

PFM Certification Program Application Note

80000NT10022A Rev.4 - 2014-12-04



Making machines talk.



SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NTICE

Notice

While reasonable efforts have been made to assure the accuracy of this document, Telit assumes no liability resulting from any inaccuracies or omissions in this document, or from use of the information obtained herein. The information in this document has been carefully checked and is believed to be entirely reliable. However, no responsibility is assumed for inaccuracies or omissions. Telit reserves the right to make changes to any products described herein and reserves the right to revise this document and to make changes from time to time in content hereof with no obligation to notify any person of revisions or changes. Telit does not assume any liability arising out of the application or use of any product, software, or circuit described herein; neither does it convey license under its patent rights or the rights of others.

It is possible that this publication may contain references to, or information about Telit products (machines and programs), programming, or services that are not announced in your country. Such references or information must not be construed to mean that Telit intends to announce such Telit products, programming, or services in your country.

Copyrights

This instruction manual and the Telit products described in this instruction manual may be, include or describe copyrighted Telit material, such as computer programs stored in semiconductor memories or other media. Laws in the Italy and other countries preserve for Telit and its licensors certain exclusive rights for copyrighted material, including the exclusive right to copy, reproduce in any form, distribute and make derivative works of the copyrighted material. Accordingly, any copyrighted material of Telit and its licensors contained herein or in the Telit products described in this instruction manual may not be copied, reproduced, distributed, merged or modified in any manner without the express written permission of Telit. Furthermore, the purchase of Telit products shall not be deemed to grant either directly or by implication, estoppel, or otherwise, any license under the copyrights, patents or patent applications of Telit, as arises by operation of law in the sale of a product.

Computer Software Copyrights

The Telit and 3rd Party supplied Software (SW) products described in this instruction manual may include copyrighted Telit and other 3rd Party supplied computer programs stored in semiconductor memories or other media. Laws in the Italy and other countries preserve for Telit and other 3rd Party supplied SW certain exclusive rights for copyrighted computer programs, including the exclusive right to copy or reproduce in any form the copyrighted computer program. Accordingly, any copyrighted Telit or other 3rd Party supplied SW computer programs contained in the Telit products described in this instruction manual may not be copied (reverse engineered) or reproduced in any manner without the express written permission of Telit or the 3rd Party SW supplier. Furthermore, the purchase of Telit products shall not be deemed to grant either directly or by implication, estoppel, or otherwise, any license under the copyrights, patents or patent applications of Telit or other 3rd Party supplied SW, except for the normal non-exclusive, royalty free license to use that arises by operation of law in the sale of a product.



Reproduction forbidden without Telit Communications S.p.A's. written authorization - All Rights Reserved.

Page 2 of 27



Usage and Disclosure Restrictions

License Agreements

The software described in this document is the property of Telit and its licensors. It is furnished by express license agreement only and may be used only in accordance with the terms of such an agreement.

Copyrighted Materials

Software and documentation are copyrighted materials. Making unauthorized copies is prohibited by law. No part of the software or documentation may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language or computer language, in any form or by any means, without prior written permission of Telit

High Risk Materials

Components, units, or third-party products used in the product described herein are NOT fault-tolerant and are NOT designed, manufactured, or intended for use as on-line control equipment in the following hazardous environments requiring fail-safe controls: the operation of Nuclear Facilities, Aircraft Navigation or Aircraft Communication Systems, Air Traffic Control, Life Support, or Weapons Systems (High Risk Activities"). Telit and its supplier(s) specifically disclaim any expressed or implied warranty of fitness for such High Risk Activities.

Trademarks

TELIT and the Stylized T Logo are registered in Trademark Office. All other product or service names are the property of their respective owners.

Copyright © Telit Communications SpA.



Reproduction forbidden without Telit Communications S.p.A's. written authorization - All Rights Reserved.

Page 3 of 27



Applicability Table

	SW Versions
GC Family (Compact)	
GC864-QUAD	
GC864-QUAD V2	10.00.xx7
GC864-DUAL V2	
GE/GL Family (Embedded)	
GE864-QUAD	
GE864-QUAD V2	
GE864-QUAD Automotive V2	
GE864-QUAD ATEX	
GE864-DUAL V2	10 00 vv7
GE864-GPS	10.00.227
GE865-QUAD	
GL865-DUAL	
GL865-QUAD	
GL868-DUAL	
GE910-QUAD	
GE910-QUAD AUTO	13.00.xx3
GE910-GNSS	
GE910-QUAD V3	
GE866-QUAD	
GL865-QUAD V3	16.00.xx2
GL865-DUAL V3	
GL868-DUAL V3	
GT Family (Terminal)	
GT863-PY	
GT864-QUAD	10.00.xx7
GT864-PY	
HE910 Family	
HE910' (1)	
HE910-GA	
HE910-D	12.00.xx4
HE910-EUR / HE910-EUD	
HE910-EUG / HE910-NAG	
HE910-NAR / HE910-NAD	
UE/UE Family (Embedded)	
UE910-NAR / UE910-NAD	40.00
	12.00.XX4
UL865-NAR / UL865-NAD	
UL865-N3G	

¹ HE910 is the "type name" of the products marketed as HE910-G & HE910-DG



Reproduction forbidden without Telit Communications S.p.A's. written authorization - All Rights Reserved.

Page 4 of 27



Contents

1.	Intr	oduction
1.1	1.	Scope
1.2	2.	Audience
1.3	3.	Contact Information, Support
1.4	4.	Document Organization
1.5	ō.	Text Conventions
1.0	6.	Related Documents
1.	7.	Document History
2.	Pre	mium FOTA Management
2.7	1.	Overview
3.	Ger	neral Requirements11
3.1	1.	Module Requirements
	3.1.	1. Module Hardware Requirements11
	3.1.	2. Module Firmware Requirements11
3.2	2.	Customer Requirements
	3.2.	1. Customer Software Requirements11
	3.2.2	2. Customer SIM Settings
4.	PFN	۲ Certification Program
4.	1.	Overview13
4.2	2.	PFM Certification Procedure
4.3	3.	PFM Server Web interface
	4.3.	1. Overview
	4.3.2	2. Step 1: Log In to Telit web server16
	4.3.3	3. Step 2: PFM Statistics17
	4.3.4	4. Step 3: Filtering the IMEI List19
	4.3.	5. Step 4: IMEI List
	4.3.0	6. Step 5: PFM update procedure23
	4.3.'	7. Step 6: Operation Report25
4.4	4.	Getting PFM Compliant Certification26
5.	Acr	onyms and abbreviations27



Reproduction forbidden without Telit Communications S.p.A's. written authorization - All Rights Reserved.



Page 6 of 27

PFM Certification Program Application Note 80000NT10022A Rev.4 – 2014-12-04

1. Introduction

1.1. Scope

This document describes requirements and procedures that customer must follow in order to be compliant with PFM service. It contains the step-by-step procedure to help the customer in the development an application as PFM Compliant.

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 TS-NORTHAMERICA@telit.com TS-LATINAMERICA@telit.com TS-APAC@telit.com

Alternatively, use:

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

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.



Reproduction forbidden without Telit Communications S.p.A's. written authorization - All Rights Reserved.



1.4. Document Organization

This document contains the following chapters:

<u>"Chapter 1: "Introduction</u>" provides a scope for this document, target audience, contact and support information, and text conventions.

<u>"Chapter 2: "Over The Air Update Service Overview</u>" gives a general description of FTMS service, available options of service, reliability and warranty.

<u>"Chapter 3: "General Requirements</u>" 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.

<u>"Chapter 4: "PFM Certification Program"</u> provides process for Service registration, Telit PFM parameters and description of update procedure steps.

<u>"Chapter 6: "Acronyms and Abbreviations"</u> provides definition for all the acronyms and abbreviations used in this document.

1.5. Text Conventions



<u>Danger – This information MUST be followed or catastrophic equipment failure or bodily</u> <u>injury may occur.</u>



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 Managements (PFM) Application Note
- PFM Product Description
- PFM Supply Agreement



Reproduction forbidden without Telit Communications S.p.A's. written authorization - All Rights Reserved.

Page 7 of 27



1.7. Document History

Revision	Date	Changes	Location
0	2009-02-06	First issue	Trieste
1	2010-10-04	Added GL865-DUAL to applicability table.	Trieste
2	2011-04-21	Updated applicability table with V2 modules.	Trieste
3	2013-05-07	Updated Applicability Table.	Trieste
4	2014-12-04	Updated Applicability Table	Trieste



Reproduction forbidden without Telit Communications S.p.A's. written authorization - All Rights Reserved.

Page 8 of 27



2. **Premium FOTA Management**

2.1. **Overview**

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 upto-date with the latest enhancements and features.

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.



Fig.1 Delta file generation

On the opposite side, Telit Module performs the reverse operation:



Fig.2 New Firmware generation

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.



Reproduction forbidden without Telit Communications S.p.A's. written authorization - All Rights Reserved.



PFM works through an SMS-based protocol and FTP protocol.

SMS-based communication protocol is used for the handshaking between PFM server and remote module; FTP protocol is used to download the delta files to the remote module.



The Update Procedure is based on SMS messages and FTP protocol. However, the delivery of messages and GPRS/CSD connections are MNO dependent and out of Telit's domain, sometimes little differences affect different mobile operators. A complete list of network mobile operators in which Telit modules are certified is available in Telit website:

http://www.telit.com/en/products/technical-support-center/certifications

For mobile operators not included in the list, customer shall provide a separated PFM certification using MNO's SIM and Network if needed.

In this case, a dedicated field test is also recommended.





3. General Requirements

All Telit modules currently in production support PFM. 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 and by the customer's applications.

3.1. Module Requirements

3.1.1. Module Hardware Requirements

The modules listed in the applicability table only support the PFM Service.

3.1.2. Module Firmware Requirements

Parameters	Release
Telit Firmware Release	7.03.xx0 or onward

Firmware release older than 7.03.xx0 cannot be updated via PFM Service.

3.2. Customer Requirements

Customer has signed a specific agreement with Telit to access to Telit Over-The-Air update service.

3.2.1. Customer Software Requirements

Customer software must be able to manage the specific PFM AT commands detailed in PFM Application Note (ref. §1.6).



STOP

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

3.2.2. Customer SIM Settings

In order to benefit of Telit's PFM update service the following requirements must be fulfilled:

- The SIM needs to have enabled SMS service also in roaming;
- After the update, the PIN insertion must be managed by the external application or by the Python script;
- If the GPRS bearer is used to download the delta file, the SIM needs to have GPRS traffic enabled.
- The customer's application must reside on the public IP network.



Reproduction forbidden without Telit Communications S.p.A's. written authorization - All Rights Reserved.

Page 11 of 27

Further specific setups, concerning the points above, are listed in PFM Application Note.

Once the module is registered in Telit PFM Server with its associated MSISDN of the SIM, the exchange of SIM between modules may be handled with care to avoid a miss registration of the module.

4. PFM Certification Program

4.1. Overview

Telit has developed the PFM Certification Program to qualify a customer as being aware of what is the correct procedure to update a module through FOTA technology: only PFM Certified Customers shall be able to FOTA-update their modules.

Basically the PFM Certification Program consists of either a PFM Certification Procedure and an acceptance by the customer to verify that each of his applications containing a Telit module be PFM compliant. The PFM compliance of an application relies on the capability of the application itself to run properly either while the module is FOTA updating its firmware. Telit has no means to verify the compatibility of customer's applications therefore it is responsibility of the customers to self-certify this behaviour: customer is strongly suggested to insert the PFM compliance qualification as a part of its acceptance tests.

Telit does not certify final customer application; final application is out of Telit's domain. Telit does not have any way to control and monitor what customer application performs.

Telit requires that a new customer fulfils at least once the PFM Certification Procedure.

Telit strongly recommends any customer to qualify as PFM compliant any of its applications of Telit modules; moreover Telit strongly suggests any customer to repeat the PFM compliance qualification each time any of its applications of Telit modules evolves, either in hardware or in software.

4.2. PFM Certification Procedure

The PFM Certification Procedure has been defined to qualify a new customer as being able to deal with the FOTA Updating Process: customer shall demonstrate to know how to download the delta-firmware and handle all the updating phases.

The PFM Certification Procedure consists of a number (\rightarrow 25) of complete special FOTA updating in which the overall sms-based communication protocol will be followed, a delta-firmware will be downloaded via ftp and, finally, it will be expanded in the target module flash memory. The only difference from a real FOTA updating is that the object of this mechanism, i.e. the delta-firmware, is a special one: it is a delta from a firmware to itself. It is guaranteed that if such an updating has been completed successfully there is no real firmware updating of the target module.

Customer will develop his application containing a Telit module following the guidelines contained in PFM Application Note (ref. §1.6).

Reproduction forbidden without Telit Communications S.p.A's. written authorization - All Rights Reserved.

Page 13 of 27

After signing the PFM agreement, a new customer will have the capability to insert in the PFM server the parameters of the modules he is going to use to obtain the PFM Certification; these parameters are:

- IMEI
- MSISDN
- FW version (actual)
- Product Name
- APN
- User Name and Password.

See PFM Product Description for details.

Customer will be assisted by Telit personnel to insert such data.

Telit will provide the new customer with the info to login to the PFM Server web interface. A special access will be provided to new customers in order to let them fulfill the PFM Certification Procedure.

Telit request new customer to successfully complete the special FOTA updating process at least 25 times. Through the special FOTA updating process customer will have the capability to verify that its application has been well-designed from a PFM point of view.

Reproduction forbidden without Telit Communications S.p.A's. written authorization - All Rights Reserved.

Page 14 of 27

In the figure below are displayed the steps each **not yet certified** customer should fulfill, in order to get the PFM compliance.

Fig.3 PFM Certification steps overview

In the figure below are displayed the steps each **certified** customer should fulfill each time his application is enhanced, in order to check if the PFM compliance is still valid.

Fig.4 PFM test for certified customers

Telit strongly recommends the certified customers using PFM certification tool each time they implement enhancements in their application.

Reproduction forbidden without Telit Communications S.p.A's. written authorization - All Rights Reserved.

Page 15 of 27

4.3. PFM Server Web interface

4.3.1. Overview

A web interface to the **PFM Server** has been designed, through which:

- The new user (not PFM Certified yet) can get the PFM Certification.
- The **PFM Certified** user can
 - 1. Request the **Special FOTA Updating** of its own modules (the **Special FOTA Updating** executes all the sms-based communication protocol and, as a result, it *doesn't really update* the firmware of the customer modules, the target software release is the same as the original one)
 - 2. Request the **real FOTA Updating** of its own modules (not available at the moment).
 - 3. Ask for reports on ... (TBD)

In the following paragraphs it will be shown how a user can get access to the **PFM Server** Web Interface, ask for information, get the **PFM Certification**, request the updating, and so on.

In what follows, we will use with the same meaning the words **IMEI** and **module**.

In what follows, we will use with the same meaning the words user and customer.

4.3.2. Step 1: Log In to Telit web server

.

From the Telit website, it is easy for a user to access the PFM web page:

http://www.telit.com/en/products/technical-support-center.php

and then move to the PFM Certification Program.

The authentication dialog of fig.5 appears:

No. 1	TFMS	SERVER	10
	User Domain:	Sub-Distributors	
	User Name:	Application Tester 3	
	Password (4 to 8 digits/chars):	•••••	
. Z		Verify	

Fig.5 PFM Web Server Interface

Reproduction forbidden without Telit Communications S.p.A's. written authorization - All Rights Reserved.

Page 16 of 27

The (new) user will select **Distributors** or **Sub-Distributor** as **User Domain**. Insert **User Name** and **Password** and, finally, push **Verify**.

4.3.3. Step 2: PFM Statistics

If the authentication procedure is correct, it appears a page named "PFM Statistics".

A highlighted information below the window title reports whether the user has already got the **PFM Certification** (\rightarrow "Telit Certified User", see fig.7) or not (\rightarrow "User Not Telit-Certified Yet", see fig.6).

	TFMS ST User: Applic Domain: Su User Not Teli Telit Certificat	TATISTICS ation Tester 3 - bDistributors it-Certified Yet! ion Steps: 8 / 25	A CONTRACTOR	ų t
Total Associate TFMS Enabled I TFMS Updating	ed Modules: Modules: Requests (Successfull %):	3 3 0 (0%)	View Successfull FOTA	
	TelitCertification	Tel	tFOTA	

Fig.6 PFM Statistics dialog box in case of Not PFM Certified user (8 positive download).

	TFMS STATISTICS User: Application Tester 4 Domain: SubDistributors Telit-Certified User	<u> Sexit</u>
Total Associated Module TFMS Enabled Modules: TFMS Updating Requests	s: 2 2 (Successfull %): 0 (0%)	View Successfull FOTA
FOTAT	est Only	TelitFOTA

Fig.7 PFM Statistics dialog box in case of PFM Certified customer

Reproduction forbidden without Telit Communications S.p.A's. written authorization - All Rights Reserved.

Page 17 of 27

Contents of the page:

- Total number of Telit modules associated to the user, as it appears from the **PFM** internal database;
- How many of these modules are PFM enabled;
- How many PFM Updating requests have been so far done by the user and, in percentage, how many of these have been completed successfully. Moreover, pushing the button [View Successfull FOTA] the user can get some information about all its successfully completed FOTA Updating requests: this information will be reported in a separate web page, whose format appears in fig. 8.

The meaning of the push buttons on the bottom-side depends on whether the user has been already PFM Certified or not:

- If user has not been PFM Certified yet, only one push button ([**Telit Certification**]) is present and enabled, letting the user to proceed to get the **PFM Certification**.
- If user has already been PFM Certified, two push buttons are present and enabled, the first ([FOTA Test Only]) to request a special FOTA Updating session (this can be useful for the user when it is testing its own application), the second ([Telit FOTA]) to request a normal FOTA Updating session.

Making machines talk.®

Fig.8 Module history table

Reproduction forbidden without Telit Communications S.p.A's. written authorization - All Rights Reserved.

Page 18 of 27

4.3.4. Step 3: Filtering the IMEI List

. @

The web page appearing when pushing either [**Telit Certification**], either [**FOTA Test Only**] or [**Telit FOTA**] is always the same: "Search Options". This page permits customer to appropriately filter the information about its own modules.

From this web page on, a simple highlighted information below the main table title (if present...) is explaining implicitly what the page has been opened for:

- a) "Telit Certification Program": special FOTA Updating session to get the PFM Certification (see fig. 9)
- b) "FOTA Test": special FOTA Updating session (see fig. 10)
- c) Nothing: normal FOTA Updating session

40	Search Options User: Application Tester 3 Domain: SubDistributors Felit Certification Program
IMEI Range:	All IMEIs
Product Name:	All products
SW Release Range:	All releases
Update Date:	O Past Month
100	Past Year Specify - format: YYYY[/MM[/DD]]
Customer:	All customers
TFMS Enabled	TFMS Registered:
< Statistics	IMEI List >>

Fig.9 Search dialog box in case of not certified customers

Reproduction forbidden without Telit Communications S.p.A's. written authorization - All Rights Reserved.

Page 19 of 27

	Search Options User: Application Tester 4 Domain: SubDistributors FOTA Test
IMEI Range: Product Name: SW Release Range:	All IMEIs All products All releases Don't remember Today
Update Date:	Within Last Week Past Month Past Year Specify - format: YYYY[/MM[/DD]]
TFMS Enabled:	TFMS Registered:

Fig.10 Search dialog box in case of certified customers performing a FOTA Test

Available filters (each of the following filters can be applied either alone or in conjunction with other filters).

- **IMEI** range: customer can identify a subset of its own modules based on the • definition of a sub-range of IMEIs.
- Product Name: customer can identify a subset of its own modules based on the • specification either of a single product or of a class of products (e.g. "FOTA products").
- SW Release Range: customer can identify a subset of its own modules based on the . definition of a sub-range of software versions.
- Updating Date: customer can identify a subset of its own modules based on the • definition of a time bound about the Last Successful FOTA Updating.
- Customer: (Distributors only): distributor can identify a subset of the modules owned • by its sub-distributors, based on the selection of a single sub-distributor.

In the bottom side of the page you can find the [IMEI List >>] button, that permits customer to display the list of all its own modules/IMEIs, as requested and specified through "Search Options" page.

Reproduction forbidden without Telit Communications S.p.A's. written authorization - All Rights Reserved.

4.3.5. Step 4: IMEI List

This page displays in a table-like format all the information about the subset of customer modules identified by the filtering selections the customer itself did in the "Search Options" page. See fig. 11 and 12.

The "IMEI List" page layout has been designed basically for three purposes:

- 1. It shows to the customer all the information about all of its modules, as it is known to the PFM Server. This information is presented in a table-like format as it appears in fig.11. Each row refers to a specific module/IMEI; blank cells appear in the row when the PFM Server doesn't know an information for a specific module (e.g. the Product Name);
- 2. It permits the customer either to select a specific operation to be applied on its modules and to specify which of its modules will be considered for this operation. The coloured column on the left-hand side of the page permits the customer to select the specific operation to request. This column changes its meaning simply pushing the buttons [<<] and [>>]. If the customer entered this page for "Telit Certification Program" or for "FOTA Test" only one operation can be requested and the above mentioned buttons [<<] and [>>]are disabled. If a customer needs to request an operation for a subset of modules, it has to tick the checkbox (...if enabled...) for all the modules of the subset and it has to proceed pushing the bottom-side button [PFM Updating]: this causes another page to be loaded, "Update Page".
- 3. It permits the customer either to monitor the state of the updating process of those modules that currently are FOTA updating the firmware or to know what a not operational module needs in order to become operational.
 - a. If a module is **not operational** either, a specific string can be displayed in the coloured cell or the checkbox in that cell appears not ticked and disabled. In both cases, the cell tooltip reports specific information.
 - b. If a module is **operational**, the checkbox in the coloured cell appears not ticked, enabled and modifiable. The cell tooltip reports information about enabled services for that module.
 - c. If a module is **operational** and is currently FOTA updating, the cell is grey coloured and the checkbox in the cell is ticked, enabled and not modifiable. The cell tooltip reports the current state of FOTA updating for the specific module

Other push buttons on this page are:

- [History], one for each item, it is used to show the history table for the specific item.
- [Mod], one for each item, it is used to manually modify/insert a small subset of information about a specific item.

Reproduction forbidden without Telit Communications S.p.A's. written authorization - All Rights Reserved.

Page 21 of 27

IT	EXIT	AQ.	4.9	d Data tion Tester 3 Distributors	Filtere User: Applica Domain: Sub	4	49	ÇO ^N
) н	TFMS Updating	Enabled Services	Owner	Last TFMS Upd.	SW Rel.	Product Name	Module Number	IMEI
	Tick All	40	AV.		1		AN C	×
		FOTA	Application Tester 3	- 4	22.22.312-222	GC864-DUAL PY	AT3_MSISDN1	AT3_IMEI3_00000
		FOTA	Application Tester 3		66.66.316.1-8666_F	GC864-DUAL PY	AT3_MSISDN2	AT3_IMEI3_00000
	Tick All	FOTA FOTA FOTA Page 1/1	Application Tester 3 Application Tester 3 Application Tester 3	Jpdating	22.22.312-222 22.22.312-222 66.66.316.1-8666_F TFMS L	GC864-DUAL PY GC864-DUAL PY GC864-DUAL PY	AT3_MSISDN1 AT3_MSISDN2 AT3_MSISDN3	AT3_IMEI1_00000 AT3_IMEI2_00000 AT3_IMEI3_00000 << Search Options

Fig.11 Modules available for PFM certification.

Filtered Data User: Application Tester 4 Domain: SubDistributors FOTA Test								4
IMEI	Module Number	Product Name	SW Rel.	Last TFMS Upd.	Owner	Enabled Services	TFMS Updating	Hist
AT4_IMEI1_00000	AT4_MSISDN1	GC864-DUAL PY	11.11.311.44	3	Application Tester 4	FOTA		Hist
		COREA DUAL DV	66 66 316 1-8666 F		Application Tester 4	FOTA		Hist

Fig.12 Modules available for FOTA Test.

Customer can access to a "history" file to check all the steps and the complete history of that specific module.

Once selected the module(s), to start the update procedure is sufficient to click on **PFM** Updating button.

Reproduction forbidden without Telit Communications S.p.A's. written authorization - All Rights Reserved.

Page 22 of 27

4.3.6. Step 5: PFM update procedure

The web page appearing when pushing either [**PFM Updating**] or [...] in the "**IMEI List**" page is always the one appearing in figs. ### or ###. This page permits customer either to select & submit an updating request or to monitor the state of the FOTA Updating currently on service.

- Select & submit of a FOTA Updating Request.
 - a) If the page has been opened for "Telit Certification Program" or for "FOTA Test" the [Target SW Release] column, if enabled, will contain the same software release label as in the [Current SW Release] column, i.e. it is possible to submit only a special PFM Updating Request.
 - b) If the page has been opened for normal FOTA Updating the [Target SW Release] column, if enabled, will contain the label of all the software releases to which a specific module can update
- FOTA Updating Monitoring. After an Updating Request has been submitted and during the whole updating phase, the column [Performing] will represent the current FOTA Updating status of a module in textual format and the column [Progress] will represent it in graphical format

Clicking the **PFM Updating** button in dialog box **Filtered Data**, the following dialogue box appears if customer is performing the certification:

TFMS Updating Request User: Application Tester 3 Domain: SubDistributors Telit Certification Program									<i>ŒEXIT</i>
IMEI	Module Number	Product Name	Current SW Release	Target SW Release	Scheduled TFMS Updating	Elapsed Time	Performing	Progress	History
AT3_IMEI1_00000	AT3_MSISDN1	GC864-DUAL	22.22.312-222	22.22.312-222		Q		-	History
AT3_IMEI2_00000	AT3_MSISDN2	GC864-DUAL	22.22.312-222	22.22.312-222	1				History
AT3_IMEI3_00000	AT3_MSISDN3	GC864-DUAL PY	66.66.316.1-8666_F	66.66.316.1-B666_F				- REDARDER	History
< Filtered Dat	a	e prima	S	ubmit "TFMS Updating" Request	-			100	

Fig.13 To start and monitor the dummy update

If customer is certified the window is the same with only the difference in the certification status:

Reproduction forbidden without Telit Communications S.p.A's. written authorization - All Rights Reserved.

Page 23 of 27

			TFMS	Updating Re ser: Application Teste Domain: SubDistributo	ec r 4 rs	quest				
				FOTA Test automatic refresh not enabled	d					$\boxtimes EXIT$
IMEI	Module Number	Product Name	Current SW Release	Target SW Release		Scheduled TFMS Updating	Elapsed Time	Performing	Progress	History
T4_IMEI1_00000	AT4_MSISDN1	GC864-DUAL PY	11.11.311.44	11.11.311.44	~	la e para de la	21:35:49			History
F4_IMEI2_00000	AT4_MSISDN2	GC864-DUAL PY	66.66.316.1-8666_F	66.66.316.1-B666_F	*		21:16:04	and the second		History
<< Filtered Dat	a]		S	ubmit "TFMS Updating" Request			1.8		- 24 - 5	-

Fig.14 To start and monitor the FOTA tests

To start a FOTA update test press **submit FOTA Updating Request** button, the displayed module(s) will be updated as shown in the figure below:

TFMS Updating Request User: Application Tester 3 Domain: SubDistributors Telit Certification Program automatic refesh every 20s.										
IMEI	Module Number	Product Name	Current SW Release	Target SW Release		Scheduled TFMS Updating	Elapsed Time	Performing	Progress	History
T3_IMEI1_00000	AT3_MSISDN1	GC864-DUAL PY	22.22.312-222	22.22.312-222	×		0:00:01	Provisioning	- ininin inin	History
T3_IMEI2_00000	AT3_MSISDN2	GC864-DUAL PY	22.22.312-222	22.22.312-222			0:00:01	Provisioning		History
T3_IMEI3_00000	AT3_MSISDN3	GC864-DUAL PY	66.66.316.1-8666_F	66.66.316.1-B666_F	Ŷ		0:00:01	Provisioning		History

Fig.15 Performing the dummy update, provisioning phase in progress

When the operation is in progress, it is possible to go back in the previous window and perform other operations.

When the required operation is completed, the **Performing** column will display two possible statuses:

- Updated;
- Not Updated.

A full report will be generated.

Reproduction forbidden without Telit Communications S.p.A's. written authorization - All Rights Reserved.

Page 24 of 27

This report is available clicking on **History** button.

If customer is certified and is performing a FOTA Test, the window is the following:

			TFMS	Updating R ser: Application Test Domain: SubDistribute	er 4 ors	luest				
				FOTA Test automatic refresh every 20.	5.					⊠ <i>EXIT</i>
IMEI	Module Number	Product Name	Current SW Release	Target SW Release	1	Scheduled TFMS Updating	Elapsed Time	Performing	Progress	History
AT4_IMEI1_00000	AT4_MSISDN1	GC864-DUAL PY	11.11.311,44	11.11.311.44	¥	Sugar A	0:00:01	Provisioning	. Michianan	History
AT4_IMEI2_00000	AT4_MSISDN2	GC864-DUAL	66.66.316.1-B666_F	66.66.316.1-B666_F			0:00:01	Provisioning		History

Fig.16 Performing the FOTA Test, provisioning phase in progress

4.3.7. Step 6: Operation Report

A complete report is displayed clicking on the button History in the column History for a specific module.

The following window appears:

\mathbb{R}^{n}	2.4	
AN 5 -	1 AQ	History Table User: TTSC Domain: Distributors
3		IMEL: 257022000027450 INCLOSE
		IMEI. 337022000037430
	2008-01-31 12:15:41	Remote Registration
- 1	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
8	2008-01-31 12:17:15	Download started
4	2008-01-31 12:20:48	FOTA Request from 07.02.104-8002 to 07.02.104-A009
	2008-01-31 12:20:54	Provisioning started
2	2008-01-31 12:22:08	FOTA Request from 07.02.104-8002 to 07.02.104-A009
8	2008-01-31 12:22:08	Provisioning started
2	2008-01-31 12:23:56	Provisioning completed
27	2008-01-31 12:23:58	Download started
1	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
\tilde{x}	2008-01-31 14:01:51	Download started
	2008-01-31 14:04:47	Download failed: client error
11	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
ŝ	2008-01-31 14:27:35	Download failed: client error
5	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

Fig.17 Module history table

Reproduction forbidden without Telit Communications S.p.A's. written authorization - All Rights Reserved.

Getting PFM Compliant Certification 4.4.

Only customers who have performed at least 25 successful special FOTA updates are able to request PFM over-the-air update.

It is not possible to skip this step; Telit does not accept an updating request involving not certified customers.

Customer is charged of the correct integration of Telit module in his application. Telit is liable only for updating steps performed by Telit modules.

Contacts Telit's Technical Support Center (TTSC) for further information and assistance.

5. Acronyms and abbreviations

Term	Definition
APN	Access Point Name
CSD	Circuit Switched Data
FTP	File Transfer Protocol
FOTA	Firmware Over The Air
GSM	Global System for Mobile communication
GPRS	General Packet Radio Service
IMEI	International Mobile Equipment Identity
M2M	Machine-to-Machine
MNO	Mobile Network Operator
MSISDN	Mobile Station International Subscriber Directory Number
PFM	Premium FOTA Managements
PLMN	Public Land Mobile Network
SIM	Subscriber Identity Module
SMS	Short Message Service
TTSC	Telit Technical Support Centre

Reproduction forbidden without Telit Communications S.p.A's. written authorization - All Rights Reserved.

Page 27 of 27