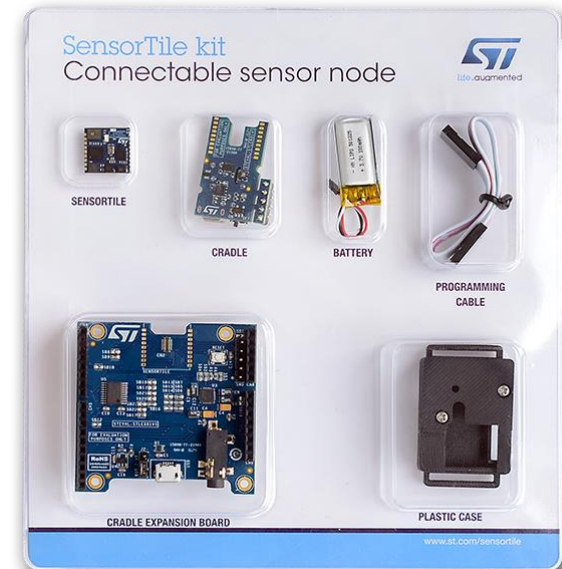


Quick Start Guide

SensorTile Kit - STEVAL-STLKT01V1



www.st.com/sensortile



- SensorTile platform overview
 - SensorTile – STEVAL-STLCS01V1
 - SensorTile Cradle – STEVAL-STLCR01V1
 - SensorTile Expansion Cradle – STEVAL-STLCX01V1
- SensorTile Programming/Debugging
- First Setup: Running the pre-loaded demo
 - With the Expansion Cradle
 - With the Cradle
- Start your own Design
 - With the Expansion Cradle
 - With the Cradle

SensorTile Platform

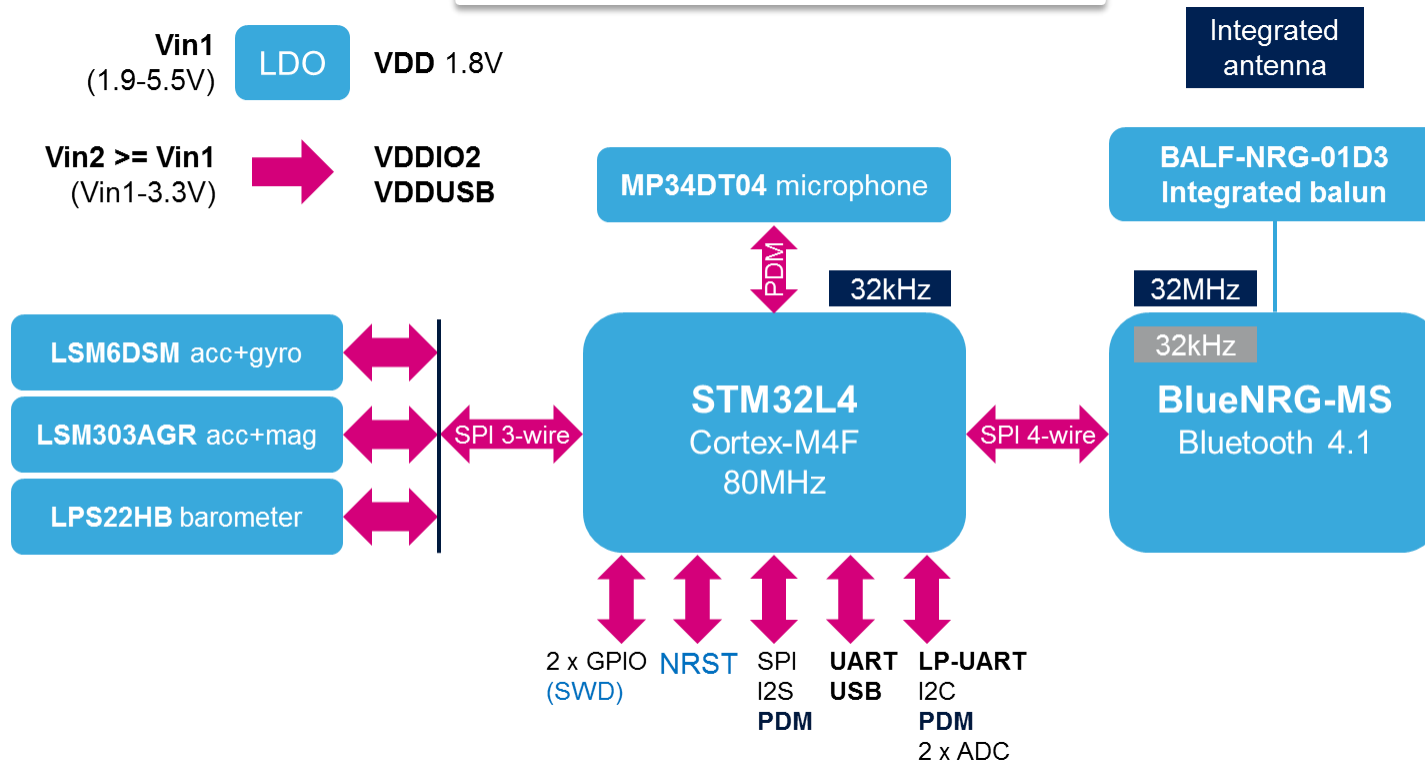
Hardware overview

3

STEVAL-STLKT01V1 Hardware Description

- STEVAL-STLKT01V1 is the development kit for the SensorTile board (STEVAL-STLCS01V1), a highly Integrated Development Platform with a broad range of functionalities aiming to improve system design cycle and accelerate delivery of results
- Two host boards are also provided as part of the kit, both featuring SWD programming interface

SensorTile Block Diagram



SensorTile Core System

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SensorTile Core System: STEVAL-STLCS01V1

MP34DT04

Microphone

64 dB SNR, 120 dB SPL

STM32L476

Cortex-M4

Up to 100DMIPS 80MHz

100uA/MHz@24MHz in run mode

LSM6DSM

3DAcc+3DGyro

0.65 mA @ 1.6kHz – 9 µA @ 12.5Hz

LSM303AGR

3DAcc+3DMag

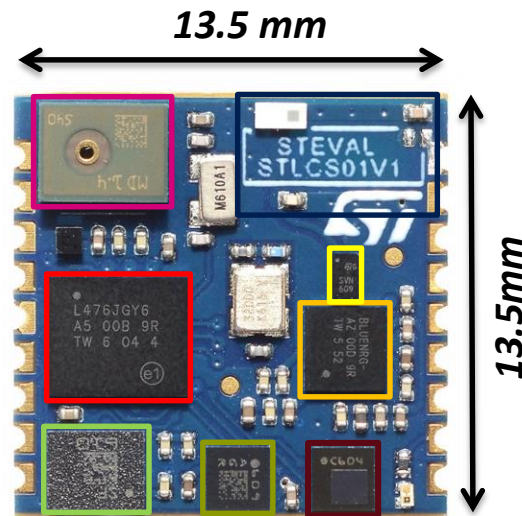
200 µA @ 20 Hz (HR mode)

Accel/Mag independent
power down mode

LPS22HB

Barometer

1-75 Hz, 3-12 µA @ 1Hz



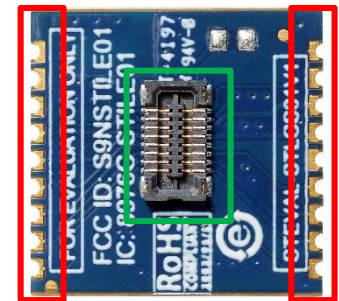
Antenna
Clearance Area

Balun Filter

BlueNRG-MS

Bluetooth low-energy
Concurrent master/slave BT4.1

Solderable



Plugin

SensorTile Cradle: STLCR01V1

TOP VIEW

SensorTile Footprint

Solderable

HTS221

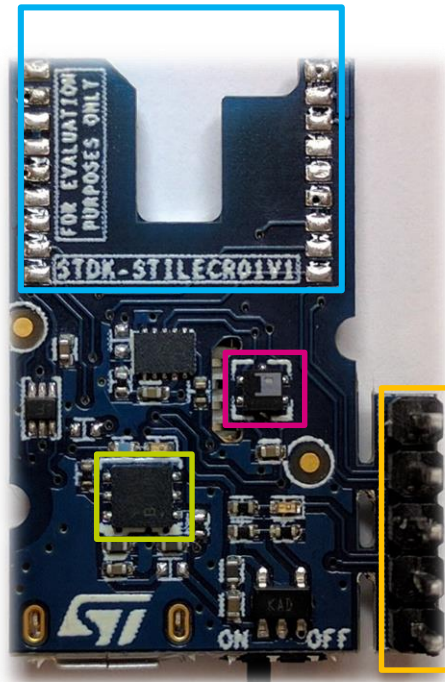
Humidity and
Temperature sensor

STBC08

Li-Ion Battery charger
with thermal regulation

SWD

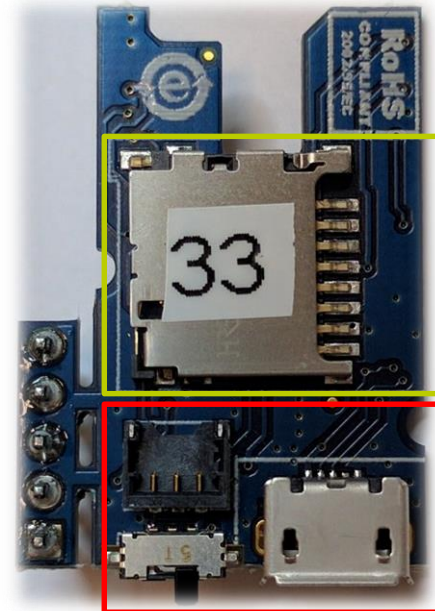
SWD programming
interface



BOTTOM VIEW

Micro-SD Card slot

Micro USB ON/OFF switch Battery Plug



SensorTile Expansion Cradle

6

SensorTile Expansion Cradle: STLCX01V1

SensorTile Footprint

ST2378ETTR

8-Bit Level Translator
3.3 V $\leftrightarrow$ 1.8 V

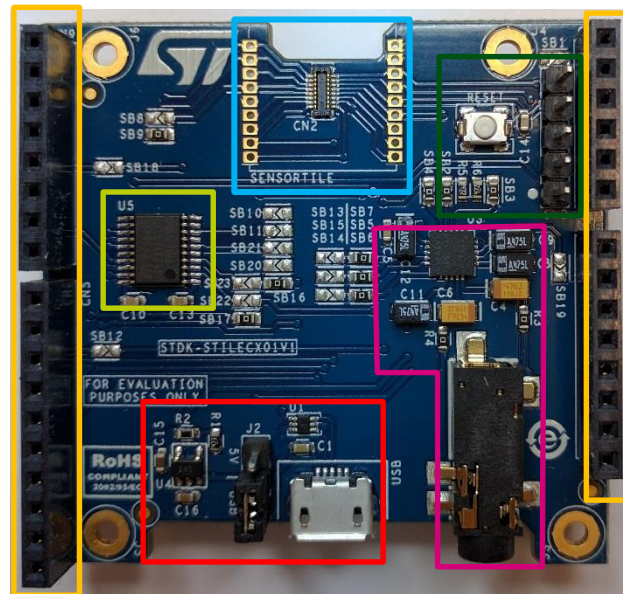
SWD & Reset

SWD programming interface
and reset button

Arduino Connector

Audio DAC
&
3.5 mm jack

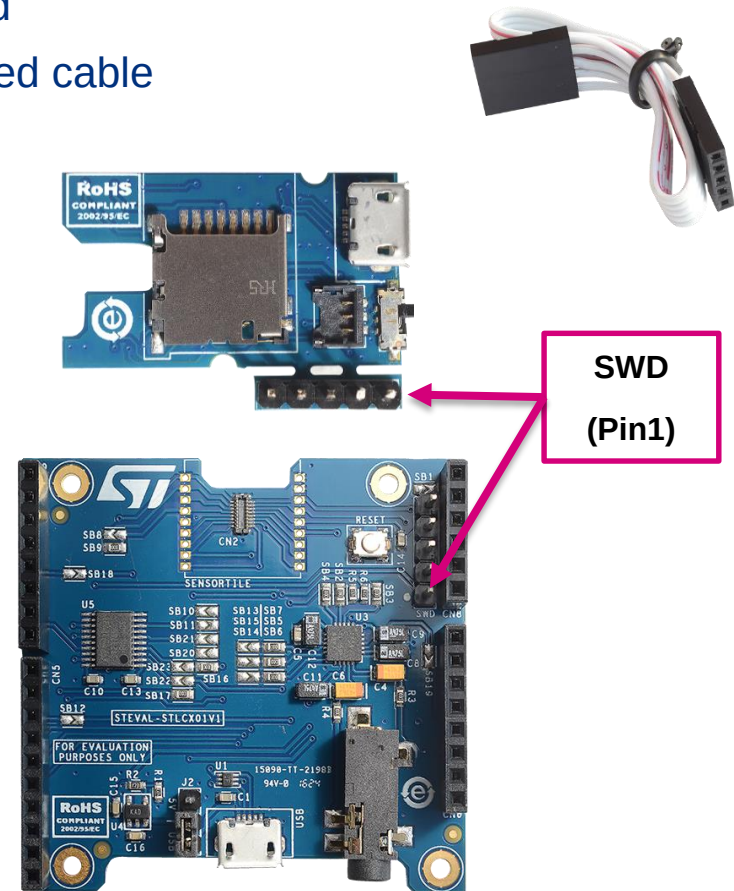
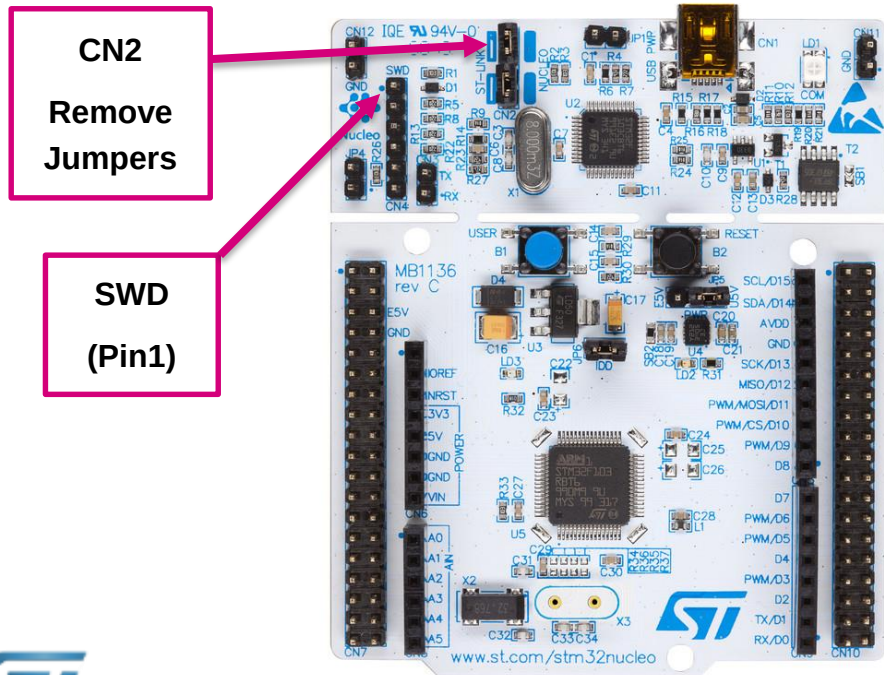
Micro USB
&
3.3 V Regulator



SensorTile Programming/Debugging [1/2]

7

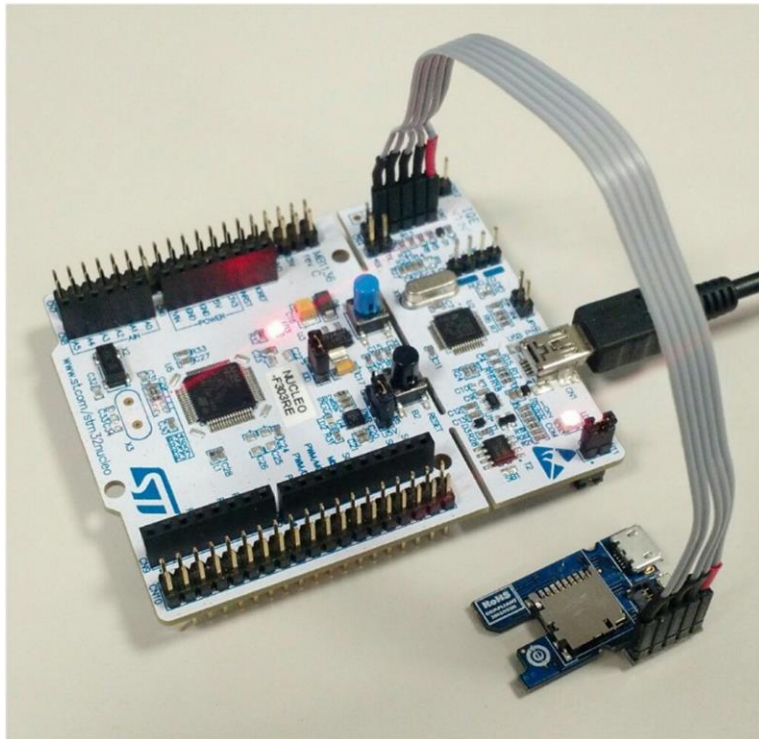
- Connect an external ST-Link to the cradles SWD connectors. A 5 pin flat cable is provided within the SensorTile Kit package
 - The easiest way is to get an STM32-Nucleo board which includes an ST-Link V2.1
 - Remove CN2 Jumpers from the Nucleo Board
 - Connect the SWD interfaces using the provided cable



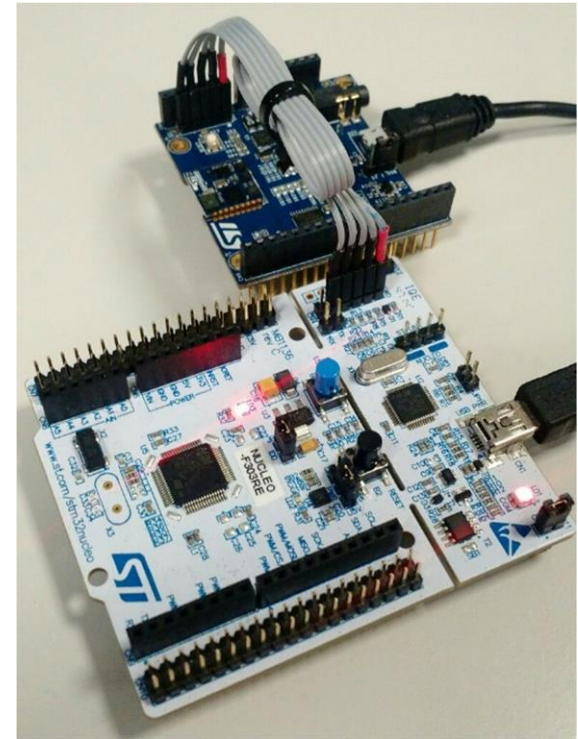
SensorTile Programming/Debugging [2/2]

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SensorTile Programming with Cradle



SensorTile Programming with Expansion Cradle



First Setup with the Expansion Cradle

Running the pre-loaded demo [1/2]

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HW

- SensorTile Core System (**STEVAL-STLCS01V1**)
- SensorTile Expansion Cradle (**STLCX01V1**)
- Android™ or iOS™ device
- USB type A to Micro-B USB cable for SensorTile power supply



Micro USB cable

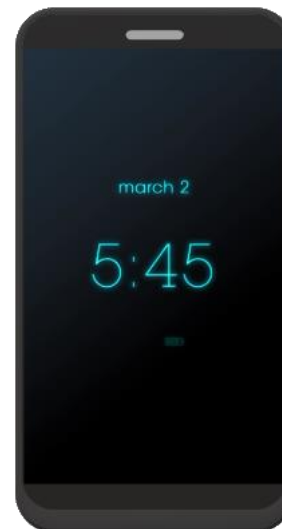
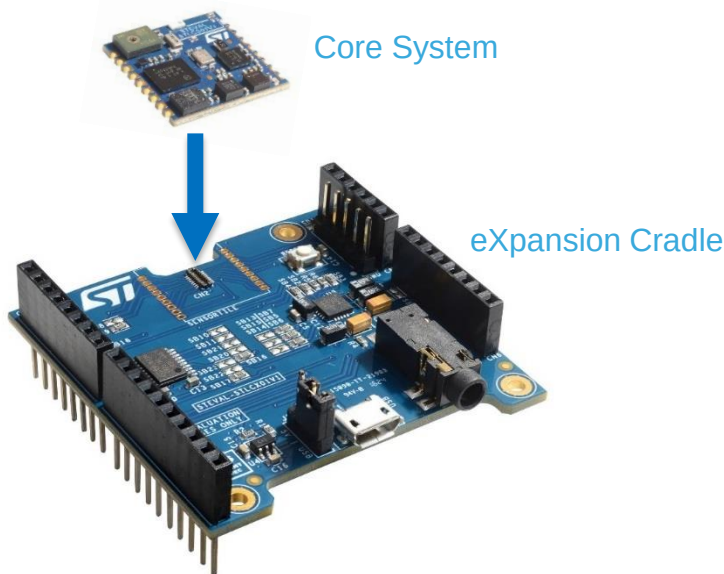
SW App (Android or iOS)

- ST BlueMS app (available on Play store and Apple store)

ST BlueMS App



www.st.com/bluems



Smartphone

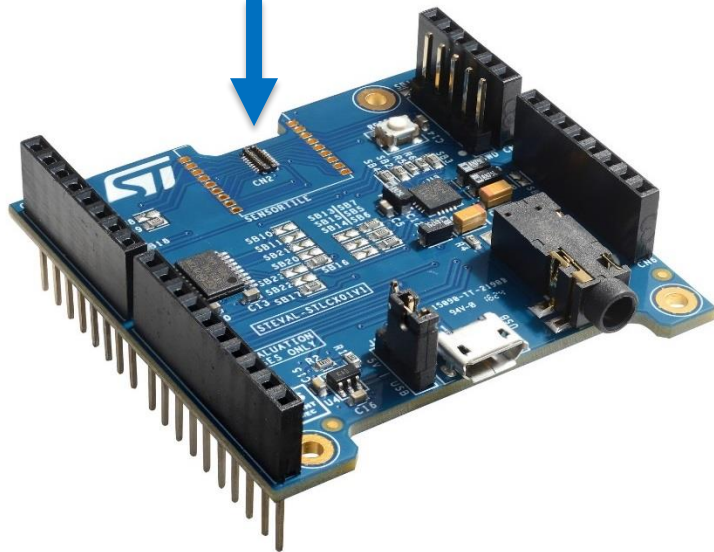
First Setup with the Expansion Cradle

Running the pre-loaded demo

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[2/2]

Plug the SensorTile Core System
on the Expansion Cradle.



Power it via USB



Connect to your Android or iOS
smartphone or tablet using the
BlueMS app



First Setup with the Cradle

Running the pre-loaded demo

11

[1/2]

HW

- SensorTile Core System (**STEVAL-STLCS01V1**)
- SensorTile Cradle (**STLCR01V1**)
- SensorTile Battery
- SensorTile Plastic Box
- Android™ or iOS™ device
- [optional] USB type A to Micro-B USB cable for battery charging

Micro USB cable



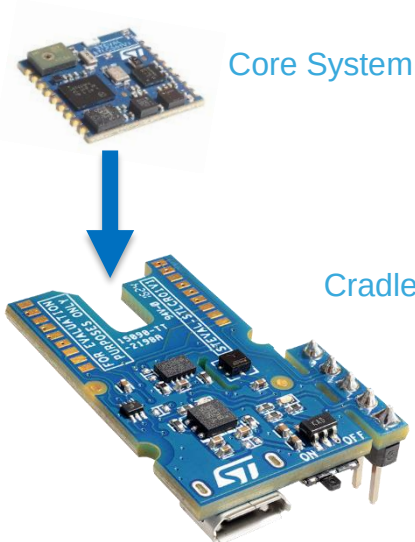
SW App (Android or iOS)

- ST BlueMS app (available on Play store and Apple store)

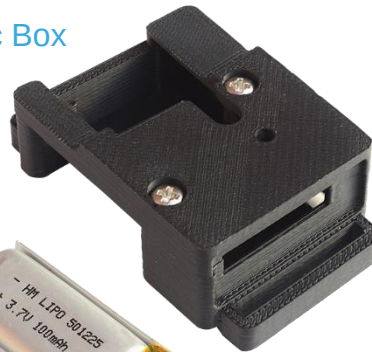
ST BlueMS App



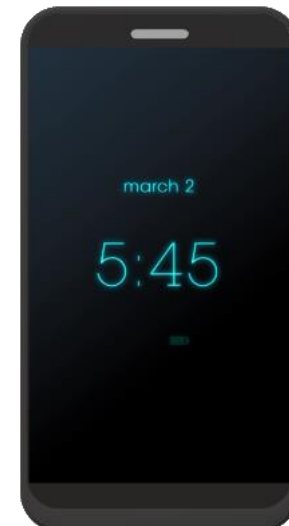
www.st.com/bluems



Plastic Box



Battery



Smartphone

First Setup with the Cradle

Running the pre-loaded demo

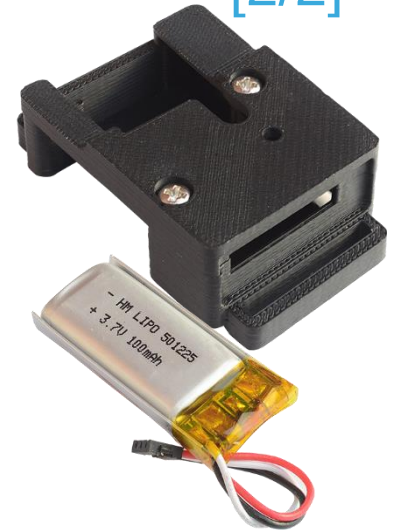
12

[2/2]

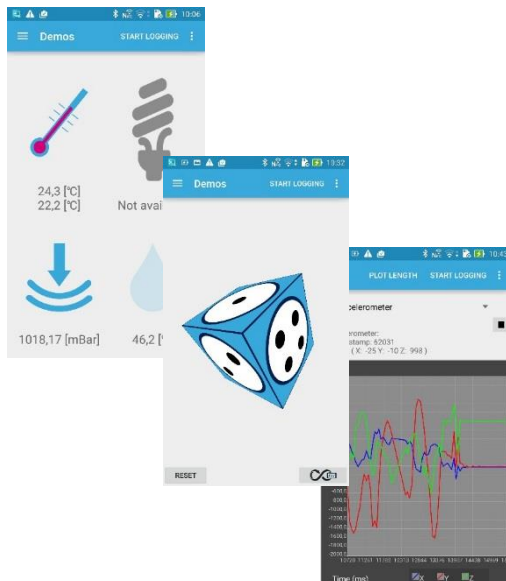


Solder the SensorTile Core System to the Cradle.

Plug the battery, protect it with the plastic cover



Turn it ON using the switch



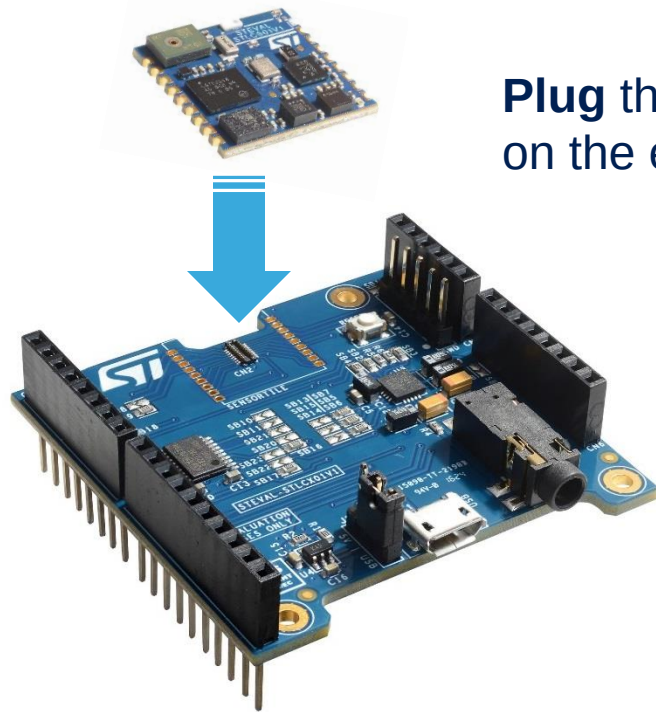
Connect to your Android or iOS smartphone or tablet using the BlueMS app



Start your own design

With the expansion Cradle

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Plug the SensorTile Core System
on the expansion Cradle.

Connect with your development
environment

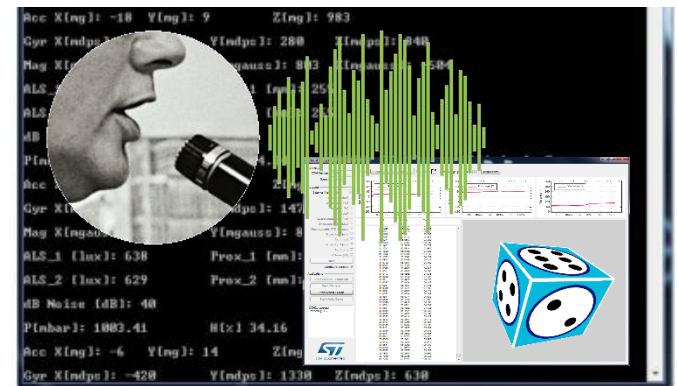


```
1 // my_trapped.c
2 // A simple program showing use of atm_trapped
3 #include <stdio.h>
4 #include <stdlib.h>
5
6 #define ATM_CMD_LEN 1024
7
8 #define ATM_CMD_LEN 1024
9
10 #define ATM_CMD_LEN 1024
11
12 #define ATM_CMD_LEN 1024
13
14 #define ATM_CMD_LEN 1024
15
16 #define ATM_CMD_LEN 1024
17
18 #define ATM_CMD_LEN 1024
19
20 #define ATM_CMD_LEN 1024
21
22 #define ATM_CMD_LEN 1024
23
24 #define ATM_CMD_LEN 1024
25
26 #define ATM_CMD_LEN 1024
27
```

Open the USB starter project on your PC
STSW-STLKT01

Compile & Run the USB Audio or DataLog
example application

Design your custom application

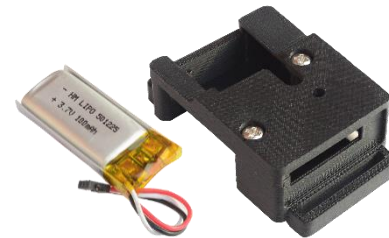


Start your own design With the Cradle

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Solder the SensorTile
to its Cradle



*You better protect it with its
plastic cover!*

Setup your PC programming environment

SWD



```
1 # my_trapread.c
2 # Sample program showing use of my_trapread
3 #include <stdio.h>
4 #include <string.h>
5
6 main(int argc, char *argv[])
7 {
8     char command[4096];
9     char *a2;
10
11     a2 = strtok(argv[1], ",");
12     if (!a2)
13     {
14         printf("Usage: %s <command>\n", argv[0]);
15         return 1;
16     }
17     sprintf(command, "my_trapread %s %s %s %s %s %s",
18             argv[1], a2, argv[2], argv[3], argv[4], argv[5]);
19     system(command);
20     a2 = strtok(argv[1], ",");
21     if (!a2)
22     {
23         printf("Usage: %s <command>\n", argv[0]);
24         return 1;
25     }
26 }
```

Program your data tracking application

Field test your application

