

**Model:**

**VS7550**

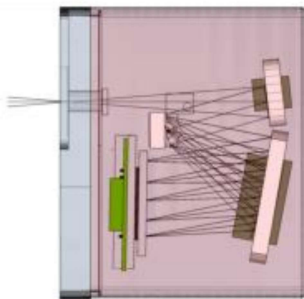
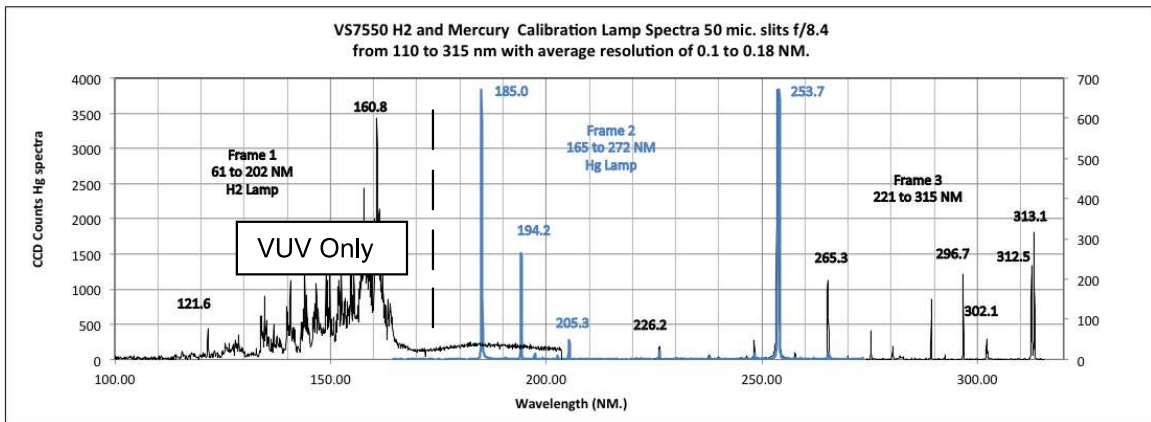


**Description:**

**UV to NIR Mini-Spectrograph**

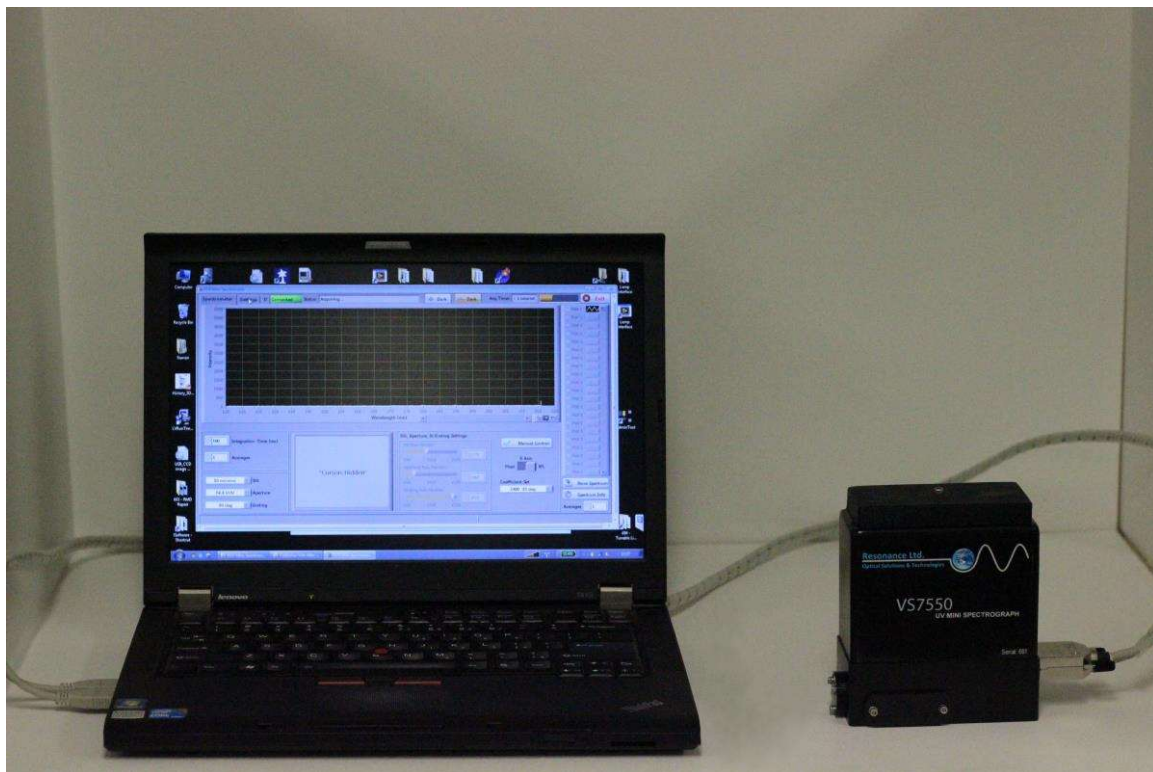
The VS7550 is a miniature Czerny-Turner spectrograph with excellent speed, spectral range and spectral resolution with software control of slit size, input f#, order sorting filters, grating angle and dark exposures. The UV spectrograph has a spectral range from the air short wavelength cut-off at 185 nm to the detector IR cut-off at 1100 nm. The spectrograph is small enough to fit in your hand and can be fully operational in any orientation at the end of a 5-meter cable. Accessories include a built-in spectral calibration lamp, a multi-spectral field flat light source, fiber optic adapters and back thinned detectors.

Spectra with 3600 grooves per mm grating using H2 UV and Hg lamps



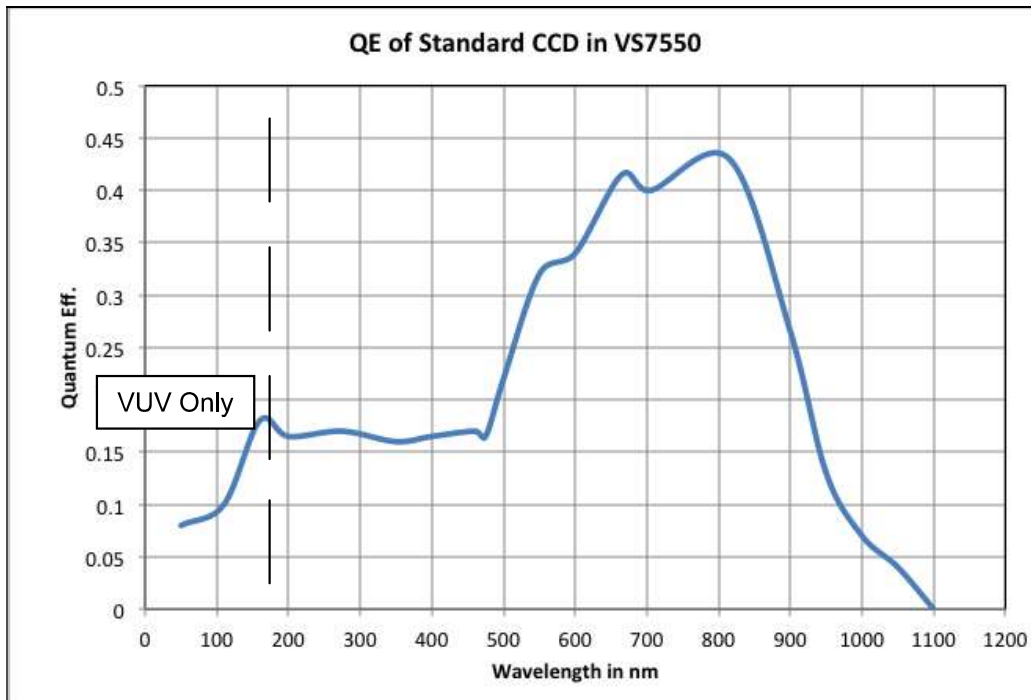
## 1 Features

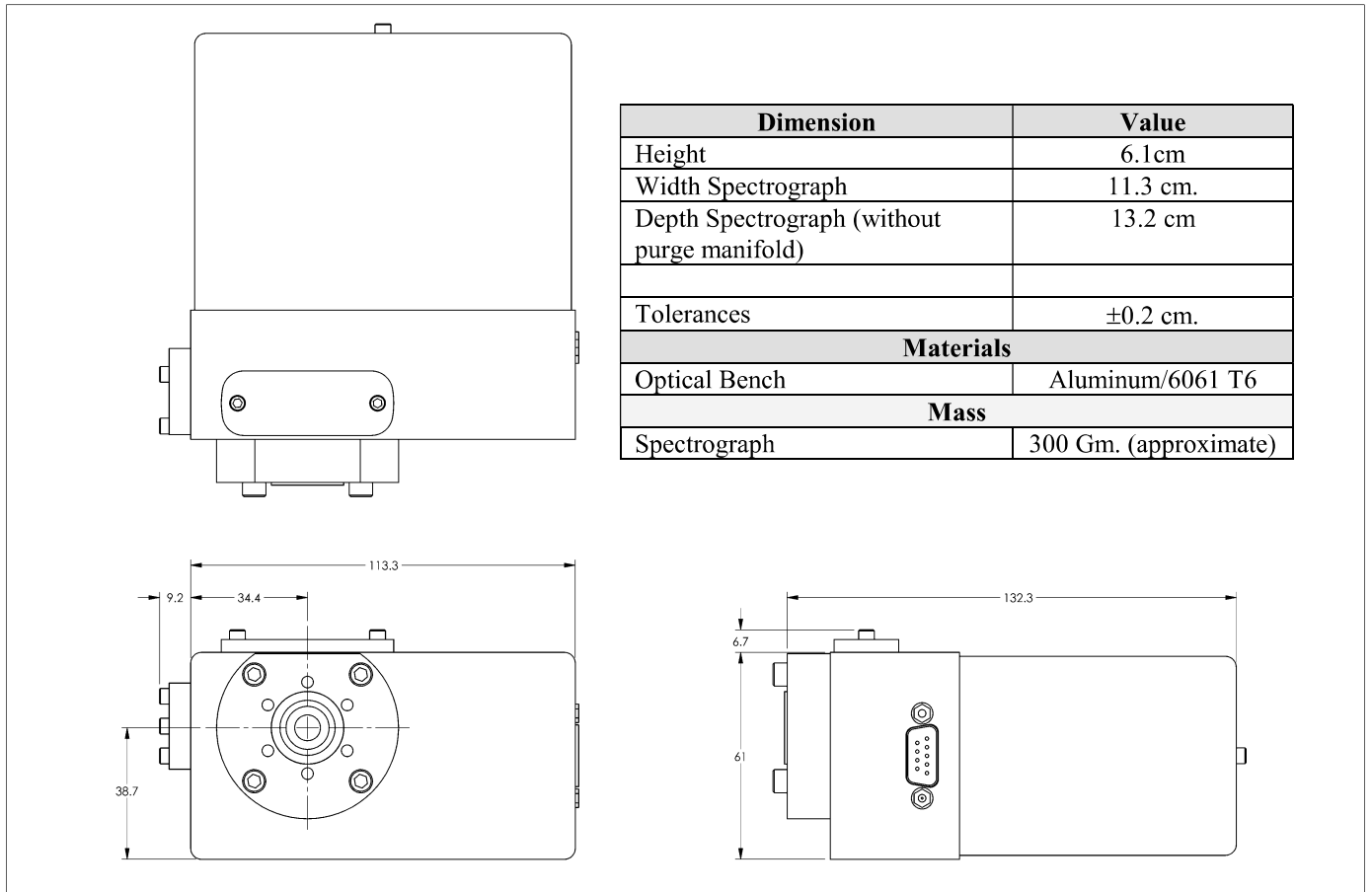
- High speed Czerny Turner optics up to  $f/3.5$  (at CCD)
- Resolution better than 0.2 nm achieved with 3600 groove per mm grating
- User interchangeable gratings from 600 to 4200 grooves per mm
- UV to LiF cutoff of 104 NM.
- Computer controlled slit size from 25 to 400 microns
- Computer controlled input aperture from  $f/3.5$  to  $f/8.4$
- Computer controlled order sorting filters
- Computer controlled grating angle means that full range of grating can be used by creating panoramic spectrum
- UHV interface with window so spectrograph can be removed from UHV chamber during bake out
- Stable detector employs phosphor coating to eliminate history effects of back-thinned detectors in UV. Sensitivity range from 185 to 1000 NM.
- Simple USB interface for spectral acquisition and spectrograph control with up to 10 meter cable.
- Extremely compact so remote operation is allowable
- Accessories include built in calibration lamp, Flat fielding LED
- NIST traceable calibrations are optional



## 2 Specifications

<b>Electrical /Optical</b>				
Specification	Minimum	Typical/Median	Maximum	Units
Focal Length (input)	76.0	76.2 mm	74.4	mm
Focal Length (output)	41	46	48	mm
Wavelength Range depends on grating	185	-	1100	nm
Wavelength Accuracy	-	± 0.1	-	nm
CCD QE 185 to 400 nm	10	18	20	%
CCD QE for 400 to 930 nm	15		42	%
CCD QE for 930 to 1050	3		15	%
Best Spectral Resolution 3600 grating first order		0.12		nm
Available Gratings	From 600 to 4200 grooves per mm			
Wavelength Range	Up to 5 frames of 100 to 500 nm for wavelength ranges from 185 to 1100 nm			
Wavelength Resolution	<0.25 nm in center of field with 3600 grooves per mm grating			
Software selectable slits, order masks and dark shutter	Typical range of resolution is 0.1 to 2 nm			
Software selection of spectral range	3600 l/mm grating 110 to 315 (2 steps) 1200 l/mm grating 110 to 950 (5 steps)			
Software selection grating aperture	Effective range of f/# 3.5 to 8.4			
Detector	2048 pixel linear array with VUV/UV phosphor			
UHV option	Window adapter with 2.75" Conflat™ flange			
Connection	Two USB 2.0 cables for data, power and servo control			





Thermal				
Non-operational Temp. Range of the Spectrograph	-20	22	70	° C
Temp. Range of the vacuum flange plus window	-50	22	220	° C

Electrical				
System Power Source (USB HUB)		USB 2.0		
Current consumption		<500 mA		

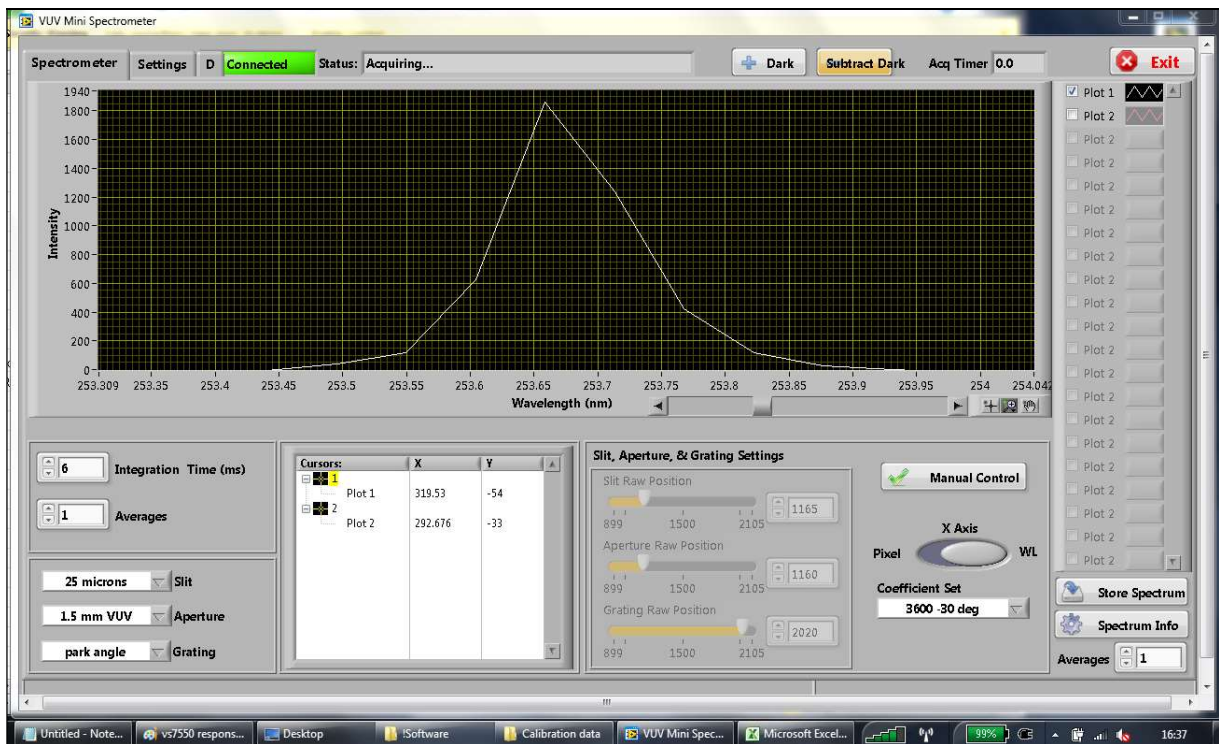
### 3 Software and Drivers

A PC software package which controls all the spectrometer functions, displays and stores spectral data is provided.

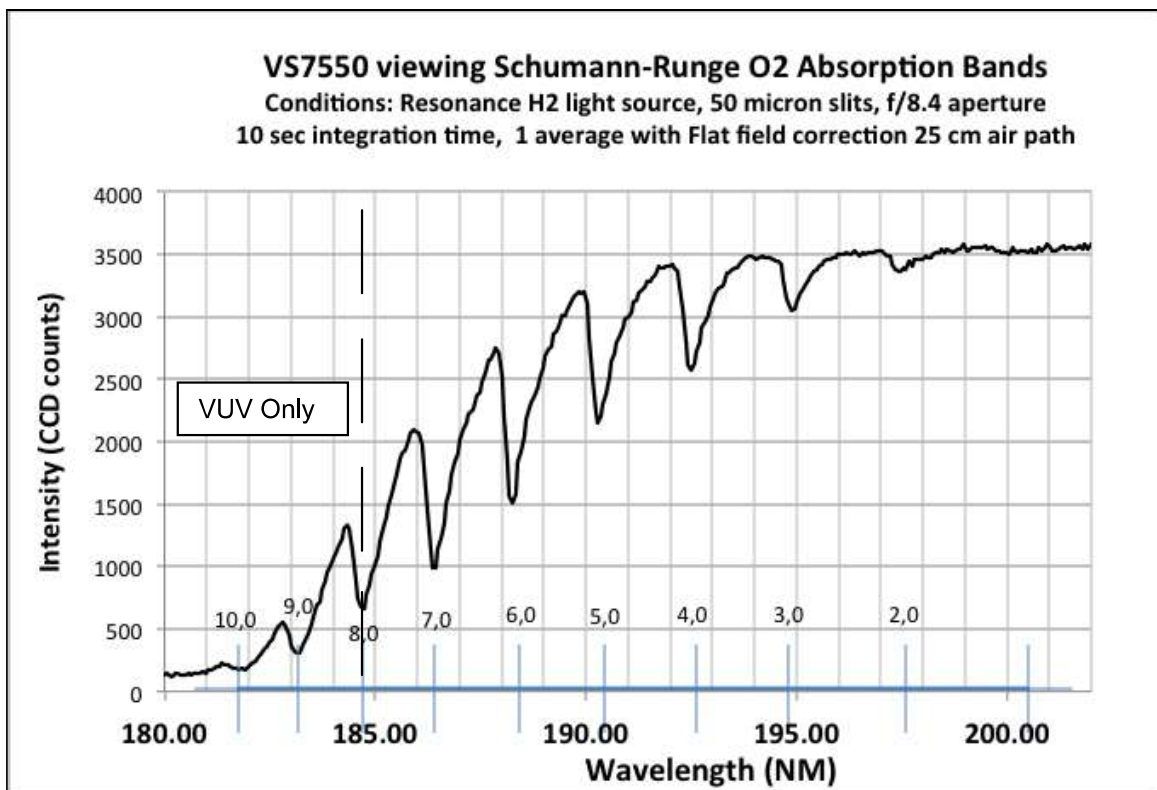
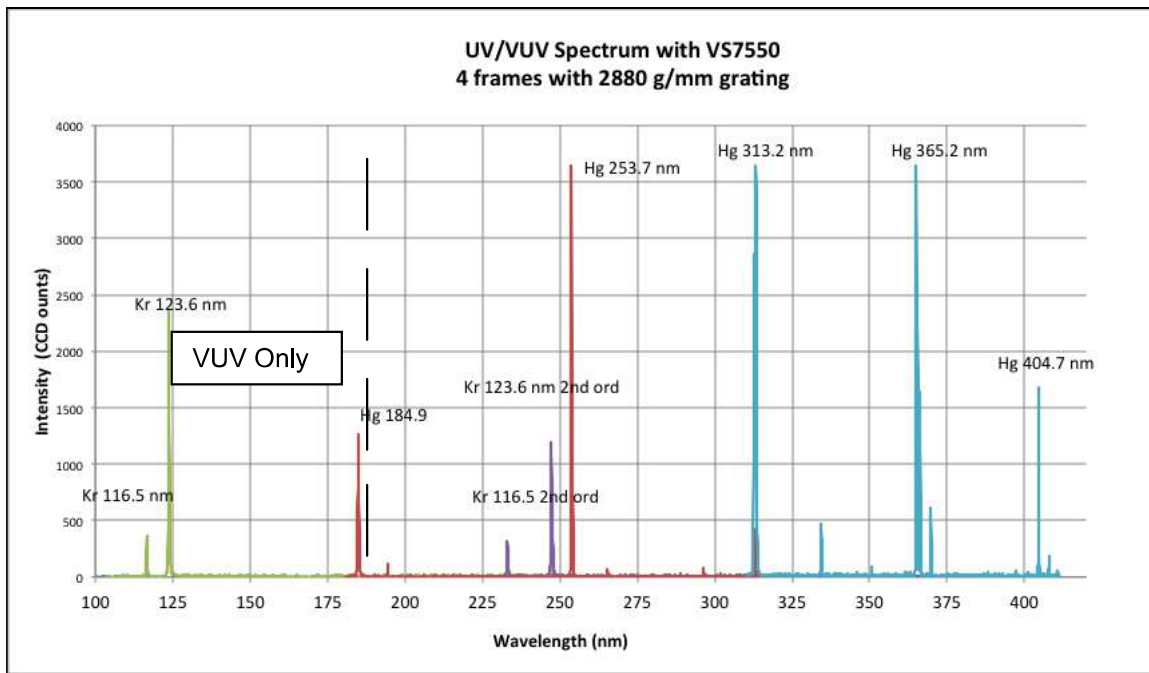
Capabilities include:

- Changing all CCD parameters (wavelength coefficients, integration time)
- Slit width control
- Spectrograph wavelength range control.
- Spectrograph input aperture (input f#)
- Spectrograph order sorting filter
- Pixel or Wavelength Display
- Software activated darks
- Data export (XLS User selectable)
- Store multiple spectra and graph/save multiple spectra

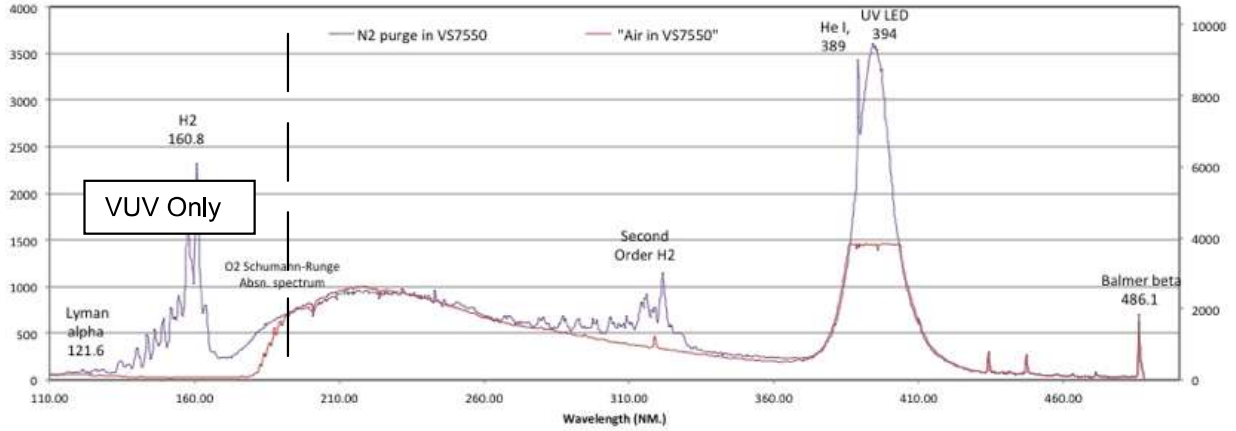
Resonance spectral acquisition software showing magnified region at 353.7 nm



4 Spectra taken with the VS7550



**VS7550 with 1200 l/mm Grating (-5 deg.) Viewing Resonance HHeLM-L H2 Light Source  
Signal in CCD counts vs Wavelength with and without N2 purge (Resolution 0.4 NM.)**



**VS7550 Spectra of Kr Lamp in 2 frames (blue and red)  
with 1200 l/mm grating compared to NIST Kr Lines (black).  
Integration time 100 msec, f# 8.4, slit 25 micron**

