



SAMBA Hair System *(for version 4.0.0)*

User manual

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This Manual describes SAMBA Hair System hardware and software. Use this manual as a reference when working with your Samba System.

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1. Hardware

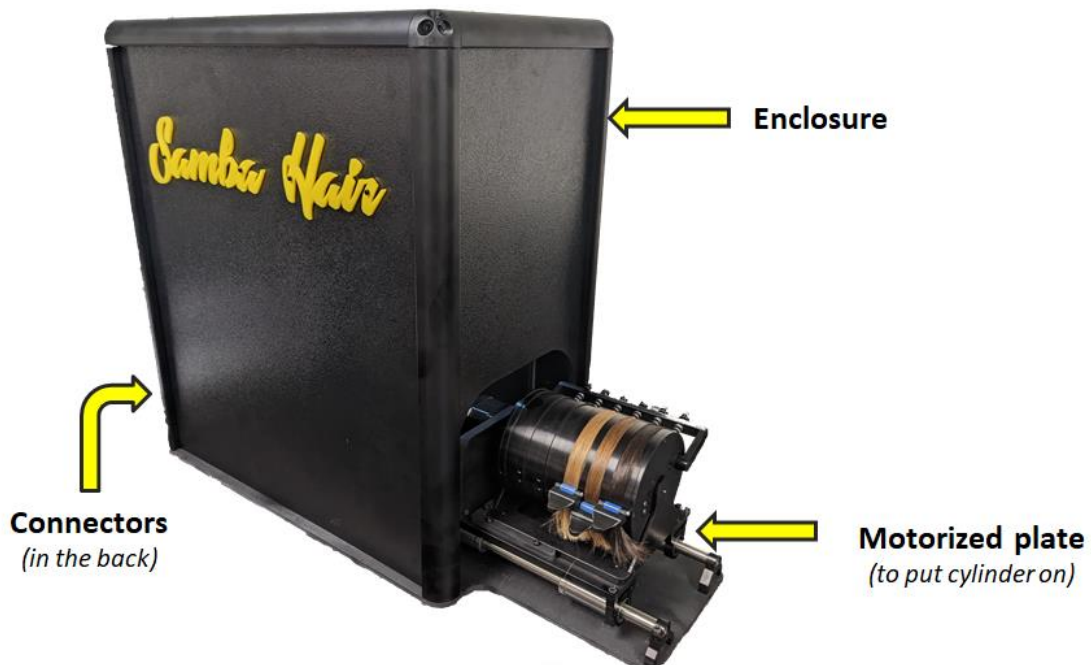
1.1. List of components

When unpacking the system, please make sure you have all the following items:

		
SAMBA system	Measurement Cylinder	Hair clamp (x 6)
		
Check-up cylinder	1 Computer (Laptop or All-in-one)	Power cable for Laptop
		
	2 USB cables (one USB 3.0 and one USB 2.0)	Power cable for SAMBA Hair system

1.2. SAMBA Hair system description

Below is a description of the exterior of the SAMBA Hair system:



1.3. Connections

Below is a description of the back panel connectors:



To connect the system:

- Use the USB 2.0 cable (grey interior) to connect the Motors Connector to a USB 2.0 port on your computer
- Use the USB 3.0 cable (blue interior) to connect the Camera Connector to a USB 3.0 port on your computer

- Use the power cable to connect the Power connector to an electric plug

To turn the system on, just use the on/off switch. When switched on, the light should turn on in the system.

1.4. Measurement Cylinder

The measurement cylinder is composed of a rotating cylinder attached to a magnetic base that can be safely put on the base plate of the SAMBA Hair system



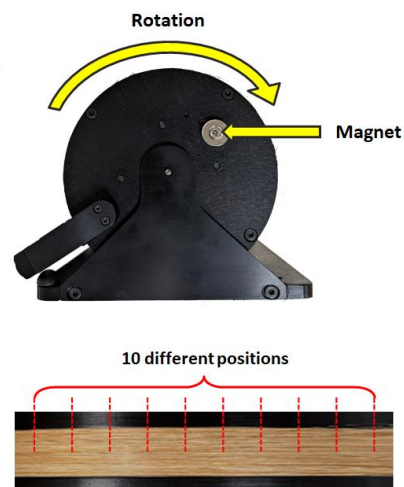
The cylinder has 6 grooves on which individual hair swatches can be put using :

- A fixed spring plunger on one side
- A removable clamp on the other



The measurement cylinder can rotate on its own axis. Once attached on the base plate, the cylinder axis itself can be attached - via its magnet on the side - to another magnet in the SAMBA Hair system.

This allows the SAMBA Hair system to take a measurement on 6 swatches at the same time, with up to 10 different positions of each swatch by rotating the cylinder.



1.5. Check-up Cylinder

The check-up cylinder only has 2 grooves and cannot rotate. The 2 grooves are supposed to accommodate:

- One shiny black paper band
- One shiny white paper band

The 2 bands are supposed to be tightened using the 2 clamps provided and do not have to be removed between check-ups.



2. SAMBA Hair Software

Locate the SAMBA HAIR Software icon in the desktop of your computer:



Double-click to launch the SAMBA Hair software.

- The system doesn't have to be on, or connected for export and/or measurement preview/analysis.
- The system has to be on for the acquisition of new measurements and automated check-up of the system

2.1. Log-in window

When you launch the SAMBA Hair software, it will ask you to log-in with a user account.

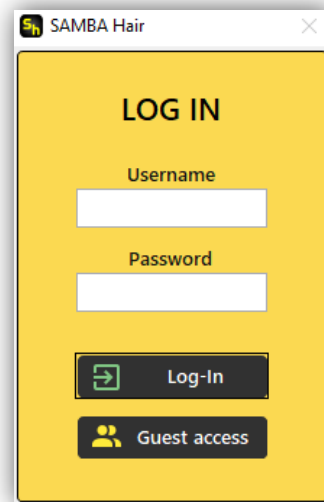
To access the software, you can either:

- enter your username and your password in the corresponding space and click on **Log-in**
- or click on **Guest access**

If this is the first time you are using the SAMBA Hair software, the default and only account you can access will be:

- **Username** : “admin”
- **Password** : “admin”
- **Level** : Admin (roles are explained later in the “User Settings” section)

You can also use **Guest access** to preview some measurements, but almost all functionalities are de-activated with **Guest access**.



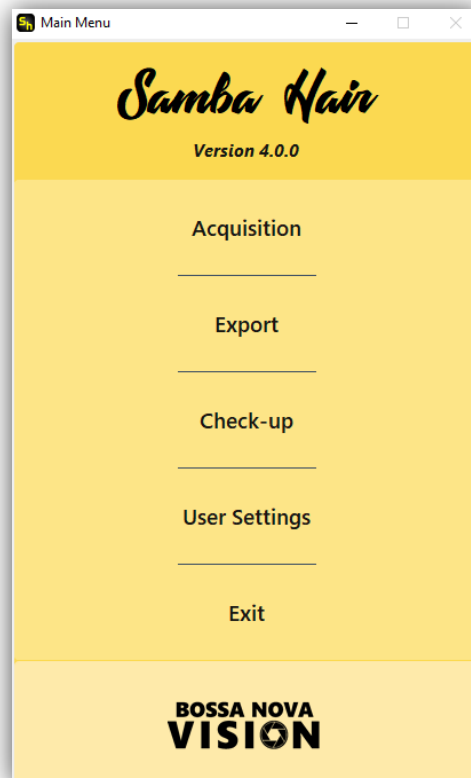
Additional user accounts can be created once you have access to the **User Settings**.

2.2. Main Menu

Once logged-in you have access to the main menu. Depending on the account level you have, some functionality may have been disabled (cf. **User Settings** for more details).

From here, you have access to :

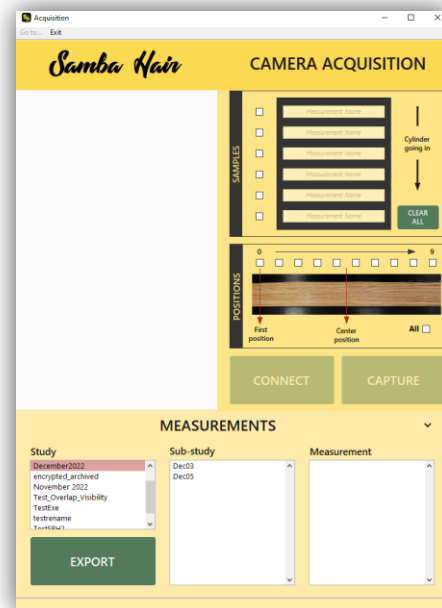
- **Acquisition** : for acquiring new measurements
- **Export** : for exporting numerical data, graphs and images
- **Check-up** : to launch a check-up process
- **User settings** : to configure user accounts
- **Exit**



2.3. Acquisition Menu

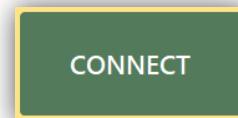
The Acquisition menu enables the user to acquire new measurements using the SAMBA Hair system, as well as manage and preview your measurements data.

You can access this menu without being connected to the SAMBA Hair system, in which case you will only be able to manage and preview your measurements as well as export your data.

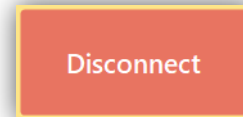


2.3.1. Connecting to the SAMBA Hair system hardware

Using the Connect/Disconnect button, you can connect and disconnect the camera and the motors of the SAMBA Hair hardware.



You can only take measurements with the hardware connected in the first place.



When clicking on **Connect**, the system will start the initialization of the camera, as well as the 4 different motors used for the automation of the measurement:

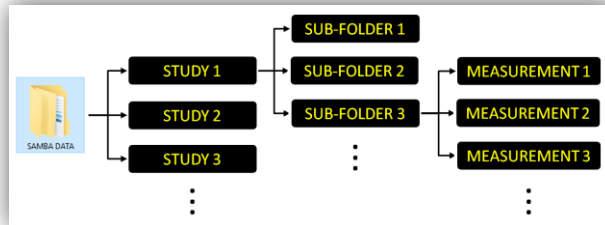
- Motor in front of the **illumination**
- Motor in front of the **camera**
- Motor of the **plate** holding the cylinder
- Motor moving the **cylinder** around its axis

Once the connection process is over, the plate will be outside of the system, ready for the user to put the cylinder on for measurements.

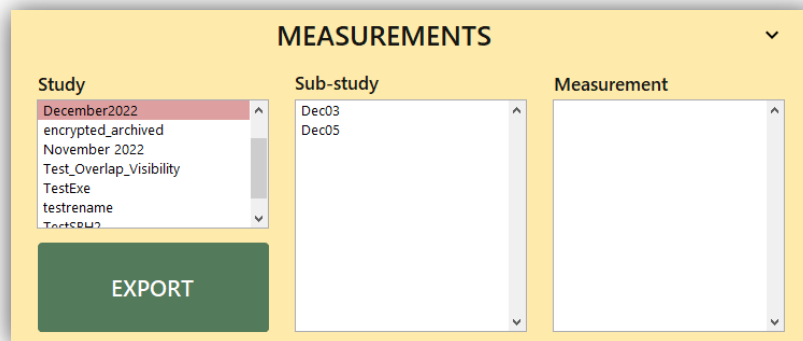
2.3.2. Data management

All the measurements are saved in a folder named SAMBA DATA located by default on the desktop of the computer or in your application folder.

It is separated into 3 subdivisions: **Study**, **Sub-study** and **Measurement**.



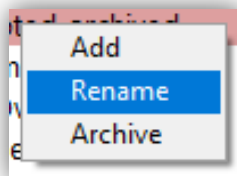
You can manage all your measurements from the Measurements section.



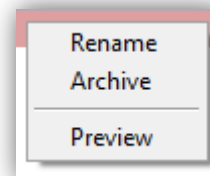
You can Add / Rename / Archive a new Study or Sub-Study by right-clicking in the corresponding list and selecting the appropriate command.

You can also Rename / Archive / Preview an existing Measurement by right-clicking in the corresponding list and selecting the appropriate command.

Study / Sub-Study



Measurements



More details about the **Preview** option are available in the Preview section of this Manual.

More details about the **Archived measurements** are available in the Export section of this Manual.

The **Export** button allows you to export data / graphs / images of one or several measurements.

EXPORT

More details about the Export option are available in the corresponding section of this Manual.

2.3.3. Acquiring measurements

Before starting the acquisition of new measurements, some steps have to be completed beforehand:

Putting your samples on the measurement cylinder

You can put up to 6 hair swatches on the cylinder for your measurements. For each swatch :

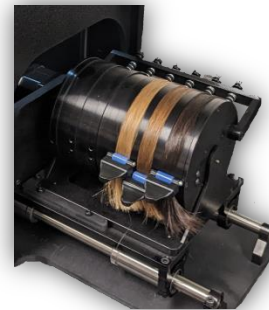
- Clip the top of your hair swatch with the spring plunger attached to the fixed bar
- Clamp the bottom of your hair swatch with one of the removable clamp



Putting the measurement cylinder on the plate

Once all your hair swatches are correctly positioned on the cylinder, put your cylinder on the plate. The plate will be in its “out” position only if the SAMBA Hair system hardware is connected (cf. **2.3.1. Connecting to the SAMBA Hair system hardware**).

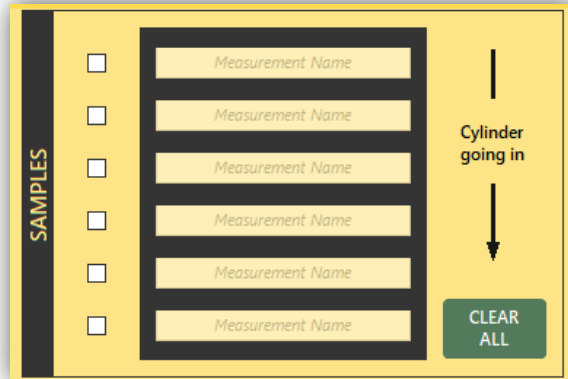
The 4 magnets on the bottom of the cylinder should position the cylinder in its correct position, and against the L-shape border.



Naming and selecting the cylinder grooves for your measurements

On the **SAMPLES** section, you can input up to 6 measurements names, corresponding to the 6 grooves of the measurement cylinder.

You need to select the grooves containing the swatches you want the system to do a measurement on, and put the corresponding name before doing an acquisition.

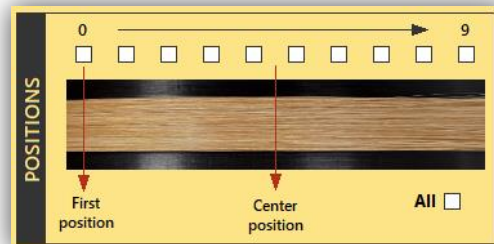


The CLEAR ALL button will empty all measurements name fields

Configuring which cylinder positions to use for measurements

On the **POSITIONS** section, you can select up to 10 positions. At least 1 position needs to be selected to start a measurement.

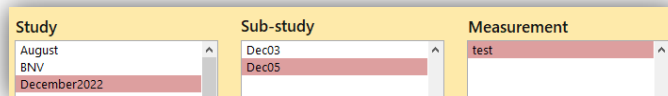
All the swatches selected in **SAMPLES** will be measured in all the positions selected in this section.



The "All" checkbox will either check or uncheck all positions

Select the Study / Sub-study to save the data in

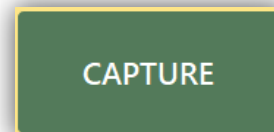
You need to select the Study and Sub-study you want to save your measurements in before doing an acquisition.



Starting the acquisition

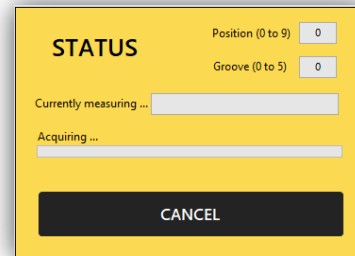
Once you are ready to start the acquisition, you can click on **Capture**.

The plate with the cylinder will go back in the SAMBA Hair enclosure, and the image acquisition of the **SAMPLES** and **POSITIONS** selected will start



A new window will pop-up informing you about the status of the acquisition. It will display :

- The name of the ongoing measurement
- The groove number of this measurement
- The cylinder position it is currently on
- A global progress bar



If you wish to CANCEL the ongoing acquisition, you can click on the CANCEL button. The system will finish the current groove/position it is on, and then cancel the rest of the measurements.

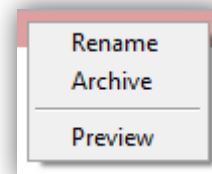
All data will be automatically saved and processed during this acquisition process.

At the end of the acquisition process, the plate will automatically move out from the system so that the cylinder with the swatches can be removed.

The time needed for doing all the measurements required can be quite long (up to 20 / 30 minutes), especially if you selected a large number of grooves and positions and/or if your swatches are dark in color (longer exposure time required)

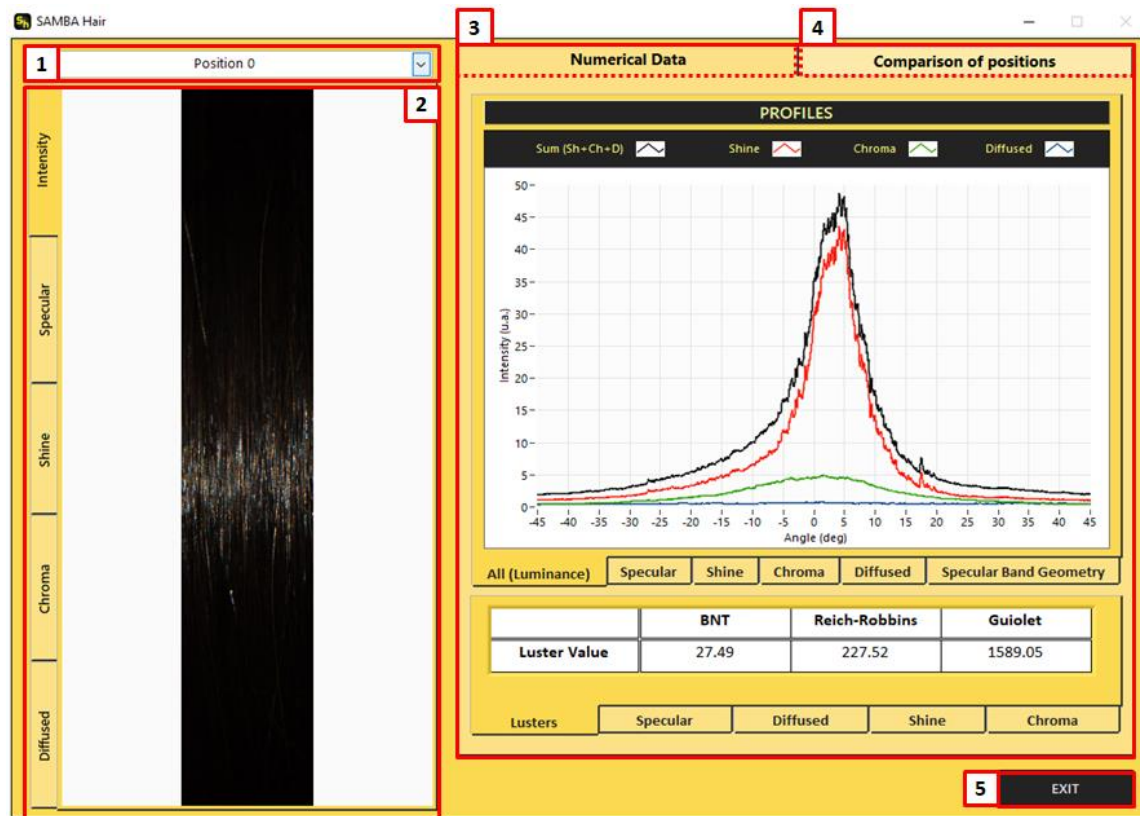
2.3.4. Preview measurements

It is possible to preview measurements by right-clicking on a measurement you wish to look-up and the click on "preview"



A progress bar will pop-up to check the progress as the software will load up all the positions saved with this measurement.

Once loading is finished, you will have a new window in which are available images of the measurements, intensity profiles and numerical data regarding luster, as well as specular, diffused, shine and Chroma data.



The main window can be described as follow:

1. **Positions Selector:** you can select which position (from 0 to 9) is displayed. You can only select a position that has actually been measured
2. **Image Display Tab :** you can select which image to display (Intensity, Specular, Shine, Chroma or Diffused) using the tab on the left
3. **Numerical Data Tab :** you can visualize all the numerical parameters (profiles and profiles parameters) of the measurement you loaded, at the position you selected
4. **Comparison of positions:** you can list and have a simple comparison of numerical data from all the positions (up to 10 positions) you used for the acquisition, with Average and Standard deviation values calculated in the tables
5. **Exit :** you can exit to go back to the Acquisition window

2.4. Export Menu

You access the export menu either from the acquisition window or the main window.

Once you access the export menu, the following window will be displayed:

The screenshot shows the 'Export Menu' window. It has a yellow background. At the top, there are three columns of dropdown menus labeled 'Study', 'Sub-study', and 'Measurement'. The 'Study' dropdown is open, showing a list of studies. The 'Sub-study' dropdown is also open, showing a list of sub-studies. The 'Measurement' dropdown is open, showing a list of measurements. To the right of these dropdowns is a large empty box labeled 'for EXPORT'. Below the dropdowns are three buttons: 'Add STUDY', 'Add Sub-STUDY', and 'Add MEASUREMENT'. Below these buttons are two checkboxes: 'Include images' and 'Include profiles'. To the right of these checkboxes is a button labeled 'CLEAR EXPORT LIST'. At the bottom of the window, there are two tabs: 'Current Measurements' and 'Archived Measurements'. Below the tabs is a 'Save as ...' dropdown menu set to '.xls (Excel)'. To the right of the dropdown are two large green buttons: 'EXPORT' and 'EXIT'.

You can export either:

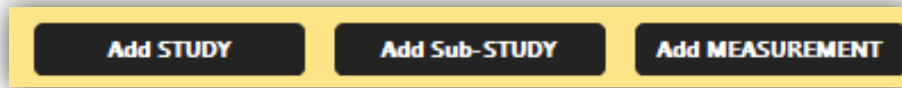
- **Current Measurements** : Those are measurements whose images are still saved in a SAMBA Hair folder, and you can still export profiles and images
- **Archived Measurements**: When a measurement is archived, the raw images associated with the measurements are deleted, but the numerical data is still saved in the database of the software. Only numerical data (no profile or images) can be exported for those measurements

Archiving measurement can be necessary if you are running low on disk space, and if you no longer require images and profiles from those measurements.

If the DATA PATH was changed between some campaigns/measurements (migrations from a computer to another, for example), your archived measurements will be filtered by the name of the DATA Folder

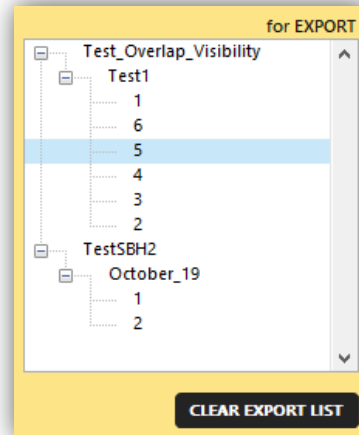
The screenshot shows a 'DATA PATH' field. It consists of a text box containing the path 'C:\Users\Paco Tortilla\Documents\Softwares\' and a small dropdown arrow on the right side.

You can add complete study / sub-study folders or individual measurement to the export list by clicking on the appropriate button

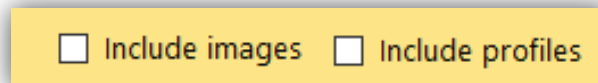


The list of all the measurements ready to be exported will be displayed in the export list on the right side of the window

You can clear the list by clicking on "Export List"



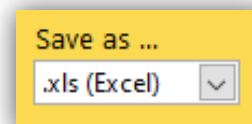
For Current Measurements, you can include images and/or profiles to the data being exported.



Please note that including either profiles and/or images will require a reprocessing of the raw images, and therefore, will be significantly longer depending on the number of measurements you are exporting

You can select the file format in which your data will be exported :

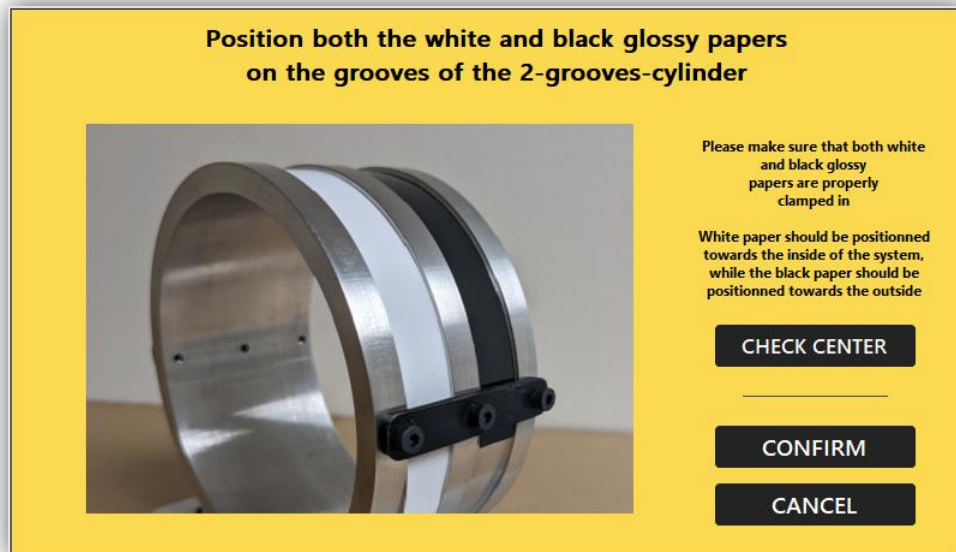
- .txt
- .csv
- .xls



Once you are ready to export the data you need, just click on Export to select where the data will be saved. The selected location will automatically open once the export process is over.

2.5. Check-Up process

It is recommended to perform a system check before running measurements (typically in the morning before starting a day of testing). Once you click on Check-Up in the main menu of the SAMBA Hair software, the following window will open.



From this window, you can either:

- Start a new check-up process
- Open the Check-up center to access past check-up data

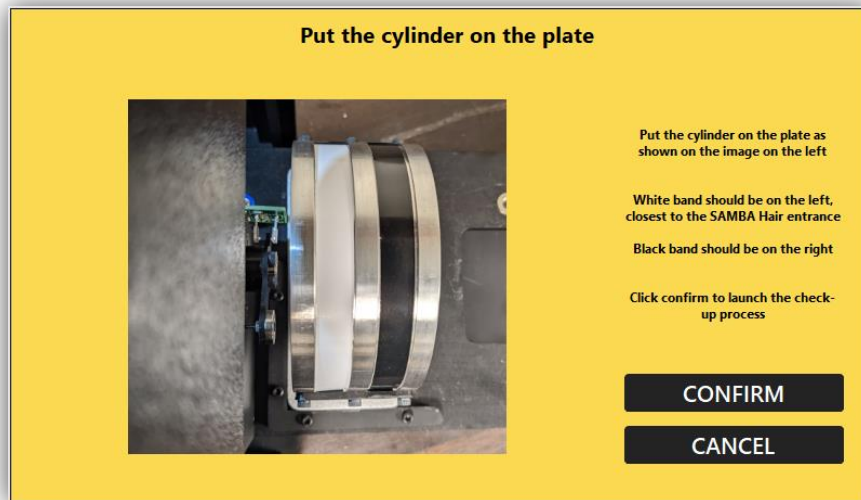
2.5.1. Doing a check-up

To start a new check-up, you need to click on the Confirm button. If you wish to go back to the main menu, you can click on the Cancel button.

The system will check the connection with the hardware, and then start the initialization of the camera, as well as the 3 different motors used for the automation of the check-up:

- Motor in front of the illumination
- Motor in front of the camera
- Motor of the plate holding the cylinder

Once this is done, the plate will pull-out from the system and you will be able to put the check-up cylinder, as explained in the window that should appear on the screen.



As explained by the description, you need to put the check-up cylinder on the plate of the SAMBA Hair.

As mentioned before in this manual, the check-up cylinder only has 2 grooves and cannot rotate. The 2 grooves are supposed to accommodate:

- One shiny black paper band
- One shiny white paper band

The 2 bands are supposed to be tightened using the 2 clamps provided and do not have to be removed between check-ups

The check-up cylinder is positioned on the base plate using magnets. The 2 magnets on the bottom of the cylinder should position the cylinder in its correct position, and against the L-shape border.

Please make sur that the white and black band are in the correct grooves compared to the magnet (as showed in the image on the right).

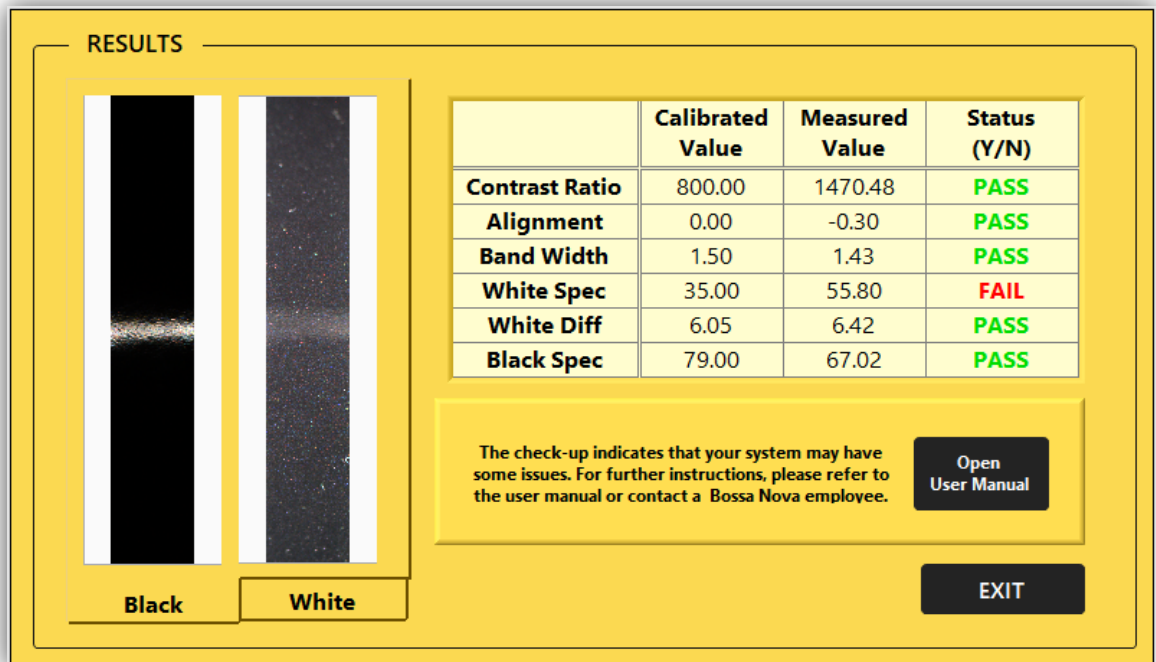


Once the cylinder is correctly positioned, click on the Confirm button to start the check-up measurement.

2.5.2. Check-up Results

Once the check-up measurement is over, the results will be displayed in a new window with images and numerical data. Images will show the specular and diffused images of both the white and black shiny paper.

In the results table are displayed several parameters with their calibrated value and their measured value with a PASS/FAIL status.



If all check points pass, the system is ready to be used.

- The **Contrast ratio** checks the alignment of the polarizers used in the system. A low value means that the separation between specular and diffused won't be done correctly.
A FAIL requires a measured value inferior to the calibrated value
- The **Alignment** checks that the shine band on the black glossy paper is straight and centered at 0 deg (middle of the image)
A FAIL requires a measured value over +/- 1 deg of the calibrated value
- The **Band Width** checks the focus of the camera by looking at the width of the shine band on the black and white glossy paper strips
A FAIL requires a measured over +/- 20% of the calibrated value

- The **White Spec**, **White Diff** and **Black Spec** checks the illumination intensity of the LED bar compared to its initial value on respectively
 - the specular of the white band
 - the diffused of the white band
 - the specular of the black band

A FAIL requires a measured over +/- 20% of the calibrated value

2.5.3. What to do if the one or more check point(s) does not pass?

Depending on the results, the message underneath the results table can vary:

If all parameters are PASS :

Your system is working correctly

If the contrast ratio is too low, the system can do a recalibration of the polarizers automatically

Your contrast ratio seems low. You can try to do a polarizer calibration and re-do a check-up to see if it fixes your contrast ratio issue.

Polarizer Calibration

It will take a few minutes, but you will be asked to redo a check-up once the polarizer calibration has been done.

If the contrast ratio is still failing, please get a report file and contact a Bossa Nova employee (cf. Check-up Center)

If another parameter than the contrast ratio is failing, you will be prompted to this user manual

The check-up indicates that your system may have some issues. For further instructions, please refer to the user manual or contact a Bossa Nova employee.

Open User Manual

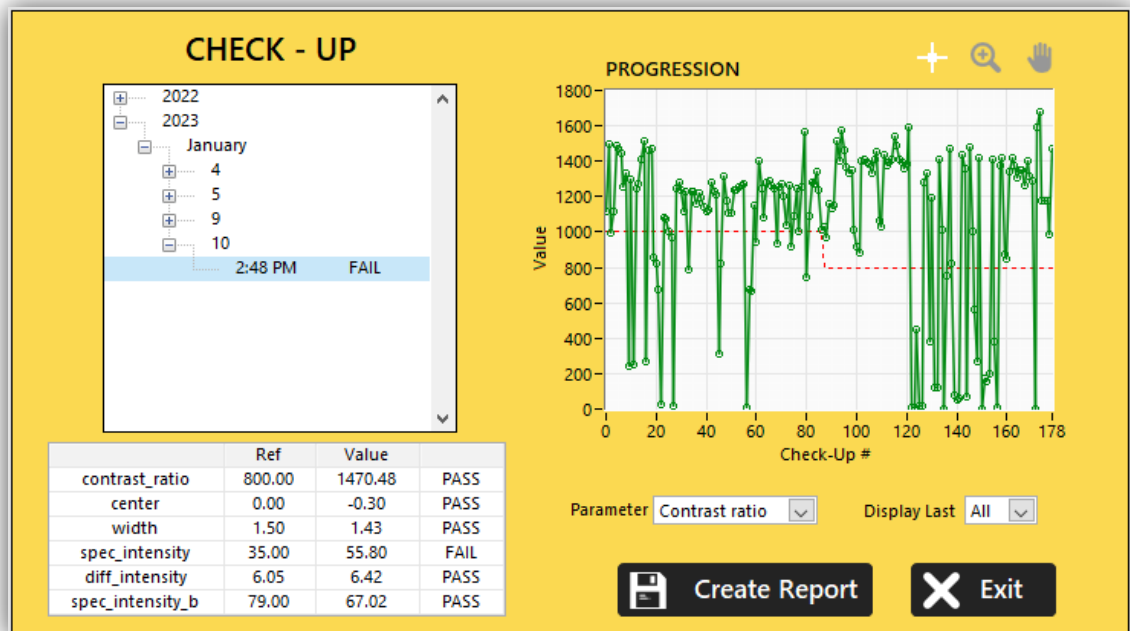
In this case, the best course of action would be to get a report file and contact a Bossa Nova employee (cf. Check-up Center)

2.5.4. Check-up Center

If you still have an issue with the system and need a report file to send for troubleshooting, you can go to the Check-up Center that you can access by clicking on Check center button from the Check-up window

It will display:

- all the system check-up done in the past in a list on the left side of the window
- the results from the selected check-up in a small table
- the progression of a single parameter (selected by the user) over a fixed number of check-up



From this window, you can also create a calibration report file (.zip format) to send for troubleshooting.

Just click on the “Create report” button and a folder containing all report files (old and new) will be opened. You can then send the latest calibration report (.zip file) to info@bossanovavision.com (make sure to include the name of your company and the best way to reach you) or contact your local agent.

2.6. User Settings

By default, the only account available on the first use of the SAMBA Hair software is the admin/admin account with Admin privileges (cf. table below). You can use the “User settings” if you are using an account with admin privileges.

[illegible]

A list of all existing users with their permission level, user creation date and last login date is displayed on the main window.

Using the buttons on the top right of the window, you can either :

- Add a new user
- Edit the permission and password of the selected user
- Delete a user



Below is a summary of the permission of all level of access, including the guest access which doesn't require a user/password login.

	Admin	Advanced User	User	Guest
Open Acquisition Menu	Y	Y	Y	Y
Preview measurements	Y	Y	Y	Y
Export data	Y	Y	Y	N
Conduct acquisitions	Y	Y	Y	N
Do a check-up	Y	Y	N	N
Access Check-up center	Y	Y	N	N
Access User settings	Y	N	N	N