

OPERATOR'S MANUAL



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ABOUT THE FIBRELUX MICRON METER

FibreLux fibre diameter meter aims to give wool farmers the ability to have an affordable, accurate, portable and user-friendly on-farm measuring instrument to assist them in one of two ways. FibreLux allows wool farmers to improve the quality of their clip through better breeding, as well as increasing the income from their seasonal clip by enabling them to classify the fleece into different fineness bales.

The procedures for using the FibreLux may differ depending on whether the farmer intends to use it for classification or breeding. As every farmer has his own processes and practical considerations, we are not in a position to give advice as to the specific practises to be followed, but constrain ourself to the operation of the FibreLux Micron Meter.

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EQUIPMENT

Included in the box the following are supplied:

- 1 x Durable Plastic Case
- 1 x FibreLux® Micron Meter
- 1 x Pair of Scissors
- 1 x Men's Comb
- 1 x Wall Mount Power Supply (2-point plug)
- 1 x Male A to Male B USB Cable
- 10 x Empty Sample Holders
- 2 x Clean Calibrated Samples
- 1 x Operating Manual
- 1 x Warranty Card
- 1 x CD with User Application

ADDITIONAL EQUIPMENT NECESSARY (NOT SUPPLIED)

- Personal Computer or Laptop for downloading of samples (if required) and support
- Access to Internet Connection for support purposes when required

WARRANTY CARD

Please ensure you return the completed Warranty Card to Nekan Trading by Fax or E-mail to validate your warranty

TECHNICAL SPECIFICATIONS

- Power Input: 100~240VAC or 12VDC
- Unit Weight: ~ 870g
- Unit Size: ~ L 230mm x W 180mm x H 80mm
- Warranty: 12 months (See Warranty Card for Terms & Conditions)
- Software: User Application requires MicroSoft Windows XP or higher to function properly.

SAMPLING AND SAMPLE PREPARATION PROCEDURES FOR FIBRELUX

Sampling

It is recommended that **midrib** samples should be used since research has shown that the midrib sample results have a very high correlation with those of the whole fleece. The midrib position is described as the area between the second and third ribs from the bottom of the rib cage one hand width down from the backbone on small sheep and one and a half hands down for large sheep.

Having chosen the appropriate sampling position, the wool should be opened so that the skin is clearly visible, avoiding obvious pleats as far as possible. The wool samples should then be clipped free from the skin using the scissors supplied. The base diameter of the cut sample should be between about 10 to 20mm, or approximately the cross-sectional size of a small coin. Care should be taken to cut the wool staples as close to the skin as possible.

Should the user want to keep samples for record purposes, the samples can be marked by using the label on the sample holder for identification purposes.

Sample Preparation

Should identification of the samples be required, use the label on the sample holders provided to mark it. Open the holder (Fig 1) and separate it into its two halves.

From the mid-rib sample taken, peel off one micro-staple (as thick as a pencil or cigarette). This should be done by holding the staple sample at the tip in one hand and taking a small pinch of wool at the tip end of the staple with the other hand, and then peeling it sideways away from the main body of the staple. Take the small pinch of wool sample (micro-staple) and pull it through the fine end of the comb (Fig 2), so that the fibres of the micro-staple are lying more or less parallel to one another and have a width of approximately 30 mm. For better results, pulling the sample through the fine end of the comb can be repeated from the opposite end of the sample. Place this combed staple then lengthwise vertically across the open space of the sample holder (Fig 3), completely covering it, with the tip part of the staple at the bottom of the sample holder. Place the other half of the sample holder on top of it and pinch the top end closed (hear click sounds), pull the staple at its lower end (tip end sticking out) a bit tighter (staple must not bulge out too much) so that the fibres lie fairly straight and parallel, and then pinch the lower ends of the sample holder together, i.e. closed (Fig 4). Use the scissors to cut off the fibres projecting from the bottom (tip part) of the sample holder (Fig 5). The sample should not be too dense, one should be able to “just” look through it (able to see the background vaguely) (Fig 6). Use the calibration samples provided as an example of the density of the samples to be measured. The sample holder is now to be inserted into the instrument for measurement.

Number of staples measured

Where high accuracy is required, up to 3 micro-staples can to be measured, representing the midrib sample, and for each micro-staple, the prepared sample holder must be rotated (reversed) for measurement from both sides. An average can then be calculated for a very high accuracy.

Wet samples

Wool swells as it absorbs moisture. Wet wool should never be tested, since it will exceed the range for which the built-in Relative Humidity sensor can correct. The operator must decide if the animals (i.e. fleeces) are dry to the touch.

Grease Correction Factor (GCF) and testing Scoured (washed) samples

There are two separated functions for testing greasy samples and scoured samples, respectively. See pages 9 - 10 of the Operator's Manual.

Note : Where more accurate results are required, (eg. for stud rams) it would be advisable to take samples at the midrib, breech and shoulder areas and then to measure one micro-staple of each area

Please note that measurement results from the FibreLux are not intended for certification purposes!!



GETTING TO KNOW YOUR FIBRELUX MICRON METER

THE KEYPAD

The Keypad (as shown on page 5 above) has 5 buttons for operating your FibreLux Micron Meter:

- The Green POWER button left top (**A**)
- The Red CANCEL button left bottom (**B**)
- The Green ENTER button centre right (**D**)
- The Blue UP and DOWN arrows right top and bottom (**C** and **E**)

The Green POWER button

The button is used to:

- Switch the FibreLux on to start operation
- When the FibreLux is on, the button can be used to put the FibreLux in Standby mode, by pressing the Power button for approximately 2 seconds. (Please note that in Standby mode the FibreLux Meter is still using power. Out of Standby mode the FibreLux is ready for operation immediately.)

The Red CANCEL button

This button is used to cancel the operation the user is busy with and return to the previous menu.

The Blue ARROW buttons

These buttons are used to move up and down on the menu's in order to be able to get to the required menu item.

The Green ENTER button

The Green ENTER button is used to select the chosen menu item

THE MENU'S

The Home Menu

The Home Menu (or Main Menu) has the following items to choose from:

Measure
Recent Results
Configuration
System Status
About
Poweroff

The functions of the different menu items are as follows:

Measure

The only function of this item is to activate the measurement of a wool sample.

Please ensure that a properly prepared sample is inserted in the applicable slot. If no sample is inserted or the sample is not properly prepared, the following message will be displayed on the screen “No sample OR sample prepared incorrectly. Please rectify and retry.”

Recent Results

Unless the results are cleared the last 500 readings will be stored on the FibreLux unit. It will show the Date and Time of the reading as well as the value.

The first option under this menu item is **Calculate Average**, which allows the user to calculate the average micron value of all the readings stored on the unit.

Moving up with the Arrow button will display **Clear All**, which option allows the user to delete all stored measurements on the unit.

The next option will be **Next (11-20)** or **Next (21-30)**, etc. which allows the user to jump to the 10 measurements taken before the 10 displayed on the screen.

The last option is **Home** which could be chosen to return to the Home menu. This can also be achieved by choosing the Red **CANCEL** button on the left of the keypad.

By moving down with the Arrow button, the user can view the last 10 measurements taken.

Configuration

There are 4 options to choose from under this menu item:

- **Greasy Factor**
- **Humidity**
- **Reset Factory Set**
- **Home**

Greasy Factor

Your FibreLux Micron Meter has the Greasy Factor set at 0 on shipment from the factory, which means the no correction factor is applied to the measurement, as would be applicable for clean wool samples.

To use this menu function effectively, the user must firstly establish the Grease Correction Factor, which can be done as per the instructions on page 10 of this manual.

After establishment of the Grease Correction Factor, the applicable value can be enabled under this **Greasy Factor** menu item on the FibreLux meter.

The Grease Correction Factor on the FibreLux is set in Micron (μm) and is set in increments of $0.1\mu\text{m}$ from 0.00 to $3.00\mu\text{m}$. Once a value is chosen the applicable number is indicated by a * after the number.

Humidity

As Humidity has an effect on the measurement of wool samples, the FibreLux Micron Meter can make an adjustment for the humidity at any given time.

The user has the option to **Enable** or **Disable** the humidity adjustment under this menu item. The standard setting at shipment from the factory is **Enabled** and the chosen option will be indicated by an *.

The last option under this menu item is **Back** which will return the user to the previous menu. Alternatively the **Cancel** button can be pressed to return to the previous menu.

Reset Factory Set

This item will Reset the configuration settings to the settings as when the unit was shipped from the factory.

Home

This menu item will return the user to the Home menu. Alternatively the **Cancel** button can be pressed to return to the Home menu.

System Status

The system status gives the user general information regarding the Time, Date, Temperature, Humidity, Battery Level, etc.

The Time and Date can be set using the User Application software and instructions for that can be found from page 14 of this manual.

About

The about menu item gives information regarding the software version for support purposes.

Poweroff

The Poweroff menu item switches the FibreLux Micron Meter off completely. A message "FibreLux is shutting down ..." is displayed when this item is chosen.

The Poweroff menu option should always be chosen when the FibreLux meter is not going to be used for more than a few minutes in order to preserve battery life.

CHARGING THE BATTERY

Your FibreLux Micron Meter is equipped with a sealed lead-acid battery. This allows the user to take measurements even when an electricity connection is not available such as in the veld or in outlying locations.

When electricity supply is available it is advisable to use the FibreLux meter on electricity, as it will simultaneously charge the battery while you are working.

To maintain the lead-acid battery it should be charged at least every 2 to 3 months.

To charge an empty battery to 100% full will take approximately 8 hours.

OPERATING INSTRUCTIONS

Setup

Ensure the FibreLux is placed in a convenient and safe area, that will not interfere with the normal operation of the yard or shed, and which does not interfere with other activities within that environment, e.g. grower, shearer, shed hands, dogs, etc. Check that the power supply is suitable and stable, otherwise charge it.

Starting up the FibreLux

1. Place the FibreLux on a stable table
2. Turn the FibreLux on by pressing the top left hand Green button (A) (power) once (Page 5)
3. The instrument will start-up, showing the FibreLux logo and name and will then load for at least 20 seconds.
4. A menu will appear showing **Measure** at the top (Page 5)
5. The FibreLux is now ready to measure a sample.
6. The **Measure** part in the menu will be highlighted at this stage and by pressing the centre right green (enter) button (D) (green button), a measurement will be made. The measurement process will be indicated by a cursor bar running from empty to full at the bottom of the LCD screen and will be completed in about 5 seconds.
7. The Mean Diameter, Humidity and Temperature values will be displayed after approximately 5 seconds on the LCD screen, and by scrolling down with the right bottom blue arrow button (E), the Time and Date will be displayed as well as an option to delete the sample.

Note : A measurement can only be done when Measure is indicated (displayed) and highlighted. If this is not the case, press the “cancel” button (B) (bottom red on the left) until this is obtained. A measurement taken will be stored automatically in memory (up to 500 sample values can be stored).

Calibration check

Included in the Equipment Case are 2 clean calibrated samples, with their values indicated on the label.

When first switching on the FibreLux and before measuring samples, the calibration can be checked by using these samples to check if the FibreLux Micron Meter takes the measurements accurately.

Take a measurement as per normal, but **REMEMBER** these are clean samples and if your **Greasy Factor** is set at anything other than 0.00, that value needs to be added to the value shown to compare with the value as indicated on the label of the calibration sample.

ESTABLISHING THE GREASY CORRECTION FACTOR (GCF)

1. The FibreLux allows the user to specify a GCF to be applied to the measurements of the wool samples.
2. To apply the GCF when greasy staple is to be measured, requires that the GCF should first be determined for the specific area/farm.

How to determine GCF

3. Firstly ensure that the Greasy Factor is set at 0.00 on the FibreLux unit and that there are no measurements saved in the Recent Results menu. The Greasy Factor setting can be found under the Configuration setting on the menu.
4. Press the Enter button when the **Greasy Factor** part of the menu is highlighted. A series of numbers will be displayed and an Asterisk (*) will indicated which GCF is enabled. To establish the GCF the Asterisk (*) should be displayed next to the 0.00.
5. To change the GCF, use the arrow keys on the right of the FibreLux to move up and down the numbers until the number 0.00 is highlighted, then press the **Enter** button on the right to set the GCF to 0.00.
6. To ensure that no measurements are saved in the Recent Results menu, move down the Home menu using the Arrow keys on the right and press the **Enter** button when the **Recent Results** menu item is highlighted.
7. When you **Enter** on the Recent Results menu and the next screen shows **< Home** it means that the Recent Results menu is Clear and that there are no results stored.
8. If the menu comes up and results are displayed, use the arrow keys to move down and **Enter** on the **Clear All** menu item. **Enter** again on the next message and the **< Home** should be displayed, meaning that all the Recent Results have been deleted.
9. It is suggested to measure between 10 and 20 greasy samples from different sheep from the same mob. The FibreLux creates its own file for these tests in the Recent Results menu.
10. Once all the greasy samples have been measured the average for these greasy samples is determined. Go to the Recent Results. **Enter** on the first menu item – **Calculate Average**. The average measurement for the Greasy Samples will be displayed. Make a note of this number and **Clear** the Recent results as per number 8 above.
11. Having tested these greasy samples, scour the same samples (see Appendix 1, Page 13 of this Manual for guidelines on scouring)
12. When the samples have been scoured, re-measure the clean staples as was done before for the Greasy Samples.
13. After testing of scoured samples has been completed calculate the average again as per point 10 above. Make a note of the new average.
14. Deduct the average of the Scoured Samples as noted from the average of the Greasy Samples as noted. The result of this will be the GCF.
15. Now return to the Greasy Factor menu item and Enter on the applicable number (to the nearest decimal point) using the arrow keys on the right.
16. Measurements can now continue, using greasy samples.

Measuring scoured samples

17. When measuring scoured samples, no GCF needs to be applied and one can proceed with testing the scoured samples in the normal manner (Number 6 and 7 on page 9).

Note : Once in **Measuring Mode**, one can at any time press the **Measure** button to measure a new sample. When measuring a sample, a “black” bar will run across the bottom of the screen, indicating measurement is in progress.

Shutting Down or Standby Mode

The last item on the Home menu is **Poweroff**. This option should always be chosen when the FibreLux meter will not be used for more than a few minutes.

The FibreLux can be put in Standby Mode from any of the screens by just depressing the Power Button (A) (Top green left hand button) for 3 seconds. When the FibreLux is not used for about 5 minutes the unit will automatically go into Standby Mode to conserve power.

To Power on the FibreLux from Standby Mode takes less than 5 seconds, while it takes more than 20 seconds after complete Shutting Down

NOTE: The FibreLux still uses power while in Standby Mode and the battery will run flat within a few days in this mode.

SUPPORT AND MAINTENANCE

Battery Failure

The FibreLux Micron Meter can still be operated even when the Battery has failed or is dead.

An indication of this is that the meter cannot be switched on when the FibreLux is not connected to an electricity source. However, if the FibreLux has not been used for a few days, it must be plugged in to a power source before it can be switched on to activate all the systems, which does not mean the battery is dead.

If the battery is dead, please contact your distributor who would be able to replace the battery at a time that is convenient for both of you.

Please note that the battery may die if it is not charged regularly (every 2 to 3 months)

Incorrect Measurements

When the calibration is checked as per page 9 above and it is found that the FibreLux Micron Meter gives readings that are totally wrong, please contact the support line for assistance.

Please note that the Calibration Samples are from Clean Wool and the Greasy Factor setting must be taken into account when the calibration is checked.

Error Messages

After falling, a hard knock or excessive shaking an error message **“The LED is not aligned”** may appear when trying to take a measurement.

Firstly, try again to take a measurement and also try to turn the unit upside down and shake it lightly. If the problem still persists, please contact the support line for assistance.

It might be necessary to send your unit in to the factory for repair, if advised. Warranty conditions will apply in this case.

Other Problems

For any other problems, please contact the support line for assistance.

FIBRELUX SUPPORT – CONTACT DETAILS

The Contact Details for FibreLux Support can be found on the label at the bottom of your FibreLux meter or the front of this Operator’s Manual

Appendix 1

WOOL SAMPLE DEGREASING (SCOURING)

Equipment

200ml porcelain or plastic jug/cup
Carlton or tissue paper
Degreasing solution

Degreasing solution

A number of different types of solutions can be used, such as petrol, benzene, acetone or thinners, which remove the grease easily and evaporate quickly when drying the staple using the tissue paper.

Caution : These liquids are highly flammable

Procedure

1. Fill the 200ml jug with a cleaning liquid to approximately $\frac{3}{4}$ level
2. Keep the jug covered while not in use to limit evaporation
3. Completely merge the staple sample to be measured into the jug containing the solution
4. Keep the sample submerged in the cleaning liquid for about 15 seconds, continuously moving the staple up and down. Remove the staple from the liquid, holding it above the jug to allow excess fluid to drain back into the jug
5. Place the sample between two layers of Carlton or tissue paper pressing down firmly on the top layer
6. Feel the sample to determine whether it dry
7. The sample can now be measured as described

Note : All samples should be scoured according to a standard procedure, with special attention to the time the samples are submerged in the liquid, it is preferable to keep the time more or less the same).

Maintenance

Ensure the tissue paper does not become too moist, especially when doing large numbers of samples. Replace the tissue paper when necessary, especially when there appears to be excessive grease build-up. The solution in the jug should become visibly contaminated before it contains too much grease for effective cleaning. When this is observed, the solution should be replaced and the old solution discarded.

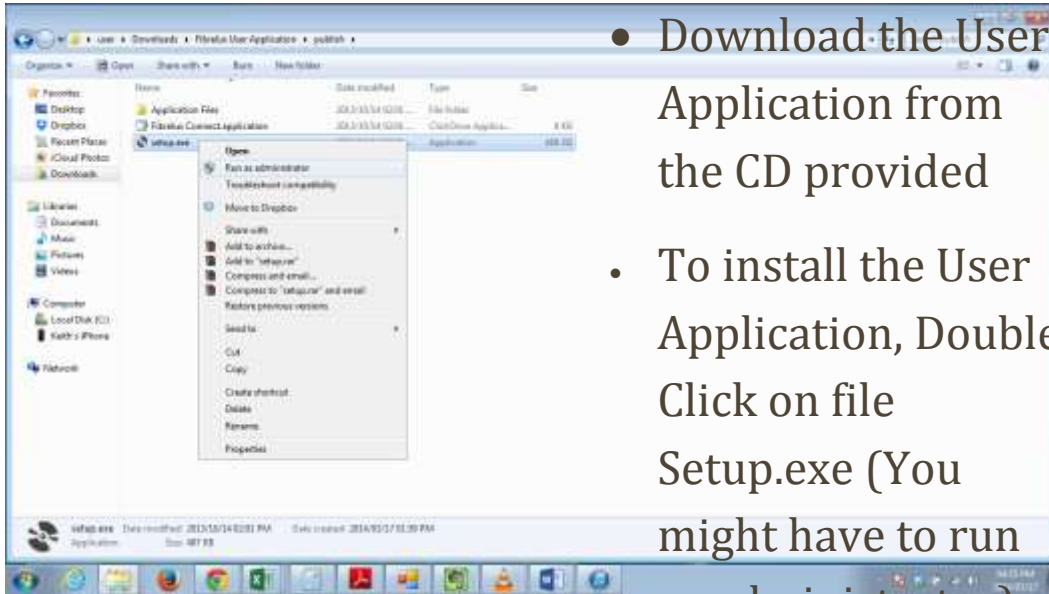
Appendix 2

ADDITIONAL MAINTENANCE OF YOUR FIBRELUX MICRON METER

- Grease build-up within the insert slot (clean with an ear-bud soaked in a suitable degreasing solution as described in Appendix 1 above)
- Dirt, fibre build-up inside sample compartment slit (open compartment by un-doing the 4 screws at the bottom of the instruments and blow clean with air)

It is recommended that the FibreLux Micron Meter be sent to the Manufacturer at least every 18 months for a full service, including calibration and battery replacement.

HOW TO UPLOAD DATA FROM THE FIBRELUX USER APPLICATION



- Download the User Application from the CD provided
- To install the User Application, Double Click on file Setup.exe (You might have to run as administrator)



- FibreLux not Connected to the PC User Application



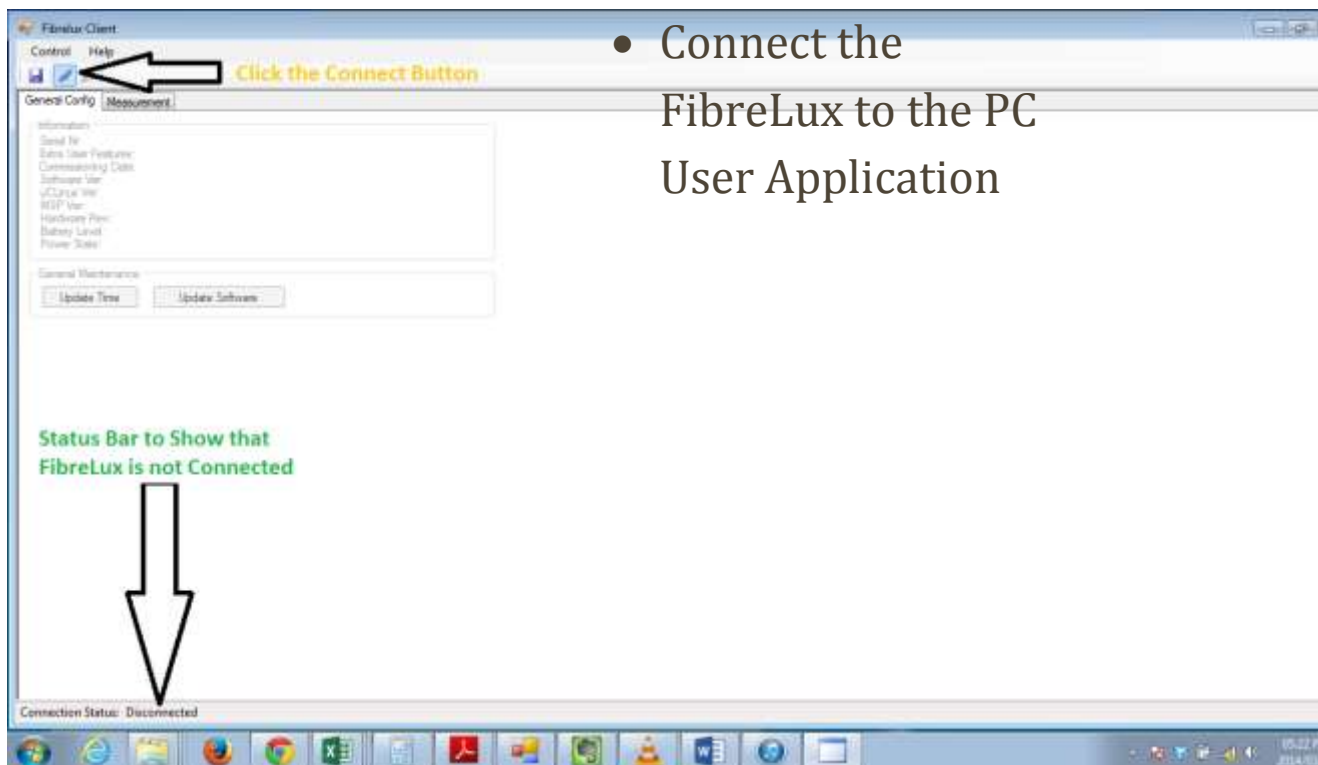
- Connect shown USB Male Connector to the Female Connector of the FibreLux



- USB cable connected to the FibreLux



- Connect Type USB Cable Connector to the Laptop



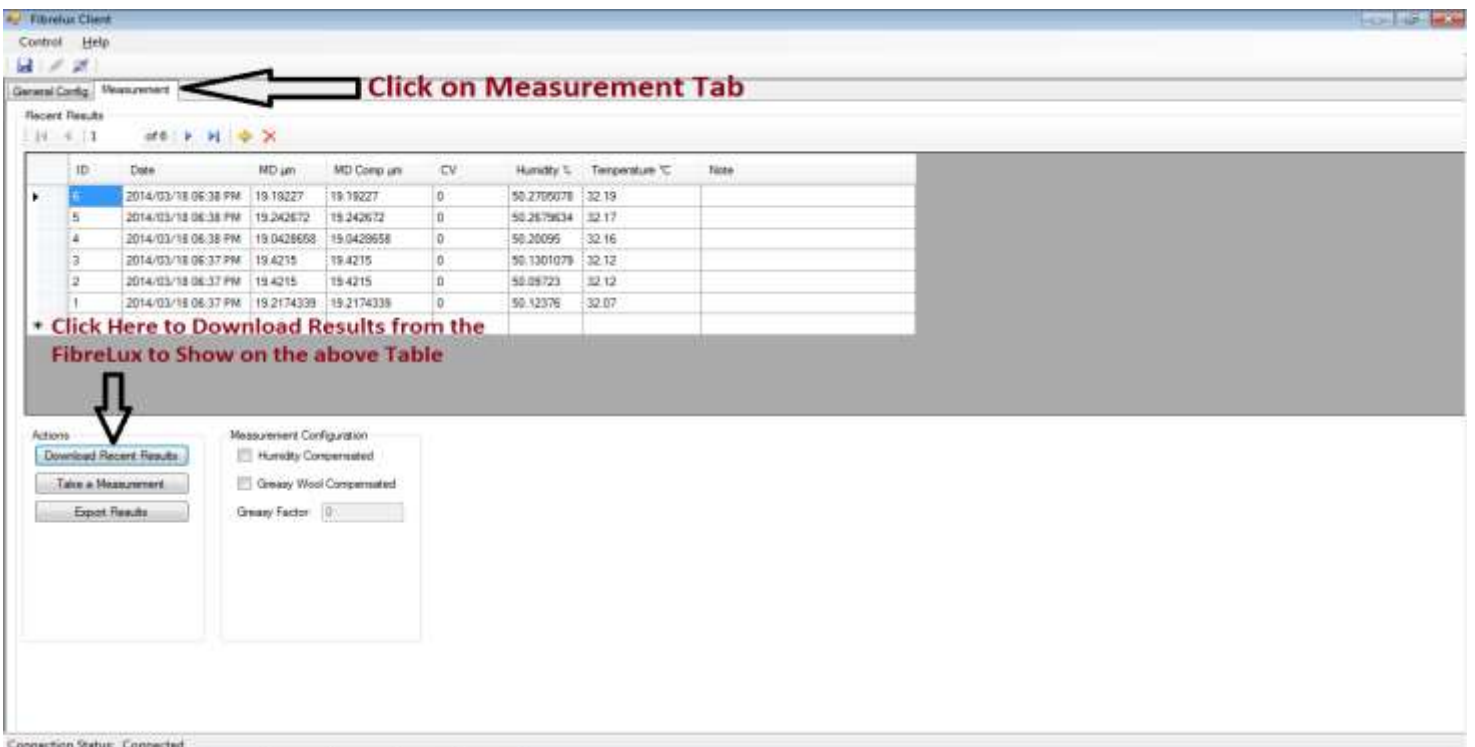
- Connect the FibreLux to the PC User Application



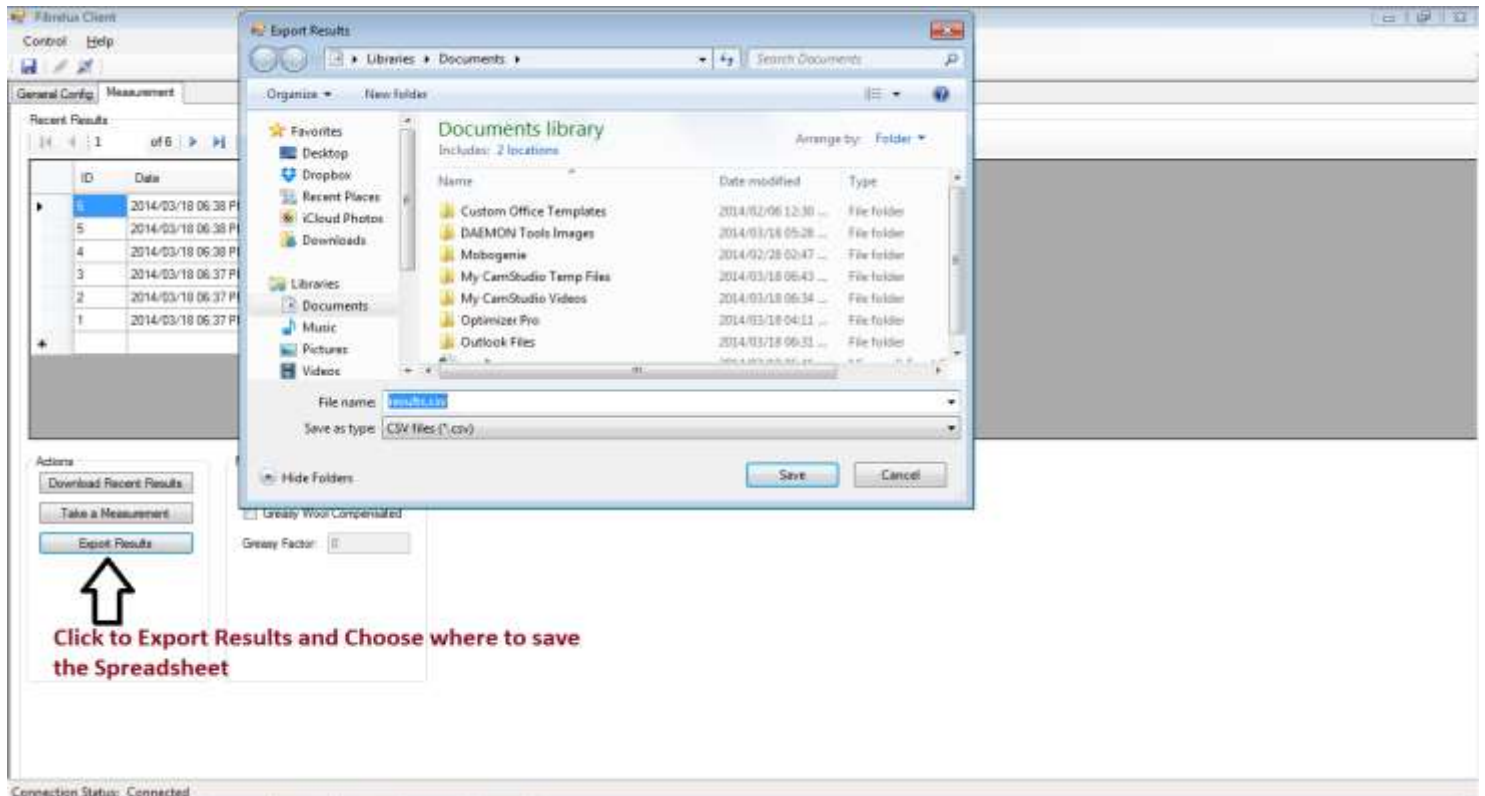
- FibreLux Connected to the PC User Application



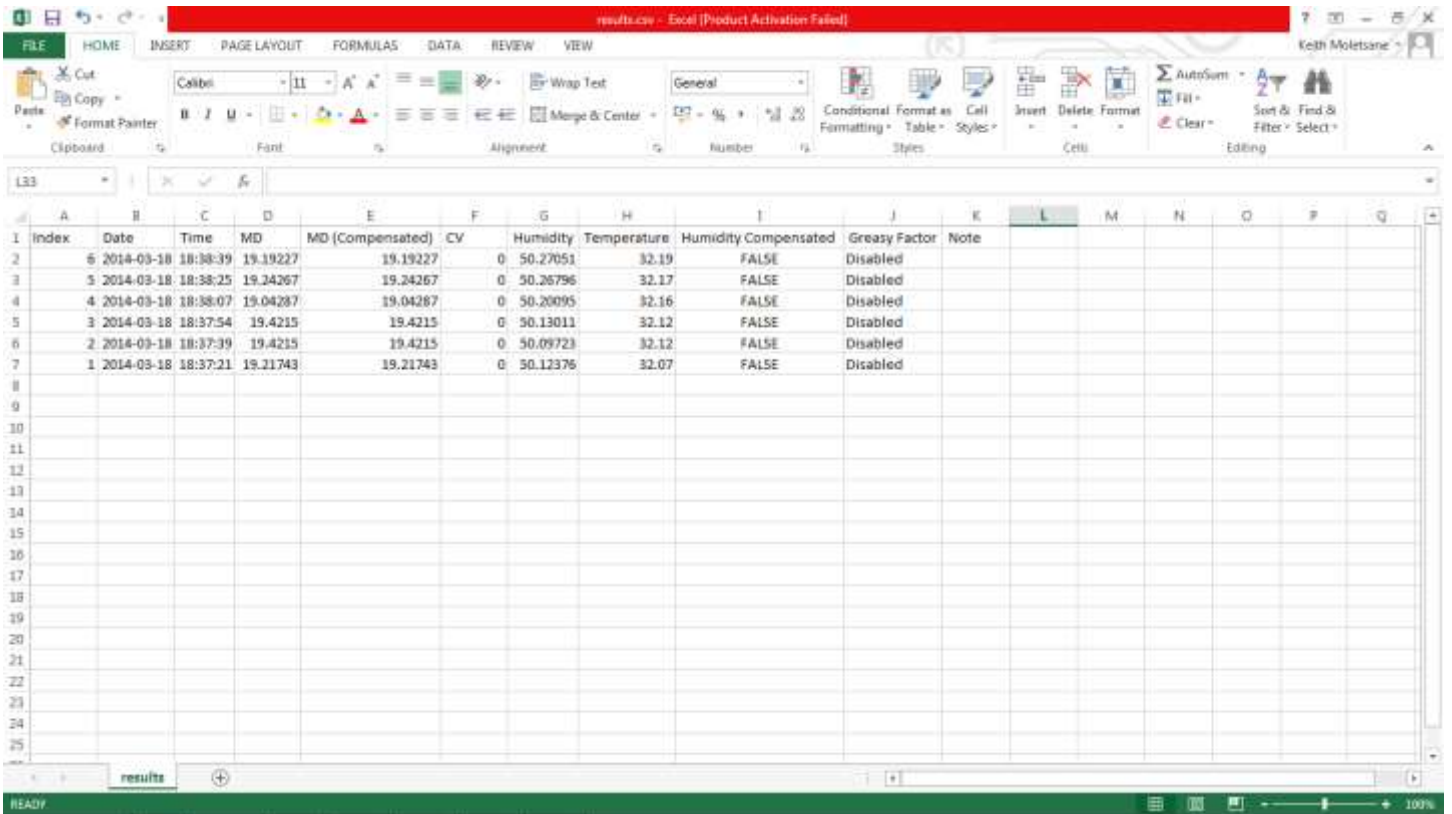
- FibreLux Connected to the PC User Application



- Click on Measurement Tab
- Click Here to Download Results from the FibreLux to Show on the above Table



- Click on the Export Results
- File will open a window that allows the user to choose where to save the file
- Choose Where to Save the Spreadsheet



- Spreadsheet Opened

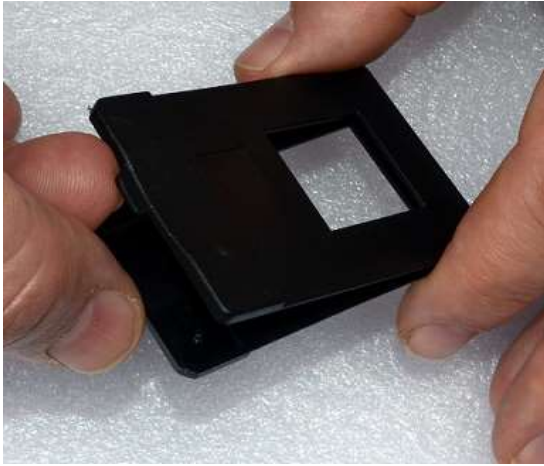


Figure 1: Opening the sample holder



Figure 2: Combing wool sample



Figure 3: Placing combed sample on sample holder



Figure 4: Close sample holder to secure sample

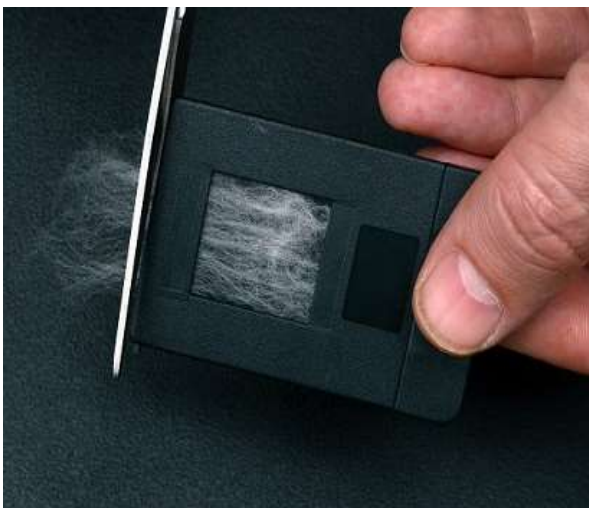


Figure 5: Use scissors to cut off excess wool



Figure 6: Example of sample density

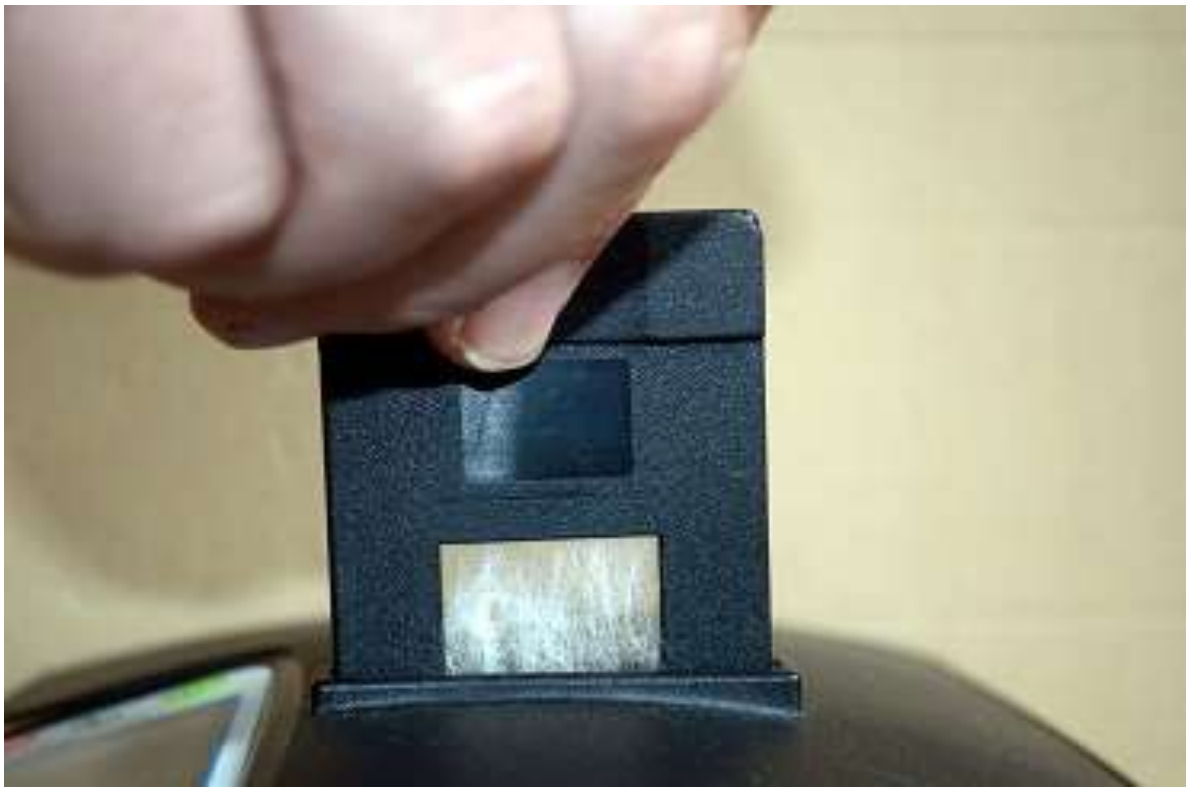


Figure 7: Inserting the prepared sample in the slot on top of the FibreLux Meter



Figure 8: Prepared sample inserted completely in slot on top of FibreLux Meter