KCMCA6S TE-B

User Guide

Short-Range Module Series

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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
-	2025-02-18	Luke FU	Creation of the document
1.0	2025-02-18	Luke FU	First official release

Contents

Table Index

Figure Index

1 Introduction

For convenient development of applications with Quectel KCMCA6S, Quectel supplies the corresponding development board (KCMCA6S-TE-B) for module testing. This document can help you quickly understand KCMCA6S-TE-B interface specifications, RF characteristics, electrical and mechanical details and how to effectively use it.

2 General Overview

KCMCA6S-TE-B is a development board that supports a series of interfaces. It can be used for testing basic functionalities or further development of the module.

2.1. Top and Bottom Views

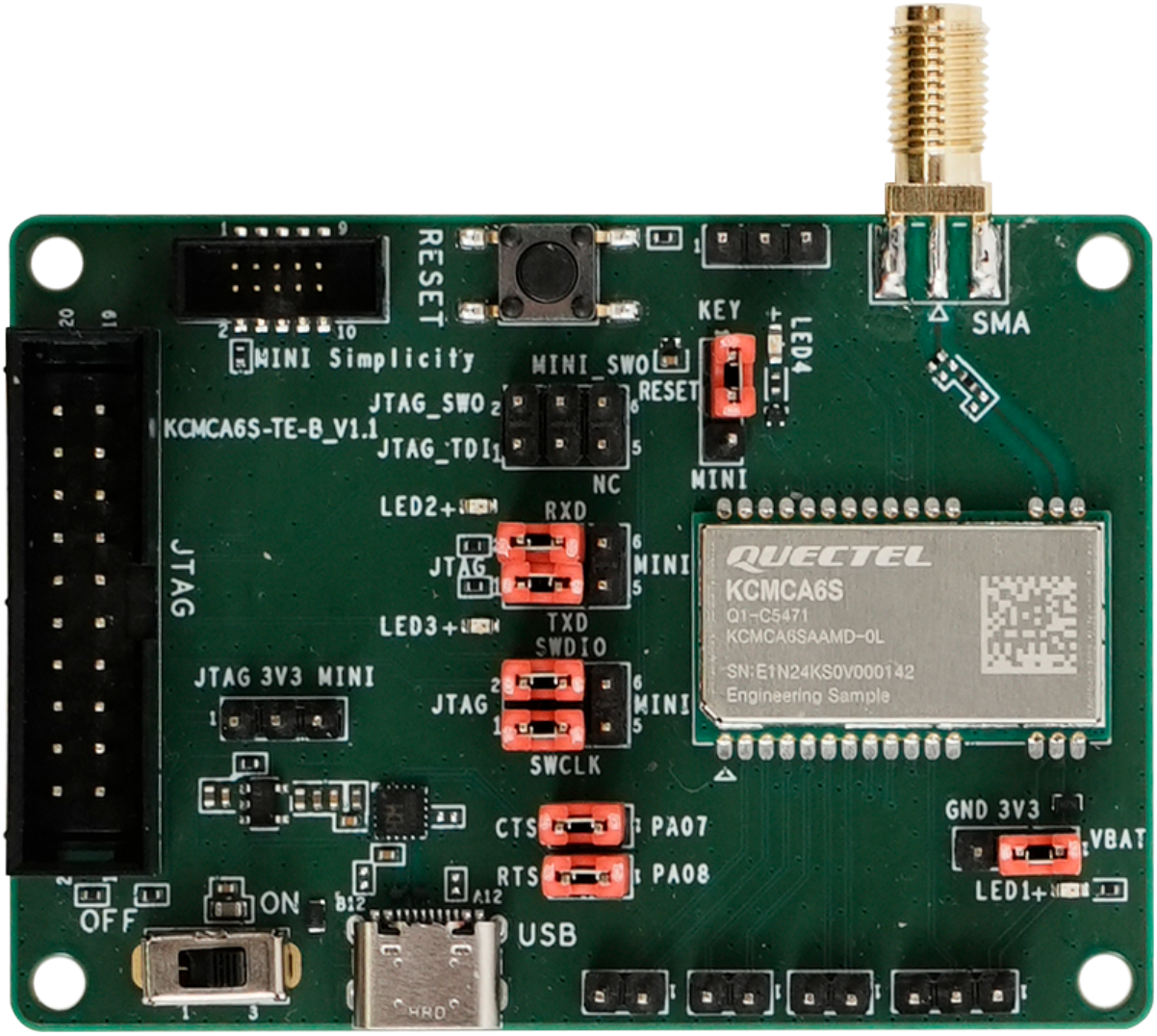

Figure 1: Top View

Figure 2: Bottom View

2.2. Component Placement

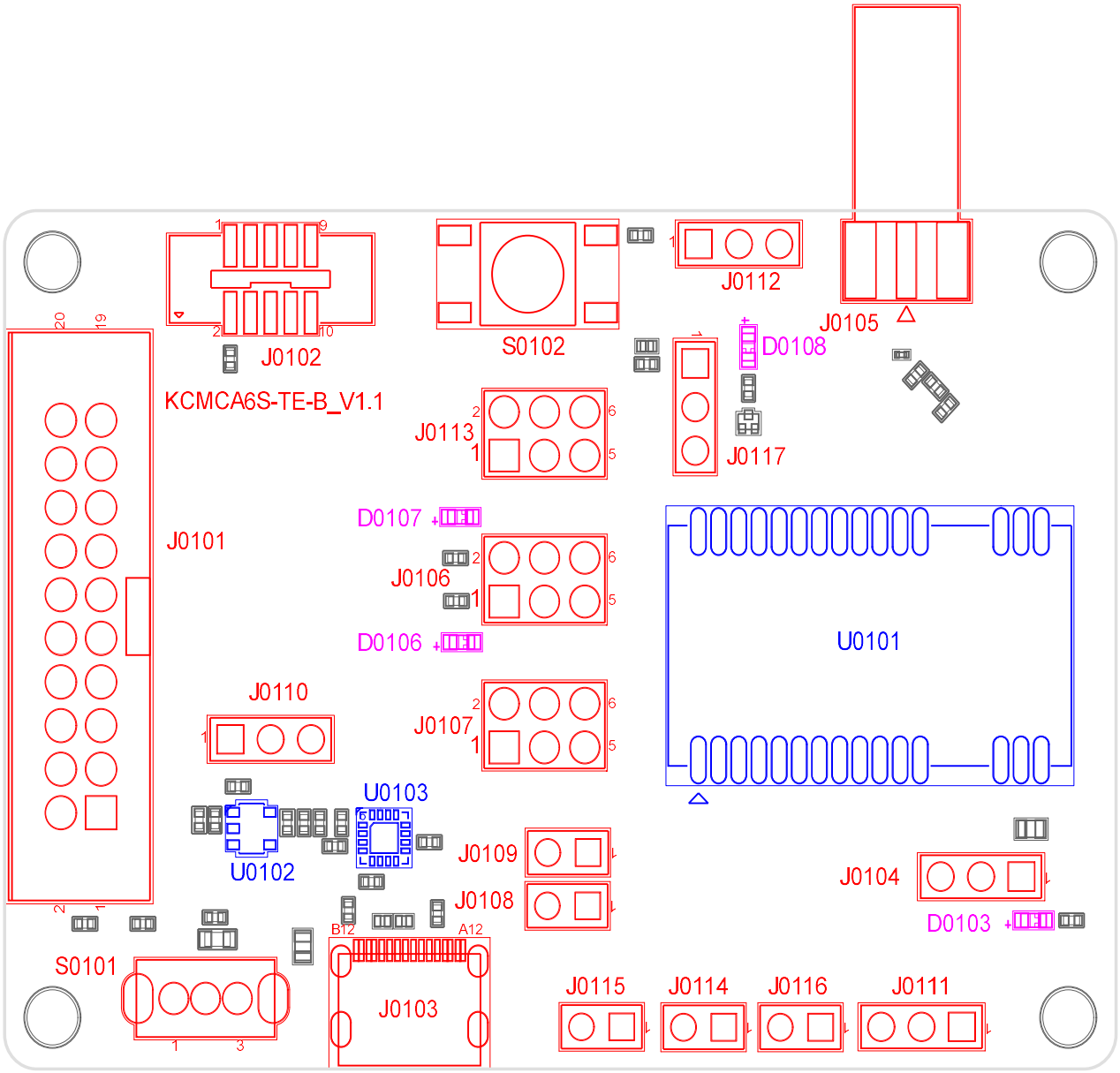

Figure 3: Component Placement

Table 1: Component Information

Component	RefDes.	Description
Module	U0101	KCMCA6S module

USB-to-UART Bridge	U0103	USB-to-UART bridge IC
LDO	U0102	5 V to 3V3 LDO
Power Supply Interfaces（3.3 V）	J0103	USB Type-C power supply interface
	J0110	VBAT powered by JTAG or mini simplicity with jumper
Power Switch	S0101	VBAT ON/OFF control
Reset Button	S0102	Reset the module with J0117
Status LEDs	D0103	VBAT ON/OFF indicator
	D0106	UART_RXD action indicator
	D0107	UART_TXD action indicator
	D0108	GPIO11 status indicator
JTAG Interface	J0101	20-pin JTAG connector
Mini Simplicity Interface	J0102	10-pin mini simplicity connector
USB Connector	J0103	Connects to USART interface of the module via U0103
SMA RF Interface	J0105	RF Connector
GPIO interfaces	J0112	GPIO9 connector
	J0111	Config the H/L status of GPIO10 with the jumper
	J0116	GPIO8 connector
	J0114	GPIO6 & GPIO7 connector
	J0115	GPIO5 connector
Reset Jumper Interface	J0117	Connects the reset pin between different jumper pins of S0102 or J0102
GPIO1 & GPIO2 Jumper Interfaces	J0113	Shorts GPIO1 to SWO (J0101) or SWO (J0102) with the jumper
		Shorts GPIO2 to TDI (J0101) with the jumper
USART Jumper Interface	J0106	Connects USART port between different jumper pins for U0103 or J0102
SWD Jumper Interface	J0107	Connects SWD port between different jumper pins for J0101 or J0102
GPIO4 Jumper Interface	J0108	Shorts GPIO4 to UART_RTS (U0103) with the jumper

GPIO3 Jumper Interface	J0109	Shorts GPIO3 to UART_CTS (U0103) with the jumper

3 Kit Accessory & Assembly

3.1. Kit Accessory

Table 2: Accessory List

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

3.2. Kit Assembly

The connection between the TE-B and its components is shown in the figure below. Refer to the instruction sheet in the accessory list for more details.

Figure 4: TE-B Kit Assembly

4 Interface Applications

This chapter outlines the information and applications of some hardware interfaces of KCMCA6S-TE-B.

4.1. Power Supply Interfaces

KCMCA6S-TE-B can be powered by USB Type-C connector (J0103), JATG connector (J0101) or Mini simplicity interface (J0102).

The simplified power supply schematic of KCMCA6S-TE-B is provided in the following figure.

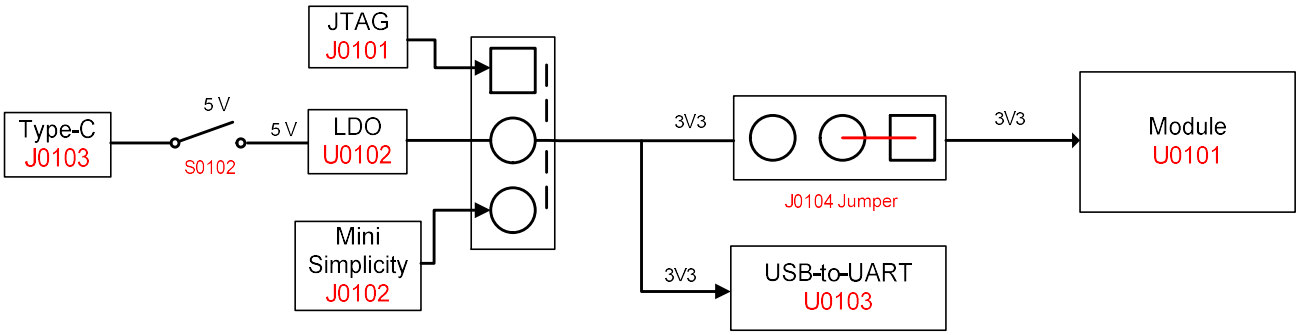

Figure 5: Power Supply for KCMCA6S-TE-B

4.2. Power Switch and Reset Button

KCMCA6S-TE-B includes one power switch (S0101) and one reset button (S0102) as shown in the following figure.

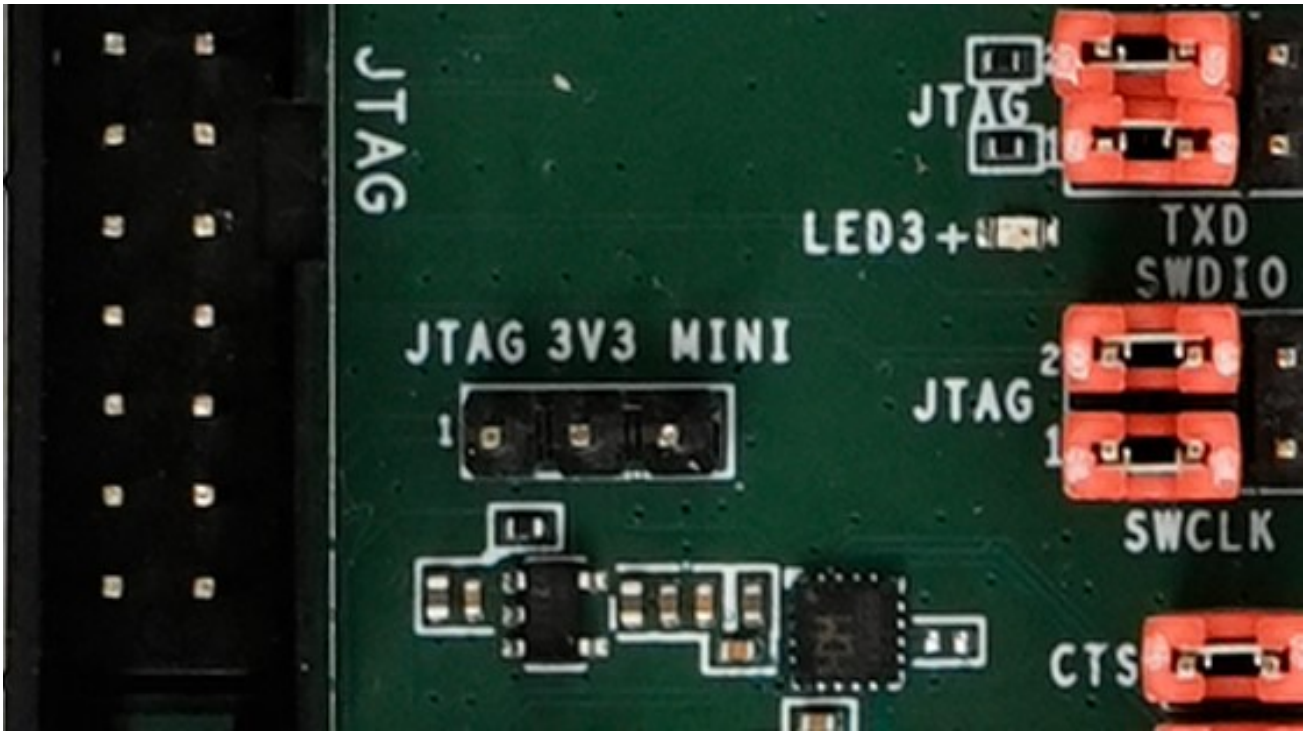

Figure 6: Power Switch

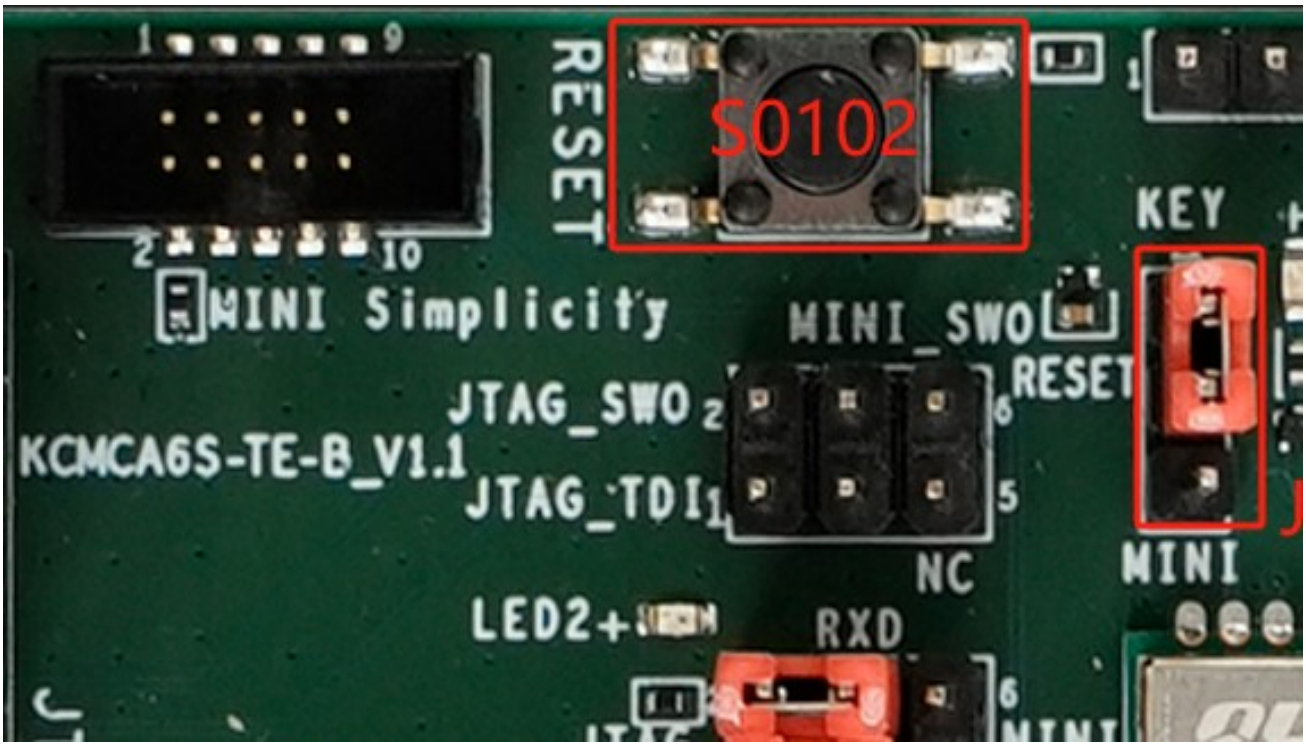

Figure 7: Reset Button

Table 3: Description of Power Switch and Reset Button

RefDes.	Description
S0101	VBAT ON/OFF control
S0102	Reset the module with J0117
J0117	Place the jumper as **Figure** 7, you can reset the module with S0102.

NOTE

If short the middle pin to MINI pin, you can reset the module by J0102 (mini simplicity interface).

4.3. USB Connector

KCMCA6S-TE-B Integrated with J0103 (USB connector), which is connected to the USART interface of the module via U0103 (USB-to-UART bridge) respectively. When we use USART port, we should place jumpers on J0106 (USART jumper interface) as shown in the following figure.

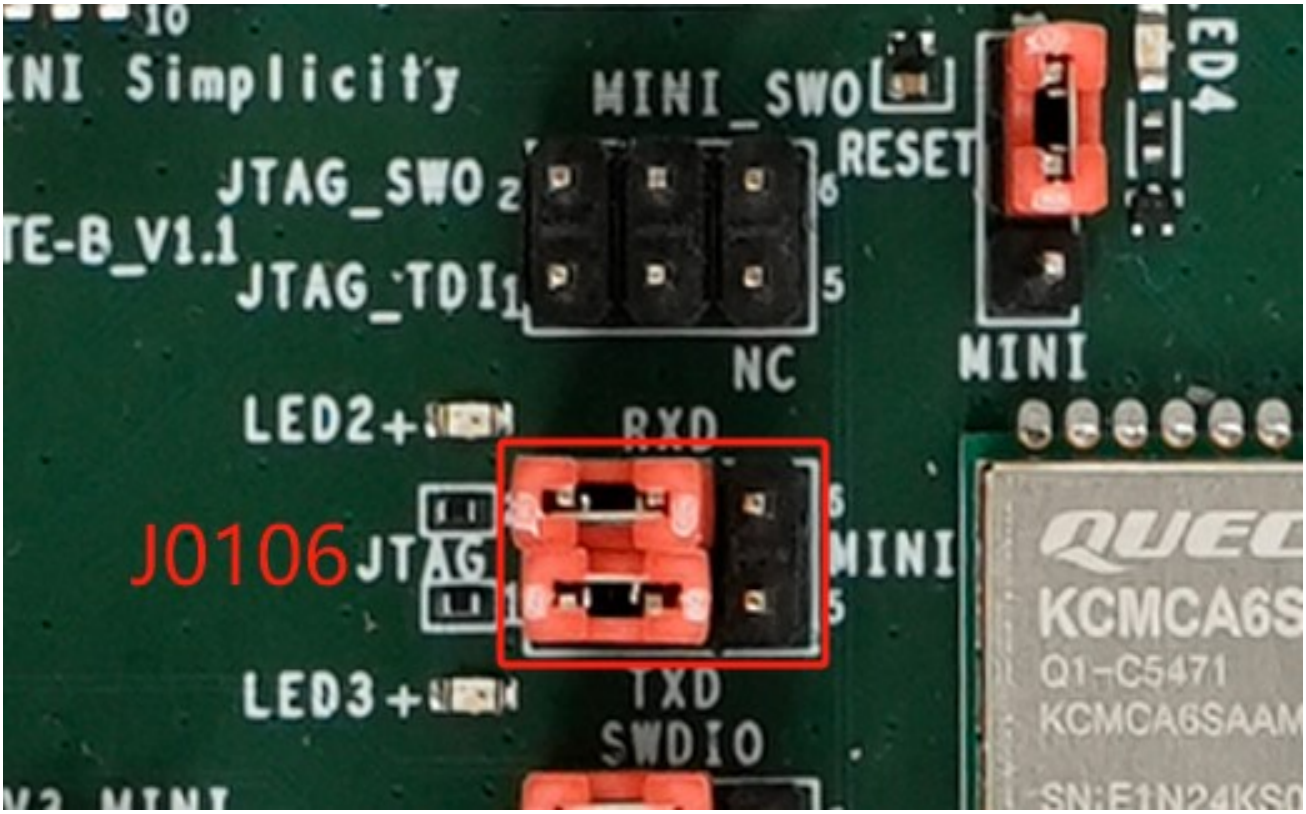

Figure 8: Jumpers Placement on J0106

J0103 (USB connector) supports 115200 bps baud rate by default. It can be used for data transmission between the module and the host. It can be used for AT command communication.

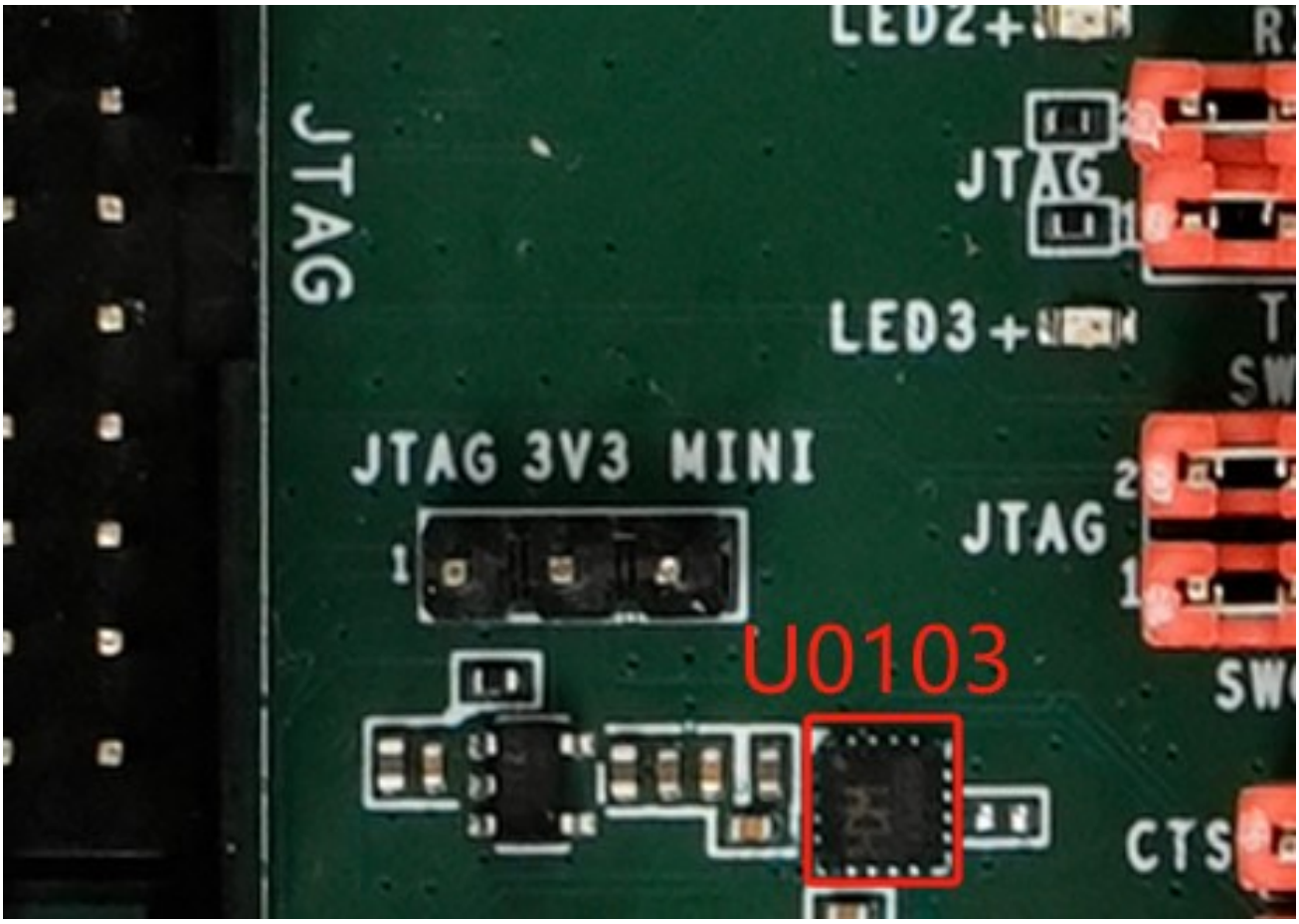

Figure 9: USB Connector and USB-to-UART Bridge

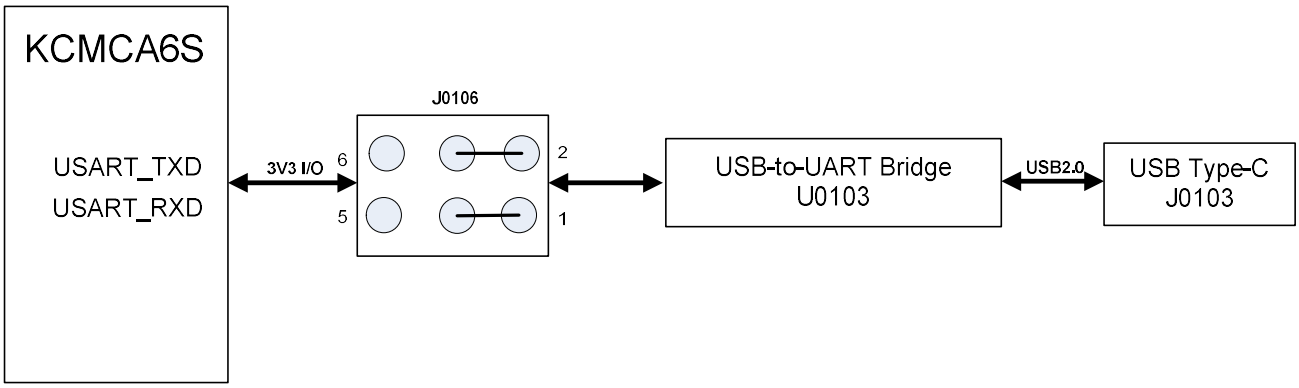

Figure 10: USB-to-UART Connection

4.4. Debug Connectors

The module supports J0101 (JTAG interface), as well as integrated J0102 (mini simplicity interface) for real-time data/instruction Embedded Trace Microcell (ETM) as shown in the following figure. Also, you can use J0101/J0102 for firmware burning and upgrade.

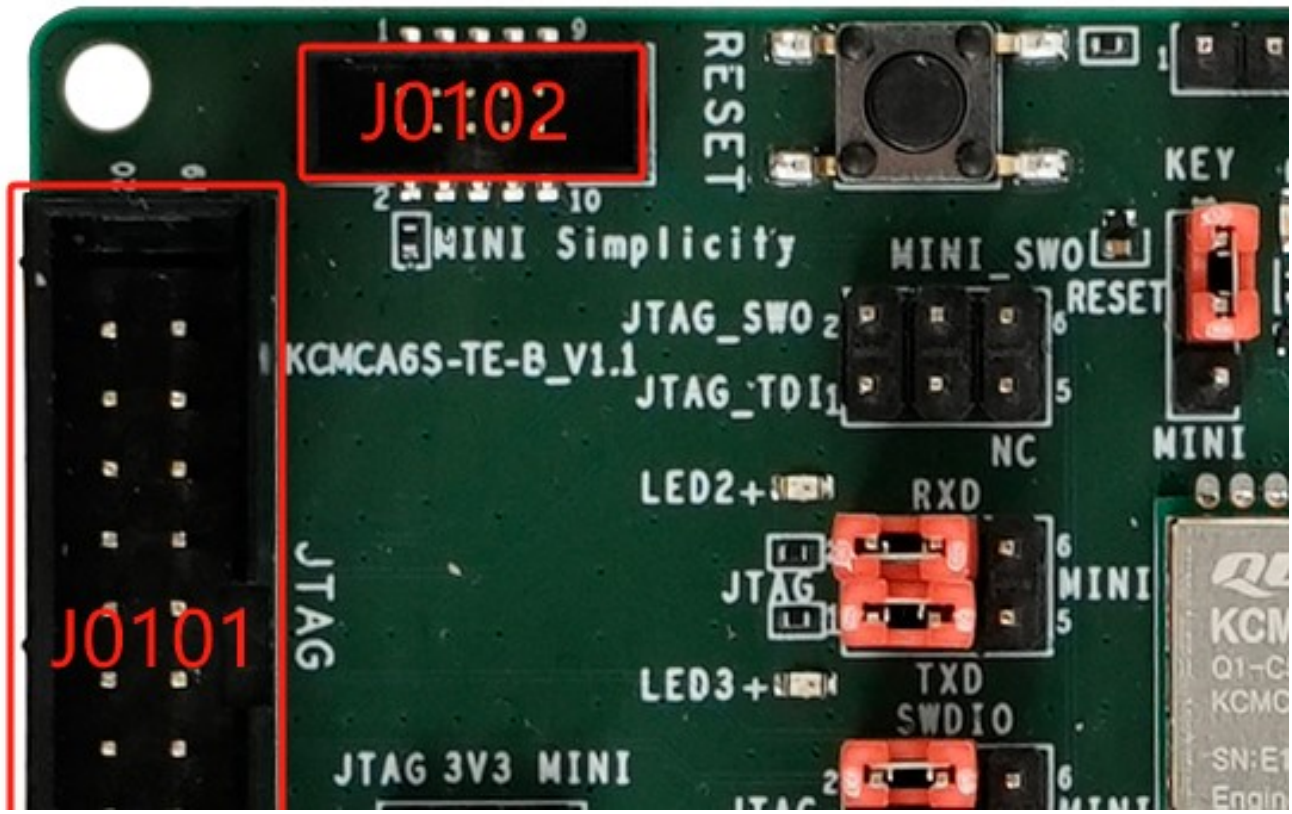

Figure 11: Debug and Jumper Interfaces

When you use J0101 (JTAG interface), you should place the jumper as shown below (red circle highlight). Connect the ARM emulator to PC through a USB type-C cable. KCMCA6S TE-B can be powered by the JTAG.

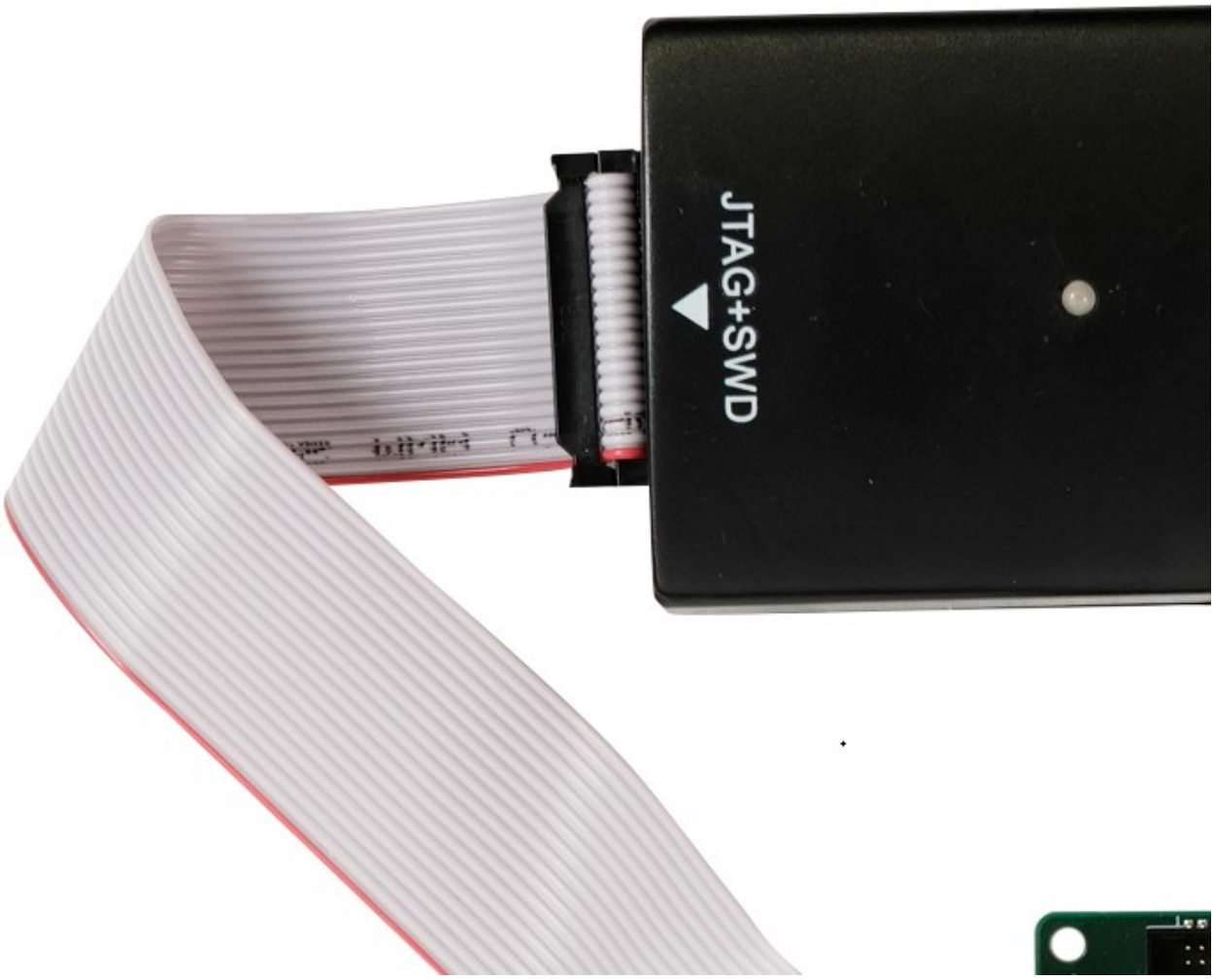

Figure 12: JTAG Connection

When you use the mini simplicity interface, you should place the jumper as shown below (red circle highlight). Connect the J-link (SI-DBG1015A) to PC through a USB type-C cable. KCMCA6S TE-B can be powered by the J-link with a long time (about 3 seconds) pressed on the PWR switch.

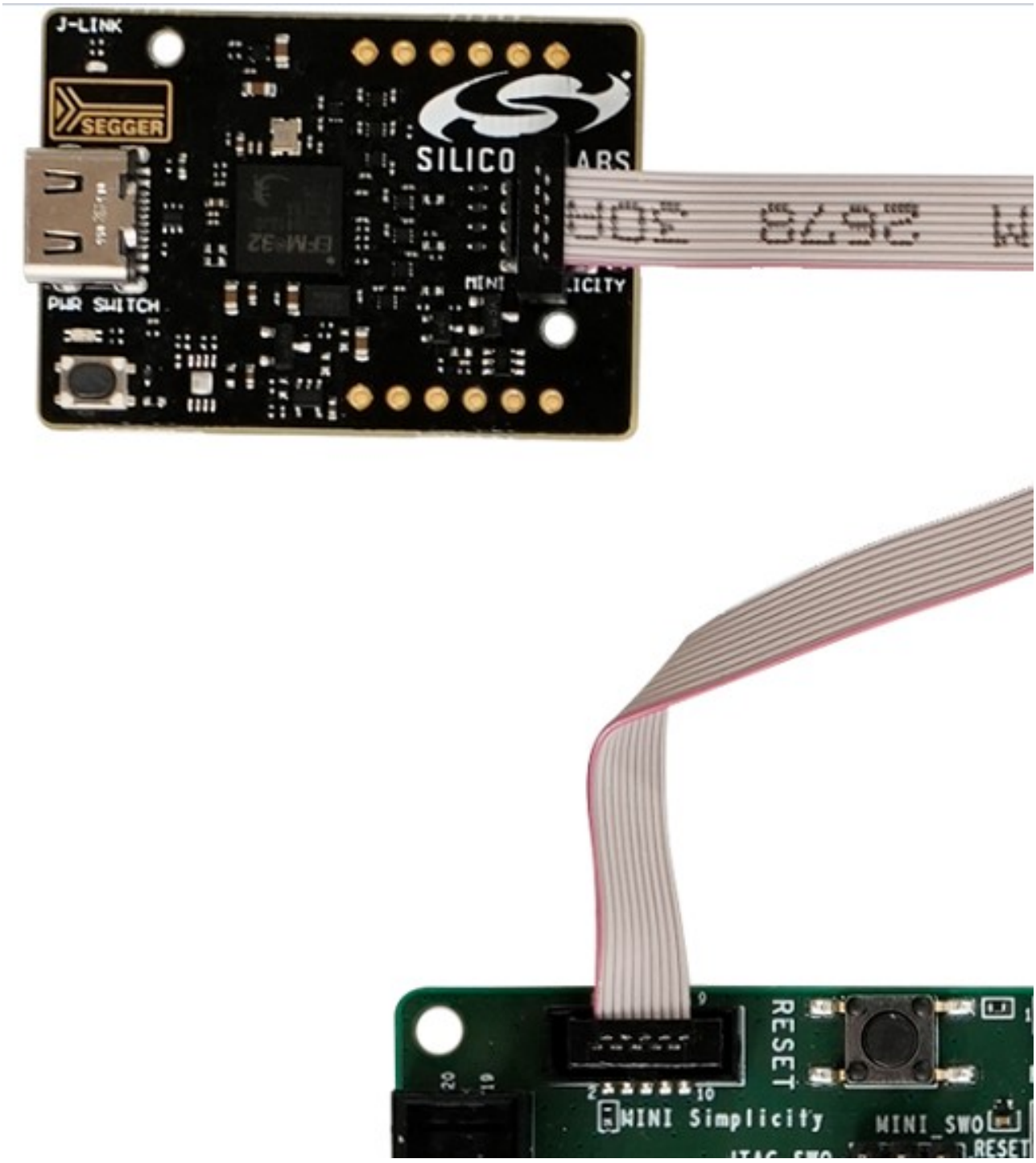

Figure 13: Mini Simplicity Connection

4.5. RF Interface

Plug J0105 (SMA RF interface) in Signal & Spectrum Analyzer (SMA) or other testers. Then start the RF test.

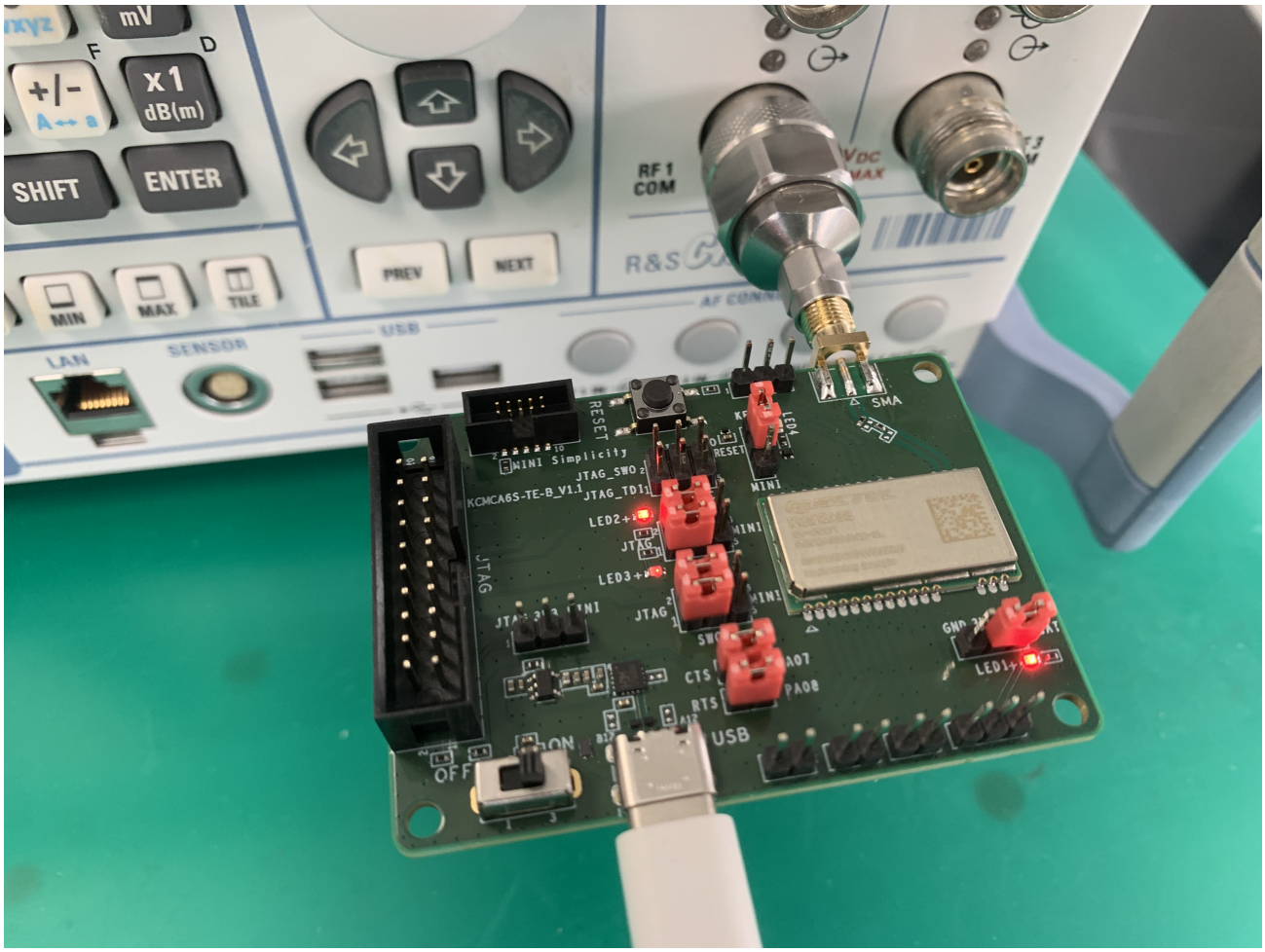

Figure 14: SMA Assembly

4.6. Test Points

KCMCA6S-TE-B features a series of test points, which can help you to obtain the corresponding waveform of some signals.

J0104, J0112, J0111, J0116, J0114 and J0115 are illustrated in the following figures. And you can test the power consumption of the module by disconnecting the jumper between pin1 & 2 of J0104, and connect pin 1 to +3V3 and pin 3 to GND with DC Source. It is always suggested to disconnect the jumper of J0106 after input the test command when you test the consumption of the module, because the USART_TXD and USART_RXD pins of the module can leak current with the jumper on J0106.

Table 4: Description of Test Points

J0104		
Pin No.	**Pin Name**	**Description**
1	VBAT	Connected directly to VBAT pin of the module
2	3V3	Connected directly to 3V3 of U0102 (LDO)
3	GND	GND Pin
J0112		
Pin No.	**Pin Name**	**Description**
1	GPIO9	Connected directly to GPIO9 of the module
2	Reserved	Connected directly to Pin21 of the module
3	Reserved	Connected directly to Pin20 of the module
J0111		
Pin No.	**Pin Name**	**Description**
1	VBAT	Connected directly to VBAT pin of the module
2	GPIO10	Connected directly to GPIO10 of the module
3	GND	Ground
J0116		
Pin No.	**Pin Name**	**Description**
1	Reserved	Connected directly to Pin7 of the module
2	GPIO8	Connected directly to GPIO8 of the module
J0114		
Pin No.	**Pin Name**	**Description**
1	GPIO7	Connected directly to GPIO7 of the module
2	GPIO6	Connected directly to GPIO6 of the module

J0115		
Pin No.	**Pin Name**	**Description**
1	GPIO5	Connected directly to GPIO5 of the module
2	Reserved	Connected directly to Pin2 of the module

NOTE

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

4.7. Status LEDs

KCMCA6S-TE-B comprises 4 status LEDs, which are shown in the following figure.

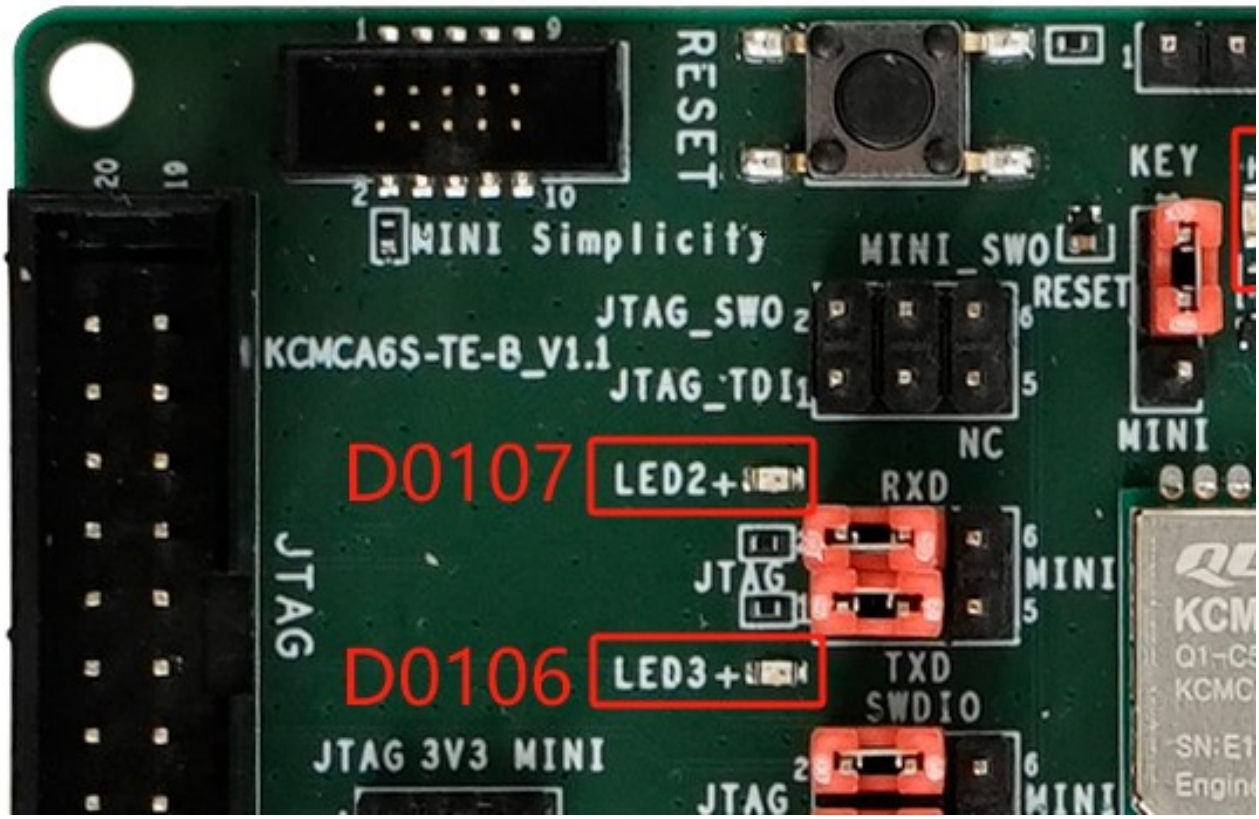

Figure 15: Status LEDs

Table 5: Description of Status LEDs

RefDes.	Description	Comment
D0103	VBAT ON/OFF indicator. It indicates power supply status of the module	Light on: power on
		Light off: power off
D0106	Indicates USART (TXD) status with the jumper on J0106	Light on: power on
		Flicker: data transmission
D0107	Indicates USART (RXD) status with the jumper on J0106	Light on: power on

		Flicker: data transmission
D0107	Indicates the status of the GPIO11	Light on: GPIO 11 H
		Light on: GPIO 11 L

5 Operating Procedures

This chapter outlines how to use the KCMCA6S-TE-B for testing and evaluating the module.

5.1. Power Up

1. Connect the USB connectors of KCMCA6S-TE-B to PC with the USB Type-C cable.
2. Switch S0101 (Power Switch) to ON state, then D0103 (VBAT ON/OFF indicator) will light up.

5.2. Communication via USB Connectors

1. Turn on the module according to the procedure mentioned in ***Chapter 5.1***.
2. The USB serial port can be viewed through the PC Device Manager, as shown below.

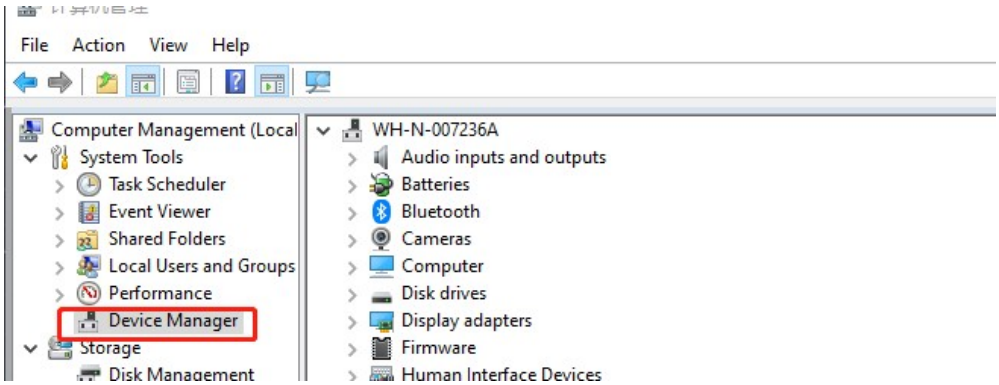

Figure 16: USB Serial Port

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

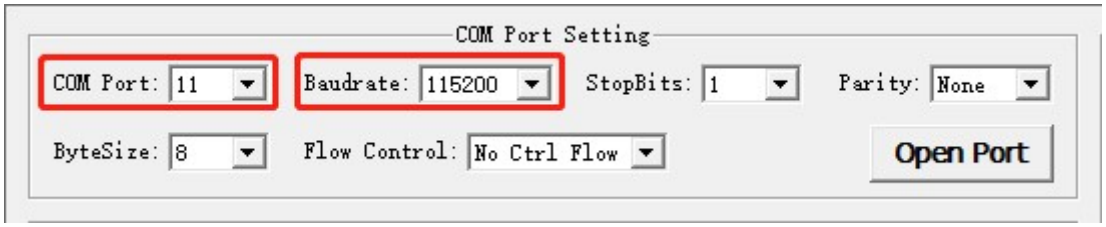

Figure 17: Debug UART Setting Field on QCOM

5.3. Firmware Upgrade

You can use simplicity commander tool provided by Quectel to establish communication between the module and the PC via J0101 (JTAG interface) or J0102 (mini simplicity interface).

NOTE

For more information about simplicity commander tool, please contact Quectel Technical Support.

5.4. Reset

Press S0102 (reset button) for more than 100 ns and then release it to reset the module.

6 Appendix References

Table 6: Related Documents

Document Name
[1] Quectel_KCMCA6S_QuecOpen_Hardware_Design
[2] Quectel_QCOM_User_Guide
[3] Quectel_KCMCA6S_Test_Guide

Table 7: Terms and Abbreviations

Abbreviation	Description
ADC	Analog-to-Digital Converter
COM	Communication
EVB	Evaluation Board
EEPROM	Electrically-Erasable Programmable Read-Only Memory
GND	Ground
GPIO	General Purpose Input/Output
LED	Light Emitting Diode
NC	Not Connected
PC	Personal Computer
RF	Radio Frequency
SMA	Sub Miniature version A
UART	Universal Asynchronous Receiver & Transmitter
USB	Universal Serial Bus