HUAWEI Module

FOTA Application Guide

Issue 01

Date 2014-05-21

Copyright © Huawei Technologies Co., Ltd. 2014. All rights reserved.

No part of this manual may be reproduced or transmitted in any form or by any means without prior written consent of Huawei Technologies Co., Ltd. and its affiliates ("Huawei").
The product described in this manual may include copyrighted software of Huawei and possible licensors. Customers shall not in any manner reproduce, distribute, modify, decompile, disassemble, decrypt, extract, reverse engineer, lease, assign, or sublicense the said software, unless such restrictions are prohibited by applicable laws or such actions are approved by respective copyright holders.

Trademarks and Permissions

, HUAWEI, and are trademarks or registered trademarks of Huawei Technologies Co., Ltd.
Other trademarks, product, service and company names mentioned may be the property of their respective owners.

Notice

Some features of the product and its accessories described herein rely on the software installed, capacities and settings of local network, and therefore may not be activated or may be limited by local network operators or network service providers.
Thus, the descriptions herein may not exactly match the product or its accessories which you purchase.
Huawei reserves the right to change or modify any information or specifications contained in this manual without prior notice and without any liability.

DISCLAIMER

ALL CONTENTS OF THIS MANUAL ARE PROVIDED “AS IS”. EXCEPT AS REQUIRED BY APPLICABLE LAWS, NO WARRANTIES OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE MADE IN RELATION TO THE ACCURACY, RELIABILITY OR CONTENTS OF THIS MANUAL.
TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, IN NO EVENT SHALL HUAWEI BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, OR LOSS OF PROFITS, BUSINESS, REVENUE, DATA, GOODWILL SAVINGS OR ANTICIPATED SAVINGS REGARDLESS OF WHETHER SUCH LOSSES ARE FORSEEABLE OR NOT.
THE MAXIMUM LIABILITY (THIS LIMITATION SHALL NOT APPLY TO LIABILITY FOR PERSONAL INJURY TO THE EXTENT APPLICABLE LAW PROHIBITS SUCH A LIMITATION) OF HUAWEI ARISING FROM THE USE OF THE PRODUCT DESCRIBED IN THIS MANUAL SHALL BE LIMITED TO THE AMOUNT PAID BY CUSTOMERS FOR THE PURCHASE OF THIS PRODUCT.

Import and Export Regulations

Customers shall comply with all applicable export or import laws and regulations and be responsible to obtain all necessary governmental permits and licenses in order to export, re-export or import the product mentioned in this manual including the software and technical data therein.

Privacy Policy

To better understand how we protect your personal information, please see the privacy policy at http://consumer.huawei.com/privacy-policy.

About This Document

Revision History

Document Version	Date	Chapter	Descriptions
01	2014-05-21		Creation

Huawei Proprietary and Confidential
Copyright © Huawei Technologies Co., Ltd.

Contents

1 Overview 5
1.1 Organization of This Document 5
1.2 Basic Download Concept 6
2 FOTA Solution 7
2.1 Overview of FOTA Solution 7
2.2 FOTA Flow 8
2.3 FOTA Application 10
2.3.1 Configure the FOTA Mode 10
2.3.2 Detect the New Version 10
2.3.3 Query Download Status of FOTA File 11
3 FOTA Test Example 13
4 Acronyms and Abbreviations 15

Huawei Proprietary and Confidential
Copyright © Huawei Technologies Co., Ltd.

1 Overview

This document is intended to provide references for customers to do module firmware update over the air. Customers need to refer to this document to develop the host application. This document also contains examples and relevant description.

Huawei module and the related firmware in the table below support the FOTA service.

Huawei Module	Firmware Version Supported FOTA
MU509-b	12.815.03.01.00 or latter
MU509-g	12.815.03.01.00 or latter
MU509-c	11.815.00.78.00 or latter
MU609	12.105.29.00.00 or latter
MU609 (mini PCIE)	12.105.29.00.00 or latter
MU609 (AT&T Special)	12.107.08.05.457 or latter
MU609 (AT&T mini PCIE Special)	12.107.07.05.457 or latter

NOTE
Users can send AT command "ATI" to the module and get the firmware version number.

1.1 Organization of This Document

Chapter	Description
Chapter 1 Overview	Describes the contents and organization of this document.
Chapter 2 FOTA Solution	Describes the FOTA solution.
Chapter 3 FOTA Test Example	Describes example for the upgrade.

Huawei Proprietary and Confidential
Copyright © Huawei Technologies Co., Ltd.

Chapter	Description
Chapter 4 Acronyms and Abbreviations	Acronyms and Abbreviations

1.2 Basic Download Concept

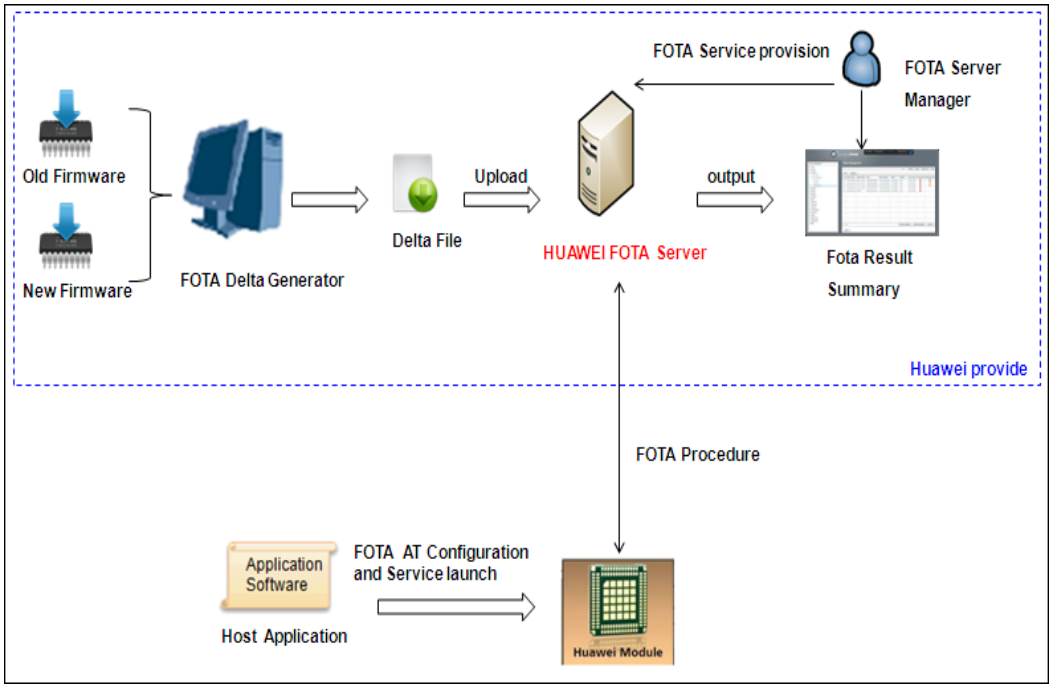
- **Host Application:** developed by users, this application needs to refer to the processes in this document.
- **FOTA Delta File:** made by Huawei, the FOTA delta file will be uploaded to the Huawei FOTA server.

Huawei Proprietary and Confidential
Copyright © Huawei Technologies Co., Ltd.

2 FOTA Solution

2.1 Overview of FOTA Solution

Figure 2-1 FOTA flow overview



NOTE

- The customer needs to confirm the old firmware and new firmware version numbers.
- The customer needs to provide the module model and the module's IMEI list, country and location.

Huawei Proprietary and Confidential
Copyright © Huawei Technologies Co., Ltd.

2.2 FOTA Flow

Figure 2-2 Huawei FOTA policy

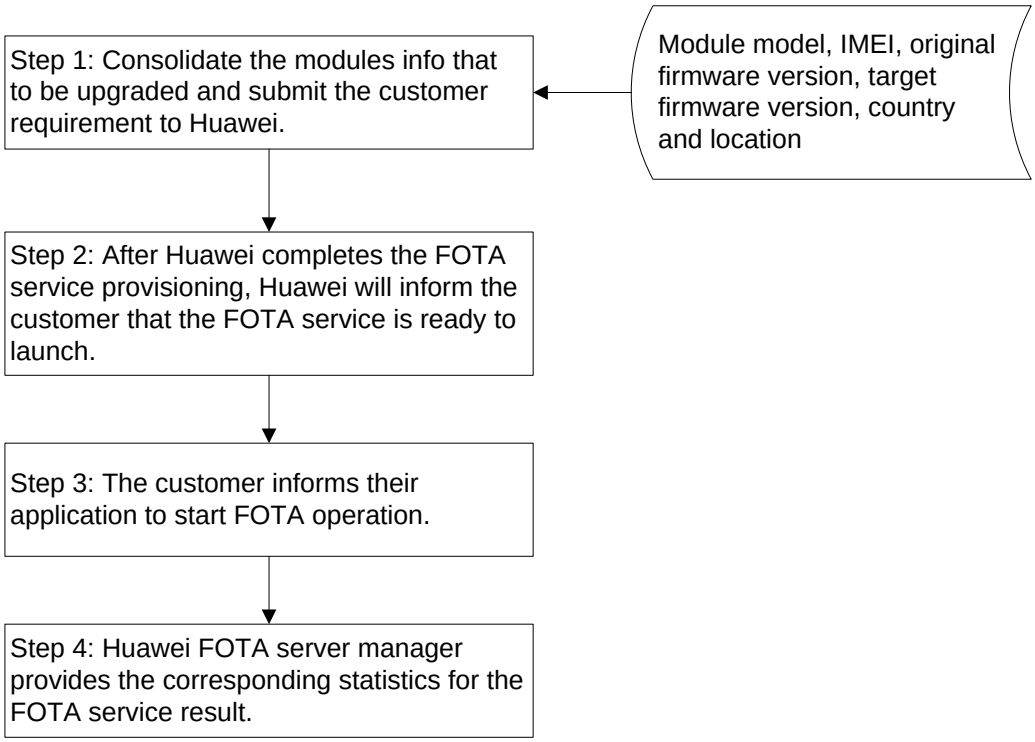
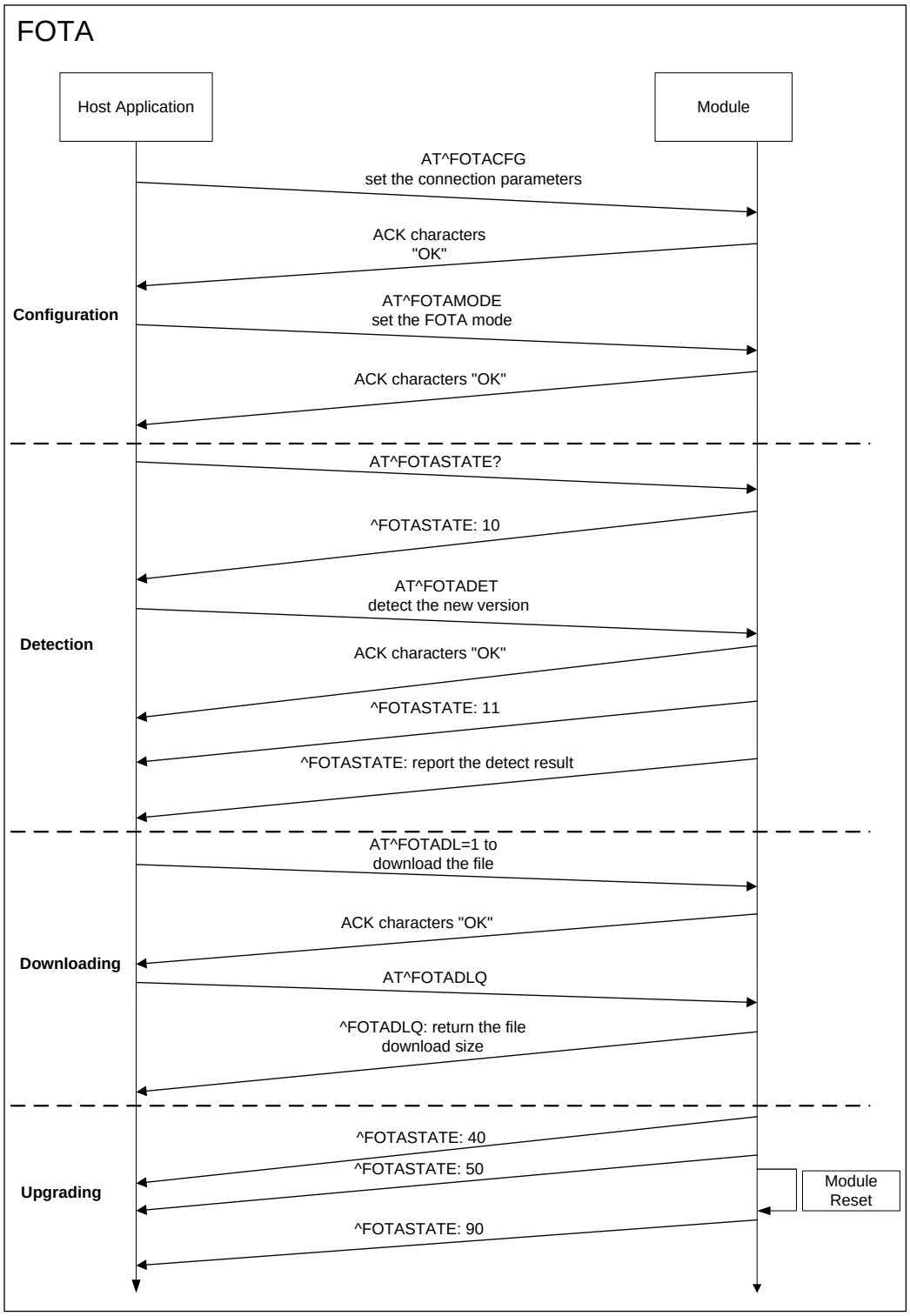


Figure 2-3 shows the overview of Huawei FOTA solution.

Huawei Proprietary and Confidential
Copyright © Huawei Technologies Co., Ltd.

Figure 2-3 Huawei FOTA normal flow



NOTE

Customers can refer to module's AT command specification for more configuration details information from "AT^FOTAMODE".

Huawei Proprietary and Confidential
Copyright © Huawei Technologies Co., Ltd.

2.3 FOTA Application

Huawei FOTA solution provides AT commands for the host application. It is easy for customers to implement the FOTA application flow with these FOTA commands on host application.

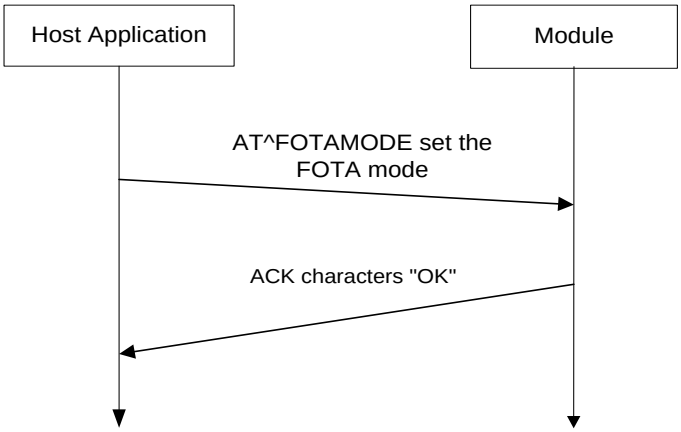
AT commands related to the FOTA are as follows. Customers can get the details of these AT commands' parameters from the module's AT command specification.

- AT^FOTAMODE
- AT^FOTACFG
- AT^FOTADET
- AT^FOTADL
- AT^FWUP
- AT^FOTASTATE
- AT^FOTADLQ

2.3.1 Configure the FOTA Mode

Customers can use the AT command "AT^FOTAMODE" to set the FOTA mode.

Figure 2-4 Set the FOTA mode

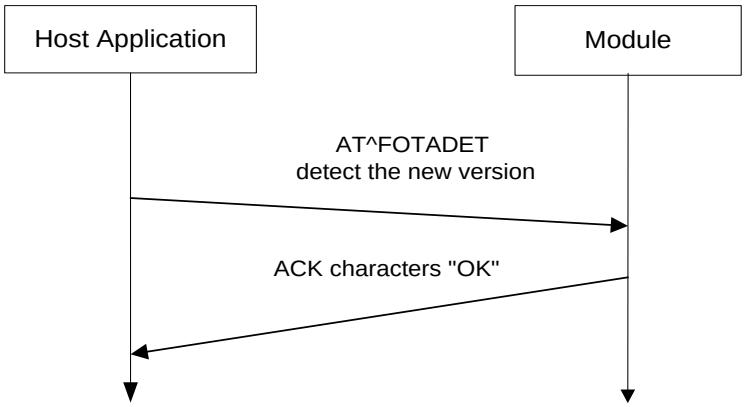


2.3.2 Detect the New Version

Customers can use the AT command "AT^FOTADET" to detect the new firmware version manually.

Huawei Proprietary and Confidential
Copyright © Huawei Technologies Co., Ltd.

Figure 2-5 Detect the new version



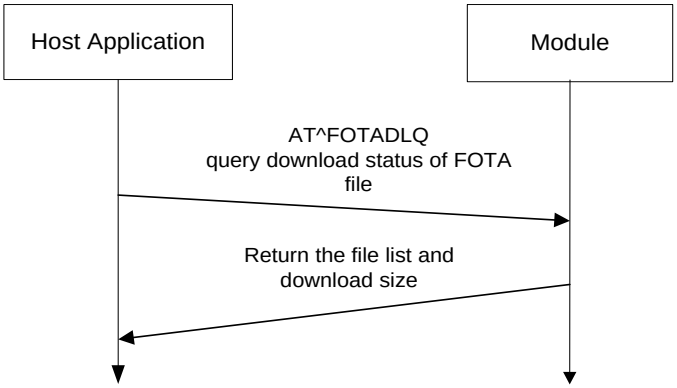
NOTE

If the module reports that the new version detection is failed, please check the connection parameters settings by running the "AT^FOTACFG". If all the connection parameters are OK, the customer should check whether the module can make a data connection to the network.

2.3.3 Query Download Status of FOTA File

Customers can use the AT command "AT^FOTADLQ" to query the download size and the download progress of the firmware file.

Figure 2-6 Query download status of FOTA file



Huawei Proprietary and Confidential
Copyright © Huawei Technologies Co., Ltd.

NOTE

After the host application sends the "AT^FOTADL=1" to the module, the delta file download progress will be launched. It is not necessary to worry about the condition that the module may be suddenly powered off or reset during the download:

- If the module has already downloaded the whole delta file, the firmware upgrade will be launched at the next time when module reboots.
- If the module does not finish the delta file download, the module can continue to download the remained delta file data after "AT^FOTAMODE" is executed to enable the resumable data transfer.

Huawei Proprietary and Confidential
Copyright © Huawei Technologies Co., Ltd.

3 FOTA Test Example

This chapter takes the MU509 FOTA progress test as an example, and gives the whole AT commands used in the test. Customers can get the explanation from the log contents among the log rows, and refer to the logs to implement the host application. Please refer to the module's AT command specification to get the FOTA feature AT command details for more using scenarios.

NOTE

The firmware versions used in this document are demo versions.

1. Perform the FOTA upgrade after the host application receives SMS or socket command:

   Run: AT+GMR

   Response: 12.815.01.03.00

   OK

2. Configure the APN to connect the FOTA server:

   Run: AT^FOTACFG="1234","","",2

   Response: OK

NOTE

"1234" is an APN in local lab network. Users need to set the correct network APN value in the actual using scenario.

3. Configure the FOTA operation mode (customers can choose the preferred configuration by modifying the parameter value of AT^FOTAMODE):

   Run: AT^FOTAMODE=0,0,1,1

   Response: OK

Huawei Proprietary and Confidential
Copyright © Huawei Technologies Co., Ltd.

4. Check the FOTA state:

   Run: AT^FOTASTATE?

   Response: ^FOTASTATE: 10

   OK

5. Detect whether the new version exists on Huawei FOTA server:

   Run: AT^FOTADET

   Response: OK

6. The module reports the state and the new version detection result:

   Response: ^FOTASTATE: 11

   Response: ^FOTASTATE: 12,12.815.01.04.00,79114,"Support send SMS background"

7. Download the new version:

   Run: AT^FOTADL=1

   Response: OK

8. Download the firmware delta file:

   Response: ^FOTASTATE: 30

9. Get the download progress:

   Run: AT^FOTADLQ

   Response: ^FOTADLQ: 1,"IMAGE",1324,1324
   ^FOTADLQ: 2,"XNV",47104,77778

   OK

10. Finish the delta file download:

    Response: ^FOTASTATE: 40

11. Ready to upgrade the firmware:

    Response: ^FOTASTATE: 50

12. The module will upgrade the firmware and then be automatically reset.
13. The module will report the upgrade result after reset:

    Response: ^FOTASTATE: 90

14. Check the firmware version number to confirm the result:

    Run: AT+GMR

    Response: 12.815.01.04.00

    OK

Huawei Proprietary and Confidential
Copyright © Huawei Technologies Co., Ltd.

4 Acronyms and Abbreviations

Table 4-1 List of Abbreviations

Acronym or Abbreviation	Expansion
ACK	Acknowledgement
APN	Access Point Name
FOTA	Firmware Over the Air
IMEI	International Mobile Equipment Identity
SMS	Short Message Service

Huawei Proprietary and Confidential
Copyright © Huawei Technologies Co., Ltd.