User Guide

Type 2FR/2FP EVK

NXP RW612 Chipset for 802.11 a/b/g/n/ac/ax + Bluetooth LE 5.4 / IEEE 802.15.4

NXP RW610 Chipset for 802.11 a/b/g/n/ac/ax + Bluetooth LE 5.4

User Guide - Rev. 3.9

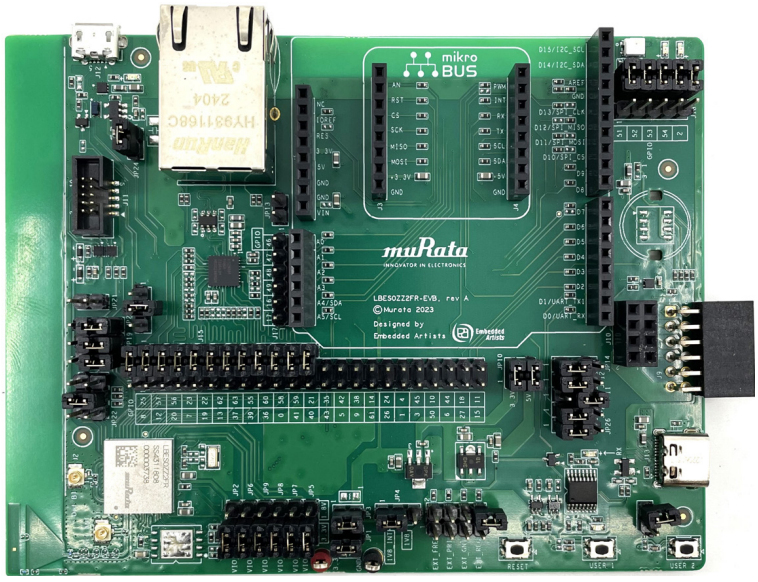


Table of Contents

1 Introduction 5
1.1 Type 2FR and Type 2FP 5
2 Murata Community Forum 5
2.1 Registering 5
2.2 Logging In 6
2.3 Using the Public Forum 6
2.4 Using Private Groups 6
2.5 Additional Resources 7
3 Kit Contents 7
3.1 Type 2FR/2FP EVK 7
3.2 Debug Probe 9
3.2.1 MCU-Link Pro 9
4 Hardware Setup 9
4.1 Type 2FR/2FP EVK Setup 9
4.2 MCU-Link Pro Setup 10
5 Default Application 11
6 Software Setup 13
6.1 Install J-Link Software 13
6.2 Install MCUXpresso IDE and SDK 13
7 Example Applications 15
7.1 Wi-Fi Application 15
7.1.1 Configure On-module Flash Operation for Wi-Fi 17
7.1.2 Build Wi-Fi Example 17
7.1.3 Flash Wi-Fi Firmware 17
7.1.4 Flash and Run Wi-Fi Example 20
7.2 Bluetooth Low Energy Application 23
7.2.1 Configure On-module Flash Operation for BLE 23
7.2.2 Build BLE Example 25
7.2.3 Flash BLE Firmware 25
7.2.4 Flash and Run BLE Example 26
7.3 GPIO Example 27
7.4 OpenThread Command Line Interface (CLI) Application 29
7.4.1 Prerequisite 29
7.4.2 Patch OT CLI Application 29
7.4.3 Build OT CLI Application 30

7.4.4 Flash OT CLI Binary 30
7.4.5 Run OT CLI Application 30
8 Flashing via J-Link Commander (Optional) 32
8.1 Connect J-Link to Module 32
8.2 Flash Applications 33
8.3 Flash Wi-Fi/BLE/802.15.4 Firmware 34
9 Creating binary in MCUXpresso (Optional) 34
10 RF Test Mode 37
10.1 RF Test Software 37
10.2 Conducted RF Test Hardware Modifications 37
11 Current Measurement 38
11.1 Power Information 38
11.2 Current Measurement Configuration 38
12 Deep Sleep Current Measurement 38
12.1.1 Flash Wi-Fi Binary Using J-Link 38
12.1.2 Flash Wi-Fi Application Using IDE 38
12.1.3 Commands Used to Test Sleep Current 41
13 Troubleshooting 41
13.1 MCU-Link Pro is not connecting 41
14 Appendix A: Setup Log of OT CLI Application 41
15 Appendix B: Compile log of OT CLI Application 59
16 References 65
17 Acronyms 65
Revision History 67

Figures

Figure 1: Murata Type 2FR/2FP EVK + NXP MCU-Link Pro 7
Figure 2: Serial Port Setup 10
Figure 3: MCU-Link Pro Logs When programming 10
Figure 4: Build SDK 14
Figure 5: Select an SDK 14
Figure 6: Download SDK 14
Figure 7: Install SDK in IDE 15
Figure 8: Import SDK Example 15
Figure 9: Select Target EVK 16
Figure 10: Select Wi-Fi Example 16
Figure 11: GUI Flash Tool 17

Figure 12: Select J-Link MCU-Link....18
Figure 13: Flash Wi-Fi Firmware....19
Figure 14: Flashing Completed....19
Figure 15: Run Debug....20
Figure 16: Tera Term Settings....21
Figure 17: Debug Completed Window....21
Figure 18: Wi-Fi CLI Example Output Messages....22
Figure 19: Select BLE Example....23
Figure 20: MCU Settings for BLE....24
Figure 21: Flash BLE Firmware....25
Figure 22: NXP IOT Toolbox App for running BLE Demo....26
Figure 23: Peripheral_ht Signal....27
Figure 24: Peripheral_ht BLE Example Output Logs....27
Figure 25: Select GPIO LED Example....28
Figure 26: Logs for GPIO LED Example....28
Figure 27: Flashing Application Via J-Link Commander....34
Figure 28: Select axf File....34
Figure 29: Create Binary....35
Figure 30: Flashing Wi-Fi Binary....35
Figure 31:Flashing BLE Binary....35
Figure 32: Flashing Combo Binary....36
Figure 33: Hardware Modification for u.FL Antenna Selection....37

Tables

Table 1: Document Conventions....4
Table 2: Comparison of Type 2FR and Type 2FP....5
Table 3: Murata Type 2FR/2FP EVK + NXP MCU-Link Pro Components....8
Table 4: References....65
Table 5: Acronyms....65

About This Document

Murata Type 2FR module (Murata part number LBES0ZZ2FR) includes 3 radios: Wi-Fi™, BLE and 802.15.4. It is based on NXP's RW612 chip. Murata Type 2FP module (Murata part number LBEE0ZZ2FP) includes 2 radios: Wi-Fi and BLE. This document provides the setup instructions for the Murata Type 2FR/2FP EVKs.

> The Type 2FR/2FP EVKs by default comes with internal flash support. With hardware rework, it is possible to incorporate external flash as well. However, this document details the instructions for on-module flash version of Type 2FR/2FP EVK.

Audience & Purpose

This document is intended for software/firmware, hardware, and systems engineers to evaluate and develop applications with Murata's Type 2FR/2FP module.

Document Conventions

Table 1 describes the document conventions.

Table 1: Document Conventions

Conventions	Description
	Warning Note Indicates very important note. Users are strongly recommended to review.
	Info Note Intended for informational purposes. Users should review.
	Menu Reference Indicates menu navigation instructions. **Example**: Insert→Tables→Quick Tables→Save Selection to Gallery
	External Hyperlink This symbol indicates a hyperlink to an external document or website. **Example**: Murata Click on the text to open the external link.
	Internal Hyperlink This symbol indicates a hyperlink within the document. **Example**: Introduction Click on the text to open the link.
`Console input/output or code snippet`	**Console I/O or Code Snippet** This text ***Style*** denotes console input/output or a code snippet.
`# Console I/O comment` `// Code snippet comment`	**Console I/O or Code Snippet Comment** This text ***Style*** denotes a console input/output or code snippet comment. • Console I/O comment (preceded by "#") is for informational purposes only and does not denote actual console input/output. • Code Snippet comment (preceded by "//") may exist in the original code.

1 Introduction

Murata Type 2FR module (Murata part number LBES0ZZ2FR) includes 3 radios: Wi-Fi, BLE and 802.15.4. It is based on NXP's RW612 chip. Murata Type 2FP module (Murata part number LBEE0ZZ2FP) includes 2 radios: Wi-Fi and BLE. This document provides the setup instructions for the Murata Type 2FR/2FP EVKs.

1.1 Type 2FR and Type 2FP

Type 2FR and Type 2FP family are based on NXP RW61x family IC. The below shows the comparison of these two modules. Type 2FR and Type 2FP are drop-in replacement for each other.

Table 2: Comparison of Type 2FR and Type 2FP

	Type 2FR	Type 2FP
IC	NXP RW612	NXP RW610
Radios	Dual band Wi-Fi 6(802.11ax) Bluetooth LE 5.4/ IEEE 15.4	Dual band Wi-Fi 6(802.11ax) Bluetooth LE 5.4
Dimensions	12.0 mm x 11.0 mm x 1.55 mm (maximum)	
Footprint	Share the same footprint	
Pin-out	Share the same pin-out	
Antenna	Support the same antenna selections	
Software	Same SDK from NXP	

2 Murata Community Forum

Murata has introduced the Murata Community Forum for technical support to our customers. The Forum can be accessed via this link.

The forum content is freely accessible to the public. However, users must log in to post questions or answers. Registration is free.

2.1 Registering

To participate in the forum, you must first register. Follow these steps to complete the registration process:

1. From the forum homepage, click on the **Login** button to navigate to the Login page.
2. Select the **Sign up** option to begin the registration process.
3. Scroll to the end of the Terms of Use, tick the checkboxes, and click on the **I Agree** button.
4. Provide your email and password, ensuring you use your company email address, then click on **Next**.
5. Click the **Send me an email** button to initiate email verification.
6. Verify your email by either clicking the verification link sent to your email or entering the confirmation code in the **Enter confirmation code** link and clicking **Verify**.
7. Fill in the required information, confirm the details, and click **Submit**.
8. Wait for the forum moderators to review and approve your application. You will receive an email notification once approved.

2.2 Logging In

Once registered, you can log in to the forum as follows:

1. From the forum homepage, click on the **Login** button to navigate to the Login page.
2. Enter your Username (the email address you used for registration) and your Password, then click **Verify**.
3. Agree to the Terms of Use by clicking on the **I Agree** button. (This step is required only during your first login)
4. After successful login, you will gain full access to the forum's features.

2.3 Using the Public Forum

To create a new post or ask a question, follow these steps:

1. Navigate to the appropriate category or subcategory that best matches the scope of your post using the forum menu or navigation options.
2. Click on the **Ask a Question** button to open the post composition page.
3. Provide the following details for your post:
4. Enter a clear and descriptive title in the **Question** field.
5. Add detailed information in the **Details** field.
6. Attach relevant files, if needed.
7. Add relevant tags (topics) for proper post classification and enhanced searchability. Suggestions will appear as you type.
8. Click the **Ask** button to publish your question. The button will only activate once you have filled in the **Question** field.

2.4 Using Private Groups

Private forum groups play a vital role in ensuring confidentiality and secure collaboration for the following purposes:

- **Sharing sensitive information:** Enables restricted sharing of critical details within a controlled environment.
- **Schematics review:** Facilitates technical reviews of design schematics.
- **Logs and file sharing:** Supports sharing of files such as manufacturing firmware required for regulatory testing.

Private forum groups are designed for secure and restricted discussions. To access a private forum group:

1. Click on your Username on the top right to open the User menu, then click **My Profile** to go to your Profile page.
2. Locate the Groups block on the right and click on the name of the group you wish to access. If the group isn't visible, click **View All** to see the full list of groups you are a member of. Select the desired group. If you still cannot see your group, you are likely not a member yet. Please request access in any public post you have created, and a moderator will add you to the group (and create the private group if it does not exist).

2.5 Additional Resources

Please refer to the following additional resources for more information.

- Murata Community Forum Quick Start Guide
- Murata Community Forum User Guide

3 Kit Contents

The Murata Type 2FR/2FP EVK contains the following items:

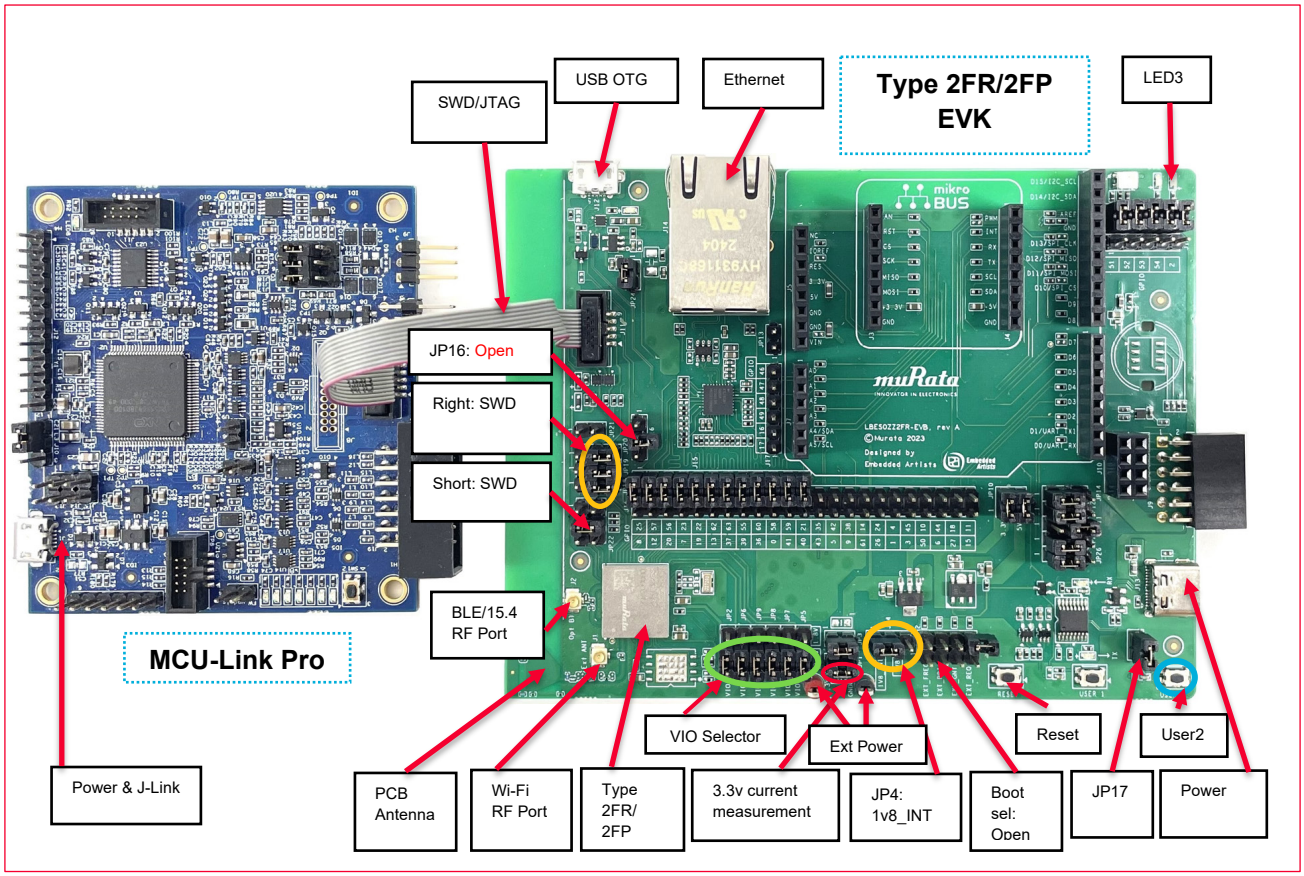
3. Type 2FR/2FP EVK
4. 1 USB-C cable

3.1 Type 2FR/2FP EVK

The 2FR/2FP EVK requires an NXP MCU-Link Pro board to operate. **Figure 1** shows the connections between 2FR/2FP EVK and MCU-Link Pro board.

An MCU-Link Pro can be obtained from here.

Figure 1: Murata Type 2FR/2FP EVK + NXP MCU-Link Pro



The various components are described in **Table 3**.

Table 3: Murata Type 2FR/2FP EVK + NXP MCU-Link Pro Components

Label	Description
LED3	This LED is used in the GPIO and LED demo application.
Ethernet	Ethernet port.
USB OTG	USB OTG port.
Power & J-Link	Power and J-Link connector. Connect an USB cable to the host PC.
SWD/JTAG	SWD/JTAG cable. This cable is used to connect the Type 2FR/2FP EVK and the MCU-Link Pro debug board.
JP16	This jumper must be kept open.
JP18, JP19, JP20	These jumpers are used to setup the EVK to connect via SWD (Serial Wire Debug) or JTAG. SWD mode is required to connect using MCUXpresso. • Right: SWD • Left: JTAG
JP22[3-4]	This jumper is used to setup the EVK to connect via SWD (Serial Wire Debug) or JTAG. SWD mode is required to connect using MCUXpresso. • Short: SWD • Open: JTAG
BLE/15.4 RF port	External u.FL antenna can be connected here for Bluetooth/802.15.4 antenna. This antenna is by default disabled. See Section 10.2 for instructions on enabling this. 802.15.4 is only available in Type 2FP EVK.
PCB Antenna	PCB Trace Antenna. This antenna is by default enabled.
Wi-Fi RF Port	External u.FL antenna can be connected here for Wi-Fi. This antenna is by default disabled. See Section 10.2 for instructions on enabling this.
Type 2FR/2FP	Type 2FR/2FP module
Green oval - Voltage selector	These jumpers are used to setup the EVK to use either 3.3V or 1.8V. • Top: 1.8V • Bottom: 3.3V
JP1	These jumper pins are used for 3.3V current measurement using a DC meter.
Yellow oval - JP4	Jumper is set to 1V8_INT configuration (1-2 position) for current measurement by default.
Boot selector	Keep open for normal mode.
JP17	Insert this jumper if running the GPIO and LED demo application. Remove it if using Ethernet.
Blue oval - USER_2	This button is used in the GPIO and LED demo application.
Power and UART	Power and UART connector. Connect an USB-C cable to the host PC.
Ext Power	Optional external power supply.

The 2FR/2FP EVK integrates a default dual band PCB pattern antenna. There are also two u.FL connectors on board for conducted test purpose. Please refer to Section 10.2.

Type 2FR/2FP module integrates a 16MB Winbond flash. When using this EVK with NXP RW61x SDK, some code changes are required, because the default SDK is made for a different flash type. See Section 7.1.1 for details of the code changes.

3.2 Debug Probe

A debug probe is used for flashing firmware images and debugging. If the debug board is not included, one can purchase it in the market. MCU-Link Pro is the recommended debug board.

3.2.1 MCU-Link Pro

Both J-Link commander tool and MCUXpresso GUI Flash Tool can work with MCU-Link Pro to burn images and debug. See Section 4.2 for details on how to setup MCU-Link Pro.

4 Hardware Setup

This section describes the hardware setup.

4.1 Type 2FR/2FP EVK Setup

Ensure the following on the 2FR/2FP EVK before connecting it to the host PC.

1. Connect the SWD/JTAG cable between the Type 2FR/2FP EVK and the MCU-Link Pro debug board, as shown in **Figure 1**.
2. The JP16 jumper is OPEN.
3. JP18, 19, 20 jumpers are set up for SWD operation by closing the RIGHT pins.
4. JP22 jumper pins 3-4 are SHORT to set up for SWD operation.

Once configured, connect the MCU-Link Pro with an USB cable to the host PC, and the Type 2FR/2FP EVK to the host PC using an USB-C cable, as shown in **Figure 1**.

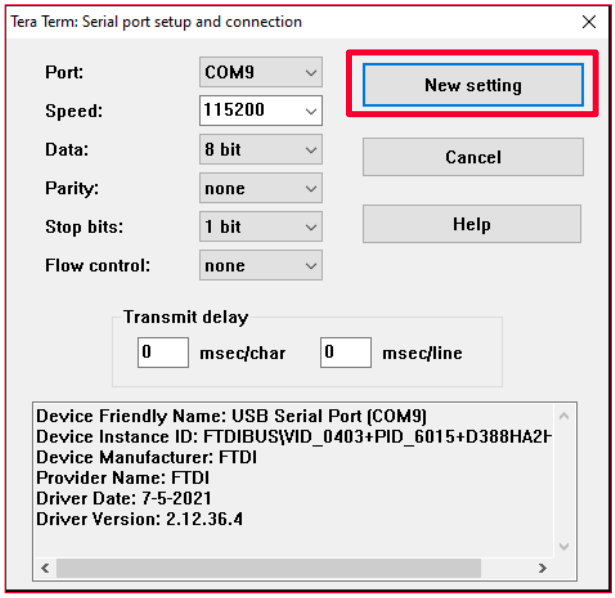
Open device manager on the host PC and check the detected COM port enumeration. There should be two COM ports. Select the COM port which shows as ‘USB Serial Port’ (not the ‘J-Link CDC UART port’) to interact with the application on Type 2FR/2FP.

The Type C USB provides the power to the EVK.
When the Type 2FR/2FP module transmits at maximum power, the current consumption can be higher than 500mA which may exceed the PC USB port current limit. In such conditions, external power supply is needed.

To use external power supply, remove the jumper at JP1 (as shown in **Figure 1**) and apply power to the power supply lugs next to JP1.

Open a terminal software (PuTTY and Tera Term) and configure as 115200, 8N1, as shown in **Figure 2**.

Figure 2: Serial Port Setup



4.2 MCU-Link Pro Setup

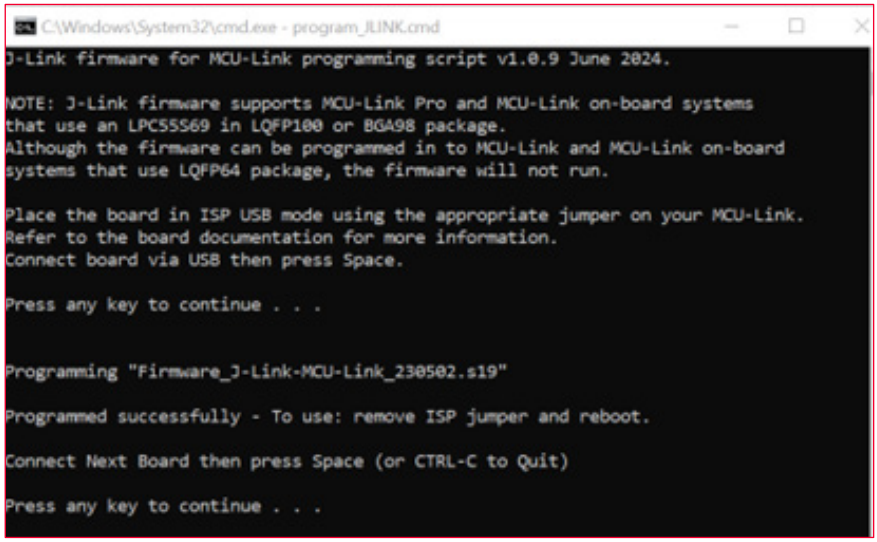
MCU-Link Pro debug probe is used for flashing firmware images and debugging. Follow the steps below to program the MCU-Link Pro for operation.

1. Download the Linkserver 1.6.133 installer for Windows from this link and install.
2. Install a jumper in J4 (labeled “FW update”) on the MCU-Link pro. Connect the MCU-Link Pro to the host PC with a USB cable.
3. Navigate to the installation folder on the host PC and run the script:

```
...\nxp\LinkServer_1.6.133\MCU-LINK_installer\scripts\program_JLINK.cmd
```

4. Once the MCU-Link Pro is programmed, stop the script, and disconnect the MCU-Link Pro from the PC. You see logs shown in **Figure 3** if it is programmed correctly.
5. Remove the J4 jumper.

Figure 3: MCU-Link Pro Logs When programming



5 Default Application

The board may have already been flashed with a default application: wifi_cli app, which provides a list of commands in a console for users to control the Wi-Fi behavior.

Some early versions of the EVK may be flashed with the manufacturing test software instead of the wifi_cli application. In such cases, revisit this section when the wifi_cli application is built and installed. It is recommended the wifi_cli be the first application to build and test.

For detailed description of the wifi_cli application, refer to Section 4.1.5 of UM11799 - NXP Wi-Fi and Bluetooth Demo Applications for RW61x document. The following is an example of some standard commands of the wifi_cli application on the serial console.

```
# help
…
# wlan-scan
Scan scheduled...

# 2 networks found:
60:38:E0:6F:21:0C "TC1_2G" Infra
channel: 3
rssi: -68 dBm
security: OPEN
WMM: YES
60:38:E0:9A:7F:26 "TC2_2G" Infra
channel: 10
rssi: -78 dBm
security: WPA2
WMM: YES

# wlan-add testing ssid TC2_2G wpa2 passphrasexxx
Added "test"

# wlan-connect testing
Connecting to network...
Use 'wlan-stat' for current connection status.

# =======================================
app_cb: WLAN: received event 1
=======================================
app_cb: WLAN: authenticated to network
=======================================
app_cb: WLAN: received event 0
=======================================
app_cb: WLAN: connected to network
Connected to following BSS:
SSID = [TC2_2G]
IPv4 Address: [10.133.101.78]
IPv6 Address: Link-Local : FE80::250:43FF:FE02:FE01 (Preferred)

# ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data
64 bytes from 8.8.8.8: icmp_req=1 ttl=56 time=50 ms
64 bytes from 8.8.8.8: icmp_req=2 ttl=56 time=45 ms

// assuming an iperf2 TCP server is running on the same network with
10.133.101.99 IP and port 5001.
# iperf -c 10.133.101.99 -d
```

```
Abort ongoing IPERF session
IPERF initialization successful

# -------------------------------------------------
TCP_DONE_CLIENT (TX)
Local address : 10.133.101.98 Port 49154
Remote address : 10.133.101.99 Port 5001
Bytes Transferred 5327584
Duration (ms) 10025
Bandwidth (Mbitpsec) 4.25

-------------------------------------------------
TCP_DONE_SERVER (RX)
Local address : 10.133.101.98 Port 5001
Remote address : 10.133.101.99 Port 63080
Bytes Transferred 6422528
Duration (ms) 10263
Bandwidth (Mbitpsec) 5.01
```

6 Software Setup

To make new applications other than the default application, read this section to setup software development environment.

The software setup requires installing/configuring software for both the EVK as well as J-Link.

6.1 Install J-Link Software

SEGGER J-Link is used to flash firmware into the Type 2FR/2FP EVK and do debugging, by enabling the MCU-Link Pro. Download and install the J-Link software from here. The version verified working is V7.92h. This version onwards supports Type 2FR/2P natively and does not need any patch.

6.2 Install MCUXpresso IDE and SDK

There are different development tools available for RW61x - MCUXpresso IDE, ARM gcc, and IAR. This document uses the MCUXpresso IDE. Follow the steps below to install MCUXpresso and the SDK.

1. Download and install the latest MCUXpresso IDE. Refer to the MCUXpresso IDE User Guide on how to use the IDE.
2. Go to the SDK for RW61x download page. An NXP login is required to access.
3. Click the Select All checkbox to select all components, as shown in **Figure 4**.
4. Click the BUILD SDK button.
5. This will generate an SDK which can be downloaded and show in a list of all previously built SDKs (if any). Click the Download link in the newly built RW612 SDK, as shown in **Figure 5**. The version number may increase in future releases.
6. Click the Download SDK Archive link to download the SDK along with all examples, as shown in **Figure 6**. Accept the Software Terms and Conditions to start the download.
7. Import the downloaded SDK in MCUXpresso IDE. You can just drag and drop the downloaded SDK in the IDE as shown in **Figure 7**.

Figure 4: Build SDK

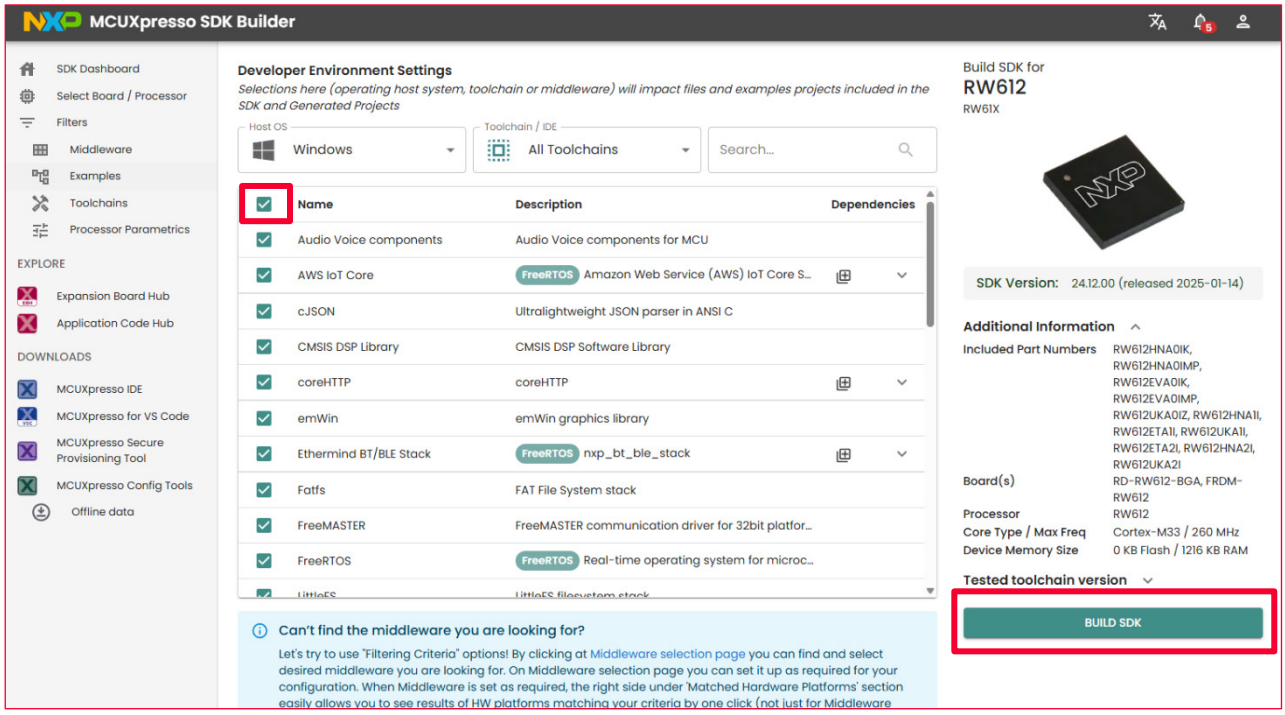


Figure 5: Select an SDK

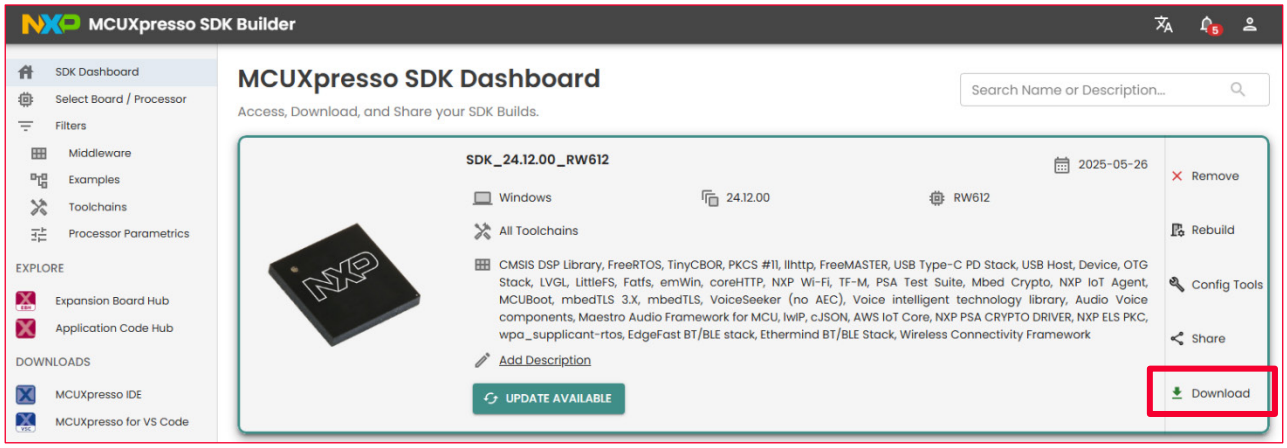


Figure 6: Download SDK

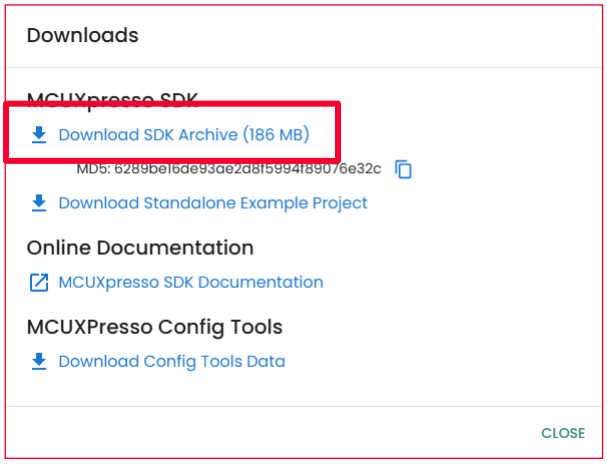
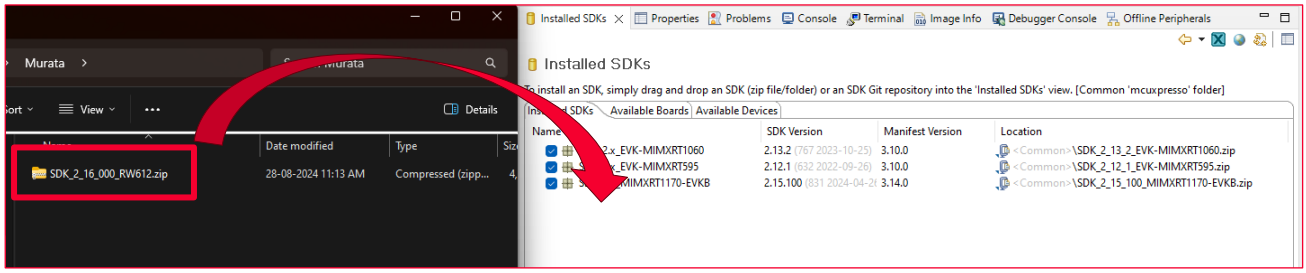


Figure 7: Install SDK in IDE



7 Example Applications

The MCUXpresso IDE contains multiple example applications. All example projects are under …\SDK_2_16_000_RW612\boards\rdrw612bga folder.

The Wi-Fi example apps are in …\SDK_2_16_000_RW612\boards\rdrw612bga\wifi_examples folder.

The BLE example apps are in …\SDK_2_16_000_RW612\boards\rdrw612bga\edgefast_bluetooth_examples folder.

802.15.4 examples are not included in the SDK yet. Contact NXP for the link in GitHub for thread examples.

7.1 Wi-Fi Application

Follow the steps below to build the default example application “wifi_cli”. The procedure is similar for building other examples.

1. Start MCUXpresso IDE and make sure the downloaded SDK has been imported.
2. Click on Import SDK example(s)… button in the Quickstart Panel. (If the Welcome page is still open, either close it, or click on the IDE icon). Refer to **Figure 8.**
3. Select the target EVK rdrw612bga and click the Next button. Refer to **Figure 9.**
4. Select one or more examples to import. Click Finish. Ensure SDK Debug Console is set as UART in Project Options. Refer to **Figure 10.**

Figure 8: Import SDK Example

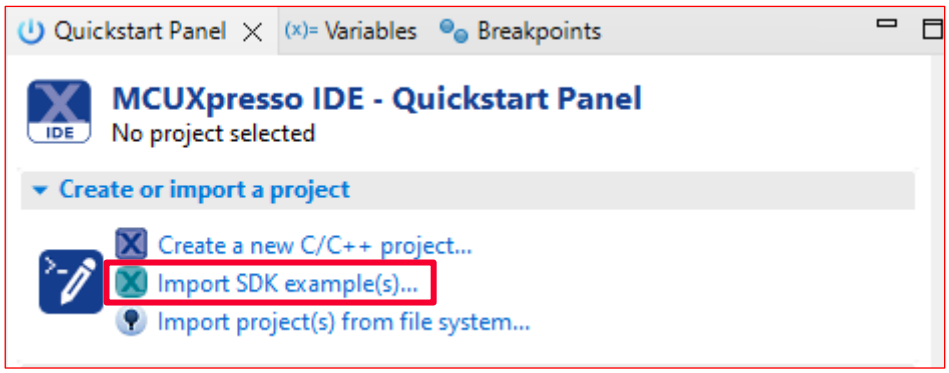


Figure 9: Select Target EVK

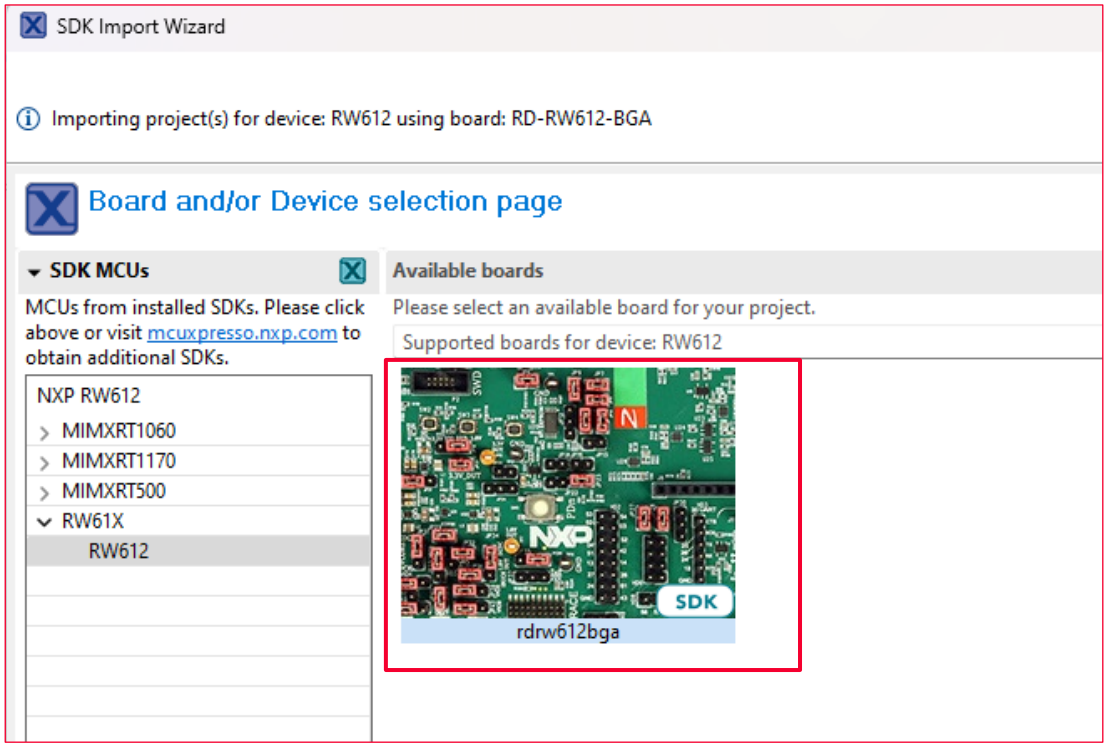
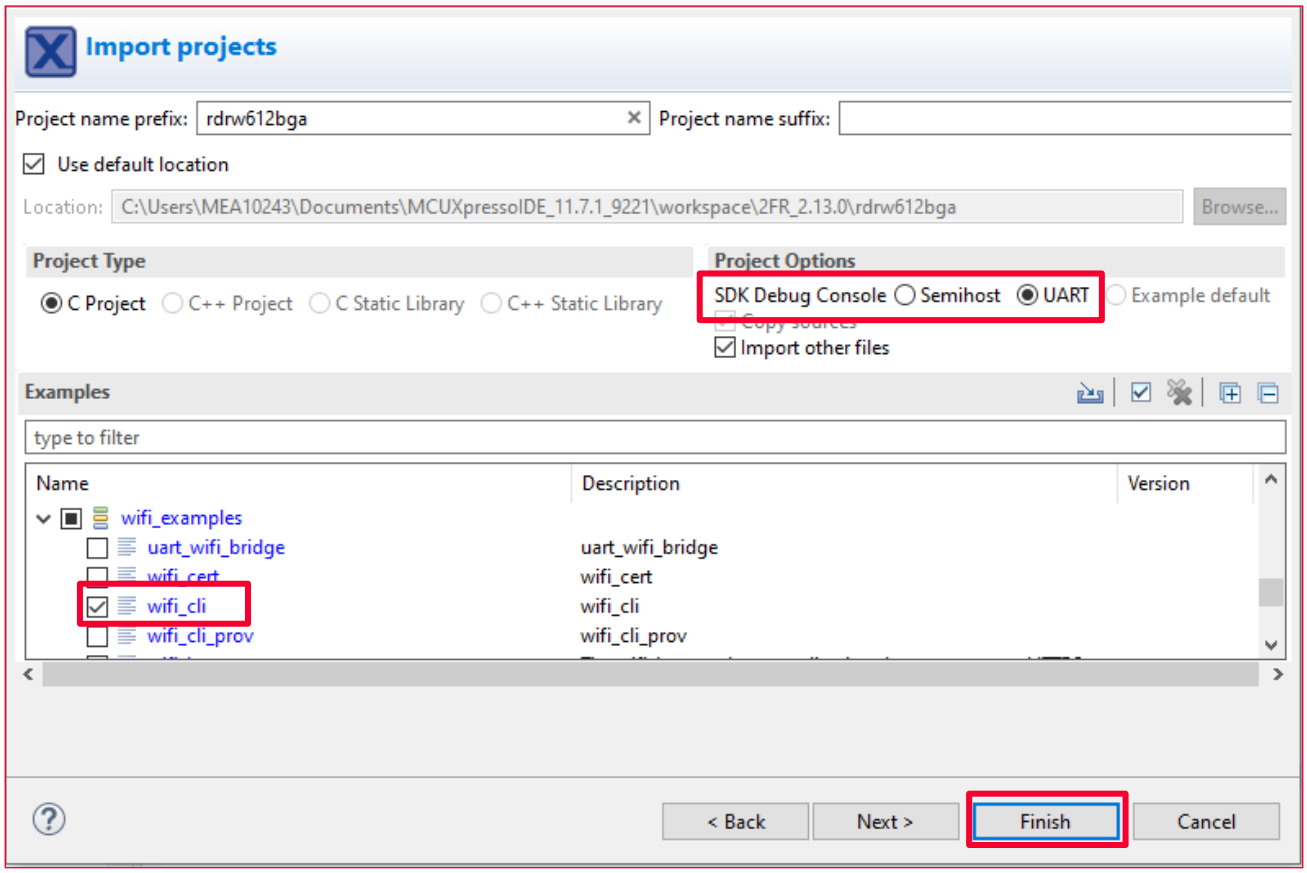


Figure 10: Select Wi-Fi Example



7.1.1 Configure On-module Flash Operation for Wi-Fi

For on-module flash operation, all applications need to be patched as described below.

- Download Murata patched files specific to your SDK and extract.
  - For SDK versions 2.16.x or lower: RW612_files_2.16.zip
  - For SDK version higher than 2.16.x: RW612_files_24.12.zip
- Replace the example file <example_folder>/flash_config/flash_config.c. with the downloaded patched **flash_config.c** file. Ignore the other files downloaded, those are for Bluetooth examples.

7.1.2 Build Wi-Fi Example

Once all the necessary change is made, build the application by clicking the Build button in the Quickstart panel.

7.1.3 Flash Wi-Fi Firmware

- This step needs to be done only once. This is used for flashing the Wi-Fi firmware to the module so that it can run any Wi-Fi applications.
- Unzip the downloaded SDK and place it in any location on the host PC.
- Click on the GUI Flash Tool icon. If the icon is greyed out, click on “rdrw610_wifi_cli” in project explorer to make it active. Refer to **Figure 11**.
- You will see pop up window to make J-Link selection. Click on “OK”. Refer to **Figure 12.**
- Click on the file system and navigate to the unzipped SDK location to access “SDK_2_16_000_RW612\components\conn_fwloader\fw_bin\rw610_sb_wifi_v2.bin” in your PC. Change the base address from “0x8000000” to “0x8400000”. Click on “Run”. Refer to **Figure 13.**
- After the flashing is complete, you will see the following window. Refer to **Figure 14.**

Figure 11: GUI Flash Tool

Figure 12: Select J-Link MCU-Link

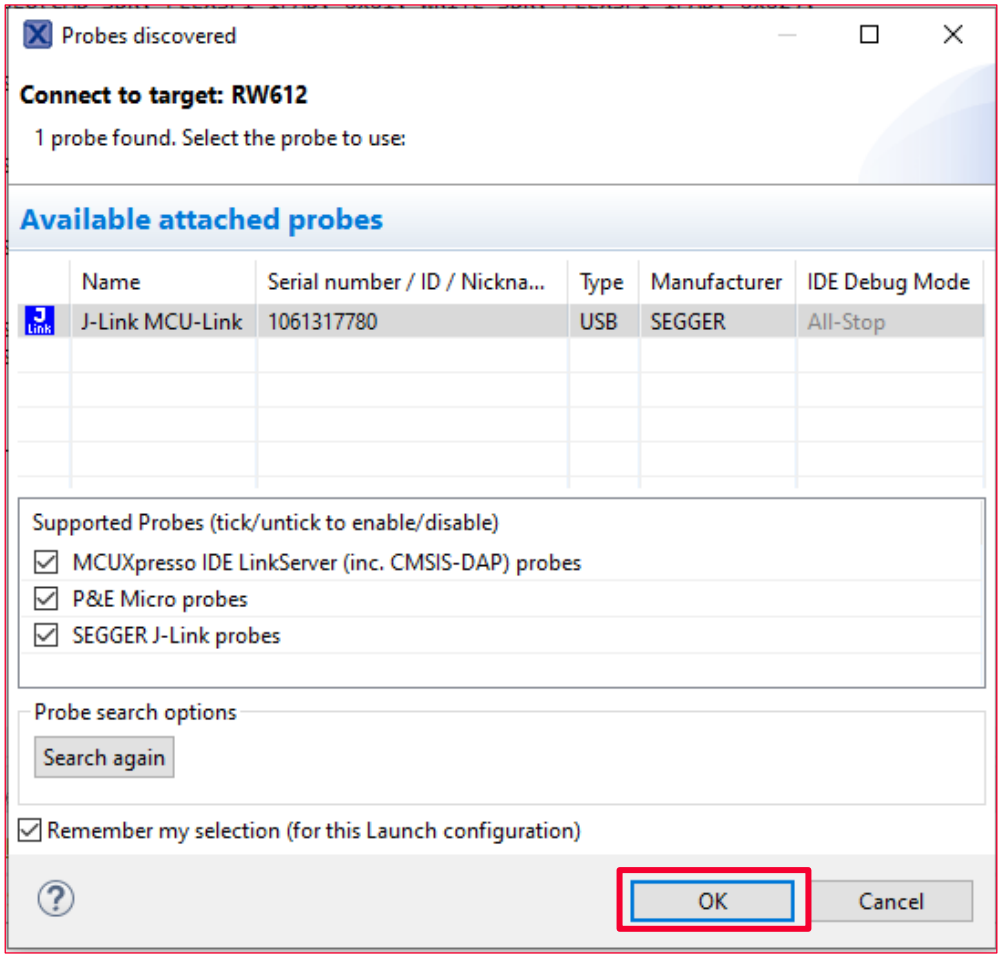


Figure 13: Flash Wi-Fi Firmware

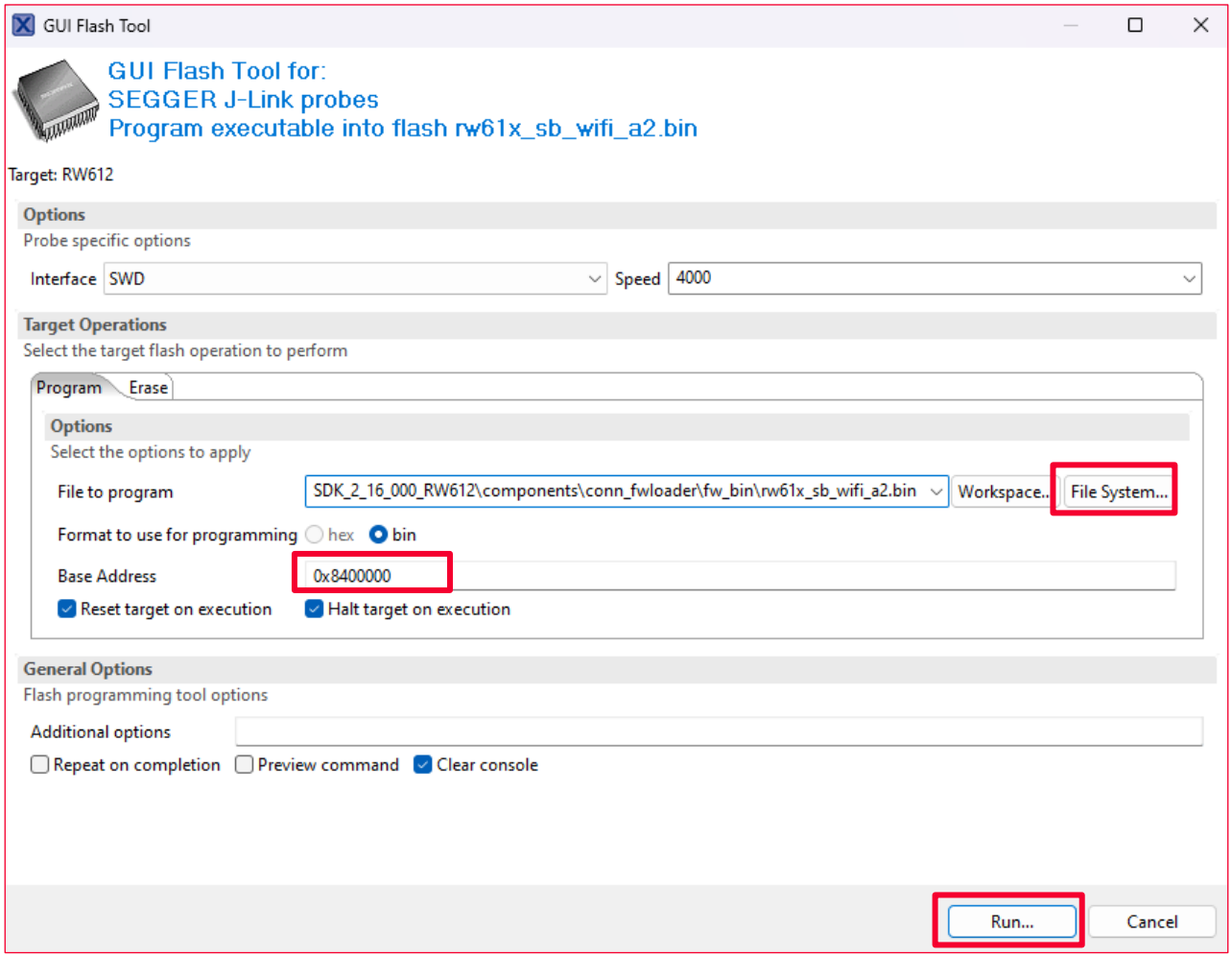
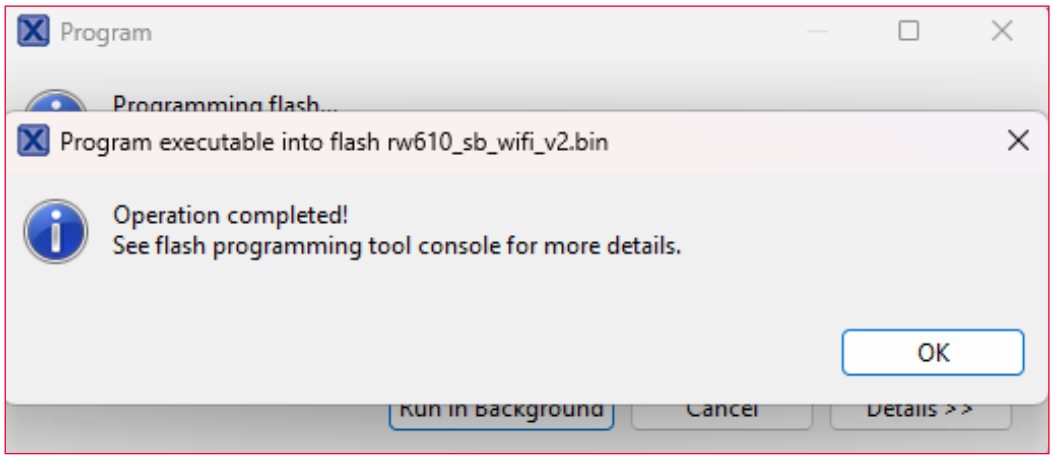


Figure 14: Flashing Completed



7.1.4 Flash and Run Wi-Fi Example

- Click the Debug button from the QuickStart Panel. Debug will flash the highlighted application and then start debugging. Refer to **Figure 15.**
- Open the Tera Term on the appropriate port and configure as 115200, 8N1. Refer to **Figure 16.**
- After the flashing is completed, stop the debug process (unless debugging is desired). Refer to **Figure 17.**
- Press the Reset button.
- You should see the following messages in the Tera Term. You can run all the scan and throughput tests now. Refer to **Figure 18.**

Figure 15: Run Debug

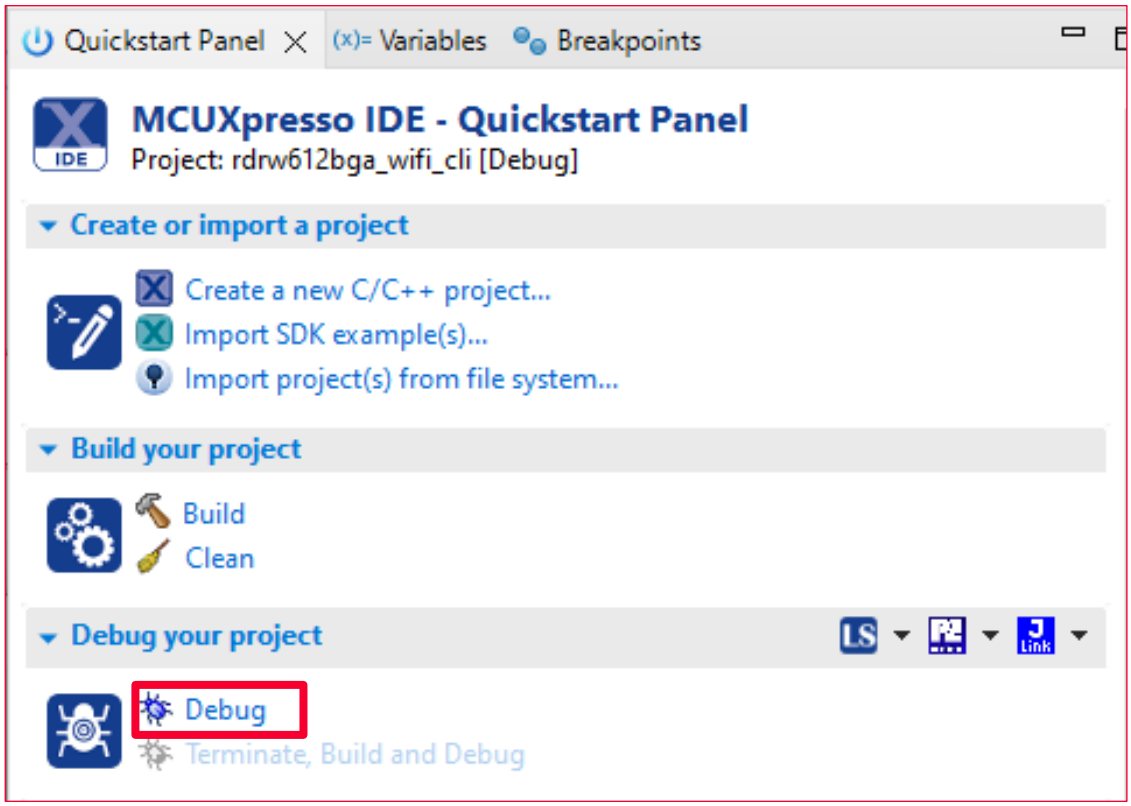


Figure 16: Tera Term Settings

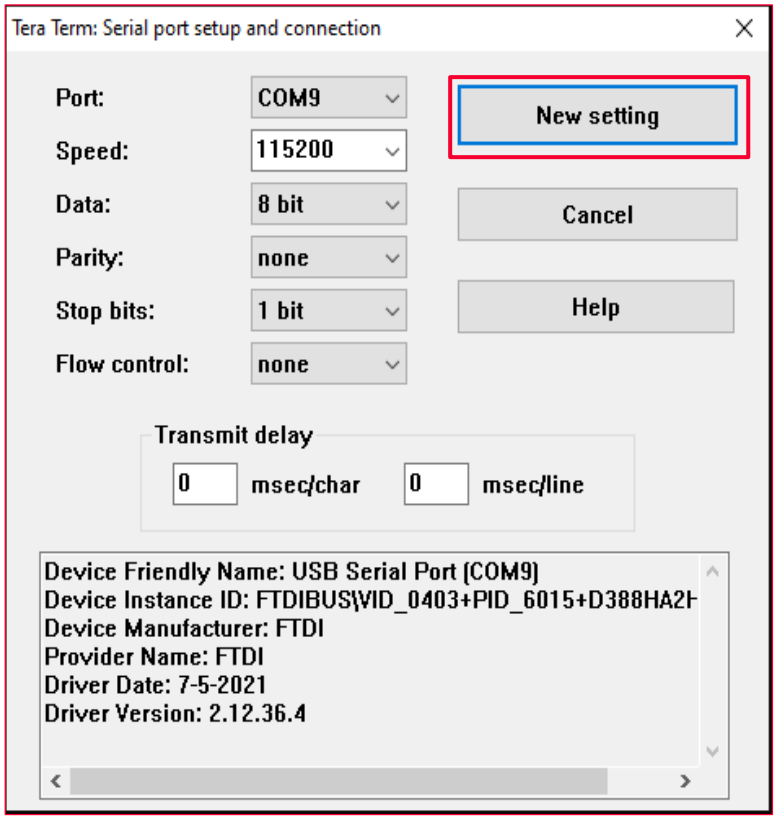


Figure 17: Debug Completed Window

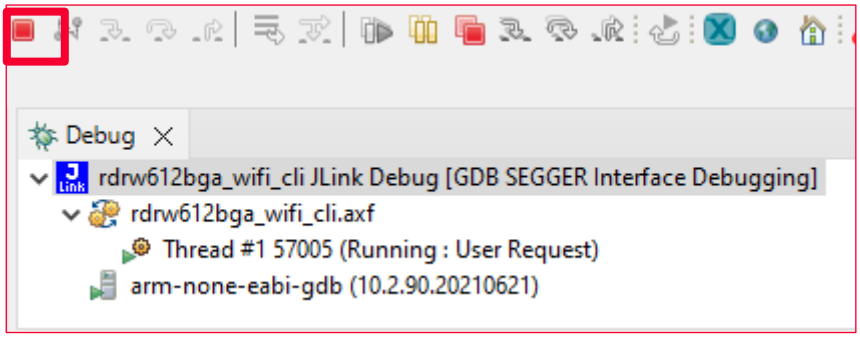
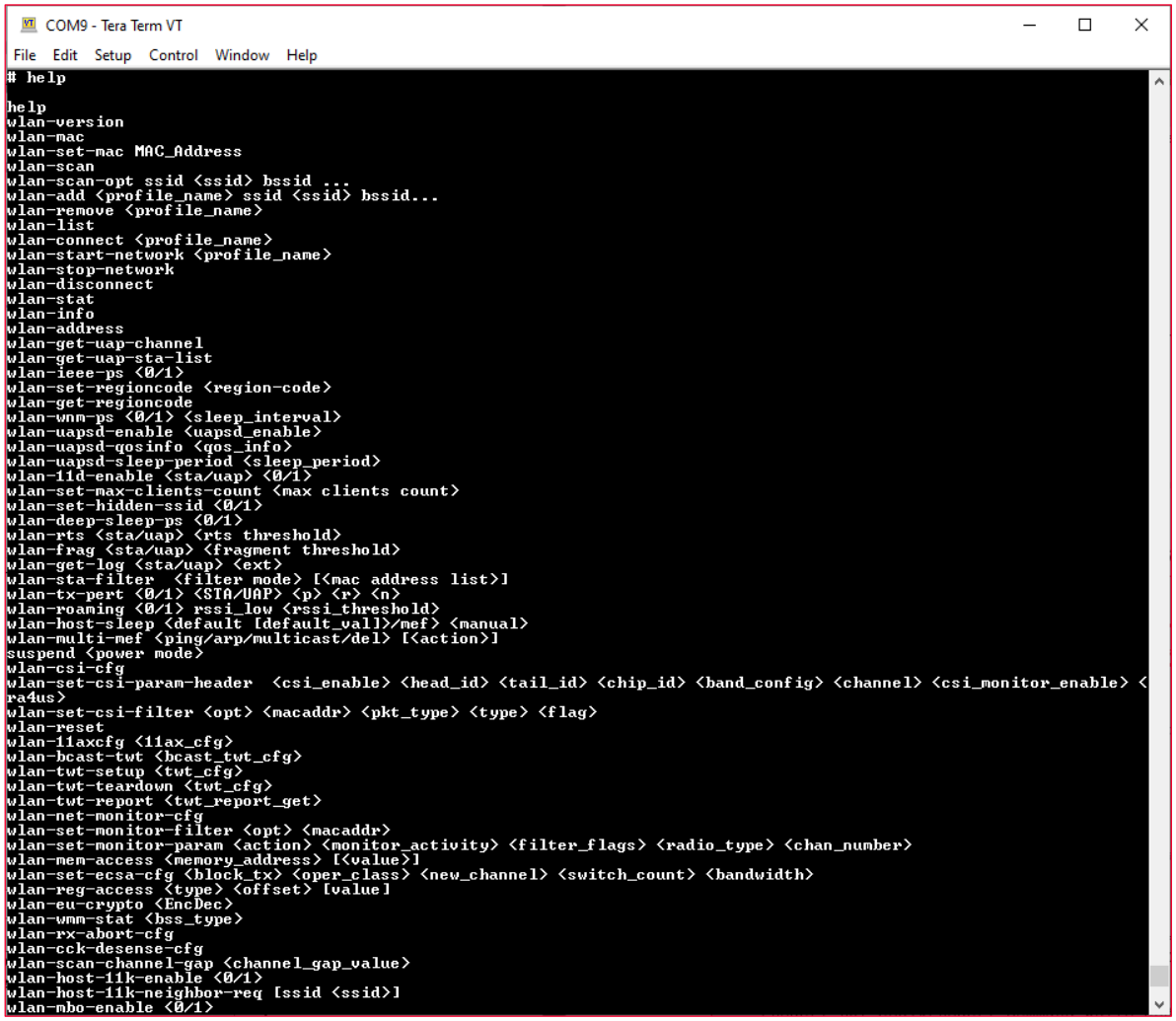


Figure 18: Wi-Fi CLI Example Output Messages

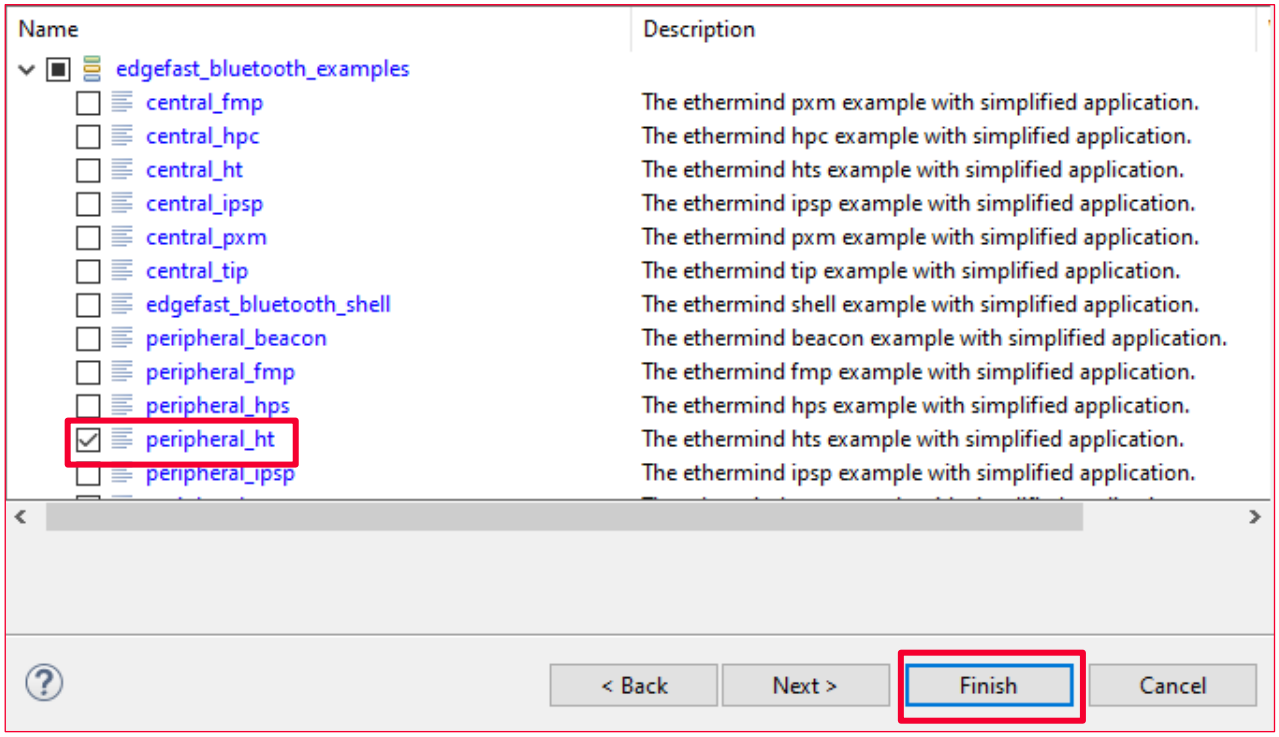


7.2 Bluetooth Low Energy Application

Select one or more examples to import. Click Finish. Ensure SDK Debug Console is set as UART in Project Options. Refer to **Figure 19**.

The default antenna setup in the Bluetooth examples are for dANT in OTP. Please refer to the Type 2FR/2FP EVK Software Application Note for detailed instructions on how to set up for sANT configuration.

Figure 19: Select BLE Example



7.2.1 Configure On-module Flash Operation for BLE

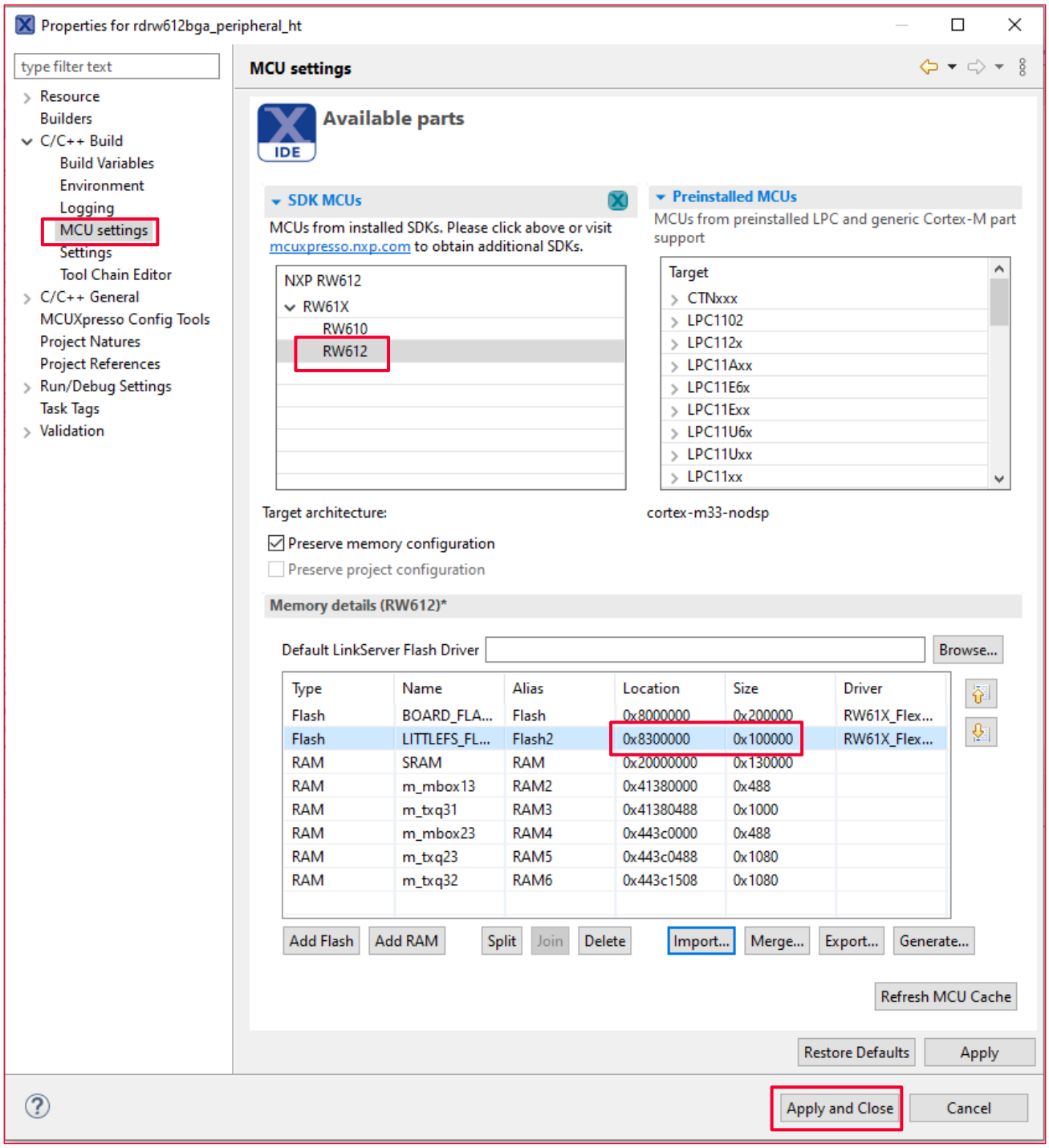
For all BLE applications, a few modifications are needed as described below.

- Download Murata patched files specific to your SDK and extract.
  - For SDK versions 2.16.x or lower: RW612_files_2.16.zip
  - For SDK version higher than 2.16.x: RW612_files_24.12.zip
- Replace the example file rdrw612bga_peripheral_ht /flash_config/flash_config.c. with the downloaded patched **flash_config.c** file.
- Replace the example file rdrw612bga_peripheral_ht/flash/mflash/rdrw612bga/mflash_drv.c with the downloaded **mflash_drv.c** file.
- **Only for SDK 24.12 and higher**: Replace the example file rdrw612bga_peripheral_ht\framework\platform\rw61x\fwk_platform_lowpower.c with the downloaded **fwk_platform_lowpower.c** file.
- For SDK 2.16.x or lower, modify the rdrw612bga_peripheral_ht/source/app_config.h file and change the value of the APP_LOWPOWER_ENABLED flag to 0. For SDK higher than 2.16.x, the macro is present in rdrw612bga_peripheral_ht/source/edgefast_bluetooth_app.h file.

```
#define APP_LOWPOWER_ENABLED 0
```

- Right click on the project and go to rdrw612_peripheral_ht➔Properties➔C/C++ Build➔MCU settings . Change the flash setting for “LITTLEFS_FLASH_region”, Location to 0x8300000 and Size to 0x100000 as shown in **Figure 20**.

Figure 20: MCU Settings for BLE



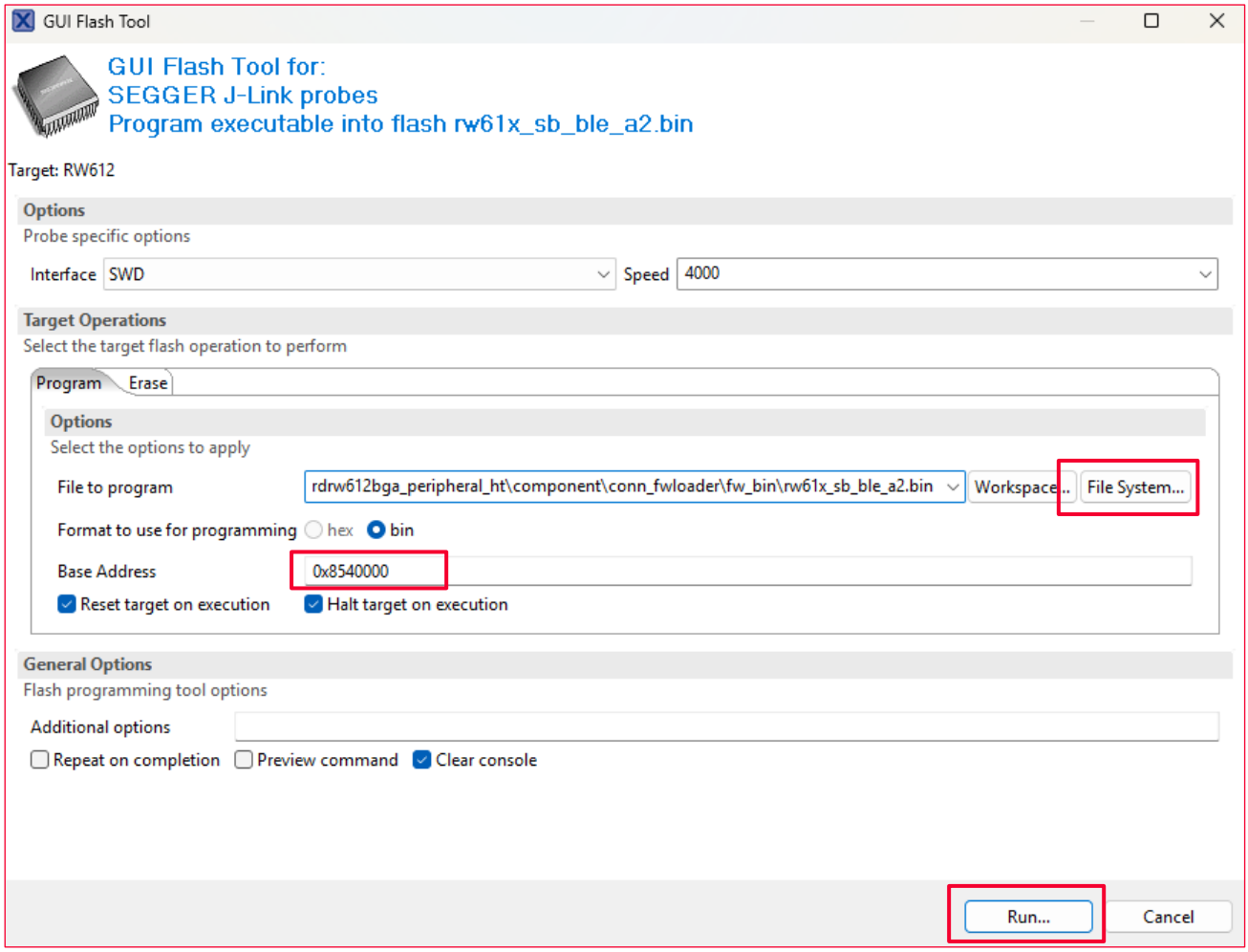
7.2.2 Build BLE Example

Once all the necessary changes are made, build the application by clicking the Build button in the Quickstart panel.

7.2.3 Flash BLE Firmware

- This step needs to be done only once. This is used for flashing the BLE firmware to the module so that it can run any BLE applications.
- Click on the GUI Flash Tool icon (**Figure 11**) and select the BLE firmware "rdrw612bga_peripheral_ht\component\conn_fwloader\fw_bin\rw61x_sb_ble_a2.bin". Change the base address from "0x8000000" to "0x8540000". See **Figure 21** for reference.
- Click on "Run".

Figure 21: Flash BLE Firmware



7.2.4 Flash and Run BLE Example

- Click on the Debug button in the IDE. After flashing is completed, stop the debug.
- Press the Reset button.
- Install “NXP IOT Toolbox” app on your phone from app store. Open the app and click on “Thermometer.” Refer to **Figure 22.**
- The app will detect the peripheral_ht signal. Click on the signal as shown in **Figure 23**.
- You will see some prompt to allow for device pairing. Accept the pairing. You will now be able to see some messages in the app and in the Tera Term as well. Refer to **Figure 24.**

Figure 22: NXP IOT Toolbox App for running BLE Demo

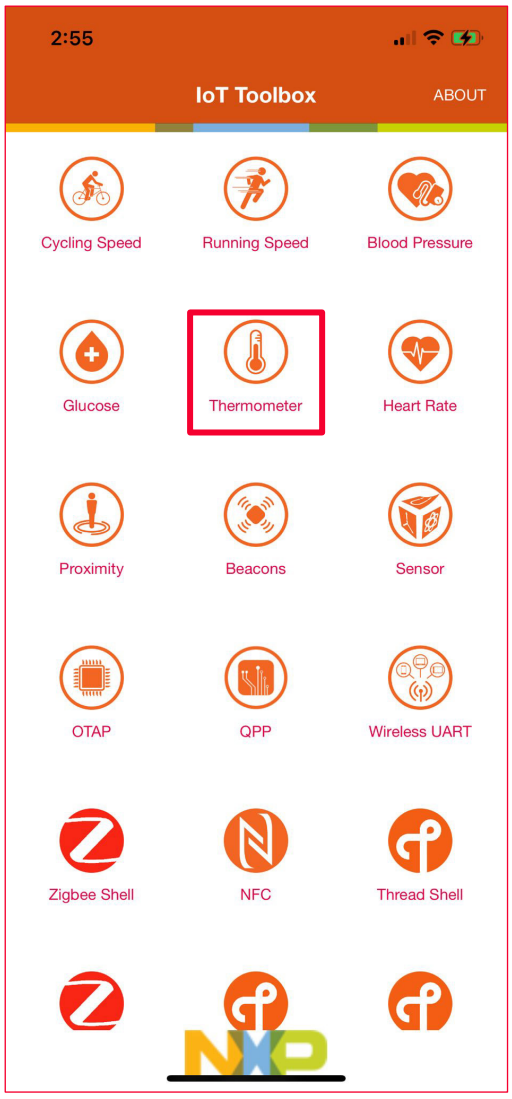


Figure 23: Peripheral_ht Signal

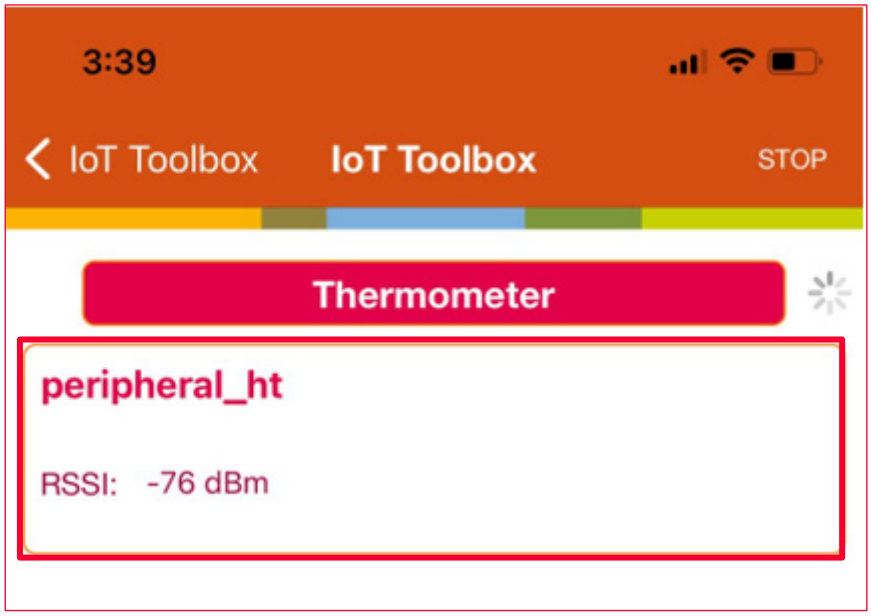
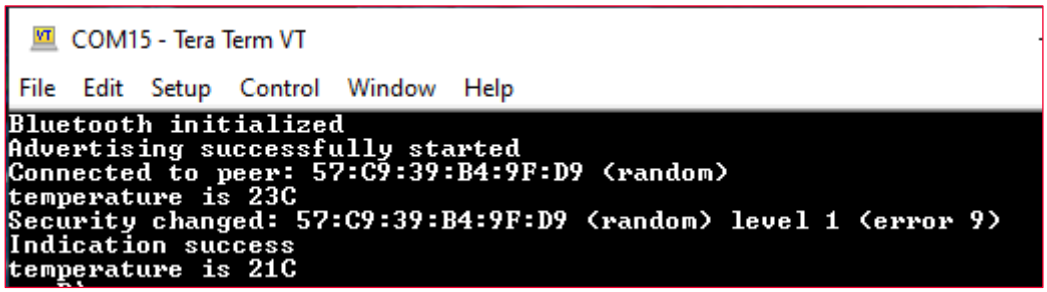


Figure 24: Peripheral_ht BLE Example Output Logs



7.3 GPIO Example

- Select one or more examples to import. Click Finish. Ensure SDK Debug Console is set as UART in Project Options. Refer to **Figure 25.**
- Patch the …/flash_config/flash_config.c as in Section 7.1.1.
- If you are using SDK version 2.16.x or later, please make the following two changes in addition:

File	Existing code	To be changed into
board/board.h	#define BOARD_LED_BLUE_GPIO_PIN 1U	#define BOARD_LED_BLUE_GPIO_PIN **2U**
board/pin_mux.c	IO_MUX_SetPinMux(IO_MUX_GPIO1);	IO_MUX_SetPinMux(IO_MUX_**GPIO2**);

- Click the Debug button from the QuickStart Panel after building.
- Open the Tera Term on the appropriate port and configure as 115200, 8N1.
- After the flashing is completed, stop the debug process.
- Install jumper at JP17 on the Type 2FR/2FP EVK.
- Press the Reset button.

- Press USER 2 button (shown in blue circle in **Figure 1**), the LED3 (green) will toggle between on and off.
- You will see some logs in the Tera Term. Refer to **Figure 26.**

Figure 25: Select GPIO LED Example

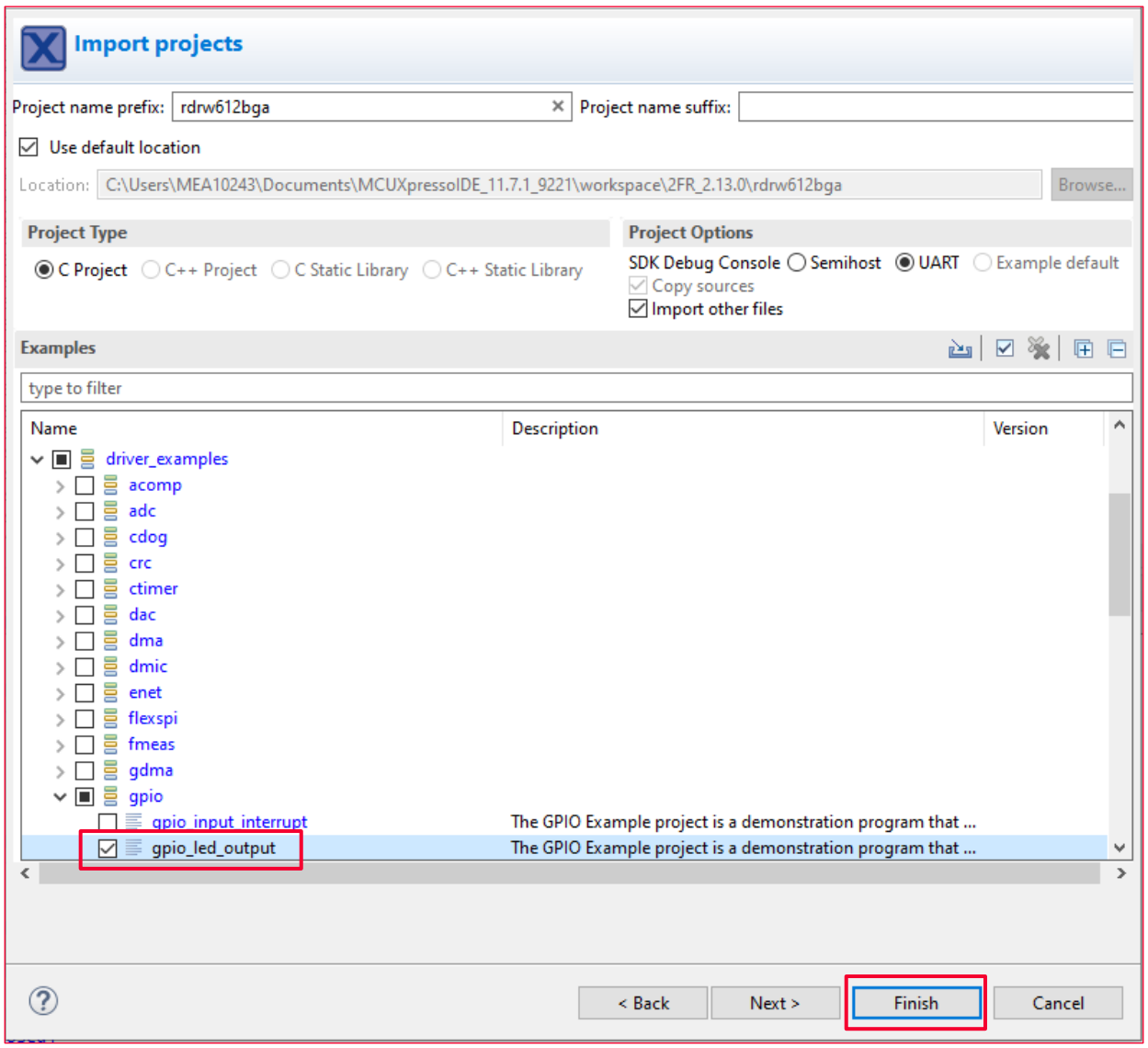
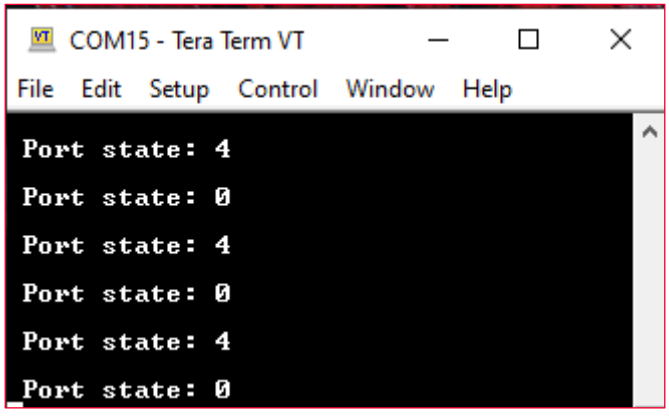


Figure 26: Logs for GPIO LED Example



7.4 OpenThread Command Line Interface (CLI) Application

The OpenTread CLI (OT CLI) application exposes configuration and management APIs via a command line interface.

The OpenThread CLI Application is only available for Type 2FR. It NOT available for Type 2FP.

7.4.1 Prerequisite

Before building the OpenThread example, the toolchain and the tools required for flashing and debugging should be installed.

OpenThread environment is suited to be run on a Linux-based OS (Ubuntu OS for example), WSL (Ubuntu 20.04 on Windows) or Windows (command line). There are three tools that need to be installed:

- CMake
- ninja
- the arm-non-eabi gcc cross-compiler

This document provides the steps for a Linux-based (Ubuntu) system.

1. Get the NXP ot-nxp repository from GitHub and checkout to branch release/v1.4.0.

```
$ git clone https://github.com/NXP/ot-nxp.git
```

2. Install the GNU toolchain and other dependencies.

```
$ cd ot-nxp
$ git submodule update --init
$ ./script/bootstrap
```

3. Download the NXP MCUXpresso git SDK and associated middleware from GitHub using the west tool.

```
$ cd third_party/github_sdk/
$ west init -l manifest --mf west.yml
$ west update
```

Please refer to Appendix A for an output log of the setup process.

7.4.2 Patch OT CLI Application

Murata provides patched files for the ot-cli application to make it compatible with the Type 2FR module. Please follow the steps below to apply the patches.

1. Download the Murata patched files from Murata Community Forum, and unzip.
2. Copy the **rw612_rd/flash_config.c** file into **ot-nxp/boards/rw612/rw612_rd/** folder.
3. Copy the **rdrw612bga/flash_config/flash_config.c** file into **ot-nxp/third_party/github_sdk/core/boards/rdrw612bga/flash_config/** folder.
4. Copy the **mflash/rdrw612bga/mflash_drv.c** file into **ot-nxp/third_party/github_sdk/core/components/flash/mflash/rdrw612bga/** folder.

7.4.3 Build OT CLI Application

Execute the commands below to build the ot-cli application.

```
$ cd <path to ot-nxp>
$ ./script/build_rw612 ot_cli
```

After a successful ot-cli build, the elf and binary files are found in build_rw612/rw612_ot_cli/bin:

- ot-cli-rw612 (the elf image)
- ot-cli-rw612.bin (the binary)

Please refer to Appendix B for an output log of the build process.

7.4.4 Flash OT CLI Binary

The flashing steps are described in Section 8. The command to flash the ot-cli binary is:

```
J-Link> loadbin path/to/binary,0x08000400
```

7.4.5 Run OT CLI Application

The steps below describe an example of ot-cli execution.

1. Prepare two boards with the flashed OT CLI Application.
2. The CLI example uses UART connection. To view raw UART output, start a terminal emulator like PuTTY and connect to the used COM port with the following UART settings.
   - Baud rate: 115200
   - 8 data bits
   - 1 stop bit
   - No parity
   - No flow control
3. Open a terminal connection on the first board and start a new Thread network.

Setting channel, panid, and network key is not enough anymore because of an Open Thread stack update.

We first need to initialize a new dataset. Using dataset command we visualize the newly generated dataset.

```
> dataset init new
Done
> dataset
Active Timestamp: 1
Channel: 25
Channel Mask: 0x07fff800
Ext PAN ID: 42af793f623aab54
Mesh Local Prefix: fd6e:c358:7078:5a8d::/64
Network Key: f824658f79d8ca033fbb85ecc3ca91cc
Network Name: OpenThread-b870
PAN ID: 0xb870
PSKc: f438a194a5e968cc43cc4b3a6f560ca4
Security Policy: 672 onrc 0
Done
```

```
>
```

To change network parameters use:

```
> dataset panid 0xabcd
Done
> dataset channel 25
Done
```

Then commit the new dataset:

```
> dataset commit active
Done
> ifconfig up
Done
> thread start
Done
```

4. After a couple of seconds the node will become a Leader of the network.

```
> state
Leader
> dataset active -x
0e080000000000010000035060004001fffe0020842af793f623aab540708fd6ec35870785
a8d0510f824658f79d8ca033fbb85ecc3ca91cc030f4f70656e5468726561642d62383730
0102b8700410f438a194a5e968cc43cc4b3a6f560ca40c0402a0f7f8000300000b
Done
>
```

5. Open a terminal connection on the second board and attach a node to the network.

```
> dataset set active
0e080000000000010000035060004001fffe0020842af793f623aab540708fd6ec35870785
a8d0510f824658f79d8ca033fbb85ecc3ca91cc030f4f70656e5468726561642d62383730
0102b8700410f438a194a5e968cc43cc4b3a6f560ca40c0402a0f7f8000300000b
Done
> ifconfig up
Done
> thread start
Done
```

6. After a couple of seconds the second node will attach and become a Child.

```
> state
Child
```

7. List all IPv6 addresses of the first board.

```
> ipaddr
fdde:ad00:beef:0:0:ff:fe00:fc00
fdde:ad00:beef:0:0:ff:fe00:9c00
fdde:ad00:beef:0:4bcb:73a5:7c28:318e
fe80:0:0:0:5c91:c61:b67c:271c
```

8. Choose one of them and send an ICMPv6 ping from the second board.

```
> ping fdde:ad00:beef:0:0:ff:fe00:fc00
16 bytes from fdde:ad00:beef:0:0:ff:fe00:fc00: icmp_seq=1 hlim=64
time=8ms
```

For detailed list of the supported commands, please refer to the OpenThread CLI Reference documentation.

8 Flashing via J-Link Commander (Optional)

This is an alternative way for flashing binaries into the module instead of using MCUXpresso. J-Link commander is used to flash firmware onto the EVK as well as debug. The following shows the steps to connect to the board via J-Link. Make sure J-Link commander executable (jlink.exe) is in the PATH of Window's environment.

8.1 Connect J-Link to Module

```
C:\Program Files\SEGGER\JLink>jlink
SEGGER J-Link Commander V7.92h (Compiled Oct 4 2023 16:23:14)
DLL version V7.92h, compiled Oct 4 2023 16:21:28
Connecting to J-Link via USB...O.K.
Firmware: J-Link MCU-Link V1 compiled May 2 2023 11:55:02
Hardware version: V1.00
J-Link uptime (since boot): 0d 00h 00m 59s
S/N: 1061317780
USB speed mode: High speed (480 MBit/s)
VTref=3.300V
Type "connect" to establish a target connection, '?' for help
J-Link>con
Please specify device / core. <Default>: RW610
Type '?' for selection dialog
Device>
Please specify target interface:
J) JTAG (Default)
S) SWD
T) cJTAG
TIF>s
Specify target interface speed [kHz]. <Default>: 4000 kHz
Speed>auto
Device "RW610" selected.
Connecting to target via SWD
InitTarget() start
****************************************************
J-Link script: RW610 Cortex-M33 core J-Link script
****************************************************
DAP-IDCODE:0x00000000
InitTarget() end
Found SW-DP with ID 0x6BA02477
DPIDR: 0x6BA02477
CoreSight SoC-400 or earlier
AP map detection skipped. Manually configured AP map found.
AP[0]: AHB-AP (IDR: Not set)
AP[1]: AHB-AP (IDR: Not set)
AP[2]: AHB-AP (IDR: Not set)
AP[0]: Core found
AP[0]: AHB-AP ROM base: 0xE00FF000
CPUID register: 0x410FD214. Implementer code: 0x41 (ARM)
Feature set: Mainline
Found Cortex-M33 r0p4, Little endian.
FPUnit: 8 code (BP) slots and 0 literal slots
Security extension: implemented
Secure debug: enabled
CoreSight components:
ROMTbl[0] @ E00FF000
[0][0]: E000E000 CID B105900D PID 000BBD21 DEVARCH 47702A04 DEVTYPE 00 Cortex-
M33
```

```
[0][1]: E0001000 CID B105900D PID 000BBD21 DEVARCH 47701A02 DEVTYPE 00 DWT
[0][2]: E0002000 CID B105900D PID 000BBD21 DEVARCH 47701A03 DEVTYPE 00 FPB
[0][3]: E0000000 CID B105900D PID 000BBD21 DEVARCH 47701A01 DEVTYPE 43 ITM
[0][5]: E0041000 CID B105900D PID 002BBD21 DEVARCH 47724A13 DEVTYPE 13 ETM
[0][6]: E0042000 CID B105900D PID 000BBD21 DEVARCH 47701A14 DEVTYPE 14 CSS600-
CTI
Cortex-M33 identified.
J-Link> h
PC = 13030F0A, CycleCnt = 388C3A47
R0 = 00000000, R1 = 00000001, R2 = 3010838C, R3 = 00000001
R4 = 301083DC, R5 = 30117FA4, R6 = 00000001, R7 = 301082EC
R8 = 00000003, R9 = 00000008, R10= 00000000, R11= 00000000
R12= 301083B4
SP(R13)= 30117FA0, MSP= 30117FA0, PSP= 00000000, R14(LR) = 13030E45
XPSR = 49000000: APSR = nZcvQ, EPSR = 01000000, IPSR = 000 (NoException)
CFBP = 00000000, CONTROL = 00, FAULTMASK = 00, BASEPRI = 00, PRIMASK = 00
MSPLIM = 00000000
PSPLIM = 00000000
Security extension regs:
MSP_S = 30117FA0, MSP_NS = 00000000
MSPLIM_S = 00000000, MSPLIM_NS = 00000000
PSP_S = 00000000, PSP_NS = FFFFFFFC
PSPLIM_S = 00000000, PSPLIM_NS = 00000000
CONTROL_S = 00, FAULTMASK_S = 00, BASEPRI_S = 00, PRIMASK_S = 00
CONTROL_NS = 00, FAULTMASK_NS = 00, BASEPRI_NS = 00, PRIMASK_NS = 00
FPS0 = 00000000, FPS1 = 00000000, FPS2 = 00000000, FPS3 = 00000000
FPS4 = 00000000, FPS5 = 00000000, FPS6 = 00000000, FPS7 = 00000000
FPS8 = 00000000, FPS9 = 00000000, FPS10= 00000000, FPS11= 00000000
FPS12= 00000000, FPS13= 00000000, FPS14= 00000000, FPS15= 00000000
FPS16= 00000000, FPS17= 00000000, FPS18= 00000000, FPS19= 00000000
FPS20= 00000000, FPS21= 00000000, FPS22= 00000000, FPS23= 00000000
FPS24= 00000000, FPS25= 00000000, FPS26= 00000000, FPS27= 00000000
FPS28= 00000000, FPS29= 00000000, FPS30= 00000000, FPS31= 00000000
FPSCR= 00000000
```

8.2 Flash Applications

Application image needs to be flashed to a specific address for the application processor to run.

For example, in a command prompt, navigate to where the bin file is located (e.g., the BLE peripheral_ht) and run J-Link.

Flash the application firmware using J-Link.

```
J-Link> loadbin rdrw610_peripheral_ht.bin, 0x08000000
```

Refer to Section 9 to convert the .axf file to downloadable .bin file.

The figure below shows the console output.

Figure 27: Flashing Application Via J-Link Commander

```
J-Link>loadbin rdrw612bga_peripheral_ht.bin, 0x08000000
'loadbin': Performing implicit reset & halt of MCU.
ResetTarget() start
Reset via SYSRESETREQ and reset pin + halt after bootloader
  MSPLIM cleared
ResetTarget() end - Took 120ms
Downloading file [rdrw612bga_peripheral_ht.bin]...
J-Link: Flash download: Bank 0 @ 0x08000000: 1 range affected (327680 bytes)
J-Link: Flash download: Total: 4.847s (Prepare: 0.346s, Compare: 0.895s, Erase: 0.620s, Program: 2.315s, Verify: 0.479s, Restore: 0.189s)
J-Link: Flash download: Program speed: 138 KB/s
O.K.
J-Link>
```

8.3 Flash Wi-Fi/BLE/802.15.4 Firmware

To run any wireless application, prebuilt wireless firmware included in the SDK must be flashed into the module first for the corresponding wireless processors to run.

In a command prompt, navigate to …\SDK_2_16_000_RW612\components\conn_fwloader\fw_bin and run J-Link. In the J-Link console, run the following commands after J-Link connection (as described in Section 8.1) .

```
J-Link> loadbin rw610_sb_wifi_v2.bin, 0x08400000
J-Link> loadbin rw610_sb_ble_v2.bin, 0x08540000
J-Link> loadbin rw610_sb_ble_15d4_combo_v2.bin, 0x085e0000
```

9 Creating binary in MCUXpresso (Optional)

From MCUXpresso build, the output file is .axf file under the workspace. E.g. C:\Users\xxxxx\Documents\MCUXpressoIDE_11.8.0_1165\workspace-2-16-000\rdrw612bga_wifi_cli\Debug. Sometimes there is a need to burn the image using Jlink commander. To convert it to a .bin file, do the following.

- Select the .axf file under Binaries as shown in **Figure 28**.
- Right click on the .axf file and select “Binary Utilities->Create binary” as shown in **Figure 29**.
- Navigate to the build directory C:\Users\xxxxx\Documents\MCUXpressoIDE_11.8.0_1165\workspace-2-16-000\rdrw612bga_wifi_cli\Debug, and flash the application FW using jlink commander.
- J-Link> loadbin rdrw612bga_wifi_cli.bin, 0x08000000
- Console outputs for flashing Wi-Fi binary, BLE binary and combo binary are shown in **Figure 30**, **Figure 31** and **Figure 32** respectively.

Figure 28: Select axf File

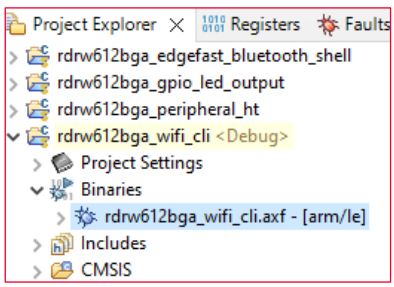


Figure 29: Create Binary

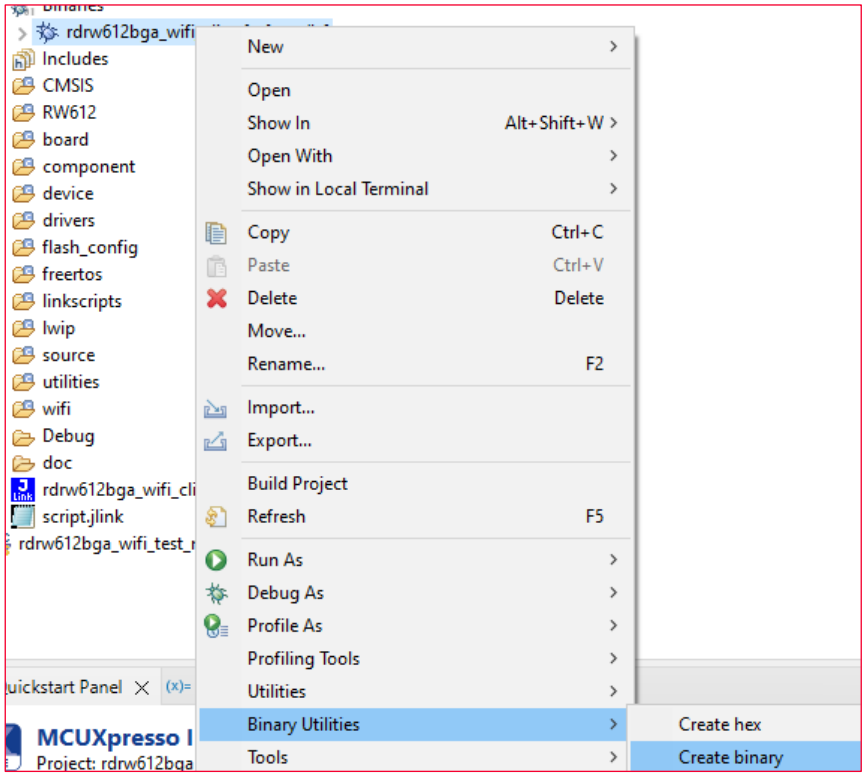


Figure 30: Flashing Wi-Fi Binary

```
J-Link>loadbin rw610_sb_wifi_v2.bin, 0x08400000
'loadbin': Performing implicit reset & halt of MCU.
ResetTarget() start
Reset via SYSRESETREQ and reset pin + halt after bootloader
  MSPLIM cleared
ResetTarget() end - Took 120ms
Downloading file [rw610_sb_wifi_v2.bin]...
J-Link: Flash download: Bank 0 @ 0x08000000: Skipped. Contents already match
O.K.
J-Link>
```

Figure 31:Flashing BLE Binary

```
J-Link>loadbin rw610_sb_wifi_v2.bin, 0x08400000
'loadbin': Performing implicit reset & halt of MCU.
ResetTarget() start
Reset via SYSRESETREQ and reset pin + halt after bootloader
  MSPLIM cleared
ResetTarget() end - Took 115ms
Downloading file [rw610_sb_wifi_v2.bin]...
J-Link: Flash download: Bank 0 @ 0x08000000: 1 range affected (589824 bytes)
J-Link: Flash download: Total: 8.188s (Prepare: 0.346s, Compare: 1.662s, Erase: 1.121s, Program: 4.004s, Verify: 0.862s, Restore: 0.190s)
J-Link: Flash download: Program speed: 144 KB/s
O.K.
```

Figure 32: Flashing Combo Binary

```
J-Link>loadbin rw610_sb_ble_15d4_combo_v2.bin, 0x085e0000
'loadbin': Performing implicit reset & halt of MCU.
ResetTarget() start
Reset via SYSRESETREQ and reset pin + halt after bootloader
  MSPLIM cleared
ResetTarget() end - Took 119ms
Downloading file [rw610_sb_ble_15d4_combo_v2.bin]...
J-Link: Flash download: Bank 0 @ 0x08000000: 1 range affected (262144 bytes)
J-Link: Flash download: Total: 3.812s (Prepare: 0.346s, Compare: 0.800s, Erase: 0.575s, Program: 1.520s, Verify: 0.380s, Restore: 0.189s)
J-Link: Flash download: Program speed: 168 KB/s
O.K.
J-Link>
```

10 RF Test Mode

This section describes RF test software and the RF hardware test modifications.

10.1 RF Test Software

To test RF performance, specific example apps are available to run inside the module. WiFi and BLE test mode code are available within the SDK, but 802.15.4 test mode are available only from GitHub. These apps, when started, will allow user to issue commands from a serial port console.

The MCUXpresso IDE contains multiple example applications. All example projects are under …\SDK_2_16_000_RW612\boards\rdrw612bga folder.

For Wi-Fi test mode use example …\SDK_2_16_000_RW612\boards\rdrw612bga\wifi_examples\wifi_test_mode.

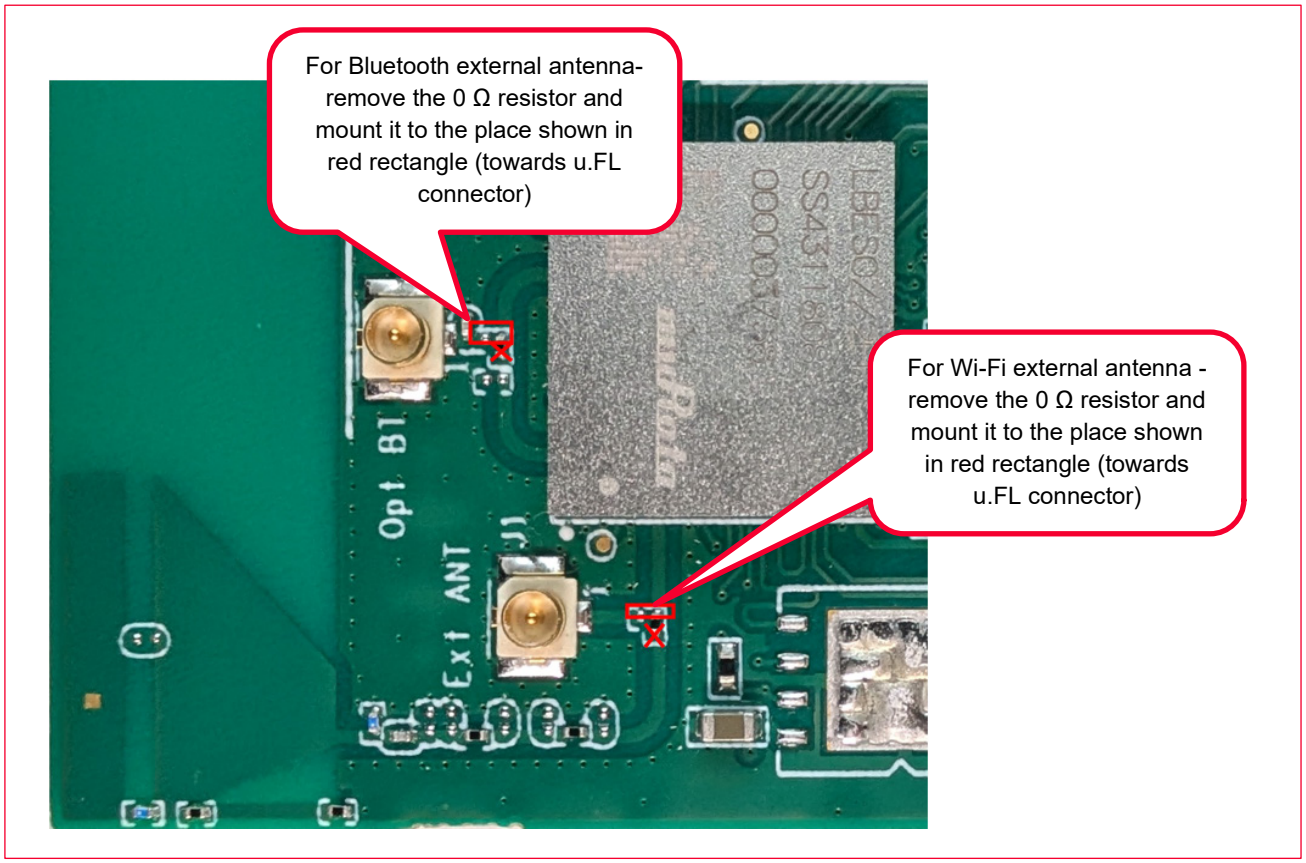
For BLE test mode use example …\SDK_2_16_000_RW612\boards\rdrw612bga\edgefast_bluetooth_examples\edgefast_bluetooth_shell.

802.15.4 test code is not included in the SDK and needs to be downloaded from here.

10.2 Conducted RF Test Hardware Modifications

If conducted RF test is desired, some hardware modification is required to enable the u.FL connected antennas, as shown in **Figure 33**.

Figure 33: Hardware Modification for u.FL Antenna Selection



11 Current Measurement

This section describes the power information and current measurement configurations.

11.1 Power Information

NXP's RW61x has voltage rails at 1.05V (Core), 1.8V (AVDD18, VIO) and 3.3V (VBAT, VPA, VIO).

Murata's Type 2FR/2FP has one single power supply of 3.3V, which supplies all RW61x's 3.3V needs. It also generates internal rails at 1.05V for Core and 1.8V for AVDD18. The internal generated 1.8V is available at module's Pin 19 for customer to use (only) as IO supply for those IOs at 1.8V.

11.2 Current Measurement Configuration

The following instructions describe the process of current measurement.

- Place the 1.8V selection jumper (as shown in **Figure 1**) to the 1V8_INT side – this configuration utilizes Type 2FR/2FP internal generated 1.8V for Type 2FR/2FP's VIO domains.
- Remove the jumper at JP1 (as shown in **Figure 1**) and insert a DC meter to measure current.
- If external power supply is used, to measure the current, the power supply device must have current measurement function.

12 Deep Sleep Current Measurement

There are two ways to load the bin file to the 2FR EVK to do the sleep current measurement.

Either you can just load the bin file provided by us directly or you can build your own bin file by making the code changes or use IDE to load the Wi-Fi CLI application. The SDK 25.06 is used for this testing.

To run any wireless application, prebuilt wireless firmware included in the SDK must be flashed into the module first for the corresponding wireless processors to run. For more details on how to flash the Wi-Fi firmware using J-Link, please refer to Section 8.

12.1.1 Flash Wi-Fi Binary Using J-Link

You can find the pre-built Wi-Fi CLI application binary file (rdrw612bga_wifi_cli_sleepcurrent.bin) uploaded to the Murata Community Forum. Use the following command to flash the application.

```
J-Link> loadbin rdrw612bga_wifi_cli_sleepcurrent.bin, 0x08000000
```

12.1.2 Flash Wi-Fi Application Using IDE

Please follow the steps mention in Section 7.1 to import and build the Wi-Fi CLI application. For this testing we need to replace two more files host_sleep.c and host_sleep.h in addition to the flash_config .c file.

If you want to generate your own bin file and then flash the application using J-Link, please refer to Section 9.

Please see the following code changes made in host_sleep.c file.

```
#if CONFIG_HOST_SLEEP
/*******************************************************************************
*
 * Includes

******************************************************************************/
#include "host_sleep.h"
#include "lpm.h"
#include "cli.h"
#include "wlan.h"
#include "wifi.h"
#include "fsl_power.h"
#include "fsl_pm_core.h"
#include "fsl_pm_device.h"
#include "fsl_rtc.h"
#include "fsl_usart.h"
#include "fsl_io_mux.h"

/*******************************************************************************
*
 * Structures

******************************************************************************/
typedef struct
{
    uint32_t selA;
    uint32_t selB;
    uint32_t frgSel;
    uint32_t frgctl;
    uint32_t osr;
    uint32_t brg;
} uart_clock_context_t;

/*******************************************************************************
*
 * Variables

******************************************************************************/
static struct cli_command host_sleep_commands[] = {
    {"wlan-suspend", "<power mode>", test_wlan_suspend},
    {"wlan-suspend-pin", "", test_wlan_suspend_pin_config},
};
```

```
#if CONFIG_UART_INTERRUPT
        usart_suspend_flag = false;
#endif
    }
    if (wlan_is_started())
    {
        if(wlan_hs_send_event(HOST_SLEEP_EXIT, NULL) != 0)
            return -1;
    }
    host_sleep_post_cfg(mode);
    if (mode == 1)
    {
```

```
        (void)PRINTF("Exit from PM1.\r\n");
        (void)PRINTF("Wakeup status is not available for PM1 due to PMU HW
design\r\n");
    }
    else
        host_sleep_dump_wakeup_source();
    wakeup_by = 0;
    wifi_clear_wakeup_reason();
    wlan_is_manual = MFALSE;
    return 0;
}

void test_wlan_suspend_pin_config(int argc, char **argv)
{
    (void)PRINTF("Configuring GPIOs 28,30,31,32,33,34 to high level during
Sleep \r\n");
    IO_MUX_SetPinOutLevelInSleep(28, IO_MUX_SleepPinLevelHigh);
    IO_MUX_SetPinOutLevelInSleep(30, IO_MUX_SleepPinLevelHigh);
    IO_MUX_SetPinOutLevelInSleep(31, IO_MUX_SleepPinLevelHigh);
    IO_MUX_SetPinOutLevelInSleep(32, IO_MUX_SleepPinLevelHigh);
    IO_MUX_SetPinOutLevelInSleep(33, IO_MUX_SleepPinLevelHigh);
    IO_MUX_SetPinOutLevelInSleep(34, IO_MUX_SleepPinLevelHigh);

}
```

Please see the following code changes made in host_sleep.h file.

```
/*******************************************************************************
*
 * API

*******************************************************************************/
void host_sleep_cli_notify(void);
void host_sleep_pre_hook(void);
int host_sleep_pre_cfg(int mode);
void host_sleep_post_cfg(int mode);
void host_sleep_dump_wakeup_source();
void test_wlan_suspend(int argc, char **argv);
void test_wlan_suspend_pin_config(int argc, char **argv);
int wlan_config_suspend_mode(int mode);
```

The purpose of this code change is to disable the flash in deep sleep mode to achieve lowest power consumption.

12.1.3 Commands Used to Test Sleep Current

1. Follow the commands below to measure the sleep current.

```
> wlan-deep-sleep-ps 1 // Puts CPU1 into deep sleep
> wlan-auto-host-sleep 1 manual // Needed for manually setting PM3 in step 4
> wlan-suspend-pin     // Set GPIO pins to high during sleep
> wlan-suspend 3       // Enable PM3
```

2. Measure average current on DUT over 50 seconds using a power analyzer.
3. The current measured should be around 0.89 mA when the VIO current consumption is included. Subtracting the sum of the current measured at each VIO on the 2FR board, the equivalent current consumption is about 0.34mA on this setup.

13 Troubleshooting

13.1 MCU-Link Pro is not connecting

Reflash the MCU-Link Pro using the procedure mentioned in Section 4.2 and try again.

14 Appendix A: Setup Log of OT CLI Application

Given below is the setup log for the ot-cli application, as described in Section 7.4.1.

```
$ git clone https://github.com/NXP/ot-nxp.git
Cloning into 'ot-nxp'...
remote: Enumerating objects: 7923, done.
remote: Counting objects: 100% (791/791), done.
remote: Compressing objects: 100% (315/315), done.
remote: Total 7923 (delta 598), reused 544 (delta 470), pack-reused 7132 (from
1)
Receiving objects: 100% (7923/7923), 9.95 MiB | 6.47 MiB/s, done.
Resolving deltas: 100% (5196/5196), done.

$ cd ot-nxp/
ot-nxp$ ls
boards  cmake  CMakeLists.txt  doc  examples  LICENSE  openthread  README.md
script  src  third_party

ot-nxp$ git submodule update --init
Submodule 'openthread' (https://github.com/NXP/openthread.git) registered for
path 'openthread'
Cloning into '/home/test/projects/tb9128-otcli/2FR-ot-cli/ot-nxp/openthread'...
Submodule path 'openthread': checked out
'a7519027ca3211e83db0cd4431476e3e8298874a'

ot-nxp$ ./script/bootstrap
+ main
++ dirname ./script/bootstrap
+ ./script/../openthread/script/bootstrap
+ main
+ install_packages
+ PM=source
+ command -v apt-get
```

```
/usr/bin/apt-get
+ PM=apt
+ install_packages_apt
+ echo 'Installing toolchain dependencies...'
Installing toolchain dependencies...
+ sudo apt-get update
[sudo] password for test:
Hit:1 http://security.ubuntu.com/ubuntu focal-security InRelease
Hit:2 http://us.archive.ubuntu.com/ubuntu focal InRelease
Ign:3 http://ppa.launchpad.net/george-edison55/cmake-3.x/ubuntu focal InRelease
Err:4 http://ppa.launchpad.net/george-edison55/cmake-3.x/ubuntu focal Release
  404  Not Found [IP: 185.125.190.80 80]
Reading package lists... Done
E: The repository 'http://ppa.launchpad.net/george-edison55/cmake-3.x/ubuntu
focal Release' does not have a Release file.
N: Updating from such a repository can't be done securely, and is therefore
disabled by default.
N: See apt-secure(8) manpage for repository creation and user configuration
details.

ot-nxp$ ls
boards  cmake  CMakeLists.txt  doc  examples  LICENSE  openthread  README.md
script  src  third_party

ot-nxp$ cd third_party/github_sdk/
ot-nxp/third_party/github_sdk$ ls
manifest

ot-nxp/third_party/github_sdk$  west init -l manifest --mf west.yml
=== Initializing from existing manifest repository manifest
--- Creating /home/test/projects/tb9128-otcli/2FR-ot-cli/ot-
nxp/third_party/github_sdk/.west and local configuration file
=== Initialized. Now run "west update" inside /home/test/projects/tb9128-
otcli/2FR-ot-cli/ot-nxp/third_party/github_sdk.

ot-nxp/third_party/github_sdk$ west update
=== updating sdk-release (core):
--- sdk-release: initializing
Initialized empty Git repository in /home/test/projects/tb9128-otcli/2FR-ot-
cli/ot-nxp/third_party/github_sdk/core/.git/
--- sdk-release: fetching, need revision MCUX_2.16.000
remote: Enumerating objects: 77720, done.
remote: Counting objects: 100% (17496/17496), done.
remote: Compressing objects: 100% (4656/4656), done.
remote: Total 77720 (delta 13034), reused 16328 (delta 12726), pack-reused
60224 (from 1)
Receiving objects: 100% (77720/77720), 209.19 MiB | 6.81 MiB/s, done.
Resolving deltas: 100% (52679/52679), done.
From https://github.com/nxp-mcuxpresso/mcux-sdk
 * tag               MCUX_2.16.000               -> FETCH_HEAD
 * [new tag]         MCUX_2.10.0                 -> MCUX_2.10.0
 * [new tag]         MCUX_2.10.0_LPC55S36        -> MCUX_2.10.0_LPC55S36
 * [new tag]         MCUX_2.10.0_aarch64_0.1     -> MCUX_2.10.0_aarch64_0.1
 * [new tag]         MCUX_2.11.0                 -> MCUX_2.11.0
 * [new tag]         MCUX_2.11.0_aarch64_0.1     -> MCUX_2.11.0_aarch64_0.1
 * [new tag]         MCUX_2.11.2_RT1170_QMC      -> MCUX_2.11.2_RT1170_QMC
 * [new tag]         MCUX_2.12.0                 -> MCUX_2.12.0
 * [new tag]         MCUX_2.12.0_UPDATE          -> MCUX_2.12.0_UPDATE
 * [new tag]         MCUX_2.12.0_aarch64_0.1     -> MCUX_2.12.0_aarch64_0.1
 * [new tag]         MCUX_2.12.0_aarch64_0.2     -> MCUX_2.12.0_aarch64_0.2
 * [new tag]         MCUX_2.13.0                 -> MCUX_2.13.0
```

```
 * [new tag]         MCUX_2.13.0_UPDATE           -> MCUX_2.13.0_UPDATE
 * [new tag]         MCUX_2.13.1                  -> MCUX_2.13.1
 * [new tag]         MCUX_2.13.1_aarch64_0.1      -> MCUX_2.13.1_aarch64_0.1
 * [new tag]         MCUX_2.13.1_aarch64_0.2      -> MCUX_2.13.1_aarch64_0.2
 * [new tag]         MCUX_2.13.2_RT1060-EVK       -> MCUX_2.13.2_RT1060-EVK
 * [new tag]         MCUX_2.13.2_RT1060-EVK_RC1_0 -> MCUX_2.13.2_RT1060-
EVK_RC1_0
 * [new tag]         MCUX_2.13.3_RW610            -> MCUX_2.13.3_RW610
 * [new tag]         MCUX_2.14.0                  -> MCUX_2.14.0
 * [new tag]         MCUX_2.14.0_EVKCMIMXRT1060   -> MCUX_2.14.0_EVKCMIMXRT1060
 * [new tag]         MCUX_2.14.0_LPC55S36         -> MCUX_2.14.0_LPC55S36
 * [new tag]         MCUX_2.14.0_MCXN23x          -> MCUX_2.14.0_MCXN23x
 * [new tag]         MCUX_2.14.0_MCXNx4x          -> MCUX_2.14.0_MCXNx4x
 * [new tag]         MCUX_2.14.0_MKE1XZ9          -> MCUX_2.14.0_MKE1XZ9
 * [new tag]         MCUX_2.14.0_UPDATE           -> MCUX_2.14.0_UPDATE
 * [new tag]         MCUX_2.14.0_UPDATE_ENHC1     -> MCUX_2.14.0_UPDATE_ENHC1
 * [new tag]         MCUX_2.14.0_UpdRev0          -> MCUX_2.14.0_UpdRev0
 * [new tag]         MCUX_2.14.0_UpdRev1          -> MCUX_2.14.0_UpdRev1
 * [new tag]         MCUX_2.14.0_aarch64_0.1      -> MCUX_2.14.0_aarch64_0.1
 * [new tag]         MCUX_2.15.000                -> MCUX_2.15.000
 * [new tag]         MCUX_2.15.000_RW610_K32W1    -> MCUX_2.15.000_RW610_K32W1
 * [new tag]         MCUX_2.15.000_RW610_RC1      -> MCUX_2.15.000_RW610_RC1
 * [new tag]         MCUX_2.15.001_RT1180EVK      -> MCUX_2.15.001_RT1180EVK
 * [new tag]         MCUX_2.15.0_MCXA15X          -> MCUX_2.15.0_MCXA15X
 * [new tag]         MCUX_2.15.100                -> MCUX_2.15.100
 * [new tag]         MCUX_2.16.000                -> MCUX_2.16.000
 * [new tag]         MCUX_2.16.000_RT700          -> MCUX_2.16.000_RT700
 * [new tag]         MCUX_2.16.100                -> MCUX_2.16.100
 * [new tag]         MCUX_2.16.100_RC1            -> MCUX_2.16.100_RC1
 * [new tag]         MCUX_2.6.10_K32W0            -> MCUX_2.6.10_K32W0
 * [new tag]         MCUX_2.6.13_K32W0            -> MCUX_2.6.13_K32W0
 * [new tag]         MCUX_2.6.14_K32W0            -> MCUX_2.6.14_K32W0
 * [new tag]         MCUX_2.6.15_K32W0            -> MCUX_2.6.15_K32W0
 * [new tag]         MCUX_2.6.7_K32W0             -> MCUX_2.6.7_K32W0
 * [new tag]         MCUX_2.6.8_K32W0             -> MCUX_2.6.8_K32W0
 * [new tag]         MCUX_2.6.9_K32W0             -> MCUX_2.6.9_K32W0
 * [new tag]         MCUX_2.9.0                   -> MCUX_2.9.0
 * [new tag]         MCUX_2.9.4_MW320             -> MCUX_2.9.4_MW320
 * [new tag]         Real-Time-Edge-v2.4-202212   -> Real-Time-Edge-v2.4-202212
 * [new tag]         Real-Time-Edge-v2.4-RC1      -> Real-Time-Edge-v2.4-RC1
 * [new tag]         Real-Time-Edge-v2.5-202303   -> Real-Time-Edge-v2.5-202303
 * [new tag]         Real-Time-Edge-v2.5-RC1      -> Real-Time-Edge-v2.5-RC1
 * [new tag]         Real-Time-Edge-v2.6-202307   -> Real-Time-Edge-v2.6-202307
 * [new tag]         Real-Time-Edge-v2.6-RC1      -> Real-Time-Edge-v2.6-RC1
 * [new tag]         Real-Time-Edge-v2.7-202312   -> Real-Time-Edge-v2.7-202312
 * [new tag]         Real-Time-Edge-v2.7-RC       -> Real-Time-Edge-v2.7-RC
 * [new tag]         Real-Time-Edge-v2.8-202403   -> Real-Time-Edge-v2.8-202403
 * [new tag]         Real-Time-Edge-v2.8-RC1      -> Real-Time-Edge-v2.8-RC1
 * [new tag]         Real-Time-Edge-v2.9-202407   -> Real-Time-Edge-v2.9-202407
 * [new tag]         Real-Time-Edge-v2.9-RC1      -> Real-Time-Edge-v2.9-RC1
Updating files: 100% (21334/21334), done.
HEAD is now at 6f3fd257c Apply MCUXpresso SDK 2.16.000 release update
HEAD is now at 6f3fd257c Apply MCUXpresso SDK 2.16.000 release update
=== updating mcux-sdk-middleware-connectivity-framework
(middleware/wireless/framework):
--- mcux-sdk-middleware-connectivity-framework: initializing
Initialized empty Git repository in /home/test/projects/tb9128-otcli/2FR-ot-
cli/ot-nxp/third_party/github_sdk/middleware/wireless/framework/.git/
--- mcux-sdk-middleware-connectivity-framework: fetching, need revision
MCUX_2.16.000_UpdRev0
remote: Enumerating objects: 1531, done.
```

```
remote: Counting objects: 100% (1531/1531), done.
remote: Compressing objects: 100% (856/856), done.
remote: Total 1531 (delta 748), reused 1366 (delta 583), pack-reused 0 (from 0)
Receiving objects: 100% (1531/1531), 2.49 MiB | 7.38 MiB/s, done.
Resolving deltas: 100% (748/748), done.
From https://github.com/nxp-mcuxpresso/mcux-sdk-middleware-connectivity-
framework
 * tag               MCUX_2.16.000_UpdRev0     -> FETCH_HEAD
 * [new tag]         MCUX_2.13.3_RW610         -> MCUX_2.13.3_RW610
 * [new tag]         MCUX_2.15.000             -> MCUX_2.15.000
 * [new tag]         MCUX_2.15.000_RW610_K32W1 -> MCUX_2.15.000_RW610_K32W1
 * [new tag]         MCUX_2.15.000_RW610_RC1   -> MCUX_2.15.000_RW610_RC1
 * [new tag]         MCUX_2.15.100             -> MCUX_2.15.100
 * [new tag]         MCUX_2.16.000             -> MCUX_2.16.000
 * [new tag]         MCUX_2.16.000_UpdRev0     -> MCUX_2.16.000_UpdRev0
 * [new tag]         MCUX_2.16.100             -> MCUX_2.16.100
 * [new tag]         MCUX_2.16.100_RC1         -> MCUX_2.16.100_RC1
 * [new tag]         MCUX_2.6.14_K32W0         -> MCUX_2.6.14_K32W0
 * [new tag]         MCUX_2.6.15_K32W0         -> MCUX_2.6.15_K32W0
 * [new tag]         v6.0.11a                  -> v6.0.11a
 * [new tag]         v6.0.12a                  -> v6.0.12a
HEAD is now at d37a68a Integrating rt1060 and rt1170 platform changes
HEAD is now at d37a68a Integrating rt1060 and rt1170 platform changes
=== updating mcux-sdk-examples (examples):
--- mcux-sdk-examples: initializing
Initialized empty Git repository in /home/test/projects/tb9128-otcli/2FR-ot-
cli/ot-nxp/third_party/github_sdk/examples/.git/
--- mcux-sdk-examples: fetching, need revision MCUX_2.16.000
remote: Enumerating objects: 554345, done.
remote: Counting objects: 100% (182712/182712), done.
remote: Compressing objects: 100% (43841/43841), done.
remote: Total 554345 (delta 133109), reused 165497 (delta 130852), pack-reused
371633 (from 1)
Receiving objects: 100% (554345/554345), 277.04 MiB | 12.51 MiB/s, done.
Resolving deltas: 100% (444064/444064), done.
From https://github.com/nxp-mcuxpresso/mcux-sdk-examples
 * tag               MCUX_2.16.000               -> FETCH_HEAD
 * [new tag]         MCUX_2.10.0                 -> MCUX_2.10.0
 * [new tag]         MCUX_2.10.0_LPC55S36        -> MCUX_2.10.0_LPC55S36
 * [new tag]         MCUX_2.11.0                 -> MCUX_2.11.0
 * [new tag]         MCUX_2.11.2_RT1170_QMC      -> MCUX_2.11.2_RT1170_QMC
 * [new tag]         MCUX_2.12.0                 -> MCUX_2.12.0
 * [new tag]         MCUX_2.12.0_UPDATE          -> MCUX_2.12.0_UPDATE
 * [new tag]         MCUX_2.13.0                 -> MCUX_2.13.0
 * [new tag]         MCUX_2.13.1                 -> MCUX_2.13.1
 * [new tag]         MCUX_2.13.3_RW610           -> MCUX_2.13.3_RW610
 * [new tag]         MCUX_2.14.0                 -> MCUX_2.14.0
 * [new tag]         MCUX_2.14.0_EVKCMIMXRT1060 -> MCUX_2.14.0_EVKCMIMXRT1060
 * [new tag]         MCUX_2.14.0_LPC55S36        -> MCUX_2.14.0_LPC55S36
 * [new tag]         MCUX_2.14.0_MCXN23x         -> MCUX_2.14.0_MCXN23x
 * [new tag]         MCUX_2.14.0_MCXNx4x         -> MCUX_2.14.0_MCXNx4x
 * [new tag]         MCUX_2.14.0_MKE1XZ9         -> MCUX_2.14.0_MKE1XZ9
 * [new tag]         MCUX_2.14.0_UPDATE          -> MCUX_2.14.0_UPDATE
 * [new tag]         MCUX_2.14.0_UPDATE_ENHC1    -> MCUX_2.14.0_UPDATE_ENHC1
 * [new tag]         MCUX_2.14.0_UpdRev0         -> MCUX_2.14.0_UpdRev0
 * [new tag]         MCUX_2.14.0_UpdRev1         -> MCUX_2.14.0_UpdRev1
 * [new tag]         MCUX_2.15.000               -> MCUX_2.15.000
 * [new tag]         MCUX_2.15.000_RT1170        -> MCUX_2.15.000_RT1170
 * [new tag]         MCUX_2.15.000_RW610_K32W1   -> MCUX_2.15.000_RW610_K32W1
 * [new tag]         MCUX_2.15.000_RW610_RC1     -> MCUX_2.15.000_RW610_RC1
 * [new tag]         MCUX_2.15.001_RT1180EVK     -> MCUX_2.15.001_RT1180EVK
```

```
 * [new tag]         MCUX_2.15.0_MCXA15X        -> MCUX_2.15.0_MCXA15X
 * [new tag]         MCUX_2.15.100              -> MCUX_2.15.100
 * [new tag]         MCUX_2.16.000              -> MCUX_2.16.000
 * [new tag]         MCUX_2.16.000_RT700        -> MCUX_2.16.000_RT700
 * [new tag]         MCUX_2.16.100              -> MCUX_2.16.100
 * [new tag]         MCUX_2.16.100_RC1          -> MCUX_2.16.100_RC1
 * [new tag]         MCUX_2.6.10_K32W0          -> MCUX_2.6.10_K32W0
 * [new tag]         MCUX_2.6.14_K32W0          -> MCUX_2.6.14_K32W0
 * [new tag]         MCUX_2.6.15_K32W0          -> MCUX_2.6.15_K32W0
 * [new tag]         MCUX_2.6.7_K32W0           -> MCUX_2.6.7_K32W0
 * [new tag]         MCUX_2.6.8_K32W0           -> MCUX_2.6.8_K32W0
 * [new tag]         MCUX_2.6.9_K32W0           -> MCUX_2.6.9_K32W0
 * [new tag]         MCUX_2.9.4_MW320           -> MCUX_2.9.4_MW320
 * [new tag]         Real-Time-Edge-v2.4-202212 -> Real-Time-Edge-v2.4-202212
 * [new tag]         Real-Time-Edge-v2.4-RC1    -> Real-Time-Edge-v2.4-RC1
 * [new tag]         Real-Time-Edge-v2.5-202303 -> Real-Time-Edge-v2.5-202303
 * [new tag]         Real-Time-Edge-v2.5-RC1    -> Real-Time-Edge-v2.5-RC1
 * [new tag]         Real-Time-Edge-v2.6-202307 -> Real-Time-Edge-v2.6-202307
 * [new tag]         Real-Time-Edge-v2.6-RC1    -> Real-Time-Edge-v2.6-RC1
 * [new tag]         Real-Time-Edge-v2.7-202312 -> Real-Time-Edge-v2.7-202312
 * [new tag]         Real-Time-Edge-v2.7-RC     -> Real-Time-Edge-v2.7-RC
 * [new tag]         Real-Time-Edge-v2.8-202403 -> Real-Time-Edge-v2.8-202403
 * [new tag]         Real-Time-Edge-v2.8-RC1    -> Real-Time-Edge-v2.8-RC1
 * [new tag]         Real-Time-Edge-v2.9-202407 -> Real-Time-Edge-v2.9-202407
 * [new tag]         Real-Time-Edge-v2.9-RC1    -> Real-Time-Edge-v2.9-RC1
Updating files: 100% (425656/425656), done.
HEAD is now at 8ebfdb8c37 examples: recover mcux IDE examples for legacy boards
HEAD is now at 8ebfdb8c37 examples: recover mcux IDE examples for legacy boards
=== updating FreeRTOS-Kernel (rtos/freertos/freertos-kernel):
--- FreeRTOS-Kernel: initializing
Initialized empty Git repository in /home/test/projects/tb9128-otcli/2FR-ot-
cli/ot-nxp/third_party/github_sdk/rtos/freertos/freertos-kernel/.git/
--- FreeRTOS-Kernel: fetching, need revision MCUX_2.16.000
remote: Enumerating objects: 157810, done.
remote: Counting objects: 100% (160/160), done.
remote: Compressing objects: 100% (82/82), done.
remote: Total 157810 (delta 98), reused 99 (delta 78), pack-reused 157650 (from
1)
Receiving objects: 100% (157810/157810), 108.50 MiB | 5.57 MiB/s, done.
Resolving deltas: 100% (113788/113788), done.
From https://github.com/nxp-mcuxpresso/FreeRTOS-Kernel
 * tag               MCUX_2.16.000              -> FETCH_HEAD
 * [new tag]         BackupPoints               -> BackupPoints
 * [new tag]         MCUX_2.10.0                -> MCUX_2.10.0
 * [new tag]         MCUX_2.10.0_UPDATE_1       -> MCUX_2.10.0_UPDATE_1
 * [new tag]         MCUX_2.10.0_aarch64_0.1    -> MCUX_2.10.0_aarch64_0.1
 * [new tag]         MCUX_2.11.0                -> MCUX_2.11.0
 * [new tag]         MCUX_2.11.0_aarch64_0.1    -> MCUX_2.11.0_aarch64_0.1
 * [new tag]         MCUX_2.12.0                -> MCUX_2.12.0
 * [new tag]         MCUX_2.12.0_aarch64_0.1    -> MCUX_2.12.0_aarch64_0.1
 * [new tag]         MCUX_2.12.0_aarch64_0.2    -> MCUX_2.12.0_aarch64_0.2
 * [new tag]         MCUX_2.13.0                -> MCUX_2.13.0
 * [new tag]         MCUX_2.13.1                -> MCUX_2.13.1
 * [new tag]         MCUX_2.13.1_aarch64_0.1    -> MCUX_2.13.1_aarch64_0.1
 * [new tag]         MCUX_2.13.1_aarch64_0.2    -> MCUX_2.13.1_aarch64_0.2
 * [new tag]         MCUX_2.13.3_RW610          -> MCUX_2.13.3_RW610
 * [new tag]         MCUX_2.14.0                -> MCUX_2.14.0
 * [new tag]         MCUX_2.14.0_EVKCMIMXRT1060 -> MCUX_2.14.0_EVKCMIMXRT1060
 * [new tag]         MCUX_2.14.0_LPC55S36       -> MCUX_2.14.0_LPC55S36
 * [new tag]         MCUX_2.14.0_MCXN23x        -> MCUX_2.14.0_MCXN23x
 * [new tag]         MCUX_2.14.0_MCXNx4x        -> MCUX_2.14.0_MCXNx4x
```

```
 * [new tag]         MCUX_2.14.0_MKE1XZ9         -> MCUX_2.14.0_MKE1XZ9
 * [new tag]         MCUX_2.14.0_UpdRev1         -> MCUX_2.14.0_UpdRev1
 * [new tag]         MCUX_2.14.0_aarch64_0.1     -> MCUX_2.14.0_aarch64_0.1
 * [new tag]         MCUX_2.15.000               -> MCUX_2.15.000
 * [new tag]         MCUX_2.15.000_RW610_K32W1   -> MCUX_2.15.000_RW610_K32W1
 * [new tag]         MCUX_2.15.000_RW610_RC1     -> MCUX_2.15.000_RW610_RC1
 * [new tag]         MCUX_2.15.001_RT1180EVK     -> MCUX_2.15.001_RT1180EVK
 * [new tag]         MCUX_2.15.0_MCXA15X         -> MCUX_2.15.0_MCXA15X
 * [new tag]         MCUX_2.15.100               -> MCUX_2.15.100
 * [new tag]         MCUX_2.16.000               -> MCUX_2.16.000
 * [new tag]         MCUX_2.16.100               -> MCUX_2.16.100
 * [new tag]         MCUX_2.9.0                  -> MCUX_2.9.0
 * [new tag]         MCUX_2.9.4_MW320            -> MCUX_2.9.4_MW320
 * [new tag]         PartialReleases             -> PartialReleases
 * [new tag]         Real-Time-Edge-v2.5-202303  -> Real-Time-Edge-v2.5-202303
 * [new tag]         Real-Time-Edge-v2.6-202307  -> Real-Time-Edge-v2.6-202307
 * [new tag]         Real-Time-Edge-v2.6-RC1     -> Real-Time-Edge-v2.6-RC1
 * [new tag]         Real-Time-Edge-v2.7-202312  -> Real-Time-Edge-v2.7-202312
 * [new tag]         Real-Time-Edge-v2.7-RC      -> Real-Time-Edge-v2.7-RC
 * [new tag]         Real-Time-Edge-v2.8-202403  -> Real-Time-Edge-v2.8-202403
 * [new tag]         Real-Time-Edge-v2.8-RC1     -> Real-Time-Edge-v2.8-RC1
 * [new tag]         Real-Time-Edge-v2.9-202407  -> Real-Time-Edge-v2.9-202407
 * [new tag]         Real-Time-Edge-v2.9-RC1     -> Real-Time-Edge-v2.9-RC1
 * [new tag]         V10.0.0                     -> V10.0.0
 * [new tag]         V10.0.1                     -> V10.0.1
 * [new tag]         V10.1.0                     -> V10.1.0
 * [new tag]         V10.1.1                     -> V10.1.1
 * [new tag]         V10.2.0                     -> V10.2.0
 * [new tag]         V10.2.1                     -> V10.2.1
 * [new tag]         V10.3.0                     -> V10.3.0
 * [new tag]         V10.3.0-kernel-only         -> V10.3.0-kernel-only
 * [new tag]         V10.3.1-kernel-only         -> V10.3.1-kernel-only
 * [new tag]         V10.4.0-kernel-only         -> V10.4.0-kernel-only
 * [new tag]         V10.4.1-kernel-only         -> V10.4.1-kernel-only
 * [new tag]         V10.4.2                     -> V10.4.2
 * [new tag]         V10.4.3                     -> V10.4.3
 * [new tag]         V4.0.1                      -> V4.0.1
 * [new tag]         V4.0.2                      -> V4.0.2
 * [new tag]         V4.0.3                      -> V4.0.3
 * [new tag]         V4.0.5                      -> V4.0.5
 * [new tag]         V4.1.0                      -> V4.1.0
 * [new tag]         V4.1.1                      -> V4.1.1
 * [new tag]         V4.1.2                      -> V4.1.2
 * [new tag]         V4.1.3                      -> V4.1.3
 * [new tag]         V4.2.0                      -> V4.2.0
 * [new tag]         V4.2.1                      -> V4.2.1
 * [new tag]         V4.3.0                      -> V4.3.0
 * [new tag]         V4.3.1                      -> V4.3.1
 * [new tag]         V4.4.0                      -> V4.4.0
 * [new tag]         V4.5.0                      -> V4.5.0
 * [new tag]         V4.6.1                      -> V4.6.1
 * [new tag]         V4.7.0                      -> V4.7.0
 * [new tag]         V4.7.1                      -> V4.7.1
 * [new tag]         V4.7.2                      -> V4.7.2
 * [new tag]         V4.8.0                      -> V4.8.0
 * [new tag]         V5.0.0                      -> V5.0.0
 * [new tag]         V5.0.2                      -> V5.0.2
 * [new tag]         V5.0.3                      -> V5.0.3
 * [new tag]         V5.1.2                      -> V5.1.2
 * [new tag]         V5.2.0                      -> V5.2.0
 * [new tag]         V5.3.0                      -> V5.3.0
```

```
 * [new tag]         V5.3.1                     -> V5.3.1
 * [new tag]         V5.4.1                     -> V5.4.1
 * [new tag]         V5.4.2                     -> V5.4.2
 * [new tag]         V6.0.0                     -> V6.0.0
 * [new tag]         V6.0.1                     -> V6.0.1
 * [new tag]         V6.0.3                     -> V6.0.3
 * [new tag]         V6.0.4                     -> V6.0.4
 * [new tag]         V6.0.5                     -> V6.0.5
 * [new tag]         V6.1.0                     -> V6.1.0
 * [new tag]         V6.1.1                     -> V6.1.1
 * [new tag]         V7.0.0                     -> V7.0.0
 * [new tag]         V7.0.1                     -> V7.0.1
 * [new tag]         V7.0.2                     -> V7.0.2
 * [new tag]         V7.1.0                     -> V7.1.0
 * [new tag]         V7.1.1                     -> V7.1.1
 * [new tag]         V7.2.0                     -> V7.2.0
 * [new tag]         V7.3.0                     -> V7.3.0
 * [new tag]         V7.4.0                     -> V7.4.0
 * [new tag]         V7.4.1                     -> V7.4.1
 * [new tag]         V7.4.2                     -> V7.4.2
 * [new tag]         V7.5.0                     -> V7.5.0
 * [new tag]         V7.5.1                     -> V7.5.1
 * [new tag]         V7.5.2                     -> V7.5.2
 * [new tag]         V7.5.3                     -> V7.5.3
 * [new tag]         V7.6.0                     -> V7.6.0
 * [new tag]         V8.0.0                     -> V8.0.0
 * [new tag]         V8.0.0-rc1                 -> V8.0.0-rc1
 * [new tag]         V8.0.0rc1                  -> V8.0.0rc1
 * [new tag]         V8.0.1                     -> V8.0.1
 * [new tag]         V8.1.0                     -> V8.1.0
 * [new tag]         V8.1.1                     -> V8.1.1
 * [new tag]         V8.1.2                     -> V8.1.2
 * [new tag]         V8.2.0                     -> V8.2.0
 * [new tag]         V8.2.0-rc1                 -> V8.2.0-rc1
 * [new tag]         V8.2.0rc1                  -> V8.2.0rc1
 * [new tag]         V8.2.1                     -> V8.2.1
 * [new tag]         V8.2.2                     -> V8.2.2
 * [new tag]         V8.2.3                     -> V8.2.3
 * [new tag]         V9.0.0                     -> V9.0.0
 * [new tag]         V9.0.0-rc1                 -> V9.0.0-rc1
 * [new tag]         V9.0.0-rc2                 -> V9.0.0-rc2
 * [new tag]         V9.0.0rc1                  -> V9.0.0rc1
 * [new tag]         V9.0.0rc2                  -> V9.0.0rc2
HEAD is now at 4fe54c5f6 Apply 2.16.000 release update
HEAD is now at 4fe54c5f6 Apply 2.16.000 release update
=== updating mcux-sdk-middleware-sdmmc (middleware/sdmmc):
--- mcux-sdk-middleware-sdmmc: initializing
Initialized empty Git repository in /home/test/projects/tb9128-otcli/2FR-ot-
cli/ot-nxp/third_party/github_sdk/middleware/sdmmc/.git/
--- mcux-sdk-middleware-sdmmc: fetching, need revision MCUX_2.16.000
remote: Enumerating objects: 433, done.
remote: Counting objects: 100% (97/97), done.
remote: Compressing objects: 100% (36/36), done.
remote: Total 433 (delta 78), reused 70 (delta 59), pack-reused 336 (from 1)
Receiving objects: 100% (433/433), 304.18 KiB | 2.22 MiB/s, done.
Resolving deltas: 100% (317/317), done.
From https://github.com/nxp-mcuxpresso/mcux-sdk-middleware-sdmmc
 * tag               MCUX_2.16.000              -> FETCH_HEAD
 * [new tag]         MCUX_2.10.0                -> MCUX_2.10.0
 * [new tag]         MCUX_2.11.0                -> MCUX_2.11.0
 * [new tag]         MCUX_2.12.0                -> MCUX_2.12.0
```

```
 * [new tag]         MCUX_2.13.0                -> MCUX_2.13.0
 * [new tag]         MCUX_2.13.1                -> MCUX_2.13.1
 * [new tag]         MCUX_2.14.0                -> MCUX_2.14.0
 * [new tag]         MCUX_2.14.0_EVKCMIMXRT1060 -> MCUX_2.14.0_EVKCMIMXRT1060
 * [new tag]         MCUX_2.14.0_MCXNx4x        -> MCUX_2.14.0_MCXNx4x
 * [new tag]         MCUX_2.14.0_UpdRev1        -> MCUX_2.14.0_UpdRev1
 * [new tag]         MCUX_2.15.000              -> MCUX_2.15.000
 * [new tag]         MCUX_2.15.001_RT1180EVK    -> MCUX_2.15.001_RT1180EVK
 * [new tag]         MCUX_2.15.100              -> MCUX_2.15.100
 * [new tag]         MCUX_2.16.000              -> MCUX_2.16.000
 * [new tag]         MCUX_2.16.100              -> MCUX_2.16.100
 * [new tag]         MCUX_2.9.0                 -> MCUX_2.9.0
HEAD is now at 40283d3 Apply MCUXpresso SDK 2.16.000 release RC2 update
HEAD is now at 40283d3 Apply MCUXpresso SDK 2.16.000 release RC2 update
=== updating mcux-sdk-middleware-multicore (middleware/multicore):
--- mcux-sdk-middleware-multicore: initializing
Initialized empty Git repository in /home/test/projects/tb9128-otcli/2FR-ot-
cli/ot-nxp/third_party/github_sdk/middleware/multicore/.git/
--- mcux-sdk-middleware-multicore: fetching, need revision MCUX_2.16.000
remote: Enumerating objects: 822, done.
remote: Counting objects: 100% (17/17), done.
remote: Compressing objects: 100% (7/7), done.
remote: Total 822 (delta 12), reused 12 (delta 10), pack-reused 805 (from 1)
Receiving objects: 100% (822/822), 24.40 MiB | 11.15 MiB/s, done.
Resolving deltas: 100% (540/540), done.
From https://github.com/nxp-mcuxpresso/mcux-sdk-middleware-multicore
 * tag               MCUX_2.16.000              -> FETCH_HEAD
 * [new tag]         MCUX_2.10.0                -> MCUX_2.10.0
 * [new tag]         MCUX_2.10.0_LPC553S36      -> MCUX_2.10.0_LPC553S36
 * [new tag]         MCUX_2.10.0_LPC553S36_RC1  -> MCUX_2.10.0_LPC553S36_RC1
 * [new tag]         MCUX_2.11.0                -> MCUX_2.11.0
 * [new tag]         MCUX_2.12.0                -> MCUX_2.12.0
 * [new tag]         MCUX_2.13.0                -> MCUX_2.13.0
 * [new tag]         MCUX_2.13.1                -> MCUX_2.13.1
 * [new tag]         MCUX_2.14.0                -> MCUX_2.14.0
 * [new tag]         MCUX_2.14.0_EVKCMIMXRT1060 -> MCUX_2.14.0_EVKCMIMXRT1060
 * [new tag]         MCUX_2.14.0_LPC55S36       -> MCUX_2.14.0_LPC55S36
 * [new tag]         MCUX_2.14.0_MCXN23x        -> MCUX_2.14.0_MCXN23x
 * [new tag]         MCUX_2.14.0_MCXNx4x        -> MCUX_2.14.0_MCXNx4x
 * [new tag]         MCUX_2.14.0_UpdRev1        -> MCUX_2.14.0_UpdRev1
 * [new tag]         MCUX_2.15.000              -> MCUX_2.15.000
 * [new tag]         MCUX_2.15.000_RW610_K32W1  -> MCUX_2.15.000_RW610_K32W1
 * [new tag]         MCUX_2.15.001_RT1180EVK    -> MCUX_2.15.001_RT1180EVK
 * [new tag]         MCUX_2.15.100              -> MCUX_2.15.100
 * [new tag]         MCUX_2.16.000              -> MCUX_2.16.000
 * [new tag]         MCUX_2.16.100              -> MCUX_2.16.100
 * [new tag]         Real-Time-Edge-v2.4-202212 -> Real-Time-Edge-v2.4-202212
 * [new tag]         Real-Time-Edge-v2.4-RC1    -> Real-Time-Edge-v2.4-RC1
 * [new tag]         Real-Time-Edge-v2.5-202303 -> Real-Time-Edge-v2.5-202303
 * [new tag]         Real-Time-Edge-v2.5-RC1    -> Real-Time-Edge-v2.5-RC1
 * [new tag]         Real-Time-Edge-v2.6-202307 -> Real-Time-Edge-v2.6-202307
 * [new tag]         Real-Time-Edge-v2.6-RC1    -> Real-Time-Edge-v2.6-RC1
 * [new tag]         Real-Time-Edge-v2.7-202312 -> Real-Time-Edge-v2.7-202312
 * [new tag]         Real-Time-Edge-v2.7-RC     -> Real-Time-Edge-v2.7-RC
 * [new tag]         Real-Time-Edge-v2.8-202403 -> Real-Time-Edge-v2.8-202403
 * [new tag]         Real-Time-Edge-v2.8-RC1    -> Real-Time-Edge-v2.8-RC1
 * [new tag]         Real-Time-Edge-v2.9-202407 -> Real-Time-Edge-v2.9-202407
 * [new tag]         Real-Time-Edge-v2.9-RC1    -> Real-Time-Edge-v2.9-RC1
HEAD is now at 0b7708a Apply 2.16.000 release update
HEAD is now at 0b7708a Apply 2.16.000 release update
=== updating rpmsg-lite (middleware/multicore/rpmsg_lite):
```

```
--- rpmsg-lite: initializing
Initialized empty Git repository in /home/test/projects/tb9128-otcli/2FR-ot-
cli/ot-nxp/third_party/github_sdk/middleware/multicore/rpmsg_lite/.git/
--- rpmsg-lite: fetching, need revision v5.1.2
remote: Enumerating objects: 1686, done.
remote: Counting objects: 100% (767/767), done.
remote: Compressing objects: 100% (230/230), done.
remote: Total 1686 (delta 551), reused 654 (delta 493), pack-reused 919 (from
1)
Receiving objects: 100% (1686/1686), 694.89 KiB | 3.39 MiB/s, done.
Resolving deltas: 100% (891/891), done.
From https://github.com/nxp-mcuxpresso/rpmsg-lite
 * tag               v5.1.2                     -> FETCH_HEAD
 * [new tag]         MCUX_2.15.000_RW610_K32W1  -> MCUX_2.15.000_RW610_K32W1
 * [new tag]         MCUX_2.15.001_RT1180EVK    -> MCUX_2.15.001_RT1180EVK
 * [new tag]         Real-Time-Edge-v2.4-202212 -> Real-Time-Edge-v2.4-202212
 * [new tag]         Real-Time-Edge-v2.4-RC1    -> Real-Time-Edge-v2.4-RC1
 * [new tag]         Real-Time-Edge-v2.5-202303 -> Real-Time-Edge-v2.5-202303
 * [new tag]         Real-Time-Edge-v2.5-RC1    -> Real-Time-Edge-v2.5-RC1
 * [new tag]         Real-Time-Edge-v2.6-202307 -> Real-Time-Edge-v2.6-202307
 * [new tag]         Real-Time-Edge-v2.6-RC1    -> Real-Time-Edge-v2.6-RC1
 * [new tag]         Real-Time-Edge-v2.7-202312 -> Real-Time-Edge-v2.7-202312
 * [new tag]         Real-Time-Edge-v2.7-RC     -> Real-Time-Edge-v2.7-RC
 * [new tag]         Real-Time-Edge-v2.8-202403 -> Real-Time-Edge-v2.8-202403
 * [new tag]         Real-Time-Edge-v2.8-RC1    -> Real-Time-Edge-v2.8-RC1
 * [new tag]         Real-Time-Edge-v2.9-202407 -> Real-Time-Edge-v2.9-202407
 * [new tag]         Real-Time-Edge-v2.9-RC1    -> Real-Time-Edge-v2.9-RC1
 * [new tag]         v1.1.0                     -> v1.1.0
 * [new tag]         v1.2.0                     -> v1.2.0
 * [new tag]         v2.0.0                     -> v2.0.0
 * [new tag]         v2.2.0                     -> v2.2.0
 * [new tag]         v3.0.0                     -> v3.0.0
 * [new tag]         v3.1.0                     -> v3.1.0
 * [new tag]         v3.1.1                     -> v3.1.1
 * [new tag]         v3.1.2                     -> v3.1.2
 * [new tag]         v3.2.0                     -> v3.2.0
 * [new tag]         v4.0.0                     -> v4.0.0
 * [new tag]         v5.0.0                     -> v5.0.0
 * [new tag]         v5.1.0                     -> v5.1.0
 * [new tag]         v5.1.1                     -> v5.1.1
 * [new tag]         v5.1.2                     -> v5.1.2
HEAD is now at 72cb088 Merge branch 'develop'
HEAD is now at 72cb088 Merge branch 'develop'
=== updating mcux-sdk-middleware-usb (middleware/usb):
--- mcux-sdk-middleware-usb: initializing
Initialized empty Git repository in /home/test/projects/tb9128-otcli/2FR-ot-
cli/ot-nxp/third_party/github_sdk/middleware/usb/.git/
--- mcux-sdk-middleware-usb: fetching, need revision MCUX_2.16.000
remote: Enumerating objects: 755, done.
remote: Counting objects: 100% (326/326), done.
remote: Compressing objects: 100% (144/144), done.
remote: Total 755 (delta 235), reused 230 (delta 168), pack-reused 429 (from 1)
Receiving objects: 100% (755/755), 76.50 MiB | 9.71 MiB/s, done.
Resolving deltas: 100% (525/525), done.
From https://github.com/nxp-mcuxpresso/mcux-sdk-middleware-usb
 * tag               MCUX_2.16.000              -> FETCH_HEAD
 * [new tag]         MCUX_2.11.0                -> MCUX_2.11.0
 * [new tag]         MCUX_2.12.0                -> MCUX_2.12.0
 * [new tag]         MCUX_2.13.0                -> MCUX_2.13.0
 * [new tag]         MCUX_2.13.1                -> MCUX_2.13.1
 * [new tag]         MCUX_2.13.3_RW610          -> MCUX_2.13.3_RW610
```

```
 * [new tag]         MCUX_2.14.0                -> MCUX_2.14.0
 * [new tag]         MCUX_2.14.0_EVKCMIMXRT1060 -> MCUX_2.14.0_EVKCMIMXRT1060
 * [new tag]         MCUX_2.14.0_LPC55S36       -> MCUX_2.14.0_LPC55S36
 * [new tag]         MCUX_2.14.0_MCXN23x        -> MCUX_2.14.0_MCXN23x
 * [new tag]         MCUX_2.14.0_MCXNx4x        -> MCUX_2.14.0_MCXNx4x
 * [new tag]         MCUX_2.14.0_UpdRev1        -> MCUX_2.14.0_UpdRev1
 * [new tag]         MCUX_2.15.000              -> MCUX_2.15.000
 * [new tag]         MCUX_2.15.000_RW610_K32W1  -> MCUX_2.15.000_RW610_K32W1
 * [new tag]         MCUX_2.15.000_RW610_RC1    -> MCUX_2.15.000_RW610_RC1
 * [new tag]         MCUX_2.15.001_RT1180EVK    -> MCUX_2.15.001_RT1180EVK
 * [new tag]         MCUX_2.15.0_MCXA15X        -> MCUX_2.15.0_MCXA15X
 * [new tag]         MCUX_2.15.100              -> MCUX_2.15.100
 * [new tag]         MCUX_2.16.000              -> MCUX_2.16.000
 * [new tag]         MCUX_2.16.100              -> MCUX_2.16.100
 * [new tag]         MCUX_2.16.100_RC1          -> MCUX_2.16.100_RC1
HEAD is now at ed235e3 Pull request #18: Add files for
release/2.16.000_major_rfp_gh_review from CI Generation
HEAD is now at ed235e3 Pull request #18: Add files for
release/2.16.000_major_rfp_gh_review from CI Generation
=== updating mbedtls (middleware/mbedtls):
--- mbedtls: initializing
Initialized empty Git repository in /home/test/projects/tb9128-otcli/2FR-ot-
cli/ot-nxp/third_party/github_sdk/middleware/mbedtls/.git/
--- mbedtls: fetching, need revision MCUX_2.16.000
remote: Enumerating objects: 47764, done.
remote: Counting objects: 100% (1298/1298), done.
remote: Compressing objects: 100% (1157/1157), done.
remote: Total 47764 (delta 791), reused 141 (delta 141), pack-reused 46466
(from 1)
Receiving objects: 100% (47764/47764), 25.44 MiB | 8.37 MiB/s, done.
Resolving deltas: 100% (36587/36587), done.
From https://github.com/nxp-mcuxpresso/mbedtls
 * tag               MCUX_2.16.000              -> FETCH_HEAD
 * [new tag]         MCUX_2.12.0                -> MCUX_2.12.0
 * [new tag]         MCUX_2.13.0                -> MCUX_2.13.0
 * [new tag]         MCUX_2.13.1                -> MCUX_2.13.1
 * [new tag]         MCUX_2.13.3_RW610          -> MCUX_2.13.3_RW610
 * [new tag]         MCUX_2.14.0                -> MCUX_2.14.0
 * [new tag]         MCUX_2.14.0_EVKCMIMXRT1060 -> MCUX_2.14.0_EVKCMIMXRT1060
 * [new tag]         MCUX_2.14.0_LPC55S36       -> MCUX_2.14.0_LPC55S36
 * [new tag]         MCUX_2.14.0_MCXN23x        -> MCUX_2.14.0_MCXN23x
 * [new tag]         MCUX_2.14.0_MCXNx4x        -> MCUX_2.14.0_MCXNx4x
 * [new tag]         MCUX_2.14.0_UpdRev1        -> MCUX_2.14.0_UpdRev1
 * [new tag]         MCUX_2.15.000              -> MCUX_2.15.000
 * [new tag]         MCUX_2.15.000_RW610_K32W1  -> MCUX_2.15.000_RW610_K32W1
 * [new tag]         MCUX_2.15.000_RW610_RC1    -> MCUX_2.15.000_RW610_RC1
 * [new tag]         MCUX_2.15.001_RT1180EVK    -> MCUX_2.15.001_RT1180EVK
 * [new tag]         MCUX_2.15.100              -> MCUX_2.15.100
 * [new tag]         MCUX_2.16.000              -> MCUX_2.16.000
 * [new tag]         MCUX_2.16.100              -> MCUX_2.16.100
 * [new tag]         beta-oob-2                 -> beta-oob-2
 * [new tag]         beta-release               -> beta-release
 * [new tag]         list                       -> list
 * [new tag]         mbed-alpha3                -> mbed-alpha3
 * [new tag]         mbed-os-beta               -> mbed-os-beta
 * [new tag]         mbedos-16.01-release       -> mbedos-16.01-release
 * [new tag]         mbedos-16.03-release       -> mbedos-16.03-release
 * [new tag]         mbedos-2016q1-oob1         -> mbedos-2016q1-oob1
 * [new tag]         mbedos-2016q1-oob2         -> mbedos-2016q1-oob2
 * [new tag]         mbedos-2016q1-oob3         -> mbedos-2016q1-oob3
 * [new tag]         mbedos-release-15-11       -> mbedos-release-15-11
```

```
 * [new tag]         mbedos-techcon-oob2        -> mbedos-techcon-oob2
 * [new tag]         mbedtls-1.3.10             -> mbedtls-1.3.10
 * [new tag]         mbedtls-1.3.11             -> mbedtls-1.3.11
 * [new tag]         mbedtls-1.3.12             -> mbedtls-1.3.12
 * [new tag]         mbedtls-1.3.13             -> mbedtls-1.3.13
 * [new tag]         mbedtls-1.3.14             -> mbedtls-1.3.14
 * [new tag]         mbedtls-1.3.15             -> mbedtls-1.3.15
 * [new tag]         mbedtls-1.3.16             -> mbedtls-1.3.16
 * [new tag]         mbedtls-1.3.17             -> mbedtls-1.3.17
 * [new tag]         mbedtls-1.3.18             -> mbedtls-1.3.18
 * [new tag]         mbedtls-1.3.19             -> mbedtls-1.3.19
 * [new tag]         mbedtls-1.3.19-rc1         -> mbedtls-1.3.19-rc1
 * [new tag]         mbedtls-1.4-dtls-preview   -> mbedtls-1.4-dtls-preview
 * [new tag]         mbedtls-2.0.0              -> mbedtls-2.0.0
 * [new tag]         mbedtls-2.1.0              -> mbedtls-2.1.0
 * [new tag]         mbedtls-2.1.1              -> mbedtls-2.1.1
 * [new tag]         mbedtls-2.1.2              -> mbedtls-2.1.2
 * [new tag]         mbedtls-2.1.3              -> mbedtls-2.1.3
 * [new tag]         mbedtls-2.1.4              -> mbedtls-2.1.4
 * [new tag]         mbedtls-2.1.5              -> mbedtls-2.1.5
 * [new tag]         mbedtls-2.1.6              -> mbedtls-2.1.6
 * [new tag]         mbedtls-2.1.7              -> mbedtls-2.1.7
 * [new tag]         mbedtls-2.1.7-rc1          -> mbedtls-2.1.7-rc1
 * [new tag]         mbedtls-2.2.0              -> mbedtls-2.2.0
 * [new tag]         mbedtls-2.2.1              -> mbedtls-2.2.1
 * [new tag]         mbedtls-2.3.0              -> mbedtls-2.3.0
 * [new tag]         mbedtls-2.4.0              -> mbedtls-2.4.0
 * [new tag]         mbedtls-2.4.1              -> mbedtls-2.4.1
 * [new tag]         mbedtls-2.4.2              -> mbedtls-2.4.2
 * [new tag]         mbedtls-2.4.2-rc1          -> mbedtls-2.4.2-rc1
 * [new tag]         polarssl-0.10.0            -> polarssl-0.10.0
 * [new tag]         polarssl-0.10.1            -> polarssl-0.10.1
 * [new tag]         polarssl-0.11.0            -> polarssl-0.11.0
 * [new tag]         polarssl-0.11.1            -> polarssl-0.11.1
 * [new tag]         polarssl-0.12.0            -> polarssl-0.12.0
 * [new tag]         polarssl-0.12.1            -> polarssl-0.12.1
 * [new tag]         polarssl-0.13.0            -> polarssl-0.13.0
 * [new tag]         polarssl-0.13.1            -> polarssl-0.13.1
 * [new tag]         polarssl-0.14.0            -> polarssl-0.14.0
 * [new tag]         polarssl-0.14.1            -> polarssl-0.14.1
 * [new tag]         polarssl-0.14.2            -> polarssl-0.14.2
 * [new tag]         polarssl-0.14.3            -> polarssl-0.14.3
 * [new tag]         polarssl-0.99-pre1         -> polarssl-0.99-pre1
 * [new tag]         polarssl-0.99-pre2         -> polarssl-0.99-pre2
 * [new tag]         polarssl-0.99-pre3         -> polarssl-0.99-pre3
 * [new tag]         polarssl-0.99-pre4         -> polarssl-0.99-pre4
 * [new tag]         polarssl-0.99-pre5         -> polarssl-0.99-pre5
 * [new tag]         polarssl-1.0.0             -> polarssl-1.0.0
 * [new tag]         polarssl-1.1.0             -> polarssl-1.1.0
 * [new tag]         polarssl-1.1.0-rc0         -> polarssl-1.1.0-rc0
 * [new tag]         polarssl-1.1.0-rc1         -> polarssl-1.1.0-rc1
 * [new tag]         polarssl-1.1.1             -> polarssl-1.1.1
 * [new tag]         polarssl-1.1.2             -> polarssl-1.1.2
 * [new tag]         polarssl-1.1.3             -> polarssl-1.1.3
 * [new tag]         polarssl-1.1.4             -> polarssl-1.1.4
 * [new tag]         polarssl-1.1.5             -> polarssl-1.1.5
 * [new tag]         polarssl-1.1.6             -> polarssl-1.1.6
 * [new tag]         polarssl-1.1.7             -> polarssl-1.1.7
 * [new tag]         polarssl-1.1.8             -> polarssl-1.1.8
 * [new tag]         polarssl-1.2.0             -> polarssl-1.2.0
 * [new tag]         polarssl-1.2.0-pre1        -> polarssl-1.2.0-pre1
```

```
 * [new tag]         polarssl-1.2.1             -> polarssl-1.2.1
 * [new tag]         polarssl-1.2.10            -> polarssl-1.2.10
 * [new tag]         polarssl-1.2.11            -> polarssl-1.2.11
 * [new tag]         polarssl-1.2.12            -> polarssl-1.2.12
 * [new tag]         polarssl-1.2.13            -> polarssl-1.2.13
 * [new tag]         polarssl-1.2.14            -> polarssl-1.2.14
 * [new tag]         polarssl-1.2.15            -> polarssl-1.2.15
 * [new tag]         polarssl-1.2.16            -> polarssl-1.2.16
 * [new tag]         polarssl-1.2.17            -> polarssl-1.2.17
 * [new tag]         polarssl-1.2.18            -> polarssl-1.2.18
 * [new tag]         polarssl-1.2.19            -> polarssl-1.2.19
 * [new tag]         polarssl-1.2.2             -> polarssl-1.2.2
 * [new tag]         polarssl-1.2.3             -> polarssl-1.2.3
 * [new tag]         polarssl-1.2.4             -> polarssl-1.2.4
 * [new tag]         polarssl-1.2.5             -> polarssl-1.2.5
 * [new tag]         polarssl-1.2.6             -> polarssl-1.2.6
 * [new tag]         polarssl-1.2.7             -> polarssl-1.2.7
 * [new tag]         polarssl-1.2.8             -> polarssl-1.2.8
 * [new tag]         polarssl-1.2.9             -> polarssl-1.2.9
 * [new tag]         polarssl-1.3-alpha1        -> polarssl-1.3-alpha1
 * [new tag]         polarssl-1.3.0             -> polarssl-1.3.0
 * [new tag]         polarssl-1.3.0-rc0         -> polarssl-1.3.0-rc0
 * [new tag]         polarssl-1.3.1             -> polarssl-1.3.1
 * [new tag]         polarssl-1.3.2             -> polarssl-1.3.2
 * [new tag]         polarssl-1.3.3             -> polarssl-1.3.3
 * [new tag]         polarssl-1.3.4             -> polarssl-1.3.4
 * [new tag]         polarssl-1.3.5             -> polarssl-1.3.5
 * [new tag]         polarssl-1.3.6             -> polarssl-1.3.6
 * [new tag]         polarssl-1.3.7             -> polarssl-1.3.7
 * [new tag]         polarssl-1.3.8             -> polarssl-1.3.8
 * [new tag]         polarssl-1.3.9             -> polarssl-1.3.9
 * [new tag]         yotta-2.2.1                -> yotta-2.2.1
 * [new tag]         yotta-2.2.2                -> yotta-2.2.2
 * [new tag]         yotta-2.2.3                -> yotta-2.2.3
 * [new tag]         yotta-2.3.0                -> yotta-2.3.0
 * [new tag]         yotta-2.3.1                -> yotta-2.3.1
 * [new tag]         yotta-2.3.2                -> yotta-2.3.2
HEAD is now at f51f6ace Apply MCUXpresso SDK 2.16.000 changes.
HEAD is now at f51f6ace Apply MCUXpresso SDK 2.16.000 changes.
=== updating wifi_nxp (middleware/wifi_nxp):
--- wifi_nxp: initializing
Initialized empty Git repository in /home/test/projects/tb9128-otcli/2FR-ot-
cli/ot-nxp/third_party/github_sdk/middleware/wifi_nxp/.git/
--- wifi_nxp: fetching, need revision MCUX_2.16.000
remote: Enumerating objects: 2109, done.
remote: Counting objects: 100% (1903/1903), done.
remote: Compressing objects: 100% (733/733), done.
remote: Total 2109 (delta 1355), reused 1499 (delta 1144), pack-reused 206
(from 1)
Receiving objects: 100% (2109/2109), 49.77 MiB | 5.72 MiB/s, done.
Resolving deltas: 100% (1425/1425), done.
From https://github.com/NXP/wifi_nxp
 * tag               MCUX_2.16.000              -> FETCH_HEAD
 * [new tag]         MCUX_2.12.0                -> MCUX_2.12.0
 * [new tag]         MCUX_2.13.0                -> MCUX_2.13.0
 * [new tag]         MCUX_2.13.1                -> MCUX_2.13.1
 * [new tag]         MCUX_2.13.3_RW610          -> MCUX_2.13.3_RW610
 * [new tag]         MCUX_2.14.0                -> MCUX_2.14.0
 * [new tag]         MCUX_2.14.0_EVKCMIMXRT1060 -> MCUX_2.14.0_EVKCMIMXRT1060
 * [new tag]         MCUX_2.14.0_MCXNx4x        -> MCUX_2.14.0_MCXNx4x
 * [new tag]         MCUX_2.14.0_UPDATE_ENHC1   -> MCUX_2.14.0_UPDATE_ENHC1
```

```
 * [new tag]         MCUX_2.14.0_UpdRev1        -> MCUX_2.14.0_UpdRev1
 * [new tag]         MCUX_2.15.000              -> MCUX_2.15.000
 * [new tag]         MCUX_2.15.000_RW610_K32W1  -> MCUX_2.15.000_RW610_K32W1
 * [new tag]         MCUX_2.15.000_RW610_RC1    -> MCUX_2.15.000_RW610_RC1
 * [new tag]         MCUX_2.15.001_RT1180EVK    -> MCUX_2.15.001_RT1180EVK
 * [new tag]         MCUX_2.15.100              -> MCUX_2.15.100
 * [new tag]         MCUX_2.16.000              -> MCUX_2.16.000
 * [new tag]         MCUX_2.16.100              -> MCUX_2.16.100
 * [new tag]         MCUX_2.16.100_QP1          -> MCUX_2.16.100_QP1
 * [new tag]         MCUX_2.16.100_RC1          -> MCUX_2.16.100_RC1
 * [new tag]         MCUX_2.9.4_MW320           -> MCUX_2.9.4_MW320
HEAD is now at 738269c Pull request #41: Add files for
release/2.16.000_major_rfp_gh_review from CI Generation
HEAD is now at 738269c Pull request #41: Add files for
release/2.16.000_major_rfp_gh_review from CI Generation
=== updating lwip (middleware/lwip):
--- lwip: initializing
Initialized empty Git repository in /home/test/projects/tb9128-otcli/2FR-ot-
cli/ot-nxp/third_party/github_sdk/middleware/lwip/.git/
--- lwip: fetching, need revision MCUX_2.16.000
remote: Enumerating objects: 57124, done.
remote: Counting objects: 100% (1703/1703), done.
remote: Compressing objects: 100% (661/661), done.
remote: Total 57124 (delta 1121), reused 1341 (delta 1005), pack-reused 55421
(from 1)
Receiving objects: 100% (57124/57124), 13.23 MiB | 7.00 MiB/s, done.
Resolving deltas: 100% (42793/42793), done.
From https://github.com/nxp-mcuxpresso/lwip
 * tag               MCUX_2.16.000                -> FETCH_HEAD
 * [new tag]         MCUX_2.12.0                  -> MCUX_2.12.0
 * [new tag]         MCUX_2.13.0                  -> MCUX_2.13.0
 * [new tag]         MCUX_2.13.1                  -> MCUX_2.13.1
 * [new tag]         MCUX_2.13.2_RW610_RFP1       -> MCUX_2.13.2_RW610_RFP1
 * [new tag]         MCUX_2.13.3_RW610            -> MCUX_2.13.3_RW610
 * [new tag]         MCUX_2.13.3_RW610_RFP2_RC2   ->
MCUX_2.13.3_RW610_RFP2_RC2
 * [new tag]         MCUX_2.14.0                  -> MCUX_2.14.0
 * [new tag]         MCUX_2.14.0_EVKCMIMXRT1060   ->
MCUX_2.14.0_EVKCMIMXRT1060
 * [new tag]         MCUX_2.14.0_MCXNx4x          -> MCUX_2.14.0_MCXNx4x
 * [new tag]         MCUX_2.14.0_UpdRev1          -> MCUX_2.14.0_UpdRev1
 * [new tag]         MCUX_2.15.000                -> MCUX_2.15.000
 * [new tag]         MCUX_2.15.000_RW610_K32W1    ->
MCUX_2.15.000_RW610_K32W1
 * [new tag]         MCUX_2.15.000_RW610_RC1      -> MCUX_2.15.000_RW610_RC1
 * [new tag]         MCUX_2.15.001_RT1180EVK      -> MCUX_2.15.001_RT1180EVK
 * [new tag]         MCUX_2.15.100                -> MCUX_2.15.100
 * [new tag]         MCUX_2.16.000                -> MCUX_2.16.000
 * [new tag]         MCUX_2.16.100                -> MCUX_2.16.100
 * [new tag]         MCUX_2.16.100_RC1            -> MCUX_2.16.100_RC1
 * [new tag]         POST_PACK_REMOVE             -> POST_PACK_REMOVE
 * [new tag]         POST_REMOVE_ARCH             -> POST_REMOVE_ARCH
 * [new tag]         PRE_ARCH_MOVE                -> PRE_ARCH_MOVE
 * [new tag]         PRE_PACK_REMOVE              -> PRE_PACK_REMOVE
 * [new tag]         PRE_leon-dhcp                -> PRE_leon-dhcp
 * [new tag]         Real-Time-Edge-v2.7-202312   -> Real-Time-Edge-v2.7-
202312
 * [new tag]         Real-Time-Edge-v2.7-RC       -> Real-Time-Edge-v2.7-RC
 * [new tag]         Real-Time-Edge-v2.8-202403   -> Real-Time-Edge-v2.8-
202403
 * [new tag]         Real-Time-Edge-v2.8-RC1      -> Real-Time-Edge-v2.8-RC1
```

```
 * [new tag]         Real-Time-Edge-v2.9-202407     -> Real-Time-Edge-v2.9-
202407
 * [new tag]         Real-Time-Edge-v2.9-RC1        -> Real-Time-Edge-v2.9-RC1
 * [new tag]         STABLE-0_6_4                   -> STABLE-0_6_4
 * [new tag]         STABLE-0_6_5                   -> STABLE-0_6_5
 * [new tag]         STABLE-0_7_0                   -> STABLE-0_7_0
 * [new tag]         STABLE-0_7_1                   -> STABLE-0_7_1
 * [new tag]         STABLE-0_7_2                   -> STABLE-0_7_2
 * [new tag]         STABLE-1_0_0                   -> STABLE-1_0_0
 * [new tag]         STABLE-1_1_0                   -> STABLE-1_1_0
 * [new tag]         STABLE-1_1_0-RC1               -> STABLE-1_1_0-RC1
 * [new tag]         STABLE-1_1_1                   -> STABLE-1_1_1
 * [new tag]         STABLE-1_3_0                   -> STABLE-1_3_0
 * [new tag]         STABLE-1_3_0-RC1               -> STABLE-1_3_0-RC1
 * [new tag]         STABLE-1_3_1                   -> STABLE-1_3_1
 * [new tag]         STABLE-1_3_1-RC1               -> STABLE-1_3_1-RC1
 * [new tag]         STABLE-1_3_1-RC2               -> STABLE-1_3_1-RC2
 * [new tag]         STABLE-1_3_1-RC3               -> STABLE-1_3_1-RC3
 * [new tag]         STABLE-1_3_2                   -> STABLE-1_3_2
 * [new tag]         STABLE-1_3_2-RC1               -> STABLE-1_3_2-RC1
 * [new tag]         STABLE-1_4_0                   -> STABLE-1_4_0
 * [new tag]         STABLE-1_4_0-RC1               -> STABLE-1_4_0-RC1
 * [new tag]         STABLE-1_4_0-RC2               -> STABLE-1_4_0-RC2
 * [new tag]         STABLE-1_4_1                   -> STABLE-1_4_1
 * [new tag]         STABLE-1_4_1-RC1               -> STABLE-1_4_1-RC1
 * [new tag]         STABLE-2_0_0_RC1               -> STABLE-2_0_0_RC1
 * [new tag]         STABLE-2_0_0_RC2               -> STABLE-2_0_0_RC2
 * [new tag]         STABLE-2_0_0_RELEASE           -> STABLE-2_0_0_RELEASE
 * [new tag]         STABLE-2_0_1                   -> STABLE-2_0_1
 * [new tag]         STABLE-2_0_1_RELEASE           -> STABLE-2_0_1_RELEASE
 * [new tag]         STABLE-2_0_2_RELEASE           -> STABLE-2_0_2_RELEASE
 * [new tag]         STABLE-2_0_2_RELEASE_VER       -> STABLE-2_0_2_RELEASE_VER
 * [new tag]         STABLE-2_0_3_RELEASE           -> STABLE-2_0_3_RELEASE
 * [new tag]         STABLE-2_1_0_RC1               -> STABLE-2_1_0_RC1
 * [new tag]         STABLE-2_1_0_RELEASE           -> STABLE-2_1_0_RELEASE
 * [new tag]         STABLE-2_1_1_RELEASE           -> STABLE-2_1_1_RELEASE
 * [new tag]         STABLE-2_1_2_RELEASE           -> STABLE-2_1_2_RELEASE
 * [new tag]         STABLE-2_1_3_RC1               -> STABLE-2_1_3_RC1
 * [new tag]         STABLE-2_1_3_RELEASE           -> STABLE-2_1_3_RELEASE
 * [new tag]         STABLE-2_2_0_RC1               -> STABLE-2_2_0_RC1
 * [new tag]         STABLE-2_2_0_RELEASE           -> STABLE-2_2_0_RELEASE
 * [new tag]         cvs-repository-moved-to-git    -> cvs-repository-moved-to-
git
 * [new tag]         master_at_STABLE-2_0_0         -> master_at_STABLE-2_0_0
 * [new tag]         merged_from_DEVEL_to_main      ->
merged_from_DEVEL_to_main
 * [new tag]         merged_from_main_to_DEVEL      ->
merged_from_main_to_DEVEL
 * [new tag]         merged_from_main_to_STABLE     ->
merged_from_main_to_STABLE
 * [new tag]         merged_from_main_to_STABLE-0_7 ->
merged_from_main_to_STABLE-0_7
 * [new tag]         start                          -> start
HEAD is now at 8bcc5523 NXP lwIP modifications for SDK version 2.16.000
HEAD is now at 8bcc5523 NXP lwIP modifications for SDK version 2.16.000
=== updating littlefs (middleware/littlefs):
--- littlefs: initializing
Initialized empty Git repository in /home/test/projects/tb9128-otcli/2FR-ot-
cli/ot-nxp/third_party/github_sdk/middleware/littlefs/.git/
--- littlefs: fetching, need revision MCUX_2.16.000
remote: Enumerating objects: 2895, done.
```

```
remote: Counting objects: 100% (955/955), done.
remote: Compressing objects: 100% (61/61), done.
remote: Total 2895 (delta 912), reused 901 (delta 894), pack-reused 1940 (from
1)
Receiving objects: 100% (2895/2895), 1.51 MiB | 5.53 MiB/s, done.
Resolving deltas: 100% (2037/2037), done.
From https://github.com/nxp-mcuxpresso/littlefs
 * tag               MCUX_2.16.000              -> FETCH_HEAD
 * [new tag]         MCUX_2.12.0                -> MCUX_2.12.0
 * [new tag]         MCUX_2.13.0                -> MCUX_2.13.0
 * [new tag]         MCUX_2.13.1                -> MCUX_2.13.1
 * [new tag]         MCUX_2.13.3_RW610          -> MCUX_2.13.3_RW610
 * [new tag]         MCUX_2.14.0                -> MCUX_2.14.0
 * [new tag]         MCUX_2.14.0_EVKCMIMXRT1060 -> MCUX_2.14.0_EVKCMIMXRT1060
 * [new tag]         MCUX_2.14.0_LPC55S36       -> MCUX_2.14.0_LPC55S36
 * [new tag]         MCUX_2.14.0_MCXN23x        -> MCUX_2.14.0_MCXN23x
 * [new tag]         MCUX_2.14.0_MCXNx4x        -> MCUX_2.14.0_MCXNx4x
 * [new tag]         MCUX_2.14.0_UpdRev1        -> MCUX_2.14.0_UpdRev1
 * [new tag]         MCUX_2.15.000              -> MCUX_2.15.000
 * [new tag]         MCUX_2.15.000_RW610_K32W1  -> MCUX_2.15.000_RW610_K32W1
 * [new tag]         MCUX_2.15.000_RW610_RC1    -> MCUX_2.15.000_RW610_RC1
 * [new tag]         MCUX_2.15.001_RT1180EVK    -> MCUX_2.15.001_RT1180EVK
 * [new tag]         MCUX_2.15.0_MCXA15X        -> MCUX_2.15.0_MCXA15X
 * [new tag]         MCUX_2.15.100              -> MCUX_2.15.100
 * [new tag]         MCUX_2.16.000              -> MCUX_2.16.000
 * [new tag]         MCUX_2.16.100              -> MCUX_2.16.100
 * [new tag]         v1.0                       -> v1.0
 * [new tag]         v1.1                       -> v1.1
 * [new tag]         v1.2                       -> v1.2
 * [new tag]         v1.3                       -> v1.3
 * [new tag]         v1.4                       -> v1.4
 * [new tag]         v1.5                       -> v1.5
 * [new tag]         v1.6.0                     -> v1.6.0
 * [new tag]         v1.6.1                     -> v1.6.1
 * [new tag]         v1.6.2                     -> v1.6.2
 * [new tag]         v1.7.0                     -> v1.7.0
 * [new tag]         v1.7.1                     -> v1.7.1
 * [new tag]         v1.7.2                     -> v1.7.2
 * [new tag]         v2.0-alpha                 -> v2.0-alpha
 * [new tag]         v2.0.0                     -> v2.0.0
 * [new tag]         v2.0.1                     -> v2.0.1
 * [new tag]         v2.0.2                     -> v2.0.2
 * [new tag]         v2.0.3                     -> v2.0.3
 * [new tag]         v2.0.4                     -> v2.0.4
 * [new tag]         v2.0.5                     -> v2.0.5
 * [new tag]         v2.1.0                     -> v2.1.0
 * [new tag]         v2.1.1                     -> v2.1.1
 * [new tag]         v2.1.2                     -> v2.1.2
 * [new tag]         v2.1.3                     -> v2.1.3
 * [new tag]         v2.1.4                     -> v2.1.4
 * [new tag]         v2.2.0                     -> v2.2.0
 * [new tag]         v2.2.1                     -> v2.2.1
 * [new tag]         v2.3.0                     -> v2.3.0
 * [new tag]         v2.4.0                     -> v2.4.0
 * [new tag]         v2.4.1                     -> v2.4.1
 * [new tag]         v2.4.2                     -> v2.4.2
 * [new tag]         v2.5.0                     -> v2.5.0
HEAD is now at 37158b2 Pull request #34: Add files for
release/2.16.000_major_rfp_gh_review from CI Generation
HEAD is now at 37158b2 Pull request #34: Add files for
release/2.16.000_major_rfp_gh_review from CI Generation
```

```
=== updating CMSIS_5 (core/CMSIS):
--- CMSIS_5: initializing
Initialized empty Git repository in /home/test/projects/tb9128-otcli/2FR-ot-
cli/ot-nxp/third_party/github_sdk/core/CMSIS/.git/
--- CMSIS_5: fetching, need revision MCUX_2.16.000
remote: Enumerating objects: 84559, done.
remote: Counting objects: 100% (5438/5438), done.
remote: Compressing objects: 100% (1090/1090), done.
remote: Total 84559 (delta 4323), reused 5329 (delta 4279), pack-reused 79121
(from 1)
Receiving objects: 100% (84559/84559), 287.91 MiB | 7.24 MiB/s, done.
Resolving deltas: 100% (61682/61682), done.
From https://github.com/nxp-mcuxpresso/CMSIS_5
 * tag               MCUX_2.16.000              -> FETCH_HEAD
 * [new tag]         5.0.0                      -> 5.0.0
 * [new tag]         5.0.0-Beta4                -> 5.0.0-Beta4
 * [new tag]         5.0.1                      -> 5.0.1
 * [new tag]         5.1.0                      -> 5.1.0
 * [new tag]         5.1.1                      -> 5.1.1
 * [new tag]         5.2.0                      -> 5.2.0
 * [new tag]         5.2.1-dev3                 -> 5.2.1-dev3
 * [new tag]         5.3.0                      -> 5.3.0
 * [new tag]         5.4.0                      -> 5.4.0
 * [new tag]         5.5.0                      -> 5.5.0
 * [new tag]         5.5.1                      -> 5.5.1
 * [new tag]         5.6.0                      -> 5.6.0
 * [new tag]         5.7.0                      -> 5.7.0
 * [new tag]         5.8.0                      -> 5.8.0
 * [new tag]         5.8.0-dev                  -> 5.8.0-dev
 * [new tag]         5.8.0-rc                   -> 5.8.0-rc
 * [new tag]         5.8.1-dev                  -> 5.8.1-dev
 * [new tag]         5.9.0                      -> 5.9.0
 * [new tag]         5.9.0-dev                  -> 5.9.0-dev
 * [new tag]         5.9.0-rc                   -> 5.9.0-rc
 * [new tag]         5.9.1-dev                  -> 5.9.1-dev
 * [new tag]         MCU-BOOT_2.0.0_D1          -> MCU-BOOT_2.0.0_D1
 * [new tag]         MCUX_2.13.0                -> MCUX_2.13.0
 * [new tag]         MCUX_2.13.1_aarch64_0.1    -> MCUX_2.13.1_aarch64_0.1
 * [new tag]         MCUX_2.13.1_aarch64_0.2    -> MCUX_2.13.1_aarch64_0.2
 * [new tag]         MCUX_2.14.0                -> MCUX_2.14.0
 * [new tag]         MCUX_2.14.0_EVKCMIMXRT1060 -> MCUX_2.14.0_EVKCMIMXRT1060
 * [new tag]         MCUX_2.14.0_aarch64_0.1    -> MCUX_2.14.0_aarch64_0.1
 * [new tag]         MCUX_2.15.000              -> MCUX_2.15.000
 * [new tag]         MCUX_2.16.000              -> MCUX_2.16.000
 * [new tag]         MCUX_2.16.000_RT700        -> MCUX_2.16.000_RT700
 * [new tag]         NN/2.0.0                   -> NN/2.0.0
 * [new tag]         RELEASE_KIBBLE_2.0d1       -> RELEASE_KIBBLE_2.0d1
 * [new tag]         RELEASE_KIBBLE_2.0rc1      -> RELEASE_KIBBLE_2.0rc1
 * [new tag]         Real-Time-Edge-v2.6-202307 -> Real-Time-Edge-v2.6-202307
 * [new tag]         Real-Time-Edge-v2.6-RC1    -> Real-Time-Edge-v2.6-RC1
 * [new tag]         Real-Time-Edge-v2.7-202312 -> Real-Time-Edge-v2.7-202312
 * [new tag]         Real-Time-Edge-v2.7-RC     -> Real-Time-Edge-v2.7-RC
 * [new tag]         Real-Time-Edge-v2.8-202403 -> Real-Time-Edge-v2.8-202403
 * [new tag]         Real-Time-Edge-v2.8-RC1    -> Real-Time-Edge-v2.8-RC1
 * [new tag]         Real-Time-Edge-v2.9-202407 -> Real-Time-Edge-v2.9-202407
 * [new tag]         Real-Time-Edge-v2.9-RC1    -> Real-Time-Edge-v2.9-RC1
HEAD is now at ace291fb5 MCUXpresso SDK 2.16.000 release RC2
HEAD is now at ace291fb5 MCUXpresso SDK 2.16.000 release RC2
=== updating wpa_supplicant-rtos (middleware/wireless/wpa_supplicant-rtos):
--- wpa_supplicant-rtos: initializing
```

```
Initialized empty Git repository in /home/test/projects/tb9128-otcli/2FR-ot-
cli/ot-nxp/third_party/github_sdk/middleware/wireless/wpa_supplicant-rtos/.git/
--- wpa_supplicant-rtos: fetching, need revision MCUX_2.16.000
remote: Enumerating objects: 1011, done.
remote: Counting objects: 100% (1011/1011), done.
remote: Compressing objects: 100% (574/574), done.
remote: Total 1011 (delta 471), reused 956 (delta 416), pack-reused 0 (from 0)
Receiving objects: 100% (1011/1011), 2.45 MiB | 6.59 MiB/s, done.
Resolving deltas: 100% (471/471), done.
From https://github.com/nxp-mcuxpresso/wpa_supplicant-rtos
 * tag               MCUX_2.16.000             -> FETCH_HEAD
 * [new tag]         MCUX_2.13.3_RW610         -> MCUX_2.13.3_RW610
 * [new tag]         MCUX_2.14.0               -> MCUX_2.14.0
 * [new tag]         MCUX_2.14.0_UPDATE_ENHC1  -> MCUX_2.14.0_UPDATE_ENHC1
 * [new tag]         MCUX_2.14.0_UpdRev1       -> MCUX_2.14.0_UpdRev1
 * [new tag]         MCUX_2.15.000             -> MCUX_2.15.000
 * [new tag]         MCUX_2.15.000_RW610_K32W1 -> MCUX_2.15.000_RW610_K32W1
 * [new tag]         MCUX_2.15.000_RW610_RC1   -> MCUX_2.15.000_RW610_RC1
 * [new tag]         MCUX_2.15.001_RT1180EVK   -> MCUX_2.15.001_RT1180EVK
 * [new tag]         MCUX_2.15.100             -> MCUX_2.15.100
 * [new tag]         MCUX_2.16.000             -> MCUX_2.16.000
 * [new tag]         MCUX_2.16.100             -> MCUX_2.16.100
 * [new tag]         MCUX_2.16.100_RC1         -> MCUX_2.16.100_RC1
HEAD is now at e7ea674 Pull request #13: Add files for
release/2.16.000_major_rfp_gh_review from CI Generation
HEAD is now at e7ea674 Pull request #13: Add files for
release/2.16.000_major_rfp_gh_review from CI Generation
=== updating mcux-sdk-middleware-bluetooth-controller
(middleware/wireless/ble_controller):
--- mcux-sdk-middleware-bluetooth-controller: initializing
Initialized empty Git repository in /home/test/projects/tb9128-otcli/2FR-ot-
cli/ot-nxp/third_party/github_sdk/middleware/wireless/ble_controller/.git/
--- mcux-sdk-middleware-bluetooth-controller: fetching, need revision
MCUX_2.16.000
remote: Enumerating objects: 112, done.
remote: Counting objects: 100% (112/112), done.
remote: Compressing objects: 100% (73/73), done.
remote: Total 112 (delta 42), reused 105 (delta 35), pack-reused 0 (from 0)
Receiving objects: 100% (112/112), 4.14 MiB | 8.74 MiB/s, done.
Resolving deltas: 100% (42/42), done.
From https://github.com/NXP/mcux-sdk-middleware-bluetooth-controller
 * tag               MCUX_2.16.000             -> FETCH_HEAD
 * [new tag]         MCUX_2.15.000_RW610_K32W1 -> MCUX_2.15.000_RW610_K32W1
 * [new tag]         MCUX_2.16.000             -> MCUX_2.16.000
 * [new tag]         MCUX_2.16.100             -> MCUX_2.16.100
 * [new tag]         MCUX_2.16.100_RC1         -> MCUX_2.16.100_RC1
 * [new tag]         MCUX_2.6.14_K32W0         -> MCUX_2.6.14_K32W0
 * [new tag]         MCUX_2.6.15_K32W0         -> MCUX_2.6.15_K32W0
HEAD is now at f75dee7 1.9.14.0 delivery for MCUXpresso SDK 2.16.000 release
HEAD is now at f75dee7 1.9.14.0 delivery for MCUXpresso SDK 2.16.000 release
=== updating mcux-sdk-middleware-bluetooth-host
(middleware/wireless/bluetooth):
--- mcux-sdk-middleware-bluetooth-host: initializing
Initialized empty Git repository in /home/test/projects/tb9128-otcli/2FR-ot-
cli/ot-nxp/third_party/github_sdk/middleware/wireless/bluetooth/.git/
--- mcux-sdk-middleware-bluetooth-host: fetching, need revision MCUX_2.16.000
remote: Enumerating objects: 600, done.
remote: Counting objects: 100% (600/600), done.
remote: Compressing objects: 100% (302/302), done.
remote: Total 600 (delta 370), reused 517 (delta 287), pack-reused 0 (from 0)
Receiving objects: 100% (600/600), 17.16 MiB | 13.14 MiB/s, done.
```

```
Resolving deltas: 100% (370/370), done.
From https://github.com/NXP/mcux-sdk-middleware-bluetooth-host
 * tag               MCUX_2.16.000             -> FETCH_HEAD
 * [new tag]         MCUX_2.15.000_RW610_K32W1 -> MCUX_2.15.000_RW610_K32W1
 * [new tag]         MCUX_2.16.000             -> MCUX_2.16.000
 * [new tag]         MCUX_2.16.100             -> MCUX_2.16.100
 * [new tag]         MCUX_2.16.100_RC1         -> MCUX_2.16.100_RC1
 * [new tag]         MCUX_2.6.14_K32W0         -> MCUX_2.6.14_K32W0
HEAD is now at e05fc5e Add files generated at mcu-sdk-2.0 6d3c2d71b6
HEAD is now at e05fc5e Add files generated at mcu-sdk-2.0 6d3c2d71b6
=== updating mcux-sdk-middleware-ieee_802.15.4 (middleware/wireless/ieee-
802.15.4):
--- mcux-sdk-middleware-ieee_802.15.4: initializing
Initialized empty Git repository in /home/test/projects/tb9128-otcli/2FR-ot-
cli/ot-nxp/third_party/github_sdk/middleware/wireless/ieee-802.15.4/.git/
--- mcux-sdk-middleware-ieee_802.15.4: fetching, need revision MCUX_2.16.000
remote: Enumerating objects: 313, done.
remote: Counting objects: 100% (313/313), done.
remote: Compressing objects: 100% (192/192), done.
remote: Total 313 (delta 149), reused 271 (delta 107), pack-reused 0 (from 0)
Receiving objects: 100% (313/313), 4.61 MiB | 9.54 MiB/s, done.
Resolving deltas: 100% (149/149), done.
From https://github.com/NXP/mcux-sdk-middleware-ieee_802.15.4
 * tag               MCUX_2.16.000             -> FETCH_HEAD
 * [new tag]         MCUX_2.15.000_RW610_K32W1 -> MCUX_2.15.000_RW610_K32W1
 * [new tag]         MCUX_2.16.000             -> MCUX_2.16.000
 * [new tag]         MCUX_2.16.100             -> MCUX_2.16.100
 * [new tag]         MCUX_2.6.14_K32W0         -> MCUX_2.6.14_K32W0
 * [new tag]         MCUX_2.6.15_K32W0         -> MCUX_2.6.15_K32W0
HEAD is now at 9e9405b Pull request #8: Add files for
release/2.16.000_major_rfp_gh_review from CI Generation
HEAD is now at 9e9405b Pull request #8: Add files for
release/2.16.000_major_rfp_gh_review from CI Generation
=== updating mcux-sdk-middleware-zigbee (middleware/wireless/zigbee):
--- mcux-sdk-middleware-zigbee: initializing
Initialized empty Git repository in /home/test/projects/tb9128-otcli/2FR-ot-
cli/ot-nxp/third_party/github_sdk/middleware/wireless/zigbee/.git/
--- mcux-sdk-middleware-zigbee: fetching, need revision MCUX_2.16.000
remote: Enumerating objects: 3626, done.
remote: Counting objects: 100% (233/233), done.
remote: Compressing objects: 100% (168/168), done.
remote: Total 3626 (delta 110), reused 101 (delta 53), pack-reused 3393 (from
1)
Receiving objects: 100% (3626/3626), 68.08 MiB | 12.53 MiB/s, done.
Resolving deltas: 100% (2127/2127), done.
From https://github.com/nxp-mcuxpresso/mcux-sdk-middleware-zigbee
 * tag               MCUX_2.16.000             -> FETCH_HEAD
 * [new tag]         MCUX_2.15.000_RW610_K32W1 -> MCUX_2.15.000_RW610_K32W1
 * [new tag]         MCUX_2.16.000             -> MCUX_2.16.000
 * [new tag]         MCUX_2.16.100             -> MCUX_2.16.100
 * [new tag]         MCUX_2.16.100_RC1         -> MCUX_2.16.100_RC1
 * [new tag]         MCUX_2.6.14_K32W0         -> MCUX_2.6.14_K32W0
 * [new tag]         MCUX_2.6.15_K32W0         -> MCUX_2.6.15_K32W0
Updating files: 100% (1839/1839), done.
HEAD is now at 3ca9a32 Pull request #6: Add files for
release/2.16.000_major_rfp_gh_review from CI Generation
HEAD is now at 3ca9a32 Pull request #6: Add files for
release/2.16.000_major_rfp_gh_review from CI Generation
=== updating mcux-secure-subsystem (middleware/secure-subsystem):
--- mcux-secure-subsystem: initializing
```

```
Initialized empty Git repository in /home/test/projects/tb9128-otcli/2FR-ot-
cli/ot-nxp/third_party/github_sdk/middleware/secure-subsystem/.git/
--- mcux-secure-subsystem: fetching, need revision MCUX_2.16.000
remote: Enumerating objects: 128, done.
remote: Counting objects: 100% (128/128), done.
remote: Compressing objects: 100% (83/83), done.
remote: Total 128 (delta 51), reused 115 (delta 38), pack-reused 0 (from 0)
Receiving objects: 100% (128/128), 110.22 KiB | 2.04 MiB/s, done.
Resolving deltas: 100% (51/51), done.
From https://github.com/nxp-mcuxpresso/mcux-secure-subsystem
 * tag               MCUX_2.16.000             -> FETCH_HEAD
 * [new tag]         MCUX_2.15.000_RW610_K32W1 -> MCUX_2.15.000_RW610_K32W1
 * [new tag]         MCUX_2.16.000             -> MCUX_2.16.000
 * [new tag]         MCUX_2.16.100             -> MCUX_2.16.100
HEAD is now at 24e5dcd Apply MCUXpresso SDK 2.16.000 changes.
HEAD is now at 24e5dcd Apply MCUXpresso SDK 2.16.000 changes.
ot-nxp/third_party/github_sdk$
```

15 Appendix B: Compile log of OT CLI Application

Given below is the build output as described in Section 7.4.3.

```
ot-nxp$  ./script/build_rw612 ot_cli
+ OT_CMAKE_NINJA_TARGET=
++ pwd
+ readonly OT_SRCDIR=/home/test/projects/tb9128-otcli/2FR-ot-cli/ot-nxp
+ OT_SRCDIR=/home/test/projects/tb9128-otcli/2FR-ot-cli/ot-nxp
+ readonly OT_BR_RTOS_CONFIG_PATH=boards/rw612/freertos/br
+ OT_BR_RTOS_CONFIG_PATH=boards/rw612/freertos/br
+ OT_OPTIONS=("-DCMAKE_TOOLCHAIN_FILE=cmake/toolchain/arm-none-eabi.cmake" "-
DCMAKE_EXPORT_COMPILE_COMMANDS=1" "-DCMAKE_BUILD_TYPE=MinSizeRel" "-
DOT_NXP_PLATFORM=rw612")
+ readonly OT_OPTIONS
+ OT_OPTIONS_BR_WIFI=("-DOT_APP_BR_FREERTOS=ON" "-DOT_NXP_LWIP_WIFI=ON" "-
DOT_NXP_LWIP_ETH=OFF" "-DOT_APP_CLI_FREERTOS=OFF" "-
DFREERTOS_CONFIG_FILE_DIRECTORY='${OT_SRCDIR}/${OT_BR_RTOS_CONFIG_PATH}'")
+ readonly OT_OPTIONS_BR_WIFI
+ OT_OPTIONS_BR_ETH=("-DOT_APP_BR_FREERTOS=ON" "-DOT_NXP_LWIP_WIFI=OFF" "-
DOT_NXP_LWIP_ETH=ON" "-DOT_APP_CLI_FREERTOS=OFF" "-
DFREERTOS_CONFIG_FILE_DIRECTORY='${OT_SRCDIR}/${OT_BR_RTOS_CONFIG_PATH}'" "-
DA2_ETH_REWORK=OFF")
+ readonly OT_OPTIONS_BR_ETH
+ main ot_cli
+ '[' -z '' ']'
+ export NXP_RW612_SDK_ROOT=/home/test/projects/tb9128-otcli/2FR-ot-cli/ot-
nxp/third_party/github_sdk/
+ NXP_RW612_SDK_ROOT=/home/test/projects/tb9128-otcli/2FR-ot-cli/ot-
nxp/third_party/github_sdk/
+ echo 'NXP_RW612_SDK_ROOT set to ' /home/test/projects/tb9128-otcli/2FR-ot-
cli/ot-nxp/third_party/github_sdk/
NXP_RW612_SDK_ROOT set to  /home/test/projects/tb9128-otcli/2FR-ot-cli/ot-
nxp/third_party/github_sdk/
+ '[' 1 == 0 ']'
+ create_directory_and_build ot_cli
+ '[' ot_cli == all ']'
+ '[' ot_cli == ot_br_wifi ']'
+ '[' ot_cli == ot_br_eth ']'
+ '[' ot_cli == ot_cli ']'
+ build_ot_cli ot_cli
```

```
+ options=("${OT_OPTIONS[@]}")
+ local options
+ options+=("-DNXP_SDK_ROOT=$NXP_RW612_SDK_ROOT")
+ options+=("${@:2}")
+ build rw612_ot_cli -DCMAKE_TOOLCHAIN_FILE=cmake/toolchain/arm-none-eabi.cmake
-DCMAKE_EXPORT_COMPILE_COMMANDS=1 -DCMAKE_BUILD_TYPE=MinSizeRel -
DOT_NXP_PLATFORM=rw612 -DNXP_SDK_ROOT=/home/test/projects/tb9128-otcli/2FR-ot-
cli/ot-nxp/third_party/github_sdk/
+ local builddir=build_rw612
+ mkdir -p build_rw612
+ cd build_rw612
+ mkdir -p rw612_ot_cli
+ cd rw612_ot_cli
+ cmake -GNinja rw612_ot_cli -DCMAKE_TOOLCHAIN_FILE=cmake/toolchain/arm-none-
eabi.cmake -DCMAKE_EXPORT_COMPILE_COMMANDS=1 -DCMAKE_BUILD_TYPE=MinSizeRel -
DOT_NXP_PLATFORM=rw612 -DNXP_SDK_ROOT=/home/test/projects/tb9128-otcli/2FR-ot-
cli/ot-nxp/third_party/github_sdk/ /home/test/projects/tb9128-otcli/2FR-ot-
cli/ot-nxp
CMake Warning:
  Ignoring extra path from command line:

   "/home/test/projects/tb9128-otcli/2FR-ot-cli/ot-
nxp/build_rw612/rw612_ot_cli/rw612_ot_cli"


-- ***ARMGCC_DIR is not set, assume toolchain bins are in your PATH***
-- CMAKE_C_COMPILER: arm-none-eabi-gcc
-- ***ARMGCC_DIR is not set, assume toolchain bins are in your PATH***
-- CMAKE_C_COMPILER: arm-none-eabi-gcc
-- The C compiler identification is GNU 9.3.1
-- The CXX compiler identification is GNU 9.3.1
-- The ASM compiler identification is GNU
-- Found assembler: /usr/local/bin/arm-none-eabi-gcc
-- Detecting C compiler ABI info
-- Detecting C compiler ABI info - done
-- Check for working C compiler: /usr/local/bin/arm-none-eabi-gcc - skipped
-- Detecting C compile features
-- Detecting C compile features - done
-- Detecting CXX compiler ABI info
-- Detecting CXX compiler ABI info - done
-- Check for working CXX compiler: /usr/local/bin/arm-none-eabi-g++ - skipped
-- Detecting CXX compile features
-- Detecting CXX compile features - done
-- OT_APP_CLI_FREERTOS=ON
-- OT_APP_CLI_FREERTOS_LOWPOWER=ON
-- OT_APP_CLI_FREERTOS_IPERF=OFF
-- OT_APP_BR_FREERTOS=OFF
-- OT_NXP_LWIP=ON
-- OT_NXP_LWIP_IPERF=ON
-- OT_NXP_LWIP_ETH=OFF
-- OT_NXP_LWIP_WIFI=OFF
-- OT_NXP_EXPORT_TO_BIN=ON
-- OT_NXP_EXPORT_TO_SREC=OFF
-- Setting default package version: a7519027c OT-NXP/0a3248f-dirty
-- Package Version: a7519027c OT-NXP/0a3248f-dirty
-- NXP Platform: rw612
-- OpenThread Source Directory: /home/test/projects/tb9128-otcli/2FR-ot-cli/ot-
nxp/openthread
-- OT_APP_CLI=OFF
-- OT_APP_NCP=OFF
-- OT_APP_RCP=OFF
```

```
-- OT_FTD=ON
-- OT_MTD=OFF
-- OT_RCP=OFF
-- - - - - - - - - - - - - - - - - -
-- OpenThread ON/OFF/Unspecified Configs
-- OT_15_4=""
-- OT_ANDROID_NDK=""
-- OT_ANYCAST_LOCATOR=""
-- OT_ASSERT=""
-- OT_BACKBONE_ROUTER=""
-- OT_BACKBONE_ROUTER_DUA_NDPROXYING=""
-- OT_BACKBONE_ROUTER_MULTICAST_ROUTING=""
-- OT_BLE_TCAT=""
-- OT_BORDER_AGENT=""
-- OT_BORDER_AGENT_EPSKC=""
-- OT_BORDER_AGENT_ID=""
-- OT_BORDER_ROUTER=""
-- OT_BORDER_ROUTING=""
-- OT_BORDER_ROUTING_DHCP6_PD=""
-- OT_BORDER_ROUTING_COUNTERS=""
-- OT_CHANNEL_MANAGER=""
-- OT_CHANNEL_MANAGER_CSL=""
-- OT_CHANNEL_MONITOR=""
-- OT_COAP=""
-- OT_COAP_BLOCK=""
-- OT_COAP_OBSERVE=""
-- OT_COAPS=""
-- OT_COMMISSIONER=""
-- OT_CSL_AUTO_SYNC=""
-- OT_CSL_DEBUG=""
-- OT_CSL_RECEIVER=""
-- OT_CSL_RECEIVER_LOCAL_TIME_SYNC=""
-- OT_DATASET_UPDATER=""
-- OT_DEVICE_PROP_LEADER_WEIGHT=""
-- OT_DHCP6_CLIENT=""
-- OT_DHCP6_SERVER=""
-- OT_DIAGNOSTIC=""
-- OT_DNS_CLIENT=""
-- OT_DNS_CLIENT_OVER_TCP=""
-- OT_DNS_DSO=""
-- OT_DNS_UPSTREAM_QUERY=""
-- OT_DNSSD_DISCOVERY_PROXY=""
-- OT_DNSSD_SERVER=""
-- OT_DUA=""
-- OT_ECDSA=""
-- OT_EXTERNAL_HEAP=ON --> OPENTHREAD_CONFIG_HEAP_EXTERNAL_ENABLE=1
-- OT_FIREWALL=""
-- OT_HISTORY_TRACKER=""
-- OT_IP6_FRAGM=""
-- OT_JAM_DETECTION=""
-- OT_JOINER=""
-- OT_LINK_METRICS_INITIATOR=""
-- OT_LINK_METRICS_MANAGER=""
-- OT_LINK_METRICS_SUBJECT=""
-- OT_LINK_RAW=""
-- OT_LOG_LEVEL_DYNAMIC=""
-- OT_MAC_FILTER=""
-- OT_MDNS=""
-- OT_MESH_DIAG=""
-- OT_MESSAGE_USE_HEAP=""
-- OT_MLE_LONG_ROUTES=""
```

```
-- OT_MLR=""
-- OT_MULTIPAN_RCP=""
-- OT_MULTIPLE_INSTANCE=""
-- OT_NAT64_BORDER_ROUTING=""
-- OT_NAT64_TRANSLATOR=""
-- OT_NEIGHBOR_DISCOVERY_AGENT=""
-- OT_NETDATA_PUBLISHER=""
-- OT_NETDIAG_CLIENT=""
-- OT_OPERATIONAL_DATASET_AUTO_INIT=""
-- OT_OTNS=""
-- OT_PING_SENDER=ON --> OPENTHREAD_CONFIG_PING_SENDER_ENABLE=1
-- OT_PLATFORM_BOOTLOADER_MODE=""
-- OT_PLATFORM_KEY_REF=""
-- OT_PLATFORM_NETIF=""
-- OT_PLATFORM_POWER_CALIBRATION=""
-- OT_PLATFORM_UDP=""
-- OT_REFERENCE_DEVICE=""
-- OT_SERVICE=ON --> OPENTHREAD_CONFIG_TMF_NETDATA_SERVICE_ENABLE=1
-- OT_SETTINGS_RAM=""
-- OT_SLAAC=ON --> OPENTHREAD_CONFIG_IP6_SLAAC_ENABLE=1
-- OT_SNTP_CLIENT=""
-- OT_SRP_ADV_PROXY=""
-- OT_SRP_CLIENT=""
-- OT_SRP_SERVER=""
-- OT_TCP=""
-- OT_TIME_SYNC=""
-- OT_TREL=""
-- OT_TX_BEACON_PAYLOAD=""
-- OT_TX_QUEUE_STATS=""
-- OT_UDP_FORWARD=""
-- OT_UPTIME=""
-- OT_VERHOEFF_CHECKSUM=""
-- - - - - - - - - - - - - - - - - -
-- OT_PLATFORM="external"
-- OT_THREAD_VERSION="1.3" ->
OPENTHREAD_CONFIG_THREAD_VERSION=OT_THREAD_VERSION_1_3
-- OT_LOG_LEVEL=""
-- OT_LOG_OUTPUT=""
-- OT_VENDOR_NAME=""
-- OT_VENDOR_MODEL=""
-- OT_VENDOR_SW_VERSION=""
-- OT_POWER_SUPPLY=""
-- OT_MLE_MAX_CHILDREN=""
-- OT_RCP_RESTORATION_MAX_COUNT="10" -->
OPENTHREAD_SPINEL_CONFIG_RCP_RESTORATION_MAX_COUNT=10
-- OT_RCP_TX_WAIT_TIME_SECS=""
-- OpenThread CMake build type: MinSizeRel
-- Package Name: OPENTHREAD
-- Package Version: a7519027c OT-NXP/0a3248f-dirty
-- SDK_TYPE: GITHUB
SDK_GITHUB driver path chosen
CMake Deprecation Warning at
third_party/github_sdk/middleware/mbedtls/CMakeLists.txt:23
(cmake_minimum_required):
  Compatibility with CMake < 3.5 will be removed from a future version of
  CMake.

  Update the VERSION argument <min> value or use a ...<max> suffix to tell
  CMake that the project does not need compatibility with older versions.
```

```
CMake Warning (dev) at
third_party/github_sdk/middleware/mbedtls/CMakeLists.txt:39 (project):
  Policy CMP0048 is not set: project() command manages VERSION variables.
  Run "cmake --help-policy CMP0048" for policy details.  Use the cmake_policy
  command to set the policy and suppress this warning.

  The following variable(s) would be set to empty:

    PROJECT_VERSION
    PROJECT_VERSION_MAJOR
    PROJECT_VERSION_MINOR
    PROJECT_VERSION_PATCH
This warning is for project developers.  Use -Wno-dev to suppress it.

-- Found Python3: /usr/bin/python3.8 (found version "3.8.10") found components:
Interpreter
CMake Warning at third_party/github_sdk/rtos/freertos/freertos-
kernel/CMakeLists.txt:31 (message):
   Using deprecated 'FREERTOS_CONFIG_FILE_DIRECTORY' - please update your
project CMakeLists.txt file:
    add_library(freertos_config INTERFACE)
    target_include_directories(freertos_config SYSTEM
      INTERFACE
        include) # The config file directory
    target_compile_definitions(freertos_config
      PUBLIC
      projCOVERAGE_TEST=0)



-- ************ CONNFWK CONFIGURATION ************
-- CONNFWK_PLATFORM: rw61x
-- CONNFWK is a subdirectory ! Make sure to set SDK properties to connfwk-
config
-- CONNFWK_BOARD_LIB: nxp-rw612-board
-- CONNFWK_MCUX_SDK_LIB: nxp-rw612-driver
-- CONNFWK_PLATFORM_LIB: connfwk-platform-rw61x
-- Configuring done (5.1s)
-- Generating done (2.8s)
-- Build files have been written to: /home/test/projects/tb9128-otcli/2FR-ot-
cli/ot-nxp/build_rw612/rw612_ot_cli
+ [[ -n '' ]]
+ ninja
[14/771] cd /home/test/projects/tb9128-otcli/2FR-ot-cli/ot-nxp...b9128-
otcli/2FR-ot-cli/ot-nxp/openthread/etc/cmake/print.cmake
OPENTHREAD_CONFIG_HEAP_EXTERNAL_ENABLE=1
OPENTHREAD_CONFIG_PING_SENDER_ENABLE=1
OPENTHREAD_CONFIG_TMF_NETDATA_SERVICE_ENABLE=1
OPENTHREAD_CONFIG_IP6_SLAAC_ENABLE=1
OPENTHREAD_CONFIG_THREAD_VERSION=OT_THREAD_VERSION_1_3
OPENTHREAD_SPINEL_CONFIG_RCP_RESTORATION_MAX_COUNT=10
OPENTHREAD_CONFIG_ENABLE_BUILTIN_MBEDTLS=0
OPENTHREAD_CONFIG_ENABLE_BUILTIN_MBEDTLS_MANAGEMENT=1
PACKAGE_NAME=OPENTHREAD
OPENTHREAD_CONFIG_NCP_HDLC_ENABLE=1
OPENTHREAD_CONFIG_TCP_ENABLE=0
OPENTHREAD_CONFIG_FILE=openthread-core-rw612-config.h
OPENTHREAD_PROJECT_CORE_CONFIG_FILE=openthread-core-rw612-config.h
OPENTHREAD_CORE_CONFIG_PLATFORM_CHECK_FILE=openthread-core-rw612-config-check.h
OT_APP_CLI_LOWPOWER_ADDON
MBEDTLS_CONFIG_FILE=rw612-mbedtls-config.h
```

```
CPU_RW612ETA1I
CPU_RW612ETA2I
CPU3
__STARTUP_CLEAR_BSS
SDK_OS_FREE_RTOS
OSA_USED
FSL_OSA_MAIN_FUNC_ENABLE=0
FSL_RTOS_FREE_RTOS
SDK_DEBUGCONSOLE_UART=1
DEBUG_CONSOLE_TRANSFER_NON_BLOCKING
SERIAL_PORT_TYPE_UART=1
HAL_UART_ADAPTER_LOWPOWER=1
SERIAL_MANAGER_TASK_STACK_SIZE=1024
SERIAL_MANAGER_TASK_PRIORITY=PRIORITY_RTOS_TO_OSA(2)
TM_ENABLE_TIME_STAMP=1
IMU_TASK_STACK_SIZE=1024
gNvStorageIncluded_d=1
APP_FLEXSPI_AMBA_BASE=0x08000000
OT_PLAT_SAVE_NVM_DATA_ON_IDLE=1
FSL_OSA_ALLOCATED_HEAP=0
gAspCapability_d=1
FFU_CNS_TX_PWR_TABLE_CALIBRATION=1
IMU_TASK_PRIORITY=2
gPlatformDisableBleLowPower_d=0
LFS_CONFIG=fwk_lfs_config.h
LFS_THREADSAFE=1
NOT_DEFINE_DEFAULT_WIFI_MODULE
WIFI_BOARD_RW610
[713/771] Building C object framework/platform/rw61x/CMakeFiles/connfwk-
platform-rw61x.dir/fwk_platform_ota.c.obj
In file included from /home/test/projects/tb9128-otcli/2FR-ot-cli/ot-
nxp/third_party/github_sdk/middleware/wireless/framework/platform/rw61x/fwk_pla
tform_ota.c:9:
/home/test/projects/tb9128-otcli/2FR-ot-cli/ot-
nxp/third_party/github_sdk/middleware/wireless/framework/platform/rw61x/../Comm
on/fwk_platform_mcuboot_ota.ch:202:17: warning: '_ActiveApplicationRemapOffset'
defined but not used [-Wunused-function]
  202 | static uint32_t _ActiveApplicationRemapOffset(void)
      |                 ^~~~~~~~~~~~~~~~~~~~~~~~~~~~~
/home/test/projects/tb9128-otcli/2FR-ot-cli/ot-
nxp/third_party/github_sdk/middleware/wireless/framework/platform/rw61x/../Comm
on/fwk_platform_mcuboot_ota.ch:197:13: warning: '_IsActiveApplicationRemapped'
defined but not used [-Wunused-function]
  197 | static bool _IsActiveApplicationRemapped(void)
      |             ^~~~~~~~~~~~~~~~~~~~~~~~~~~~
[714/771] Building C object framework/platform/rw61x/CMakeFiles/connfwk-
platform-rw61x.dir/fwk_platform_extflash.c.obj
In file included from /home/test/projects/tb9128-otcli/2FR-ot-cli/ot-
nxp/third_party/github_sdk/middleware/wireless/framework/platform/rw61x/fwk_pla
tform_extflash.c:8:
/home/test/projects/tb9128-otcli/2FR-ot-cli/ot-
nxp/third_party/github_sdk/middleware/wireless/framework/platform/rw61x/../Comm
on/fwk_platform_mflash.ch:100:17: warning: '_ActiveApplicationRemapOffset'
defined but not used [-Wunused-function]
  100 | static uint32_t _ActiveApplicationRemapOffset(void)
      |                 ^~~~~~~~~~~~~~~~~~~~~~~~~~~~~
[770/771] Linking CXX executable bin/ot-cli-rw612.elf
Memory region         Used Size  Region Size  %age Used
  m_flash_config:          3 KB         3 KB    100.00%
    m_interrupts:        640 B        640 B    100.00%
          m_text:     483876 B    4189568 B     11.55%
```

```
    m_nvm_region:          0 GB        64 KB      0.00%
          m_data:      182464 B      1216 KB     14.65%
m_sqram_cpu13_mbox:       1160 B       1160 B    100.00%
m_sqram_cpu13_txq:           0 GB         4 KB      0.00%
m_sqram_cpu31_txq:           4 KB         4 KB    100.00%
m_sqram_cpu23_mbox:       1160 B       1160 B    100.00%
m_sqram_cpu23_txq:           0 GB      4224 B      0.00%
m_sqram_cpu32_txq:        4224 B       4224 B    100.00%
[771/771] Generating bin/ot-cli-rw612.bin
copy from `/home/test/projects/tb9128-otcli/2FR-ot-cli/ot-
nxp/build_rw612/rw612_ot_cli/bin/ot-cli-rw612.elf' [elf32-littlearm] to
`/home/test/projects/tb9128-otcli/2FR-ot-cli/ot-
nxp/build_rw612/rw612_ot_cli/bin/ot-cli-rw612.bin' [binary]
+ cd /home/test/projects/tb9128-otcli/2FR-ot-cli/ot-nxp
```

16 References

Table 4: References

Document	Description
Getting Started with MCUXpresso SDK for RD-RW61X	This SDK document is available in the MCUXpresso RW61X SDK Documents bundle at SDK_<version>_ RW612\docs folder.
UM11797 - NXP Wi-Fi and Bluetooth Debug Feature Configuration for RW61x Evaluation Board	This User Manual is available in the MCUXpresso RW61X SDK Documents bundle at SDK_<version>_RW612\docs\wireless folder.
UM11798 - Getting Started with Wireless on RW61x Evaluation Board Running RTOS	This User Manual is available in the MCUXpresso RW61X SDK Documents bundle at SDK_<version>_ RW612\docs\wireless folder.
UM11799 - NXP Wi-Fi and Bluetooth Demo Applications for RW61x	This User Manual is available in the MCUXpresso RW61X SDK Documents bundle at SDK_<version>_RW612\docs\wireless folder.

17 Acronyms

Table 5 describes the acronyms used in this document.

Table 5: Acronyms

Acronym	Description
802.15.4	IEEE 802.15.4 is a technical standard which defines the operation of a low-rate wireless personal area network (LR-WPAN), maintained by the IEEE 802.15 working group.
ARM	Advanced RISC Machines.
BLE	Bluetooth Low Energy. It is a wireless personal area network technology designed and marketed by the Bluetooth Special Interest Group.
DC	Direct Current
EVB	Evaluation Board. The Type 2FR/2FP board is an EVB.
EVK	Evaluation Kit. The Type 2FR/2FP EVK contains the Type 2FR/2FP EVK, cables and debug probe.
GPIO	General Purpose Input/Output.

Acronym	Description
IDE	Integrated Development Environment. It is a software application that provides comprehensive facilities for software development such as a source-code editor, build automation tools, and a debugger. The MCUXpresso IDE is referenced in this document.
IO	Input Output
JTAG	Joint Test Action Group. The JTAG defines a standard to communicate with a microcontroller.
LED	Light Emitting Diode. It is a semiconductor device that emits light when current flows through it. The Type 2FR/2FP EVK contains multiple LEDs for various indications.
PCB	Printed Circuit Board.
RF	Radio Frequency.
SDK	Software Development Kit. It is a collection of software development tools in one installable package. The MCUXpresso RW61x SDK is used for Type 2FR/2FP software development.
SWD	Serial Wire Debug. SWD is a modification/implementation of JTAG specifically for ARM processors.
u.FL	u.FL is a miniature RF connector for high-frequency signals up to 6 GHz.
UART	Universal Asynchronous Receiver-Transmitter. It is an industry standard device-to-device communication protocol.
USB	Universal Serial Bus. It is an industry standard that specifies the physical interfaces and protocols for connecting data transferring and powering of hosts.
USB OTG	USB On-The-Go is a specification that allows USB devices to switch back and forth between the roles of host and device.
Wi-Fi	Wi-Fi is a family of wireless network protocols based on the IEEE 802.11 family of standards by Wi-Fi Alliance, which are commonly used for local area networking of devices and Internet access

Revision History

Revision	Date	Author	Change Description
1.0	Jul 27, 2022	TF	Initial Release
2.0	Oct 09, 2023	TF	Modified for A1 chip and latest SDK
3.0	Jul 19, 2024	TF	Modified for A2 chip, SDK_2_13_2 and added optional external power supply.
3.1	Aug 28, 2024	TF	Fixed issues and updated links.
3.2	Sep 11, 2024	TF	Updated SDK to 2.16.0
3.3	Nov 20, 2024	TF	Added OT CLI example
3.4	Dec 12, 2024	TF	Added Murata Community Forum section.
3.5	Mar 27, 2025	TF	Updated GPIO Example instructions for SDK 2.16.x.
3.6	Apr 01, 2025	TF	Added Type 2FP EVK.
3.7	May 28, 2025	TF	Added support for SDK 24.12
3.8	Aug 25, 2025	TF	Added section deep sleep current measurement
3.9	July 10, 2026	TF	Updated Section 7.4.1 to specify the release/v1.4.0 branch.

Copyright © Murata Manufacturing Co., Ltd. All rights reserved. The information and content in this document are provided “as-is” with no warranties of any kind and are for informational purpose only. Data and information have been carefully checked and are believed to be accurate; however, no liability or responsibility for any errors, omissions, or inaccuracies is assumed.

The Bluetooth® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. Other brand and product names are trademarks or registered trademarks of their respective owners.

Specifications are subject to change without notice.