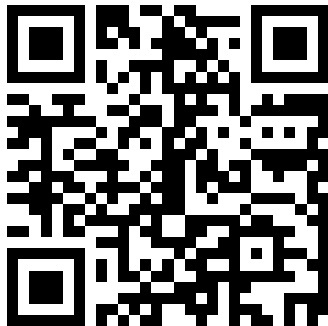


Sensor Network for Smart Agriculture

Jiří Maňák

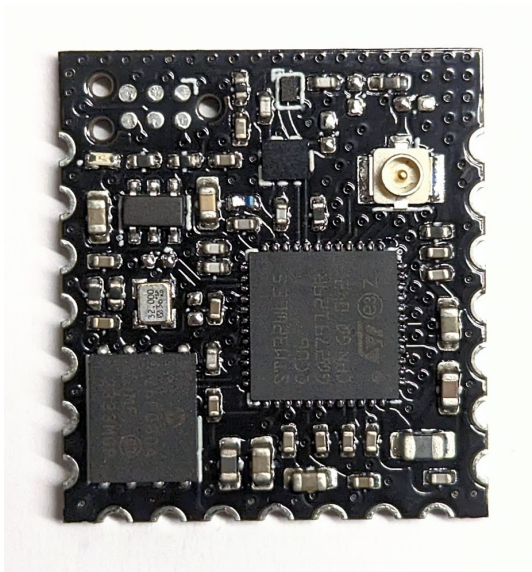
May 26, 2024

Live Demo



(or visit the link)

Motivation



Goals

Generic LoRa Module

- ▶ Design the PCBA
- ▶ Implement OTA update
- ▶ Validate wireless performance

Soil Moisture Sensor

- ▶ Find suitable form-factor
- ▶ Design measurement circuit
- ▶ Design power management

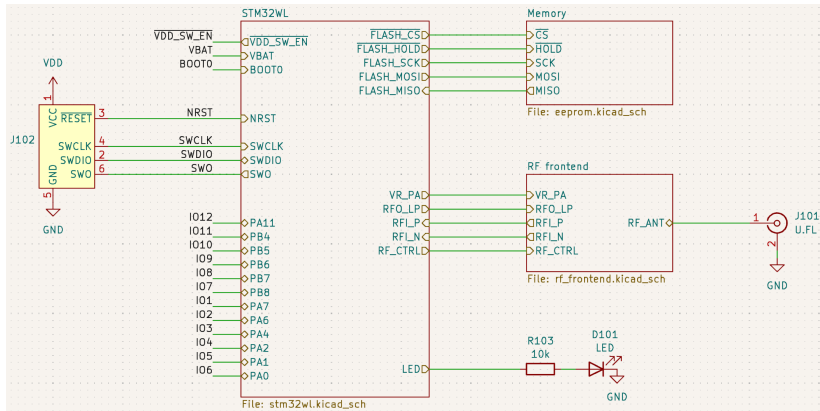


Implement and Test the MVP

LoRa Module

- ▶ 2.8–3.3 V nominal voltage range,
- ▶ low power design - support for switchable power rails,
- ▶ target the EU868,
- ▶ wide temperature range
- ▶ minimize the amount of specialized hardware,
- ▶ support for OTA updates,
- ▶ integrated RF,
- ▶ host communication interface,
- ▶ minimal footprint,
- ▶ low cost.

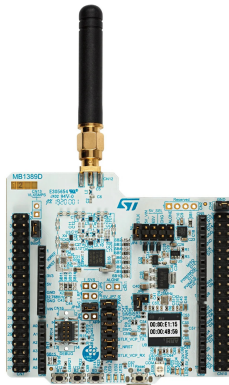
LoRa Module



LoRa Module

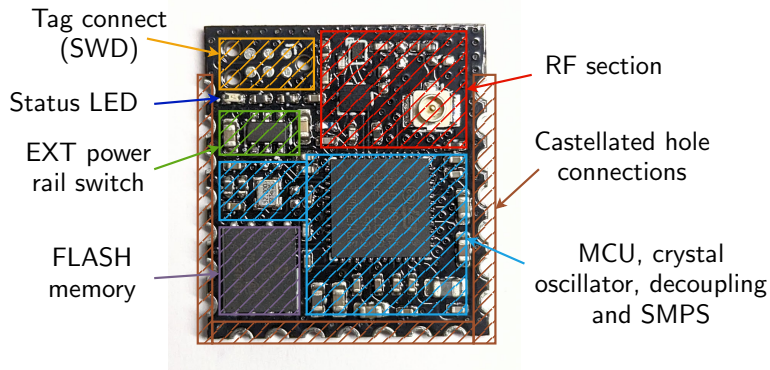


STDES-WL5U4ILH



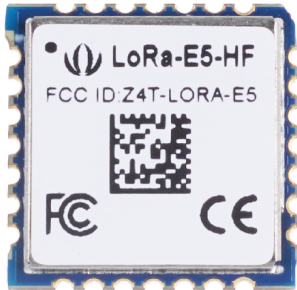
Nucleo-WL55JC

LoRa Module



- ▶ STM32WLE5CC
- ▶ 868 MHz, 13 dBm
- ▶ 20.32 × 22.48 mm
- ▶ 1 MB FLASH
- ▶ 2.3–3.5 V
- ▶ 16 IO pins

Existing solution?

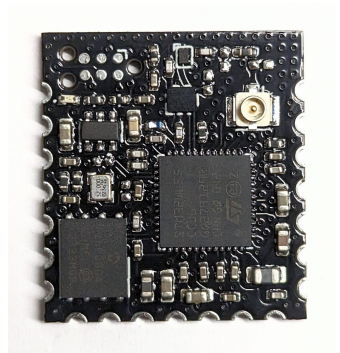


Seed Studio Wio-E5

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My LoRa Module