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STDES-BFTAG01

Battery-free wireless sensor node

Roberto La Rosa

Ultra Low Power Applications Team Manager

STMicroelectronics

Battery-free wireless sensor node STDES-BFTAG01

Highlights

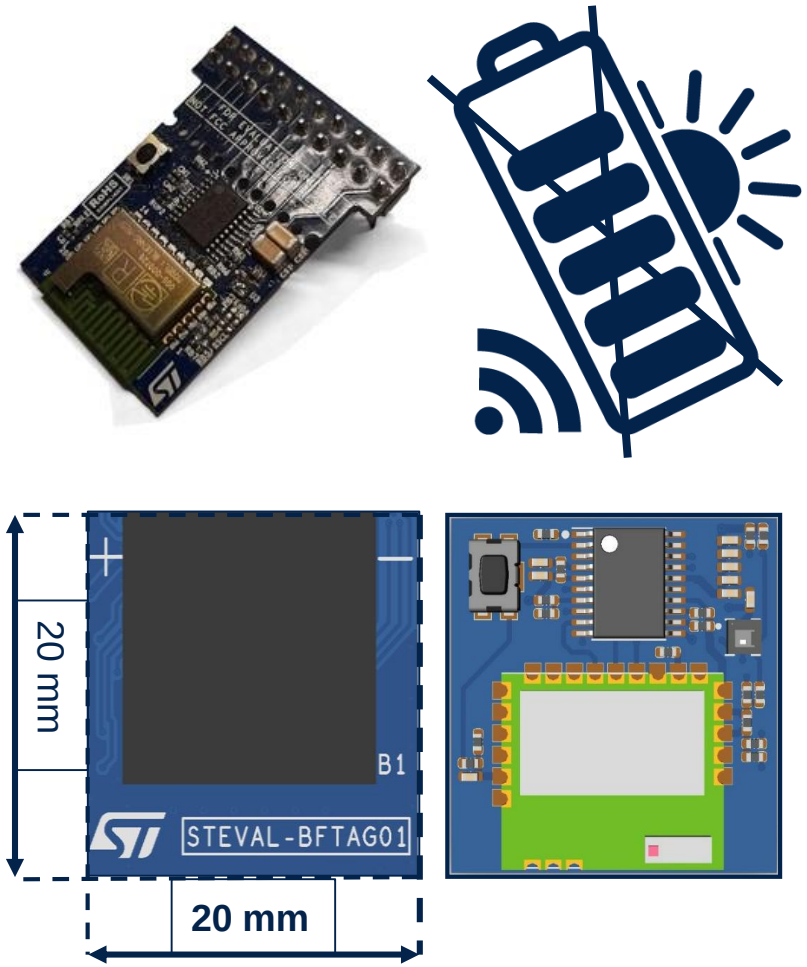
- *Energy Autonomous and Battery-Free device*
- *Sensor-Free light monitor*
- *Sensor-Free vibrations monitor*

Features

- *Small form factor*
- *Bluetooth Low Energy (BLE) connectivity*
- *Low cost solution*
- *Digital Read Out*

Applications

- *Ambient Light Monitoring*
- *Predictive Maintenance*
- *Asset Tracking*



- *It sends a number of beacons, in a given time interval, in proportion to the intensity of ambient light.*
- *Self-powered by energy harvesting, e.g. a small solar panel.*

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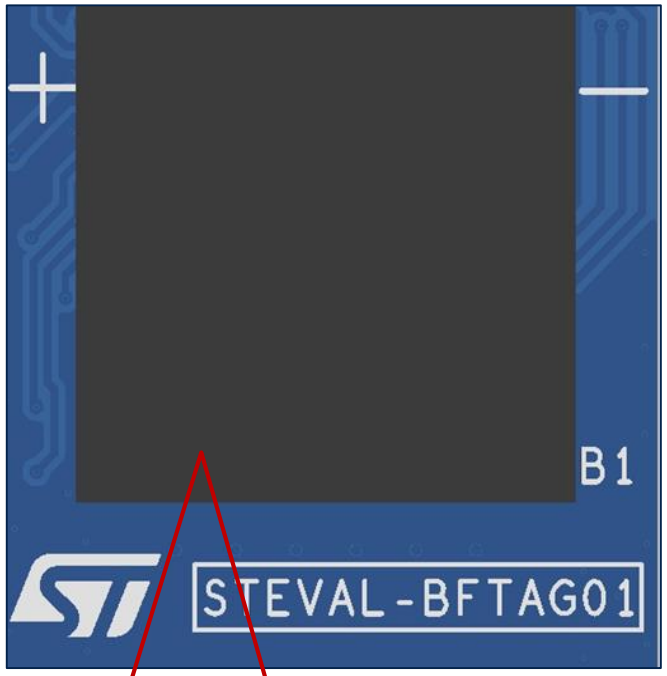
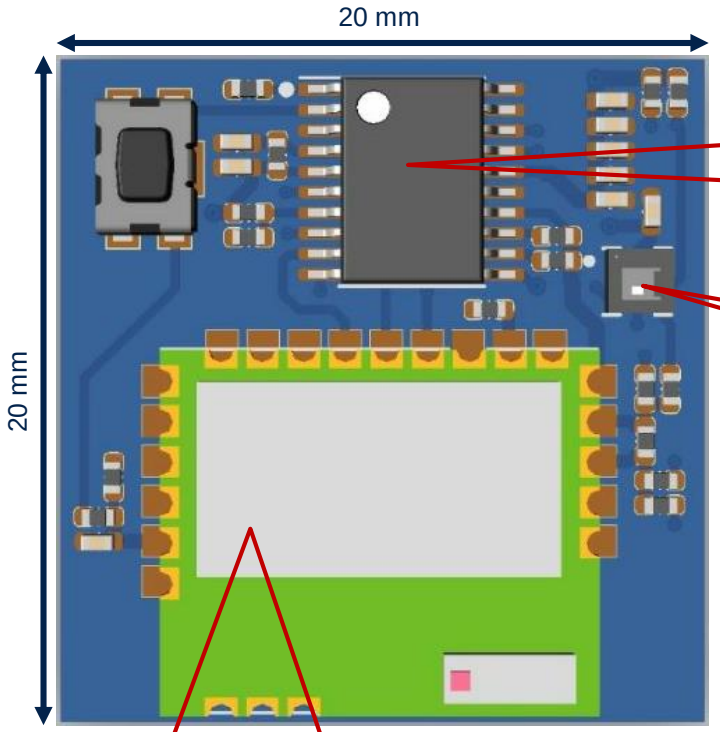


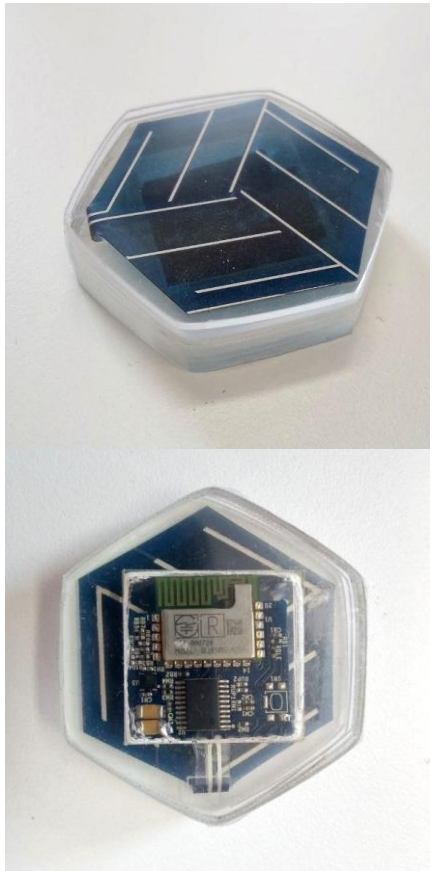
Amorphous Silicon Solar Cell
AM 1606-C by Panasonic



Bluenrg-M2
Very Low Power Application processor module for Bluetooth Low Energy V5.0

STM32L011F4
Ultra-Low-Power ARM Cortex-M0+ MCU with 16 Kbytes Flash, 32 MHz CPU

HTS221
Temperature Humidity Sensor



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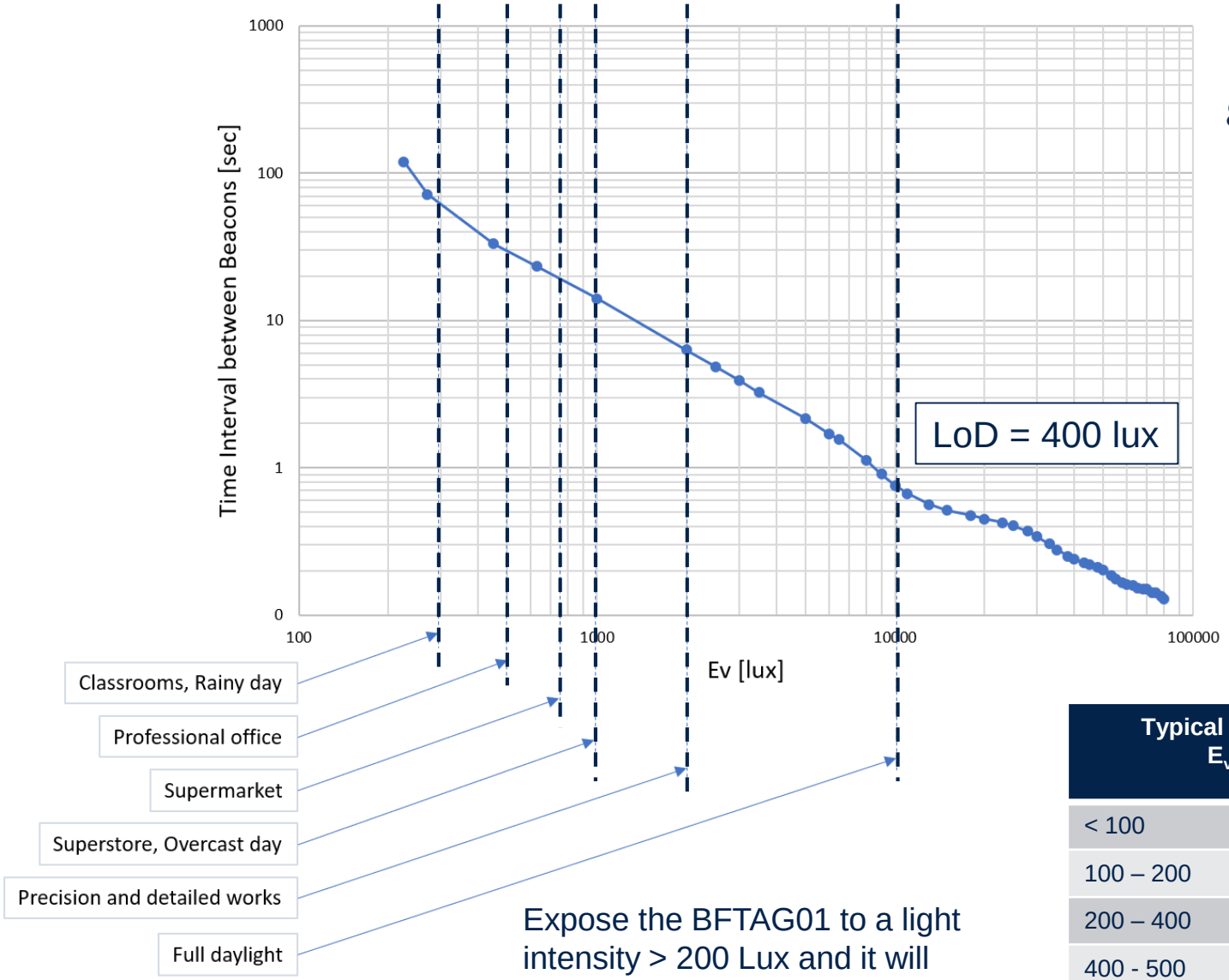

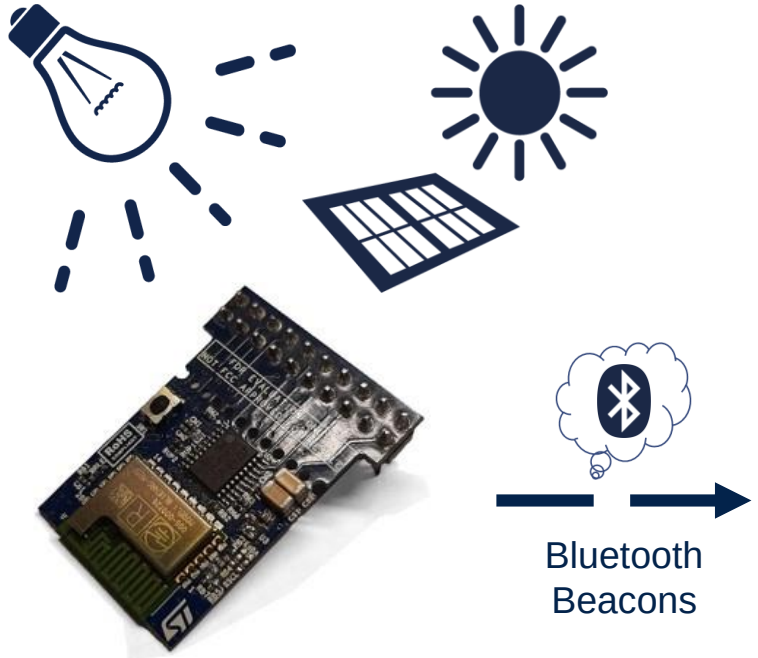

Expose the BFTAG01 to a light intensity > 200 Lux and it will automatically power up and begins tp transmit beacons.

Typical Light Level E_v [lux]	Environment	Time interval of Sensor(1) [sec]
< 100	Moonlight	Does not work
100 – 200	Street lighting	Does not work
200 – 400	Indoor Museum	70 – 35
400 - 500	Office light	30
1000	Shopping mall, rainy day	8

(1) Photovoltaic cell AM-1606C by Panasonic

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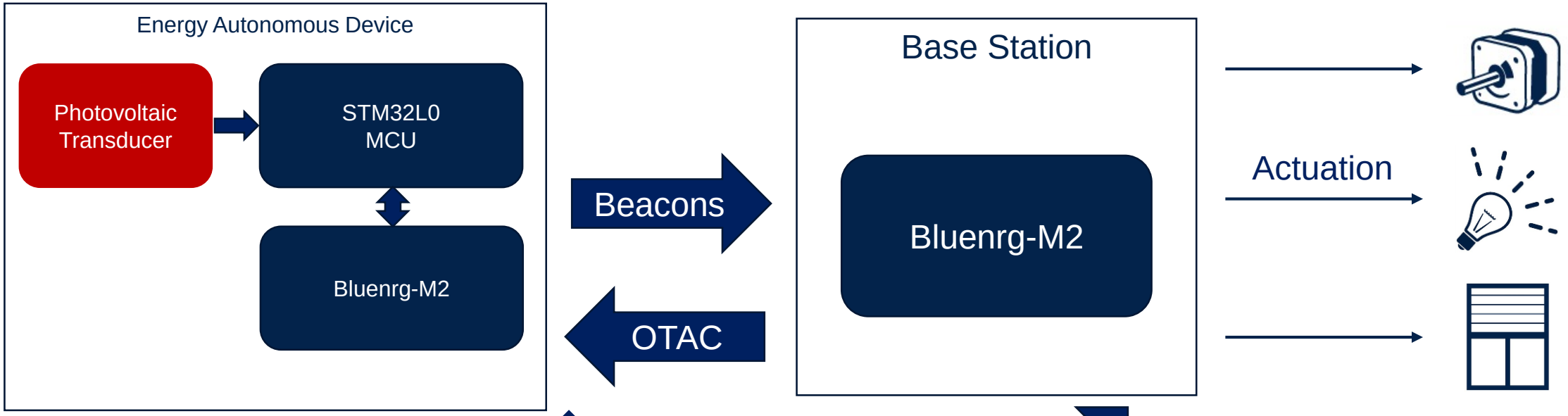
Battery-free wireless sensor node STDES-BFTAG01



- Energy Autonomous Device
- Battery Free
- Light Sensor Free
- Flood Network Control
- Over the Air Configuration
- Small Dimensions 2 cm x 2 cm
- Easy installation
- Auto Configuration

- Time Domain Read Out
- Data Elaboration
- Communication Quality Awareness
- Over the Air Configuration
- Aging Calibration

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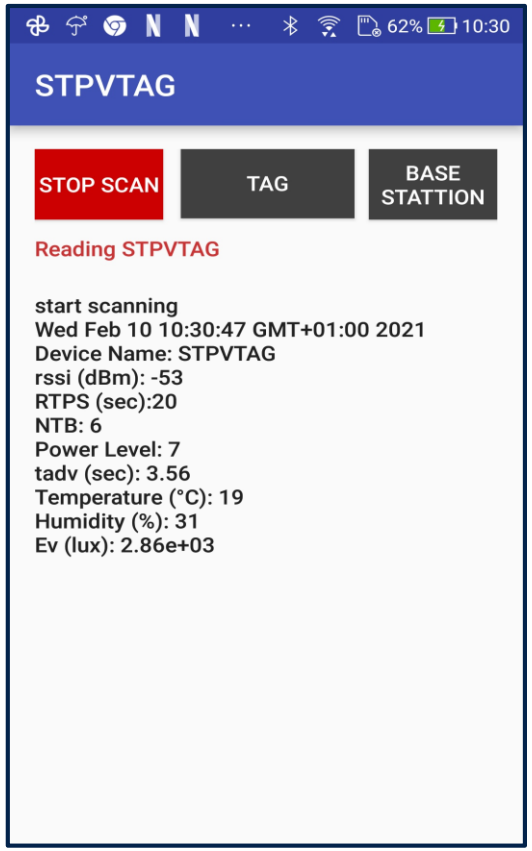
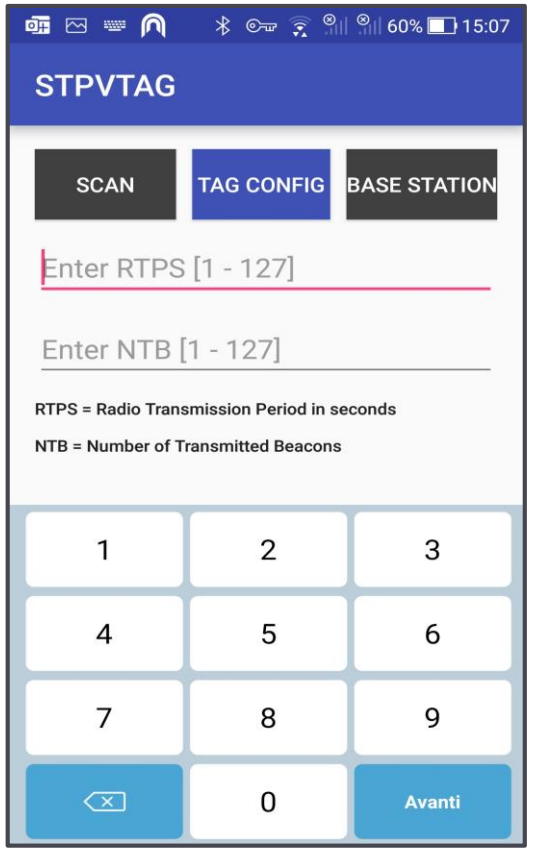
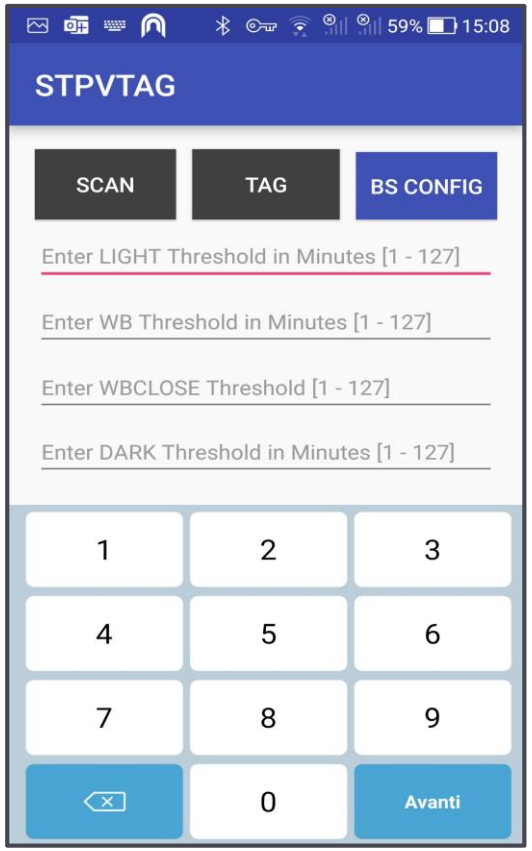
Battery-free wireless sensor node STDES-BFTAG01







- Flood Network Control
- Over the Air Configuration
- Easy installation
- Auto Configuration
- Configurable via App
- Temperature Measurement
- Humidity Measurement
- Light Measurement

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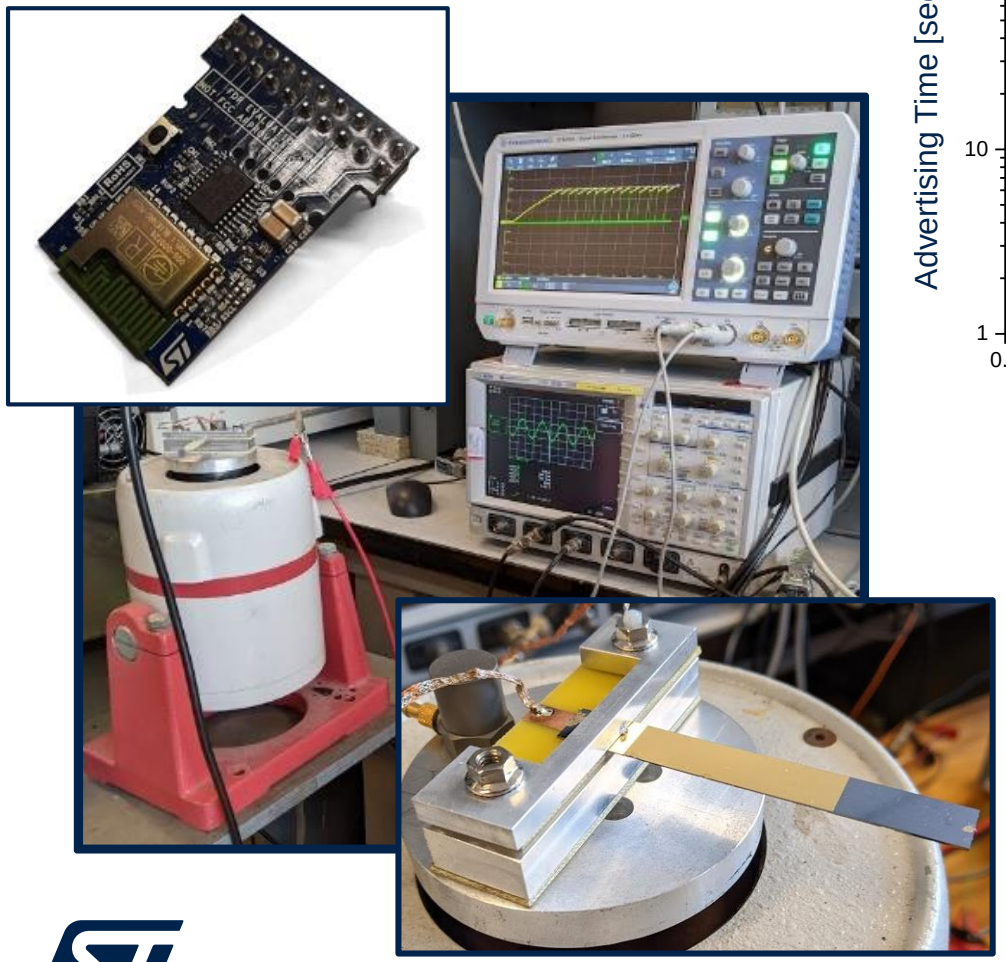
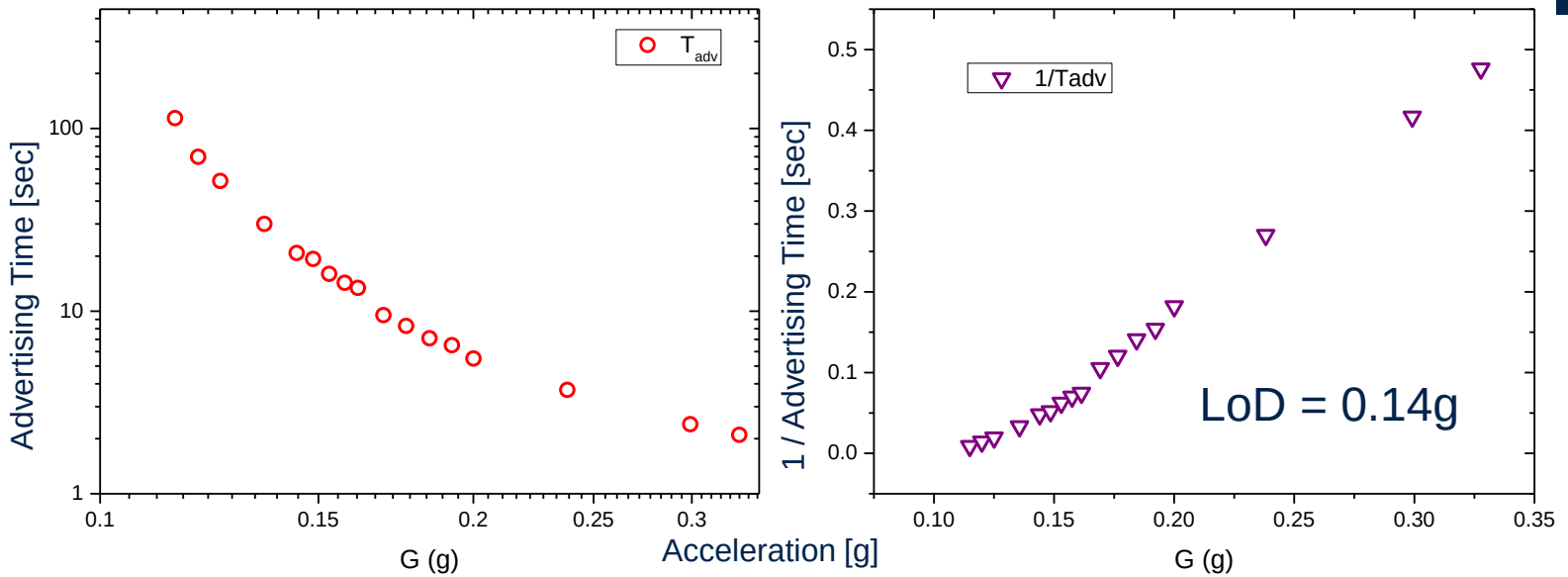
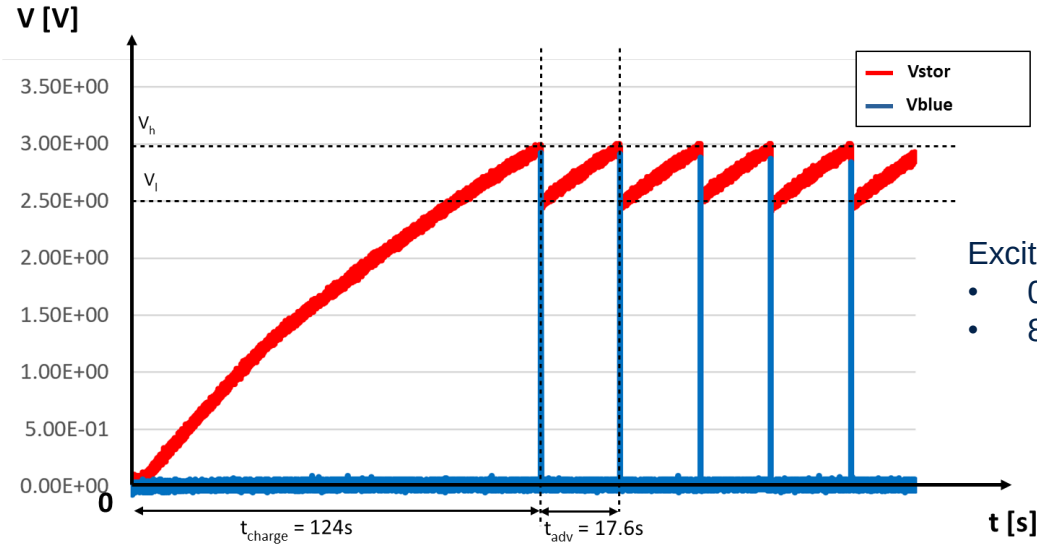
Battery-free wireless sensor node STDES-BFTAG01

Energy Autonomous Battery-free and Sensor-free Vibration Sensor







Excitation amplitude:

- 0.14 g
- 81.6 Hz

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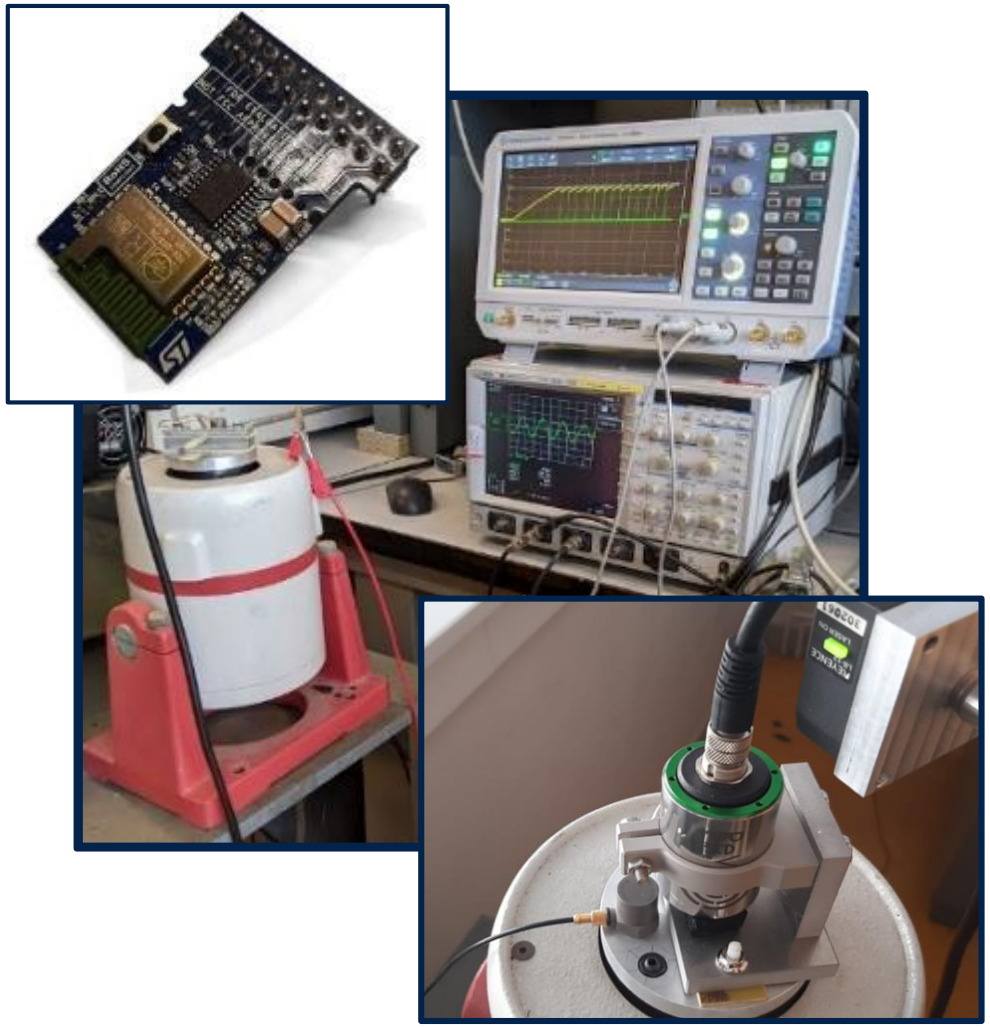
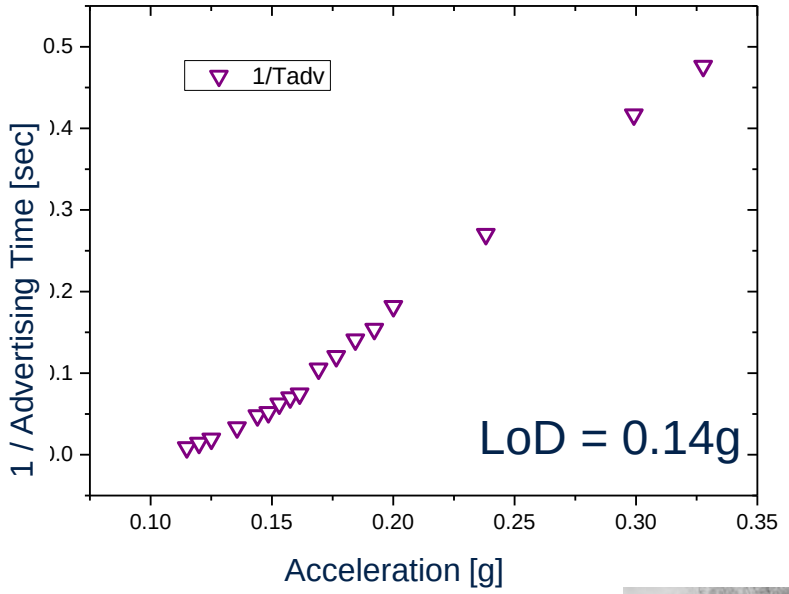
Energy Autonomous Battery-free and Sensor-free Light and Vibration Sensor

Battery-free wireless sensor node STDES-BFTAG01





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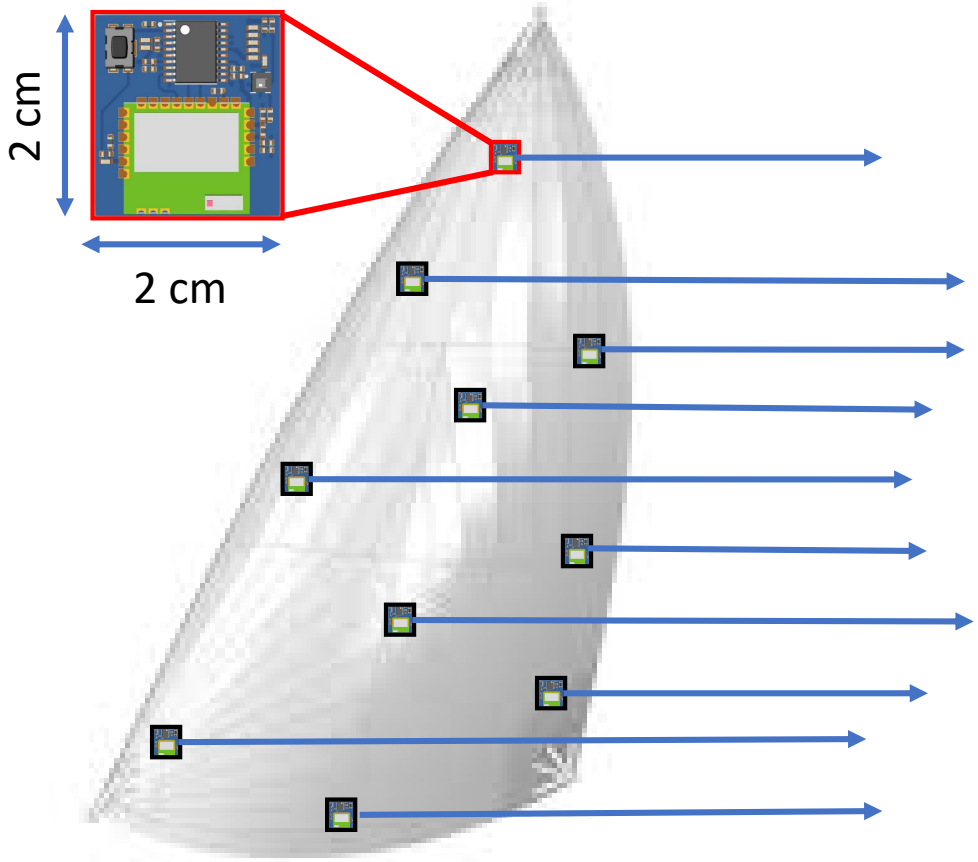
Battery-free wireless sensor node STDES-BFTAG01



Beacons

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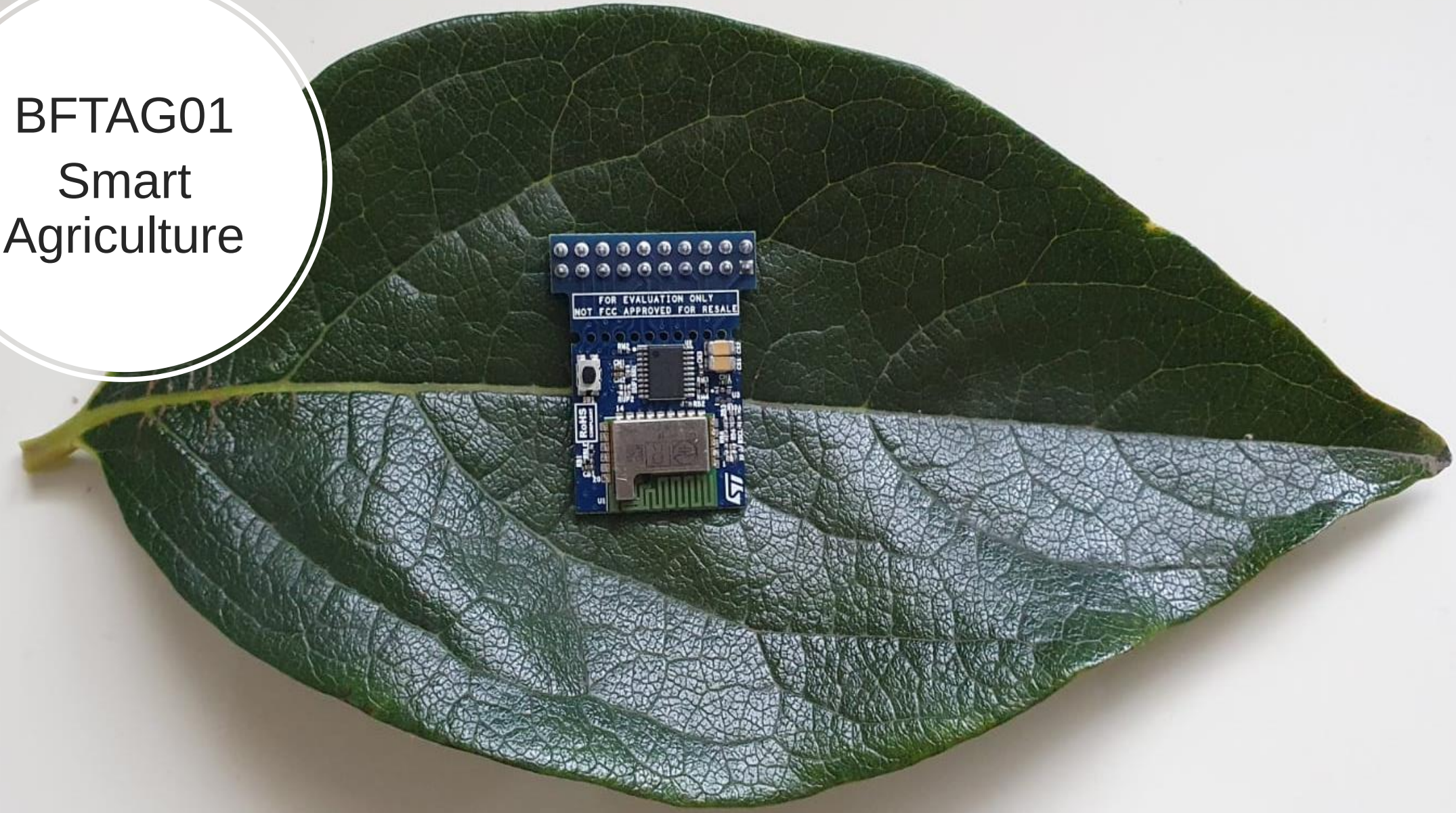
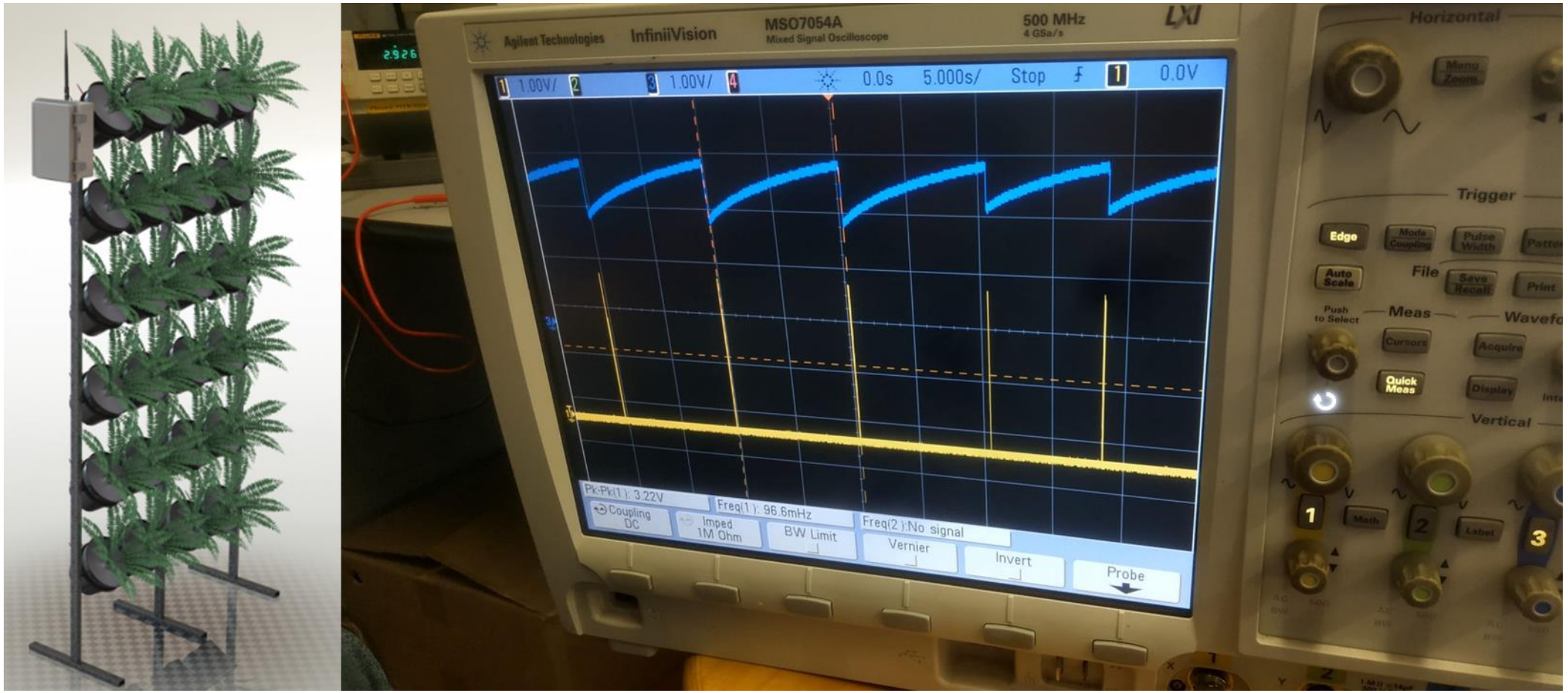
BFTAG01: Vibrational Harvesting

BFTAG01

Smart Agriculture

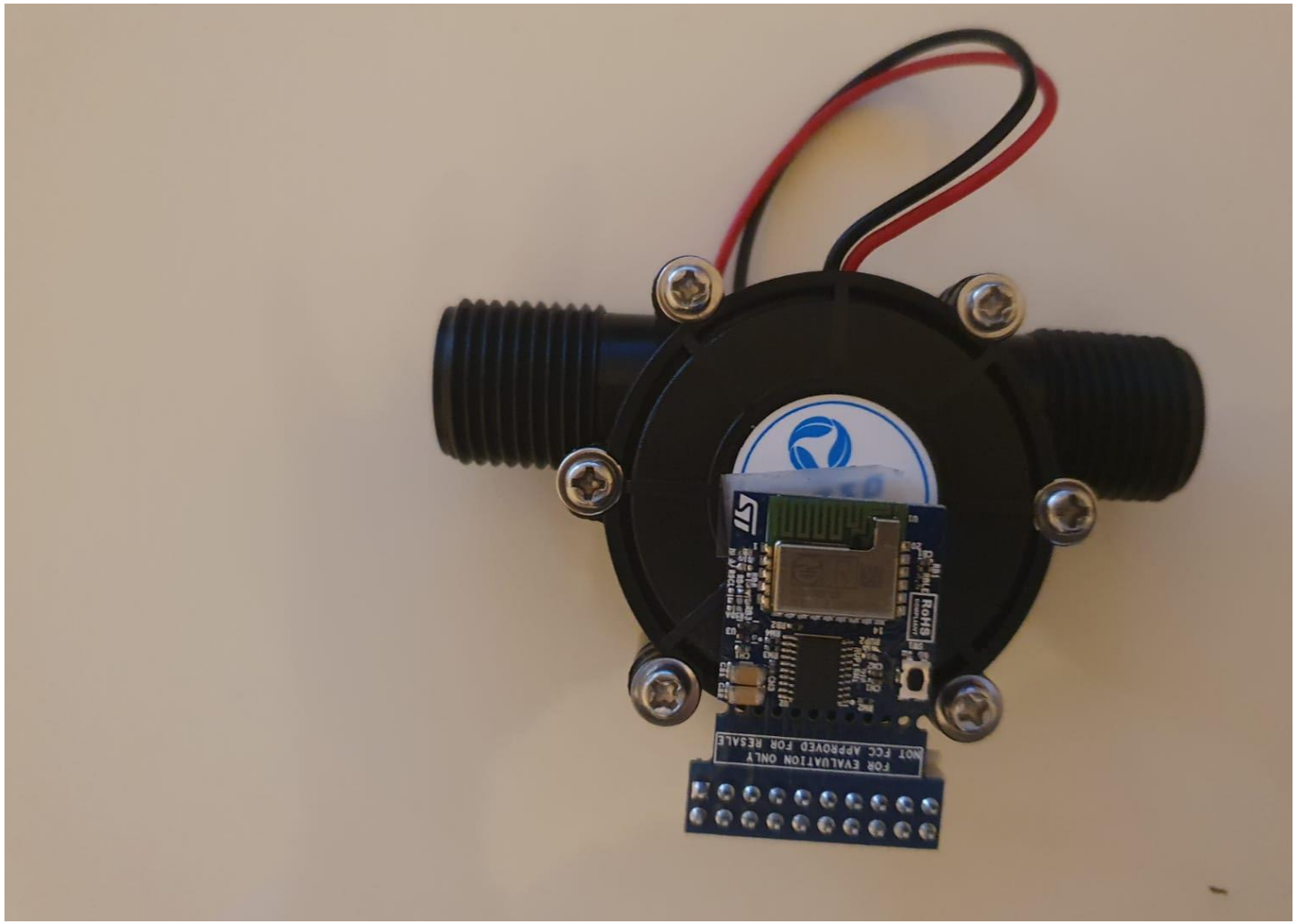


Battery-free, plant metabolism sensor



Battery-free wireless sensor node STDES-BFTAG01

Smart Irrigation
Energy Autonomous Battery-free
Flow Meter



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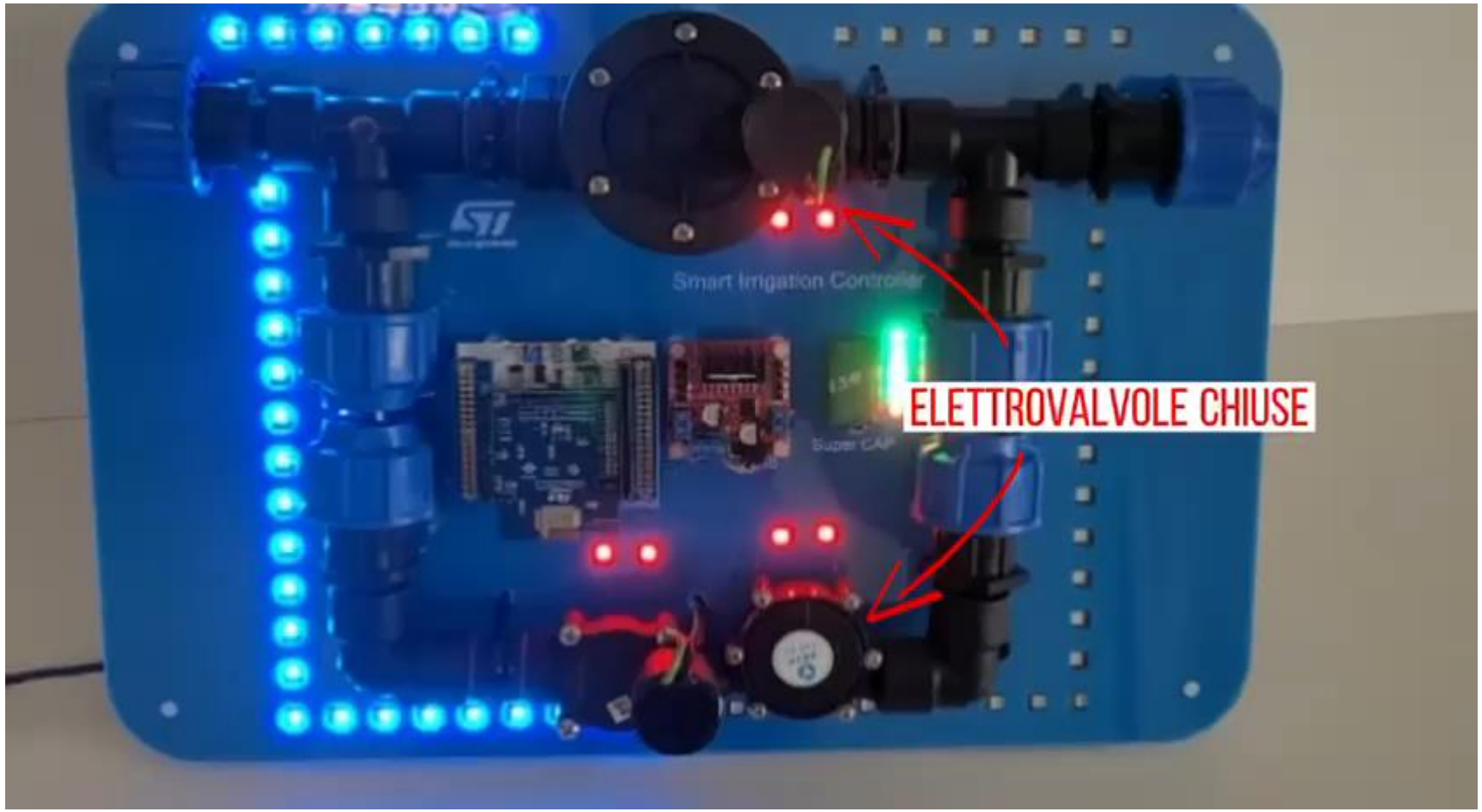
Battery-free wireless sensor node STDES-BFTAG01

Smart Irrigation
Energy Autonomous Battery-free
Wireless Water Controller



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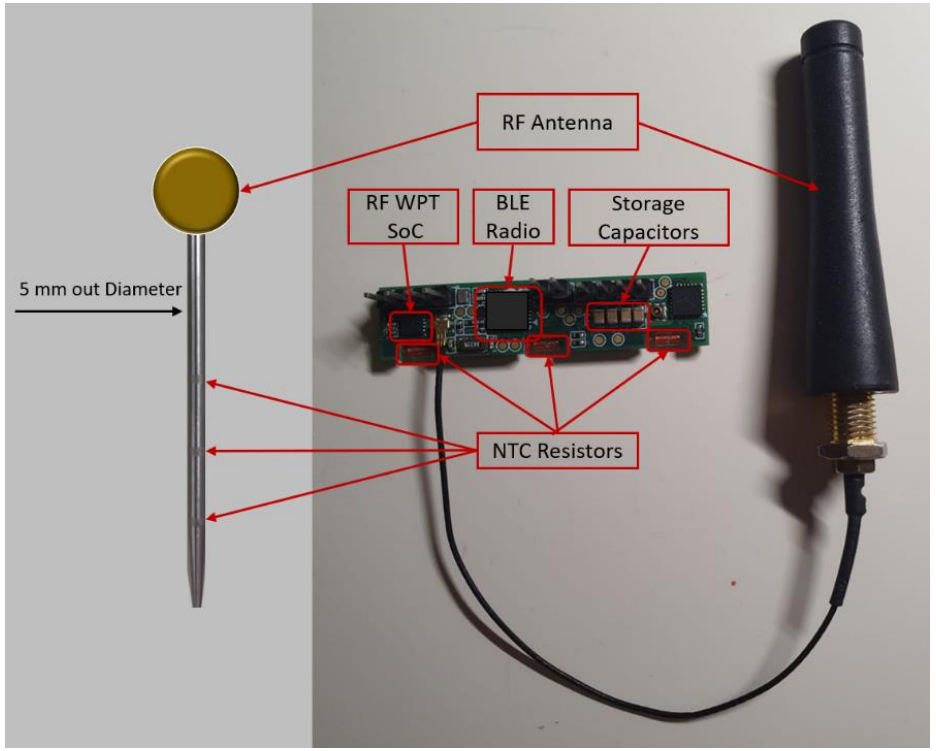
Battery-free wireless sensor node STDES-BFTAG01

Energy Autonomous Battery-free
Meat Probe



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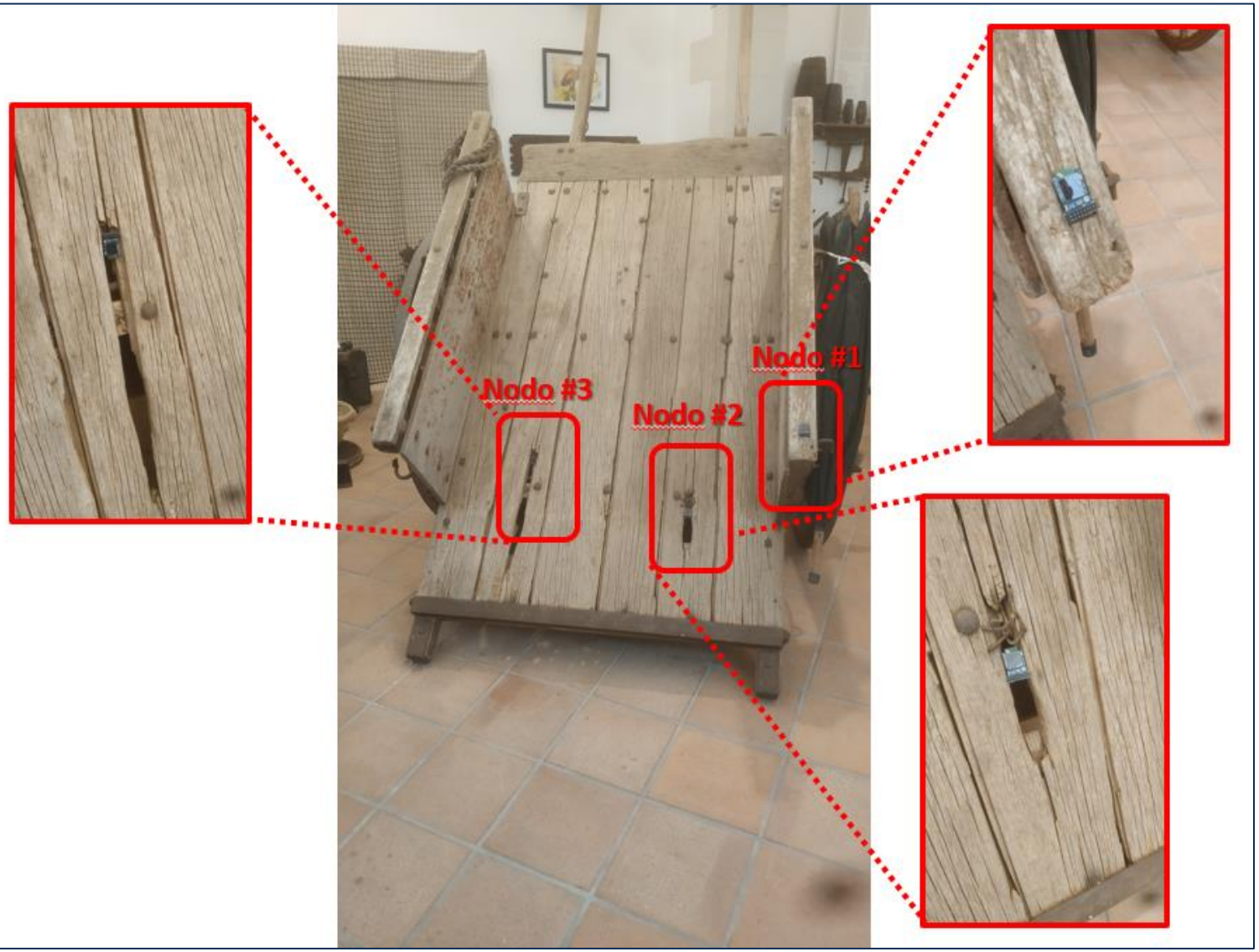

Museo della Civilta’ Contadina “Nunzio Bruno”
Floridia (SR)

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Thank you

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