BG95&BG77&BG600L Series
FTP(S) Application Note

LPWA Module Series

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About the Document

Revision History

Version	Date	Author	Description
1.0	2019-10-28	Terrence YANG	Initial
1.1	2020-06-23	Terrence YANG	1. Added an applicable module BG600L-M3. 2. Deleted AT+QFTPCFG="data_sslctxid". 3. Updated the example of login to FTPs server in Chapter 3.2.

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1 Introduction

Quectel BG95 series, BG77 and BG600L-M3 modules provide FTP(S) application to FTP(S) server. This document is a reference guide to all the AT commands defined for FTP(S).

1.1. Applicable Modules

Table 1: Applicable Modules

Module Series	Model	Description
BG95	BG95-M1	Cat M1 only
	BG95-M2	Cat M1/Cat NB2
	BG95-M3	Cat M1/Cat NB2/EGPRS
	BG95-M4	Cat M1/Cat NB2, 450 MHz Supported
	BG95-M5	Cat M1/Cat NB2/EGPRS, Power Class 3
	BG95-M6	Cat M1/Cat NB2, Power Class 3
	BG95-MF	Cat M1/Cat NB2, Wi-Fi Positioning
	BG95-N1	Cat NB2 Only
BG77	BG77	Cat M1/Cat NB2
BG600L	BG600L-M3	Cat M1/Cat NB2/EGPRS

1.2. AT Command Syntax

1.2.1. Definitions

- **<CR>**   Carriage return character.
- **<LF>**   Line feed character.
- **<...>**   Parameter name. Angle brackets do not appear on command line.
- **[...]**   Optional parameter of a command or an optional part of TA information response. Square brackets do not appear on command line. When an optional parameter is not given, the new value equals to its previous value or its default setting, unless otherwise specified.
- **Underline**   Default setting of a parameter.

1.2.2. AT Command Syntax

The **AT** or **at** prefix must be added at the beginning of each command line. Entering **<CR>** will terminate a command line. Commands are usually followed by a response that includes **<CR><LF><response><CR><LF>**. Throughout this document, only the response **<response>** will be presented, **<CR><LF>** are omitted intentionally.

Table 2: Type of AT Commands and Responses

Test Command	AT+<cmd>=?	This command returns the list of parameters and value ranges set by the corresponding Write Command or internal processes.
Read Command	AT+<cmd>?	This command returns the currently set value of the parameter or parameters.
Write Command	AT+<cmd>=<p1>[,<p2>[,<p3>[...]]]	This command sets the user-definable parameter values.
Execution Command	AT+<cmd>	This command reads non-variable parameters affected by internal processes in the module.

1.3. The Process of Using FTP(S) AT Commands

As the modules support FTP(S) protocol, the file and directory on FTP(S) server can be operated via FTP(S) AT commands. The general process is as follows:

Step 1: Configure and activate a PDP context.

1) Configure **<APN>**, **<username>**, **<password>** and other parameters of a PDP context by

AT+QICSGP.

2) Activate the PDP context via **AT+QIACT**.
3) Configure the PDP context ID for FTP(S) by **AT+QFTPCFG="contextid",<contextID>**. The PDP context should be activated first.

Step 2: Configure user account and FTP(S) server.

1) Configure the account information by **AT+QFTPCFG="account",<username>,<password>**.
2) Configure the type of transferred data by **AT+QFTPCFG="filetype",<file_type>**. Either binary data or ASCII data can be transferred between FTP(S) server and client.
3) Configure the transfer mode by **AT+QFTPCFG="transmode",<transmode>**. The transfer mode means either the FTP(S) server or the client listens on a port for data connection. Please be noted that **AT+QFTPCFG="transmode",1** must be set for FTPS operations, because FTPS does not support active mode currently.
4) Configure the response timeout value by **AT+QFTPCFG="rsptimeout",<timeout>**.
5) If the module works as an FTPS client, then the following configurations are needed:
   a) Execute **AT+QFTPCFG="ssltype",1**.
   b) Execute **AT+QFTPCFG="sslctxid",<SSL_ctx_ID>** to select a **<SSL_ctx_ID>**.
   c) Execute **AT+QSSLCFG** to configure the selected **<SSL_ctx_ID>**.

Step 3: Login to FTP(S) server.

Login to FTP(S) server by **AT+QFTPOPEN=<hostname>,<port>**. If **+QFTPOPEN: 0,0** URC is returned, it indicates the operation is successful. Please be noted that the port numbers of FTPS and FTP servers are different. The port number of FTPS server depends on the server provider, and it is 990 usually.

Step 4: File operation.

1) Set the current directory by **AT+QFTPCWD**.
2) Upload a file to FTP(S) server.
   a) Upload a file to UFS via **AT+QFUPL**, then upload the file to FTP(S) server by **AT+QFTPPUT**. After uploading the file to FTP(S) server successfully, the file should be deleted by **AT+QFDEL**.
   b) Upload a file to FTP(S) server through COM port by **AT+QFTPPUT**, then the module will enter in data mode. **+++** can be inputted to finish the file uploading process.
3) Download a file from FTP(S) server by **AT+QFTPGET**. The file can be outputted to COM port or saved to UFS. If the file is outputted to COM port, the module will enter in data mode.
4) Get the size of the file on FTP(S) server by **AT+QFTPSIZE**.
5) Get the length of data transferred between FTP(S) server and client by **AT+QFTPLEN**.
6) Delete a file on FTP(S) server by **AT+QFTPDEL**.
7) Rename a file on FTP(S) server by **AT+QFTPRENAME**.

Step 5:   Directory operation on FTP(S) server.

1) Set the current directory by **AT+QFTPCWD**.
2) Create a directory by **AT+QFTPMKDIR**.
3) List the content of a directory by **AT+QFTPLIST**.
4) List file names of a directory by **AT+QFTPNLST**.
5) Rename a directory by **AT+QFTPRENAME**.
6) Delete a directory by **AT+QFTPRMDIR**.
7) List standardized file and directory information by **AT+QFTPMLSD**.
8) Get the file modification time on FTP(S) server by **AT+QFTPMDTM**.

Step 6: Close a connection with FTP(S) server.

Close a connection with FTP(S) server by **AT+QFTPCLOSE**. If **+QFTPCLOSE: 0,0** URC is reported, it indicates the operation is successful. **Step 3** to **Step 6** can be repeated.

Step 7: Deactivate PDP context.

Deactivate a PDP context by **AT+QIDEACT=<contextID>**.

NOTES

1. See *Quectel_BG95&BG77_TCP(IP)_Application_Note* for more details of **AT+QICSGP**, **AT+QIACT** and **AT+QIDEACT**.
2. See *Quectel_BG95&BG77_SSL_Application_Note* for more details of **AT+QSSLCFG**.
3. See *Quectel_BG95&BG77_FILE_Application_Note* for more details of **AT+QFUPL** and **AT+QFDEL**.

1.4. Description of Data Mode

The COM port of the modules have two working modes: AT command mode and data mode. In AT command mode, the inputted data via COM port will be treated as AT command, while in data mode, it will be treated as data.

Inputting **+++** or pulling up DTR (**AT&D1** should be set first) will make the module exit from data mode. To prevent the **+++** from being misinterpreted as data, the following sequence should be followed:

1) Do not input any character within 1s at least before inputting **+++**.
2) Input **+++** within 1s, and no other characters can be inputted during the time.
3) Do not input any character within 1s after **+++** has been inputted.

When **AT+QFTPPUT**, **AT+QFTPGET**, **AT+QFTPLIST** and **AT+QFTPNLST** are executed, if the local file path is **"COM:"**, which means data will be received from or outputted to COM port, the COM port will enter data mode. The module will exit from data mode when inputting **+++** or changing DTR level from low to

high, and it will re-enter data mode by executing **ATO** after **AT+QFTPGET**, **AT+QFTPLIST** and **AT+QFTPNLST** are executed. After **AT+QFTPPUT** is executed, the module will not be able to re-enter data mode anymore.

2 Description of FTP(S) AT Commands

2.1. AT+QFTPCFG   Configure Parameters for FTP(S) Server

This command configures FTP(S) server parameters, including user account, file type, transfer mode, context ID, response timeout, SSL type, SSL context ID, data connection address selection, etc. If only one parameter is executed, the write commend will query the current settings.

AT+QFTPCFG Configure Parameters for FTP(S) Server	
Test Command **AT+QFTPCFG=?**	Response **+QFTPCFG: "account",<username>,<password>** **+QFTPCFG: "filetype",(**list of supported **<file_type>**s**)** **+QFTPCFG: "transmode",(**list of supported **<transmode>**s**)** **+QFTPCFG: "contextid",(**range of supported **<contextID>**s**)** **+QFTPCFG: "rsptimeout",(**range of supported **<timeout>**s**)** **+QFTPCFG: "ssltype",(**range of supported **<SSL_type>**s**)** **+QFTPCFG: "sslctxid",(**range of supported **<SSL_ctx_ID>**s**)** **+QFTPCFG: "data_address",(**list of supported **<data_addr ess>**s**)** **OK**
Write Command **AT+QFTPCFG="account"[,<userna me>,<password>]**	Response If the optional parameters are omitted, query the current setting: **+QFTPCFG: "account",<username>,<password>** **OK** If the optional parameters are specified, set the username and password for authentication: **OK** Or **+CME ERROR: <err>**
Write Command **AT+QFTPCFG="filetype"[,<file_type >]**	Response If the optional parameter is omitted, query the current setting: **+QFTPCFG: "filetype",<file_type>**

	OK If the optional parameter is specified, set the data type: **OK** Or **+CME ERROR: \<err>**
Write Command **AT+QFTPCFG="transmode"[,\<trans mode>]**	Response If the optional parameter is omitted, query the current setting: **+QFTPCFG: "transmode",\<transmode>** **OK** If the optional parameter is specified, set it is the FTP(S) server or the client that listens on a port for data connection: **OK** Or **+CME ERROR: \<err>**
Write Command **AT+QFTPCFG="contextid"[,\<conte xtID>]**	Response If the optional parameter is omitted, query the current setting: **+QFTPCFG: "contextid",\<contextID>** **OK** If the optional parameter is specified, set the PDP context ID: **OK** Or **+CME ERROR: \<err>**
Write Command **AT+QFTPCFG="rsptimeout"[,\<time out>]**	Response If the optional parameter is omitted, query the current setting: **+QFTPCFG: "rsptimeout",\<timeout>** **OK** If the optional parameter is specified, set the timeout value for the response of most FTP(S) AT commands: **OK** Or **+CME ERROR: \<err>**
Write Command **AT+QFTPCFG="ssltype"[,\<SSL_typ e>]**	Response If the optional parameter is omitted, query the current setting: **+QFTPCFG: "ssltype",\<SSL_type>** **OK**

	If the optional parameter is specified, set the module to work as FTP client or FTPS client: **OK** Or **+CME ERROR: <err>**
Write Command **AT+QFTPCFG="sslctxid"[,<SSL_ctx_ID>]**	Response If the optional parameter is omitted, query the current setting: **+QFTPCFG: "sslctxid",<SSL_ctx_ID>** **OK** If the optional parameter is specified, set the SSL context ID: **OK** Or **+CME ERROR: <err>**
Write Command **AT+QFTPCFG="data_address"[,<data_address>]**	Response If the optional parameter is omitted, query the current setting: **+QFTPCFG: "data_address",<data_address>** **OK** If the optional parameter is specified, set the FTP(S) data connection address: **OK** Or **+CME ERROR: <err>**

Parameter

<username>	String type. Username for authentication. The maximum size of the parameter is 255 bytes.
<password>	String type. Password for authentication. The maximum size of the parameter is 255 bytes.
<contextID>	Integer type. PDP context ID. Range: 1–16. Default value: 1. It should be activated by **AT+QIACT** before using **AT+QFTPOPEN**. For more details of **AT+QIACT**, see *Quectel_BG95&BG77_TCP(IP)_Application_Note*.
<file_type>	Integer type. The type of transferred data. 0　Binary 1　ASCII
<transmode>	Integer type. Whether the FTP(S) server or client listens on a port for data connection 0　Active mode, the module will listen on a port for data connection 1　Passive mode, the FTP(S) server will listen on a port for data connection
<timeout>	Integer type. Range: 20–180. Default value: 90. Unit: second. Generally, it is the timeout value for the **OK** result code to be returned for most

FTP(S) AT commands except **AT+QFTPPUT**, **AT+QFTPGET**, **AT+QFTPLST** and **AT+QFTPNLST**. The rules for these four commands are shown as below:

a) When the command has been sent, but **CONNECT** has not been outputted yet, this parameter indicates the maximum timeout value for **CONNECT** to be outputted after the command has been sent.

b) When the module has entered data mode, this parameter indicates the maximum interval time between two packets of received/transmitted data.

c) When the **<local_name>** is not **"COM:"**, it indicates the maximum interval time between two packets of received/transmitted data.

<SSL_type>	Integer type. The module works as an FTP client or FTPS client.
	<u>0</u> FTP client
	1 FTPS client (FTP over implicit TLS/SSL)
	2 FTPS client (FTP over explicit TLS/SSL)
<SSL_ctx_ID>	Integer type. SSL context ID. Range: 0–5. Default value: 0. Customers should configure the SSL parameters by **AT+QSSLCFG**. For details, see *Quectel_BG95&BG77_SSL_Application_Note.*
<data_address>	Integer type. FTP(S) data connection address selection.
	0 Use server dispatched address
	<u>1</u> Use FTP(S) control session address
<err>	Integer type. The error code of the operation. See *Chapter 5* for details.

NOTE

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

2.2. AT+QFTPOPEN   Login to FTP(S) Server

This command logs in 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**.

AT+QFTPOPEN Login to FTP(S) Server	
Test Command **AT+QFTPOPEN=?**	Response **+QFTPOPEN: <hostname>,<port>** **OK**
Write Command **AT+QFTPOPEN=<hostname>[,<port]**	Response **OK** **+QFTPOPEN: <err>,<protocol_error>**

	If there is any error: **+CME ERROR: <err>**

Parameter

<hostname>	String type. The IP address or domain name of the FTP(S) server. The maximum size of the parameter is 200 bytes.
<port>	Integer type. The port number of the FTP(S) server. Default value: 21.
<err>	Integer type. The error code of the operation. See *Chapter 5* for details.
<protocol_error>	Integer type. For reference only. Indicates the original error code from FTP(S) server which is defined in FTP(S) protocol. For more details, see *Chapter 6*. If it is 0, it is invalid.

NOTE

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

2.3. AT+QFTPCWD   Configure the Current Directory on FTP(S) Server

This command configures 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 file and directory operations will be performed in the current directory.

AT+QFTPCWD Configure the Current Directory on FTP(S) Server	
Test Command **AT+QFTPCWD=?**	Response **+QFTPCWD: <path_name>** **OK**
Write Command **AT+QFTPCWD=<path_name>**	Response **OK** **+QFTPCWD: <err>,<protocol_error>** If there is any error: **+CME ERROR: <err>**

Parameter

<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. See *Chapter 5* for details.
<protocol_error>	Integer type. For reference only. Indicates the original error code from FTP(S) server which is defined in FTP(S) protocol. For more details, see *Chapter 6*. If it is 0, it is invalid.

2.4. AT+QFTPPWD   Get the Current Directory on FTP(S) Server

This command gets 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**.

AT+QFTPPWD Get the Current Directory on FTP(S) Server	
Test Command **AT+QFTPPWD=?**	Response **OK**
Execution Command **AT+QFTPPWD**	Response **OK** And then, if the current directory is successfully got: **+QFTPPWD: 0,<path_name>** If failed to get the current directory: **+QFTPPWD: <err>,<protocol_error>** If there is any error: **+CME ERROR: <err>**

Parameter

<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. See *Chapter 5* for details.
<protocol_error>	Integer type. For reference only. Indicates the original error code from FTP(S) server which is defined in FTP(S) protocol. For more details, see *Chapter 6*. If it is 0, it is invalid.

2.5. AT+QFTPPUT   Upload a File to FTP(S) Server

This command uploads a file to FTP(S) server. If the file data will be uploaded via COM port, then the module will enter data mode. Inputting **+++** will abort the file uploading. A local file can be uploaded to FTP(S) server but the file can only be UFS files. The file can be uploaded to UFS by **AT+QFUPL**, and then be uploaded to FTP(S) server via **AT+QFTPPUT**. After a file is uploaded successfully, the file can be deleted by **AT+QFDEL**. For more details, see *Quectel_BG95&BG77_FILE_Application_Note*.

A file can be uploaded from a specified file position by **<startpos>**. If the **<local_name>** is **"COM:"**, **CONNECT** should be outputted within **<timeout>** configured by **AT+QFTPCFG**. If **<local_name>** is not **"COM:"**, **OK** will be outputted first, and then **+QFTPPUT: 0,<transferlen>** will be outputted after data transfer is completed.

If the module has entered 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.

AT+QFTPPUT Upload a File to FTP(S) Server	
Test Command **AT+QFTPPUT=?**	Response **+QFTPPUT: <file_name>,<local_name>,<startpos>,<uploadlen>,<beof>** **OK**
Write Command When the **<local_name>** is **"COM:"**, that is, to input data via COM port **AT+QFTPPUT=<file_name>,"COM:"[,<startpos>[,<uploadlen>,<beof>]]**	Response If the module enters data mode successfully: **CONNECT** Then input the data via COM port **OK** After that, if the data are successfully uploaded: **+QFTPPUT: 0,<transferlen>** If failed to upload the data: **+QFTPPUT: <err>,<protocol_error>** If there is any error: **+CME ERROR: <err>**
Write Command When **<local_name>** is not **"COM:"** **AT+QFTPPUT=<file_name>,<local_name>[,<startpos>]**	Response **OK** And then, if the data are successfully uploaded: **+QFTPPUT: 0,<transferlen>** If failed to upload the data:

	+QFTPPUT: <err>,<protocol_error>
	If there is any error: **+CME ERROR: <err>**

Parameter

<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 80 bytes. If it is **"COM:"**, the data will be inputted via COM port. If it is not **"COM:"**, the data will be saved to UFS. After successful uploading, the file should be deleted by **AT+QFDEL** (see *Quectel_BG95&BG77_FILE_Application_Note* for details).
<startpos>	Integer type. The start position of the file to be uploaded. Default value: 0. If **<uploadlen>** and **<beof>** are specified, **<startpos>** should be the position where the data continues to be uploaded to the same file.
<uploadlen>	Integer type. The length of the data to be uploaded. It is valid only when **<local_name>** is "**COM:**". When the length of data uploaded via COM port reaches **<uploadlen>**, the module will exit from data mode. Unit: byte.
<beof>	Integer type. Whether it is the last packet of data to be uploaded.
	0 Not the last packet of data. When the data length reaches **<uploadlen>**, the module will exit from data mode and **+QFTPPUT: 0,<transferlen>** will be outputted. In such a case, do not disconnect data connection, as the remained data needs to be uploaded to the same file on FTP(S).
	1 The last packet of data. When the data length reaches **<uploadlen>**, the module will exit from data mode and data connection can be disconnected. After that, **+QFTPPUT: 0,<transferlen>** will be outputted.
<transferlen>	Integer type. The length of successfully transferred data. Unit: byte.
<err>	Integer type. The error code of the operation. See *Chapter 5* for details.
<protocol_error>	Integer type. For reference only. Indicates the original error code from FTP(S) server which is defined in FTP(S) protocol. For more details, see *Chapter 6*. If it is 0, it is invalid.

Example

```
//Upload a file via COM port to FTP(S) server.
AT+QFTPPUT="test.txt","COM:",0          //All data will be saved as test.txt on FTP(S) server.
CONNECT
//Input the file data via COM port
+++                                     //Exit data mode
OK

+QFTPPUT: 0,1000
```

//Upload a file via COM port to FTP(S) server twice in 1024 bytes each time.
AT+QFTPPUT="test.txt","COM:",0,1024,0   //It is not the last 1024 bytes of *test.txt*.
CONNECT
//Input the file data via COM port
OK   //Data length reaches 1024 bytes.

+QFTPPUT: 0,1024
AT+QFTPPUT="test.txt", "COM:",1024,1024,1 //It is the last 1024 bytes of *test.txt*.
CONNECT
Input the file data via COM port
OK   //Data length reaches 1024 bytes.

+QFTPPUT: 0,1024
//Upload a file to UFS.
AT+QFUPL="test1.txt",1000,300,1   //Upload a file to UFS, the file will be saved as *test1.txt* and the maximum size of file is 1000 bytes. 300 indicates timeout value, and 1 indicates ACK mode. See *Quetel_BG95&BG77_FILE_Application_Note* for details*.*

CONNECT
Input 1000 bytes data
+QFUPL: 1000,707

OK
AT+QFLST="*"
+QFLST: "test1.txt",1000

OK
AT+QFTPPUT="test.txt","test1.txt",0   //Upload *test1.txt* to FTP(S) server, and the file will be saved as *test.txt* on FTP(S) server.

OK

+QFTPPUT: 0,1000
AT+QFDEL="test1.txt"
OK

2.6. AT+QFTPGET   Download a File from FTP(S) Server

This command downloads a file from FTP(S) server. The file can be outputted to COM port by **AT+QFTPGET="filename","COM:"**. The module will enter data mode on receiving data from server. After the data transfer is completed, the module will exit from data mode automatically and output **+QFTPGET: 0,<transferlen>**. The file can be saved to UFS by **AT+QFTPGET="filename","localname"**. After the file transfer has been completed, 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 transfer is completed.

If the module has entered 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.

AT+QFTPGET Download a File from FTP(S) Server	
Test Command **AT+QFTPGET=?**	Response **+QFTPGET: <file_name>,<local_name>,<startpos>,<downloadlen>** **OK**
Write Command When the **<local_name>** is **"COM:"**, that is, to output the data via COM port **AT+QFTPGET=<file_name>,"COM:"[,<startpos>[,<downloadlen>]]**	Response If the module enters data mode successfully: **CONNECT** **<output_data>** **OK** And then, if the data are successfully downloaded: **+QFTPGET: 0,<transferlen>** If failed to download the data: **+QFTPGET: <err>,<protocol_error>** If there is any error: **+CME ERROR: <err>**
Write Command When the **<local_name>** is not **"COM:"** **AT+QFTPGET=<file_name>,<local_name>[,<startpos>]**	Response **OK** And then, if the data are successfully downloaded: **+QFTPGET: 0,<transferlen>** If failed to download the data: **+QFTPGET: <err>,<protocol_error>** If there is any error: **+CME ERROR: <err>**

Parameter

<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 80 bytes. If it is **"COM:"**, the file data will be outputted to COM port. If it is not **"COM:"**, the data will be saved to UFS, and then the file can be read by **AT+QFREAD**. For more details, see *Quectel_BG95&BG77_FILE_Application_Note*.
\<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 are some data left. Unit: byte.
\<output_data\>	The file data outputted to COM port.
\<transferlen\>	Integer type. The length of actually transferred data. If it is less than **\<downloadlen\>**, it means the file transfer has completed. Unit: byte.
\<err\>	Integer type. The error code of the operation. See **Chapter 5** for details.
\<protocol_error\>	Integer type. For reference only. Indicates the original error code from FTP(S) server which is defined in FTP(S) protocol. For more details, see **Chapter 6**. If it is 0, it is invalid.

Example

```
//Download a file and the file will be outputted to COM port.
AT+QFTPGET="test.txt","COM:",0
CONNECT
<output_data>
OK

+QFTPGET: 0,1000

//Download a file and the file will be outputted to COM port twice in 500 bytes each time.
AT+QFTPGET="test.txt","COM:",0,500        //The size of test.txt is 1000 bytes. Download the first
                                            500 bytes.
CONNECT
<output_data>
OK

+QFTPGET: 0,500

AT+QFTPGET="test.txt","COM:",500,500    //Download the left 500 bytes .
CONNECT
<output_data>
OK

+QFTPGET: 0,500

//Download a file and save it to UFS.
```

AT+QFTPGET="test.txt","test2.txt",0
OK

+QFTPGET: 0,1000
AT+QFLST="*"
+QFLST: "test2.txt",1000

OK

2.7. AT+QFTPSIZE   Get the File Size on FTP(S) Server

The command gets 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.

AT+QFTPSIZE Get the File Size on FTP(S) Server	
Test Command **AT+QFTPSIZE=?**	Response **+QFTPSIZE: <file_name>** **OK**
Write Command **AT+QFTPSIZE=<file_name>**	Response **OK** And then, if the file size is successfully got: **+QFTPSIZE: 0,<file_size>** If failed to get the file size: **+QFTPSIZE: <err>,<protocol_error>** If there is any error: **+CME ERROR: <err>**

Parameter

<file_name>	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. See **Chapter 5** for details.
<protocol_error>	Integer type. For reference only. Indicates the original error code from FTP(S) server which is defined in FTP(S) protocol. For more details, see **Chapter 6**.

If it is 0, it is invalid.

2.8. AT+QFTPDEL   Delete a File on FTP(S) Server

This command deletes a specified file on FTP(S) server. If **OK** is returned, **+QFTPDEL: <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.

AT+QFTPDEL Delete a File on FTP(S) Server	
Test Command **AT+QFTPDEL=?**	Response **+QFTPDEL: <file_name>** **OK**
Write Command **AT+QFTPDEL=<file_name>**	Response **OK** **+QFTPDEL: <err>,<protocol_error>** If there is any error: **+CME ERROR: <err>**

Parameter

<file_name>	String type. The file name on FTP(S) server. The maximum size of the parameter is 255 bytes.
<err>	Integer type. The error code of the operation. See *Chapter 5* for details.
<protocol_error>	Integer type. For reference only. Indicates the original error code from FTP(S) server which is defined in FTP(S) protocol. For more details, see *Chapter 6*. If it is 0, it is invalid.

2.9. AT+QFTPMKDIR   Create a Folder on FTP(S) Server

This command creates a folder on FTP(S) server. If **OK** is returned, **+QFTPMKDIR: <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.

AT+QFTPMKDIR Create a Folder on FTP(S) Server	
Test Command **AT+QFTPMKDIR=?**	Response **+QFTPMKDIR: <folder_name>**

	OK
Write Command **AT+QFTPMKDIR=<folder_name>**	Response **OK** **+QFTPMKDIR: <err>,<protocol_error>** If there is any error: **+CME ERROR: <err>**

Parameter

<folder_name>	String type. The folder name on FTP(S) server. The maximum size of the parameter is 255 bytes.
<err>	Integer type. The error code of the operation. See **Chapter 5** for details.
<protocol_error>	Integer type. For reference only. Indicates the original error code from FTP(S) server which is defined in FTP(S) protocol. For more details, see **Chapter 6**. If it is 0, it is invalid.

2.10. AT+QFTPRMDIR Delete a Folder on FTP(S) Server

This command deletes a specified folder on FTP(S) server. If **OK** is returned, **+QFTPRMDIR: <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.

AT+QFTPRMDIR Delete a Folder on FTP(S) Server	
Test Command **AT+QFTPRMDIR=?**	Response **+QFTPRMDIR: <folder_name>** **OK**
Write Command **AT+QFTPRMDIR=<folder_name>**	Response **OK** **+QFTPRMDIR: <err>,<protocol_error>** If there is any error: **+CME ERROR: <err>**

Parameter

\<folder_name\>	String type. The folder name on FTP(S) server. The maximum size of the parameter is 255 bytes.
\<err\>	Integer type. The error code of the operation. See **_Chapter 5_** for details.
\<protocol_error\>	Integer type. For reference only. Indicates the original error code from FTP(S) server which is defined in FTP(S) protocol. For more details, see **_Chapter 6_**. If it is 0, it is invalid.

2.11. AT+QFTPLIST   List Content of a Directory on FTP(S) Server

This command lists the content of a directory on FTP(S) server. If **\<local_name\>** is **"COM:"**, **CONNECT** should be outputted within **\<timeout\>** configured by **AT+QFTPCFG**. If **\<local_name\>** is not **"COM:"**, **OK** will be returned first, and **+QFTPLIST: 0,\<transfer_size\>** will be outputted after the content is transferred completely.

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

AT+QFTPLIST List Content of a Directory on FTP(S) Server	
Test Command **AT+QFTPLIST=?**	Response **+QFTPLIST: \<dirname\>,\<local_name\>** **OK**
Write Command When **\<local_name\>** is **"COM:"** **AT+QFTPLIST= \<dirname\>[,"COM:"]**	Response If the module enters data mode successfully: **CONNECT** **\<output_content\>** **OK** And then, if the content of the directory is successfully listed: **+QFTPLIST: 0,\<transfer_size\>** If failed to list the content: **+QFTPLIST: \<err\>,\<protocol_error\>** If there is any error: **+CME ERROR: \<err\>**
Write Command When **\<local_name\>** is not **"COM:"** **AT+QFTPLIST=\<dirname\>,\<local_na me\>**	Response **OK** And then if the content of the directory is successfully listed:

	+QFTPLIST: 0,<transfer_size> If failed to list the content: **+QFTPLIST: <err>,<protocol_error>** If there is any error: **+CME ERROR: <err>**

Parameter

<dirname>	String type. The directory name on FTP(S) server. The maximum size of the parameter is 255 bytes. If it is **"."** it will list the content of the current directory configured by **AT+QFTPCWD**.
<local_name>	String type. The local storage location of the data from FTP(S) server. The maximum size of the parameter is 80 bytes. The default value is **"COM:"**. If it is **"COM:"**, the data will be outputted to COM port. If it is not **"COM:"**, the data will be saved to UFS first and then can be read via **AT+QFREAD**. For more details, see *Quectel_BG95&BG77_FILE_Application_Note*.
<output_content>	The directory content outputted to COM port.
<transfer_size>	Integer type. The size of transferred data from FTP(S) server. Unit: byte.
<err>	Integer type. The error code of the operation. See *Chapter 5* for details.
<protocol_error>	Integer type. For reference only. Indicates the original error code from FTP(S) server which is defined in FTP(S) protocol. For more details, see *Chapter 6*. If it is 0, it is invalid.

Example

```
//Get the content of the current directory on FTP(S) server and the data will be outputted to COM port.
AT+QFTPLIST="."
CONNECT
<output_content>
OK

+QFTPLIST: 0,1000

//Get the content of a specified directory on FTP(S) server and save it to UFS.
AT+QFTPLIST="TESTDIR","test2.txt"
OK

+QFTPLIST: 0,1000
AT+QFLST="*"
+QFLST: "test2.txt",1000

OK
```

2.12. AT+QFTPNLST   List File Names of a Directory on FTP(S) Server

This command lists file names of a directory on FTP(S) server. If **<local_name>** is **"COM:"**, **CONNECT** should be outputted within **<timeout>** configured by **AT+QFTPCFG**. If **<local_name>** is not **"COM:"**, **OK** will be returned first, and then **+QFTPNLST: 0,<transfer_size>** will be outputted after file name transfer is completed.

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

AT+QFTPNLST List File Names of a Directory on FTP(S) Server	
Test Command **AT+QFTPNLST=?**	Response **+QFTPNLST: <dirname>,<local_name>** **OK**
Write Command When **<local_name>** is **"COM:"** **AT+QFTPNLST=<dirname>[,"COM:"]**	Response If the module enters data mode successfully: **CONNECT** **<output_filename>** **OK** And then, if the file names are successfully listed: **+QFTPNLST: 0,<transfer_size>** If failed to list the file names: **+QFTPNLST: <err>,<protocol_error>** If there is any error: **+CME ERROR: <err>**
Write Command When **<local_name>** is not **"COM:"** **AT+QFTPNLST=<dirname>,<local_name>**	Response **OK** **+QFTPNLST: 0,<transfer_size>** If there is any error: **OK** **+QFTPNLST: <err>,<protocol_error>** Or **+CME ERROR: <err>**

Parameter

<dirname>	String type. The folder name on FTP(S) server. The maximum size of the parameter is 255 bytes. If it is **"."** it will list the file names of the current directory configured by **AT+QFTPCWD**.
<local_name>	String type. The local storage location of the data from FTP(S) server. The maximum size of the parameter is 80 bytes. The default value is **"COM:"**. If it is **"COM:"**, the data will be outputted to COM port. If it is not **"COM:"**, the data will be saved to UFS first and then can be read via **AT+QFREAD**. For more details, see *Quectel_BG95&BG77_FILE_Application_Note*.
<output_filename>	The file names outputted to COM port.
<transfer_size>	Integer type. The size of transferred data from FTP(S) server. Unit: byte.
<err>	Integer type. The error code of the operation. See *Chapter 5* for details.
<protocol_error>	Integer type. For reference only. Indicates the original error code from FTP(S) server which is defined in FTP(S) protocol. For more details, see *Chapter 6*. If it is 0, it is invalid.

Example

```
//Get the file name of the current directory on FTP(S) server and the data will be outputted to COM port.
AT+QFTPNLST="."
CONNECT
<output_filename>
OK

+QFTPNLST: 0,1000

//Get the file name of a specified directory on FTP(S) server and save it to UFS.
AT+QFTPNLST="TESTDIR","test2.txt"
OK

+QFTPNLST: 0,1000
AT+QFLST="*"
+QFLST: "test2.txt",1000

OK
```

2.13. AT+QFTPMLSD   List Standardized File and Directory Information

This command lists standardized file and directory information on FTP(S) server. If **<local_name>** is **"COM:"**, **CONNECT** should be outputted within **<timeout>** configured by **AT+QFTPCFG**. If **<local_name>** is not **"COM:"**, **OK** will be returned first and then **+QFTPMLSD: 0,<transfer_size>** will be

outputted after the information transfer is completed.

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

AT+QFTPMLSD List Standardized File and Directory Information	
Test Command **AT+QFTPMLSD=?**	Response **+QFTPMLSD: <dirname>,<local_name>** **OK**
Write Command When **<local_name>** is **"COM:"** **AT+QFTPMLSD=<dirname>[,"COM:"]**	Response If the module enters data mode successfully: **CONNECT** **<output_info>** **OK** And then, if the file and directory information is successfully listed: **+QFTPMLSD: 0,<transfer_size>** If failed to list the file and directory information: **+QFTPMLSD: <err>,<protocol_error>** If there is any error: **+CME ERROR: <err>**
Write Command When **<local_name>** is not **"COM:"** **AT+QFTPMLSD=<dirname>,<local_name>**	Response **OK** And then, if the file and directory information is successfully listed: **+QFTPMLSD: 0,<transfer_size>** If failed to list the file and directory information: **+QFTPMLSD: <err>,<protocol_error>** If there is any error: **+CME ERROR: <err>**

Parameter

<dirname>	String type. The folder name on FTP(S) server. The maximum size of the parameter is 255 bytes. If it is **"."** it will list standardized file and directory information configured by **AT+QFTPCWD**.

<local_name>	String type. The local storage location of the data from FTP(S) server. The maximum size of the parameter is 80 bytes. The default value is **"COM:"**. If it is **"COM:"**, the data will be outputted to COM port. If it is not **"COM:"**, the data will be saved to UFS first and then can be read via **AT+QFREAD**. For more details, see *Quectel_BG95&BG77_FILE_Application_Note*.
<output_info>	The file and directory information outputted to COM port.
<transfer_size>	Integer type. The size of transferred data from FTP(S) server. Unit: byte.
<err>	Integer type. The error code of the operation. See *Chapter 5* for details.
<protocol_error>	Integer type. For reference only. Indicates the original error code from FTP(S) server which is defined in FTP(S) protocol. For more details, see *Chapter 6*. If it is 0, it is invalid.

Example

```
//Get standardized file and directory information on FTP(S) server and the data will be outputted to COM port.
AT+QFTPMLSD="."
CONNECT
<output_info>
OK

+QFTPMLSD: 0,1000
//Get standardized file and directory information on FTP(S) server and save them to UFS.
AT+QFTPMLSD="TESTDIR","test2.txt"
OK

+QFTPMLSD: 0,1000
AT+QFLST="*"
+QFLST: "test2.txt",1000

OK
```

2.14. AT+QFTPMDTM   Get the File Modification Time on FTP(S) Server

This command gets the file modification time on FTP(S) server. If **OK** is returned, **+QFTPMDTM: 0,<modify_time>** or **+QFTPMDTM: <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.

AT+QFTPMDTM Get the File Modification Time on FTP(S) Server	
Test Command **AT+QFTPMDTM=?**	Response **+QFTPMDTM: <file_name>**

	OK
Write Command **AT+QFTPMDTM=<file_name>**	Response **OK** And then, if the file modification time is successfully got: **+QFTPMDTM: 0,<modify_time>** If failed to get the file modification time: **+QFTPMDTM: <err>,<protocol_error>** If there is any error: **+CME ERROR: <err>**

Parameter

<file_name>	String type. The file name on FTP(S) server. The maximum size of the parameter is 255 bytes.
<modify_time>	String type. The file modification time on FTP(S) server. The format is "YYYYMMDDHHMMSS" or "YYYYMMDDHHMMSS.NNN".
<err>	Integer type. The error code of the operation. See *Chapter 5* for details.
<protocol_error>	Integer type. For reference only. Indicates the original error code from FTP(S) server which is defined in FTP(S) protocol. For more details, see *Chapter 6*. If it is 0, it is invalid.

2.15. AT+QFTPRENAME   Rename a File or Folder on FTP(S) Server

This command renames a file or folder on FTP(S) server. If **OK** is returned, **+QFTPRENAME: <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.

AT+QFTPRENAME Rename a File or Folder on FTP(S) Server	
Test Command **AT+QFTPRENAME=?**	Response **+QFTPRENAME: <old_name>,<new_name>** **OK**
Write Command **AT+QFTPRENAME=<old_name>,<new_name>**	Response **OK** **+QFTPRENAME: <err>,<protocol_error>**

| | If there is any error: |
| | **+CME ERROR: <err>** |

Parameter

<old_name>	String type. The old file name or folder name on FTP(S) server. The maximum size of the parameter is 255 bytes.
<new_name>	String type. The new file name or folder name on FTP(S) server. The maximum size of the parameter is 255 bytes.
<err>	Integer type. The error code of the operation. See *Chapter 5* for details.
<protocol_error>	Integer type. For reference only. Indicates the original error code from FTP(S) server which is defined in FTP(S) protocol. For more details, see *Chapter 6*. If it is 0, it is invalid.

2.16. AT+QFTPLEN   Get the Length of Transferred Data

This command gets the length of transferred data on FTP(S) server, after executing **AT+QFTPPUT**, **AT+QFTPGET**, **AT+QFTPNLST** and **AT+QFTPLIST**.

AT+QFTPLEN Get the Length of Transferred Data	
Test Command **AT+QFTPLEN=?**	Response **OK**
Execution Command **AT+QFTPLEN**	Response **OK** **+QFTPLEN: 0,<transferlen>** If there is any error: **+CME ERROR: <err>**

Parameter

<transferlen>	Integer type. The length of transferred data on FTP(S) server. Unit: byte.
<err>	Integer type. The error code of the operation. See *Chapter 5* for details.

2.17. AT+QFTPSTAT   Get the Status of FTP(S) Server

This command gets the status of FTP(S) server.

AT+QFTPSTAT Get the Status of FTP Server	
Test Command **AT+QFTPSTAT=?**	Response **OK**
Execution Command **AT+QFTPSTAT**	Response **OK** **+QFTPSTAT: 0,<ftpstat>** If there is any error: **+CME ERROR: <err>**

Parameter

<ftpstat>	Integer type. The current status of FTP(S) server.
	0 Opening an FTP(S) server
	1 The FTP(S) server is open and idle
	2 Transferring data with FTP(S) server
	3 Closing the FTP(S) server
	4 The FTP(S) server is closed
<err>	Integer type. The error code of the operation. See *Chapter 5* for details.

2.18. AT+QFTPCLOSE   Log out from FTP(S) Server

This command logs 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.

AT+QFTPCLOSE Log out from FTP(S) Server	
Test Command **AT+QFTPCLOSE=?**	Response **OK**
Execution Command **AT+QFTPCLOSE**	Response **OK** **+QFTPCLOSE: <err>,<protocol_error>** If there is any error: **+CME ERROR: <err>**

Parameter

\<err\>	Integer type. The error code of the operation. See *Chapter 5* for details.
\<protocol_error\>	Integer type. For reference only. Indicates the original error code from FTP(S) server which is defined in FTP(S) protocol. For more details, see *Chapter 6*. If it is 0, it is invalid.

3 Examples

3.1. Login to FTP Server

```
//Step 1: Configure and activate the PDP context.
AT+QICSGP=1,1,"CMNBIOT","","",1          //Configure PDP context 1. APN is "CMNBIOT" for
                                          China Mobile NB-IOT network.

OK
AT+QIACT=1                                //Activate PDP context 1.
OK                                        //Activated successfully.
AT+QIACT?                                 //Query the state of PDP context.
+QIACT: 1,1,1,"10.7.157.1"

OK
AT+QFTPCFG="contextid",1                  //Configure the PDP context ID as 1 (PDP context
1                                         has been activated).
OK


//Step 2: Configure user account and transfer settings.
AT+QFTPCFG="account","test","test"        //Set user name and password.
OK
AT+QFTPCFG="filetype",1                    //Set the data type as ASCII.
OK
AT+QFTPCFG="transmode",1                   //Set transfer mode as passive mode.
OK
AT+QFTPCFG="rsptimeout",90                 //Set response timeout value.
OK


//Step 3: Login to FTP server.
AT+QFTPOPEN="hf.quectel.com",21
OK

+QFTPOPEN: 0,0
```

3.2. Login to FTPS Server

//Step 1: Configure and activate the PDP context.
AT+QICSGP=1,1,"CMNBIOT","","",1   //Configure PDP context 1. APN is "CMNBIOT" for China
                                             Mobile NB-IOT network.

OK
AT+QIACT=1   //Activate PDP context 1.
OK   //Activated successfully.
AT+QIACT?   //Query the state of PDP context.
+QIACT: 1,1,1, "10.7.157.1"

OK
AT+QFTPCFG="contextid",1   //Configure the PDP context ID as 1 (PDP context 1 has
                                             been activated).

OK

//Step 2: Configure user account and transfer settings.
AT+QFTPCFG="account","test","test"   //Set user name and password.
OK
AT+QFTPCFG="filetype",1   //Set the data type as ASCII.
OK
AT+QFTPCFG="transmode",1   //Set transfer mode as passive mode.
OK
AT+QFTPCFG="rsptimeout",90   //Set response timeout value.
OK

//Step 3: FTPS configuration
AT+QFTPCFG="ssltype",1   //Set SSL type as 1 (the module works as FTPS client).
OK
AT+QFTPCFG="sslctxid",0   //Select SSL context 0.
OK
AT+QSSLCFG="ciphersuite",0,0XFFFF   //Configure SSL cipher suite type as 0XFFFF, which means
                                             all cipher suite types are supported.

OK
AT+QSSLCFG="seclevel",0,0   //Configure SSL security level as 0, which means the SSL
                                             CA certificate is not needed.

OK
AT+QSSLCFG="sslversion",0,4   //Configure SSL version as 4, which means all SSL Version.
OK

//Step 4: Login to FTPS server.
AT+QFTPOPEN="hf.quectel.com",990
OK

+QFTPOPEN: 0,0

3.3. Folder Operation

AT+QFTPCWD="/"   //Set the current directory.
OK

+QFTPCWD: 0,0
AT+QFTPPWD   //Query the current directory.
OK

+QFTPPWD: 0,"/"
AT+QFTPMKDIR="TEST"   //Create a folder as *TEST* on FTP(S) server.
OK

+QFTPMKDIR: 0,0
AT+QFTPRENAME="TEST","TEST_NEW"   //Rename the folder into *TEST_NEW*.
OK

+QFTPRENAME: 0,0
AT+QFTPRMDIR="TEST_NEW"   //Delete the folder.
OK

+QFTPRMDIR: 0,0

3.4. File Operation

AT+QFTPCWD="/"   //Set the current directory.
OK

+QFTPCWD: 0,0
AT+QFTPPWD   //Query the current directory.
OK

+QFTPPWD: 0, "/"
AT+QFTPSIZE="test_my1.txt"   //Query the size of *test_my1.txt* on FTP(S) server.
OK

+QFTPSIZE: 1000

AT+QFTPRENAME="test_my1.txt","test_new.txt" //Rename the file into *test_new.txt*.
OK

+QFTPRENAME: 0,0
AT+QFTPMDTM="test_new.txt"   //Get the file modification time of *test_new.txt* on FTP(S) server.
OK

+QFTPMDTM: 0, "20140708110039"
AT+QFTPDEL="test_new.txt"   //Delete *test_new.txt* on FTP(S) server.
OK

+QFTPDEL: 0,0

3.5. List File Information or File Names

AT+QFTPCWD="/"   //Set the current directory.
OK

+QFTPCWD: 0,0
AT+QFTPLIST=".","COM:"   //List the content of the current directory and the data will be outputted to COM port.
CONNECT
<output_content>
OK

+QFTPLIST: 0,1000
AT+QFTPLIST=".","list.txt"   //List the content of the current directory and the data will be outputted to *list.txt*.
OK

+QFTPLIST: 0,1000
AT+QFTPLIST="TEST_2","COM:"   //List the content of *TEST_2* and the data will be outputted to COM port.
CONNECT
<output_content>
OK

+QFTPLIST: 0,1000
AT+QFTPNLST=".","COM:"   //List file names of the current directory and the data will be outputted to COM port.
CONNECT
<output_filename>

```
OK


+QFTPNLST: 0,1000
AT+QFTPNLST=".","nlst.txt"          //List file names of the current directory and the data will be
                                      outputted to nlst.txt.

OK


+QFTPNLST: 0,1000
AT+QFTPNLST="TEST_2","COM:"          //List file names of TEST_2 and the data will be outputted to
                                      COM port.

CONNECT
<output_filename>
OK


+QFTPNLST: 0,1000
AT+QFTPMLSD=".","COM:"               //List standardized file and directory information of the current
                                      directory and the data will be outputted to COM port.

CONNECT
<output_info>
OK


+QFTPMLSD: 0,1000
AT+QFTPMLSD=".","nlst.txt"           //List standardized file and directory information of the current
                                      directory and the data is outputted to nlst.txt.

OK


+QFTPMLSD: 0,1000
AT+QFTPMLSD="TEST_2","COM:"          //List standardized directory information of TEST_2 and the data
                                      is outputted to COM port.

CONNECT
<output_info>
OK


+QFTPMLSD: 0,1000
```

3.6. Upload a File to FTP(S) Server

```
AT+QFTPCWD="/"
OK


+QFTPCWD: 0,0
AT+QFTPSTAT
```

+QFTPSTAT: 0,1

OK

//Upload a file via COM port.
AT+QFTPPUT="test_my.txt","COM:",0   //All data will be saved as *test_my.txt* on FTP(S) server.
CONNECT
//Input the data via COM port.
+++   //Exit data mode
OK

+QFTPPUT: 0,1000
AT+QFTPLEN
OK

+QFTPLEN: 0,1000
AT+QFTPSIZE="test_my.txt"
OK

+QFTPSIZE: 0,1000

//Upload a file via COM port and the start position is 1000.
AT+QFTPPUT="test_my.txt","COM:",1000   //All data will be saved as *test_my.txt* on FTP(S) server.
CONNECT
//Input the file data via COM port
+++   //Exit data mode
OK

+QFTPPUT: 0,500

AT+QFTPSIZE="test_my.txt"
OK

+QFTPSIZE: 0,1500

//Upload a file via COM port to FTP(S) server twice in 1024 bytes each time.
AT+QFTPPUT="test.txt","COM:",0,1024,0   //It is not the last 1024 bytes of *test.txt*.
CONNECT
//Input the file data via COM port
OK   //Data length reaches 1024 bytes.

+QFTPPUT: 0,1024
AT+QFTPPUT="test.txt","COM:",1024,1024,1   //It is the last 1024 bytes of *test.txt*.
CONNECT

//Input the file data via COM port
OK //Data length reaches 1024 bytes.

+QFTPPUT: 0,1024

//Upload a file from UFS to FTP server.
AT+QFUPL="test_ufs.txt",1000,300,1 //Upload a file to UFS and the file will be saved as
test_ufs.txt. The maximum file size is 1000 bytes.
300 indicates timeout value and 1 indicates ACK
mode. For more details, see
Quectel_BG95&BG77_FILE_Application_Note.

CONNECT
//Input 1000 bytes data
+QFUPL: 1000,707

OK

AT+QFLST="*"
+QFLST: "test_ufs.txt",1000

OK
AT+QFTPPUT="test_my1.txt", "test_ufs.txt",0 //Upload *test_ufs.txt* to FTP(S) server and save it as
test_my1.txt on FTP(S) server.

OK

+QFTPPUT: 0,1000

AT+QFTPLEN
OK

+QFTPLEN: 0,1000
AT+QFTPSIZE="test_my1.txt"
OK

+QFTPSIZE: 0,1000
AT+QFDEL="test_ufs.txt" //Delete the local UFS file.
OK

3.7. Download a File from FTP(S) Server

AT+QFTPCWD="/"
OK

+QFTPCWD: 0,0

//Solution 1: Output downloaded data directly via COM port.
//Download a file from FTP(S) server and the data will be outputted to COM port.
AT+QFTPGET="test_my.txt","COM:"
CONNECT
<output_data>
OK

+QFTPGET: 0,1000

//Download a file and the data will be outputted to COM port twice in 500 bytes each time.
AT+QFTPGET="test.txt","COM:",0,500   //The size of *test.txt* is 1000 bytes. Download the first
                                                                            500 bytes.
CONNECT
<output_data>
OK

+QFTPGET: 0,500
AT+QFTPGET="test.txt", "COM:",500,500   //Download the left 500 bytes.
CONNECT
<output_data>
OK

+QFTPGET: 0,500

//Solution 2: Save the downloaded data into a UFS file.
//Download a file from FTP(S) server and save it to UFS.
AT+QFTPGET="test_my1.txt","test.txt"   //Download the file and save it to UFS as *test.txt*.
OK

+QFTPGET: 0,1000
AT+QFLST="*"
+QFLST: test.txt,1000

OK

//Download a file from FTP(S) server and save it to UFS. The start position is 450.

AT+QFTPGET="test_my1.txt","test1.txt",450   //Download the file and save it to UFS as *test.txt*.
OK

+QFTPGET: 0,550

AT+QFTPLEN
OK

+QFTPLEN: 0,550
AT+QFLST="*"
+QFLST: test.txt,1000
+QFLST: test1.txt,550

OK

3.8. Log out from FTP(S) Server

AT+QFTPCLOSE   //Log out from FTP(S) server.
OK

+QFTPCLOSE: 0,0
AT+QIDEACT=1   //Deactivate the PDP context which was activated for FTP(S).
OK

4 Error Handling

4.1. Executing FTP(S) AT Command Fails

When executing FTP(S) AT commands, if **ERROR** response is received from the module, check whether the U(SIM) card is inserted and whether it is **+CPIN: READY** returned when executing **AT+CPIN?**.

4.2. PDP Activation Fails

If it is failed to activate a PDP context with **AT+QIACT**, check the following configurations:

1. Query the PS domain status by **AT+CEREG?** (for LTE Cat M and Cat NB2 networks) or **AT+CGREG?** (for EGPRS network) and make sure the PS domain has been registered.
2. Query the PDP context parameters by **AT+QICSGP=<contextID>** and make sure the APN of the specified PDP context has been set.
3. Make sure the specified PDP context ID is neither used by PPP nor activated by **AT+CGACT**.
4. The module supports maximum three PDP contexts activated simultaneously under LTE Cat M/ EGPRS and maximum two under LTE Cat NB2.

If all above configurations are correct, but activating the PDP context by **AT+QIACT** still fails, reboot the module to resolve this issue. After rebooting the module, check the configurations mentioned above for at least three times and each time at an interval of 10 minutes to avoid frequent rebooting of the module.

4.3. DNS Parse Fails

When executing **AT+QFTPOPEN**, if **+QFTPOPEN: 604,0** is returned, check the following aspects:

1. Make sure the domain name of FTP(S) server is valid.
2. Query the status of the PDP context with **AT+QIACT?** to make sure the specified PDP context has been activated successfully.

4.4. Error Response of FTP(S) Server

When the **<protocol_error>** in **+QFTPXX: <err>,<protocol_error>** is not 0, it indicates an error code replied from FTP(S) server.

The issue can be identified based on the returned protocol error code. For example, if **<protocol_error>** is 530 (not logged in), **<username>** or **<password>** may be wrong. If **<protocol_error>** is 550 (requested action not taken: file unavailable.), the file or directory may not exist. For more details, see *RFC959 - File Transfer Protocol*.

5 Summary of Error Codes

The error code **<err>** indicates an error related to mobile equipment or network. The details about **<err>** are described in the following table.

Table 3: Summary of Error Codes

<err>	Description
0	Operation successful
601	Unknown error
602	FTP(S) server blocked
603	FTP(S) server busy
604	DNS parse failed
605	Network error
606	Control connection closed.
607	Data connection closed
608	Socket closed by peer
609	Timeout error
610	Invalid parameter
611	Failed to open file
612	File position invalid
613	File error
614	Service not available, closing control connection
615	Open data connection failed
616	Connection closed; transfer aborted
617	Requested file action not taken

618	Requested action aborted: local error in processing
619	Requested action not taken: insufficient system storage
620	Syntax error, command unrecognized
621	Syntax error in parameters or arguments
622	Command not implemented
623	Bad sequence of commands
624	Command parameter not implemented
625	Not logged in
626	Need account for storing files
627	Requested action not taken
628	Requested action aborted: page type unknown
629	Requested file action aborted
630	Requested file name invalid
631	SSL authentication failed

6 Summary of FTP(S) Protocol Error Codes

The protocol error code **\<protocol_error\>** indicates an error replied from FTP(S) server when it is not 0. See *RFC959 - File Transfer Protocol*. The details of **\<protocol_error\>** are described in the following table.

Table 4: Summary of FTP(S) Protocol Error Codes

\<protocol_error\>	Description
421	Service not available, closing control connection
425	Opening data connection failed
426	Connection closed; transfer aborted
450	Requested file action not taken
451	Requested action aborted: local error in processing
452	Requested action not taken: insufficient system storage
500	Syntax error, command unrecognized
501	Syntax error in parameters or arguments
502	Command not implemented
503	Bad sequence of commands
504	Command parameter not implemented
530	Not logged in
532	Need account for storing files
550	Requested action not taken: file unavailable
551	Requested action aborted: page type unknown
552	Requested file action aborted: exceeded storage allocation
553	Requested action not taken: file name not allowed

7 Appendix A References

Table 5: Related Documents

SN	Document Name	Remark
[1]	RFC959	File Transfer Protocol
[2]	Quectel_BG95&BG77_TCP(IP)_Application_Note	BG95&BG77 TCP/IP AT Commands Manual
[3]	Quectel_BG95&BG77_FILE_Application_Note	BG95&BG77 FILE AT Commands Manual
[4]	Quectel_BG95&BG77_AT_Commands_Manual	BG95&BG77 AT Commands Manual
[5]	Quectel_BG95&BG77_SSL_Application_Note	BG95&BG77 SSL AT Commands Manual

Table 6: Terms and Abbreviations

Abbreviation	Description
ACK	Acknowledgement
APN	Access Point Name
ASCII	American Standard Code for Information Interchange
DNS	Domain Name Server
IP	Internet Protocol
DTR	Data Terminal Ready
FTP	File Transfer Protocol
FTPS	FTP over SSL
PDP	Packet Data Protocol
PPP	Point-to-Point Protocol

PS	Packet Switching
SSL	Secure Sockets Layer
TLS	Transport Layer Security
UFS	Universal Flash Storage
URC	Unsolicited Result Code
(U)SIM	(Universal) Subscriber Identity Module

PS   Packet Switching