## Firmware Release Notes Survey

Date: July 28th, 2016

Product: SP60

Subject: SP60 V3.10 Firmware Release

## Introduction

This document is the firmware release note for SP60 V3.10.

This version is a major release with new features, improvements and bug fixing.

## Upgrade procedure

The customer can upgrade the receiver with version V3.10 by following this procedure:

1- Copy the file sp60_upgrade_v3.10.tar to your PC.
2- Insert a fully charged battery inside the SP60
3- Switch on the SP60
4- Connect the SP60 to the PC with the USB cable
5- Run the software Spectra Precision Loader, select the COM port corresponding the USB cable and press the Upgrade button.
6- Select the file sp60_upgrade_v3.10.tar
7- Press the Update button and wait for the complete receiver upgrade

## Firmware list and versions

General version number: V3.10 – 07/07/2016

OS: 3.0.101#348
PVT: LP71V17
DSP: LC71V17
SL: LS71V24
XDL: V01.14(2)

The software compatible with SP60 V3.10 are:

- FAST Survey: 5.01.x
- RINEX Converter: 4.6.9

- Survey Pro: 5.8.1
- Survey Office (64-bits): 3.70
- Spectra Precision Loader:5.0.0
- Spectra Precision File Manager: 1.1.0

## New features

1. **New option [1] RTXRAM**: this new option enables the use of the Regional Atmospheric Model in the RTX computation. This option is automatically enabled (activated by default) in the SP60 as soon as one RTX option is valid.
2. **New RTX modes:** the Trimble corrections services modes FieldPoint and ViewPoint are now supported.
3. **UHF Relay Mode**: the internal XDL radio is now configurable in relay mode. In this mode, the received data are transmitted back on the same frequency
4. **Dithered RTK:** 2 new modes exist: 7/2cm and 30/30cm (They will be released to customer at the same time as a new version of the SPace application)
5. **BEIDOU:** the Beidou differential mode is now supported
6. **GALILEO:** it is now used in RTK positioning
7. **BEIDOU:** positioning with BEIDOU only is now possible

## Improvements

1. **RTX QuickStart**: the RTX QuickStart is improved.
2. **RTCM3.1 Type 1021 to 1029**: it is now possible to apply only horizontal transformation, only vertical transformation or both vertical and horizontal precision. See command $PASHS,LCS
3. **L-Band reception**: the L-Band reception is improved; a second channel allows tracking 2 L-Band satellites and the L-Band beam selection is improved.
4. **User Defined L-Band**: it is now possible to enter directly the frequency and the baud of a new L-Band beam
5. **GALILEO:** GALILEO acquisition is improved

## Resolved Problems

1. **UHF Firmware Upgrade**: the upgrade of the internal radio firmware with ADLCONF failed. This problem is now resolved.
2. **UHF radio start problem**: sometimes the UHF radio didn't start properly. This problem is resolved.
3. **G-File**: an occupation was automatically written in G-Files so that these were never seen as static by SPSO. This problem is now resolved.

## Known issues

1. **Bluetooth**: the receiver can accept 2 Bluetooth connections from data collectors. If your field software does not work properly, make sure that there is no other data collector connected to the receiver.

2. **USB**: when you plug a USB memory to the SP60, it may happen that the USB device is not detected. In this case, you need to unplug and plug it back. The receiver beeps when the USB device is properly detected.

## Recommendations

1. **Beta version**: the official version contains 2 numbers (ex: 1.2). If the receiver contains a version with 3 digits (ex: 1.2.5), it means that this is a beta release and it can be used only for 90 days after the release date. After 90 days, the receiver will not respond to any command, and the only thing to do is upgrade the receiver with an official version.
2. **Firmware Upgrade**: It is not recommended to upgrade the firmware with SP Loader using the serial cable. The USB cable is recommended.
3. **Ionosphere activity**: Today we are at a peak of ionosphere activity which can affect/degrade receiver performance. Users must understand that often 3rd party reference data providers are equally responsible for performance degradation because of generating much less correcting data compared to quiet ionosphere conditions. Users are also recommended to contact their Network data providers in case of RTK problems.
4. **ATL log**: In case of receiver performance problem, we recommend users to record atl.log and share it with Tech Support. Without atl.log files, the ability to help end users will be much less.
5. **6 GNSS**: While SP60 can work with different subsets of GNSS (e.g. GLO only, BDS only, GLO+BDS), users must understand that exclusion of any available GNSS system may result in degraded positioning performance
6. **6 GNSS**: While SP60 can track and use the observables from all 6 GNSS, for differential (RTK rover) operation, this can be possible only if the base provides the corresponding reference data. Today with RTCM-3.1 protocols these reference data can be available only for L1/L2 GPS and GLONASS, so SP60 cannot take benefit from other signals. Only the following 2 cases can allow effective RTK usage of all tracking signals:
    - Using your own SP60 base generating either ATOM or RTCM-3.2 (MSM) differential data
    - Using 3rd party services supporting RTCM-3.2 (MSM) data generation
7. **NTRIP:** When working with Ntrip service, users are recommended to select a VRS mount point over MAC and FKP. In general, with a wide variety of different mount points, always try to select mount points with multiple GNSS data.
8. **RINEX:** when converting receiver raw data to RINEX, it is recommended to generate RINEX-3.2 (latest released version) data as legacy RINEX-2.11 does not support many of the GNSS signals the SP60 can track.