



# NV Series FM Transmitter - Software Update Procedure

**IS09004C**

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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

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## INFORMATION SHEET

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### 1 INTRODUCTION

The NV Series FM transmitter is a microprocessor controlled unit. Periodically, enhancements or improvements to the operating system are identified and made available. This requires a software update.

#### 1.1 Equipment Affected

This procedure applies to NV series FM transmitters.

#### 1.2 Responsibility for Implementation of Procedure

This procedure should be carried out by qualified station maintenance personnel who are familiar with the NV series FM transmitter.

#### 1.3 Scheduling

This procedure may be implemented at the convenience of station maintenance personnel.

#### 1.4 Manpower Requirements

It is estimated that implementing this modification will require 30 minutes to complete. Note that it is necessary for the transmitter to be placed in an off-air status for the duration of this procedure.

#### 1.5 Special Tools/Test Equipment

Along with standard hand tools (screwdriver, nutdriver, etc.) the following test equipment is required:

- laptop (i.e., local computer for direct connection) or network computer with Windows and Internet Explorer Web browser
- CAT5 Ethernet cable
- software for transmitter (\*.tgz) file

### 2 PRELIMINARY CHECKS

- (a) Determine the current software revision installed. Via the advanced user interface (AUI) screen, go to **Menu / Software Configuration / Upgrade Software**. Select the \*.tgz file from the boot image list (should highlight in blue) and press **About**. Record the current software revision for *AUI, Server, Controller, Exciter and Cubes*.
- (b) Contact Nautel for the most recent software revision and receive a new compact flash card (which contains upgrade \*.tgz file) or download \*.tgz file to a laptop or network location.

#### NOTE

*If a new compact flash card was received, continue to paragraph 3. If not, proceed to paragraph 4.*

### 3 COMPACT FLASH CARD SWAP

If a new compact flash card was received with the upgrade \*.tgz file, swap the current card with the new card as follows:

- (a) From the transmitter AUI, go to **Menu / Software Configuration / Network Setup**, and record your current network settings (IP address, Subnet Mask, Default Gateway).
- (b) Unplug the single board computer's (SBC) power connector P8 – located behind a cover on the rear of the door (use 7 mm nut-driver – M4 hardware).
- (c) Remove the current compact flash card – bottom edge of SBC. Note the orientation of the card.



- (d) Install the new card (noting orientation) and plug in SBC power connector P8.
- (e) The AUI should boot up and the transmitter login screen should appear (or the main screen – depending if *Auto Login* was enabled for the active user).
- (f) Proceed to paragraph 5.

4 TRANSFERRING UPGRADE FILE  
 The following steps assume either the laptop will be used to connect directly to the transmitter **OR** the transmitter and network computer are currently connected to the same network.

#### 4.1 Transmitter IP Configuration

- (a) From the transmitter AUI, go to **Menu/ Software Configuration / Network Setup**.
- (b) Record your current network settings (IP address, Subnet Mask, Default Gateway).
- (c) If connecting to the transmitter directly with a laptop, select '*Static IP*' and set as follows:

IP Address:       **10.10.10.2**  
 Subnet Mask:     **255.255.255.0**  
 Default Gateway: **192.168.1.2**

Press **Apply** then **Reboot Now**.

- (d) Set the transmitter for **Remote** control.

#### 4.2 Laptop IP Setup

The following steps assume the operating system is *Windows XP*; adapt as required for computers with different operating systems.

- (a) On the laptop, go to **Start Menu / Control Panel / Network Connections / Local Area Network**.
- (b) In the Local Area Network Status, open the **General** tab and choose **Properties**. Scroll down and highlight **Internet Protocol (TCP/IP)**. Choose **Properties**.
- (c) In the *Internet Protocol (TCP/IP) Properties* window, select **Use the following IP address**.
- (d) Enter the following settings:
 

IP Address:	<b>10.10.10.1</b>
Subnet Mask:	<b>255.255.255.0</b>
Default Gateway:	<b>192.168.1.2</b>
- (e) In the *Internet Protocol (TCP/IP) Properties* window, select **OK**.
- (f) In the *Local Area Connection Properties* window, select **OK**.
- (g) In the *Local Area Connection Status* window, select **Close**.
- (h) Close the *Network Connections* window.



#### 4.3 Transfer software upgrade file to Transmitter

- (a) If using a laptop, connect the laptop network interface card to the transmitter LAN port (A1J21 on the control/interface PWB) using a CAT5 Ethernet cable. Open Internet Explorer and search for 10.10.10.2. The transmitter login screen should appear.
- (b) If using a network computer, open Internet Explorer and search for the IP address recorded in step 4.1 (b). The transmitter login screen should appear.
- (c) At the transmitter login screen enter:  
  
User: Nautel or \*\*\*\*  
Password: *none* (default) or \*\*\*\*  
  
\*\*\*\* denotes an alternate user assigned password and user name of an account that has Super User or Read/Write permission level.
- (d) Navigate through the AUI to **Menu / Software Configuration / Upgrade Software** and press **Browse**. Locate the software update \*.tgz file and press **Upload** to load the file into the transmitter boot image list.
- (e) Proceed to paragraph 5.

#### 5 FLASHING TRANSMITTER WITH UPGRADE SOFTWARE

- (a) Set the transmitter to its **RF Off** state.
- (b) Set the transmitter for **Local** control. Perform the following steps locally (in front of the transmitter AUI).
- (c) Go to the AUI **Menu / Software Configuration / Upgrade Software** screen and select the update \*.tgz file from the boot image list (should highlight in blue) and press **Begin Flash**.

#### CAUTION

**Note the red warning text at the top of the AUI screen – do not leave this page until the flash process is complete.**

- (d) After a successful load (*boot status indicates 100% complete and notes that cubes should be reset*) press **Reset** and go to the **Maintenance** screen in **Menu / Software Configuration** and select **Reboot AUI**.
- (e) This completes the software upgrade. Restore the former network settings on the transmitter and laptop as required [see step 4.1 (b)].
- (f) From the transmitter AUI, go to **Menu/ Software Configuration / Network Setup**, and set the network settings (IP address, Subnet Mask, Default Gateway) recorded in step 3 (a).
- (g) Login and repeat step 2 (a) to determine if the current version is the same as the upgrade version – this confirms the upgrade was successful.
- (h) If the upgrade was not successful, repeat steps 5 (a) through 5 (g), except in step 5 (d), cycle the ac power (switch off, then on) instead of selecting **Reboot AUI**. If still unsuccessful, contact Nautel.



## 6 CONFIGURATION CHANGE

Perform the following steps on all NV series transmitters that upgrade to software version 2.6 or greater.

- (a) Operate the transmitter in an FM mode preset at the licensed analog power level, with exciter A as active.
- (b) Go to the **AUI Menu / Hardware Configuration / HD Settings** screen.
- (c) Press the **Calibrate** button next to Exciter HD Power Calibration.
- (d) Almost immediately the Calibration Value shall change from a nominal 1.000 to a value typically between 0.900 and 1.100.
- (e) Manually change over to exciter B and repeat steps 6 (a) through 6 (d). When complete, change over to exciter A (making it active again).

## NOTE

*This calibration process addresses all IBOC modes (FM+HD and HD) of operation.*

- (f) Select the desired preset or operating mode. Note that for any FM+HD mode, the power level displayed in the AUI's Presets page is the desired analog power setting (TPO). The power reading at the top of the home page is also the analog portion of the FM+HD output.
- (g) The procedure is complete.

