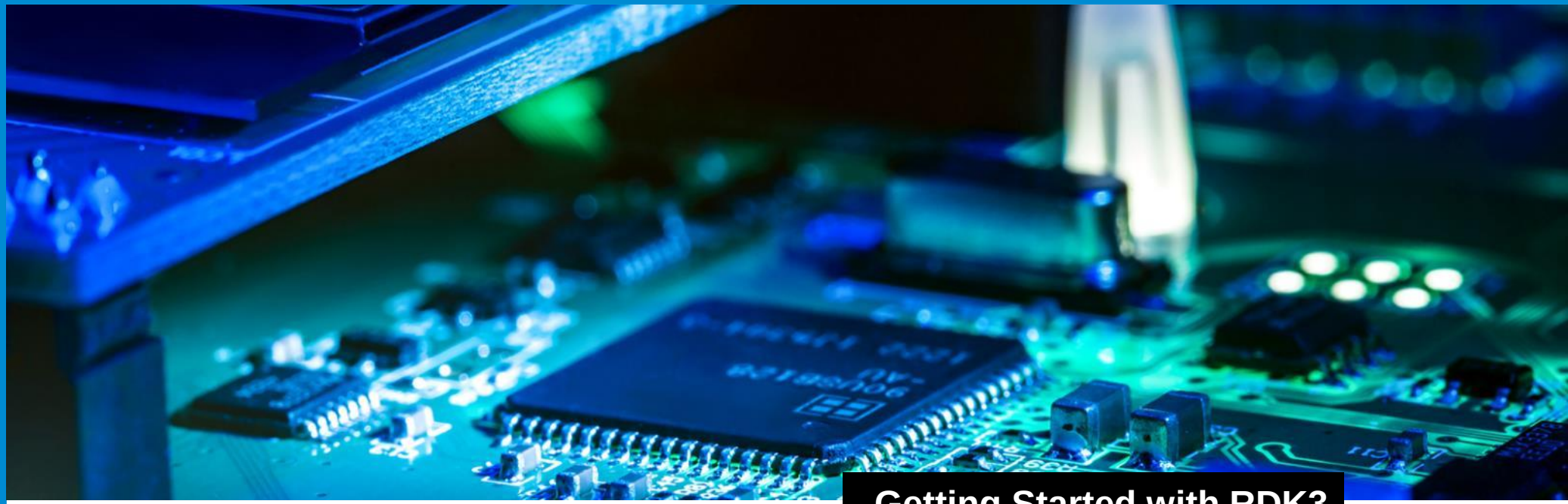

Getting Started with RDK3

Getting Started with CYB06447BZI-BLD53 Development Platform – **RDK3**

Registration & Download

1.) Register or/and login to the Infineon website, press on „myInfineon“ tab.
https://www.infineon.com

2.) Download and install the latest ModusToolbox™ software.

3.) [Optional] Download and install yours prefered terminal emulator, for example: PuTTY, Tera Term, etc.

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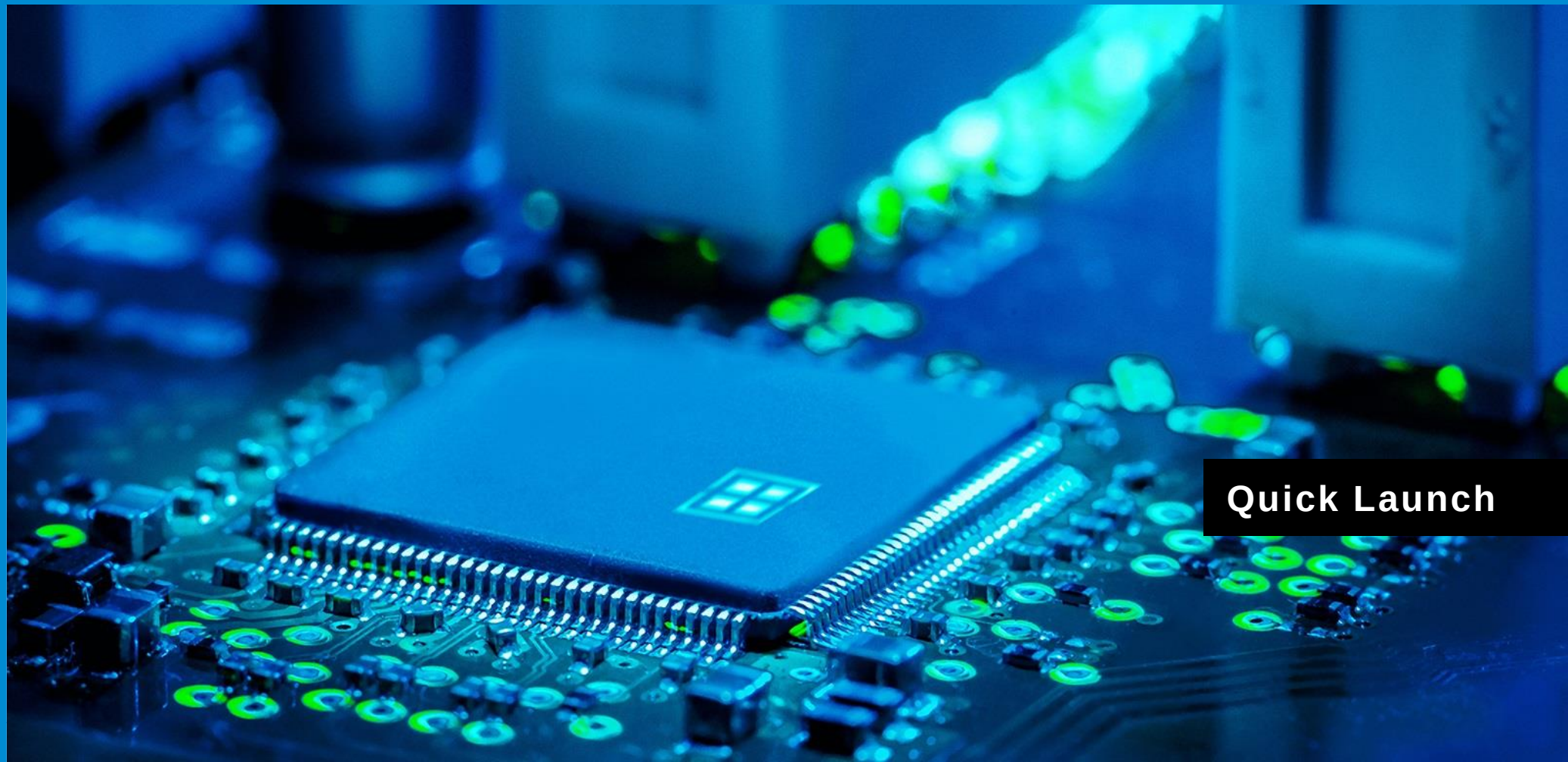
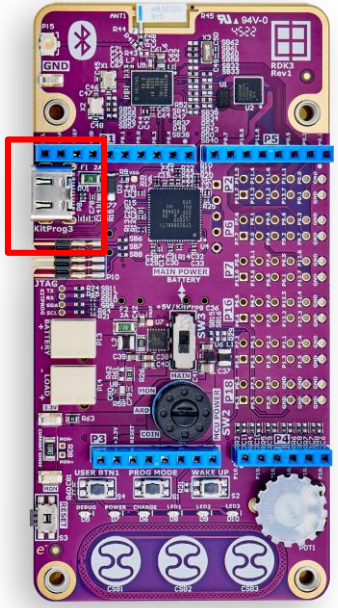


Quick Launch

Connect the RDK3 to your PC.

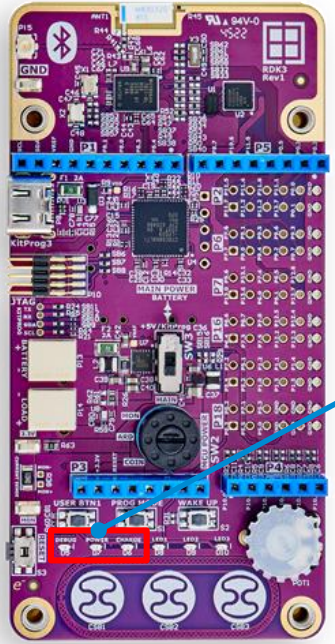


Look for the USB-C socket with a marking “KitProg3”

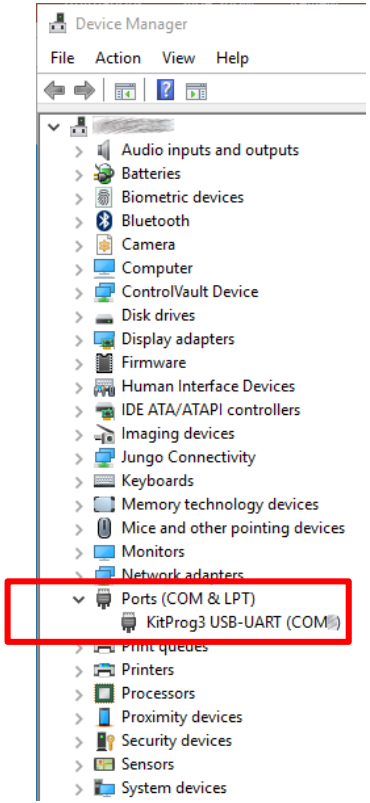
Have a USB Type-C cable

Connect it with your PC

Check if the RDK3 is ready.



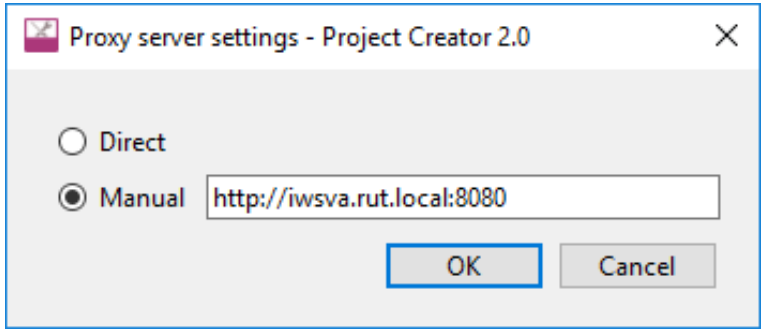
“POWER” and “DEBUG” LEDs must shine constantly. The “CHARGE” LED will be blinking if no battery is connected.



The “KitProg3” must be seen in the “Device Manager” window.

If you are working with your personal PC, (not the Rutronik provided Laptop PC) please skip this setup.

Open the File→New→ "ModusToolbox Application" → Settings → Proxy server settings and enter the proxy address: http://iwsva.rut.local:8080



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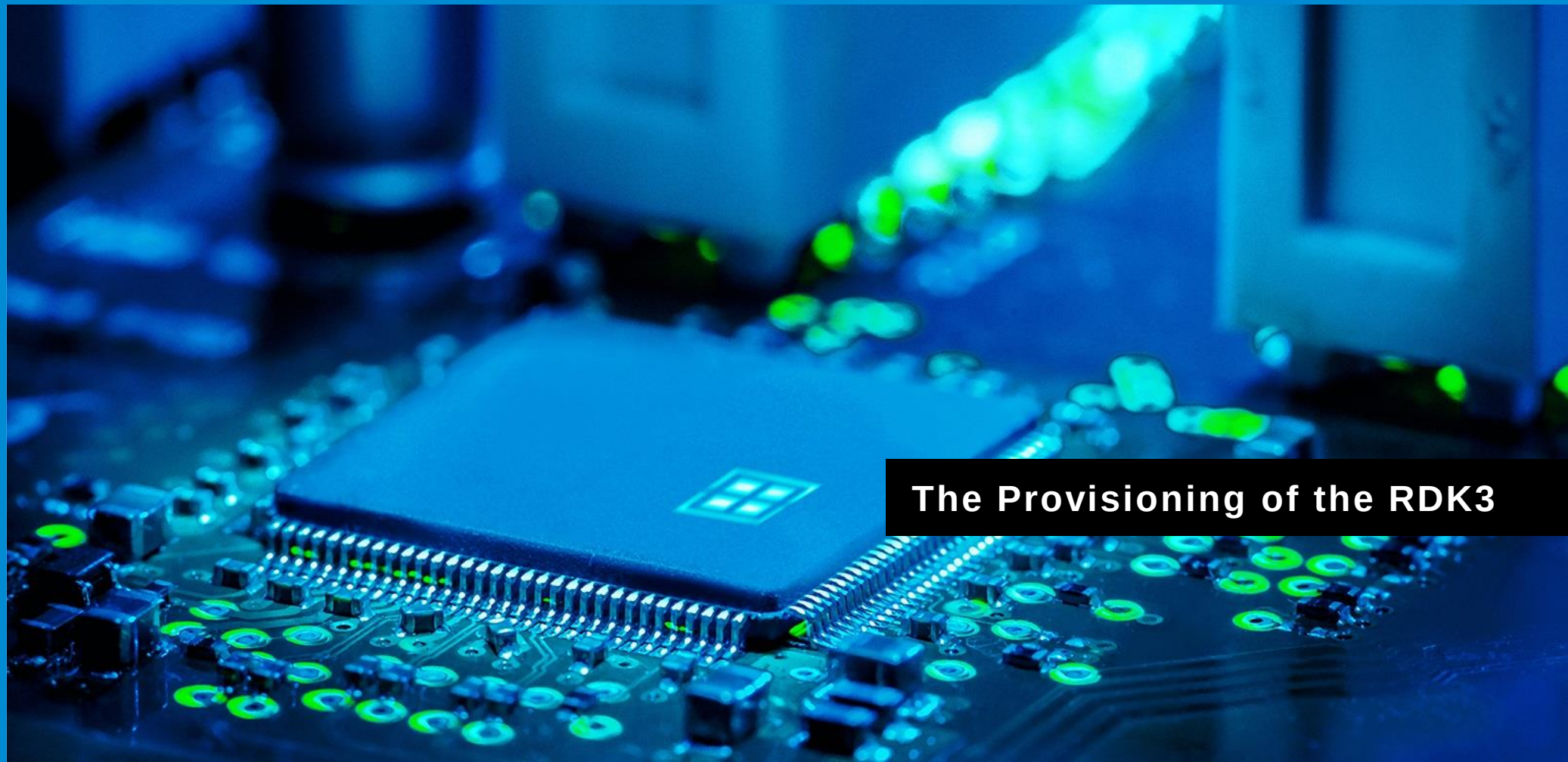


The Provisioning of the RDK3

The Provisioning of the RDK3

- **The RDK3 is equipped with a PSoC™ 64 "Secure" MCU CYB06447BZI-BLD53.**
- **The PSoC™64 device must be provisioned with keys and policies before being programmed.**
- **If the unsigned or not properly signed image will be written to the RDK3 PSoC™64 – the microcontroller will not startup.**
- **You may also refer to the "Secure Policy" Configurator guide.**

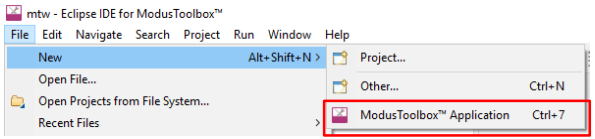
Additional Information

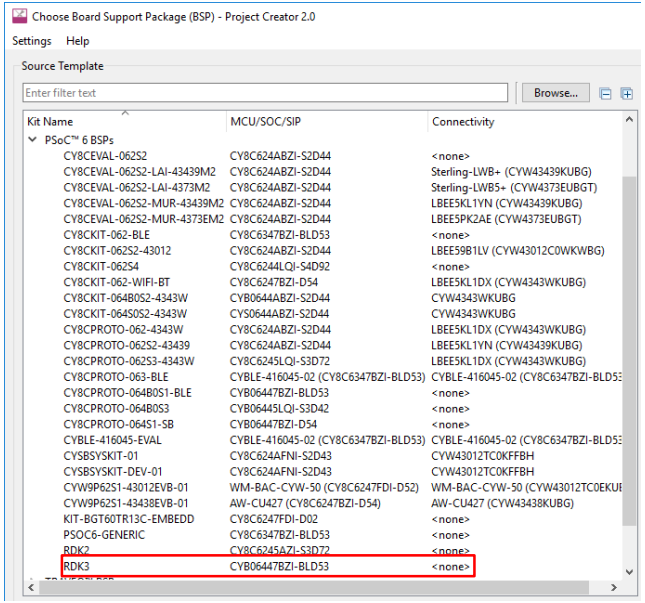
PSoC™ 64 - Secured MCU

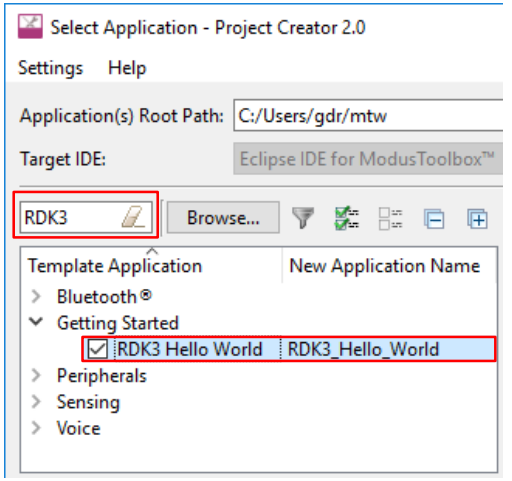
PSoC™ 64 Provisioning Specification

The Provisioning of the RDK3

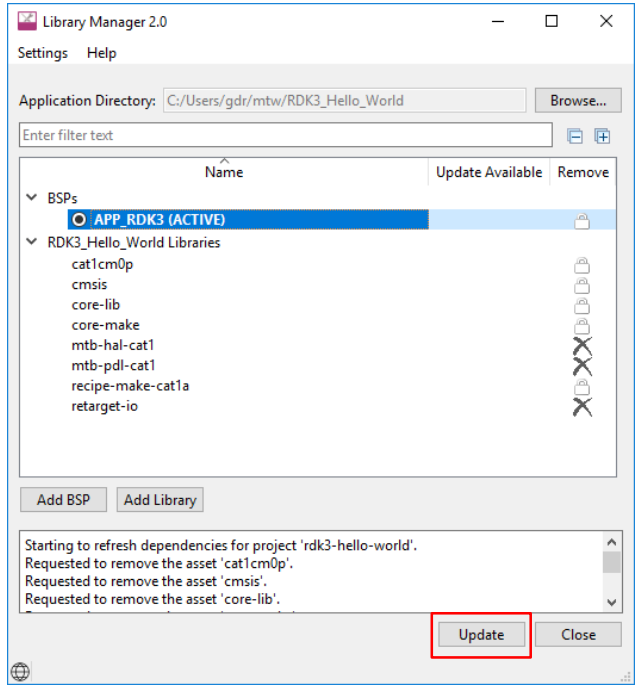
1.) Open the “Project Creator” tool: File → New → ModusToolbox™ Application
2.) Select the “RDK3” BSP. It is in PSoC™ 6 BSPs list.
3.) Click on “Next”.
4.) Write a “RDK3” in a Search… window. Select the example from given categories list.
5.) Click on “Create”.





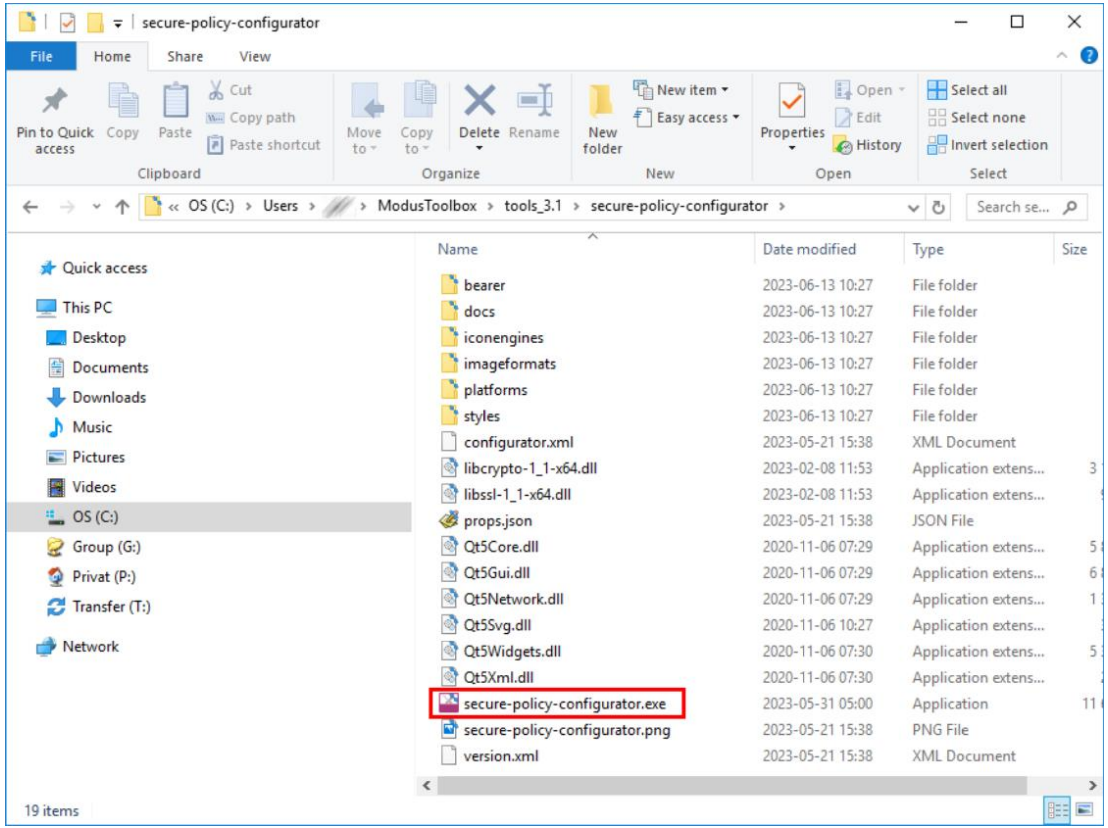


6.) After project creation is finished - update libraries with “Library Manager” tool.

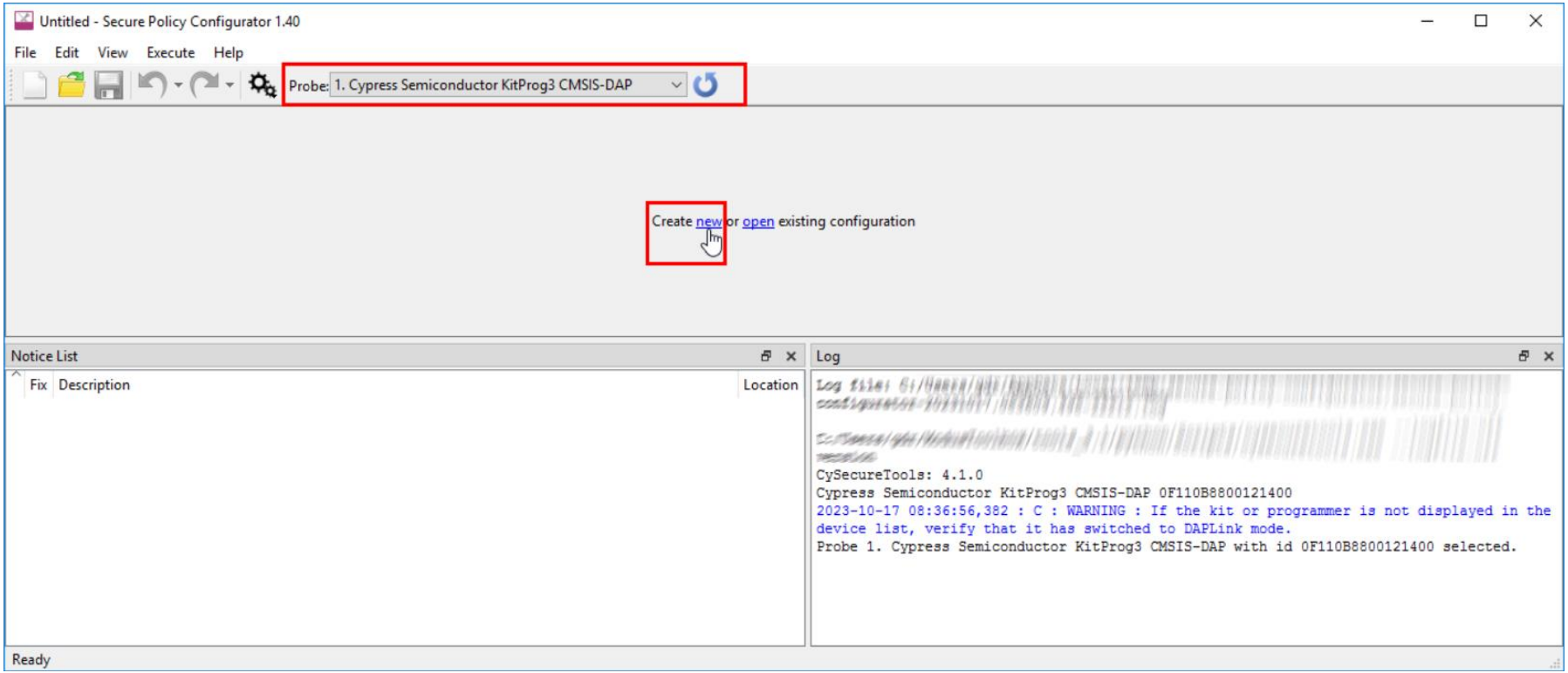


7.) Load the “Secure Policy Configurator”.

Look in ModusToolbox install directory.
By default it is C:\Users\[User Name]\ModusToolbox\tools_3.x.

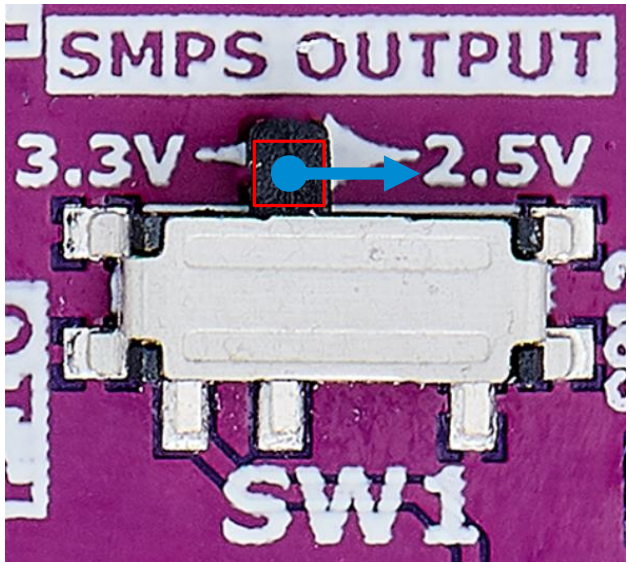


8.) Select the probe: Cypress Semiconductor KitProg3 CMSIS-DAP.
9.) Press on Create new configuration.



10.) Choose your RDK3_Hello_World Project Directory*. The Target is cy8cproto-064b0s1-ble.
11.) Set the SW1 “SMPS OUTPUT” to the 2.5V position.

→



***By default it is in C:\Users\[User Name]\mtw.**

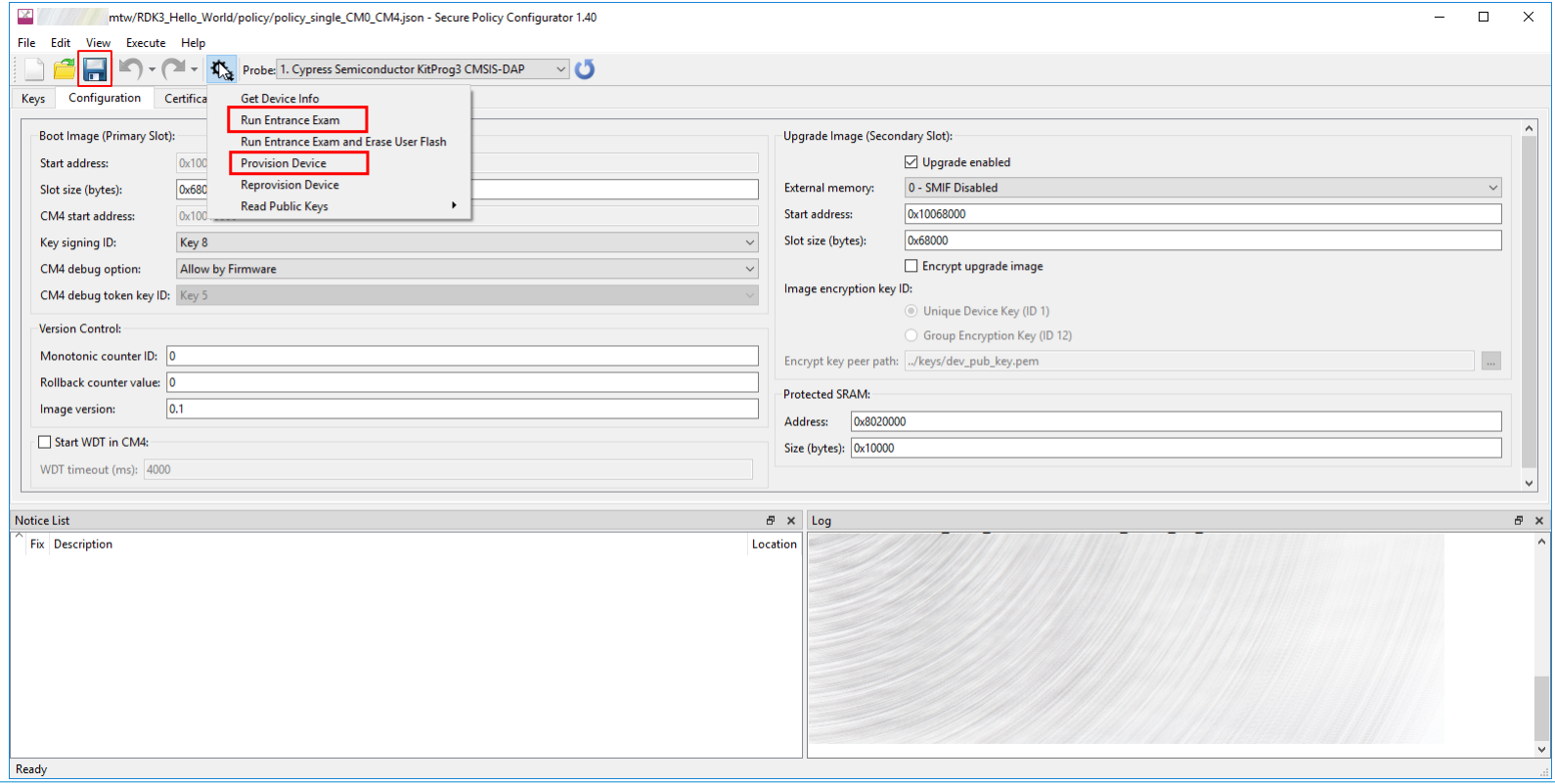
The Provisioning of the RDK3

12.) Configure the settings according to your needs or leave them as it is.
13.) Press on “Save” icon to generate a new configuration to your project directory.
14.) “Run The Entrance Exam” first, and then if you have a PASS - “Provision the Device”

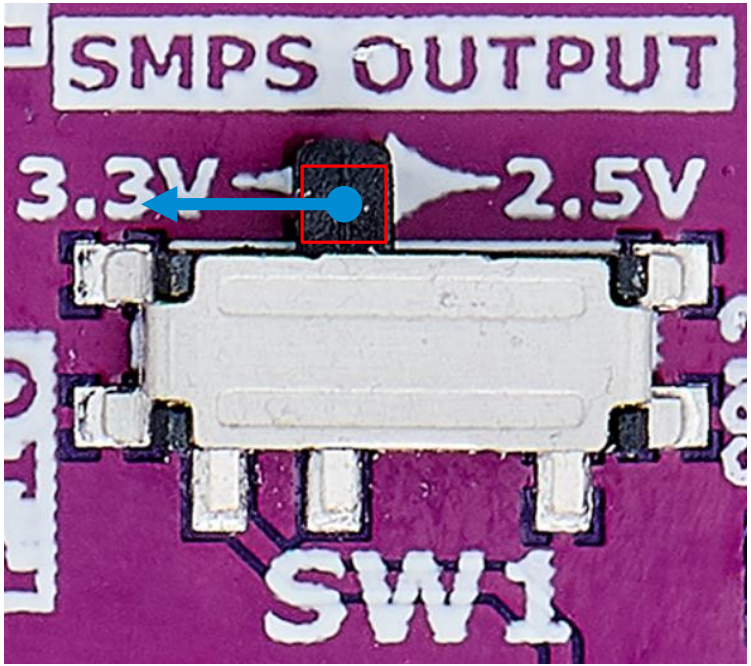
The Entrance Exam must be run to make sure if the current device can be provisioned.

The most common entrance exam failures are:

- **The device is already provisioned.**
- **The power supply is not set to 2.5V.**
- **The device is not responding.**



15.) Switch the power supply back to 3.3V

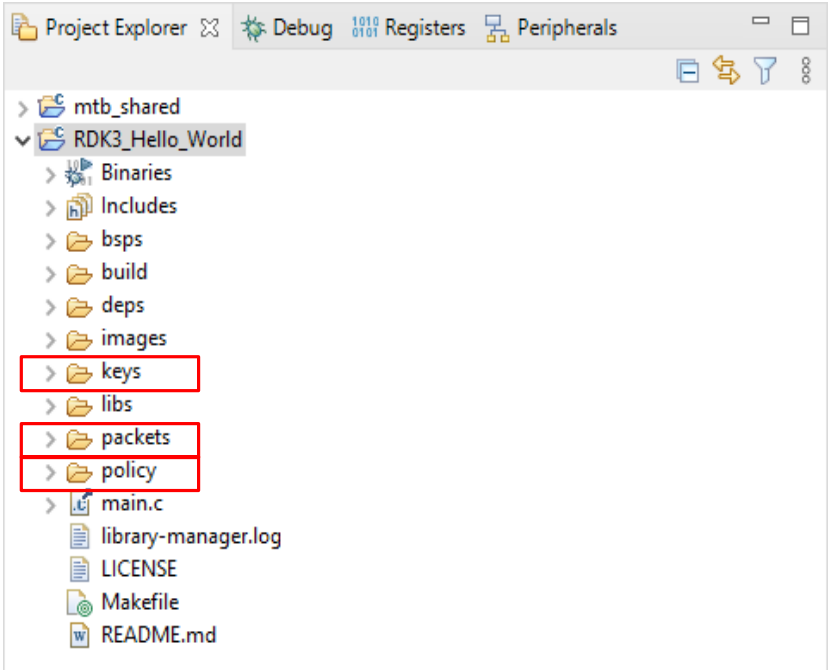


Please store the “keys”, “policy” and “packets” folders with all the content in a safe location for later use.

You may do the provisioning for all the new RDK3s you have using the same keys and policies that you have created with the first one.

The keys and policy configurations are needed for all the ModusToolbox projects with RDK3.

The packets files are only needed for the provisioning or re-provisioning other RDK3 kits you may have.



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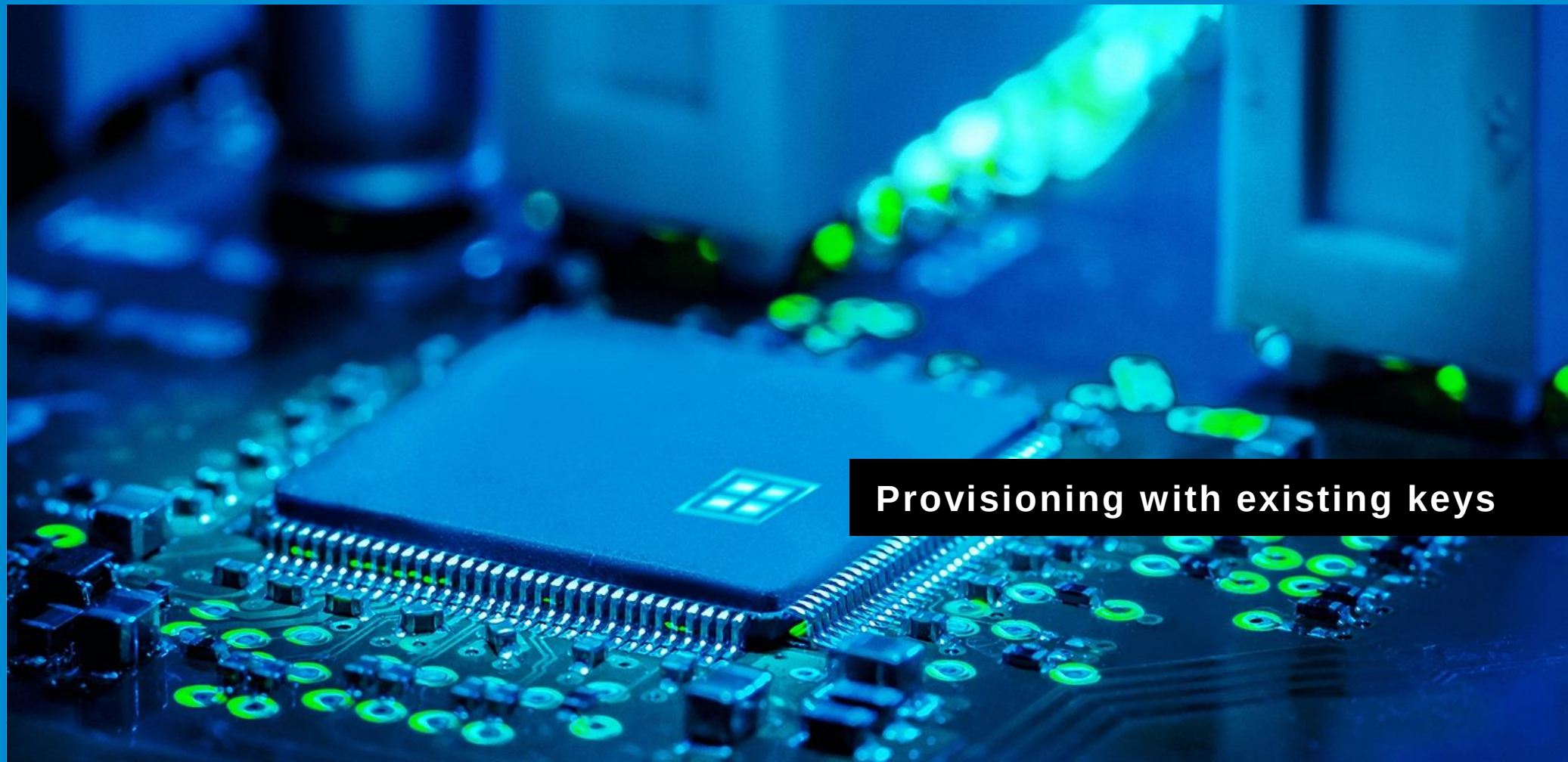
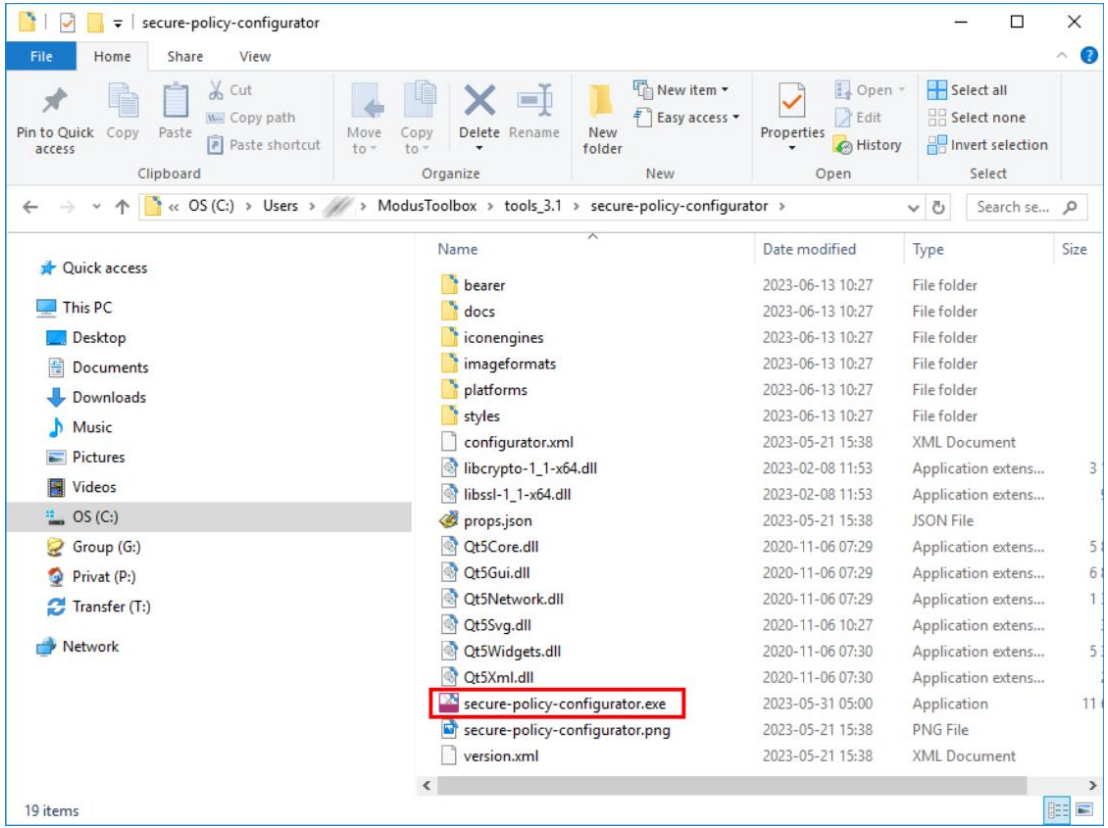


Provisioning with existing keys

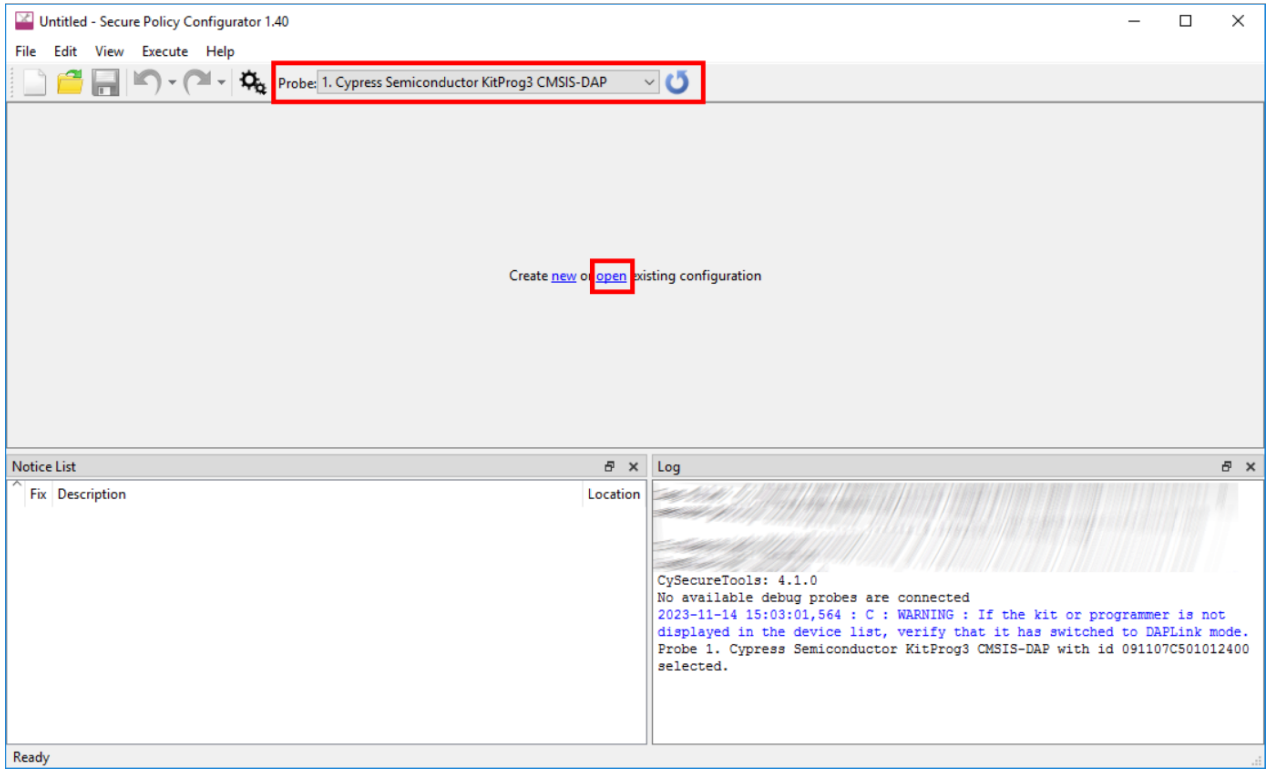
1.) Load the “Secure Policy Configurator”.

Look in ModusToolbox install directory.
By default it is C:\Users\[User Name]\ModusToolbox\tools_3.x.



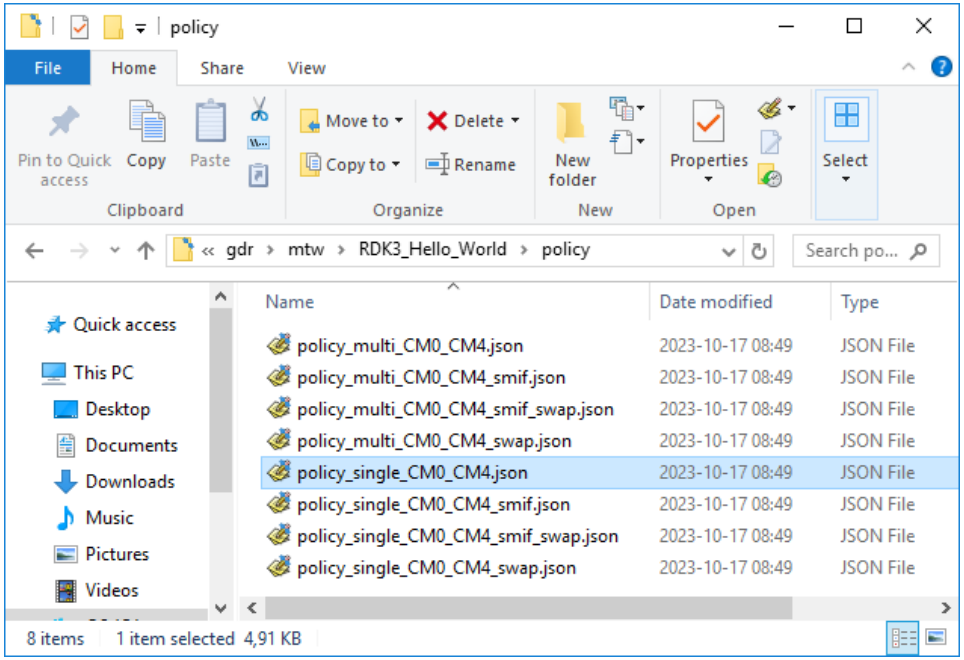
Provisioning with existing keys

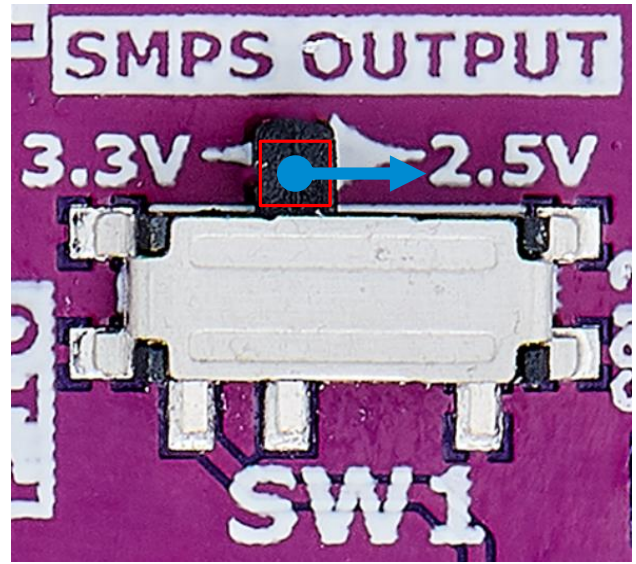
2.) Select the probe: Cypress Semiconductor KitProg3 CMSIS-DAP.
3.) Press on open configuration.



Provisioning with existing keys

4.) Choose the file “policy_single_CM0_CM4.json” in your RDK3_Hello_World/policy directory*.
5.) Set the SW1 “SMPS OUTPUT” to the 2.5V position.





***By default it is in C:\Users\[User Name]\mtw.**

6.) “Run The Entrance Exam” first, and then if you have a PASS - “Provision the Device”

The Entrance Exam must be run to make sure if the current device can be provisioned.

The most common entrance exam failures are:

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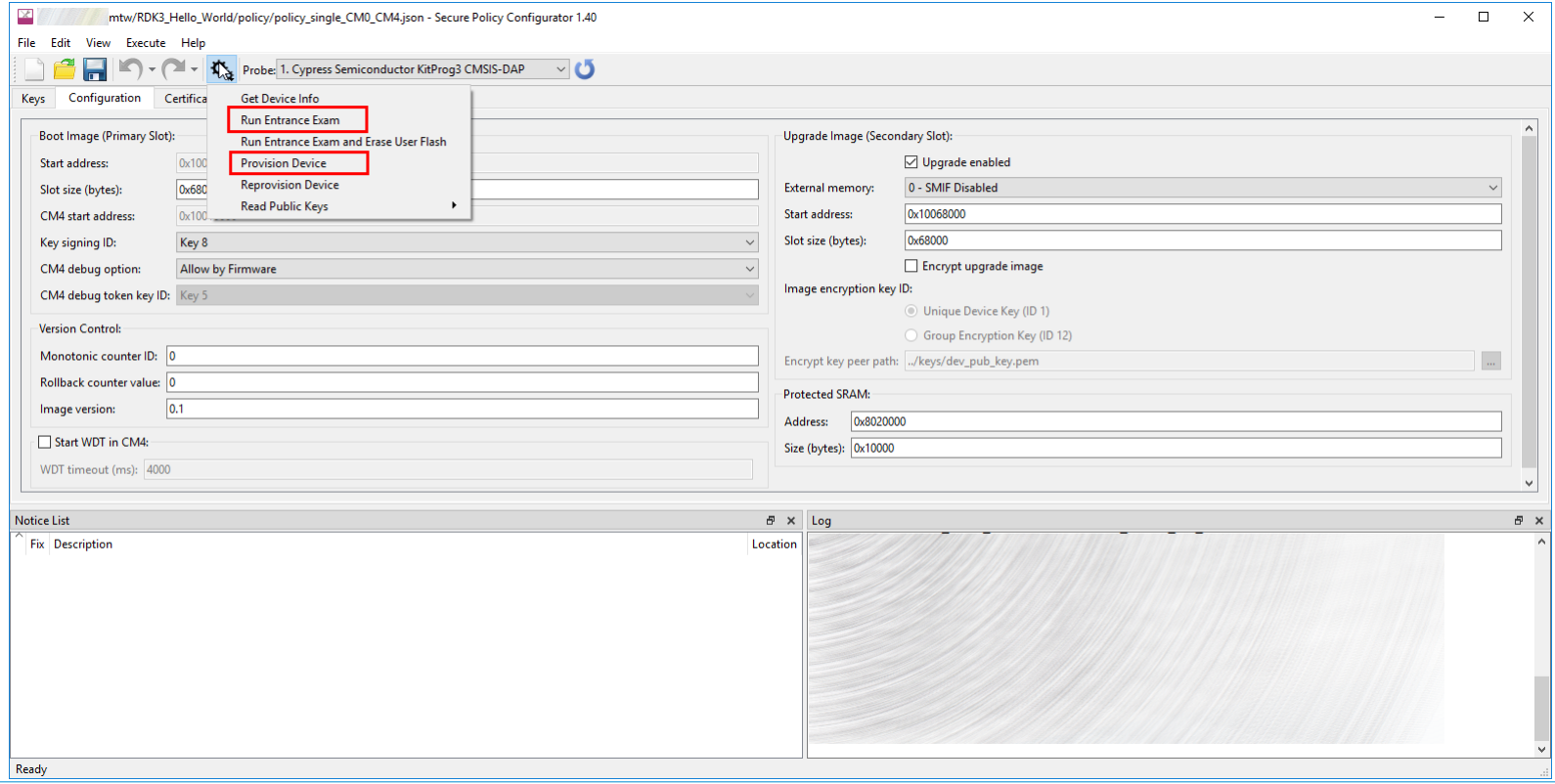
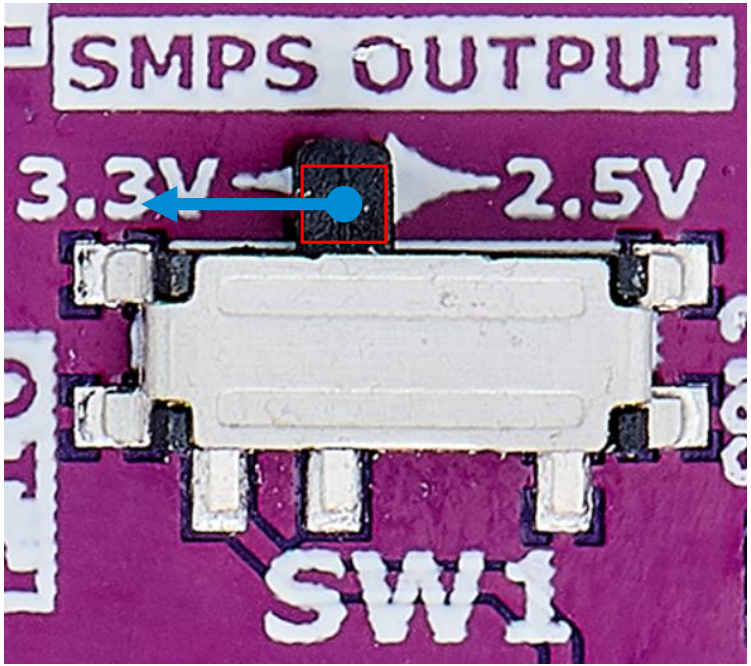


7.) Switch the power supply back to 3.3V



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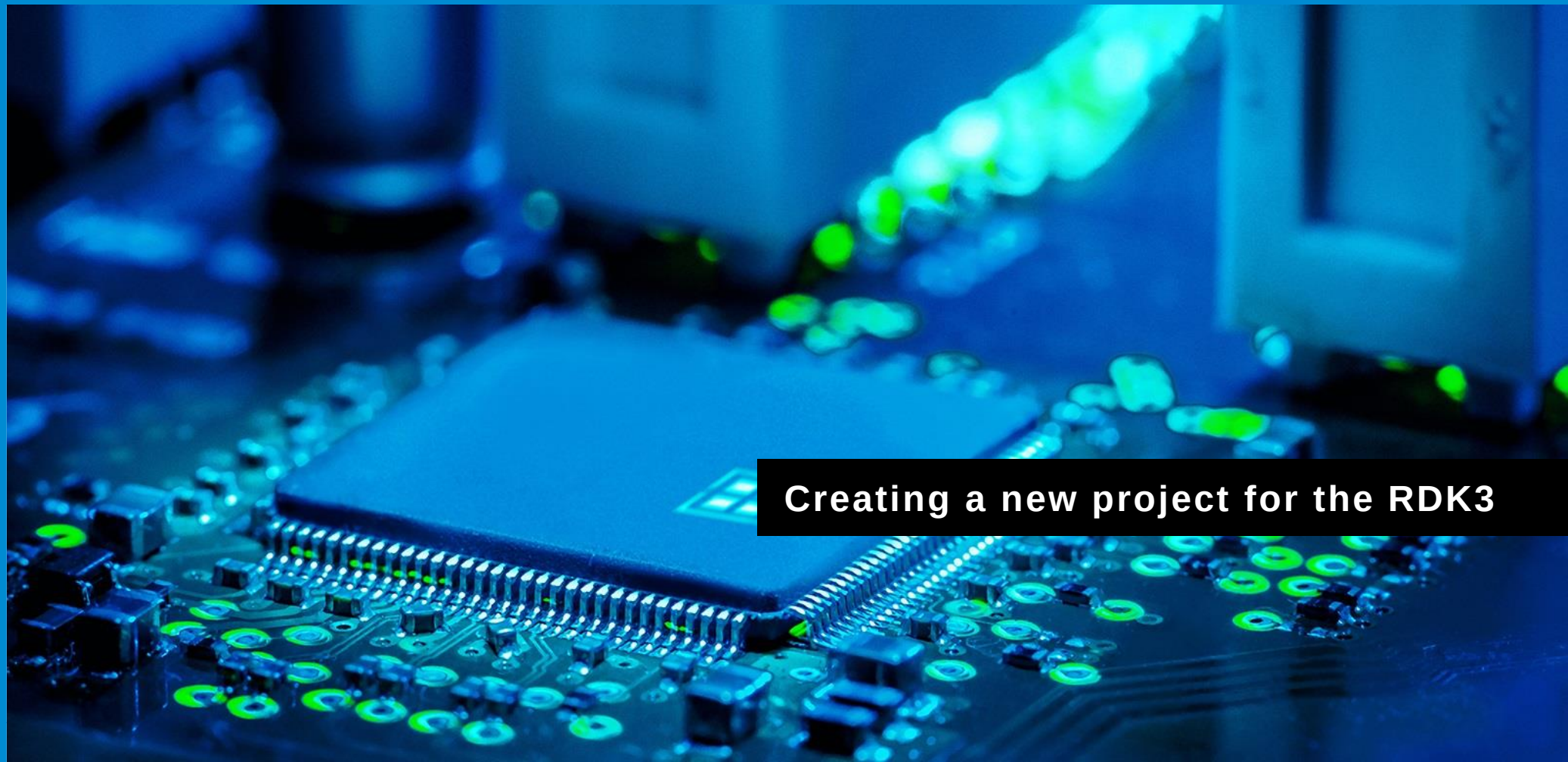


Creating a new project for the RDK3

Creating new projects with “Project Creator” tool

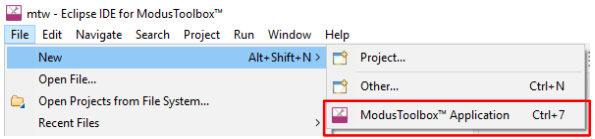
1.) Open the “Project Creator” tool: File → New → ModusToolbox™ Application

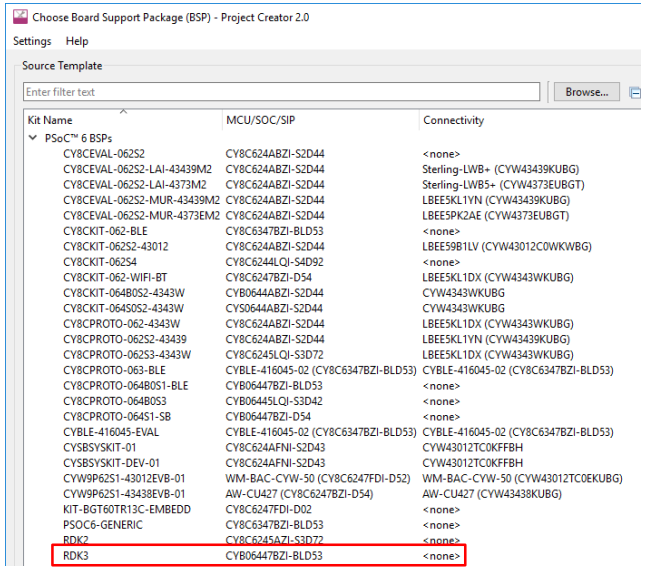
2.) Select the “RDK3” BSP. It is in PSoC™ 6 BSPs list.

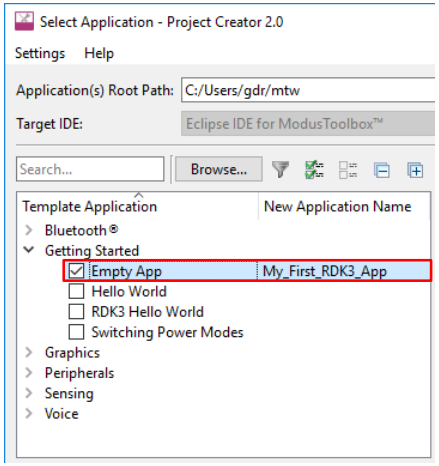
3.) Click on “Next”.

4.) Select a “Empty App” in a “Getting Started” category. Name it “My_First_RDK3_App”.

5.) Click on “Create”.

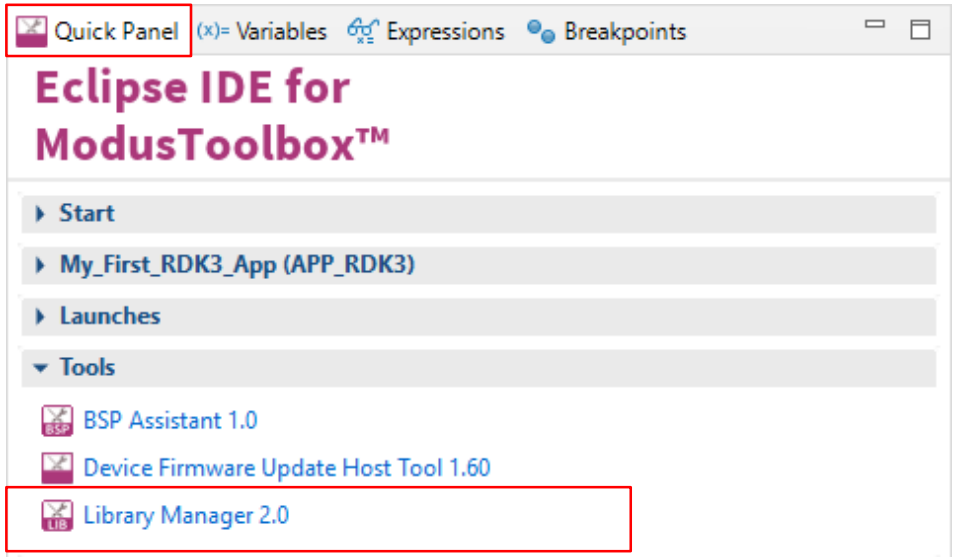


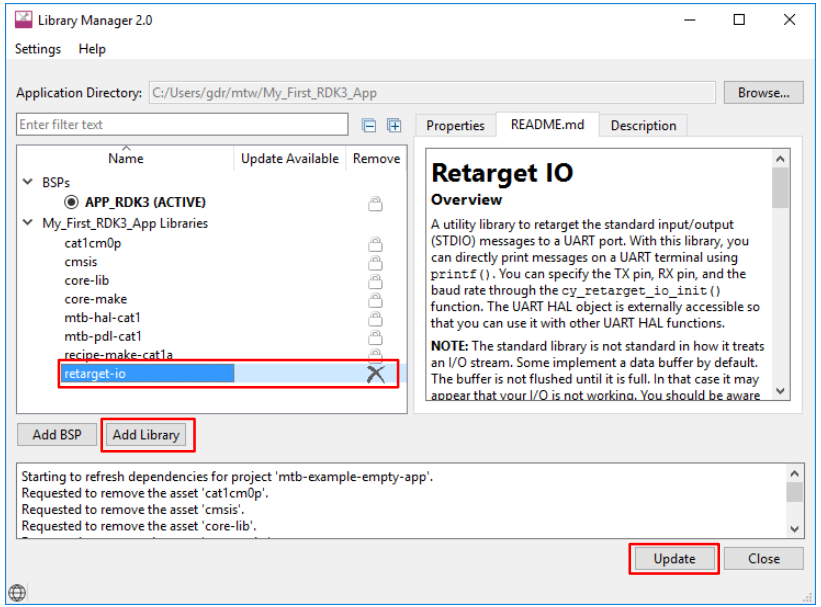




Creating new projects with “Project Creator” tool

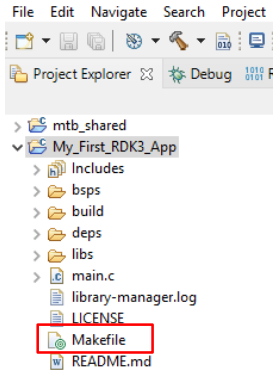
6.) Include the “retarget-io” library in a “Library Manager” tool and press “Update”.





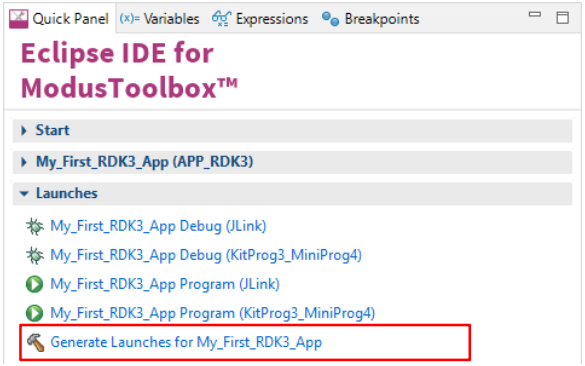
Creating new projects with “Project Creator” tool

7.) Modify the “Makefile” to disable code optimisation*



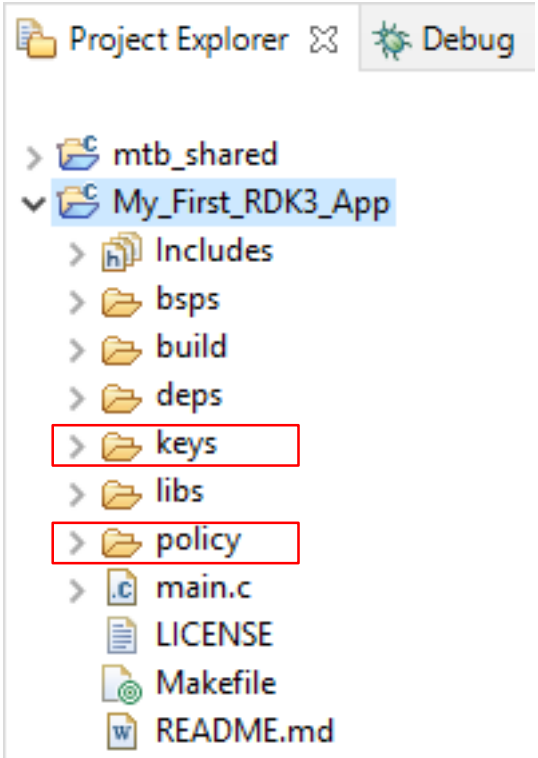
APPNAME=my-first-rdk3-app
CONFIG=Custom
CFLAGS =-O0

8.) Press “Generate Launches” in Quick Panel



***only for debugging, learning and demo purposes. Normally, code optimisations should never be disabled.**

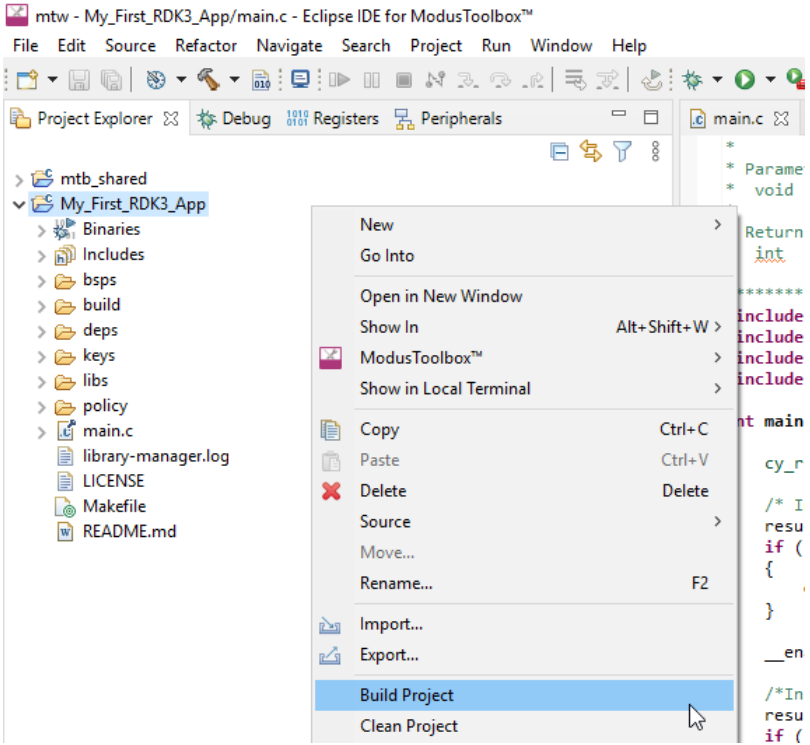
9.) Copy and paste the “keys” and “policy” folders with all the files into your project.



10.) Copy/Paste and save the code example to the “main.c” file.

```
#include "cy_pdl.h"
#include "cyhal.h"
#include "cybsp.h"
#include "cy_retarget_io.h"

int main(void)
{
    cy_rslt_t result;

    /* Initialize the device and board peripherals */
    result = cybsp_init();
    if (result != CY_RSLT_SUCCESS)
    {
        CY_ASSERT(0);
    }

    __enable_irq();

    /*Initialize LED2*/
    result = cyhal_gpio_init( LED2, CYHAL_GPIO_DIR_OUTPUT, CYHAL_GPIO_DRIVE_STRONG, CYBSP_LED_STATE_OFF);
    if (result != CY_RSLT_SUCCESS)
    {CY_ASSERT(0);}

    /*Enable debug output via KitProg UART*/
    result = cy_retarget_io_init( KITPROG_TX, KITPROG_RX, CY_RETARGET_IO_BAUDRATE);
    if (result != CY_RSLT_SUCCESS)
    {CY_ASSERT(0);}
    printf("\x1b[2J\x1b[;H");

    for (;;)
    {
    /*Delay 1000 milliseconds*/
    CyDelay(1000);
    printf("Powered by RUTRONIK.\r\n");
    cyhal_gpio_toggle(LED2);
    }
}
```

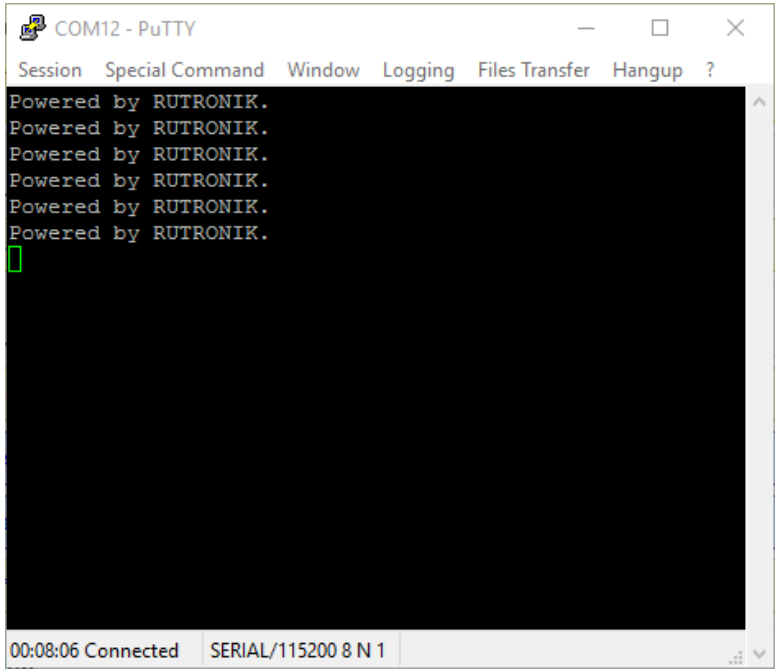
11.) Build and Debug the active project.



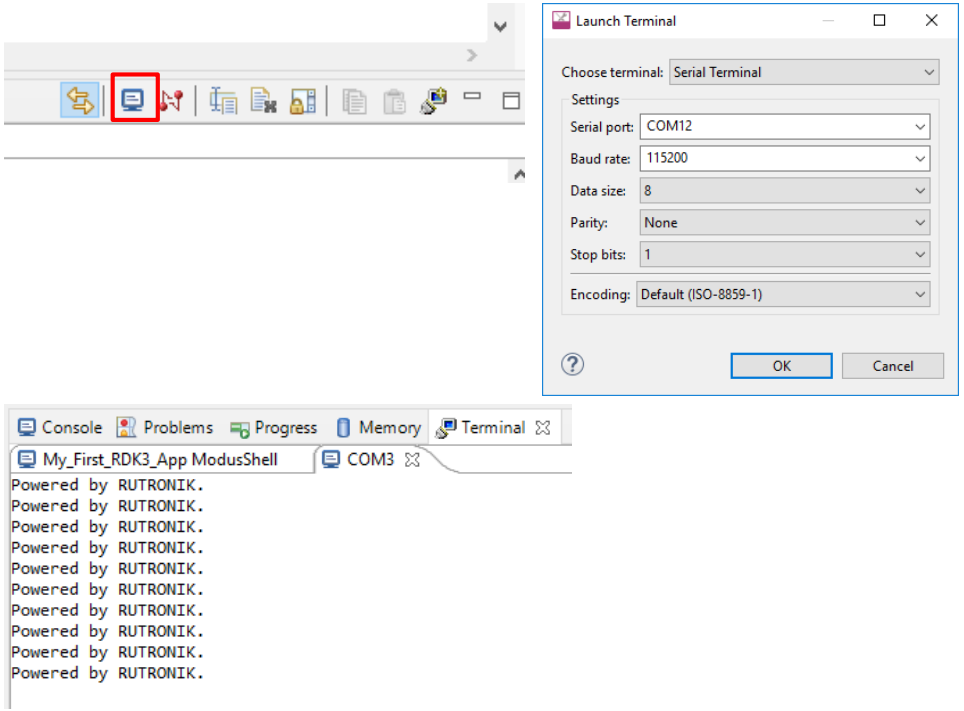
Creating new projects with “Project Creator” tool

The final result is a blinking LED2 on the RDK3 board and text on the terminal window:

PuTTY Terminal



ModusToolbox Terminal



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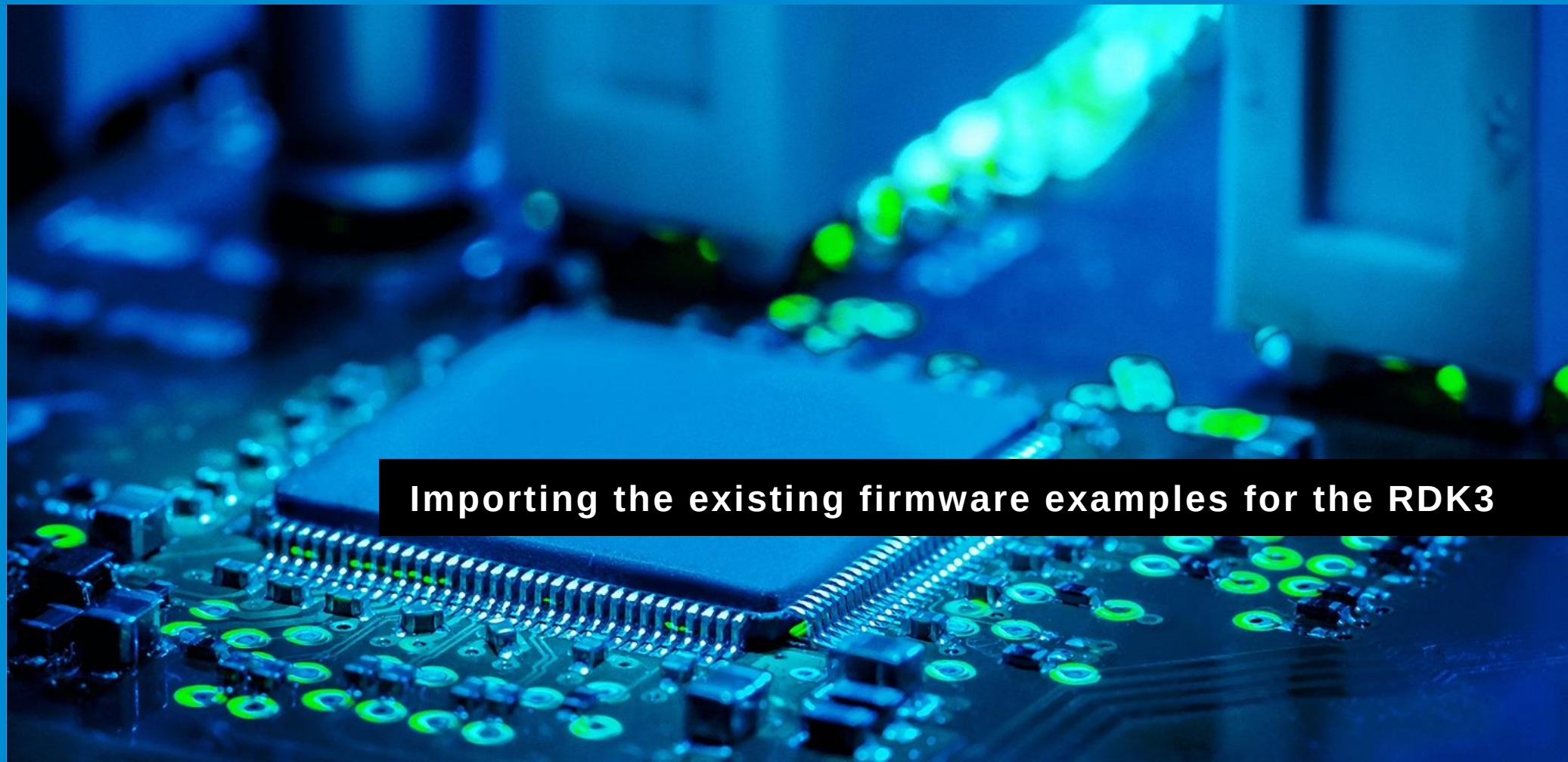
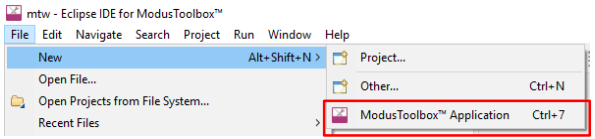
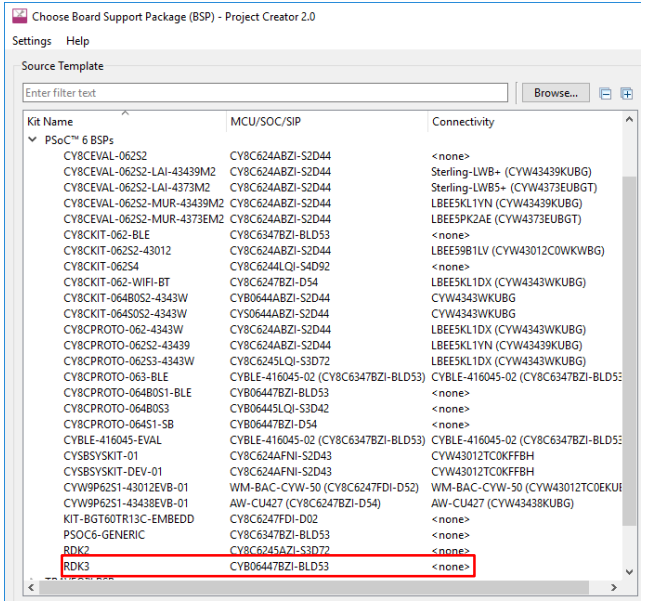


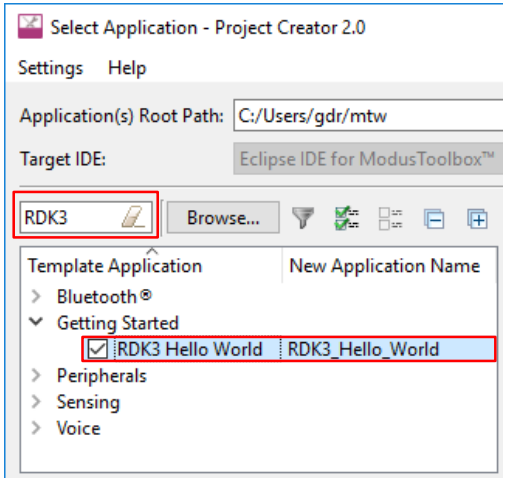
Importing the existing firmware examples for the RDK3

Importing firmware examples with “Project Creator” tool

1.) Open the “Project Creator” tool: File → New → ModusToolbox™ Application
2.) Select the “RDK3” BSP. It is in PSoC™ 6 BSPs list.
3.) Click on “Next”.
4.) Write a “RDK3” in a Search… window. Select the example from given categories list.
5.) Click on “Create”.

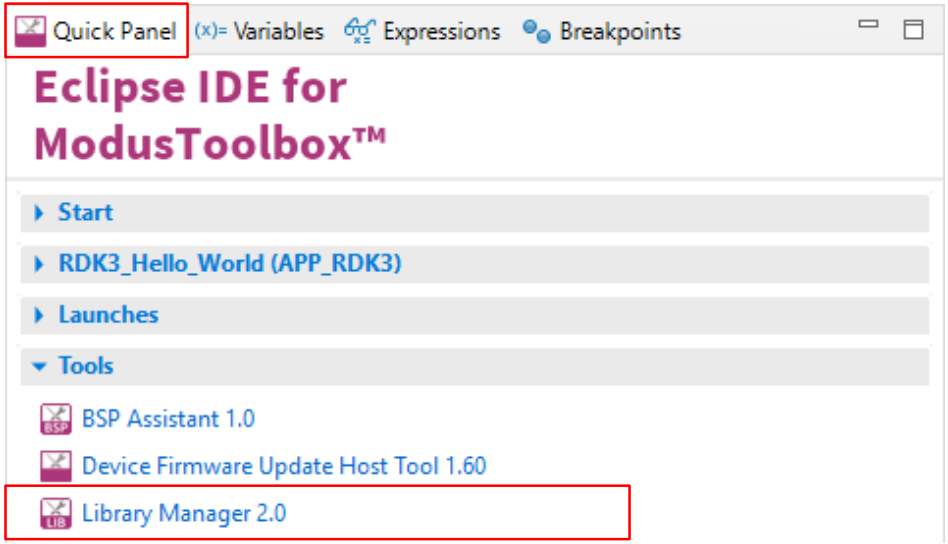


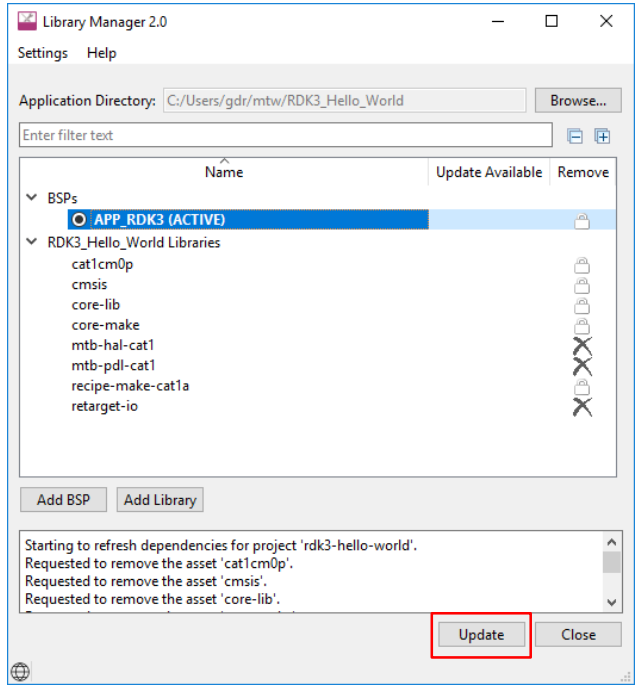




Importing firmware examples with “Project Creator” tool

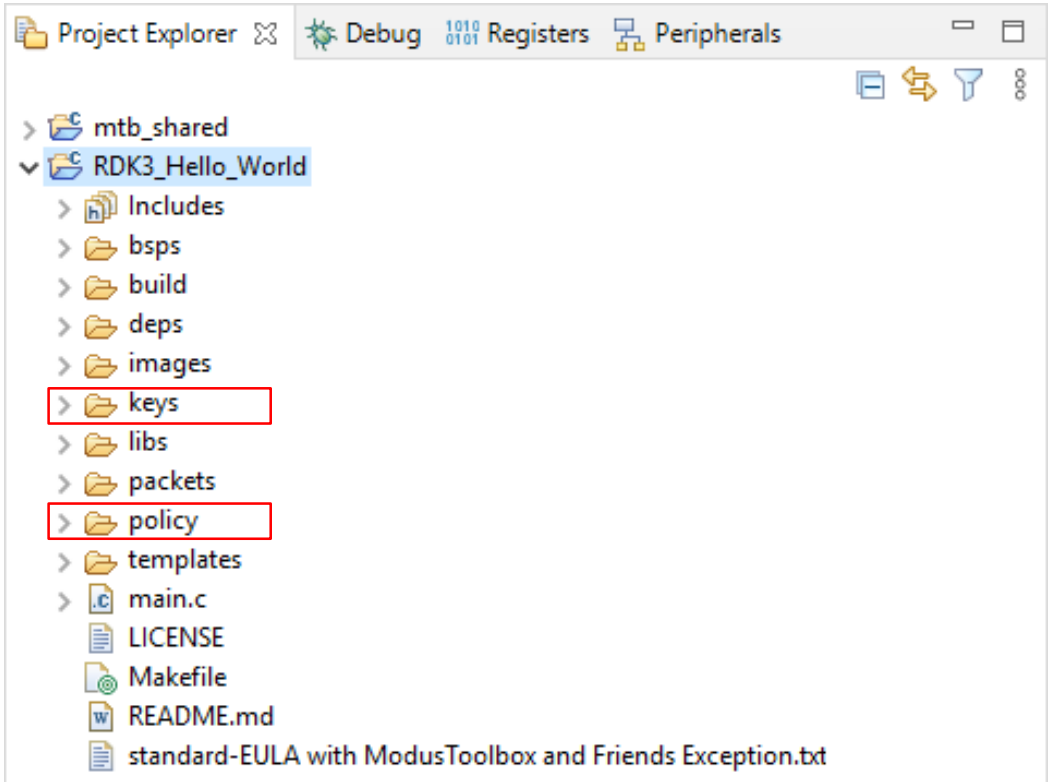
6.) After project creation is finished - update libraries with “Library Manager” tool.



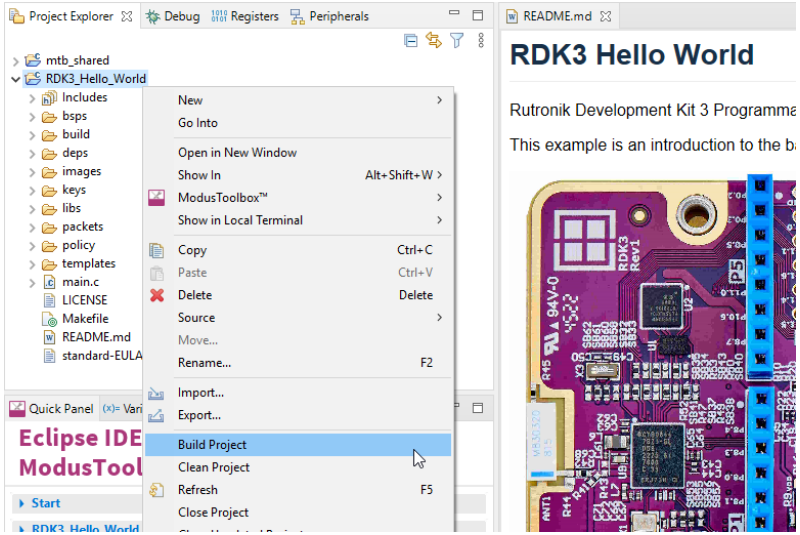


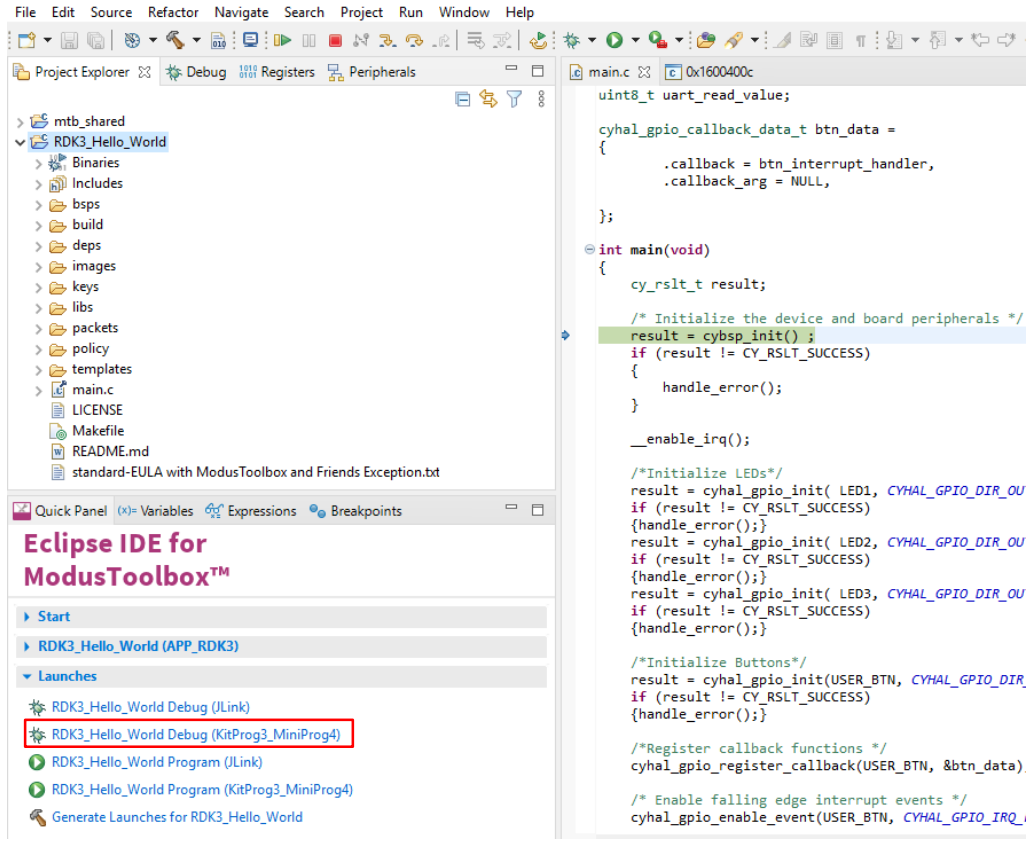
Importing firmware examples with “Project Creator” tool

7.) Copy and paste the “keys” and “policy” folders with all the files into your project. The folder “packets” is optional, needed only for the re-provisioning.



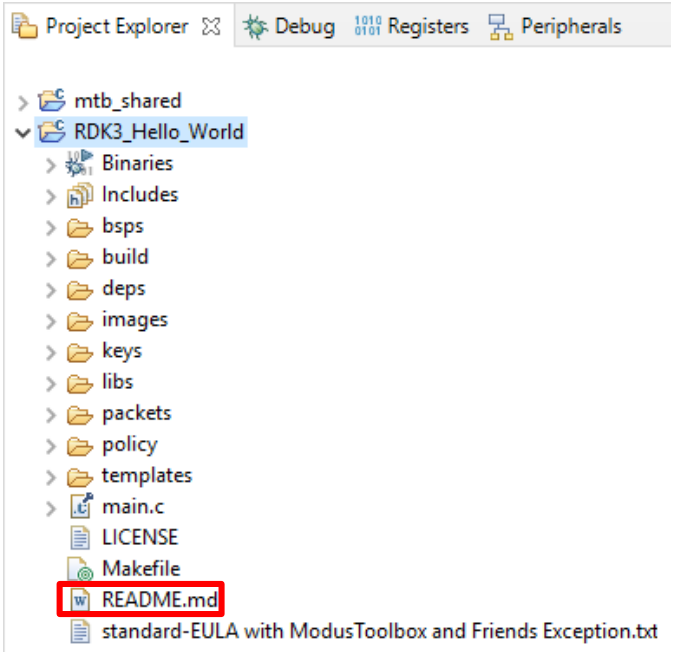
8.) Build and Debug the project.

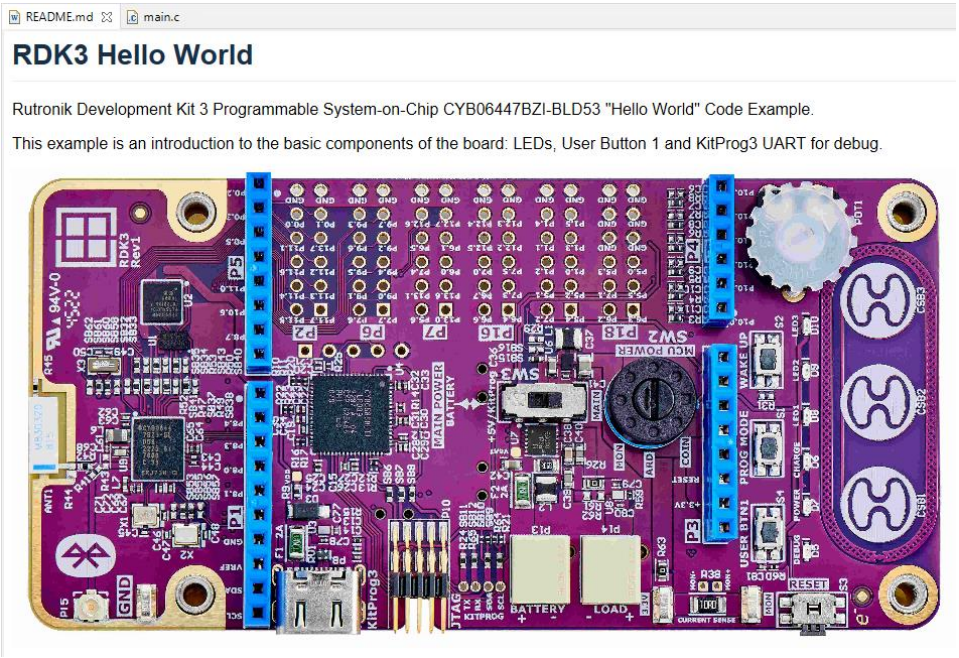


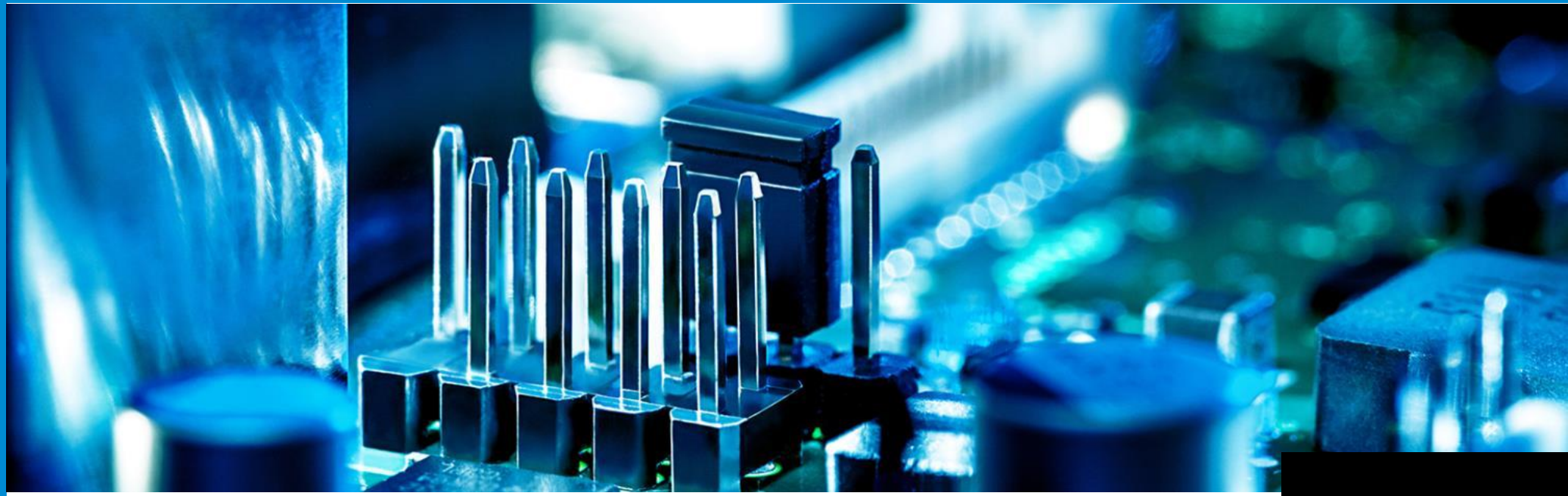


RDK3 README.md

Check the README.md file before starting to explore the code example. You may find important hints or what else is needed to have firmware running properly.







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