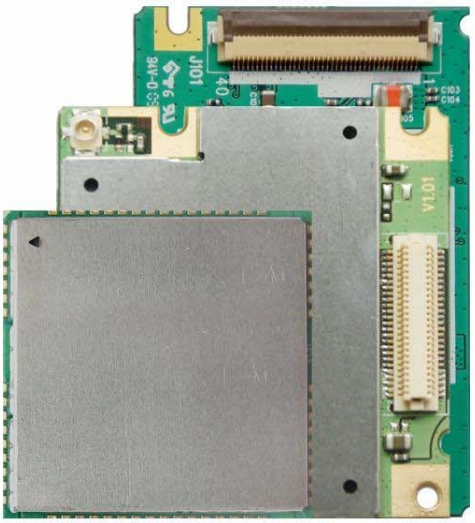
Quectel Cellular Engine

GSM AT Commands Application Notes

GSM_ATC_AN_V1.00



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General Notes

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0. Revision history

Revision	Date	Author	Description of change
1.00	2009-12-15	Jean HU	Initial

1. Introduction

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

1.1. Reference

Table 1: Reference

SN	Document name	Remark
[1]	Mxx_ATC	AT Commands Set
[2]	GSM_TCPIP_AN	TCPIP Application Notes
[3]	GPRS_Startup_UGD	GPRS Startup User Guide
[4]	GSM_MUX_AN	Multiplexer Application Notes
[5]	GSM_HTTP_ATC	HTTP Service AT Commands
[6]	GSM_FTP_ ATC	FTP AT Commands
[7]	GSM_MMS_ ATC	MMS AT Commands
[8]	FAX_Setup	Fax Setup User Guide

2. Module power on/off

2.1. Power on

The following is a process to turn on GSM module, taking M10 module and its EVB board as an example).

1) Install module on EVB board.
2) Connect antenna.
3) Insert SIM card.
4) Connect power adapter and serial cable.
5) Switch on power supply (5V-SW), and press down PWRKEY button on EVB board for more than 2 seconds, the module will power on.
6) Please confirm the power indicator LED D304 will light, and the network indicator LED D303 will blink periodically.

Warning:
S201 (D/L) on EVB board is the switch for download software, S203 (VCHG) is the switch for charging. (They should always be set to OFF state when module is in working status).

2.2. Power off module with AT command

Table 2: Related AT commands

AT command	description
AT+QPOWD	Power off the module

2.2.1. Normal powering off

AT+QPOWD=*1*	// ***1*** indicates powering off normally
NORMAL POWER DOWN	// Module is powered off normally

2.2.2. Urgent powering off

AT+QPOWD=*0*	// ***0*** indicates powering off urgently
OK	// Module is powered off urgently

*Warnning: Powering off urgently is the same as cutting off power supply. Generally, it is not suggested to use **AT+QPOWD=0** to power off urgently.*

3. UART communication and module initialization

3.1. UART communication

For all GSM module firmware of Quectel, the default baud rate setting is autobauding enabled.

Following is the notes for autobauding.

1) It is necessary for UART communication to make sure that TE is in sync with TA's autobauding. Keep inputting **AT<CR><LF>** or **at<CR><LF>** through UART, until the response **OK** is returned, it indicates synchronization is successful.

2) If baud rate is set as autobauding, URCs in boot process will not be reported.

3) It is strongly recommended to set baud rate as customer's common fixed baud rate. The following is an example of setting fixed baud rate to 115200:

```
AT+IPR=115200                    // Set fixed baud rate to 115200
OK


AT&W                             // Save the setting
OK
```

When fixed baud rate is set, URCs in boot process will be reported as following:

```
RDY

+CFUN: 1

+CPIN: READY                     // Unsolicited result information

Call Ready                       // Initialization is finished, and "Call Ready" is reported
```

3.2. Recommended module's initialization process

1) UART communication (e.g. Hyper Terminal).
   Open Hyper Terminal -> New Hyper Terminal -> Choose Connect Port -> Configure baud rate setting for UART communication (should be consistent with module's baud rate setting), and the hardware flow control (hardware flow control is set as default in module).

2) After module is powered on, input **AT<CR><LF>** or **at<CR><LF>** through UART, until **OK** is returned. Make sure the UART communication is fine.

3) It is recommended to make sure that the SIM card has been registered to network before doing other operations. The following is the detailed steps.

```
AT+CSQ                          // Query the RF signal strength
+CSQ: 30,0                      // RF signal strength indication 30, channel bit error rate 0

OK


AT+CREG?                        // Query register state of GSM network
+CREG: 0,1                      // <stat>=1 means GSM network is registered

OK


AT+CGREG?                       // Query register state of GPRS network
+CGREG: 0, 1                    // <stat>=1 means GPRS network is registered

OK


AT+COPS?                        // Query the currently selected operator
+COPS: 0,0,"CHINA MOBILE"

OK
```

4. Query version and status information

Table 3: Version and status related AT commands

AT command	Description
ATI	Query version information
AT&F	Restore to factory default settings
AT&W	Save current settings
AT&V	Display current settings
AT+GSN/ AT+CGSN	Query IMEI
AT+QCCID	Query CCID
AT+CIMI	Query IMSI

The following sections give some examples for related AT command operations and applications.

4.1. Query version information

```
ATI                              // Query version information
Quectel_Ltd                      // Quectel made
Quectel_M10                      // M10 GSM module
Revision:M10R04A01M32_SST        // Firmware version: M10R04A01M32_SST

OK
```

4.2. Display current configuration

```
AT&V                             // Query the current configuration
ACTIVE PROFILE

E: 0

Q: 0

V: 1
….                               // Omit some configuration
+QECHO(NORMAL_AUDIO): 221,1024,16388,849,0

+QECHO(Earphone_AUDIO): 221,1024,0,849,1

+QECHO(LoudSpk_AUDIO): 224,1024,5128,374,2
```

```
+QSIDET(NORMAL_AUDIO): 80

+QSIDET(HEADSET_AUDIO): 144

+QCLIP: 0

+CSNS: 0

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

4.3. Query IMEI

```
AT+GSN                          // Query IMEI
359231030000010                 // IMEI is "359231030000010"

OK


AT+CGSN                         // Query IMEI
359231030000010

OK
```

4.4. Query CCID

```
AT+QCCID                        // Query CCID
898600220909A0206023            // CCID is "898600220909A0206023"

OK
```

4.5. Query IMSI

```
AT+CIMI                         // Query IMSI
460023210226023                 // IMSI is "460023210226023"

OK
```

4.6. Restore factory settings/Save settings

AT&F	// Restore factory default settings
OK	
AT&W	// Save settings
OK	

Note:
AT&F can restore the settings of AT commands to factory settings (exclude the settings of +IPR).
AT&W can save the settings of AT commands.
Those affected AT commands can be listed with AT&V.

5. SIM card security settings

Table 4: SIM card security settings related AT commands

AT command	Description
AT+CLCK	Lock function
AT+CPIN	Query the status of PIN or enter PIN
AT+CPWD	Change password

The following sections give the examples for related AT command operations and applications.

5.1. PIN code setting in boot process

AT+CLCK="SC",*0*,"1234" // <**mode**>=*0* , cancel lock function of PIN code
OK

AT+CLCK="SC",*2* // <**mode**>=*2* means Query state of PIN lock
+CLCK: *0* // <**mode**>=*0* means the state of PIN lock is off

OK

AT+CLCK="SC",*1*,"1234" // <**mode**>=*1* means Open lock function of PIN code
OK // Open PIN lock successfully

AT+CPIN? // Query the status of PIN
+CPIN: SIM PIN // Need to input PIN code

OK

AT+CPIN=*1234* // Input PIN code "***1234***"
+CPIN: READY // PIN authentication is successful

OK

Warning:
PIN code can't be mismatched for 3 times, otherwise it will enter PUK state.
+CPIN: SIM PIN

AT+CPIN=1111 **+CME ERROR: 16**	// Input wrong PIN code
AT+CPIN=1111 **+CME ERROR: 16**	
AT+CPIN=1111 **+CPIN: SIM PUK** **+CME ERROR: 12**	// Input wrong PIN code for 3 times // SIM card enter PUK state
AT+CPIN="26601934","1234" **+CPIN: READY** **OK**	// Unlock PUK, "**26601934**" is PUK code, "**1234**" is new PIN code

5.2. Change password for function lock

Example: Change PIN code

AT+CPWD="SC","*1234*","*4321*" **OK**	// Change SIM card's PIN code from "***1234***" to "***4321***"

6. Network querying and setting

Table 5: Network querying and setting related AT command

AT command	Description
AT+CSQ	Signal quality report
AT+CREG	GSM network registration status
AT+CGREG	GPRS network registration status
AT+COPS	Operator selection
AT+CPOL	Preferred operator list
AT+COPN	Read operator name
AT+QBAND	Select the network bands

The following sections give the examples for related AT command operations and applications.

6.1. Network state information

AT+CSQ // Query RF signal strength of current network
+CSQ: *30,0* // **RF** signal strength indication ***30,*** channel bit error rate ***0***

OK

AT+CREG? // Query register state of GSM network
+CREG: 0,*1* // <**stat**>=***1*** means GSM network is registered

OK

AT+CGREG? // Query register state of GPRS network
+CGREG: 0, *1* // <**stat**>=***1*** means GPRS network is registered

OK

AT+COPS? // Query the currently selected operator
+COPS: 0,0,"CHINA MOBILE"

OK

6.2. URC to report status of network registration

AT+CREG=*2* // **<n>=*2*,** enable URC to report status of GSM network registration
OK

AT+CGREG=2 // **<n>=*2*,** enable URC to report status of GPRS network registration
OK

+CREG: *1*,"1806","2012" // **<n>=*1*,** registered to GSM network

+CGREG: *1*, "1806", "2012" // **<n>=*1*,** registered to GPRS network

6.3. Select the network bands

AT+QBAND=? // Query network bands supported
+QBAND:(EGSM_MODE,DCS_MODE,PCS_MODE,EGSM_DCS_MODE,GSM850_PCS_MODE,GSM850_EGSM_DCS_PCS_MODE)

OK

AT+QBAND? // Query current selected band mode
+QBAND: "GSM850_EGSM_DCS_PCS_MODE"

OK

AT+QBAND="*EGSM_MODE*" // Select the new band mode as "***EGSM_MODE***"
OK

7. Call

Table 6: Call related AT commands

AT command	Description
ATD	Mobile originated call
ATDL	Redial last number used
ATA	Answer a 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+CEER	Extended error report
AT+CHLD	Call hold and multiparty
AT+VTS	DTMF tone generation
AT+CKPD	Keypad control

The following sections give the examples for related AT command operations and applications.

7.1. Make a call

7.1.1. Make a voice call

```
ATD02151082965;          // Make a voice call
OK                       // "OK" is returned, operation succeeds
```

7.1.2. Set URC control of call connected

```
AT+COLP=1                // <n>=1, enable URC report when voice call connected
OK


ATD10086;                // Make a call
+COLP: "10086",129,"",0  // When call connected, URC is reported

OK
```

7.2. Answer an incoming call

7.2.1. Answer an incoming call

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

RING
ATA                     // Accept the incoming call
OK
```

7.2.2. Set URC control of incoming call

```
AT+CLIP=1               // <n>=1, enable URC report when call incoming
OK

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

+CLIP: "13764920730",129,"",,"",0       // URC is reported
```

7.3. Auto answer

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


RING                    // An incoming call

RING                    // After "RING" is reported twice, call is accepted automatically


AT+CLCC
+CLCC: 1,1,0,0,0,"13764920730",129,""  // <stat>=0, the incoming call is active

OK
```

7.4. DTMF

DTMF is used for dialing extent number or some 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 active.

AT+VTS="8,1,6" // Dial the extent number **816** by sending DTMF.
OK

Note: After call is connected, send DTMF tone to dial extent phone number.

7.5. Call waiting

AT+CCWA=1,1 // Enable to display URC for an incoming waiting call
OK

ATD10086; // Make a voice call
OK
+CCWA: "02164011559",129,1
// If there is a new incoming call when the call is progressing, URC of call waiting will be reported

7.6. Call forwarding

AT+CCFC=*2*,*3*,"*02151082965*",129,,,*5*
// **<reads>=*2*, <mode>=*3*,** set call forwarding when no reply (If no reply in ***5*** seconds, call will be forwarded to ***02151082965***)
OK

AT+CCFC=*2*,*2* // **<reads>=*2*，<mode>=*2***, query the state of call forwarding when no reply
+CCFC: 1,1,"+862151082965",145,,,5

+CCFC: 1,16,"+862151082965",145,,,5

OK

AT+CCFC=*2,4* // **<reads>=*2*，<mode>=*4,*** delete all call forwarding when no reply
OK

7.7. Call hold and multiparty

ATD10086; // Make the first voice call
OK

ATD10086; // Make the second voice call
OK

AT+CLCC // Query call state
+CLCC: 1,0,1,0,0,"10086",129,""

+CLCC: 2,0,0,0,0,"10086",129,""

OK

AT+CHLD=*2* // **<n>=*2*** means to place active call on hold and activate the other
OK // call (waiting call or held call)

AT+CLCC // Query call state, make sure **AT+CHLD** is successful
+CLCC: 1,0,0,0,0,"10086",129,""

+CLCC: 2,0,1,0,0,"10086",129,""

OK

AT+CHLD=*3* //**<n>=*3*** means to add the held call to the active calls
OK

AT+CLCC // Query call state, make sure **AT+CHLD** is successful
+CLCC: 1,0,0,0,1,"10086",129,""

+CLCC: 2,0,0,0,1,"10086",129,""

OK

7.8. Query call state

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

OK

ATD10086; // Make voice call
OK

AT+CLCC // Query call state
+CLCC: 1,0,0,0,0,"10086",129,""

OK

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

OK

8. Audio settings

Table 7: Audio settings related AT command

AT command	Description
AT+QADUCH	Swap the audio channels
AT+CLVL	Loud speaker volume level
AT+CRSL	Ringer sound levels
AT+CALM	Alert sound mode
AT+CMUT	Mute control
AT+QMIC	Change the microphone gain level
AT+QLDTMF	Generate local DTMF tone

About the detail settings of audio ECHO, Gain etc, please refer to document *GSM_AUDIO_UGD.pdf*.

The following sections give the examples for related AT command operations and applications.

8.1. Swap the audio channels

AT+QAUDCH=*1* // Swap the audio channels, **<n>=*1*** indicates switching to
OK // auxiliary channel (headset channel)

8.2. Change ringer sound level when call incoming

RING // New incoming call, **RING** indication

RING
AT+CRSL=*100* // Change ringer sound level to ***100***
OK

AT+CALM=*1* // **<n>=*1*** start alert mute function
OK

8.3. Mute when call is progressing

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

OK
AT+CMUT=1                             // <n>=1 mute the call, now the peer can't hear sound
                                      from the module
OK
```

8.4. Change volume when call is progressing

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

OK


AT+CLVL=80                            // Set volume to 80
OK
```

8.5. Generate local DTMF tone

```
AT+QLDTMF=100,"3"                     // Generate local DTMF tone. <n>=100 indicates DTMF
                                      tone will play for 10 seconds, "3" is the content to play.
OK


AT+QLDTMF                             // Stop playing DTMF tone
OK
```

9. SMS

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 store
AT+CMGS	Send SMS message
AT+CMGD	Delete SMS message
AT+QMGDA	Delete all SMS
AT+CSDH	Show SMS text mode parameters
AT+CSCA	SMS service center address
AT+CNMI	New SMS message indications
AT+CSAS	Save SMS settings
AT+CRES	Restore SMS settings
AT+CSCB	Select cell broadcast SMS messages

The following sections give some examples for related AT command operations and applications.

9.1. SMS message storage

AT+CPMS=? // Query supported SMS storage

+CPMS: ("SM", "ME", "MT"), ("SM", "ME", "MT"), ("SM", "ME", "MT")

OK // "**SM**" indicates that SMS is stored in SIM card storage, "**ME**" indicates module storage, and "**MT**" indicates SIM card storage and module storage(prior to store in SIM card storage）

AT+CPMS? // Query the setting of SMS storage

+CPMS: "SM",8,30,"SM",8,30,"SM",8,30

OK // **<mem1>="*SM*"** indicates SMS to be read and deleted from SIM card storage, **<used1>=*8*** indicates there are 8 SMS to be read and deleted,**<total1>=*30*** indicates the SMS capacity of SIM card is 30

9.2. Write SMS

9.2.1. Write SMS in text mode

AT+CMGF=*1*	// **<mode>=*1*,** set text mode
OK	
AT+CSCS="*GSM*"	// **<chset>="*GSM*",** configure 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 storage and the index is ***18***
OK	

9.2.2. Write SMS in PDU mode

AT+CMGF=*0*	// **<mode>=*0*,** set PDU mode
OK	
AT+CMGW=43	// Write SMS (PDU code)
>*0011000D91683118876788F30018011C00480065006C006C006F002C00510075006500630074006500630021*	// Input the content of SMS: "***Hello, Quectel!***"
+CMGW: *2*	// Written SMS is stored in storage and the index is ***2***
OK	

9.3. Send SMS

9.3.1. Send SMS in text mode

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

AT+CMGS="15021012496" // Send text SMS
> *Hello,Quectel!* // Input the content of SMS
+CMGS: 26

OK

9.3.2. Send SMS in PDU mode

AT+CMGF=*0* // **<mode>=*0*,** set PDU mode
OK

AT+CMGS=43 // Send PDU SMS
>*0011000D91685120012194F60008011C00480065006C006C006F002C005100750065006300740065006C0021* //The destination number is **8615021012496** , the content of SMS is "**Hello,Quectel!**"
+CMGS: 254

OK

9.4. Read SMS

9.4.1. Read saved SMS

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 message
+CMGW: *3* // The index of written SMS in storage is ***3***

OK

AT+CMGR=*3* // Read the SMS whose index in storage is ***3***

```
+CMGR: "STO UNSENT","",""
Hello,Quectel!

OK
```

9.4.2. Read new arrived SMS

```
+CMTI: "SM",4          // New SMS 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","+8615021012496","","2009/10/15 16:32:51+32"
Hello,Quectel!

OK                     // The number of the sender is +8615021012496
```

9.4.3. Read all SMS in specified type

```
AT+CMGL="REC READ"     // "REC READ" means to list all read SMS. In PDU
                          mode, please use 1 to replace "REC READ" to list all read
                       SMS.
+CMGL: 4,"REC READ","+8615021012496","","2009/10/15 11:10:56+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: 2,"REC READ","+8615021012496","","2009/11/23 19:48:44+32"
Hello,Quectel!

+CMGL: 3,"REC UNREAD","+8615021012496","","2009/11/23 19:49:03+32"
Hello,Quectel!


OK
```

9.5. Delete SMS

9.5.1. Delete specified SMS

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

9.5.2. Delete all SMS in specified type

AT+QMGDA="*DEL ALL*"	// Delete all SMS. In PDU mode, please use ***6*** to replace "***DEL ALL***" to delete all SMS.
OK	

9.6. SMS settings

9.6.1. Query and set the number of SMS center

AT+CSCA?	// Query the number of SMS center
+CSCA: "*+8613800210500*",145	// The number of SMS center is "***+8613800210500***"
OK	
AT+CSCA="+8613800210500"	// Set the number of SMS center as "***+8613800210500***"
OK	

Note:
It is strongly recommended not to change the number of SMS center in normal use. Otherwise, it may cause failing of sending SMS with the SIM card.

9.6.2. SMS report setting

AT+CSMP=*49*,167,0,241	// SMS status report is supported under text mode if the first parameter <fo> is set to ***49***.
OK	
AT+CNMI=2,1,0,*1*,0	// Set **<ds>=*1***, SMS notification will be reported
OK	
AT+CMGS="15021012496"	// Send SMS
> Hello,Quectel!	

```
+CMGS: 25

OK

+CDS: 6,25,"15021012496",129,"2009/10/15 17:04:11+32","2009/10/15 17:04:12+32",
                                    // Receive SMS report
```

9.7. Broadcast SMS

```
AT+CSCB=0,"50","1"          // Select specified broadcast SMS
OK
```

10. Phonebook

Table 9: Phonebook related AT commands

AT command	Description
AT+CPBS	Select phonebook storage
AT+CPBW	Write phonebook entry
AT+CPBR	Read current phonebook entries
AT+CPBF	Find phonebook entries
AT+CNUM	Subscriber number

The following sections give some examples for related AT command operations and applications.

10.1. 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 of the content of phonebook number and
OK                              // phonebook name to "GSM"
```

10.2. Write phonebook entry

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

10.3. Read phonebook entry

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

OK
```

10.4. Delete phonebook entry

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

OK

10.5. Find phonebook entry

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

OK

10.6. 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",129,7,4

+CNUM: "Own number2","15021012496",129,7,4

OK

10.7. Dial phonebook

Dial phonebook with ATD command as following:

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

11. 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+CGQREQ	Quality of service profile (requested)
AT+CGDATA	Enter data state
AT+CGPADDR	Show PDP address
AT+CGCLASS	GPRS mobile station class
AT+CGEREP	Control GPRS unsolicited GPRS event reporting
AT+CGREG	GPRS network registration status
AT+CGSMS	Select service for MO SMS messages

Following sections are examples for related AT command operations and applications.

11.1. Activate GPRS context

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

OK


AT+CGDCONT=1,"IP","CMNET"          // 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,"10.78.195.244"        // PDP address of context 1 is "10.78.195.244"

OK
```

11.2. Deactivate GPRS context

AT+CGACT=0,*1*	// Deactivate GPRS context ***1***
NO CARRIER	// Deactivate successfully

11.3. Dial-up internet

For detailed description, please refer to: *GPRS_Startup_UGD.pdf*.

12. CSD

Table 11: CSD related AT commands

AT command	Description
ATD	Mobile originated call to dial a number
AT+CSNS	Single numbering scheme
+++	Switch from data mode to command mode
ATO	Switch from command mode to data mode

The following sections give some examples for related AT command operations and applications.

12.1. Set up CSD connection

Here is an example that module A make a CSD call to module B. After connection is established, module A hangs up the call.

Module A:

ATD15052251387	// StepA1: Make a CSD Call
CONNECT 9600	// Response for StepB1: CSD connection is established
QUECTEL TEST001	// StepA2: Send data to module B, the data is "***QUECTEL TEST002***" Response for StepB2: Receive data from module B "***QUECTEL TEST001***"
OK	// StepA3: Input **+++**, switch from data mode to command mode
ATO	// StepA4: Input **ATO**, enter data mode
CONNECT 9600	
QUECTEL TEST003	// Response for StepB3: Receive data from module B "***QUECTEL TEST003***"
OK	// StepA5: Input **+++**, switch from data mode to command mode
ATH	// StepA6: Hang up CSD connection
OK	

Module B:

AT+CSNS=4	// Set data transfer mode for CSD
OK	
RING	// Response for StepA1: New incoming CSD call
ATA	// StepB1: Answer CSD call
CONNECT 9600	// Response for StepB1: CSD connection is set up

QUECTEL TEST002	// Response for StepA2: Receive data from module A "***QUECTEL TEST002***"
	StepB2: Send data to module B "***QUECTEL TEST001***"
	StepB3: Send data to module B "***QUECTEL TEST003***"
NO CARRIER	// Response for StepA6: Hang up CSD connection

13. TCPIP

Table 12: TCPIP related AT commands

AT command	Description
AT+QIFGCNT	Select a context as foreground context
AT+QIMODE	Set TCPIP transferring mode
AT+QIMUX	Control whether to display local IP address
AT+QISACK	Query the data information for sending
AT+QISERVER	Configure as a server
AT+QIOPEN	Start up TCP or UDP connection
AT+QICLOSE	Close TCP or UDP connection
AT+QISTAT	Query current connection status
AT+QIDEACT	Deactivate GPRS/CSD PDP context
AT+QISEND	Send data through TCP or UDP connection
AT+QIREGAPP	Start TCPIP task and set APN, user name, password
AT+QIACT	Bring up wireless connection with GPRS or CSD
AT+QILOCIP	Get local IP address
AT+QILPORT	Set local port
AT+QIDNSCFG	Configure domain name server
AT+QIDNSGIP	Query the IP address of given domain name
AT+QIDNSIP	Connect with IP address or domain name server
AT+QIHEAD	Add an IP header when receiving data
AT+QISHOWRA	Set whether to display the address of sender
AT+QIAUTOS	Set auto sending timer
AT+QIPROMPT	Set prompt of '>' when sending data
AT+QICSGP	Select CSD or GPRS as the bearer
AT+QISRVC	Choose connection
AT+QISCON	Save TCPIP application context
AT+QITCFG	Configure transparent transferring mode
AT+QISHOWPT	Control whether to show the protocol type
AT+QISHOWLA	Control whether to display local IP address

About detailed steps and information, please refer to document: *GSM_TCPIP_AN.pdf*.

14. MUX

Table 13: MUX related AT commands

AT command	Description
AT+CMUX	Set MUX mode

For detailed steps and information, please refer to document *GSM_MUX_AN.pdf*.

15. HTTP

Table 14: HTTP related AT commands

AT command	Description
AT+QHTTPURL	Set HTTP server URL
AT+QHTTPGET	Send HTTP GET request
AT+QHTTPREAD	Read HTTP server response
AT+QHTTPPOST	Send HTTP POST request

For detailed steps and information, please refer to document *GSM_HTTP_ATC.pdf*.

16. FTP

Table 15: FTP related AT commands

AT command	Description
AT+QFTPOPEN	Open an FTP service to the given FTP server
AT+QFTPCLOSE	Close the FTP service
AT+QFTPPUT	Upload a file to the FTP server
AT+QFTPGET	Download a file from the FTP server
AT+QFTPPATH	Set the path in the FTP server to upload or download file
AT+QFTPUSER	Set the user name of the account to open FTP service
AT+QFTPPASS	Set the password of the account to open FTP service
AT+QFTPCFG	Set some configurable parameters for the FTP service
AT+QFTPSTAT	Query status of FTP service

For detailed steps and information, please refer to document *GSM_FTP_ATC.pdf*.

17. MMS

Table 16: MMS related AT commands

AT command	Description
AT+QMMURL	Set the URL of the MMSC
AT+QMMPROXY	Set the MMS proxy
AT+QMMCFG	Set the parameter for sending MMS
AT+QFLDS	Get UFS information
AT+QFUPL	List UFS files
AT+QFDEL	Upload file to UFS
AT+QMMSCS	Download file from UFS
AT+QMMSW	Delete file in UFS
AT+QMMSEND	Set character sets and input mode
AT+QMMRM	Write MMS
AT+QMMRR	Send MMS
AT+QMMRECV	Manage the received MMS
AT+QMMPRI	Read a received MMS

For detailed steps and information, please refer to document *GSM_MMS_ATC.pdf*.

18. FAX

Table 17: FAX related AT commands

AT command	Description
AT+FCLASS	Set FAX mode
AT+CSNS	Set data transferring mode

For detailed steps and information, please refer to document *FAX_ Setup.pdf*.

19. Alarm and others

Table 18: Alarm and others related AT commands

AT command	Description
AT+QALARM	Set alarm
AT+CCLK	Set clock
AT+CFUN	Set phone functionality
AT+QENG	Report cell description in engineer mode
ATV	TA response format
ATE	Set command echo mode
A/	Re-issue last AT command given
AT+CMEE	Report mobile equipment error

The following sections give some examples for related AT command operations and applications.

19.1. 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
```

19.2. Set alarm

Example 1: Normal alarm

```
AT+CCLK?                                    // Query current clock
+CCLK: "08/01/02,00:04:29+00"

OK


AT+QALARM=1, "08/01/02,00:06:00+00",0,0     // <power>=0, set as normal alarm
OK

ALARM RING                                  // Alarm expires
```

Example 2: Boot alarm

AT+QALARM=1, "08/01/02,00:06:00+00",0,*2*	// Set boot alarm, **<power>=*2*** indicates boot alarm
OK	
AT+QPOWD=1	// Power off with AT command (can also power off with PWRKEY pin）
NORMAL POWER DOWN	
RDY	// Alarm expires, system will automatically boot and enter **ALARM MODE** // Alarm mode
+CFUN: 0	
NORMAL POWER DOWN	// System will automatically power off after entering alarm mode for 90 seconds

19.3. Set phone functionality

AT+CFUN=1	// Set phone functionality as full function
OK	

19.4. Query parameters of network

AT+QENG=*1*	// **<mode>=*1***, start monitoring parameters of network, no unsolicited information reported
OK	
AT+QENG?	// Query servicing cell and neighbouring cells description
+QENG: 1,0	
+QENG: 0,460,00,1806,2602,64,46,-54,189,189,5,8,x,x,x,x,x,x,x	
OK	
AT+QENG=*2*	// **<mode>=*2***, start monitoring parameters of network, and cell description will be reported as unsolicited information

OK

+QENG: 0,460,00,1806,2602,64,46,-54,190,190,5,8,x,x,x,x,x,x,x
// URC reported

AT+QENG=*0* // **<mode>=*0,*** stop monitoring parameters of network,
OK

19.5. Settting of power saving mode

AT+QSCLK? // Query the setting of power saving mode. (Power saving is disabled in default)
+QSCLK: 0

OK

AT+QSCLK=1 // **<n>=*1*** , allow to enter power saving mode
OK

AT+QSCLK=0 // **<n>=*0*** , forbid to enter power saving mode
OK

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