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# YUGE ASR Platform series Modules AT command Manual

V1.18

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| | | | |
|---|---|---|---|
| V1.16 | 2021/3/30 | Document group | 1.add the command AT+QIPSWTMD<br>2.add the command TCP/UDP Example<br>3.add the command AT+SSLCFG<br>4.add the command AT+VTYPE<br>5.add the command +EEMGINFOBASIC<br>6.add the command AT+QIPSTATE<br>7.add the command ATD Dial Command<br>8.add the command ATA Call Answer<br>9.add the command AT+CHUP<br>10.add the command AT+CLCC<br>11.add the command AT+CLVL<br>12.add the command AT+CMICGAIN<br>13.add the command AT+VMUTE<br>14.add the command AT+CMUT<br>15.add the command RING<br>16.add the command ^ORIG<br>17.add the command ^CONN<br>18.add the command ^CEND<br>19.add the command ATS0<br>20.add the command AT^NVAUTO<br>21.add the command AT^DTMF<br>22.add the command AT+SETVOLTE |
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# Contents

# Chapter 1. Summary

AT command interface, as shown in Figure 1-1:

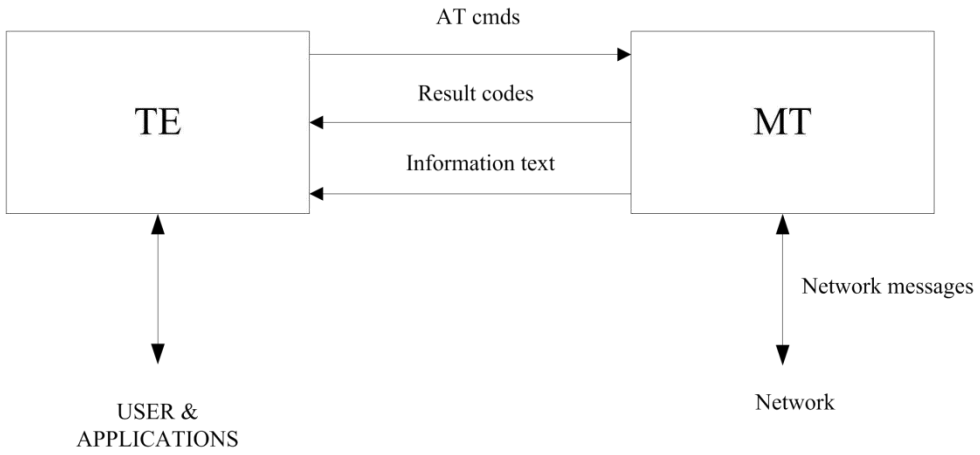


Figure 1-1 AT command interface

## 1.1 AT Command Syntax

1. Optional parameter and required parameters must be arranged in accordance with the provisions of the order , the parameters must be separated by a comma . An example of this “AT+CPWD=<fac>,<oldpwd>,<newpwd>”，which is used to set a new password for facility lock .
2. If the parameter is a string (such as <number>), the string must be placed in double quotes . For example , the string “1234” or “cmnet” . On the contrary, the symbols in double quotes can be seen as a string .
3. Optional parameters or the optional part of the results return from TA should be in the square brackets .
4. When you don’t use double quotes, the spaces between the characters in the string are negligible .
5. In actual use, do not need to enter < >, [].
6. All AT commands are not case sensitive , “AT”or “at”is OK.

## 1.2 AT Command Interface

Each interface requires functional cohesion .

Because of the AT command transmit the data packets through communication port , so the size of the package is limited . For sending AT commands , in addition to the characters “AT”, MT can receiving 1600 characters in length at most , including the null character at the end of

the commands . MT active reported response messages or URC , the maximum length is also limited to 1600 characters .

Each command line can contain only one AT command . For the URC or response which MT initiative report to TE,Each line also allows only one AT command.AT command end with a carriage return,and response and reporting end with linefeed.

In order to increase the readability and normative of the command and response format,In addition to the original standard protocol interface,all the other new interface parameters cannot contain spaces.

If TE want to execute the second AT command ,it must be first wait for the response of the AT command from MT. Or the second AT command will not be executed.

In order to ensure the other affairs without interference, it suggest that report response results in asynchronous mode for the AT command which need long time to response.If MT takes a long time to respond to the TE, there may be a result of the response is interrupted by a URC.This interrupt contains two cases,one is that the URC report during the response process after the AT command executed,the response result will be report after the URC report. Another is that the URC report during the response process after the AT command executed , the AT command still to be executed and the response will be report with the URC report lead to two kinds of reports confusion.For the special URC such as RING will use as a command terminator in some special cases, for example, the hang up command will be aborted if it has RING report in the process of hang up command .

The definition of string: up by double quotes, without quotes or comma byte stream.

AT command string con not appear the combination of comma and quotes.The current version, does not support the escape character.For the UCS2 encoding format of the data, the encoding value reported in character format.

The possible response from MT to TE consist of information text and result code,of which the information text is optional and the result code is Compulsory.Possible response format control by ATV command.

## 1.3 AT Command Interface Standards

1.The standard of add new interface

Parameters can added directly behind the original parameters of AT command , so in the late stage of product development if it is found that the interface can not adapt to the new demand , it is only allowed add new parameters behind the original interface . Additional parameters should not affect the original function.

2. The design principle of this product does not support function

If the AT command from MT con not recognize the current interface , the result of command not support will be reported. If the parameters more than the original parameters , two report may be reported,the one is result code of too many parameters , another approach is fault-tolerant processing which not to judge the extra parameter.

# Chapter 2. Terms and Abbreviations

| Abbreviations | Full name |
|---|---|
| AAA | Authentication Authorization Accounting |
| WCDMA | Wide band Code Division Multiple Access |
| ESN | Electronic Serial Number |
| FTP | File Transfer Protocol |
| GIS | Geographic Information System |
| GPS | Global Positioning System |
| IMSI | International Mobile Subscriber Identity |
| MDN | Mobile Directory Number |
| PDSN | Packet Data Serving Node |
| PPP | Point to Point Protocol |
| SGIP | Short Message Gateway Interface Protocol |
| SI | System Integrate |
| SMG | Short Message Gateway |
| SMPP | Short Message Peer to Peer |
| TCP | Transmission Control Protocol |
| UDP | User Data gram Protocol |
| SIM | User Identity Model |
| EDGE | Enhanced Data GSM Environment |
| EGPRS | Enhanced General Packet Radio Service |
| GPRS | General Packet Radio Service |
| GSM | Global System for Mobile communications |
| HSDPA | High Speed Downlink Packet Access |
| HSUPA | High Speed Uplink Packet Access |

| | |
|---|---|
| PDU | Protocol Data Unit |

# Chapter 3. General Commands

## 3.1 AT AT command

**Description**

Can be used to check if the module AT is available.

**Syntax**

| Command | Response |
|---|---|
| AT | OK |
| Maximum Response Time | 300ms |

**Example**

AT
OK

## 3.2 ATE Set Command Echo Mode

**Description**

The command controls if the module echoes characters received from TE during AT command state . Attention: dial-up network or the automatic processing software will automatically send the ATE0 to close the echoes.

**Syntax**

| Command | Response |
|---|---|
| ATE[<value>] | OK<br>or<br>ERROR |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <value> | 0 | Echo mode off |
| | 1 | Echo mode on |

**NOTE:**

✧ The default value of <value> is 1.

**Example**

```
ATE1
OK
```

## 3.3 ATV Set Result Code Format Mode

**Description**

This parameter setting determines the contents of the header and trailer transmitted with result codes and information responses.

In case of using the command without parameter <value> will be set to 1.

**Syntax**

| Command | Response |
|---|---|
| ATV[<value>] | 0 If<value>=0<br>or<br>OK If<value>=1 |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <value> | 0 | Information response: <text><CR><LF><br>Short result code format: <numeric code><CR> |
| | 1 | Information response: <CR><LF><text><CR><LF> Long result code format: <CR><LF><verbose code><CR><LF> |

**Example**

```
ATV
0
ATV1
OK
```

## 3.4 ATI Display Product Identification Information

**Description**

The command requests the product information, which consists of manufacturer identification,model identification, revision identification, International Mobile station Equipment Identity (IMEI) and overall capabilities of the product.

**Syntax**

| Command | Response |
|---|---|
| ATI | Manufacturer: <manufacturer> |

| | |
|---|---|
| | Model: <model><br>Revision: <revision><br>IMEI: <imei><br>+GCAP: list of <name>s<br><br>OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <manufacturer> | | The identification of manufacturer. |
| <model> | | The identification of model. |
| <revision> | | The revision identification of firmware. |
| <imei> | | of a single line containing IMEI (International Mobile station Equipment Identity) number. |
| <name> | +CGSM | GSM function is supported |

**Example**

```
ATI
Manufacturer:    Co.,Ltd.
Model: CLM920_AC3
Revision: CLM920_AC3-V1 [Feb 22 2019 12:57:48]
IMEI:352099001761482
+GCAP: +CGSM

OK
```

## 3.5 AT+CGMI Request Manufacturer Identification

**Description**

Execution command returns a manufacturer identification text.

**Syntax**

| Command | Response |
|---|---|
| AT+CGMI | <manufacturer> |

| | |
|---|---|
| | OK |
| AT+CGMI=? | OK |
| AT+CGMI=<manufacturer> | OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <manufacturer> | | The identification of manufacturer. |

**Example**

```
AT+CGMI
 Co.,Ltd.

OK
AT+CGMI=Shanghai
OK
AT+CGMI="Shanghai    Co.,Ltd."
OK
```

## 3.6 AT+CGMM Request Model Identification

**Description**

Execution command returns a product model identification text.

**Syntax**

| Command | Response |
|---|---|
| AT+CGMM | <name><br><br>OK |
| AT+CGMM=? | OK |
| AT+CGMM=<name> | OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <name> | | The identification of model. |

**Example**

```
AT+CGMM
CLM920_AC3

OK
AT+CGMM= CLM920_AC3
OK
```

## 3.7 AT+CGMR Request Revision Identification

**Description**

Execution command delivers a product firmware version identification.

**Syntax**

| Command | Response |
|---|---|
| AT+CGMR | <software version><br><br>OK |
| AT+CGMR=? | OK |
| AT+CGMR=<software version> | OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <software version> | | The revision identification of firmware. |

**Example**

```
AT+CGMR
CLM920_AC3-V1 [Mar  1 2019 10:00:25]

OK
```

## 3.8 AT+CIMI Request International Mobile Subscriber Identity

**Description**

Execution command requests the International Mobile Subscriber Identity (IMSI) which is intended to permit the TE to identify the individual SIM card or active application in the UICC (GSM or USIM) that is attached to MT.

**Syntax**

| Command | Response |
|---|---|
| AT+CIMI | <IMSI><br><br>OK |
| AT+CIMI=? | OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <IMSI> | | International Mobile Subscriber Identity (string, without double quotes). |

**Example**

```
AT+CIMI
460018621323229

OK
```

## 3.9 AT^IMEI Set module IMEI

**Description**

The command is used to set module IMEI value.

**Syntax**

| Command | Response |
|---|---|
| AT^IMEI=? | OK |
| AT^IMEI? | ^IMEI: <IMEI><br>OK |
| AT^IMEI=<IMEI> | OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <IMEI> | | Serial number identification（14-16 位） |

**Example**

AT^IMEI?

^IMEI: 3520990017614823

OK

AT^IMEI=357941053041368

OK

## 3.10 AT+CGSN Request Product Serial Number Identification

**Description**

Execution command returns International Mobile Equipment Identity (IMEI).

**Syntax**

| Command | Response |
|---|---|
| AT+CGSN | <IMEI><br><br>OK |
| AT+CGSN=? | OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <IMEI> | | Serial number identification |

**Example**

AT+CGSN

357941053041368

OK

## 3.11 AT+CCLK Real Time Clock

### Description

The command is used to manage Real Time Clock of the module.

### Syntax

| Command | Response |
|---|---|
| AT+CCLK=<time> | OK<br>or<br>ERROR |
| AT+CCLK? | +CCLK: "<yy/MM/dd>,<hh:mm:ss[±zz]>"<br><br>OK |
| AT+CCLK=? | OK |
| Maximum Response Time | 300ms |

### Defined values

| Parameter | values | Explain |
|---|---|---|
| <time> | | String type value; format is “yy/MM/dd,hh:mm:ss±zz”, where characters indicate year (two last digits), month, day, hour, minutes, seconds and time zone (indicates the difference, expressed in quarters of an hour, between the local time and GMT;<br>If the MT does not support the time zone, the last three characters of the <time> will not return<br><br>Support setting 1970-2070 |
| yy | 1980-2100 | Year |
| MM | 01-12 | Month |
| dd | 01-31 | Day |
| hh | 01-24 | Hour |
| mm | 00-59 | Minute |
| ss | 00-59 | Second |
| zz | -47-+48 | Time zone |

**Example**

```
AT+CCLK?
+CCLK: "19/03/15,11:04:25+32"

OK
AT+CCLK="00/12/31,23:59:59+32"
OK
```

## 3.12 AT+CSCS Select TE Character Set

**Description**

Write command informs TA which character set <chset> is used by the TE. TA is then able to convert character strings correctly between TE and MT character sets.

Read command shows current setting and test command displays conversion schemes implemented in the TA.

**Syntax**

| Command | Response |
|---|---|
| AT+CSCS=? | +CSCS: (list of supported <chset>s)<br><br>OK |
| AT+CSCS? | +CSCS: <chset><br><br>OK |
| AT+CSCS=<chset> | OK<br>or<br>ERROR |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <chset> | “IRA” | International reference alphabet. |
| | “GSM” | GSM default alphabet. |
| | “UCS2” | UCS2 alphabet |

**Example**

```
AT+CSCS=?
+CSCS: ("IRA","UCS2","GSM")

OK
AT+CSCS="IRA"
OK
AT+CSCS?
+CSCS: "IRA"

OK
```

## 3.13 AT+IPR Set Local Baud Rate permanently

### Description

This command sets the baud rate of module's serial interface permanently, after reboot the baud rate is also valid.The default value is 115200.

### Syntax

| Command | Response |
|---|---|
| AT+IPR=<rate> | OK<br>Or<br>ERROR |
| AT+IPR? | +IPR: <rate><br><br>OK |
| AT+IPR=? | +IPR (<rate>list)<br><br>OK |
| Maximum Response Time | 300ms |

### Defined values

| Parameter | values | Explain |
|---|---|---|
| <rate> | 0,300,600,1200,2400,4800,9600,19200,38400,57600,115200,230400 | Baud rate |

### Example

```
AT+IPR?
```

```
+IPR: 115200

OK
AT+IPR=115200
OK
```

## 3.14 AT+IFC Set Local Data Flow Control

### Description

This command is used to control the operation of local flow control between the DTE and DCE.

### Syntax

| Command | Response |
|---|---|
| AT+IFC=<n>,<m> | OK<br>Or<br>ERROR |
| AT+IFC? | +IFC: <n>,<m><br>OK |
| AT+IFC=? | +IFC: (<n>list),(<m>list)<br>OK |
| Maximum Response Time | 300ms |

### Defined values

| Parameter | values | Explain |
|---|---|---|
| <n> | 0 | none |
| | 1 | DC1/DC3 on circuit 103; do not pass DC1/DC3 characters to the remote DCE |
| | 2 | Circuit 133 (Ready for Receiving) |
| | 3 | DC1/DC3 on circuit 103 with DC1/DC3 characters being passed through to the remote DCE in addition to being acted upon for local flow control |
| <m> | 0 | None |
| | 1 | DC1/DC3 on circuit 104 |

| | | |
|---|---|---|
| | 2 | Circuit 106 (Clear to Send/Ready for Sending) |

**Example**

```
AT+IFC?
+IFC: 2,2

OK
AT+IFC=2,2
OK
```

## 3.15 AT+ICF Set Control Character Framing

**Description**

The command sets character framing which contain data bit, stop bit and parity bit.

**Syntax**

| Command | Response |
|---|---|
| AT+ICF=<n>,<m> | OK<br>Or<br>ERROR |
| AT+ICF? | +ICF: <n>,<m><br><br>OK |
| AT+ICF=? | +ICF: (<n>list),(<m>list)<br><br>OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| < n> | 0 | auto detect |
| | 1 | 8 Data; 2 Stop |
| | 2 | 8 Data; 1 Parity; 1 Stop |
| | 3 | 8 Data; 1 Stop |
| | 4 | 7 Data; 2 Stop |

| | | |
|---|---|---|
| | 5 | 7 Data; 1 Parity; 1 Stop |
| | 6 | 7 Data; 1 Stop |
| <m> | 0 | odd |
| | 1 | even |
| | 2 | Mark |
| | 3 | none |

**Example**

```
AT+ICF?
+ICF: 3,3

OK
AT+ICF=3,3
OK
```

## 3.16 AT+CSQ Signal Quality Report

**Description**

Execution command returns received signal strength indication <rssi> and channel bit error rate <ber> from the ME. Test command returns values supported by the TA as compound values.

**Syntax**

| Command | Response |
|---|---|
| AT+CSQ | +CSQ: <rssi>,<ber><br><br>OK |
| AT+CSQ=? | +CSQ: (<rssi>list),(<ber>list)<br><br>OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <rssi> | 0 | - 113 dBm or less |

| | | |
|---|---|---|
| | 1 | - 111 dBm |
| | 2-30 | - 109... - 53 dBm |
| | 31 | -51 dBm |
| | 99 | not known or not detectable |
| <ber> | 0 | <0.01% |
| | 1 | 0.01% --- 0.1% |
| | 2 | 0.1% --- 0.5% |
| | 3 | 0.5% --- 1.0% |
| | 4 | 1.0% --- 2.0% |
| | 5 | 2.0% --- 4.0% |
| | 6 | 4.0% --- 8.0% |
| | 7 | >=8.0% |
| | 99 | not known or not detectable |

**Example**

```
AT+CSQ
+CSQ: 19,99

OK
AT+CSQ=?
+CSQ: (0-31,99),(0-7,99)

OK
```

## 3.17 AT+CFUN Set Phone Functionality

**Description**

The command controls the functionality level. It can also be used to reset the UE.

**Syntax**

| Command | Response |
|---|---|
| AT+CFUN=[<fun>[,<rst>]] | OK |
| AT+CFUN? | +CFUN: <fun><br><br>OK |

| | |
|---|---|
| AT+CFUN=? | +CFUN: (<fun>list),(<rst>list)<br><br>OK |
| Maximum Response Time | 15s,determined by network |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <fun> | 0 | Minimum functionality |
| | 1 | Full functionality, online mode |
| | 3 | Disable phone receive RF circuits |
| | 4 | Disable phone both transmit and receive RF circuits |
| | 5 | Disable SIM |
| | 6 | Trun off full secondary recieve |
| <rst> | 0 | Do not reset the ME before setting it to <fun> power level |
| | 1 | Reset the ME before setting it to <fun> power level. This value only takes effect when <fun> equals 1. |

**Example**

```
AT+CFUN?
+CFUN: 1

OK
AT+CFUN=1,1
OK
```

## 3.18 AT+ICCID Read ICCID in SIM Card

**Description**

The command is used to Read the ICCID in SIM card.

**Syntax**

| Command | Response |
|---|---|
| AT+ICCID | +ICCID: <ICCID> |

| | |
|---|---|
| | OK |
| AT+ICCID=? | OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <ICCID> | | Integrate circuit card identity |

**Example**

```
AT+ICCID
+ICCID: 89861116040211636036

OK
```

## 3.19 AT+CPAS Mobile Equipment Activity Status

**Description**

Execution command returns the activity status <cpas> of the ME.

**Syntax**

| Command | Response |
|---|---|
| AT+CPAS | +CPAS: <cpas><br><br>OK |
| AT+CPAS=? | +CPAS: (<cpas>list)<br><br>OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <cpas> | 0 | Ready (ME allows commands from TA/TE) |
| | 2 | unknown (MT is not guaranteed to respond to instructions) |
| | 3 | ringing (MT is ready for commands from TA/TE, but the |

| | | |
|---|---|---|
| | | ringer is active) |
| | 4 | call in progress (MT is ready for commands from TA/TE, but a call is in progress) |

**Example**

```
AT+CPAS
+CPAS: 0

OK
```

# Chapter 4.SIM Card Related Commands

## 4.1 AT+CLCK Facility Lock

### Description

The command is used to lock, unlock or interrogate a ME or a network facility <fac> Password is normally needed to do such actions.

### Syntax

| Command | Response |
|---|---|
| AT+CLCK=<fac>,<mode>[ ,<passwd>[,<class>]] | When <mode>=2：<br>+CLCK: <status>[,<class>]<br><br>OK<br>When <mode>≠2：<br>OK |
| AT+CLCK=? | +CLCK: (<fac>list)<br><br>OK |
| Maximum Response Time | 5s |

### Defined values

| Parameter | values | Explain |
|---|---|---|
| <fac> | "AO" | Barr All Outgoing Calls |
| | "OI" | Barr Outgoing International Calls |
| | "OX" | Barr Outgoing International Calls except to Home Country |
| | "AI" | Barr All Incoming Calls |
| | "IR" | Barr Incoming Calls when roaming outside the home country |
| | "PN" | Network Personalization |
| | "PP" | Service Provider Personalization |
| | "PU" | Network subset Personalization |
| | "PC" | Corporate Personalization |
| | "PF" | Lock Phone to the very First inserted SIM card or USIM |

| | | |
|---|---|---|
| | | card |
| | "SC" | Lock SIM card or USIM card |
| | "FD" | SIM fixed dialing memory feature |
| <mode> | 0 | Unlock |
| | 1 | Lock |
| | 2 | Query status |
| <passwd> | | Password. |
| <class> | 1 | Voice (telephony) |
| | 2 | Data (refers to all bearer services) |
| | 4 | Fax (facsimile services) |
| | 8 | Short message service |
| | 16 | Short message service |
| | 32 | Short message service |
| | 64 | Dedicated packet access |
| <status> | 0 | Not active |
| | 1 | Active |

**Example**

```
AT+CLCK="SC",2
+CLCK: 0

OK
AT+CLCK="SC",1,"1234"
OK
AT+CLCK="SC",2
+CLCK: 1

OK
```

## 4.2 AT+CPWD Change Password

**Description**

Write command sets a new password for the facility lock function defined by command Facility Lock AT+CLCK.

Test command returns a list of pairs which present the available facilities and the maximum length of their password.

**Syntax**

| Command | Response |
|---|---|
| AT+CPWD=<fac>,<oldpwd>,<newpwd> | OK |
| AT+CPWD=? | +CPWD: (<fac>,<pwdlength>)list<br>OK |
| Maximum Response Time | 5s |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <fac> | "AO" | Barr All Outgoing Calls |
| | "OI" | Barr Outgoing International Calls |
| | "OX" | Barr Outgoing International Calls except to Home Country |
| | "AI" | Barr All Incoming Calls |
| | "IR" | Barr Incoming Calls when roaming outside the home country |
| | "PN" | Network Personalization |
| | "PP" | Service Provider Personalization |
| | "PU" | Network subset Personalization |
| | "PC" | Corporate Personalization |
| | "PF" | Lock Phone to the very First inserted SIM card or USIM card |
| | "SC" | Lock SIM card or USIM card |
| | "FD" | SIM fixed dialing memory feature |
| <oldpwd> | | String type, old password . |
| <newpwd> | | String type, new password . |
| <pwdlength> | | Integer type, max length of password |

**Example**

```
AT+CPIN?
+CPIN: READY

OK
```

```
AT+CPWD="SC","1234","0000"      //Change SIM card password to “0000”
OK
AT+CFUN=1,1      //Restart module
OK
AT+CPIN?
+CPIN: SIM PIN      //PIN code is locked

OK
AT+CPIN="1234"    //Enter the old password
+CME ERROR: incorrect password      //Password is incorrect
AT+CPIN="0000"      //Enter the new password
OK
AT+CPIN?
+CPIN: READY      //SIM card is ready

OK
```

## 4.3 AT+CPIN Enter PIN

**Description**

If the password request is PIN or PIN2 , please enter AT+CPIN=<PIN> to examine.

If the password request is PUK or PUK2 , please enter AT+CPIN=<PIN>,<newpin> to unlock the SIM card. The first parameter is SIM PUK or SIM PUK2 , the second parameter is new PIN or PIN2 .

**Syntax**

| Command | Response |
|---|---|
| AT+CPIN=<pin>[,<newpin>] | OK |
| AT+CPIN? | +CPIN: <code><br><br>OK |
| AT+CPIN=? | OK |
| Maximum Response Time | 5s |

**Defined values**

| Parameter | values | Explain |
|---|---|---|

| | | |
|---|---|---|
| <pin> | | Password (string type). |
| <newpin> | | New password (string type) |
| <code> | READY | ME is not pending for any password |
| | SIM PIN | ME is waiting SIM PIN to be given |
| | SIM PUK | ME is waiting SIM PUK to be given |
| | SIM PIN2 | ME is waiting SIM PIN2 to be given |
| | SIM PUK2 | ME is waiting SIM PUK2 to be given |

**Example**

```
AT+CPIN?
+CPIN: READY

OK
```

## 4.4 AT+CRSM Restricted SIM Access

**Description**

By using this command instead of Generic SIM Access +CSIM TE application has easier but more limited access to the SIM database. Set command transmits to the MT the SIM command and its required parameters.

**Syntax**

| Command | Response |
|---|---|
| AT+CRSM=<command>[,<fileID>[,<P1>,<P2>,<P3>[,<data>[,<pathid>]]]] | +CRSM: <sw1>,<sw2>[,<response>]<br><br>OK |
| AT+CRSM=? | +CRSM: (176,178,192,214,220,242),(12037-28599),(0-255),(0-255),(0-255),<data>,<pathid><br><br>OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <command> | 176 | READ BINARY |
| | 178 | READ RECORD |
| | 192 | GET RESPONSE |
| | 214 | UPDATE BINARY |
| | 220 | UPDATE RECORD |
| | 242 | STATUS |
| <fileID> | | Identifier for an elementary data file on SIM, if used by <command>. |
| <P1>,<P2>,<P3> | | Integer type; parameters transferred by the MT to the SIM. |
| <data> | | Information which shall be written to the SIM |
| <sw1>,<sw2> | | Status information from the SIM about the execution of the actual command.These parameters are delivered to the TE in both cases, on successful or failed execution of the command. |
| <response> | | Response data from SIM. |

NOTE:

**Example**

```
AT+CRSM=242
+CRSM:
144,0,62338202782183023F00A5038001718A01058B032F0605C61890017C830101830102
95010083011183010A83010B83010C81021F14

OK
```

## 4.5 AT+CIND Indicator Control

**Description**

Set command is used to set the values of MT indicators.

Read command returns the status of MT indicators.

Test command returns pairs, where string value <49escry> is a maximum 16 character description of the indicator and compound value is the allowed values for the

indicator.

Currently only support network mode indicator.

**Syntax**

| Command | Response |
|---|---|
| AT+CIND=<ind> | OK |
| AT+CIND? | +CIND: <ind>[,<ind>[,...]]<br><br>OK |
| AT+CIND=? | +CIND: (“service”,(0-1))<br><br>OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <ind> | 0 | Indicator is off |
| | 1 | Indicator is on |

**Example**

```
AT+CIND?
+CIND: 0


OK
```

# Chapter 5. Packet Domain Commands

## 5.1 AT+CGDCONT Define PDP Context

### Description

The set command specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter, <cid>.

The read command returns the current settings for each defined context.

The test command returns values supported as a compound value.

### Syntax

| Command | Response |
|---|---|
| AT+CGDCONT=<cid> [,<PDP_type> [,<APN> [,<PDP_addr> [,<d_comp> [,<h_comp>]]]]] | |
| AT+CGDCONT? | [+CGDCONT: <cid>, <PDP_type>,<APN>, <PDP_addr>, <d_comp>,<h_comp>[,<pd1> [,…[,pdN]]] [<CR><LF>+CGDCONT: <cid>, <PDP_type>, <APN>,<PDP_addr>, <d_comp>, <h_comp>[,<pd1>[,…[,pdN]]] […]]]<br><br>OK |
| AT+CGDCONT=? | +CGDCONT: (0-15),"IP",,,(0-3),(0-4),(0,1),(0,1),(0-2),(0,1)<br><br>+CGDCONT: (0-15),"IPV6",,,(0-3),(0-4),(0,1),(0,1),(0-2),(0,1)<br><br>+CGDCONT: (0-15),"IPV4V6",,,(0-3),(0-4),(0,1),(0,1),(0-2),(0,1)<br><br>+CGDCONT: (0-15),"PPP",,,(0-3),(0-4),(0,1),(0,1),(0-2),(0,1)<br><br>OK |
| Maximum Response Time | 300ms |

### Defined values

| Parameter | values | Explain |
|---|---|---|
| <cid> | | (PDP Context Identifier) a numeric parameter which |

| | | |
|---|---|---|
| | | specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum value = 1) is returned by the test form of the command. |
| <PDP_type> | IP,IPV6, PPP, IPV4V6 | (Packet Data Protocol type) a string parameter which specifies the type of packet data protocol |
| <APN> | | (Access Point Name) a string parameter which is a logical name that<br>is used to select the GGSN or the external packet data network. |
| <PDP_address> | | a string parameter that identifies the MT in the address space applicable to the PDP.<br>If the value is null or omitted, then a value may be provided by the TE during the PDP startup procedure or, failing that, a dynamic address will be requested.<br>The read form of the command will continue to return the null string even if an address has been allocated during the PDP startup procedure. The allocated address may be read using the +CGPADDR command. |
| <d_comp> | 0-2 | a numeric parameter that controls PDP data compression (applicable for SNDCP only) (refer 3GPP TS 44.065 )<br>0 – off (default if value is omitted)<br>1 – on (manufacturer preferred compression)<br>2 – V.42bis<br>Other values are reserved.<br>Note: only support 0 and 2 now. |
| <h_comp> | | a numeric parameter that controls PDP header compression (refer 3GPP TS 44.065 and 3GPP TS 25.323)<br>0 – off (default if value is omitted)<br>1 – RFC1144 (applicable for SNDCP only)<br>2 – RFC2507<br>Note: only support 0 and 1 now. |
| <pd1>, …<br><pdN> | | zero to N string parameters whose meanings are specific to the <PDP_type> |

**Example**

```
AT+CGDCONT?
+CGDCONT: 1,"IP","3GNET","10.14.101.192",0,0,,,,

OK
AT+CGDCONT=1,"IP","3GNET"
OK
```

## 5.2 AT+CGATT PS Attach or Detach

**Description**

The execution command is used to attach the MT to, or detach the MT from, the Packet Domain service. After the command has completed, the MT remains in V.25ter command state. If the MT is already in the requested state, the command is ignored and the OK response is returned. Any active PDP contexts will be automatically deactivated when the attachment state changes to detached.

**Syntax**

| Command | Response |
|---|---|
| AT+CGATT=[<state>] | OK |
| AT+CGATT? | +CGATT: <state><br><br>OK |
| AT+CGATT=? | +CGATT: (<state>list)<br><br>OK |
| Maximum Response Time | 140s,determined by network |

**Defined value**

| Parameter | values | Explain |
|---|---|---|
| <state> | 0-1 | Indicates the state of Packet Domain attachment:<br>0--- detached<br>1--- attached |

**Example**

```
AT+CGATT?
+CGATT: 1

OK
AT+CGATT=0
OK
```

## 5.3 AT+CGACT PDP Context Activate or Deactivate

**Description**

The execution command is used to activate or deactivate the specified PDP context (s).

The read command returns the current activation states for all the defined PDP contexts.

The test command is used for requesting information on the supported PDP context activation states.

**Syntax**

| Command | Response |
|---|---|
| AT+CGACT=<state>[,<cid>] | OK |
| AT+CGACT? | [+CGACT: <cid>,<state><br>[<CR><LF>+CGACT: <cid>, <state>[…]]]<br><br>OK |
| AT+CGACT=? | +CGACT: (0,1), (<cid>list)<br><br>OK |
| Maximum Response Time | 150s,determined by network |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <state> | 0-1 | Indicates the state of PDP context activation<br>0--- Deactivated<br>1--- Activated |
| <cid> | 1-16 | A numeric parameter which specifies a particular PDP context definition |

**Example**

```
AT+CGACT?
+CGACT: 1,1

OK
AT+CGACT=?
+CGACT: (0,1), (1-16)
```

OK

## 5.4 AT+RNDISCALL For RNDIS On/Off

**Description**

The write command is used to activate or deactivate the RNDIS.

**Syntax**

| Command | Response |
|---|---|
| AT+RNDISCALL=<value> | OK |
| AT+RNDISCALL? | +RNDISCALL: <value><br><br>OK |
| AT+RNDISCALL=? | +RNDISCALL: (0,1)<br><br>OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <value> | 0 | RNDIS off |
| | 1 | RNDIS on |

**Example**

```
AT+RNDISCALL?
+RNDISCALL: 1

OK
AT+RNDISCALL=0
OK
```

## 5.5 AT+DIALMODE RNDIS Automatic dialing

**Description**

This command is used to enable or disable the automatic dialing function after RNDIS is turned on. The default value is 0.Scenes dialed using ppp need to turn off automatic dialing.

**Syntax**

| Command | Response |
|---|---|
| AT+DIALMODE=? | +DIALMODE: (0-1)<br><br>OK |
| AT+DIALMODE? | +DIALMODE: <mode><br><br>OK |
| AT+DIALMODE=<mode> | OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <mode> | 0-1 | 0 --- ON<br>1 --- OFF |

**Example**

```
AT+DIALMODE?
+DIALMODE: 0

OK
AT+DIALMODE=?
+DIALMODE: (0-1)

OK
AT+DIALMODE=1
OK
```

## 5.6 ATD*99# Initiate Data Connection

**Description**

This command will enable the MT to initiate a series of necessary operations to establish a communication with PDN.

**Syntax**

| Command | Response |
|---|---|
| ATD*99#[*[<called_address>][*[<L2P>][*[<cid>]]]]# | CONNECT 115200 |

| | |
|---|---|
| Maximum Response Time | 5s,determined by network |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <called_address> | | Ignore |
| <L2P> | “PPP” | |
| <cid> | 1-24,100-179 | A numeric parameter which specifies a particular PDP context definition |

**Example**

```
ATD*99#
CONNECT 115200
```

## 5.7 AT+CGPADDR Show PDP Address

**Description**

This command will show PDP address,The Write Command returns a list of PDP addresses for the specified context identifiers. If no <cid> is specified, the addresses for all defined contexts are returned.

**Syntax**

| Command | Response |
|---|---|
| AT+CGPADDR=? | +CGPADDR: (list of defined <cid>s)<br>OK |
| AT+CGPADDR | +CGPADDR: <cid>,<PDP_addr><br>[+CGPADDR: <cid>,<PDP_addr>[…]]<br>OK |
| AT+CGPADDR[=<cid>[,<cid>[,…]]] | +CGPADDR: <cid>,<PDP_addr><br>[+CGPADDR: <cid>,<PDP_addr>[…]]<br>OK |
| Maximum Response Time | 5s,determined by network |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <cid> | | A numeric parameter which specifies a particular PDP |

| | | |
|---|---|---|
| | | context definition (see AT+CGDCONT command) |
| <PDP_addr> | | A string that identifies the MT in the address space applicable to the PDP. The address<br>may be static or dynamic. For a static address, it will be the one set by AT+CGDCONT<br>command when the context was defined. For a dynamic address it will be the one<br>assigned during the last PDP context activation that used the context definition referred<br>to by <cid>. <PDP_address> is omitted if none is available. |

**Example**

```
AT+CGPADDR
+CGPADDR: 1, "10.175.76.132"
+CGPADDR: 2, "10.174.139.166"

OK
```

# Chapter 6. Network Service Commands

## 6.1 AT+COPS Operator Selection

### Description

Write command forces an attempt to select and register the GSM/UMTS network operator.

Read command returns the current mode and the currently selected operator.

Test command returns a list of quadruplets, each representing an operator present in the network.

### Syntax

| Command | Response |
|---|---|
| AT+COPS=[<mode>[,<format>[,<oper>]]] | OK |
| AT+COPS? | +COPS: <mode>[,<format>,<oper>,<sys>]<br><br>OK |
| AT+COPS=? | +COPS: [(<stat>,long<oper>,short<oper>,numeric<oper >)s][,,(<mode>list),(<format>list)]<br><br>OK |
| Maximum Response Time | 180s,determined by network |

### Defined values

| Parameter | values | Explain |
|---|---|---|
| <mode> | 0-4 | 0--- Automatic mode; <oper> field is<br>1--- Manual operator selection. <oper> present.<br>2--- Force deregister<br>3--- Set only <format><br>4--- Manual/automatic |
| <format> | 0-2 | 0---Long format alphanumeric <oper><br>1--- Short format alphanumeric <oper><br>2--- Numeric <oper> |

| | | |
|---|---|---|
| <oper> | | String type; <format> indicates if alphanumeric or numeric |
| <sys> | 2,7 | 2 --- WCDMA<br>7 --- LTE |
| <stat> | 0-3 | 0--- unknown<br>1--- available<br>2--- current<br>3--- forbidden |

**Example**

```
AT+COPS?
+COPS: 0,2,"46000",7

OK
```

## 6.2 AT+CREG Network Registration

**Description**

Set command controls the presentation of an unsolicited result code +CREG: <stat> when <n>=1 and there is a change in the MT network registration status,or code +CREG: <stat>[,<lac>,<ci>] when <n>=2 and there is a change of the network cell.

**Syntax**

| Command | Response |
|---|---|
| AT+CREG=[<n>] | OK |
| AT+CREG? | +CREG: <n>,<stat><br><br>OK |
| AT+CREG=? | +CREG: (<n>list)<br><br>OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|

| | | |
|---|---|---|
| <n> | 0-3 | 0: disable network registration unsolicited result code<br>1: enable network registration unsolicited result code +CREG: <stat><br>2: enable network registration and location information unsolicited result code +CREG: <stat>[,<lac>,<ci>,<AcT>]<br>3: enable network registration, location information and cause value information unsolicited result code +CREG: <stat>[,[<lac>],[<ci>],[<AcT>],[<rac>] [,<cause_type>,<reject_cause>]] |
| <stat> | 0-11 | <stat>:<br>0: not registered, MT is not currently searching a new operator to register to<br>1: registered, home network<br>2: not registered, but MT is currently searching a new operator to register to<br>3: registration denied<br>4: unknown<br>5: registered, roaming<br>6: registered, home network, SMS-only (applicable only when AcT is E-UTRAN)<br>7: registered, roaming, SMS-only (applicable only when AcT is E-UTRAN)<br>8: attached for emergency bearer services only (not applicable)<br>9: registered for “CSFB not preferred”,home network(applicable only when AcT is E-UTRAN)<br>10: registered for “CSFB not preferred”,roaming (applicable only when AcT is E-UTRAN)<br>11: only emergency services are available |
| <lac> | | string type; two byte location area code in hexadecimal format |
| <ci> | | string type; four byte cell identifier in hexadecimal format. GSM case: 16 least significant bits ,WCDMA case: CellId – 16 least significant bits ,RNCID – 12 most significant bits |
| <AcT> | 0-8 | 0 --- GSM<br>1 --- GSM Compact<br>2 --- UTRAN<br>3 --- GSM w/EGPRS<br>4 --- UTRAN w/HSDPA<br>5 --- UTRAN w/HSUPA<br>6 --- UTRAN w/HSDPA and HSUPA<br>7 --- E-UTRAN<br>8 --- UTRAN HSPA+ |

## Example

```
AT+CREG?
+CREG: 0,1

OK
AT+CREG=?
+CREG: (0-3)

OK
```

## 6.3 AT+CGREG  GPRS Network Registration Status

**Description**

The set command controls the presentation of an unsolicited result for GSM/UMTS package network registration status: <stat> when <n>=1 and there is a change in the MT's GPRS network registration status, or code +CGREG: <stat>[,<lac>,<ci>,<AcT>,<rac>] when <n>=2 and there is a change of the network cell, or code +CGREG: <stat>[,[<lac>],[<ci>],[<AcT>],[<rac>][,<cause_type>,<reject_cause>]] when <n>=3 and there is a change of the network cell.

The read command returns the status of result code presentation and an integer <stat> which shows whether the network has currently indicated the registration of the MT.

**Syntax**

| Command | Response |
|---|---|
| AT+CGREG=[<n>] | OK |
| AT+CGREG? | +CGREG: <n>,<stat>[,[<lac>],[<ci>],[<AcT>],[<rac>][,<cause_type>,<reject_cause>]]<br><br>OK |
| AT+CGREG=? | +CGREG: (0,3)<br><br>OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <n> | | 0: disable network registration unsolicited result code<br>1: enable network registration unsolicited result code +CGREG: <stat><br>2: enable network registration and location information |

| | | |
|---|---|---|
| | | unsolicited result code +CGREG:<br><stat>[,<lac>,<ci>,<AcT>,<rac>]<br>3: enable network registration, location information and cause value information unsolicited result code +CGREG: |
| <stat> | 0-11 | <stat>:<br>0: not registered, MT is not currently searching a new operator to register to<br>1: registered, home network<br>2: not registered, but MT is currently searching a new operator to register to<br>3: registration denied<br>4: unknown<br>5: registered, roaming<br>6: registered, home network, SMS-only (applicable only when AcT is E-UTRAN)<br>7: registered, roaming, SMS-only (applicable only when AcT is E-UTRAN)<br>8: attached for emergency bearer services only (not applicable)<br>9: registered for “CSFB not preferred”,home network(applicable only when AcT is E-UTRAN)<br>10: registered for “CSFB not preferred”,roaming<br>(applicable only when AcT is E-UTRAN)<br>11: only emergency services are available |
| <lac> | | string type; two byte location area code in hexadecimal format |
| <ci> | | string type; four byte cell identifier in<br>hexadecimal format. GSM case: 16 least<br>significant bits ,WCDMA case: CellId – 16 least<br>significant bits ,RNCID – 12 most significant bits |
| <AcT> | 0-8 | 0 --- GSM<br>1 --- GSM Compact<br>2 --- UTRAN<br>3 --- GSM w/EGPRS<br>4 --- UTRAN w/HSDPA<br>5 --- UTRAN w/HSUPA<br>6 --- UTRAN w/HSDPA and HSUPA<br>7 --- E-UTRAN<br>8 --- UTRAN HSPA+ |

**Example**

```
AT+CGREG?
+CGREG: 3,1,"e802","00bd8515",7

OK
AT+CGREG=?
+CGREG: (0,3)
```

OK

## 6.4 AT+CEREG EPS network registration status

**Description**

The set command controls the presentation of an unsolicited result code +CEREG: <stat> when <n>=1 and there is a change in the MT's EPS network registration status in EUTRAN, or unsolicited result code +CEREG: <stat>[,[<tac>],[<ci>],[<AcT>]] when <n>=2 and there is a change of the network cell in E-UTRAN. The parameters <AcT>, <tac> and <ci> are sent only if available.The value <n>=3 further extends the unsolicited result code with [,<cause_type>,<reject_cause>], when available, when the value of <stat> changes.

NOTE 1: If the EPS MT in GERAN/UTRAN/E-UTRAN also supports circuit mode services and/or GPRS services, the +CREG command and +CREG: result codes and/or the +CGREG command and +CGREG: result codes apply to the registration status and location information for those services.

The read command returns the status of result code presentation and an integer <stat> which shows whether the network has currently indicated the registration of the MT. Location information elements <tac>, <ci> and <AcT>, if available, are returned only when <n>=2 and MT is registered in the network. The parameters [,<cause_type>,<reject_cause>], if available, are returned when <n>=3. Test command returns values supported as a compound value.

**Syntax**

| Command | Response |
|---|---|
| AT+CEREG=? | +CEREG: (0-3)<br><br>OK |
| AT+CEREG? | +CEREG: <n>,<stat>[,[<tac>],[<ci>],[<AcT>[,<cause_type>,<reject_cause>]]]<br><br>OK |
| AT+CEREG=<n> | OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <n> | 0-3 | 0--- disable network registration unsolicited result code<br>1--- enable network registration unsolicited result code +CEREG: |

| | | |
|---|---|---|
| | | <stat><br>2--- enable network registration and location information unsolicited result code +CEREG: <stat>[,[<tac>],[<ci>],[<AcT>]]<br>3--- enable network registration, location information and EMM cause value information unsolicited result code +CEREG: <stat>[,[<tac>],[<ci>],[<AcT>][,<cause_type>,<reject_cause>]] |
| <stat> | 0-11 | 0 --- not registered,MT is not currently searching an operator to register to<br>1 --- registered, home network<br>2 --- not registered, but MT is currently trying to attach or searching an operator to register to<br>3 --- registration denied<br>4 --- unknown (e.g. out of E-UTRAN coverage)<br>5 --- registered, roaming<br>6 --- registered for “SMS only”, home network (not applicable)<br>7 --- registered for “SMS only”, roaming (not applicable)<br>8 --- attached for emergency bearer services only (See NOTE 2)<br>9 --- registered for “CSFB not preferred”, home network (not applicable)<br>10 --- registered for “CSFB not preferred”, roaming (not applicable)<br>11 --- emergency bearer services only |
| <tac> | | string type; two byte tracking area code in hexadecimal format (e.g.“00C3” equals 195 in decimal) |
| <ci> | | string type; four byte E-UTRAN cell ID in hexadecimal format |
| <AcT> | 0-8 | integer type; indicates the access technology of the serving cell<br>0 --- GSM (not applicable)<br>1 --- GSM Compact (not applicable)<br>2 --- UTRAN (not applicable)<br>3 --- GSM w/EGPRS (see NOTE 3) (not applicable)<br>4 --- UTRAN w/HSDPA (see NOTE 4) (not applicable)<br>5 --- UTRAN w/HSUPA (see NOTE 4) (not applicable)<br>6 --- UTRAN w/HSDPA and HSUPA (see NOTE 4) (not |

| | | |
|---|---|---|
| | | applicable)<br>7 --- E-UTRAN<br>8 --- UTRAN HSPA+ |
| <cause_type> | 0-1 | integer type; indicates the type of <reject_cause>.<br>0 --- Indicates that <reject_cause> contains an EMM cause value, see 3GPP TS 24.301 [83] Annex A.<br>1 --- Indicates that <reject_cause> contains a manufacturer-specific cause. |
| <reject_cause> | | integer type; contains the cause of the failed registration.<br>The value is of type as defined by <cause_type>. |

**Example**

```
AT+CEREG?
+CEREG: 3,1,"18be","08608021",7

OK
```

## 6.5 AT^SYSINFO Query System Information

**Description**

This command inquires the current system information. Such as system service status, domain, roaming, system mode, UIM card status, etc.

**Syntax**

| Command | Response |
|---|---|
| AT^SYSINFO | ^SYSINFO: <srv_status>,<srv_domain>,<roam_status>,<br><sys_mode>,<sim_state>[,<reg_mode>]<br><br>OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <srv_status> | 0-4 | 0--- No service<br>1--- Limited service<br>2--- Service available |

| | | |
|---|---|---|
| | | 3--- Limited regional service<br>4--- Power save or deep sleep |
| <srv_domain> | 0-4 | 0--- No service<br>1--- CS only capable<br>2--- PS only capable<br>3--- CS and PS capable<br>4--- Searching network |
| Searching network | 0-1 | 0--- Roaming off<br>1--- Roaming on |
| <sys_mode> | 0-3 | 0--- No service<br>3--- GSM mode<br>5--- WCDMA mode<br>9--- LTE mode |
| <sim_state> | 0-1 | 0--- SIM is not available<br>1--- SIM is available<br>255--- SIM is available |

**Example**

```
AT^SYSINFO
^SYSINFO: 2,3,0,9,1        //LTE mode

OK
```

## 6.6 AT^SYSCONFIG Set System Parameter

**Description**

This command allows user to configure system parameter, access network mode, access network order, support roaming or not, service network domain.

**Syntax**

| Command | Response |
|---|---|
| AT^SYSCONFIG=<mode_pre f>,<acq_pref>, <roam_pref>,< domain_pref> | OK |
| AT^SYSCONFIG? | ^SYSCONFIG: <mode_pref>,<acq_pref>,<roam_pref >,< domain_pref> |

| | |
|---|---|
| | OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <mode_pref> | 2,14,16<br>38,54,99 | Integer type, mode preferences:<br>2 --- Automatic<br>14--- WCDMA only<br>16--- No Change<br>38--- LTE only<br>99--- Unknow |
| <acq_pref> | 0,2,3,4 | Integer type, indicate access network order<br>0--- Automatic<br>2--- WCDMA, LTE WCDMA preferred<br>3--- No change<br>4--- Unknown |
| <roam_pref> | 0-3 | 0--- Forbid roam<br>1--- Allow roam<br>2--- No change<br>3--- Unknown |
| <domain_pref> | 0-4 | 0--- CS only<br>1--- PS only<br>2--- CS and PS<br>3--- Any<br>4--- No Change<br>5--- Unknown |

**Example**

```
AT^SYSCONFIG?
^SYSCONFIG: 2,2,1,2


OK
```

## 6.7 AT^MODECONFIG Network Mode Selection

**Description**

The set command select system mode for MT ,don't need SIM card, and immediately available.

Read command returns the current system mode.

**Syntax**

| Command | Response |
|---|---|
| AT^MODECONFIG=<mode> | OK |
| AT^MODECONFIG? | ^MODECONFIG: 2<br><br>OK |
| AT^MODECONFIG=? | ^MODECONFIG: <mode>list<br><br>OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <mode> | 2,14 ,38,5<br>5,56 | 2 ---AUTO<br>14 --- WCDMA only<br>38--- LTE only<br>55---UMTS_LTE, UMTS preferred<br>56--- UMTS_LTE, LTE preferred |

**Example**

```
AT^MODECONFIG?
^MODECONFIG: 2

OK
```

## 6.8 AT+CEMODE EPS Registry Settings

**Description**

The set command used to set the MT corresponding to the EPS registration, the command affect after reboot.

Read command returns the current EPS registration mode.

**Syntax**

| Command | Response |
|---|---|
| AT+CEMODE? | +CEMODE: <mode><br><br>OK |
| AT+CEMODE=? | +CEMODE: (<mode>list)<br><br>OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <mode> | 0-3 | 0 --- EPS attach only, UE is data centric<br>1 --- Combined attach, UE is voice centric<br>2 --- Combined attach, UE is data centric<br>3 --- EPS attach only, UE is voice centric |

**Example**

```
AT+CEMODE?
+CEMODE: 2

OK
AT+CEMODE=?
+CEMODE: (0-3)

OK
```

## 6.9 AT+CPOL Preferred Operator List

**Description**

The command is used to edit the SIM preferred list of networks.

Execute command writes an entry. If <index> is given but <oper> is left out, entry is deleted. If <oper> is given but <index> is left out, <oper> is put in the next free location. If only <format> is given, the format of the <oper> in the read command is changed

**Syntax**

| Command | Response |
|---|---|

| | |
|---|---|
| AT+CPOL=[<index>[,<format>[,<oper>[,<GSM_AcT>,<GSM_Compact_AcT>,<UTRAN_AcT>,<E-UTRAN_AcT>]]]] | OK |
| AT+CPOL? | +CPOL: <index>,<format>,<oper><br>[...]<br><br>OK |
| AT+CPOL=? | +CPOL: (<index>list),(<format>list)<br><br>OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <index> | 1-254 | Integer type, the order number of oper preferred operator list. |
| <format> | 0-2 | 0 --- Long format alphanumeric <oper><br>1 --- Short format alphanumeric <oper><br>2 --- Numeric <oper> |
| <oper> | | String type; <format> indicates if alphanumeric or numeric. |
| <GSM_AcT> | 0-1 | GSM access technology:<br>0--- access technology not selected<br>1--- access technology selected |
| <GSM_Compact_AcT> | 0-1 | GSM compact access technology:<br>0--- access technology not selected<br>1--- access technology selected |
| <UTRAN_AcT> | 0-1 | UTRAN access technology:<br>0--- access technology not selected<br>1---access technology selected |
| <E-UTRAN_Act> | 0-1 | integer type;E-UTRAN access technology<br>0---access technology not selected<br>1--- access technology selected |

**Example**

```
AT+CPOL?
+CPOL: 1,2, "46001", 0, 0, 1, 0
```

```
+CPOL: 2, 2, "46009", 0, 0, 1, 0

OK
```

## 6.10 AT+EEMGINFO Query GSM/UMTS/LTE information

**Description**

Query GSM/UMTS/LTE information in Engineering Mode. Only valid in query mode. Before executing this command, you need to enter the engineering mode with the command AT+CGED=2.

**Syntax**

| Command | Response |
|---|---|
| AT+EEMGINFO? | +EEMGINFO : <state>,<nw_type><br><br>OK |
| AT+EEMGINFO=<type> | OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <state> | 0-3 | 0 --- ME in Idle mode<br>1 --- ME in Dedicated mode<br>2 --- ME in PS PTM mode<br>3 --- Invalid state |
| <nw_type> | 0-2 | 0 --- GSM<br>1 --- UMTS<br>2 --- LTE |
| <type> | 0-1 | 0 --- not force, may include Ncell info<br>1 --- force to decode system info to get Ncell info |

**Example**

```
AT+EEMGINFO?
+EEMGINFO : 3, 2

OK
```

## 6.10.1 +EEMLTESVC Serving-cell information in LTE

### Description

Indication of serving-cell information in LTE Engineering Mode.

### Syntax

| Command |
| --- |
| +EEMLTESVC: <mcc>, <lenOfMnc>, <mnc>, <tac>, <phyCellId>, <dlEuArfcn>, <ulEuArfcn>, <band>, <dlBandwidth>, <rsrp>, <rsrq>, <sinr>, <errcModeState>, <emmState>, <serviceState>, <IsSingleEmmRejectCause>, <EMMRejectCause>, <mmeGroupId>, <mmeCode>, <mTmsi>, <cellId>, <subFrameAssignType>, <specialSubframePatterns>, <transMode>, <mainRsrp>, <diversityRsrp>, <mainRsrq>, <diversityRsrq>, <rssi>, <cqi>, <pathLoss>, <tb0DlTpt>, <tb1DlTpt>, <tb0DlPeakTpt>, <tb1DlPeakTpt>, <tb0UlPeakTpt>, <tb1UlPeakTpt>, <dlThroughPut>, <dlPeakThroughPut>, <averDlPRB>, <averCQITb0>, <averCQITb1>, <rankIndex>, <grantTotal>, <ulThroughPut>, <ulPeakThroughPut>, <currPuschTxPower>, <averUlPRB>, <dlBler>, <ulBler> |

### Defined values

| Parameter | values | Explain |
| --- | --- | --- |
| <mcc> | | Mobile Country Code(十进制） |
| <lenOfMnc> | | length of mnc |
| <mnc> | | Mobile Network Code |
| <tac> | | Tracking area code |
| <phyCellId> | | Physical Cell Identifier |
| <dlEuArfcn> | | dl arfcn |
| <ulEuArfcn> | | ul arfcn |
| <band> | | band |
| <dlBandwidth> | | dl band width |
| <rsrp> | | rsrp |
| <rsrq> | | rsrq |
| <sinr> | | sinr |
| <errcModeState> | | ErrcModeState |
| <emmState> | | emmState |
| <serviceState> | | serviceState |
| <IsSingleEmmRejectCause> | | IsSingleEmmRejectCause |
| <EMMRejectCause> | | EMMRejectCause |
| <mmeGroupId> | | mmeGroupId |
| <mmeCode> | | mmeCode> |
| <mTmsi> | | mTmsi |
| <cellId> | | cellId |
| <subFrameAssignType> | | subFrameAssignType |

| | | |
|---|---|---|
| <specialSubframePatterns> | | specialSubframePatterns |
| <transMode> | | transMode |
| <mainRsrp> | | ainRsrp |
| <diversityRsrp> | | diversityRsrp |
| <mainRsrq> | | mainRsrq |
| <diversityRsrq> | | iversityRsrq |
| <rssi> | | rssi |
| <cqi> | | cqi |
| <pathLoss> | | pathLoss |
| <tb0DlTpt> | | tb0DlTpt |
| <tb1DlTpt> | | tb1DlTpt |
| <tb0DlPeakTpt> | | tb0DlPeakTpt |
| <tb1DlPeakTpt> | | tb1DlPeakTpt |
| <tb0UlPeakTpt> | | tb0UlPeakTpt |
| <tb1UlPeakTpt> | | tb1UlPeakTpt |
| <dlThroughPut> | | dlThroughPut |
| <dlPeakThroughPut> | | dlPeakThroughPut |
| <averDlPRB> | | averDlPRB |
| <averCQITb0> | | averCQITb0 |
| <averCQITb1> | | averCQITb1 |
| <rankIndex> | | rankIndex |
| <grantTotal> | | grantTotal |
| <ulThroughPut> | | ulThroughPut |
| <ulPeakThroughPut> | | ulPeakThroughPut |
| <currPuschTxPower> | | currPuschTxPower |
| <averUlPRB> | | averUlPRB |
| <dlBler> | | dlBler |
| <ulBler> | | ulBler |

**Example**

```
+EEMLTESVC: 1120, 2, 17, 23324, 372, 100, 18100, 1, 5, 49, 25, 20, 2, 10, 13, 1, 0, 12544, 4, 3775713504, 186088834, 255, 255, 1, 255, 255, 255, 255, 255, 65535, 107, 4816, 0, 4816, 0, 0, 0, 0, 0, 4, 15, 0, 0, 459, 0, 0, 18, 2, 0, 0
```

## 6.10.2 +EEMLTEINTRA Intra freq information in LTE

**Description**

Indication of Intra freq information in LTE Engineering Mode.

**Syntax**

| Command |
| --- |
| +EEMLTEINTRA: <p1>, <p2>, <p3>, <p4>, <p5> |

**Defined values**

| Parameter | values | Explain |
| --- | --- | --- |
| <p1> | | index of ENGMODE INTERFREQ |
| <p2> | | phyCellId |
| <p3> | | euArfcn |
| <p4> | | rsrp |
| <p5> | | rsrq |

**Example**

```
+EEMLTEINTRA: 0, 66, 1300, 37, 15
```

## 6.10.3 +EEMLTEINTER Inter freq information in LTE

**Description**

Indication of Inter freq information in LTE Engineering Mode.

**Syntax**

| Command |
| --- |
| +EEMLTEINTER: <p1>, <p2>, <p3>, <p4>, <p5> |

**Defined values**

| Parameter | values | Explain |
| --- | --- | --- |
| <p1> | | index of ENGMODE INTERFREQ |
| <p2> | | phyCellId |
| <p3> | | euArfcn, refer to AT+CESQ for conversion |
| <p4> | | rsrp, refer to AT+CESQ for conversion |
| <p5> | | rsrq, refer to AT+CESQ for conversion |

**Example**

```
+EEMLTEINTER: 0, 175, 2452, 37, 15

+EEMLTEINTER: 1, 89, 2452, 33, 8
```

## 6.10.4 +EEMLTEINTERRAT Inter RAT information

### Description

Indication of inter RAT information in LTE Engineering Mode.

### Syntax

| Command |
| --- |
| +EEMLTEINTERRAT: <p1>,<p2>,<p3>,<p4>,<p5>,<p6>,<p7>,<p8>,<p9>[,<p10>] |

### Defined values

| Parameter | values | Explain |
| --- | --- | --- |
| <p1> | 0-1 | 0 --- GSM<br>1 --- UMTS |
| <p2> | | number of INTERRAT. |
| <p3> | | mcc |
| <p4> | | mnc |
| <p5> | | lac |
| <p6> | | ci |
| <p7> | | arfcn(GSM )/uarfcn(UMTS) |
| <p8> | | bsic(GSM )/ psc_cellParameterId(UMTS) |
| <p9> | | rssi(GSM )/ rscp(UMTS) |
| <p10> | | cpichEcN0(UMTS) |

### Example

+EEMLTEINTERRAT:0,16,1120,0,6334,20549,6,13,-55,0,0,65534,-1,14,255,-77,0,0,65534,-1,18,255,-83,0,0,65534,-1,24,255,-86,0,0,65534,-1,62,255,-90,0,0,65534,-1,21,255,-90,0,0,65534,-1,56,255,-90,0,0,65534,-1,64,255,-94,0,0,65534,-1,49,255,-96,0,0,65534,-1,633,255,-96,0,0,65534,-1,0,255,-101,0,0,65534,-1,36,255,-102,0,0,65534,-1,628,255,-106,0,0,65534,-1,631,255,-110,0,0,65534,-1,635,255,-111,0,0,65534,-1,624,255,-111

## 6.10.5 +EEMUMTSSVC serving-cell information in UMTS

### Description

Indication of serving-cell information in UMTS Engineering Mode.

### Syntax

| Command |
| --- |
| +EEMUMTSSVC: <mode>, <sCellMeasPresent>, <sCellParamPresent>, <ueOpStatusPresent>, <rscp>, <utraRssi>, <cpichEcN0>, <sQual>, <sRxLev>, <txPower>, <rac>, <nom>, <mcc>, <lenOfMnc>, <mnc>, <lac>, <ci>, <uraId>, |

<psc_cellParameterId>, <arfcn>, <t3212>, <t3312>, <hcsUsed>, <attDetAllowed>, <csDrxCycleLen>, <psDrxCycleLen>, <utranDrxCycleLen>, <HSDPASupport>, <HSUPASupport>, <rrcState>, <numLinks>, <srncId>, <sRnti>, <algPresent>, <cipherAlg>, <cipherOn>, <algPresent>, <cipherAlg>, <cipherOn>, <HSDPAActive>, <HSUPAActive>, <MccLastRegisteredNetwork>, <MncLastRegisteredNetwork>, <TMSI>, <PTMSI>, <IsSingleMmRejectCause>, <IsSingleGmmRejectCause>, <MMRejectCause>, <GMMRejectCause>, <mmState>, <gmmState>, <gprsReadyState>, <readyTimerValueInSecs>, <NumActivePDPContext>, <ULThroughput>, <DLThroughput>, <serviceStatus>, <pmmState>, <LAU_status>, <LAU_count>, <RAU_status>, <RAU_count>

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <mode> | | Engineer Mode |
| <sCellMeasPresent> | | sCellMeasPresent |
| <sCellParamPresent> | | sCellParamPresent |
| <ueOpStatusPresent> | | ueOpStatusPresent |
| <rscp> | | rscp |
| <utraRssi> | | utraRssi |
| <cpichEcN0> | | cpichEcN0 |
| <sQual> | | sQual |
| <sRxLev> | | sRxLev |
| <txPower> | | txPower |
| <rac> | | rac |
| <nom> | | nom |
| <mcc> | | mcc |
| <lenOfMnc> | | Length Of Mnc |
| <mnc> | | mnc |
| <lac> | | lac |
| <ci> | | ci |
| <uraId> | | uraId |
| <psc_cellParameterId> | | psc_cellParameterId |
| <arfcn> | | arfcn |
| <t3212> | | t3212 |
| <t3312> | | t3312 |
| <hcsUsed> | | hcsUsed |
| <attDetAllowed> | | attDetAllowed |

| | | |
|---|---|---|
| <csDrxCycleLen> | | csDrxCycleLen |
| <psDrxCycleLen> | | psDrxCycleLen |
| <utranDrxCycleLen> | | utranDrxCycleLen |
| <HSDPASupport> | | HSDPASupport |
| <HSUPASupport> | | HSUPASupport |
| <rrcState> | | rrcState |
| <numLinks> | | numLinks |
| <srncId> | | srncId |
| <sRnti> | | sRnti |
| <algPresent> | | algPresent |
| <cipherAlg> | | cipherAlg |
| <cipherOn> | | cipherOn |
| <algPresent> | | algPresent |
| <cipherAlg> | | cipherAlg |
| <cipherOn> | | cipherOn |
| <HSDPAActive> | | HSDPAActive |
| <HSUPAActive> | | HSUPAActive |
| <MccLastRegisteredNetwork> | | MccLastRegisteredNetwork |
| <MncLastRegisteredNetwork> | | MncLastRegisteredNetwork |
| <TMSI> | | TMSI |
| <PTMSI> | | PTMSI |
| <IsSingleMmRejectCause> | | IsSingleMmRejectCause |
| <MMRejectCause> | | MMRejectCause |
| <GMMRejectCause> | | GMMRejectCause |
| <mmState> | | mmState |
| <gmmState> | | gmmState |
| <gprsReadyState> | | gprsReadyState |
| <readyTimerValueInSecs> | | readyTimerValueInSecs |
| <NumActivePDPContext> | | NumActivePDPContext> |
| <ULThroughput> | | ULThroughput |
| <DLThroughput> | | DLThroughput |
| <serviceStatus> | | serviceStatus |
| <pmmState> | | pmmState |
| <LAU_status> | | LAU_status |
| <LAU_count> | | LAU_count |
| <RAU_status> | | RAU_status |
| <RAU_count> | | RAU_count |

## Example

+EEMUMTSSVC: 3, 1, 1, 1, -4096, 41, -4096, -32768, -32768, 0, 0, 3, 1120, 0, 1, 43063, 45342, 65535, 139, 10713, 60, 0, 0, 1, 65535, 65535, 65535, 0, 0, 6, 1, 219, 55626, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 1053756281, 4157227662, 1, 1, 28672, 255, 191, 29, 0, 65535, 0, 0, 0, 0, 2, 0, 0, 0, 0

## 6.10.6 +EEMGINFOBASIC GSM Basic information

**Description**

Indication of basic information in GSM Engineering Mode.

**Syntax**

| Command |
| --- |
| +EEMGINFOBASIC: <state> |

**Defined values**

| Parameter | values | Explain |
| --- | --- | --- |
| <state> | 0-2 | 0: ME in Idle mode<br>1: ME in Dedicated mode<br>2: ME in PS PTM mode |

**Example**

+EEMGINFOBASIC: 0

## 6.10.7 +EEMUMTSINTRA Intra freq information in UMTS

**Description**

Indication of Intra freq information in UMTS Engineering Mode.

**Syntax**

| Command |
| --- |
| +EEMUMTSINTRA: <index>, <rscp>, <utraRssi>, <cpichEcN0>, <sQual>, <sRxLev>, <mcc>, <mnc>, <lac>, <ci>, <arfcn>, <psc_cellParameterId> |

**Defined values**

| Parameter | values | Explain |
| --- | --- | --- |
| | | |

**Example**

+EEMUMTSINTRA: 0, -62, -1, -2, -32768, -32768, 65535, 65535, 65534, 0, 10713, 139

```
+EEMUMTSINTRA: 1, -32768, -1, -32768, -32768, -32768, 65535, 65535, 65534, 8, 10713, 127

+EEMUMTSINTRA: 2, -32768, -1, -32768, -32768, -32768, 65535, 65535, 65534, 9, 10713, 128

+EEMUMTSINTRA: 3, -32768, -1, -32768, -32768, -32768, 65535, 65535, 65534, 10, 10713, 129

+EEMUMTSINTRA: 4, -32768, -1, -32768, -32768, -32768, 65535, 65535, 65534, 11, 10713, 144

+EEMUMTSINTRA: 5, -32768, -1, -32768, -32768, -32768, 65535, 65535, 65534, 13, 10713, 281

+EEMUMTSINTRA: 6, -32768, -1, -32768, -32768, -32768, 65535, 65535, 65534, 14, 10713, 283

+EEMUMTSINTRA: 7, -32768, -1, -32768, -32768, -32768, 65535, 65535, 65534, 15, 10713, 256
```

## 6.10.8 +EEMGINFOPS PS information in GSM

### Description

Indication of PS information in GSM Engineering Mode.

### Syntax

| Command |
| --- |
| +EEMGINFOPS: <PS_attached>, <attach_type>, <service_type>, <tx_power>, <c_value>, <ul_ts>, <dl_ts>, <ul_cs>, <dl_cs>, <ul_modulation>, <dl_modulation>, <gmsk_cv_bep>, <8psk_cv_bep>, <gmsk_mean_bep>, <8psk_mean_bep>, <EDGE_bep_period>, <single_gmm_rej_cause>, <pdp_active_num>, <mac_mode>, <network_control>, <network_mode>, <EDGE_slq_measurement_mode>,<edge_status> |

### Defined values

| Parameter | values | Explain |
| --- | --- | --- |
| <PS_attached> | | GPRS/EDGE attached |

| | | |
|---|---|---|
| <attach_type> | | Attach type |
| <service_type> | | Service type |
| <tx_power> | | Transmit power |
| <c_value> | | C value |
| <ul_ts> | | Uplink timeslot |
| <dl_ts> | | Downlink timeslot |
| <ul_cs> | | Uplink Coding Scheme |
| <dl_cs> | | Downlink Coding Scheme |
| <ul_modulation> | | Uplink modulation |
| <dl_modulation> | | Downlink modulation |
| <gmsk_cv_bep> | | GMSK CV BEP(Block Error Probability) |
| <8psk_cv_bep> | | 8PSK CV BEP |
| <gmsk_mean_bep> | | GMSK mean BEP |
| <8psk_mean_bep> | | 8PSK mean BEP |
| <EDGE_bep_period> | | EDGE BEP period |
| <single_gmm_rej_cause> | | Is single GMM reject cause |
| <pdp_active_num> | | Activated PDP number |
| <mac_mode> | | MAC mode |
| <network_control> | | Network control |
| <network_mode> | | network mode |
| <EDGE_slq_measurement_mode> | | EDGE SLQ measurement mode |
| <edge_status> | | EDGE status |

**Example**

+EEMGINFOPS: 0, 2, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 1, 0, 0

## 6.10.9 +EEMGINFONC neighbour-cell information in GSM

**Description**

Indication of neighbour-cell information in GSM Engineering Mode.

**Syntax**

| Command |
|---|
| +EEMGINFONC:<nc_num>,[<mcc>, <mnc>, <lac>, <rac>, <ci>, <rx_lv>, <bsic>,<C1>, <C2>, <arfcn>,<C31>, <C32>, […]] |

**Defined values**

| Parameter | values | Explain |
|---|---|---|

| | | |
|---|---|---|
| <nc_num> | | Neighbor cell number |
| <mcc> | | Mobile Country Code |
| <mnc> | | Mobile Network Code |
| <lac> | | Location Area Code |
| <rac> | | Routing Area Code |
| <ci> | | Cell Indetifier |
| <rx_lv> | | Receive signal level |
| <bsic> | | Base Station Identity Code |
| <C1> | | C1 value |
| <C2> | | C2 value |
| <arfcn> | | Absolute Radio Frequency Channel |
| <C31> | | C31 value |
| <C32> | | C32 value |

**Example**

```
+EEMGINFONC: 0, 0, 0, 0, 0, 0,23, 255, 0, 0, 566, 0, 0

+EEMGINFONC: 1, 0, 0, 0, 0, 0,20, 255, 0, 0, 576, 0, 0

+EEMGINFONC: 2, 1120, 0, 6319, 0, 31528,19, 23, 7, 103, 62, 0, 103

+EEMGINFONC: 3, 1120, 0, 6334, 0, 20520,19, 21, 11, 117, 56, 0, 117

+EEMGINFONC: 4, 1120, 0, 6334, 0, 20521,18, 30, 10, 110, 64, 0, 110

+EEMGINFONC: 5, 1120, 0, 6334, 0, 0,18, 31, 10, 116, 49, 0, 116
```

## 6.10.10 +EEMGINBFTM Notify current network status

**Description**

To notify current network status which used for EFEM.

**Syntax**

| Command |
|---|
| +EEMGINBFTM: <p1>,<p2>,<p3>,<p4>,<p5>,<p6>,<p7>,<p8>,<p9>,<p10>,<p11>,<p12>,<p13>,<p14>,<p15>,<p16>,<p17>,<p18>,<p19> |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <p1> | | Engineering Mode |
| <p2> | | mcc |
| <p3> | | mnc |
| <p4> | | lac |
| <p5> | | ci |
| <p6> | | bsic |
| <p7> | | C1 |
| <p8> | | C2 |
| <p9> | | Timing advance |
| <p10> | | TxPowerLevel |
| <p11> | | rxSigLevel |
| <p12> | | rxSigLevelFull |
| <p13> | | rxSigLevelSub |
| <p14> | | rxQualityFull |
| <p15> | | rxQualitySub |
| <p16> | | arfcnTch |
| <p17> | | hopping status |
| <p18> | | channel type |
| <p19> | | Server Timeslot |

**Example**

```
+EEMGINBFTM: 0, 1120, 0, 6334, 20549, 13, 48, 148, 0, 0, 56, 0, 0
```

## 6.10.11 +EEMGINFOGMM Mobility management information

**Description**

Indication of mobility management information in GSM Engineering Mode.

**Syntax**

| Command |
|---|
| +EEMGINFOGMM: <p1>,<p2>,<p3>,<p4>,<p5>,<p6>,<p7>,<p8>,<p9>,<p10>,<p11>,<p12>,<p13>,<p14>,<p15>,<p16> |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <p1> | | MccLastRegisteredNetwork |

| | | |
|---|---|---|
| <p2> | | MncLastRegisteredNetwork |
| <p3> | | TMSI |
| <p4> | | PTMSI |
| <p5> | | IsSingleMmRejectCause |
| <p6> | | MMRejectCause |
| <p7> | | currentBandMode |
| <p8> | | mmState |
| <p9> | | gmmState |
| <p10> | | gprsReadyStatus |
| <p11> | | readyTimerValueInSecs |
| <p12> | | serviceStatus |
| <p13> | | LAUStatus |
| <p14> | | LAUCount |
| <p15> | | RAUStatus |
| <p16> | | RAUCount |

**Example**

```
+EEMGINFOGMM: 1120, 0, 729148266, -302761875,1, 28672, 6,191, 10, 2, 120, 0, 0, 0
```

## 6.10.12 +EEMGINFOSVC Serving-cell information in GSM

**Description**

Indication of serving-cell information in GSM Engineering Mode.

**Syntax**

| Command |
|---|
| +EEMGINFOSVC: <mcc>, <mnc>, <lac>, <ci>, <nom>, <nco>, <bsic>, <C1>, <C2>, <TA>, <TxPwr>, <RxSig>, <RxSigFull>, <RxSigSub>, <RxQualFull>, <RxQualSub>, <ARFCN_tch>, <hopping_chnl>, <chnl_type>, <TS>, <PacketIdle>, <rac>, <arfcn>, <bs_pa_mfrms>, <C31>, <C32>, <t3212>, <t3312>, <pbcch_support>, <EDGE_support>, <ncc_permitted>, <rl_timeout>, <ho_count>, <ho_succ>, <chnl_access_count>, <chnl_access_succ_count>,<gsmBand>, <chanl_mode> |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <mcc> | | Mobile Country Code |
| <mnc> | | Mobile Network Code |
| <lac> | | Location Area Code |
| <ci> | | Cell Identifier |
| <nom> | | Network Operation Mode |

| | | |
|---|---|---|
| <nco> | | Network Control Order |
| <bsic> | | Base Station Identity Code |
| <C1> | | C1 value |
| <C2> | | C2 value |
| <TA> | | Timing Advance |
| <TxPwr> | | Transmit Power |
| <RxSig> | | Receive level BCCH |
| <RxSigFull> | | Receive level for full set of TCH |
| <RxSigSub> | | Receive level for sub set of TCH |
| <RxQualFull> | | BER in DTX mode |
| <RxQualSub> | | BER in non-DTX mode |
| <ARFCN_tch> | | Traffic Channel ARFCN(Absolute Radio Frequency Channel) |
| <hopping_chnl> | | Channel is hopping |
| <chnl_type> | | Channel type |
| <TS> | | Serving timeslot |
| <PacketIdle> | | In packet idle mode |
| <rac> | | Routing Area Code |
| <arfcn> | | Absolute Radio Frequency Channel |
| <bs_pa_mfrms> | | BS PA frames |
| <C31> | | C31 value |
| <C32> | | C32 value |
| <t3212> | | timeout No. 3212 |
| <t3312> | | timeout No. 3312 |
| <pbcch_support> | | Support PBCCH |
| <EDGE_support> | | Support EDGE |
| <ncc_permitted> | | NCC permitted |
| <rl_timeout> | | Radio link timeout |
| <ho_count> | | Total hand-over count |
| <ho_succ> | | Success hand-over count |
| <chnl_access_count> | | Total channel access count |
| <chnl_access_succ_count> | | Success channel access count |
| <gsmBand> | | gsm band |
| <chanl_mode> | | mode of dedicated channel |

**Example**

+EEMGINFOSVC: 1120, 0, 6334, 20549, 2, 0, 13, 48, 148, 0, 0, 56, 0, 0, 0, 0, 0, 0, 0, 2, 1, 1, 6, 2, 0, 148, 30, 54, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0

## 6.11 AT*CELL Activate or to deactivate Cell/Frequency lock

### Description

This proprietary AT command is used to requests to activate or to deactivate Cell/Frequency lock.

### Syntax

| Command | Response |
|---|---|
| AT*CELL=<mode>,<act>,<band>,<freq>,<cellId> | OK |
| AT*CELL=? | *CELL:<mode>,<act>,<band>,<freq>,<cellId><br><br>OK |
| Maximum Response Time | 300ms |

### Defined values

| Parameter | | values | Explain |
|---|---|---|---|
| <mode> | | 0-2 | 0 --- Cell/Frequency disabled<br>1 --- Frequency lock enabled<br>2 --- Cell lock enabled |
| <act> | | | 0 --- GSM<br>1 --- UMTS_TD<br>2 --- UMTS_WB<br>3 --- LTE |
| <band> | UMTS | 0-8 | 0 --- Band_1<br>1 --- Band_2<br>2 --- Band_3<br>3 --- Band_4<br>4 --- Band_5<br>5 --- Band_6<br>6 --- Band_7<br>7 --- Band_8<br>8 --- Band_9 |
| | LTE | 0-63 | FDDLTE --- 0~30<br>TDDLTE --- 32~43<br>0-63 --- Band1~Band64 |
| <freq> | UMTS | | Band_1 arfcn 10562-10838<br>Band_2 arfcn 9662-9938<br>Band_3 arfcn 1162-1513<br>Band_4 arfcn 1537-1738<br>Band_5 arfcn 4357-4458<br>Band_6 arfcn 4387-4413<br>Band_7 arfcn 2237-2563<br>Band_8 arfcn 2937-3088<br>Band_9 arfcn 9237-9387 |

| | | | |
|---|---|---|---|
| | LTE | | Band_1: 0-599<br>Band_3: 1200-1949<br>Band_5: 2400-2649<br>Band_7: 2750-3449<br>Band_8: 3450-3799<br>Band_13: 5180-5279<br>Band_17: 5730-5849<br>Band_20: 6150-6449<br>Band_38: 37750-38249<br>Band_39: 38250-38649<br>Band_40: 38650-39649<br>Band_41: 39650-41589 |
| <cellId> | UMTS | 0-127 | CELL ID: 0-127 |
| | LTE | 0-503 | CELL ID: 0-503 |

**Example**

```
AT*CELL=1,3,0,100
OK
AT*CELL=1,3,0,100,372
OK
```

## 6.12 AT*BAND Controls user mode and band settings

**Description**

Set command controls parameters for GSM/UMTS/LTE user mode and optionally band settings.

The new parameters will be saved in NVM

UE will be reset to apply the new settings.

**Syntax**

| Command | Response |
|---|---|
| AT*BAND=[<mode>[<GSMband>,<UMTSband>,<LTEbandH>,<LTEbandL>[,<roamingConfig>,<srvDomain>,<bandPriorityFlag>]]] | OK |
| AT*BAND? | *BAND :<mode>,<GSMband>,<UMTSband>,<LTEbandH>,<LTEbandL>,<roamingConfig>,<srvDomain>,<bandPriorityFlag ><br><br>OK |

| | |
|---|---|
| AT*BAND=? | *BAND: (list of supported<mode>s),<GSMband>, <UMTSband>,<LTEbandH>,<LTEbandL>,<bandPriority Flag >, <srvDomain>,< bandPriorityFlag ><br><br>OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <mode> | 0-15 | <mode>: integer type<br>0 – GSM network<br>1 – UMTS network<br>2 – Dual mode(GSM and UMTS) (auto)<br>3 – Dual mode(GSM and UMTS) (GSM preferred)<br>4 – Dual mode(GSM and UMTS) (UMTS preferred)<br>5 – LTE network<br>6 – Dual mode(GSM and LTE)(auto)<br>7 – Dual mode(GSM and LTE)( GSM preferred)<br>8 – Dual mode(GSM and LTE)(LTE preferred)<br>9 – Dual mode(UMTS and LTE)(auto)<br>10 – Dual mode(UMTS and LTE)(UMTS preferred)<br>11 – Dual mode(UMTS and LTE)(LTE preferred)<br>12 – Trip mode(auto)<br>13 – Trip mode(GSM preferred)<br>14 – Trip mode(TD preferred)<br>15 – Trip mode(LTE preferred) |
| <GSMband> | | <GSMband>: integer type<br><GSMband> is a sum of integers each representing a GSM band (in other words bit mask)<br>1 – PGSM 900 (standard or primary)<br>2 – DCS GSM 1800<br>4 – PCS GSM 1900<br>8 – EGSM 900 (extended)<br>16 – GSM 450<br>32 – GSM 480<br>64 – GSM 850<br>512 - BAND_LOCK_BIT // used for GSM band setting<br><br>Notes: About GSM bandsetting:<br>AT*band=0,( BAND_LOCK_BIT+ GSMband)<br>Example:<br>AT*band=0,513 // set PGSM 900(512 -BAND_LOCK _BIT, 1 –PGSM 900) |
| <UMTSband> | | <UMTSband>: integer type<br><UMTSband> is a sum of integers each representing a UMTS band (in other words bit mask)<br>1 – UMTS_BAND_1<br>2 – UMTS_BAND_2 |

| | | |
|---|---|---|
| | | 4 – UMTS_BAND_3<br>8 – UMTS_BAND_4<br>16 – UMTS_BAND_5<br>32 – UMTS_BAND_6<br>64 – UMTS_BAND_7<br>128 – UMTS_BAND_8<br>256 – UMTS_BAND_9 |
| <LTEbandH> | | <LTEbandH>: integer type<br><LTEbandH> is a sum of integers each representing a TDD LTE band (in other words bit mask)<br>2 - TDLTE_BAND_34<br>32 – TDLTE_BAND_38<br>64 – TDLTE _BAND_39<br>128 – TDLTE _BAND_40<br>256 – TDLTE _BAND_41 |
| <LTEbandL> | | <LTEbandL> integer type<br><LTEbandL> is a sum of integers each representing a FDD LTE band (in other words bit mask)<br>1 – FDDLTE_BAND_1<br>4 – FDDLTE _BAND_3<br>8 – FDDLTE _BAND_4<br>16 – FDDLTE _BAND_5<br>64 – FDDLTE _BAND_7<br>128 – FDDLTE _BAND_8<br>65536 – FDDLTE _BAND_17<br>524288 – FDDLTE _BAND_20 |
| <roamingConfig> | | <roamingConfig>: integer value<br>0 – not support<br>1 – support<br>2 – no change |
| <srvDomain> | | <srvDomain>: integer value<br>0 – CS only<br>1 – PS only<br>2 – CS and PS<br>3 – ANY<br>4 – no change |
| <bandPriorityFlag > | | <bandPriorityFlag><br>0 – default<br>1 – TD-LTE<br>2 – FDD-LTE |

**Example**

```
AT*BAND?
*BAND:11,78,147,482,149,0,2,2

OK
```

```
AT*BAND=5,0,0,482,0,0,2,1    // lock B34/38/39/40/41
OK
```

## 6.13 AT*BANDIND Indicates the current band

### Description

The command is used to indicates the current band.

### Syntax

| Command | Response |
|---|---|
| AT*BANDIND=[<n>] | OK |
| AT*BANDIND? | *BANDIND: <n>[,<band>,<AcT>]<br><br>OK |
| AT*BANDIND=? | *BANDIND: (0,1)<br><br>OK |
| Maximum Response Time | 300ms |

### Defined values

| Parameter | values | Explain |
|---|---|---|
| <n> | 0-1 | When enable band indications and the band changes,there will be indication<br>*BANDIND: <band>, <Act> |
| <band> | | gsmBand:<br>0 --- PGSM 900<br>1 --- DCS_BAND<br>2 --- PCS_BAND<br>3 --- EGSM_BAND<br>4 --- GSM_450_BAND<br>5 --- GSM_480_BAND<br>6 --- GSM_850_BAND<br>umtsBand = returned band value +1<br>lteBand = returned band value |
| <AcT> | 0-8 | <AcT> access technology selected:<br>0 --- GSM<br>1 --- GSM Compact<br>2 --- UTRAN<br>3 --- GSM EGPRS<br>4 --- UTRAN HSDPA<br>5 --- UTRAN HSUPA<br>6 --- UTRAN HSPA<br>7 --- EUTRAN<br>8 --- UTRAN HSPA+ |

**Example**

```
AT*BANDIND?
*BANDIND: 0, 40, 7

OK
AT*BANDIND=1
*BANDIND: 40, 7

OK

*BANDIND: 1, 7    // band is changed
```

## 6.14 AT+EEMRPTFLAG enable the EEM information report

**Description**

The command is used to enable and disable the EMM information report.

**Syntax**

| Command | Response |
|---|---|
| AT+EEMRPTFLAG[=<mode>] | OK |
| AT+EEMRPTFLAG? | +EEMRPTFLAG: <mode><br><br>OK |
| AT+EEMRPTFLAG=? | +EEMRPTFLAG: (<mode>list)<br><br>OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <mode> | 0 | Disable the EMM information report |
| | 1 | Enable the EMM information report |

**Example**

```
AT+EEMRPTFLAG=?
+EEMRPTFLAG: (0-1)
```

```
OK
AT+EEMRPTFLAG=1
OK
```

## 6.15 AT+CESQ Received signal quality

**Description**

Execution command returns received signal quality parameters. If the current serving cell is not a GERAN cell, <rxlev> and <ber> are set to value 99. If the current serving cell is not a UTRA FDD or UTRA TDD cell, <rscp> is set to 255. If the current serving cell is not a UTRA FDD cell, <ecno> is set to 255. If the current serving cell is not an E-UTRA cell, <rsrq> and <rsrp> are set to 255.

**Syntax**

| Command | Response |
|---|---|
| AT+CESQ | +CESQ: <rssi>,<ber>,<rscp>,<ecno>,<rsrq>,<rsrp><br><br>OK |
| AT+CESQ=? | +CESQ: (range of supported <rssi>s),( rangeofsupported <ber>s), (range of supported <rscp>s),(range of supported <ecno>s), (range of supported<rsrq>s), (range of supported <rsrp>s)<br><br>OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <rxlev> | 0-63,99 | integer type, received signal strength level (see 3GPP TS 45.008 [20] subclause 8.1.4). |
| | | 0 rssi < -110 dBm<br>1 -110 dBm ≤ rssi < -109 dBm<br>2 -109 dBm ≤ rssi < -108 dBm<br>: : : :<br>61 -50 dBm ≤ rssi < -49 dBm<br>62 -49 dBm ≤ rssi < -48 dBm<br>63 -48 dBm ≤ rssi<br>99 not known or not detectable |

| | | |
|---|---|---|
| <ber> | 0-7,99 | integer type; channel bit error rate (in percent) |
| | | 0-7 as RXQUAL values in the table in 3GPP TS 45.008 [20] subclause 8.2.4<br>99 not known or not detectable |
| <rscp> | 0-96,255 | integer type, received signal code power (see 3GPP TS 25.133 [95] subclause 9.1.1.3 and 3GPP TS 25.123 [96] subclause 9.1.1.1.3). |
| | | 0 rscp < -120 dBm<br>1 -120 dBm ≤ rscp < -119 dBm<br>2 -119 dBm ≤ rscp < -118 dBm<br>: : : :<br>94 -27 dBm ≤ rscp < -26 dBm<br>95 -26 dBm ≤ rscp < -25 dBm<br>96 - 25 dBm ≤ rscp<br>255 not known or not detectable |
| <ecno> | 0-49,255 | integer type, ratio of the received energy per PN chip to the total received power spectral density (see 3GPP TS 25.133 [95] subclause). |
| | | 1 -24 dB ≤ Ec/Io < -23.5 dB<br>2 -23.5 dB ≤ Ec/Io < -23 dB<br>: : : :<br>47 -1 dB ≤ Ec/Io < -0.5 dB<br>48 -0.5 dB ≤ Ec/Io < 0 dB<br>49 0 dB ≤ Ec/Io<br>255 not known or not detectable |
| <rsrq> | 0-34,255 | integer type, reference signal received quality (see 3GPP TS 36.133 [96] subclause 9.1.7). |
| | | 0 rsrq < -19.5 dB<br>1 -19.5 dB ≤ rsrq < -19 dB<br>2 -19 dB ≤ rsrq < -18.5 dB<br>: : : :<br>32 -4 dB ≤ rsrq < -3.5 dB<br>33 -3.5 dB ≤ rsrq < -3 dB<br>34 -3 dB ≤ rsrq<br>255 not known or not detectable |
| <rsrp> | 0-97,255 | integer type, reference signal received power (see 3GPP TS 36.133 [96] subclause 9.1.4). |

| | | |
|---|---|---|
| | | 0 rsrp < -140 dBm<br>1 -140 dBm ≤ rsrp < -139 dBm<br>2 -139 dBm ≤ rsrp < -138 dBm<br>: : : :<br>95 -46 dBm ≤ rsrp < -45 dBm<br>96 -45 dBm ≤ rsrp < -44 dBm<br>97 -44 dBm ≤ rsrp<br>255 not known or not detectable |

**Example**

```
AT+CESQ
+CESQ:53,99,255,255,34,64

OK

AT+CESQ=?
+CESQ:rssi:(0-31),ber:(0-7),rscp:(0-96),ecno:(0-49),rsrq:(0-34),rsrp:(1-97)

OK
```

## 6.16 AT+CLOCATION Base station positioning

**Description**

The command is used to obtain the registered base station location.

The necessary condition for using this command is that the module can register and connect to the network.

**Syntax**

| Command | Response |
|---|---|
| AT+CLOCATION | OK<br><br>+CLOCATION: <lat_str>,<lng_str> |
| AT+CLOCATION=? | OK |
| Maximum Response Time | 25s |

**Defined values**

| Parameter | values | Explain |
|---|---|---|

| | | |
|---|---|---|
| <lat_str> | | Latitude |
| <lng_str> | | Longitude |

**Example**

```
AT+CLOCATION
OK


+CLOCATION: 31.17328200000001,121.59997300001187
```

# Chapter 7. TCP/UDP

## 7.1 AT+QIPCSGP Set context parameters

### Description

Configure the <APN>, <username>, <password> and other contexts by AT+QICSGP.

### Syntax

| Command | Response |
|---|---|
| AT+QIPCSGP=<CID>,<CONTEXTTYPE>,<APN>,[<username>,<password>] | OK |
| AT+QIPCSGP? | OK |
| AT+QIPCSGP=? | +QIPCSGP:(1-6),(1,2),<APN>,<username>,<password>,(0-2)<br><br>OK |
| Maximum Response Time | 300ms |

### Defined values

| Parameter | values | Explain |
|---|---|---|
| <CID> | 1-6 | The context ID. Range: 1-6 |
| <CONTEXTTYPE> | 1-3 | The protocol type.<br>1 --- IPv4<br>2 --- IPv6<br>3 --- IPv4v6 |
| <APN> | | The access point name |
| <username> | | The username. The maximum length: 127 bytes |
| <password> | | The password. The maximum length: 127 bytes. |
| <authentication> | 0-2 | The authentication methods.<br>0 --- None<br>1 --- PAP<br>2 --- CHAP |

### Example

```
AT+QIPCSGP=1,1,"3GNET"
OK
```

## 7.2 AT+QIPACT Activation context

### Description

Before activating context by AT+QIACT, host should configure the cont xt by AT+QICSGP. After activation, the IP address can be queried by AT+QIACT?

**Syntax**

| Command | Response |
|---|---|
| AT+QIPACT=<contextID> | OK<br><br>+QIPACTURC: <contextID>,<context_state>,<ip_Addr> |
| AT+QIPACT? | If it is the default value, it will return：<br>OK<br><br>If the instruction AT+QIPACT=<contextID> is executed, it will return：<br>+QIPACT:<contextID>,<context_state>,<ip_Addr><br><br>OK |
| AT+QIPACT=? | +QIPACT:(1-6)<br><br>OK |
| Maximum Response Time | 3s,determined by network |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <contextID> | 1-6 | The context ID. Range: 1-6. |
| <CONTEXTTYPE> | 0-1 | 0: Deactivated<br>1: Activated |
| "IP" | | The local IP address after the context is activated |

**Example**

```
AT+QIPACT=1
OK

+QIPACTURC: 1,1,"10.76.7.39"

AT+QIPACT?
+QIPACT:1,1,"10.76.7.39"

OK
```

## 7.3 AT+QIPOPEN Establish a socket connection

### Description

Start a socket service by AT+QIPOPEN. The service type can be specified by the parameter <service_type>. The data access mode (buffer access mode, direct push access mode and transparent access mode) can be specified by parameter <access_mode>. The URC "+QIPOPEN" indicates whether the socket service is started successfully.

### Syntax

| Command | Response |
|---|---|
| AT+QIPOPEN=<CID>,<socketID>,"<service_type>","<IP_address>",<remote_port>,<local_port>,<access_mode> | OK<br><br>+QIPOPEN: <socketID>,<err> |
| AT+QIPOPEN? | +QIPOPEN: <contextID>,<socketID>,<service_type>,<remote_port>,<local_port>,<access_mode><br><br>.....<br><br>OK |
| AT+QIPOPEN=? | +QIPOPEN:(1-6),(1-6),"TCP/UDP/TCP LISTENER/UDP SERVICE","IP_address/domain_name",<remote_port>,<local_port>,(0-2)<br><br>OK |
| Maximum Response Time | 5s,determined by network |

### Defined values

| Parameter | values | Explain |
|---|---|---|
| <contextID> | 1-6 | The context ID. Range: 1-6. |
| <socketID> | 1-6 | The socket ID. Range: 1-6 |
| <service_type> | | Socket service type<br><br>"TCP" Start a TCP connection as a client<br>"UDP" Start a UDP connection as a client<br>Refer to Chapter 8.1 for the relevant configuration of SSL<br>"SSL" Start a SSL TCP connection as a client<br>If <service_type> is "TCP LISTENER" or "UDP SERVICE", please enter 127.0.0.1.<br>"TCP LISTENER" Start a TCP server to listen to TCP connection |

| | | |
|---|---|---|
| | | "UDP SERVICE" Start a UDP service |
| <IP_address> | | The domain name or ip address of the remote serve |
| <remote_port> | | The port of the remote server. Range: 0-65535. |
| <local_port> | | The local port. Range: 0-65535. |
| <access_mode> | 0-2 | Access mode<br>0 --- Buffer access mode.Report notification when the news arrives<br>1 --- Direct push mode.Report the message directly when the message arrives<br>2 --- Transparent mode |
| <keepIdle> | 0-86400 | if <keepIdle> is equal to 0<br>Disable the KeepAlive funciton<br>else<br>Enable the KeepAlive funciton<br><br>The time the connection needs to remain idle before TCP starts sending keepalive probes<br><br>Uint: s, Recommended value 7200 |
| <keepInterval> | 0-3600 | The number of seconds to wait for a keepalive response before retransmitting the message<br><br>Uint: s, Recommended value 75 |
| <keepCount> | 0-200 | he number of retransmission attempts that must occur before the connection is considered dead |
| <err> | | <err> is 0 when the service is opened successfully. Other refer to 7.14 err code |

**Example**

```
AT+QIPOPEN=1,1,"TCP","203.156.205.55",8866,12341,1
OK


+QIPOPEN: 1,0
```

## 7.4 AT+QIPSTATE Query Socket State

**Description**

The command used to query socket state.

**Syntax**

| Command | Response |
|---|---|

| | |
|---|---|
| AT+QIPSTATE=<query_type>,<query_index> | +QIPSTATE: <socketID>,<service_type>,<IP_address>,<remote_port>,<local_port>,<socket_state>,<contextID>,<serverID>,<access_mode><br>.....<br><br>OK |
| AT+QIPSTATE? | +QIPSTATE: <socketID>,<service_type>,<IP_address>,<remote_port>,<local_port>,<socket_state>,<contextID>,<serverID>,<access_mode><br>.....<br><br>OK |
| AT+QIPSTATE=? | +QIPSTATE:(0-1),(1-6)<br>OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <query_type> | 0-1 | The Query Type. Range: 0-1. |
| <query_index> | 1-6 | If <query_type> == 0<br>The Query Index is context ID, Range: 1-6.<br>If <query_type> == 1<br>The Query Index is socket ID, Range: 1-6. |
| <socketID> | 1-6 | The socket ID. Range: 1-6. |
| <service_type> | | Socket service type<br><br>"TCP": Start a TCP connection as a client<br>"UDP": Start a UDP connection as a client<br>"SSL": Start a SSL TCP connection as a client<br><br>If <service_type> is "TCP LISTENER" or "UDP SERVICE", please enter 127.0.0.1. |

| | | |
|---|---|---|
| | | "TCP LISTENER": Start a TCP server to listen to TCP connection<br>"UDP SERVICE": Start a UDP service<br>"TCP INCOMING": Accepted socket |
| <IP_address> | | The domain name or ip address of the remote server |
| <remote_port> | | The port of the remote server. Range: 0-65535. |
| <local_port> | | The local port. Range: 0-65535. |
| <socket_state> | 0-4 | 0：INIT<br>1：OPENING<br>2：CONNECTED<br>3：LISTEN<br>4：CLOSE |
| <contextID> | 1-6 | The context ID. Range: 1-6. |
| <serverID> | 1-6 | It only is vaild if <service_type> is equal to "TCP INCOMING"<br><br>The server socketID of accept this socket |
| <access_mode> | 0-2 | Access mode<br>0 --- Buffer access mode.Report notification when the news arrives<br>1 --- Direct push mode.Report the message directly when the message arrives<br>2 --- Transparent mode |

**Example**

```
AT+QIPOPEN=1,1,"TCP","47.99.180.198",38888,0,1
OK

+QIPOPEN: 1,0

AT+QIPOPEN=1,2,"SSL","www.baidu.com",443,0,1
OK
```

```
+QIPOPEN: 2,0

AT+QIPOPEN=2,3,"TCP","47.99.180.198",38888,0,1
OK

+QIPOPEN: 3,0
AT+QIPSTATE=1,2
+QIPSTATE: 2,SSL,112.80.248.75,443,0,2,1,0,1

OK
AT+QIPSTATE=0,1
+QIPSTATE: 1,TCP,47.99.180.198,38888,0,2,1,0,1
+QIPSTATE: 2,SSL,112.80.248.75,443,0,2,1,0,1

OK

AT+QIPSTATE?
+QIPSTATE: 1,TCP,47.99.180.198,38888,0,2,1,0,1
+QIPSTATE: 2,SSL,112.80.248.76,443,0,2,1,0,1
+QIPSTATE: 3,TCP,47.99.180.198,38888,0,2,2,0,1

OK
```

## 7.5 AT+QIPSEND Send data

### Description

The command used to send data.

### Syntax

| Command | Response |
|---|---|
| AT+QIPSEND=<socketID>[,<sendLen>] | ><br>+QIPSEND:<socketID>,<length><br>OK<br>OR<br>ERROR |
| AT+QIPSEND? | OK |

| | |
|---|---|
| AT+QIPSEND=? | AT+QIPSEND=?<br>+QIPSEND:(1-6),(0-1460)<br><br>OK |
| Maximum Response Time | 10s |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <socketID> | 1-6 | The socket ID. Range: 1-6. |
| <sendLen> | 0-1460 | The length of data to be sent, which cannot exceed 1460 bytes. |
| <length> | | Length of successful send |

**Example**

```
AT+QIPSEND=1
>1234567890<CTRL+Z>
+QIPSEND:1,10

OK
AT+QIPSEND=1,10
>AAAAAAAAAA
+QIPSEND:1,10

OK
```

## 7.6 AT+QIPSENDEX Send Hex String Data

**Description**

The command used to send hex string data.

**Syntax**

| Command | Response |
|---|---|
| AT+QIPSENDEX=<socketID>,<hex_string> | +QIPSENDEX:<socketID>,<length><br>OK<br>OR |

| | |
|---|---|
| | ERROR |
| AT+QIPSENDEX? | OK |
| AT+QIPSENDEX=? | AT+QIPSENDEX=?<br>+QIPSEND:(1-6),<hex_string><br><br>OK |
| Maximum Response Time | 3s |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <socketID> | 1-6 | The socket ID. Range: **1-6**. |
| <hex_string> | | The hex string data, Max **1460 bytes**. |
| <length> | | Length of successful send |

**Example**

```
AT+QIPSENDEX=1,"3132333435"
+QIPSENDEX:1,5

OK
```

## 7.7 AT+QIPREAD Read data

**Description**

In buffer access mode, after receiving data, the module will buffer it and report a URC as +QIPREADURC: <socketID> to notify the host. Then host can retrieve data by AT+QIPREAD

**Syntax**

| Command | Response |
|---|---|
| AT+QIPREAD=<socketID> | +QIPREAD: <length><br><br>OK |
| AT+QIPREAD=<socketID>,<length> | +QIPREAD: <socketID>,<length><br>data<br>OK |
| AT+QIPREAD? | OK |
| AT+QIPREAD=? | +QIPREAD:(0--6),(0-1500) |

| | |
|---|---|
| | OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <socketID> | 1-6 | The socket ID. Range: 1-6. |
| <length> | 0-1500 | The maximum length of data to be read. Range: 0-1500 |

**Example**

```
+QIPREADURC: 2
AT+QIPREAD=2
+QIPREAD: 10

OK
AT+QIPREAD=2,10
+QIPREAD: 2,10
##########
OK
```

## 7.8 AT+QIPCLOSE Close the socket connection

**Description**

The command use to be close the socket connection.

**Syntax**

| Command | Response |
|---|---|
| AT+QIPCLOSE=<socketID> | +QIPCLOSE: <socketID><br><br>OK |
| AT+QIPCLOSE? | OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <socketID> | 1-6 | The socket ID. Range: 1-6. |

**Example**

```
AT+QIPCLOSE=1
+QIPCLOSE: 1

OK
```

## 7.9 AT+QIPDEACT Disconnect TCP/IP connection

**Description**

The command will deactivate the specific context <context ID> and close a TCP/IP connections set up in this context.

**Syntax**

| Command | Response |
|---|---|
| AT+QIPDEACT=<contextID> | OK |
| AT+QIPDEACT? | OK |
| AT+QIPDEACT=? | +QIPDEACT:(1-6)<br><br>OK |
| Maximum Response Time | 10s,determined by network |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <contextID> | 1-6 | The context ID. Range: 1-6. |

**Example**

```
AT+QIPDEACT=1
OK
```

## 7.10 AT+QUARTIPOPEN Serial port transparent setting

**Description**

This command is used to set the serial port transparent transmission parameters. It takes effect after restart. After setting the wrong parameters, the device will not enter the transparent transmission mode next time.

**Syntax**

| Command | Response |
|---|---|
| AT+QUARTIPOPEN=<contextID>,<so | OK |

| | |
|---|---|
| cketID>,"<service_type>","<IP_address>",<remote_port>,<local_port>,<access_mode> | |
| AT+QUARTIPOPEN? | +QUARTIPOPEN: <contextID>,<socketID>,"<service_type>","<IP_address>",<remote_port>,<local_port>,<access_mode><br><br>OK |
| AT+QUARTIPOPEN=? | +QUARTIPOPEN:(0-6),(1-6),"TCP/UDP/TCP LISTENER/UDP SERVICE","IP_address/domain_name",<remote_port>,<local_port>,(0-2)<br><br>OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <contextID> | 1-6 | The context ID. Range: 1-6. |
| <socketID> | 1-6 | The socket ID. Range: 1-6. |
| <service_type> | | Socket service type<br>"TCP" Start a TCP connection as a client<br>"UDP" Start a UDP connection as a client |
| <IP_address> | | The domain name or ip address of the remote server |
| <remote_port> | 0-65535 | The port of the remote server. Range: 0-65535. |
| <local_port> | 0-65535 | The local port. Range: 0-65535. |
| <access_mode> | 2 | Access mode<br>2 --- Transparent mode(Only mode 2 works) |
| <keepIdle> | 0-86400 | if <keepIdle> is equal to 0<br>Disable the KeepAlive funciton<br>else<br>Enable the KeepAlive funciton<br><br>The time the connection needs to remain idle before TCP starts sending keepalive probes<br><br>Uint: s, Recommended value 7200 |
| <keepInterval> | 0-3600 | The number of seconds to wait for a keepalive response before retransmitting the message<br><br>Uint: s, Recommended value 75 |
| <keepCount> | 0-200 | he number of retransmission attempts that must occur before the connection is considered dead |

**Example**

```
AT+QUARTIPOPEN=1,1,"TCP","203.156.205.55",9568,12341,2
OK          //Enter the serial port transparent transmission mode after restart
AT+QUARTIPOPEN=0,0,"TCP","203.156.205.55",9568,12341,2
OK      //Invalid parameter, will not enter serial port transparent transmission mode after
          restart
```

## 7.11 AT+QIPSWTMD Switch Socket Access Mode

**Description**

The command used to switch socket access mode.

**Syntax**

| Command | Response |
|---|---|
| AT+QIPSWTMD=<socketID>,<access_mode> | If switch to Buffer access mode or Direct push mode.<br>OK<br>If switch to Transparent mode.<br>CONNECT<br>If socket not open or failed.<br>ERROR |
| AT+QIPSWTMD? | OK |
| AT+QIPSWTMD=? | +QIPSWTMD:(1-6),(0-2)<br><br>OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <socketID> | 1-6 | The socket ID. Range: 1-6. |
| <access_mode> | 0-2 | Access mode<br>0 --- Buffer access mode.Report notification when the news arrives<br>1 --- Direct push mode.Report the message directly when the message arrives<br>2 --- Transparent mode |

**Example**

```
AT+QIPCSGP=1,1,"CMNET"
OK
```

```
AT+QIPACT=1
OK

+QIPACTURC: 1,1,"10.227.82.181"

AT+QIPOPEN=1,1,"TCP","47.99.180.198",38888,0,1
OK

+QIPOPEN: 1,0

AT+QIPSWTMD=1,2

CONNECT
11111

OK
// entern +++ to eixt Transparent mode

ATO

CONNECT

OK

// if not switch the access mode, can use "ATO" return to the Transparent mode

// To prevent data loss after eixt Transparent mode, better to switch to Buffer access mode or Direct push mode at once
// entern +++ to eixt Transparent mode

AT+QIPSWTMD=1,1

OK
```

RECV FROM:1,47.99.180.198,38888,12
222222222222

ATO

NO CARRIER
// If switch to other access mode,can not use "ATO" return to Transparent mode. "AT+QIPSWTMD=1,2" can return to Transparent mode

## 7.12 TCPIP URCs

**Description**

Description of URCs

**Syntax**

| Command | Response |
|---|---|
| +QIPACTURC | +QIPACTURC: <CID>,<CONTEXTTYPE>,<IP> |
| +QIPOPEN | +QIPOPEN: <socketID>,<err> |
| +QIPREADURC | +QIPREADURC: <socketID> |
| +QIPURCCLIENT | +QIPURCCLIENT: <socketID>,<IP>,<PORT> |

## 7.13 TCP/UDP Example

| **Single APN** | |
|---|---|
| → | AT+QIPCSGP=1,1,"3GNET" |
| ← | OK |
| | |
| → | AT+QIPACT=1 |
| ← | OK |
| ← | +QIPACTURC: 1,1,"10.189.42.254" |
| | |
| → | AT+QIPOPEN=1,1,"TCP","47.99.180.198",38888,0,1 |
| ← | OK |
| ← | +QIPOPEN: 1,0 |

| | |
|---|---|
| | |
| → | AT+QIPOPEN=1,2,"TCP","47.99.180.198",38888,0,0 |
| ← | OK |
| ← | +QIPOPEN: 2,0 |
| | |
| → | AT+QIPSEND=1 |
| ← | >#recv ">" then input data, Ctrl+Z(0x1A) Terminate input and send |
| ← | +QIPSEND:1,9 |
| ← | OK |
| | |
| ← | RECV FROM:1,47.99.180.198,38888,18<br>111111111111111111 |
| | |
| ← | +QIPREADURC: 2 |
| | |
| → | AT+QIPREAD=2,1500 |
| ← | +QIPREAD: 2,16 |
| ← | 2222222222222222 |
| ← | OK |
| | |
| → | AT+QIPCLOSE=1 |
| ← | +QIPCLOSE: 1 |
| ← | OK |
| | |
| → | AT+QIPCLOSE=2 |
| ← | +QIPCLOSE: 2 |
| ← | OK |
| | |
| **Multi APN** Suitable for sending data to both public and private networks | |
| → | AT+QIPCSGP=1,1,"3GNET" |
| ← | OK |
| | |

| | |
|---|---|
| → | AT+QIPCSGP=2,1,"UNINET" |
| ← | OK |
| | |
| → | AT+QIPACT=1 |
| ← | OK |
| ← | +QIPACTURC: 1,1,"10.189.42.254" |
| | |
| → | AT+QIPACT=2 |
| ← | OK |
| ← | +QIPACTURC: 2,1,"10.57.93.70" |
| | |
| → | AT+QIPOPEN=1,1,"TCP","47.99.180.198",38888,0,1 |
| ← | OK |
| ← | +QIPOPEN: 1,0 |
| | |
| → | AT+QIPOPEN=2,3,"SSL","www.baidu.com",443,0,1 |
| ← | OK |
| ← | +QIPOPEN: 3,0 |
| | |
| → | AT+QIPSEND=1 |
| ← | >#recv ">" then input data, Ctrl+Z(0x1A) Terminate input and send |
| ← | +QIPSEND:1,9 |
| ← | OK |
| | |
| ← | RECV FROM:1,47.99.180.198,38888,18<br>11111111111111111 |
| | |
| → | AT+QIPSENDEX=3,"31320D0A" |
| ← | +QIPSENDEX:3,4 |
| ← | OK |
| | |
| ← | RECV FROM:3,112.80.248.75,443,28 |

| | |
|---|---|
| | HTTP/1.1 400 Bad Request |
| | |
| ← | +QIPCLOSEURC: 3 |

## 7.14 err code

| err code | Description |
|---|---|
| 0 | SUCCESS |
| 550 | UNKNOWN |
| 551 | OPERATION_BLOCKED |
| 552 | INVALID_PARAMETERS |
| 553 | MEMORY_NOT_ENOUGH |
| 554 | CREATE_SOCKET_FAILED |
| 555 | OPERATION_NOT_SUPPORTED |
| 556 | SOCKET_BIND_FAILED |
| 557 | SOCKET_LISTEN_FAILED |
| 558 | SOCKET_WRITE_FAILED |
| 559 | SOCKET_READ_FAILED |
| 560 | SOCKET_ACCEPT_FAILED |
| 561 | OPEN_PDP_CONTEXT_FAILED |
| 562 | CLOSE_PDP_CONTEXT_FAILED |
| 563 | SOCKET_IDENTITY_HAS_BEEN_USED |
| 564 | DNS_BUSY |
| 565 | DNS_PARSE_FAILED |
| 566 | SOCKET_CONNECT_FAILED |
| 567 | SOCKET_HAS_BEEN_CLOSED |
| 568 | OPERATION_BUSY |
| 569 | OPERATION_TIMEOUT |
| 570 | PDP_CONTEXT_BROKEN_DOWN |
| 571 | CANCEL_SEND |
| 572 | OPERATION_NOT_ALLOWED |
| 573 | APN_NOT_CONFIGURED |

| | |
|---|---|
| 574 | PORT_BUSY |

# Chapter 8. FTP

## 8.1 AT+QFTPCFG Configure Parameters for FTP(S) Server

### Description

The command is used to configure FTP(S) server, user account, file type, transfer mode and context ID. If the Write Command only executes one parameter, it will query the current settings.

### Syntax

| Command | Response |
|---|---|
| AT+QFTPCFG=? | +QFTPCFG: "account",<username>,<password><br>+QFTPCFG: "filetype",(0,1)<br>+QFTPCFG: "transmode",(0,1)<br>+QFTPCFG: "contextid",(1,16)<br>+QFTPCFG: "rsptimeout",(20-180)<br>+QFTPCFG: "ssltype",(0,1)<br>+QFTPCFG: "sslctxid",(0,1)<br><br>OK |
| AT+QFTPCFG="account"[,<username>,<password>] | If <username> and <password> are not omitted:<br>OK<br>or<br>+CME ERROR:<err><br><br>If <username> and <password> are both omitted, query the current settings:<br>+QFTPCFG: "account",<username>,<password><br><br>OK |
| AT+QFTPCFG="filetype"[,<file_type>] | If <file_type> is not omitted:<br>OK<br>Or<br>+CME ERROR:<err><br><br>If <file_type> is omitted, query the current settings:<br>+QFTPCFG: "filetype",<file_type><br><br>OK |
| AT+QFTPCFG="transmode"[,<transmode>] | If <transmode> is not omitted:<br>OK<br>Or<br>+CME ERROR: <err><br><br>If <transmode> is omitted, query the current settings:<br>+QFTPCFG: "transmode",<transmode> |

| | |
|---|---|
| | OK |
| AT+QFTPCFG="contextid"[,<contextID>] | If <contextID> is not omitted:<br>OK<br>Or<br>+CME ERROR: <err><br><br>If <contextID> is omitted, query the current settings:<br>+QFTPCFG: "contextid",<contextID><br><br>OK |
| AT+QFTPCFG="rsptimeout"[,<timeout>] | If <timeout> is not omitted:<br>OK<br>Or<br>+CME ERROR: <err><br><br>If <timeout> is omitted, query the current settings:<br>+QFTPCFG: "rsptimeout",<timeout><br><br>OK |
| AT+QFTPCFG="ssltype"[,<ssltype>] | If <ssltype> is not omitted:<br>OK<br>Or<br>+CME ERROR: <err><br><br>If <ssltype> is omitted, query the current settings:<br>+QFTPCFG: "ssltype",<ssltype><br><br>OK |
| AT+QFTPCFG="sslctxid"[,<sslctxid>] | If <sslctxid> is not omitted:<br>OK<br>Or<br>+CME ERROR: <err><br><br>If <sslctxid> is omitted, query the current settings:<br>+QFTPCFG: "sslctxid",<sslctxid><br><br>OK |
| Maximum Response Time | 36s |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <usename> | | String type. The user name for authentication. The maximum size of the parameter is 255 bytes. |
| <password> | | String type. The password for authentication. The maximum size of the parameter is 255 bytes. |

| | | |
|---|---|---|
| <contextID | 1-16 | Integer type. The PDP context ID. The range is 1-16, and the default value is 1. Itshould be activated by AT+QIACT before using QFTPOPEN. |
| <file_type> | 0-1 | Integer type. The type of transferred data.<br>0---Binary type<br>1---ASCII type |
| <transmode> | 0-1 | Integer type. Whether the FTP(S) server or client listens on a port for data connection.<br>0--- Active mode, the module will listen on a port for data connection<br>1--- Passive mode, FTP(S) server will listen on a port for data connection |
| <timeout> | 20-180 | Integer type. The range is 20-180, and the default value is 90. Unit: second. Generally, it is the timeout value for most +QFTPXXX: xx,xx commands after the "OK" result code is returned, except AT+QFTPPUT/QFTPGET/QFTPLST/QFTPNLST commands. The rules for these four commands are shown as below:<br><br>a) When the command has been sent, but "CONNECT" has not been outputted yet, this parameter indicates the maximum interval time for "CONNECT" to be outputted after the command has been sent.<br><br>b) When the module has entered into data mode, this parameter indicates the maximum interval time between two packets of received/transmitted data.<br><br>c) When the <local_name> is not "COM:", it indicates the maximum interval time between two packets of received/transmitted data. |
| <ssltype> | 0-1 | Integer type. The module works as FTP client or FTPS client.<br>0--- FTP client<br>1---FTPS client |
| <sslctxid> | 0-5 | Integer type. The SSL context ID. The range is 0-5, and the default value is 0. Customers should configure the SSL parameters by AT+QSSLCFG. |
| <err> | | Integer type. The error code of the operation. |

**NOTE:**

**During FTPS operation, <transmode> must be set into 1 because FTPS does not support active mode currently.**

**Example**

```
AT+QFTPCFG="XX","XX","XX"
OK
```

## 8.2 AT+QFTPOPEN Login to FTP(s) Server

**Description**

The command is used to login to FTP(S) server. The PDP context should be activated by AT+QIACT first. "+QFTPOPEN: <err>,<protocol_error>" indicates the operation result of AT+QFTPOPEN and it should be outputted within <timeout> configured by AT+QFTPCFG.

**Syntax**

| Command | Response |
|---|---|
| AT+QFTPOPEN=? | +QFTPOPEN= <hostname>,<port><br><br>OK |
| AT+QFTPOPEN=<hostname>[,<port> ] | +QFTPOPEN: <err>,<protocol_error><br>Or<br>+CME ERROR: <err> |
| Maximum Response Time | 36s |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <hostname> | | String type. The IP address or domain name of the FTP(S) server. The maximum size of the parameter is 200 bytes. |
| <port> | 21 | Integer type. The port of the FTP(S) server. The default value is 21. |
| <err> | | Integer type. The error code of the operation. |
| <protocol_error> | | Integer type. For reference only. Indicates the original error code from FTP(S) server which is defined in FTP(S) protocol. |

**NOTE:**

**Please note that the ports of FTPS and FTP server are different. The port of FTPS server depends on FTPS server provider, and it is 990 usually.**

**Example**

```
AT+QFTPOPEN="XX.XX.XX.XX",21
+QFTPOPEN: 0,230

OK
```

## 8.3 AT+QFTPCWD Configure the Current Directory on FTP(S) Server

**Description**

The command is used to configure the current directory on FTP(S) server. If “OK” is returned, “+QFTPCWD: <err>,<protocol_error>” should be outputted within <timeout> configured by AT+QFTPCFG. All the files and directory operation will be configured in the current directory.

**Syntax**

| Command | Response |
|---|---|
| AT+QFTPCWD=? | +QFTPCWD: <path_name><br><br>OK |
| AT+QFTPCWD=<path_name> | OK<br><br>+QFTPCWD: <err>,<protocol_error><br>Or<br>+CME ERROR: <err> |
| Maximum Response Time | 36s |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <path_name> | | String type. A directory path on FTP(S) server. The maximum size of the parameter is 255 bytes. The root path of FTP(S) server is “/”. |
| <err> | | Integer type. The error code of the operation. |
| <protocol_err> | | Integer type. For reference only. Indicates the original error code from FTP(S) server which is defined in FTP(S) protocol. |

**Example**

```
AT+QFTPCWD=?
+QFTPCWD:  <pathname>

OK

AT+QFTPCWD="/"
+QFTPCWD: 0,250

OK
```

## 8.4 AT+QFTPPWD Get the Current Directory on FTP(S) Server

### Description

The command is used to get the current directory on FTP(S) server. If "OK" is returned, "+QFTPPWD: 0,<path_name>" or "+QFTPPWD: <err>,<protocol_error>" should be outputted within <timeout> configured by AT+QFTPCFG.

### Syntax

| Command | Response |
|---|---|
| AT+QFTPPWD=? | +QFTPPWD:<br><br>OK |
| AT+QFTPPWD | OK<br><br>If successfully got, response:<br>+QFTPPWD: 0,<path_name><br><br>If failed to get, response:<br>+QFTPPWD: <err>,<protocol_error><br>Or<br>+CME ERROR: <err> |
| Maximum Response Time | 36s |

### Defined values

| Parameter | values | Explain |
|---|---|---|
| <path_name> | | String type. A directory path on FTP(S) server. The maximum size of the parameter is 255 bytes. The root path of FTP(S) server is "/". |
| <err> | | Integer type. The error code of the operation. |
| <protocol_error> | | Integer type. For reference only. Indicates the original error code from FTP(S) server which is defined in FTP(S) protocol. |

### Example

```
AT+QFTPPWD
+QFTPPWD

OK
```

## 8.5 AT+QFTPSIZE Get the File Size on FTP(S) Server

### Description

The command is used to get the file size on FTP(S) server. If “OK” is returned, “+QFTPSIZE: 0,<file_size>” or “+QFTPSIZE: <err>,<protocol_error>” should be outputted within <timeout> configured by AT+QFTPCFG. Otherwise, the FTP(S) connection should be disconnected, and the network should be deactivated and reactivated.

**Syntax**

| Command | Response |
|---|---|
| AT+QFTPSIZE=? | +QFTPSIZE: <filename><br><br>OK |
| AT+QFTPSIZE=<file_name> | OK<br><br>If successfully got, response:<br>+QFTPSIZE: 0,<file_size><br><br>If failed to get, response:<br>+QFTPSIZE: <err>,<protocol_error><br>Or<br>+CME ERROR: <err> |
| Maximum Response Time | 36s |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <filename> | | String type. The file name on FTP(S) server. The maximum size of the parameter is 255 bytes. |
| <file_size> | | Integer type. The size of file on FTP(S) server. Unit: byte. |
| <err> | | Integer type. The error code of the operation. |
| <protocol_error> | | Integer type. For reference only. Indicates the original error code from FTP(S) server which is defined in FTP(S) protocol. |

**Example**

```
AT+QFTPSIZE=?
+QFTPSIZE: <filename>

OK
AT+QFTPSIZE="123.txt"
+QFTPSIZE: 0,105

OK
```

## 8.6 AT+QFTPGET Download a File from FTP(S) Server

**Description**

The command is used to download a file from FTP(S) server. The file can be outputted via COM port by AT+QFTPGET="filename","COM:". The module will enter into data mode on receiving data from server. After the data is transferred completely, the module will exit from data mode automatically and output “QFTPGET: 0,<transferlen>”. The file can be saved to RAM, UFS or SD by AT+QFTPGET="filename","RAM:localname", AT+QFTPGET="filename","UFS:localname" or AT+QFTPGET="filename","SD:localname". After the file has been transferred completely, the module will output “+QFTPGET: 0,<transferlen>”.

If the <local_name> is “COM:”, “CONNECT” should be outputted within <timeout> configured by AT+QFTPCFG. If the <local_name> is not “COM:”, “OK” will be outputted first, and then “+QFTPGET: 0,<transferlen>” will be outputted after data has been transferred completely.

If the module has entered into data mode or the <local_name> is not “COM:”, the <timeout> configured by AT+QFTPCFG indicates the maximum interval time between two packets of received/transmitted data.

**Syntax**

| Command | Response |
|---|---|
| AT+QFTPGET=? | +QFTPGET: <file_name>,<local_name>,<startpos>,<downloadlen><br><br>OK |
| AT+QFTPGET=<file_name>,"COM:"[,<startpos>[,<downloadlen>]] | CONNECT<br><Output file data><br>OK<br><br>If successfully downloaded, response:<br>+QFTPGET: 0,<transferlen><br><br>If failed to download, response:<br>+QFTPGET: <err>,<protocol_error><br>Or<br>+CME ERROR: <err> |
| AT+QFTPGET=<file_name>,<local_name>[,<startpos >] | OK<br><br>If successfully downloaded, response: |

| | |
|---|---|
| <local_name> is not “COM:” | +QFTPGET: 0,<transferlen><br><br>If failed to download, response:<br>+QFTPGET: <err>,<protocol_error><br>Or<br>+CME ERROR: <err> |
| Maximum Response Time | 36s |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <file_name> | | String type. The file name on FTP(S) server. The maximum size of the parameter is 255 bytes |
| <local_name> | | String type. The local file name. The maximum size of the parameter is 60 bytes. If it is “COM:”, the file data will be outputted via COM port. If it is not “COM:”, the data will be saved to RAM, UFS or SD. It is strongly recommended to save the file in RAM, UFS or SD. |
| <startpos> | | Integer type. The start position of the file to be downloaded. The default value is 0. |
| <downloadlen> | | Integer type, the length of data to be downloaded. It is valid only if <local_name> is “COM:”. If this parameter is specified, the module will output <downloadlen> bytes to COM port and exit from data mode. And data can be downloaded from <startpos> by the same AT command if there is any data left. Unit: byte. |
| <transferlen> | | Integer type. The length of actually transferred data. If it is less than <downloadlen>, it means the whole file is transferred completely. Unit: byte. |
| <err> | | Integer type. The error code of the operation. |
| <protocol_error> | | Integer type. For reference only. Indicates the original error code from FTP(S) server which is defined in FTP(S) protocol. |

**Example**

```
AT+QFTPGET="123.txt","dst.txt"

OK

+QFTPURC: 1          // +QFTPURC: status      /*0: FTP command close, 1: FTP data close*/

+QFTPGET: 0,105
```

## 8.7 AT+QFTPCLOSE Log out from FTP(S) Server

### Description

The command is used to log out from FTP(S) server. If “ OK ” is returned, “ +QFTPCLOSE: <err>,<protocol_error> ” should be outputted within <timeout> configured by AT+QFTPCFG. Otherwise, the network should be deactivated and reactivated.

### Syntax

| Command | Response |
|---|---|
| AT+QFTPCLOSE=? | +QFTPCLOSE:<br><br>OK |
| AT+QFTPCLOSE | OK<br><br>+QFTPCLOSE: <err>,<protocol_error><br>Or<br>+CME ERROR: <err> |
| Maximum Response Time | 36s |

### Defined values

| Parameter | values | Explain |
|---|---|---|
| <err> | | Integer type. The error code of the operation. |
| <protocol_error> | | Integer type. For reference only. Indicates the original error code from FTP(S) server which is defined in FTP(S) protocol. |

### Example

```
AT+QFTPCLOSE
+QFTPCLOSE: 0,0

OK

+QFTPURC: 0
```

# Chapter 9. SSL (for cat1 modules)

## 9.1 AT+SSLCFG configure SSL config

### Description

The command is used to configure the ssl config.

### Syntax

| | |
|---|---|
| Command | AT+SSLCFG=? |
| Response | +SSLCFG:(params_name),(sslctxID),[value]<br>OK |
| Command | AT+SSLCFG="sslversion",<sslctxID>[,<sslversion>] |
| Response | If <sslversion> is omitted, query the value of "sslversion" with specified <sslctxID>, and response:<br>+SSLCFG: "sslversion",<sslctxID>,<sslversion><br><br>Else, set the value of "version" with specified <sslctxID>, and response:<br>OK<br>or<br>ERROR |
| Command | AT+SSLCFG="ciphersuite",<sslctxID>[,<ciphersuites>] |
| Response | If <ciphersuites> is omitted, query the value of "ciphersuite" with specified <sslctxID>, and response:<br>+SSLCFG: "ciphersuite",<sslctxID>,<ciphersuites><br>Else, set the value of "ciphersuite" with specified <sslctxID>, and response:<br>OK<br>or<br>ERROR |
| Command | AT+SSLCFG="cacert",<sslctxID>[,<cacertpath>] |
| Response | If <cacertpath> is omitted, query the value of "cacert" with specified <sslctxID>, and response:<br>+SSLCFG: "cacert",<sslctxID>,<cacertpath><br><br>Else, set the value of "cacert" with specified <sslctxID>, and response:<br>OK<br>or<br>ERROR |
| Command | AT+SSLCFG="clientcert",<sslctxID>[,<client_cer_tpath>] |
| Response | If <client_cert_path> is omitted, query the value of "clientcert" with specified <sslctxID>, and response:<br>+SSLCFG: "clientcert",<sslctxID>,<client_cert_path><br><br>Else, set the value of "clientcert" with specified <sslctxID>, and response:<br>OK<br>or<br>ERROR |
| Command | AT+SSLCFG="clientkey",<sslctxID>[,<client_key_path>] |
| Response | If <client_key_path> is omitted, query the value of "clientkey" with |

| | |
|---|---|
| | specified <sslctxID>, and response:<br>+SSLCFG: "clientkey",<sslctxID>,<client_key_path><br><br>Else, set the value of "clientkey" with specified <sslctxID>, and response:<br>OK<br>or<br>ERROR |
| Command | AT+SSLCFG="seclevel",<sslctxID>[,<seclevel>] |
| Response | If <seclevel> is omitted, query the value of "seclevel" with specified <sslctxID>, and response:<br>+SSLCFG: "seclevel",<sslctxID>,<seclevel><br><br>Else, set the value of "clientkey" with specified <sslctxID>, and response:<br>OK<br>or<br>ERROR |
| Command | AT+SSLCFG="ignorelocaltime",<sslctxID>[,<ignoreltime>] |
| Response | If <ignoreltime> is omitted, query the value of "ignorelocaltime" with specified <sslctxID>, and response:<br>+SSLCFG: "ignorelocaltime",<sslctxID>,<ignoreltime><br><br>Else, set the value of "ignorelocaltime" with specified <sslctxID>, and response:<br>OK<br>or<br>ERROR |
| Command | AT+SSLCFG="negotiatetime",<sslctxID>[,<negotiate_time>] |
| Response | If <negotiate_time> is omitted, query the value of "negotiatetimeout" with specified <sslctxID>, and response:<br>+SSLCFG: "negotiatetimeout",<sslctxID>,<negotiate_time><br><br>Else, set the value of "negotiatetimeout" with specified <sslctxID>, and response:<br>OK<br>or<br>ERROR |
| Command | AT+SSLCFG="hostname",<sslctxID>[,<hostname>] |
| Response | If <hostname> is omitted, query the value of "hostname" with specified <sslctxID>, and response:<br>+SSLCFG: "hostname",<sslctxID>,<hostname><br><br>Else, set the value of "hostname" with specified <sslctxID>, and response:<br>OK<br>or<br>ERROR |

Defined values

| Parameter | values | Explain |
|---|---|---|
| <sslctxID> | 1-6 | For TCP SSL<br><sslctxID> is bound to <socketID> of "+QIPOPEN" |

| | | |
|---|---|---|
| | 88,153 | For MQTT SSL<br><sslctxID> :88<br>For HTTP SSL<br><sslctxID> :153 |
| <sslversion> | 0-4 | Numeric type, SSL Version<br>0: SSL3.0<br>1: TLS1.0<br>2: TLS1.1<br>3: TLS1.2<br>4: All |
| <ciphersuites> | 0<br>1 | Numeric type, SSL Ciphersuites<br>0x0035 TLS_RSA_WITH_AES_256_CBC_SHA<br>0x002F TLS_RSA_WITH_AES_128_CBC_SHA<br>0x0005 TLS_RSA_WITH_RC4_128_SHA<br>0x0004 TLS_RSA_WITH_RC4_128_MD5<br>0x000A TLS_RSA_WITH_3DES_EDE_CBC_SHA<br>0x003D TLS_RSA_WITH_AES_256_CBC_SHA256<br>0xFFFF Support all |
| <ignoreltime> | | Numeric format, indicates how to deal with expired certificate<br>0: Care about time check for certification<br>1: Ignore time check for certification |
| <cacertpath> | | String format<br>The path of the trusted CA certificate. |
| <client_cert_path> | | String format<br>The path of the client certificate. |
| <client_key_path> | | String format<br>The path of the client private key. |
| <seclevel> | 0-1 | Numeric format, the authentication mode<br>0: No authentication<br>1: Manage server authentication |
| <negotiate_time> | 10-300 | Numeric format, indicates max timeout used in SSL negotiate stage, value<br>Rang is 10-300, unit: seconds, default: 300. |

**Example**

```
TCP SSL Example
AT+QIPCSGP=1,1,"3GNET"
OK

AT+QIPACT=1
OK
+QIPACTURC: 1,1,"10.189.42.254"
```

```
AT+SSLCFG="hostname",1,"fanyi.baidu.com"    // SSL sslctxID is 1

OK

AT+SSLCFG="hostname",1
+SSLCFG:"hostname",1,fanyi.baidu.com

OK
AT+QIPOPEN=1,1,"SSL","fanyi.baidu.com",443,0,1 // tcp socketID is bound to ssl
sslctxCID

OK

+QIPOPEN: 1,0
AT+QIPSEND=1,112
>POST https://fanyi.baidu.com HTTP/1.1
Host: fanyi.baidu.com
Content-Type: text/html
Content-Length: 4

中国
+QIPSEND:1,112

OK

RECV FROM:1,112.80.255.4,443,1429
HTTP/1.1 200 OK
Content-Type: text/html; charset=utf-8
Date: Mon, 01 Feb 2021 06:23:52 GMT
P3p: CP=" OTI DSP COR IVA OUR IND COM "
Server: Apache
Set-Cookie: BAIDUID=919C87361757EB85C456978E51B730D6:FG=1; expires=Tue,
01-Feb-22 06:23:52 GMT; max-age=31536000; path=/; domain=.baidu.com; version=1
Tracecode: 14323008982697339658020114
```

Vary: Accept-Encoding
Transfer-Encoding: chunked
.....

# Chapter 10. SMS

## 10.1 AT+CSMS Select Message Service

### Description

The command is used to select messaging service <service>.

### Syntax

| Command | Response |
|---|---|
| AT+CSMS=<service> | +CSMS:<mt>,<mo>,<bm><br><br>OK |
| AT+CSMS? | +CSMS:<sevice>,<mt>,<mo>,<bm><br><br>OK |
| AT+CSMS=? | +CSMS:(<service>list)<br><br>OK |
| Maximum Response Time | 300ms |

### Defined values

| Parameter | values | Explain |
|---|---|---|
| <service> | 0 | SMS at command is compatible with GSM phase 2. |
| | 1 | SMS at command is compatible with GSM phase 2+. |
| <mt> | 0 | Mobile terminated messages is not supported. |
| | 1 | Mobile terminated messages is supported. |
| <mo> | 0 | Mobile originated messages is not supported. |
| | 1 | Mobile originated messages is supported. |
| <bm> | 0 | Broadcast type messages is not supported. |
| | 1 | Broadcast type messages is supported. |

### Example

```
AT+CSMS=?
+CSMS: (0,1)

OK
AT+CSMS?
+CSMS: 0,1,1,1

OK
```

## 10.2 AT+CPMS Preferred Message Storage

### Description

The command is used to select memory storages <mem1>, <mem2> and <mem3> to be used for reading, writing, etc.

### Syntax

| Command | Response |
|---|---|
| AT+CPMS=<mem1>[,<mem2>[,<mem3>]] | +CPMS:<used1>,<total1>,<used2>,<total2>,<used3>,<total3><br><br>OK |
| AT+CPMS? | +CPMS:<mem1>,<used1>,<total1>,<mem2>,<used2>,<total2>,<mem3>,<used3>,<total3><br><br>OK |
| AT+CPMS=? | +CPMS:(<mem1>list),(<mem2>list),(<mem3>list)<br><br>OK |
| Maximum Response Time | 300ms |

### Defined values

| Parameter | values | Explain |
|---|---|---|
| <mem1> | “SM” | SIM message storage,memory from which messages are read and deleted |
| | “ME”or“MT” | FLASH message storage,memory from which messages are read and deleted |
| | “SR” | Status report storage,memory from which messages are read and deleted |
| <mem2> | “SM” | SIM message storage,memory to which writing and sending operations are made |
| | “ME”or“MT” | FLASH message storage,memory to which writing and sending operations are made |
| | “SR” | Status report storage,memory to which writing and sending operations are made |
| <mem3> | “SM” | SIM message storage,memory to which received SMS is preferred to be stored |
| | “ME” | FLASH message storage,memory to which received SMS is preferred to be stored |
| <usedx> | | Number of messages currently in <memX>. |

| | | |
|---|---|---|
| <totalx> | | Total number of message locations in <memX>. |

**Example**

```
AT+CPMS?
+CPMS: "SM",1,40,"SM",1,40,"SM",1,40

OK
AT+CPMS="ME","ME","ME"
+CPMS: 0,180,0,180,0,180

OK
```

## 10.3 AT+CMGF Select Short Message Format

**Description**

The command is used to specify the input and output format of the short messages.

**Syntax**

| Command | Response |
|---|---|
| AT+CMGF[=<mode>] | OK |
| AT+CMGF? | +CMGF: <mode><br><br>OK |
| AT+CMGF=? | +CMGF: (<mode>list)<br><br>OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <mode> | 0 | PDU mode (default when implemented) |
| | 1 | Text mode |

**Example**

```
AT+CMGF=?
+CMGF: (0-1)

OK
```

```
AT+CMGF=1
OK
```

## 10.4 AT+CSCA SMS Service Center Address

**Description**

This command write command updates the SMSC address when mobile originated SMS are transmitted. In text mode, the setting is used by write commands. In PDU mode, setting is used by the same commands, but only when the length of the SMSC address is coded into the <pdu> parameter which equals to zero

**Syntax**

| Command | Response |
|---|---|
| AT+CSCA=<sca>[,<tosca>] | OK |
| AT+CSCA? | +CSCA:<sca>,<tosca><br><br>OK |
| AT+CSCA=? | OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <sca> | | Service center address. |
| <tosca> | | Type of service center address. |

**Example**

```
AT+CSCA="+8613010314500"
OK
AT+CSCA?
+CSCA: "+8613010314500",145

OK
```

## 10.5 AT+CNMI New Message Indications to TE

**Description**

The command is used to select the procedure how receiving of new messages from the network is indicated to the TE when TE is active, e.g. DTR signal is ON.

**Syntax**

| Command | Response |
|---|---|
| AT+CNMI=<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]] | OK |
| AT+CNMI? | +CNMI:<mode>,<mt>,<bm>,<ds>,<bfr><br><br>OK |
| AT+CNMI=? | +CNMI:(<mode>list),(<mt>list),(<bm>list),(<ds>list),(<bfr>list)<br><br>OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <mode> | 0 | Buffer unsolicited result codes in the TA. If TA result code buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications. |
| | 1 | Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved (e.g. in on-line data mode). Otherwise forward them directly to the TE. |
| | 2 | Buffer unsolicited result codes in the TA when TA-TE link is reserved (e.g. in on-line data mode) and flush them to the TE after reservation. Otherwise forward them directly to the TE |
| <mt> | 0 | No SMS-DELIVER indications are routed to the TE. |
| | 1 | If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE using unsolicited result code: +CMTI: <mem3>,<index>. |
| | 2 | SMS-DELIVERs (except class 2 messages and messages in the message waiting indication group (store message)) are routed directly to the TE using unsolicited result code: +CMT:[<alpha>],<length><CR><LF><pdu> (PDU mode enabled);<br>or |

| | | |
|---|---|---|
| | | +CMT:<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<br><CR> <LF><data> |
| | 3 | Class 3 SMS-DELIVERs are routed directly to TE using unsolicited result codes defined in <mt>=2. Messages of other data coding schemes result in indication as defined in <mt>=1. |
| <bm> | 0 | No CBM indications are routed to the TE. |
| | 2 | New CBMs are routed directly to the TE using unsolicited result code:<br>+CBM: <length><CR><LF><pdu> (PDU mode enabled);<br>or<br>+CBM:<br><sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data> (text mode enabled) |
| <ds> | 0 | No SMS-STATUS-REPORTs are routed to the TE. |
| | 1 | SMS-STATUS-REPORTs are routed to the TE using unsolicited result code:<br>+CDS: <length><CR><LF><pdu> (PDU mode enabled);<br>or<br>+CDS: <fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st> (text mode enabled) |
| | 2 | If SMS-STATUS-REPORT is stored into ME/TA, indication of the memory location is routed to the TE using unsolicited result code: +CDSI: <mem3>,<index>. |
| <bfr> | 0 | TA buffer of unsolicited result codes defined within this command is flushed to the TE when <mode> 1 to 3 is entered |
| | 1 | TA buffer of unsolicited result codes defined within this command is cleared when <mode> 1 to 3 is entered. |

**Example**

```
AT+CNMI=1,1
OK
```

```
+CMTI: "SM",20                //short message is coming
```

## 10.6 AT+CMGW Write Message to Memory

### Description

AT+CMGW write and execution commands store a short message from TE to memory storage <mem2>. Memory location <index> of the stored message is returned.

### Syntax

| Command | Response |
|---|---|
| AT+CMGW=<da>[,<toda>[,<stat>]]<br>text to send <ctrl-Z/ESC><br>(TEXT mode) | +CMGW: <index><br><br>OK |
| AT+CMGW=<length>[,<stat>]<br>PDU to send <ctrl-Z/ESC><br>(PDU mode) | +CMGW: <index><br><br>OK |
| AT+CMGW=? | OK |
| Maximum Response Time | 300ms |

### Defined values

| Parameter | values | | Explain |
|---|---|---|---|
| <da> | | | Destination-Address. |
| <toda> | | | TP-Destination-Address, Type-of-Address octet in integer format. (when first character of <da> is +(IRA 43) default is 145, otherwise default is 129). |
| <stat> | text | “REC UNREAD” | Received unread messages |
| | | “REC READ” | Received read messages |
| | | “STO UNSENT” | Stored unsent messages |
| | | “STO SENT” | Stored sent messages |
| | | “ALL” | All messages |
| | PDU | 0 | Received unread messages |
| | | 1 | Received read messages |
| | | 2 | Stored unsent messages |
| | | 3 | Stored sent messages |
| | | 4 | All messages |

### Example

```
AT+CMGF=1
OK
AT+CMGW="1381627xxxx"
> TEST
+CMGW: 1

OK
AT+CMGF=0
OK
AT+CMGW=20
> 0011000D9168311826x7xxFx0000AA05D4E2941A03
+CMGW: 2

OK
```

## 10.7 AT+CMSS Send Message From Storage

**Description**

The command is used to send message with location value <index> from preferred message storage to the network.

**Syntax**

| Command | Response | |
|---|---|---|
| AT+CMSS=<index>[,<da>[,<toda>]] | text | +CMSS:<mr><br><br>OK |
| | PUD | +CMSS:<mr>[,<ackpdu>]<br><br>OK |
| Maximum Response Time | | 120s,determined by network |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <index> | | Value in the range of location numbers supported by the associated memory and start with zero. |
| <da> | | Destination-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently |

| | | |
|---|---|---|
| | | selected TE character set, type of address given by <toda>. |
| <toda> | | Type of recipient address. |
| <mr> | | Message reference. |
| <scts> | | Service center time stamp. |
| <ackpdu> | | Format is same for <pdu> in case of SMS, but without 3GPP TS 24.011 SC address field and parameter shall be bounded by double quote characters like a normal string type parameter. |

**Example**

```
AT+CMGF=1
OK
AT+CMSS=8
+CMSS: 32

OK
AT+CMGF=0
OK
AT+CMSS=9
+CMSS: 33

OK
```

## 10.8 AT+CMGS Send Message

**Description**

AT+CMGS write command sends a short message from TE to network (SMS- After invoking the write command, wait for the prompt “>” and then start to write the message. Then enter <CTRL-Z> to indicate the ending of PDU and begin to send the message. Sending can be cancelled by giving <ESC> character. Abortion is acknowledged with “OK”, though the message will not be sent. The message reference <mr> is returned to the TE on successful message delivery. The value can be used to identify message upon unsolicited delivery status report result code.

**Syntax**

| Command | Response |
|---|---|
| AT+CMGS=<da>[,<toda>]<br>text to send <ctrl-Z/ESC><br>(TEXT mode) | +CMGS: <mr><br><br>OK |
| AT+CMGS=<length><br>PDU to send <ctrl-Z/ESC><br>(PDU mode) | +CMGS: <mr><br><br>OK |
| Maximum Response Time | 120s,determined by network |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <da> | | Destination-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by <toda>. |
| <toda> | | TP-Destination-Address, Type-of-Address octet in integer format. (when first character of <da> is +(IRA 43) default is 145, otherwise default is 129). |
| <length> | | Message length. |
| <mr> | | Message reference. |

**Example**

```
AT+CMGF=1          //TEXT mode
OK
AT+CMGS="1381627XXXX"
> TEST
+CMGS: 34

OK
AT+CMGF=0        //PDU mode
OK
AT+CMGS=20
> 0011000D9168311826X7XXFX0000AA05D4E2941A03
+CMGS: 35

OK
```

## 10.9 AT+CMGL List Messages

### Description

Execution command returns messages with status value <stat> from preferred message storage <mem1> to the TE.

Test command shall give a list of all status values supported by the TA.

### Syntax

| Command | | Response |
|---|---|---|
| AT+CMGL[=<stat>] | PDU | +CMGL: <index>,<stat>,[<alpha>],<length><br><CR><LF><PDU><br><br>OK |
| | text | +CMGL: <index>,<stat>,<da>/<oa>,[<alpha>],[<scts>]<br>[,<tooa>/<toda>,<length>]<CR><LF><data>[...]]<br><br>OK |
| AT+CMGL=? | | +CMGL: (<stat>list)<br><br>OK |
| Maximum Response Time | | 300ms |

### Defined values

| Parameter | values | | Explain |
|---|---|---|---|
| <index> | | | Value in the range of location numbers supported by the associated memory and start with zero. |
| <stat> | text | “REC UNREAD” | Received unread messages |
| | | “REC READ” | Received read messages |
| | | “STO UNSENT” | Stored unsent messages |
| | | “STO SENT” | Stored sent messages |
| | | “ALL” | All messages |
| | PDU | 0 | Received unread messages |
| | | 1 | Received read messages |
| | | 2 | Stored unsent messages |
| | | 3 | Stored sent messages |
| | | 4 | All messages |

| | | |
|---|---|---|
| <alpha> | | String type alphanumeric representation of <da> or <oa> corresponding to the entry found in MT phonebook; implementation of this feature is manufacturer specific; used character set should be the one selected with command Select TE Character Set AT+CSCS. |
| <length> | | Message length. |
| <da> | | Destination-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by <toda>. |
| <oa> | | Originating-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by <tooa>. |
| <scts> | | Service center time stamp. |
| <tooa> | | Type of originating address. |
| <toda> | | Type of recipient address. |

**Example**

```
AT+CMGF=1       //TEXT mode
OK
AT+CMGL="ALL"
+CMGL: 1,"STO UNSENT","13816278107"
TESTE1

+CMGL: 2,"STO SENT","13816278107"
TEST2

+CMGL: 3,"REC READ","15618593215",,"19:11:1215:54:10 GMT+8"
```

```
TEST3

+CMGL: 4,"REC UNREAD","15618593215",,"19:11:1215:55:12 GMT+8"
TEST4

OK
AT+CMGF=0          //PDU mode
AT+CMGL=4
+CMGL: 1,2,,19
010021000B813118268701F7000006D4E2945A8C01

+CMGL: 2,3,,18
010021000B813118268701F7000005D4E2942A03

+CMGL: 3,1,,24
0891683108200115F2240BA15116583912F500009111215145012305D4E2943A03

+CMGL: 4,1,,24
0891683108200115F2240BA15116583912F500009111215155212305D4E2944A03

OK
```

## 10.10 AT+CMGR Read Message

**Description**

The command returns message with location value <index> from message storage <mem1> to the TE.

**Syntax**

| Command | | Response |
|---|---|---|
| AT+CMGR=<index> | text | +CMGR:<stat>,<number>,[<reserved>],<time><br><data><br><br>OK |
| | PDU | +CMGR:<stat>,[<alpha>],<length><br><pdu><br><br>OK |

| | | |
|---|---|---|
| AT+CMGR=? | | OK |
| Maximum Response Time | | Depends on the length of message content. |

**Defined value**

| Parameter | values | | Explain |
|---|---|---|---|
| <index> | | | Value in the range of location numbers supported by the associated memory and start with zero. |
| <stat> | text | “REC UNREAD” | Received unread messages |
| | | “REC READ” | Received read messages |
| | | “STO UNSENT” | Stored unsent messages |
| | | “STO SENT” | Stored sent messages |
| | | “ALL” | All messages |
| | PDU | 0 | Received unread messages |
| | | 1 | Received read messages |
| | | 2 | Stored unsent messages |
| | | 3 | Stored sent messages |
| | | 4 | All messages |
| <number> | | | Sender number |
| <reserved> | | | null |
| <time> | | | TP-Discharge-Time in time-string format :”yy/MM/dd , hh:mm:ss+zz”,where characters indicate year (two last digits),month,day,hour,minutes,seconds and time zone. |
| <alpha> | | | String type alphanumeric representation of <da> or <oa> corresponding to the entry found in MT phonebook; implementation of this feature is manufacturer specific; used character set should be the one selected with command Select TE Character Set AT+CSCS. |
| <length> | | | Message length. |

**Example**

```
AT+CMGF=1
```

```
OK
AT+CNMI=1,1
OK

+CMTI: "SM",8
AT+CMGR=8
+CMGR: "REC UNREAD","15618593215",,"19:11:1216:19:33 GMT+8"
TEST10

OK
AT+CMGF=0
OK

+CMTI: "SM",9
AT+CMGR=9
+CMGR: 0,,25
0891683108200115F1240BA15116583912F500009111216102612306D4E2941A8B01

OK
```

## 10.11 AT+CMGD Delete Message

**Description**

The command is used to delete message from preferred message storage <mem1> location <index>.

**Syntax**

| Command | Response |
|---|---|
| AT+CMGD=<index>[,<delflag>] | OK |
| AT+CMGD=? | OK |
| Maximum Response Time | 300ms |

**Defined value**

| Parameter | values | Explain |
|---|---|---|
| <index> | 0-255 | Value in the range of location numbers supported by the associated memory and start with zero. |

| | | |
|---|---|---|
| <delflag> | 0 | Delete the message specified in <index>.(or omitted) |
| | 1 | Delete all read messages from preferred message storage. |
| | 2 | Delete all read messages from preferred message storage and sent mobile originated messages. |
| | 3 | Delete all read messages from preferred message storage, sent and unsent mobile originated messages |
| | 4 | Delete all messages from preferred message storage including unread messages. |

**Example**

```
AT+CMGL="ALL"
+CMGL: 1,"REC UNREAD","15618593215",,"19:11:1216:24:21 GMT+8"
TEST1

+CMGL: 2,"REC UNREAD","15618593215",,"19:11:1216:24:38 GMT+8"
TEST2

+CMGL: 3,"REC UNREAD","15618593215",,"19:11:1216:24:51 GMT+8"
TEST3

OK
AT+CMGD=3       //Delete the third message
OK
AT+CMGL="ALL"
+CMGL: 1,"REC READ","15618593215",,"19:11:1216:24:21 GMT+8"
TEST1

+CMGL: 2,"REC READ","15618593215",,"19:11:1216:24:38 GMT+8"
TEST2

OK
AT+CMGD=0,4 //Delete all text messages
OK
AT+CMGL="ALL"
OK
```

# Chapter 11. HTTP&HTTPS

## 11.1 AT+HTTPSND Send http and https request

### Description

This command is used to send http and https request.

### Syntax

| Command | Response |
|---|---|
| AT+HTTPSND=? | +HTTPSND: (0-2),(0-10),(0-1)...<br><br>OK |
| AT+HTTPSND=<method>,<ssl_enable>,<hex_mode>,<url>[,<header>[,<body>]] | OK<br>+HTTPSND:<result> |
| Maximum Response Time | determined by network and file size |

### Defined values

| Parameter | values | Explain |
|---|---|---|
| <method> | 0-1 | HTTP request method<br>0 --- GET<br>1 --- POST |
| <ssl_enable> | | 0 //default 0<br>https: url Start with “https://” |
| <hex_mode> | | Header and body data format for ASCII or HEX format when HTTP send and receive.<br>0 --- ASCII<br>1 --- HEX |
| <url> | | Max 256 char<br>Start with “http:// or https:// ” |
| <header> | | Max 256 char, multiple headers are divided by -H, and the format is as follows：<br>ASCII ： " - H 'Connection=keep-alive' - H 'Content-Type=multipart/form-data'"<br>HEX ：<br>"E28093482027436F6E6E656374696F6E3D6B6565702D616C6976652720E28093482027436F6E74656E742D547970653D6D756C7469706172742F666F726D2D6461746127" |
| <body> | | Max 512 char |
| <result> | 0-1 | 0 --- successed<br>1 --- failed |

**NOTE:**

1. Execute the command AT+CGDCONT? to query if IP address is obtained before executing the command AT+HTTPSND .
2. In LTE mode, the PDN is automatically activated after successful registration, and can be used the command AT+HTTPSND directly. In WCDMA mode, you need to execute AT+CGACT=1,5 to activate the PDN, and then execute the command AT+HTTPSND after obtaining the IP address.

**Example**

```
HTTP:
AT+CGDCONT?
+CGDCONT: 5,"IP","wonet.mnc001.mcc460.gprs","10.226.177.186",0,0,,,,

OK

ASCII mode:
AT+HTTPSND=0,0,0,http://203.156.205.55:8080/web/123.txt,"-H 'Connection: keep-alive'"
OK
+HTTPSND: 0

+HTTPRCV:291,HTTP/1.1 200 OK
Content-Type: text/plain
Content-Length: 46
Accept-Ranges: bytes
Server: HFS 2.3k
Set-Cookie: HFS_SID_=0.812043825862929; path=/; HttpOnly
ETag: 9ACD6BA42FA6D11C5E58D8CB8A5C93C8
Last-Modified: Mon, 25 Nov 2019 06:52:28 GMT
Content-Disposition: filename="123.txt";




+HTTPRCV:46,AAAAAAAAAA
BBBBBBBBBB
```

```
CCCCCCCCCC
DDDDDDDDDD
HEX mode:
AT+HTTPSND=0,0,1,http://203.156.205.55:8080/web/123.txt,"2D482027436F6E6E656374696F6E3A206B6565702D616C69766527"
OK
+HTTPSND: 0

+HTTPRCV:291,485454502F312E3120323030204F4B0D0A436F6E74656E742D547970653A20746578742F706C61696E0D0A436F6E74656E742D4C656E6774683A2034360D0A4163636570742D52616E6765733A2062797465730D0A5365727665723A2048465320322E336B0D0A5365742D436F6F6B69653A204846535F5349445F3D302E383232333303637313330383933343733B20706174683D2F3B20487474704F6E6C790D0A455461673A203941343643424134324641364431314335453538443843423841354339334338 0D0A4C6173742D4D6F6469666965643A204D6F6E2C203235204E6F76203230313920303633A35323A323820474D540D0A436F6E74656E742D446973706F736974696F6E3A2066696C656E616D653D223132332E747874223B0D0A0D0A

+HTTPRCV:46,41414141414141414141410D0A424242424242424242420D0A434343434343434343430D0A44444444444444444444

HTTPS:

ASCII mode：
AT+HTTPSND=0,0,0,https://www.baidu.com,"-H 'Accept:*/*'"
OK
+HTTPSND: 0

+HTTPRCV:1024,HTTP/1.0 200 OK
Accept-Ranges: bytes
Cache-Control: no-cache
Content-Length: 227
Content-Type: text/html
Date: Mon, 25 Nov 2019 07:33:47 GMT
```

```
P3p: CP=" OTI DSP COR IVA OUR IND COM "
P3p: CP=" OTI DSP COR IVA OUR IND COM "
Pragma: no-cache
Server: BWS/1.1
Set-Cookie: BD_NOT_HTTPS=1; path=/; Max-Age=300
Set-Cookie: BIDUPSID=FA9AA01407412E3F018C0F3FA2B9EC29; expires=Thu,
31-Dec-37 23:55:55 GMT; max-age=2147483647; path=/; domain=.baidu.com
Set-Cookie: PSTM=1574667227; expires=Thu, 31-Dec-37 23:55:55 GMT;
max-age=2147483647; path=/; domain=.baidu.com
Set-Cookie: BAIDUID=FA9AA01407412E3F83015F87A948EF1B:FG=1;
max-age=31536000; expires=Tue, 24-Nov-20 07:33:47 GMT; domain=.baidu.com; path=/;
version=1; comment=bd
Strict-Transport-Security: max-age=0
Traceid: 157466722704209249381256035197990312646 3
X-Ua-Compatible: IE=Edge,chrome=1

<html>
<head>
    <script>
        location.replace(location.href.replace("https://","http://"));
    </script>
</head>
<body>
    <noscript><meta http-equiv="refresh" content="

+HTTPRCV:58,0;url=http://www.baidu.com/"></noscript>
</body>
</html>

HEX mode：
AT+HTTPSND=0,0,1,https://www.baidu.com,"2D4820274163636570743A2A2F2A27"
OK
+HTTPSND: 0
```

+HTTPRCV:512,485454502F312E3020323030204F4B0D0A4163636570742D52616E67657
33A2062797465730D0A43616368652D436F6E74726F6C3A206E6F2D63616368650D0A4
36F6E74656E742D4C656E6774683A203232370D0A436F6E74656E742D547970653A2074
6578742F68746D6C0D0A446174653A204D6F6E2C203235204E6F7620323031392030373
A33333A323120474D540D0A5033703A2043503D22204F54492044535020434F522049564
1204F555220494E4420434F4D20220D0A5033703A2043503D22204F54492044535020434
F5220495641204F555220494E4420434F4D20220D0A507261676D613A206E6F2D6361636
8650D0A5365727665723A204257532F312E310D0A5365742D436F6F6B69653A2042445F
4E4F545F48545450533D313B20706174683D2F3B204D61782D4167653D3330300D0A536
5742D436F6F6B69653A20424944455505349443D434433434642393346414630393030434
5324641384235443536303043394538 3B20657870697265733D5468752C2033312D4465632
D33372032333A35353A353520474D543B206D61782D6167653D323134373438333634373
B20706174683D2F3B20646F6D61696E3D2E62616964752E636F6D0D0A5365742D436F6
F6B69653A205053544D3D3135373436363732303 13B20657870697265733D5468752C203
3312D4465632D33372032333A35353A3535

+HTTPRCV:512,20474D543B206D61782D6167653D323134373438333634373B207061746
83D2F3B20646F6D61696E3D2E62616964752E636F6D0D0A5365742D436F6F6B69653A2
042414944554944 3D434433434642393346414630393030433431304432323033393245393
4641363A46473D313B206D61782D6167653D333135333630303B20657870697265733D
5475652C2032342D4E6F762D32302030373A33333A323120474D543B20646F6D61696E3
D2E62616964752E636F6D3B20706174683D2F3B2076657273696F6E3D313B20636F6D6
D656E743D62640D0A5374726963742D5472616E73706F72742D53656375726974793A20
6D61782D6167653D300D0A547261636569643A203135373436363732303130343231323
5323631383135323430363735373133303935383331303634 0D0A582D55612D436F6D70617
469626C653A2049453D456467652C6368726F6D653D310D0A0D0A3C68746D6C3E0D0A
3C686561643E0D0A093C7363726970743E0D0A09096C6F636174696F6E2E7265706C616
365286C6F636174696F6E2E687265662E7265706C6163652822687474703A2F2F222C22
687474703A2F2F2229293B0D0A093C2F7363726970743E0D0A3C2F686561643E0D0A3C
626F64793E0D0A093C6E6F7363726970743E3C6D6574612068747470 2D65717569763D2
272656672657368222 0636F6E74656E743D22

+HTTPRCV:58,303B75726C3D687474703A2F2F7777772E62616964752E636F6D2F223E3
C2F6E6F7363726970743E0D0A3C2F626F64793E0D0A3C2F68746D6C3E

## 11.2 AT+HTTPINIT Init the HTTP Service

### Description

This command is used to init the HTTP Service.

### Syntax

| Command | Response |
|---|---|
| AT+HTTPINIT | OK |
| AT+HTTPINIT? | OK |
| AT+HTTPINIT=? | OK |
| Maximum Response Time | 3s,determined by network |

### Example

```
AT+HTTPINIT
OK
```

## 11.3 AT+HTTPSSL Enable the SSL for HTTP

### Description

This command is used to enable the ssl for HTTP.

### Syntax

| Command | Response |
|---|---|
| AT+HTTPSSL=<mode> | OK |
| AT+HTTPSSL? | +HTTPSSL: <mode><br>OK |
| AT+HTTPSSL=? | +HTTPSSL: (0-1)<br>OK |
| Maximum Response Time | 3s,determined by network |

### Defined value

| Parameter | values | Explain |
|---|---|---|
| <mode> | 0-1 | 0 --- disable the ssl (default)<br>1 --- enable the ssl |

### Example

```
AT+HTTPSSL=1
OK
```

## 11.4 AT+HTTPPARA Configure the HTTP Parameters

### Description

This command is used to configure the http parameters.

### Syntax

| Command | Response |
|---|---|
| AT+HTTPPARA=<HTTPParamTag>,<HTTPParamValue> | OK |
| AT+HTTPPARA? | +HTTPPARA: list of <HTTPParamTag>:<HTTPParamValue>)<br>OK |
| AT+HTTPPARA=? | +HTTPPARA: "HTTPParamTag","HTTPParamValue"<br>OK |
| Maximum Response Time | 3s,determined by network |

### Defined value

| Parameter | values | Explain <HTTPParamValue> |
|---|---|---|
| <HTTPParamTag> | "CID" | 0 --- default,not need to specify it by default<br>1-6 --- It needs to be activated with "+QIPACT" before it can be used |
| | "URL" | HTTP or HTTPS URL<br>"http://server/path"<br>Or<br>"https://server/path" |
| | "UA" | User-Agent<br>Defaule:_MODULE |
| | "USERDATA" | User-defined Http Header,Use \r\n to separate multiple items<br>"Content-Type:application/json\r\nAPPKEY:FW" |

### Example

```
AT+HTTPPARA="UA","_MODULE"
OK
AT+HTTPPARA="URL","http://xxxxxxxxx/HTTP/1111.amr"
```

```
OK
//Add user-defined http headers, maybe need to replace "\r\n" with "\\r\\n" on some PC tools
AT+HTTPPARA="USERDATA","Content-Type:application/json\r\nAPPKEY:FW"
OK
```

## 11.5 AT+HTTPDATA Input HTTP DATA

### Description

This command is used to input the http data for POSTmethod.

### Syntax

| Command | Response |
|---|---|
| AT+HTTPDATA=<size>,<time> | DOWNLOAD<br><br>OK |
| AT+HTTPDATA? | OK |
| AT+HTTPDATA=? | +HTTPDATA: (0-102400),(1000-120000)<br>OK |
| Maximum Response Time | 300ms,determined by network |

### Defined value

| Parameter | values | Explain |
|---|---|---|
| <size> | 0-102400 | 0 --- clean the HTTP post Data<br>1-102400 --- data Size |
| <time> | 1000-120000 | Timeout time(ms) |

### Example

```
AT+HTTPDATA=10,1000
DOWNLOAD
11111111111
```

OK

## 11.6 AT+HTTPACTION HTTP active method

### Description

This command is used to active the http cmd.

**Syntax**

| Command | Response |
|---|---|
| AT+HTTPACTION=<method> | OK<br>+HTTPACTION: <method>,<httpCode>,<dataLen> |
| AT+HTTPACTION=? | +HTTPACTION: (0-2)<br>OK |
| Maximum Response Time | 3s,determined by network |

**Defined value**

| Parameter | values | Explain |
|---|---|---|
| <method> | 0-2 | 0 --- GET<br>1 --- POST<br>2 --- HEAD |
| <httpCode> | | 100 --- Continue<br>101 --- Switching Protocols<br>200 --- OK<br>201 --- Created<br>202 --- Accepted<br>203 --- Non-Authoritative Information<br>204 --- No Content<br>205 --- Reset Content<br>206 --- Partial Content<br>300 --- Multiple Choices<br>301 --- Moved Permanently<br>302 --- Found<br>303 --- See Other<br>304 --- Not Modified<br>305 --- Use Proxy<br>307 --- Temporary Redirect<br>400 --- Bad Request<br>401 --- Unauthorized<br>402 --- Payment Required<br>403 --- Forbidden<br>404 --- Not Found |

| | | |
|---|---|---|
| | | 405 --- Method not Allowed<br>406 --- Not Acceptable<br>407 --- Proxy AuthenticationRequired<br>408 --- Request Time-out<br>409 --- Conflict<br>410 --- Gone<br>411 --- Length Required<br>412 --- Precondition Failed<br>413 --- Request Entity Too Large<br>414 --- Request-URI Too Large<br>415 --- Unsupported Media Type<br>416 --- Requested range notsatisfiable<br>417 --- Expectation Failed<br>500 --- Internal Server Error<br>501 --- Not Implemented<br>502 --- Bad Gateway<br>503 --- Service Unavailable<br>504 --- Gateway Time-out<br>505 --- HTTP Version not supported<br>600 --- Not HTTP PDU<br>601 --- Network Error<br>602 --- No memory<br>603 --- DNS Error<br>604 --- Stack Busy<br>605 --- SSL setup failed<br>606 --- SSL alert error |
| <dataLen> | | HTTP download data len |

**Example**

```
AT+HTTPACTION=0          //0：GET，  1：PUT

OK

+HTTPACTION: 0,200,1460
```

```
+HTTPACTION: 0,200,2048

.....

+HTTPACTION: 0,200,2048

+HTTPACTION: 0,200,2048

+HTTPACTION: 0,200,212
```

## 11.7 AT+HTTPREAD Read the HTTP Data

### Description

This command is used to read the http data.

### Syntax

| Command | Response |
|---|---|
| AT+HTTPREAD=<start_address>,<byte_size> | +HTTPREAD:<date_len><br><data><br>OK |
| AT+HTTPREAD | +HTTPREAD:<date_len><br><data><br>OK |
| AT+HTTPREAD=? | OK |
| Maximum Response Time | 300ms,determined by network |

### Defined value

| Parameter | values | Explain |
|---|---|---|
| <start_address> | 0-262144 | Http data start address |
| <byte_size> | 1-262144 | Http data read bytes |

### Example

```
AT+HTTPREAD=103500,2048
+HTTPREAD: 4
```

```
1234
OK
```

## 11.8 AT+HTTPHEAD Read HTTP Header

### Description

This command is used to read the http header.

### Syntax

| Command | Response |
|---|---|
| AT+HTTPHEAD | +HTTPREAD:<date_len><br><data><br>OK |
| AT+HTTPHEAD=? | OK |
| Maximum Response Time | 300ms,determined by network |

### Defined value

| Parameter | values | Explain |
|---|---|---|
| <date_len> | | http header len |

### Example

```
AT+HTTPHEAD
+HTTPHEAD: 279
Content-Disposition: attachment; filename="1111.amr";
Last-Modified: Fri, 26 Feb 2021 05:42:35 GMT
ETag: A2D2F99124BFA321EA69B492928C586F
Set-Cookie: HFS_SID_=0.646366314496845; path=/; HttpOnly
Server: HFS 2.3m
Accept-Ranges: bytes
Content-Type: application/octet-stream

OK
```

## 11.9 AT+HTTPTERM Termination the HTTP Service

### Description

This command is used to termination HTTP Service.

**Syntax**

| Command | Response |
|---|---|
| AT+HTTPTERM | OK |
| AT+HTTPTERM=? | OK |
| Maximum Response Time | 300ms,determined by network |

**Example**

```
AT+HTTPTERM
OK
```

## 11.10 HTTP Example

**HTTP GET：**

```
AT+HTTPINIT
OK
AT+HTTPPARA="URL","http://xx.99.180.xxx/HTTP/1111.amr"
OK
AT+HTTPACTION=0          //0：GET，  1：PUT
OK

+HTTPACTION: 0,200,1460
+HTTPACTION: 0,200,2048
.....
+HTTPACTION: 0,200,2048
+HTTPACTION: 0,200,2048
+HTTPACTION: 0,200,212


AT+HTTPREAD?
+HTTPREAD: 103504
OK

AT+HTTPREAD=0,2048
+HTTPREAD: 2048
#!AMR
```

.....呔　@?损$%9 龅嫱拫寺 k?湘
3n 枷 41 鹅 s?c
OK

AT+HTTPREAD=103500,2048
+HTTPREAD: 4
m 儢
OK

AT+HTTPTERM
OK

**HTTP POST：**
AT+HTTPINIT
OK
AT+HTTPSSL=1
OK
AT+SSLCFG="hostname",153,"fanyi.baidu.com"
OK
AT+HTTPPARA="URL","https://fanyi.baidu.com"
OK
AT+HTTPDATA=4,3000
DOWNLOAD
中国
OK
AT+HTTPACTION=1
OK

+HTTPACTION: 1,200,207296

AT+HTTPREAD=207280,10
+HTTPREAD: 10

</html>

OK

# Chapter 12. Voice Call (for cat1 modules)

## 12.1 AT+VTYPE Set type of speech

**Description**

The command is used to set the type of voice. The default value is 2,which indicated the type of speech is PCM.

**Syntax**

| Command | Response |
|---|---|
| AT+VTYPE=<type> | OK |
| AT+VTYPE? | +VTYPE: <type><br><br>OK |
| AT+VTYPE=? | +VTYPE: (2,3,4)<br><br>OK |

Defined values

| Parameter | values | Explain |
|---|---|---|
| <type> | 2,3,4 | 2 --- PCM speech<br>3 --- Analog speech<br>4 --- Analog speech |

**Example**

```
AT+VTYPE?
+VTYPE: 2

OK
AT+VTYPE=?
+VTYPE: (2,3,4)

OK
AT+VTYPE=3
OK
```

## 12.2 ATD Dial Command

**Description**

The dial command can be used to set up outgoing voice and data calls.

**Syntax**

| Command | Response |
| --- | --- |
| ATD[digits][I/i][;] | OK |

**Defined values**

| Parameter | values | Explain |
| --- | --- | --- |
| [digits] | 0-9, *, #, + | Ready (ME allows commands from TA/TE) |
| [I/i] | I | Activates CLIR |
| | i | Deactivates CLIR |
| [;] | | The termination character ";" is mandatory to set up voice calls. |

**Examples**

```
ATD10010;
OK

^ORIG:0,0

^CONN:0,0
```

## 12.3 ATA Call Answer

**Description**

Connects the module to an incoming voice or data call indicated by a "RING" URC.

**Syntax**

| Command | Response |
| --- | --- |
| ATA | OK |

**Examples**

```
RING

RING

ATA
OK

^CONN:3,0
```

## 12.4 AT+CHUP Hang Up Call

### Description

The command is used to cancel voice calls.

### Syntax

| Command | Response |
|---|---|
| AT+CHUP | OK |

### Examples

```
ATD18521XXXXXX;
OK

^ORIG:1,0

^CONN:1,0
AT+CHUP
OK

^CEND:1,25,29
```

## 12.5 AT+CLCC List Current Calls

### Description

Return list of current calls of ME. If command succeeds but no calls are available, no information response is sent to TE.

### Syntax

| Command | Response |
|---|---|
| AT+CLCC | +CLCC:<idx>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[,<alpha>[,<priority>]]]<br><br>OK |
| AT+CLCC=? | OK |

### Defined values

| Parameter | values | Explain |
|---|---|---|
| <idx> | | Integer type, call identification number, this number can be used in +CHLD command operations. |
| <dir> | 0 | Mobile originated (MO) call |

| | | |
|---|---|---|
| | 1 | Mobile terminated (MT) call |
| <stat> | 0 | Active |
| | 1 | Held |
| | 2 | Dialing (MO call) |
| | 3 | Alerting (MO call) |
| | 4 | Incoming (MT call) |
| | 5 | Waiting (MT call) |
| <mode> | 0 | Voice |
| | 1 | Data |
| | 2 | Fax |
| <mpty> | 0 | Call is not one of multiparty (conference) call parties |
| | 1 | Call is one of multiparty (conference) call parties |
| <number> | | String type phone number in format specified by <type>. |
| <type> | 129 | Unknown type |
| | 145 | International number type |
| | 161 | National type |
| <alpha> | | String type alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with command Select TE Character Set AT+CSCS. |
| <priority> | | |

**Example**

```
ATD138XXXXXXXX;
OK

^ORIG:2,0

AT+CLCC
+CLCC: 1,0,3,0,0,"138XXXXXXXX",129

OK

^CONN:2,0
```

```
AT+CLCC
+CLCC: 1,0,0,0,0,"138XXXXXXXX",129

OK
AT+CHUP
OK
```

^CEND:2,5,29

## 12.6 AT+CLVL Loudspeaker volume level

**Description**

The command is used to select the volume of the internal loudspeaker audio output of the device.

**Syntax**

| Command | Response |
|---|---|
| AT+CLVL=<level> | OK |
| AT+CLVL? | +CLVL: <level><br><br>OK |
| AT+CLVL=? | +CLVL: (0-5)<br><br>OK |

**Defined value**

| Parameter | values | Explain |
|---|---|---|
| <level> | 0-5 | Integer type value which represents loudspeaker volume level. The range is from 0 to 5, and 0 represents the lowest loudspeaker . |

**Example**

```
AT+CLVL?
+CLVL: 3


OK
AT+CLVL=4
```

OK

## 12.7 AT+CMICGAIN Microphone gain control

**Description**

The command controls microphone gain. The default value is 4.

**Syntax**

| Command | Response |
|---|---|
| AT+CMICGAIN=<level> | OK |
| AT+CMICGAIN? | +CMICGAIN: <level><br><br>OK |
| AT+CMICGAIN=? | +CMICGAIN: (0-8)<br><br>OK |

Defined value

| Parameter | values | Explain |
|---|---|---|
| <level> | 0-8 | MIC gain level,default value is 4 |

**Example**

AT+CMICGAIN?

+CMICGAIN: 6

OK

AT+CMICGAIN=?

+CMICGAIN: (0-8)

OK

AT+CMICGAIN=5

OK

## 12.8 AT+VMUTE Speaker mute control

**Description**

This command is used to control the loudspeaker to mute and unmute during a voice call or a video call which is connected. If there is not a connected call, write command can’t be used.When all calls are disconnected, the Module sets the subparameter as 0 automatically.

**Syntax**

| Command | Response |
|---|---|
| AT+VMUTE=<mode> | OK |
| AT+VMUTE? | +VMUTE: <mode><br><br>OK |
| AT+VMUTE=? | +VMUTE: (0-1)<br><br>OK |

**Defined value**

| Parameter | values | Explain |
|---|---|---|
| <mode> | 0-1 | 0 --- mute off<br>1 --- mute on |

**Example**

```
AT+VMUTE?
+VMUTE: 0

OK
AT+VMUTE=?
+VMUTE: (0-1)

OK
AT+VMUTE=1
OK
```

## 12.9 AT+CMUT Microphone mute control

**Description**

This command is used to enable and disable the uplink voice muting during a voice call or a video call which is connected. If there is not a connected call, write command can’ t be used.

When all calls are disconnected, the Module sets the subparameter as 0 automatically.

**Syntax**

| Command | Response |
|---|---|
| AT+CMUT=<mode> | OK |
| AT+CMUT? | +CMUT: <mode><br><br>OK |
| AT+CMUT=? | +CMUT: (0-1) |

| | |
|---|---|
| | OK |

**Description**

| Parameter | values | Explain |
|---|---|---|
| <mode> | 0-1 | 0 --- mute off<br>1 --- mute on |

**Example**

```
AT+CMUT?
+CMUT: 0

OK
AT+CMUT=?
+CMUT: (0-1)

OK
AT+CMUT=1
OK
```

## 12.10 RING Incoming Call Bell

**Description**

When the mobile terminal has called, the MT will be periodic (T=6s) to report this instruction to TE.

**Syntax**

| Command | Response |
|---|---|
| | RING |

**Example**

```
RING

RING

ATA
OK

^CONN:3,0
```

## 12.11 ^ORIG Outgoing Call Bell

**Description**

MT is initiating a call.

**Syntax**

| Command | Response |
|---|---|
| | ^ORIG:<call_id>,<call_type> |

**Defined value**

| Parameter | values | Explain |
|---|---|---|
| <call_id> | | Integer type, call identification number, this number can be used in +CHLD command operations. |
| <call_type> | 0 | Voice call |
| | 9 | Emergency call |

**Example**

```
ATD10010;
OK

^ORIG:4,0

^CONN:4,0
```

## 12.12 ^CONN Call Answering Indication

**Description**

When the call is switched on, the MT reports to the TE to indicate that the current state has changed to a call state.

**Syntax**

| Command | Response |
|---|---|
| | ^CONN:<call_id>,<call_type> |

**Defined value**

| Parameter | values | Explain |
|---|---|---|
| <call_id> | | Integer type, call identification number, this number can be used in +CHLD command operations. |
| <call_type> | 0 | Voice call |
| | 9 | Emergency call |

**Example**

```
ATD10010;
OK

^ORIG:4,0

^CONN:4,0
```

## 12.13 ^CEND Call End Indication

**Description**

When the call is over, MT reports this instruction to the TE, informs the TE that the reason of call end and the call duration .

**Syntax**

| Command | Response |
|---|---|
| | ^CEND:<call_id>,<duration>,<end_status> |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <call_id> | | Integer type, call identification number, this number can be used in +CHLD command operations. |
| <duration> | | Call duration , in seconds |
| <end_status> | | Call end reason |

**Example**

```
ATD10010;
OK

^ORIG:4,0

^CONN:4,0

AT+CHUP
OK

^CEND:4,4,29
```

## 12.14 ATS0 Automatic Answer

**Description**

The S-parameter command controls the automatic answering feature of the Module. If set to 000, automatic answering is disabled, otherwise it causes the Module to answer when the incoming call indication (RING) has occurred the number of times indicated by the specified value; and the setting will not be stored upon power-off, i.e. the default value will be restored after restart.

**Syntax**

| Command | Response |
|---|---|
| ATS0=<n> | OK |
| ATS0? | <n><br><br>OK |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <n> | 0 | Automatic answering mode is disable. |
| | 1~255 | Enable automatic answering on the ring number specified. |

**Example**

```
ATS0=3
OK

RING

RING

RING
```

^CONN:11,0

## 12.15 AT^NVAUTO Automatic Answer

**Description**

The command used to set whether to automatically answer.

**Syntax**

| Command | Response |
|---|---|

| | |
|---|---|
| AT^NVAUTO=<mode> | OK |
| AT^NVAUTO? | ^NVAUTO: <mode><br><br>OK |

**Defined value**

| Parameter | values | Explain |
|---|---|---|
| <mode> | 0 | Automatic answering mode is disable. |
| | 1 | Automatic answering mode is enable. |

**Example**

```
AT^NVAUTO=1
OK
RING


^CONN:11,0
```

## 12.16 AT^DTMF Dual Tone Multi–Frequency

**Description**

Call state, by signaling to send DTMF value to the network side.

**Syntax**

| Command | Response |
|---|---|
| AT^DTMF=<number>[,<on_length>[,<off_length>] ] | OK<br>or<br>+CME ERROR:<err> |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <number> | 0-9,*,#,A,B,C,D | DTMF value |
| <on_length> | 0 | Press |
| | 1 | Lift |
| | 95,150,200,250,300,350 | DTMF tone duration, in ms |
| <off_length> | hold | Interval time of DTMF tone |

**Example**

```
ATD02150177336;       //Dialled the operator.
OK
^ORIG:4,0
```

```
^CONN:4,0
AT^DTMF=8                    //Dial 8006 extension
OK
AT^DTMF=0
OK
AT^DTMF=0
OK
AT^DTMF=6
OK
AT+CHUP
OK

^CEND:4,13,29
```

## 12.17 AT+SETVOLTE Set VOLTE

**Description**

The command is used to open or close VOLTE， it take effect after the restart using the command AT+CFUN=1,1.

**Syntax**

| Command | Response |
|---|---|
| AT+SETVOLTE=<mode> | OK |
| AT+SETVOLTE? | +SETVOLTE: <mode><br><br>OK |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <mode> | 0 | Close VOLTE |
| | 1 | Open VOLTE (default) |

**Example**

```
AT+SETVOLTE?
+SETVOLTE: 1

OK
AT+SETVOLTE=0
```

```
OK
AT+CFUN=1,1
OK
AT+SETVOLTE?
+SETVOLTE: 0

OK
```

# Chapter 13. GPS (for cat1 modules)

## 13.1 AT+CGPS Start/Stop GPS session

### Description

This command is used to start or stop GPS session.

After the module is powered on and the module port appears, please wait at least 20s and then send the command AT+CGPS=1.

### Syntax

| Command | Response |
|---|---|
| AT+CGPS=<on/off> | OK |
| AT+CGPS? | +CGPS: <on/off><br><br>OK |
| AT+CGPS=? | +CGPS: (0-1)<br><br>OK |

### Defined value

| Parameter | values | Explain |
|---|---|---|
| <on/off> | 0-1 | 0 --- off stop GPS session<br>1 --- on start GPS session |

### Example

```
AT+CGPS=1
OK
.....
$GNRMC,070019.00,A,3110.4244,N,12136.0802,E,1.718,,220620,,,A,V*18
$GNGGA,070019.00,3110.4244,N,12136.0802,E,1,09,1.30,85.3,M,,M,,*6E
$GNGLL,3110.4244,N,12136.0802,E,070019.00,A,A*70
$GNGSA,A,3,03,04,05,09,19,193,195,,,,,,1.73,1.30,1.14,1*07
$GNGSA,A,3,19,21,,,,,,,,,,,,1.73,1.30,1.14,4*0C
$GPGSV,3,1,09,03,08,040,35,04,22,074,29,05,13,220,27,09,31,114,22,0*66
$GPGSV,3,2,09,19,72,020,22,17,67,088,,12,,,19,193,59,126,26,0*68
$GPGSV,3,3,09,195,72,099,28,0*6E
$GBGSV,1,1,02,19,44,054,38,21,19,201,33,0*7F
$GNVTG,,T,,M,1.718,N,3.181,K,A*39
```

## 13.2 AT+CGPSINFO Get GPS fixed position information

### Description

This command is used to get current position information.

### Syntax

| Command | Response |
|---|---|
| AT+CGPSINFO | +CGPSINFO: [<lat>],[<N/S>],[<log>],[<E/W>],[<date>],[<UTC time>],[<alt>],[<speed>],[<course>]<br><br>OK |
| AT+CGPSINFO? | +CGPSINFO: 0<br><br>OK |
| AT+CGPSINFO=? | +CGPSINFO: (0-255)<br><br>OK |

### Defined value

| Parameter | values | Explain |
|---|---|---|
| <lat> | | Latitude of current position. Output format is ddmm.mmmmmm |
| <N/S> | | N/S Indicator, N=north or S=south |
| <log> | | Longitude of current position. Output format is dddmm.mmmmmm |
| <E/W> | | E/W Indicator, E=east or W=west |
| <date> | | Date. Output format is ddmmyy |
| <UTC time> | | UTC Time. Output format is hhmmss.s |
| <alt> | | MSL Altitude. Unit is meters. |
| <speed> | | Speed Over Ground. Unit is knots |
| <course> | | Course. Degrees. |

### Example

```
AT+CGPSINFO
+CGPSINFO: 3110.3880,N,12136.0362,E,,075345.00,12.1,0.341,

OK
```

## 13.3 AT+CGPSPORT Configure output port for NMEA sentence

### Description

The command is used to choose the output port for NMEA sentence.

**Syntax**

| Command | Response |
|---|---|
| AT+CGPSPORT=<port> | OK |
| AT+CGPSPORT? | +CGPSPORT: <port><br><br>OK |
| AT+CGPSPORT=? | +CGPSPORT: (list of supported <port>s)<br><br>OK |

**Defined value**

| Parameter | values | Explain |
|---|---|---|
| <port> | 0-3 | 0 --- Temporary does not support<br>1 --- Modem port<br>2 --- AT port<br>3 --- UART port |

**Example**

```
AT+CGPSPORT?
+CGPSPORT: 1

OK
AT+CGPSPORT=?
+CGPSPORT: (0,3)

OK
AT+CGPSPORT=2
OK
```

## 13.4 AT+CGPSPOS Read NMEA information

**Description**

The command is used to read NMEA information.

**Syntax**

| Command | Response |
|---|---|
| AT+CGPSPOS=<mode> | $<NMEA>,<nmea information><br><br>OK |
| AT+CGPSPOS? | OK |
| AT+CGPSPOS=? | +CGPSPOS: (0-5) |

| | |
|---|---|
| | OK |

**Defined value**

| Parameter | values | Explain |
|---|---|---|
| <mode> | 0,1 | 0 --- GNGGA<br>1 --- GNGSA<br>2 --- GPGSV<br>3 --- GNRMC<br>4 --- GPVTG<br>5 --- GNGLL |
| <nmea information> | | This information corresponds to NMEA. Please refer to section 15.10 for details. |

**Example**

```
AT+CGPSPOS=0
$GNGGA,075421.00,3110.3946,N,12136.0509,E,1,07,5.23,55.7,M,,M,,*6D

OK
AT+CGPSPOS=1
$GNGSA,A,3,19,,,,,,,,,,,,7.74,5.23,5.71,4*0F

OK
AT+CGPSPOS=2
$GPGSV,2,1,08,04,17,050,25,09,39,083,29,17,49,131,32,19,69,117,27,0*61
$GPGSV,2,2,08,05,33,235,,06,57,012,16,195,70,125,27,193,67,115,,0*6A
$GPGSV,1,1,0,
$GPGSV,1,1,0,

OK
```

## 13.5 NMEA message specification

### 13.5.1 GNRMC

Data format:

$GPRMC,<1>,<2>,<3>,<4>,<5>,<6>,<7>,<8>,<9>,<10>,<11>,<12>*<13><CR><LF>

| Data | Description |
|---|---|
| $GPRMC | Message ID |
| <1> | UTC time |
| <2> | Mode |

| | |
|---|---|
| | M --- Manual , forced to operate in 2D or 3D mode<br>A --- Allowed to automatically switch 2D/3D |
| <3> | Latitude ,format as ddmm.mmmm |
| <4> | N/S indicator, N-north ,S-south |
| <5> | Longitude , format as dddmm.mmmm |
| <6> | E/W indicator , E-east,W-west |
| <7> | Speed over ground |
| <8> | Course over ground |
| <9> | Date , format as ddmmyy |
| <10> | Magnetic variation |
| <11> | East/West indicator E-east or W-west |
| <12> | Mode<br>A --- Autonomous<br>D --- DGPS |
| <13> | checksum |
| <CR><LF> | End of message termination |

**Example**

$GNRMC,081425.00,A,3110.3946,N,12136.0186,E,0.432,,220620,,,A,V*1C

| name | Data | Description | Note |
|---|---|---|---|
| Message ID | $GNRMC | | |
| UTC time | 081425.00 | 16:14:25.00 | UTC+8h |
| Mode | A/V | Status<br>A=Data is valid<br>V=Invalid data | |
| Latitude | 3110.3946 | 31°10'23.676" | 0.3946×60=23.676" |
| N/S indicator | N | N-north | |
| Longitude | 12136.0186 | 121°36'1.116" | 0.0186×60=1.116" |
| E/W indicator | E | E-east | |
| Speed over ground | 0.432 | | |
| Course over ground | | | |
| Date | 220620 | 2020.6.22 | |
| Magnetic variation | | | |
| East/West indicator | | | |
| Mode | A | A --- Autonomous | |

| | | | |
|---|---|---|---|
| checksum | *27 | | |

## 13.5.2 GNGGA GPS Fixed Data

Data format:

$GNGGA,<1>,<2>,<3>,<4>,<5>,<6>,<7>,<8>,<9>,M,<10>,M,<11>,<12>*xx<CR><LF>

| Data | Description |
|---|---|
| $GNGGA | Message ID |
| <1> | UTC time , format as hhmmss.sss |
| <2> | Latitude ,format as ddmm.mmmm |
| <3> | N/S indicator, N-north ,S-south |
| <4> | Longitude , format as dddmm.mmmm |
| <5> | E/W indicator , E-east,W-west |
| <6> | GPS Status<br>0 --- invalid<br>1 --- valid |
| <7> | Satellites used |
| <8> | Horizontal dilution of precision |
| <9> | MSL altitude, Unit is meters |
| M | Unit of <9>,meters |
| <10> | Geoid separation, Unit is meters |
| M | Unit of <10>,meters |
| <11> | Age of Diff. Corr , null fields when DGPS is not used |
| <12> | Diff.Ref.Station ID |
| *xx | checksum |
| <CR><LF> | End of message termination |

**Example**

$GNGGA,081425.00,3110.3946,N,12136.0186,E,1,08,3.85,17.1,M,,M,,*64

| name | Data | Description | Note |
|---|---|---|---|
| Message ID | $GNGGA | | |
| UTC time | 081425.00 | 16:14:25.00 | UTC+8h |
| Latitude | 3110.3946 | 31°10'23.676" | 0.3946×60=23.676" |
| N/S Indicator | N | North Latitude | |

| | | | |
|---|---|---|---|
| Longitude | 12136.0186 | 121º36'1.116" | 0.0186×60=1.116" |
| E/W Indicator | E | East Longitude | |
| GPS Status | 1 | Valid | |
| Satellites used | 08 | Using 8 Satellites | |
| HDOP | 3.85 | Horizontal dilution of precision | |
| MSL altitude | 17.1 | 17.1m | |
| M | M | Meters | |
| Geoid separation | | | |
| M | M | Meters | |
| Age of Diff. Corr | null | | |
| Diff.Ref.Station ID | null | | |
| checksum | *60 | | |

### 13.5.3 GNGLL Geolocation information

Data format:

$GNGLL,<1>,<2>,<3>,<4>,<5>,<6>*hh<CR><LF>

| Data | Description |
|---|---|
| $GNGLL | Message ID |
| <1> | Latitude ,format as ddmm.mmmm |
| <2> | N/S indicator, N-north ,S-south |
| <3> | Longitude , format as dddmm.mmmm |
| <4> | E/W indicator , E-east,W-west |
| <5> | UTC time , format as hhmmss.sss |
| <6> | GPS Status<br>A --- valid<br>V --- invalid |
| *hh | checksum |
| <CR><LF> | End of message termination |

**Example**

$GNGLL,3110.3946,N,12136.0186,E,081425.00,A,A*7E

| name | Data | Description | Note |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Message ID | GNGLL | | |
| Latitude | 3110.3946 | 31°10'23.676" | 0.3946×60=23.676" |
| N/S Indicator | N | North Latitude | |
| Longitude | 12136.0186 | 121°36'1.116" | 0.0186×60=1.116" |
| E/W Indicator | E | East Longitude | |
| UTC time | 081425.00 | 16:14:25.00 | UTC+8h |
| GPS Status | A | Data is valid | |
| checksum | *7E | | |

### 13.5.4 GNGSA Current satellite information

Data format:

$GNGSA,<1>,<2>,<3>,<4>,<5>,<6>,<7>,<8>,<9>,<10>,<11>,<12>,<13>,<14>,<15>,<16>,<17>*<18><CR><LF>

| Data | Description |
|---|---|
| $GNGGA | Message ID |
| <1> | Mode 1<br>M --- Manual , forced to operate in 2D or 3D mode<br>A --- Allowed to automatically switch 2D/3D |
| <2> | Mode 2<br>1 --- Not available<br>2 --- 2D<br>3 --- 3D |
| <3> | Satellite used , SV on channel 1 |
| <4> | Satellite used , SV on channel 2 |
| <5> | Satellite used , SV on channel 3 |
| <6> | Satellite used , SV on channel 4 |
| <7> | Satellite used , SV on channel 5 |
| <8> | Satellite used , SV on channel 6 |
| <9> | Satellite used , SV on channel 7 |
| <10> | Satellite used , SV on channel 8 |
| <11> | Satellite used , SV on channel 9 |
| <12> | Satellite used , SV on channel 10 |
| <13> | Satellite used , SV on channel 11 |
| <14> | Satellite used , SV on channel 12 |

| | |
|---|---|
| <15> | PDOP (0.5 - 99.9) |
| <16> | HDOP (0.5 - 99.9) |
| <17> | VDOP (0.5 - 99.9) |
| <18> | checksum |
| <CR><LF> | End of message termination |

**Example**

$GNGSA,A,3,04,06,09,17,195,19,193,,,,,,5.12,3.85,3.37,1*0D

| name | Data | Description | Note |
|---|---|---|---|
| Message ID | $GNGSA | | |
| Mode 1 | A | Allowed to automatically switch 2D/3D | |
| Mode 2 | 3 | 3D | |
| Satellite used | 04 | SV on channel 1 | |
| Satellite used | 06 | SV on channel 2 | |
| ... | ... | ... | |
| Satellite used | | SV on channel 12 | |
| PDOP | 5.12 | Position Dilution of Precision | |
| HDOP | 3.85 | Horizontal Dilution of Precision | |
| VDOP | 3.37 | Vertical Dilution of Precision | |
| checksum | *0D | End of message termination | |

## 13.5.5 GPGSV GNSS Satellites in View

Data format:

$GPGSV,<1>,<2>,<3>,<4>,<5>,<6>,<7>,<4>,<5>,<6>,<7>,<4>,<5>,<6>,<7>,<4>,<5>,<6>,<7>*<8><CR><LF>

| Data | Description |
|---|---|
| $GPGSV | Message ID |
| <1> | Total number of GSV message to be sent in this group |
| <2> | Message number in this group of GSV message |
| <3> | Satellites in view |
| <4> | Satellite ID |
| <5> | Elevation |

| | |
|---|---|
| <6> | Azimuth |
| <7> | SNR （C/N0），dBHz |
| <8> | checksum |
| <CR><LF> | |

**Example**

$GPGSV,2,1,08,04,13,043,41,06,56,029,29,09,38,071,31,17,41,139,33,0*61

$GPGSV,2,2,08,19,61,133,27,05,40,243,,195,68,133,27,193,70,109,21,0*62

| name | Data | Description | Note |
|---|---|---|---|
| Message ID | $GPGSV | | |
| Number of message | 2 | Total number of GSV message is 4 | |
| Message number | 1 | Message number in this group of GSV message is 1 | |
| Satellites in view | 08 | Number of Satellites in view is 13 | |
| Satellite ID | 04 | Satellite ID | |
| Elevation | 13 | Elevation | |
| Azimuth | 043 | Azimuth | |
| SNR （C/N0） | 41 | 23dBHz | |
| checksum | *61 | | |

## 13.5.6 GBGSV BeiDou Satellites in View

Data format:

$GBGSV,<1>,<2>,<3>,<4>,<5>,<6>,<7>,<4>,<5>,<6>,<7>,<4>,<5>,<6>,<7>*<8><CR><LF>

| Data | Description |
|---|---|
| $GBGSV | Message ID |
| <1> | Total number of GSV message to be sent in this group |
| <2> | Message number in this group of GSV message |
| <3> | Satellites in view |
| <4> | Satellite ID |
| <5> | Elevation |
| <6> | Azimuth |
| <7> | SNR （C/N0），dBHz |

| | |
|---|---|
| <8> | checksum |
| <CR><LF> | |

**Example**

$GBGSV,1,1,03,19,19,041,,21,49,214,,35,41,118,31,0*41

| Data | Description |
|---|---|
| $GBGSV | Message ID |
| <1> | Total number of GSV message to be sent in this group |
| <2> | Message number in this group of GSV message |
| <3> | Satellites in view |
| <4> | Satellite ID |
| <5> | Elevation |
| <6> | Azimuth |
| <7> | SNR （C/N0）， dBHz |
| <8> | checksum |
| <CR><LF> | |

## 13.5.7 GNVTG Ground velocity information

Data format:

$GNVTG,<1>,T,<2>,M,<3>,N,<4>,K,<5>*<6><CR><LF>

| Data | Description |
|---|---|
| $GNVTG | Message ID |
| <1> | Course ,measured heading |
| T | Reference , true north |
| <2> | Course , measured heading |
| M | Reference ,Magneticl north |
| <3> | Speed ,measured horizontal speed |
| N | Units,knots |
| <4> | Speed km/hr measured horizontal speed |
| K | Units , Kilometers per hour |
| <5> | Mode<br>A --- Autonomous<br>D --- DGPS |

| | |
|---|---|
| *<6> | checksum |
| <CR><LF> | End of message termination |

**Example**

$GNVTG,,T,,M,0.432,N,0.801,K,A*31

| name | Data | Description | Note |
|---|---|---|---|
| Message ID | $GNVTG | | |
| Course | | | |
| Reference | T | Reference , true | |
| Course | | measured heading | |
| Reference | M | Magneticl | |
| Speed | 0.432 | measured horizontal speed | |
| Units | N | Knots | |
| Speed | 0.801 | measured horizontal speed | |
| Units | K | Kilometers per hour | |
| Mode | A | Autonomous | |
| checksum | *31 | | |

# Chapter 14. WIFI((forcat1modules)

## 14.1 AT*WIFIICTRL positioning function

**Descripti**

ASR extended AT command to control WIFI scan function.,After successfully scanning WiFi, it will actively report data.

Syntax

| Command | Response |
|---|---|
| AT*WIFICTRL=<option> | OK<br>or<br>+CME ERROR: <err> |
| AT*WIFICTRL? | *WIFICTRL: <option><br>OK<br>or<br>+CME ERROR: <err> |
| AT*WIFICTRL=? | *WIFICTRL: (0-1) |

**Defined value**

| Parameter | values | Explain |
|---|---|---|
| <on/off> | 0-1 | 0 – stop to scan wifi hotspot<br>1 – start to scan wifi hotspot |

**Example**

```
AT*WIFICTRL=1
OK

*WIFICELLINFO:"88C397F8D707",-50,6
*WIFICELLINFO:"9CA615B940BD",-62,11
*WIFICELLINFO:"2076933EE934",-68,13
*WIFICELLINFO:"5C63BF407BFC",-68,4
*WIFICELLINFO:"9CA615B94227F",-70,1
*WIFICELLINFO:"CA50E9D35ACB"-76,1
*WIFICELLINFO:"9CA61557E820",-77,7
```

## 14.2 *WIFICELLINFO Unsolicited result code

**Description**

ASR extended AT command to indicate the searched wifi hotspot information.

| Command | Response |
| --- | --- |
| | * WIFICELLINFO: <mac addr>, <rssi>, <channel_num> |

**Defined value**

| Parameter | values | Explain |
| --- | --- | --- |
| <mac addr> | | string type, MAC address |
| <rssi> | | integer type, receive signal, in dBm |
| <channel_num> | | integer type |

**Example**

```
AT*WIFICTRL=1
OK

*WIFICELLINFO:"88C397F8D707",-50,6
*WIFICELLINFO:"9CA615B940BD",-62,11
*WIFICELLINFO:"2076933EE934",-68,13
*WIFICELLINFO:"5C63BF407BFC",-68,4
*WIFICELLINFO:"9CA615B94227F",-70,1
*WIFICELLINFO:"CA50E9D35ACB"-76,1
*WIFICELLINFO:"9CA61557E820",-77,7
```

# Chapter 15.AT Commands for File System

## 15.1 AT*WIFIICTRL positioning function

### Description

This command is used to read the cache file. The default module cache file name is <dst.txt>.

### Syntax

| Command | Response |
|---|---|
| AT+FSREAD=<filename>,<mode>,<size>,<offset> | +FSREAD: <size><br>1111111111<br>OK |
| Maximum Response Time | 300ms |

### Defined values

| Parameter | values | Explain |
|---|---|---|
| <file_name> | | filename |
| <mode> | | Read mode |
| <size> | 1024 | Read data size |
| <offset> | 1024 | Offset of the starting position |

### Example

```
AT+FSREAD="dst.txt",1,1024,0
+FSREAD: 5
12345
OK
```

## 15.2 AT+FSATTRI Read file temporary space

### Description

This directive is used to read the size of the downloaded file.

### Syntax

| Command | Response |
|---|---|

| | |
|---|---|
| AT+FSATTRI=”dst.txt” | +FSATTRI: < file_size>,< time ><br><br>OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <file_size> | | filesize |
| <time> | | modification time |

**Example**

```
AT+FSATTRI="dst.txt"
+FSATTRI: 5,0085/09/25 23:04:32 5

OK
```

## 15.3 AT+FSDEL Delete file

**Description**

This command is used to delete a downloaded file.

**Syntax**

| Command | Response |
|---|---|
| AT+FSDEL | AT+FSDEL=< file_name ><br>OK |
| Maximum Response Time | 300ms |

**Defined values**

| Parameter | values | Explain |
|---|---|---|
| <file_name> | | filename |

**Example**

```
AT+FSDEL="dst.txt"
OK
```

## 15.4 AT+FSMEM Querying Available Memory

**Description**

This command is used to obtain the internal free space of a module.

**Syntax**

| Command | Response |
|---|---|
| AT+FSMEM | +FSMEM: < memsize ><br><br>OK |
| Maximum Response Time | 300ms |

**Example**

```
AT+FSMEM
+FSMEM: 786432 bytes

OK
```

## 15.5 AT+FSCD Select directory as current directory

**Description**

This command is used to select a directory. The Module supports absolute path and relative path..Read Command will return current directory without double quotation marks.support SDcard.

**Syntax**

| Command | Response |
|---|---|
| AT+FSCD=? | OK |
| AT+FSCD? | +FSCD: <curr_path><br>OK |
| AT+FSCD=<path> | +FSCD:<curr_path><br>OK<br>or<br>ERROR |

**Example**

```
AT+FSCD=C:
+FSCD: C:/
OK

AT+FSCD=C:/
+FSCD: C:/
 OK

AT+FSCD?
+FSCD: C:/
OK

AT+FSCD=..
+FSCD: C:/
OK

AT+FSCD=D:
+FSCD: D:/
OK

AT+FSCD?
+FSCD:D:/
OK
```