User's Manual for Agera L2 & EasyMatch® Essentials 2

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A60-1021-826 Version 1.0
For EasyMatch Essentials 2.37 and Above

The world's true measure of color
HunterLab

Preface

Copyrights and Trademarks

Safety Notes

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

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

- General safety instructions that should always be observed 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.

Legal Disclaimers: Instrumental – Visual Evaluation

The HunterLab Agera Colorimetric Spectrophotometer is designed for precision color and appearance measurement. It measures numerical color and related data in absolute and relative terms.

HunterLab cannot guarantee the accuracy, completeness, efficacy, and timeliness of the data due to inherent uncertainties in instrumental readings, variations in sample presentation, and potential inconsistencies in human color perception. Users are strongly advised to verify the

instrumental data with meticulous visual evaluation.

Disclaimer of Liability: Utilization of Data, Metadata and Information

Hunter Associates Laboratory, Inc. (including its employees, agents, and assignees) assumes no responsibility for consequences from the use of the data derived from its color measurement devices or from the information contained herein or in any respect for the content of such information, including but not limited to errors or omissions, the accuracy or reasonableness of factual or scientific assumptions, studies or conclusions, the defamatory nature of statements, ownership of copyright or other intellectual property rights and the violation of property, privacy or personal rights of others. Hunter Associates Laboratory, Inc. is not responsible for and expressly disclaims all liability for damages of any kind arising out of use, reference to, or reliance on such data and/or information. No guarantees or warranties, including but not limited to any express or implied warranties of merchantability or fitness for any particular use or purpose made by Hunter Associates Laboratory, Inc. for such data and/or information.

Contents

Instrument Setup and Overview

What is HunterLab Agera L2 & EasyMatch Essentials

Agera L2 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. Ultra dark mode provides high precision readings for deep black, complex and low-reflectance materials. 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. All measurement results are simultaneously displayed on a 7" high resolution touch screen interface via the embedded EasyMatch Essentials L2 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, printed to networked printers, and streamed to LIMS and SPC systems. And there are HDMI ports and additional USB ports for a monitor, keyboard and mouse.

Standard Accessories

- Calibration Box with Calibrated Instrument Standard (White Tile), Black Glass Standard and Diagnostic Check Standard (Green Tile)
- Area of View Port Plates - Set of 3
- Certificate of Traceability
- Power Supply
- Stylus, Lens wipe & Cleaning Cloth
- Agera Quick Start Guide
- USB Flash Drive

Selecting A Space for the Agera

Laboratory Environment

The HunterLab Agera Spectrophotometer is a high-precision laboratory instrument. Laboratory grade environments are required and should be maintained to ensure precise and accurate measurements. This includes environmental factors and conditions such as temperature humidity, atmospheric pressure, and cleanliness. The environment should be free of contaminants such as airborne dust and/or particulate matter and aerosols to avoid contamination of the precision equipment.

Site Requirements

The instrument size and weight are shown in the table below along with requirements for electric and temperature/humidity.

Table 1. Site Requirements

Height	28cm; 11.0in
Width	21.6cm; 8.75in
Depth	31cm; 12.25in
Weight	7.7 kg (17 lb)
Electrical	110-240AC 47-63Hz Single Phase
Temperature	10 - 40°C (50 - 104°F)
Humidity	10% to 90% non-condensing

- Allow 20cm (8in) of unobstructed clearance on each side of the instrument.
- The Instrument should be placed to avoid direct sunlight and away from windows.
- The atmosphere around the Agera should be free from alkalis and acid vapors, free from organic solvents and dust free.
- Do not operate the Agera in the presence of strong electrical fields.
- Avoid strong vibrations or shocks.
- Ensure that there are no heat generating sources near the Agera.
- Do not remove any of the covers. Service is to be performed by a HunterLab service representative.

Note: Failure to comply with these conditions and protocols set forth in this document may adversely affect the instrument performance.

Samples

Implement protocols for handling and preparing samples to minimize contamination to the inside of the instrument.

Personnel

Train laboratory personnel on clean practices, including wearing appropriate attire, using cleanroom-like protocols and being mindful of their actions to prevent contamination.

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.

For more information, please refer to **SPECIFICATIONS**.

Cleaning the Agera

Clean the outside surfaces of the Agera using a soft cloth. Do not spray liquids directly on the instrument. Care should be taken to avoid degradation of optical surfaces. Refer to **MAINTENANCE** for more detail

Note: As outlined in this document, failure to comply with these conditions and protocols may adversely affect the instrument's performance

Unpacking your Box

Place the Agera on the bench. Retain the packaging in case return of the instrument to HunterLab is deemed necessary.

Review Your Order

Please review your order. Compare your order with the shipping document from HunterLab. If there are any discrepancies, please contact the HunterLab Customer Experience Team (support@hunterlab.com).

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.

Port Forward Orientation

The Essentials screen is default setup for port up Agera. If port forward orientation is required, then go to ***SYSTEM MENU > INSTRUMENT SETTINGS > DISPLAY & BRIGHTNESS*** and check ***CHANGE SCREEN ORIENTATION***.

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.

User-Facing Features

Touchscreen Display

The Agera features a seven-inch high-resolution touchscreen display, which serves as the primary interface for operating the instrument. The screen provides intuitive access to the EasyMatch Essentials software, allowing users to view sample data, manage workflows, and adjust instrument settings.

Front and Rear USB Connectors

There are three 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. Any USB port can be used for exporting jobs and WorkSpaces, backing up the instrument and updating software.

The instrument is compatible with the **L02-1017-434 Wireless Keyboard and Mouse Kit**.

Physical Action button

Located on the right side of the sample port, the round physical action button is marked with a lightning icon. This button replicates the functionality of the green action button in the Essentials user interface. It allows users to perform key operations, such as standardization, initiating measurements, or advancing to the next step in a workflow.

Power Input and Rear I/O Features

The instrument is supplied with a 24 VDC (3.75A) power supply. Plug the power supply into the power input located at the back bottom of the Agera.

The Rear I/O board includes the following components:

- **Power Input:** Plug the power supply into the power input.
- **Power Switch:** Use the rocker switch to turn the instrument on or off.
- **HDMI:** Connects to a monitor or for video output**.**
- **Ethernet Port:** Connects the Agera to a network for data output when connected with HunterLab Essentials on a PC, and other networked plant systems.
- **USB Ports:** Connectivity to printer, keyboard mouse. Rear Panel = 2; Front panel = 1.
- **Service Port:** For use by the HunterLab Service department.
- **Footswitch Port:** Connect a foot switch here to trigger measurements conveniently.
- **Accessory Connector:** Supports Accessories such as the Agera Sample Rotation Clamp.

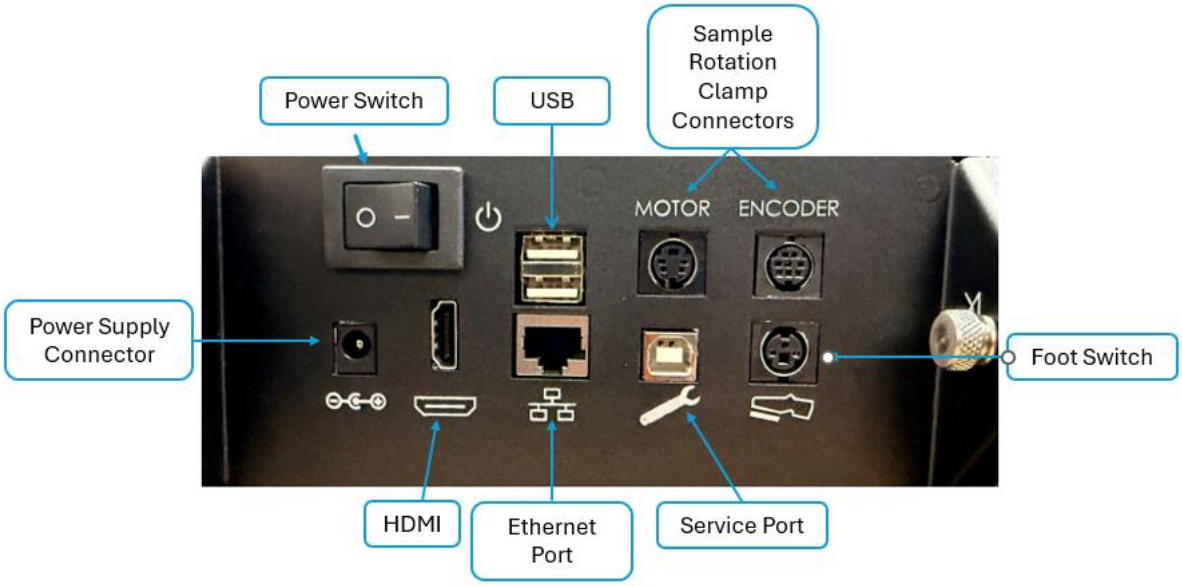

Figure 1. Ports on the Back of the Agera

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.

Initial Essentials Setup and Measurement Guide

Powering On the Instrument

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

First Time Setup and Introductory Tutorial

When the Essentials software launches for the first time, it displays the FIRST TIME SETUP dialog. Configure the language, region, date, and time, then tap DONE to proceed.

Next, the ***WELCOME WIZARD*** guides you through an overview of the instrument and software features. To exit the wizard, tap the X in the top-right corner. Relaunch the wizard anytime by tapping the HunterLab icon in the top-right corner.

Default WorkSpace Settings

After the wizard, the main measurement screen, EZ View [D65/10], is displayed. . Essentials loads with 'CIELAB [D65/10]' default WorkSpace
configured as follows:

Table 2. WorkSpace Settings

Color Scale:	CIE L*a*b*
Indices	None
Differences	None
Illuminant/Observer:	D65/10°(CIE 1964 observer)
Illumination Profile	D65
Port:	28.57mm (1.125") measures 25.0 mm (1'')
Views	EZ View
Standard Type	Ad hoc/Working

Note: Essentials software includes two default WorkSpaces, 'CIELAB [D65/10]' and 'HunterLab [C/2]'. These WorkSpaces cannot be modified directly. However, you can edit them and save them as new ones or create a new WorkSpace and then edit there.

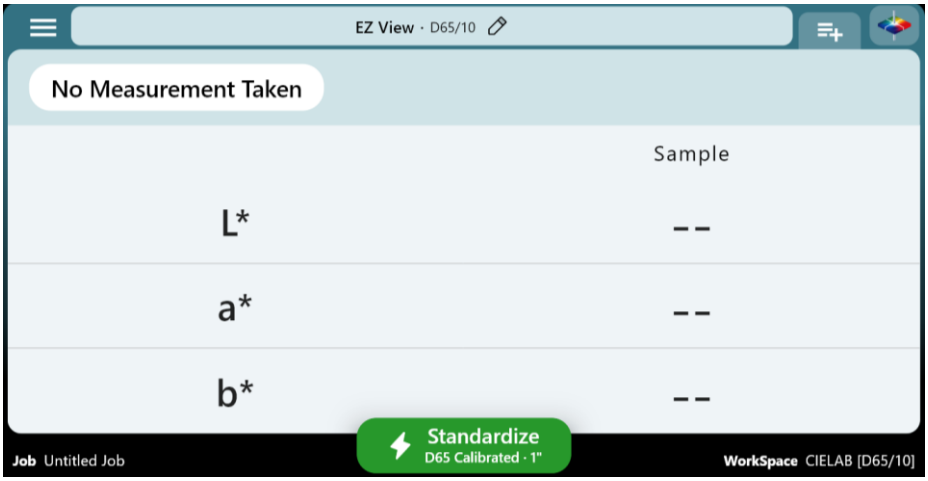

Figure 2. Opening Screen

Standardization

The green action button at the bottom center of the screen displays **STANDARDIZE** if no valid standardization exists. The gloss sensor is enabled by default and is included with every measurement. The following steps are for the default Workspace settings.

Steps to Standardize

1. Install standard 25.4mm (1-in.) port plate. Press the ***STANDARDIZE*** button**.**
2. Place the **Black Glass Standard** at the sensor port and press ***MEASURE***.

Figure 3. Standardize on the Black Glass Standard

3. Replace the Black Glass Standard with the **Certified Instrument Standard (White Tile)** and press ***MEASURE.***

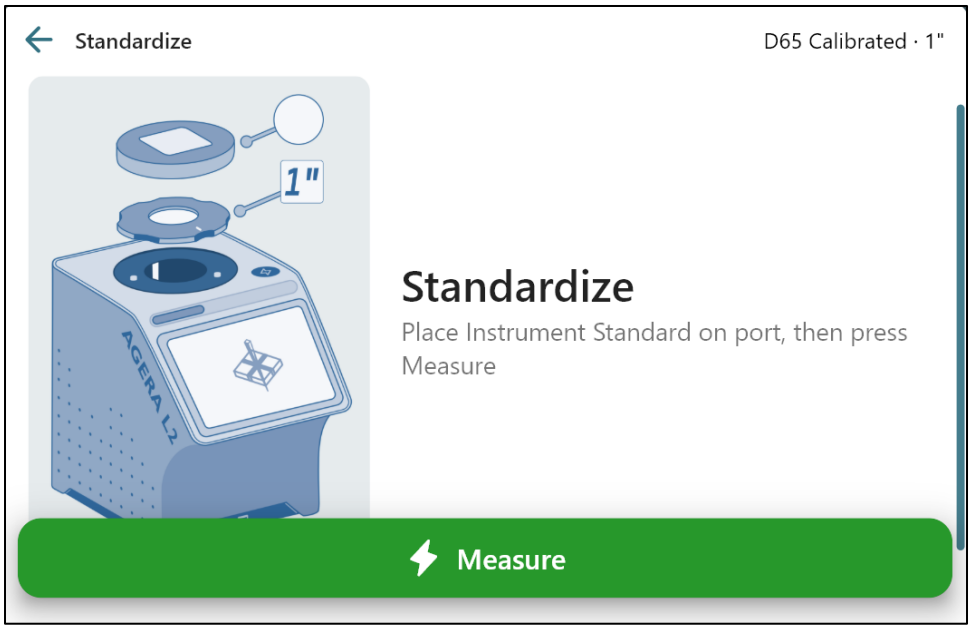

Figure 4. Read the Certified Instrument Standard (White Tile)

4. Remove the Certified Instrument Standard and place the **Diagnostics Check Standard (Green Tile)** at the port. Press ***MEASURE***. The Diagnostics Check Standard values for 25.4mm (1'') standard port plate are entered at the factory and listed on the back of the tile.

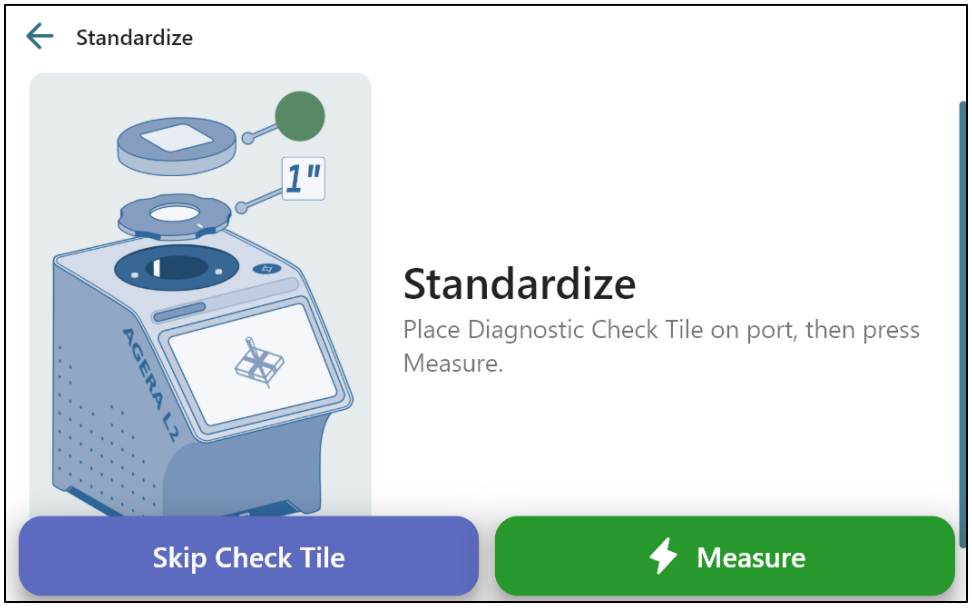

Figure 5. Read the Diagnostic Check Standard

Green Tile Check in Standardization

Optional**:** To skip the Diagnostics Check Standard test, tap ***SKIP CHECK TILE***. Skipping may impact instrument performance, and a warning message will be displayed.

Note: If the Diagnostics Check Standard fails, clean the instrument Certified Instrument Standard, Diagnostics Check Standard, and/or Black Glass Standard, and run the test again. Contact HunterLab Support if the issue persists.

If a customer sets up other standardization mode (e.g. using different port plate, Area View, UV mode, or illuminant profile), the first special port plate standardization will take five measurements of the green tile and use the average as the target value for future green tile checks in that specific port plate standardization mode.

Users can reset the green tile target for special inserts/port plates in the ***SYSTEM MENU → INSTRUMENT SETTINGS → DIAGNOSTICS.***

Reading a Sample

To measure a sample:

1. Prepare the sample and place it on the port plate.
2. Press ***MEASURE***. The first reading will be treated as a standard since the 'CIELAB [D65/10]' default WorkSpace uses the Ad hoc/working standard type.
3. To set a difference sample as the standard in this job, measure the sample, tap its name, and select **SET AS STANDARD**.

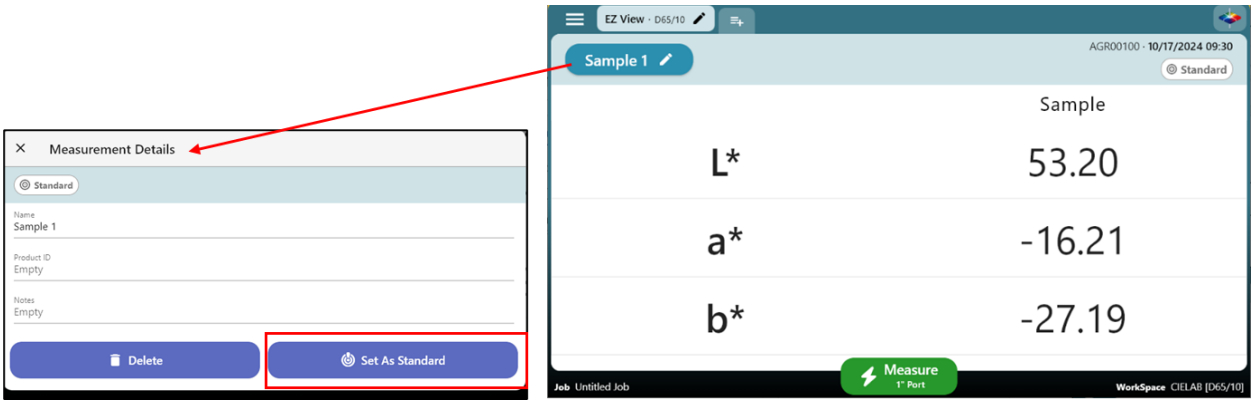

Figure 6. Set a Sample as Standard

4. In the **MEASUREMENT DETAILS** dialog, click on the associated line to edit the **SAMPLE NAME**, **PRODUCT ID**, and **ENTER NOTES**. Use the **DELETE** to remove a sample measurement.

   Alternately, a standard can be read in CIELab D65/10 and entered as a numeric standard. Press ***WORKSPACE*** at the bottom right side of the screen.

Select ***EDIT CURRENT WORKSPACE***. Select ***NEXT STEP*** to proceed to ***STANDARD & TOLERANCES***, then Choose the standard type: Adhoc/Working (set a sample as a standard), Physical (measure), Numeric (enter values), or Hitch/Transfer (use a known standard or another instrument).

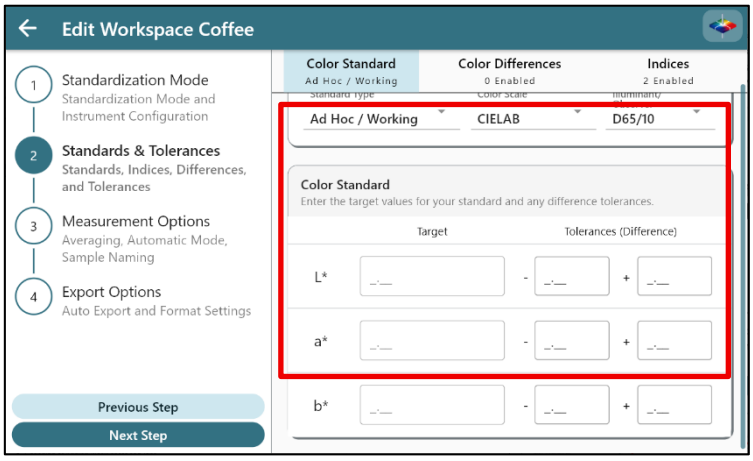

Figure 7. Setup a Simple Standard

Editing EZ VIEW

Sample Name Box

Located at the top-left corner of the screen, this box allows you to edit the sample name, delete it, or set it as the standard by tapping on it. The box is highlighted with a color corresponding to the measured color, offering a quick visual reference. .

Information Area

Located at the top-right corner of the screen, this area displays the instrument's serial number, time, date, and Pass/Fail status. If the measurement is a standard, it will be labeled as a Standard in this area.

Display Options

Tap the pencil icon in the EZ View box and select ***DISPLAY OPTIONS***. Choose the radio buttons next to ***SHOW STANDARD*** and ***SHOW DIFFERENCES*** to display the simple differences. All changes to the view are automatically saved to the current WorkSpace. For more details on view editing, refer to **VIEWS**. .

Changing or Adding WorkSpaces and Jobs

WorkSpaces in Essentials are similar to product setups. Jobs under a WorkSpace serve as associated data files. Once a WorkSpace is launched, you can create a new job or open existing jobs under this WorkSpace.

To change or add a WorkSpace, tap the WorkSpace name at the bottom-right of the screen. Edit settings such as **DIFFERENCES/INDICES**, **READ OPTIONS**, and **DATA EXPORT OPTIONS**.

Jobs within a WorkSpace can be managed by tapping the **JOB name** in the bottom-left corner of the screen. Users can create a new job or select an existing one to **RENAME, DELETE, EXPORT** or **PRINT**.

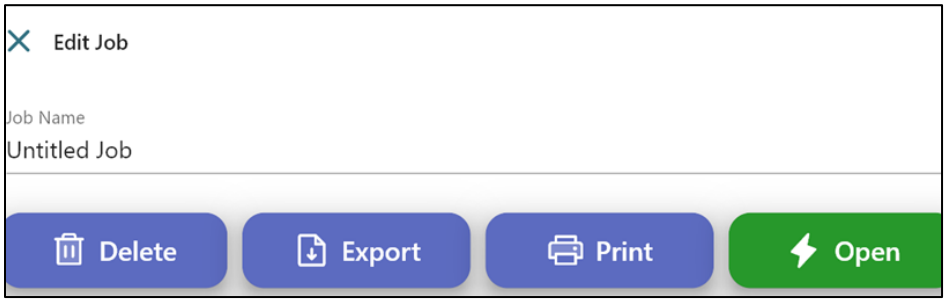

Figure 8. Renaming, Deleting, Exporting, Printing Jobs

Job Export

Jobs can be exported in **CSV, PDF, or XLS** formats to a flash drive, making it easy to open them in **Microsoft Excel** or automation software. When exporting a PDF, users can choose between exporting a **color data table** or a **spectral data table**. Any images stored within a job can be exported as **JPEG files** inside a **zip folder**.

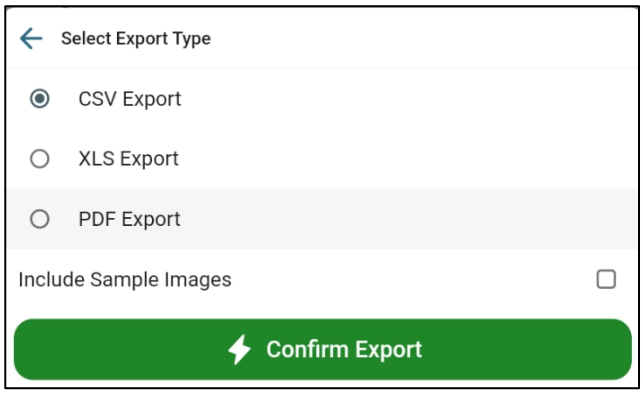

Figure 9. Select Export Type

Press ***CONFIRM EXPORT*** and check the box to include SAMPLE IMAGES.

Job Export-Multiple Jobs

To export multiple jobs together under a WorkSpace:

- In the Job dialog, press and hold a job to enable Multiple Job Management Mode.
- The Trash Can and Export icons will appear.
- Select multiple jobs as needed, then tap the Export icon on the top right corner of this dialog to export the selected jobs.

Job Print

Confirm the instrument and an Android-compatible printer are on the same Network.

- **Start** – In Essentials 2, open ***EDIT JOB*** and tap **PRINT**.
- **Choose a view** – Select **Color Data Table View** or **Spectral Data Table View**, then tap ***PRINT*** again.
- **Select a printer** – The Android print dialog lists all printers on the network. Pick one; Essentials 2 remembers your choice for next time. Copies, paper size, color mode, orientation, duplex, and page range can be changed here.
- **Print** – Tap the ***PRINT*** icon to send the job.

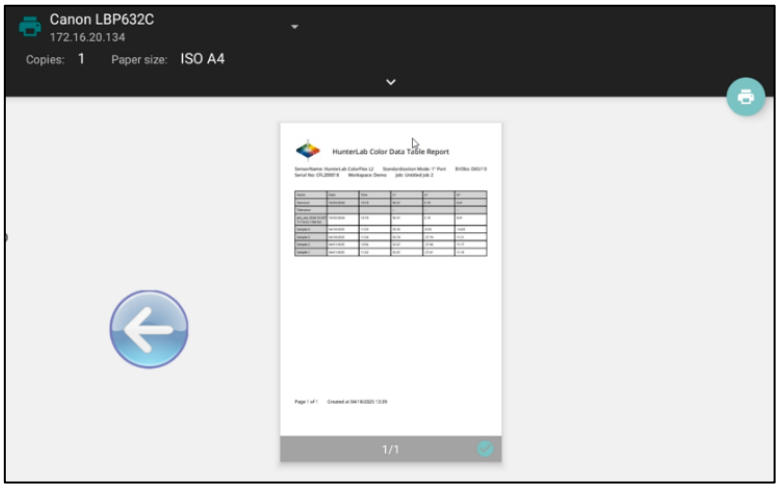

Figure 10.Job Print

Alternately, tap the ***SYSTEM MENU*** at the top left corner of screen and select **JOBS > or WORKSPACE** to change or add new Jobs and/or WorkSpaces.

Additional settings including **INSTRUMENT SETTINGS**, **DATA MANAGEMENT**, **PERIODIC DIAGNOSTICS** and **STANDARDIZATION**, are available in the **SYSTEM MENU.**

Navigating the Essentials Screen:

The main screen of EasyMatch Essentials is shown below.

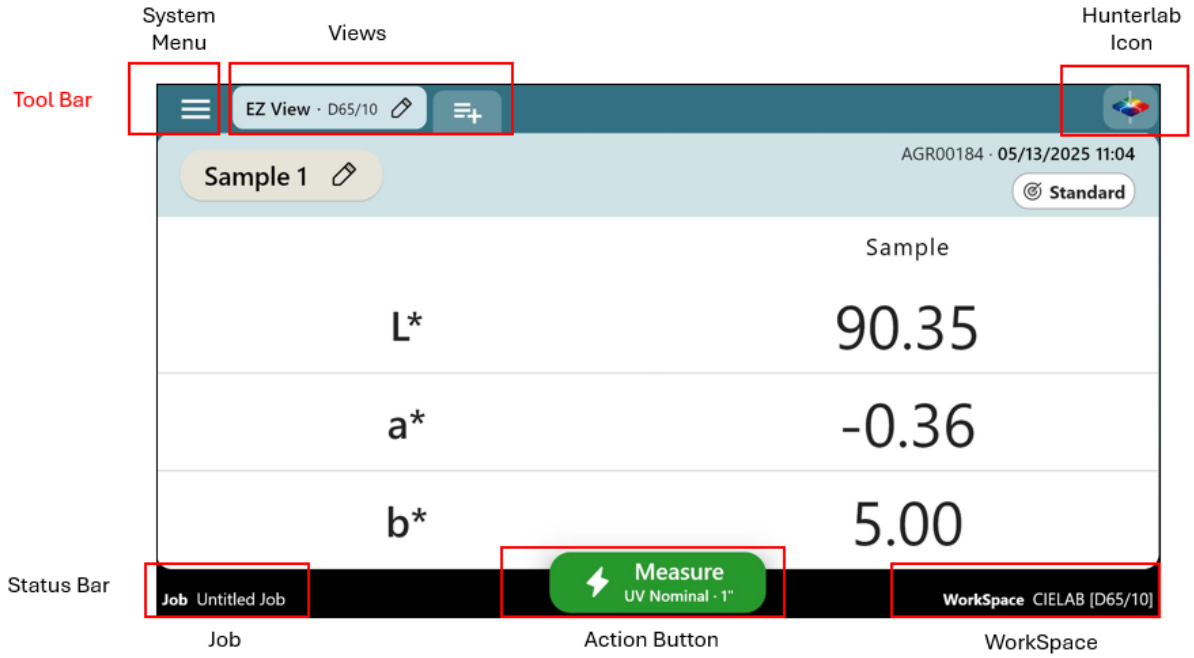

Figure 11. User Interface Screen of Agera Essentials

Status Bar – Job, Action Button, and WorkSpace

The Status bar at the bottom of screen includes the following features:

Status Bar: Job

It displays the name of the current job. Tap this button to create a new job or select an existing job to rename, delete, or export as a .csv file.

To manage multiple jobs:

1. Press and hold a job to enable ***MULTIPLE JOB MANAGEMENT MODE***.
2. Both the **TRASH CAN** icon and **EXPORT** icon will appear, allowing you to select multiple jobs for deletion or export.

Note: Each Job files can contain up to 2000 measurement. The measure button will change to a "New Job" button when this limit is reached.

Status Bar: Action Button

The Action Button allows users to perform key operations, such as standardization, taking measurements, or advancing to the next step in a workflow. The physical action button located next to the instrument port serves the same purpose as the on-screen Action Button.

Status Bar: WorkSpace

To change or create a new WorkSpace, press ***WORKSPACES*** in the Status Bar. This action opens a list of all available WorkSpaces.

- The **current WorkSpace** is always listed first.
- Remaining WorkSpaces are displayed either by **Last Used** or in **Alphabetical** Order. Click Search icon to search for a WorkSpace by name.
- For WorkSpaces with non-Ad hoc/Working standard types, the WorkSpace is highlighted with a color corresponding to the standard it contains, providing a quick visual reference.

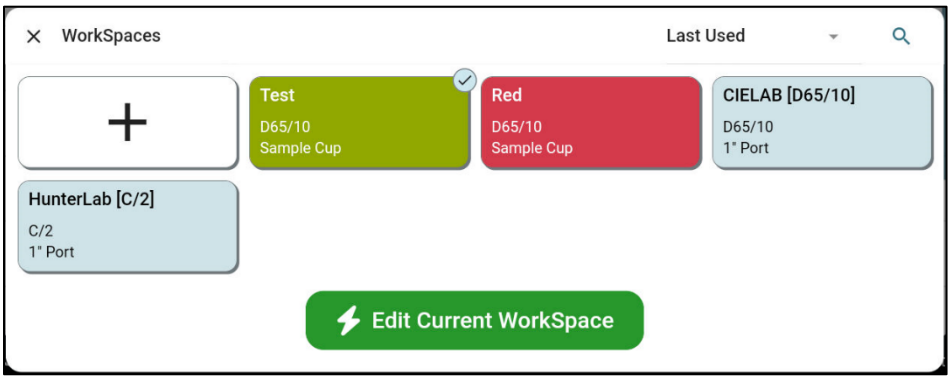

Figure 12. Edit or Create New WorkSpace

Managing WorkSpaces

Launch a WorkSpace

- Tap an existing WorkSpace displayed in the WorkSpaces dialog
- Click the ***LAUNCH BUTTON*** to load the selected WorkSpace.

Create a New WorkSpace

- Tap the + icon to create a ***NEW WORKSPACE***. Select an existing WorkSpace as a template and press ***CONTINUE***..
- Modify the settings for the new WorkSpace as prompted. See ***SYSTEM MENU > WORKSPACE EDIT*** for details.
- ***NAME*** and ***SAVE*** the new WorkSpace.

Delete a WorkSpace

Press and hold a WorkSpace to enable deletion mode. A trash can icon will appear, allowing you to select multiple WorkSpaces for deletion. To disable deletion mode, unselect all WorkSpaces. .

Note: Default WorkSpaces and the active WorkSpace cannot be deleted.

Tool Bar – System Menu, Views and HunterLab Icon

The Tool bar at the top of screen includes **SYSTEM MENU**, **VIEWS**, and **HUNTERLAB ICON**.

Tool Bar: System Menu

The **System Menu** is located in the top-left corner of the screen. Tap the three-bar icon to access the following options: .

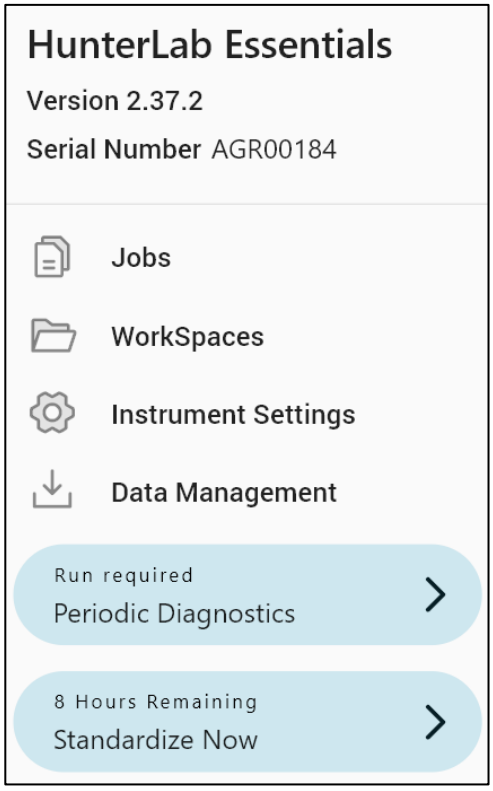

Figure 13. System Menu

- **JOBS/WORKSPACES**
  Alternate ways to open the Job or WorkSpace dialogs for managing data and configurations.
- **INSTRUMENT SETTINGS**
  Configure key settings such as Standardization Interval, importing product setups from another instrument, changing date and time, selecting a language, reversing screen orientation, and setting up security. See **INSTRUMENT SETTINGS** for more details. .
- **DATA MANAGEMENT**
  Export Jobs and WorkSpaces to a flash drive...
- **PERIODIC DIAGNOSTICS**
  View the status of diagnostics and run diagnostic tests, including Signal Levels, Repeatability, and Diagnostic Check Tile tests. See **INSTRUMENT SETTINGS > DIAGNOSTICS** for additional information. .

- **STANDARDIZE NOW**
  Displays the current Illuminant, Port Size and Area of View and enables the user to change these parameters prior to standardization.

Tool Bar: Views

The **Views** section in the Tool Bar displays the current view(s) in the center of the Tool Bar. Available views include:

- **EZ VIEW,**
- **COLOR DATA TABLE VIEW,**
- **SPECTRA DATA VIEW,**
- **SPECTRA PLOT VIEW,**
- **COLOR PLOT VIEW**

For detailed information about each view, see **VIEWS**.

Managing Views

- **Adding/Removing Views**
  Tap the  icon and select the desired views from the list. ..
- **Reordering Views**
  Tap and hold a selected view, then drag it to the desired position. .
- **Saving Changes**
  Press **SAVE** to apply changes. Once saved, use the tabs in the Tool Bar to navigate between views. .

Note: Each view can only be opened in one tab. Essentials does not support multiple tabs with the same type of view.

Editing Views

- The view currently displayed on the screen is the **active view** in Essentials.
- Only the active view shows a pencil icon in its tab. Tap the pencil icon to edit the view.
- If a view is not active, tap it first to display it, then tap it again to access its editing options.
- Press the left arrow at the top of the screen, or anywhere on the view screen to exit View Options.

Tool Bar: HunterLab Icon

The **HunterLab Icon** is located at the top-right corner of the screen. .. This can also be accessed by swiping up with 3 fingers on any page.

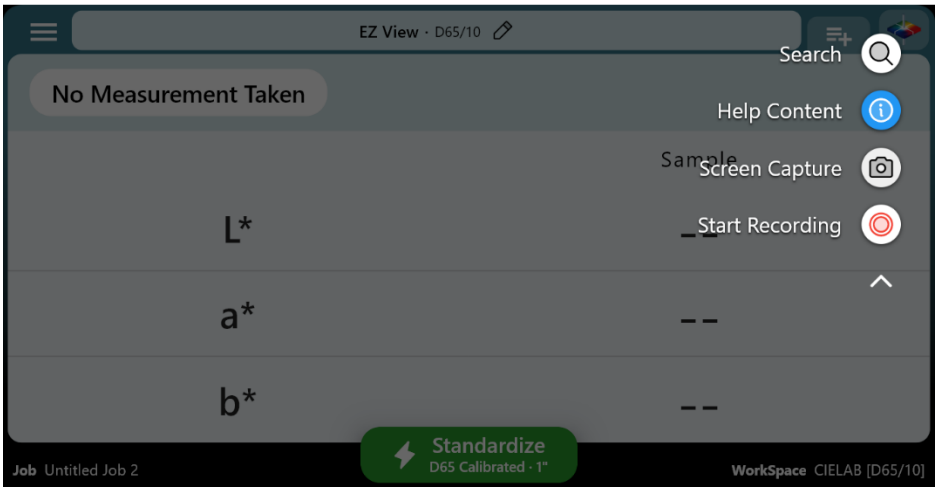

Figure 14. HunterLab Icon

Global Search

Use the Global Search to quickly find jobs, or WorkSpaces or instrument settings .

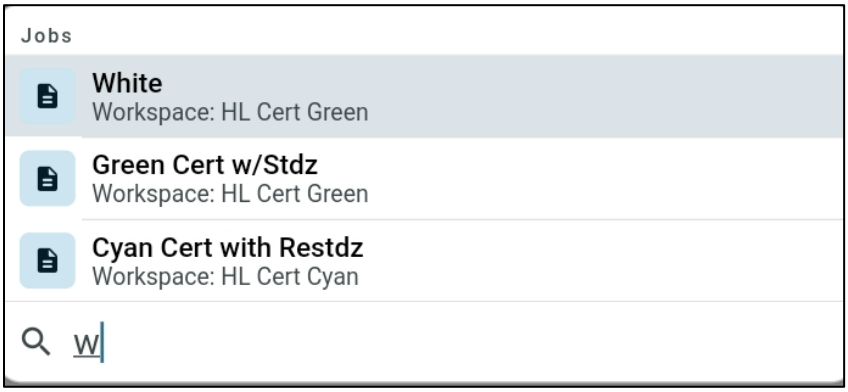

Figure 15. Global Search for Jobs and WorkSpaces

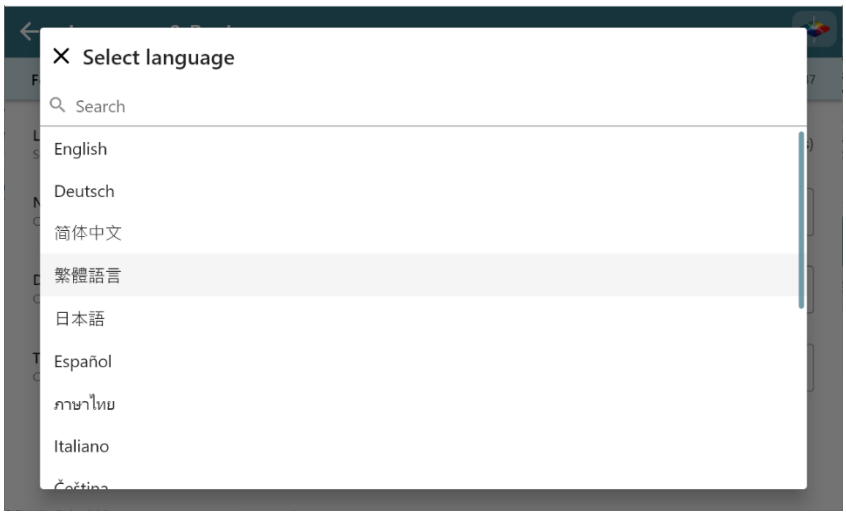

Figure 16. Search Languages

Help Content
Select this feature to review the main software features.

Screen Capture
Press and hold the HunterLab icon to enable the screen capture function. Tap **Screen Capture**, and the image of the current screen will be saved to an attached flash drive. .

Recording
The **Recording** feature will allow you to record the Essentials screen. Tap **Start Recording** to begin. To stop, tap the **HunterLab Icon** again and select **Stop Recording**. The video will be saved to an attached flash drive.

WorkSpace Edit

In the WorkSpaces main dialog, a check mark (✓) appears in the upper-right corner of the current WorkSpace box. All the WorkSpaces are listed here in boxes. If there is a physical or numeric standard saved in a WorkSpace, the WorkSpace box will be shown with corresponding color rendering.

To manage a WorkSpace, tap its box. The three-dot menu (⋮) provides options to **Rename**, **Mark as Favorite**, **Print a Search Label**, or **Delete** the WorkSpace (if it is not a default WorkSpace). The Print Label option generates a unique barcode for the selected WorkSpace, allowing users to switch to it by scanning the barcode. If connected to a label printer, the barcode can be printed directly from Essentials.

Print a WorkSpace Search Label

The Print Label option in the three-dot menu generates a unique barcode for the selected WorkSpace, allowing users to switch to this workspace by scanning its barcode.

- The following label sizes are recommended:
  - 29x90 mm (Address Label)
  - 62x100 mm (Shipping Label)
  - 62 mm width Roll (Shipping Label continuous)
- Plug the label printer into the USB port on the Agera. The **Brother QL-800 High-Speed Professional Label Printer** is the recommended and supported model for use with Agera Essentials.
- In WorkSpace dialog, tap the WorkSpace box which you want to print. Tap the three-dot menu (⋮) and choose **Print Search Label** option to generate a unique QR code for the selected WorkSpace.
- Scan the label with Agera to load the associated WorkSpace instantly.

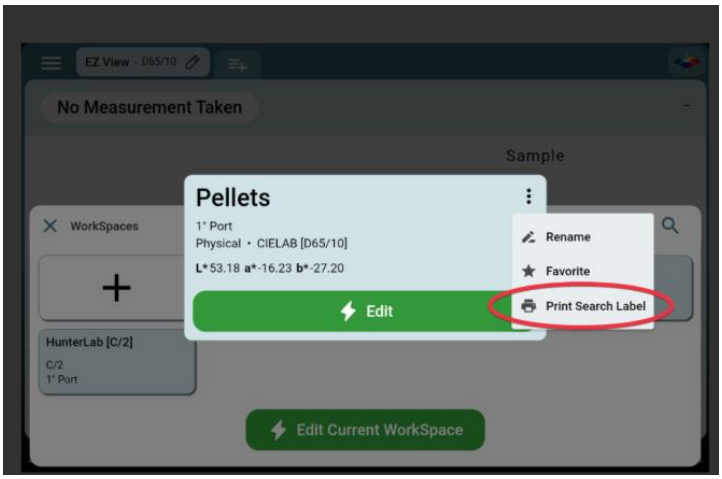

Figure 17. 3 dot Print Search Label

- Users can tap a **sample name** in **EZ View**, **Color Data Table View**, or **Spectra Data Table View**. This will open the **Sample Measurement Details** dialog, where users can click **PRINT LABEL** to print the label for that specific sample.

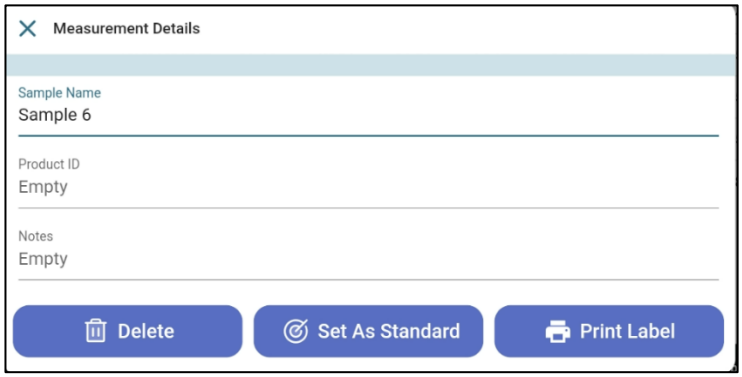

Figure 18. Sample Measurement Details

Edit A WorkSpace

To edit the current WorkSpace, tap ***EDIT CURRENT WORKSPACE***, then modify the settings as needed. To print a label, use the 3 dot option at the top right corner of the dialog.

The 3 Dot option provides the ability to ***RENAME*** the WorkSpace, ***MARK*** the WorkSpace as a favorite and ***PRINT A SEARCH LABEL***.

To create a new WorkSpace, tap the **+** icon and follow the on-screen instructions to configure and customize it..

Edit An Existing WorkSpace

1. Tap the desired WorkSpace in the dialog.
2. Tap ***LAUNCH*** to load the WorkSpace.
3. Return to the main dialog and tap ***EDIT CURRENT WORKSPACE*** to modify the selected WorkSpace.

In the **Edit WorkSpace** dialog, follow the steps listed in the left panel: **STANDARDIZATION MODE**, **STANDARDS & TOLERANCES**, **MEASUREMENT OPTIONS**, and **EXPORT OPTIONS**. After completing the setup, save and exit the WorkSpace configuration.

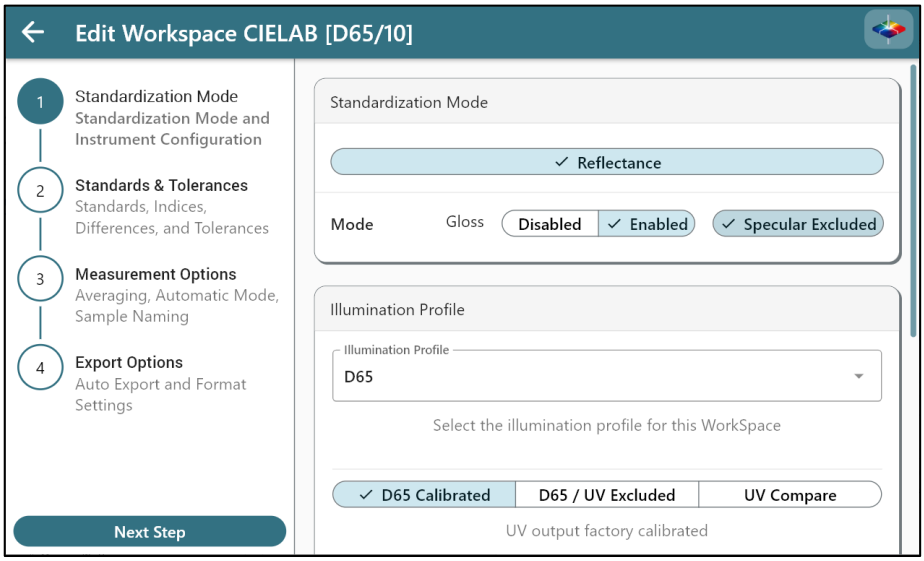

Figure 19. Standardization Mode

Standardization Mode

Gloss

This parameter can be measured in addition to color. Gloss is enabled by default. If gloss measurement is not required, go to ***SYSTEM MENU > INSTRUMENT SETTINGS > GENERAL*** and ***DISABLE*** this portion of the measurement.

Illumination Profiles

There are three illumination profiles available in the Agera L2. To change the Illumination profile go to ***WORKSPACE > EDIT > STANDARDIZATION MODE > ILLUMINATION PROFILE.***

1. **D65** – Recommended as the default illumination profile for most applications. D65 is the default illumination profile. UV options under D65 Illumination Profiles includes D65 Calibrated, D65 UV excluded, and UV compare. D65 Calibrated includes the factory UV calibration.
2. **Ultra Dark** – Use the D65 Illumination profile optimized for dark sample repeatability. If the sample is too bright for dark mode, the instrument will not perform the measurement. This feature is perfect for reflectance values below 20%.

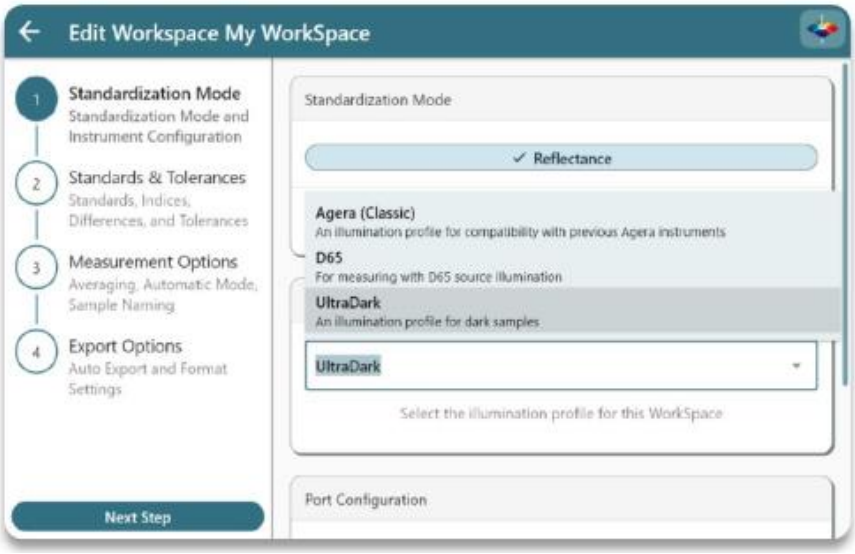

Figure 20. Select Illumination Profile

3. **Classic** – Provides compatibility with legacy Agera instruments. Classic mode includes the following UV options: UV Nominal, UV Excluded, UV Calibrated, and UV Compare. UV Nominal includes the factory UV calibration. UV Calibrated allows users to calibrate UV using a UV standard. After UV Calibrated is configured in a workspace, follow the green action button to perform the UV calibration.

Figure 21. Classic Mode

Select the Whiteness Indice and enter the target value from the back of the Fluorescent Standard. Place the Fluorescent Standard at the port and press ***MEASURE*** to continue.

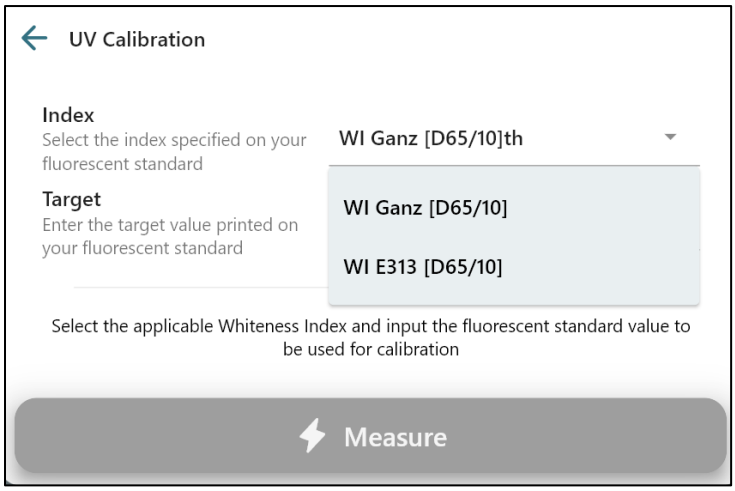

Figure 22. UV Calibration Target and Indice

Port Plates

Place the port plate that will be used for the workspace onto the Agera. Click Read Port Plate to detect the port plate currently attached, or select the correct port plate type from the dropdown list.

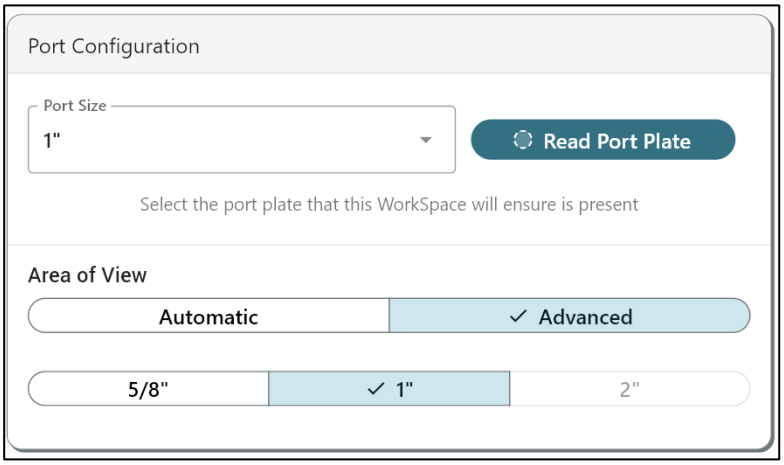

Figure 23. Port Plate Selection

If Automatic is selected for Area of View, the appropriate area of view will be applied based on the chosen port plate. Users may select Advanced to manually choose an area of view (5/8", 1", or 2"), as long as it does not exceed the actual port plate size. This option is useful when measuring translucent materials.

Table 3: Port Selections

Port Configuration	Port Size: 15.9mm (5/8-in) 15.9mm (5/8-in) with glass 25.4mm (1-in) 25.4mm (1-in) with glass 50.8mm (2-in) 50.8 (2-in) with glass Sample Cup
Area of View	Automatic Advanced (5/8", 1" or 2")

Figure 24. Port Configuration

Agera L2 automatically checks whether the installed port plate matches the configuration defined in the workspace. If a mismatch is detected, the Action button (green) will update accordingly. The correct port plate must be installed before performing any Standardize or Measure steps.

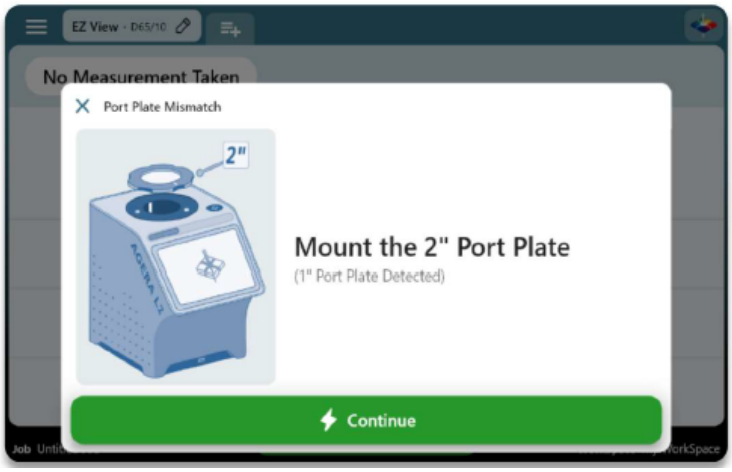

Figure 25. Port Plate Mismatch Detected

Standards & Tolerances

The table below shows all the available selections in Standard &Tolerances dialog. The user can select the type of standard color scale, color difference, indice, illuminant/Observer and add a numeric standard with tolerance.

Table 4. Available WorkSpace Selections

Standard Type	Color Scale	Color Differences	Indices	Illuminants	Observers
Ad Hoc/ Working	CIELAB	dE	a/b Ratio	A	2˚
Physical	CIELCh	dE*	Y	C	10˚
Numeric	HunterLab	dC*	YI D1925 (YID)	D50	
Hitch/Transfer	XYZ	dH*	YI E313 (YIE)	D55	
	Yxy[1]	dE CMC	WI GANZ, WI E313	D65	
	Rdab	dE * 2000	Tint	D75	
		Grey Scale Color (GSC)	Z Percent (Z%)	F2	
		Grey Scale Stain (GSS)	457 nm Brightness (457B)	F7	
		Strength at Max Absorbance (SMA)	Opacity (OP)	F11	
		Strength Weighted (SW)	Gloss		
		Metamerism Index (MI)	Tint E313		
			Tint GANZ		
			Blackness (My, Mc, dM)[2] Greyness (Gy, Gc, dG)[2]		

1 – When using the Yxy color scale, you can add chromaticity tolerances. These can be manually entered or loaded from a list of standard presets. The absolute color plot for Chromaticity will show the region along with pass/fail indicators for the plotted points. Other views will also show a simple pass/fail for the chromaticity tolerance.

2—When Ultramode is configured Ultra Dark indices are available in the indices list.

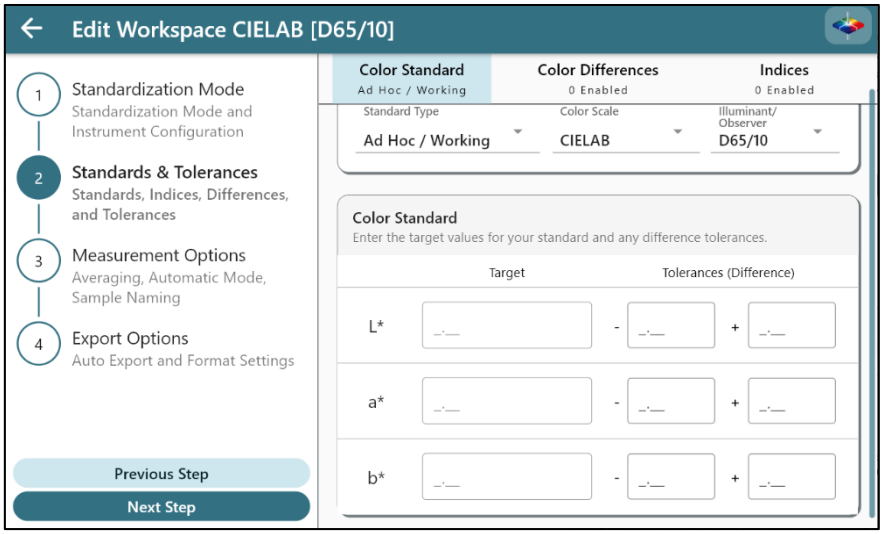

Figure 26. Standards and Tolerances

Color Standard Tab

Configure **STANDARD TYPE**, **TRISTIMULUS COLOR SCALES**, and **ILLUMINANTS/OBSERVERS**.

Following are available **STANDARD TYPES**:

Ad hoc/ Working Standard
The first sample measurement is automatically assigned as an Ad Hoc/Working standard. Tolerances can be entered after standard selection. The other sample in a job can be manually set as standard if needed.

Physical Standard: Measure a physical standard in this dialog and use it as standard. Use the Green action button in this dialog to standardize (if there is no valid standardization) and measure the standard. Multiple measurement and their average can also be used as the standard target.

Numeric Standard: This type of standard is defined by numeric values representing standard values. This feature can be used when no physical standard is available. Enter the values for the color scale and tolerances.

Hitch/Transfer Standard: A hitch standard links the values of the current instrument to a Master instrument/standard. This feature allows multiple instruments to read the same values on one product. .

Hitch Configuration:
When Hitch/Transfer is selected, tap **EDIT THE HITCH CONFIGURATION,** the blue highlighted area, and follow the instructions to setup hitch.

Choose between **HITCH TO TILE** or **HITCH TO INSTRUMENT**. Hitch to Tile refers to using a tile that has already been assigned with a reference value; Hitch to Instrument involves using a sample that was previously measured on the other Instrument.

Steps to Configure Hitch:

1. Press ***CONTINUE***. Place the tile/sample at the port and ***MEASURE***. When measuring a sample, multiple measurements for averaging are available.
2. Enter the values of the **TILE** or the **SAMPLE** from the reference or the compared instrument.
3. Select **ADDITIVE** or **RATIO** Hitch Calculations.
4. Press ***CONTINUE***. The Hitch Adjustment is shown on the **STANDARDS AND TOLERANCE** page. .

In addition to the existing colorimetric hitch an offset can also be set spectrally

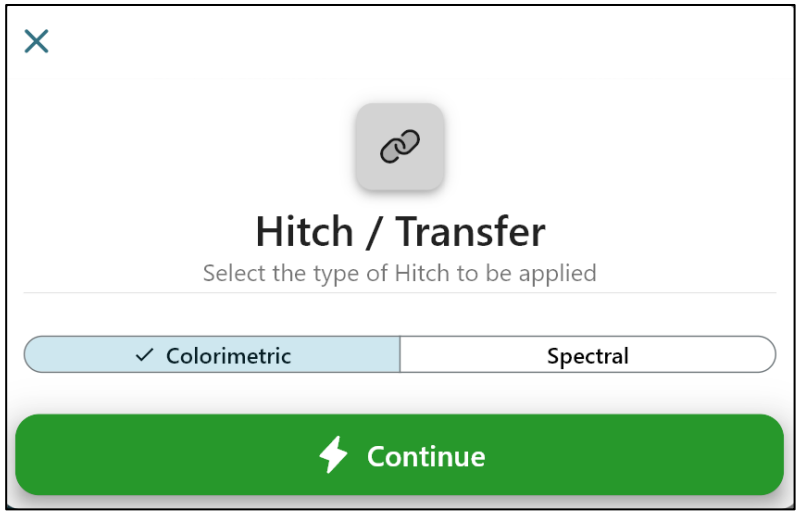

Figure 27. Select Colorimetric or Spectral Hitch

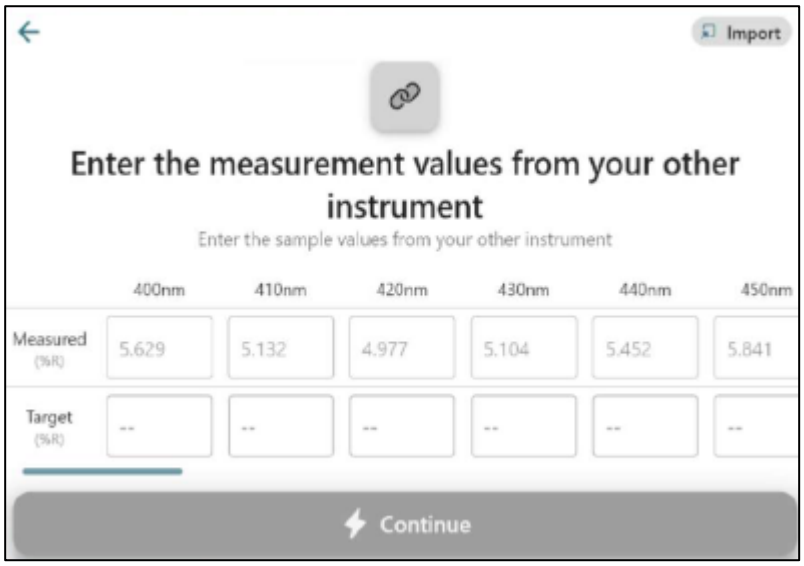

Figure 28. Spectral Hitch

Color Differences Tab

Tap the **COLOR DIFFERENCES TAB** and check **DIFFERENCES**. As a differences is checked, the pencil icon is displayed at the right side. Tap the pencil icon to configure Tolerances. Scroll down to find additional differences.

Indices Tab

Tap the **INDICES** tab and select the indices needed for the measurement.

- If an indice is available with multiple Illuminant/Observer options, the **Indice Configuration** dialog will appear to assist in selecting the appropriate Illuminant/Observer. Tap **CONTINUE** to confirm.
-
- A pencil icon appears on the right side of each checked index. Tap the pencil icon to:
  - **Set Tolerances**: Configure absolute or difference tolerances.
  - **Settings**: Adjust bias, gains, or change the Illuminant/Observer settings (based on the index).

Measurement Options

Measurement Configuration:

Three reading modes are provided: **MANUAL**, **AUTOMATIC READINGS**, and **AVERAGING**. Follow the instructions on the Essentials screen to set up the reading mode.

Measurement Prompt Settings:

Edit a default sample name, enable or disable prompts for **SAMPLE NAME, PRODUCT ID, and NOTES**.

AutoSearch Settings:

Check **Include in AutoSearch Standard** to include this WorkSpace for AutoSearch Standard mode.

Export Options

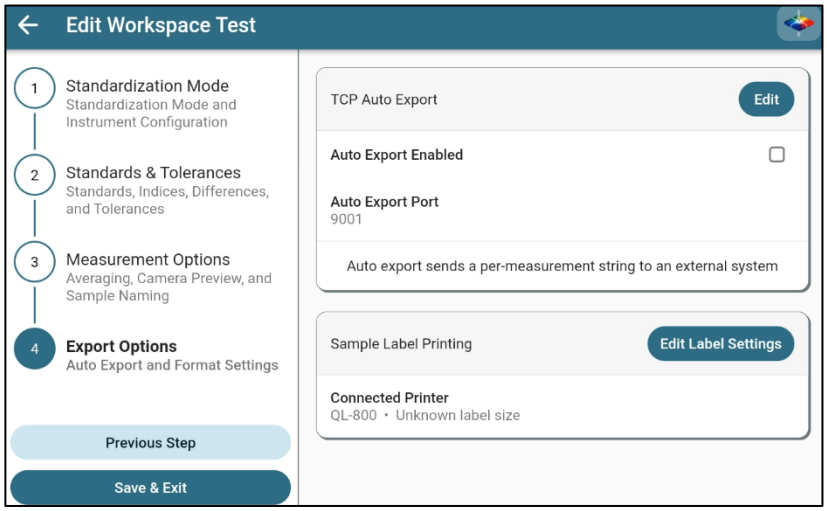

Figure 29. Export Options

Auto Export

Configure **AUTO EXPORT** to simultaneously send the data string per measurement to a data collection system. Ensure both the Agera and the data collection system are on the same network. Check details in Instrument Settings/Network Settings

Tap ***EDIT*** button in TCP Auto Export to:

- Choose what data is going to be exported in these categories, Color Scales, Differences and Indices, and Other fields. Drag fields in the configuration list to reorder. To remove a field, click the Trash Can icon on the left side.
- Select a delimiter type
- Press ***SAVE*** when finished.
- ***ENABLE/DISABLE*** Auto Export
- Auto Export Port is fixed as 9001.

In the data collection system, configure the TCP/IP method: Set Agera IP as the server IP and port 9001 to collect data from the Agera.

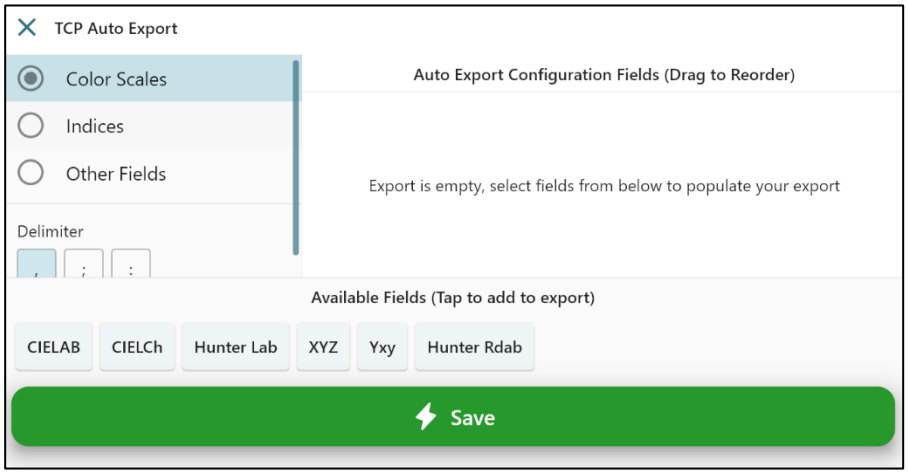

Figure 30. Auto Export Configuration

Sample Label Printing

Sample Label Printing is supported in Essentials when a compatible label printer is connected. The **Brother QL-800 High-Speed Professional Label Printer** is the recommended and supported model for use with Agera Essentials. This printer is not sold by HunterLab and must be purchased separately by the customer.

1. Plug the label printer into the USB-A port on the left side of the Agera.
2. Within the Label Settings menu, users can configure the label orientation (portrait or landscape), and select options such as:
    - Auto Cut Labels
    - Auto Print for Each Sample
    - Include Barcode

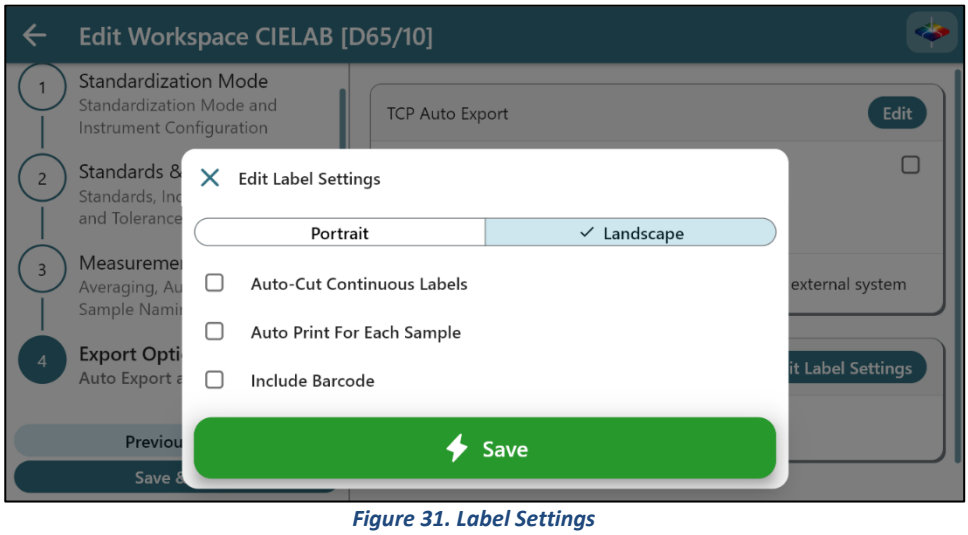

Figure 31. Label Settings

After adjusting the desired settings, press ***SAVE***. A sample label will be displayed on the right side of the screen for preview. Save the WorkSpace when finished.

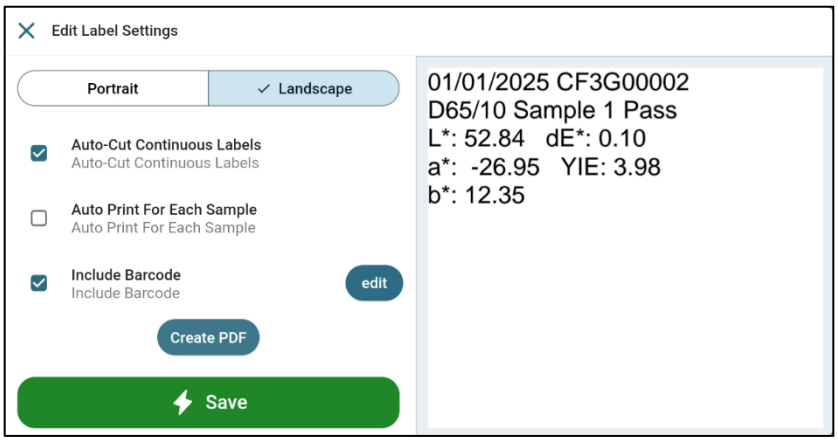

Figure 32. Sample Label Printing

3. Users can tap a **sample name** in **EZ View**, **Color Data Table View**, or **Spectral Data Table View**. This will open the **Sample Measurement Details** dialog, where users can click ***PRINT LABEL*** to print the label for that specific sample.

Views

All views are displayed in the middle of the Tool Bar.

- **View Editing**: Tap the current tab to edit. Alternatively, tap another view to load it first, then tap again to open the view options. After editing, press the left arrow at the top of the screen or tap anywhere on the view screen to exit.
- **Add/Remove**: tap the plus icon to add views. Click the box next to the desired view and press ***SAVE***.

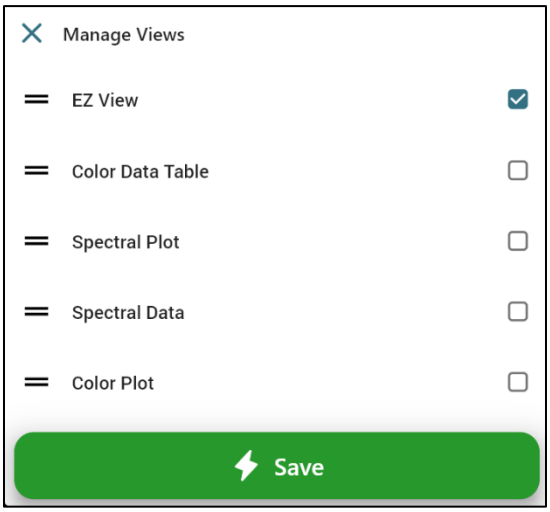

Figure 33. Manage Views

EZ VIEW

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

Overview

Sample Name Box
Located at the top-left corner of the screen, this box allows you to edit the sample name, delete it, or set it as the standard by tapping on it. The box is highlighted with a color corresponding to the measured color, offering a quick visual reference.

Information Area
Located at the top-right corner of the screen, this area displays the instrument's serial number, time, date, and Pass/Fail status. If the measurement is a standard, it will be labeled as Standard in this area.

Edit EZ View

To edit, click EZ View Screen tab on the top of the Essentials screen. in the ***EZ VIEW*** tab.

Display Options:
Includes **SHOW STANDARD, SHOW DIFFERENCES, SHOW COLOR PLOT**, and adjusting

PRECISION. Selecting **SHOW COLOR PLOT** displays the color difference plot in EZ View, which auto-scales to show differences. Tapping the plot also initiates auto-scaling.

Color Scales:
Select one or multiple tristimulus Color Scales to display.

Differences And Indices:
To select **DIFFERENCES** and **INDICES** to display (go to WorkSpace to add first If not already selected in WorkSpace).

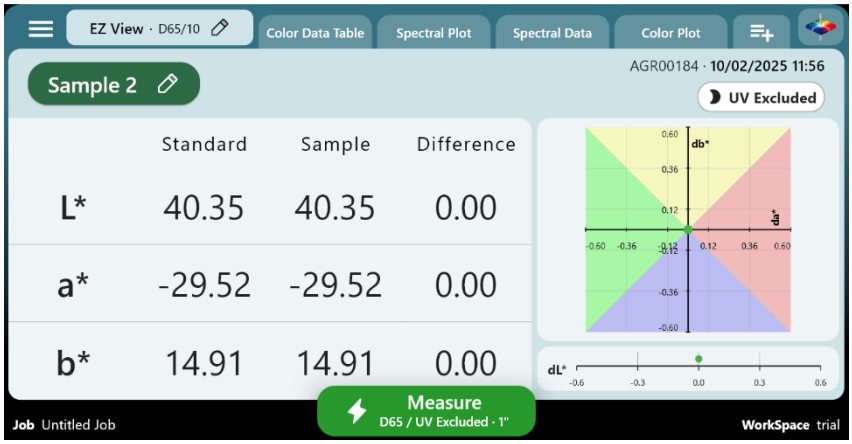

Figure 34. EZ View Display with New Options

COLOR DATA TABLE

The **COLOR DATA TABLE** displays **COLOR SCALE**, **COLOR DIFFERENCE**, and **INDEX DATA** for the standards and all samples in the job. Press and hold a column (except the Name column) to drag and reorder the fields.

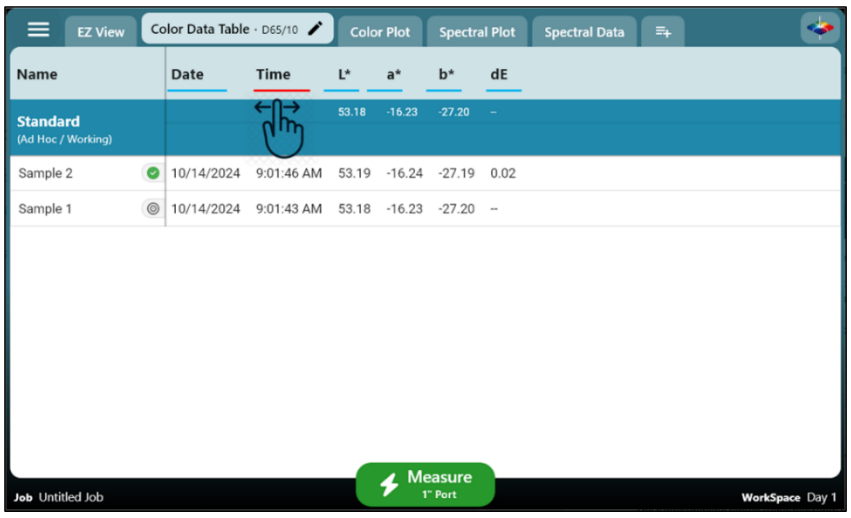

Figure 35. Color Data Display

Press the edit icon (pencil) or press the **COLOR DATA TABLE VIEW TAB**. At the bottom of the screen, you will find options to edit the view settings including:

Display Options:
Includes **SHOW STANDARD, SHOW SERIAL NUMBER, SHOW DATE, SHOW TIME, SHOW PASS/FAIL, SHOW PRODUCT ID, SHOW NOTES,** and edit **PRECISION**.

Color Scales
Select one or multiple tristimulus Color Scales to display.

Differences And Indices:
To select Differences and Indices to display (If not already selected in WorkSpace, go to WorkSpace to add them first.).

SPECTRAL DATA TABLE

The **SPECTRAL DATA TABLE** displays the percent reflectance for each selected measurement at the measured wavelengths. A sliding bar at the bottom of the screen provides access to all measurements.

DISPLAY OPTIONS can be accessed using the edit icon (pencil) in the Spectral Data tab. The options include showing the Standard and changing the precision of the measurement data. The measurement data can be changed from Reflectance to Absorbance to % Strength and K/S.

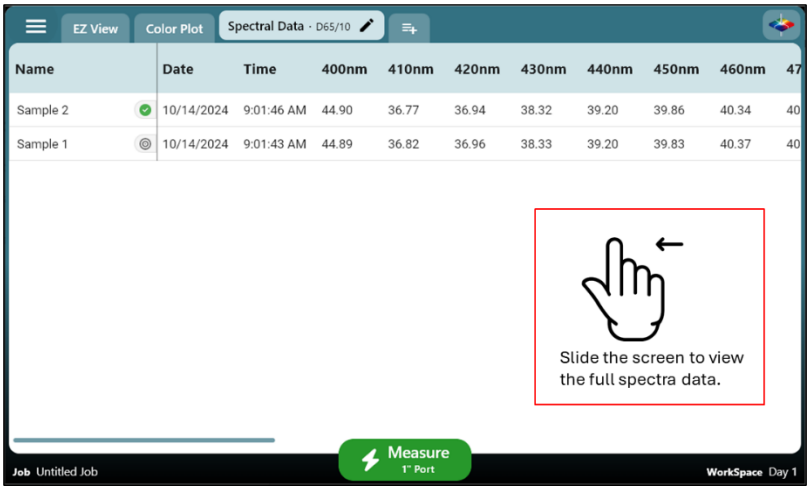

Figure 36. Spectral Data Table

SPECTRAL PLOT

This view displays a graph of reflectance percentage versus wavelength. Use the + button to enlarge the plot or the – button to reduce its size.. Moving the cursor around the plot shows the measurement values for each sample at different wavelengths.

Spectral Plot Options: Sample Limit

This setting controls the number of samples displayed simultaneously, with a maximum limit of 10 samples.

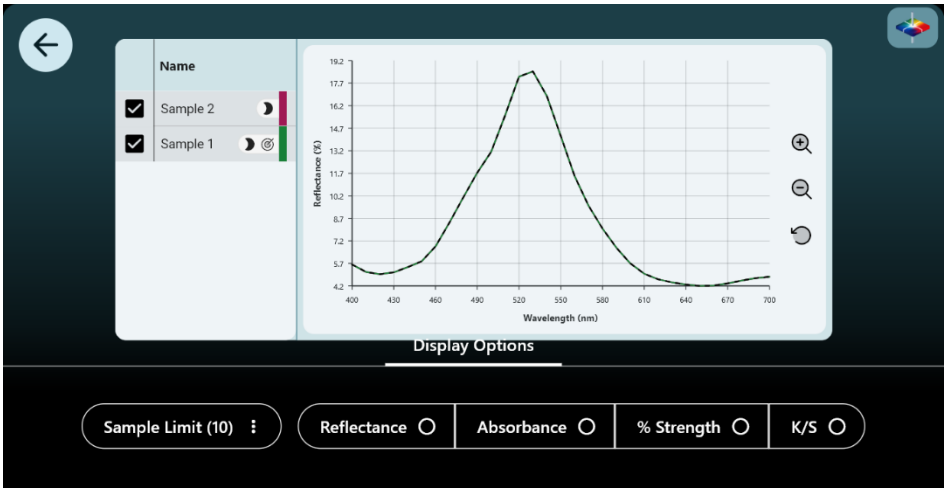

Figure 37.Spectral Plot View

Spectral Plot Options: Display Options

Select from Reflectance Absorbance, % Strength and K/S.

COLOR PLOT

This view displays the sample's position in a two-dimensional Color Space relative to the standard. The standard is the center point for difference measurements, plotting each sample to show variation. Each sample's position is shown without referencing a standard for absolute measurements.

Sample List

The samples displayed on the Color Plot are listed in a box on the left side of the screen.

- **Scaling and Detail:** The Color Plot is automatically scaled . Clicking the data points allows for detailed viewing of each point's information.
- The user can select Absolute color, differences, hue and chroma for display.
- Display options include **SETTING LIMIT** of samples to show on the plot. The Upper Limit is 10.

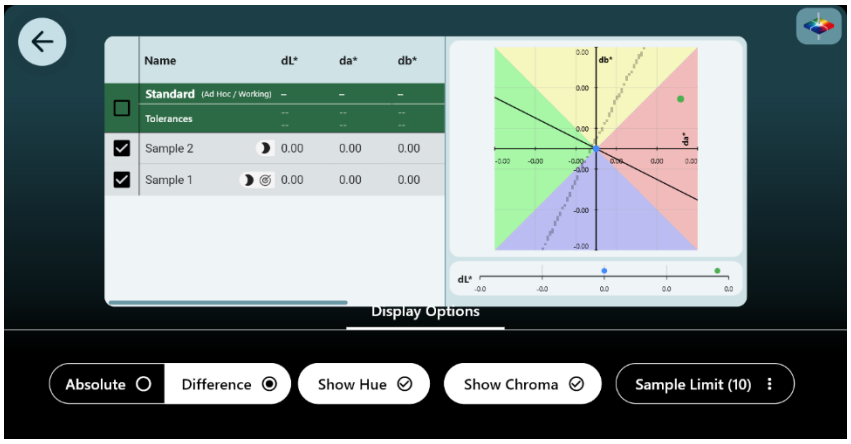

Figure 38. Color Plot View

Instrument Settings

Press ***INSTRUMENT SETTINGS*** under System Menu to display the current settings for **INFORMATION,** and edit the settings for **GENERAL, DISPLAY & BRIGHTNESS, NETWORKING, AUTOSEARCH STANDARD, DIAGNOSTICS**, **SECURITY SETTINGS and UV CALIBRATION**..

The **INFORMATION** screen provides the Instrument Serial Number, Version number, Firmware Version and Sensor Name. Network Settings lists the IP Address and MAC address (if connected).

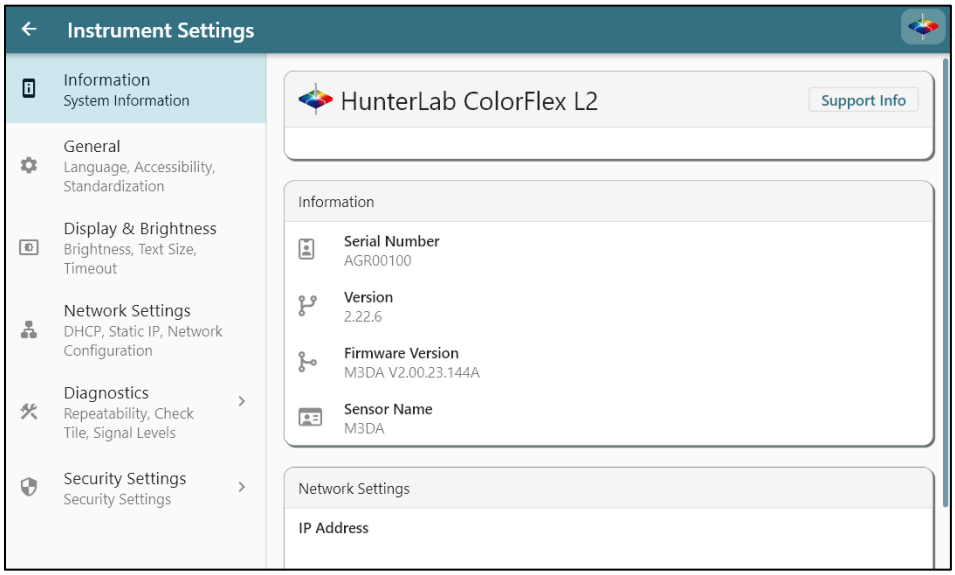

Figure 39. Instrument Information

General

On this screen, you can set the **STANDARDIZATION INTERVAL** to 8, 12, or 24 hours. Additionally, **SYSTEM SETTINGS** allow you to adjust **DATE/TIME** and **LANGUAGE & DATE FORMAT**, **SAMPLE DETECTION** at the port and **GLOSS MEASUREMENT.**

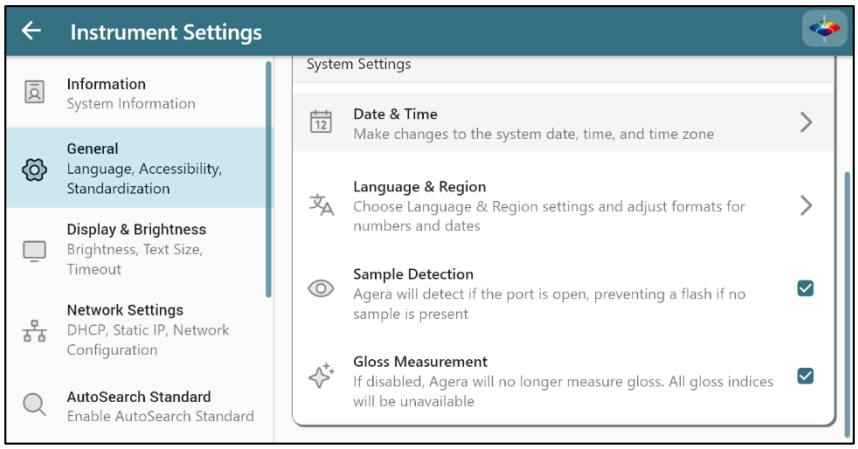

Figure 40. Instrument Settings: General

Figure 41. Date and Time

Language allows the user to set the language needed, choose the format for number display and format the date and time to their region.

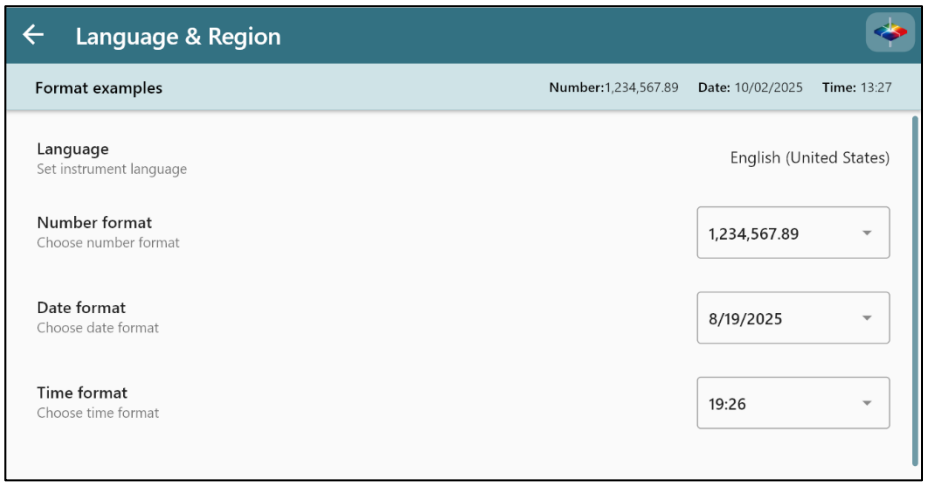

Figure 42. Language, Number and Date Format

Sample Detection and Gloss Toggle

Sample detection and Gloss measurement can be disabled from Instrument Settings by unchecking the box. These options will immediately affect all WorkSpaces.

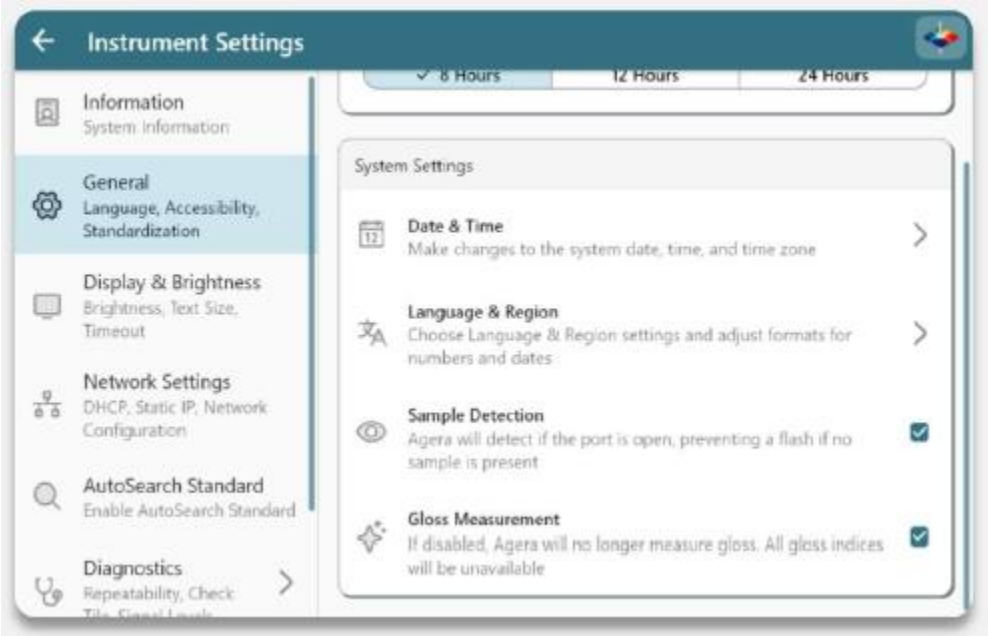

Figure 43. Enable Sample Detection and Gloss

Display And Brightness

Appearance

Changes the display background from white to black.

Text Size

Press the arrow on the right size to change the Font Size. Use the sliding tool at the bottom of the screen to change the font size, or press ***RESET*** to return the font to the original size.

Display Brightness

Provides a sliding scale to set the desired brightness.

(In)activity Timeout

Lowers the screen brightness when the time is reached.

Network Settings

The network settings enable the Agera to automatically export data to a shared network location, connect with HunterLab Essentials for PC on a computer, and support other network functionalities. Network Settings offers the choice between DHCP for automatic IP configuration or Static IP for manual IP entry .

Method 1: Connect AGERA to a network hub using Ethernet cables.

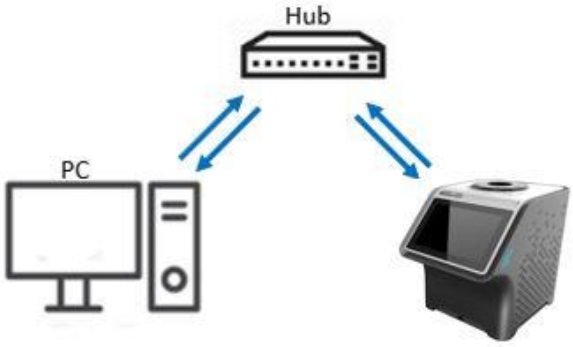

Figure 44. Network Connection Method 1

Connect a AGERA and PC to the same network hub using an Ethernet cable. Alternatively, connect a AGERA and PC using an Ethernet cable to a stand-alone router with DHCP server features. .

1. Plug the Ethernet cable into the back of the AGERA and the other end to a network hub. Plug the PC to this network hub as well.

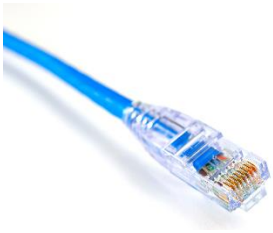

Figure 45. Ethernet Cable

2. In the AGERA, go to **SYSTEM MENU > INSTRUMENT SETTINGS > NETWORK SETTINGS**. Select "Edit". CONFIGURE ETHERNET SETTINGS.
3. Check **USE DHCP FOR ETHERNET** and click **APPLY NETWORK SETTINGS**, then close the Network Settings window.

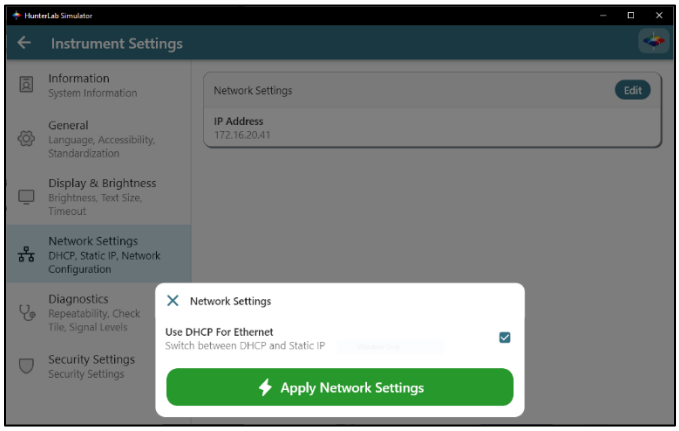

Figure 46. DHCP Network Settings

Method 2: Direct connection between AGERA and computer -

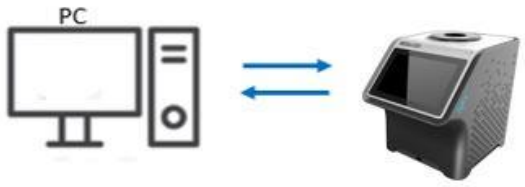

Figure 47. Network Connection Method 2

1. Plug the Ethernet cable into the back of the AGERA and the other end to the PC. If the PC does not have any available ethernet ports, a USB-Ethernet adapter can be applied. .

Figure 48. USB to Ethernet Adapter

2. Check the PC IP settings:
   a. For Windows computers, open the command prompt by clicking the Start menu, type "cmd" in the search bar, and select "Command Prompt".
   b. Type in ipconfig and press Enter.
   c. Find the right Ethernet connection (in this case, it is Ethernet Adapter 2) and write down the value under "Autoconfiguration IPv4 Address" and "Subnet Mask".

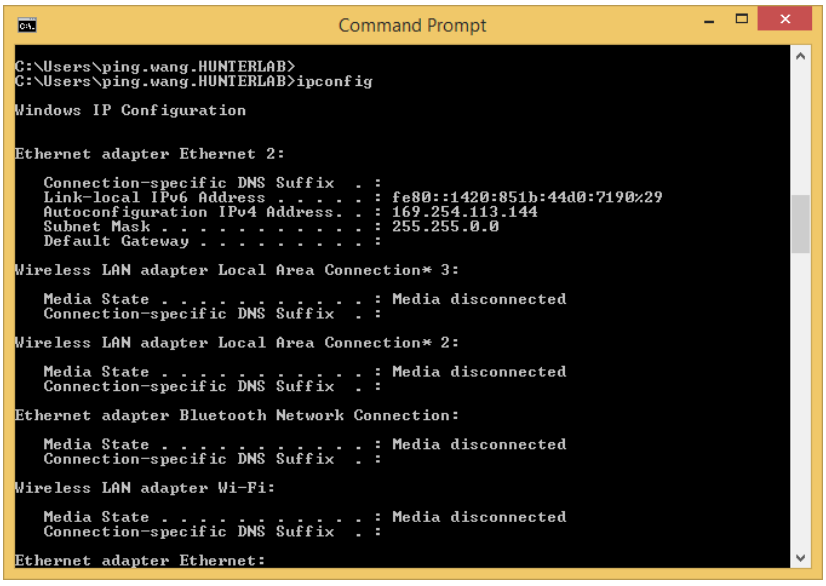

Figure 49. Command Prompt – Ethernet Adapter

3. In the AGERA, go to **SYSTEM MENU > INSTRUMENT SETTINGS > NETWORK SETTINGS**. Select "Edit". ***CONFIGURE ETHERNET SETTINGS***. .
4. Uncheck **USE DHCP FOR ETHERNET**.
5. Type in the **IP Address**, **Subnet Mask**, **Gateway**, and **Preferred DNS** manually.
   a. The **IP Address** is equal to the IPv4 of the Ethernet Adapter. Change the last digit to any number from 1-10 that differs from the Ethernet Adapter IPv4 address, for example, 169.254.113.145.
   b. The Subnet Mask is equal to Ethernet Adapter. For example, 255.255.0.0.
   c. Leave the Gateway empty.
   d. Leave the Preferred DNS empty.

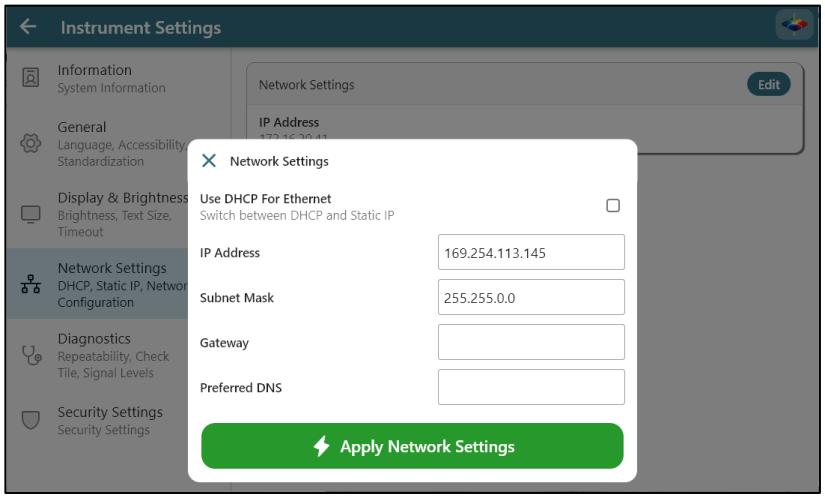

Figure 50. Static Network Settings

6. Select **APPLY NETWORK SETTINGS**, then close the Network Settings window.

Autosearch Standard

The Autosearch Standard feature automatically identifies any WorkSpace with passing tolerances each time a measurement is taken.
To enable and use Autosearch Standard mode:

- **Enable Autosearch Standard:**
  - Go to ***SYSTEM MENU → INSTRUMENT SETTINGS → AUTOSEARCH STANDARD***.
  - Check "AutoSearch Standard Enabled" and configure the standardization mode and measurement options.
  - Note: Once enabled, the measurement options (configuration and prompt settings) set here will override those in WorkSpace settings.

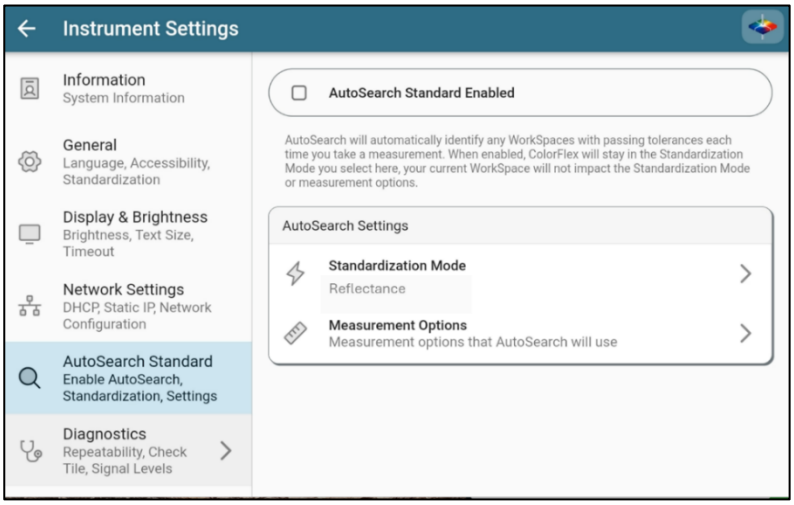

Figure 51. AutoSearch Settings

- **Select WorkSpaces for Autosearch:**
  - Open ***EDIT WORKSPACE → MEASUREMENT OPTIONS*** for each WorkSpace you want to include.
  - Check "***INCLUDE IN AUTOSEARCH STANDARD***" to add it to the Autosearch process.

Note: Only WorkSpaces with Physical, Numeric, or Hitch standards will be included in AutoSearch. Your WorkSpace must also have at least one tolerance applied. If you want to exclude a WorkSpace from AutoSearch, you can always exclude it in the WorkSpace settings page for that WorkSpace.

- **Take a Measurement:**
  - The green action button will update to ***AUTOSEARCH***.
  - Place the sample and tap the ***MEASURE*** action button.
  - Essentials will search the configured WorkSpaces, listing those with the same standardization mode as the current measurement and tolerances that pass.
  - If multiple WorkSpaces are listed, select one to save.
  - If no WorkSpace Standard Pass for this sample, you will still be able to save the sample to the ***NO MATCH*** WorkSpace for later review.

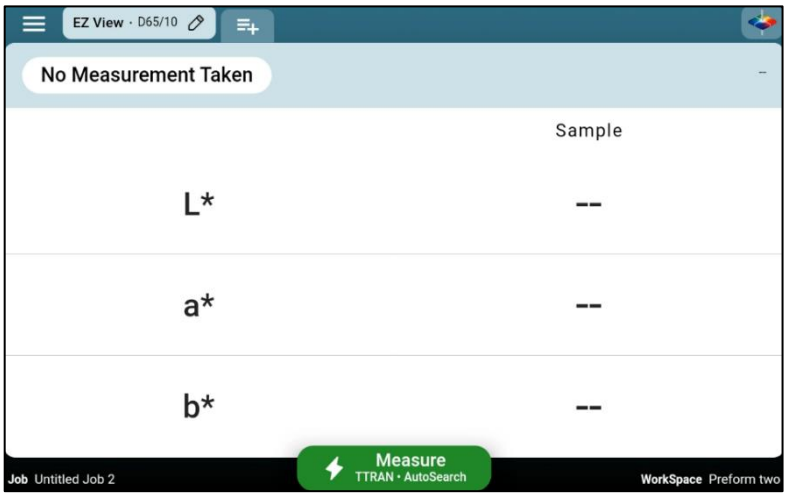

Figure 52. Measurement

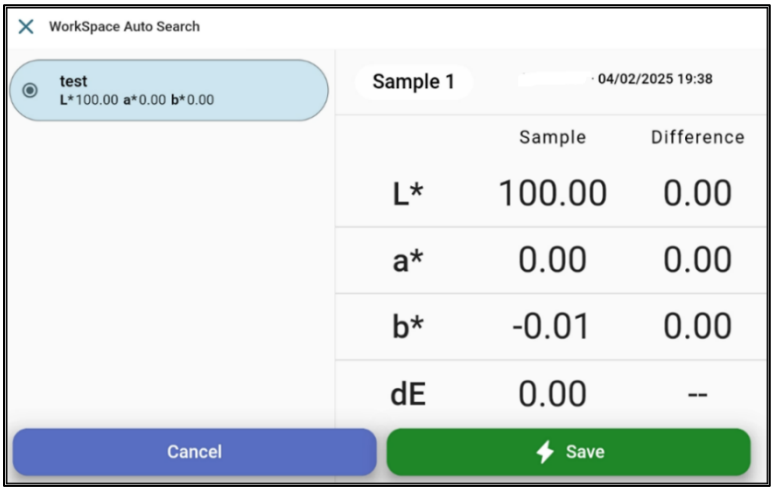

Figure 53. WorkSpace Auto Search

- **Save and View Results:**
  - Click **SAVE** to load the selected WorkSpace and display the measurement results.

Diagnostics

The Diagnostics menu shows the overall health of the instrument, **LAST DIAGNOSTIC TEST RESULTS,** and **INSTRUMENT DETAILS**. . To exit this menu, use the arrow at the top left side of the screen.

If the diagnostics are skipped or have failed a simple indicator is shown in the top left screen. The status of each test is shown on the Diagnostics page.

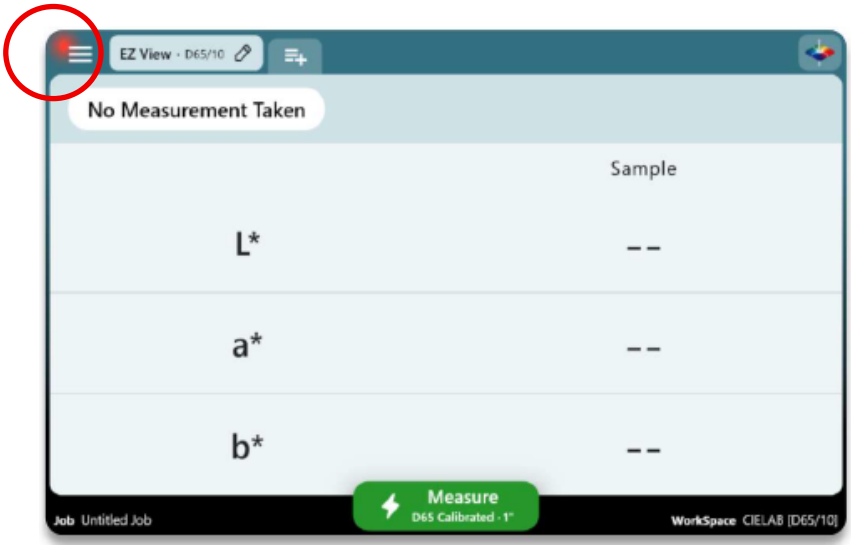

Figure 54. Failed Diagnostics

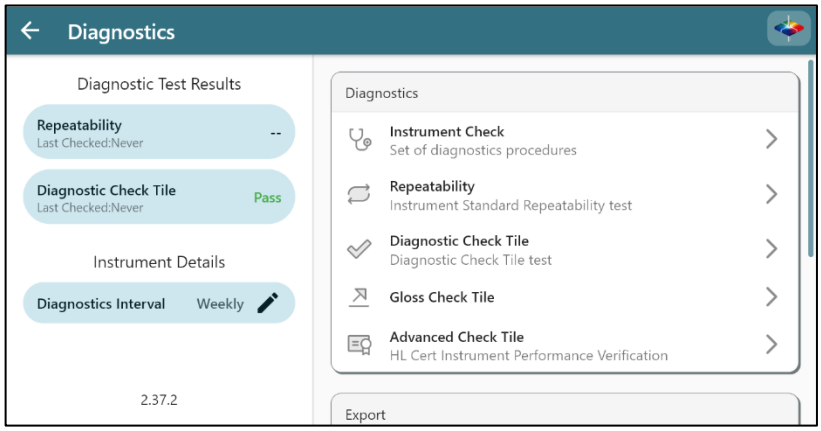

Figure 55. Instrument Health

Instrument Check

Select the **INSTRUMENT CHECK** to run a series of tests: signal levels, repeatability, and check tile. Follow instructions to continue. Instrument Check can be initiated by tapping ***SYSTEM MENU > DIAGNOSTICS STATUS***.

Repeatability

Select this test to run a group of 30 readings compared to 1 standard reading on the white tile. Ensure that the one-inch port plate is utilized. Tap the Green action button to **STANDARDIZE** and run the test.

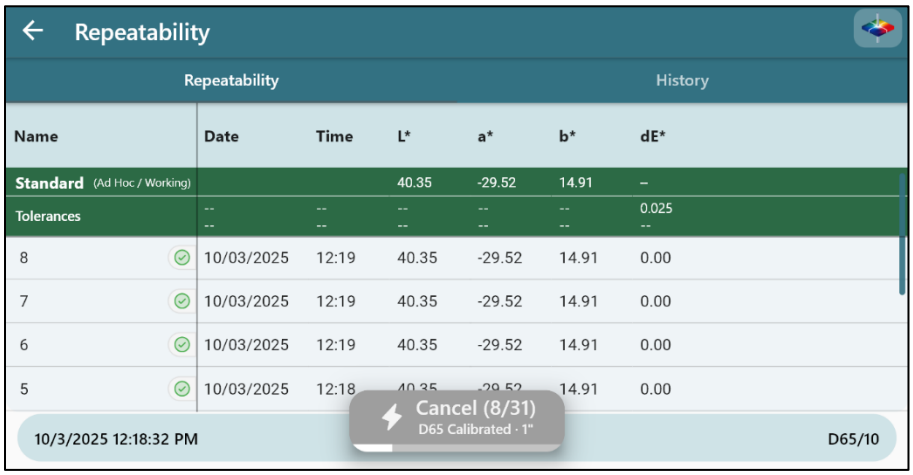

Figure 56. Repeatability

Check Tile

Use this test to measure the green tile and confirm that the readings match the factory-set tolerance values. First, attach the 1-inch port plate. Tap the Green action button to **STANDARDIZE** the instrument. Then, position the green tile at the port and press ***START*** to measure.

Figure 57. Diagnostic Check Standard Reading

Gloss Check

Standardize the instrument. Then, enter the target values for the Gloss standard along with tolerances. The Pass or Fail result is shown at the bottom right of the page.

Figure 58. Enter the Gloss Value

Advanced Check Tile

This verifies instrument performance and generates a HunterLab Certificate.

Export Diagnostic Results, Log File And Full Database

Attach a flash drive into the instrument and press the export options here to export data.

Security Settings

This function provides a way to enable/disable password protection. . Options include role-based permissions, password length and expiration, inactivity sign-out and limits on failed sign-in attempts before lockout.

- Follow the instructions on screen to setup the passcode.
- Select the Secured Functions required passcode, Standardization and/or Data View Editor.
- After this, a password will be required to perform the secured functions.

UV Calibration

UV Calibration status for all modes can be checked in the I***NSTRUMENT SETTINGS > UV CALIBRATION*** page. Recalibration for any mode can also be done from this page.

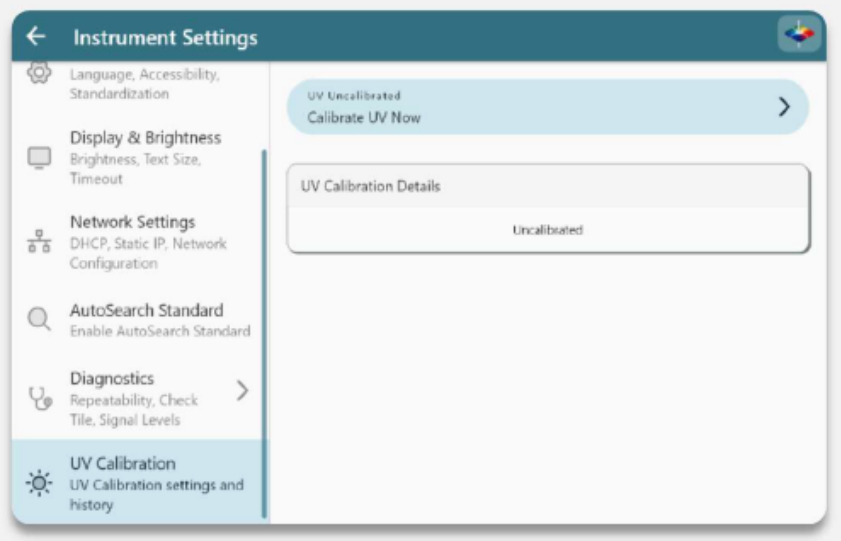

Figure 59. UV Calibration Status

Provides the UV Calibration settings and history. Press ***CALIBRATE NOW*** to select the port plate and area of view to perform a calibration. 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]. Once selected, press the green bar to perform the UV Calibration.

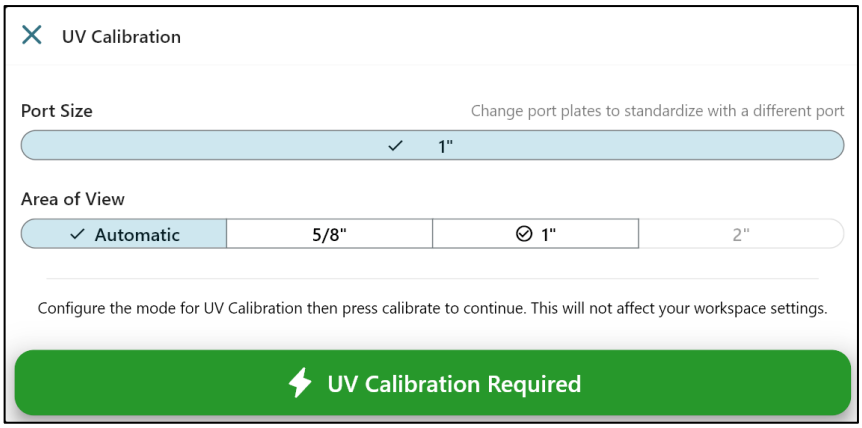

Figure 60. UV Calibration

How to Update Essentials in Agera

Please find the latest version of the Agera Essentials software, along with a document outlining the major changes in HunterLab support website.

Instructions:

1. Download the **HUNTERLAB-type file** onto a flash drive (e.g., *2024.4.2.hunterlab*, where *2024.4.2* is the release number).

Note: You can rename the file if needed. AGERA Essentials will automatically recognize the file based on its type, not its name.

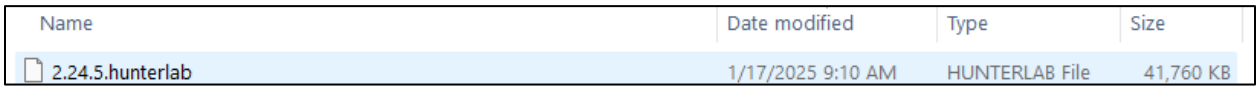

Figure 61. Essential Update File

2. Insert the flash drive into the Agera.
   - Essentials will automatically detect the file on the drive.
   - If the file is a newer version than the currently installed one, Essentials will display a prompt to update.
3. Follow the on-screen instructions to complete the installation of the new Essentials software.

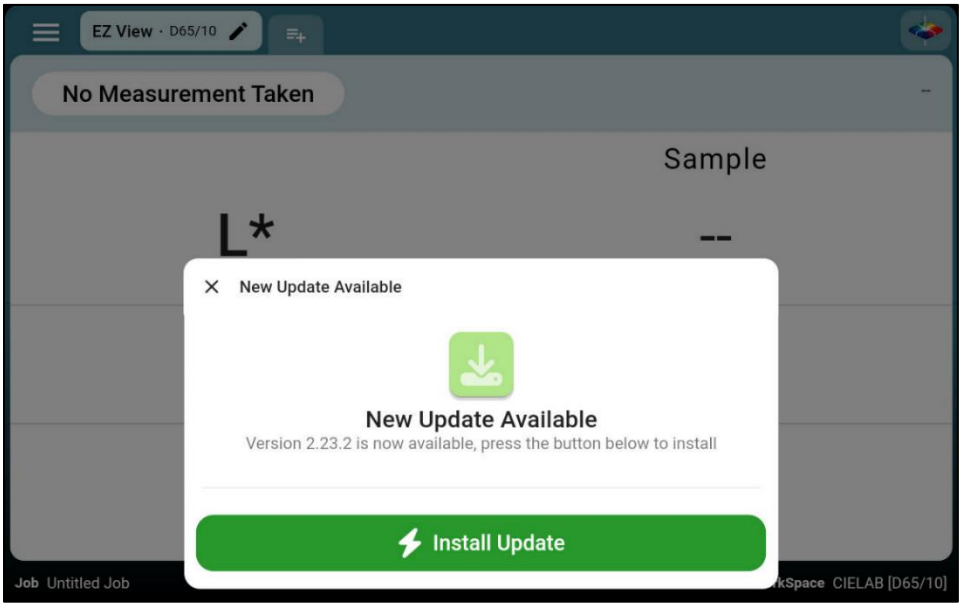

Figure 62. Install Update

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 WorkSpace 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.

Table 5: Specifications

Operating Conditions

Storage Temperature (3weeks)	-20°C to 65°C (-5°F to 150°F)
Operating Temperature	10°C to 40°C (50°F to 104°F)
Noncondensing Humidity	10% to 90%

Physical Characteristics

Weight	7.7 kg (17.0 lbs.)
Dimensions (Height x width x depth)	28 cm x 22 cm x 31 cm (11.0 in x 8.75 in x 12.25 in)
Communications I/O: USB Ethernet RJ45 External Inputs:	 Connectivity to thumb drive, printer, keyboard, mouse, and other peripherals. Front Panel (1), Read Panel (2) Print directly to standalone or network printers; stream data to LIMS and SPC systems. Enabled via internet-based support tool. Remote footswitch or similar closed contact switching device.
System Power	100 – 240 VAC, 47 – 63 Hz to universal power supply @ 24 VDC/3.75A 90W
Display	7" Capacitive Touch screen, high resolution 1280x800
External PC Software	Compatible with HunterLab EasyMatch QC and EasyMatch QC-Electronic Records Quality Control Software

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 Sealed optics,
Geometry	0°/45° circumferential ASTM E1164
Measurement Conditions	Port Forward, Port Up

Instrument Performance

Spectral Data	Range: 400 nm -700 nm; Reporting Interval (nm): 10 nm
Illumination Range	360 nm – 700 nm
Spectral Resolution	<3 nm
Effective Bandwidth	10 nm equivalent triangular
Photometric Range	0 to150%
Read Time	<3 seconds
LED life	5 years typical
Inter-instrument Agreement	Color: ΔE 2000 < 0.20 CIE L*a*b* (Avg) on CCSII (CERAM) Tile Set Gloss: 0-100; ≤ 0.5 GU
Colorimetric Repeatability	Color: ΔE < 0.03 CIE L*a*b* (Max) on White Tile Gloss: 0-100 GU: ≤0.1 GU
UV Control	UV Included and UV Excluded with automated comparative data viewing and reporting. Factory calibrated with user option to calibrate to their specific fluorescent standard.

Measurement

Image Capture	High-resolution, D65 illuminated, 0°/45° image viewing, image capture and image recall
Port Plate Opening	Extra Large – 53.97 mm (2.125 in) Large - 28.57 mm (1.125 in) Medium - 17.47 mm (0.688 in)
Area Measured	XLAV - 50.8 mm (2.0 in) LAV - 25.4 mm (1.0 in) MAV -15.89 mm (0.625 in) Gloss – 8mm (5/16in)
Data Views	EZ View, Color Data Table, Color Plot, Spectral Data, Spectral Plot, Chromaticity Plot

Other Features	Pass/Fail Color Indication, Time/Date Stamp, Auto-naming, Image Capture, Average Multiple Readings, Time-Based Automatic Measurements, Data Backup and Recovery
USB Flash Drive Features	Data Export, Job Data, Sample Images, Screen Capture & Database
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*, ΔC*, ΔE, ΔE CMC, ΔE 2000, dH*, Grey Scale Color, Grey Stain, Strength at Max. Absorbance, Strength Weighted, Metamerism, Shade Number 555
Indices and Metrics	Gloss (ASTM D423, ASTM D2457, ISO 2813, ISO 7668, JIS 28741), E313 Yellowness, E313 Whiteness, E313 Tint, Ganz Tint, Ganz Whiteness, YI D1925 Yellowness, Y Brightness, Z%, 457nm Brightness, Baking Contrast Units, ASTM E1349, ISO 18314-3 Blackness (My, Mc, dM), Greyness (Gy, Gc, dG)
Gloss	60° Gloss conformance to ASTM D523 and ISO2813
Data Storage	1 million Records max; 8 GB
Languages	Supports Multiple Languages

Standard Accessories

Standard Accessories	Certified Instrument Standard (White Tile with Certificate of Traceability), Black Glass Standard, Diagnostic Check Standard (Green Tile), Standards Box, Port Plates of XL, L and M, Power Supply, Quick Start Guide, Agera User's Manual for Essentials 2 on www.hunterlab.com

Standards Conformance

Standard	**Color:** CIE 15:2018, ASTM E1164, DIN 5033, Teil 7, JIS Z 8722 Condition C **Gloss:** ASTM D523, ASTM D2457, ISO 2813, ISO 7668, MIS Z874

Regulatory Notice

The world's true measure of color
HunterLab

Declaration of Conformance

Applicable Directives:	**2014/30/EU Electromagnetic Compatibility** **2014/53/EU Radio Equipment Directive** **2011/65/EU RoHS** **EN61010-1 Product Safety**
Standard to which Conformity is Declared:	**IEC 61326-1: 2021**
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: *August 22, 2022*

Signature

Full Name *Kyle Fruth*

Position *Electrical Engineer*

A61-1018-855 REV C

Agera Maintenance & Safety

Maintenance for the Agera

The Agera is designed to require minimal maintenance. This section highlights the few components of the sensor that need occasional upkeep to ensure the instrument operates correctly.

- The Agera is NOT waterproof, but the case's exterior may be wiped with a damp cloth.
- When cleaning the optical window, take precautions without scratching the optical window glass or the coating. Use a soft microfiber cloth or lens wipe.
- The Instrument Tiles should be handled the same way as other optical surfaces. Although the material of the white tile is very durable, care should be taken to prevent contaminants such as finger oils from contacting the material's surface. Always keep tiles in the Standards case when not in use.

Cleaning the Instrument White Tile, Black Glass and Green Tile

- The Certified Instrument Standard (White Tile), Diagnostic Check Standard (Green Tile) and Black Glass Standard can be cleaned using a soft nylon bristle brush, warm water, and laboratory-grade detergent such as SPARKLEEN, Alconox or Isopropyl Alcohol. After cleaning, wipe the tiles dry using a clean, non-optically brightened, lint-free paper towel, or use warm water as a rinse and let stand to air-dry for a few minutes.

Note: SPARKLEEN is manufactured by Fisher Scientific Co., Pittsburgh, PA 15219, and may be ordered using catalog number 4-320-4. Add one tablespoon of SPARKLEEN to a gallon of water.

Alconox is manufactured by Alconox, Inc White Plains, NY 10603 and may be ordered using catalog number 1104-1. Add one tablespoon of Alconox to a gallon of water.

Keep the **Instrument Tiles** in the standard case when not in use to prevent scratching or dust collection. Before standardizing the instrument, check the tiles for scratches, dust, fingerprints or other contaminants. Significant scratches or dirt will result appearance degradation that may cause a standardization error. If any of the tiles are scratched or soiled beyond cleaning, contact HunterLab at Support@hunterlab.com or contact your local HunterLab representative to order a replacement.

When You Need Assistance

If you need technical or sales assistance on applications, troubleshooting, service, warranty, accessory pricing, and more, please contact the office nearest you:

For the Americas, Support@hunterlab.com

For Asia, AsiaSupport@hunterlab.com

For Europe, EuropeSupport@hunterlab.com

For all other regions, Support@hunterlab.com

Additionally, our global support website offers 24/7 assistance with a library of information on various color measurement and appearance topics, such as applications, instrument operation, and troubleshooting. The HunterLab global support website is located at **support.hunterlab.com**.

For personalized assistance, go to support.hunterlab.com and locate the **Create A Ticket** button on the menu. Your information is gathered and registered. Our Customer Experience Teams will respond to your inquiry.

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