



## Loading Firmware on SPAN-SE

This application note provides procedures for using WinLoad to load or reload firmware on individual SPAN-SE components.

### 1 Overview

The SPAN-SE requires different firmware for each card inside the unit. Authorization codes and firmware can be obtained from NovAtel Customer Service. The contact information for Customer Service is in the last section of this application note. Authorization codes are generated based on receiver serial number and firmware version, so you will need to provide NovAtel Customer Service with this information to obtain the proper authorization code. The latest firmware versions are posted on the NovAtel website at: <http://www.novatel.com/support/fwsupdates.htm>.

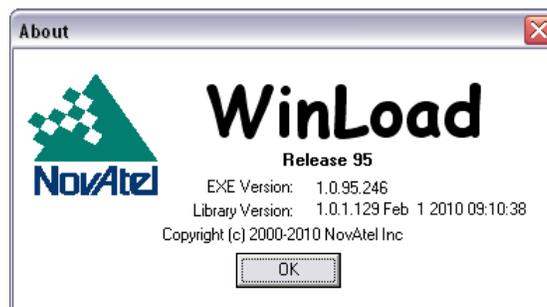
Refer to the SPAN-SE User Manual for information about the hardware referred to in this application note. User manuals are available from our website at: <http://www.novatel.com/support/docupdates.htm>.

### 2 Loading Procedure

There are three different firmware builds, one for each card in the SPAN-SE:

- FPGA
- SPPC
- OEMV3

If the FPGA firmware on your SPAN-SE receiver needs to be updated, first upload the FPGA firmware onto the SPAN-SE receiver then upload the SPPC firmware. When uploading firmware, make sure you are using the latest version of WinLoad software that is included in the firmware download zip file. If you have an older version of Winload, replace it with the newer version. Check the version of WinLoad by selecting the **Help** menu and clicking **About...**



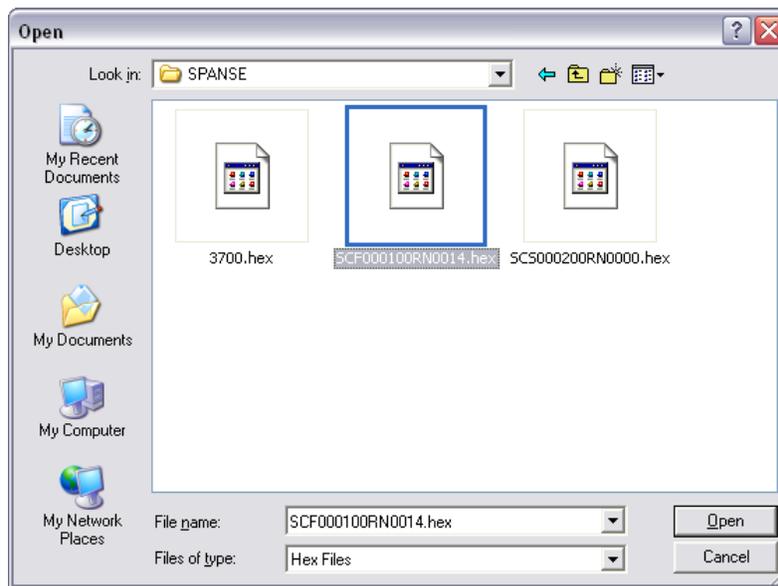
#### 2.1 FPGA Firmware Loading

The FPGA card in the SPAN-SE can be accessed directly via the SPAN-SE yellow cable. Use the SPAN-SE serial DB9 COM port labeled *COM1* to load this card. Ensure this end is connected to the serial COM port on the computer from which you are loading.

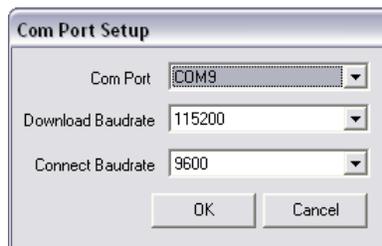
1. Select the firmware file you want to load.
  - a. On the Winload **File** menu click **File Open...**

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- b. Browse to the required location then select the FPGA firmware file.



- c. Click **Open**.
2. Ensure **Com Port Setup** is set correctly for your computer.
    - a. On the **Settings** menu click **COM Settings...**
    - b. Select the PC COM port to which your yellow cable SPAN-SE serial *COM1* is connected. Updating through a USB port is currently not supported, so you must use one of the SPAN-SE serial COM ports for reloading firmware.
    - c. Ensure **Download Baudrate** is not set higher than the maximum rate the PC COM port can handle.
    - d. Set **Connect Baudrate** to *9600*.



3. Make sure power is available, but do not apply it to the SPAN-SE yet.
4. Click the **Write Flash** button on Winload.
5. Power on the SPAN-SE about three seconds after the status screen displays "Searching for card... timeout in: 30 secs". Once Winload detects the SPAN-SE receiver, the loading process begins.
6. If WinLoad prompts you to insert an Authorization Code, click **Skip**.



7. Loading will finish automatically.

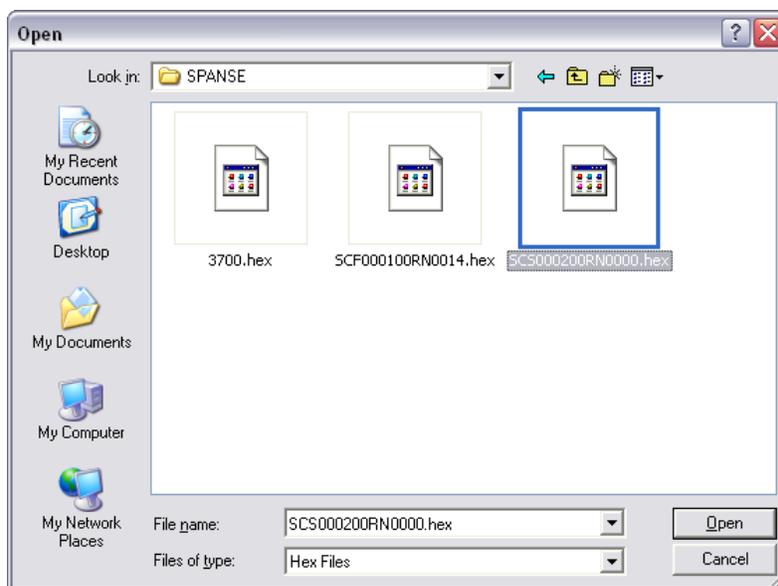
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8. Once loading has been completed, power cycle the SPAN-SE receiver.
9. Establish communication with the SPAN-SE serial *COM1* port on CDU or HyperTerminal and check the SPANFPGA field in the VERSION log (see Section 3).
10. Send a FRESET command to complete the loading process and restore factory default settings.

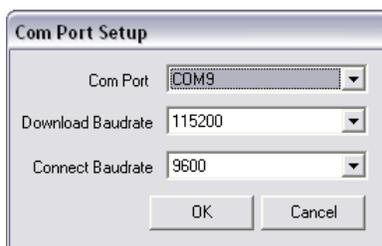
### 2.2 SPPC Firmware Loading

The procedure for loading the SPPC firmware is similar to the procedure for loading the FPGA firmware. One major difference is that the SPPC card requires a valid authorization code to operate. Contact NovAtel Customer Service to obtain the proper authorization code. The SPPC card in the SPAN-SE can be accessed directly via the SPAN-SE yellow cable. Use the SPAN-SE serial DB9 COM port labeled *COM1* to load this card. Ensure this end is connected to the serial COM port on the computer from which you are loading.

1. Select the firmware file to load.
  - a. On the Winload **File** menu click **File Open...**
  - b. Browse to the required location then select the SPPC firmware file.



- c. Click **Open**.
2. Ensure **Com Port Setup** is set correctly for your computer.
  - a. On the **Settings** menu click **COM Settings...**
  - b. Select the PC COM port to which your yellow cable SPAN-SE serial *COM1* is connected. Updating through a USB port is currently not supported, so you must use one of the SPAN-SE serial COM ports for reloading firmware.
  - c. Ensure **Download Baudrate** is not set higher than the maximum rate the PC COM port can handle.
  - d. Set **Connect Baudrate** to *9600*.



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3. Make sure power is available, but do not apply it to the SPAN-SE yet.
4. Click the **Write Flash** button on Winload.
5. Power on the SPAN-SE about three seconds after the status screen says “Searching for card... timeout in: 30 secs”.
6. Once Winload detects the SPAN-SE receiver the loading process begins.
7. When the **Authorization Code** screen appears, input the SPPC authorization code.



8. Click **OK**. Loading finishes automatically.
9. Once loading is complete, power cycle the SPAN-SE receiver.
10. Establish communication with the SPAN-SE serial *COM1* port on CDU or HyperTerminal and check the SPANCARD field in the VERSION log (see Section 3).
11. Send a FRESET command to complete the loading process and restore factory default settings.

### 2.3 OEMV3 Firmware Loading

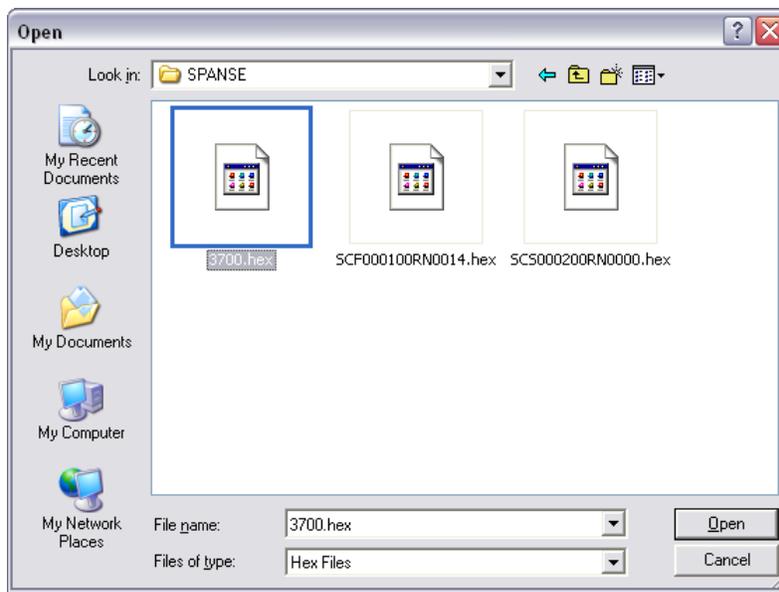
The procedure for loading the OEMV3 is similar to the procedure for loading the SPPC firmware with one key difference. The OEMV3 card in the SPAN-SE can be accessed directly through the green cable; therefore, the user will need to use the green cable SPAN-SE serial COM port labeled *OEMV3* to load the OEMV3 card.

If the OEMV3 inside the SPAN-SE receiver responds after power up (i.e., if the GPS1 LED lights continuously and you can establish communication with the OEMV3 card directly via the *OEMV3* port), go to Procedure A. If the OEMV3 does not respond after power up (i.e., if the GPS1 LED does not light up or if you cannot establish communication with the OEMV3 card directly via the *OEMV3* port), go to Procedure B.

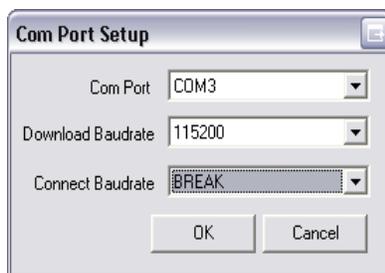
#### 2.3.1 Procedure A

1. Connect PC COM port to the green cable SPAN-SE serial DB9 COM port labeled *OEMV3*.
2. Select the firmware file you want to load.
  - a. On the Winload **File** menu click **File Open...**
  - b. Browse to the required location then select the OEMV3 firmware file.

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- c. Click **Open**.
3. Ensure **COM Port Setup** is set correctly for your computer.
  - a. On the **Settings** menu select **COM Settings...**
  - b. Choose the PC COM port to which the green cable SPAN-SE serial *OEMV3* port is connected.
  - c. Ensure **Download Baudrate** is not set higher than the maximum rate the PC COM port can handle.
  - d. Set **Connect Baudrate** to **BREAK**.



4. Power on the SPAN-SE receiver and wait until the GPS1 LED lights up.
5. Click the **Write Flash** button on Winload. The status screen displays “Searching for card... timeout in: 30 secs”.
6. Once Winload detects the OEMV3 card the loading process begins.
7. When the Authorization Code screen displays, enter the OEMV3 authorization code provided by Customer Service.



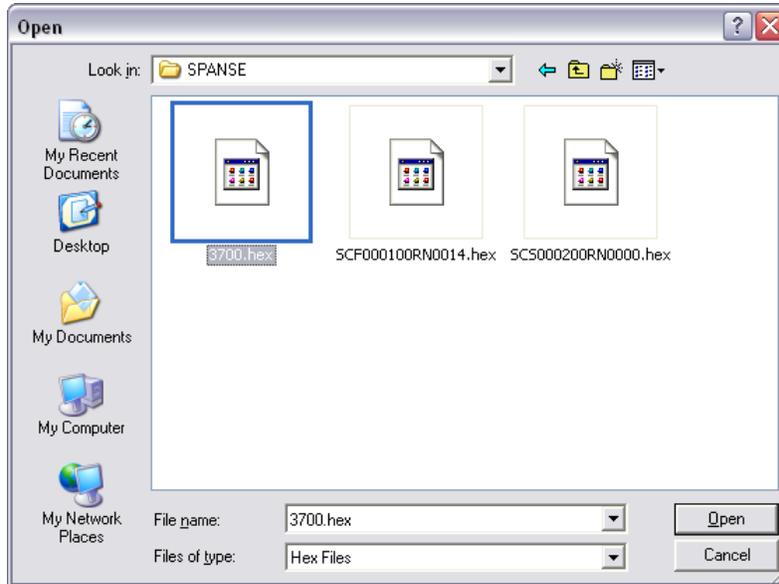
8. Click **OK**. Loading finishes automatically.
9. Once loading has been completed, power cycle the SPAN-SE receiver.

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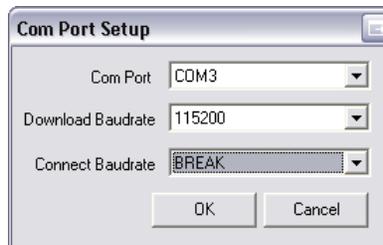
- Establish communication with the yellow cable SPAN-SE serial *COM1* port on CDU or HyperTerminal and check the GPSCARD field in the VERSION log (see Section 3). If you cannot establish communication with the OEMV3 card, go to Procedure B.

### 2.3.2 Procedure B

- Connect PC COM port to the yellow cable SPAN-SE serial DB9 COM port labeled *COM1*.
- Click the firmware file that you want to load.
  - On the Winload **File** menu click **File Open...**
  - Browse to the required location then select the OEMV3 firmware file.



- Click **Open**.
- Ensure **Com Port Setup** is set correctly for your computer.
    - On the **Select Settings** menu click **COM Settings...**
    - Select the PC COM port to which the yellow cable SPAN-SE serial *COM1* is connected.
    - Ensure **Download Baudrate** is not set higher than the maximum rate the PC COM port can handle.
    - Set **Connect Baudrate** to **BREAK**.



- Click the **Write Flash** button on Winload.
- Power on the SPAN-SE about three seconds after the status screen displays “Searching for card... timeout in: 30 secs”.
- When the countdown to 0 seconds shows “Card not found!”, change the connection from the yellow cable SPAN-SE serial *COM1* port to the green cable SPAN-SE serial *OEMV3* port. Click **Abort** then click **Write Flash**. The loading process will continue.

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7. When the Authorization Code screen displays, input the code provided by Customer Service.



8. Click **OK**. Loading finishes automatically.
9. Once loading has been completed, power cycle the SPAN-SE receiver.
10. Establish communication with the yellow cable SPAN-SE serial *COM1* port on CDU or HyperTerminal and check the GPSCARD field in the VERSION log (see Section 3).

### 3 VERSION log

If the firmware reloading is done properly, the VERSION log will be similar to that shown in the following example:

From the SPAN-SE receiver *COM1*, *COM2*, *COM3* or *COM4* port:

```
VERSION COM1 0 99.0 UNKNOWN 0 23.559 00000000 0000 243
<      3
<      SPANCARD "SJ" "DDV09080014" "SPANPPC-3.00-A" "SCS000200RN0000" "1.100" "Feb
4 2010" "14:14:37"
<      SPANFPGA "" "" "" "SCF000100RN0014" "" "" ""
<      GPSCARD "L12LRVQ" "DAB09120165" "OEMV3G-4.00-X2T" "3.700" "3.000"
"2009/Sep/18" "15:09:31"
```

To confirm communication with OEMV3, the GPSCARD component must be in the above Log VERSION string.

### 4 Contact Information

If you require further information regarding the topics covered in this application note, please contact:

NovAtel Customer Service

1120 – 68 Ave. N.E.

Calgary, Alberta, Canada, T2E 8S5

Phone: 1-800-NOVATEL (in Canada or the U.S.) or +1-403-295-4500

Fax: 403-295-4501

E-mail: [support@novatel.ca](mailto:support@novatel.ca)

Website: [www.novatel.com](http://www.novatel.com)