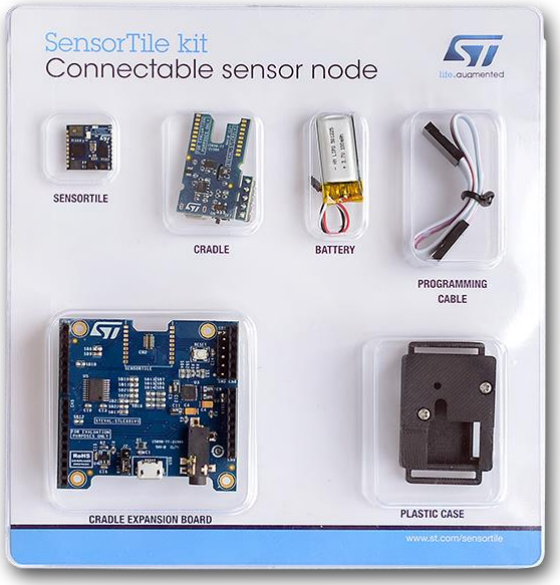
Quick Start Guide

SensorTile Kit - STEVAL-STLKT01V1

www.st.com/sensortile



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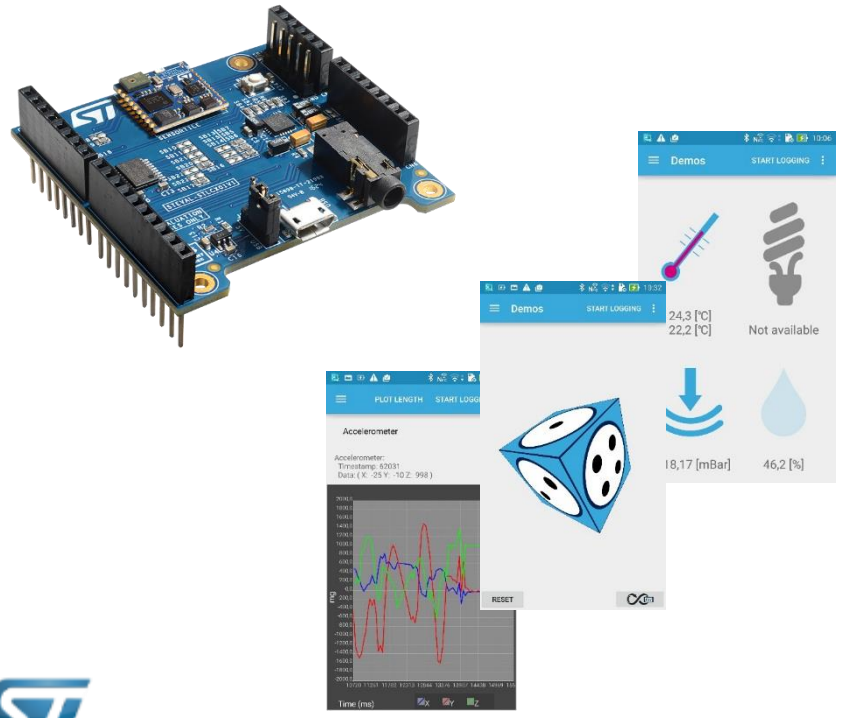
What do you want to do?

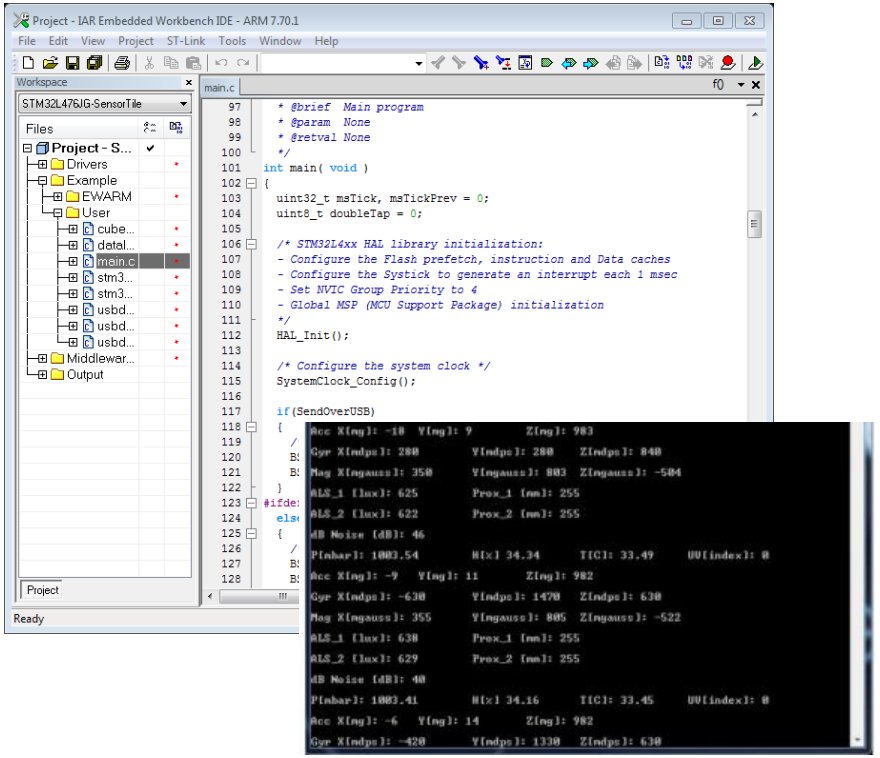
Unbox and run default demo

Page 3



Start designing your application

Page 5



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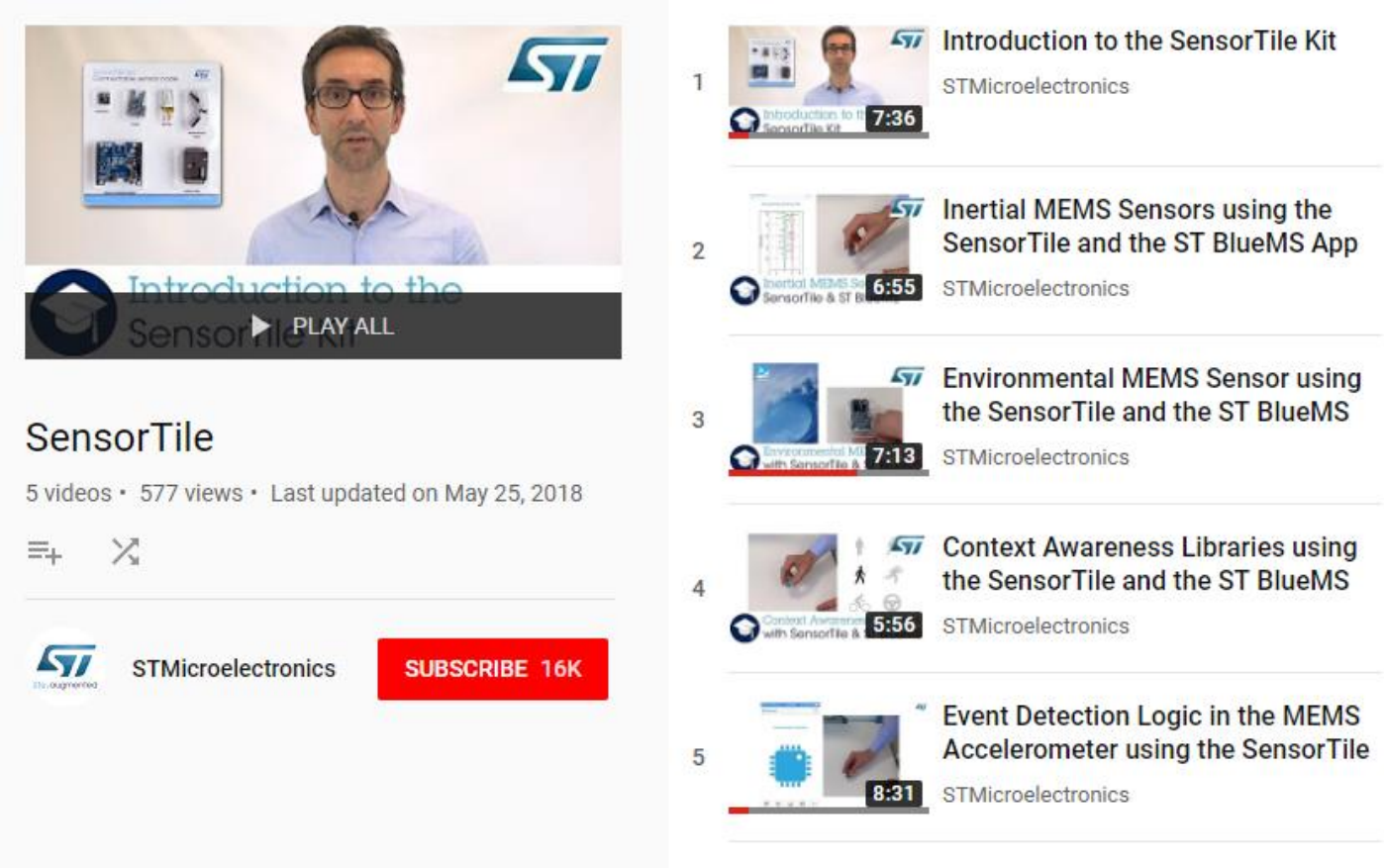
YouTube video playlist

- Have a look at the SensorTile Video Playlist on YouTube
  - https://www.youtube.com/playlist?list=PLnMKNibPkDnE1cJxYN7Or2VyqJ_iPOAdT



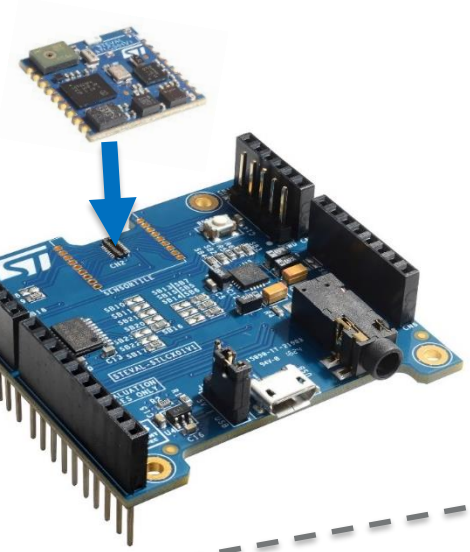
Note: ST BlueMS app has been renamed to ST BLE Sensor

First Setup – Run the preloaded Demo

- The preloaded demo on SensorTile Kit is the FP-SNS-ALLMEMS1 *

Step 1

Plug the SensorTile Core System on the Expansion Cradle.



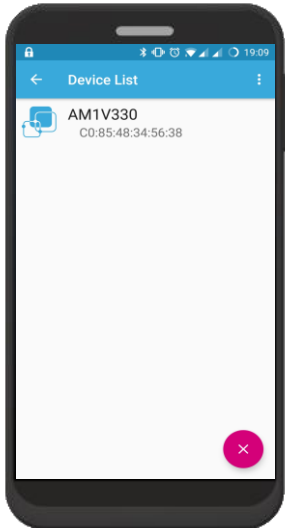
Step 2

Power it via **USB**

www.st.com/STBLESensor

Step 3

Download and run **ST BLE Sensor App** (Android or iOS)



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*** In previous release the pre-loaded firmware was BLUEMICROSYSTEM2 (label BM2V220 on the app). To upgrade, see page 7.**

Programming the SensorTile – Two choices

Starter Firmware

Page 6

- Very simple to use
- Basic features
- 3 example projects
  - DataLog: USB or SDCard
  - AudioLoop: microphone acquisition and audio output
  - BLE_SampleApp: Bluetooth Low Energy sample app (compatible with ST BLE Sensor App)

FP-SNS-ALLMEMS1

Page 7

- More complex to use
- Complete source code of the preloaded demo
- Advanced features
  - Compiled libraries
  - Advanced algorithms
- Compatible with STM32 Open Development Environment

See also:

Hardware Setup for board programming

Page 8

Starter Firmware – STSW-STLKT01

Step 1

Download the Starter Firmware from www.st.com/sensortile

Tools and Software

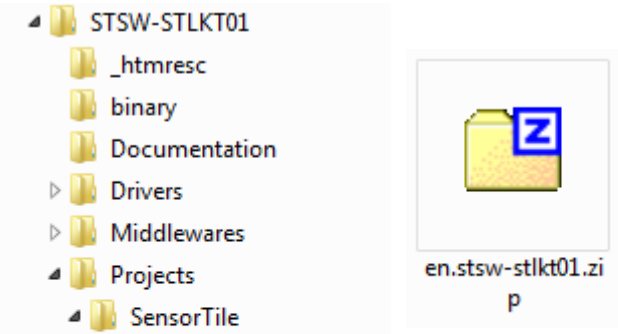
EMBEDDED SOFTWARE

EVALUATION TOOL SOFTWARE

Part Number	Manufacturer	Description
STSW-STLKT01	ST	Basic firmware application for STEVAL-STLKT01V1

Step 2

Unzip the package on your PC



Step 3

Open one of the the projects examples with your favorite IDE

IAR Embedded Workbench

ARM KEIL µVision IDE

System Workbench for STM32

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Advanced Firmware – FP-SNS-ALLMEMS1

Step 1

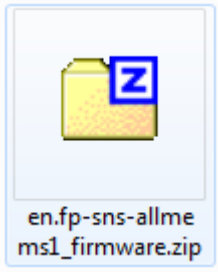
Download the FP-SNS-ALLMEMS1 Firmware from www.st.com/sensortile

MCUS EMBEDDED SOFTWARE

Part Number	Manufacturer	Description
FP-SNS-ALLMEMS1	ST	STM32 ODE func environmental and
FP-SNS-MOTENV1	ST	STM32 ODE function pack for IoT node with BLE connectivity and environmental and motion sensors

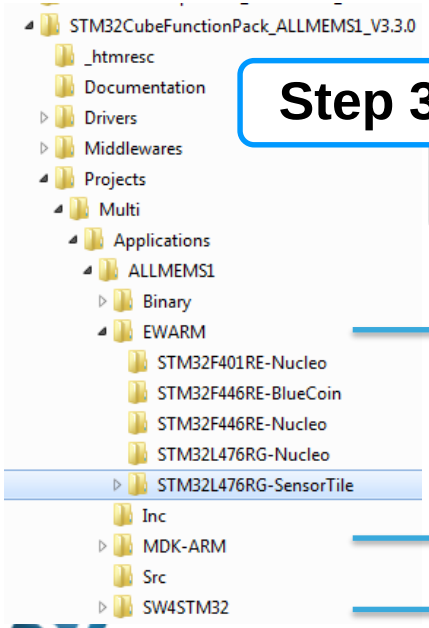
Step 2

Unzip the package on your PC



Step 3

Open the SensorTile version of the project with your favorite IDE



→ IAR Embedded Workbench

→ ARM KEIL µVision

→ System Workbench for STM32

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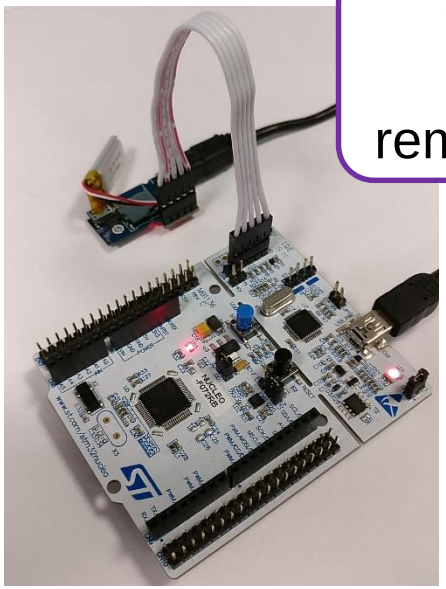
Hardware Setup for board programming

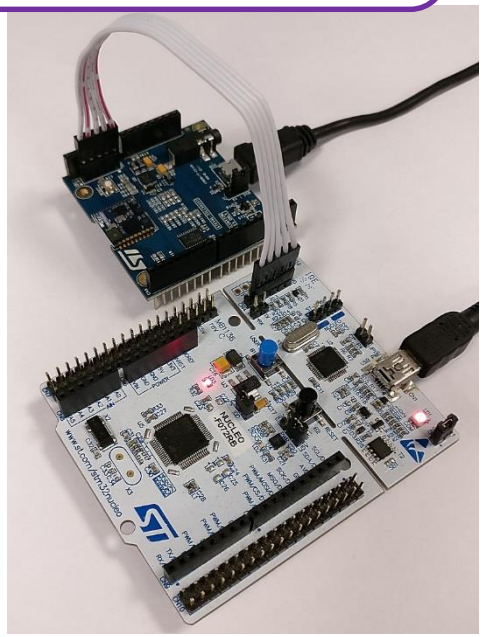
Step 1

Take an STM32 Nucleo board

Step 2

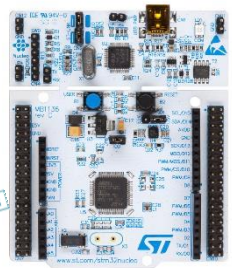
Connect it to the SensorTile and remove CN2* jumpers





Step 3

Connect to the PC and download the firmware with your IDE



* See page 14 for details

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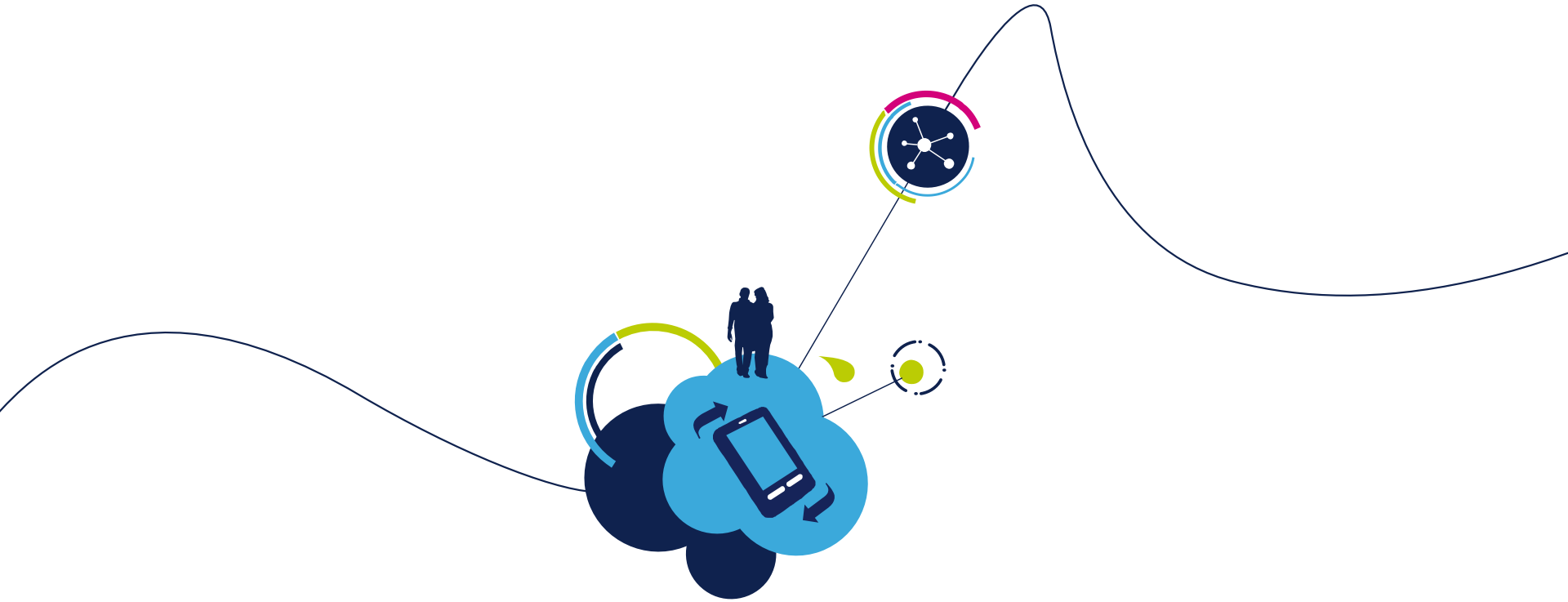
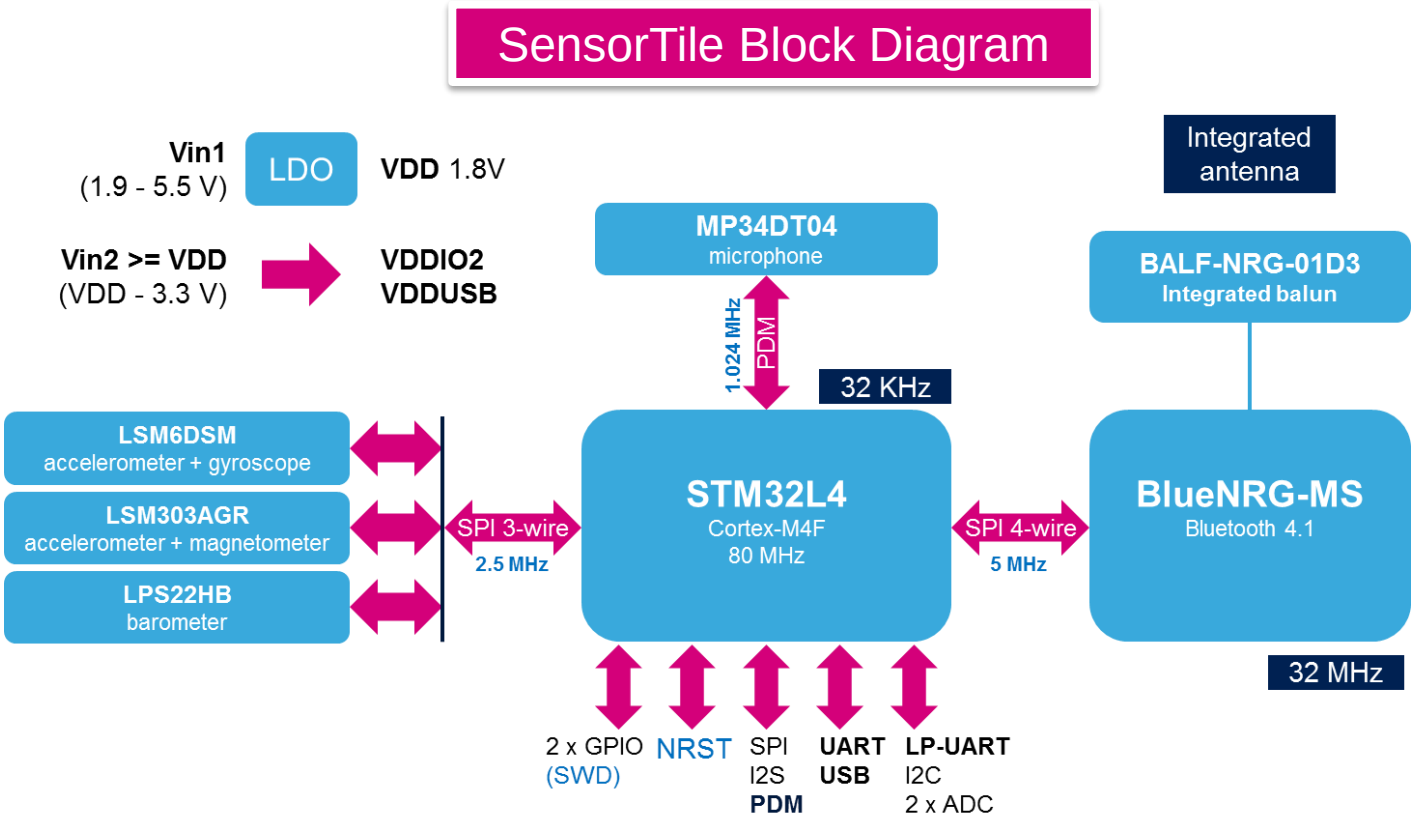


More information

SensorTile Platform – Hardware overview

- 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 Core System

SensorTile Core System: STEVAL-STLCS01V1

MP34DT05-A *

Microphone

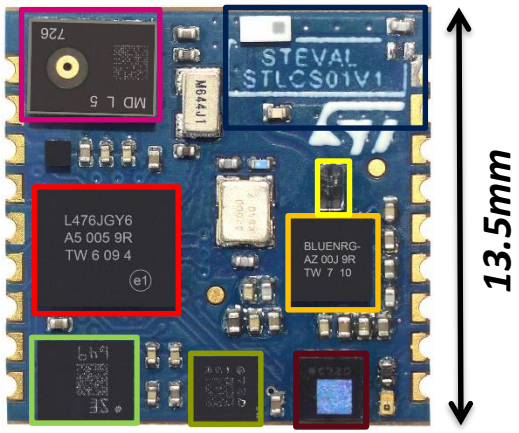
64dB SNR, 122.5 dBSPL AOP

STM32L476

Cortex-M4

Up to 100DMIPS 80MHz

100uA/MHz@24MHz in run mode



Antenna Clearance Area

BALF-NRG-02D3 *

Balun

BlueNRG-MS

Bluetooth low-energy

Concurrent master/slave BT4.1

LSM6DSM

3DAcc+3DGyro

0.65mA @ 1.6kHz - 9µA @ 12.5Hz

LSM303AGR

3DAcc+3DMag

200µA @ 20 Hz (HR mode)

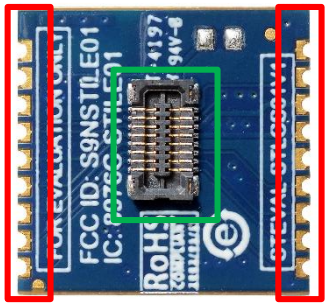
Accel/Mag independent power down mode

LPS22HB

Barometer

1-75Hz, 3-12µA @ 1Hz

Solderable



Pluggable

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*** In previous release: MP34DT04 and BALF-NRG-01D3**

SensorTile Cradle

SensorTile Cradle: STEVAL-STLCR01V1

SensorTile Footprint

Solderable

HTS221

Humidity and Temperature sensor

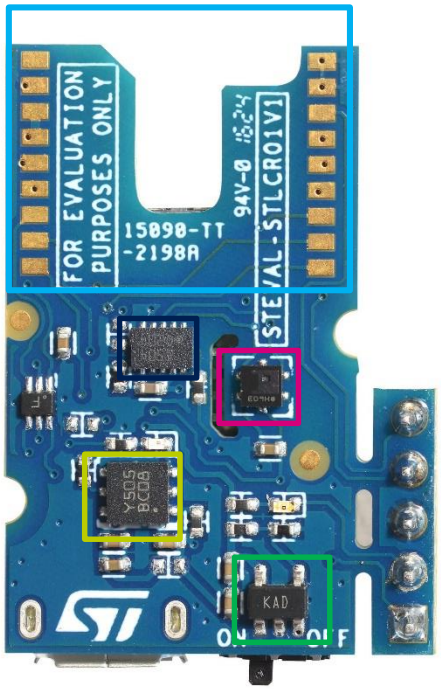
STC3115

Gas gauge IC with alarm output

STBC08

Li-Ion Battery charger with thermal regulation

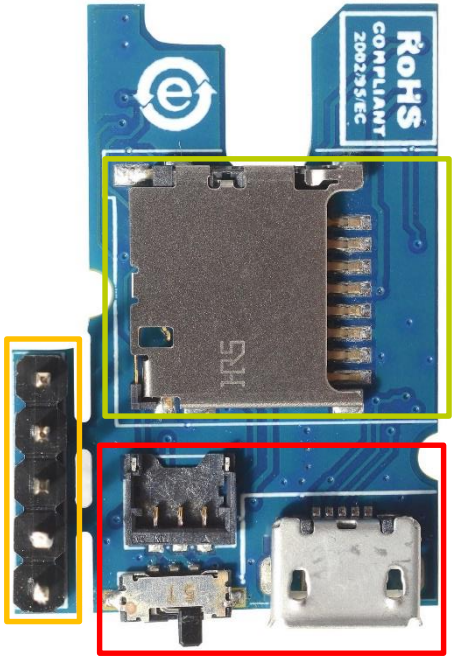
TOP VIEW



LDK120

200 mA very low noise LDO

BOTTOM VIEW



Micro-SD Card slot

Micro USB ON/OFF switch Battery Plug

SWD

SWD programming interface

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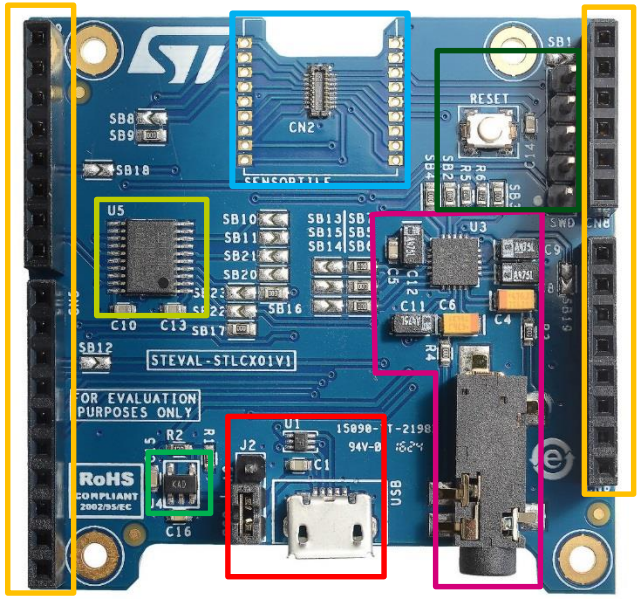
SensorTile Expansion Cradle

SensorTile Expansion Cradle: STEVAL-STLCX01V1

SensorTile Footprint



ST2378ETTR

8-Bit Level Translator
3.3V ←→ 1.8V

SWD & Reset

SWD programming interface
and reset button

Arduino Connectors

Audio DAC & 3.5mm jack

LDK120

200 mA very low
noise LDO

Micro USB and power selector

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SensorTile Programming/Debugging

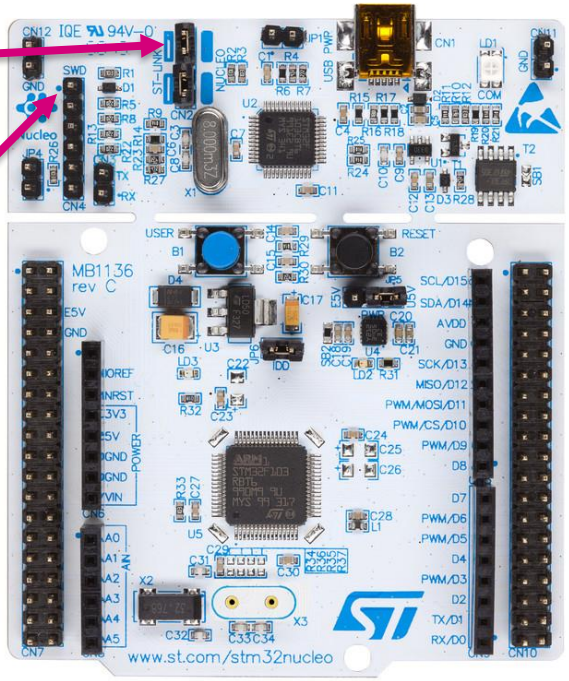
- Connect an external ST-Link to the cradles SWD connectors. A 5pin flat cable is provided within the SensorTile Kit package
  - The easiest way is to get an STM32-Nucleo board which includes an ST-Link V2.1
  - Remove CN2 Jumpers from the Nucleo Board
  - Connect the SWD interfaces using the provided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

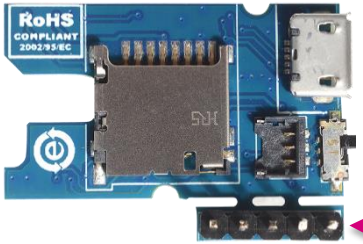
CN2

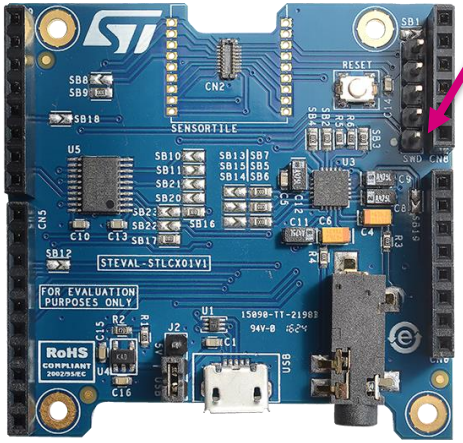
Remove Jumpers

SWD

(Pin1)







SWD

(Pin1)

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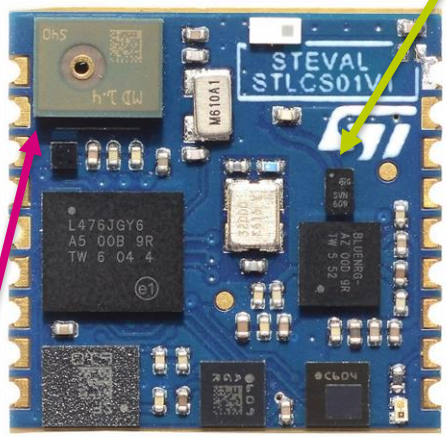
How to recognize the different generations

First generation

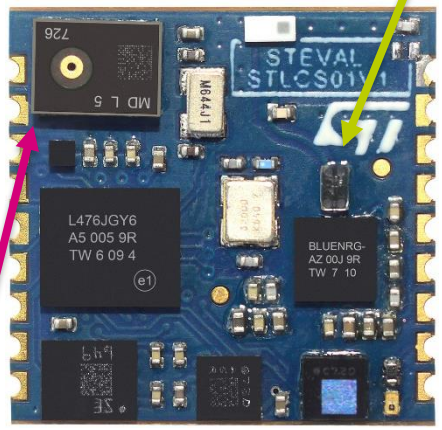
- Balun package is black (opaque)
  - BALF-NRG-01D3 (U4)



- MEMS Microphone
  - MP34DT04 (U11)

Second generation

- Balun package is transparent
  - BALF-NRG-02D3 (U4)



- Microphone
  - MP34DT05-A (U11)

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