RELASE NOTE

June 26th, 2017

SP90m V3.51 Firmware Release

Introduction

This document is the firmware release note of SP90m V3.51.

This version is the first official firmware version for the SP90m GNSS receiver.

The first SP90m GNSS receivers have been shipped with firmware version V3.50. They must be upgraded to firmware version V3.51 before using the receiver.

Upgrade Procedure

The upgrade procedure can take up to five minutes. The receiver beeps when the upgrade is complete. Please do not turn off and do not remove the power source during the upgrade.

During the upgrade, if the receiver screen is turned on, steps 1 to 5 are displayed. Between step 4 and 5, the screen and the power LED may be turned off for approximately one minute.

There are three ways of upgrading the receiver firmware:

With USB key and front panel display:

The user can upgrade the receiver to firmware version V3.51 by following this procedure:

1- Copy the file sp90m_upgrade_v3.51.tar to a USB key.
2- Insert the USB key to the SP90m.
3- With the right-arrow, go to Advanced Settings, then with the down-arrow go to Upgrade firmware.
4- Press OK and confirm the upgrade.
5- Let the receiver proceed with the upgrade. Do not turn off the receiver while the upgrade is in progress.

With the Web Server:

The user can upgrade the receiver to firmware version V3.51 by following this procedure:

1- Copy the file sp90m_upgrade_v3.51.tar to your computer.
2- Open the Web Server on your receiver.
3- Go the Configuration tab and select Firmware Upgrade.
4- Select the file sp90m_upgrade_v3.51.tar located on your computer.
5- Press Upload.
6- Let the receiver proceed with the upgrade. Do not turn off the receiver while the upgrade is in progress.

With Spectra Precision Loader:
The user can upgrade the receiver to firmware version V3.51 by following this procedure:

1- Copy the file sp90m_upgrade_v3.51.tar to your computer.
2- Connect the SP90m to the computer with the USB cable.
3- Run the software Spectra Precision Loader, select the COM port corresponding the USB cable and press the button Upgrade.
4- Select the file sp90m_upgrade_v3.51.tar.
5- Press the button Update and wait until the upgrade is complete. Do not turn off the receiver while the upgrade is in progress.

Firmware list and versions

General version number: V3.51 – 06/26/2017

OS: 4.1.15 #957
U-Boot: 0.9
PVT: SP80V21
DSP: SC80V21
SL: SS80V24
WEB Service: SW80V15
HTML Pages: SH80V19
PMU: 1.2
GSM: 3.001
XDL: V01.34(1)

The software compatible with SP90m V3.51 are:
- Survey Pro: 6.1.1
- FAST Survey: not compatible yet
- Trimble Access: not compatible
- RINEX Converter: 4.6.11
- Survey Office (64-bits): 3.90.1
- USB Serial Emulation: 1.1
- Spectra Precision Loader: 6.2.1
- Spectra Precision File Manager: 1.3.0

New Features

Firmware V3.51 is the initial firmware release for the SP90m GNSS receiver. The functionality and product features are described in the product brochure and in the user guide.

Improvements

Not applicable

Resolved Problems

Not applicable

Know issues

1. **Firmware Upgrade**: It is not recommended to upgrade the firmware with SP Loader using the serial cable. It is recommended to use the USB cable with SP Loader.
2. **GALILEO**: The Galileo measurements E5a/E5b recorded in the G-File are not processed by Spectra Precision Survey Office.
3. **External UHF transmitter:** When an external UHF transmitter is connected to the SP90m, the settings of the transmitter are displayed on the SP90m display. If you modify the radio settings directly on the radio, then the settings displayed by the SP90m are not correct anymore.
4. **Internal UHF receiver:** The XDL micro version 1.34 does not work well when the speed is greater than 5 kph. It is recommended to use the version 1.14 if you experience this situation.
5. **IRNSS:** The IRNSS tracking status can be seen only via proprietary messages. NMEA and RTCM do not support IRNSS data. RINEX 3.02 (which is supported by Spectra Precision RINEX converter) does not support IRNSS.
6. **IRNSS and RTK:** Use of IRNSS in RTK is not possible because there is no standardized protocol which transmit IRNSS reference data.
7. **Trimble RTX:** This service is not available in the version 3.51.

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 it is a beta release, and this beta release can be used only 90 days beyond the release date. After 90 days, the receiver will not answer to any command, and an official version has to be installed.
2. **Ionosphere activity**: Today we are at the peak of ionosphere activity which can affect/degrade the receiver performance. The user must realize 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. It is recommended to the user to also contact the network data provider in case of RTK problems.
3. **ATL log**: We recommend to end users in case of receiver performance problems to record atl.log and share it with Technical Support. Without atl.log files, the ability to help end users will be much less.
4. **7 GNSS**: While SP90m can work with different subsets of GNSS (e.g. GLO only, BDS only, GLO+BDS), the user must realize that exclusion of any available GNSS system may result in degraded positioning performance. GALILEO only mode is not supported.
5. **7 GNSS**: While SP90m can track and use the observables from all 7 GNSS, for differential (RTK rover) operation it can be possible only if base provides respective reference data. Today with RTCM-3.1 protocols, these reference data can be available only for L1/L2 GPS and GLONASS, so SP90m cannot take a benefit of other signals. Only the following 3 cases can allow effective RTK usage of all tracking signals:
   - Using an own SP90m base receiver generating either ATOM or RTCM-3.2 (MSM) differential data.
   - Using 3rd party services supporting RTCM-3.2 (MSM) data generation.
   - Using Trimble bases/services generating CMRx data.
6. **NTRIP:** When working with Ntrip service, the user is recommended to select a VRS mount point over MAC and FKP (today MAC and FKP support only GPS+GLONASS while VRS can generate usually data for up to 6 constellations, excluding IRNSS>). In general, with wide variety of different mount points, always try select GNSS points.
7. **RINEX:** When converting receiver raw data to RINEX, it is desirably to generate RINEX-3.02 (latest released version) data as legacy RINEX-2.11 does not support many of the GNSS signals the SP90m receiver tracks.
8. **USB Driver:** The first time you connect the SP90m to your computer with a USB cable, it is recommended to have an internet connection available on your computer in order to install the USB driver automatically. The driver is also available on the Spectra Precision website.
9. **USB device:** The USB memory or USB hard drive must be formatted in FAT32 to work with the SP90m. NTFS is not supported.
10. **USB hard drive:** The SP90m is USB2.0. If you use a hard drive USB3.0 compatible USB2.0 and the hard drive is powered by the SP90m, it is possible that it does not work because the SP90m cannot provide enough power.