EG800Q&EG91xQ Series
DFOTA Upgrade Guide

LTE Standard Module Series

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Our aim is to provide customers with timely and comprehensive service. For any assistance, please contact our company headquarters:

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About the Document

Revision History

Version	Date	Author	Description
-	2022-10-27	Byron ZHOU	Creation of the document
1.0	2023-03-06	Byron ZHOU	First official release
1.1	2023-09-06	Byron ZHOU	Updated the applicable modules: ● Added EG916Q-GL. ● Updated EG800Q-EU to EG800Q series.
1.2	2024-05-22	Byron ZHOU	Updated EG915Q-NA to EG915Q series.
1.3	2024-09-25	Byron ZHOU	1. Updated the document name from "Application Note" to "Upgrade Guide". 2. Added the chapter of DFOTA implementation and user responsibility (Chapter 1.1). 3. Optimized the DFOTA firmware upgrade flowchart to distinguish between the user side and the Quectel side (Figure 1). 4. Optimized the description of the DFOTA firmware upgrade steps and added relevant notes to distinguish between the user side and the Quectel side (Chapter 2). 5. Updated the declaration of AT command examples (Chapter 3.2). 6. Optimized the explanation of the <serverURL> parameter and updated the URL address and related instructions in the command example (Chapter 3.3.1.1). 7. Optimized the explanation of the <HTTP_server_URL> parameter and updated the URL address and related instructions in the command example (Chapter 3.3.1.2).

Contents

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1 Introduction

Quectel LTE Standard EG800Q series and EG91xQ family (EG915Q series and EG916Q-GL) modules support DFOTA (Delta Firmware Over-The-Air) function to realize the upgrade or degrade of the firmware version of the module.

1.1. DFOTA Implementation and User Responsibility

Quectel follows industry best practices with regard to firmware updates for its modules by enabling users to offer DFOTA updates. Please note that Quectel does not have the ability to unilaterally push updates to users' devices. Quectel hands full control over the DFOTA process to users. In the process, Quectel solely provides the updated firmware but cannot initiate DFOTA updates on users' devices.

Users can determine when to push the update to the Quectel modules using the DFOTA mechanism by configuring corresponding parameters for the update that the users host on their own infrastructures.

2 Firmware Upgrade via DFOTA

The following chart illustrates the procedures of firmware upgrade through DFOTA.

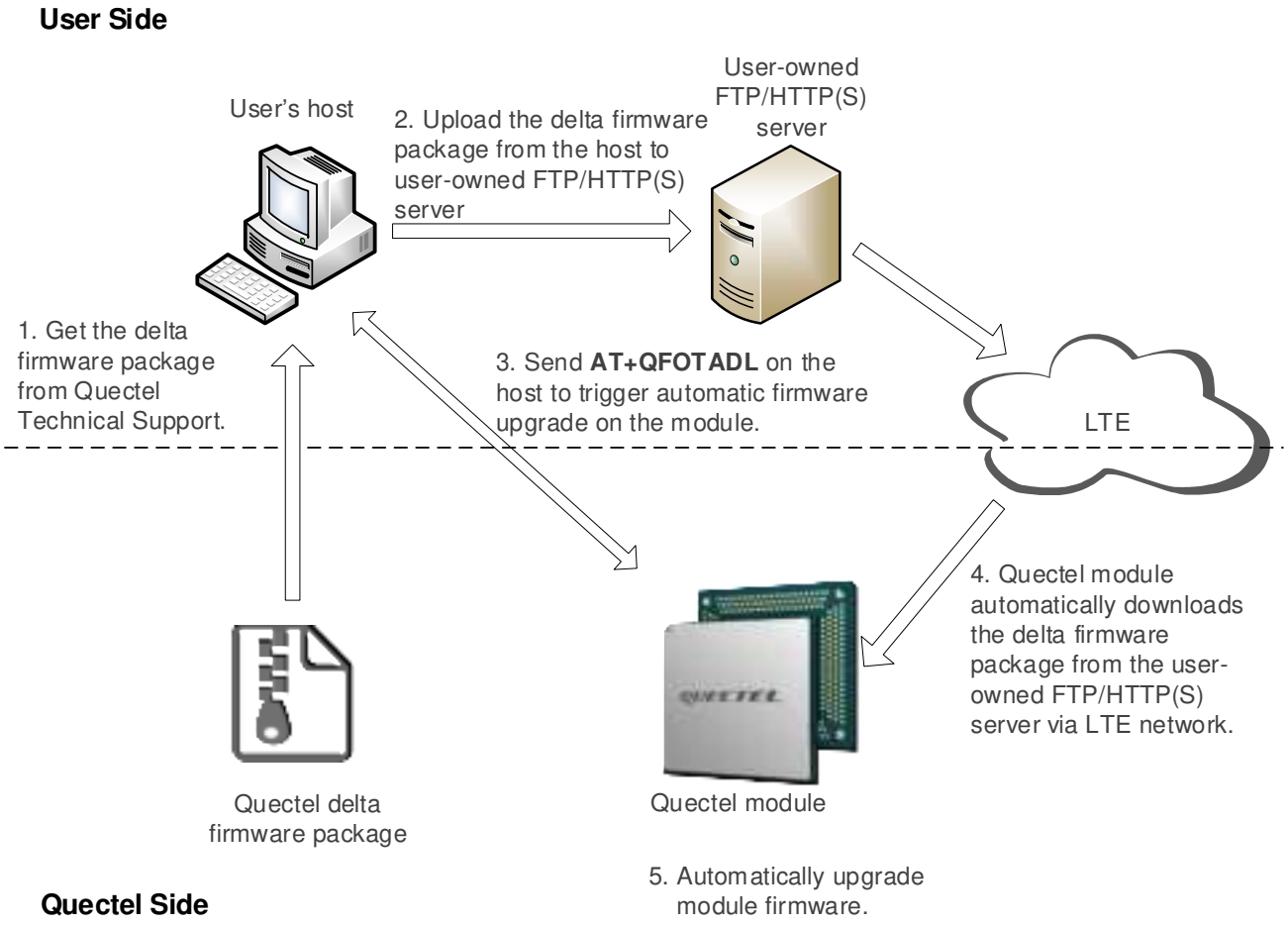

Figure 1: Firmware Upgrade via DFOTA

As shown in the above figure, the following steps need to be performed to upgrade the firmware:

Step 1: Get the delta firmware package from Quectel Technical Support (See ***Chapter 2.1*** for details).
Step 2: Upload the delta firmware package to your FTP/HTTP(S) server or host (See ***Chapter 2.2*** for details).
Step 3: Execute **AT+QFOTADL** on the host to trigger automatic firmware upgrade on the module (see ***Chapter 2.3*** for details).

Step 4: The module automatically downloads the delta firmware package from your FTP/HTTP(S) server via LTE network or gets delta firmware package from your host.

Step 5: The module internally runs the updating program to automatically upgrade the module firmware.

NOTE

1. During the upgrading process, please make sure that the module is powered up, otherwise, the DFOTA upgrade may fail and cannot be restored.
2. You are responsible for providing and managing the FTP/HTTP(S) server for the firmware upgrade. Quectel does not supply the server or assist with its setup.

2.1. Get Delta Firmware Package

Before firmware upgrading, check the original firmware version name with **ATI** and confirm the target firmware version, and then send the two firmware versions to Quectel Technical Support to obtain the corresponding delta firmware package.

NOTE

There are two types of delta firmware packages, one is a *.par* file to upgrade only the firmware version; the other is a *.bin* file to upgrade a tool for upgrading firmware (updater) and the firmware version at the same time. You can choose the delta package as needed.

2.2. Upload Delta Firmware Package to FTP/HTTP(S) Server or Host

When the delta package is stored on the FTP/HTTP(S) server:

Step 1: Please set up an FTP/HTTP(S) server before using the DFOTA function (Quectel does not provide such servers).

Step 2: After completing the server setup, upload the delta firmware package to your server, and save the storage path.

You can also store the delta package on your host directly after getting it.

2.3. Execute AT Command to Upgrade the Firmware

After uploading the delta firmware package to the FTP/HTTP(S) server or your host, execute **AT+QFOTADL** on the host, and then the module will download the delta firmware package from the FTP/HTTP(S) server over the air or gets the delta firmware package from your host and upgrade the firmware automatically. For more details about the DFOTA AT commands, see ***Chapter 3.3***.

3 Description of DFOTA AT Commands

3.1. AT Command Introduction

3.1.1. 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 in a command, the new value equals its previous value or the default settings, unless otherwise specified.
- **Underline** Default setting of a parameter.

3.1.2. AT Command Syntax

All command lines must start with **AT** or **at** and end with **<CR>**. Information responses and result codes always start and end with a carriage return character and a line feed character: **<CR><LF><response><CR><LF>**. In tables presenting commands and responses throughout this document, only the commands and responses are presented, and **<CR>** and **<LF>** are deliberately omitted.

Table 1: Types of AT Commands

Command Type	Syntax	Description
Test Command	**AT+<cmd>=?**	Test the existence of corresponding command and return information about the type, value, or range of its parameter.
Read Command	**AT+<cmd>?**	Check the current parameter value of a corresponding command.
Write Command	**AT+<cmd>=<p1>[,<p2>[,<p3>[...]]]**	Set user-definable parameter value.
Execution Command	**AT+<cmd>**	Return a specific information parameter or perform a specific action.

3.2. Declaration of AT Command Examples

The AT command examples in this document are provided to help you learn about the use of AT commands introduced herein. The examples, however, should not be taken as Quectel's recommendation or suggestions about how to design a program flow or what status to set the module into. Sometimes multiple examples may be provided for one AT command. However, this does not mean that there exists a correlation among these examples and that they should be executed in a given sequence. The URLs, domain names, IP addresses, usernames/accounts, and passwords (if any) in the AT command examples are provided for illustrative and explanatory purposes only, and they should be modified to reflect your actual usage and specific needs.

3.3. AT Commands Description

3.3.1. AT+QFOTADL Upgrade Firmware via DFOTA

AT+QFOTADL enables automatic firmware upgrade for modules via DFOTA. See ***Chapter 3.3.1.1*** to ***Chapter 3.3.1.3*** for details.

If the delta package is stored on the FTP/HTTP(S) server, after executing the corresponding command, the module will automatically download the package from FTP/HTTP(S) server. When the package is downloaded successfully, the module will automatically upgrade the firmware; After the firmware is successfully upgraded, the module automatically reboots.

If the delta package is stored on your host, after executing the corresponding command, the module receives the package from your host through the main serial port or USB AT port, and then automatically upgrades the firmware.

AT+QFOTADL Upgrade Firmware via DFOTA	
Test Command **AT+QFOTADL=?**	Response **+QFOTADL: <url>,**(list of **<upgrade_mode>**s)**,**(list of **<download_URC_max>**s)**,(**list of **<update_URC_max>**s**)** **OK**
Maximum Response Time	180 s
Characteristics	-

Parameter

<url>	String type. The URL of the delta firmware package stored on the FTP/HTTP(S) server or host. Maximum length: 255 bytes. See ***Chapter 3.3.1.1*** to ***Chapter 3.3.1.3*** for details.

<upgrade_mode>	Integer type. Upgrade mode after successfully downloading the delta firmware package. 0 Upgrade the firmware after manually rebooting the module 1 Automatically reboot the module to upgrade the firmware at once.
<download_URC_max>	Integer type. URC indicating the download progress. The last URC indicates that the download is completed. For example: if it is set to 50, 50 URCs will be reported to indicate the download progress, of which the 25th URC indicates that the download is half completed, and the 50th URC indicates that the download is completed. 0 Reporting URCs indicating download progress is not allowed 5–100 Maximum number of reported download progress URCs
<update_URC_max>	Integer type. URC indicating the upgrade progress. The last URC indicates that the upgrade is completed. For example: if it is set to 50, 50 URCs will be reported to indicate the upgrade progress, of which the 25th URC indicates that the upgrade is half completed, and the 50th URC indicates that the upgrade is completed. 0 Reporting URCs indicating upgrade progress is not allowed 5–100 Maximum number of reported upgrade progress URCs

3.3.1.1. AT+QFOTADL=<FTP_URL> Upgrade Firmware over FTP Server

When the delta package is stored on the FTP server, execute **AT+QFOTADL=<FTP_URL>** to initiate automatic firmware upgrade for modules via DFOTA. After executing this command, the module will automatically download the package from FTP server and then upgrade the firmware.

AT+QFOTADL=<FTP_URL> Upgrade Firmware over FTP Server	
Write Command If you only upgrade the firmware version (the delta package is a *.par* file.): **AT+QFOTADL=<FTP_URL>[,<upgrade_mode>[,<download_URC_max>[,<update_URC_max>]]]**	Response **OK** **+QIND: "FOTA","FTPSTART"** **[+QIND: "FOTA","DOWNLOADING",<percent>** **+QIND: "FOTA","DOWNLOADING",<percent>** **…]** **+QIND: "FOTA","FTPEND",<FTP_err>** **+QIND: "FOTA","START"** **[+QIND: "FOTA","UPDATING",<percent>** **+QIND: "FOTA","UPDATING",<percent>** **...]** **+QIND: "FOTA","END",<err>** If there is any error: **ERROR**
Write Command If you upgrade the firmware version and	Response **OK**

the updater tool at the same time (the delta package is a *.bin* file): **AT+QFOTADL=<FTP_URL>[,<upgrade_mode>[,<download_URC_max>[,<update_URC_max>]]]**	**+QIND: "FOTA","FTPSTART"** **[+QIND: "FOTA","DOWNLOADING",<percent>** **+QIND: "FOTA","DOWNLOADING",<percent>** **…]** **+QIND: "FOTA","FTPEND",<FTP_err>** **+QIND: "FOTA","UPDATERSTART"** **+QIND: "FOTA","UPDATEREND",<updater_err>** **+QIND: "FOTA","START"** **[+QIND: "FOTA","UPDATING",<percent>** **+QIND: "FOTA","UPDATING",<percent>** **...]** **+QIND: "FOTA","END",<err>** If there is any error: **ERROR**
Maximum Response Time	180 s
Characteristics	-

Parameter

<FTP_URL>	String type. The URL address that the delta firmware package stored on the FTP server. It should be started with "FTP://". For example, **"FTP://<user_name>:<password>@<serverURL>:<port>/<file_path>"**。 Maximum length: 255 bytes.
<user_name>	String type. Username for authentication.
<password>	String type. Password for authentication.
<serverURL>	String type. IP address or domain name of FTP server owned and operated by you.
<port>	Integer type. Port of FTP server. Range: 1–65535. Default: 21.
<file_path>	String type. Delta firmware package path on FTP server.
<upgrade_mode>	Integer type. Upgrade mode after successfully downloading the delta firmware package. 0 Upgrade the firmware after manually rebooting the module. 1 Automatically reboot the module to upgrade the firmware at once.
<download_URC_max>	Integer type. URC indicating the download progress. The last URC indicates that the download is completed. For example: if it is set to 50, 50 URCs will be reported to indicate the download progress, of which the 25th URC indicates that the download is half completed, and the 50th URC indicates that the download is completed. 0 Reporting URCs indicating download progress is not allowed 5–100 Maximum number of reported download progress URCs
<update_URC_max>	Integer type. URC indicating the upgrade progress. The last URC

	indicates that the upgrade is completed. For example: if it is set to 50, 50 URCs will be reported to indicate the upgrade progress, of which the 25th URC indicates that the upgrade is half completed, and the 50th URC indicates that the upgrade is completed. 0 Reporting URCs indicating upgrade progress is not allowed 5–100 Maximum number of reported upgrade progress URCs
<FTP_err>	Integer type. The FTP result code. 0 means download successfully. See ***Chapter 4.1*** for details.
<updater_err>	Integer type. The result code of the updater tool upgrading. 0 means updater upgraded successfully. See ***Chapter 4.4*** for details.
<percent>	Integer type. Download or upgrade progress.
<err>	Integer type. Result code. 0 means upgraded successfully. Any other value means an error. See ***Chapter 4.5*** for details.

Example

```
//Upgrade the firmware when delta firmware package is stored on your FTP server.
"FTP://test:test@192.0.2.2:21/EG800Q_FOTA_PACKAGE.par" is used as an example URL below. (The URL is provided for illustrative purpose only. Please replace it with a valid URL that corresponds to your FTP server and firmware package.)
//Configure the PDP context. In this example, the PDP context ID is 2. For more details, refer to the document [1].
AT+QICSGP=2,1,"broadband","","",1      //Set the PDP context ID to 2, the APN to "broadband" (representing AT&T), the username and password to be empty, and the authentication type to PAP.
OK
AT+QIACT=2                             //Activate the PDP context.
OK
//Execute AT+QFOTADL to initiate automatic firmware upgrade via DFOTA, and then the module will start to download the delta package and upgrade the firmware automatically.
AT+QFOTADL="FTP://test:test@192.0.2.2:21/EG800Q_FOTA_PACKAGE.par",1,50
OK
+QIND: "FOTA","FTPSTART"
+QIND: "FOTA","DOWNLOADING",2
+QIND: "FOTA","DOWNLOADING",4
...
+QIND: "FOTA","DOWNLOADING",100
+QIND: "FOTA","HTTPEND",0              //Download the delta firmware package from the FTP server successfully.
//After the download completes, the module will reboot automatically and enter the upgrade mode and then upgrade firmware through DFOTA.
+QIND: "FOTA","START"
+QIND: "FOTA","UPDATING",1
+QIND: "FOTA","UPDATING",2
...
```

```
+QIND: "FOTA","UPDATING",100
+QIND: "FOTA","END",0                    //Upgrade the firmware successfully.
```

NOTE

1. The server address and delta package name above are only examples, and you can modify them as needed.
2. If the downloaded delta package is a file suffixed with *.bin*, after the delta package is downloaded, the updater tool will be upgraded first, and the following URC will be reported:
   +QIND: "FOTA","UPDATERSTART"
   +QIND: "FOTA","UPDATEREND",0 // Upgrade the updater tool successfully.
   After the updater tool is successfully upgraded, the module will reboot automatically and enter the upgrade mode and then upgrade firmware through DFOTA.

3.3.1.2. AT+QFOTADL=<HTTP_URL> Upgrade Firmware over HTTP(S) Server

When the delta package is stored on the HTTP(S) server, execute **AT+QFOTADL=<HTTP_URL>** to initiate automatic firmware upgrade for modules via DFOTA. After executing this command, the module will automatically download the package from HTTP(S) server and then upgrade the firmware.

AT+QFOTADL=<HTTP_URL> Upgrade Firmware over HTTP(S) Server	
Write Command If you only upgrade the firmware version (the delta package is a *.par* file.): **AT+QFOTADL=<HTTP_URL>[,<upgrade_mode>[,<download_URC_max>[,<update_URC_max>]]]**	Response **OK** **+QIND: "FOTA","HTTPSTART"** **[+QIND: "FOTA","DOWNLOADING",<percent>** **+QIND: "FOTA","DOWNLOADING",<percent>** **…]** **+QIND: "FOTA","HTTPEND",<HTTP_err>** **+QIND: "FOTA","START"** **[+QIND: "FOTA","UPDATING",<percent>** **+QIND: "FOTA","UPDATING",<percent>** **...]** **+QIND: "FOTA","END",<err>** If there is any error: **ERROR**
Write Command If you upgrade the firmware version and the updater tool at the same time (the delta package is a *.bin* file): **AT+QFOTADL=<HTTP_URL>[,<upgrade_mode>[,<download_URC_max>[,<**	Response **OK** **+QIND: "FOTA","HTTPSTART"** **[+QIND: "FOTA","DOWNLOADING",<percent>** **+QIND: "FOTA","DOWNLOADING",<percent>** **…]**

update_URC_max>]]]	**+QIND: "FOTA","HTTPEND",<HTTP_err>** **+QIND: "FOTA","UPDATERSTART"** **+QIND: "FOTA","UPDATEREND",<updater_err>** **+QIND: "FOTA","START"** **[+QIND: "FOTA","UPDATING",<percent>** **+QIND: "FOTA","UPDATING",<percent>** **...]** **+QIND: "FOTA","END",<err>** If there is any error: **ERROR**
Maximum Response Time	180 s
Characteristics	-

Parameter

<HTTP_URL>	String type. The URL of the delta firmware package stored on the HTTP(S) server. It should be started with "http://" or "https://". For example, "http://**<HTTP_server_URL>:<HTTP_port>/<HTTP_file_path>**". Maximum length: 255 bytes.
<HTTP_server_URL>	String type. The IP address or domain name of the HTTP(S) server owned and operated by you.
<HTTP_port>	Integer type. HTTP(S) server port. Range: 1–65535. Default value: 80.
<HTTP_file_path>	String type. The file path of the delta firmware package on the HTTP(S) server.
<upgrade_mode>	Integer type. Upgrade mode after successfully downloading the delta firmware package. 0 Upgrade the firmware after manually rebooting the module. 1 Automatically reboot the module to upgrade the firmware at once.
<download_URC_max>	Integer type. URC indicating the download progress. The last URC indicates that the download is completed. For example: if it is set to 50, 50 URCs will be reported to indicate the download progress, of which the 25th URC indicates that the download is half completed, and the 50th URC indicates that the download is completed. 0 Reporting URCs indicating download progress is not allowed 5–100 Maximum number of reported download progress URCs
<update_URC_max>	Integer type. URC indicating the upgrade progress. The last URC indicates that the upgrade is completed. For example: if it is set to 50, 50 URCs will be reported to indicate the upgrade progress, of which the 25th URC indicates that the upgrade is half completed, and the 50th URC indicates that the upgrade is completed. 0 Reporting URCs indicating upgrade progress is not allowed

	5–100 Maximum number of reported upgrade progress URCs
<HTTP_err>	Integer type. The HTTP(S) result code. 0 means download successfully. See ***Chapter 4.2*** for details.
<updater_err>	Integer type. The result code of the updater tool upgrading. 0 means updater upgraded successfully. See ***Chapter 4.4*** for details.
<percent>	Integer type. Download or upgrade progress.
<err>	Integer type. Result code. 0 means upgraded successfully. Any other value means an error. See ***Chapter 4.5*** for details.

Example

```
//Upgrade the firmware when delta firmware package is stored on your HTTP(S) server.

“http://www.example.com:100/EG800Q_FOTA_PACKAGE.par" is used as an example URL below. (The URL is provided for illustrative purpose only. Please replace it with a valid URL that corresponds to your HTTP(S) server and firmware package.)

//Configure the PDP context. In this example, the PDP context ID is 2. For more details, refer to the document [1].
AT+QICSGP=2,1,"broadband","","",1  //Set the PDP context ID to 2, the APN to "broadband" (representing AT&T), the username and password to be empty, and the authentication type to PAP.
OK
AT+QIACT=2                         //Activate the PDP context.
OK
//Execute AT+QFOTADL to initiate automatic firmware upgrade via DFOTA, and then the module will start to download the delta package and upgrade the firmware automatically.
AT+QFOTADL="http://www.example.com:100/EG800Q_FOTA_PACKAGE.par",1,50
OK
+QIND: "FOTA","HTTPSTART"
+QIND: "FOTA","DOWNLOADING",2
+QIND: "FOTA","DOWNLOADING",4
...
+QIND: "FOTA","DOWNLOADING",100
+QIND: "FOTA","HTTPEND",0          //Download the delta firmware package from the HTTP(S) server successfully.
//After the download completes, the module will reboot automatically and enter the upgrade mode and then upgrade firmware through DFOTA.
+QIND: "FOTA","START"
+QIND: "FOTA","UPDATING",1
+QIND: "FOTA","UPDATING",2
...
+QIND: "FOTA","UPDATING",100
+QIND: "FOTA","END",0              //Upgrade the firmware successfully.
```

NOTE

1. The server address and delta package name above are only examples, and you can modify them as needed.
2. If the downloaded delta package is a file suffixed with *.bin*, after the delta package is downloaded, the updater tool will be upgraded first, and the following URC will be reported:
   +QIND: "FOTA","UPDATERSTART"
   +QIND: "FOTA","UPDATEREND",0 //Upgrade the updater tool successfully.
   After the updater tool is successfully upgraded, the module will reboot automatically and enter the upgrade mode and then upgrade firmware through DFOTA.

3.3.1.3. AT+QFOTADL="FILE:<length>" Upgrade Firmware over Host

When the delta package is stored on your host, execute **AT+QFOTADL="FILE:<length>"** to initiate automatic firmware upgrade for modules via DFOTA. After executing this command, the module will receive the firmware package from your host through the main UART or USB AT port and then upgrade the firmware automatically.

If main UART (or USB AT port) is used, the following steps should be performed to upgrade firmware:

Step 1: The host opens the UART tool and chooses main UART(or USB AT port).
Step 2: Select the delta package from your host.
Step 3: Send **AT+QFOTADL="FILE:<length>"[,<upgrade_mode>[,<download_URC_max>[,<update_URC_max>]]]**
Step 4: Send the delta firmware package.

AT+QFOTADL="FILE:<length>" Upgrade Firmware over Host	
Write Command **AT+QFOTADL="FILE:<length>"[,<upgrade_mode>[,<download_URC_max>[,<update_URC_max>]]]**	Response **OK** **+QIND: "FOTA","FILESTART"** **[+QIND:"FOTA","DOWNLOADING",<upload length><total length><percent>** **+QIND:"FOTA","DOWNLOADING",<upload length><total length><percent>** **…]** **+QIND: "FOTA","FILEEND",<file_err>** **+QIND: "FOTA","START"** **[+QIND: "FOTA","UPDATING",<percent>** **+QIND: "FOTA","UPDATING",<percent>** **...]** **+QIND: "FOTA","END",<err>**

	If there is any error: **ERROR**
Maximum Response Time	180 s
Characteristics	-

Parameter

<length>	Integer type. Length of delta firmware package.
<file_err>	Integer type. File result code. 0 indicates successful downloading. Refer to ***Chapter 4.3*** for details.
<upload length>	Integer type. Length of uploaded delta firmware package.
<total length>	Integer type. Total length of delta firmware package.
<percent>	Integer type. Download or upgrade progress.
<err>	Integer type. Result code. 0 indicates upgraded successfully. Any other value indicates an error. See ***Chapter 4.5*** for details.
<upgrade_mode>	Integer type. Upgrade mode after successfully downloading the delta firmware package. 0 Upgrade the firmware after manually rebooting the module. 1 Automatically reboot the module to upgrade the firmware at once
<download_URC_max>	Integer type. URC indicating the download progress. The last URC indicates that the download is completed. For example: if it is set to 50, 50 URCs will be reported to indicate the download progress, of which the 25th URC indicates that the download is half completed, and the 50th URC indicates that the download is completed. 0 Reporting URCs indicating download progress is not allowed 5–100 Maximum number of reported download progress URCs
<update_URC_max>	Integer type. URC indicating the upgrade progress. The last URC indicates that the upgrade is completed. For example: if it is set to 50, 50 URCs will be reported to indicate the upgrade progress, of which the 25th URC indicates that the upgrade is half completed, and the 50th URC indicates that the upgrade is completed. 0 Reporting URCs indicating upgrade progress is not allowed 5–100 Maximum number of reported upgrade progress URCs

Example

```
// Upgrade the firmware when delta firmware package is stored on your host.
AT+QFOTADL="FILE:216014",1,100        //The length of delta firmware package is 216014 bytes.

OK
```

```
+QIND: "FOTA","FILESTART"
//Wait for the host to send delta firmware package through UART tool to module.
+QIND: "FOTA","DOWNLOADING",2450,216014,1
+QIND: "FOTA","DOWNLOADING",4550,216014,2
...
+QIND: "FOTA","DOWNLOADING",216014,216014,100
+QIND: "FOTA","FILEEND",0
//Upgrade firmware via DFOTA immediately after downloading delta firmware package.
+QIND: "FOTA","START"
+QIND: "FOTA","UPDATING",1
+QIND: "FOTA","UPDATING",2
...
+QIND: "FOTA","UPDATING",100
+QIND: "FOTA","END",0                    // Upgrade the firmware successfully.
```

4 Summary of Result Codes

This chapter introduces the result codes related to mobile equipment or network. The details about **<FTP_err>**, **<HTTP_err>**, **<file_err>**, **<updater_err>** and **<err>** are described as follows.

4.1. Summary of <FTP_err> Codes

Detailed information about **<FTP_err>** is listed as follows.

Table 2: Summary of <FTP_err> Codes

<FTP_err>	Description
0	FTP download successfully
601	FTP unknown error
602	FTP service blocked
603	FTP service 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	Failed to open data connection
616	Connection closed and 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	Failed to login FTP
626	Need account for storing files
627	Requested action not taken
628	Requested action aborted: page type unknown
629	Requested file action aborted

4.2. Summary of <HTTP_err> Codes

Detailed information about **<HTTP_err>** is listed as follows.

Table 3: Summary of <HTTP_err> Codes

<HTTP_err>	Description
0	HTTP(S) download successfully
701	HTTP(S) unknown error
702	HTTP(S) timeout
703	HTTP(S) busy
704	HTTP(S) UART busy
705	HTTP(S) does not get/post request
706	HTTP(S) network busy
707	HTTP(S) network open failed
708	HTTP(S) network not configured
709	HTTP(S) network deactivated
710	HTTP(S) network error
711	HTTP(S) URL error
712	HTTP(S) URL empty
713	HTTP(S) IP address error
714	HTTP(S) DNS error
715	HTTP(S) socket creation error
716	HTTP(S) socket connection error
717	HTTP(S) socket read error
718	HTTP(S) socket write error
719	HTTP(S) socket closed

720	HTTP(S) data encode error
721	HTTP(S) data decode error
722	HTTP(S) read timeout
723	HTTP(S) response failed
724	Incoming call busy
725	Voice call busy
726	Input timeout
727	Wait data timeout
728	Wait HTTP(S) response timeout
729	Allocate memory failed
730	Invalid parameter

4.3. Summary of <file_err> Codes

Detailed information about **<file_err>** is listed as follows.

Table 4: Summary of <file_err> Codes

<file_err>	Description
0	File download successfully
500	File dowmload error

4.4. Summary of <updater_err> Codes

Detailed information about **<updater_err>** is listed as follows.

Table 5: Summary of <updater_err> Codes

<updater_err>	Description
0	Updater upgraded successfully
-1	Updater package read error
-2	Updater package header parsing error
-3	The updater package has no ending tail
-4	Updater package verification error
-5	Memory erase error
-6	Error loading updater package

4.5. Summary of <err> Codes

Detailed information about **<err>** is listed as follows.

Table 6: Summary of <err> Codes

<err>	Description
0	DFOTA upgrade successfully
504	DFOTA upgrade failed
505	DFOTA package check error
506	DFOTA firmware MD5 check error
507	DFOTA package version is mismatched
552	DFOTA package project name is mismatched
553	DFOTA package baseline number is mismatched

5 Appendix References

Table 7: Related Document

Document Name
[1] Quectel_EG800Q&EG91xQ_Series_TCP(IP)_Application_Note

Table 8: Terms and Abbreviations

Abbreviation	Description
APN	Access Point Name
DFOTA	Delta Firmware Over-The-Air
GSM	Global System for Mobile Communications
GPRS	General Packet Radio Service
HTTP	Hyper Text Transfer Protocol
HTTPS	Hyper Text Transfer Protocol Secure
IP	Internet Protocol
LTE	Long Term Evolution
PAP	Password Authentication Protocol
PDP	Packet Data Protocol
URC	Unsolicited Result Code
URL	Uniform Resource Locator
WCDMA	Wideband Code Division Multiple Access