

Operator Instruction Manual



Lovibond® OnShade Colour Software

Lovibond® Colour Measurement

403250 Version 1.1

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1. Introduction

1.1 Software description

The OnShade quality controller system supports the TR 520 and TR 500 spectrophotometers.

OnShade software can connect the spectrophotometer (instrument) to the PC through a USB cable or Bluetooth® if the instrument has Bluetooth functionality. OnShade Software controls the instrument to measure colour, modify the settings and manage the instrument's data. At the same time, it also makes a substantial expansion of the instrument's functionality to support various colour systems, illuminants, more complicated data management, colour detection and report generation. It is an efficient assistant for colour quality management.

1.2 Using Spectrophotometers

This manual covers how to use the OnShade Software once it is connected to a spectrophotometer.

This manual does not cover operating the spectrophotometer. Refer to the relevant spectrophotometer (TR 520 and TR 500) manuals for instructions on using the spectrophotometers with OnShade Colour Software.

1.3 System requirements

- Windows XP SP3, Windows 7, Windows 8, Windows 10. Windows 7 or above are recommended.
- Memory: >2G.
- Free disk space: >50MB for installation and operation.

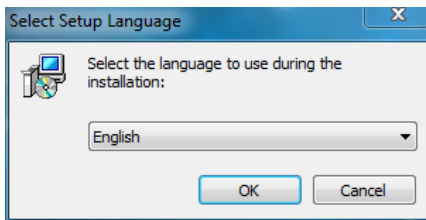
2. Installation

2.1 Installing Software

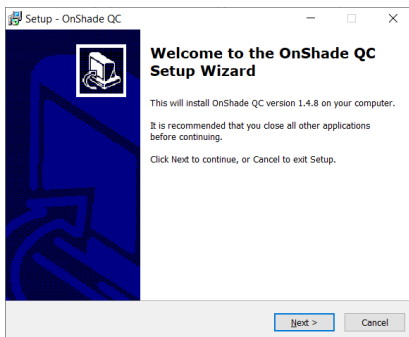
Insert the TR 520 / 500 Colour Management Control System (OnShade) installation USB key into a USB port in your computer. If the software does not load automatically, from the USB key, copy the software folder in a suitable location in your computer.

To install the software:

1. Click and load the software called OnShade QC.
2. Choose the required language (Figure 1) and click “OK”. This language will be the default installation language.



3. The OnShade QC Setup Wizard will appear as shown in Figure 2. Click “Next” to start installation.



4. Select the location in your computer that you want the installation files to be stored in.

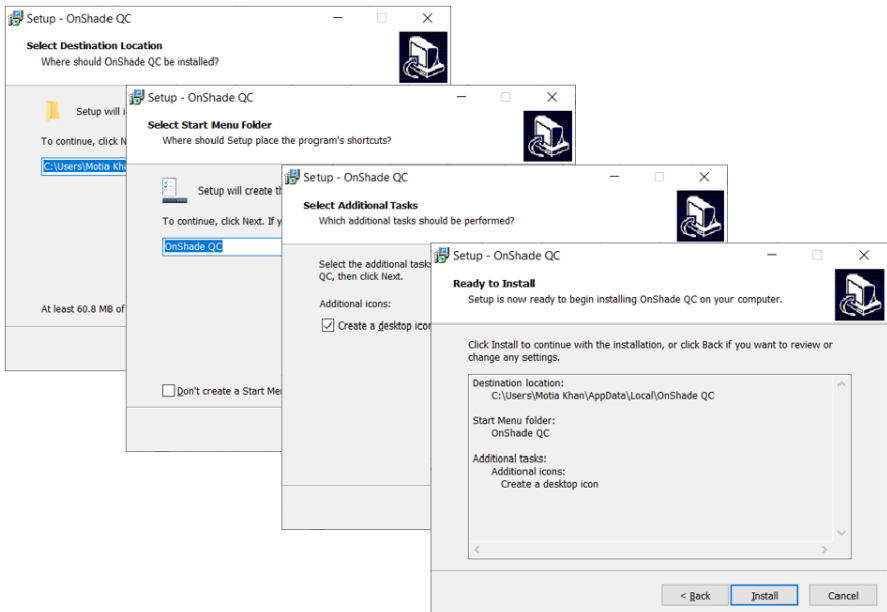
Note: Generally, it is advisable to use the default installation location. If you choose to change the location and your computer system is Windows 7-10, it is recommended that you install it in the system tray because the application will change the installation directory of the configuration file when it is running. If you have installed it in the system tray, you must have administrator rights. Otherwise, you will get a failed error message to change the configuration file.

5. Change the shortcut location if required and click “Next”.

Note: Unless you change the shortcut location, your computer’s default location will be selected automatically.

6. Select whether you want a shortcut on your desktop and click “Next”.

7. Click “Install” (Figure 3).



2.2 Instrument Communications Driver Installation

The instrument communications driver will be installed after the software installation.

2.2.1 32 Bit System

A 32-bit system will automatically install drivers after software installation.

2.2.2 64 Bit System

In a 64-bit system, the Device Driver Installation Wizard will load. To install the drivers, click “Next” (Figure 4). Once the driver has been installed, an “Installation finished” screen (Figure 5) will be displayed. Click “Finish” to complete the installation.

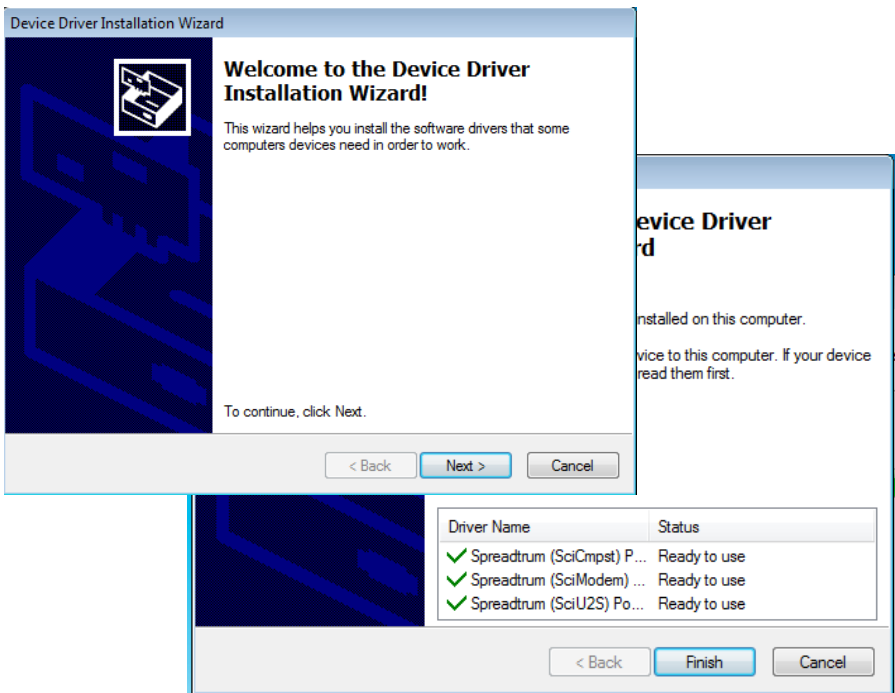
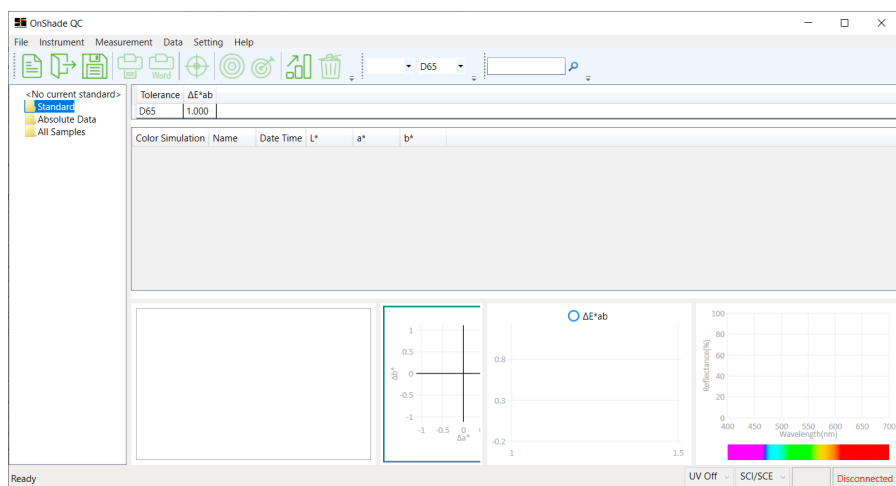


Figure 4: Install Driver (64-bit System)

Upon successful installation, you can open OnShade and will see the Main screen (Figure 5). See Section 3.1 for details on what each section of the screen displays.



Many of the functions will be disabled when you open OnShade after installation. The connection status will say "Disconnected". To enable all the functions, you need to connect a Spectrophotometer to OnShade. See Section 2.3 for instructions on connecting a spectrophotometer to a PC.

2.3 Connecting the Instrument to a PC

Before using the OnShade measurement, you must connect the Spectrophotometer (instrument) to a PC and then calibrate the black and white plate (see section 3.2).

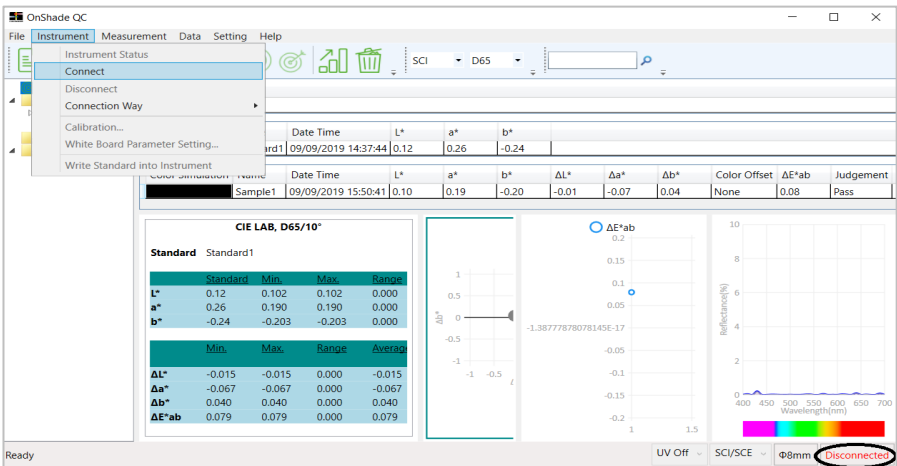
Note: If you want to use the instrument standalone without the PC software, refer to the instrument's user manual.

OnShade supports a USB data cable connection and a Bluetooth connection for those instruments that have Bluetooth functionality. The PC must also have a Bluetooth transceiver.

2.3.1 Cable Connection

Use a USB cable to connect the instrument to the computer. If the software is already open, the instrument will automatically be detected and connected; otherwise it will automatically connect to the instrument when the software is loaded. The status on the bottom right hand of the system should show as “Connected”.

If the status says “Disconnected”, you can manually click “Connect” under the “Instrument” menu.



If the connection still fails, the problem may be identified by doing the following:

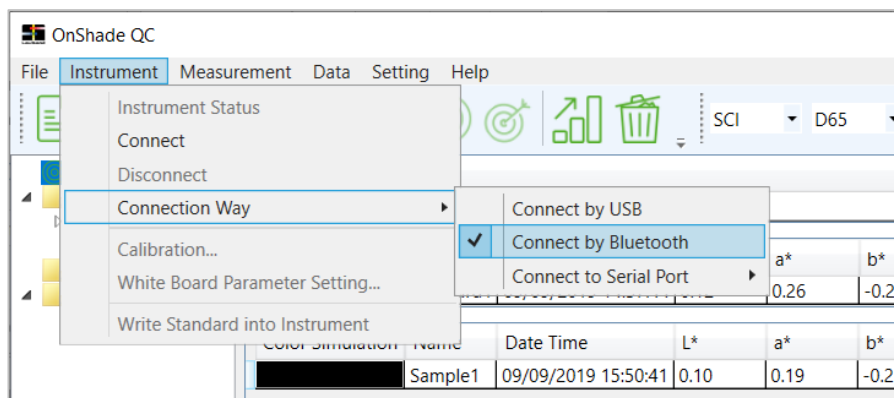
- Checking whether you selected “Connect by Bluetooth” as the connection method.
- Checking that the drivers have been properly installed.
 - You can open the Device Manager to see if there are “SCI USB2 Serial (COM3)” under “Port (COM and LPT)” (where “COM3” may also be “COM” plus other digits). If it is present, it indicates that the instrument is properly connected to the computer. Restart OnShade or click the “Instrument Disconnected” menu and then click “Instrument Connect” to try to connect the instrument again. If it is not present, unplug the cable and plug it in again. If the system prompts the “unknown device” or a question mark appears against the device manager, indicating that the driver is not properly installed, you need to reinstall the driver.
- Unplugging the cable, restarting the instrument and then reinserting the cable.
- Changing the computer.

If the above methods have not been able to solve the problem, please check if the cable or instrument connection port has a problem.

2.3.2 Bluetooth Connection

You can usually connect via Bluetooth by following these steps:

1. Make sure that the PC’s Bluetooth device is turned on.
2. Turn on the Bluetooth in the System Setting of the instrument (refer to the instrument’s user manual for instructions).
3. From the OnShade system menu select “Instrument”>“Connection Way”>“Connect by Bluetooth”. If this has already been selected, then click “Connect” (Figure 7).



- From the pop-up menu select the device i.e. the Lovibond instrument to connect and then click “OK”.

The Bluetooth device of the instrument is usually in the form of "Lovibond" plus the serial number of the instrument. If the serial number of the instrument is “960900”, then the Bluetooth name will be “Lovibond-SN960900”.

Note: It may take a while for the instrument to locate the Bluetooth device or connection may fail. You can wait for a while to establish connection, re-start OnShade, or turn off the instrument power switch and restart.

Cannot find Bluetooth Device

If the instrument cannot find the instrument’s Bluetooth device, check the bottom right corner of the desktop whether there is a Bluetooth icon. If it does not appear, you will need to install the Bluetooth driver.

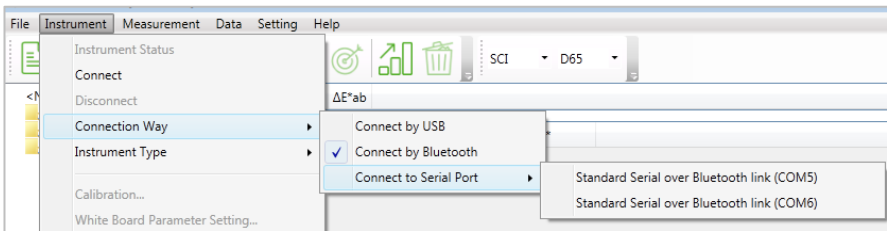
If you have installed the Bluetooth device driver, but OnShade can’t find any Bluetooth device, you can Mirror the Bluetooth device to a serial interface and then connect via the serial port. See Section 2.3.3.

2.3.3 Mapping the Bluetooth Device to a Serial Device

If you are unable to find the instrument via Bluetooth from OnShade you can consider mirroring the Bluetooth device to a serial device and then connecting. To do this, follow the steps as below:

1. Right-click the Bluetooth icon in the bottom right hand corner of the desktop, open the context menu, and click “Add Bluetooth Device”. If there are sub-menus under “Add Bluetooth Device”, select “All Types” (or similar).
2. In the “Add Device” window, select the Bluetooth device for the instrument and then click “Next”.
3. In the “Pairing Options” window, select “Input Pairing Code for Device” and enter the pairing code. The default pairing code is 1234 or 0000. Click “Next” to complete the addition of the device.
4. After the addition is complete, the instrument's Bluetooth device will be mapped to a serial device, then in the OnShade “Instrument” menu under the “Connect to Serial Port” (Figure 8), select the corresponding serial port.

The instrument's Bluetooth device is mapped to two or three serial ports. Only one can be connected. Try to connect one by one.



3. Operation Instructions

3.1 Main Interface Introduction

When you open the OnShade software, the main user interface is as displayed in Figure 9.

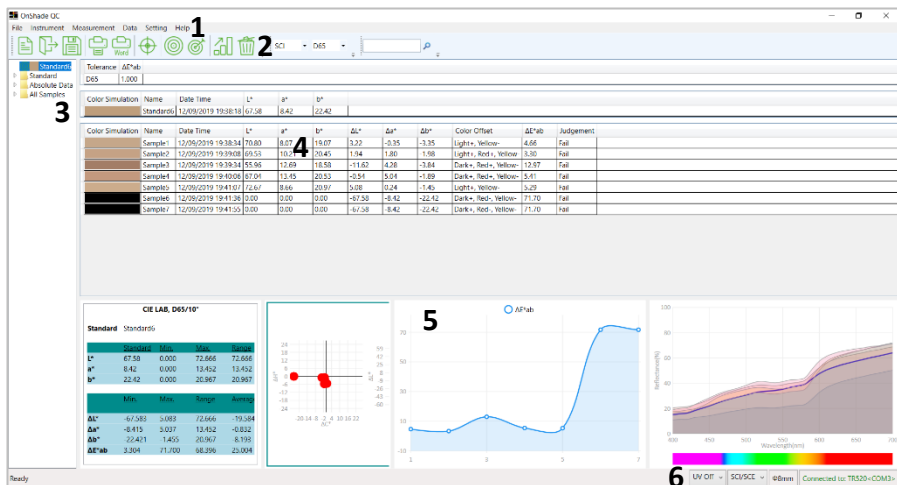
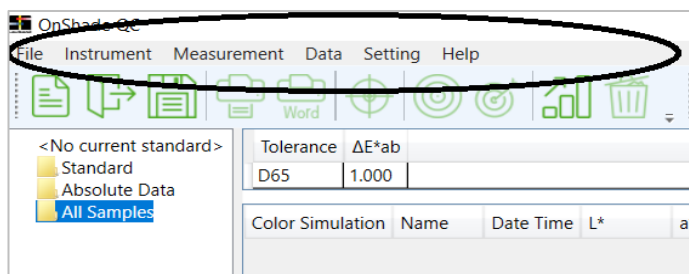


Figure 9: Main user interface and its functions

The main interface includes the following:

- Menu (1)
- Toolbar (2)
- Sample Tree (3)
- Data Sheet (4)
- Charts (5)
- Status Bar (6)

3.1.1 Menu Introduction



The main menu of the software includes the following:

Menu option	Description
File	This mainly includes the functions for file management including create a new file, open file, print etc.
Instrument	This is mainly used for calibration and connection systems.
Measurement	This is mainly used to perform measurements – standard measurement and sample measurement.
Data	This allows you to rename, modify part numbers., delete data, auto-name Switch, configure naming rules., export/import data and manage instrument data.
Setting	This mainly gives access to the language setting functions, standard observe angle setting light sources setting and display setting, tolerance setting and report settings.
Help	User manual.

Table 1: OnShade Menu options

3.1.2 Toolbar introduction

The toolbar includes a selection of functionalities from the menu such as New, Open, Save, Print, Standard Measurement, Sample Measurement and Delete, as well as SCI / SCE display switching and light source display switching.



Figure 11: OnShade toolbar

3.1.3 Sample Tree

The samples tree on the left of the screen is a classification of all sample records. The top list is the current standard name, followed by the standard group.

The standard group includes all standard records as Figure 12 shows. Each standard record is followed by the associated sample record. “Absolute Data” group is followed by the sample record which is not associated with standard. “All Samples” includes all sample records, including both associated and unassociated standards.

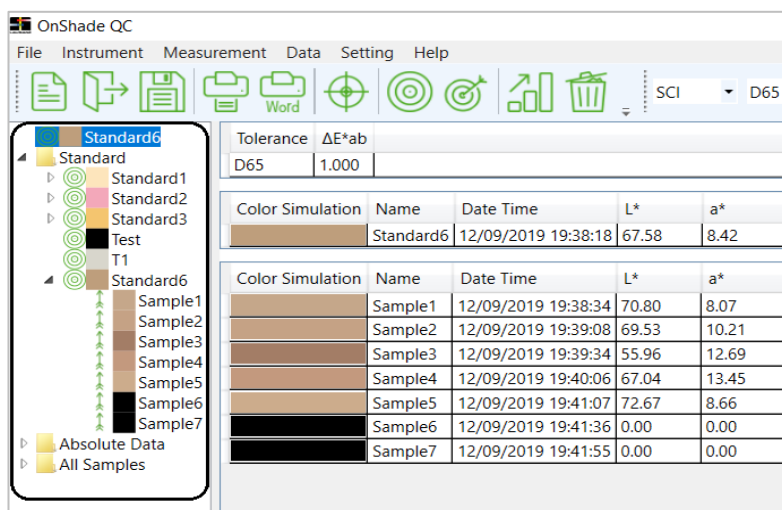


Figure 12: OnShade Sample Tree

3.1.4 Data Sheet

The top of the Data sheet is the Tolerance sheet, showing the current tolerance setting.

The Tolerance sheet is followed by Standard sheet. The Standard sheet is followed by Sample sheet as shown in Figure 13.

OnShade QC

File Instrument Measurement Data Setting Help

SCI D65

Tolerance ΔE^*ab

D65 1.000

Color Simulation	Name	Date Time	L*	a*	b*
Standard6	Standard6	12/09/2019 19:38:18	67.58	8.42	22.42

Color Simulation	Name	Date Time	L*	a*	b*	ΔL^*	Δa^*	Δb^*
Sample1	Sample1	12/09/2019 19:38:34	70.80	8.07	19.07	3.22	-0.35	-3.35
Sample2	Sample2	12/09/2019 19:39:08	69.53	10.21	20.45	1.94	1.80	-1.98
Sample3	Sample3	12/09/2019 19:39:34	55.96	12.69	18.58	-11.62	4.28	-3.84
Sample4	Sample4	12/09/2019 19:40:06	67.04	13.45	20.53	-0.54	5.04	-1.89
Sample5	Sample5	12/09/2019 19:41:07	72.67	8.66	20.97	5.08	0.24	-1.45
Sample6	Sample6	12/09/2019 19:41:36	0.00	0.00	0.00	-67.58	-8.42	-22.42
Sample7	Sample7	12/09/2019 19:41:55	0.00	0.00	0.00	-67.58	-8.42	-22.42

Figure 13: OnShade Data Sheet

When the “Standard” group is selected from the sample tree on the left, all the samples will be displayed in Standard sheet on the right, and the Sample Sheet will be hidden.

When a standard under the “Standard” group is selected, the standard will be displayed on the right side of the Standard sheet and all associated sample records will be displayed in the Sample sheet.

When the “Absolute Data” or “All Samples” group are selected in the Standard list, the Standard sheet on the right side will be hidden and the sample records under the group will be displayed in the Sample sheet.

3.1.5 Charts

The bottom of the screen (Figure 14) from left to right, includes:

- Report shows the statistics of all the samples recorded under the standard.
- Colour Difference Chart shows the difference of all the samples.
- Colour Difference Trend Graph - shows the trend of the colour difference of all the samples.
- Reflectance Graph shows the reflectance of the standard and all the associated samples.

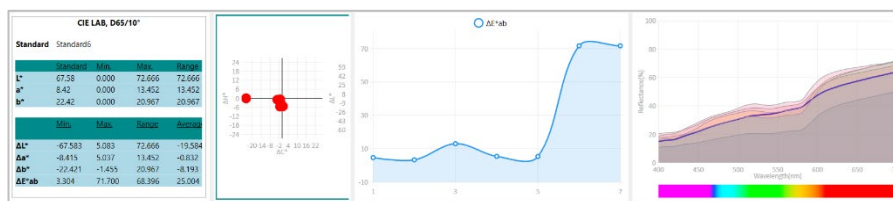


Figure 14: OnShade Charts

3.1.6 Status bar

The Status bar (Figure 15) from right to left shows:

- Instrument Connection Status
- Instrument Measurement Aperture
- Instrument Metering Mode
- Instrument UV Switch

For instruments that support switching metering mode and UV, the metering mode can be selected using SCI, SCE, or both the SCI and SCE modes. The UV switch can be used to turn on/off UV during measurement.

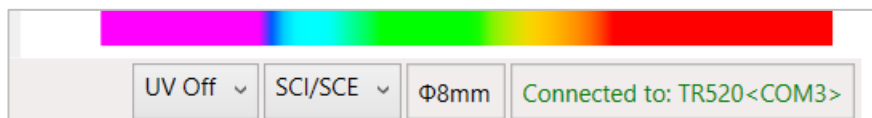



Figure 15: OnShade Status Bar

3.2 Black/White Calibration

In order to ensure the accuracy of the instrument, it is recommended that the instrument is re-calibrated from time to time or when the external environment (such as temperature and humidity) changes greatly. It is also recommended that the instrument is re-calibrated when connecting to OnShade.

Before calibration, make sure that the aperture of the instrument and the whiteboard serial are the same as those of the instrument. Otherwise, the calibration result will be misaligned.

To calibrate follow the steps below:

1. From the menu select “Instrument” and then “Calibration” or click the Calibration icon  from the tool bar. A window will appear (Figure 16).

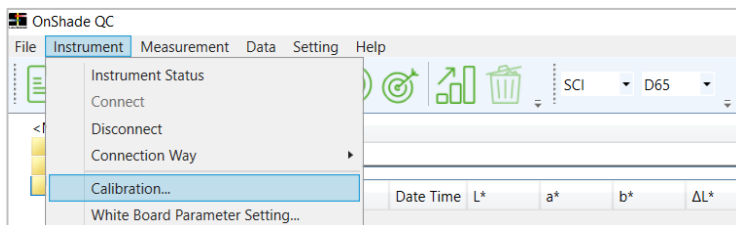


Figure 16: OnShade menu – Instrument Calibration

2. Confirm the current measurement aperture and whiteboard number and then click “OK” to proceed to whiteboard calibration.

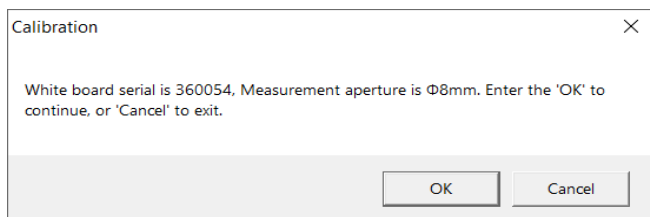


Figure 17: White calibration

3. You will see a prompt to align the measuring aperture with the whiteboard of the calibration box. Ensure alignment and click "OK" to continue. White calibration will be repeated three times
4. Once the white calibration is successful, a dialogue box will appear. Align the measuring aperture with the blackboard click "OK" to continue. The black calibration is also repeated three times.
5. On successful calibration of the black, the calibration cycle is completed and you will see confirmation on screen. Click "OK" to continue.

3.3 Measuring

After the black and white calibration are completed, a measurement can be made. Measurements are classified as **standard** and **sample**.

Sample measurement is similar to standard measurement but it displays the colour difference between the current standard and the measured sample.

The results of the standard measurements are stored in the "Standard" group in the sample tree and the results of the sample measurements are stored under the "Current Standard". Results will be stored in the "Absolute Data" group if there is no current standard.

Figure 18 shows the current standard set as Standard 1 and within the current standard, there is one sample, named Sample 1.

The screenshot shows the OnShade QC software interface. The left sidebar displays a tree structure with the following items: Standard1 (selected), Standard, Standard1 (with a target icon), Sample1 (with a target icon), Standard2 (with a target icon), Sample1 (with a target icon), Absolute Data, All Samples, Sample1 (with a target icon), and Sample1 (with a target icon). The main window displays the following data:

Tolerance		ΔE^*ab	
D65	1.000		


Color Simulation	Name	Date Time	L*	a*	b*
	Standard1	12/09/2019 09:14:36	92.29	3.88	23.05

Color Simulation	Name	Date Time	L*	a*	b*
	Sample1	12/09/2019 09:15:34	88.45	5.74	24.63

Figure 18: Standards and samples

3.3.1 Standard Measurement

To perform standard measurement using OnShade:

1. Align the measuring aperture tightly with the standard sample and keep the instrument stable during measurements.
2. From the menu select “Measurement”>“Measure Standard” (Figure 19) or click the Standard Measure icon  from the toolbar or use the shortcut key F5.

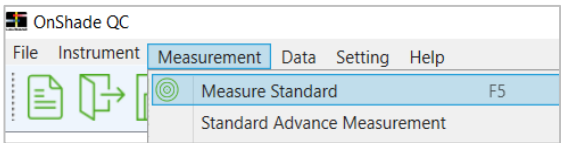


Figure 19: Measure Standard menu

The results of the measurements are stored in the Standard section.

Standard Advance Measurement

The “Standard Advance Measurement” option shown in Figure 20 can be used to tailor the settings before taking measurements. Once you have tailored the settings, click “Measure” (Figure 20) to take a measurement.

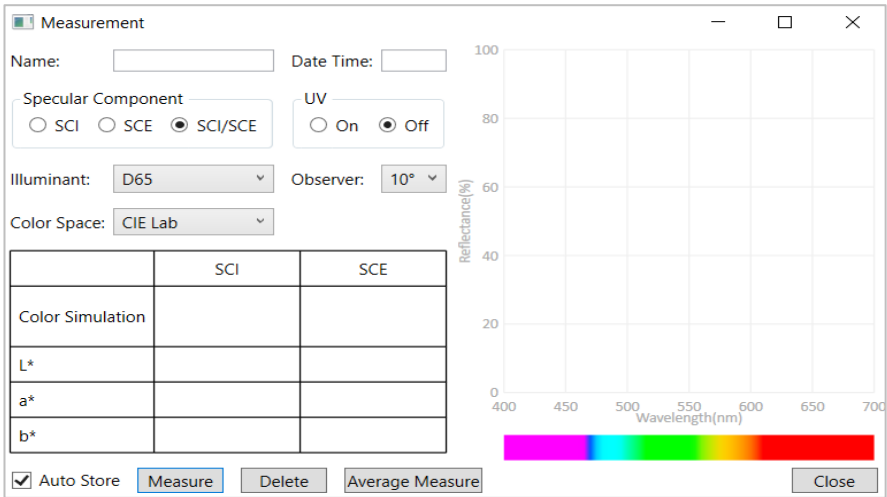


Figure 20: Standard advance measurement settings


After you take measurements, the standard will be listed in the Standard group if the “Auto Store” option is checked.

You can delete the standard by clicking the “Delete” option. The “Average Measure” option will calculate the average of the standards.

Note: After taking measurements using the Standard Advance Measurement option, you can change the settings of that standard and click “Measure” again to create another standard.

3.3.2 Sample Measurement

To measure a sample using OnShade:

1. Align the measuring aperture with the sample to be measured and keep the instrument stable.
2. From the menu select “Measurement”>“Measure Sample” (Figure 21) or click the Sample Measurement icon  from the toolbar or use the shortcut key Space.

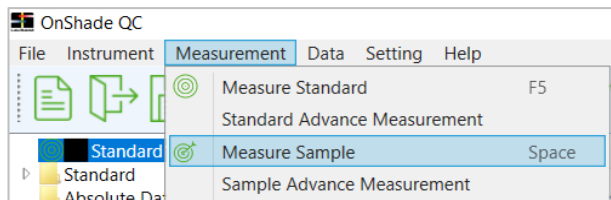


Figure 21: Measure Sample menu

The results of the sample measurements are stored under the current standard.

Sample Advance Measurements

The “Sample Advance Measurement” option shown in Figure 21 can be used to tailor the settings before taking sample measurements. Once you have tailored the settings, click “Measure” (Figure 22) to take a measurement.

Measurement

Name: Date Time:

Specular Component: ☐ SCI ☐ SCE ☒ SCI/SCE

UV: ☐ On ☒ Off

Illuminant: Observer:

Color Space:

	SCI	SCE
Color Simulation		
L*		
a*		
b*		

☒ Auto Store

Graph: Reflectance(%) vs Wavelength(nm) (400-700 nm). A color bar is shown below the graph.

Figure 22: Sample advance measurement settings

After you take measurements, the standard will be listed in the Standard group if the “Auto Store” option is checked.

You can delete the standard by clicking the “Delete” option. You can delete the standard by clicking the “Delete” option. The “Average Measure” option will calculate the average of the samples.

Note: After taking measurements using the Sample Advance Measurement option, you can change the settings of that sample and click “Measure” again to create another sample under the Current Standard.

3.3.3 Turn off UV

For instruments that support UV and SCI/SCE switching, you can select to turn off UV in the status bar at the bottom of the screen and use a different metering mode as shown in Figure 23.

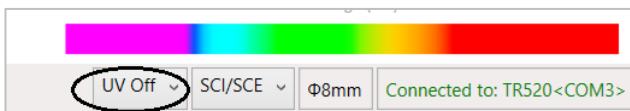


Figure 23: Status Bar

3.4 Set Standard

You can set a sample as a standard by selecting the sample, right-clicking and then selecting “Set as Current Standard” (Figure 24). The sample will then move to the Standard group.

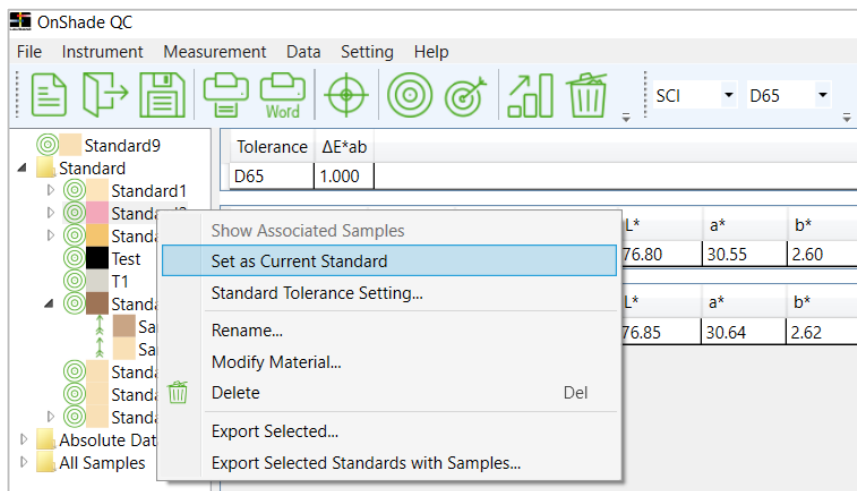


Figure 24: Setting a sample as standard

3.5 Input Standard

If you have some standard data, you can choose to enter these standards and then set this as the current standard to measure.

To enter the standard details:

1. Select from the menu “Data”>”Input Standard”.

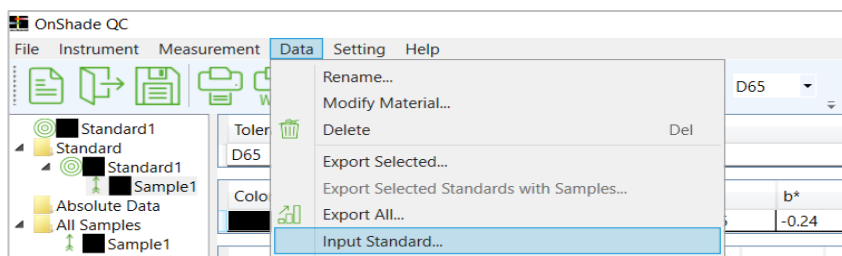


Figure 25: Input Standard menu

2. In the Standard Input window, enter a name for the standard in the “Name” field and then select type of data to be entered from the “Data Type” drop-down menu. You can currently input reflectivity, CIE Lab colour coordinates, CIE XYZ and Hunter Lab data as shown in Figure 26.
3. Next, choose the SCI data, or SCE data, or both in the “Specular Component” section.
4. Choose “On” from the UV section, if you want to input the standard measured during UV, otherwise choose “Off”.
5. Choose an appropriate aperture, if the measuring apertures are listed in the standard measurement; otherwise choose “Other”.
6. Enter the remaining information required, which will depend on the data type selected (see Reflectivity/Non-reflectivity data notes below).
7. After inputting any data, click “OK”. The data will be added to the standard group.

Standard Input

Name:

Data Type: Reflectance

Specular Component

☐ SCI ☐ SCE ☒ SCI/SCE

UV

☐ On ☐ Off

Measurement Aperture

☐ Φ4mm ☐ Φ8mm ☐ Customized ☒ Other

SCI

	00	10	20	30	40	50	60	70	80	90
400	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
500	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
600	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
700	<input type="text"/>									

SCE

	00	10	20	30	40	50	60	70	80	90
400	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
500	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
600	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
700	<input type="text"/>									

OK Cancel

Figure 26: Standard inputting - input reflectivity data

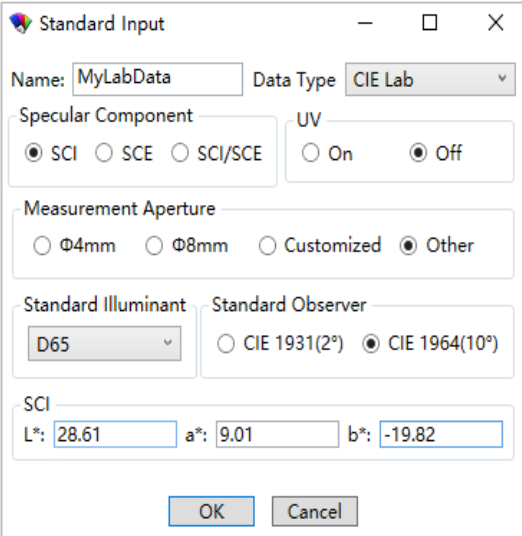
Reflectivity Data Notes

If "Reflectance" was selected enter the SCI and SCE values in the Standard Input Screen (Figure 26).

When inputting reflectivity, if reflectivity data is separated by blank characters or commas, or stored in an Excel sheet, it can be directly copied and then pasted. The reflectivity data will paste into the cursor location and subsequent grid.

Non-reflectivity Data Notes

If the input data is outside of the reflectivity data you need to select the data when measured using the standard light source and observer perspective, as shown in Figure 27. If you don't know, usually choosing D65 light source, 10 degrees standard observer Angle is correct.



The image shows a software dialog box titled "Standard Input". It contains several sections for configuring measurement parameters:

- Name:** A text field containing "MyLabData".
- Data Type:** A dropdown menu set to "CIE Lab".
- Specular Component:** Three radio buttons: "SCI" (selected), "SCE", and "SCI/SCE".
- UV:** Two radio buttons: "On" and "Off" (selected).
- Measurement Aperture:** Four radio buttons: "Φ4mm", "Φ8mm", "Customized", and "Other" (selected).
- Standard Illuminant:** A dropdown menu set to "D65".
- Standard Observer:** Two radio buttons: "CIE 1931(2°)" and "CIE 1964(10°)" (selected).
- SCI:** Three text fields for "L*", "a*", and "b*" values. The values are "28.61", "9.01", and "-19.82" respectively.
- Buttons:** "OK" and "Cancel" buttons at the bottom.

Figure 27: Standard input - Lab Values

3.6 Sample and Colour Difference Measurement

To measure the difference between a set standard and a sample or even two samples, select the standard or sample, right-click and select “Set as Current Standard”. Next, measure the sample as per section 3.3.2.

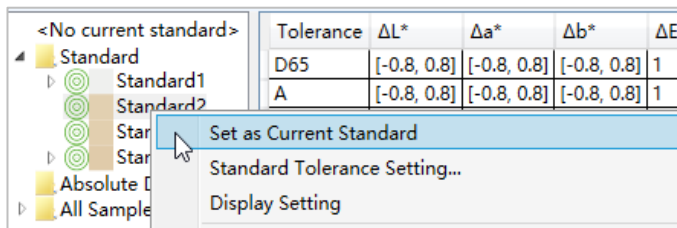


Figure 28: Right-click menu of standard

Note: Alternatively, you can measure the standard directly using the instrument and then measure the sample as per Section 3.3.

After measurement, the new sample will be added under the current standard and displayed in the sample list. In Figure 29, the new sample measurement is shown at the end of the list (Sample 7). It shows the colour difference of sample and standard, colour deviation relative to the standard and the results of the tolerance settings. The colour difference and reflectivity of the sample is highlighted in the charts.

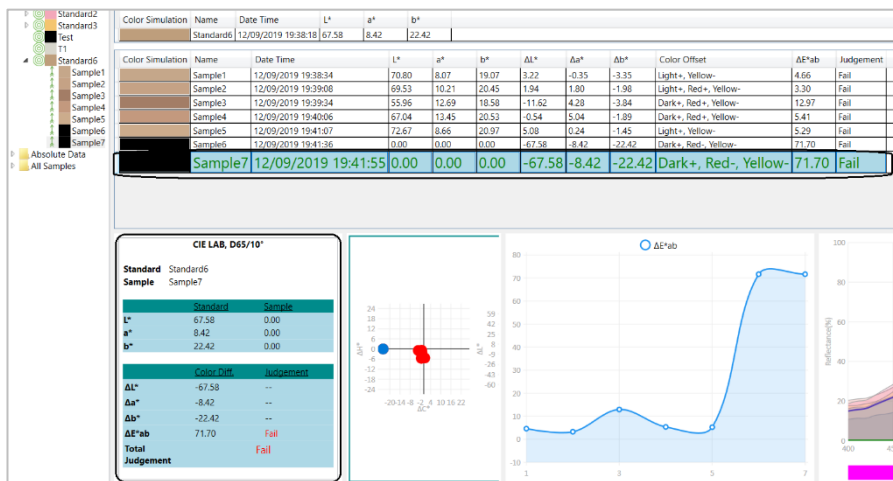


Figure 29: Sample measurement results

3.7 The Display Items Setting

OnShade provides colour space CIE XYZ, CIE Lab, CIE LCH, CIE RGB, Hunter Lab space etc, yellowness, whiteness, colour fastness, strength index, as well as the reflectivity data. All this information can be displayed together with the sample's name, material number and the measurement time.

To manage data settings:

1. From the menu select “Settings”>“Data Items Setting”:

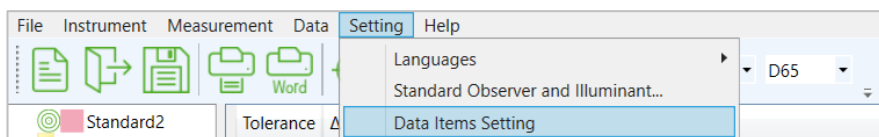


Figure 30: OnShade menu – Data Items Setting

2. The Display Setting window will load (Figure 31) listing the available fields on the left. The right lists the data items in the current display. Select the desired item from the list on the left and click “>>” to move it to the display data items. Clicking the “<<” button moves it back to Available Items.

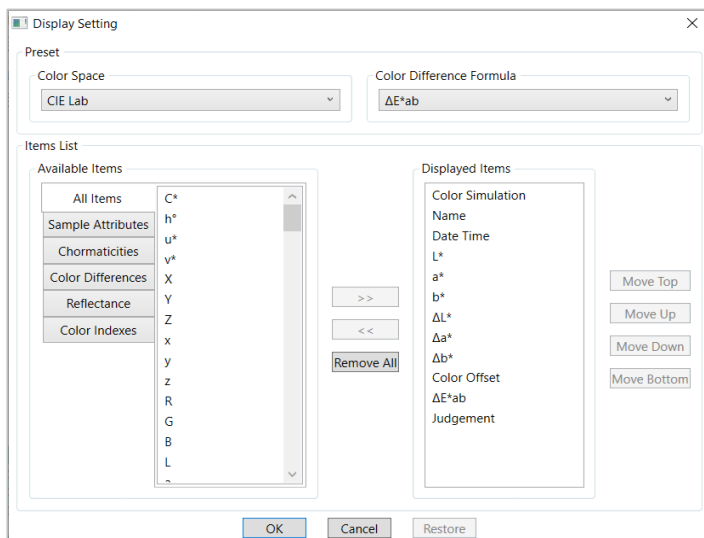


Figure 31: Display setting window

Note: The “Remove All” button in Figure 31 will clear all display items and the “Restore” button will take you back to the default settings.

Table 2 shows the information listed under each item listed on the left.

Available Items	Content
Sample Attributes	Lists the Sample Name, Number, Metering Mode, Measuring Aperture, Colour Deviation, Conclusion, non-numeric data items.
Chromaticities	Lists the chromaticity co-ordinates under all available colour space.
Color Differences	Lists all the chromaticity co-ordinates of colour difference and colour difference formula available.
Reflectance	Lists all available wavelengths of reflectance and difference value field.
Color indexes	The index lists the various whiteness, yellowness, colour fastness, strength, cover degree colour index.

Table 2: Display setting items

3.8 Standard Illuminant and Observer setting

To amend the standard illuminant and observer setting, from the menu select “Setting”>“Standard Observer and Illuminant”.

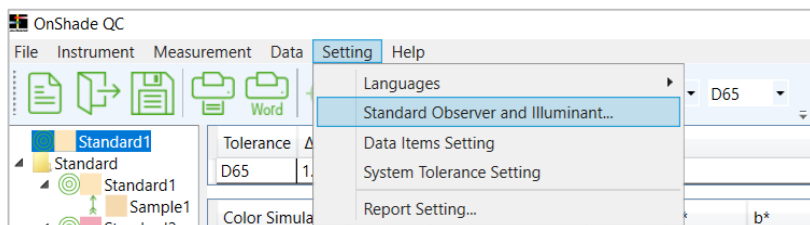


Figure 32: OnShade menu – standard observer and illuminant setting

The Standard Illuminant and Observer Setting window loads. Set the Observer Angle and Primary Illuminant.

If Metamerism is chosen in the data display, the reference illuminant must be set. Only once this has been set is it possible to set the related reference tolerance. Once the reference illuminant has been set, you may switch it in the tool bar of the main menu.

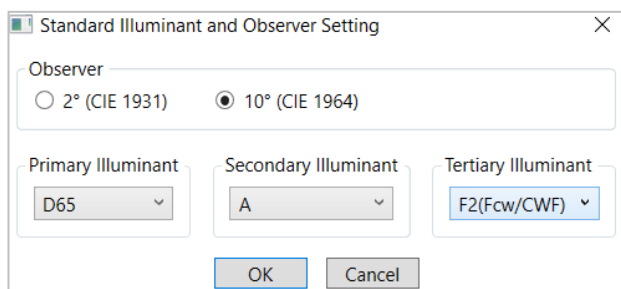


Figure 33: Standard Illuminant and Observer setting window

3.9 Tolerance Setting

You should set tolerances for current sample according to your requirements. The software allows you to set one main tolerance and two reference tolerances. The reference tolerance is set for reference illumination.

To set tolerances from the menu select “Setting”>“Tolerance Setting”.

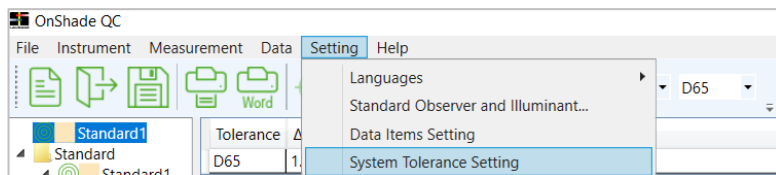


Figure 34: OnShade menu – system tolerance setting

The Tolerance Setting window will load. All available tolerances are listed in “Tolerance Data” section.

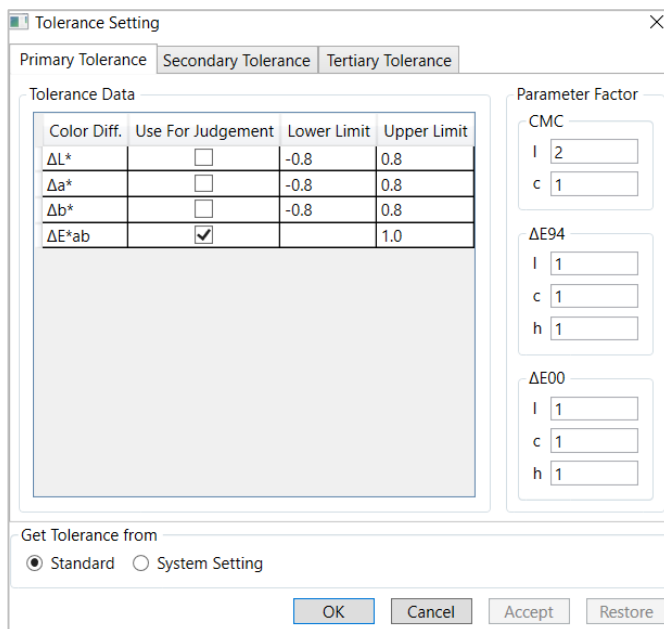


Figure 35: Tolerance setting window

The data contains all colour difference items (see Table 3), colour formulas and reflection difference value. CIE $L^*a^*b^*$ is a Colour space in which values L^* , a^* and b^* are plotted using a Cartesian coordinate system. Equal distances in the space approximately represent equal colour differences. L^* represents lightness; a^* represents the red/green axis; and b^* represents the yellow/blue axis. CIE $L^*a^*b^*$ is a popular colour space for measuring both reflective and transmissive samples.

Colour difference	Description
ΔL^*	The Delta (or difference) on the L^* axis.
Δa^*	Represents the difference on the red/green axis.
Δb^*	Represents the difference on the yellow/blue axis.
ΔE^*_{ab}	(Delta E, dE) - The measure of change in visual perception of two given colours. Delta E is a metric for understanding how the human eye perceives colour difference.

Table 3: Colour difference formulas

You can make changes as required and click “OK” and then “Accept” to apply the changes. The following changes can be made:

- For each colour difference tick the “Use for Judgement” check box (column 2) if required. If it is selected, the relevant tolerance will apply to judge that all selected items are qualified.
- For each colour difference set the upper and lower limit (column three and four in Figure 35).
- Select where to get tolerance from (Standard or System Setting). If “Standard” is selected, Standard Tolerance will overwrite System Tolerance. If “System Setting” is selected, whether the standard tolerance has been set or not, it will use the system setting.
- When using CMC colour formula or CIE DE94 or CIE DE2000, input the relevant data if you want to change parameter factor.

Note: You can click “Restore” to recover the default setting.

3.10 Instrument Data Management

OnShade can be used to import, export and delete the data in the instrument.

To manage instrument data, select from the menu “Data”>“Instrument Data Management”.

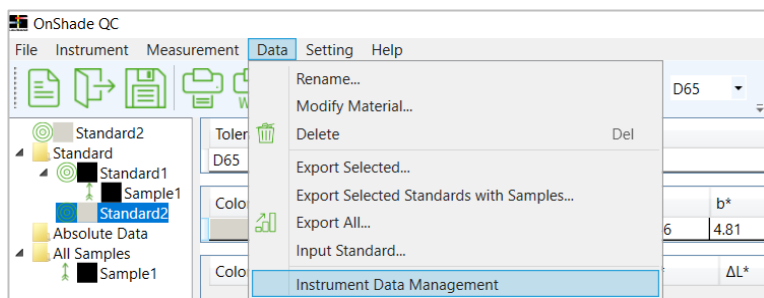


Figure 36: OnShade menu – Instrument Data Management

The Instrument Data Management window (Figure 37) will open listing all the standards. The system will upload all the standards in the instrument automatically when you open the instrument data management window.

Note: If there are many standards in the instrument, it may be slow to open.

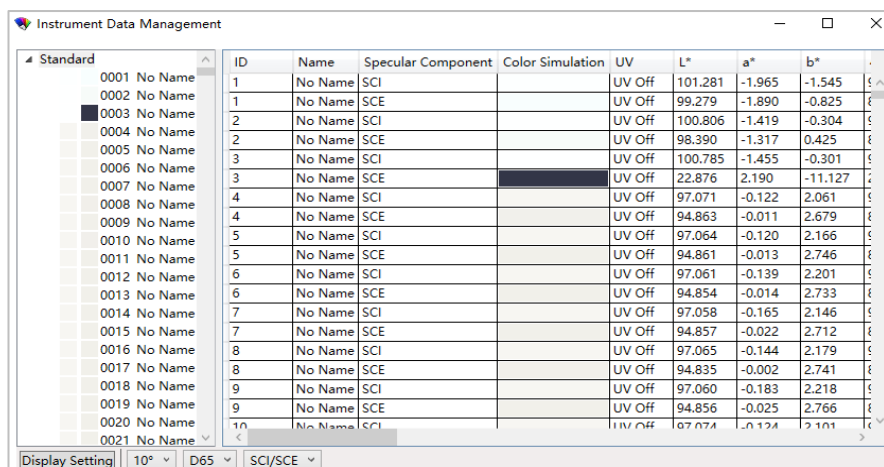


Figure 37: Instrument data management window

The window displays simulation colour, number and name of all the standards to the left of the screen and the data related to the standard is shown on the right of the screen.

When you select a standard from the left, it will upload all the samples under this standard and display this in the right. Nothing will be displayed if there are no relevant samples.

3.10.1 Import, Export, Upload or Delete Standards and Samples

From the Instrument Data Management window, you can manage instrument data as required including import, export, upload and delete standards and sample. To do this, select an item, then right click and choose the required option as shown in Figure 38.

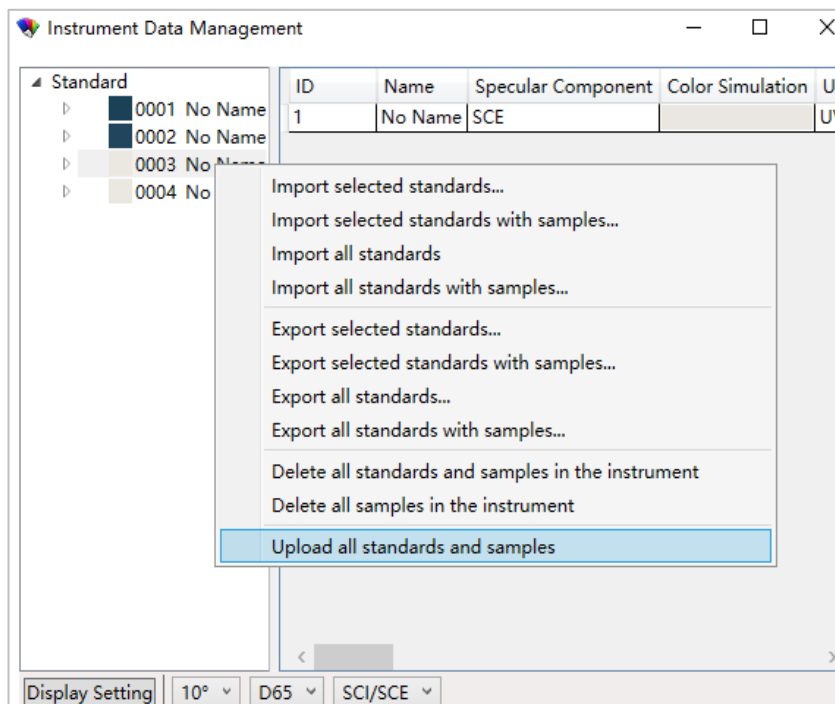


Figure 38: Instrument data management right-click menu

Table 4 explains the menu options shown in Figure 38.

Menu Item	Operating instruction
Import the selected standard samples	Import the selected standard sample into the current working standard sample group.
Import selected standard with samples	Import the standard samples and its associated testing samples into the current working mode and maintain the original relationship.
Import all standard samples	Import all the standard samples in the instrument to the current working group.
Import all standard with samples	Import all the testing samples from the instrument into the current mode and keep the correlation between original standard sample and the testing sample.
Export selected standards	Export the selected standard sample to Excel.
Export selected standards with samples	Export the selected standard samples and the relevant testing samples to Excel.
Export all standards	Export all the standard samples to Excel.
Export all standard samples with samples	Export all the standard samples and testing samples to Excel.
Delete all standards and samples in the instrument	Empty the data in the instrument.
Delete all samples in the instrument	Delete all testing sample data in the instrument.
Upload all standards and samples	Upload all the testing samples associated with each sample.

Table 4: Instrument data management menu options

3.10.2 Set Data Items Displayed

Click the “Display Setting” option at the bottom of the Instruments Data Management screen (Figure 38) to set data items displayed. See section 3.7 for details on the Display Items Settings.

You can also:

- Change the observation angle using the drop-down menu.
- Change standard by using the drop-down menu.
- Change the metering mode using drop-down to change SCI, SCE or both.

3.11 Input the Standard Samples into Instrument

If you want to write a standard sample to the instrument, select the standard sample and then from the menu select “Instrument>“Write Standard into Instrument”.

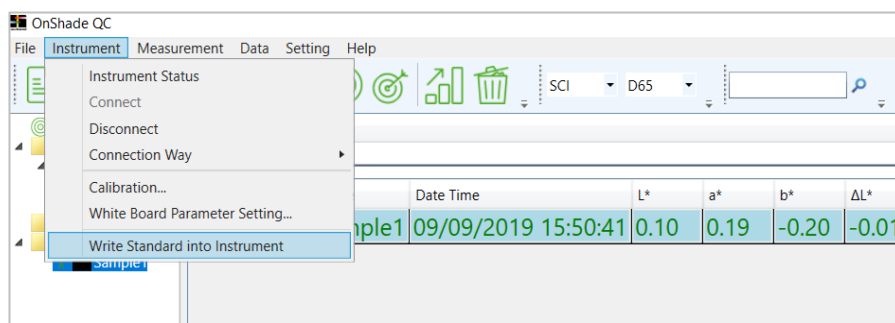


Figure 39: OnShade menu – write standard into instrument

Note: Since the name length of the label is in the instrument, the name length of the label to be written is automatically truncated when it is longer than eight English characters. In addition, the non-English characters in the name are not guaranteed to display correctly.

4. Data Management and Administration

4.1 Report Information Setting

To set information for reports:

1. From the menu select “Setting”>“Report Setting” to open the setting window (Figure 40).

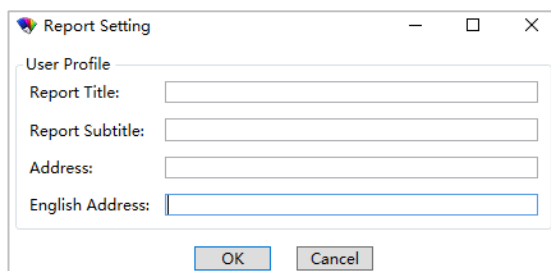


Figure 40: OnShade report setting options

2. Input relevant information and leave blank if not applicable then click “OK”.

4.2 Software Language Setting

You can change the software language by selecting from the menu “Setting”>“Language” and then choosing the desired language.

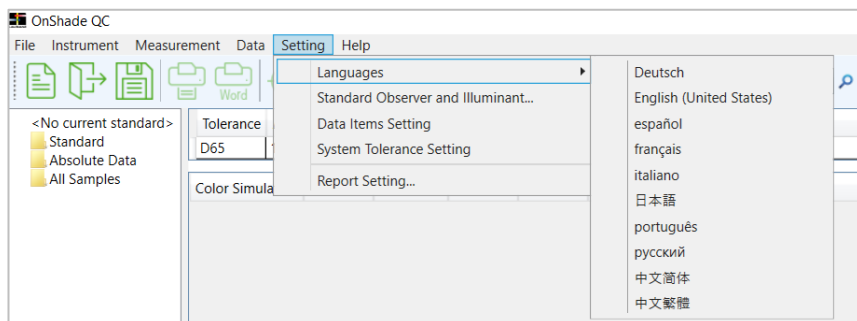


Figure 41: OnShade software language setting

4.3 Printing Forms

4.3.1 Printing Colour Difference Forms

Select some samples in the sample tree or sample form, then click “File”>“Print”.

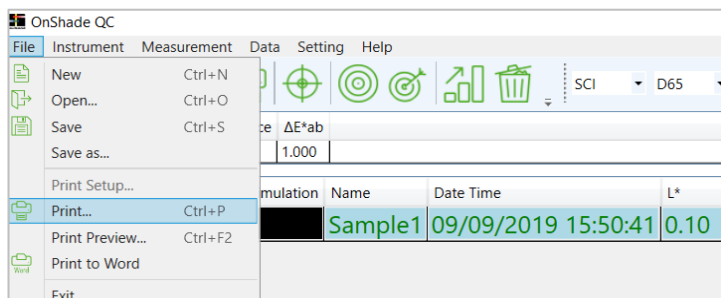


Figure 42: OnShade File menu options

Print to Word

If output to Word forms are required, click “File”>“Print to Word”.

Preview Document

To preview document before printing select “File”>“Preview”.

4.3.2 Print Collected Colour Difference Forms

Select some or every standard in the standard tree or various samples in the sample form, then click “File”>“Print”.

Print to Word

If output Word forms are required, click “File”>“Print to Word”.

Preview Document

To preview document before printing select “File”>“Preview”.

4.4 Document operation

4.4.1 Save Current Job

OnShade can save the current job to the XML file. To do this, from the menu select “File”>“Save”.

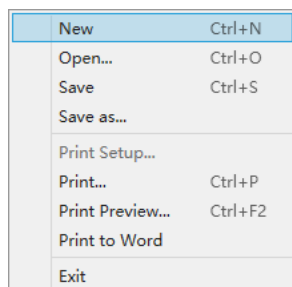


Figure 43: OnShade menu options under File

4.4.2 Open files

To open a file from the menu, select “File”>“Open” from the menu. Choose the required file from the relevant directory you saved your work to.

4.4.3 Create New File

To create a new file, from the menu select “File”>“New” to close the current job and open a new job.

Set rules of auto-naming and default part number

A name is automatically generated when the “Auto-Naming Rule” under the menu is activated. Select from the menu “Measure”>“Auto-Naming Rule” to set the automatic naming rules for the standard samples and testing samples, and the default feed number (Figure 44).

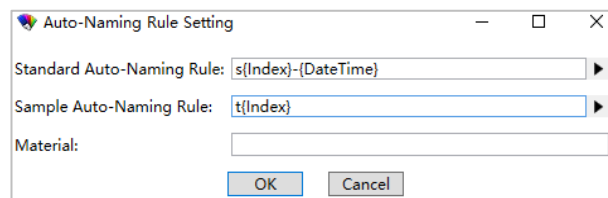


Figure 44: Set the naming convention window

The naming rules are composed of strings and variables as detailed in Table 5 which are enclosed in parentheses. Click the triangle on the right side of the standard sample or testing sample naming rule to display the available variables (Figure 45) and click the appropriate variable to automatically enter it into the edit box.

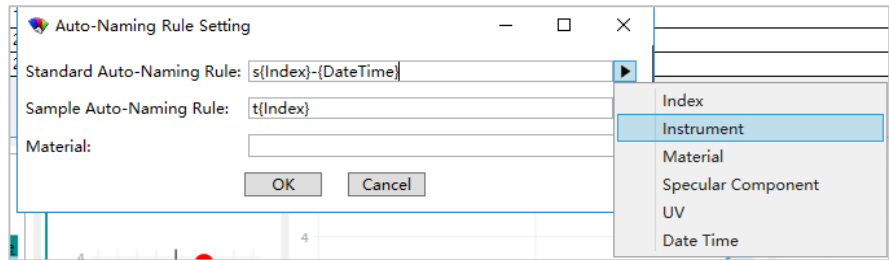


Figure 45: Auto-naming available variables

Variable	Meaning
Index	The index of the testing sample
Instrument	The instrument model of the measurement
Material	The setting of default material number
Specular Component	Metering mode: SCI, SCE or SCI/SCE
UV	The UV logistics of the measurement
Date Time	Time of measurement

Table 5: Variables of the automatic naming convention

Note: If the prototype of the naming rules is set to “{Index} - {DateTime}” and if the sixth standard sample was measured at 10:23:15 April 1, 2017, it will be automatically generated for its name “the prototype - 6-201704012315”.

4.5 Standard Sample Operation

Select one or more of the standard samples from the sample tree and right-click to open the menu options which includes various options for administering standard sample (Figure 46).

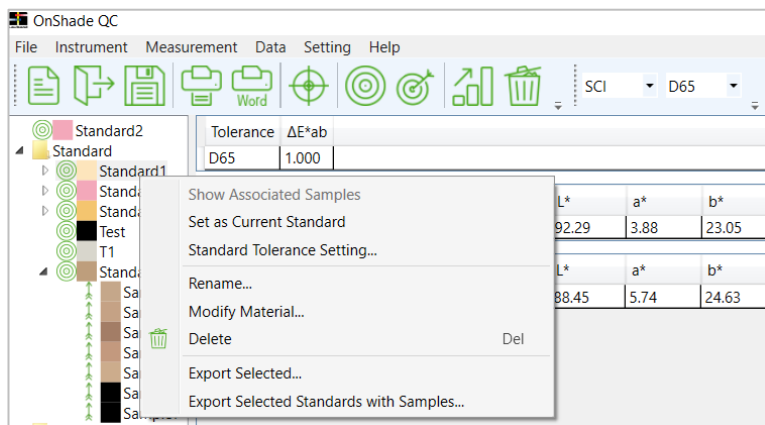


Figure 46: Standard context menu

Each right-click menu option in Figure 46 is explained in Table 6.

Menu	Operation
Set as Current Standard	Set the selected standard to the current standard.
Standard Tolerance Setting	Set the tolerance of the selected standard. The detailed operation can refer to set the tolerance. When the standard tolerance is set, the system display settings are copied and a separate data display item is set for the standard (see Section 3.9).
Rename	Modify the name of the sample by entering new name in the pop-up box.
Modify Material	Modify the standard item number in by entering detail in the pop-up box.
Delete	Remove selected standard from OnShade.
Export Selected	Export the selected standard to Excel or text file.
Export Selected Standards with Samples	Export the selected standard with samples to Excel or text file.

Table 6: Standard context menu operation

4.6 Sample Operation

Select the sample from the sample tree and right-click to open the menu which includes various options for administering the sample (Figure 47).

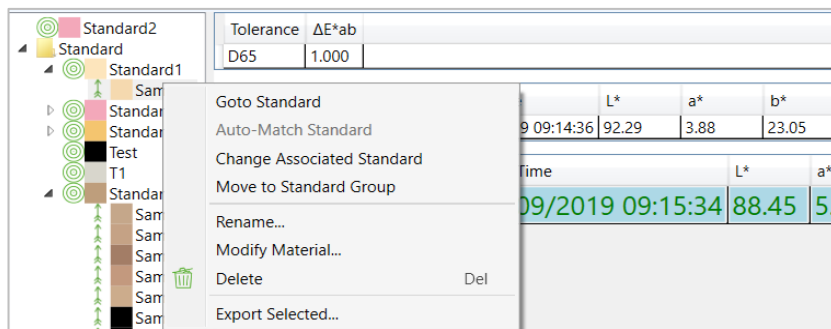


Figure 47: Standard context menu

Each right-click menu option in Figure 47 is explained in Table 7.

Menu	Operation
Change Associated Standard	Change the standard of the selected sample (see section 4.7).
Move to Standard Group	Move the selected sample to the standard group, so it becomes a standard.
Rename	Modify the name of the sample by entering new name in the pop-up box.
Modify Material	Modify the standard item number in by entering detail in the pop-up box.
Delete	Remove selected sample from OnShade.
Export Selected	Export the selected sample to Excel or text file.

Table 7: Sample context menu operation

4.7 Change Associated Standard

You can change the standard associated with a sample by selecting the sample, right-clicking and selecting “Change Associated Standard”.

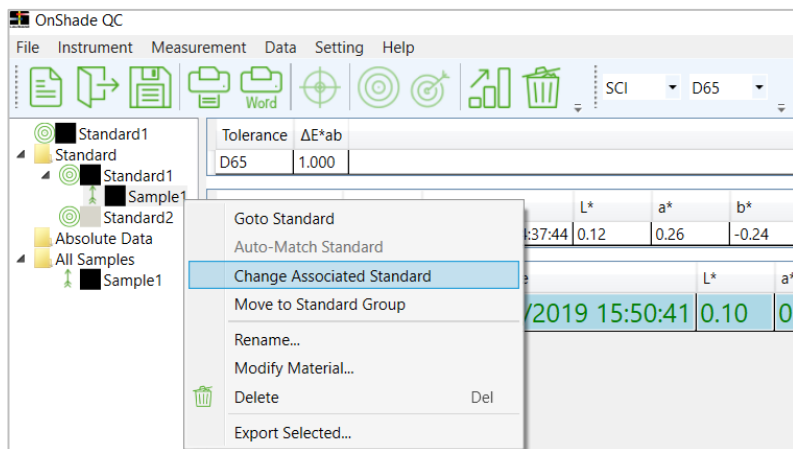


Figure 48: OnShade manage standards menu option

The Standard Setting box will open and you can select the required standard from the drop-down box and click “OK” to move the selected sample under the standard sample.

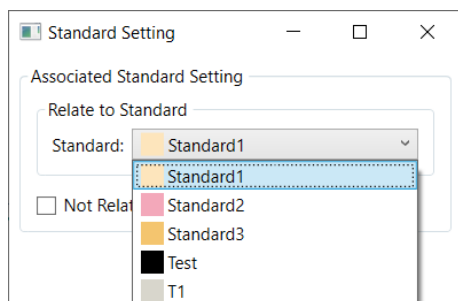


Figure 49: Changing related standard

Not Associate with Standard

If you do not want to associate with any standard, check “Not Relate to Standard” in the Standard Setting window.

4.8 Colour Difference Figure

Right-click the colour difference figure at the bottom of the OnShade main screen and from the pop-up menu you can select to display DeltaLab colour chart, DeltaLCH colour difference figure, DeltaYxy colour difference figure, DeltaHunterLab colour difference figure and DeltaLuv colour difference figure.

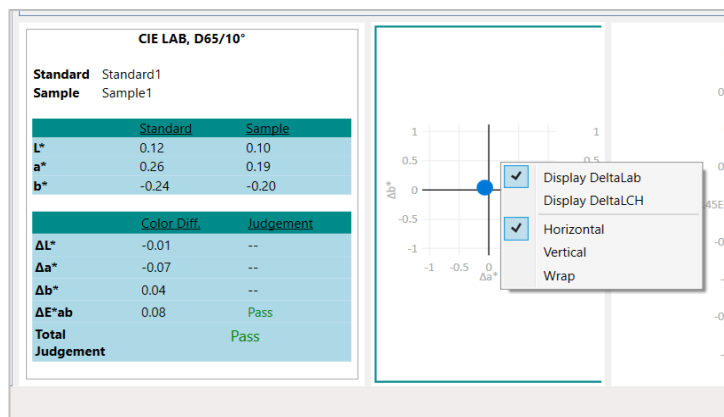


Figure 50: Colour difference between standard and sample

- DeltaLc needs to use the CIE Lab colour space
- DeltaLCH needs to use CIE LCh colour space
- DeltaYxy need to use the CIE XYZ colour space or CIE Yxy colour space
- DeltaHunterLab need to use Hunter Lab colour space
- DeltaLuv need CIE Luv colour space

Note: Different colour difference graphs can only be selected if the field of the corresponding colour space is used in the field display option, otherwise it will not be displayed in the context menu.

4.8.1 Horizontal or Vertical Arrangement

If you select multiple colour difference figures, you can also choose to use horizontal arrangement, reorder or auto line in the context menu.

4.9 Colour Difference Trend Figure

The colour difference figure can display the trend of each colour difference. By default, only ΔE^*_{ab} is displayed. You can select other colour difference items by right-clicking the menu. The selectable colour difference item will vary depending on the field selected in the display settings.

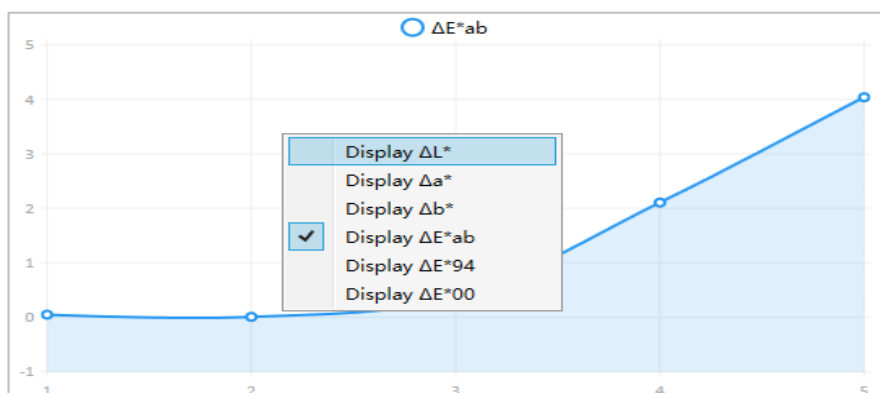


Figure 51: Colour difference trend figure context menu

4.10 Reflectivity Figure

The reflectivity figure displays the reflectivity of all samples in the sample list. There are no user selectable variables for this display.

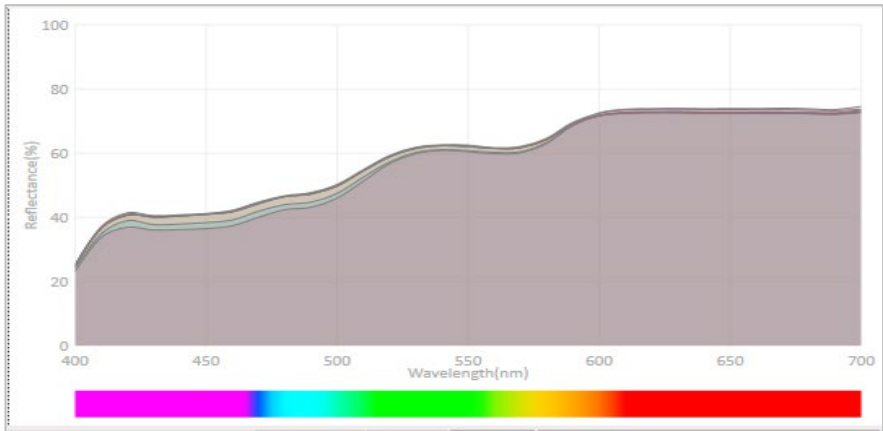


Figure 52: Reflectivity figure table

4.11 Re-calibration of Whiteboard Parameters Setting

In order to ensure the accuracy of measuring instruments, you need to perform a re-calibration of the whiteboard. This is usually conducted annually.

You can send the instrument to the manufacturer for re-calibration, but also to a recommended servicing department for re-calibration. If it is the latter, you need to re-calibrate the whiteboard.

The following are the specific steps to write the whiteboard reflectivity:

1. Connect the instrument to OnShade, and then click “Whiteboard Parameter Settings” under the “Instrument” menu to open the Whiteboard Parameter Settings dialogue box.
2. Click the “Read” button to read the original whiteboard parameters.
3. Keep the internal and external numbers of the whiteboard and enter the whiteboard reflectivity data after the recalibration.
4. Please note the accepted reflectivity data interval when entering. In addition, you may need to enter the calibration data under the SCI and SCE at the same time. When you enter the reflectivity data, you can copy a set of reflectivity data at a time. This reflectivity data is separated

by a blank character or a comma and then pasted to the edit box corresponding to the first reflectivity data. The following values are automatically pasted to the corresponding location.

5. Click the “Write” button to write the parameters.

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