

User's Manual
of
Sperm Quality Analyzer
CCT-SW3702

Introduction

Welcome to use our brand sperm quality analyzer. We are greatly honored by your trust in this Instrument.

Please read this Using Guide carefully, this will help you to use the instrument properly. The contents of this Using Guide are as follows: Instrument Characteristics, Structure and Technical Characteristics, Operation Instruction, Trouble Shooting, Maintenance, Precautions, etc. Please read all the data and information delivered together with the instrument carefully and pay special attention to the safety information and notices in the Manual before you start mounting and using it. These will help you to use this Instrument better.

In addition, during use once you find the product unsatisfactory, please inform us of it by email and telephone or visit our website, we will render wholehearted service to you.

Disclaimer

Description in this Operation Manual does not represent any explanation for product specifications and its software and hardware allocations. For product specifications and its allocations, please read the related agreement and packing list, or consult sales agent.

During compiling of the Operational Manual, we strive for making its contents right and whole, but we do not guarantee that there are no any errors or oversights. Since the products and service of us. are continuously being optimized and improved, we reserve the right to modify our products and the contents of the Manual without notice. During using this product, if you find that the product does not conform to the contents in the Manual and want to obtain the last information or have questions or ideas, please contact us or visit our website.

Limited Guarantee / Repair

We will provide after-sale service according to Standard Service Promise (Guarantee Repair Content) enclosed with the product. Beyond Standard Service Promise we do not provide any services. Under this situation you should require organ or people, who provided the product to you, to provide after-sale service according to their promises.

Under maximum lawful condition, We are not responsible for following whichever clause in any situations:

1. The third party claims requirement on you (death and personal injury, but except fixed property and related tangible property);
 2. The loss or damage of your record or data;
 3. Special, incidental or indirect damage or whichever resulting economic damage (including the losses in profit and deposit), even if we have been informed of the possibility of the damage and losses.
 4. The failure caused by your mounting software or hardware which are not provided with the product. Through inspection the failure is not related to the product.
 5. The failure caused by the environment which is not determined by the Manual or by the operation method which is not determined by the Manual.
 6. The product damage caused by force majeure.
- You can call us or visit our web site for more information.

Signs Explanation

Note: Important information for proper product using.

Notice: Prompt information for possible product failure, property loss or personal injury



High voltage



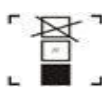
! Please consult the attachment file



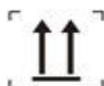
Don't discard into garbage cans directly.



“B” type equipment



Pile



This side up



Fragile



Caution against wet



Keep away from heat

I mean I type equipment.

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Chapter I General Outline

1.1 Product characteristics

CCT-SW-3700 Series sperm collector and analyzer. It is using automatic control technology and through massage, twitching etc, acting upon the human penis, can collect semen quickly. And the through microscope, computer image processing technology and data processing. It can do sperm quality analysis accurately. It is the best sperm collector and quality analyzer equipment at the moment.

CCT-SW3702 can only be used for sperm analysis and printing report.

1.2 Main Application and Applicable Scope

The instrument is used for sperm quality analysis.

1.3 Normal work condition

Work temperature: 5℃～40℃

Relative humidity: ≤80%

Atmospheric pressure: 86Kpa～106 Kpa

Voltage: AC 220V±22V, 50Hz±1Hz

The instrument should be away from the powerful magnetic field.

1.4 Transport and storage conditions

Work temperature: 5℃～40℃

Relative humidity: ≤80%

Atmospheric pressure: 86Kpa～106 Kpa

Transport: the packed instrument can be transported by normal vehicle or according to contract provision. The transportation should be prevented from rain, snow and mechanical collision. Put or transport with corrosive things is forbidden.

Storage: the instrument should be packed well and stored in dry, ventilated, non-corrosive room.

1.5 Required Safety Regulations

System safety requirements accord with GB9706.1-2007 “Medical Electric Equipment the First Part: general requirements for safety”;

Indoor power supply system in system studio should be standard three-core power outlet whose protection ground junction (terminal) is connected with protective ground conductor of the power supply system. If there is no protection ground junction (terminal) connecting with the protective ground conductor of the power supply system in the power outlet, the consumer should use a metal wire with the cross-sectional area of no less than 1.0 mm², one end connected with a protective earthing termination column, the other end with the land.

The environmental test of system is in accordance with the requirements of environment for climate test Group II and environment for mechanical test Group II of “Environmental Requirements and Test Methods for Medical Electrical Equipment” GB/T14710-93.

Note: The consumer should operate the suppression of ground wire in accordance with related standard or under the guidance of the experienced electrician.

1.6 Requirements for environment protection

The instrument and accessories should be handled according to local laws and regulations at the end of its life, the same for the use-process-related waste.

1.7 Features and classification

Safety category: I

The type it belong (protection type): B-type application part

Power type: 220V \pm 22V 50Hz \pm 1Hz

Chapter II Work Principle and Structure Features

2.1 Structure features

1. Basic configuration

Computer system 1 set

Biological microscope 1 set

Printer 1 set

2. Accessories

Power line 1 Fuse FUSE Φ 5 \times 20 3.15A 3

Packing material 1

2.2 Working principle

1. Microscope camera: formed by microscope and CCD, the effect is to enlarge the detected sample signal by microscope and then turn the signal into television signal with CCD, then send to the image acquisition card of computer and process.

2. Images capture: the image acquisition can capture, identify, preprocess, store the signal sent by CCD and further more send the mature signal to computer for processing.

3. Computer process: the analysis software will handle and process the preprocessing signal after being captured. Then the handled parameter will be displayed on the screen and printed by printer.

2.3 The picture of this instrument



Chapter III Technical Characteristics

3.1 Basic Parameter

1. Power: 220V \pm 22V 50Hz \pm 1Hz
2. The basic parameters of sperm analysis:
 - a) Microscope objective magnification:/Recommendation: 20X,40X
 - b) Eyepiece magnification: 10x

3.2 Basic requirements for the running environment of sperm analysis software






- a) Microsoft windows operating system
- b) Pentium class PC, 120MB RAM or above

- c) 40 GB free hard disk space
- d) CD-ROM drive
- e) medicine-used pseudo color video capture card
- f) Color inkjet printer
- g) 24 bit (true color), 1024*768 resolution

3.3 Software features

- 1. Images real-time display:** display clear and real-time images, facilitate for teaching, observation and consultation of several people.
- 2. Dynamic adjustment for images:** it can adjust the brightness, contrast, hue and saturation of dynamic images.
- 3. Images save and copy:** the captured images can be saved to other place or copy to other software for using.
- 4. Several print modes.**
- 5. Can be used for checking historical cases and statistics:** with easy operation, you can get the patients' information.
- 6. The printer paper size can be adjusted.**
- 7. General storage report:** you can save all the information, when you use the next time, you can only need load them.
- 8. Can print report:** we can printer pictures with characters with high quality.

Chapter IV Transport and Installation

- Equipment packaged by paper / wooden box should be placed up , avoid the damp , collision , extrusion , and sunshine  in transportation. It can be transported by air, road, rail and ship.
- After opening the carton, count the number according to packing list. And then read the user's manual carefully.
- Take out the main unit and accessories.
- Inspect power supply of the apparatus to ensure one of the ends of the power cord be inserted the back panel of the host (marked 220V/50Hz) and the other one connect with special power wiring board within the scope of prescriptive power.
- Inspect the connection of the apparatus among the various parts, and then switch on the

- power after ensuring right connection.
- Note: do not draw or insert the plug when the machine is power on to protect the main unit from being damaged.
 - When the installation personnel installs the equipment, it should be placed on a clean and ventilated room, dry and clean environment, avoiding together with chemicals and electromagnetic and strong electrical field, and the equipment installation location should be convenient for operating.
 - **If the host can not power on, check the fuse (FUSEΦ5×20 3.15A), cut the connection before check. Then change the fuse with a tool. Refer to the instruction of Install**

Chapter V Specification for Sperm Analysis Software

5.1 How to put the specimen

Put the specimen right under the microscope and adjust the aperture and focal length that make the specimen can be seen clearly. Then collect the pictures.

5.2 Operation of software.

1. Logging In





According to the picture above, the acquiescent username is semensa and no password. If you want to establish any other users and password, please press “enter”. And the system will enter next step.

2. Establish the Report and Input Patients' Information



The screenshot displays the 'CAROTRON SPERM QUALITY ANALYZER' software window. The interface is divided into several sections:

- Top Bar:** Contains menu options: Start, Report, System, Help.
- Left Panel:** A form for patient information including fields for No., Test No., Name, Age, Out No., In No., Case No., Dept, Room, Bed, Class, Sample date, Apply date, Apply by, Diagnosis, Result, Technician, Technician Code, Auditor, Typical, Keywords, Report date, Remark, and Format.
- Right Panel:** A table for test results with columns: Item name, Item value, unit, and Reference range.

Item name	Item value	unit	Reference range
Sample info			
Sampling date	2010.05.08		
Sampling time	16:45:12		
Abstinence time	3 Day		
Sampling way	Masturbation		
Volume	2.0 ml		>=2
Dilute ratio	1:0		
Liquefaction time	30 minute		<=60
Liquefaction status	y liquefaction		
room temperature	25 C		
Viscosity	normal		
agglomeration	-		
appearance	milk white		
smell	t flower smell		
pH	7.4		7.2-8
result			
Total number	0		
density	0.0 10 ⁶ /ml		>=20
total semen in specimen	0.0 10 ⁶		
Active sperm number	0		
Active sperm density	0.0 10 ⁶ /ml		
Motility	0.0 %		>60%
Rate of deformity	0.0 %		
Class A(fast)	0.0 %		>=25%
Class B(middle)	0.0 %		
Class C(slowly)	0.0 %		
Class D(slowly or not move)	0.0 %		
a found	0		
density of a	0.0 10 ⁶ /ml		
total a in specimen	0.0 10 ⁶		
b found	0		
density of b	0.0 10 ⁶ /ml		

Click the button  of Toolbar or carry out 【start menu → report edit】, the picture above will appear, then press the button “new”  and input the report in this window. If there is a small arrowhead appearing in the edit box, then you can input information or choose. In the date box, you can choose the year, month and date by moving cursor. Or you can choose by clicking and increase or reduce the data by clicking the up and down arrowhead. After finish the work, then press save button. If there is several patients' information needs to be input, please press the submenu items “new” or “inheritance new” under the menu “report edit” and input again.


3. Collect the Images of Moving Sperm

Press the submenu item “image process” under “start” menu or click this button , enter video and image processing window. Click the submenu item “show/hide video” under “operation” menu or tool button , active the video, like the picture below:

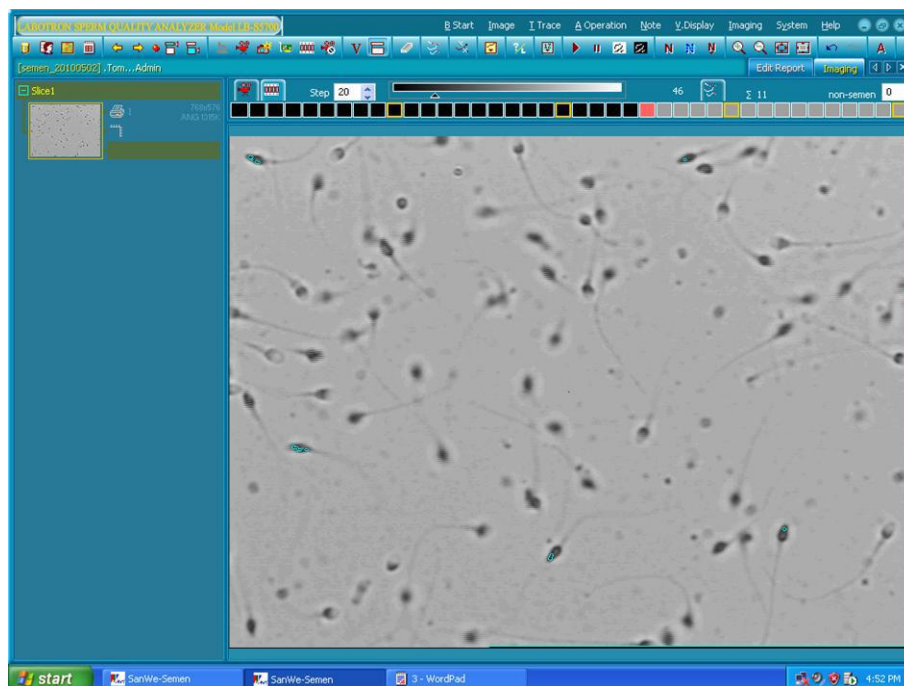


Prepare specimen under microscope. If the specimen needs to be diluted, please choose dilution ratio in the specimen information bar of report edit window. 1:0 means no need to dilute.

Mix up the field of vision, and set up the time interval between every frame of image

and total frames that need to be snap shot. Then press the button “catch image sequence” , catch the image of moving sperm systemically.

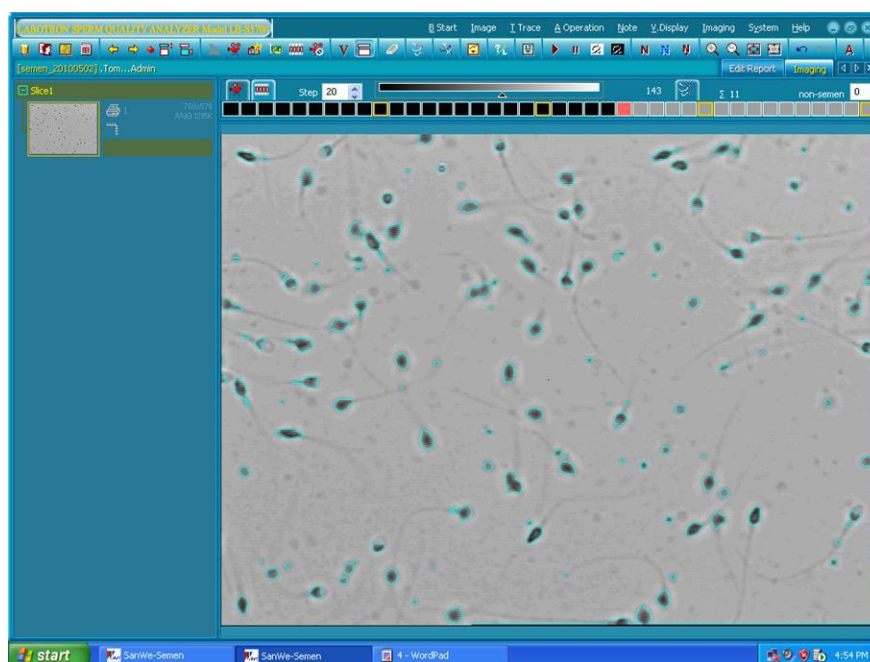
If the images need to be saved, press the button “save sequence” on the Toolbar. Or press the submenu item “save sequence”, save the images of moving sperm to the report. The images under several vision fields can be saved repeatedly. The caught images can be analyzed directly.



4. Calculate the Motion Track of Sperm

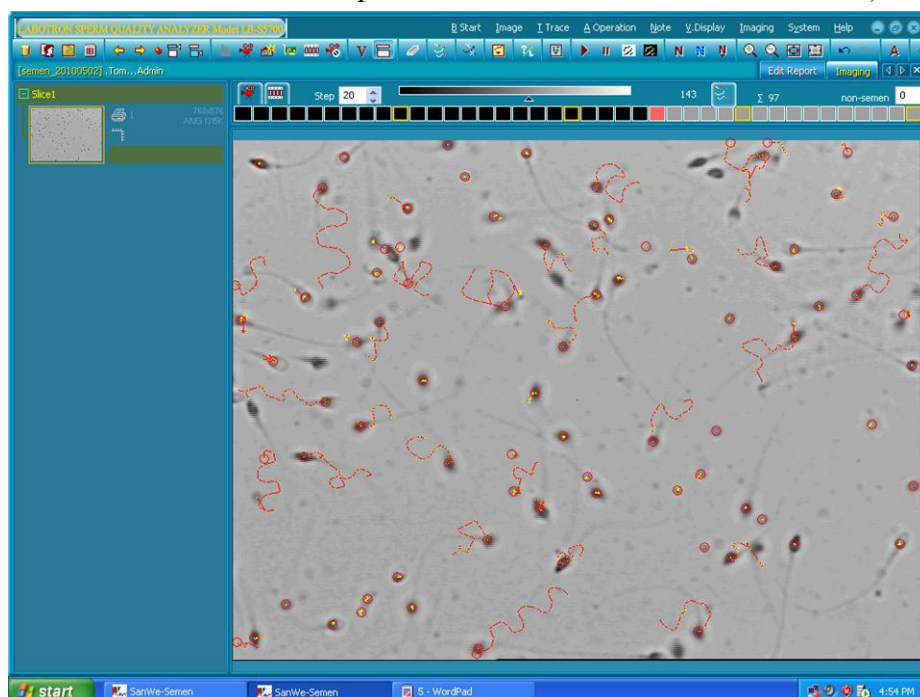
The images can be analyzed directly after catching, or after saved. As shown in the picture below:

Firstly, press the first frame of the series images frame number bar, set the first image at focus.






If the pace needs to be set, do it now. Then set the adaptive threshold for sperm and background by clicking the small triangle of “bound threshold”, dragging it to the left or right to adjust the threshold value with the standard that the sperm heads can be divided clearly with background and impurities are the least. Then press the button “calculate track”, the track of sperm motion can be drawn by the software automatically.

(Calibration coefficients are very important in the calculating of this step so that the newly installed system must be operated according to the right calibration coefficients, so does the software. The operation is in the calibration instruction.)





5. Delete the Impurities

After the sperms' motion track is calculated, some track that left by round cells and impurities granule which may be regarded as sperm need to be deleted. Press the upper button “delete track”  in the tool bar, then the cursor became an “X”, delete the track you want. Also you can estimate the non-sperm number (round cells number) according to the total track number (as shown as the picture ) , and input the number in , then the parameter can be calculated.

6. Save the Track



If you want to save the sperm track of this image, and you need to save this track of sperm as shown in the picture below.




, press the last image of this image series, then press “save image” button  or the submenu item “save image” under “track” menu. If this image which is analyzed directly after caught hasn't be saved, then you can press the button , save the track with image.

The sequence images and track can be replayed with black or white background. Click any grid of the frames, the replay will stop there and press the left or right key, the images will be replayed immediately.


7. Calculate Parameter and Save

Press the button “calculate parameter” , the sperm operational parameter of this sequence image will be calculated. For one specimen can be measured with several vision fields to increase the precision, so the parameters need to be calculated are more. Under the default occasion, if the parameters aren't cleared, the parameters will be added and calculated to average value. If you need to calculate all the parameters again, press the button , or carry out the menu (track- clear parameters).

After finish calculating the parameters, press the button  and save the result.

If you think the sperms' step number do not meet the requirement, please active the vision field again and catch images, analyzing and saving.

8. Perfect the Report

As shown in the picture below, press “report and edit” label item in the item and label column of the window, back to the report processing window. Input complete report items in the left window, such as “diagnostic check”. Click “+” of the name column of the right diagnostic window, spread the sub-items, input results and press  to save.

Sample info

Item name	Item value	unit	Reference range
Sampling date	2010.05.02		
Sampling time	23:14:15		
Abstinence time	3 Day		
Sampling way	Masturbation		
Volume	2.0 ml		>=2
Dilute ratio	1:0		
Liquefaction time	30 minute		<=60
Liquefaction status	y liquefaction		
room temperature	25 C		
Viscosity	normal		
agglomeration	-		
appearance	milk white		
smell	t flower smell		
pH	7.4		7.2-8

result

Total number	80		
density	9.0 10 ⁶ /ml		>=20
total semen in specimen	18.1 10 ⁶		
Active sperm number	67		
Active sperm density	7.6 10 ⁶ /ml		
Motility	83.8 %		>60%
Rate of deformity	9.1 %		
Class A(fast)	55.0 %		>=25%
Class B(middle)	12.5 %		
Class C(slowly)	16.3 %		
Class D(slowly or not move)	16.2 %		
a found	44		
density of a	5.0 10 ⁶ /ml		
total a in specimen	9.9 10 ⁶		
b found	10		
density of b	1.1 10 ⁶ /ml		

Slice1



768x576
ANG 1319K

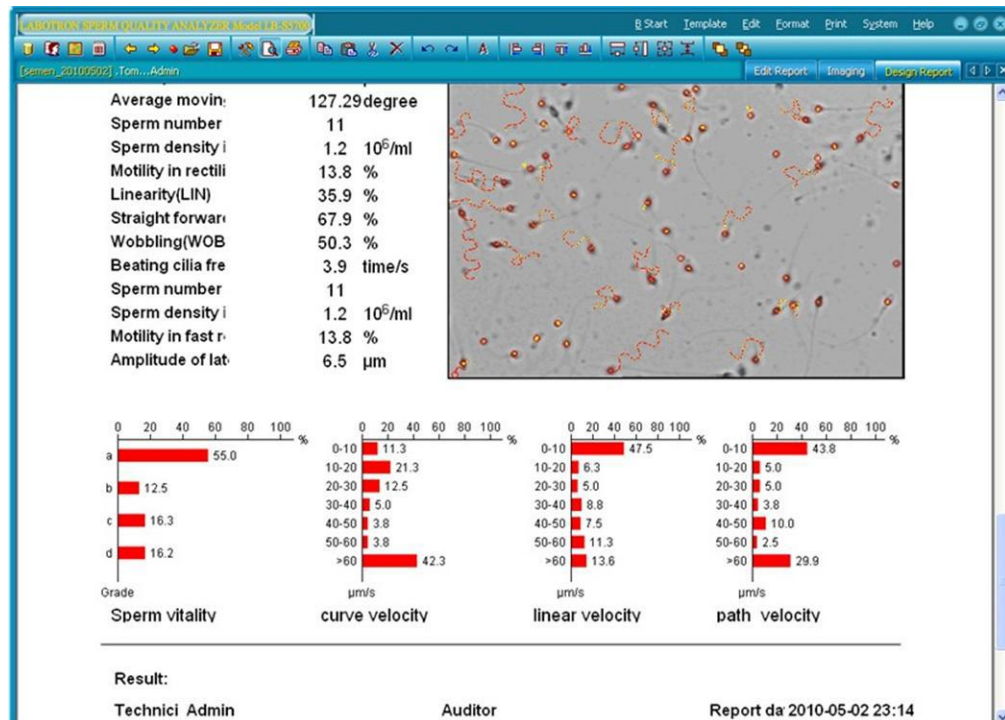
Set the printing pictures:

If there's only one picture, press the printer button beside, change 0 to 1 as shown in the picture below:



9. Print the Report

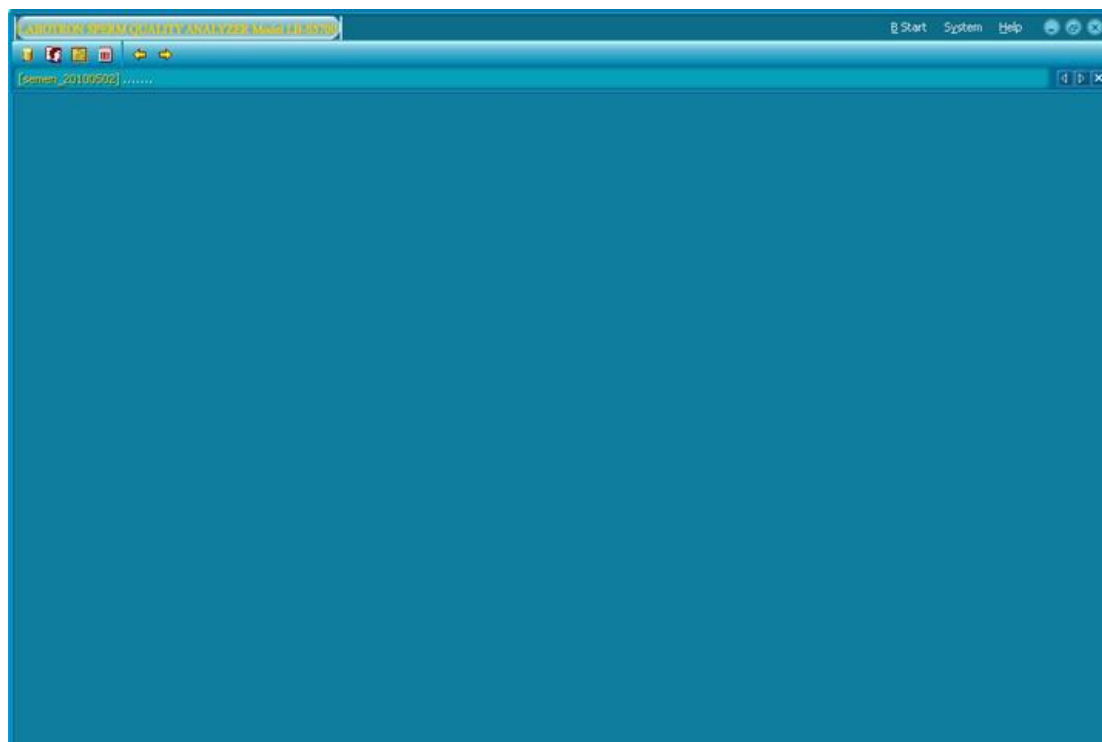
If the report template has been designed, press the “print preview” icon , system will display according to the default template. If it meets the requirement, then you can press “print” icon. If you need another template, click “open template” button , then preview and print. As follows:



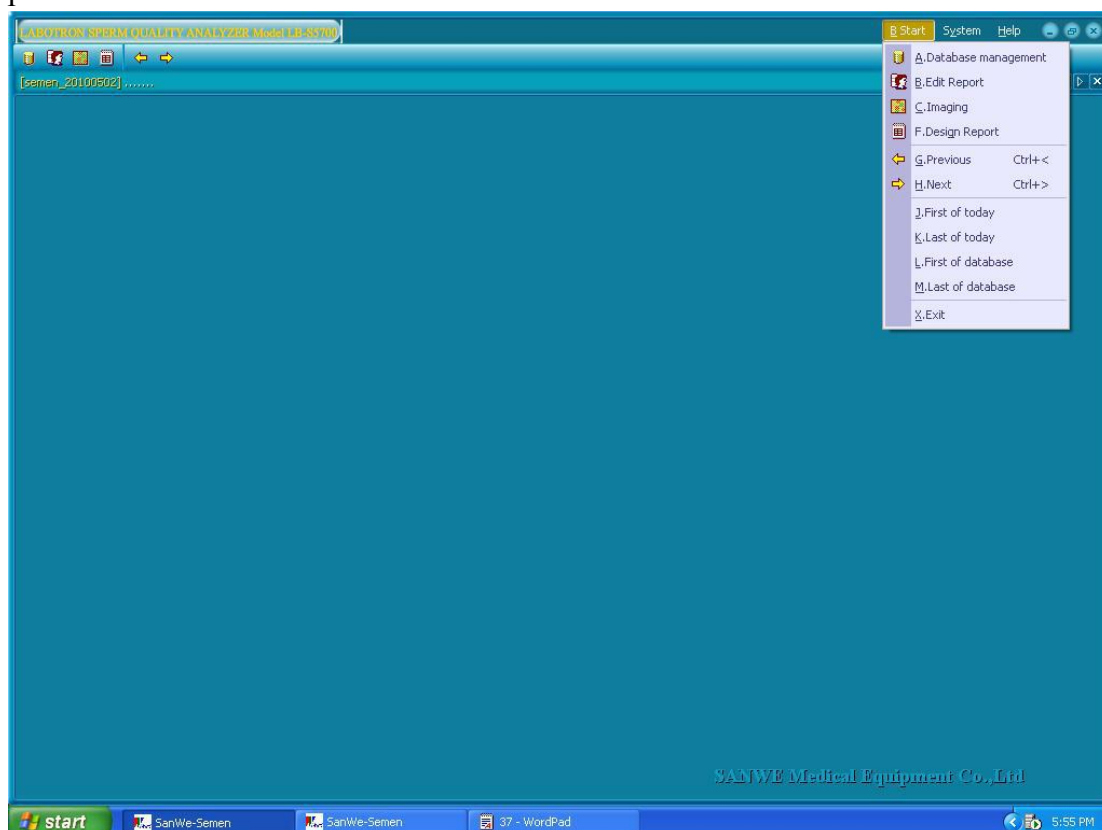
PS:

Attachment II Software calibration instruction

When newly installing software or changing display resolution, and changing the image size of the parameters, it will need software calibration to calculate the report result accurately. You can operate as the following instruction.

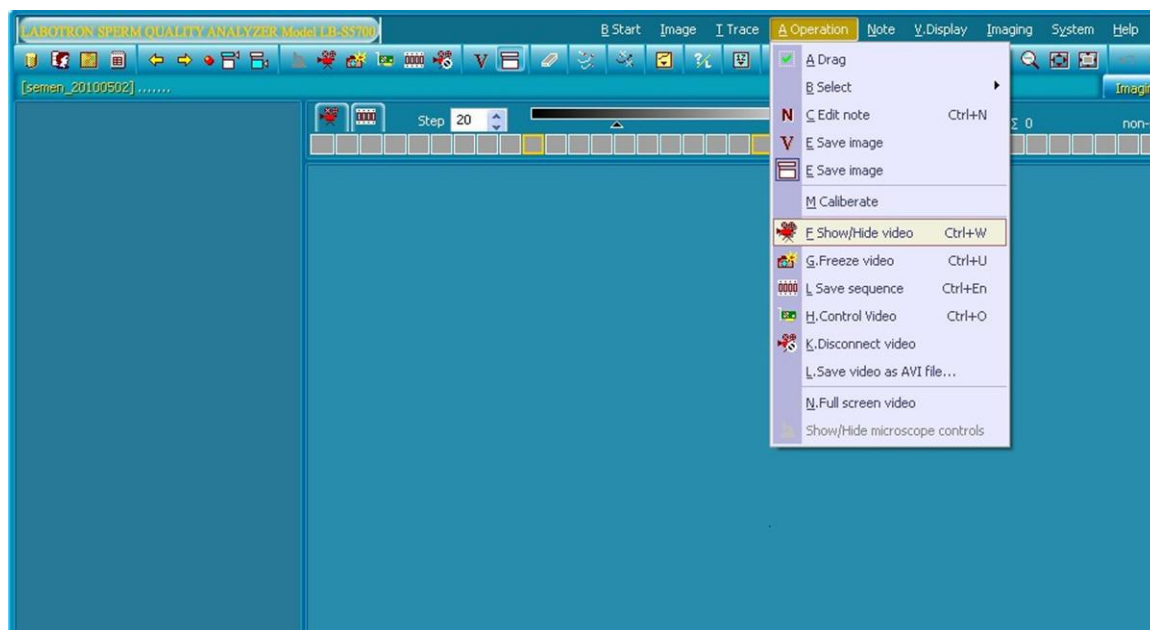


In picture 1, click the submenu “image process” under “start” menu as shown in picture 2.

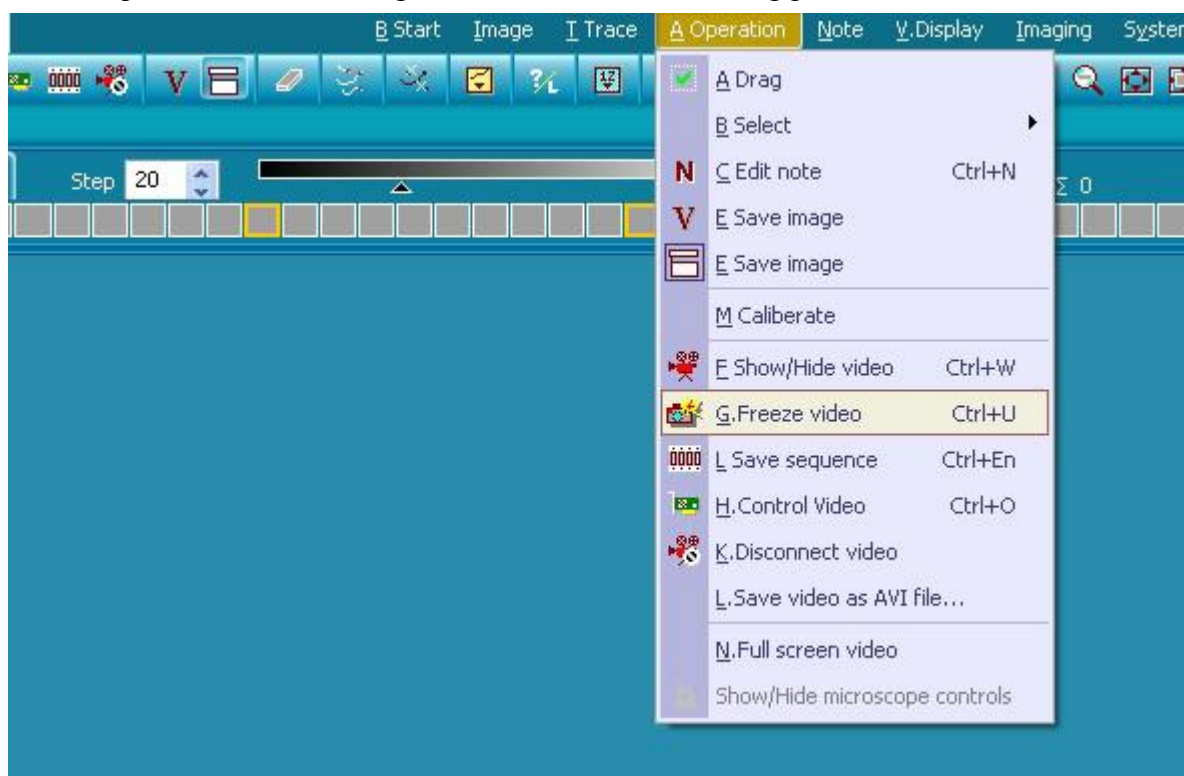


Then enter the next program window, put the standard count pool under the microscope away and adjust focus. If you use 10 times objective lens, the counting pool should select the grid used for counting white blood cells (side length 250 microns). If you use 40 times objective lens, the counting pool should select the grid

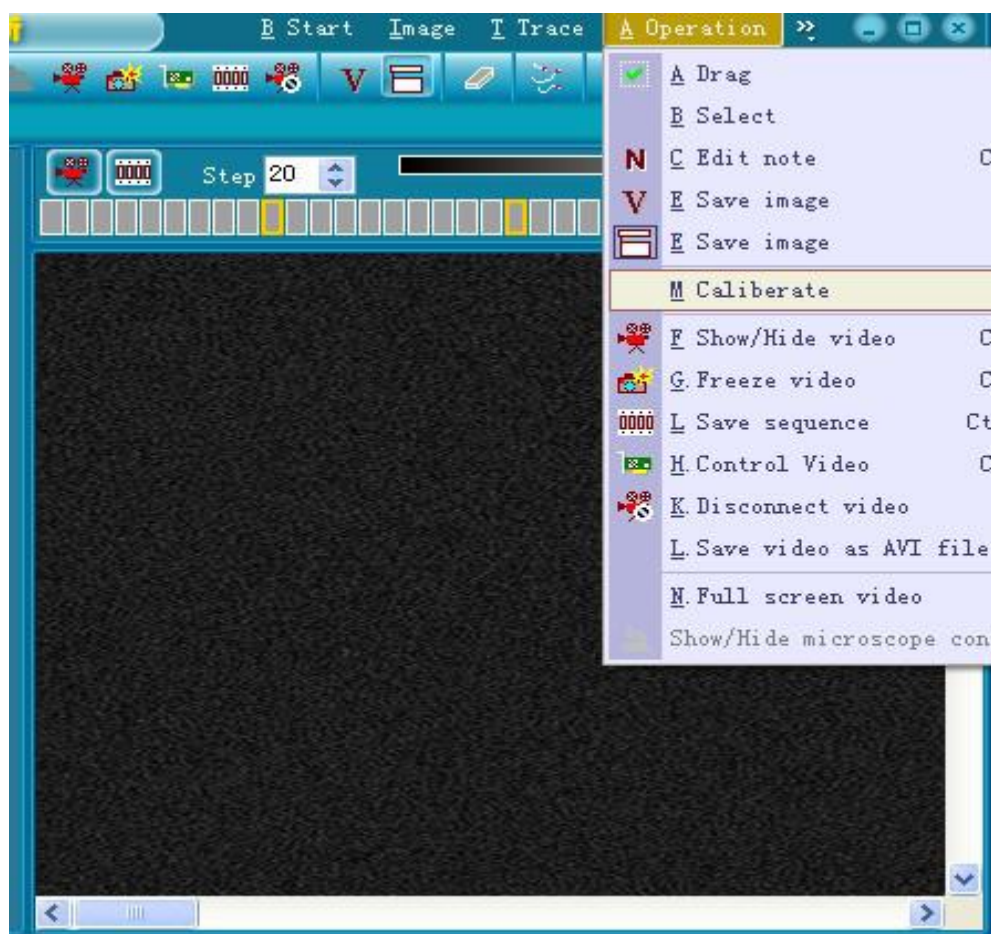
used for counting red blood cells (side length 50 microns), as shown in the following picture.



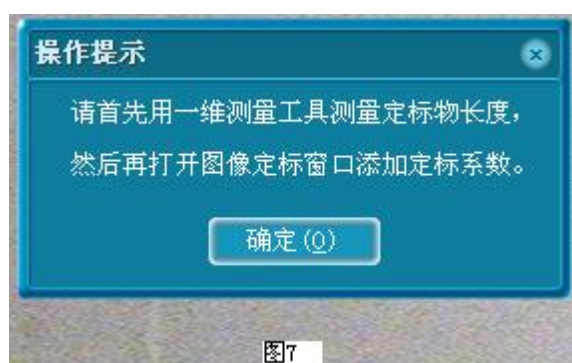
Click the menu “show/hide video” under “operation” menu. Then choose the grid area of count pool in the video images, as shown in the following picture:



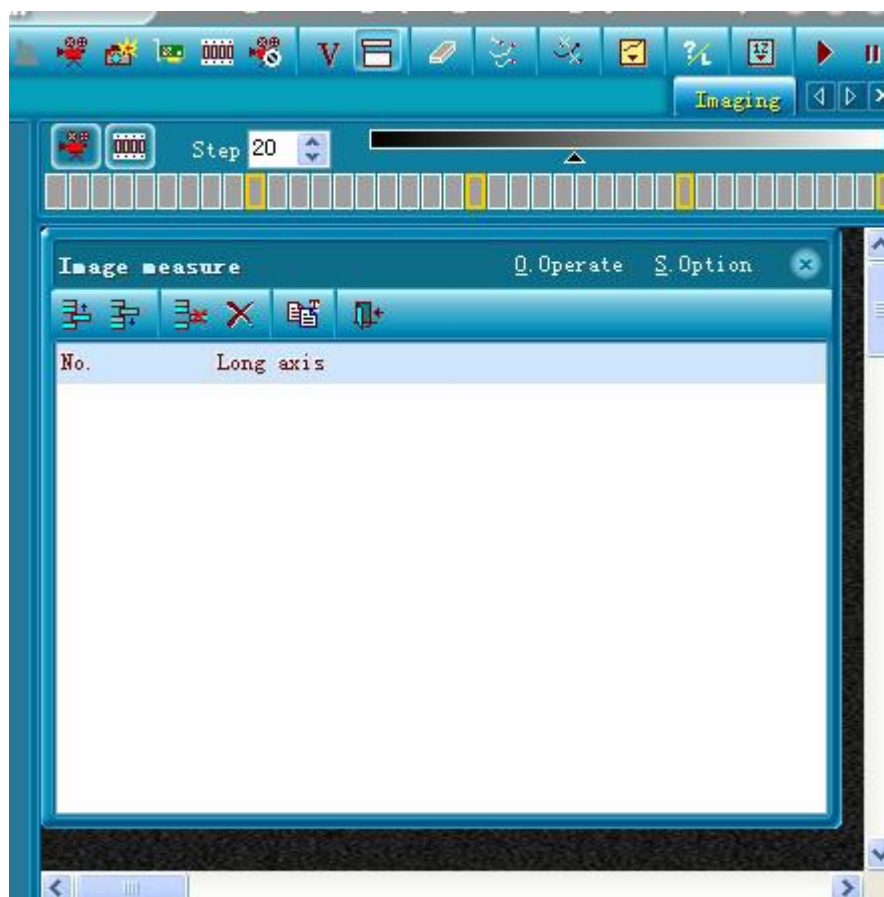
Fix one picture by clicking “activate/ freeze” under “operation” menu, then click the submenu “image calibration” under “operation menu”, as shown in the following picture:



Then a dialog box will come out.



Click enter, the following picture will emerge:



At the same time, the cursor will become “+”, click on the frame line of the middle grid, drag to the other head of the line and then disentangle the mouse and the ant wire frame emerge. Now system will calculate the pixel length of the ant line. You can choose more than three different frames to measure to reduce the error.

Then click “image calibration” according to picture six, a dialog box will come out:



Fill the previous measurements (ant line) of the paragraph above in the window "Actual Size of the calibration substance" column, the physical length of the border box (the actual side length of the grid in standard count pool is 250 um; the small grid is 50 um). Then click the "Add" button to add a line of calibration item.






Click the small arrow in that the "objective lens name" column, choose the previously used multiples of the microscope objective lens. Then "Default" button, then click "OK" button. (Ant line can be eliminated by clicking the right key)

Note: Acquiescent calibration is expressed by red character, generally calibrate the parameters with 20X and 40X microscope.

Chapter VI The Note of the Equipment Application

- ⚡ there are strong electricity in the equipment, do not open it by yourselves!
- If power fails suddenly during operation, start up power again, and the interval should be no less than three minutes or no response.
- Apparatus should be placed on clean and ventilated room, needing dry and clean environment, avoiding putting chemicals, electrical electromagnetic and strong electricity with the equipment together.
- Do not move or shake the equipment when it on position.
- Avoid frequent switches, or easily damaged. When equipment is not in use, shut

down the power, unplug the outside power, and cover cloth cover. A long time out of use, clean it, put it on the box, and regularly open the electricity to run. (Generally once a month)

- Equipment packaged by paper / wooden box should be placed up , avoid the damp , collision , extrusion , and sunshine  in transportation. It can be transported by air, road, rail and ship.
- In the failure of equipment, do not open the case by yourself and get in touch with the maintenance company for repairs.

Chapter VII Maintenance

- Check power supply frequently, if the voltage exceeds the adaptation scope of equipment (AC 198V ~ 242V), no using the boot, otherwise regulating power supply.
- Check power line the equipment regularly, if damaged or fractured, it should be replaced immediately.
- Unplug the power cord before cleaning the outer surface of equipment. Wipe it with cotton wool and toothpaste, but not alcohol cleaners and fungicides.
- After moving equipment, check whether there is a loose connection among components. If loosening, it should be well connected.
- When the equipment fails, invite the specialized personnel or contact the company.

Chapter VIII After-sale service

Products sold by the company is guaranteed for 18 months. The company will send specialized staff for maintenance in 18 months once. If necessary, the company can provide circuit diagrams and component list. In the warranty period, failures caused by product quality, maintenance is free of charge. Beyond the guarantee, repair is for all of the life.

The following causes of failure are not in the scope of guarantee:

- a) Unauthorized disassembly and modification.
- b) Inadvertently tempering, or falling.
- c) Lack of reasonable maintenance or environmental requirements.
- d) The operation not in accordance with the requirements of this manual.
- e) Without the permission of the company to repair.
- f) Force majeure.

- No guarantee for consumption and fragile goods.
- No guarantee if unable to offer quality books of the company.

●Please directly contact the agents, if purchasing equipment from the agents of the company.

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