

Upgrading the Internal GPS Receiver

Introduction

Spectracom TSync time code processors are complete synchronized time code reader/generator packages offering flexibility and easy integration for mission critical embedded applications. PCI Express, Compact PCI, PCI-104, PMC, and VPX form factors are supported. Part of the configurability of the platform is the ability to incorporate GPS receivers for accurate satellite based synchronization. In addition to firmware updates for the core timing software utilized in the platform, we have added the ability to upgrade the firmware on some of the receivers we utilize in order to provide additional capability and address issues. This technical note provide information on how to use our provided TSync factory driver to upgrade incorporated Trimble Resolution SMT GG receivers .

Upgrade Instructions

1. **Install and compile Linux Tsync driver, Ver 3.20, or higher**

GPS firmware updates can only be done using driver version of 3.20 or higher

2. **Generating the Upgrade Tool**

- a. Open a terminal window.
- b. Change to the directory in which the driver and its sources were extracted.
- c. Build the upgrade tool by issuing the commands below:

```
> cd tsync
> cd upgrade
> make clean
> make
```

3. **Using the upgrade tool, update the TSync-PCIe boards to 3.3.2 firmware or higher.**

Note: GPS receiver updates can only be done using TSync firmware 3.3.2 or higher.

- a. Copy the runtime images for the 3.3.2 firmware, `rt_fpga.bin` & `rt_fw.bin`, to the TSync “upgrade” driver folder.
- b. Run the upgrade tool for each board.

```
> ./TSyncUpgrade x
```

Where “x” is the board index

- c. Restart the TSync-PCIe board for the new firmware to take effect

4. **Using the upgrade tool, update the Resolution SMT GG to the latest firmware, Ver 1.9**

This update is only valid for the Trimble Resolution SMT GG receivers. It will not work on the older Trimble Resolution T receivers or newer u-blox receivers.

- a. Copy the GPS receiver image for the 1.9 firmware, `rt_gnss0E_fw.bin`, to the TSync “upgrade” driver folder.

Note: Remove older runtime images from folder before starting update.

- b. Run the upgrade tool for each board.

```
> ./TSyncUpgrade x
```

Where “x” is the board index

- c. The upgrade process takes around 3 minutes to complete

5. **Verify application of the new Resolution SMT GG firmware**

- a. Change to the TSync “examples” driver folder
- b. Read back the firmware version using the `GR_GetRcvInfo` example program and verify Application version is 1.9.