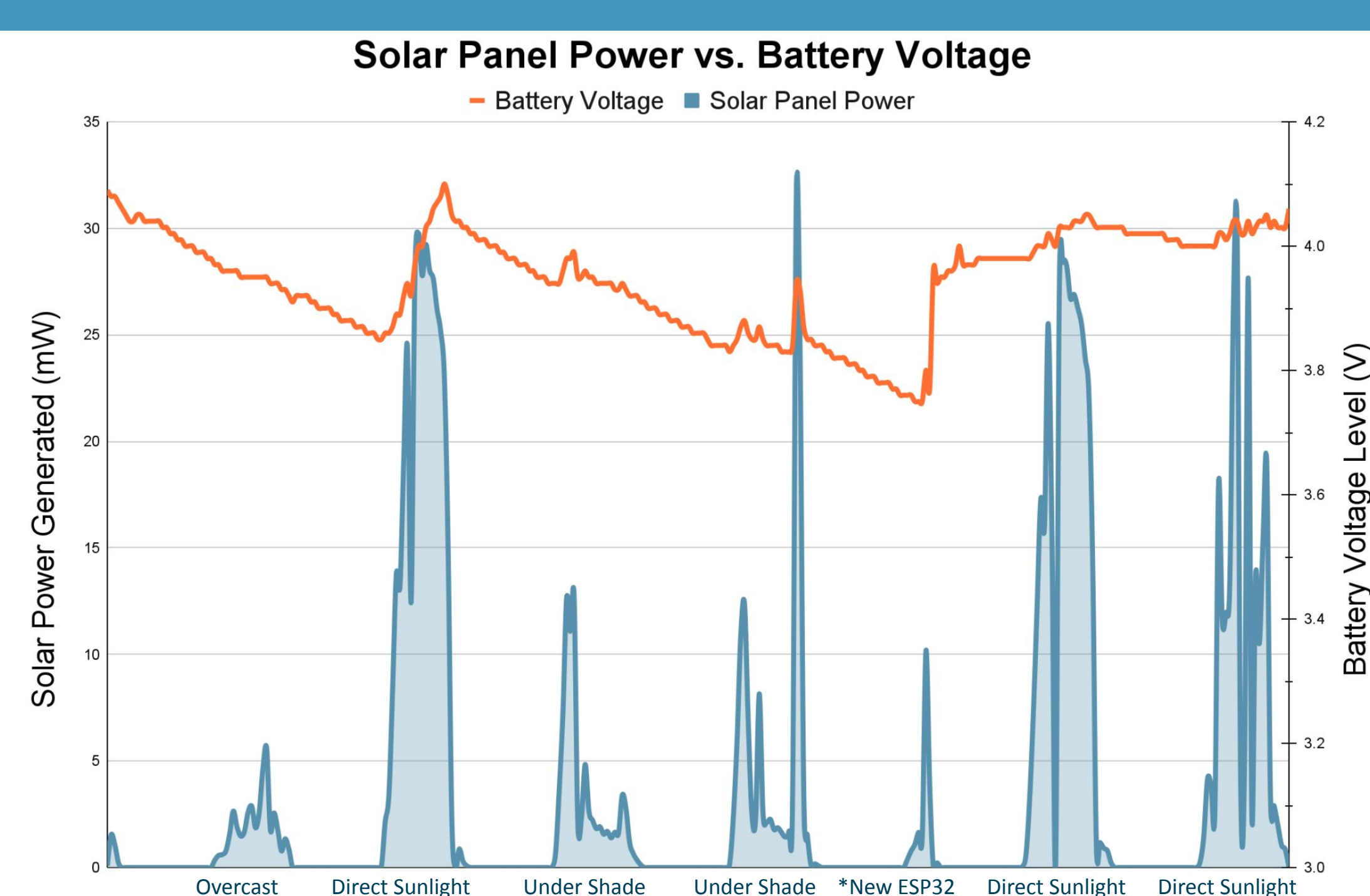
Onboard Display



Sensor Data Gathered



Solar Power Generation



Battery Lifespan

