

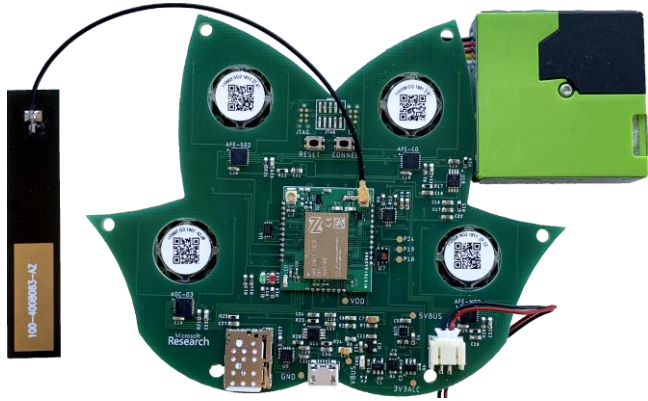


Urban Innovation // Project Eclipse

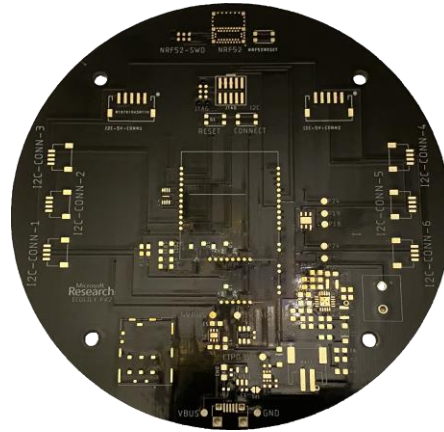
Initiative goals to achieve mass sensor deployment

- Accurate sensor measurement
- Direct to Cloud
- Infrastructure minimal
- Low cost
- Deploy and go
- Minimal service needs
- Extensible

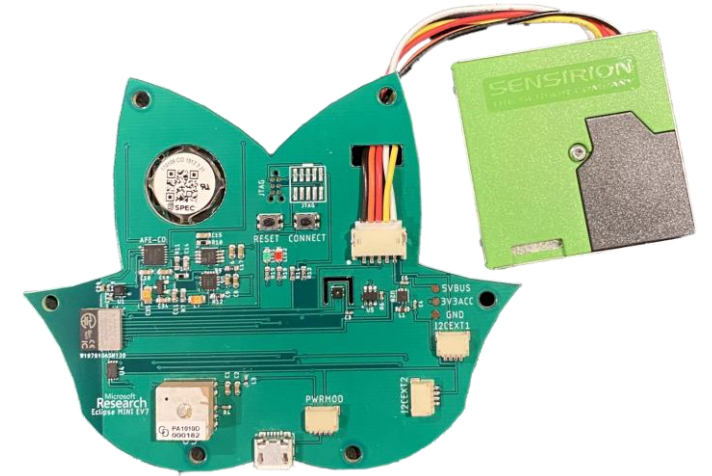
A Family of Devices



Eclipse PRO



Eclipse Lilypad



Eclipse MINI

- *Infrastructure devices*
- Latest industry LTE-M enabled MCU + Bluetooth LE (Nordic NRF9160)
- No infrastructure requirement – just LTE signal
- 100-300uA consumption
- Solar Harvester enabled 3"x3" panel (Self powered indefinitely per power/usage budget)
- Fully sensor extensible
- < \$100/device in volume

- *Wearable/Personal device*
- Bluetooth LE MCU (Nordic NRF52)
- GPS enabled
- Paired to smartphone
- Variable sampling (20s -> 10m)
- Charged (bi)daily
- Fully sensor extensible
- < \$60/device in volume

PROJECT ECLIPSE AIR QUALITY SENSOR



NO2 GAS SENSOR

PARTICLE SENSOR

CO GAS SENSOR

LTE-M/NB-IOT ENABLED
MICROPROCESSOR

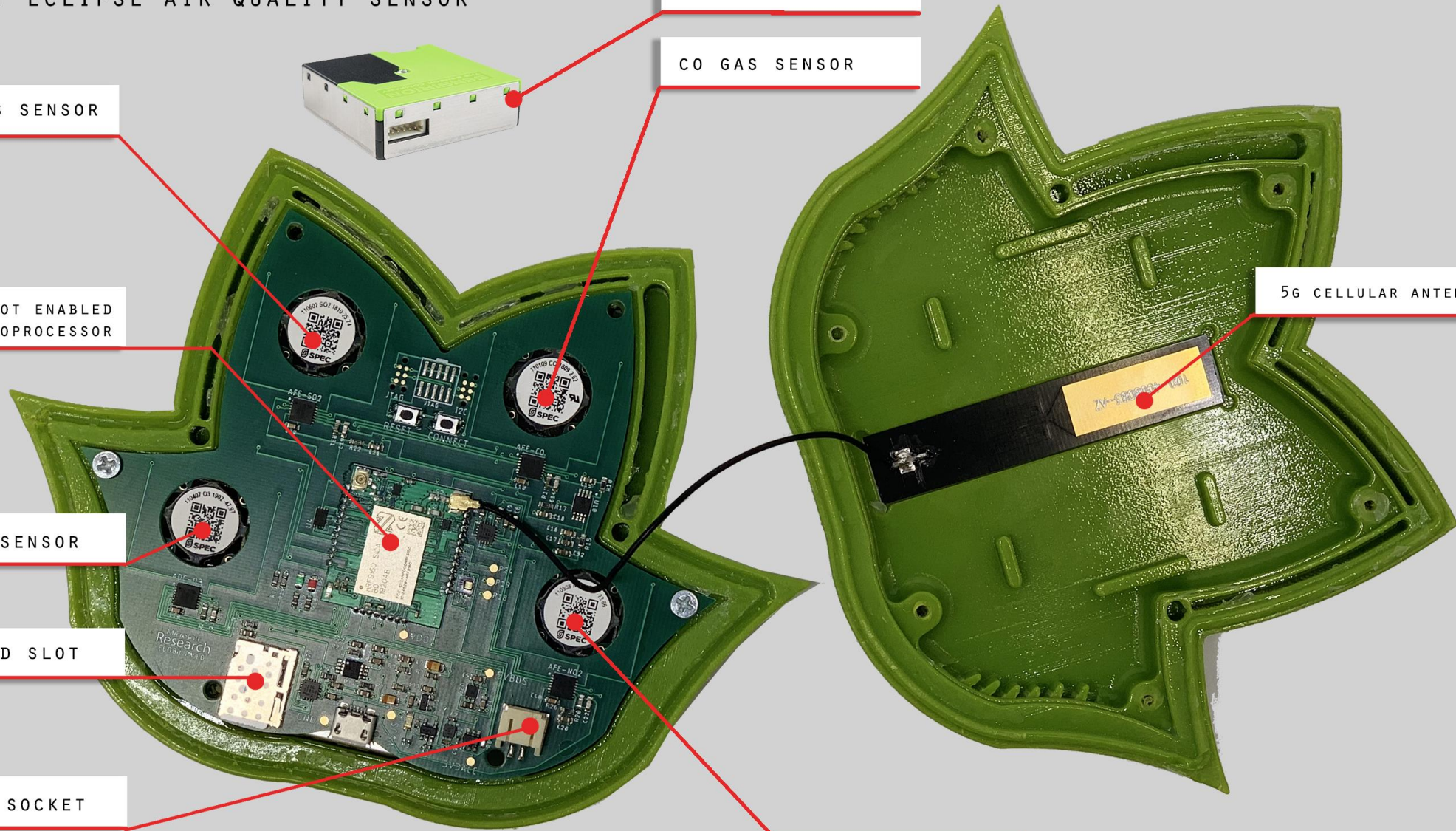
O3 GAS SENSOR

SIM CARD SLOT

BATTERY SOCKET

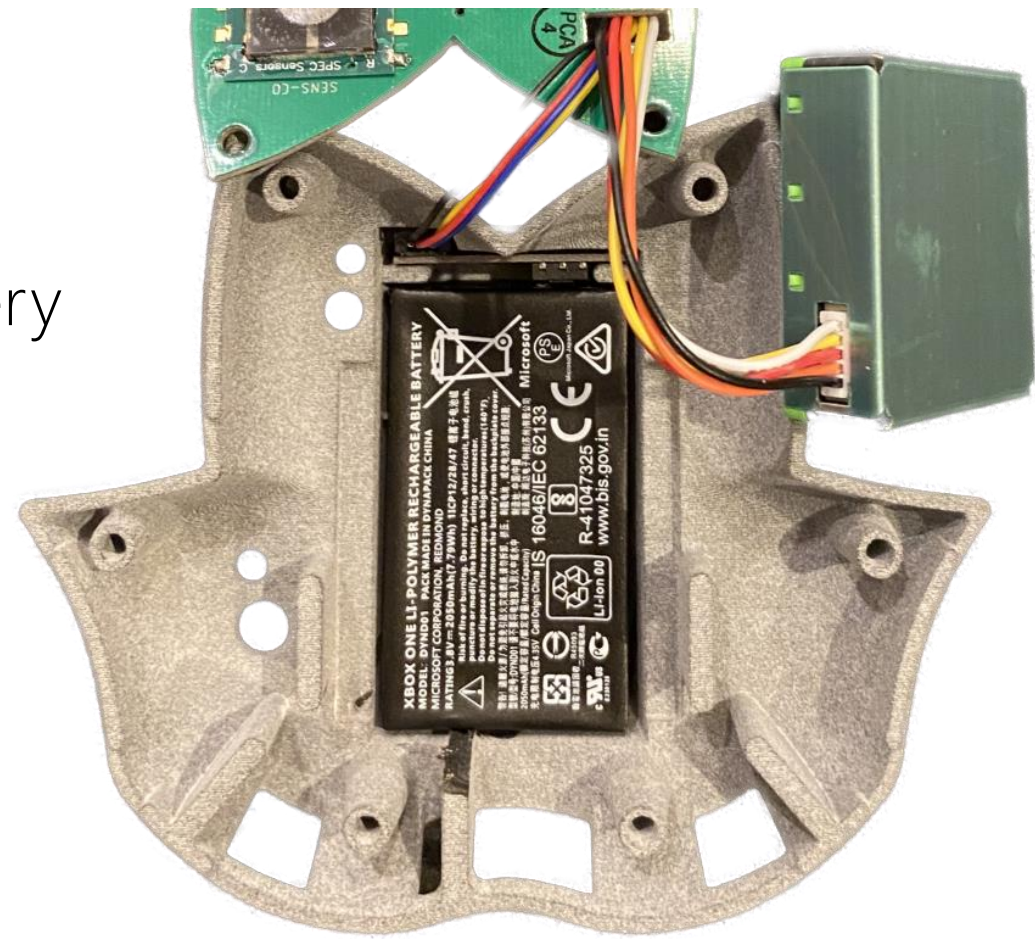
5G CELLULAR ANTENNA

SO2 GAS SENSOR



Deeper Dive

 Powered by Xbox – 2000mAh controller battery



Deeper Dive

 Powered by Xbox – 2000mAh controller battery

Modular power system, USB, Solar, other

0.6W 66mm solar panel can charge depleted device in 2 days



Deeper Dive

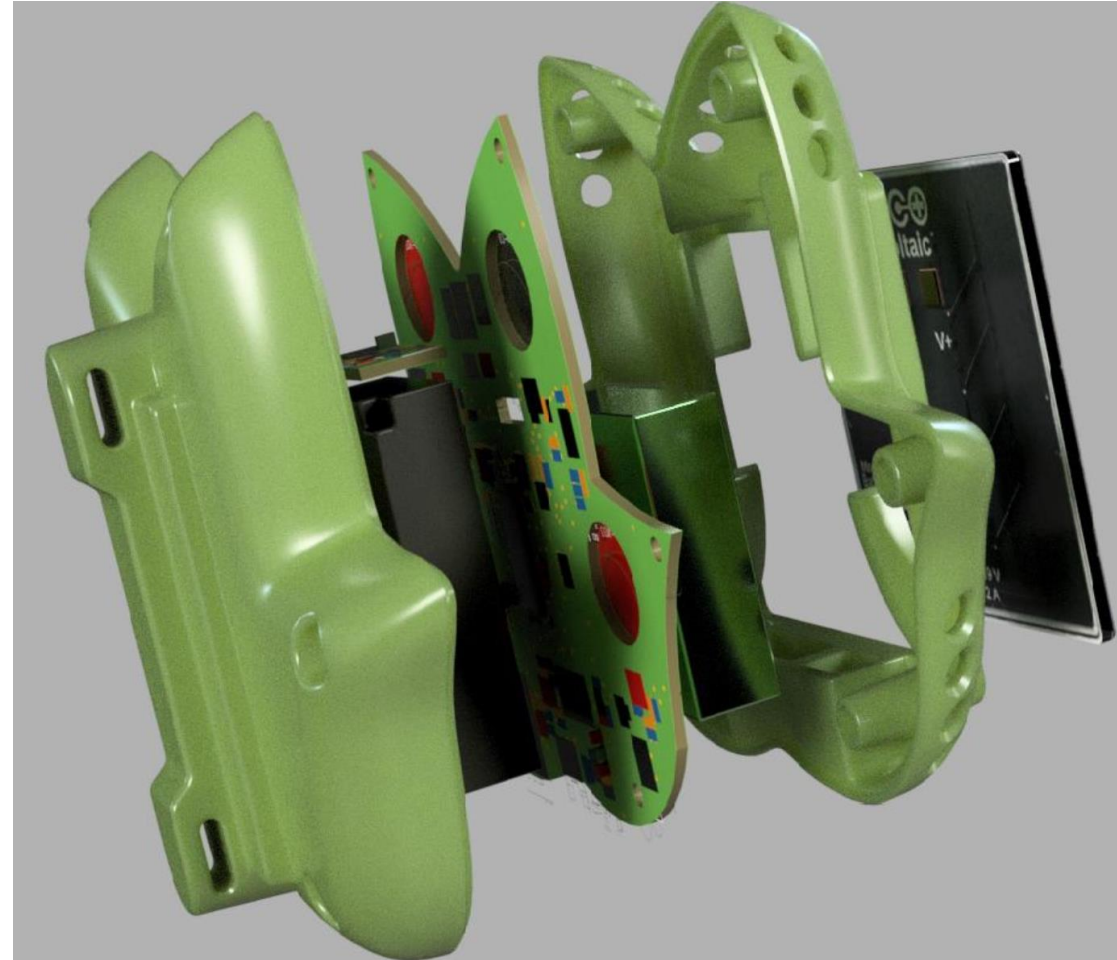
 Powered by Xbox – 2000mAh controller battery

Modular power system, USB, Solar, other

0.6W 66mm solar panel can charge depleted device in 2 days

Air flow modelled

Qwiic/STEMMA modularity



Deeper Dive

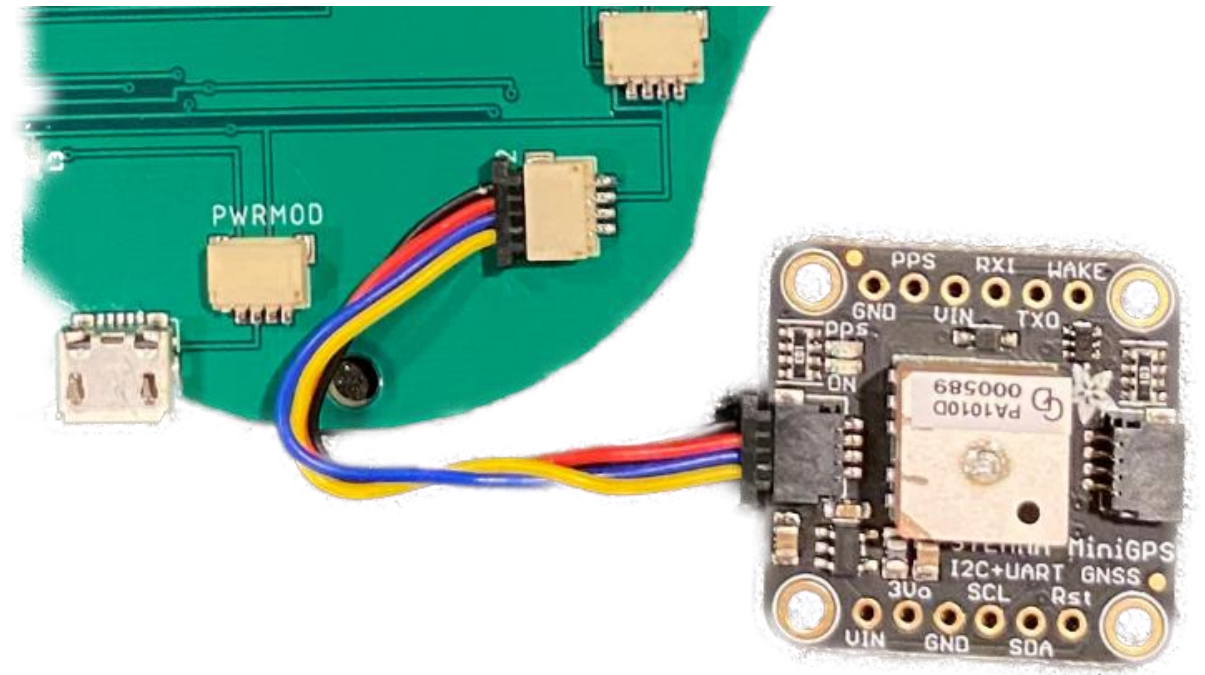
 Powered by Xbox – 2000mAh controller battery

Modular power system, USB, Solar, other

0.6W 66mm solar panel can charge depleted device in 2 days

Air flow modelled

Qwiic/STEMMA modularity



Water Quality

Conductivity (concentration of ions) = salinity

- Detection range: 0 – 20 mS/cm
- Temperature Range: 0 - 40°C
- Cable length: 100 cm
- Probe life: >0.5 years

Turbidity (cloudiness of water) disruption of photosynthesis (storm water)

- Operating Temperature: 5 - 90°C
- Detection range (from in-lab testing): 0 – 1000 NTU
- Detection resolution (from in-lab testing): 20 NTU

pH Sensing

- Detection range: 0 - 14 (4 below is low) (basic 10+)
- Measurement accuracy: ± 0.1 at 25°C
- Temperature range: 5 - 60°C
- Cable length: 100 cm
- Probe life: >0.5 years

Thermal Temp

- 55c to 125c
- 0.5 degree accuracy

