# Nautel Software Bulletin

August 18, 2014

## Nautel NVLT Series V4.2.3 Release Notes

**Note:** Nautel **strongly** recommends that users upgrade to NVLT SW 4.2.3 or higher.

- Implements transmitter final stage PA bias routine. Previously, a single bias value was used for all PAs for each operating mode. This allows the transmitter to determine the proper bias value for each PA, accounting for individual FET characteristic differences.
- Resolved an issue where the minimum power set-point is undershot while in RF-drive control (low power in FM mode).
- Implements discharge bias voltage increase (to a limit) on PAs if PA voltage is not discharging fast enough.

The most significant improvements with previous versions include:

Version 4.2.2 – Released May 26, 2014

- Resolved an internal DSP/DMA engine issue whereby if operating with "MPX over AES" as the main audio source, the exciter PWB output would produce wideband noise that translated to the transmitter RF output spectrum (having the potential to fail power amplifiers and would sound un-listenable).

Version 4.2.1 – Released May 14, 2014

- This release resolved a connection issues with the Phone Home service.

Version 4.2 – Released January 31, 2014

NVLT SW 4.2 sees the introduction of Nautel Phone Home to the NVLT family of products. See manual for further details on activating this feature.

Follow the link below for the latest files. Files may be safely transferred using flash drives or "copy and paste"

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Other improvements with this release include:

- Greatly increased communication reliability with the power supplies.
- Cleaned up some errant duplicate SNMP MIB entries.
- Remote IO power adjustment behaviour has been modified. NVLT now supports both edge and level triggers, and the increment/decrement step size has been adjusted from 100W to 1% of TX nameplate power. **NOTE**: Any customers using this feature will need to double-check their remote IO power adjustment settings.

Known issues:

- The remote IO power adjustment increments for NVLT 3.5, 7.5, 15, and 30 are incorrectly 50W, 100W, 200W and 400W, respectively.
- On the Software Upgrade page, the "Last Update" date always shows the year of the user's computer.  The Software Upgrade History shows the correct date.

Version 4.1 – Released August 29, 2013

NVLT SW 4.1 includes the following improvements:

- As of this release, NVLT supports MPX over AES (Omnia Direct) with appropriate Omnia 11 (or later) processor and necessary version of transmitter related hardware which includes: Controller module (with integrated exciter) using PWB NAPE87A or later (e.g. NAE106B) and/or Exciter module NAE107 or later.
- SNMP Summary Alarm support; see new MIB file.
- Resolved issue where "Controller - RF Drive Splitter Temperature" meter did not appear on AUI for NV3.5LT thru NV10LT.
- Resolves an issue in the System Settings -> LVPS Hardware menu where "Dual LVPS A/B" was not an available option. For those customers who have dual LVPS A and B installed and were running NVLT SW 4.0 and are

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now upgrading to NVLT SW 4.1, it is recommended that this configuration be changed from "Single LVPS A" (a temporary factory setting to work around this bug) to "Dual LVPS A/B". This configuration change will now show "LVPS B Missing" alarms when and if the B LVPS is removed; otherwise it is masked off for a setting of "Single LVPS A". Note that even with "Single LVPS A" as the setting while LVPS A and B are installed, both LVPS A and B alarms would be visible if a related fault occurred.

Version 4.0 – Released July 29, 2013

Upgrading to NVLT SW 4.x from version 3.3 is a two-stage process; first is an OS upgrade, and second is an upgrade using a .tgz file. Please see the appropriate upgrade Information Sheet for further details.

It is **strongly recommended** that customers upgrade to NVLT SW 3.3 before upgrading to NVLT SW 4.x; version 3.3 contains a new second stage bootloader that greatly increases the success rate of the OS fallback procedure.

NVLT software version 4.0 supports high power NVLT systems, as well as fixing a number of issues:

- This release implements a new OS and a new first stage bootloader.
- Implements "Cutback" function which reduces the transmitter's target output power level to the shutback point power level less 15%, in the event an SWR Shutback occurs repeatedly (more than 3 times in 60 seconds for the 1st time, and then each time there after) due to an issue with the output RF feedline/antenna (e.g. fault in the feedline that has a finite air gap between the output conductor and the inner conductor, such that at a specific power level, the air breaks down and an arc occurs causing repeated SWR shutback events each time the transmitter recovers and the power level reaches that breakdown point). The transmitter will automatically try and increase the target power level back to the set-point after a predetermined

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amount of time (approx. 3min). If the fault condition has been cleared, the transmitter will recover to the original desired set-point; if not, it will continue cycling indefinitely. This also applies to the Reject Shutback function.

- Exciter "Reverse Path Gain" meter replaced by "Reverse Attenuation"; value only applies to NAE107 Exciter module.
- Some device meter ranges were updated to account for corrected typical values and alarm thresholds.
- Additional meters were added to each device and the sorting was rearranged accordingly.
- Added new Lineage PS meters: Ac Input Voltage (V), Ac Input Current (A), Run Time (hrs) and Fan Speed (RPM).
- When using UG92A power supplies the transmitter is now capable of operating from 90-265Vac vs. 175-265Vac; a "Low Ac Operation" alarm will become active when in this condition (incoming ac voltage drops below 170Vac) and clear when the voltage exceeds 175Vac.
- "Call Sign/ID" text is now shown as a header in the Critical Parameters.
- Added new Combiner Match related alarms that indicate the reason the Combiner Match alarm occurred; these include:
  - "Power Discrepancy" (control system has determined that there is unaccounted for amount of RF power somewhere in the transmitter - likely in an arc);
  - "Low Efficiency" (control system has determined that the system efficiency is much lower than expected; input power >> output power because some of the RF power is going to sustain an arc and not making it out of the transmitter);
  - "Current Imbalance" (RF module current ratios on either side of the internal hybrid combiner have exceeded an acceptable threshold, typically caused by severe SWR; symptoms of an intermediate combiner stage arc).

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- Added support for Level Triggered Remote Inputs (e.g. Presets).
- Updated function so that the external RDS Encoder "must" enable time packets and issue the time to the exciter before time packets will be sent by the exciter (NAE107).
- "Low Forward Power" and "Very Low Forward Power" thresholds now exist in the "User Settings" menu (still remain as duplicate in the "System Settings"); this allows the user to adjust these thresholds without having to enter the System Settings menu.
- The maximum number of remote AUI users has been increased to 8. Performance (update speed) may degrade as the number of users increase.
- NVLT SW 4.0 requires a new OS v4.0 update; for that reason, any saved Playlists will be deleted. It will be up to the user to ensure their playlist content can be restored post the upgrade.
- Changeover menu updated slightly to improve readability.
- Critical Parameters "Settings" reorganized to improve readability.
- Resolved issue where the standby NAE106 controller was not enabling the internal fan when Standby Test was active.
- UI Main/Active Exciter within Changeover menu now references Exciter B in place of Exciter 2(B); and Ctrl/Exc A in place of Ctrl/Exc 1(A)
- Controller - Reject #-# Power meters now reference "5kW", "10kW", "20kW" or "40kW" prefixes based on their application (makes it easier to identify their purpose).
- Resolved issue where Exciter B (NAE107*) version number was not being shown in the Software Upgrade details.
- Updated UI meter sorting to match sequence on AUI meter view.
- Updates Controller - Total RF Drive Power meter to reflect necessary ranges for NV40LT (highest RF Drive Power requirements).
- Exciter Forward Power meter range/limits increased to account for higher power application when used in NVLT HP.

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- Updates "Exciter - PA Current" meter to reflect NV40LT exciter current requirements; higher nominal levels.
- Standby Exciter is limited to 100W RF output when "Standby Test" is ON.
- Incorporates new alarm "RF Module # Fan Voltage Fault" to inform the user that the associated RF Module fan power supply is not producing the expected output voltage.
- New "Exciter - VSWR" meter added.
- Changeover menu "Auto Delay" range is now 2-120 seconds with the default as 2 seconds (min was 1 second).
- Improvements made to prevent Controller/Exciter DAC Gain from reaching the upper limit (100%) before the Forward Attenuation was updated; now the Forward Attenuation is allowed to change further to prevent this behaviour. Symptoms were that the exciter forward power set-point could not be achieved, as the DAC would hit 100%; this typically had a negative impact on output power capability due to the reduced RF drive; however, it was worked around by running the "Exc Att Routine" (Exciter Attenuation Routine) - this should no longer be necessary.
- Resolves issue where local RF OFF button would only turn the transmitter off if the local UI was functioning; hardwired control line wasn't being listened to by the rack controller; now, if the UI fails, the local RF OFF button will turn off the transmitter.
- Incorporates a new alarm "Module Extraction Shutback" to inform the user that they have extracted an RF module without first disabling it and this is the cause of the transmitter shutback. RF modules should first be disabled using their front panel switch and only removed once the STATUS LED is red.
- Fan Speed range changed from 60-100% to 63-100% with 63% as the default.
- Changed syntax for "Sync Cal" menu to use the term "Racks" in place of "Tx" for consistency/accuracy.
- Several menus have removed the numerical references to exciters (1 & 2).
- Resolves issue where "Exciter High SWR" and "Exciter SWR Foldback" alarms were not being displayed properly when the controller/exciter was in that condition. Alarms inform the user that the exciter is not achieving the desired output power due to a high SWR at its output.
- Resolved intermittent controller temperature reading issue (meter read normal then dropped out to less than 0C, then normal again). It now reads the correct temperature and is stable.
- Resolved issue where Controller - Average PA Voltage meter was reading 0V (was actually correct, but

the meter read incorrectly) when the Forward Power was less than 5% of the transmitters rated power.

- Resolved a few issues with Exciter Changeover function where Exciter High SWR (pulled RF drive cable) would not cause changeover to the standby exciter.
- RF Module "RF Drive Loss" alarms now function.
- "Avg PS Curr" (Average Power Supply Current) meter added to the UI - Controller meter list to aid in troubleshooting only (not available in AUI).

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