



**K3 Analyst Software**

**OPERATION MANUAL**

**For use with S-2150 and S2150UV Spectrophotometers**

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## INTRODUCTION

The UNICO® K3 Analyst Software has been designed to operate with UNICO® S-2150 and S-2150UV Spectrophotometer.

UNICO® Application package includes:

- Software CD
- Software User's Manual
- USB cable.

K3 Analyst Software performs the following methods for analysis:

- Absorbance/%Transmittance/Concentration at single or multi wavelengths:
- Standard Curve: create a calibration curve with up to 8 standard solutions to determine concentrations of unknown samples.
- Kinetics: measure absorbance change over a selected period of time
- Scanning: scan any wavelength range featuring zoom and peak/valley pick.

Minimum PC Requirements

- Win XP or Win 7 operating system
- .Net 3.5 Framework
- 1GB RAM
- 500 MB of free space on memory

## PLEASE READ PRIOR TO INSTALLATION

The CD contains 2 versions of the K3 Analyst software. Please use the chart below to identify the version compatible with your instrument:

| PC Software Version | Compatible Firmware | For Model      |
|---------------------|---------------------|----------------|
| Beta V1.05          | V1.1.10 and before  | S-2150 Visible |
| Beta V1.05          | V5.1.10 and before  | S-2150UV       |
|                     |                     |                |
| V1.0.13             | V1.1.11 and up      | S-2150 Visible |
| V1.0.13             | V5.1.11 and up      | S-2150UV       |

To Identify the Firmware installed on your spectrophotometer:

1. Turn the instrument on and follow onscreen instruction to get to the main menu.
2. From the main menu select System Setup – About. The Firmware version will be displayed on the screen.

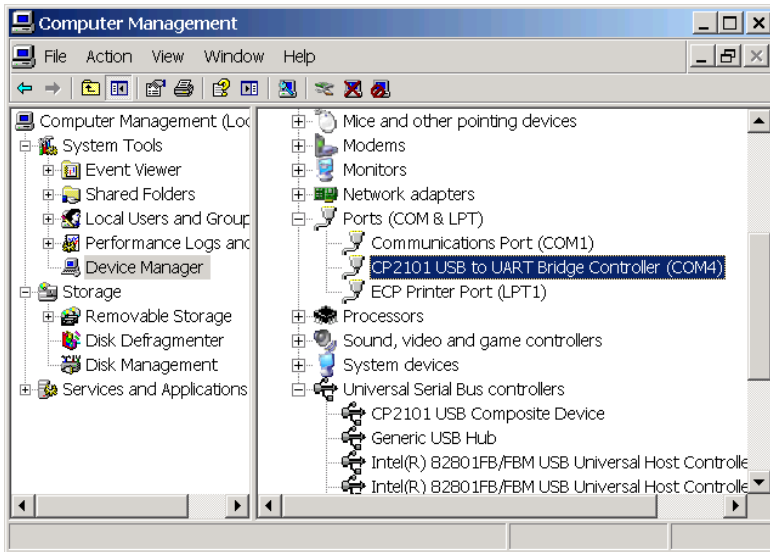
## INSTALLATION

Insert CD into the CD-ROM and double click setup.exe. Follow installation wizard to complete the setup. The short cut will be place on the desktop to start the application.

USB driver is required and is not automatically installed. Windows will attempt to locate the driver via Windows Update function or you can select the drivers included on the software CD. The driver will be installed on the COM port selected by Windows.

**PORT CHECK**

- From the desktop select “My Computer”.
- Right click and select “Manage” to open Computer Management Window.
- Select “Device Management” and expand Ports section.
- COM4 is assigned in example below. Select the same port (COM4) when connecting software to the spectrophotometer.
- Default Setting for Baud Rate is 9600.



**ESTABLISHING CONNECTION**

Connect spectrophotometer to PC using USB cord included with the software package.

On the spectrophotometer select option 5: Connect to PC and press Enter.





LCD will display Connecting to PC

Double click K3 Analyst icon on the desktop. If the application does not connect to the spectrophotometer automatically check the port setting of the application by selecting UV-Photometer – Com Hub Setup menu option. Make sure it matches Windows COM port settings.
























UV-

When Connected the LCD Display will read Controlled by PC and the information bar of the application will read Connected.

**ICONS AND FUNCTION**


| Function | ICON  | Action            |
|----------|---|-------------------|
| Open     |  | Open file         |
| Save     |  | Save current data |
| Print    |  | Print report      |
| Connect  |  | Connect to PC     |

### K3 Analyst Software

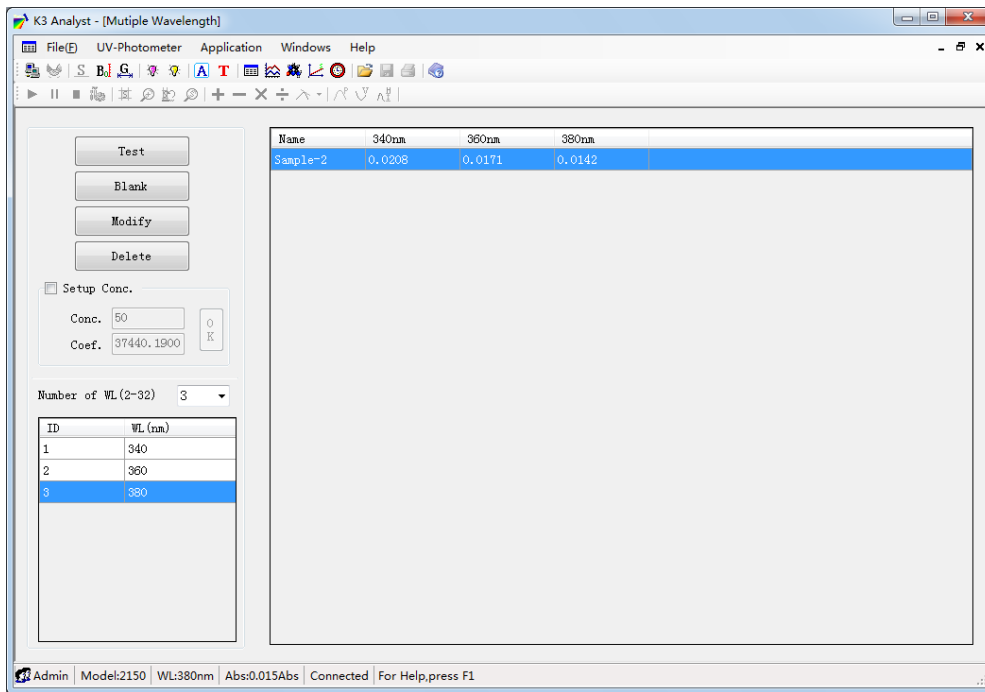
|                     |   |                              |
|---------------------|---|------------------------------|
| Port Setup          |    | Setup Port for PC connection |
| Halogen On          |    | Turn on Halogen lamp         |
| Deuterium On        |    | Turn on Deuterium lamp       |
| Multi-wavelength    |    | Multiple wavelengths test    |
| Scan                |    | Wavelength scanning          |
| Standard Curve      |    | Standard curve test          |
| DNA/Protein         |    | DNA/Protein test             |
| Kinetics(Time Scan) |    | Kinetics test(Time scan)     |
| Start               |    | Start (Scan)                 |
| Pause               |    | Pause (Scan)                 |
| Stop                |   | Stop (Scan)                  |
| 0A/100%             |  | Blanking                     |
| Scan Setup          |  | Set Scan parameters          |
| Display Settings    |  | Change X-Y screen settings   |
| Peak                |  | Show peak(s)                 |
| Valley              |  | Show valley(s)               |
| Zoom                |  | Zoom in                      |
| Back                |  | Back to last screen          |
| Manual Search       |  | Search peak(s) manually      |
| %T Mode             |  | Display transmittance(%T)    |
| Abs Mode            |  | Display absorbance (A)       |
| WL Setup            |  | Setup wavelength             |
| Threshold           |  | Setup Peak/Valley threshold  |

## OPERATION

### SINGLE OR MULTIPLE WAVELENGTHS TEST

From Application menu select Multiple Wavelength Function or simple click  icon.

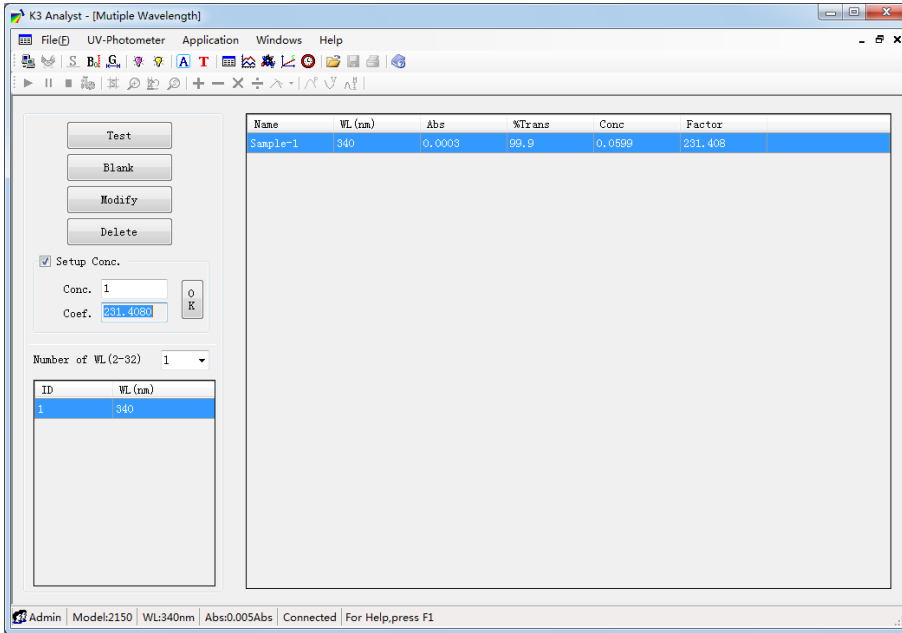
1. Select or enter the number of wavelengths (WL). Max number is 32.
2. Enter WL desired by clicking the WL Cell.
3. Select the test mode A for absorbance or %T for transmittance.
4. Insert the blank solution into the cell holder and click Blank button to set blank
5. Insert the first sample into the cell holder. Click Test button to run the test. The test results will be displayed as shown below. You can double click on the sample name to rename it.
6. Repeat step 4 for the next sample and continue on.
7. To delete any test highlight the test and click "Delete".



### Concentration Measurement with One Standard

1. Check "Setup Conc." box.
2. Enter the value of the Standard into "Conc." cell.
3. Insert the blank solution and click "Blank" button to blank.
4. Click "OK" and follow the pop-up instruction to measure the Standard.
5. Insert unknown sample into the cell holder. Click "Test" to start measure the sample.
6. Repeat step 5 for the next sample as necessary.

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### Re-measure Sample

To re-measure certain sample highlight that sample's test result data on the table and click "Modify" to re measure the sample.

### Delete Sample Test Result

To delete certain sample test result highlight the sample's test result data on the table and click "Delete" to delete the test result.

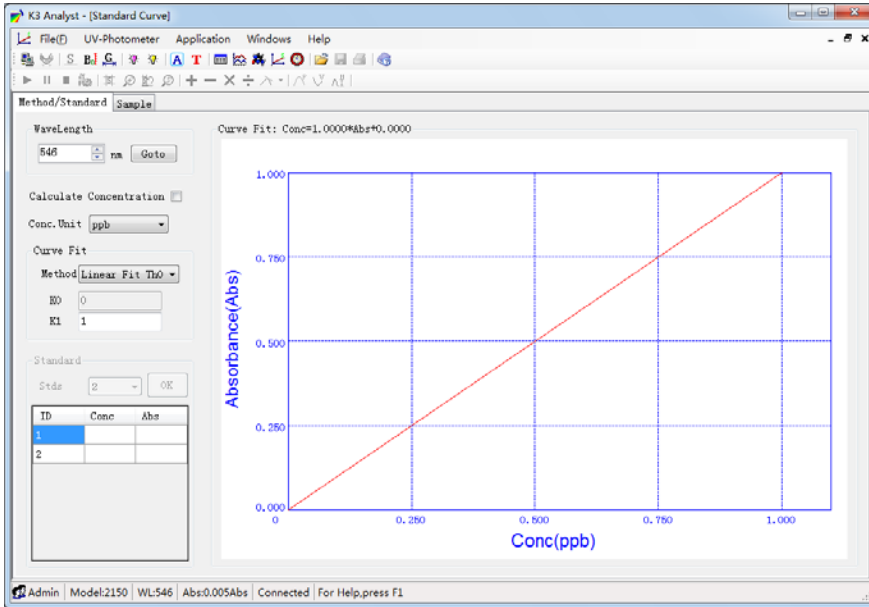
## STANDARD CURVE

Click  on the screen or select Standard Curve from Application menu  
Enter desired WL and click Go To button  
Select the concentration unit from the "Conc. Unit" drop down list.  
Choose type of method: Linear Fit Th0 or Linear Fit

### Establishis Standard Curve with Known Factors

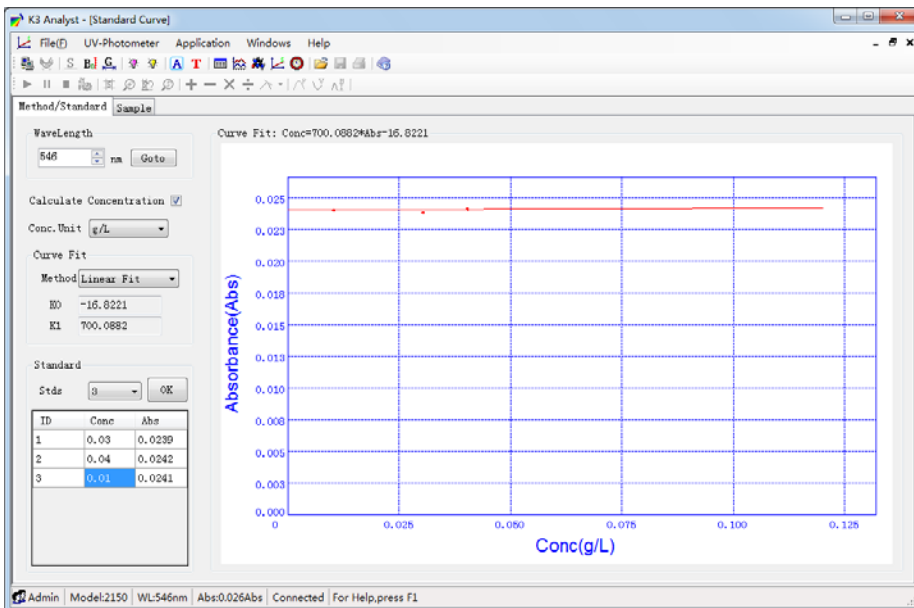
1. Enter the value K0 (intercept) and the slope value K1
2. Click OK to establish the curve  $\text{Conc.} = K1 * \text{Abs} + K0$

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### Establish Standard Curve with Standards

1. Check Calculate Concentration Box.
2. Select the number of standards from the “Stds” drop down list.
3. Enter the concentration of each standard in the “Conc” cell and Click OK.
4. Insert Blanking solution and blank the instrument.
5. Measure Abs of all standards as entered. The Abs value of each standard will be automatically entered into the Abs cell next to the standard.
6. The curve equation will be displayed on the screen.

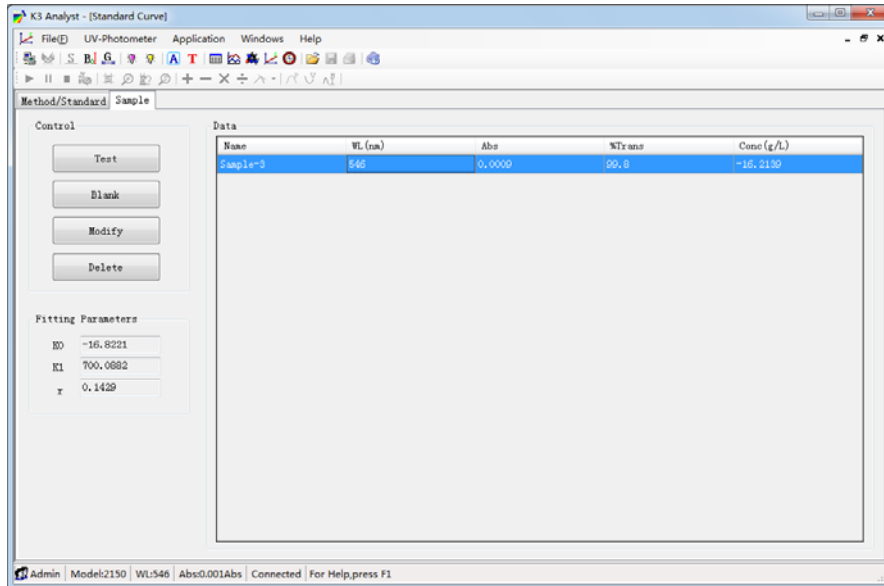


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### Measure unknown samples with standard curves

After the standard curve is established click “sample” to start sample test:

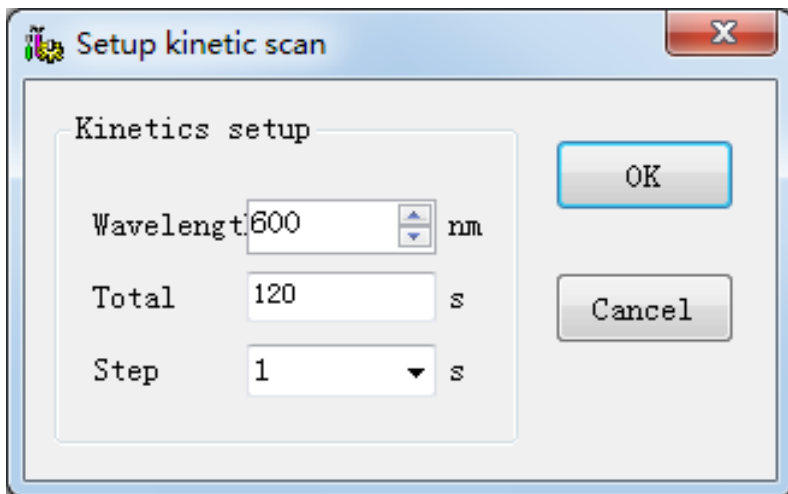
1. Insert blanking reagent into the cell holder. Click “Blank” to set blank.
2. Insert sample into the cell holder and click “TEST” to test the sample
3. You may name or rename the sample in the test data table.
4. Repeat the above to complete the next sample(s).




## KINETICS

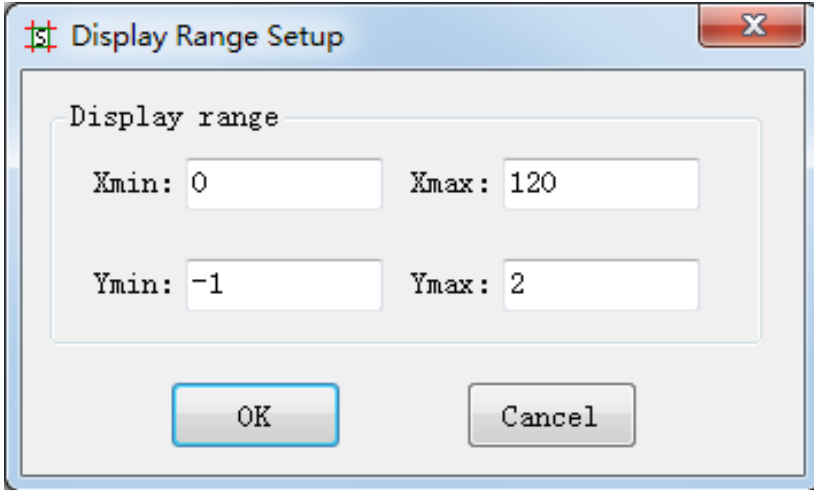
Click  or choose Kinetics Application menu.

Click  Setup kinetics Test Parameters. Select Wavelengths, enter Time ( sec) and Step ( sec)






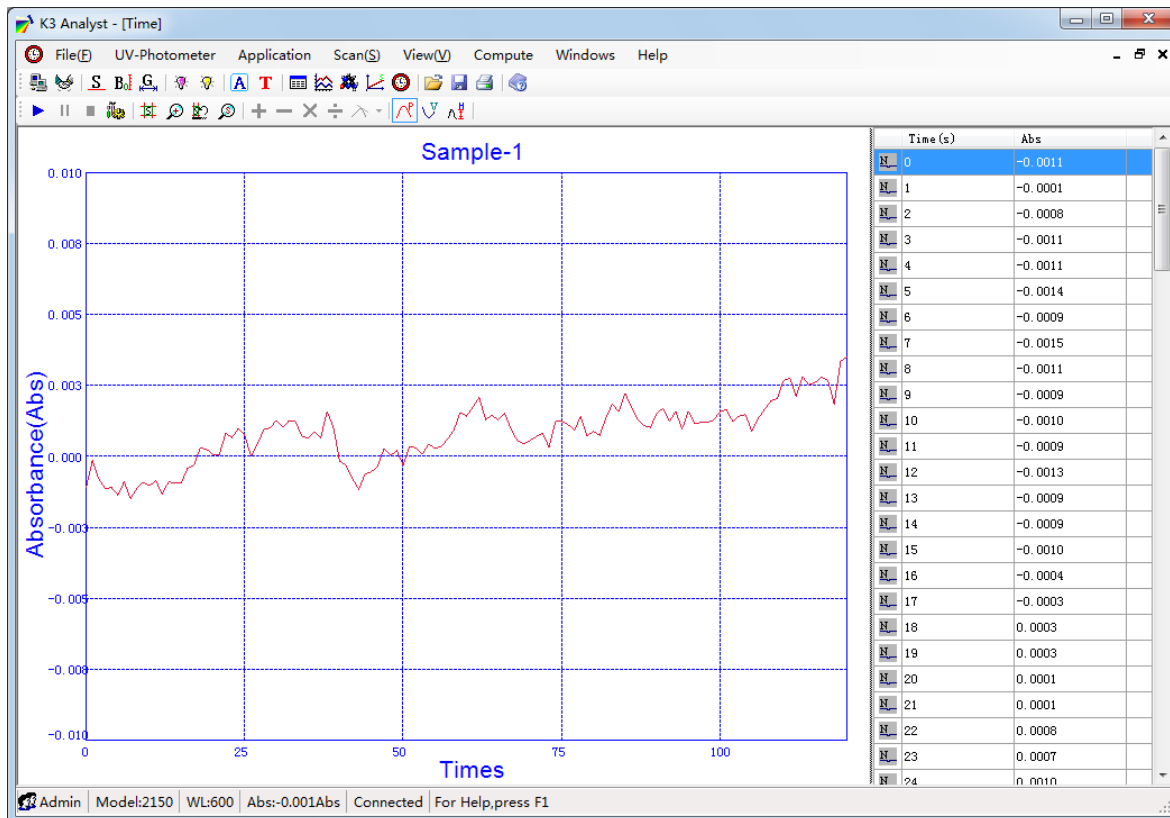


Click  to setup the display range. Click OK to confirm.




### Run Kinetics test

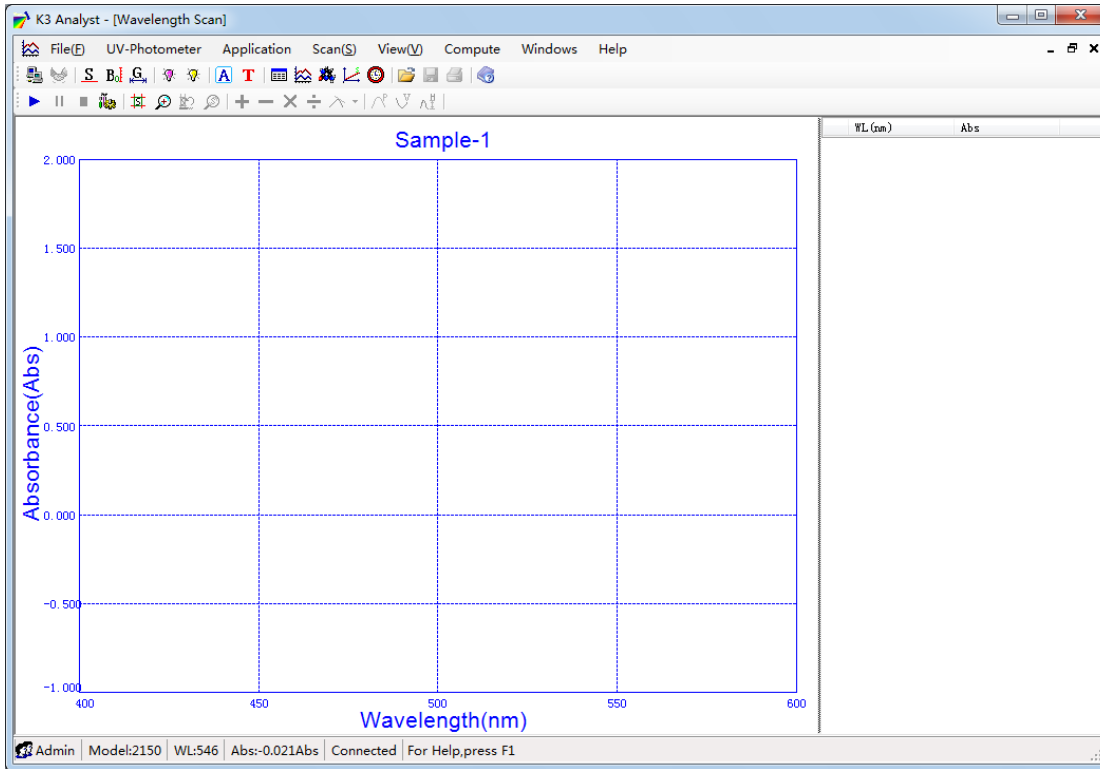
1. Insert the blank into the cell holder and set blank.
2. Insert sample in the cell holder. Click  to start time scan measuring the Absorbance value at each time interval. Click  to pause the test. Click  will stop the test.
3. The test result (Abs vs Time) graph will display and the Abs vs Time data is shown on the right




## SCANNING

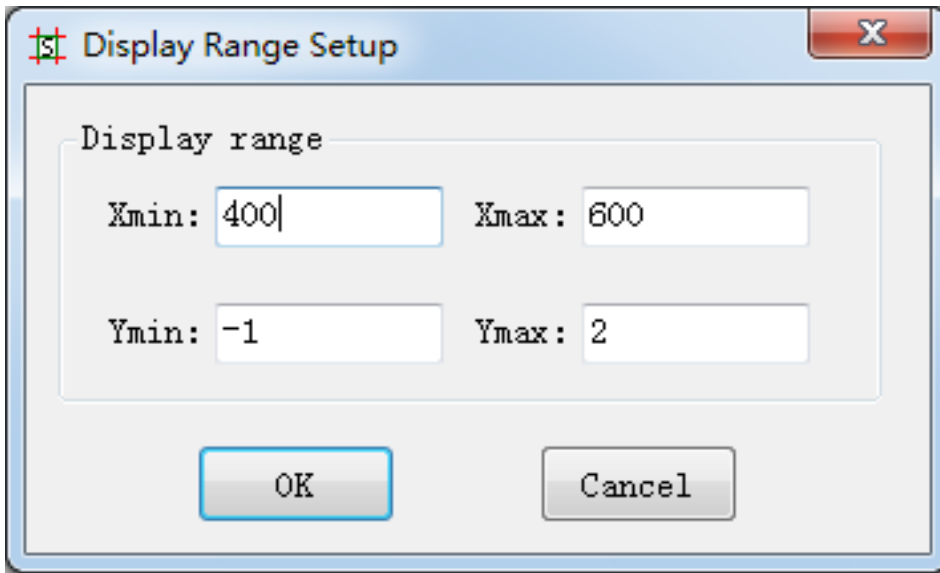



Click  or select wavelength scan from the Application menu






Click  to setup scanning parameters. Click OK to confirm.

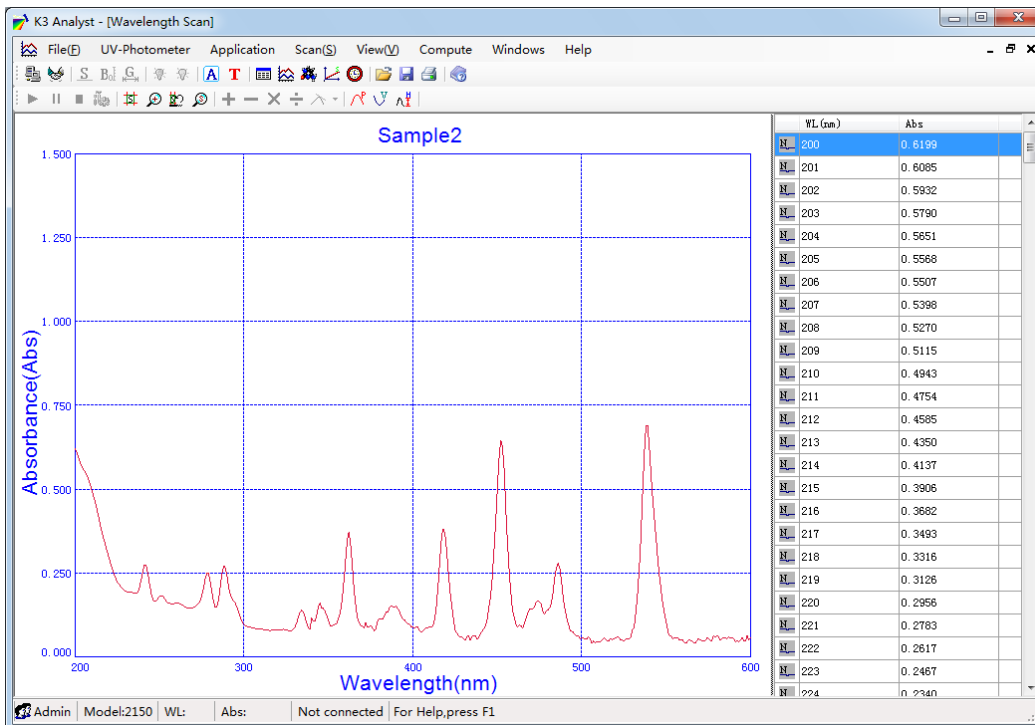
Click  to setup the display range on the screen. Click OK to confirm.



Insert blank reference into the cell holder and click  to blank at the entire wavelength range.

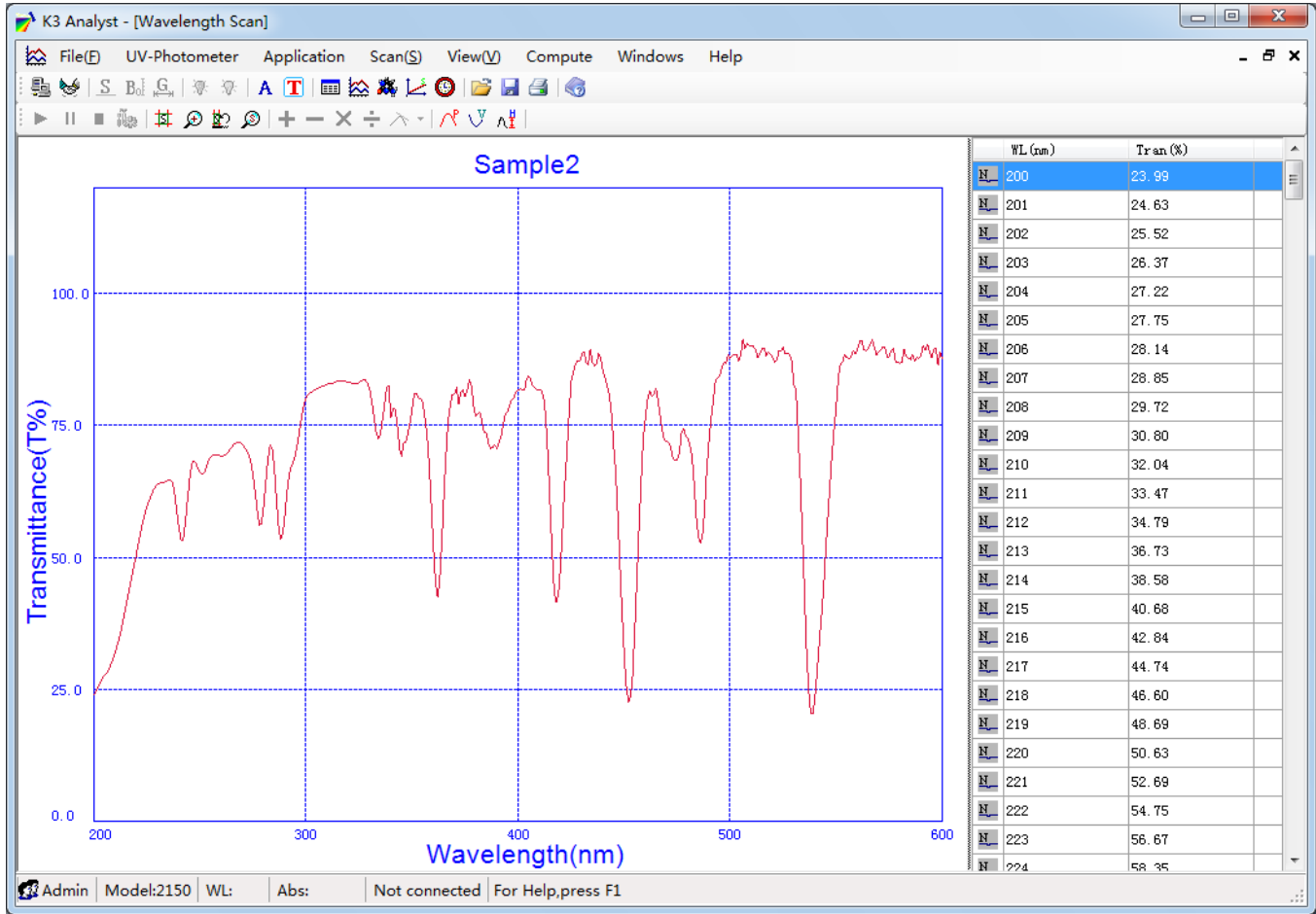
Click  to start scanning. Click  to pause the test. Click  to stop scanning.

The scanning result (scanning curve) display on the screen with scanning data table on the right.







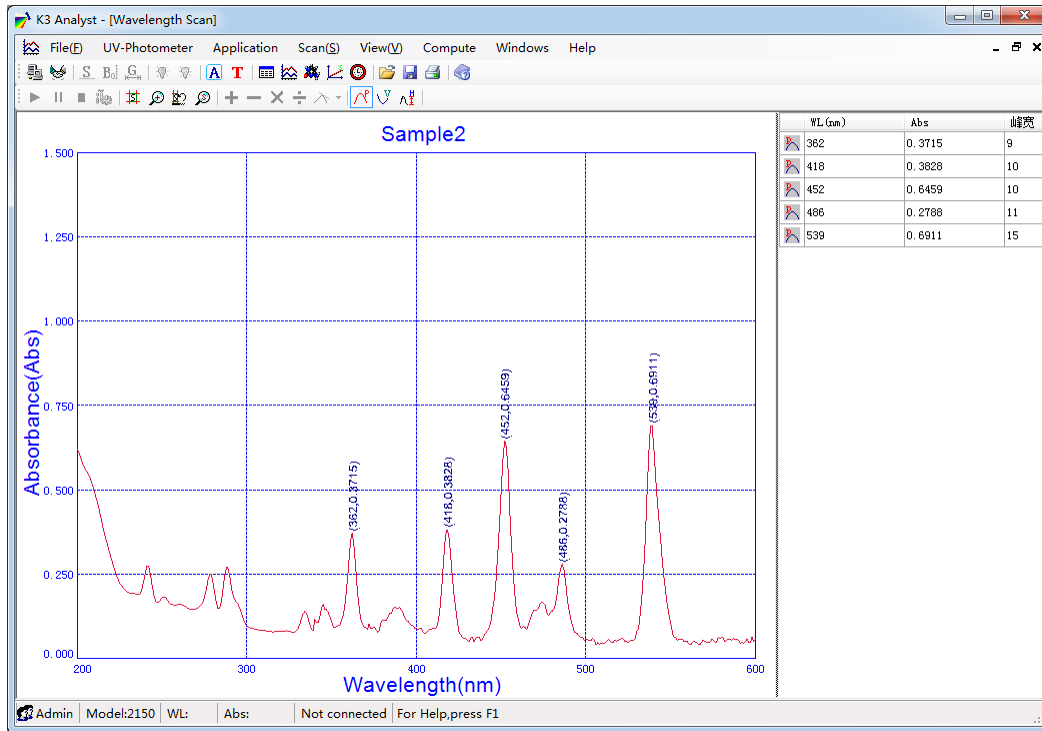
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Switch display mode by click on **A** or **T**

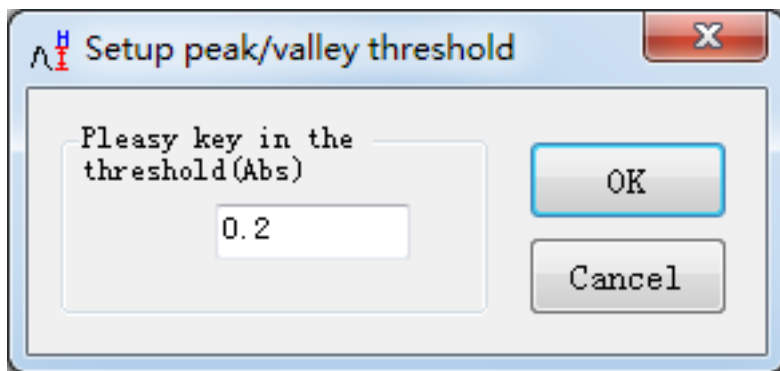


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Display peaks or valleys by clicking on  or . The peak or valley values will be marked on the curve and the data will display on the right table. Click  or  again to undo.



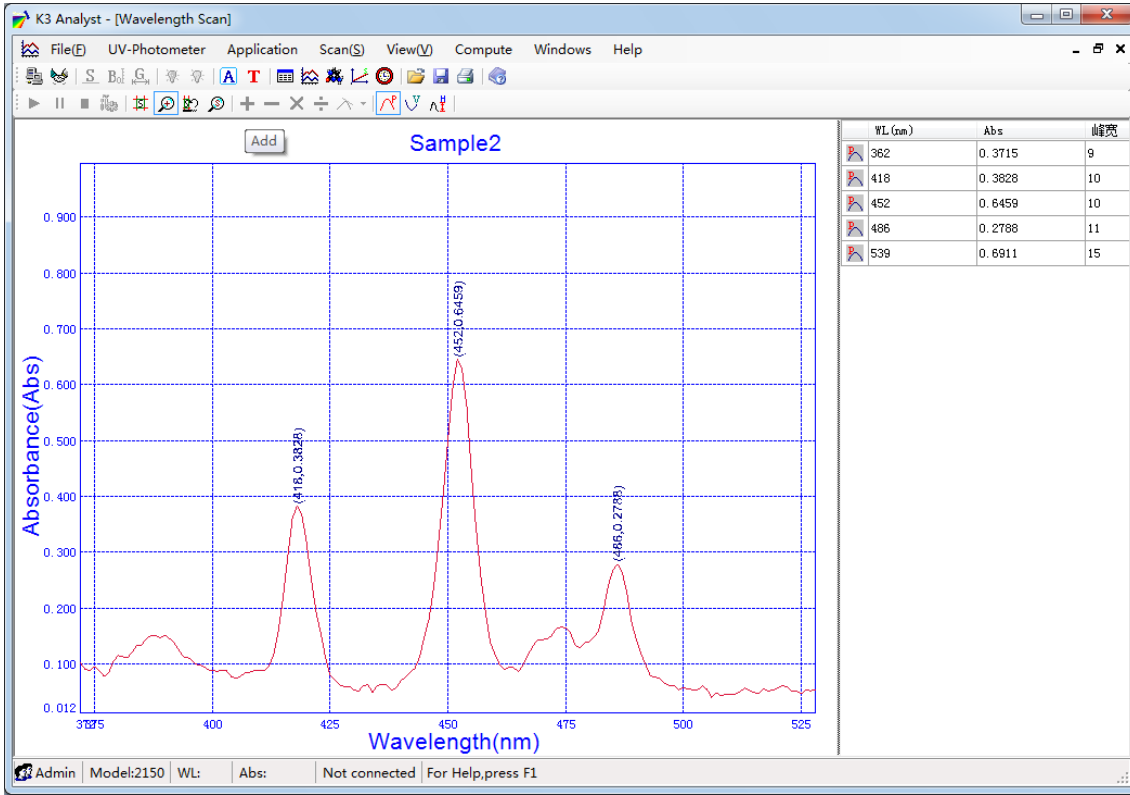
Set the peak height threshold by clicking . Only peaks equal or higher will be marked and data displayed.




### Zoom

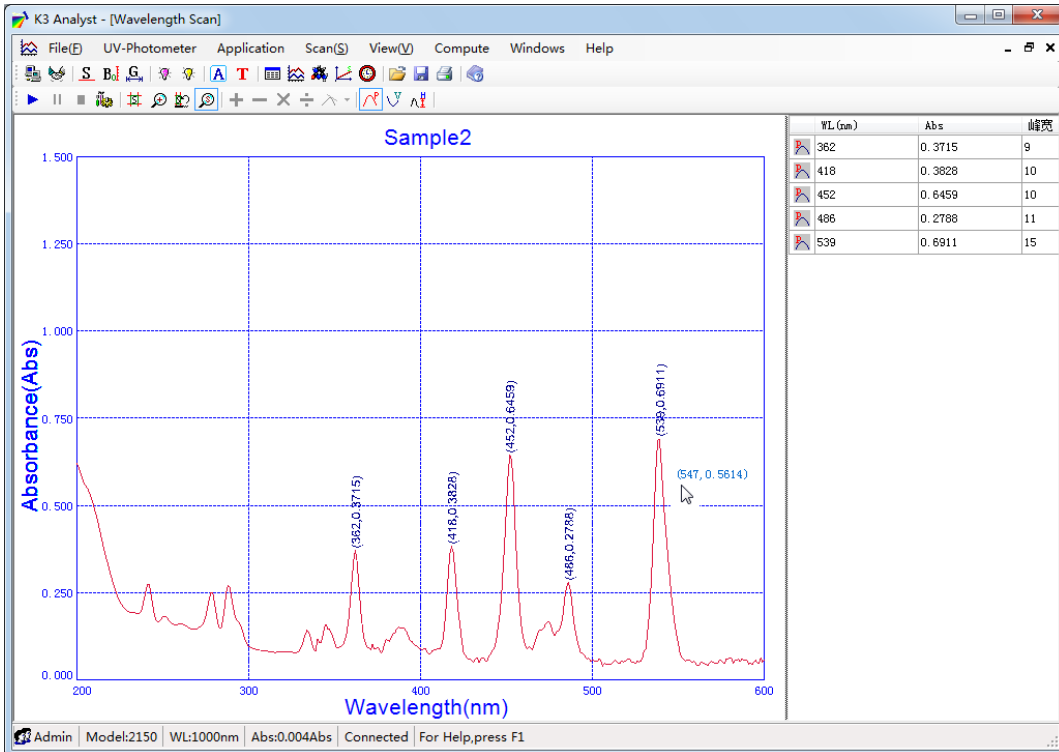
Click  to set the curve at zoom in status. Left click, hold and drag the mouse on the area of interest and the release. Click  to return to the original.

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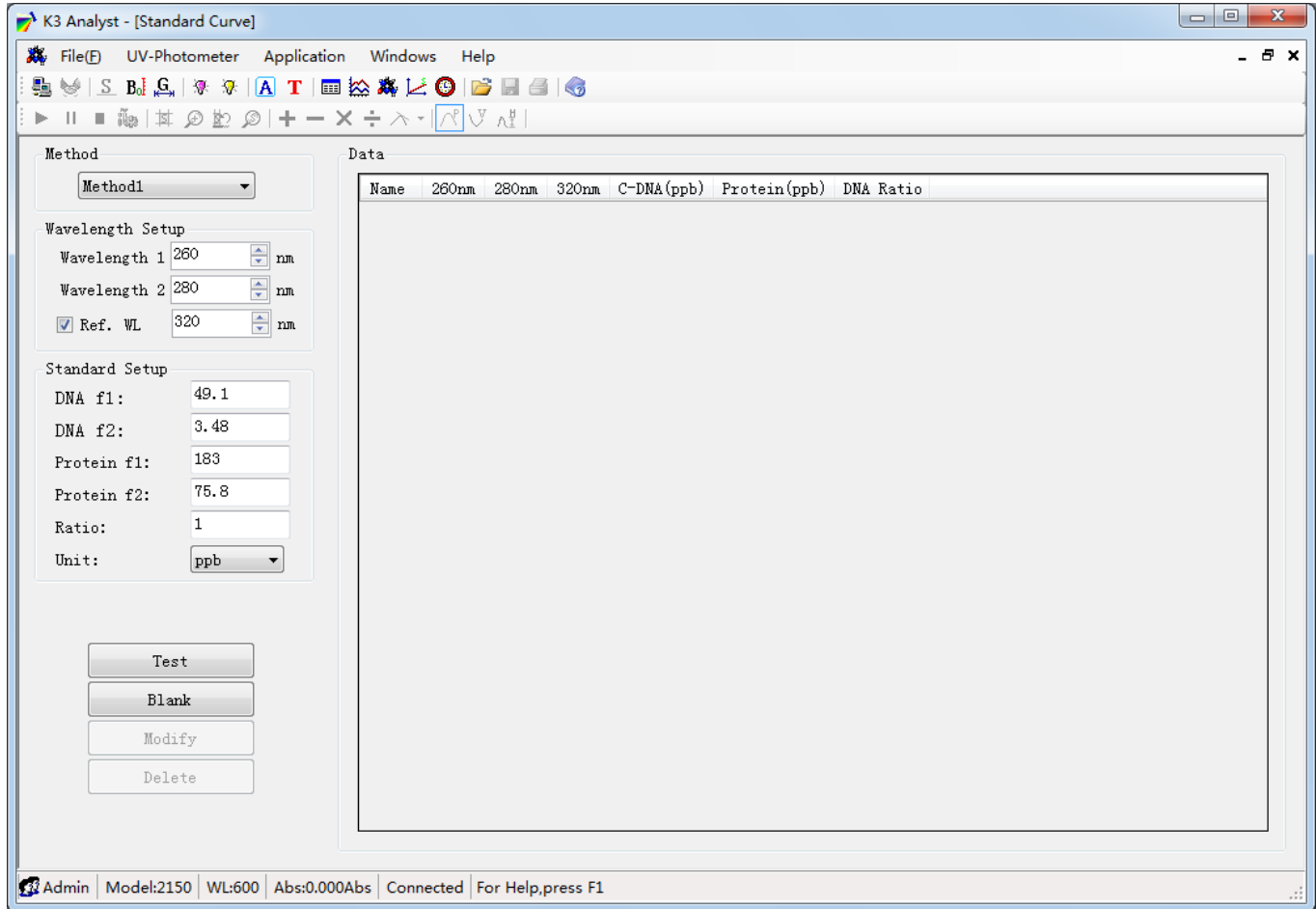
### Search peaks

Click  then move the mouse to a peak to show the peak value. Click to mark the peak. Right click on the curve area to undo.



**RNA/DNA/PROTEIN TEST**

Click  or select RNA/DNA/Protein test from the Application menu



**Parameter Setup and Test**

There are three preset method to choose. You may define your own test parameters. After the parameters are set insert the reference into the cell holder and set blank. Insert the sample and click Test to start testing. The data will display in the data table.