# User’s Manual

RadiCS®
RadiCS® LE

## Quality Control Software

## Software Version 5.1

**Important**

**Carefully read this User’s Manual before use to use the monitor correctly.**

- For the latest product information including the "User’s Manual", refer to our web site:
  www.eizoglobal.com

# CONTENTS

# 1 Introduction

RadiCS is a software tool that helps with medical standard-compliant advanced monitor quality management.You can use this software to perform calibration, acceptance test, consistency test, and other types of tests of monitors.

RadiCS LE is simplified monitor quality management software designed to calibrate monitors and manage their calibration histories.

RadiCS has "User Mode" in which simplified management tasks, such as visual checks and monitor status checking, are performed and "Administrator mode" in which advanced quality management and detailed settings are to be performed.

The functions that can be executed vary depending on the RadiCS type and mode that you are using. For details, see 2.6 Function and Structure of Each Window [▶ 21].

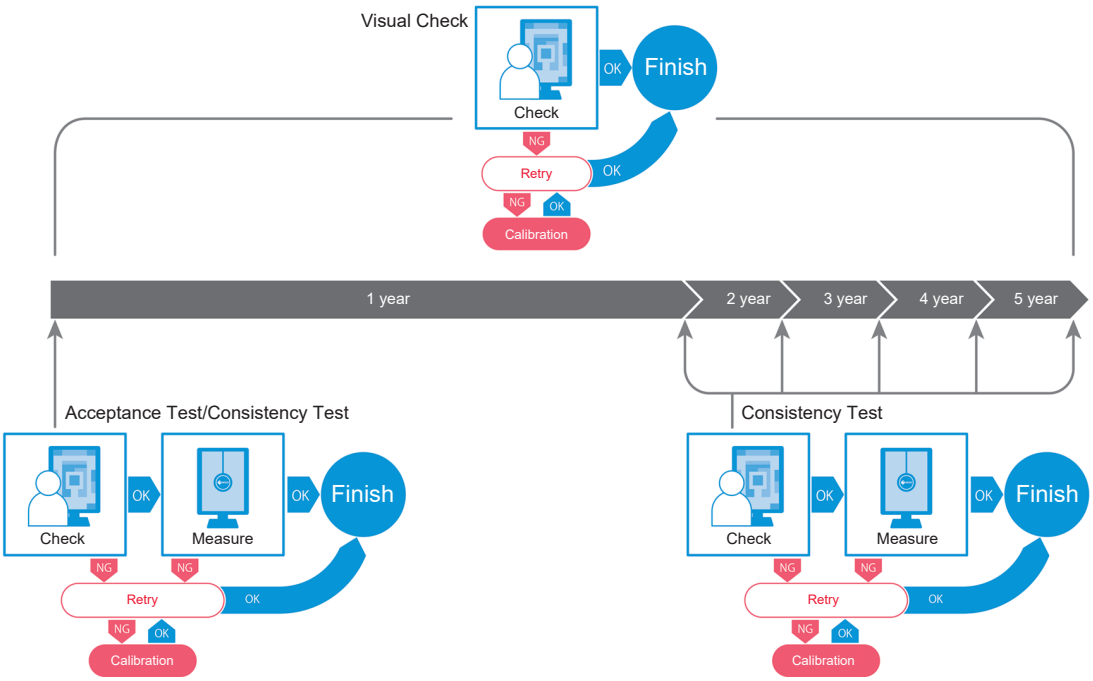
## 1.1 Monitor Quality Control

In medical fields, various types of digital imaging for medical data, such as CR or DR, CT, and MRI, have been able to be generated by digitization and performance enhancement of digital imaging for medical photographing apparatuses (modality). When these digital imaging for medical are displayed, faithful and stable display of fine images is important to prevent errors in medical judgment.

A quality confirmation (Acceptance Test) of the state of the monitor at the time of setup, confirmation of the state of the display with visual inspections (Visual Check), and periodical measurement using measurement devices and sensors (Consistency Test) are indispensable in order to maintain stable display. If any changes occur in the display quality of the monitor, it will be necessary to make the appropriate adjustments (Calibration) to return the original quality. These processes are referred to collectively as "Monitor Quality Management".

* Details differ depending on medical standards in countries.

**Basic Flow of Quality Control**



## 1.2 Features

### 1.2.1 RadiCS (Windows)

- Monitor quality control features
  - Visual checks
  - Acceptance testing
  - Consistency testing
  - Calibration function
  - Hands-off check
  - Test execution function by schedule
  - History management
  - Generates reports
- Power saving function
  - Reducing monitor power consumption (Backlight Saver)
  - Turning on and off the power supplies to multiple monitors linked with each other (Master Power Switch)
- Work optimization (Work-and-Flow) function
  - Toggling CAL Switch Modes (Auto Mode Switch / Manual Mode Switch)
  - Switching signals (Signal Switch)
  - Moving mouse pointer (Mouse Pointer Utility)
  - Switching between displaying and hiding the PinP sub window (Hide-and-Seek)
  - Switching the PC used to operate USB devices (Switch-and-Go)
  - Displaying any CAL Switch Mode assigned to a part of the screen (Point-and-Focus)
  - Monitor brightness switching function according to the mouse pointer position (Auto Brightness Switch)
  - Rotating the display direction according to installation direction (Image Rotation Plus)
  - Improving diagnostic screen legibility by temporarily increasing brightness (Instant Backlight Booster)
  - Adjusting the brightness according to ambient lighting (Auto Brightness Control)

### 1.2.2 RadiCS (Mac)

- Monitor quality control features
  - Visual checks
  - Acceptance testing
  - Consistency testing
  - Calibration function
  - Hands-off check
  - Test execution function by schedule
  - History management
  - Generates reports

### 1.2.3 RadiCS LE

- Monitor quality control features
  - Calibration function

  - Pattern indication
  - Hands-off check
  - Calibration execution function by schedule
  - History management
  - Generates reports
- Power saving function
  - Reducing monitor power consumption (Backlight Saver)
  - Turning on and off the power supplies to multiple monitors linked with each other (Master Power Switch)
- Work Optimization (Work-and-Flow) Function
  - Toggling CAL Switch Modes (Auto Mode Switch / Manual Mode Switch)
  - Switching signals (Signal Switch)
  - Moving mouse pointer (Mouse Pointer Utility)
  - Switching between displaying and hiding the PinP sub window (Hide-and-Seek)
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  - Improving diagnostic screen legibility by temporarily increasing brightness (Instant Backlight Booster)
  - Adjusting the brightness according to ambient lighting (Auto Brightness Control)

## 1.3 Cybersecurity Warnings and Responsibilities

- Please implement the following measures on the computer on which this software is installed and used. If you are setting up a system that operates separately from the Internet, it is also recommended to implement similar measures on individual computers in order to mitigate internal network threats.
  - Install security software (antivirus software, firewall, etc.)
  - Use an operating system that is still supported
  - Ensure that the security software used with your operating system is always up-to-date.
- Update security software to the latest version and perform regular virus checks.
- Install and update this software using the DVD-ROM, installation file, and update file provided by EIZO Corporation or its distributor.
- If an update file is provided by EIZO Corporation or its distributor, update it immediately and use the latest version.

# 2 Setup

## 2.1 System Requirements

### 2.1.1 Windows

#### 2.1.1.1 PC

**OS**

- Windows 11
- Windows 10 (32 bit / 64 bit)

**CPU**

- Must meet the system requirements of your OS

**Memory**

- 1 GB or more (32 bit)
- 2 GB or more (64 bit)
- 4 GB or more (Windows 11)

**Graphics board**

- Color
  - Color: 24 bits or more
  - Monochrome: 8 bits or more
- Resolution: 1280 x 1024 or higher[*1]

[*1] Even if the resolution meets the requirements, the screen layout may be incorrect depending on the display scale setting of the OS. Check the display scale setting if necessary.

**Storage**

- 1 GB for software installation
- Approx. 1 GB for history storage (recommended)

**Interface**

- Communication with a monitor
  - USB
  - DDC
- Communication with a sensor
  - USB
  - RS-232C

**Software**

- Security software
  - Antivirus
  - Firewall

### 2.1.1.2 Compatible sensors

✓: Supported, -: Not supported

| Sensor | Calibration | Luminance Check<br>Grayscale Check<br>Uniformity Check |
|---|---|---|
| EIZO UX2 Sensor | ✓ | ✓ |
| SSM | ✓*2 | ✓ |
| EIZO Integrated Front Sensor | ✓ | ✓*3 |
| LX-Can*1 | - | ✓ |
| LX-Plus*1 | - | ✓ |
| LS-100*1 | - | ✓ |
| CD-Lux<br>(Firmware version 1.95 and later are supported) *1 | - | ✓ |
| CD mon*1 | - | ✓ |
| MAVO-SPOT 2 USB*1 | - | ✓ |
| RaySafe X2 Light*1 | - | ✓ |

*1 Only supported by RadiCS.

*2 Only supported by monochrome monitors.

*3 Only supports Luminance Check and Grayscale Check.

**Attention**

- Available functions depend on the sensor used.
- Select the sensor according to the QC Guideline / standard. For details, see "Sensors" in 9.2 RadiCS Software [▶ 178].

**Note**

- To use built-in Integrated Front Sensor as a monitor, we recommend you to periodically correlate with external sensor calibrated in order to keep the measurement accuracy. See 5.7 Performing Correlation for Integrated Front Sensor [▶ 106] for information on how to perform correlation.

### 2.1.1.3 Compatible monitors

Open "About RadiCS" in the upper part of the window, and confirm on the "Monitor" tab (see 8.9 Confirming RadiCS Information (About RadiCS) [▶ 168]) or on our web site.

### 2.1.2 Mac

#### 2.1.2.1 PC

| Attention |
| --- |
| • RadiCS LE is not supported on Mac.<br>• RadiCS screens may be displayed cut off on MacBook Pro Retina display models. Please use RadiCS by moving the screen to a monitor other than the MacBook Pro.<br>• When using a monitor that supports the PbyP function, disable "Displays have separate Spaces" in Mission Control settings.<br>• Check that the OS meets the system requirements before upgrading RadiCS. If the system requirements are not met, upgrade the OS before upgrading RadiCS. |

**OS**

- macOS Ventura (13)
- macOS Monterey (12)

**CPU**

- Must meet the system requirements of your OS

**Memory**

- 2 GB or more

**Graphics board**

- Color: 16.7 million colors or more
- Resolution: 1280 x 1024 or higher

**Storage**

- 1 GB for software installation
- Approx. 1 GB for history storage (recommended)

**Interface**

- Communication with a monitor: USB
- Communication with a sensor: USB

**Software**

- Security software
  - Antivirus
  - Firewall

#### 2.1.2.2 Compatible sensors

- EIZO UX2 sensor
- EIZO Integrated Front Sensor

| Attention |
| --- |
| • Available functions depend on the sensor used. |

**Note**

- In order to maintain measurement accuracy when using the EIZO Integrated Front Sensor as the sensor, we recommend correlating with the calibrated external sensor once a year. See 5.7 Performing Correlation for Integrated Front Sensor [▶ 106] for information on how to perform correlation.

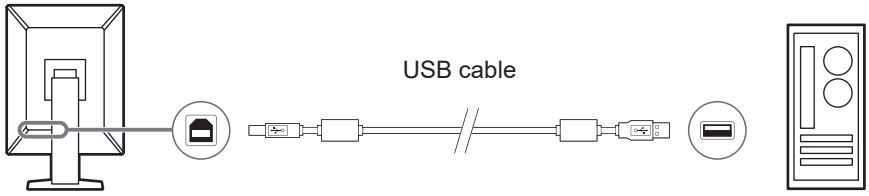
#### 2.1.2.3 Compatible monitors

Open "About RadiCS" in the upper part of the window, and confirm on the "Monitor" tab (see 8.9 Confirming RadiCS Information (About RadiCS) [▶ 168]) or on our web site.

## 2.2 Connecting

1. Connect the monitor's USB upstream port to the PC's USB downstream port with the USB cable of the monitor.

Example:




**Attention**

- If the monitor is equipped with multiple USB upstream ports, use the "USB 1" or "USB-C®" port.

## 2.3 Installing the Software

**Note**

- See 8.3 Connecting to RadiNET Pro [▶ 157] when connecting to RadiNET Pro. In addition, a RadiNET Pro server must be set up in advance. For details, refer to the RadiNET Pro system guide.

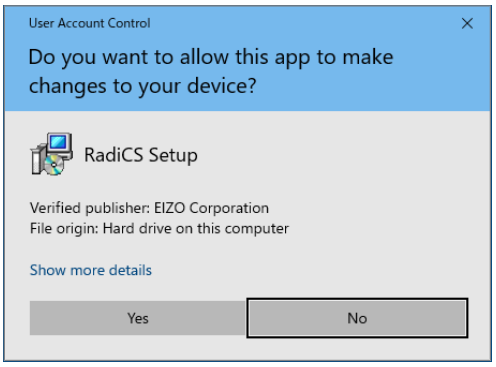
### 2.3.1 Windows

**Attention**

- When RadiCS version 3 or earlier is installed, RadiCS of this version cannot be installed. Uninstall it in advance.
- A user account with Administrator authority is required to install RadiCS. For information on the authority of your account, contact your system administrator.
- The current RadiCS will be uninstalled if it is version 4 or above.
- RadiCS version 4.6.1 or later is required If you are upgrading from version 4.

#### 2.3.1.1 Installing from DVD-ROM

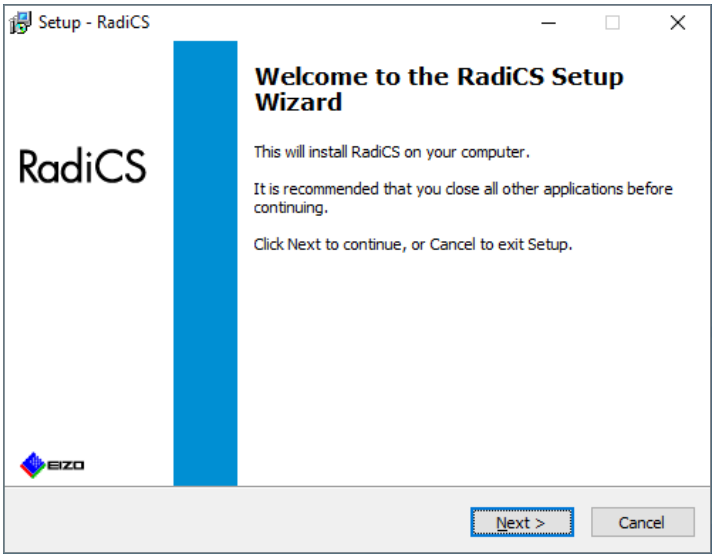
1. Insert "RadiCS DVD-ROM" into the DVD-ROM drive.




The "User Account Control" dialog box appears. Click "Yes" to start the installer.

| **Note** |
| --- |
| • When the installer does not automatically start, double-click "EIZO_RadiCS_v5.x.x.x.exe" in DVD-ROM. |

2. Click "Next".

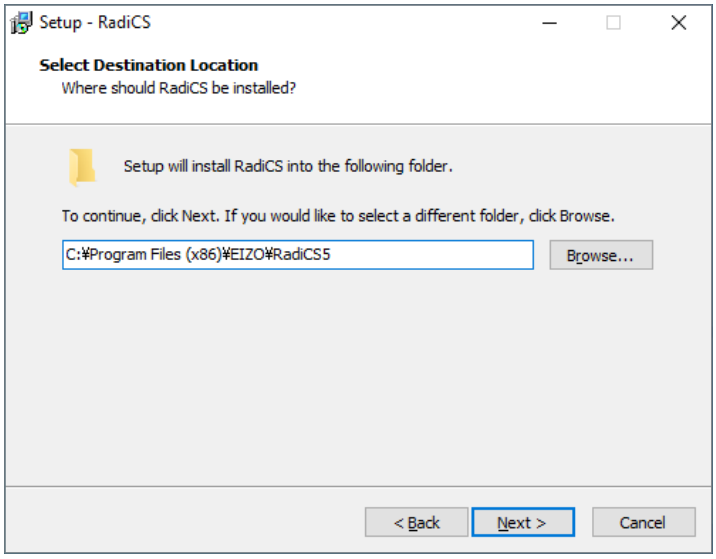



The "License Agreement" window appears.

3. Confirm the contents, select "I accept the agreement", and click "Next".


The "Select Destination Location" window appears.

4. Select the destination folder for installing RadiCS and click "Next".

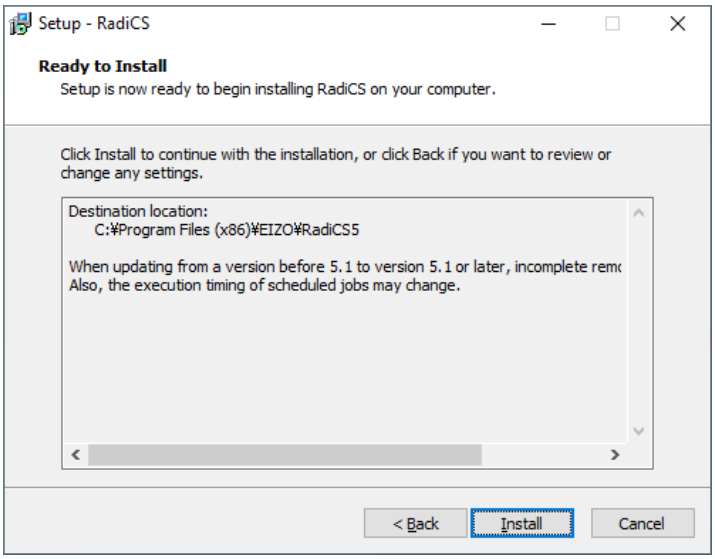



The "Ready to Install" window appears.

**Note**

- If RadiCS version 5.x.x is already installed, this screen will not appear. RadiCS will be installed by overwriting the folder where it is installed.

5. Click "Install".




The installation commences.
When the installation is completed, the "Completing the RadiCS Setup Wizard" window appears.

6. Click "Finish".


The RadiCS icon appears on the desktop and in the notification area.

| Note |
| --- |
| • When the "Open RadiCS" check box is selected, RadiCS automatically starts. |

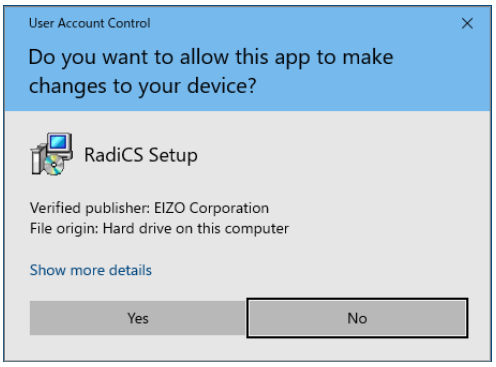
### 2.3.1.2 Installing from the downloaded file

Install using the file downloaded from RadiNET Pro, the RadiCS DVD-ROM or our web site (RadiCS LE only).

**Note**

- Please save the downloaded file for backup purposes in a shared folder or other location as needed.
- The Administrator mode password can be changed during installation. For details, see Changing the password during installation [▶ 163].

1. If you downloaded from RadiNET Pro, unzip the file (EIZO_RadiCS_v5.x.x.x.zip or xxxxx_EIZO_RadiCS_v5.x.x.x.zip).
2. Double-click "EIZO_RadiCS_v5.x.x.x.exe".




   The "User Account Control" dialog box appears. Click "Yes" to start the installer.
3. Follow step 2 to step 6 in Installing from DVD-ROM [▶ 13] for installation.

### 2.3.2 Mac

**Attention**

- Check that the OS meets the system requirements (see 2.1 System Requirements [▶ 9]) before upgrading RadiCS. If the system requirements are not met, upgrade the OS before upgrading RadiCS.

1. Place in a drive that can load "RadiCS DVD-ROM".
   The icon appears on the desktop.
2. Double-click the icon.
3. Double-click the "RadiCS_v5.x.x.x.pkg" icon.
   The installer starts up, and the installation wizard appears.

**Attention**

- A user account with administrator authority is required to install the software. For information on the authority of your account, contact your system administrator.
- If RadiCS is already installed, it is uninstalled.

4. Install the software.
   Follow the on-window instructions to install the software.

## 2.4 Setup

### 2.4.1 Starting up RadiCS

#### 2.4.1.1 Windows

1. Double-click the RadiCS icon in the notification area.

**Note**

- Once started, the software resides in the notification area.
- When there is not the RadiCS icon on the desktop or in the notification area, follow the procedures below to start up RadiCS.
  - Windows 11:
    Click "Start" - "All Apps" - "RadiCS Ver. 5".
  - Windows 10:
    Click "Start" - "EIZO" - "RadiCS Ver.5" in order.

#### 2.4.1.2 Mac

1. Click the RadiCS icon on the menu bar, and select "RadiCS".

### 2.4.2 Correlating monitor with monitor information

#### 2.4.2.1 Automatic correlation

When RadiCS starts up initially or when a monitor configuration change is detected, the monitor is automatically detected and the correlation of the monitor with the monitor information is completed. No further steps are needed.

**Note**

- If the following monitors are not detected, then confirm in Administrator mode, the General screen, "Monitor Detection" that "Detect CuratOR monitors" is enabled. (See 8.4 RadiCS Basic Setting [▶ 160])
  - LL580W
  - LX1910
  - LX550W

#### 2.4.2.2 Manual correlation

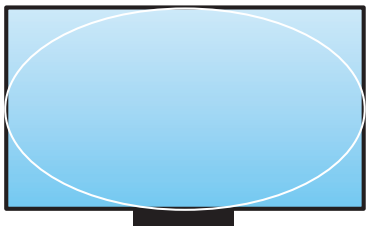
It is necessary to conduct manual detection and correlation for monitors where information such as the model name or serial number is not retained as monitor information cannot be automatically retrieved.

When manually correlating the monitor with the monitor information, disable automatic detection on the "Monitor Detection" on the General screen in Administrator mode. (8.4 RadiCS Basic Setting [▶ 160])

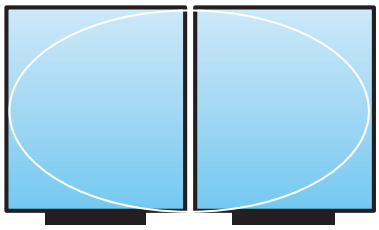
When a monitor configuration change is automatically detected, the screen to correlate the monitor with the monitor information is displayed. Then, follow the steps below and correlate the monitor with the monitor information.

**Attention**

- If automatic detection is disabled, it is necessary to perform manual detection after the initial RadiCS start up or after changing the monitor layout. RadiCS will not work normally unless manual monitor detection is performed.
- Monitor detection cannot be performed while in Wide View (screen displayed across multiple monitors).



Can detect monitor

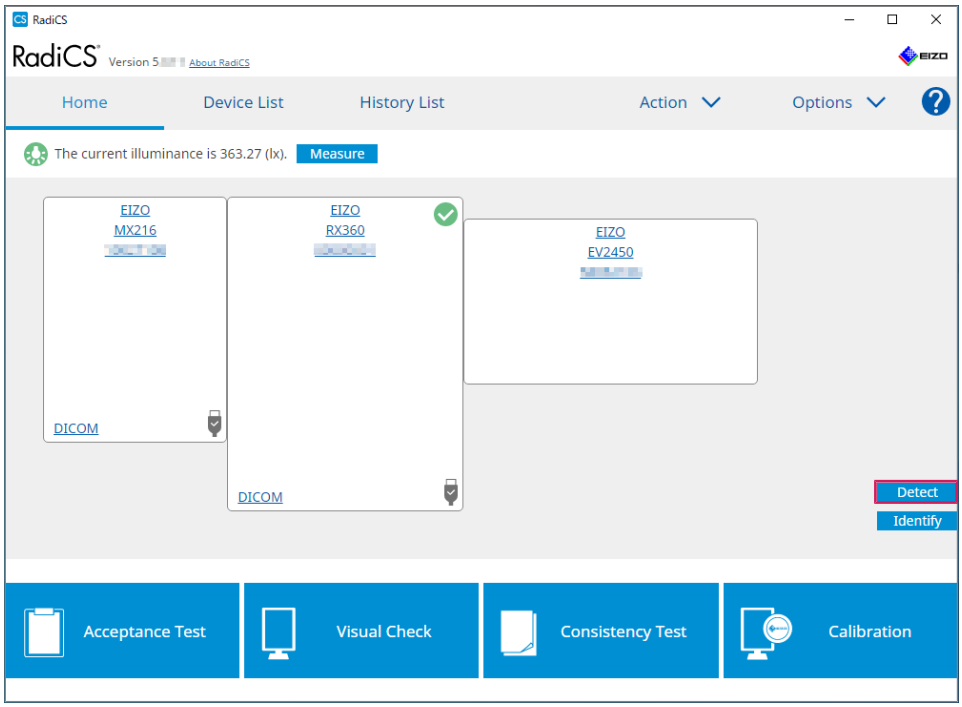


Cannot detect monitor

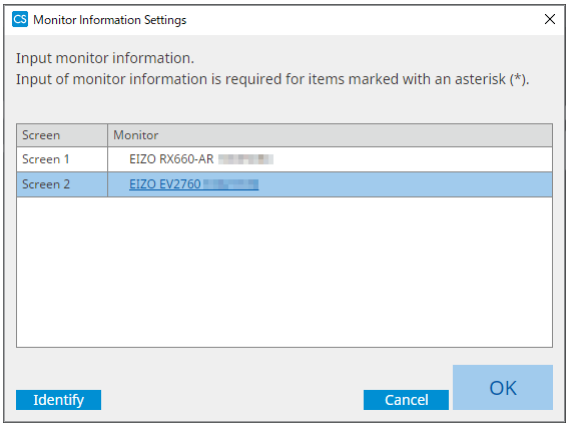
**Note**

- Monitor information may not be automatically retrieved in the following situations:
  - Information of the connected monitor is not displayed on the Home Screen.
  - Monitor information displayed on the Home Screen is not linked.

1. Logs in to Administrator Mode. (2.5 Logging in to Administrator Mode [▶ 20])
2. Click "Detect".



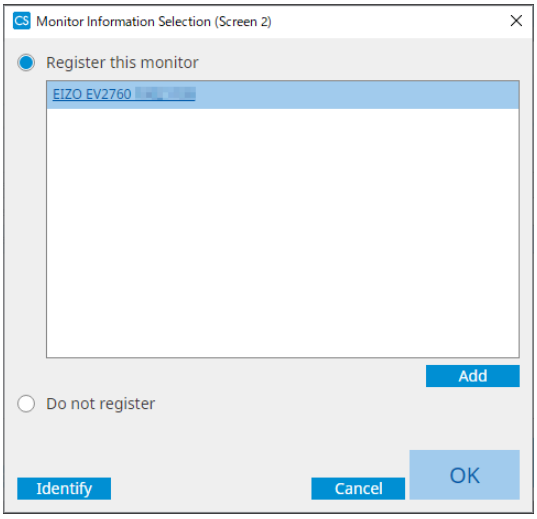
The Monitor Information Settings window appears if the monitor information cannot be obtained. If the Monitor Information Settings window does not appear, no further action is required as correlation is complete.




**Note**

- While the Monitor Information Settings window is displayed, an identification screen is displayed indicating which screen row corresponds to the actual screen.
- Moving the mouse over a row causes an identification circle to appear around the screen that corresponds to that row.
- Clicking "Identify" displays monitor identification information ("Information") on the monitor screen (compatible only with select models).
- Depending on the monitor, "Identify" may not be displayed.

3. Click the linked monitor (uncorrelated monitor).
   The Monitor Information Selection window appears.
4. Select the monitor information correlating with the screen.
   Monitor information registered when the monitor was previously detected is linked. Clicking the link allows you to edit the monitor information. Monitor information retrieved by USB communication cannot be edited.
   If the monitor information that you want to correlate is not displayed, click "Add" and enter the monitor information.



**Note**

- Clicking "Identify" displays monitor identification information ("Information") at the top of the monitor screen.
- Depending on the monitor, "Identify" may not be displayed.
- If it is not necessary to manage the target screen, select "Do not register". Monitor information will not be registered.

5. Click "OK".

### 2.4.3 Closing RadiCS

1. Click ✕ at the upper right of the window.

**Note**

- Even if the window is closed, RadiCS will reside in the notification area and menu bar.

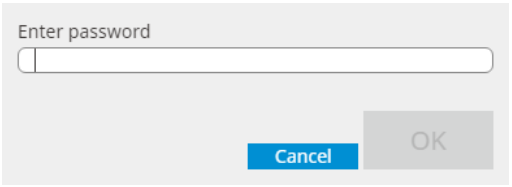
## 2.5 Logging in to Administrator Mode

To execute an acceptance test or calibration in RadiCS and configure various settings, log in to Administrator Mode.

1. Click "Administrator mode".


The password entry window appears.

2. Enter the password and click "OK".




The "Administrator mode" window appears.

**Attention**

- The default setting of password is "passwordv5". Make sure to change the initial password. See 8.5 Changing Password [▶ 161] to change the password or Changing the password during installation [▶ 163] to specify a password during installation.
- If you have upgraded from Ver.4, the password used in Ver.4 is still valid.

## 2.6 Function and Structure of Each Window

This section describes the structure and function of RadiCS / RadiCS LE.

### 2.6.1 Icon

#### 2.6.1.1 Icon shown in the notification area

After installing RadiCS / RadiCS LE, the RadiCS icon appears in the notification area. The icon changes according to the status.

| Icon | Status |
|---|---|
|  | Operating normally. |
|  | Task execution failed. |
|  | The illuminance alert is displayed. |
|  | Task execution failed, and the illuminance alert is displayed. |
|  | Executing a task. |

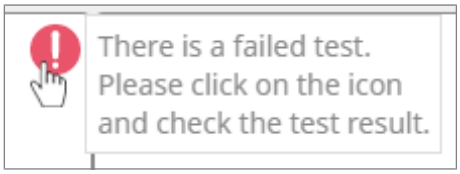
| Note |
|---|
| • The icon shown in the Task Tray will change to  if connecting to RadiNET Pro has failed. |

#### 2.6.1.2 Icon shown in RadiCS

The monitor status icon is displayed on RadiCS / RadiCS LE. The meaning of each icon is as follows:

| Icon | Status |
|---|---|
|  | Latest test result is Pass. |
|  | Latest test result is Fail. |
|  | Monitor successfully connected. |
|  | Monitor not connected. |
|  | Illuminance is within allowable range. |
|  | Illuminance exceeds allowable range. |
| (hidden) | Not tested or not managed by RadiCS. |

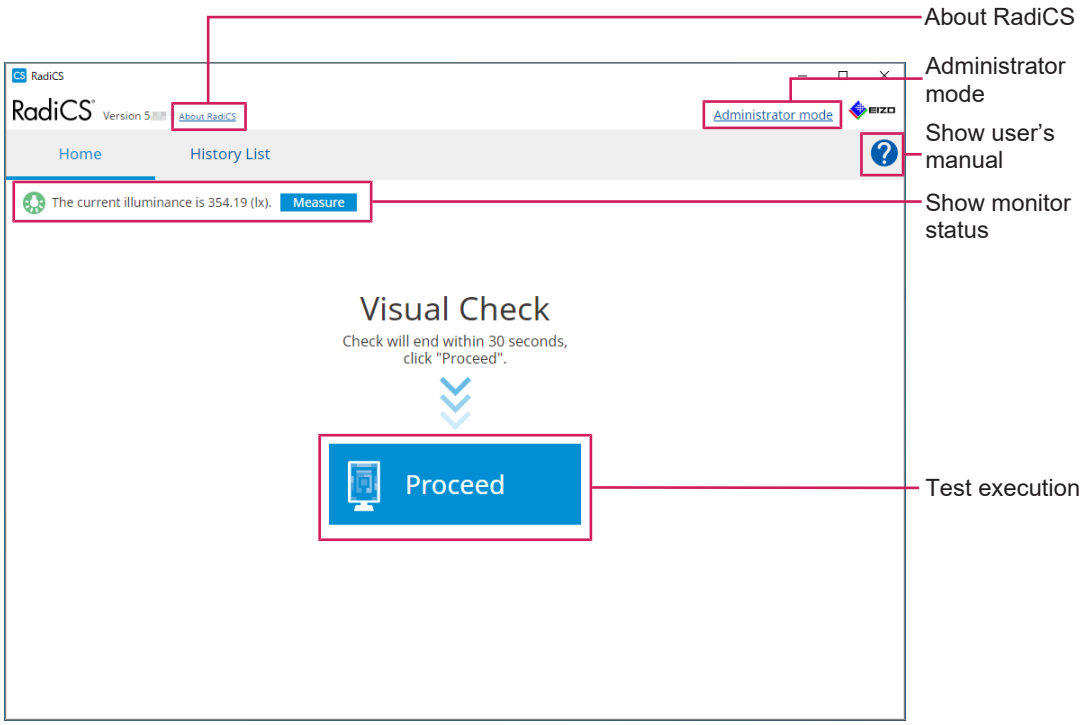
When the status is shown only with the icon, place the mouse pointer on the icon to confirm the details.



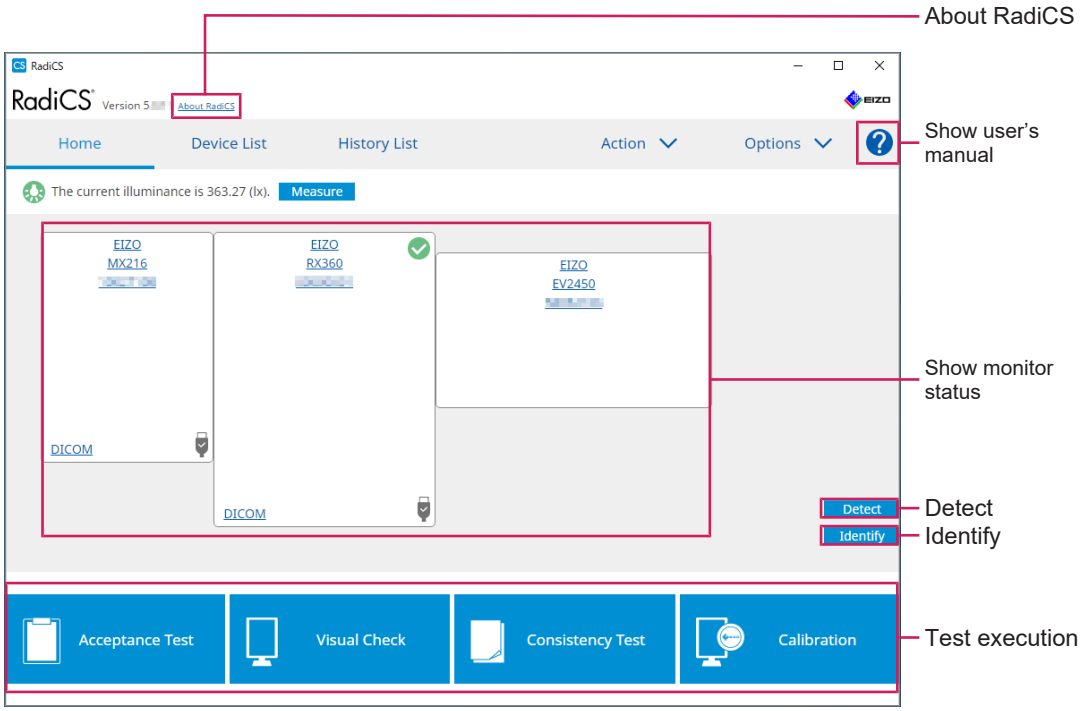
## 2.6.2 RadiCS (Windows)

### 2.6.2.1 Home

The monitor status is displayed simply. It is possible to run the test or adjustment.




RadiCS (User mode)




RadiCS (Administrator mode)

Adjustable functions depend on a mode.

✓: Supported, -: Not supported

| Function | User mode | Administrator mode |
|---|---|---|
| About RadiCS | ✓ | ✓ |
| Administrator mode | ✓ | - |
| User's Manual | ✓ | ✓ |
| Show monitor status | ✓ | ✓ |
| Detect | - | ✓ |
| Identify | - | ✓ |
| Test execution | ✓*1 | ✓ |

*1 Only the Visual Check is executable. Consistency Test is executable from "Action" only in Administrator mode. For details on execution, see Performing a Consistency Test [▶ 51].

### About RadiCS

Displays the following information: (8.9 Confirming RadiCS Information (About RadiCS) [▶ 168])

- Version
- Compatible monitors
- Plug-in
- License

### Administrator mode

Logs in to Administrator Mode.

### User's manual

Displays the RadiCS user's manual.

### Show monitor status

Shows the monitor status.

In User mode, the illuminance information is displayed.

In Administrator mode, the following items are displayed:

- Illuminance information
- Monitor information (manufacturer, monitor name, serial number, and USB connection status)
- Latest test result

### Detect

Detects a monitor.

### Identify

The monitor information (manufacturer, model name, serial number) is displayed on the monitor's screen.

### Test execution

Runs the test or adjustment.

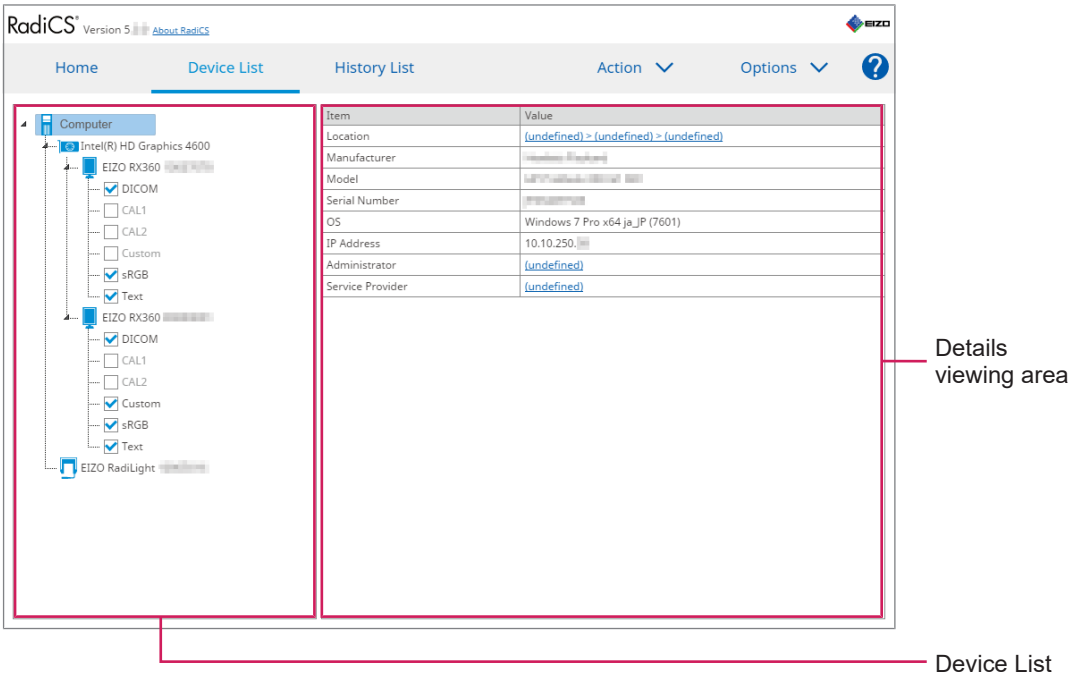
- Acceptance Test
- Visual Check

- Consistency Test
- Calibration

### 2.6.2.2 Device List

It is possible to confirm and set PC used, graphics board, monitor connected via RadiLight and USB, and its detailed information of CAL Switch Mode. The device list is displayed only in Administrator mode.

| Note |
| --- |
| • More information on RadiLight can be found on Monitor Information [▶ 149]. |




✓: Supported, -: Not supported

| Function | User mode | Administrator mode |
| --- | --- | --- |
| Device List | - | ✓ |
| Details viewing area | - | ✓ |

#### Device List

The following information is displayed in a tree format. The detailed information of selected item is displayed in the detailed display area. Also, select the check box to set the CAL Switch Mode as an object managed by RadiCS.

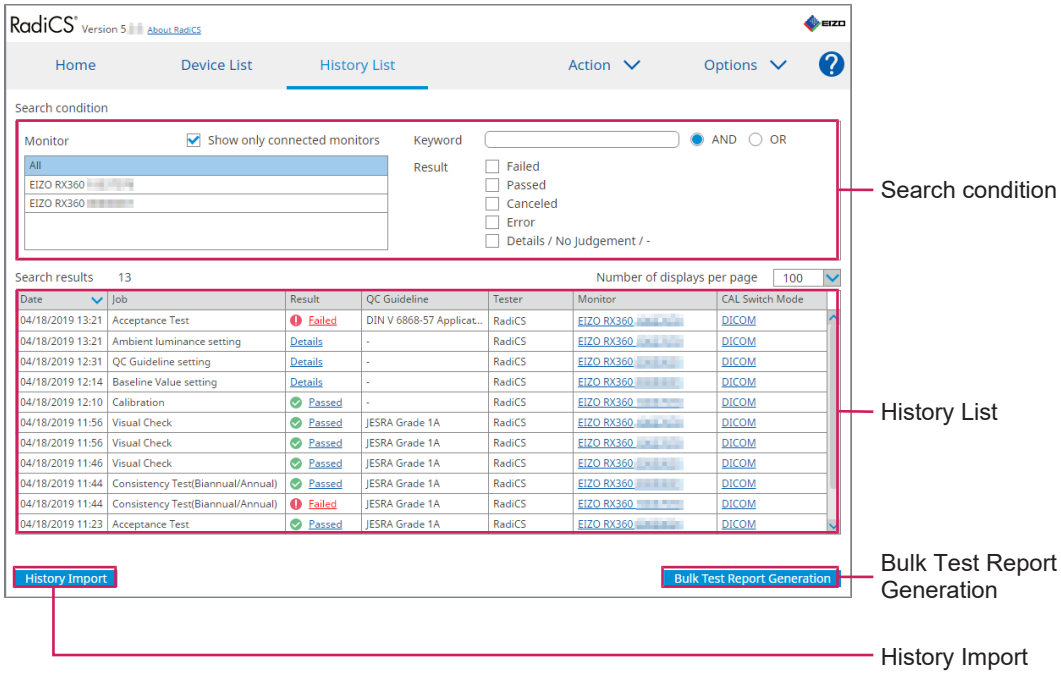
- PC
- Graphics board
- Monitor
- CAL Switch Mode
- RadiLight

#### Details viewing area

Shows the detailed information of a selected item. (8.1 Managing PC / Monitor Information [▶ 147])

### 2.6.2.3 History List

A history list of the execution results of task and adjustment and setting changes is displayed. You can create a report from the history.




✓: Supported, -: Not supported

| Function | User mode | Administrator mode |
|---|---|---|
| Search condition | ✓ | ✓ |
| History List | ✓ | ✓ |
| History Import | - | ✓ |
| Bulk Test Report Generation | ✓ | ✓ |

#### Search condition

Sets the condition to display histories in History List. Select a condition or enter a keyword in the text box. (Searching History [▶ 68])

#### History List

Shows a history list of the execution results of task and adjustment and setting changes according to search condition. Right-click the history selected to generate the report. (Generating Report from History List [▶ 69])

#### History Import

Imports backup of history file. (Importing History [▶ 68])

#### Bulk Test Report Generation

Generates bulk report of tests that meet the configured condition of all histories displayed in History List. (Generating Multiple Reports [▶ 70])

### 2.6.2.4 Action

✓: Supported, -: Not supported

| Function | User mode | Administrator mode |
|---|---|---|
| Hands-off Check | - | ✓ |
| Luminance Check | - | ✓ |
| Grayscale Check | - | ✓ |
| Consistency Test*1 | ✓ | - |
| Work-and-flow*1 | ✓ | - |
| Correlation | - | ✓ |
| Illuminance Sensor Correlation | - | ✓ |
| Color Match Calibration | - | ✓ |
| Pattern Indication | - | ✓ |
| Create/Restore Backup | - | ✓ |

*1 Only displays when set to Administrator mode "Options" - "Configuration" - "User Mode". For details, see 8.6 Configuring User Mode Display Setting [▶ 163].

**Attention**

- Available functions depend on the monitor used.

**Hands-off Check**

Performs a Hands-off Check. (5.1 Performing Tasks [▶ 92])

**Luminance Check**

Performs a Luminance Check. (5.1 Performing Tasks [▶ 92])

**Grayscale Check**

Performs a Grayscale Check. (5.1 Performing Tasks [▶ 92])

**Consistency Test**

Performs a Consistency Test. (Performing a Consistency Test [▶ 51])

**Work-and-flow**

Set the function for making works more efficient.

- Hide-and-Seek (7.1 Switching Displaying / Hiding of PinP Sub Window (Hide-and-Seek) [▶ 118])
- Switch-and-Go (7.2 Switching PC to Operate (Switch-and-Go) [▶ 123])
- Point-and-Focus (7.3 Focusing on Part of Screen to be Displayed (Point-and-Focus) [▶ 127])
- Auto Mode Switch (7.4 Automatically Switching CAL Switch Mode (Auto Mode Switch) [▶ 131])
- Manual Mode Switch (7.5 Switching CAL Switch Mode on Screen (Manual Mode Switch) [▶ 132])
- Signal Switch (7.6 Switching Input Signal (Signal Switch) [▶ 135])
- Mouse Pointer Utility (7.7 Optimizing Mouse Operation (Mouse Pointer Utility) [▶ 138])
- Image Rotation Plus (7.8 Rotating the Display Direction According to the Installation Direction (Image Rotation Plus) [▶ 140])

- Auto Brightness Switch (7.9 Switching the Brightness of the Monitor According to Mouse Position (Auto Brightness Switch) [▶ 141])
- Instant Backlight Booster (7.10 Increasing Brightness Temporarily (Instant Backlight Booster) [▶ 142])
- Auto Brightness Control (7.11 Adjusting Monitor Brightness According to Ambient Lighting (Auto Brightness Control) [▶ 145])

**Correlation**

Performs correlation between the Integrated Front Sensor and the measurement device. (5.7 Performing Correlation for Integrated Front Sensor [▶ 106])

**Illuminance Sensor Correlation**

Perform correlation for the illuminance sensor of the monitor and the illuminometer. (5.8 Performing Illuminance Sensor Correlation [▶ 108])

**Color Match Calibration**

Manually match the monitor colors for two machines. (5.4 Calibrating Colors between the Monitors (Color Match Calibration) [▶ 97])

**Pattern Indication**

Displays a test pattern on the monitor, and detects the pattern. Also displays a measurement pattern and manually measures the brightness of the monitor. (5.3 Displaying / Outputting a Pattern [▶ 94], 5.2 Manually Measuring Luminance [▶ 93])

**Create/Restore Backup**

This function only works with specific monitors. It obtains the monitor status and saves the file. In addition, it restores the monitor status from the saved file. (8.10 Functions Limited to Specific Monitors [▶ 170])

### 2.6.2.5 Options

Various settings are configured. The option is displayed only in Administrator mode.

✓: Supported, -: Not supported

| Function | User mode | Administrator mode |
|---|---|---|
| Configuration | - | ✓ |
| QC Guideline | - | ✓ |
| Work-and-flow | - | ✓ |
| Power Saving | - | ✓ |
| Gateway | - | ✓ |
| Export settings | - | ✓ |

**Configuration**

Set the following items:

- General (8.3 Connecting to RadiNET Pro [▶ 157], 8.4 RadiCS Basic Setting [▶ 160], 8.5 Changing Password [▶ 161])
- Registration Information (8.2 Setting Registration Information [▶ 156])
- Schedule (4.5 Using Scheduling [▶ 89])
- Sensor (4.4 Adding Measurement Devices [▶ 88])
- User Mode (8.6 Configuring User Mode Display Setting [▶ 163])

- History (Backing Up the History [▶ 73])
- Ambient Light Watchdog (5.6 Watching the Illuminance [▶ 103])
- MAC Address Clone (8.8 Replacing the MAC address of the monitor (MAC Address Clone) [▶ 165])

**QC Guideline**

Prepare or edit the QC Guideline. (4.2 Changing QC Guidelines [▶ 75])

**Work-and-flow**

Set the function for making works more efficient.

- Hide-and-Seek (7.1 Switching Displaying / Hiding of PinP Sub Window (Hide-and-Seek) [▶ 118])
- Switch-and-Go (7.2 Switching PC to Operate (Switch-and-Go) [▶ 123])
- Point-and-Focus (7.3 Focusing on Part of Screen to be Displayed (Point-and-Focus) [▶ 127])
- Auto Mode Switch (7.4 Automatically Switching CAL Switch Mode (Auto Mode Switch) [▶ 131])
- Manual Mode Switch (7.5 Switching CAL Switch Mode on Screen (Manual Mode Switch) [▶ 132])
- Signal Switch (7.6 Switching Input Signal (Signal Switch) [▶ 135])
- Mouse Pointer Utility (7.7 Optimizing Mouse Operation (Mouse Pointer Utility) [▶ 138])
- Image Rotation Plus (7.8 Rotating the Display Direction According to the Installation Direction (Image Rotation Plus) [▶ 140])
- Auto Brightness Switch (7.9 Switching the Brightness of the Monitor According to Mouse Position (Auto Brightness Switch) [▶ 141])
- Instant Backlight Booster (7.10 Increasing Brightness Temporarily (Instant Backlight Booster) [▶ 142])
- Auto Brightness Control (7.11 Adjusting Monitor Brightness According to Ambient Lighting (Auto Brightness Control) [▶ 145])

**Power Saving**

Configure the setting for power saving.

- Backlight Saver (6.1 Using Power Saving Function (Backlight Saver) [▶ 112])
- Master Power Switch (6.2 Turning ON / OFF the Monitor in Cooperation [▶ 116])

**Gateway**

Configures the setting for connecting to RadiNET Pro Web Hosting / RadiNET Pro Enterprise / RadiNET Pro Guardian. For details, refer to the RadiNET Pro Web Hosting system guide. This function is not shown until the connection settings are completed.

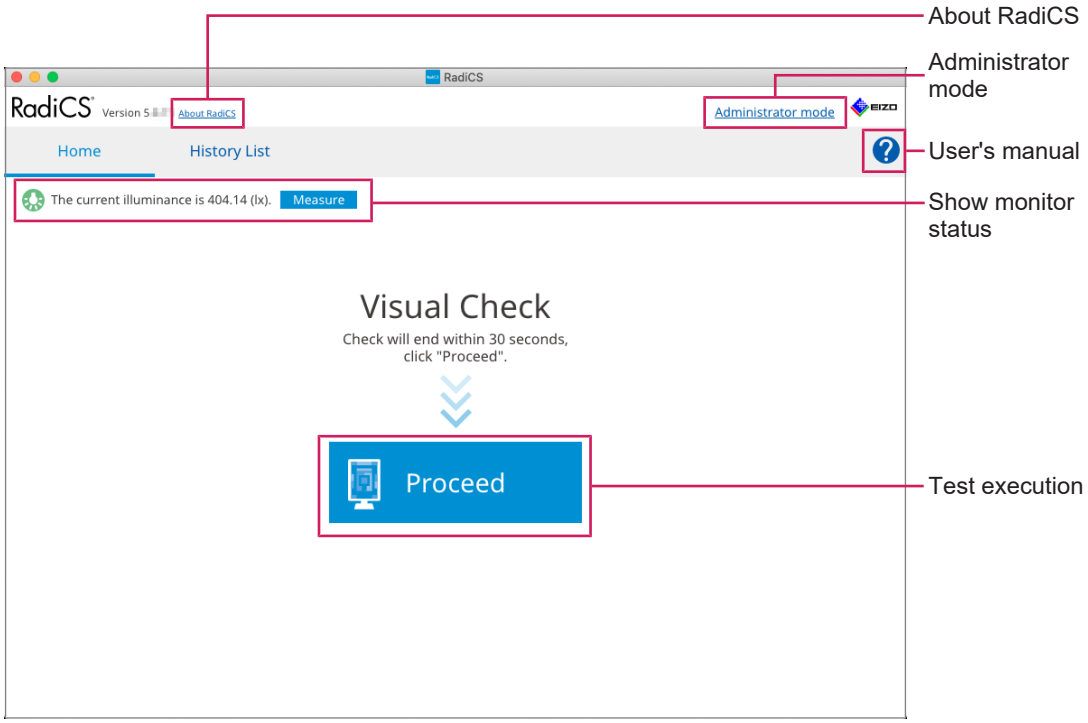
**Export settings**

Exports the setting file for batch setting from RadiNET Pro to each RadiCS PC. (Exporting Setting File to be Imported into RadiNET Pro [▶ 159])

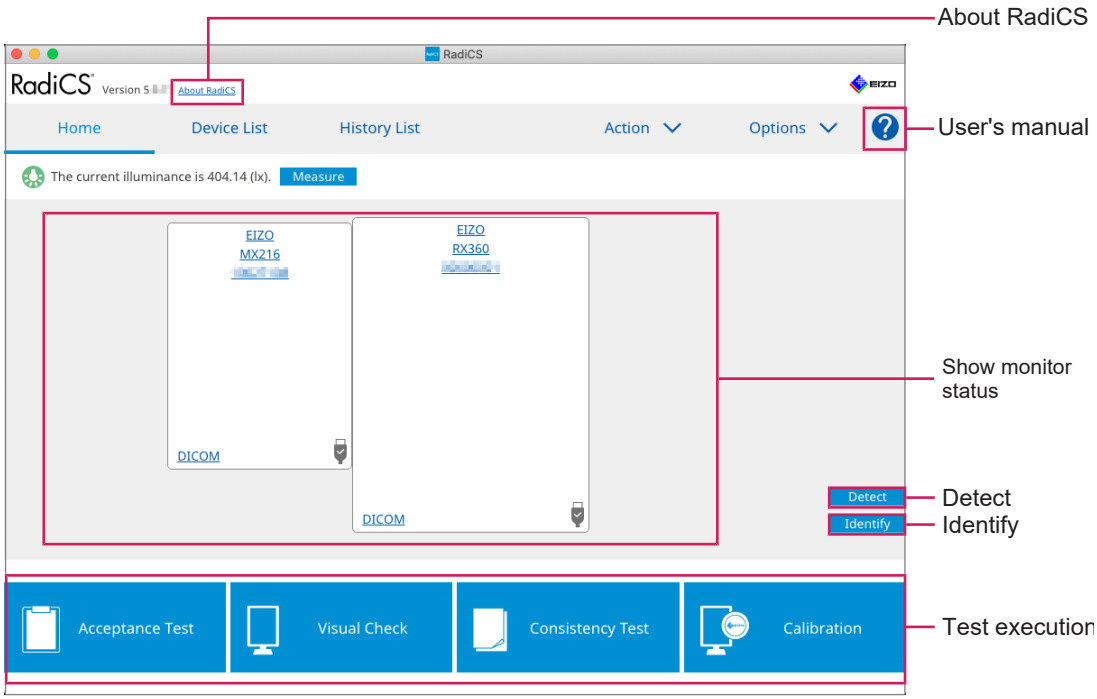
### 2.6.3 RadiCS (Mac)

#### 2.6.3.1 Home

The monitor status is displayed simply. It is possible to run the test or adjustment.




RadiCS (User mode)




RadiCS (Administrator mode)

✓: Supported, -: Not supported

| Function | User mode | Administrator mode |
|---|---|---|
| About RadiCS | ✓ | ✓ |
| Administrator mode | ✓ | - |
| User's manual | ✓ | ✓ |
| Show monitor status | ✓ | ✓ |
| Detect | - | ✓ |
| Identify | - | ✓ |
| Test execution | ✓*1 | ✓ |

*1 Only the Visual Check is executable. Consistency Test is executable from "Action" only in Administrator mode. For details on execution, see Performing a Consistency Test [▶ 51].

**About RadiCS**

Displays the following information: (8.9 Confirming RadiCS Information (About RadiCS) [▶ 168])

- Version
- Compatible monitors
- Plug-in
- License

**Administrator mode**

Logs in to Administrator Mode.

**User's manual**

Displays the RadiCS user's manual.

**Show monitor status**

Shows the monitor status.

In User mode, the illuminance information is displayed.

In Administrator mode, the following items are displayed:

- Illuminance information
- Monitor information (manufacturer, monitor name, serial number, and USB connection status)
- Latest test result

**Detect**

Detects a monitor.

**Identify**

The monitor information (manufacturer, model name, serial number) is displayed on the monitor's screen.

**Test execution**

Runs the test or adjustment.

- Acceptance Test
- Visual Check

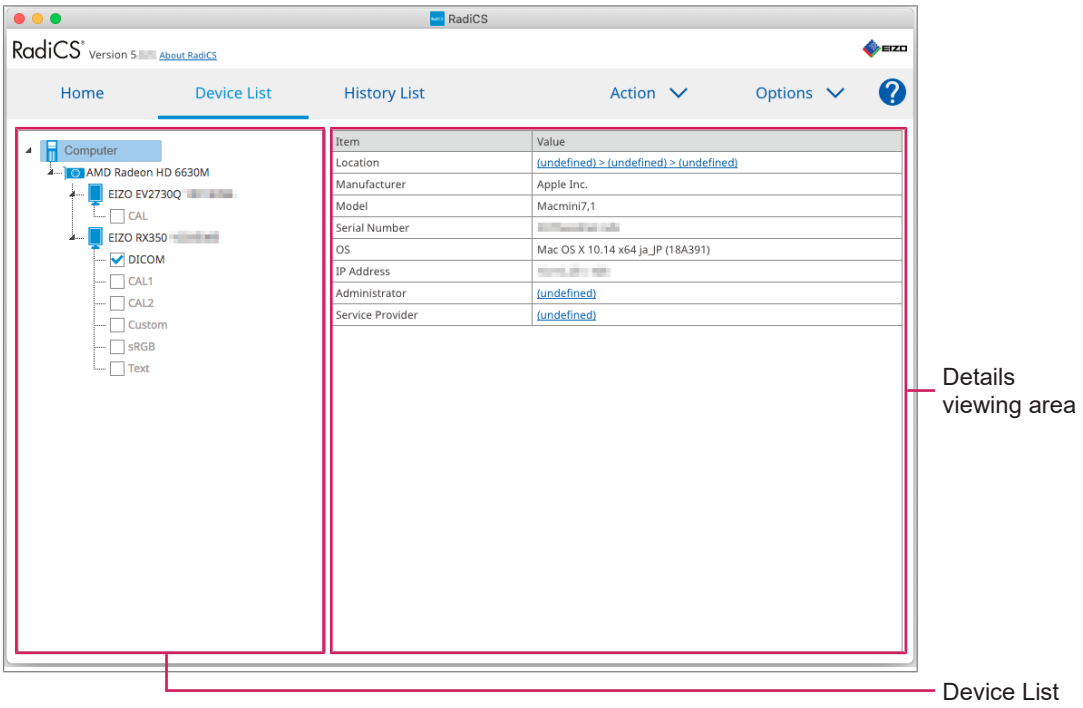
- Consistency Test
- Calibration

### 2.6.3.2 Device List

Detailed information about the PC and graphics board in use, monitor connected via USB, and the CAL Switch Mode can be confirmed and set. The device list is displayed only in Administrator mode.

**Note**

- More information on RadiLight can be found on Monitor Information [▶ 149].




✓: Supported, -: Not supported

| Function | User mode | Administrator mode |
|---|---|---|
| Device List | - | ✓ |
| Details viewing area | - | ✓ |

#### Device List

The following information is displayed in a tree format. The detailed information of selected item is displayed in the detailed display area. Also, select the check box to set the CAL Switch Mode as an object managed by RadiCS.

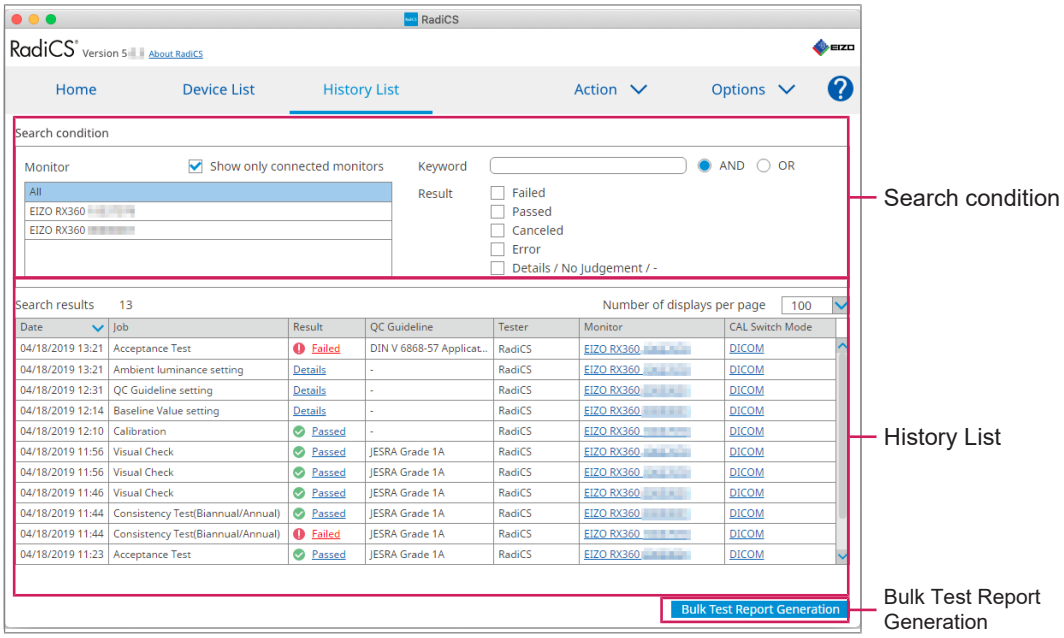
- PC
- Graphics board
- Monitor
- CAL Switch Mode

#### Details viewing area

Shows the detailed information of a selected item. (8.1 Managing PC / Monitor Information [▶ 147])

### 2.6.3.3 History List

A history list of the execution results of task and adjustment and setting changes is displayed. You can create a report from the history.




✓: Supported, -: Not supported

| Function | User mode | Administrator mode |
|---|---|---|
| Search condition | ✓ | ✓ |
| History List | ✓ | ✓ |
| Bulk Test Report Generation | ✓ | ✓ |

#### Search condition

Sets the condition to display histories in History List. Select a condition or enter a keyword in the text box. (Searching History [▶ 68])

#### History List

Shows a history list of the execution results of task and adjustment and setting changes according to search condition. Right-click the history selected to generate the report. (Generating Report from History List [▶ 69])

#### Bulk Test Report Generation

Generates bulk report of tests that meet the configured condition of all histories displayed in History List. (Generating Multiple Reports [▶ 70])

#### 2.6.3.4 Action

✓: Supported, -: Not supported

| Function | User mode | Administrator mode |
|---|---|---|
| Hands-off Check | - | ✓ |
| Luminance Check | - | ✓ |
| Grayscale Check | - | ✓ |
| Consistency Test*1 | ✓ | - |
| Correlation | - | ✓ |
| Illuminance Sensor Correlation | - | ✓ |
| Pattern Indication | - | ✓ |

*1 Only displays when set to Administrator mode "Options" - "Configuration" - "User Mode". For details, see 8.6 Configuring User Mode Display Setting [▶ 163].

**Hands-off Check**

Performs a Hands-off Check. (5.1 Performing Tasks [▶ 92])

**Luminance Check**

Performs a Luminance Check. (5.1 Performing Tasks [▶ 92])

**Grayscale Check**

Performs a Grayscale Check. (5.1 Performing Tasks [▶ 92])

**Consistency Test**

Performs a Consistency Test. (Performing a Consistency Test [▶ 51])

**Correlation**

Performs correlation between the Integrated Front Sensor and the measurement device. (5.7 Performing Correlation for Integrated Front Sensor [▶ 106])

**Illuminance Sensor Correlation**

Perform correlation for the illuminance sensor of the monitor and the illuminometer. (5.8 Performing Illuminance Sensor Correlation [▶ 108])

**Pattern Indication**

Displays a test pattern on the monitor, and detects the pattern. Also displays a measurement pattern and manually measures the brightness of the monitor. (5.3 Displaying / Outputting a Pattern [▶ 94], 5.2 Manually Measuring Luminance [▶ 93])

#### 2.6.3.5 Options

Various settings are configured. The option is displayed only in Administrator mode.

✓: Supported, -: Not supported

| Function | User mode | Administrator mode |
|---|---|---|
| Configuration | - | ✓ |
| QC Guideline | - | ✓ |
| Export settings | - | ✓ |

### Configuration

Set the following items:

- General (8.3 Connecting to RadiNET Pro [▶ 157], 8.4 RadiCS Basic Setting [▶ 160], 8.5 Changing Password [▶ 161])
- Registration Information (8.2 Setting Registration Information [▶ 156])
- Schedule (4.5 Using Scheduling [▶ 89])
- Sensor (4.4 Adding Measurement Devices [▶ 88])
- User Mode (8.6 Configuring User Mode Display Setting [▶ 163])
- Ambient Light Watchdog (5.6 Watching the Illuminance [▶ 103])

### QC Guideline

Prepare or edit the QC Guideline. (4.2 Changing QC Guidelines [▶ 75])

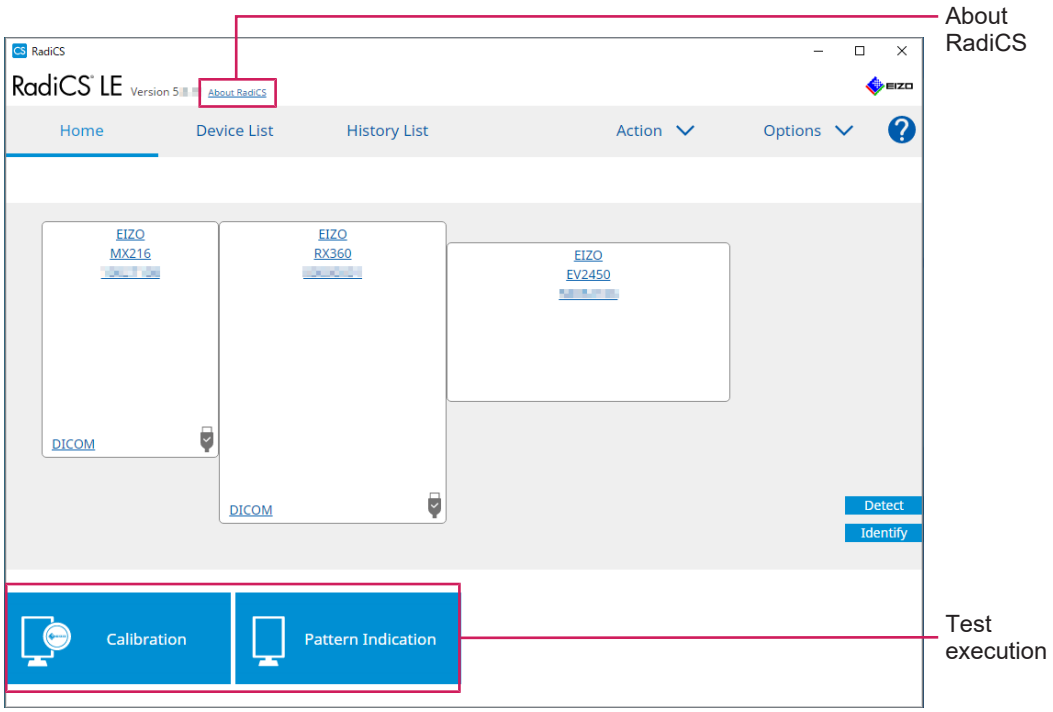
### Export settings

Exports the setting file for batch setting from RadiNET Pro to each RadiCS PC. (Exporting Setting File to be Imported into RadiNET Pro [▶ 159])

## 2.6.4 RadiCS LE

### 2.6.4.1 Home

The monitor status is displayed simply. Calibration and Visual Check are executable.




### About RadiCS

Displays the following information: (8.9 Confirming RadiCS Information (About RadiCS) [▶ 168])

- Version
- Compatible monitors
- Plug-in

- License

**Detect**

Detect a monitor manually.

**Identify**

The monitor information (manufacturer, model name, serial number) is displayed on the monitor's screen.

**Test execution**

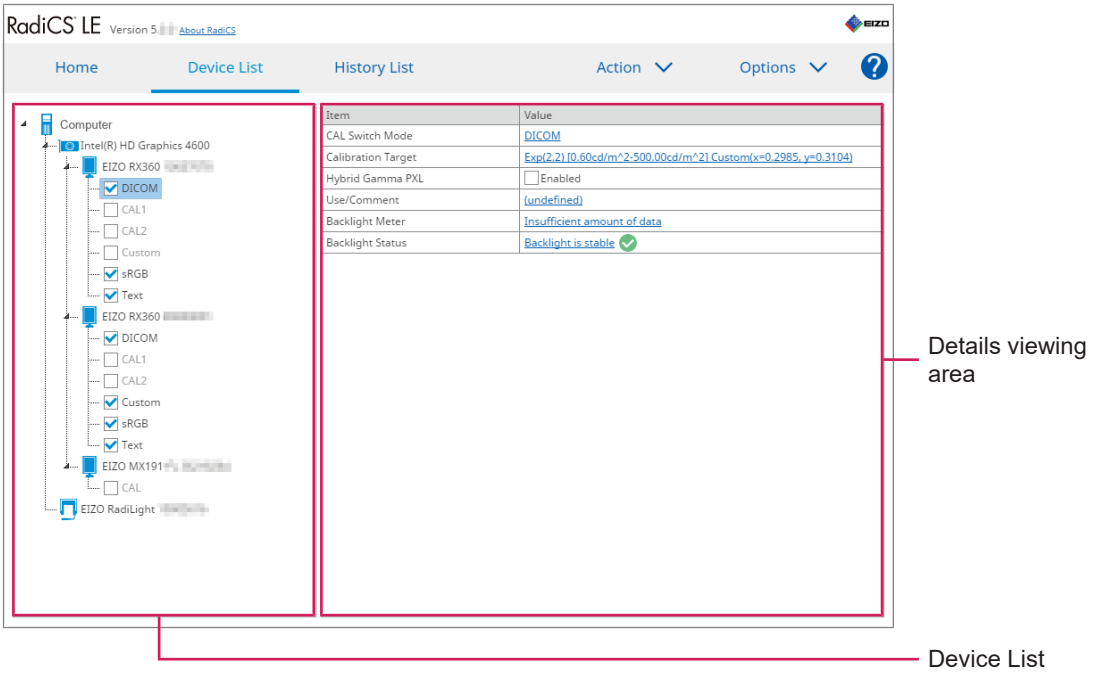
Runs the test or adjustment.

- Calibration
- Pattern Indication

### 2.6.4.2 Device List

It is possible to confirm and set PC used, graphics board, monitor connected via RadiLight and USB, and its detailed information of CAL Switch Mode.

| Note |
| --- |
| • More information on RadiLight can be found on Monitor Information [▶ 149]. |




**Device List**

The following information is displayed in a tree format. The detailed information of selected item is displayed in the detailed display area. Also, select the check box to set the CAL Switch Mode as an object managed by RadiCS.

- PC
- Graphics board
- Monitor
- CAL Switch Mode

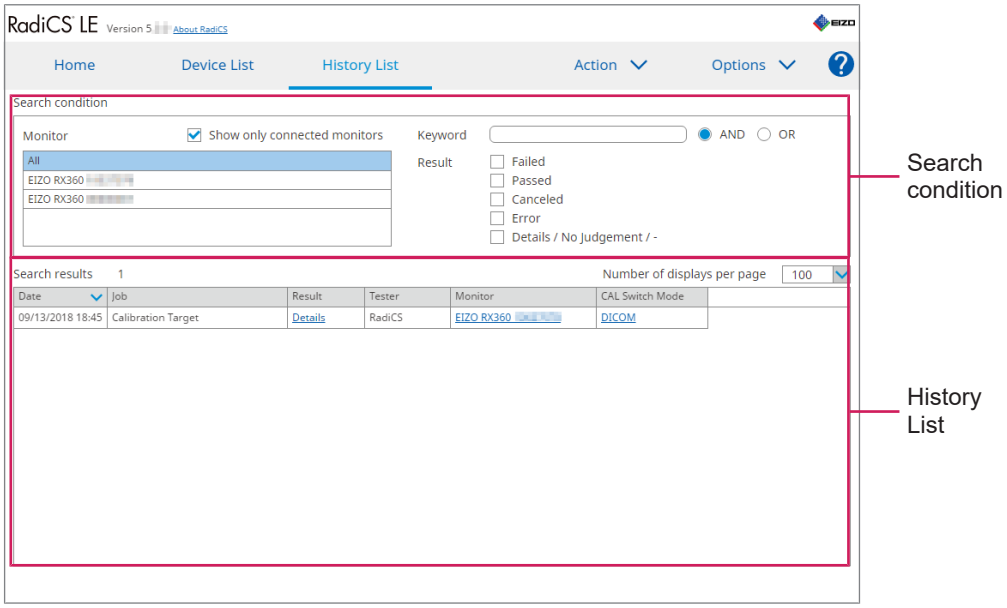
- RadiLight

**Details viewing area**

Shows the detailed information of a selected item. (8.1 Managing PC / Monitor Information [▶ 147])

### 2.6.4.3 History List

A history list of the execution results of task and adjustment and setting changes is displayed. You can create a report from the history.




**Search condition**

Sets the condition to display histories in History List. Select a condition or enter a keyword in the text box. (Searching History [▶ 68])

**History List**

Shows a history list of the execution results of task and adjustment and setting changes according to search condition. Right-click the history selected to generate the report. (Generating Report from History List [▶ 69])

### 2.6.4.4 Action

| **Attention** |
| --- |
| • Available functions depend on the monitor used. |

**Hands-off Check**

Performs a Hands-off Check. (5.1 Performing Tasks [▶ 92])

**Correlation**

Performs correlation between the Integrated Front Sensor and the measurement device. (5.7 Performing Correlation for Integrated Front Sensor [▶ 106])

### 2.6.4.5 Options

Various settings are configured.

| Attention |
| --- |
| • Available functions depend on the monitor used. |

#### Configuration

Set the following items:

- General (8.3 Connecting to RadiNET Pro [▶ 157], 8.4 RadiCS Basic Setting [▶ 160], 8.5 Changing Password [▶ 161])
- Registration Information (8.2 Setting Registration Information [▶ 156])
- Schedule (4.5 Using Scheduling [▶ 89])
- MAC Address Clone (8.8 Replacing the MAC address of the monitor (MAC Address Clone) [▶ 165])

#### Work-and-flow

Set the function for making works more efficient.

- Hide-and-Seek (7.1 Switching Displaying / Hiding of PinP Sub Window (Hide-and-Seek) [▶ 118])
- Switch-and-Go (7.2 Switching PC to Operate (Switch-and-Go) [▶ 123])
- Point-and-Focus (7.3 Focusing on Part of Screen to be Displayed (Point-and-Focus) [▶ 127])
- Auto Mode Switch (7.4 Automatically Switching CAL Switch Mode (Auto Mode Switch) [▶ 131])
- Manual Mode Switch (7.5 Switching CAL Switch Mode on Screen (Manual Mode Switch) [▶ 132])
- Signal Switch (7.6 Switching Input Signal (Signal Switch) [▶ 135])
- Mouse Pointer Utility (7.7 Optimizing Mouse Operation (Mouse Pointer Utility) [▶ 138])
- Image Rotation Plus (7.8 Rotating the Display Direction According to the Installation Direction (Image Rotation Plus) [▶ 140])
- Auto Brightness Switch (7.9 Switching the Brightness of the Monitor According to Mouse Position (Auto Brightness Switch) [▶ 141])
- Instant Backlight Booster (7.10 Increasing Brightness Temporarily (Instant Backlight Booster) [▶ 142])
- Auto Brightness Control (7.11 Adjusting Monitor Brightness According to Ambient Lighting (Auto Brightness Control) [▶ 145])

#### Power Saving

Configure the setting for power saving.

- Backlight Saver (6.1 Using Power Saving Function (Backlight Saver) [▶ 112])
- Master Power Switch (6.2 Turning ON / OFF the Monitor in Cooperation [▶ 116])

## 2.7 Uninstalling

### 2.7.1 Windows

#### 2.7.1.1 Windows 11 / Windows 10

1. Select "Start" - "Configuration" - "Apps" in order.
2. Select "RadiCS5" from the list, and click "Uninstall".
3. Follow the on-screen instructions to uninstall the software.

### 2.7.2 Mac

1. Double-click the "Library/Application Support/EIZO/RadiCS5/Uninstaller/RadiCSUninstaller" icon.

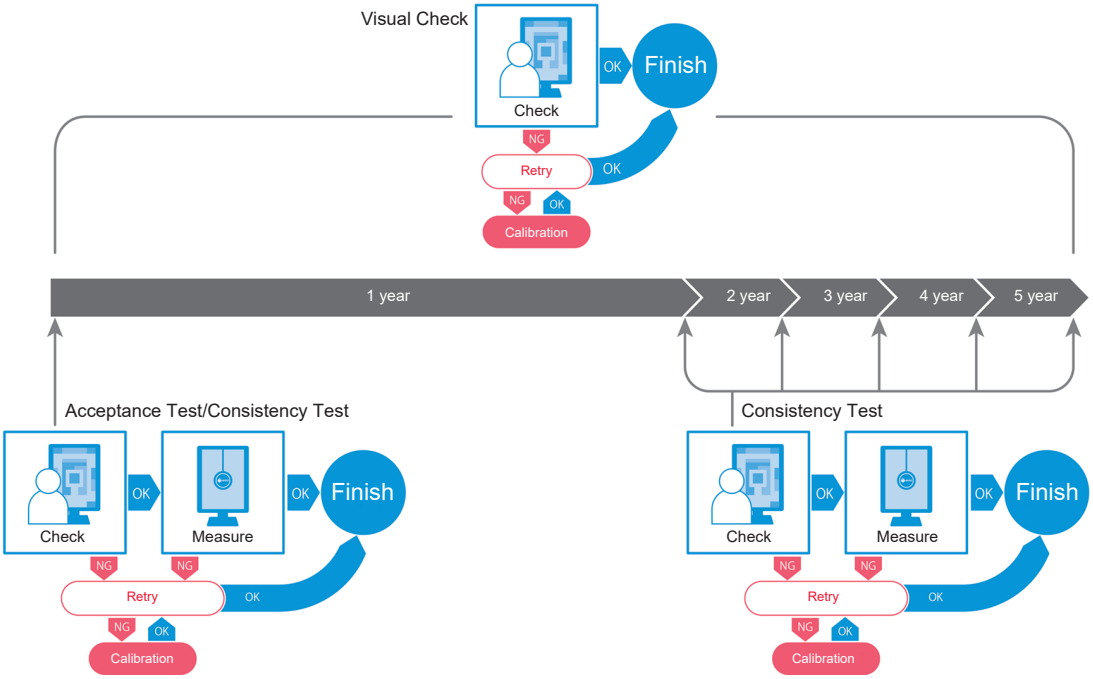
# 3 Basic Quality Control

## 3.1 Performing Test

This section explains how to perform tests to maintain monitor quality and how to prepare for tests.

### 3.1.1 Basic Flow of Quality Control

The basic flow of monitor quality control is as follows. The monitor quality control standard (QC Guideline) is specified by each country and the details (Test conditions, test details, test execution intervals of consistency tests, etc.) differ depending on the standards. See 4.2 Changing QC Guidelines [▶ 75] for how to change the QC Guideline.




Procedures of the following test methods are explained in this chapter:

#### 3.1.1.1 Acceptance Test

An acceptance test is used to check whether the display quality satisfies the requirements of the QC Guideline when a monitor is newly installed or replaced. It is recommended that this test is executed when a monitor is installed. For details, see Performing Acceptance Test [▶ 40].

| Note |
| --- |
| • If JESRA is selected for QC Guideline, the test on installation can be omitted for "Shipping Test Report" attached to a monitor. |

#### 3.1.1.2 Visual Check

A daily test is used to visually check whether the monitor display status is normal (Pattern Check). This check must be done before using a monitor. For details, see Performing Visual Check [▶ 47].

#### 3.1.1.3 Consistency Test

A consistency test is used to check that the display quality of the monitor is maintained. It is required to perform it at intervals specified by the QC guideline you use. For details, see Performing a Consistency Test [▶ 51].

### 3.1.2 Performing Acceptance Test

An acceptance test is used to check whether the display quality of a monitor satisfies the requirements of the QC guideline before using it. If a monitor is newly installed or replaced, it is recommended that you perform the acceptance test before using it in your daily operation. For details on how to set QC guidelines, see 4.2 Changing QC Guidelines [▶ 75].

The acceptance test includes pattern, luminance, grayscale, and uniformity checks. The check items depend on the QC guideline you use.

**Pattern Check**

Performs visual check whether the monitor display status is normal.

**Luminance Check**

Performs black and white luminance check.

**Grayscale Check**

Performs a grayscale check.

**Uniformity Check**

Performs the color and brightness uniformity check for the whole screen.

**Attention**

- Execute the tests at the actual temperature and illuminance of the monitor usage environment.
- The illuminance may affect the measurement accuracy of the sensor. Be careful of the following points to maintain the environment during measurement:
  - Use a curtain or the like to block any windows so that natural (outside) light does not enter the room.
  - Ensure that the lighting in the room does not change during measurement.
  - While measuring, do not bring the face or an object close to the monitor, do not look into the sensor.

**Note**

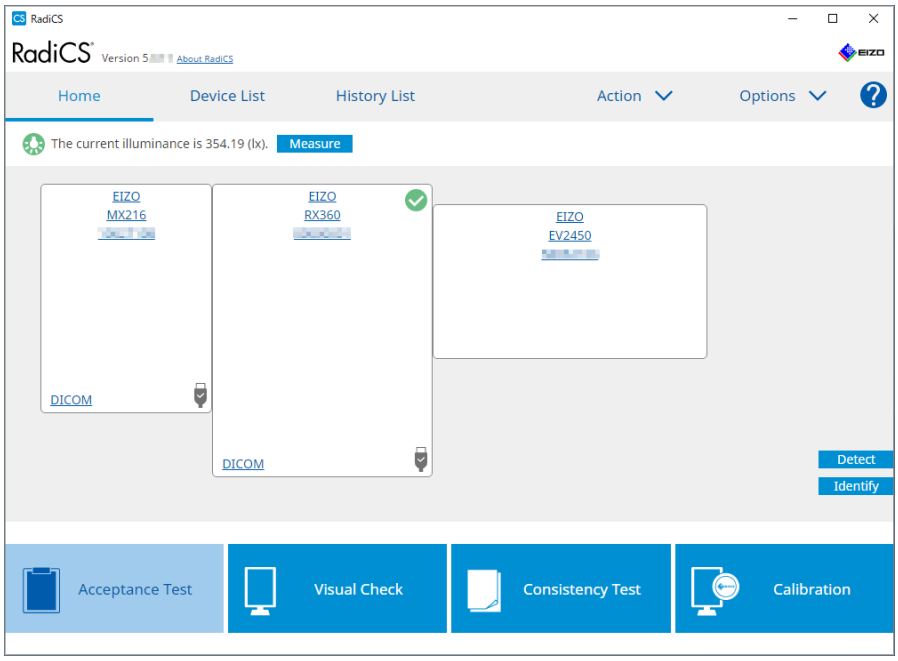
- If QS-RL, ONR 195240-20 or DIN 6868-157 is selected for the QC guideline and the judgment of the acceptance test is "Passed", the baseline value can be set.

1. Connect the measurement devices.

**Attention**

- The usable measurement device depends on the QC guideline. Check the usable measurement device in advance.
- If a measurement device that is connected with the RS-232C is used, the measurement device must be registered in advance. For details, see 4.4 Adding Measurement Devices [▶ 88].

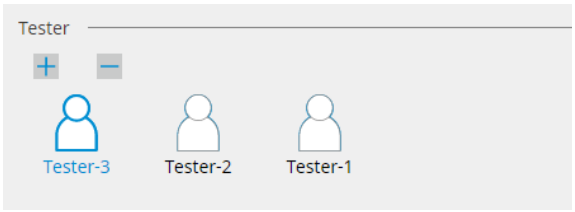
2. Click "Acceptance Test" of "Home".




The test execution window appears.

3. Select a tester.

To register a tester, click + and register the tester.



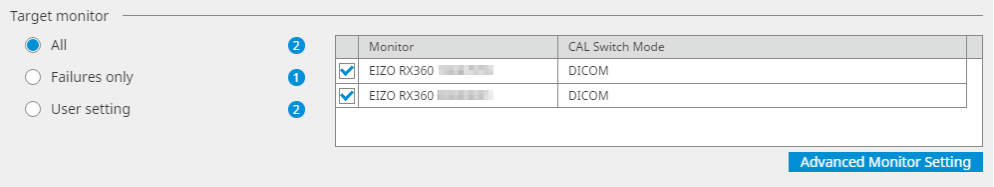

**Attention**

- The entered tester name must be no more than 31 characters long.

**Note**

- The default settings have the user who is logged into the OS registered as the tester (when using Mac, the tester name may be displayed as "RadiCS"). To change the tester name, register the tester using a new name and then delete the originally registered tester. Select the icon of the tester to be deleted and click − to delete it.
- Up to 10 testers can be registered. To register a new tester with 10 testers registered, delete a less frequently used tester and then register the tester.
- If "Register task tester" is disabled in the basic settings window in Administrator mode, the registered tester will not be saved. In such a case, the tester will only see the user logged into the OS. If you want to use the registered tester for the next test, enable "Register task tester". (see 8.4 RadiCS Basic Setting [▶ 160]).

4. Select the test target.




- All
  The test is executed for all of the CAL Switch Modes set as management targets in RadiCS.
- Failures only
  The test is executed for the monitors with CAL Switch Mode where failed tests have already existed.
- For the selection from the list of monitors
  CAL Switch Mode set to the RadiCS management targets is displayed on the monitor list. Check the check box for monitors with CAL Switch Mode to be tested.

**Note**

- When the test target is selected from the monitor list, "User setting" is selected regardless of the setting details.
- Clicking "Detail" displays the monitors enabled with the check box on the monitor list and the information of the applied QC guideline. Clicking the link of "QC Guideline" allows you to change the QC guideline to be used for the test.

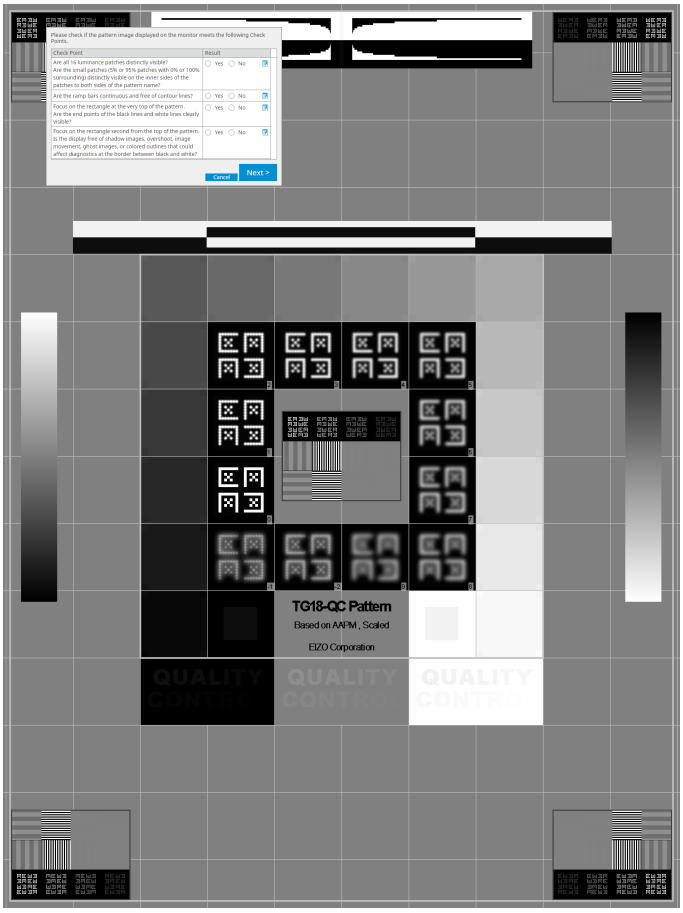
5. Select a sensor and a measurement device.
   Select a measurement device from the dropdown list if a monitor that does not allow using Integrated Front Sensor and QC guideline that requires measurement with a measurement device are selected. Select "Manual Input" and input the following items manually if an applicable sensor does not exist:
   – Sensor
     Input the sensor name.
     Check the check box for "Chromaticity Measurement" if the sensor can measure the chromaticity.
   – Serial Number(S/N)
     Input the serial number of the sensor.

**Note**

- Check the check box for "Use Integrated Front Sensor / Internal Illuminance Sensor" if DIN 6868-157, ONR 195240-20 or QS-RL is selected for the QC guideline and illuminance is measured with the illuminance sensor of the monitor.
- The luminance check and grayscale check can be omitted if they are executed remotely with Integrated Front Sensor from RadiNET Pro. Check the check box for "Skip the luminance check and grayscale check performed using the Integrated Front Sensor.".

6. Click "Proceed".
   The test pattern and check point are displayed.
   If DIN 6868-157 or ONR 195240-20 is selected for the QC guideline, the test requirements and applicability to the classification of use environment must be checked. Click "Next". For details, see Checking Test Requirements and Applicability to Application Category [▶ 45].

7. Check whether the test pattern displayed on the monitor satisfies the details of the check points.
   Select "Yes" if the descriptions of the check points are satisfied, and "No" if they are not satisfied.



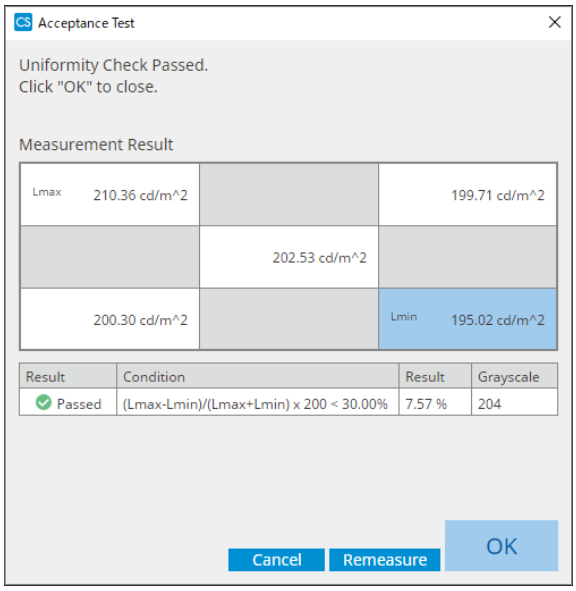

**Note**

- If a check point is selected, a guide indicating the checking area is displayed on the pattern.
- Clicking displays the comment input window. The input comments are described on the report.

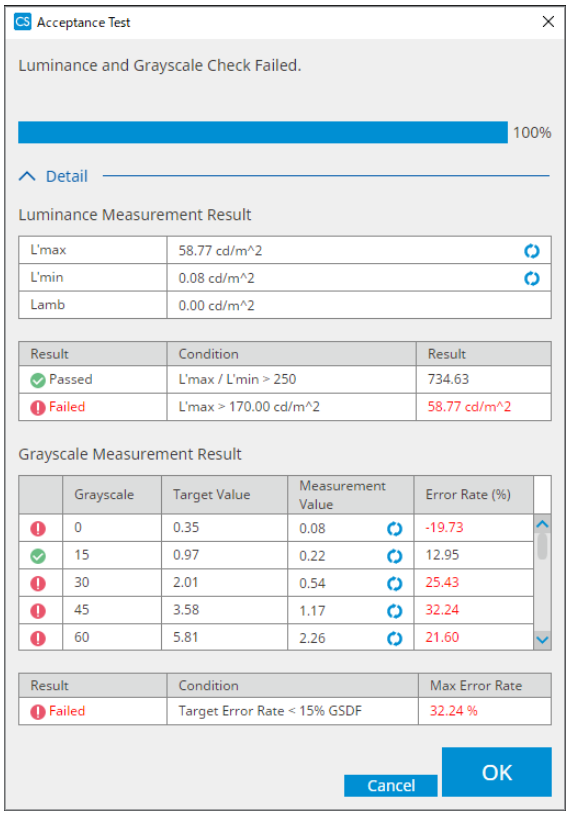
8. Click "Next".
   The next measurement window appears.
9. Perform measurement according to the instructions on the screen.
   Once all measurements are completed and there are no issues with the results, click "OK".

**Note**

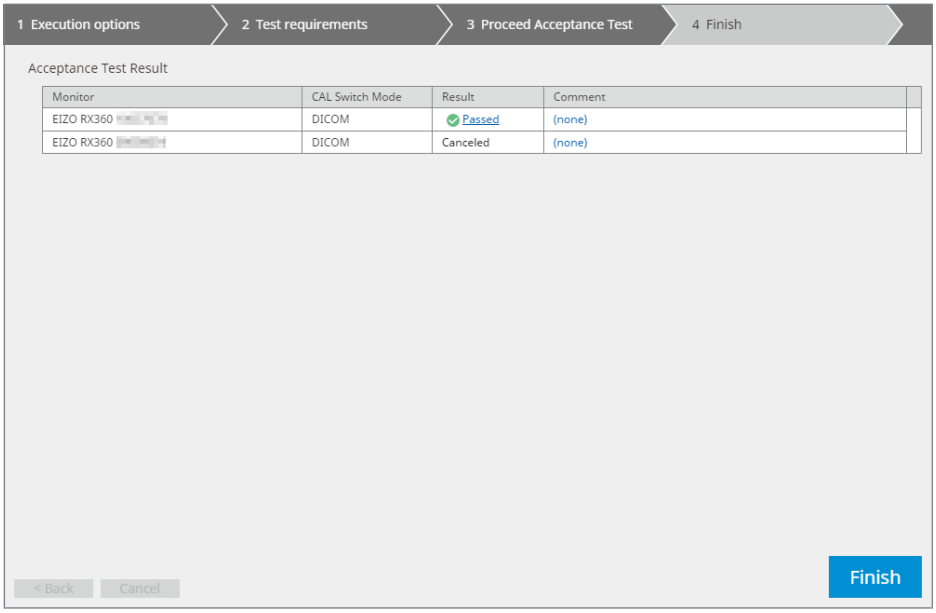
- The measurement points and measurement values are displayed on the uniformity measurement result window. Selecting the measurement point and clicking "Remeasure" allows you to remeasure the selected point.




- After the end of grayscale check and luminance check, click "Detail" to display the measurement result details. Click to measure the selected item again.



10. Click "OK".
    The result window appears. Click "Finish" to display the "Home".




**Attention**

- If the acceptance test has failed, check your environment and equipment, and then retry the test. If the re-test has also failed, check if there are any problems with your environment and equipment. Calibrate the monitor as necessary and retry the test.

**Note**

- If QS-RL, DIN 6868-157 or ONR 195240-20 is selected for the QC guideline, the baseline value checking window will appear.
- Clicking the link of "Result" allows you to output the report.
- Clicking the link of "Comment" allows you to input comments. The input comments are described on the report.
- If QS-RL, DIN V 6868-57, DIN 6868-157 or ONR 195240-20 is selected for the QC guideline, the report information registration window will appear after the acceptance test is executed.

### 3.1.2.1 Checking Test Requirements and Applicability to Application Category

**For DIN 6868-157**

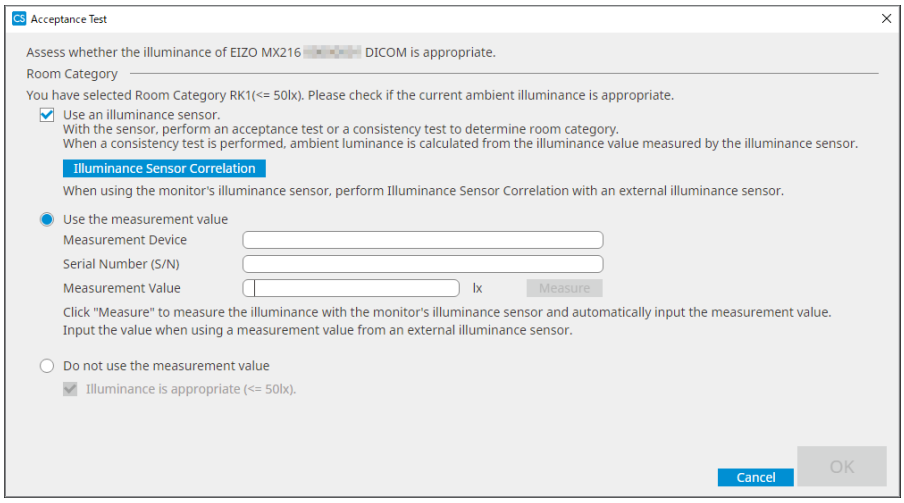
1. Check that DIN 6868-157 test requirements are satisfied on the test requirements checking window.
   Clicking "Detail" allows you to check the detail of the test requirements. If there is a requirement that is not satisfied, uncheck the check box for the requirement.

**Note**

- Check the check box for "Use the current test requirement check results during automated execution from the scheduling function or RadiNET Pro." if the checking result of the test requirements is applied to the schedule function and the remote execution result from RadiNET Pro.

2. Click "Proceed".
   The illuminance judgment window appears.

3. Check whether the present illuminance meets the selected application category.




**For judging with illuminance sensor measurement value**

a. Check the check box for "Use an illuminance sensor" and select "Use the measurement value".

b. Click "Illuminance Sensor Correlation".
The Illuminance Sensor Correlation window appears.

c. Measure illuminance of the monitor display using the illuminometer and input the value.

d. Click "Proceed".
Illuminance Sensor Correlation starts. When it completes, the correlation result is reflected on the illuminance judgment window.

**Note**

- Executing the Illuminance Sensor Correlation enables "Measure". Clicking "Measure" measures the illuminance with the illuminance sensor.

**For judging with illuminometer measurement value**

a. Select "Use the measurement value".

b. Measure illuminance of the monitor display using the illuminometer and input the items below.

- Measurement Device
- Serial Number
- Measurement Value

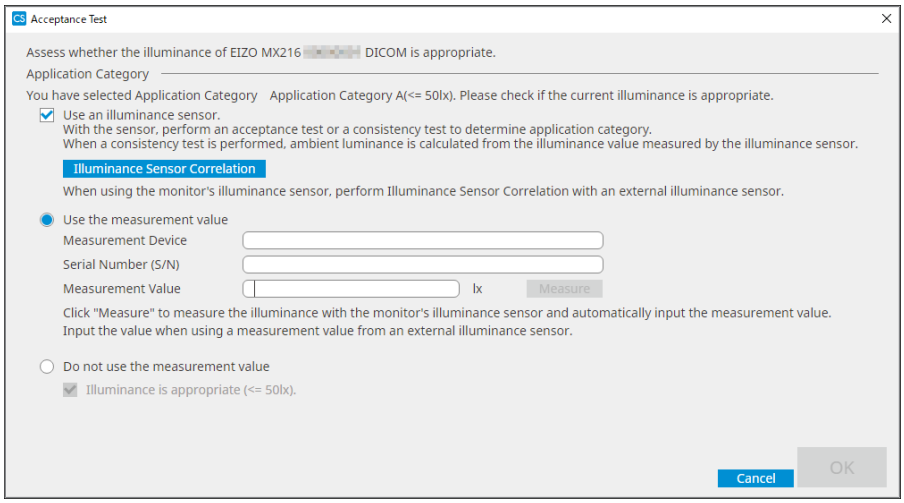
**For not using measurement value**

a. Select "Do not use the measurement value" and check the check box for "Illuminance is appropriate".
Check that the present illuminance is appropriate in advance.

4. Click "OK".
The basic clinical image confirmation window appears.
5. Enter required items.
Items with * are mandatory. Entered values are output in reports.
6. Click "OK".
The test pattern and check point are displayed.

**For ONR 195240-20**

1. Check whether the present illuminance meets the selected application category on the illuminance judgment window.




**For judging with illuminance sensor measurement value**

a. Check the check box for "Use an illuminance sensor" and select "Use the measurement value".

b. Click "Illuminance Sensor Correlation".
The Illuminance Sensor Correlation window appears.

c. Measure illuminance of the monitor display using the illuminometer and input the value.

d. Click "Proceed".
Illuminance Sensor Correlation starts. When it completes, the correlation result is reflected on the illuminance judgment window.

| **Note** |
| --- |
| • Executing the Illuminance Sensor Correlation enables "Measure". Clicking "Measure" measures the illuminance with the illuminance sensor. |

**For judging with illuminometer measurement value**

a. Select "Use the measurement value".

b. Measure illuminance of the monitor display using the illuminometer and input the items below.

- Measurement Device
- Serial Number
- Measurement Value

**For not using measurement value**

a. Select "Do not use the measurement value" and check the check box for "Illuminance is appropriate".
Check that the present illuminance is appropriate in advance.

2. Click "OK".
The test pattern and check point are displayed.

### 3.1.3 Performing Visual Check

A visual check is used to visually check whether the monitor display status is normal (Pattern Check). Registration is required before performing using the monitor for actual work.

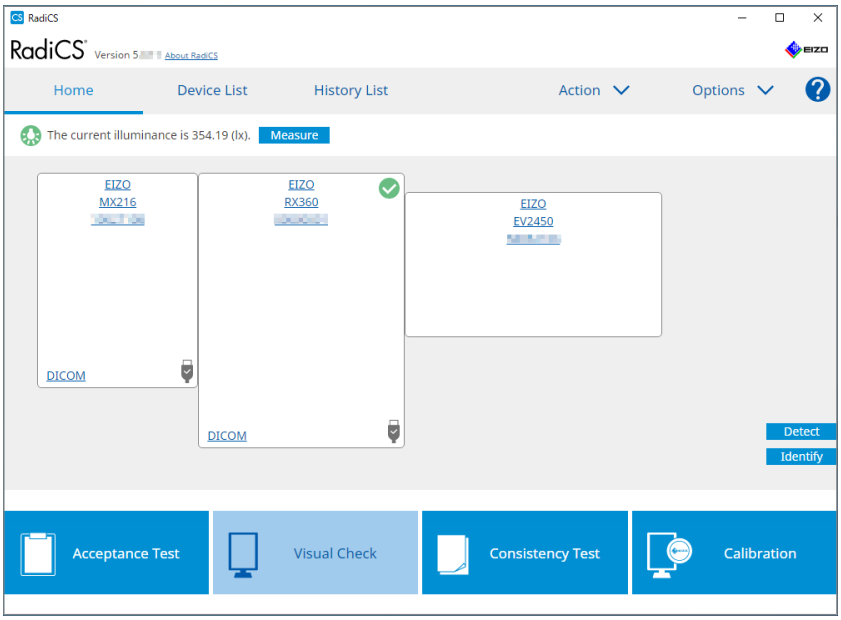
**Attention**

- Execute the tests at the actual temperature and illuminance of the monitor usage environment.

**Note**

- The visual checks use the same QC guideline as that specified for the Consistency Test. For details on setting QC guidelines and on setting a pattern used for pattern check, see Editing QC Guidelines [▶ 78].
- Scheduling allows you to set up a schedule to perform the task periodically (see 4.5 Using Scheduling [▶ 89]).

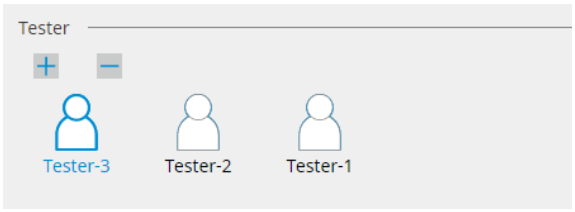
1. Click "Visual Check" of "Home".




The test execution window appears.

2. Select a tester.

To register a tester, click + and register the tester.



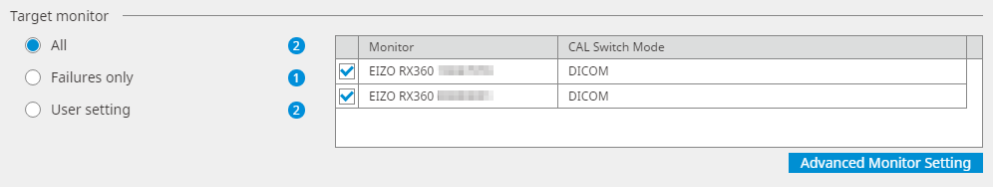

**Attention**

- The entered tester name must be no more than 31 characters long.

**Note**

- The default settings have the user who is logged into the OS registered as the tester (when using Mac, the tester name may be displayed as "RadiCS"). To change the tester name, register the tester using a new name and then delete the originally registered tester. Select the icon of the tester to be deleted and click — to delete it.
- Up to 10 testers can be registered. To register a new tester with 10 testers registered, delete a less frequently used tester and then register the tester.
- If "Register task tester" is disabled in the basic settings window in Administrator mode, the registered tester will not be saved. In such a case, the tester will only see the user logged into the OS. If you want to use the registered tester for the next test, enable "Register task tester". (see 8.4 RadiCS Basic Setting [▶ 160]).

3. Select the test target.




- All
  The test is executed for all of the CAL Switch Modes set as management targets in RadiCS.
- Failures only
  The test is executed for the monitors with CAL Switch Mode where failed tests have already existed.
- For the selection from the list of monitors
  All connected monitors with CAL Switch Mode set to the RadiCS management targets are displayed on the monitor list. Check the check box for monitors with CAL Switch Mode to be tested.

**Note**

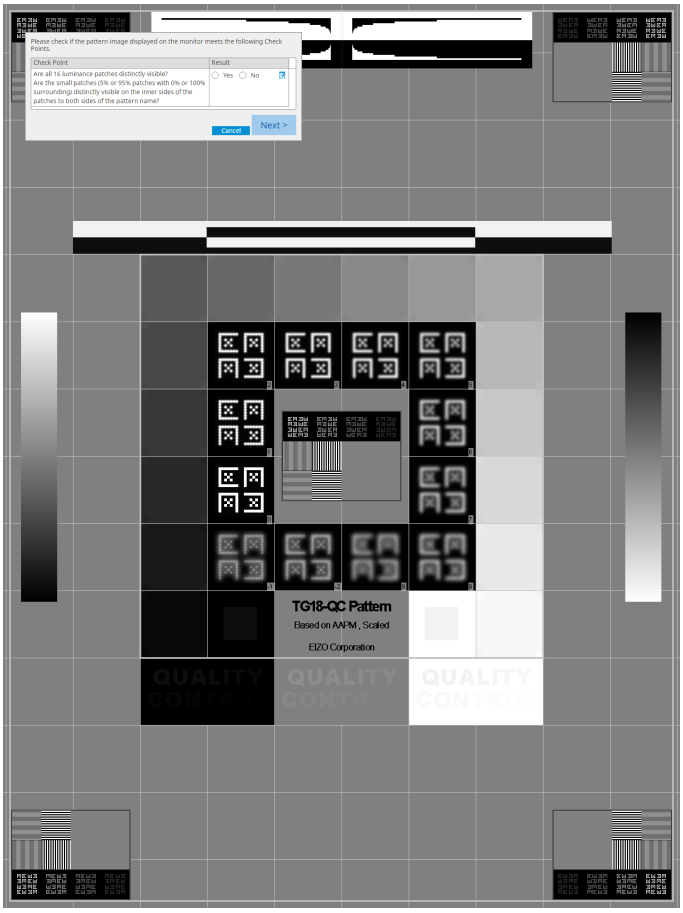
- When the test target is selected from the monitor list, "User setting" is selected regardless of the setting details.
- Clicking "Detail" displays the monitors enabled with the check box on the monitor list and the information of the selected QC guideline. Clicking the link of "QC Guideline" allows you to change the QC guideline to be used for the test.

4. Select the sensor to measure illuminance, if DIN 6868-157, ONR 195240-20 and QS-RL is selected for the QC guideline.
   Check the check box for "Use Integrated Front Sensor / Internal Illuminance Sensor" if illuminance is measured with the illuminance sensor of the monitor.
5. Click "Proceed".
   The test pattern and check point are displayed.

**Note**

- If the illuminance sensor of the monitor is not used to measure illuminance, the illuminance confirmation window will be displayed on test execution. Measure illuminance of the monitor display with the illuminometer, check that the illuminance conditions described on the illuminance confirmation window are satisfied and check the check box for "Illuminance is appropriate".

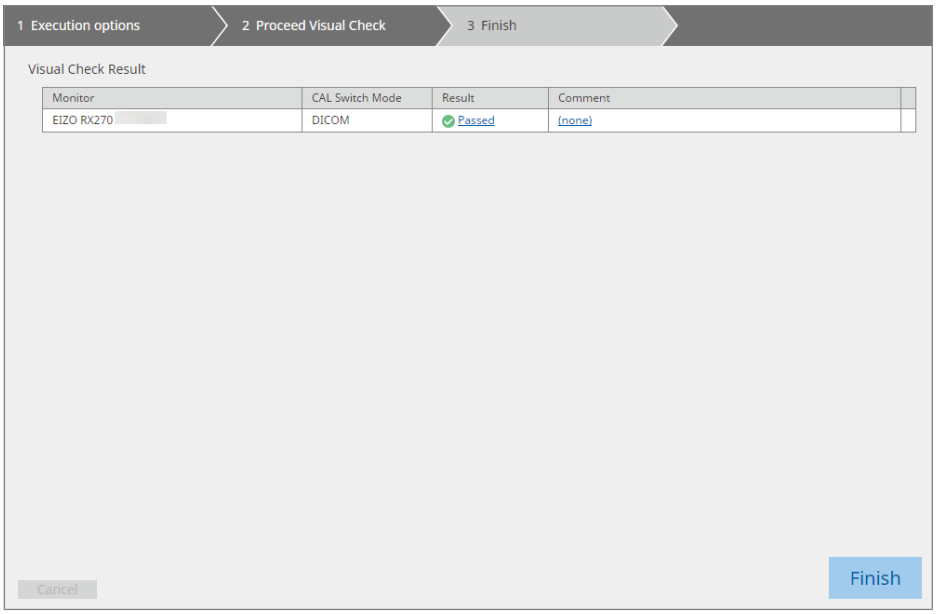
6. Check whether the test pattern displayed on the monitor satisfies the details of the check points.
   Select "Yes" if the descriptions of the check points are satisfied, and "No" if they are not satisfied.




**Note**

- If a check point is selected, a guide indicating the checking area is displayed on the pattern.
- Clicking displays the comment input window. The input comments are described on the report.

7. Click "Next".




The result window appears. Click "Finish" to display the "Home".

**Attention**

- If the visual check has failed, check your environment and equipment, and retry the check. If the re-test has also failed, check if there are any problems with your environment and equipment. Calibrate the monitor as necessary and retry the test.

**Note**

- Perform 8.7 Set RadiCS to start at logon [▶ 164]. RadiCS will start automatically at logon and perform the monitor visual check in User mode. After clicking "Finish" on the result screen, it will close.
- Clicking the link of "Result" allows you to output the report.
- Clicking the link of "Comment" allows you to input comments. The input comments are described on the report.

### 3.1.4 Performing a Consistency Test

A consistency test is used to determine that the image quality of the monitor is maintained. It is required to perform it at intervals specified by the QC guideline you use. The consistency test includes pattern, luminance, grayscale, and uniformity checks. The test items depend on the QC guideline you use.

**Pattern Check**

Performs visual check whether the monitor display status is normal.

**Luminance Check**

Performs black and white luminance check.

**Grayscale Check**

Performs a grayscale check.

**Uniformity Check**

Performs the color and brightness uniformity check for the whole screen.

**Attention**

- Execute the tests at the actual temperature and illuminance of the monitor usage environment.
- The illuminance may affect the measurement accuracy of the sensor. Be careful of the following points to maintain the environment during measurement:
  - Use a curtain or the like to block any windows so that natural (outside) light does not enter the room.
  - Ensure that the lighting in the room does not change during measurement.
  - While measuring, do not bring the face or an object close to the monitor, do not look into the sensor.
  - If DIN 6868-157 or ONR 195240-20 is selected for the QC guideline, the consistency test can be executed only when the baseline value is calculated with the acceptance test.

**Note**

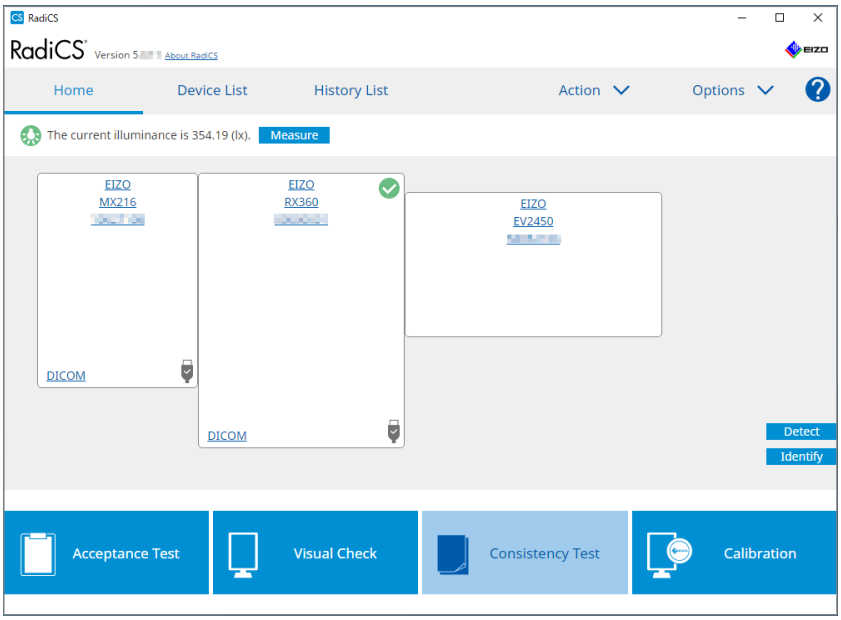
- The test items of the consistency test vary, depending on the QC guideline you use. Follow the instructions on the screen to proceed with the test. For details on how to set QC guidelines, see 4.2 Changing QC Guidelines [▶ 75].
- Scheduling allows you to set up a schedule to perform the task periodically (see 4.5 Using Scheduling [▶ 89]).

1. Connect the measurement devices.
   Connect a measurement device in advance if a monitor that does not allow using Integrated Front Sensor and QC guideline that requires measurement with a measurement device are selected.

**Attention**

- The usable measurement device depends on the QC guideline. Check the usable measurement device in advance.
- If a measurement device that is connected with RS-232C is used, the measurement device must be registered in advance. For details, see 4.4 Adding Measurement Devices [▶ 88].

2. Click "Consistency Test" of "Home".




The test execution window appears.

3. Select a tester.
   To register a tester, click + and register the tester.

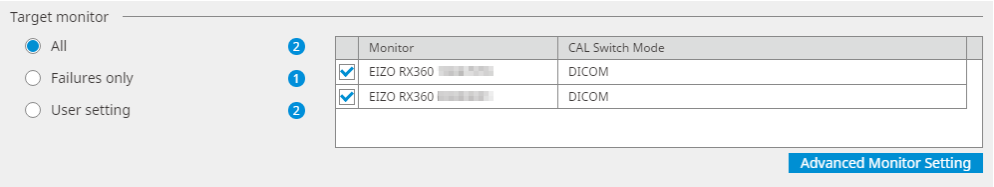

**Attention**

- The entered tester name must be no more than 31 characters long.

**Note**

- The default settings have the user who is logged into the OS registered as the tester (when using Mac, the tester name may be displayed as "RadiCS"). To change the tester name, register the tester using a new name and then delete the originally registered tester. Select the icon of the tester to be deleted and click − to delete it.
- Up to 10 testers can be registered. To register a new tester with 10 testers registered, delete a less frequently used tester and then register the tester.
- If "Register task tester" is disabled in the basic settings window in Administrator mode, the registered tester will not be saved. In such a case, the tester will only see the user logged into the OS. If you want to use the registered tester for the next test, enable "Register task tester". (see 8.4 RadiCS Basic Setting [▶ 160]).

4. Select the test target.




- All
  The test is executed for all of the CAL Switch Modes set as management targets in RadiCS.
- Failures only
  The test is executed for the monitors with CAL Switch Mode where failed tests have already existed.
- For the selection from the list of monitors
  All connected monitors with CAL Switch Mode set to the RadiCS management targets are displayed on the monitor list. Select the check box of the CAL Switch mode for the monitor for which you want to test.

**Note**

- When the test target is selected from the monitor list, "User setting" is selected regardless of the setting details.
- Clicking "Detail" displays the monitors enabled with the check box on the monitor list and the information of the selected QC guideline. Clicking the link of "QC Guideline" allows you to change the QC guideline to be used for the test.
- When selecting a CAL Switch Mode in which a QC Guideline that includes multiple tests is set, you can select the tests from the pull-down menu.

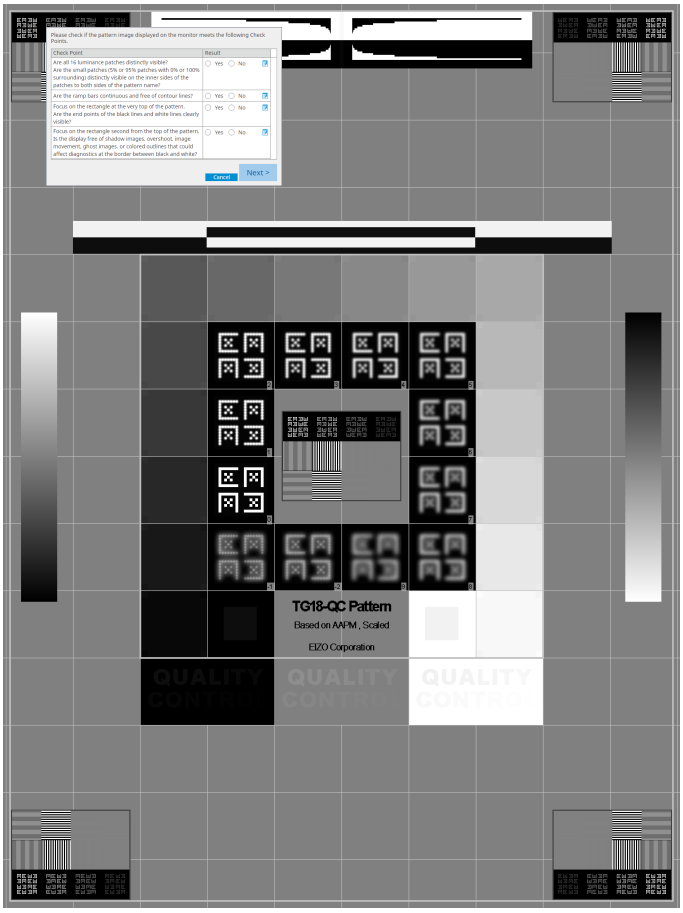
5. Select a sensor and a measurement device.
   When selecting a CAL Switch Mode in which a QC Guideline that includes tests in which the Integrated Front Sensor cannot be used, or when selecting a monitor which does not have an Integrated Front Sensor, select the measurement device from the dropdown list. Select "Manual Input" and input the following items manually if an applicable sensor does not exist:
   – Sensor
     Input the sensor name.
     Check the check box for "Chromaticity Measurement" if the sensor can measure the chromaticity.
   – Serial Number(S/N)
     Input the serial number of the sensor.

**Note**

- Check the check box for "Use Integrated Front Sensor / Internal Illuminance Sensor" if DIN 6868-157, ONR 195240-20 or QS-RL is selected for the QC guideline and illuminance is measured with the illuminance sensor of the monitor.
- The luminance check and grayscale check can be omitted if they are executed remotely with Integrated Front Sensor from RadiNET Pro. Check the check box for "Skip the luminance check and grayscale check performed using the Integrated Front Sensor.".

6. Click "Proceed".
   The test pattern and check point are displayed.
   If DIN 6868-157 or ONR is selected for the QC guideline, the test requirements and applicability to the classification of use environment must be checked. Click "Next". For details, see Checking Test Requirements and Applicability to Application Category [▸ 45].

7. Check whether the test pattern displayed on the monitor satisfies the details of the check points.
   Select "Yes" if the descriptions of the check points are satisfied, and "No" if they are not satisfied.



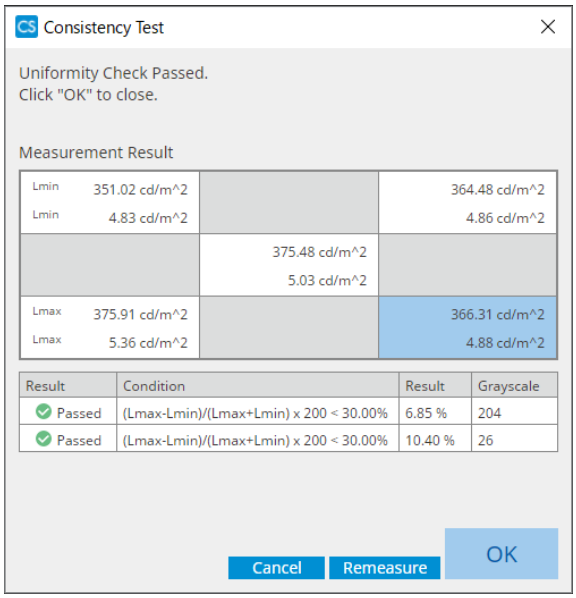

**Note**

- If a check point is selected, a guide indicating the checking area is displayed on the pattern.
- Clicking displays the comment input window. The input comments are described on the report.

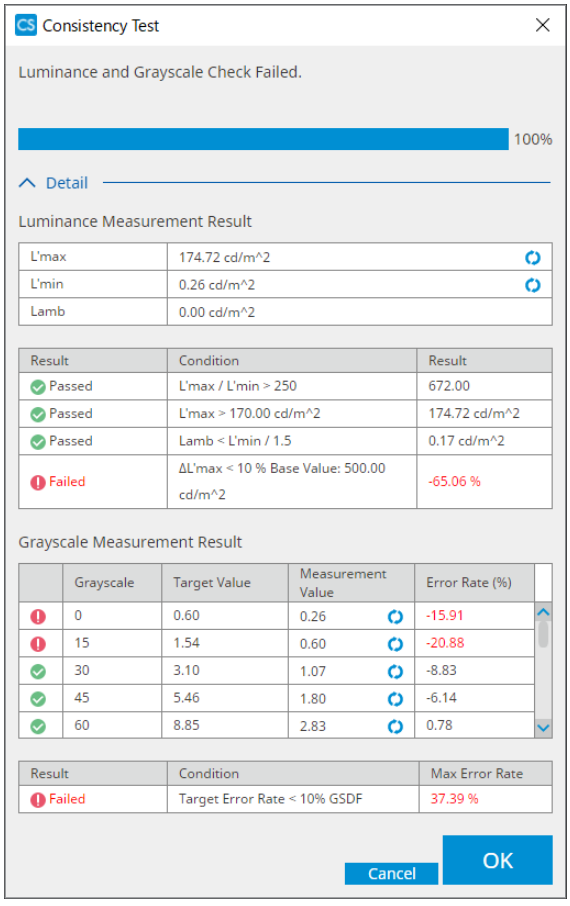
8. Click "Next".
   The next measurement window appears.
9. Perform measurement according to the instructions on the screen.
   Once all measurements are completed and there are no issues with the results, click "OK".

**Note**

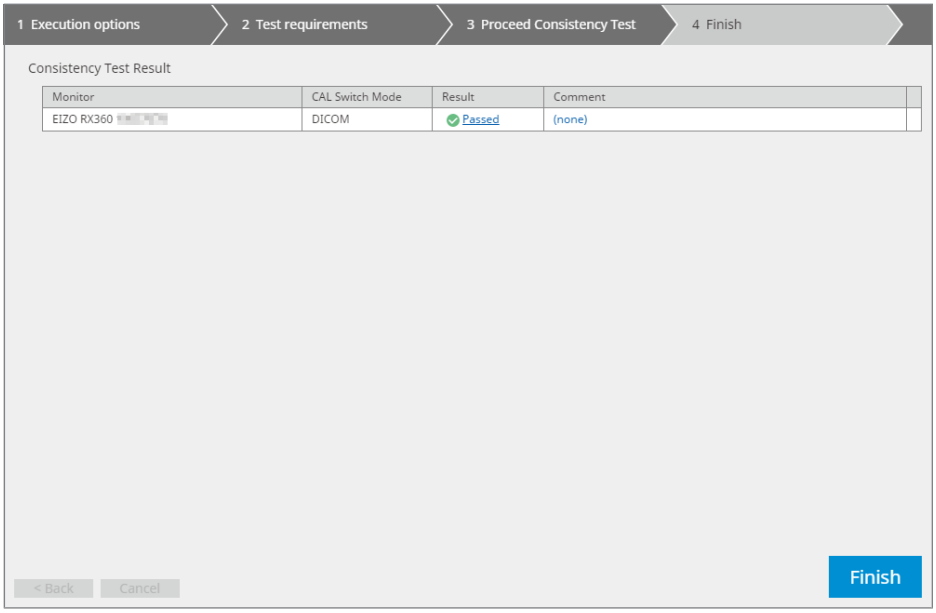
- The measurement points and measurement values are displayed on the uniformity measurement result window. Selecting the measurement point and clicking "Remeasure" allows you to remeasure the selected point.




- After the end of grayscale check and luminance check, click "Detail" to display the measurement result details. Click to measure the selected item again.



10. Click "OK".
    The result window appears. Click "Finish" to display the "Home".




**Attention**

- If the consistency test has failed, retry the test. If the re-test has failed, calibrate the monitor before retrying the test.

**Note**

- Click the link "Result" to display the report.
- Clicking the link "Comment" to enter comments.
- If QS-RL, DIN V 6868-57, DIN 6868-157 or ONR 195240-20 is selected for the QC guideline, the report information registration window will appear after the consistency test is executed.

#### 3.1.4.1 Checking Test Requirements and Applicability to Application Category

**For DIN 6868-157**

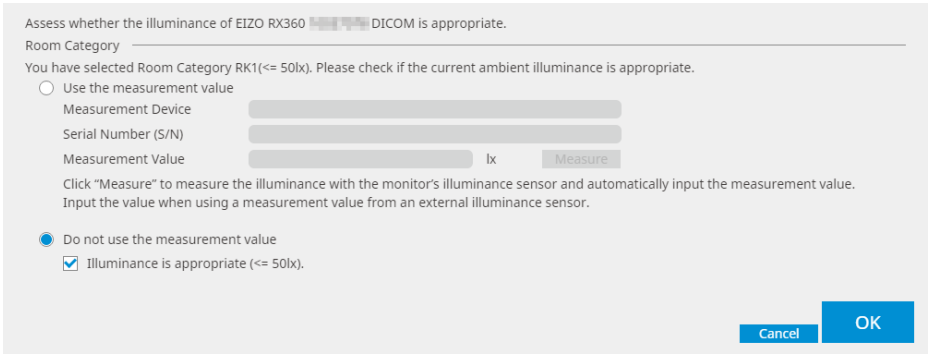
1. Check that DIN 6868-157 test requirements are satisfied on the test requirements checking window.
   Clicking "Detail" allows you to check the detail of the test requirements. If there is a requirement that is not satisfied, uncheck the check box for the requirement.

**Note**

- Check the check box for "Use the current test requirement check results during automated execution from the scheduling function or RadiNET Pro." if the checking result of the test requirements is applied to the schedule function and the remote execution result from RadiNET Pro.

2. Click "Proceed".
   The Illuminance judgment window appears.

3. Check whether the present illuminance meets the selected application category.




**For judging with illuminance sensor measurement value**

| **Attention** |
| --- |
| • Measurement with the illuminance sensor is available only when the illuminance sensor correlation has been performed with the acceptance test. |

a. Select "Use the measurement value".

b. Click "Measure".

The measurement value is input.

**For judging with illuminometer measurement value**

a. Select "Use the measurement value".

b. Measure illuminance using the illuminometer and input the items below.

– Measurement Device
– Serial Number
– Measurement Value

**For not using measurement value**

a. Select "Do not use the measurement value" and check the check box for "Illuminance is appropriate".

Check that the present illuminance is appropriate in advance.

4. Click "OK".

The basic clinical image confirmation window appears.

5. Enter required items.

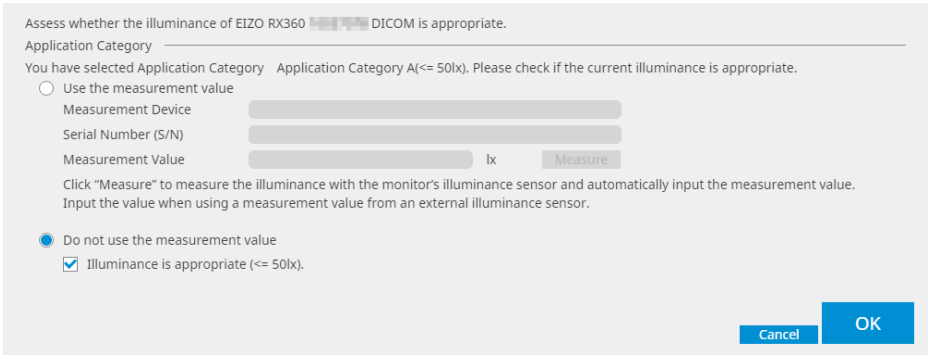
Items with * are mandatory. Entered values are output in reports.

6. Click "OK".

The test pattern and check point are displayed.

**For ONR 195240-20**

1. Check whether the present illuminance meets the selected application category on the illuminance judgment window.




**For judging with illuminance sensor measurement value**

a. Check the check box for "Use an illuminance sensor" and select "Use the measurement value".

b. Click "Illuminance Sensor Correlation".
The Illuminance Sensor Correlation window appears.

c. Measure illuminance using the illuminometer and input the value.

d. Click "Proceed".
Illuminance Sensor Correlation starts. When it completes, the correlation result is reflected on the illuminance judgment window.

| **Note** |
| --- |
| • Executing the Illuminance Sensor Correlation enables "Measure". Clicking "Measure" measures the illuminance with the illuminance sensor. |

**For judging with illuminometer measurement value**

a. Select "Use the measurement value".

b. Measure illuminance using the illuminometer and input the items below.

- Measurement Device
- Serial Number
- Measurement Value

**For not using measurement value**

a. Select "Do not use the measurement value" and check the check box for "Illuminance is appropriate".
Check that the present illuminance is appropriate in advance.

2. Click "OK".
The test pattern and check point are displayed.

## 3.2 Calibration

Monitors will need to be calibrated in the case that the monitor needs to be readjusted, or to reflect ambient luminance or changes in monitor display settings. Furthermore, calibrating your monitors regularly ensures the stability of screen display.

**Attention**

- If the RS-232C-connected sensor is used, the sensor must be registered in advance. For details, see 4.4 Adding Measurement Devices [▶ 88].
- If Integrated Front Sensor is used for calibration, it is recommended that correlation is performed with a measurement device calibrated periodically to retain the measurement accuracy. See 5.7 Performing Correlation for Integrated Front Sensor [▶ 106] for information on how to perform correlation.
- The illuminance may affect the measurement accuracy of the sensor. Be careful of the following points to maintain the environment during measurement:
  - Use a curtain or the like to block any windows so that natural (outside) light does not enter the room.
  - Ensure that the lighting in the room does not change during measurement.
  - While measuring, do not bring the face or an object close to the monitor, do not look into the sensor.

**Note**

- Perform Acceptance Test (Performing Acceptance Test [▶ 40]) after calibration and check the display status. Execute the tests at the actual temperature and illuminance of the monitor usage environment.

### 3.2.1 Calibration

Two different calibration methods are available; a calibration that uses a sensor and a measurement device and a simple calibration (self-calibration) that uses a backlight sensor built in a monitor. The simple calibration can be executed only for the RadiCS compatible monitor. The calibration method using the external sensor differs between the RadiCS compatible monitor and other monitors.

**For RadiCS compatible monitor**

The brightness and display function are corrected at the monitor (Hardware Calibration). For RadiCS compatible monitor, see 8.9 Confirming RadiCS Information (About RadiCS) [▶ 168].

**For RadiCS incompatible monitor**

The signal level output from the graphics board is corrected (Software Calibration). This calibration can be performed if an EIZO-recommended graphics board is used.

**Attention**

- Software calibration is a function to carry out basic adjustments of the monitor display and is not warranted to support the medical standards or guidelines of all countries.
- Software calibration cannot be performed for the Mac version.
- If you are using a color mode that does not allow luminance adjustment, change the color mode to one that allows luminance adjustment before performing the software calibration.
- To perform a simple calibration, it is necessary to change the settings in advance. For details, see 4.3 Setting Calibration Targets [▶ 85].

**Note**

- If you perform calibration once, you can change the setting of the correction data (LUT data) next time and later.
  1. Click "Device List" and select the monitor name to be set from the device list.
  2. Check the check box for "Reflect the result" of "Software Calibration". If the check box is checked, the grayscale data generated at the calibration is set as LUT data. If it is unchecked, the default is used. However, it is automatically checked on each time calibration is performed.

1. Before calibration, turn on the monitor and wait until the display has stabilized.

**Note**

- The time required may vary according to the monitor. For more details, refer to the user's manual of the monitor.

2. Connect the measurement devices.
   If calibration is performed for a monitor for which Integrated Front Sensor cannot be used, a measurement device shall be connected in advance.

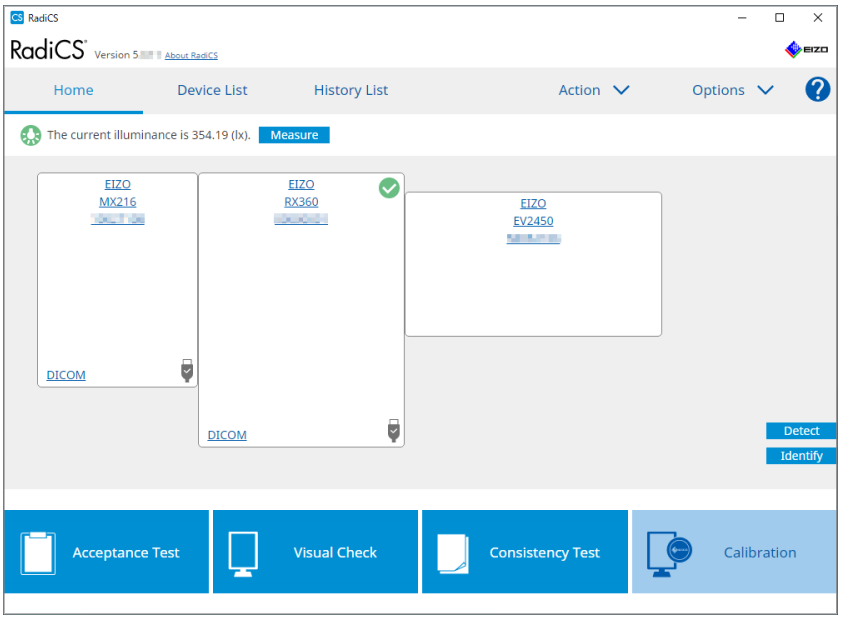
**Note**

- For the simple calibration, a measurement device connection is not required.

**Attention**

- The SSM sensor can be used for monochrome monitors only.

3. Click "Calibration" of "Home".




The calibration execution window is displayed.

4. Select a tester.
   To register a tester, click + and register the tester.

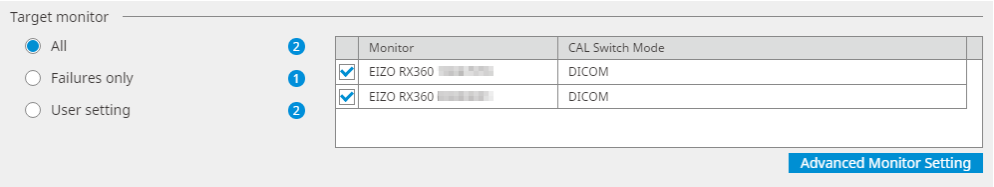

**Attention**

- The entered tester name must be no more than 31 characters long.

**Note**

- The default settings have the user who is logged into the OS registered as the tester (when using Mac, the tester name may be displayed as "RadiCS"). To change the tester name, register the tester using a new name and then delete the originally registered tester. Select the icon of the tester to be deleted and click − to delete it.
- Up to 10 testers can be registered. To register a new tester with 10 testers registered, delete a less frequently used tester and then register the tester.
- If "Register task tester" is disabled in the basic settings window in Administrator mode, the registered tester will not be saved. In such a case, the tester will only see the user logged into the OS. If you want to use the registered tester for the next test, enable "Register task tester". (see 8.4 RadiCS Basic Setting [▶ 160]).

5. Select a monitor to be calibrated.




- All
  The test is executed for all of the CAL Switch Modes set as management targets in RadiCS.
- Failures only
  Calibration is performed for the Monitor CAL Switch Mode where failed tests have already existed.
- For the selection from the list of monitors
  CAL Switch Mode set to the RadiCS management targets is displayed on the monitor list. Check the check box for Monitor CAL Switch Mode to be calibrated.

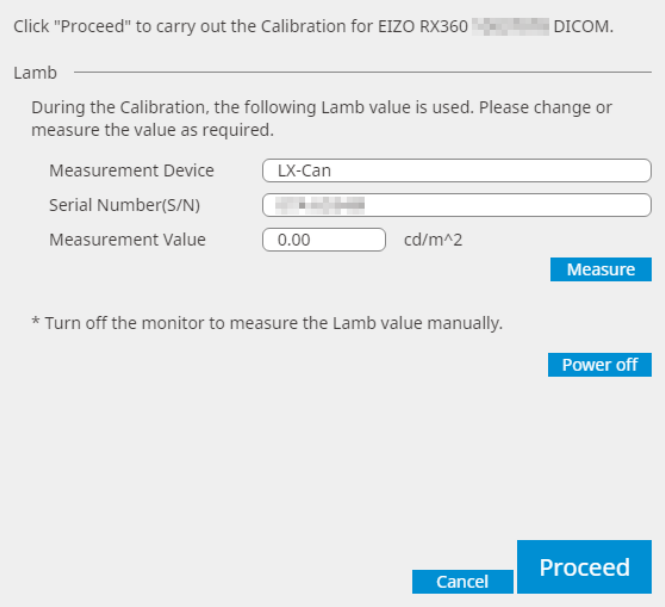
**Note**

- When the calibration target is selected from the monitor list, "User setting" is selected regardless of the setting details.
- Clicking "Detail" displays the monitors enabled with the check box on the monitor list and the calibration targets. Clicking the link for "Calibration Target" displays the calibration target setting window where you can change the target value and settings. See 4.3 Setting Calibration Targets [▶ 85] for the details of the setting method.

6. Select a measurement device and a sensor to be used.
   Check the check box for "Use Integrated Front Sensor / Internal Illuminance Sensor" for monitors that allow using Integrated Front Sensor.
   Select sensors from the pull-down menu for monitors that do not allow using Integrated Front Sensor.
   - Sensor
     Input the sensor name.
     Check the check box for "Chromaticity Measurement" if the sensor can measure the chromaticity.
   - Serial Number(S/N)
     Input the serial number of the sensor.
7. Click "Proceed".
   When a measurement device is used, the calibration performance message and the measurement window appear on the monitor screen. Attach the measurement device to the measurement window, and click "Proceed". Follow the instructions on the monitor screen to perform the measurement.

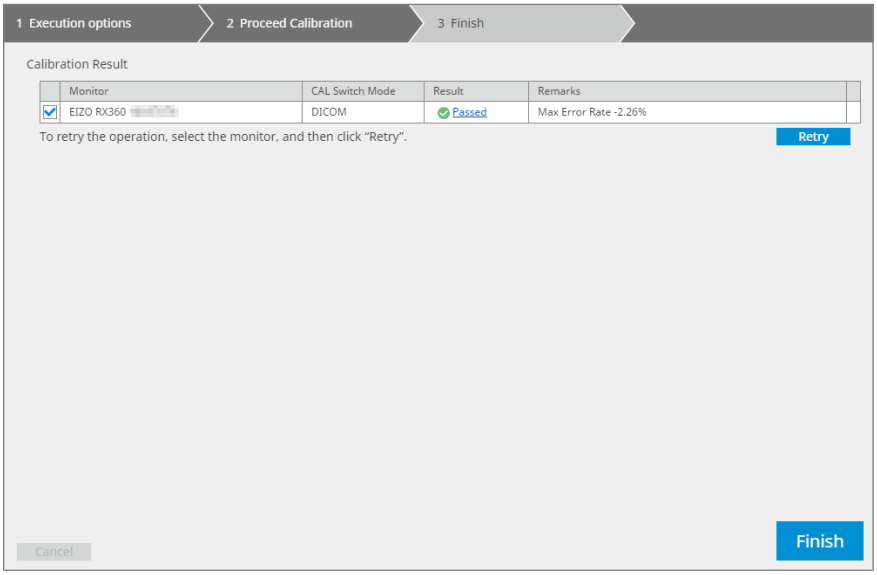
**Note**

- When simple calibration is performed, the measurement window does not appear.
- If "DICOM Part 14 GSDF" is selected for the display function on the "Calibration Target" window and the "Lamb " check box is checked, the current ambient luminance can be checked and input (see 4.3 Setting Calibration Targets [▶ 85]).
- RadiCS compatible monitors can also measure the ambient luminance.




- When calibration is performed in an environment with multiple monitors connected, the procedure differs depending on the sensor used.
  - **When a measurement device is used**
    The calibration message and measurement window appear on all monitors one by one. Perform calibration one monitor at a time. If the message and measurement window appear on a monitor that is not to be calibrated, click "Skip". The message appears on the next monitor.
  - **When an Integrated Front Sensor is used**
    The calibration message appears simultaneously on all connected monitors. When you click "Proceed" on one of the monitors on which the calibration message appears, calibration is performed for all of the monitors at once.
- When calibrating the following monitors, a message checking whether backup data has been created ahead of time will be displayed (excluding when backup data has been created that same day):
  - LL580W
  - LX550W
    Selecting "Yes" to this message will display the backup data creation screen. For details, see 8.10 Functions Limited to Specific Monitors [▶ 170].

8. The result window appears.
   Click "Finish" to display the "Home".
   To re-perform calibration, check the check box for the target monitor CAL Switch Mode and click "Retry".



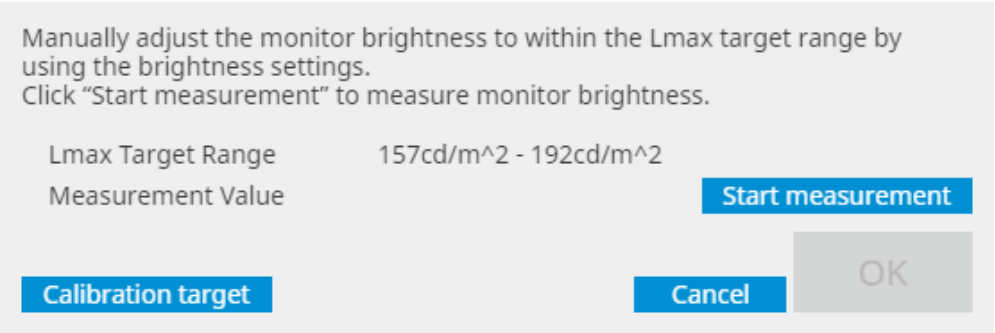

**Attention**

- After calibration is complete, the monitor adjustment function is locked to prevent accidental changes to the calibrated state.
- If you are to use the adjustment function of the monitor, use either of the following methods to unlock the lock:
  - Select the monitor name on "Device List". Click the "Key Lock" link to unlock the lock (see Changing Key Lock Setting of Monitor [▶ 151]).
  - Unlock the lock on the monitor. (For details, refer to the user's manual of the monitor.)

**Note**

- Clicking the link of "Result" allows you to output the report.
- Clicking the link of "Comment" allows you to input comments. The input comments are described on the report.
- If the "Confirm the results after calibration" check box is checked with "Options" of "Calibration Target", measurement will be automatically executed to check the calibration result when calibration is completed.
- If a RadiCS incompatible monitor is not connected to the PC via USB, or if the monitor is made by a different company, the monitor luminance must be manually calibrated so that Lmax is within the target range. Calibrate the monitor luminance as follows:

1. Click "Start measurement".
   The luminance will be measured at a specified intervals with a measurement device. The latest measurement value will be displayed.



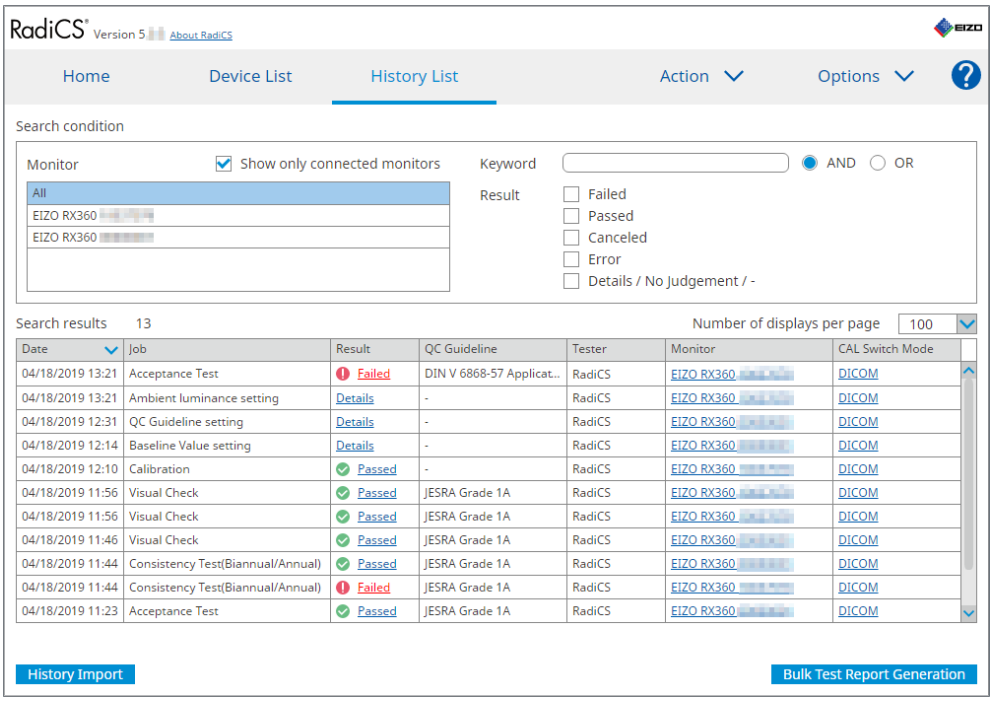

2. Use the monitor brightness adjustment function of the monitor to set the luminance to be within the Lmax target range.
   The luminance is automatically measured until the "OK" button is clicked.
   The "OK" button becomes active when the measurement value reaches the Lmax target range. If the measurement value does not satisfy the Lmax target range, click "Calibration Target" to change the Lmax target value on the calibration target window.
3. Click "OK".

## 3.3 Managing History

When completing a task and changing a setting, the record is stored as a history for each monitor. History List enables you to confirm a test or measurement result and setting change, and output them to a report.

### 3.3.1 Displaying a History List

1. Click "History List".
   A history list of executed tasks and setting changes is displayed. The display items are as follows:




Example: RadiCS

- Date
  Shows the date and time the task was executed.
- Job
  Shows the name of the test or measurement executed or setting changed.
- Result
  Shows the judgment result of the task.
  - Passed: Judgment result is Pass
  - Failed: Judgment result is Fail
  - Canceled: Execution of task is canceled by the scheduler
  - Error: Error occurred during scheduler-based execution of task
  - Details / No Judgement / -: No relevant judgment
- QC Guideline[*1]
  Indicates the QC guideline used to execute the task.
- Tester
  Shows the name of operator who selected the task when performing the task.

- Monitor
  Shows the manufacturer name registered in the Monitor Information in the form of "Manufacturer Model Serial Number".
- CAL Switch Mode
  Shows CAL Switch Mode in which the task was executed.

*1 This does not appear in RadiCS LE.

**Note**

- Also, click the "Home" test result icon to display the history list.
- Click the title in the list to sort the records by the item clicked.

#### 3.3.1.1 Searching History

Select a condition from the monitor or result of "Search condition" or enter a condition in the text box.

**Note**

- The history from the monitor not connected at present can be displayed in the History List. To display the history from the monitor not connected at present, deselect the "Show only connected monitors" check box.
- The number of items to display on a list at one time can be selected from the number of displays per page.

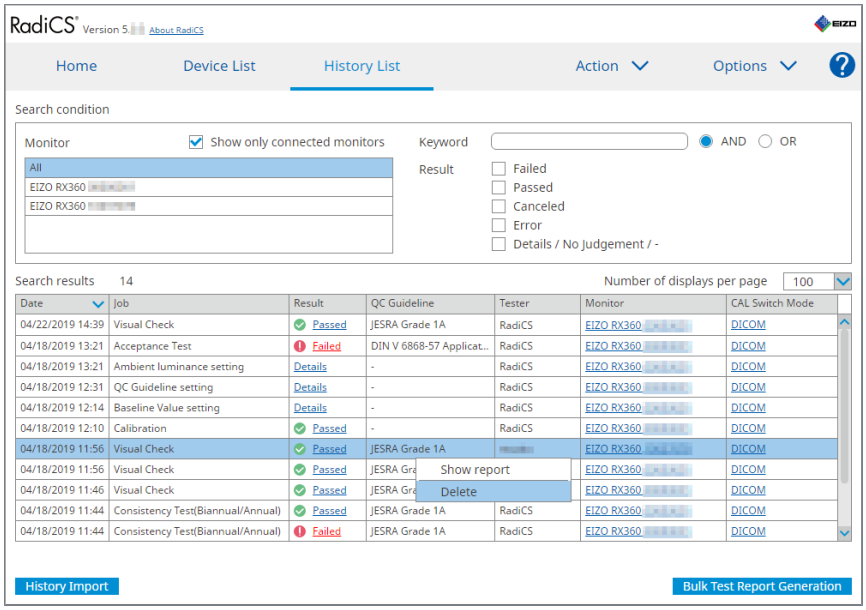
#### 3.3.1.2 Importing History

Click "History Import" to import a history file backed up. For information on the history backup procedure, see Backing Up the History [▶ 73].

#### 3.3.1.3 Delete

Deletes the history selected from the History List.

1. From the history list, select an execution history to be deleted, and right-click it.
   The menu appears.
2. Click "Delete".




The confirmation window appears.

3. Click "OK".
   The execution history is deleted from the history list.

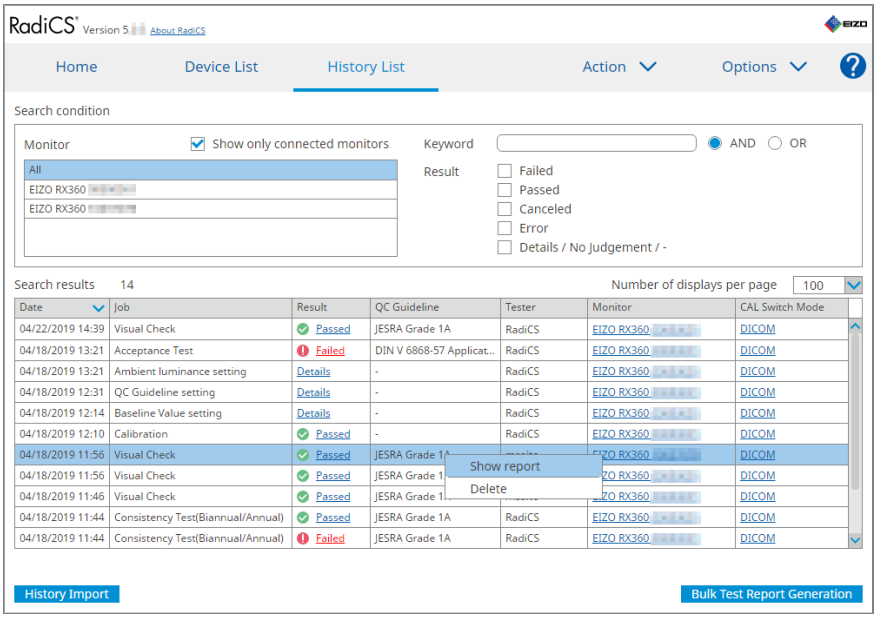
### 3.3.2 Generating Report from History List

#### 3.3.2.1 Report

A report can be generated on a test or measurement result and setting change.

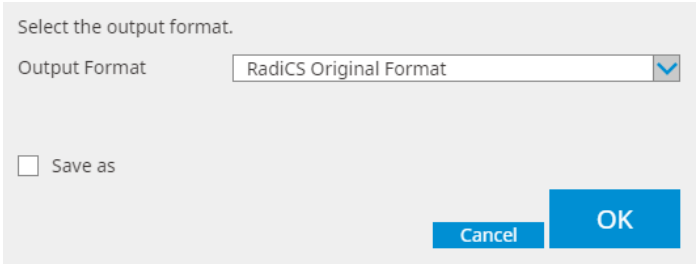
1. Click "History List".
2. Select a desired history for generating a report, double-click or right click the history, and select "Show report" from the menu.

| Note |
| --- |
| • Also, click the judgment link to display the report. |

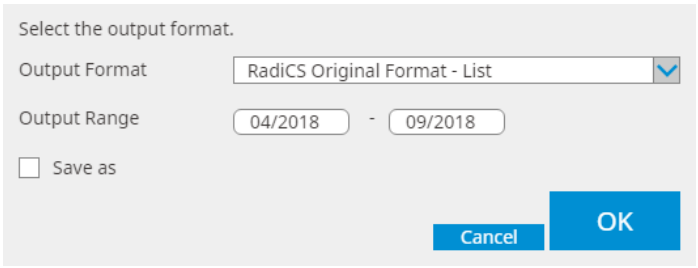



3. When the history of an acceptance test, consistency test, or visual check is selected, the "Select the output format" window appears. Select the output format from the pull-down menu.
   The following are available as output formats. (The items that can be selected depend on the selection history.)
   – RadiCS Original Format
   – RadiCS Original Format - List
   – Luminance Check
   – Grayscale Check
   – QC Guideline Name (Example: JESRA)

When the QC Guideline Name is selected, the report is output according to each QC Guideline. When "RadiCS Original Format - List" is selected, specify the history period (start and end months) for report output and click "OK".




"RadiCS Original Format" (PDF)




"RadiCS Original Format - List"

**Note**

- When outputting QS-RL, DIN V 6868-57, DIN 6868-157, and ONR 195240-20 in the PDF format, the language option is available.
  - QS-RL, DIN V 6868-57, and DIN 6868-157: English / French / German / Italian
  - ONR 195240-20: English / German
- Select the "Save as" check box to store the file in any location.
- When the "Luminance Check" or "Grayscale Check" is selected, the report cannot be stored in a file.
- When multiple histories are selected, "Luminance Check" and "Grayscale Check" are not displayed.
- If test elements (pattern / luminance / grayscale / uniformity) are skipped, they will be interpolated from the past 30-day history (365 days for Japan).

### 3.3.2.2 Generating Multiple Reports

You can collectively create reports corresponding to the designated time period or test.

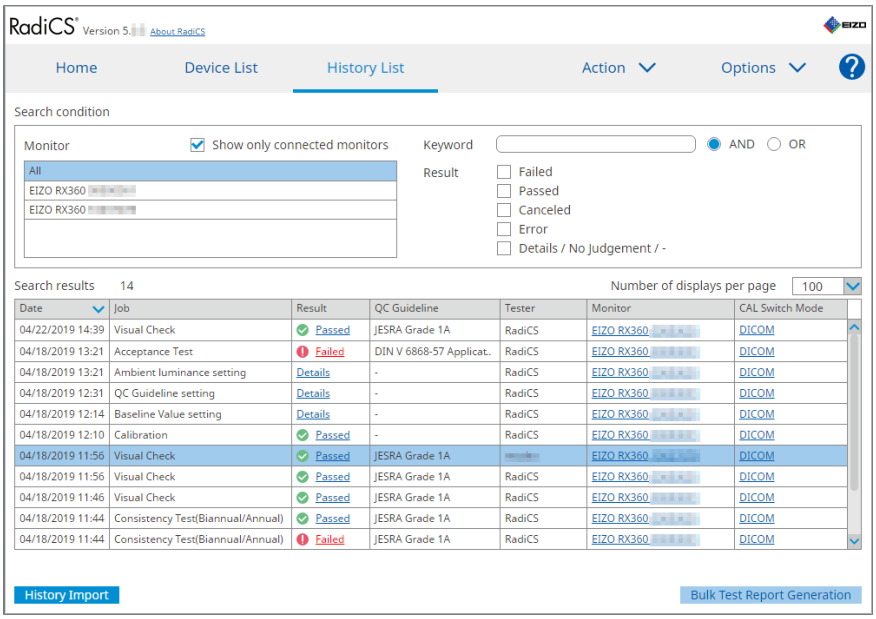
**Attention**

- RadiCS LE does not provide these functions.

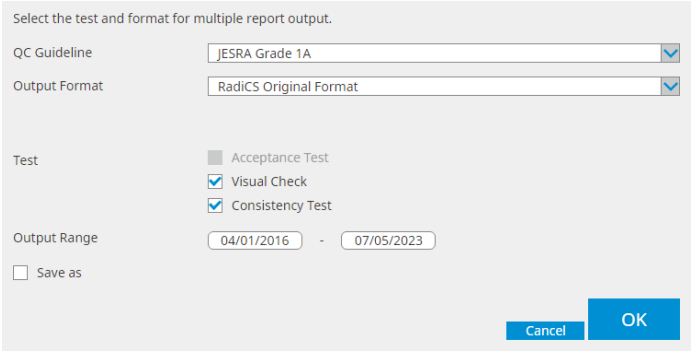
**Note**

- For history records that meet any of the following conditions, the multiple report cannot be generated:
  - "Job" is other than the acceptance test, visual check, and consistency test
  - "Result" is an error
  - "Result" is canceled (except when the report output format is "RadiCS Original Format - List")

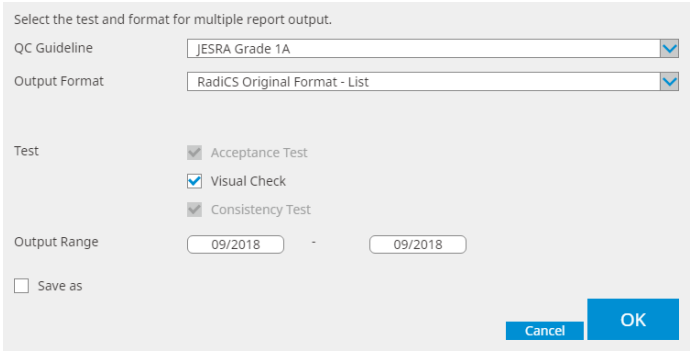
1. Click "Bulk Test Report Generation" at the lower right of the screen.




2. Specify "QC Guideline", "Output Format", "Test", and the history period (start and end months) for report output and click "OK".
   All history data that meet the specified conditions are output on a task basis.




"RadiCS Original Format"




"RadiCS Original Format - List"

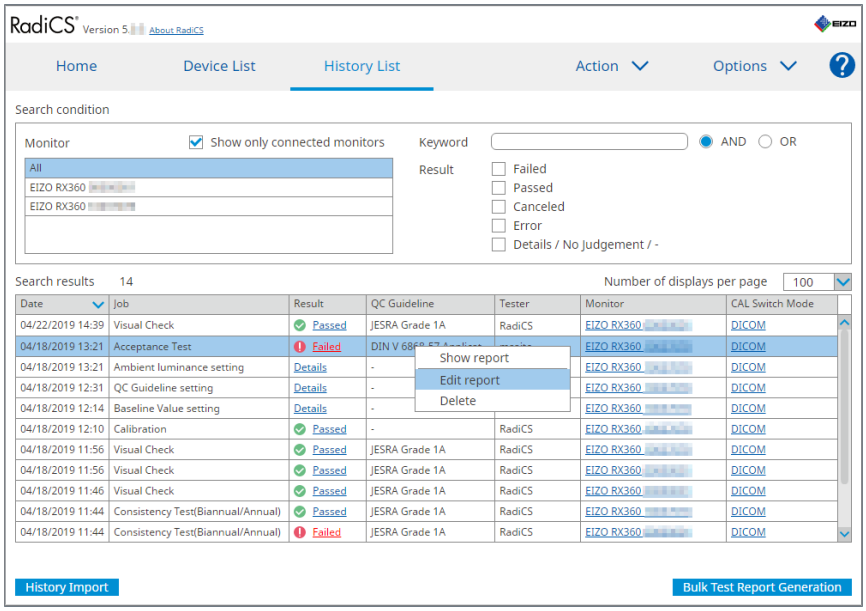
**Note**

- When outputting QS-RL, DIN V 6868-57, DIN 6868-157, and ONR 195240-20 in the PDF format, the language option is available.
  - QS-RL, DIN V 6868-57, and DIN 6868-157: English / French / German / Italian
  - ONR 195240-20: English / German
- Select the "Save as" check box to store the file in any location.
- The period when the output is available within three years.

### 3.3.2.3 Edit Report

When QS-RL, DIN V 6868-57, DIN 6868-157, and ONR 195240-20 is used, the report information registered can be edited.

1. Select the task execution history for which you want to edit a report, and right-click it. The menu appears.
2. Click "Edit report".



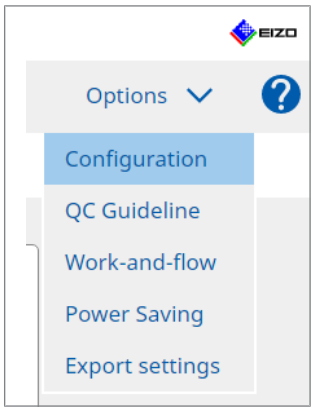

The report information registration window appears.

3. Edit the report information and click "OK".

### 3.3.3 Backing Up the History

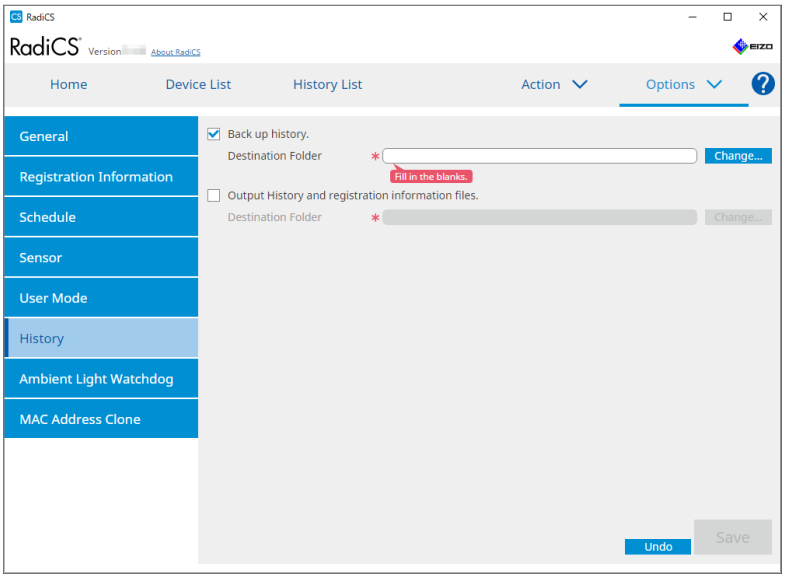
Backup and file output of the history is available.

1. Click "Configuration" of "Options".




The setting window appears.

2. Click "History".




The History window is displayed.

3. Select the check box for the item to be executed.

**Back up history.**

The history is stored in the specified folder.

| Note |
| --- |
| • The saved backup file can be imported. For details, see Importing History [▶ 68]. |

**Output History and registration information files.**

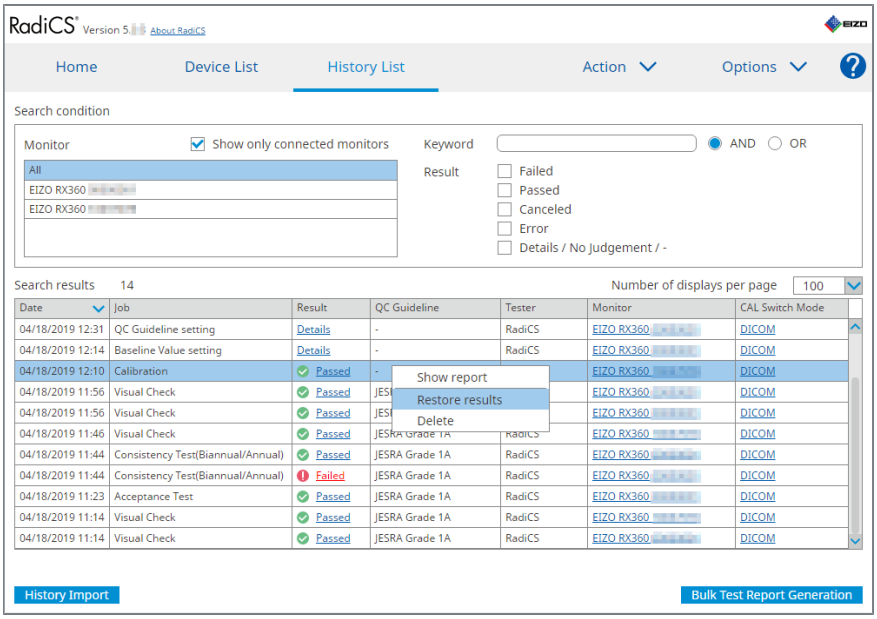
The history details and registration information are output as an XML file to the specified folder.

4. Click "Change..." and set the save location.
5. Click "Save".
   The file is saved. After the file is saved, when a history record is created, the history information is saved automatically to the specified file.

### 3.3.3.1 Writing Correction Value to Monitor from Calibration History

You can set the data of the correction value applied to the calibration to the monitor.

1. Select a calibration history, and right-click it.
   The menu appears.
2. Click "Restore results".




The confirmation window appears.

3. Click "Yes".
   The correction value applied to the selected calibration is applied to the monitor.

**Attention**

- The monitor status may have changed since the calibration was performed. To restore the display status to at the time of calibration execution, it is recommended that calibration is executed.

**Note**

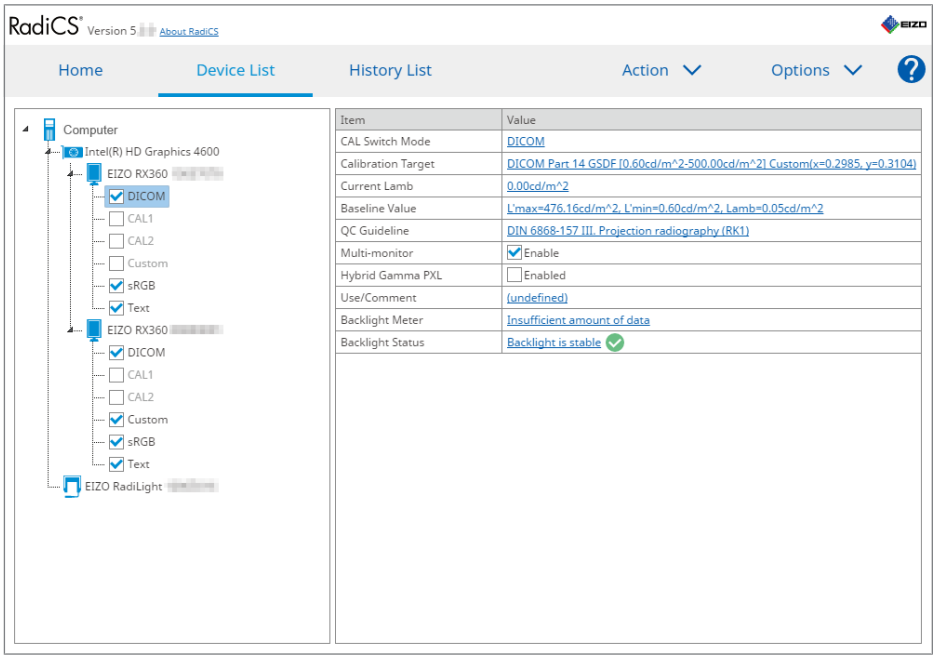
- This function is not available if more than one history record is selected.

# 4 Changing Test Settings

## 4.1 Set the CAL Switch Mode Control Targets

Set the CAL Switch mode to be controlled by RadiCS. For the CAL Switch modes in which tests and measurements can be performed, refer to the user's manual of the monitor.

1. Click "Device List".
2. Select the check box of each CAL Switch mode to let RadiCS control the mode from the list of connected equipment.




**Note**

- The CAL Switch modes including those that are not the RadiCS control targets cannot be set by monitor operations or Work and Flow setting.

## 4.2 Changing QC Guidelines

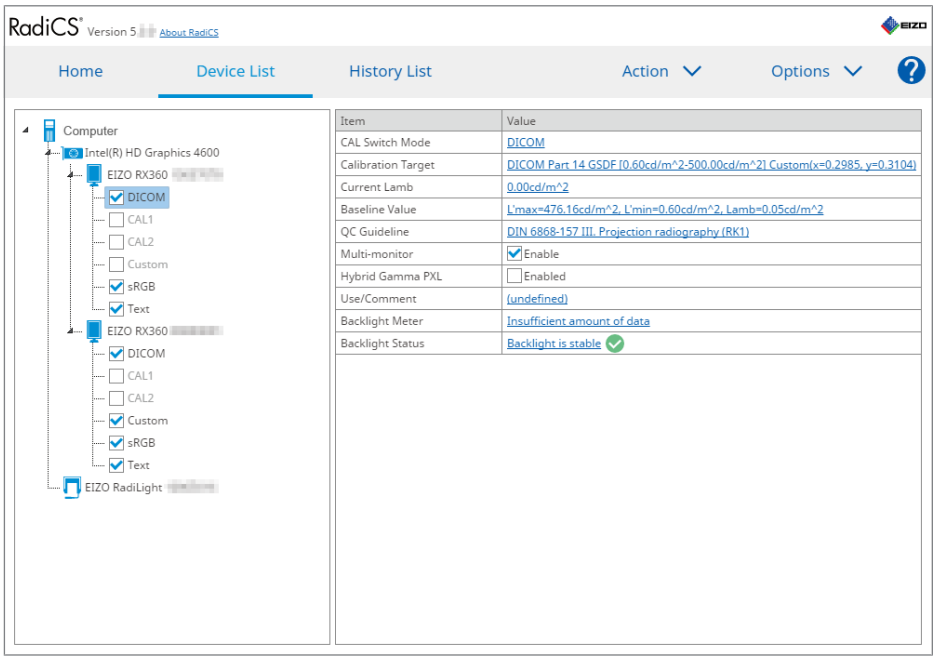
Select the QC guideline which you want to use for acceptance or consistency test.

**Note**

- The visual checks use the same QC guideline as that specified for the Consistency Test.

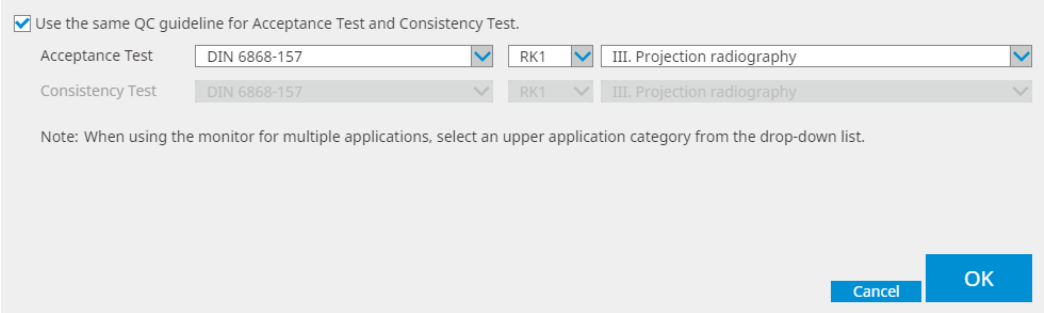
1. Click "Device List".
2. Select a CAL Switch mode of a monitor for which you want to set the QC guidelines from the list of connected equipment.
   The CAL Switch mode information appears to the right pane.

3. Specify the appropriate QC guideline. Click the "QC Guideline" link.




The QC guideline setting window appears.

4. From the pull-down menu, select QC guidelines to use.
   To use the same QC guideline for acceptance and consistency tests, select the "Use the same QC guideline for Acceptance Test and Consistency Test." check box.




**Note**

- The visual checks use the same QC guideline as that specified for the Consistency Test.
- You may need to select the category and room category depending on the QC guideline.
- The QC guideline setting window can also be displayed from the test execution window. For details, see Performing Acceptance Test [▶ 40] and Performing a Consistency Test [▶ 51].
- For details on QC guidelines, see 9 Information [▶ 173].

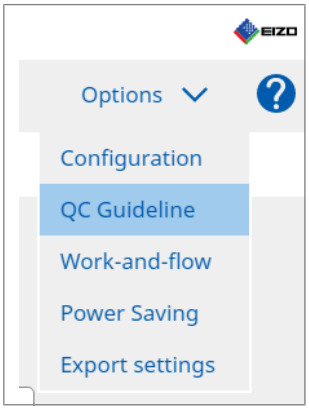
5. Click "OK".
   Your settings are saved.

### 4.2.1 Creating QC Guidelines

RadiCS allows you to create customized QC guidelines based on QC guidelines that support the medical standard in countries. For customized QC guidelines, acceptance and consistency tests and visual checks can be set.

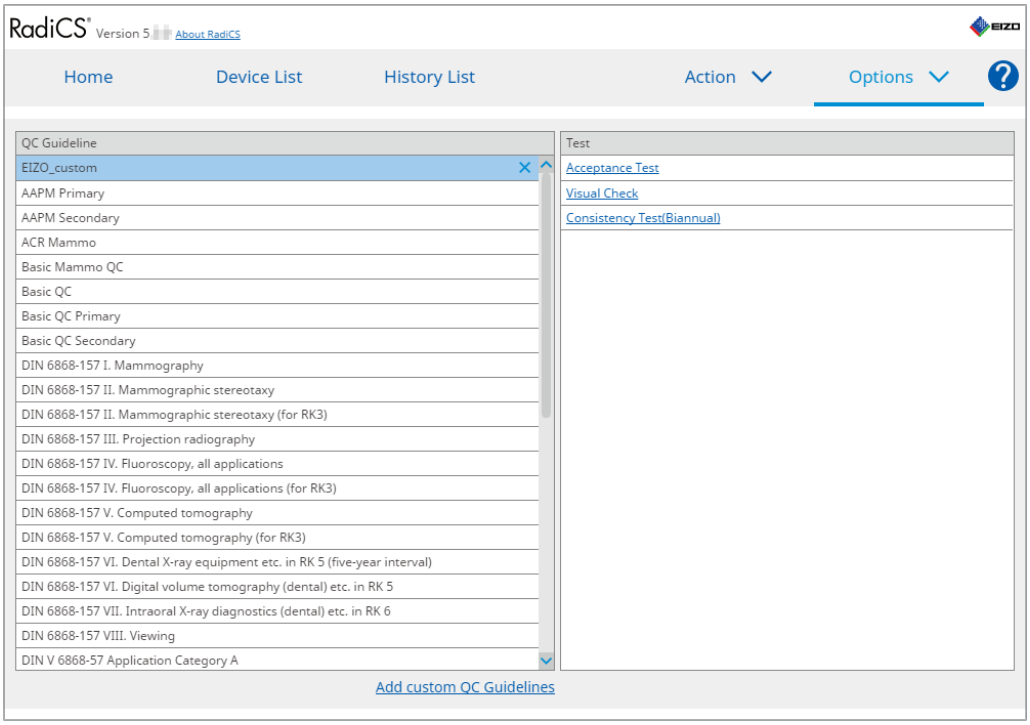
| Note |
| --- |
| • You cannot create QC guidelines in RadiCS if you are connected to RadiNET Pro. Create the guidelines using RadiNET Pro. |

1. Select "QC Guideline" from "Options".



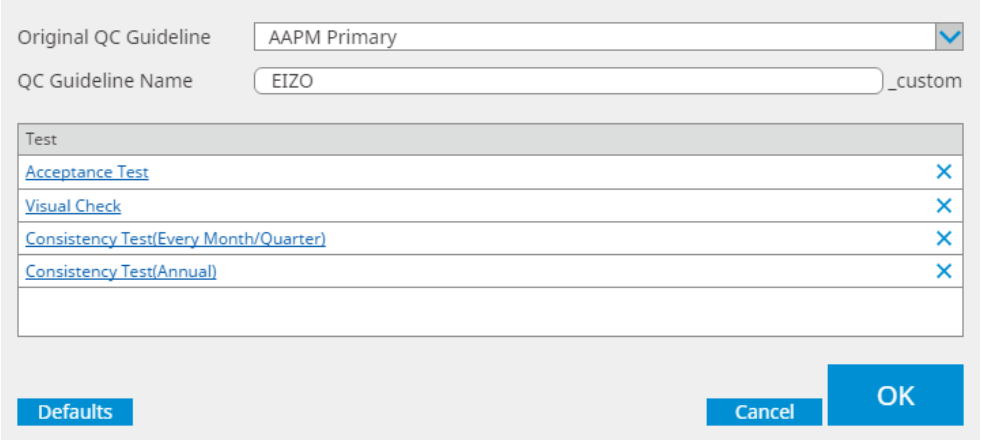

The Edit QC Guideline window appears.

2. Click the "Add custom QC Guidelines" link.




The Add QC Guideline window appears.

3. Select the original QC guideline from the pull-down menu, and enter the QC guideline name.




The list displays the tests that are to be performed under the original QC guidelines. Check that the list contains tests you want to customize.
Clicking the link allows you to change the test name.

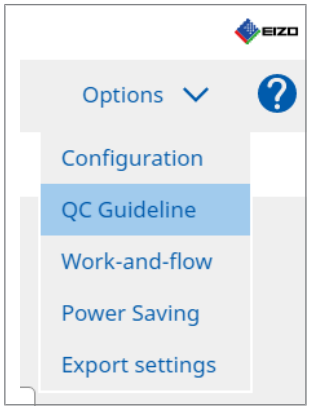
4. Click "OK".
The Edit QC Guideline window appears. The QC guideline you created is displayed with the name "QC Guideline Name_custom" in "QC Guideline".

### 4.2.2 Editing QC Guidelines

**Attention**

- If the QC guideline supports the medical standard in countries, you can edit only the following items:
  - Pattern
  - Multi-monitor (Luminance / Uniformity)

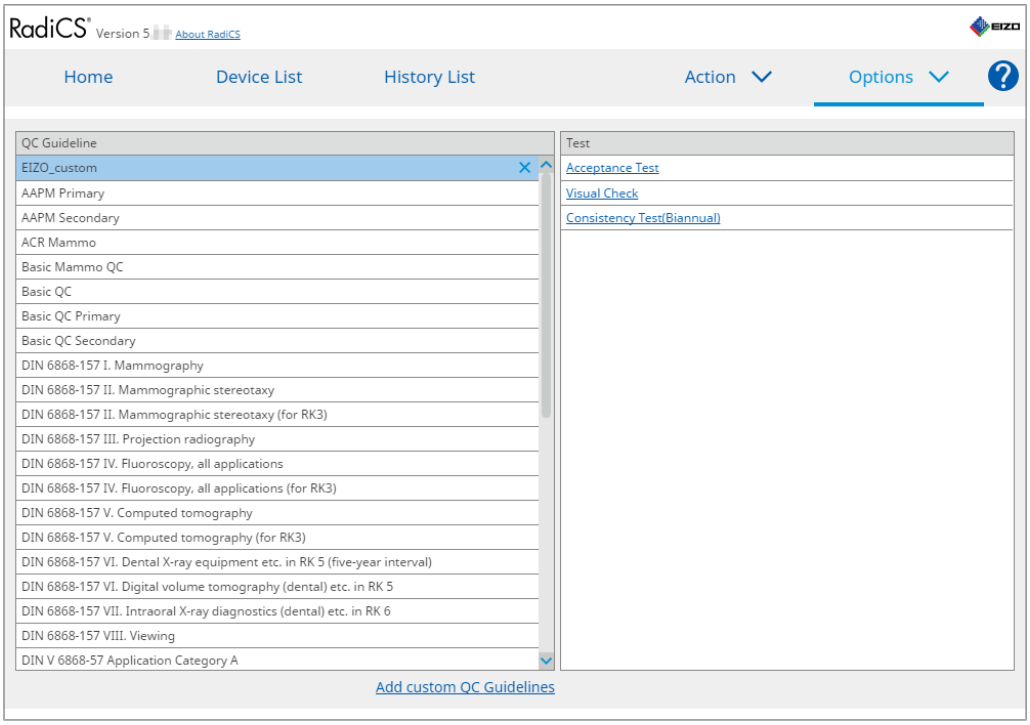
1. Select "QC Guideline" from "Options".




The Edit QC Guideline window appears.

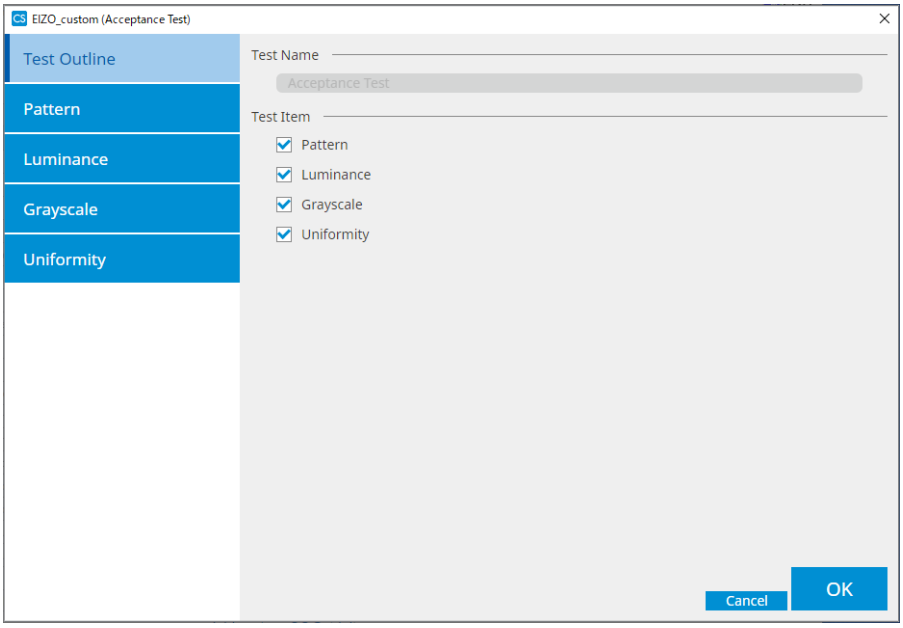
2. Select the appropriate QC guideline from "QC Guideline".
The QC guideline selected for "Test" displays the tests required.

3. Click the "Test" link.

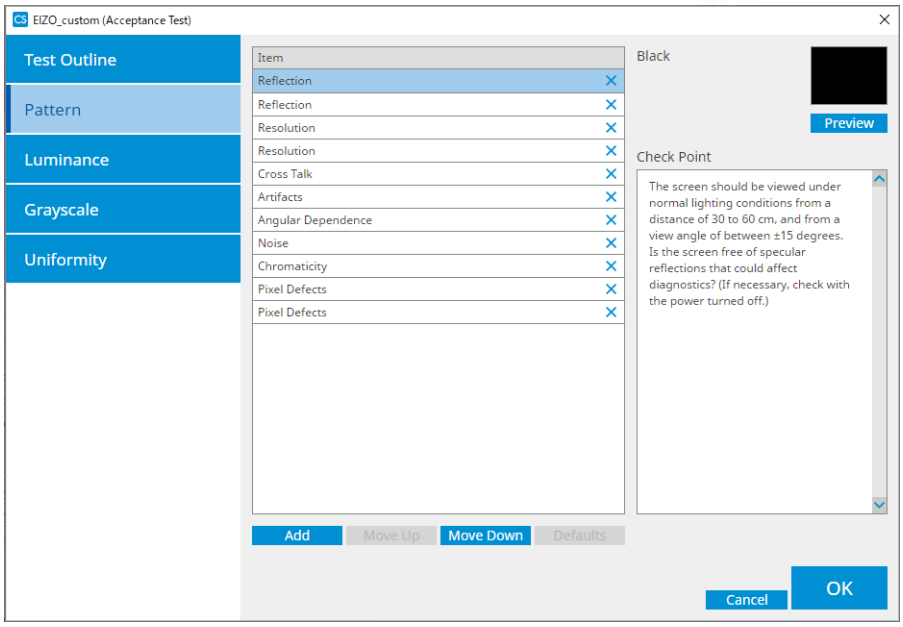



The test details window appears.

4. Click "Test Outline".
The outline setting window appears. Select the check box for the test to be executed.



5. Click "Pattern".
   The pattern setting window appears. Set the patterns that appear during the pattern check.




- Item
  Lists the patterns that can be used in the pattern check.
- ✕ Icon
  Deletes the pattern from the pattern list. The deleted pattern is not used in the pattern check.
- Add
  Adds a pattern used in the pattern check. From the "Add Pattern" window, select the pattern you want to use in the pattern check.
- Move Up
  Moves the selected pattern one position higher in the list of patterns. The patterns are listed from high to low in the pattern check.
- Move Down
  Moves the selected pattern one position lower in the list of patterns.
- Defaults
  Sets the selected pattern as the default.
- Preview
  Displays a preview image of the selected pattern.
- Check Point
  Allows you to edit the text which asks about the pattern selected in the pattern list. Enter the text in the Check Point field. The total text length must be 450 characters or less.

**Attention**

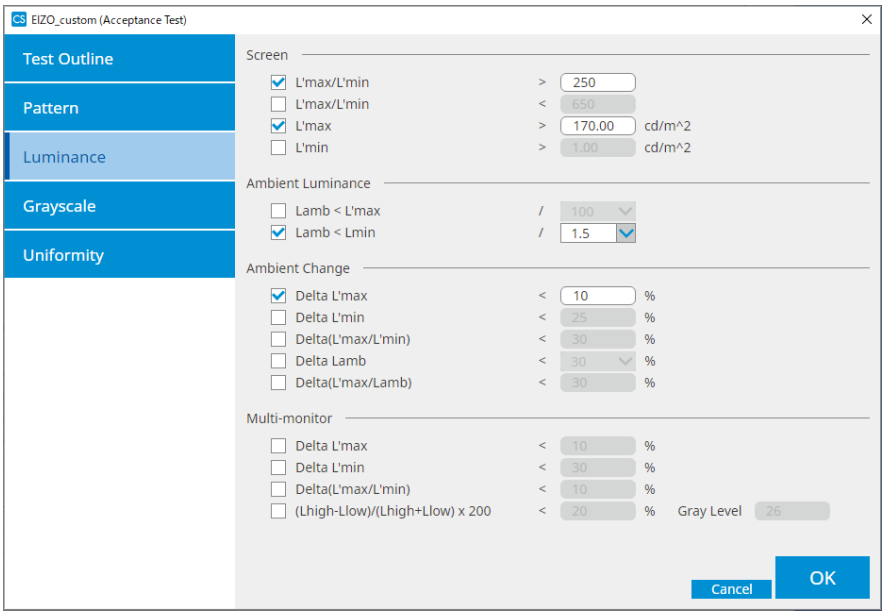
- If a question appears in the pattern check, and the question shown under Check Point is not true, you clear the check box of the item. Observe the following rules when making questions:
  - The text must be in question form. e.g. "Is convergence adjusted correctly?"
  - The answer to the question must not affect the pattern check result if the question is responded with "Yes".

**Note**

- Files in the following formats can be added as a pattern:
  - Bitmap (*.bmp)
  - JPEG (*.jpg, *.jpeg, *.jpe, *.jfif)
  - GIF (*.gif)
  - TIFF (*.tif, *.tiff)
  - PNG (*.png)
  - DICOM® (*.dc3, *.dcm, *.dic)
- A pattern can be added using the following procedure:

1. Create a folder in any location of the PC and save a pattern to be added. If you want to add multiple patterns with different resolutions, save all the target patterns in a folder.
2. Click "Add" on the pattern setting window.
3. The Add Pattern window appears. Click "Add".
4. Select the folder created in step 1.
   A pattern is added on the Add Pattern window, and the thumbnail is displayed.
5. Enter the appropriate item name, and click "OK".
   The pattern is added to the pattern setting window, and it can be used for the pattern check.

6. Click "Luminance".
   The luminance check judgment window appears. To enable judgment, select the appropriate check box and set values.




Screen

- L'max/L'min
  Enter the contrast ratio required (0 to 999).
- L'max (cd/m$^2$)
  Enter the maximum luminance value required (0.00 to 999.00).
- L'min (cd/m$^2$)
  Enter the minimum luminance value required (0.00 to 99.00).

Ambient Luminance

- Lamb < L'max / setting values
  Select the Lamb judgment method from the pull-down menu. The L'max/Lamb> setting values have changed (setting values: 100, 40).
- Lamb < Lmin / setting values
  Select the Lamb judgment method from the pull-down menu. The Lmin/Lamb> setting values has been changed (setting values: 4, 1.5, 1, 0.67, 0.1).

Ambient Change

- Delta L'max (%)
  Enter the maximum allowable difference as a percent ratio (0 to 100) between the L'max and the baseline value.
- Delta L'min (%)
  Enter the maximum allowable difference as a percent ratio (0 to 100) between the L'min and the baseline value.
- Delta(L'max/L'min) (%)
  Enter the maximum allowable difference as a percent ratio (0 to 100) between the L'max / L'min and the baseline value.
- Delta Lamb (%)
  Select the maximum allowable difference (30 or 25) between the Lamb and the baseline value from the pull-down menu.
- Delta(L'max/Lamb) (%)
  Enter the maximum allowable difference as a percent ratio (0 to 100) between the L'max / Lamb and the baseline value.

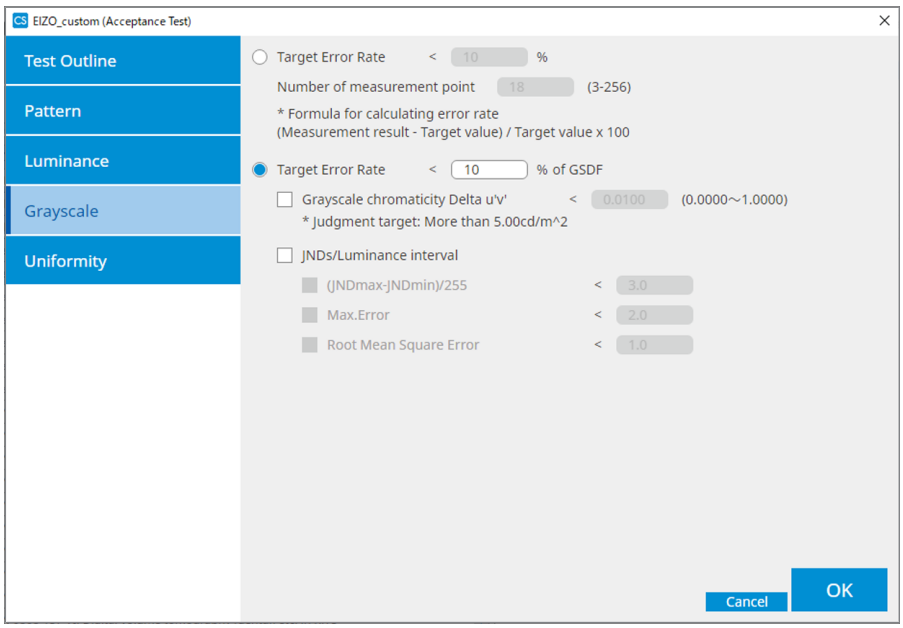
Multi-monitor

- Delta L'max (%)
  Enter the maximum allowable difference as a percent ratio (0 to 100) between the L'max values of monitors.
- Delta L'min (%)
  Enter the maximum allowable difference as a percent ratio (0 to 100) between the L'min values of monitors.
- Delta(L'max/L'min) (%)
  Enter the maximum allowable difference as a percent ratio (0 to 100) between the L'max / L'min values of monitors.
- (Lhigh-Llow)/(Lhigh+Llow) x 200 (%)
  Enter the maximum allowable difference as a percent ratio (0 to 100) between the (Lhigh - Llow)/(Lhigh + Llow) x 200 values of monitors.

**Note**

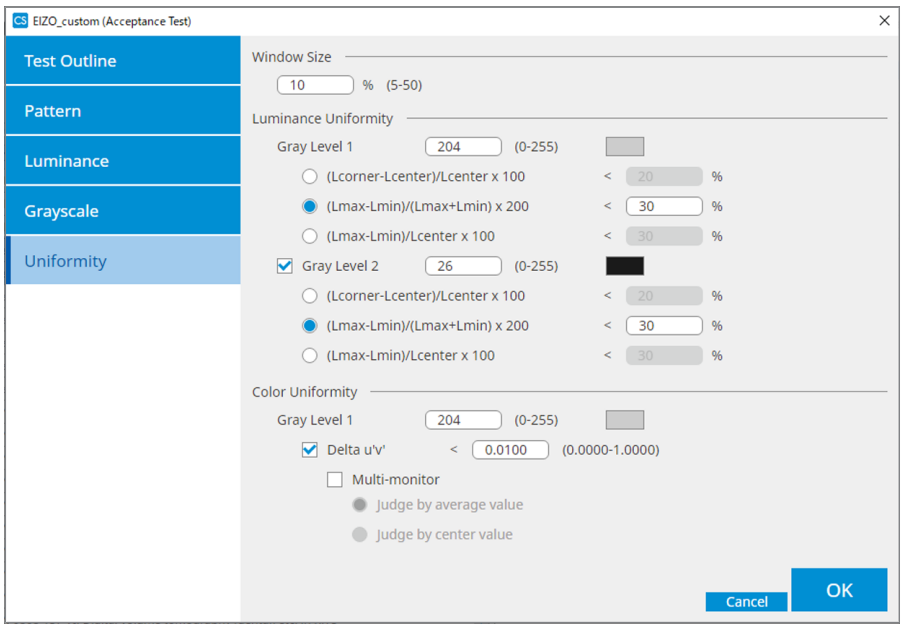
- For a multi-monitor, monitors of the same model can be compared.

7. Click "Grayscale".
   The grayscale check setting screen appears. The error check setting is performed.




- Target Error Rate (%)
  Enter the maximum allowable error rate between 0 to 100 if you wish to calculate the target error rate in terms of the ratio of error to measurement value (cd/m$^2$). Enter the number of measurement points on the screen, from 3 to 256.
- Target Error Rate (% of GSDF)
  Enter the maximum allowable error rate between 0 and 100 if you wish to calculate using the error rate of GSDF (contrast response).
  – Grayscale Chromaticity Delta u'v'
    Extract the maximum value from the delta u'v' calculated for each grayscale, and compare the maximum value with the judgment value. Enter the judgment value in the range of 0.0000 to 1.0000.
  – JNDs / Luminance interval
    Measure 256 points, and evaluate the JND per grayscale difference. Enter the judgment value for each item, from 0.0 to 3.0.

8. Click "Uniformity".
   The uniformity check setting screen appears. The measurement level is specified.

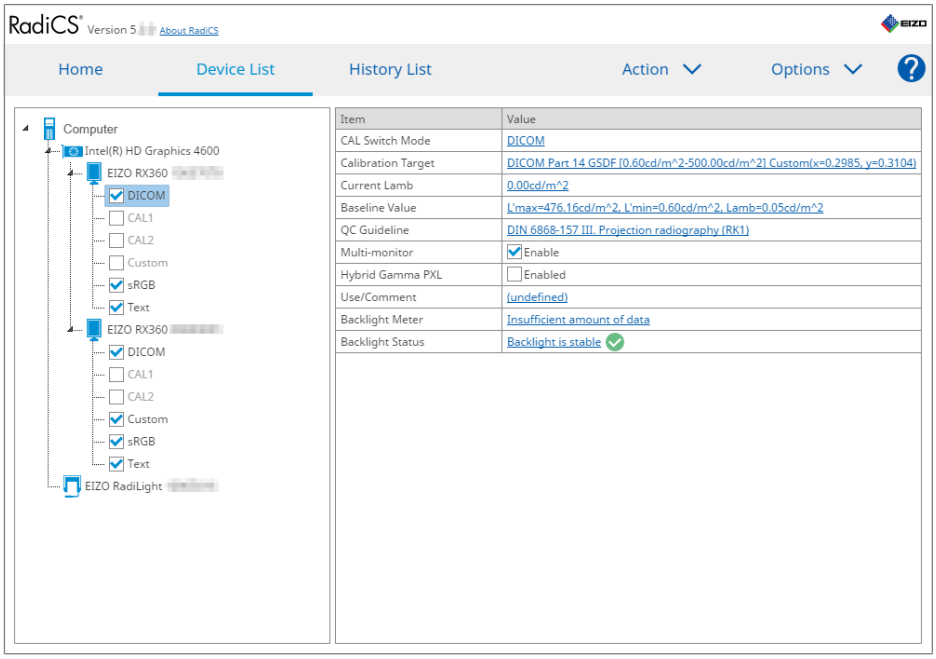



- Window Size (%)
  Set up the measurement window size in a range between 5 % and 50 %.
- Luminance Uniformity
  Set up error judgment standard of luminance uniformity. An error judgment standard can be set for each of the two grayscale preset values. To execute the error check, select the check box.
- Color Uniformity
  Set up the error judgment standard for chromaticity. To execute the multi-monitor check, select the check box.

9. Click "OK".
   Your settings are saved.

## 4.3 Setting Calibration Targets

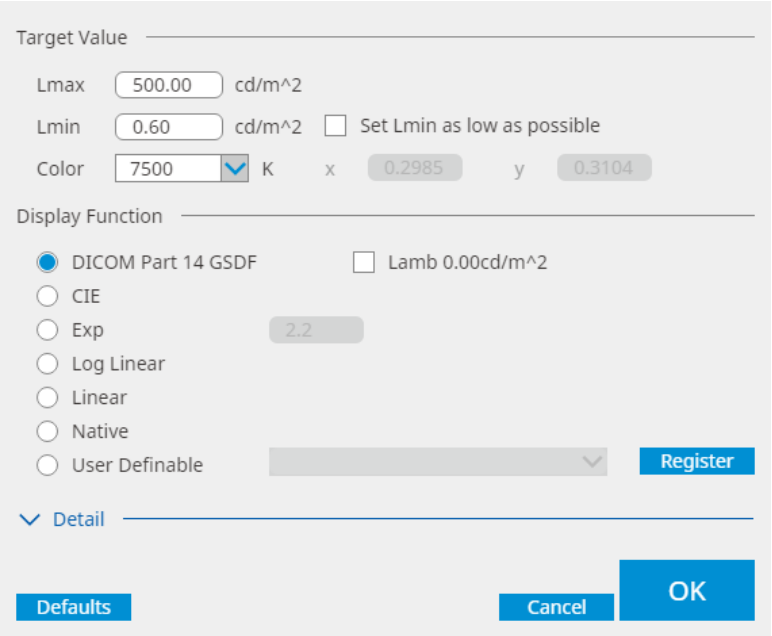
1. Click "Device List".
2. Select a CAL Switch mode of a monitor for which you want to set the calibration target from the list of connected equipment.




3. Click the "Calibration Target" link.
   The calibration target setting screen is displayed.
4. Set the following items, and click "OK".

**Note**

- The valid value ranges of Lmax and Lmin depend on the monitor model.
- Clicking "Defaults" allows you to return the value to the default target value.
- The specified Lmax, Lmin, and Lamb values are applied to the baseline value under the following conditions (except for QS-RL, DIN V 6868-57, DIN 6868-157, and ONR 195240-20):
  - After calibration is executed.
  - When the RadiCS SelfCalibration history is acquired from the monitor.




### Target Value

Set the calibration target value.

- Lmax
  Enter the maximum luminance target value excluding ambient luminance.
- Lmin
  Enter the minimum luminance target value excluding ambient luminance.
  If you want to set the smallest luminance value obtainable as the Lmin target value when measuring the monitor, check "Set Lmin as low as possible".
- Color
  Select a color temperature target value from the pulldown menu for a color monitor.
  To set the chromaticity (x: 0.2000 to 0.4000, y:0.2000 to 0.4000), select "Custom".
  To set the original color of an LCD panel, select "OFF".

| **Attention** |
| --- |
| • For a monochrome monitor, the color cannot be set. |

### Display Function

Select the DICOM display function (grayscale characteristics).

- DICOM Part 14 GSDF
  This setting complies with DICOM Part14.
  If the "Lamb" check box is selected, the ambient luminance value is used in calibration.
  Lmax + Lamb = Maximum Luminance Target
  Lmin + Lamb = Minimum Luminance Target
- CIE
  Uses a display function which complies with CIE LUV and CIE LAB.
- Exp
  A power function is used. Enter an exponent (gamma value) in the range from 1.6 to 2.4.
- Log Linear
  A log-linear function is used.

- Linear
  A linear function is used.
- Native
  Settings of native characteristics of an LCD panel are used.
- User Definable
  You can select a file by clicking "Register".

### Detail

Click "Detail" to display the following items:

- Confirm the results after calibration
  After the calibration, perform automatic measurements and confirm the results of adjustment.
- Calibrate using a Backlight sensor
  If selected, the backlight sensor built into the monitor is used to execute simple calibration (brightness and grayscale correction) (calibration with a Backlight Sensor).

| **Attention** |
| --- |
| • Only the RadiCS compatible monitor can be selected. |

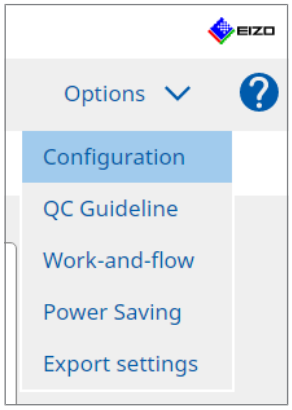
- Measurement Level
  Set the calibration measurement accuracy for the external sensor.
  - Low
    Select if you want to shorten the measurement time. The measurement accuracy is reduced.
  - Standard
    The default setting of RadiCS. The standard measurement accuracy of RadiCS.
  - High
    Select if you want to perform calibration with a high level of accuracy. It takes longer to complete measurement.

| **Attention** |
| --- |
| • Fixed at "Standard" for the following monitors:<br>– LL580W<br>– LX1910<br>– LX550W |

## 4.4 Adding Measurement Devices

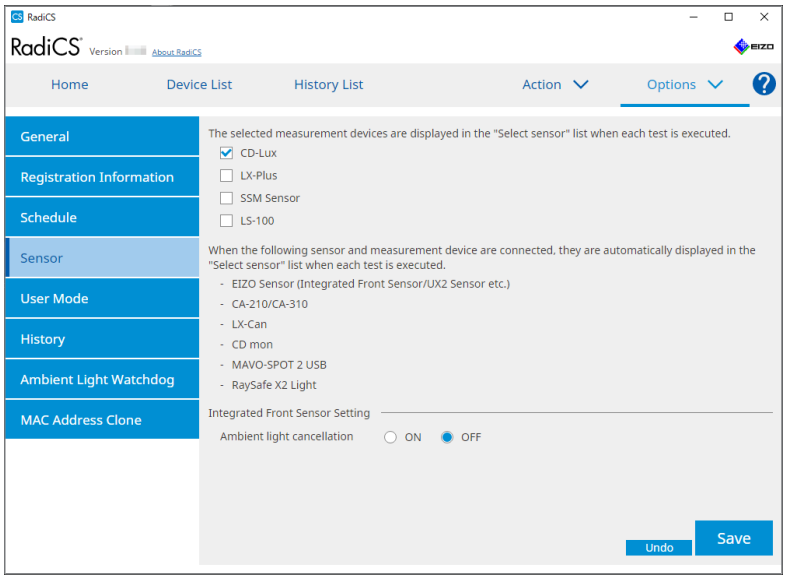
Set measurement devices, connected via RS-232C, that you want to display in the list of sensors on the test setting window.

1. Click "Configuration" from "Options".




The setting window appears.

2. Click "Sensor".




The sensor setting screen appears.

**Note**

- The impact of ambient lighting will become greater in brightly lit rooms (highly illuminated environments).
- When using a monitor with an Integrated Front Sensor (slide-type), you can set the "Ambient light cancellation" to ON or OFF. Set to "ON" when using the monitor in an environment easily affected by ambient light. Doing so can reduce the impact of ambient lighting.

3. Of the following measurement devices, select the check box of the device you want to display on the test execution screen.

   Set measurement devices, connected via RS-232C, that you want to display in the list of sensors on the test setting window.

- CD-Lux
- LX-Plus
- SSM Sensor

- LS-100

**Note**

- The measurement devices connected via USB are automatically added to the list of sensors.

4. Click "Save".
   The settings are applied.

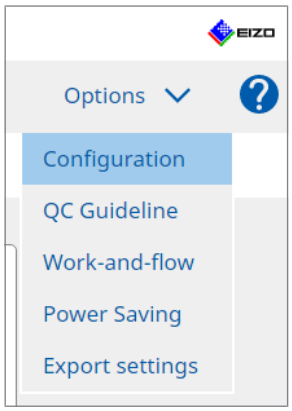
## 4.5 Using Scheduling

Scheduling allows you to perform tests and measurements periodically.

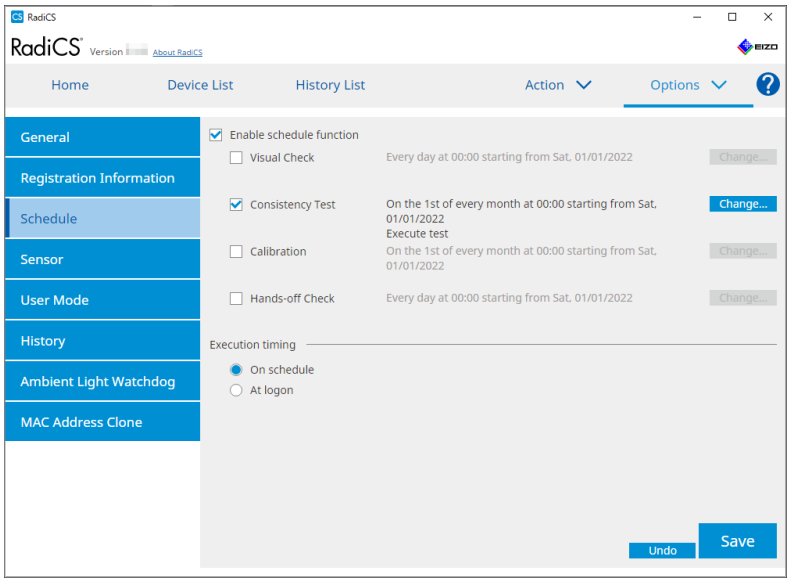
**Attention**

- The Integrated Front Sensor (slide type) cannot be used depending on the panel protector to be attached. If the Integrated Front Sensor cannot be used, do not set a schedule as consistency tests and calibration cannot be executed regularly.
- The schedule cannot be changed in RadiCS when the task schedule is configured according to the RadiNET Pro policy. Items that cannot be changed are shown in gray.
- When upgrading RadiCS from version 5.0.12 or earlier, the next scheduled execution date appearing in the schedule may be different than the time previously registered in the schedule. Check the next scheduled execution date and time from the job list in RadiCS or RadiNET Pro (see 5.9 Checking Jobs [▶ 111]).

1. Click "Configuration" from "Options".
   The setting window appears.



2. Click "Schedule".

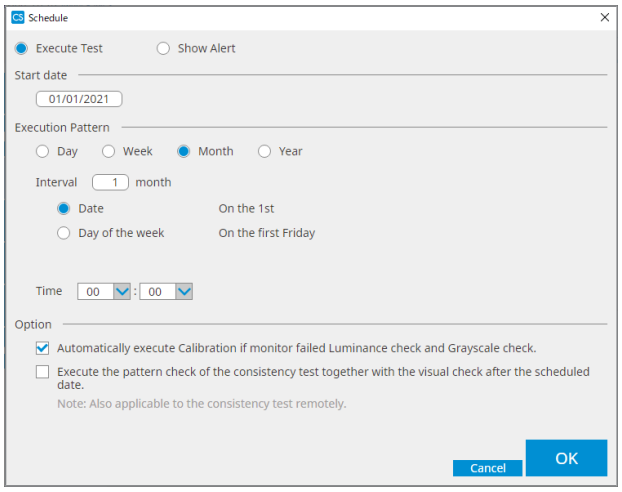



The Schedule window appears to the right.

3. Select the "Enable schedule function" check box.
4. Select the check box of the item to which you want to apply the schedule.

| **Attention** |
| --- |
| • You cannot perform visual check and the consistency test with RadiCS LE. |

5. Click "Change...".




The schedule setting window appears.

6. Select the pattern you want to execute.

**Contents of execution**

Only in the consistency test, set the contents of execution with the schedule executed.

- Execute Test
  Select this item to execute the test on the execution date.
- Show Alert[*1]
  Select this item to announce the test execution date in advance. Set how many days prior to the test the notification is made.

[*1] The next test execution date is displayed in the list of jobs. The test is not executed.

**Execution Pattern**

Select the schedule pattern you want to execute.

**Options**

- Automatically execute Calibration if monitor failed Luminance check and Grayscale check.
  Select this check box to re-execute calibration and the consistency test automatically if the Luminance check or Grayscale check failed during the consistency test (only applicable with select models).
- Execute the pattern check of the consistency test together with the visual check after the scheduled date.
  When a consistency test schedule is set, the pattern check of the test will be conducted together with the visual check.
- Perform calibration if the Hands-off Check is failed
  Select this check box to re-execute calibration and hands-off check automatically if the hands-off check failed.
- Show Alert
  Set how many days prior to the scheduled execution date the alert is displayed.

7. Click "OK".
8. Select "Execution timing" on the schedule window.

- On schedule
  The task is executed at the time specified.

| **Attention** |
| --- |
| • If the PC does not run at the time and date set for visual check, the task will be executed immediately after the PC starts.<br>• Even if the "Automatically execute Calibration if monitor failed Luminance check and Grayscale check." check box is selected, if SelfQC detects items that cannot be determined as failed during the SelfQC test, calibration will not be performed after the test. |

- At logon
  The task is executed when you log in the PC for the first time after the specified date and time comes.

| **Attention** |
| --- |
| • Even with repeated logons and logoffs, the task is executed only once per day. |

9. Click "Save".
   The schedule is applied.

# 5 Checking the Monitor Status

## 5.1 Performing Tasks

The following tasks can be performed:

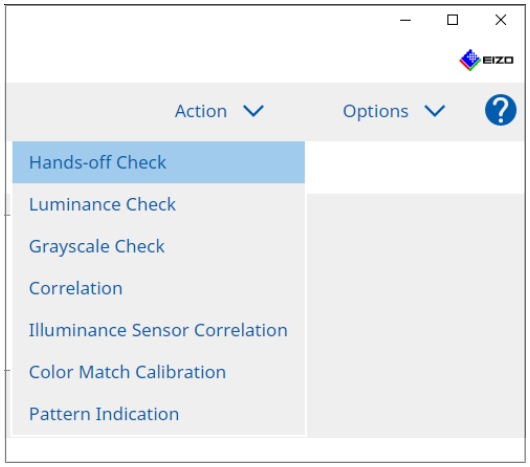
- Hands-off Check[*1]
  Obtains luminance information from the monitor and judges whether the current luminance is managed properly. If the luminance is judged to be low, a message prompting the calibration settings to be change and calibration to be executed appears.
- Luminance Check[*2]
  Performs black and white luminance check.
- Grayscale Check [*2]
  Performs a grayscale check.

[*1] Cannot be performed with the following monitors:

- LL580W
- LX1910
- LX550W

[*2] RadiCS LE cannot execute this.

1. Select the task that is performed from "Action".




   The test setting window appears.
2. Follow the on-screen instructions to make settings and then click "Proceed".

| Note |
| --- |
| • After the end of grayscale check and luminance check, click "Detail" to display the measurement result details. Click to measure the selected item again. |

3. Click "OK".
4. The result window appears. Click "Finish" to display the "Home".

| Note |
| --- |
| • Click the link "Result" to display the report.<br>• Clicking the link "Comment" to enter comments. |

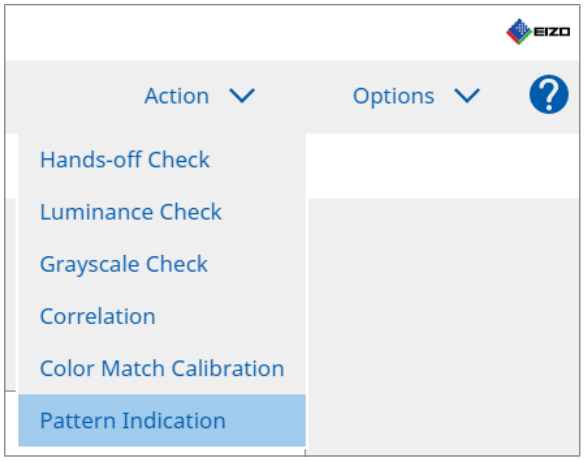
## 5.2 Manually Measuring Luminance

Displays the measurement window and manually measure the luminance.

**Attention**

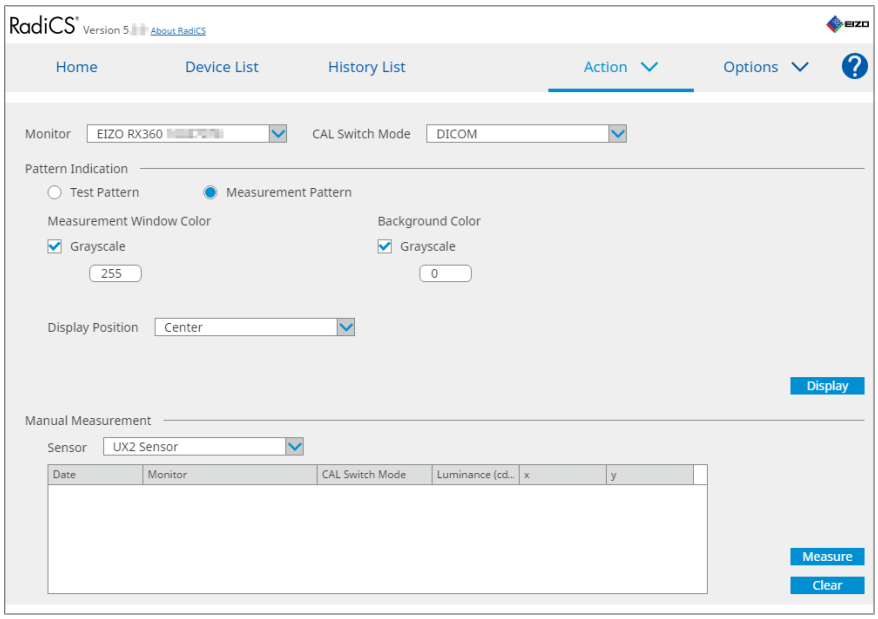
- RadiCS LE cannot execute this.

1. Select "Pattern Indication" from "Action".




The Pattern Indication window appears.

2. From the pull-down menu, select "Monitor" and "CAL Switch Mode" to display the measurement window.




**Attention**

- Move the RadiCS window to a monitor other than a monitor in which the measurement window is displayed.

3. Select "Measurement Pattern" from "Pattern Indication".
   An item for setting up a measurement window for manual measurement appears.
4. Set "Measurement Window Color" and "Background Color".
   Click "Display" to view the screen you set.

5. Select "Display Position" from the pull-down menu.
6. Click "Display".
   The measurement window appears.
7. Click "Measure".
   When multiple measurement devices are connected, select the measurement device from the "Sensor" pull-down menu.
   When the measurement is complete, the measurement results are displayed.

| **Attention** |
| --- |
| • An Integrated Front Sensor or manual input sensor cannot be used for measurement. |

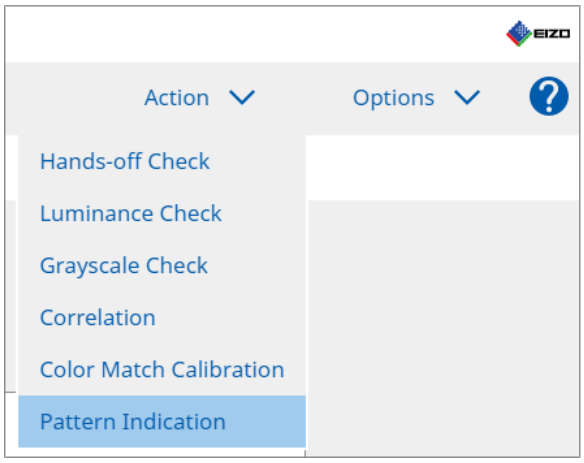
## 5.3 Displaying / Outputting a Pattern

| **Attention** |
| --- |
| • RadiCS LE cannot execute this. |

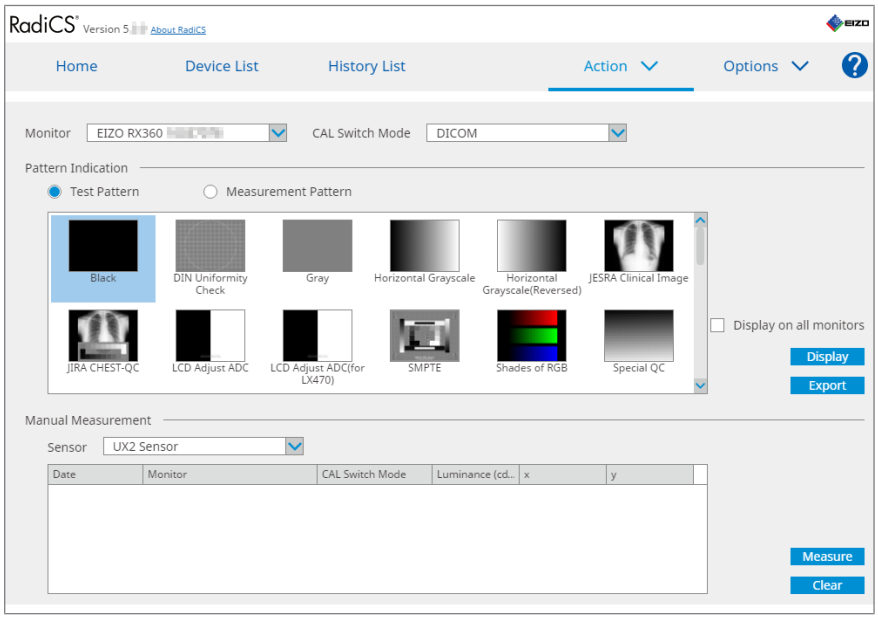
### 5.3.1 Pattern Indication

Allows you to display a pattern image on the screen of a monitor or all connected monitors. This function only displays a selected pattern and does not have setup or pattern check capabilities.

1. Select "Pattern Indication" from "Action".



2. From the pull-down menu, select "Monitor" and "CAL Switch Mode" to display the pattern.




3. Select "Test Pattern" from "Pattern Indication".
4. Select the pattern image you want do display and click "Display".
   The selected pattern image is displayed on the entire screen.
   Selecting the "Display on all monitors" check boxes allows you to display the pattern image on all monitors.

**Attention**

- Select one pattern you want to display. You cannot display any pattern if multiple patterns have been selected.

5. To return to the previous window, click the left mouse button on the displayed pattern image.

### 5.3.2 Pattern Output

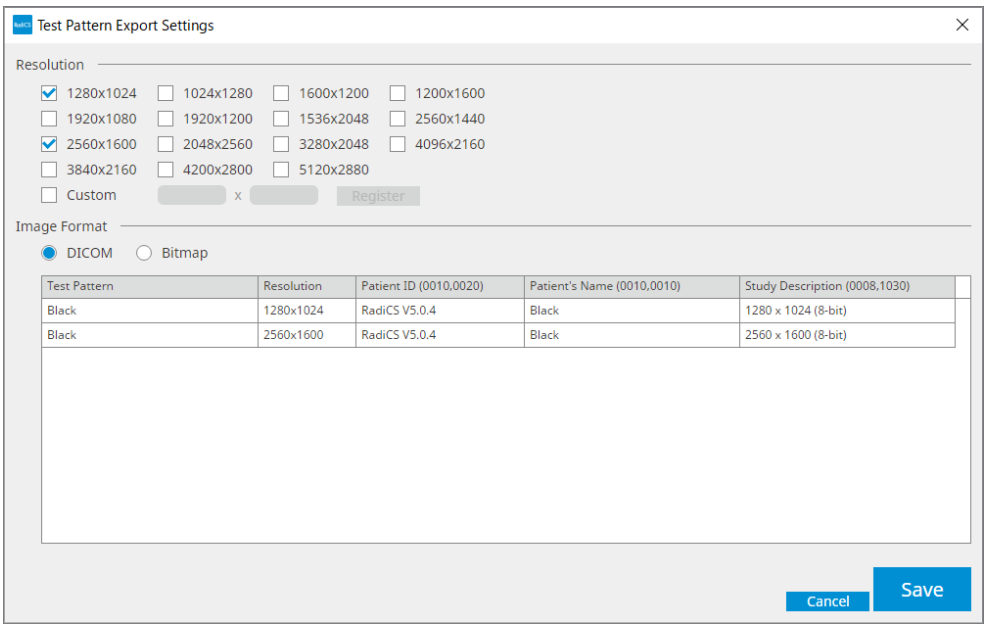
Pattern output is a function for outputting pattern images from RadiCS in DICOM or Bitmap format.

1. Select "Pattern Indication" from "Action".
2. Select "Monitor" and "CAL Switch Mode" from the pull-down menu.
3. Select "Test Pattern" from "Pattern Indication".
4. Select a pattern image to output, and click "Export".
   The Test Pattern Export Settings window appears.

**Note**

- You can select multiple pattern images using the following methods:
  - Click multiple images while holding down the Ctrl key.
    All the images that you have clicked are selected.
  - Click two images while holding down the Shift key.
    The images that you have clicked and those between them are all selected.

5. Select the resolution and image format for the pattern images, and click "Save".
   You can select multiple resolutions.




- Resolution
  Select the resolution of pattern images to be output. Selecting "Custom" allows you to specify any resolution from 1 to 5120.
- Image Format
  Select the image format.
  - DICOM[*1]
  - Bitmap

[*1] If you select "DICOM", the following items can be edited:

- Patient ID (0010,0020)
- Patient Name (0010,0010)
- Study Description (0008,1030)

6. Specify the save location and file name, and click "Save".
   A pattern image file will be created.

## 5.4 Calibrating Colors between the Monitors (Color Match Calibration)

You can match colors between two monitors by visually adjusting monitor colors to those of the reference monitor and performing the calibration based on the adjusted status.

**Attention**

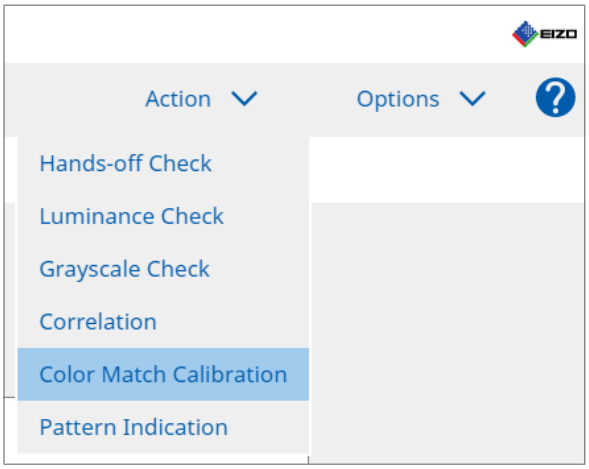
- Cannot be performed with a monochrome monitor.
- Calibration cannot be performed for Mac or with RadiCS LE.
- Cannot be performed with the following monitors:
  - LL580W
  - LX1910
  - LX550W
- Perform the calibration in advance on both the reference monitor and the monitor to be adjusted with the same calibration target.

1. Connect the measurement devices.

**Note**

- The sensors that can be used are as follows:
  - UX2 Sensor
  - Konica Minolta CA-210
  - Konica Minolta CA-310

2. Select "Color Match Calibration" from "Action".



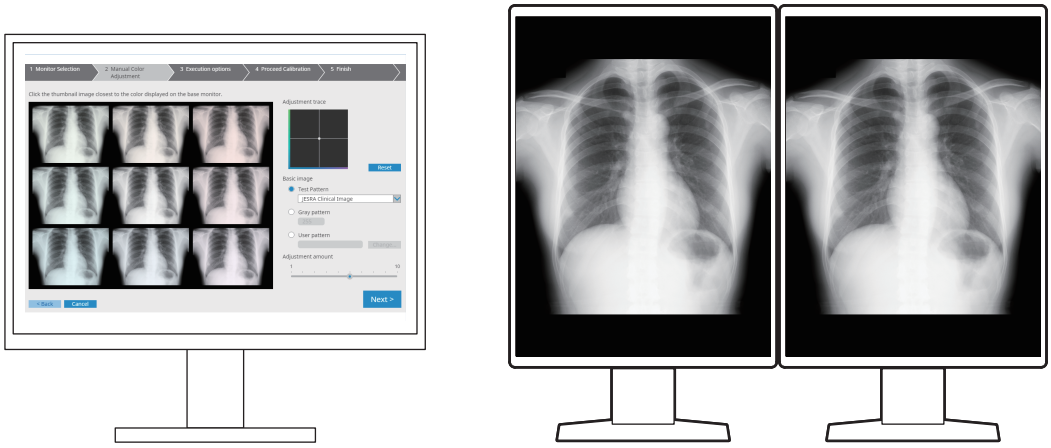

The Monitor Selection window appears.

3. Select the monitor targeted for color matching and the CAL Switch Mode.
   - Base monitor
     From the pull-down menu, select the reference monitor for color matching and the CAL Switch Mode. Select "Other monitor" to use the monitor connected to a different PC as the base monitor.
   - Target monitor
     From the pull-down menu, select the monitor targeted for color matching and the CAL Switch Mode. Only the RadiCS compatible color monitor can be selected.
4. Click "Next".
   The same image appears on the monitor selected in step 3 and the Manual Color Adjustment window appears.

**Attention**

- If you select "Other monitor" for "Base monitor" in step 3, display the image manually.
- Only CAL Switch Modes that are management targets can be selected.

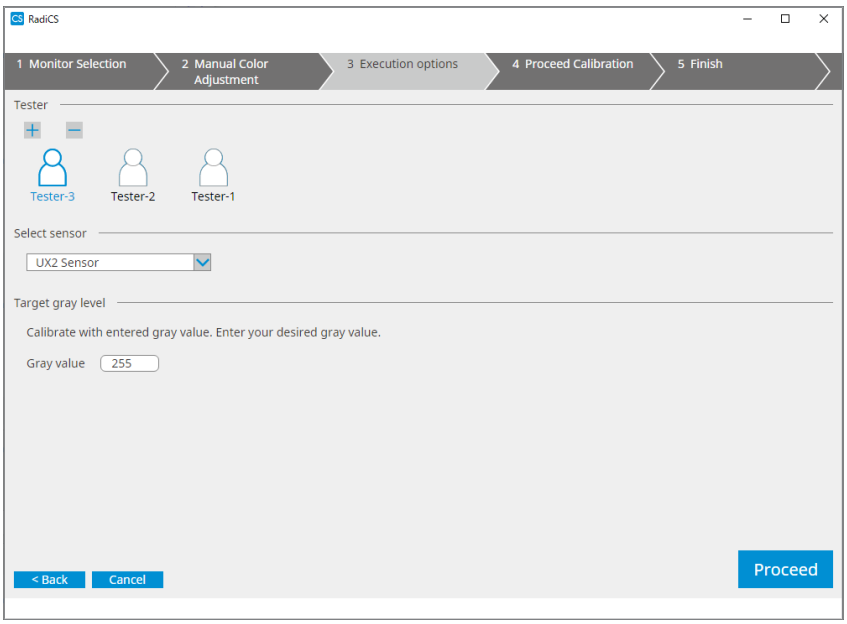
5. Perform color matching.
   Confirm the images that appear on "Base monitor" and "Target monitor", then select the thumbnail image whose color is the closest to that on the base monitor from nine thumbnail images.



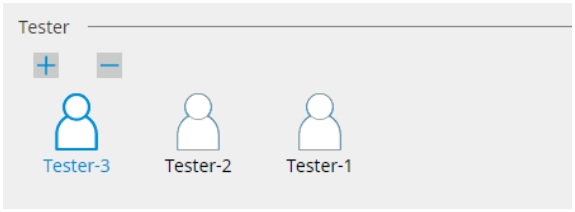
**Note**

- It is recommended to display thumbnails on monitors other than the base monitor and target monitor. Operations are possible even when thumbnails are displayed on the base monitor or the target monitor, but the color of the thumbnail images may be inappropriate and interfere with color matching.
- The color of the image displayed on "Target monitor" turns into the color of the selected thumbnail image. Adjust the color while checking it.
- You can change the amount of color variation of a thumbnail image by sliding the "Adjustment amount" indicator.
- Adjustment trace appears in "Adjustment trace". Click "Reset" to reset the contents of adjustment.
- "JESRA Clinical Image" is displayed by default as the reference image on the screen. To change the image, select an image from the pull-down menu.
- To use patterns at any grayscale level for color matching, select "Gray pattern" and enter the grayscale value.
- To use a test pattern not found in RadiCS for color matching, select "User pattern" and then select "Change...". Select a file you want to display.

6. Click "Next".
   The calibration execution window is displayed.




7. Select "Tester".
   To register a tester, click + and register the tester.




**Attention**

- The entered tester name must be no more than 31 characters long.

**Note**

- The default settings have the user who is logged into the OS registered as the tester (when using Mac, the tester name may be displayed as "RadiCS"). To change the tester name, register the tester using a new name and then delete the originally registered tester. Select the icon of the tester to be deleted and click − to delete it.
- Up to 10 testers can be registered. To register a new tester with 10 testers registered, delete a less frequently used tester and then register the tester.
- If "Register task tester" is disabled in the basic settings window in Administrator mode, the registered tester will not be saved. In such a case, the tester will only see the user logged into the OS. If you want to use the registered tester for the next test, enable "Register task tester". (see 8.4 RadiCS Basic Setting [▶ 160]).

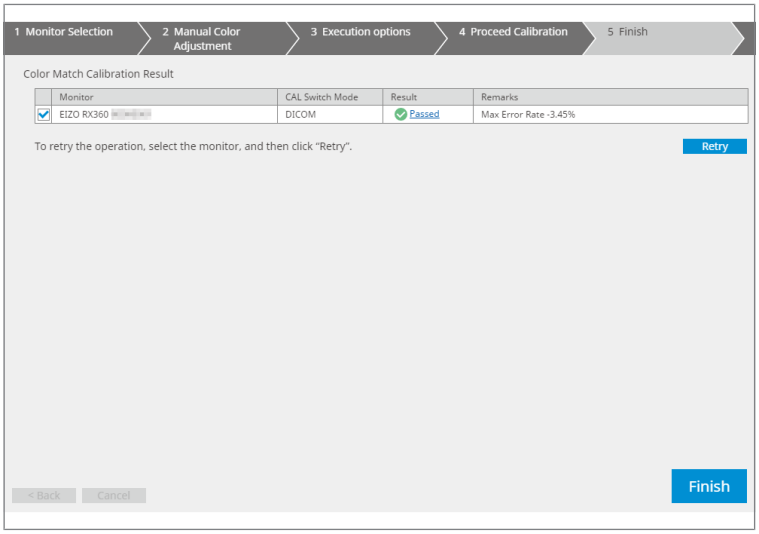
8. Select a measurement device from the "Select sensor" pull-down menu.

**Note**

- If CA-210 or CA-310 is connected, select "Manual Measurement".

9. Specify the most desired grayscale value for color matching.
   Enter the grayscale value.

10. Click "Proceed".
    A calibration message and a measurement window appear on the monitor screen.
    Attach the measurement device to the measurement window, and click "Proceed".
    Follow the instructions on the monitor screen to perform the measurement.
11. The confirmation window appears.
    Click "Finish" to display the "Home".
    To do Color Match Calibration again, select the check box of the target monitor, and click "Retry".



## 5.5 Checking Backlight Meter / Backlight Status

With the following two functions, the monitor status is monitored and the results are displayed:

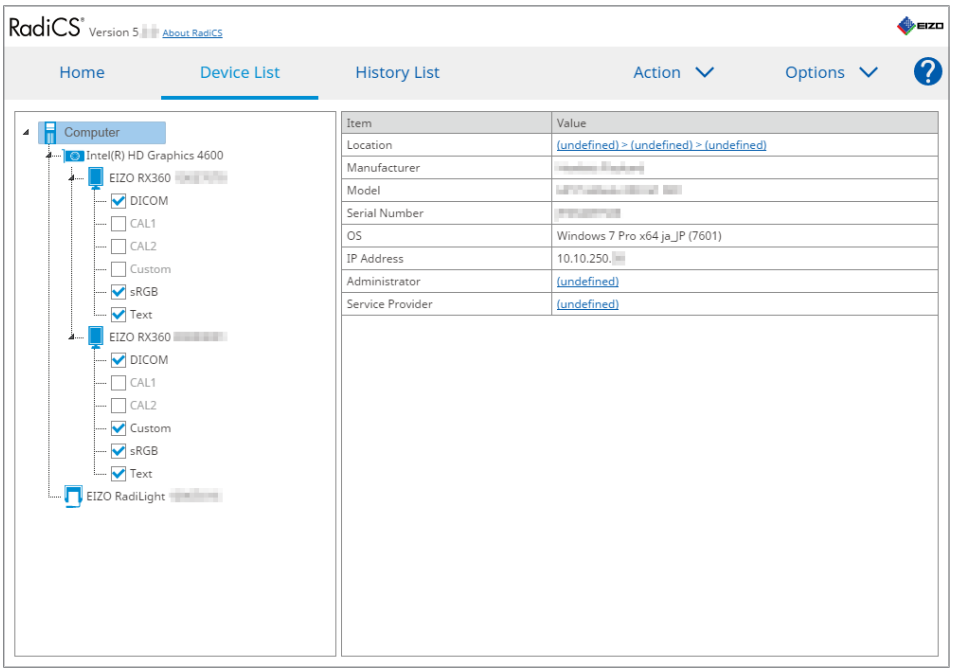
**Attention**

- Cannot be performed with the following monitors:
  - LL580W
  - LX1910
  - LX550W

### 5.5.1 Checking the Backlight Life Time

Estimates the monitor lifetime (the remaining time that the recommended brightness can be maintained), and displays the backlight status.

1. Click "Device List".



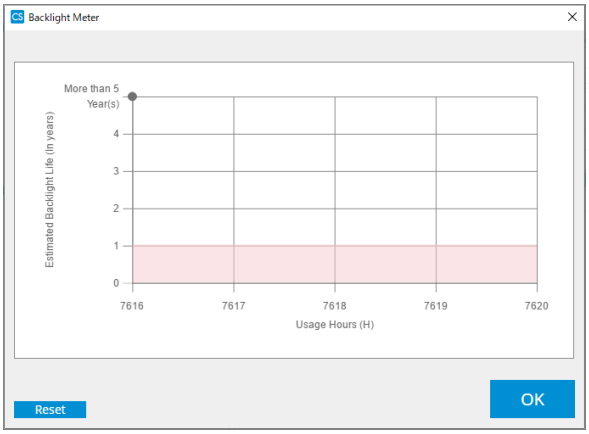

2. Select the CAL Switch Mode for the targeted monitor.
   Select a CAL Switch Mode in which the test can be performed. The CAL Switch Mode information appears to the right pane.
3. Check the backlight life time by "Backlight Meter".
   If the estimated lifetime is five years or less, estimated remaining days appear.

**Attention**

- The estimated lifetime cannot be displayed when the operating time is 500 hours or less, or the operating time after reset (click "Reset" on the "Backlight Meter" screen or change the Lmax value of the calibration target) is 500 hours or less.

**Note**

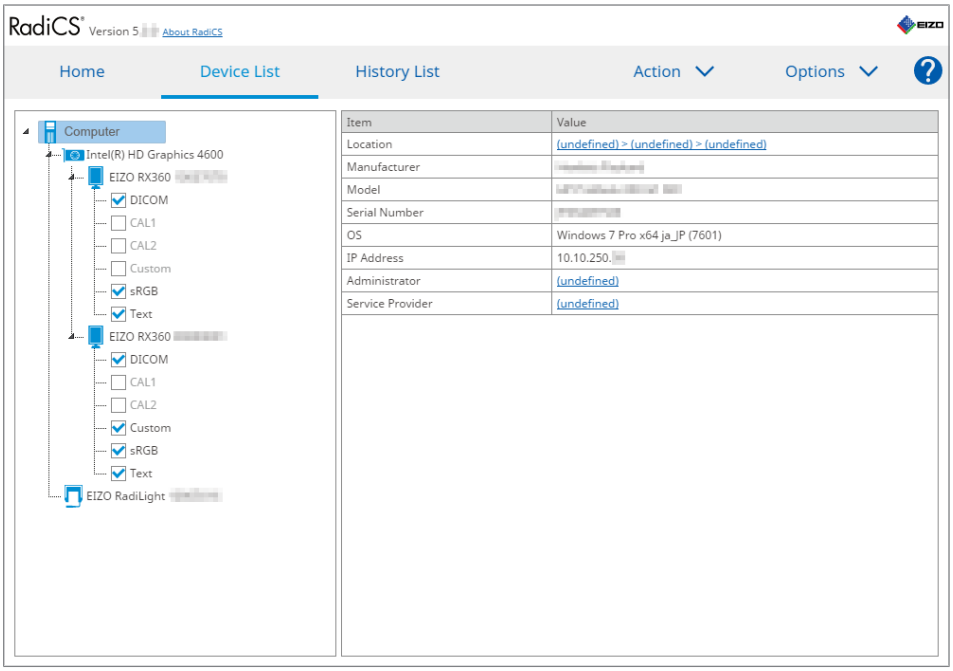
- Click the link to display the estimated lifetime details. The red background area in the graph indicates that the value of the backlight condition is lower than the threshold.




### 5.5.2 Checking the Backlight Status

Obtains luminance information from the monitor and displays the luminance status after the calibration until now.

1. Click "Device List".



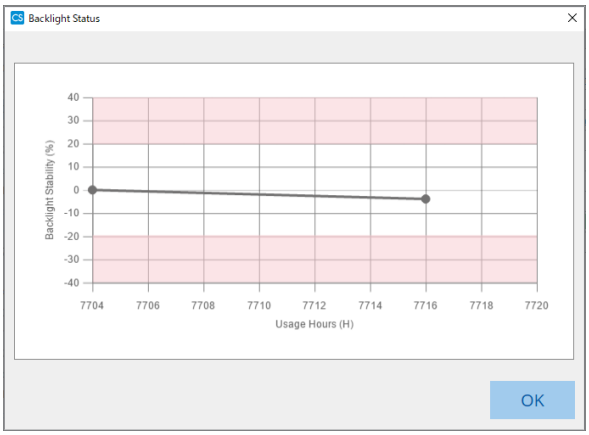

2. Select the CAL Switch Mode for the targeted monitor.
   Select a CAL Switch Mode in which the test can be performed. The CAL Switch Mode information appears to the right pane.
3. Check the backlight status by "Backlight Status".
   The backlight status appears after the calibration execution.

**Attention**

- The graph for "Backlight Status" is reset when calibration is executed.

**Note**

- Click the link to display the backlight status with a graph. The red backlight area in the graph indicates a large change from the luminance status after the calibration. In this case, it is recommended that calibration is executed.




## 5.6 Watching the Illuminance

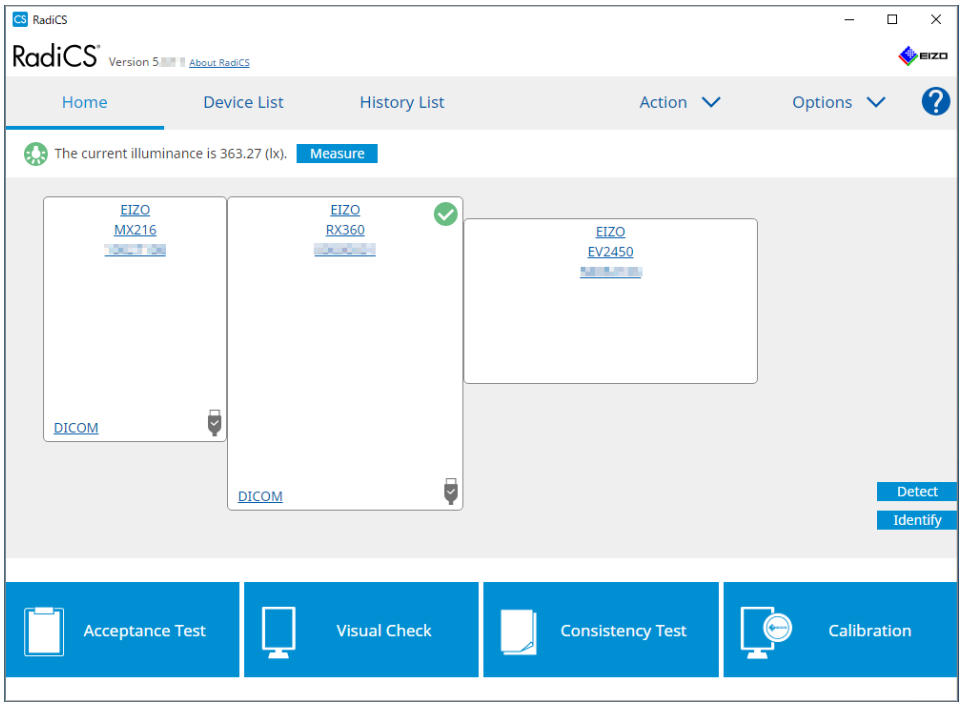
### 5.6.1 Measuring the Illuminance

**Attention**

- It is enabled only when the "Display illuminance" check box is selected in "Configuration" of "Options". For details, see 8.4 RadiCS Basic Setting [▶ 160].
- The illumination can be measured only on a monitor with an illuminance sensor installed (except for MX270W / MX215).
- The illuminance may affect the measurement accuracy of the sensor. Be careful of the following points to maintain the environment during measurement:
  - Use a curtain or the like to block any windows so that natural (outside) light does not enter the room.
  - Ensure that the lighting in the room does not change during measurement.
  - While measuring, do not bring the face or an object close to the monitor, do not look into the sensor.

1. Click "Home".

2. Click "Measure".




The current illuminance is measured, and the measurement result is displayed.

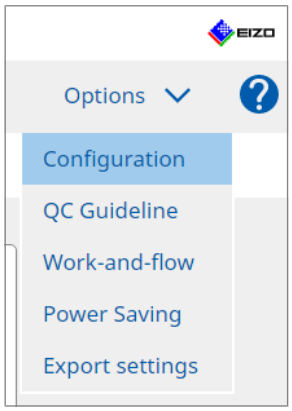
### 5.6.2 Watching the Illuminance

If Ambient Light Watchdog is enabled, the illuminance is measured at set intervals. If the number of times the illuminance falls outside the allowable range exceeds the set number, an alert can be displayed, as needed.

**Note**

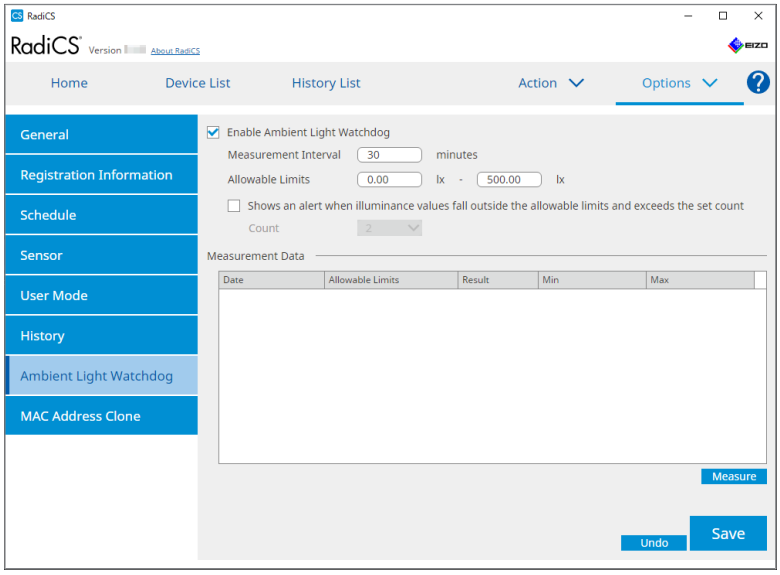
- The illumination can be measured only on a monitor with an illuminance sensor installed (except for MX270W / MX215).
- When the following tests and measurements are performed on a monitor with an illuminance sensor installed, this function monitors the change of the illuminance before and after the tasks are executed. If there is a major change in the illuminance value before and after the task execution, an alarm is displayed. If the alarm is displayed, check environmental conditions such as the ambient light and use the illuminance under an appropriate environment.
  - Pattern Check
  - Luminance Check
  - Grayscale Check
  - Calibration
  - Correlation
  - Uniformity Check

1. Select "Configuration" from "Options".




The Configuration window appears.

2. Click "Ambient Light Watchdog".




The ambient light watchdog window appears in the right pane.

3. Select the "Enable Ambient Light Watchdog" check box and set the following items:

- Measurement Interval
  Set the interval at which the illuminance is measured.
- Allowable Limits
  Set the upper and lower limits on the allowable illuminance.
- Shows an alert when illuminance values fall outside the allowable limits and exceeds the set count
  When the check box is selected, an alert appears if the number of times the allowable range is exceeded is more than the set number.
- Count
  Set the minimum number of times that displays an alert when it is exceeded.

**Note**

- Click "Measure" to immediately measure the illuminance, regardless of the set times in "Measurement Interval ".

## 5.7 Performing Correlation for Integrated Front Sensor

When using the Integrated Front Sensor for the test, you must periodically perform correlation with the measurement device. Correlation allows you to calculate the correct state of the monitor at the central portion from the measurement portion of the Integrated Front Sensor.

**Attention**

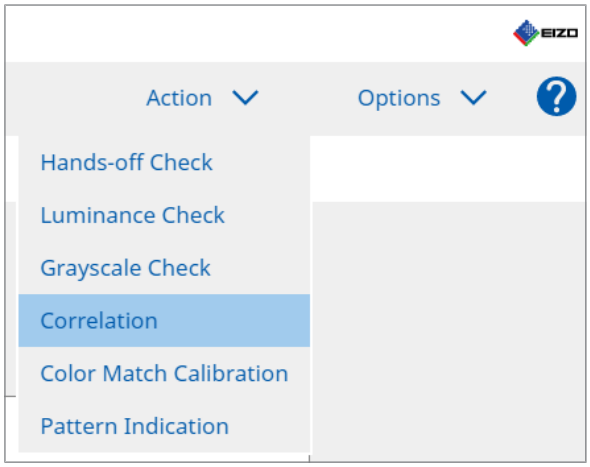
- Can only be executed on a monitor with the Integrated Front Sensor installed.
- Cannot be performed with the following monitors:
  - LL580W
  - LX1910
  - LX550W

1. Connect the measurement devices.

**Note**

- The sensors that can be used are as follows:
  - UX2 Sensor
  - CA-210
  - CA-310
  - SSM (Can be used for monochrome monitors only)

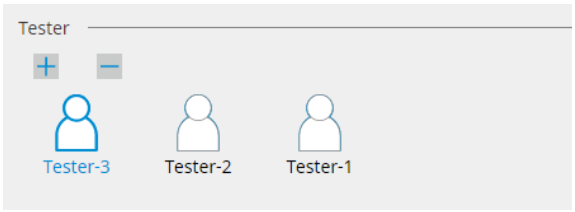
2. Select "Correlation" from "Action".




The correlation execution window is displayed.

3. Select a tester.

To register a tester, click + and register the tester.



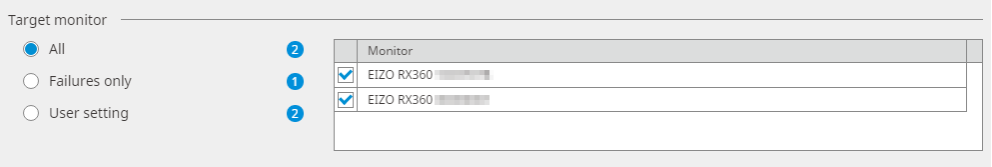

**Attention**

- The entered tester name must be no more than 31 characters long.

**Note**

- The default settings have the user who is logged into the OS registered as the tester (when using Mac, the tester name may be displayed as "RadiCS"). To change the tester name, register the tester using a new name and then delete the originally registered tester. Select the icon of the tester to be deleted and click — to delete it.
- Up to 10 testers can be registered. To register a new tester with 10 testers registered, delete a less frequently used tester and then register the tester.
- If "Register task tester" is disabled in the basic settings window in Administrator mode, the registered tester will not be saved. In such a case, the tester will only see the user logged into the OS. If you want to use the registered tester for the next test, enable "Register task tester". (see 8.4 RadiCS Basic Setting [▶ 160]).

4. Select the correlation target.




**Attention**

- Correlation can be executed only when CAL Switch Mode in which tests and measurements can be carried out are specified as a control target.

- All
  Correlation is executed for all the monitors currently connected that have Integrated Front Sensors.
- Failures only
  Correlation is executed for the monitors that have failed in some test.
- For the selection from the list of monitors
  All the monitors currently connected that have Integrated Front Sensors are displayed in the list of monitors. Select the check box for the monitor you want to test.

**Note**

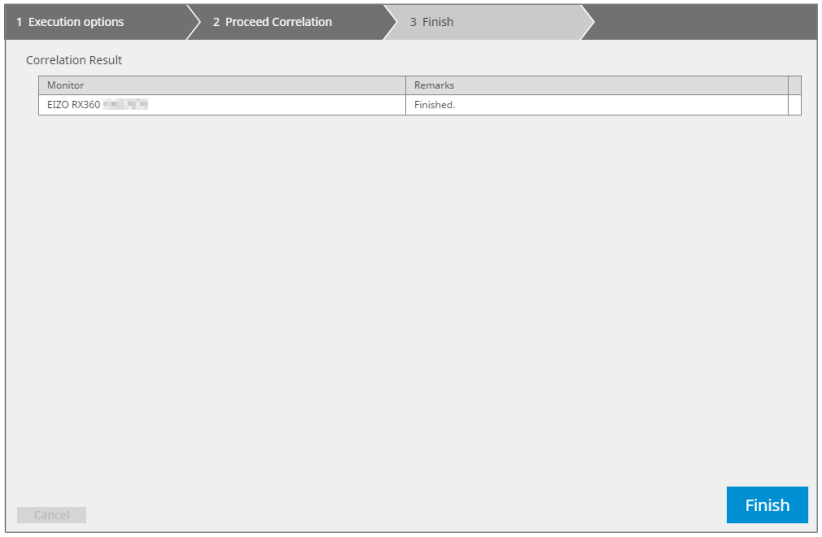
- If a correlation target is selected from the list of monitors, "User setting" is selected regardless of the contents of the settings.

5. Select a measurement device from the pull-down menu.
6. Click "Proceed".
   A correlation message and a measurement window appear on the monitor screen.
7. Install the measurement device by aligning it at the center of the measurement window, and click "Proceed".
   The correlation starts.

**Attention**

- The correlation with the SSM sensor can be executed only when a monochrome monitor is used.

8. Click "OK".
   The result window appears. Click "Finish" to display the "Home".

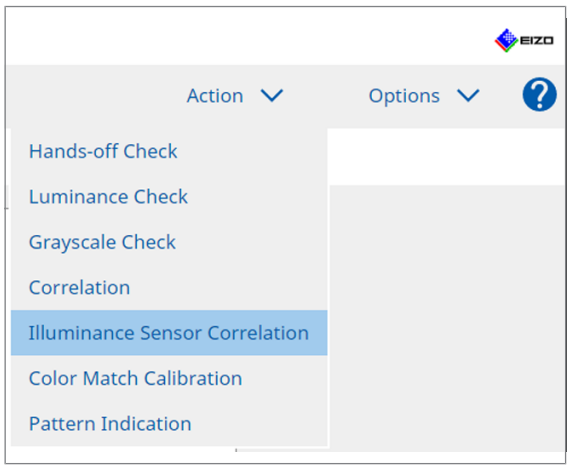



## 5.8 Performing Illuminance Sensor Correlation

Perform correlation for the illuminance sensor of the monitor and the illuminometer. By performing correlation, you can correct errors with the illuminometer.

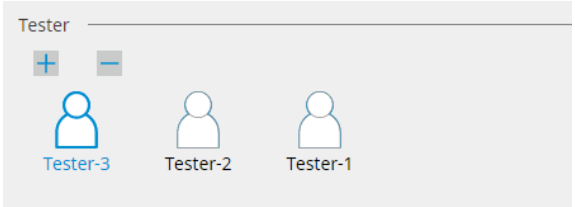
| **Attention** |
| --- |
| • It can only be performed on monitors equipped with an illuminance sensor. |

1. Select "Illuminance Sensor Correlation" from "Action".




   The Illuminance Sensor Correlation execution window appears.

2. Select a tester.
   To register a tester, click + and register the tester.



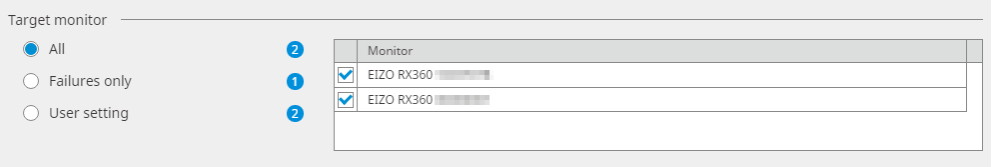
**Attention**

- The entered tester name must be no more than 31 characters long.

**Note**

- The default settings have the user who is logged into the OS registered as the tester (when using Mac, the tester name may be displayed as "RadiCS"). To change the tester name, register the tester using a new name and then delete the originally registered tester. Select the icon of the tester to be deleted and click — to delete it.
- Up to 10 testers can be registered. To register a new tester with 10 testers registered, delete a less frequently used tester and then register the tester.
- If "Register task tester" is disabled in the basic settings window in Administrator mode, the registered tester will not be saved. In such a case, the tester will only see the user logged into the OS. If you want to use the registered tester for the next test, enable "Register task tester". (see 8.4 RadiCS Basic Setting [▶ 160]).

3. Select the correlation target.




**Attention**

- Correlation can be executed only when CAL Switch Mode in which tests and measurements can be carried out are specified as a control target.

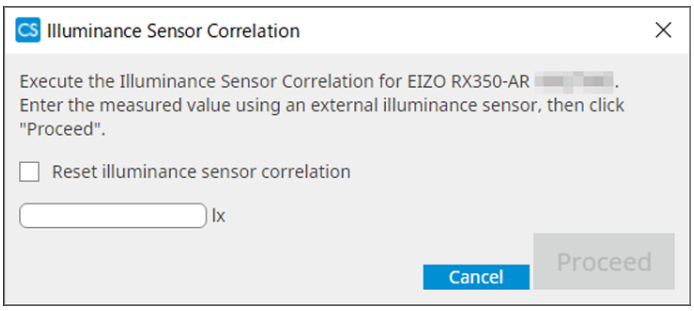
- All
  Correlation is executed for all the monitors currently connected that have illuminance sensors.
- Failures only
  Correlation is executed for the monitors that have failed in some test.
- For the selection from the list of monitors
  All the monitors currently connected that have illuminance sensors are displayed in the list of monitors. Select the check box for the monitor you want to test.

**Note**

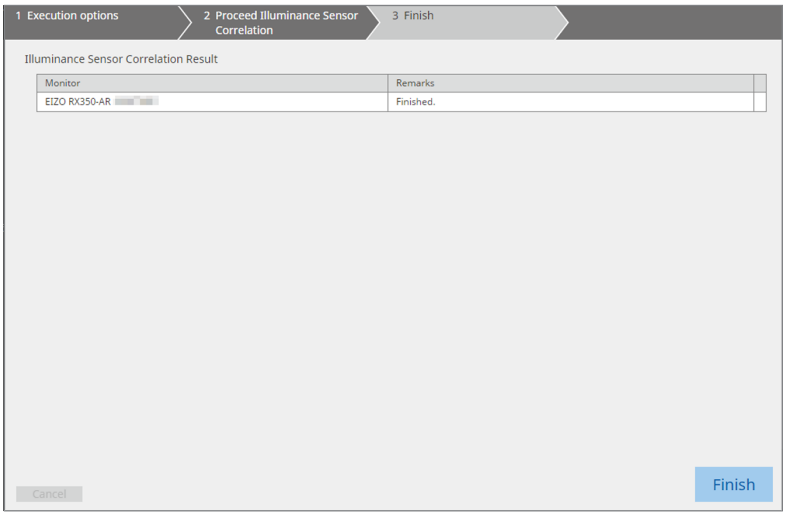
- If a correlation target is selected from the list of monitors, "User setting" is selected regardless of the contents of the settings.

4. Click "Proceed".
   A correlation message appears on the monitor screen. At this time, the entire screen turns black to improve the accuracy of the correlation.

5. Measure illuminance of the monitor display using the illuminometer and input the value. Alternatively, to restore the illuminance sensor to its state before correction, enable the "Reset illuminance sensor correlation" check box.



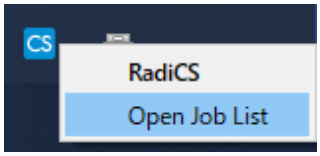

6. Click "Proceed".
   The correlation starts.
7. Click "OK".
   The result window appears. Click "Finish" to display the "Home".



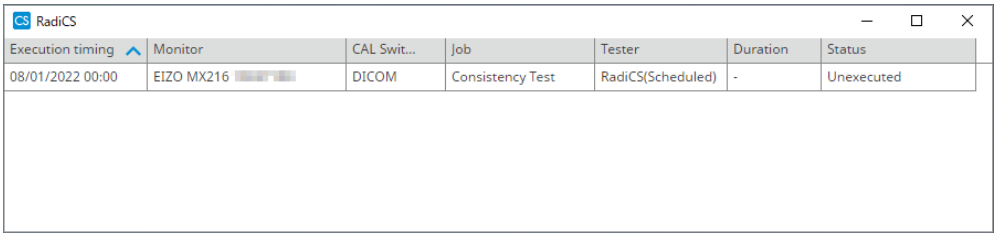
## 5.9 Checking Jobs

You can check jobs being executed and planned to be executed from a list.

1. Right-click the RadiCS icon in the notification area and click "Open Job List".




The job list screen is displayed.




**Note**

- Select a job, right-click and select "Cancel" to cancel a job. (Jobs being executed cannot be canceled.)
- If a scheduled job is canceled, the job with the next execution timing is registered in the schedule. To delete a scheduled job, disable the scheduling feature in RadiCS or set the RadiNET Pro policy to "Not Applicable".
- If you are using a monitor with that has RadiLight connected or built-in, you can change the RadiLight settings from the menu that appears by right-clicking the RadiCS icon.

# 6 Using Power Saving Function

**Attention**

- The functions described in this section cannot be used when using a Mac or the following monitors:
  - LL580W
  - LX1910
  - LX550W
- The functions mentioned in this chapter can be used once RadiCS is closed. Close RadiCS after putting the settings into effect. The functions cannot be used while RadiCS is running.

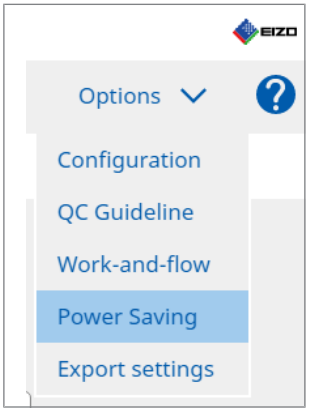
## 6.1 Using Power Saving Function (Backlight Saver)

RadiForce series monitors or some of FlexScan EV series monitors allow you to enable Backlight Saver to extend the monitor life. With Backlight Saver, the monitor will be automatically placed in Power Save mode with the specified timing.

The Power Save mode status differs between RadiForce series monitors and FlexScan EV series monitors.

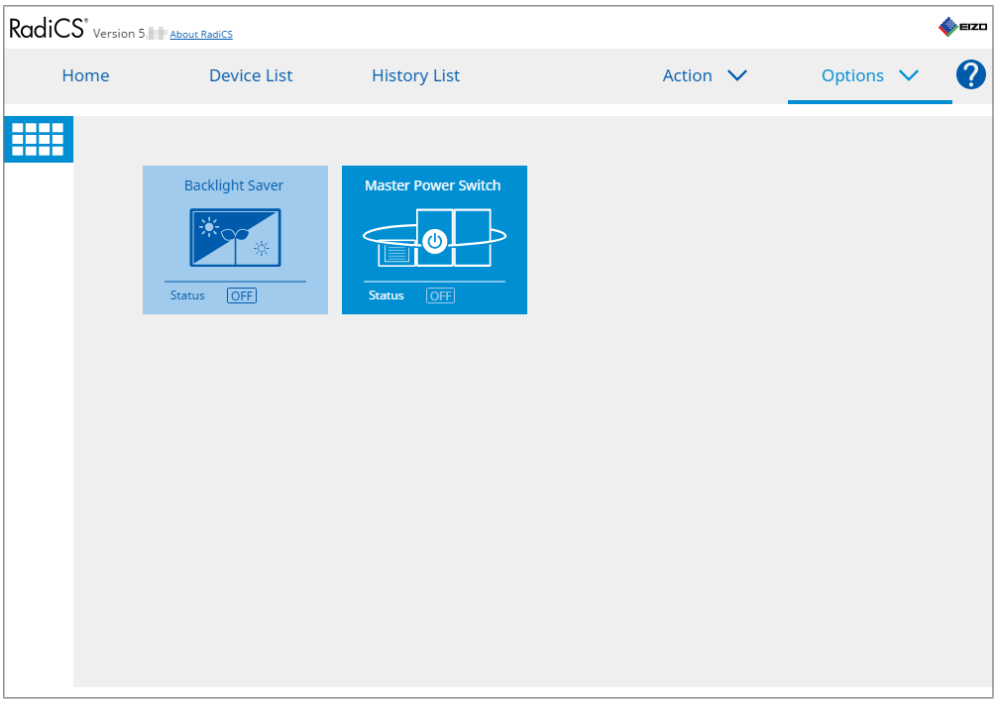
- RadiForce series monitors: Powered off
- FlexScan EV series monitors: Low luminance

1. Select "Power Saving" from "Options".




The Power Saving window appears.

2. Click "Backlight Saver".

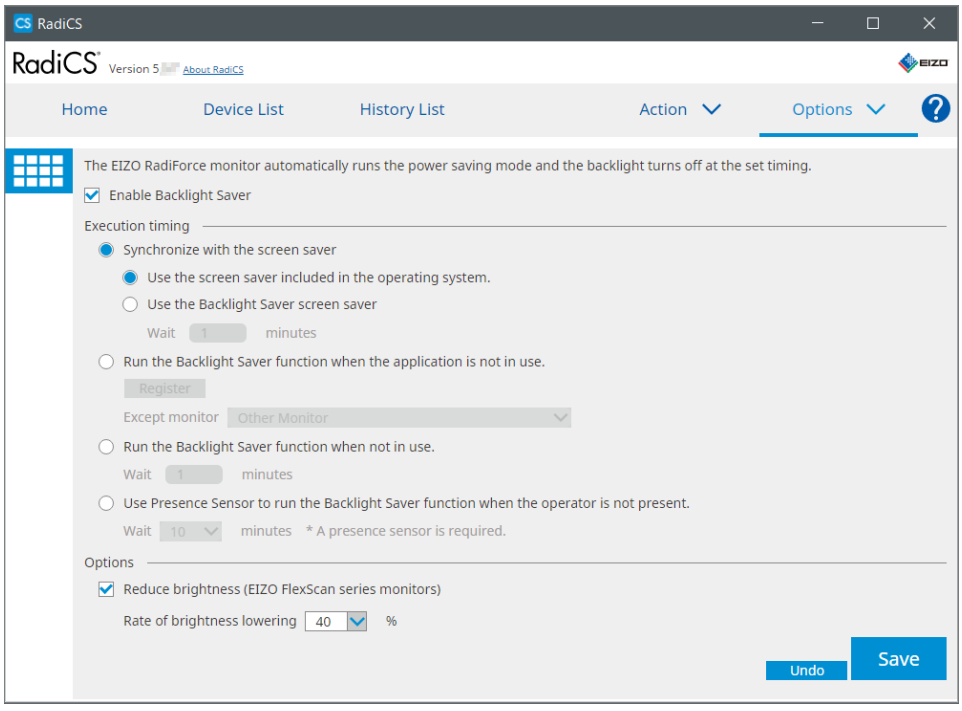



The Backlight Saver window appears.

**Note**

- The current setting will be displayed on the tile.

3. Select the "Enable Backlight Saver" check box.



4. Select when to place the monitor in Power Save mode.

### Synchronize with the screen saver

When the screensaver is activated, the monitor is placed in Power Save mode. The monitor returns from Power Save mode when you operate the mouse or keyboard.

a. Select "Synchronize with the screen saver".

b. Set the timing when the screensaver is activated.

- Use the screen saver included in the operating system.
  The monitor is placed in Power Save mode with the Wait set to the screensaver of OS.
- Use the Backlight Saver screen saver
  Set the Wait before the screensaver is activated.

**Note**

- If "Use the Backlight Saver screen saver" is selected, the Wait set on this screen is reflected on "Wait" of the screensaver of OS.
  Also, it is automatically set to the screensaver for EIZO Backlight Saver. You can also set behavior options (position, speed, and text).

### Run the Backlight Saver function when the application is not in use.

When all applications registered are finished, the monitor is placed in Power Save mode. If any of the registered applications is started, the monitor returns from Power Save mode.

**Attention**

- When the power of the target monitor is turned off, the mouse pointer moves to the monitor on which the task bar is displayed.

a. Select "Run the Backlight Saver function when the application is not in use.".

b. Click "Register".

The "Application Registration" window appears.

c. Select the application from "Register applications" and click "Add".

**Note**

- If you have registered "IEXPLORER" or "MICROSOFTEDGE", you can specify any URL using the following procedure:
  1. Select "IEXPLORER" or "MICROSOFTEDGE" from "Applications already registered".
  2. Check the check box for "Register URL" and click "Register".
  3. Enter URL in "Text box" on the "URL Registration" window and click "Add".
  4. Click "OK".
     The URL will be registered.
- Multiple applications and URLs can be registered.

d. Click "OK".

e. Set the monitor that is not placed in Power Save mode in conjunction with the application as needed.

Select the applicable monitor from the "Except monitor" pull-down menu.

### Run the Backlight Saver function when not in use.

When the mouse and keyboard have not been used for the amount of time specified, the monitor is placed in Power Save mode. The monitor returns from Power Save mode when you operate the mouse or keyboard.

Depending on the PC being used, Power Save may not operate together with the OS screensaver. If so, you can use the Backlight Saver function by applying this configuration.

a. Select "Run the Backlight Saver function when not in use.".

b. Specify the Wait until the monitor is placed in Power Save mode.

Enter the Wait in the text box.

### Use Presence Sensor to run the Backlight Saver function when the operator is not present.

When the presence sensor detects the user away from the monitor, the monitor is placed in Power Save mode. When the user returns, the monitor returns from Power Save mode.

a. Select "Use Presence Sensor to run the Backlight Saver function when the operator is not present.".

b. Specify the Wait until the monitor is placed in Power Save mode.

Select the Wait from the pull-down menu.

**Attention**

- This can be selected only when the presence sensor is installed and the setting is set to ON. Set ON to the presence sensor with the monitor information of "Device List". (Monitor Information [▶ 149])
- To cancel RadiCS SelfQC that was started during execution of the Backlight Saver function, press the button on the front of the monitor. You cannot cancel it by operating the keyboard or the mouse.
- When more than one presence sensor is installed in a multiple monitor configuration, the monitor switches to Power Save mode only when all presence sensors detect that the user is away from the monitor.

**Note**

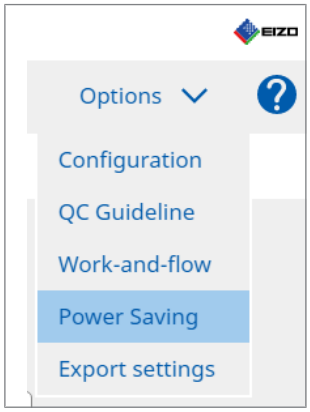
- If the sensor does not work correctly, increase the wait time in "Wait" (recommended wait time: 10 minutes or more).
- If it still does not work correctly, check the following:
  - There is no object that reflects light such as a mirror or glass in front of the sensor.
  - The monitor is not located in a place subject to direct sunlight.
  - There is a device emitting infrared light / heat near the monitor.
  - There is no obstacle in front of the sensor.
  - The sensor is not dirty. If it is dirty, clean the sensor with a soft cloth.
  - You are sitting in front of the monitor and the monitor is tilted at the correct angle so that the sensor can detect the user.

5. For a FlexScan EV series monitor, check the "Reduce brightness (EIZO FlexScan series monitors)" check box and set the rate of brightness lowering of the monitor.
6. Click "Save".
   The settings are applied.

## 6.2 Turning ON / OFF the Monitor in Cooperation

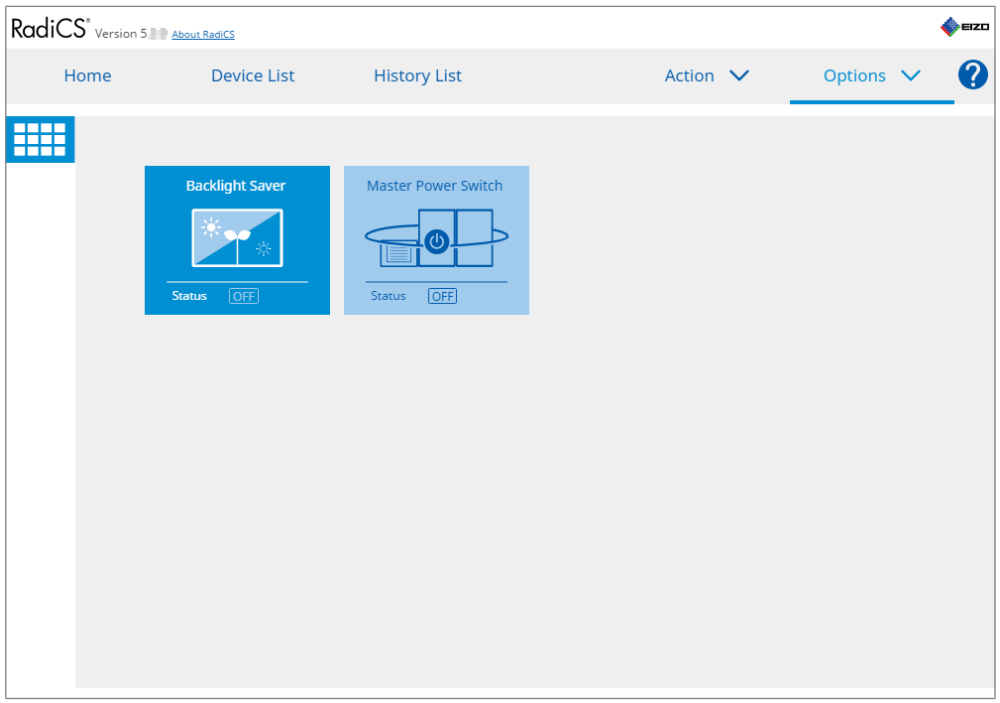
All EIZO monitors connected are turned ON / OFF in conjunction with the power ON / OFF of one monitor.

1. Select "Power Saving" from "Options".




The Power Saving window appears.

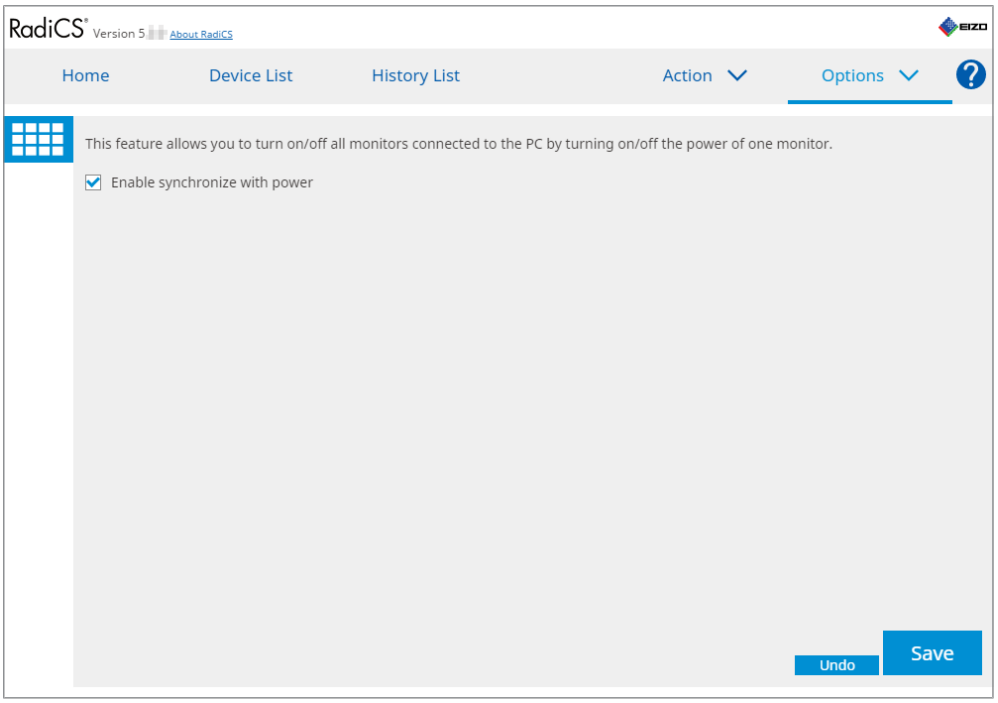
2. Click "Master Power Switch".




The Master Power Switch window appears.

| Note |
| --- |
| • The current setting will be displayed on the tile. |

3. Select the "Enable synchronize with power" check box.




4. Click "Save".
   The settings are applied.

# 7 Optimizing Operation

**Attention**

- The functions described in this section cannot be used when using a Mac.
- The functions mentioned in this chapter can be used once RadiCS is closed. Close RadiCS after putting the settings into effect. The functions cannot be used while RadiCS is running.
- Available functions depend on the monitor used. Information on the compatibility of each function and monitor is available on our web site. Go to www.eizoglobal.com and type "Work-and-flow" in the search box on the web site.
- Functions other than Mouse Pointer Utility are not available on the following monitors:
  - LL580W
  - LX1910
  - LX550W

## 7.1 Switching Displaying / Hiding of PinP Sub Window (Hide-and-Seek)

When the monitor is able to display the PinP sub window, you can display and hide the PinP sub window using the mouse or hotkey.

**For switching with mouse operation**

Moving the mouse pointer to the switch position of PinP sub window displays / hides the sub window.

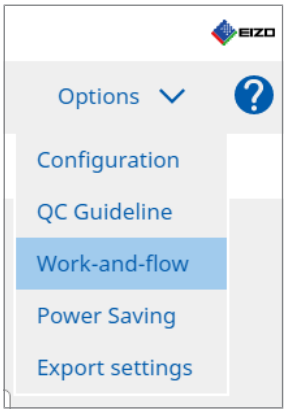
**For switching with hotkey operation**

Pressing the specified key displays / hides the sub window.

**Attention**

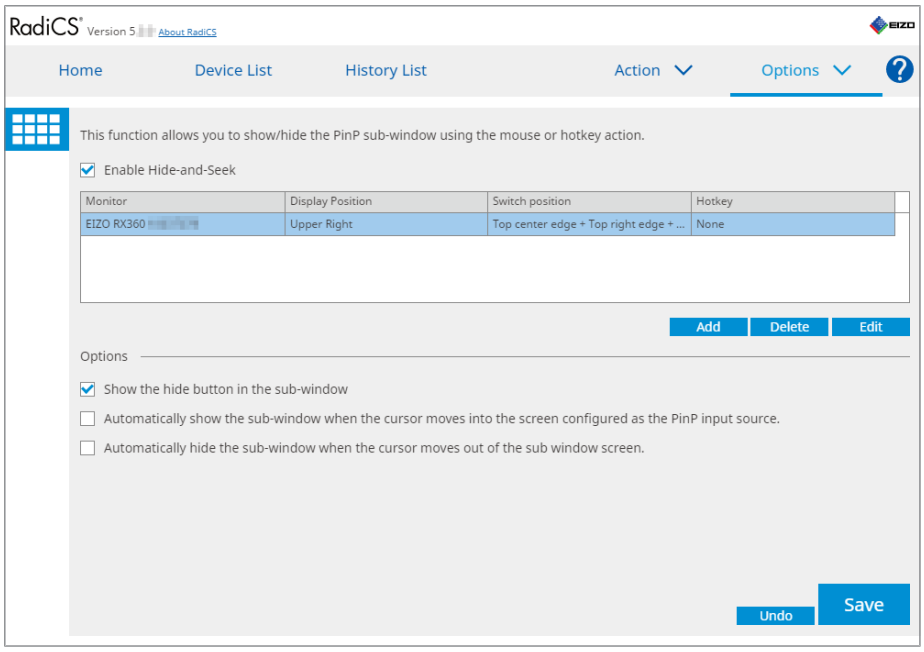
- Do not select the key sequence that has been already used with the following functions for the hotkey:
  - Point-and-Focus
  - Manual Mode Switch
  - Mouse Pointer Utility
  - Instant Backlight Booster
- On RX440, the PinP sub window cannot be displayed or hidden using the mouse.
- This function cannot be used when the Mouse Pointer Utility function is enabled.

1. Select "Work-and-flow" from "Options".




The Work-and-Flow window appears.

2. Click "Hide-and-Seek".



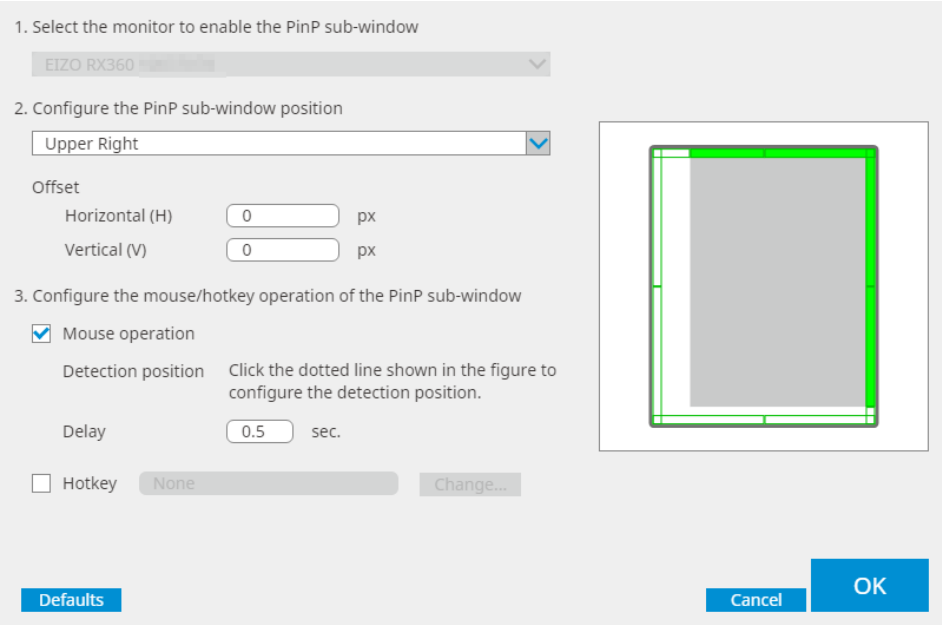

The Hide-and-Seek window appears.

3. Select the "Enable Hide-and-Seek" check box.
   The Hide-and-Seek Settings window appears.

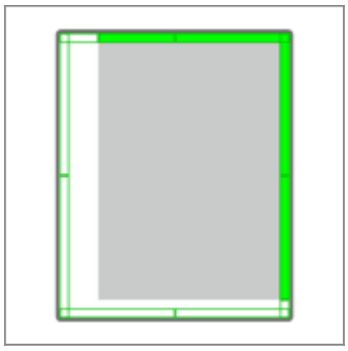
**Note**

- If the "Enable Hide-and-Seek" check box has been already checked, take one of the following steps to display the Hide-and-Seek Settings window:
  - Click "Add".
  - Select a configured monitor from the list, and click "Edit".
- When the Hide-and-Seek Settings window appears, the sub window appears on the screen.

4. Perform the display setting for the sub window.
   **For switching with mouse operation**
   a. Select a monitor on which to display the PinP sub window.
   Select a monitor from the pull-down menu.



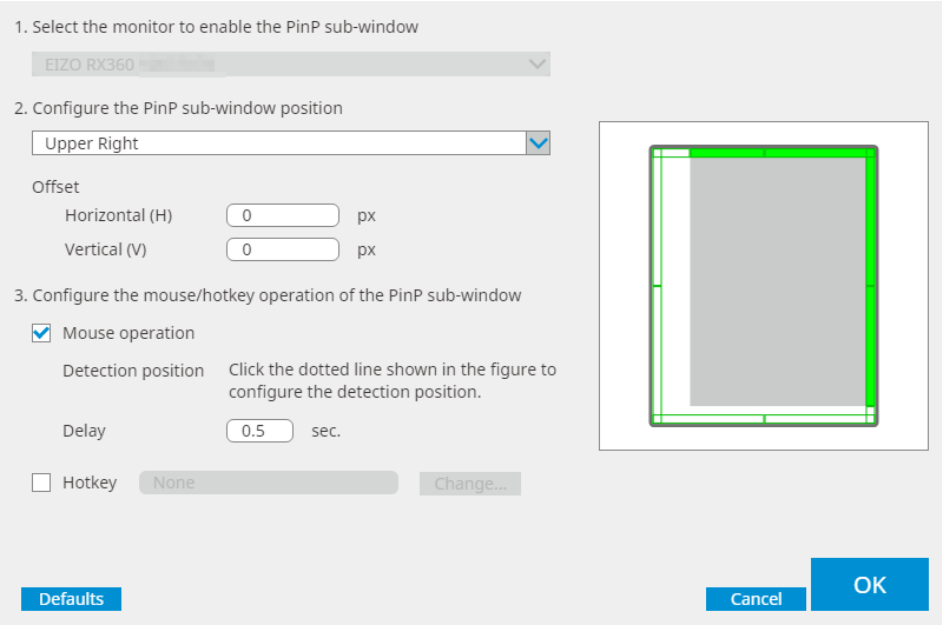

   b. Select a display position of the PinP sub window.
   – Window display position
     From the pull-down menu, select a position to display the sub window on the monitor.
   – Offset
     Specify the distance from the edges of the screen to the sub window. Enter the value in the text box. You can display the PinP sub window by circumventing the Windows task bar or other items displayed on the edges of the screen.
   c. Select the switching method.
   Check the check box for "Mouse operation".
   d. Select a position to detect in the selected monitor.
   Click the detection area on the figure to specify the detection position.



   e. Set the Delay.
   Enter the time to display the sub window after the mouse pointer is moved to the detection position in the text box.

**For switching with hotkey operation**

a. Select a monitor on which to display the PinP sub window.
Select a monitor from the pull-down menu.



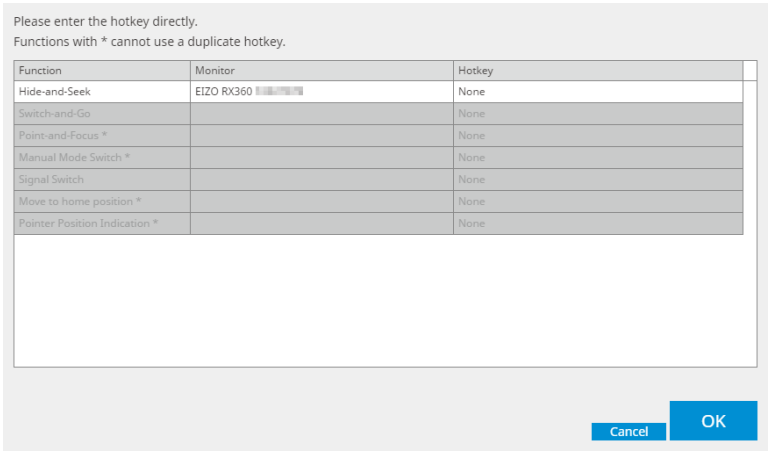

b. Select a display position of the PinP sub window.

– Window display position
  From the pull-down menu, select a position to display the PinP sub window on the monitor.
– Offset
  Click "Change..." to set the distance from the edges of the screen to the sub window. Enter the value in the text box. You can display the PinP sub window by circumventing the Windows task bar or other items displayed on the edges of the screen.

c. Select the switching method.
Check the check box for "Hotkey".

d. Click "Change...".
The hotkey settings window appears.

e. Specify the hotkey.
Directly enter the key to be used for the hotkey while "Hotkey" of "Hide-and-Seek" is selected.

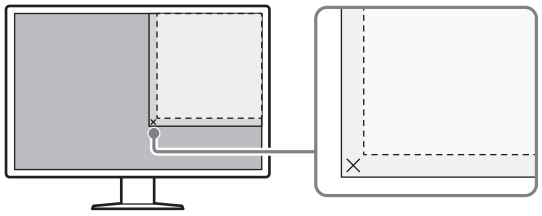



**Note**

- Function hotkeys other than Hide-and-Seek's can also be changed at the same time (only when the target function is enabled).

f. Click "OK".

5. Click "Save".
   The setting details are reflected on the list in the Hide-and-Seek window.
6. Set "Options" as needed.
   – Show the hide button in the sub-window
   Clicking once displays the ✕ button to hide the sub window.



   – Automatically show the sub-window when the cursor moves into the screen configured as the PinP input source.
   The sub window can be displayed when the mouse pointer moves to the sub window position on the screen.
   – Automatically hide the sub-window when the cursor moves out of the sub window screen.
   The sub window can be hidden when the mouse pointer moves from the inside to the outside of the PinP sub window.
7. Click "Save".
   The settings are applied.

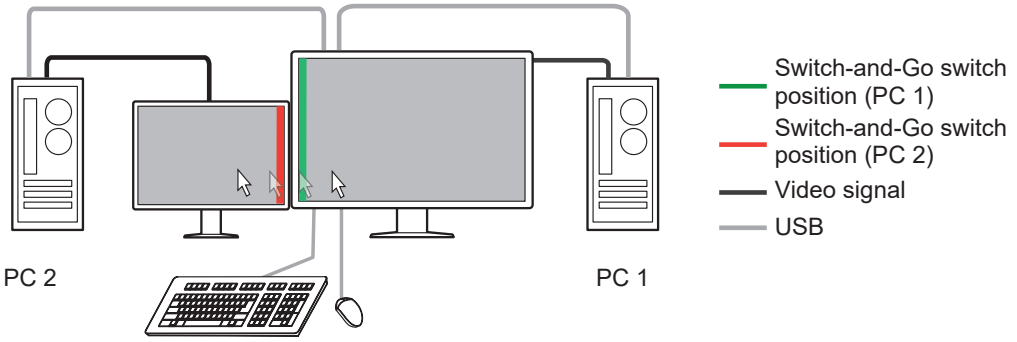
## 7.2 Switching PC to Operate (Switch-and-Go)

Using a monitor with two or more USB upstream ports, you can switch the USB ports by using a mouse or hotkey, and operate two PCs using the same keyboard and a mouse.

Having Switch-and-Go and Signal Switch running together will allow you to switch between input signals at the same time (see 7.6 Switching Input Signal (Signal Switch) [▶ 135]).

**For switching with mouse operation**

Moving the mouse pointer to the USB switch position switches PC to operate.




**For switching with hotkey operation**

Pressing the specified key switches PC to operate.

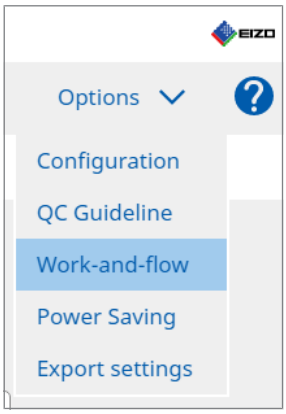
**Attention**

- Install RadiCS on the two PCs before using this feature. Connect the main PC (PC 1) for quality control to "USB 1" or "USB-C" (upstream) of the monitor. For more details, refer to the user's manual of the monitor.
- If you are to change PC that operates USB devices, disconnect any storage devices such as USB memory devices from the monitor in advance. Otherwise, data may be lost or damaged.
- Do not select the key sequence that has been already used with the following functions for the hotkey:
  - Point-and-Focus
  - Manual Mode Switch
  - Mouse Pointer Utility
  - Instant Backlight Booster
- For monitors equipped with three or more USB upstream ports, it is necessary to select the combination of two ports for Switch-and-Go switching in advance. Ensure that the desired port combination (example: USB 1 - USB 2) is selected in the settings menu of the monitor and that USB cables are connected to those ports.

**Note**

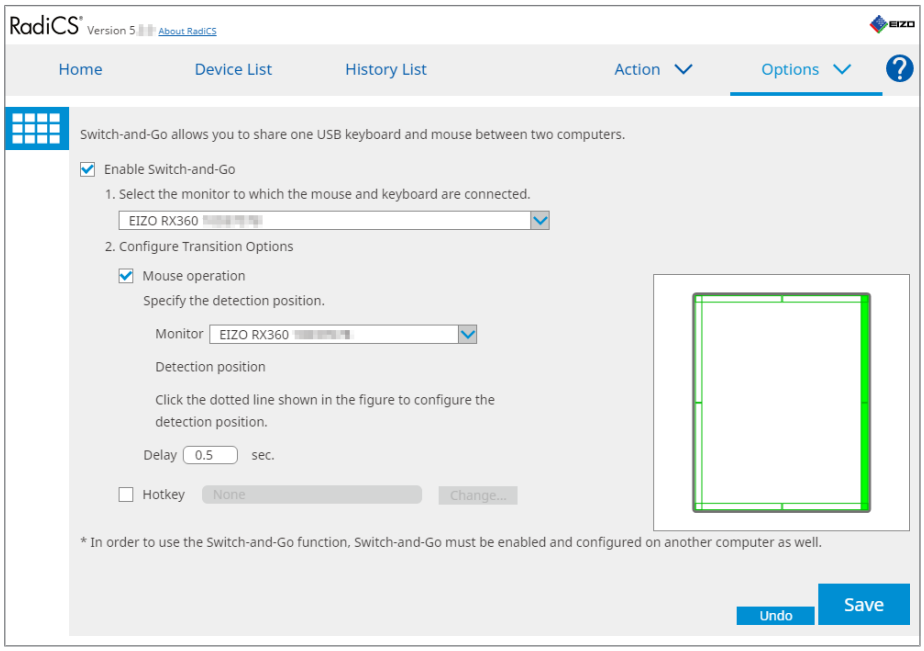
- The operation target PC can be switched with the OSD operation of the monitor with two or more USB upstream ports.

1. Configure settings on PC 1. Select "Work-and-flow" from "Options".




The Work-and-Flow window appears.

2. Click "Switch-and-Go".




The Switch-and-Go window appears.

3. Select the "Enable Switch-and-Go" check box.
4. Set the PC switching method.

**For switching with mouse operation**

a. Select the monitor to which the mouse and keyboard are connected.

b. Select the PC switching method.

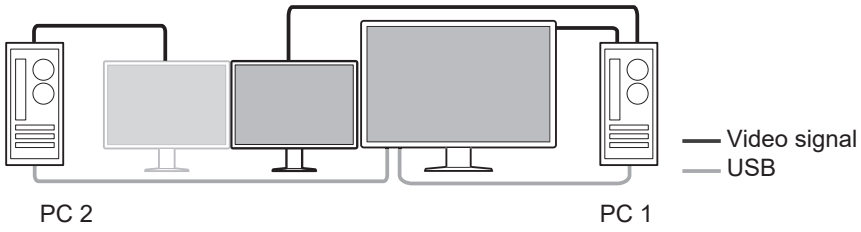
Check the check box for "Mouse operation".

c. Specify the mouse detection position.

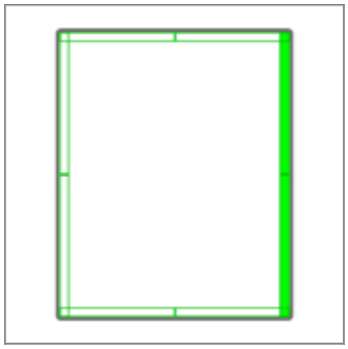
– Monitor
From the pull-down menu, select a monitor for which you want to specify the switch position.

**Note**

- If you want to display signals from PC 1 on multiple monitors, install the monitor so that it is adjacent to the monitor of PC 2.




– Detection position
Select a position to detect in the selected monitor. Click the detection area on the figure to specify the detection position.



**Note**

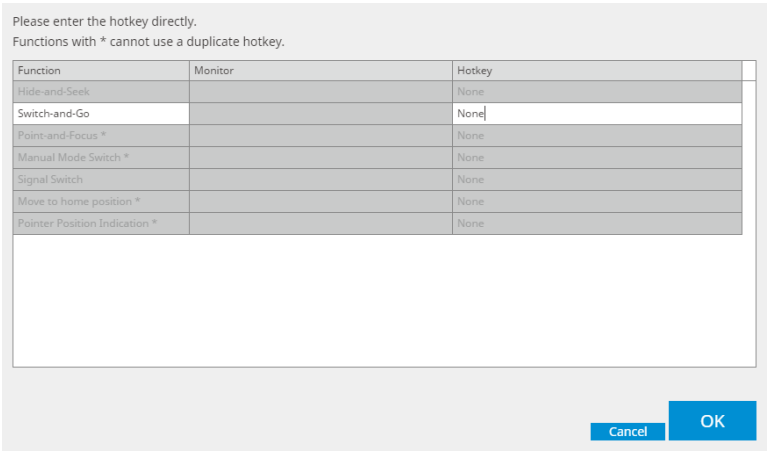
- When Hide-and-Seek is enabled, the border between the PinP sub window and main screen cab be specified as the switch position.

d. Set the Delay.
Enter the time to switch PC after the mouse pointer is moved to the detection position in the text box.

**For switching with hotkey operation**

a. Select the monitor to which the mouse and keyboard are connected.
b. Select the PC switching method.
Check the check box for "Hotkey".
c. Click "Change...".
The hotkey settings window appears.

d. Specify the hotkey.
Directly enter the key to be used for the hotkey while "Hotkey" of "Switch-and-Go" is selected.




**Note**

- Function hotkeys other than Switch-and-Go can also be changed at the same time (only when the target function is enabled).

e. Click "OK".

5. Click "Save".
6. Configure settings on PC 2.
   Display the screen of PC 2 on the monitor and start RadiCS.
7. Display the Switch-and-Go window following steps 1 and 2.
8. Select the "Enable Switch-and-Go" check box.
9. Set the PC switching method.
   **For switching with mouse operation**
   a. Select "Another Switch-and-Go Compatible Monitor".
   b. Select the PC switching method.
   Check the check box for "Mouse operation".
   c. Specify the detection position and timing with the same procedure as PC 1.
   **For switching with hotkey operation**
   a. Select "Another Switch-and-Go Compatible Monitor".
   b. Select the PC switching method.
   Check the check box for "Hotkey".
   c. Specify the hotkey with the same procedure as PC 1.

**Attention**

- Set the same hotkey as PC 1.

10. Click "Save".
    The settings are applied.

## 7.3 Focusing on Part of Screen to be Displayed (Point-and-Focus)

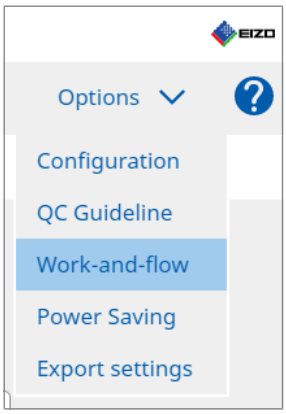
Assigning an arbitrary CAL Switch Mode to the surrounding area of the mouse pointer allows focusing on the area to be displayed (Highlight area). In addition, displaying areas other than the highlight area with an arbitrary CAL Switch Mode of a darker setting allows the highlight area to be seen more clearly.

The highlight area can be fixed and also whose shape and size can be changed.

**Attention**

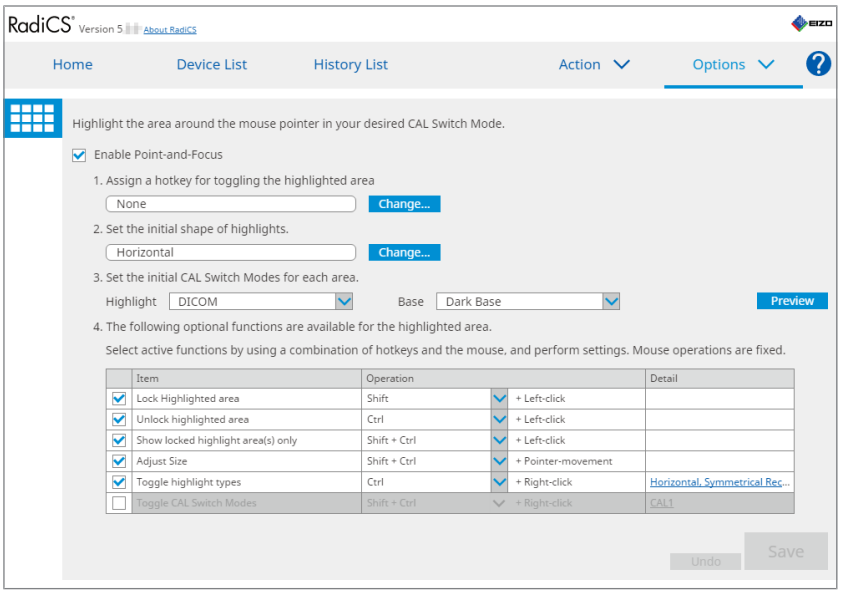
- Do not select the key sequence that has been already used with other functions for the hotkey that enables Point-and-Focus.
- This function cannot be used when Instant Backlight Booster is enabled.

1. Select "Work-and-flow" from "Options".




The Work-and-Flow window appears.

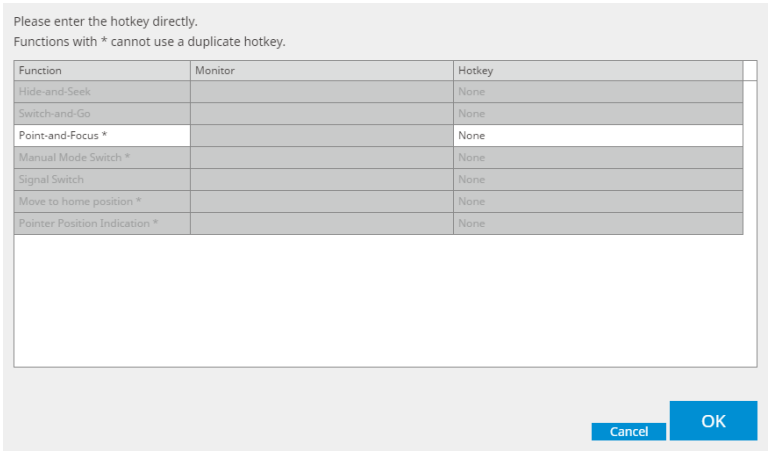
2. Click "Point-and-Focus".




The Point-and-Focus window appears.

3. Select the "Enable Point-and-Focus" check box.
4. Click "Change..." of "1. Assign a hotkey for toggling the highlighted area".
The hotkey settings window appears.

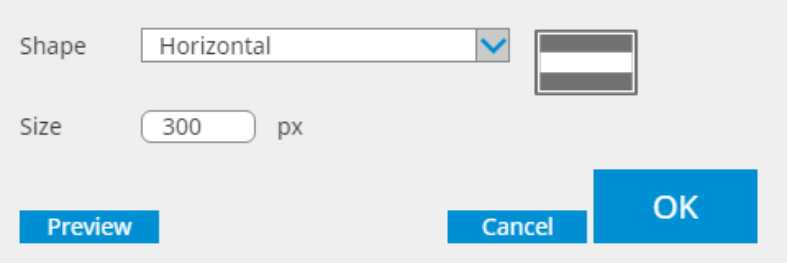
5. Specify the hotkey.
   Directly enter the key to be used for the hotkey while "Hotkey" of "Point-and-Focus" is selected.




**Note**

- Function hotkeys other than Point-and-Focus's can also be changed at the same time (only when the target function is enabled).

6. Click "OK".
7. Click "Change..." of "2. Set the initial shape of highlights.".
   The Highlight Shape Settings window appears.
8. Specify the initial shape and size and click "OK".




- Shape
  Select the highlight area initial shape from the three shapes below.

Horizontal | Symmetrical Rectangle | Rectangle

- Size
  Specify the highlight area size. (Setting range: 20 to 1000 px)
- PbyP Mode
  Specify the area for highlight in PbyP Mode.
  If the check box is checked, the highlight area will be displayed only on the screen with the mouse pointer. If the check box is not checked, the highlight area will be displayed crossing the two screens.

**Note**

- Clicking "Preview" allows you to check the present setting status on the screen.

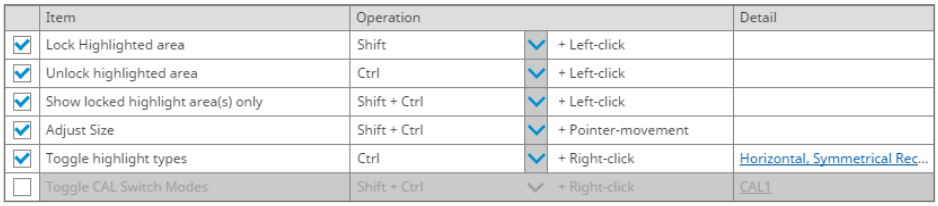
9. Set the initial CAL Switch Mode on Point-and-Focus displayed.

- Highlight
  From the pull-down menu, select CAL Switch Mode to be assigned to the highlight area.
- Base
  From the pull-down menu, select CAL Switch Mode to be applied to areas other than the highlight area while the highlight are is displayed.

**Note**

- Depending on the monitor model, "Dark Base" can be selected, which is a mode that further emphasizes the highlight area.
- Clicking "Preview" allows you to check the present setting status on the screen.

10. Check the check box for the item to be used.



| | Item | Operation | | Detail |
|---|---|---|---|---|
| ☑ | Lock Highlighted area | Shift | + Left-click | |
| ☑ | Unlock highlighted area | Ctrl | + Left-click | |
| ☑ | Show locked highlight area(s) only | Shift + Ctrl | + Left-click | |
| ☑ | Adjust Size | Shift + Ctrl | + Pointer-movement | |
| ☑ | Toggle highlight types | Ctrl | + Right-click | Horizontal, Symmetrical Rec... |
| ☐ | Toggle CAL Switch Modes | Shift + Ctrl | + Right-click | CAL1 |

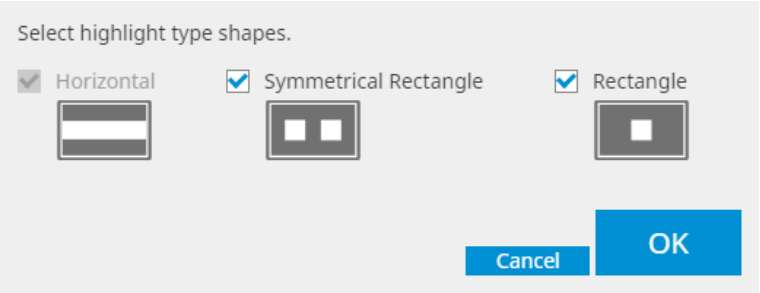
- Lock Highlighted area
  The highlight area is fixed on the present mouse pointer position.
  After the highlight area is fixed, new highlight areas are displayed following the mouse pointer. There is a limit to the number of highlight areas that can be fixed. The maximum number varies according to the monitor.
- Unlock highlighted area
  The fixed highlight areas are deleted. Select the highlight areas to be deleted with the mouse pointer.
- Show locked highlight area(s) only
  Only the fixed highlight areas are displayed. Even when the mouse is moved, the highlight areas do not follow it.
- Adjust Size
  The size of the highlight area that follows the mouse pointer is increased / reduced. Moving the mouse while the modifier key set in the step 2 is pressed changes the size.

**Attention**

- The size of the fixed highlight area cannot be changed.

- Toggle highlight types
  The shape of the highlight area that follows the mouse pointer is switched. The switching order is set as follows:

a. Click the "Detail" link.




The "Highlight Type Toggle Settings" window appears.

b. Check the check box for the shape to be switched to with the switching operation.
You can select multiple shapes.

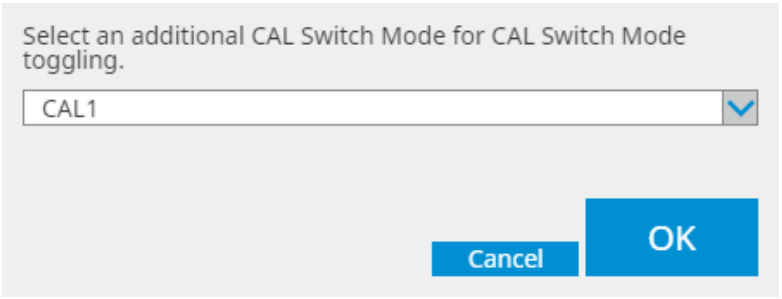
c. Click "OK".

| **Attention** |
| --- |
| • The shape of the fixed highlight area cannot be changed. |

**Toggle CAL Switch Modes**

The CAL Switch Mode of the highlight area that follows the mouse pointer is switched. The setting method for CAL Switch Mode after switching is as follows:

a. Click the "Detail" link.




The "Toggling CAL Switch Modes" window appears.

b. From the pull-down menu, select CAL Switch Mode to be switched with the switching operation.

c. Click "OK".

| **Attention** |
| --- |
| • The CAL Switch Mode of the fixed highlight area cannot be changed. |

| **Note** |
| --- |
| • Clicking "Defaults" resets the setting to the initial state. |

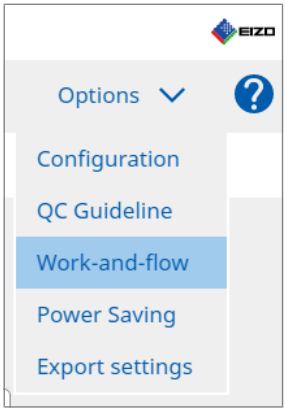
11. Select the modifier key of the keyboard from the "Operation" pull-down menu.
    Setting the modifier key decides the combination of the modifier key and mouse operation when enabling / disabling of functions is switched. The mouse operation has been decided for each function and cannot be changed.
12. Click "Save".
    The settings are applied.

## 7.4 Automatically Switching CAL Switch Mode (Auto Mode Switch)

By registering the CAL Switch Mode to an application, the CAL Switch Mode can be automatically switched in association with the application.

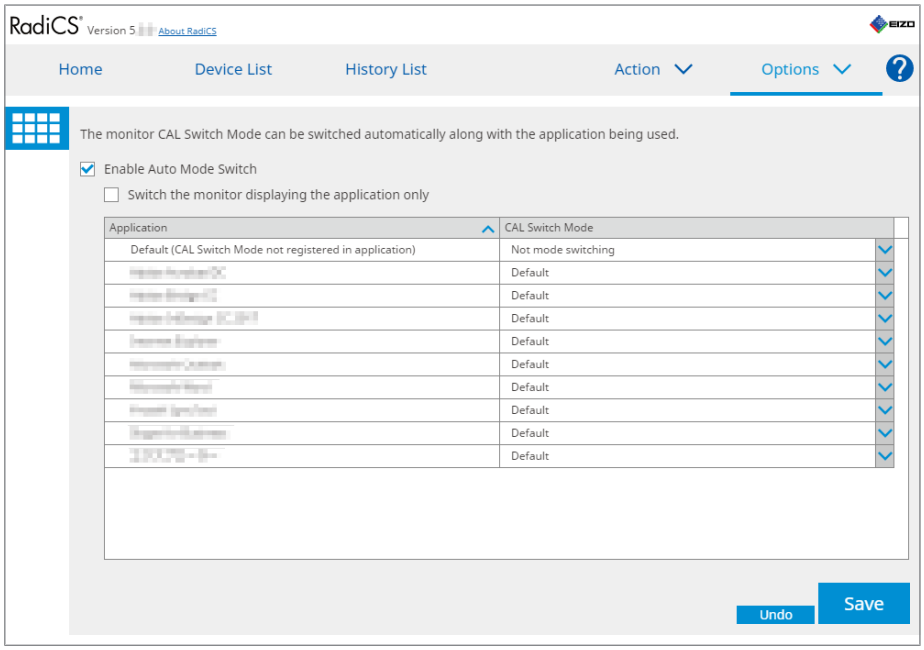
| **Attention** |
| --- |
| • Monitors that do not support multi-monitor mode cannot use the Auto Mode Switch function. |

1. Select "Work-and-flow" from "Options".




The Work-and-Flow setting window appears.

2. Click "Auto Mode Switch".




The Auto Mode Switch window appears.

3. Select the "Enable Auto Mode Switch" check box.

| **Note** |
| --- |
| • For the multiple monitor configuration, checking the check box for "Switch the monitor displaying the application only" switches only CAL Switch Mode of the monitor where the application is running. When the application is displayed across multiple monitor screens, the CAL Switch Mode is switched in a monitor where the application is displayed with the largest size. |

4. Associate CAL Switch Mode with the application.
   Select the CAL Switch Mode to be associated with from the "CAL Switch Mode" pull-down menu.

- Application
  The running application is displayed. To add an application to the list, start the application.
- CAL Switch mode
  The pull-down menu has a list of CAL Switch Mode of monitors connected.

5. Click "Save".
   The settings are applied.

## 7.5 Switching CAL Switch Mode on Screen (Manual Mode Switch)

The CAL Switch Mode of monitors can be switched on the screen.

**Attention**

- The Mode Switch window does not appear if no compatible monitors are connected.
- When RadiCS or RadiCS LE is running, the Mode Switch window does not appear.
- Do not select the key sequence that has been already used with other functions for the hotkey that displays the Mode Switch window.

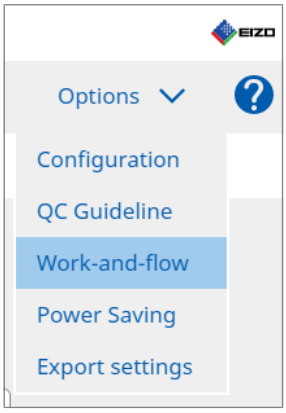
**Note**

**RX440**

- When setting in "PbyP", the Main window and the Sub window are each switched to a separate CAL Switch Mode.
- When using Hybrid Gamma or ALT Mode, the Main window and the Sub window cannot be switched to separate CAL Switch Modes.
- When set to "PbyP", selecting "Apply to identical models simultaneously" switches both the Main window and Sub window to the same CAL mode.
- When set to "PinP", the CAL mode of the Sub window cannot be switched.

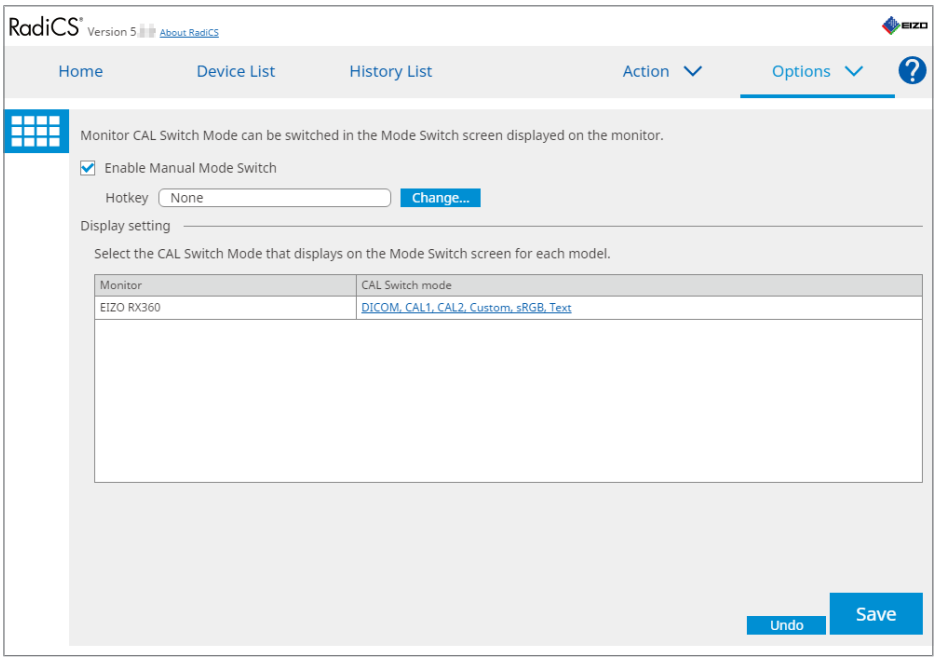
### 7.5.1 Configuring the Manual CAL Switch Window Settings

1. Select "Work-and-flow" from "Options".



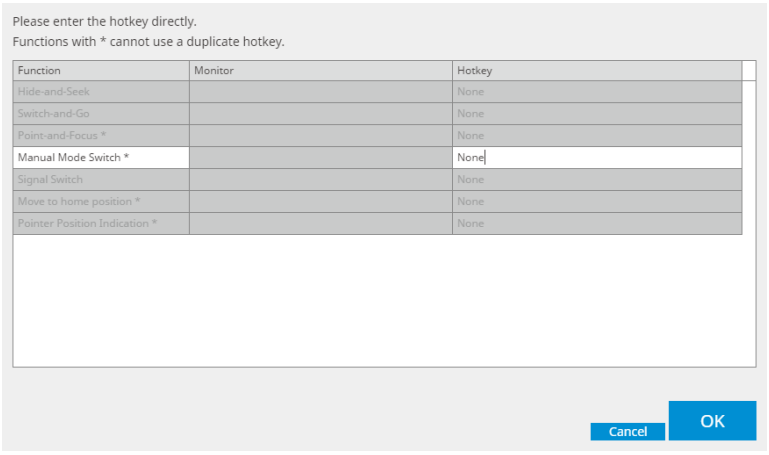

The Work-and-Flow window appears.

2. Click "Manual Mode Switch".




The Manual Mode Switch window appears.

3. Select the "Enable Manual Mode Switch" check box.
   The hotkey settings window appears. If the check box is checked, click "Change...".
4. Specify the hotkey.
   Directly enter the key to be used for the hotkey while "Hotkey" of "Manual Mode Switch" is selected.




**Note**

- Function hotkeys other than Manual Mode Switch's can also be changed at the same time (only when the target function is enabled).

5. Click "OK".
6. Set the CAL Switch Mode displayed on the Mode Switch window for each model. Click the "CAL Switch Mode" link of the model set.
   The Manual Mode Switch Display Settings window appears.
7. Check the check box for the CAL Switch Mode to be displayed on the Mode Switch window.

**Note**

- The CAL Switch Mode displayed on the Mode Switch window is set in units of models, therefore, it cannot be set for each monitor.
- The list displays all the CAL Switch Modes including those that are not the RadiCS control targets and those set to skip on the monitor side.

8. Click "OK".
9. Click "Save".
   The settings are applied.

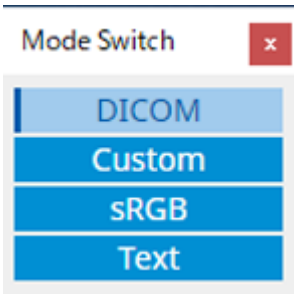
### 7.5.2 Switching CAL Switch Mode

1. Exit RadiCS.

**Attention**

- You need to exit RadiCS before displaying the Mode Switch window.

2. Enter the hotkey assigned to display the Mode Switch window.
   The Mode Switch window appears.




3. Move the Mode Switch window over to the screen of the monitor whose CAL Switch Mode you want to change.
4. Click the CAL Switch Mode to be changed to.
   The CAL Switch Mode is switched.

**Note**

- The context menu is displayed by right-clicking the title bar in the Mode Switch window. The context menu enables you to:
  - Apply to the same model
    When you select "Apply to identical models simultaneously" in a multiple monitor configuration, the CAL Switch Mode of all monitors that are the same model as the monitor that is displaying the Mode Switch window, can be switched simultaneously.
  - Display at the reduced size
    Selecting "Display at reduced size" allows changing the size of the Mode Switch window. When the window appears in the reduced size, you can move the mouse pointer over a button to view the CAL Switch Mode name of the button.

## 7.6 Switching Input Signal (Signal Switch)

The input signal of the monitor can be switched with the keyboard operation (Hotkey) or in conjunction with Switch-and-Go.

- Monitors that work with Switch-and-Go are GX560, MX317W, RX270, RX360, RX370, RX670 and RX1270.

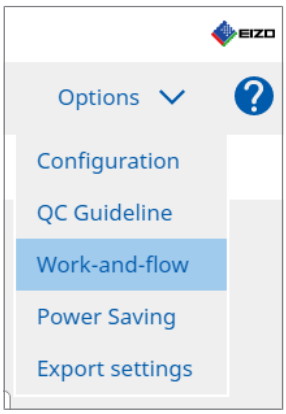
**Attention**

- Hotkeys do not work in the following cases:
  - Calibration is running
  - SelfCalibration is running
  - RadiCS is running
- Do not select the key sequence that has been already used with the following functions for the hotkey:
  - Point-and-Focus
  - Manual Mode Switch
  - Mouse Pointer Utility
  - Instant Backlight Booster

**Note**

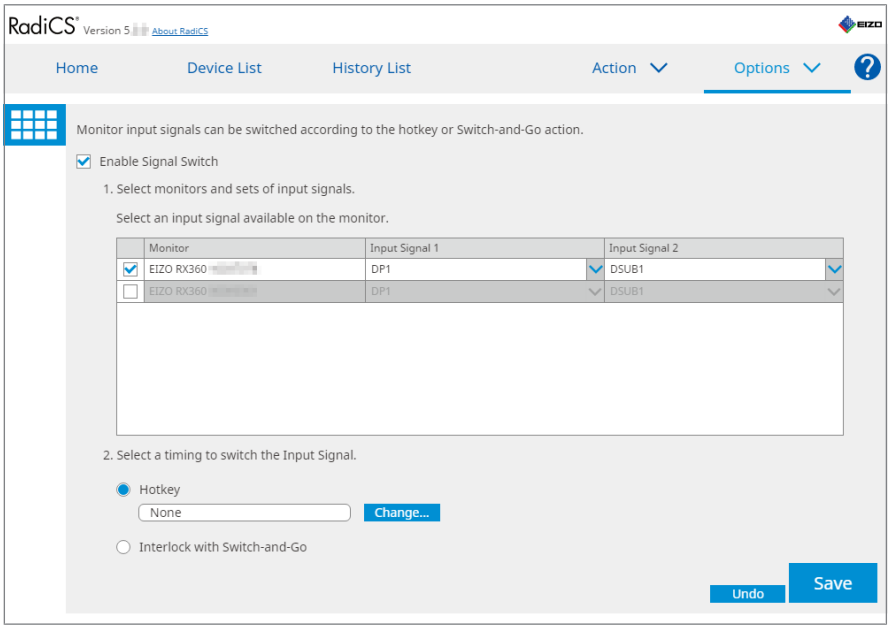
- When the same hotkey has been set in all monitors in a multiple monitor configuration, pressing the hotkey activates the registered setting simultaneously in the monitors.
- Hotkeys cannot be set by individual monitor.

1. Select "Work-and-flow" from "Options".




The Work-and-Flow window appears.

2. Click "Signal Switch".




The Signal Switch window appears.

3. Select the "Enable Signal Switch" check box.
4. Select the monitor. Check the check box.
5. From the pull-down menu, select the input signal.

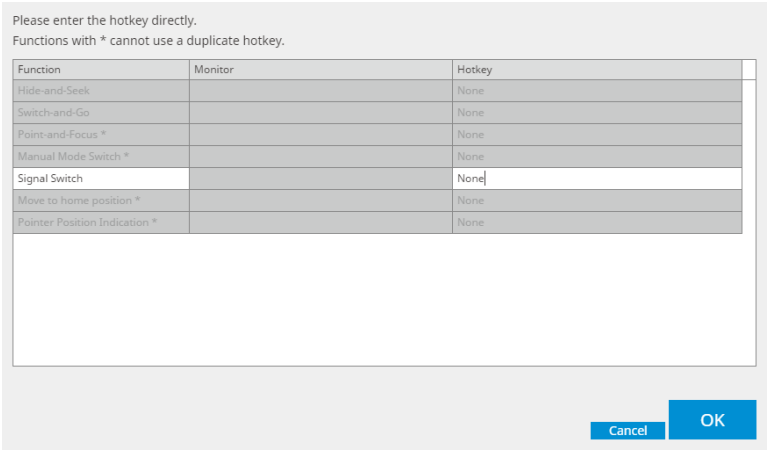
**Attention**

- The pull-down menu also has the signal not supported by the monitor. If the signal which does not exist in the monitor is selected, the monitor may have a signal error.
- To switch the signal in conjunction with Switch-and-Go, select the signal of the main PC for "Input Signal 1".

**Note**

- With the default setting, the signal currently displayed on the screen is displayed for "Input Signal 1".
- For PbyP supported monitors, also the combinations of signals that can be displayed in PbyP mode are displayed in the pull-down menu.

6. Select the switching method.
   **Hotkey**
   a. Select "Hotkey" and click "Change...".
   The hotkey settings window appears.
   b. Specify the hotkey.
   Directly enter the key to be used for the hotkey while "Hotkey" of "Signal Switch" is selected.




**Note**

- Function hotkeys other than Signal Switch can also be changed at the same time (only when the target function is enabled).

   c. Click "OK".

   **Interlock with Switch-and-Go**

**Attention**

- This setting shall be performed for the main PC (PC 1) for Switch-and-Go after setting up Switch-and-Go.

   a. Select "Interlock with Switch-and-Go".

7. Click "Save".
   The settings are applied.

## 7.7 Optimizing Mouse Operation (Mouse Pointer Utility)

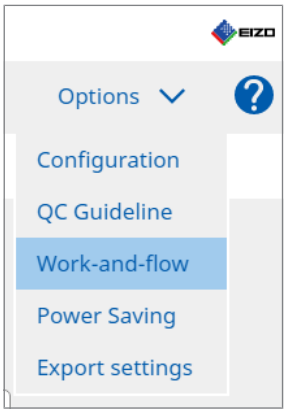
The mouse pointer can be moved automatically and the loads on mouse operations in a multiple monitor configuration can be reduced.

- Move the mouse pointer between Multi-monitor easily
  The mouse pointer can move smoothly between monitors with different resolutions.
- Move the mouse pointer from the left or right edge of the desktop to the opposite edge
  When the mouse pointer reaches to the right or left edge of the desktop, it moves to the other edge.
- Move the mouse pointer to the center of the main monitor
  When the hotkey that has been assigned is entered, the mouse pointer moves into the vicinity of the center of the main monitor (a monitor that displays the notification area).
- Display position of mouse pointer
  A hotkey is assigned and the position of the mouse pointer is displayed with an animation when the assigned hotkey is input.

**Attention**

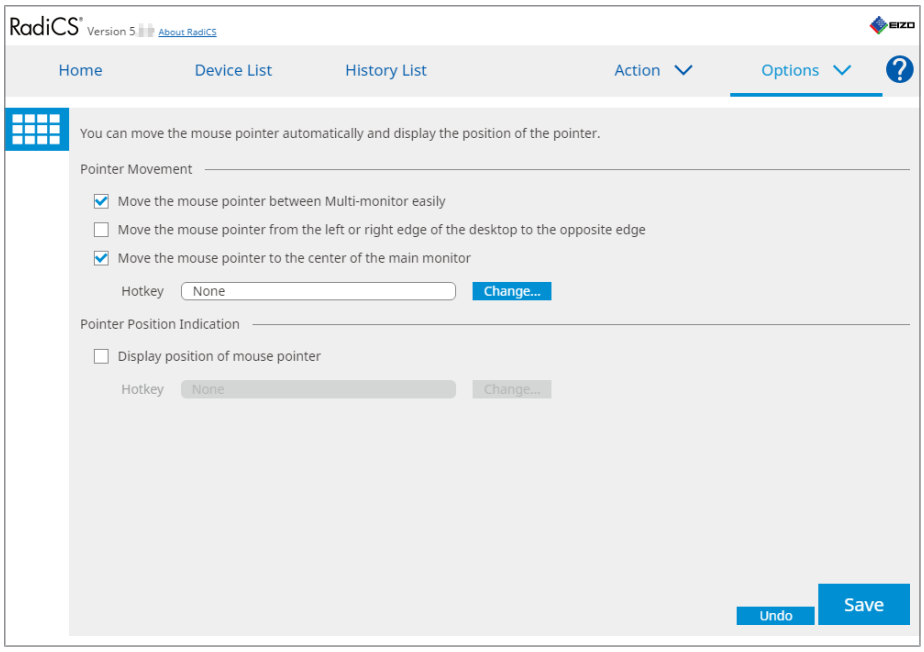
- In order to move smoothly between multiple monitors, arrange the display distribution on Windows along the top or the bottom.
- Do not select the key sequence that has been already used with other functions for the hotkey of this function.
- This function is not available when Hide-and-Seek function is enabled.

1. Select "Work-and-flow" from "Options".



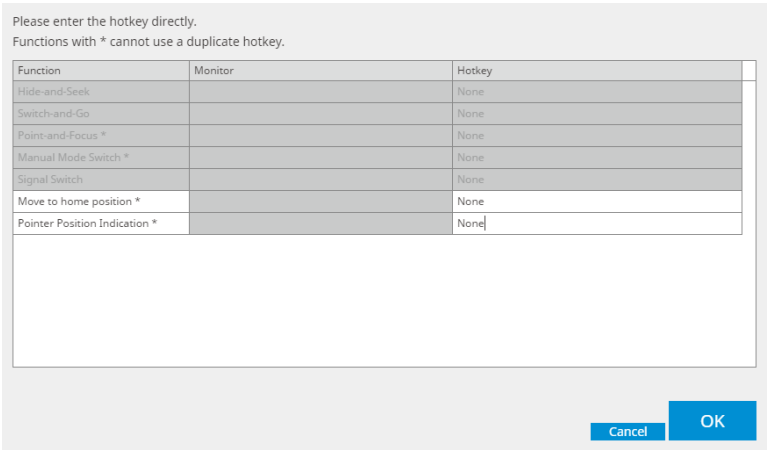

The Work-and-Flow window appears.

2. Click "Mouse Pointer Utility".




The Mouse Pointer Utility window appears.

3. Check the check box for the function to be enabled.
   Set the hotkey when "Move the mouse pointer to the center of the main monitor" or "Display position of mouse pointer" is selected.
4. Click "Change...".
   The hotkey settings window appears.
5. Specify the hotkey.
   Directly enter the key to be used for the hotkey while "Hotkey" of "Move the mouse pointer to the center of the main monitor" or "Display position of mouse pointer" is selected.




**Note**

- Function hotkeys other than Mouse Pointer Utility's can also be changed at the same time (only when the target function is enabled).

6. Click "OK".
7. Click "Save".
   The settings are applied.

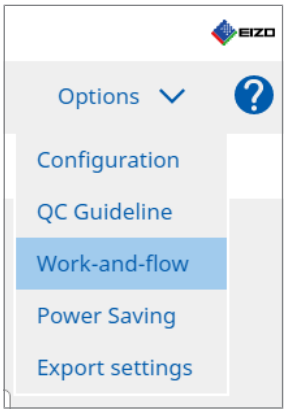
## 7.8 Rotating the Display Direction According to the Installation Direction (Image Rotation Plus)

Any change in the installation orientation is detected to rotate the display orientation of the screen.

**Attention**

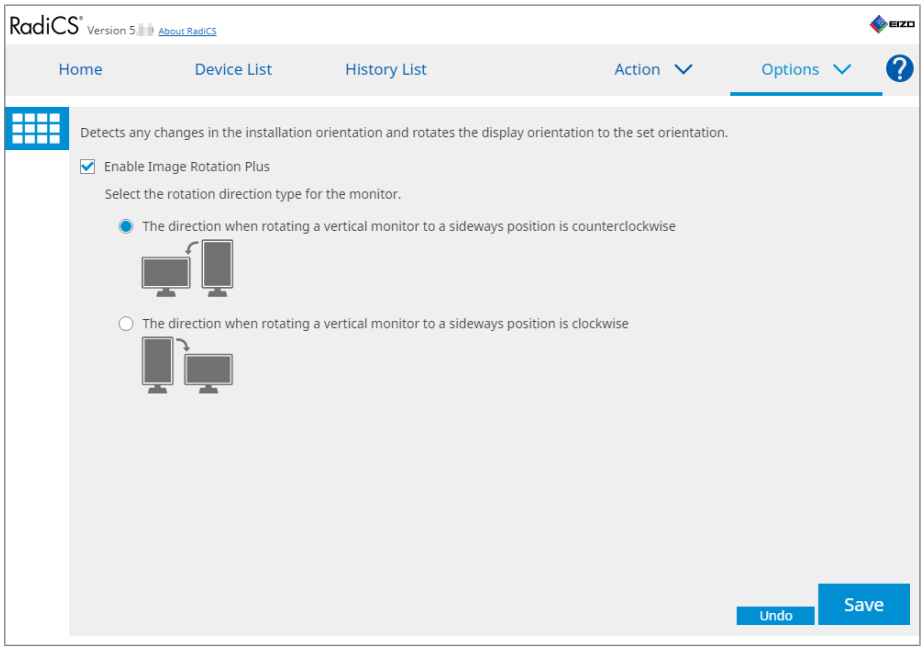
- The Image Rotation Plus feature is available only when a monitor with the gravity sensor (for image rotation / installation direction) is connected.
- To use the Image Rotation Plus feature, configure the monitor settings as follows:
  - Screen layout: Single screen display (not using PbyP or PinP)
  - "Orientation": "Landscape"
    If you are using GX340 or GX240, select "Landscape" or "Portrait (SW)".

1. Select "Work-and-flow" from "Options".




The Work-and-Flow window appears.

2. Click "Image Rotation Plus".




The Image Rotation Plus window appears.

3. Select the "Enable Image Rotation Plus" check box.
4. Select the rotation direction type for the monitor.

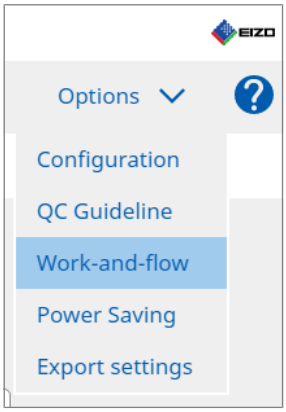
5. Click "Save".
   The settings are applied.

## 7.9 Switching the Brightness of the Monitor According to Mouse Position (Auto Brightness Switch)

It is detected whether the position of the mouse pointer is in the inside or outside of the screen on the monitor and brightness is automatically switched.

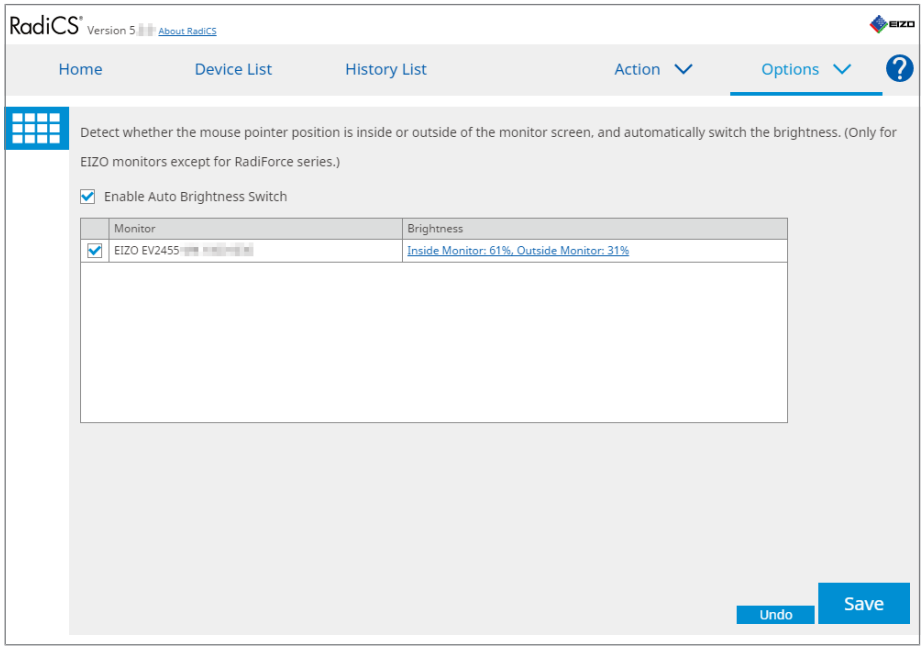
| **Attention** |
| --- |
| • This function is enabled only for FlexScan EV Series monitors. |

1. Select "Work-and-flow" from "Options".




   The Work-and-Flow window appears.

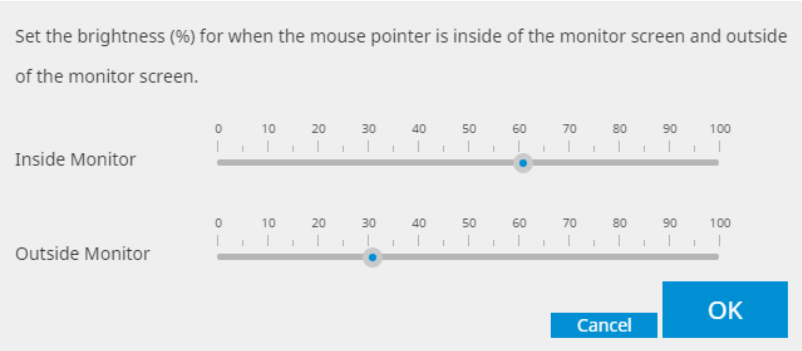
2. Click "Auto Brightness Switch".




   The Auto Brightness Switch window appears.

3. Select the "Enable Auto Brightness Switch" check box.
4. Check the check box for the target monitors.
5. Click the "Brightness" link.
   The Brightness Settings window appears.

6. Select the brightness.




   – Inside Monitor
     The brightness (%) is set when the mouse pointer is within the screen of the target monitor.
   – Outside Monitor
     The brightness (%) is set when the mouse pointer is outside of the screen of the target monitor.
7. Click "OK".
8. Click "Save".
   The settings are applied.

## 7.10 Increasing Brightness Temporarily (Instant Backlight Booster)

You can temporarily increase monitor brightness using the hotkey. This is effective for when you want to improve diagnostic screen legibility.

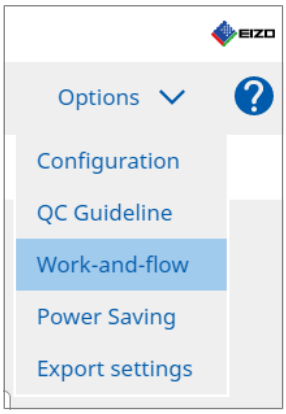
**Attention**

- With this function the temporary brightness change can be selected between maximum luminance and CAL Switch Mode. Observe the following points to use the function correctly,
  - Maximum luminance: Not target for monitor quality control. It is meant to assist with radiographic image interpretation. Please perform final diagnosis using a CAL Switch Mode that supports quality control.
  - CAL Switch Mode: Selecting a CAL Switch Mode that supports monitor quality control is recommended. When selecting a CAL Switch Mode that does not support quality control the same points need to be observed as when selecting maximum luminance.
- Excessive use of this function may cause early deterioration of the monitor backlight. Use it only when necessary.
- Function automatically turns off after being left on for a minute.
- The displayed CAL Switch Mode will not run when in a mode not supported by the calibration.
- Do not select the key sequence that has been already used with other functions for the hotkey of this function.
- This function is not available when Point-and-Focus function is enabled.

**Note**

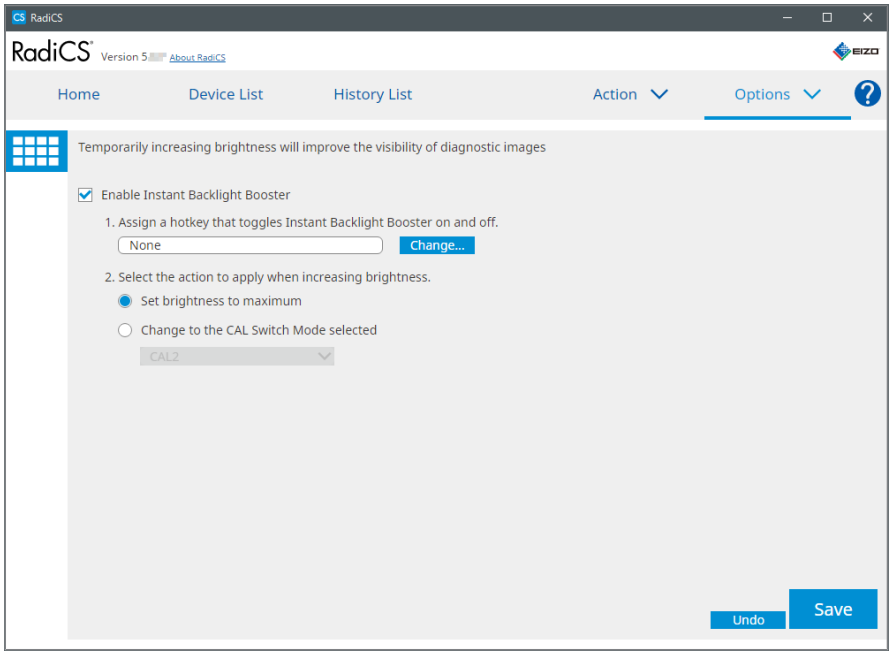
- When the function is running, a box indicating so will be displayed on the target screen.

1. Select "Work-and-flow" from "Options".




The Work-and-Flow window appears.

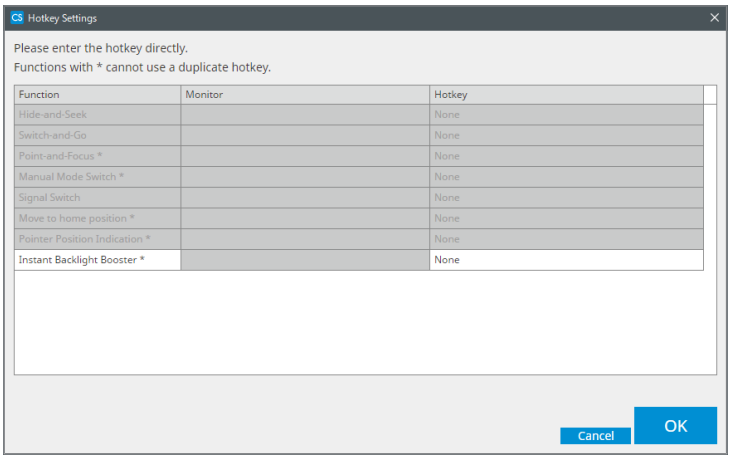
2. Click "Instant Backlight Booster".




The Instant Backlight Booster window appears.

3. Select the "Enable Instant Backlight Booster" check box.
4. Set the hotkey for switching Instant Backlight Booster on/off. Click "Change...".
The hotkey settings window appears.

5. Specify the hotkey.
   Directly enter the key to be used for the hotkey while "Hotkey" of "Instant Backlight Booster" is selected.




**Note**

- Function hotkeys other than Instant Backlight Booster's can also be changed at the same time (only when the target function is enabled).

6. Click "OK".
7. Select the operation when increasing the brightness.
   – Set brightness to maximum
     Displays at the maximum monitor brightness.

**Attention**

- It is an option to assist with radiographic image interpretation. It is not meant to be used in diagnosis.

   – Change to the CAL Switch Mode selected
     Switches to the CAL Switch Mode selected in the pull-down menu. The pull-down menu shows the CAL Switch Modes of the connected monitors that can be calibrated. Select a mode calibrated for an appropriate target.
8. Click "Save".
   The settings are applied.

## 7.11 Adjusting Monitor Brightness According to Ambient Lighting (Auto Brightness Control)

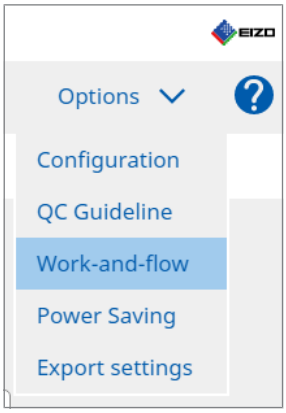
Auto Brightness Control automatically adjusts the brightness of the monitor set to Text mode according to the environment used.

Adjusting the brightness to an appropriate level reduces eye strain and fatigue.

**Attention**

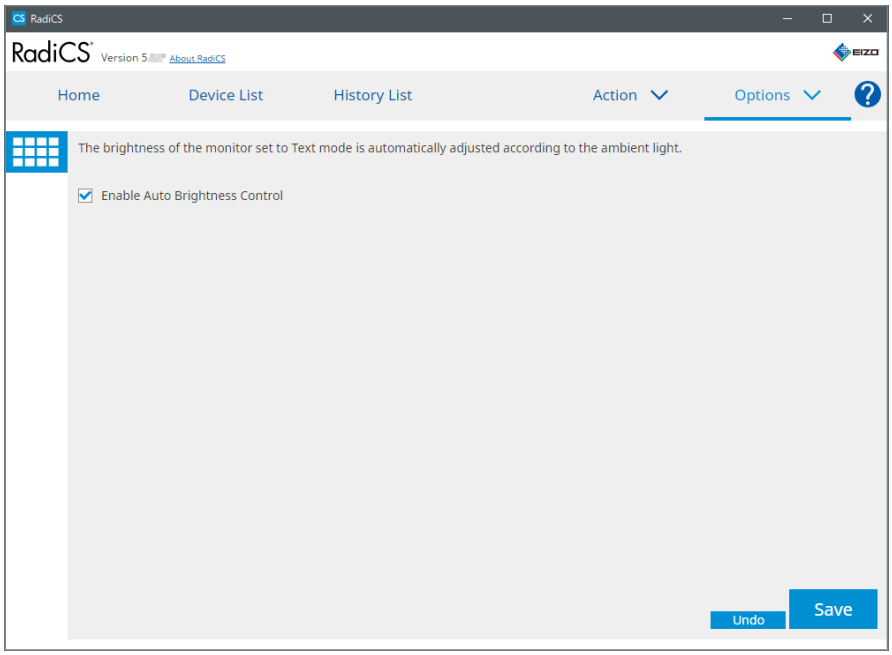
- Only available for RadiCS-compatible monitors set to Text mode.
- This function automatically adjusts the brightness of monitors set to Text mode based on ambient light and the brightness of the image-reading monitors. This means that even if the ambient light is the same, the brightness after adjustment will differ depending on the image-reading monitor settings and whether the image-reading monitor is connected to the same PC.
- Cannot be used when there are no monitors with illuminance sensors connected.
- This function cannot be used in the following situations:
  - RX440: When the PinP function is enabled.
  - Other than RX440: When the PinP function is enabled and the sub window displayed.

1. Select "Work-and-flow" from "Options".




The Work-and-Flow window appears.

2. Click "Auto Brightness Control".




   The Auto Brightness Control window appears.
3. Select the "Enable Auto Brightness Control" check box.
4. Click "Save".
   The settings are applied.

# 8 Managing RadiCS Setting

## 8.1 Managing PC / Monitor Information

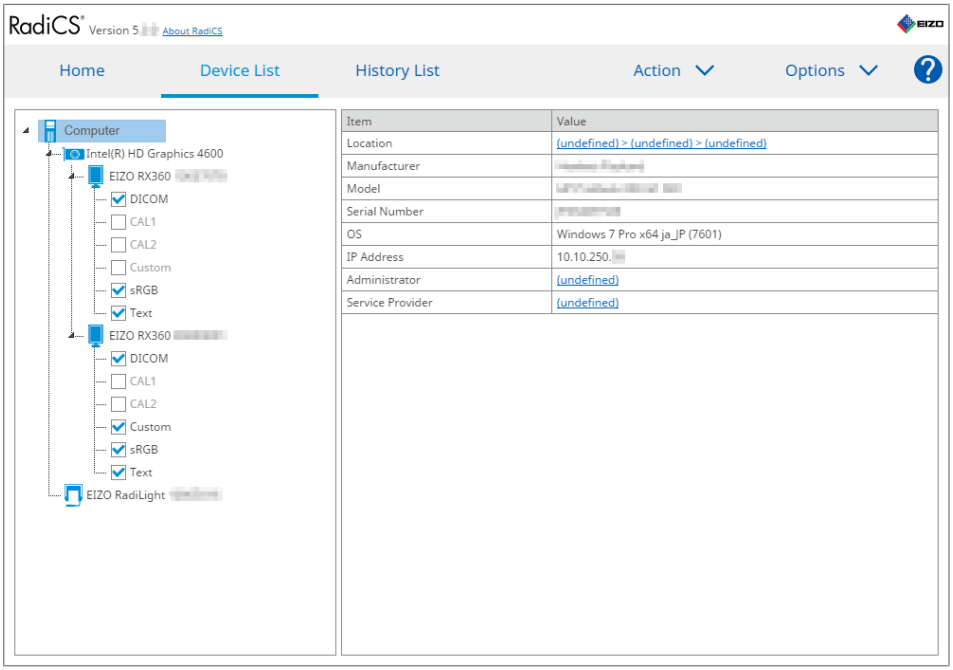
"Device List" enables you to manage and edit information on the connecting PC, graphics board, monitor (CAL Switch Mode), and RadiLight.

**Note**

- In a Windows 11, or Windows 10, the "Resolution" value of the software may differ from the "Screen Resolution" value displayed in the Windows Control Panel. If so, perform the following operation:
  - For Windows 11:
    Enter the appropriate value in "Setting " - "System" - "Display" - "Scale" - "Custom scaling".
  - For Windows 10:
    Enter any value in "Custom scaling" under "Advanced scaling settings" in "Setting" - "System" - "Display".
- Click "Identify" to display the monitor information configured (manufacturer, model name, and serial number) on the monitor screen.

### 8.1.1 PC Information

Click the PC name to display the following PC information.




**Note**

- Connect to RadiNET Pro to automatically register the installation location information.

**Location**

Shows the installation location of PC (location, department, and room). Click the link to display the registration information window, allowing to edit the installation location information.

**Manufacturer**

Shows the manufacturer name of PC.

**Model**

Shows the PC's model name.

**Serial Number**

Shows the PC's serial number.

**OS**

Shows the information of OS installed in PC.

**IP Address**

Shows the IP address of PC.

**Administrator**

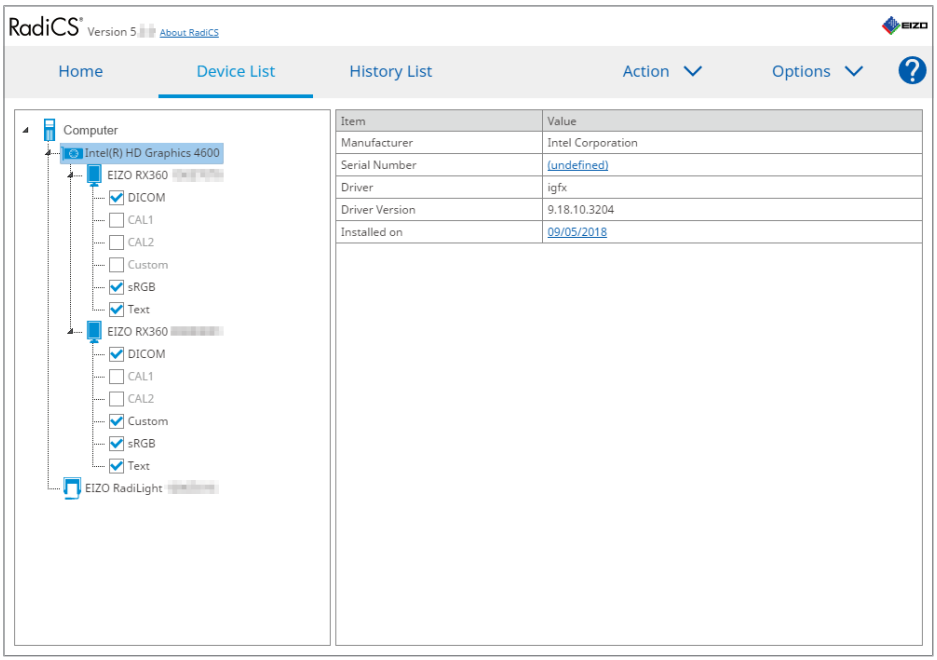
Click the link to enter the administrator name of PC.

**Service Provider**

Click the link to enter Service Provider name of PC.

### 8.1.2 Graphics Board Information

Click the graphics board name to display the following graphics board information.




**Note**

- RadiCS can automatically obtain the serial number of some graphics boards. This means you cannot manually enter the serial number.

**Manufacturer**

Shows the manufacturer name of the graphics board.

**Serial Number**

Click the link to enter the serial number of the graphics board.

**Driver**

Shows the driver of the graphics board.

**Driver Version**

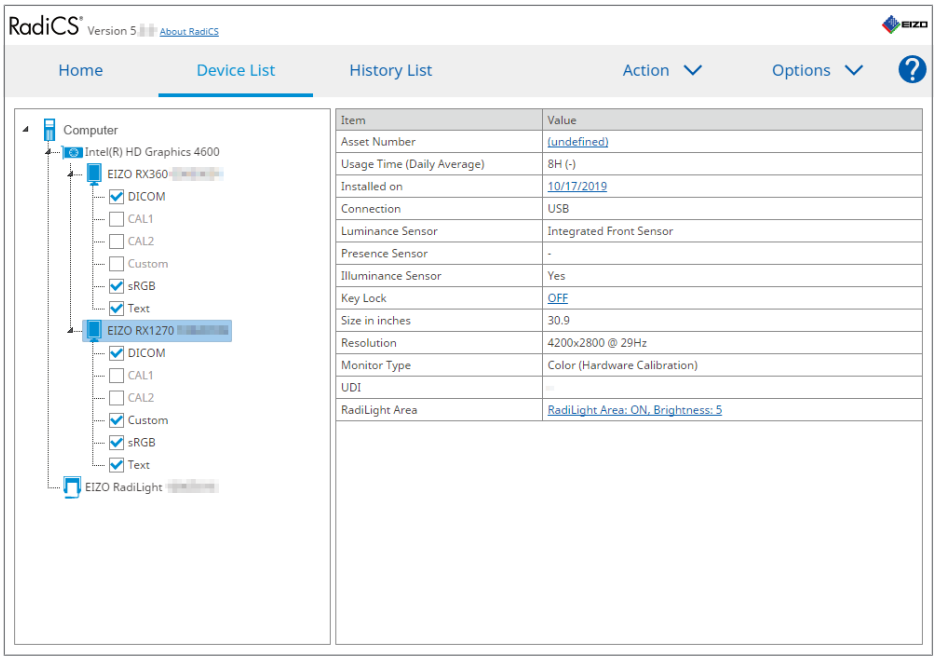
Shows the driver version of the graphics board.

**Installed on**

Shows the date of the RadiCS installation by default. Click the link to edit the content.

### 8.1.3 Monitor Information

Click the monitor name to display the following monitor information.




**Asset Number**

Click the link to enter the asset number of the monitor.

**Usage Hours (H)**

Shows the monitor's usage time.

**Installed on**

Shows the date of the RadiCS installation by default. When a new monitor is connected after installing RadiCS, the date on which this new monitor was first detected will be displayed. Click the link to edit the content.

| Note |
| --- |
| • When using RadiNET Pro, the monitor installation date will not change even if the PC using RadiCS is switched. To change the installation date, use RadiCS. |

**Connection**

Shows the monitor's connection.

**Luminance Sensor**

Shows the name of a luminance sensor when there is the sensor built in the monitor.

**Presence Sensor**

Shows the setting of the presence sensor. Click the link to display the Presence Sensor setting window, allowing to change the setting.

**Illuminance Sensor**

Shows whether there is an illuminance sensor built in the monitor.

**Key Lock**

Shows the setting of the key lock function. Click the link to display the Key Lock setting window, allowing to change the setting.

**Size in inches**

Shows the monitor's size in inches.

**Resolution**

Shows the monitor's display resolution.

**Monitor Type**

Shows the monitor type (color or monochrome) and the calibration type (hardware or software calibration).

| **Note** |
| --- |
| • When the monitor supports RadiCS, the monitor side performs the hardware calibration calibrating a luminance and display function. When the monitor does not support RadiCS, the software calibration calibrating signal level output from the graphics board is performed. |

**UDI**

Shows the monitor's UDI (identifier). Shows UDI only when the monitor can obtain the UDI information.

**RadiLight Area**

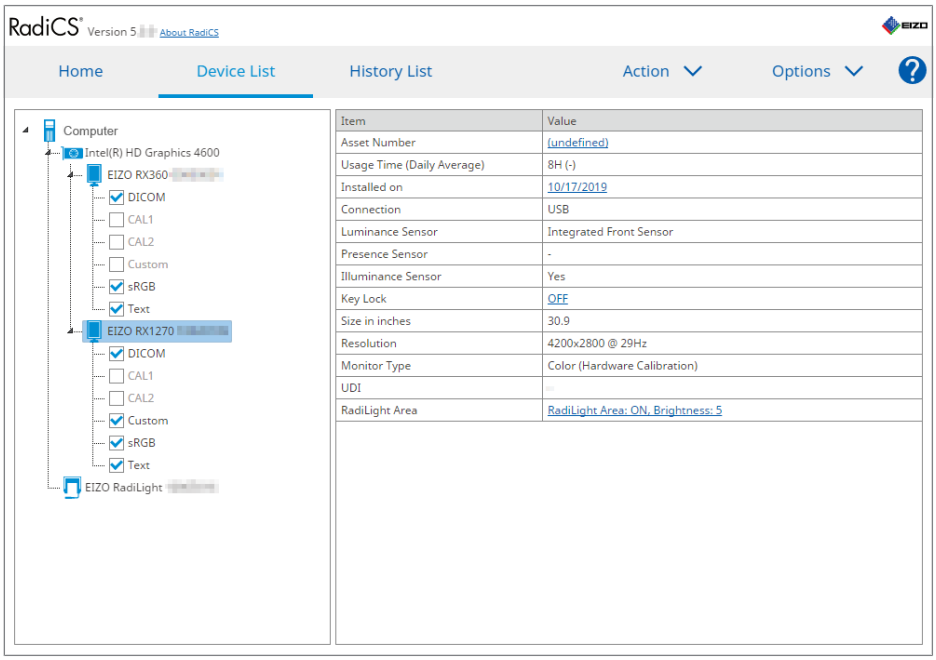
Shows the settings of RadiLight if it is built into the monitor. The the built-in RadiLight Area Settings screen will be shown when you click the link, after which you can change the settings.

### 8.1.3.1 Changing Key Lock Setting of Monitor

**Attention**

- The change is available only when the RadiCS supported monitor has the Key Lock function.

1. Click a monitor name in "Device List".




   The monitor information will be displayed on the right.

2. Click the "Key Lock" link.
   The Key Lock setting window appears.
3. Select the key lock status from the pull-down menu.

| Item | Switches that can be locked |
|---|---|
| OFF | None (All switches are enabled) |
| Menu Lock | Enter button |
| All Locks | All buttons excluding power button |
| All Locks (including the power button) | All buttons including power button |

**Attention**

- Depending on the monitor, not all items may be displayed.
- When performing calibration for a monitor where the key lock is OFF, the key lock is set to "Menu Lock" or "All Locks (including the power button)". To make an adjustment on the monitor side, change the key lock to "OFF".

**Note**

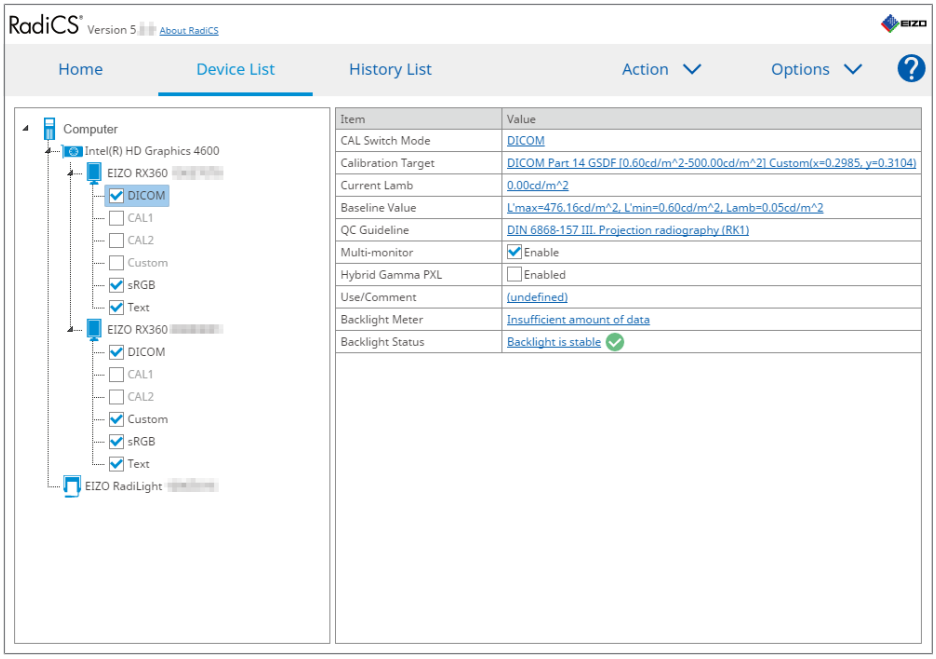
- In some monitors, the monitor's "Information" can be confirmed even in a "Menu Lock" state.

4. Click "OK".
   The settings are applied.

### 8.1.4 CAL Switch Mode Information

Click the CAL Switch Mode name to display the CAL Switch Mode information. Also, selecting the check box allows to perform the test and measurement as an object managed by RadiCS.

For details, see 4.1 Set the CAL Switch Mode Control Targets [▶ 75].




**Attention**

- The display item may vary according to the monitor.
- When the CAL Switch Mode does not support the calibration, the CAL Switch Mode information is not displayed.

#### CAL Switch Mode

Shows the CAL Switch Mode name. Click the link to change the CAL Switch Mode name.

#### Calibration Target

Shows the calibration target value. Click the link to change the calibration target value. For details, see 4.3 Setting Calibration Targets [▶ 85].

#### Current Lamb

Shows the Ambient Luminance value.

#### Baseline Value

Shows the Baseline Value. Click the link to display the Baseline Value setting window, allowing to change the baseline value, date of measurement, measured by, name of sensor used, and serial number of the sensor.

**Attention**

- Basically, the baseline value does not need to be changed. Be careful that the change of baseline value may give a great impact on the test or measurement result.

### QC Guideline

Shows the QC Guideline used in the acceptance or consistency test. Click the link to display the QC Guideline setting window, allowing to change the QC guideline. For details, see 4.2 Changing QC Guidelines [▶ 75].

### Multi-monitor

Selecting the check box enables the multi-monitor judgment.

| Attention |
| --- |
| • It cannot be enabled with the QC Guideline. |

### Hybrid Gamma PXL

Selecting the check box enables monitor's Hybrid Gamma PXL function.

### Use/Comment

Click the link to edit the content.

| Attention |
| --- |
| • The entered text must be up to 20 characters long. |

### Backlight Meter

Shows the estimated lifetime of the monitor's backlight. Click the link to confirm the detail in a graph. For details, see Checking the Backlight Life Time [▶ 101].

### Backlight Status

Shows the backlight status of the monitor after performing the calibration. Click the link to confirm the detail in a graph. For details, see 5.5 Checking Backlight Meter / Backlight Status [▶ 101].

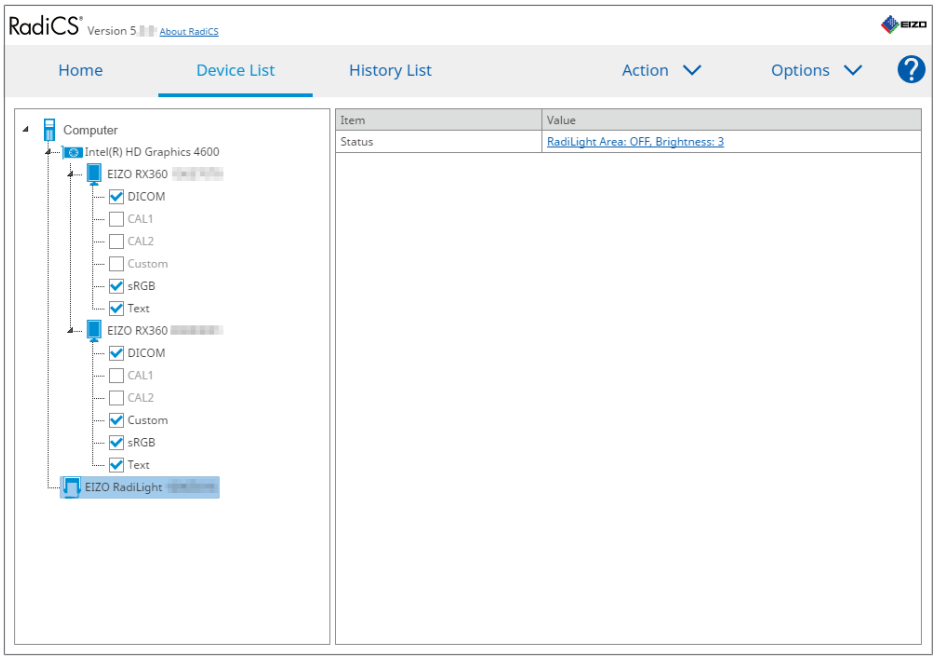
### 8.1.5 RadiLight Information

When RadiLight is connected, the information appears in the Device List. Click the RadiLight name to display the RadiLight Area (illuminating part at the back) status. Click the link to change the RadiLight Area status.

| **Attention** |
| --- |
| • RadiLight information is not displayed when using Mac. |

#### 8.1.5.1 Changing RadiLight Area Status

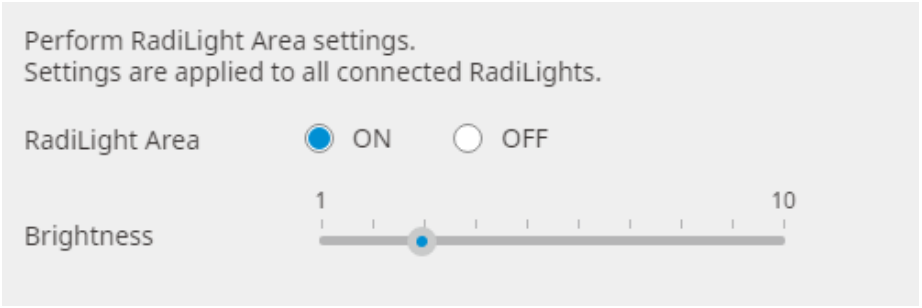
1. Click the RadiLight name in Device List.




   The RadiLight information appears in the right pane.

2. Click the "Status" link.
   The RadiLight Area Settings window appears.
   You can also access this window from the notification area.

3. Set the RadiLight Area.




   - RadiLight Area
     Set RadiLight Area ON / OFF.
   - Brightness
     Set the Brightness of RadiLight Area by sliding the indicator.

**Note**

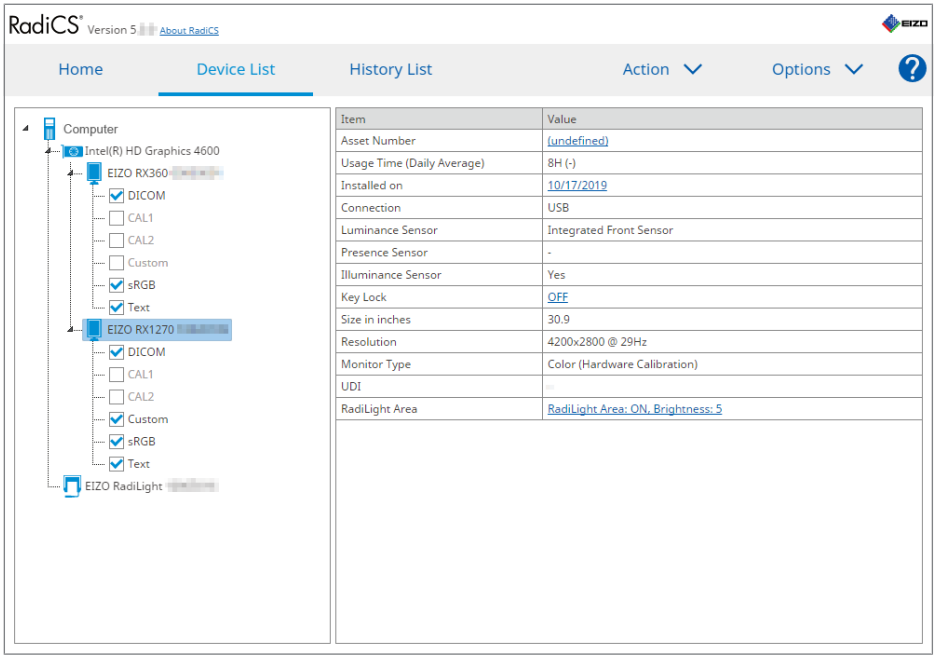
- The brightness of RadiLight Area changes in interlock with the indicator value.

4. Click ✕ at the upper right of the RadiLight Area Settings window.

### 8.1.5.2 Changing the Settings of the Built-in RadiLight Area

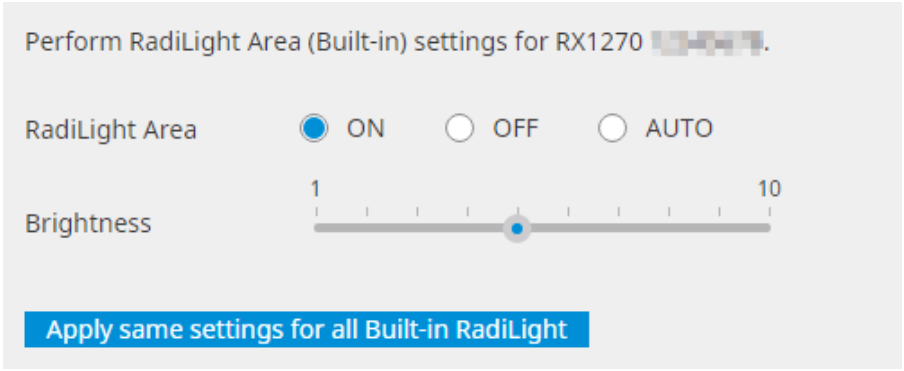
Follow the steps below to change the settings if you are using a RadiLight-integrated monitor.

1. From the Device List, click the name of the monitor with the RadiLight built in.




The monitor information will be displayed on the right.

2. Click the "RadiLight Area" link.
   A window to change the settings of RadiLight Area will be displayed.
   You can also access this window from the notification area.
3. Configure the settings of RadiLight Area.




- RadiLight Area
  Turn RadiLight Area on or off, or set it to auto mode. When set to auto mode, RadiLight Area will turn on or off accordingly with the monitor's backlight.
- Brightness
  Set the Brightness of RadiLight Area by sliding the indicator.

- Apply same settings for all Built-in RadiLight
  This is shown when there are multiple built-in RadiLights. Clicking this will let you standardize the settings for all RadiLight Areas.

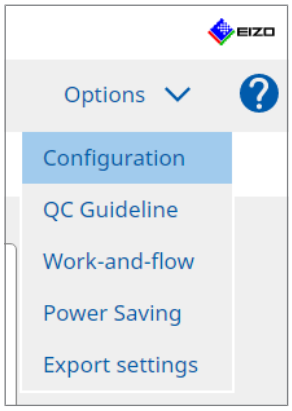
| Note |
| --- |
| • The brightness of RadiLight Area changes in interlock with the indicator value. |

## 8.2 Setting Registration Information

Set the information of organization where RadiCS is installed as the registration information of RadiCS. The entered information is used by the history function for report generation.

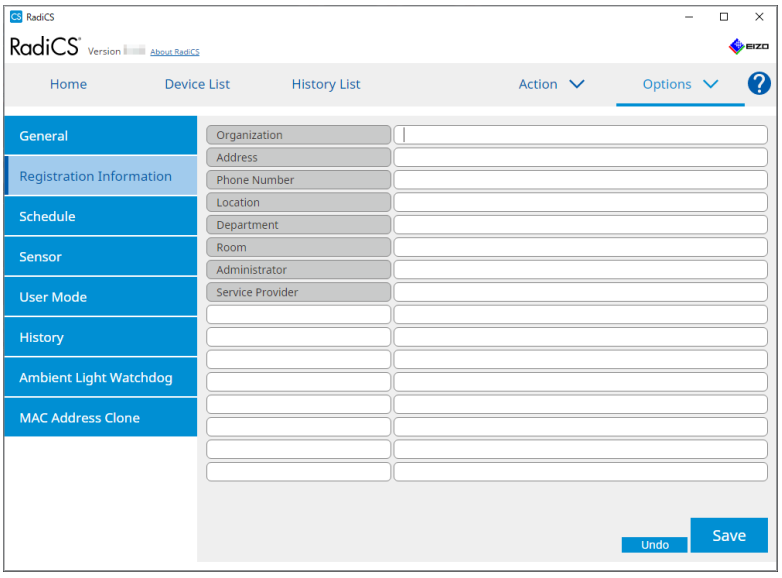
| Note |
| --- |
| • Connect to RadiNET Pro to automatically register the information configured in RadiNET Pro. |

1. Select "Configuration" from "Options".




   The Configuration window appears.

2. Click "Registration Information".




RadiCS (Administrator mode)

   The Registration Information appears in the right pane.

3. Set the following items:

**Note**

- Each value must be up to 128 characters long.
- The item name can be freely added into the blank item field. The field name must be up to 50 characters long.
- The existing field names in the software cannot be changed.
- When you use Active Directory, the following items are entered automatically:
  - Organization
  - Address
  - Location

- Organization
  Enter a hospital name or the like.
- Address
  Enter the address.
- Phone Number
  Enter the phone number.
- Location
  Enter the location of the monitor.
- Department
  Enter the name of the department using the monitor.
- Room
  Enter the name of the room where the monitor is used.
- Administrator
  Enter the name of the monitor administrator.
- Service Provider
  Enter information on the service provider that you contact with.

4. Click "Save".
   The information is registered.

## 8.3 Connecting to RadiNET Pro

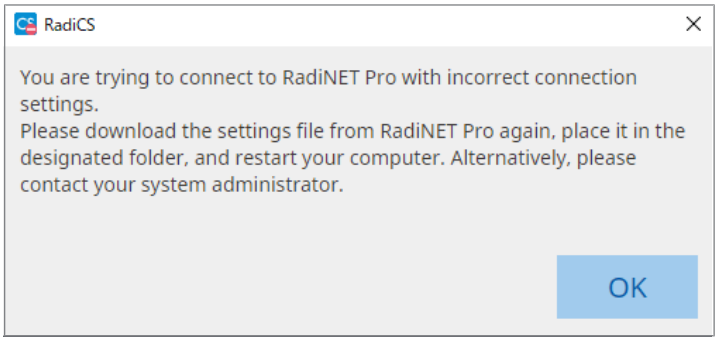
The flow connecting to RadiNET Pro may vary according to the connecting RadiNET Pro type.

Here, the procedures in RadiCS are described when connecting to RadiNET Pro.

For information on procedures to preset RadiNET Pro, refer to the system guide of RadiNET Pro.

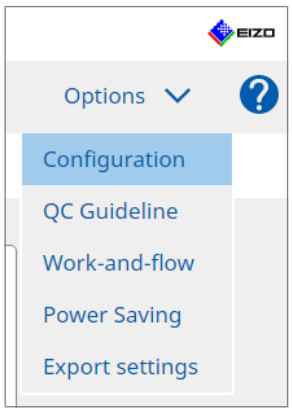
**Attention**

- The setting procedures may vary when connecting to RadiNET Pro Enterprise / RadiNET Pro Web Hosting. For details, refer to the system guide.
- Group policies for monitors connected to RadiNET Pro can be configured with RadiNET Pro. For more information, refer to the RadiNET Pro user's manual.
- If you attempt to connect to RadiNET Pro with incorrect connection settings, the following message will be displayed. Follow the message and try again.




- If connecting to RadiNET Pro fails, it will be indicated at the top of the window that you are Offline/Archived. The history of the calibration and tests run during this period will be uploaded after the monitor is connected to RadiNET Pro.

1. Select "Configuration" from "Options".




   The setting window appears.
2. Click "General".
   The basic settings window appears.
3. Select the "Enable remote management" check box.

**Attention**

- If the "Enable remote management" check box cannot be selected, you must overwrite the RadiCS installation using the pre-configured connection installer downloaded from RadiNET Pro. For details, refer to the RadiNET Pro system guide.

**Note**

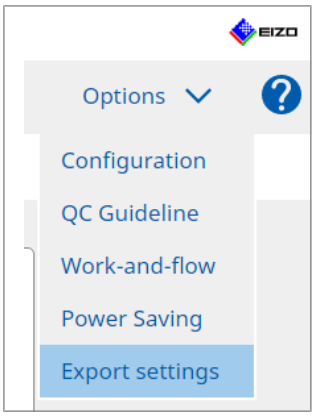
- The values preset in RadiNET Pro are put in "Primary Server address" and "Primary port". Do not change this value, as changing it may prevent you from connecting to RadiNET Pro.

4. Click "Save".
   The settings are applied.

### 8.3.1 Exporting Setting File to be Imported into RadiNET Pro

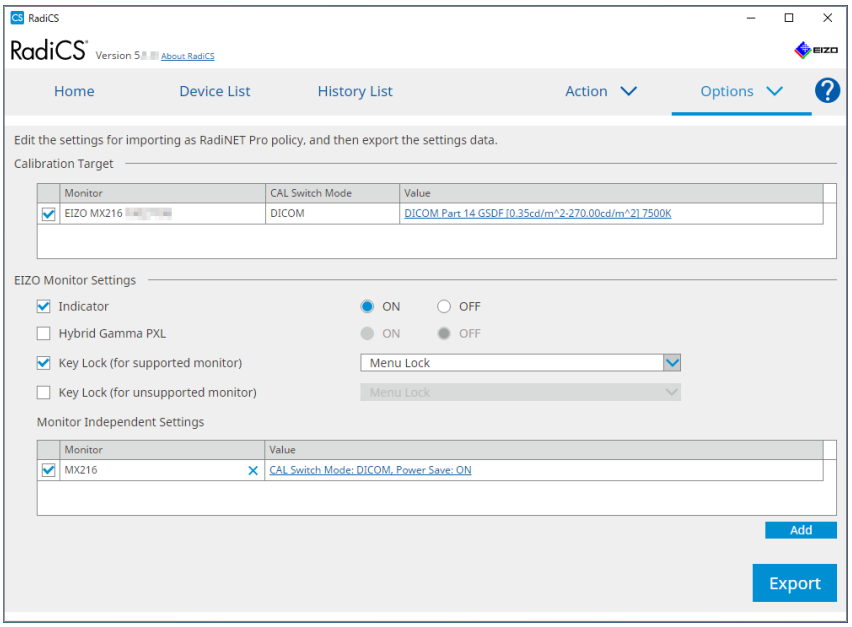
The software setting (RadiCS5 batch setting file) can be exported.

1. Select "Export settings" from "Options".




The Export settings window appears.

2. Select the desired check box for export and edit the content.




Calibration Target

Output the calibration target of the monitor managed by RadiCS at present.

**Note**

- Click the "Value" link to display the Calibration Target setting window, allowing to change the target value. For details, see 4.3 Setting Calibration Targets [▶ 85].

EIZO Monitor Settings

Edit and output the EIZO monitor setting.

Select the Indicator, Hybrid Gamma PXL, and Key Lock status.

Click "Add" to display the EIZO monitor settings window for each monitor, allowing to set the details. Select the desired check box for export and set the content.

**Note**

- To edit the setting for each monitor again, click "Value" to display the EIZO monitor settings window.
- Click ✕ to delete the setting.

- CAL Switch Mode
  Select the CAL Switch Mode to set as an object managed from the pull-down menu.
- Presence Sensor
  Select the presence sensor setting from the pull-down menu. If the setting is ON, set "Time " and "Sensitivity ".
- LEA
  Select the timing when to obtain estimated lifetime data from the pull-down menu.
- Power Save
  Select ON or OFF for the Power Save function.
- Auto Input Detection
  Select ON or OFF for the automatic signal input detection function.
- Mode Preset
  Select ON or OFF for the Mode Preset function. When ON is selected, the CAL Switch Mode not supported by calibration can be selected from the monitor side.

3. Click "OK".
4. Click "Export".
   Specify the save location and file name of the RadiCS5 batch setting file (*.radics5setting) and click "Save".

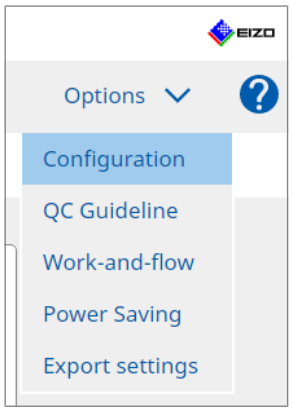
**Note**

- For more information on procedures to import an export file as a group policy into RadiNET Pro, refer to the RadiNET Pro user's manual.

## 8.4 RadiCS Basic Setting

Configure RadiCS Basic setting.

1. Select "Configuration" from "Options".



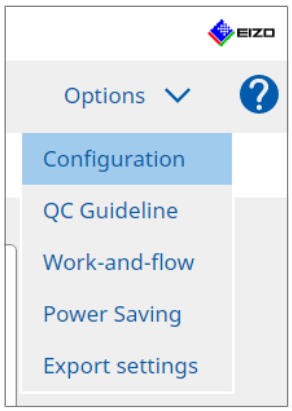

   The setting window appears.
2. Click "General".
   The basic settings window appears in the right pane.

3. Set each item.
   **Password**
   Click "Change..." to change the password. For details, see 8.5 Changing Password [▶ 161].
   **Illuminance**
   Select the check box to display the illuminance value on the home window.
   **SelfQC History**
   Obtains only the histories of monitors managed of all monitors connected and shows them in "History List".
   **Tester**
   Enable this check box if you want to save the tester registered when the task was executed and use it for subsequent tests. If the check box is disabled, the last registered tester will not be displayed, and the user currently logged into the OS will be displayed as the tester.
   **Monitor Detection**
   – Automatically detect at RadiCS startup and when monitor configuration changes are made
     When the check box is selected, automatic detection will be performed upon startup or when a monitor configuration change has been detected.
   – Detect CuratOR monitors
     Check the check box ahead of time if detecting CuratOR monitors.
   **Language**
   Select the language to be displayed on RadiCS from the pull-down menu.
   **Loglevel**
   Select the log level from the pull-down menu.
   **Remote Setting**
   Set the connection to RadiNET Pro. For details, see 8.3 Connecting to RadiNET Pro [▶ 157].
4. Click "Save".
   The settings are applied.

## 8.5 Changing Password

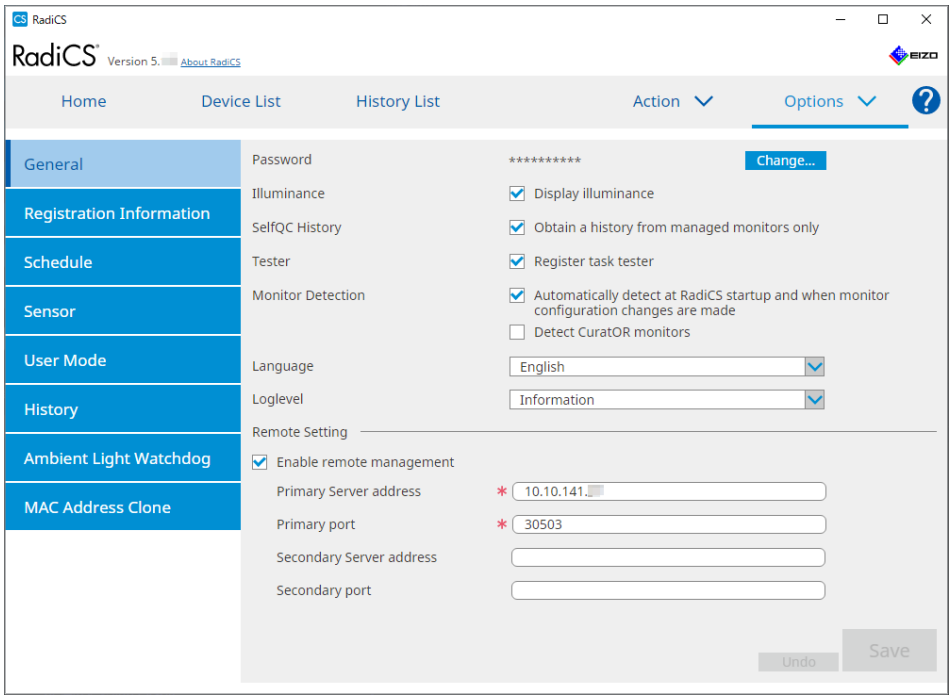
The password is changed that is required when starting the Administrator mode of RadiCS.

1. Select "Configuration" from "Options".

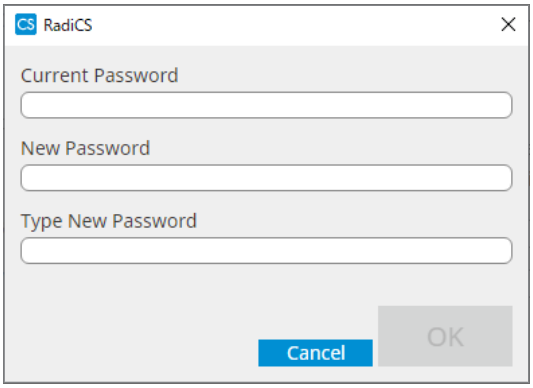



   The setting window appears.
2. Click "General".
   The Change Password window appears to the right.

3. Click "Change..." of "Password ".




The Set Password window appears.




4. Enter the following items:
   - Current Password
     Enter the current password.
   - New Password
     Enter a new password.
   - Type New Password
     Reenter the new password.

| **Attention** |
| --- |
| • Set the password to be between 6 to 15 alphanumeric characters. |

5. Click "OK".
6. Click "Save".
   The changed password is applied.

| **Attention** |
| --- |
| • If you forget the password, the software must be reinstalled. Uninstalling the software and then reinstalling it in the same folder resets the password. |

### 8.5.1 Changing the password during installation

You can change the Administrator mode password during installation using the file downloaded from RadiNET Pro or the RadiCS DVD-ROM.

| Attention |
| --- |
| • RadiCS LE does not provide these functions.<br>• Not supported on the Mac version. |

1. If you downloaded from RadiNET Pro, unzip the file (EIZO_RadiCS_v5.x.x.x.zip or xxxxx_EIZO_RadiCS_v5.x.x.x.zip).
2. Open "RadiCSInstallParam.xml" with an application like Notepad and specify the password for Administrator mode startup.
   Enter the password between the <RadiCSPassword> tag and </RadiCSPassword> tag.

| Attention |
| --- |
| • Set the password to be between 6 to 15 alphanumeric characters. |

3. Save the "RadiCSInstallParam.xml" file.

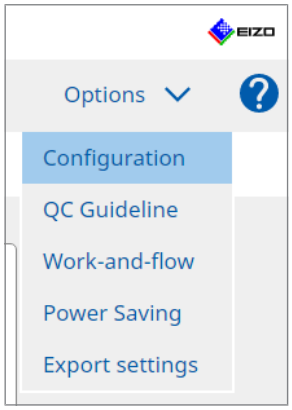
| Note |
| --- |
| • Please save the installation file for backup purposes in a shared folder or other location as needed. |

4. Follow the steps in Installing from the downloaded file [▶ 15] to install.

## 8.6 Configuring User Mode Display Setting

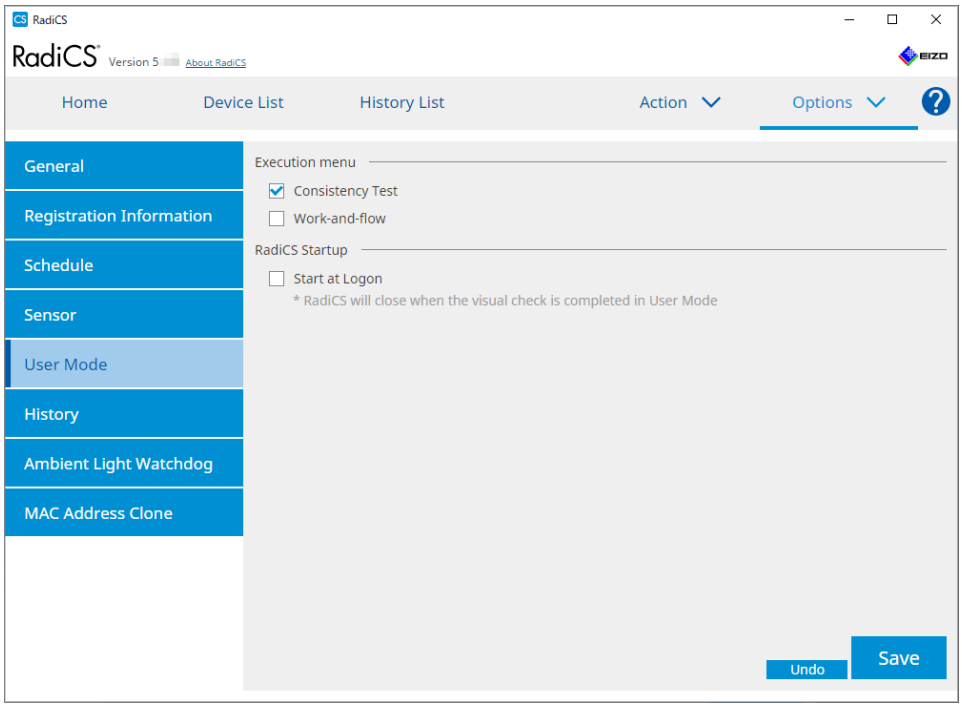
Set additional items to be displayed in User mode.

1. Select "Configuration" from "Options".




The setting window appears.

2. Click "User Mode".




The User Mode settings window appears to the right.

3. Select the "Consistency Test", "Work-and-flow" check boxes to be displayed in User mode.

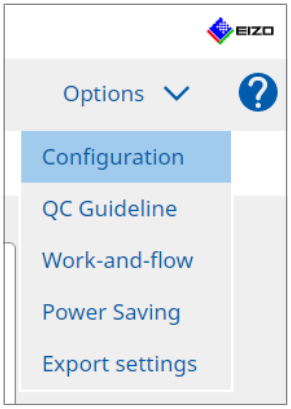
| Note |
| --- |
| • The selected item is displayed in "Action" of User mode. |

4. Click "Save".
The settings are applied.

## 8.7 Set RadiCS to start at logon

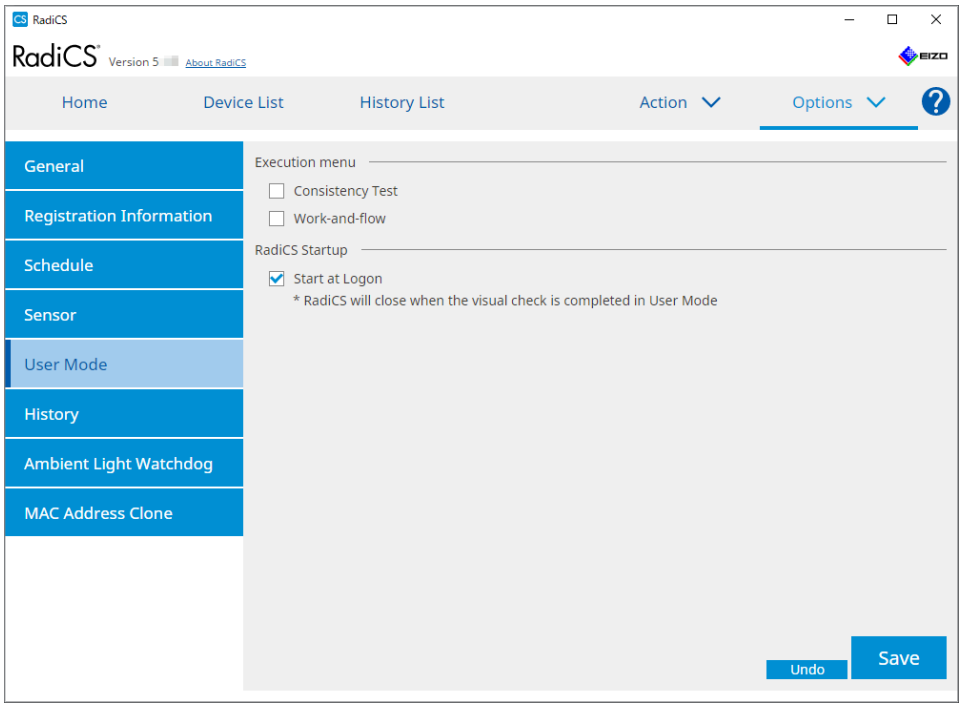
This setting configures RadiCS to launch automatically when you log on to your computer.

1. Select "Configuration" from "Options".




The setting window appears.

2. Click "User Mode".




The User Mode settings window appears to the right.

3. If you want to start RadiCS at logon, select the "Start at Logon" check box.
4. Click "Save".
   The setting is applied and RadiCS launches automatically the next time you log on.

## 8.8 Replacing the MAC address of the monitor (MAC Address Clone)

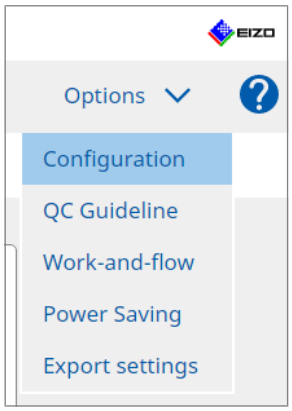
By enabling the MAC Address Clone function, you can temporarily replace the MAC address of an EIZO monitor with the authenticated MAC address of the computer, provided that the monitor is equipped with a USB LAN adapter function.

In a network environment that uses MAC address authentication, you can establish a wired network connection to the network via the LAN adapter built into the EIZO monitor from a computer that has been authenticated with its MAC address.

| **Attention** |
| --- |
| • Not supported on Mac version. |

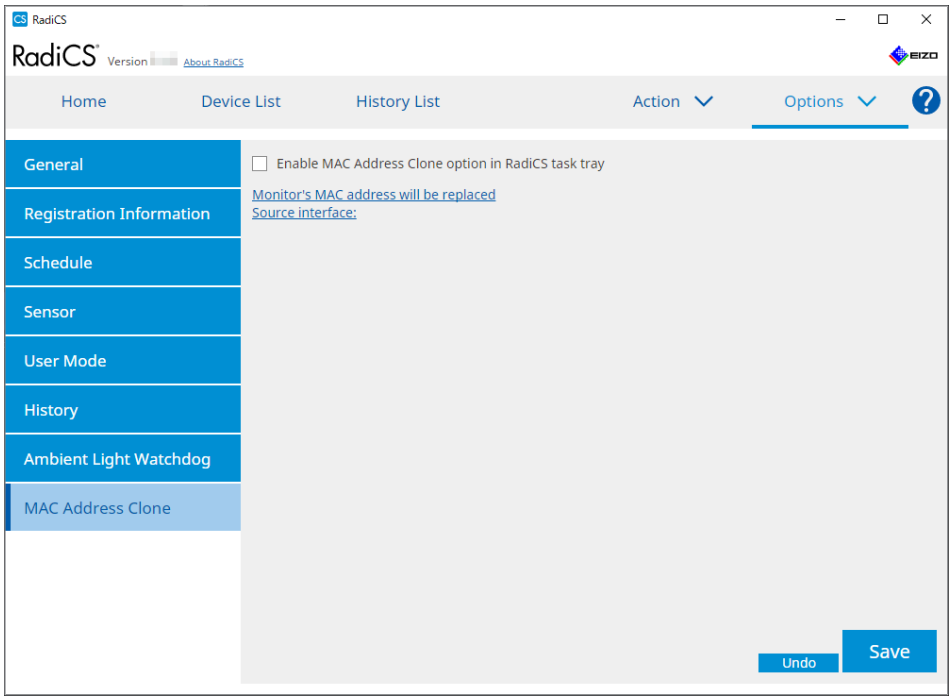
1. Connect the monitor and computer to which the MAC address is to be replaced with a USB-C cable.

2. Select "Configuration" from "Options".



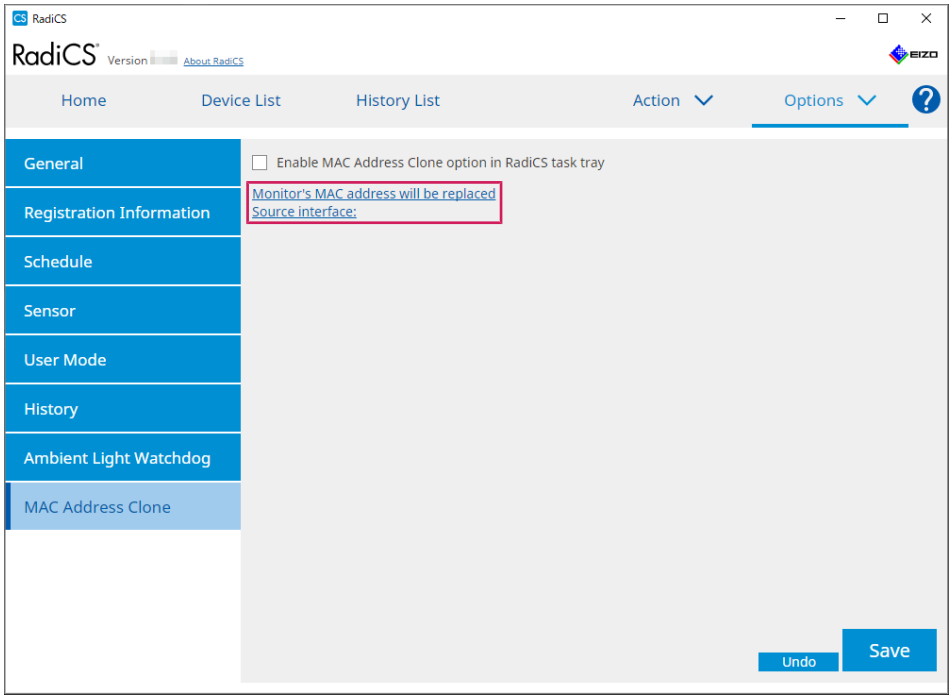

The setting window appears.

3. Click "MAC Address Clone".



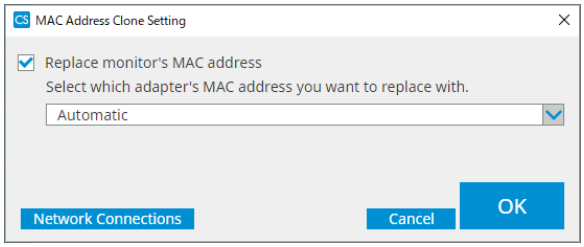

The right screen will display the current settings for the MAC Address Clone.

4. Click on the link.




The MAC Address Clone setting window appears.

5. Select the "Replace monitor's MAC address" check box. In addition, select which adapter's MAC address to replace from the pull-down list.




**Attention**

- Click "Network Connections" to display the Windows Network Connections screen.

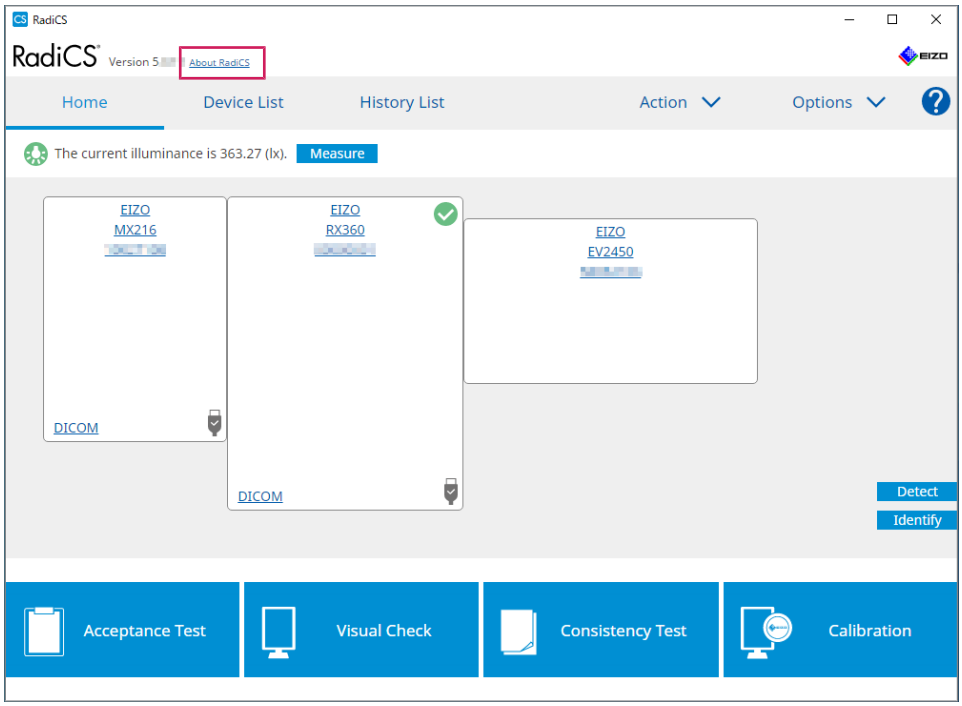
6. Click "OK".
7. To display the MAC Address Clone settings screen from the task tray, enable the "Enable MAC Address Clone option in RadiCS task tray" check box.
8. Click "Save".
   The settings are applied.

## 8.9 Confirming RadiCS Information (About RadiCS)

You can view the following information on the software currently used:

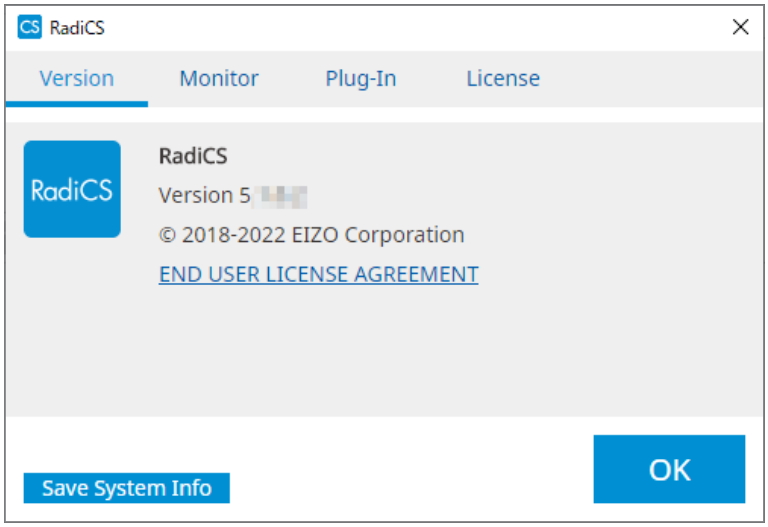
- Version
  Displays the software version information.
- Monitor
  Shows the model name of monitor supporting Hardware Calibration.
- Plug-In
  Displays the plug-in information.
- License
  Shows the License information.

1. Click "About RadiCS".




Shows the RadiCS version information window.

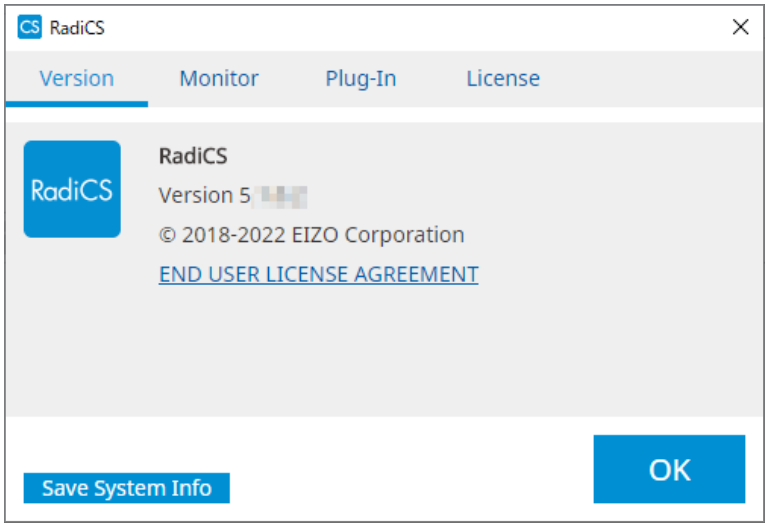
2. Select a tab whose contents you want to view.



### 8.9.1 Acquiring System Logs

We may have to ask you to submit the system logs for solving a problem.

1. Click "About RadiCS".
2. Click "Save System Info".




The System Information Acquisition window appears.

3. Click "OK".
4. Specify the save location and file name (*.zip) and click "Save".
   To submit the log file, submit the entire file to your local EIZO representative.

## 8.10 Functions Limited to Specific Monitors

RadiCS includes functions that only work with specific monitors.

The specific monitors are shown below.

- LL580W
- LX1910[*1]
- LX550W

[*1] Create / Restore Backup Data is not supported

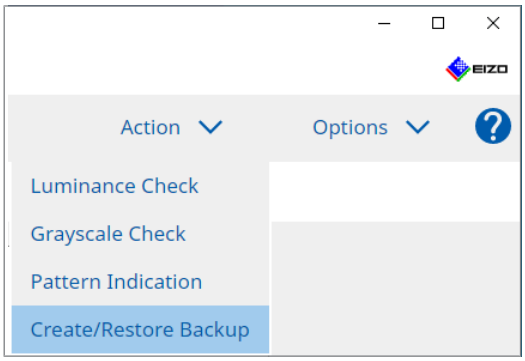
| Attention |
| --- |
| • Not supported on Mac version. |

### 8.10.1 Create / Restore Backup Data

Obtains the monitor status and saves it in a backup file. In addition, it restores the monitor status from the saved backup file.

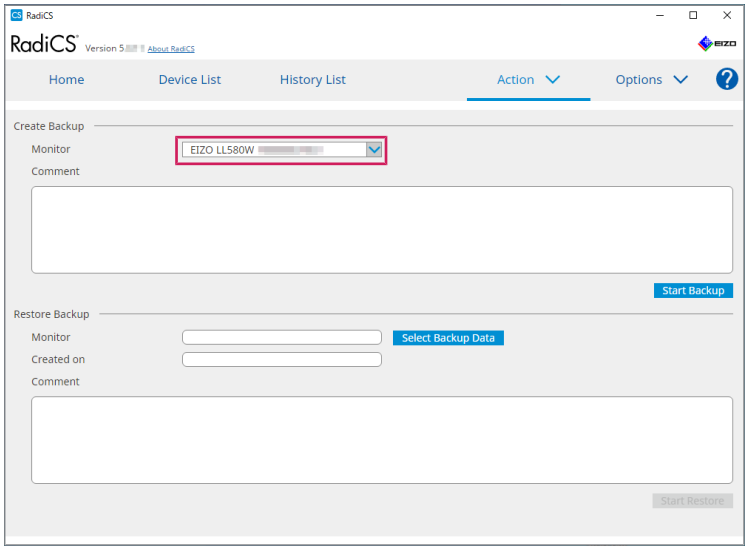
#### 8.10.1.1 Create backup data

1. Select "Create/Restore Backup" from "Action".



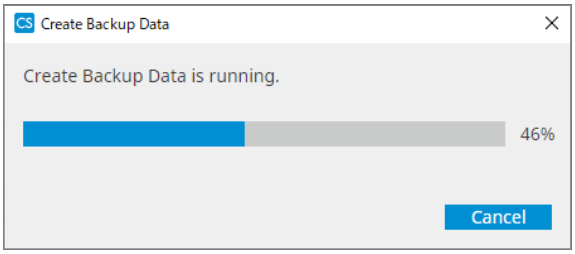

The screen to create / restore backup data appears.

2. From the pull-down menu, select the monitor for which you want to create a backup.

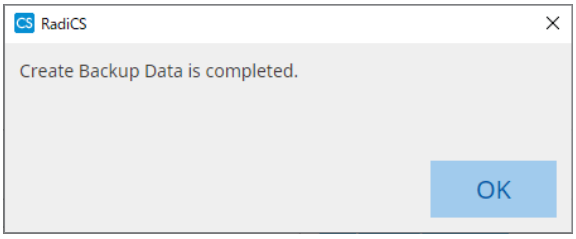



3. Enter any necessary comments, and click "Start Backup".
The screen for specifying the file destination appears.

4. Specify the file name and destination, and click "Save".
   This starts the backup. Progress is displayed on the screen during this process.

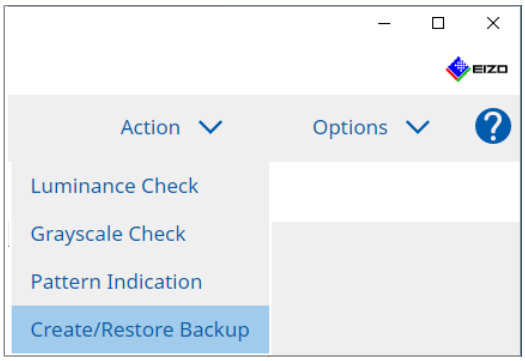



5. When the completion message appears, click "OK".



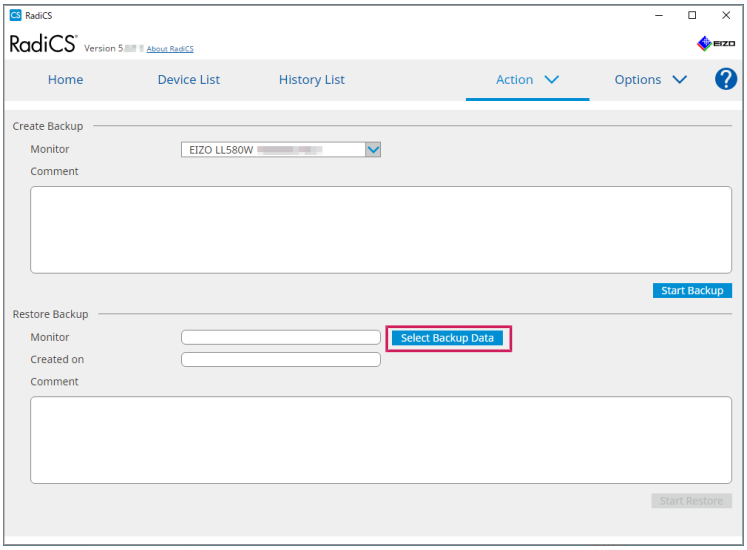

#### 8.10.1.2 Restore the monitor status from the saved backup file

1. Select "Create/Restore Backup" from "Action".




   The screen to create / restore backup data appears.

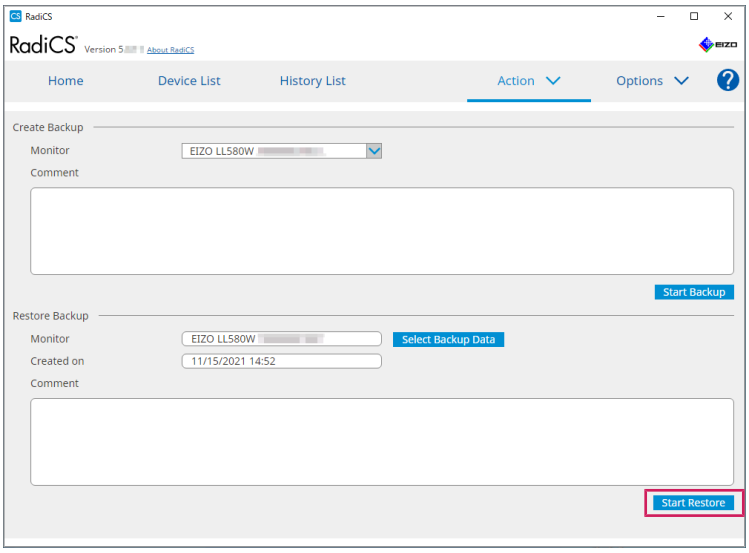
2. Click "Select Backup Data".



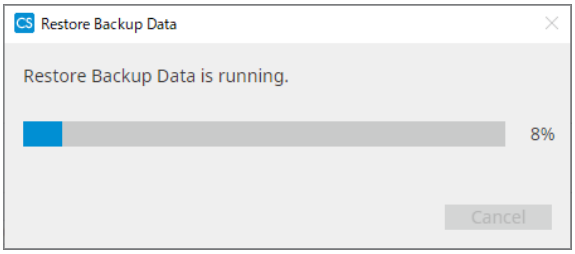

   The file selection screen appears.

3. Select the backup data to restore, then click "Open".

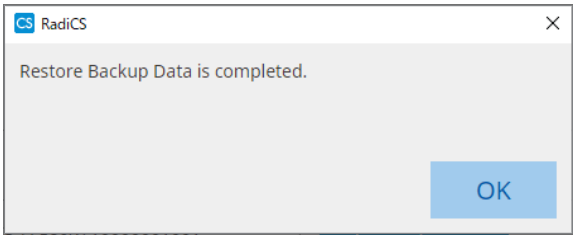
4. Click "Start Restore".




This starts data restoration. Progress is displayed on the screen during this process.




5. When the completion message appears, click "OK".




**Attention**

- Do not perform any of the following operations during restoration. This could cause the monitor to be damaged and be unable to be recovered from RadiCS.
  - Pulling out or inserting the communication cable or signal cable
  - OSD operations on the monitor
  - Turning the monitor off

### 8.10.2 Extract Calibration Data

If there is no calibration history data for the target monitor in RadiCS, then create a RadiCS calibration history from the calibration history data saved in the monitor when it was shipped from the factory. Or, create the standards for Hands-off Check and register them.

This function is automatically performed by RadiCS when detecting a monitor.

# 9 Information

This chapter provides the following information:

- Notes concerning the monitor quality control standards (QC guidelines) used by RadiCS.
- Precautions for setting up a test in RadiCS according to each monitor quality control standards (QC guidelines).

## 9.1 Description of Standards

### 9.1.1 Quality Control Standards for Digital Imaging for Medical Display Monitors (Monitor Quality Control Standards)

**IEC 62563-2: 2021**

"Medical electrical equipment - Medical image display systems - Part 2: Acceptance and constancy tests for medical image displays" issued by the International Electrotechnical Commission. This standard uses the evaluation method of IEC 62563-1 to specify test criteria, frequency, category classification, etc.

**Note**

- "IEC 62563-2" in RadiCS includes the following.

| Standard / Guideline references | QC guideline (Abbreviation) |
|---|---|
| Category I-A | IEC 62563-2 Category I-A |
| Category I-B | IEC 62563-2 Category I-B |
| Category II[*1] | IEC 62563-2 Category II for Diagnosis |
| | IEC 62563-2 Category II for Viewing |

[*1] Category II is divided into two categories in RadiCS because the evaluation contents and judgment criteria are different for diagnostic and viewing purposes.

**AAPM On-line Report No. 03: 2005**

"Assessment of Display Performance for Medical Imaging Systems" formulated by Task Group (TG) 18 of American Association of Physicists in Medicine. It defines consistency tests and acceptance tests for monitors. Monitors are classified into "Primary" and "Secondary" depending on the intended use.

**Note**

- "AAPM" used in RadiCS means "AAPM On-line Report No. 03".

**ACR-AAPM-SIIM Practice Guideline for Determinants of Image Quality in Digital Mammography: 2012**

This guideline was formulated collaboratively by specialists in mammography and medical physics who represent the American College of Radiology (ACR), American Association of Physicists in Medicine (AAPM), and Society for Imaging Informatics in Medicine (SIIM). The Mammography Quality Standards Act (MQSA) obliges the quality control for mammography diagnostic equipments in the United States. This Act, which went into effect in 1992, is aimed at film based analog systems, and is being revised for digital systems that become popular recently. This guideline is positioned as one of proposals by ACR for such rework. The section on monitors covers diagnostic (Primary) use. It does not cover the concepts of acceptance tests or consistency tests. This was revised in 2012.

**Note**

- RadiCS with "ACR" indicates that it has been tested with additional quality control elements based on the ACR-AAPM-SIIM Practice Guideline for Determinants of Image Quality in Digital Mammography (hereinafter referred to as ACR Mammo) (the evaluation item and standard are selected from the ACR-AAPM-SIIM Practice Guideline for Determinants of Image Quality in Digital Mammography: 2012 (hereinafter referred to as the Technical Standard) and AAPM On-line Report No. 03:2005).

**New York State Department of Health Bureau of Environmental Radiation Protection Guide for Radiation Safety / Quality Assurance Program Primary Diagnostic Monitors**

The guidelines describe the types and extension of information and criteria used by the New York State Department of Health Bureau of Environmental Radiation Protection to evaluate Primary Diagnostic Monitor (PDM) in facilities as a part of the radiation safety and quality assurance program.

**Note**

- Term "NYS PDM-***" in RadiCS refers to "New York State Department of Health Bureau of Environmental Radiation Protection Guide for Radiation Safety/Quality Assurance Program Primary Diagnostic Monitors". In RadiCS, contents are added by referring partially to AAPM On-line Report No. 03.

| Standard / Guideline references | QC guideline (Abbreviation) |
|---|---|
| Not for mammography | NYS PDM – Diagnostic |
| For mammography | NYC PDM – Clinical sites |

**NYC Quality Assurance Guidelines for Primary Diagnostic Monitors: 2015**

Refers to the "Guidance related to quality assurance for Primary Diagnostic Monitor (PDM)" based on the health regulations of New York city provided by the New York City Health Department’s Office of Radiological Health.

**Note**

- The term "NYC PDM-***" in RadiCS refers to "NYC Quality Assurance Guidelines for Primary Diagnostic Monitors: 2015". In RadiCS, contents are added by referring partially to AAPM On-line Report No. 03.

| Standard / Guideline references | QC guideline (Abbreviation) |
|---|---|
| For hospitals, medical centers, imaging centers, radiologist offices | NYC PDM – Hospitals |
| For all other clinical sites, including chiropractic offices, medical doctor offices, orthopedic offices | NYC PDM – Clinical sites |
| For mammography facilities | NYC PDM – Mammography |

**ONR 195240-20: 2017**

"Image Quality Assurance in X-ray Diagnosis - Part 20: Acceptance test and consistency test for image display devices" formulated by the Austrian Standards Institute. This standard is based on German DIN 6868-157 and QS-RL standards, with the Institute’s own judgment and interpretation added to the compilation. Compared with the 2008 edition, parts of test patterns, evaluation methods, judgment standards, etc. to be used have been modified in the new edition.

**Note**

- The term "ONR 195240-20 **" in RadiCS refers to "Image Quality Assurance in X-ray Diagnosis - Part 20: Acceptance test and consistency test for image display devices: 2017".

| Standard / Guideline references | QC guideline (Abbreviation) |
|---|---|
| Mammography: Application Category A | ONR 195240-20 Application Category A Mammo |
| Application Category A | ONR 195240-20 Application Category A |
| In dentistry: Application Category B | ONR 195240-20 Application Category B Dentistry |
| Application Category B | ONR 195240-20 Application Category B |

**DIN 6868-157: 2022**

"Image quality assurance in diagnostic X-ray – Part 157: X-ray Ordinance Acceptance and Consistency Tests of image display systems in their environment" formulated by the German Institute for Standardization (Deutsches Institut für Normung e.V). The standard is intended to replace the preceding DIN V 6868-57 standard that defines acceptance testing and the corresponding chapters of QS-RL and PAS1054 (see below) that specifies criteria by body part and capture method, consistency test items, and frequencies. Conformance to the international standard is also one of the reasons of revision and many of the evaluation methods and test patterns specified in IEC 62563-1 (or DIN EN 62563-1) have been adapted. There are also original approaches such as definition of room category and setting down of upper limit of illuminance according to the application. RadiCS reflects relevant items according to "QS-RL Rundschreiben (TOP C 04 der 74. Sitzung des LA RöV im Mai 2015, TOP C 07 der 75. Sitzung des LA RöV im November 2015)".

**Note**

- "DIN 6868-157" shown in RadiCS includes the followings.

| Standard / Guideline references | QC guideline (Abbreviation) |
|---|---|
| DIN 6868-157 I. Mammography | DIN 6868-157 I. Mammography |
| DIN 6868-157 II. Mammographic stereotaxy | DIN 6868-157 II. Mammographic stereotaxy |
| DIN 6868-157 III. Projection radiography (thorax, skeleton, abdomen) | DIN 6868-157 III. Projection radiography |
| DIN 6868-157 IV. Fluoroscopy, all applications | DIN 6868-157 IV. Fluoroscopy, all applications |
| DIN 6868-157 V. Computed tomography | DIN 6868-157 V. Computed tomography |
| DIN 6868-157 VI. Digital volume tomography(dental), intraoral X-ray diagnostics with dental tubehead, panoramic radiographs, cephalometric radiographs of the skull, Dental radiographs of a skull overview, Hand radiographs for skeletal growth determination | DIN 6868-157 VI. Digital volume tomography (dental) etc. in RK 5 |
| DIN 6868-157 VII. Intraoral X-ray diagnostics with dental tubehead, panoramic radiographs, cephalometric radiographs of the skull, Dental radiographs of a skull overview, Hand radiographs for skeletal growth determination (The interval of the measuring tests can be extended to five years on the condition that the requirements specified in TOP C 07 der 75. Sitzung des LA RöV are satisfied.) | DIN 6868-157 VI. Dental X-ray equipment etc. in RK 5 (five-year interval) |
| DIN 6868-157 VII. Intraoral X-ray diagnostics with dental tubehead, panoramic radiographs, cephalometric radiographs of the skull, Dental radiographs of a skull overview, Hand radiographs for skeletal growth determination | DIN 6868-157 VII. Intraoral X-ray diagnostics (dental) etc. in RK6 |
| DIN 6868-157 VIII. Viewing | DIN 6868-157 VIII. Viewing |

**DIN V 6868-57: 2001**

"Image Quality Assurance in X-ray Diagnosis - Part 57: Acceptance test for image display devices" formulated by the German Institute for Standardization (Deutsches Institut für Normung e.V). Image display devices are divided into three categories. "Application Category A" includes image display devices used for the diagnosis of images of high spatial and contrast resolution. "Application Category B" includes image display devices for diagnosis which are not classified in "Application Category A" and image display devices for image viewing.

**Quality Control Manual for Digital Mammography: 2017**

A quality control manual for digital mammography systems written by the Japan Central Institute on Quality Assurance of Breast Cancer Screening, a nonprofit organization, in Japan. This NPO studies and manages quality control of mammography.

| Note |
| --- |
| • "DMG QC Manual" or "DMG QCM" in RadiCS refers to "Quality Control Manual for Digital Mammography". Note that "Regular Control Point" or "Daily Control Point" written in the DMG QCM is expressed as "Consistency Test" or "Visual Check" on RadiCS. |

**European Guidelines for Quality Assurance in Breast Cancer Screening and Diagnosis Fourth Edition - Supplements: 2013**

This guideline was issued by the European Commission in cooperation with EUREF (European Reference Organization for Quality Assured Breast Screening and Diagnostic Services), EBCN (European Breast Cancer Network), and EUSOMA (European Society of Mastology). It applies to mammography systems as a whole and chapter 2 deals with monitors. Supplements were added in 2013. Different conditions are set for monitors for diagnostic and for reference use.

| Note |
| --- |
| • "EUREF" written on RadiCS means "European Guidelines for Quality Assurance in Breast Cancer Screening and Diagnosis Fourth Edition - Supplements". |

**JESRA X-0093*B$^{-2017}$: 2017**

"Quality Assurance (QA) Guideline for Medical Imaging Display Systems" prepared by Japan Medical Imaging and Radiological Systems Industries Association (JIRA). It was published in 2005 and revised in 2010 and 2017. This guideline specifies the acceptance tests and consistency tests. Also, in this guideline, the organization can omit the acceptance test by substituting it with the shipment test reports provided by manufacturers. In the 2017 revision, the previous "Grade 1" was changed to "Grade 1B", and the new "Grade 1A" was added as the higher-level judgment criteria. The organization must judge which grade level is to be used for management depending on the intended use.

| Note |
| --- |
| • "JESRA" used in RadiCS means "JESRA X-0093". |

**IPEM Report 91: 2005**

"Recommended Standards for the Routine Performance Testing of Diagnostic X-ray Imaging Systems" formulated by Institute of Physics and Engineering in Medicine in the UK. It applies to diagnostic X-ray imaging systems as a whole including image display devices but does not include MR or ultrasonic systems. The items related to monitors were added when this standard was revised from Report 77. It mainly defines consistency tests.

| Note |
| --- |
| • "IPEM" used in RadiCS means "IPEM Report 91". |

**Qualitätssicherungs-Richtlinie (QS-RL): 2007**

"Guideline for implementing quality assurance of the X-ray systems for diagnostic and medical treatment purposes according to chapters 16 and 17 of the X-ray Ordinance". This defines the details of the quality assurance of general X-ray systems obliged by the X-ray Ordinance (for diagnostics: chapter 16, for medical treatment: chapter 17). DIN V 6868-57 is supposed to be referred on basic test methods for diagnostic image display devices. Limiting values such as the minimum value of the maximum luminance and the items/ frequency of the consistency test are added to the contents of DIN V6868-57 that defines only the acceptance test. Although the classification of image display devices conforms to DIN V 6868-57 (Category A, B), stricter criteria are established for mammography equipments by reference to PAS1054 "Requirements and testing of digital mammographic X-ray equipment", which is the standard issued by the German Institute for Standardization.

| Note |
| --- |
| • "QS-RL" used in RadiCS means "Qualitätssicherungs-Richtlinie: 2007". "Application Category A Mammo" means PAS1054 is also complied with. |

### 9.1.2 Other Standards

**DICOM PS 3.14: 2000**

"Digital Imaging and Communications in Medicine (DICOM) Part 14: Grayscale Standard Display Function" formulated by NEMA (National Electrical Manufacturers Association) in the US. It defines the grayscale characteristics to be equipped in films and monitors for the display of grayscale images as GSDF: Grayscale Standard Display Function. More details on the evaluation of compliance for this standard are specified in other policies and standards, such as AAPM On-line Report No. 03.

| Note |
| --- |
| • "DICOM Part 14 GSDF" used in RadiCS means "The grayscale standard display function defined in DICOM PS 3.14". |

**CIE Pub.15.2: 1986**

"Colorimetry, Second Edition" published by Commission Internationale de l' Eclairage. It recommends CIELAB(L*a*b*) and CIELUV(L*u*v*) that are uniform color spaces and uses color difference formulas to evaluate the difference of two colors quantitatively.

| Note |
| --- |
| • "CIE" used in RadiCS means "Display formulas with L* formula". |

**SMPTE RP133: 1991**

"Specifications for Medical Diagnostic Imaging Test Pattern for Television Monitors and Hard-Copy Recording Cameras" proposed by Society of Motion Picture and Television Engineers in the US.

| Note |
| --- |
| • "SMPTE" used in RadiCS means "Test patterns created in reference to SMPTE RP133 specifications". |

**Basic QC, Basic Mammo QC, Basic Mammo QC for Remote, Basic QC Primary, Basic QC Primary for Remote, Basic QC Secondary, Basic QC Secondary for Remote, Pathology350, Pathology450**

The setting specific to RadiCS used for monitor management that does not comply with standards or guidelines established in each country.

## 9.2 RadiCS Software

### 9.2.1 Prerequisite

**RadiCS software**

We have long developed monitors. With those skills, knowledge and measuring data, we have developed RadiCS for users of digital imaging for medical diagnosis to manage the quality of monitors efficiently according to our interpretation of the quality control standard for each digital imaging for medical monitor.

Each digital imaging for medical monitor evaluation standard defines the change of clinical image use and monitor luminance, as well as measurement devices. Having only RadiCS

will not meet all the conditions. Read thorough the related standards and test each item according to the conditions.

A setting value for each standard can be changed and testing conditions can be set with several standards.

To maintain and manage image quality according to the standards and the situation, follow the monitor quality control standards and use RadiCS.

Monitor judgment by RadiCS is not to ensure each monitor quality control standard.

This product includes open source software.

If the open source software contains a product for which usage us granted under a GPL (GNU GENERAL PUBLIC LICENSE) license, EIZO Corporation will, in line with the GPL usage license conditions, provide the source code for corresponding GPL software via a medium, such as CD-ROM, at a cost to individuals and organizations who make contact via the following contact information for a minimum period of three years after purchase of the product.

We will also provide the source code for corresponding LGPL (GNU LESSER GENERAL PUBLIC LICENSE) software of products that include LGPL software licensed under the LGPL in the same manner as stated above.

Contact information

www.eizoglobal.com/contact/index.html

*Contact your local EIZO representative.

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### 9.2.2 Correlation Between RadiCS and Monitor Quality Control Standards

The RadiCS software interprets and supports each monitor quality control standard as described below. Use this information when setting up tests in RadiCS.

**IEC 62563-2**

**RadiCS Setup**

| | Acceptance Test | | | |
|---|---|---|---|---|
| | **Category I-A** | **Category I-B** | **Category II for Diagnosis** | **Category II for Viewing** |
| Pattern Check (Used pattern) | TG18-OIQ<br>TG18-MP<br>TG18-UN80<br>TG18-UN10 | TG18-OIQ<br>TG18-MP<br>TG18-UN80<br>TG18-UN10 | TG18-OIQ<br>TG18-MP<br>TG18-UN80 | TG18-OIQ<br>TG18-MP<br>TG18-UN80 |
| Luminance Check | L'max > 450cd/$m^2$<br>L'max / L'min > 350<br>Lamb < Lmin / 0.67 | L'max > 350cd/$m^2$<br>L'max / L'min > 250<br>Lamb < Lmin / 0.67 | L'max > 150cd/$m^2$<br>L'max / L'min > 100 | L'max > 150cd/$m^2$<br>L'max / L'min > 100 |
| Grayscale Check | Target error rate < 10 % of GSDF<br>Grayscale chromaticity delta u'v' < 0.010 | Target error rate < 10 % of GSDF<br>Grayscale chromaticity delta u'v' < 0.010 | Target error rate < 20 % of GSDF<br>Grayscale chromaticity delta u'v' < 0.015 | Target error rate < 20 % of GSDF |

| | Acceptance Test | | | |
|---|---|---|---|---|
| | **Category I-A** | **Category I-B** | **Category II for Diagnosis** | **Category II for Viewing** |
| | (5.00cd/m$^2$ or more) | (5.00cd/m$^2$ or more) | (5.00cd/m$^2$ or more) | |
| Uniformity Check | Grayscale 204<br>(Lmax-Lmin) / (Lmax+Lmin) x 200 < 20 %<br>Grayscale 204<br>Δu'v' < 0.010 | Grayscale 204<br>(Lmax-Lmin) / (Lmax+Lmin) x 200 < 20 %<br>Grayscale 204<br>Δu'v' < 0.010 | Grayscale 204<br>(Lmax-Lmin) / (Lmax+Lmin) x 200 < 30 %<br>Grayscale 204<br>Δu'v' < 0.015 | Grayscale 204<br>(Lmax-Lmin) / (Lmax+Lmin) x 200 < 30 % |
| Multi-monitor | ΔL'max < 10 %<br>Grayscale 204<br>Δu'v' < 0.010 | ΔL'max < 10 %<br>Grayscale 204<br>Δu'v' < 0.010 | ΔL'max < 20 %<br>Grayscale 204<br>Δu'v' < 0.015 | ΔL'max < 20 % |

| | Consistency Test | | | |
|---|---|---|---|---|
| | **Category I-A** | **Category I-B** | **Category II for Diagnosis** | **Category II for Viewing** |
| Pattern Check<br>(Used pattern) | TG18-OIQ<br>TG18-MP<br>TG18-UN80<br>TG18-UN10 | TG18-OIQ<br>TG18-MP<br>TG18-UN80<br>TG18-UN10 | TG18-OIQ<br>TG18-MP<br>TG18-UN80 | TG18-OIQ<br>TG18-MP<br>TG18-UN80 |
| Luminance Check | L'max > 450cd/m$^2$<br>L'max / L'min > 350<br>Lamb / Lmin < 0.67 | L'max > 350cd/m$^2$<br>L'max / L'min > 250<br>Lamb / Lmin < 0.67 | L'max > 150cd/m$^2$<br>L'max / L'min > 100 | L'max > 150cd/m$^2$<br>L'max / L'min > 100 |
| Grayscale Check | Target error rate <<br>10 % of GSDF | Target error rate <<br>10 % of GSDF | Target error rate <<br>20 % of GSDF | Target error rate <<br>20 % of GSDF |
| Uniformity Check | - | - | - | - |
| Multi-monitor | ΔL'max < 10 % | ΔL'max < 10 % | ΔL'max < 20 % | ΔL'max < 20 % |

**IEC 62563-2: 2021 and RadiCS**

**Pattern Check**

RadiCS prepares the patterns based on check results for respective compatible resolutions.

**Luminance Check**

The standard includes an equality sign in each judgment condition but RadiCS does not include an equality sign.

The "Lamb/L'min (a) relationship <0.6" equation has been changed to "Lamb<Lmin/0.67" to determine the ambient luminance.

**Grayscale Check**

The standard includes an equality sign in each judgment condition but RadiCS does not include an equality sign.

In RadiCS, "target error rate < 10 or 20 % of GSDF" indicates a contrast response test, which measures 18 points. Measured values of less than 5.00cd/m$^2$ are not used to determine "Grayscale chromaticity Δu'v'".

**Uniformity Check**

The standard includes an equality sign in each judgment condition but RadiCS does not include an equality sign.

It describes how to use the TG18-UNL80 pattern, but RadiCS displays a 10 % display area of the window at grayscale 204 in the middle and corner of the screen, and measures the center of the window.

**Sensors**

Noncontact and contact measurement devices can be used in IEC 62563-2.

**Multi-monitor**

The standard includes multi-monitor judgment and includes an equality sign, but RadiCS does not include an equality sign.

**Cautions**

Although Category II is not classified in the standard, RadiCS divides it into two categories for convenience, since the evaluation contents/judgment criteria differ between diagnostic and viewing use. Note that Category III in the standard is not implemented in RadiCS.

**AAPM**

**RadiCS Setup**

| | Acceptance Test | |
|---|---|---|
| | **Primary** | **Secondary** |
| Pattern Check<br>(Used pattern) | Black<br>TG18-QC<br>TG18-AD<br>TG18-UN80<br>TG18-AFC<br>TG18-CT<br>White | Black<br>TG18-QC<br>TG18-AD<br>TG18-UN80<br>TG18-AFC<br>TG18-CT<br>White |
| Luminance Check | L'max / L'min > 250<br>L'max > 170 cd/m$^2$<br>ΔL'max < 10 %[*1] | L'max / L'min > 100<br>L'max > 100 cd/m$^2$<br>ΔL'max < 10 %[*1] |
| Grayscale Check | Target error rate < 10 % of GSDF | Target error rate < 20 % of GSDF |
| Uniformity Check | Grayscale: 204, 26 [*2]<br>Grayscale: 204<br>Δu'v' < 0.010 | Grayscale: 204, 26 [*2] |
| Multi-monitor | ΔL'max < 10 %<br>between multiple monitors<br>Grayscale 204<br>Mean value between multiple monitors<br>Δu'v' < 0.010 | ΔL'max < 10 %<br>between multiple monitors |

| | Consistency Test | |
|---|---|---|
| | **Primary** | **Secondary** |
| Pattern Check<br>(Used pattern) | TG18-QC<br>TG18-AD | TG18-QC<br>TG18-AD |

| | Consistency Test | |
|---|---|---|
| | **Primary** | **Secondary** |
| | TG18-UN80<br>TG18-AFC<br>Black<br>White | TG18-UN80<br>TG18-AFC<br>Black<br>White |
| Luminance Check | L'max / L'min > 250<br>L'max > 170 cd/m$^2$<br>ΔL'max < 10 %[*1] | L'max / L'min > 100<br>L'max > 100 cd/m$^2$<br>ΔL'max < 10 %[*1] |
| Grayscale Check | Target error rate < 10 % of GSDF | Target error rate < 20 % of GSDF |
| Uniformity Check | Grayscale: 204, 26 [*2] | Grayscale: 204, 26 [*2] |
| Multi-monitor | ΔL'max < 10 %<br>between multiple monitors | ΔL'max < 10 %<br>between multiple monitors |

[*1] Lamb < Lmin / 1.5

[*2] (Lmax-Lmin) / (Lmax+Lmin) x 200 < 30 %

### Correlation between AAPM and RadiCS

#### Pattern Check

A test pattern given in AAPM cannot be applied to a monitor whose screen aspect ratio is not 1:1 without modification, since AAPM (or the test pattern) uses an aspect ratio of 1:1. Therefore, RadiCS checks a monitor being tested, and determines and generates an appropriate test pattern for each resolution supported by the monitor.

| | |
|---|---|
| TG18-QC<br>TG18-AD<br>TG18-AFC<br>TG18-CT | Equivalent to the pattern with the same name in the standard. The pattern is scaled in accordance with the screen resolution. |
| TG18-UN80 | Grayscale 204 white patterns. The same pattern of AAPM has a square frame but RadiCS does not have any because it does not need to be visible. |

#### Luminance Check

AAPM except for Lamb < Lmin includes an equality sign in each judgment condition but RadiCS does not.

The calibration setup, Lmax value will be input in the ΔL'max baseline value as an initial setup when performing a tasksetup.

L'max/L'min means AAPM LR'( = (Lmax+Lamb)/(Lmin+Lamb)).

#### Grayscale Check

AAPM includes an equality sign but RadiCS doesn't because of the target error rate is < 10 % of GSDF. This is a judgment condition for DICOM Part 14 GSDF.

The number of grayscale measuring points is fixed at 18 and is unchangeable.

The measurement result is 17 points because it is expressed as $(JND_{n+1} – JND_n)/2$.

#### Uniformity Check

AAPM includes an equality sign in each judgment condition but RadiCS does not.

AAPM uses TG18-UN80 and TG18-UN10 patterns in measurement, but these patterns cannot be applied to a monitor whose screen aspect ratio is not 1:1 without modification, since they use an aspect ratio of 1:1. Instead, RadiCS displays grayscale 204 and grayscale 26 windows equivalent to 10 % of the display area in the center of the screen and in the corners, and measures the center portion of each window.

**Sensors**

Noncontact and contact measurement devices are available in AAPM.

**Multi-monitor**

AAPM includes a determination for multiple monitors, but by default RadiCS is set not to make such a determination. If necessary, make settings as indicated in the table above. AAPM includes an equality sign but RadiCS does not.

**Cautions**

AAPM consistency testing has three types: tests that monitor users perform daily, tests that medical physicists perform or QC (quality control) technologists perform under their instructions monthly / quarterly, and tests that medical physicists perform annually. RadiCS is mainly intended for consistency testing of the second type, but pattern checks can be performed for all three types of testing.

AAPM has an item to measure geometrical distortion but RadiForce series monitors do not need to be measured because it meets the requested specification.

However, non-RadiForce monitors may be used. Therefore, the pattern check has patterns and checkpoints for geometrical distortion.

**ACR**

**RadiCS Setup**

| | Acceptance Test | Consistency Test |
|---|---|---|
| Pattern Check<br>(Used pattern) | Black<br>TG18-QC<br>TG18-AD<br>TG18-UN80<br>TG18-AFC<br>TG18-CT<br>White | Black<br>TG18-QC<br>TG18-AD<br>TG18-UN80<br>TG18-AFC<br>White |
| Luminance Check | L'max / L'min > 250<br>L'max > 420 cd/$m^2$<br>L'min >1.2 cd/$m^2$<br>Lamb < Lmin / 4 | L'max / L'min > 250<br>L'max > 420 cd/$m^2$<br>L'min >1.2 cd/$m^2$<br>Lamb < Lmin / 4 |
| Grayscale Check | Target error rate < 10 % of GSDF | Target error rate < 10 % of GSDF |
| Uniformity Check | Grayscale: 204, 26<br>(Lmax-Lmin) / (Lmax+Lmin) x 200 < 30 %<br>Grayscale: 204<br>Δu'v' < 0.010 | Grayscale: 204, 26<br>(Lmax-Lmin) / (Lmax+Lmin) x 200 < 30 %<br>Grayscale: 204<br>Δu'v' < 0.010 |
| Multi-monitor | Grayscale: 204<br>Δu'v' < 0.010 | Grayscale: 204<br>Δu'v' < 0.010 |

**Correlation between ACR and RadiCS**

**Pattern Check**

The test patterns are not introduced specifically in ACR Mammo. The same check method as AAPM is applied to RadiCS. See the AAPM item for details of the correlation with RadiCS.

**Luminance Check**

For ACR Mammo, only "L'max ≥ 400 cd/m$^2$ (recommendation: 450 cd/m$^2$)" is displayed. For the Technical Standard, "L'max ≥ 420 cd/m$^2$" is specified for mammography, so 420 cd/m$^2$ is used. In addition, other judgment standards specified by the Technical Standard are also used. The judgment conditions include an equality sign but RadiCS does not.

**Grayscale Check**

GSDF is recommended for ACR Mammo, but there is no judgment standard. For reference values, the values for AAPM and the Technical Standard are used. These include an equality sign but RadiCS does not because the target error rate is < 10 % of GSDF. This is a judgment condition for DICOM Part 14 GSDF.

The number of grayscale measuring points is fixed at 18 and is unchangeable. The measurement result is 17 points because it is expressed as $(JND_{n+1} – JND_n)/2$.

**Uniformity Check**

For ACR Mammo, the uniformity of the luminance and chromaticity is not specified. The uniformity needs to be confirmed, so conditions for RadiCS include uniformity judgment for luminance and chromaticity. The content is the same as that for AAPM. For details on the correlation with RadiCS, see the AAPM section.

**Sensors**

ACR Mammo contains nothing in particular about sensors or measurement devices. Since this standard was compiled using AAPM as a reference, sensors are handled in the same manner as AAPM.

**Multi-monitor**

For ACR Mammo, there is no multi-monitor judgment. By default, RadiCS does not perform judgment. If necessary, make settings as indicated in the table above.

**Cautions**

ACR Mammo is an educational tool to supply physicians, technicians, and physicists with extensive knowledge related to digital mammography image quality. It is not an implementation standard, a list of essential requirements, or a quality control standard. For this reason it does not cover the concepts of acceptance tests or consistency tests. However, we, who have agreed to the ACR policy, suggest support for the deficiencies in quality control with reference to the AAPM and the Technical Standard stated in ACR Mammo to achieve more practical operation.

**NYS-PDM**

**RadiCS Setup**

| | **Acceptance Test / Consistency Test [Annually]** | |
|---|---|---|
| | **NYS PDM – Diagnostic** | **NYS PDM – Mammography** |
| Pattern Check<br>(Used pattern) | - | - |
| Luminance Check | L'max / L'min > 170<br>L'max > 171 cd/m$^2$<br>Lamb < Lmin / 1.5 | L'max / L'min > 250<br>L'max > 250 cd/m$^2$<br>Lamb < Lmin / 1.5 |
| Grayscale Check | Target error rate < 10 % of GSDF | Target error rate < 10 % of GSDF |
| Uniformity Check | Grayscale: 204, 26<br>(Lmax-Lmin) / (Lmax+Lmin) x 200 < 30 % | Grayscale: 204, 26<br>(Lmax-Lmin) / (Lmax+Lmin) x 200 < 30 % |
| Multi-monitor | - | - |

| | Consistency Test [Bi-Weekly] | |
|---|---|---|
| | **NYS PDM – Diagnostic** | **NYS PDM – Mammography** |
| Pattern Check<br>(Used pattern) | Black<br>SMPTE<br>Shades of RGB<br>White | Black<br>SMPTE<br>Shades of RGB<br>White |
| Luminance Check | - | - |
| Grayscale Check | - | - |
| Uniformity Check | - | - |
| Multi-monitor | - | - |

| | Consistency Test [Quarterly] | |
|---|---|---|
| | **NYS PDM – Diagnostic** | **NYS PDM – Mammography** |
| Pattern Check<br>(Used pattern) | - | - |
| Luminance Check | L'max / L'min > 170<br>L'max > 171 cd/$m^2$<br>Lamb < Lmin / 1.5 | L'max / L'min > 250<br>L'max > 250 cd/$m^2$<br>Lamb < Lmin / 1.5 |
| Grayscale Check | Target error rate < 10 % of GSDF | Target error rate < 10 % of GSDF |
| Uniformity Check | - | - |
| Multi-monitor | - | - |

**Pattern Check**

The Shades of RGB pattern displays 18 gradation levels for each of Red, Green, and Blue for checking. Monochrome monitors cannot run (display) this pattern even if it has been specified as a display pattern.

The Bi-Weekly setting is not available in RadiCS. Specify Weekly instead. The Visual Check settings are the same as those for Bi-Weekly.

**Luminance Check**

Lamb < Lmin/1.5 is added in accordance with AAPM On-line Report No. 03.

**Grayscale Check**

Added in accordance with AAPM On-line Report No. 03.

**Uniformity Check**

Added in accordance with AAPM On-line Report No. 03.

**Sensors**

All the measurement devices can be used in accordance with AAPM On-line Report No. 03.

**Cautions**

As the guideline does not contain any description of the acceptance test, the same settings as those for the consistency test (annually) are configured.

### NYC-PDM

### RadiCS Setup

| | Acceptance Test / Consistency Test [Annually] | | |
|---|---|---|---|
| | **NYC PDM – Hospitals** | **NYC PDM – Clinical sites** | **NYC PDM – Mammography** |
| Pattern Check<br>(Used pattern) | - | - | - |
| Luminance Check | L'max / L'min > 250<br>L'max > 350 cd/m$^2$<br>Lamb < Lmin / 1.5 | L'max / L'min > 250<br>L'max > 250 cd/m$^2$<br>Lamb < Lmin / 1.5 | L'max / L'min > 250<br>L'max > 420 cd/m$^2$<br>Lamb < Lmin / 1.5 |
| Grayscale Check | Target error rate < 10 % of GSDF | Target error rate < 10 % of GSDF | Target error rate < 10 % of GSDF |
| Uniformity Check | Grayscale: 204, 26<br>(Lmax-Lmin) / (Lmax+Lmin) x 200 < 30 % | Grayscale: 204, 26<br>(Lmax-Lmin) / (Lmax+Lmin) x 200 < 30 % | Grayscale: 204, 26<br>(Lmax-Lmin) / (Lmax+Lmin) x 200 < 30 % |
| Multi-monitor | - | - | - |

| | Consistency Test [Bi-Weekly] | | |
|---|---|---|---|
| | **NYC PDM – Hospitals** | **NYC PDM – Clinical sites** | **NYC PDM – Mammography** |
| Pattern Check<br>(Used pattern) | Black<br>SMPTE<br>Shades of RGB<br>White | Black<br>SMPTE<br>Shades of RGB<br>White | Black<br>SMPTE<br>Shades of RGB<br>White |
| Luminance Check | - | - | - |
| Grayscale Check | - | - | - |
| Uniformity Check | - | - | - |
| Multi-monitor | - | - | - |

| | Consistency Test [Quarterly] | | |
|---|---|---|---|
| | **NYC PDM – Hospitals** | **NYC PDM – Clinical sites** | **NYC PDM – Mammography** |
| Pattern Check<br>(Used pattern) | - | - | - |
| Luminance Check | L'max / L'min > 250<br>L'max > 350 cd/m$^2$<br>Lamb < Lmin / 1.5 | L'max / L'min > 250<br>L'max > 250 cd/m$^2$<br>Lamb < Lmin / 1.5 | L'max / L'min > 250<br>L'max > 420 cd/m$^2$<br>Lamb < Lmin / 1.5 |
| Grayscale Check | Target error rate < 10 % of GSDF | Target error rate < 10 % of GSDF | Target error rate < 10 % of GSDF |
| Uniformity Check | - | - | - |
| Multi-monitor | - | - | - |

### Pattern Check

The Shades of RGB pattern displays 18 gradation levels for each of Red, Green, and Blue for checking. Monochrome monitors cannot run (display) this pattern even if it has been specified as a display pattern.

The Bi-Weekly setting is not available in RadiCS. Specify Weekly instead. The Visual Check settings are the same as those for Bi-Weekly.

**Luminance Check**

Lamb < Lmin/1.5 is added in accordance with AAPM On-line Report No. 03.

**Grayscale Check**

Added in accordance with AAPM On-line Report No. 03.

**Uniformity Check**

Each judgment condition includes an equality sign, but RadiCS does not.

**Sensors**

All the measurement devices can be used in accordance with AAPM On-line Report No. 03.

**Cautions**

The judgment of the luminance check has been added to each test. In addition, the judgment of the luminance ratio has been added to consistency tests (quarterly).

**ONR 195240-20**

**RadiCS Setup**

| | Acceptance Test | | | |
|---|---|---|---|---|
| | **Category A** | **Category A Mammo** | **Category B** | **Category B Dentistry** |
| Pattern Check<br>(Used pattern) | TG18-OIQ<br>TG18-UN80<br>TG18-UN10 | TG18-OIQ<br>TG18-UN80<br>TG18-UN10<br>TG18-MM1<br>TG18-MM2 | TG18-OIQ<br>TG18-UN80<br>TG18-UN10 | TG18-OIQ<br>TG18-UN80<br>TG18-UN10 |
| Illuminance judgment | ≤ 50 lx | ≤ 50 lx | ≤ 100 lx | ≤ 100 lx |
| Luminance Check | L'max / L'min > 100<br>L'max > 200 cd/ $m^2$<br>Lamb < L'max / 100 | L'max / L'min > 250<br>L'max > 250 cd/ $m^2$<br>Lamb < L'max / 100 | L'max / L'min > 40<br>L'max > 120 cd/ $m^2$<br>Lamb < L'max / 40 | L'max / L'min > 40<br>L'max > 120 cd/ $m^2$<br>Lamb < L'max / 40 |
| Grayscale Check | - | - | - | - |
| Uniformity Check | Grayscale: 204, 26<br>(Lcorner-Lcenter) / Lcenter x 100 < 25 % | Grayscale: 204, 26<br>(Lcorner-Lcenter) / Lcenter x 100 < 25 % | Grayscale: 204, 26<br>(Lcorner-Lcenter) / Lcenter x 100 < 30 % | Grayscale: 204, 26<br>(Lcorner-Lcenter) / Lcenter x 100 < 30 % |
| Multi-monitor | ΔL'max < 20 % | ΔL'max < 10 % | ΔL'max < 20 % | ΔL'max < 20 % |

| | Consistency Test | | | |
|---|---|---|---|---|
| | **Category A** | **Category A Mammo** | **Category B** | **Category B Dentistry** |
| Pattern Check<br>(Used pattern) | TG18-OIQ<br>TG18-UN80 | TG18-OIQ<br>TG18-UN80 | TG18-OIQ<br>TG18-UN80 | TG18-OIQ<br>TG18-UN80 |

| | Consistency Test | | | |
|---|---|---|---|---|
| | **Category A** | **Category A Mammo** | **Category B** | **Category B Dentistry** |
| | TG18-UN10 | TG18-UN10<br>TG18-MM1<br>TG18-MM2 | TG18-UN10 | TG18-UN10 |
| Illuminance judgment | ≤ 50 lx | ≤ 50 lx | ≤ 100 lx | - |
| Luminance Check | L'max / L'min > 100<br>L'max > 200 cd/ $m^2$<br>Lamb < L'max / 100<br>ΔLamb < 30 % | L'max / L'min > 250<br>L'max > 250 cd/ $m^2$<br>Lamb < L'max / 100<br>ΔLamb < 30 % | L'max / L'min > 40<br>L'max > 120 cd/ $m^2$<br>Lamb < L'max / 40<br>ΔLamb < 30 % | - |
| Grayscale Check | - | - | - | - |
| Uniformity Check | Grayscale: 204, 26<br>(Lcorner-Lcenter) / Lcenter x 100 < 25 % | Grayscale: 204, 26<br>(Lcorner-Lcenter) / Lcenter x 100 < 25 % | Grayscale: 204, 26<br>(Lcorner-Lcenter) / Lcenter x 100 < 30 % | - |
| Multi-monitor | ΔL'max < 20 % | ΔL'max < 10 % | ΔL'max < 20 % | - |

**ONR 195240-20: 2008 and RadiCS**

**Pattern Check**

RadiCS prepares the patterns based on check results for respective compatible resolutions.

**Luminance Check**

Lmax and Lmin in ONR 195240-20, which include ambient luminance, are equivalent to L'max and L'min in RadiCS. Lamb indicates ambient luminance, the same value as "Ls" in ONR 195240-20. The equation is transformed by changing Lmax/Ls>100 (or 40) in ONR 195240-20 into Ls<Lmax/100 (or 40). When a contact sensor is used in the monitor equipped with the illuminance sensor capable of measuring environmental illumination (see 5 Checking the Monitor Status [▶ 92]), the conversion from illuminance to brightness is automatically performed.

In RadiCS, as in accordance with the standard, no judgment will be made for Delta Lamb if the measurement value of the consistency test is 0.15 cd/$m^2$ or less and below the baseline value.

**Uniformity Check**

Luminance uniformity is determined from the ratio of difference in luminance between the center of the screen and a corner, with the center as the standard. ONR 195240-20 provides a method that uses the SMPTE pattern and another method that uses the TG18-UNL80 (or UNL10). RadiCS adopts the method that uses the TG18-UNL80 (or UNL10) pattern. It displays grayscale 204 and grayscale 26 windows (a square occupying 10 % of the total display area) in the center of the screen and corners, and measures the middle portion of the window.

All monitors compatible with RadiCS are LCD, therefore, LCD values (25 % and 30 %) are used as the judgment value. For this reason, CRT monitors are not supported.

RadiCS specifies (Lcorner-Lcenter)/Lcenter x 100<25 % (or 30 %), but this denotes ±25 % (or ±30 %), and does not include an equals sign.

**Sensors**

For acceptance tests, ONR 195240-20 defines the use of measurement devices conforming to class B or higher (DIN 5032-7) and those do not block ambient light. To perform

acceptance tests using RadiCS, only non-contact type measurement devices can be used. EIZO sensors can also be used for consistency tests.

**Multi-monitor**

ONR 195240-20 has multi-monitor judgment. If necessary, make settings as indicated in the table above. ONR 195240-20 includes an equality sign but RadiCS does not.

**Cautions**

Category A Mammo requires a minimum resolution of 2000 x 2500 for monitors used for mammography, however, RadiCS does not perform this judgment.

**DIN 6868-157**

**RadiCS Setup**

| | Acceptance Test | | | | |
|---|---|---|---|---|---|
| | **I. Mammography** | **II. Mammographic stereotaxy** | **III. Projection radiography** | **IV. Fluoroscopy, all applications** | **V. Computed tomography** |
| Pattern Check<br>(Used pattern) | TG18-OIQ<br>TG18-UN80<br>TG18-UN10<br>TG18-MP<br>TG18-LPH<br>(89,50,10)<br>TG18-LPV<br>(89,50,10) | TG18-OIQ<br>TG18-UN80<br>TG18-UN10<br>TG18-MP | | | |
| Luminance Check | L'max > 250 cd/m$^2$<br>L'max / L'min > 250 | L'max > 200 cd/m$^2$<br>L'max / L'min > 100 | L'max > 250 cd/m$^2$<br>L'max / L'min > 250 | L'max > 150 cd/m$^2$<br>L'max / L'min > 100 | |
| | Lamb < Lmin / 0.1 *1 | | | | |
| Grayscale Check | Target error rate < 10 % of GSDF | Target error rate < 15 % of GSDF | Target error rate < 10 % of GSDF | Target error rate < 15 % of GSDF | |
| Uniformity Check | Grayscale: 204, 26 (Lmax-Lmin) / (Lmax+Lmin) x 200 | | | | |
| | < 25 % | | | | |
| Multi-monitor *2 | Grayscale: 26 < 10 % | Grayscale: 26 < 20 % | | | |
| Resolution | ≥2048 x ≥2048 | ≥1024 x ≥1024 | ≥1600 x ≥1200 | ≥1024 x ≥1024 | ≥1024 x ≥1024 |

| | Acceptance Test | | |
|---|---|---|---|
| | **VI. Digital volume tomography (dental) etc. in RK 5** | **VII. Intraoral X-ray diagnostics (dental) etc. in RK 6** | **VIII. Viewing** |
| | **VI. Dental X-ray equipment etc. in RK 5 (five-year interval)*3** | | |
| Pattern Check<br>(Used pattern) | TG18-OIQ<br>TG18-UN80<br>TG18-UN10 | | - |

| | Acceptance Test | | |
|---|---|---|---|
| | VI. Digital volume tomography (dental) etc. in RK 5 | VII. Intraoral X-ray diagnostics (dental) etc. in RK 6 | VIII. Viewing |
| | VI. Dental X-ray equipment etc. in RK 5 (five-year interval)*3 | | |
| Luminance Check | L'max > 200 cd/m$^2$<br>L'max / L'min > 100 | L'max > 300 cd/m$^2$<br>L'max / L'min > 100 | - |
| | Lamb < Lmin / 0.1 *1 | | - |
| Grayscale Check | - | - | - |
| Uniformity Check | Grayscale: 204, 26 (Lmax-Lmin) / (Lmax+Lmin) x 200 | | - |
| | < 30 % | | - |
| Multi-monitor *2 | Grayscale: 26 < 30 % | | - |
| Resolution | ≥1024 x ≥768 | | - |

*1 L’min > 1.1Lamb ↔ Lmin+Lamb > 1.1Lamb ↔ Lmin > 0.1Lamb ↔ Lamb < Lmin/0.1

*2 (Lhigh-Llow)/(Lhigh+Llow) x 200

*3 The interval of the annual measuring tests can be extended to five years on the condition that the specified requirements are satisfied.

| | Consistency Test | | | | |
|---|---|---|---|---|---|
| | I. Mammography | II. Mammographic stereotaxy | III. Projection radiography | IV. Fluoroscopy, all applications | V. Computed tomography |
| Pattern Check<br>(Used pattern) | TG18-OIQ<br>TG18-UN80 | | | | |
| Luminance Check | L'max > 250 cd/m$^2$<br>L'max / L'min > 250 | L'max > 200 cd/m$^2$<br>L'max / L'min > 100 | L'max > 250 cd/m$^2$<br>L'max / L'min > 250 | L'max > 150 cd/m$^2$<br>L'max / L'min > 100 | |
| | Lamb < Lmin / 0.1 *1<br>ΔL'max < 30 %<br>ΔL'min < 30 % | | | | |
| | ΔLamb ≤ 30 % *3 | | | | |
| Grayscale Check *3 | Target error rate < 10 % of GSDF | Target error rate < 15 % of GSDF | Target error rate < 10 % of GSDF | Target error rate < 15 % of GSDF | |
| Uniformity Check | - | - | - | - | - |
| Multi-monitor *2, 3 | Grayscale: 26 < 10 % | Grayscale: 26 < 20 % | | | |
| Resolution | ≥2048 x ≥2048 | ≥1024 x ≥1024 | ≥1600 x ≥1200 *4 | ≥1024 x ≥1024 | ≥1024 x ≥1024 |

| | Consistency Test | | |
|---|---|---|---|
| | VI. Digital volume tomography (dental) etc. in RK 5 | VII. Intraoral X-ray diagnostics (dental) etc. in RK 6 | VIII. Viewing |
| | VI. Dental X-ray equipment etc. in RK 5 (five-year interval)[*5] | | |
| Pattern Check<br>(Used pattern) | TG18-OIQ<br>TG18-UN80 | | TG18-OIQ |
| Luminance Check | L'max > 200 cd/m$^2$<br>L'max / L'min > 100 | L'max > 300 cd/m$^2$<br>L'max / L'min > 100 | - |
| | Lamb < Lmin / 0.1 [*1]<br>ΔL'max < 30 %<br>ΔL'min < 30 % | | - |
| | - | - | - |
| Grayscale Check | - | - | - |
| Uniformity Check | - | - | - |
| Multi-monitor [*2] | - | - | - |
| Resolution | ≥1024 x ≥768 | | - |

[*1] L'min ≥ 1.1Lamb ↔ Lmin+Lamb ≥ 1.1Lamb ↔ Lmin ≥ 0.1Lamb ↔ Lamb ≤ Lmin/0.1

[*2] (Lhigh-Llow)/(Lhigh+Llow) x 200

[*3] If Room Category "RK3" is selected, it will be excepted from judgment. If the luminance satisfies ΔL'min < 30 %, ΔLamb < 30 % does not display or provide judgment.

[*4] ≥1024 x ≥1024 can be used until December 31, 2024 as per transition measures.

[*5] The interval of the annual measuring tests can be extended to five years on the condition that the specified requirements are satisfied.

### Correlation between DIN 6868-157 and RadiCS

#### Test requirements

To create a test result report in RadiCS, it is necessary to check and enter information of the requirements before executing the test.

- Check that the image display system has adequate ability and has been installed and configured correctly.
  (E.g., the system is for medical use, the grayscale characteristics of the image display device are GSDF, and the system has been configured and installed correctly according to the specifications.)
- Check that the specifications of the measurement device and software to be used in the test are appropriate.
  (E.g., using the measurement device of DIN 5032-7 class B or higher, acceptance test, selecting and securing the reference clinical image[*1], appropriate resolution of the test image[*2], ensuring reliability of the testing software[*2])
- Check that the environment where the test is executed has been set up.
  (E.g., turn on the power of the monitor in advance, clean the display, stabilize the ambient light, and prevent reflection.)

As DIN 6868-157 specifies not only selection of the body parts and capture methods but also illuminance that should be selected depending on the actual work and locations, so it is necessary to select the environmental illumination[*3]. RK that can be selected differs depending on the selected body part and capture method.

| Room category | Location (Work) | Illuminance (lx) |
|---|---|---|
| RK1 | Diagnostics room | ≤50 |
| RK2 | Examination rooms with immediate diagnostics | ≤100 |
| RK3 | Rooms to carry out examinations | ≤500 |
| RK4 | Viewing and treatment rooms | ≤1000 |
| RK5 | Dental diagnostic workstation | ≤100 |
| RK6 | Dental treatment room | ≤1000 |

*1 An appropriate clinical image should be selected as reference clinical image and viewed with optimum parameters. Before running RadiCS, check the quality of the image secured by the responsible operator on the application software (viewer, etc.) to be actually used for displaying the image. On the reference clinical image confirmation dialog, enter the image identification, parameters to be displayed, name of the responsible operator, and other necessary information. Enter the judgment result when performing pattern check.

*2 RadiCS displays the test image in the same resolution as that of the monitor, so each pixel of the test image corresponds to that of the monitor. As displayed image is not corrected by the software, it is possible to evaluate the monitor characteristics correctly even in measurement of grayscale characteristics such as GSDF.

*3 It may be necessary for the environmental illumination to be set appropriately in order to pass the test.

**Pattern Check**

RadiCS determines the properties to be verified and independently prepares patterns for each compatible resolution applied.

As for checking the reference clinical image, the items to be checked are displayed but the image is not displayed. As the check here is only for recording the history of check results, you need to judge with the results you checked before execution.

Although the TG18-MP pattern has been created as a pattern of 10 bits or more enabling identification of both 8 bits and 10 bits resolutions, RadiCS creates and displays it as an 8-bit pattern. An 8-bit pattern is enough to check the judgment criteria of the test items.

**Luminance Check**

In case of DIN 6868-157, luminance of ambient light should be included in the test. When a contact sensor is used in the monitor equipped with the illuminance sensor capable of measuring environmental illumination (see 5 Checking the Monitor Status [▶ 92]), the conversion from illuminance to brightness is automatically performed.

Deviation from the reference value includes an equality sign in the standard but not in RadiCS.

Therefore L’min≥1.1Lamb does not include an equality sign in RadiCS.

In RadiCS, as in accordance with the standard, no judgment will be made for Delta Lamb if the measurement value of the consistency test is 0.15 cd/m$^2$ or less and below the baseline value.

**Grayscale Check**

GSDF checking includes an equality sign in the standard but not in RadiCS.

**Uniformity Check**

In DIN 6868-157, luminance uniformity is measured at five points for less than 23 inch and nine points for 23 inch or larger, which will be selected automatically.

If a contact type sensor is used, luminance of ambient light is not included.

"(Lmax - Lmin) / (Lmax + Lmin) x 200" shown in RadiCS is the same as "200 x (Lhighest - Llowest) / (Lhighest + Llowest)" in the standard.

**Sensors**

DIN 6868-157 requires a luminance meter class B or higher (DIN 5032-7) for acceptance tests and measurement devices that does not block environmental light. If measuring grayscale by bringing a measurement device in contact with the monitor, use a measurement device that, in accordance with the measurement devices' User's Manual, can be brought in contact with the monitor.

EIZO sensors are available for consistency tests. DIN 6868-157 requires creation of a reference value for consistency test to include reflected luminance caused by ambient light and accepts the use of contact type sensor.

If any measurement device or measurement method different from that is used in the acceptance test is used, it is recommended to make a correlation with the measurement device used in the acceptance test before deciding the reference value.

**Multi-monitor**

DIN 6868-157 includes a determination for multiple monitors, but by default RadiCS is set not to make such a determination. Enter the settings as necessary (see RadiCS Setup [▸ 189]).

"(Lhigh - Llow)/(Lhigh + Llow) x 200" shown in RadiCS is the same as "200 x (Lhighest - Llowest)/(Lhighest + Llowest)" in the standard.

**Resolution**

The available monitor resolution is determined in the standard depending on body part / capture method. RadiCS has set restrictions in the control criteria to be selected for body parts / capture methods in accordance with the standard.

| | **I. Mammography** | **II. Mammographic stereotaxy** | **III. Projection radiography** | **IV. Fluoroscopy, all applications / V. Computed tomography** | **VI. Digital volume tomography (dental) etc. in RK 5/ VI. Dental X-ray equipment etc. in RK 5 (five-year interval) / VII. Intraoral X-ray diagnostics (dental) etc. in RK 6** |
|---|---|---|---|---|---|
| Resolution | ≥2048 x ≥2048 | ≥1024 x ≥1024 | ≥1600 x ≥1200 | ≥1024 x ≥1024 | ≥1024 x ≥768 |

**DIN V 6868-57**

**RadiCS Setup**

| | **Acceptance Test** | |
|---|---|---|
| | **Category A** | **Category B** |
| Pattern Check<br>(Used pattern) | Test pattern 1<br>Test pattern 2<br>Test pattern 3 | Test pattern 1<br>Test pattern 2<br>Test pattern 3 |
| Luminance Check | L'max / L'min > 100<br>Lamb < L'max / 100 | L'max / L'min > 40<br>Lamb < L'max / 40 |
| Grayscale Check | - | - |
| Uniformity Check | Grayscale: 128 *1 | Grayscale: 128 *2 |

| | Consistency Test | |
|---|---|---|
| | Category A | Category B |
| Pattern Check<br>(Used pattern) | Test pattern 1<br>Test pattern 2<br>Test pattern 3 | Test pattern 1<br>Test pattern 2<br>Test pattern 3 |
| Luminance Check | L'max / L'min > 100<br>Lamb < L'max / 100 | L'max / L'min > 40<br>Lamb < L'max / 40 |
| Grayscale Check | - | - |
| Uniformity Check | Grayscale: 128 *1 | Grayscale: 128 *2 |

*1 (Lcorner-Lcenter) / Lcenter x 100 < 15 %

*2 (Lcorner-Lcenter) / Lcenter x 100 < 20 %

**Correlation between DIN V 6868-57 and RadiCS**

**Pattern Check**

A test pattern given in DIN V 6868-57 cannot be applied to a monitor whose screen aspect ratio is not 1:1 without modification, since DIN V 6868-57 (or the test pattern) uses an aspect ratio of 1:1. Therefore, RadiCS checks a monitor being tested, and determines and generates an appropriate test pattern for each resolution supported by the monitor.

- Test pattern 1
  Equivalent to Bild 3 pattern. The pattern is scaled in accordance with the screen resolution.
- Test pattern 2
  Equivalent to Bild 2 pattern. The pattern is scaled in accordance with the screen resolution.
- Test pattern 3
  Equivalent to Bild 5 pattern. The pattern is scaled in accordance with the screen resolution.

**Luminance Check**

Lmax and Lmin used in DIN V 6868-57 include ambient luminance and are the same as L'max and L'min in RadiCS. Lamb stands for the ambient luminance and refers to the same value as "Ls" of DIN V 6868-57. Lmax/Ls > 100 (or 40) have been Ls < Lmax/100 (or 40).

L'max/L'min stands for a contrast ratio. DIN V 6868-57 includes an equality sign like Lmax/Lmin ≥ 100 (or 40) but RadiCS does not.

DIN V 6868-57 defines L'max and L'min by measuring the test pattern 2 square with white (grayscale: 255) and black (grayscale: 0). RadiCS displays 10 % of a display area in the middle and measures luminance by changing the grayscale 0 to 255. By doing so, the exact contrast ratio can be acquired.

**Uniformity Check**

The Uniformity Check judges the uniformity of the ratio between the screen corner and the center of the screen as a standard. DIN V 6868-57 has no particular standard regarding measuring points. It also displays 10 % display area of the window at grayscale 128 in the middle of the screen and in the corner of the screen and measures the center of the window.

The basic judgment value (15 % or 20 %) is the same as LCD monitors since RadiForce series monitors are recommended for RadiCS.

RadiCS specifies (Lcorner-Lcenter)/Lcenter x 100<15 % (or 20 %), but this denotes ±15 % (or ±20 %), and does not include an equals sign.

**Sensors**

DIN V 6868-57 requires a luminance meter class B or higher (DIN 5032-7) for acceptance tests and measurement devices that does not block environmental light.

DIN V 6868-57 allows noncontact sensors only to measure Category B reference value for consistency tests. EIZO sensors are available for consistency tests.

**DMG QC Manual**

**RadiCS Setup**

| | Acceptance Test | Consistency Test |
|---|---|---|
| Pattern Check<br>(Used pattern) | TG18-QC<br>TG18-UN80 | Black<br>TG18-QC<br>TG18-UN80 |
| Luminance Check | L'max / L'min > 250 | L'max / L'min > 250<br>ΔL'max < 10 % |
| Grayscale Check | Target error rate < 15 % of GSDF | Target error rate < 15 % of GSDF |
| Uniformity Check | Grayscale: 204<br>(Lmax-Lmin) / (Lmax+Lmin) x 200 < 30 % | - |
| Multi-monitor | ΔL'max < 10 %<br>between multiple monitors | ΔL'max < 10 %<br>between multiple monitors |

**Correlation between DMG QC Manual and RadiCS**

**Pattern Check**

RadiCS determines necessary test patterns based on the inspection results and generates its own patterns corresponding to the resolution of the monitor.

- TG18-QC
  Equivalent to the pattern with the same name in the standard. However, RadiCS-specific scaling is performed in accordance with the monitor resolution.
- TG18-UN80
  A pattern solidly filled with white of grayscale 204. The pattern with the same name in the JESRA has a square frame, but RadiCS does not have it because it is not necessary for the visual inspection.

**Luminance Check**

In DMG QCM, the luminance measurement does not include the ambient luminance. In RadiCS, an apostrophe (') in the L'max, for example, indicates that it includes the ambient luminance. However, entering the ambient luminance value as 0 cd/$m^2$ can effectively exclude the ambient luminance from the luminance measurement.

Note that none of inequalities used in RadiCS includes an equality sign although every judgment condition in DMG QCM includes it.

The Lmax value in the calibration setup is provided as the default for the baseline value of ΔL'max.

**Grayscale Check**

In DMG QCM, the luminance measurement does not include the ambient luminance. In RadiCS, an apostrophe (') in the L'max, for example, indicates that it includes the ambient luminance. However, entering the ambient luminance value as 0 cd/$m^2$ can effectively exclude the ambient luminance from the luminance measurement.

The calculation method for this item is the same as the one for κδ. RadiCS describes the specification of the grayscale as Target Error Rate < 15 % (or 30 %) of GSDF. Note that none of inequalities used in RadiCS includes an equality sign.

This specification is provided as the judgment condition for DICOM Part 14 GSDF, so there is no meaning to use this specification for other display functions. The number of measuring points is fixed to 18 points and this value cannot be changed. (The number of data points will be 17 because the result is presented as $(JND_{n+1} – JND_n)/2$.)

**Uniformity Check**

Although DMG QCM includes an equality sign, each judgment condition in RadiCS does not.

The DMG QCM specifies that the luminance is measured using the TG18-UN80 patterns. On the other hand, RadiCS displays two windows (grayscale: 204) with the size of 10 % of the whole display area at the center and a corner of the screen. It then measures the luminance at the center of both windows.

**Sensors**

DMG QCM permits the use of both noncontact and contact type measurement devices. In RadiCS, the noncontact measurement device measures the monitor without shutting off the environment light, so use the device in a dark room or use a cylinder to shut off environment light. Any sensors can be used to perform both the acceptance tests and the consistency tests.

**Multi-monitor**

DMG QCM has multi-monitor judgment. DMG QCM includes an equality sign but RadiCS does not.

**EUREF**

**RadiCS Setup**

| | Acceptance Test | |
|---|---|---|
| | **Primary** | **Secondary** |
| Pattern Check<br>(Used pattern) | TG18-QC<br>TG18-LPH (89, 50, 10)<br>TG18-LPV (89, 50, 10) | TG18-QC<br>TG18-LPH (89, 50, 10)<br>TG18-LPV (89, 50, 10) |
| Luminance Check | L'max / L'min > 250 | L'max / L'min > 100 |
| Grayscale Check | Target error rate < 10 % of GSDF | Target error rate < 20 % of GSDF |
| Uniformity Check | Grayscale: 26<br>(Lmax-Lmin) / Lcenter x 100 < 30 % | Grayscale: 26<br>(Lmax-Lmin) / Lcenter x 100 < 30 % |
| | Grayscale: 204<br>(Lmax-Lmin) / Lcenter x 100 < 15 % | Grayscale: 204<br>(Lmax-Lmin) / Lcenter x 100 < 15 % |
| Multi-monitor | ΔL'max < 5 %<br>between multiple monitors | ΔL'max < 5 %<br>between multiple monitors |

| | Consistency Test | |
|---|---|---|
| | **Primary** | **Secondary** |
| Pattern Check<br>(Used pattern) | TG18-QC<br>TG18-LPH (89, 50, 10)<br>TG18-LPV (89, 50, 10) | TG18-QC<br>TG18-LPH (89, 50, 10)<br>TG18-LPV (89, 50, 10) |
| Luminance Check | L'max / L'min > 250 | L'max / L'min > 100 |
| Grayscale Check | Target error rate < 10 % of GSDF | Target error rate < 20 % of GSDF |
| Uniformity Check | Grayscale: 26<br>(Lmax-Lmin) / Lcenter x 100 < 30 % | Grayscale: 26<br>(Lmax-Lmin) / Lcenter x 100 < 30 % |
| | Grayscale: 204 | Grayscale: 204 |

| | Consistency Test | |
|---|---|---|
| | Primary | Secondary |
| | (Lmax-Lmin) / Lcenter x 100 < 15 % | (Lmax-Lmin) / Lcenter x 100 < 15 % |
| Multi-monitor | ΔL'max < 5 %<br>between multiple monitors | ΔL'max < 5 %<br>between multiple monitors |

**Correlation between EUREF and RadiCS**

**Pattern Check**

The patterns used for EUREF are the same as those used for AAPM. RadiCS determines the properties to be verified and independently prepares appropriate patterns for each resolution.

- TG18-QC
  This is scaled to match the resolution.
- TG18-LPH (89, 50, 10)
  This is scaled to match the resolution.
- TG18-LPV (89, 50, 10)
  This is scaled to match the resolution.

**Luminance Check**

Maximum luminance and luminance ratio specified in the standard correspond to L’max and L’max/L’min used in RadiCS. The patterns TG18-LN12-01 and TG18-LN12-18 are recommended for luminance measurements, but RadiCS measures the luminance by displaying a window equivalent to 10 % of the display area in the center of the screen and changing its grayscale level to 0 and 255. This provides a more accurate measurement. EUREF includes an equality sign but RadiCS does not.

**Grayscale Check**

The GSDF determination conditions correspond to those specified in EUREF. EUREF recommends using patterns TG18-LN12-01 to TG18-LN12-18 for measurements, but RadiCS measures the luminance by displaying a window equivalent to 10 % of the display area in the center of the screen and changing the grayscale level corresponding to the specified pattern from 0 to 255. This provides a more accurate measurement. EUREF includes an equality sign but RadiCS does not.

**Uniformity Check**

EUREF recommends using the TG18-UNL10 and TG18-UNL80 patterns, but since they have an aspect ratio of 1:1 they cannot be used directly. Instead, RadiCS displays grayscale 204 and grayscale 26 windows equivalent to 10 % of the display area in the center of the screen and in the corners, and measures the center portion of each window.

In Supplements: 2013, the judgment standard for LCDs to satisfy in relation to grayscale 204 has been tightened from 30 % to 15 % (30 % for CRTs). RadiCS monitors satisfy the standard applicable to LCDs.

**Sensors**

EUREF recommends the use of a telescopic luminance meter. EIZO sensors may also be used to perform measurements.

**Multi-monitor**

EUREF includes a determination for multiple monitors, but by default RadiCS is set not to make such a determination. If necessary, make settings as indicated in the table above. EUREF includes an equality sign but RadiCS does not.

**Cautions**

For primary use, an illuminance meter must be used to ensure that the ambient light level is less than 10 lux. RadiCS does not make illuminance-based judgment.

RadiForce series monitors are considered to sufficiently satisfy requirements regarding geometrical distortion, so this item is omitted.

**IPEM**

**RadiCS Setup**

| | Acceptance Test | Consistency Test |
|---|---|---|
| Pattern Check<br>(Used pattern) | TG18-QC | TG18-QC |
| Luminance Check | L'max / L'min > 250<br>ΔL'max < 20 % | L'max / L'min > 250<br>ΔL'max < 20 % |
| Grayscale Check | Target error rate < 10 % of GSDF | Target error rate < 10 % of GSDF |
| Uniformity Check | Grayscale: 128<br>(Lmax-Lmin) / (Lmax+Lmin) x 200 < 30 % | Grayscale: 128<br>(Lmax-Lmin) / (Lmax+Lmin) x 200 < 30 % |
| Multi-monitor | ΔL'max < 30 %<br>between multiple monitors<br>ΔL'min < 30 %<br>between multiple monitors | ΔL'max < 30 %<br>between multiple monitors<br>ΔL'min < 30 %<br>between multiple monitors |

**Correlation between IPEM and RadiCS**

**Pattern Check**

The patterns used for IPEM are the same as those used for AAPM. RadiCS determines the properties to be verified and independently prepares appropriate patterns for each resolution.

- TG18-QC
  This is scaled to match the resolution.

**Luminance Check**

Maximum luminance and luminance ratio specified in IPEM correspond to L’max and L’max/L’min used in RadiCS. The patterns TG18-QC and SMPTE are recommended for luminance measurements, but RadiCS measures the luminance by displaying a window equivalent to 10 % of the display area in the center of the screen and changing its grayscale level to 0 and 255. This provides a more accurate measurement. IPEM makes ΔLmin ≤ 25 % judgment, but RadiCS does not. Make the settings as necessary although the standard name will be "Custom". IPEM includes an equality sign but RadiCS does not.

**Uniformity Check**

IPEM recommends using TG18-QC or SMPTE patterns, but these patterns are not suitable for measuring 50 % grayscale uniformity. Instead, RadiCS displays grayscale 128 windows equivalent to 10 % of the display area in the center of the screen and in the corners, and measures the center portion of each window. IPEM includes an equality sign but RadiCS does not.

**Sensors**

Use of a measurement device that complies with the CIE standard photopic spectral response and has a calibration traceable to an appropriate primary standard is recommended. RadiCS supports use of all compliant sensors.

**Multi-monitor**

IPEM includes a determination for multiple monitors, but by default RadiCS is set not to make such a determination. If necessary, make settings as indicated in the table above. IPEM includes an equality sign but RadiCS does not.

**Cautions**

An illuminance meter must be used to ensure that the ambient light level is less than 15 lux. RadiCS does not make illuminance-based judgment.

**JESRA**

**RadiCS Setup**

An apostrophe (') in L'max and L'min indicates that it includes the ambient luminance. However, using a measurement method that does not include the ambient luminance or by entering the ambient luminance value as "0 cd/m$^2$", judgment can exclude the ambient luminance from the luminance measurement.

In RadiCS, each condition does not include this symbol; however, this fact has no real influence because judgment is performed using a lower value than the fourth decimal place.

| | Acceptance Test | | |
|---|---|---|---|
| | **Grade 1A** | **Grade 1B** | **Grade 2** |
| Pattern Check<br>(Used pattern) | TG18-QC<br>TG18-UN80<br>JESRA Clinical Image | TG18-QC<br>TG18-UN80<br>JESRA Clinical Image | TG18-QC<br>TG18-UN80<br>JESRA Clinical Image |
| Luminance Check | L'max / L'min > 250<br>L'max > 350 cd/m$^2$ | L'max / L'min > 250<br>L'max > 170 cd/m$^2$ | L'max / L'min > 100<br>L'max > 100 cd/m$^2$ |
| Grayscale Check | Target error rate < 10 % of GSDF | Target error rate < 15 % of GSDF | Target error rate < 30 % of GSDF |
| Uniformity Check | Grayscale: 204<br>(Lmax-Lmin) / (Lmax+Lmin) x 200 < 30 %<br>Grayscale: 204<br>Δu'v' < 0.010 | Grayscale: 204<br>(Lmax-Lmin) / (Lmax+Lmin) x 200 < 30 %<br>Grayscale: 204<br>Δu'v' < 0.010 | Grayscale: 204<br>(Lmax-Lmin) / (Lmax+Lmin) x 200 < 30 % |
| Multi-monitor | ΔL'max < 10 %<br>between multiple monitors<br>Grayscale: 204<br>Mean value between multiple monitors<br>Δu'v' < 0.010 | ΔL'max < 10 %<br>between multiple monitors<br>Grayscale: 204<br>Mean value between multiple monitors<br>Δu'v' < 0.010 | ΔL'max < 10 %<br>between multiple monitors |

| | Consistency Test | | |
|---|---|---|---|
| | **Grade 1A** | **Grade 1B** | **Grade 2** |
| Pattern Check<br>(Used pattern) | TG18-QC<br>TG18-UN80<br>JESRA Clinical Image | TG18-QC<br>TG18-UN80<br>JESRA Clinical Image | TG18-QC<br>TG18-UN80<br>JESRA Clinical Image |
| Luminance Check | L'max / L'min > 250<br>L'max > 350 cd/m$^2$<br>ΔL'max < 10 % | L'max / L'min > 250<br>L'max > 170 cd/m$^2$<br>ΔL'max < 10 % | L'max / L'min > 100<br>L'max > 100 cd/m$^2$<br>ΔL'max < 10 % |
| Grayscale Check | Target error rate < 10 % of GSDF | Target error rate < 15 % of GSDF | Target error rate < 30 % of GSDF |
| Uniformity Check | - | - | - |
| Multi-monitor | ΔL'max < 10 % | ΔL'max < 10 % | ΔL'max < 10 % |

| | Consistency Test | | |
|---|---|---|---|
| | Grade 1A | Grade 1B | Grade 2 |
| | between multiple monitors | between multiple monitors | between multiple monitors |

**Correlation between JESRA and RadiCS**

**Pattern Check**

The guideline introduces test patterns for conducting a test, but it does not cover all medical monitors' resolutions. RadiCS provides the appropriate test patterns, taking into account the check contents shown in the guideline.

**Luminance Check**

The ambient change ratio between the baseline value and the measured value is indicated by "ΔL'max". The default baseline value is set to the Lmax value in the Calibration Settings.

**Grayscale Check**

The maximum error rate of contrast response, "κδ", is indicated by "target error rate < 10 % (15 %, 30 %) of GSDF".

**Uniformity Check**

In JESRA, measurements are performed while displaying the TG18-UN80 pattern on the full screen. In RadiCS, window patterns (same as the TG18-UN80 specifications), each of which is 10 % of the display area in 204 gradations, are sequentially displayed in the center or corner of the screen, which enables an easy-to-perform measurement. In RadiCS, the brightness uniformity is indicated by "(Lmax-Lmin)/(Lmax+Lmin) x 200".

**Sensors**

JESRA provides use of both the non-contact type (telescopic) and contact type measurement devices; therefore, all the compatible sensors can be used.

The non-contact type measurement device performs measurements including the ambient luminance. When you do not want to include the ambient luminance, perform measurements in a dark room or shut down the environmental light using a circular cylinder, etc.

**Multi-monitor**

The differential ratio of the maximum luminance between medical monitors is indicated by "ΔL'max".

**QS-RL**

**RadiCS Setup**

| | Acceptance Test | | |
|---|---|---|---|
| | Category A | Category B | Category A Mammo |
| Pattern Check<br>(Used pattern) | Test pattern 1<br>Test pattern 2<br>Test pattern 3 | Test pattern 1<br>Test pattern 2<br>Test pattern 3 | Test pattern 1<br>Test pattern 2<br>Test pattern 3 |
| Luminance Check | L'max / L'min > 100<br>L'max > 200 cd/$m^2$<br>Lamb < L'max / 100 | L'max / L'min > 40<br>L'max > 120 cd/$m^2$<br>Lamb < L'max / 40 | L'max / L'min > 250<br>L'max > 250 cd/$m^2$<br>L'min > 1.0 cd/$m^2$<br>Lamb < L'max / 100 |
| Grayscale Check | - | - | - |
| Uniformity Check | Grayscale: 128<br>(Lcorner-Lcenter) / Lcenter x 100 < 15 % | Grayscale: 128<br>(Lcorner-Lcenter) / Lcenter x 100 < 20 % | Grayscale: 128<br>(Lcorner-Lcenter) / Lcenter x 100 < 15 % |

| | Acceptance Test | | |
|---|---|---|---|
| | **Category A** | **Category B** | **Category A Mammo** |
| Multi-monitor | - | - | ΔL'max < 10 %<br>between multiple monitors<br>Δ(L'max / L'min) < 10 %<br>between multiple monitors |

| | Consistency Test | | |
|---|---|---|---|
| | **Category A** | **Category B** | **Category A Mammo** |
| Pattern Check<br>(Used pattern) | Test pattern 1<br>Test pattern 2<br>Test pattern 3 | Test pattern 1<br>Test pattern 2<br>Test pattern 3 | Test pattern 1<br>Test pattern 2<br>Test pattern 3 |
| Luminance Check | L'max / L'min > 100<br>L'max > 200 cd/m$^2$<br>Δ(L'max / L'min) < 30 %<br>ΔLamb < 30 % | L'max / L'min > 40<br>L'max > 120 cd/m$^2$<br>Δ(L'max / L'min) < 30 %<br>ΔLamb < 30 % | L'max / L'min > 250<br>L'max > 250 cd/m$^2$<br>L'min > 1.0 cd/m$^2$<br>Δ(L'max / L'min) < 30 %<br>ΔLamb < 30 % |
| Grayscale Check | - | - | - |
| Uniformity Check | - | - | - |
| Multi-monitor | - | - | ΔL'max < 10 %<br>between multiple monitors<br>Δ(L'max / L'min) < 10 %<br>between multiple monitors |

**Correlation between QS-RL and RadiCS**

**Pattern Check**

The test patterns used are the same as the one specified in DIN V 6868-57.

**Luminance Check**

Lmax and Lmin used in QS-RL include the ambient luminance and are the same as L'max and L'min used in RadiCS.

QS-RL specifies Lmin ≥ 1.0 cd/m$^2$, but RadiCS includes no equality sign. Lamb stands for the ambient luminance and refers to the same value as "Ls" of DIN V 6868-57. The inequality Lmax/Ls > 100 (or 40) in the standard has been transformed into Ls > Lmax/100 (or 40). In QS-RL, the luminance is specified as |Delta Ls| ≤ 0.3 Ls. Delta Lamb in RadiCS corresponds to the calculation of |Delta Ls|/Ls in QS-RL, and is expressed as its percentage. Note that none of inequalities used in RadiCS includes an equality sign.

L'max/L'min stands for a contrast ratio. The inequality of L'max/L'min in QS-RL has an equality sign in it (L'max/L'min ≥ 100, 40 or 250) but the inequality in RadiCS does not. (L'max/L'min > 100, 40 or 250). In QS-RL, the luminance is specified as |Delta Km| ≤ 0.3 Km. Km corresponds to L'max/L'min in RadiCS, and Delta (L'max/L'min) in RadiCS corresponds to the calculation of |Delta Km|/Km in QS-RL, and is expressed as its percentage. Also note that none of inequalities used in RadiCS includes an equality sign.

In QS-RL, L'max and L'min are determined by measuring the luminance at square regions filled with white (grayscale: 255) and black (grayscale: 0) in the test pattern 2, respectively.

RadiCS displays 10 % of a display area in the middle and measures luminance by changing the grayscale 0 to 255. By doing so, the exact contrast ratio can be acquired.

**Uniformity Check**

The luminance uniformity is determined by firstly measuring the luminance of the center and a corner of the screen. Then, calculate the difference of these two luminance values and evaluate a percentage by dividing the difference by the luminance of the center. However, QS-RL does not specify particular measuring points for the uniformity measurement. In QS-RL, the measuring points are indicated with the test pattern 1 or the SMPTE pattern of the aspect ratio of 1:1, but the measuring points in these patterns have a significant difference, and other patterns around the measuring points may affect the measurement results. RadiCS displays two windows (grayscale: 128) with the size of 10 % of the whole display area at the center and a corner of the screen. It then measures the luminance at the center of both windows.

Since any monitors that support the RadiCS luminance check are LCD monitors, the criteria of 15 % or 20 % should apply to the LCD monitors, not to CRT monitors.

RadiCS specifies (Lcorner-Lcenter)/Lcenter x 100<15 % (or 20 %), but this denotes ±15 % (or ±20 %), and does not include an equals sign.

**Sensors**

DIN V 6868-57 requires the use of a measurement device for the acceptance tests that provides a luminance meter compliant with Class B or higher standard (DIN 5032-7) and does not block the ambient light. This requirement is also effective for QS-RL. RadiCS only allows noncontact type measurement devices to perform both the acceptance tests and the consistency tests. Since the EIZO sensors (UX2) are contact type measurement devices, they are not applicable.

**Multi-monitor**

Category A Mammo includes a determination for multiple monitors. QS-RL includes an equality sign but RadiCS does not.

**Cautions**

Category A Mammo conforms to the PAS1054 mammography standard. This standard includes monitor resolution of 2000 x 2500 or above as a condition, but RadiCS makes no such determination.

**Basic QC**

**RadiCS Setup**

| | Acceptance Test | Consistency Test |
|---|---|---|
| Pattern Check<br>(Used pattern) | TG18-QC | TG18-QC |
| Luminance Check | - | - |
| Grayscale Check | - | - |
| Uniformity Check | - | - |
| Multi-monitor | - | - |

**Correlation between Basic QC and RadiCS**

**Pattern Check**

The patterns used for Basic QC are the same as those used for AAPM. RadiCS determines the properties to be verified and independently prepares appropriate patterns for each resolution.

- TG18-QC
  This is scaled to match the resolution.

### Basic Mammo QC and Basic Mammo QC for Remote

#### RadiCS Setup

| | Acceptance Test | Consistency Test |
|---|---|---|
| Pattern Check<br>(Used pattern)[*1] | TG18-QC<br>TG18-UN80 | TG18-QC<br>TG18-UN80 |
| Luminance Check | L'max / L'min > 250<br>L'max > 450 cd/m$^2$<br>Lamb < Lmin / 1.5 | L'max / L'min > 250<br>L'max > 450 cd/m$^2$<br>Lamb < Lmin / 1.5 |
| Grayscale Check | Target error rate < 10 % of GSDF | Target error rate < 10 % of GSDF |

[*1] Not included in the consistency test of Basic Mammo QC for Remote.

#### Correlation between Basic Mammo QC, Basic Mammo QC for Remote and RadiCS

**Pattern Check**

The patterns used for Basic Mammo QC, Basic Mammo QC for Remote are the same as those used for ACR. RadiCS determines the properties to be verified and independently prepares appropriate patterns for each resolution.

- TG18-QC
  This is scaled to match the resolution.
- TG18-UN80
  A pattern solidly filled with white of grayscale 204.

**Luminance Check**

Except for Lamb < Lmin / 1.5, Basic Mammo QC and Basic Mammo QC for Remote include an equality sign in each judgment condition but RadiCS does not.

**Grayscale Check**

Basic Mammo QC and Basic Mammo QC for Remote include an equality sign but RadiCS does not because the target error rate is < 10 % of GSDF. This is a judgment condition for DICOM Part 14 GSDF. The number of grayscale measuring points is fixed at 18 and is unchangeable. The measurement result is 17 points because it is expressed as ($JND_{n+1}$ – $JND_n$)/2.

**Sensors**

Any sensors can be used to perform both the acceptance tests and the consistency tests with Basic Mammo QC and Basic Mammo QC for Remote.

### Basic QC Primary, Basic QC Primary for Remote, Basic QC Secondary, and Basic QC Secondary for Remote

#### RadiCS Setup

| | Acceptance Test | |
|---|---|---|
| | Basic QC Primary<br>Basic QC Primary for Remote | Basic QC Secondary<br>Basic QC Secondary for Remote |
| Pattern Check<br>(Used pattern) | - | - |
| Luminance Check | L'max / L'min > 250<br>L'max > 170 cd/m$^2$<br>Lamb < Lmin / 1.5<br>ΔL'max < 10 % | L'max / L'min > 100<br>L'max > 100 cd/m$^2$<br>Lamb < Lmin / 1.5<br>ΔL'max < 10 % |
| Grayscale Check | Target error rate < 10 % of GSDF | Target error rate < 20 % of GSDF |

| | Visual Check[*1] | |
|---|---|---|
| | **Basic QC Primary** | **Basic QC Secondary** |
| Pattern Check<br>(Used pattern) | TG18-QC | TG18-QC |

| | Consistency Test | |
|---|---|---|
| | **Basic QC Primary**<br>**Basic QC Primary for Remote** | **Basic QC Secondary**<br>**Basic QC Secondary for Remote** |
| Pattern Check<br>(Used pattern)[*1] | TG18-QC | TG18-QC |
| Luminance Check | L'max / L'min > 250<br>L'max > 170 cd/m$^2$<br>Lamb < Lmin / 1.5<br>ΔL'max < 10 % | L'max / L'min > 100<br>L'max > 100 cd/m$^2$<br>Lamb < Lmin / 1.5<br>ΔL'max < 10 % |
| Grayscale Check | Target error rate < 10 % of GSDF | Target error rate < 20 % of GSDF |

[*1] Not included in Basic QC Primary for Remote and Basic QC Secondary for Remote.

**Correlation between Basic QC Primary, Basic QC Primary for Remote, Basic QC Secondary, and Basic QC Secondary for Remote and RadiCS**

**Pattern Check**

The patterns used for Basic QC Primary and Basic QC Secondary are the same as those used for AAPM.

RadiCS determines the properties to be verified and independently prepares appropriate patterns for each resolution.

- TG18-QC
  This is scaled to match the resolution.

**Luminance Check**

Except for Lamb < Lmin / 1.5, Basic QC Primary, Basic QC Primary for Remote, Basic QC Secondary, and Basic QC Secondary for Remote include an equality sign in each judgment condition but RadiCS does not.

**Grayscale Check**

Basic QC Primary, Basic QC Primary for Remote, Basic QC Secondary, and Basic QC Secondary for Remote includes an equality sign but RadiCS does not because the target error rate is < 10 % of GSDF. This is a judgment condition for DICOM Part 14 GSDF. The number of grayscale measuring points is fixed at 18 and is unchangeable. The measurement result is 17 points because it is expressed as $(JND_{n+1} – JND_n)/2$.

**Sensors**

Any sensors can be used to perform both the acceptance tests and the consistency tests with Basic QC Primary, Basic QC Primary for Remote, Basic QC Secondary, and Basic QC Secondary for Remote.

### About Pathology350, Pathology450

### RadiCS Setup

| | Acceptance Test | |
|---|---|---|
| | **Pathology350** | **Pathology450** |
| Luminance Check | L'max / L'min > 250<br>L'max > 350 cd/$m^2$<br>ΔL'max < 10 % | L'max / L'min > 250<br>L'max > 450 cd/$m^2$<br>ΔL'max < 10 % |
| Grayscale Check | Target error rate < 10 % | Target error rate < 10 % |

| | Consistency Test | |
|---|---|---|
| | **Pathology350** | **Pathology450** |
| Luminance Check | L'max / L'min > 250<br>L'max > 350 cd/$m^2$<br>ΔL'max < 10 % | L'max / L'min > 250<br>L'max > 450 cd/$m^2$<br>ΔL'max < 10 % |
| Grayscale Check | Target error rate < 10 % | Target error rate < 10 % |

### Correlation between Pathology350, Pathology450 and RadiCS

#### Luminance Check

Pathology350, Pathology450 includes an equality sign in each judgment condition but RadiCS does not.

#### Grayscale Check

Pathology350, Pathology450 includes an equality sign but RadiCS doesn't because of the target error rate is < 10 %. The number of grayscale measuring points is fixed at 18 and is unchangeable.

#### Sensors

For Pathology350, Pathology450, any sensor can be used to perform both acceptance tests and consistency tests.

# Appendix

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## Source

TG18 Citation:

Samei E, Badano A, Chakraborty D, Compton K, Cornelius C, Corrigan K, Flynn MJ, Hemminger B, Hangiandreou N, Johnson J, Moxley M, Pavlicek W, Roehrig H, Rutz L, Shepard J, Uzenoff R, Wang J, and Willis C.

Assessment of Display Performance for Medical Imaging Systems, Report of the American Association of Physicists in Medicine (AAPM) Task Group 18, Medical Physics Publishing, Madison, WI, AAPM On-Line Report No. 03, April 2005.

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00N0N448AZ
UM-RADICS



1st Edition – January, 2024