

WiFi HaLow 802.11ah

As new IoT standard

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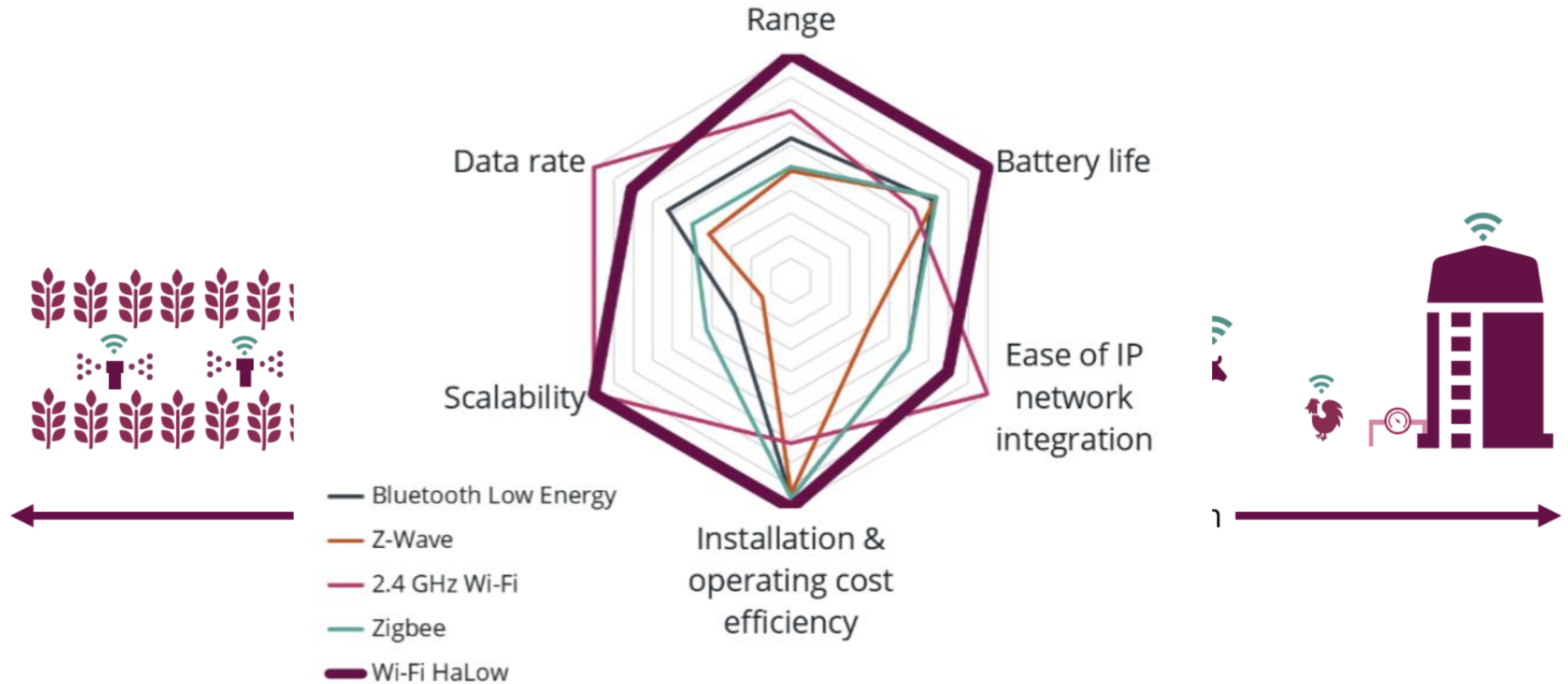
HOW STANDARDS PROLIFERATE:
(SEE: A/C CHARGERS, CHARACTER ENCODINGS, INSTANT MESSAGING, ETC.)



Overview

- WiFi Alliance backed
 - IEEE 802.11ah
- < 1 GHz
 - Lower path losses
 - Longer distance
- Low power
 - Battery powered devices
 - TIM – Traffic Indication Map
- Device capacity
 - Up to 8191 per SSID
 - [YT demo](#) with 1000+ devices
- IP networking capability
 - TCP/IP & UDP
 - Clients <> AP
- Security
 - WPA3
- Datarate
 - ‘High’ throughput possible
 - Optimised for low to medium datarate

Use case example

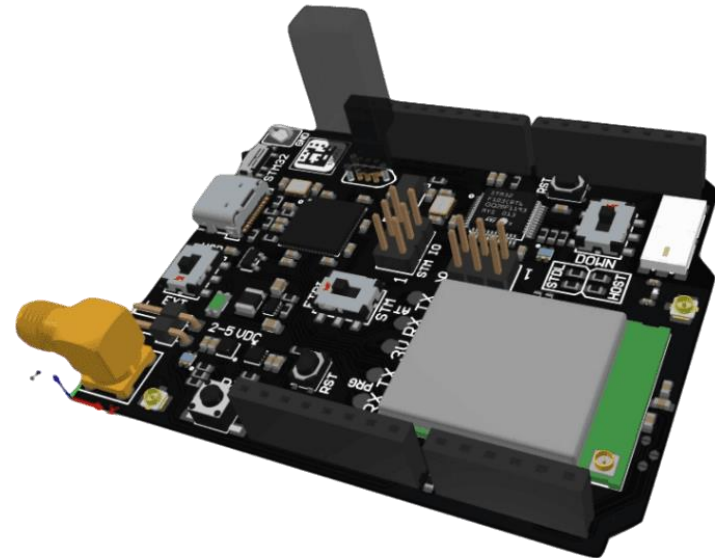
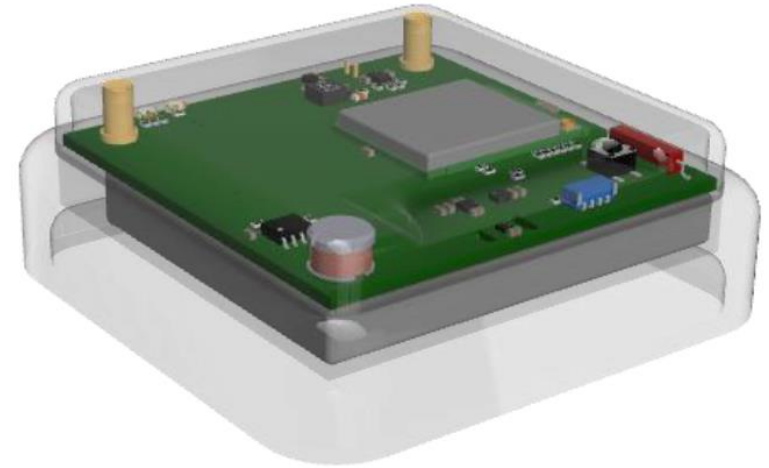


Study

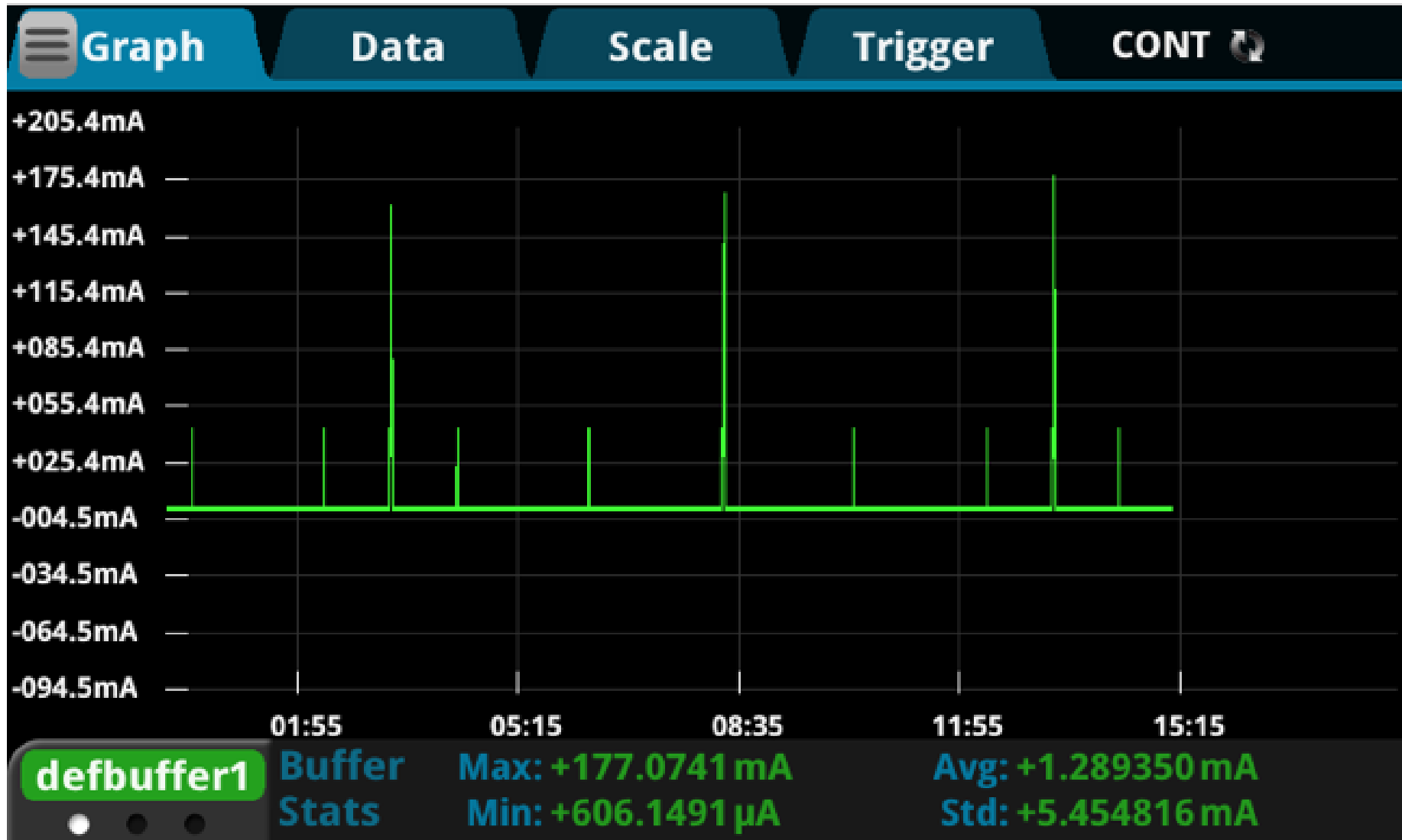
- Available modules
 - NewRaCom NRC7292
 - Available (w/ documentation)
 - First generation
 - Several SoM vendors
 - MorseMicro MM6108
 - Available
 - Several SoM vendors arising
 - AsiaRF, Quectel, Mμ
 - Huge-ic TXW8301
 - More testing necessary
 - Methods2Business
 - IP testbed available

Trajectory

- NRC7292
 - Project examples available
 - SDK
 - API calls
 - Toolchain setup
- Test setups built
 - Alpha Networks AP
 - STM32 AT command interface
 - Sensornode (Bachelor's thesis)
 - Devboard (Client & AP)



Results



Results

- Data to Cloud
 - TCP/IP via AP
 - MQTT connection
 - Grafana dashboard
 - Live demo

Intervendor communication

- Work in progress
 - M μ and M2B
 - Basic data communication possible on 1MHz & 2MHz bandwidth
 - Full communication between NRC7292 modules
 - Demo workshop as PoC
 - AP and clients working as intended

Roadmap

- Tech comparison
 - Zigbee
 - BT/BLE
 - WiFi
 - Z-Wave
 - LoRa
- Tests with M μ modules
 - Data/SDK provided
 - No STM32 samples available
- Create devkit
 - 2 or more Sensornodes
 - Tried and tested AP

Expectations for the future

- Intervendor communication
- Power consumption
- General availability
- Pricing

Demo