

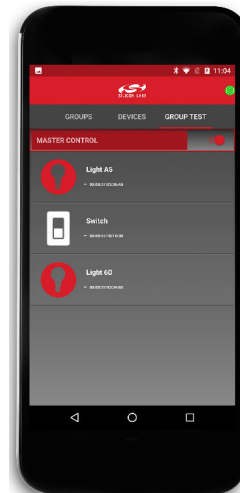
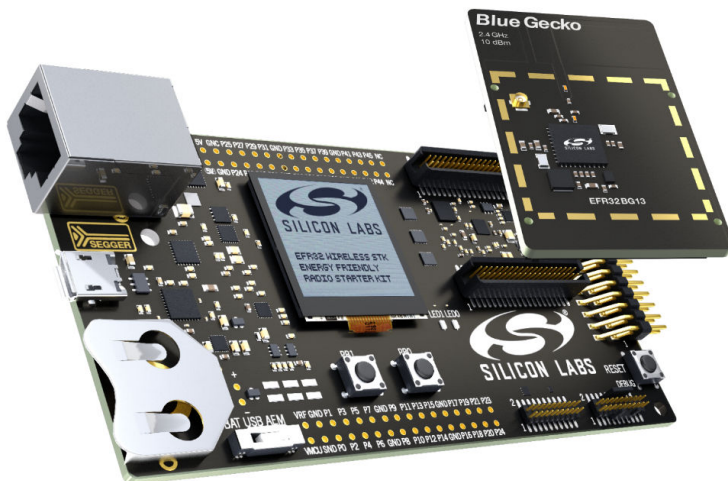
# QSG148: Getting Started with the Silicon Labs Bluetooth<sup>®</sup> Mesh Lighting Demonstration



This document provides step-by-step instructions to demonstrate a basic Bluetooth mesh network. In this demo, three Wireless Starter Kit (WSTK)-based devices are provisioned as two Lights and one Switch. The mobile application allows the control of either the group of Lights or an individual Light. By pressing buttons on the Switch device, you can control the ON/OFF states and brightness for all lights in the same group. The demo is open-sourced and provides a good demonstration of a basic Bluetooth mesh network.

## KEY POINTS

- Prerequisite for the demo
- Hardware set-up of WSTKs
- Bluetooth mesh SDK installation in Simplicity Studio
- Demo firmware installation
- Instructions for provisioning, configuring, and controlling network nodes using the Android smartphone application



## 1. Prerequisites

The Silicon Labs Bluetooth mesh lighting demonstration is designed to illustrate Bluetooth mesh operation without any need to configure or compile software. To get started with Bluetooth mesh demo, obtain the following.

### 1.1 Order Development Kits

The Blue Gecko Bluetooth SoC Wireless Starter Kit is the easiest and fastest way to start the evaluation and development of your own Bluetooth mesh applications. To get started with Bluetooth mesh demo, you need to have **three (3)** EFR32™ Blue Gecko Bluetooth® Low Energy Wireless SoC Starter Kits (**PN: SLWSTK6020B**).

Go to <http://www.silabs.com/products/development-tools/wireless/bluetooth/blue-gecko-bluetooth-low-energy-soc-starter-kit> to order the kits from Silicon Labs' authorized distributors.

This demo requires either **EFR32BG13** or **EFR32BG12** radio boards. If you already have the WSTK Main Boards, you can purchase the required radio boards [here](#).

### 1.2 Download Simplicity Studio

Go to: <http://www.silabs.com/simplicity-studio> to download the latest Simplicity Studio version compatible with your computer's operating system.

### 1.3 Download Silicon Labs' Bluetooth Mesh App for Android Smartphone in Google Play

Download the **Bluetooth Mesh** Android application by Silicon Labs from Google Play.

**Note:** The minimum requirement for the smartphone is Android 6 (API23).

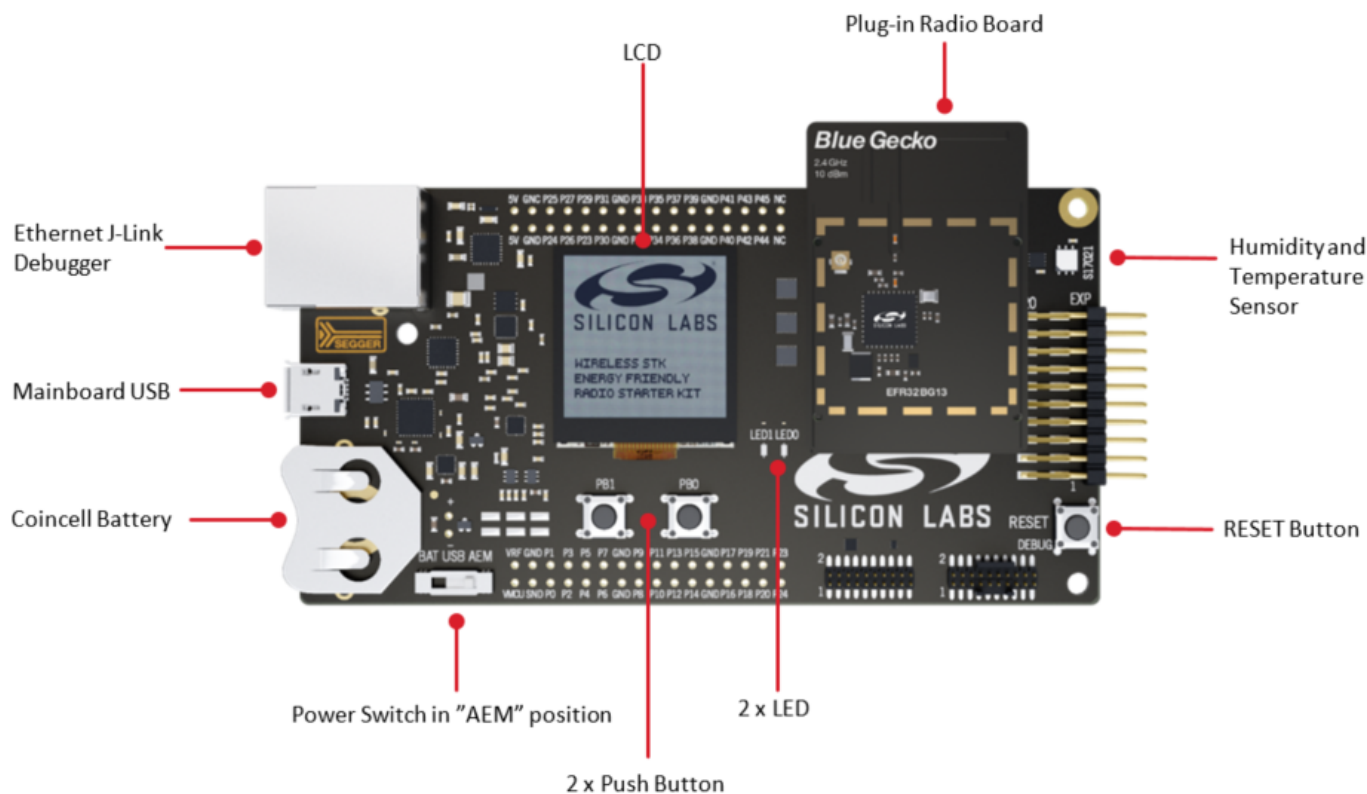
### 1.4 Obtaining Support

You can access the Silicon Labs support portal at <https://www.silabs.com/support> through Simplicity Studio Resources. Click the "Email-Support" link and log in with your self-registered credentials. Use the support portal to contact Customer Support for any questions you might have about the demonstration.

## 2. Getting Started

### 2.1 Preparing the WSTK

The layout of the Wireless Starter Kit (WSTK) Main Board with attached EFR32BG13 radio board is shown in the following figure:



**Figure 2.1. WSTK Main Board with Radio Board Attached**

1. Connect a Blue Gecko Radio Board to the WSTK Main Board.

Use radio board SLWRB4104A **EFR32BG13** 2.4 GHz (+10 dBm) for this demo experience.

2. Connect the WSTK to a PC using the "J-Link USB" connector and the cable provided with the starter kit.

3. If not already set, turn the Power switch to "AEM" position.

4. Repeat the above steps for other two kits so all three kits are connected to your computer.

#### Verifying the Setup:

1. Check that the blue "USB Connection Indicator" LED (next to "J-Link USB") turns on or starts blinking.

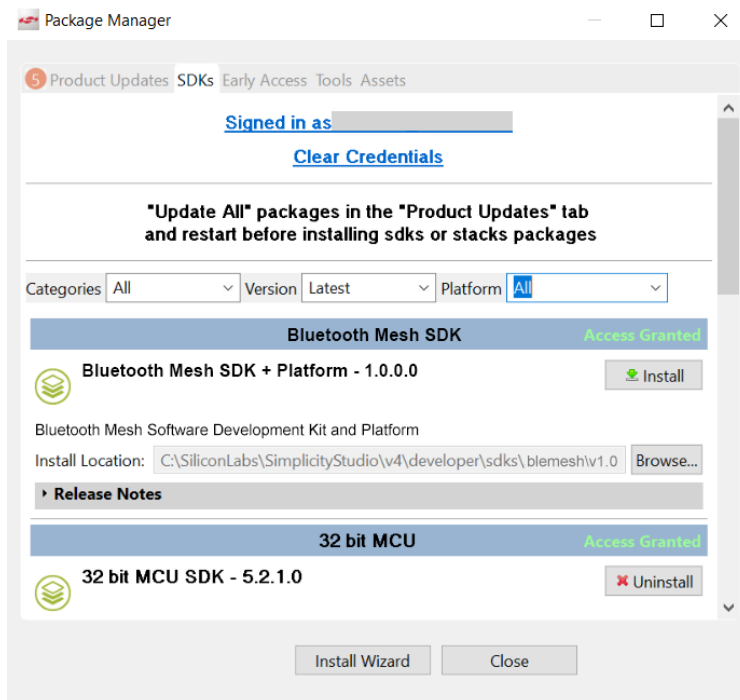
2. Check that the Main Board LCD display turns on and displays a Silicon Labs logo.

For more detailed information regarding the Starter Kit, refer to [UG279: EFR32BG13 Blue Gecko Bluetooth Starter Kit User's Guide](#).

## 2.2 Open Simplicity Studio and Install Bluetooth mesh SDK

Bluetooth mesh SDK is installed using the Simplicity Studio package manager.

1. Open Simplicity Studio and log in using your Silicon Labs account.
2. Go to Package Manager (red/green down arrow under the menu bars) and go to the SDKs tab to install Bluetooth mesh SDK.



3. In the Launcher screen, check if the preferred SDK is “Bluetooth mesh SDK + Platform”. If not, click the link provided to change the preferred SDK to “Bluetooth mesh SDK + Platform”.

You can find more detailed instructions for Simplicity Studio in [QSG139: Bluetooth Development with Simplicity Studio](#).

### 2.3 Install the Demonstration Firmware

When the devices are connected to your PC with a USB cable, you can see three devices listed in the **Device** window in Simplicity Studio. Select the J-link for a device to display demonstrations, examples, and documentation associated with the Bluetooth Mesh SDK.

For this demo, you need to flash two devices with **BT Mesh – Light Example** and one device with **BT Mesh – Switch Example**.

To install the firmware, click the demo. In the **Mode** drop-down in the next dialog, select **Run**. Click **[Start]**.

#### J-Link Silicon Labs (440061615)

Preferred SDK: Bluetooth Mesh v1.0.0: Bluetooth, Mesh 1.0.0.0 Click [here](#) to change the preferred SDK.

Debug Mode: MCU [Change](#)

[New Project](#) [Recent Projects](#)

#### Getting Started

#### Documentation

#### Compatible Tools

#### Demos

##### Bluetooth Mesh SDK + Platform 1.0.0.0

##### Bluetooth Mesh SDK + Platform Demos

- BT Mesh - Empty SOC  
Bluetooth Mesh: SOC Empty application. It
- BT Mesh - Light Example**  
Bluetooth Mesh: Light Example. This is an
- BT Mesh - Switch Example**  
Bluetooth Mesh: Switch Example. This is an
- NCP target - BT Mesh - Empty  
Bluetooth Mesh: NCP (Network co-

#### Software Examples

##### Bluetooth Mesh SDK + Platform 1.0.0.0

##### Bluetooth Mesh SDK + Platform Examples

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- BT Mesh - Switch Example  
Bluetooth Mesh: Switch Example. This is an
- NCP target - BT Mesh - Empty  
Bluetooth Mesh: NCP (Network co-processor)

Demos
×

**Select Demo**

Select a demo and the mode with which to run it.

Name	Description
BT Mesh - Empty SOC	Bluetooth Mesh: SOC Empty a...
<b>BT Mesh - Light Example</b>	Bluetooth Mesh: Light Examp...
BT Mesh - Switch Example	Bluetooth Mesh: Switch Exam...
NCP target - BT Mesh - Empty	Bluetooth Mesh: NCP (Networ...

Bluetooth Mesh: Light Example. This is an out-of-the-box Software Demo where the LEDs of the WSTK are switched on and off triggered by push button presses. It is based on the Bluetooth Mesh Generic On/Off Model. It currently only works with BRD4104A/SLWRB4104A.

Mode:

Filter by selected product line

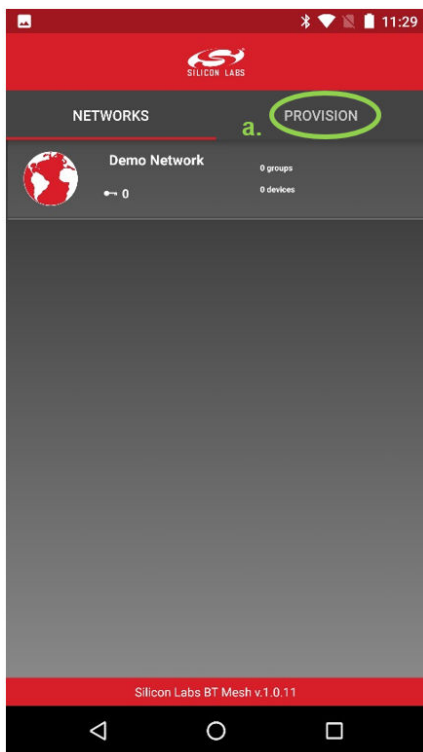
?
Start
Cancel

## 2.4 Use the Demo with an Android Smartphone

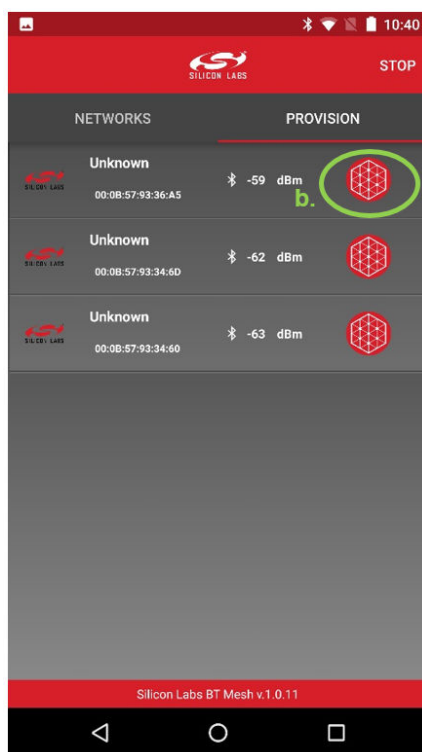
Make sure that all three devices have the status of “**unprovisioned**” on the device LCD screen before starting with the Mobile App. Open the **Bluetooth Mesh** App by Silicon Labs on your Android phone.

Follow the procedures below to set up and use the demonstration.

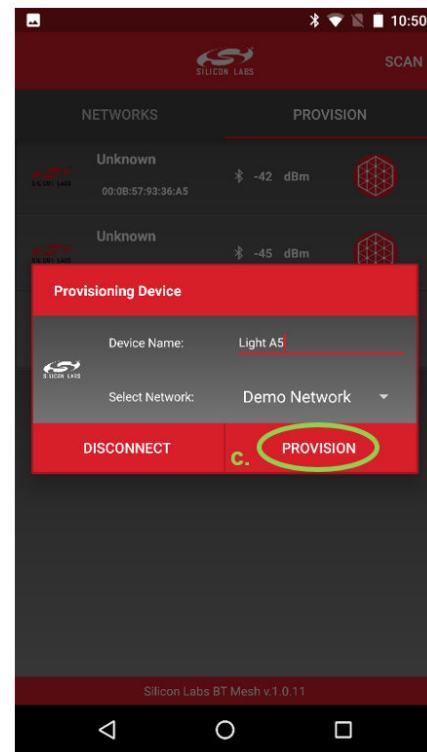
1. Enable **Bluetooth** and **Location** service (GPS) on your Android phone.
2. Scan and Provision the devices.



a. Go to PROVISION and tap SCAN to scan for Bluetooth mesh devices.

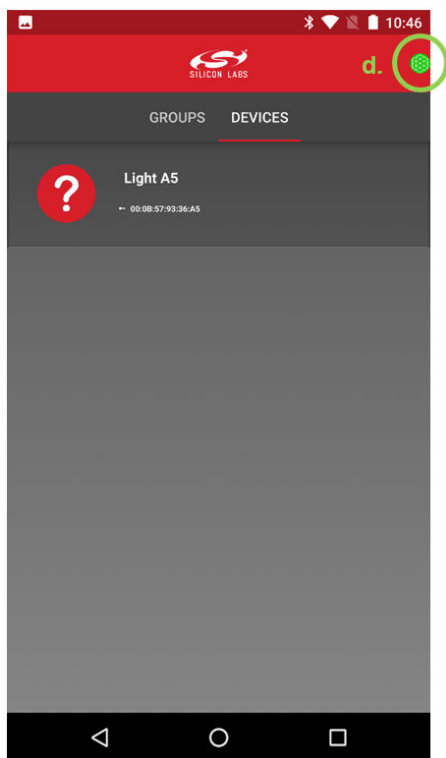


b. Tap the mesh symbol to start provisioning each device.



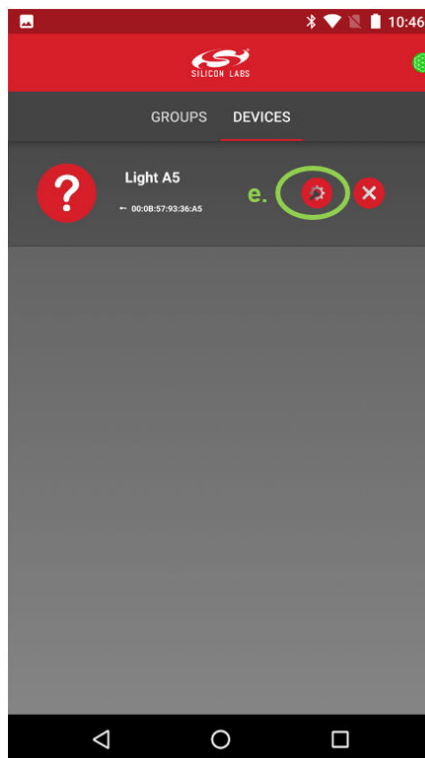
c. Name the device and tap PROVISION.

3. After provisioning, the App automatically redirects to Devices view. Configure each node.

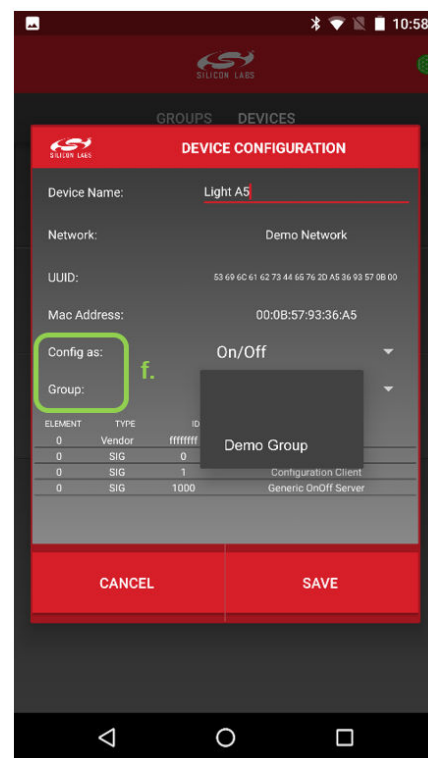


d. Wait until the mesh symbol is permanently green, which means all devices are connected in the mesh Demo Network.

If the mesh symbol does not turn green, press the RESET button on the WSTK main board. This starts the device advertising again to initiate a connection.



e. Long press the device to display the Configuration symbol and tap it.



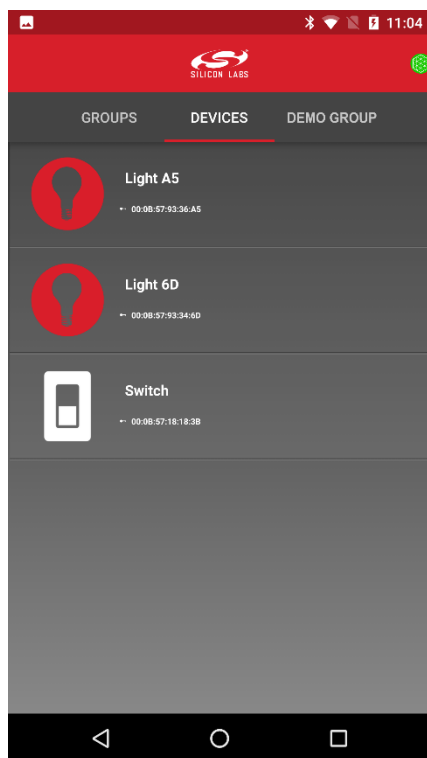
f. Configure the node as either Switch or Light, according to the profile displayed on the device's LCD, and select Demo Group

Go back to Demo Network view and repeat steps a. through step f. until all the nodes are provisioned and configured.

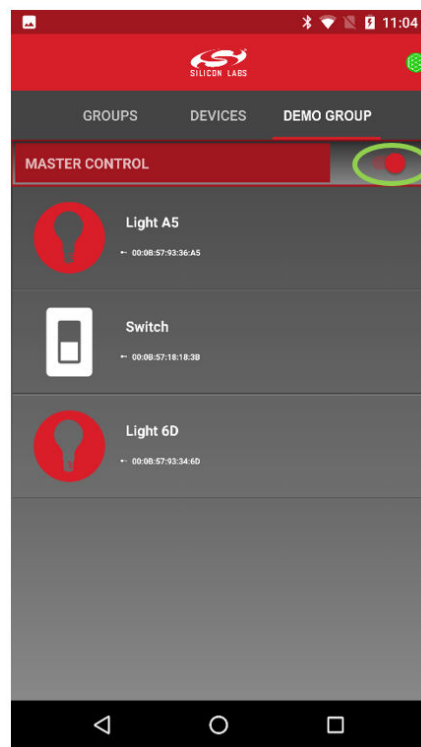
#### 4. Control the mesh lighting network.

On a Light device, both LED0 and LED1 act as the light. The light brightness and on/off status can be controlled either using the smartphone app or using buttons PB0 and PB1 on the switch node.

##### Option 1: Control Using the Smartphone.



In the Device tab, turn individual lights ON/OFF by tapping the light bulb symbol.



In the group tab, turn both lights ON/OFF by tapping the master control button.

##### Option 2: Control Using the PB Buttons on the WSTK.

Using the buttons on the switch, you can control the brightness and ON/OFF states for both lights in the network.

- PB0: Short press to decrease brightness, long press to turn light OFF
- PB1: Short press to increase brightness, long press to turn light ON

The difference between a long and short press is approximately 0.5 seconds.

##### If you need to re-start the process:

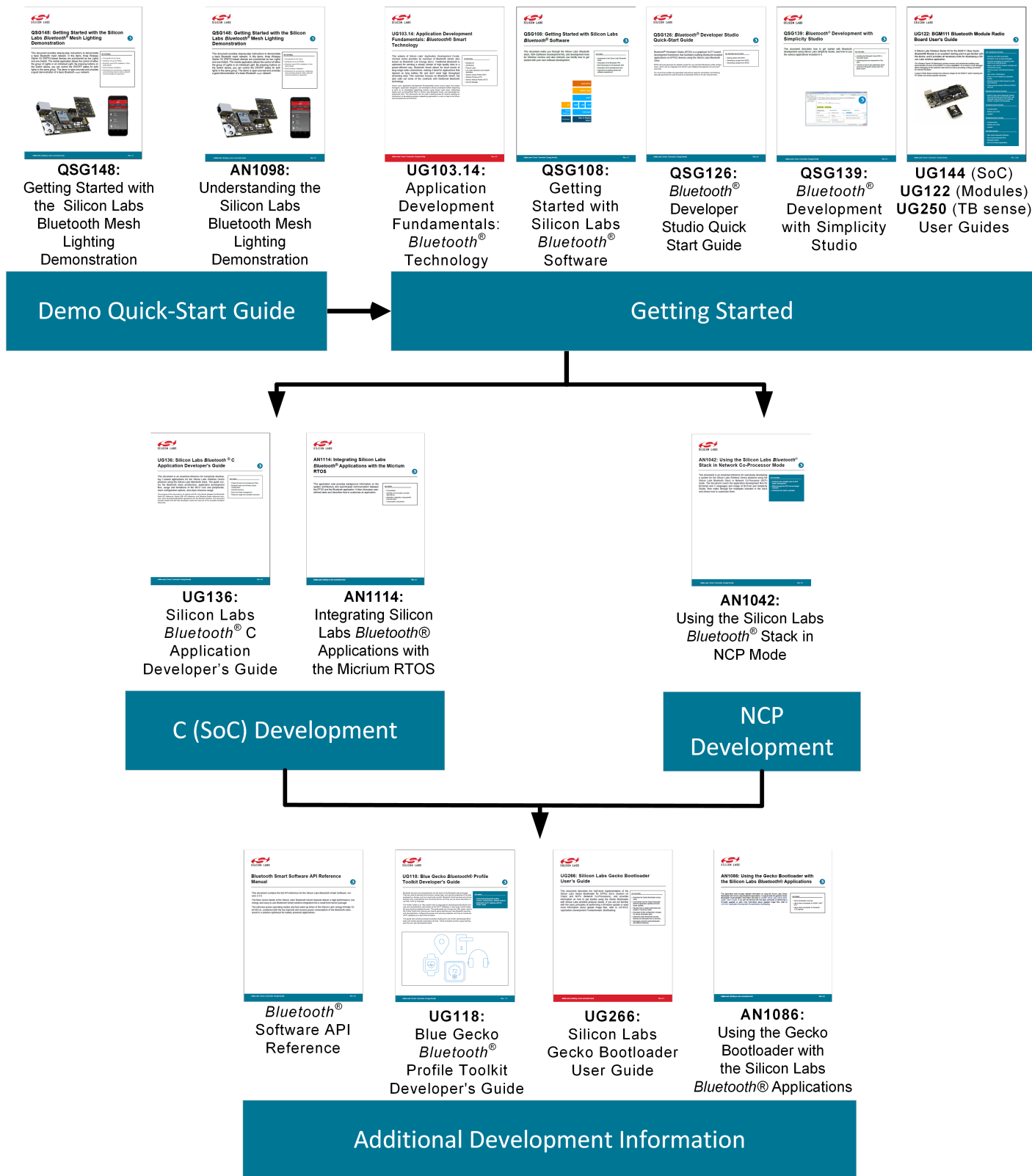
1. Restart the app in your Android smartphone. In the Networks tab, long press the Demo Network and click the “X” symbol for **Data-base Flushed**
2. Reset the devices. Simultaneously press one of the Push buttons (either PB0 or PB1) and the RESET button. Release the RESET button and continue to hold PB0 or PB1 until the LCD displays “**FACTORY RESET**”.



### 3. Next Steps

To understand how the demo works, see *AN1098: Understanding the Silicon Labs Bluetooth Mesh Lighting Demonstration*.

Explore the other documentation provided by Silicon Labs to get started with customizing your own Bluetooth mesh applications. SDK-specific documentation is provided under Documents on the Getting Started tab of the Launcher perspective.



Silicon Labs

# Simplicity Studio™4



## Simplicity Studio

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



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