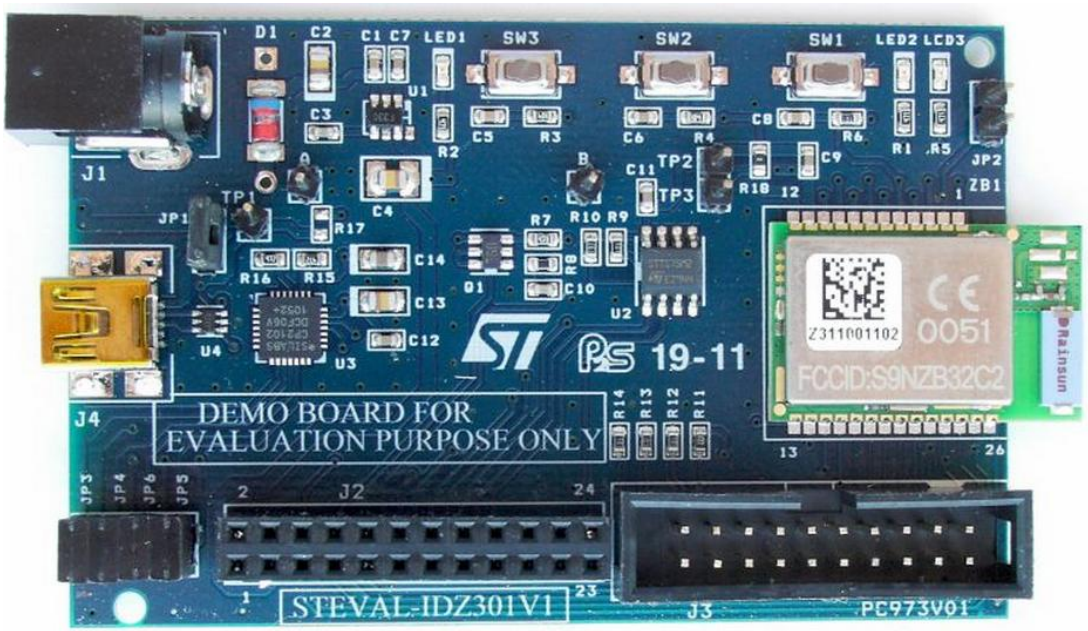
STEVAL-IDZ301V1

Oct. 2012



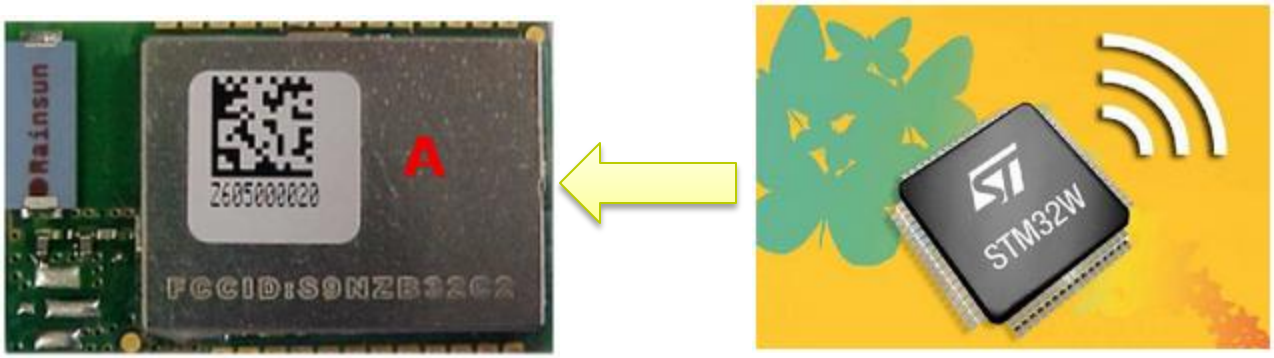
life.augmented

SILICA
An Avnet Company

STEVAL-IDZ301V1

The **STEVAL-IDZ301V1** is a demonstration board of the **SPZB32W1** series of IEEE 802.15.4 ZigBee®RF modules based on the **STM32W108CU6** microcontroller that integrates a **32-bit ARM®Cortex™ - M3** microprocessor and a **2.4 GHz, IEEE 802.15.4 radio**.

The STEVAL-IDZ30xV1 kit allows testing the performance of the RF, the features of the protocol libraries defined for the microcontroller, and prototyping the target application. The kit includes a development board and a software library that can be integrated in the structure of the packages available from the ST website for ZigBee PRO, Zigbee RF4CE and simplified MAC of the STM32W108 microcontroller family.



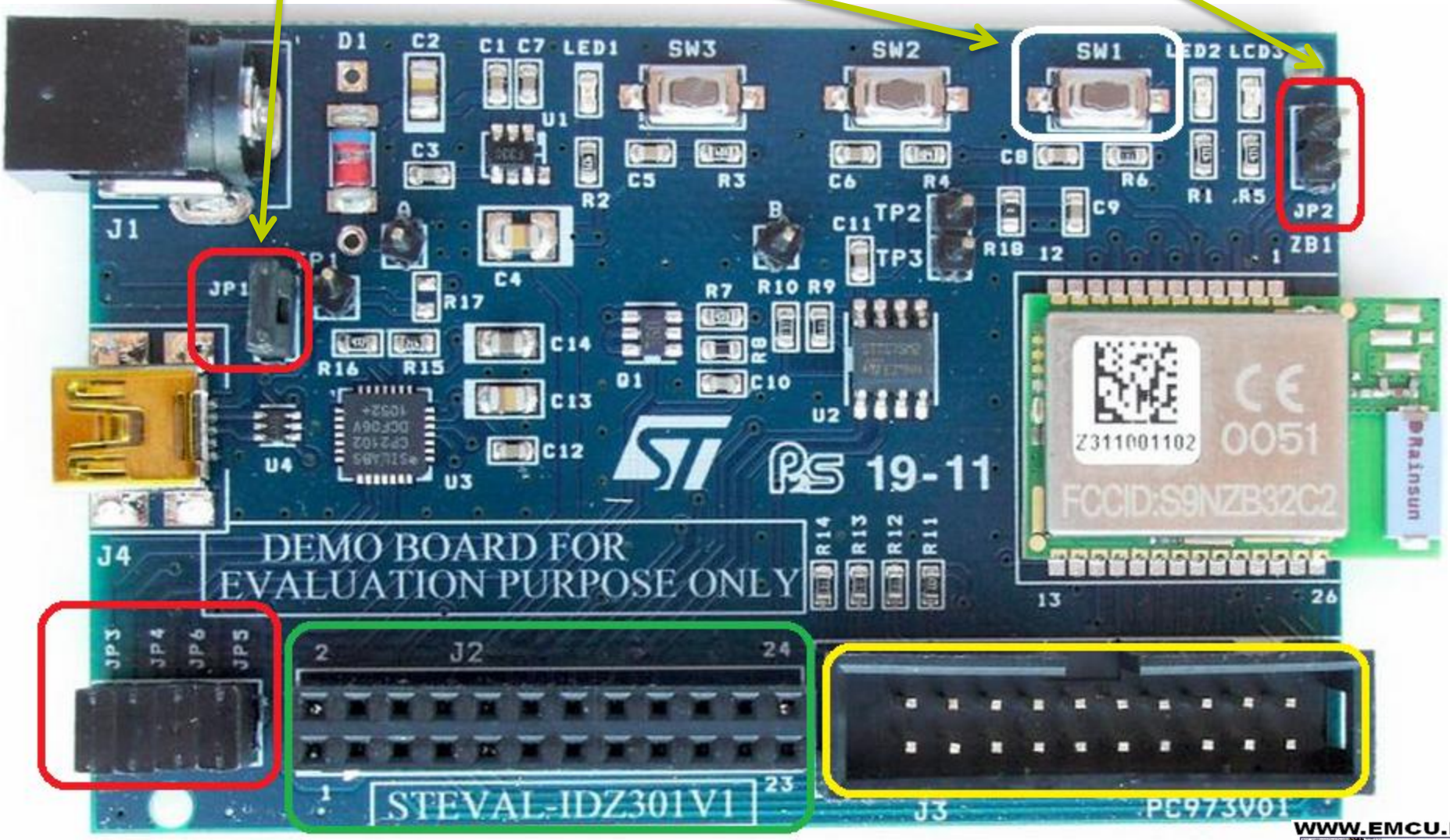
STEVAL-IDZ301V1 Key Features

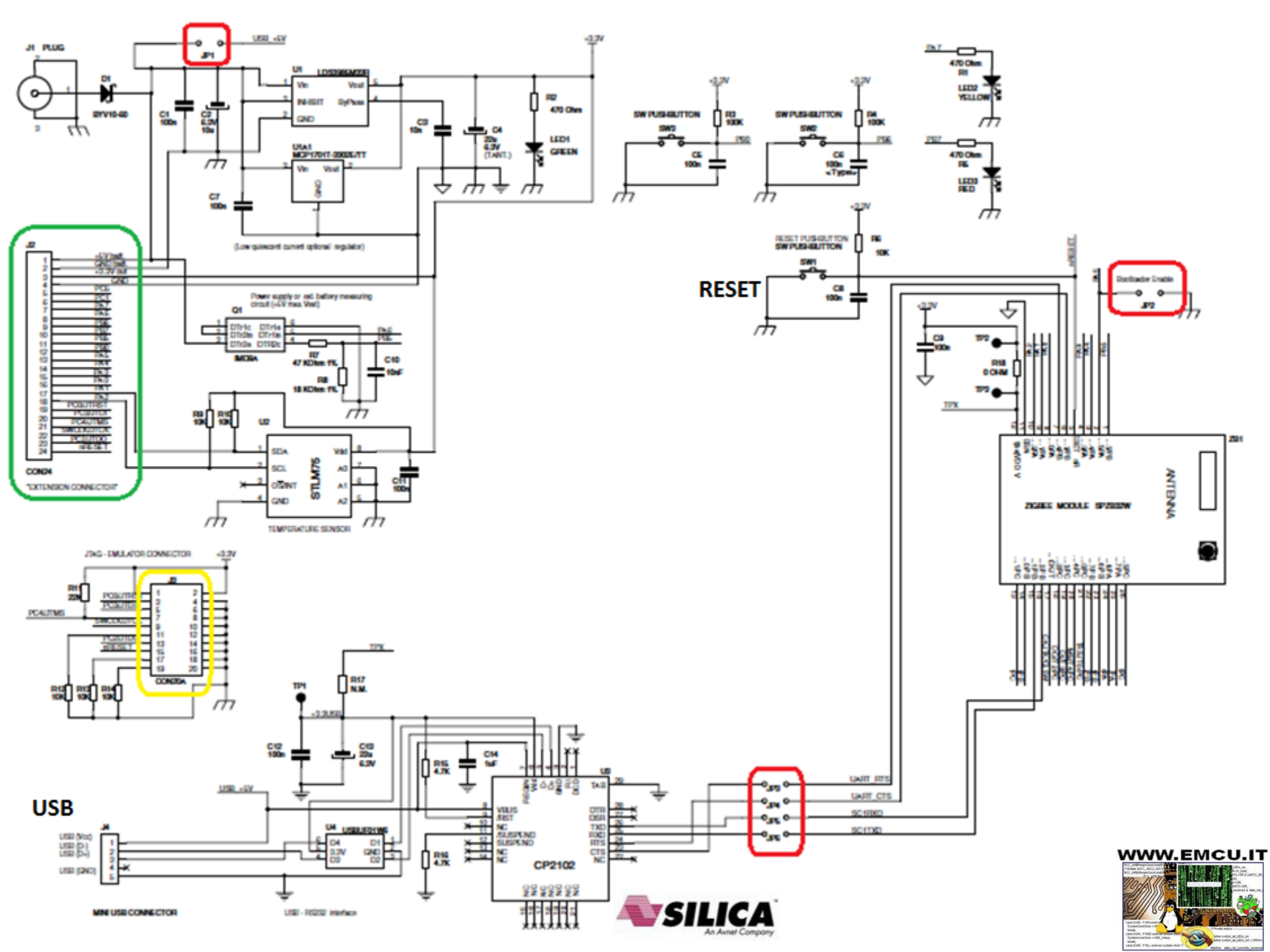
- **Integrated RF module** belonging to the SPZB32W1 series of IEEE 802.15.4 ZigBee®modules
- 20-pin **JTAG** connector for programming and debugging purposes
- Hardware support for application development:
  - **Temperature sensor**
  - **Circuitry for measuring the battery voltage**
  - **Two configurable push buttons**
  - **Two configurable LEDs**
  - **Mini-USB connector and USB-RS-232 bridge**
  - Jumper (JP1) allows DC power source selection between the external power supply or external USB supply
  - LED power indicator
  - **Jumper for boot activation**
  - **Jumpers for serial communication setup (RS232 or mini-USB)**
  - **24-pin**, double-row header **for access to the remaining STM32W GPIO signals and interfaces**

JP1 Configurable power jumper.
Present == power is from USB port.

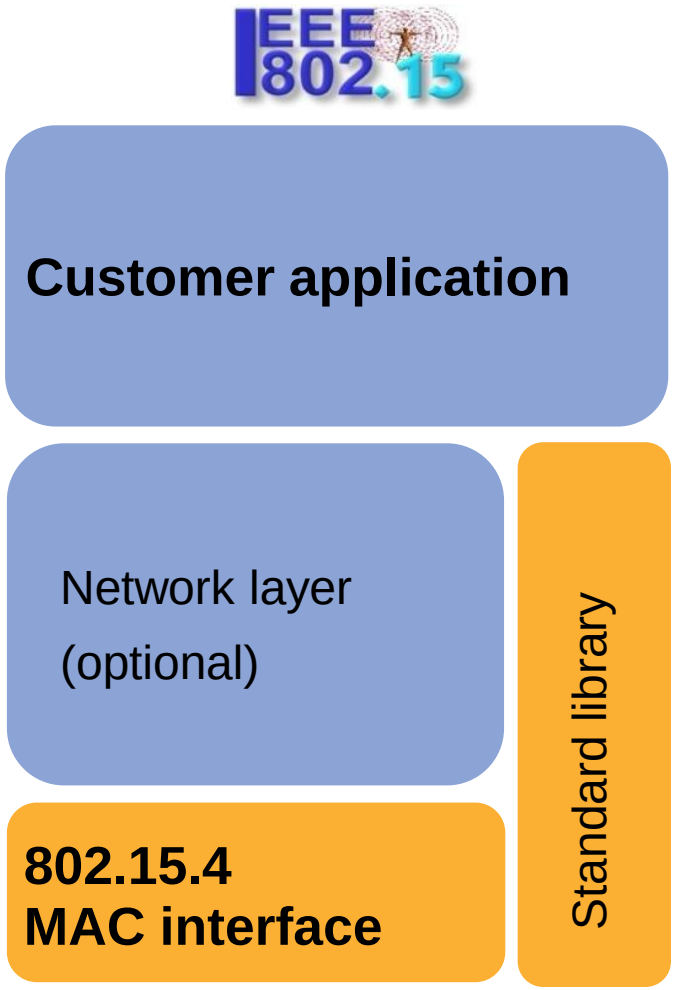
JP2 Configurable boot jumper.
Present == loading the bin files on the STEVAL via the USB connector.

SW1 == RESET




RESET
USB
CON24
"EXTENSION CONNECTOR"
STLM75
TEMPERATURE SENSOR
CON20A
JTAG - EMULATOR CONNECTOR
CP2102
MINI USB CONNECTOR
USB - RS232 interface
ANTENNA
SILICA
An Avnet Company
WWW.EMCU.IT

STEVAL-IDZ301V1 & 802.15.4 Simple MAC Library

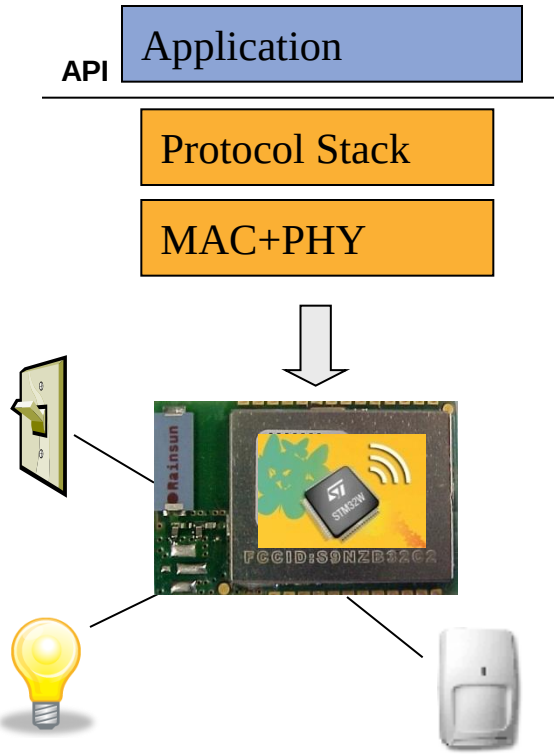


- The ST **IEEE 802.15.4** Simple MAC Library provides a set of APIs allowing access to the **PHY** and **lower-MAC** functionality of the STM32W SoC:
  - RX/TX functionalities
  - Radio channel selection
  - **Transmit power level** control
  - Boost mode control
  - Radio **sleep** and **wakeup** control
  - LQI and RSSI for received packets
  - Implementes Unslotted CSMA transmit support including CCA
  - Ability to enable/disable receiver
  - Automatic acknowledgement management

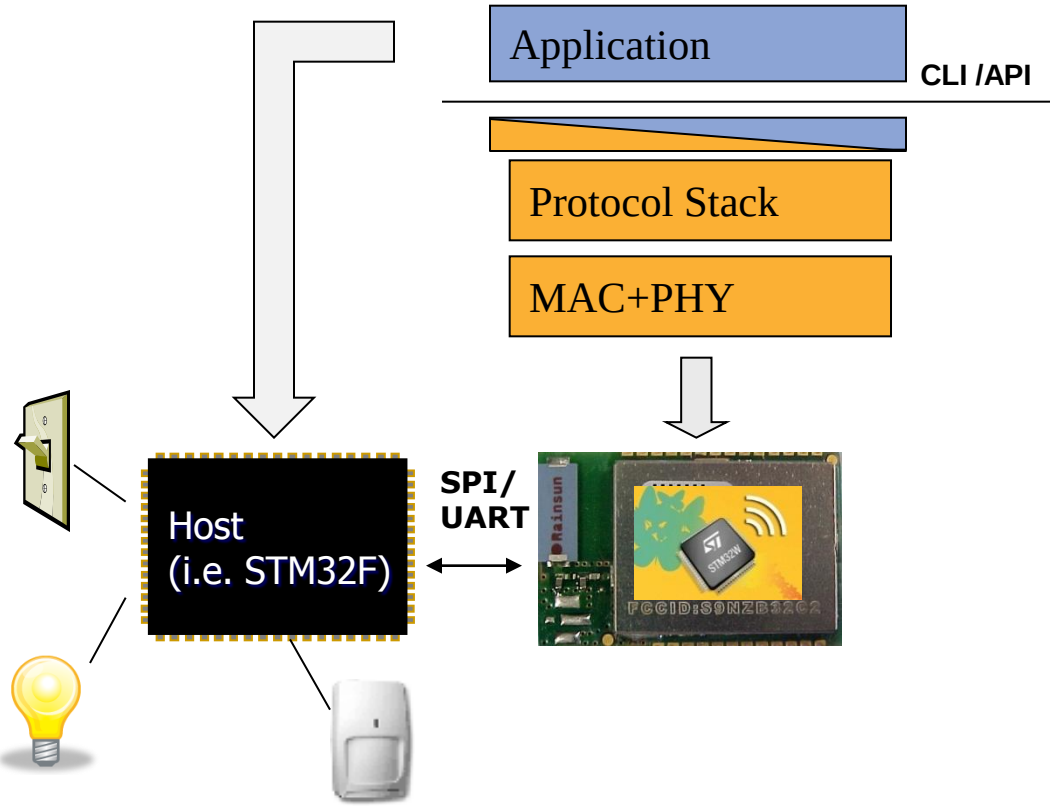
Customer code **Productized Libraries**

STEVAL-IDZ301V1 & 802.15.4

SOC Use Mode:
SPZB32W1xx.4 runs both the protocol and the application both stored in the integrated Flash



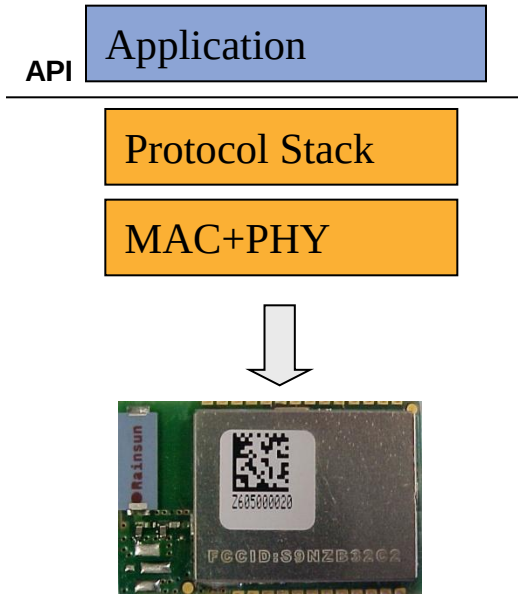
Network Coprocessor Use Mode:
SPZB32W1xx.4 runs the protocol while an host processor runs and store the application

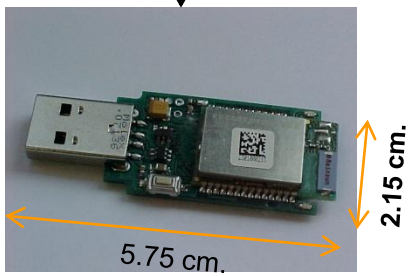


*Extra info are **here***

STEVAL-IDZ301V1 & 802.15.4 ref.design

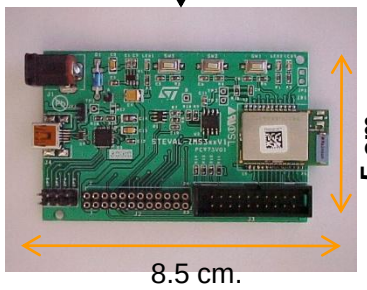
SOC Use Mode:
SPZB32W1xx.4 stores and runs both the protocol and the application





STEVAL-IDZ401V1

- **Optimized USB Dongle Design**
- **Powered and programmable via USB**
- **STM32F USB Bridge**
- **Integrated JTAG**



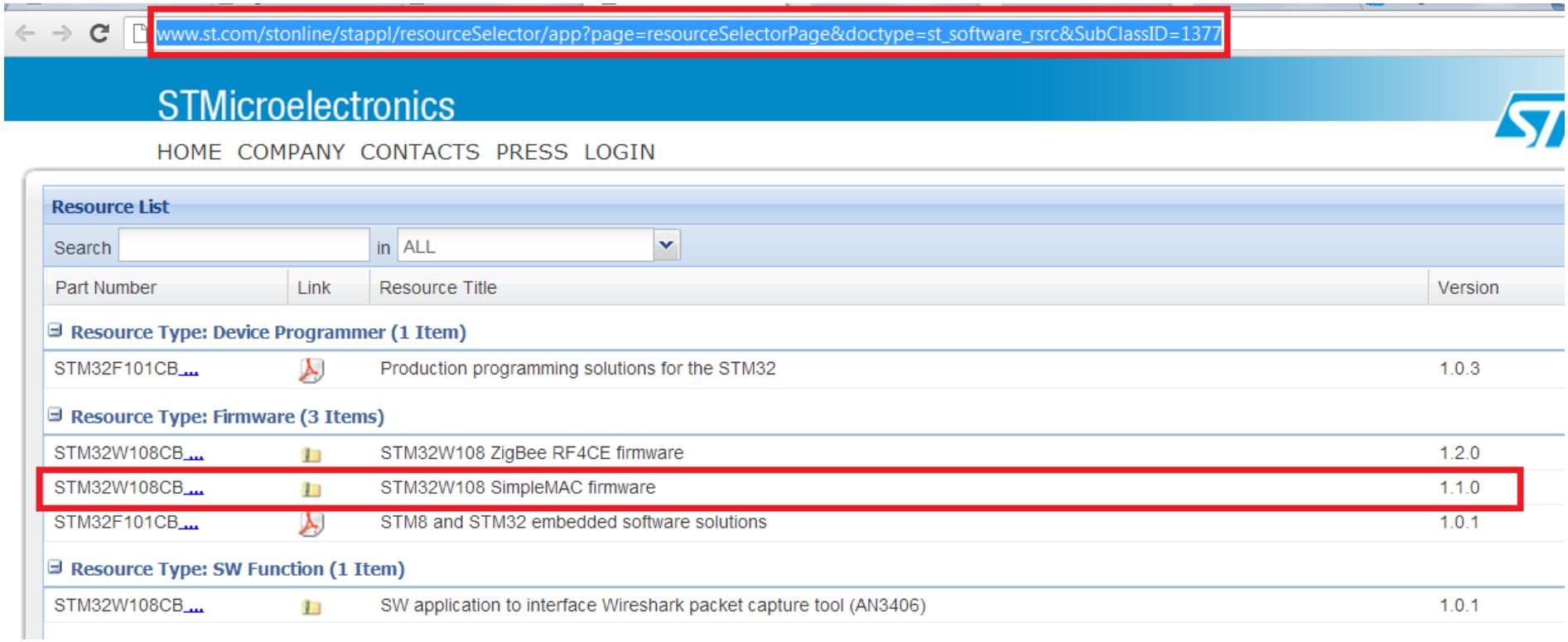
STEVAL-IDZ30xV1

- **Flexible and expandable development board**
- **Multiple Power Supply Options**
- **SiLab USB Bridge**
- **Integrated temperature sensor, configurable buttons, configurable leds and voltage battery measurement circuitry**

STEVAL-IDZ301V1 & TALK-802.15.4

Aim of this example is to explain how to use the STM example concerning the:
Simple MAC (v.1.1.0) TALK (point to point connection) using two eva-boards.

The SW (STM Simple MAC) that we used is **here** (see below):

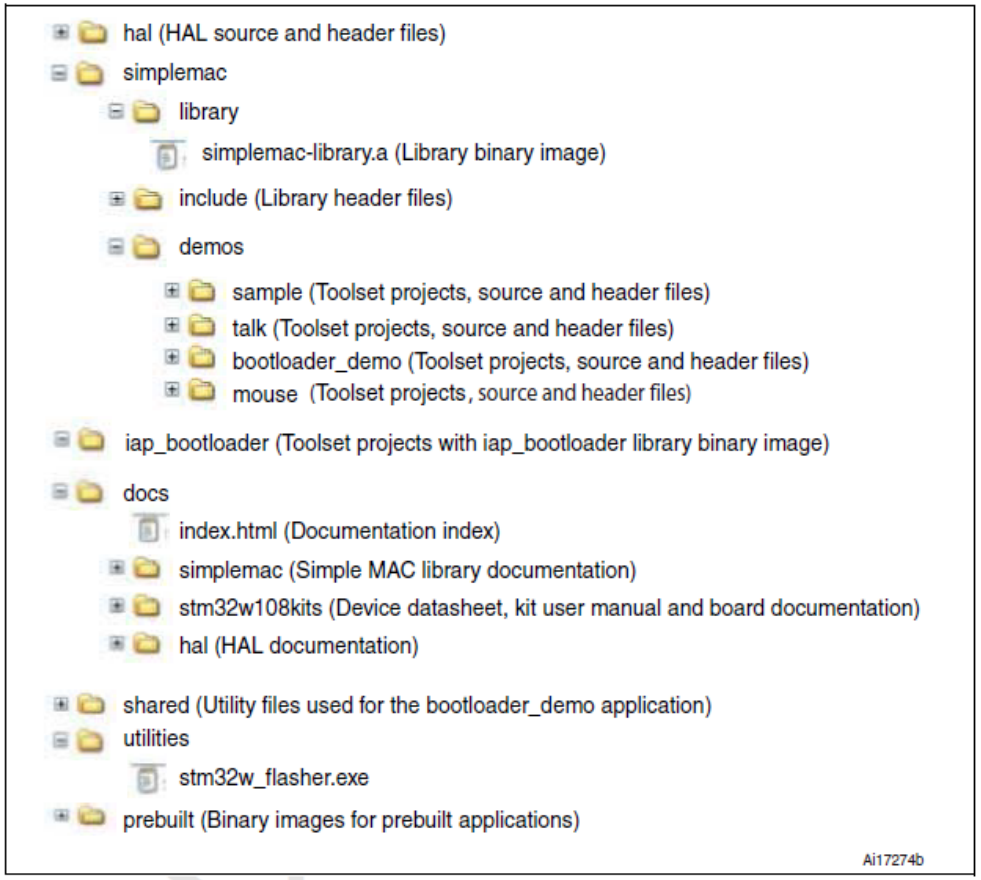


STEVAL-IDZ301V1 & TALK-802.15.4

Download and install the: **STM32W108 SimpleMAC firmware**.

After the installation you find the Examples, Documentation, etc in:
C:\Program Files\STMicroelectronics\ST SimpleMAC-1.1.0\STM32W108
or in:
C:\Program Files (x86)\STMicroelectronics\ST SimpleMAC-1.1.0\STM32W108

Software and documentation tree



life.augmented

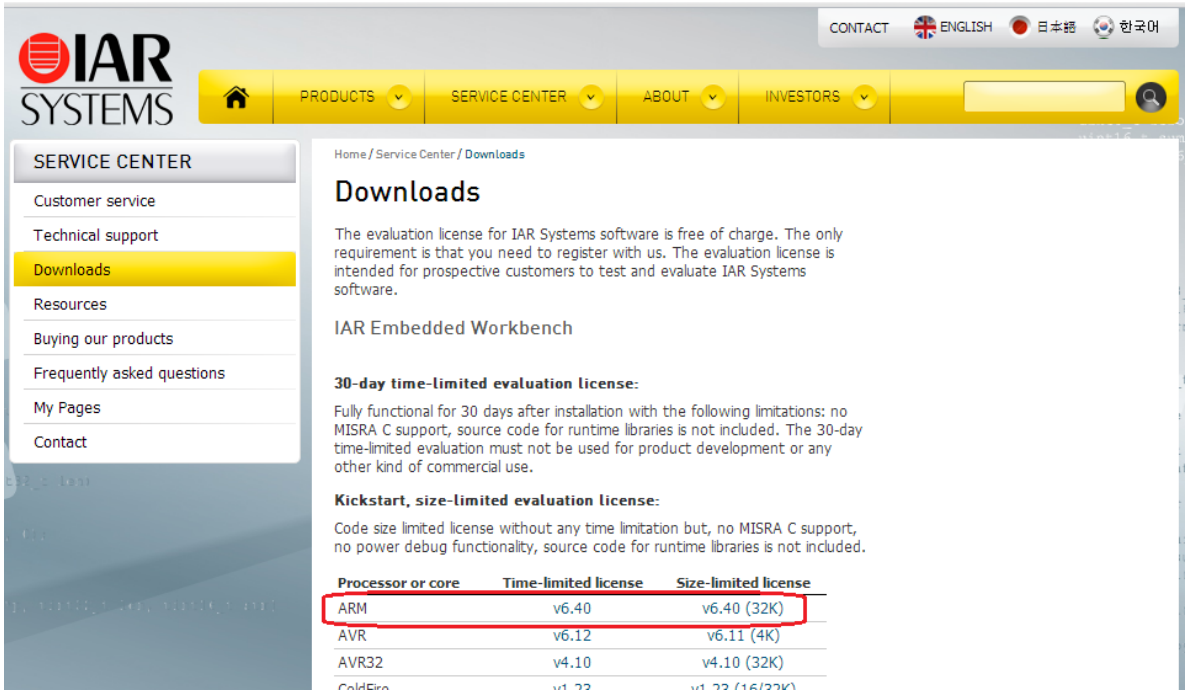
STEVAL-IDZ301V1 & TALK-802.15.4

ATTENTION:
We assume that you have already installed on your PC the **IAR** **v.6.40.4.4221** (32KFree).

The STM firmware is guaranteed for using in conjunction with:

IAR v.5.41
ATOLLIC TrueStudio Lite 2.1.0
ATOLLIC TrueStudio Professional 2.1.1

I tested the SimpleMAC TALK under IAR v.6.40.4.4221 and it works but is not guaranteed from STM.



STEVAL-IDZ301V1 & TALK-802.15.4

Copy all the contents of:

C:\Program Files (x86)\STMicroelectronics\ST SimpleMAC-1.1.0

Into your working directory, we suppose that is:

C:\SILICA-STday\SILICA-STday2012\HOn2

Because up to now the SW example (**ST SimpleMAC-1.1.0**) do not support the **STEVAL-IDZ301V1** is necessary do some changes in two files that are:

C:\SILICA-STday\SILICA-STday2012\HOn2\STM32W108\hal\micro\cortexm3\board.c

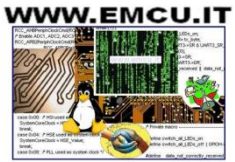
and

C:\SILICA-STday\SILICA-STday2012\HOn2\STM32W108\hal\micro\cortexm3\stm32w108\board.h

Click **here** for download the **board.c** and replace with it the original file.

Click **here** for download the **board.h** and replace with it the original file.

After this change you are ready to use the **STEVAL-IDZ301V1** .



STEVAL-IDZ301V1 & TALK-802.15.4

The TALK example configure two STEVAL-IDZ301V1 boards for:
point to point connection.
Connect the STEVAL-IDZ301V1 to your PC and make sure that the jumper (JP1) is present, see below.

STEVAL-IDZ301V1 & TALK-802.15.4

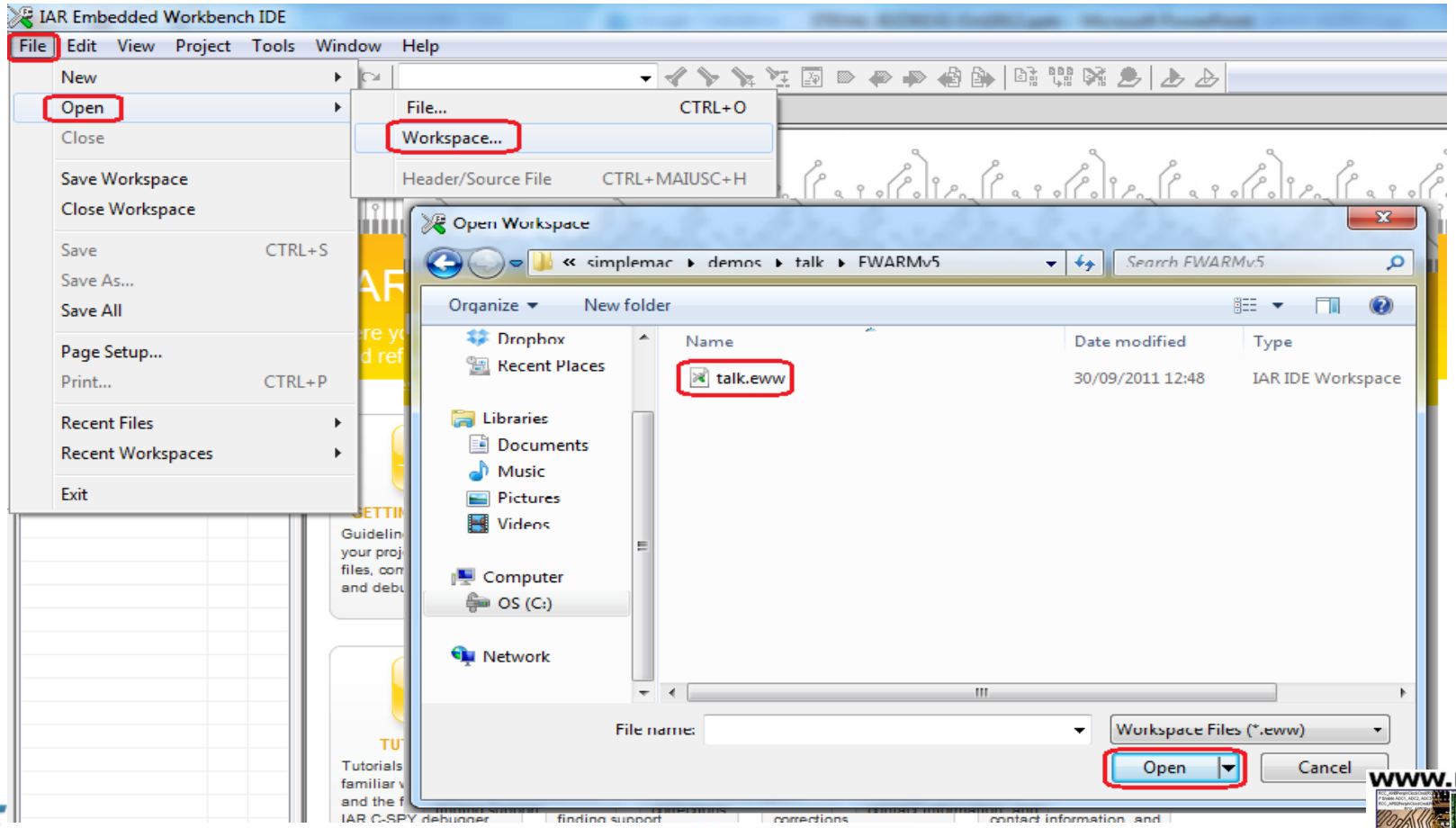
The first time you connect the STEVAL-IDZ301V1 to PC probably (depend of the board revision code) it request the driver (SILICON LABS CP2102 - **VCP Driver Kit**) that you get **here**.

The USB/RS232 driver is available for:

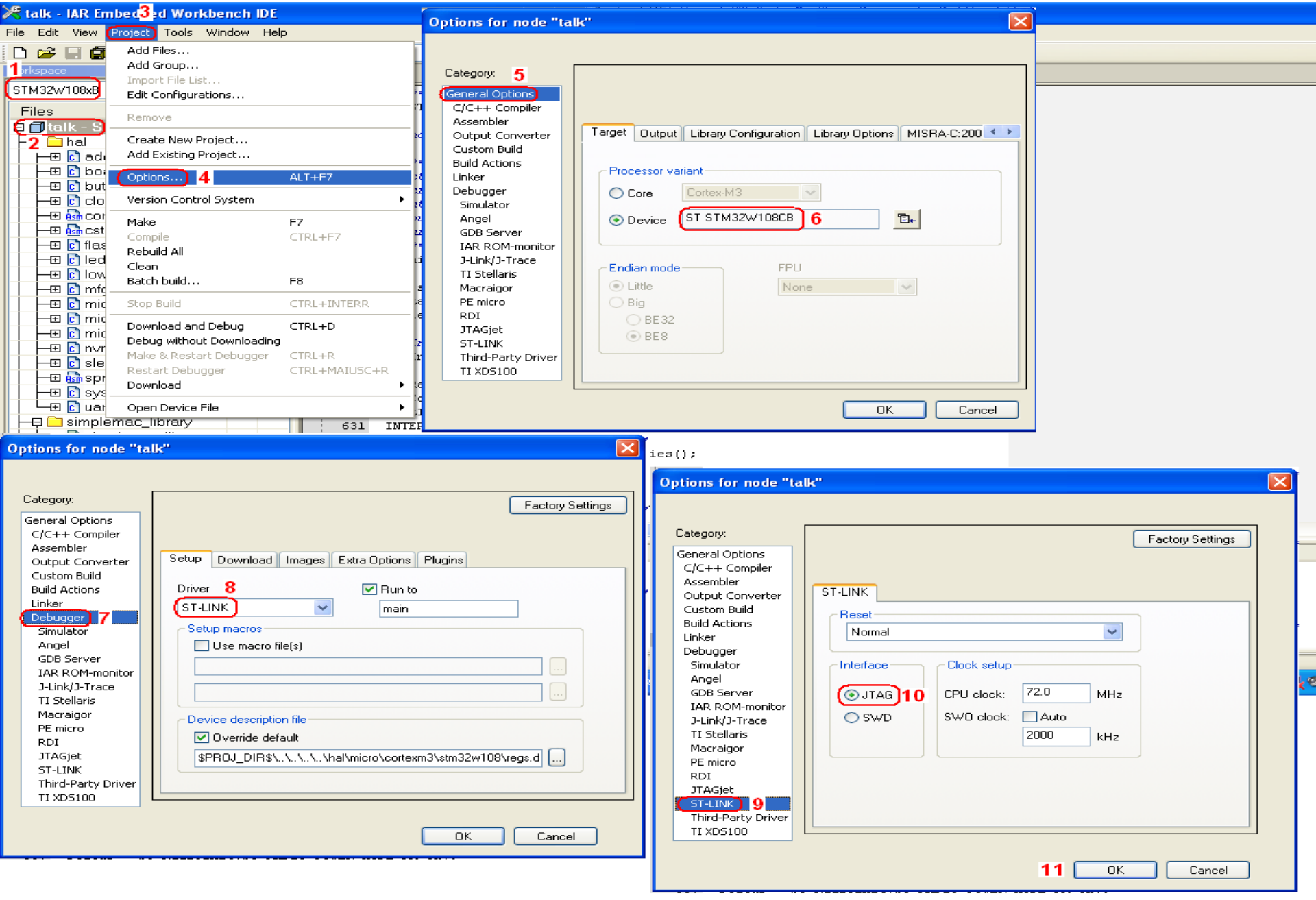
Windows XP/Server 2003/Vista/7
WinCE
Macintosh OSX
Linux

STEVAL-IDZ301V1 & TALK-802.15.4

Now we are ready to open the **TALK example** that is here:
C:\SILICA-STday\SILICA-STday2012\HOn2\STM32W108\simplemac\demos\talk\EWARMv5 \talk.eww
For do this run **IAR**, next choose:
File -> Open -> Workspace
From the windows that appears select: **talk.eww** and press **OPEN**. See below.

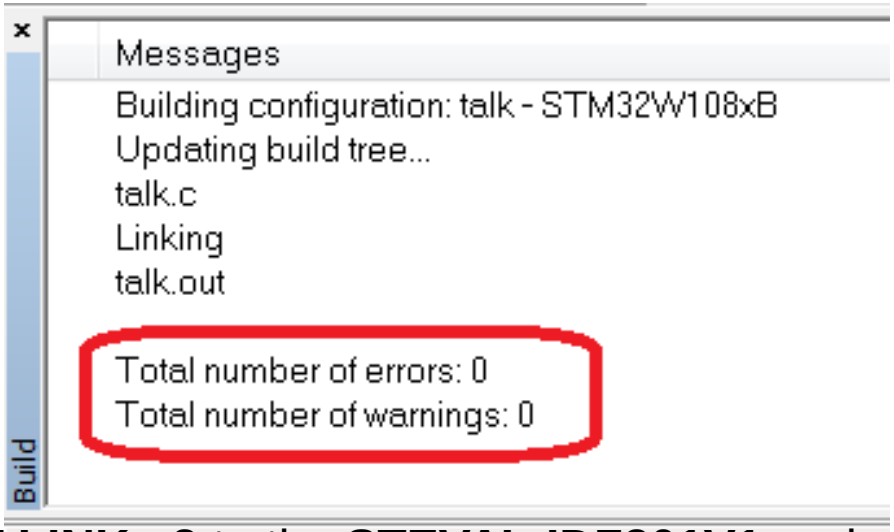


Before compile the example is necessary to configure the IAR IDE, for do this follow the step below.



STEVAL-IDZ301V1 & TALK-802.15.4

Now compile the project: **Project -> Make**.
You must see something like below.



Connect the **ST-LINK-v2** to the **STEVAL-IDZ301V1** and select:

1. **Download and Debug**
2. **Now exit from Debug**

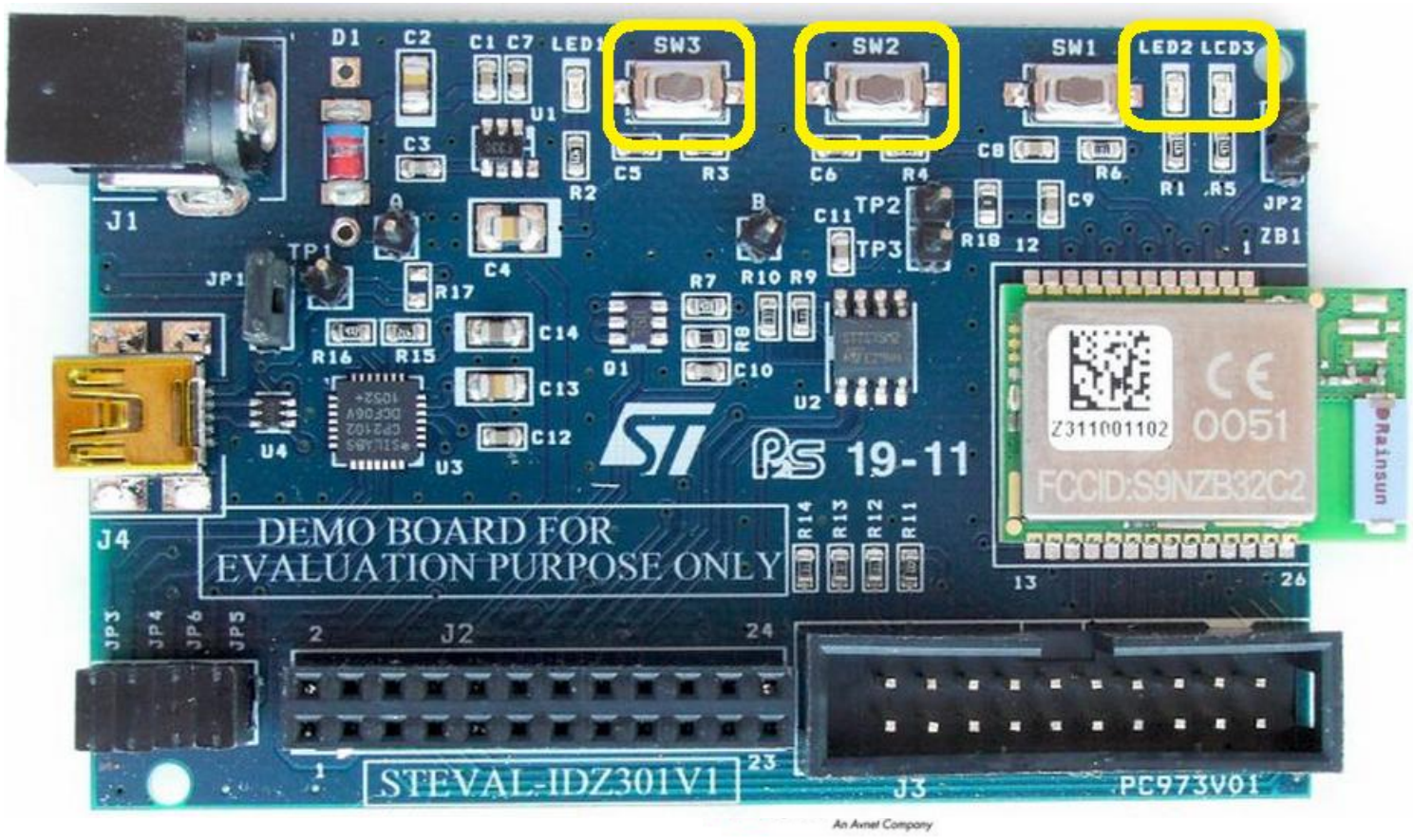
Do this steps (1 and 2) on two **STEVAL-IDZ301V1** board.

Now connect two **STEVAL-IDZ301V1** to PC and you must see the **YELLOW** and **RED** LEDs **ON**.

STEVAL-IDZ301V1 & TALK-802.15.4

Now you are ready for test the SW.

- Press on both **STEVAL-IDZ301V1** the **reset** button.
- If you press the button S2 on a board on the other board you see the LED2 go ON/OFF
- If you press the button S3 the LED3 go ON/OFF.

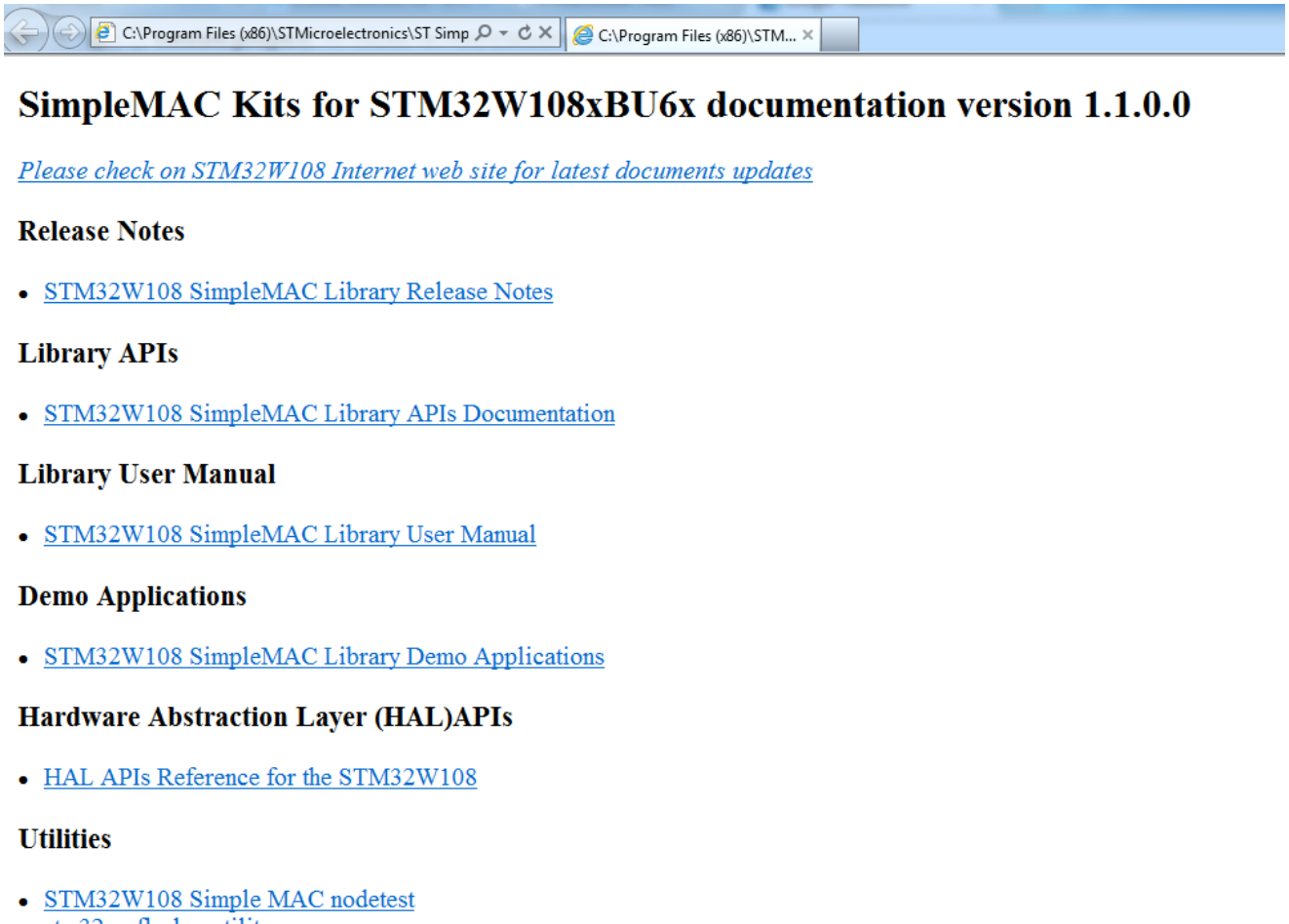


life.augmented

WWW.EMCU.IT

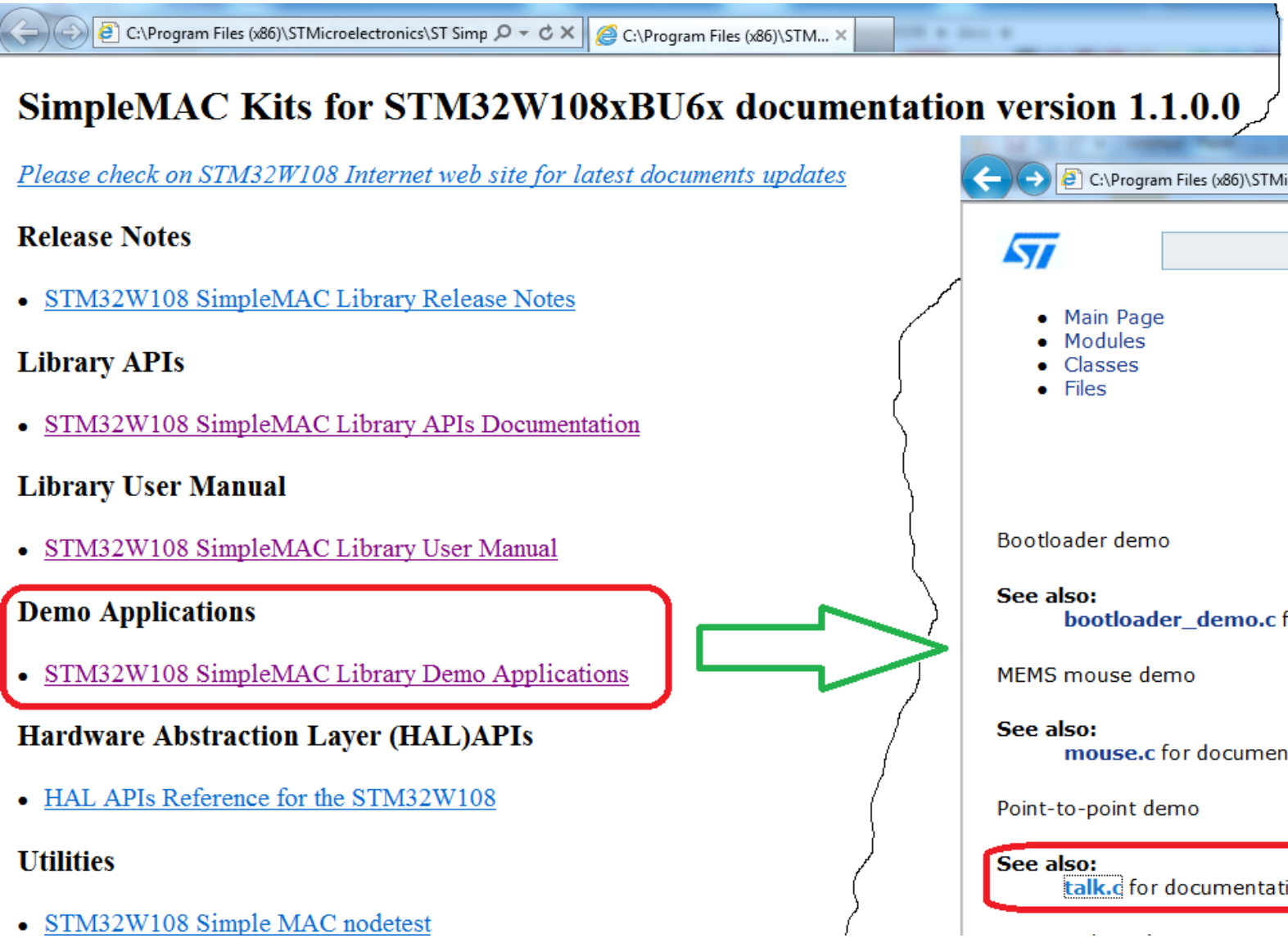
STEVAL-IDZ301V1 documentation

The documentation is in your PC:
C:\Program Files (x86)\STMicroelectronics\ST SimpleMAC-1.1.0\STM32W108\docs
Inside the docs folder there is:
Index.html
Double click on it and you must see the Index Doc Page, see below.



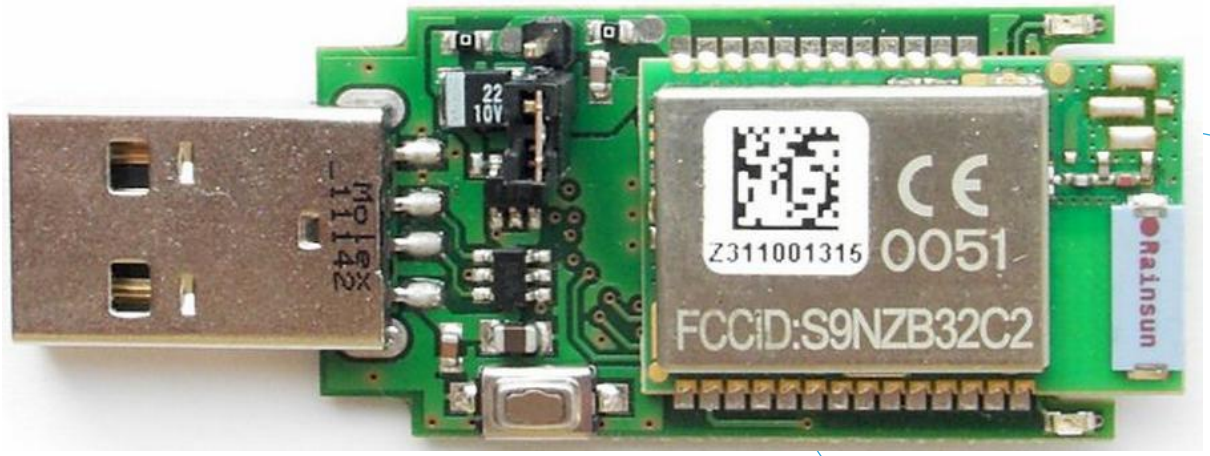
STEVAL-IDZ301V1 documentation

The doc concerning this example (**TALK**) is in: **DEMO APPLICATIONS**, see below



STEVAL-IDZ401V1

Oct. 2012



life.augmented

SILICA
An Avnet Company

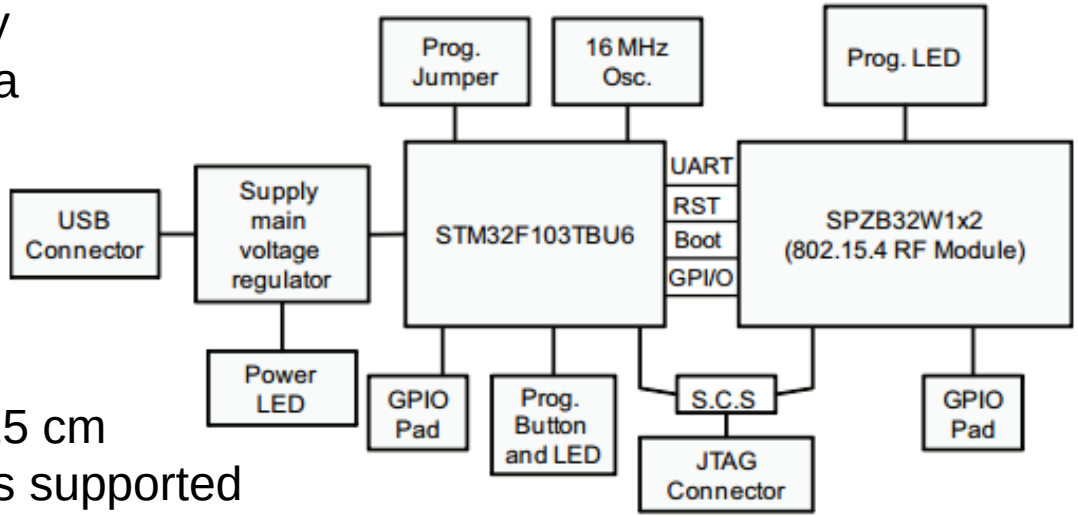
WWW.EMCU.IT

STEVAL-IDZ401V1

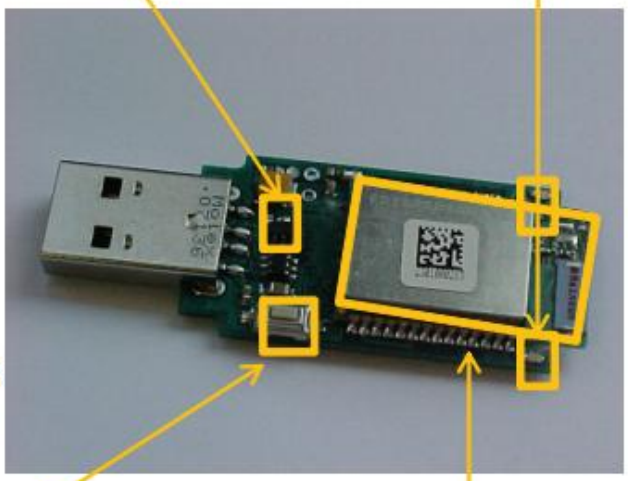
The **STEVAL-IDZ401V1** is an IEEE 802.15.4/ZigBee RF module with a USB interface and with a “dongle” style optimized form factor.

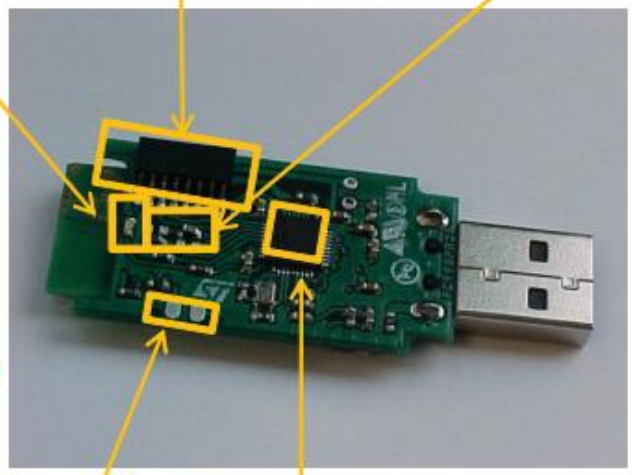
The board includes an STM32F103 chipset with USB bridge functional capabilities and an STM32W chipset. Configurable LEDs and a pushbutton are also available onboard.

- Based on a 2.4 GHz IEEE 802.15.4/ZigBee® SPZB32W1A2 RF module
- Integrated STM32F103TBU6 with USB bridge capabilities
- USB interface and power supply
- Supported reprogrammability via the USB interface
- JTAG connector
- Configurable pushbutton
- Configurable LEDs
- Power indicator LED
- Small dimensions 5.75 cm x 2.15 cm
- STM32W protocol stack libraries supported
- Supported application partitioning between STM32F and STM32W



STEVAL-IDZ401V1





life.augmented

SILICA
An Avnet Company

WWW.EMCU.IT