

Color Slider



The top command on the third tab is the RGB Color Slider.

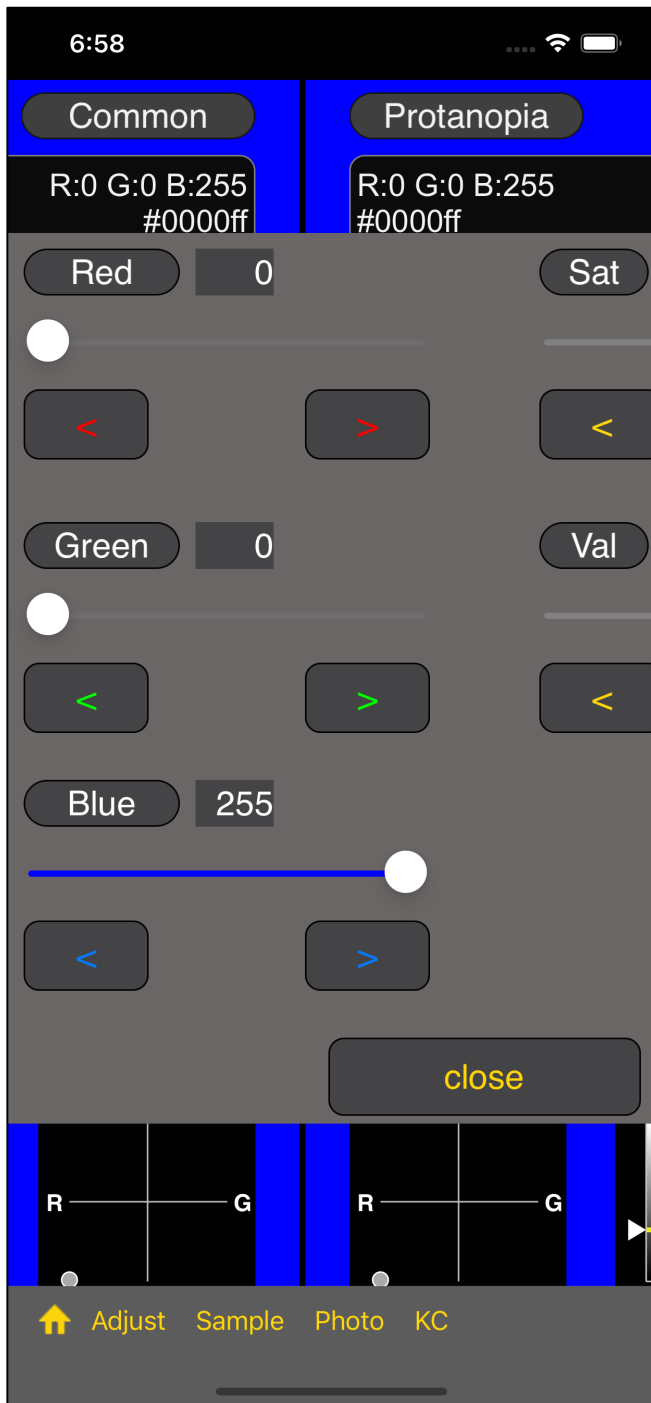
There are two types: one for RGB and one for HSV.

The LMS Conversion method can also be converted during execution.
(But HSV Color Sliders are not available.)



The color slider looks like this.

When you press the "Adjust" button on the toolbar, you will see a slider view like the one below.



- movable
- It is able to operate without leaving it out.
- Use the "close" button to turn it off.
- Also "Long Touch" is able to turn it off.

This slider view is made like this.

This RGB color slider allows you to specify the value as follows:

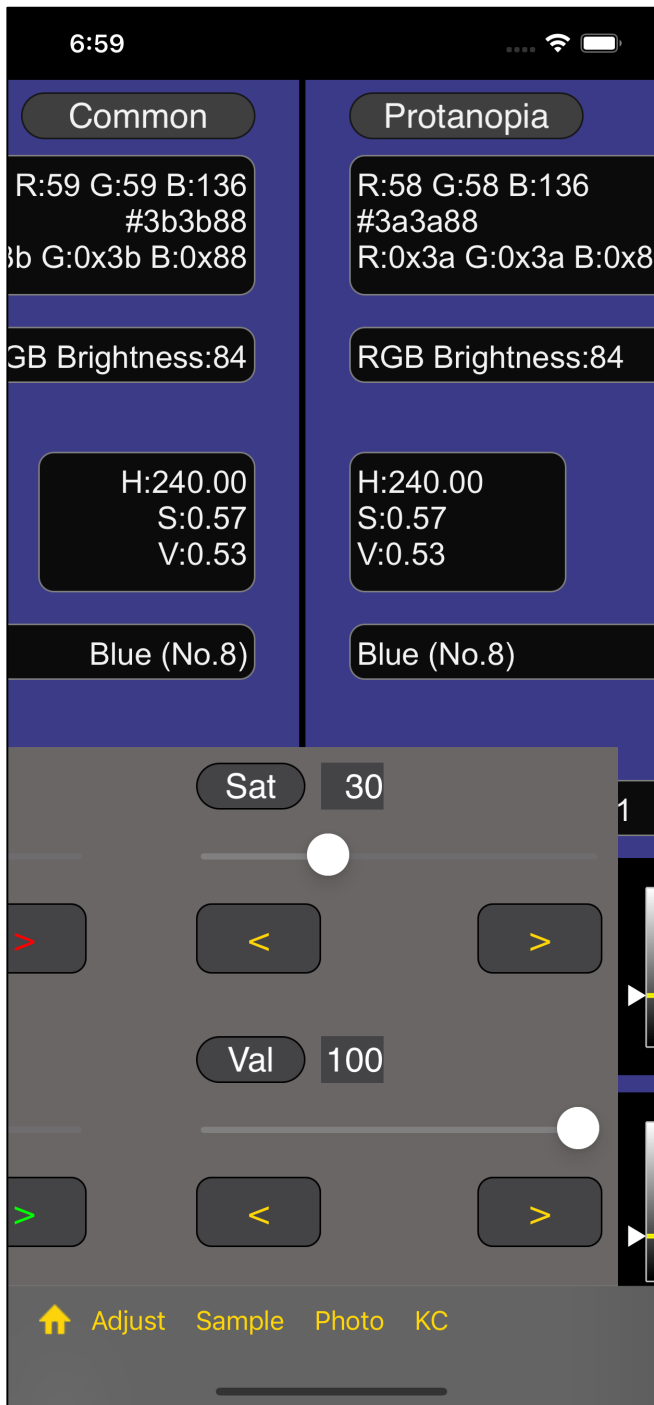
RGB value Red (0 ~ 255)

RGB value Green (0 ~ 255)

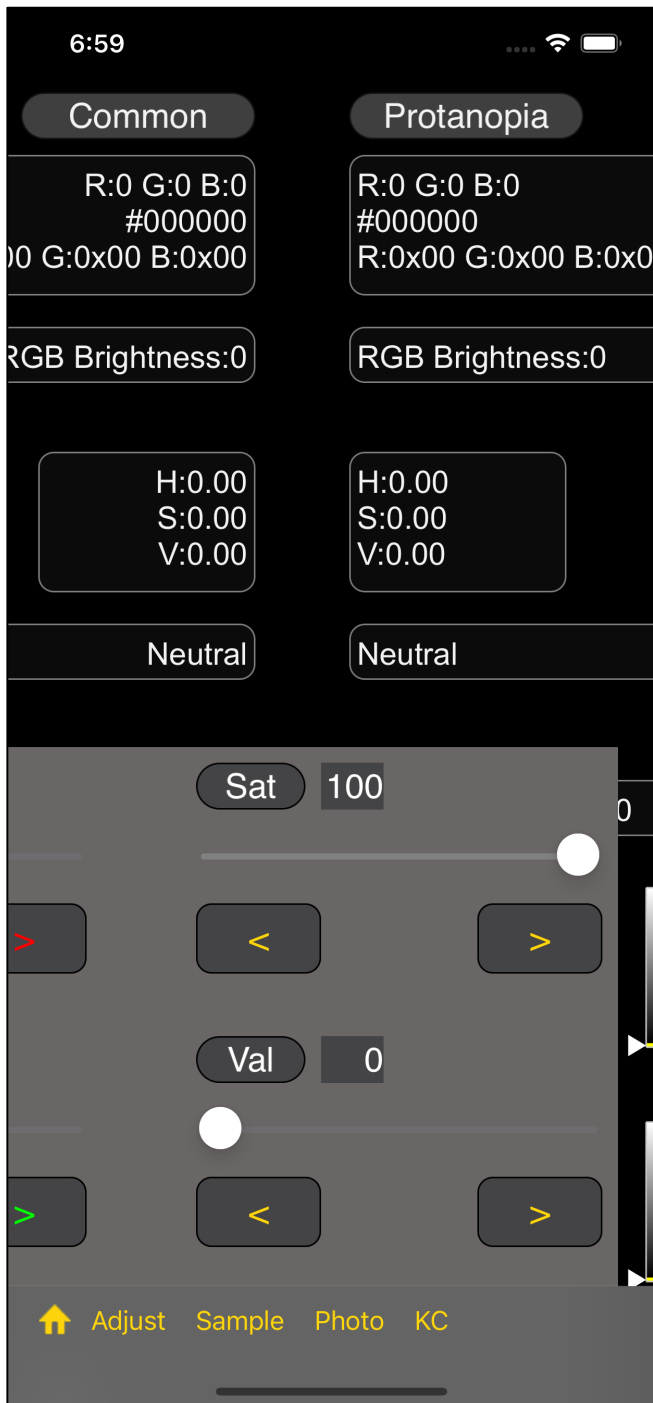
RGB value Blue (0 ~ 255)

Saturation (0 ~ 100)

Value (0 ~ 100)



For example, if you set the saturation to 30, the color will look like this.



Note that if you set such the Value to 0, the color will not appear.

If you don't see any color, it's likely that you have set the Value to 0.



In the HSV Color Slider, the sliders that appear with the "Adjust" button are as follows.

HSV H (0 ~ 359)

HSV S (0 ~ 100)

HSV V (0 ~ 100)

Saturation (0 ~ 100)

Value (0 ~ 100)

(If HSV H is 0, the color will be Red.)

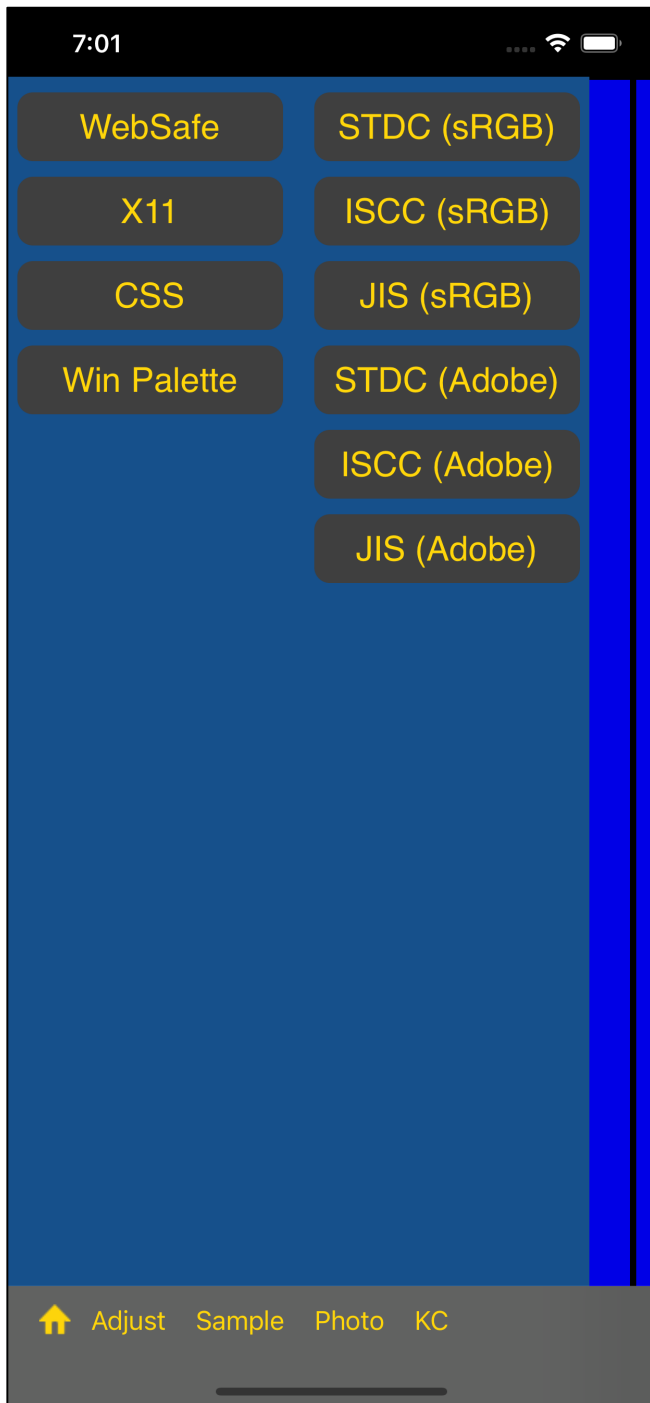
Other than this point, there is nothing different from the RGB color slider.

However, the HSV slider does not have the following features:

Reading from Photos

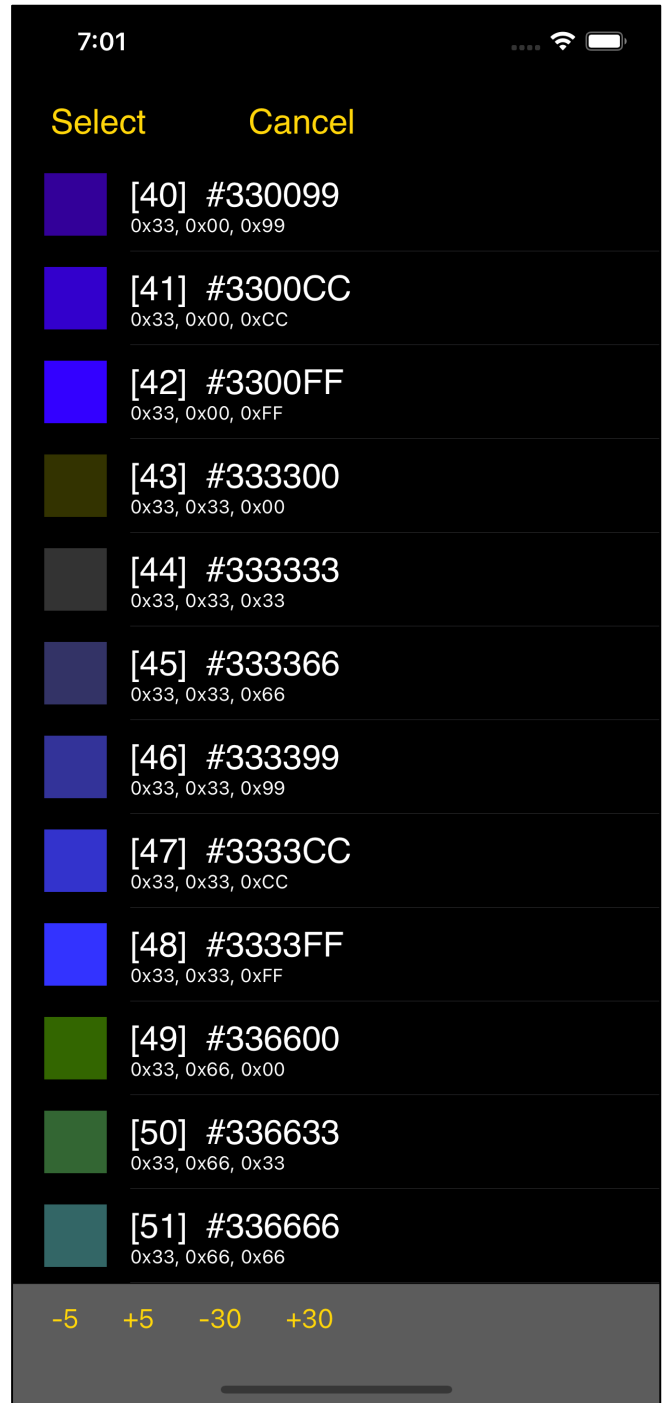
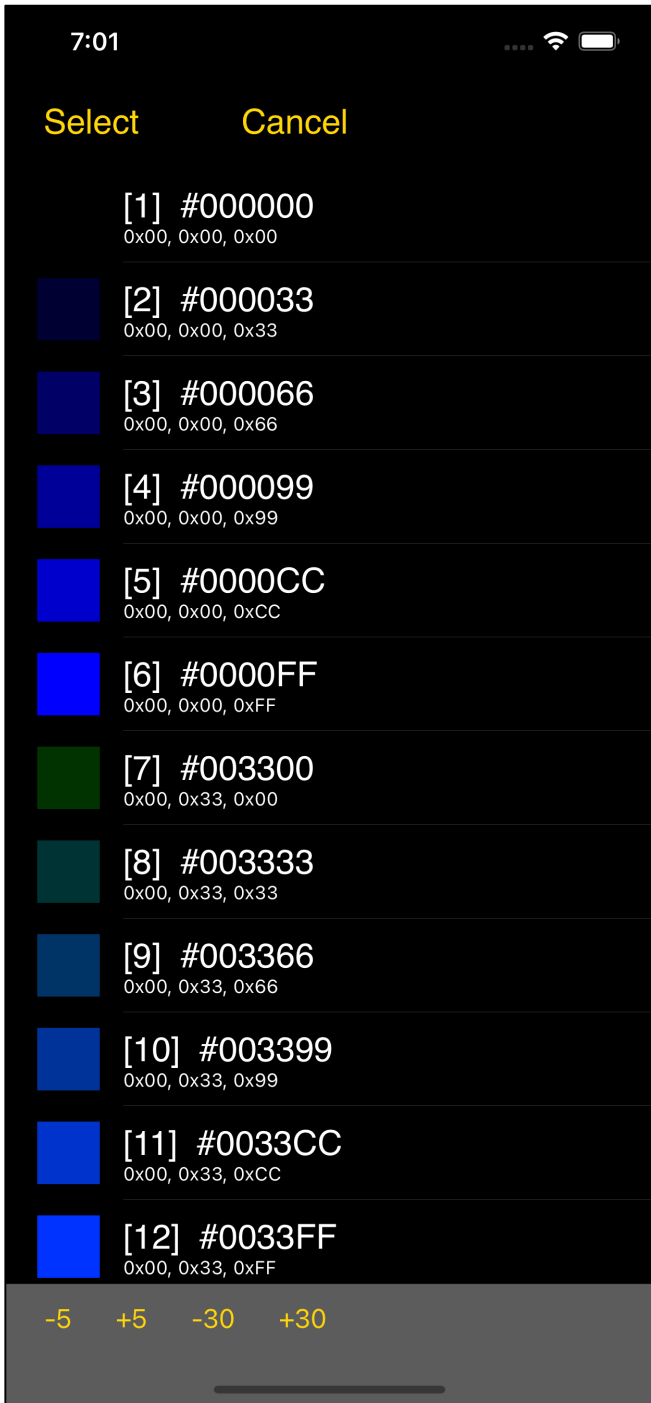
Changing the LMS Conversion method

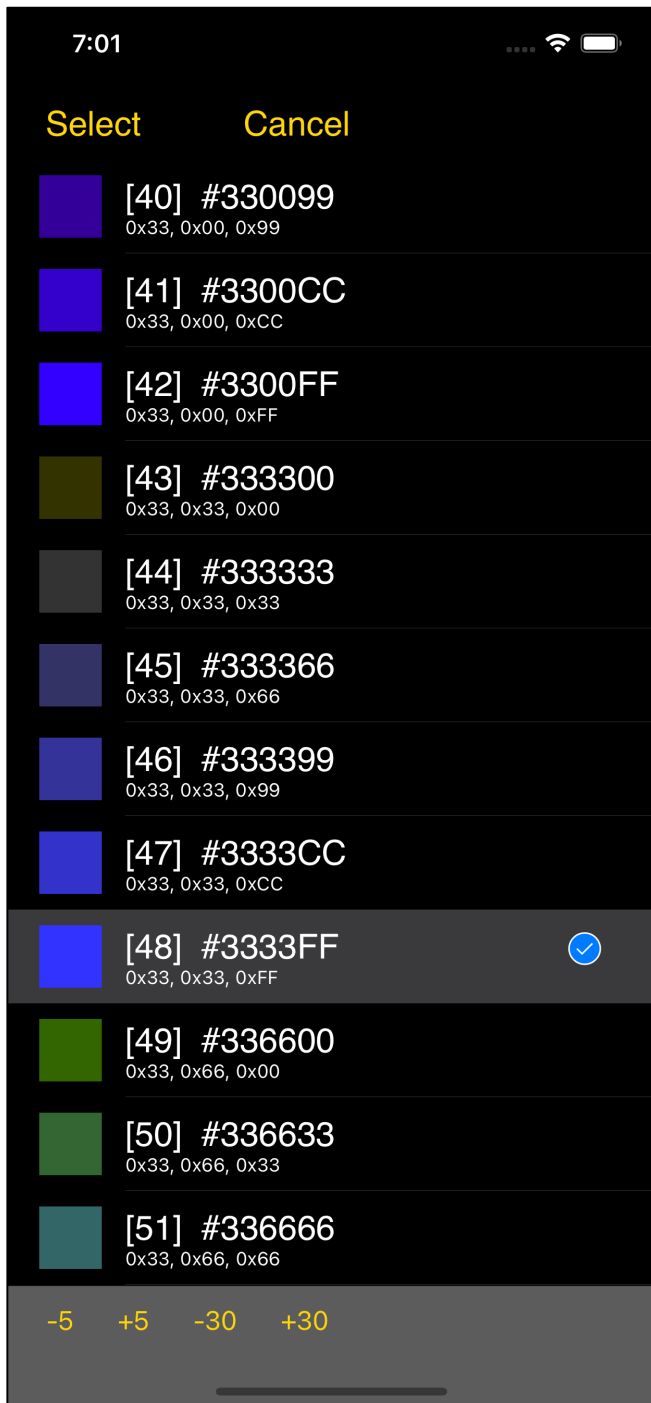
Sample command



Pressing the "Sample" button on the toolbar will bring up a menu view like this.

When you press the "WebSafe" button, the following table view will appear.

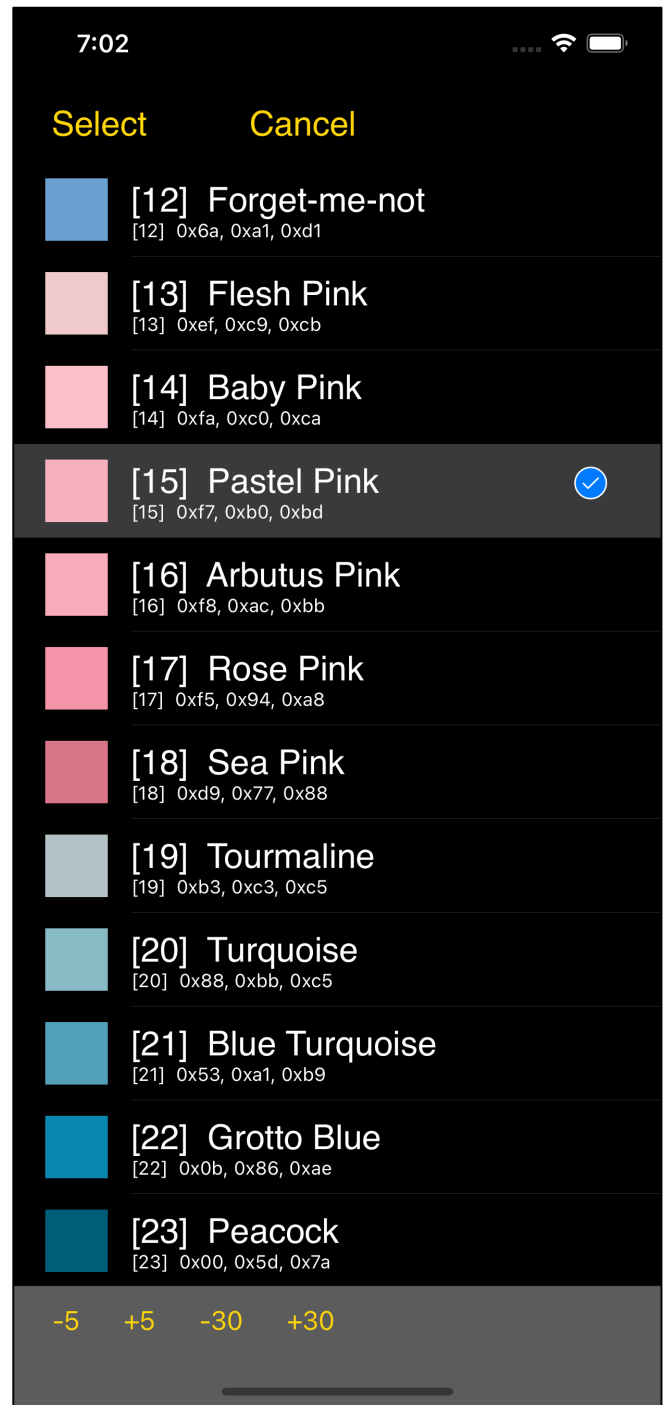
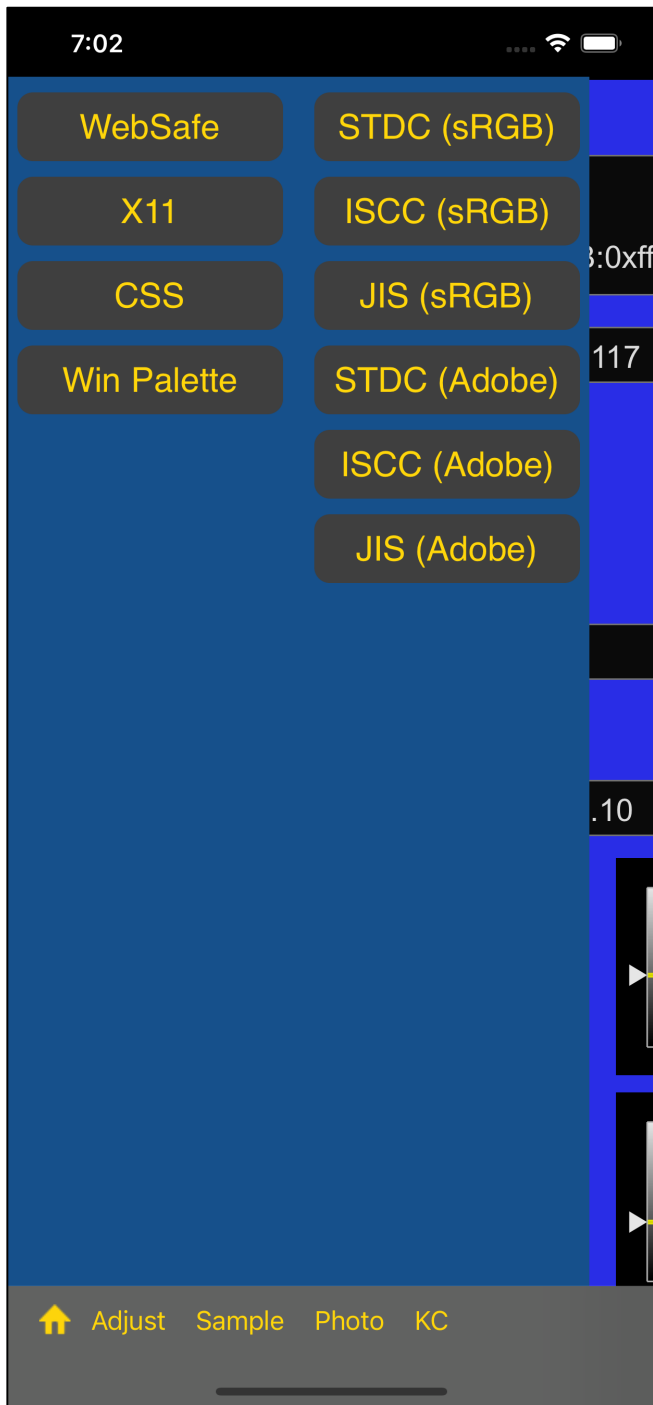




In this way, if you select [48] # 3333FF and press the [Select] button at the top, you will return to the slider with this color value.



In this way, the color values you selected in the table view will be displayed.



Press [STDC (sRGB)] at the top right and select [15] Pastel Pink to get the color below.



In landscape mode, it will look like this.

Common	Protanopia
R:247 G:176 B:189 #f7b0bd R:0xf7 G:0xb0 B:0xbd	R:185 G:185 B:189 #b9b9bd R:0xb9 G:0xb9 B:0xbd
RGB Brightness:204	RGB Brightness:186
H:349.01 S:0.29 V:0.97	H:240.00 S:0.02 V:0.74

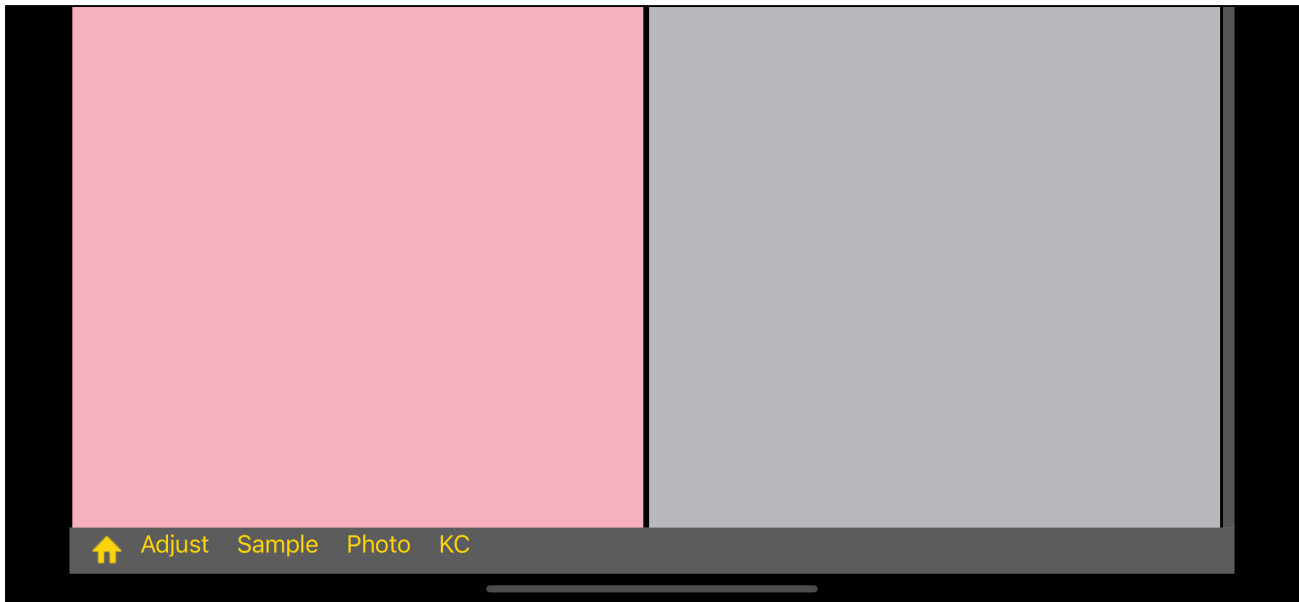
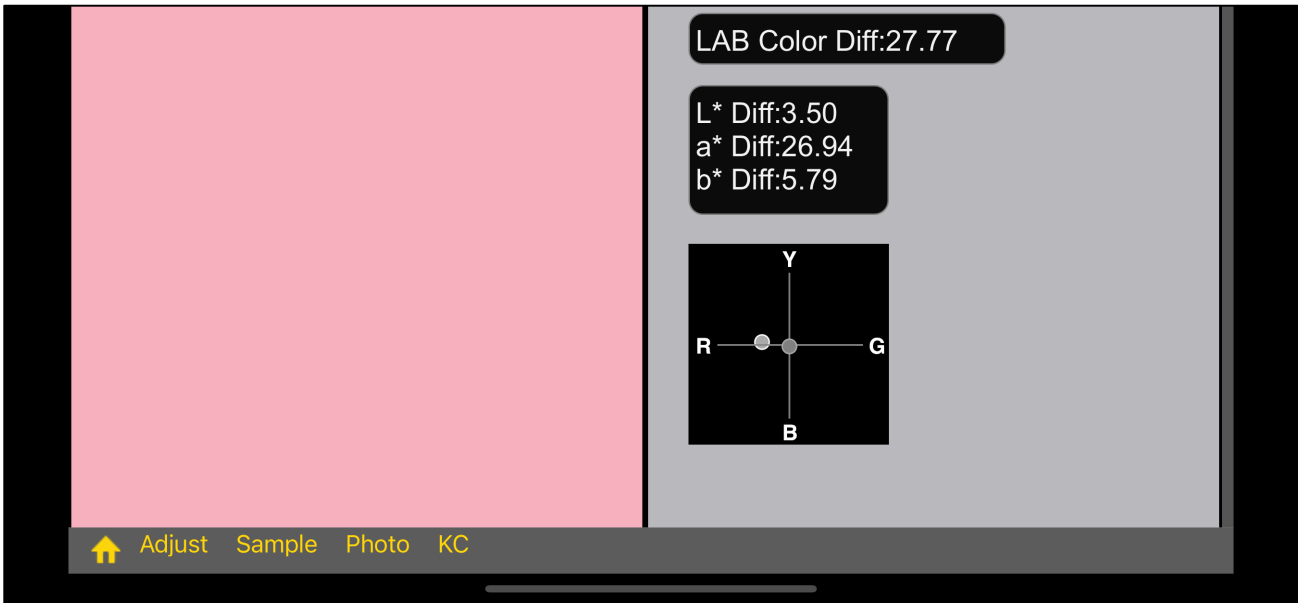
Adjust Sample Photo KC

Red (No.0)	Blue (No.8)
<p>YR Y GY R G RP CG P C PB B BC</p> <p>204 78.75</p>	<p>YR Y GY R G RP CG P C PB B BC</p> <p>186 75.26</p>
RGB Color Diff:62.65	

Adjust Sample Photo KC

<p>78.75</p> <p>L*:78.75 a*:27.69 b*:3.77</p>	<p>75.26</p> <p>L*:75.26 a*:0.75 b*:-2.02</p> <p>LAB Color Diff:27.77</p> <p>L* Diff:3.50 a* Diff:26.94</p>
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Adjust Sample Photo KC



The meanings of the values in each part are as follows.



[RGB values after calculation of Value and Saturation.]

[RGB Brightness value]

Calculated value of $(R + G + B) / 3$

[HSV value]

[Color name obtained from H of HSV value]

[Color difference using RGB value]

[HSV color angle diagram]

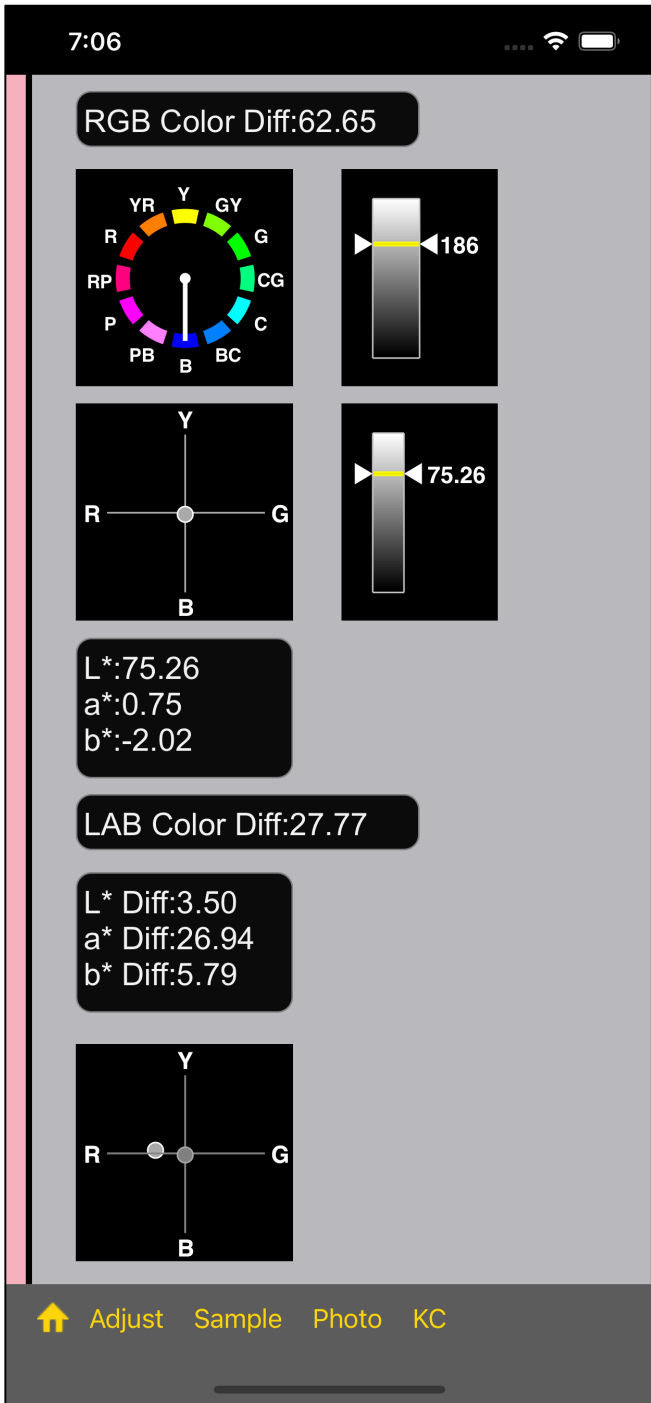
[RGB tone value]

(-70 ~ +70)

[L* a* b* Coordinate position diagram]

[Brightness of L* a* b*]

(L* value of L* a* b*)



[L* a* b* value]

[L* a* b* color difference]

[L*, a*, b* Each single unit difference]

L* - L*
a* - a*
b* - b*

(-70 ~ +70)

[L* a* b* Coordinate position diagram]

Thin ... [Common] position

Thick ... Position after LMS
Conversion

Attention.

In general, such is usually the case:

Red 0° is set at the top in the HSV hue circle.

However, such is usually the case about color vision-related matters:

Yellow 60° is set at the top.

This software is designed to be used in a color vision-related display format.

Also, in general, in the $L^* a^* b$ coordinate,

The orientation of the horizontal axis a^* is green (G) red (R).

this is the common case.

However, in order to match the color positioning of the HSV hue circle used for color vision-related,

The orientation of the horizontal axis a^* is red (R) green (G)".

such inverting is done in this software.

On the other hand

The orientation of vertical axis b^* is Yellow (Y) Blue (B).

this one is the same as the general LAB value display method, so it is not inverted.

For this reason, when compared to a general LAB value diagram, it looks like "left and right are flipped."

In the LAB diagram implemented by this software, the range of values that can be displayed for both the vertical axis b^* and the horizontal axis a^* is -70 to +70.

So,

Values less than -70 are placed at the -70 position.

Values greater than 70 are placed in the 70 position.

It is like this.

Therefore,

Value less than -70

Value greater than 70

if the actual value is such a value, the position in coordinates is inaccurate.

The '*' in $L^* a^* b^*$ is called a "star".

L^* ... el star ... value

a^* ... a star ... horizontal axis (component values of green (G) to red (R))

b^* ... b star ... vertical axis (component values of yellow (Y) to blue (B))

Each value of LAB has this meaning

In general, LAB values usually vary from program to program, and from software to software.

Assumed brightness, gamma value, RGB conversion method, etc.

This is because these values themselves and the calculation method are different.

The LAB value differs depending on the program and software used.

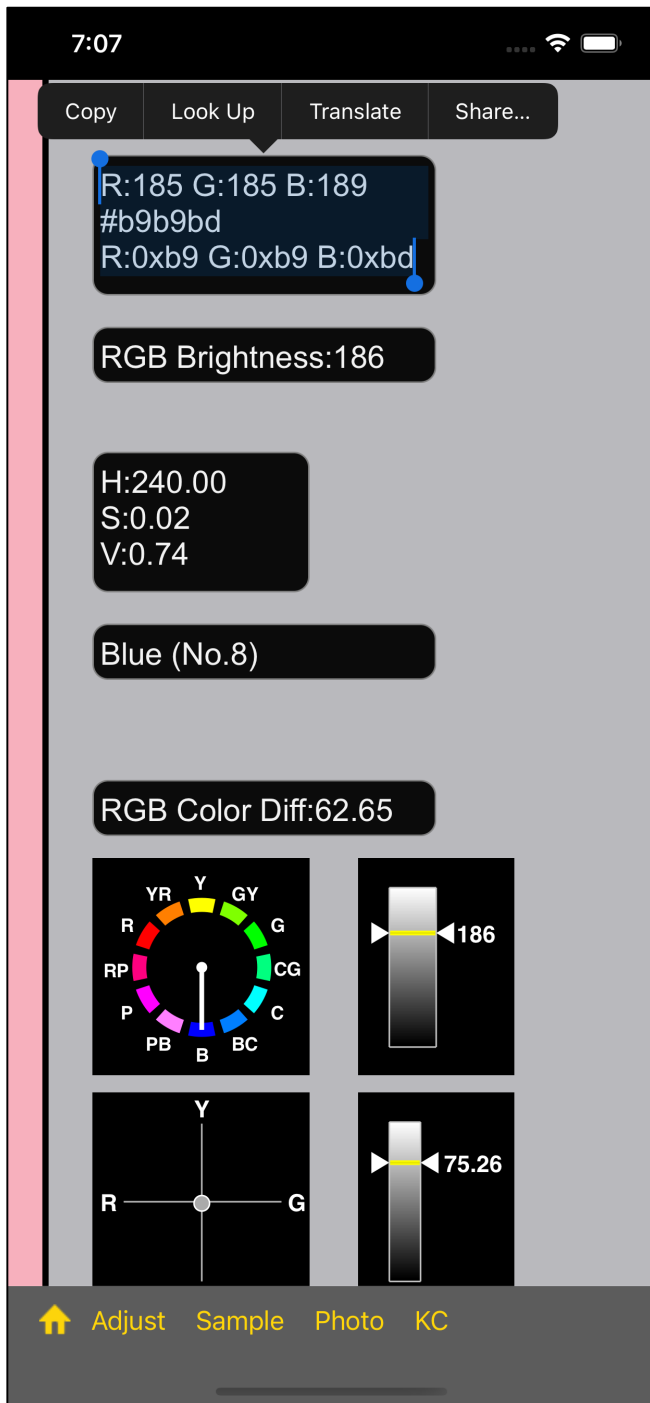
That may seem uneasy, but it's usually absolutely different.

About the text view displaying the values



The view displaying the value is implemented as a TextView.

If you scroll it down in any way, it will be equivalent to the text not being displayed.

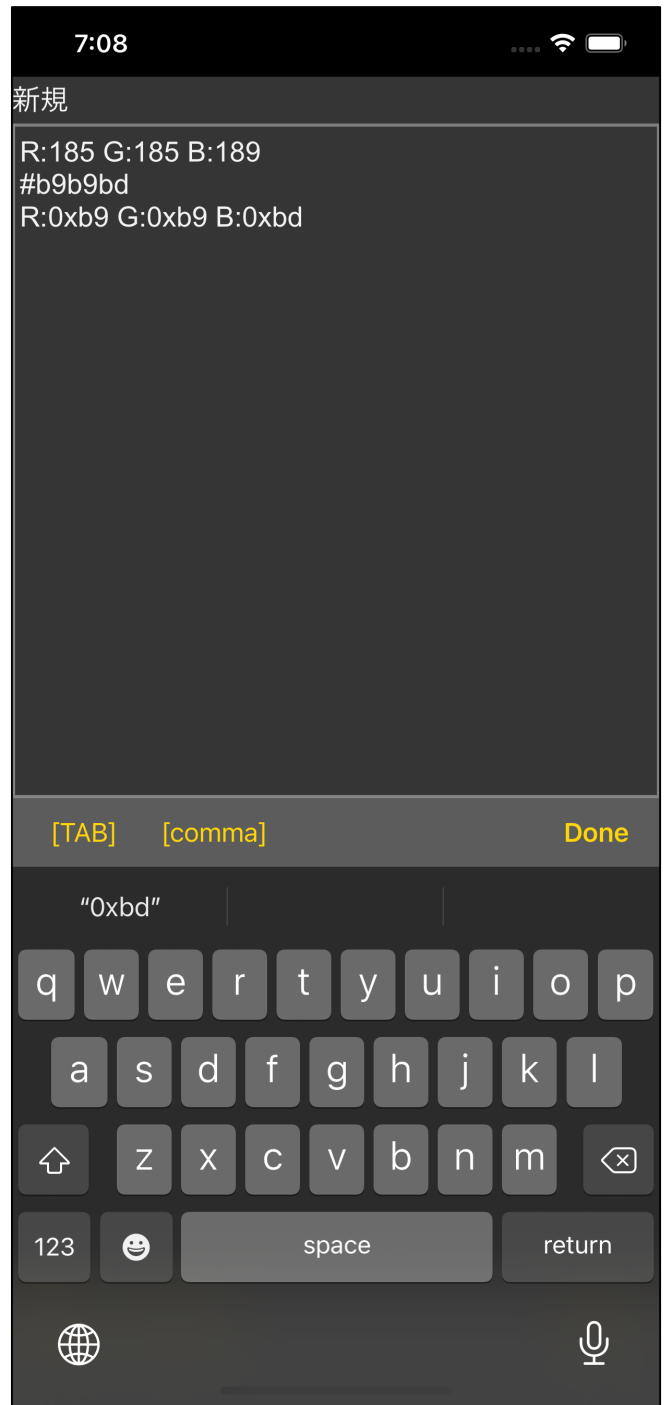
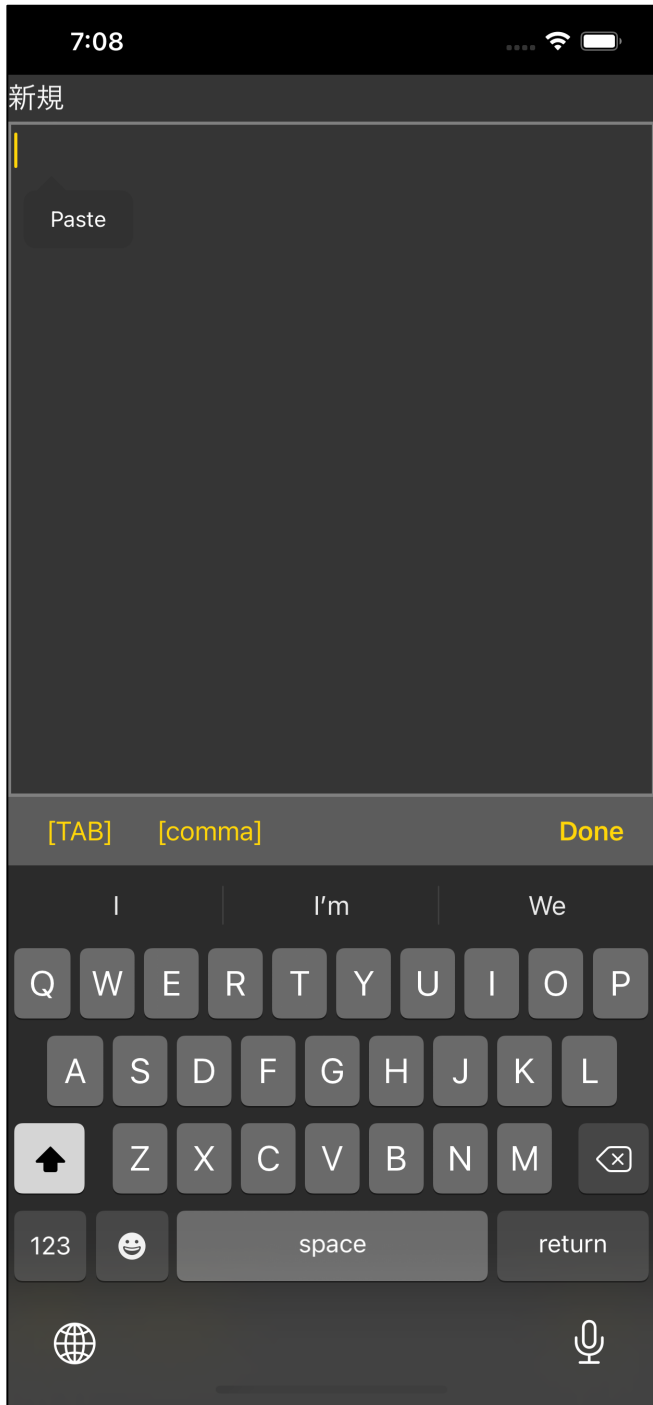


The view displaying the value is implemented as a TextView.

Therefore, you can copy the displayed text by selecting it as shown on the left.

This software (FM Panel D-15 Test) does not have the ability to handle text.

So, trying to paste it with another software, it looks like this:



About color difference

It's about the color difference.

As a rough measure,

RGB color difference... 5.0 or less

LAB color difference... 1.5 or less

if the color difference is such, it can be considered the same color.



As an example of what can be considered the same color, let's use this value as a reference.

7:10

Common

R:4 G:4 B:246
#0404f6
04 G:0x04 B:0xf6

GB Brightness:84

H:240.00
S:0.98
V:0.96

Blue (No.8)

Protanopia

R:0 G:2 B:246
#0002f6
R:0x00 G:0x02 B:0xf6

RGB Brightness:82

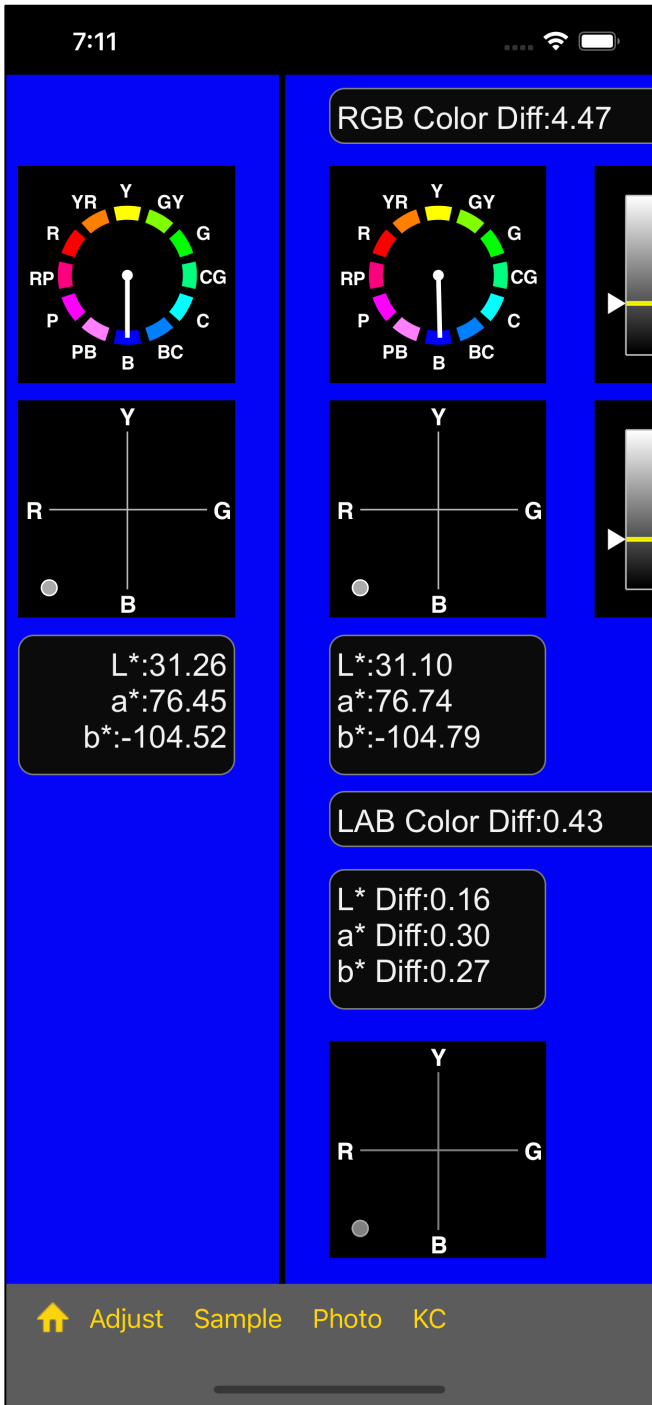
H:239.51
S:1.00
V:0.96

Blue (No.8)

RGB Color Diff:4.47

↑ Adjust Sample Photo KC

RGB color difference: 4.47



LAB color difference: 0.43

The displayed circle looks like a single circle.

Common (4, 4, 246) - Protanopia (0, 2, 246)

In the comparison of these two,

RGB color difference: 4.47

LAB color difference: 0.43

it is such a value:.

[Criteria to be considered the same color]

RGB color difference... 5.0 or less

LAB color difference... 1.5 or less

Since it is a smaller value than these,

Common (4, 4, 246) - Protanopia (0, 2, 246)

I think these two colors can be considered the same color.

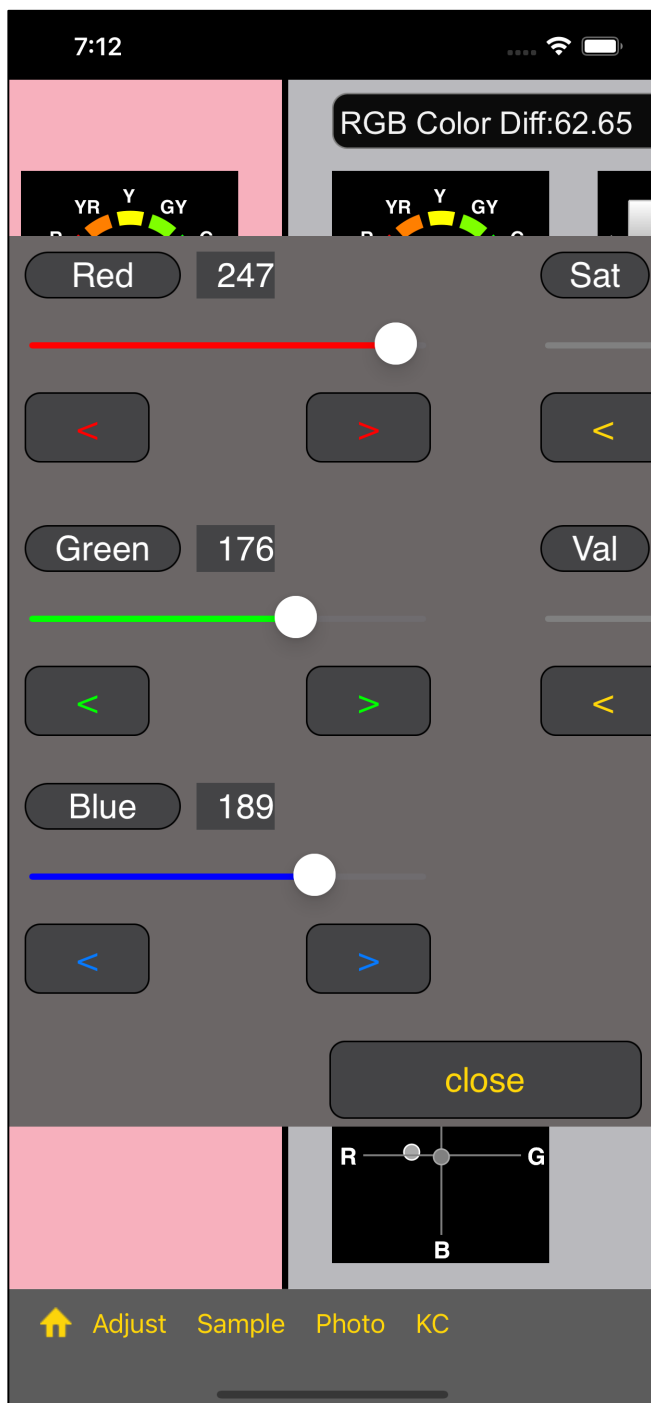
The next example is one that cannot be considered the same color.

[STDC (sRGB)] [15] Pastel Pink (247, 176, 189)

Take this as an example.

Common (247, 176, 189) - Protanopia (185, 185, 189)

It will be the color difference between these two.



In landscape orientation, the values are as follows.

RGB Color Diff: 62.65

Adjust Sample Photo KC

Detailed description: This screenshot shows a color calibration tool interface. On the left, a pink sample is shown. Two vertical sliders are positioned at 204 and 78.75. A color wheel is visible with a white needle pointing towards the pink region. On the right, a grey reference area shows the same color wheel and two sliders at 186 and 75.26. A navigation bar at the bottom contains a home icon and the text 'Adjust Sample Photo KC'.

LAB Color Diff: 27.77

L* Diff: 3.50
a* Diff: 26.94

Adjust Sample Photo KC

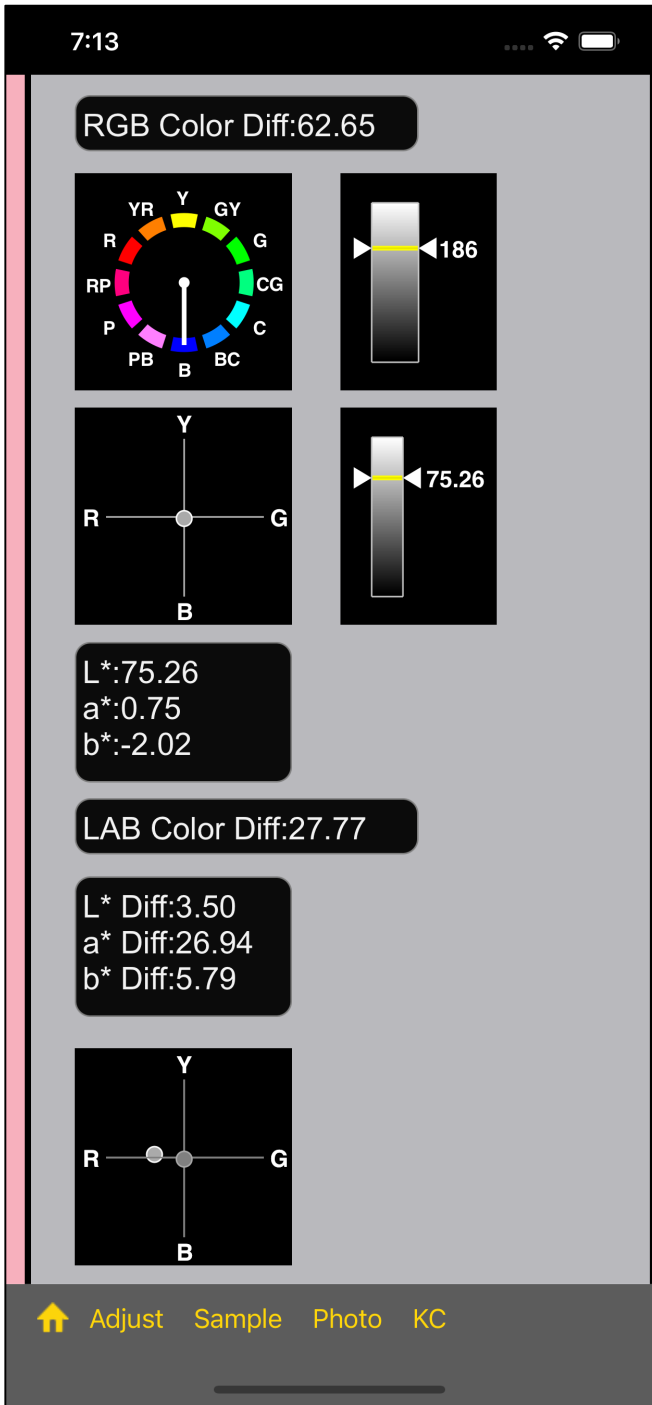
Detailed description: This screenshot shows the same interface as above, but with additional data. The LAB Color Diff is 27.77. Below the color wheel, a box displays the L*a*b* values for the pink sample: L*: 78.75, a*: 27.69, b*: 3.77. Another box shows the L*a*b* values for the grey reference: L*: 75.26, a*: 0.75, b*: -2.02. A third box shows the differences: L* Diff: 3.50, a* Diff: 26.94. The navigation bar at the bottom remains the same.

LAB Color Diff: 27.77

L* Diff: 3.50
a* Diff: 26.94
b* Diff: 5.79

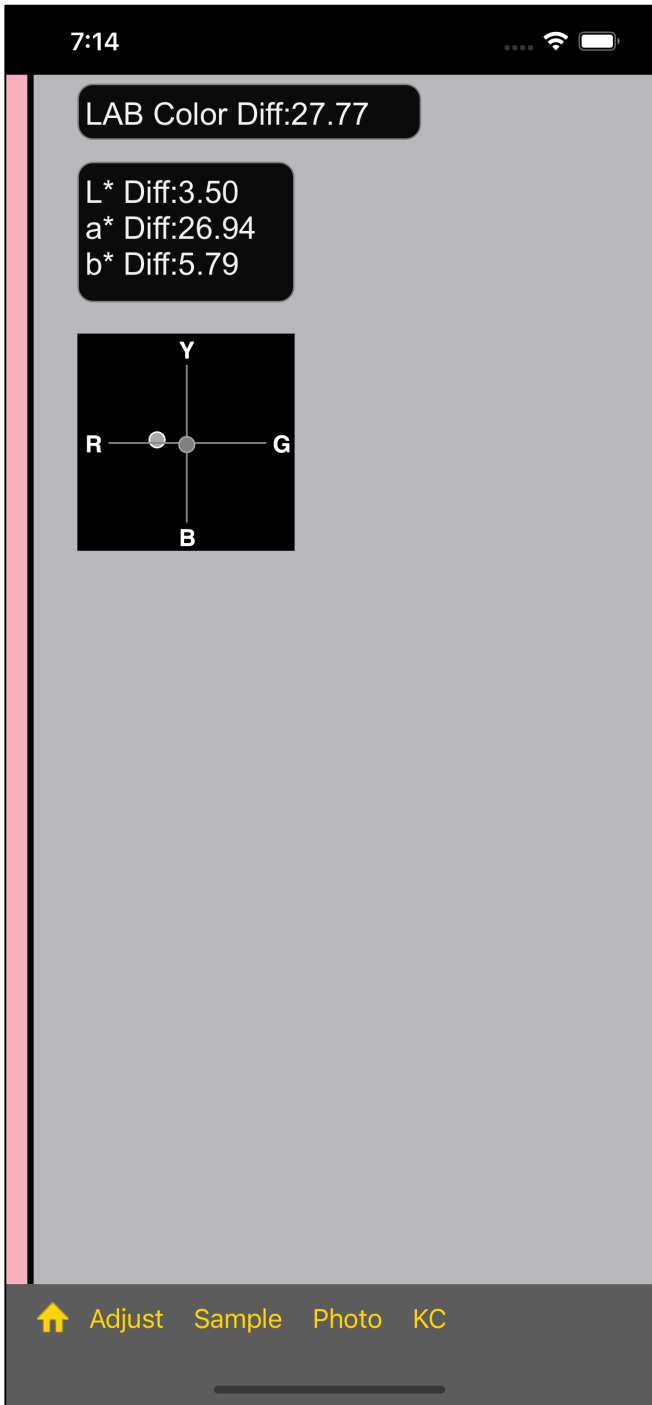
Adjust Sample Photo KC

Detailed description: This screenshot shows the same interface as above, but with a third box displaying the b* difference: b* Diff: 5.79. The navigation bar at the bottom remains the same.

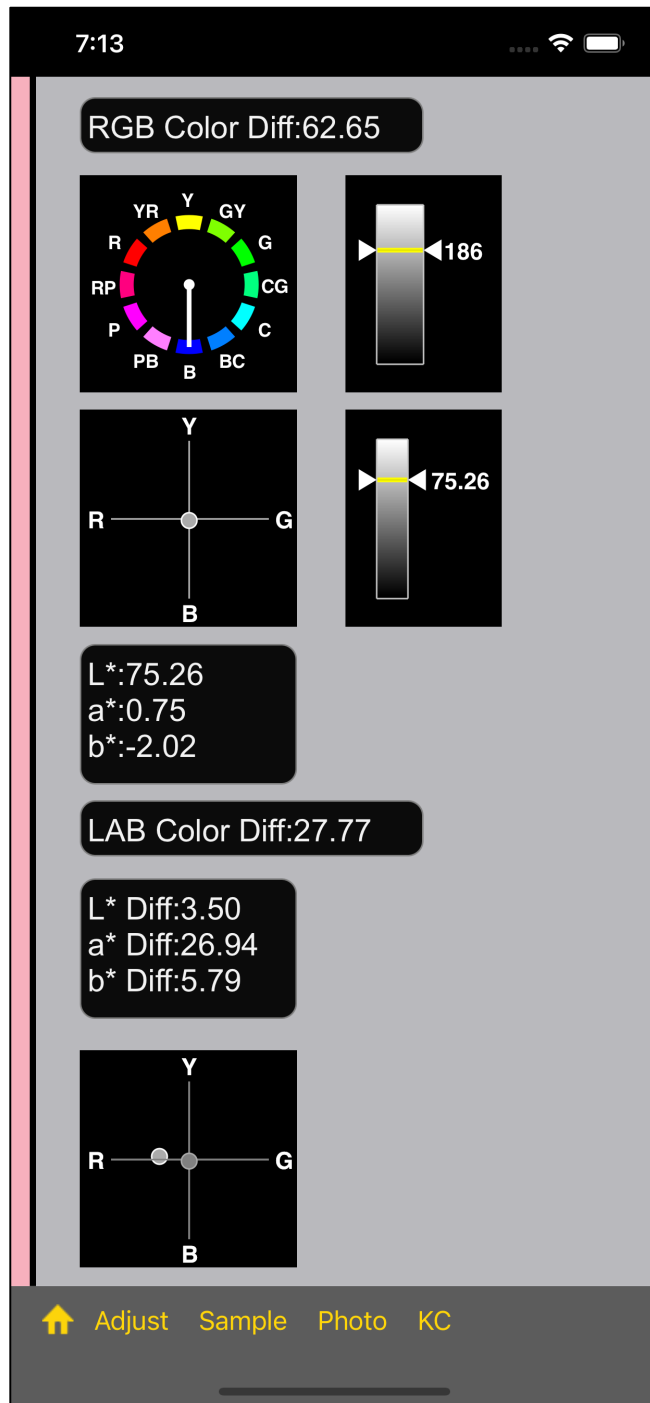


RGB color difference: 62.65

LAB color difference: 27.77



Clearly, the two circles are displayed.



LAB color difference

L* difference

a* difference

b* difference

LAB color difference

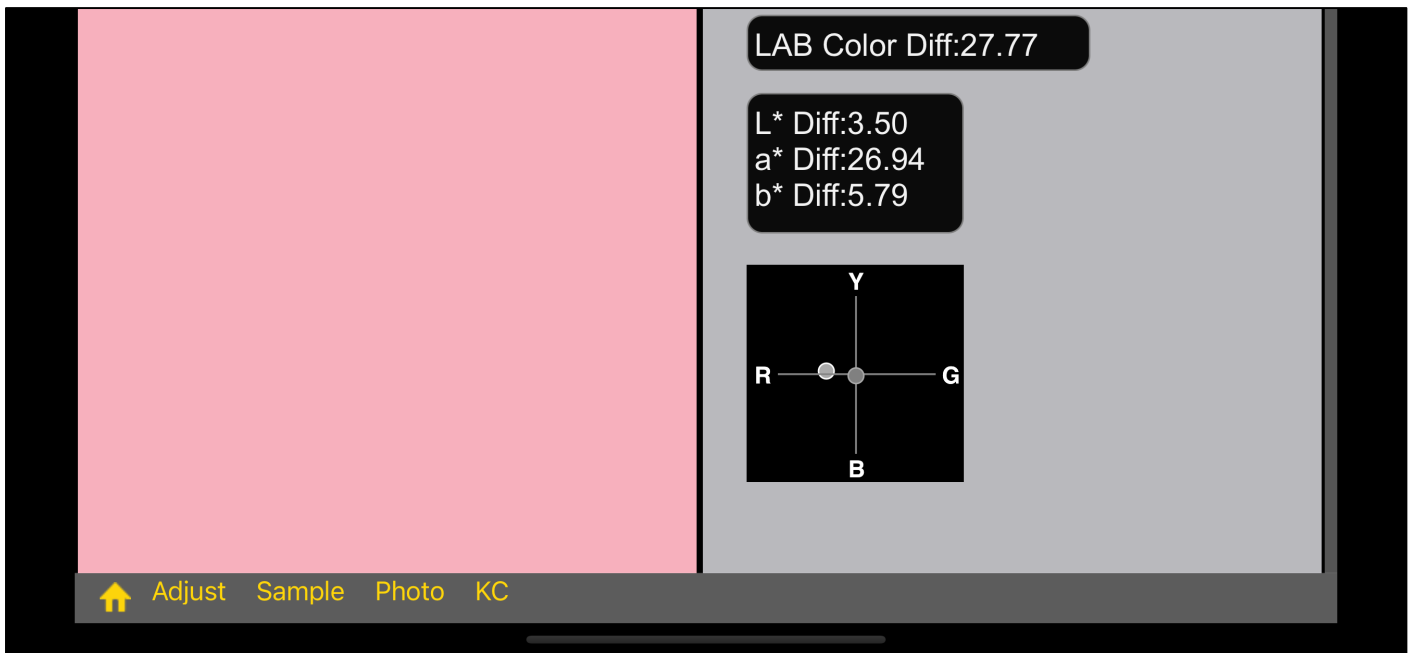
L* difference

a* difference

b* difference

Any one of these four is over 10.0.

If so, you can usually assume that it's a (completely) different color.



The diagram which displayed at the bottom on the side for Protanopia,
 (synthetic) L* a* b* Coordinate position diagram (-70 ~ +70)

Thin ...[Common] position

Thick ...Position after LMS Conversion

On this diagram

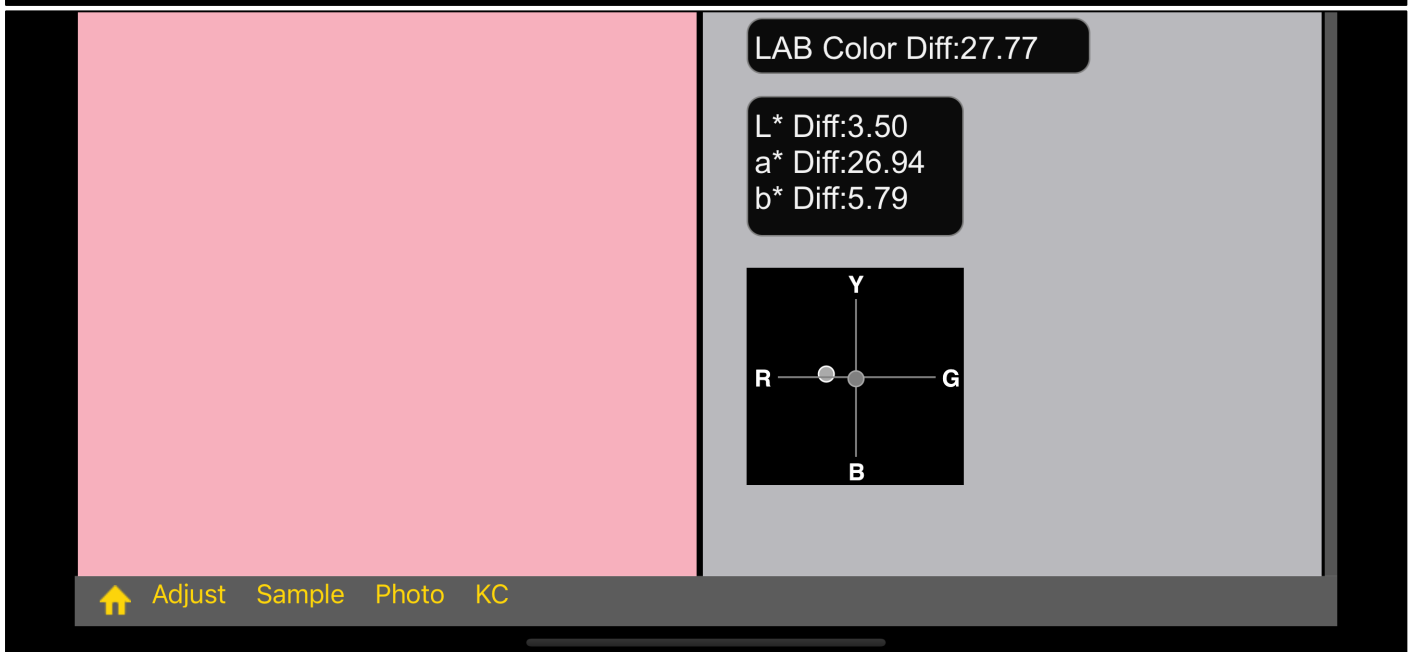
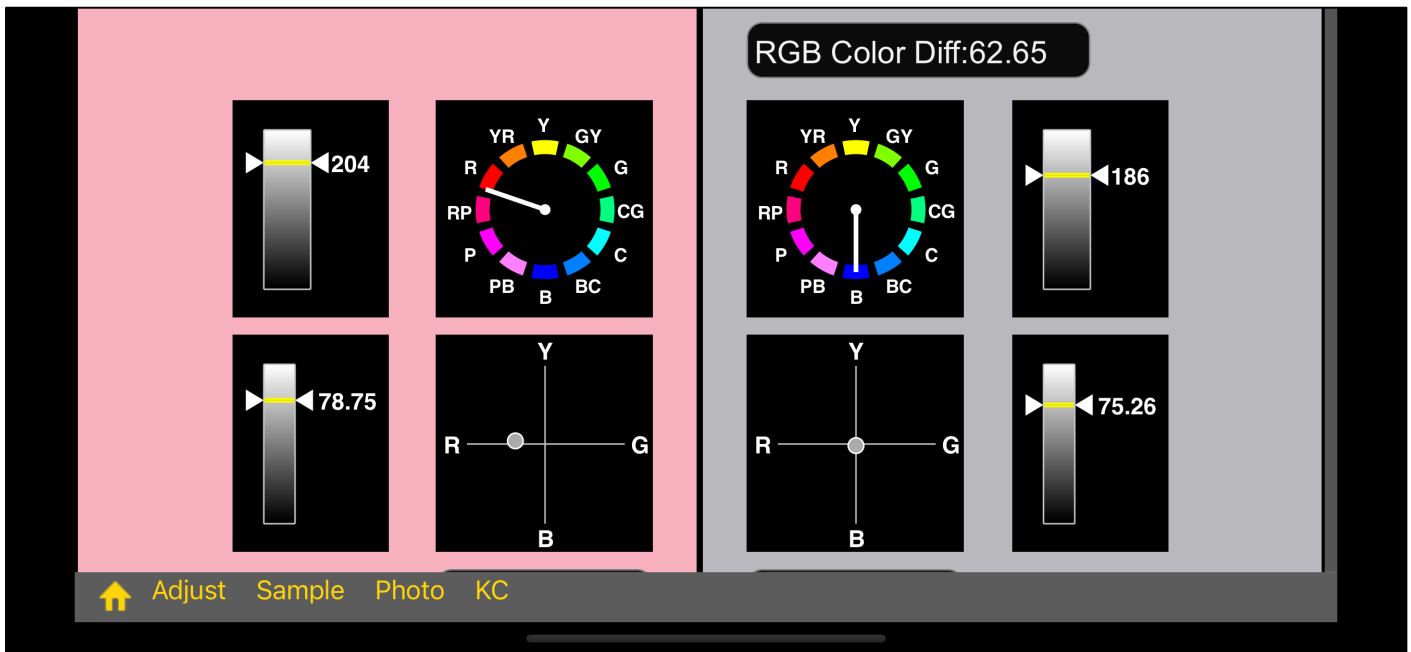
The circle for displaying the LAB value of Common

The circle for displaying the LAB value of LMS converted

These two circles do not overlap at all.

Clearly, two circles are displayed.

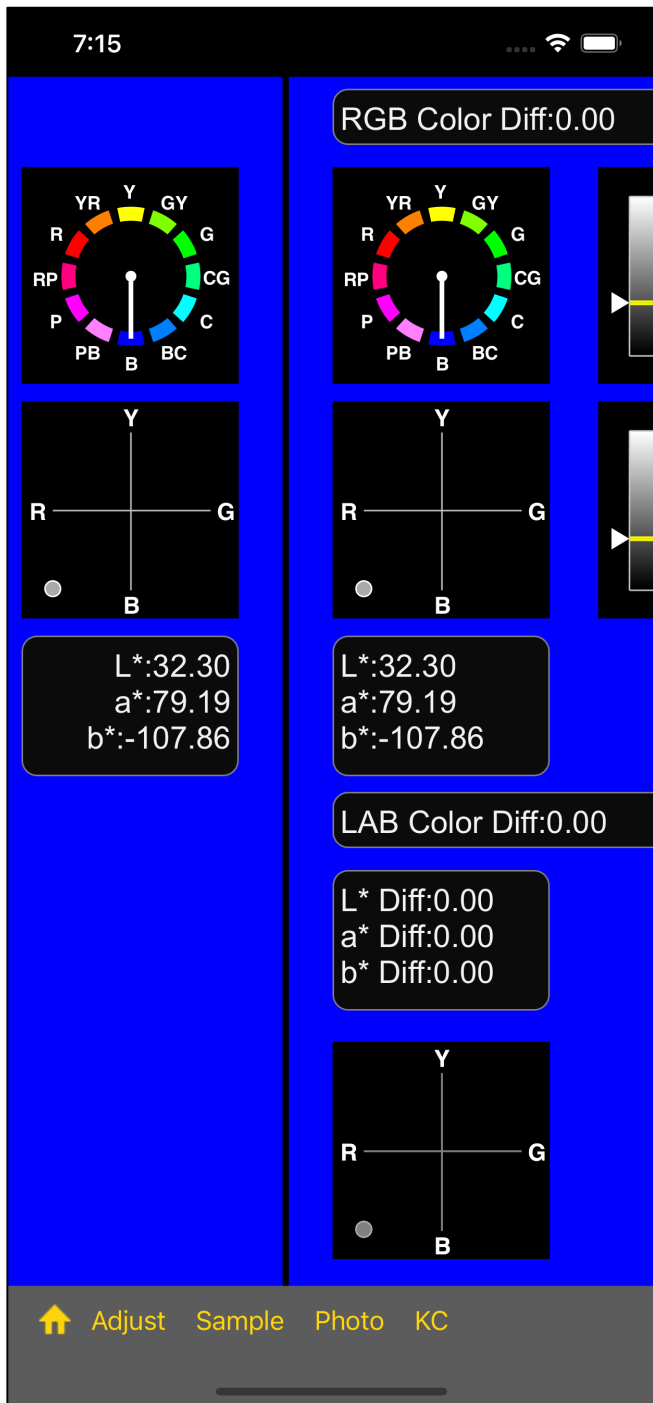
If this happens, you can think of it as a (completely) different colors.



The diameter of this circle showing the coordinate position of $L^* a^* b^*$ is 10.

If it is not in overlapping positions, I think that it is OK to think of it as a different color.

Also, as mentioned above, the coordinates in this figure are -70 to +70, so if the a^* or b^* values exceed this value, this figure will be inaccurate.



This is blue (0, 0, 255), but the LAB b^* value is -107.86.

However, the position shown in the LAB diagram is at -70.

In fact, there is a big difference, and it is a big problem, but there is no way to squeeze it into a figure of this size.

-30 to 30 or so, they come to almost the same position.

Even if it is about -70 to 70, the two circles are not so far apart and it is difficult to understand.

If displaying the range from -150 to 150 in a diagram of this size, it will be so.

As a result of various trials,

Values exceeding -70, 70 are displayed at the -70, 70 positions.

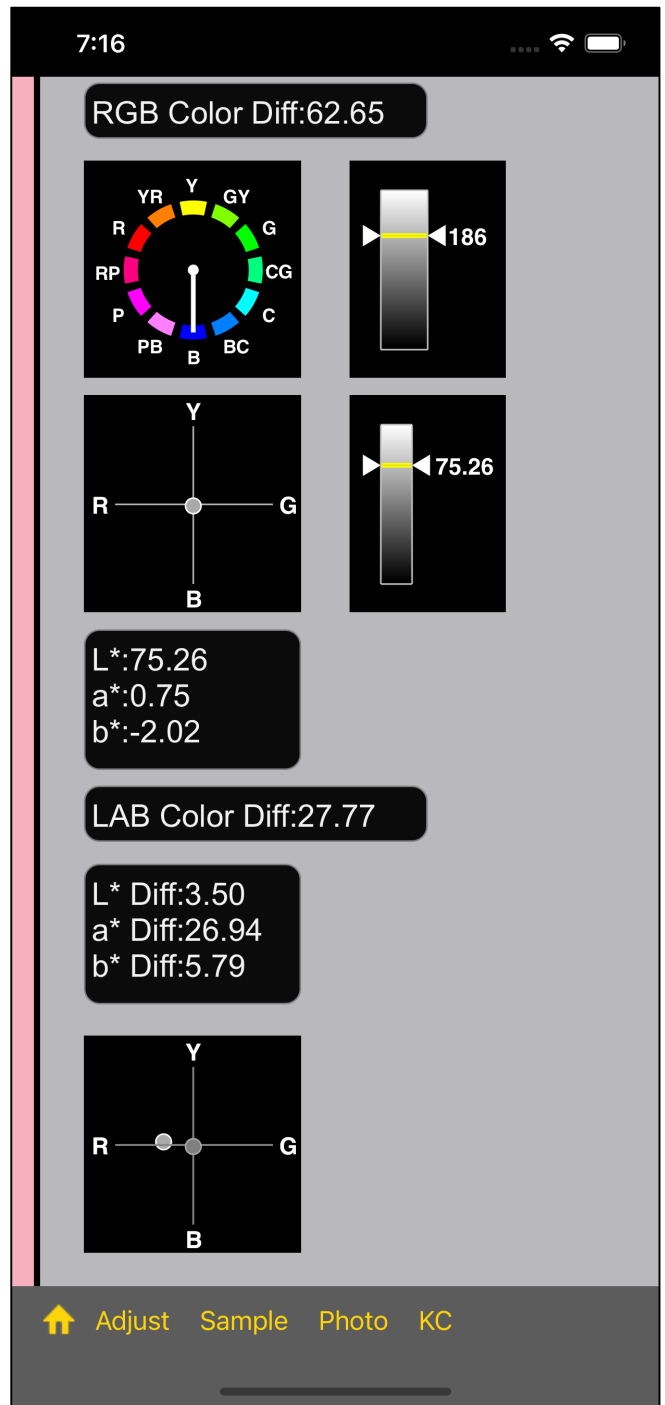
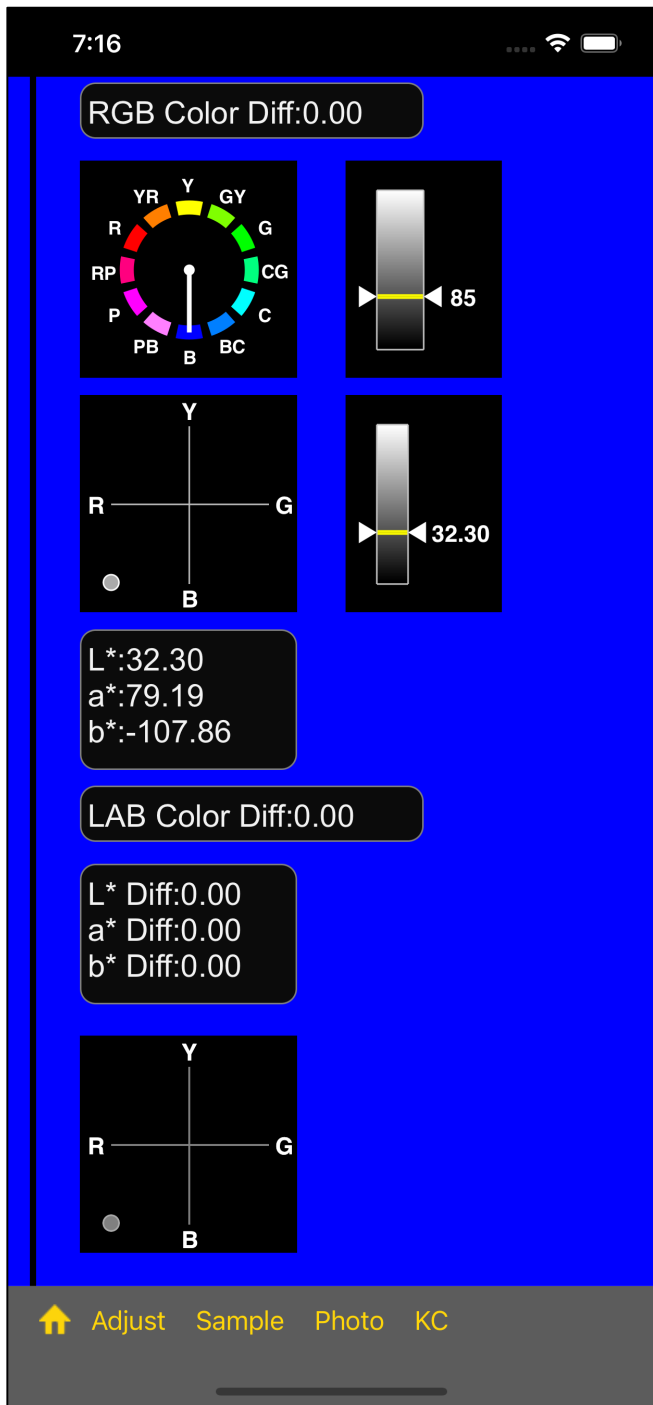
this method seemed to be the least harmful and the most profitable, so I decided to do this.

The values of a^* and b^* are values that exceed -70 and 70.

This doesn't happen very often, so overall, I think the harm is small.

However, as you can see in this example, it is an absurd diagram for displaying following value:

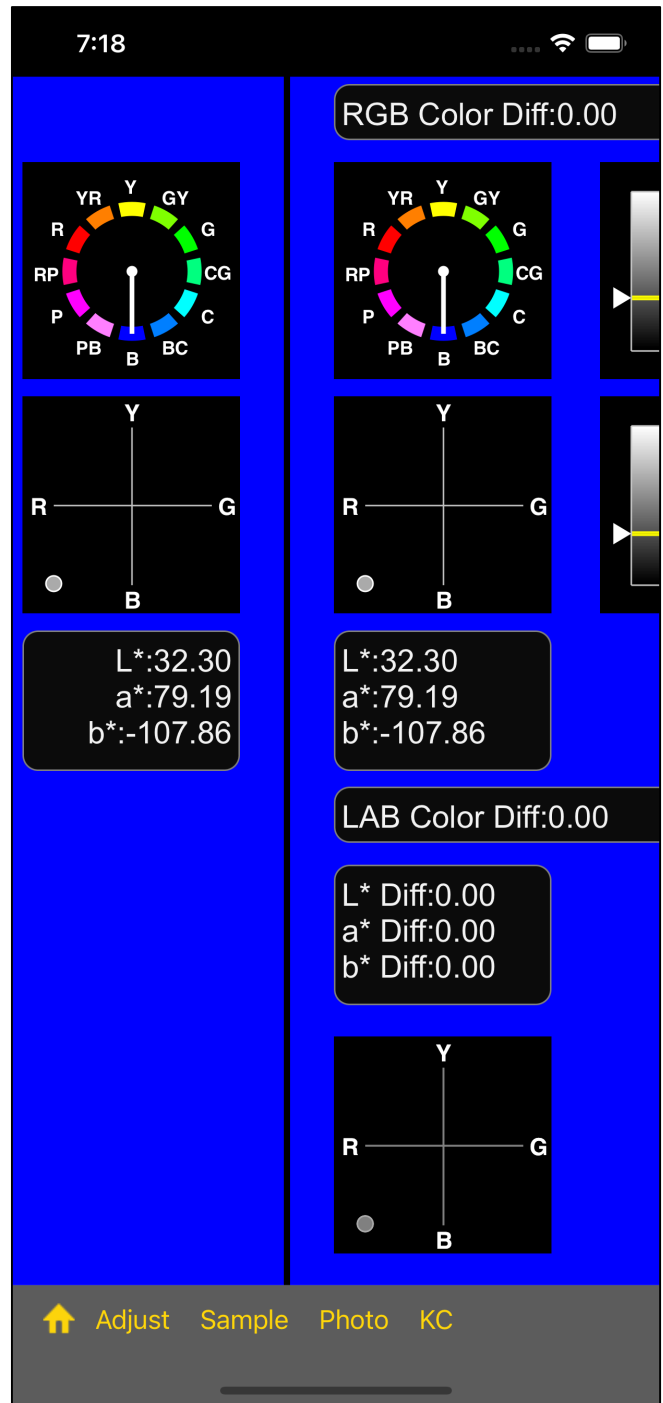
$b^* -107.86$



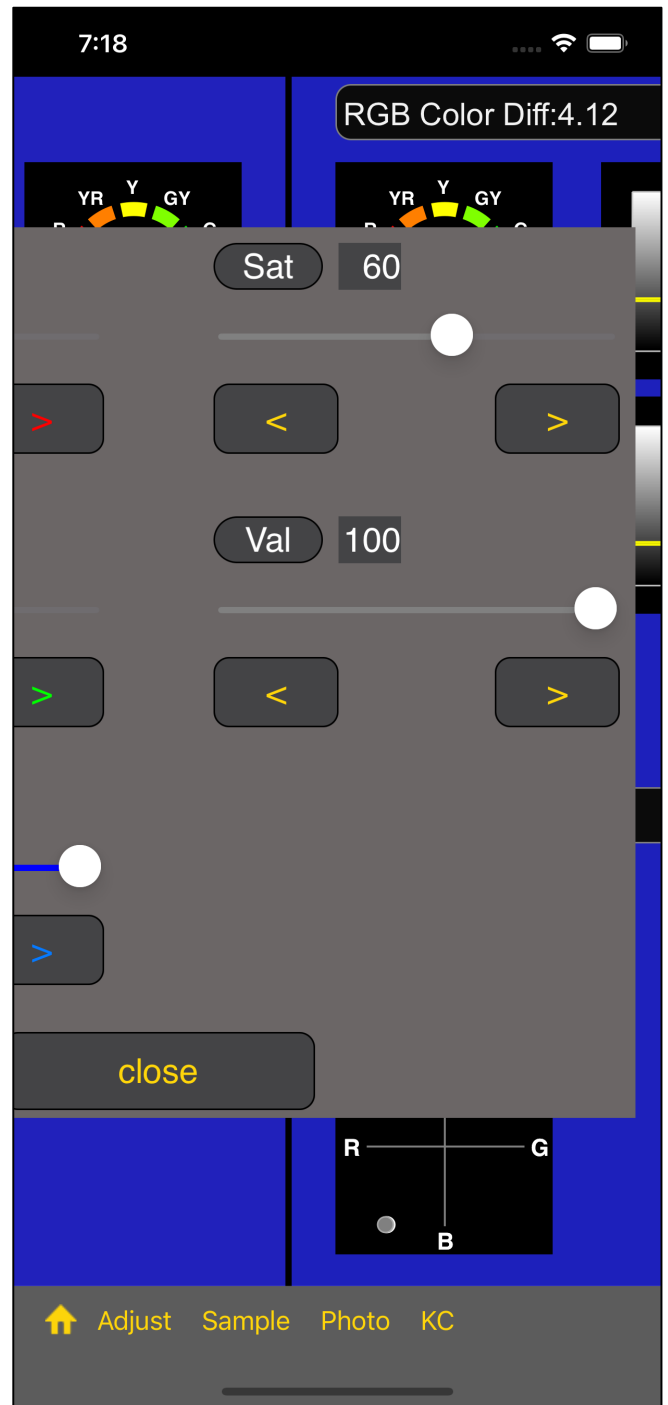
Anyway, if you can clearly see the two circles in the [L^* a^* b^* coordinate position diagram] as shown in the figure on the right, you can assume that they are (completely) different colors.

~ 空白 ~

Attention.

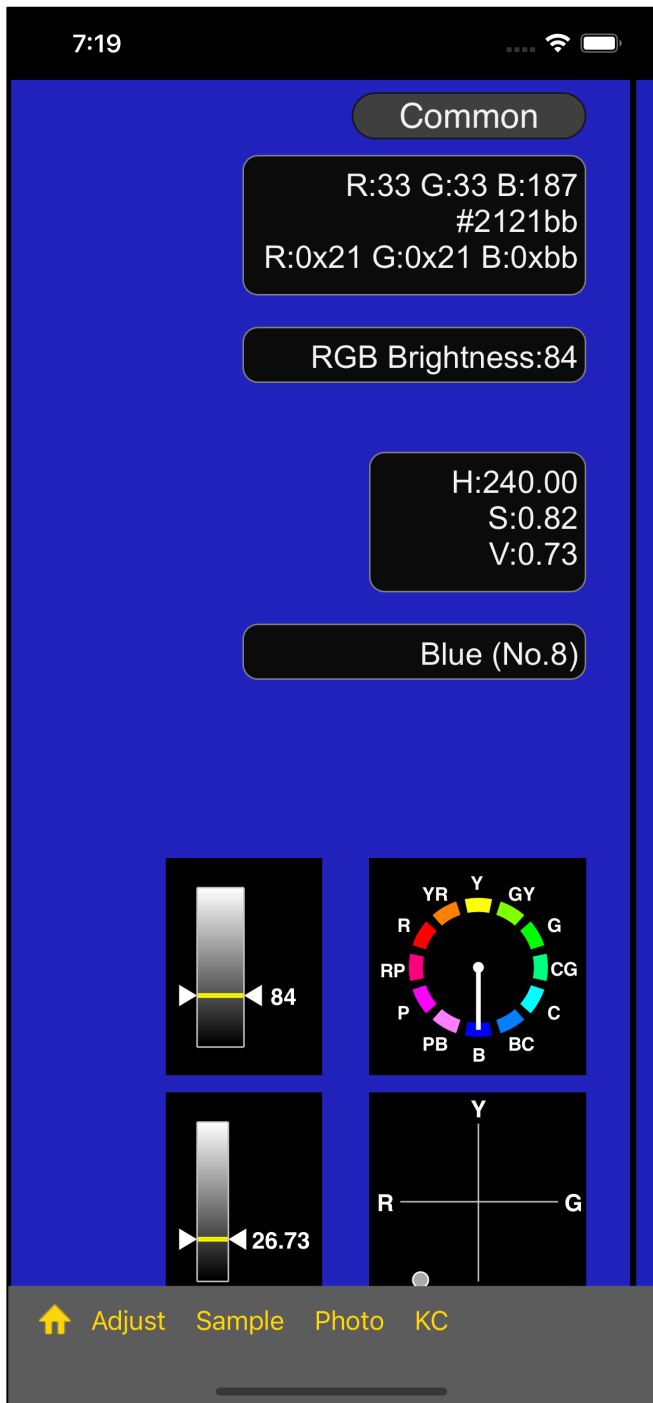


The RGB values displayed in a view such as the main view of the color slider are the values after calculating the Value and Saturation.



The value itself entered in the slider view for value input is displayed only on the slider view side.

Also, it is only used on the slider view side.



RGB (0, 0, 255), Saturation 60, Value 100

will be displayed

RGB (33, 33, 187) (As Saturation 100 and Value 100).

~ 空白 ~

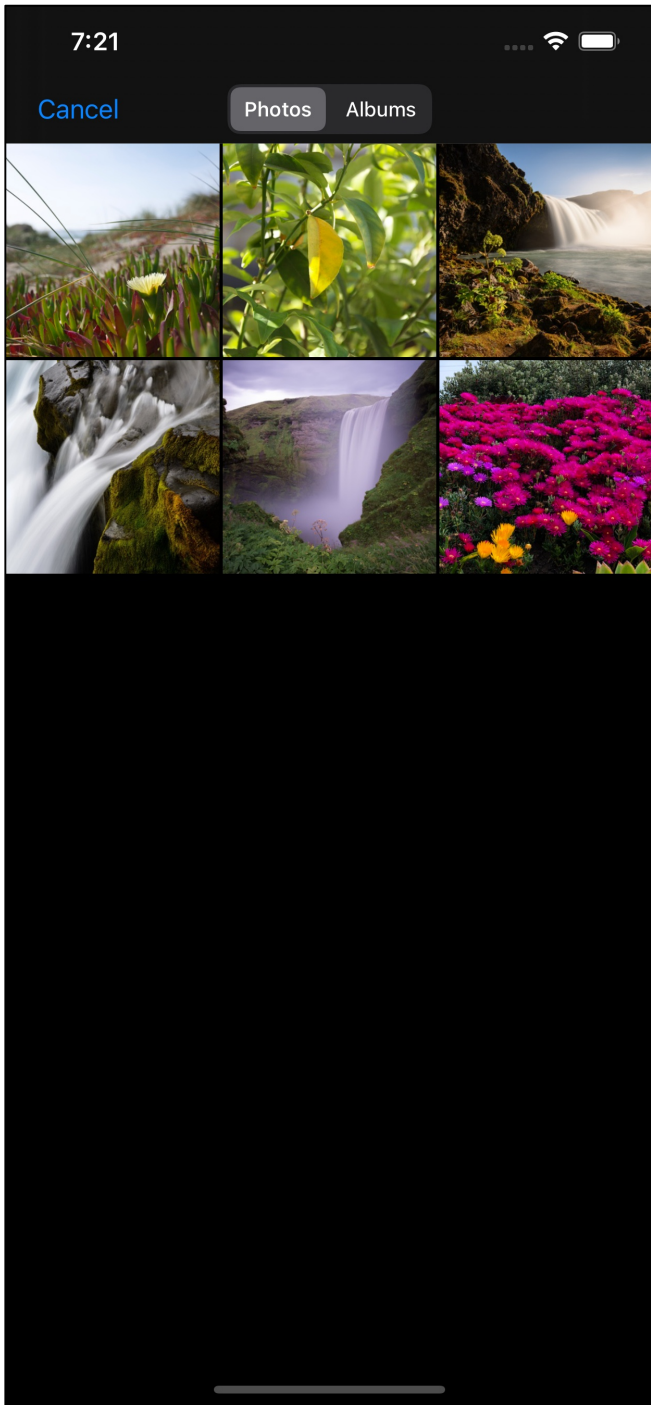
Read from Photos (Camera Roll) (Image Pixel Picker)

This feature is not included in the HSV slider.

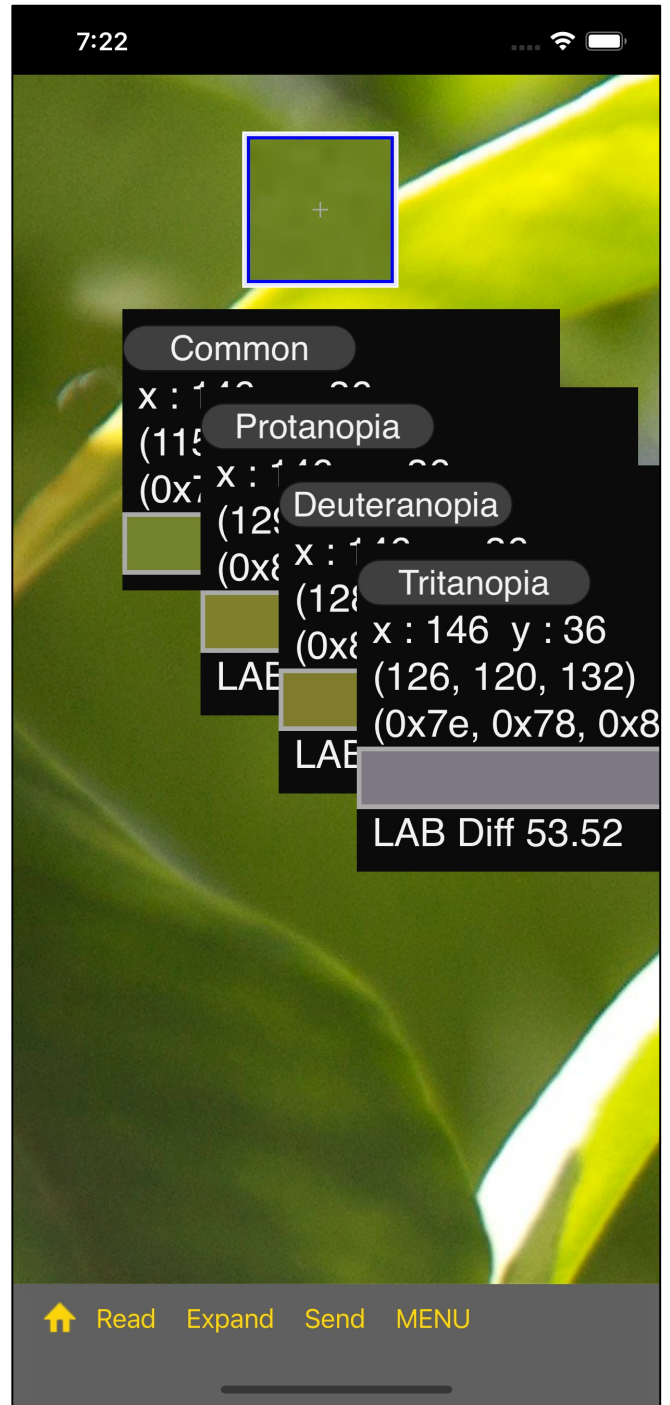
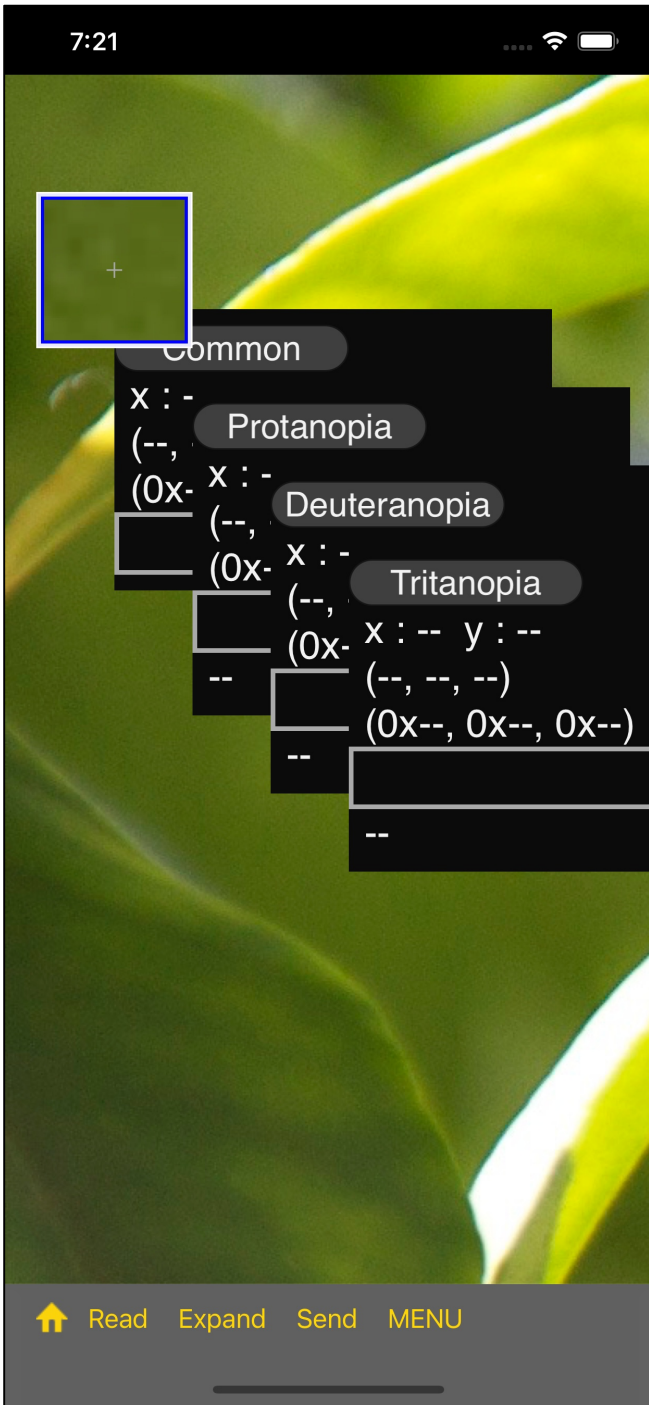


If you press the 4th "Photos" button on the toolbar, you will see a view like the one on the right.

If you press the "Read" button, which is the second in that view, it transit to the selected view of the Photos (Camera Roll) as follows.



If you select the second image from the left in the upper row, it will be as follows.



When you start moving the cursor view, the value is displayed in the value display view.

caution

If you read an image that is too large for this command to handle, the cursor view will not move.

There is no choice but to give up handling images that the cursor view does not move with this command.

The cursor view here is a 10x magnifying glass (loupe).

The upper left corner of the cursor view is like a mouse cursor pointer.

The 10 * 10 area near the upper left corner of the cursor view is displayed inside the cursor view with a size of 100 * 100.

The cross inside the cursor view is the center of an area of size 100 * 100.

In the original image, the pixel pointed to by the upper left corner of the cursor view will be displayed at the cross position inside the cursor view.

This may be a confusing mechanism.

Until version 1.4, the cross inside the cursor view was used as a mouse pointer.

However, in version 2.0, the upper left corner of the cursor view is now the mouse pointer.

It may be a confusing and annoying specification change for those who continue to use it from version 1.4 or earlier.

Actually, this is a place where small problems occur frequently, and it is a place where I am struggling to deal with it.

As this position, is this magnified image correct?

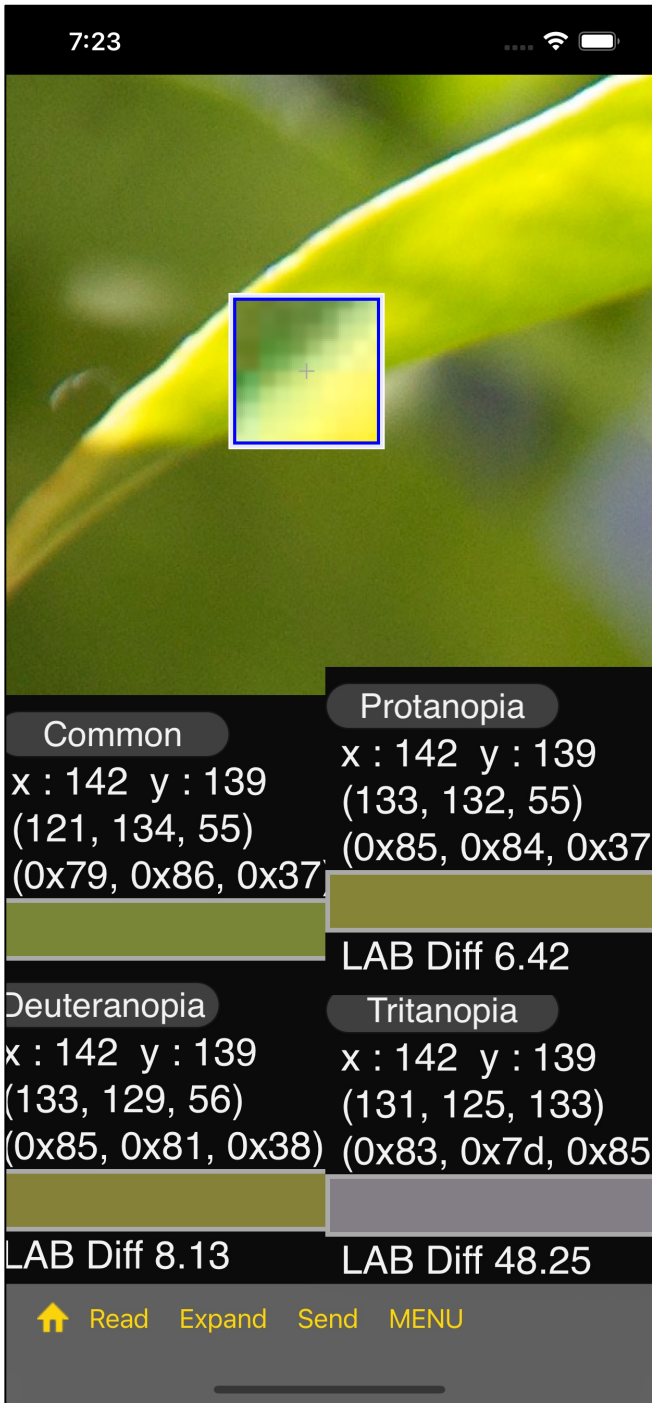
You may think so.

As a matter of fact, I myself have not been able to dispel this suspicion.

However,

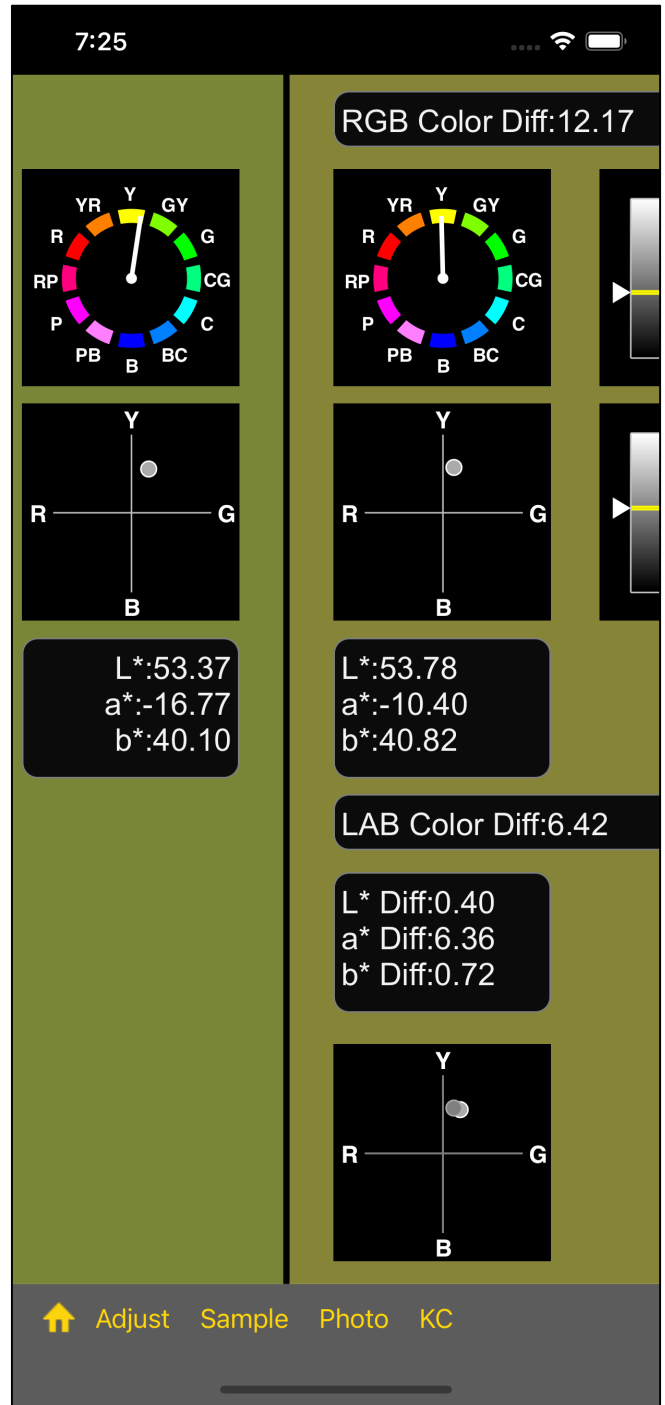
The difference of one or two pixels in a rectangle of size 10 * 10 is significant.

It is this kind of problem and not a highly malignant problem like hanging up.



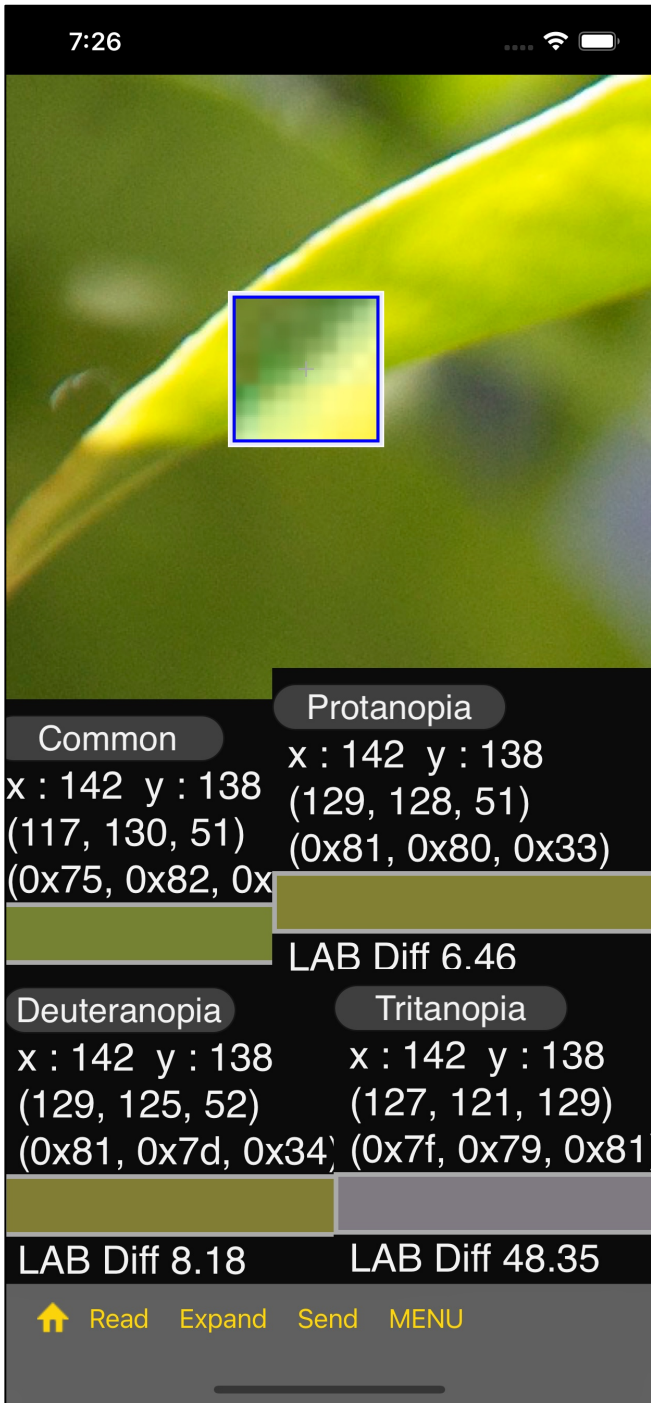
If you scatter the value display view appropriately, it will look like this.

In this state, if you press the 4th "Send" button on the toolbar of this picker view, the [Common] value will be transferred to the slider view of the caller and will return immediately.



The display when you return will be like this.

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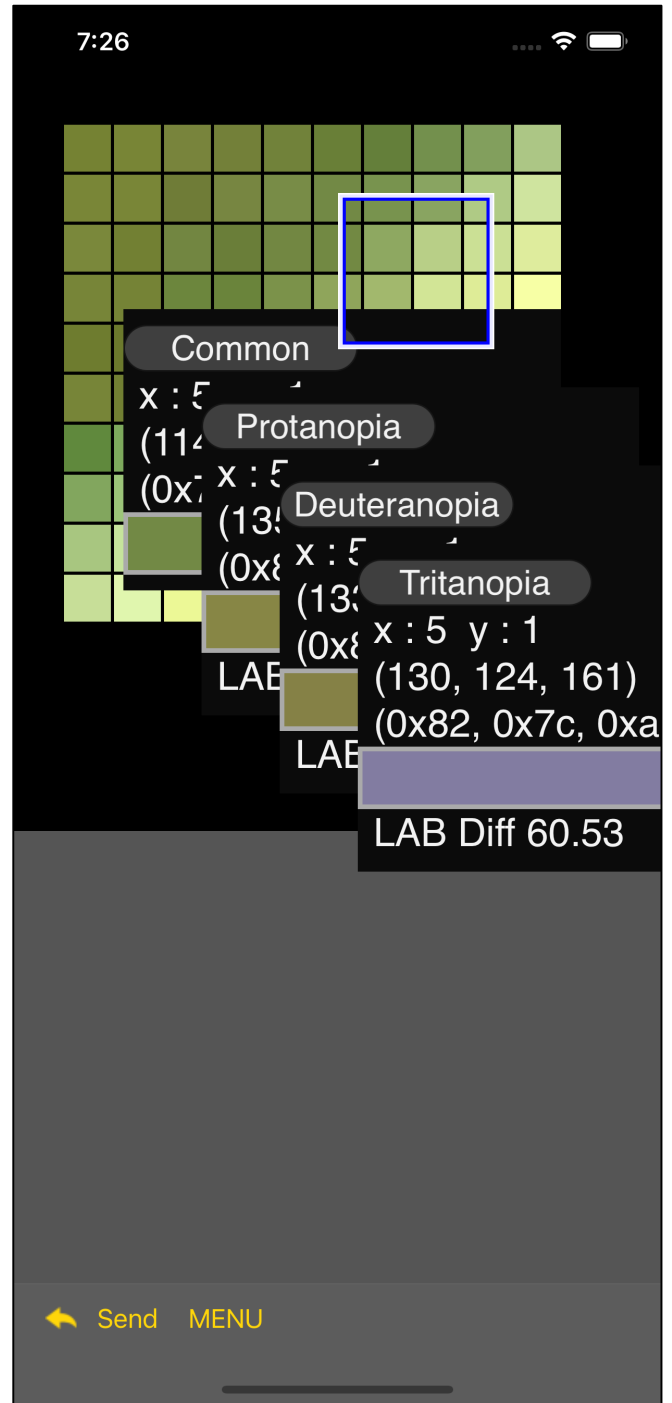
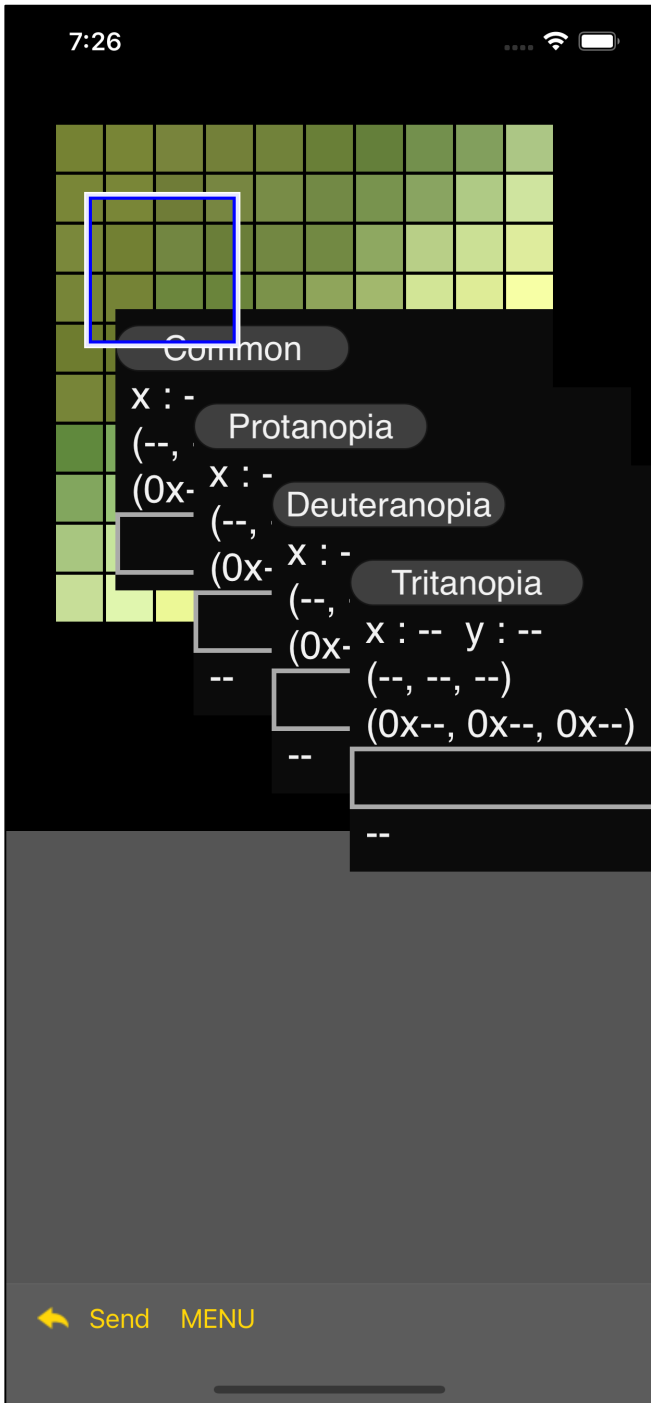


Expand command in Picker view

When the picker view looks like this, pressing the third "Expand" button on the picker view toolbar will bring up a Expanded view of the 10x10 pixel value near the upper left corner of the cursor view.

(If the cursor view points outside the area of the original image, it will not transition to the Expand view.)

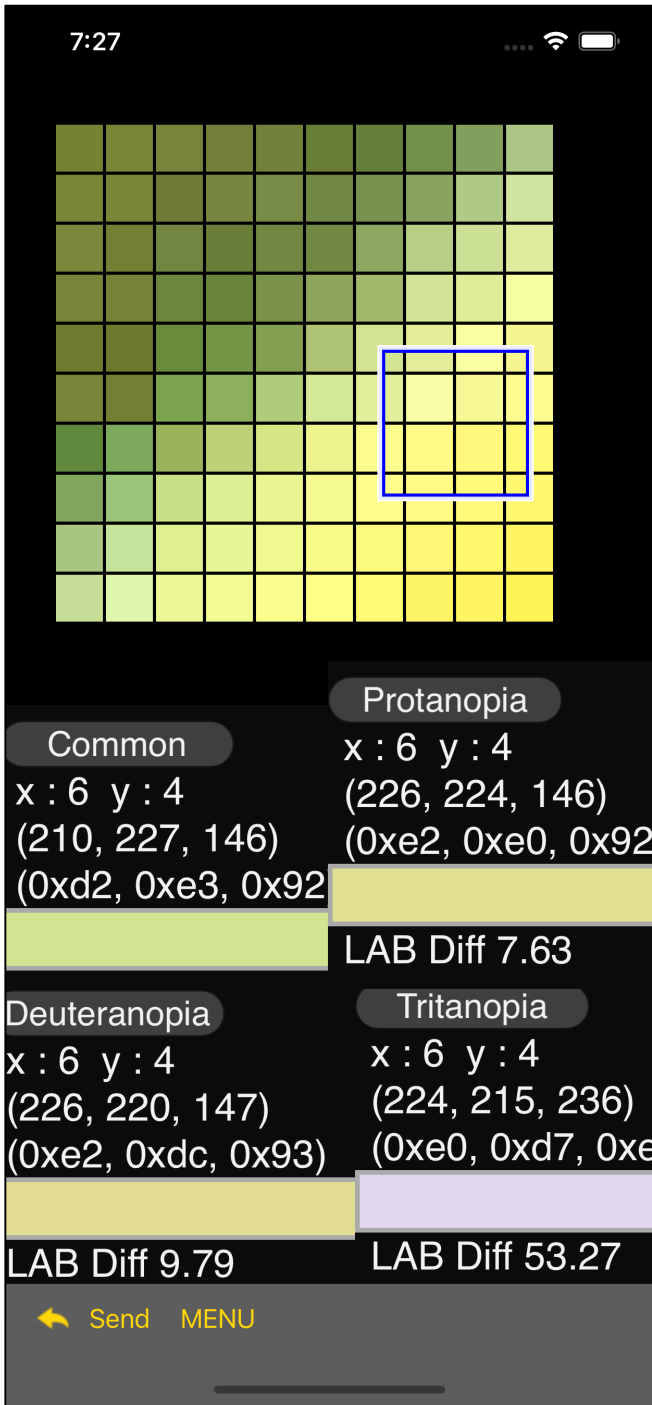
It will be as follows.



When you start moving the cursor view, the value is displayed in the value display view.

In the Expand view, the upper left corner of cursor view is the mouse pointer.

The magnified image (loupe image) is not displayed in the cursor view of the Expand view.



If you scatter the display views properly, it will look like this

Pressing the second "Send" button in the Expand view transfers the value pointed to by the cursor view to the color slider.

The value that is transferred is the value that "Common" is displaying.

Even if the "Common" value display view is hidden, the value returned is the value that "Common" is displaying.

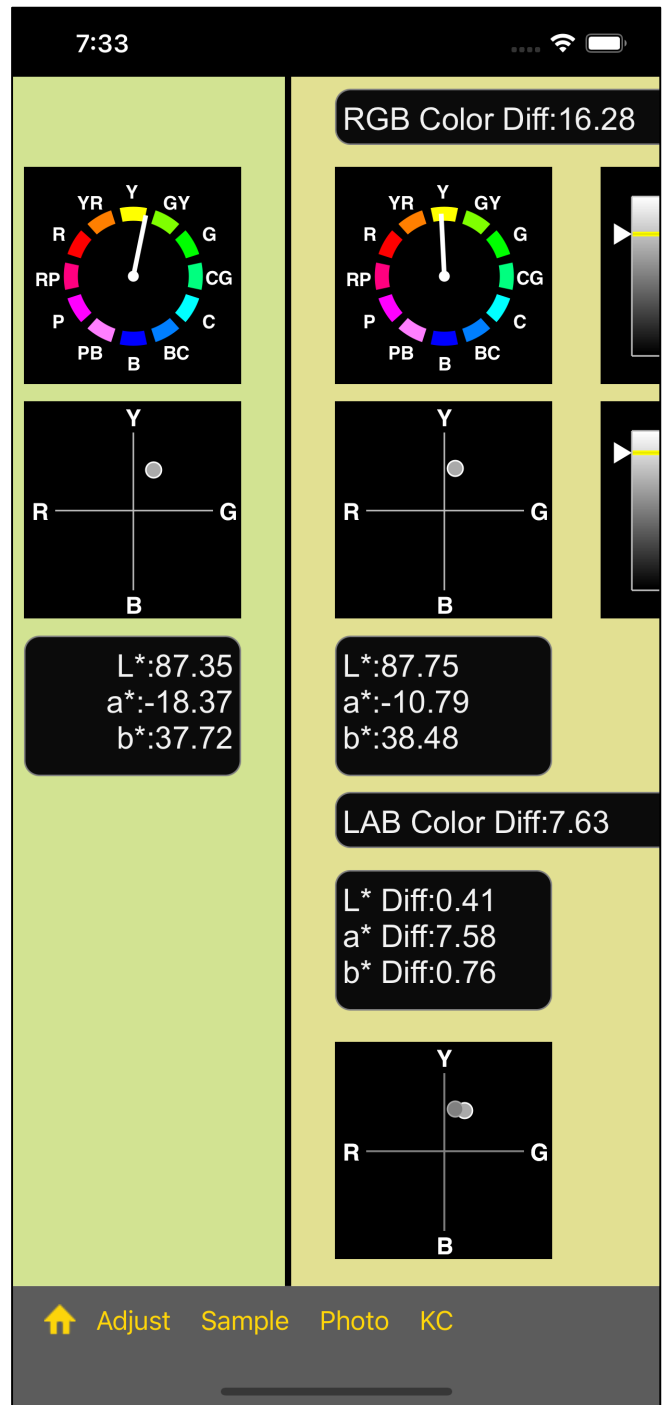
The Expand view here is called in a following hierarchy:

Color Slider

Picker View

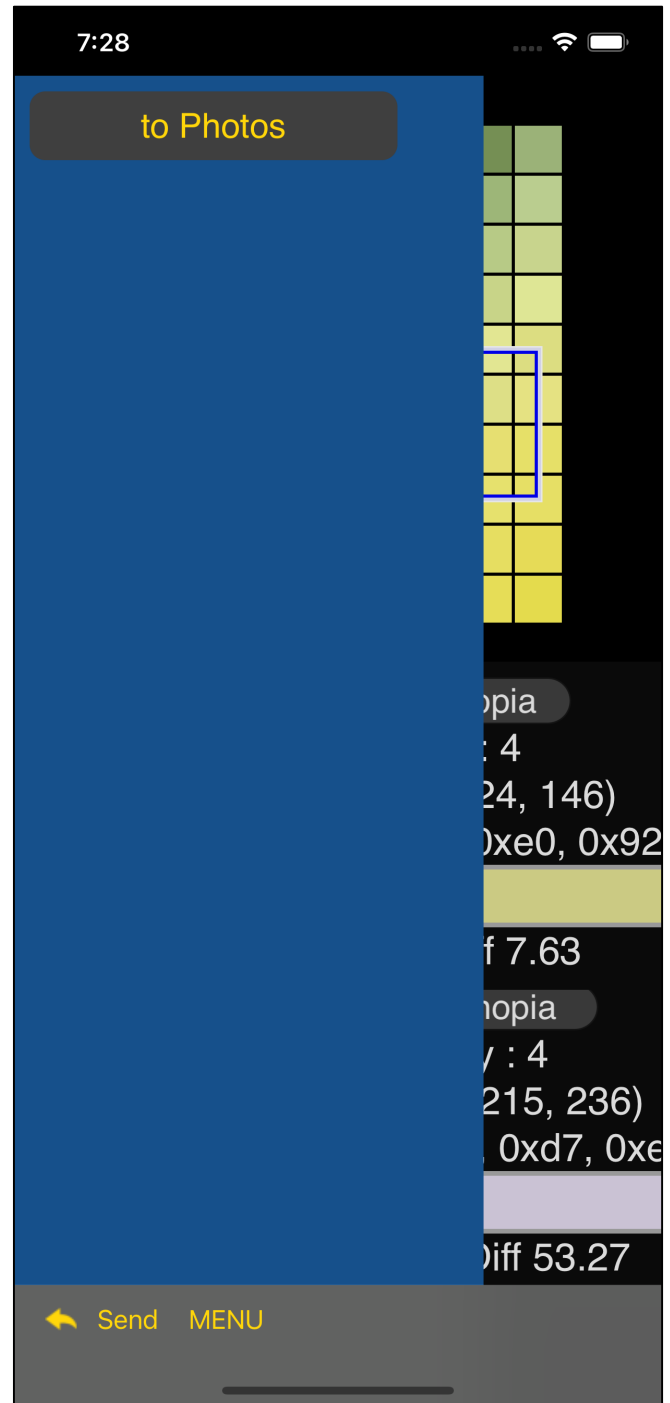
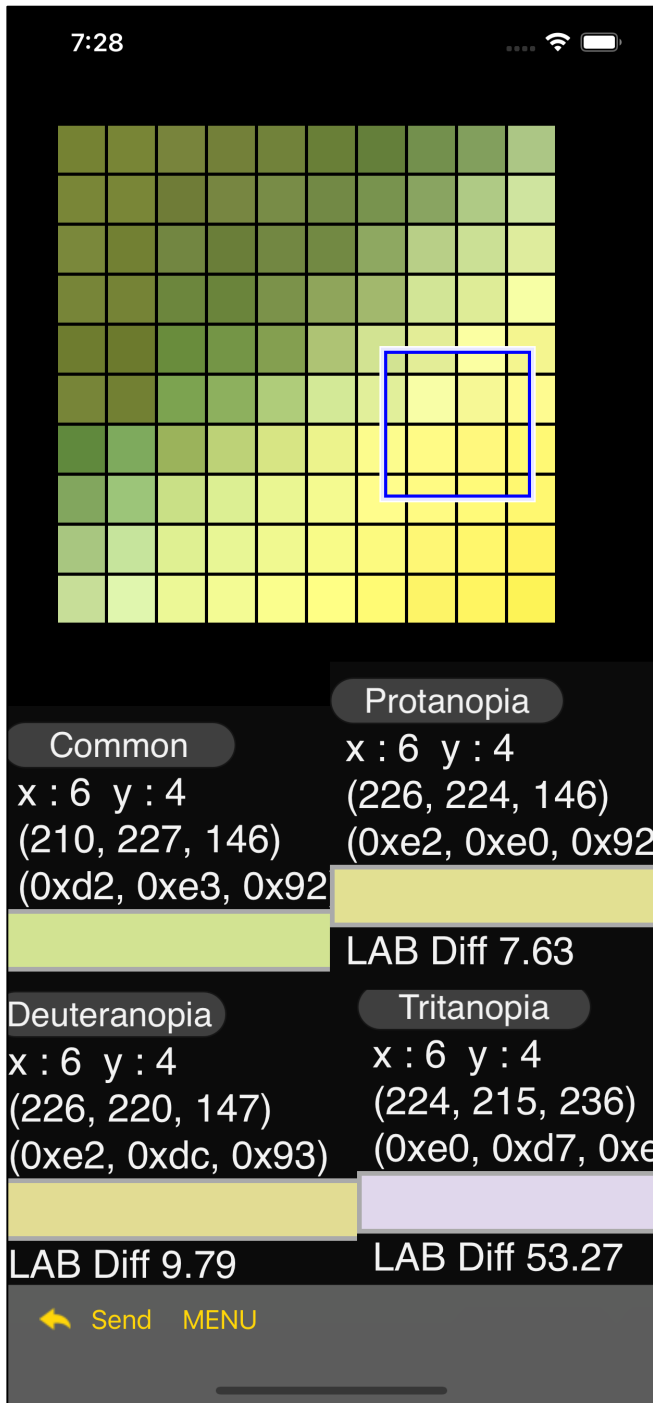
Expand View

If you press the "Send" button on the toolbar of the Expand view,
It will automatically jump over the picker view and return to the Color Slider.



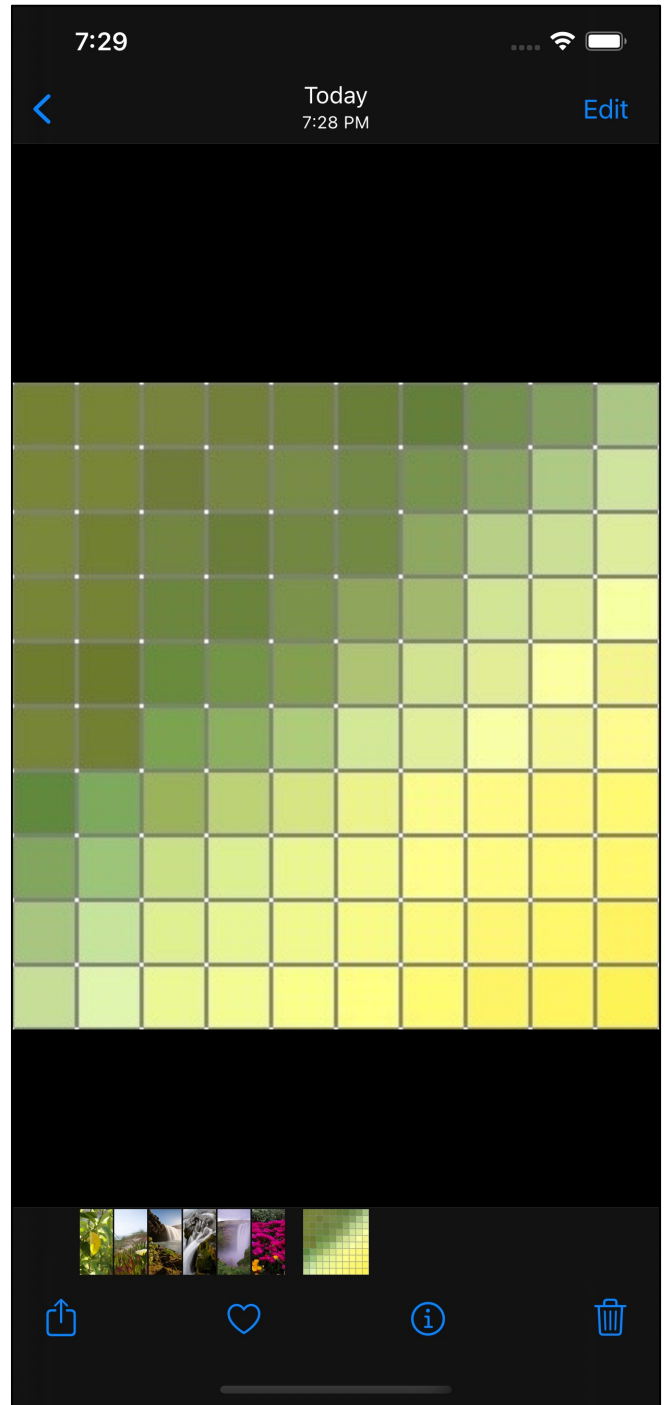
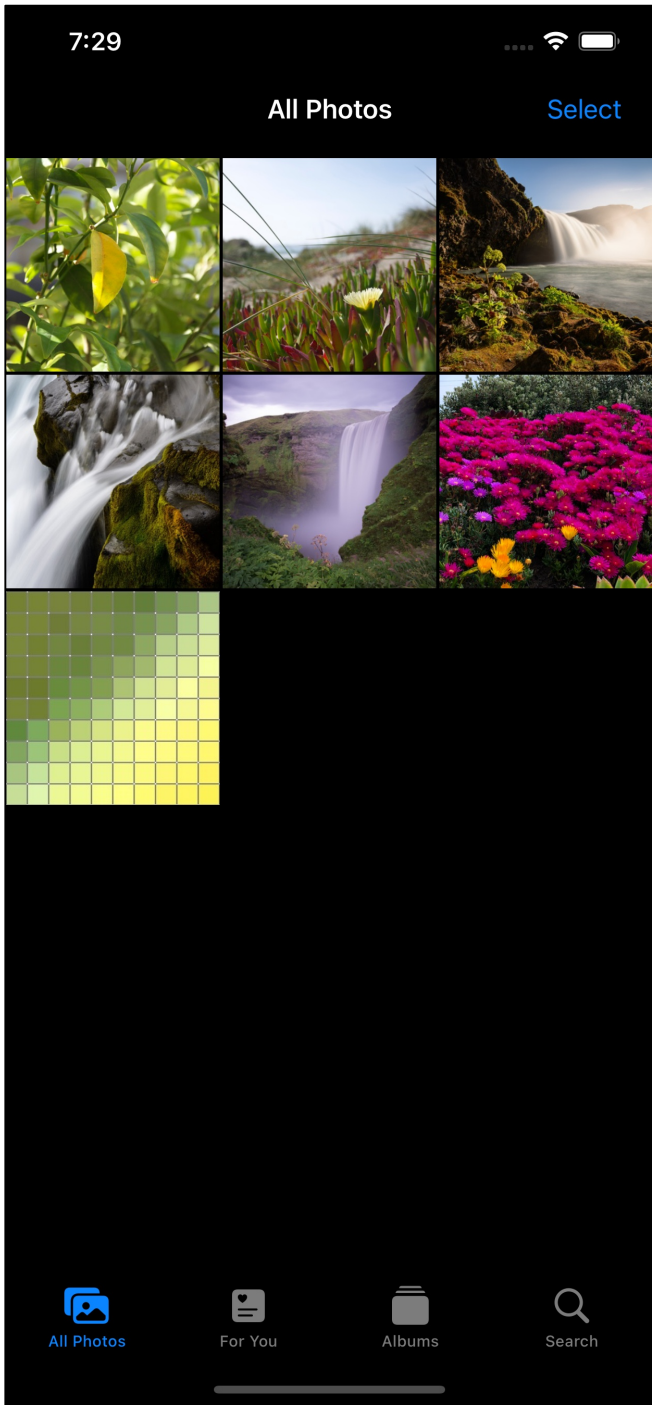
When you return to the color slider, you will see something like this.

to Photos Command



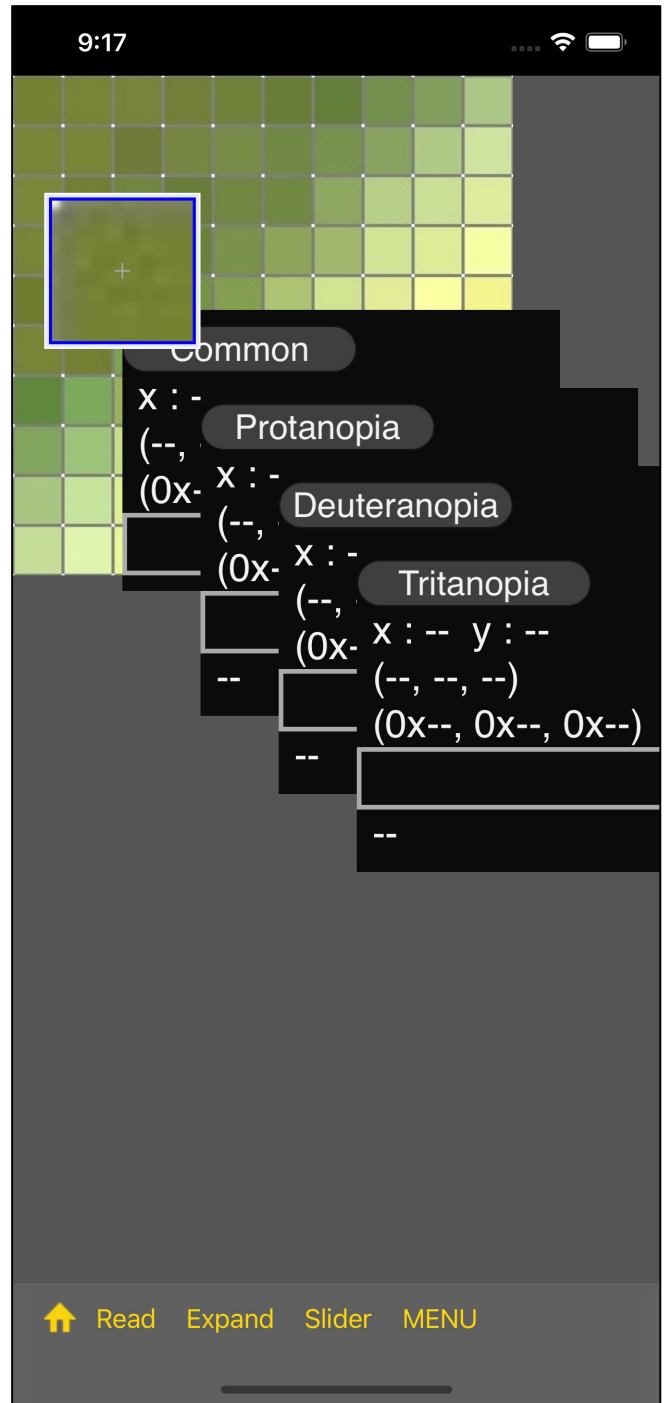
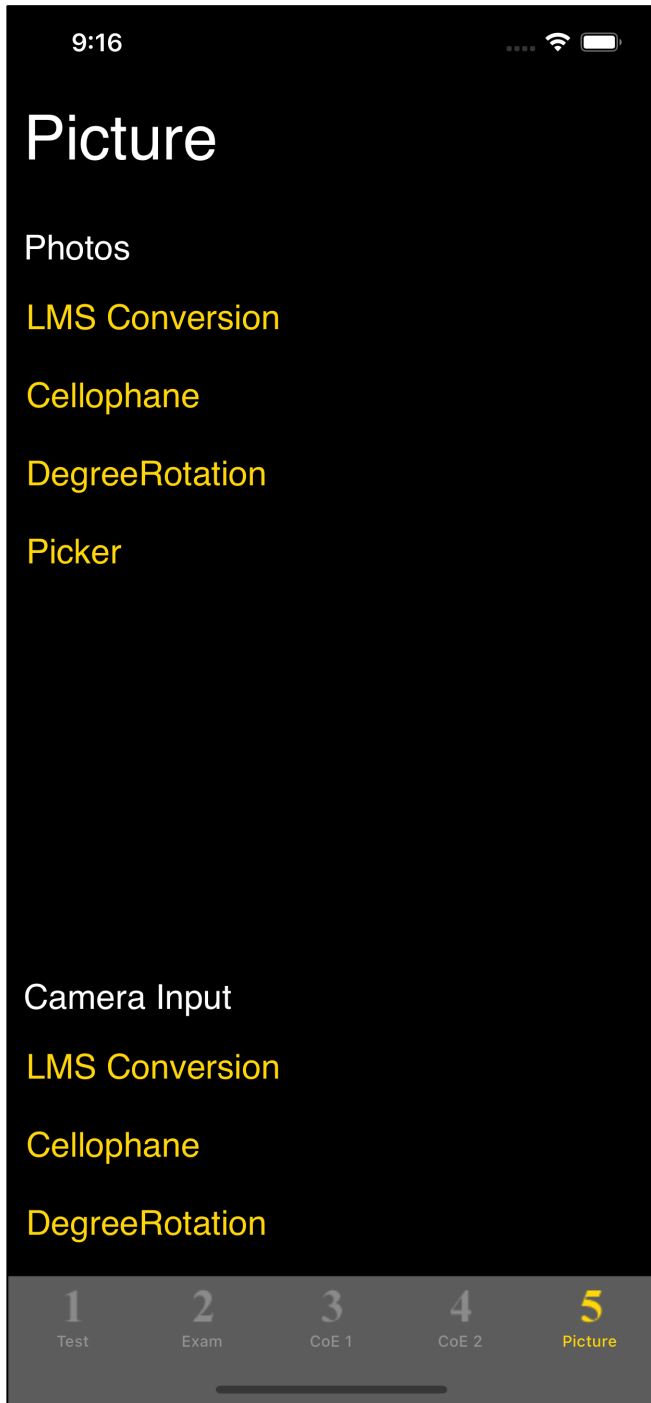
If you Long Touch the part of the Expand view that displays the pattern, the menu view shown on the right will appear.

When you press the "to Photos" button, the image of the displayed pattern will be sent to Photos. 55

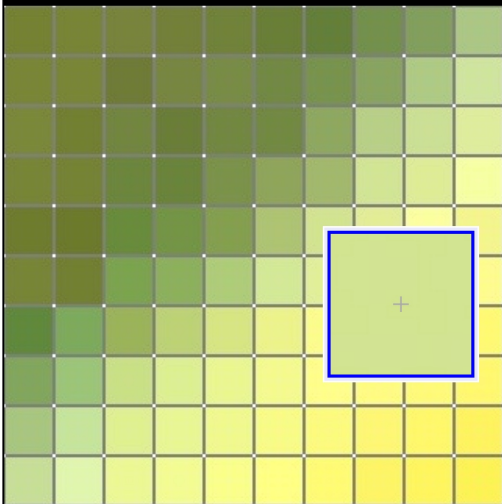


When you launch Photos, you will see something like this.

If you look at this image with the Picker command in the fifth tab, you will see the following.



9:18



Protanopia

Common
x : 204 y : 141
(210, 228, 144)
(0xd2, 0xe4, 0x90)

x : 204 y : 141
(226, 225, 144)
(0xe2, 0xe1, 0x90)

LAB Diff 7.64

Deuteranopia

x : 204 y : 141
(227, 221, 145)
(0xe3, 0xdd, 0x91)

Tritanopia

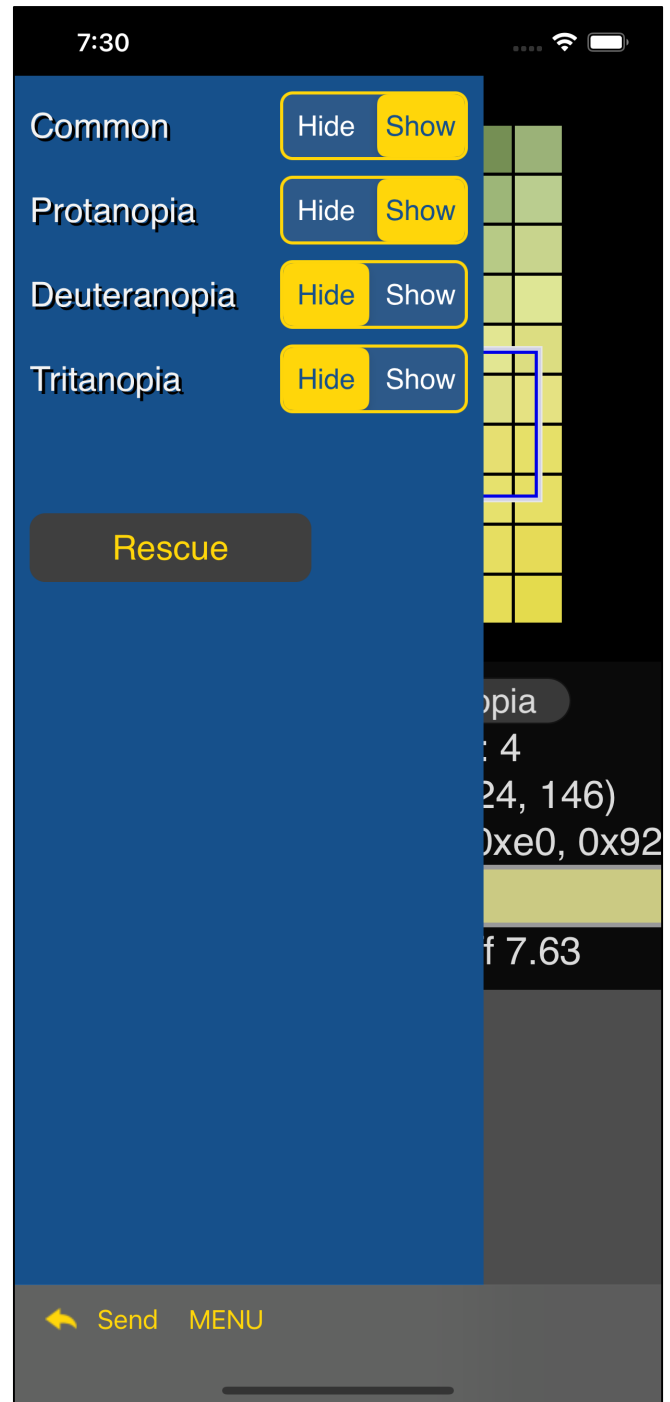
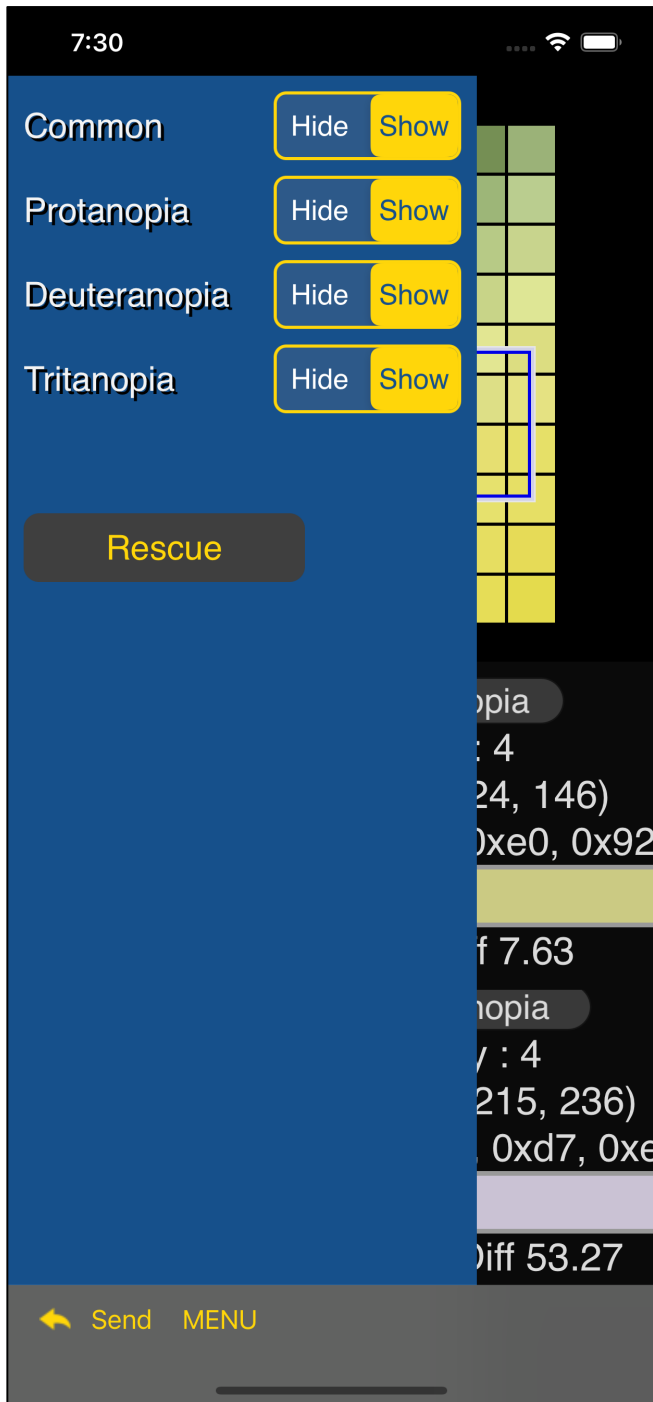
x : 204 y : 141
(225, 215, 237)
(0xe1, 0xd7, 0xed)

LAB Diff 10.15

LAB Diff 55.33

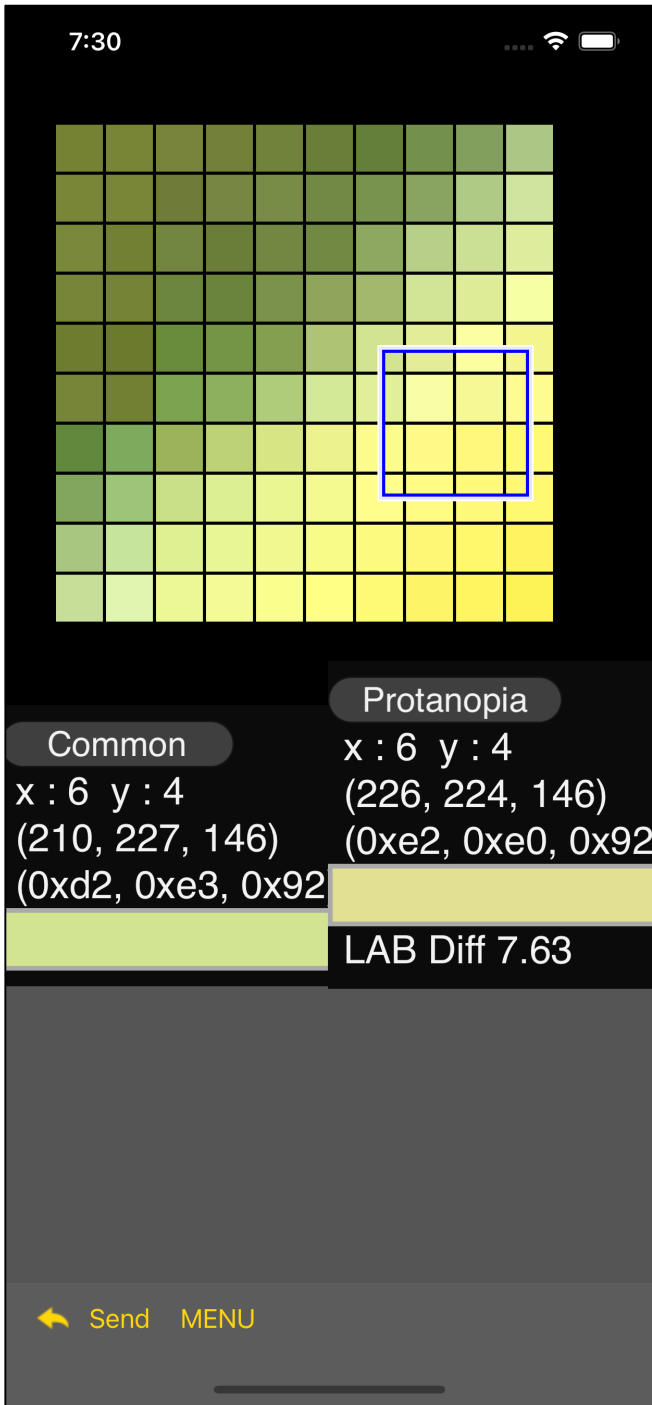
↑ Read Expand Slider MENU

Expand view's menu button

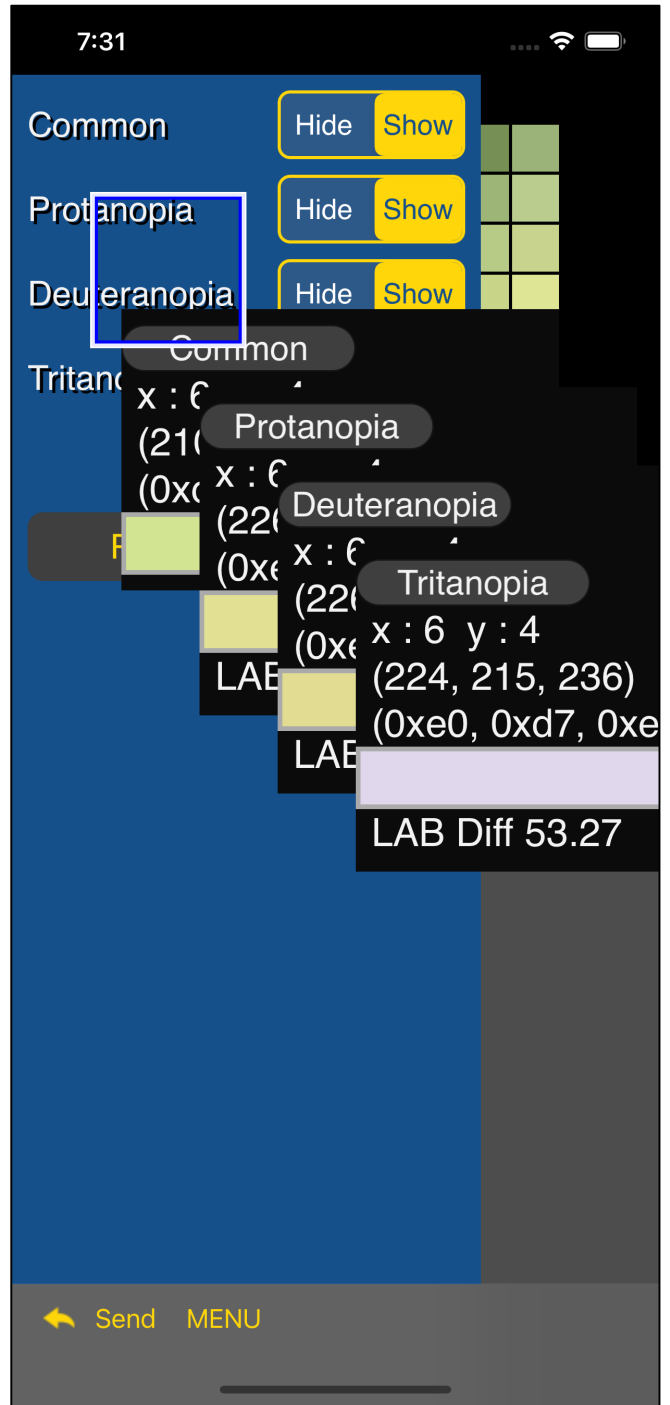
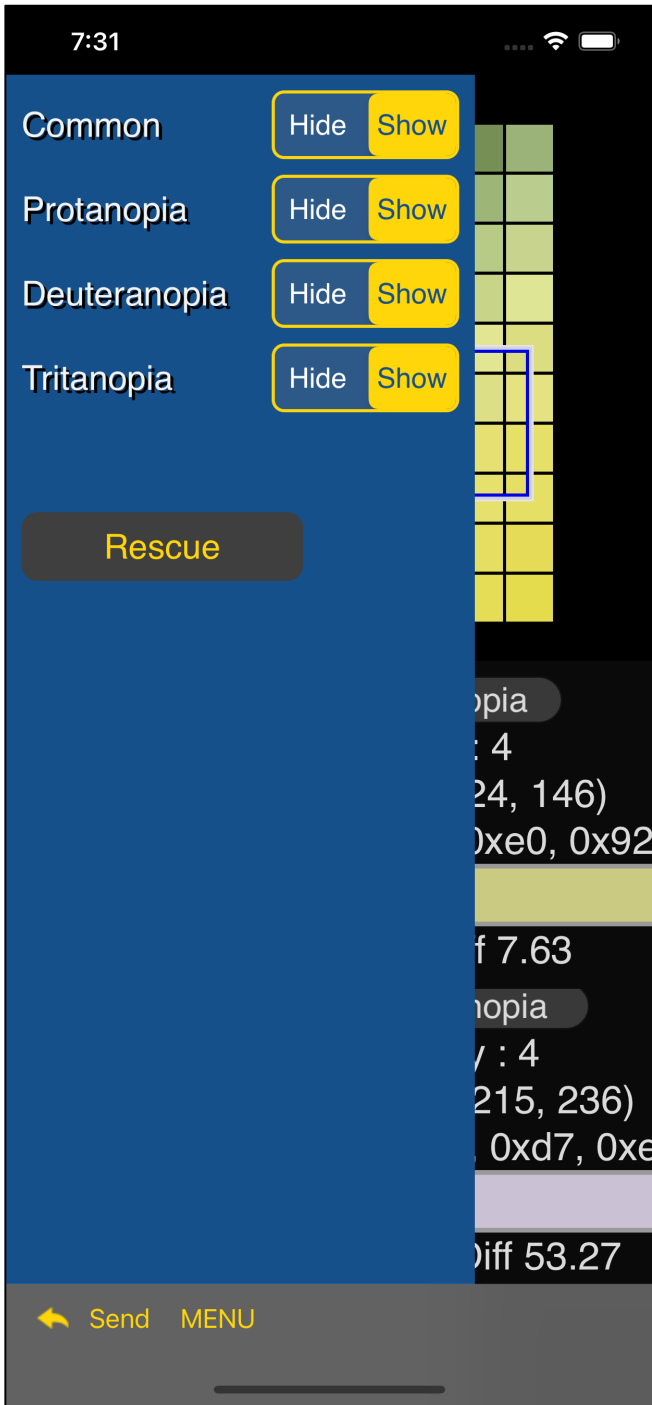


If you press the "MENU" button on the toolbar of the Expand view, a menu view like this will appear.

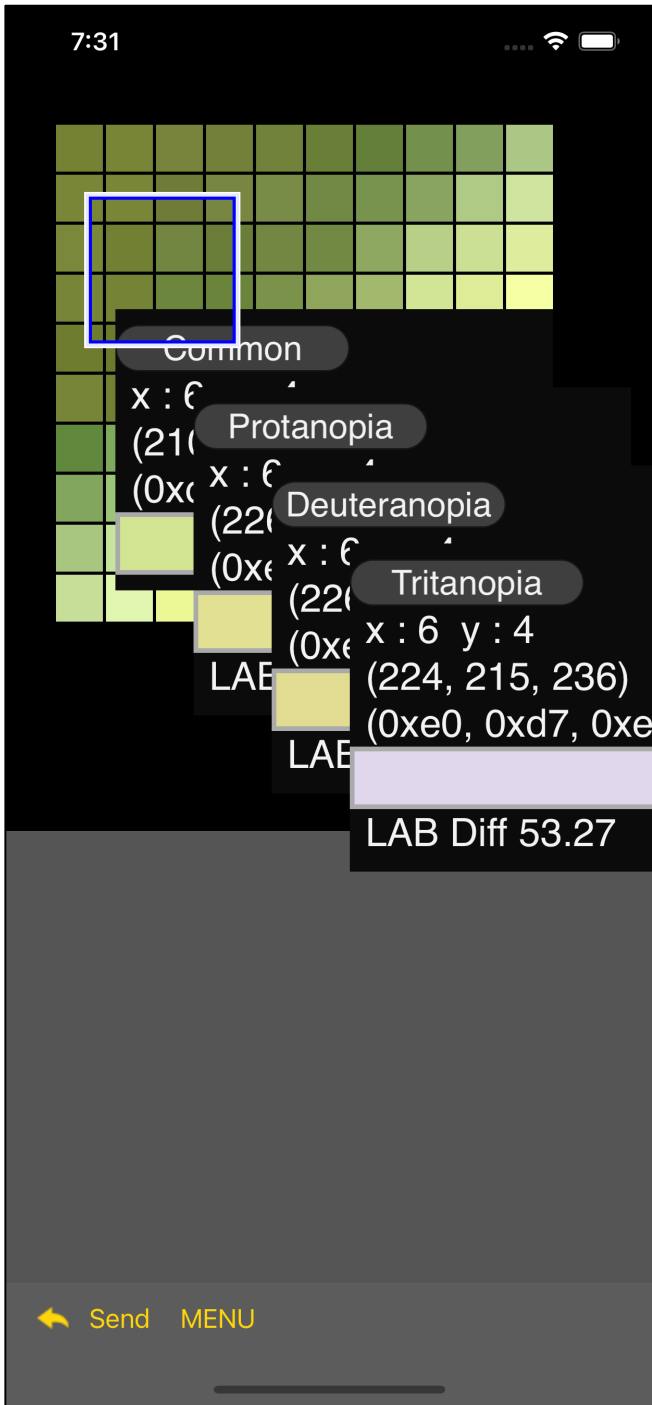
If you set "Hide" for Deuteranopia and Tritanopia, so only the value display view for Common and Protanopia will be displayed.



It will be like this.



When you press the "Rescue" button in the menu view, the cursor view and value display view move to the specified position.



I will come to such a position.

KC command (Kind Change)

This feature is not included in the HSV slider.



When you press the 5th "KC" button on the toolbar of the main view of the color slider, the menu view will appear from the bottom as shown in the figure on the right.

If you press the "Tritanopia" button so LMS conversion method is switched to Tritanopia.



It will be like this.