KCM0A5S TE-B

User Guide

Short-Range Module Series

Version: 1.0.0

Date: 2025-03-21

Status: Preliminary

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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 cellular 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
-	2025-03-21	Luke FU	Creation of the document
1.0.0	2025-03-21	Luke FU	Preliminary

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1 Introduction

To help you to develop applications with Quectel KCM0A5S conveniently, Quectel supplies corresponding development board (KCM0A5S-TE-B) to test the module. This document can help you quickly understand KCM0A5S-TE-B interface specifications, RF characteristics, electrical and mechanical details and know how to use it.

2 Product Overview

KCM0A5S-TE-B is a Wi-SUN development board that supports a series of interfaces. It can be used for basic functionalities test and further development of KCM0A5S.

2.1. Top and Bottom Views

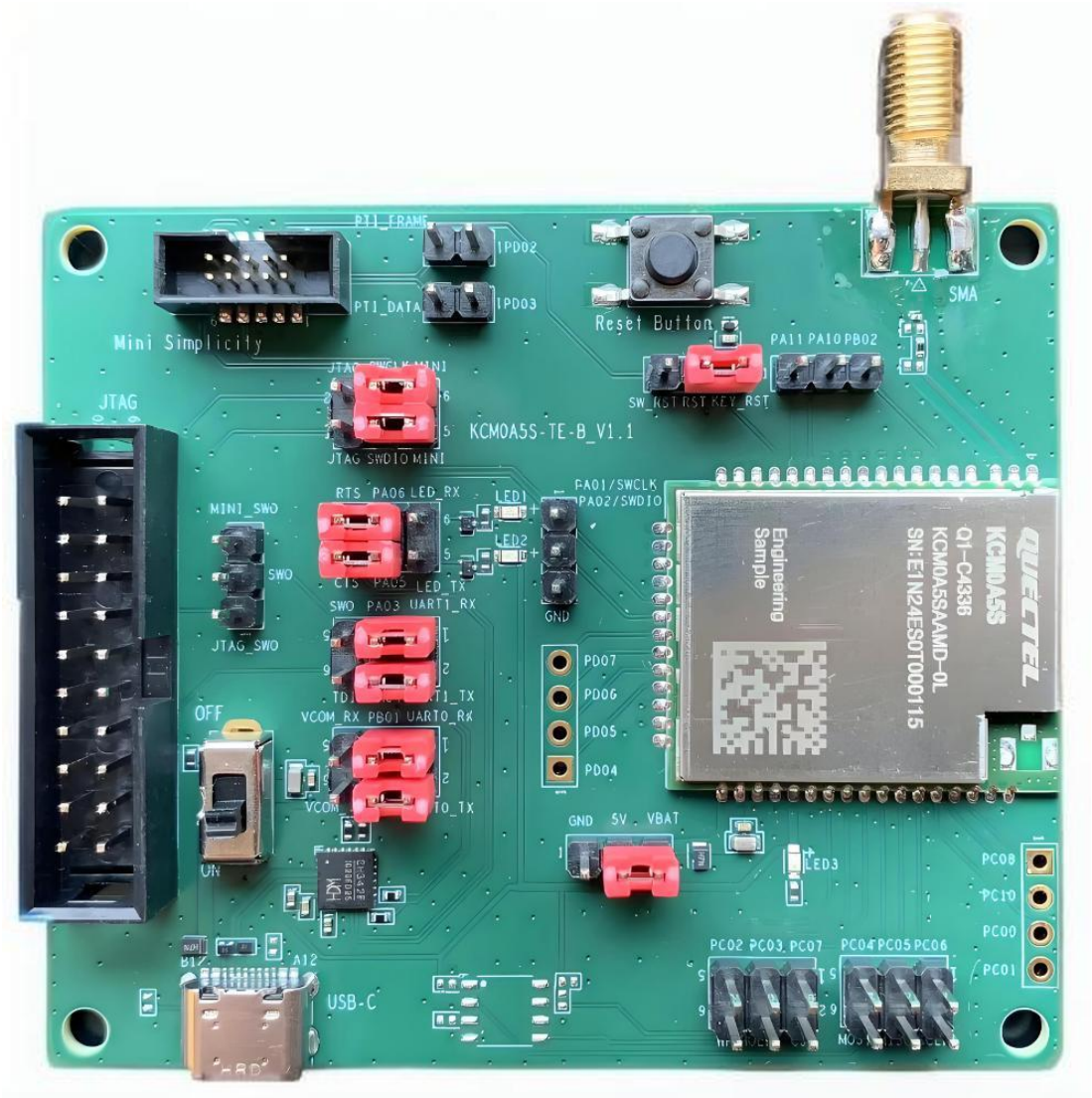

Figure 1: Top View

Figure 2: Bottom View

2.2. Component Placement

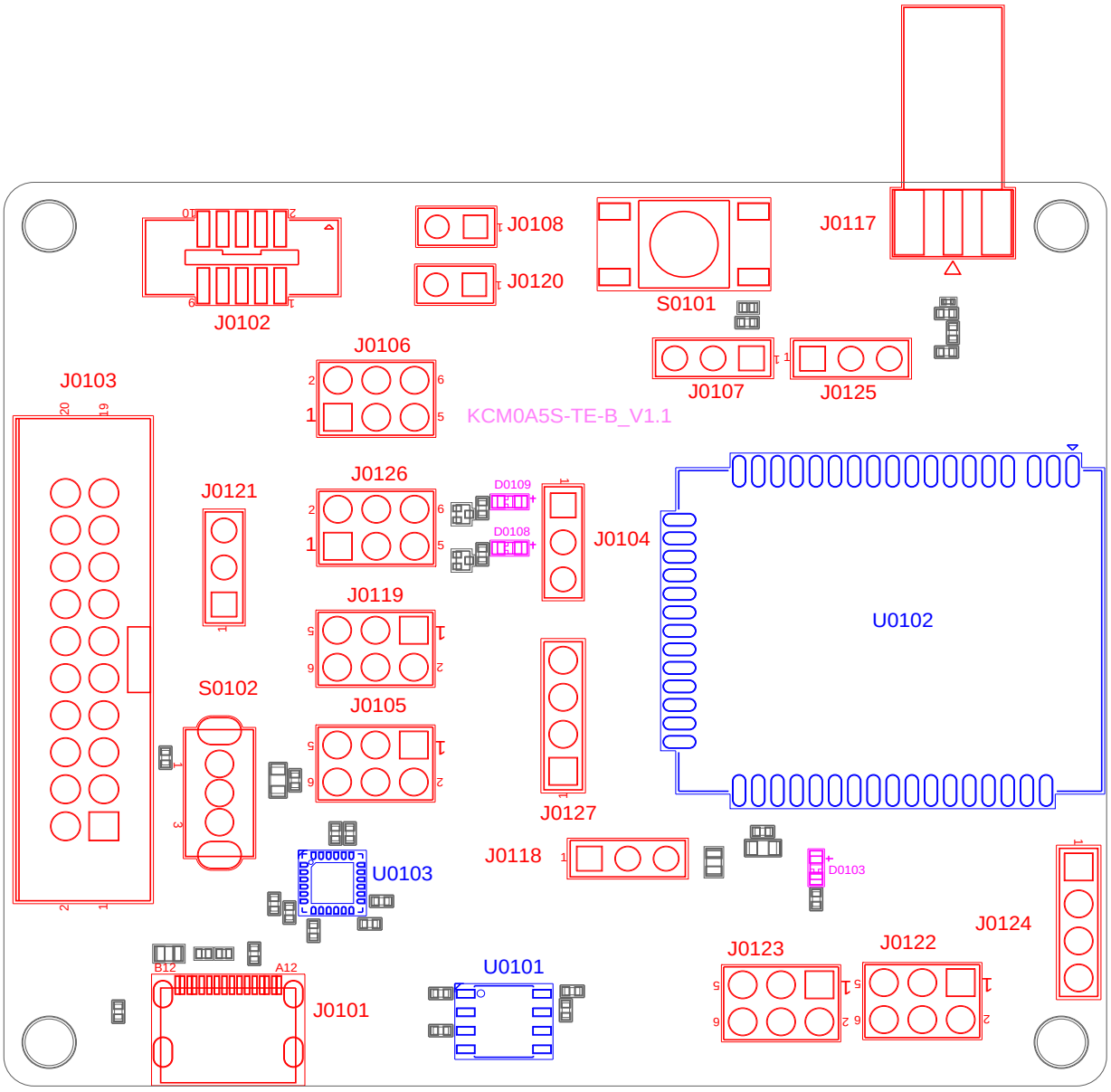

Figure 3: Component Placement

Table 1: Component Information

Component	RefDes.	Description
Module	U0102	KCM0A5S module
USB-to-UART Bridge	U0103	USB-to-UART bridge

SPI Flash or PSRAM	U0101	Reserved for SPI Flash or PSRAM
Power Supply Interfaces	J0101	USB Type-C power supply interface
	J0118	VBAT jumper interface
Power Switch	S0102	VBAT ON/OFF control
Reset Button	S0101	Resets the module via J0107
USB Interface	J0101	Connects to UART interface of the module via U0103, J0105 and J0119
Status LEDs	D0103	Indicates the KCM0A5S Module power on/off status (LED3)
	D0109 D0108	Indicate UART port communicate status (LED1 & LED2) With specific firmware.
Debug Interfaces	J0104	3-pin SWD interface
	J0103	20-pin JTAG interface
	J0102	10-pin mini simplicity interface
	J0118	Module power consumption interface
Test Points	J0125 J0127 J0124	Test basic functions
SMA RF interface	J0117	RF Connector
SWD Jumper Interface	J0106	Connections between different jumper pins for J0103/J0102
EUSART Jumper Interface	J0105	Connections EUSART port between different jumper pins for U0103/J0102
EUSART Jumper Interface	J0119	Connections EUSART port between different jumper pins for U0103/J0103
PA05 & PA06 Jumper Interface	J0126	Connections between different jumper pins for U0103/status LEDs (LED1 & LED2)
Reset Jumper Interface	J0107	Connections between different jumper pins for S0101/J0102
PD02 Jumper Interface	J0108	Shorted PD02 to PTI_FRAME with the jumper
PD03 Jumper Interface	J0120	Shorted PD03 to PTI_DATA with the jumper
SWO Jumper Interface	J0121	Connections between different jumper pins for J0102/J0103
SPI Flash or PSRAM	J0122	Shorted the GPIO to SPI Flash or PSRAM with the jumper
	J0123	

NOTE

See ***Chapter 4*** for details of pins connection of each jumper interface in the table above.

3 Kit Accessory & Assembly

3.1. Kit Accessory

Table 2: Accessory 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 KCM0A5S-TE-B.

4.1. Power Supply Interfaces

The simplified schematic of KCM0A5S-TE-B is shown in the following figure.

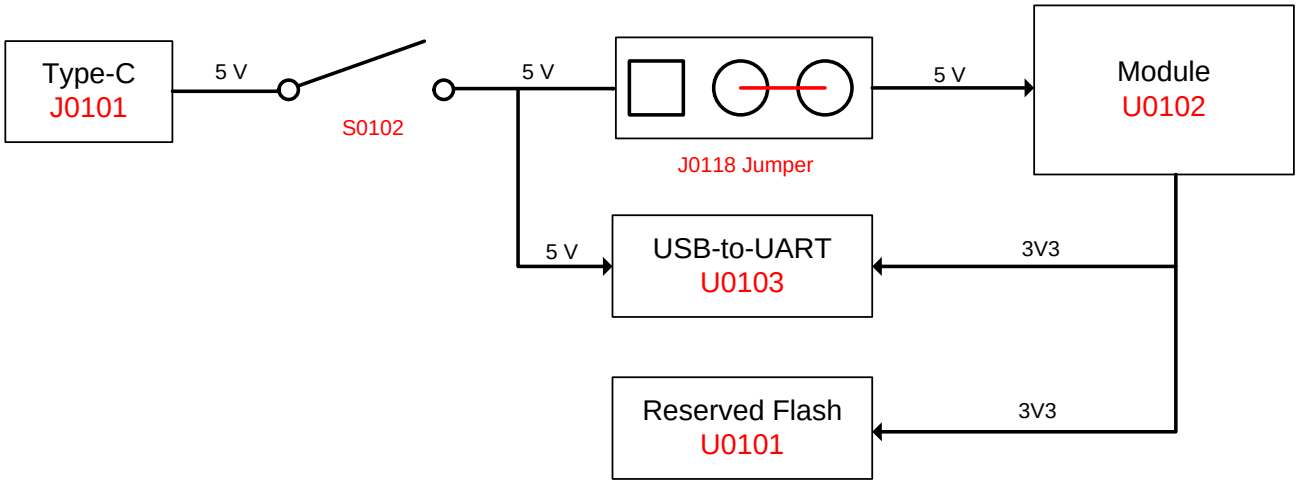

Figure 5: Power Supply for KCM0A5S-TE-B

4.2. Power Switch and Reset Button

KCM0A5S-TE-B includes one S0102 (power switch) and one S0101 (reset button) as shown in the following figure.

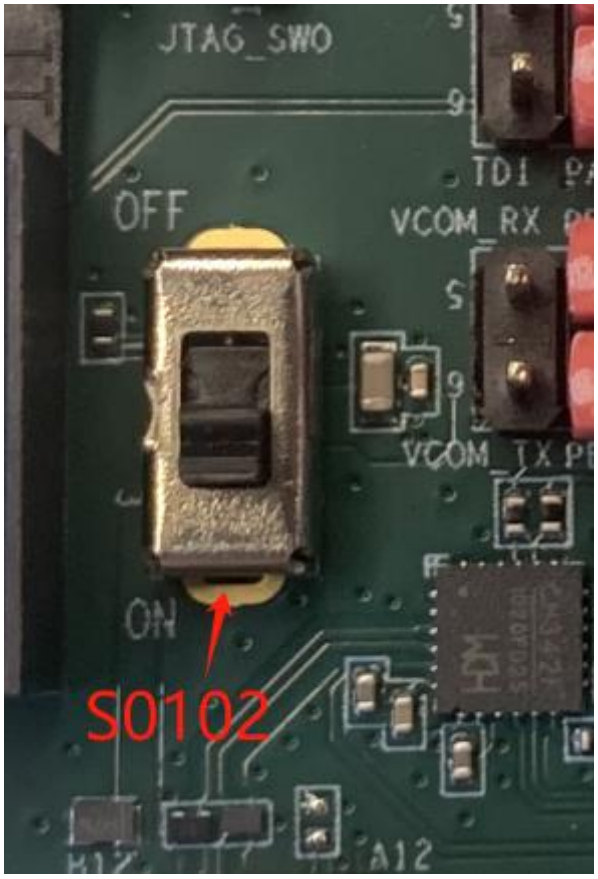

Figure 6: Power Switch

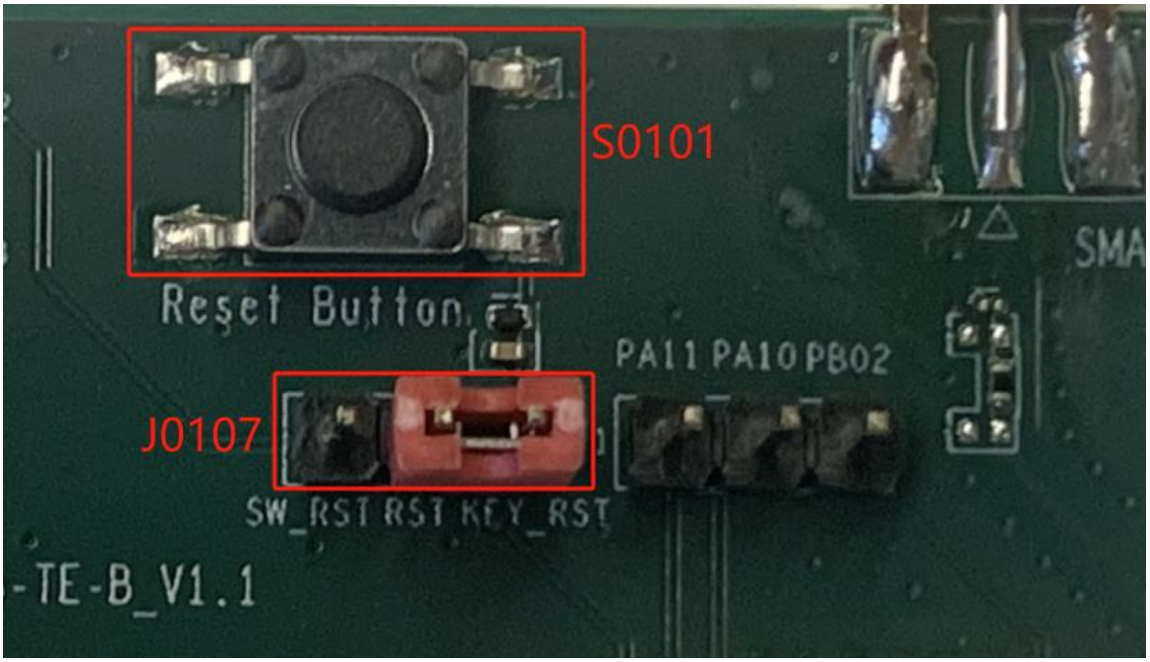

Figure 7: Reset Button and Reset Jumper

Table 3: Description of Power Switch and Reset Button

RefDes.	Description
S0101	Resets the module via J0107
S0102	VBAT ON/OFF control
J0107	Connect RST to KEY_RST for S0101

4.3. USB Interface

KCM0A5S-TE-B integrates J0101 (USB interface) connecting to the module's EUSART interface via U0103 (USB-to-UART bridge) for USB-to-UART connection, with the jumpers on J0105 (EUSART Port 1 Jumper Interface), J0119 (EUSART Port 2 Jumper Interface), J0126 (PA05 & PA06 Jumper Interface) as shown in the following figure.

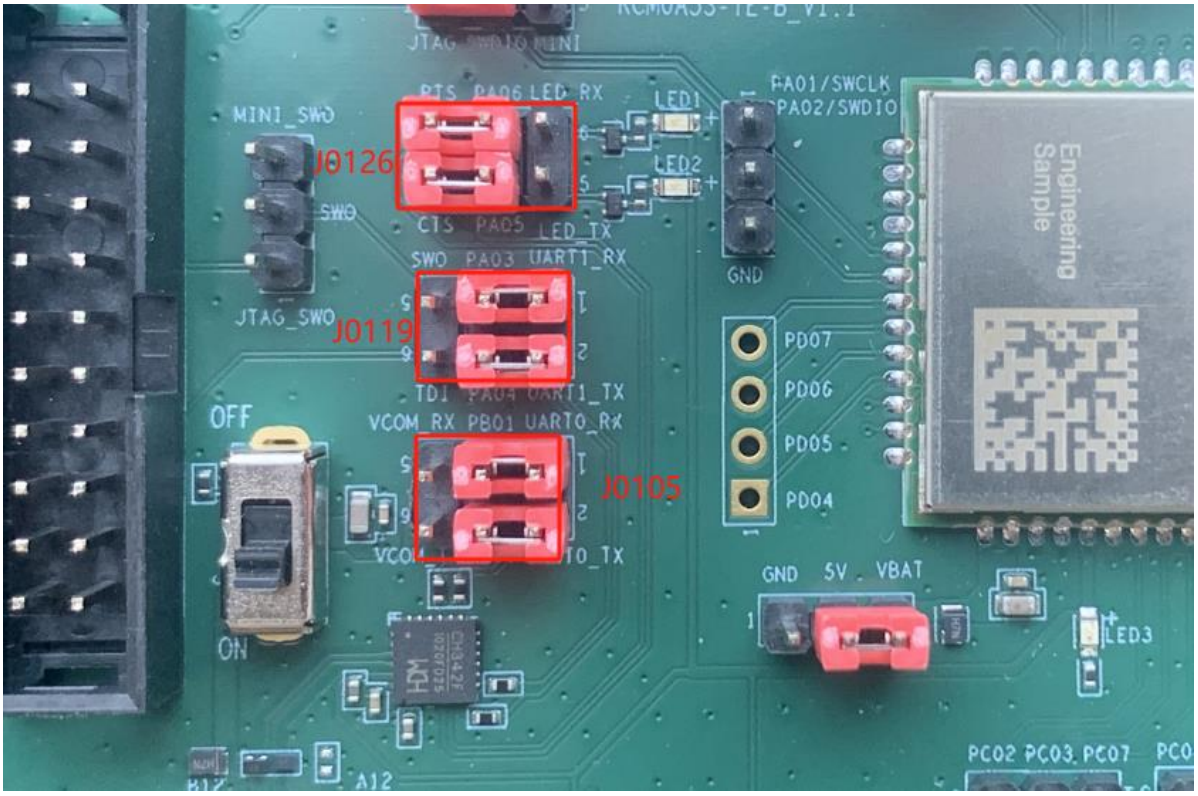

Figure 8: Jumper Interfaces

J0101 (USB interface) 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.

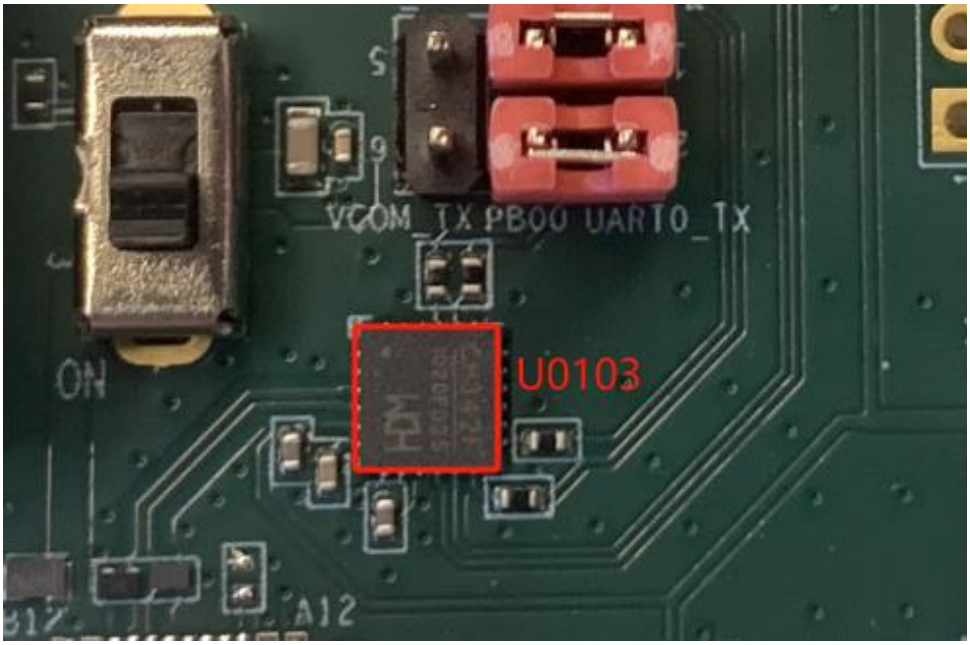

Figure 9: USB-to-UART Bridge

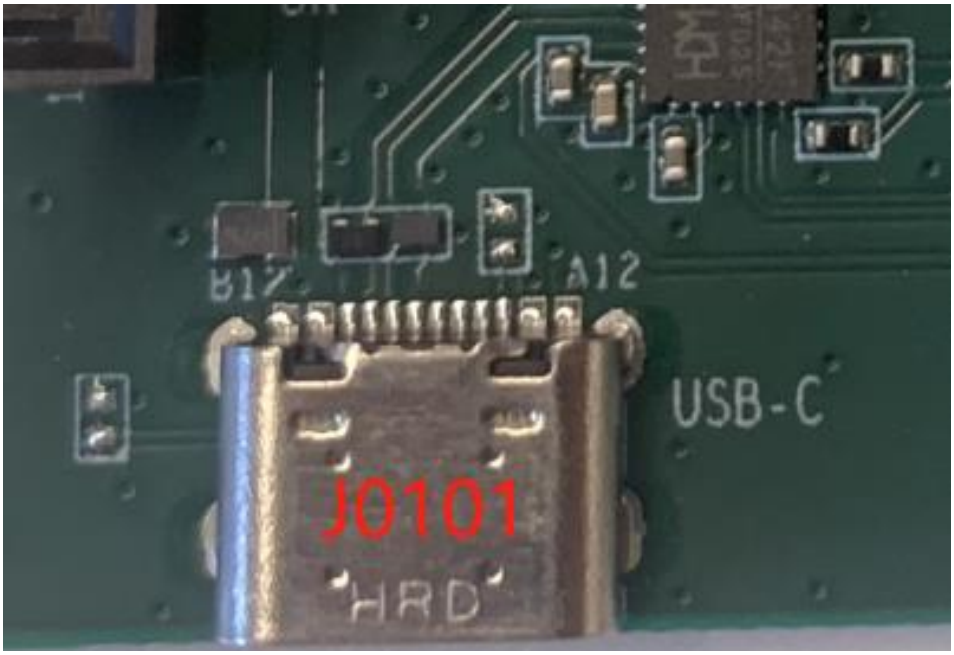

Figure 10: USB Interface

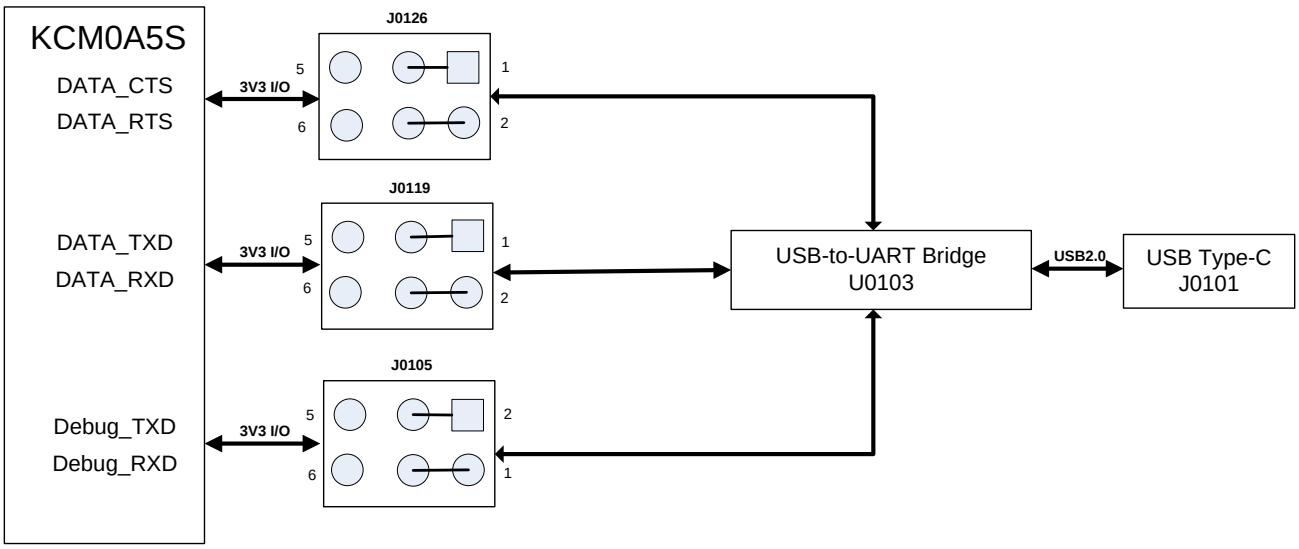

Figure 11: USB-to-UART Connection

Table 4: Description of USB-to-UART Connection

RefDes.	Description
U0103	USB-to-UART bridge
J0101	USB Type-C power supply and debug interface
J0105	Connects pin 1 to pin 3
	Connects pin 2 to pin 4
J0119	Connects pin 1 to pin 3
	Connects pin 2 to pin 4
J0126	Connects pin 1 to pin 3
	Connects pin 2 to pin 4

4.4. Debug Interfaces

The module supports J0104 (SWD interface)，J0103 (JTAG interface) and J0102 (mini simplicity connector) for real-time data and instruction tracing through the Embedded Trace Microcell (ETM) as illustrated in the following figure. J0104/J0103/J0102 can also be used for firmware download and upgrade.

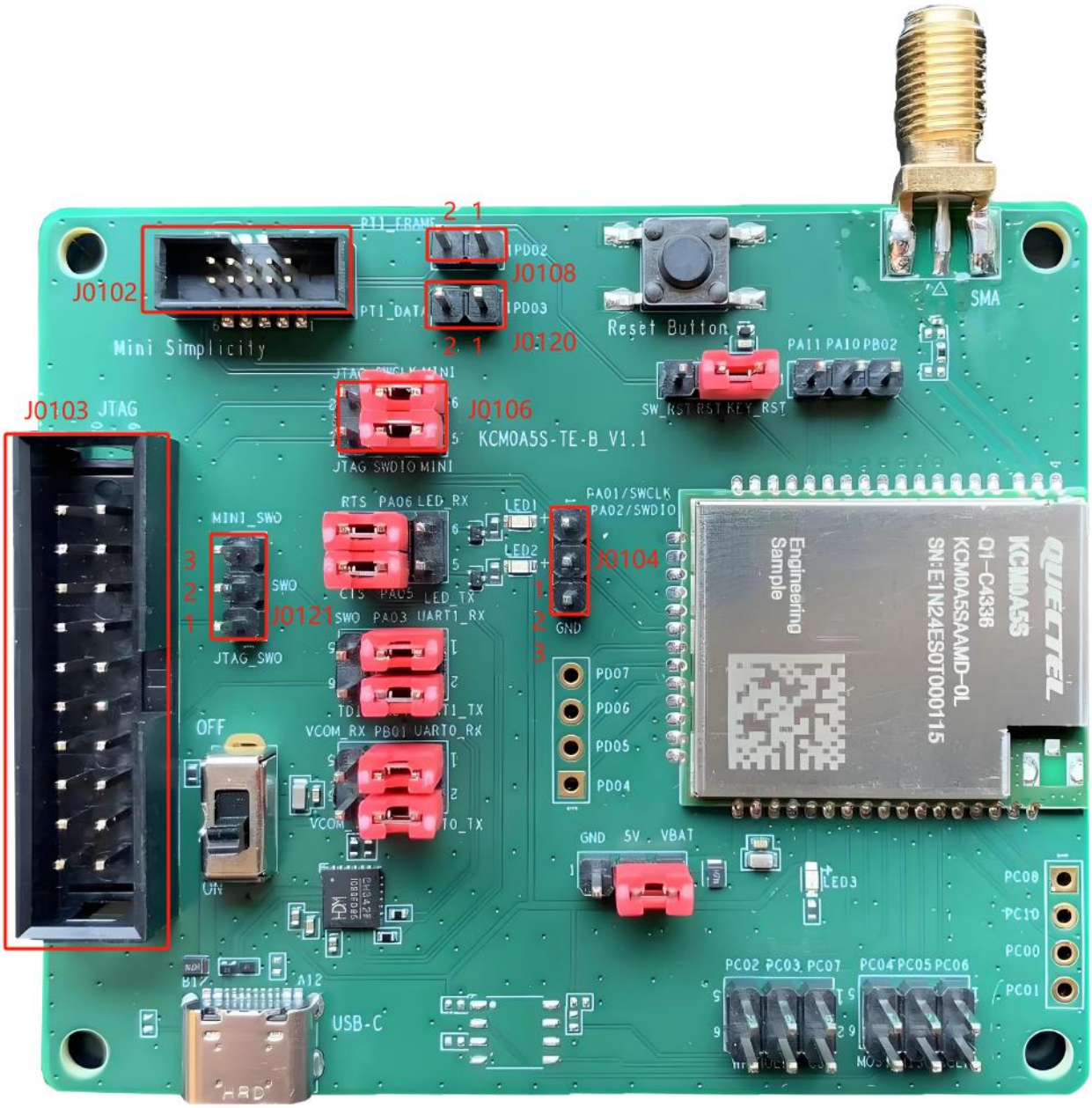

Figure 12: Debug and Jumper Interfaces

When you use J0104 (SWD interface), connect pin 1 (SWCLK), pin 2 (SWDIO) and pin 3 (GND) of J0104 to JTAG as below:

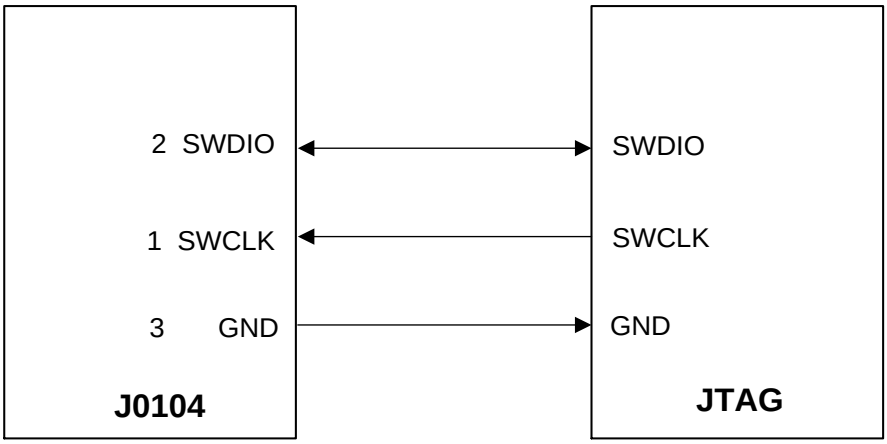

Figure 13: SWD Interface Connection

Table 5: Description of Debug and Jumper Interfaces

RefDes.	Description
J0104	3-pin SWD interface
J0103	20-pin JTAG interface
J0102	10-pin mini simplicity interface
J0121	Connects SWO to JTAG_SWO for JTAG connection
	Connects SWO to MINI_SWO for mini simplicity connection
J0106	Connects pin1 to pin 3 and pin 2 to pin 4 for JTAG connection
	Connects pin 4 to pin 6 and pin 3 to pin 5 for mini simplicity connection
J0108	Connects pin 1 to pin 2 for mini simplicity connection
J0120	Connects pin 1 to pin 2 for mini simplicity connection

When you use J0103 (JTAG interface), place the jumper as shown below, and connect the JTAG downloader to PC through a USB type-C cable, and the module must be powered with J0101 (USB Type-C power supply interface).

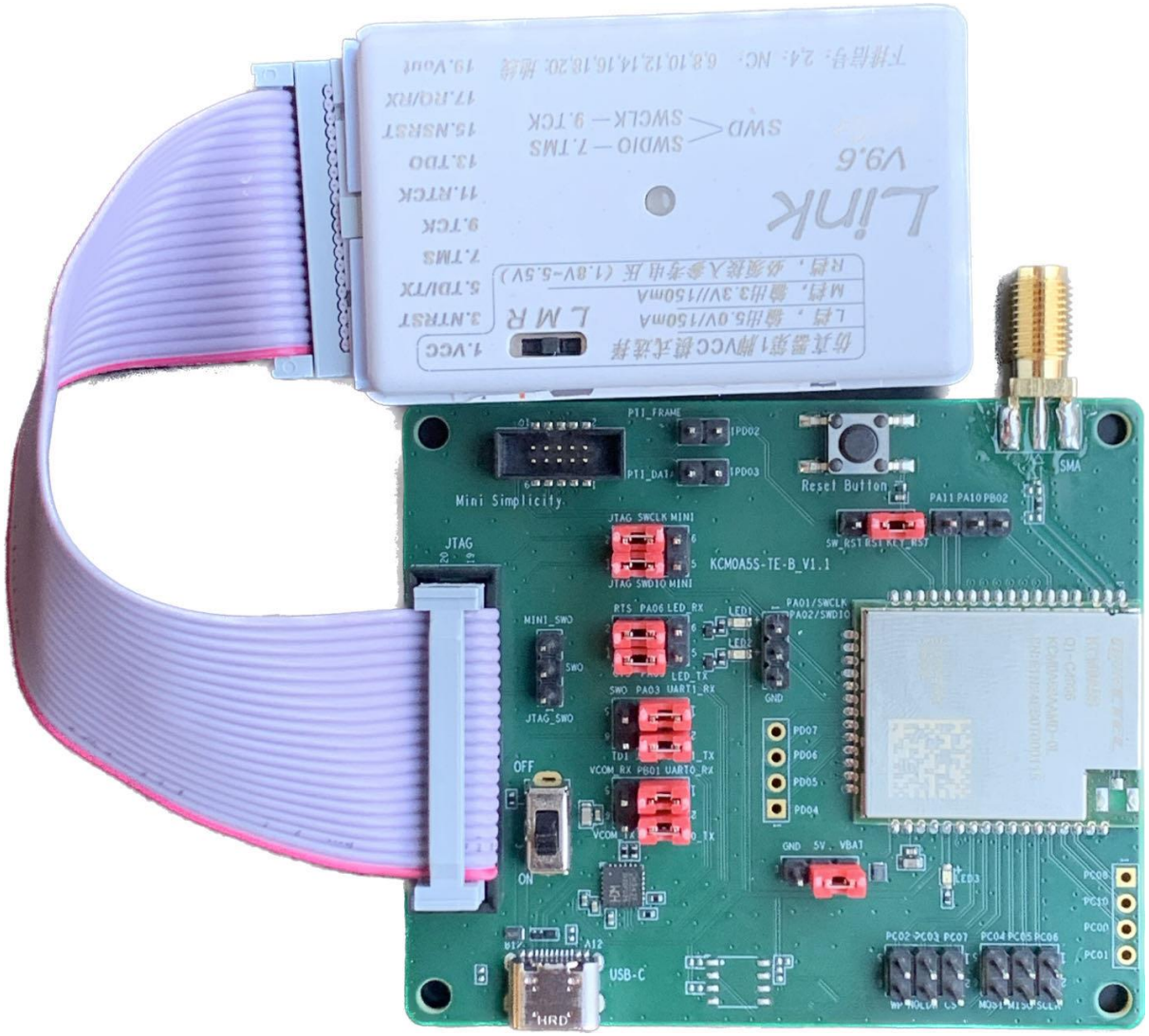

Figure 14: JTAG Connection

When you use J0102 (mini simplicity interface), place the jumper as shown below, and connect the J-link debugger (SI-DBG1015A) to PC through a USB type-C cable.

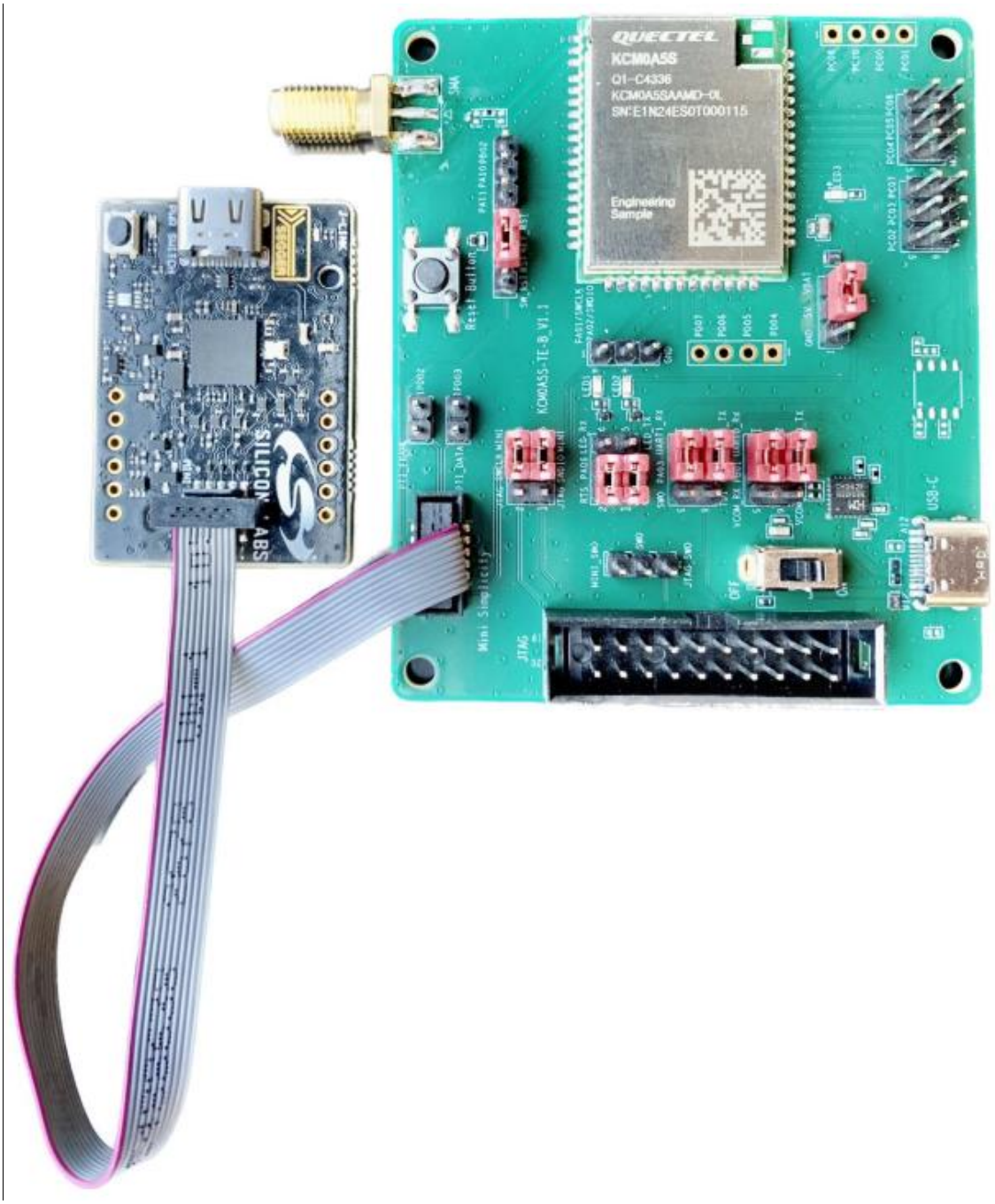

Figure 15: Mini Simplicity Connection

4.5. RF Interfaces

Test the conductivity through the J0117 (SMA RF interface) on the top side.

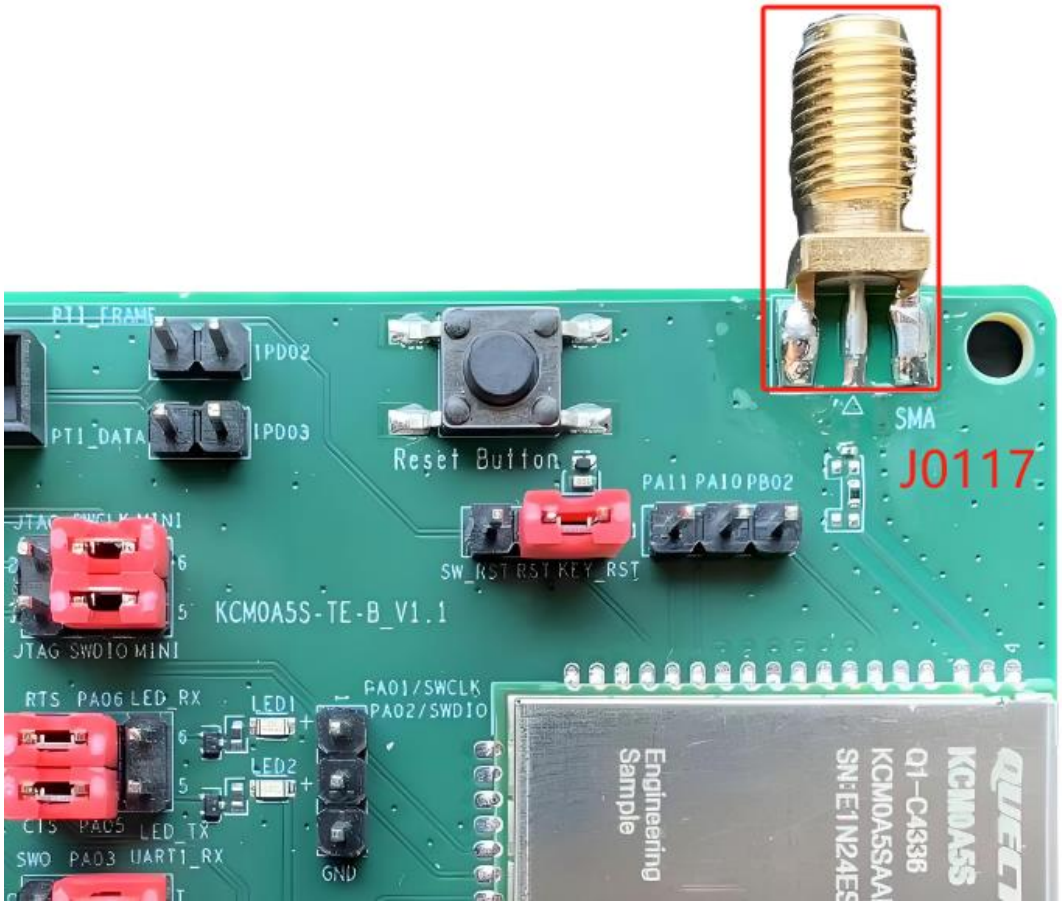

Figure 16: SMA Connector

4.6. Test Points

KCM0A5S-TE-B features a series of test points (J0125, J0127, J0124), 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 of J0118 (VBAT jumper interface). Connect pin 1 of J0118 (VBAT jumper interface) to the negative pole and pin 3 of J0118 (VBAT jumper interface) to the positive pole for the programmable power supply.

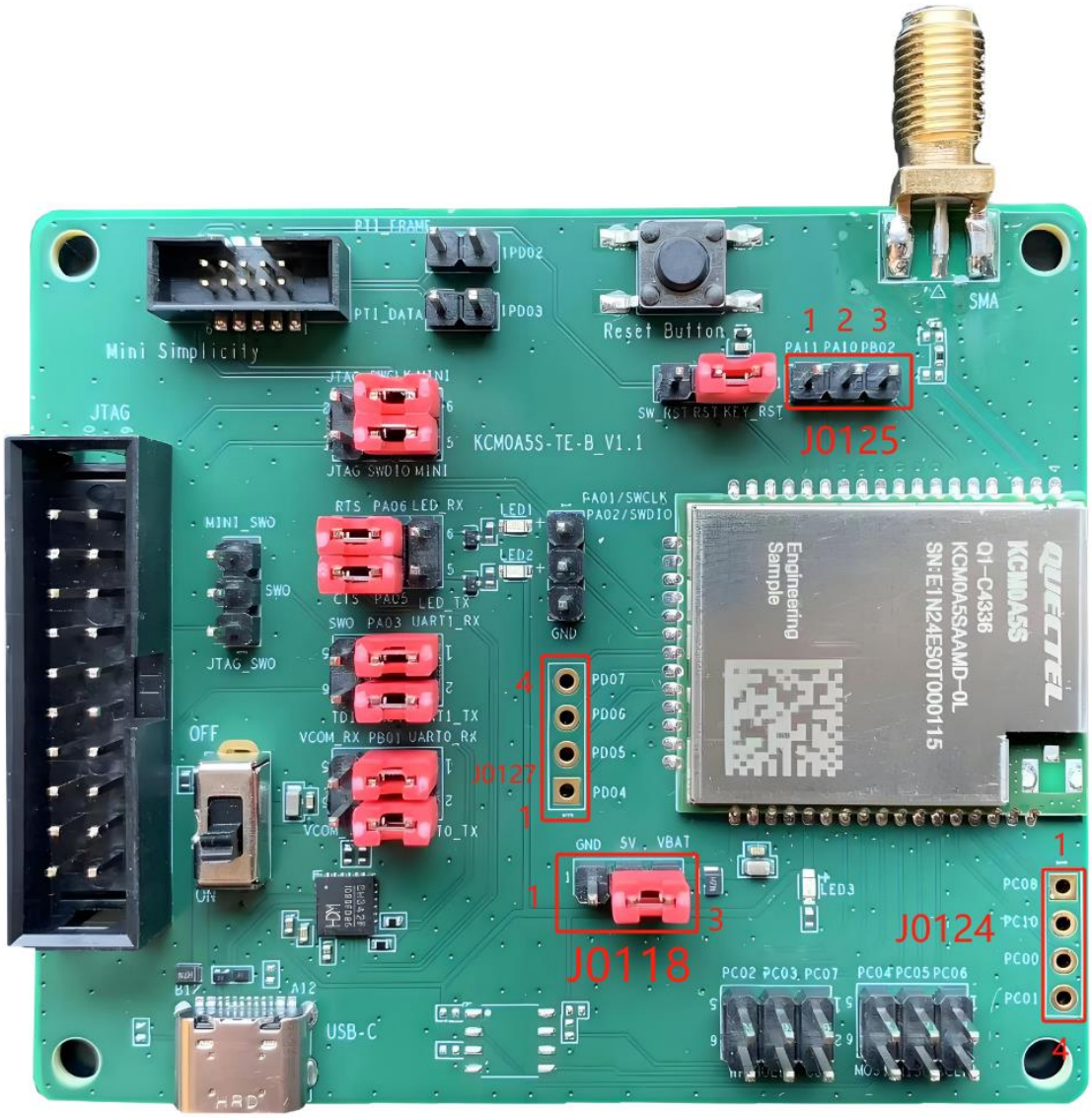

Figure 17: Test Points

Table 6: Pin Description of Test Points

J0118		
Pin No.	**Pin Name**	**Description**
1	GND	Ground
2	5 V	Power supply
3	VBAT	Connected directly to module's VBAT Pin

J0125		
Pin No.	**Pin Name**	**Description**
1	PA11	Connected directly to module's GPIO PA11
2	PA10	Connected directly to module's GPIO PA10
3	PB02	Connected directly to module's GPIO PB02
J0127		
Pin No.	**Pin Name**	**Description**
1	PD04	Connected directly to module's GPIO PD04
2	PD05	Connected directly to module's GPIO PD05
3	PD06	Connected directly to module's GPIO PD06
4	PD07	Connected directly to module's GPIO PD07
J0124		
Pin No.	**Pin Name**	**Description**
1	PC08	Connected directly to module's GPIO PC08
2	PC10	Connected directly to module's GPIO PC10
3	PC00	Connected directly to module's GPIO PC00
4	PC01	Connected directly to module's GPIO PC01

NOTE

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

4.7. Status LEDs

KCM0A5S-TE-B comprises 3 status LEDs, which are presented in the following figure.

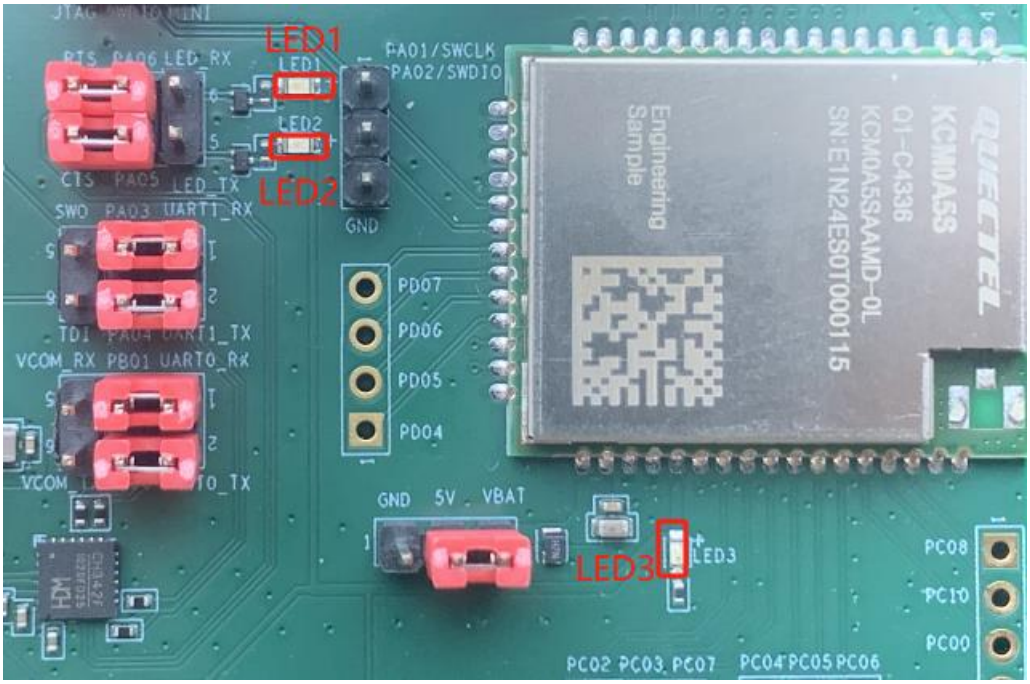

Figure 18: Status LEDs

Table 7: Description of Status LEDs

RefDes.	Description	Comment
LED1	Indicates data transmission status	Flicker: data Rx
LED2	Indicates data transmission status	Flicker: data Tx
LED3	The KCM0A5S Module Power on/off indicator	Light on: power on Light off: power off

5 Operating Procedures

This chapter outlines how to use the KCM0A5S-TE-B for testing and evaluating the module.

5.1. Power Up

1. Connect J0101 (USB interface) of KCM0A5S-TE-B to the PC with the USB Type-C cable.
2. Switch S0102 (power switch) to ON state, then D0103 (power ON/OFF status indicator) will light up.

5.2. Communication via USB Connector

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.

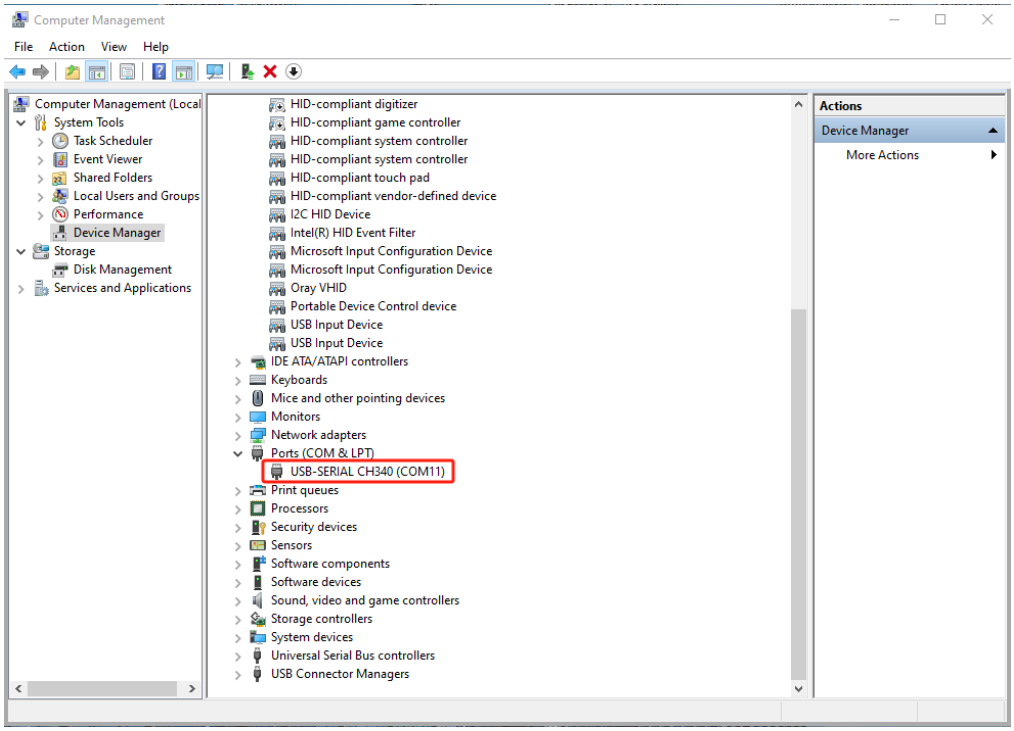

Figure 19: USB Serial Port

3. Use the QCOM tool provided by Quectel to establish communication between the module and the PC via 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]***.

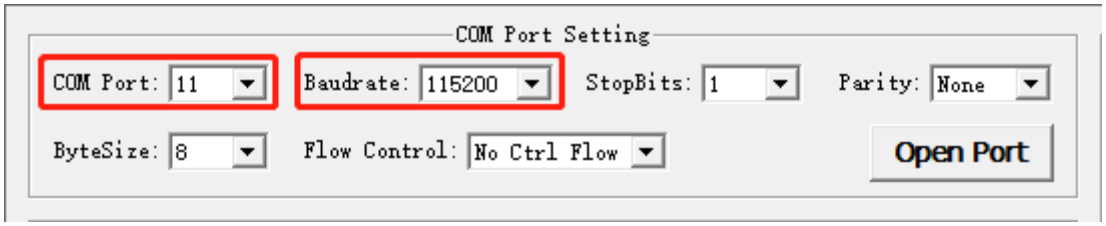

Figure 20: COM Port Setting Field on QCOM

5.3. Firmware Upgrade

You can use the JFlash tool provided by Quectel to establish the communication between the module and the PC via J0104 (SWD interface) or J0103 (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 Module to KEY of J0107 (reset jumper interface), and then press and hold S0101 (reset button) for more than 100 ns before releasing it.

6 Appendix References

Table 8: Related Documents

Document Name
[1] Quectel_KCM0A5S_Hardware_Design
[2] Quectel_QCOM_User_Guide
[3] Quectel_KCM0A5S_Test_Guide

Table 9: Terms and Abbreviations

Abbreviation	Description
COM	Communication
ETM	Embedded Trace Module (Macrocell)
GND	Ground
GPIO	General Purpose Input/Output
IC	Integrated Circuit
JTAG	Joint Test Action Group
LDO	Low-dropout Regulator
LED	Light Emitting Diode
PC	Personal Computer
RF	Radio Frequency
RXD	Receive Data (Pin)
SWD	Serial Wire Debug
SWO	Serial Wire Output

TXD	Transmit Data (Pin)
UART	Universal Asynchronous Receiver & Transmitter
USB	Universal Serial Bus
VBAT	Voltage at Battery (Pin)