Wireless Module Expert

UC20 AT Commands Application Note

UMTS/HSPA Module Series

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About the Document

History

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1 Introduction

This document presents the recommendatory operation process of AT commands and related applications of Quectel UC20 modules.

2 Power on Module

2.1. The Recommended Process to Power on Module

You can power on module according to the following steps, as shown in Figure 1:

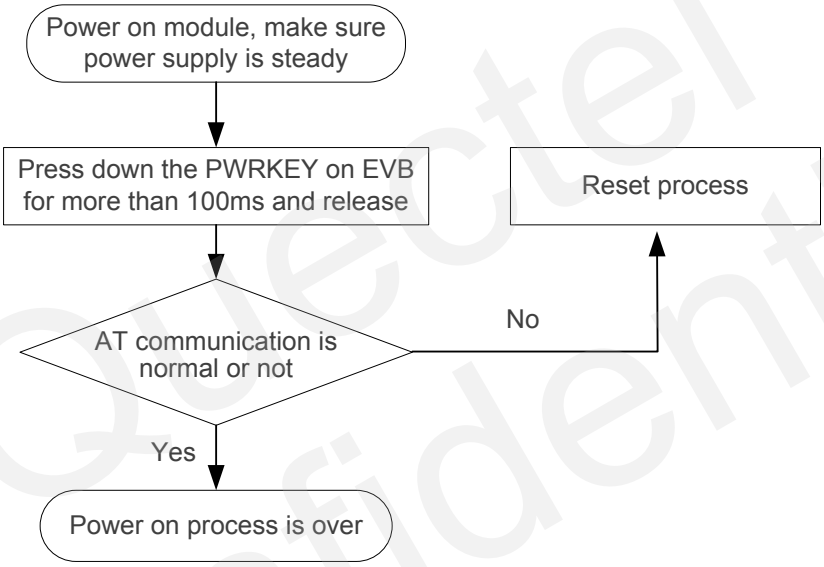

Figure 1: Power on Module Process

NOTES

1. Power on module, and send AT command. If OK is returned, it means AT communication is normal.
2. If you use USB cable, there will be a prompt to ask you to install USB driver when you power on the module for the first time, please refer to "*Quectel_UC20_Windows_USB_Driver_User_Guide*" to install USB driver. Then five virtual ports can be found in the Device Management, as shown in Figure 3. For introduction on each USB virtual port, please refer to Table 2.

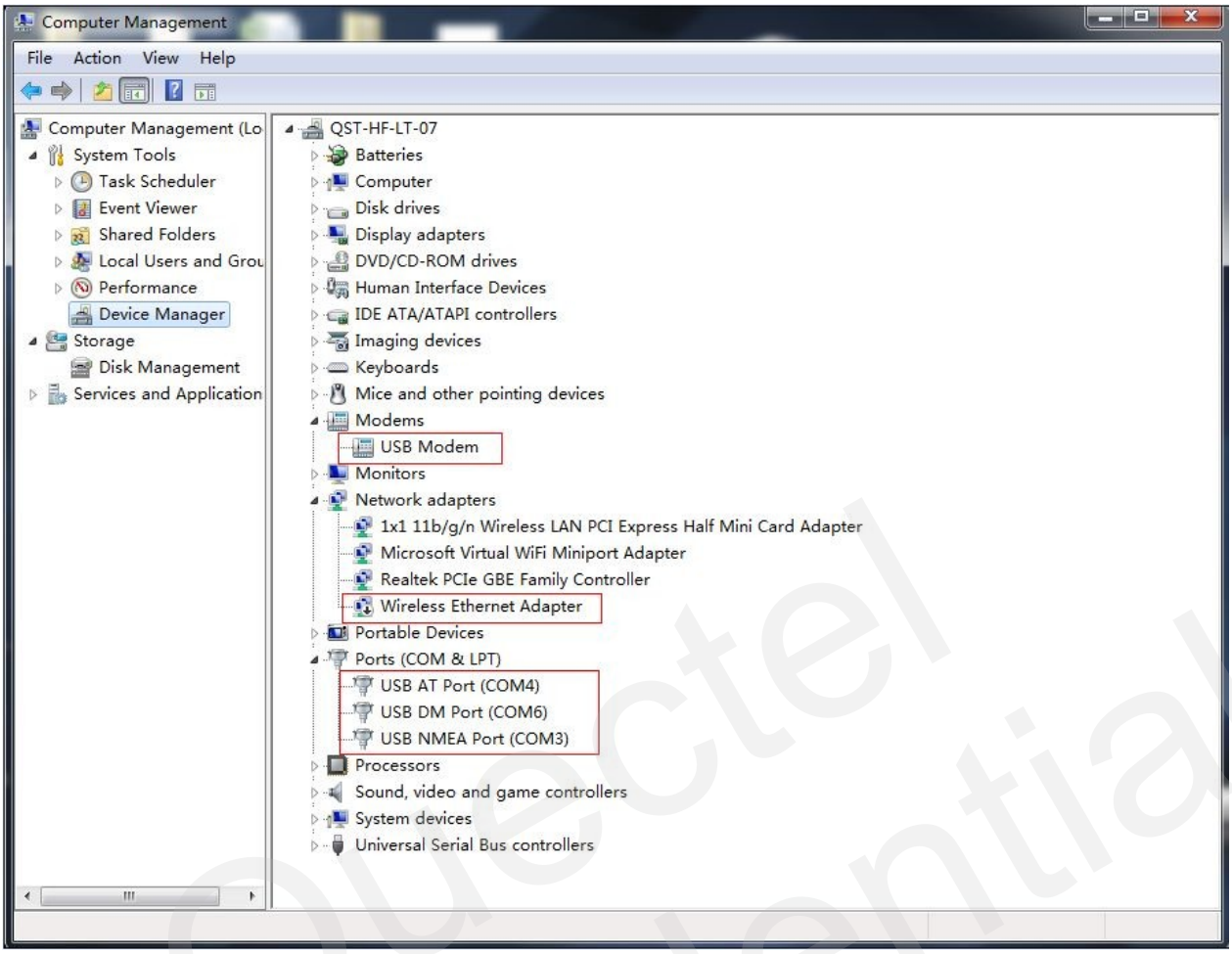

Figure 2: USB Virtual Ports

Table 1: Description of USB Ports

USB Ports	Description
USB Modem Port	Support all AT commands and data transfer
USB AT Port	Only support simple AT commands, not support data transfer mode
USB DM Port	Diagnose port, used for FW upgrade and catching log
USB NMEA Port	GPS sentence output port and PCM data output port
Wireless Ethernet Adapter	NDIS virtual network card

About how to access to Internet by NDIS, please refers to "Quectel_*UC20_NDIS_User_Guide*".

2.2. The Recommended Initialization Command

```
AT+IPR?
+IPR: 115200                    //The baud rate returned by module is fixed as 115200bps. If 0
                                 is returned, it means module is configured as auto baud rate. It is
                                 strongly recommended to use fixed baud rate.
OK
ATI                             //Query module version.
Quectel
UC20
Revision: UC20EQAR03A01M1024

OK
AT+CPIN?
+CPIN: READY                    //PIN is ready.

OK
AT+CSQ                          //Query the strength of current network signal.
+CSQ: 16,99                     //The strength of current network signal is 16.

OK
AT+CREG?                        //Query the network registration status of CS domain.
+CREG: 0,1                      //<stat>=1 means network is registered.

OK
AT+CGREG?                       //Query the network registration status of PS domain.
+CGREG: 0,1                     //<stat>=1 means network is registered.

OK
```

3 Power off Module

3.1. Power off Module by Hardware

You can power off module off by hardware, please refer to Figure 4.

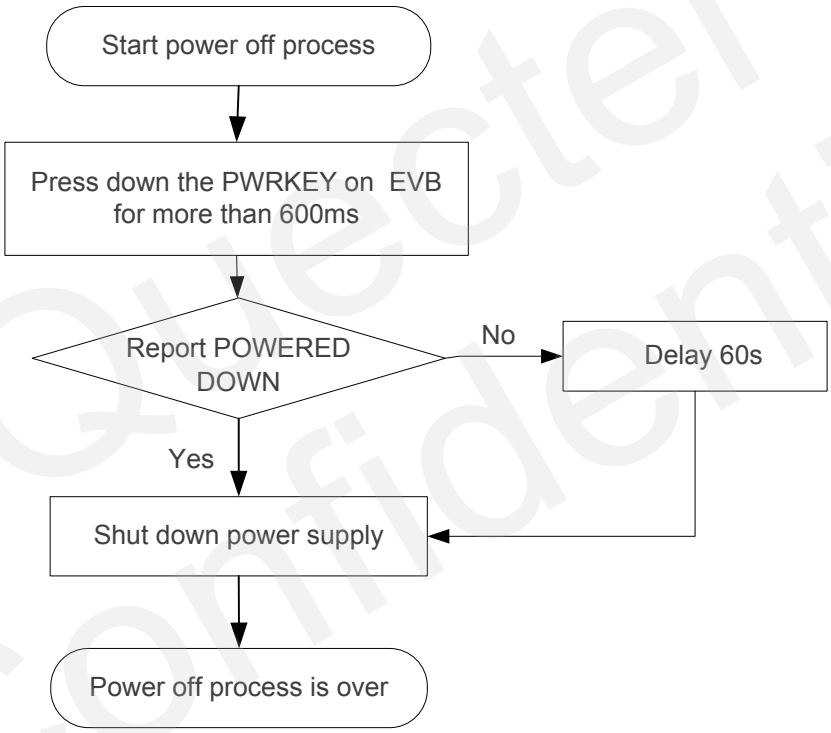

Figure 3: Turn off Module by Hardware

NOTES

1. Make sure the PWRKEY is pulled in high state in the process of module power-off; otherwise module will restart again after shutdown. Module cannot respond any AT command after powering off.
2. Module will detach network during power-off procedure, and the detaching time is determined by current network status, so it is strongly recommended to shut down the power supply after module reports “POWERED DOWN”, in order to ensure some important data has been saved by software

before shutdown. If “POWERED DOWN” has not been reported in 60s, you can force to shut down the power supply.

3.2. Power off Module by Software

You can power off module by software, please refer to Figure 5.

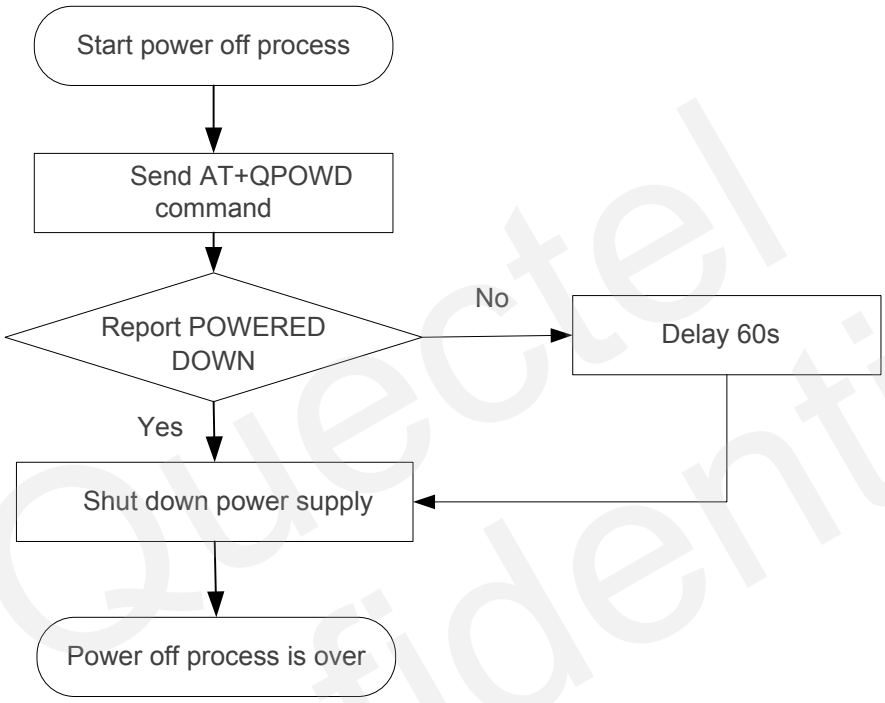

Figure 4: Turn off Module by Software

Table 2: Turn off module by Software AT Command

AT Command	Description
AT+QPOWD	Power off the module normally

```
AT+CREG=2
OK
AT+CGREG=2          //Enable network registration unsolicited result code.
OK
AT+QPOWD            //Power off the module normally.
OK
```

+CREG: 0

+CGREG: 0 //UE deactivates the network.

POWERED DOWN //Module is powered off normally.

NOTES

1. Make sure the PWRKEY is pulled in high state in the process of module power-off; otherwise module will restart again after shutdown. Module cannot respond any AT command after powering off.
2. Module will detach network during power-off procedure, and the detaching time is determined by current network status, so it is strongly recommended to shut down the power supply after module reports “POWERED DOWN”, in order to ensure some important data has been saved by software before shutdown. If “POWERED DOWN” has not been reported in 60s, you can force to shut down the power supply.

4 The Recommended Restart Process

About the recommended restart process for module, please refer to Figure 6.

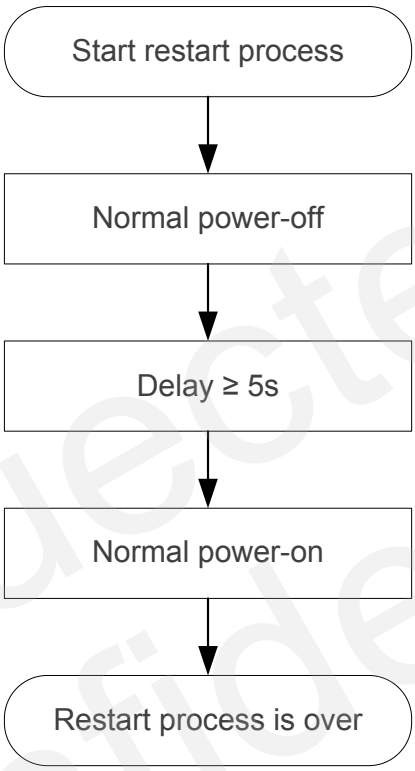

Figure 5: The Recommended Restart Process

NOTES

1. After normal power-off, you need to wait at least 5s considering the capacitor discharge time and other related components, and then power on module normally.
2. Requirements on restart mechanism: module cannot be frequently restarted, or it will decrease the service life of SIM card. When you constantly failed to restart for 3 times, you can restart immediately for the first time after that, if it still fails, you should restart after 10 minutes for the second time, and restart after 30 minutes for the third time, 1 hour for the fourth time, etc.
3. Because of possible module abnormalities, module may fail to restart through normal power-on procedure, so MCU must be able to control module VBATT power in hardware design.

5 Query Version and Status

Table 3: AT Commands for Querying Version and Status

AT Command	Description
ATI	Query product identification information
AT&V	Display current configuration
AT&F	Set all current parameters to factory settings
AT&W	Save current settings
AT+GSN/AT+CGSN	Query IMEI
AT+QCCID	Query CCID
AT+CIMI	Query IMSI

The following sections give some examples for the related AT commands.

5.1. Query Product Identification Information

```
ATI                                  //Query product identification information.
Quectel                              //Made by Quectel.
UC20                                 //UC20 module.
Revision: UC20EQAR03A01M1024         //Firmware version: UC20EQAR03A01M1024.

OK
```

5.2. Display Current Configuration

```
AT&V                                 //Query the current configuration.
&C: 1
```

```
&D: 1
&F: 0
&W: 0
E: 1
Q: 0
V: 1
X: 4
Z: 0
S0: 0
S3: 13
S4: 10
S5: 8
S6: 2
S7: 0
S8: 2
S10: 15

OK                          //End of querying output configuration, "OK" is returned.
```

5.3. Query Module IMEI

```
AT+GSN                      //Query module IMEI.
861075020001004             //IMEI is "861075020001004".

OK
AT+CGSN                     //Query IMEI.
861075020001004

OK
```

5.4. Query CCID of SIM Card

```
AT+QCCID                    //Query CCID.
89860111830012856974        //CCID is "89860111830012856974".

OK
```

5.5. Query IMSI of SIM Card

```
AT+CIMI                    //Query IMSI.
460014135605634            //IMSI is "460014135605634".

OK
```

5.6. Set all Current Parameters to Manufacturer Defaults

```
AT&F                       //Restore factory settings (Note: not restore baud rate).
OK
AT&W                       //Save settings.
OK
```

NOTE

About the parameters that can be restored by AT&F or saved by AT&F, please refer to "*Quectel_UC20_AT_Commands_Manual*".

6 SIM Card Security Settings

Table 4: AT Commands for SIM Card Security Settings

AT Command	Description
AT+CLCK	Facility lock
AT+CPIN	Enter PIN
AT+CPWD	Change password

The following sections give the detailed description of AT commands for SIM card security settings.

6.1. PIN Code Setting in Power-on Process

```
AT+CLCK="SC",2                  //<mode>=2 means to query the state of PIN1 lock.
+CLCK: 0                        //<mode>=0 means the PIN1 is unlocked.

OK
AT+CLCK="SC",1,"1234"           //<mode>=1 means to enable PIN1 lock.
OK                              //Enable PIN1 lock successfully.

//Restart the module:

AT+CPIN?                        //Query the status of PIN1.
+CPIN: SIM PIN                  //Need to input PIN1 password.

OK
AT+CPIN=1234                    //Input password "1234".
OK                              //PIN1 is verified.

+CPIN: READY                    //SIM PIN is ready.
AT+CLCK="SC",2                  //<mode>=2 means to query the status of PIN1 lock.
+CLCK: 1                        //<status>=1 means PIN1 lock is enabled.

OK
```

```
AT+CLCK="SC",0,"1234"          //<mode>=0 , disable PIN1 lock.
OK
```

NOTE

PIN1 code cannot be mismatched for 3 times, otherwise it will enter to PUK1 state. PUK1 password cannot be mismatched for 10 times, otherwise SIM card will be locked forever.

```
+CPIN: SIM PIN
AT+CPIN=1111                   //Input wrong PIN1 password.
+CME ERROR: 16
AT+CPIN=1111
+CME ERROR: 16
AT+CPIN=1111                   //Input wrong PIN1 password for 3 times.
+CME ERROR: 12

+CPIN: SIM PUK                 //Input error PIN1 password for 3 times, it enters to PUK1 state.
AT+CPIN="26601934","1234"      //Unlock PUK1, "26601934" is PUK1 password, "1234" is new
                                 PIN1 password.
OK

+CPIN: READY
```

6.2. Change Password for SC Lock

```
AT+CPWD="SC","1234","4321"     //Change SIM card PIN1 password from "1234" to "4321".
OK
```

7 Network Querying and Setting

Table 5: AT Commands for Network Querying and Setting

AT Command	Description
AT+CSQ	Signal quality status
AT+CREG	Network registration status
AT+CGREG	Packet domain network registration status
AT+COPS	Operator selection
AT+CPOL	Preferred operator list
AT+COPN	Read operator names
AT+QCFG="nwscanmode"	Network search mode configuration
AT+QCFG=”band”	Band configuration

The following sections give the examples for AT commands of network querying and setting in details.

7.1. Network State Information

```
AT+CSQ                  //Query the signal strength of current network.
+CSQ: 16,99             //Signal strength is 16.

OK
AT+CREG?                //Query network registration status.
+CREG: 0,1              //<stat>=1 means network is registered.

OK
AT+CGREG?               //Query packet domain network registration status.
+CGREG: 0,1             //<stat>=1 means packet domain network is registered.

OK
```

```
AT+COPS?                        //Query the currently registered operator.
+COPS: 0,0,"CHN-UNICOM",2       //Current operator is China Unicom,<act>=2 means registered on
                                  3G network.
OK
```

7.2. Network Search Mode Configuration and URC Reports of Network Registration Status

```
AT+CREG=2                       //<n>=2, enable URC to report the network registration status.
OK
AT+CGREG=2                      //<n>=2, enable URC to report the packet domain network registration
                                  status.
OK

+CREG: 1,"D509","80D413F",2     //Auto report, <stat>=1 and <act>=2, registered to 3G network.

+CGREG: 1, "D509", "80D413F",2 //Auto report, <stat>=1 and <act>=2, registered to 3G network.
AT+QCFG="nwscanmode"            //Query the currently network mode.
+QCFG: "nwscanmode",0           //<scanmode>=0 means auto mode.

OK
AT+QCFG="nwscanmode",1          //Configure network search mode to 2G only.
OK

+CREG: 2                        //Auto report, not registered.

+CGREG: 2                       //Auto report, not registered.

+CREG: 1,"5504","2B55",0        //Auto report, <stat>=1 and <act>=2, registered to GSM.

+CGREG: 1,"5504","2B55",0       //Auto report, <stat>=1 and <act>=2, registered to GSM.

AT+QCFG="nwscanmode",2          //Configure network search mode to 3G only.
OK

+CREG: 2                        //Auto report, Not registered.

+CGREG: 2                       //Auto report, Not registered.

+CREG: 1,"D509","80D413F",2     //Auto report, <stat>=1 and <act>=2, registered to 3G network.
```

```
+CGREG: 1, "D509", "80D413F",2    //Auto report, <stat>=1 and <act>=2, registered to 3G network.
```

7.3. Select the Network Bands

```
AT+QCFG="band"                    //Query current selected band mode.
+QCFG: "band",159

OK
AT+QCFG="band",129                //Select GSM-900/WCDMA-900.
OK
```

8 Call

Table 6: Call Related AT Commands

AT Command	Description
ATD	Mobile originated call
ATDL	Redial last number
ATA	Answer an incoming call
ATH	Disconnect existing connection
ATS0	Set number of rings before automatically answering the call
AT+COLP	Connected line identification presentation
AT+CLIP	Calling line identification presentation
AT+CCWA	Call waiting control
AT+CCFC	Call forwarding number and conditions control
AT+CLCC	List current calls of ME
AT+CPAS	Mobile equipment activity status
AT+CHLD	Call hold and multiparty
AT+VTS	DTMF tone generation

The following sections give the examples for call AT commands.

8.1. Make a Call

8.1.1. Make a Voice Call

```
ATD10010;                //Make a voice call.
OK                       //"OK" is returned, operation is successful.
```

8.1.2. Set URC Control of Call Connected

```
AT+COLP=1                          //<n>=1, enable URC to be reported when call is connected
                                     successfully.
OK
ATD10010;                          //Make a call.
+COLP: "10010",129,,,              //When call is connected, URC will be reported.

OK
```

8.2. Answer an Incoming Call

8.2.1. Answer an incoming call

```
RING                               //New incoming call, URC "RING" is reported.

RING
ATA                                //Answer the incoming call.
OK
```

8.2.2. Set URC of Incoming Call Information

```
AT+CLIP=1                          //<n>=1, enable URC to be reported when a call is incoming.
OK

RING                               //There is an incoming call, "RING" is reported.

+CLIP: "18654123773",161,,,,0      //URC is reported.
```

8.3. Auto Answer

```
ATS0=2                             //<n>=2, set auto answer function after "RING" is reported twice.
                                   //Call will be accepted automatically (default is 0).
OK

RING                               //An incoming call.

RING                               //After "RING" has been reported twice, call is accepted
                                     automatically.
AT+CLCC
```

```
+CLCC: 1,1,0,0,0,"18654123773",161 //<stat>=0, the incoming call is answered.

OK
```

8.4. DTMF

DTMF is used for dialing extension number or auto service system. After call is connected, it is necessary to use DTMF to send number to network. Following is an example to dial the phone number 02151082965-816.

```
ATD02151082965;                    //Dial the phone number 02151082965.
OK
AT+CLCC
+CLCC: 1,0,0,0,0," 02151082965",129

OK                                 //The mobile originated call is answered.
AT+VTS="816"                       //Dial the extension number 816 by sending DTMF.
OK
```

NOTE

After call is connected, it is needed to send DTMF to dial extension number.

8.5. Call Waiting

```
AT+CCWA=1,1                        //Enable to display URC for call waiting of an incoming call.
OK
ATD10010;                          //Make a voice call.
OK

+CCWA: "02164011559",161,1         //If there is a new incoming call when the call is progressing, URC of
                                     call waiting will be reported.
```

8.6. Call Forwarding

```
AT+CCFC=0,3,"02151082965"          //<reads>=0, <mode>=3, set unconditional call forwarding, call will be
                                     forwarded to 02151082965).
```

```
OK
AT+CCFC=0,2                    //<reads>=0，<mode>=2, query the state of unconditional call forwarding.
+CCFC: 1,1,"+8602151082965",145,,,

OK
AT+CCFC=0,4                    //<reads>=0，<mode>=4, delete all unconditional call forwarding.
OK
```

8.7. Call Hold and Multiparty Functions

```
ATD10010;                      //Make the first voice call.
OK
ATD10010;                      //Make the second voice call.
OK
AT+CLCC                        //Query call state.
+CLCC: 1,0,1,0,0,"10010",129
+CLCC: 2,0,0,0,0,"10010",129

OK
AT+CHLD=2                      //Place all activated calls on hold (if any) and accept the other call (waiting
                                 call or held call) as the activated call.
OK
AT+CLCC                        //Query call state to confirm AT+CHLD is successful.
+CLCC: 1,0,0,0,0,"10010",129
+CLCC: 2,0,1,0,0,"10010",129

OK
AT+CHLD=3                      //<n>=3 means to add the held call to the activated calls.
OK
AT+CLCC                        //Query call state to confirm AT+CHLD is successful.
+CLCC: 1,0,0,0,1,"10010",129
+CLCC: 2,0,0,0,1,"10010",129

OK
```

8.8. Query Call State

```
AT+CPAS                        //Query state of ME.
+CPAS: 0                       //<pas>=0 indicates ME is in idle state.
```

```
OK
ATD10010;                   //Make voice call.
OK
AT+CLCC                     //Query call state.
+CLCC: 1,0,0,0,0,"10010",129

OK
AT+CPAS                     //Query state of ME.
+CPAS: 4                    //<pas>=4 indicates ME is progressing a call.

OK
```

9 Audio Settings

Table 7: AT Commands of Audio Settings

AT Command	Description
AT+QDAI	Digital audio interface configure
AT+CLVL	Loud speaker volume level
AT+CMUT	Mute control
AT+QAUDMOD	Set audio mode

The following sections gives the detailed explanation for the AT commands of audio settings.

9.1. Digital Audio Interface Configuration

```
AT+QDAI=2                          //2 means analog output.
OK
```

9.2. Call Mute

```
AT+CLCC
+CLCC: 1,0,0,0,0,"15021012496",129   //Call is activated.

OK
AT+CMUT=1                          //Mute the call, now the peer cannot hear sound from the module.
OK
```

9.3. Change Call Volume

```
AT+CLCC
+CLCC: 1,0,0,0,0,"15021012496",129   //Call is activated.

OK
AT+CLVL=3                            //Set volume to 3.
OK
```

10 Short Message Service

Table 8: SMS Related AT Commands

AT Command	Description
AT+CPMS	Preferred SMS message storage
AT+CSMP	Set SMS text mode parameters
AT+CMGF	Select SMS message format
AT+CSCS	Select TE character set
AT+CMGW	Write SMS message to memory
AT+CMGR	Read SMS message
AT+CMGL	List SMS messages from preferred storage
AT+CMGS	Send SMS message
AT+CMGD	Delete SMS message
AT+CSDH	Show SMS text mode parameters
AT+CSCA	SMS service center address
AT+CNMI	New SMS message indications
AT+CSCB	Select cell broadcast SMS messages
AT+CGSMS	Select service for MO SMS messages

The following sections give some examples for SMS AT commands.

10.1. SMS Message Storage

```
AT+CPMS=?                          //Query supported SMS storage.
+CPMS: ("ME","MT","SM"),("ME","MT","SM"),("ME","MT","SM")

OK                                 //"SM" indicates that SMS is stored in SIM card storage; both "ME" and
                                     "MT" indicate module storage.
AT+CPMS?                           //Query the settings of SMS storage.
+CPMS: "SM",8,50,"SM",8,50,"SM",8,50

OK                                 //<mem1>="SM" means to read and delete SMS from SIM card storage,
                                     <used1>=8 indicates there are 8 SMS to be read and deleted,
                                     <total1>=50 indicates the SMS capacity of SIM card is 50.
```

10.2. Write SMS

10.2.1. Write SMS in Text Mode

```
AT+CMGF=1                          //<mode>=1, set text mode.
OK
AT+CSCS="GSM"                      //<chset>="GSM", set character set to "GSM".
OK
AT+CMGW                            //Write SMS.
>Hello,Quectel!                    //Input the content of SMS "Hello,Quectel!", use <Ctrl+Z>/Esc to write
                                     SMS or exit.
+CMGW: 18                          //Written SMS is stored in the storage and the index is 18.

OK
```

10.2.2. Write SMS in PDU Mode

```
AT+CMGF=0                          //<mode>=0, set PDU mode.
OK
AT+CMGW=43                         //Write SMS (PDU code).
>0011000D91683118876788F30018011C00480065006C006C006F002C00510075006500630074006500
06C0021                            //Input the content of SMS: "Hello,Quectel!".
+CMGW: 2                           //Written SMS is stored in the storage and the index is 2.

OK
```

10.3. Send SMS

10.3.1. Send SMS in Text Mode

```
AT+CMGF=1                  //<mode>=1, text mode.
OK
AT+CSCS="GSM"              //<chset>="GSM", set character set to "GSM".
OK
AT+CMGS="15021012496"      //Send text SMS.
>Hello,Quectel!            //Input the content of SMS "Hello,Quectel!", use <Ctrl+Z>/Esc to send SMS
                            or exit.
+CMGS: 26

OK
```

10.3.2. Send SMS in PDU Mode

```
AT+CMGF=0                  //<mode>=0, PDU mode.
OK
AT+CMGS=43                 //Send PDU SMS.
>0011000D91685120012194F60008011C00480065006C006C006F002C00510075006500630074006500
6C0021                     //The destination number is 8615021012496, the content is "Hello,Quectel!".
+CMGS: 254

OK
```

10.4. Read SMS

All of the following operations related to SMS reading are shown in text mode.

```
AT+CMGF=1                  //<mode>=1, text mode.
OK
AT+CSCS="GSM"              //<chset>="GSM", set character set to "GSM".
OK
```

10.4.1. Read Saved SMS

```
AT+CMGW                    //Write SMS.
>Hello,Quectel!            //Input content.
+CMGW: 3                   //The index of written SMS in the storage is 3.
```

```
OK
AT+CMGR=3                  //Read the SMS whose index in the storage is 3.
+CMGR: "STO UNSENT","",
Hello,Quectel!

OK
```

10.4.2. Read New Arrived SMS

```
+CMTI: "SM",4              //New SMS is arrived, the index of the new SMS in SIM card storage is 4.
AT+CMGR=4                  //Read the SMS whose index in storage is 4.
+CMGR: "REC UNREAD","18654123773",,"14/02/21,14:39:29+32"
Hello,Quectel!

OK                         //Then number of the sender is 18654123773.
```

10.4.3. List All SMS in Specified Type

```
AT+CMGL="REC READ"//"REC READ" means to read all read SMS.
                           //In PDU mode, please use 1 to replace "REC READ" to read all read SMS.
+CMGL: 1,"REC READ","18654123773",,"14/02/21,14:39:29+32"
Hello,Quectel!

OK
AT+CMGL="ALL"              //"ALL" means to read all SMS. In PDU mode, please replace "ALL" with 4 to
                             read all SMS.
+CMGL: 1,"STO UNSENT","",
Hello,Quectel!
+CMGL: 1,"REC READ","18654123773",,"14/02/21,14:39:29+32"
Hello,Quectel!
+CMGL: 2,"REC UNREAD","18654123773",,"14/02/21,14:39:29+32"
Hello,Quectel!

OK
```

10.5. Delete SMS

10.5.1. Delete Specified SMS

```
AT+CMGD=1                  //Delete the SMS whose index in storage is 1.
OK
```

10.5.2. Delete All SMS in Specified Type

```
AT+CMGD=1,4                    //<delflag>=4, delete all messages from <mem1> storage.
OK
```

10.6. SMS Settings

10.6.1. Query and Set the Number of SMS Center

```
AT+CSCA?                       //Query the number of SMS center.
+CSCA: "+8613010305500",145    //The number of SMS center is "+8613010305500".

OK
AT+CSCA="+8613010305500"       //Set the number of SMS center as “+8613010305500”.
OK
```

NOTES

It is strongly recommended not to change the number of SMS center. It may cause failure of sending SMS with the SIM card.

10.6.2. SMS Report Setting

```
AT+CSMP=49,167,0,0             //SMS status report is supported under text mode if the first
                                 parameter <fo> is set to 49.
OK
AT+CNMI=1,1,0,1,0              //Set <ds>=1, SMS notification will be reported.
OK
AT+CMGS="15021012496"          //Send SMS.
>Hello,Quectel!
+CMGS: 25

OK

+CDS: 6,151,"15021012496",129,"14/02/21,15:32:16+32","14/02/21,15:32:20+32",0
                               //Receive SMS report.
```

11 Phonebook

Table 9: Phonebook Related AT Commands

AT Command	Description
AT+CPBS	Select phonebook storage
AT+CPBW	Write/delete phonebook entries
AT+CPBR	Read phonebook entries
AT+CPBF	Find phonebook entries
AT+CNUM	Subscriber number

The following sections give some examples for phonebook AT commands.

11.1. Phonebook Settings

```
AT+CPBS="SM"                    //Set storage type of phonebook to "SM".
OK                              //It means to operate the phonebook in SIM card.
AT+CSCS="GSM"                   //Set character set to “GSM”.
OK
```

11.2. Write Phonebook Entry

```
AT+CPBW=1,"15021012496",129,"Quectel"   //Write phone entry whose index is 1.
OK
```

11.3. Read Phonebook Entry

```
AT+CPBR=1                          //Read phonebook entry whose index is 1.
+CPBR: 1,"15021012496",129,"Quectel"

OK
```

11.4. Delete Phonebook Entry

```
AT+CPBW=1                          //Delete phonebook entry whose index is 1.
OK
```

11.5. Find Phonebook Entry

```
AT+CPBF="Quectel"                  //Find all entries whose names contain "Quectel" in current phonebook.
+CPBF: 1,"15021012496",129,"Quectel"

OK
```

11.6. Query/Set Subscriber Number

```
AT+CPBS="ON"                       //Select phonebook of "ON" type.
OK
AT+CPBW=1,"13761832100",129,"Own number1"
OK                                 //Write subscriber number 1.
AT+CPBW=2,"15021012496",129,"Own number2"
OK                                 //Write subscriber number 2.
AT+CNUM                            //Query subscriber number.
+CNUM: "Own number1","13761832100",129
+CNUM: "Own number2","15021012496",129

OK
```

11.7. Dial from Phonebook

Dial from phonebook with ATD command as follows:

```
ATD>1;                    //Dial the number whose index is 1 in current phonebook.
OK
```

12 GPRS

Table 10: GPRS Related AT Commands

AT Command	Description
AT+CGATT	Attach to/detach from GPRS service
AT+CGDCONT	Define PDP context
AT+CGACT	Activate or deactivate PDP context
AT+CGQMIN	Quality of service profile (minimum acceptable)
AT+CGEQMIN	3G quality of service profile (minimum acceptable)
AT+CGQREQ	Quality of service profile (requested)
AT+CGEQREQ	3G quality of service profile (requested)
AT+CGDATA	Enter data state
AT+CGPADDR	Show PDP address
AT+CGCLASS	GPRS mobile station class
AT+CGEREP	Control unsolicited GPRS event reporting
AT+CGREG	GPRS network registration status

Following sections are examples for GPRS AT commands.

12.1. Activate GPRS Context

```
AT+CGATT?                          //Query whether GPRS network is attached.
+CGATT: 1                          //<state>=1 indicates GPRS is attached.

OK
AT+CGDCONT=1,"IP","UNINET"         //Define the content of the PDP context 1.
```

```
OK
AT+CGACT=1,1                    //Activate GPRS context 1.
OK
AT+CGPADDR =1                   //Query PDP address of context 1.
+CGPADDR: 1, "172.34.155.120"   //PDP address of context 1 is "172.34.155.120".

OK
```

12.2. Deactivate GPRS Context

```
AT+CGACT=0,1                    //Deactivate GPRS context 1.
OK                              //Deactivate successfully.
```

12.3. Dial-up Internet

For detailed steps of dial-up settings, please refer to "*Quectel_UC20_PPP_Application_Note*".

13 CSD Call

Table 11: CSD Call Related AT Commands

AT Command	Description
ATD	Mobile originated call
+++	Switch from data mode to command mode
ATO	Switch from command mode to data mode
ATA	Answer an incoming call
ATH	Disconnect existing connection

The following sections give some examples for CSD AT commands.

13.1. Set Up CSD Connection

Here is an example about module A makes a CSD call to module B. After connection is set up, module A hangs up the call.

Module A:

```
ATD15052251387          //Step A1: Make a CSD Call.
CONNECT 9600            //Response for Step B1: CSD connection is set up.
QUECTEL TEST001         //Step A2: Send data to module B, the data is "QUECTEL TEST002".
                        //Response from Step B2: Receive data "QUECTEL TEST001" from module B.
OK                      //Step A3: Input +++, switch from data mode to command mode.
ATO                     //Step A4: Input ATO, enter data mode.
CONNECT 9600
QUECTEL TEST003         //Response from Step B3: Receive data "QUECTEL TEST003" from module B.

OK                      //Step A5: Input +++, switch from data mode to command mode.
ATH                     //Step A6: Hang up CSD connection.
```

OK

Module B:

RING	//Response for Step A1: New incoming CSD call.
ATA	//Step B1: Answer CSD call.
CONNECT 9600	//Response from Step B1: CSD connection is set up.
QUECTEL TEST002	//Response from Step A2: Receive data "QUECTEL TEST002" from module A.
	//Step B2: Send data "QUECTEL TEST001" to module B.
	//Step B3: Send data "QUECTEL TEST003" to module B.
NO CARRIER	//Response from Step A6: Hang up CSD connection.

14 TCPIP/HTTP/MMS/GNSS/FTP/SMTP/ eCall

About detailed steps and information about these functions, please refer to the following documents respectively:

- Quectel_UC20_TCPIP_AT_Commands_Manual
- Quectel_UC20_HTTP_AT_Commands_Manual
- Quectel_UC20_MMS_AT_Commands_Manual
- Quectel_UC20_GNSS_AT_Commands_Manual
- Quectel_UC20_FTP_AT_Commands_Manual
- Quectel_UC20_SMTP_AT_Commands_Manual
- Quectel_UC20_eCall_AT_Commands_Manual

15 Others

Table 12: Clock and Other AT Commands

AT Command	Description
AT+CCLK	Set clock
AT+CFUN	Set phone functionality
ATV	TA response format
ATE	Set command echo mode
A/	Repeat previous command line
AT+CMEE	Error message format
AT+QSCLK	Configure whether or not to enter into sleep mode

The following sections give some examples for clock and other AT commands.

15.1. Query/Set Clock

```
AT+CCLK?                          //Query current clock.
+CCLK: "08/01/01,06:06:24+00"

OK
AT+CCLK="09/09/09,12:00:00+00"    //Set clock.
OK
```

15.2. Set Phone Functionality

```
AT+CFUN=1                         //Set phone functionality as full function (default is 1).
OK
```

15.3. Set Power Saving Mode

```
AT+QSCLK?                    //Query the settings of power saving mode.
+QSCLK: 0                    //Power saving is disabled by default.

OK
AT+QSCLK=1                   //<n>=1, allow to enter into power saving mode.
OK
AT+QSCLK=0                   //<n>=0, forbid to enter into power saving mode.
OK
```

16 Appendix A Reference

Table 13: Reference

SN	Document Name	Remark
[1]	Quectel_UC20_AT_Commands_Manual	UC20 AT Commands Set
[2]	Quectel_UC20_TCPIP_AT_Commands_Manual	Introduction about UC20 TCPIP AT Commands
[3]	Quectel_UC20_PPP_Application_Note	UC20 PPP Application Note
[4]	Quectel_UC20_HTTP_AT_Commands_Manual	Introduction about UC20 HTTP AT Commands
[5]	Quectel_UC20_SMTP_AT_Commands_Manual	Introduction about UC20 SMTP AT Commands
[6]	Quectel_UC20_MMS_AT_Commands_Manual	Introduction about UC20 MMS AT Commands
[7]	Quectel_UC20_FTP_AT_Commands_Manual	Introduction about UC20 FTP AT Commands
[8]	Quectel_UC20_GNSS_AT_Commands_Manual	Introduction about UC20 GNSS AT Commands
[9]	Quectel_UC20_eCall_AT_Commands_Manual	Introduction about UC20 eCall AT Commands
[10]	Quectel_UC20_Windows_USB_Driver_User_Guide	UC20 Windows USB Driver User Guide
[11]	Quectel_UC20_NDIS_User_Guide	UC20 NDIS User Guide