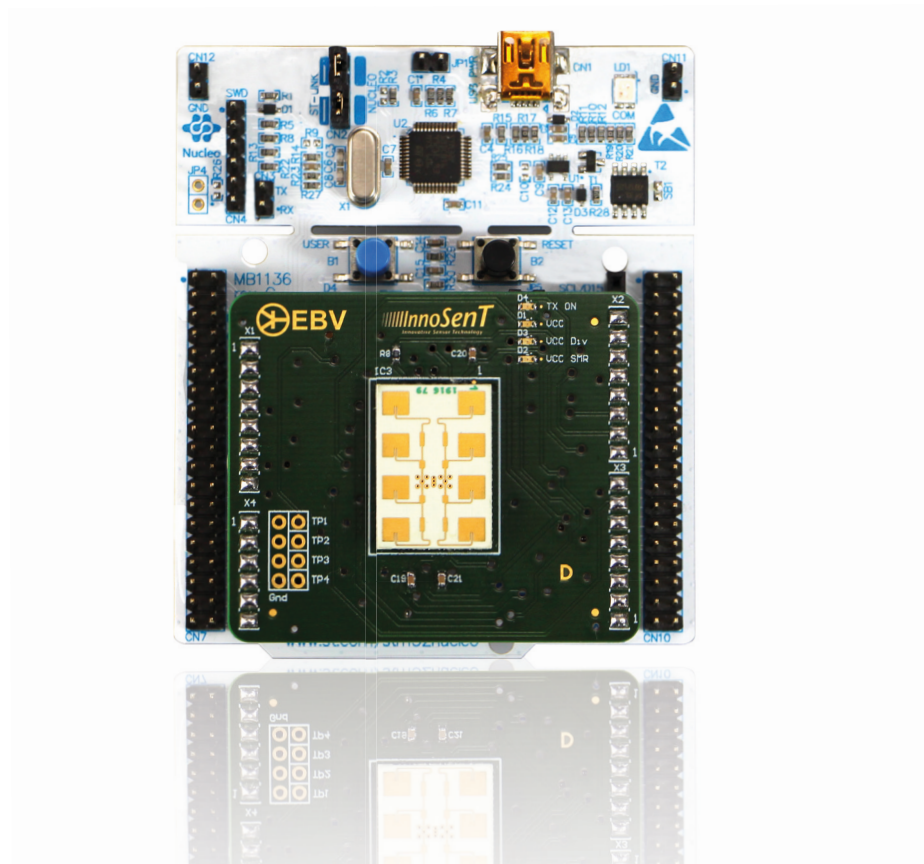


SMR Evaluation Kit Quickstart Guide



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1. Software packages overview

- ST-LINK USB Driver
- SW4STM32 IDE
- STM32Cubemx
- InnoSenT SMR Evaluation Kit GUI

2. Software Download

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>

The screenshot shows the ST website interface for downloading software. It features a navigation bar with 'QUICK VIEW', 'DESIGN', and 'GET SOFTWARE' tabs. Below the navigation bar is a table of software packages:

Description	Version	Size
DB2694 : USB driver for ST-LINKV2 and ST-LINKV2-1	2.0	115 KB

Below this table is a 'Legal' section with a 'License Agreement' table:

Description	Version	Size
SLA0047 : Image V2 - SOFTWARE LICENSE AGREEMENT	1.11	99 KB

At the bottom of the page is a 'GET SOFTWARE' section with a table of software versions:

Part Number	Software Version	Marketing Status	Supplier	Order from ST
STSW-LINK009	1.02	Active	ST	Get Software

The footer of the page contains navigation links for 'About STMicroelectronics', 'Media Center', 'Investor Relations', 'Sustainability', and 'Careers'.

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

2.2. SW4STM32 IDE

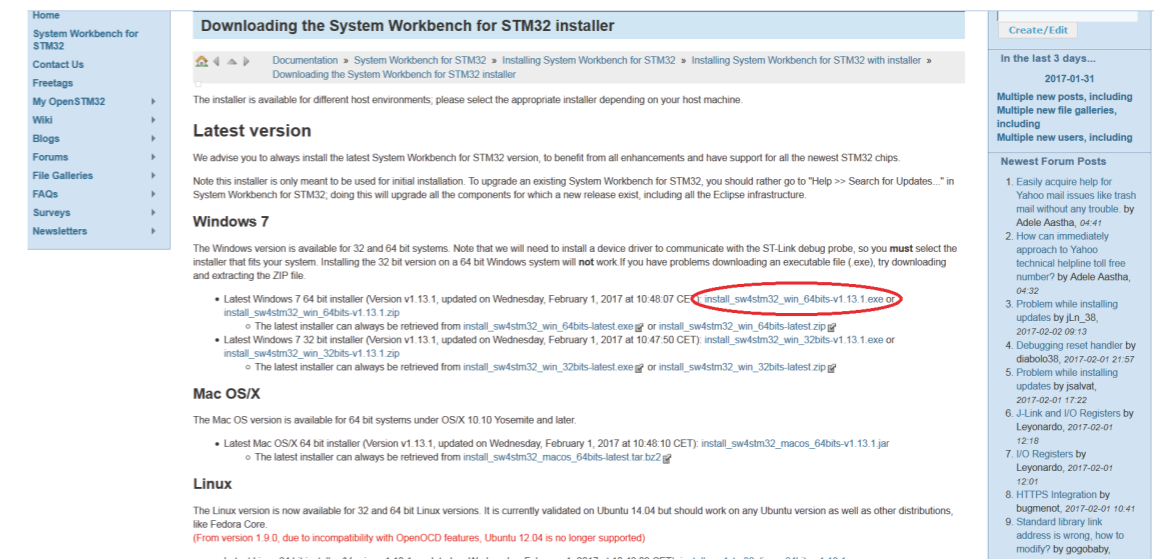
- To download the software, go to <http://www.openstm32.org/HomePage> and then go to “download area”



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



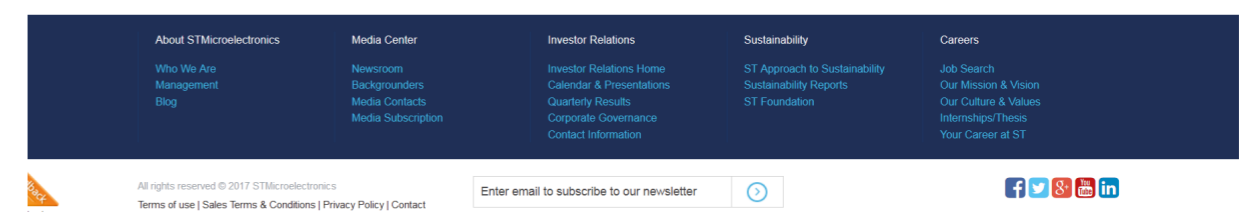
- After creating an account, choose the version that matches your operating system and download it



2.3. STM32Cubemx (optional)

STM32Cubemx is a graphical software tool that can be used to configure the STM32 microcontroller board and generate an empty project with C code for the controller initialization. The Evaluation Kit comes with a preconfigured firmware. Unless you would like to start a new project the STM32Cubemx software is not required.

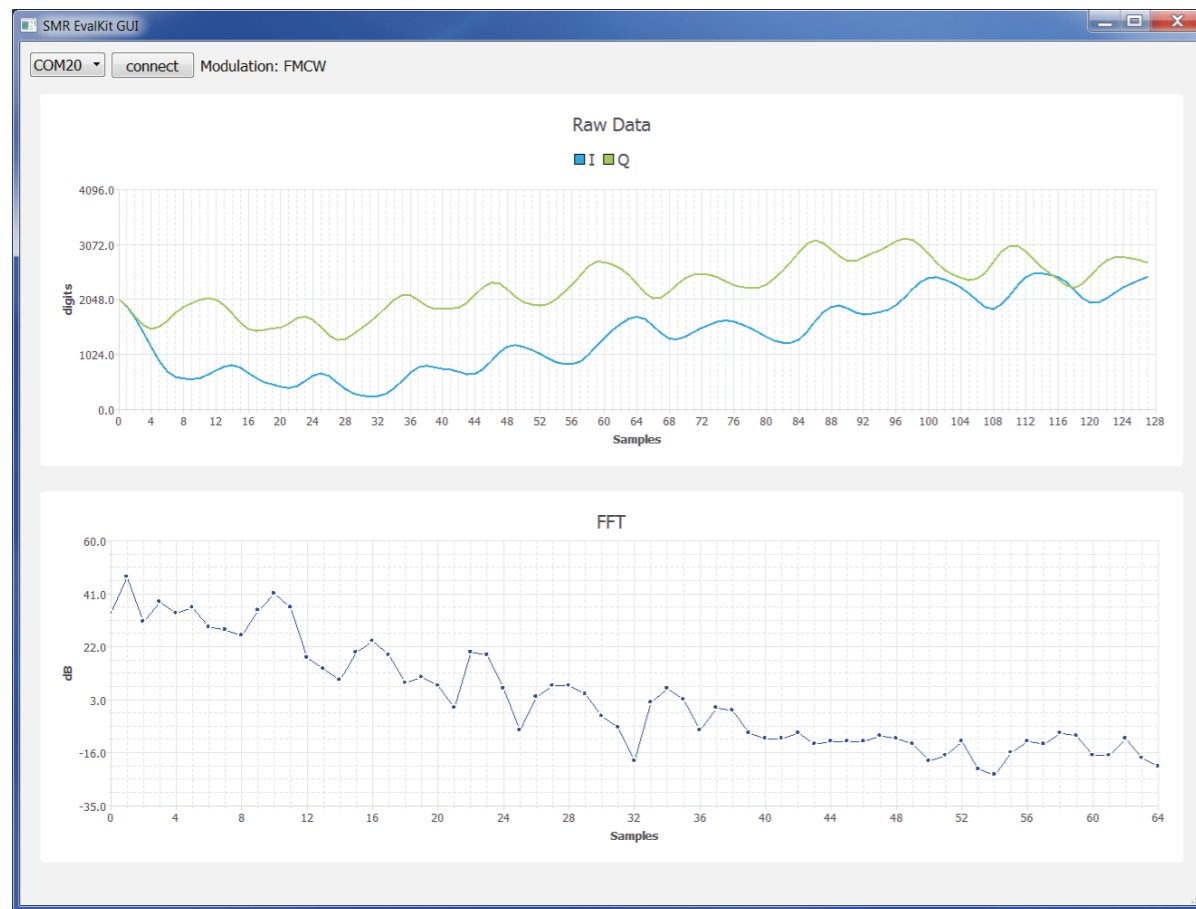
- To download the software, go to <http://www.st.com/en/development-tools/stm32cubemx.html>
Scroll down and click on “Get Software”



- Accept license agreement and download the software.
Note: user may need to create an account in order to download the software.

2.4. InnoSenT SMR Evaluation Kit GUI

A simple GUI for visualizing can be found in our software package. To download this package please visit: <https://avnet.com/wps/portal//ebv/products/product-highlights/ebv-and-infineon-24-ghz/registration-software-download/>



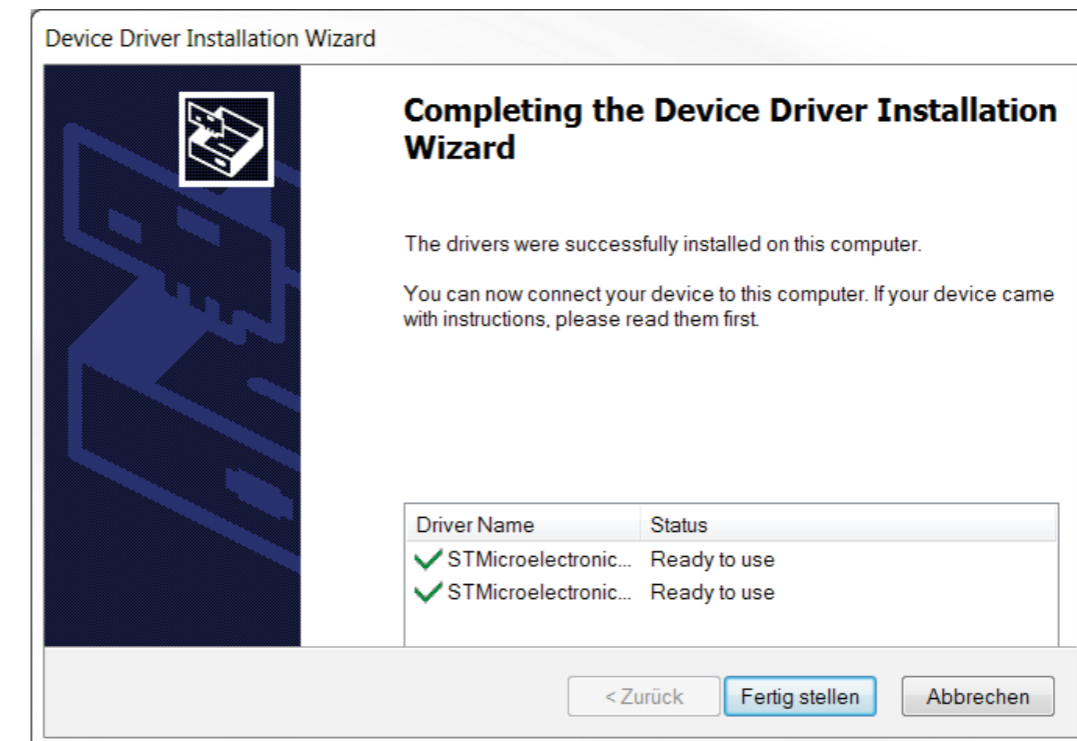
3. Software Installation

The kit comes with a download link containing the example firmware source code for the system and a simple GUI for visualizing the signals that are received by the radar.

In addition to that the following software packages need to be installed in order to modify and run the source code and make full use of the Evaluation Kit.

3.1 ST-LINK USB Driver

Please install the ST-LINK USB Driver first.

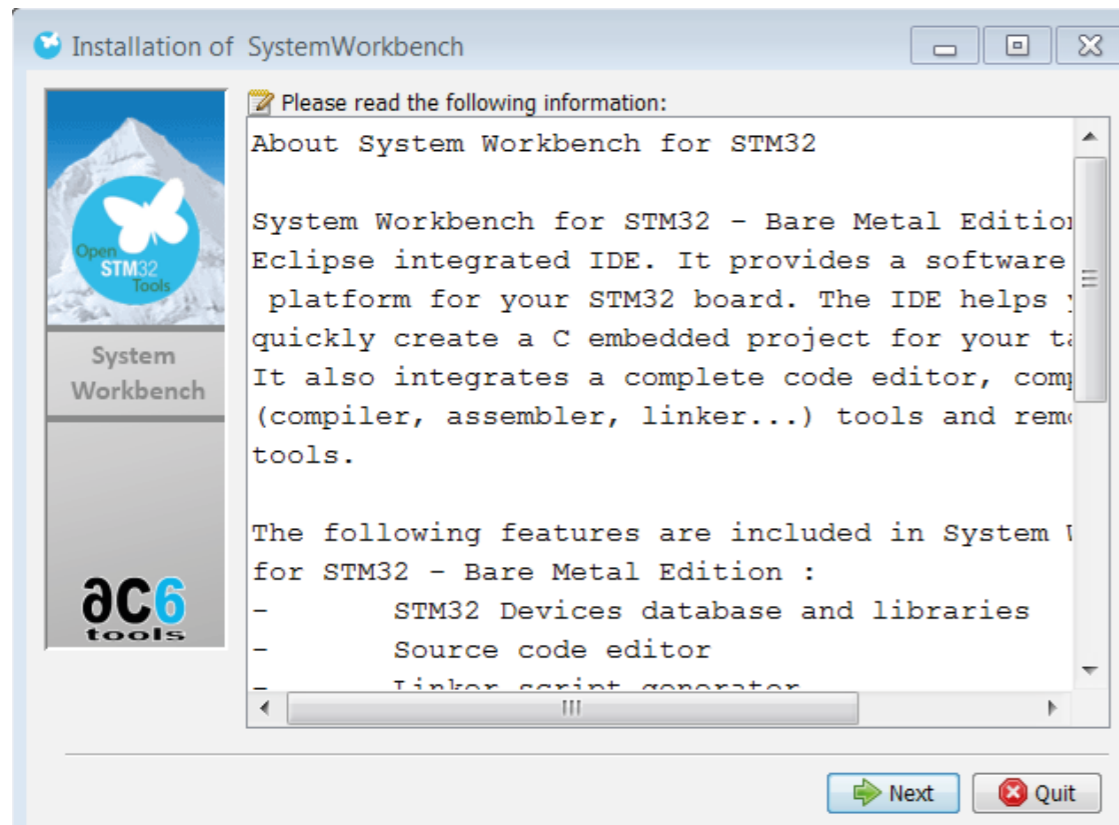


3.2 SW4STM32 IDE

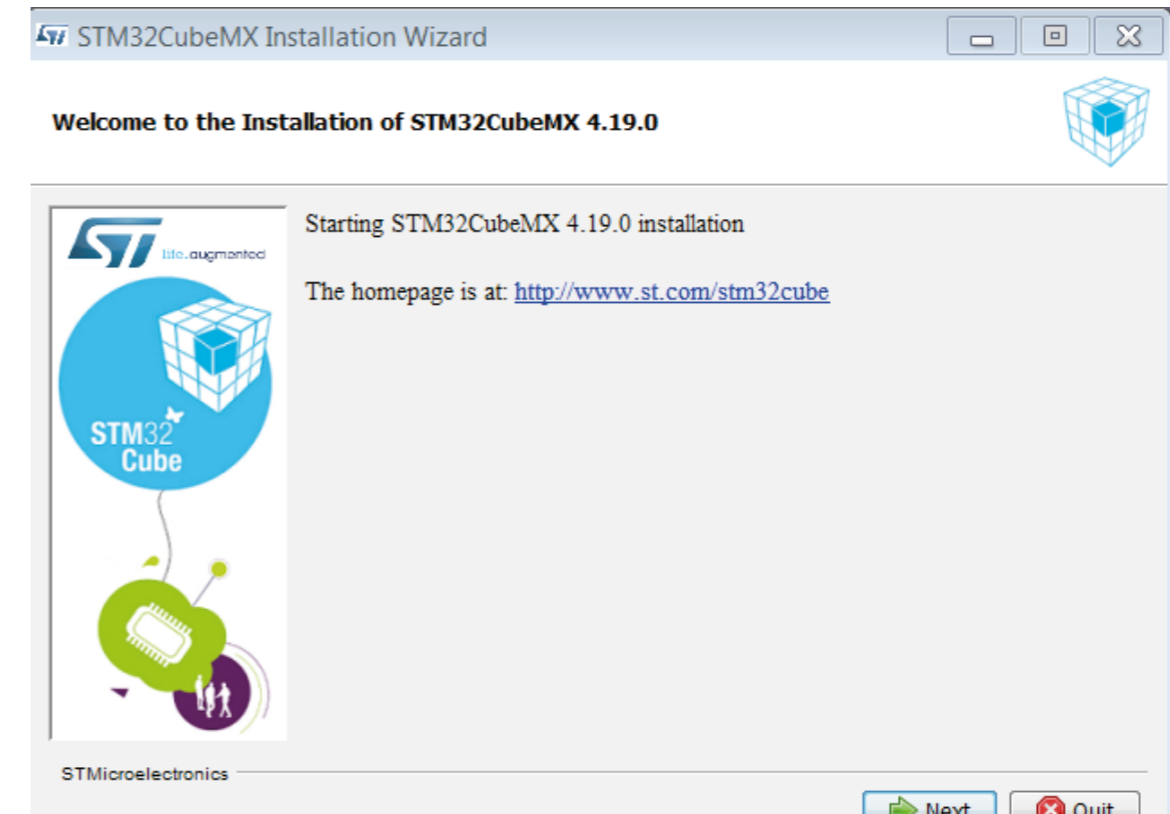
The SW4STM32 (System Workbench for STM32) IDE is used for programming and uploading the source code onto the STM32 microcontroller board. To install the SW4STM32 software, please follow the instructions below:

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

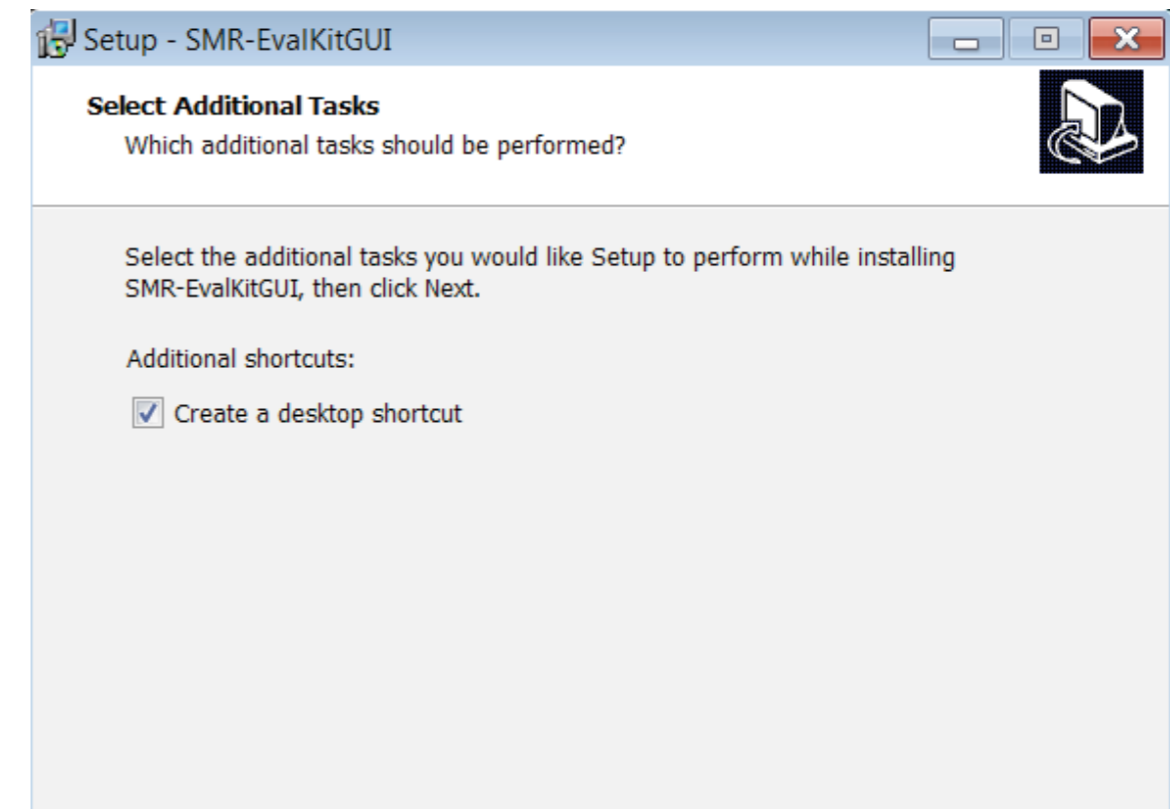
<http://www.oracle.com/technetwork/java/javase/downloads/jre7-downloads-1880261.html>



3.3 STM32CubeMX (optional)



3.4 InnoSenT SMR-EvalKit GUI



4. System Setup

4.1 Hardware Installation

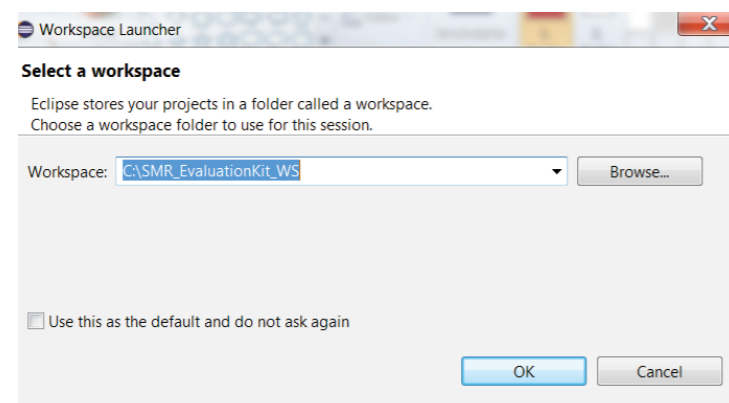
- The hardware comes preassembled
- Jumpers on microcontroller board should be left unchanged

Connect the SMR-EvalKit to your PC via the mini-USB cable that is included in the kit and wait until your operating system finishes configuring the STM drivers.

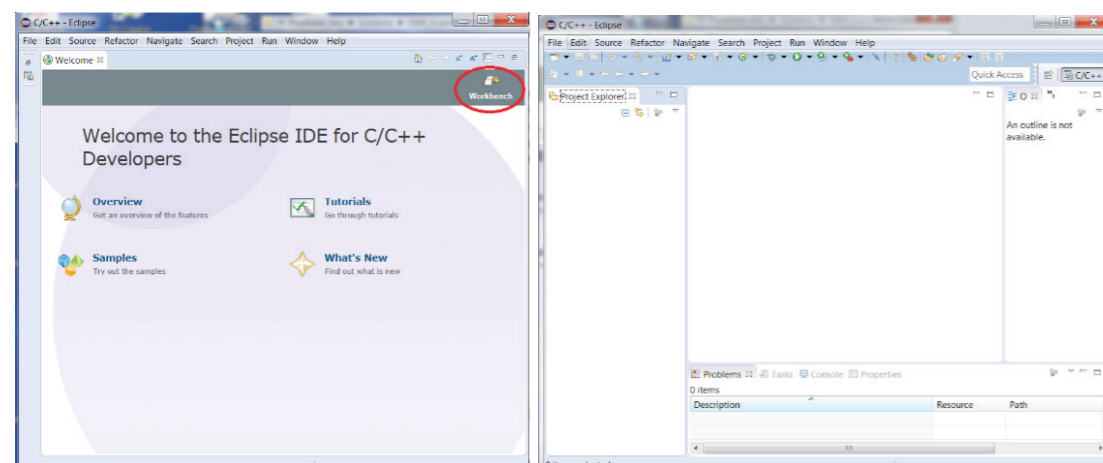
Note: ST-LINK USB Driver needs to be installed before connecting the SMR-EvalKit with the PC.

4.2 Starting the STM IDE and uploading source code to the microcontroller board

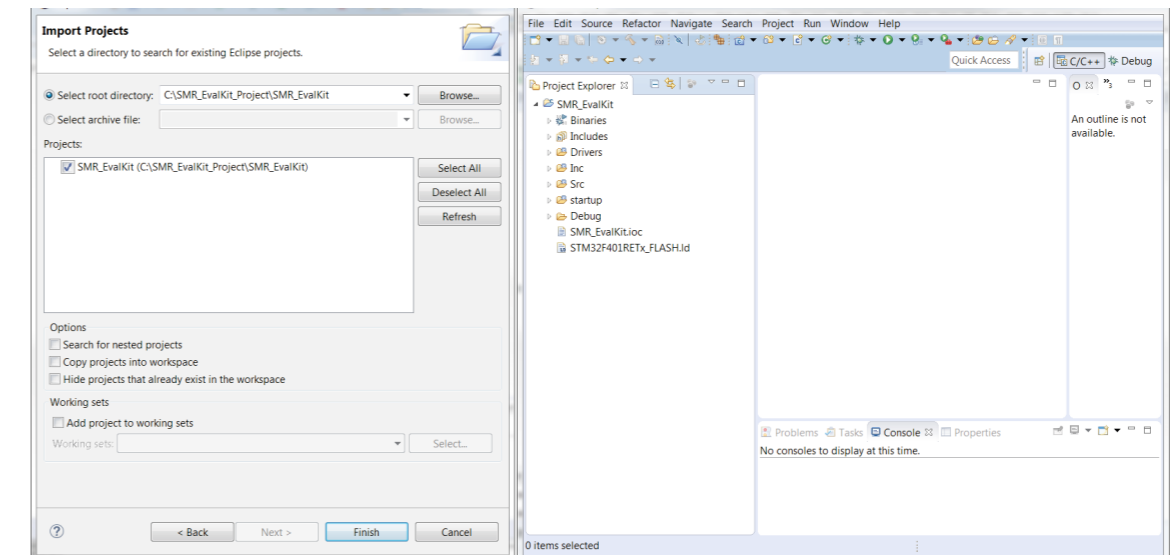
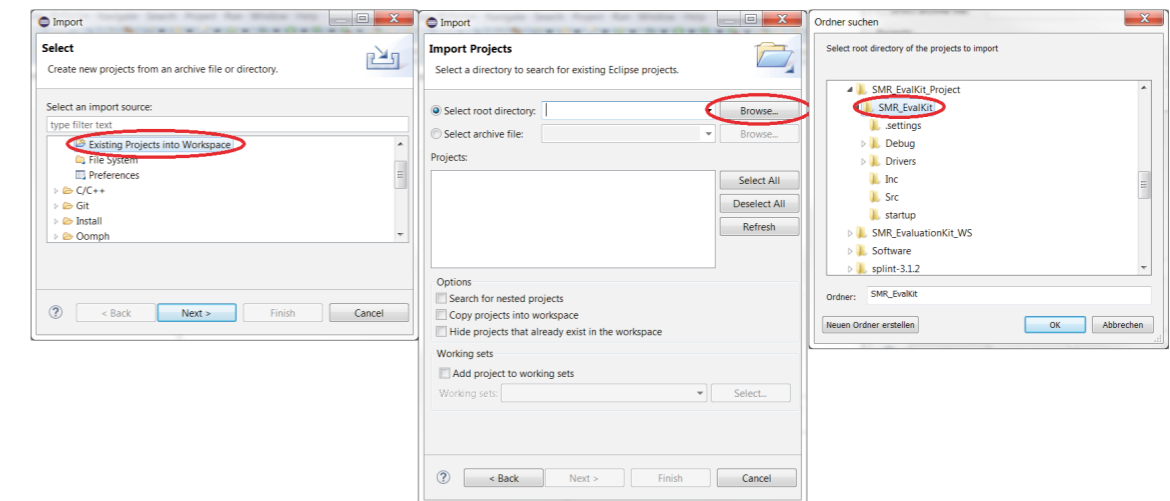
- Create a workspace folder for the project e.g: "C:\SMR_EvaluationKit_WS"
- Copy the SMR EvalKit firmware project folder into the workspace
- Run SW4STM32 software and select the created workspace folder



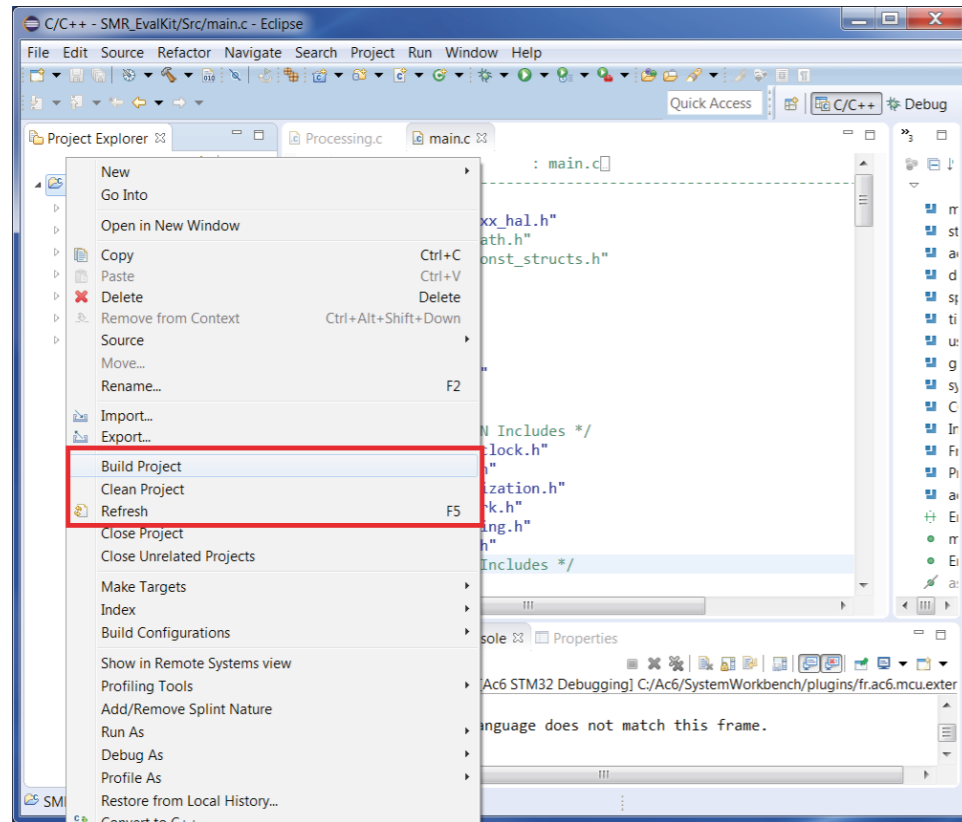
- Go to workbench



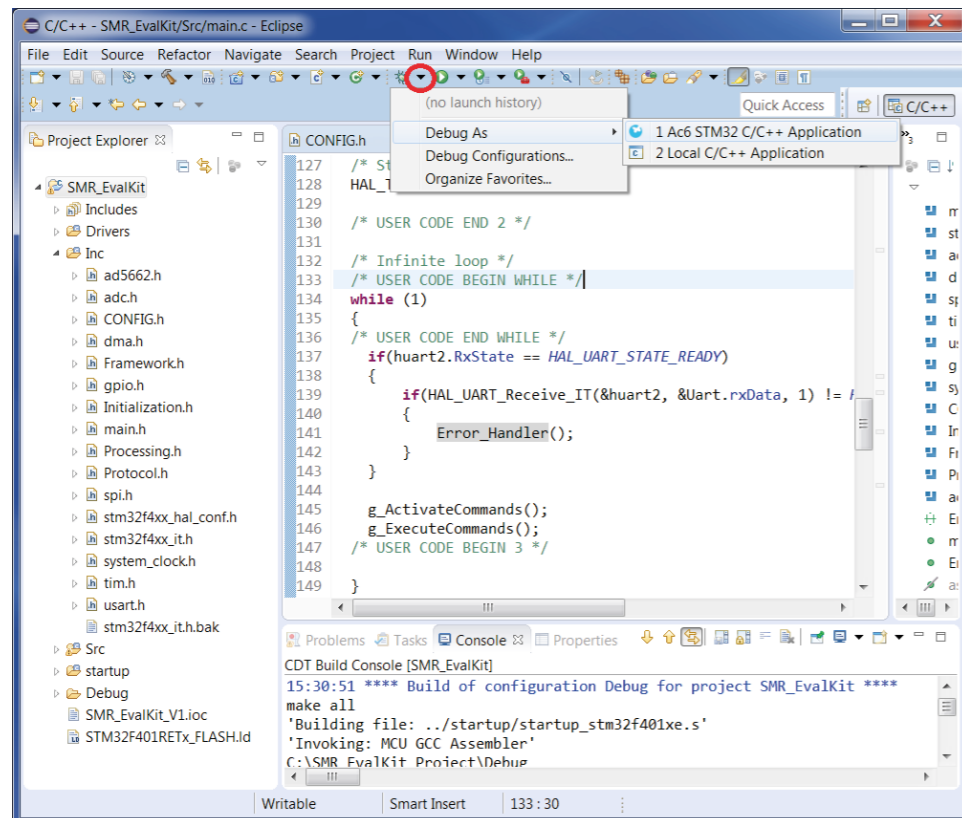
- Import the project containing the source code into the workspace. In the Project Explorer tab -> Right Click -> Import -> General -> Existing Projects into Workspace -> Select root directory -> Brower -> "select directory where the source code project located" -> OK -> Finish



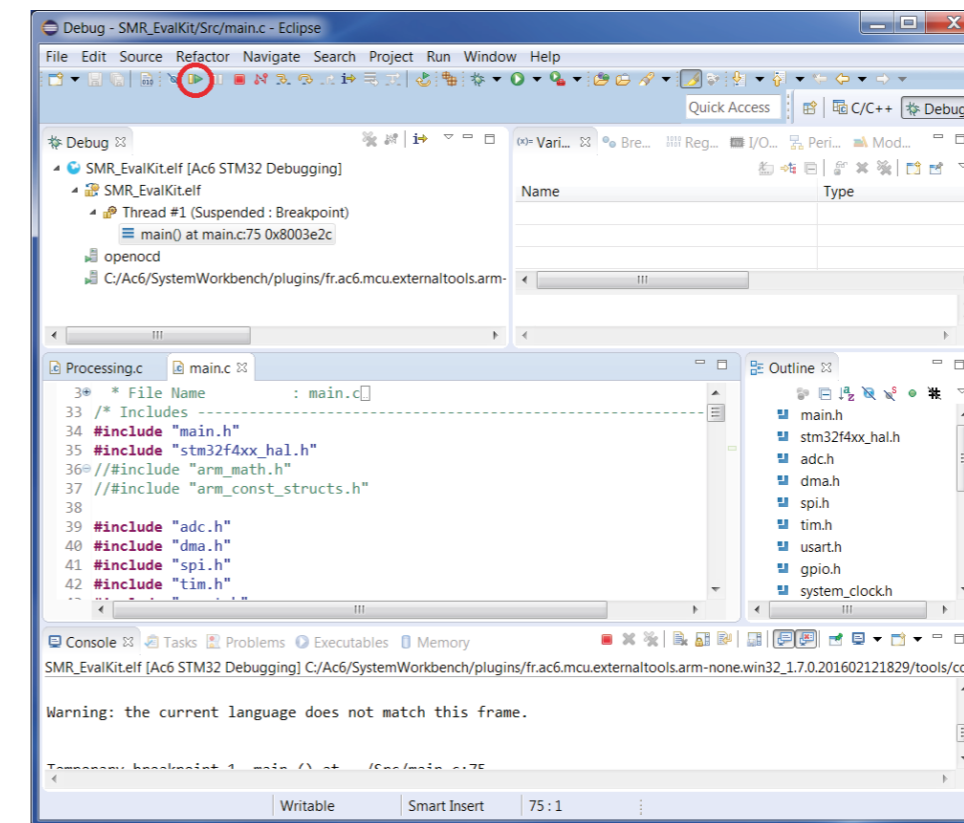
- Build the project: Right click on the project folder -> Clean Project. Right click on the project folder -> Refresh. Right click on the project folder -> Build Project.



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



h) Run application. Click on "Run" button.



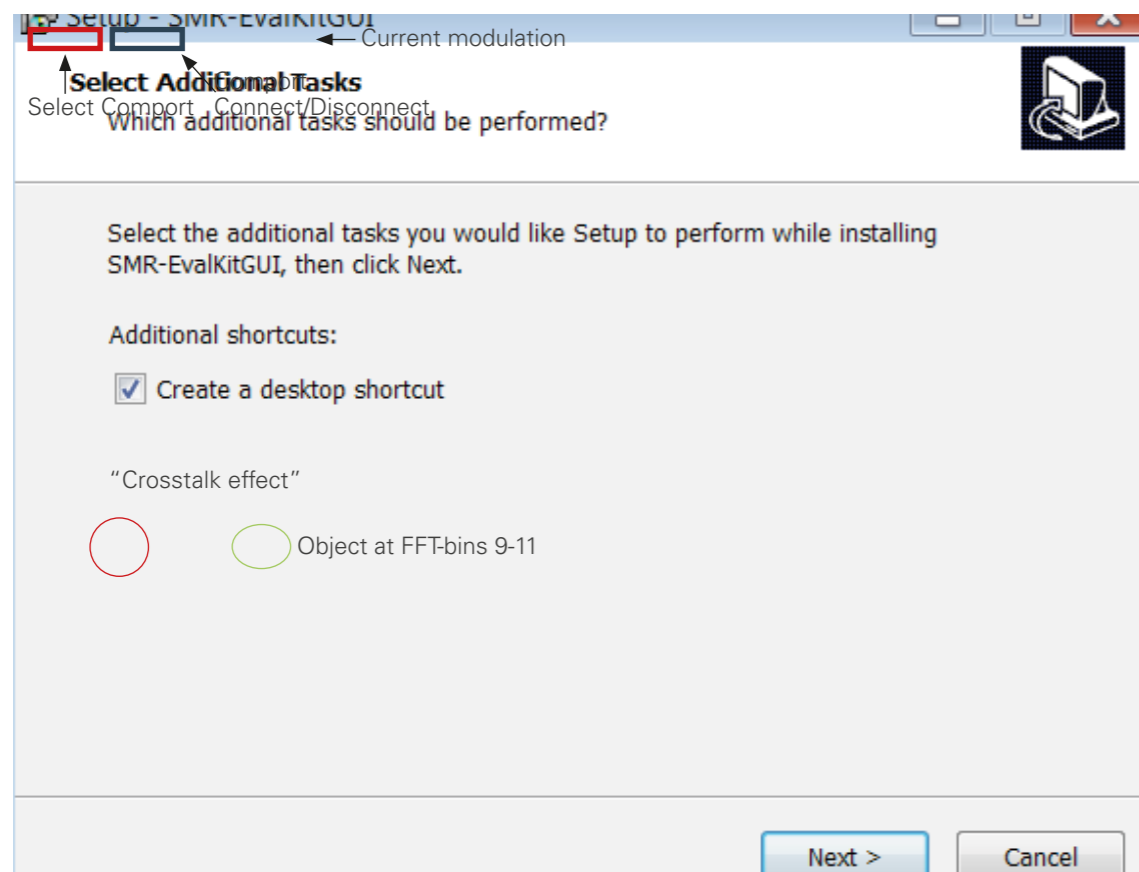
i) Once the firmware has even uploaded to the target and has been run it will be stored in the controllers flash memory and run even without connecting to the system workbench on power up.

4.3 Signal Visualization

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

- open the SMR EvalKit GUI
- select corresponding **Comport** of SMR EvalKit
- Click Connect/Disconnect button to **connect** or **disconnect** to SMR EvalKit Comport

In the GUI, the upper graph shows the raw receive signals on I- and Q-channel. The magnitudes are scaled in digit values. The bottom graph shows the corresponding FFT of raw receive signals and is displayed logarithmic (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 the PC during this time. It might take a few moments until a signal is displayed in the GUI.

5. History

Document revision	Date	Change log	Author
1	20.02.2017	first draft	BL
2	25.07.2017	release	CD



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