Intel-IrriS

PRIMA
PARTNERSHIP FOR RESEARCH AND INNOVATION
IN THE MEDITERRANEAN AREA

Intelligent Irrigation System for Low-cost Autonomous Water Control in Small-scale Agriculture

Intel-IrriS

Building the INTEL-IRRIS LoRa IoT platform Part 5: outdoor gateway

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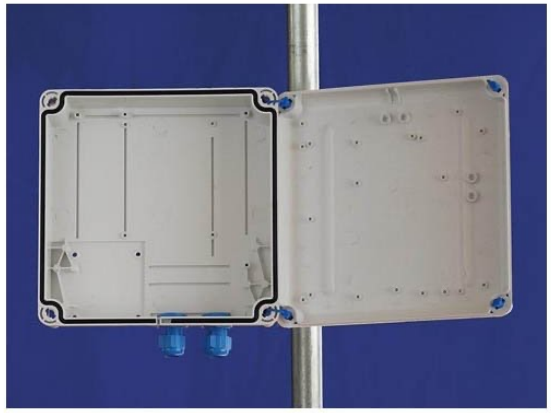
LIUPPA

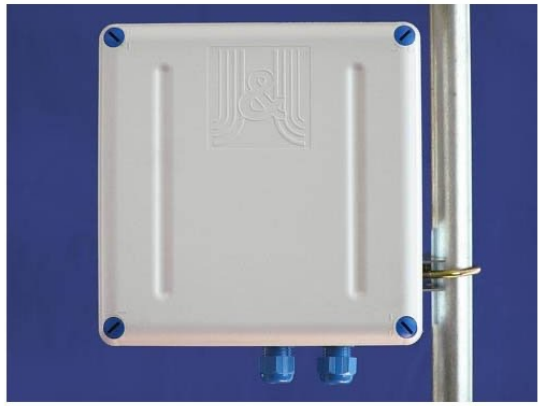
WAZIUP
IoT – from idea to reality
WAZIHUB

Before we start

- Look at the tutorial on how to build the simple INTEL-IRRIS gateway
  - Tutorial slides on building the INTEL-IRRIS IoT platform. Part 2: edge-enabled gateway
  - https://docs.google.com/viewer?url=https://github.com/CongducPham/PRIMA-Intel-IrriS/raw/main/Tutorials/Intel-Irris-edge-gateway.pdf
  - Associated YouTube video
  - https://youtu.be/j-1Nk0tv0xM

Overview of the additional parts





RaspberryPi and radio module are taken from the simple INTEL-IRRIS gateway. The SD card distribution is unchanged

Fixing the Raspberry to the case

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WITH POE-5V SPLITTER

Using a PoE – micro USB 5V

Power with PoE adaptor or PoE switch

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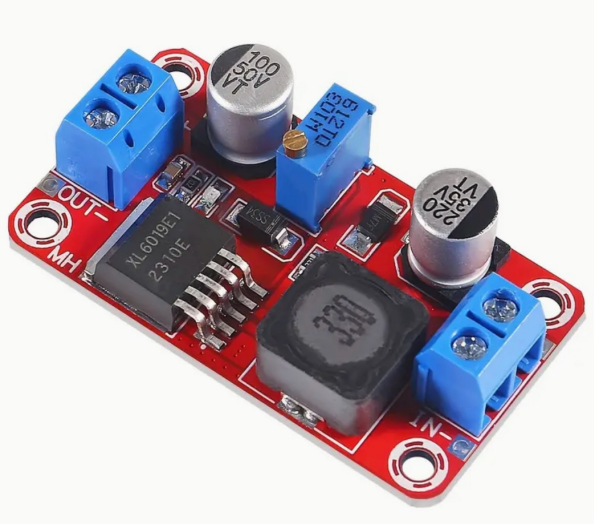
BUILD POE-5V SPLITTER

1/ Get a simple PoE splitter

- Simple PoE splitter can be connected to AC/DC adaptor (usually 5.5 mm / 2.1 mm)

2/ Use a DC-DC step down

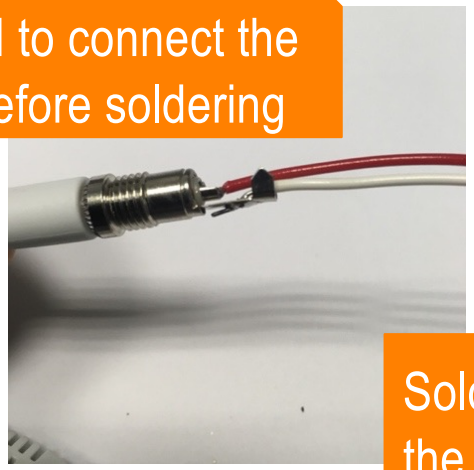
- Most popular are based on LM2596 module, but there are much newer modules
- Any DC-DC module that delivers 5V and at least 2A is OK

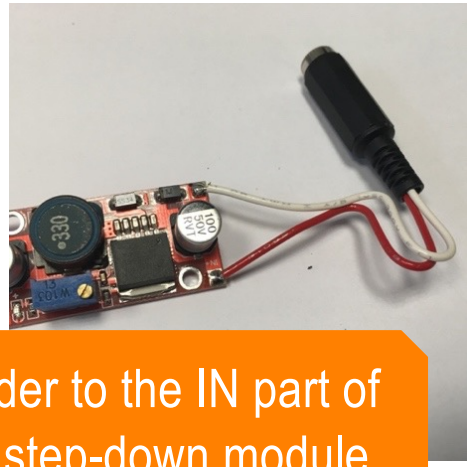


- Final assembling depends on which module you have

Ex: Simple DC-DC based on LM2596

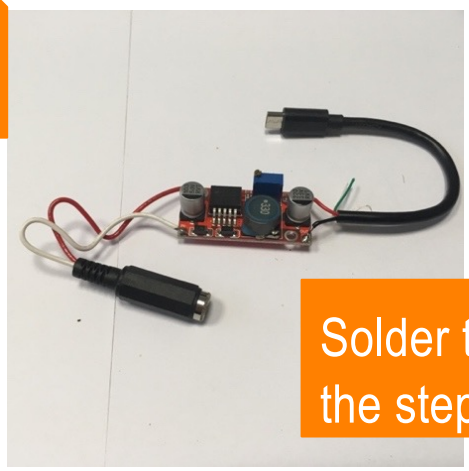
It is advised to connect the DC plugs before soldering





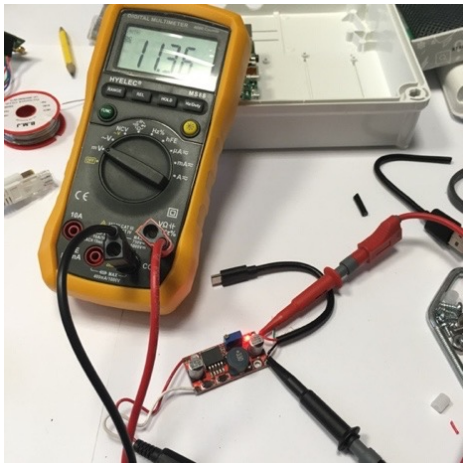
Solder to the IN part of the step-down module

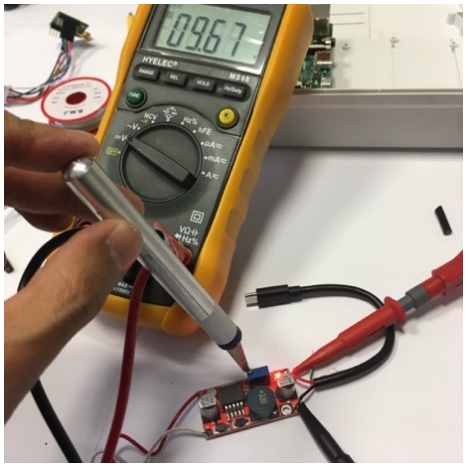
Cut a USB cable, keeping the micro-USB side

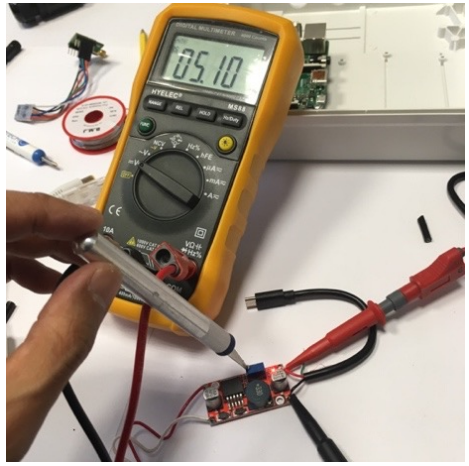


Solder to the OUT part of the step-down module

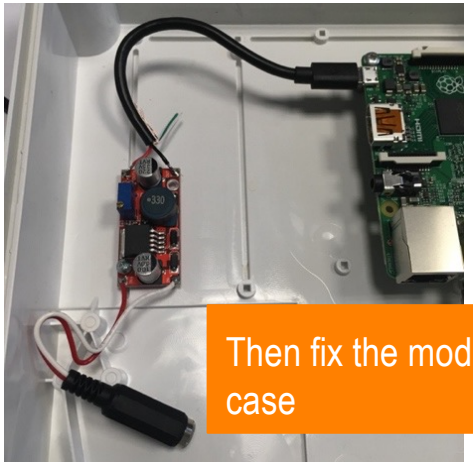
Setting the step-down module





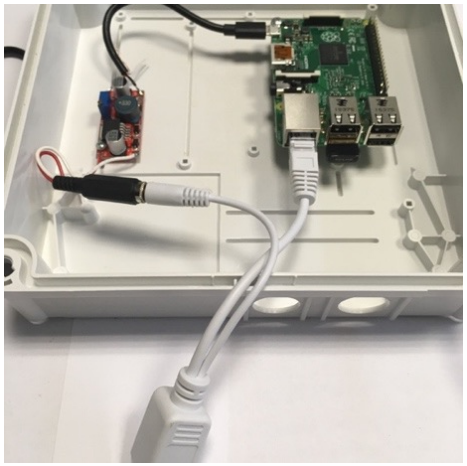


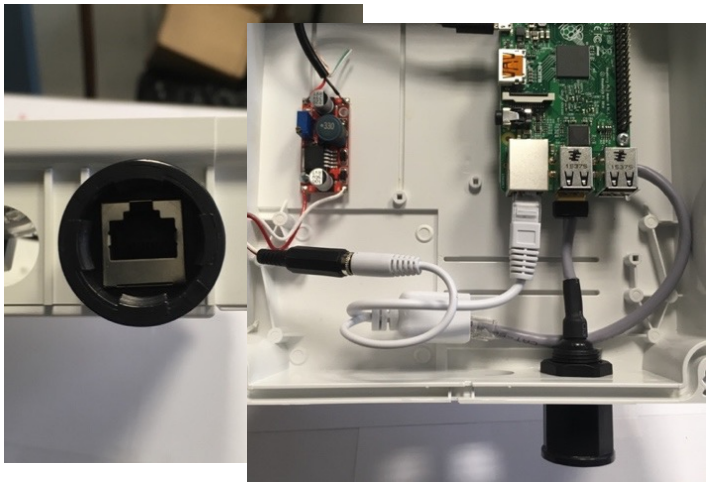
Use for instance a 9v, 12v or 18V AC-DC adaptor, connect to the IN plug, then check the output voltage with a voltmeter and turn the regulation screw until output is about 5.1v.

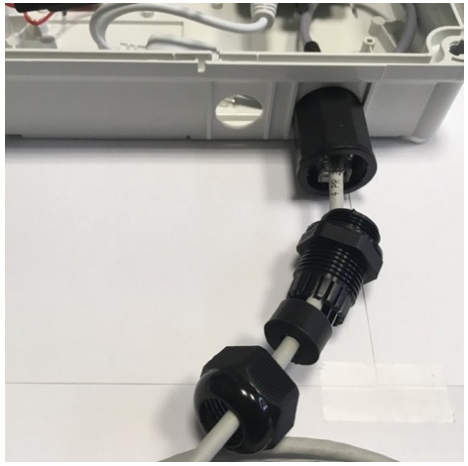
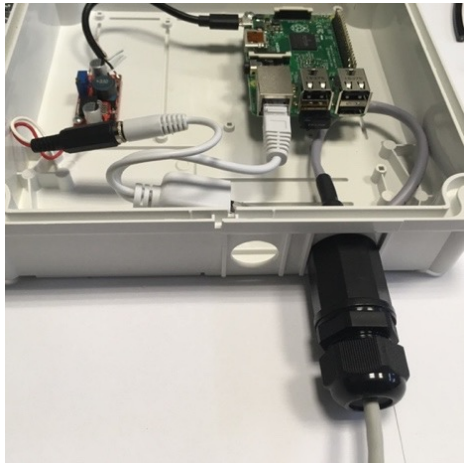


Then fix the module to the case

Installing the PoE injector





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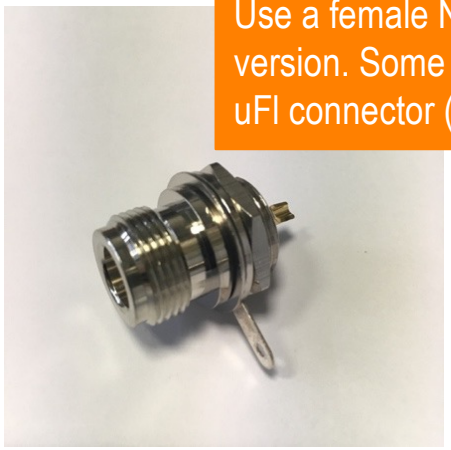
ANTENNA

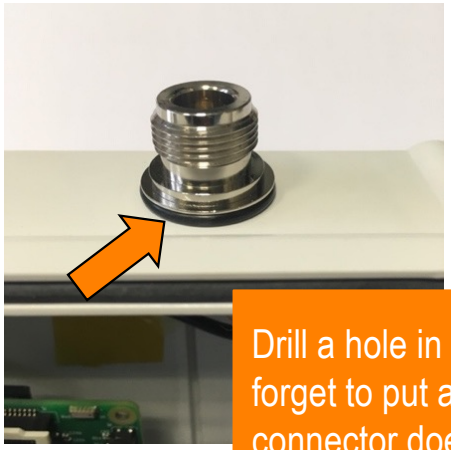
Adding external antenna connector

Outdoor antenna can have an N-connector, could be male (left) or female (right)

It is better to take an antenna with male N to be connected to a female N

Use a female N-connector in mount version. Some already have an SMA or uFl connector (pigtail) at the other end



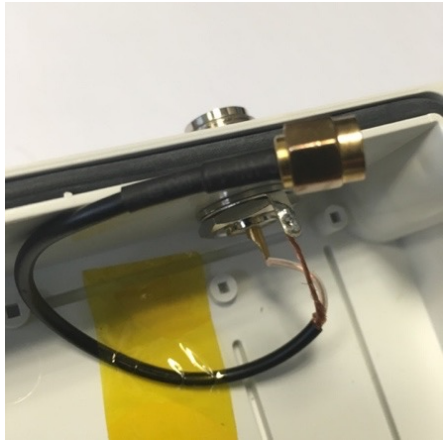


Drill a hole in the case and do not forget to put a rubber seal if your connector does not have one.

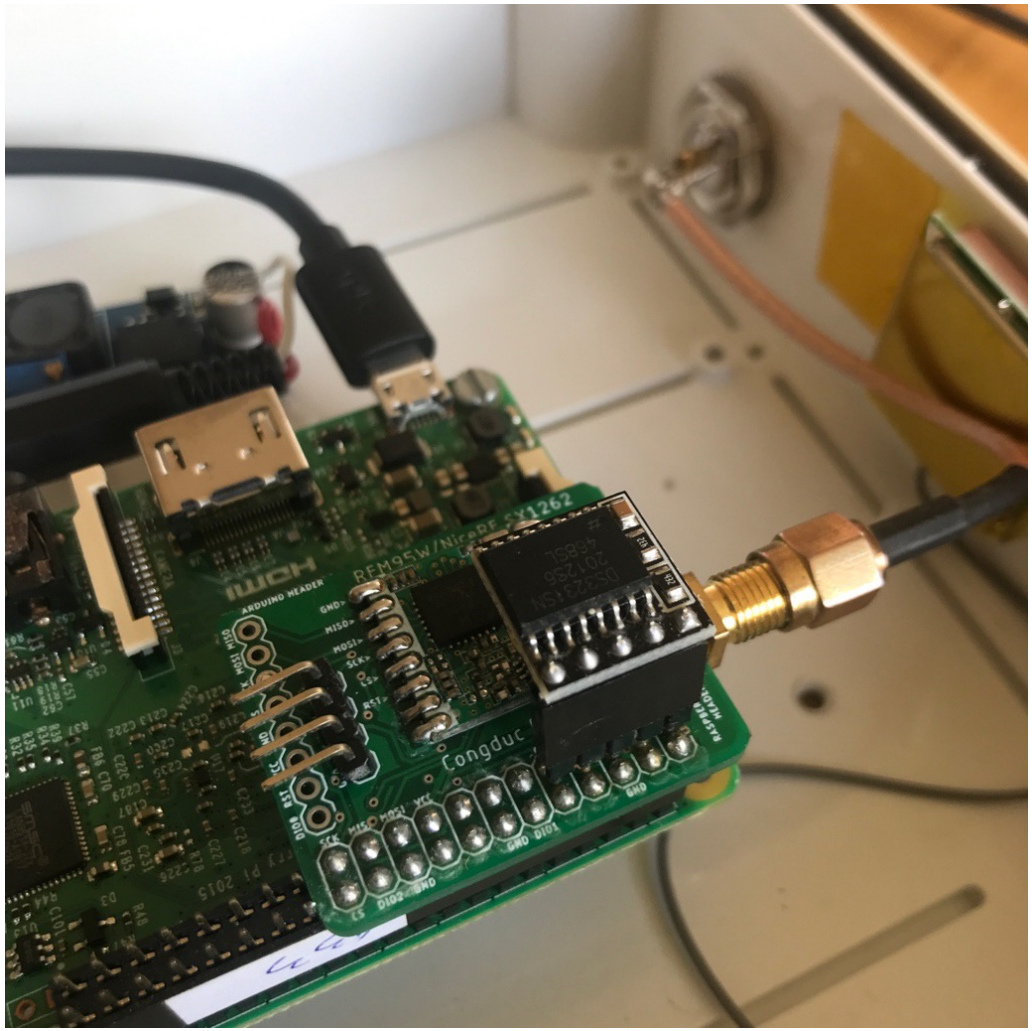
If you only have the simple version, take a short SMA cable where one end has a connector that fits your radio module. Usually it should be SMA or RP-SMA male. Cut the other end. Then solder to the N-Connector


SMA Male


RP-SMA Male



Installing & connecting the LoRa hat



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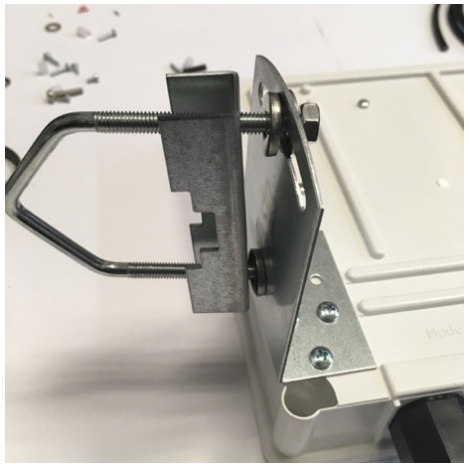
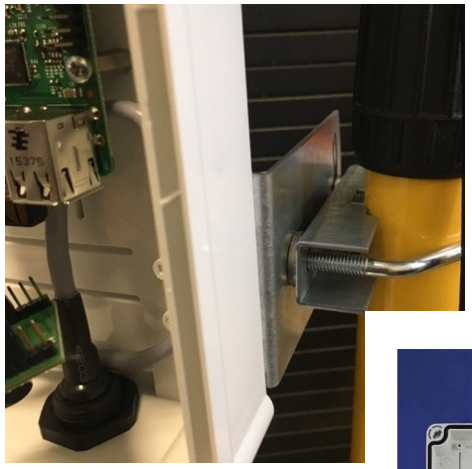
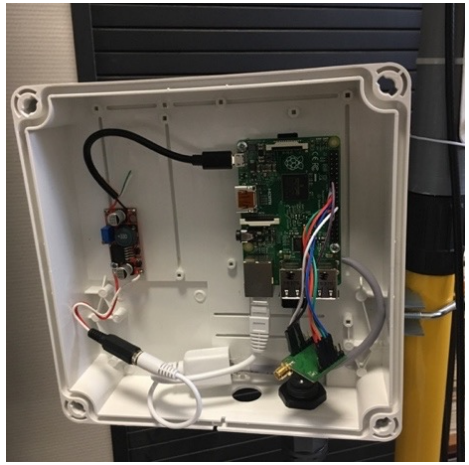
FINAL RESULT

Install fixing parts of the case

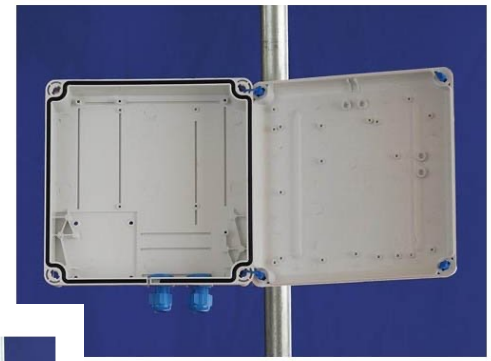


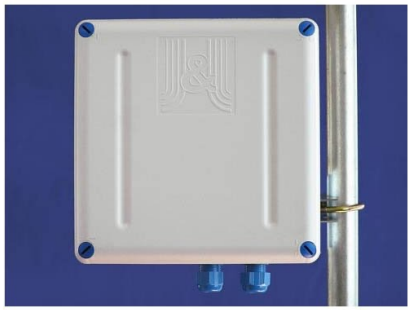




These parts of course depends on the case that you have.

Here we use the GentleBOX JE-200 case from MHzShop.





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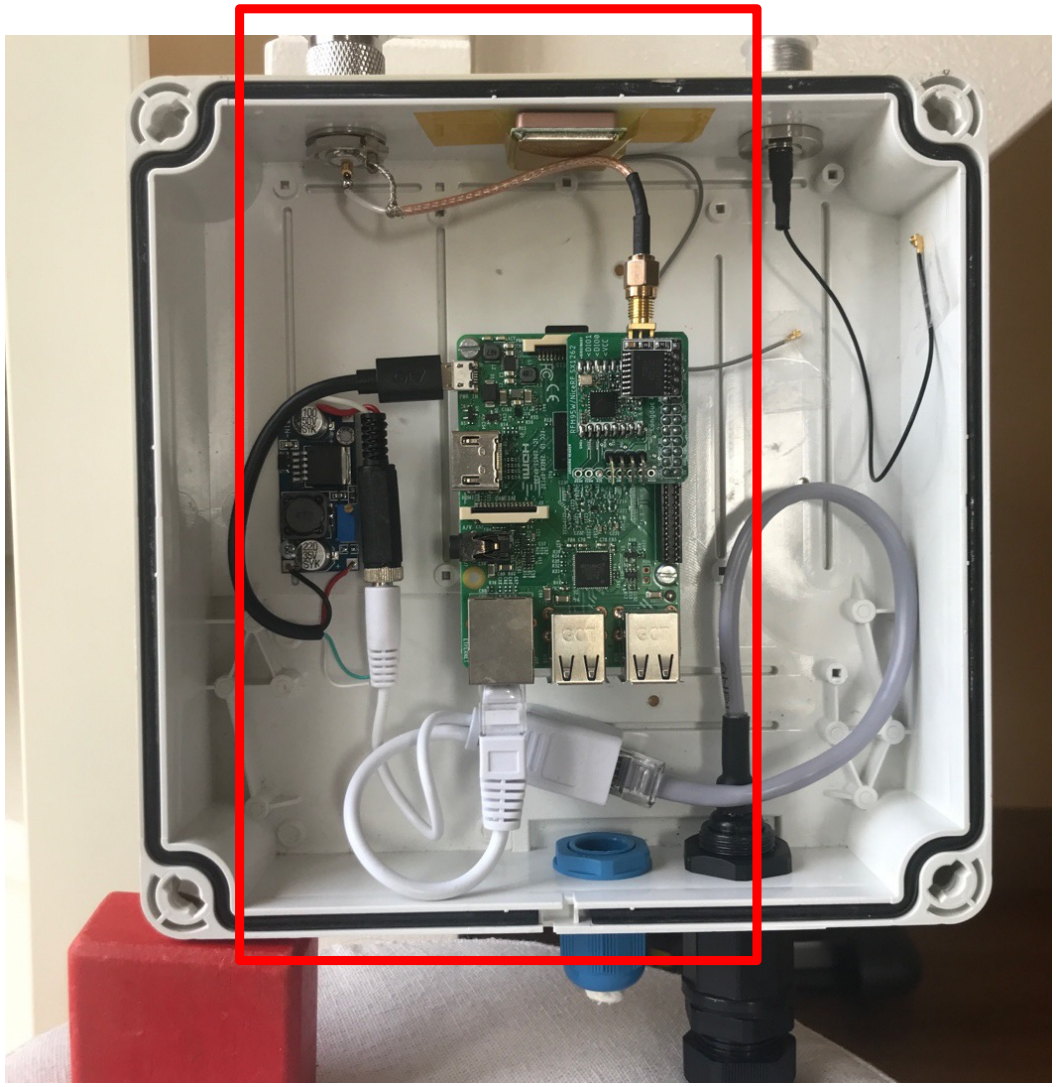
Final result



Connect to Internet

With PoE adaptor or PoE switch

Without PoE switch, use an AC-DC 9V-24V adaptor