

# AIROC™ Wi-Fi/Bluetooth® STM32 Expansion pack user guide

## Enabling Wi-Fi/Bluetooth® USB Adapter with SEGGER emusb-host middleware

### About this document

#### Version

1.0.0

#### Scope and purpose

The AIROC™ Wi-Fi/Bluetooth® STM32 integration uses SEGGER emusb-host middleware as the USB host. The stm32\_segger\_usb.zip archive includes SEGGER emusb-host middleware and three projects, which show how USB host middleware is integrated.

#### Intended audience

This document helps application developers understand how to enable the Wi-Fi/BT USB Adapter (e.g. Sterling-LWB5+ USB) with the AIROC™ Wi-Fi/Bluetooth® STM32 Expansion pack.

#### Document conventions

Convention	Explanation
<b>Bold</b>	Emphasizes heading levels, column headings, menus and sub-menus
<i>Italics</i>	Denotes file names and paths.
Courier New	Denotes APIs, functions, interrupt handlers, events, data types, error handlers, file/folder names, directories, command line inputs, code snippets
<b>File &gt; New</b>	Indicates that a cascading sub-menu opens when you select a menu item



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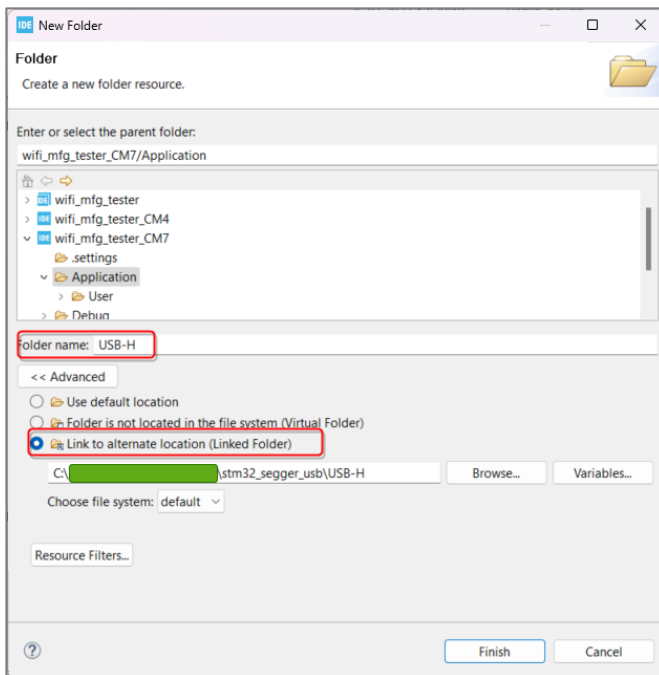
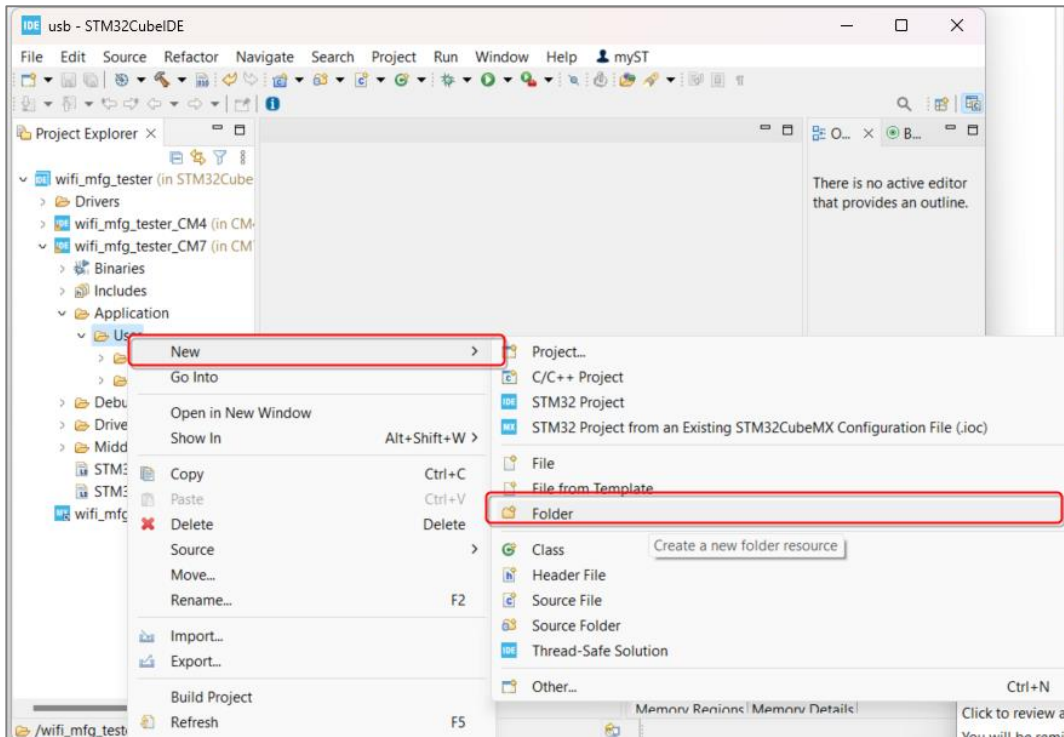
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## 2 Configure system to use Wi-Fi/Bluetooth® USB Adapter

### 2.1 Add SEGGER emusb-host Middleware to STM32CubeMx workspace

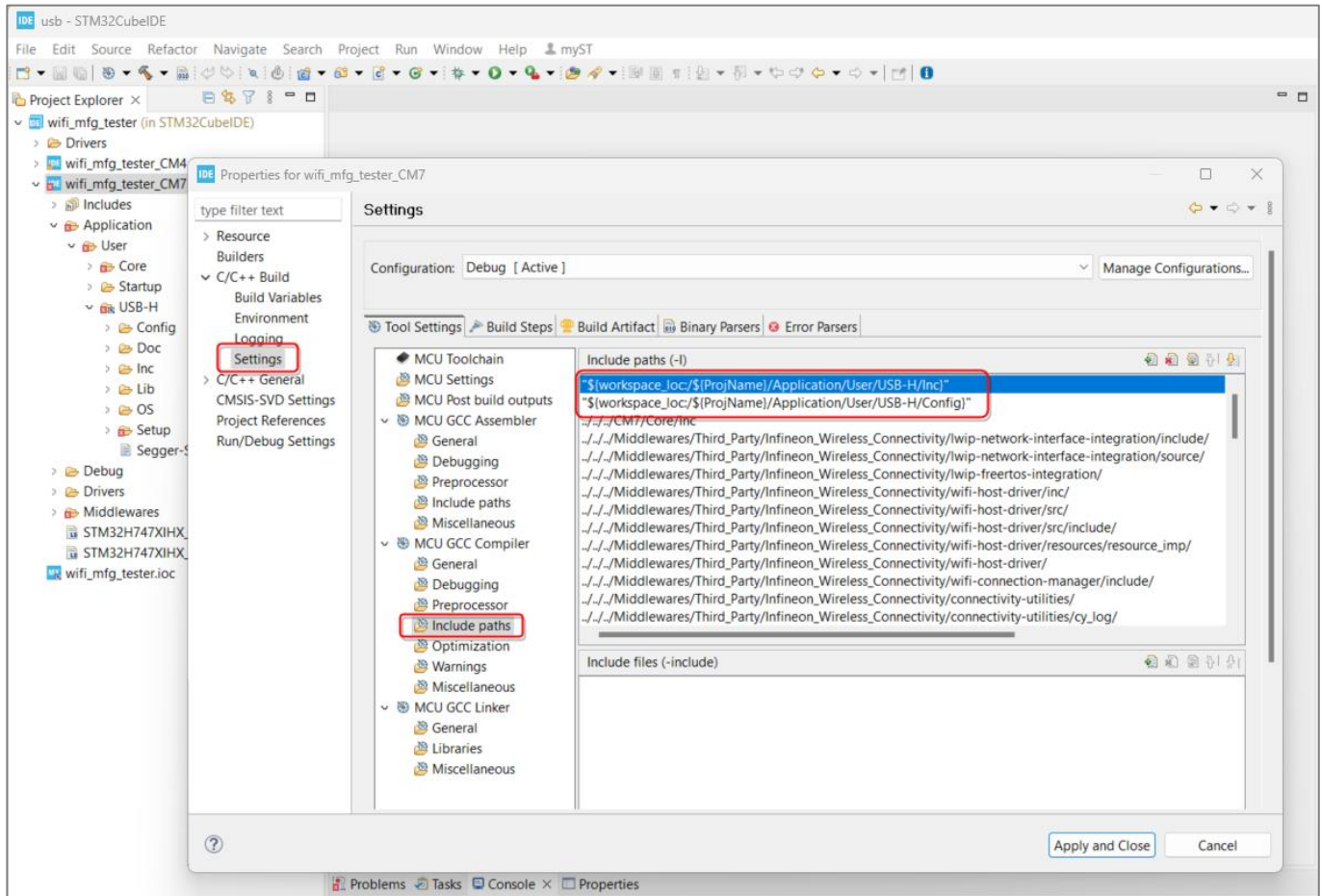
1. Add the SEGGER emusb-host middleware (USB-H) sources to the Project workspace as Link:



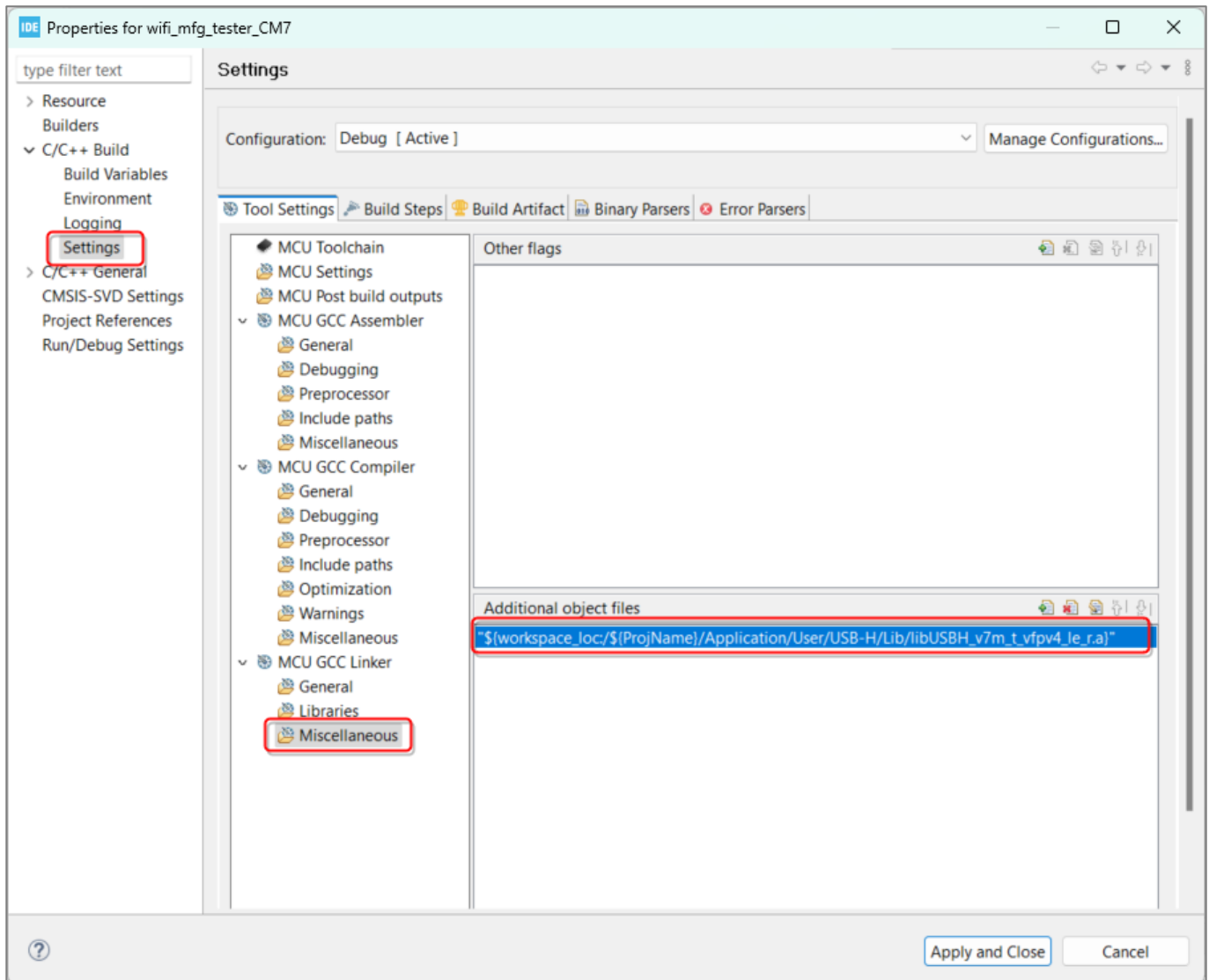
2. Add the include paths (-I) to the `../USB-H/Inc` and `../USB-H/Config` folders of SEGGER emusb-host middleware:

`"${workspace_loc}/${ProjName}/Application/User/USB-H/Inc"`

`"${workspace_loc}/${ProjName}/Application/User/USB-H/Config"`



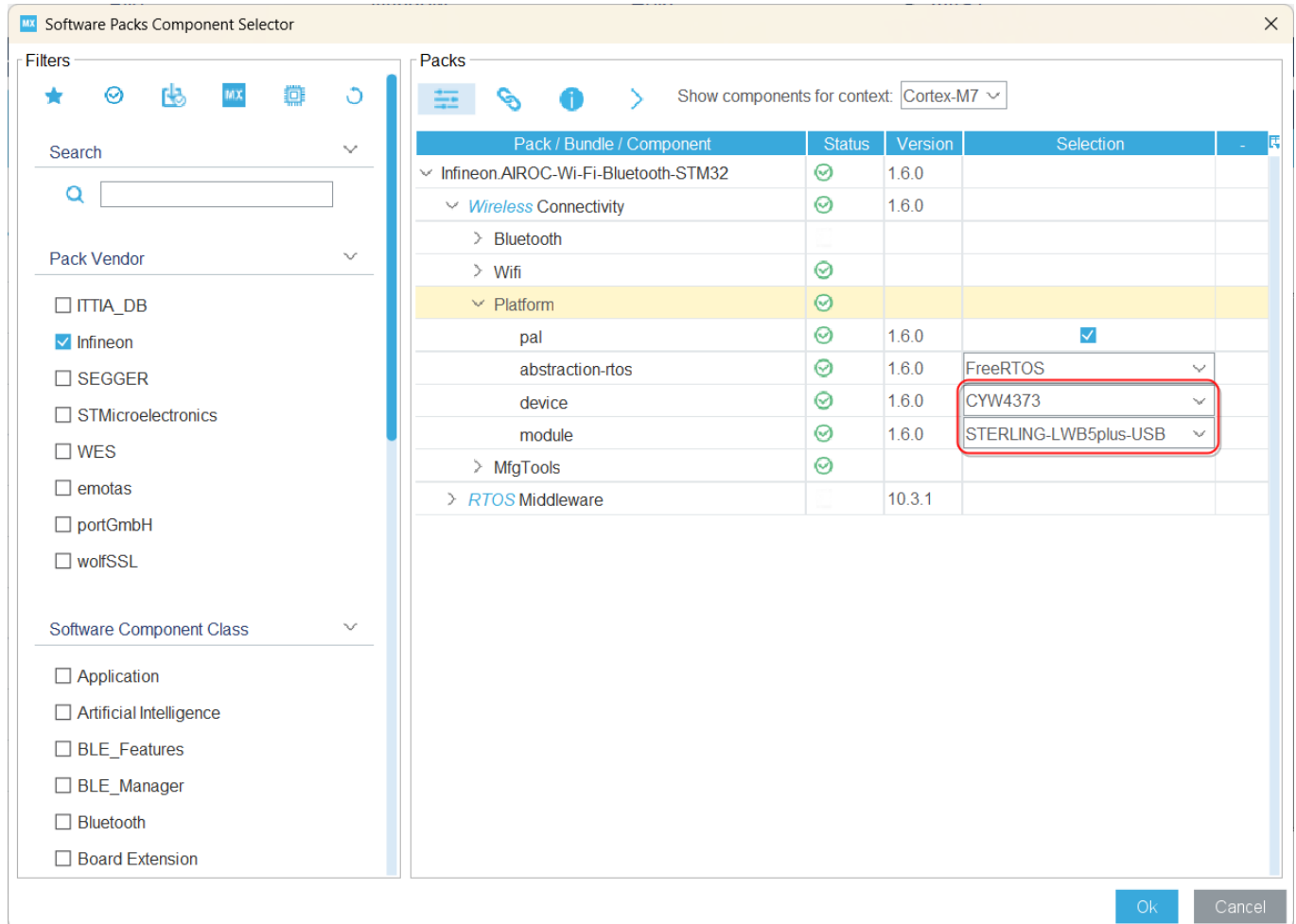
3. Add the path to SEGGER emusb-host prebuild library to the Project workspace:  
"`${workspace_loc:${ProjName}/Application/User/USB-H/Lib/libUSBH_v7m_t_vfpv4_le_r.a}`"



## 2.2 STM32CubeMx configuration

To configure the USB part in the STM32CubeMx environment:

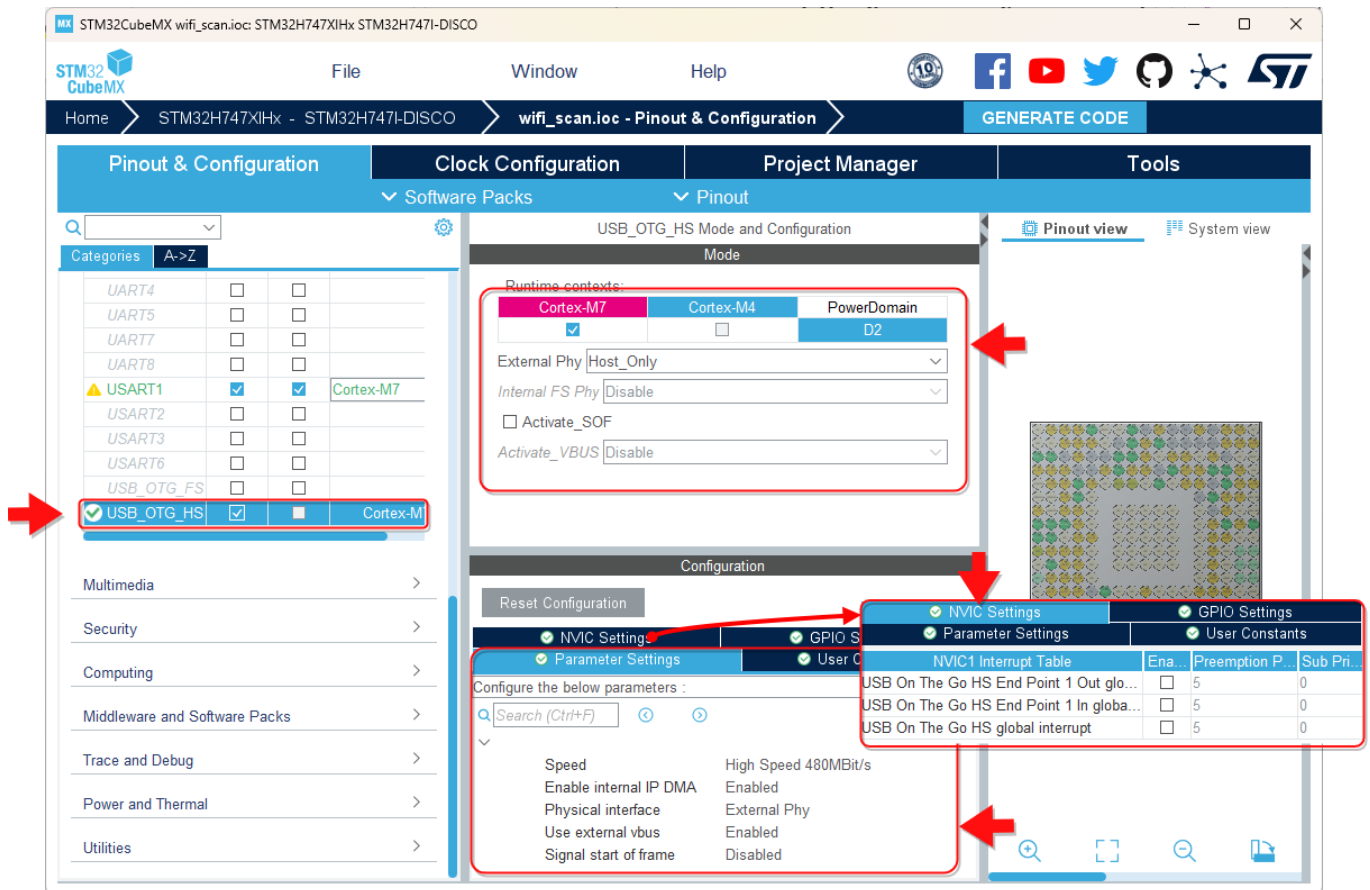
1. In the Software Pack Component Selector, select the proper device or module with USB support (e.g. Sterling-LWB5+ USB).



2. In section Connectivity, enable and configure the USB\_OTG\_HS hardware block:

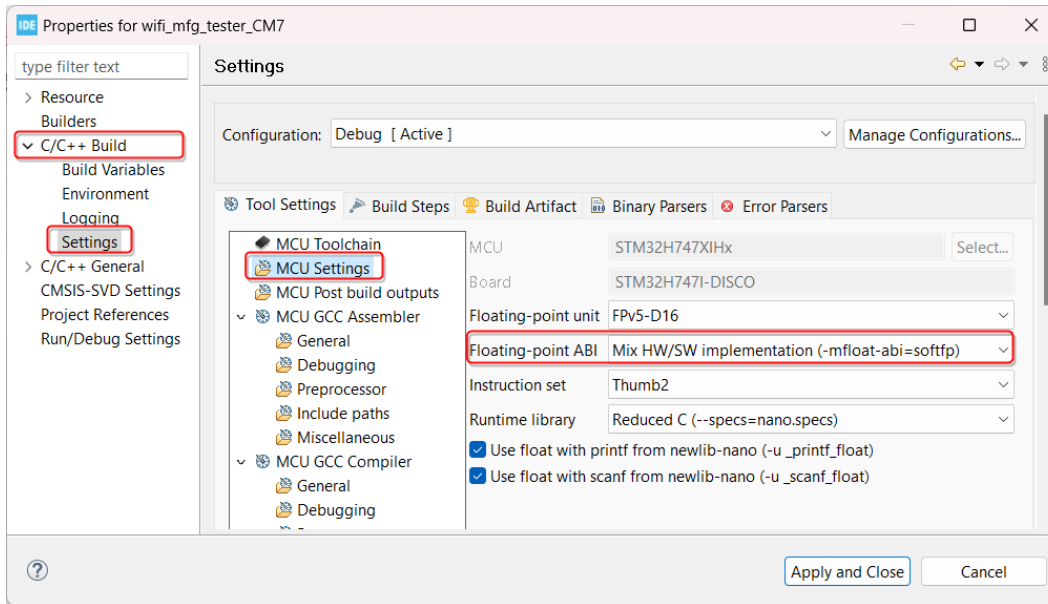
- External Phy: *Host\_Only*
- In Parameter Settings:
  - Speed: *High Speed 480Mbit/s*
  - Enable internal IP DMA: *Enable*
  - Physical Interface: *External Phy*
- In NVIC Settings:
  - Disable all interrupts.





## 2.3 Application configuration

1. Add the Preprocessor macro name to the project:
  - CYBSP\_WIFI\_INTERFACE\_TYPE=CYBSP\_USB\_INTERFACE
  - NO\_NVRAM\_FILE
2. The pre-built library of SEGGER emusb-host middleware requires to set Floating-point ABI as *Mix HW/SW implementation* (-mfloat-abi=softfp) in the Project environment.



3. Before enabling Wi-Fi, initialize and enable SEGGER emusb-host middleware by calling the `USBH_Start()` function.

The `stm32_segger_usb.zip` archive the applications, which you can use as a reference for enabling the USB connectivity:

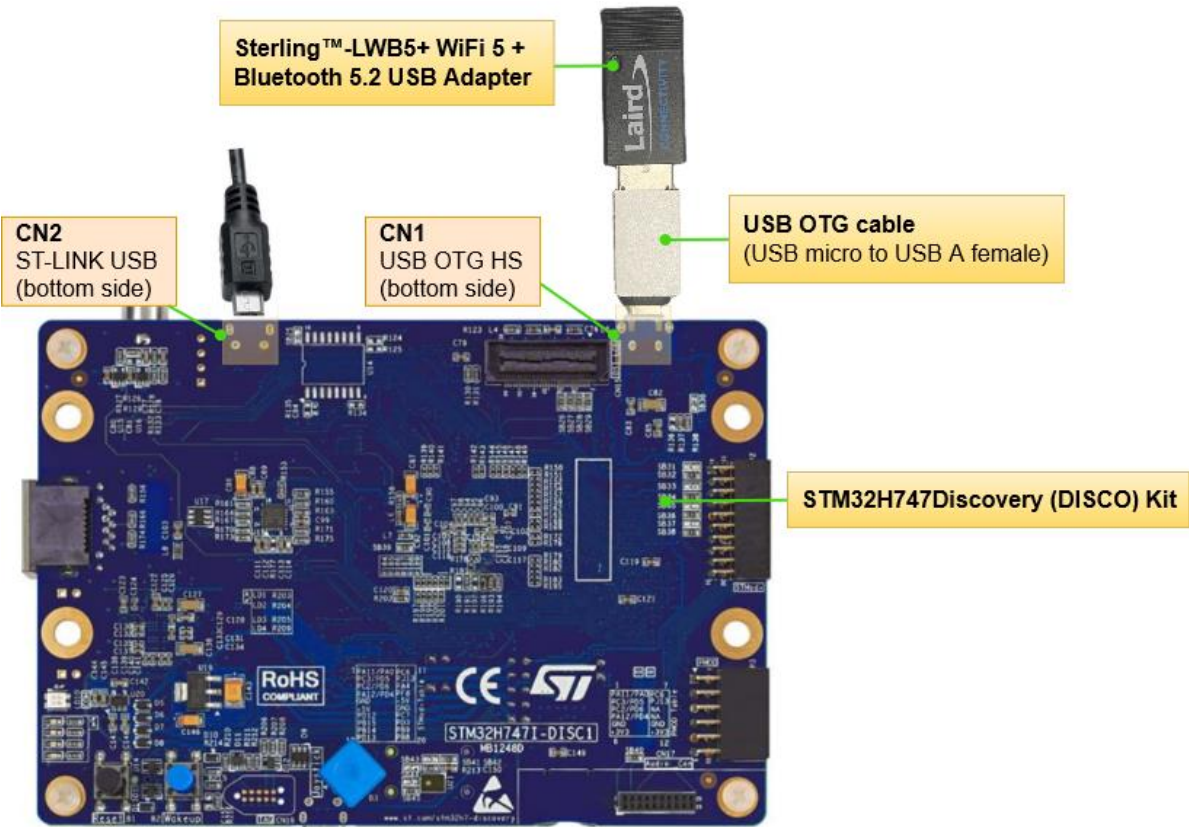
- {Path to `stm32_segger_usb` content}\Projects\STM32H747I-DISCO\Applications\4373\_USB\wifi\_scan
- {Path to `stm32_segger_usb` content }\Projects\STM32H747I-DISCO\Applications\4373\_USB\wifi\_mfg\_tester
- {Path to `stm32_segger_usb` content }\Projects\STM32H747I-DISCO\Applications\4373\_USB\wifi\_bt\_tester

### 3 Hardware setup

#### 3.1 Using STM32H747 DISCO kit with Wi-Fi/ Bluetooth® USB Dongle

The STM32H747 DISCO board setup requires two discrete boards to enable the STM32H7xx board to host Infineon's CYW4373/USB connectivity device. The two boards and links are:

- [STM32H747 Discovery \(DISCO\) Kit](#): The STM32H747I-DISCO Discovery kit is a complete demonstration and development platform for the STMicroelectronics STM32H747XIH6 microcontroller, designed to simplify user application development.
- [Sterling™-LWB5+ USB Adapter](#): Wi-Fi 5 + Bluetooth 5.2 USB Adapter for embedded devices.



This setup does not require any connecting wires.

#### Revision history

Date	Version	Description
2024-03-06	**	Initial release.

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