SIM800 Series_IP_Application Note

GPRS Module
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About Document

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Scope

This document presents the AT command of HTTP&FTP operation and application examples. This document can apply to SIM800 series modules with HTTP and FTP function.
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1 Introduction

This chapter introduces the IP application features of SIM800 series modules.

1.1 Purpose of the document

SIM800 series modules support Hyper Text Transfer Protocol application, which provides a mode to alternate of HTTP server. The basic application contains GET, POST, HEAD methods; it also supports proxy server, redirection, broken transfer resuming functions.

SIM800 series modules support File Transfer Protocol application, which provides a mode to interact with FTP server. The basic application contains GET, PUT methods, it also supports broken transfer resuming function. PUT method supports APPE, STOR and other modes.

1.2 Related documents


1.3 Conventions and abbreviations

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<th>Description</th>
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<td>FTP</td>
<td>File Transfer Protocol</td>
</tr>
<tr>
<td>HTTP</td>
<td>Hypertext Transfer Protocol</td>
</tr>
<tr>
<td>APN</td>
<td>Access Point Name</td>
</tr>
<tr>
<td>GPRS</td>
<td>General Packet Radio Service</td>
</tr>
<tr>
<td>PDP</td>
<td>Packet Data Protocol</td>
</tr>
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## 2 AT commands

<table>
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<th>Description</th>
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<td>Initialize HTTP service</td>
</tr>
<tr>
<td>AT+HTTPTERM</td>
<td>Terminate HTTP service</td>
</tr>
<tr>
<td>AT+HTTPPARA</td>
<td>Set HTTP parameters value</td>
</tr>
<tr>
<td>AT+HTTPDATA</td>
<td>Input HTTP data</td>
</tr>
<tr>
<td>AT+HTTPACTION</td>
<td>Http method action</td>
</tr>
<tr>
<td>AT+HTTPREAD</td>
<td>Read the HTTP server response</td>
</tr>
<tr>
<td>AT+HTTPSCONT</td>
<td>Save HTTP application context</td>
</tr>
<tr>
<td>AT+HTTPSTATUS</td>
<td>Read HTTP status</td>
</tr>
<tr>
<td>AT+FTPSPORT</td>
<td>Set FTP control port</td>
</tr>
<tr>
<td>AT+FTPMODE</td>
<td>Set active or passive FTP mode</td>
</tr>
<tr>
<td>AT+FTPTYPE</td>
<td>Set the type of data to be transferred</td>
</tr>
<tr>
<td>AT+FTPPUTOPT</td>
<td>Set FTP put type</td>
</tr>
<tr>
<td>AT+FPCID</td>
<td>Set FTP bearer profile identifier</td>
</tr>
<tr>
<td>AT+FTPREST</td>
<td>Set resume broken download</td>
</tr>
<tr>
<td>AT+FTPSERV</td>
<td>Set FTP server address</td>
</tr>
<tr>
<td>AT+FTPUN</td>
<td>Set FTP user name</td>
</tr>
<tr>
<td>AT+FTPPW</td>
<td>Set FTP password</td>
</tr>
<tr>
<td>AT+FTPGETNAME</td>
<td>Set download file name</td>
</tr>
<tr>
<td>AT+FTPGETPATH</td>
<td>Set download file path</td>
</tr>
<tr>
<td>AT+FTPPUTNAME</td>
<td>Set upload file name</td>
</tr>
<tr>
<td>AT+FTPPUTPATH</td>
<td>Set upload file path</td>
</tr>
<tr>
<td>AT+FTPGET</td>
<td>Download file</td>
</tr>
<tr>
<td>AT+FTPPUT</td>
<td>Set upload file</td>
</tr>
<tr>
<td>AT+FTPSCONT</td>
<td>Save FTP application context</td>
</tr>
<tr>
<td>AT+FTPDELE</td>
<td>Delete specified file in FTP server</td>
</tr>
<tr>
<td>AT+FTPSIZE</td>
<td>Get the size of specified file in FTP server</td>
</tr>
<tr>
<td>AT+FTPSTATE</td>
<td>Get the FTP state</td>
</tr>
<tr>
<td>AT+FTPSEXTPUT</td>
<td>Extend upload file</td>
</tr>
<tr>
<td>AT+FTPMKD</td>
<td>Make directory on the remote machine</td>
</tr>
<tr>
<td>AT+FTPRMD</td>
<td>Remove directory on the remote machine</td>
</tr>
<tr>
<td>AT+FTPPLIST</td>
<td>List contents of directory on the remote machine</td>
</tr>
<tr>
<td>AT+FTPGETTOFS</td>
<td>Download file and save in file system</td>
</tr>
<tr>
<td>AT+FTPPUTFRMFS</td>
<td>Upload file from file system</td>
</tr>
<tr>
<td>Command</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------------------------------------------------</td>
</tr>
<tr>
<td>AT+FTPEXTGET</td>
<td>Extend download file</td>
</tr>
<tr>
<td>AT+FTPFILEPUT</td>
<td>Load file in RAM from file system then upload with FTPPUT</td>
</tr>
<tr>
<td>AT+FTPQUIT</td>
<td>Quit current FTP session</td>
</tr>
</tbody>
</table>
## 3 IP Examples

### 3.1 Bearer Configure

//Bearer configure
```
AT+SAPBR=3,1,"Contype","GPRS"  //Configure bearer profile 1
OK
AT+SAPBR=3,1,"APN","CMNET"  
OK
AT+SAPBR=1,1  //Configure bearer profile 1
OK
AT+SAPBR=2,1  //To open a GPRS context.
+SAPBR:1,1,"10.89.193.1"
OK
AT+SAPBR=0,1  //To close a GPRS context.
OK
```

### 3.2 HTTP GET Method

// Download data from HTTP server.
```
AT+HTTPINIT  //Init HTTP service
OK
AT+HTTPPARA="CID",1  //Set parameters for HTTP session
OK
AT+HTTPPARA="URL","www.sim.com"  
OK
AT+HTTPACTION=0  //GET session start
OK
+HTTPACTION: 0,200,1000  //GET successfully
AT+HTTPREAD
+HTTPREAD: 1000
....
OK
```

Read the data of HTTP server
### 3.3 HTTP POST Method

// Upload data to HTTP server.

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT+HTTPINIT</td>
<td>//Init HTTP service</td>
</tr>
<tr>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>AT+HTTPPARA=&quot;CID&quot;,1</td>
<td>//Set parameters for HTTP session</td>
</tr>
<tr>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>AT+HTTPPARA=&quot;URL&quot;,&quot;www.sim.com&quot;</td>
<td></td>
</tr>
<tr>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>AT+HTTPDATA=100,10000 DOWNLOAD</td>
<td>//POST the data whose size is 100 Bytes and the maximum latency time for inputting is 10000 ms. It is recommended to set the latency time long enough to allow downloading all the data.</td>
</tr>
<tr>
<td>......</td>
<td></td>
</tr>
<tr>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>AT+HTTPACTION=1</td>
<td>//POST session start</td>
</tr>
<tr>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>+HTTPACTION: 1,200,0</td>
<td>//POST successfully</td>
</tr>
<tr>
<td>AT+HTTPTERM</td>
<td>//Terminate HTTP service</td>
</tr>
<tr>
<td>OK</td>
<td></td>
</tr>
</tbody>
</table>

It is ready to receive data from UART, and DCD has been set to low.
All data has been received over, and DCD is set to high.

### 3.4 HTTP HEAD Method

//Get HTTP head information

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<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT+HTTPINIT</td>
<td>//Init HTTP service</td>
</tr>
<tr>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>AT+HTTPPARA=&quot;CID&quot;,1</td>
<td>//Set parameters for HTTP session</td>
</tr>
<tr>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>AT+HTTPPARA=&quot;URL&quot;,&quot;www.sim.com&quot;</td>
<td></td>
</tr>
<tr>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>AT+HTTPACTION=2</td>
<td>//HEAD session start</td>
</tr>
<tr>
<td>OK</td>
<td></td>
</tr>
</tbody>
</table>

OK
3.5 Set Proxy HTTP Server

It provides the method to use proxy HTTP server.

```
// use proxy HTTP server
AT+HTTPINIT
OK
AT+HTTPPARA="CID",1
OK
AT+HTTPPARA="URL","www.sim.com"
OK
AT+HTTPPARA="PROIP","10.0.0.172"
OK
AT+HTTPPARA="PROPORT",80
OK
AT+HTTPACTION=0
OK
+HTTPACTION: 0,200,1000
// GET successfully
AT+HTTPREAD
+HTTPREAD: 1000
// Read the data of HTTP server.
....
OK
AT+HTTPTERM
OK
```

3.6 HTTP Redirection Parameter

It provides the method to use HTTP redirection function.

```
// use HTTP redirection function.
AT+HTTPINIT
OK
```
AT+HTTPPARA="CID",1 //Set parameters for HTTP session
OK
AT+HTTPPARA="REDIR",1 //Set the redirection parameter
OK
AT+HTTPPARA="URL","www.sim.com/abcde" //Set the URL
OK
AT+HTTPACTION=0 //GET session start
OK
+HTTPACTION: 0,200,1000 //GET successfully
AT+HTTPREAD //Read the response of HTTP server
+HTTPREAD: 1000 //Output the data to UART
....
OK
AT+HTTPTERM //Terminate HTTP service
OK

3.7 Set HTTP Download Break Point Parameter

It provides the method to use HTTP broken download resuming function..

// use HTTP broken download
AT+HTTPINIT //Init HTTP service
OK
AT+HTTPPARA="CID",1 //Set parameters for HTTP session
OK
AT+HTTPPARA="URL","HTTP://www.sim.com/img/sim_logo_jr_1003_38.gif" //Set the URL, the size of gif is 16384 bytes
OK
AT+HTTPPARA="BREAK",2000 //Set the break point
OK
AT+HTTPACTION=0 //GET session start, get data from 2000 to 16384
OK
+HTTPACTION: 0,200,14384 //GET successfully
AT+HTTPREAD //Read the data of HTTP server
+HTTPREAD: 14384 //Output the data to UART
....
OK
AT+HTTPTERM //Terminate HTTP service
OK
3.8 Get HTTP Current Status

//get http current status
AT+HTTPINIT  //Init HTTP service
OK
AT+HTTPPARA="CID",1  //Set parameters for HTTP session
OK
AT+HTTPPARA="URL","www.baidu.com"  //Set the URL
OK
AT+HTTPACTION=0  //Get session start
OK
AT+HTTPSTATUS?  //The status of getting session is in progress
+HTTPSTATUS: GET,1,1440,7915
OK
+HTTPACTION: 0,200,9335  //GET successfully
AT+HTTPSTATUS?
+HTTPSTATUS: GET,0,0,0
OK
AT+HTTPACTION=1  //POST session start
OK
AT+HTTPSTATUS?  //The status of posting session is in progress
+HTTPSTATUS: POST,2,1440,608
OK
+HTTPACTION: 1,200,0  //POST successfully
AT+HTTPSTATUS?
+HTTPSTATUS: POST,0,0,0
OK
AT+HTTPTERM  //Terminate HTTP service
OK

3.9 Show HTTP Header Information

//show http header information
AT+HTTPINIT  //Init HTTP service
OK
AT+HTTPPARA="CID",1 //Set parameters for HTTP session
OK
AT+HTTPPARA="URL","www.baidu.com" //Set the URL
OK
AT+HTTPGETHEAD=1 //Set option
OK
AT+HTTPACTION=2 //HEAD session start
OK
+HTTPACTION: 2,200,9335 //HEAD successfully
AT+HTTPREAD //Read the information of HTTP Header
+HTTPREAD: 9335
....
OK
AT+HTTPTERM //Terminate HTTP service
OK

3.10 FTP GET Method

Download data from FTP server

// Download data from FTP server
AT+FTPCID=1 //Set parameters for FTP session.
OK
AT+FTPSERV="116.228.221.52" OK
AT+FTPUN="sim.cs1"
OK
AT+FTPPW="******"
OK
AT+FTPGETNAME="1K.txt"
OK
AT+FTPGETPATH="/"
OK
AT+FTPGET=1 //Open the FTP get session.
OK
+FTPGET: 1,1 //Data are available.
+FTPGET: 2,1024 //Request to read 1024 bytes, but Only 50 bytes are now available.
012345678901234567890123456789
01234567890123456789
OK
### 3.11 FTP PUT Method

Upload data to FTP server.

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT+FTPCID=1</td>
<td>Set parameters for FTP session.</td>
<td>OK</td>
</tr>
<tr>
<td>AT+FTPSERV=&quot;116.228.221.52&quot;</td>
<td>Set FTP server address.</td>
<td>OK</td>
</tr>
<tr>
<td>AT+FTPUN=&quot;sim.cs1&quot;</td>
<td>Set FTP user.</td>
<td>OK</td>
</tr>
<tr>
<td>AT+FTPPW=&quot;******&quot;</td>
<td>Set FTP password.</td>
<td>OK</td>
</tr>
<tr>
<td>AT+FTPPUTNAME=&quot;1K.txt&quot;</td>
<td>Set FTP put filename.</td>
<td>OK</td>
</tr>
<tr>
<td>AT+FTPPUTPATH=&quot;/&quot;</td>
<td>Set FTP put directory.</td>
<td>OK</td>
</tr>
<tr>
<td>AT+FTPPUT=1</td>
<td>Open the FTP put session.</td>
<td>OK</td>
</tr>
<tr>
<td>+FTPPUT: 1,1,1360</td>
<td>FTP session is ready for uploading. 1360 is the max length of data which can be sent at a time. It depends on the network status.</td>
<td></td>
</tr>
<tr>
<td>AT+FTPPUT=2,100</td>
<td>Client requests to send 100 bytes.</td>
<td>+FTPPUT: 2,100</td>
</tr>
<tr>
<td>+FTPPUT: 100</td>
<td>Response indicates that user must input 100 bytes for transferring now.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>It is ready to receive data from UART, and DCD has been set to low.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>All data has been received over, and DCD is set to high. URC indicates</td>
<td></td>
</tr>
<tr>
<td></td>
<td>that the FTP session is ready to transfer more data.</td>
<td></td>
</tr>
</tbody>
</table>
During FTP session, different failure may occur because of bad network environment or other reasons. Some common failure includes timeout failure and wrong password failure.

### 3.12 FTP Time out

Time out occurs during FTP session because of different reasons.

```
//ftp time out
AT+FTPGET=1
OK
+FTPGET: 1,64
//Open the FTP Get session.
//If the status of the network is poor, it may be time out.
//The connection to the FTP server is closed.
AT+FTPGET=1
OK
+FTPGET: 1,1
+FTPGET: 1,1
........
+FTPGET: 1,1
+FTPGET: 1,64
//Data are available.
//If customer does not use "AT+FTPGET: 2,<reqlength>" to read data, "+FTPGET: 1,1" will be shown again in a certain time.
//If the user does not read data for a long time, the session will time out. The connection to the FTP server is closed.
```

### 3.13 FTP Error

Error occurs during FTP applications because of wrong parameter setting

```
//ftp error
AT+FTPWP="3214567"
OK
AT+FTPGET=1
OK
+FTPGET: 1,72
//Set wrong password
//Open the FTP Get session
//FTP session password error. The connection to the FTP server is closed.
```
3.14 FTP Operation Error

Error occurs during FTP applications because of wrong operating.

```
//ftp operation error
AT+FTPGET=1
OK
+FTPGET: 1,64
AT+FTPPUT=1
OK
AT+FTPPUT=1
OK
+FTPPUT: 1,66
```

3.15 FTP READ and WRITE Error

Error occurs before FTP applications because of operating in wrong state.

```
//ftp read and write error
AT+FTPGET=1
OK
AT+FTPGET=2,1000
ERROR
+FTPGET: 1,1
AT+FTPGET=2,1000
+FTPGET: 2,50
0123456789012345678901234567890123456789
01234567890123456789
OK
+FTPGET: 1,0
AT+FTPGET=2,1000
ERROR
AT+FTPPUT=1
OK
AT+FTPPUT=2,1000
ERROR
+FTPPUT: 1,1,1360
AT+FTPPUT=2,100
+FTPPUT: 2,100
......
OK
```
3.16 Set FTP Download Break Point Parameter

It provides the method to use FTP broken download resuming function

//Set ftp download break
AT+FTPGET=1    //Open the FTP Get session.
OK
+FTPGET: 1,1
AT+FTPGET=2,1024
+FTPGET: 2,29
wodeceshijuego,zhgeshigeshia
OK
+FTPGET: 1,0
AT+FTPREST=20
OK
AT+FTPGET=1    //Open the FTP Get session.
OK
+FTPGET: 1,1
AT+FTPGET=2,1024
+FTPGET: 2,9
shigeshia
OK
+FTPGET: 1,0
//Data are available.
//Get data of FTP server.
//Data transfer finished. The connection to the FTP server is closed.

3.17 FTP DELE Method

Delete the specified file in FTP server.

// Delete the specified file in FTP
AT+FTPCID=1    //Set parameters for FTP session.
OK
AT+FTPSERV="116.228.221.52"
OK
AT+FTPUN="sim.cs1"
OK
### 3.18 FTP SIZE Method

Get the size of specified file in FTP server.

```c
// Get the size of specified file
AT+FPCID=1
OK
AT+FTPSERV="116.228.221.52"
OK
AT+FTPUN="sim.cs1"
OK
AT+FTPPW="******"
OK
AT+FTPGETNAME="1K.txt"
OK
AT+FTPGETPATH="/"
OK
AT+FTPSIZE //Open the FTP SIZE session.
OK
+FTPSIZE: 1,0,1024 //Get the size of file finished. The connection to the FTP server is closed.
```

### 3.19 FTP MKD and RMD Method

Make and remove directory on the remote machine.

```c
// Make and remove directory
AT+FPCID=1 //Set parameters for FTP session.
OK
```
AT+FTPSERV="116.228.221.52"
OK
AT+FPTUN="sim.cs1"
OK
AT+FTPPW="******"
OK
AT+FTPGETPATH="/test"
OK
AT+FTPMKD
//Open the FTP session.
OK
+FTPMKD: 1,0 //The directory "test" is made on the remote machine
AT+FTPRMD
//Open the FTP session
OK
+FTPRMD: 1,0 //The directory "test" is removed from the remote machine

3.20 FTP LIST Session

List contents of remote directory.

// List contents of remote directory.
AT+FTPCID=1 //Set parameters for FTP session.
OK
AT+FTPSERV="116.228.221.52"
OK
AT+FPTUN="sim.cs1"
OK
AT+FTPPW="******"
OK
AT+FTPGETNAME="1K.txt"
OK
AT+FTPGETPATH="/"
OK
AT+FTPLIST=1 //Open the FTP session.
OK
+FTPLIST: 1,1 //Data are available
AT+FTPLIST=2,1024 //Request to read 1024 bytes, but only 126 bytes are now available
+FTPLIST: 2,126
total 0
drw-rw-rw- 1 user group 0 Oct 12 14:58.
drw-rw-rw- 1 user group 0 Oct 12 14:58...
3.21 FTP Extend PUT Method

Extend Upload data to the remote machine.

// Extend Upload data
AT+FTPCID=1  //Set parameters for FTP session.
OK
AT+FTPSERV="116.228.221.52"  
OK
AT+FTPUN="sim.cs1"  
OK
AT+FTPPW="******"  
OK
AT+FTPPUTNAME="1K.txt"  
OK
AT+FTPPUTPATH="/"  
OK
AT+FTPEXTPUT=1  //Open the FTP session.
OK
AT+FTPEXTPUT=2,0,1024,10000  //Client requests to send 1024 bytes.
+FTPEXTPUT: 0,1024  //Response indicates that user must input 1024 bytes for transferring. It is saved in the module.
......  //It is ready to receive data from UART, and DCD has been set to low.
OK
AT+FTPPUT=1  //Open the FTP PUT session. Waiting for the module to upload the data to the remote machine.
OK
+FTPPUT: 1,0  //Data transfer finished. The connection to the remote machine is closed
AT+FTPEXTPUT=0  //Set FTP to normal put method
OK

3.22 FTPGETTOFS Method

Download file and save in file system.
//Download file and save in file system
AT+FTPCID=1
OK
AT+FTPSERV=116.228.221.52
OK
AT+FPUTUN=sim.cs1
OK
AT+FPPW=******
OK
AT+FGETNAME=test.txt
OK
AT+FGETPATH=/
OK
AT+FGETTOFS=0,"test.txt"
OK
AT+FGETTOFS?
+FTPGETTOFS: 1,174125,163900
OK
+FTPGETTOFS: 0,174125

3.23 FTPPUTFRMFS Method

Upload file from file system

// Upload file from file system
AT+FTPCID=1
OK
AT+FTPSERV=116.228.221.52
OK
AT+FPUTUN=sim.cs1
OK
AT+FPPW=******
OK
AT+FPUTNAME=test.txt
OK
AT+FPUTPATH=/
OK
AT+FPUTFRMFS=c:\user\ftp\test.txt
OK
AT+FTPPUTFRMFS?  //Query progress of FTP session
+FTPPUTFRMFS: 1,68160  //FTP session running, 68160 bytes data has been upload.
OK
+FTPPUTFRMFS: 0,174125  //File upload succeed. Total 174125 bytes data has been upload.

3.24 FTPEXTGET Method

Extend Download File

// Extend Download File
AT+FTPCID=1  //Set parameters for FTP session.
OK
AT+FTPSERV="116.228.221.52"  OK
AT+FTPUN="sim.cs1"  OK
AT+FTPPW="*******"  OK
AT+FTPGETNAME="test.txt"  OK
AT+FTPGETPATH="/"  OK
AT+FTPEXTGET=1  //Open the FTP session.
OK
AT+FTPEXTGET?  //Query progress of FTP session
+FTPEXTGET: 1,64136  //FTP session running, 64136 bytes data has been download.
OK
+FTPEXTGET: 1,0  //File download succeed.
AT+FTPEXTGET=2,"test.txt"  //Save download data to "c:\user\ftp\test.txt"
+FTPEXTGET: 2,174125  //Save success, 174125 bytes saved
OK
AT+FTPEXTGET=3,0,174125  //Output receive data from position 0, length 174125
+FTPEXTGET: 3,174125  //Output data
......
OK  //Finish output
AT+FTPEXTGET=0  //End FTPEXTGET.
OK
### 3.25 FTPFILEPUT Method

Load file in RAM from file system then upload with FTPPUT

```c
// Load file in RAM
AT+FTPCID=1
OK
AT+FTPSERV="116.228.221.52"
OK
AT+FPTUN="sim.cs1"
OK
AT+FTPWPW="******"
OK
AT+FTPPUTNAME="test.txt"
OK
AT+FTPPUTPATH="/"
OK
AT+FTPFILEPUT=1,\"c:\user\ftp\test.txt\"
OK
AT+FTPPUT=1
OK
+FTPPUT: 1,0
OK
AT+FTPFILEPUT=0
OK
```

Set parameters for FTP session.

File upload succeed.

### 3.26 HTTP Redirection Parameter

Quit current FTP session

```c
// Quit current FTP session
AT+FTPCID=1
OK
AT+FTPSERV="116.228.221.52"
OK
AT+FPTUN="sim.cs1"
OK
AT+FTPWPW="******"
OK
AT+FTPGETNAME="1K.txt"
OK
```
<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT+FTPGETPATH=&quot;/&quot;</td>
<td>Open the FTP session.</td>
</tr>
<tr>
<td>AT+FTPGET=1</td>
<td></td>
</tr>
<tr>
<td>AT+FTPQUIT</td>
<td>Quit FTP session</td>
</tr>
<tr>
<td>+FTPGET: 1,86</td>
<td>Manual quit FTP session</td>
</tr>
</tbody>
</table>