HOW TO INSTALL GeoSmartOne®
FIRMWARE

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CONTENT

I/ Introduction····4
II/ GeoSmartOne quickstart guide····5
III/ Install Simplicity Studio····7
IV/ Add Gecko SDK to Simplicity Studio····11
V/ Connect device to Simplicity by J-TAG (J-link)···· 12
VI/ Flash firmware in format .hex···· 14

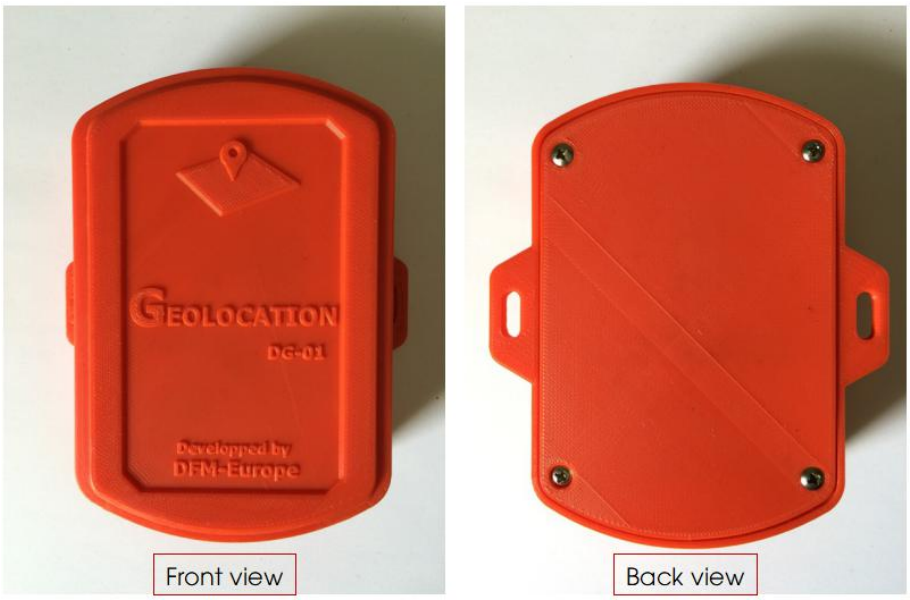
I/ Introduction

GeoSmartOne is a geolocation device that uses a GPS system to locate the object and then communicate with the server via a LoRaWan protocol.

In this document, a quick start guide is presented in Part II. Everything else will show you how to change the program of device. To flash the GeoSmartOne device firmware, we use a J-Link emulator (JTAG) with Simplicity Studio support from SILICON LABS. Please install this program (see Part III) and follow this document to change the GeoSmartOne firmware in .HEX format.

II/ GeoSmartOne quickstart guide

The front and back view of the GeoSmartOne is shown in the image below. This is just a prototype is printed by 3D printer.

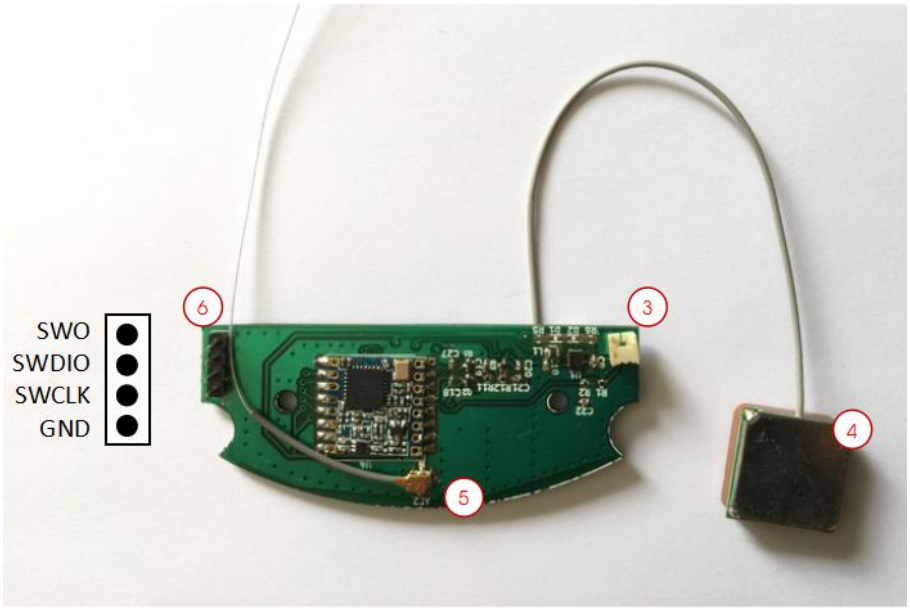


Front view | Back view

To start the system, make sure that the 3LR12 (4.5V) battery is correctly connected. Then click on the ON/OFF button (1) to power the device and start the geolocation program. If you need to restart the network connection (RE-JOIN), press the ON / OFF button twice.

1 - ON/OFF Button
2 - Battery 3LR12
3 - Battery connector
4 - GPS antenna

To remove the main board, we must unscrew two yellow screws. The pinout connector of the device is shown in the image below.



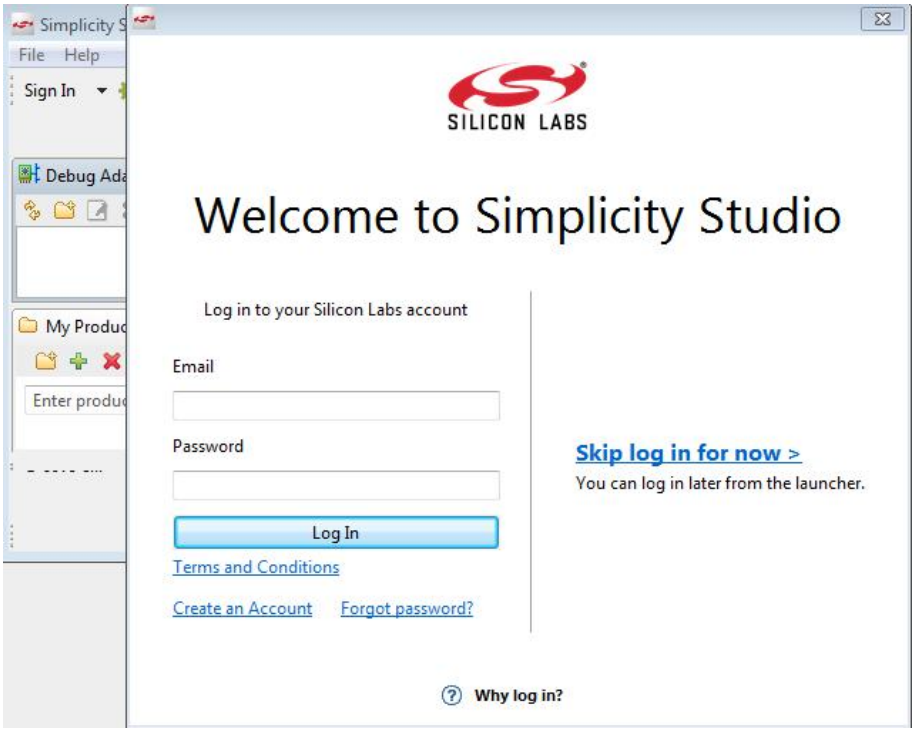
3 - Battery connector
4 - GPS antenna
5 - LoRa Antenna
6 - Pinout connector

III/ Install Simplicity Studio

Download simplicity studio software depened on your OS by the following link.

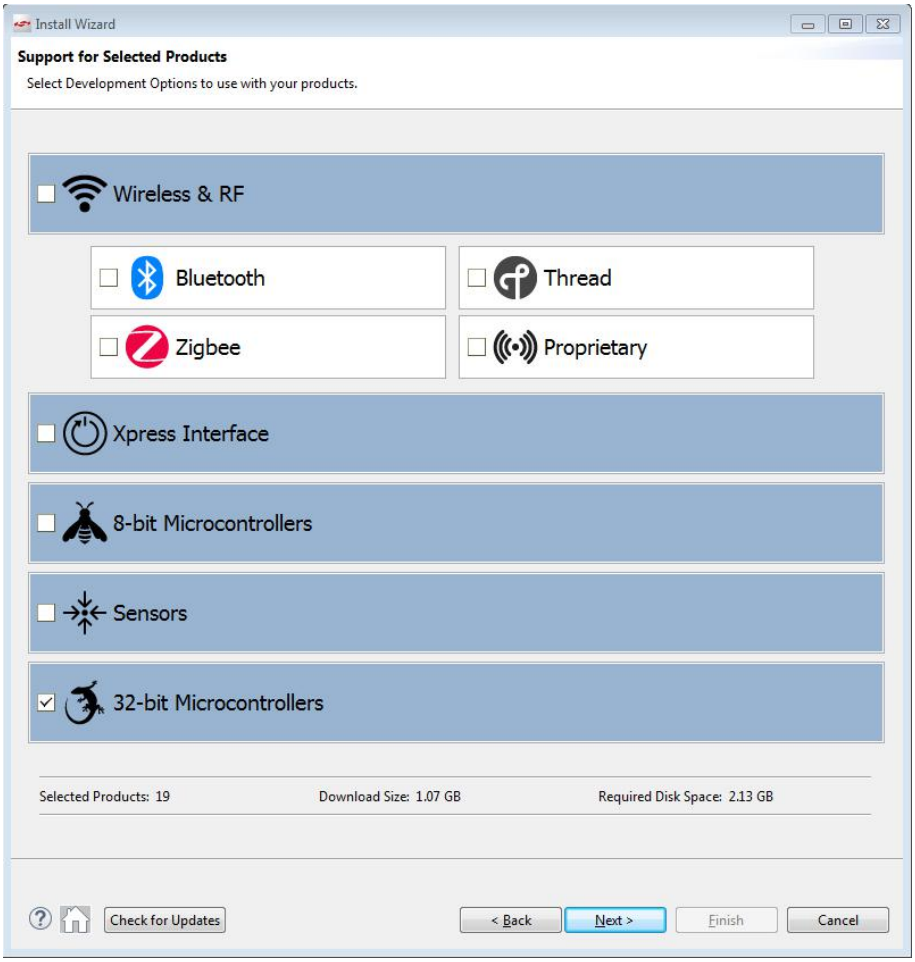
Install simplicity studio with setup file :

1. Frist of all, please login with your simplicity account (if you have it or you could use our account - Email: manhhd@dfm-europe.com - Password: u2u0g%7KP4Q4).

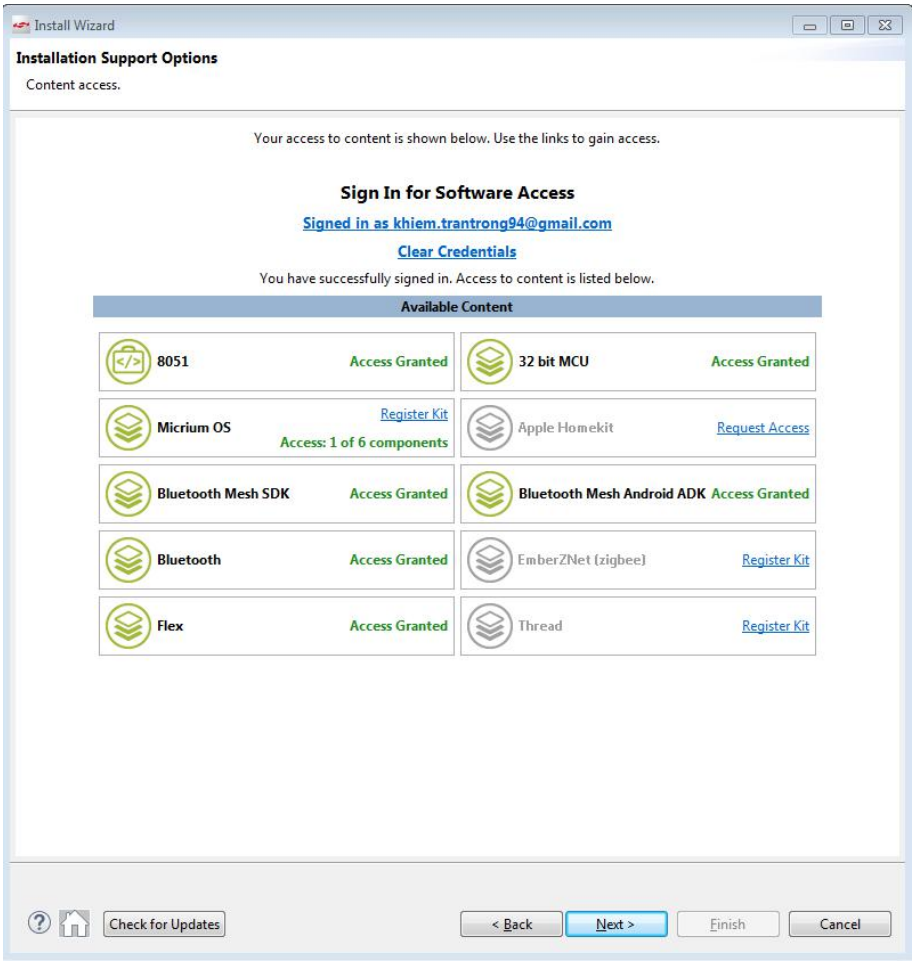


2. Choose "Install by Product Group".

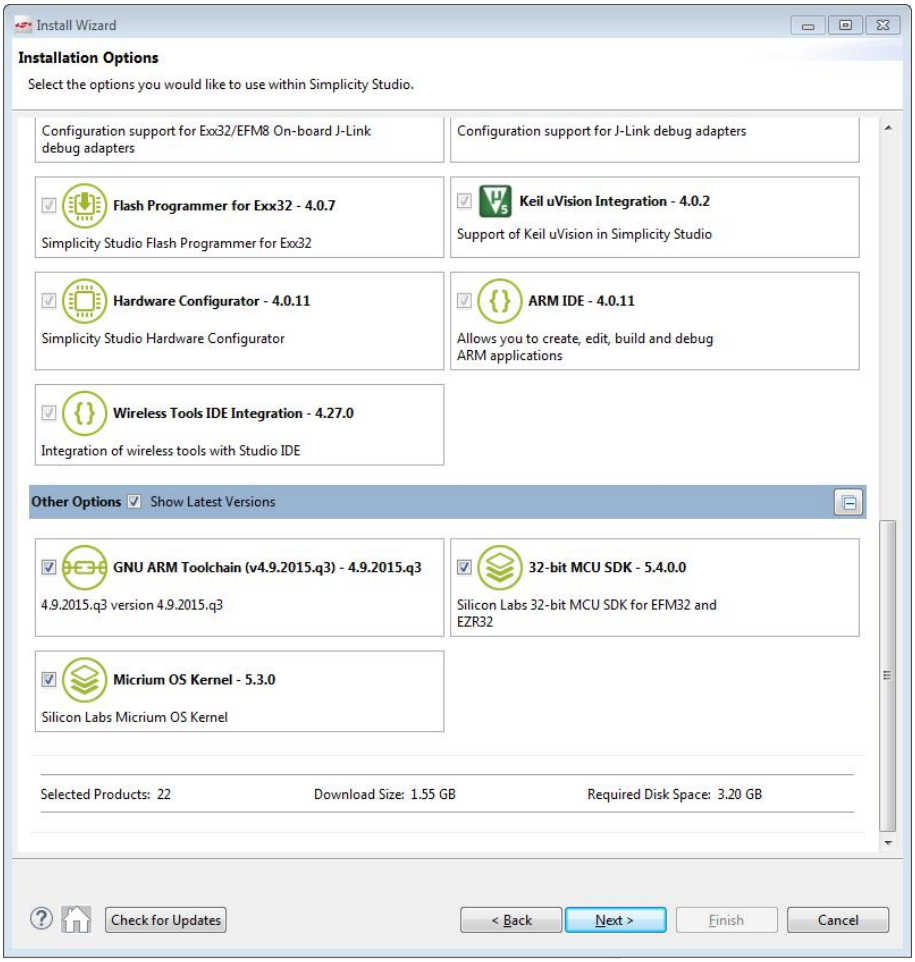
3. Select "32-bit Microcontrollers" and click next.



4. Make sure you have access right like image below then click next.



5. Please scroll to the end of tab and select these following options: GNU ARM , 32-bit MCU SDK, micrium OS Kernel.



6. Accept all term then click next to finish Simplicity Studio's installation.

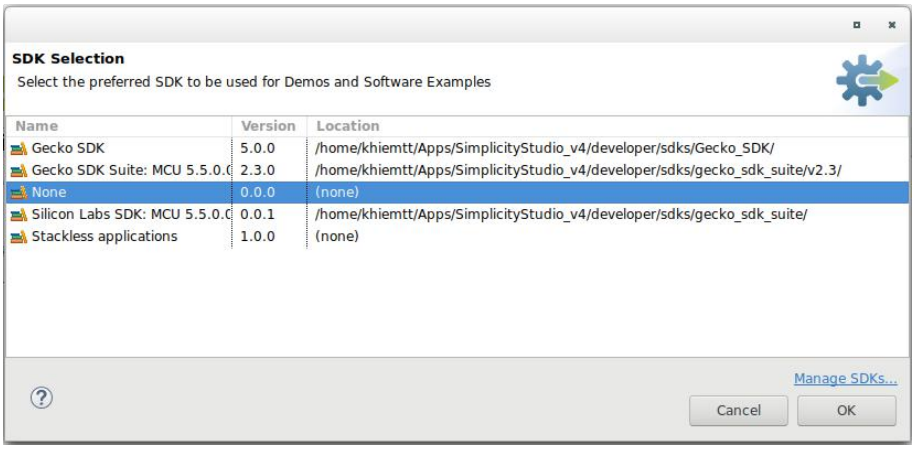
IV/ Add Gecko SDK to Simplicity Studio

We are using Gecko SDK version 5.0.0.0 for Geolocation project so please download SDK file with this link.

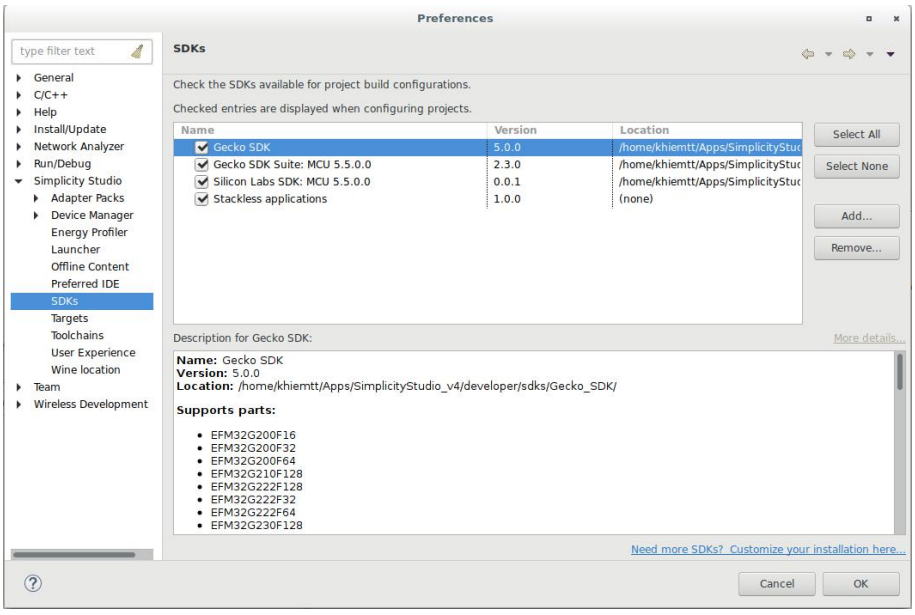
To add Gecko SDK v 5.0.0.0 to Simplicity Studio, please follow the instruction below:

1. Open simplicity program

2. In "**launcher tab**" click to "**Change Preferred SDK**" then choose "Manage SDKs…" in SDK selection



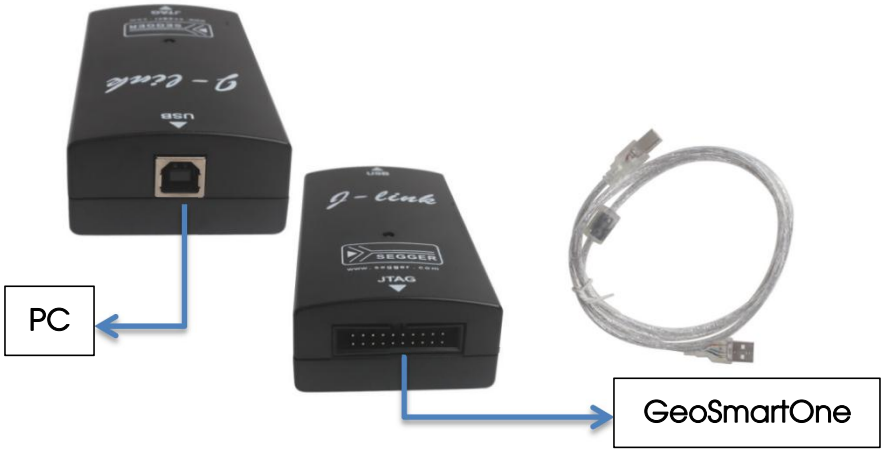
3. In SDKs tab you choose "**Add..**" then browse to Gecko SDK file you have just downloaded then click Ok and after that you will see your new sdk is added.



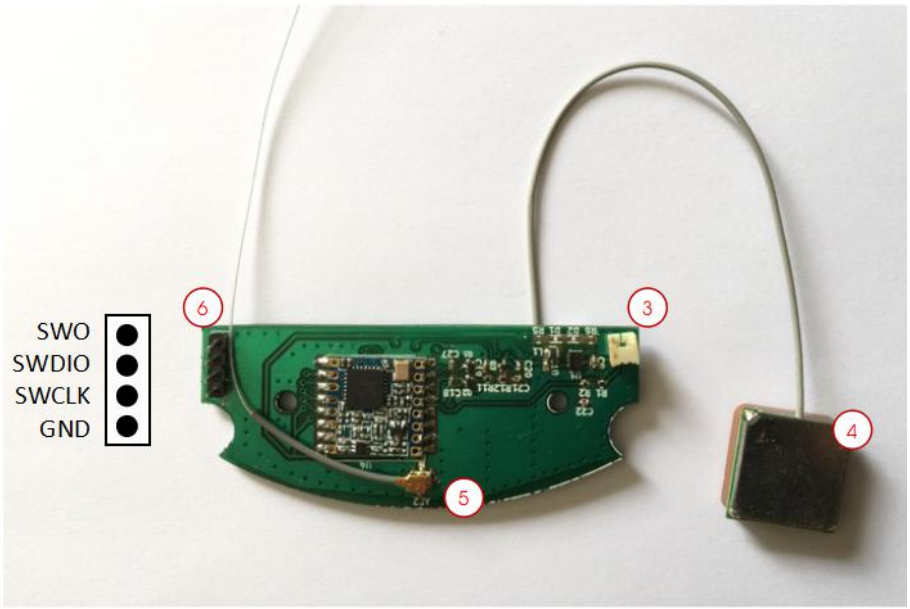
Reference : how to install simplicity studio

V/ Connect device to Simplicity by J-TAG (J-link)

J-link adapter emulator has two output. One is used to connect to PC by an usb cable. The second is used to connect to GeoSmartOne device.



GeoSmartOne connector is presented in following picture.



3 - Battery connector
4 - GPS antenna
5 - LoRa Antenna
6 - Pinout connector

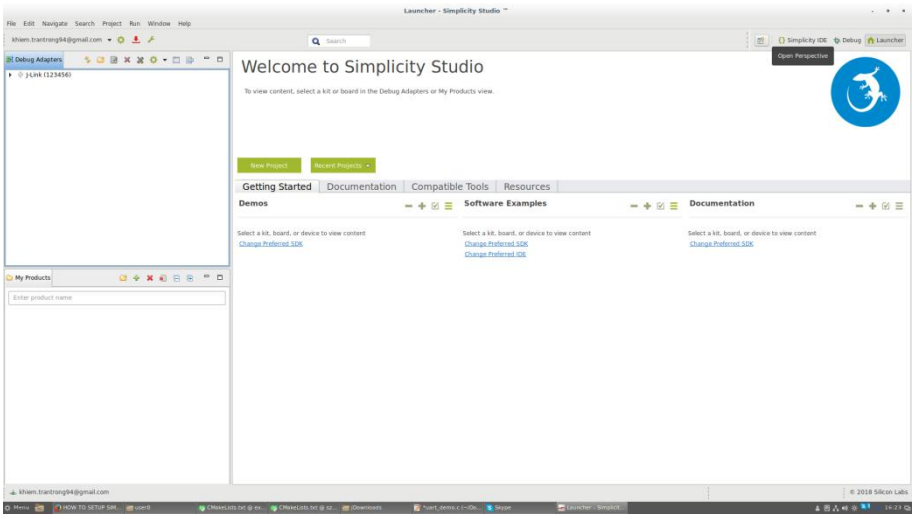
Connect JTAG pinout with GeoSmartOne pinout device with following schematic.

JTAG -> GeoSmartOne

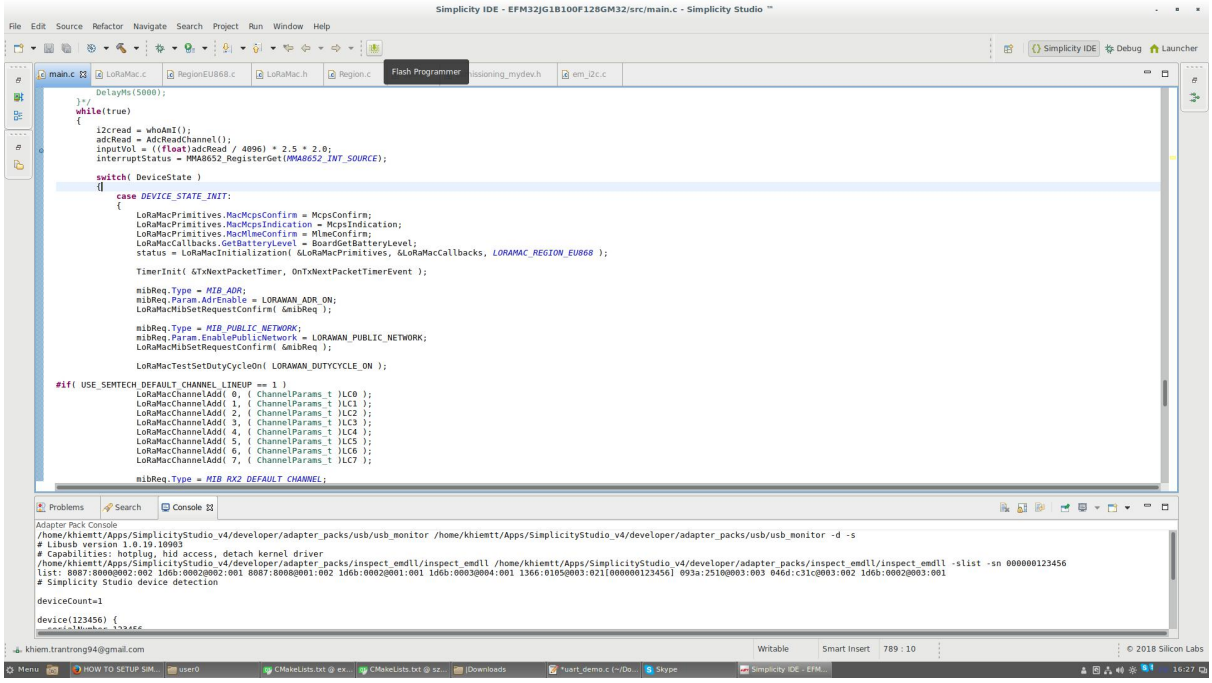
TDO-13 -> SWO
TCK-9 -> SWCLK
TMS-7 -> SWDIO
GND-6 -> GND

VI/ Flash firmware in format .hex

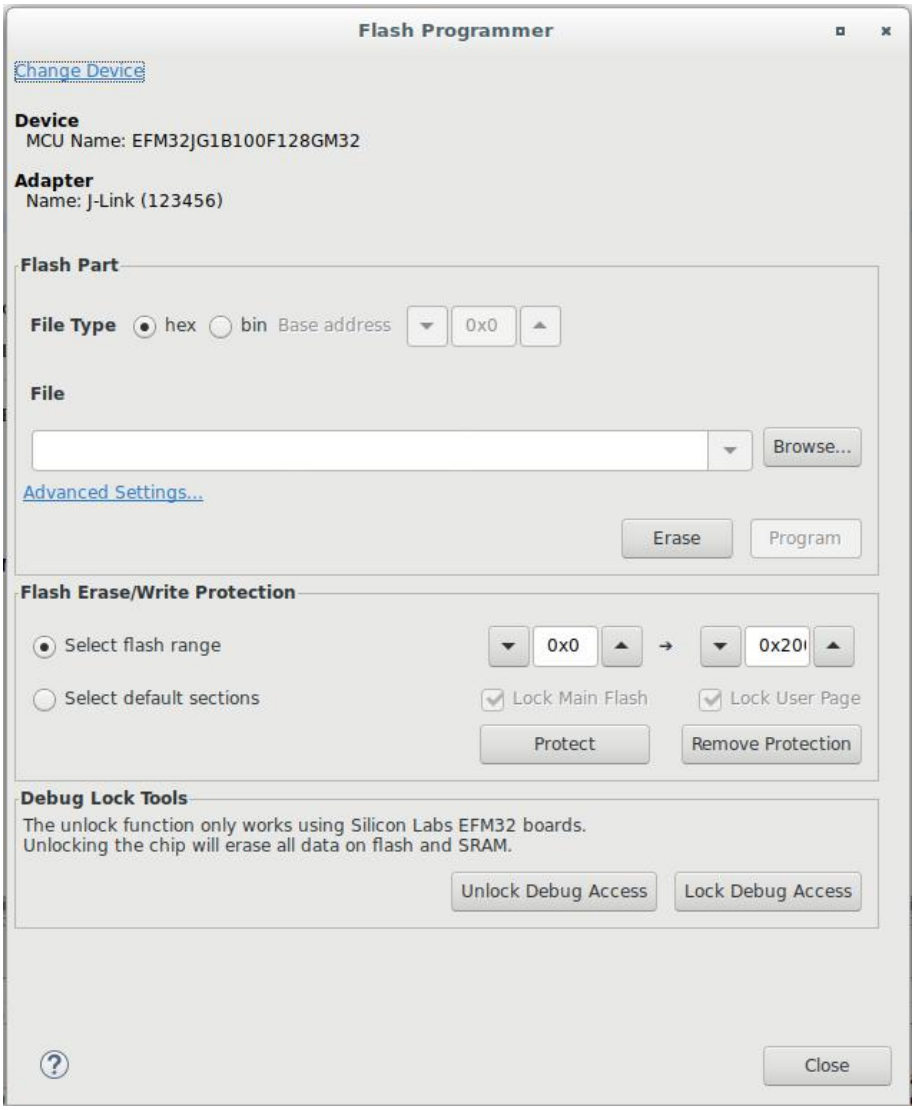
1. Please connect J-link debbugger to computer (see Part V)
2. Open Simplicity program
3. Add **Simplicity IDE** tab, in "**Launcher tab**" choose "**Open Perspective**" then add "**Simplicity ide**"



4. Open "**Simplicity ide**" tab then click to "**Flash programmer**"



5. In "**Flash programmer**" tag choose "**Browse**" and link to your hex file then click "**Erase**". When it is finished click "**Program**" to flash your firmware.



Note: if device is locked you need to unlock it by clicking "**Unlock Debug Access**" in flash program tab and then re-flash your hex file once time again.