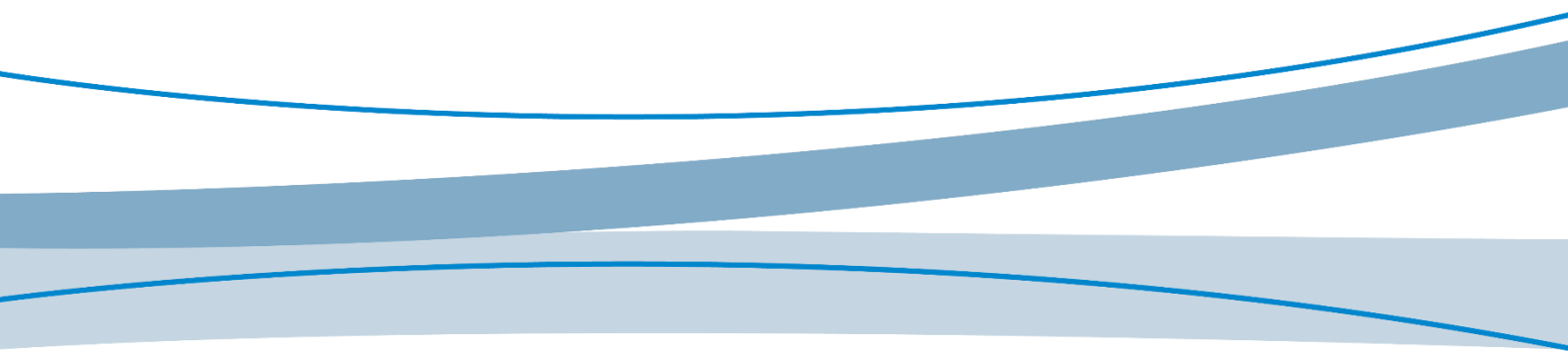




MTC

Application Guide_FOTA

V1.3



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Change History

V1.3 (2024-08-05)	Add application mode
V1.2 (2024-05-27)	Revise the description of questions 6 and 7 in the "FAQs" section
V1.1 (2024-05-10)	Add upgrade space instructions for Unisoc and HTTP server configuration instruction
V1.0 (2023-11-16)	Initial version.

Applicable Models

Platform	Project Model	Description
Qualcomm	NL668	NA
	LC116	
	MG110	
	MC116	
	MA510	
	FG132	
Zte	L716	NA
Unisoc	MC66x	NA
	MG66x	
	LC610x	
	LG610	
	MC61x	
Eigencomm	LE130	The maximum differential package supported by the models corresponding to EC718S and EC716S is 50KB;
	LE170	
	LE230	The specific size of differential packages supported by the module needs to be determined based on the remaining size of the file system;
	LE250	
	LE270	
	LE370	
	LE371	EC618.EC718S and EC716S not support download by FTP

1 Overview

FOTA refers to Firmware Over-The-Air, which is a means to update the firmware of module devices by downloading over the air.

In actual use, due to the wide distribution of module products, when module firmware has update patches, each terminal module needs to complete firmware patch download and firmware patch integration through FOTA function, so FOTA function is the key to ensure firmware update. In this document, firmware patches are uniformly referred to as upgrade packages.

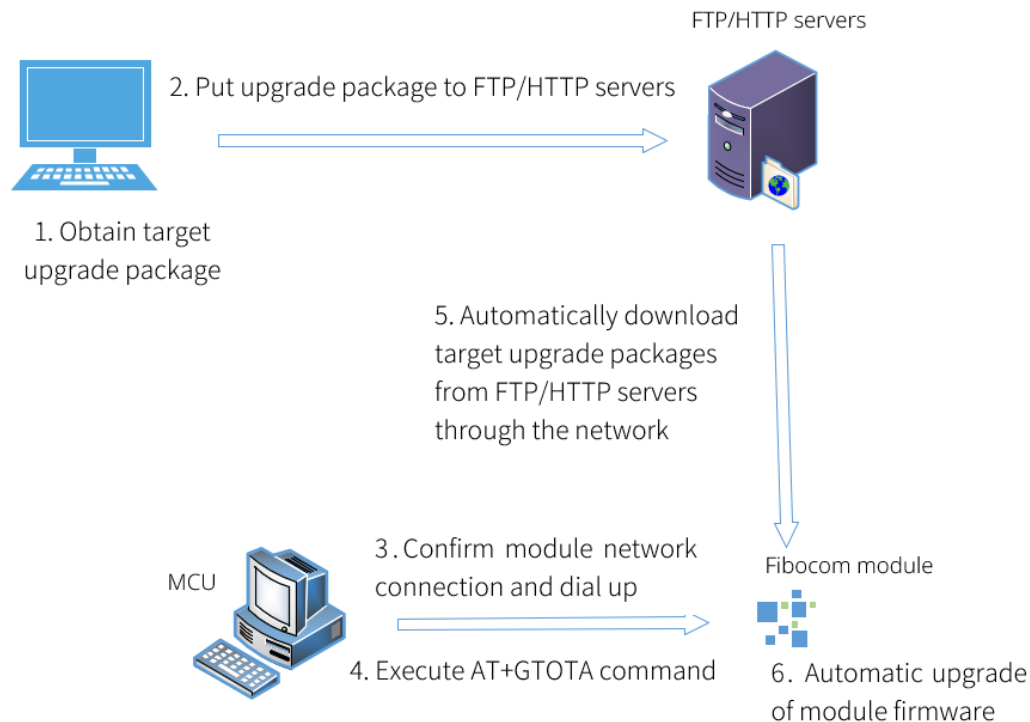
This document describes how Fibocom standard modules use FOTA functionality to download and update module firmware.

2 Acronyms and Abbreviations

FOTA	Firmware Over-The-Air Upgrade
HTTP	Hypertext Transfer Protocol
FTP	File Transfer Protocol

3 FOTA Upgrade Process

The following figure shows the FOTA upgrade process:



As shown above, you need to perform the following operations for customer upgrades:

1. Obtain the target upgrade package from Fibocom.
2. Place the upgrade package on an FTP/HTTP server.
3. Verify that the module has registered with the network and dialed successful.
4. When AT+GTOTA is executed, the module will download the upgrade package from FTP/HTTP server through the network. After the download is completed, the module will automatically restart and enter the upgrade. After the upgrade is completed, the module will report the upgrade result.



- Please do not power off the module during the upgrade process, otherwise it may cause FOTA upgrade failure.
- During the upgrade process of the QC9205 platform projects, the Module will restart multiple times. Please wait for ten minutes to check the upgrade result.
- For Unisoc platform projects, please confirm whether the module file system space is sufficient before upgrading. After storing the upgrade package, the remaining file system space of the module is greater than 128K (for the Unisoc platform to run and store upgrade process files). Query file system space command: AT+FSLSTPART.

As shown in the figure below, the remaining file system space is 523000/1024, which means the available space is approximately 510KB, and the maximum upgrade package

is 282KB.

```
[14:40:54.211]发→◇AT+FSLSTPART
[14:40:54.213]收←◆AT+FSLSTPART
+FSLSTPART: "/,523000
+FSLSTPART: "/modem",254500
+FSLSTPART: "/factory",88572
OK
```

3.1 Obtaining Upgrade Package

Obtain the current firmware version through AT+CGMR, confirm the target firmware version (i.e. the upgraded software version), and send the current version and target version information to the Fibocom technical support to obtain the corresponding firmware upgrade package.

3.2 Placing Upgrade Package on an FTP/HTTP Server

Verify that the target upgrade package has been placed on the server before the FOTA upgrade.

Fibocom does not provide FTP/HTTP server, so please build it by yourself. Put the corresponding upgrade package to the server and record the storage path of the upgrade package.

3.3 Registering for the Network and Dialing

AT+COPS?

Query network registration status.

AT+MIPCALL=1

Dialing to get an IP. Note that this is an asynchronous command. An OK response does not indicate the end of processing. Repeated commands to the module are reported as errors and are not processed until the command execution is complete.

If "+MIPCALL: IP address" obtained by the module in this dialing is reported, the dialing is successful.

If "+MIPCALL: 0" is reported, the dialing is failed.

If "ERROR" is reported, there is no network at present, or this command is sent repeatedly.



For QC9x07 and QC9205 platform projects, you do not need to execute the AT+MIPCALL command to execute FOTA download process.

3.4 Executing AT to Upgrade Firmware

After dialing is successful, execute **AT+GTOTA**. The module will start downloading the upgrade package, report the download progress, and automatically enter the upgrade after the download is completed. For details of the AT+GTOTA command, refer to the AT manual released by Fibocom.

3.4.1 FOTA Upgrade Example

FTP upgrade

```
AT+COPS?  
+COPS: 0,0,"CHINA MOBILE",7  
OK  
  
AT+MIPCALL=1  
OK  
  
+MIPCALL: 10.0.92.253  
  
AT+GTOTA=1," ftp://111.111.111.111:21","/test/OTA package","username","password"  
OK  
  
GTOTA DOWNLOAD START  
GTOTA DOWNLOADING: 1%  
.....  
GTOTA DOWNLOADING: 100%  
GTOTA DOWNLOAD COMPLETE  
  
FOTA_UPDATE_SUCCESS
```

HTTP upgrade

```
AT+COPS?  
+COPS: 0,0,"CHINA MOBILE",7  
OK  
  
AT+MIPCALL=1  
OK  
+MIPCALL: 10.0.92.253  
  
AT+GTOTA=0,"http://111.111.111.111/test/OTA package "  
OK  
  
GTOTA DOWNLOAD START  
GTOTA DOWNLOADING: 1%  
.....  
GTOTA DOWNLOADING: 100%  
GTOTA DOWNLOAD COMPLETE
```

```
FOTA_UPDATE_SUCCESS
```

3.4.2 Upgrade Result

The module will automatically reboot during the upgrade process. After the module is rebooted, a successful upgrade will report FOTA_UPDATE_SUCCESS and a failure will report FOTA_UPDATE_FAILED. After the upgrade is successful, you can execute the AT+CGMR command to check the upgraded version number, which is also synchronously upgraded to the new firmware.

4 FAQs

1. AT+ COPS? returns 0.

The module fails to register to the network. Confirm whether the SIM card is available and check the network signal quality.

2. AT+MIPCALL returns error.

a. There is no network at present. Confirm whether the network has been successfully registered.

b. Repeat this command continuously. Note that AT+MIPCALL is an asynchronous command, and returning OK does not mean the end of execution.

3. AT+MIPCALL returns 0.

Dialing failed. Check the network environment, whether there are other dialing processes and whether the dialing parameters are configured correctly.

4. AT+GTOTA returns ERROR.

a. AT command parameters are wrong. Check whether the parameters are entered correctly.

b. There is no network. Check whether the dialing is successful.

5. AT+GTOTA returns GTOTA DOWNLOAD FAILED.

a. Dialing failed. Ensure that all dialing processes are closed before upgrading.

b. There is no corresponding upgrade package under the upgrade package path in AT command.

c. Check the HTTP server configuration where the upgrade package is stored. If the transfer encoding is Transfer Encoding: chunked, modify this configuration to obtain Content-Length to entering the download process normally.

6. After AT+GTOTA successfully starts downloading, the module reports FOTA_DOWNLOAD_FAILED for a period of time

The download failed due to network issues, and the AT+GTOTA command needs to be re executed to continue the download process.

7. After AT+GTOTA successfully starts downloading, the module reports FOTA_UPDATE_FAILED for a period of time

Upgrade failed, please check if the upgrade package is correct.