

User's Manual for Agera® and EasyMatch® Essentials



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For EasyMatch Essentials 100.0051 and Above

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Safety Notes



Caution: If the equipment is used in a manner not specified by the HunterLab, the overall safety and protection provided by the equipment may be impaired. The instrument is for indoor use only and not suitable for a wet location.



Caution: There is a potential of a UV Light hazard in using this instrument. Please avoid looking directly at the light. The frequency of this flashing light is in the range of sensitivity for those prone to epileptic seizures.



For your safety when using the Agera, you should pay attention to the following types of statements in this User's Manual:

- General safety instruction that should be observed at all times while operating the instrument.
- Specific safety instruction critical to the type of instrument operation being explained in the manual where the caution appears.
- Use of this equipment in a manner not specified by the manufacturer may impair the protection afforded by the equipment.
- Danger of electric shock if liquids are spilled and fire if volatile or flammable liquids are spilled. Use care when measuring liquid samples.
- The Agera is for indoor use only at an altitude of up to 2000m and pollution degree 2.

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Setting Up the Agera

The Agera is a dual beam 0-degree illumination and 45-degree circumferential detection spectrophotometer with a wavelength range from 400 to 700 nanometers (nm). It is designed for use with the sample port facing up or forward.

The optical delivery and collection system combined with port openings of nominally 51 mm (2 in), 25.4 mm (1 in), and 16.9 mm (0.625 in) delivers measurement of semi non-homogenous samples such as pellets, granules, and textured flat samples including textiles, plastics, paper. The multiple viewing area accommodate powders, opaque and semi-opaque sauces and liquids.

Standard Accessories

- Calibration Box with calibrated Agera white tile, Agera black glass and Agera green diagnostics tile
- Area of View Port Plates - Set of 3
- Certificate of Traceability
- Power Supply
- Agera Quick Start Guide
- USB Flash Drive

Selecting A Space for the Agera

The Agera can be setup in a laboratory setting with controlled, consistent temperature (10°C to 40°C) and humidity. A laboratory bench is recommended with easy access to the rear connectors.

Power Jack

- The instrument is supplied with a 24 VDC (3.75A) power supply. The power supply is plugged into the back of the instrument as shown along with the Ethernet port and the USB port.

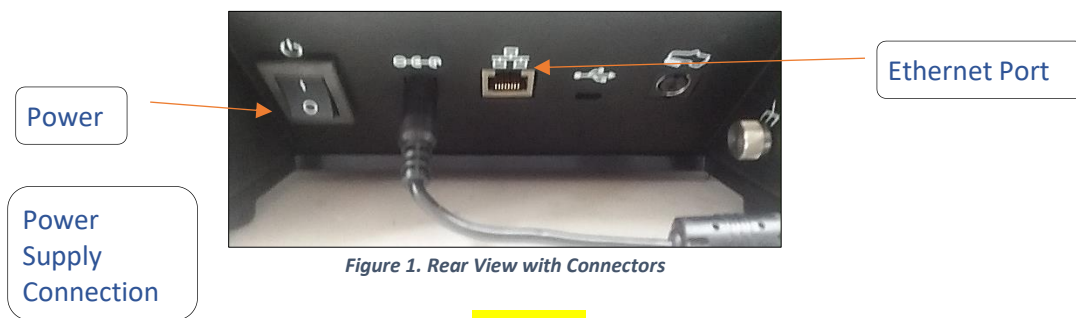


Figure 1. Rear View with Connectors

CAUTION

Note: Use only the power cord included with this instrument or a replacement obtained from HunterLab. Be certain that the power cord is in good condition before connecting it.

Power Switch

- To turn the instrument on, press the rocker switch on the back of the instrument.

Port Forward Orientation

- The Essentials screen is default setup for port up Agera. If port forward orientation is required, then go to **Workspace > Preferences** and check **REVERSE SCREEN ORIENTATION** and click **APPLY**. Power off/on Agera to get the screen orientation changed.

Keyboard and Mouse

- The Agera works with the following keyboard and mouse:
 - L02-1017-434 Wireless keyboard and mouse kit.
- To use this accessory, turn the power off. Plug in the micro USB adaptor into the instrument and then attach the nano-receiver for the keyboard into the USB port. Install the batteries into the keyboard/mouse and turn the power back on.

Front and Rear USB Connectors

- There are two USB connectors on the Agera. The one in the front is typically used to connect a printer or a keyboard to the Agera. If the user wants to connect multiple devices at the same time, a USB hub can be plugged in to the front of the instrument. Either port can be used for exporting jobs and workspaces, backing up the instrument and updating software



Figure 2. USB Port on Front of Instrument

Ethernet Port

- This port is used to connect the Agera to:
 - Computer or to a network with the purpose of sending data (ASCII) to a server
 - Connect with EasyMatch QC and EasyMatch QC Electronic Records
 - Remote Support
 - Network printer
 - Email data

Navigating the Essentials Screen

The EasyMatch Essentials Tools and Status features are shown below.

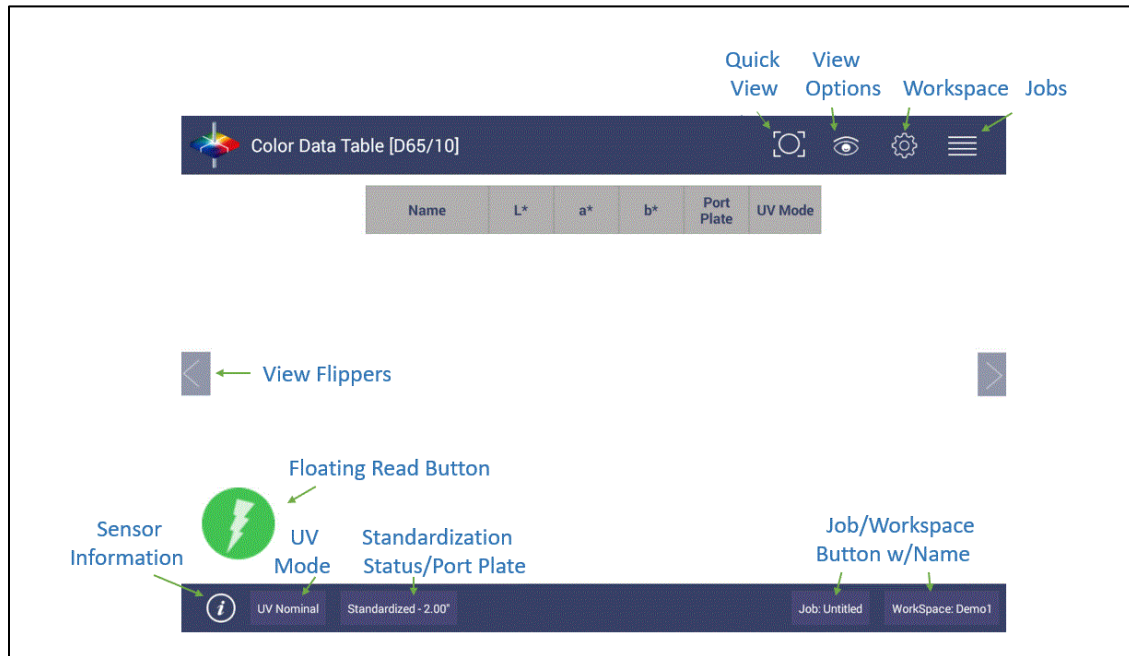


Figure 3. User Interface Screen for Agera & Essentials

Tools: Status Bar

This area shows the current mode settings.

- **UV STATUS** – To change the UV mode, press this button.
- **STANDARDIZATION** – To re-standardize, press this button. The standardization status and current port plate size will be shown.
- **WORKSPACE** - To open a new Job, press this button. The software will prompt to select a Workspace for a new Job. Workspace Name is reported on this button.
- **JOB** – To open an existing Job, press this button. Job Name is reported on this button.

Tools: Read

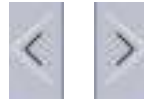
Read Measurement Icon



- Samples are read using this key.
- This tool can be moved around the screen by pressing and moving the icon.

Tools: View Flippers

View Flippers Icon



- Switching between Views can be accomplished by using the semi-transparent **NEXT** and **PREV** buttons placed at the side edges of the screen or by swiping left or right with two fingers on the screen.

Tools: Information

Sensor Information Icon



- The sensor type and serial number is shown at the bottom left side of the System Bar when the **i** is pressed. When application security is enabled and the user logs into Essentials, the User Account will also be shown in the Information box.



Figure 4. Sensor Serial Number

Tools: Quick View

Quick View Icon



- Quick View is used to see the positioning of a sample at the port before a measurement is taken. This function does not allow for image saving. Pressing the **QUICK VIEW** icon on the toolbar provides an onscreen image for viewing.

Tools: View Options

View Options Icon



- This menu shows the configuration options for the active view. A total of six views are available. Each view shows a different option. Views can be added or removed in Workspace > Views.

Tools: Workspace & System Settings

Workspace/Systems Settings Icon



- The Workspace menu sets up the data screen with measurement color scales, read options, standards, tolerances and views.
- Systems Settings initiates Standardization, Diagnostics, Preferences, and the User Manager for System Security.

Tools: Jobs

Jobs Icon



- A job is a collection of all the sample measurements and a workspace used for a task, product, or customer. Jobs are the 'readings' of EasyMatch Essentials. Jobs can be created for many different reasons, such as to hold data for a certain customer or a specific product line. Each operator may maintain their own job with preferences or create separate jobs for different operations. A workspace is a collection of the measurement parameters for a job along with tolerances and the standard, i.e. analogous to word processing documents containing text and formatting. Each job has only one workspace.

Taking a Simple Measurement

What is HunterLab Agera & EasyMatch Essentials?

Agera is a multi-purpose 0/45° color and appearance measurement system that provides users with 400-700 nm reflectance color, ASTM 60-degree gloss, and sample imaging capabilities in either a port up or port forward configurations. UV controlled LED illumination provides superior color accuracy and repeatability on standard and fluorescent samples. An internal camera provides on-screen 45/0° sample viewing during the measurement preparation and will capture and save a sample image for retrieval with the sample data, while providing an RGB histogram of image color distribution. All measurement results are simultaneously displayed on a 7" high resolution touch screen interface via the embedded EasyMatch Essentials quality control software, which includes most color scales, indices and Illuminant/observer combinations desired for industrial applications. With Ethernet, wireless and USB connectivity, data results can be saved, emailed directly from the Agera instrument, printed to local or networked printers, and streamed to LIMS and SPC systems.

Connecting the Sensor and Taking a Measurement

After unpacking and setting up the instrument, turn on the power using the rocker switch on the back of the instrument base.

- Once inside the software, the main measurement screen is displayed – Color Data Table (D65/10).



Figure 5. Measurement Screen

- The instrument is automatically connected, and this is reported on the status bar. Next, the unit must be Standardized.

Standardization

- Configure **UV MODE**: The UV mode is shown in the status bar. To change the mode, click the **UV BUTTON** and select a UV mode. Then click **APPLY**.
- Press the **STANDARDIZATION BUTTON** on the status bar to initiate standardization. The port plate size and UV mode is shown in the standardization dialog. To change the port plate, place the new port plate on Agera and click **BACK** to update the port plate information.

- **Read Black Glass:** Place the Agera black glass at the sensor port and press **READ**. Make sure that the line on the tile matches the port plate white line.

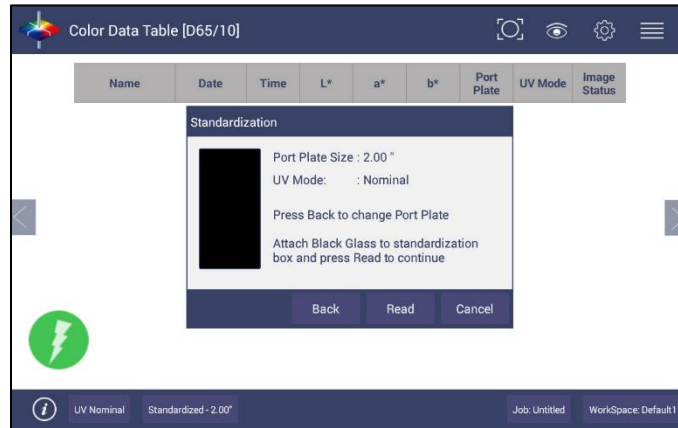


Figure 6. Read the Black Glass for Bottom-of-Scale

- **Read White Tile:** Remove the black glass and place the Agera white tile at the port. Press **READ** to continue.

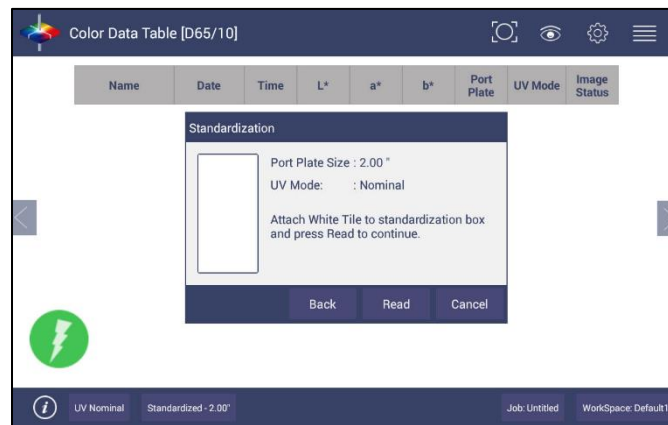


Figure 7. Read the White Tile for Top-of-Scale

- Remove the calibrated white tile when standardization is completed. Click **OK**.
- Standardization is updated and reported as **STANDARDIZED** in the bottom status bar along with UV Mode and Port Plate Size.

Note: Agera supports multiple modes allowing for switching among different valid modes after standardization.



Figure 8. Standardization Status Bar

- To update Standardization Status for a new port plate, place the new port plate on the instrument and click the **READ** button. The standardization status will be updated. If the standardization of this new mode is valid, then the sample will be read. If the standardization is not valid, a dialog box will be shown so prompt for new Standardization.

Create a Workspace

From the **WORKSPACE MENU**, press **NEW WORKSPACE** and **ENTER A NAME** for this Workspace

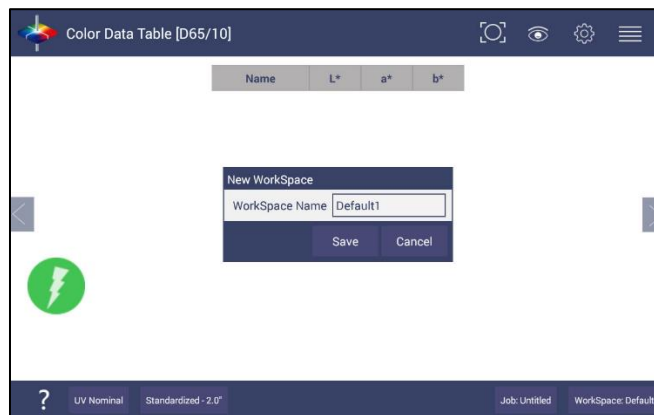


Figure 9. Name New Workspace

Note: The active Workspace name is displayed in the lower right corner of the screen.

- Default Workspace Settings:** The default settings for a new Workspace are shown in the Table below:

Table 1. Workspace Parameters

Parameter	Selection
ColorScales	CIE L*a*b*
Illuminant	D65/10
Indices	None
Differences	None
Read Options > Options	Prompt for Sample Name, Auto Save Job
Read Options > Measurement Config	UV Nominal
Standard and Tolerances	None
Views	Color Data Table only
View Options for Color Data Table	Latest Data First selected, Precision = 2

- **Configure the New Workspace:** With this new workspace open, you can start to change the following settings:

To change measurement scales, select **WORKSPACE > COLOR SCALES**. This configures the desired color scales, indices, and differences.


To change measurement procedure, select **WORKSPACE > READ OPTIONS**.

To add tolerances, select **WORKSPACE > STANDARDS & TOLERANCES**.


To select the view screens, go to **WORKSPACE > VIEWS**. To configure each view screen, click **VIEW OPTIONS** in the toolbar.

- Now your instrument is ready to read your product under this new workspace. If you'd like to start a new job for this product, you can press **NEW JOB** and load this configured workspace to continue.

Read Sample

- **Prepare Sample:** Place the sample at the port. The **QUICK VIEW** icon on the toolbar  can be used to assist to position your sample.

Note: QUICK VIEW does not save image. If you want to save image for each measurement, please enable Image Viewer under WORKSPACE > READ OPTIONS and VIEW OPTIONS > IMAGE VIEWER.

- Use the **READ MEASUREMENT** button  to read samples.
- If **IMAGE VIEWER** is enabled, the camera preview dialog will be prompted before color measurement. Click **CAPTURE** to save the image and **CONTINUE** to measure color. To view the sample image in Color Data Table and/or EZ view, please use **VIEW OPTIONS > IMAGE VIEW**.

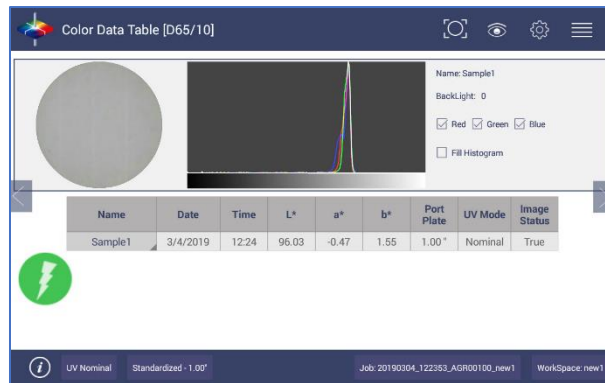


Figure 10. Image View with CDT

- **Main Measurement Screen:** The Color Data Table view shows the configured Color Scale results for the standard and sample measurements in the job. The configured tolerances can be applied to the Job and Pass/Fail results will also be displayed.

Note: Agera includes a built-in 60-degree gloss meter with a single LED illumination (filtered to C/2 °)/detector pair in conformance with ASTM D523 and located right below the sample port plate. Gloss is measured for each sample and standard measurement. To show the Gloss value, please select Gloss index in **WORKSPACE > COLOR SCALES > INDICES**.

- To output data, select the **JOBS** icon from the upper right corner. Under Jobs, data can be saved, sent to a printer, emailed to the network or exported to a flash drive.
- A long press on the Sample name will show a menu with the following options:
 - **SET AS STANDARD** – to set the sample as Standard
 - **RENAME** – to rename the sample
 - **DELETE** – to delete the sample.



Figure 11. Changing, Renaming or Deleting a Sample

- A long press on the Standard name will show a menu with the following options:
 - **EDIT** – to edit the standard. If Edit is selected, the **WORKSPACE > STANDARD AND TOLERANCES** dialog box is presented to allow for editing the name, assigning tolerances or changing the type of standard.
 - **DELETE** – to delete the standard. The deleted Standard is reverted into the samples list with its original name.



Figure 12. Edit/Delete a Standard

Tool Bar: Jobs Function

Jobs Icon



Under the Job function, the following tasks can be accomplished:

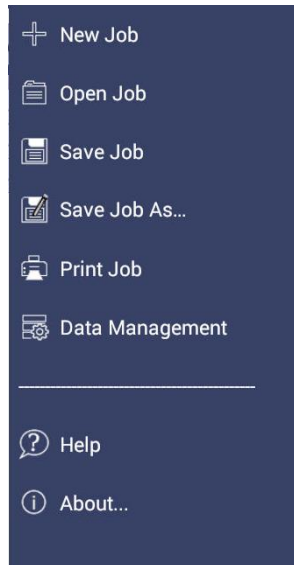


Figure 13. Job Menu

Jobs

Jobs vs. Workspace: A job consists of samples measured according to a specific workspace. A workspace is a template with measurement conditions such as standard & tolerances, color scale, index, illuminant, etc. There can be only one workspace associated with a job. The main tool bar provides the options to create a new job, open an existing job and save a job.

Jobs > New

- When click **NEW JOB** (**Shortcut:** press Workspace name in the lower right status bar), the Load Workspace dialog will pop out. The default selected workspace is the current workspace. User can change the workspace and click **LOAD**. Then the selected Workspace is opened in the **NEW JOB**. Once the Workspace has been loaded to the New Job, the Workspace name associated with this job cannot be edited.

Jobs > Open

- OPEN** a saved Job: A list of available jobs under the current path are displayed for selection. If the job that is needed exists in another folder, then it is an option to change the folder. When the job to be opened is displayed select the file and press **OPEN**.
- Shortcut:** press job name in the status bar on the lower right.



Figure 14. Open A Job

Jobs > Save & Save As

- **SAVE** the Job under the desired name: To save a job, select the folder, name the Job and save the Job contents into a file. These files have an '.ezm' extension. There will be a default name filled in Filename box as date&time&instrument#&workspace. You can edit it if needed.

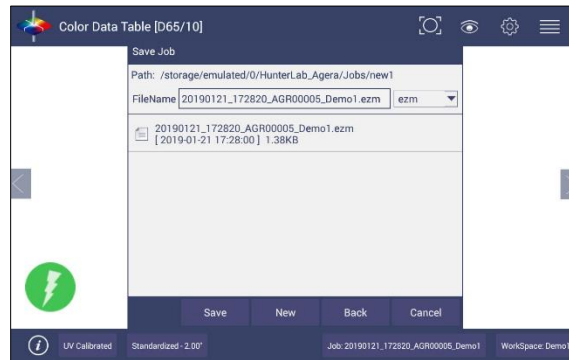


Figure 15. Save A Job

Jobs > Print

- **PRINT** an open Job using the parameters set up under **WORKSPACE & SYSTEMS SETTINGS > PREFERENCES**. For Agera, if the user selects the Color Data Table, then the saved images will also be printed.

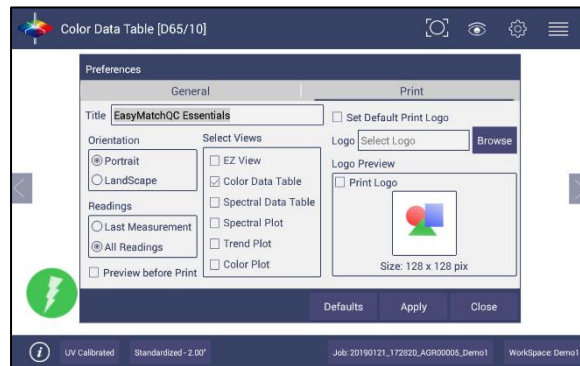


Figure 16. Workspace & System Settings > Preferences > Print

- Drivers included in the Agera are shown below. Additional printer drivers can be added under **WORKSPACE > DIAGNOSTICS > ADVANCED**.

Table 2: Printer Drivers Included

Printer	Driver
Canon	Canon Print Service 4.4+
HP	HP Print Service Plugin 4.1+
Epson	Epson Print Enabler 4.4+
Konica Minolta	Konica Minolta Print Service Plugin 4.4+
Kyocera	Kyocera Print Service Plugin 4.4+
Lexmark	Lexmark Print Service Plugin 4.4+
Sharp	Sharp Print Service Plugin 4.4+
Xerox	Xerox Print Service Plugin 4.4+

- Printing can be downloaded to a pdf file by selecting, **SAVE AS PDF**. Once this is selected, the parameters for the output are presented. Please save the file to the download folder. To access these files, see [DATA MANAGEMENT > EXPORT > OTHERS](#).

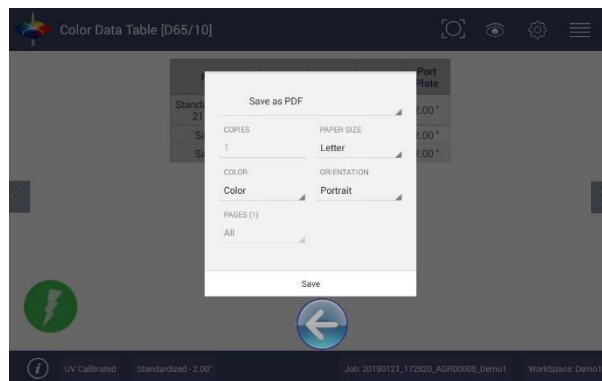


Figure 17. Save as PDF

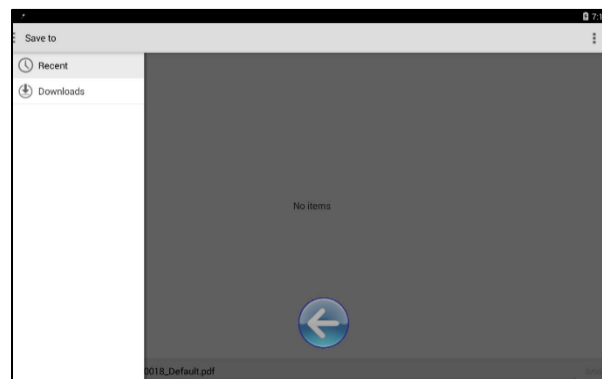


Figure 18. Save PDF to Downloads File

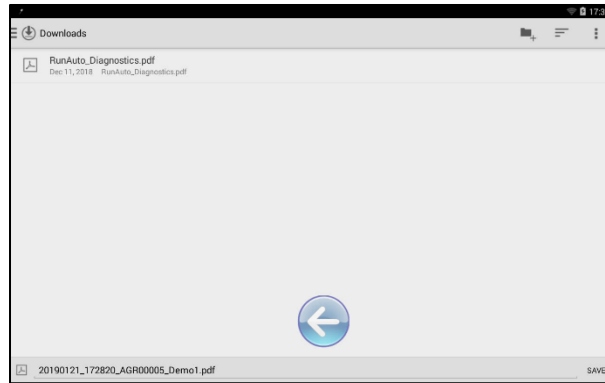


Figure 19. Download File Contents

Jobs > Data Management

Standard(s) and sample measurements are saved in Job files and database along with the sensor information. The saved measurements are also associated with a respective Workspace and Job.

- The Data Management contains the features to Recall, Import, Export, Email a Job and Backup/Restore.
 - **RECALL** the measurements from the database.
 - **IMPORT** a selected Job(s), Standard(s), Workspace(s)Diagnostics, photos for logo print setup and others from a USB flash drive.
 - **EXPORT** the Job(s), Standard(s), Workspace(s), Diagnostics, pdf reports and others to a USB flash drive.
 - **EMAIL** the selected Job(s), pdf reports and other files.
 - **DELETE** Job(s), Standard(s), Workspace(s), Diagnostics, pdf reports and others.
 - **BACKUP** the HunterLab folder (all jobs, database and user manager settings) into a USB Flash drive.
 - **RESTORE** the HunterLab folder (all jobs, database and user manager settings) from a USB Flash drive.

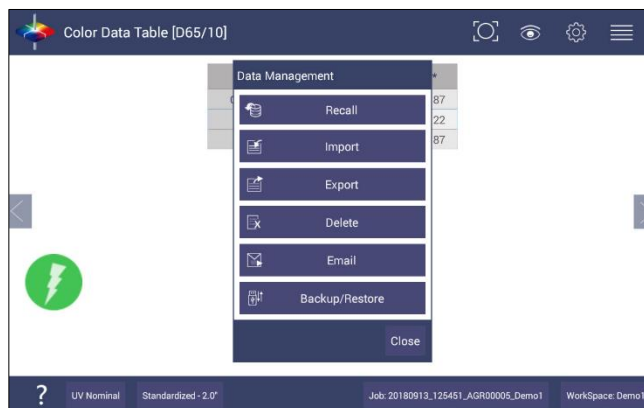


Figure 20. Data Management Menu

- ***JOBS > DATA MANAGEMENT > RECALL***

Recall measurements that have been stored to a job.

This feature enables the user to recall the Standard/Sample(s) stored in the Database into the current running Job.

Click **RECALL** option in Data Management. A dialog will be displayed where the user can recall the measurements from the database by **SELECTING THE TYPE**:

- **SHOW THE STANDARD ASSOCIATED WITH A SPECIFIED CATEGORY**

- **SHOW ALL THE MEASUREMENTS IN THE SELECTED JOB**

When this option is selected, the standard and samples for that job are listed.

- **SHOW THE STANDARDS/SAMPLES IN THE CURRENT WORKSPACE**

When this option is selected, the list is filled with the standards and samples associated with the current workspace. To narrow the sample list, the user can select the samples only associated with the selected standard.

- **SHOW THE IMPORTED STANDARDS**

When this option is selected, the standards list is only filled with the standards imported into the database.

After selecting the measurements click **RECALL** placing them into the active Job.

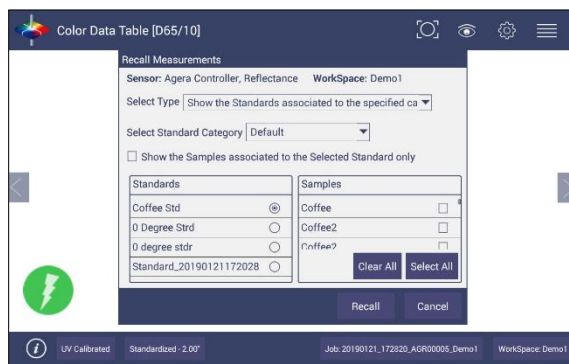


Figure 21. Recall Measurements

- ***JOBS > DATA MANAGEMENT > IMPORT***

This feature allows the user to import the below data from a USB flash drive into the instrument. Data can be one file or multiple files. All selected files should be in the same file path location. The following data can be imported:

- Job
- Standard
- Workspace
- Diagnostics
- Others

- **IMPORT JOB**

This option allows the user to browse and select a Job file(s) (.ezm) from the USB flash drive and import into the instrument. If a file name already exists, then the name will be incremented numerically.

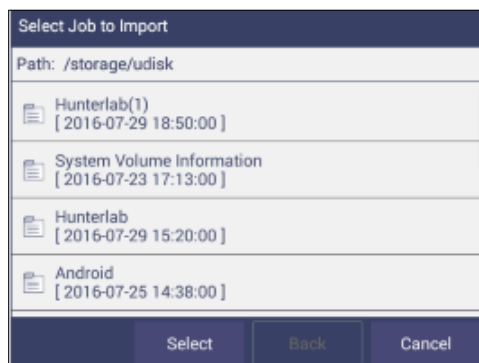


Figure 22. Import Job

- **IMPORT STANDARD**

This option allows the user to browse and select a Standard(s) (extension .std) from the USB flash drive and import into the database. If required, the Standard Name can be changed.

- **IMPORT WORKSPACE**

This option allows the user to browse and select a Workspace(s) (extension .wsp) from the USB flash drive and import into the database. If the workspace already exists, then the user is prompted to specify a different name.

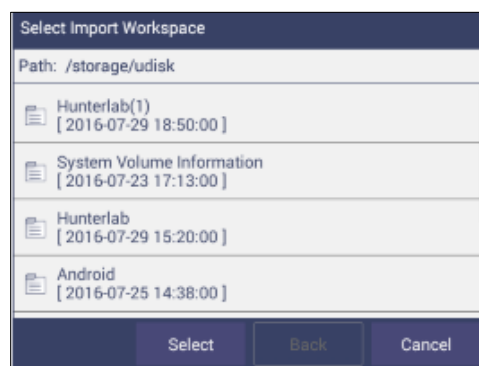


Figure 23. Import Workspace

To use the above functions, a USB flash drive must be present in the port.

- **IMPORT DIAGNOSTICS:** This option allows the user to browse and select a Diagnostics file from the USB flash drive for import into the instrument database.
- **IMPORT OTHERS:** This function is available to import other items such as a logo for the printed report. Once the logo is imported, go to **WORKSPACE & SYSTEM SETTINGS > PREFERENCES > PRINT** to add the logo to a report.

- ***JOBS > DATA MANAGEMENT > EXPORT***. This feature allows the user to export the below data from instrument into a USB flash drive. Data can be one file or multiple files. All selected files should be in the same file path location. The following data can be exported:
 - Job
 - Standard
 - Workspace
 - Diagnostics
 - Others (e.g all files in Hunterlab folder, and all pdf reports in Download folder)
- **EXPORT JOB:** This option allows the user to browse and select an existing Job(s) (.ezm) or the current active Job data and copy into a USB flash drive either in **CSV** or **EZM** file format. While exporting into EZM format, the current active Workspace settings can be applied. The color data shown in the Color Data View and the Spectral Data is saved in a CSV file.

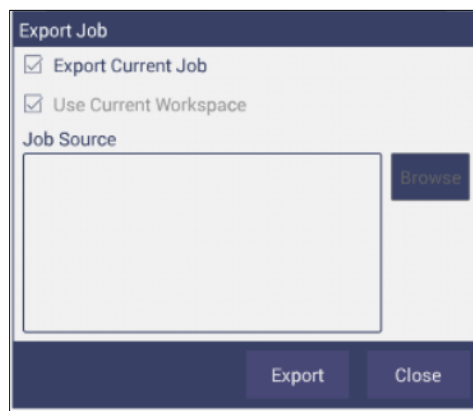


Figure 24. Export Current Job

- **EXPORT STANDARD**
This option allows the user to browse and select an existing Standard(s) in the database and copy into the USB flash drive as a file (.std).



Figure 25. Export Standard

- **EXPORT WORKSPACE**

This option allows the user to browse and select an existing Workspace(s) in the database and copy into the USB flash drive as a file (.wsp). To use the above functions, a USB flash drive must be present in the port.

- **EXPORT PDF**

This allows the user to select a PDF file from the Downloads folder to export. Switch to the Download folder in the dropdown list and then select the pdf files to export.



Figure 26. Select Download Folder for PDF File Export

- **JOBS > DATA MANAGEMENT > EMAIL.** Saved Jobs can be emailed if there is an active internet connection. When the **EMAIL** option is clicked, the following screen is shown prompting the user to browse and select a user and enter the recipient mail address. Data can be one file or multiple files. All selected files for one email should be in the same file path location. You can email any file in HunterLab folder as well as in the downloads folder.

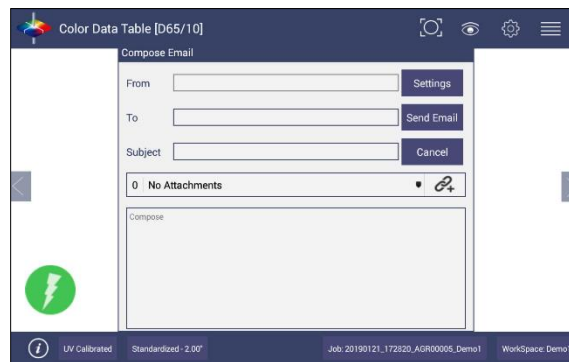


Figure 27. Enter an Address to Email a Job

- **MAIL SETTINGS**

Click **MAIL SETTINGS** button to configure the SMTP mail server configuration (Port, Server) as shown below. The mail settings configuration is mandatory to enable the mail job feature in the application. When done, press **SEND**.

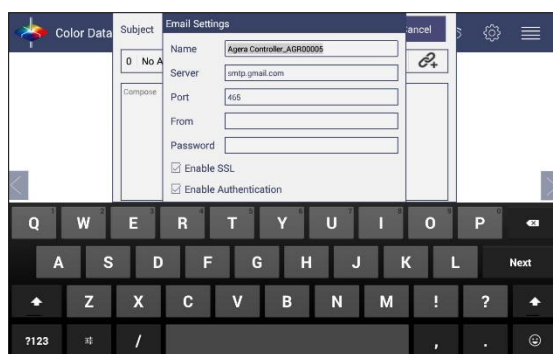


Figure 28. Enter SMTP Mail Server Information

- ***JOBS > DATA MANAGEMENT > DELETE***. The Delete function will allow deletion of Jobs, Standards, Workspace, Diagnostics and others. Data can be one file or multiple files. All selected files must be in the same file path location. In addition, one can delete PDF files from the Downloads folder.
- ***JOBS > DATA MANAGEMENT > BACKUP/RESTORE***. The Backup function will copy the entire HunterLab folder to a thumb drive. Restore enables the user to copy the backup folder of a thumb drive and upload to the Agera.

Jobs > Help

To access the onboard manual, use ***JOBS > HELP***. Novice Help can also be enabled under ***PREFERENCES > GENERAL***.

Jobs > About

The ***ABOUT*** menu provides information about HunterLab and the current software version.

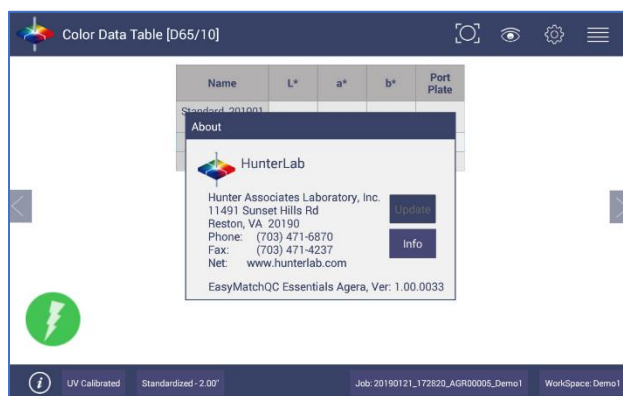


Figure 29. Job > About the Software

To update the software version from a USB flash drive, insert the USB flash drive into the port on the front of the instrument. Open the ***JOBS > ABOUT*** menu and press ***UPDATE*** to continue. After update, open Essentials and it will prompt to enter or create an Administrator Account. If needed, you can edit this account in User Manager later.

For detailed information on firmware and more, please press the **INFO** button on the screen.

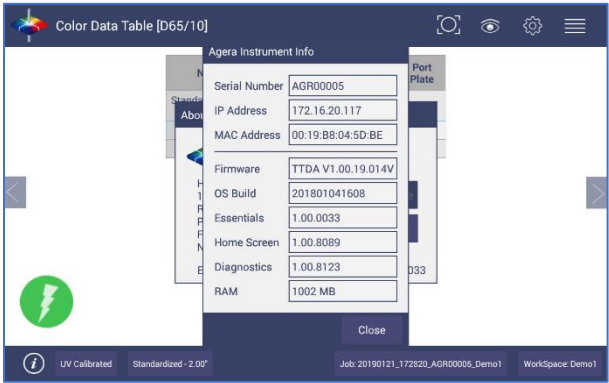


Figure 30. Instrument Info

Tool Bar: Workspace & System Settings

Workspace Icon



Under the **WORKSPACE & SYSTEMS SETTINGS**, the following tasks can be accomplished:

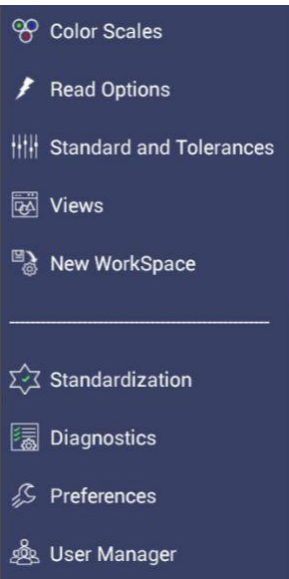


Figure 31. Workspace Parameters

Workspace > Color Scales

Color Scales provide four tabs in which the **SCALES, INDICES, DIFFERENCES AND ILLUMINANT/OBSERVER (ILL/OBS)** can be configured.

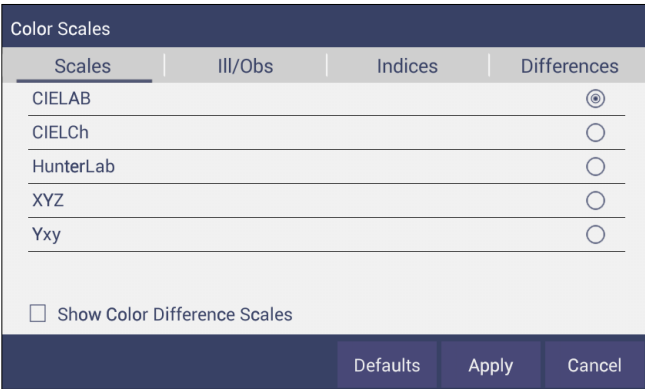


Figure 32. Color Measurement Scales

- The **SCALES** Tab shows the five scales available for measurement. Select the absolute scale or color difference scales (if a standard is selected). Press **APPLY** and begin to read your samples.

- The **ILLUMINANT/OBSERVER** tab displays combination selections for these parameters. To see all of the choices, you can scroll through the selections by viewing the screen.

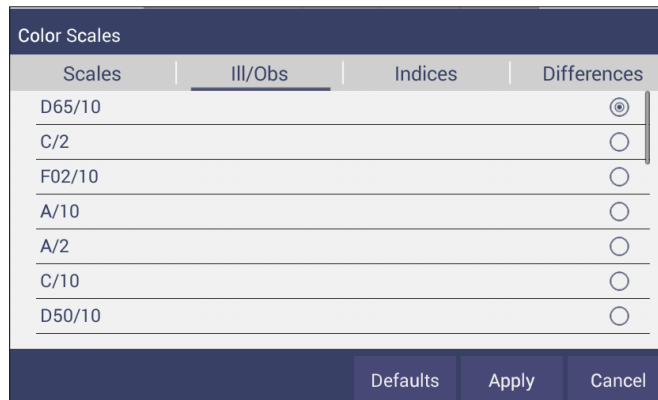


Figure 33. Illuminant/Observer Configuration

- To select indices, go to the **INDICES** tab and check the corresponding box on the right side. Multiple selections are available. To remove all selections, press **CLEAR ALL**. To see more choices, the screen can be scrolled. Custom Indices allows the user to input a %R at a wavelength as an indice. The Bias configuration in Read Options can then be used to adjust the value. Press **APPLY** to continue.

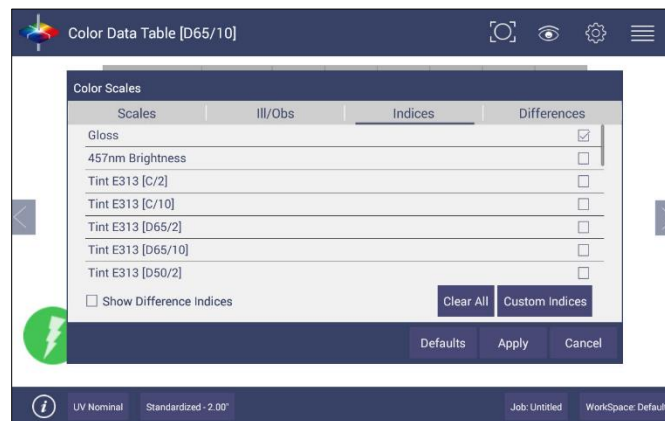


Figure 34. Index Configuration

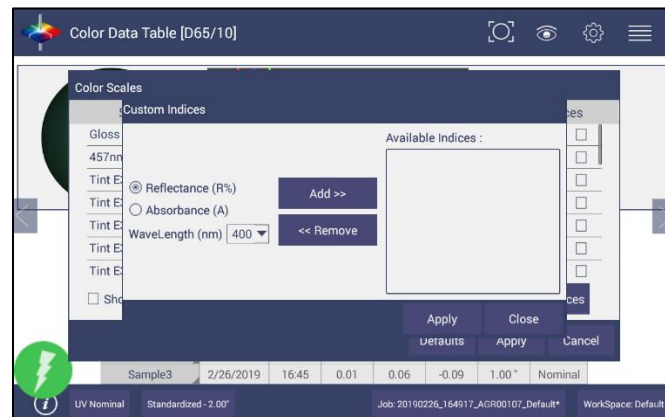


Figure 35. Custom Indices

- To select differences, go to the **DIFFERENCES** tab and check the corresponding box on the right side. Press **APPLY** to continue.

Color Scales			
Scales	III/Obs	Indices	Differences
dE			<input type="checkbox"/>
dE*			<input type="checkbox"/>
dE CMC			<input type="checkbox"/>
dE* 2000			<input type="checkbox"/>

Defaults Apply Cancel

Figure 36. Color Measurement Differences

Table 3. Overview of Color Measurement Parameters for
EZ View, Color Data Table, Trend Plot & Color Plot

Illuminant	Observer	Scales	Differences	Indices	View Options
D65	2/10	CIE Lab	dL*a*b*	457nm Brightness	Pass/Fail ¹
C	2/10	CIE LCh	dL*C*h	Tint E313	Tolerances
F02	2/10	Hunter Lab	dLab	WI E313	Time ³
D50	2/10	XYZ ¹	dXYZ	WI Ganz	Date ³
D55	2/10	Yxy ¹	dYxy	Tint Ganz	Port Plate
D75	2/10		dE	Y Bright	Image Status
F07	2/10		dE CMC	YI D1925	UV Mode
F11	2/10		dE* 2000	YI E313	Image View
TL84	2/10		dE*	Z%	Latest Data First
ULT 30	2/10			SCAA/C	Trace Range 1 ²
ULT 35	2/10			SCAA/G	Trace Range 2 ²
	2/10			HCCI	Trace Range 3 ²
				BCU	Trace Range 4 ²
				Gloss	Auto Range ²
					Display: Line ²
					Display: Point ²
					Zoom
					Average ²
					Std. Deviation ²
					Meas per Display ²

¹Not Available on Color Plot, ²Trend Plot Only, ³Color Data Table Only

Workspace > Read Options

Read Options > Options

Shows a dialog box to configure **AVERAGING**, **CONTINUOUS READ INTERVAL**, **AUTO SAVE**, **IMAGE VIEWER**, **INDEX BIAS CONFIGURATION**, **SAMPLE NAME**, and **STANDARD NAME**. The Read command performs the operation based on the configured options.

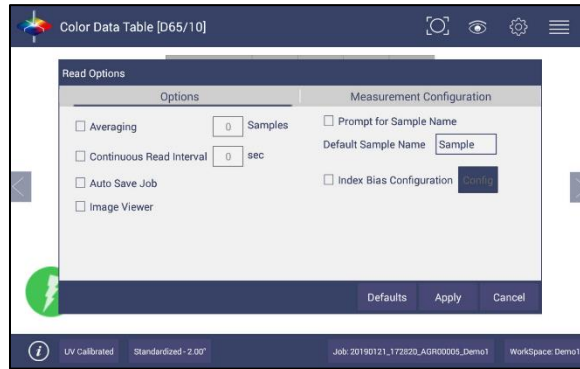


Figure 37. Read Options

■ AVERAGING

Select the number of readings to average to produce the final measurement. The total number of readings to be averaged can be no less than two. Press **APPLY** to close the screen

and press Read  to initiate Readings.

Average Reading				
Name	L*	a*	b*	
Coffee Std	24.19	9.88	15.87	Read
Sample 1	22.78	9.95	16.80	Average
Sample 2	22.79	9.95	16.80	
				Cancel

Figure 38. Reading and Averaging

Once the **READ** button is pressed, the instrument will display a unique dialog box to **READ** and **AVERAGE** the readings. The second reading is taken using the dialog box button, Read. Once all the readings are taken, press **AVERAGE** to obtain the results. Average and Continuous Read are mutually exclusive.

CONTINUOUS READ INTERVAL

This feature performs measurements continuously. In **CONTINUOUS READ** mode, measurements are initiated and stopped using the **READ** Button. The minimum value of the Read interval is 5 seconds and it will read as fast as it can update. When in **CONTINUOUS READ** mode, the Read Button is enhanced with a checkmark.

When taking measurements, the Read button is greyed out. When waiting to take the next measurement, the Read button turns green.

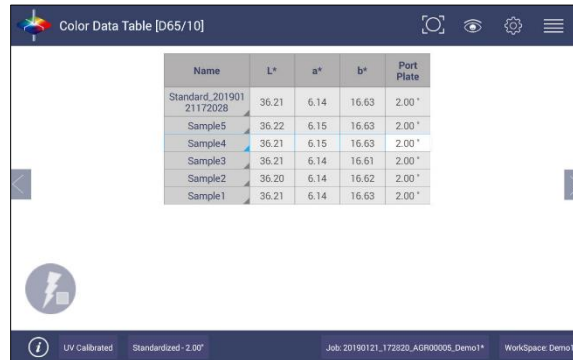


Figure 39. Continuous Read

To stop the Continuous Read, press the **READ** button when the button is green.

AUTO SAVE JOB

This selection will automatically save a job. Once this feature is selected, a dialog box will be displayed to name the job. If there is no name for a job yet, the file name will be default with the date, time, instrument and workspace.

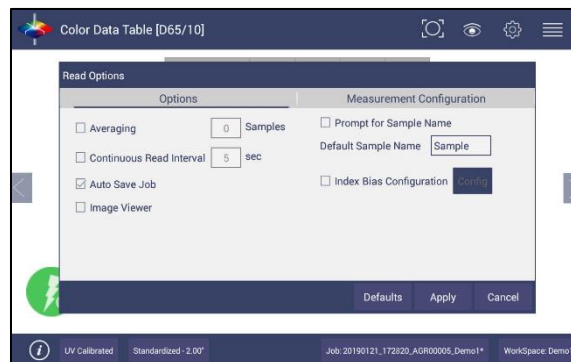


Figure 40. Auto Save Job

IMAGE VIEWER

To preview/capture an image of each sample prior to measurement, go to **WORKSPACE > READ OPTIONS > IMAGE VIEWER**. Check the **IMAGE VIEWER** and press **APPLY**.

When this option is checked, the camera will look on sample before taking each measurement. You can just view the sample's area without any capture or capture an image and save it together with a measurement.

Note: When Averaging or Continuous Read is selected with Image Viewer, the camera will only view the sample once at the first measurement.

Note: The Camera preview dialog can only last 30 seconds maximum each time. This dialog will automatically close and take sample measurement once it passes 30 seconds.

- To take an image of a sample, place the sample on the port plate, and click the **READ** button. A **CAMERA PREVIEW** dialog will be prompted in your screen.

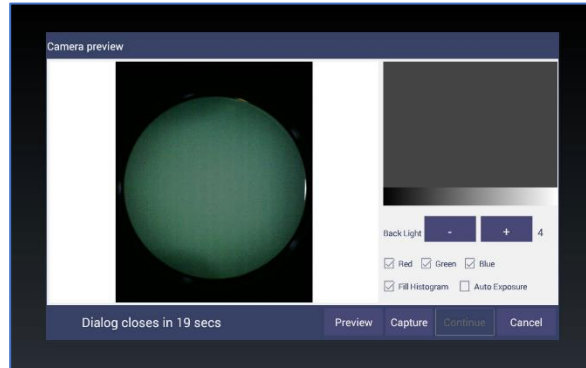


Figure 41. Camera Preview

- If the image shown in your screen appears to be fuzzy, tap on the image to perform auto-focus.
- Set the back-light level by adjusting the \pm button and position your sample in the right place. Then, click on **CAPTURE** to save an image.
- The camera analyses the colors in your image and creates a histogram that plots three colors of you captured image: Red, Green, and Blue.

Note: To fix the camera's auto focus, we use a sample with a sharp image (for example a paper with characters). Do not use the white tile or black glass for auto focus as it won't work well.

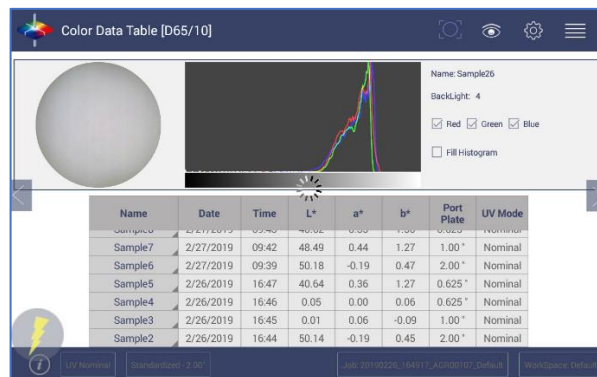


Figure 42. Image Viewer with CDT Screen

• INDEX BIAS CORRECTION

This option allows the user to input a custom slope and intercept correction for indices. The user can select any Index from the list of applicable indices and input the desired **GAIN AND BIAS** values. After selecting the required Indices, select the Apply button to save the selected Indices values and update the Views accordingly. The Bias-corrected Indices will be marked with * (eg: HCCI *) in the respective view display.

To calculate the slope and bias correction, read a series of samples around the target values of interest. Three methods can be used to provide corrected values:

1. **One standard data point:** In this case, the single data point is compared to the expected value. The Gain remains at 1.0 and the Bias is corrected:

$$\text{Bias} = \text{Expected Value} - \text{Measured Value}$$

2. **Two data points:** In this case, the two readings are compared to the expected values.

$$\text{Bias Correction} = \text{Expected Value 1} - (\text{Measured Value 1} * \text{Gain})$$

$$\text{Gain Correction} = (\text{Expected Value 1} - \text{Expected Value 2}) / (\text{Measured Value 1} - \text{Measured Value 2})$$

3. **Linear regression:** Create a $y = mx + b$ relationship comparing actual readings to target values, where target values is on the Y-axis and actual readings are on the x-axis. Enter the slope correction under Gain and the intercept correction under Bias.

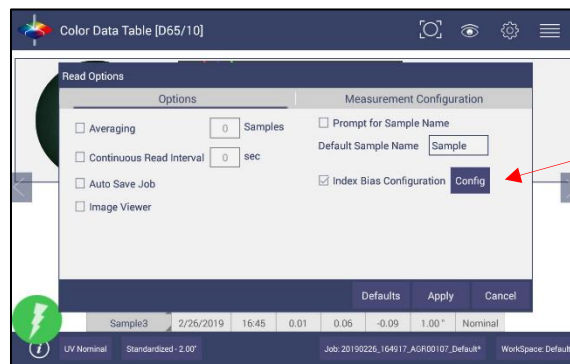


Figure 43. Slope & Bias Correction

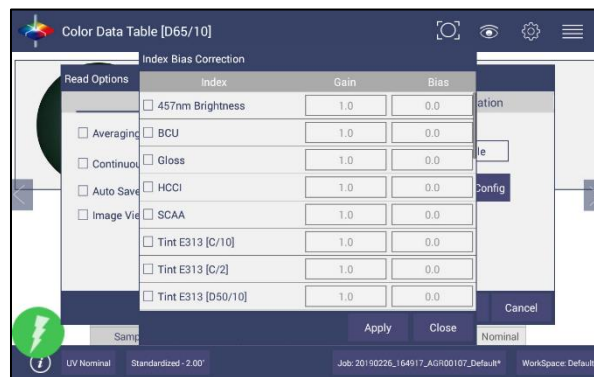


Figure 44. Input Gain & Bias

The indices with bias correction include: 457nm Brightness, BCU, HCCI, SCAA/C, SCAA/G, Tint E313, WI E313, Y Brightness, YI D195, YI E313, Z%.

- **PROMPT FOR SAMPLE/STANDARD NAME**

Select this feature to input the Sample (or Standard) name manually during the measurement cycle so that the Sample measurement will be inserted with the specified name. If this option is not selected, the Samples will be inserted with the specified default sample name suffixed with the auto incremented index number. Press **APPLY** when done.

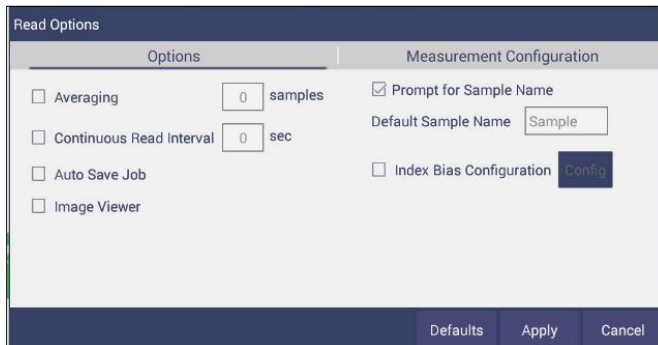


Figure 45. Prompt for Sample (Standard) Name

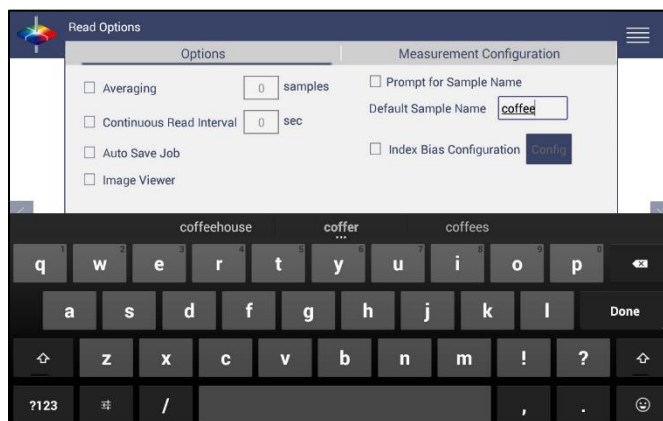


Figure 46. Input Sample Name

Read Options > Measurement Configuration

- **UV Mode**

Agera uses LEDs to determine UV-nominal, UV-excluded and UV-calibrated. UV compare will take two measurements automatically; one by UV-excluded mode and UV-calibrated mode for one sample. Both measurements will be saved with the same name. If the Image View is captured, the sample image will be saved for both measurements. The procedure is to standardize in 2 modes – one with the UV-excluded and one with the UV-calibrated. In this way, a numerical value for the ultraviolet contribution can be documented. To begin, select **UV STATUS** from the Status bar or go to **WORKSPACE > READ OPTIONS > MEASUREMENT CONFIGURATION**.

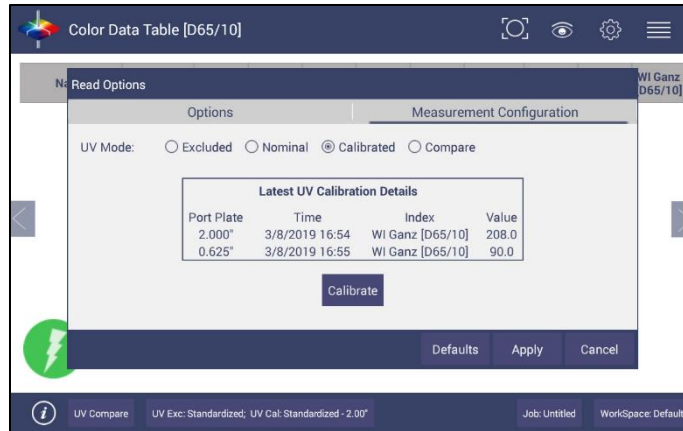


Figure 47. UV Mode Settings

- **UV-Nominal** - This mode includes UV. The UV for this mode can only be calibrated/updated at HunterLab.
- **UV-Excluded** - This option allows the user to negate the effect of optically-brightened agents or when used in multi-mode with UV-nominal or UV-calibrated, determines the amount of optical brightening agents present.
- **UV-Calibrated** - This UV calibration procedure optimizes the UV content to match D65 Daylight over time using a Fluorescent Standard with an assigned whiteness index value such as WI Ganz [D65/10] and WI E313 [D65/10]. When UV calibration is done correctly (i.e. the measurement is <0.5 from the calibration value), it will show port plate size, calibrate date and Whiteness index in this dialog as a stamp. If the measurement is >0.5, then the user will be asked to re-standardize and re-read the fluorescent standard. If the tolerance is not met, then this procedure will repeat 2 more times.

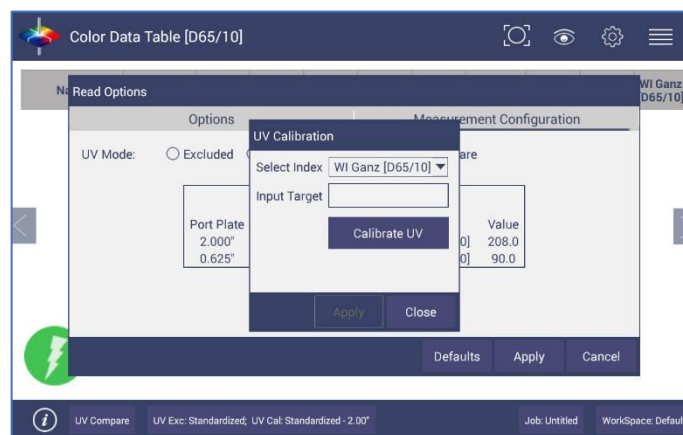


Figure 48. UV Calibration

- **UV-Compare** – This UV procedure automatically takes two measurements for one sample; one by UV-excluded and one by UV-calibrated.

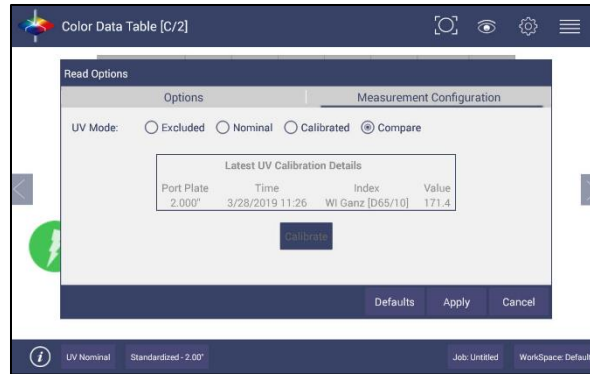


Figure 49. Select UV Compare

Read the sample for results UV-excluded and UV-calibrated.

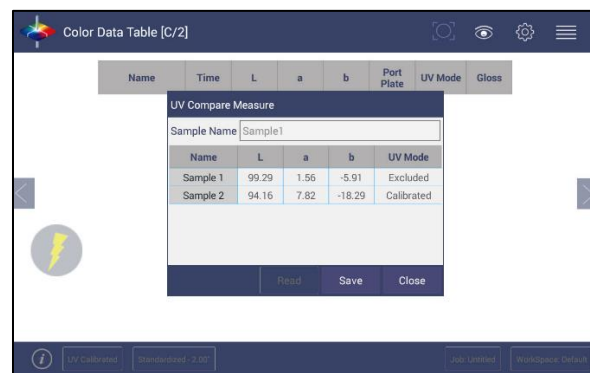


Figure 50. UV-compare Measurement

Workspace: Standard and Tolerances

Standard and Tolerances. Standards can be one of four types: retrieved from database, physical (measured), and ad hoc and numeric. A standard that is retrieved from Database has been previously stored. A physical standard is one that has been read as a sample and made into a standard. An Ad Hoc (or working) standard is one that is read at the beginning of a job and becomes the standard for a run. In this case, auto tolerances are recommended. A numeric standard is one that has color measurement values but is not present and cannot be read. A subset of this is the Hitch Standard. All types of standards can apply Hitch.

Note: Image can be saved with physical standards. When recall the physical standards, the image will be recalled together.

- A Standard is saved with standard name, standard color value and standard tolerances to the database by pressing the button at the bottom of the screen. When there is a standard applied in a job, you must delete it first if you want to change the standard type (Recall. Physical/Adhoc and Numeric). You can click the **CALC AUTO TOLERANCES** here to calculate the tolerances of standards.

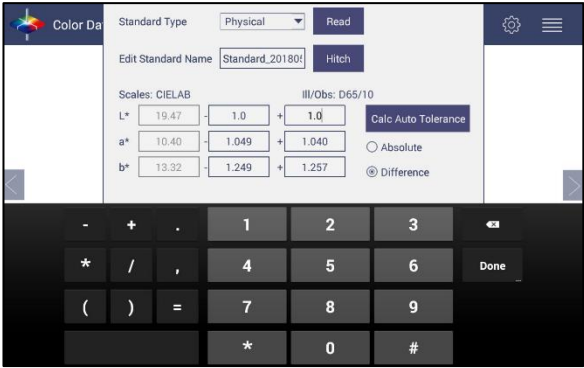


Figure 51. Tolerances Configuration

- **Tolerances** can be entered manually for a selected scale, index and difference.

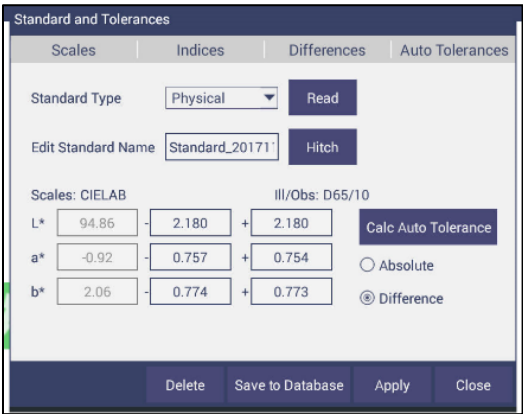


Figure 52. Enter Tolerances

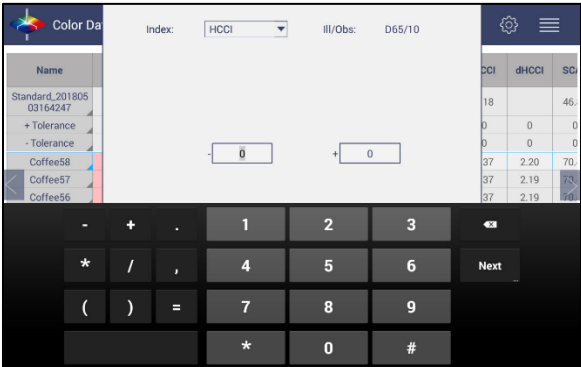
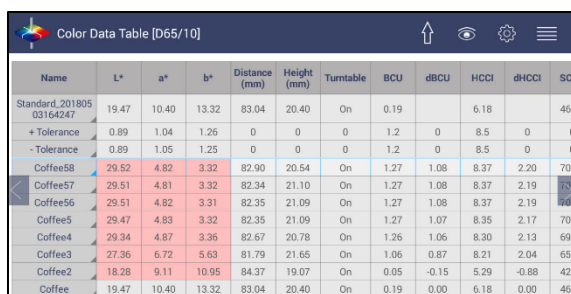


Figure 53. Index Selection and Tolerances

- Tolerances will be displayed on the measurement screen if enabled under VIEW OPTIONS for the Color Data and the Color Plot Screens.



Name	L*	a*	b*	Distance (nm)	Height (nm)	Turntable	BCU	dBCU	HCCI	dHCCI	SG
Standard, 201805 03164247	19.47	10.40	13.32	83.04	20.40	On	0.19		6.18		46.
+ Tolerance	0.89	1.04	1.26	0	0	0	1.2	0	8.5	0	0
- Tolerance	0.89	1.05	1.25	0	0	0	1.2	0	8.5	0	0
Coffee58	29.52	4.82	3.32	82.90	20.54	On	1.27	1.08	8.37	2.20	70.
Coffee57	29.51	4.81	3.32	82.34	21.10	On	1.27	1.08	8.37	2.19	70.
Coffee56	29.51	4.82	3.31	82.35	21.09	On	1.27	1.08	8.37	2.19	70.
Coffee5	29.47	4.83	3.32	82.35	21.09	On	1.27	1.07	8.35	2.17	70.
Coffee4	29.34	4.87	3.36	82.67	20.78	On	1.26	1.06	8.30	2.13	69.
Coffee3	27.36	6.72	5.63	81.79	21.65	On	1.06	0.87	8.21	2.04	65.
Coffee2	18.28	9.11	10.95	84.37	19.07	On	0.05	-0.15	5.29	-0.88	42.
Coffee	19.47	10.40	13.32	83.04	20.40	On	0.19	0.00	6.18	0.00	46.

Figure 54. Indices & Tolerances on CDT

- Pass/Fail based on these tolerances can be used on the EZ View as well as Color Data View.
 - Hitch Standardization
 - **Hitch Standardization** is a process by which two or more instruments of similar design can be made to read the same color values on a group of specimens. This process is very useful in expanding the communications of color around the world or between vendor and customer.
 - The process of Hitch Standardization (also known as transfer standardization) involves assigning one instrument to be the reference, or master, unit and mathematically adjusting the secondary, or slave, unit(s) to read the “same” values. In this way, two or more instruments can be hitched together. Hitching a secondary unit to a reference instrument requires that a specimen be read on both units and the values compared and adjusted accordingly. This specimen, known as the hitch standard, is first read on the reference instrument and its values recorded as spectral data or colorimetric (tristimulus) data. The hitch standard is then physically moved to the secondary instrument where it is reread and the values from the reference unit are input into the secondary instrument’s processor.
- ❖ Steps for Hitch Standardization:
- Read a standard.
 - Go to **WORKSPACE > STANDARD AND TOLERANCES** and select **HITCH**.
 - The Standard is displayed under **AS READ**. Enter the **TARGET VALUES**.
 - Check the **APPLY HITCH** box and press **OK**.

Hitch Standard

Hitch Method: ☒ Tristimulus Hitch

Hitch Type: ☒ Additive ☐ Ratio

Colorimetric Conditions

Illuminant/Observer: D65/10

Scale: CIELAB

Readings

	L*	a*	b*
As Read	94.86	-0.92	2.06
Target	94	1.0	2.0

☒ Apply Hitch

OK Cancel

Figure 55. Hitch Standardization

Table 4. Hitch Standardization by Additive or Ratio Application

	Hitch Standard		Calculate	Calculate	New Read	Apply Hitch	Apply Hitch
			Additive	Ratio		Additive	Ratio
	Target	Measured	Hitch	Hitch		New Read	New Read
X	80.27	78.29	= +1.98	=*1.025	70.84	72.82	72.63
Y	81.00	79.21	= + 1.79	=*1.022	72.25	74.04	73.88
Z	50.71	47.76	= +2.95	=*1.061	46.07	49.02	48.91
			Hitch Factor	Hitch Factor			
			1.98	1.025290586			
			1.79	1.022598156			
			2.95	1.061767169			

Tolerances

Tolerances can be manually entered for Scales, Indices and Differences. Tolerances will be displayed on the measurement screen if enabled under **VIEW OPTIONS** for the Color Data and EZ View Screens.

Pass/Fail based on these tolerances can also be viewed on these screens.

Name	dE*	Tint E313 [C/2]
Blue Standard	-8.61	
Sample19	0.06	-8.58
Sample18	0.82	-8.41
Sample17	0.58	-8.51
Sample16	0.29	-8.55
Sample15	1.00	-8.38
Sample14	0.38	-8.53
Sample13	0.45	-8.50
Sample12	0.96	-8.38
Sample11	0.18	-8.56
Sample10	0.51	-8.46
Sample9	0.79	-8.43
Sample8	0.08	-8.59

Figure 57. Difference Tolerance Configuration

Name	dE*	Tint E313 [C/2]
Blue Standard	-8.61	
Sample19	0.06	-8.58
Sample18	0.82	-8.41
Sample17	0.58	-8.51
Sample16	0.29	-8.55
Sample15	1.00	-8.38
Sample14	0.38	-8.53
Sample13	0.45	-8.50
Sample12	0.96	-8.38
Sample11	0.18	-8.56
Sample10	0.51	-8.46
Sample9	0.79	-8.43
Sample8	0.08	-8.59

Figure 58. Indices Tolerance Configuration

Workspace: Views

This option can be used to select the screen views to be used. Simply check on the box of the screen needed. Press **APPLY** to save one or all of the screens. The default screen is the **COLOR DATA TABLE**. To navigate between screens once the selections have been applied, use the **VIEW FLIPPERS** on the left and right of the screen.

Figure 59. Workspace Views

Workspace: New Workspace

This allows the user to create a new workspace. A warning is shown to make sure that the current Job is saved. All settings in the previous workspace will be loaded in the new workspace.



Figure 60. New Workspace

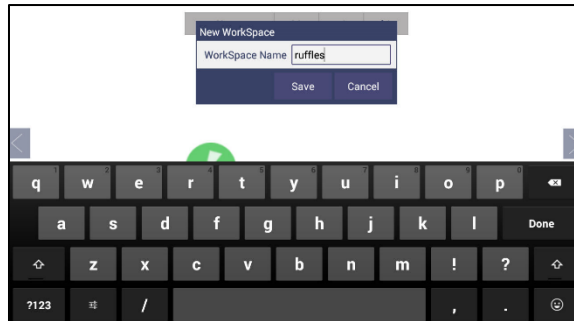


Figure 61. Name the New Workspace

System Settings: Standardization

From the **WORKSPACE** menu, select **STANDARDIZATION**. You can also press the Standardization button in the Status bar as a shortcut. The instrument can report the current port plate and UV Mode on the status bar. Agera can save multiple modes contains different UV settings (nominal, excluded and calibration) and Area of View (LAV1, LAV2, and SAV).

Each Agera has a specific set of Black Glass and White Tile unique to the instrument. These are not interchangeable with other instruments. Position the standard tiles on the instrument with the white line matching the white line on the port plate.

- **READ BLACK GLASS:** Place the Agera black glass on the sensor port. Press **READ** to continue.



Figure 62. Read Black Glass

- **READ WHITE TILE:** Remove the black glass and place the Agera white tile at the port. Press **READ** to continue.

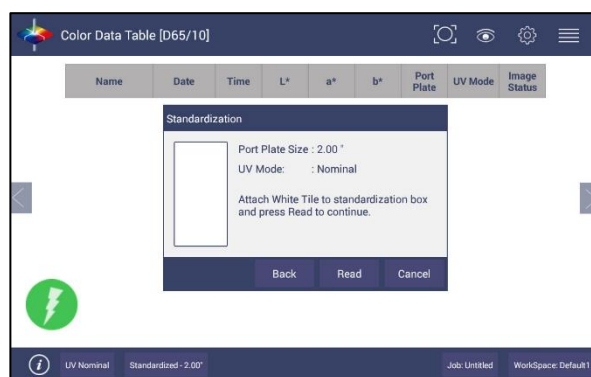


Figure 63. Change to White Tile

- Remove the calibrated white tile when standardization is complete. The instrument is ready to Read Samples.

Multi-Standardization Mode

Agera can save multiple modes with UV Modes and Area of View (Port Plate Settings). Based on the UV-status and the port plate standardization, the nine modes can be stored and recalled for measurement.

Table 5. Multiple Modes

Mode	UV	Port Plate
1	Nominal	LAV 1: 51mm (2.0 in)
2	Nominal	LAV2: 25.4mm (1.0 in)
3	Nominal	SAV: 16.9mm (0.625 in)
4	Calibrated	LAV 1: 51mm (2.0 in)
5	Calibrated	LAV2: 25.4mm (1.0 in)
6	Calibrated	SAV: 16.9mm (0.625 in)
7	Excluded	LAV 1: 51mm (2.0 in)
8	Excluded	LAV2: 25.4mm (1.0 in)
9	Excluded	SAV: 16.9mm (0.625 in)

To update Standardization Status for a new mode, place the new port plate on the instrument and/or change UV status by UV button and click the **READ** button. The standardization status will be updated. If the standardization of this new mode is valid, then the sample will be read. If the standardization is not valid, a dialog box will be shown so prompt for new Standardization.

When using UV compare, there are two standardization modes associated – one for UV-calibrated and one for UV-excluded. Both modes must be valid before measurements can be taken.

Standardization and Port Plate/Area of View

Each Agera can determine the port plate in view and adjust accordingly. The sizes are as follows:

- LAV 1 - 54 mm (2.125 in) illumination; 51 mm (2.0 in) measured
- LAV 2 - 28.6 mm (1.125 in) illumination; 25.4 mm (1.0 in) measured
- SAV - 17.46 mm (0.6875 in) illumination; 16.9 mm (0.625 in) measured

Gloss Standardization

Gloss standardization is automatically done while performing instrument color standardization and uses the Black Glass as the reference.

Agera includes a built-in 60-degree gloss meter with a single LED illumination (filtered to C/2°)/detector pair in conformance with ASTM D523 and located right below the sample port plate.

Gloss measurement works with all three port plates.

Agera reports gloss when selected as an index in **WORKSPACE > COLOR SCALES > INDICES > GLOSS**.

System Settings: Diagnostics

The performance diagnostics are Repeatability and a Green Tile Test. Both tests use the 1.00 in port plate and UV-excluded.

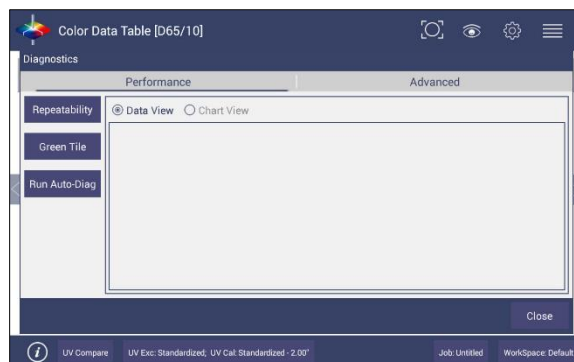


Figure 64. Performance Diagnostics Menu

Colorimetric Repeatability

The Repeatability Test assesses how consistently the instrument can measure color. To begin the sample pan should be free of samples and obstacles. Click **NEW** button to start the repeatability test and the user is prompted to press **OK** to standardize. All sample readings must be within the tolerances to pass the test.

- **READ** the Agera black glass and then the Agera white tile.

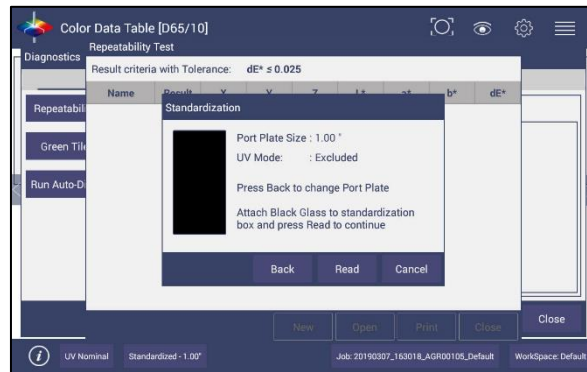


Figure 65. Standardize the Instrument



Figure 66. Read White Tile

- Leave the white tile at the port and press **OK** to initiate the repeatability readings. The white tile is read 30 times and the individual results reported. A table of the difference between the current reading and Standard is shown after every measurement. By comparing each reading to the tolerance, a Pass/Fail assessment is shown.

Name	Result	X	Y	Z	L*	a*	b*	dE*
Sample19	Pass	85.19	90.10	94.41	96.04	-0.45	1.53	0.01
Sample20	Pass	85.19	90.10	94.41	96.04	-0.45	1.53	0.01
Sample21	Pass	85.18	90.10	94.41	96.04	-0.45	1.52	0.01
Sample22	Pass	85.19	90.10	94.43	96.04	-0.45	1.51	0.02
Sample23	Pass	85.19	90.11	94.42	96.04	-0.45	1.52	0.01
Sample24	Pass	85.19	90.10	94.41	96.04	-0.45	1.52	0.01
Sample25	Pass	85.19	90.10	94.41	96.04	-0.45	1.53	0.01
Sample26	Pass	85.19	90.10	94.41	96.04	-0.45	1.53	0.01
Sample27	Pass	85.19	90.10	94.42	96.04	-0.45	1.52	0.02
Sample28	Pass	85.19	90.10	94.41	96.04	-0.45	1.53	0.01
Sample29	Pass	85.19	90.10	94.41	96.04	-0.45	1.53	0.01
Sample30	Pass	85.18	90.10	94.40	96.04	-0.45	1.53	0.01

Figure 67. Repeatability Readings with Pass/Fail

When all 30 readings have been made, the final test result is shown and saved automatically. To print the results, press the **PRINT** button or click to open the file and then Print.



Figure 68. Diagnostics Repeatability Test Results

Reading the Green Tile

- This test requires entry of the target values for the green tile.

The screenshot shows the 'GreenTile Test' window. It contains a section for entering scale targets before beginning a new test. The targets are entered as 0.00 for X, Y, and Z, with a tolerance of ± 0.30 . A table of results is shown below:

Name	X	Y	Z

Figure 69. Input Target Values for Green Tile

- Once the target values have been entered, press **NEXT**. Standardize the instrument and attach the Green Tile. Press **OK** to continue.

The screenshot shows the 'Standardization' dialog box. It contains the text 'Standardization is done.' and 'Click OK to read Green Tiles'. There are 'OK' and 'Cancel' buttons at the bottom.

Figure 70. Place the Green Tile at the Port

- Ten readings are taken and compared to the tolerance as an average. This test is then automatically saved and can be printed by pressing **PRINT**.

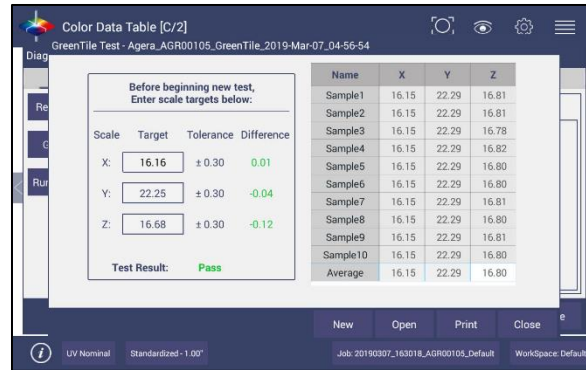


Figure 71. Green Tile Readings

Advanced Tests

Advanced Tests are primarily for use by HunterLab's Service Department. However, this menu supports the upload of Printer Drivers, Parking of the sensor for Shipping, and remote support setting.



Figure 72. Advanced Menu

- **GLOSS:** Provides the current sample's gloss value and raw gloss counts in the Data View.
- **PORT PLATE:** Provides the current port plate code and size in the Data View. If the port plates are being read incorrectly, please contact the Service Department.
- **CAMERA AV:** Used to detect/calculate the sampling area of each port plate. To use this feature each port plate should be read with a white translucent sample at the plate. The process of reading will calibrate the sampling area.
- **READ SIGNAL, DARK, ZERO:** This function will enable the Service Department to determine proper performance of the instrument.
- **CAROUSEL:** Moves the LAV lens/SAV lens/Camera position of the item selected. For example, if you click on LAV, it will move to the LAV lens. The Back light is used to check if the SAV/LAV lens are aligned correctly.
- **ENABLE LOG:** Once check enabled, this feature records the instrument actions for tracking purposes. When complete the user returns to this screen and exports the data to a thumb drive. Once the data export is completed the data size becomes '0' again.
- **STANDARDIZE:** Initiates standardization from the Diagnostics screen.
- **MEASURE:** Initiates the measurement of a sample from the Diagnostics screen. The reflectance spectra data will be showed in this Data View.

- **PRINTER DRIVERS:** To upload a new print driver or apk file, download the apk file needed from the internet onto a flash drive. Place the flash drive into the instrument (front port) so that it can access the list of apk files. Select the driver to upload and press **OK**.



Figure 73. Insert USB with Printer Driver



Figure 74. Select Printer Driver

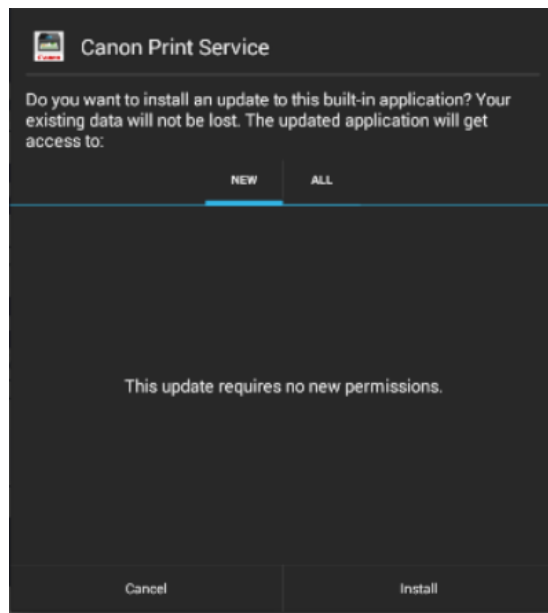


Figure 75. Updating Printer Drivers

- The Agera will install the new printer driver.

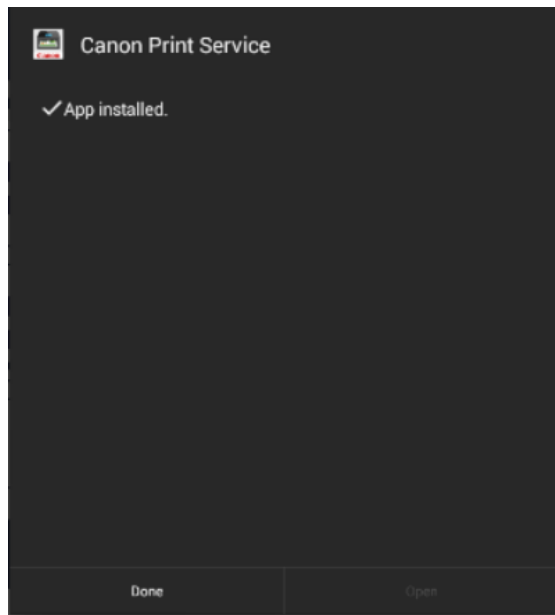


Figure 76. Printer Driver Installed

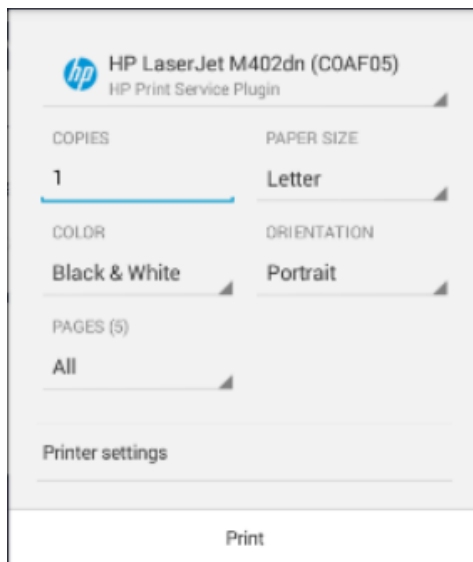


Figure 77. Printer Page

- **RESTART COMM** can be used to reset the ethernet communications for EasyMatch QC.
- **SUPPORT REGION:** Select **SUPPORT REGION**. A dialog is displayed with three options for region selection. Select the region (from **USA, EUROPE OR ASIA PACIFIC**) and then press **OK**. To apply this change, please restart support using the method below.

Note: Your instrument must be connected to the internet.

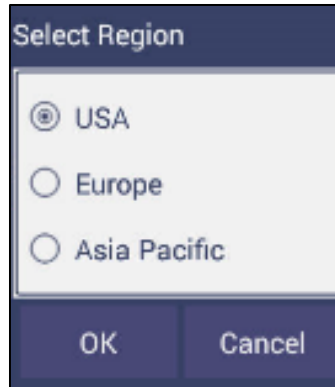


Figure 78. Select Region

- **RESTART SUPPORT** to view the Netops Host Screen. From the top right side of the Netops Host screen, select the 3 dots. From the list menu, select **RESTART**.

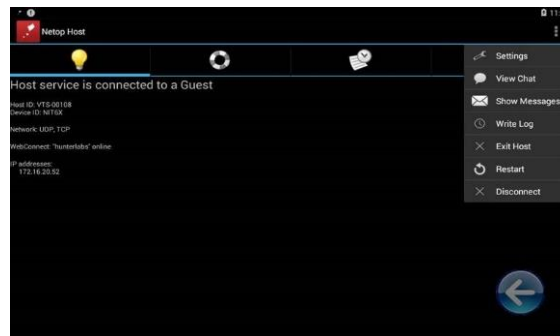


Figure 79. Remote Access Screen

- To ensure that **REMOTE SUPPORT** is successfully restarted, make sure that you see the message **WebConnect: 'hunterlabs' online**. If this message does not appear, please contact our support team. To exit press the floating back button.

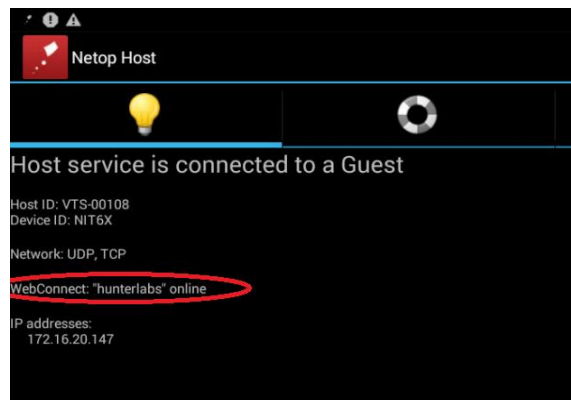


Figure 80. Web connect to HunterLab

System Settings: Preferences

Preferences: General

This allows the user to set preferences to:

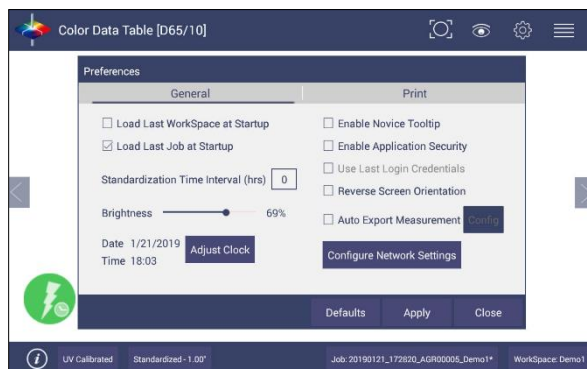


Figure 81. System Settings > Preferences > General Page

- To Load the **LAST WORKSPACE AT STARTUP** check this box and press **APPLY**.
- To Load the **LAST JOB AT STARTUP**, check this box and press **APPLY**.
- The **STANDARDIZATION TIME INTERVAL** is a useful reminder to re-standardize. Press **APPLY** to set the new interval. When the time has lapsed, a prompt to re-standardize will be displayed before measurements can be taken.
- Set the screen **BRIGHTNESS** using a sliding scale and press **APPLY**.
- Set the Date and Time, time zone, and format use the **ADJUST CLOCK** feature.
- **ENABLE NOVICE TOOLTIPS** by checking on the box. Once enabled, on screen tips are displayed for 3 seconds. To display again, roll over the **LIGHTBULB ICON** on the lower right part of the screen.

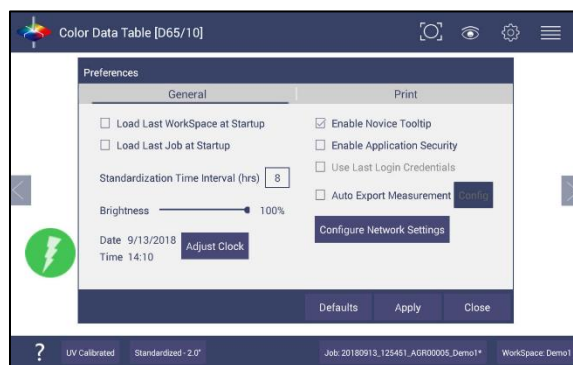


Figure 82. Enable Novice Tool Tips

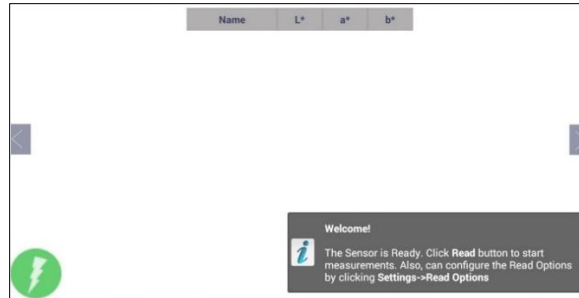


Figure 83. Example of Novice Tool Tip

- **ENABLE APPLICATION SECURITY.** This selection is available after the User Manager has been set up. Please refer to the **SYSTEM SETTINGS > USER MANAGER** for more information.
 - When this is selected, the application will require valid login credentials at startup. On successful login, the user name will be shown in the status bar. If **USE LAST LOGIN CREDENTIALS** is checked, the user will be automatically logged in on subsequent startups.
- **REVERSE SCREEN ORIENTATION.** The Essentials screen is default setup for port up Agera. If port forward orientation is required, then go to **WORKSPACE > PREFERENCES** and check **REVERSE SCREEN ORIENTATION** and click **APPLY**. Power off/on Agera to get the screen orientation changed.
- To **CONFIGURE AND ENABLE THE NETWORK DATA EXPORT**, the Configuration menu is presented.

For direct connection to a computer, **CONNECT AS CLIENT**. Enter the **SERVER IP ADDRESS**, **PORT NUMBER** and **DELIMITER** and press **APPLY**.

For connection to a network, select **ACT AS SERVER**. Enter the Port number and delimiter and press **APPLY**.

Figure 84. Data Export Configuration

- In Network settings, one can use an Ethernet cable or setup a WiFi Connection.

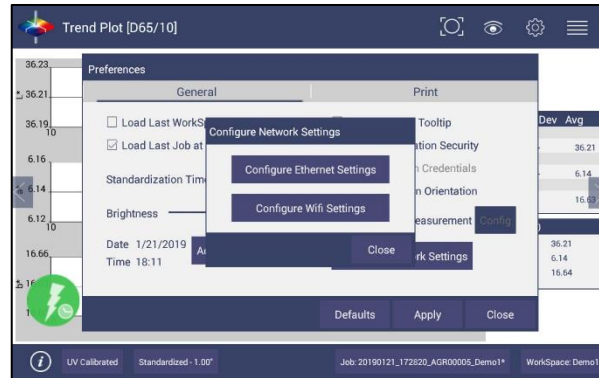


Figure 85. Network Settings

Preferences: Print

The Print page allows the user to configure:

- Enter a **TITLE** for the printout.
- Select **PORTRAIT OR LANDSCAPE** orientation.
- Select **LAST MEASUREMENT** or **ALL READINGS** for the job.
- The option to **PREVIEW** before print.
- Select the **VIEW** to print, i.e. **EZ VIEW, COLOR DATA TABLE, SPECTRAL DATA TABLE, SPECTRAL PLOT, TREND PLOT** and **COLOR PLOT**.
- Select **LOGO**. To apply a logo, import the logo first and then **BROWSE** to select. This logo can be used as a **DEFAULT LOGO** for all printouts or selected for each printout using the **SELECTION BOX TO PRINT** the Logo.
- To save changes, press **APPLY**. To use a default setup, press **DEFAULTS**.

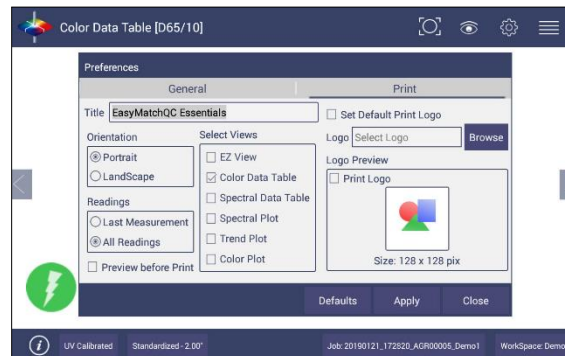


Figure 86. System Settings > Preferences > Configure Print Page

System Settings: User Manager

Security can be enabled on the Agera to ensure that operators cannot modify/delete folders or files and limit their functionality. An administrator is identified to set up the users/groups with selected privileges.

- To begin, go to **WORKSPACE > USER MANAGER** to set up Create Administrative Groups first followed by Create User Groups.

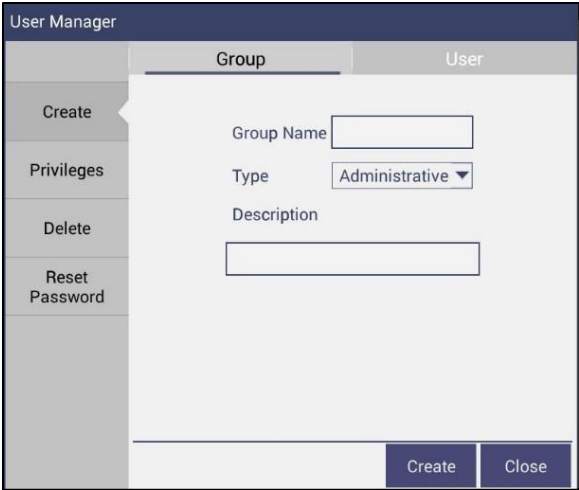


Figure 87. Create a Group

- Once the groups have been established, then individual users with **USER NAMES** and **PASSWORDS** can be setup for both Administrator and User Groups.

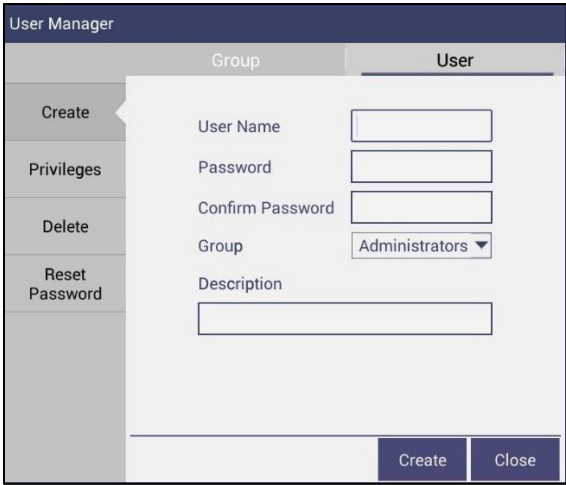


Figure 88. Setup Administrative & General Users

- Users in Administrative Groups have all features enabled. For Users in User Groups, Privileges can be setup as shown below. Press **UPDATE PROFILE** to complete.

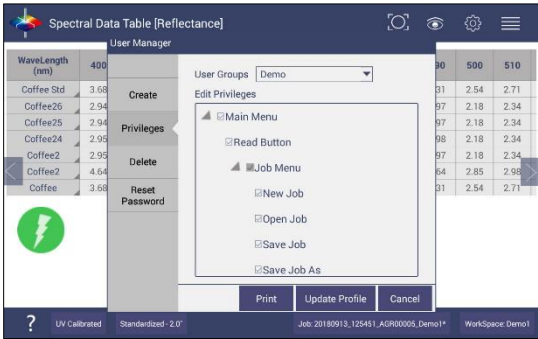


Figure 89. User Privileges

- If a printer is attached, you can **PRINT** a list of Privileges selected.
- To complete enabling security, go to **WORKSPACE > PREFERENCES** and **ENABLE SECURITY** on the right side.

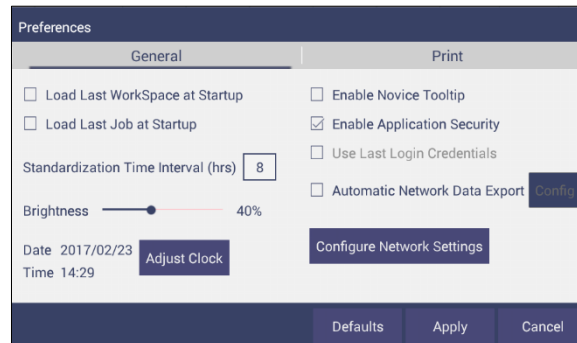


Figure 90. Enabling Security

- After enabling security, each user must enter a name and password when logging into the Agera. For convenience, the user can check the box under **WORKSPACE > PREFERENCES > GENERAL** to use the **LAST LOGIN CREDENTIALS**.



Figure 91. Login Credentials

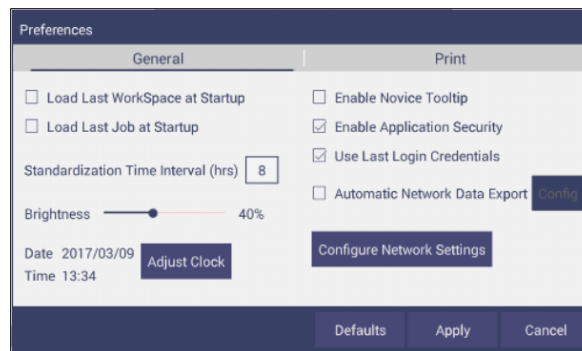


Figure 92. Enable Last Login Credentials

- If needed, the administrative user can delete groups / users and reset passwords of all Groups & Users.

Toolbar: View Options

View Options Icon



Views are selected using a dialog box under Workspace. Simply check on the box of the screen needed. Press **APPLY** to save one or all of the screens. The default screen is the Color Data Table. To navigate between screens once the selections have been applied, use the **VIEW FLIPPERS** on the left and right of the screen.

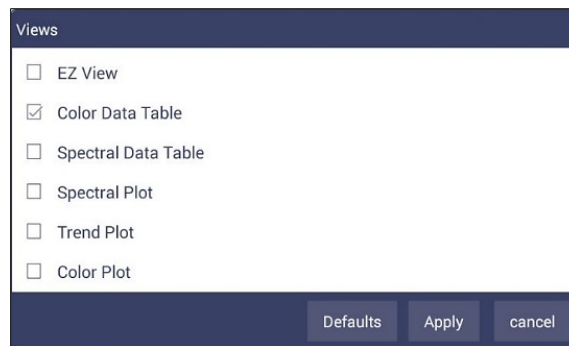


Figure 93. Workspace > select Views

Once the views have been selected, then **VIEW OPTIONS** are available to configure the views on the screen. Each screen has a unique set of view options associated with it.

Views: EZ View

This view provides a simple display of **STANDARD** vs. **SAMPLE** and **PASS/FAIL** results.

Name	Standard_20...	Sample10
L*	36.21	36.21
a*	6.14	6.14
b*	16.63	16.64
Tint E313 [D50/10]	-45.66	-45.64
SCAA	1000.00	1000.00

Figure 94. EZ View Display

- **VIEW OPTIONS** includes the selection of **NO COLOR SCALE**, **PASS/FAIL**, **IMAGE VIEW**, **PRECISION** and **FONT SIZE**.



Figure 95. EZ View Options

- Selecting the **IMAGE VIEW** allows you to see an image of the sample as well as a histogram of the same image.

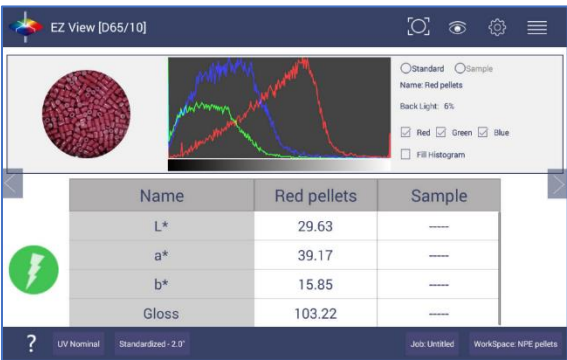


Figure 96. Image View for EZ View

Views: Color Data Table

The **COLOR DATA TABLE** view shows **COLOR SCALE**, **COLOR DIFFERENCE**, and **INDICE** data for the **STANDARDS** and **SAMPLES** in the job.



Figure 97. Color Data Display

- Options such as **UV MODE**, **IMAGE STATUS**, **PORT PLATE SIZE**, **TOLERANCES**, **DATA ORDER**, **DATE**, **IMAGE VIEW**, **TIME** and **PASS/FAIL** can be selected for viewing using the **VIEW OPTIONS**.

View Options

UV Mode

Image Status

Port Plate

Tolerances

Latest Data First

Date

Image View

Time

Pass/Fail

Precision

2

OK

Figure 98. Color Data Screen: View Options

- **IMAGE VIEW** allows you to see the captured image of your sample along with a histogram of the image. **IMAGE STATUS** shows the status whether the sample or standard is saved with the image - False means no image and True means with image.

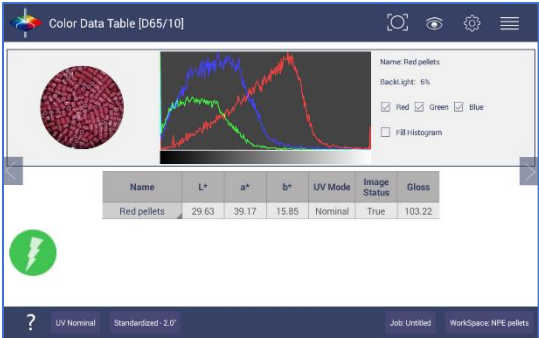


Figure 99. Image View

- A long press on the **SAMPLE** can enable the user to make the sample into a standard, change the name or delete the reading.

Name	Set as standard	b*
Sample 3	Rename	0.02
Sample 2	Delete	0.00
Sample 1		0.00

Figure 100. Changing a Sample into a Standard

- To delete a sample (or standard), select **DELETE** and then confirm the action.

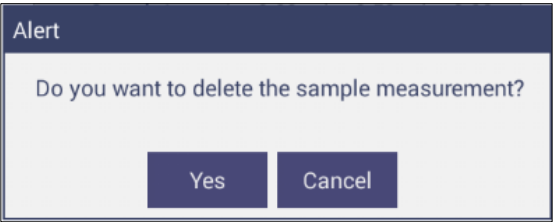


Figure 101. Delete the Sample Measurement

- A long press on the **STANDARD** will enable the user to edit or delete the standard. Edit opens the Standard and Tolerances dialog box. Delete will delete the standard from the current workspace.

Views: Spectral Data Table

The **SPECTRAL DATA TABLE** displays percent reflectance or absorbance values for each selected measurement at the wavelengths being measured.

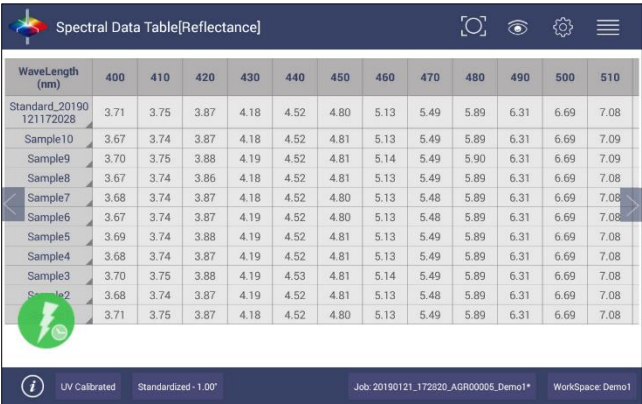


Figure 102. Spectral Data Table

- Selections include **ABSOLUTE** or **DIFFERENCE** for **REFLECTANCE**, **STRENGTH** or **K/S**. Enter the start and stop wavelength, the interval and the precision and press **OK** to continue.

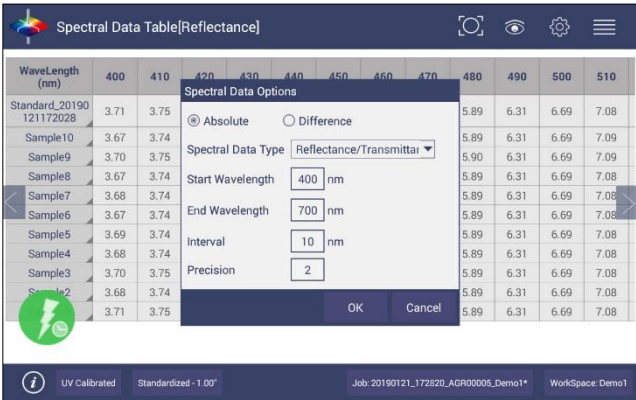


Figure 103. Spectral Data Table Options

Views: Spectral Plot

This view provides a plot of wavelength vs. spectral measurement parameter.

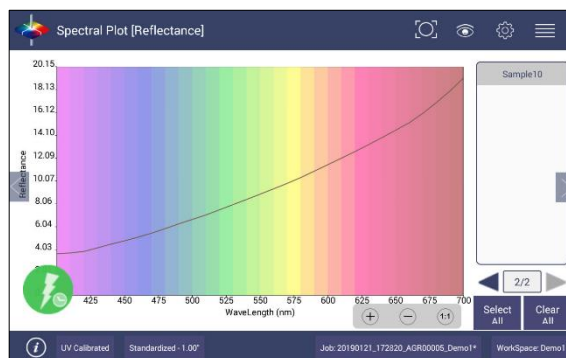


Figure 104. Spectral Plot View

- Press **CLEAR ALL** to remove all the samples to display. Press **SELECT ALL** to enable display of all samples. To select an individual sample, click on the respective Sample in the list located on the right edge of the screen.
- The Sample List is paginated. Click the left and right arrow buttons below the samples list to navigate between pages.
- Press and hold on the left/right page number arrows under the sample list to show a small dialog box. This dialog allows you to select the number of records per page to display and the page number to display.

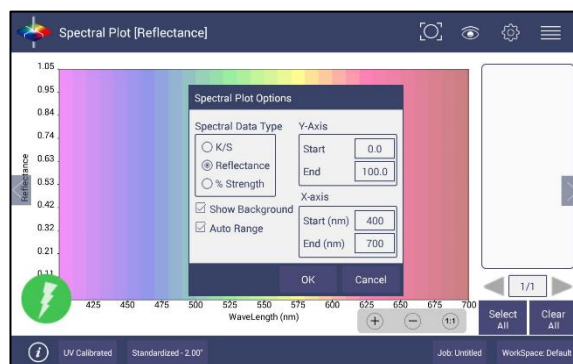


Figure 105. Spectral Plot Options

- **SPECTRAL PLOT OPTIONS:** There are three choices for spectral plot options:
 - **K/S** – mathematical calculation based on reflectance and determined at each wavelength for the standard and sample.
 - **REFLECTANCE** - Displays the reflectance value at each wavelength.
 - **% STRENGTH** – Percentage of the ratio of the K/S of the sample to the K/S of the standard.
- Uncheck the **OPTIONS: SHOW BACKGROUND**, to display the plot with white background color.

- Check **OPTIONS: AUTO RANGE** to automatically scale the contents to fit. If **AUTO RANGE** is not selected, then enter the **Y**-and **X**-axis range to display.

Views: Trend Plot

This tool can be used to study the trends in production and identify color variations. There are four parameters of color measurement (three scale values and optional indice) which can be represented in four traces. If a sample point is selected in one of the four traces, it is highlighted in the other 3 traces in blue. The name is shown at the bottom right hand corner of the View. The **AVERAGE** and **STANDARD DEVIATION** can be shown as per the view configuration settings. XE "Trend Plot"



Figure 106. Trend Plot

- **VIEW OPTIONS** for the Trend Plot include the **TYPE OF DISPLAY**, the **STATISTICS** and the **NUMBER OF READINGS** per display.

The figure shows the 'View Options' dialog box. It has two main sections: 'Display' and 'Statistics'. In the 'Display' section, there are two checkboxes: 'Line' and 'Point', both of which are checked. In the 'Statistics' section, there are two checkboxes: 'Average' and 'Std. Deviation'. The 'Average' checkbox is checked, and the 'Std. Deviation' checkbox is unchecked. Below these sections, there is a 'Measurements per Display' field with a value of '10'. At the bottom of the dialog box, there are two buttons: 'OK' and 'Close'.

Figure 107. Trend Plot Options

- **VIEW OPTIONS > TRACES** set the ranges for the traces or allow selection of **AUTO RANGE**. Trace 1 to 3 uses the current Color Measurement Scale and Trace 4 will allow for measurement of differences or an index. The user can select which Traces to view and set control limits as a percent.

Figure 108. Trend Plot Traces

Views: Color Plot

This shows the sample location in two-dimensional Color Space with respect to the standard for difference measurements or the samples in absolute measurement. For differences, the standard is the center point of the plot and the samples are plotted separately on the graph.

- The displayed samples are shown in a list box on the right of the screen. The Color Plot can be zoomed, and the data points can be viewed in detail.
- Press and hold on the left/right page number arrows to show a small dialog box. This dialog allows you to select the number of records per page to display and the default page number to display.



Figure 109. Color Plot View

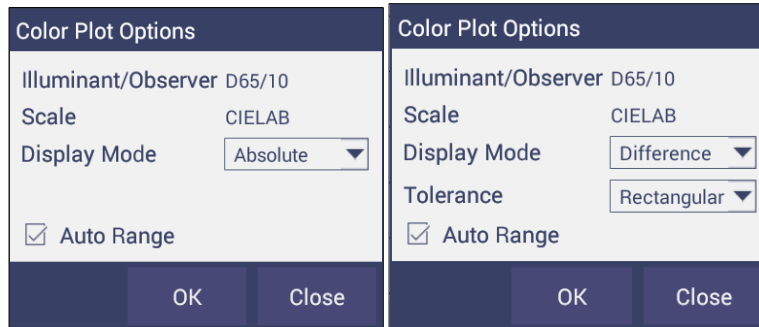


Figure 110. Color Plot Options

- The Tolerance Plot is available in rectangular and elliptical color space. The **PASS/FAIL** sample points are shown in green and red when in difference mode, respectively. In Absolute Mode, they are shown in green.

Special Functions

Auto-Exporting Data through a Network Connection

Connect Agera to a network. You can connect Agera to a network hub using the Ethernet cable or connect Agera to a network hotspot through a WiFi connection. The computer must be connected to the same network as the Agera.

Option A: Connect to a network hub using an Ethernet

- Hardware needed: Ethernet cable plugged into the back of the Agera and the other end to a network hub.



Figure 111. Ethernet Cable

- To connect Agera to network, go to **WORKSPACES > PREFERENCES** and Select **CONFIG NETWORK SETTINGS**.

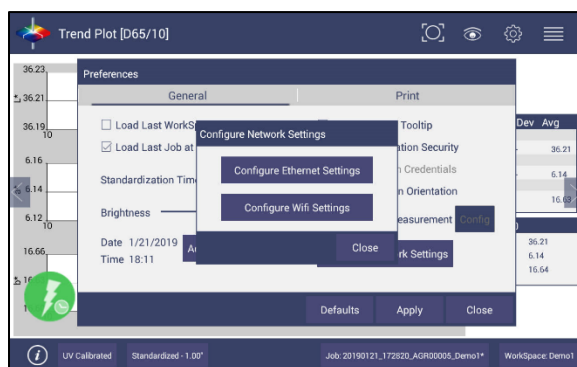
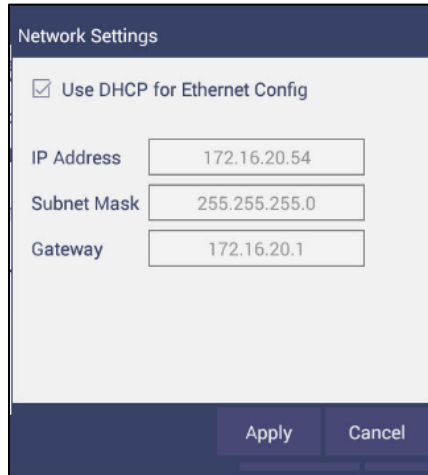


Figure 112. Preferences (General) > Network Settings

- Select **CONFIGURE ETHERNET SETTINGS**.
- Check **USE DHCP FOR ETHERNET CONFIG**. Please write down the IP address showing in the Ethernet Setting dialog. You can also check the IP address of Agera in **JOBS > ABOUT > INFO**.



Network Settings

☒ Use DHCP for Ethernet Config

IP Address: 172.16.20.54

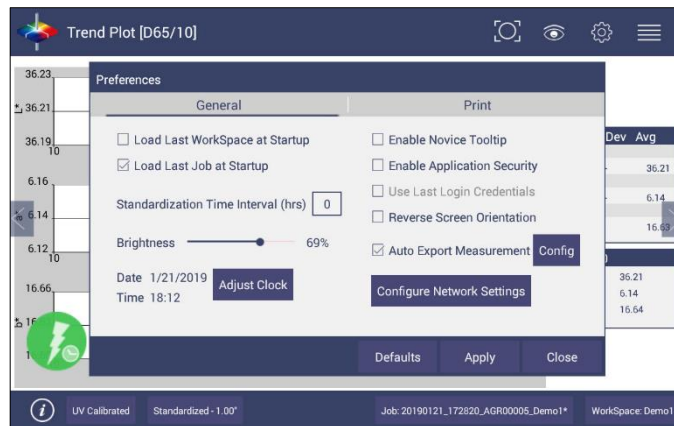
Subnet Mask: 255.255.255.0

Gateway: 172.16.20.1

Apply Cancel

Figure 113. Select DHCP

- Go to **WORKSPACE > PREFERENCES** and select **AUTO NETWORK DATA EXPORT MEASUREMENT** using a check and select Config. Choose **ACT AS SERVER** and **PORT NUMBER AS 11111**. You can also choose a delimiter to mark your data.



Trend Plot [D65/10]

Preferences

General

☐ Load Last WorkSpace at Startup

☒ Load Last Job at Startup

Standardization Time Interval (hrs): 0

Brightness: 69%

Date: 1/21/2019

Time: 18:12

Adjust Clock

Print

☐ Enable Novice Tooltip

☐ Enable Application Security

☐ Use Last Login Credentials

☐ Reverse Screen Orientation

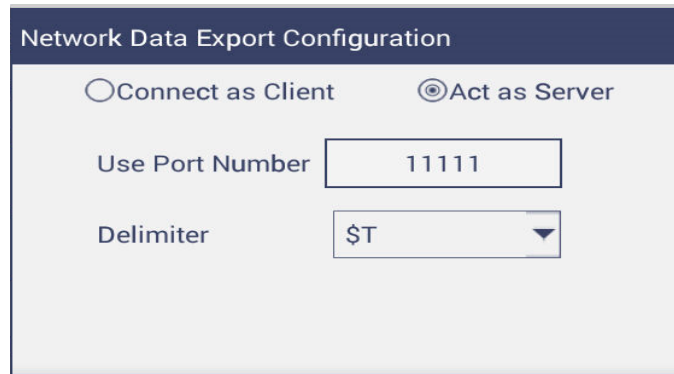
☒ Auto Export Measurement

Config

Configure Network Settings

Defaults Apply Close

Figure 114. Auto Export Measurement



Network Data Export Configuration

☐ Connect as Client ☒ Act as Server

Use Port Number: 11111

Delimiter: \$T

Figure 115. Network Data Export

- Configure the computer with the following settings:
 - Set **COMPUTER AS CLIENT**.
 - Enter the **IP ADDRESS** of Agera as recorded above.

- Set the **PORT NUMBER** as 11111.
- After all have been set, the data is ready to be exported from Agera to the computer.

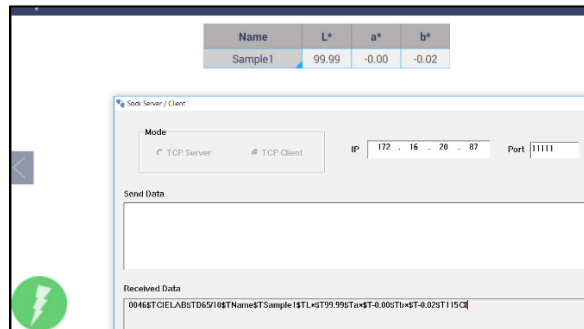


Figure 116. Data Export

Optional B: Connect to a hotspot through the WiFi connection

- To connect Agera to network, go to **WORKSPACES > PREFERENCES** and select **CONFIG NETWORK SETTINGS**.

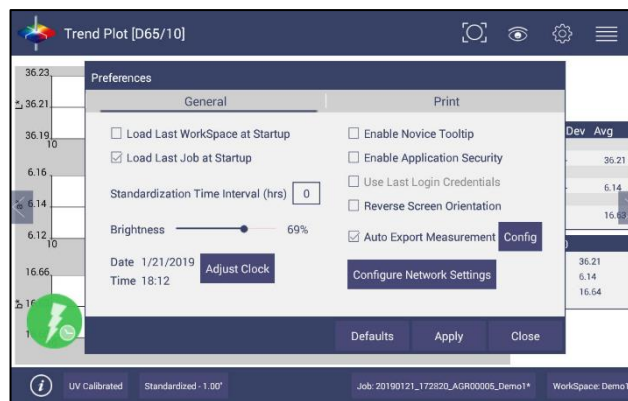


Figure 117. Configure Network Settings

- Select **CONFIGURE WIFI SETTINGS** and the WiFi configuration dialog will be prompted.

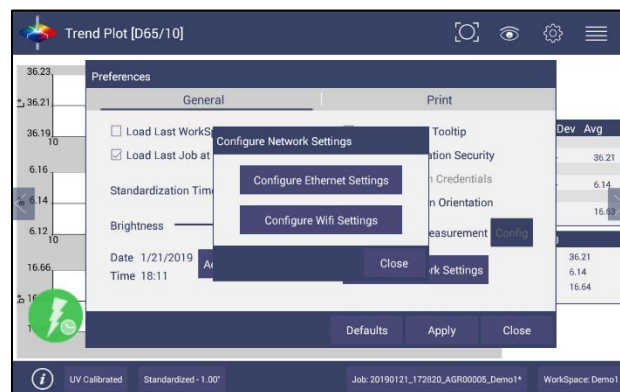


Figure 118. Configure WIFI settings

- Please search and connect to the available WiFi and write down the IP address showing in this dialog. After the WiFi configuration, please click the floating **BACK BUTTON** to go back to Essentials app.

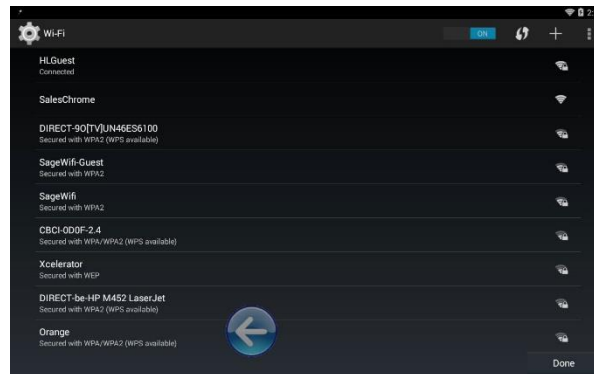


Figure 119. Find IP Address

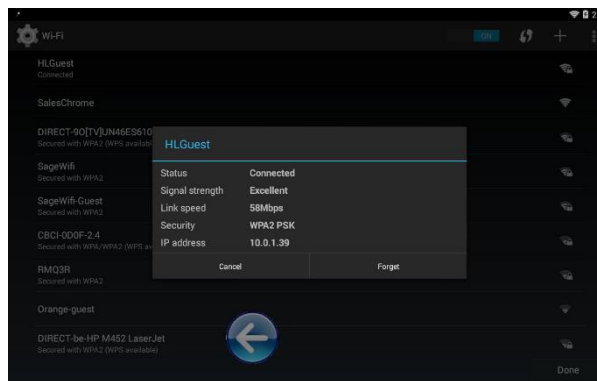


Figure 120. Find IP Address (Part2)

- Go back to **WORKSPACES > PREFERENCES > AUTO EXPORT MEASUREMENT** and check **CONFIG**. Choose **ACT AS SERVER** and **PORT NUMBER AS 11111**. You can also choose a delimiter to mark your data.

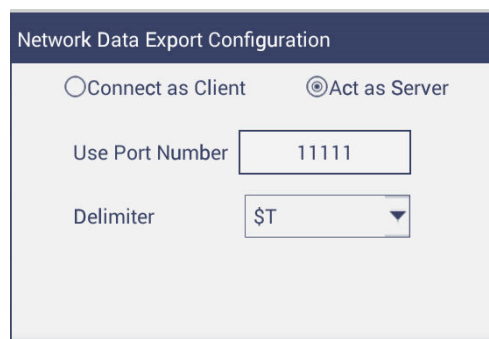


Figure 121. Network Data Export Config

- Configure the computer with the following settings:
 - Set computer as **CLIENT**
 - Enter the **IP ADDRESS** of Agera which is recorded in step 1 above
 - Put the port number as **11111**
- After all is set, the data is ready to be exported from Agera to the computer.

Auto-Exporting Data via Direct Connection between Agera and a Computer

Ethernet cable is plugged into the back of the Agera and the other end is connected to the computer. Ethernet adapter USB can be applied here if the computer does not have available Ethernet port.

- **Materials needed:** Ethernet cable and Ethernet adapter to USB can be applied here if the computer does not have available Ethernet port. **Hardware needed:** Ethernet cable and Ethernet adapter to USB can be applied here if the computer does not have available Ethernet port.



Figure 122. Ethernet Cable



Figure 123. Ethernet to USB Adapter

Connect Agera to Computer:

- Plug Ethernet cable into RJ-45 Ethernet connection at rear of Agera.



Figure 124. Rear View of Agera

- Plug the other end into the computer or into the Ethernet adapter

Open Command Prompt in the PC

- Type in **IPCONFIG** to find the right ethernet (in this case, it is **ETHERNET ADAPTER ETHERNET**) and write down **AUTOCONFIGURATION IPV4 ADDRESS** as well as the **SUBNET MASK**.

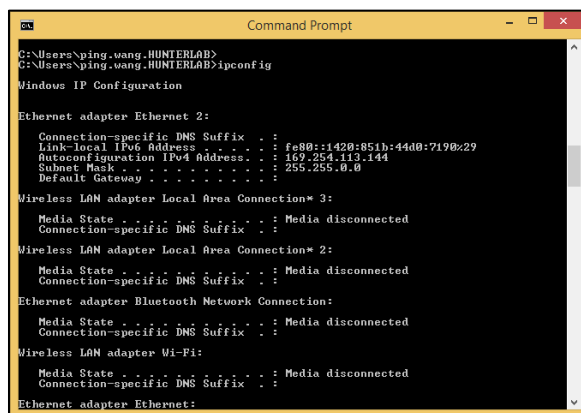


Figure 125. Command Prompt ipconfig

Configure the Agera

Open Agera Essentials, go to **WORKSPACES > PREFERENCES > CONFIGURE NETWORK SETTINGS**. First, select the **ETHERNET CONFIGURATION**. Uncheck **USE DHCP FOR ETHERNET CONFIG**. Type in **IP ADDRESS** and **SUBNET MASK** manually. The IP address here should be same as the autoconfiguration IPv4 Address in the PC, except changing the last number. The Subnet Mask is the exact same. Restart Agera to get network setting applied.

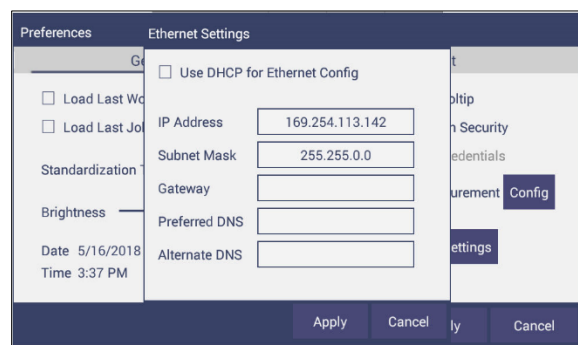


Figure 126. Configuration Parameters for Ethernet

- Press **APPLY** on the Ethernet Configuration and then **APPLY** on the Preferences Page to complete.
- Turn the instrument off and then back on.
- Go to **PREFERENCES > AUTO NETWORK DATA EXPORT**.

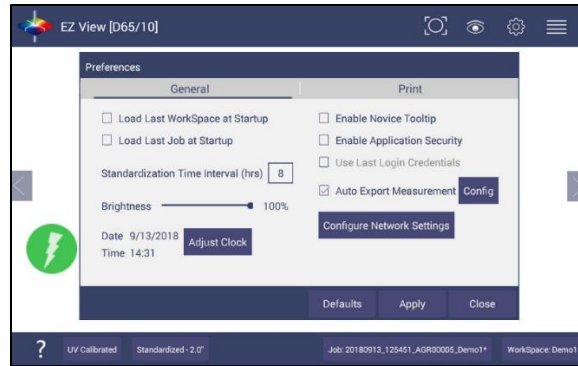


Figure 127. Read Options> Auto Export Measurements

- For a direct connection between Agera and data collection computer, set up the Agera as a **CLIENT**.
- Enter the computer IP address here, in this case 169.254.113.144 and the PORT as 11111. Press **APPLY** on the screen to continue.

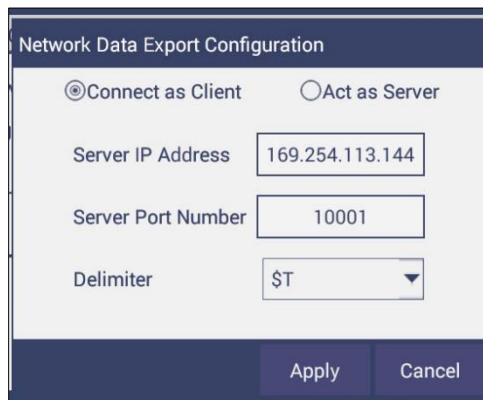


Figure 128. Read Options Export

- Agera is now ready to send data.

Configure the Computer

- Connection configurations differ depending on data collection software. The data collection computer will be set up as a Server.
- Connect as follows:
 - Set computer as **SERVER**.
 - Enter the computer IP address **169.254.113.144**.
 - Put the port number as **11111**.

Send Data from the Agera:

- **CONFIGURE THE COLOR DATA TABLE** with the color scale and parameters to be measured.

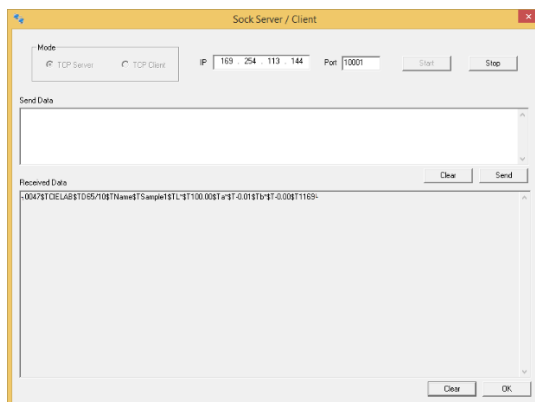


Figure 129. Data Output

Tips & Tricks: Recover Unsaved Measurement Data

In the case where the application is closed unexpectedly, the data is temporarily stored in a table along with the Job details. When the application restarts, a prompt allows the user to recover the data.

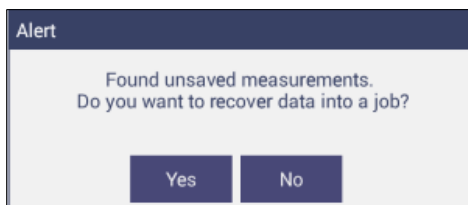


Figure 130. Recover Data

If the user answers **YES**, all measurements are recovered into a new job or appended to a saved job.

Specifications

The specifications and characteristics of the instrument are given in this chapter. For best performance, the instrument should be placed where there is ample work space with medium or subdued illumination and no drafts. The operating conditions (temperature and humidity ranges) are given in the Operating Conditions section below.

Note: Do not leave Agera in an area where temperature or humidity extremes are possible.

Operating Conditions

Storage Temperature (3weeks)	-20°C to 65°C (-5°F to 150°F)
Operating Temperature	4°C to 38°C (40°F to 100°F)
Noncondensing Humidity	10% to 85%
Standard Accessories	Calibrated instrument White Tile, Certificate of Traceability, Black Glass Standard, Green Diagnostic Tile, Standards Box, Port Plates of LAV 1, LAV2 and SAV, Power Supply, Quick Start Guide, Agera User's Manual on USB

Physical Characteristics

Weight	6.35 kg (14.0 lbs)
Dimensions (Height x width x depth)	28 cm x 21.6 cm x 31 cm (11.0 in x 8.75 in x 12.25 in)
Communications I/O: USB Ethernet RJ45 Remote Access Support Bluetooth Enabled	Connectivity to thumb drive, printer, keyboard, mouse and other peripherals; Print directly to standalone or network printers; email directly from the instrument; stream data to LIMS and SPC systems; Enabled via internet-based support tool Computer, Wireless Mouse & Keyboard
System Power	100 – 240 VAC, 47 – 63 Hz to universal power supply @ 24 VDC/3.75A

Conditions of Illumination and Viewing

Light Source	Full spectrum balanced LED system array
Dual Beam Spectrophotometer	256 element diode array and high resolution, concave holographic grating
Geometry	0°/45° circumferential
Measurement Conditions	Port Forward, Port Up

Instrument Performance

Spectral Data	Range: 400 nm -700 nm; Reporting Interval (nm): 10 nm
Illumination Range	360nm – 700 nm
Spectral Resolution	<3 nm
Effective Bandwidth	10 nm equivalent triangular
Photometric Range	0 to150%
Measurement Duration	<3 second; <5 sec interval
LED life	5 years typical
Inter-instrument Agreement	$\Delta E_{2000} < 0.15$ CIE $L^*a^*b^*$ (Avg) on BCRA II Tile Set
Colorimetric Repeatability	$\Delta E_{2000}^* < 0.03$ CIE $L^*a^*b^*$ (Max) on White Tile
UV Control	UV Nominal, UV-Calibrated; UV-Excluded; UV-Compare

Measurement

Image Capture	High-resolution, D65 illuminated, 45°/0° image viewing, image capture and image recall with RGB histogram display for image analysis.
Area Measured	LAV 1 - 54 mm (2.125 in) illumination; 51 mm (2.0 in) measured; LAV 2 - 28.6 mm (1.125 in) illumination; 25.4 mm (1.0 in) measured; SAV - 17.46 mm (0.6875 in) illumination; 16.9 mm (0.625 in) measured
Data Views	Color Data, Spectral Data, Spectral Plot, EZ View, Tristimulus Color Plot, Trend Plot
Illuminants	A, C, D50, D55, D65, D75, F02, F07, F11,
Observers	2° and 10°
Color Scales	CIE $L^*a^*b^*$, Hunter Lab, CIE L^*C^*h , CIE Yxy, CIE XYZ and Differences
Color Difference Indices	ΔE^* , ΔE , ΔE_{CMC} , ΔE_{2000}
Indices and Metrics	Gloss, E313 Yellowness, E313 Whiteness, YI D1925, Y Brightness, Z%, 457nm Brightness, Baking Contrast Units, Tint, HCCI, SCAA/G, SCAA/C, Custom Indices
Gloss	60° Gloss conformance to ASTM D523 and ISO2813
Data Storage	500,000 Records max

Regulatory Notice




Declaration of Conformance

Applicable Directives:	2014/30/EU Electromagnetic Compatibility 2014/53/EU Radio Equipment Directive EN61010-1 Product Safety
Manufacturer:	Hunter Associates Laboratory, Inc. 11491 Sunset Hills Rd, Reston, VA, USA
European Representative: Representative's Address:	Christian Jansen Dr. August Einsele Ring 15 D-82418 Murnau, Germany
Type of Equipment:	Reflectance Spectrophotometer
Model No.:	Agera

*I, the undersigned, hereby declare that the equipment specified above
conforms to the Directive(s) and Standard(s) above*

Place: Reston, VA, USA

Date: January 22, 2019

Signature 

Full Name Tim Barrett

Position Senior Electrical Engineer

A61-1018-855 REV A

Features, Accessories & Maintenance

Agera Maintenance & Safety

The Agera is engineered to be virtually maintenance free. This section outlines the few parts of the sensor that are to be maintained for the instrument to function properly.

- Cleaning the Agera: The Agera is NOT waterproof, but the exterior of the case may be wiped with a damp cloth.
- Power Required: Voltage: 100-240 VAC, 3.75A, 47/63 Hz; Single Phase; 60 VA maximum; Installation Category (Over Voltage): II
- Safety
 - Do not view the instrument LED's directly as it may be damaging to the eyes.
 - Do not submerge the instrument in water.
 - Do not take the instrument apart as there are 'no user serviceable parts' in the instrument.
 - Do not disassemble the instrument and attempt to clean the optical components.
 - Do not open the instrument or remove any covers except using the instructions given in this User's Manual or under the direction of HunterLab Technical Support.

Options and Sample Devices

There are many options and devices available for positioning samples at the measurement port of the Agera and for making the instrument easier to use. Any or all of the following options and sample devices may be purchased for use with the Agera. HunterLab part numbers are provided for convenience in ordering.

- EasyMatch Quality Control Software
- Ring and Disk Set
- Disk Assembly
- Ring Only
- Glass Sample Cup
- Sample Cup Opaque Cover
- Agera Sample Cup Set
- Skein/Swatch Holder
- Footswitch Assembly
- Sample Clamp
- 50% Gloss Check Tile

Easy Match Quality Control Software (EZMQC-OPT)

Used on: CFEZ/MSEZ/Vista/Aeros/Agera EZMQC-OPT should be purchased as an option. Easy Match QC is a Window's based color quality control package. EZMQC interfaces directly with your HunterLab instrument for instrument control and data collection. Product features include simple operation with standard vs samples and Pass/Fail displays for quick QC analysis and automatic Pass/Fail tolerancing

based on color standard. Advanced features include multiple configurable data views, customized templates for color data and display, customizable print job reports, data records stored to data base with standard and user defined search fields, automatic data output to Microsoft Excel, and data protection with definable user and supervisor access privileges.

Disk Assembly (02-4522-00)

From Ring and Disk set.



Figure 131. Disk Assembly

Ring and Disk Set (02-4579-00)

For use in the glass sample cup (purchased separately). Used for transparent and translucent liquids or semi-solids where the sample path length must be fixed. The minimum sample volume required for the ring and disk in the sample cup is 25ml.



Figure 132. Ring and Disk Set

Sample Cup Opaque Cover (04-4000-00)

Provides a light trap to exclude the interference of external ambient light on the sample.



Figure 133. Sample Cup Cover

Ring Only (04-4230-00)

From Ring and Disk set (92-4579-00) to hold light inside sample cup.



Figure 134. Ring Only

Glass Sample Cup (04-7209-00)

Optically clear glass cup for sample presentation of liquids, powders, granules and pellets. The sample cup measures 64mm (2.5 inch).



Figure 135. 64mm Glass Sample Cup

Sample Cup Set (Agera-SC-Assy)

Consists of a 2.5 inch glass sample cup, sample cup opaque cover, ring and disk set and port insert.



Figure 136. Sample Cup Set

Skein/Swatch Holder (02-7396-00)

Sample Presentation Device used for measuring swatches, yarns and string skeins.



Figure 137. Skein/Swatch Holder

Foot switch Assembly (D02-1010-327)

The footswitch is used to initiate sample measurement without the use of hands.



Figure 138. Foot Switch

Sample Clamp (D02-1018-462)

Used to hold sample in place in standard and port-forward orientation.



Figure 139. Sample Clamp

Gloss Check Tile (D02-1018-997)

Nominal 50 Gloss Units Check tile for Agera.

Instrument Replacement, Repair, Problems, and Questions

The following HunterLab policies are described in this chapter:

- Warranty
- Shipping claims
- Returns/service
- Technical assistance.

Warranty

HunterLab warrants that all instruments it manufactures are free from defects in material and workmanship under normal use. This warranty is limited to repairing or replacing any defective hardware or software that may cause the instrument to perform outside of its specified tolerances. This warranty is one year from date of shipment of new instruments and two months from the date of shipment of repaired instruments.

Note: Printers and computers are covered under the original manufacturer's warranty.

The warranty is void if the user has made unauthorized repairs, improperly installation, operated, or subjected the instrument to conditions outside of the operating conditions specified in the product documentation.

The HunterLab warranty does not cover consumable items such as lamps, fuses, batteries, etc. An instrument registration card is available online at <https://www.hunterlab.com/ras-registration.html>. It is important that the instrument owner fills this out on receipt of equipment.

Questions concerning operation, maintenance, or repair of your equipment can be directed to the Service Department at Service@hunterlab.com. Additional information can be obtained at <http://support.hunterlab.com>.

Shipping Claims

All materials are sold F.O.B. from Reston, Virginia (unless otherwise specified) and HunterLab responsibility ends upon delivery to the first carrier. All claims for loss or damage must be rendered by the consignee against the carrier within fifteen days of receipt of goods. A copy of this notice must also be forwarded to HunterLab within five days of its receipt.

- Breakage or Damage

Per the contract terms and conditions of the carrier, the responsibility of the shipper ends at the time and place of shipment. The carrier then assumes full responsibility. Perform the following procedures in the case that your instrument arrives broken or damaged.
- Freight or Express
 - Notify your local carrier.
 - Hold the damaged goods with their container and packaging for inspection by the examining agent. Do not return any goods to HunterLab prior to inspection by and authorization of the carrier.

- File a claim against the carrier. Substantiate this claim with the examining agent's report. A certified copy of our invoice is available upon request. The original B/L is attached to our original invoice. If the shipment is prepaid, write for a receipted transportation bill.
- Advise HunterLab regarding replacement.
- Parcel Post Shipment
 - Notify HunterLab at once in writing, giving details of the loss or damage. This information is required for filing a claim.
 - Hold the damaged goods with their container and packaging for possible inspection by postal authorities.
 - Advise HunterLab regarding replacement.
- United Parcel Service
 - Contact your local UPS office regarding damage and insurance claims. Each UPS office has a different method of handling these occurrences and yours will advise you of its procedures.
 - Retain the container and packaging.
 - Notify HunterLab at once for replacement.

Shortage

Perform the following procedure if your order appears to be missing items.

- Check the packing list notations. The apparent shortage may be a backordered item and may be marked as an intentional short-ship.
- Re-inspect the container and packing material, particularly to locate smaller items.
- Ascertain that the item was not removed by unauthorized personnel prior to complete unpacking and checking.
- Notify HunterLab immediately of the shortage in writing.

Incorrect Shipment

Perform the following procedure if material received does not correspond with your order.

- Notify HunterLab immediately, referencing your order number and item.
- Hold incorrect items until return shipping instructions are received.

Returns for Repair

A service request order (SRO) number is required before any items can be returned to HunterLab. Contact HunterLab's Order Processing Department to obtain an SRO for damaged or incorrect parts, or the HunterLab Service Department to obtain an SRO to return an instrument for service.

Do not return any damaged or incorrect items until all shipping instructions are received.

HunterLab offers complete repair services for all instruments it manufactures. Call HunterLab for the service facility nearest your location. If your equipment is not functioning properly, contact HunterLab Service for maintenance or repair instructions. Many times, this on-the-spot diagnosis is all that is required.

If repair is required, the instrument may be returned to a HunterLab service facility. For schedule and terms for repairs, call HunterLab Service. Please read the next section, "When You Need Assistance," prior to contacting HunterLab.

Customers are responsible for incoming and outgoing freight charges for instrument returned to HunterLab for all repairs, including warranty repairs.

- Packing and Shipping Instruments for Repair

Please regard the following instructions when packing your instrument to return it to HunterLab for repair. **Please save the original packing to use if needed.** These instructions do not replace the recommended professional packaging for your instrument, but may assist in eliminating the need for a shipment claim due to faulty packaging. Purchasing freight insurance does not guarantee a successful damaged shipment claim if the carrier determines the instrument was not packaged properly.

- All instrument tiles, black glass, power supply, power cords, and cables for the instrument should be included in your shipment. **Your repair estimate will be delayed if the instrument tiles are shipped separately later.**
- Cover the measurement port. **Do not use duct tape.** "Painter's tape" is preferred, as it will not leave residue on the instrument.
- Place the instrument inside original box. **Styrofoam peanuts** should not be used as packing material for instruments, as they can suspend items weighing only up to 5 pounds. Observe the information listed on the bottom of most cartons about burst strength and gross weight limits. Single wall cardboard cartons should not be used. (A proper packing carton with packing material may be purchased from HunterLab, if desired.)
- Insure the shipment.
- Provide an itemized packing list of all contents of the shipment.
- Label the carton(s) as follows:

HunterLab
Attn: SRO # _____
11491 Sunset Hills Road
Reston, VA 20190
U.S.A.

When You Need Assistance

When you have a problem with an instrument or software, or need technical advice concerning a specific application, you may want to consult the **support.hunterlab.com** webpage. If you need to contact HunterLab for assistance, please have the following information available:

- The type of sensor for which you need assistance (Agera).
- The serial number of the instrument (found on the back of the unit).
- The type of processor or software you are using to access the sensor output (such as EasyMatch Essentials), the version of the software, the operating system, and the brand and type of computer, if applicable.
- The specific nature of the problem, including the exact error message received or the number of units the sensor reads "off" from the standard tiles.
- The steps performed prior to the start of the problem.
- Steps already performed to reconcile the problem and/or results of any diagnostic tests.
- The type of product being measured.
- Environmental conditions under which the instrument is normally used (temperature, humidity, dust, fumes, etc.)
- Whether the instrument has recently been moved or the computer reconfigured.
- The name(s) of any HunterLab personnel with whom you have previously discussed the problem. The HunterLab address within the united states is available on the previous page. Customers outside the united states should contact their HunterLab distributor for initial assistance.

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