COHERENT
Service Department

PRIORITY

____	Mandatory	__X__	As Required
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FIELD SERVICE BULLETIN

DATE ISSUED: 11/6/2006 NUMBER: 493

Release of Chameleon Software Version 7.91

PRODUCT **All 80 MHz Chameleon series lasers (Ultra, Ultra II and XR-80)**

PURPOSE To inform all Coherent and Coherent Subsidiary FSEs of the features, verbose RS232 library, expanded head EEPROM parameters, and the newest software tools associated with software version **7.91**.

DESCRIPTION To determine when an upgrade is required: Any situation where the current software version is responsible for substandard performance in a Chameleon system. More specifically where performance issues attributed to software version **7.90** involving serial commands, ability to acquire lasing, or inaccuracies in Chameleon power between 1000nm and 1010nm are observed. Details regarding issues from software versions prior to **7.90** can be found in the Software History Section SVC-CHAM-4.5 of the Chameleon Service Manual.

Changes specific to software version 7.91:

- Handling of the slow and fast photodiode boost improved.
- The occasional error to queries with <CR><LF> causing a reported break in communication by Zeiss microscope software, has been corrected.
- Remaining verbose commands and queries added back into the library.

Changes specific to software version 7.90:

- Added back the verbose commands and queries originally removed from the library with the 80MHz platforms.
- Gain switch wavelength now selectable.
- Average diode current now displayed under the System Information menu.
- Threshold ranges extended to allow threshold settings to be set anywhere from 1% to 100%.
- Ability to work with both "Brown," and "Green" (RoHS) Chameleon head boards.
- Pump raster slowed down to improve the Chameleon's ability to find lasing with PZTs that are not ideally optimized.

*These changes remain in the Chameleon software version **7.91** and version **7.92** as well.*

Changes to Chameleon PC Loader: The EEPROM bootloader software "Chameleon PC" must be version **1.14** or later. Older versions of Chameleon PC are unable to read the EEPROM data structure supported by Chameleon software versions **7.91** and later. Slow and fast photodiode DAC counts for the boost are now stored along with the lower gain values adding two additional columns(see *Figure 1*).

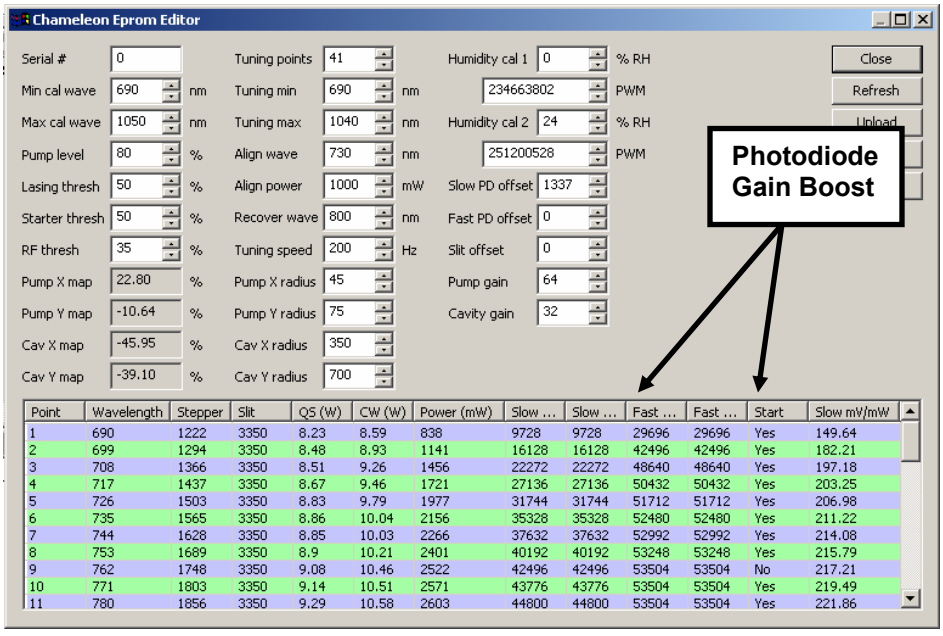

*Figure 1. Chameleon PC version **1.14***

The new fields in the Chameleon EEPROM editor were added to correct a problem with previous software versions. In previous software versions, there was a slow and fast photodiode interpolation problem when resolving between the calibrated wavelength data points. To correct this, version **7.91** software required two DAC levels and would make the interpolation dependant on the active gain state of the Chameleon using the appropriate DAC count for that gain state. In other words, each wavelength must be able to handle either the low gain boost or the high gain boost for both the slow and fast photodiode. The Chameleon PC software was changed to allow these values to be displayed.

Setting the Boost wavelengths: Since the boost wavelength is no longer "fixed," the software was adapted to allow the lower and upper gain parameters to be adjusted from the Service Menu or via RS-232 when in service mode (see *Figure 2*). **Note: Chameleon PC version 1.14 does not display these fields, they will be added in later versions of Chameleon PC.**

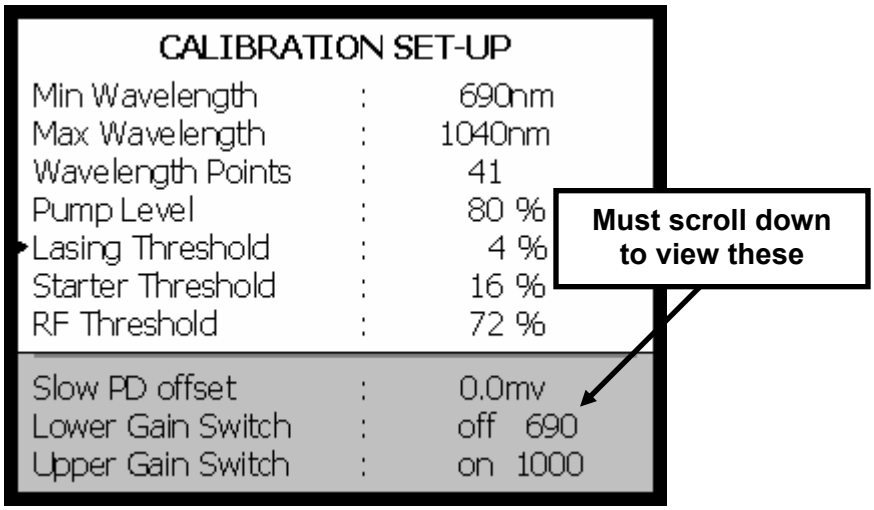

Figure 2. Added Photodiode Gain Switches

The gain switch state (on/off) can be set in the Calibration Set-Up service menu by selecting the field from the front panel up/down arrows and pressing 'Select' to toggle or by using the serial command EGSL=1 to turn the Lower Gain Switch on and EGSH=1 to turn the Upper Gain Switch on. Setting this command's integer value to zero(0) will turn the switch off. The Gain Switch wavelength can be changed from the front panel by selecting the field and using the adjustment knob to increment or decrement the wavelength. **Note: the factory default wavelength for the Lower**

Gain Switch is 690nm; software version 7.91 has an adjustment range from 691nm to 1039nm for this parameter, so changing the lower wavelength value in this screen will not provide you the ability to get back to 690nm. This issue should be corrected in software version 7.92, but for systems with version 7.91, the RS232 command will need to be used for 690nm. The serial command to set the Lower Gain wavelength is GSL=nnn; for the Upper Gain wavelength the command is GSH=nnnn. This change was required for the Chameleon Ultra II.

Raster speed reduced: In order for the Chameleon to obtain lasing in situations where the cavity PZTs are not optimized, the pump PZT raster speed was decreased so that potential overshoot of the pump PZT location would be less likely. This was originally added to software version **7.90** but was not formally announced. This software change is not intended to correct lasing problems associated with improperly adjusted thresholds.

Verbose RS232 Library: To reduce the software program size when the 80MHz Chameleons were introduced, the RS232 command and query library was reduced to include just the shorthand versions of the instruction. Some customers were using software programs that used the longhand or verbose instructions. The Chameleon software would not recognize these commands or queries, so the request was ignored. The majority of the verbose commands were added back in software version **7.90**; the remaining few were eventually included with software version **7.91** and later.

Threshold ranges expanded: The service menu ability to set the lasing, starter and RF thresholds had software limits to keep these values within a defined range for the specific threshold being adjusted. Because of the variation in behavior associated with the detectors being compared to these thresholds, the limited range did not allow enough adjustment to encompass every systems operation. The limits were removed from Chameleon software versions **7.90** and later. All three thresholds can now be adjusted from 1% to 100%.

Software upgrade concerns: Upgrading the Chameleon software should only be done using the JTAG wiggler cable p/n 1123189. (RS232 is prone to failure and shouldn't be used). Always have a backup copy of the current software version installed on the system, and make a copy of the Verdi and Chameleon EEPROM data. Headboards incorrectly reporting rev **ND** should not be upgraded,

either wait for version **7.92** which will be able to handle this fault or alternatively contact Product Support. If the system exhibits fault#1 - “Laser Emission Lamp failure”, or fails to maintain the ‘Power Map’ PZT values after the upgrade is performed, it should also be reported.

ACTION

Before proceeding with the software upgrade, check the Chameleon headboard revision number in the system information menu. On a small isolated number of headboards the hardware revision rev number is falsely reported as Rev.**ND** (the correct revision should be Rev. **AD**). The software uses this revision information to determine which drivers to use within the hardware and incorrect revision information will corrupt the software. Systems displaying headboard revision Rev **ND** should <u>not</u> be upgraded and Product Support should be contacted for further information. You will want to save a copy of the Chameleon EEPROM using Chameleon PC version **1.14** or later, the format is acceptable. After the software upgrade to **7.91** this datafile should then be reloaded using this latest Chameleon PC. This will ensure that the Chameleon EEPROM data is configured correctly. Refer to the current procedure SVC-CHAM-5.4 for instructions on how to do the software upgrade in the field. The following files will be required to complete this upgrade along with the latest versions of Chameleon PC and the Software Bootloader:

Head_Bootloader.S

Interface_Bootloader.S

ChameleonHead_v7_91.S

ChameleonInterface_v7_91.S

PSE Initials: MV