HCM010S-E TE-B

User Guide

Short-Range Module Series

Version: 1.0

Date: 2025-02-20

Status: Released

At Quectel, our aim is to provide timely and comprehensive services to our customers. If you require any assistance, please contact our headquarters:

Quectel Wireless Solutions Co., Ltd.
Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai 200233, China
Tel: +86 21 5108 6236
Email: info@quectel.com

Or our local offices. For more information, please visit:
http://www.quectel.com/support/sales.htm.

For technical support, or to report documentation errors, please visit:
http://www.quectel.com/support/technical.htm.
Or email us at: support@quectel.com.

Legal Notices

We offer information as a service to you. The provided information is based on your requirements and we make every effort to ensure its quality. You agree that you are responsible for using independent analysis and evaluation in designing intended products, and we provide reference designs for illustrative purposes only. Before using any hardware, software or service guided by this document, please read this notice carefully. Even though we employ commercially reasonable efforts to provide the best possible experience, you hereby acknowledge and agree that this document and related services hereunder are provided to you on an "as available" basis. We may revise or restate this document from time to time at our sole discretion without any prior notice to you.

Use and Disclosure Restrictions

License Agreements

Documents and information provided by us shall be kept confidential, unless specific permission is granted. They shall not be accessed or used for any purpose except as expressly provided herein.

Copyright

Our and third-party products hereunder may contain copyrighted material. Such copyrighted material shall not be copied, reproduced, distributed, merged, published, translated, or modified without prior written consent. We and the third party have exclusive rights over copyrighted material. No license shall be granted or conveyed under any patents, copyrights, trademarks, or service mark rights. To avoid ambiguities, purchasing in any form cannot be deemed as granting a license other than the normal non-exclusive, royalty-free license to use the material. We reserve the right to take legal action for noncompliance with abovementioned requirements, unauthorized use, or other illegal or malicious use of the material.

Trademarks

Except as otherwise set forth herein, nothing in this document shall be construed as conferring any rights to use any trademark, trade name or name, abbreviation, or counterfeit product thereof owned by Quectel or any third party in advertising, publicity, or other aspects.

Third-Party Rights

This document may refer to hardware, software and/or documentation owned by one or more third parties ("third-party materials"). Use of such third-party materials shall be governed by all restrictions and obligations applicable thereto.

We make no warranty or representation, either express or implied, regarding the third-party materials, including but not limited to any implied or statutory, warranties of merchantability or fitness for a particular purpose, quiet enjoyment, system integration, information accuracy, and non-infringement of any third-party intellectual property rights with regard to the licensed technology or use thereof. Nothing herein constitutes a representation or warranty by us to either develop, enhance, modify, distribute, market, sell, offer for sale, or otherwise maintain production of any our products or any other hardware, software, device, tool, information, or product. We moreover disclaim any and all warranties arising from the course of dealing or usage of trade.

Privacy Policy

To implement module functionality, certain device data are uploaded to Quectel's or third-party's servers, including carriers, chipset suppliers or customer-designated servers. Quectel, strictly abiding by the relevant laws and regulations, shall retain, use, disclose or otherwise process relevant data for the purpose of performing the service only or as permitted by applicable laws. Before data interaction with third parties, please be informed of their privacy and data security policy.

Disclaimer

a) We acknowledge no liability for any injury or damage arising from the reliance upon the information.
b) We shall bear no liability resulting from any inaccuracies or omissions, or from the use of the information contained herein.
c) While we have made every effort to ensure that the functions and features under development are free from errors, it is possible that they could contain errors, inaccuracies, and omissions. Unless otherwise provided by valid agreement, we make no warranties of any kind, either implied or express, and exclude all liability for any loss or damage suffered in connection with the use of features and functions under development, to the maximum extent permitted by law, regardless of whether such loss or damage may have been foreseeable.
d) We are not responsible for the accessibility, safety, accuracy, availability, legality, or completeness of information, advertising, commercial offers, products, services, and materials on third-party websites and third-party resources.

Safety Information

The following safety precautions must be observed during all phases of operation, such as usage, service or repair of any terminal or mobile incorporating the module. Manufacturers of the terminal should notify users and operating personnel of the following safety information by incorporating these guidelines into all manuals of the product. Otherwise, Quectel assumes no liability for customers' failure to comply with these precautions.

	Full attention must be paid to driving at all times in order to reduce the risk of an accident. Using a mobile while driving (even with a handsfree kit) causes distraction and can lead to an accident. Please comply with laws and regulations restricting the use of wireless devices while driving.
	Switch off the terminal or mobile before boarding an aircraft. The operation of wireless appliances in an aircraft is forbidden to prevent interference with communication systems. If there is an Airplane Mode, it should be enabled prior to boarding an aircraft. Please consult the airline staff for more restrictions on the use of wireless devices on an aircraft.
	Wireless devices may cause interference on sensitive medical equipment, so please be aware of the restrictions on the use of wireless devices when in hospitals, clinics or other healthcare facilities.
	Terminals or mobiles operating over radio signal and cellular network cannot be guaranteed to connect in certain conditions, such as when the mobile bill is unpaid or the (U)SIM card is invalid. When emergency help is needed in such conditions, use emergency call if the device supports it. In order to make or receive a call, the terminal or mobile must be switched on in a service area with adequate signal strength. In an emergency, the device with emergency call function cannot be used as the only contact method considering network connection cannot be guaranteed under all circumstances.
	The terminal or mobile contains a transceiver. When it is ON, it receives and transmits radio frequency signals. RF interference can occur if it is used close to TV sets, radios, computers or other electric equipment.
	In locations with explosive or potentially explosive atmospheres, obey all posted signs and turn off wireless devices such as mobile phones or other terminals. Areas with explosive or potentially explosive atmospheres include fueling areas, below decks on boats, fuel or chemical transfer or storage facilities, and areas where the air contains chemicals or particles such as grain, dust or metal powders.

About the Document

Revision History

| Version	Date	Author	Description
-	2024-11-12	Allen KE	Creation of the document
1.0	2025-02-20	Allen KE	First official release

Contents

Table Index

Figure Index

1 Introduction

To help you to develop applications with Quectel HCM010S-E conveniently, Quectel supplies corresponding development board (HCM010S-E-TE-B) to test the module. This document can help you quickly understand HCM010S-E-TE-B interface specifications, RF characteristics, electrical and mechanical details and know how to effectively use it.

2 Product Overview

HCM010S-E-TE-B is a Bluetooth development board that supports a series of interfaces. It can be used for testing basic functionalities and developing HCM010S-E.
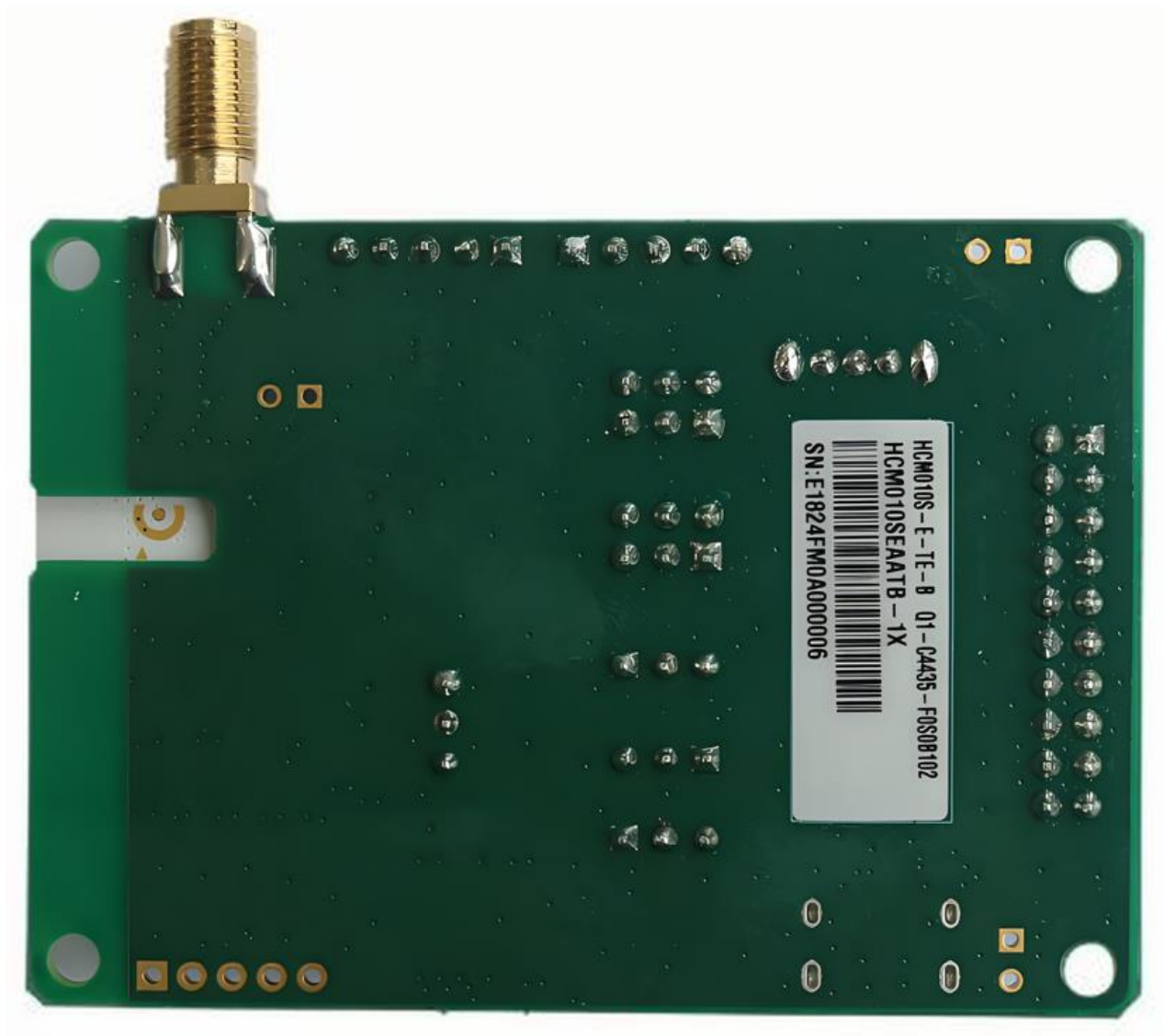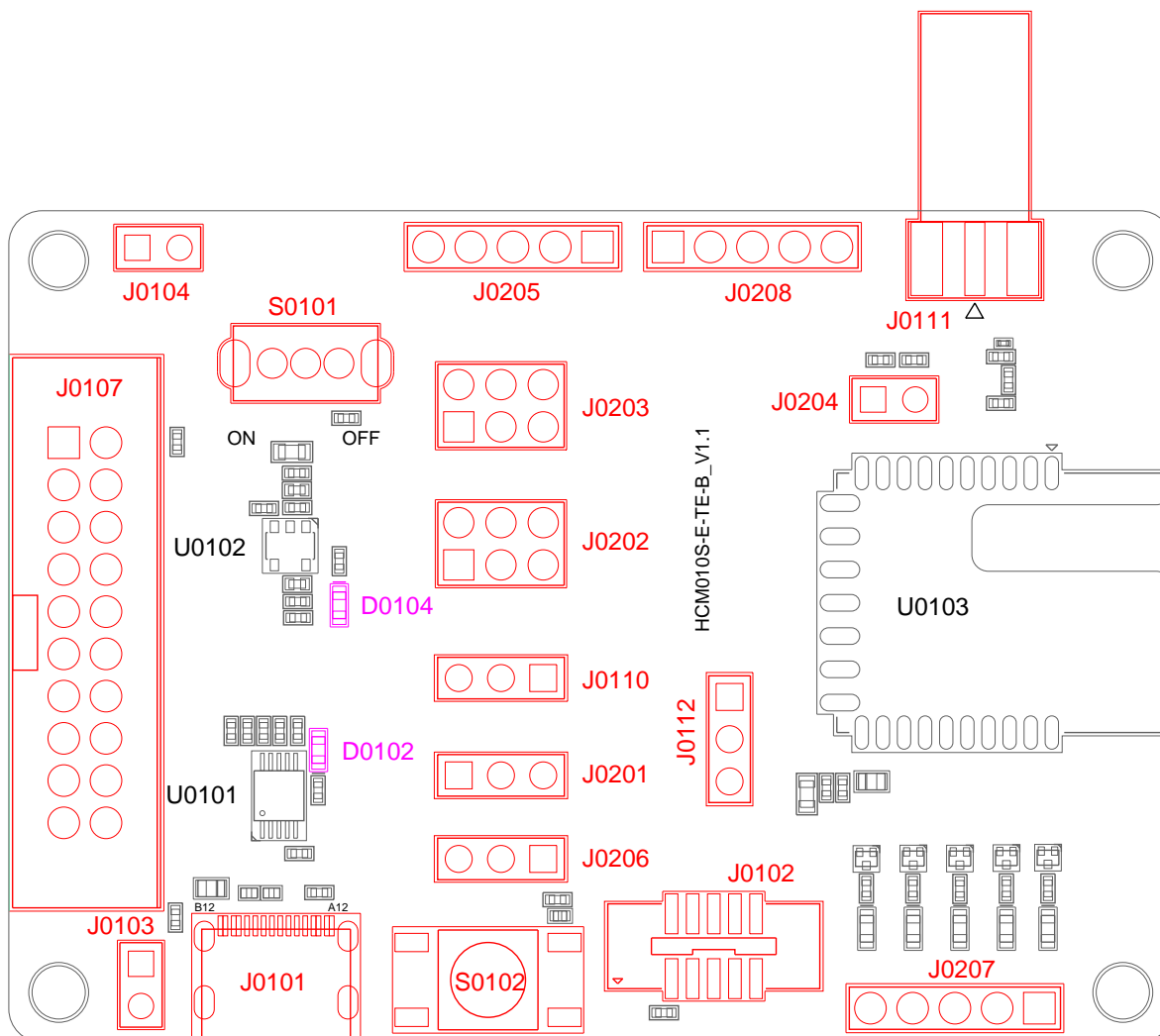
2.1. Top and Bottom Views
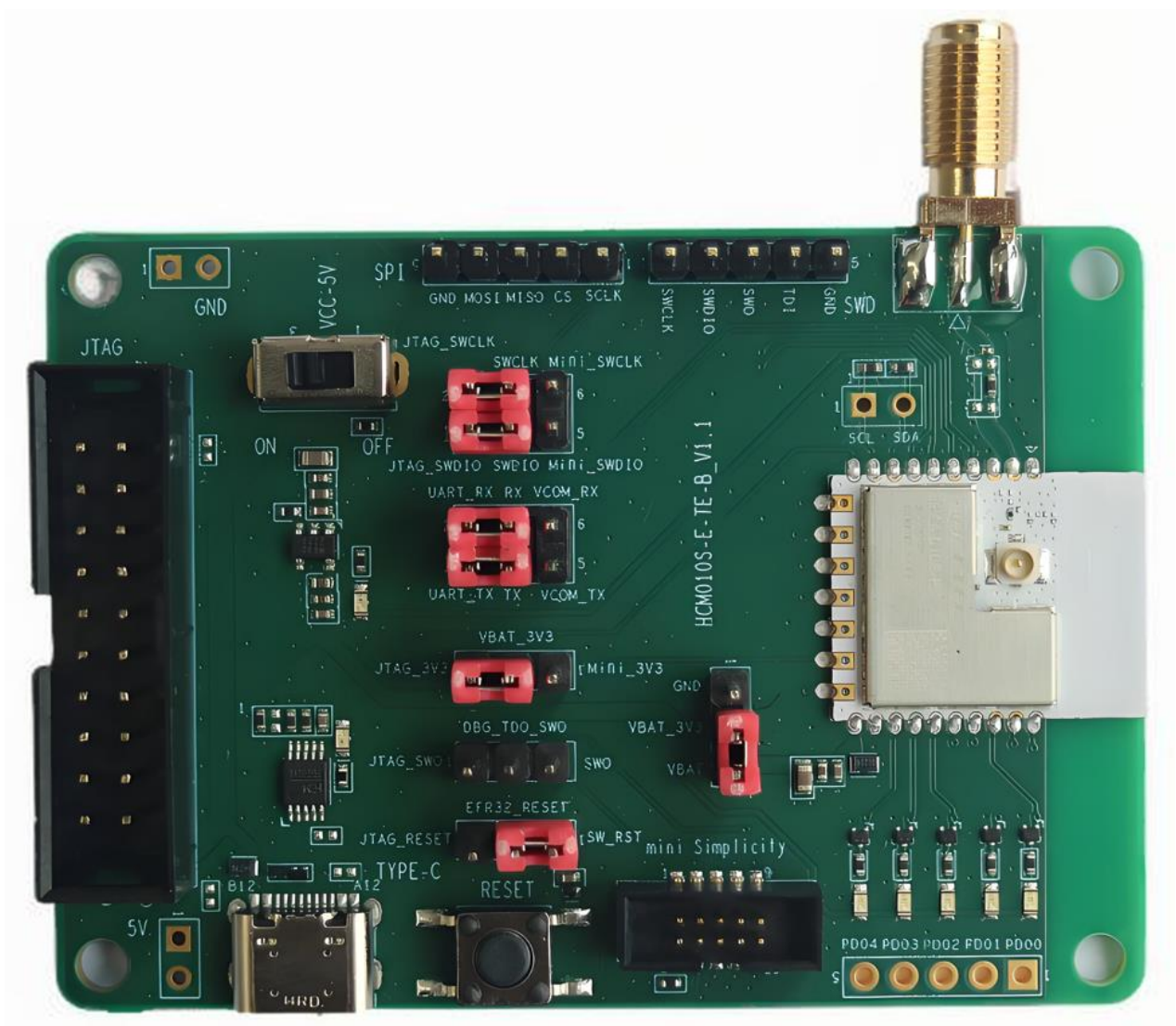
Figure 1: Top View

Figure 2: Bottom View

2.2. Component Placement

Figure 3: Component Placement

Table 1: Component Information

Component	RefDes	Description
Module	U0103	HCM010S-E module
LDO	U0102	5 V to 3.3 V
USB-to-UART Bridge	U0101	USB-to-UART bridge
Power Supply Interfaces	J0101	USB Type-C power supply interface

	J0103	Positive electrode of external power supply interface (+5 V)
	J0104	Negative electrode of external power supply interface (GND)
	J0110	VBAT_3V3 jumper interface
Power Switch	S0101	VBAT ON/OFF control
Reset Button	S0102	Resets the module via J0206
USB Interface	J0101	Connects to USART interface of the module via U0101 and J0202
	J0208	5-pin SWD interface
Debug Interfaces	J0107	20-pin JTAG interface
	J0102	10-pin header of mini simplicity connector
Status LEDs	D0104	Indicates VBAT ON/OFF status
	D0102	Indicates USART status
SWO Jumper Interface	J0201	Connections between different jumper pins for JTAG interface or 10-pin header of mini simplicity connector
USART Jumper Interface	J0202	Connections between different jumper pins for U0101 or 10-pin header of mini simplicity connector
SWD Jumper Interface	J0203	Connections between different jumper pins for JTAG interface or 10-pin header of mini simplicity connector
Reset Jumper Interface	J0206	Connections between different jumper pins for S0102 or JTAG interface
Test Points	J0204	Connected directly to the module's GPIO4 and GPIO5
	J0205	Connected directly to the module's GPIO6–GPIO9
	J0207	Connected directly to the module's GPIO12–GPIO16
	J0112	Power consumption measurement
SMA Female Connector	J0111	RF test interface

> **NOTE**
>
> See *Chapter 4* for pins connection details of jumper interfaces in the table above.

3 Kit Accessories & Assembly

3.1. Kit Accessories

Table 2: Accessories List

Items	Description	Quantity (pcs)
Cable	USB Type-C cable	1

3.2. Kit Assembly

Figure 4: TE-B Kit Assembly

4 Interface Applications

This chapter outlines the information and applications of some hardware interfaces of HCM010S-E-TE-B.

4.1. Power Supply Interfaces

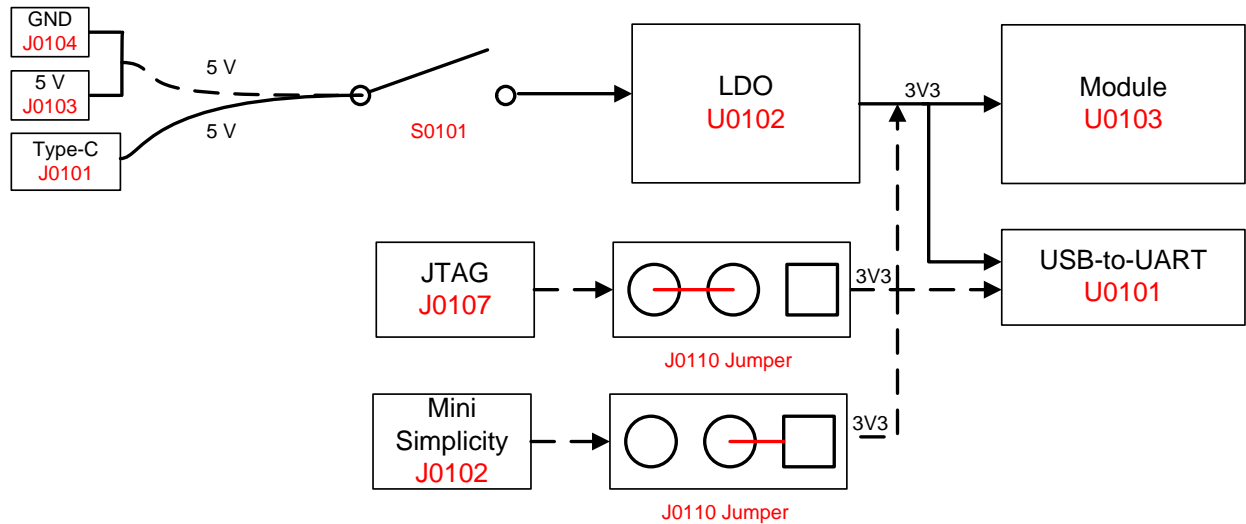The simplified schematic of power supply for HCM010S-E-TE-B is shown in the following figure.

Figure 5: Power Supply for HCM010S-E-TE-B

4.2. Power Switch and Reset Button

HCM010S-E-TE-B includes one power switch (S0101) and one reset button (S0102) as shown in the following figure.
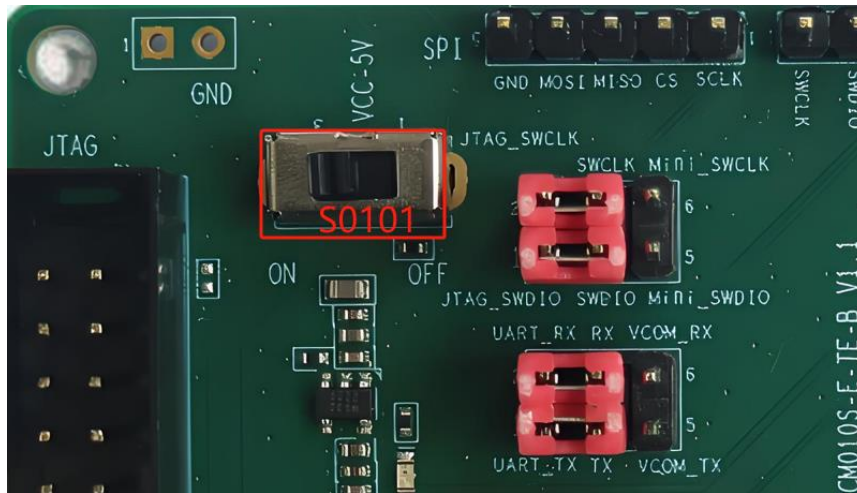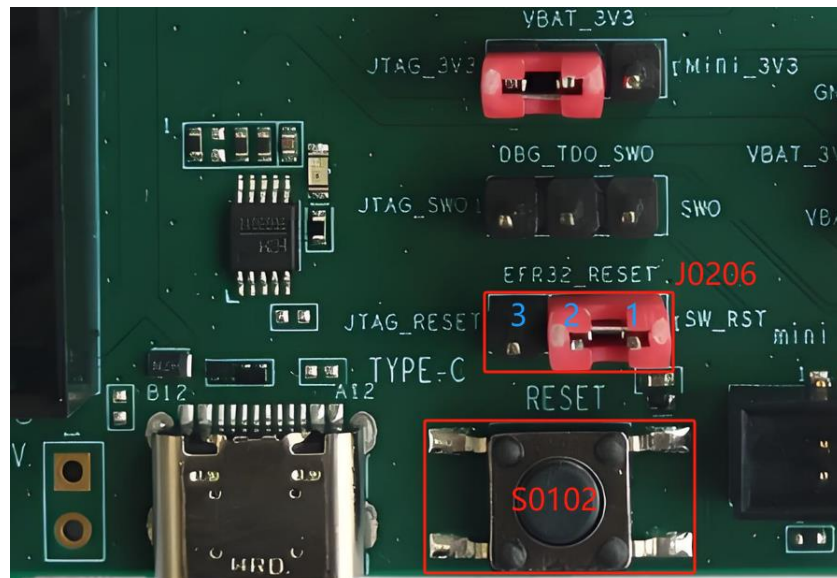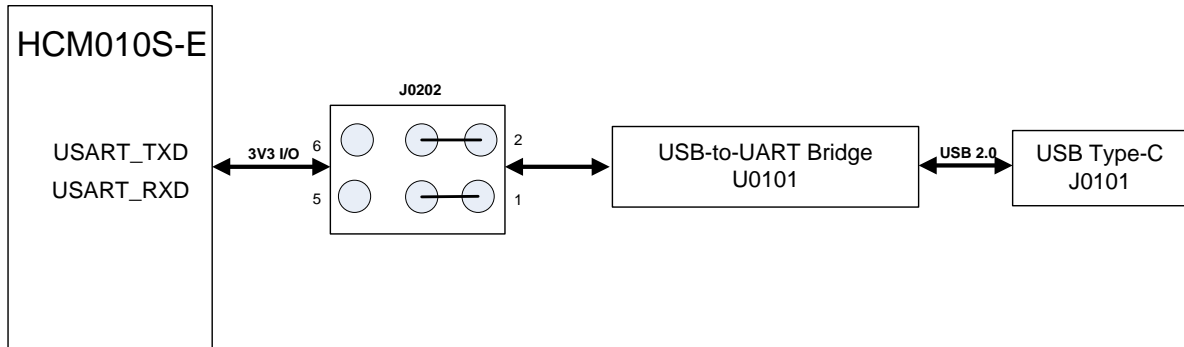
Figure 6: Power Switch

Figure 7: Reset Button

Table 3: Description of Power Switch and Reset Button

RefDes.	Description
S0101	VBAT ON/OFF control
S0102	Resets the module via J0206 (connecting EFR32_RESET to SW_RST by default)

4.3. USB Interface

Figure 8: USB-to-UART Connection

Table 4: Description of USB-to-UART Connection

RefDes	Description
U0101	USB-to-UART bridge
J0101	USB Type-C interface
J0202	Connects TX to UART_TX
	Connects RX to UART_RX

HCM010S-E-TE-B offers J0101 (USB interface) connecting to the module's USART interface via U0101 and J0202 for USB-to-UART connection, with the jumpers on J0202 as shown in *Figure 11*.
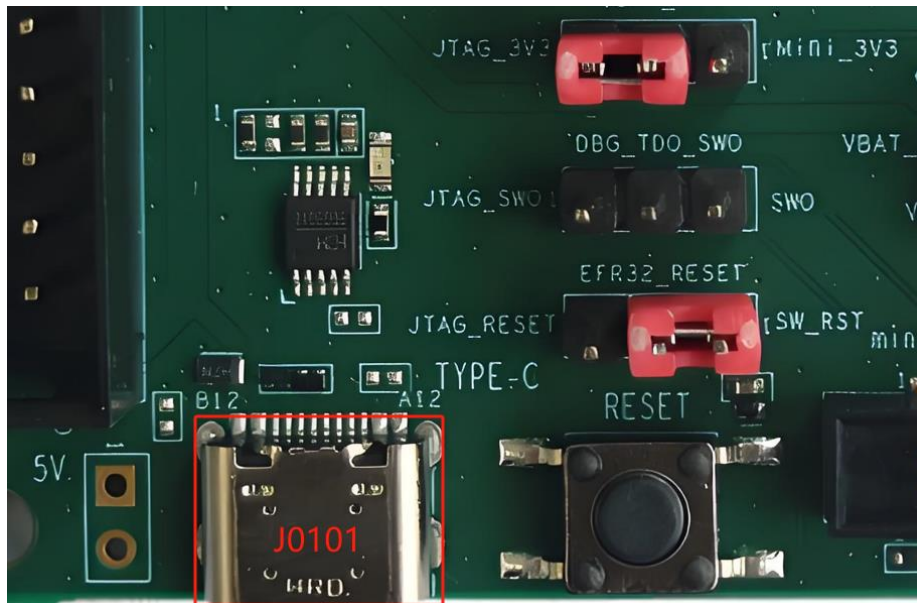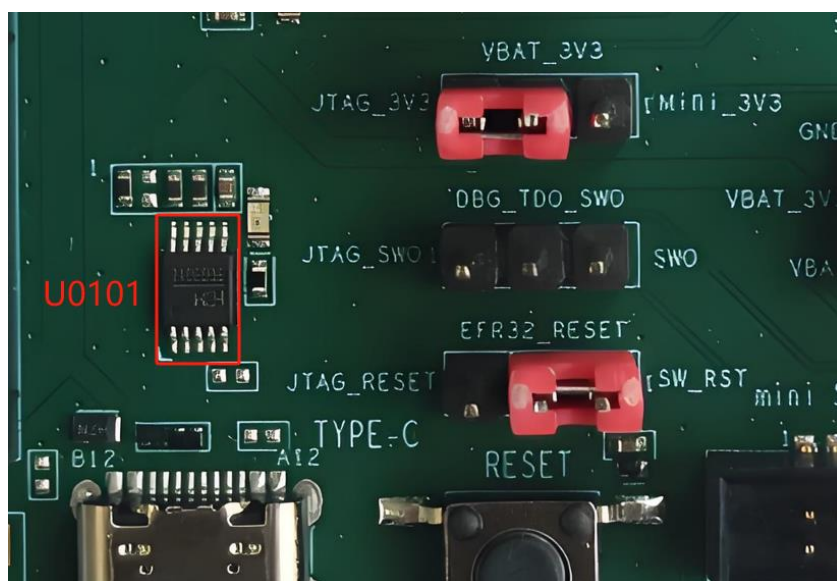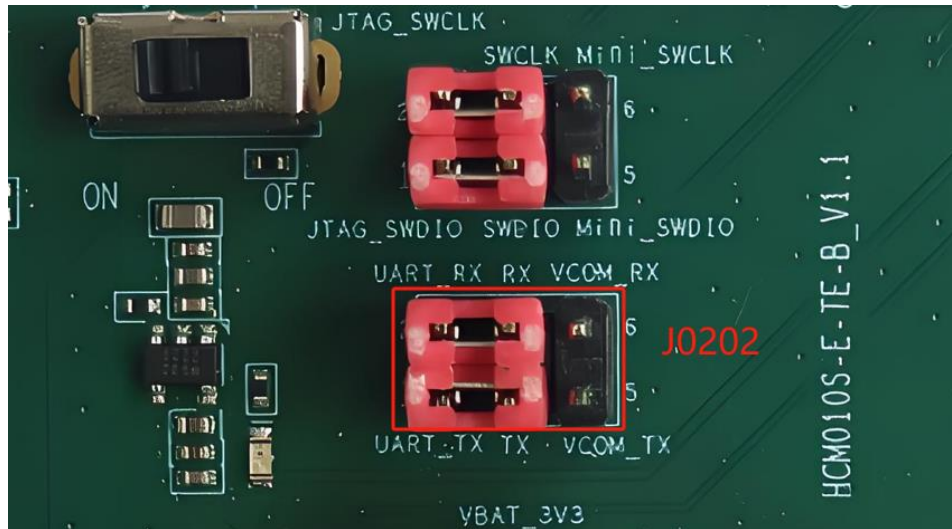
Figure 9: USB Interface

Figure 10: USB-to-UART Bridge

Figure 11: Jumper

J0101 supports 115200 bps baud rate by default. It is intended for data transmission between the module and the host. It can also be used for AT command communication and debugging.

4.4. Debug Interfaces

HCM010S-E-TE-B offers J0208 (SWD interface), J0107 (JTAG interface) and J0102 (10-pin header of mini simplicity connector) for real-time data and instruction tracing through the Embedded Trace Module (ETM) as illustrated in the following figure. J0208/J0107/J0102 can also be used for firmware download and upgrade.
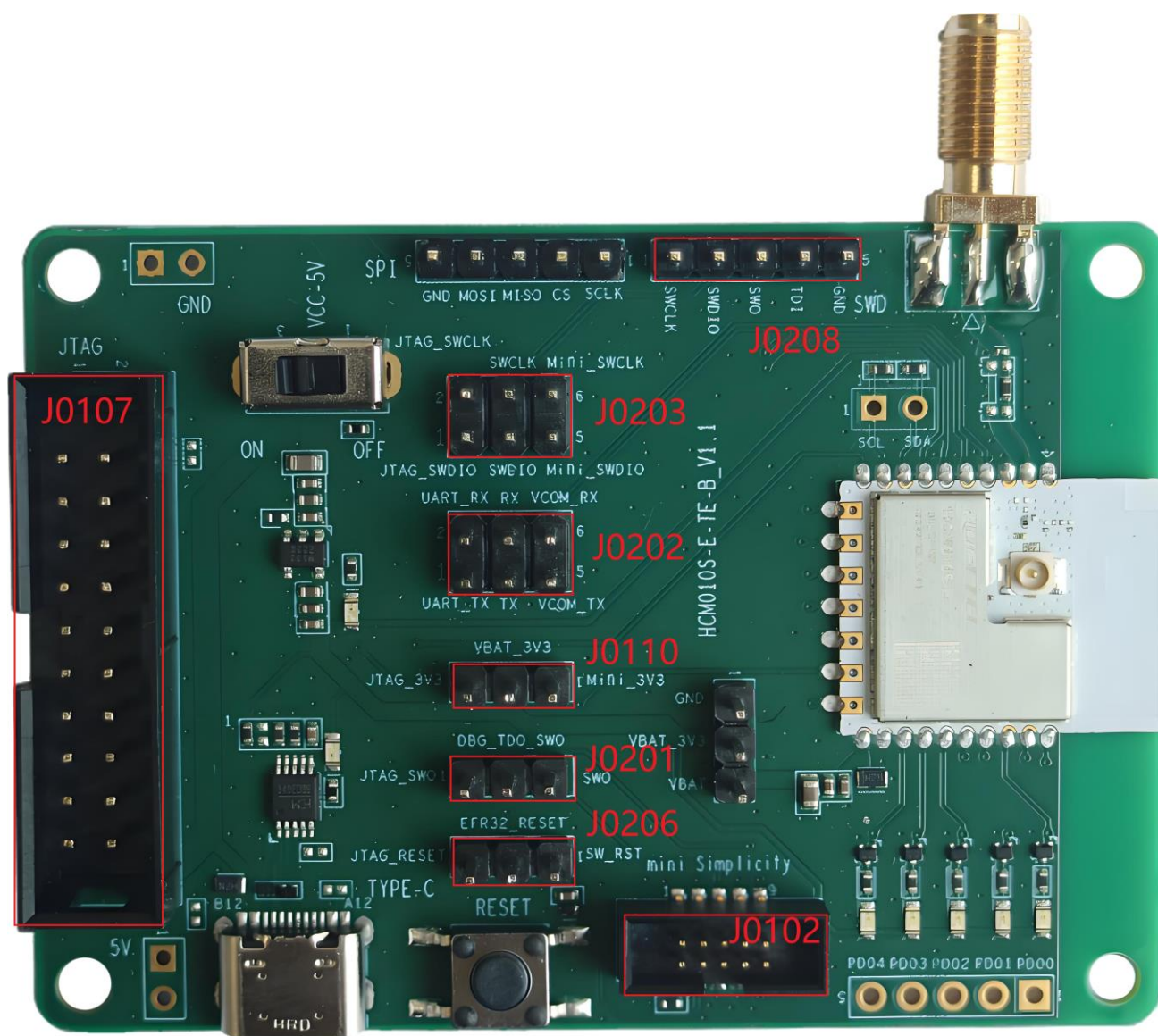
Figure 12: Debug Interfaces

Table 5: Description of Debug Interfaces

| RefDes.	Description
J0107	20-pin JTAG interface
J0208	5-pin SWD interface
J0102	10-pin header of mini simplicity connector
J0202	Connects TX to VCOM_TX and RX to VCOM_RX for the connection of mini simplicity connector

J0203	Connects JTAG_SWCLK to SWCLK and JTAG_SWDIO to SWDIO for JTAG interface connection
	Connects SWCLK to Mini_SWCLK and SWDIO to Mini_SWDIO for the connection of mini simplicity connector
J0206	Connects SW_RST to EFR32_RESET for resetting the module via mini simplicity connector
J0201	Connects DBG_TDO_SWO to SWO for the connection of mini simplicity connector
	Connects DBG_TDO_SWO to JTAG_SWO for JTAG interface connection
J0110	Connects Mini_3V3 to VBAT_3V3 for the connection of mini simplicity connector
	Connects VBAT_3V3 to JTAG_3V3 for JTAG interface connection

When you use the SWD interface, connect pin 1 (SWCLK), pin 2 (SWDIO) and pin 5 (GND) of J0208 to JTAG downloader as below:
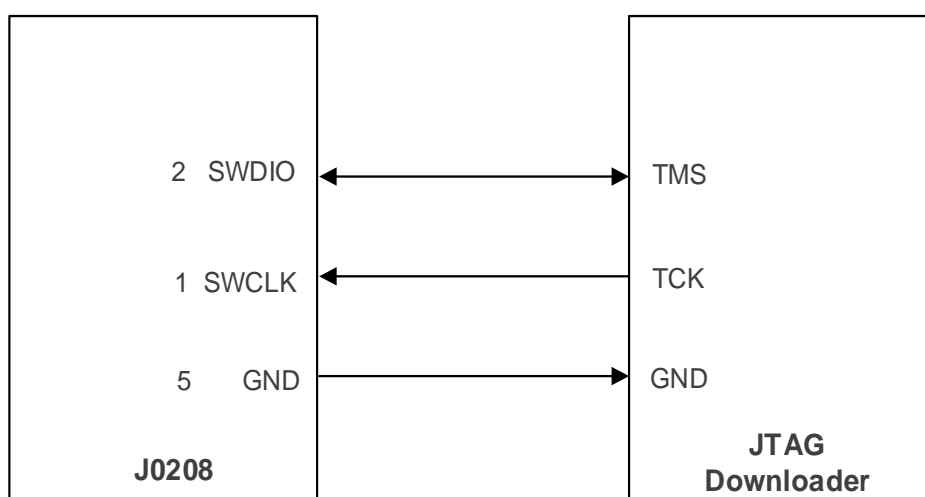
Figure 13: SWD Connection

When you use J0107 (JTAG interface), place the jumper as shown below, and connect the ARM emulator to PC through a USB type-C cable.
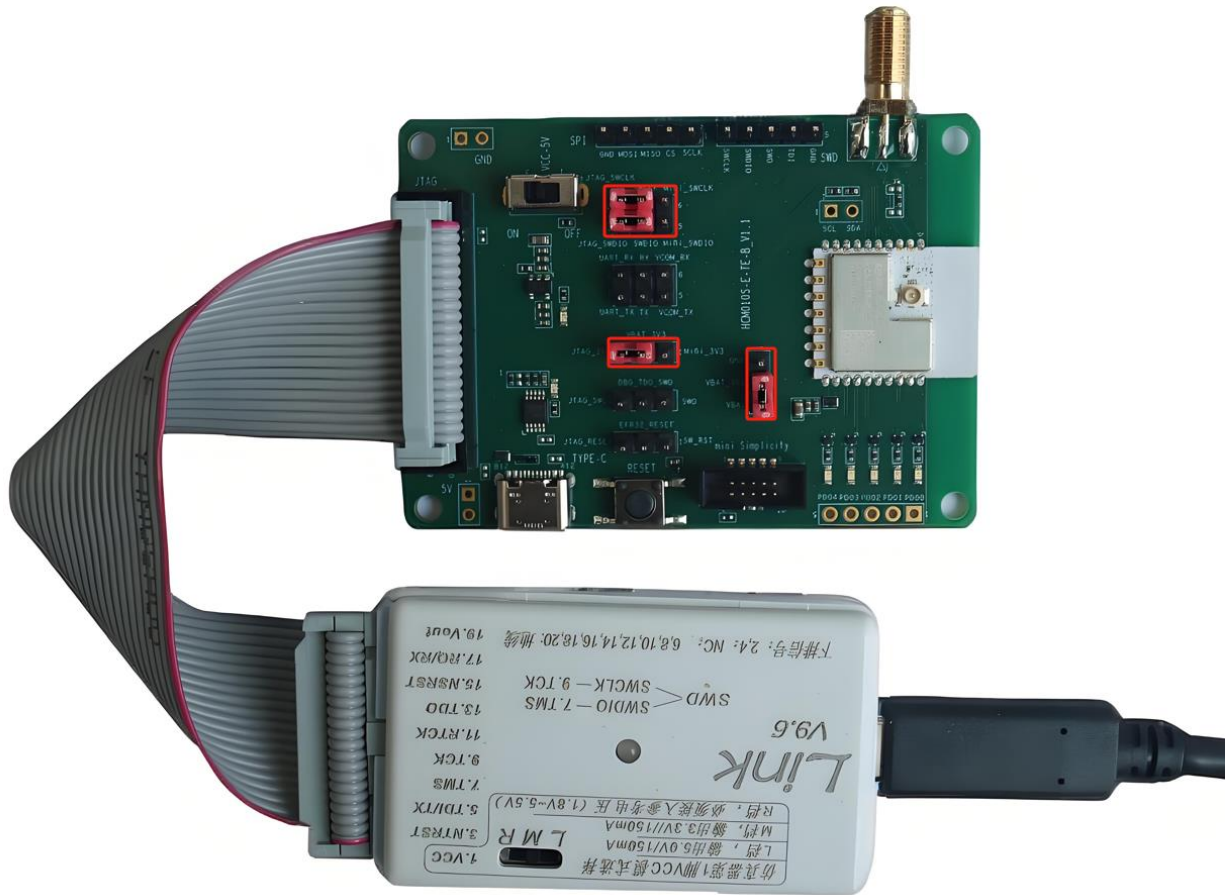
Figure 14: JTAG Connection

When you use J0102 (10-pin header of mini simplicity connector), place the jumper as shown below, and connect the J-Link debugger (SI-DBG1015A) to PC through a USB type-C cable.
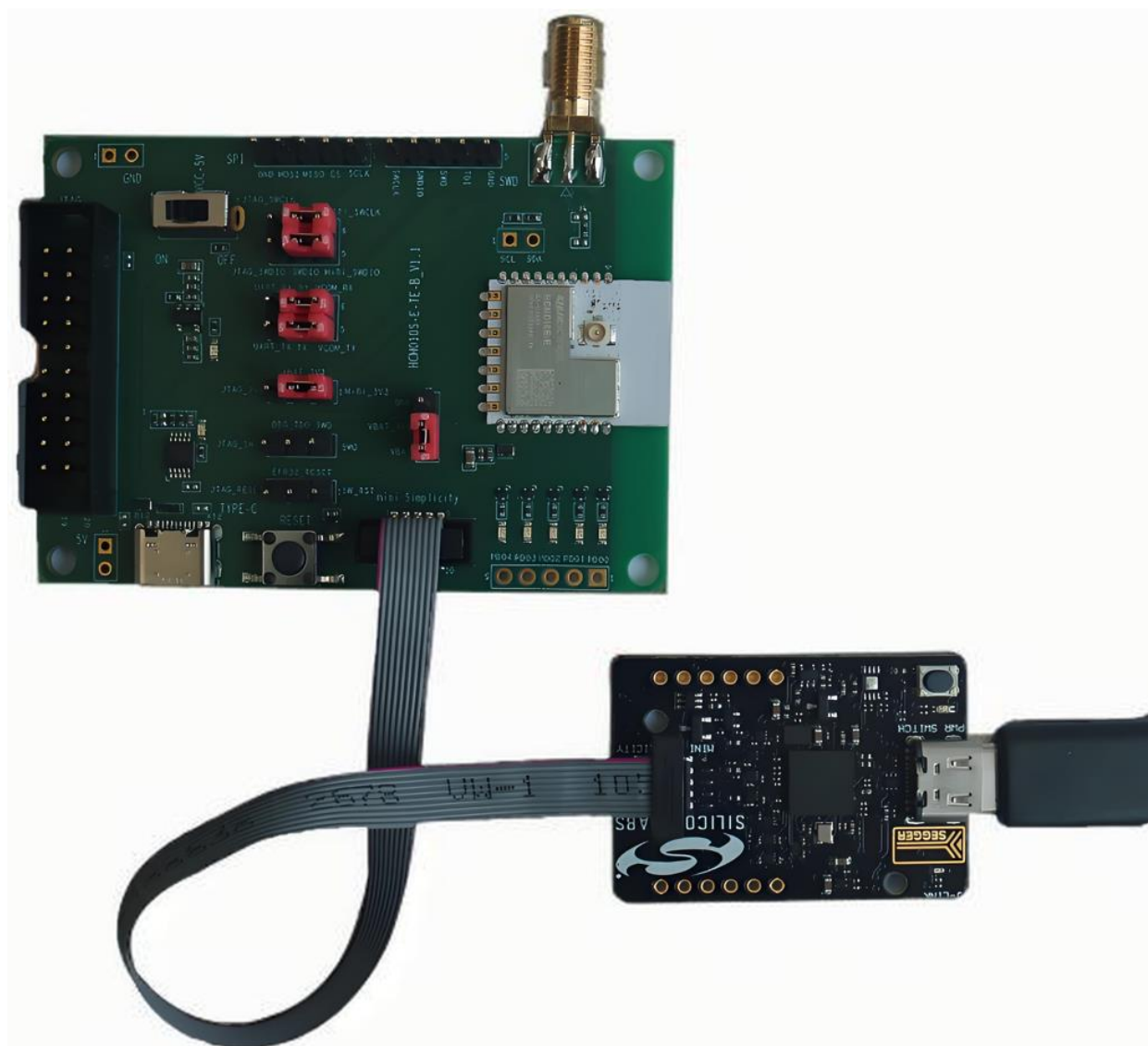
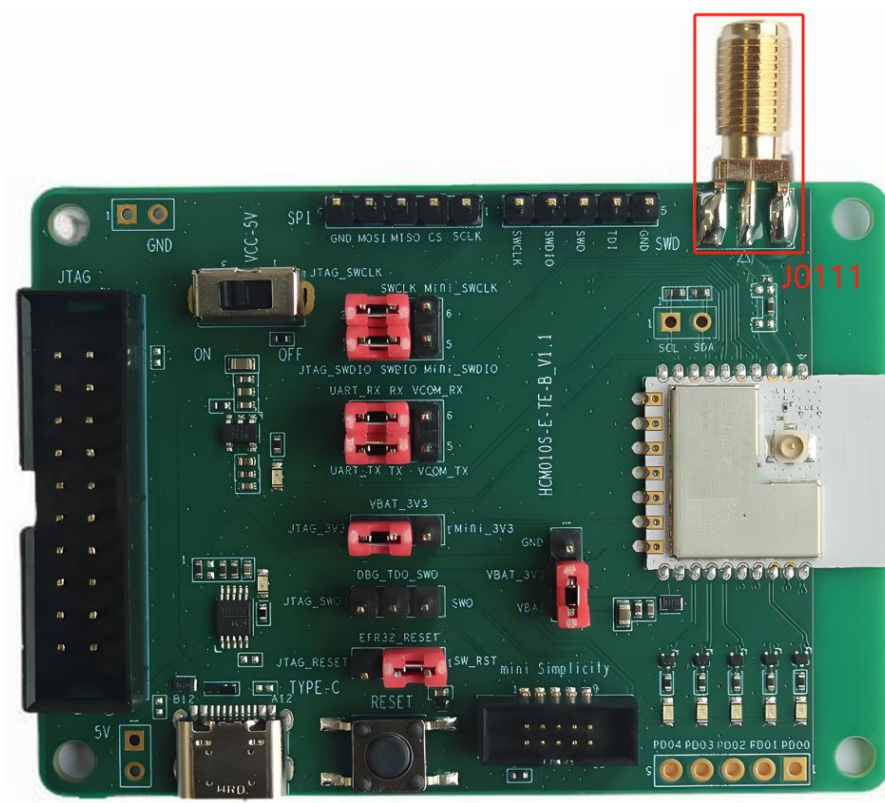**Figure 15: Mini Simplicity Connection**

4.5. RF Interface
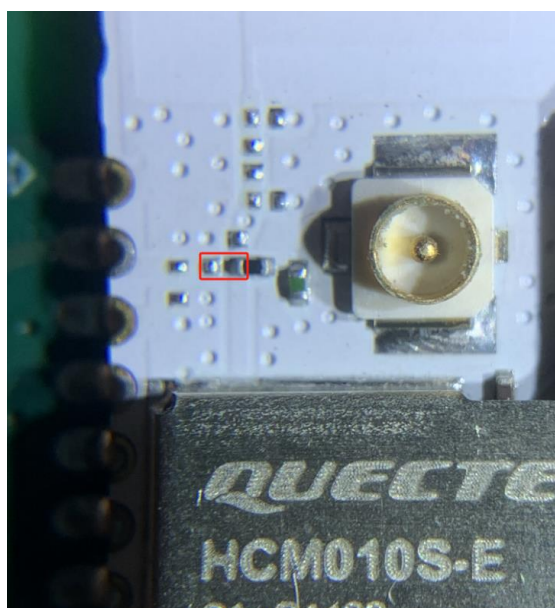

Figure 16: SMA Connector

Figure 17: Resistor Jumper

Test the conduction through J0111 (SMA connector) on the top side while a resistor jumper is required to connect to the module's pin antenna interface.

4.6. Test Points

HCM010S-E-TE-B features a series of test points (J0205, J0204, J0112 and J0207) which are illustrated in the following figure, and these test points can help you to obtain the corresponding waveform of some signals.

To test the module's power consumption, disconnect the jumper between pin 2 and pin 3 of J0112 and connect pin 1 of J0112 to the negative pole and pin 3 of J0112 to the positive pole of the programmable power supply.
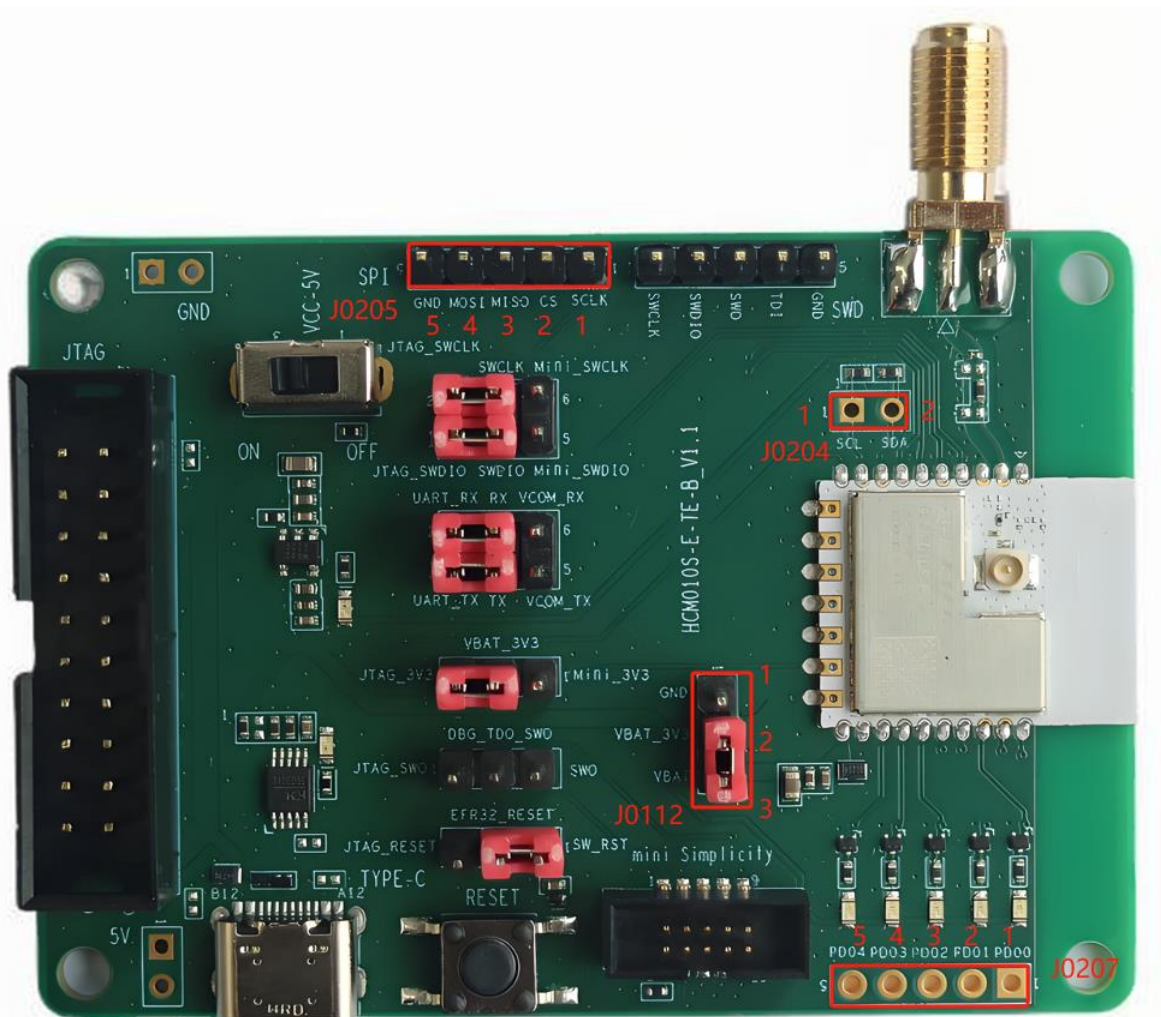
Figure 18: Test Points

Table 6: Pin Description of Test Points

| J0112		
Pin No.	**Pin Name**	**Description**
1	GND	Ground
2	VBAT_3V3	3.3 V power supply
3	VBAT	Connected directly to the module's VBAT
J0204		
Pin No.	**Pin Name**	**Description**
1	SCL	Connected directly to the module's GPIO5
2	SDA	Connected directly to the module's GPIO4
J0205		
Pin No.	**Pin Name**	**Description**
1	SCLK	Connected directly to the module's GPIO6
2	CS	Connected directly to the module's GPIO9
3	MISO	Connected directly to the module's GPIO7
4	MOSI	Connected directly to the module's GPIO8
5	GND	Ground
J0207		
Pin No.	**Pin Name**	**Description**
1	PD00	Connected directly to the module's GPIO16
2	PD01	Connected directly to the module's GPIO12
3	PD02	Connected directly to the module's GPIO15
4	PD03	Connected directly to the module's GPIO14
5	PD04	Connected directly to the module's GPIO13

NOTE

See *document [1]* for details of module pin names and definitions in the above table.

4.7. Status LEDs

HCM010S-E-TE-B comprises 2 status LEDs, which are presented in the following figure.
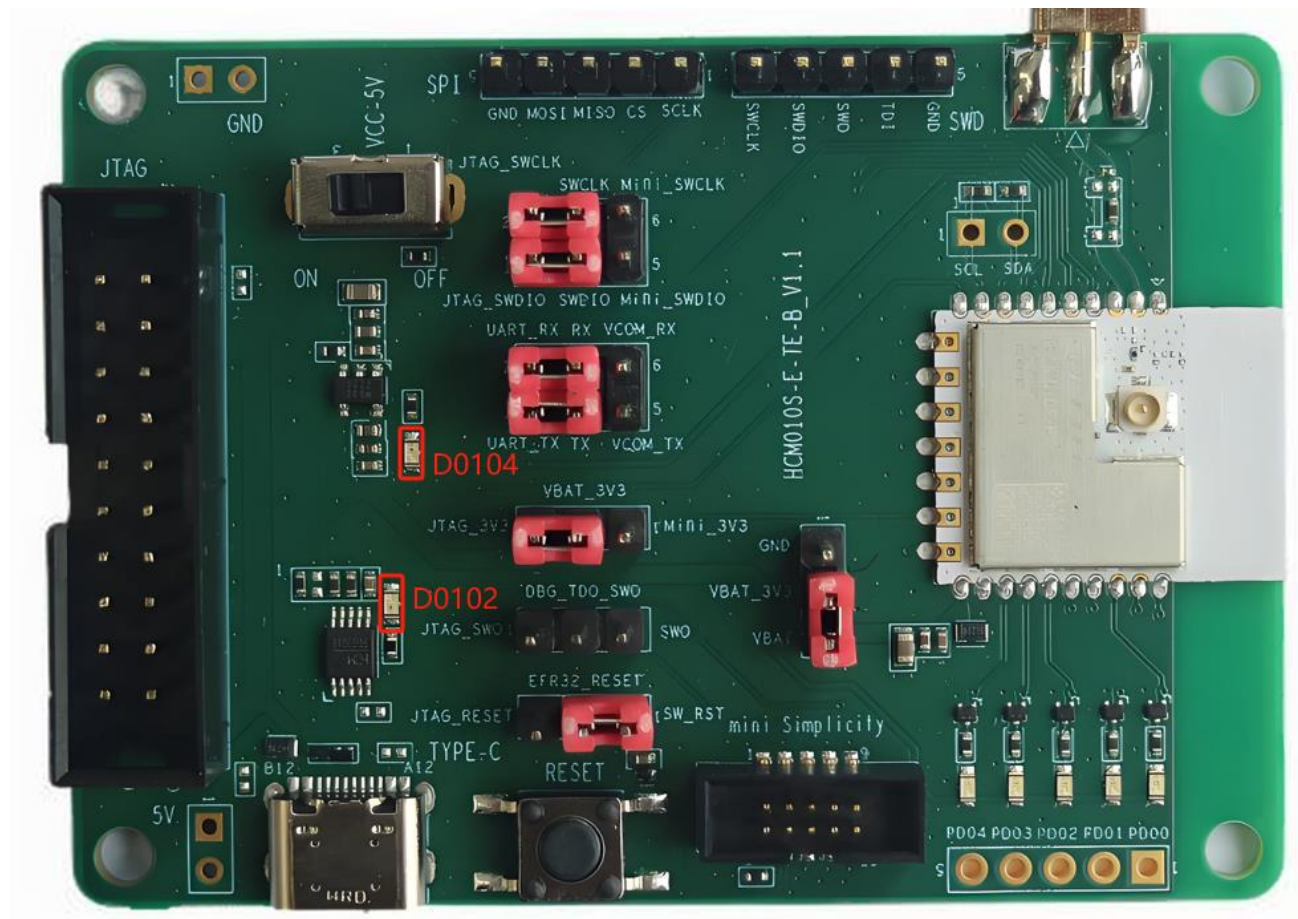
Figure 19: Status LEDs

Table 7: Description of Status LEDs

| RefDes.	Description	Comment
D0102	Indicates USART status	Light on: power on Flicker: data transmission
D0104	VBAT ON/OFF indicator	Light on: power on Light off: power off

5 Operating Procedures

This chapter outlines how to use the HCM010S-E-TE-B for testing and evaluating the module.

5.1. Power Up

1. Connect J0101 (USB interface) of HCM010S-E-TE-B to PC through the USB Type-C cable.
2. Switch S0101 (Power Switch) to **ON** position, and then D0104 (VBAT ON/OFF status LED) will light up.

5.2. Communication via USB Interface

1. Turn on the module according to the procedures referred to in *Chapter 5.1*.
2. The USB serial port number can be viewed through the PC Device Manager, as shown below.
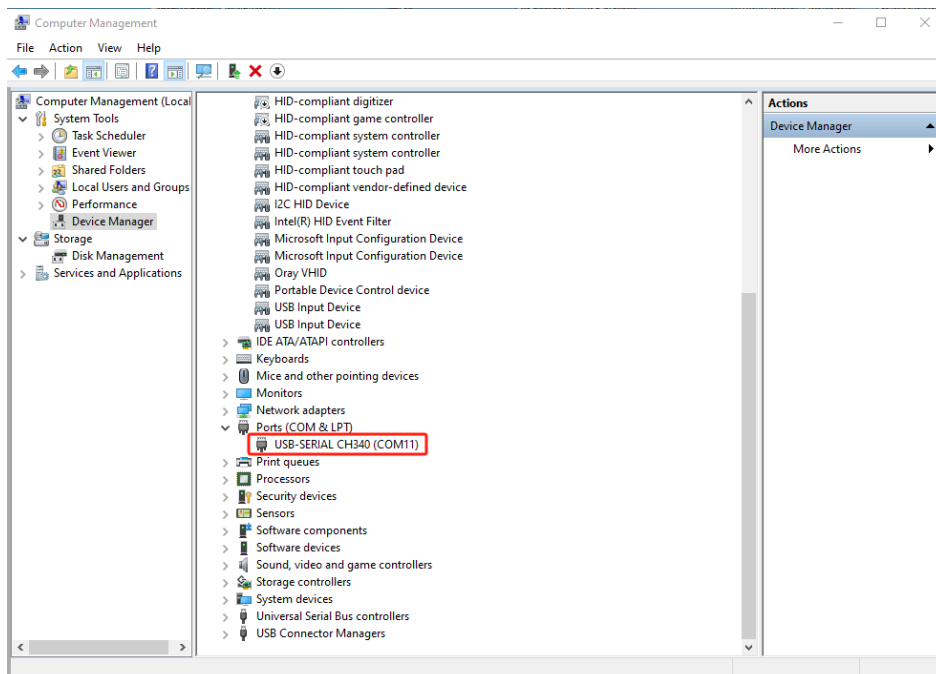
Figure 20: USB Serial Port

3. Use the QCOM tool provided by Quectel to establish communication between the module and the PC via the J0101 (USB interface). The following figure shows the field for setting the COM port on QCOM. Select the "**COM port**" (USB serial port) and set the correct "**Baudrate**". For more details about QCOM tool usage and configuration, see *document [2]*.
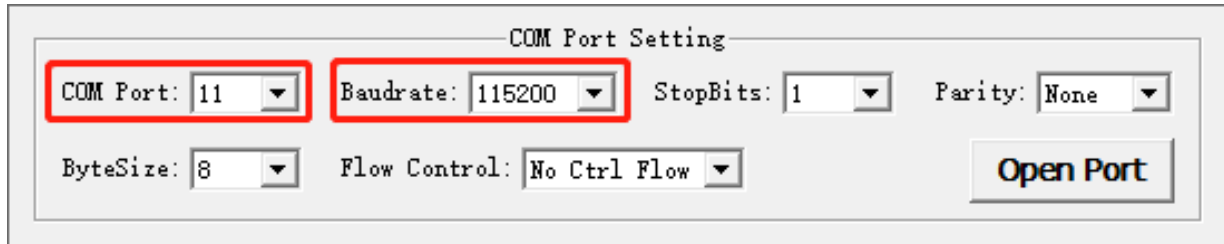

Figure 21: COM Port Setting Field on QCOM

5.3. Firmware Upgrade

You can use the JFlash tool provided by Quectel to establish the communication between the module and the PC via J0208 (SWD interface) or J0107 (JTAG interface).

> **NOTE**
>
> Contact Quectel Technical Support for the JFlash tool. For more details about JFlash tool usage and configuration, see *document [3]*.

5.4. Reset

To reset the module, first connect EFR32_RESET to SW_RST of J0206 (reset jumper interface), and then push and hold the S0102 (reset button) for more than 50 ms before releasing it.

6 Appendix References

Table 8: Related Documents

Document Name
[1] Quectel_HCM010S-E_Hardware_Design
[2] Quectel_QCOM_User_Guide
[3] Quectel_HCM010S-E_Test_Guide

Table 9: Terms and Abbreviations

Abbreviation	Description
COM	Communication
ETM	Embedded Trace Module (Microcell)
GND	Ground
GPIO	General Purpose Input/Output
JTAG	Joint Test Action Group
LCC	Leadless Chip Carrier (package)
LDO	Low-dropout Regulator
LED	Light Emitting Diode
MOSI	Master Out Slave In
PC	Personal Computer
RF	Radio Frequency
RX	Receive
SCLK	Serial Clock

SMA	Subminiature Version A
SPI	Serial Peripheral Interface
SWD	Serial Wire Debug
SWO	Serial Wire Output
TX	Transmit
UART	Universal Asynchronous Receiver & Transmitter
USB	Universal Serial Bus
VBAT	Voltage at Battery (Pin)