



## **Information Sheet IS22003**

### **VS Series - Upgrading from VS SW 1.y.z to VS SW 4.2.6**

Issue 1.0 ..... 08 June 2022

**Nautel Limited**

10089 Peggy's Cove Road,  
Hackett's Cove, NS, Canada B3Z 3J4  
T.877 6 nautel (628835) or +1.902.823.2233  
F.+1.902.823.3183 info@nautel.com

U.S. customers please contact:

**Nautel Inc.**

201 Target Industrial Circle, Bangor ME 04401  
T.877 6 nautel (628835) or +1.207.947.8200  
F.+1.207.947.3693 info@nautel.com

e-mail: support@nautel.com

**www.nautel.com**



# IS22003: VS Series - Upgrading from VS SW 1.y.z to VS SW 4.2.6

## INFORMATION SHEET

---

### 1 INTRODUCTION

This document provides instructions for VS transmitters with older operating systems (OS) to upgrade to later versions. Upgrading allows access to new and improved VS software features, including the Nautel Legacy AUI Access app.

#### 1.1 Equipment Affected

This procedure applies to VS Series FM transmitters operating with software version VS SW 1.y.z. that require an upgrade to software version VS SW 4.2.6 or newer. See paragraph 2 to verify your transmitter's software version.

#### 1.2 Responsibility for Implementation of Procedure

This procedure should be carried out by qualified station maintenance personnel who are familiar with VS transmitters, software upgrades, and terminal programs such as PuTTY.

#### 1.3 Scheduling

The transmitter must be "off air" during this procedure.

#### 1.4 Manpower Requirements

Implementing these instructions will require approximately two (2) hours.

#### 1.5 Special Tools/Test Equipment/Software

##### Hardware:

- PC or laptop to serially connect to the transmitter
- USB to Serial adapter cable (dependent on PC / laptop capabilities)
- DB9 straight-through serial cable with a male connector
- Working USB flash drive, minimum 2 GB, FAT32 format
- Internet connection is required to download software files

#### **NOTE**

*Ensure adequate internet connection is available at the transmitter site or download the software files below prior to arriving at the transmitter site.*



**Software Files** (located in Nautel's FTP site <http://www3.nautel.com/pub>):

<b>File/folder name</b>	<b>Sub-folder of <a href="http://www3.nautel.com/pub">http://www3.nautel.com/pub</a></b>
Filename putty.exe	<a href="#">Utilities/putTY/</a>
Filename NCodeUploader1.8.0.exe	<a href="#">Utilities/NCodeUploader/</a>
Filename VS_APP_V2_3_1.tgz	<a href="#">VS_Series/IS/IS22003/</a>
Filename VS_APP_11MAR2011_V2_0_1.zip	<a href="#">VS_Series/IS/IS22003/</a>
Filename VS_CS_osrecovery_v4.2.6.zip	<a href="#">VS_Series/IS/IS22003/</a>
Filename NAUTEL-MIB.txt	<a href="#">VS_Series/IS/IS22003/</a>
Filename NAUTEL-VS_SW_2.3-MIB.txt	<a href="#">VS_Series/IS/IS22003/</a>
**Folder 1.02/	<a href="#">Legacy_AUI_Access/</a>
Filename IS18008 - VS Series - Updating to 5.x Software and OS Recovery_iss_1.0.pdf	<a href="#">VS_Series/VS_SW_5.3.1</a>

**\*\* NOTE**

*If you are using the Nautel Legacy AUI Access app, which is possible after upgrading to VS SW 4.2.6 (see paragraph 3.5), note that the 1.02 folder above contains zip files for both Windows and Mac systems, plus other useful information that describes how to use the app.*

**1.6 Publications Affected**

There are significant differences between the Front Panel UI and AUI Menu trees when upgrading from VS SW 1.y.z to VS SW 4.2.6. Refer to the 'Operating' section of the *VS Operation and Maintenance Manual* for detailed information. To find the technical documentation for VS transmitters with VS SW 4.2.6, go to:

[http://www3.nautel.com/pub/VS\\_Series/VS\\_SW\\_4.2.6/Handbooks/](http://www3.nautel.com/pub/VS_Series/VS_SW_4.2.6/Handbooks/)

Select the Operations and Maintenance Manual (OPS) pdf file for the appropriate VS model.

**2 PRELIMINARY SETUP**

This procedure will erase the user database. Only the default "Nautel" user will be valid with no password required. Before proceeding, record user settings such as user accounts, logs, SNMP configuration, email configuration, time zone, notifications, and playlists to ensure they can be restored after the procedure is complete. Refer to the transmitter's Operations and Maintenance Manual to locate these settings.

- (a) Verify that your transmitter is compatible for this upgrade. Using the transmitter's front panel UI, go to **View Status -> View SW Versions**. If the DSP version is 1.0.4.21 or older, your transmitter is compatible with the VS SW 1.y.z starting point.
- (b) Using the transmitter's front panel, set the transmitter to **Local** control, then to **RF Off**.

**3 UPGRADE PROCEDURE**

Upgrading from VS SW 1.y.z to VS SW 4.2.6 requires a sequential approach that involves several procedures. Perform these procedures in the order presented (see below).

- Obtaining the VS Controller Install File – see paragraph 3.1
- Connecting Through PuTTY – see paragraph 3.2
- OS Recovering to VS SW 2.0.1 – see paragraph 3.3
- Upgrading to VS SW 2.3.1 – see paragraph 3.4
- Upgrading to VS SW 4.2.6 – see paragraph 3.5



### 3.1 Obtaining the VS Controller Install File

- (a) Access the Nautel FTP site (see paragraph 1.5) and download the VS\_APP\_V2\_3\_1.tgz file.
- (b) Extract the files inside VS\_APP\_V2\_3\_1.tgz to “C:\Users\- (c) Open the “VS\_APP\_V2\_3\_1” folder.

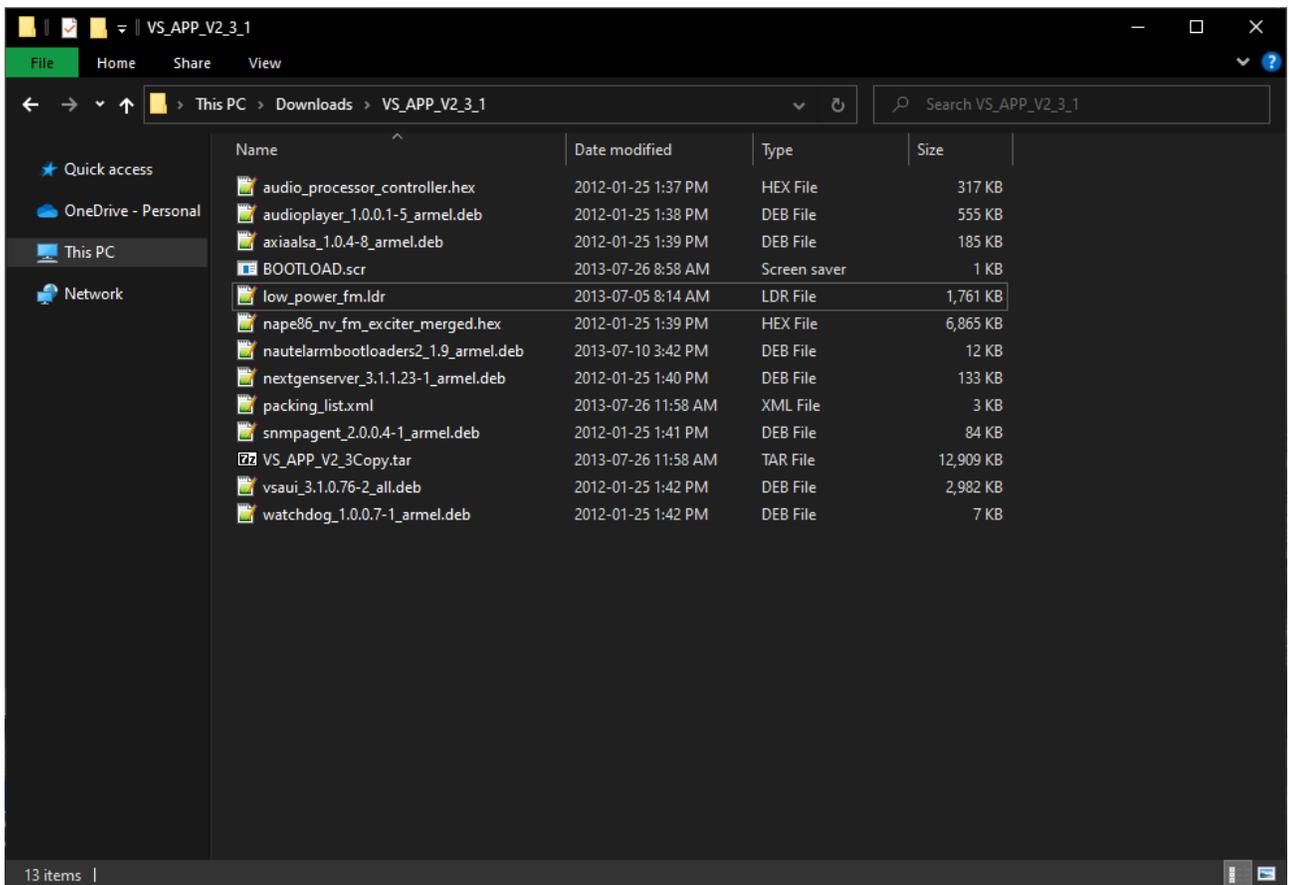
#### **NOTE**

*VS\_APP\_V2\_3Copy.tar is inside the folder.*

- (d) Extract all files inside VS\_APP\_V2\_3Copy.tar to “C:\Users\

#### **NOTE**

*All the files are extracted and “low\_power\_fm.ldr” is present as seen in Figure 1.*



**Figure 1: VS\_APP\_V2\_3\_1 extracted files**



## 3.2 Connecting Through PuTTY

- (a) Using the transmitter's front panel UI, navigate to the **System Settings -> Console Select** screen and select **ARM Console**.
- (b) Download PuTTY.exe from the Nautel FTP site (see paragraph 1.5) and save it to the desktop.
- (c) Connect the PC or laptop (with PuTTY installed) via the serial port to A1J5A (**RDS/RBDS**) on the back of the transmitter, noting that modern laptops may require a USB to Serial adapter cable.
- (d) Double click the PuTTY.exe icon and configure for the settings shown in Figure 2. Select Serial for Connection type. Enter the appropriate COM port in the Serial line field. Enter 115200 in the Speed field. Click **Open**.

### NOTE

Determine the serial port number using the *Ports* tab of the *Device Manager* application of the PC or laptop.

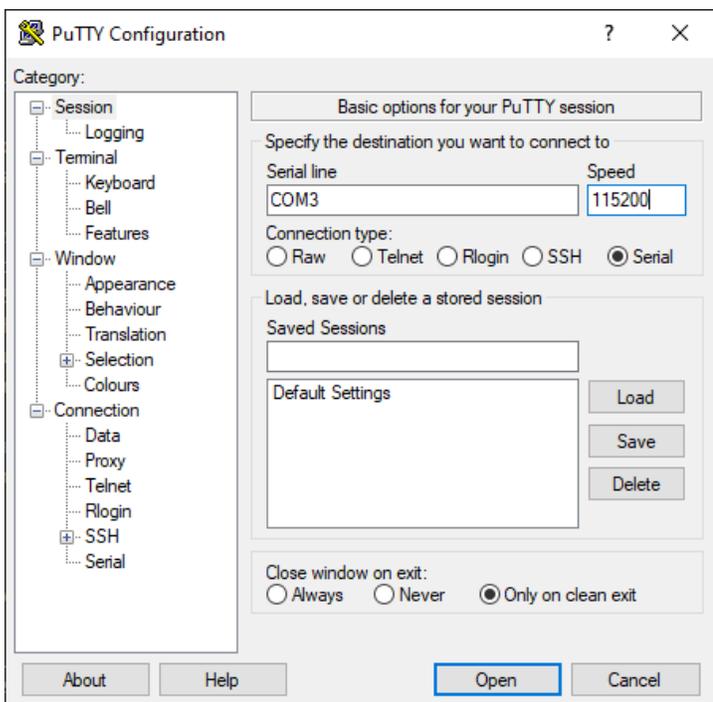


Figure 2: PuTTY configuration settings

## 3.3 OS Recovering to VS SW 2.0.1

To successfully update to VS SW 2.3.1, the VS transmitter must first be OS recovered to VS SW 2.0.1.

- (a) Using the transmitter's front panel UI, navigate to the **Main Menu -> Local/Remote** screen and select **Local**.



- (b) Disable the ARM Watchdog by navigating to the **Main Menu -> System Settings -> ARM Watchdog** screen and select **Disabled**.
- (c) Remove any USB devices that are connected to the transmitter.
- (d) Download VS\_APP\_11MAR2011\_V2\_0\_1.zip from the Nautel FTP site (see paragraph 1.5) and save it to the desktop.
- (e) Extract all files from VS\_APP\_11MAR2011\_V2\_0\_1.zip to the root directory of a suitable USB flash drive. Seven (7) files will be created in the root directory.
- (f) Connect the USB flash drive to the top USB port (A1J8B) on the rear of the transmitter, located immediately below the **LAN** port. The PuTTY terminal screen should indicate the detection of the USB drive (see Figure 3).

```
nautel@debian: /nautel/firmware/deb_packages
usb 1-1.2: new full speed USB device using usb-ohci and address 4
usb 1-1.2: configuration #1 chosen from 1 choice
scsi 1:0:0:0: Direct-Access Kingston DataTraveler G3 PMAP PQ: 0 ANSI: 0 CCS
sd 1:0:0:0: [sda] 7827456 512-byte hardware sectors (4008 MB)
sd 1:0:0:0: [sda] Write Protect is off
sd 1:0:0:0: [sda] Assuming drive cache: write through
sd 1:0:0:0: [sda] 7827456 512-byte hardware sectors (4008 MB)
sd 1:0:0:0: [sda] Write Protect is off
sd 1:0:0:0: [sda] Assuming drive cache: write through
sda: sda1
sd 1:0:0:0: [sda] Attached SCSI removable disk
```

**Figure 3: PuTTY terminal screen – USB drive detection**

- (g) Using the transmitter’s front panel UI, navigate to the **Main Menu -> System Settings -> OS Recovery** screen, which should display the word **Cancel**. Press the UI’s up arrow key to change the selection to **Force OS Recovery**. Press the center checkmark button to initiate the process.
- (h) The VS transmitter’s front panel does not indicate the OS Recovery process. PuTTY.exe allows observation of the process and provides notification when the process is complete. See Figures 4, 5 and 6.
- (i) Once the USB drive is mounted (see Figure 5), the extraction process should commence (see Figure 6). **NOTE:** The extraction process takes approximately 25 minutes to complete. The OS recovery process is complete when “Finished Installation” appears on the screen (see Figure 6).
- (j) Turn off the transmitter’s ac power.
- (k) Remove the USB flash drive.

```
nautel@debian: /nautel/firmware/deb_packages

NAND ID: 9590DC2C

Nautel ARM Bootloader Version 1.4
(Apr 16 2010 - 13:47:01)

Current PC is at 0x08000B34
Testing SDRAM: 1/0.. DQMx.. Ax/Bx..
SDRAM test OK!

Hit a key to enter menu (3s timeout)....
Checking for stage 2 loader ...not found.
Starting NAND FALLBACK boot ...
NAND copy zImage to 0x80080000 ...
NAND copy initrd to 0x80800000 ...
NAND copy ATAGS to 0x80002000 ...

Starting kernel ...
Uncompressing Linux..... done, booting the kernel.
```

Figure 4: PuTTY terminal screen – recovery process initiated

```
nautel@debian: /nautel/firmware/deb_packages

rtc-lpc32xx rtc-lpc32xx: setting system clock to 2004-07-22 22:42:55 UTC (1090536175
)
RAMDISK: Compressed image found at block 0
EXT4-fs warning (device ram0): ext4_fill_super: extents feature not enabled on this
filesystem, use tune2fs.

EXT4-fs: ram0: not marked OK to use with test code.
VFS: Mounted root (ext2 filesystem).
Freeing init memory: 124K
Mount proc
Mount sys
Export PATH:/usr/sbin
Found /dev/sda1
Mounting USB Device
mount: /dev/sda1 is not a valid block device
USB not mounted sleeping for 5 seconds ...
scsi 0:0:0:0: Direct-Access Kingston DataTraveler G3 PMAP PQ: 0 ANSI: 0 CCS
sd 0:0:0:0: [sda] 7827456 512-byte hardware sectors (4008 MB)
sd 0:0:0:0: [sda] Write Protect is off
sd 0:0:0:0: [sda] Assuming drive cache: write through
sd 0:0:0:0: [sda] 7827456 512-byte hardware sectors (4008 MB)
sd 0:0:0:0: [sda] Write Protect is off
sd 0:0:0:0: [sda] Assuming drive cache: write through
sda: sda1
sd 0:0:0:0: [sda] Attached SCSI removable disk
Found /dev/sda1
Mounting USB Device
Successfully mounted usb.

*****
* sys_install.sh *
*****

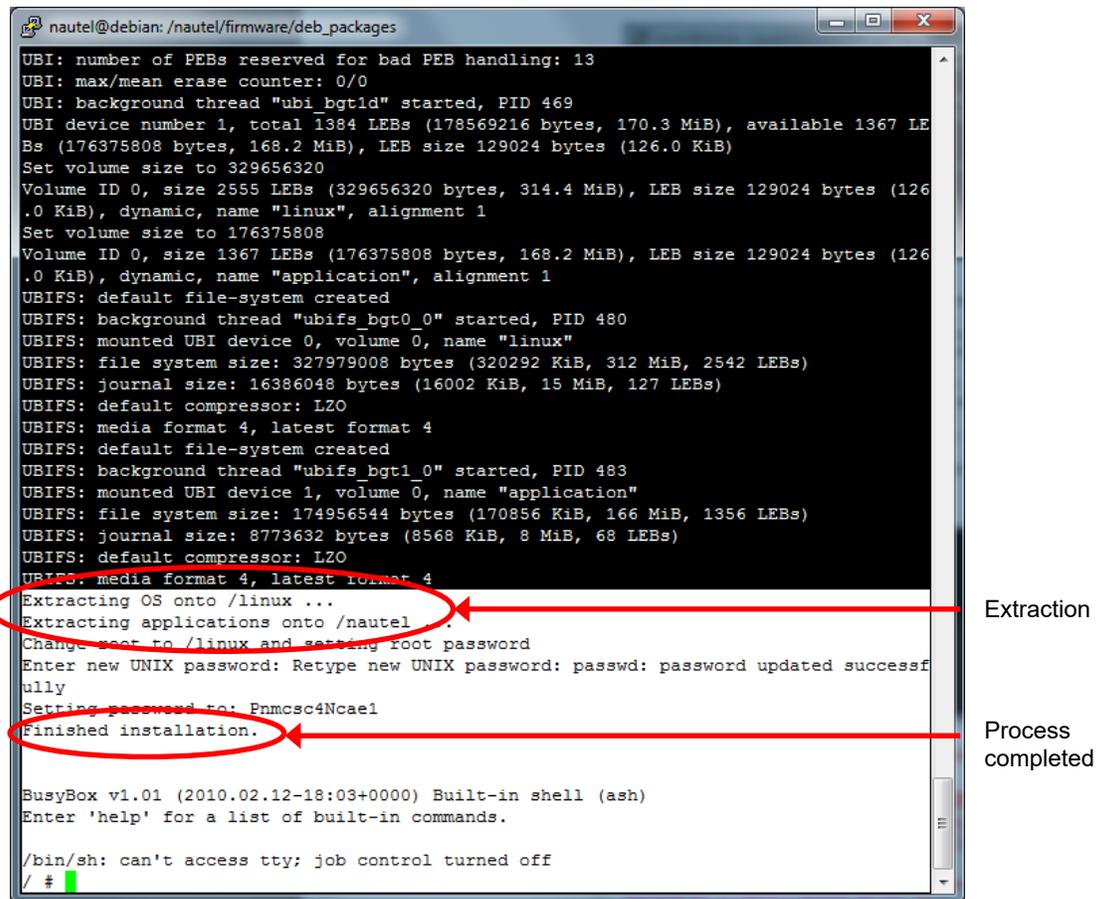
*****
* Parse MAC Address *
*****

Test Addr: [7864320]
```

USB Drive Mounting

Figure 5: PuTTY terminal screen – USB drive mounting





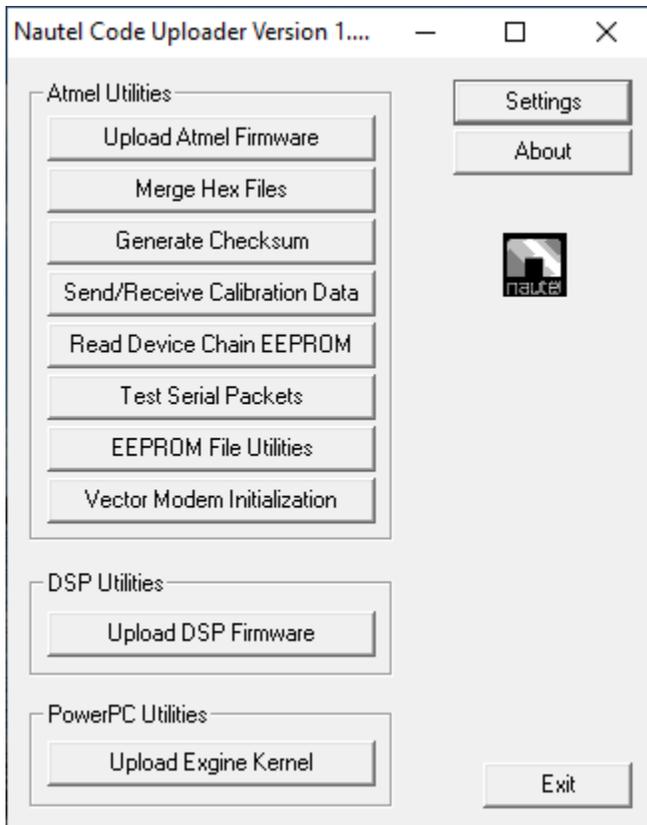
**Figure 6: OS recovery completion screen**

### 3.4 Upgrading to VS SW 2.3.1

To successfully update to VS SW 4.2.6, the VS transmitter must first be updated to VS SW 2.3.1. This ensures that the VS transmitter can successfully perform an OS Recovery to VS SW 4.2.6.

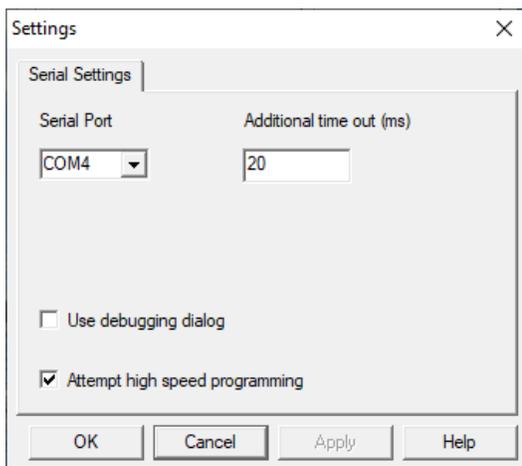
- (a) With ac power turned off, gain access to the VS transmitter's exciter/control PWB. Remove the transmitter from its host cabinet, as applicable, and remove its top cover.
- (b) On the exciter/control PWB, move jumper E2 from the **NORM** position to the **PRGM** position.
- (c) Turn on the transmitter's ac power.
- (d) Disconnect and reconnect the USB-to-Serial cable from the laptop or PC end.
- (e) Download NCodeUploader1.8.0.exe from the Nautel FTP site (see paragraph 1.5) and save it to the desktop. Open NCodeUploader. Its main screen (see Figure 7) will appear.





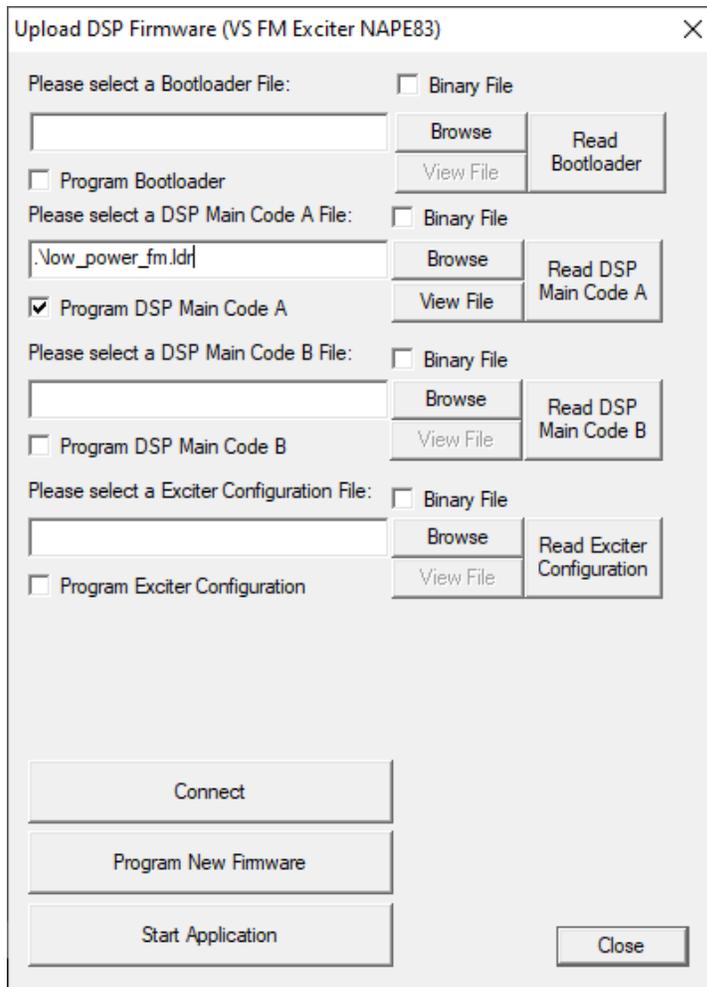
**Figure 7: NCodeUploader configuration settings**

- (f) Click **Settings** (top, right button) and configure the settings shown in Figure 8.
- Set “Serial Port” to the USB-Serial cable’s port (can be found in Device Manager under Ports.)
  - Set “Additional time out (ms)” to 20.
  - Checkmark the “Attempt high speed programming” box.
  - Click **OK** to return to the main screen (See Figure 7).



**Figure 8: NCodeUploader configuration settings**

- (g) Click Upload DSP Firmware (see Figure 7). Verify that NCodeUploader connects to the DSP successfully.
- (h) See Figure 9. In the “Please select a DSP Main Code A File:”section:
- Click **Browse** to select ‘low\_power\_fm.ldr’, extracted in paragraph 3.1, for programming.
  - Check the “Program DSP Main Code A” check box. **NOTE:** “Program DSP Main Code A” shall be the only checked box on the screen.



**Figure 9: Upload DSP Firmware screen settings**

- (i) Click **Program New Firmware**.
- (j) When the programming is complete, turn off the transmitter’s ac power.
- (k) On the exciter/control PWB, move jumper E2 from the **PRGM** position to the **NORM** position.
- (l) Turn on the transmitter’s ac power.

- (m) Copy the 'VS\_APP\_V2\_3\_1.tgz' file, downloaded in paragraph 3.1, to the root directory of the USB flash drive.
- (n) Connect the flash drive to the transmitter's controller USB-A port and perform a firmware update with the upgrade file. Navigate to the front panel UI's **Main Menu -> System Settings -> Firmware Update** screen and select usb/VS\_APP\_V2\_3\_1.tgz.

**NOTE**

*Step (n) may require a few minutes and ARM/Host Reboots for the file to appear. It also may take a few selection attempts for the update to start its process.*

- (o) When the update is complete, remove the USB flash drive. Cycle (turn off, then on) the transmitter's ac power.

### **3.5 Upgrading to VS SW 4.2.6**

To use the Nautel Legacy AUI Access app (see FTP file location in paragraph 1.5), the VS transmitter must be OS recovered and updated to VS SW 4.2.6.

- (a) Using the transmitter's front panel UI, navigate to the **System Settings -> Console Select** screen and select **ARM Console**.
- (b) Disconnect and reconnect the USB-to-Serial cable from the laptop or PC end.
- (c) Restart the terminal connection.
- (d) Remove all files from the USB flash drive.
- (e) Access the Nautel FTP site (see paragraph 1.5) and download the VS\_CS\_osrecovery\_4.2.6.zip file.
- (f) Extract all files from the VS\_CS\_osrecovery\_v4.2.6.zip to the root directory of the USB flash drive.
- (g) Connect the flash drive to the transmitter's controller USB-A and perform an OS Recovery. Go to front panel UI's **Main Menu -> System Settings -> OS Recovery** screen and select **Force OS Recovery**. **NOTE:** If the process stops midway for a few minutes, cycle (turn off, then on) the transmitter's ac power, set the Console Select to ARM and retry the OS recovery.
- (h) When the OS recovery is completed, turn off the transmitter's ac power.
- (i) Remove the USB flash drive.
- (j) Remove the USB-to-Serial cable.
- (k) Turn on the transmitter's ac power.
- (l) Perform a firmware update with the **vs.4.2.6.2.tgz** file using the front panel UI's **Main Menu -> System Settings -> Firmware Update** screen. If necessary, use the front panel UI's 'down' arrow to find the .tgz file.
- (m) Cycle (turn off, then on) the transmitter's ac power.



- (n) Enable the ARM Watchdog by navigating to the **Main Menu -> System Settings -> ARM Watchdog** screen and select **Enabled**.

**NOTE**

*Once the OS Recovery is complete, the user database is reset, therefore only the default "Nautel" user is valid with no password required.*

*Refer to the transmitter's Operations and Maintenance Manual to re-establish lost user settings including user accounts, logs, SNMP configuration, email configuration, time zone, notifications, and playlists.*

*Before connecting remotely via the AUI, clear your web browser's cache to remove any obsolete AUI files.*

**NOTE**

*VS SW 4.2.6 uses the NAUTEL-MIB.txt and NAUTEL-VS\_SW\_2.3-MIB.txt files located in the directory shown in the Software files table in paragraph 1.5.*

- (o) This completes the upgrade process from VS SW 1.y.z to VS SW 4.2.6. To upgrade to VS SW 5.y.z, refer to IS18008, *VS Series – Updating to 5.x Software and OS Recovery Procedure* (see paragraph 1,5 for FTP location).

