

Premium Fota Management Application Note
80000NT10013a Rev.5, 06/02/09

This document is applicable to the following products:

APPLICABLE PRODUCTS

PRODUCT	PART NUMBER ⁽¹⁾
GT863-PY	3990150471
GT864-PY	4990150070
GM862-GPS	GM862GPS***_***
GM862-QUAD-PY	GM862PYT***_***
GM862-QUAD	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	NMO dependent ⁽²⁾
GE864-PY	GE864PYT***_***
GE864-QUAD	GE864QUD***_***
GE864-QUAD Automotive	GE864AUT***_***
GE863-PRO3 w/o OS ⁽³⁾	GE863PR3***_***
GE863-PRO3 with LINUX ⁽³⁾	GE863PR3***_***
GE863-PRO3 64MB RAM w/o OS ⁽³⁾	GE863PR3***_***
GE863-PRO3 64MB RAM with LINUX ⁽³⁾	GE863PR3***_***

⁽¹⁾ The suffix "***_***" depends on the module HW/SW configuration. Please contact your Telit representative or TTSC for details.

⁽²⁾ Ask to TTSC for details.

⁽³⁾ The Premium FOTA Managements is available for the GSM/GPRS engine only. The support for the ARM application will be available in a later phase.

Applicable from SW Version:

07.03.xx0



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1 Introduction

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

The ability to manage software over-the-air is a necessary requirement for all customers who design m2m products because of long lifecycles of m2m enabled products. The lifecycle of m2m enabled applications in the market ranges from 5-10 years. Downloading firmware version updates with new features represents an important new capability for m2m applications. It does away with the need to have the device updated in the field by technicians, cutting costs and timing of maintenance of the fielded applications. Such issues typically arise from a network configuration, a network software update to „fixing bugs“ or the introduction of new additional features into the Telit module required by the market.

Telit, which has signed a partnership agreement with the worldwide leader of Mobile Software Management Red Bend, has integrated in its own proprietary protocol the unique vCurrent® Mobile Update Installer and Update Generator software for use in its m2m product portfolio. Telit is therefore 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.

vCurrent® is a registered trademark of Red Bend Software Inc.

1.1 Scope

Scope of this document is to provide all necessary information about Premium FOTA Managements, and how to design an application that benefits from these services.

All Telit modules, starting from SW version specified at the beginning of this document, support firmware update service. Note that this service will be enabled only after signing specific agreement with Telit.

Customers, who want to benefit from this service, must pass through the Telit certification program, where Telit will assist the customer in validating the correct implementation of firmware update service.



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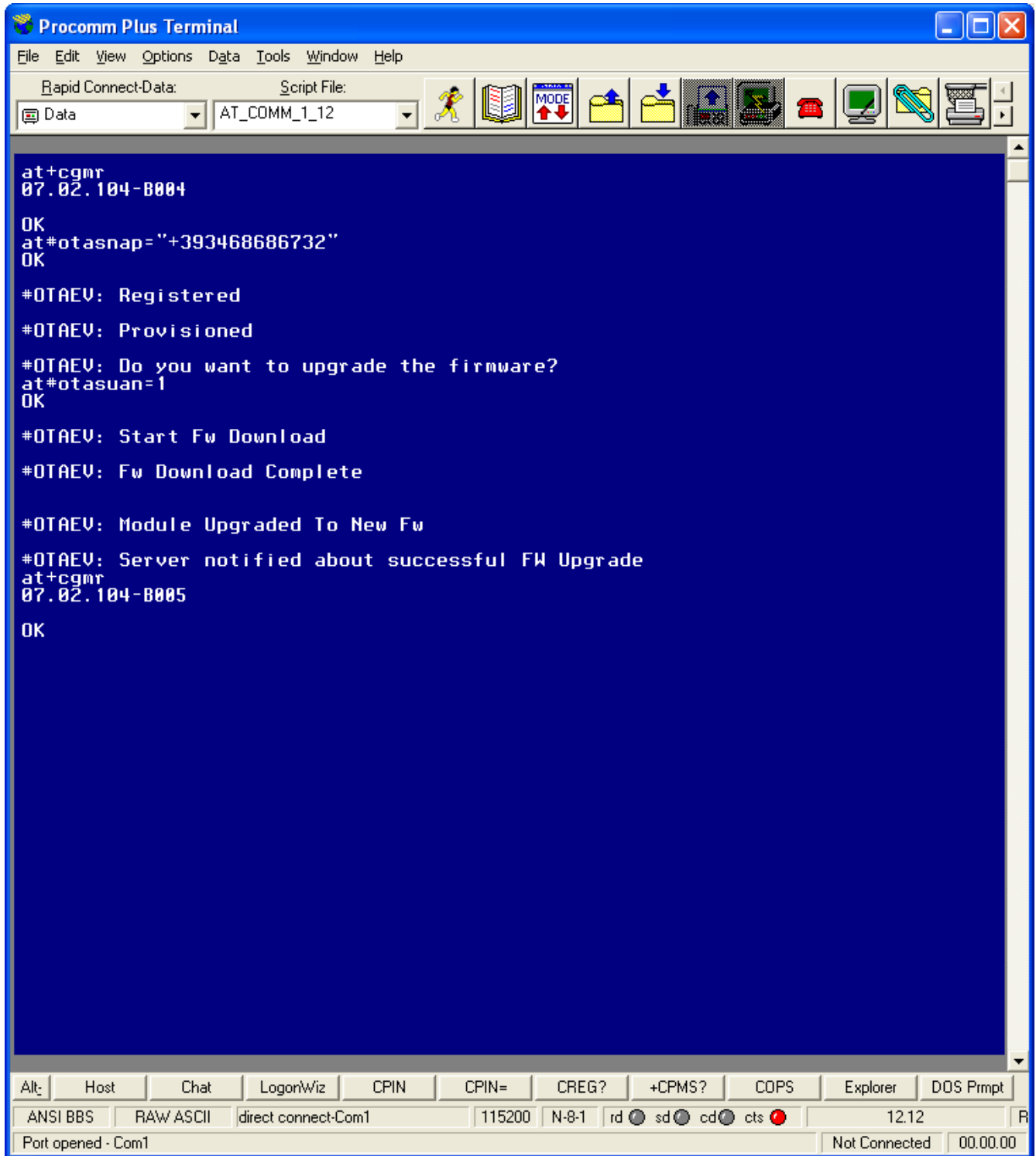


Fig.1 AT command interface listing firmware update operations

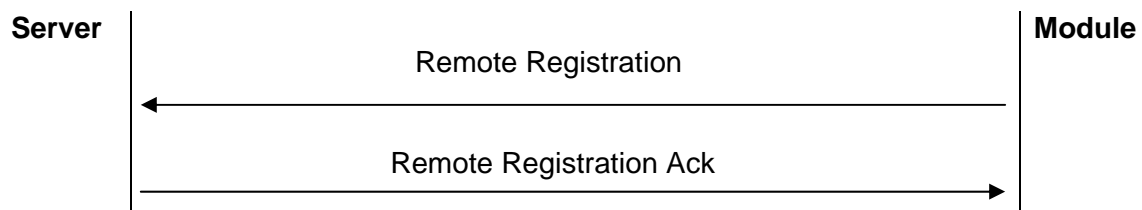


3.1 Remote Registration

In order to send a SMS containing all the needed information (IMEI, phone number, model, IMSI, current PLMN) from the module to the server, it is necessary to issue the following AT command:

- **AT#OTASNAP="number"**

where *number* represents the phone number in international format of the server. The server will respond with a SMS that ends the registration procedure. The SMS scenario is the following:



When the *Remote Registration Ack* SMS is received, the following unsolicited result code will be prompted on the AT command interface:

- **#OTAEV: Registered**

If, for some reason, the *Remote Registration Ack* SMS is not received, then the module will not be registered and, on every power on, the module will resend automatically the *Remote Registration* SMS.

Another way to force the *Remote Registration* SMS sending when the module is not registered, is to give again the #OTASNAP command.

If a module is still registered and after that the SIM is changed, the module will send automatically the *Remote Registration* SMS, because the server needs to be updated with the new information regarding the SIM (number, IMSI, etc).

NOTE: The issue of #OTASNAP command, i.e. the issue of registration SMS, must be performed at least once. In this way PFM server knows the parameters of that specific module. Moreover, the issue of OTASNAP command informs Telit’s module that it is going to use PFM service; this means that after the first issue of OTASNAP, Telit module will send a registration SMS each time the SIM card is changed.



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At this point, the module checks the delta firmware file validity and in case, it starts the updating phase.

At the end of this phase, the module restarts with the new firmware and the following unsolicited result code will be prompted on the AT interface:

- **#OTAEV: Module Upgraded To New Fw**

A *Command Final* SMS is sent to the Server and, if this operation is successful, the following unsolicited result code will be prompted on the AT interface:

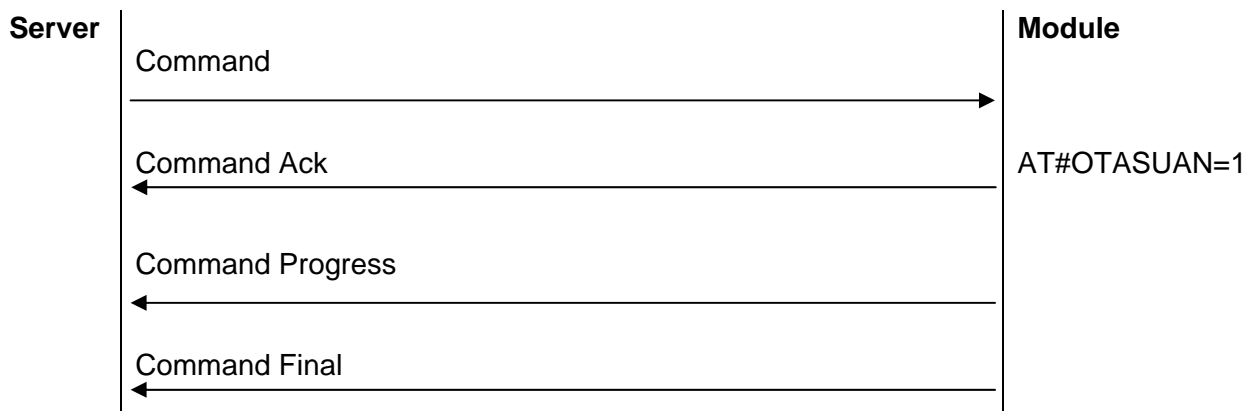
- **#OTAEV: Server notified about successful FW Upgrade**

Now, the procedure is completed.

In case, at any of above described steps, something goes wrong (the delta firmware file is bad, the ftp connection opening fails, etc.) a SMS containing the error code will be sent to the server and the following unsolicited result code will be prompted on the AT interface:

- **#OTAEV: OTA Fw Upgrade Failed**

Usually, the update scenario is the following:



3.3.1 Expected times

For a delta firmware file size of about 165 kB, the download time is:

- in GPRS case
 - with timeslot configuration: 4 + 1 is about 90 seconds;
 - with timeslot configuration: 1 + 1 is about 150 seconds;
- in CSD case is about 190 seconds

The delta file validation phase is about 80 seconds long.

The updating phase is about is about 440 seconds long.

3.3.2 Firmware update failure handling

Possible causes for firmware update failure can be:

1. Delta firmware file corruption: the version of the downloaded delta file is wrong or the file is corrupted due for example to a partial download;
2. FTP error during the download;
3. GPRS context activation error or CSD call setup error.

In these cases the firmware update process is interrupted, a URC is sent through the serial port while the module goes on working properly and the external application continues to control it as before the firmware update process.

A power supply failure (voltage drop, battery fail...) during firmware update phase is fail proof. In case of power fail during updating phase, the module, at the next restart, will recognize the interruption of the former updating process. It will perform the updating process restarting form the point of interruption. The update process will be completed without any external action.



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#OTASUAN – Set User Answer	
	<p>#OTAEV: Automatic Fw Upgrade Requested An automatic Fw Update procedure has started</p> <p>#OTAEV: User Answer Timeout Expected User Answer not received within server defined time interval</p> <p>#OTAEV: Start Fw Download The firmware download is started</p> <p>#OTAEV: Fw Download Complete The firmware download is finished</p> <p>#OTAEV: OTA Fw Upgrade Failed The Fw update has failed</p> <p>#OTAEV: Module Upgraded To New Fw The Fw update is successfully finished</p> <p>"#OTAEV: Registered" The module has registered itself to a server</p> <p>"#OTAEV: Not registered" The registration procedure has failed</p> <p>"#OTAEV: Provisioned" The server has provisioned the module</p> <p>"#OTAEV: Notified" The server has notified the module</p> <p>#OTAEV: Server notified about successful FW Upgrade The final SMS is sent to the server notifying the update</p>
AT# OTASUAN?	Read command reports the current settings in the format: #OTASUAN: ,<mode>,<bfr>
AT#OTASUAN =?	Test command returns values supported as a compound value
Example	<pre>AT#OTASUAN= , 2 , 1 OK AT#OTASUAN? #OTASUAN: , 2 , 1 OK AT#OTASUAN =? #OTASUAN: (0-1) , (0-2) , (0-1) OK</pre>



8 Appendix

8.1 Commands parameters stored during update process

Command	Parameters
#ESCRIP	script_name
#STARTMODESCR	script_start_mode, script_start_to
#CMUXSCR	enable,rate
#BND	band
#AUTOBND	value
#ENS	mode
#SMSMODE	mode
#SELINT	v
#COPSMODE	Mode
#ENHSIM	Mod
+COPS	Mode, oper
#SMSATRUNCFG	muxinstance,urcmo,timeout
#SMSATWL	index,entryType,string
#TCPATRUNCFG	connId,muxinstance,tcpPort,tcpHost tcpHostPort,tcpHost ,urcmo,timeout,authMode,retryCnt,retryDelay
#TCPATRUNFRWL	ip_addr,net_mask
#TCPATRUNAUTH	userid,passw
+CGDCONT	cid,PDP_type,APN,PDP_addr,d_comp,h_comp
#GSMCONT	cid,P_type,CSD_num
#DNS	cid,primary,secondary
#SGACTCFG	cid,retry,delay,urcmo
#SKTSAV	-
#SKTRST	-
#SCFG	connId,cid,pktSz,maxTo,connTo,txTo
#SCFGEXT	connId,srMode,dataMode,keepalive



9 Document Change Log

Revision	Date [dd/mm/yy]	Changes
ISSUE #0	18/03/08	First Issue
ISSUE #1	17/07/08	Updated applicability table
ISSUE #2	18/07/08	Updated applicable products table Title changed into the proper name of the service. Introduction changed Premium FOTA Managements Certification Program chapter added.
ISSUE #3	17/10/08	Updated applicable products table Updated preliminary requirements Updated alert list Added § 3.3.1“Expected times” Added § 3.3.2 Firmware update failure handling Added § 6 Critical scenario Added new § 8 “Appendix” Review of document layout
ISSUE #4	06/11/08	Highlighted that the PFM support for the GE863-PRO3 products, is available for the GSM/GPRS engine only, and will be available for the ARM application in a later phase.
ISSUE #5	06/02/09	Updated applicability list Title changed into proper name Highlighted the importance of registration sms.

