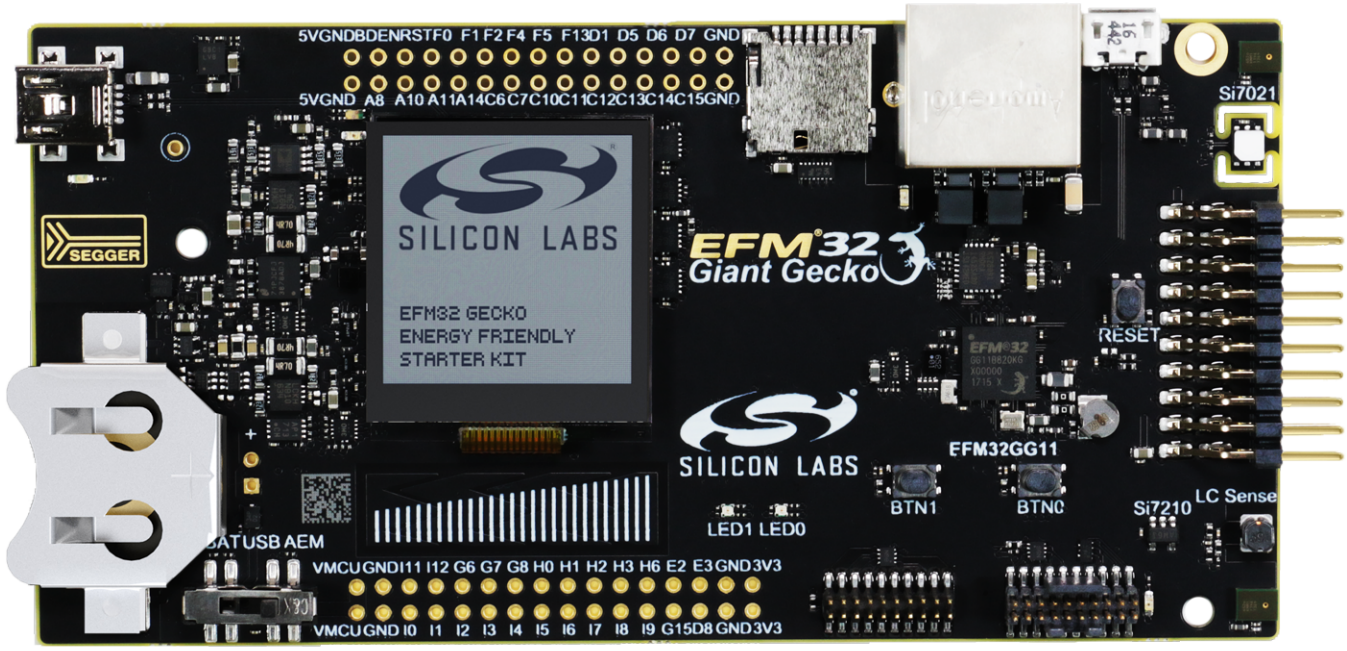
EFM32 EFM32GG11 Giant Gecko Family QSG149: EFM32GG11-SLSTK3701A Quick-Start Guide

The EFM32GG11-SLSTK3701A is an excellent starting point to get familiar with the EFM32 EFM32GG11 Giant Gecko microcontrollers.

The kit contains sensors and peripherals demonstrating some of the MCU's many capabilities. The kit can also serve as a starting point for application development.

KIT CONTENTS

- EFM32GG11 Giant Gecko Starter Kit board
- 1 x mini USB cable
- 1 x micro USB cable
- 1 x micro USB to USB A female adapter
- Getting Started card

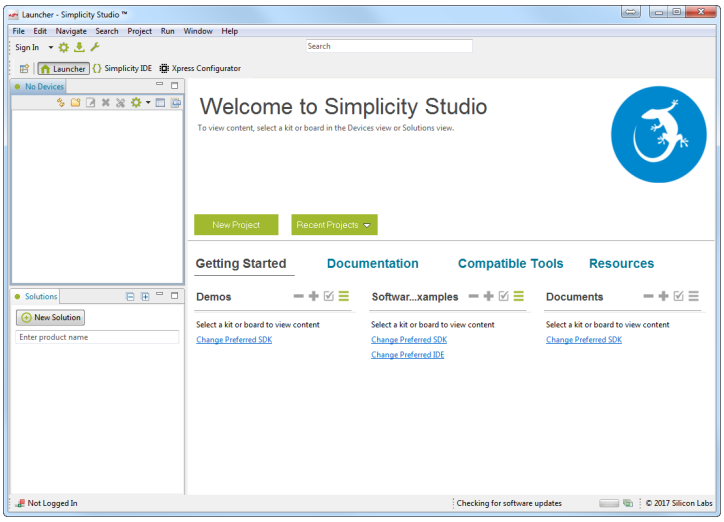


1. Getting Started

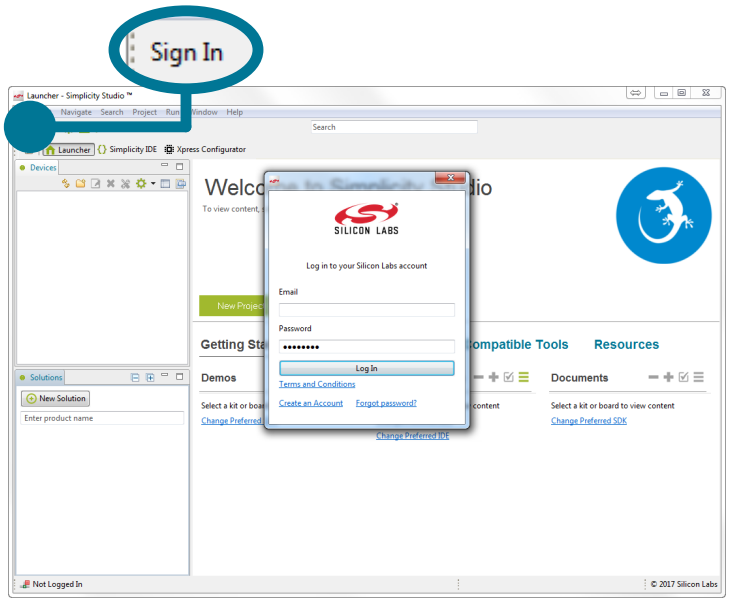
Install Simplicity Studio

Simplicity Studio is a free software suite needed to start developing your application. Download the latest version of Simplicity Studio from the Silicon Labs website:

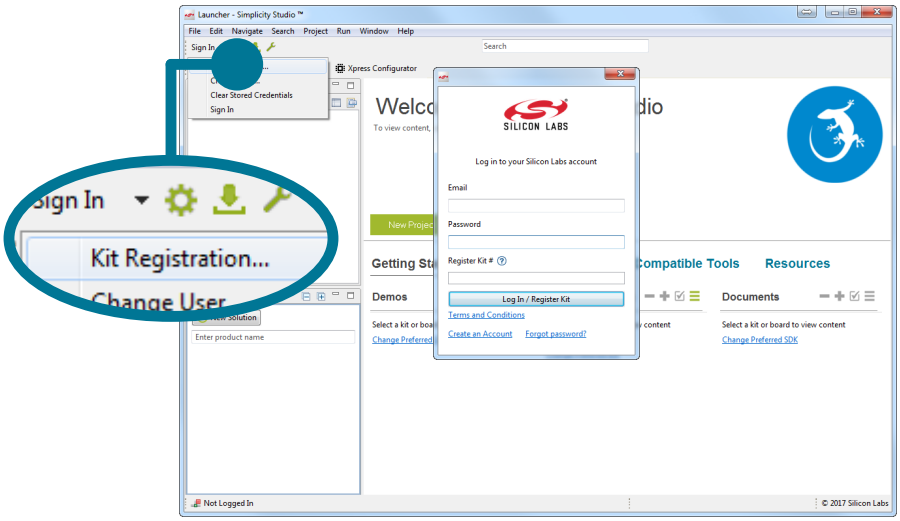
http://www.silabs.com/simplicity-studio



1. Download the software and follow the installation instructions.
2. When asked to sign in, enter your Silicon Labs username and password. Sign up for a new account if you don't already have one. This is required to gain access to all of the software components.



3. After signing in, register your kit with Simplicity Studio. If the kit is not registered, Simplicity Studio will only enable access to the Micrium Kernel; however, if the kit is registered, Simplicity Studio will enable access to all the other applicable Micrium components as well. The license number is on the box of the kit.

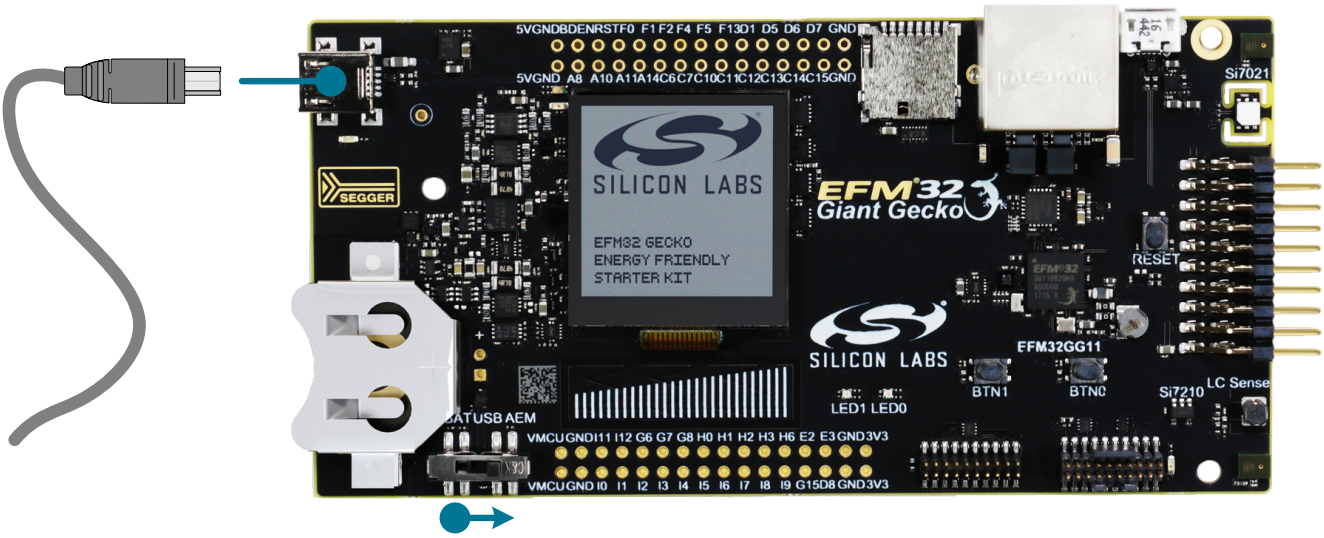


4. The installation wizard automatically selects the recommended software for the connected device or selected product line. To adjust the installed software, click the [**Update Software**]  button in the [**Launcher**] area. In the dialog that opens, select the desired software under the [**SDKs**] tab and tools under the [**Tools**] tab.
5. Finalize the installation.

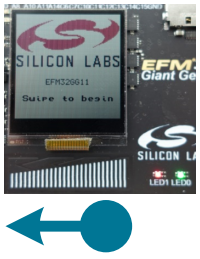
Play with the Pre-Programmed Demo While Waiting

The EFM32GG11 Giant Gecko STK comes pre-loaded with a demo called [**Helge's Demo**]. This demo showcases some of the EFM32GG11 MCU and kit features.

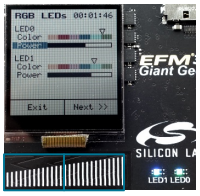
1. To run the demo, power the STK from the debug USB connector on the left and set the switch to the [**AEM**] position. Alternatively, insert a CR2032 battery and set the power-switch to [**BAT**].



2. The display on the kit will show a Silicon Labs logo. This is the first screen of the demo. To move to the next screen, swipe left or right on the capacitive touch slider beneath the screen. To follow this guide, swipe left.



3. The second screen shows an interface to control the color and intensity of the RGB LEDs on the kit. Press down on the right side of the touch slider to activate the virtual button shown on the screen, named [**Settings**]. Use the slider to adjust the current setting, and use the virtual [**Next**] button (tap the slider on the right side) to move to the next setting. Use the virtual [**Exit**] button (tap the slider on the left side) to return to normal slider operation.



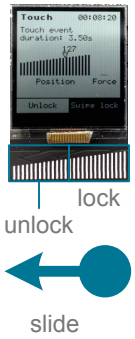
Exit Next

slide

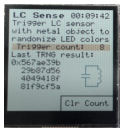
4. The third screen shows the magnetic field strength measured by the Silicon Labs Si7210 Hall-Effect Sensor, mounted on the lower-right of the kit. Move a magnet close to it to see what happens.

5. The fourth screen shows the temperature and humidity measured by the Silicon Labs Si7021 Humidity and Temperature Sensor, mounted on the top-right of the kit. Tapping the virtual button toggles between Celsius and Fahrenheit.

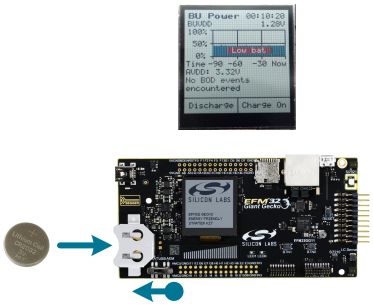
6. The fifth screen shows data coming from the capacitive sense slider. The EFM32GG11 Giant Gecko has an advanced SAR-based capacitive touch peripheral with up to 64 inputs that provides the touch measurements. Use the virtual [**Swipe lock**] button to interact more freely with the slider in this screen.



7. The sixth screen shows the ultra-low power LESENSE peripheral in action, as well as the True Random Number Generator (TRNG) peripheral, both on the EFM32GG11 Giant Gecko. On this screen, LESENSE is monitoring the LC sensor on the bottom right of the kit. When it senses closeness of metal, the TRNG is used to generate a new color for the LEDs. Move a piece of metal up to the top of the LC Sense coil to try this out.

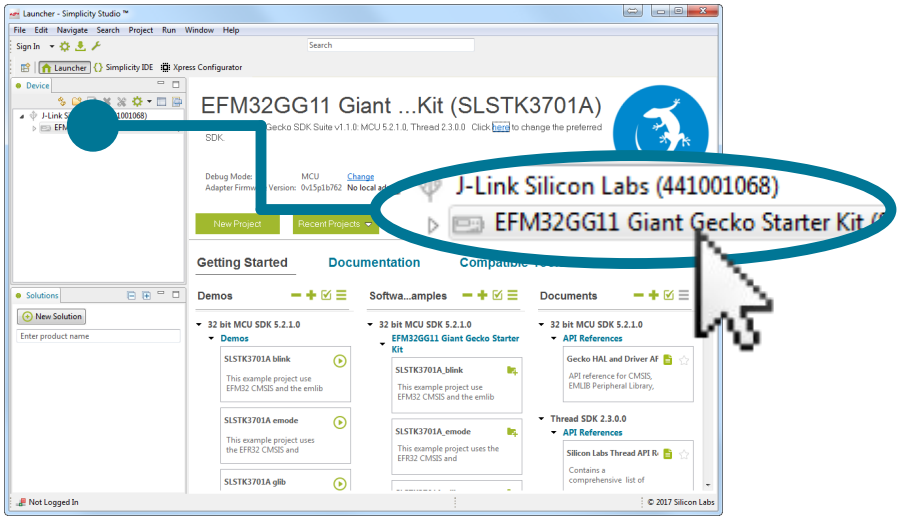


8. The seventh screen features the backup mode of the EFM32GG11 Giant Gecko. This mode leverages a 20 mF super-cap to keep the RTC and some memory alive on the MCU in the event of power-loss. To try it out, power the kit from a CR2032 battery and click the [**Charge On**] virtual button to enable charging of the super-cap. Then, wait until the display says [**BU ready**]. Note the time displayed in the top-right corner of the screen. At this point, you can move the power-switch on the kit away from the [**BAT**] position, effectively disconnecting the battery from the EFM32GG11 Giant Gecko. Wait for ~5 seconds, then turn the switch back to [**BAT**]. This will return to the backup screen where the time value in the top-right corner of the screen continued counting while the power was off.



Detect Your Device

1. Provide power and a debug connection to the kit by connecting the provided USB cable between the kit and a computer. Use the USB connector in the upper left of the board.
2. Ensure the power selector switch on the STK is in the [**AEM**] position.
3. Click the [**Refresh**] button in the [**Device**] area. The board may take some time to appear due to driver installations for the debug adapter.
4. Once an item with the name [**J-Link Silicon Labs**] appears, expand by clicking the arrow, and verify that the detected devices matches the kit. Click the EFM32GG11 Giant Gecko Starter Kit.
5. The [**Launcher**] view will now display a number of available resources, including pre-compiled demos, examples, documentation, tools, and other resources.



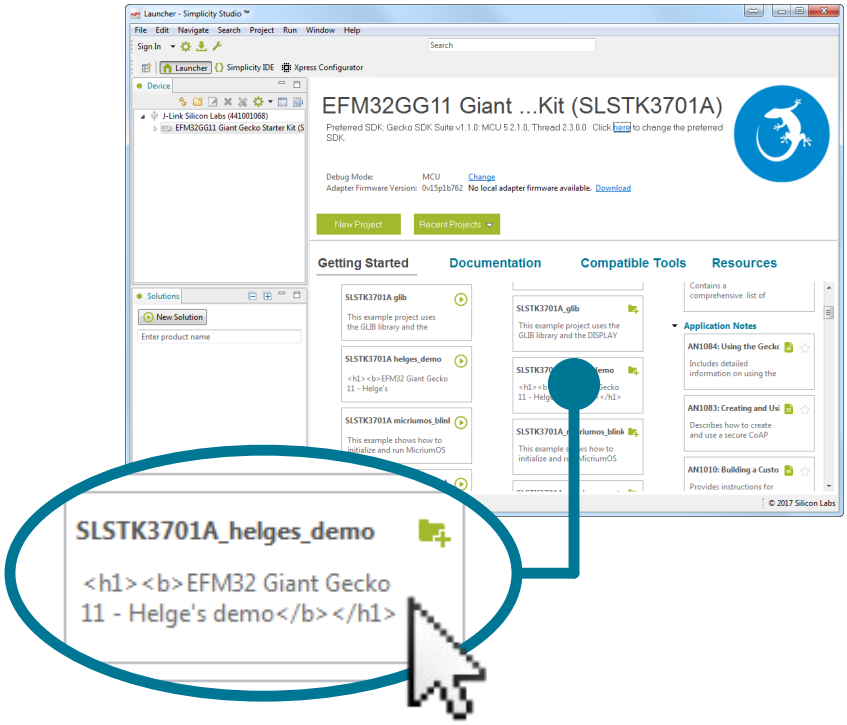
Launch an Example Project

There are two types of projects in Simplicity Studio:

- Demos are pre-compiled, enabling them to be downloaded and run immediately without opening the associated project and compiling it.
- Example projects are source code, so they can be opened in the IDE, modified, built, and downloaded to the target device.

Demos are typically available as both demos and examples.

1. Under [**Getting Started**] in the Launcher, scroll down in the [**Software Examples**] column until you find [**SLSTK3701A_helges_demo**]. Click it, then answer [**Yes**] when a dialog opens asking to switch to the IDE perspective and create the example project.



2. Click the [**Debug**] button  in the menu bar along the top to compile and download the demo to the MCU. Once downloaded, the kit is again running Helge's Demo.

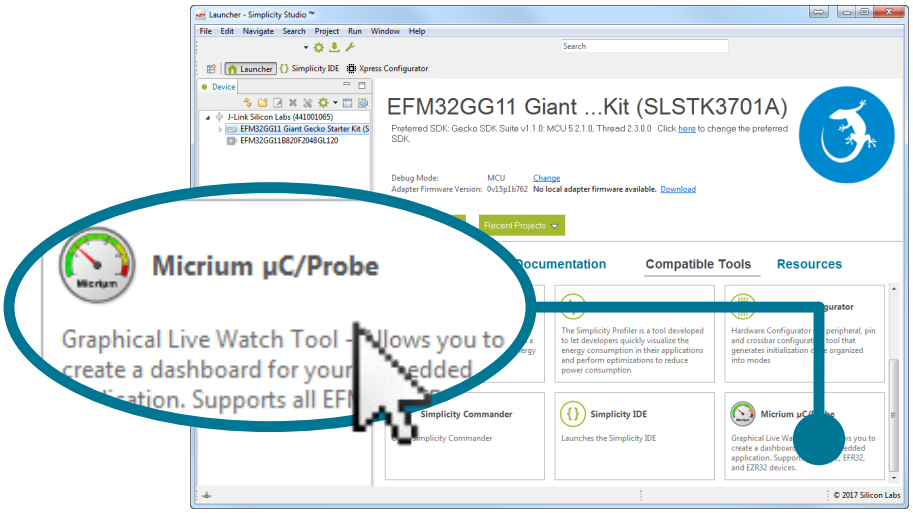
Launch a Micrium OS Project and µC/Probe

Examples leveraging Micrium OS are side-by-side the other examples in Simplicity Studio. Try the Ethernet example and open a tool called µC/Probe to look at some stats from the operating system.

µC/Probe is a tool that looks at the compiled image of a project to find all global variables. It enables visualization of these global variables without any additional code residing on the target. These visualizations can take many forms: text boxes, meters, sliders, etc. It's also possible to add buttons, sliders, and other controls to directly affect the state of the global variables in the device. µC/Probe can also give insight into the operating system on the device.

Note: Micrium µC/Probe does not require the use of the Micrium OS kernel to observe global variables in the device.

1. In the [**Launcher**], click the example named [**SLSTK3701A_micriumos_net**] in the [**Getting Started**]>[**Software Examples**] area.
2. Build and download the example by clicking the [**Debug**] button.
3. Connect the kit to an Ethernet network. The screen on the display should now list the IP address of the kit along with the number of packets sent and recevied.
4. Go back to the [**Launcher**] and click the [**Compatible Tools**] area, and select [**Micrium µC/Probe**]. Click [**Ok**].



5. If the symbol browser is empty, point µC/Probe to the image of the project. Click the [**ELF**] button, then find the project. On a Windows machine, the file is typically located in `C:\Users\<username>\SimplicityStudio\<workspace>\<demo name>\<build> - Debug\<project name>.axf`.
6. The symbol browser should now be populated. To look at the operating system information, click the [**Screens**] dropdown in the [**Workspace Explorer**] and click [**Micrium OS Kernel**]. This adds a second view to µC/Probe.
7. Click the [**Run**] button in the top-right of the µC/Probe window. In the new window that appears, select the [**Micrium OS Kernel**] tab. Here you can see various statistics about the system, such as maximum stack usage across all running processes.

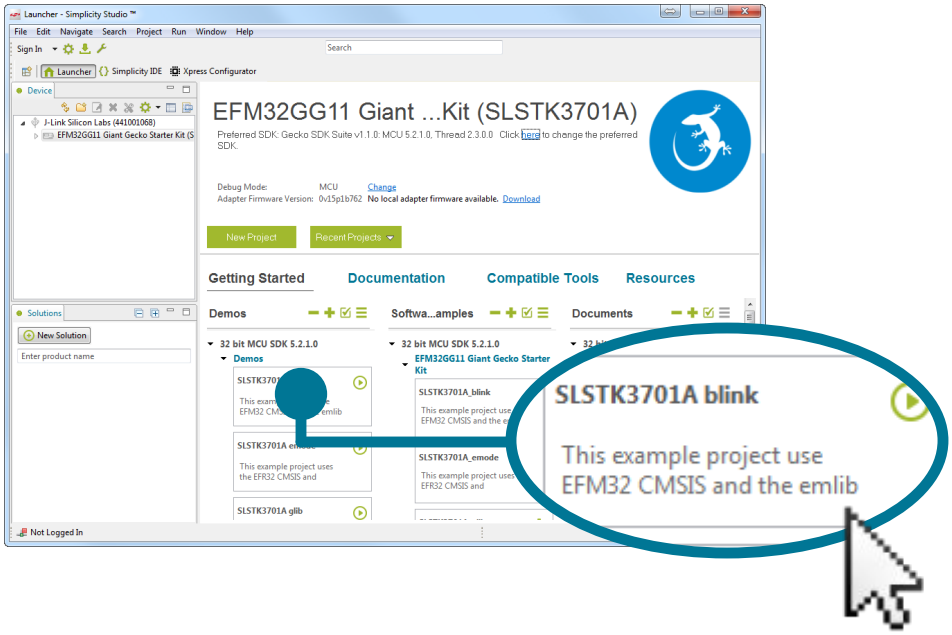
Utilize the Available Resources

The next section includes additional resources available for the kit, including software examples, documentation, and application notes.

2. Resources

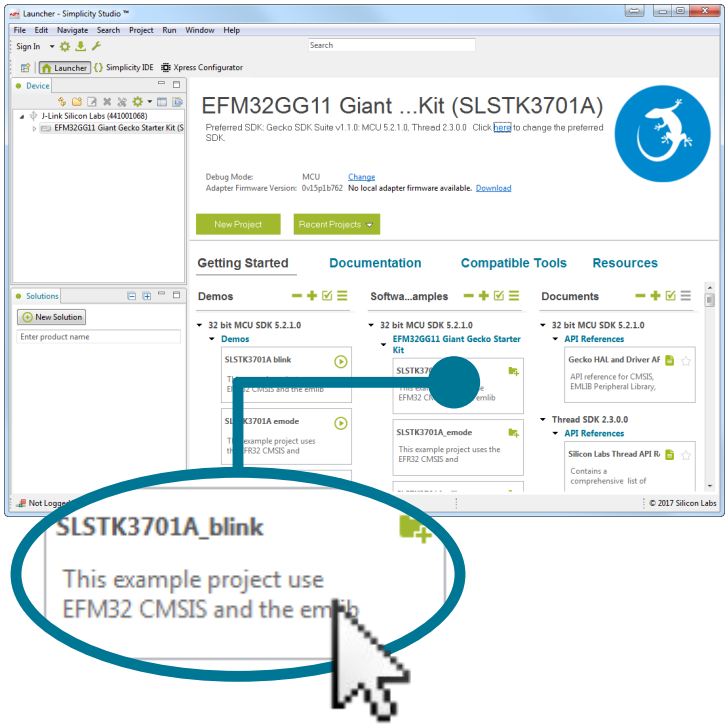
Demos

Demos are a quick and easy way to evaluate a device without compiling or debugging code. Demos can be accessed using the [**Getting Started**]>[**Demos**] area in the launcher.



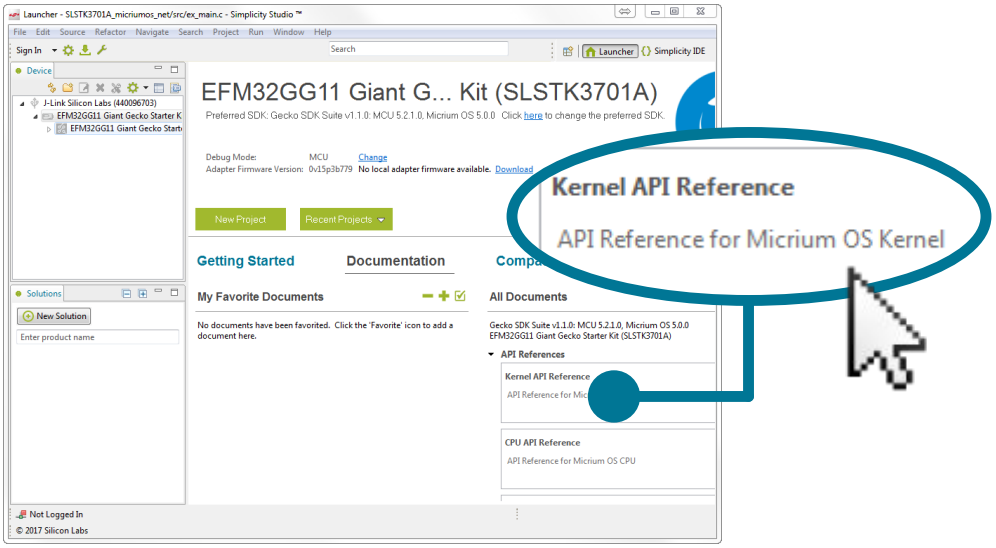
Software Examples

Software examples can be imported, compiled, and downloaded using the [**Getting Started**]>[**Software Examples**] area in the launcher.



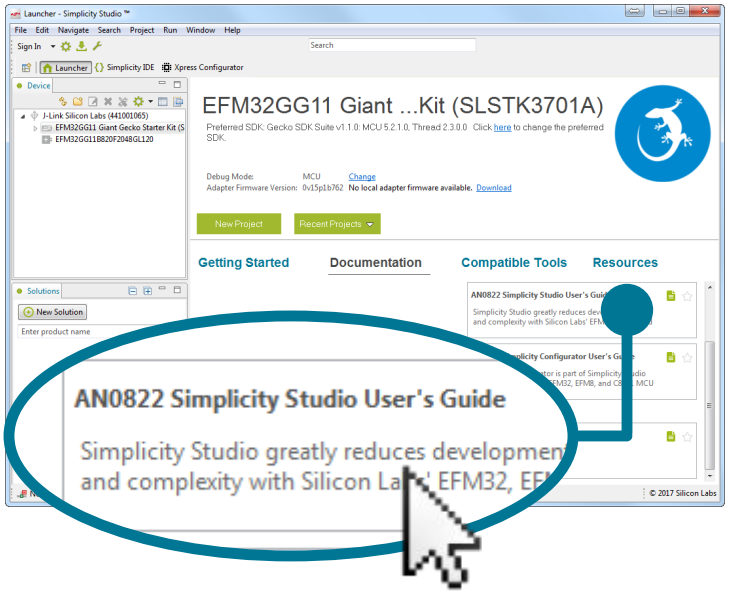
Software Documentation

Software documentation provides more information on the firmware libraries available for the selected device. Access these documents using the [**Documentation**] area in the launcher.



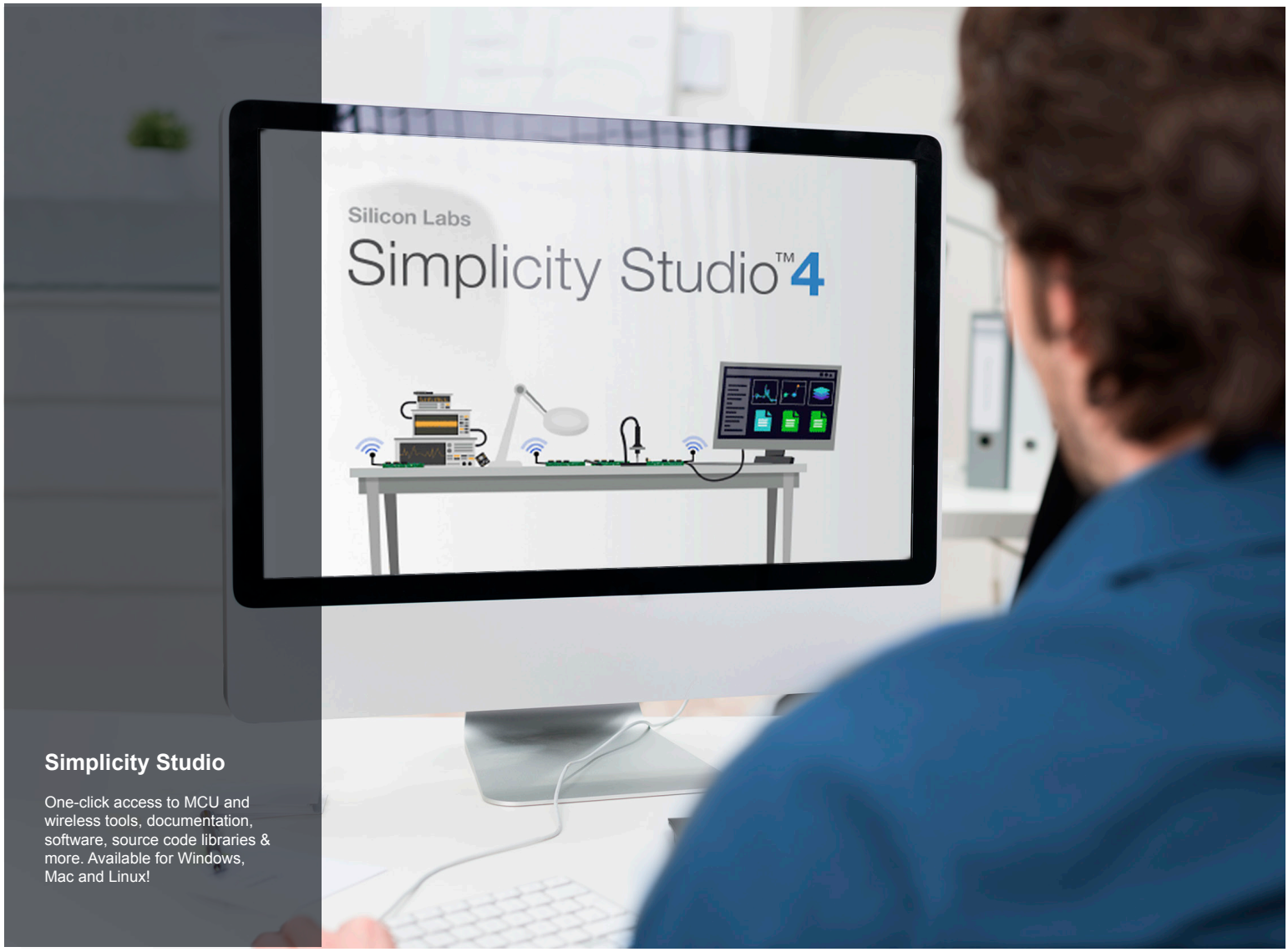
Other Documentation

Kit documentation, application notes, and device documentation can be found using the [**Documentation**] area of the launcher.



Community and Support

Have a question? Visit the community by clicking the [**Resources**]>[**Silicon Labs Community**] area of the launcher.



Simplicity Studio

One-click access to MCU and wireless tools, documentation, software, source code libraries & more. Available for Windows, Mac and Linux!

IoT Portfolio
www.silabs.com/IoT

SW/HW
www.silabs.com/simplicity

Quality
www.silabs.com/quality

Support and Community
community.silabs.com

SILICON LABS

Silicon Laboratories Inc.
400 West Cesar Chavez
Austin, TX 78701
USA

http://www.silabs.com