

ModusToolbox™ usage: How to create own BSP using bsp-assistant tool

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Scope of work

- › All ModusToolbox™ applications require a target BSP. Infineon provides BSPs for all kits and generic BSPs for each chip architecture to use as a starting point. You can modify an Infineon BSP to match your own hardware when working with your own hardware. The BSP Assistant helps to simplify that process.

- › This document helps application developers understand how to create their own BSPs for ModusToolbox™ applications using the BSP Assistant tool.

- › The content of this document is divided into the following sections:
 - Launch the BSP Assistant
 - BSP Assistant workflow
 - BSP Assistant use case

Launch the BSP Assistant

There are many ways to launch the BSP Assistant, depending on how you use the various tools in ModusToolbox™. Here are some of the methods to launch the assistant.

› Make command

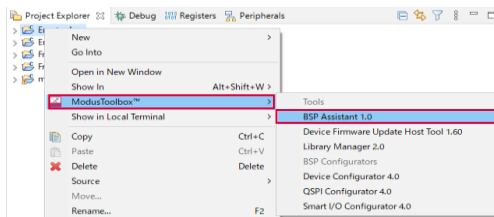
- As described in the [ModusToolbox™ Build System chapter](#), you can run numerous make commands in the application directory, including launching the BSP Assistant. After creating the ModusToolbox™ application, navigate to the application directory and type the following command in the appropriate bash terminal window:

Make bsp-assistant

When launched this way, the bsp-assistant opens with the active BSP for the application.

› Eclipse IDE

- If you use the Eclipse IDE for ModusToolbox™, you can launch the BSP Assistant for the selected application. In the Project Explorer, right-click on the project and select “**ModusToolbox™ >BSP Assistant<version>**”. Alternatively, you can click the “**BSP Assistant<version>**” link in the IDE Quick Panel.



Launch the BSP Assistant (contd.)

› Stand-alone GUI

- You can launch the BSP Assistant GUI as a stand-alone GUI by running its executable as applicable to your operating system. By default, it is installed here: **<install_dir>/ModusToolbox/tools_<version>/bsp-assistant**

› Command line interface (CLI) executable

- There is also a “cli” version of the executable that does not open the GUI. Running the cli executable from the command line can be useful as part of batch files or shell scripts. The exit code for the executable is zero if the operation is successful, and non-zero if the operation encounters an error. See [CLI Description chapter](#) for more details.

BSP Assistant workflow

The different scenarios for using the BSP Assistant are as follows:

› **Modify BSP for existing application**

- Open the BSP from the application, make and save changes, and then rebuild the application. Changes will only apply to the current application and not to any others.

› **Modify BSP without application**

- Modify a BSP independent of an application. Open the existing BSP, make and save changes, and then you can optionally export the BSP to a zip file. Once edited and/or exported, import the BSP using the Project Creator or Library Manager. Any applications that reference the BSP from the saved location will see the updated BSP. These applications need to be updated through the Library Manager or by running *make getlibs* to see any dependency changes.

› **Create a new BSP**

- Create a new BSP, make and save changes, and then you can optionally export the BSP to a zip file. Once edited and/or exported, import the BSP using the Project Creator or Library Manager. You may also use this as a starting point to create additional BSPs using the BSP Assistant.

BSP Assistant workflow

The following is the basic workflow for using the BSP Assistant:

- 1. Launch the BSP Assistant, and either open an existing BSP or create a new BSP.**
 - › An existing BSP may be in an application or you may browse to a location independent of an application.
 - › Create a new BSP by selecting one from the standard or custom manifest, or by browsing to the location of a starting BSP.

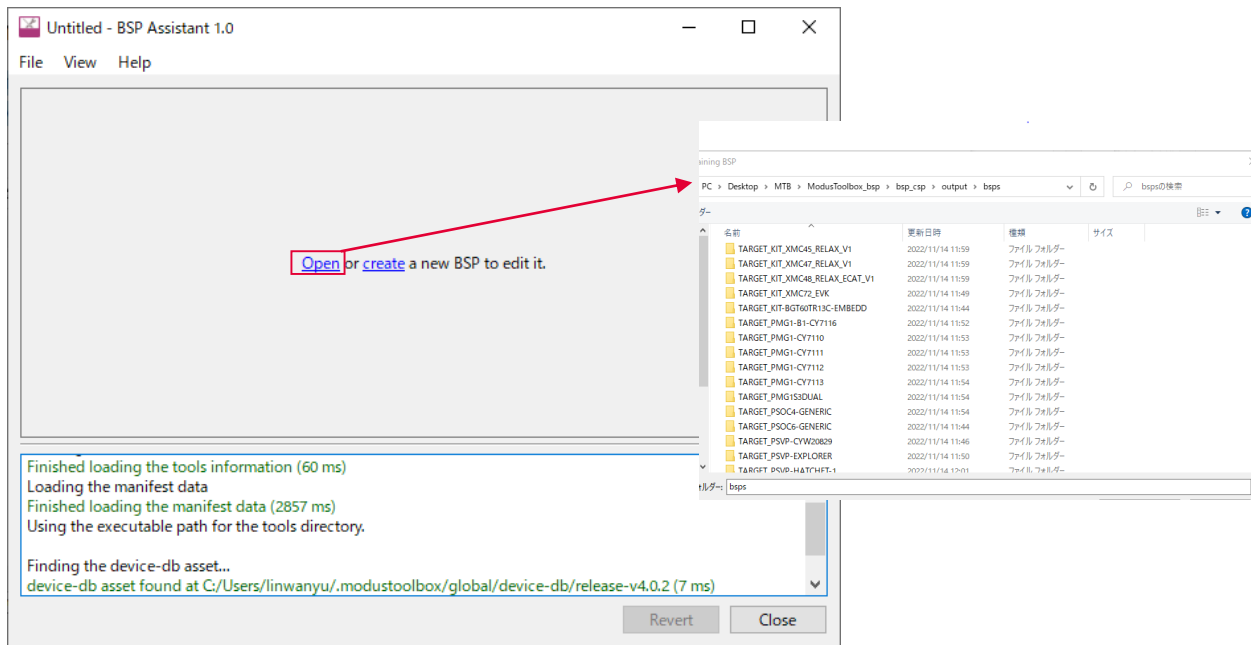
- 2. Edit the various areas of the BSP including the following:**
 - › Devices¹:
 - It includes various details about the BSP hardware. These settings vary for different types of devices and BSPs. Select an option for changing the desired files.
 - › Configurators¹:
 - It shows the current configurations available for the BSP.
 - › Dependencies¹:
 - It shows all of the libraries currently used by the BSP.
 - › Capabilities¹:
 - It contains a read-only list of capabilities for the BSP. The list indicates the capabilities that the BSP can provide. Applications and libraries specify which capabilities they require, so this list is used to determine which applications and libraries are compatible with the BSP.

- 3. Save changes and optionally export the BSP.**

¹: See [BSP Assistant user guide](#) for more details.

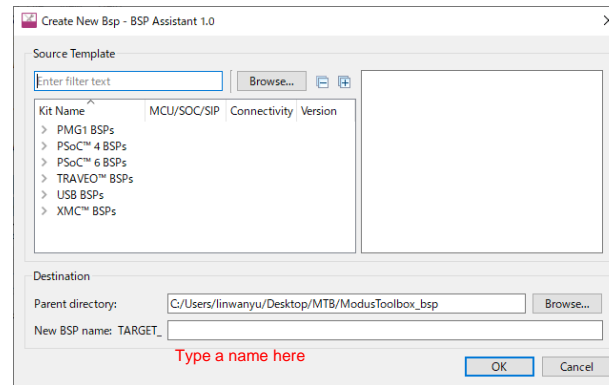
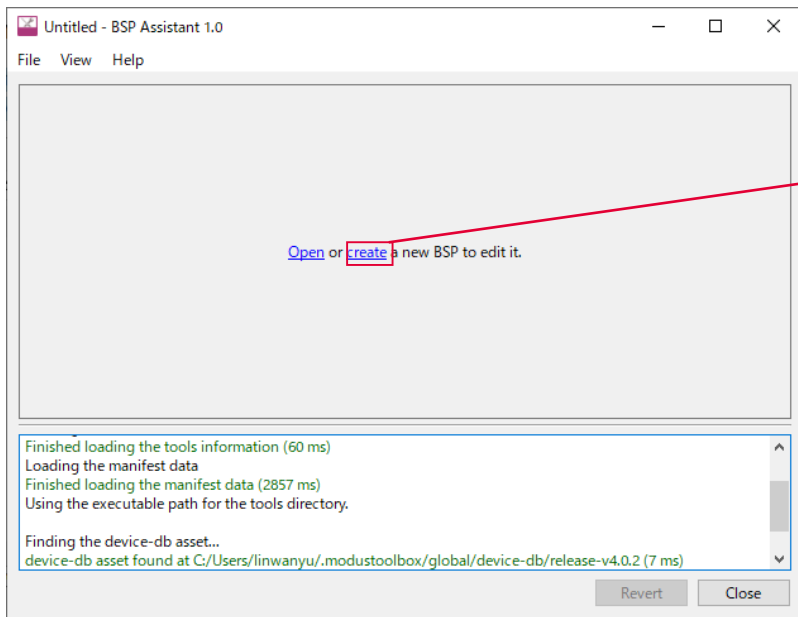
BSP Assistant workflow: Opening existing BSP

- › On the main BSP Assistant window, click the **“Open”** link or select **“File > Open”** to access the standard Open dialog. Then, navigate to the directory that contains the desired BSP, and select the folder that you want to exist.



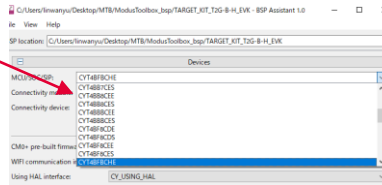
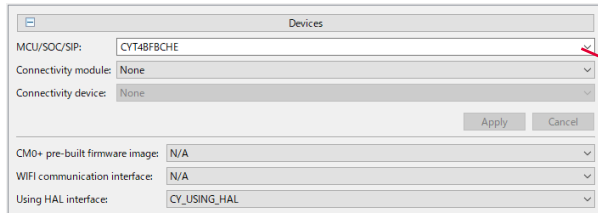
BSP Assistant workflow: Creating a new BSP

- › On the main BSP Assistant window, click **“create”** or select **“File > New”** to open the new BSP dialog box. Select a BSP that closely matches what you intend to use for your design. Enter the **“Parent directory”** location, or click **“Browse”** to choose. Then type a name for the BSP.

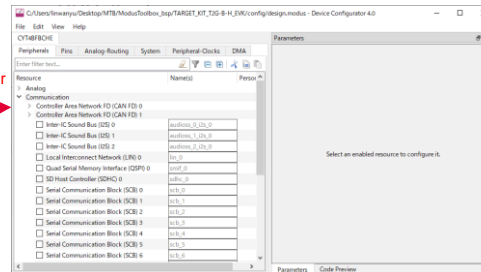
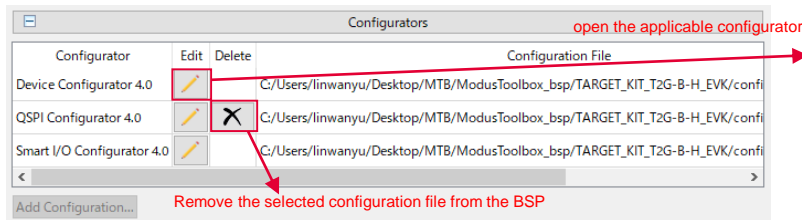


BSP Assistant workflow: Editing the BSP

- After opening or creating a BSP, the GUI shows various sections with settings, including:
 - Devices - Includes various details about the BSP hardware. These settings vary for different types of devices and BSPs.

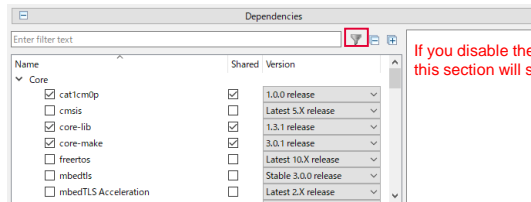


- Configurators - Shows the current configurations available for the BSP. Any changes you make to this section are saved automatically.



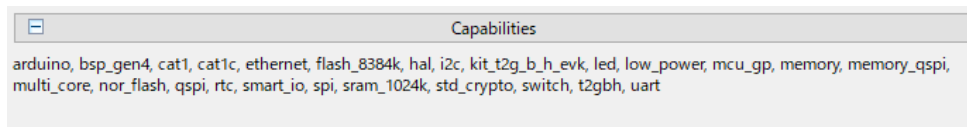
BSP Assistant workflow: Editing the BSP

- › After opening or creating a BSP, the GUI shows various sections with settings, including:
 - Dependencies - Shows all of the libraries currently used by the BSP. Any changes you make to this section are automatically saved. You can remove a library, change a library from shared to local, and select a different version.



If you disable the Filter button, this section will show all the libraries available that you can add to the BSP.

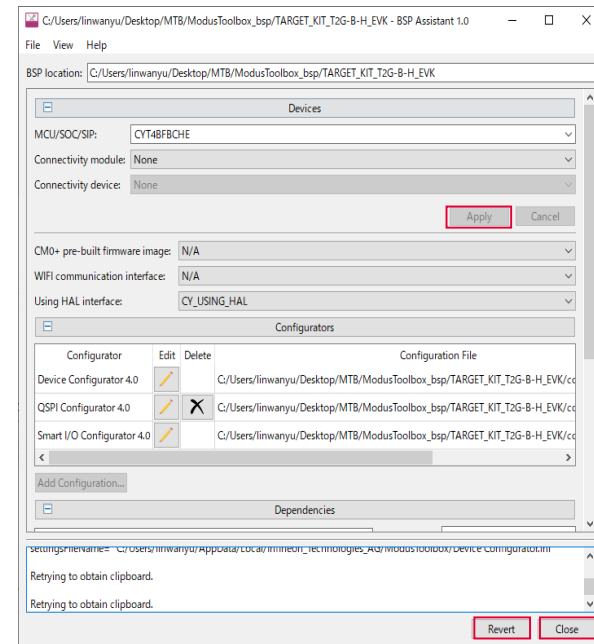
- Capabilities - Contains a read-only list of capabilities that the BSP can provide. Applications and libraries specify which capabilities they require, so this list is used to determine which applications and libraries are compatible with the BSP.



To update this list, you must edit the BSP's *props.json* file.

BSP Assistant workflow: Editing the BSP

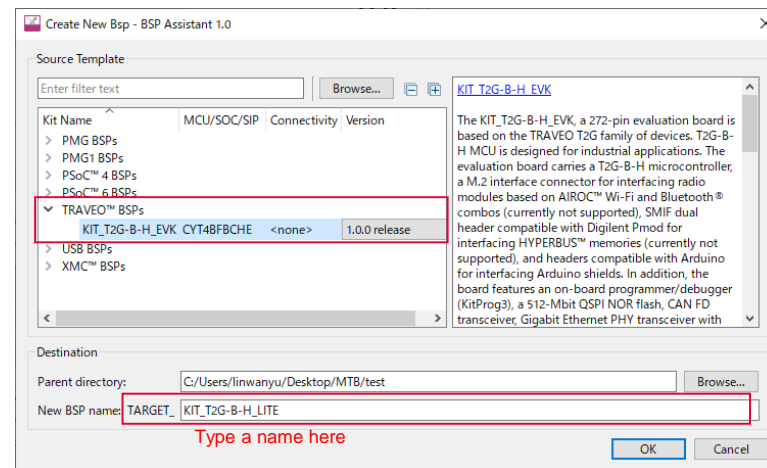
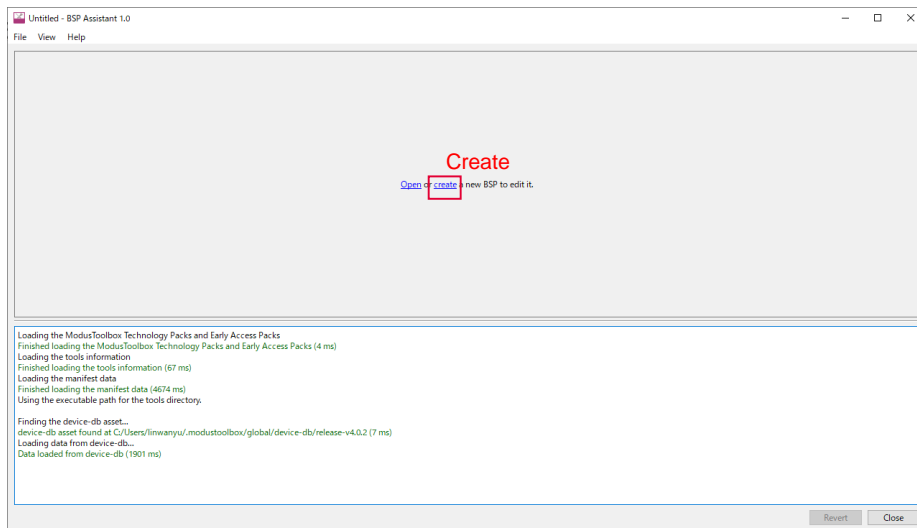
- › The BSP Assistant provides Apply, Close, and Revert buttons described as follows:
 - Apply – To select an option for changing the desired files, click “**Apply**” to save the changes or “**Cancel**” to return to the previous selections. Once you click “**Apply**”, the tool makes all necessary changes to the BSP makefile, linker scripts, startup code files, etc.
 - Close - Saves changes made to the Configurators and Dependencies sections automatically as you go. To save changes in the Devices section, you must click “Apply” in that section. If you click “Close” with changes already saved/applied, the BSP Assistant tool will quit. If there are unsaved changes, a dialog displays asking if you want to apply the changes.
 - Revert - If you decide to undo your changes before closing the BSP Assistant (including applied changes in the Devices section), click the “Revert” button to review the files that were changed and confirm the cancellation of the edits.



BSP Assistant use case: Create a new BSP for CYT4BF8CDS

› This section shows you how to create a new BSP for CYT4BF8CDS as a use case.

1. When you open the BSP Assistant, the following window pops up. Click “**create**” to create a new BSP. The window “**Create New Bsp**” shows different devices. Select a BSP that closely matches what you intend to use for your design. CYT4BF8CDS (TRAVEO™ T2G Body High series) is the same series as the CYT4BFBCHE of KIT_T2G-B-H_EVK. Thus choose **TRAVEO™ BSPS: KIT_T2G-B-H_EVK**, and type the name and directory. Click “**OK**” to move to the next step.



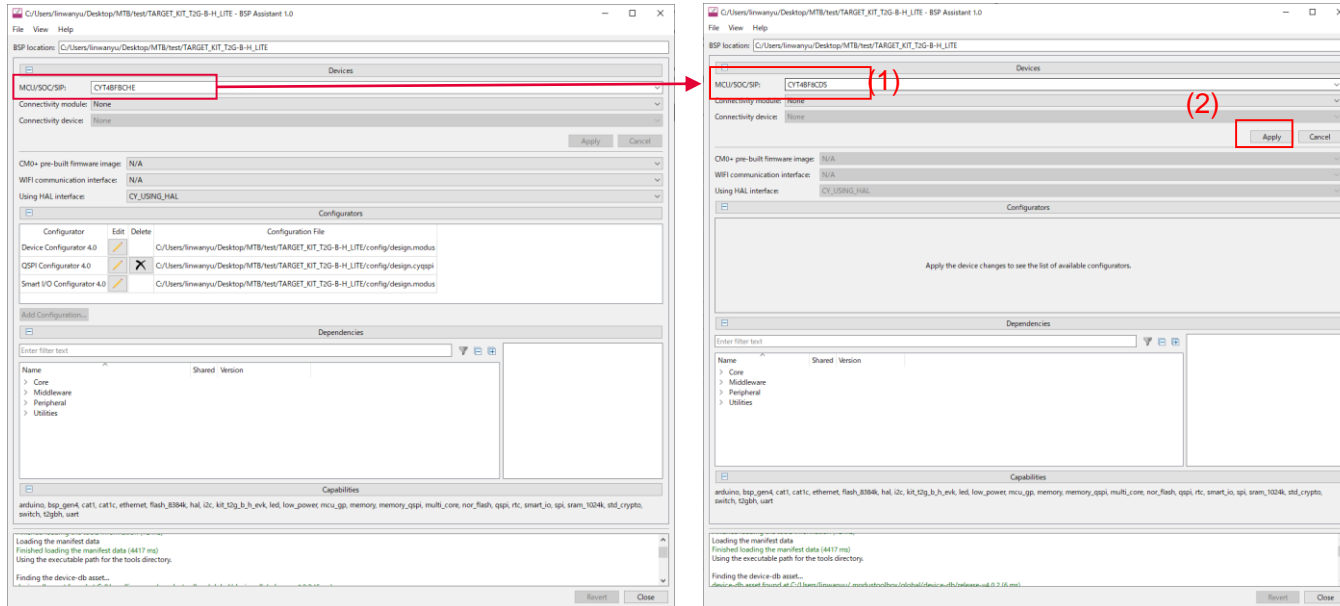
Note: Currently available devices are TRAVEOTM T2G body high series MCUs

BSP Assistant use case: Create a new BSP for CYT4BF8CDS (contd.)

2. When the following window pops up, we must change the following setting to CYT4BF8CDS.

(1) Change the MCU to “CYT4BF8CDS”

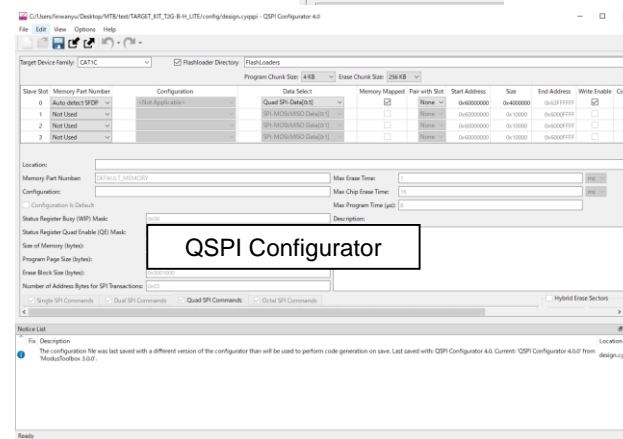
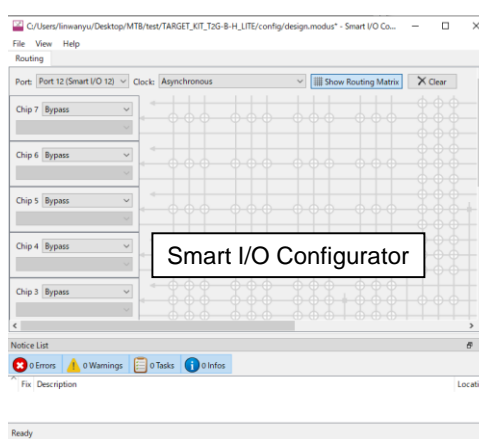
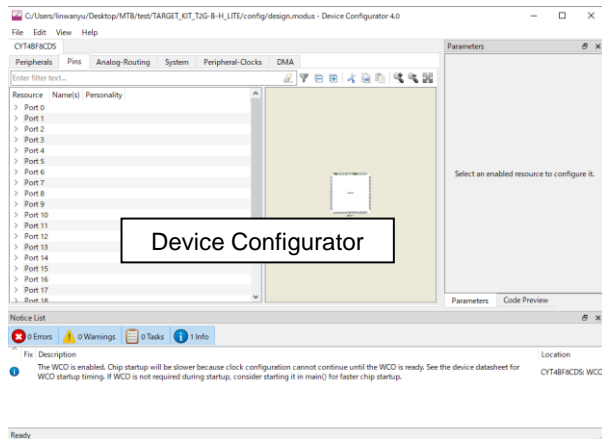
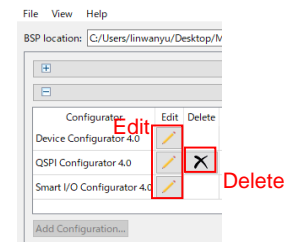
(2) Click “Apply”, then the device will change.



BSP Assistant use case: Create a new BSP for CYT4BF8CDS (contd.)

3. The device has been changed to CYT4BF8CDS. We can change the configurations for the BSP.

- (1) Click the **“Edit”** icon to open the applicable configurator.
Also, click the **“Delete”** icon to remove the selected configuration file from the BSP.
- (2) Any changes you make to this section are saved automatically.

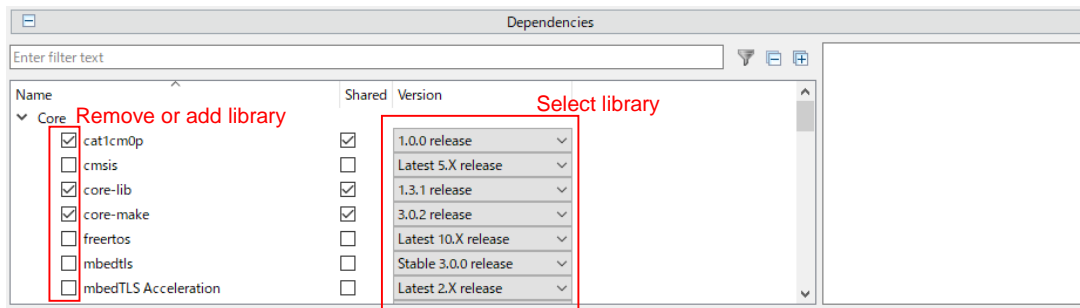


Note:
Change inputs and outputs such as LEDs, buttons, and a serial interface to apply to your environment with the Device Configurator.
The code examples provided may require the configuration of peripherals required for execution. Device Configurator settings may be required for these code examples to run correctly.

BSP Assistant use case: Create a new BSP for CYT4BF8CDS (contd.)

4. Dependencies

The Dependencies section shows all of the libraries currently used by the BSP. It can remove a library, change a library from shared to local, and select a different version.



5. Capabilities

The list indicates the capabilities that the BSP can provide. Applications and libraries specify which capabilities they require. This list is used to determine which applications and libraries are compatible with the BSP.

You cannot modify this list on the BSP Assistant. To update this list, you must edit the BSP's props.json file. You can find the file that was generated by the BSP Assistant at the address you specify. After the modification is complete, click "Apply". The tool makes all necessary changes to the BSP.

BSP Assistant use case: Create a new BSP for CYT4BF8CDS (contd.)

6. Check the file which is generated by the BSP Assistant

After clicking “Apply”, the tool makes all necessary changes to the BSP. You can find the following files at the address which you specified.

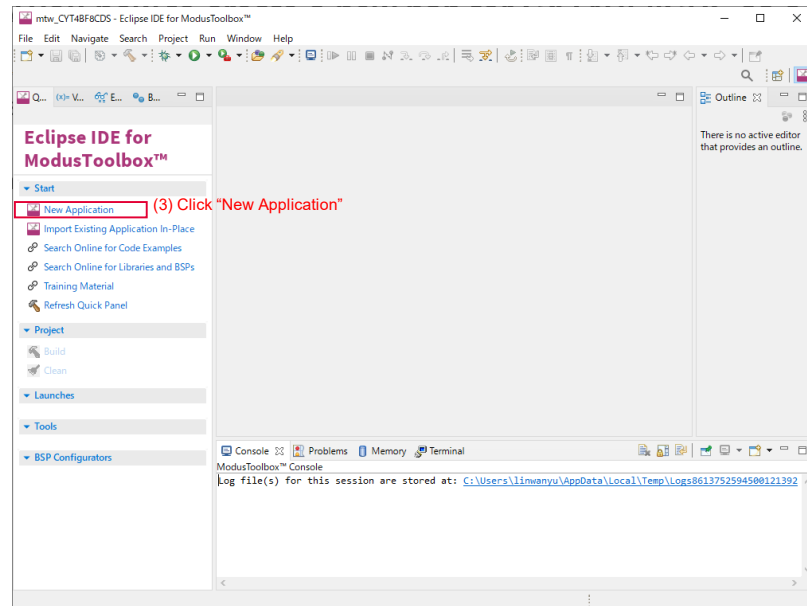
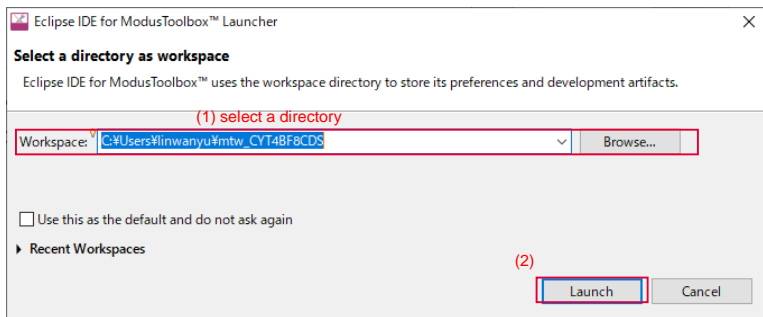
- COMPONENT_CM0P
- COMPONENT_CM7
- config
- deps
- docs
- .cyignore
- cybsp.c
- cybsp.h
- cybsp_doc.h
- cybsp_types.h
- EULA
- LICENSE
- props.json
- README.md
- RELEASE.md
- startup_cat1c.h
- system_cat1c.h
- xmc7xxx_partition.h

BSP Assistant use case: Create a new BSP for CYT4BF8CDS (contd.)

7. Apply to ModusToolbox™ software application

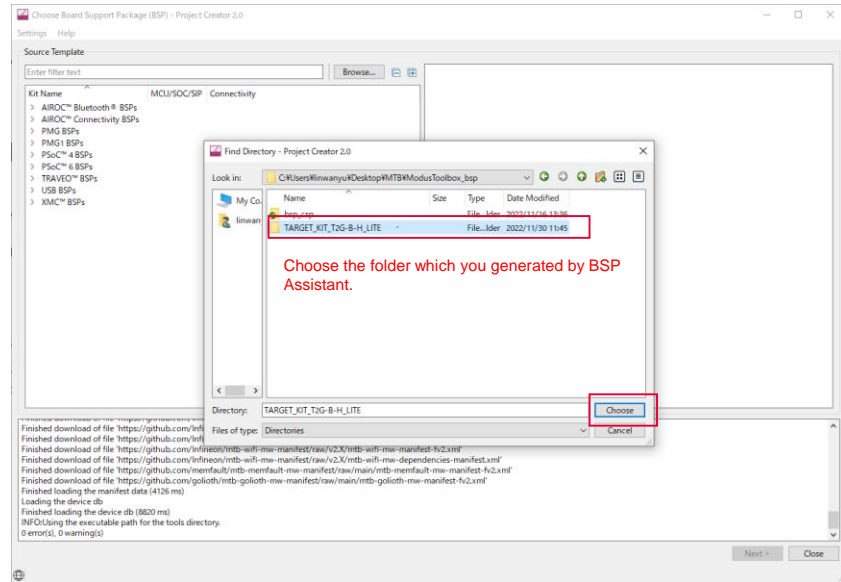
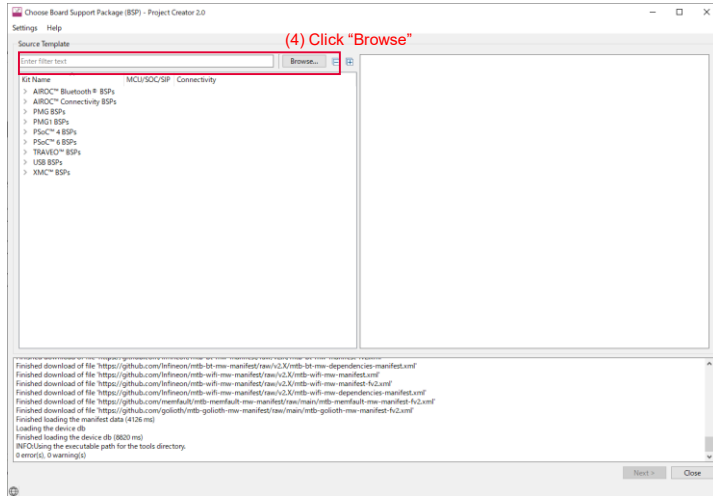
The BSP for CYT4BF8CDS has been created. Now, you can import the files and apply them to ModusToolbox™ which you generated.

- (1) Open **ModusToolbox™** and select a directory as a workspace.
- (2) Click **“Launch”**.
- (3) Click **“New Application”**



BSP Assistant use case: Create a new BSP for CYT4BF8CDS (contd.)

(4) Click “**Browse**” and choose the folder which you generated.

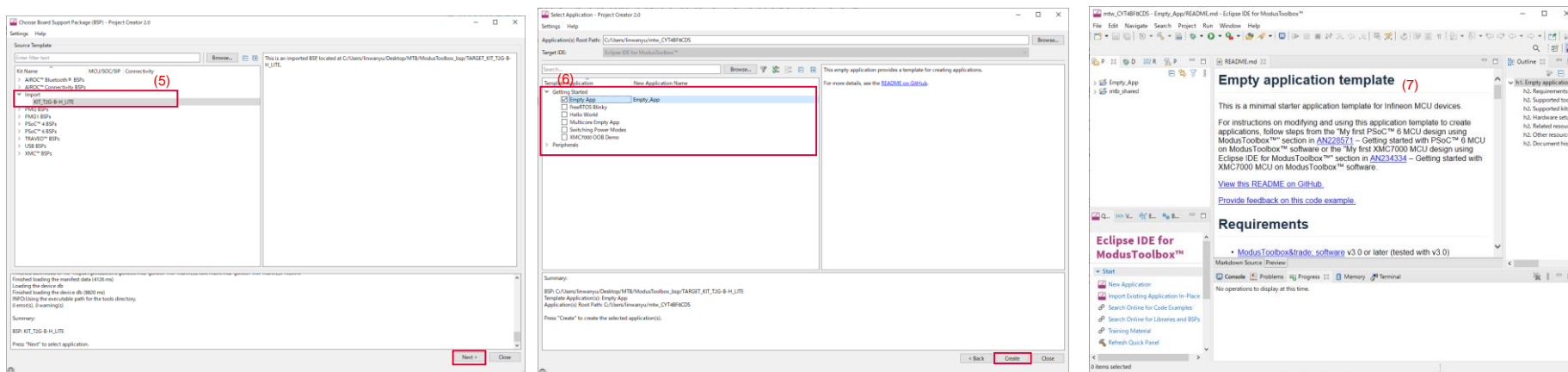


BSP Assistant use case: Create a new bsp for CYT4BF8CDS

(5) The “Import” window pops up and select it. Click “Next”.

(6) Select an example that you want to use. Then click “Create”.

(7) After creating, you can use **ModusToolbox™** to debug and flash it. See [Eclipse IDE for ModusToolbox™ user guide](#) for more details.



References

User guides

- › [Eclipse IDE for ModusToolbox™ user guide](#)
- › [ModusToolbox™ Device Configurator user guide](#)
- › [ModusToolbox™ tools package user guide](#)

Revision history

Revision	ECN	Submission Date	Description of Change
**	7844600	2022/12/06	Initial release

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