

# **EC25-J** SoftBank DFOTA Mechanism Introduction

**LTE Standard Module Series**

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# About the Document

## Revision History

| Version | Date       | Author     | Description |
|---------|------------|------------|-------------|
| 1.0     | 2020-08-21 | Herry GENG | Initial     |

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# 1 Introduction

The SoftBank DFOTA mechanism is to upgrade the module's firmware version by regularly polling the available delta firmware package on SoftBank FOTA server according to the mandatory requirements of Japan's SoftBank certification. Quectel will update the delta firmware package from time to time and upload it to the SoftBank FOTA server to ensure that the firmware of the user terminal is the latest version.

This document mainly introduces the DFOTA process of Quectel's EC25-J module under SoftBank network. You do not need to perform any firmware upgrade related configuration since the module will report the upgrade status through URCs.

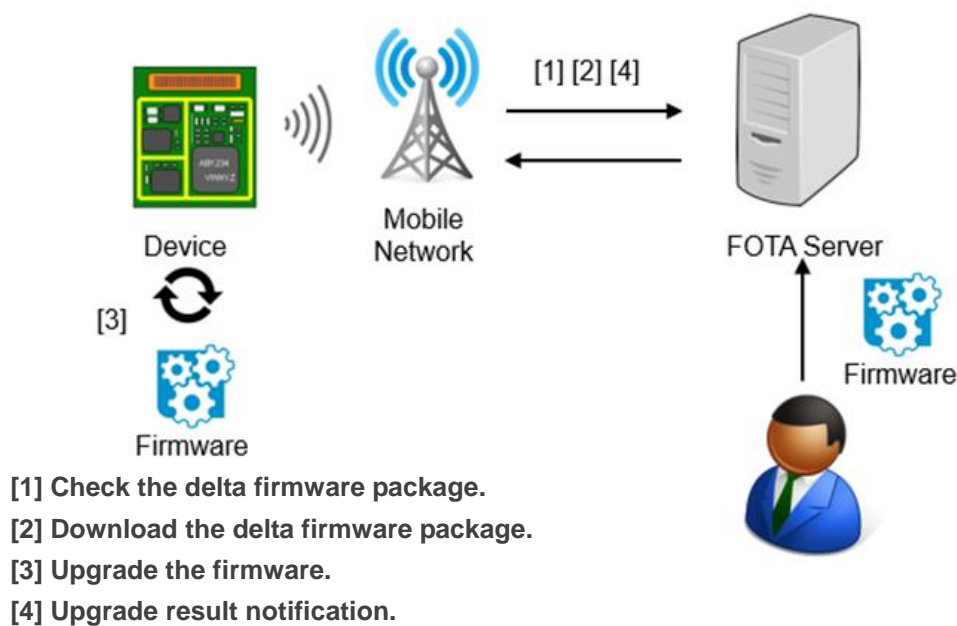


Figure 1: SoftBank DFOTA Mechanism

## NOTE

Do not shutdown the module during the whole DFOTA process.

## 2 SoftBank DFOTA Process

The SoftBank DFOTA process of EC25-J module is shown in the figure below, in which the module will determine whether to download the delta firmware package as per the following items:

- Complete delta firmware package to be upgraded locally
- Successful network registration of the module
- Legal IMSI number of (U)SIM card
- Module in roaming state
- Polling timer timeout

### NOTES

1. IMSI legality verification is to verify whether a SoftBank (U)SIM card is used, that is, the first five digits of IMSI are 44020 and the first eight digits cannot be 44020109.
2. The polling timer cycle is 14 days.



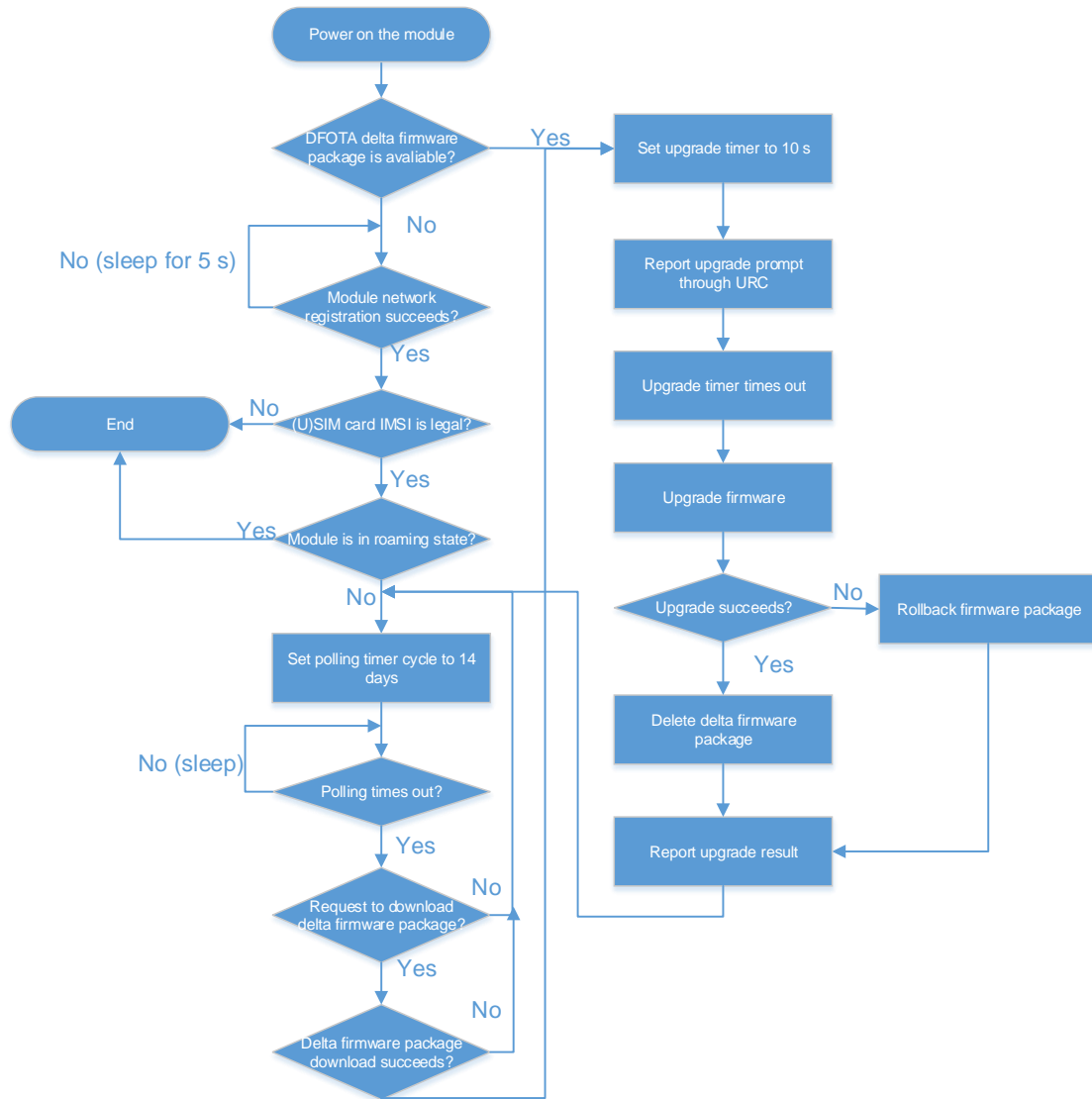


Figure 2: SoftBank DFOTA Flow Chart of EC25-J Module

# 3 SoftBank DFOTA Procedures

The following chart illustrates the firmware upgrade procedure via SoftBank DFOTA without any configuration required by you.

- Step 1:** If there is a new firmware needs to be upgraded, Quectel will make the corresponding DFOTA delta firmware package.
- Step 2:** Quectel puts the newly generated delta firmware package to SoftBank FOTA server.
- Step 3:** When the polling timer times out, the module will automatically download the delta firmware package over LTE/WCDMA network.
- Step 4:** After downloading the package successfully, the module will automatically trigger the firmware upgrade process.

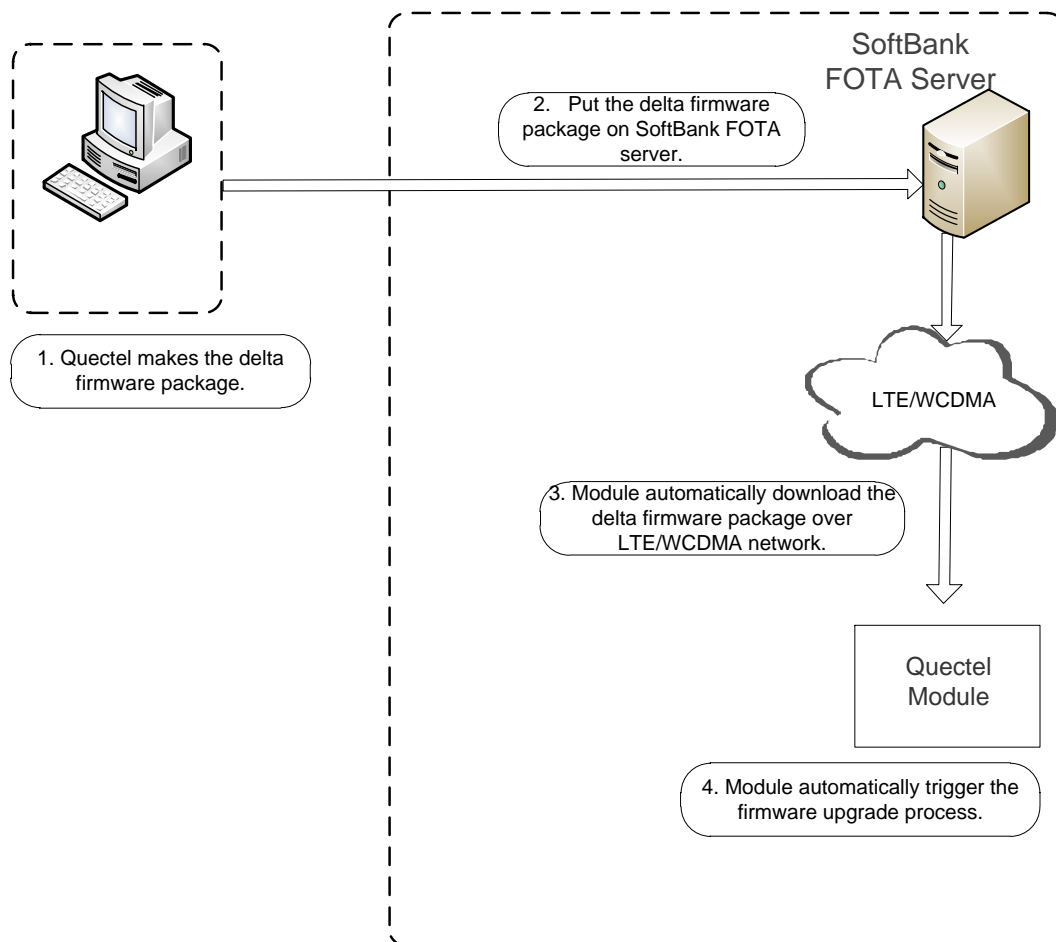


Figure 3: SoftBank DFOTA Procedures of EC25-J Module

## 4 Description of URCs

URCs will be reported to inform the upgrade status.

### 4.1. Polling Start

#### Polling Start

+QSBFOTA: "poll","start"

Polling start

### 4.2. Polling End

#### Polling End

+QSBFTOA: "poll","end",<code>

Polling end

#### Parameter

<code> Integer type. Result code. For more details, see **Table 1**.

### 4.3. Download Start

#### Download Start

+QSBFTOA: "download","start"

Module starts to download the delta firmware package from SoftBank FOTA server.

## 4.4. Download End

### Download End

+QSBFTOA: "download","end",<code>

The delta firmware package download is completed.

### Parameter

<code> Integer type. Result code. For more details, see **Table 1**.

## 4.5. Upgrade Prompt

### Upgrade Prompt

+QSBFTOA: "after 10 seconds will be update..."

Module is about to perform the DFOTA process.

## 4.6. Upgrade Start

### Upgrade

+QSBFTOA: "update","start"

Module starts the DFOTA process.

## 4.7. Upgrade End

### Upgarde End

+QSBFTOA: "update","end",<code>

The DFOTA process is completed.

### Parameter

<code> Integer type. Result code. For more details, see **Table 1**.

# 5 Appendix A References

**Table 1: Summary of <code> Result Codes**

| <code> | Description              |
|--------|--------------------------|
| 0      | Success                  |
| 1      | Failed to poll           |
| 2      | Failed to download       |
| 3      | Failed to upgrade        |
| 4      | Network error            |
| 5      | Failed to get the token. |

**Table 2: Terms and Abbreviations**

| Abbreviation | Description                                           |
|--------------|-------------------------------------------------------|
| DFOTA        | Delta Firmware Upgrade Over-the-Air                   |
| FOTA         | Firmware Upgrade Over-the-Air                         |
| GPRS         | General Packet Radio Service                          |
| IMSI         | International Mobile Subscriber Identification Number |
| LTE          | Long Term Evolution                                   |
| SIM          | Subscriber Identification Module                      |
| URC          | Unsolicited Result Code                               |