

# Premium FOTA Management Product Description

80287ST10048a Rev.0 – 2009-02-06



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## 1. Introduction

### 1.1. Scope

This document describes requirements and procedures that customer must follow in order to be compliant with Premium FOTA Management (PFM) the Telit's Over-The-Air firmware update service, one of the Telit's INFINITA services. It contains both the procedure of registration to Telit Firmware Update Program and the Over-The-Air updating procedure steps.

### 1.2. Audience

This document is intended for customers who design products that integrate Telit modules and are interested in maintaining the module's firmware up-to-date with latest enhancements and features.

### 1.3. Contact Information, Support

For general contact, technical support, to report documentation errors and to order manuals, contact Telit's Technical Support Center (TTSC) at:

[TS-EMEA@telit.com](mailto:TS-EMEA@telit.com)  
[TS-NORTHAMERICA@telit.com](mailto:TS-NORTHAMERICA@telit.com)  
[TS-LATINAMERICA@telit.com](mailto:TS-LATINAMERICA@telit.com)  
[TS-APAC@telit.com](mailto:TS-APAC@telit.com)

Or use:

<http://www.telit.com/en/products/technical-support-center/contact>

For detailed information about where you can buy the Telit modules or for recommendations on accessories and components visit:

<http://www.telit.com>

To register for product news and announcements or for product questions contact Telit's Technical Support Center (TTSC).

Our aim is to make this guide as helpful as possible. Keep us informed of your comments and suggestions for improvements.

Telit appreciates feedback from the users of our information.



## 1.4. Document Organization

This document contains the following chapters:

[“Chapter 1: Introduction”](#) provides a scope for this document, target audience, contact and support information, and text conventions.

[“Chapter 2: Service Overview”](#) gives a general description of FTMS service, available options of service, reliability and warranty.

[“Chapter 3: General Requirements”](#) describes the hardware and software requirements requested either to modules either to customer applications in order to benefit from the PFM. The PFM Certification Program is also described.

[“Chapter 4: Premium FOTA Management”](#) provides process for Service registration, Telit PFM parameters and description of update procedure steps.

[“Chapter 5: Post Update Report”](#) describes the report issued by Telit PFM Server related to each update performed on a specific module.

[“Chapter 6: Acronyms and Abbreviations”](#) provides definition for all the acronyms and abbreviations used in this document.

## 1.5. Text Conventions



**Danger – This information MUST be followed or catastrophic equipment failure or bodily injury may occur.**



**Caution or Warning – Alerts the user to important points about integrating the module, if these points are not followed, the module and end user equipment may fail or malfunction.**



**Tip or Information – Provides advice and suggestions that may be useful when integrating the module.**

All dates are in ISO 8601 format, i.e. YYYY-MM-DD.

## 1.6. Related Documents

The following documents are related to:

- Premium FOTA Management (PFM) Application Note.
- PFM Certification Program Reference Guide.
- PFM Service Agreement.



## 1.7. Document History

Revision	Date	Changes	Location
0	2009-06-02	First issue	Trieste



## 2. Service Overview

### 2.1. General description

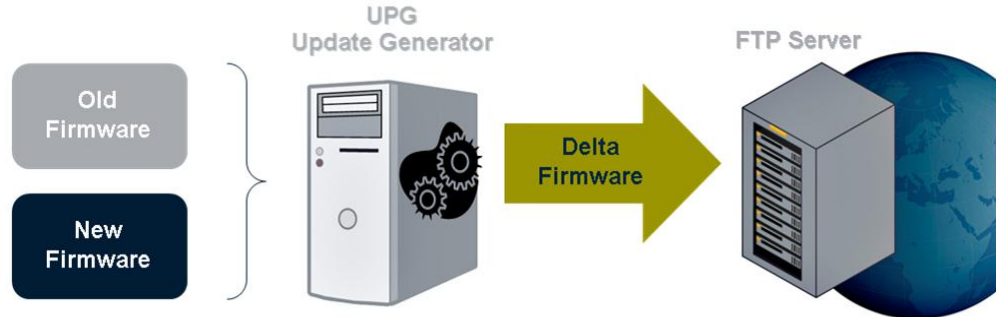
M2M modules have a lifetime of 5 – 15 years; they are often deployed in remote, unmanned locations. Pace of innovation in wireless technologies creates risk of modules becoming quickly outdated.

Premium FOTA Management (PFM) provides a cost-effective, fast, secure and reliable way for wirelessly update the firmware on mobile devices, ensuring that embedded software is up-to-date with the latest enhancements and features.

Telit has signed a partnership agreement with the worldwide leader of Mobile Software Management Red Bend. Telit has integrated in its own proprietary protocol the unique vCurrent<sup>®</sup>(<sup>(\*)</sup>) Mobile Update Installer and Update Generator software for use in its m2m product portfolio.

Telit is able to update its products, using Firmware Over The Air (FOTA) technology, by transmitting only a “delta file”, which represents the difference between one firmware version and another.

Starting from old and new version Telit creates a delta firmware file. This file is stored in PFM server, available for download.



Delta file generation

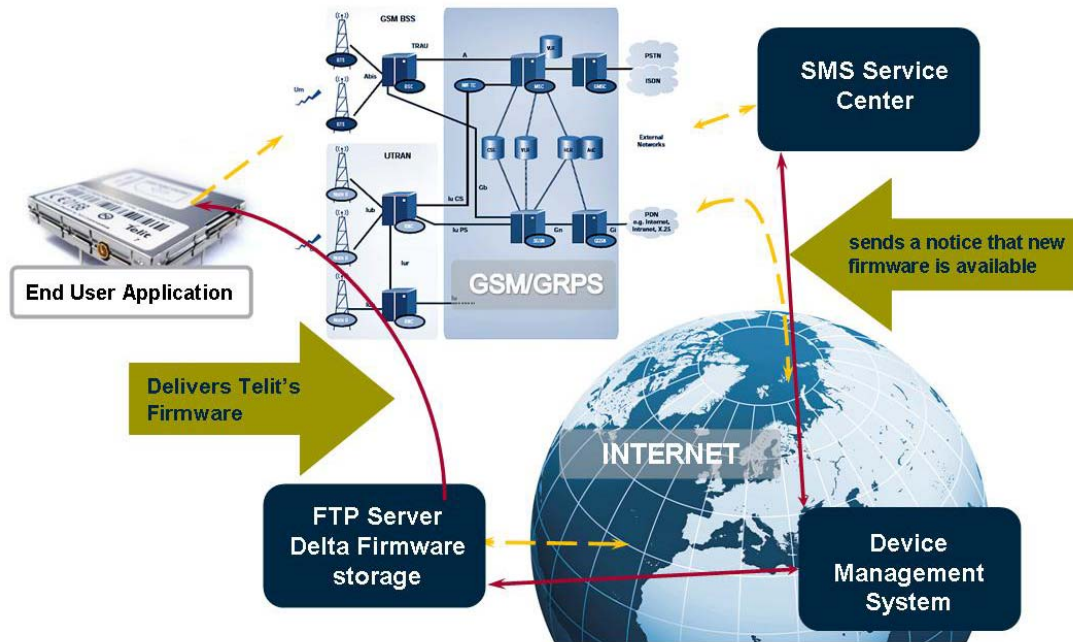
(\*)vCurrent<sup>®</sup> is a registered trademark of Red Bend Software Inc.

Customer can choose a specific target release, not necessary the latest.

PFM service is available whenever and wherever customer needs to update its own product.



PFM service dramatically reduces maintenance costs.  
PFM service maximize lifetime of M2M modules.



Global view of PFM update services

PFM is based on SMS message and FTP protocol.

## 2.2. Options of Service

PFM update service is available as extended warranty on the software, on top of the first year of warranty, with several durations. Each customer can find the right PFM option. It has to be noted that customer can choose to update his own modules to a desired target release, not necessary the latest one.

there is no upper limit to the duration of service, otherwise, the minimum duration a customer can subscribe is 1 year. :



**It will be up to the customer to decide when an update of the module's firmware is needed.**

For other requirements or further information, please contact your Telit Representative or TTSC.





### 3. General Requirements

All Telit modules currently in production support PFM update service. This does not signify that each Telit module inside each customer's application can be updated.

There are some requirements to be respected either by modules or by the customer's applications.

#### 3.1. Module Requirements

##### 3.1.1. Module Hardware Requirements

The following P/Ns support the PFM Service:

PRODUCT	PART NUMBER <sup>(1)</sup>
GT863-PY	3990150471
GT864-PY	4990150070
GT864-QUAD	4990150069
GM862-GPS	GM862GPS***-***
GM862-QUAD	GM862QUD***-***
GM862-QUAD-PY	GM862PYT***-***
GC864-PY	GC864PYT***-***
GC864-QUAD	GC864QUD***-***
GC864-PY SIM Holder	GC864PYH***-***
GC864-QUAD SIM Holder	GC864QUH***-***
GC864-PY-C2	GC864QC2***-***
GC864-QUAD-C2	GC864PC2***-***
GE863-GPS	GE863GPS***-***
GE863-PY	GE863PYT***-***
GE863-QUAD	GE863QUD***-***
GE863-SIM	MNO dependent <sup>(2)</sup>
GE864-PY	GE864PYT***-***
GE864-QUAD	GE864QUD***-***
GE864-QUAD Automotive	GE864AUT***-***
GE863-PRO3 w/o OS	GE863PR3***-***
GE863-PRO3 with LINUX	GE863PR3***-***
GE863-PRO3 64MB RAM w/o OS	GE863PR3***-***
GE863-PRO3 64MB RAM with LINUX	GE863PR3***-***

(1) The suffix "\*\*\*-\*\*\*" depends on the module HW/SW configuration.

(2) Ask to TTSC for details







## 4. Premium FOTA Management

### 4.1. Service Registration

Customer must register his devices in PFM server to get over-the-air firmware update service. This can be done in two ways:

- Standard Registration;
- Remote Registration.

A “PFM enabled device” become “PFM registered device” after registration on the PFM server. The registration is allowed only to customers who have signed a contract for PFM. This means that not all PFM enabled devices become PFM registered.

Only certified customers can perform the download from PFM Server, see Telit Certification Program Reference Guide (ref.1.6) for details.

#### 4.1.1. Standard Registration

In order to register his modules in PFM server, customer has to communicate the list of devices.

Device’s list can be provided in two ways:

1. Sending to TTSC a file with the following information in CSV format:

```
<IMEI>;<Module Number>;<Product Name>;<Firmware Label>;<Distributor name>;<Subdistributor name>;<FOTA enabled>;<FOTA activated>;<FOTA DownINAP FROM DATABASE>;<FOTA DownINAP MANUAL>;<CSD Bearer>;<GPRS Bearer>;<NAP Username>;<NAP Password>
```

Where:

<IMEI> is the IMEI of the module;

<Module number> is the phone number of the SIM inserted in that module (MSISDN);

<Product Name> is the type of product (GE864-PY, GE863-QUAD.....);

<firmware label> is the current firmware version of the module;

<Distributor name> is distributor name. If this parameter is empty the next parameter (sub-distributor) must be present;

<Subdistributor name> is customer name, if this info is empty; the previous parameter (distributor) must be present;

<FOTA Enabled> and <FOTA activated> these parameters must be present as they are (see example at the end of this paragraph);

<FOTA DownINAP FROM DATABASE> is the APN of the network. This parameter is charged from a table, present in the PFM database, depending





## 4.2. PFM Server

The PFM service allow to schedule the update procedures in an agreed time slot in order to perform the updating when customer's application is in idle phase or network connection is cheaper. This time slot will be agreed with the customer.

PFM Server monitors in real time each updating phase and it logs all the operations performed on each device.

PFM server can also perform other two operations:

- Test;

In this case the update will not be performed, but only the SMS-based PFM protocol will be exchanged between the PFM server and the module.

- Query.

The query operation forces the module to send a SMS to the PFM server containing all the information concerning the module: IMEI, phone number, model, IMSI, current PLMN.

## 4.3. PFM Firmware Update Procedure

In order to update his modules, customer has to communicate:

- PFM Agreement reference No.
- Option of Service (years of Extended Update);
- List of concerned devices (in the same format as detailed in §4.1.1)
- Desired Software Release;



**If customer has different modules with different firmware releases installed and/or different target releases, a dedicated list shall be prepared for each one. This information is very important in order to create the correct delta file.**

After getting PFM Compliant Certification, and only with customer's assent, Telit will perform the updating of customer modules in batch of agreed quantities.

First of all, Telit will perform the update of some samples of that batch and customer will test it, verifying the complete compliance of the application.

At the end of sample's verification, customer will give his assent to update the entire batch.

Telit will proceed to download some samples of next batch and customer will verify it and so on, until the entire stock is updated.



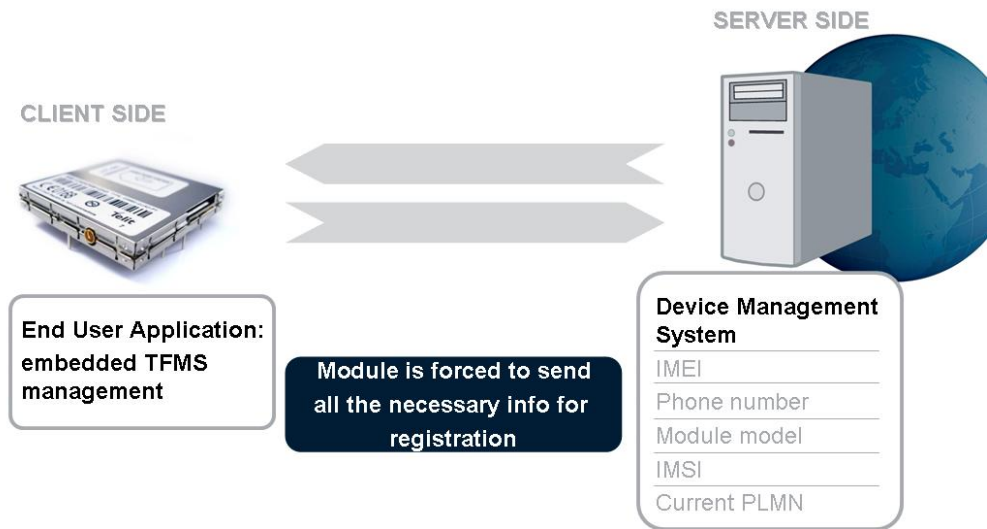


### 4.3.1. Firmware Updating Steps

The steps of firmware update procedure are listed below:

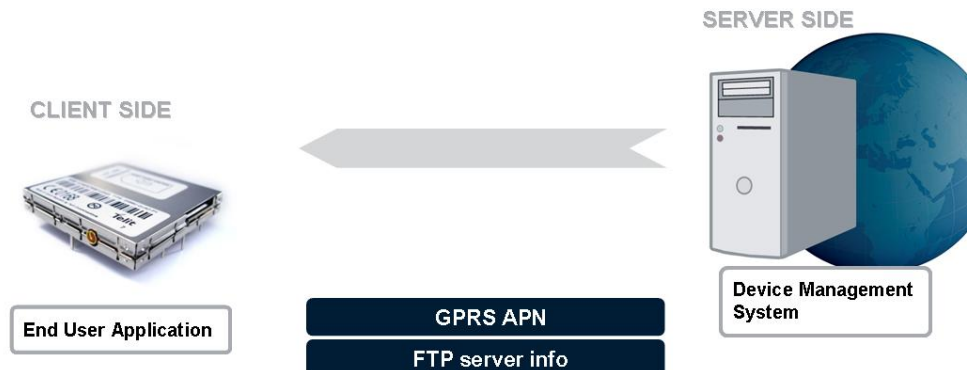
1. **Remote Registration** (needed if module is not registered yet);

PFM server forces Telit module, via SMS, to send a SMS containing all the useful information to be registered in the server.



2. **Provisioning;**

This phase provides setup of network parameters in the module.



It will be performed only the first connection with PFM server.

PFM server sends to Telit module, via SMS, network parameters for GPRS and FTP connection.



### 3. Firmware download;



Module receives a request from server to update the firmware from server by means SMS.

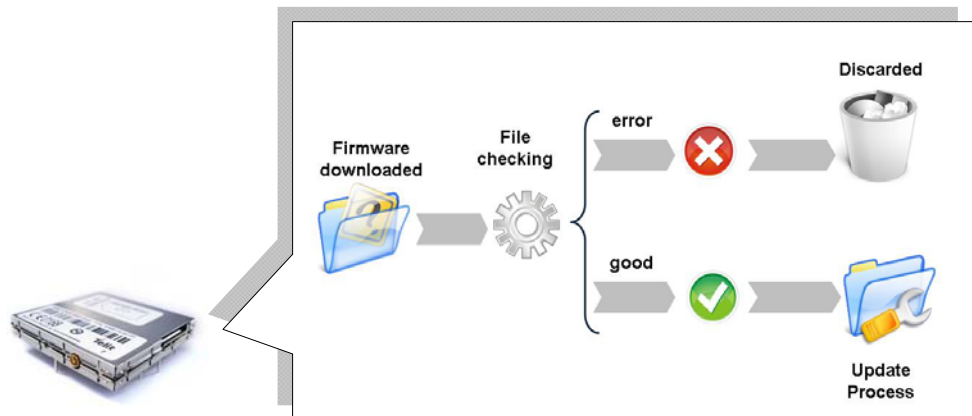
Module sends a SMS to accept the request and performs a FTP connection to download the delta file from FTP Server.



**To perform the update procedure, the external application or the Python script has to confirm the update request.**

### 4. Firmware Check;

When download is completed, the delta file is checked to verify the consistency and errors if the case.

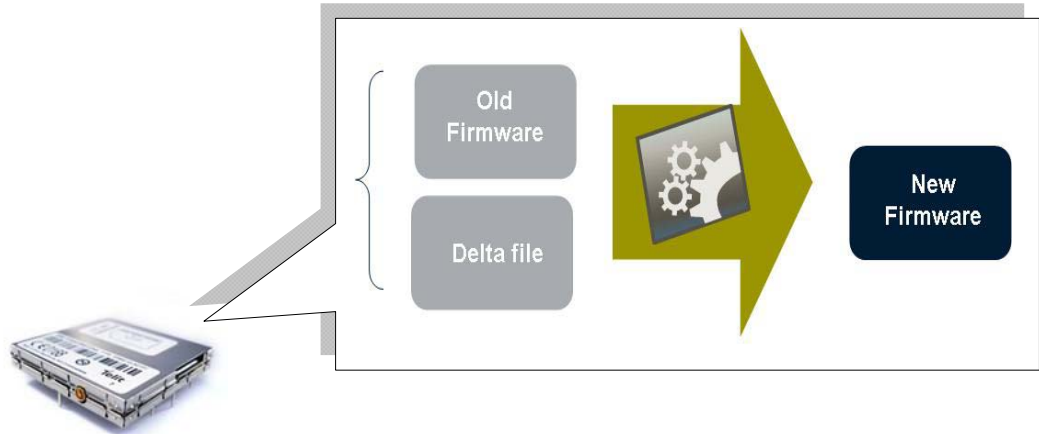


If an error is detected, the file is discarded and module goes as before. A SMS is issued to report a fail to the server.



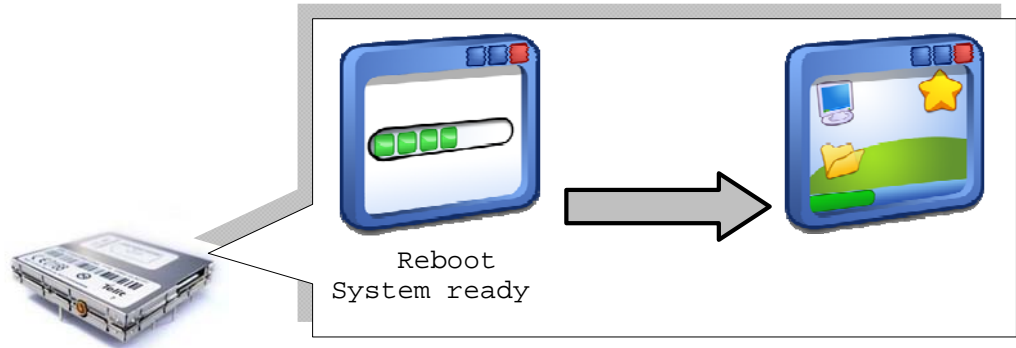
**5. Firmware Updating;**

Starting from current firmware and delta file downloaded from PFM server, module is able to build the new firmware version.



**6. Module Reboot;**

At the end of the updating phase, the module reboots with the new firmware.



**After reboot, the PIN insertion must be managed by the external application or the Python script.**



**Some particular setups must be re-programmed after reboot. See PFM Application Note for the complete list of setups to be reprogrammed.**



**7. Update result message;**

A final SMS is sent to PFM Server reporting the result of updating (updated, not updated).

In case of fail (delta file error, FTP connection fail, etc.) the SMS contain a specific error code.

**LAST STEP: Final Result Message**

CLIENT SIDE



End User Application:  
Successful update or  
Error code

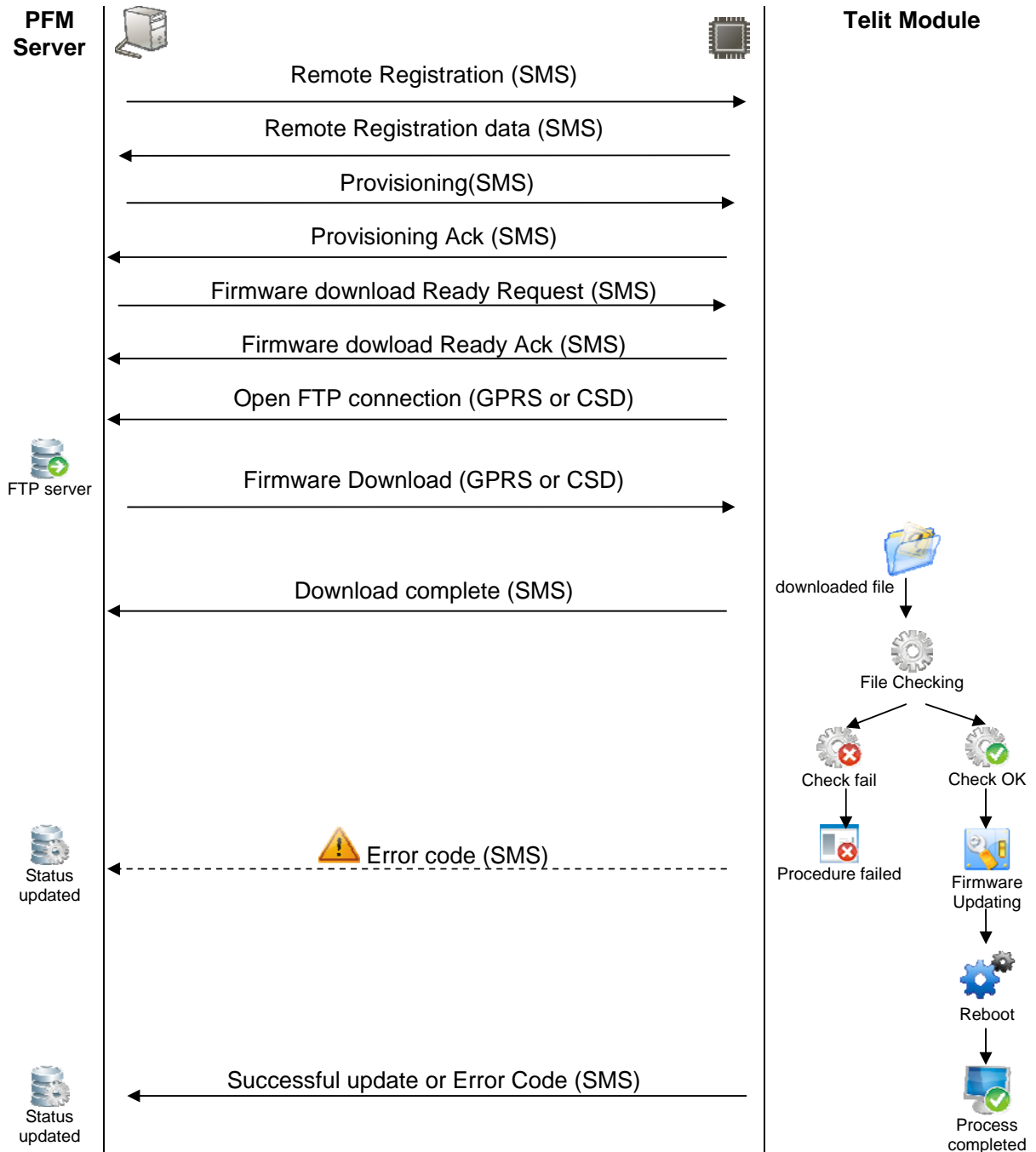


SERVER SIDE



A general review of message exchange and operations are listed below:

### General review of message exchanges



## 5. Post-update Report

Each updating phase is recorded in a file stored in PFM Server.

There are two possible reports available in PFM website:

1. A General Report

The General Report contains all the IMEI provided by customer to be updated by PFM with the actual firmware version and date of last update.

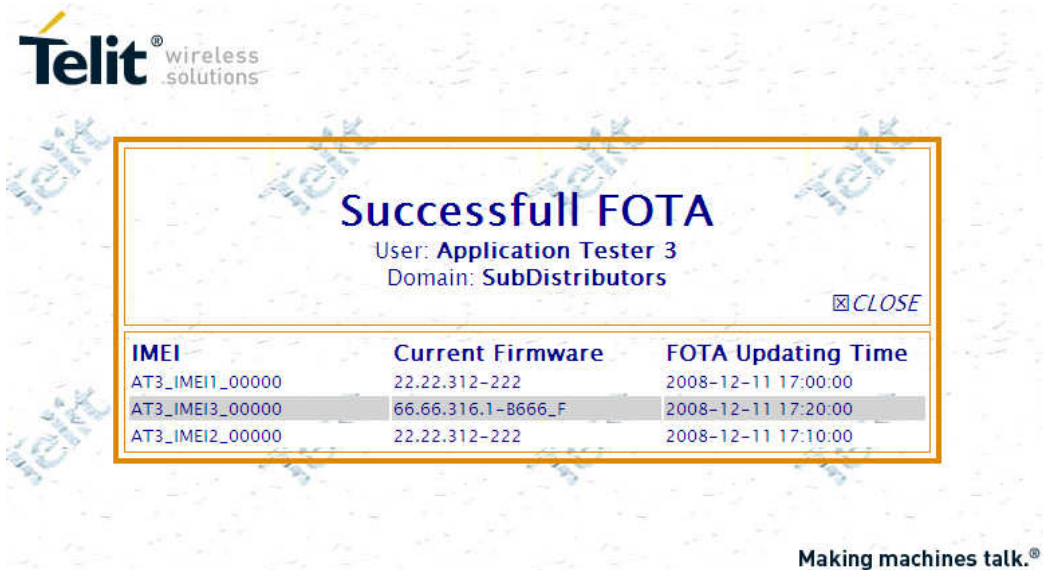
2. A Module Report

The Module Report is a dedicated report by means customer can check all the operations carried on a specific module.

The procedure to access to the update reports is exactly the same report request performed during Certification Program.

See Certification Program Reference Guide for details (ref. §1.6).

An example of each report is reported below:



**Telit**® wireless solutions

**Successful FOTA**  
User: **Application Tester 3**  
Domain: **SubDistributors**  **CLOSE**

IMEI	Current Firmware	FOTA Updating Time
AT3_IMEI1_00000	22.22.312-222	2008-12-11 17:00:00
AT3_IMEI3_00000	66.66.316.1-B666_F	2008-12-11 17:20:00
AT3_IMEI2_00000	22.22.312-222	2008-12-11 17:10:00

**Making machines talk.®**

General Report



<h2>History Table</h2> <p>User: TTSC Domain: Distributors</p> <p>IMEI: 357022000037450 <span style="float: right;">☒ CLOSE</span></p>	
2008-01-31 12:15:41	Remote Registration
2008-01-31 12:15:41	Remote Registration
2008-01-31 12:17:02	FOTA Request from 07.02.104-B002 to 07.02.104-A009
2008-01-31 12:17:15	Download started
2008-01-31 12:20:48	FOTA Request from 07.02.104-B002 to 07.02.104-A009
2008-01-31 12:20:54	Provisioning started
2008-01-31 12:22:08	FOTA Request from 07.02.104-B002 to 07.02.104-A009
2008-01-31 12:22:08	Provisioning started
2008-01-31 12:23:56	Provisioning completed
2008-01-31 12:23:58	Download started
2008-01-31 12:36:37	Download completed
2008-01-31 14:01:40	FOTA Request from 07.02.104-A009 to 07.02.104-B002
2008-01-31 14:01:51	Download started
2008-01-31 14:04:47	Download failed: client error
2008-01-31 14:24:23	FOTA Request from 07.02.104-A009 to 07.02.104-B002
2008-01-31 14:24:41	Download started
2008-01-31 14:27:35	Download failed: client error
2008-01-31 14:59:23	FOTA Request from 07.02.104-A009 to 07.02.104-B002
2008-01-31 14:59:42	Download started
2008-01-31 15:02:40	Download failed: client error
2008-01-31 17:20:25	FOTA Request from 07.02.104-A009 to 07.02.104-B002
2008-01-31 17:20:26	Provisioning started

Module Report



