

UMTS<E EVB

User Guide

UMTS/HSPA/LTE Module Series

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About the Document

History

Revision	Date	Author	Description
1.0	2015-03-03	Huik LI	Initial
1.1	2015-06-10	Radom XIANG	Deleted +5V adapter parts in EVB accessories
2.0	2017-01-12	Allen WANG	<ol style="list-style-type: none"> 1. Added applicable modules of the EVB: EC25, EC21, EC20 R2.0, FC20 series and EG95 2. Added the description of UMTS&LTE TE-A interface (Chapter 4.2) 3. Added the description of Wi-Fi & Ethernet TE-A interface (Chapter 4.3) 4. Added the description of digital audio codec board interface (Chapter 4.5.1) 5. Added the description of SD card interface (Chapter 4.7) 6. Added a Wi-Fi antenna and two codec boards into EVB accessories 7. Added procedures for power on/off Wi-Fi modules in Chapter 5

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1 Introduction

This document describes how to use the evaluation board of UMTS<E modules and Wi-Fi modules. It is an assistant tool for engineers to develop and test Quectel UMTS, LTE and Wi-Fi modules.

1.1. Safety Information

The following safety precautions must be observed during all phases of the operation, such as usage, service or repair of any cellular terminal or mobile incorporating UMTS<E and Wi-Fi modules. Manufacturers of the cellular terminal should send the following safety information to users and operating personnel, and incorporate these guidelines into all manuals supplied with the product. If not so, Quectel assumes no liability for the customer's failure to comply with these precautions.



Full attention must be given 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. You must comply with laws and regulations restricting the use of wireless devices while driving.



Switch off the cellular terminal or mobile before boarding an aircraft. Make sure it is switched off. The operation of wireless appliances in an aircraft is forbidden, so as to prevent interference with communication systems. Consult the airline staff about the use of wireless devices on boarding the aircraft, if your device offers an Airplane Mode which must be enabled prior to boarding an aircraft.



Switch off your wireless device when in hospitals, clinics or other health care facilities. These requests are designed to prevent possible interference with sensitive medical equipment.



Cellular terminals or mobiles operating over radio frequency signal and cellular network cannot be guaranteed to connect in all conditions, for example no mobile fee or with an invalid USIM/SIM card. While you are in this condition and need emergent help, please remember using emergency call. In order to make or receive a call, the cellular terminal or mobile must be switched on and in a service area with adequate cellular signal strength.



Your cellular terminal or mobile contains a transmitter and receiver. When it is ON, it receives and transmits radio frequency energy. RF interference can occur if it is used close to TV set, radio, computer or other electric equipment.



In locations with potentially explosive atmospheres, obey all posted signs to turn off wireless devices such as your phone or other cellular terminals. Areas with potentially explosive atmospheres include fuelling areas, below decks on boats, fuel or chemical transfer or storage facilities, areas where the air contains chemicals or particles such as grain, dust or metal powders, etc.

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2 General Overview

Quectel supplies UMTS<E EVB for designers to develop applications based on Quectel UMTS<E modules and Wi-Fi modules. This EVB can test basic functionalities of these modules.

2.1. Applicable Modules

UMTS<E EVB is applicable to the following module models.

- UC20
- UGxx ¹⁾
- EC2x ²⁾
- FC20 series ³⁾
- EG95

NOTES

1. ¹⁾ UGxx contains UG35, UG95 and UG96.
2. ²⁾ EC2x contains EC25, EC21, EC20 and EC20 R2.0.
3. ³⁾ FC20 series (hereinafter FC20 simply) includes both FC20 and FC20-N.

2.2. Key Features

The following table describes the detailed features of UMTS<E EVB.

Table 1: Key Features

Features	Implementation
Power Supply	DC supply: 4.5~5.5V, typically: 5V VBAT: 3.8V for J103
UMTS<E TE-A Interface	Support Quectel UMTS<E modules: UC20/UGxx/EC2x/EG95

Wi-Fi & Ethernet TE-A Interface	Support Quectel Wi-Fi modules: FC20
SD Interface	Support SD card
USIM Card Interface	Support USIM/SIM card insertion detection Support USIM/SIM card: 3.0V and 1.8V
Audio Interfaces	<ul style="list-style-type: none"> ● One digital audio codec board interface Support Realteck ALC5616 and TI Codec TLV320AIC3104 ● Three analog interfaces used for loud speaker, earphone and handset
UART Interfaces	Two UART interfaces: <ul style="list-style-type: none"> ● COM1: serial interface for data communication Max baud rate: 460,800bps; ● COM2: serial interface for debug purpose Max baud rate: 3Mbps
USB Interface	USB 2.0
Signal Indication	5 LEDs are available for signal indication
KEY Interfaces	Power Switch (S201), PWRKEY (S302), RESET (S303), PWRDWN_N (S301), BT Function Switch (S901)
Physical Characteristics	Size: 146.4mm × 115.0mm

2.3. Interface Overview

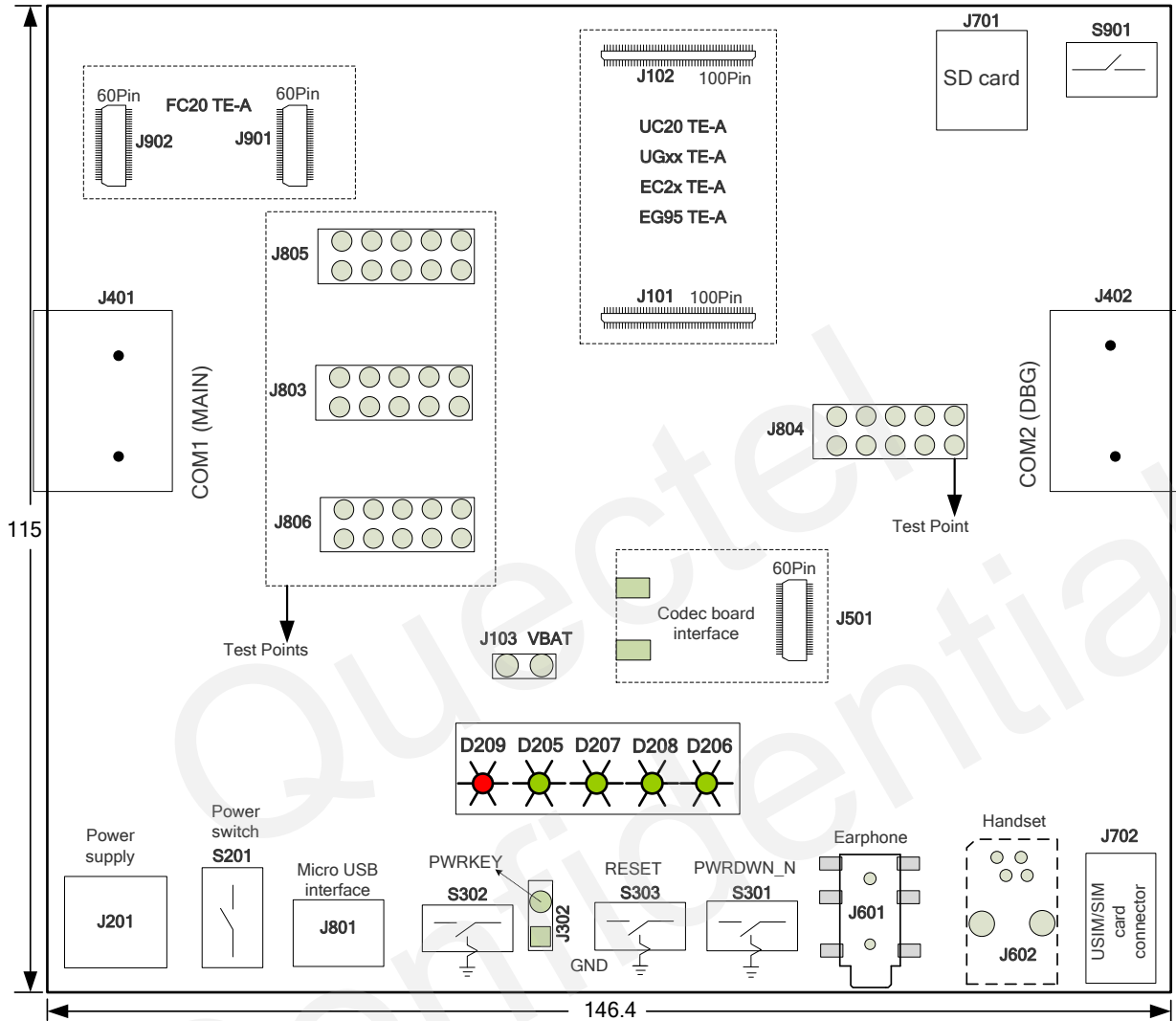


Figure 1: UMTS<E EVB Interface Overview (Unit: mm)

Table 2: Interfaces of UMTS<E EVB

Interface	Reference No.	Description
Power Supply ¹⁾	J201 (bottom side)	The power jack on the EVB. Supply voltage typically: +5V
	J801	USB_VBUS supplies voltage typically: +5V
Power Switch	S201	Control power supply VBAT ON/OFF

PWRKEY	S302	Power key (push button) Used to turn on/off the UMTS<E module
	J302	Jumper is used to connect PWRKEY to GND
PWRDWN_N	S301	Used to turn off the UMTS<E module ²⁾
RESET	S303	Reset button (push button). It is used to reset the UMTS<E module
BT Function Switch	S901	Switched to the left: connect FC20's BT interface (UART, PCM) to EC2x modules, for testing the BT function of FC20. Switched to the right: connect the main UART and codec board interfaces on EVB to UMTS<E module, for testing the module's main UART functions, and the codec's PCM function.
Micro USB	J801	USB device interface
Audio	J501	Codec board interface
	J603	Used for loud speaker Used to test the analog audio function of UMTS<E module
	J601	Used for earphone Used to test the analog audio function of UMTS<E module
	J602	Used for handset
	(bottom side)	Used to test the analog audio function of UMTS<E module
USIM	J702	USIM card connector
COM1	J401 (bottom side)	Main UART port
COM2	J402 (bottom side)	Debug UART port
Status Indication LEDs	D209, D205, D207, D208, D206	D209 is VBAT ON/OFF indicator. D205 is used for indicating whether the UMTS<E module is powered on. D207 is used for indicating whether UMTS<E module is in sleep mode. D208 and D206 are used for indicating the network status of UMTS<E module.
UMTS<E TE-A Interface	J101, J102	Connectors of UMTS<E TE-A
Wi-Fi & Ethernet TE-A Interface	J901, J902	Connectors of Wi-Fi & Ethernet TE-A
SD Card	J701	SD card connector
VBAT	J103	Jumper used for VBAT voltage test

Test Points	J803, J804, J805, J806	Test pins
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NOTES

- ¹⁾ The power supply information in above table is for UMTS<E modules. For the detailed information of power supply for Wi-Fi modules, please refer to **Chapter 4.1** and **Chapter 4.3**.
- ²⁾ This function is only supported by UG35, UG95 and UG96 modules.

2.4. Top View of EVB

The top view of the UMTS<E EVB is shown as following figure.

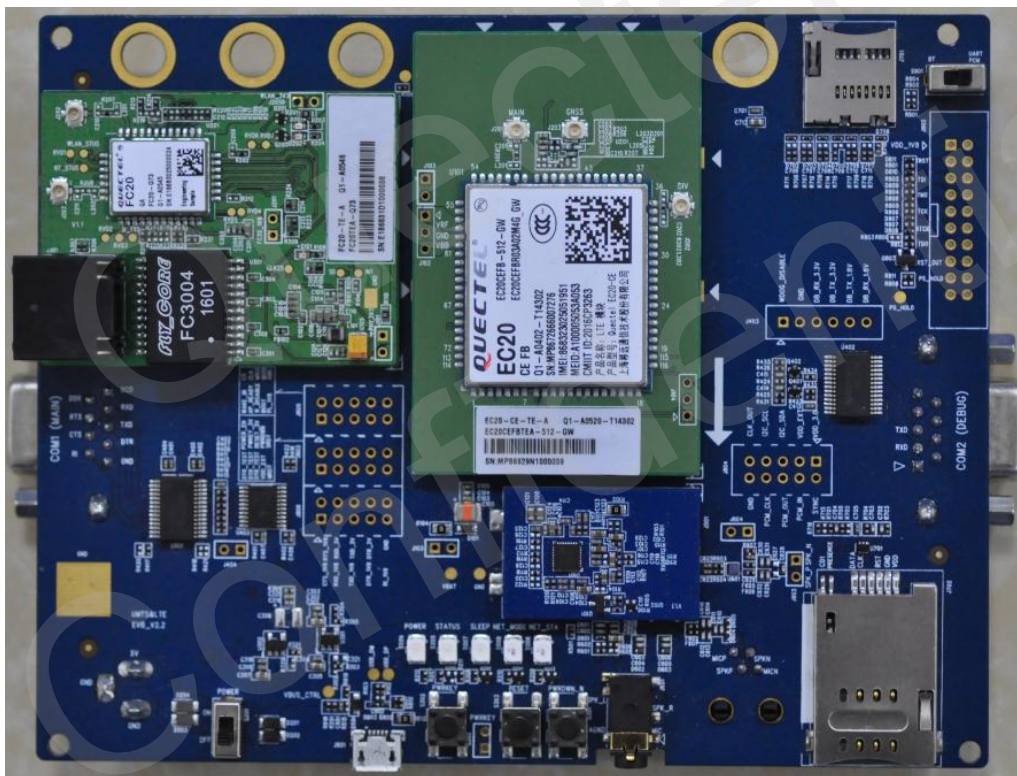


Figure 2: UMTS<E EVB Top View

2.5. EVB Kit Accessories

All accessories of the UMTS<E EVB kit are listed as below.



Figure 3: EVB Kit Accessories

Table 3: Accessories List

Items	Description	Quantity
Cables	USB to UART converter cable	1
	USB cable	1
	RF cables	4
Antennas	Main Antennas	2

	GNSS Antenna (passive)	1
	Wi-Fi Antenna	1
Audio	Earphone	1
Disk	USB 2.0 to RS232 driver and USB driver disk	1
Codec Boards	ALC5616 and TLV320AIC3104 codec boards	2
Others	Bolts and nuts for fixing EVB	1
Instruction Sheet	A sheet of paper giving instructions for EVB connection, details of EVB accessories, etc.	1

NOTE

The main antenna can also be used for diversity reception.

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3 EVB Kit Accessories Assembly

The following figure shows the EVB Kit accessories assembly.



Figure 4: UMS<E EVB Kit Accessories Assembly

4 Interface Application

This chapter describes the hardware interfaces of UMTS<E EVB, shown as follows:

- Power interface
- UMTS<E TE-A interface
- Wi-Fi & Ethernet TE-A interface
- USB interface
- Audio interfaces
- USIM card interface
- SD card interface
- UART interfaces

It also provides information about the buttons, switch, status indication LEDs and test points to help customers use the UMTS<E EVB.

4.1. Power Interface (J201/J801)

The UMTS<E EVB can be powered by an external power adapter through connecting with the power jack (J201) or USB receptacle (J801) on the EVB. The power adapter connects to a step-down converter which can provide the supply voltage (VBAT) required for operating the EVB and the module.

The following two figures show the simplified power supply schematic and the power interface of Quectel UMTS<E EVB.

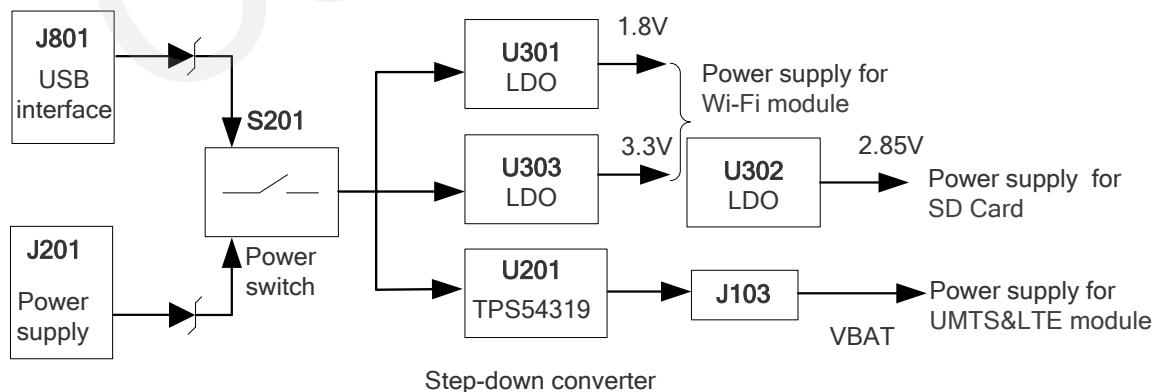


Figure 5: Power Supply for UMTS<E EVB

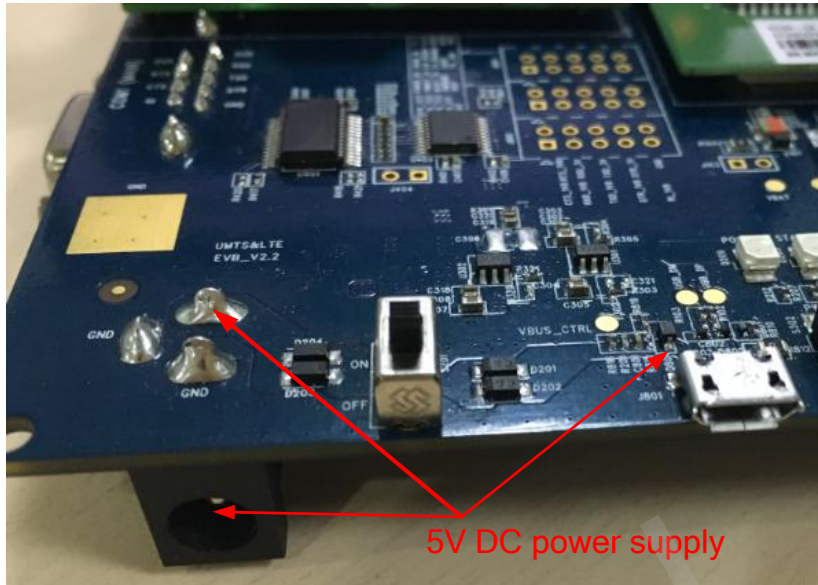


Figure 6: Power Interface

Before connecting the power supply, customers have to select a proper DC power adapter to supply power for the UMS<E EVB, and the power plug design of the adapter is shown as below.

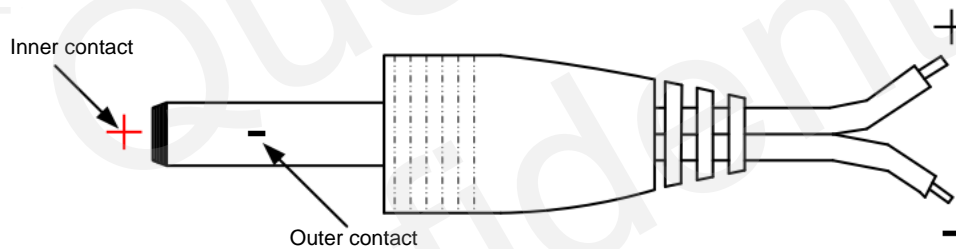


Figure 7: Power Plug Design

4.2. UMS<E TE-A Interface

The UMS<E TE-A interface supports UC20/UGxx/EC2x/EG95 modules, and includes two BTB connectors named J101 and J102, respectively. UMS<E TE-A is connected to the EVB via the two connectors. With UMS<E modules, customers can easily design wireless communication products.

The following figure shows the connection between UMS<E TE-A and EVB.

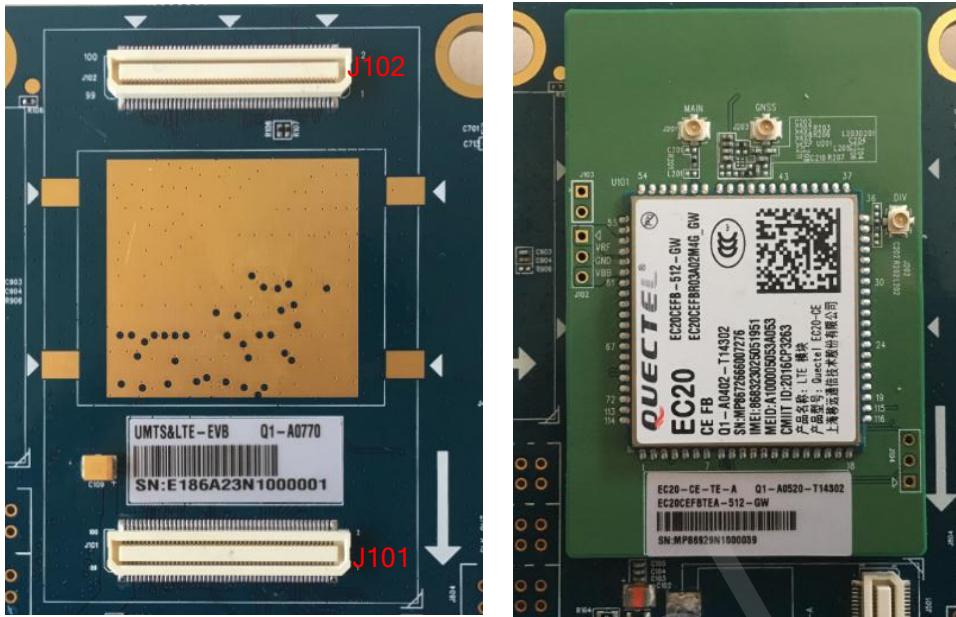


Figure 8: Connection between UMTS<E TE-A and EVB

4.3. Wi-Fi & Ethernet TE-A Interface

The Wi-Fi & Ethernet TE-A interface supports FC20 modules, and includes two BTB connectors named J901 and J902, respectively. Wi-Fi & Ethernet TE-A (FC20 TE-A) is connected to the EVB via the two connectors. The interface allows customers to easily test the Wi-Fi function of EC2x modules or to develop applications with Wi-Fi function.

The following two figures show the connection between FC20 TE-A and EVB.

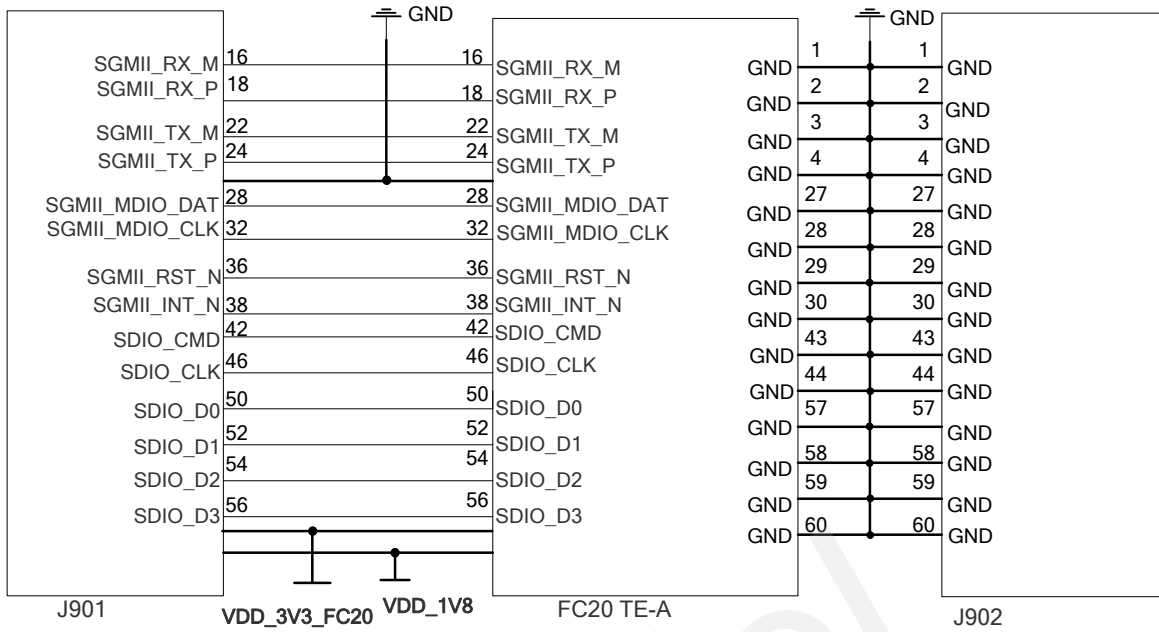


Figure 9: Simplified FC20 TE-A Interface Schematic



Figure 10: Connection Between FC20 TE-A and EVB

4.4. USB Interface (J801)

Quectel UMTS<E module provides a USB interface which complies with USB 2.0 standard for high-speed (480Mbps), full-speed (12Mbps) and low-speed (1.5Mbps) functions. The interface is used for AT command communication, data transmission, firmware upgrade and GNSS NEMA output.

The UMTS<E EVB provides a Micro-USB interface J801 for connection with a host device. The USB data lines USB_DP and USB_DM are connected directly to the UMTS<E module. The USB_VBUS line can be used for USB connection detection and EVB power supply.

The following figure is a reference circuit design for the USB device interface.

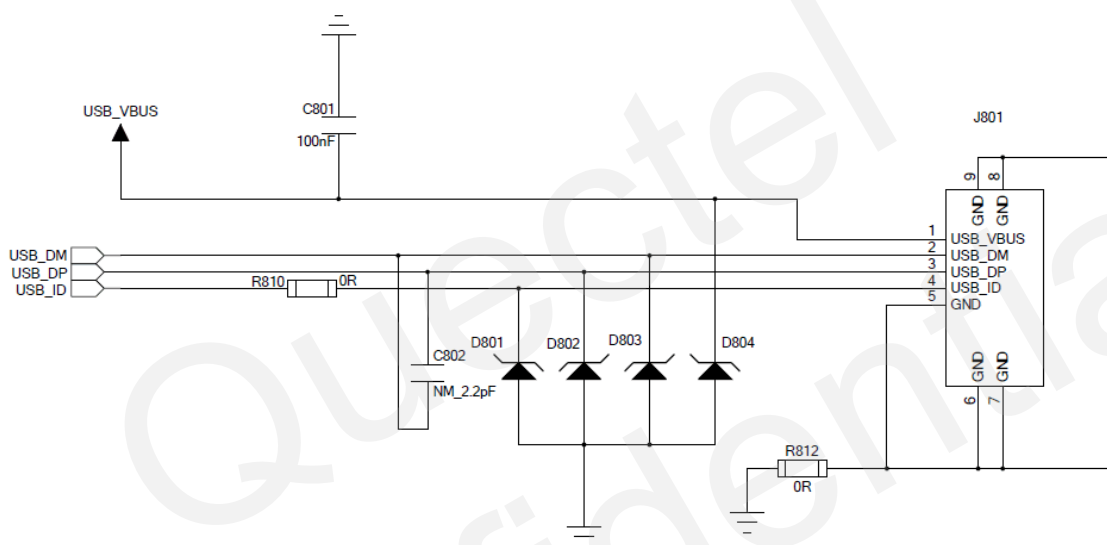


Figure 11: Reference Circuit Design for USB Device Interface

Table 4: Pin Definition of J801

Pin No.	Pin Name	Function
1	USB_VBUS	Used for USB connection detection and power supply for EVB
2	USB_DM	USB serial differential bus (minus)
3	USB_DP	USB serial differential bus (positive)
4	USB_ID	USB ID bus for host or device
5	GND	GND for USB interface

4.5. Audio Interfaces

Quectel UMS<E EVB provides one digital audio codec board interface (PCM) J501 and three analog audio interfaces J601, J602 and J603. This chapter gives a detailed introduction on these audio interfaces.

4.5.1. Digital Audio Codec Board Interface (J501)

The UMS<E EVB supports two different kinds of external digital audio codecs named ALC5616 and TLV320AIC3104. The codec circuit is assembled on an independent small board which can be interconnected with EVB by the BTB connector J501.

Customers can select different codecs according to their own application demands, and also can use AT command to switch between codecs. For example, **AT+QDAI=3** is used to switch codec from TLV320AIC3104 to ALC5616, and **AT+QDAI=5** is used to switch codec from ALC5616 to TLV320AIC3104. For more details about the AT commands, please refer to **document [4]** and **document [5]**.

The following figure shows a reference circuit design for digital audio codecs, and **Figure 13** shows the connection between codec board and EVB.

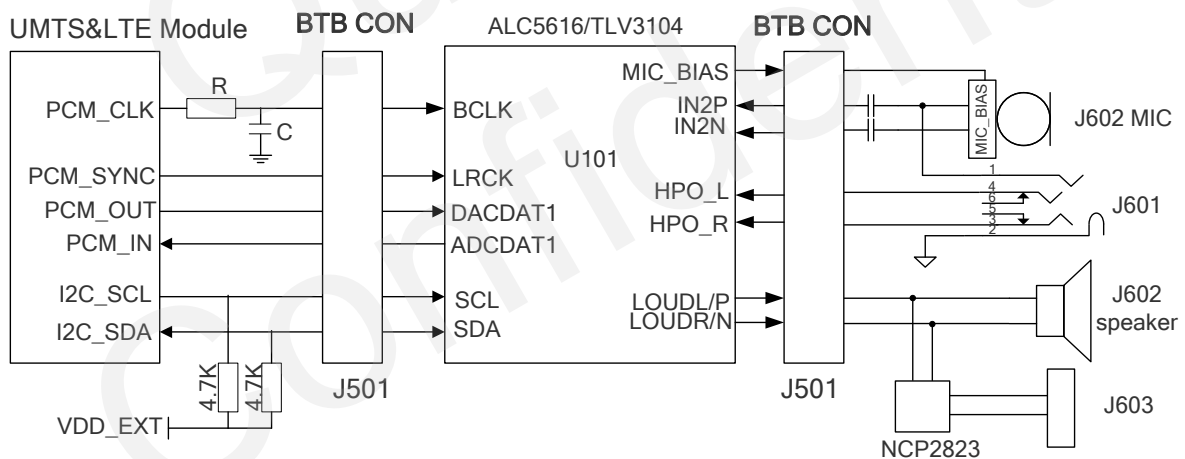


Figure 12: Digital Audio Codec Circuit

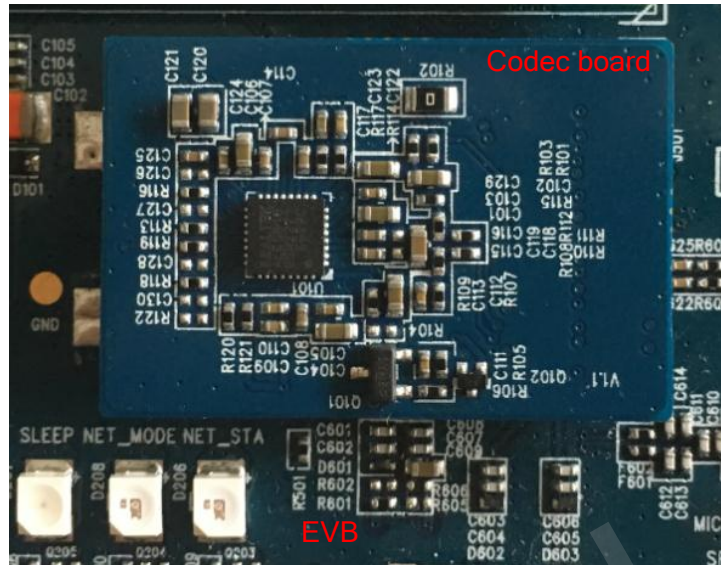


Figure 13: Connection between Codec Board and EVB

4.5.2. Analog Audio Interfaces (J603/J601/J602)

4.5.2.1. Loud Speaker Interface (J603)

Audio interface J603 is designed for loud speaker and the following figure shows a reference design of loud speaker with an external Class-D audio amplifier.

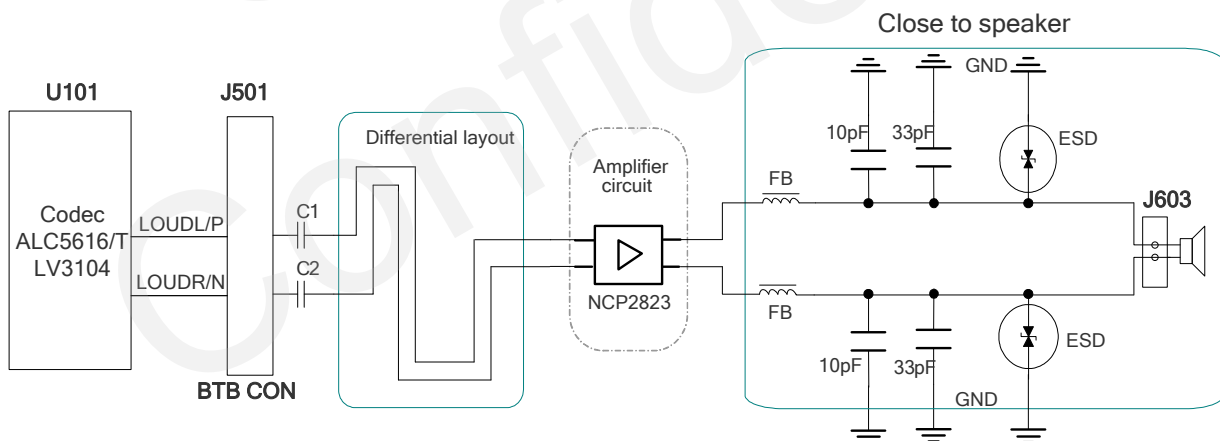


Figure 14: Reference Circuit Design for Loud Speaker Interface J603

4.5.2.2. Earphone Interface (J601)

Audio interface J601 is designed for earphones. The names of corresponding pins on EVB are shown in **Figure 16**. A reference circuit designs for earphone interfaces J601 is shown as following figure.

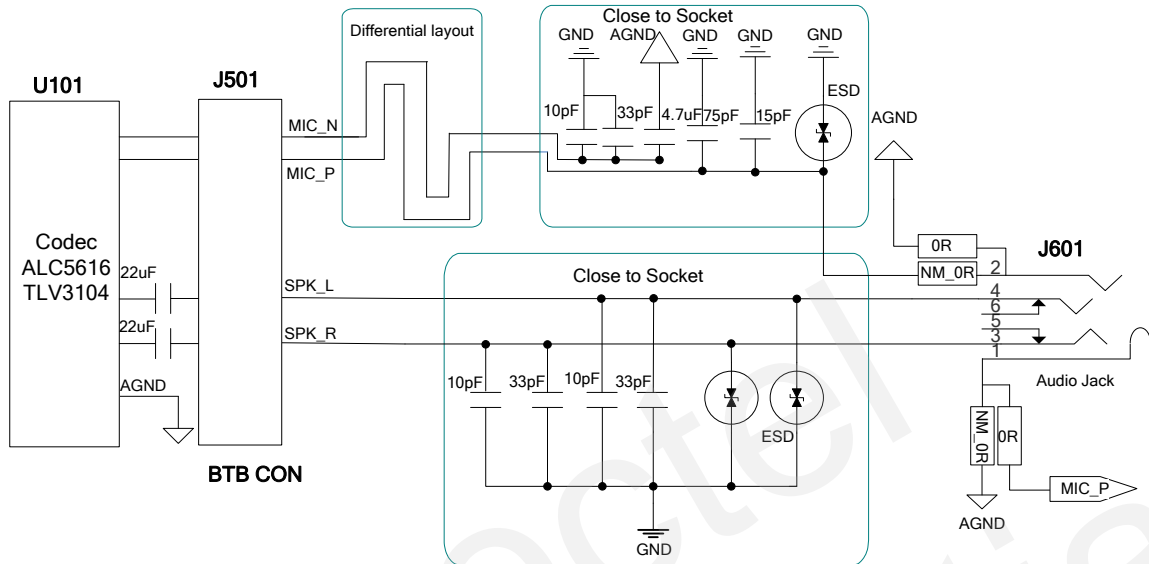


Figure 15: Reference Circuit Design for Earphone Interface J601

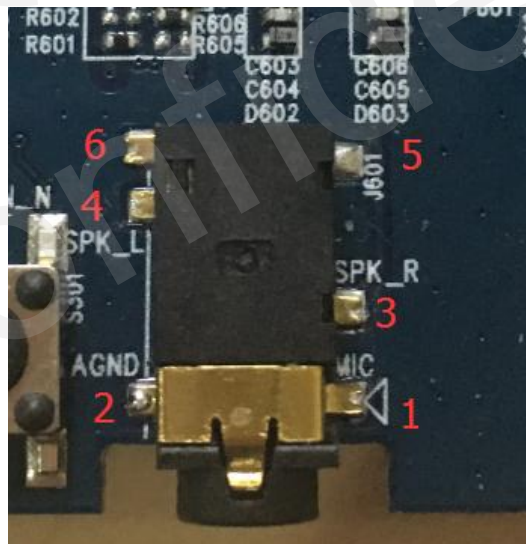


Figure 16: Pin Assignments of J601

Table 5: Pin Definition of J601

Pin No.	Pin Name	Description
1	MIC	Microphone input
2	AGND	Dedicated GND for audio
3	SPK_R	Right channel of stereo audio output
4	SPK_L	Left channel of stereo audio output
5, 6	NC	Not connected

The following figure shows the sketch design of audio plug which suits for the audio jack on UMTS<E EVB.

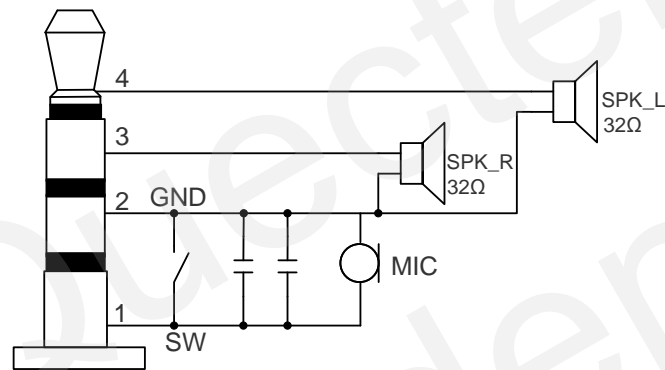


Figure 17: Sketch of Audio Plug

4.5.2.3. Handset Interface (J602)

Audio interface J602 is designed for handsets. The names of corresponding pins on EVB are shown in **Figure 19**. A reference circuit design for handset interfaces J602 is shown below.

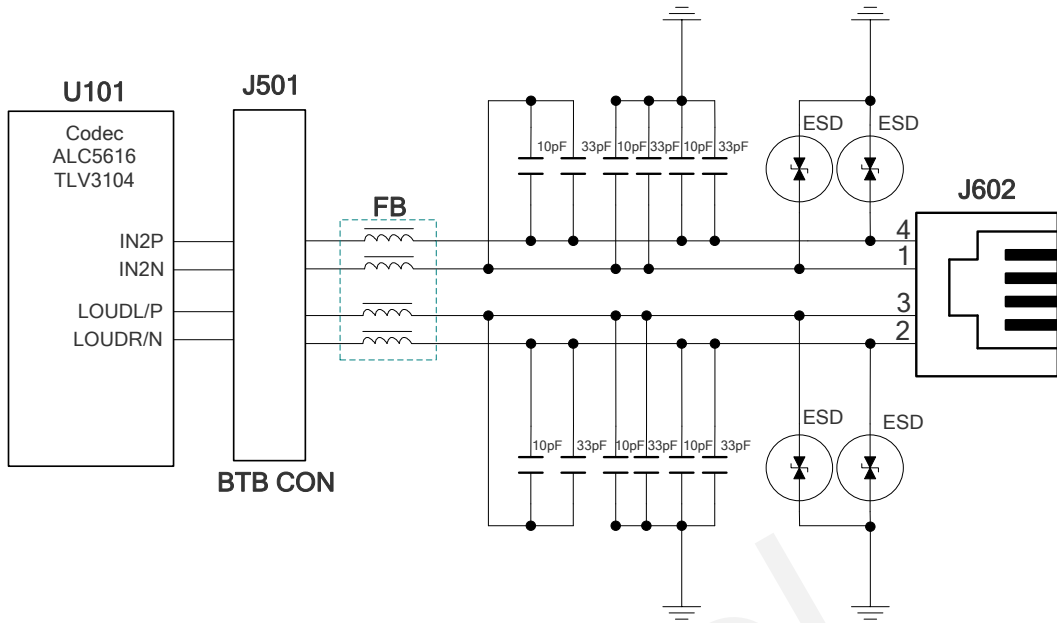


Figure 18: Reference Circuit Design for Handset Interface J602



Figure 19: Pin Assignments of J602

Table 6: Pin Definition of J602

Pin No.	Pin Name	Function
1	MICN	Negative microphone input
2	SPKN	Negative loud speaker output
3	SPKP	Positive loud speaker output
4	MICP	Positive microphone input

4.6. USIM Card Interface (J702)

The UMTS<E EVB has a 6-pin push-push type USIM card (3V or 1.8V) connector J702. The following figure shows the simplified interface schematic for J702.

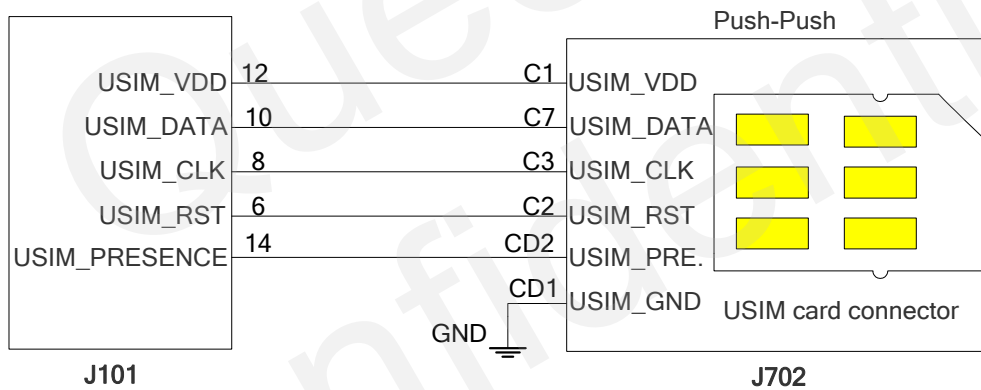


Figure 20: Simplified Interface Schematic for USIM Card Connector J702

The following figure shows the pin assignments of J702.

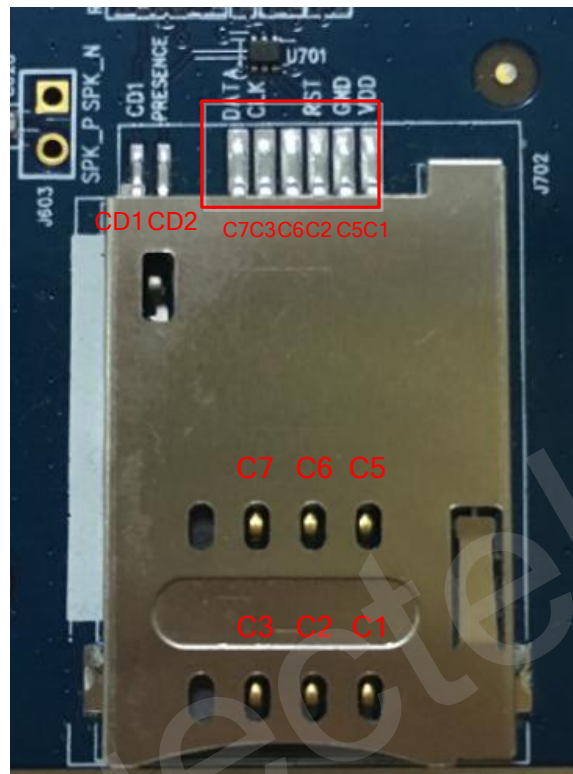


Figure 21: Pin Assignments of J702

Table 7: Pin Definition of J702

Pin No.	Signal Name	I/O	Function
C1	USIM_VDD	PO	USIM card power supply, provided by UMTS<E EVB
C2	USIM_RST	DO	USIM card reset
C3	USIM_CLK	DO	USIM card clock
C5	GND	/	Ground
C6	VPP	/	Not connected
C7	USIM_DATA	I/O	Data line, bi-directional
CD1	GND	GND	USIM card insertion detection
CD2	USIM_PRESENCE	I	USIM card insertion detection. Support low level detection.

4.7. SD Card Interface (J701)

The UMTS<E EVB provides an SD card interface that supports maximally 32GB micro SD card. With the SD card interface, customers can easily enhance the memory capacity of modules.

The following figure shows the simplified interface schematic for J701.

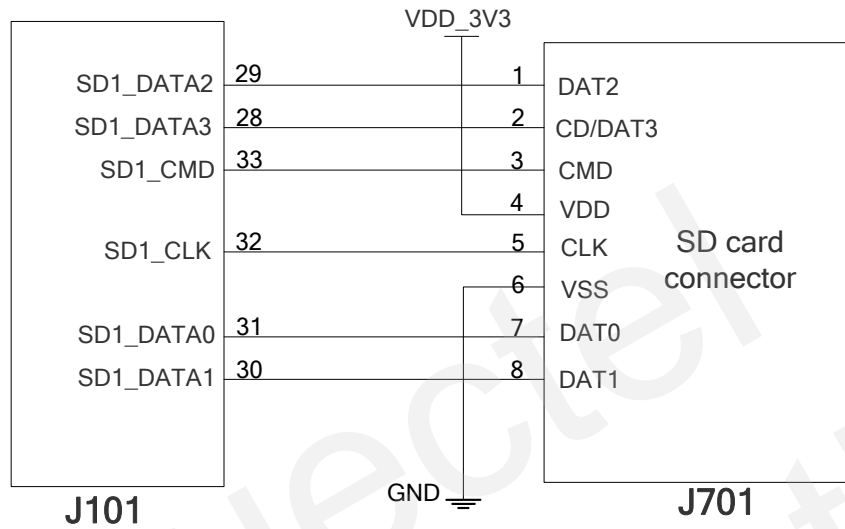


Figure 22: Simplified Interface Schematic for SD Card Interface J701



Figure 23: Pin Assignments of J701

4.8. UART Interfaces (J401/J402)

The UMS<E EVB offers two UART interfaces: COM1 (Main UART port J401 and J402) and COM2 (Debug UART port).

COM1 of UMS<E EVB is intended for the communication between the module and the host application. It can be used for data transmission and AT command communication.

COM2 supports 115,200bps baud rate. It can be used for Linux console and log output.

The following figure shows the block diagram of UART on UMS<E EVB.

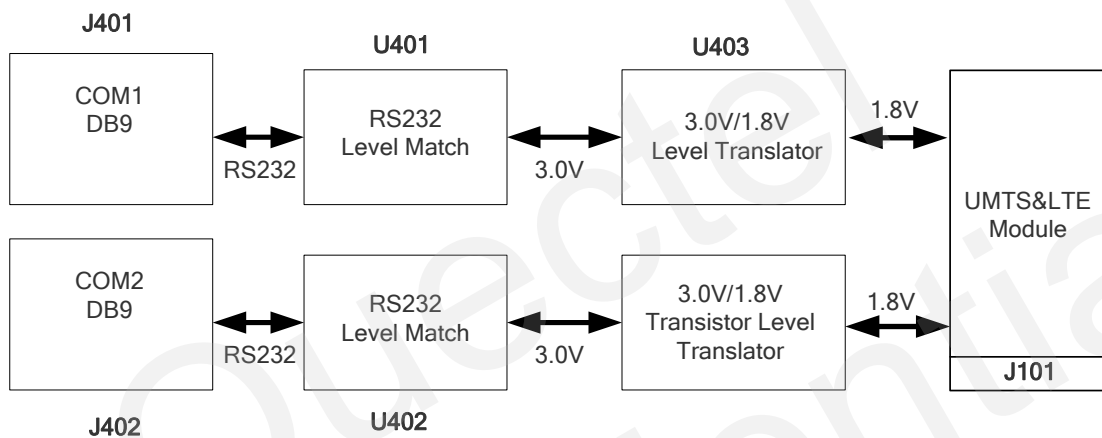


Figure 24: UART Block Diagram

The following two figures show the pin assignments of J401 and J402.



Figure 25: Pin Assignments of J401

Table 8: Pin Definition of J401

Pin No.	Signal Name	I/O	Description
1	RS232_DCD	DO	Data carrier detection
2	RS232_RXD	DI	Receive data
3	RS232_TXD	DO	Transmit data
4	RS232_DTR	DI	Data terminal ready
5	RS232_GND	/	GND
6	NC	/	Not connected
7	RS232_RTS	DI	Request to send
8	RS232_CTS	DO	Clear to send
9	RS232_RI	DO	Ring indicator



Figure 26: Pin Assignments of J402

Table 9: Pin Definition of J402

Pin No.	Signal Name	I/O	Description
2	RS232_RXD	DI	Receive Data
3	RS232_TXD	DO	Transmit data

4.9. Switches and Buttons

The UMTS<E EVB includes two switches (S201 and S901) and three buttons (S301, S302 and S303), as shown in the following figures.



Figure 27: S901 Switch

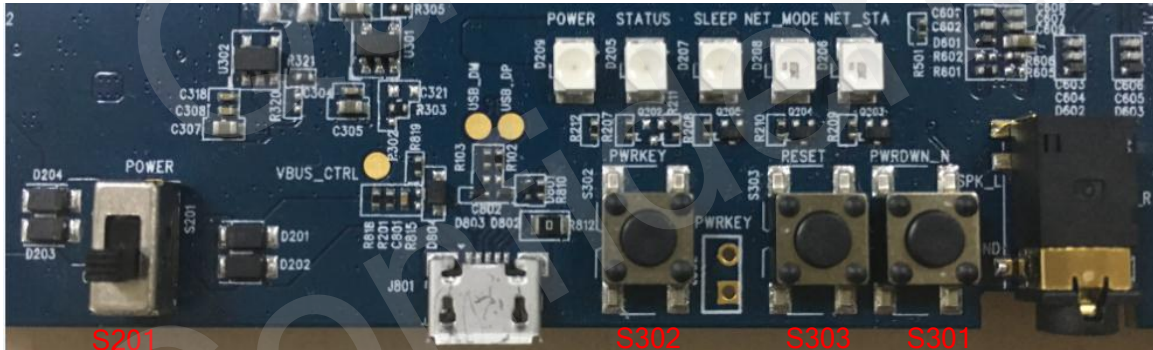


Figure 28: S201 Switch and S301/S302/S303 Buttons

Table 10: Description of Switches and Buttons

Reference No.	Description
S201	Control power supply VBAT ON/OFF
S901	Switched to the left: connect FC20's BT interface (UART, PCM) to EC2x modules, for testing the BT function of FC20. Switched to the right: connect the main UART and codec board interfaces

	on EVB to UMTS<E module, for testing the module's main UART functions, and the codec's PCM function.
S302	Used to turn on/off the UMTS<E module
S303	Used to reset the UMTS<E module
S301	Used to turn off the UMTS<E module ¹⁾

NOTE

¹⁾ This function is only supported by UG35, UG95 and UG96 modules.

4.10. Status Indication LEDs

The UMTS<E EVB comprises five status indication LEDs (D209, D205, D207, D208 and D206). The following figure shows the positions of these LEDs.

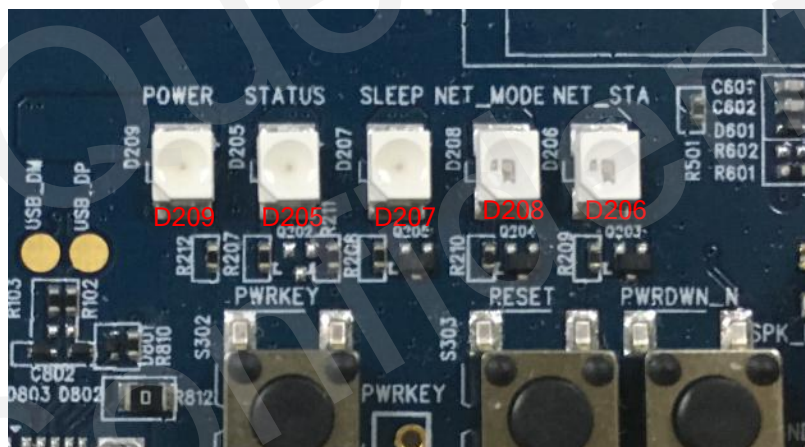


Figure 29: Status Indication LEDs

Table 11: Description of Status Indication LEDs

Reference No.	Description
D209	Indicates the power supply for UMTS<E module is ready Bright: VBAT ON Extinct: VBAT OFF
D205	Indicates the operation status of UMTS<E module

	Bright: the module is powered on Extinct: the module is powered down
D207	Indicate the sleep status of UMTS<E module Bright: the module is in sleep mode Extinct: the module is not in sleep mode
D208, D206	Indicate the network status of UMTS<E module, for detailed information please refer to document [2] .

4.11. Test Points

The UMTS<E EVB provides a series of test points for some signals. They can help customers to obtain the corresponding waveform. The following two figures show test points J803, J804, J805 and J806.

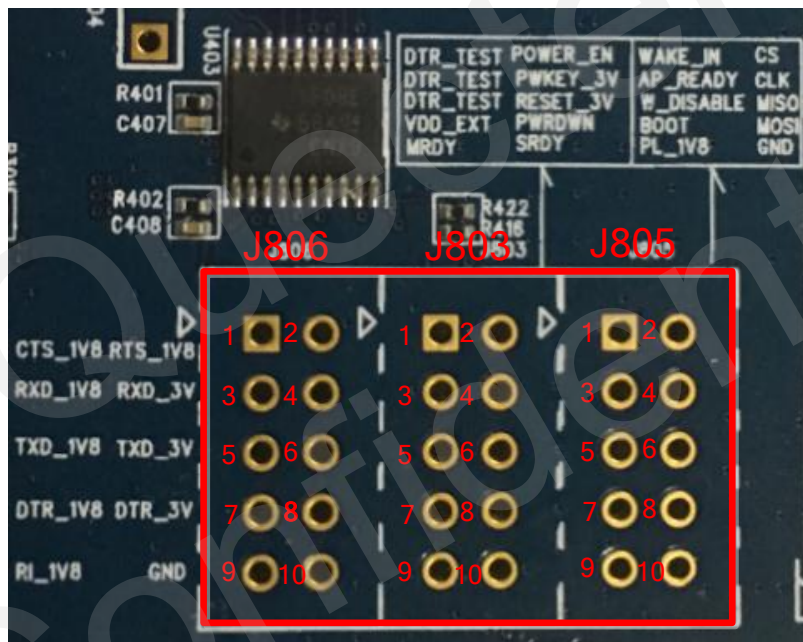


Figure 30: Test Points J803, J805 and J806

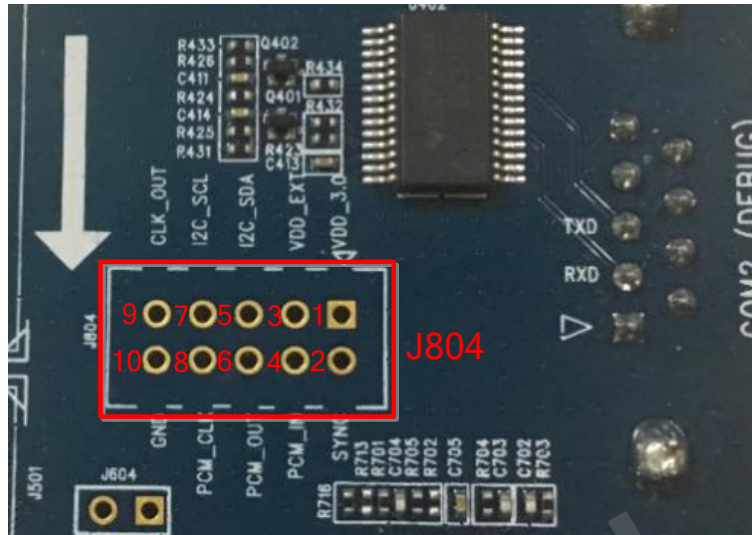


Figure 31: Test Point J804

Table 12: Pin Definition of J803, J804, J805 and J806

J803 Pin No.	Pin Name	Description
1,3,5	DTR_TEST	Data terminal ready test pins
2	POWER_EN	VBAT enable pin
4	PWRKEY_3.0V	PWRKEY_3.0V test pin
6	RESET_3.0V	RESET_3.0V test pin
7	VDD_EXT	Connected directly to VDD_EXT of UMTS<E module
8	POWER_OFF_3.0V	Used to power off UGxx modules
9	SPI_MRDY	RESERVED
10	SPI_SRDY	RESERVED
J804 Pin No.	Pin Name	Description
1	VDD_3.0V	3.0V power supply from U302
2	PCM_SYNC	Connected directly to PCM_SYNC of UMTS<E module
3	VDD_1V8	1.8V power supply from U301
4	PCM_IN	Connected directly to PCM_IN of UMTS<E module

5	I2C_SDA	Connected directly to I2C_SDA of UMTS<E module
6	PCM_OUT	Connected directly to PCM_OUT of UMTS<E module
7	I2C_SCL	Connected directly to I2C_SCL of UMTS<E module
8	PCM_CLK	Connected directly to PCM_CLK of UMTS<E module
9	CLK_OUT	RESERVED
10	GND	Ground

J805 Pin No.	Pin Name	Description
1	WAKE_IN	Connected directly to WAKE_IN of UMTS<E module
2	SPI_CS_N	Connected directly to SPI_CS_N of UMTS<E module
3	AP_READY	Connected directly to AP_READY of UMTS<E module
4	SPI_CLK	Connected directly to SPI_CLK of UMTS<E module
5	W_DISABLE_N	Connected directly to W_DISABLE# of UMTS<E module
6	SPI_MISO	Connected directly to SPI_MISO of UMTS<E module
7	USB_BOOT	Connected directly to USB_BOOT of UMTS<E module
8	SPI_MOSI	Connected directly to SPI_MOSI of UMTS<E module
9	VDD_1.8V	Connected to VDD_1.8V via a resistor
10	GND	Ground

J806 Pin No.	Pin Name	Description
1	CTS_1.8V_UART	Connected directly to voltage translator
2	RTS_1.8V_UART	Connected directly to voltage translator
3	RXD_1.8V_UART	Connected directly to voltage translator
4	RXD_3.0V	Connected directly to voltage translator
5	TXD_1.8V_UART	Connected directly to voltage translator
6	TXD_3.0	Connected directly to voltage translator
7	DTR_1.8V	Connected directly to DTR of UMTS<E module

8	DTR_3.0V	Connected directly to voltage translator
9	RI_1.8V	Connected directly to RI of UMTS<E module
10	GND	Ground

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5 Operation Procedures Illustration

This chapter introduces how to use the UMTS<E EVB for testing and evaluation of Quectel UMTS<E modules and Wi-Fi modules.

5.1. Power on UMTS<E and Wi-Fi Modules

- **Power on UMTS<E module**

1. Connect the UMTS<E TE-A to the connectors (J101 and J102) on EVB.
2. Insert a USIM card into the USIM card connector on EVB, and connect the antennas to UMTS<E TE-A.
3. Connect the EVB to a 5V power adapter, or connect the EVB to PC via USB cable.
4. Switch S201 to **ON** state, then D209 will be light. Press the S302 (PWRKEY) for at least 100ms, then the UMTS<E module will be powered on and D205 (STATUS) will be light.

- **Power on Wi-Fi module**

1. Make sure the EC2x module is powered on, if there is a need to test the Wi-Fi function of EC2x modules.
2. Connect the FC20 TE-A to the connectors (J901 and J902) on EVB, and connect the Wi-Fi antenna to FC20 TE-A.
3. Connect the FC20 TE-A to PC via Ethernet cable.
4. Send **AT+QWIFI=1** command to EC2x module to enable power supply for FC20 module. For more details, please refer to **document [3]**. Before sending the command, please make sure the EVB has been connected to PC via USB cable.

The following table shows the UMTS<E module's network status which can be judged by D206 and D208.

Table 13: Indication of D206 and D208

Status Indication LEDs	State	Network Status
D206 NET_STATUS	Flicker slowly (200ms ON/1800ms OFF)	Network searching
	Flicker slowly (1800ms ON/200ms OFF)	Idle mode
	Flicker slowly (125ms ON/125ms OFF)	Data is being transferred over 2G/3G/4G networks
	Always ON	Voice calling
D208 NET_MODE	Always ON	Registered on 3G network successfully (UC20/UGxx) Registered on 4G network successfully (EC2x/EG95)
	Always OFF	Others

5.2. Communication Via USB or UART Interface

5.2.1. Communication via USB Interface

1. Power on the UMTS<E module according to the procedures mentioned in **Chapter 5.1**.
2. Connect the EVB and the PC with USB cable through USB interface, and then run the driver disk on PC to install the USB driver. For details about USB driver installation, please refer to **document [1]**. The USB port numbers can be viewed through the PC Device Manager, shown as following figure.

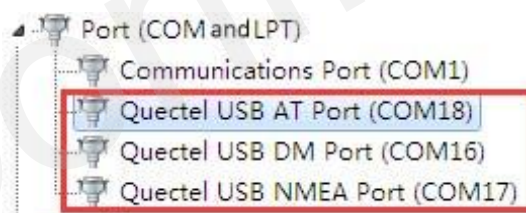


Figure 32: USB Ports

3. Install and then use the QCOM tool provided by Quectel to realize the communication between the UMTS<E module and the PC. The following figure shows the QCOM window configuration: select correct **“COM port”** (USB AT Port which is shown in above figure) and set correct **“Baudrate”** (such as 115,200bps). For more details about QCOM tool usage and configuration, please refer to **document [6]**.

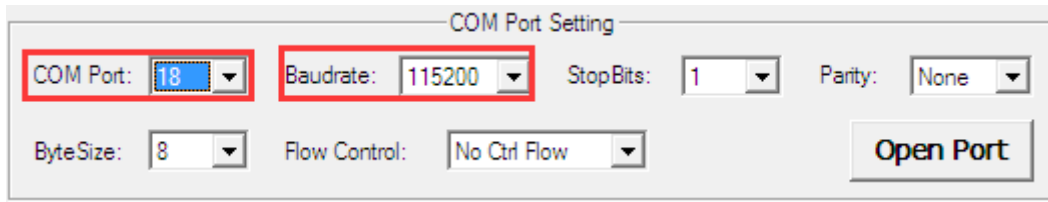


Figure 33: QCOM Window Configuration When Connecting USB Port

5.2.2. Communication via UART Interface

1. Run the driver disk on PC to install the USB-to-RS232 driver.
2. Connect the Main UART interface to PC with the USB-to-UART converter cable (USB-to-RS232 cable), and the USB serial port number can be viewed through the PC Device Manager, shown as the following figure.



Figure 34: USB Serial Port

3. Install and then use the QCOM tool provided by Quectel to realize the communication between the UMTS<E module and the PC. The following figure shows the QCOM window configuration: select correct “**COM port**” (USB Serial Port) and set correct “**Baudrate**” (such as 115,200bps). For more details about QCOM tool usage and configuration, please refer to **document [6]**.

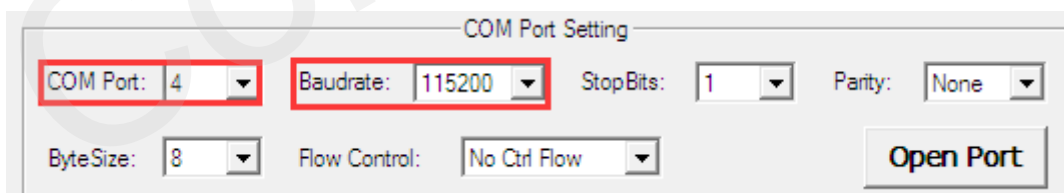


Figure 35: QCOM Window Configuration When Connecting USB Serial Port

5.3. Firmware Upgrade

Quectel UMS<E module upgrades firmware via USB port by default, please follow the procedures below to upgrade firmware.

1. Install and open the firmware upgrade tool QFlash on PC and then power on the UMS<E module according to the procedures mentioned in **Chapter 5.1**.
2. Click the “**COM Port**” dropdown list and select the USB DM port.
3. Click the “**Load FW Files**” button to choose the firmware package.
4. Click the “**Start**” button to upgrade the firmware.

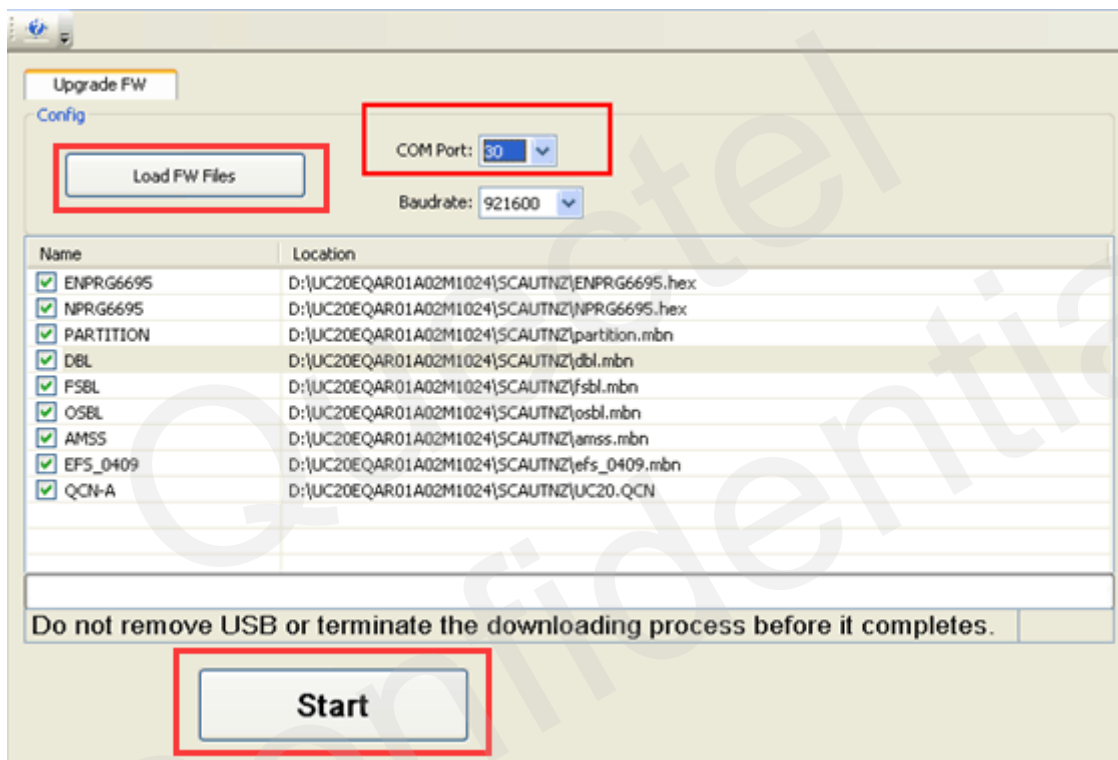


Figure 36: Configurations for Firmware Upgrade

5.4. Reset UMS<E Modules

The emergency reset option is only used in case of emergency. For example, the software does not respond for more than 5s due to some serious problems.

Press the button S303 for more than 150ms then release it to reset UMS<E module. However, this may causes the loss of information stored in the memory as the reset module has been initialized.

5.5. Power off UMTS<E and Wi-Fi Modules

- **Power off UMTS<E module**

There are two ways to power off UMTS<E module.

One way is to execute AT command **AT+QPOWD**. This is the best and the safest way. The module will log off from the network and save data before shutdown, but it will be powered on again after shutdown. For more details about the AT command, please refer to **document [4]** and **document [5]**.

The other way is to press down S302 for at least 0.6s, the UMTS<E module will be shut down.

- **Power off Wi-Fi module**

AT+QWIFI=0 command can be used to power off FC20 modules. For more details, please refer to **document [3]**.

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6 Appendix A References

Table 14: Related Documents

SN	Document Name	Remark
[1]	Quectel_UC20&UC15&EC25&EC21&EC20_Windows_USB_Drivers_Installation_Guide	Windows USB drivers installation guide for UC20, EC25, EC21 and EC20; Install USB drivers of these modules in Windows XP/Vista 7/8
[2]	Quectel_xx_Hardware_Design	Hardware design for UC20, UG95, UG96, EC25, EC21, EC20 and EC20 R2.0
[3]	Quectel_FC20_Series_Hardware_Design	FC20 series hardware design
[4]	Quectel_WCDMA_UGxx_AT_Commands_Manual	AT commands manual for Quectel WCDMA UGxx modules
[5]	Quectel_xx_AT_Commands_Manual	AT commands manual for UC20, EC25, EC21, EC20 and EC20 R2.0
[6]	Quectel_QCOM_User_Guide	User guide for QCOM tool

Table 15: Terms and Abbreviations

Abbreviation	Description
AGND	Analogue Ground
COM	Cluster Communication Port
BTB	Board to Board
DC	Direct Current
DI	Digital Input
DO	Digital Output
EVB	Evaluation Board

GND	Ground
GNSS	Global Navigation Satellite System
I/O	Input/Output
LED	Light Emitting Diode
LTE	Long Term Evolution
MIC	Microphone
NC	Not Connected
PC	Private Computer
PCB	Printed Circuit Board
PCM	Pulse Code Modulation
PO	Power Output
RF	Radio Frequency
SD	Secure Digital
SIM	Subscriber Identity Module
UART	Universal Asynchronous Receiver & Transmitter
UMTS	Universal Mobile Telecommunications System
USB	Universal Serial Bus
USIM	Universal Subscriber Identity Module
VBAT	Voltage of Battery
