SMR Evaluation Kit Quickstart Guide

Necessary software packages

0. History

Document revision	Date	Change log	Author
1	20-2-2017	first release	BL

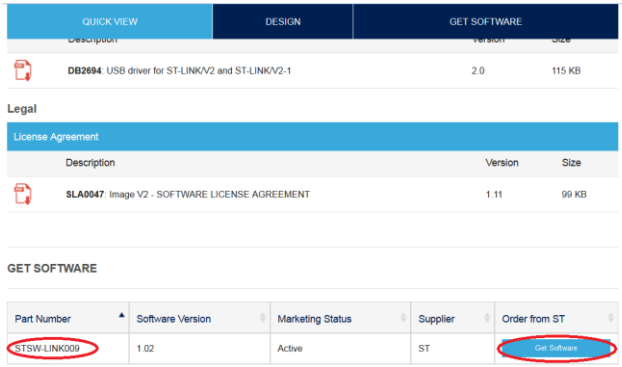
1. Software packages overview

- ST-LINK USB Driver
- SW4STM32 IDE
- STM32Cubemx
- GUI

2. Downloading

2.1. ST-LINK USB Driver

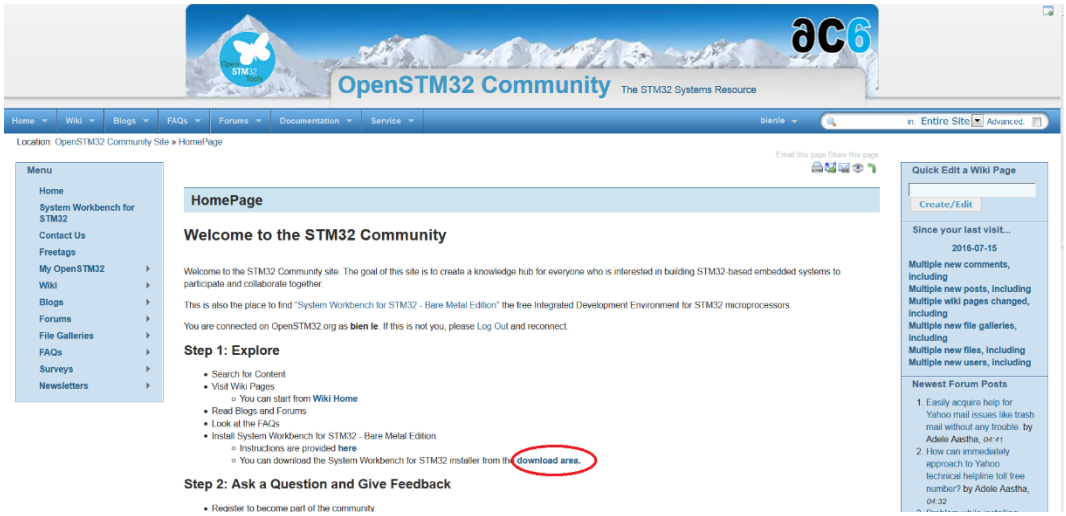
➢ The driver for STM32F401RE board can be downloaded here: http://www.st.com/en/embedded-software/stsw-link009.html



Note: ST-LINK USB Driver is also integrated in the GUI installer!

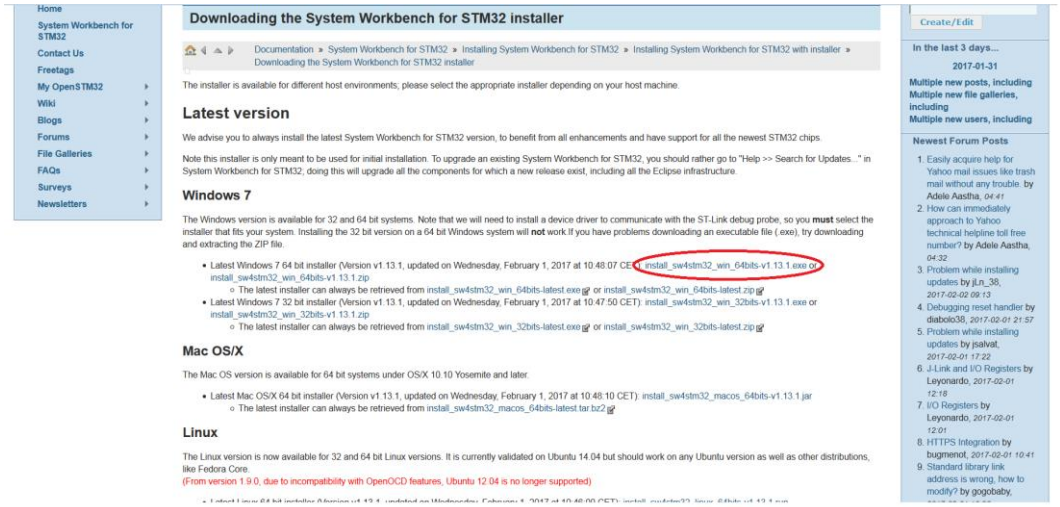
2.2. SW4STM32 IDE

➢ To download the software, go to http://www.openstm32.org/HomePage and then go to "download area"



- Users may have to register for an account in order to download the software

- After creating an account, choose an appropriate version corresponding to operating system and download (e.g. Windows 64bit).



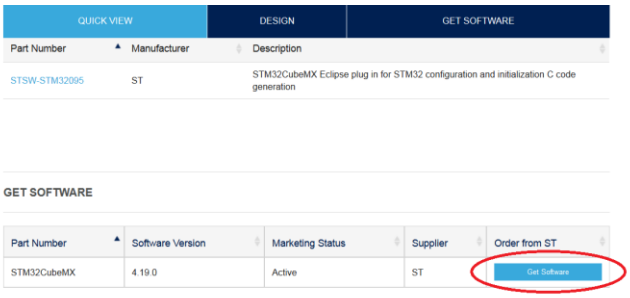
2.3. STM32Cubemx

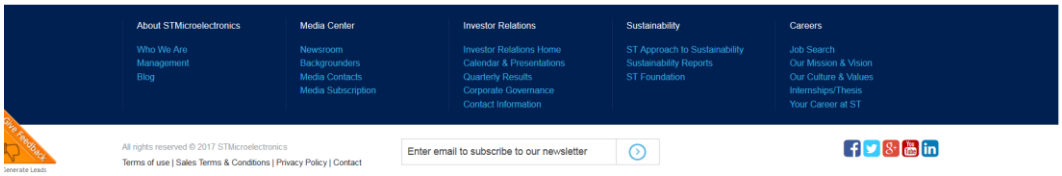
STM32Cubemx is a graphical software configuration tool used for setting STM32 microcontroller board and generating corresponding C code.

- To download the software, go to

  http://www.st.com/en/development-tools/stm32cubemx.html

  Scroll down and click on “Get Software”





- Accept license agreement and download the software.

  Note: user may need to create an account in order to download the software.

2.4. GUI

A simple GUI for visualizing can be found in provided download link for software under the name “SMR-EvalKitGUI.exe”.

Note: ST-LINK USB Driver is also integrated in the GUI installer!

3. Installation

In order to have a proper hardware installation, please follow the instructions below:

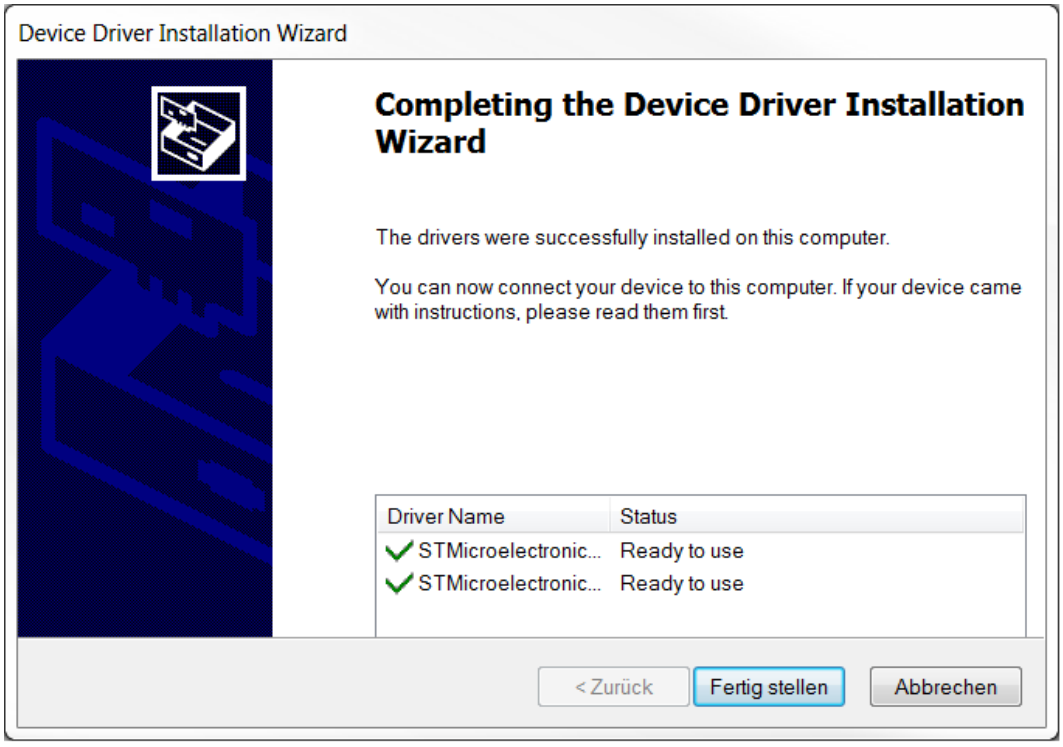
- In the delivered packet the SMR-module board and STM32 microcontroller board should be already connected together, however it is also possible to disassemble the two boards.
- When the two boards are separated and need to be assembled, then connect them as in the following picture. *Note:* before connecting the two boards please make sure the power supply to the STM32F401RE board (via USB cable) is disconnected in order to prevent any damage to the system due to wrong connection and the connection should be checked again before applying the power supply.
- Jumpers on microcontroller board should be left unchanged.

3.1. Software Installation

The packet comes with a download link containing the source code for the system and a simple GUI for visualizing receive signals. Besides the following software packages are also required in order to modify and run the source code (namely: ST-LINK USB driver, SW4STM32 IDE, STM32Cubemx).

3.1.1. ST-LINK USB Driver

After downloading driver packet, proceed installing process.

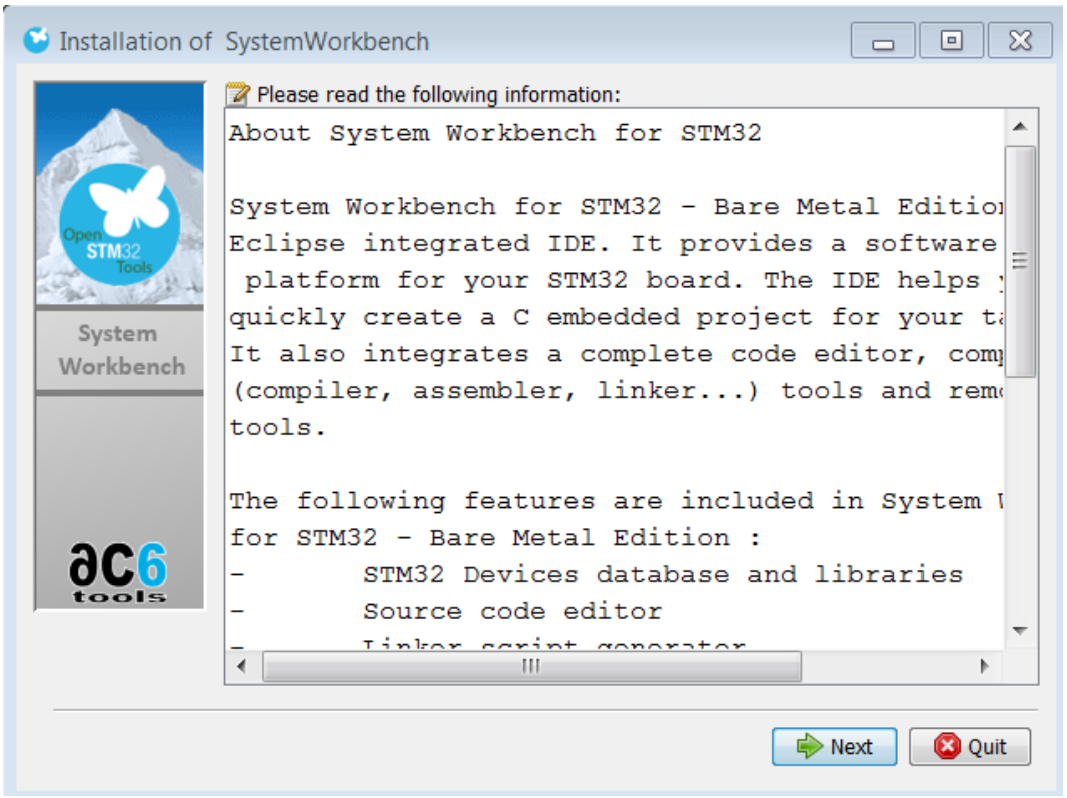


3.1.2. SW4STM32 IDE

The SW4STM32 (System Workbench for STM32) IDE is used for programming and uploading the source code onto the STM32 microcontroller board. To install the SW4STM32 software, please follow instructions below:

After downloading the software, proceed installing process. Note: If JavaRE is required, it can be downloaded here:

http://www.oracle.com/technetwork/java/javase/downloads/jre7-downloads-1880261.html

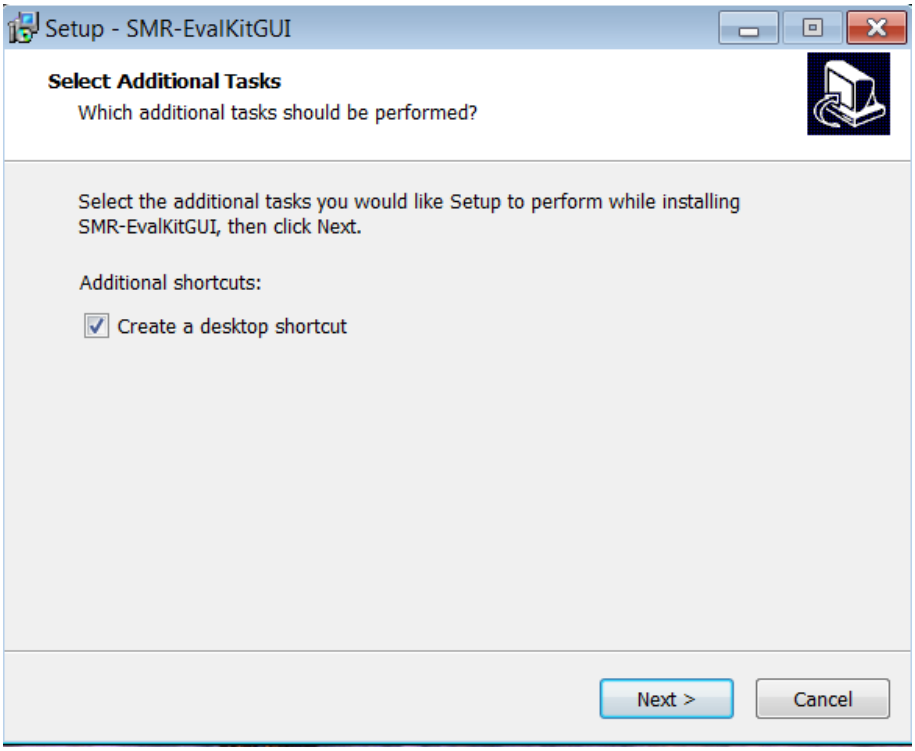


3.1. STM32Cubemx

After downloading, proceed to installing process.

3.2. GUI

After downloading, proceed installing process.



4. Quick Start

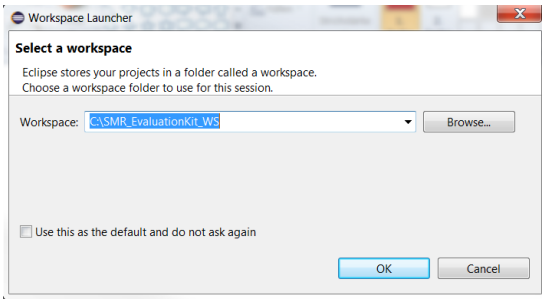
4.1. Hardware Plug-in

Connect SMR-EvalKit to PC via mini-USB cable and wait until STM drivers are successfully installed. *Note: ST-LINK USB Driver needs to be installed before plugging SMR-EvalKit onto PC.*

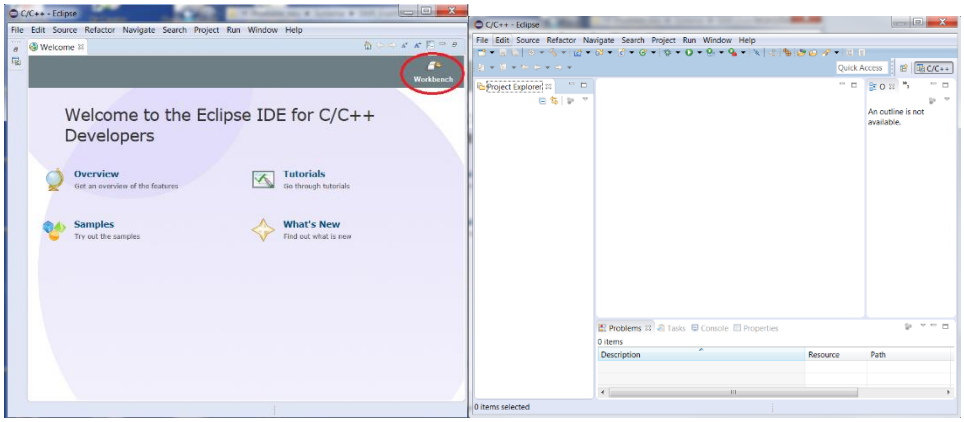
4.2. Uploading of source code onto Microcontroller board

a) Create a workspace folder for the project e.g: "*C:\SMR_EvaluationKit_WS*"

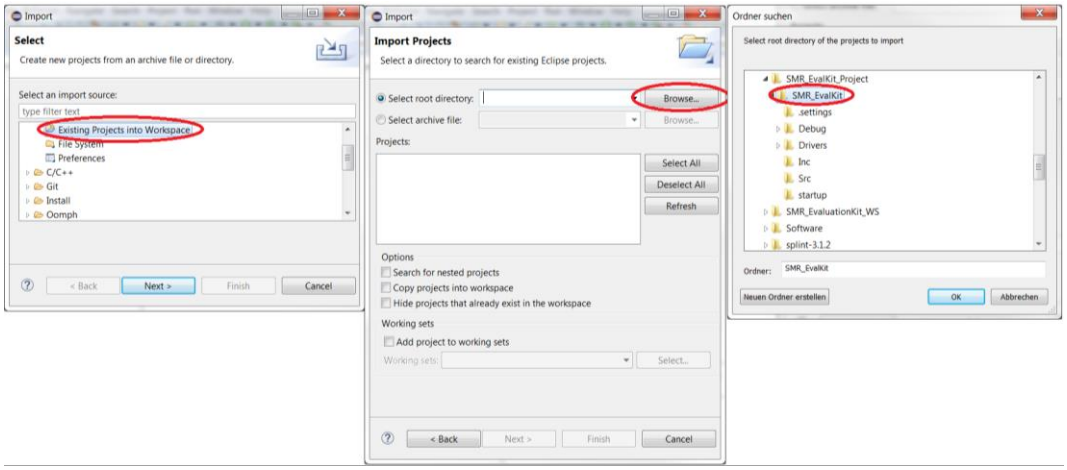
b) Run SW4STM32 software and select the created workspace

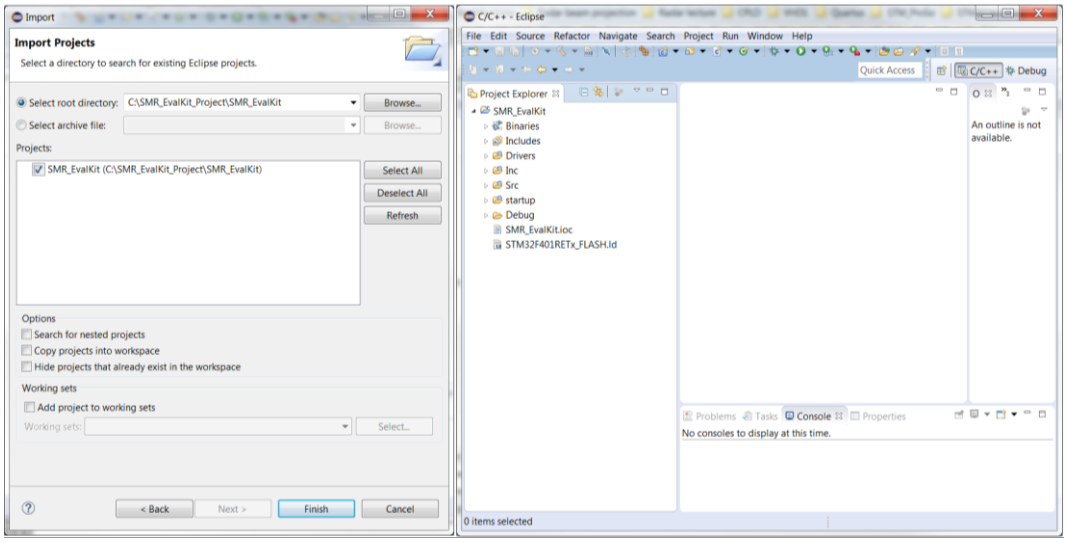


c) Go to workbench

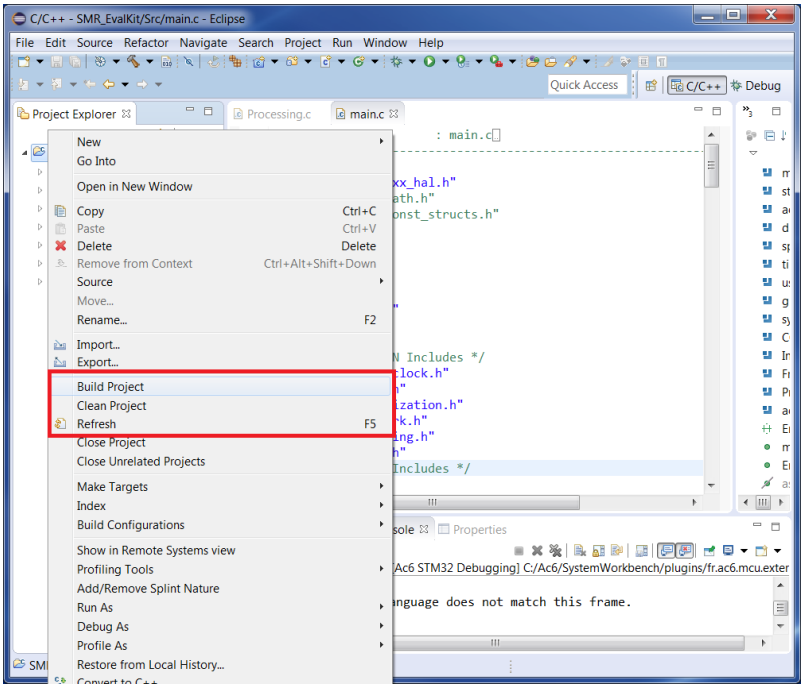


d) Import the project containing the source code into the workspace. Under Project Explorer tab -> Right Click -> Import -> General -> Existing Projects into Workspace -> Select root directory -> Brower -> "select *directory where the source code project located*" -> OK -> Finish

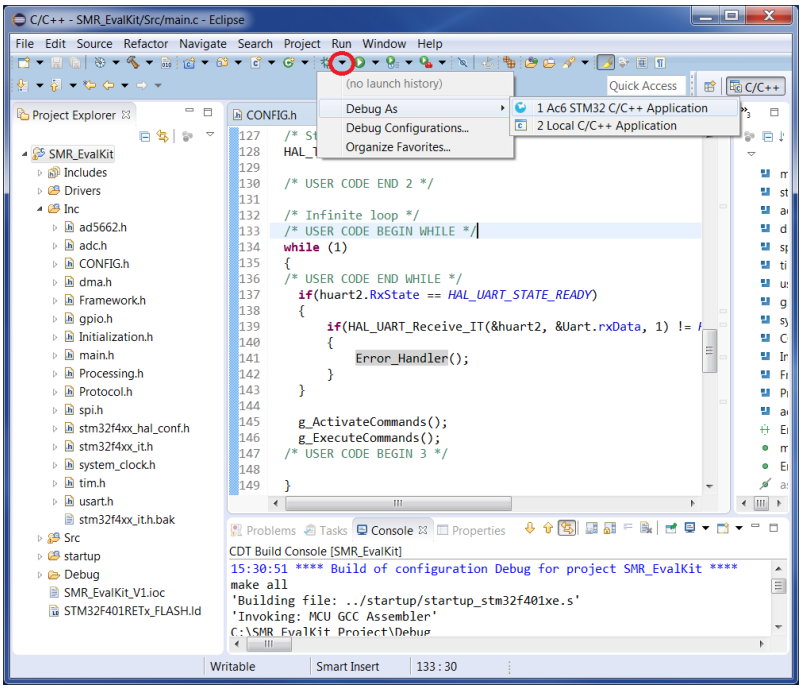




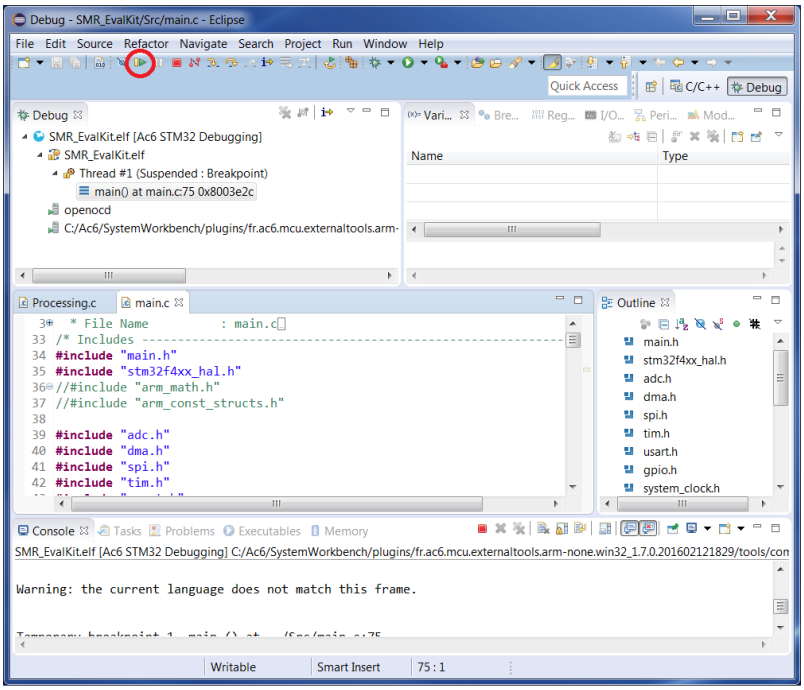
e) Build the project: Right click on project folder -> Clean Project. Right click on project folder -> Refresh. Right click on project folder -> Build Project.



f) Upload the source code onto microcontroller board. Right click on project folder (or left click on debug arrow button) -> Debug As -> Ac6 STM32 C/C++ Application



g) Run application. Click on “Run” button.



h) After successfully uploading and run, the source code will be stored in microcontroller board and will be loaded when microcontroller is powered on.

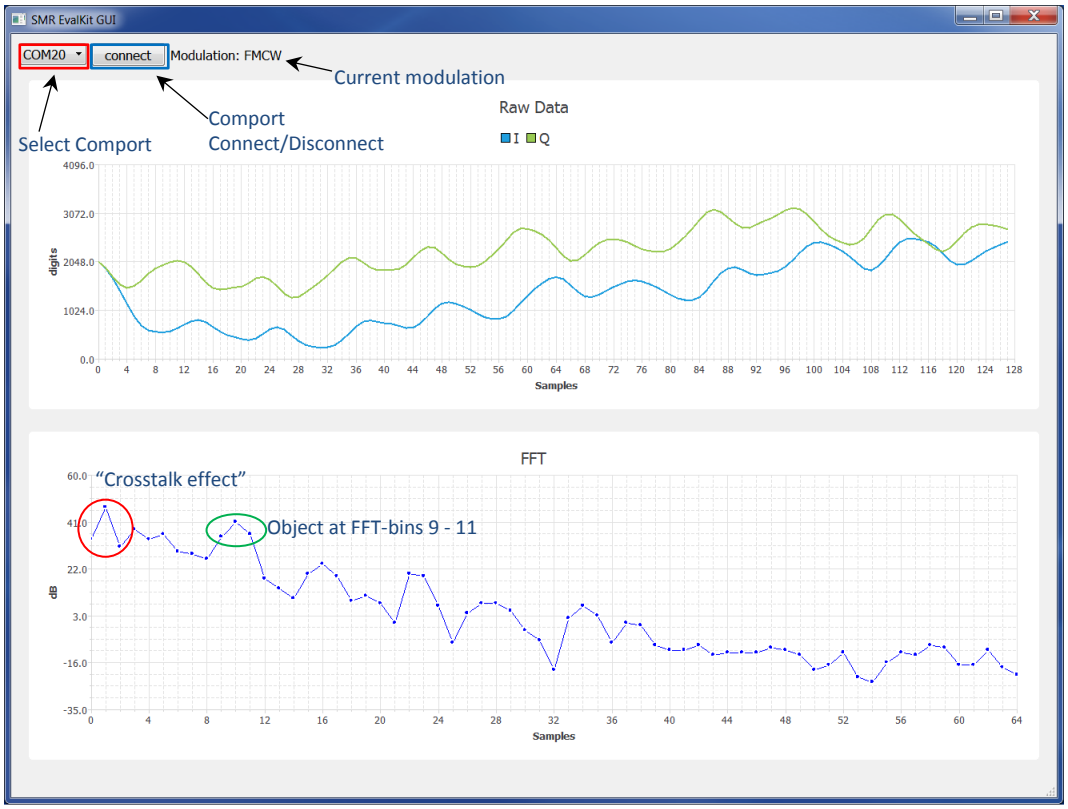
4.3. Signal Visualization

The SMR-EvalKit is a plug-and-play device. The system will run with current configuration when it's supplied power via USB cable and receive signals can be visualized using the GUI.

To visualize receive signals:

- First open the installed GUI
- Then select corresponding Comport of STM-Evalkit
- Click Connect/Disconnect button to connect or disconnect to STM-Evalkit Comport

On the GUI, the upper half shows raw receive signals on I- and Q-channel and its magnitudes are scaled in digit values. The lower half of the GUI shows the corresponding FFT of raw receive signals and is displayed in logarithmic scale (dB).



Note: *When starting SMR-Evalkit, it may take a few seconds to perform initial frequency calibration and there is no data being transmitted to PC during this duration, therefore there is no signal being displayed on the GUI during this time*.

InnoSenT GmbH
Am Roedertor 30
97499 Donnersdorf
GERMANY

Tel.: +49 95289518-0
E-Mail: info@innosent.de
www.innosent.de