



# **Information Sheet IS22009**

## **NX Series - Imaging OS Files on SSD**

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# IS22009: NX Series – Imaging OS Files on SSD

## INFORMATION SHEET

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### 1 INTRODUCTION

Periodically, enhancements or improvements to the AUI are identified and made available through major release (e.g., SW 4.x.y to SW 5.y.z) software upgrades. This document describes how to burn the SSD (solid state drive) with a new OS IMAGE file for the NX Series of transmitters and how to create a copy of the current IMAGE file for recovery purposes.

#### **NOTE**

*Minor software updates that are released within the same overall number (e.g., SW 5.x.y to SW 5.z.x) can be performed using the Upgrading Software procedure found in section 4 of the Operations and Maintenance manual.*

#### **1.1 Equipment Affected**

This modification affects the following NX series AM broadcast transmitters:

- Models NX15 and higher that have Nautel Field Modifications FM19008, FM19008A or FM13016C
- Models NX15 and higher that have Nautel Part # 207-8710-02 or 207-8720
- Models NX15 and higher that have Nautel DWA-247 or DWA-120 applied

#### **1.2 Responsibility for Implementation of Procedure**

This procedure should be carried out by qualified station maintenance personnel who are familiar with NX series transmitters.

#### **1.3 Scheduling**

This procedure should be completed at the earliest convenience of the transmitter maintenance personnel. It is necessary to go 'off-air' while performing this procedure. You will also be required to perform a software update when installing the modified NX Series transmitters, which will require approximately 30 minutes of "off air" time.

#### **1.4 Manpower Requirements**

Implementing these instructions should take one (1) person approximately three (3) hours, including the 30-minute software update.

#### **1.5 Special Tools/Test Equipment**

The following tools are required to complete the modification:

- The existing SSD from the transmitter, or a compatible replacement (equivalent to Nautel supplied device (UX217) – Western Digital WDS240G2G0A or Kingston SA400S37/240G). Minimum recommended performance requirement for suitable replacement SSD is meeting SATA Rev. 3.0 specification with a minimum size of 8GB if creating a new SSD, while the minimum size is 240GB if backing up the SSD
- # 1 and # 2 Phillips screwdrivers
- 5-mm nut-driver
- 7-mm nut-driver/socket
- USB mouse for Touchscreen Calibration
- USB Keyboard
- Anti-static mat & wrist strap (recommended)
- PC or laptop with a SATA to USB adapter cable



- New IMAGE file to burn to the SSD. Visit [http://www3.nautel.com/pub/NX\\_Series](http://www3.nautel.com/pub/NX_Series) and use the directory with the highest version that applies to your SBC. (e.g., NX\_UB118\_SW\_5\_1\_0 OR NX\_SW\_5\_1\_0) FM19008, FM19008A, 207-8710-02, or DWA-120 would use NX\_SW\_5\_1\_0 while FM13016C, 207-8720 or DWA-247 would use NX\_UB118\_SW\_5\_1\_0
- Putty - <http://www3.nautel.com/pub/Utilities/putTy/>

## 1.6 Publications Affected

This modification does not affect the NX series documentation.

## 2 RECORDING SETTINGS

### NOTE

*If the SSD currently installed is being replaced due to a failure of the AUI, these settings will not be available to record. Proceed to step 4 using the replacement SSD.*

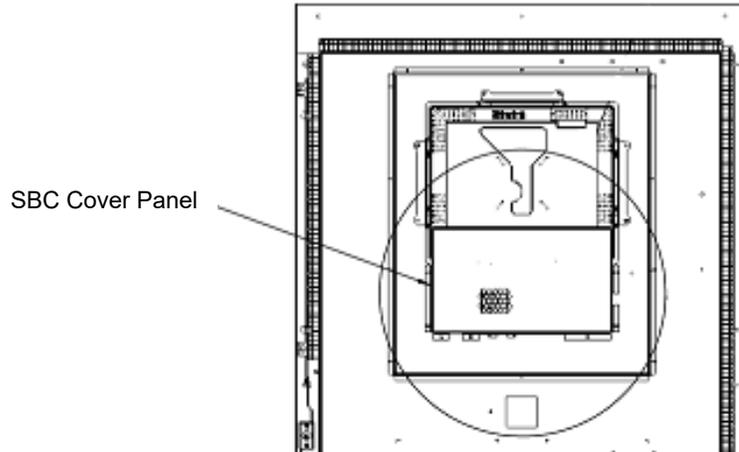
There are various settings and logged data that will not be saved in your transmitter when you update the OS IMAGE file. Nautel recommends that you record these settings and logged data, as desired, before removing your SSD so that you may re-enter them after burning the new IMAGE file. Logs cannot be restored to the new image. The following AUI pages apply (refer to the NX Operations and Maintenance Manual, if necessary, to navigate to these pages):

- Logs
- User Accounts
- Network Setup
- Email Configuration
- Notifications
- Engine Settings
- NTP Servers
- Nautel Phone Home
- \*SNMP Configuration (MIB files are required to use SNMP; can be retrieved from the Nautel FTP site)  
(\* for applicable software versions)

## 3 PREPARING THE TRANSMITTER FOR SSD REMOVAL

- Press **RF OFF**. Turn off and lock out the transmitter's main ac power. Disconnect any UPS AC Feeds as applicable.
- Open the front door (left most for multi-panel transmitters) of the transmitter and locate the SBC (Single Board Computer) Cover Panel (Nautel Part # 207-8292 or 207-8292-03), this will be located directly below the AUI (Advanced User Interface) touchscreen monitor. See Figure 1.
- Remove and retain the seven sets of M4 hardware that secures the SBC Cover Panel in place. Remove the cover to gain access to the SBC.



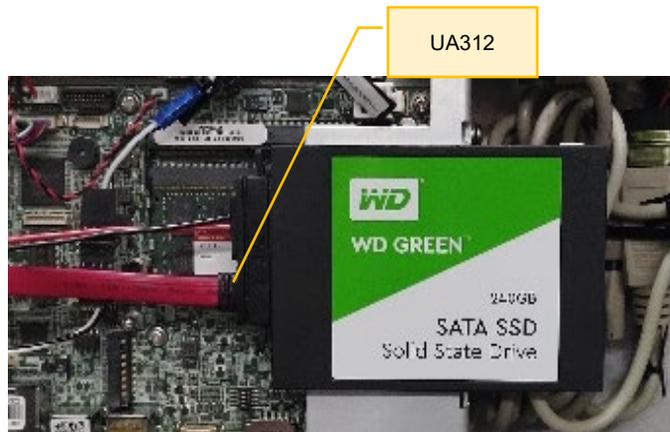


**Figure 1: Location of SBC Cover Panel (NX25 shown as reference)**

### **3.1 Removing SSD Hardware (UB97)**

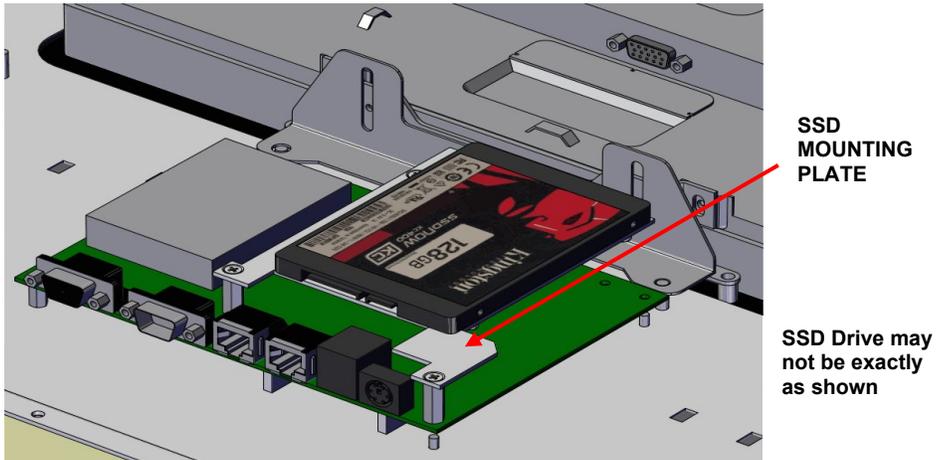
Applies to transmitters with FM19008, FM19008A, 207-8710-02, or DWA-120

- (a) Remove the large black connector (W1P1) of the UA312 cable from the SSD Assembly. see Figure 2.

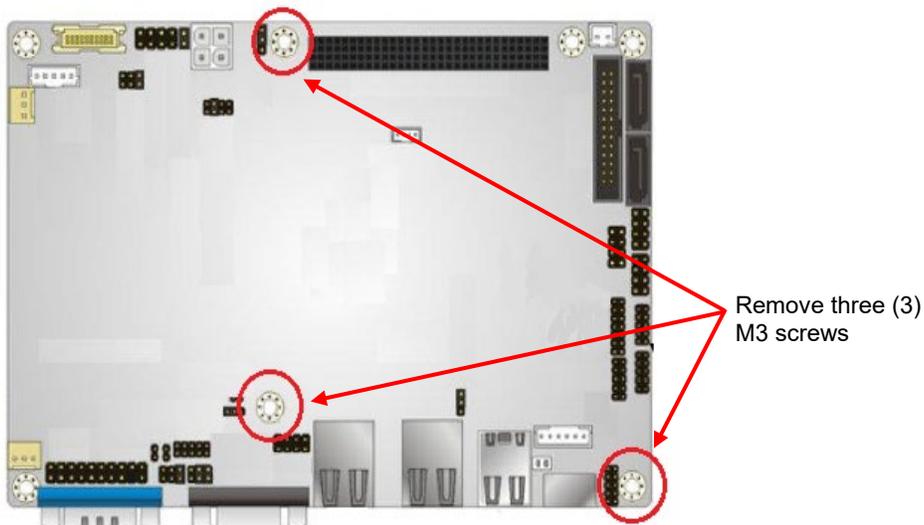


**Figure 2: UA312 Connector**

- (b) Remove the three M3 screws to unmount the SSD Mounting Plate (see Figure 3) from the SBC in the locations marked in Figure 4.



**Figure 3: UB97 SSD Mounting Plate**



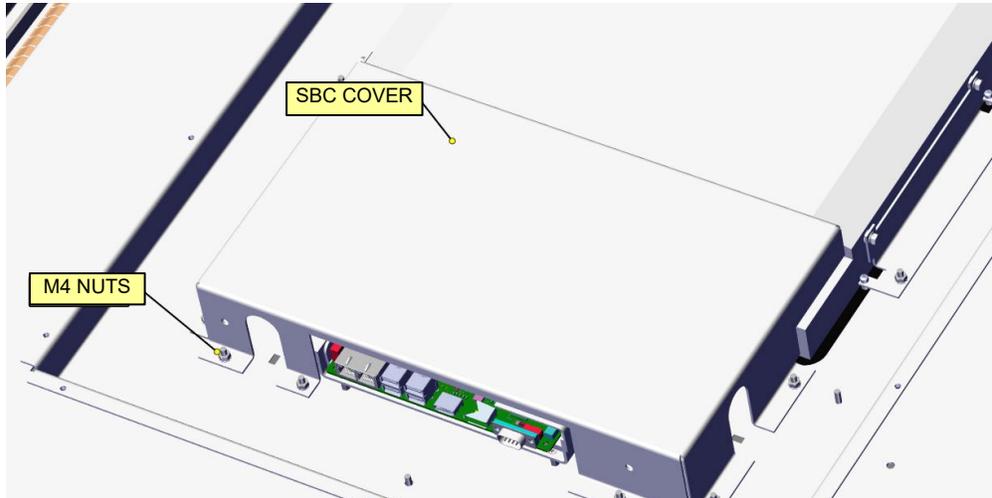
**Figure 4: SBC Hardware Removal**

- (c) There is no need to unmount the SSD from the SSD Mounting Plate. The SSD can stay mounted on the plate while writing the image.

### 3.2 Removing SSD Hardware (UB118)

Applies to transmitters with FM13016C, 207-8720 or DWA-247

(a) Remove the SBC Cover, secured with M4 hardware (see Figure 5).



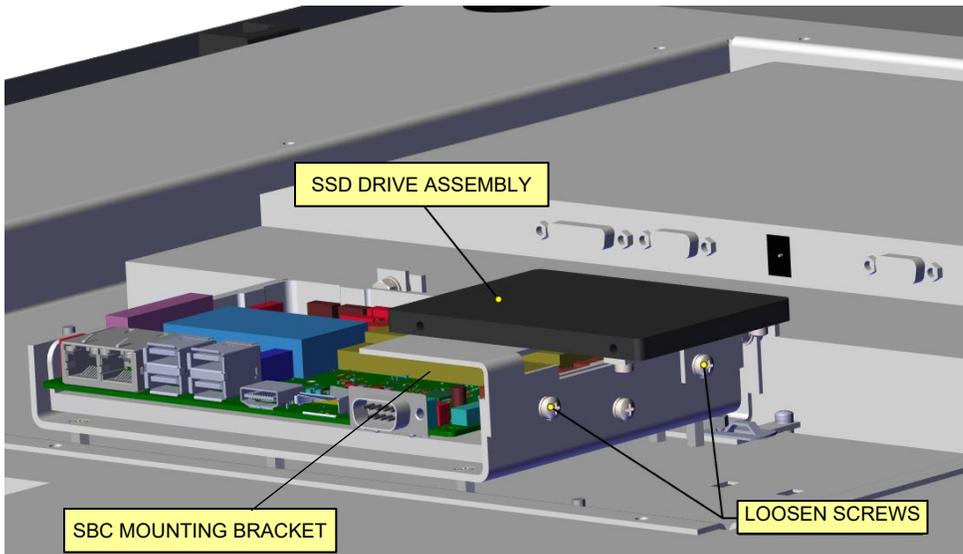
**Figure 5: Removing the new SBC cover**

(b) Disconnect UA312 from the SSD (see Figure 6).



**Figure 6: UA312 Location**

(c) Loosen two screws (see Figure 7). Dismount the SSD Drive assembly by sliding the assembly over the loosened screws. There is no need to unmount the SSD from the SBC Mounting Bracket; the SSD can remain mounted on the bracket while writing the image.



**Figure 7: Removing the SSD Drive assembly from the SBC**

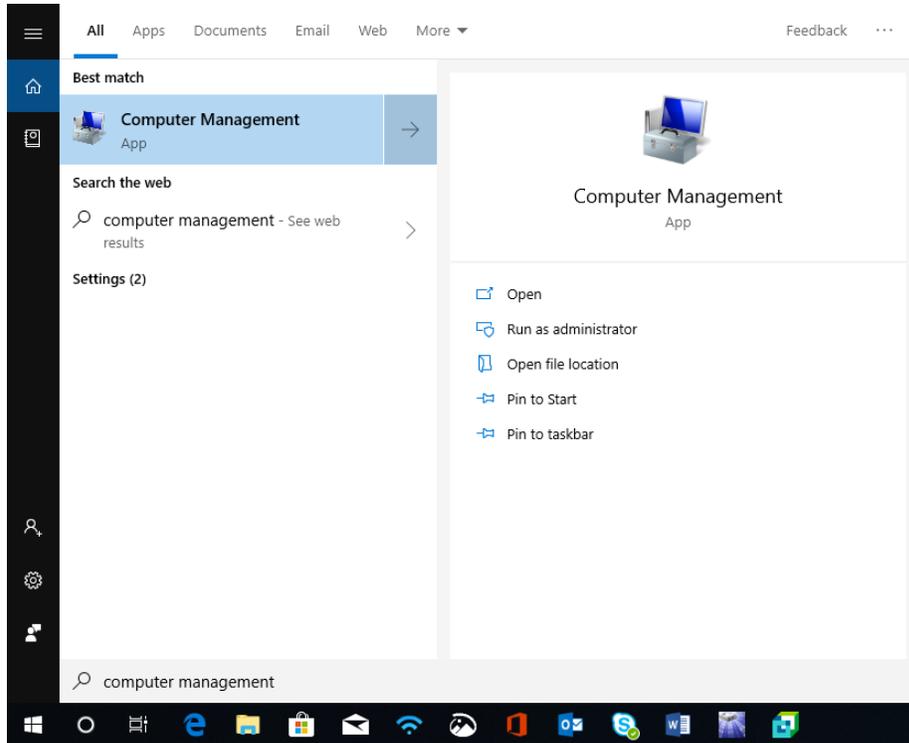
#### **4 IDENTIFYING THE DISK NUMBER**

- (a) Using a PC or laptop, connect the SSD using the SATA to USB cable and let it be recognized by your OS (this process varies in different OSs).

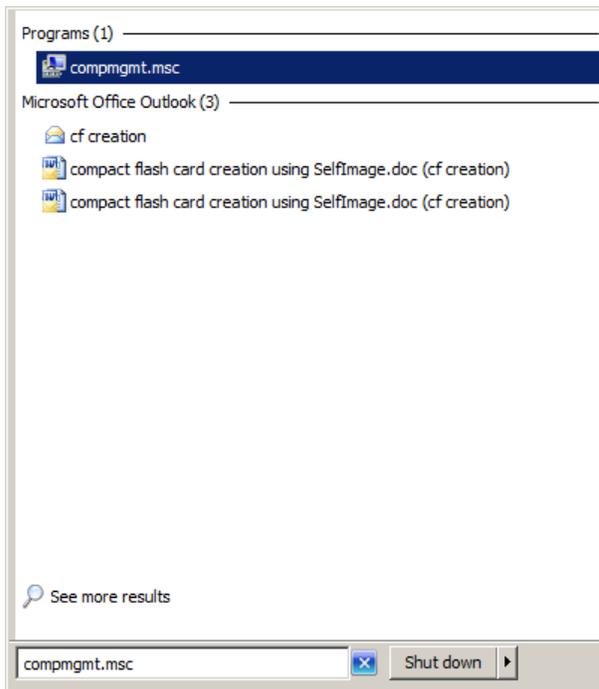
##### **NOTE**

*Windows may display a message prompting you to format this SSD. **DO NOT** do this. Cancel the window.*

- (b) From your Windows based PC, gain access to the “Computer Management” application. This can be done using various methods. Examples are:
- i. Windows 10/11: click the search icon (next to the Start button), type “computer management” and select the Computer Management app (see Figure 8).
  - ii. Windows 7: click the Start button, type “compmgmt.msc” in the ‘search for programs and files’ window and select the applicable program that appears (see Figure 9).



**Figure 8: Windows 10**



**Figure 9: Windows 7**

(c) The Computer Management window (see Figure 10) will open. Select **“Disk Management”** on the left (see Figure 10, #1).

(d) Identify which “Disk” is your flash card (see Figure 10, #2). You may have to disconnect the SSD to confirm which “Disk” number disappears. Note this “Disk” Number for future reference.

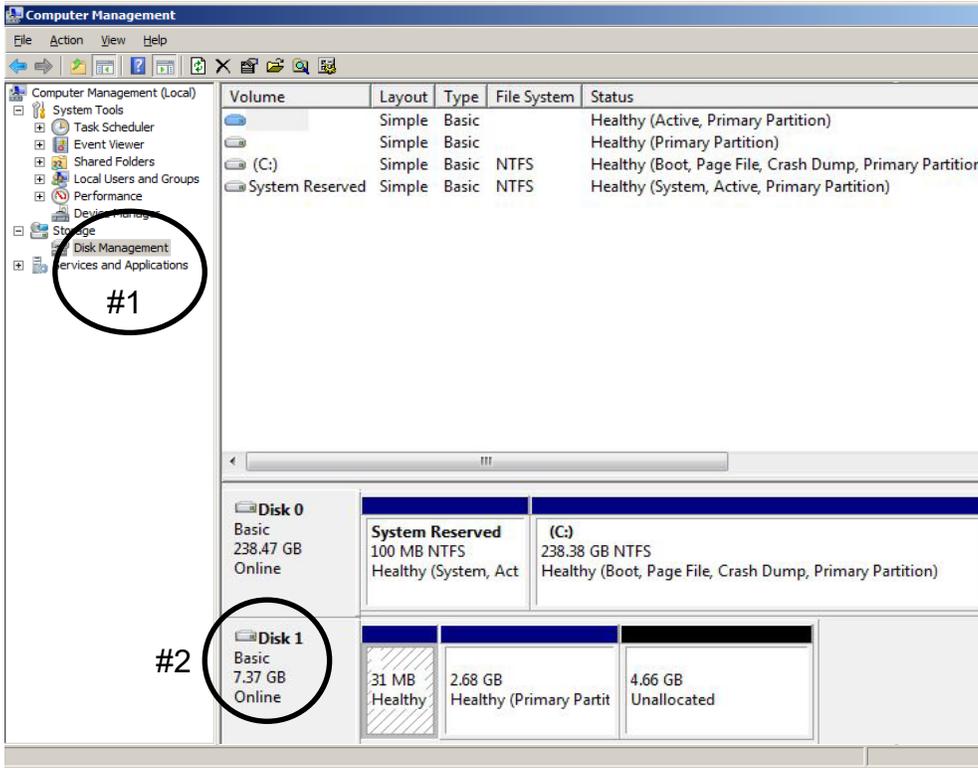


Figure 10: Computer Management window

## 5 SAVING A BACKUP OF THE EXISTING IMAGE FILE

When using your existing SSD instead of buying a replacement, Nautel recommends you make a copy of your current SSD Image to have for recovery purposes. This will save your touch screen calibration, network setup, email setup, user accounts, and notifications. In the event you experience difficulties after the OS upgrade, contact Nautel Customer Service at [support@nautel.com](mailto:support@nautel.com) for guidance before using the backup image file.

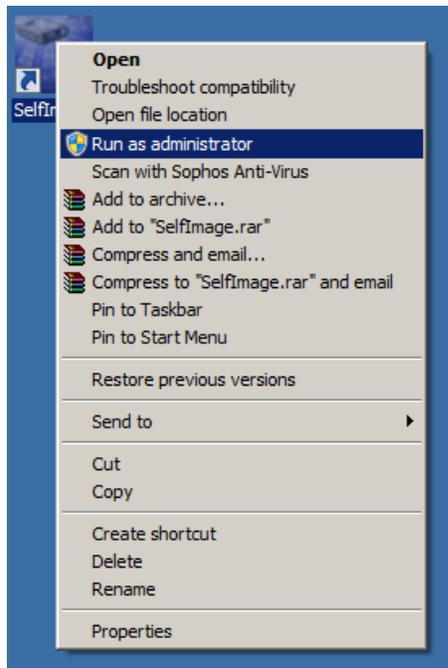
### NOTE

The image being created will be 240GB. Please ensure the drive the image is being saved to has enough space to accommodate this.

(a) Connect the SSD to your PC or laptop using the SATA to USB cable and run SelfImage.  
**NOTE:** The SSD must be connected prior to running SelfImage.

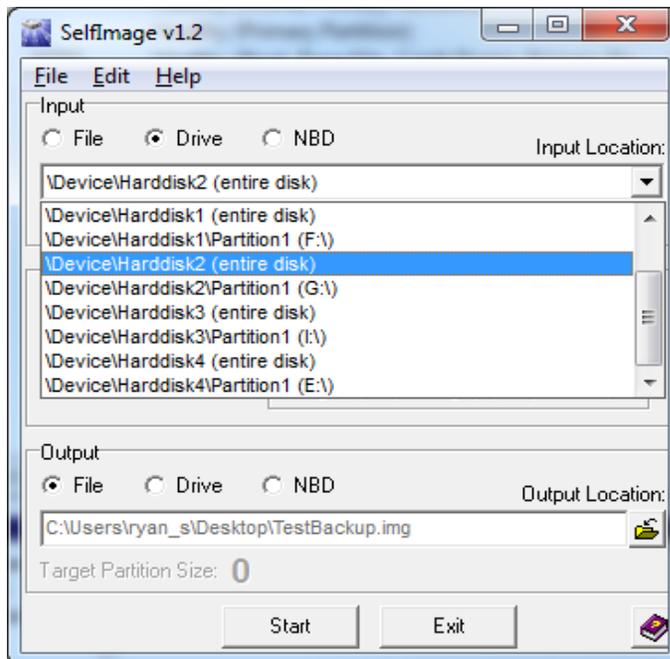
Depending on your OS and administrative rights, you may have to right click on the SelfImage icon and select “Run as administrator” (see the Windows 7 example in Figure 11).





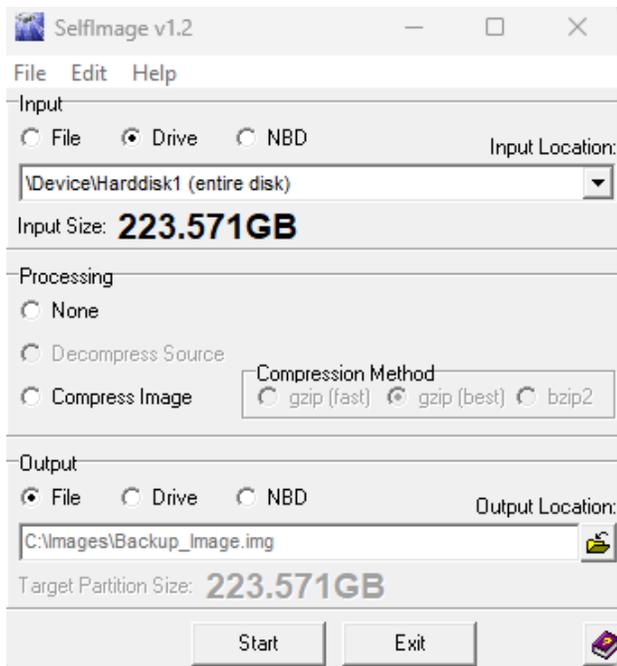
**Figure 11: Windows 7 – Run as Administrator**

- (b) In SelfImage select the “Input” as “Drive” and then use the drop down to select the drive (see Figure 12) noted in step 4 (d). It is important that you select “Entire Disk” version of the “Disk” number to ensure the proper imaging.



**Figure 12 – SelfImage – Making an Image**

- (c) Under “Processing”, select “None” (see Figure 13).
- (d) Under “**Output**”, select “**File**” and then choose a file location and assign a file name (see Figure 13). This file will be saved in the IMG format and will be approximately 240GB in size. The actual file size is shown as “Input Size” (see Figure 13).
- (e) Click **Start**. This process can take between 15 and 60 minutes depending on the speed of your computer. A progress window (see Figure 15) appears to indicate the progress. It reverts to the original SelfImage window when complete.



**Figure 13: SelfImage**

## 6 BURNING AN IMAGE TO THE SSD

### **WARNING**

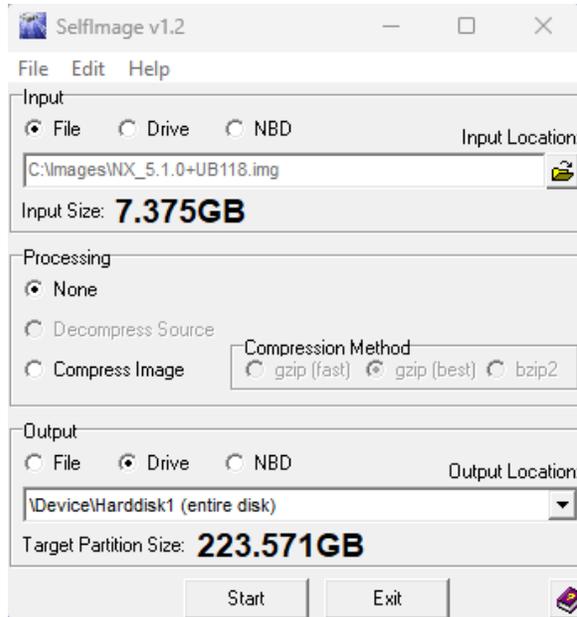
*The following procedure will completely replace any existing data on the SSD.*

- (a) Connect the SSD to your PC or laptop using the SATA to USB cable and run SelfImage.  
**NOTE:** The SSD must be connected prior to running SelfImage.

Depending on your OS and administrative rights, you may have to right click on the SelfImage icon and select “Run as administrator” (see the Windows 7 example in Figure 11).

- (b) In SelfImage select the “**Input**” as “**File**” and then use the browsing window to locate and select the Nautel provided IMG file you are going to write to the SSD (see Figure 14).
- (c) Under “**Processing**”, select “**None**” (see Figure 14).
- (d) Under “**Output**”, select “**Drive**” and then choose your “Disk” number as determined in step 4 (d). It is important to ensure you select “**Entire Disk**” version of the “Disk” number to ensure proper imaging (see Figure 14).



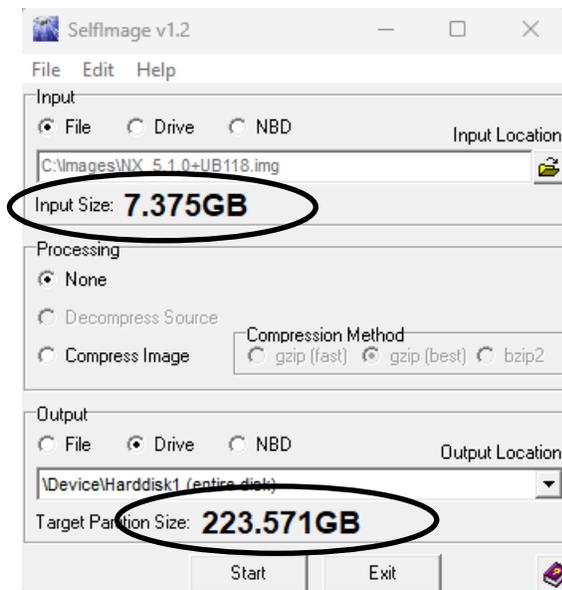


**Figure 14: SelfImage**

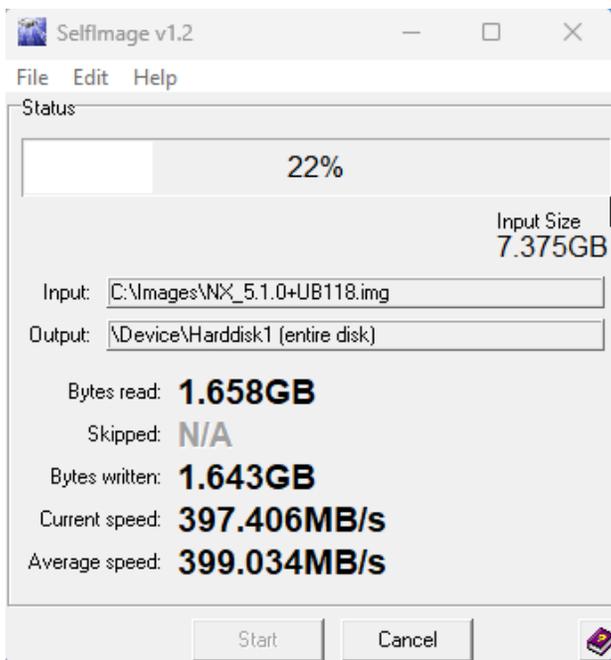
- (e) Click **Start**. This process can take between 15 and 60 minutes depending on the speed of your computer. A progress window (see Figure 16) appears to indicate the progress. It reverts to the original SelfImage window when complete.

**NOTE**

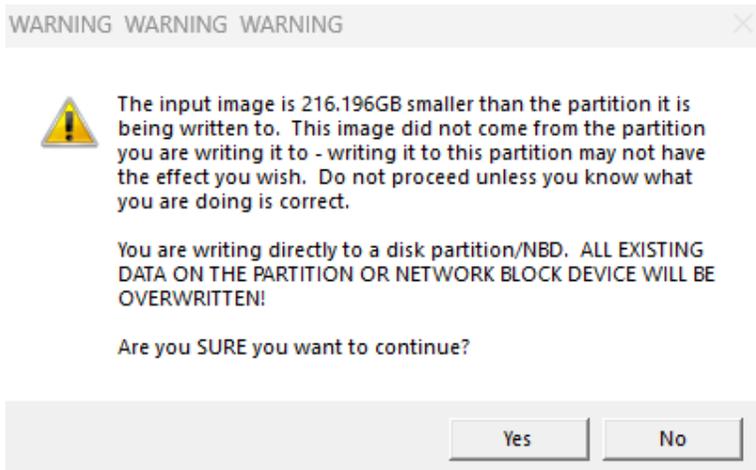
*When you click **Start**, if there is a size difference between the input image size and the target partition to which you are writing (see example in Figure 15), you may receive a warning message (see Figure 17) that asks you "Are you are SURE you want to continue?". Select **Yes**.*



**Figure 15: SelfImage (showing size difference between input and target partition)**



**Figure 16: Progress Window**



**Figure 17: Warning Window**

## 7 INSTALLING THE SSD

### **NOTE**

*If using a replacement SSD, follow the instructions in paragraphs 3.1 or 3.2 to remove the existing SSD prior to proceeding with the following steps. Take note of the SSD model being removed from the transmitter. If different than the replacement, the BIOS boot options may need to be updated when turning on the transmitter for the first time.*

### **NOTE**

*This section will require approximately 30 minutes of 'Off Air' time while the transmitter installs the new software.*



To reinstall the SSD and cover, reverse the steps in paragraph 3.1 or 3.2, as applicable.

- (a) Connect the USB keyboard, reconnect UPS AC and turn on the transmitter's main ac power. Keep RF off.

#### **NOTE**

*If the SSD being installed is a different brand than what was originally installed, you may need to update the BIOS boot options for the AUI to load. Plug in the USB keyboard and refer to IS18005\* for further instructions.*

- (b) The touchscreen monitor will turn on and a screen will appear prompting you to perform a software upgrade. The AUI will not navigate away from this page until it has been completed. Plug in the USB mouse and begin the upgrade. Refer to the Non-Standard Maintenance section of the NX Operations and Maintenance Manual for assistance with installing the new software.
- (c) When the software upgrade is complete, you can turn RF On.
- (d) Perform a touch screen calibration through the AUI (in **Menu ► System Settings ► Screen Configuration**). Refer to the NX Operations and Maintenance Manual, if necessary. Use the USB mouse to navigate to the touch screen calibration page, and then use your finger to touch the targets.
- (e) Reconfigure the network settings in the **Network Setup** page (in **Menu ► User Settings**).
- (f) Reconfigure the **User Accounts** settings (in **Menu ► User Accounts**), **Email Configuration**, **Notifications**, **Engine Settings**, **NTP Servers**, **Nautel Phone Home** and **SNMP Configuration** settings (in **Menu ► User Settings**).
- (g) Unplug the USB mouse. Close the front door.

## **8 CHANGING THE OS PASSWORD**

The OS password must be changed for security purposes. To do this, you will need a way to remotely connect to a Linux computer using SSH. PuTTY is a common utility for Windows users (available at <http://www3.nautel.com/Utilities/putty/putty.exe>; if unable to open this link, use a search engine to find new URL), while Linux users can use 'ssh' from the command line. Change the password as follows:

- (a) Connect to the transmitter IP address using your selected SSH client.
- (b) Login with username **root** and password **gckTZbiMEq**.
- (c) At the prompt, type the command **passwd**. This is the Linux command to change your password.
- (d) Enter and confirm your new password. Consider using the last OS password as supplied by Nautel, provided with the original documentation for the transmitter or with a replacement SSD, for consistency. If not and you choose a new password, record it now in a secure location for safe keeping.

The procedure is complete.

