

SiRF StarIV ROM Patching Application Note

80000NT10098A Rev.1 – 2013-09-13



APPLICABILITY TABLE

PRODUCT
GE865-QUAD
GL865-QUAD
GL865-DUAL
GL865-DUAL V3
GL865-QUAD V3
GE910-QUAD
GE910-QUAD V3
GC864-QUAD V2



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1. Introduction

1.1. Scope

Scope of this document is to provide customers with all the information about the SiRF StarIV patching procedure. This procedure is valid for all the SiRF StarIV-ROM-based GPS receivers (JF2-ROM, JN3-ROM and SE880) used in conjunction with Telit GSM modules, i.e. in the so called Telit GSM+GPS bundle solutions.

1.2. Audience

This document is intended for customers developing location based applications.

1.3. Contact Information, Support

For general contact, technical support, to report documentation errors and to order manuals, contact Telit 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 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: “SiRF StarIV Patching Overview”](#) gives an overview of the patching operation.

[“Chapter 3: “Patching JF2-ROM, JN3-ROM and SE880”](#) describes how a SiRF StarIV-ROM-based GPS receiver (JF2-ROM, JN3-ROM and SE880) can be patched.

[“Chapter 4: “Document History”](#) shows the history of 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

- [1] Telit_AT_Commands_Reference_Guide_r17.pdf
- [2] GSD4e ROM Patching Users Guide (CS-206186-UG-3).pdf



2. SiRF StarIV ROM Patching Overview

A SiRF StarIV-ROM-based GPS receiver (JF2-ROM, JN3-ROM and SE880) allows the application of firmware patches.

Patches are sent into operating SiRF StarIV ROM (GSD4e) using simple One Socket Protocol (OSP) Patch Protocol serial messages.

Patches are stored inside the I2C Serial EEPROM if it exists and are automatically applied by internal firmware whenever the baseband CPU is started.

If backup battery power is lost or if BBRAM is corrupted, the patch contents must be re-sent to the operating receiver through the serial port.

Patch data files for GSD4e_X.X.X-PZ ROM firmware use the following naming convention:

GSD4e_X.X.X-P1_RPATCH.YY.pd2

Where:

- **X.X.X** is the ROM version
- **YY** is the patch version.

The Patch Manager embedded into the GSM module manages all the steps involved in the Patching Operation.

If patch data is not present, or if the present patch data version is older than the patch data file available at the GSM side, then the Patch Manager pushes the patch data file into the Patch RAM. The SiRF StarIV ROM performs internal reset and restarts itself.



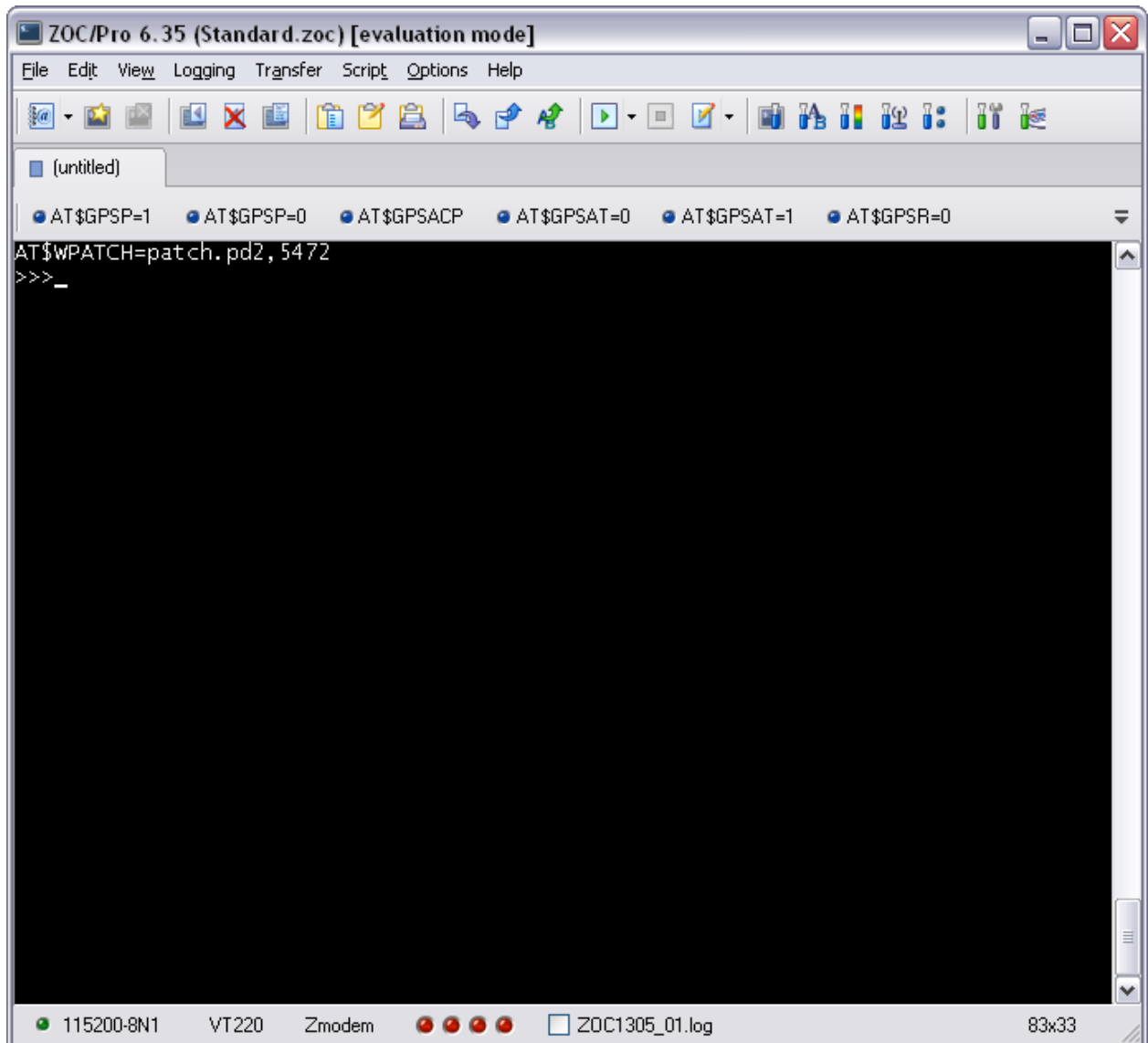
3. Patching JF2-ROM, JN3-ROM and SE880

This chapter describes how to patch a SiRF StarIV-ROM-based GPS receiver (JF2-ROM, JN3-ROM and SE880). For further details on the AT commands used below, see [1].

The following steps must be performed to successfully apply a patch:

1. Select the specific GPS receiver that has to be used by specifying the device type and sub-device type through the **AT\$GPSD** command, e.g. **AT\$GPSD=2,1** (JF2-ROM).
2. Configure the specific GSM GPIOs to be used to drive the GPS receiver through the **AT\$GPSGPIO** command, e.g. **AT\$GPSGPIO=4,5,6,7**.
3. Save the current AT configuration for the GPS receiver through the **AT\$GPSSAV** command and reboot the GSM module.
4. Power up the GPS receiver by issuing the **AT\$GPSP** command, i.e. **AT\$GPSP=1**.
5. Download the Patch file into the GSM NVM through the **AT\$WPATCH** command:
 - a) Since the maximum number of characters, for the patch file name, accepted by the **AT\$WPATCH** command is 16, the original patch file name (GSD4e_X.X.X-P1_RPATCH.YY.pd2) should be renamed, e.g. into patch.pd2
 - b) Issue the **AT\$WPATCH**, e.g. **AT\$WPATCH=patch.pd2,5472**, and wait for the “>>>” symbol as shown below:





- c) Send the patch file with the terminal “Send Text File” command.
6. Once the patch has been successfully sent, it can be applied through the **AT\$EPATCH** command, e.g. **AT\$EPATCH=patch.pd2**.
As soon as the patch has been successfully applied (few seconds are required) the “Patch Manager: Patched” unsolicited result code is relayed by the GSM module. After few seconds, the GPS firmware version, reported by the **AT\$GPSSW** command, is updated accordingly.
7. Issue the **AT\$GPSSAV** command if the patch has to be automatically applied at every startup of the GSM module and after a loss of backup battery power.

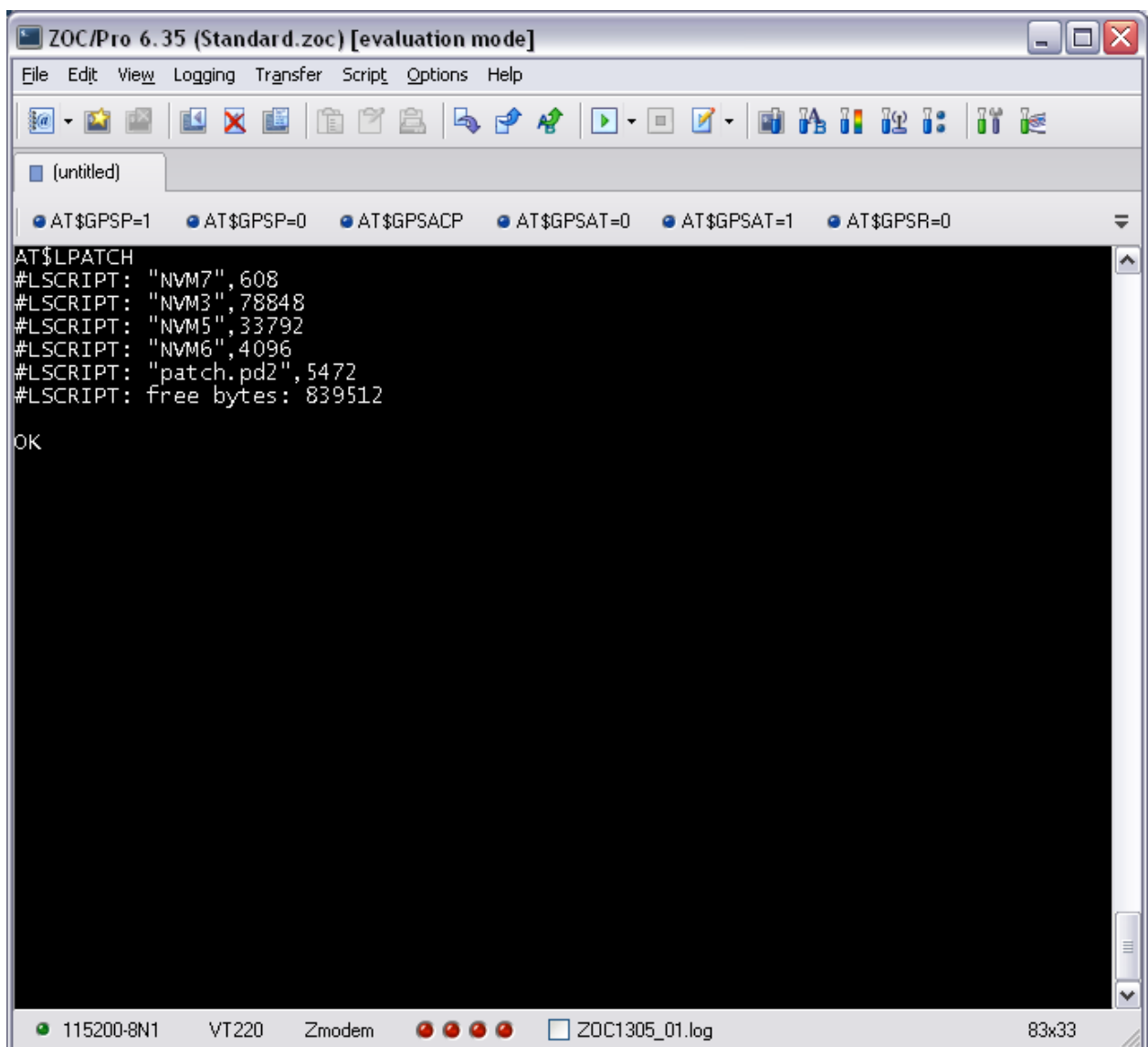
It is possible to disable the automatic patch application, at the startup of the GSM module, by issuing the following commands:



- a. **ATSEPATCH=**
- b. **AT\$GPSSAV**

In order to delete the current applied patch, stored in RAM memory, remove power supply (also remove Vbatt) or send a Factory Reset.

The patch files, currently stored onto the GSM NVM, can be listed by issuing the **AT\$LPATCH** command as shown below:



Also, it is possible to delete a specific patch file, currently stored onto the GSM NVM, by issuing the **AT\$DPATCH** command, e.g. **AT\$DPATCH=patch.pd2**.



WARNING:

The **AT\$LPATCH** command lists the currently stored patch files along with the NVMX files used by the SiRF InstantFIX whenever a SiRF StarIV-ROM-based GPS receiver is being used.

The NVMX files must not be erased or overwritten through the AT\$DPATCH or AT\$WPATCH commands.



4. Document History

Revision	Date	Changes
0	2013-05-13	First issue
1	2013-09-13	Changes in section 3

