Global No. 1 Facial Analysis System
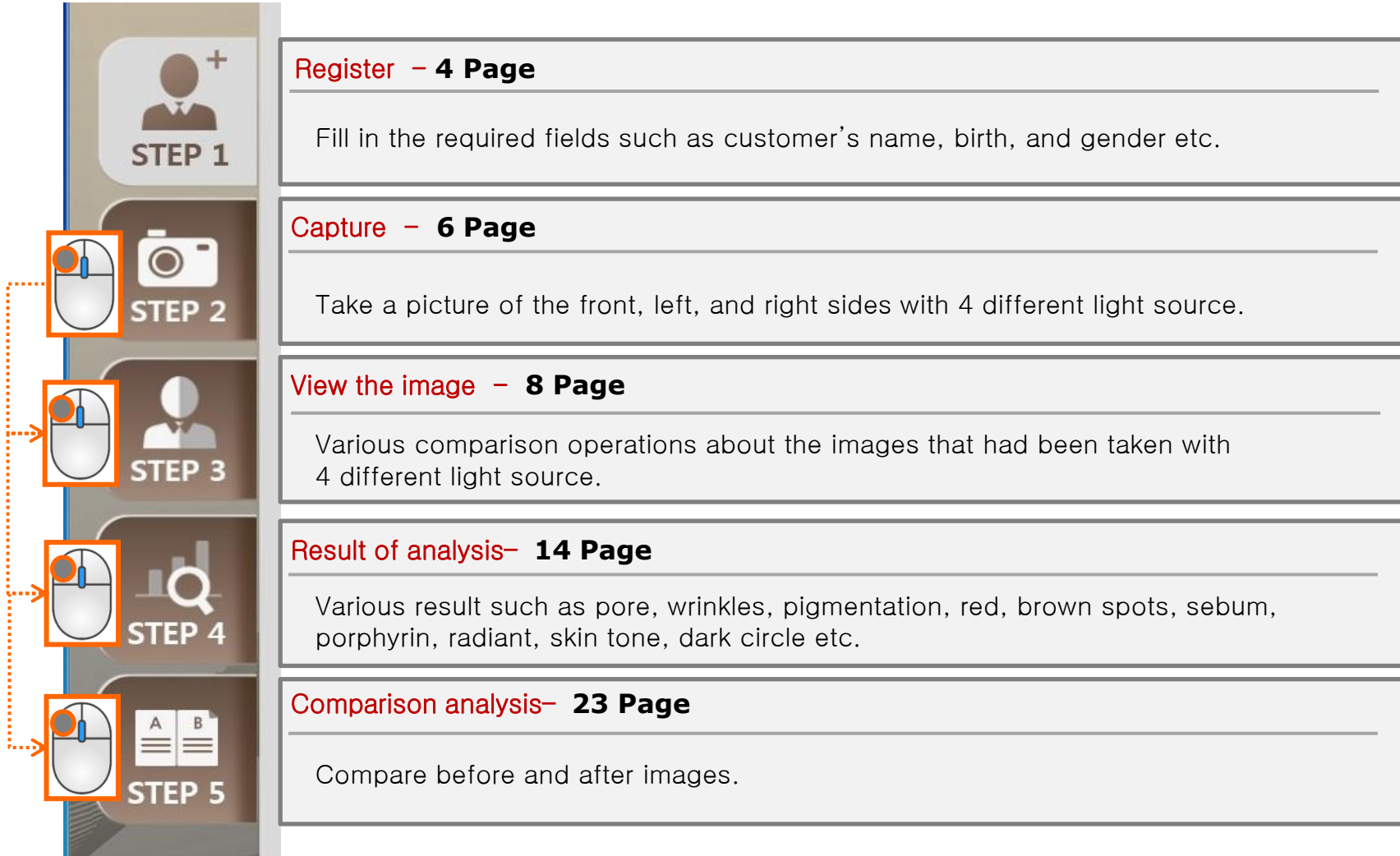
MARK•Vu **Operation Manual**

PSI PLUS

Professional Scientific Instrument

◎ Program operation flow chart◎

◇ It is possible to move step through click the **STEP** button.

・ **STEP 1 (Register) → STEP 2 (Capture)→ STEP 3 (View the image) → STEP 4 (**Result of analysis**)**
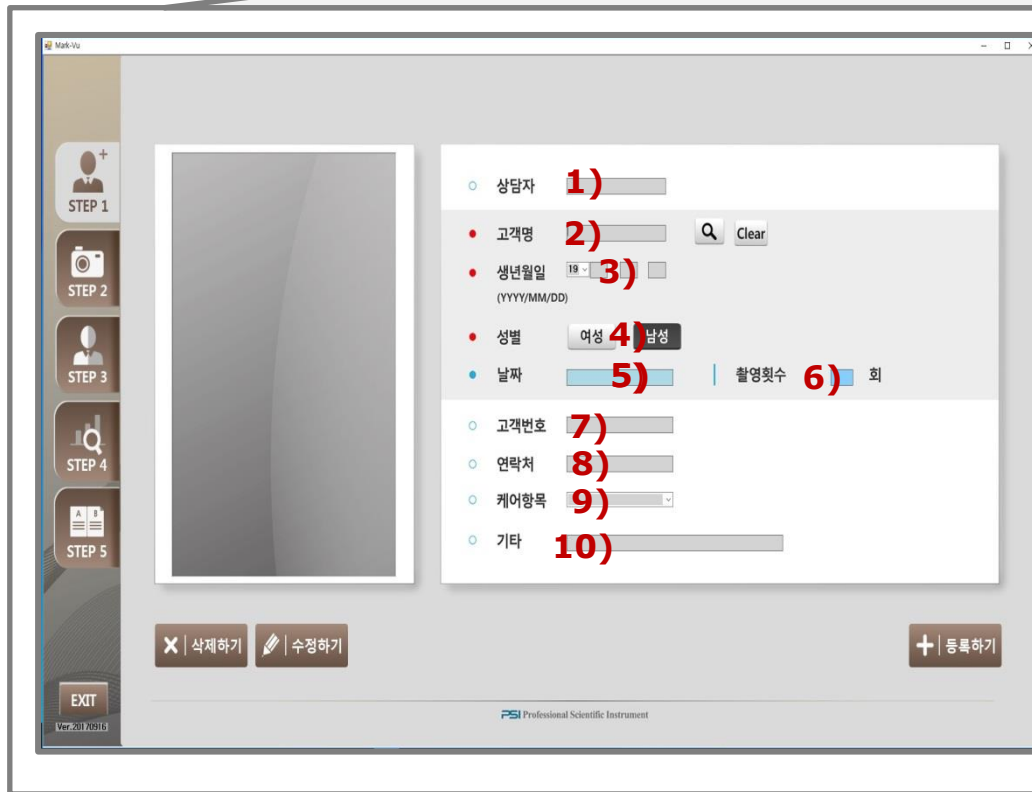
　→ **STEP 5 (**comparing analysis**)**

Register – **4 Page**

Fill in the required fields such as customer's name, birth, and gender etc.

Capture – **6 Page**

Take a picture of the front, left, and right sides with 4 different light source.

View the image – **8 Page**

Various comparison operations about the images that had been taken with 4 different light source.

Result of analysis– **14 Page**

Various result such as pore, wrinkles, pigmentation, red, brown spots, sebum, porphyrin, radiant, skin tone, dark circle etc.

Comparison analysis– **23 Page**

Compare before and after images.

◇ **Click '*MarkVu'* icon on your desktop to open it.**

◎ STEP 1 : Register(1) ◎

◆ **New Customer :** Please click a ➕ 등록하기 button after fill in the required fields

such as customer's name, birth, gender etc.

| Clear | clear a entered. | Fill in the required fields. | ➕ 등록하기 Register to new customer. | 📷 STEP 2 Move to STEP2. |

	List	Detail
1)	Counselor	Name of counselor
2)	**Name**	**Those are required fields for compared to group of customers gender and age.**
3)	**Birth**	
4)	**Gender**	
5)	Date	**It is automatically input.**
6)	No. of shots taken	
7)	Customer No.	Management number
8)	Phone	Contact number
9)	Care	a surgery/treatment list.
10)	Etc.	Other information

◆ **Existing customers**

Please click the 🔍 button or please click the 🔍 button after fill in a customers name for searching a customer.
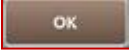
◇ **It is switch to customer list page through click [🔍] button.** – The customer who was recently shoot is at the top in the customer list.

◇ **There are two different way to search a customer in customer list.**

　① **Searching for the customers name, counselor, customers No., care.**

　　(Find a common customer for each entry)

　② **Searching for the shooting period. (Find customer for a time period)**

◇ **It is switch to the register page to click the [OK] button after selected a customer on the list.**

◇ Disk button : It is possible to make an excel file about a customer list included customer's information and result of analysis.
* If you click the 'Disk button' without searching a customer, you will get an excel file about all of your customer information and result of analysis.

◎ STEP 2. Capture a customer images: front, left, right side (1) ◎

◇ **It is switch a screen to click the** [📷 STEP 2] **button as like a below pictures.**

1) Adjust the headrest up and down to match the size of customer face and than lean a customer face to headrest and chinrest.

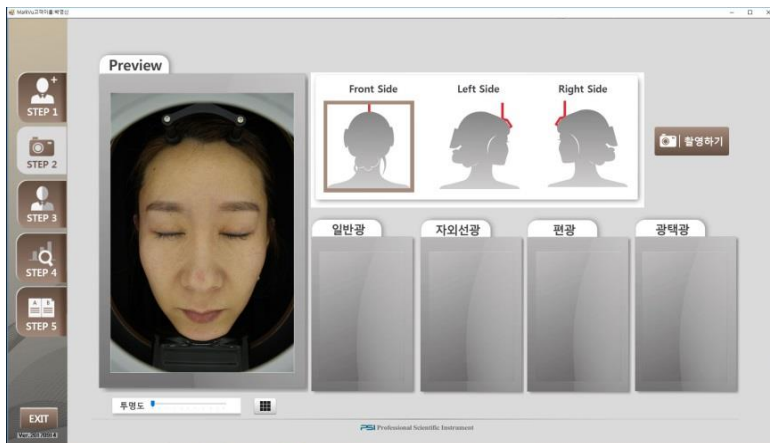   (Check the position of customer chin above the chinrest)

2) It is start to take a picture to click the [📷 | 촬영하기] button at right side of screen or press the button at top of device.

3) When it is finished to take a picture of front side by 4 light source, automatically ready to take a picture of left side.

4) Ready to take a picture of left side : Lead a customer face to headrest and chin rest

   after the headrest turns right and the device turns left.

5) Ready to take a picture of left side : Lead a customer face to headrest and chin rest

   after the headrest turns left and the device turns right.

6) It is start to take a picture to click the [📷 | 촬영하기] button at right side of screen or press the button at top of device

   as like take a picture of front side.
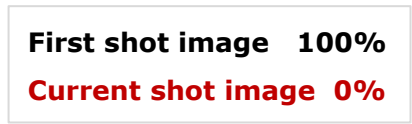

[Capture a front side]   [Capture a left side]   [Capture a right side]

It is photographed four times in the order of normal light, UV light, polarized light, specular light. It is possible to confirm the images as soon as shooting is finished.

* If you need to take a picture again, you can take a picture after select the side of face which needed to re-take a picture.
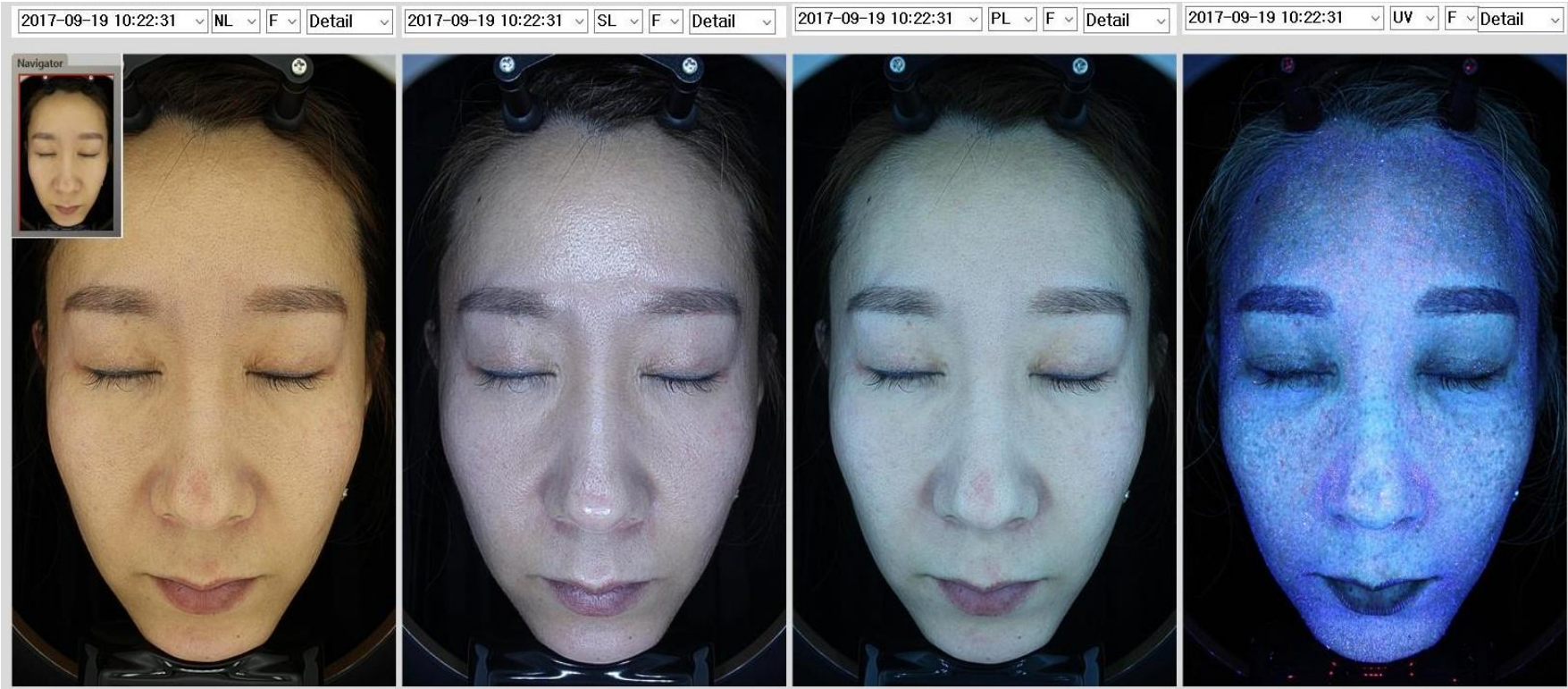
① **Transparency** : For existing customers, It is used to overlay the first shot image to the current preview screen for taking a same standard images to comparison analyze

First shot image 100%	First shot image 0%
Current shot image 0%	**Current shot image 100%**

② **The grid pattern frame for shooting aid** : At the first shooting, it is help to check customer face is
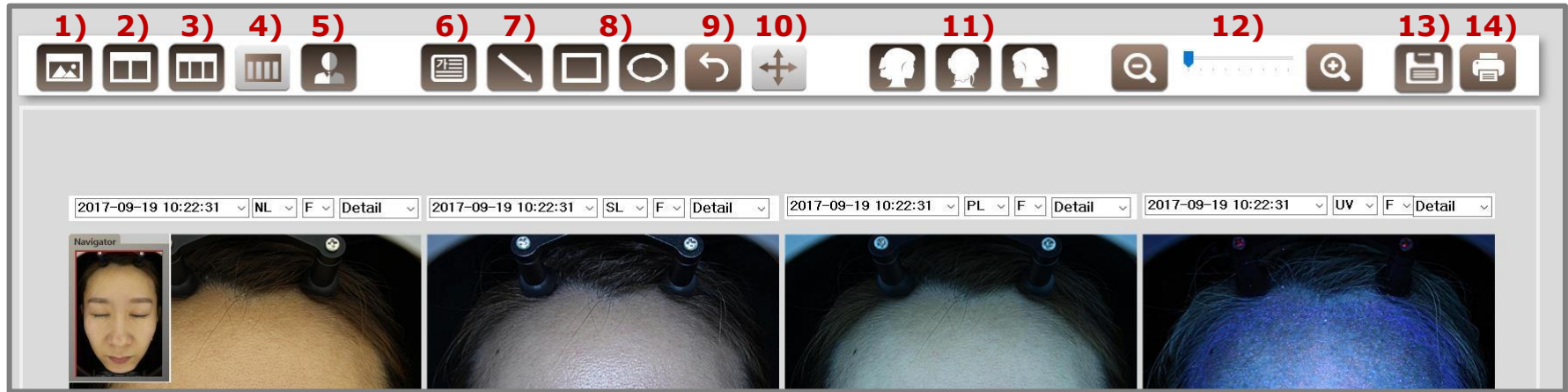
symmetrically correct.

◇ **It is switch to view the images page as like below picture through click** STEP 3 **button.**

Light source	Normal(NL)	Specular(SL)	Polarized(PL)	Ultraviolet(UV)
List of analysis	pore, wrinkles, skin one	Hidden wrinkles, radiant	red & brown spots	Melanin, sebum, porphyrin

◎ STEP 3. View the images (2) – Detail of function◎

	icon	Instruction		icon	Instruction
1)		To view an image in detail	8)		Draw a circle, square
2)		To compare two different images	9)		Undo
3)		To compare three different images	10)		**Move to point – default** ※ Caution, your text and draw will be deleted after move to point.
4)		To compare four different image - default	11)		To change side of face
5)		Overlay - default (PL/ UVL)	12)		Enlargement and reduction
6)		Please press 'Enter' after fill in your text	13)		Screenshot for current page
7)		Draw an allow (to - , from ->)	14)		Print for current page

1) **2) 3)** **4)**

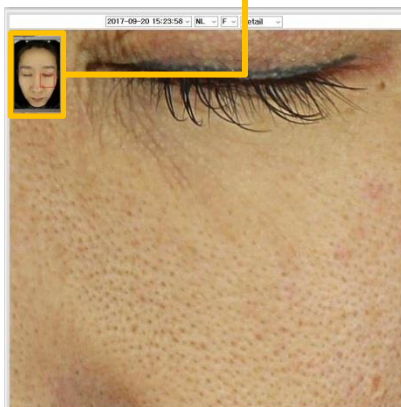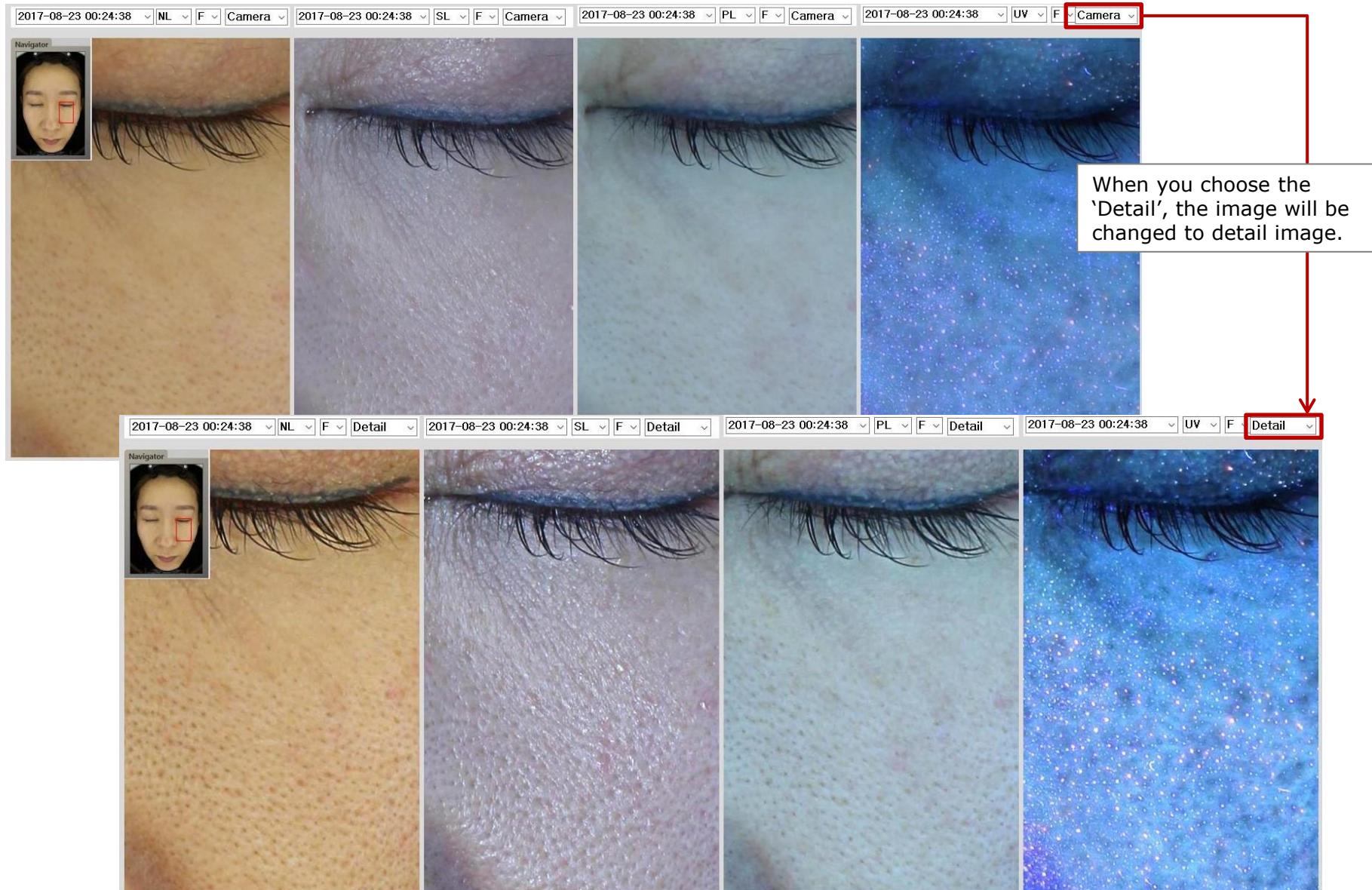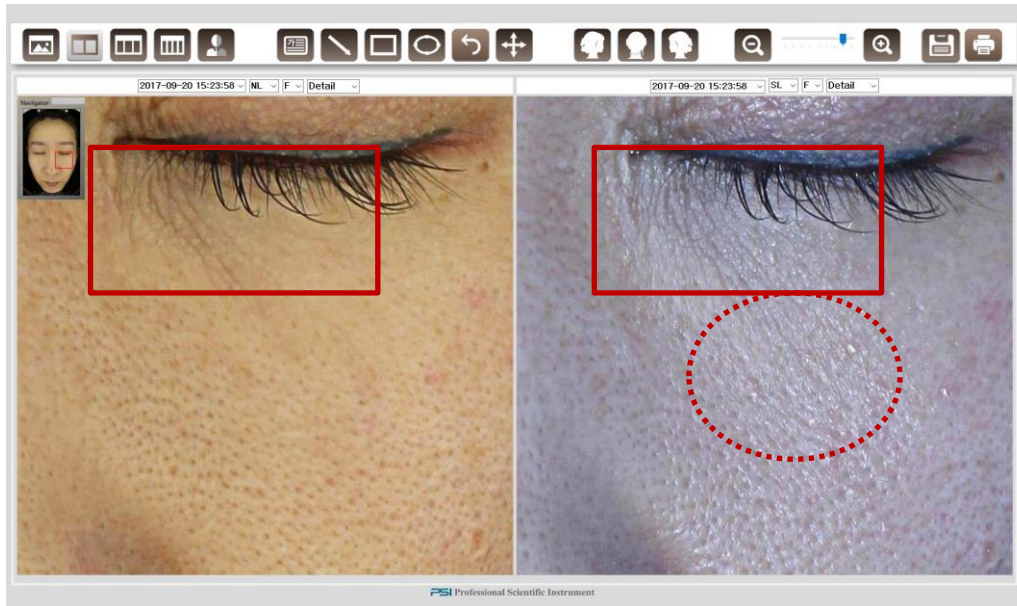| 1) **Choose the date**	2) **Choose the light source**	3) **Choose the side of face**	4) **Choose the Camera/Detail image**
2017-09-19 10:22:31 **You can see the list of date when you press button.**	**NL : Normal SL : Specular** **PL : Polarized UV : Ultraviolet**	**F : Front** **L : Left** **R : Right**	**Detail : Cleared images** **Camera : Original images**

* Navigator

① When the image enlargement is selected, a red square box appears

on the face.

② When enlarged, the box becomes smaller and the area enlarges.

③ You can observe the face part you want to see by dragging the red

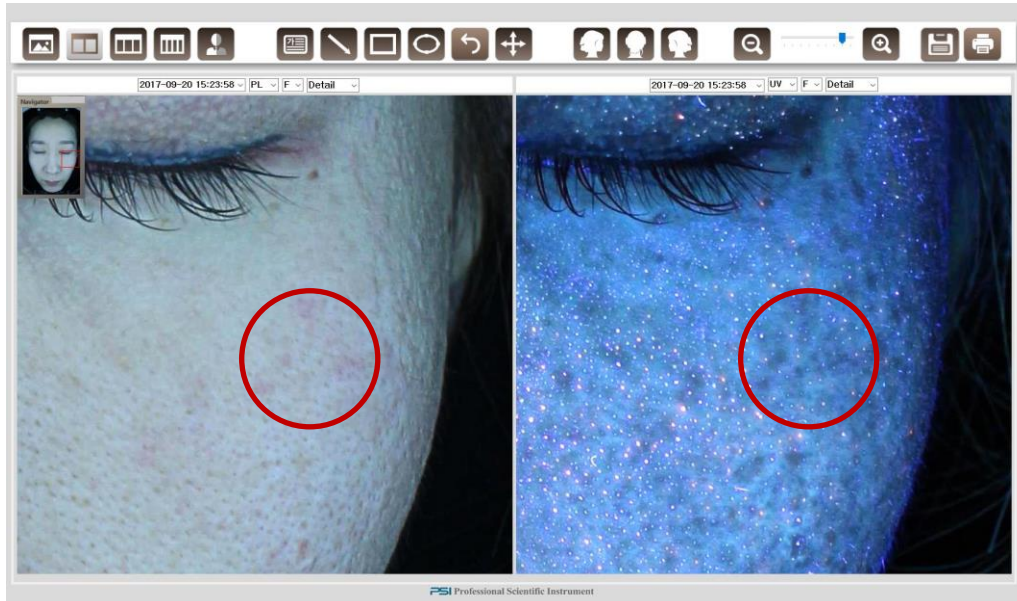square box.

◎ STEP 3. View the images (4) – Detail images◎

When you choose the 'Detail', the image will be changed to detail image.

◇ **Counseling case 1)**
Normal & Specular light

As the red box in the left image, you can see the wrinkles under the eyes in normal light. But, as the red circles in the right image, in specular light, it is possible to observe a hidden wrinkles that can not be seen in normal light. When the customer treatments skin of under the eyes, the customer also should get a treatment at area of red circle which wrinkles could be occurred in the future.

◇ **Counseling case 2)**
Polarized & UV light

On the left polarized image, you can see that there are a red and a brown spot together on the cheekbones which marked red circle. Also, if a red and brown spot are present on the surface of the skin, it can be check that melanin is also found in the inside of the skin on the right UV image. The red turns into brown color over time. The treatment a red is one of treatment pigmentation.
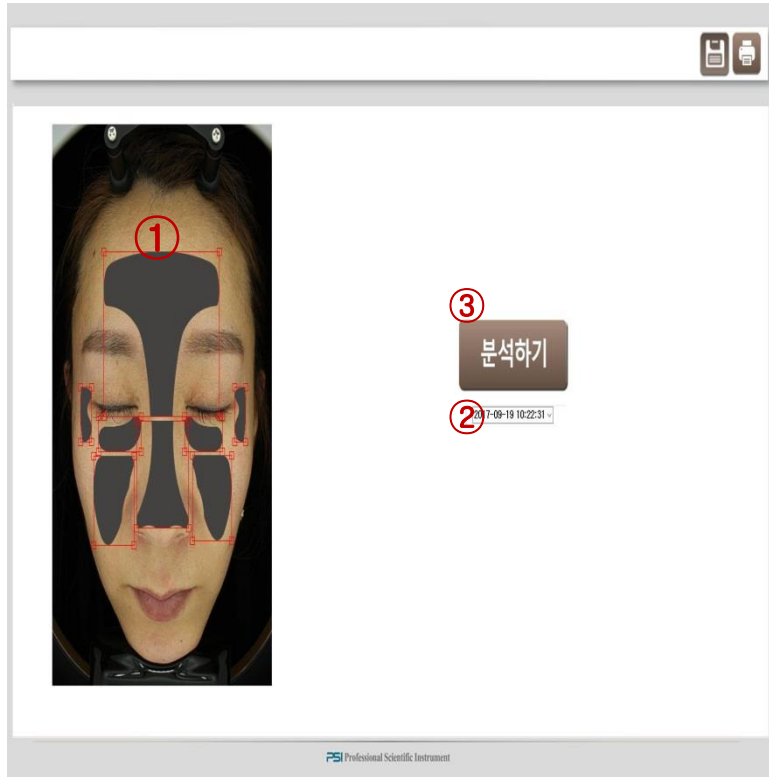
◇ **Consultation with 3 split screen**

- It is possible to check skin problem with 3 split screen as set front side, left side, right side of face as like above

 picture. it is possible to observe a customer's skin while changing light source or enlarge the images.

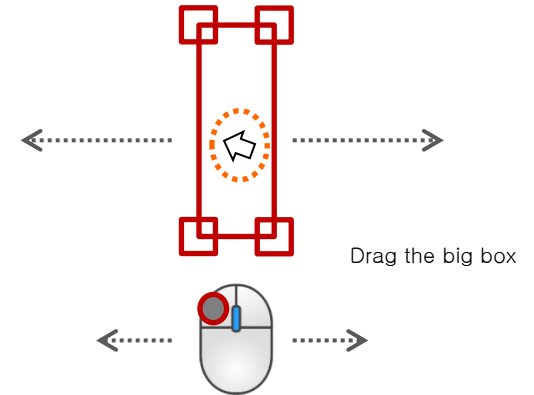# ◎ STEP 4. Result of analysis _ Setting analysis part◎

1) Adjusting the analysis area position

  - **Please drag the big box to move a analyzed area to correct position.**

Drag the big box

2) Resize

  - **Pease drag the small box to resize a analyzed area.**

Enlargement

Drag the small box

Reduction

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* Area setting order

① **To set the analyzed area is follow the description on the right.**

② **Choose the date which you want to get a analyzed result above the 'Analyze' button.**
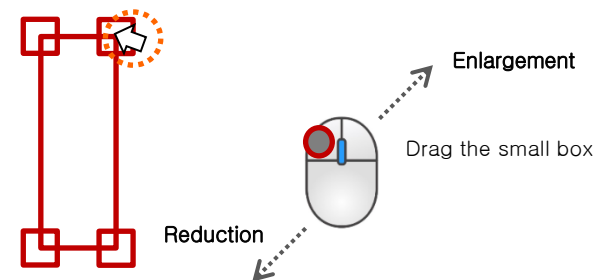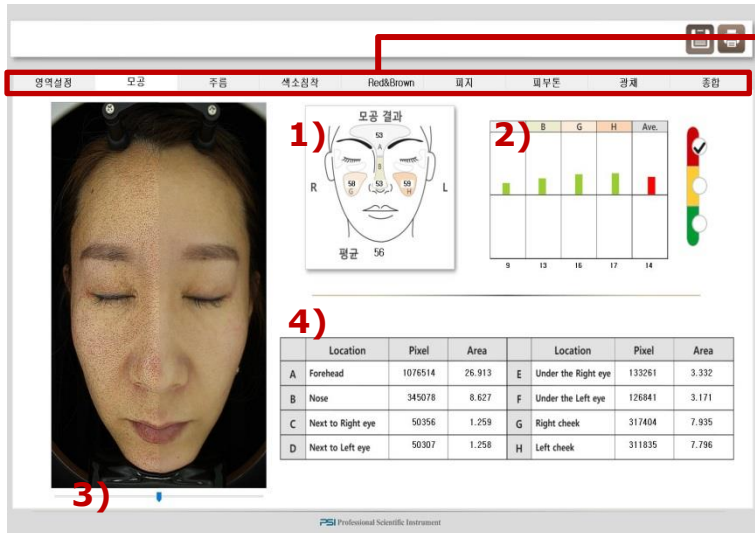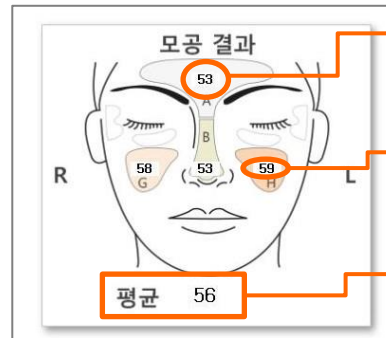
③ **Press the 'Analyze' button.**

◎ STEP 4. Result of analysis _ Pore ◎

It is switch the result page to click the skin problems button as like pore, wrinkles, pigmentation, red & brown spots, sebum, skin tone, radiant, and etc.
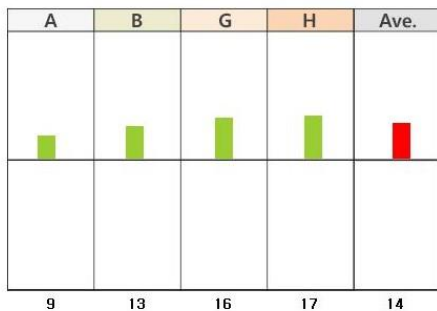
1) Result of analysis by area

The '53%' has mean is the result of pores in A area. (As an assume the total area of 'A' is 100%.)

The '53%' has mean is the result of pores in A area. (As an assume the total area of 'H' is 100%.)

The '56%' has mean is the average result of pores in total from "A","B","G","H".

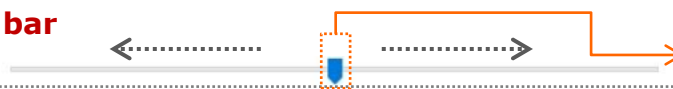## 2) Graph of result by area(comparison with an average of group of age.)

This graph shows the level of customer's value which compared to group of same age.

Through "A" area, the result is 9% worse than the result of average by age group. If the result is -5%, that is 5% better than the result of average by age group.

Through "Ave", the total result of pore is 14% worse than the result of average by age group.

The high value means 'the result of pore is bad'(Red) by result of age group, The low value means 'the result of pore is good'(Green) by result of age group.
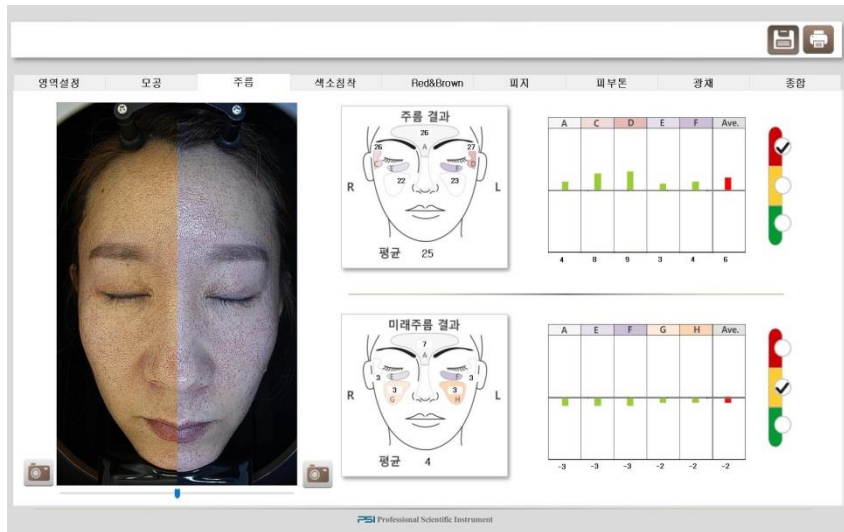
3) Skin problems checking bar

It is useful to check skin problem with drag a bar.

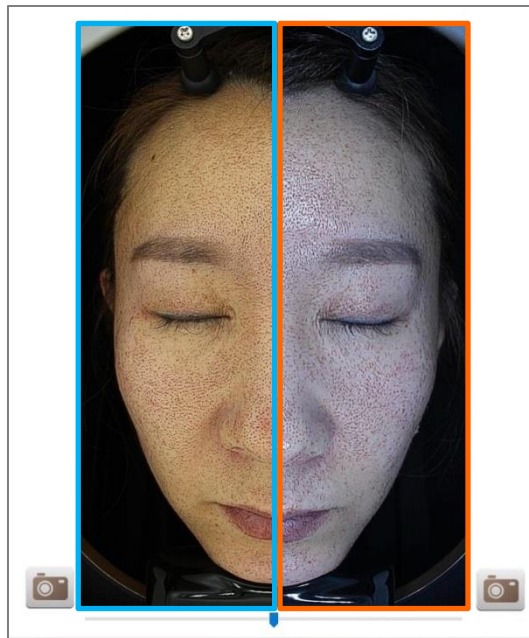## 4) A number of pixels of total analysis part and an area

By set an area, the pixel and area of the analyzed area is displayed as a Cm²

What is Hidden Wrinkles?

The hidden wrinkles is observed by the specular light made by the maximized reflection of light. It is possible to check an invisible pores and wrinkles by normal light. It is possible to predict a hidden wrinkles through the difference between a pores & wrinkles found in specular light and a pore & wrinkles found in normal light.
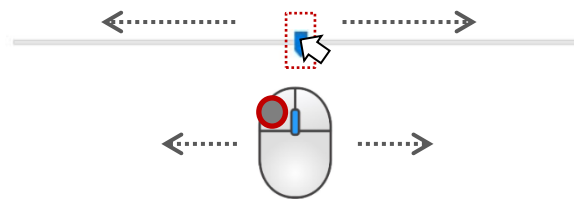

The image in the blue box is the analyzed image for the pores and the wrinkles by normal light source.

 - The analyzed result of the pores and the wrinkles by normal light source is the current pores and wrinkles.

The image in the orange box is the analyzed image for the pores and the wrinkles by specular light source.

 - The analyzed result of the pores and the wrinkles by specular light source is the hidden pores and wrinkles.
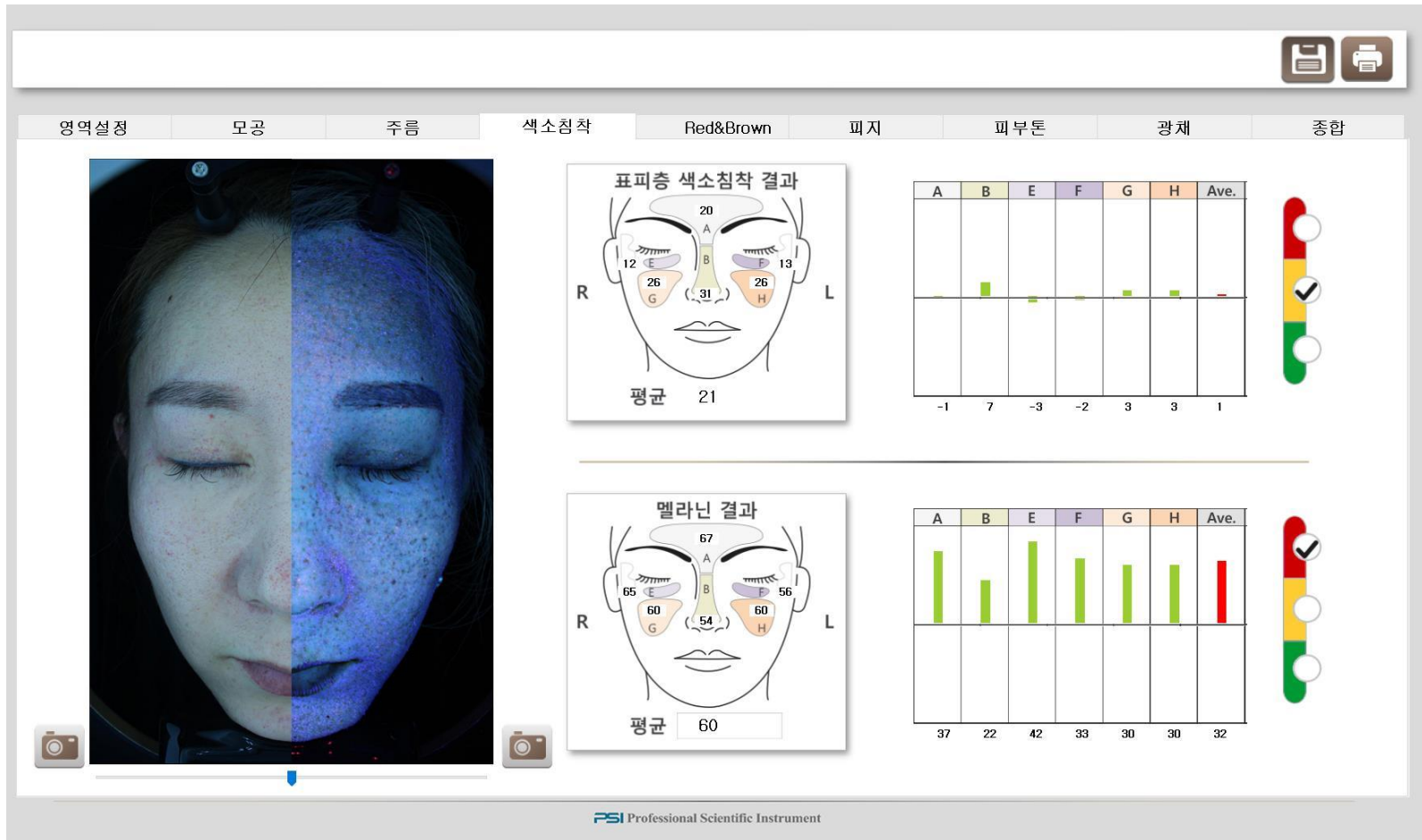
When you drag that point to left, you can see the more images shoot by specular light source.
When you drag the point to right, you can see the more images shoot by normal light source.

it is switch to click the camera button the analyzed image to original image.

Result of pigmentation : It is include the result of red and brown spots by Polarized light.

Result of melanin : It is possible to analyze the melanin as like a dark spots by UV light.
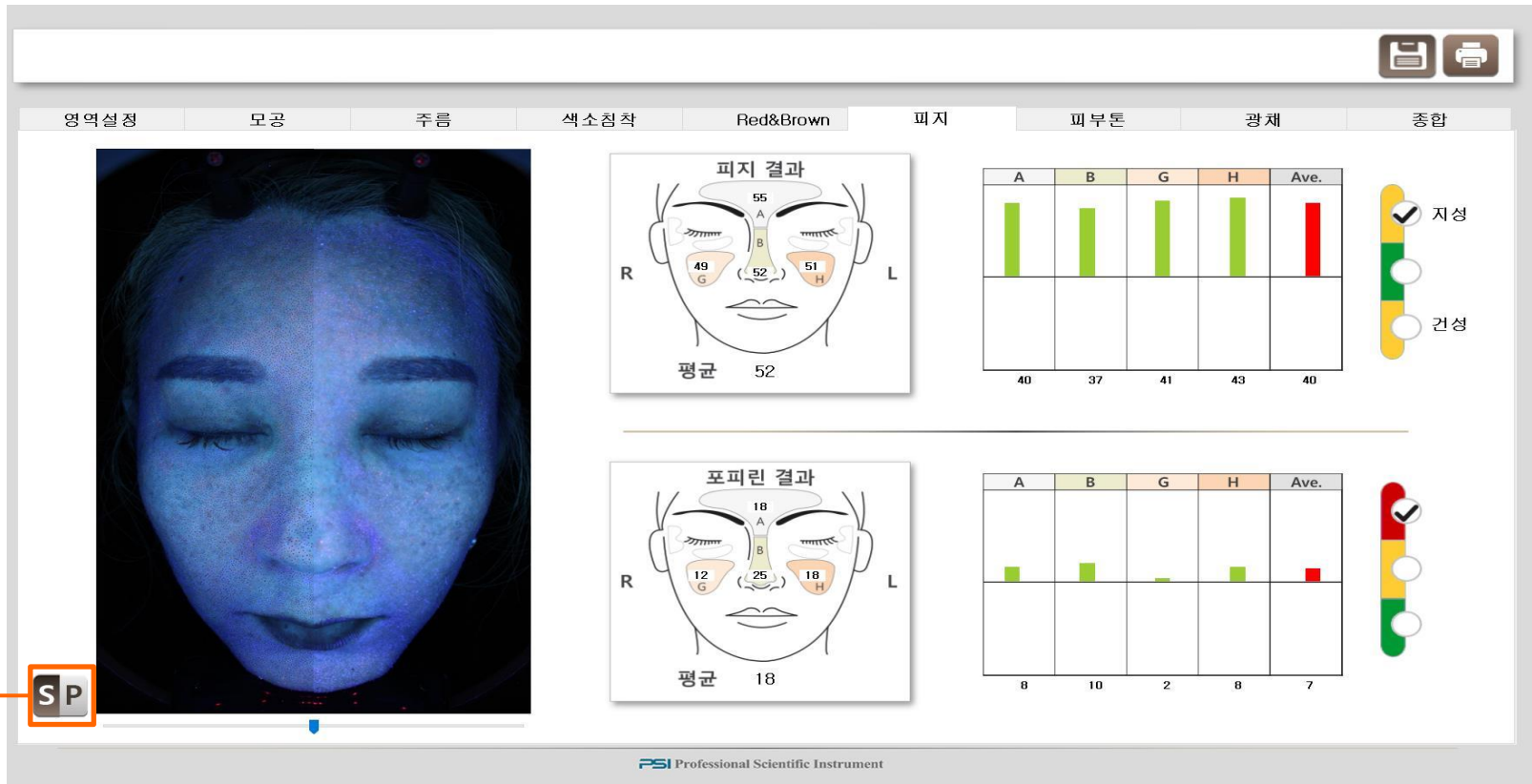
The result of pigmentation is divided into the result of red and the result of brown spots.

R **B** **: R is for Red, B is Brown spots.**

- **Result of sebum :** The sebum result has mean is percentage of area occupied by the sebum.

- **Result of porphyrin:** The porphyrin result has mean is percentage of area occupied by the porphyrin from the area occupied by the sebum.

$$* \text{ Result of porphyrin(\%) } = \frac{\text{Area of porphyrin}}{\text{Total area(porphyrin + sebum)}} \times 100$$

S P : Please click to change the images. S is for sebum, P is for porphyrin.

◎ STEP 4. Result of analysis _ Skin tone ◎

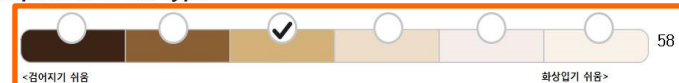**Graph of skin tone:** Unlike other results, Higher values mean 'skin is bright'. A low value means 'skin is dark'. Therefore, the graph is reversed.

Graph of dark circle : The dark circle value is presented by different skin tone value of both cheek and skin tone value of under the eyes.

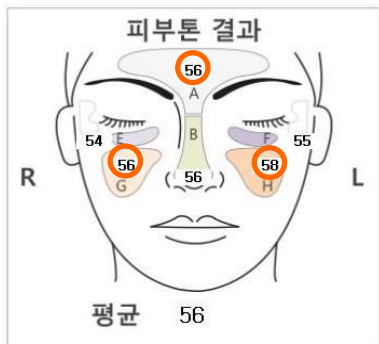(average of the both cheek – average of both under the eyes)

fine | normal | careful | serious

Graph of Fitzpatrick's Skin type:

It is possible to differentiate the brightness of the skin according to the light sensitivity.– When the light is exposed, it distinguishes between the type of tanning and the type of blushing.

The sensitivity to UV B is high

You should choose to base on the PA when you buy a sunscreen.

The sensitivity to UV B is high

You should choose to base on the PA when you buy a sunscreen.

Consult to result of skin tone :

the low value means 'skin tone is darker than average of age group', the high value means ' skin tone is brighten than average of age group' from forehead(A), Both of cheek (G, H). If a customer has different result value 3 or more between forehead and both of cheek, a customer face may look mottled. You can consult that the customer should take a skin tone treatment this time. Especially, the skin problems such as wrinkles, pigmentation, etc. make a skin tone to dark.

Graph of radiant:

Higher value means 'radiant is good'(Green). A low value means 'radiant is bad'(Red). Therefore, this is the opposite of other graphs such as pore, wrinkles, pigmentation etc..

Result of area of radiant : By specular light The radiation value is based on the phenomenon that light is horizontally polarized on a smooth surface. The more the smooth surface area of face, the higher the radiant value. And the more the curvature surface area of face, the lower the radiant value. In the case of oily skin, the curvature of the skin surface of both cheeks is so severe that the brightness is lowered.

(If the left and right symmetry of the face does not match well at the time of shooting, the difference between the values of both cheeks becomes bigger, so be careful when shooting.)

Result of radiant : The radiant result is displayed the average of entire RGB value of the analysis area as like skin tone result. The high value means 'There is a lot of radiant'. In other word, The higher the value means the smoother your skin surface.

◎ STEP 4. Result of analysis _ Total ◎

Sensitive :

This graphs are based on the maximum value of the red and porphyrin results in the analysis, the results were divided into five levels.

Graph of age/skin tone :

The results of skin problems related to aging and skin color are shown into five levels. The green of the graph means there is few of skin problems.

Graph of skin type :

One graph at left side is for the amount of sebum on the U zone . The other graph at bottom side is for the amount of sebum on the T zone. Through both graphs, the red dot is placed to customer's skin type.
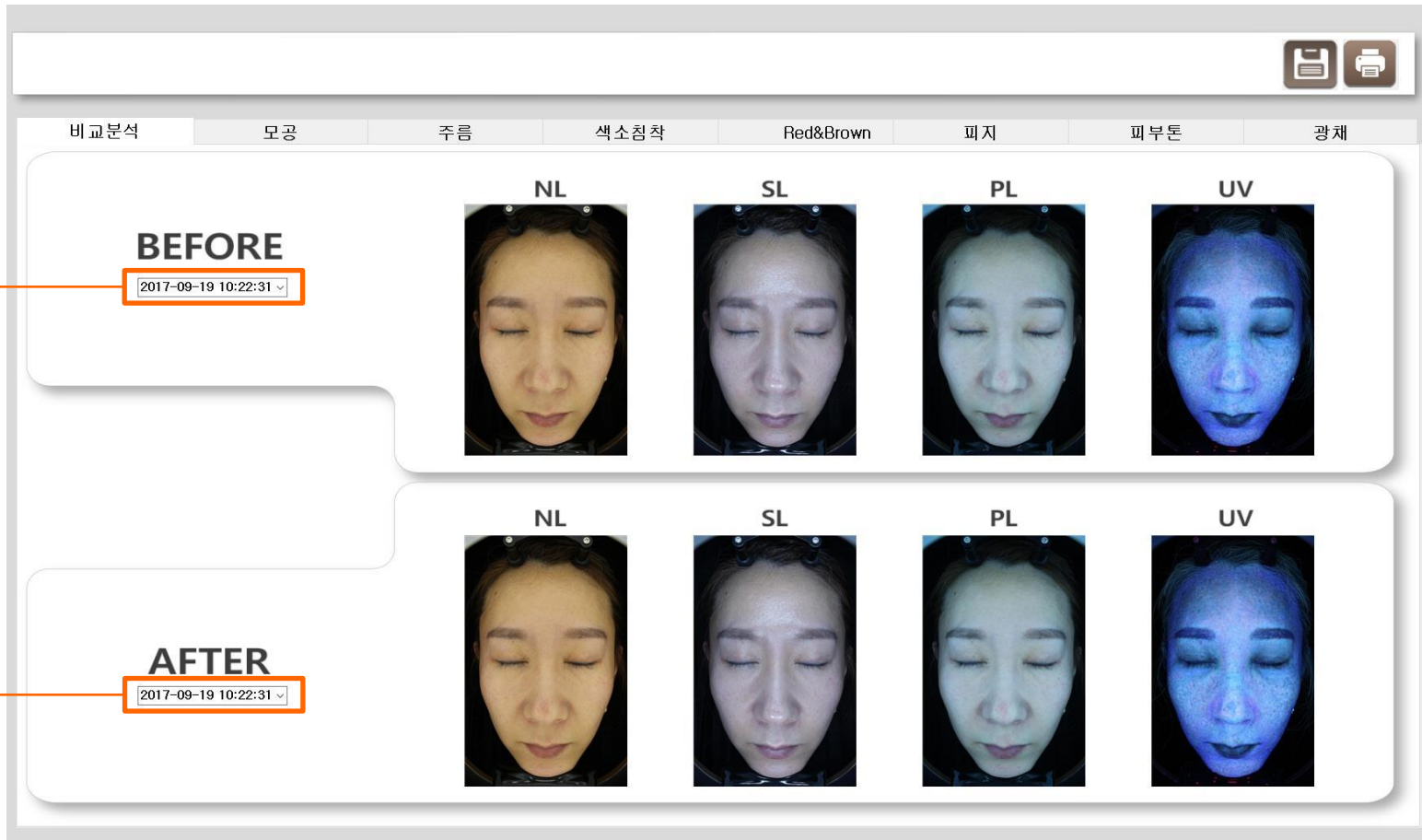
Graph of skin problems :

If the red dot is placed out side, that mean is 'There is many skin problems. So, you need to treatment'. If the red dot is placed inside, that mean is 'There is few of skin problems. So, your skin condition is good for now.'
The half-round at left side is for graph of aging, the other half-round at right side is for graph of skin tone. And there is total result of skin problems at bottom side.

Images of skin problems:

It is possible to switch the result page when you click the image. For example, if you click the R&B image, it will be switch to Red & Brown result page.
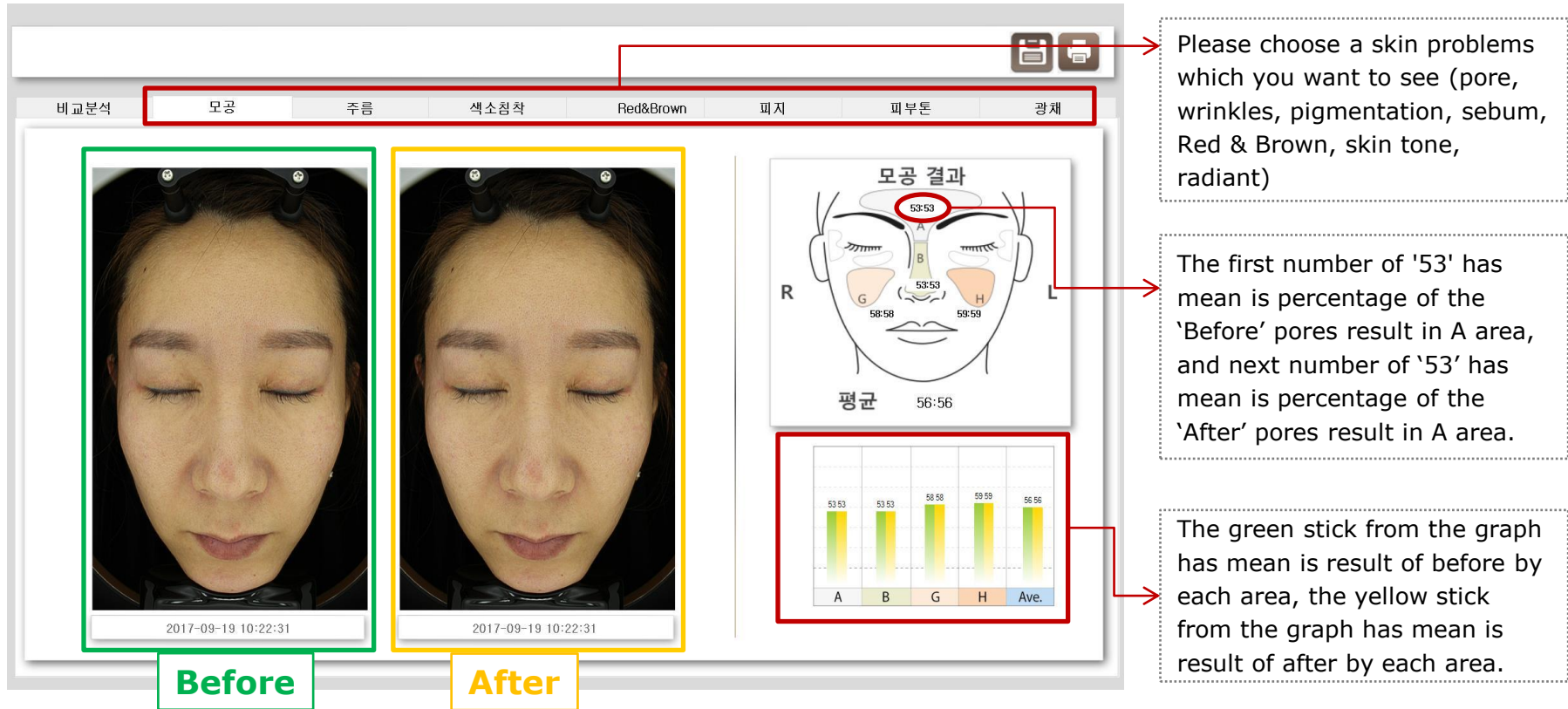
Comparison analysis (choose the two different date)

Choose the two different date for comparison analysis. It is possible to compare before/after images when the all of images are changed.

◎ STEP 5. Comparison analysis _ pore ◎

➢ **It is possible to compare the different date of analyzed result**. **Usually, it is useful to compare before/after result after a customer get a treatment.**

➢ **It is use to compare the results which one of customer takes a pictures in different day.**

Before

After

Please choose a skin problems which you want to see (pore, wrinkles, pigmentation, sebum, Red & Brown, skin tone, radiant)

The first number of '53' has mean is percentage of the 'Before' pores result in A area, and next number of '53' has mean is percentage of the 'After' pores result in A area.

The green stick from the graph has mean is result of before by each area, the yellow stick from the graph has mean is result of after by each area.

◆ **To compare Before / After images and date is useful to consult the effect of treatment and care systems.**

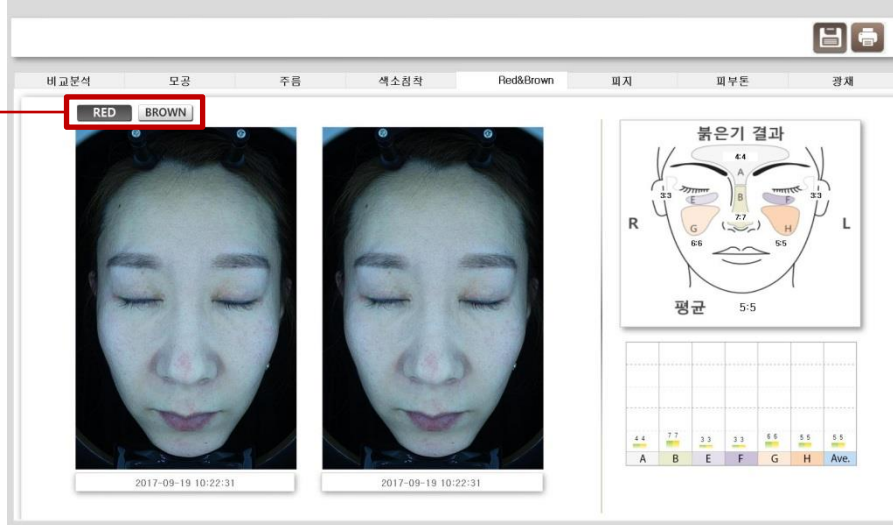◆ **The comparison analysis is useful to check a reproducibility of data.**

NL is for wrinkles result, **SL** is for hidden wrinkles result.

PL is for pigmentation, **UV** is for melanin.

RED is for red spots result, **BROWN** is for brown spots result.

AREA is for area of radiant, **RGB** is for radiant result.