ADVANTEST

ADVANTEST CORPORATION

TAS7x00 Series Terahertz Spectroscopy & Imaging System System Software Operation Manual

MANUAL NUMBER 8702787-07

Applicable Systems

TAS7500

TAS7400

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Revision History

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01	Apr 16/12	
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Preface

Purpose of This Manual

This manual describes how to operate the system software for spectroscopic measurements/analyses and imaging measurements/analyses using the TAS7x00 Series Terahertz Spectroscopy & Imaging System.

Related Manuals

TAS7500 Series Terahertz Spectroscopy & Imaging System Instruction Manual

This manual describes the procedures required to perform measurement and analysis operations including handling notes for safe use, after the system is installed.

TAS7400 Series Terahertz Spectroscopy System Instruction Manual

This manual describes the procedures required to perform measurement and analysis operations including handling notes for safe use, after the TAS7400 system is installed.

TAS7x00 Series Terahertz Spectroscopy & Imaging System System Software Operation Manual (Quantitative Analysis Option)

This manual describes how to add the license for the optional quantitative analysis function to system software, operation method, and function itself.

1. Overview

This system is a nondestructive spectroscopy & imaging analysis system that utilizes terahertz (THz) waves. Spectrum analysis and tablet imaging analysis can be performed. Use the spectroscopic unit for spectrum analysis. Use the imaging unit for tablet imaging analysis.
This manual describes how to operate the software when using the spectroscopic and imaging units.

The TAS7400 system performs spectrum analysis. Therefore, an imaging unit is not included. For the TAS7400 system, there are not any imaging unit related operations in this manual.

➔ For more information on the configuration of software, refer to 12. "Software Specifications" on page 12-1.

➔ For more information on the coating quality analysis option, refer to 9. "Coating Quality Analysis Option" on page 9-1.

➔ For more information on the polarization analysis option, refer to 10. "Polarization Analysis Option" on page 10-1.

2. System Start Up and Shut Down

This chapter describes how to start up and shut down the system.

2. 1 System Start Up

The system start procedure is as follows. It is assumed that the circuit breaker on the back of the measurement unit and the one on the back of the analysis frame are ON beforehand.

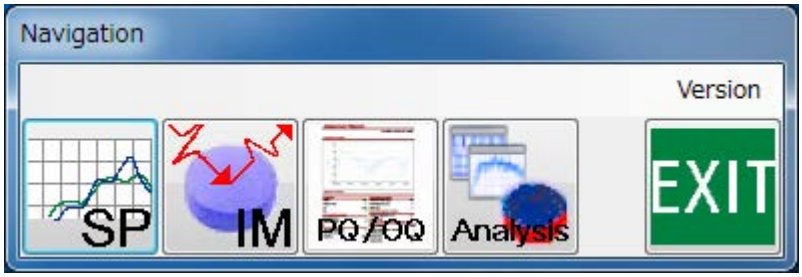
Important

Before starting system software, warm up the system at least one hour after its power is turned on.

1) Switch the key switch on the front panel of the measurement unit to ON.
2) Turn on the system controller.
3) Double click the TAS7x00 icon on the desktop.
   The Navigation window opens.

Figure 2-1 TAS7x00 Icon

Figure 2-2 Navigation Window



2. 2 System Shut Down

The system shutdown procedure is as follows:

1) Click the **[EXIT]** button in the Navigation window to exit the software.

2) Shut down the system controller.

> **Important**
>
> Termination of the analysis unit firmware is executed during the shutdown procedure for the system controller. If the firmware is not terminated properly, the system may not start smoothly the next time it is started up. Therefore, wait until the system controller finishes the shutdown processing before proceeding with the next procedure.

3) Switch the key switch on the front panel of the measurement unit to OFF.

3. Navigation Window

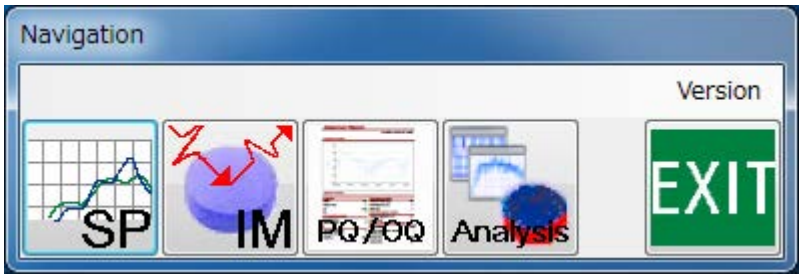
This chapter describes the Navigation window.

3. 1 Window Layout

The Navigation window is the first window that appears when the system software starts.

Figure 3-1 shows the user interfaces in the Navigation window.

Figure 3-1 Navigation Window



3. 2 Menu Bar

The menu bar contains the following items:

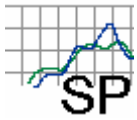
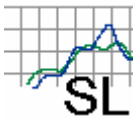
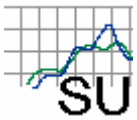
[Version]

The **[Version]** menu displays version information.

3. 3 Tool Bar

The tool bar contains the following buttons:

The buttons on the unit are enabled only when it is connected. Also, hardware is initialized at the first startup.

	Opens measurement window for spectroscopic unit.
	Opens measurement window for spectroscopic unit (Low-Frequency Coverage).
	Opens measurement window for spectroscopic unit (Wide-Band Coverage).
	Opens measurement window for imaging unit.
	Opens PQ/OQ window.
	Opens Analyze window.
	Exits software.

4. Spectroscopic Unit

This chapter describes the spectroscopic unit.

4. 1 Operating Procedure

This section describes the operation procedures using the spectroscopic unit.

4. 1. 1 Basic Measurement Operations

Basic operations of the measurement function are roughly categorized into the following four steps:

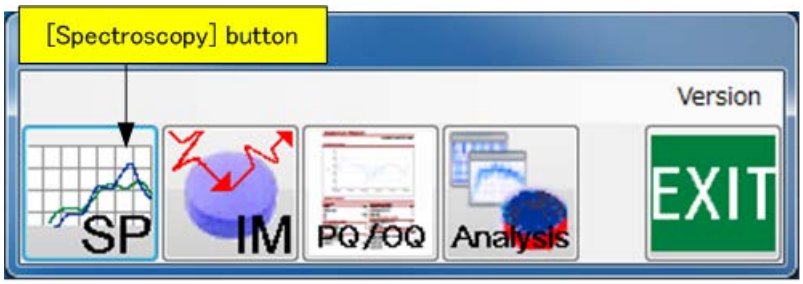
1. Starting the Spectroscopic Measurement window
2. Performing background measurement
3. Performing sample measurement
4. Saving sample waveforms to a file

The following section describes the measurement operations.

Reflection measurement is used as an example for descriptive purposes.

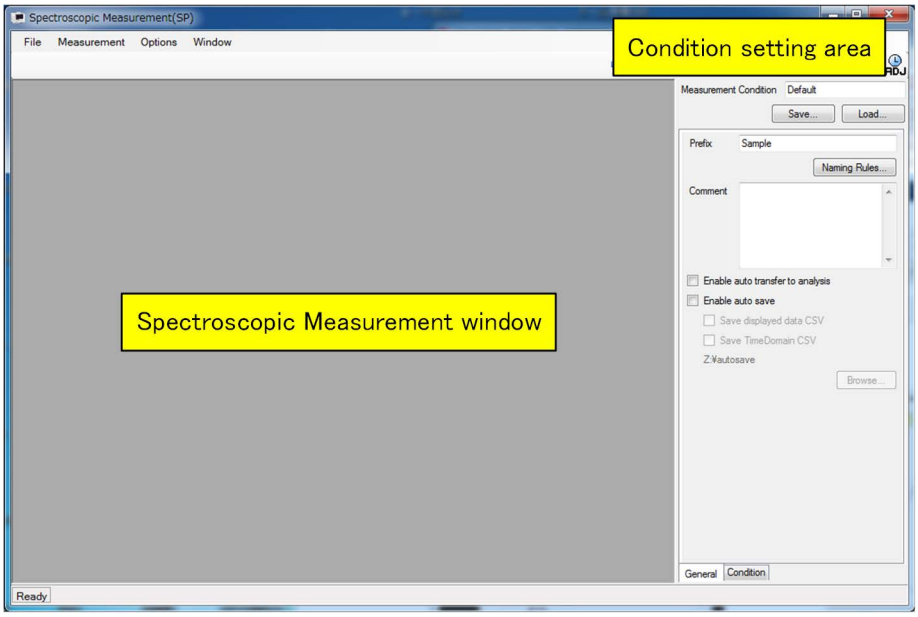
1) Start the Spectroscopic Measurement window.
Click the **[Spectroscopy]** button in the Navigation window to start the Spectroscopic Measurement window.

Figure 4-1 Spectroscopy Button



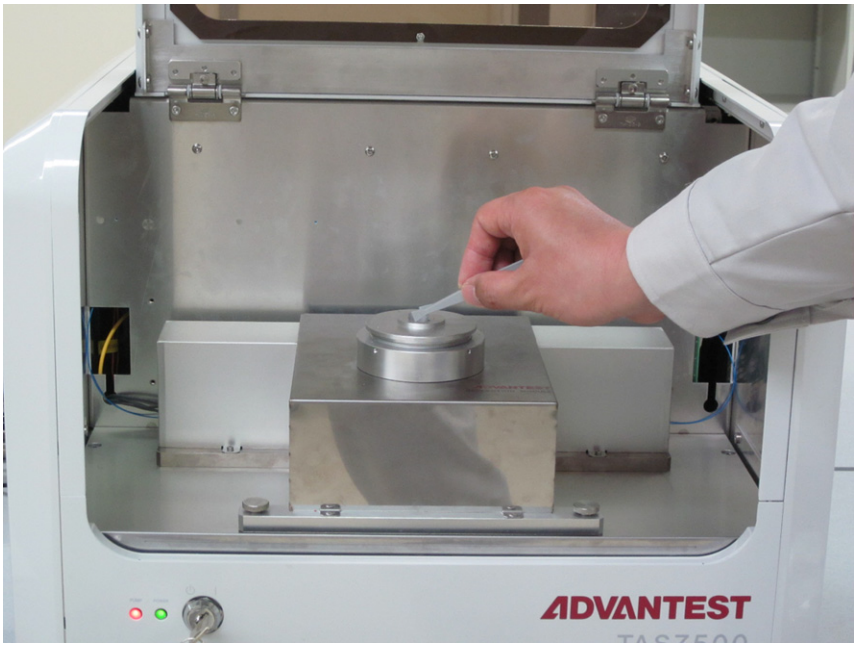
When the Measurement window opens, execute **[Measurement]** → **[Check Measurement Module]** from the menu bar to detect the current measurement module.

Figure 4-2 Spectroscopic Measurement Window



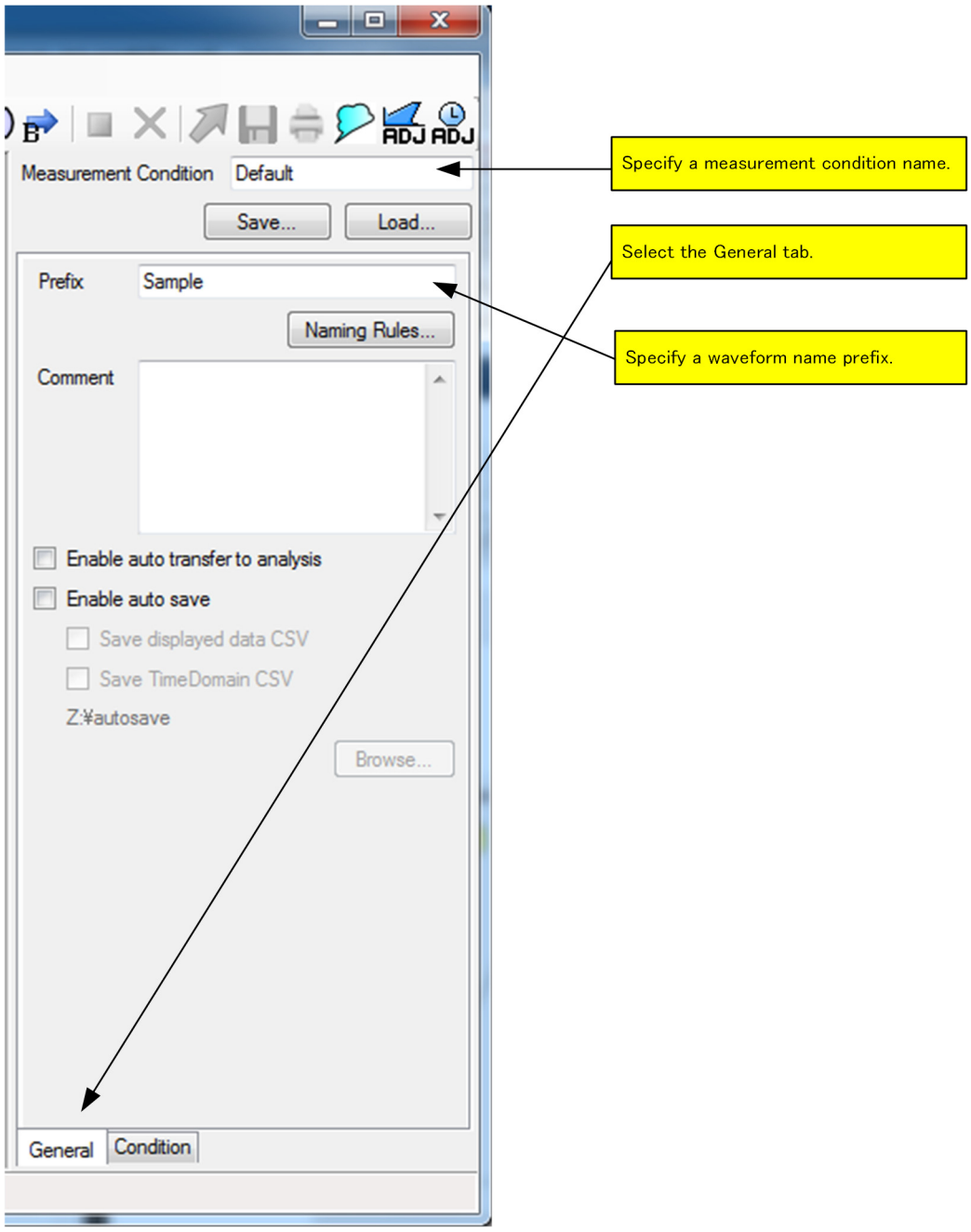
2) Place a mirror on the measurement module to perform background measurement.

Figure 4-3 Setting Mirror



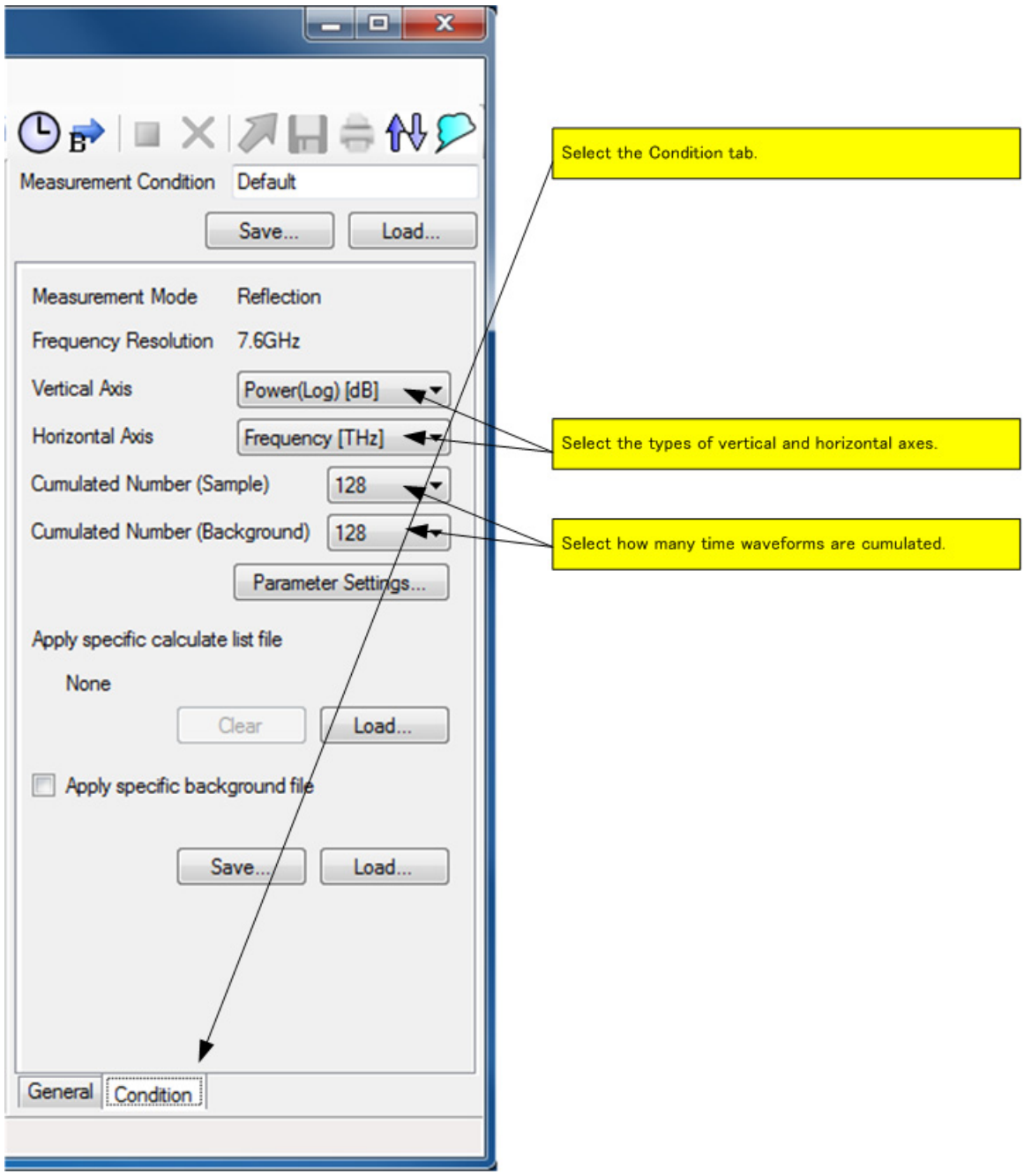
3) Select the General tab in the condition setting area of the Spectroscopic Measurement window and specify the settings as shown in the following figure:

Figure 4-4 General Tab in Condition Setting Area



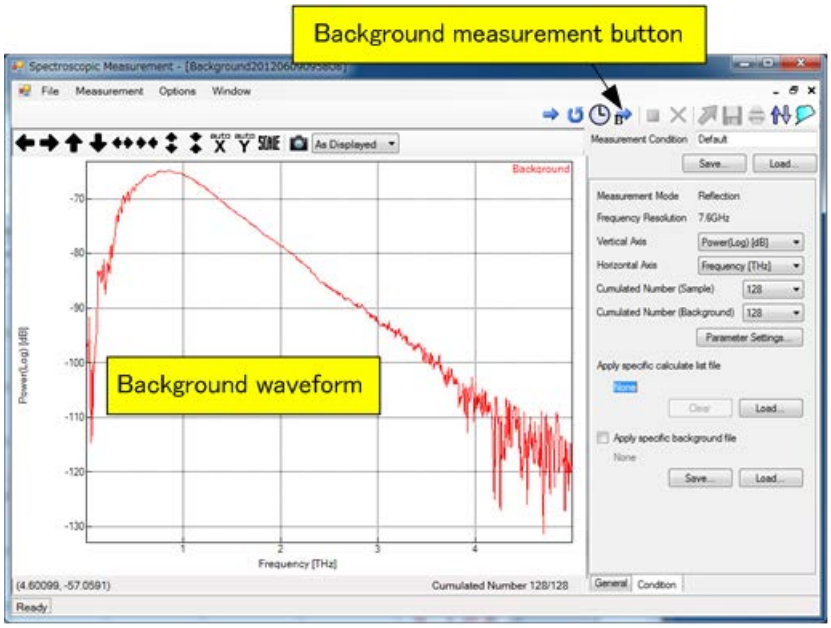
4) Select the Condition tab in the condition setting area of the Spectroscopic Measurement window and specify the conditions as shown in the following figure:

Figure 4-5 Condition Tab in Condition Setting Area



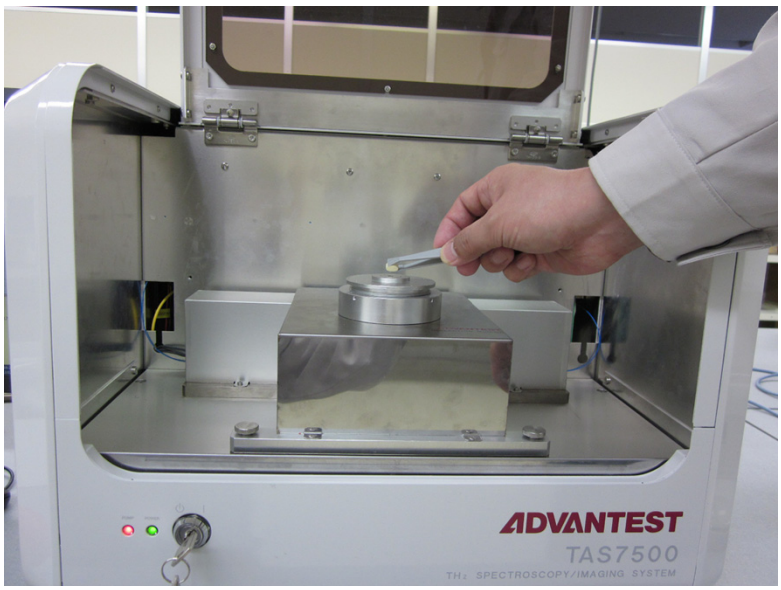
5) Execute background measurement.
Click the background measurement button on the tool bar to display the background waveform.

Figure 4-6 Background Measurement



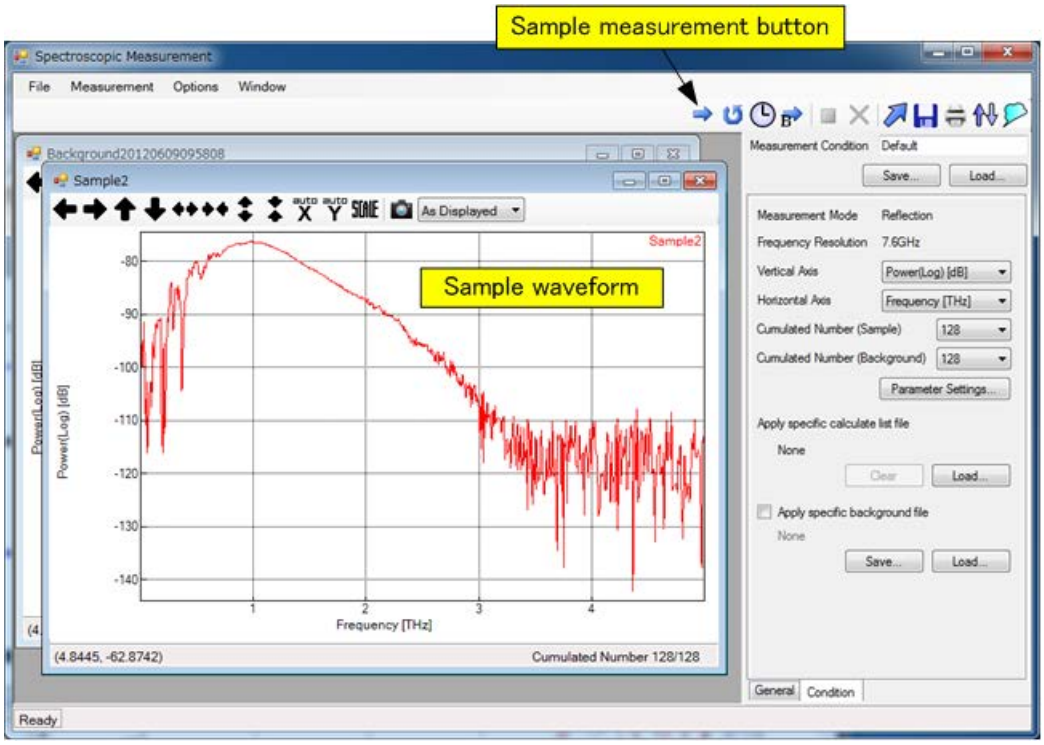
6) Place the sample on the measurement module.

Figure 4-7 Setting Sample



7) Execute sample measurement.
Click the sample measurement button on the tool bar to display the sample waveform.

Figure 4-8 Sample Measurement



To continuously acquire and monitor the sample waveform, click the button on the tool bar. To stop this operation, click the button.

8) Save the sample waveform to a file.
Click the button on the tool bar to open a file selection dialog box. Enter a file name in the dialog box and save the file.
To analyze data immediately after measurement, transfer the sample waveform to the Analyze window using the button on the tool bar.

4. 1. 2 Basic Analysis Operations

Basic operations of the analysis function are roughly categorized into the following three steps:

1. Starting the Analyze window
2. Loading the waveform data file
3. Analyzing waveforms. In this section, the following operations are performed as examples:
   - Changing the vertical axis
   - Smoothing
   - Detecting peaks
   - Comparing two waveforms

The following section describes analysis operations:

1) Start the Analyze window.
Click the **[Analysis]** button in the Navigation window to start the Analyze window.

Figure 4-9 Analysis Button

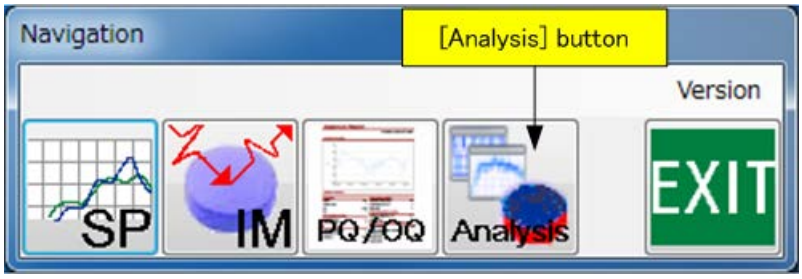
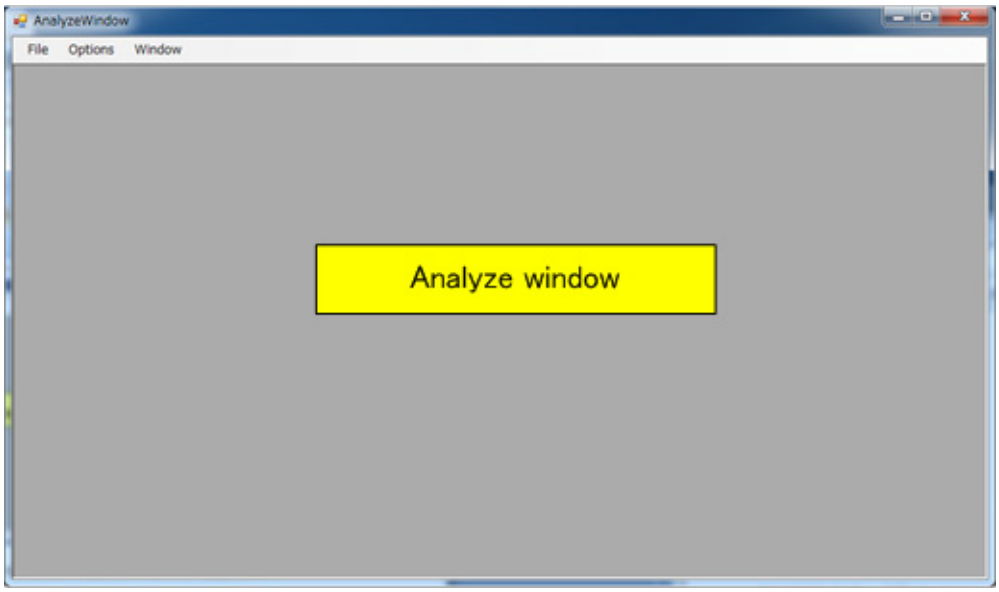
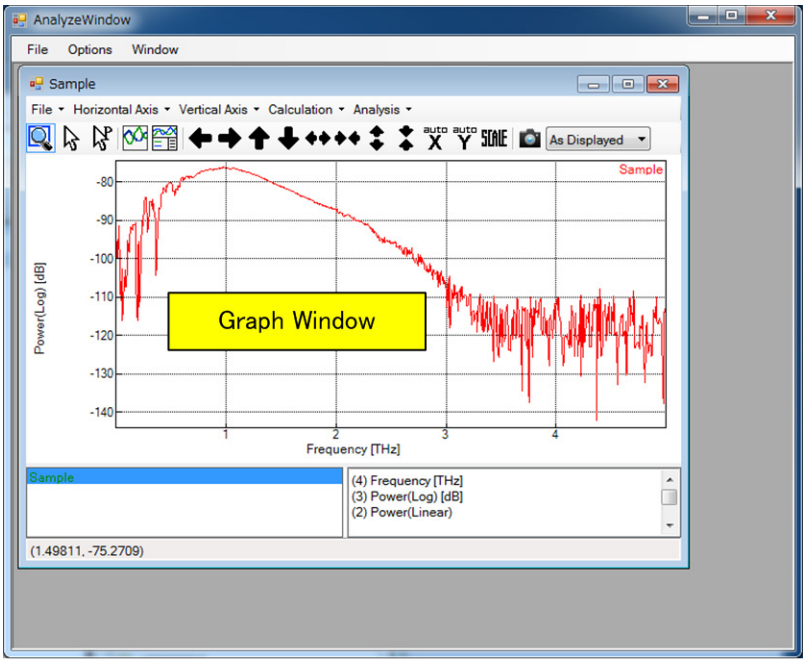


Figure 4-10 Analyze Window



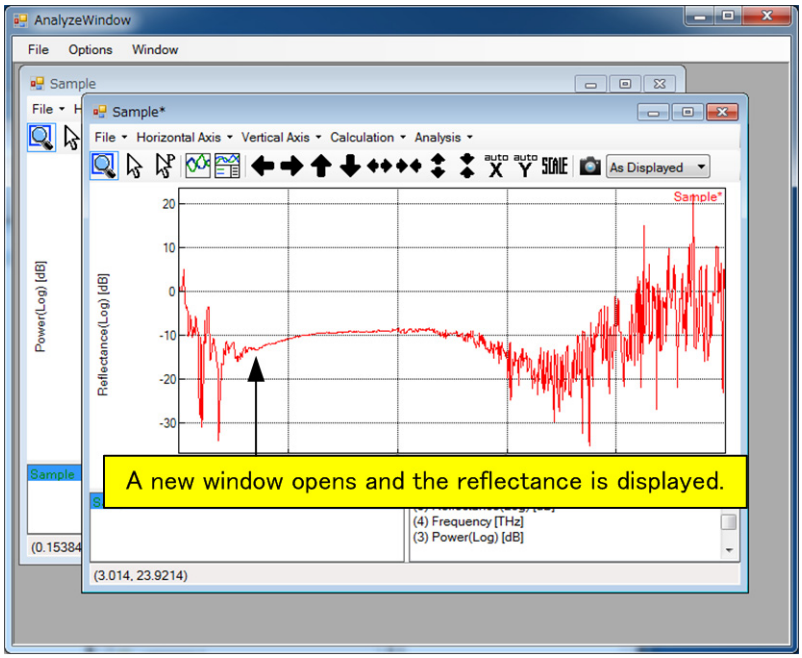
2) Load a data file.
Select **[File]** → **[Load PointData...]** in the Analyze window to start a file selection dialog box. Enter the file name in the dialog box and load the file. A graph window then opens and the spectrum is displayed.

Figure 4-11 Graph Window



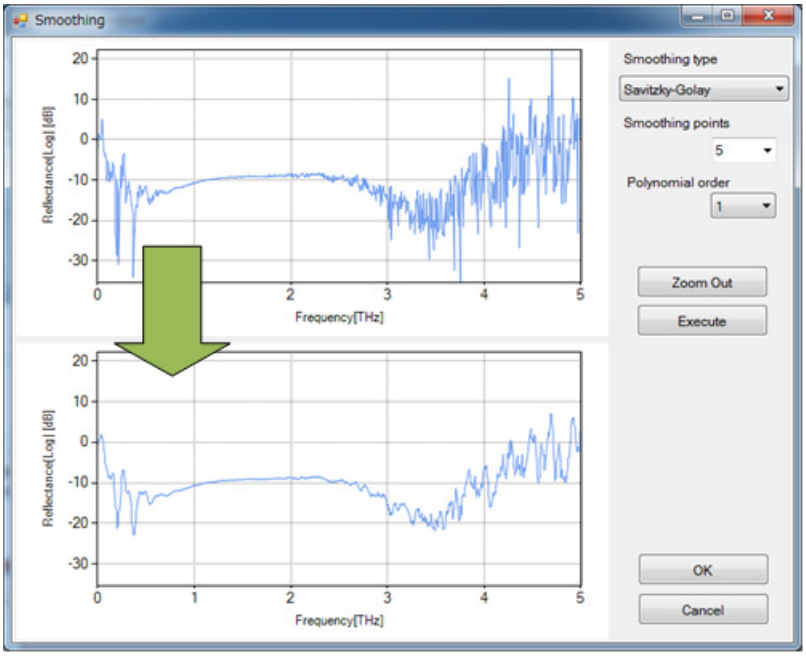
3) Change the type of vertical axis for the spectrum.
For example, click **[Vertical Axis]** → **[Reflectance(Log) [dB]]** in the graph window to change the type to reflectance. A new graph window then opens and the reflectance is displayed.

Figure 4-12 Graph Window Displaying Reflectance



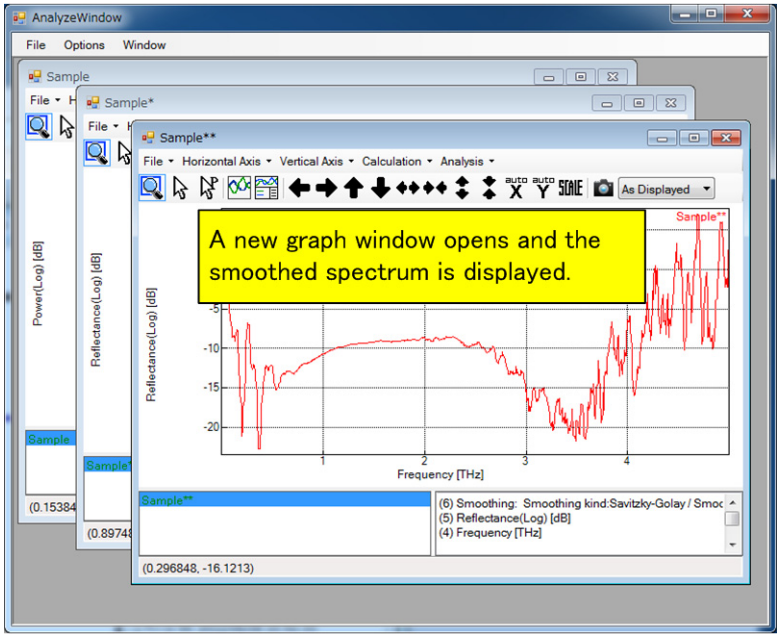
4) Execute smoothing to remove noise from the spectrum.
Click **[Calculation]→ [Smoothing]** in the graph window to start the Smoothing dialog box. For example, specify the conditions as shown in the following figure and click the **[Execute]** button to execute Savitzky-Golay smoothing. The result is then displayed in the lower graph. Repeat this work while changing conditions and check the result.

Figure 4-13 Smoothing Dialog Box



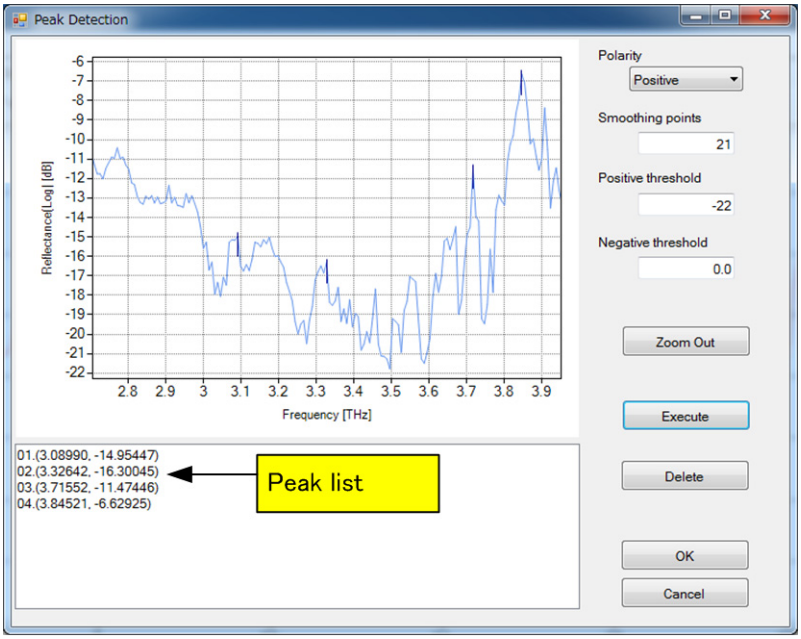
When an appropriate result is achieved, click the **[OK]** button. The smoothed spectrum is then displayed in the new graph window of the Analyze window.

Figure 4-14 Graph Window after Smoothing



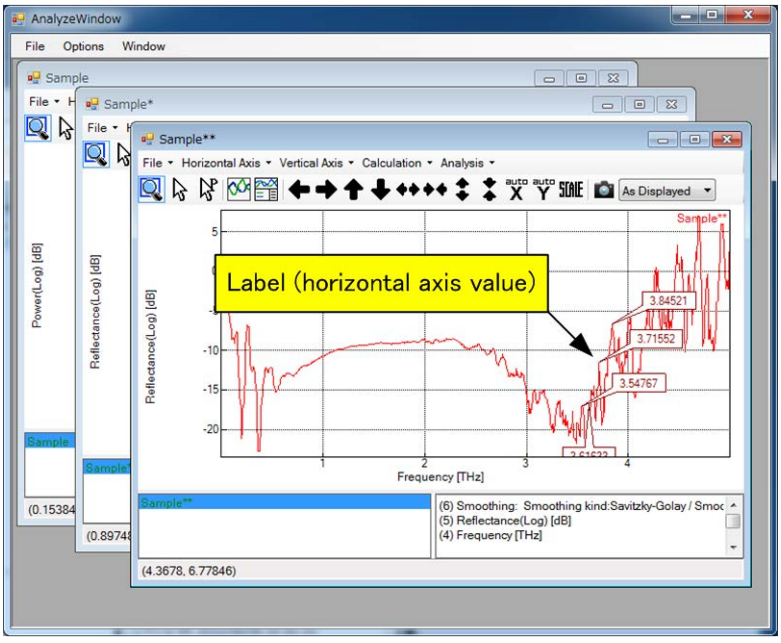
5) Detect peaks.
Click **[Analysis]** → **[Peak Detection]** in the graph window to start the Peak Detection dialog box. For example, enter the settings as shown in the following figure and click the **[Execute]** button to detect only the positive peaks with levels greater than -22.

Figure 4-15 Peak Detection Dialog Box



Clicking the **[OK]** button at this point displays labels (horizontal axis values) at the positions of the relevant peaks in the graph window.

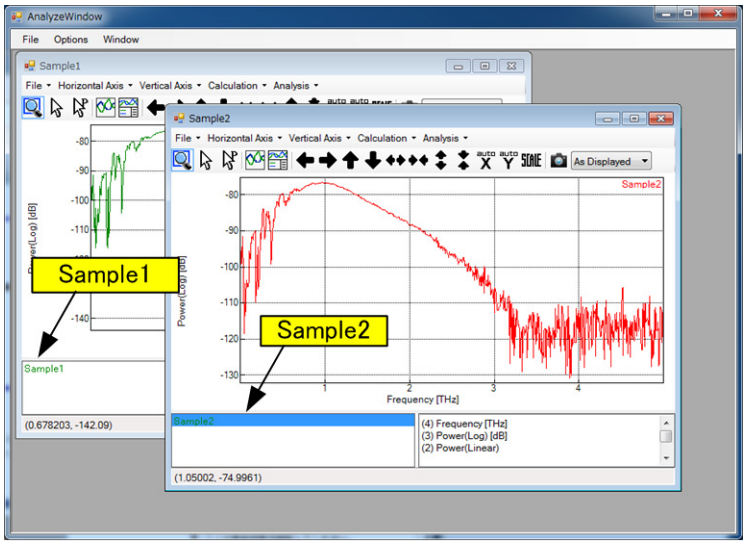
Figure 4-16 Displaying Labels (Positions on Horizontal Axis)



6) Load another data file and overlap spectra for comparison.

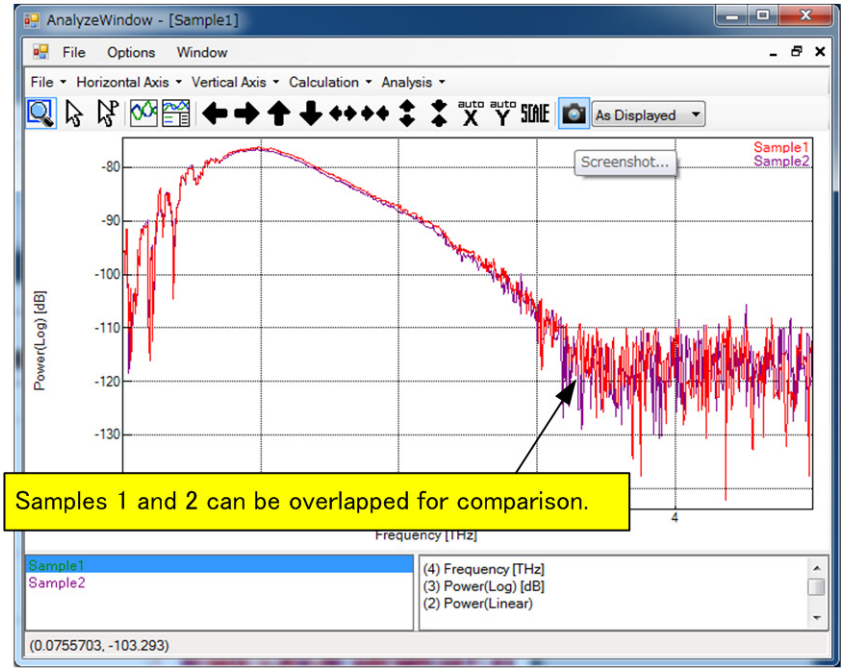
In the following example, another data file has been loaded according to step 2) and two graph windows have started.

Figure 4-17 Two Waveforms



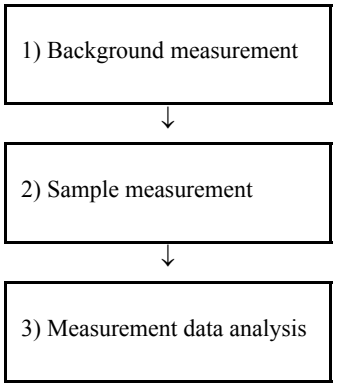
Select Sample2 with the mouse and press the [Ctrl and C] keys. Display the Sample1 window in front and press the [Ctrl and V] keys. The spectra in Sample1 and Sample2 then overlap.

Figure 4-18 Graph Window where Two Waveforms Overlap



4. 1. 3 Polarization Measurement and Analysis Operations (Polarization Analysis Option)

The following describes the polarization measurement and analysis operation procedure:



Measure the background. The wire grid angle is 0°.

Measure the sample. The wire grid angles are 45° and -45°.

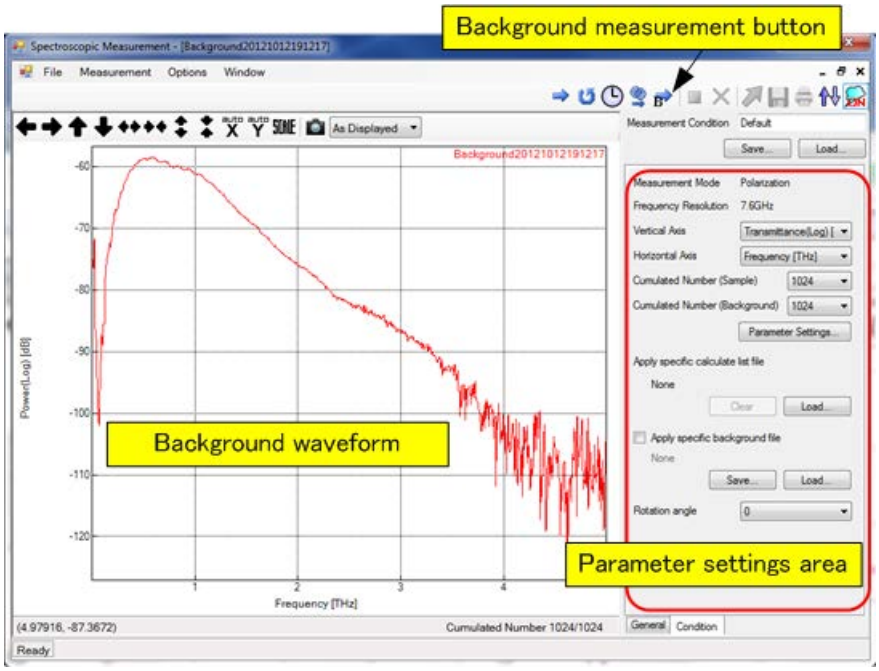
Analyze measurement data.

1) Background measurement

The procedure for measuring the background is as follows.

1. Remove the sample from the transmission module (polarization measurement type).
2. Input the measurement parameters in the parameter settings area.
3. Click the Background Measurement button on the tool bar.
4. This will bring up a message box containing the following instructions.
   "Set the wire grid angle lever to 0 degrees, and push OK button."
5. Following the instruction, set the angle adjustment lever of the wire grid of the transmission module (polarization measurement type) to 0° and click the **[OK]** button.

Figure 4-19 Background Measurement

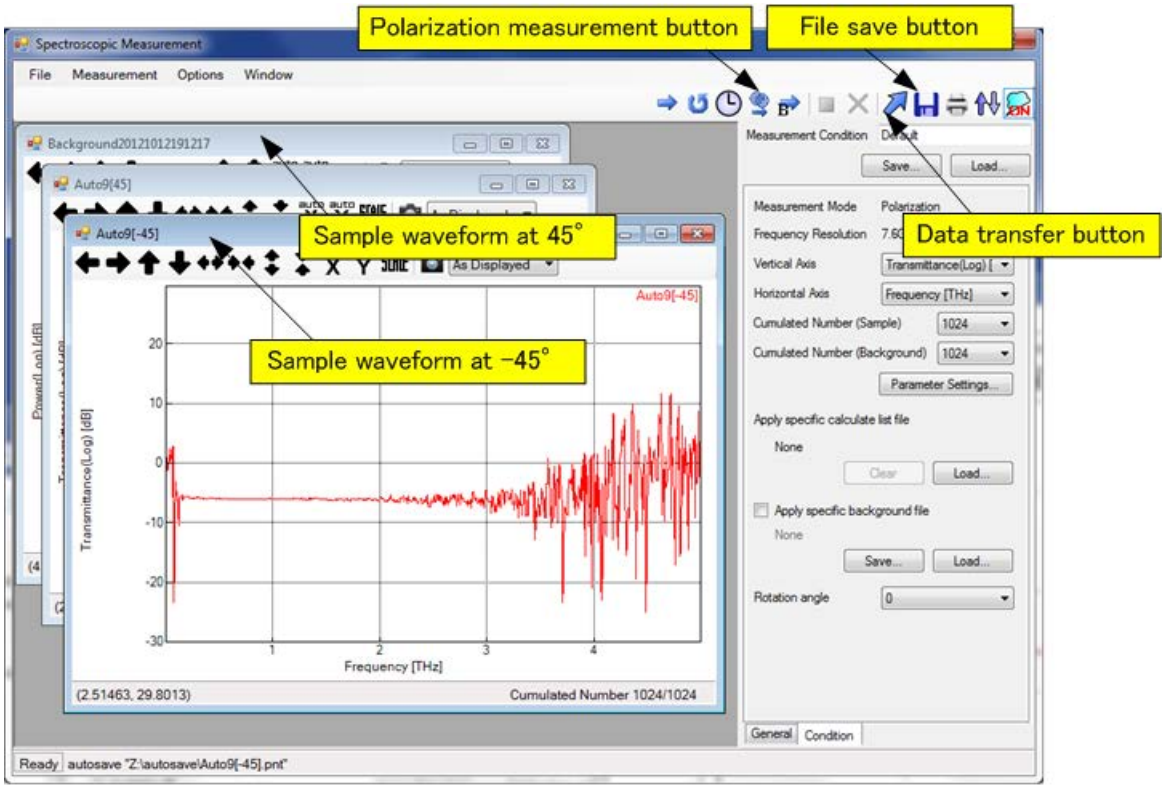


2) Sample measurement

The procedure for sample measurement is as follows. In the polarization settings, the angle of the wire grid can be set in one of two positions (45° and -45°).

1. Place the sample in the transmission module (polarization measurement type).
2. Click the Polarization Measurement button on the tool bar.
3. This brings up a message box containing the following instructions.
   "Set the wire grid angle lever to 45 degrees, and push OK button."
4. Following the instruction, set the angle adjustment lever of the wire grid of the transmission module (polarization measurement type) to 45° and click the **[OK]** button.
5. This brings up a message box containing the following instructions.
   "Set the wire grid angle lever to -45 degrees, and push OK button."
6. Following the instruction, set the angle adjustment lever of the wire grid of the transmission module (polarization measurement type) to -45° and click the **[OK]** button.
7. Click the File Save button to save the measurement data.
8. In order to analyze the measurement data, transfer the measurement data to the analysis window by clicking the data transfer button.

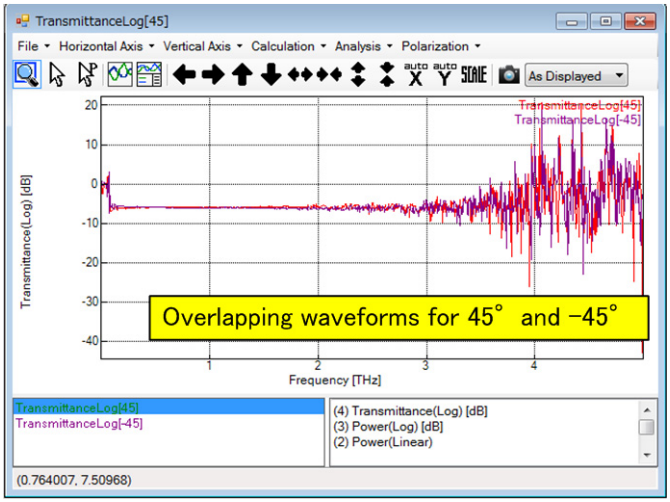
Figure 4-20 Sample Measurement



3) Measurement data analysis

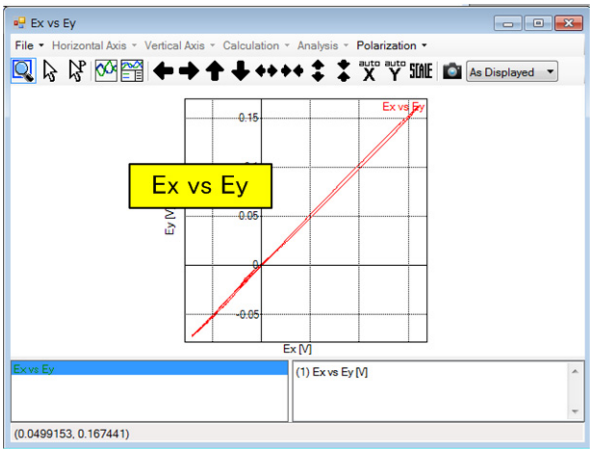
The polarization analysis data transferred from the measurement window is shown in a single graph window containing the overlapping waveforms for 45° and -45°.

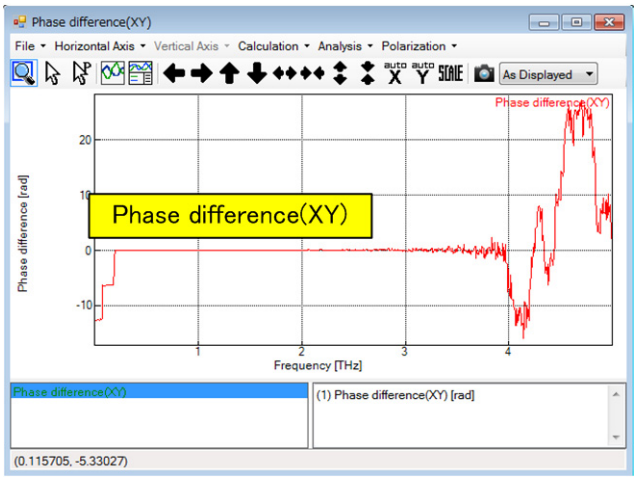
Figure 4-21 Transferred Polarization Analysis Data

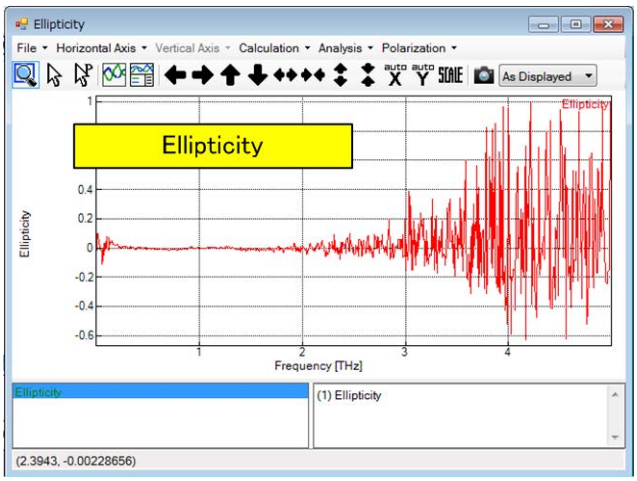


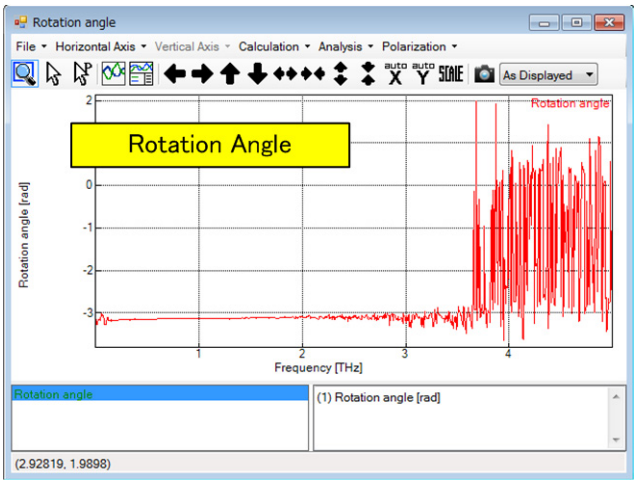
In the analysis window, the polarization analysis data can be displayed using various axes. The desired axes can be selected from the Polarization menu in the graph window.

Figure 4-22 Displaying the Polarization Analysis Data along Various Axes








Rotation angle
File
Horizontal Axis
Vertical Axis
Calculation
Analysis
Polarization
As Displayed
Rotation angle
Rotation Angle
Rotation angle [rad]
Frequency [THz]
Rotation angle
(1) Rotation angle [rad]
(2.92819, 1.9898)

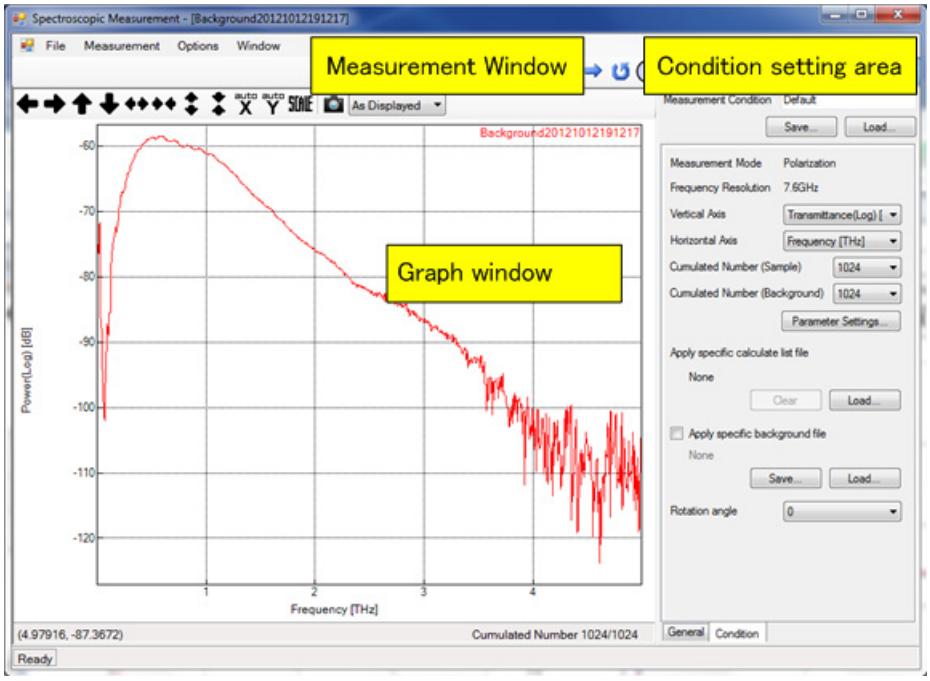
4. 2 Spectroscopic Measurement Window

This section describes the Spectroscopic Measurement window.

4. 2. 1 Window Layout

Figure 4-23 shows the user interfaces in the Spectroscopic Measurement window.

Figure 4-23 Spectroscopic Measurement Window



4. 2. 2 Menu Bar

The menu bar contains various pull-down menus for measurement.

4. 2. 2. 1 [File]

The following selections can be made in the **[File]** menu:

◆ **[File] → [Save Data...]**

This command saves sample waveforms to a file.

Sample waveforms can be saved in the following file formats:

TAS7x00 PointData (*.pnt)	Spectrum measurement data file
CSV (*.csv)	CSV file
JCAMP-DX (*.jdx)	JCAMP-DX format file The JCAMP-DX format is the standard file format used to exchange spectroscopic data.
SPC (*.spc)	SPC format file The SPC format is a spectroscopic data file format developed by Galactic (current name: Thermo Scientific).

◆ **[File] → [Print Report...]**

This command prints a report.

Clicking this command opens the Print Report dialog box.

➔ For more information on this dialog box, refer to 4. 2. 5. 6 "Print Report Dialog Box" on page 4-37.

◆ **[File] → [Close]**

This command closes the Spectroscopic Measurement window.

4. 2. 2. 2 [Measurement]

The following selections can be made in the **[Measurement]** menu:

◆ **[Measurement] → [Single Measurement]**

This command executes sample measurement (once).

◆ **[Measurement] → [Repeat Measurement]**

This command repeats sample measurement.

Use this command to observe the temporal change of waveforms.

◆ **[Measurement] → [Programmable Measurement]**

This command repeats measurement at certain time intervals and saves measurement data to a file.

Clicking this command opens the Programmable Measurement dialog box.

➔ For more information on this dialog box, refer to 4. 2. 5. 1 "Programmable Measurement Dialog Box" on page 4-27.

◆ **[Measurement] → [Polarization Measurement]**

This command executes a polarization measurement.

◆ **[Measurement] → [Background Measurement]**

This command executes background measurement.

◆ **[Measurement] → [Stop Measurement]**

This command stops measurement.

◆ **[Measurement] → [Abort Measurement]**

This command terminates measurement.

Data during measurement is discarded.

◆ **[Measurement] → [Send to Analysis]**

This command transfers a sample waveform to the Analyze window.

◆ **[Measurement] → [Check Measurement Module]**

This command detects the currently connected measurement module. The detected measurement module is displayed in Measurement Mode on the Condition tab.

◆ **[Measurement] → [Dry Air Purge]**

This command executes dry air purge.

◆ **[Measurement] → [Adjust Laser]**

This command executes laser correction.

This menu item is displayed only for the TAS7500 series.

◆ **[Measurement] → [Auto-Adjustment of Laser]**

This command sets periodically-executed laser automatic correction ON or OFF.

However, automatic correction is forced to be set ON when the imaging unit measurement window or PQ/OQ window opens.

This menu item is displayed only for the TAS7500 series.

4. 2. 2. 3 [Options]

The following selections can be made in the **[Options]** menu:

◆ **[Options] → [Visualization...]**

This command specifies the waveform and background colors.

Clicking this command opens the Visualization dialog box.

➔ For more information on this dialog box, refer to 4. 2. 5. 4 "Visualization Dialog Box" on page 4-32.

◆ **[Options] → [Environment...]**

This command specifies where to save system data and the default scale.

Clicking this command opens the Environment dialog box.

➔ For more information on this dialog box, refer to 4. 2. 5. 5 "Environment Dialog Box" on page 4-35.

◆ **[Options] → [Report Settings..]**

This command sets items output to a report.

Clicking this command opens the Report Settings dialog box.

➔ For more information on this dialog box, refer to 4. 2. 5. 7 "Report Settings Dialog Box" on page 4-39.

4. 2. 2. 4 [Window]

The following selections can be made in the **[Window]** menu:

◆ **[Window] → [Cascade]**

This command cascades graph windows.

◆ **[Window] → [Tile Horizontal]**

This command horizontally tiles graph windows.

◆ **[Window] → [Tile Vertical]**

This command vertically tiles graph windows.

4. 2. 3 Tool Bar

The tool bar contains the following buttons:

	Shortcut to **[Measurement]** → **[Single Measurement]**
	Shortcut to **[Measurement]** → **[Repeat Measurement]**
	Shortcut to **[Measurement]** → **[Programmable Measurement]**
	Shortcut to **[Measurement]** → **[Polarization Measurement]**
	Shortcut to **[Measurement]** → **[Background Measurement]**
	Shortcut to **[Measurement]** → **[Stop Measurement]** When this button is blue, repeated measurement is stopped. When this button is red, single measurement is stopped.
	Shortcut to **[Measurement]** → **[Abort Measurement]**
	Shortcut to **[Measurement]** → **[Send to Analysis]**
	Shortcut to **[File]** → **[Save Data...]**
	Shortcut to **[File]** → **[Print Report...]**
	Shortcut to **[Measurement]** → **[Check Measurement Module]**
	Shortcut to **[Measurement]** → **[Dry Air Purge]** During dry air purge execution, ON is displayed on button.
	Shortcut to **[Measurement]** → **[Adjust Laser]** This button is displayed only for the TAS7500 series.
	Shortcut to **[Measurement]** → **[Auto-Adjustment of Laser]** When laser automatic correction is OFF, a red diagonal line is displayed on the button. This button is displayed only for the TAS7500 series.

4. 2. 4 Condition Setting Area

This section describes the condition setting area.

Measurement condition	Specifies the measurement name.
[Save...] button	Saves measurement conditions to a file.
[Load...] button	Loads a measurement condition file.

4. 2. 4. 1 General Tab

This section describes the General tab.

Prefix — Specifies a measurement data name.

[Naming Rules...] button — Specifies the naming rules for measurement data.
Clicking this button opens the Naming Rules dialog box.

➔ For more information on this dialog box, refer to 4. 2. 5. 2 "Naming Rules Dialog Box" on page 4-28.

Comment — Enter comment on measurement data.

[Enable auto transfer to analysis] checkbox

When this button is ON, measurement data is automatically transferred to the Analyze window.

[Enable auto save] checkbox — When this button is ON, measurement data is automatically saved to a file.

[Save displayed data CSV] checkbox

When this button is ON, measurement data is saved to a file in CSV format.

[Save TimeDomain CSV] checkbox

When this button is ON, time waveform data of measurement data is saved to a file in CSV format.
In this file, both sample waveform and background waveform data items are contained.

[Browse...] button — Specifies where to save measurement data.

[Show Background message] checkbox

Usually, when measuring the background with the transmission module (polarization measurement type), a confirmation message about the wire grid angle is displayed. The message is displayed if the checkbox is ticked and not displayed if the checkbox is not ticked.

4. 2. 4. 2 Condition Tab

This section describes the Condition tab.

Measurement Mode	Displays the installed measurement module.	
Frequency Resolution	Displays the frequency resolution. The TAS7400 can select either of the following frequency resolutions: 1.9 GHz/7.6 GHz [Default: 1.9 GHz]	
Vertical Axis	Selects a type of vertical axis.	
	Transmittance(Log) [dB]	Transmittance (log display) This can only be selected in the transmission or polarization measurement mode.
	Transmittance(Linear) [%]	Transmittance This can only be selected in the transmission or polarization measurement mode.
	Reflectance(Log) [dB]	Reflectance (log display) This can only be selected in the reflection measurement mode.
	Reflectance(Linear) [%]	Reflectance This can only be selected in the reflection measurement mode.
	ATR(Log) [dB]	ATR (log display) This can only be selected in the ATR measurement mode.
	ATR(Linear) [%]	ATR This can only be selected in the ATR measurement mode.
	Log(1/R)	Log (1/R) is calculated as R=Io/I from the power spectrum (I) of the sample and the reference power spectrum (lo). The same as Absorbance when the measurement mode is Transmission.
	Absorbance	Absorbance This can only be selected in the transmission or polarization measurement mode.
	Absorption Coefficient [cm-1]	Absorption coefficient
	Extinction Coefficient	Extinction coefficient
	Refractive Index	Refractive index
	Permittivity	Permittivity
	Dielectric Loss	Dielectric loss
	Phase Shift [rad]	Phase difference
	Power(Log) [dB]	Frequency spectrum (log display)
	Power(Linear)	Frequency spectrum
	Phase [rad]	Phase
	Time Domain [V]	Time waveform

Horizontal Axis	Selects a type of horizontal axis.	
	Frequency [THz]	Frequency
	Wave Numbers [cm-1]	Number of waves
	Wave Length [um]	Wavelength
	Time [psec]	Time This can only be selected when Time Domain [V] is selected as the vertical axis type.

Cumulated number (Sample)

Specifies how many times sample measurement is cumulated.
1 to 16384

Cumulated number (Background)

Specifies how many times background measurement is cumulated.
1 to 16384

[Parameter Settings...] button

Specifies detailed axis conversion conditions.
Clicking this button opens the Parameter Settings dialog box.

➔ For more information on this dialog box, refer to 4. 2. 5. 3 "Parameter Settings Dialog Box" on page 4-29.

Apply specific calculate list file

[Clear] button — Clears the calculation list file.

➔ For more information on the calculation list file, refer to 7. 1 "Calculation List (File)" on page 7-1.

[Load...] button — Loads the calculation list file.

➔ For more information on the calculation list file, refer to 7. 1 "Calculation List (File)" on page 7-1.

[Apply specific background file] checkbox

Turn ON this button to specify the background waveform with a file.

[Save ...] button — Saves the background waveform to a file.

[Load ...] button — Loads the background waveform from a file

Rotation angle — Specifies the angle of the wire grid of the transmission module (polarization measurement type). The angle can be set to 0°, 45° and -45°. These values must match the actual position of the lever. Only active for Single and Repeat measurements with the transmission module (polarization measurement type).

4. 2. 5 Dialog Boxes

This section describes dialog boxes.

4. 2. 5. 1 Programmable Measurement Dialog Box

This dialog box is used to repeat measurement at certain time intervals and save measurement data to a file.

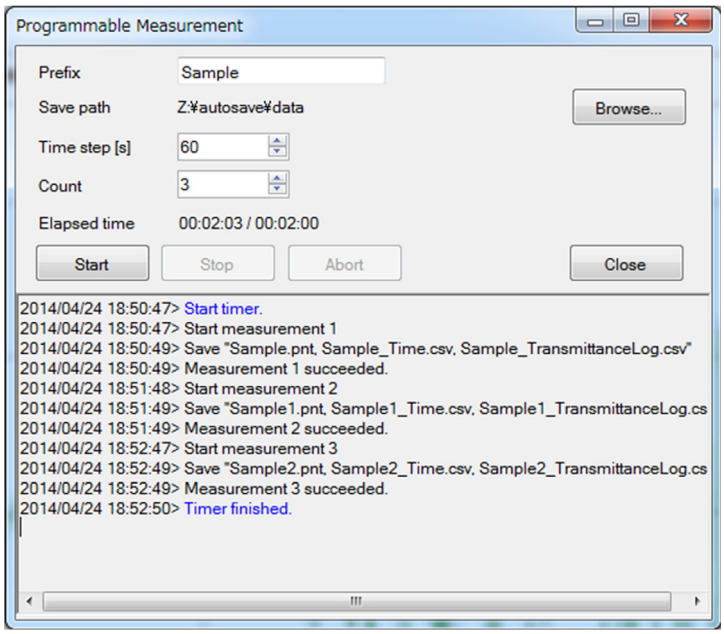
The following three file types are saved:

1. Spectrum measurement data file
2. CSV-format file containing time waveform data*1
3. CSV-format file containing currently displayed vertical axis data

**1 As for 2., time waveform data of sample and background waveforms is output to a file. However, if sample waveforms does not have a background waveform, this data is not displayed.*

Start this dialog box by selecting **[Measurement]** → **[Programmable Measurement]**.

Figure 4-24 Programmable Measurement Dialog Box



Prefix	Specify a prefix to be attached to the saved file name.

Tip

The settings in the Naming Rules dialog box are applied for the name of file to be saved.

➔ For more information on the dialog box, refer to 4. 2. 5. 2 "Naming Rules Dialog Box" on page 4-28.

Save path	
[Browse...] button	Specifies the directory in which to save the file.
Time step	Specifies a time interval. The unit is seconds. (0 to 20000)
Count	Specifies the number of times measurement is executed. (1 to 2000)
[Start] button	Starts timer measurement.
[Stop] button	Stops measurement.
[Abort] button	Terminates measurement.
[Close] button	Closes the dialog box.

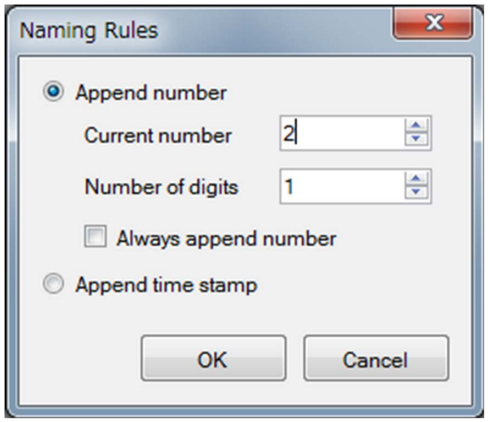
4. 2. 5. 2 Naming Rules Dialog Box

This dialog box is used to specify the naming rules for measurement data.

The number or date can be selected in this dialog box.

Start this dialog box by clicking the **[Naming Rules...]** button described in 4. 2. 4. 1 "General Tab" on page 4-24.

Figure 4-25 Naming Rules Dialog Box



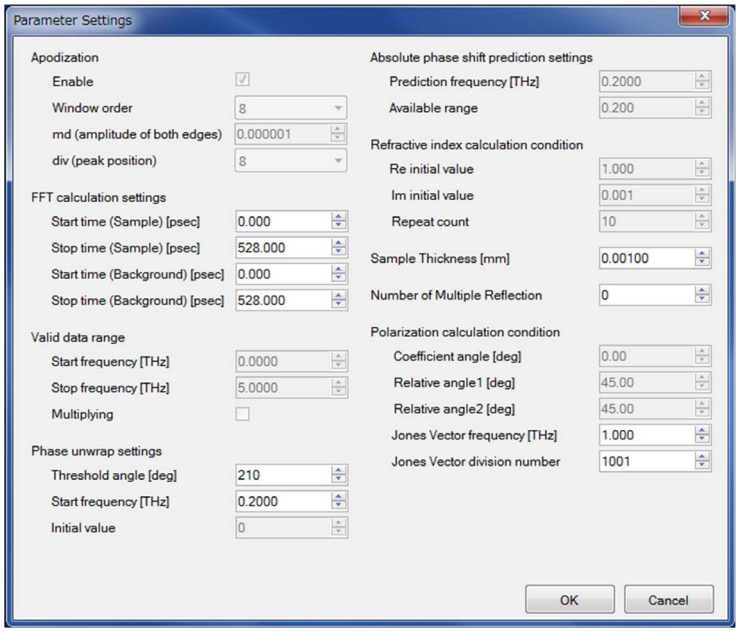
[Append number] button	Turn this button ON to select a number.
Current number	Initial number (0 to 9999) If 0 is specified, a number is not appended. When measurement is executed from the Programmable Measurement dialog box, this value is initialized to 0.
Number of digits	Number of digits (1 to 4)
[Always append number] checkbox	When selected, sequential numbers are given to file names even when Current-Number is 0.
[Append time stamp] button	Turn this button ON to select the date. The format is yyyymmddhhmmss.
[OK] button	Enables the specified setting.
[Cancel] button	Closes the dialog box.

4. 2. 5. 3 Parameter Settings Dialog Box

This dialog box is used to specify detailed axis conversion conditions.

Start this dialog box by clicking the **[Parameter settings...]** button described in 4. 2. 4. 2 "Condition Tab" on page 4-25 or the **[Parameter settings...]** menu described in 4. 5. 4 "Pop-up Menu" on page 4-76.

Figure 4-26 Parameter Settings Dialog Box



◆ Apodization

Displays window function conditions.

Enable	Whether to apply the window function.
Window order	Order of window function.
md (amplitude of both edges)	Amplitude of both edges.
div (peak position)	Peak data position.

◆ FFT calculation settings

Specifies the conditions under which fast Fourier transform (FFT) is executed for the time domain waveform.

Start time (Sample) [psec]	Start position of effective data when FFT is executed for sample waveforms. (0.000 to Stop time)
Stop time (Sample) [psec]	Stop position of effective data when FFT is executed for sample waveforms. (Start time to 528.000)
Start time (Background) [psec]	Start position of effective data when FFT is executed for background waveforms. (0.000 to Stop time)
Stop time (Background) [psec]	Stop position of effective data when FFT is executed for background waveforms. (Start time to 528.000)

Tip

If background waveform data does not exist, its related items are not displayed.

◆ Valid data range

Displays data range conditions.

Start frequency [THz]	Start frequency for FFT.
Stop frequency [THz]	Stop frequency for FFT.
Multiplying	Whether to multiply.

◆ Phase unwrap settings

Specifies the conditions for phase unwrap processing.

➔ For more information on phase unwrap processing, refer to 7. 2 "Phase Unwrap Processing" on page 7-2.

Threshold angle [deg]	Angle criterion for unwrap processing. (0 to 360)
Start frequency [THz]	Start frequency for unwrap processing. (0.0000 to 10.0000)
Initial value	Initial value for unwrap processing.

◆ Absolute phase shift prediction settings

Displays phase difference conditions.

Prediction frequency [THz]	Correction frequency.
Available range	Valid range width.

◆ Refractive index calculation condition

Specifies the refractive index calculation conditions.

Re initial value	Initial refractive index.
Im initial value	Initial extinction coefficient.
Repeat count	Number of calculation repetitions.

◆ Sample Thickness[mm]

Sample thickness. (0.00001 to 10.00000)

◆ Number of Multiple Reflection

Specifies the number of multiple reflections. (0 to 50)

◆ **[OK]** button

Enables the specified parameters.

◆ **[Cancel]** button

Closes the dialog box.

◆ Polarization calculation condition (Polarization Analysis Option)

For polarization analysis data, the following values are valid:

Coefficient angle[deg]	Correction angle of the wire grid
Relative angle1[deg]	Relative angle 1 of the wire grid
Relative angle2[deg]	Relative angle 2 of the wire grid
Jones Vector frequency[THz]	Jones Vector frequency
Jones Vector division number	Jones Vector division number

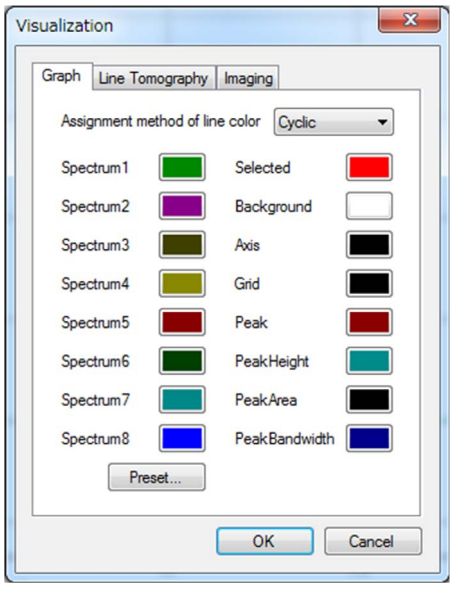
4. 2. 5. 4 Visualization Dialog Box

This dialog box is used to specify the waveform and imaging result colors.

This dialog box opens from the following menus:

- **[Visualization...]** in 4. 2. 2. 3 "[Options]" on page 4-21
- **[Visualization...]** in 4. 4. 2. 2 "[Options]" on page 4-48
- **[Visualization...]** in 5. 2. 2. 3 "[Options]" on page 5-22
- **[Visualization...]** in 5. 5. 2. 2 "[Options]" on page 5-50

Figure 4-27 Visualization Dialog Box



◆ Graph tab

Specifies the colors used for waveform display.

[Assignment method of line color] menu

Specifies how to assign colors for Spectrum 1 to 8 to waveforms.

Cyclic	Assigns eight waveform colors cyclically. For example, if there are nine waveforms, the first color is assigned to the ninth waveform.
Stretch	Handles eight waveform colors as one color map and assigns the colors so that the entire waveform currently displayed shows the color map. For example, if there are nine waveforms, the first color is assigned to the first waveform, the eighth color to the ninth waveform, and interpolation colors to the remaining waveforms according to the color map.

Spectrum1 to 8	Waveform color patterns. When waveforms overlap, these color patterns are applied starting from Spectrum1.
Selected	Color of the selected waveform
Background	Background color
Axis	Axis color
Grid	Grid color
Peak	Color of peak annotation
PeakHeight	Color of height annotation
PeakArea	Color of area annotation
PeakBandwidth	Color of area annotation

[Preset...] button

Selects a color map to be applied to Spectrum 1 to 8.
Select from the following:

Default	Default gradation
Standard	Gradation of blue-green-red
AnalogyRed	Reddish gradation
AnalogyGreen	Greenish gradation
AnalogyBlue	Bluish gradation
BlueRedGreen	Gradation of blue-red-green
RedGreenBlue	Gradation of red-green-blue
GreenBlueRed	Gradation of green-blue-red

◆ Line Tomography tab

Specifies the colors used for line tomography display.

Colormap	Color maps used for line tomography display	
	Standard	Standard gradation
	Gray	Gray gradation
	Red	Red gradation
	Green	Green gradation
	Blue	Blue gradation
	BlueRed	Gradation from blue to red
	BlueGreen	Gradation from blue to green
	BlueWhiteRed	Gradation from blue to white to red
	RedYellowWhite	Gradation from red to yellow to white
	Rainbow	Rainbow color gradation

◆ Imaging tab

Specifies the colors used for imaging display.

Colormap	Color maps used for imaging display	
	Standard	Standard gradation
	Gray	Gray gradation
	Red	Red gradation
	Green	Green gradation
	Blue	Blue gradation
	BlueRed	Gradation from blue to red
	BlueGreen	Gradation from blue to green
	BlueWhiteRed	Gradation from blue to white to red
	RedYellowWhite	Gradation from red to yellow to white
	Rainbow	Rainbow color gradation
Not Detectable	Color for invalid data	
Incomplete	Color for data not yet measured	
Background	Background patterns	
	Gradation	Gradation
	Monochromatic	Single color
Backcolor1	Start color for gradation or the monochromatic color	
Backcolor2	End color for gradation	
[OK] button	Applies the specified settings.	
[Cancel] button	Closes the dialog box.	

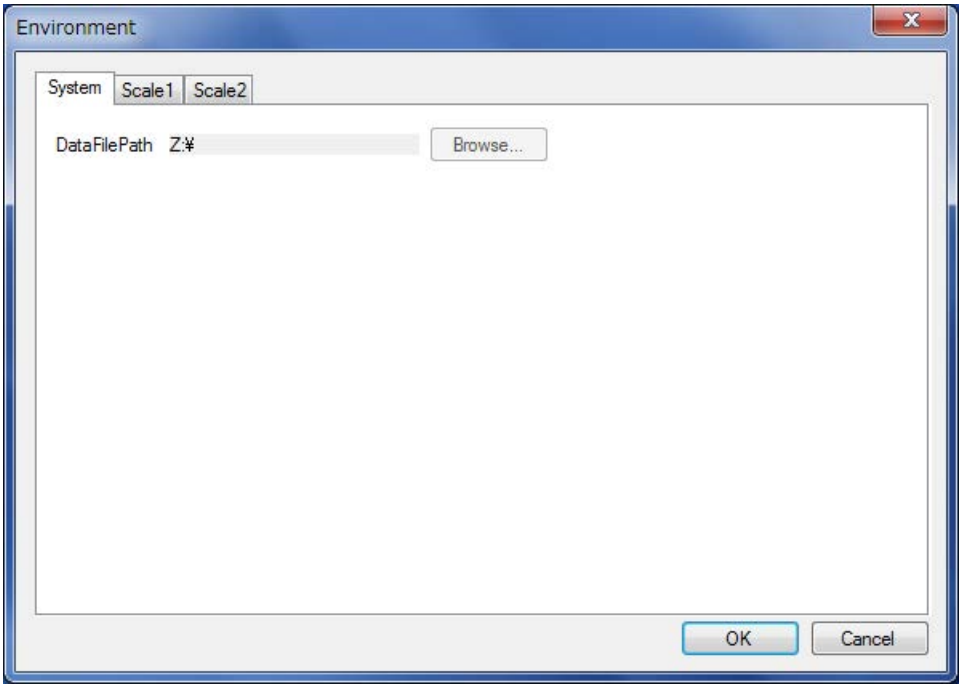
4. 2. 5. 5 Environment Dialog Box

This dialog box is used to specify settings such as the system and display scale settings.

This dialog box opens from the following menus:

- **[Environment...]** in 4. 2. 2. 3 "[Options]" on page 4-21
- **[Environment...]** in 4. 4. 2. 2 "[Options]" on page 4-48
- **[Environment...]** in 5. 2. 2. 3 "[Options]" on page 5-22
- **[Environment...]** in 5. 5. 2. 2 "[Options]" on page 5-50

Figure 4-28 Environment Dialog Box



◆ System tab

DataFilePath	Directory in which to store system data. It can be changed only offline.
[Browse...] button	Specifies the system data directory.

◆ Scale1 tab

Specifies the default scale for the waveform.

GraphWindow Vertical Scale	Specifies the default scale for the vertical axis.
[Fixed] checkbox	When the checkbox is ON, the scale when the waveform is loaded is fixed as the minimum and maximum values. When this checkbox is OFF, the scale is automatically determined. The same for other Scale tabs.
Max	Maximum scale value
Min	Minimum scale value
Time Domain [V]	Time waveform
Power(Linear)	Frequency spectrum
Power(Log) [dB]	Frequency spectrum (log display)
Phase [rad]	Phase
Phase Shift [rad]	Phase difference
Transmittance(Linear) [%]	Transmittance, reflectance, and ATR
Transmittance(Log) [dB]	Transmittance (log display), reflectance (log display), and ATR (log display)
Absorbance	Absorbance
Absorption Coefficient [cm-1]	Absorption coefficient
Refractive Index	Refractive index
Extinction Coefficient	Extinction coefficient
Permittivity	Permittivity
Dielectric Loss	Dielectric loss
Voltage	Voltage waveform
Normalized	Normalized waveform
Log(1/R)	Log (1/R) waveform

GraphWindow Horizontal Scale	Specify the default scale for the horizontal axis.
Time [psec]	Time
Frequency [THz]	Frequency
Wavenumbers [cm-1]	Number of waves
Wavelength [um]	Wavelength
Thickness[um]	Thickness

◆ Scale2 tab

Specifies the default scale for the imaging waveform.

LinePlot Scale	Specifies the default scale for the vertical axis in the line plot.
Thickness	Film thickness
Surface Reflectance	Surface reflectance
Interface Reflection	Interface reflection
FCSI	Film coating strength index

Imaging Range	Specifies the default scale for the physical amount (surface color) in 3D display.
Thickness	Film thickness
Surface Reflectance	Surface reflectance
Interface Reflection	Interface reflection
FCSI	Film coating strength index
[OK] button	Applies the specified setting and closes the dialog box.
[Cancel] button	Closes the dialog box.

◆ Scale3 tab (polarization analysis option)

Specifies the default scale for polarization analysis data.

GraphWindow Polarization Vertical Scale	
Ey [V]	Ey axis of Ex vs Ey
Phase difference [rad]	Phase difference (XY, LR)
Birefringence	Birefringence (Linear, Circular)
Retardation [nm]	Retardation
Ellipticity	Ellipticity
Rotation angle [rad]	Rotation angle
Optical Rotation [rad]	Optical rotation
Ey	Ey axis of Ex vs Ey (Jones Vector)

GraphWindow Polarization Horizontal Scale	
Ex [V]	Ex axis of Ex vs Ey
Ex	Ex axis of Ex vs Ey (Jones Vector)

4. 2. 5. 6 Print Report Dialog Box

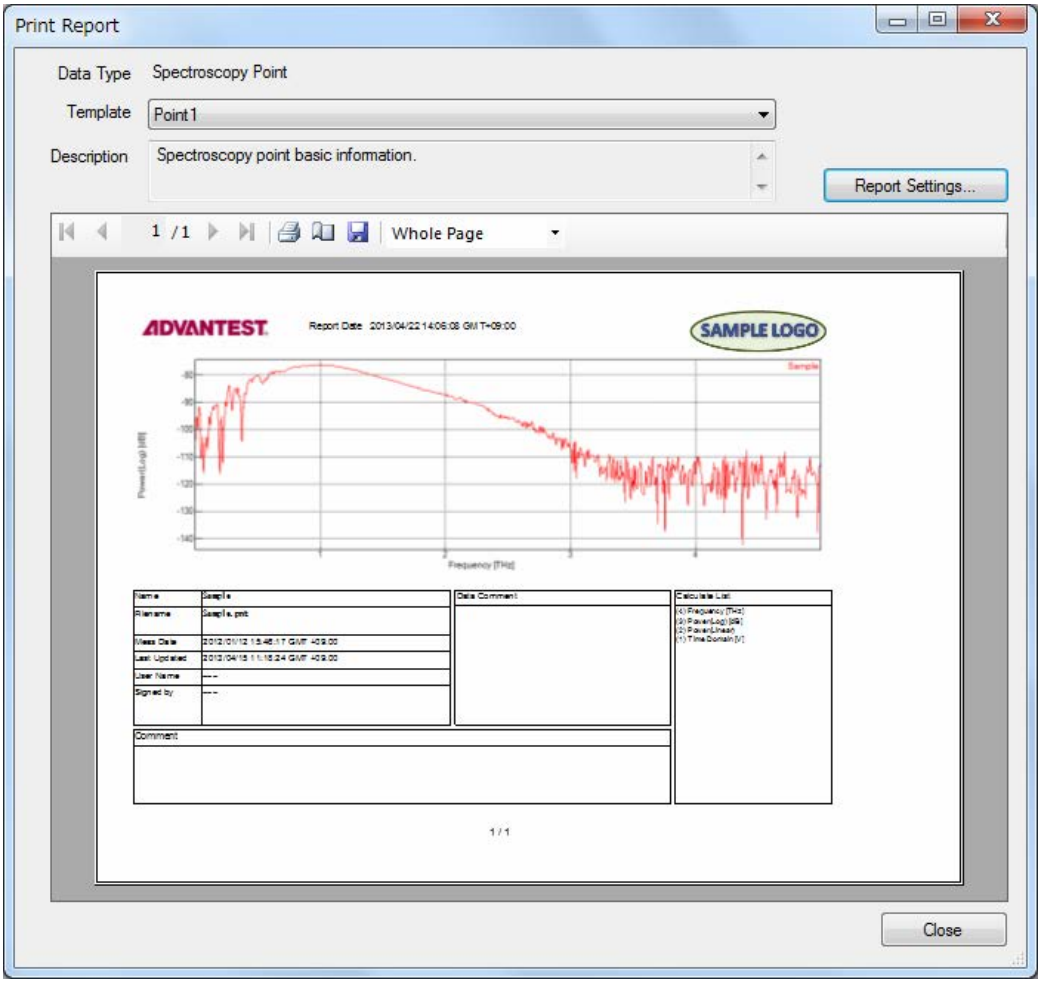
This dialog box outputs reports.

This dialog box opens from the following menu:

- **[Print Report...]** in 4. 2. 2. 1 "[File]" on page 4-19
- **[Print Report...]** in 4. 5. 2. 1 "[File]" on page 4-50

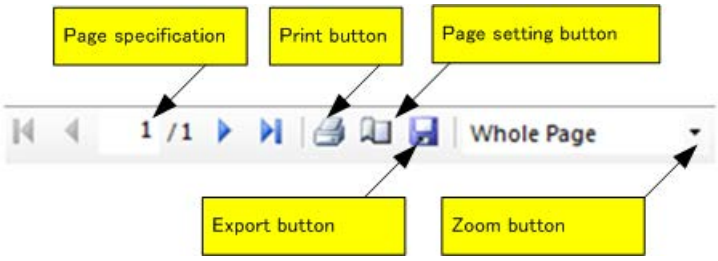
- **[Print Report...]** in 5. 6. 2. 1 "[File]" on page 5-52
- **[Print Report...]** in 5. 7. 2. 1 "[File]" on page 5-59
- **[Print Report...]** in 5. 8. 2. 1 "[File]" on page 5-67
- **[Print Report...]** in 5. 9. 2. 1 "[File]" on page 5-70
- **[Print Report...]** in 5. 11. 2. 1 "[File]" on page 5-75

Figure 4-29 Print Report Dialog Box



Data Type	Displays a data type.
Template	Specifies a template appropriate for the data type.
Description	Displays a description of the template.
[Report Settings...]button	Clicking this command opens the Report Settings dialog box. ➔ For more information on this dialog box, refer to 4. 2. 5. 7 "Report Settings Dialog Box" on page 4-39.
[Close]button	Closes the dialog box.

Figure 4-30 Preview



Page specification	From the left side, the first page, previous page, current page, next page, and last page buttons.
Print button	Prints a report.
Page setting button	Sets pages to be printed.
Export button	Outputs a report to a TIFF or PDF file.
Zoom button	Zooms the preview in or out.

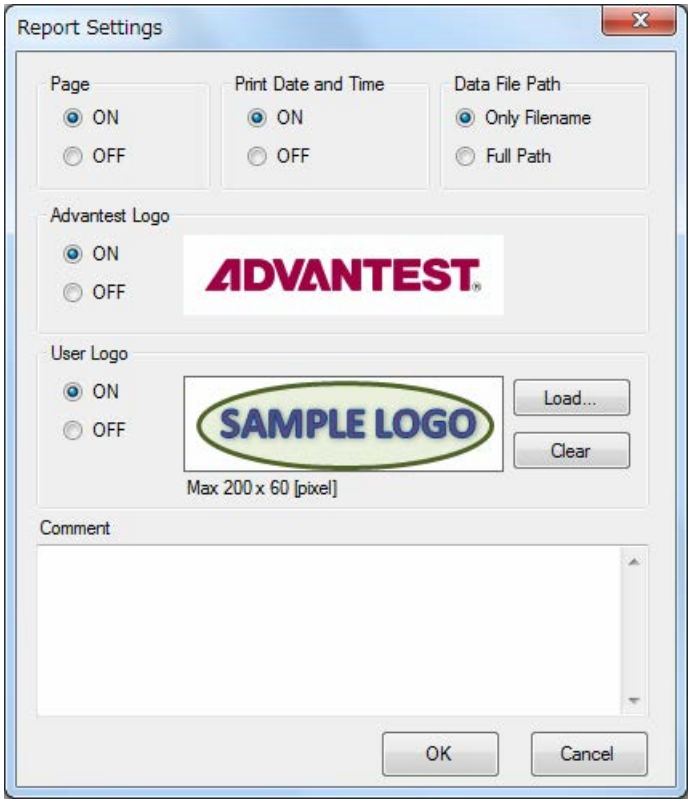
Tip

When shipped, Acrobat Reader is already installed so PDF files can be viewed. However, it is prohibited to convert a PDF file into a file of a different format by using Acrobat Reader.

4. 2. 5. 7 Report Settings Dialog Box

This dialog box sets items to be output to a report.

Figure 4-31 Report Settings Dialog Box



Page	Specifies ON or OFF for outputting page numbers.
Print Date and Time	Specifies ON or OFF for outputting print date and time.
Data File Path	
Only Filename	Outputs only the file name.
Full Path	Outputs the file name by full path.
Advantest Logo	Specifies ON or OFF for outputting the Advantest logo.
User Logo	Specifies ON or OFF for outputting the user logo.
[Load...] button	Specifies the user logo.
[Clear] button	Clears the user logo.
Comment	Describe a comment on measurement data.
[OK] button	Applies the specified setting and closes the dialog box.
[Cancel] button	Closes the dialog box.

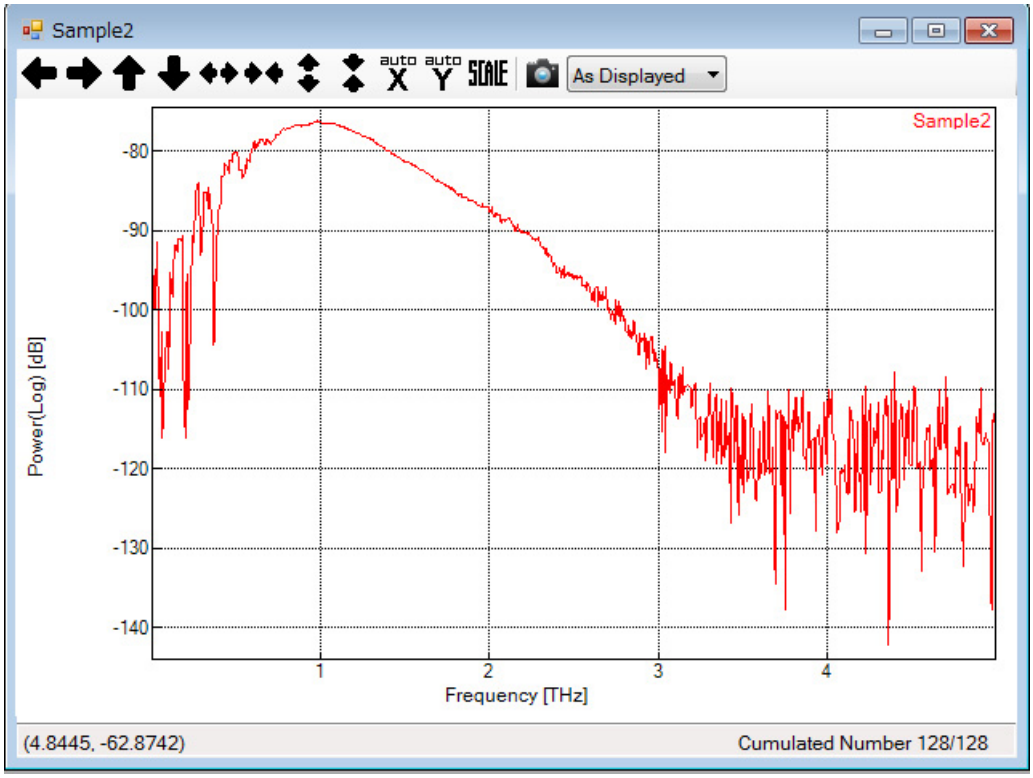
4. 3 Graph Window in Spectroscopic Measurement Window

This section describes the graph window in the Spectroscopic Measurement window.

4. 3. 1 Window Layout

Figure 4-32 shows the user interfaces in the graph window.

Figure 4-32 Graph Window



4. 3. 2 Tool Bar

The tool bar has the following buttons:

	Moves waveform to left.
	Moves waveform to right.
	Moves waveform up.
	Moves waveform down.
	Stretches waveform in horizontal axis direction.
	Compresses waveform in horizontal axis direction.
	Stretches waveform in vertical axis direction.
	Compresses waveform in vertical axis direction.
	Adjusts display range of horizontal axis to display all data included in current range of vertical axis.
	Adjusts display range of vertical axis to display all data included in current range of horizontal axis.
	Scale specification button. Click this button to specify display range in dialog box. Clicking this button opens Scale Settings dialog box. ➔ For more information on this dialog box, refer to 4. 5. 5. 2 "Scale Settings Dialog Box" on page 4-78.
	Saves screen shot to file. Size of saved image file can be specified from option menu on right.

4. 3. 3 Pop-up Menu

The pop-up menu is displayed by right clicking on the graph window.

The pop-up menu contains the following commands:

◆ [Properties...]

This command opens the Properties dialog box.

➔ For more information on this dialog box, refer to 4. 3. 4. 1 "Properties Dialog Box" on page 4-43.

4. 3. 4 Dialog Boxes

This section describes dialog boxes.

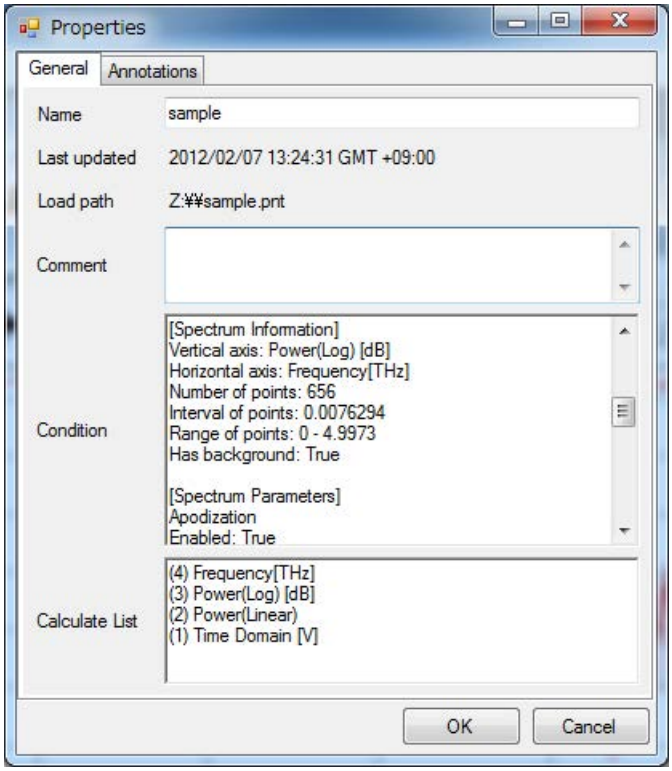
4. 3. 4. 1 Properties Dialog Box

This dialog box displays detailed waveform information.

This dialog box opens from the following buttons:

- **[Properties...]** button in 4. 3. 3 "Pop-up Menu" on page 4-42
- **[Properties...]** button in 4. 5. 4 "Pop-up Menu" on page 4-76
- **[Properties...]** button in 5. 3. 3 "Pop-up Menu" on page 5-44
- **[Properties...]** button in 5. 6. 4 "Pop-up Menu" on page 5-54

Figure 4-33 Properties Dialog Box



◆ General tab

This tab displays the details of a waveform.

Name	Displays the waveform name. The waveform name can be changed.
Last updated	Displays the date and time when the waveform was saved last time.
Load path	Displays the waveform loading destination. After the waveform is loaded, a waveform is not displayed in the Spectroscopic Measurement window.
Comment	Displays comments. Comments can be changed.
Condition	Displays the measurement conditions and the waveform status.

[Measurement Condition]	Group of measurement condition items
Measurement time and date	Date and time of measurement
Measurement function	Measurement unit
Measurement mode	Measurement mode
Frequency resolution	Frequency resolution
Cumulated number	Waveform cumulated count
Product	Product name
Main system	System version
Instrument	Model name
Firmware	Firmware version

[Imaging Information]	Group of imaging data items
Display Physical Type	Type of display physical quantity
Total Measurement Point	Number of measurement points
Axis Resolution[mm]	Interval of measurement points
3D Display Space Start[mm]	3D display start point
3D Display Space End[mm]	3D display end point
Coordinates[mm]	Measurement coordinates
Multiple Background Data Setting	Whether to execute measurement with multipoint background data settings

[Spectrum Information]	Group of waveform status items
Vertical axis	Type of vertical axis
Horizontal axis	Type of horizontal axis
Number of points	Number of data items to display
Interval of points	Interval of data items to display (horizontal axis)
Range of points	Range of data items to display (horizontal axis)
Has background	Existence of background

[Spectrum Parameters]	Group of calculation parameter items
Apodization	Window function parameter item

	Enabled	Whether to apply the window function
	Window order	Order of window function
	md	Amplitude at both edges
	div	Position of peak data
	FFT calculation settings	FFT parameter items
	Start time [ps]	Start point of valid data for FFT execution
	Stop time [ps]	End point of valid data for FFT execution
	Valid data range	Data range parameter items
	Start frequency [THz]	Start frequency for FFT
	Stop frequency [THz]	Stop frequency for FFT
	Multiplying	Whether to multiply
	Phase unwrap settings	Unwrap processing parameter items
	Threshold angle [deg]	Angle criterion for unwrap processing
	Start frequency [THz]	Start frequency for unwrap processing
	Initial value	Initial value for unwrap processing
	Absolute phase shift prediction settings	
		Phase difference parameter items
	Prediction frequency [THz]	Correction frequency
	Available range	Valid range width
	Refractive index calculation condition	
		Refractive index parameter items
	Number of multiple reflection	Number of multiple reflections
	Re initial value	Initial refractive index
	Im initial value	Initial extinction coefficient
	Repeat count	Number of calculation repetitions
	Sample thickness[mm]	Sample thickness
Calculate List	Group of calculation list items	
	(No)	Calculation list application order
	Name	Calculation name
	Parameter	Parameter details

◆ Annotations tab

This tab displays the annotation setting values.

X	X coordinate of annotation
Type	Annotation format (Peak/Height/Area/BandWidth)
Value	Annotation value
Comment	Displayed annotation string
Baseline Start	X coordinate at the start point on the baseline (Enabled when Type is Height or Area)
Baseline Stop	X coordinate at the end point on the baseline (Enabled when Type is Height or Area)
Calculate Start	X coordinate at the start point in the calculation range (Enabled when Type is Area or BandWidth)
Calculate Stop	X coordinate at the end point in the calculation range (Enabled when Type is Area or BandWidth)
[OK] button	Applies changes.
[Cancel] button	Closes the Properties dialog box.

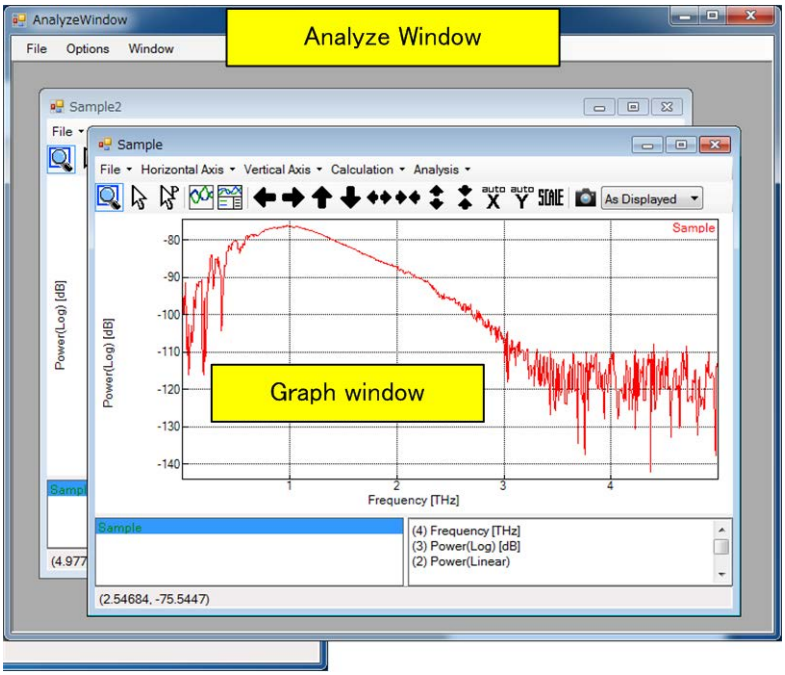
4. 4 Analyze Window

This section describes the Analyze window.

4. 4. 1 Window Layout

Figure 4-34 shows the user interfaces in the Analyze window.

Figure 4-34 Analyze Window



4. 4. 2 Menu Bar

The menu bar contains various pull-down menus for analysis.

4. 4. 2. 1 [File]

The following selections can be made in the **[File]** menu:

◆ **[File] → [Create New Window]**

This command opens an empty graph window.

◆ **[File] → [Load PointData...]**

This command loads a spectrum measurement data file.

◆ **[File] → [Load ImagingData...]**

This command loads an imaging measurement data file.

◆ **[File] → [Load JCAMPDX Data...]**

This command loads a JCAMP-DX format file.

◆ **[File] → [Load SPCData...]**

This command loads an SPC format file.

◆ **[File] → [Close]**

This command closes the Analyze window.

4. 4. 2. 2 [Options]

The following selections can be made in the **[Options]** menu:

◆ **[Options] → [Visualization...]**

This command specifies the colors for waveform, background, and other items.

Clicking this command opens the Visualization dialog box.

➔ For more information on this dialog box, refer to 4. 2. 5. 4 "Visualization Dialog Box" on page 4-32.

◆ **[Options] → [Environment...]**

This command specifies the system data directory or default scale.

Clicking this command opens the Environment dialog box.

➔ For more information on this dialog box, refer to 4. 2. 5. 5 "Environment Dialog Box" on page 4-35.

◆ **[Options] → [Report Settings..]**

This command sets items output to a report.

Clicking this command opens the Report Settings dialog box.

➔ For more information on this dialog box, refer to 4. 2. 5. 7 "Report Settings Dialog Box" on page 4-39.

4. 4. 2. 3 [Window]

The following selections can be made in the **[Window]** menu:

◆ **[Window] → [Cascade]**

This command cascades graph windows.

◆ **[Window] → [Tile Horizontal]**

This command vertically tiles graph windows.

◆ **[Window] → [Tile Vertical]**

This command horizontally tiles graph windows.

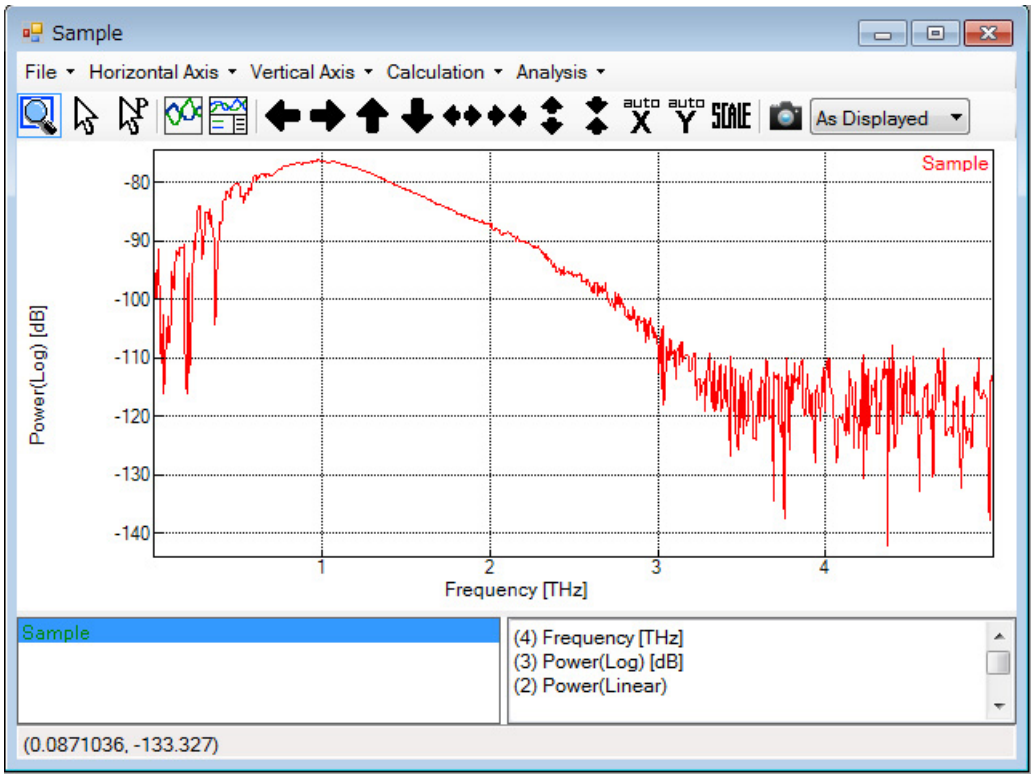
4. 5 Graph Window in Analyze Window

This section describes the graph window in the Analyze window.

4. 5. 1 Window Layout

Figure 4-35 shows the user interfaces in the graph window.

Figure 4-35 Graph Window



4. 5. 2 Menu Bar

The menu bar contains various pull-down menus for graph operations.

4. 5. 2. 1 [File]

The following selections can be made in the **[File]** menu:

◆ **[File] → [Load...]**

This command loads a file.

◆ **[File] → [Save...]**

This command saves a graph to a file.

◆ **[File] → [Save all data on the Graph Window ...]**

This command saves multiple graphs to a file at once.

Clicking this command opens the Save All Data on the Graph Window dialog box.

➔ For more information on this dialog box, refer to 4. 5. 5. 1 "Save All Data on the Graph Window Dialog Box" on page 4-77.

◆ **[File] → [Screen Shot...]**

This command saves the screen shot to a file.

◆ **[File] → [Load Calculate List...]**

This command loads the calculation list file.

➔ For more information on the calculation list file, refer to 7. 1 "Calculation List (File)" on page 7-1.

◆ **[File] → [Save Calculate List...]**

This command saves the calculation list to a file.

➔ For more information on the calculation list file, refer to 7. 1 "Calculation List (File)" on page 7-1.

◆ **[File] → [Save Report...]**

This command saves a report to a file.

◆ **[File] → [Print Report...]**

This command prints a report.

Clicking this command opens the Print Report dialog box.

➔ For more information on this dialog box, refer to 4. 2. 5. 6 "Print Report Dialog Box" on page 4-37.

◆ **[File] → [Close]**

This command closes the graph window.

4. 5. 2. 2 [Horizontal Axis]

The following selections can be made in the **[Horizontal Axis]** menu:

◆ **[Horizontal Axis] → [Frequency [THz]]**

This command changes the horizontal axis to frequency.

◆ **[Horizontal Axis] → [Wave Numbers [cm-1]]**

This command changes the horizontal axis to number of wave numbers.

◆ **[Horizontal Axis] → [Wave Length [um]]**

This command changes the horizontal axis to wavelength.

◆ **[Horizontal Axis] → [Time [psec]]**

This command changes the horizontal axis to time.

This can be selected only when **[Vertical Axis] → [Time Domain [V]]** is selected.

4. 5. 2. 3 [Vertical Axis]

The following selections can be made in the **[Vertical Axis]** menu:

◆ **[Vertical Axis] → [Transmittance(Log) [dB]]**

This command changes the vertical axis to transmittance (log display).

◆ **[Vertical Axis] → [Transmittance(Linear) [%]]**

This command changes the vertical axis to transmittance.

◆ **[Vertical Axis] → [Reflectance(Log) [dB]]**

This command changes the vertical axis to reflectance (log display).

◆ **[Vertical Axis] → [Reflectance(Linear) [%]]**

This command changes the vertical axis to reflectance.

◆ **[Vertical Axis] → [ATR(Log) [dB]]**

This command changes the vertical axis to ATR (log display).

◆ **[Vertical Axis] → [ATR(Linear) [%]]**

This command changes the vertical axis to ATR.

◆ **[Vertical] → [Log(1/R)]**

This command changes the vertical axis to Log (1/R). Log (1/R) is calculated as R=Io/I from the power spectrum (I) of the sample and the reference power spectrum (lo). The same as Absorbance when the measurement mode is Transmittance.

◆ [Vertical Axis] → [Absorbance]

This command changes the vertical axis to absorbance. Executable only when the measurement mode is Transmittance.

◆ [Vertical Axis] → [Absorption Coefficient [cm-1]]

This command changes the vertical axis to the absorption coefficient. The absorption coefficient is calculated from the extinction coefficient. When the measurement mode is Transmission, specify the Refractive index calculation condition and Sample Thickness in the Parameter Settings dialog box described in 4. 2. 5. 3 "Parameter Settings Dialog Box" on page 4-29.

◆ [Vertical Axis] → [Extinction Coefficient]

This command changes the vertical axis to the extinction coefficient. When the measurement mode is Transmission, specify the Refractive index calculation condition and Sample Thickness in the Parameter Settings dialog box described in 4. 2. 5. 3 "Parameter Settings Dialog Box" on page 4-29. When the measurement mode is Reflection or ATR, the extinction coefficient is calculated from the complex permittivity obtained using the algorithms appropriate for each mode.

◆ [Vertical Axis] → [Refractive Index]

This command changes the vertical axis to the refractive index. When the measurement mode is Transmission, specify the Refractive index calculation condition and Sample Thickness in the Parameter Settings dialog box described in 4. 2. 5. 3 "Parameter Settings Dialog Box" on page 4-29. When the measurement mode is Reflection or ATR, the refractive index is calculated from the complex permittivity obtained using the algorithms appropriate for each mode.

◆ [Vertical Axis] → [Permittivity]

This command changes the vertical axis to permittivity. When the measurement mode is Transmission, specify the Refractive index calculation condition and Sample Thickness in the Parameter Settings dialog box described in 4. 2. 5. 3 "Parameter Settings Dialog Box" on page 4-29. When the measurement mode is Reflection or ATR, the permittivity is calculated using the algorithms which obtain the complex permittivity appropriate for each mode.

◆ [Vertical Axis] → [Dielectric Loss]

This command changes the vertical axis to dielectric loss. When the measurement mode is Transmission, specify the Refractive index calculation condition and Sample Thickness in the Parameter Settings dialog box described in 4. 2. 5. 3 "Parameter Settings Dialog Box" on page 4-29. When the measurement mode is Reflection or ATR, the dielectric loss is calculated using the algorithms which obtain complex permittivity appropriate for each mode.

◆ [Vertical Axis] → [Phase Shift [rad]]

This command changes the vertical axis to the phase difference.

◆ [Vertical Axis] → [Power(Log) [dB]]

This command changes the vertical axis to the frequency spectrum (Log display).

◆ [Vertical Axis] → [Power(Linear)]

This command changes the vertical axis to the frequency spectrum (Linear display).

◆ [Vertical Axis] → [Phase [rad]]

This command changes the vertical axis to phase.

◆ [Vertical Axis] → [Time Domain [V]]

This command changes the vertical axis to the time waveform.

◆ [Vertical Axis] → [ATR Correction]

This command performs ATR correction.

➔ For more information on ATR correction, refer to 7. 3 "ATR Correction" on page 7-3.

Note the following points when changing the vertical axis.

Important

1. If the vertical axis is changed using the following routes, the already executed calculations in the calculation list are inherited. Otherwise, the calculation list is cleared.

   ➔ For more information on the calculation list, refer to 7. 1 "Calculation List (File)" on page 7-1.

Before change	After change
Power(Log) [dB]	Transmittance(Log) [dB]
Transmittance(Log) [dB]	Transmittance(Linear)[%]
	Log(1/R)
Transmittance(Linear)[%]	Absorbance
	Absorption Coefficient [cm-1]
	Extinction Coefficient
	Refractive Index
	Permittivity
	Dielectric Loss

   **1 For Transmittance, when the measurement mode is Transmission, it remains Transmittance. When the measurement mode is Reflection, replace Transmittance with Reflectance, and when the measurement mode is ATR, replace Transmittance with ATR.*

2. The selectable vertical axes are limited by the following conditions.
   The menus that cannot be selected are inactive.
   - Measurement mode

- Whether the background waveform exists

3. The point which cannot calculate a value in Extinction Coefficient and Refractive Index is displayed with the value 30000.
   The incalculable cause can consider that a setup of Sample Thickness of a parameter setting dialog differs from the actual condition.

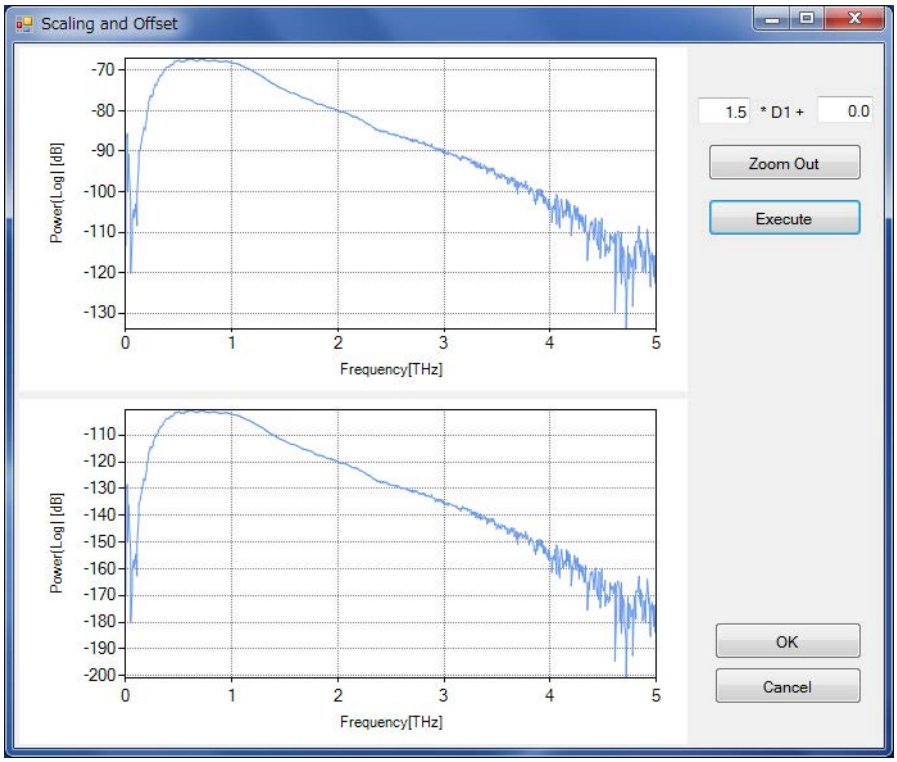
4. 5. 2. 4 [Calculation]

The **[Calculation]** menu contains the items for data correction and calculation.

◆ [Calculation] → [Scaling and Offset]

This command opens the Scaling and Offset dialog box. The Scaling and Offset dialog box can be used to multiply the spectrum by a constant or to apply an offset. Use this dialog box to expand, reduce, or shift the spectrum.

Figure 4-36 Scaling and Offset Dialog Box



The graph on the top is the one before calculation. The graph on the bottom is the one after calculation.

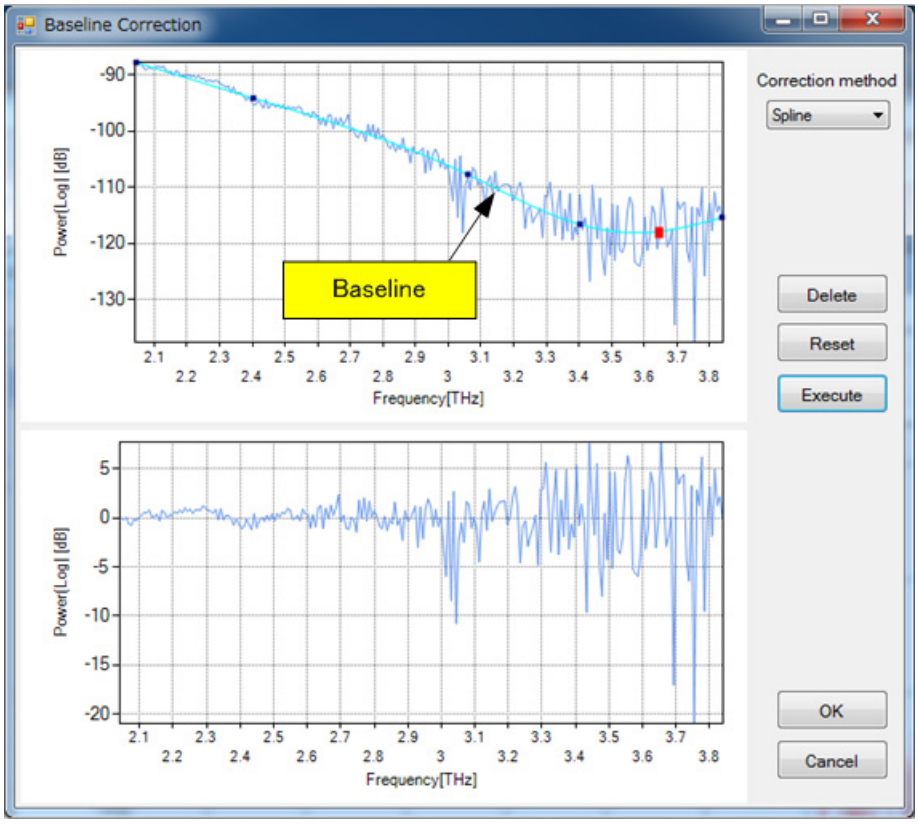
To zoom in to the desired range, drag it with the mouse.

A * D1 + B	Specify a coefficient in A and an offset in B.
[Zoom Out] button	Zooms out of the specified range.
[Execute] button	Executes a calculation.
[OK] button	Adds the calculation result graph to the Analyze window.
[Cancel] button	Closes the dialog box.

◆ [Calculation] → [Baseline Correction]

This command opens the Baseline Correction dialog box. The Baseline Correction dialog box is used to create the baseline along the spectrum and correct the spectrum so that its position becomes 0. Use this dialog box to correct a diagonal spectrum.

Figure 4-37 Baseline Correction Dialog Box



The graph on the top is the one before calculation. The graph on the bottom is the one after calculation.

To change the shape of the baseline, click on the baseline to create a node and then drag the node. To move an existing node, select the node by clicking it and then drag it.

Maximum nodes is 32.

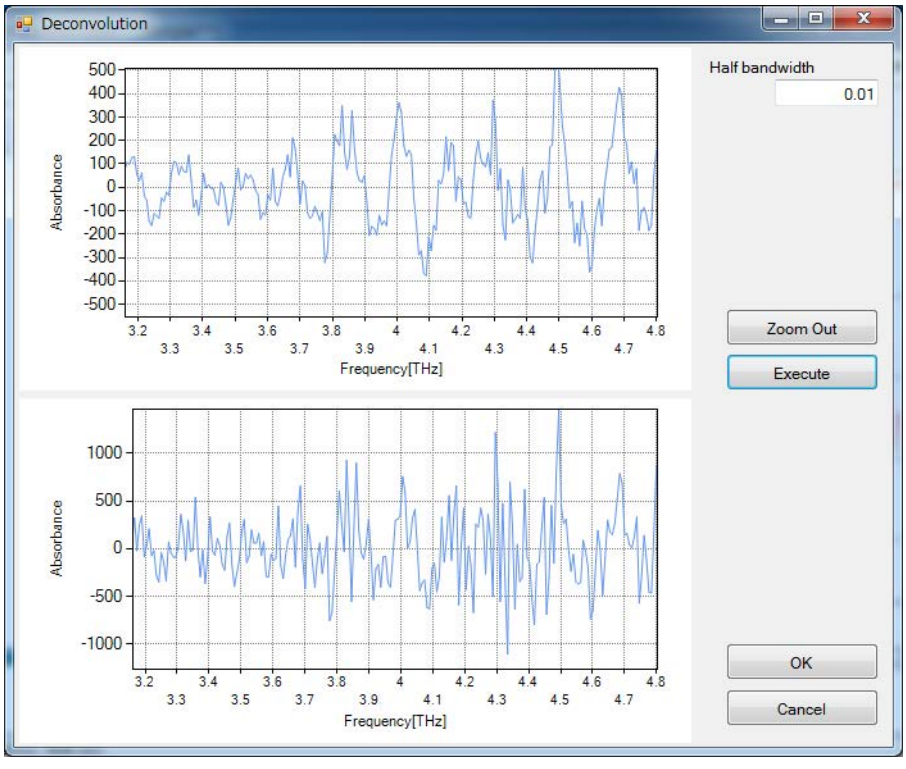
Correction method	Specifies a baseline type.
Straightline	Nodes are connected by a straight line.
Spline	Nodes are connected by a spline curve.
Auto	The baseline is automatically set. The set baseline is the straight line connecting the start and end points that is shifted downward so that it does not touch the waveform.
[Delete] button	Deletes the selected nodes from the baseline.
[Reset] button	Initializes the baseline.
[Execute] button	Executes a calculation.
[OK] button	Adds the calculation result graph to the Analyze window.
[Cancel] button	Closes the dialog box.

◆ [Calculation] → [Deconvolution]

This command opens the Deconvolution dialog box. Deconvolution means extracting peak positions from each band waveform assuming that the measurement waveform consists of band waveforms with the same width. Deconvolution separates overlapping peaks.

➔ For more information on deconvolution, refer to 7. 4 "Fourier Self Deconvolution (FSD Method)" on page 7-4.

Figure 4-38 Deconvolution Dialog Box



The graph on the top is the one before calculation. The graph on the bottom is the one after calculation.

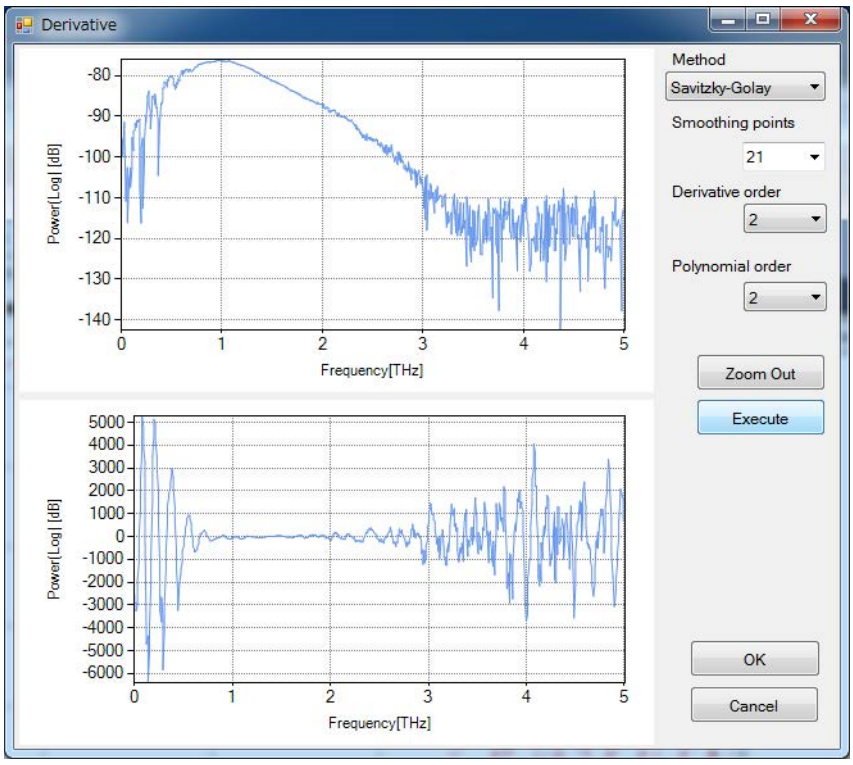
To zoom in to the desired range, drag it with the mouse.

Half bandwidth	Specifies a half width.
[Zoom Out] button	Zooms out of the specified range.
[Execute] button	Executes deconvolution.
[OK] button	Adds the calculation result graph to the Analyze window.
[Cancel] button	Closes the dialog box.

◆ [Calculation] → [Derivative]

This command opens the Derivative dialog box. The Derivative dialog box is used to differentiate the spectrum. The difference or Savitzky-Golay method can be selected.

Figure 4-39 Derivative Dialog Box



The graph on the top is the one before calculation. The graph on the bottom is the one after calculation.

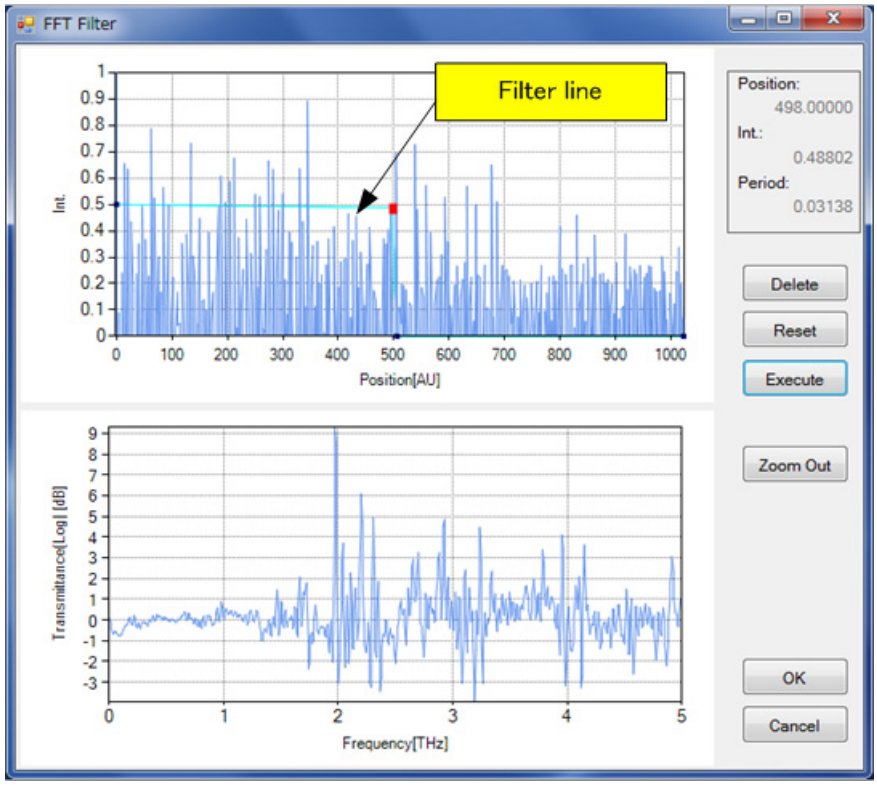
To zoom in to the desired range, drag it with the mouse.

Method	Selects a derivative method.	
	Difference method	Difference method
	Savitzky-Golay	Savitzky-Golay method
Data Points	Specifies the number of data points. (Only an odd number can be entered. It is also possible to select from 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, and 25.)	
Smoothing points	Specifies a convolution width. (Only an odd number can be entered. It is also possible to select from 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, and 25.)	
Derivative order	Specifies a derivative order. (1 to 4)	
Polynomial order	Specifies a polynomial order. (1 to 5)	
[Zoom Out] button	Zooms out of the specified range.	
[Execute] button	Executes derivation.	
[OK] button	Adds the calculation result graph to the Analyze window.	
[Cancel] button	Closes the dialog box.	

◆ [Calculation] → [FFT Filter]

This command opens the FFT Filter dialog box. The FFT Filter dialog box is used to remove noise with a certain period from the spectrum. Move the contact point of the filter line while checking the value in **[Period]** and adjust the shape of the filter line. Elements with periods smaller than 0.03138 are removed in the following example.

Figure 4-40 FFT Filter Dialog Box



The graph on the top is the one after FFT. The graph on the bottom is the one after calculation.

To zoom in to the desired range, drag it with the mouse.

To change the shape of the filter line, click on the filter line to create a node and then drag the node. To move an existing node, select the node by clicking it and then drag it.

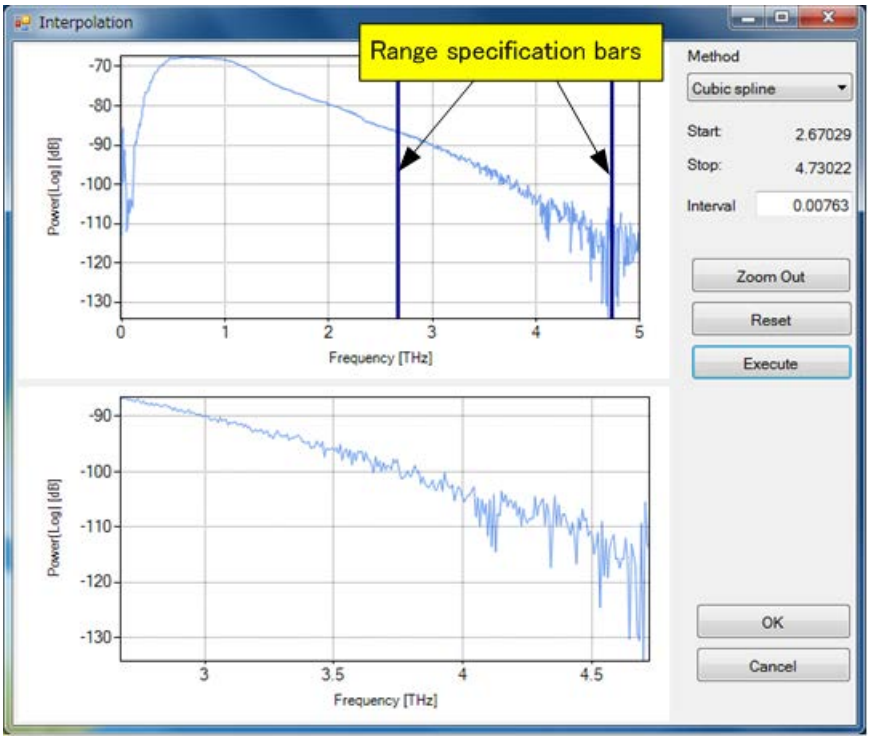
Maximum nodes is 32.

Position	Displays the horizontal axis value of the active node.
Int	Displays the vertical axis value of the active node.
Period	Displays the period of the active node.
[Delete] button	Deletes the active node.
[Reset] button	Initializes the filter line.
[Execute] button	Initializes the FFT filter.
[Zoom Out] button	Zooms out of the specified range.
[OK] button	Adds the calculation result graph to the Analyze window.
[Cancel] button	Closes the dialog box.

◆ [Calculation] → [Interpolation]

This command opens the Interpolation dialog box. The Interpolation dialog box is used to cut out a range from the spectrum and to interpolate the data in that range. Use this calculation method if a spectrum with a rounded off data interval is required.

Figure 4-41 Interpolation Dialog Box



The graph on the top is the one before calculation. The graph on the bottom is the one after calculation.

To zoom in to the desired range, drag it with the mouse.

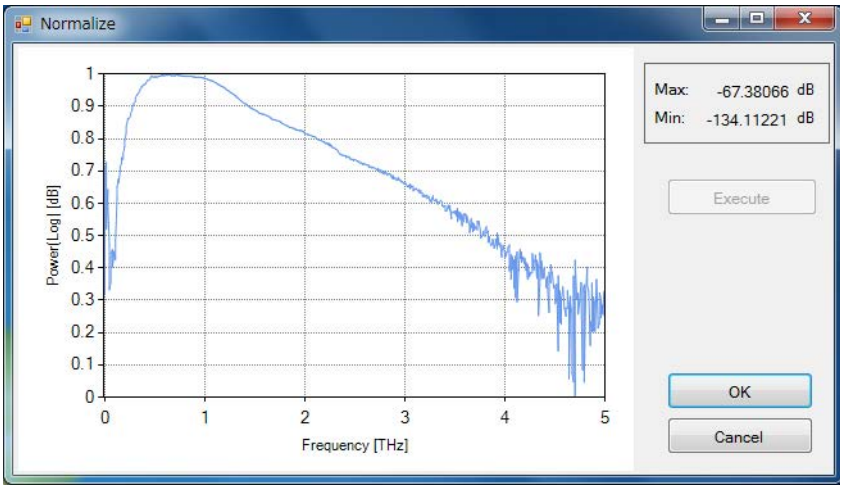
To move the range specification bar, drag it with the mouse.

Method		Specifies a method.
	Lagrange	Lagrange interpolation ➔ For more information on Lagrange interpolation, refer to 7. 5. 1 "Lagrange Interpolation" on page 7-5.
	Cubic spline	Cubic spline interpolation ➔ For more information cubic spline interpolation, refer to 7. 5. 2 "Cubic Spline Interpolation" on page 7-5.
	Cut	Only cuts the data.
Start		Displays the horizontal axis value of the left range specification bar.
Stop		Displays the horizontal axis value of the right range specification bar.
Interval		Specifies a data interval.
[Zoom Out] button		Zooms out of the specified range.
[Reset] button		Initializes the range specification bars.
[Execute] button		Interpolates data.
[OK] button		Adds the calculation result graph to the Analyze window.
[Cancel] button		Closes the dialog box.

◆ [Calculation] → [Normalize]

This command opens the Normalize dialog box. The Normalize dialog box is used to put all data within the range of 0 (minimum value)to 1 (maximum value). Use this dialog box to compare spectrum data.

Figure 4-42 Normalize Dialog Box

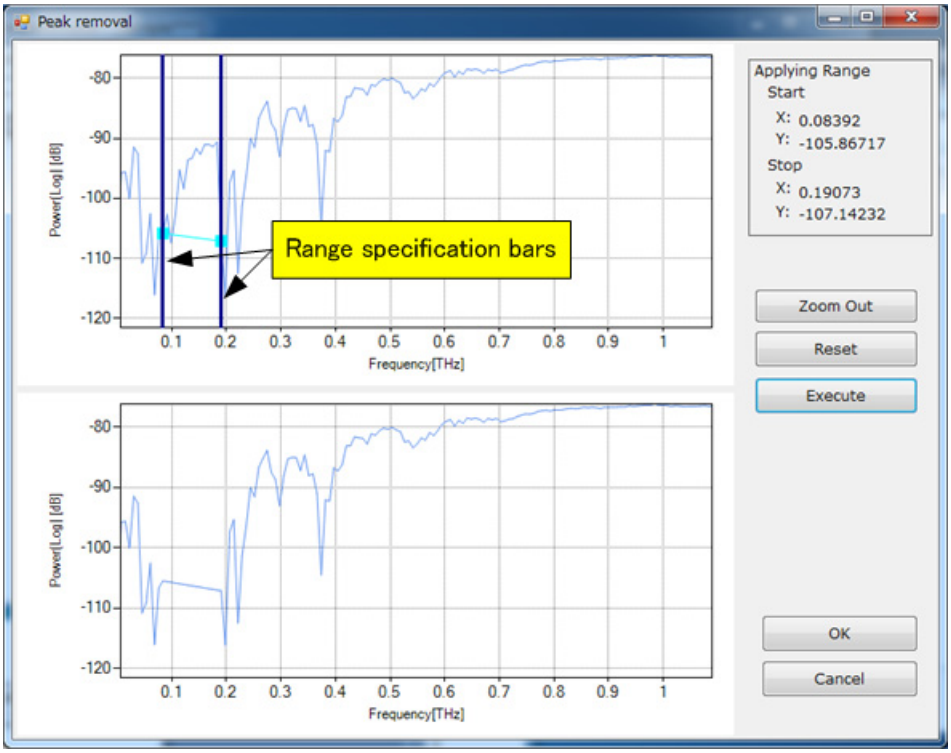


Max	Displays the maximum value of the original waveform.
Min	Displays the minimum value of the original waveform.
[Execute] button	Executes normalization.
[OK] button	Adds the calculation result graph to the Analyze window.
[Cancel] button	Closes the dialog box.

◆ [Calculation] → [Peak removal]

This command opens the Peak removal dialog box. The Peak removal dialog box is used to delete unnecessary peaks. Use this dialog box to remove pseudo peaks known to be noise.

Figure 4-43 Peak Removal Dialog Box



The graph on the top is the one before calculation. The graph on the bottom is the one after calculation.

To zoom in to the desired range, drag it with the mouse.

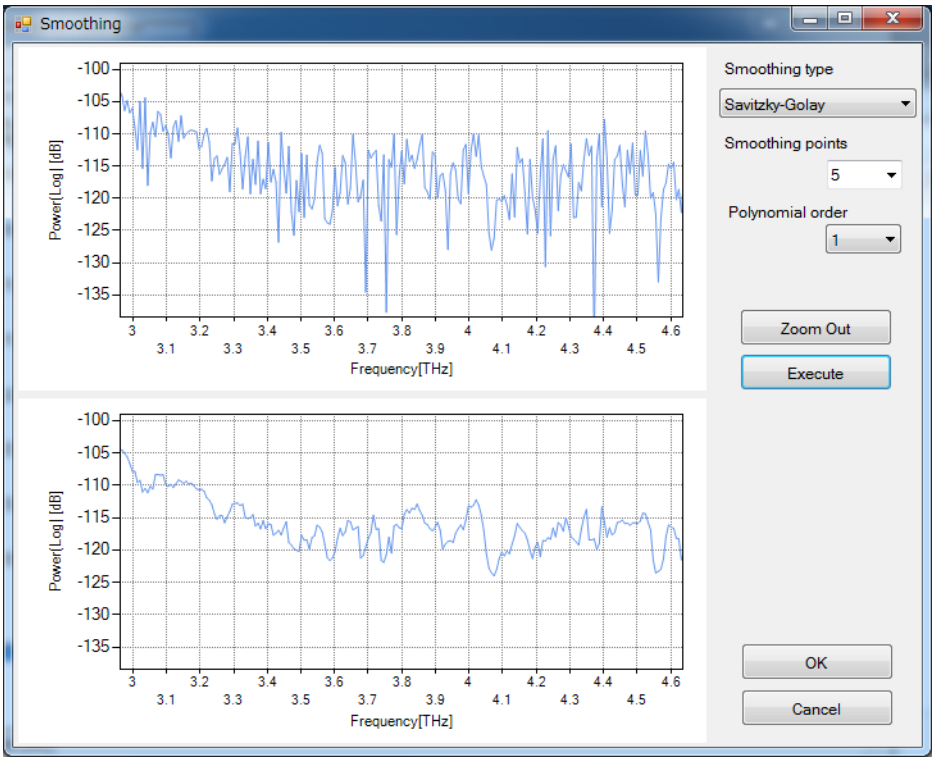
To move the range specification bar, drag it with the mouse.

Applying Range	
Start	Displays the coordinates for the intersection of the left range specification bar and the waveform.
Stop	Displays the coordinates for the intersection of the right range specification bar and the waveform.
[Zoom Out] button	Zooms out of the specified range.
[Reset] button	Initializes the range specification bars.
[Execute] button	Removes unnecessary peaks.
[OK] button	Adds the calculation result graph to the Analyze window.
[Cancel] button	Closes the dialog box.

◆ [Calculation] → [Smoothing]

This command opens the Smoothing dialog box. The Smoothing dialog box is used to remove noise components from the spectrum.

Figure 4-44 Smoothing Dialog Box



The graph on the top is the one before calculation. The graph on the bottom is the one after calculation.

To zoom in to the desired range, drag it with the mouse.

Smoothing type	Specifies a smoothing calculation method. The options are as follows:
Simple moving average	Simple moving average method
Savitzky-Golay	Savitzky-Golay method
Adaptive smoothing	Adaptive smoothing method
Binomial	Binomial method

➔ For more information on each smoothing calculation method, refer to 7. 6 "Smoothing" on page 7-6.

Smoothing points	Specifies the number of data items. (Only an odd number can be entered. It is also possible to select from 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, and 25.)
Polynomial order	Specifies a polynomial order. (1 to 5)
Deflection noise	Specifies a differential noise value.
Repeat count	Specifies the number of repetitions. (1 to 99)
[Zoom Out] button	Zooms out of the specified range.
[Execute] button	Performs smoothing.
[OK] button	Adds the calculation result graph to the Analyze window.
[Close] button	Closes the dialog box.

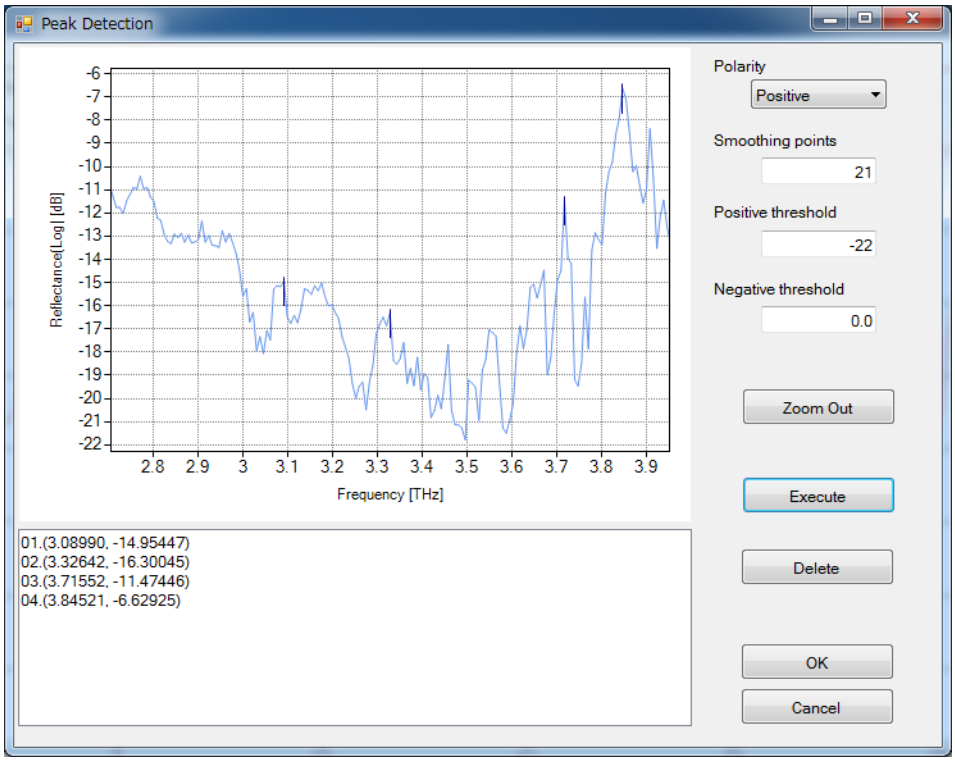
4. 5. 2. 5 [Analysis]

The **[Analysis]** menu contains the items for data analysis.

◆ [Analysis] → [Peak Detection]

This command opens the Peak Detection dialog box. The Peak Detection dialog box is used to detect spectrum peaks.

Figure 4-45 Peak Detection Dialog Box



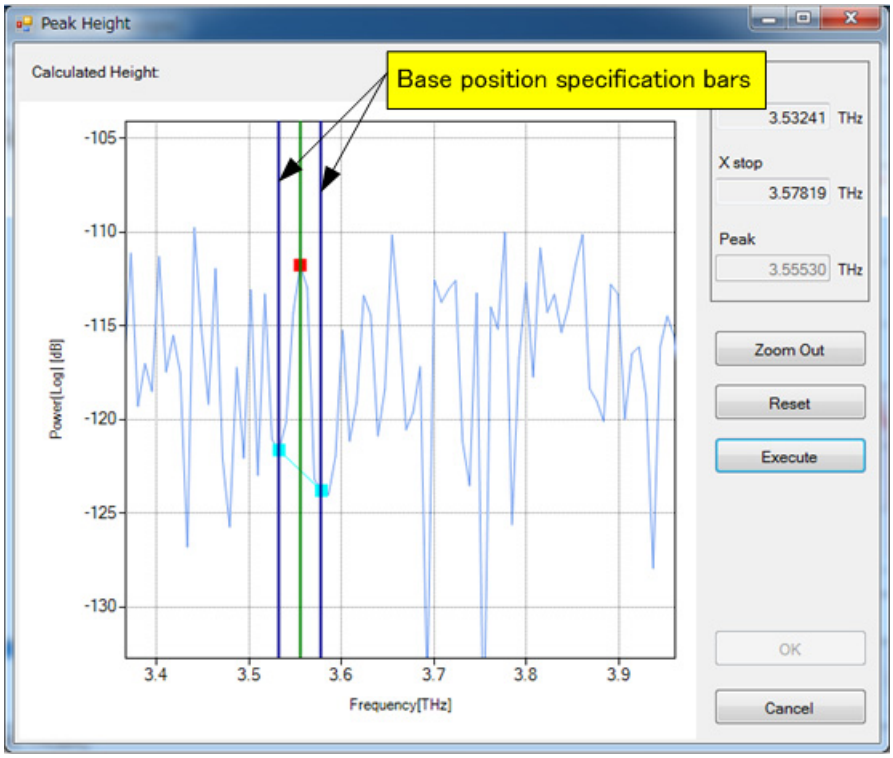
To zoom in to the desired range, drag it with the mouse.

Polarity	Specifies the orientation of peaks to detect. Select from Positive (upward), Negative (downward), and Both (both directions).
Smoothing points	Data points used for smoothing. Specify an odd-number value. The smaller the value that is specified, the more accurate the peak detection becomes.
Positive threshold	Threshold when detecting positive peaks.
Negative threshold	Threshold when detecting negative peaks.
[Zoom Out] button	Zooms out of the specified range.
[Execute] button	Detects peaks.
[Delete] button	Deletes the peaks selected in the list.
[OK] button	Displays the information on detected peaks in the graph window in the Analyze window.
[Cancel] button	Closes the dialog box.

◆ [Analysis] → [Peak Height]

This command opens the Peak Height dialog box. The Peak Height dialog box is used to calculate the height of a peak. The height of the specified peak is calculated with reference to the baseline.

Figure 4-46 Peak Height Dialog Box



To zoom in to the desired range, drag it with the mouse.

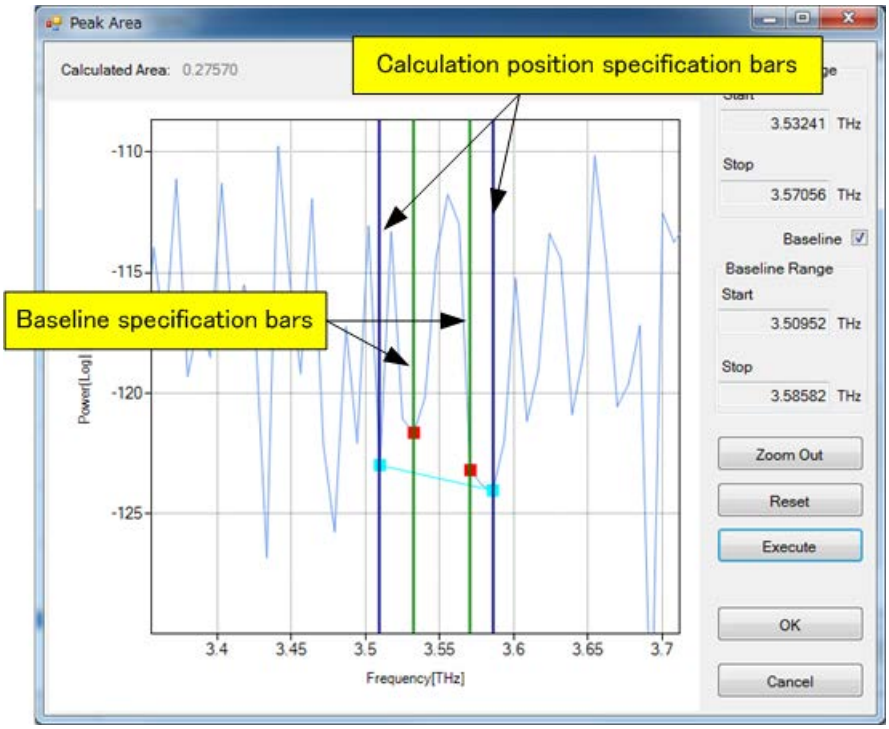
To move the base position specification bar, drag it with the mouse.

Calculated Height	Displays the calculated peak height.
X start	Displays the horizontal axis value of the left base position specification bar.
X stop	Displays the horizontal axis value of the right base position specification bar.
Peak	Displays the horizontal axis value of the peak position specification bar.
[Zoom Out] button	Zooms out of the specified range.
[Reset] button	Resets the position of each bar.
[Execute] button	Calculates the height of the peak.
[OK] button	Displays the peak height information in the graph window in the Analyze window.
[Cancel] button	Closes the dialog box.

◆ [Analysis] → [Peak Area]

This command opens the Peak Area dialog box. The Peak Area dialog box is used to calculate the area of a peak. The area specified by the specified horizontal axis range and the baselines is calculated.

Figure 4-47 Peak Area Dialog Box



To zoom in to the desired range, drag it with the mouse.

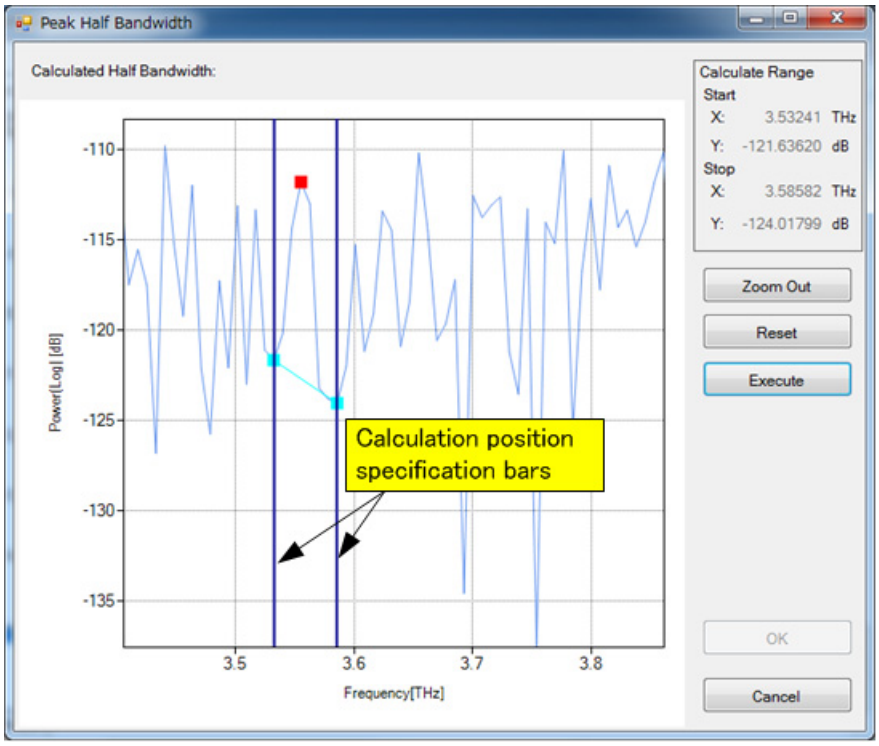
To move the calculation position or baseline specification bar, drag it with the mouse.

Calculated Area	Displays the calculated area.
Calculate Range	
Start	Displays the horizontal axis value of the left calculation position specification bar.
Stop	Displays the horizontal axis value of the right calculation position specification bar.
[Baseline] checkbox	Check this button to specify the baselines.
Baseline Range	
Start	Displays the horizontal axis value of the left baseline specification bar.
Stop	Displays the horizontal axis value of the right baseline specification bar.
[Zoom Out] button	Zooms out of the specified range.
[Reset] button	Resets the position of each bar.
[Execute] button	Calculates the area of the peak.
[OK] button	Displays the peak area information in the graph window in the Analyze window.
[Cancel] button	Closes the dialog box.

◆ [Analysis] → [Peak Half Bandwidth]

This command opens the Peak Half Bandwidth dialog box. The Peak Half Bandwidth dialog box is used to calculate the half width of a peak.

Figure 4-48 Peak Half Bandwidth Dialog Box



To zoom in to the desired range, drag it with the mouse.

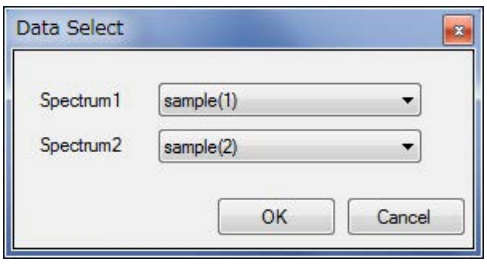
To move the calculation position specification bar, drag it with the mouse.

Calculated Half Bandwidth	
	Displays the calculated half width of the peak.
Calculate Range	
Start	Displays the coordinates for the intersection of the left calculation position specification bar and the waveform.
Stop	Displays the coordinates for the intersection of the right calculation position specification bar and the waveform.
[Zoom Out] button	Zooms out of the specified range.
[Reset] button	Resets the position of each bar.
[Execute] button	Calculates the half width.
[OK] button	Displays the half width information in the graph window in the Analyze window.
[Cancel] button	Closes the dialog box.

◆ [Analysis] → [Four Arithmetic Operations with Two Spectra]

This command executes an arithmetic operation using two waveforms. Selecting this command first opens the Data Select dialog box used to specify the waveform data to be used in an arithmetic operation.

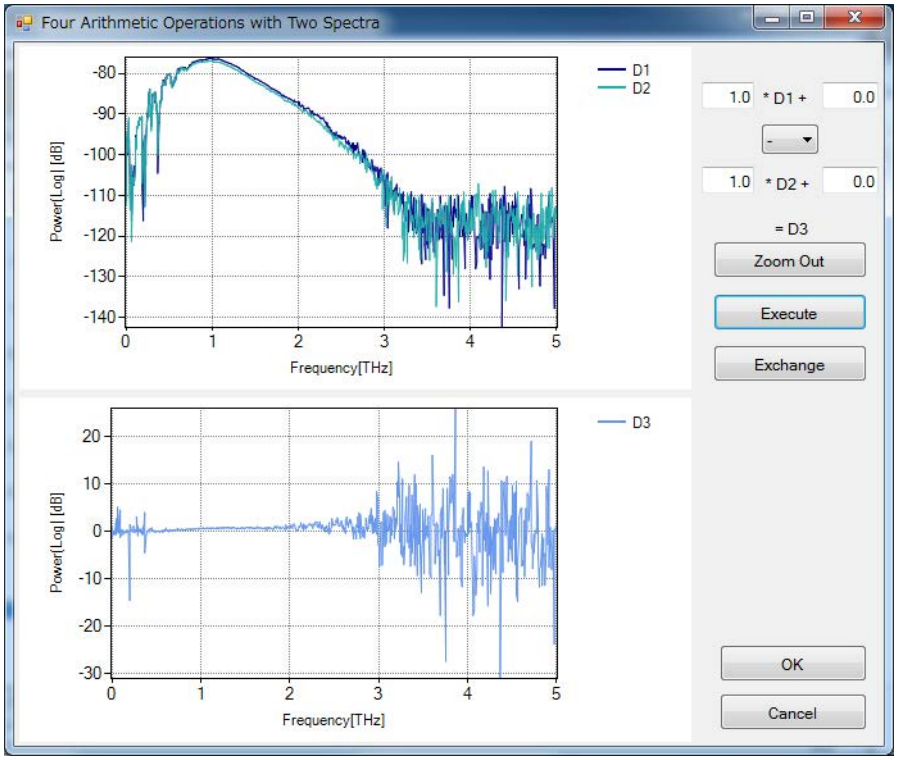
Figure 4-49 Data Select Dialog Box



Spectrum1	Selects the first waveform data.
Spectrum2	Selects the second waveform data.
[OK] button	Opens the Four Arithmetic Operations with Two Spectra dialog box.
[Cancel] button	Closes the dialog box and cancels the operation.

The Four Arithmetic Operations with Two Spectra dialog box is used to execute an arithmetic operation using spectra.

Figure 4-50 Four Arithmetic Operations with Two Spectra Dialog Box



The graph on the top is the one before calculation. The graph on the bottom is the one after calculation.

To zoom in to the desired range, drag it with the mouse.

A * D1 + B	Specifies a coefficient in A and an offset in B.
+ − × ÷	Selects the type of operation.
C * D2 + D	Specifies a coefficient in C and an offset in D.
[Zoom Out] button	Zooms out of the specified range.
[Execute] button	Executes an arithmetic operation.
[Exchange] button	Switches the two waveforms (D1 and D2).
[OK] button	Adds the calculation result graph to the Analyze window.
[Cancel] button	Closes the dialog box.

4. 5. 2. 6 [Polarization] (Polarization Analysis Option)

Important

The Polarization menu can be used only for data satisfying the following conditions.

- The data was acquired with the transmission module (polarization measurement type).
- Data for two waveforms are displayed, one measured at 45° and the other at -45° of the angle adjustment lever of the wire grid.
- There is a background waveform.

◆ [Polarization] → [Ex vs Ey [V]]

This command shows a graph of Ex vs Ey.

◆ [Polarization] → [Phase difference(XY) [rad]]

This command shows a graph of the phase difference between the X and Y components.

◆ [Polarization] → [Linear Birefringence]

This command shows a birefringence graph.

◆ [Polarization] → [Retardation [nm]]

This command shows a retardation graph.

◆ [Polarization] → [Ellipticity]

This command shows an ellipticity graph.

◆ [Polarization] → [Rotation angle [rad]]

This command shows a rotation angle graph.

◆ **[Polarization] → [Phase difference(LR) [rad]]**

This command shows a graph of the phase difference between the left and right rotation components.

◆ **[Polarization] → [Circular Birefringence]**

This command shows a circular birefringence graph.

◆ **[Polarization] → [Optical Rotation [rad]]**

This command shows an optical rotation graph.

◆ **[Polarization] → [Ex vs Ey(Jones Vector)]**

This command shows a graph of Ex vs. Ey with the introduction of a Jones vector.

◆ **[Polarization] → [Transmittance(Log)(XY) [dB]]**[*1]

This command shows the transmittance (log) for the X and Y components.

◆ **[Polarization] → [Transmittance(Log)(LR) [dB]]**[*1]

This command shows counterclockwise and clockwise transmittance (log).

◆ **[Polarization] → [Transmittance(Linear)(XY) [%]]**[*1]

This command shows the transmittance (linear) for the X and Y components.

◆ **[Polarization] → [Transmittance(Linear)(LR) [%]]**[*1]

This command shows counterclockwise and clockwise transmittance (linear).

◆ **[Polarization] → [Absorbance(XY)]**[*1]

This command shows the absorbance for the X and Y components.

◆ **[Polarization] → [Absorbance(LR)]**[*1]

This command shows counterclockwise and clockwise absorbance.

◆ **[Polarization] → [Absorption Coefficient(XY) [cm-1]]**[*1]

This command shows the absorption coefficient for the X and Y components.

◆ **[Polarization] → [Absorption Coefficient(LR) [cm-1]]**[*1]

This command shows counterclockwise and clockwise absorption coefficients.

◆ **[Polarization] → [Refractive Index(XY)]**[*1]

This command shows the refractive index for the X and Y components.

◆ **[Polarization] → [Refractive Index(LR)]**[*1]

This command shows counterclockwise and clockwise refractive indexes.

◆ **[Polarization] → [Extinction Coefficient(XY)]**[*1]

This command shows the extinction ratio for the X and Y components.

◆ **[Polarization] → [Extinction Coefficient(LR)]**[*1]

This command shows counterclockwise and clockwise extinction coefficients.

◆ **[Polarization] → [Permittivity]**[*1]

This command shows the permittivity for the X and Y components.

◆ **[Polarization] → [Dielectric Loss]**[*1]

This command shows the dielectric loss for the X and Y components.

◆ **[Polarization] → [Phase Shift(XY) [rad]]**[*1]

This command shows the phase shift for the X and Y components.

◆ **[Polarization] → [Phase Shift(LR) [rad]]**[*1]

This command shows counterclockwise and clockwise phase differences.

◆ **[Polarization] → [Power(Log) [dB]]**[*1]

This command displays the frequency spectrum (Log display) of X and Y ingredients.

◆ **[Polarization] → [Power(Linear)]**[*1]

This command displays the frequency spectrum (Linear display) of X and Y ingredients.

◆ **[Polarization] → [Phase [rad]]**[*1]

This command shows the phase for the X and Y components.

◆ **[Polarization] → [TimeDomain [V]]**[*1]

This command shows the amplitude of the electric field for the X and Y components.

**1 Two waveforms are shown in a single window.*

4. 5. 3 Tool Bar

The tool bar has the following buttons:

	Activates waveform selection mode. Zooming can be performed in this mode.
	Activates cursor operation mode.
	Activates waveform label selection mode.
	Toggles between tile display and cascade display.
	Displays or hides waveform list.
	Moves waveform to left.
	Moves waveform to right.
	Moves waveform up.
	Moves waveform down.
	Stretches waveform in horizontal axis direction.
	Compresses waveform in horizontal axis direction.
	Stretches waveform in vertical axis direction.
	Compresses waveform in vertical axis direction.
	Adjusts display range of horizontal axis to display all data included in current range of vertical axis.
	Adjusts display range of vertical axis to display all data included in current range of horizontal axis.
	Scale specification button. Click this button to specify display range in dialog box. Clicking this button opens Scale Settings dialog box. ➔ For more information on this dialog box, refer to 4. 5. 5. 2 "Scale Settings Dialog Box" on page 4-78.
	Saves screen shot to file. Size of saved image file can be specified from option menu on right.

4. 5. 4 Pop-up Menu

The pop-up menu is displayed by right clicking on the graph window.

The pop-up menu contains the following commands:

◆ [Copy Calculate List]

This command copies the calculation list.

➔ For more information on the calculation list file, refer to 7. 1 "Calculation List (File)" on page 7-1.

◆ [Copy]

This command copies the graph.

◆ [Cut]

This command cuts the graph.

◆ [Paste]

This command pastes the graph.

◆ [Delete]

This command deletes the graph.

◆ [Clear Label]

This command deletes all displayed labels.

◆ [Show Source data]

This command extracts the measurement data for 45° and -45° from the polarization analysis data. The two data sets are shown overlapping in a new graph window.

◆ [Show Background]

This command displays the background waveform.

◆ [Background Settings...]

This command displays the Background Settings dialog box.

The background waveform for another sample waveform can be applied to the current sample waveform.

➔ For more information on this dialog box, refer to 4. 5. 5. 3 "Background Settings Dialog Box" on page 4-79.

◆ [Parameter Settings...]

This command displays the Parameter Settings dialog box.

➔ For more information on this dialog box, refer to 4. 2. 5. 3 "Parameter Settings Dialog Box" on page 4-29.

◆ [Properties...]

This command displays the Properties dialog box.

➔ For more information on this dialog box, refer to 4. 3. 4. 1 "Properties Dialog Box" on page 4-43.

4. 5. 5 Dialog Boxes

This section describes dialog boxes.

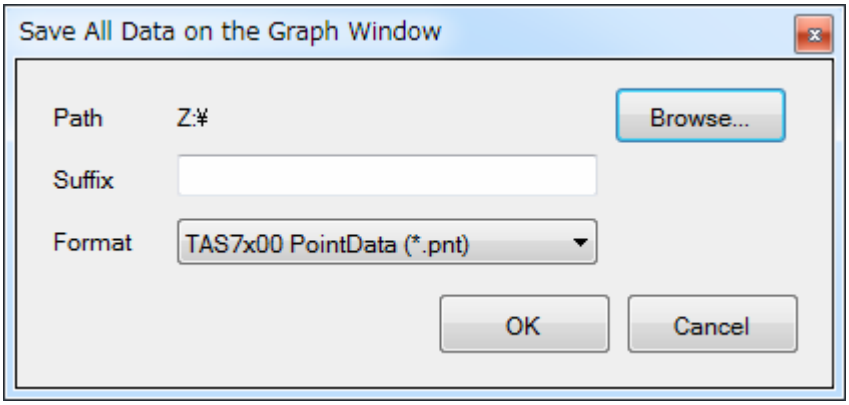
4. 5. 5. 1 Save All Data on the Graph Window Dialog Box

This dialog box is used to save multiple graphs to a file at once.

The file is saved under the same name as the waveform.

Open this dialog box by clicking **[Save all data on the Graph Window...]** described in 4. 5. 2. 1 "[File]" on page 4-50.

Figure 4-51 Save All Data on the Graph Window Dialog Box



Path

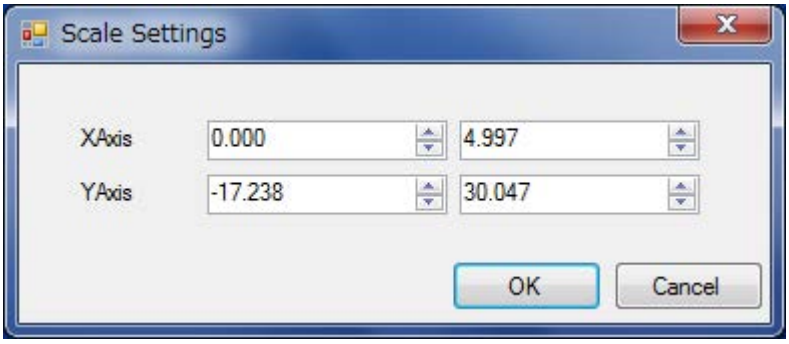
[Browse...] button	Specifies the directory in which to save the file.
Suffix	Specifies a suffix to be attached to the file name.
Format	Selects a format. The choices are as follows: TAS7x00 PointData (*.pnt) CSV (*.csv) JCAMP-DX (*.jdx) SPC (*.spc)
[OK] button	Saves data to a file.
[Cancel] button	Closes the dialog box.

4. 5. 5. 2 Scale Settings Dialog Box

This dialog box is used to specify the display ranges of the horizontal and vertical axes in the graph window.

Open this dialog box by clicking the scale specification button described in 4. 3. 2 "Tool Bar" on page 4-42 or the scale specification button described in 4. 5. 3 "Tool Bar" on page 4-75.

Figure 4-52 Scale Settings Dialog Box



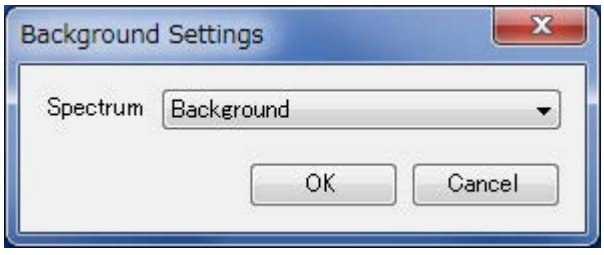
XAxis	Specifies the display range of the horizontal axis.
YAxis	Specifies the display range of the vertical axis.
[OK] button	Specifies the display range of the graph window.
[Cancel] button	Closes the dialog box.

4. 5. 5. 3 Background Settings Dialog Box

This dialog box is used to apply the background waveform for another sample waveform to the current sample waveform.

Open this dialog box by clicking **[Background Settings...]** described in 4. 5. 4 "Pop-up Menu" on page 4-76.

Figure 4-53 Background Settings Dialog Box



Spectrum	Specifies the background waveform.
[OK] button	Sets the specified background waveform.
[Cancel] button	Closes the dialog box.

5. Imaging Unit

This chapter describes the Imaging Unit.

The Imaging Unit provides the following functions:

- Allows users to measure the physical quantity of the surface of a tablet and visualize it in a 3D image. (Imaging Window)
- Allows users to observe the distribution of the physical quantity of a line specified on the surface of a tablet. (LinePlot Window)
- Allows users to observe the tomographic view of a line specified on the surface of a tablet. (Line-Tomography Window)
- Allows users to observe the frequency of a physical quantity on the surface of a tablet in a histogram. (Histogram Window)

5. 1 Operating Procedures

This section describes the operating procedures of the Imaging Unit.

5. 1. 1 Basic Operations for Measurement

When performing an imaging measurement, it is necessary to attach a cassette, determine analysis parameters through a prior point measurement, and perform the actual measurement. With this unit, these operations are performed in the following steps.

(1) Opening the Measurement window	Initialize the optical unit and manipulator.
↓	
(2) Registering tablet shape information	Register shape information for the tablet to be measured.
↓	
(3) Selecting and attaching a cassette	Select the cassette to be used, from tablet shape information. Then, place the reference mirrors and tablets in the target cassette and attach it to the main body.
↓	
(4) Setting shape information to the cassette	Set shape information for each slot of the cassette.
↓	
(5) Setting measurement conditions	Set measurement conditions. The setting contents are as follows: • General tab: measurement condition name • Condition tab: axis type, physical quantity type, and waveform cumulated count • Calculate tab: smoothing condition
↓	
(6) Point measurement	To determine the parameters for an imaging measurement, measure a representative point on the tablet.
↓	
(7) Determining analysis parameters	Perform an analysis using Time of Flight in the Analysis window to determine the parameters for imaging measurement.
↓	
(8) Imaging measurement	Use the determined parameters to perform the imaging measurement.

The following describes the details of preceding steps:

1) Opening the Measurement window

Click the **[Imaging]** button in the Navigation window. The Measurement window then opens. After it opens, execute dry air purge with the button on the tool bar.

Figure 5-1 Imaging Button

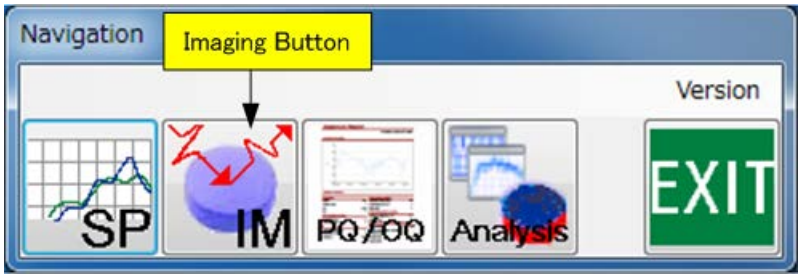
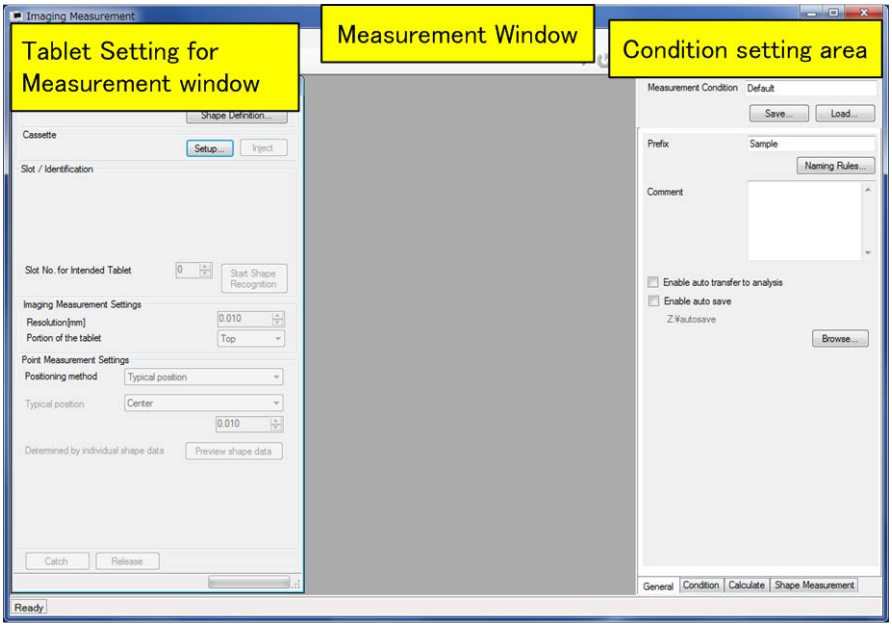


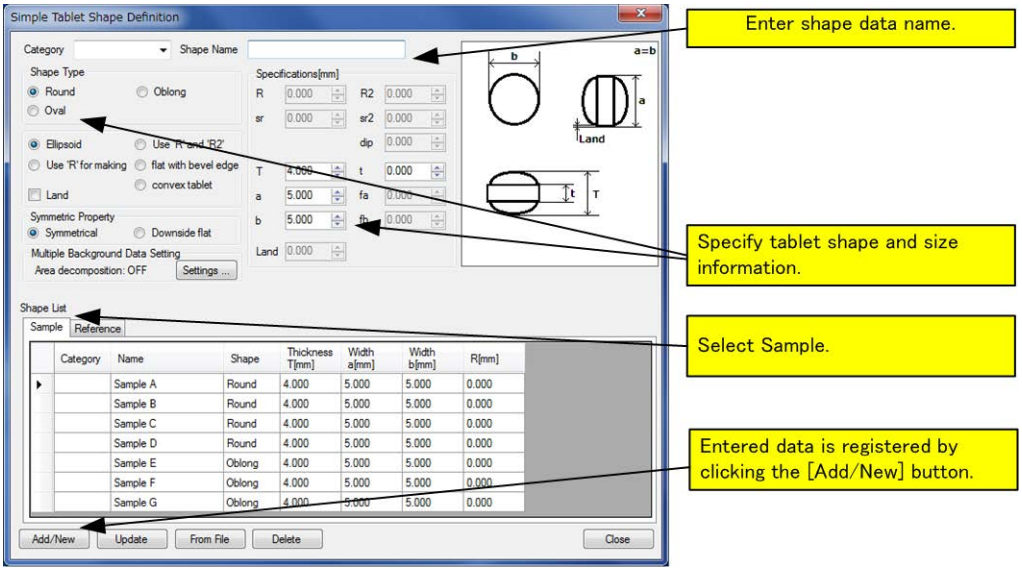
Figure 5-2 Measurement Window



2) Registering tablet shape information

Register shape information for the tablet to be measured. Click the **[Shape Definition...]** button in the Tablet Settings for Measurement window. The Simple Tablet Shape Definition dialog box is then displayed. Enter the tablet shape name and size information, then register by clicking the **[Add/New]** button.

Figure 5-3 Simple Tablet Shape Definition Dialog Box

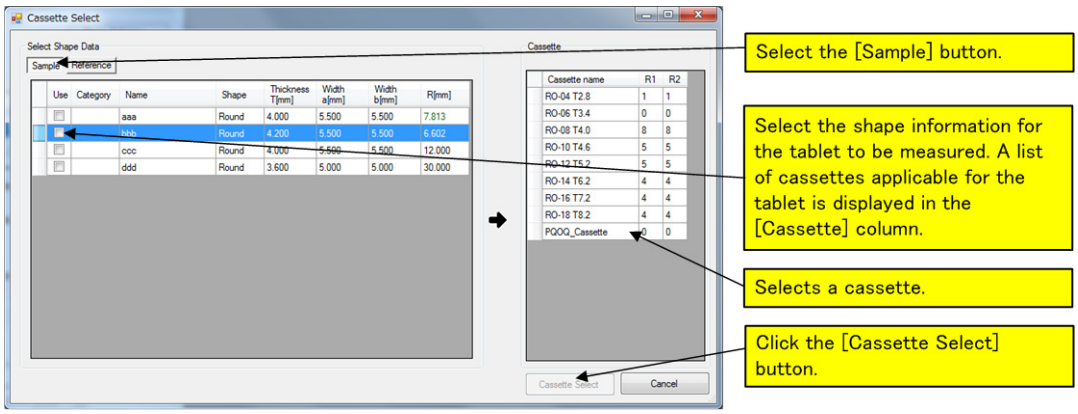


3) Selecting and attaching a cassette

Selects the cassette to be used. Click the **[Setup...]** button in the Tablet Settings for Measurement window. The Cassette Select dialog box is then displayed.

Select tablet (or reference mirror) shape information. A list of usable cassettes is then displayed. From this list, select a cassette.

Figure 5-4 Cassette Select Dialog Box



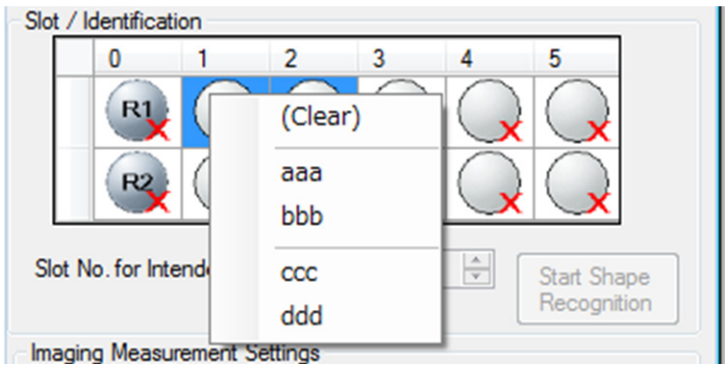
Place the reference mirrors and tablets in the target cassette and attach it to the main body.

➔ For more information, refer to "4.5.1 Imaging Unit Cassette Removal/Attachment Procedure" in *TAS7500 Series Terahertz Spectroscopy & Imaging System Instruction Manual*.

4) Setting shape information to the cassette

For each slot in the cassette, set shape information on the actually-placed reference mirrors or tablets. By right-clicking on the slot, candidates are displayed. Select one from the list.

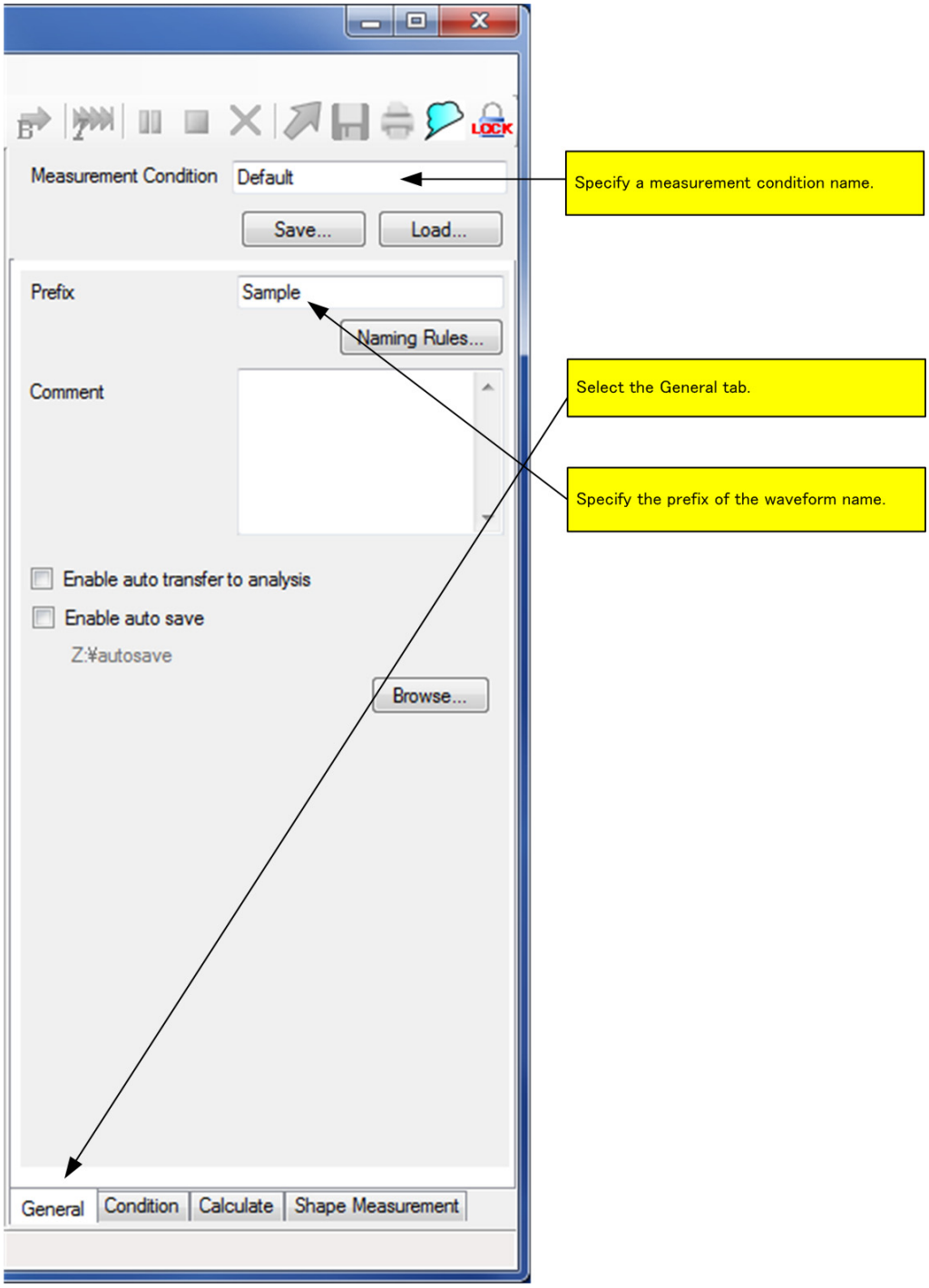
Figure 5-5 Setting Shape Information to Cassette



5) Setting measurement conditions

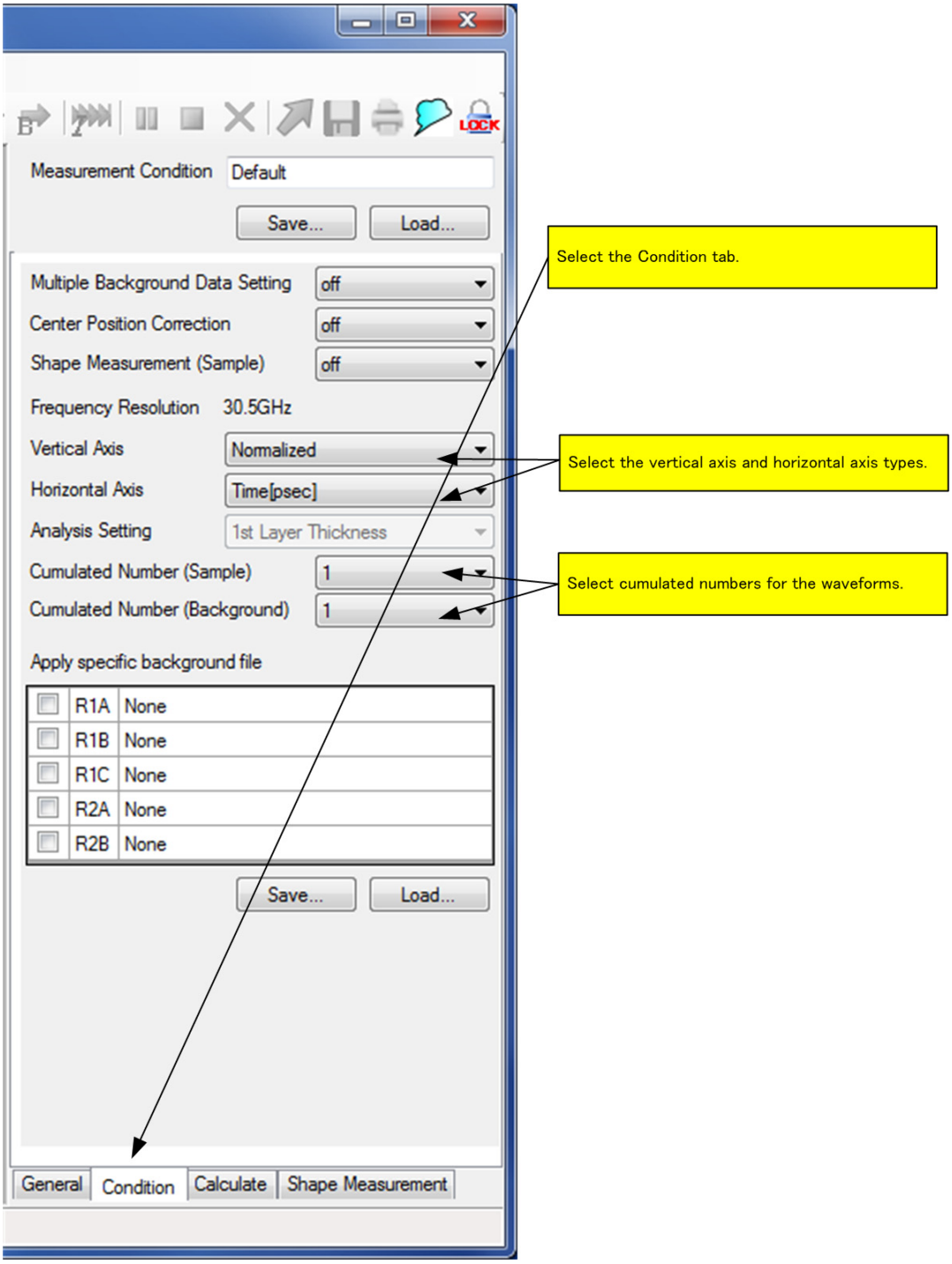
a) Select the General tab in the condition setting area of the Measurement window to set measurement conditions.

Figure 5-6 General Tab in Condition Setting Area



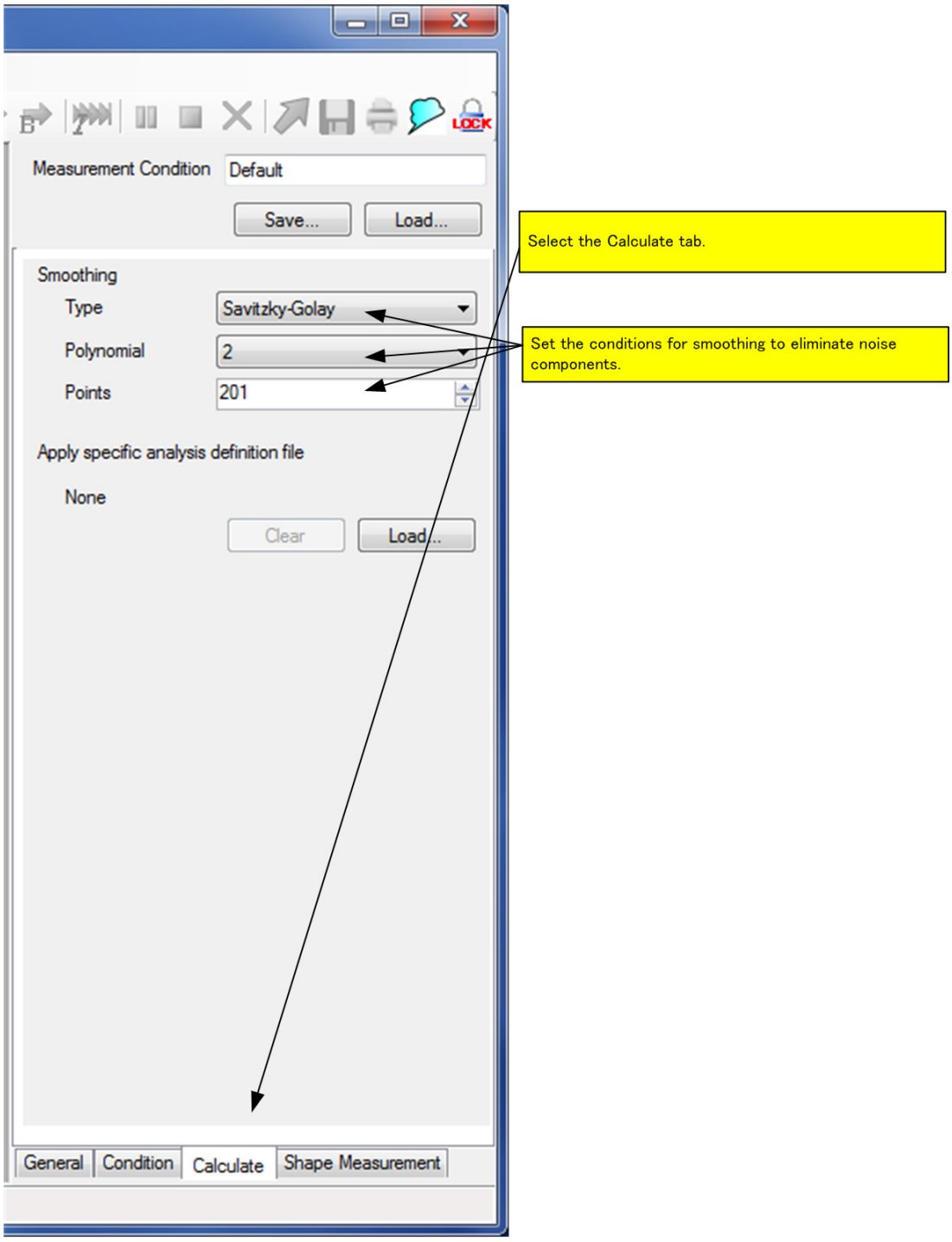
b) Select the Condition tab in the condition setting area of the Measurement window to set measurement conditions.

Figure 5-7 Condition Tab in Condition Setting Area



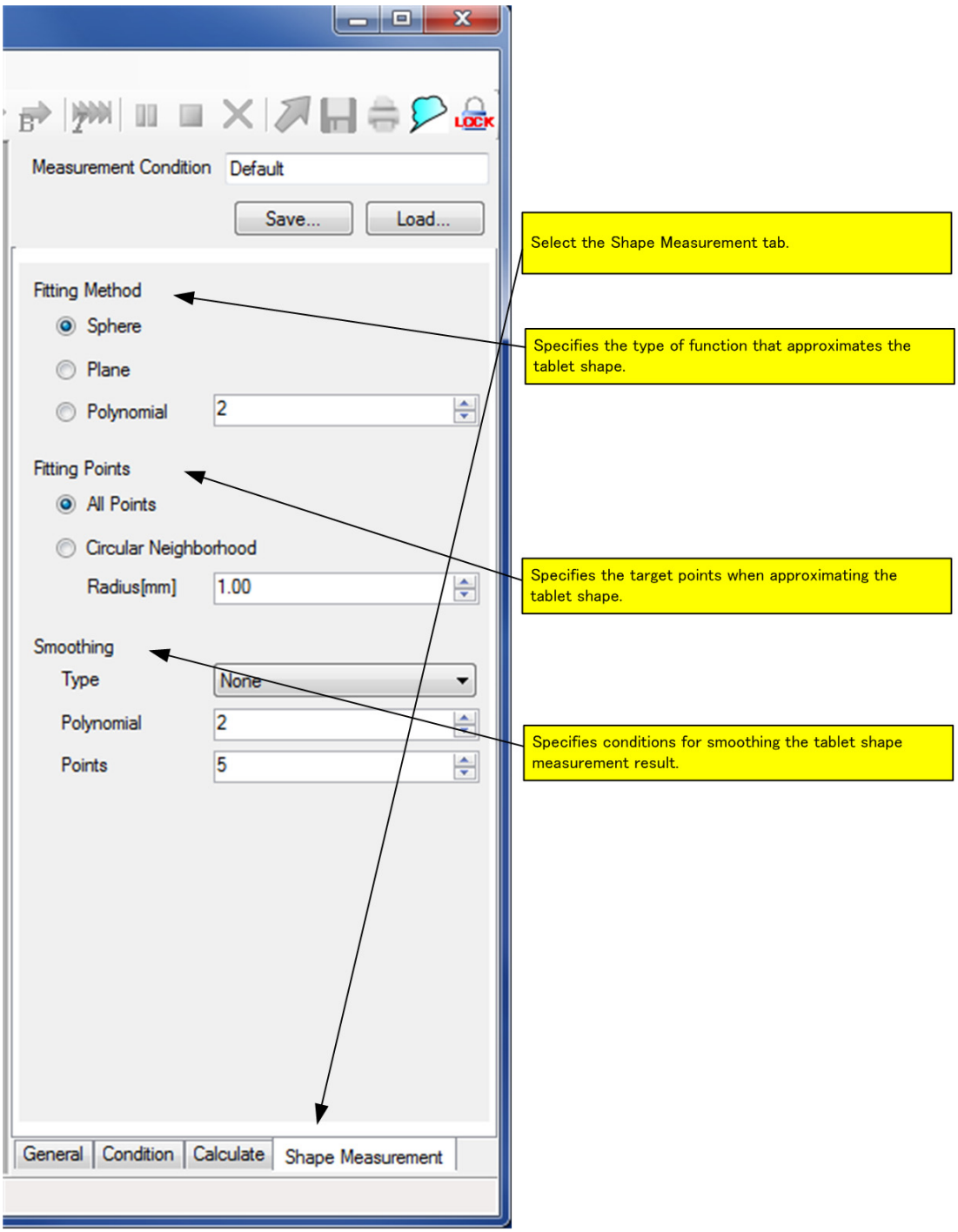
c) Select the Calculate tab in the condition setting area of the Measurement window to set measurement conditions.

Figure 5-8 Calculate Tab in Condition Setting Area



d) In order to measure the tablet shape, select the Shape Measurement tab in the condition setting area of the Measurement window and set measurement conditions.

Figure 5-9 Shape Measurement Tab in Condition Setting Area



6) Point measurement

a) In the Slot / Identification area of the Tablet Settings for Measurement window, select a reference mirror and tablet to be measured.

b) Specify a slot number for the measurement target in Slot No. for Intended Tablet in the Slot / Identification area of the Tablet Settings for Measurement window.

c) Press the  button on the tool bar in the Measurement window to execute background measurement.

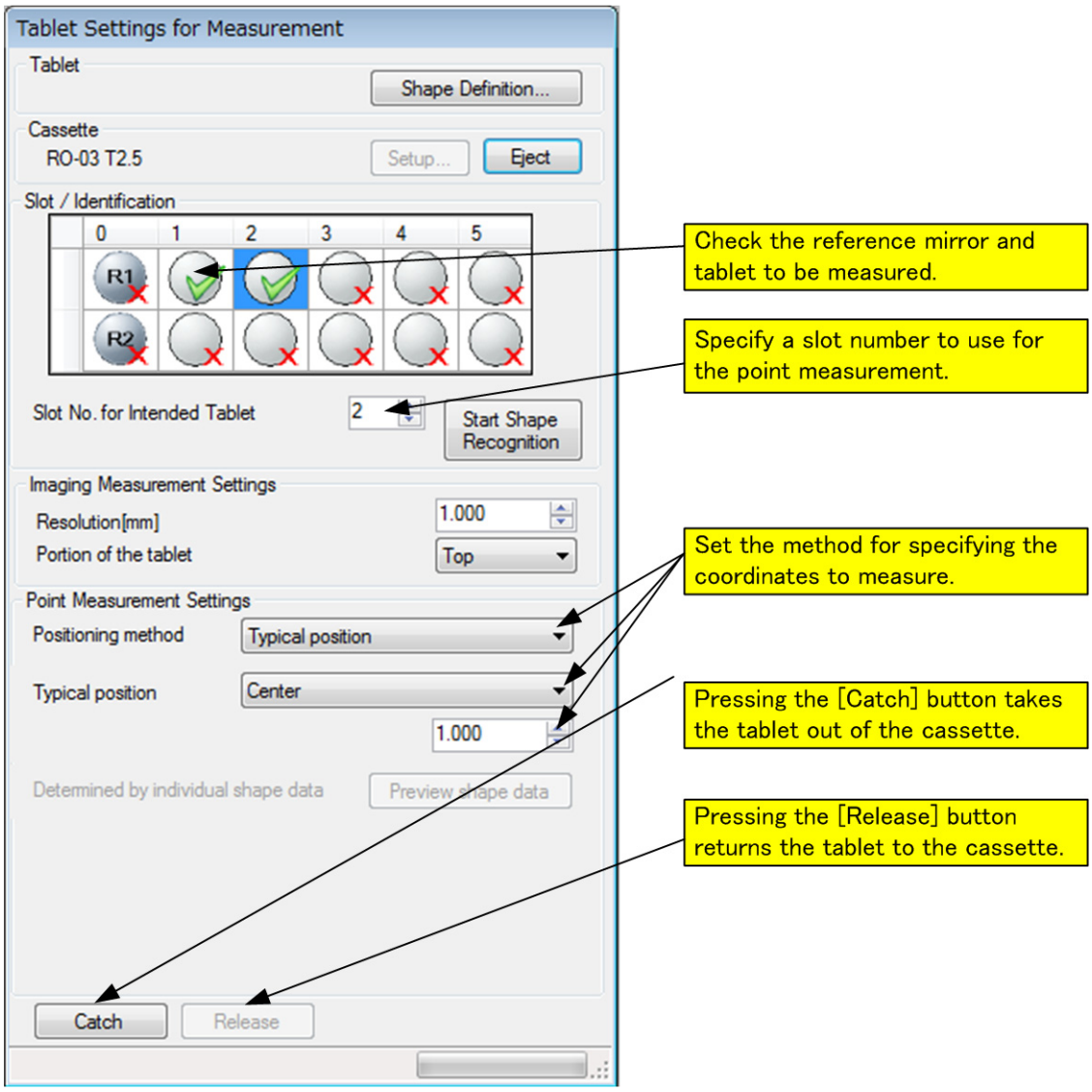
d) Set the method for specifying the coordinates to measure in the Point Measurement Settings area of the Tablet Settings for Measurement window.

e) Press the **[Catch]** button to catch the tablet.

f) Press the  button on the tool bar in the Measurement window to execute point measurement.

g) Press the **[Release]** button to return the tablet to the cassette.

Figure 5-10 Point Measurement



7) Determining analysis parameters

Create an analysis definition file using the point measurement data.

➔ For more information on the analysis definition file, refer to 7. 7 "Analysis Definition File" on page 7-7.

a) Press the  button on the tool bar in the Measurement window to transfer the point measurement data to the Analysis window.

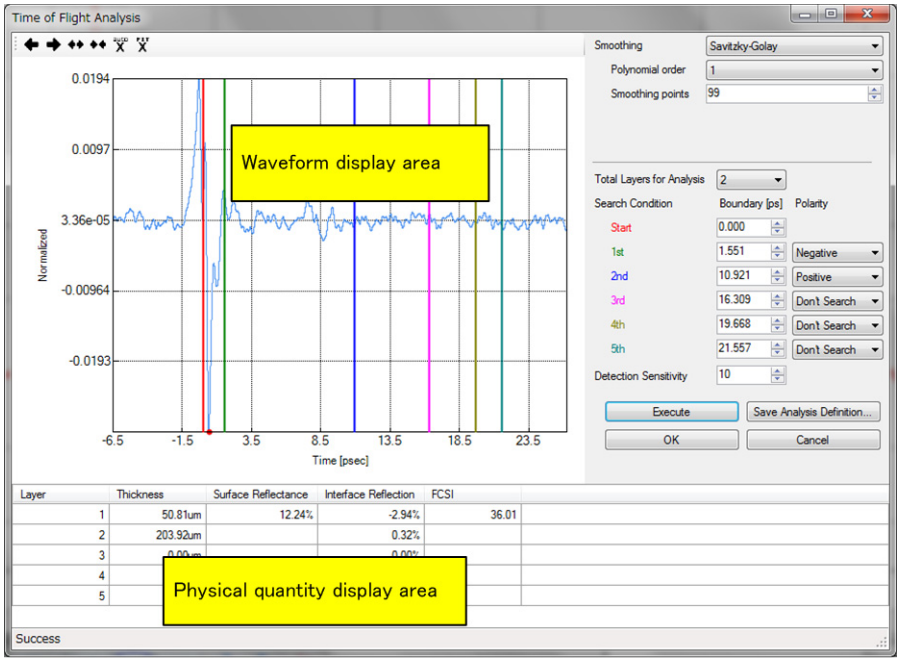
b) Click **[Analysis]** → **[Time of Flight Analysis]** in the graph window. The Time of Flight Analysis dialog box then opens. Make adjustments by setting the preprocessing type and make settings for each layer in this dialog box to correctly calculate the physical quantity.

Here, the settings for calculating the physical quantity in the first layer are configured as an example.

- Enter 1, which is the number of the layer to be analyzed, in Total Layers for Analysis.
- Set the time interval for the first layer by dragging the red and green bars in the waveform display area with the mouse.
- To search for negative peaks, select Negative as the Polarity for 1st under Search Condition.
- Press the **[Execute]** button to calculate the physical quantity. If the calculation is performed successfully, "Success" is displayed in the lower part of the dialog box and the values of the calculated results are displayed in the physical quantity display area.
  If the physical quantity cannot be calculated successfully, "Error" is displayed in the lower part of the dialog box. In such a case, repeat the preceding steps until the calculation is performed successfully.

When the calculation is performed successfully, press the **[OK]** button to close the dialog box. A new graph window is displayed in the Analysis window.

Figure 5-11 Time of Flight Analysis Dialog Box



c) Select **[File]** → **[Save Analysis Definition...]** in the graph window to save the analysis parameters to file.

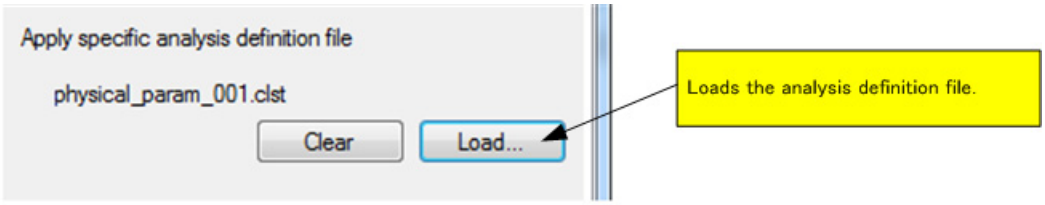
8) Imaging measurement

a) Select the Calculate tab in the condition setting area in the Measurement window and load the analysis definition file that was created in 7) into Apply specific analysis definition file.

b) Press the button on the tool bar in the Measurement window to execute background measurement.

➔ For more information on the analysis definition file, refer to 7. 7 "Analysis Definition File" on page 7-7.

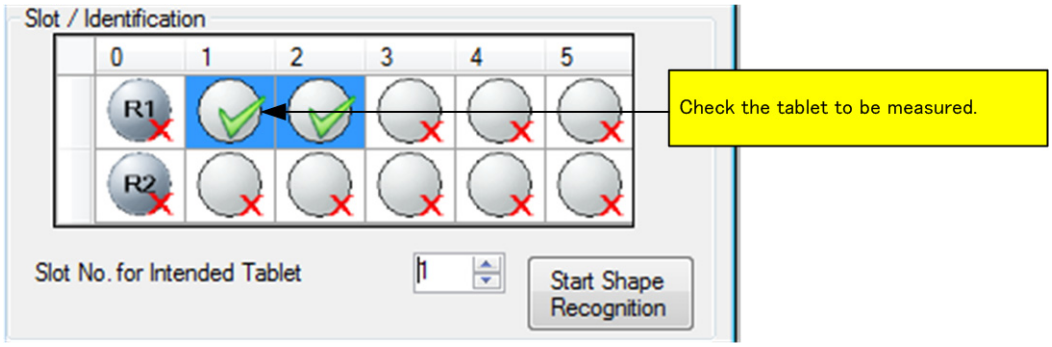
Figure 5-12 Specifying Analysis Definition File



c) Select the Condition tab in the condition setting area of the Measurement window and select the physical quantity to be displayed in Analysis Setting.

d) Select a tablet to measure in the Slot / Identification area of the Tablet Settings for Measurement window.

Figure 5-13 Specifying Measurement Target Tablet

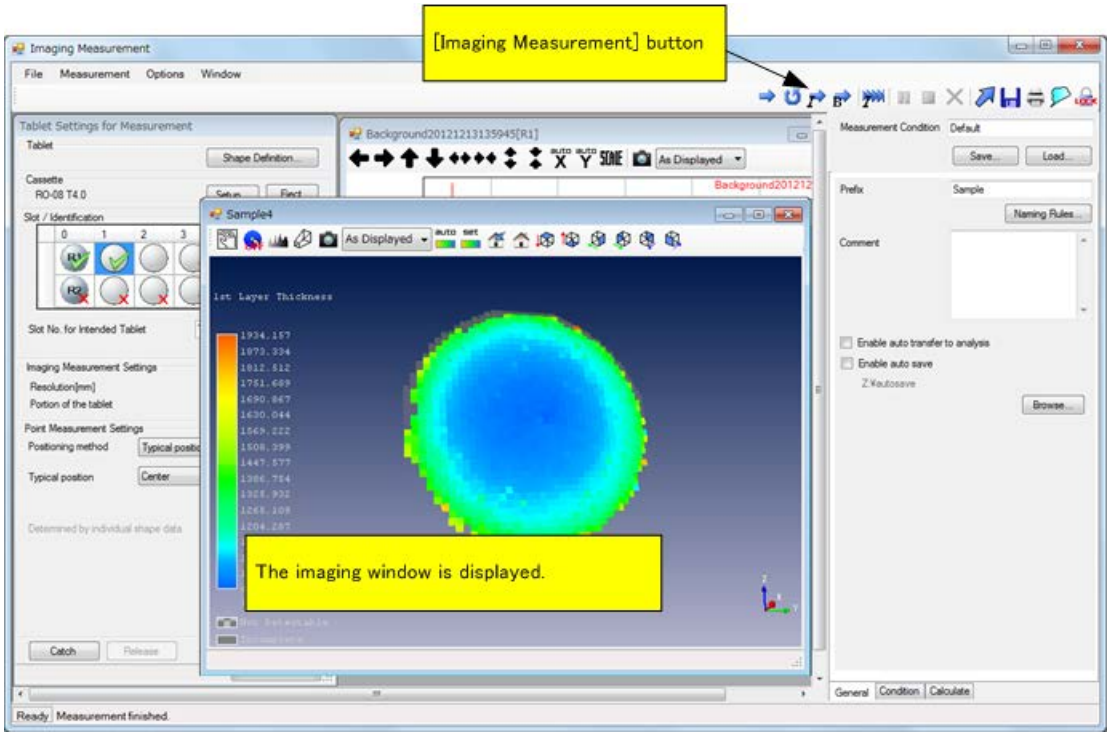


e) Set the measurement resolution and measuring plane in the Imaging Measurement Settings area of the Tablet Settings for Measurement window.

Figure 5-14 Specifying Measurement Resolution and Measuring Plane

f) Press the button on the tool bar in the Measurement window to execute imaging measurement.

Figure 5-15 Imaging Measurement



g) Use the **[Eject]** button in the Cassette area of the Tablet Settings for Measurement window to remove the cassette.

5. 1. 2 Basic Operations for Analysis

The basic operations of the analysis function include the following three steps:

1. Opening the Analysis window
2. Loading the data folder
3. Analyzing the imaging data. In this section, the following operations are performed as examples:
   - Observing the distribution of the physical quantity on the surface of a tablet
   - Observing the tomographic view of a tablet

The following describes how to perform analysis operations:

1) Opening the Analysis window
Click the **[Analysis]** button in the Navigation window. The Analysis window then opens.

Figure 5-16 Analysis Button

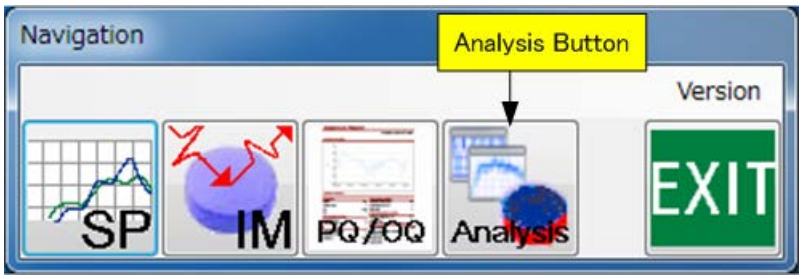
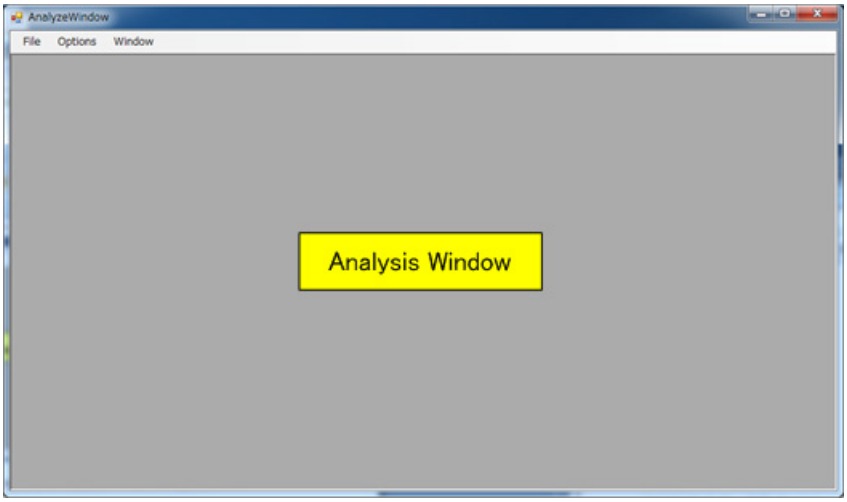
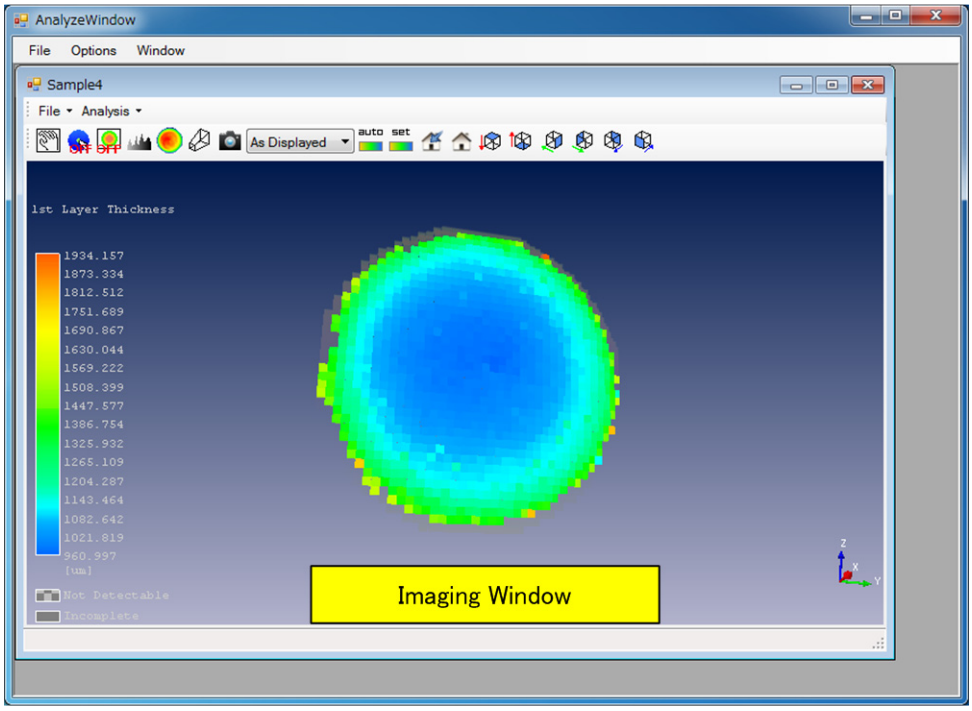


Figure 5-17 Analysis Window



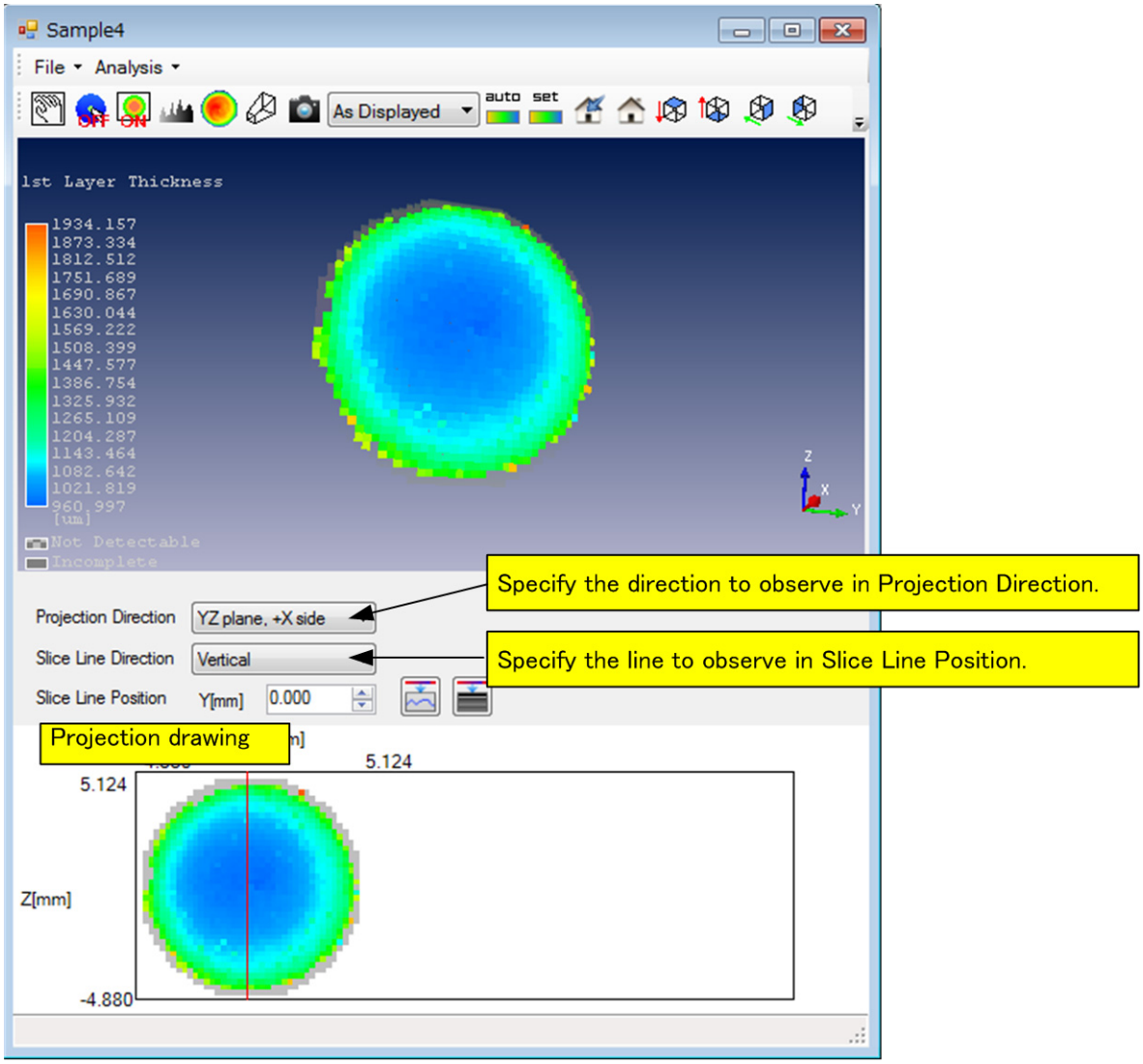
2) Loading the data folder
Select **[File]** → **[Load ImagingData...]** in the Analysis window to open the folder browser dialog box. When a folder (under which the BackGroundData folder exists) in the dialog box is selected and loaded, the imaging window then opens. An image of the film thickness of the first layer is displayed.

Figure 5-18 Imaging Window



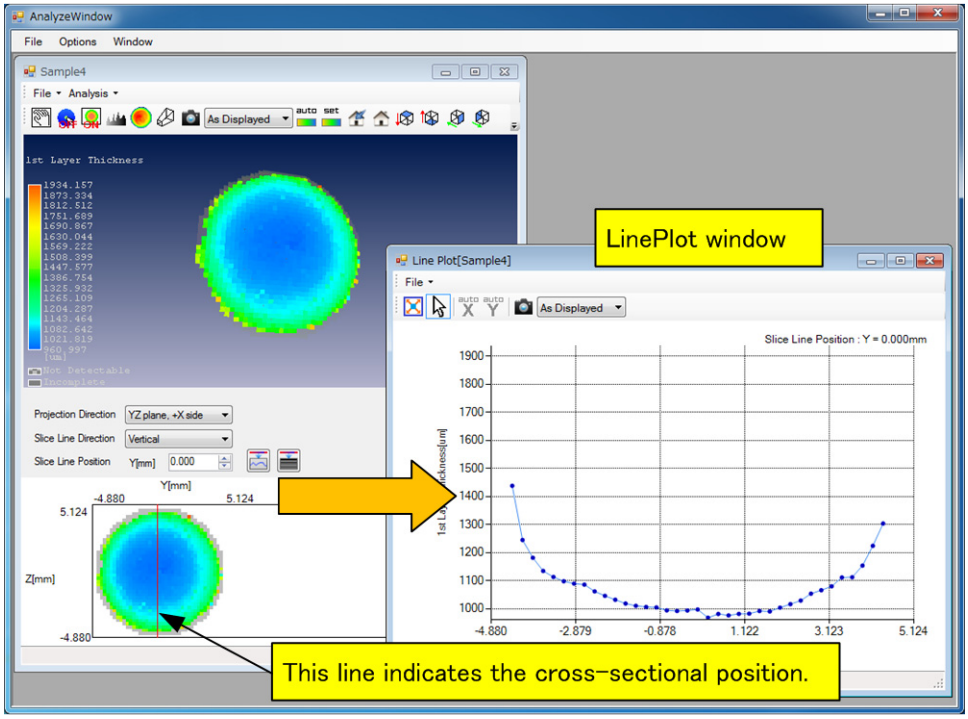
3) Displaying the projection drawing of the imaging display.
Click the  button on the tool bar in the imaging window. The projection drawing is then displayed. Specify the direction and the line to observe using Projection Direction and Slice Line Position and check the displayed projection drawing.

Figure 5-19 Displaying Imaging Projection



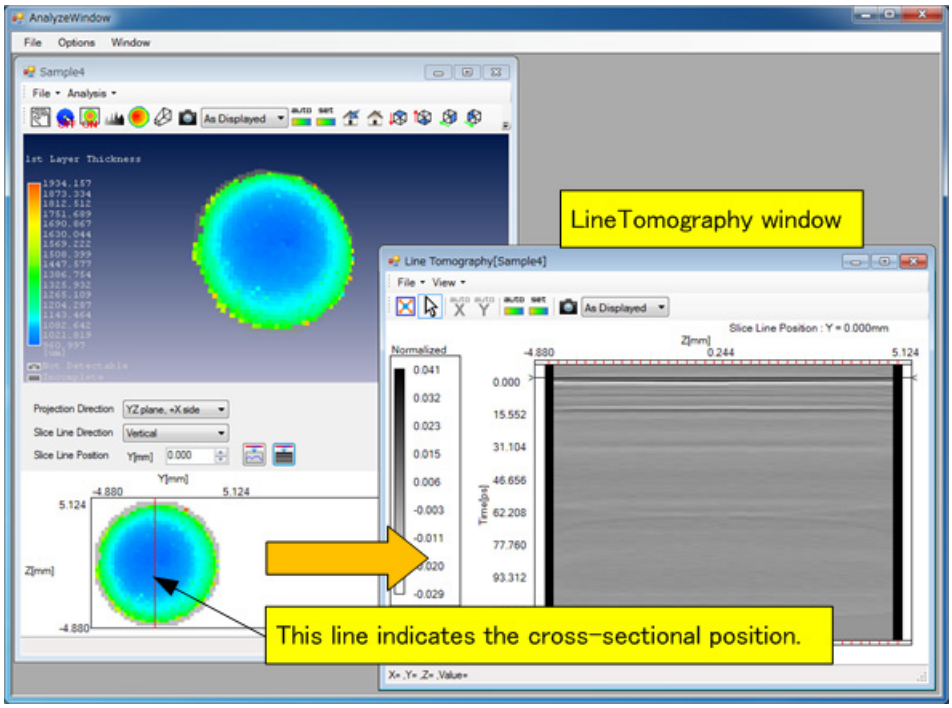
4) Opening the LinePlot window to observe the distribution of the physical quantity on the tablet surface.
After specifying the cross-sectional position of the projection drawing, click the  button in the projection drawing to open the LinePlot window.

Figure 5-20 LinePlot Window



5) Opening the LineTomography window to observe the tomographic view of the tablet.
After specifying the cross-sectional position of the projection drawing, click the  button in the projection drawing to open the LineTomography window.

Figure 5-21 LineTomography Window



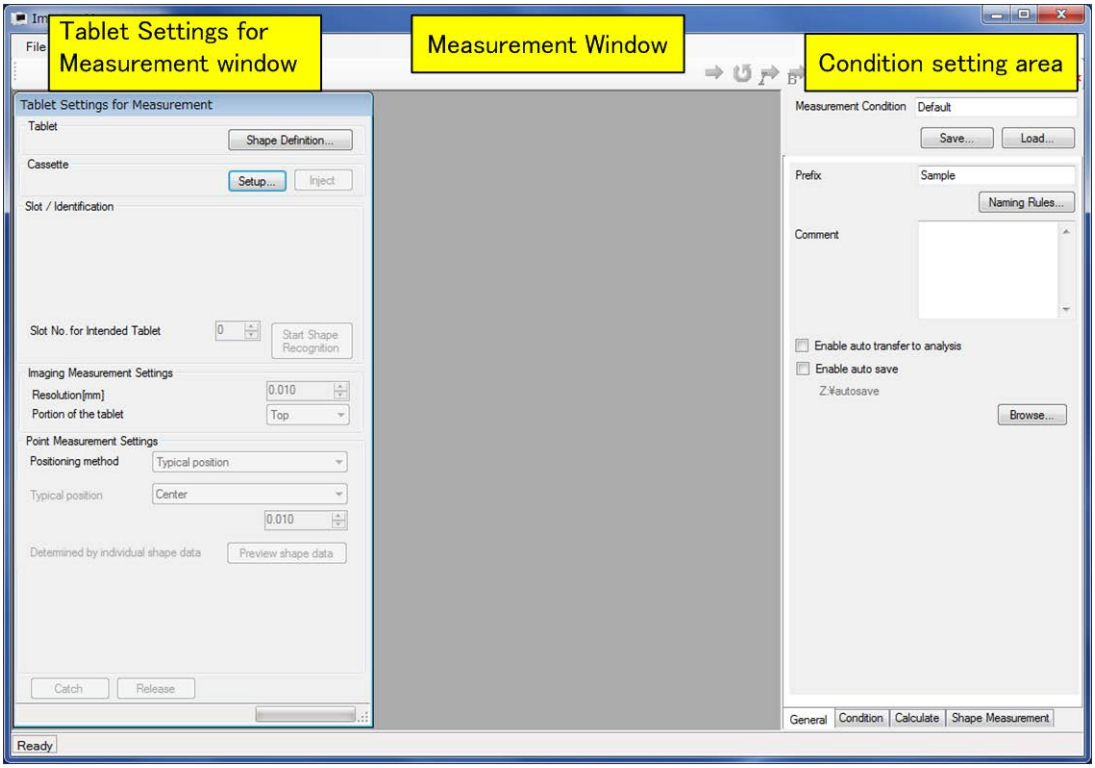
5. 2 Measurement Window

This section describes the Measurement window.

5. 2. 1 Window Layout

Figure 5-22 shows the user interfaces in the Measurement window.

Figure 5-22 Measurement Window



5. 2. 2 Menu Bar

The menu bar consists of various pull-down menus for measurement.

5. 2. 2. 1 [File]

The **[File]** menu can be used to make the following selections.

◆ **[File] → [Save Data...]**

This command saves the obtained data to file. The sample waveform is saved after a point measurement. The imaging data is saved after an imaging measurement.

◆ **[File] → [Print Report...]**

This command prints a report.

Clicking this command opens the Print Report dialog box.

➔ For more information on this dialog box, refer to 4. 2. 5. 6 "Print Report Dialog Box" on page 4-37.

◆ **[File] → [Close]**

This command closes the Measurement window.

5. 2. 2. 2 [Measurement]

The **[Measurement]** menu can be used to make the following selections.

◆ **[Measurement] → [Point Measurement(single)]**

This command executes point measurement.

◆ **[Measurement] → [Point Measurement(repeat)]**

This command executes point measurement repeatedly.

It is used to see the temporal change of a waveform.

◆ **[Measurement] → [Imaging Measurement]**

This command executes imaging measurement.

◆ **[Measurement] → [Background Measurement]**

This command executes background measurement.

◆ **[Measurement] → [Plural Sample Imaging Measurement]**

This command executes imaging measurement of more than one tablet.

◆ **[Measurement] → [Pause Measurement]**

This command temporarily stops imaging measurement. To resume execution of imaging measurement, execute **[Measurement] → [Imaging Measurement]**.

◆ **[Measurement] → [Stop Measurement]**

This command stops measurement.

◆ **[Measurement] → [Abort Measurement]**

This command terminates measurement.

◆ **[Measurement] → [Send to Analysis]**

This command transfers the obtained data to the Analysis window. The sample waveform is transferred after a point measurement. The imaging data is transferred after an imaging measurement.

◆ **[Measurement] → [Dry Air Purge]**

This command executes dry air purge.

◆ **[Measurement] → [Cover Lock]**

This command toggles the lock and unlock of the imaging unit internal cover.

5. 2. 2. 3 [Options]

The **[Options]** menu can be used to make the following selections.

◆ **[Options] → [Visualization...]**

This command sets the color of the waveform and background.

Clicking this command opens the Visualization dialog box.

➔ For more information on the dialog box, refer to 4. 2. 5. 4 "Visualization Dialog Box" on page 4-32.

◆ **[Options] → [Environment...]**

This command sets the directory and default scale of the system data.

Clicking this command opens the Environment dialog box.

➔ For more information on the dialog box, refer to 4. 2. 5. 5 "Environment Dialog Box" on page 4-35.

◆ **[Options] → [Report Settings..]**

This command sets items output to a report.

Clicking this command opens the Report Settings dialog box.

➔ For more information on this dialog box, refer to 4. 2. 5. 7 "Report Settings Dialog Box" on page 4-39.

5. 2. 2. 4 [Window]

The **[Window]** menu can be used to make the following selections.

◆ **[Window] → [Cascade]**

This command stacks child windows on top of each other so that only the title bar and left edge is visible.

◆ **[Window] → [Tile Horizontal]**

This command vertically aligns child windows.

◆ **[Window] → [Tile Vertical]**

This command horizontally aligns child windows.

5. 2. 3 Tool Bar

The tool bar contains the following buttons.

	Shortcut to **[Measurement]** → **[Point Measurement(single)]**
	Shortcut to **[Measurement]** → **[Point Measurement(repeat)]**
	Shortcut to **[Measurement]** → **[Imaging Measurement]**
	Shortcut to **[Measurement]** → **[Background Measurement]**
	Shortcut to **[Measurement]** → **[Plural Sample Imaging Measurement]**
	Shortcut to **[Measurement]** → **[Pause Measurement]**
	Shortcut to **[Measurement]** → **[Stop Measurement]** When the button is blue, it stops measurement. When the button is red, it stops measurement forcibly.
	Shortcut to **[Measurement]** → **[Abort Measurement]**
	Shortcut to **[Measurement]** → **[Send to Analysis]**
	Shortcut to **[File]** → **[Save Data...]**
	Shortcut to **[File]** → **[Print Report...]**
	Shortcut to **[Measurement]** → **[Dry Air Purge]** During dry air purge execution, ON is displayed on button.
	Shortcut to **[Measurement]** → **[Cover Lock]**

5. 2. 4 Condition Setting Area

This section describes the condition setting area.

Measurement Condition	Specifies a measurement name.
[Save...] button	Saves the measurement conditions to file.
[Load...] button	Loads a measurement condition file.

5. 2. 4. 1 General Tab

This section describes the General tab.

Prefix	Specifies the prefix of the measurement data name.
[Naming Rules...] button	Specifies the rules for naming the measurement data. Clicking this command opens the Naming Rules dialog box. ➔ For more information on the dialog box, refer to 4. 2. 5. 2 "Naming Rules Dialog Box" on page 4-28.
Comment	Enter a comment about measurement data.
[Enable auto transfer to analysis] checkbox	Transfers the measurement data automatically to the Analysis window when this button is ON.
[Enable auto save] checkbox	Automatically saves the measurement data to file when this button is ON.
[Browse...] button	Specifies the destination in which to save the measurement data.

5. 2. 4. 2 Condition Tab

This section describes the Condition tab.

Multiple Background Data Setting	Specifies whether to execute measurement using multipoint background data. When On is set, it is executed. When Off is set, it is not executed. ➔ For more information on multipoint background data, refer to 7. 8 "Tablet Area Division and Multipoint Background Data Settings" on page 7-8.
Center Position Correction	Specifies whether to execute tablet center position correction or not. When this is On, it is executed. When this is Off, it is not executed.
Shape Measurement(Sample)	Specifies whether to execute tablet shape measurement. This setting is valid only for sample measurement. When On is set, it is executed. When this is Off, it is not executed. When On is set, tablet center position correction is not executed even if Center Position Correction is set to On. ➔ For more information on tablet shape measurement, refer to 7. 9 "Tablet Shape Measurement" on page 7-11.
Frequency Resolution	Displays the frequency resolution.
Vertical Axis	Specifies the type of vertical axis.
Normalized	Normalized waveform
Voltage	Voltage waveform
Power (Log)	Frequency spectrum (log display)
Horizontal Axis	Specify the type of horizontal axis.
Time [psec]	Time This cannot be selected if Power (Log) is selected as the vertical axis type.
Frequency [THz]	Frequency This can only be selected when Power (Log) is selected as the vertical axis type.
Wave Number [cm-1]	Wave number This can only be selected when Power (Log) is selected as the vertical axis type.
Analysis Setting	Specifies the physical quantity to display in the 3D imaging window.
1st Layer Thickness	1st Layer Thickness1st layer film thickness
1st Layer Surface Reflectance	1st layer surface reflectance
1st Layer Interface Reflection	1st layer interface reflection
1st Layer FCSI	1st layer Film Coating Strength Index
2nd Layer Thickness	2nd layer film thickness
2nd Layer Interface Reflection	2nd layer interface reflection
3rd Layer Thickness	3rd layer film thickness

3rd Layer Interface Reflection	
	3rd layer interface reflection
4th Layer Thickness	4th layer film thickness
4th Layer Interface Reflection	
	4th layer interface reflection
5th Layer Thickness	5th layer film thickness
5th Layer Interface Reflection	
	5th layer interface reflection

Cumulated Number (Sample)

Specify the cumulated number of sample measurements.

1 to 16384

Cumulated Number (Background)

Specifies the cumulated number of background measurements.

1 to 16384

[Apply specific background file] button

Specifies a background waveform by file. R1A, R1B, and R1C are the background waveforms for the top surface of tablets. R2A and R2B are the waveforms for the sides. When the check box is set to selected, the specified file becomes valid.

➔ For more information on R1A, R1B, and R1C as well as R2A and R2B, refer to 7. 8 "Tablet Area Division and Multipoint Background Data Settings" on page 7-8.

[Save...] button — Saves the background waveform to file.

[Load...] button — Loads the background waveform from a file.

5. 2. 4. 3 Calculate Tab

This section describes the Calculate tab.

Smoothing

Type	Specifies a type of smoothing.	
	Savitzky-Golay	Savitzky-Golay method
	None	Smoothing is not executed.

Polynomial	Specifies a polynomial order. This is enabled when Type is Savitzky-Golay.
Points	Specifies the number of data points. This is enabled when Type is Savitzky-Golay.

Apply specific analysis definition file

Displays the name of the analysis definition file that has been loaded.

➔ For more information on the analysis definition file, refer to 7. 7 "Analysis Definition File" on page 7-7.

[Clear] button — Clears the analysis definition file.

➔ For more information on the analysis definition file, refer to 7. 7 "Analysis Definition File" on page 7-7.

[Load...] button — Loads the analysis definition file.

➔ For more information on the analysis definition file, refer to 7. 7 "Analysis Definition File" on page 7-7.

5. 2. 4. 4 Shape Measurement Tab

This section describes the Shape Measurement tab.

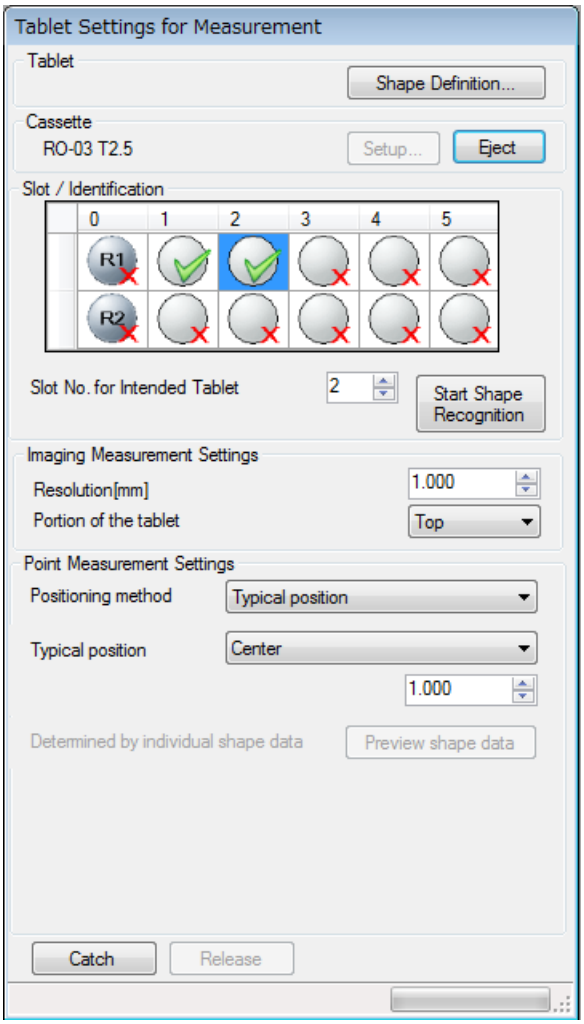
➔ For more information on tablet shape measurement, refer to 7. 9 "Tablet Shape Measurement" on page 7-11.

Fitting Method	Specify a type of the function that approximates the tablet shape based on the tablet shape measurement result.	
	Sphere	Approximation using a sphere equation
	Plane	Approximation using a plane equation
	Polynominal	Approximation using a polynomial equation
		Order of the polynomial equation (2 to 6)
Fitting Points	Specify the target points when approximating the tablet shape based on the tablet shape measurement result.	
	All Points	Approximation of shape using the shape measurement data at all points
	Circular Neighborhood	Approximation using the neighborhood shape measurement data (circular neighborhood) included in the radius of the circle specified for each point
	Radius[mm]	Specifies a circular neighborhood radius. 1 mm to size of tablet (long or short diameter, whichever larger) ➔ For more information on long and short diameters, refer to 5. 2. 6. 1 "Simple Tablet Shape Definition Dialog Box" on page 5-34.
Smoothing	Specifies conditions for smoothing the tablet shape measurement result.	
	Type	Specifies a type of smoothing.
	Savitzky-Golay	Savitzky-Golay method
	None	Does not execute smoothing.
	Polynominal	Specifies an order of the polynomial equation (1 to 5).
	Points	Specifies the number of data points (3 to 1001).

5. 2. 5 Tablet Settings for Measurement Window

Figure 5-23 shows the user interface of the Tablet Settings for Measurement window.

Figure 5-23 Tablet Settings for Measurement Window



◆ Tablet

Shape Definition... — Registers tablet shape information.

➔ For more information on the dialog box, refer to 5. 2. 6. 1 "Simple Tablet Shape Definition Dialog Box" on page 5-34.

◆ Cassette

[Eject] / **[Inject]** button — Attaches and removes the cassette.

[Setup...] button — Selects the cassette to be used. Clicking this button opens the Cassette Select dialog box.

➔ For more information on the dialog box, refer to 5. 2. 6. 4 "Cassette Select Dialog Box" on page 5-41.

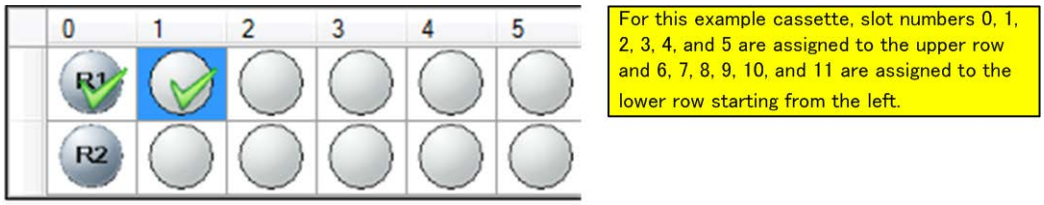
◆ Slot / Identification

Tablet selection area — Specifies a reference mirror and tablet to be measured. Check the slot to be measured.

R1 Reference mirror to measure the top surface.

R2 Reference mirror to measure the side.

Figure 5-24 Tablet Selection Area



	Reference tablet for which tablet information has not been set
	Sample tablet for which tablet information has not been set
	Selected tablet. More than one tablet can be selected at once by dragging mouse. This is target when setting tablet information by right-clicking.
	Reference tablet for which tablet information has been set
	Sample tablet for which tablet information has been set. This can be checked as tablet to be measured.
	Sample tablet that has been checked as measurement target

Slot No. for Intended Tablet — Specifies the slot number of the target tablet in order to measure one tablet.

[Start Shape Recognition] button

Starts length measurement to detect the shape of the selected tablet.
The result of the length measurement is saved to a file as shape coordinate data. The data can be loaded by pressing the **[From File]** button in the Tablet Configuration Setting dialog box.

◆ Imaging Measurement Settings

Resolution [mm]	Specifies the interval of measurement points. (0.01 to 1/3 of the largest tablet that can be positioned in the tablet cassette)	
Portion of the tablet	Specifies a portion of the tablet to measure. The selection can be made from the following choices:	
	Top	Top surface
	Lateral	Side surfaces
	Bottom	Bottom surface
	All	All surfaces
	Top+Lateral	Top surface + side surfaces

◆ Point Measurement Settings

Positioning method	Selects a method for specifying the coordinates of the measurement point. The selection can be made from the following choices: Typical position Specifies a measurement point based on the distance from the reference point. Determined by individual shape data Specifies a measurement point based on the tablet shape image.
Typical position	Specifies a measurement point based on the distance from the reference point. The selection can be made from the following choices: Valid only when Typical position is selected for Positioning method. Center — Measures the center position. Upside from center [mm] Measures a position which is a specified distance away from the center to the top. Lower side from center [mm] Measures a position which is a specified distance away from the center to the bottom. Left hand from center [mm] Measures a position which is a specified distance away from the center to the left. Right hand from center [mm] Measures a position which is a specified distance away from the center to the right. Distance input range. (0.01 to 1/2 of the longest diameter for the largest tablet that can be positioned in the tablet cassette)
[Preview shape data] button	Displays the image of the specified tablet. Clicking this button opens the Singular measurement point setting dialog box. ➔ For more information on the dialog box, refer to 5. 2. 6. 5 "Singular measurement point setting Dialog Box" on page 5-41. Valid only when Determined by individual shape data is selected for Positioning method.
[Catch] button	Catches the tablet.
[Release] button	Returns the tablet to the cassette.

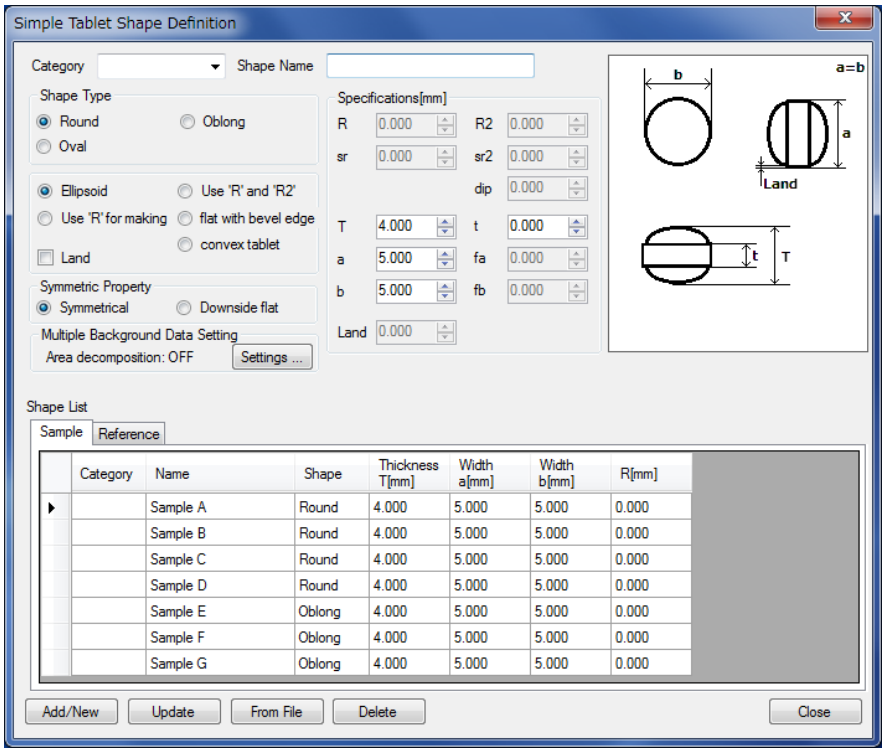
5. 2. 6 Dialog Box

This section describes the dialog boxes.

5. 2. 6. 1 Simple Tablet Shape Definition Dialog Box

This dialog box is used to register tablet shape data. This dialog box can be displayed by clicking the **[Shape Definition...]** button in 5. 2. 5 "Tablet Settings for Measurement Window" on page 5-29.

Figure 5-25 Simple Tablet Shape Definition Dialog Box



Category	Specify category to classify shape data. (Can be omitted)	
Shape Name	Specify name of shape data to be created.	
Shape Type	Round	Circular
	Oval	Elliptical
	Oblong	Rectangle with rounded corners
	Ellipsoid	Creates elliptical top surface of tablet.
	Use 'R' for making	Creates curved radius top surface of tablet.
	Use 'R' and 'R2'	2Rs. Creates double-curvature radius top surface of tablet. (Cannot be selected for Oval.)
	flat with bevel edge	Flat surface with beveled edge. Creates flat tablet top surface with specified-angled circular cone edge. (Cannot be selected for Oval.)
	convex tablet	Flat surface with curved edge. Creates flat top surface of tablet with curved edge defined by R. (Cannot be selected for Oval.)
	Land	Creates flat area between tablet diameter and tablet top surface shape when this is selected.
Specifications[mm]	R	Curvature radius (for Oval, curvature radius in short diameter direction) (2.525 to 990)
	sr	Lateral curvature radius in long diameter direction when using R for oval tablet (0.5 to 1000)

	sr2	Lateral curvature radius in short diameter direction when using R for oval tablet (0 to 1000)
	R2	Curvature radius near edge of 2Rs tablet (0 to 10)
	dip	Angle of inclination near edge for tablet having flat surface with beveled edge (1 to 89)
	T	Height (0.1 to 10)
	t	Lateral height (0 to T)
	a	Long diameter (1 to 20)
	fa	Area where side in long diameter direction is straight line (0 to a)
	b	Short diameter (1 to 20)
	fb	Area where side in short diameter direction is straight line (0 to b)
	Land	Land area width (0 to 5)
Symmetric Property	Symmetrical	Creates upside-down shape.
	Downside flat	Creates shape with flat bottom.
Multiple Background Data Setting		
When Shape List displays Sample:		
	Area decomposition	If tablet area division is enabled, ON is displayed. If disabled, OFF is displayed. ➔ For more information on tablet area division, refer to 7. 8 "Tablet Area Division and Multipoint Background Data Settings" on page 7-8.
	Settings...	Opens the Area Decomposition Settings dialog box. ➔ For more information on the dialog box, refer to 5. 2. 6. 2 "Area Decomposition Settings Dialog Box" on page 5-37.
When Shape List displays Reference:		
	Background position	If even one coordinate for executing background measurement is set to the divided area of a tablet, ON is displayed. Otherwise, OFF is displayed. ➔ For more information on tablet area division, refer to 7. 8 "Tablet Area Division and Multipoint Background Data Settings" on page 7-8. ➔ For more information on coordinates for executing background measurement, refer to 5. 2. 6. 3 "Background Position Settings Dialog Box" on page 5-39.
	Settings...	Opens the Background Position Settings dialog box. ➔ For more information on the dialog box, refer to 5. 2. 6. 3 "Background Position Settings Dialog Box" on page 5-39.
[Add/New] button	Registers shape data.	
[Update]	Updates shape data selected in shape data area.	
[From File] button	Loads shape data from file.	
[Delete] button	Deletes shape data selected in shape data area.	

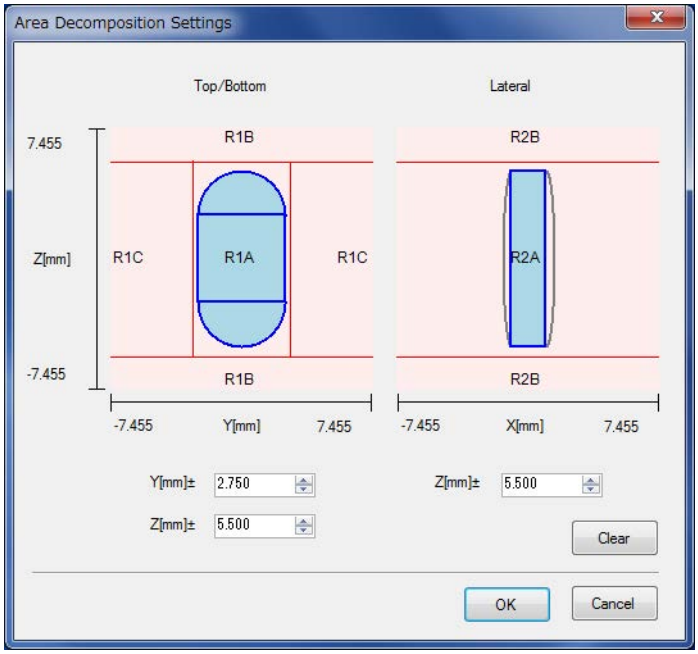
[Close] button	Closes dialog box.

5. 2. 6. 2 Area Decomposition Settings Dialog Box

This dialog box specifies how the tablet area is divided. This dialog box can be opened by selecting the Sample tab in Shape List of 5. 2. 6. 1 "Simple Tablet Shape Definition Dialog Box" on page 5-34 and clicking the **[Settings...]** button in Multiple Background Data Setting.

➔ For more information on tablet area division, refer to 7. 8 "Tablet Area Division and Multi-point Background Data Settings" on page 7-8.

Figure 5-26 Area Decomposition Settings Dialog Box



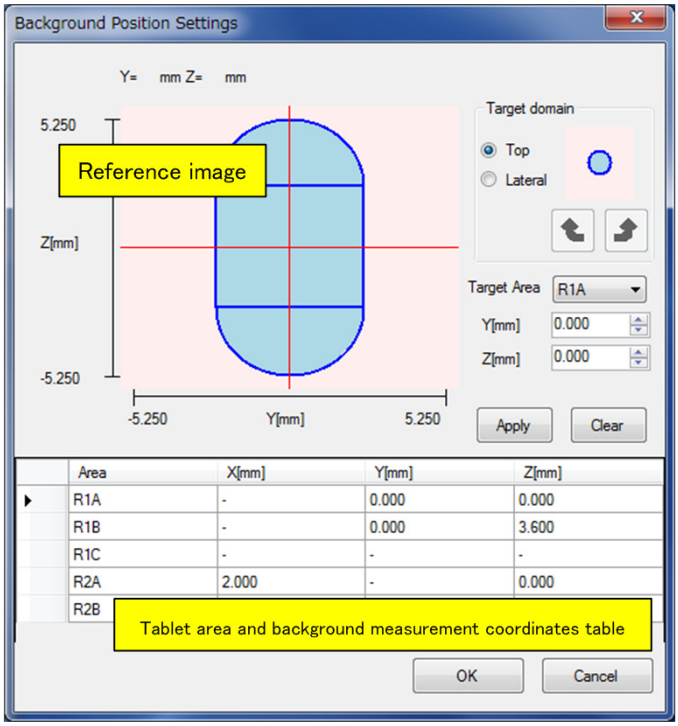
Top/Bottom	Y[mm]±	Specifies a Y-axis value of the boundary between R1A and R1C for the top and bottom surfaces. The boundary is displayed with horizontal red lines on the Top/Bottom figure. The boundary can be moved by clicking the mouse on the figure.
	Z[mm]±	Specifies a Z-axis value of the boundary between R1A and R1B for the top and bottom surfaces. The boundary is displayed with vertical red lines on the Top/Bottom figure. The boundary can be moved by clicking the mouse on the figure.
Lateral	Z[mm]±	Specifies a Z-axis value of the boundary between R2A and R2B for the side surface. The boundary is displayed with horizontal red lines on the Lateral figure. The boundary can be moved by clicking the mouse on the figure.
[Clear] button		Resets the setting values for the top, bottom, and side surfaces to the default values. By default, the lines for R1B, R1C, and R2B do not overlap R1A and R2A as shown in the figure.
[OK] button		Enables the specified setting.
[Cancel] button		Closes the dialog box.

5. 2. 6. 3 Background Position Settings Dialog Box

This dialog box specifies a position of background measurement on the reference and associate background data with the tablet area. This dialog box can be opened by selecting the Reference tab in Shape List of 5. 2. 6. 1 "Simple Tablet Shape Definition Dialog Box" on page 5-34 and clicking the **[Settings...]** button in Multiple Background Data Setting.

➔ For more information, refer to 7. 8 "Tablet Area Division and Multipoint Background Data Settings" on page 7-8.

Figure 5-27 Background Position Settings Dialog Box



X,Y,Z	Displays the cursor location on the reference image. The coordinate axes change depending on the selected domain.
Target domain	Specifies a domain to be displayed in the tablet figure by selecting a radio button.
Top	Displays the top surface.
Lateral	Displays the side surface. When Lateral is selected, the side location can be changed by using the and buttons.
Target Area	Specifies the area selected for tablet area division. Background data measured at coordinates X, Y, and Z is used in this specified area.
X[mm],Y[mm],Z[mm]	Specifies the coordinates of the point to be measured. The coordinate axes change depending on the selected domain.
[Apply] button	Applies the coordinate values to the target area in the [Tablet area and background measurement coordinates table].
[Clear] button	Clears the coordinate values from the target area in the [Tablet area and background measurement coordinates table].

Tablet area and background measurement coordinates table

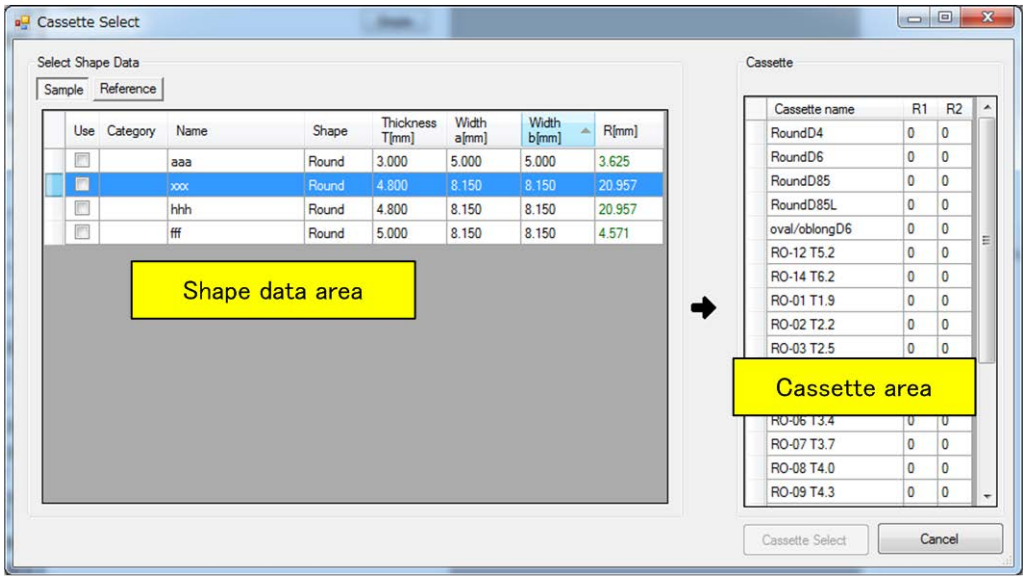
Area	Displays the tablet area specified in Target Area.
X[mm],Y[mm],Z[mm]	Displays the reference coordinates at which background data is measured.
[OK] button	Enables the specified setting.
[Cancel] button	Closes the dialog box.

5. 2. 6. 4 Cassette Select Dialog Box

This dialog box is used to apply a cassette to the system. This dialog box can be displayed by clicking the **[Setup...]** button in 5. 2. 5 "Tablet Settings for Measurement Window" on page 5-29.

Select a tablet (or reference mirror) from the shape data area. A list of cassettes that can store it is then displayed in the cassette area. Select an appropriate cassette from the list and apply it to the system by clicking the **[Cassette Select]** button.

Figure 5-28 Cassette Select Dialog Box



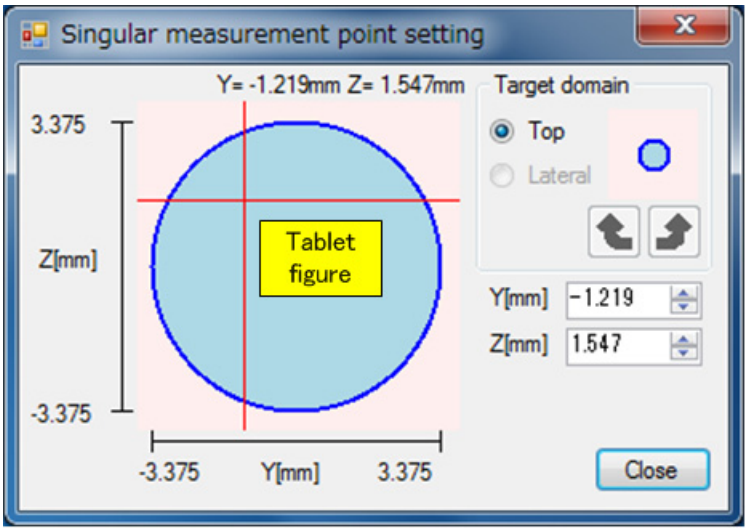
Shape data area	Displays a list of shape data items for registered tablets (or reference mirrors). Select by using the Use check box.
[Sample] button	Displays list of tablets in shape data area.
[Reference] button	Displays list of reference mirrors in shape data area.
Cassette area	Displays list of cassettes that can store tablet (or reference mirror) selected in shape data area.
[Cassette Select] button	Applies cassette selected in cassette area to system.
[Cancel] button	Closes dialog box.

5. 2. 6. 5 Singular measurement point setting Dialog Box

This dialog box is used to set a point to be measured. Point measurement can be executed without closing this dialog box.

Open this dialog box using the **[Preview shape data]** button in 5. 2. 5 "Tablet Settings for Measurement Window" on page 5-29.

Figure 5-29 Singular measurement point setting Dialog Box



By clicking on the tablet figure, a point to be measured can be specified.

X,Y,Z	Displays cursor location on the tablet figure. Depending on the selected domain, the coordinate axes change.
Target domain	Specifies a domain to be displayed in the tablet figure by selecting a radio button.
Top	Displays the top surface.
Lateral	Displays the side surface. When Lateral is selected, the side location can be changed by using the and buttons.
button	Rotates clockwise by 90 degrees.
button	Rotates counterclockwise by 90 degrees.
X[mm], Y[mm], Z[mm]	Specifies the coordinate of the point to be measured. Depending on the selected domain, the coordinate axes change.
[Close] button	Closes the dialog box.

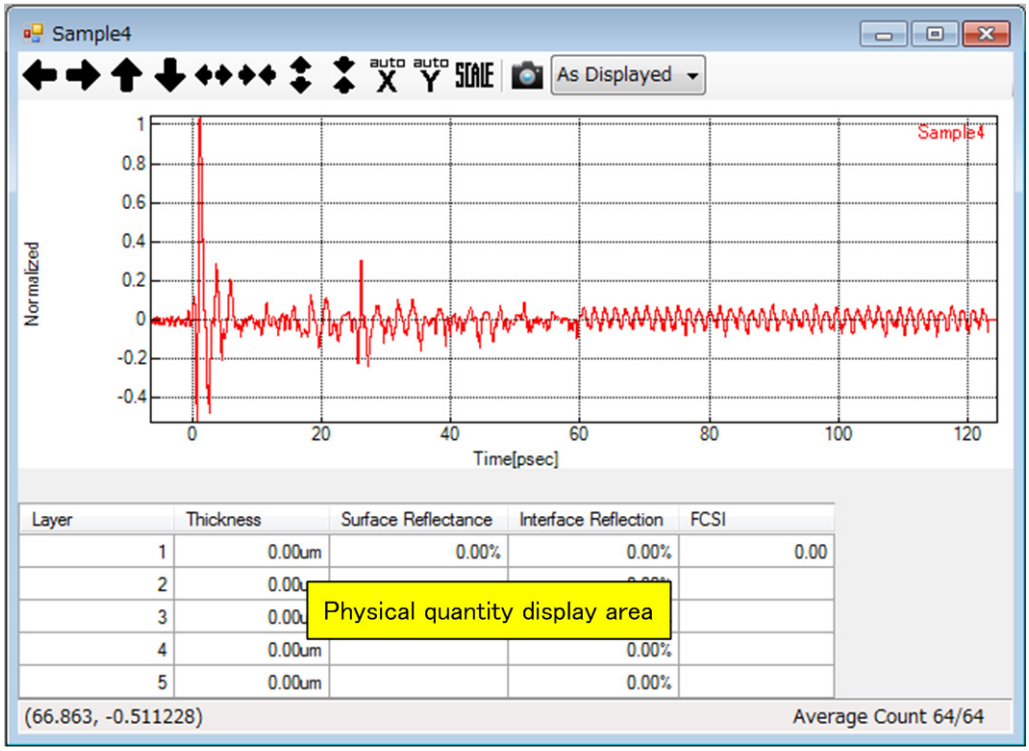
5. 3 Graph Window in Measurement Window

This section describes the graph window of the Measurement window.

5. 3. 1 Window Layout

Figure 5-30 shows the user interface of the graph window.

Figure 5-30 Graph Window



◆ Physical quantity display area

Layer	Layer number
Thickness	Film thickness
Surface Reflectance	Surface reflectance
Interface Reflection	Interface reflection
FCSI	Film Coating Strength Index

5. 3. 2 Tool Bar

The tool bar contains the following buttons.

	Moves waveform to left.
	Moves waveform to right.
	Moves waveform upward.
	Moves waveform downward.
	Expands waveform in direction of horizontal axis.
	Compresses the waveform in the direction of the horizontal axis.
	Expands waveform in direction of vertical axis.
	Compresses waveform in direction of vertical axis.
	Adjusts display range of horizontal axis so that all data items located within range of current vertical axis can be displayed.
	Adjusts display range of vertical axis so that all data items located within range of current horizontal axis can be displayed.
	Scale specification button. Display range is specified in dialog box. Clicking this button opens Scale Settings dialog box. ➔ For more information on the dialog box, refer to 4. 5. 5. 2 "Scale Settings Dialog Box" on page 4-78.
	Saves the screen shot to file. Use option menu on right to specify size of image file to save.

5. 3. 3 Pop-up Menu

The pop-up menu is displayed by right clicking on the graph window.

The pop-up menu includes the following commands.

◆ [Properties...]

This command opens the properties dialog box.

➔ For more information on the dialog box, refer to 4. 3. 4. 1 "Properties Dialog Box" on page 4-43.

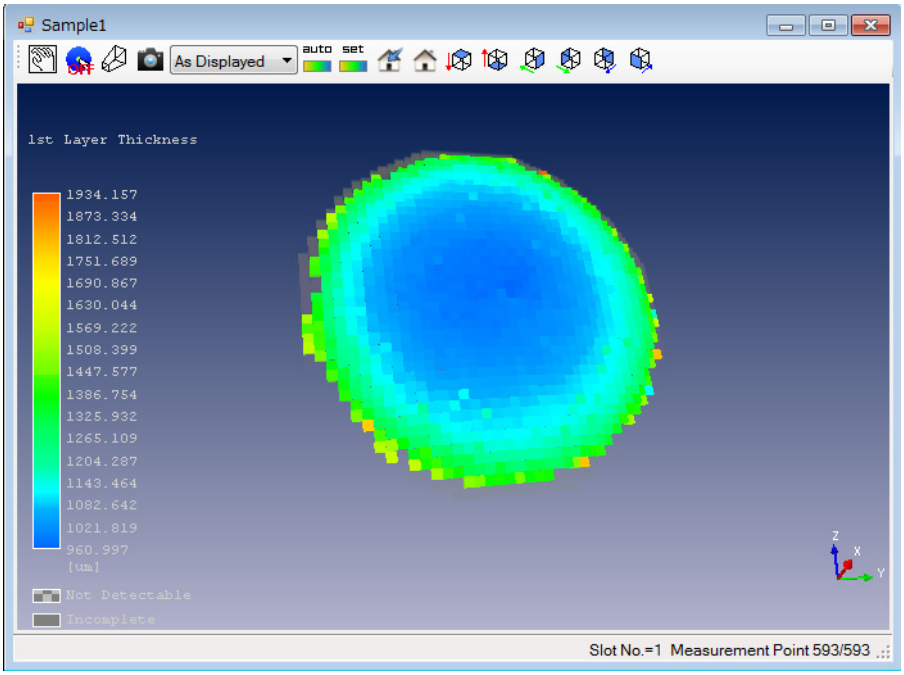
5. 4 Imaging Window in Measurement Window

This section describes the imaging window of the Measurement window.

5. 4. 1 Window Layout

Figure 5-31 shows the user interface of the imaging window.

Figure 5-31 Imaging Window



Not Detectable	A point where there is a calculation error.
Incomplete	A point at which measurement is not carried out.

5. 4. 2 Tool Bar

The tool bar contains the following buttons.

	Toggles imaging rotation mode and cursor display mode. With icon on left, imaging display can be rotated using mouse. When icon shows arrow, cursor is displayed.
	Toggles display of point waveform. When this button shows ON, point waveform of point on imaging display at which mouse has been clicked is displayed. When this button shows OFF, no point waveform is displayed.
	Toggles display of projection drawing. This button is only displayed in imaging window of Analysis window.
	Displays histogram of 3D data. This button is only displayed in imaging window of Analysis window.
	Starts the gradation view window. ➔ For more information on the window, refer to 5. 11 "Gradation View Window in Analyze Window" on page 5-75. This button is only displayed in imaging window of Analysis window.
	Switches camera for 3D display. Camera switches between the parallel projection camera and perspective projection camera.
	Saves screen shot to file. Use option menu on right to specify size of image file to save.
	Displays minimum value to maximum value of displayed data in gradient.
	Scale setting button. Sets gradient within fixed range using dialog box. Clicking this button opens Scale Settings dialog box. ➔ For more information on the dialog box, refer to 5. 4. 4. 1 "Scale Settings Dialog Box" on page 5-47.
	Saves the current camera position as the home position. If more than one camera is displayed, camera displayed in upper left corner is used.
	Moves camera to position saved as home position. If more than one camera is displayed, they all move to same position.
	Moves camera to position from which top surface of tablet can be shown.
	Moves camera to position from which image of bottom surface of tablet can be shown.
	Moves camera to position from which image of lateral surface (viewed from + direction of Y axis) of tablet can be shown.
	Moves camera to position from which image of lateral surface (viewed from - direction of Y axis) of tablet can be shown.
	Moves camera to position from which image of lateral surface (viewed from + direction of Z axis) of tablet can be shown.

	Moves camera to a position from which image of lateral surface (viewed from - direction of Z axis) of tablet can be shown.

5. 4. 3 Pop-up Menu

The pop-up menu is displayed by right clicking on the imaging window.

The pop-up menu includes the following commands.

◆ [Properties...]

This command opens the Properties dialog box.

➔ For more information on the dialog box, refer to 5. 4. 3. 1 "Properties Dialog Box" on page 5-47.

5. 4. 3. 1 Properties Dialog Box

This dialog box displays detailed information of imaging data.

This dialog box opens from the following buttons:

- **[Properties...]** button in 5. 4. 3 "Pop-up Menu" on page 5-47
- **[Properties...]** button in 5. 7. 3 "Pop-up Menu" on page 5-61

The items displayed in this dialog box are the same as 4. 3. 4. 1 "Properties Dialog Box" on page 4-43.

5. 4. 4 Dialog Box

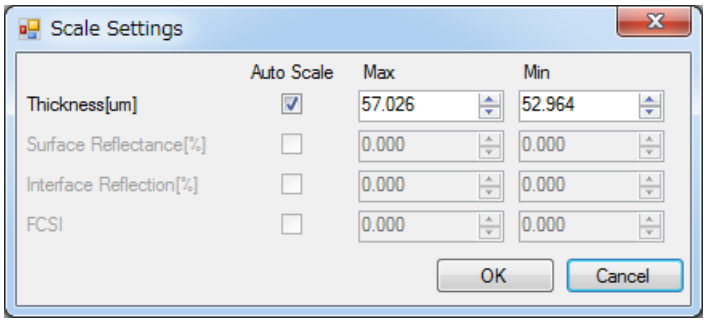
This section describes the dialog boxes.

5. 4. 4. 1 Scale Settings Dialog Box

This dialog box is used to set the gradation range of the imaging window. The items of currently displayed physical quantity can be entered.

Open this dialog box using the scale setting button in 5. 4. 2 "Tool Bar" on page 5-46.

Figure 5-32 Scale Settings Dialog Box



Auto Scale checkbox	Sets the minimum value and maximum value of the data being displayed. When the checkbox is on, the minimum and maximum values are enabled. When it is off, all the data is displayed.
Max	Specifies a maximum value for the range to display.
Min	Specifies a minimum value for the range to display.
[OK] button	Applies the set information.
[Cancel] button	Closes the dialog box.

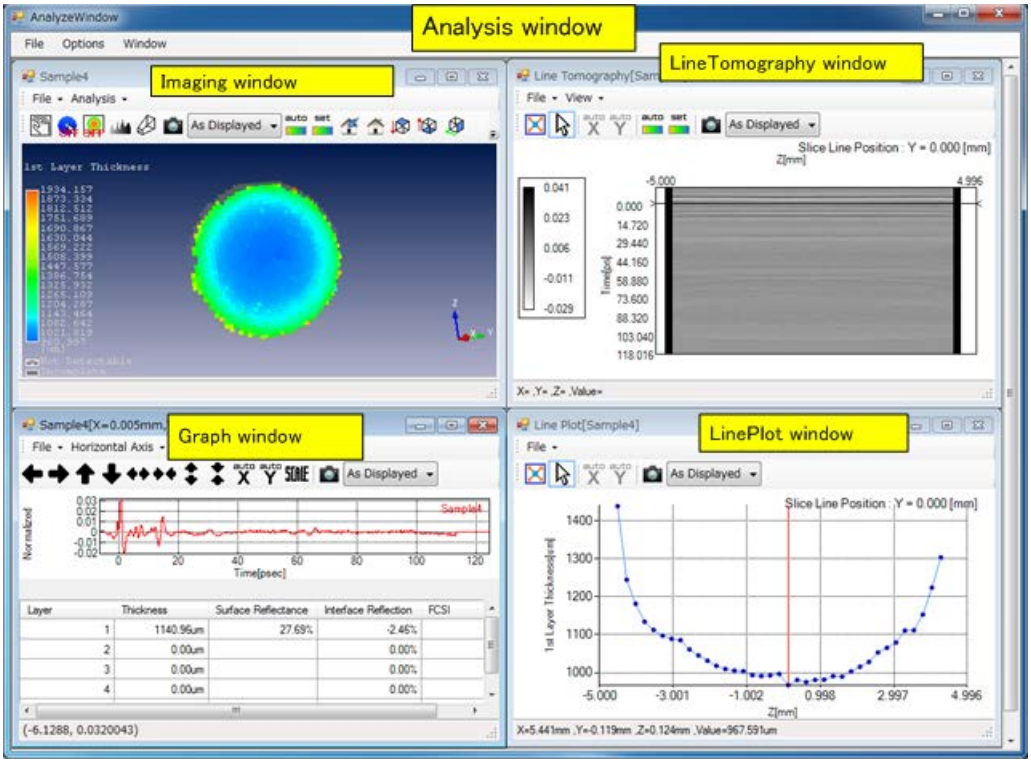
5. 5 Analysis Window

This section describes the Analysis window.

5. 5. 1 Window Layout

Figure 5-33 shows the user interface of the Analysis window.

Figure 5-33 Analysis Window



5. 5. 2 Menu Bar

The menu bar consists of various pull-down menus for analyses.

5. 5. 2. 1 [File]

The **[File]** menu can be used to make the following selections.

◆ **[File] → [Create New Window]**

This command opens an empty graph window.

◆ **[File] → [Load PointData...]**

This command loads the spectrum measurement data file.

◆ **[File] → [Load ImagingData...]**

This command loads the imaging measurement data file.

◆ **[File] → [Load JCAMPDX Data...]**

This command loads the JCAMPDX format file.

◆ **[File] → [Load SPCData...]**

This command loads the SPC format file.

◆ **[File] → [Close]**

This command closes the Analysis window.

5. 5. 2. 2 [Options]

The **[Options]** menu can be used to make the following selections.

◆ **[Options] → [Visualization...]**

This command sets the color of the waveform and background.

Clicking this command opens the Visualization dialog box.

➔ For more information on the dialog box, refer to 4. 2. 5. 4 "Visualization Dialog Box" on page 4-32.

◆ **[Options] → [Environment...]**

This command sets the directory and default scale of the system data.

Clicking this command opens the Environment dialog box.

➔ For more information on the dialog box, refer to 4. 2. 5. 5 "Environment Dialog Box" on page 4-35.

◆ **[Options] → [Report Settings..]**

This command sets items output to a report.

Clicking this command opens the Report Settings dialog box.

➔ For more information on this dialog box, refer to 4. 2. 5. 7 "Report Settings Dialog Box" on page 4-39.

5. 5. 2. 3 [Window]

The **[Window]** menu can be used to make the following selections.

◆ **[Window] → [Cascade]**

This command stacks child windows on top of each other so that only the title bar and left edge is visible.

◆ **[Window] → [Tile Horizontal]**

This command vertically aligns child windows.

◆ **[Window] → [Tile Vertical]**

This command horizontally aligns child windows.

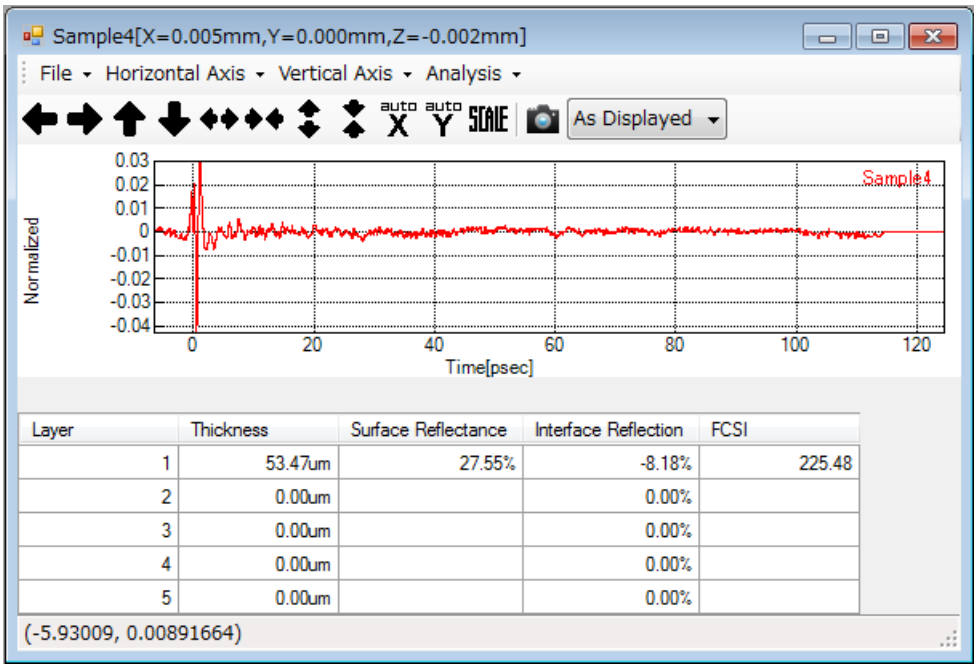
5. 6 Graph Window in Analysis Window

This section describes the graph window of the Analysis window.

5. 6. 1 Window Layout

Figure 5-34 shows the user interface of the graph window.

Figure 5-34 Graph Window



5. 6. 2 Menu Bar

The menu bar consists of various pull-down menus for manipulating a graph.

5. 6. 2. 1 [File]

The **[File]** menu can be used to make the following selections.

◆ **[File] → [Save...]**

This command saves the graph to file.

◆ **[File] → [Screenshot...]**

This command saves the screen shot to file.

◆ **[File] → [Load Analysis Definition...]**

This command loads the analysis definition file.

➔ For more information on the analysis definition file, refer to 7. 7 "Analysis Definition File" on page 7-7.

◆ **[File] → [Save Analysis Definition...]**

This command saves the analysis parameters to file.

◆ **[File] → [Save Report...]**

This command saves a report to a file.

◆ **[File] → [Print Report...]**

This command prints a report.

Clicking this command opens the Print Report dialog box.

➔ For more information on this dialog box, refer to 4. 2. 5. 6 "Print Report Dialog Box" on page 4-37

◆ **[File] → [Close]**

This command closes the graph window.

5. 6. 2. 2 [Horizontal Axis]

The **[Horizontal Axis]** menu can be used to make the following selections.

◆ **[Horizontal Axis] → [Time [psec]]**

This command changes the horizontal axis to time.

◆ **[Horizontal Axis] → [Thickness [um]]**

This command changes the horizontal axis to thickness.

◆ **[Horizontal Axis] → [Wave Numbers [cm-1]]**

This command changes the horizontal axis to wave number.

◆ **[Horizontal Axis] → [Frequency [THz]]**

This command changes the horizontal axis to frequency.

5. 6. 2. 3 [Vertical Axis]

The **[Vertical Axis]** menu can be used to make the following selections.

◆ **[Vertical Axis] → [Normalized]**

This command changes the vertical axis to normalized waveform.

◆ **[Vertical Axis] → [Voltage]**

This command changes the vertical axis to voltage.

◆ **[Vertical Axis] → [Power(Log) [db]]**

This command changes the vertical axis to frequency spectrum (log display).

5. 6. 2. 4 [Analysis]

The **[Analysis]** menu includes a menu for analyses.

◆ **[Analysis] → [Time of Flight Analysis]**

This command performs preprocessing for calculating the physical quantity and specifies the range of layers.

Clicking this command opens the Time of Flight Analysis dialog box.

➔ For more information on the dialog box, refer to 5. 6. 5. 1 "Time of Flight Analysis Dialog Box" on page 5-55.

5. 6. 3 Tool Bar

The contents of the tool bar are the same as those described in 5. 3. 2.

5. 6. 4 Pop-up Menu

The pop-up menu is displayed by right clicking on the graph window.

The pop-up menu includes the following commands.

◆ **[Copy Analysis Definition]**

This command copies the analysis parameters.

◆ **[Paste]**

This command applies the analysis parameters that have been copied.

◆ **[Show Background]**

This command displays the background waveform.

◆ [Background Settings]

This command displays the Background Settings dialog box.

It applies the background waveform of another sample waveform to the relevant sample waveform.

➔ For more information on the dialog box, refer to 4. 5. 5. 3 "Background Settings Dialog Box" on page 4-79.

◆ [Properties...]

This command opens the properties dialog box.

➔ For more information on the dialog box, refer to 4. 3. 4. 1 "Properties Dialog Box" on page 4-43.

5. 6. 5 Dialog Box

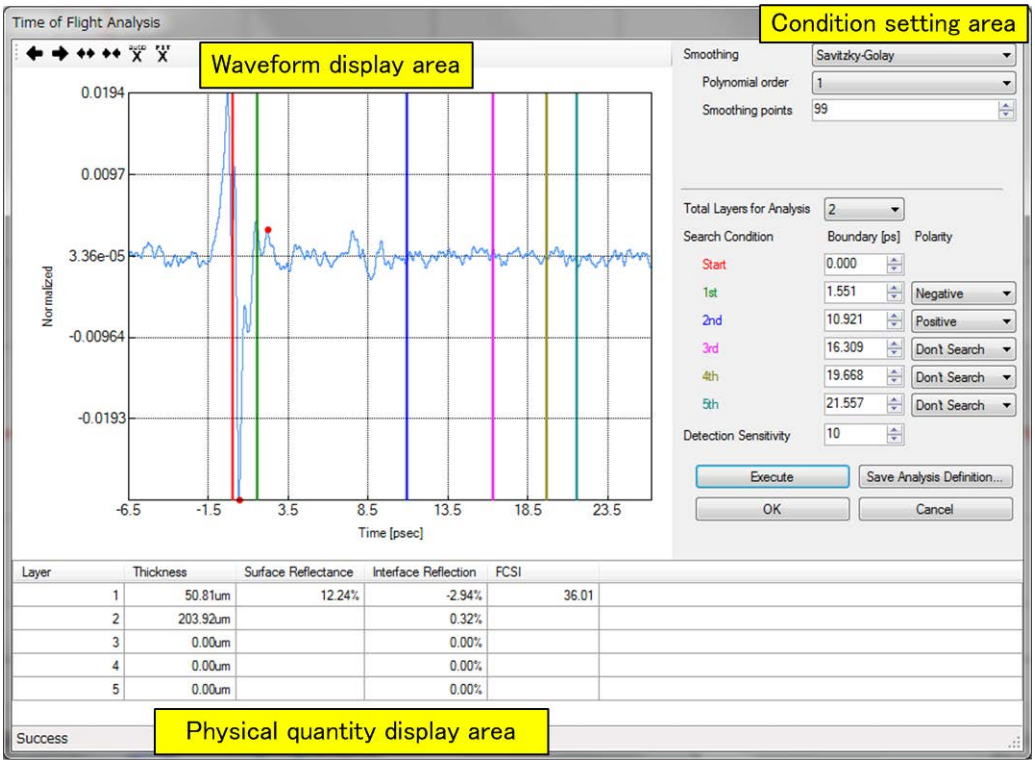
This section describes the dialog boxes.

5. 6. 5. 1 Time of Flight Analysis Dialog Box

This dialog box is used to perform preprocessing for calculating the physical quantity and specify the range of layers.

Open this dialog box from **[Analysis]** → **[Time of Flight Analysis]** in the graph window of the Analysis window.

Figure 5-35 Time of Flight Analysis Dialog Box



◆ Waveform display area

	Moves waveform to left.
	Moves waveform to right.
	Expands display range in direction of horizontal axis.
	Compresses display range in direction of horizontal axis.
	Displays entire range in direction of horizontal axis.
	Changes display range of horizontal axis to between Start and 5th, which were specified in Search Condition.

Boundary bars — Color-coded boundary bars are displayed on the waveform. By dragging these bars, the boundaries of the layers can be changed.

◆ Condition setting area

Smoothing	Specifies a type of smoothing.	
	Savitzky-Golay -	Savitzky-Golay method.
	None -	Smoothing is not executed.
Polynomial order	Specifies a polynomial order. (1-5) This is enabled when Savitzky-Golay is selected for Smoothing.	
Smoothing points	Number of data points. This is enabled when Savitzky-Golay is selected for Smoothing.	
Total Layers for Analysis		
	Specifies the number of layers for which the physical quantity is calculated. (1-5)	
Search Condition		
Boundary[ps]	Specifies a time value of the layer boundaries.	
Polarity	Specifies the peak polarity.	
	Positive -	Positive peak
	Negative -	Negative peak
	Don’t Search -	No search is performed.
Detection Sensitivity	Specifies the peak detection accuracy.(1-10) The greater the value that is specified, the finer peaks that are detected.	
[Execute] button	Executes the calculation of the physical quantity.	
[OK] button	Applies the analysis parameters to the graph window of the Analysis window. A new graph window opens.	
[Cancel] button	Closes the dialog box.	

◆ Physical quantity display area

Layer	Layer number
Thickness	Film thickness
Surface Reflectance	Surface reflectance
Interface Reflection	Interface reflection
FCSI	Film Coating Strength Index

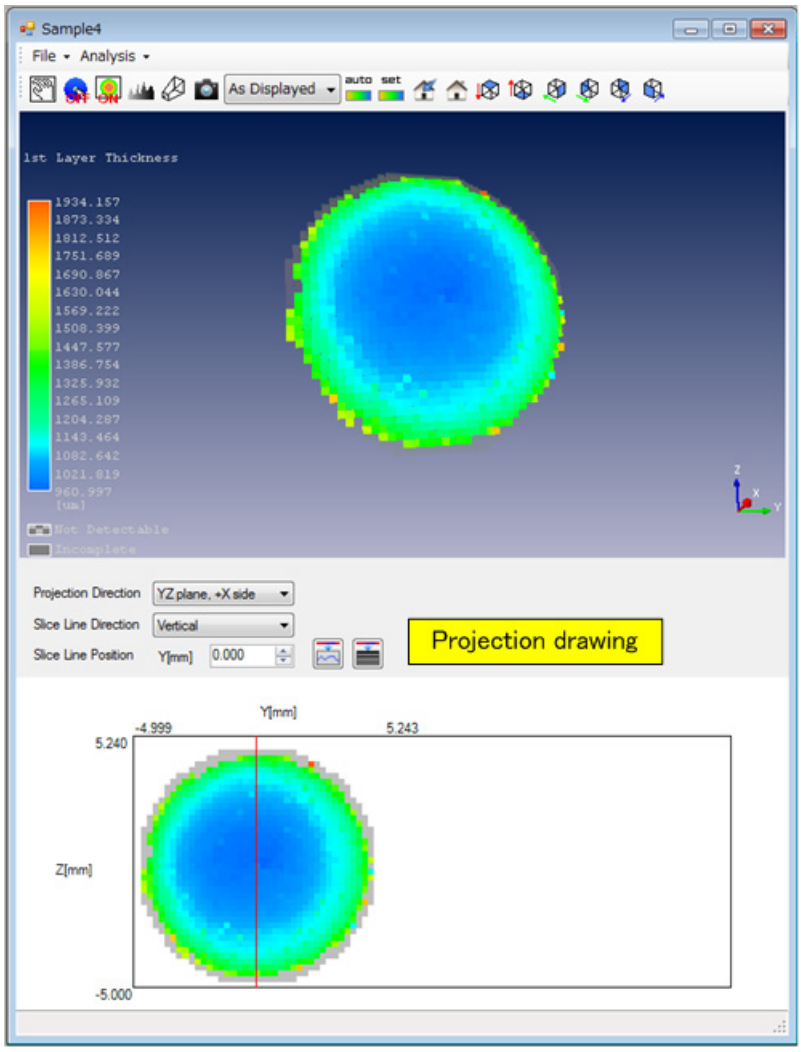
5. 7 Imaging Window in Analysis Window

This section describes the imaging window of the Analysis window.

5. 7. 1 Window Layout

Figure 5-36 shows the user interface of the imaging window.

Figure 5-36 Imaging Window



Not Detectable	A point where there is a calculation error.
Incomplete	A point at which measurement is not carried out.

5. 7. 2 Menu Bar

The menu bar consists of various pull-down menus for manipulating imaging data.

5. 7. 2. 1 [File]

The **[File]** menu can be used to make the following selections.

◆ **[File] → [Save...]**

This command saves the imaging data to folder.

◆ **[File] → [Save as csv file...]**

This command saves the imaging data to file in CSV format.

◆ **[File] → [Screenshot...]**

This command saves the screen shot to file.

◆ **[File] → [Load Analysis Definition...]**

This command loads the analysis definition file. The physical quantity is recalculated with the loaded analysis parameters.

➔ For more information on the analysis definition file, refer to 7. 7 "Analysis Definition File" on page 7-7.

◆ **[File] → [Save Report...]**

This command saves a report to a file.

◆ **[File] → [Print Report...]**

This command prints a report.

Clicking this command opens the Print Report dialog box.

➔ For more information on this dialog box, refer to 4. 2. 5. 6 "Print Report Dialog Box" on page 4-37.

◆ **[File] → [Close]**

This command closes the window.

5. 7. 2. 2 [Analysis]

The **[Analysis]** menu can be used to make the following selections.

◆ **[Analysis] → [1st Layer Thickness]**

This command displays the film thickness of the 1st layer.

◆ **[Analysis] → [1st Layer Surface Reflectance]**

This command displays the surface reflectance of the 1st layer.

◆ **[Analysis] → [1st Layer Interface Reflection]**

This command displays the interface reflection of the 1st layer.

◆ **[Analysis] → [1st Layer FCSI]**

This command displays the FCSI of the 1st layer.

◆ **[Analysis] → [2nd Layer Thickness]**

This command displays the film thickness of the 2nd layer.

◆ **[Analysis] → [2nd Layer Interface Reflection]**

This command displays the interface reflection of the 2nd layer.

◆ **[Analysis] → [3rd Layer Thickness]**

This command displays the film thickness of the 3rd layer.

◆ **[Analysis] → [3rd Layer Interface Reflection]**

This command displays the interface reflection of the 3rd layer.

◆ **[Analysis] → [4th Layer Thickness]**

This command displays the film thickness of the 4th layer.

◆ **[Analysis] → [4th Layer Interface Reflection]**

This command displays the interface reflection of the 4th layer.

◆ **[Analysis] → [5th Layer Thickness]**

This command displays the film thickness of the 5th layer.

◆ **[Analysis] → [5th Layer Interface Reflection]**

This command displays the interface reflection of the 5th layer.

◆ **[Analysis] → [1st Layer All Parameter]**

This command displays all physical quantities of the 1st layer.

◆ **[Analysis] → [2nd Layer All Parameter]**

This command displays all physical quantities of the 2nd layer.

◆ **[Analysis] → [3rd Layer All Parameter]**

This command displays all physical quantities of the 3rd layer.

◆ **[Analysis] → [4th Layer All Parameter]**

This command displays all physical quantities of the 4th layer.

◆ **[Analysis] → [5th Layer All Parameter]**

This command displays all physical quantities of the 5th layer.

5. 7. 3 Pop-up Menu

The pop-up menu is displayed by right clicking on the imaging window. The pop-up menu includes the following commands.

◆ **[Background Settings...]**

This command applies the background waveform to the relevant imaging data.

➔ For more information on the dialog box, refer to 5. 7. 4. 1 "Background Settings Dialog Box" on page 5-62.

◆ **[Merge Imaging Data...]**

This command displays the Merge Imaging Data dialog box. Other imaging data items are merged with the relevant imaging data.

➔ For more information on the dialog box, refer to 5. 7. 4. 2 "Merge Imaging Data Dialog Box" on page 5-63.

◆ **[Properties...]**

This command opens the Properties dialog box.

➔ For more information on the dialog box, refer to 5. 4. 3. 1 "Properties Dialog Box" on page 5-47.

5. 7. 4 Dialog Box

This section describes the dialog boxes.

5. 7. 4. 1 Background Settings Dialog Box

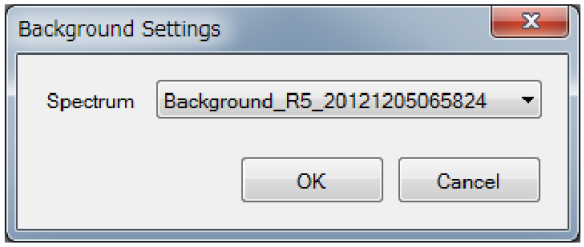
This dialog box applies the background waveform for another sample waveform to the current sample waveform.

This dialog box can be opened by clicking **[Background Settings...]** in 5. 7. 3 "Pop-up Menu" on page 5-61. If the system version is R3.00 or earlier, Figure 5-37 is displayed. For R3.01 or later, Figure 5-38 is displayed.

➔ For more information on the system version, refer to 3. 2 "Menu Bar" on page 3-2.

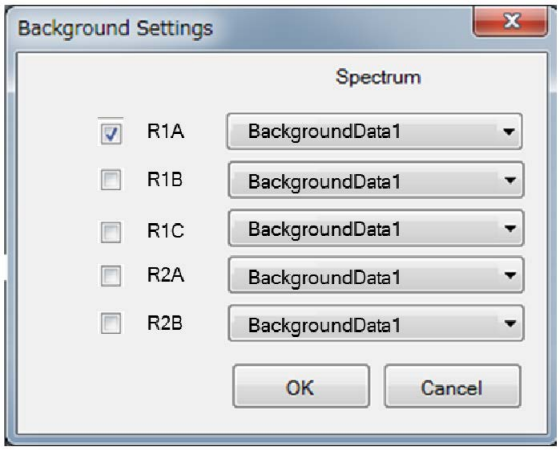
➔ For more information on R1A, R1B, and R1C as well as R2A and R2B, refer to 7. 8 "Tablet Area Division and Multipoint Background Data Settings" on page 7-8.

Figure 5-37 Background Settings Dialog Box (Imaging Data for R3.00 or Earlier)



Spectrum	Specifies a background waveform.
[OK] button	Sets the specified background waveform.
[Cancel] button	Closes the dialog box.

Figure 5-38 Background Settings Dialog Box (Imaging Data for R3.01 or Later)



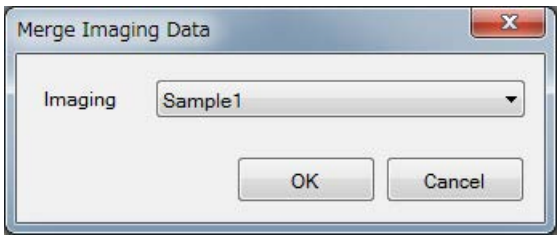
Spectrum	Specifies a background waveform.
[R1A] check box	Select this check box to apply to area A on the top surface of the tablet.
[R1B] check box	Select this check box to apply to area B on the top surface of the tablet.
[R1C] check box	Select this check box to apply to area C on the top surface of the tablet.
[R2A] check box	Select this check box to apply to area A on the side surface of the tablet.
[R2B] check box	Select this check box to apply to area B on the side surface of the tablet.
[OK] button	Sets the specified background waveform.
[Cancel] button	Closes the dialog box.

5. 7. 4. 2 Merge Imaging Data Dialog Box

This dialog box merges other imaging data items with the relevant imaging data.

Open this dialog box by clicking **[Merge Imaging Data...]** described in 5. 7. 3 "Pop-up Menu" on page 5-61.

Figure 5-39 Merge Imaging Data Dialog Box



Imaging	Specifies the imaging data.
[OK] button	Merges the specified imaging data items with the relevant imaging data.
[Cancel] button	Closes the dialog box.

Tip

1. *If the relevant imaging data is for system version R3.00 or earlier, only imaging data for R3.00 or earlier can be selected for merging.*
2. *If the relevant imaging data is for system version R3.01 or later, only imaging data for R3.01 or later can be selected for merging.*
3. *If background data is set to the relevant imaging data, only imaging data for which background data is set can be selected.*
4. *If background data is not set to the relevant imaging data, only imaging data for which background data is not set can be selected.*

5. 7. 5 Tool Bar

The contents of the tool bar are the same as those described in 5. 4. 2.

5. 7. 6 Projection Drawing

Projection drawing allows users to observe the cross-sectional image of a tablet.

Projection Direction	Specifies a surface of the tablet to observe. The selection can be made from the following choices.	
	YZ plane, +Xside	Top surface
	YZ plane, -Xside	Bottom surface
	XZ plane, +Yside	Lateral surface viewed from the + direction of the Y axis
	XZ plane, -Yside	Lateral surface viewed from the - direction of the Y axis
	YZ plane, +Zside	Lateral surface viewed from the + direction of the Z axis
	YZ plane, -Zside	Lateral surface viewed from the - direction of the Z axis
Slice Line Direction	Specifies the direction of the line that specifies the cross-sectional surface. The selection can be made from the following choices.	
	Vertical	Vertical direction
	Horizontal	Horizontal direction
Slice Line Position	Specifies the position of the line that specifies the cross-sectional surface. The line can be moved by changing the numerical value.	

	Opens LinePlot window. ➔ For more information on the LinePlot window, refer to 5. 8 "LinePlot Window in Analysis Window" on page 5-66.
	Opens LineTomography window. ➔ For more information on the LineTomography window, refer to 5. 9 "LineTomography Window in Analysis Window" on page 5-69.

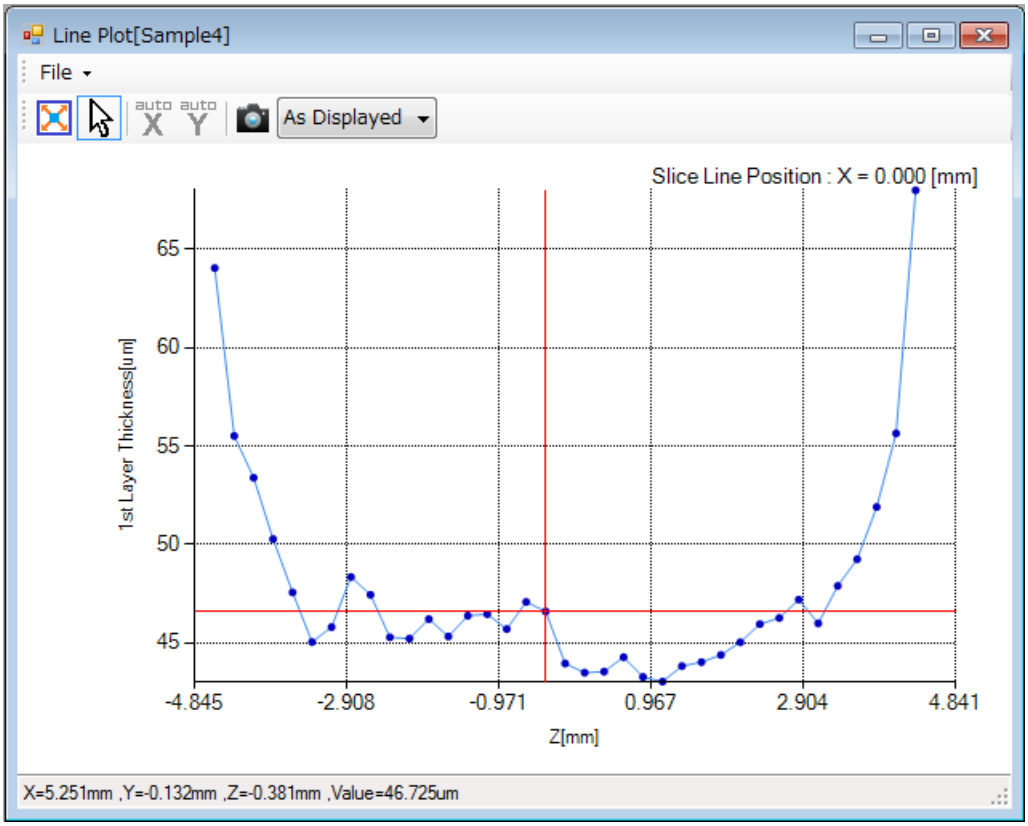
5. 8 LinePlot Window in Analysis Window

This section describes the LinePlot window of the Analysis window. The LinePlot window allows users to observe the distribution of the physical quantity on the cross-sectional surface specified by the projection drawing.

5. 8. 1 Window Layout

Figure 5-40 shows the user interface of the LinePlot window.

Figure 5-40 LinePlot Window



Slice Line Position	Displays the position of the cross-sectional line that has been specified by the projection drawing.

5. 8. 2 Menu Bar

The menu bar consists of various pull-down menus.

5. 8. 2. 1 [File]

The **[File]** menu can be used to make the following selections.

◆ **[File] → [Save as csv file...]**

This command saves the LineTomography data to file in CSV format.

◆ **[File] → [Screenshot...]**

This command saves the screen shot to file.

◆ **[File] → [Save Report...]**

This command saves a report to a file.

◆ **[File] → [Print Report...]**

This command prints a report.

Clicking this command opens the Print Report dialog box.

➔ For more information on this dialog box, refer to 4. 2. 5. 6 "Print Report Dialog Box" on page 4-37.

◆ **[File] → [Close]**

This command closes the window.

5. 8. 3 Tool Bar

The tool bar contains the following buttons:

	Sets mode to zoom mode. Area specified using mouse can be zoomed in.
	Sets mode to pointing mode. Cursor is displayed at position of mouse.
	Expands display range in horizontal direction.
	Expands display range in vertical direction.
	Saves screen shot to file. Use option menu on right to specify size of image file to save.

5. 8. 4 Pop-up Menu

The pop-up menu is displayed by right clicking on the LinePlot window.

The pop-up menu includes the following commands.

◆ [Show Waveform]

This command displays the point waveform of a specified point.

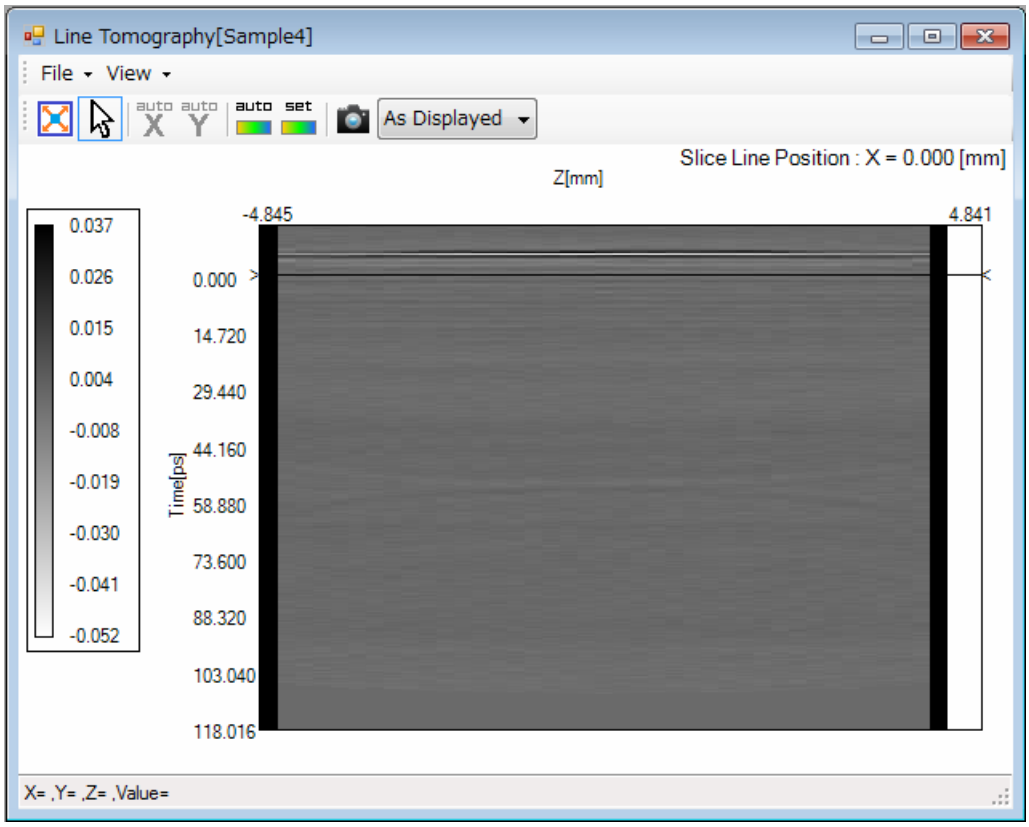
5. 9 LineTomography Window in Analysis Window

This section describes the LineTomography window of the Analysis window. The LineTomography window allows users to observe the tomographic view of the cross-sectional surface that has been specified by the projection drawing.

5. 9. 1 Window Layout

Figure 5-41 shows the user interface of the LineTomography window.

Figure 5-41 LineTomography Window



Slice Line Position — Displays the position of the cross-sectional line that has been specified by the projection drawing.

5. 9. 2 Menu Bar

The menu bar consists of various pull-down menus.

5. 9. 2. 1 [File]

The **[File]** menu can be used to make the following selections.

◆ **[File] → [Save as csv file...]**

This command saves the LineTomography data to file in CSV format.

◆ **[File] → [Screenshot...]**

This command saves the screen shot to file.

◆ **[File] → [Save Report...]**

This command saves a report to a file.

◆ **[File] → [Print Report...]**

This command prints a report.

Clicking this command opens the Print Report dialog box.

➔ For more information on this dialog box, refer to 4. 2. 5. 6 "Print Report Dialog Box" on page 4-37.

◆ **[File] → [Close]**

This command closes the window.

5. 9. 2. 2 [View]

The **[View]** menu can be used to make the following selections.

◆ **[View] → [Scale Unit] → [Time]**

This command displays the vertical axis as time.

◆ **[View] → [Scale Unit] → [Thickness]**

This command displays the vertical axis as thickness.

5. 9. 3 Tool Bar

The tool bar contains the following buttons.

	Sets mode to zoom mode. Area specified using mouse can be zoomed in.
	Sets mode to pointing mode. Cursor is displayed at position of mouse.
	Expands display range in horizontal direction.
	Expands display range in vertical direction.
	Displays minimum value to maximum value of displayed data in gradient.
	Scale setting button. Sets gradient within fixed range using dialog box. Clicking this button opens Scale Settings dialog box. ➔ For more information on the dialog box, refer to 5. 9. 5. 1 "Scale Settings Dialog Box" on page 5-71.
	Saves screen shot to file. Use option menu on right to specify size of image file to save.

5. 9. 4 Pop-up Menu

The pop-up menu is displayed by right clicking on the LinePlot window.

The pop-up menu includes the following commands.

◆ [Show Waveform]

This command displays the point waveform of a specified point.

5. 9. 5 Dialog Box

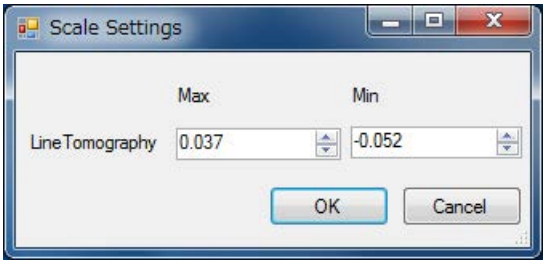
This section describes the dialog boxes.

5. 9. 5. 1 Scale Settings Dialog Box

This dialog box is used to set the gradation range of the LineTomography window.

Open this dialog box using the scale setting button in 5. 9. 3 "Tool Bar" on page 5-71.

Figure 5-42 Scale Settings Dialog Box



Line Tomography	
Max	Maximum value of the gradation range
Min	Minimum value of the gradation range
[OK] button	Applies the set information.
[Cancel] button	Closes the dialog box.

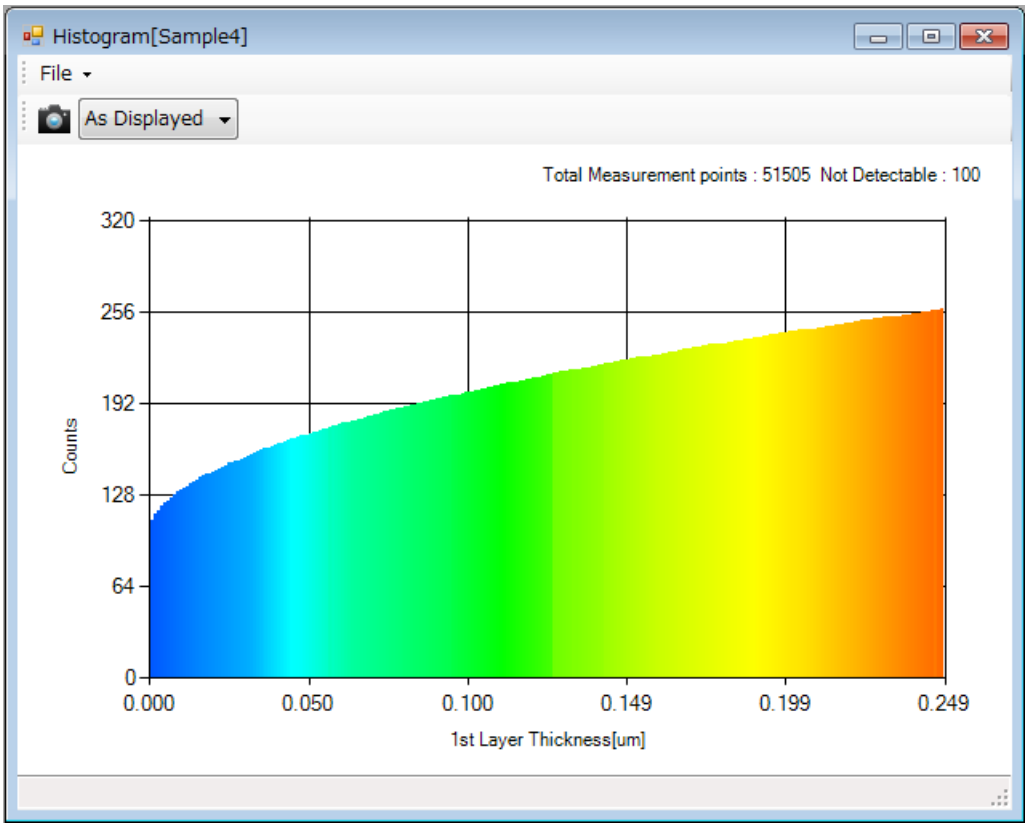
5.10 Histogram Window in Analysis Window

This section describes the histogram window of the Analysis window. In the histogram window, the frequency of a physical quantity is displayed in a histogram. This window is used to check the frequency of a physical quantity on a tablet.

5.10. 1 Window Layout

Figure 5-43 shows the user interface of the histogram window.

Figure 5-43 Histogram Window



Total Measurement points	Number of points at which measurement has been carried out
Not Detectable	Number of measured points at which a calculation error occurred

The color of the histogram is the same as that of the imaging data in the imaging window.

5.10. 2 Menu Bar

The menu bar consists of various pull-down menus.

5.10. 2. 1 [File]

The **[File]** menu can be used to make the following selections.

◆ **[File] → [Save as csv file...]**

This command saves the histogram data to file in CSV format.

◆ **[File] → [Screenshot...]**

This command saves the screen shot to file.

◆ **[File] → [Close]**

This command closes the window.

5.10. 3 Tool Bar

The tool bar contains the following buttons.

	Saves screen shot to file. Use option menu on right to specify size of image file to save.

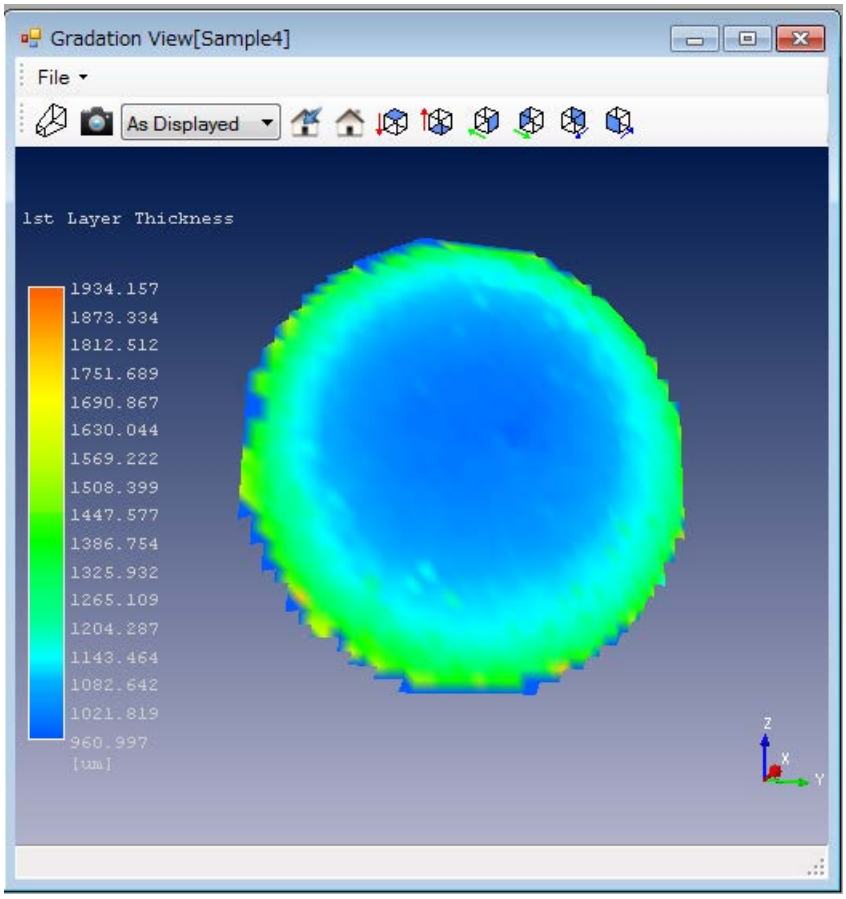
5.11 Gradation View Window in Analyze Window

This section describes the gradation view window in the Analyze window. By supplementing colors among data items, the gradation view window displays smooth images.

5.11. 1 Window Layout

Figure 5-44 shows the user interface of the imaging window.

Figure 5-44 Gradation View Window



5.11. 2 Menu Bar

The menu bar consists of various pull-down menus for manipulating imaging data.

5.11. 2. 1 [File]

The following selections can be made in the **[File]** menu:

◆ **[File] → [Screenshot...]**

This command saves the screenshot to a file.

◆ **[File] → [Save Report...]**

This command saves a report to a file.

◆ **[File] → [Print Report...]**

This command prints a report.

Clicking this command opens the Print Report dialog box.

➔ For more information on this dialog box, refer to 4. 2. 5. 6 "Print Report Dialog Box" on page 4-37.

◆ **[File] → [Close]**

This command closes the window.

5.11. 3 Tool Bar

Of the buttons in 5. 4. 2 "Tool Bar" on page 5-46, only the button that saves the screenshot to a file and the button that adjusts the view are implemented.

6. PQ/OQ Test

This chapter describes the PQ and OQ tests.

➔ For more information on the PQ and OQ tests, refer to the instruction manual for each system.
TAS7500: *TAS7500 Series Terahertz Spectroscopy & Imaging System Instruction Manual*.
TAS7400: *TAS7400 Series Terahertz Spectroscopy System Instruction Manual*.

Important

To display the execution results of a PQ or OQ test, a PDF reader must be installed.

6. 1 Operating Procedures

This section describes the operating procedures for performing a PQ or OQ test.

6. 1. 1 Starting PQ/OQ Window

Click the **[PQ/OQ]** button in the Navigation window. The PQ/OQ window then opens.

Figure 6-1 PQ/OQ Button

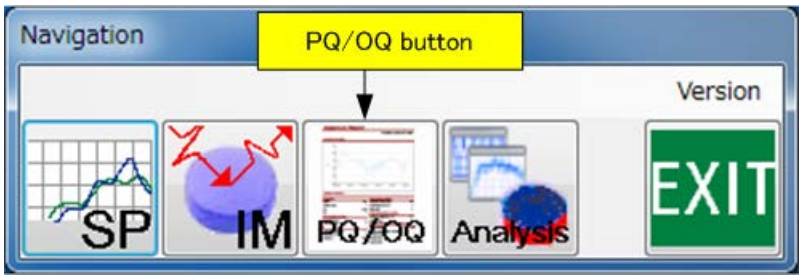
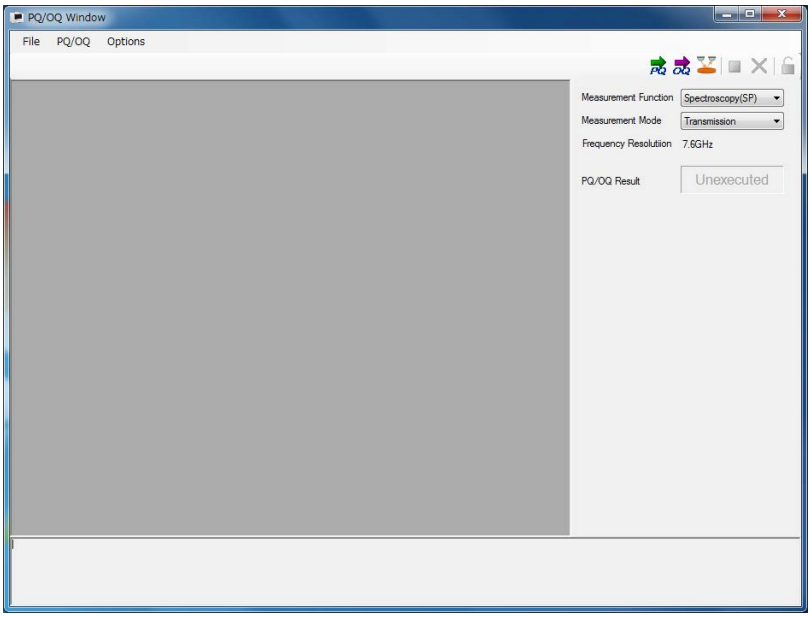


Figure 6-2 PQ/OQ Window



6. 1. 2 Basic Operations Using Spectroscopic Unit

The following describes basic operations using the spectroscopic unit:

1) Set each module to the following status:

Transmission module (Polarization measurement type included)

Remove the object to be measured and install the sample holder (HT-710037) for the transmission module.

Reflection module

Place a reference mirror on the sample holder.

ATR module

Remove the object to be measured.

2) Specify **[Spectroscopy]** as the measurement function.
The measurement function is fixed to **[Spectroscopy]** for an independent unit.
Replace **[Spectroscopy]** with **[Spectroscopy(SP)]**, **[Spectroscopy(SL)]**, or **[Spectroscopy(SU)]** according to the connected unit.

3) Select a measurement mode. If the measurement mode is different from the actual measurement module, the PQ or OQ test cannot be executed.

4) To execute a PQ test, click the PQ button on the tool bar. To execute an OQ test, click the OQ button on the tool bar. When executing a PQ or OQ test the first time after System Software starts, the initialization process is executed.

5) Remove or install the measurement module according to the directions on the screen.

6) When the PQ or OQ test is completed, a report in PDF format is output.
The report is saved in Z:\PQOQ_Report.
The file name is PQ[SP|SL|SU]_[REF|TR|ATR]_yyyymmdd_hhmm.pdf or OQ[SP|SL|SU]_[REF|TR|ATR]_yyyymmdd_hhmm.pdf. For example, for the standard specification transmission module, the name of the file that would be created if a PQ test were completed at 13:15 on August 15, 2012 is "PQSP_TR_20120815_1315.pdf."

7) When the measurement module is set to Reflection, remove the reference mirror.

6. 1. 3 Basic Operations Using Imaging Unit

6. 1. 3. 1 PQ/OQ Test

The following describes the PQ/OQ test using the imaging unit:

1) Place the standard sample on the PQ/OQ cassette. As shown in the following figure, place the standard sample in the specified orientation and location. When handling the standard sample, use non-metal tweezers and do not touch it with bare hands.

Important

If the side or orientation of the placed sample is wrong, a test cannot be executed correctly.

Figure 6-3 TH-710036 Standard Sample

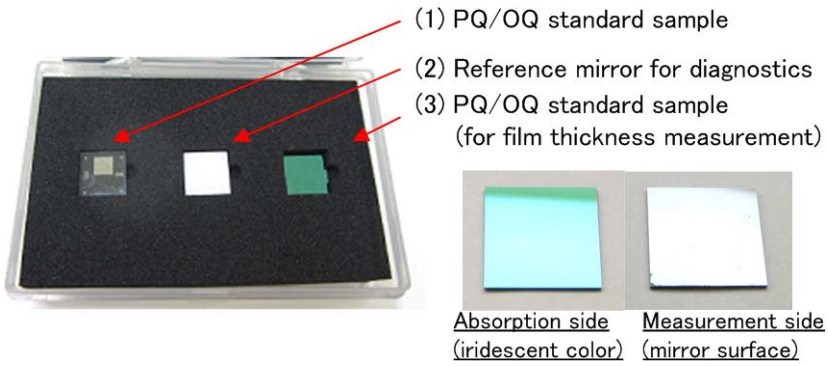
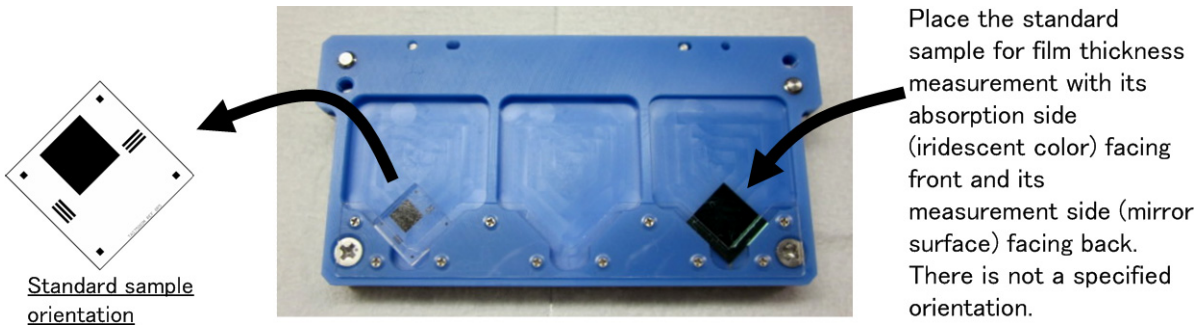


Figure 6-4 How to Set Standard Sample



2) Specify **[Imaging]** as the measurement function. The measurement function is fixed to **[Imaging]** for an independent unit.

3) To execute a PQ test, click the PQ button on the tool bar. To execute an OQ test, click the OQ button on the tool bar. When executing a PQ or OQ test the first time after System Software starts, the initialization process is executed.

4) The cassette holder moves to the tablet cassette removal/attachment area. Follow the directions on the screen to attach the cassette prepared in 1). Click the **[OK]** button to start a PQ or OQ test.

5) When the PQ or OQ test is completed, a report is output.
The report is saved in Z:\PQOQ_Report. The file name is PQIM_yyyymmdd_hhmm.pdf or OQIM_yyyymmdd_hhmm.pdf. For example, the name of the file that would be created if an OQ test were completed at 13:15 on August 15, 2012 is "OQIM_20120815_1315.pdf."

6) The cassette holder moves to the eject position. Follow the directions on the screen to remove the dedicated cassette in which the correlation standard sample is set.

6. 1. 3. 2 Stage Positioning Accuracy Test

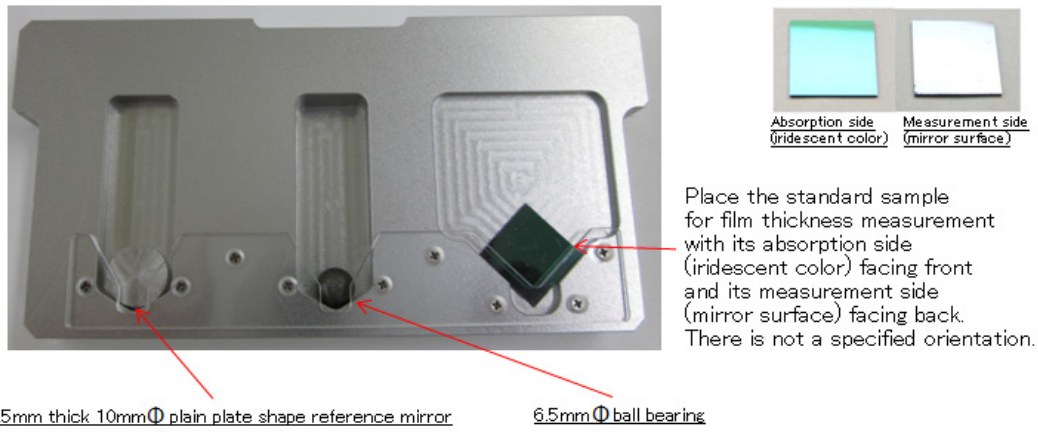
The following describes the stage positioning accuracy test using the imaging unit.

1) Place the standard sample on the stage positioning accuracy test cassette. As shown in the following figure, place the standard sample in the specified orientation and location. When handling the standard sample, use non-metal tweezers and do not touch it with bare hands.

Important

If the sample is placed backwards, tests cannot be executed correctly.

Figure 6-5 How to Set Standard Sample



2) Specify **[Imaging]** as the measurement function. The measurement function is fixed to **[Imaging]** for independent units.

3) To execute a stage positioning accuracy test, click the Stage positioning accuracy test button on the tool bar. The initialization process is executed when executing this test for the first time after System Software starts.

4) The cassette holder moves to the tablet cassette removal/attachment area. Follow the directions on the screen to attach the cassette prepared in 1). Click the **[OK]** button to start a stage positioning accuracy test.

5) When the stage positioning accuracy test is completed, a report is output. The report is saved in Z:\PQOQ_Report. The file name is StagePos_yyyymmdd_hhmm.pdf. For example, the name of the file created when an optical diagnosis is completed at 13:15 on August 15, 2012 is "StagePos_20120815_1315.pdf."

6) The cassette holder moves to the eject position. Follow the directions on the screen to remove the special cassette in which the correlation standard sample is set.

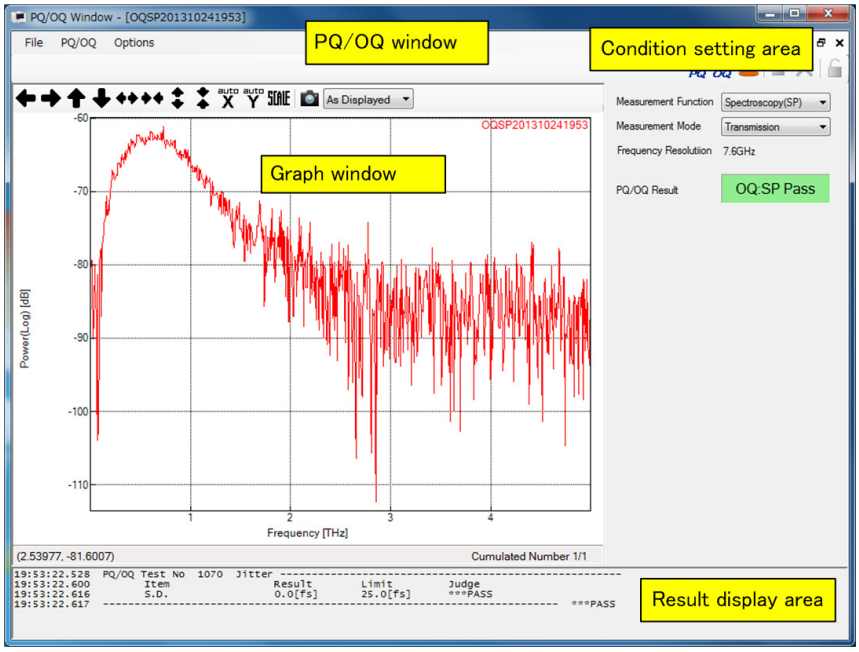
6. 2 PQ/OQ Window

This section describes the PQ/OQ window.

6. 2. 1 Window Layout

Figure 6-6 shows the user interface in the PQ/OQ window.

Figure 6-6 PQ/OQ Window



6. 2. 2 Menu Bar

The menu bar consists of various pull-down menus for PQ and OQ tests.

6. 2. 2. 1 [File]

The following selections can be made in the **[File]** menu:

◆ **[File] → [Load Report...]**

This command displays a report of PQ or OQ test results using PDF Reader.

◆ **[File] → [Close]**

This command closes the PQ/OQ window.

6. 2. 2. 2 [PQ/OQ]

The following selections can be made in the **[PQ/OQ]** menu:

◆ **[PQ/OQ] → [Performance Qualification]**

This command executes a PQ test.

◆ **[PQ/OQ] → [Operational Qualification]**

This command executes an OQ test.

◆ **[PQ/OQ] → [Stage positioning accuracy test]**

This command executes a stage positioning accuracy test using the imaging unit.

◆ **[PQ/OQ] → [Stop Measurement]**

This command stops measurement.

◆ **[PQ/OQ] → [Abort Measurement]**

This command terminates measurement. The measurement data is discarded.

◆ **[PQ/OQ] → [Cover Lock]**

This command toggles the lock and unlock of the imaging unit internal cover.

6. 2. 2. 3 [Options]

The following selections can be made in the **[Options]** menu:

◆ **[Options] → [Visualization...]**

This command sets the color of the waveform and background.

Clicking this command opens the Visualization dialog box.

➔ For more information on the dialog box, refer to 4. 2. 5. 4 "Visualization Dialog Box" on page 4-32.

◆ **[Options] → [Environment...]**

This command specifies where to save system data and the default scale.

Clicking this command opens the Environment dialog box.

➔ For more information on the dialog box, refer to 4. 2. 5. 5 "Environment Dialog Box" on page 4-35.

◆ [Options] → [Advanced settings...]

This command provides advanced setting functions for maintaining the performance of this analysis system.

Tip

*About the **[Advanced settings...]** command*
*The **[Advanced settings...]** command is provided to specify advanced settings for maintaining the performance of this analysis system. When this command is specified, a dialog box that prompts the user to input a password is displayed. This function is provided only when the entered password is correct. If this command is inadvertently specified, it can be stopped by clicking the **[Close]** button in the displayed dialog box. This command is for use by authorized persons who have attended maintenance training conducted by Advantest Corporation.*

6. 2. 3 Tool Bar

The tool bar contains the following buttons.

	Shortcut to **[PQ/OQ]** → **[Performance Qualification]**
	Shortcut to **[PQ/OQ]** → **[Operational Qualification]**
	Shortcut to **[PQ/OQ]** → **[Stage positioning accuracy test]**
	Shortcut to **[PQ/OQ]** → **[Stop Measurement]**
	Shortcut to **[PQ/OQ]** → **[Abort Measurement]**
	Shortcut to **[PQ/OQ]** → **[Cover Lock]**

6. 2. 4 Condition Setting Area

This section describes the condition setting area.

Measurement Function	Specifies the measurement function.
Measurement Mode	Selects the measurement mode for the spectroscopic unit.
Frequency Resolution	Displays the frequency resolution during measurement. For the TAS7400, specify a frequency resolution.
PQ/OQ Result	Displays the PQ or OQ test result.

6. 2. 5 Result Display Area

The log display area displays the execution results and judgment values of the evaluation items.

6. 3 Graph Window in PQ/OQ Window

➔ For more information on the graph window, refer to 4. 3 "Graph Window in Spectroscopic Measurement Window" on page 4-41.

7. Glossary

This chapter describes the terms used in this manual.

7. 1 Calculation List (File)

The calculation list is a list in which calculations applied to waveform data are recorded.

The calculations from the following menus in the Analyze window are recorded:

[Horizontal Axis] menu
[Vertical Axis] menu
[Calculation] menu

The file in which the calculation list is saved is called the calculation list file.

7. 2 Phase Unwrap Processing

The phase is a value between -π and π. If the phase difference between adjacent points is larger than a certain value, the phases must be connected by adding or subtracting 2π.

This operation is called phase unwrap.

The Parameter Settings dialog box can be used to specify the angle criterion for determining the phase difference that requires correction and the start frequency for unwrap processing.

7. 3 ATR Correction

The absorbing capacity of the spectrum measured with the ATR method changes depending on the number of waves.

ATR correction means correcting this change with a straight ramp function of the wavelength to approximate it to the transmission spectrum.

7. 4 Fourier Self Deconvolution (FSD Method)

With the Fourier self deconvolution method, analysis is performed assuming that the measurement waveform consists of overlapping Lorentz waveforms with the same width.

Because the horizontal axis information is extracted at the sacrifice of the vertical axis information with this method, only the peak position of each band has a physical meaning in the waveform after the processing.

7. 5 Data Interpolation

Data interpolation means calculating the interpolation function that passes through all the measurement data points and estimating the function values other than measurement data points.

7. 5. 1 Lagrange Interpolation

Lagrange interpolation means calculating the interpolation function that passes through all the data points in the specified range and interpolating data with the calculated function.

This interpolation function is called the Lagrange polynomial.

The disadvantage of Lagrange interpolation is that the interpolation function creates waves if there are a lot of data items.

7. 5. 2 Cubic Spline Interpolation

Cubic spline interpolation means calculating the cubic functions between each data point in the specified range and interpolating data with the calculated functions.

The cubic functions for each region are connected so that the first and second derived functions match at the node.

Unlike Lagrange interpolation, cubic spline interpolation is not negatively affected by a large number of data items.

7. 6 Smoothing

Smoothing removes noise components from the spectrum.

7. 6. 1 Simple Moving Average Method

The moving average method is a method to appropriately weight the target point and the points before and after it and average them.

A rectangular function is used as the weighting function in the simple moving average method. Therefore, data is very distorted though the smoothing effect is large.

Use the simple moving average method when the signal component is sufficiently smoother than the noise components.

7. 6. 2 Savitzky-Golay Method

The weighting coefficient defined by Savitzky-Golay is used in the Savitzky-Golay method.

The smoothed value is calculated by multiplying the specified data width by the weighting coefficient.

The Savitzky-Golay method can be used to remove noise from most spectra.

7. 6. 3 Adaptive Smoothing Method

The smoothed value is calculated from the smoothed value calculated with the simple moving average method and the specified differential noise in the adaptive smoothing method.

With this method, there is almost no distortion in the peak parts, but the smoothing effect is large in the baseline part. This method is effective in removing the noise components from a sharp spectrum.

7. 6. 4 Binomial Method

A binomial coefficient is used as the weighting coefficient in the binomial method.

The smoothed value is calculated from three points (target point and arbitrary points before and after it). This operation is repeated the specified number of times. This method has advantages over the Savitzky-Golay method. For example, the waveform is not distorted in whole and the phase is not shifted.

7. 7 Analysis Definition File

The analysis definition file stores parameters used to calculate physical quantities.

In this file, smoothing settings and the time range corresponding to each layer of a tablet, which have been set in the Time of Flight Analysis dialog box, are stored.

The physical quantities can be displayed at the time of imaging measurement by loading this file using Apply specific analysis definition file in the Measurement window.

7. 8 Tablet Area Division and Multipoint Background Data Settings

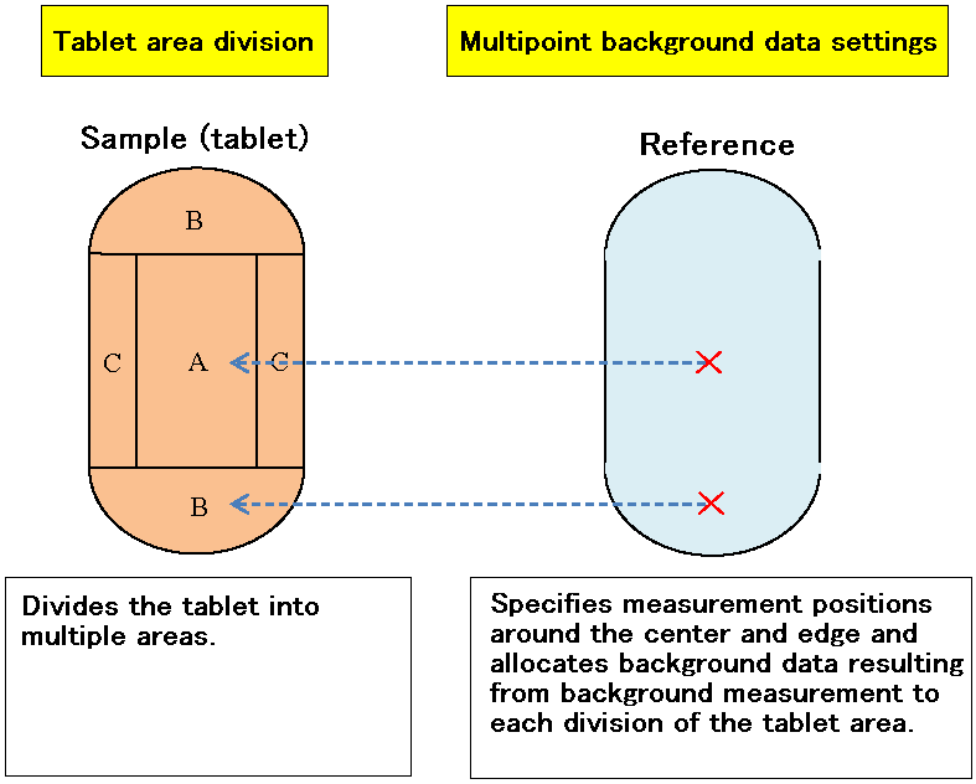
The tablet area division function is used to divide a tablet into multiple areas.

The multipoint background data setting function is used to set up reference background data for each divided area.

The area around the center of a tablet was measured during conventional reference background measurement. Take an oblong tablet for example. The curvature around the center and around the edge are different. If the background data at the center of the tablet is applied to calculate the physical quantity around the edge, differences in background data are included in the calculation result, degrading the measurement accuracy.

Tablet area division and multipoint background data settings divide the area into the center of the tablet and the area around the edge and applies different background data to each area for more accurate imaging measurement than before.

Figure 7-1 Tablet Area Division and Multipoint Background Data Settings

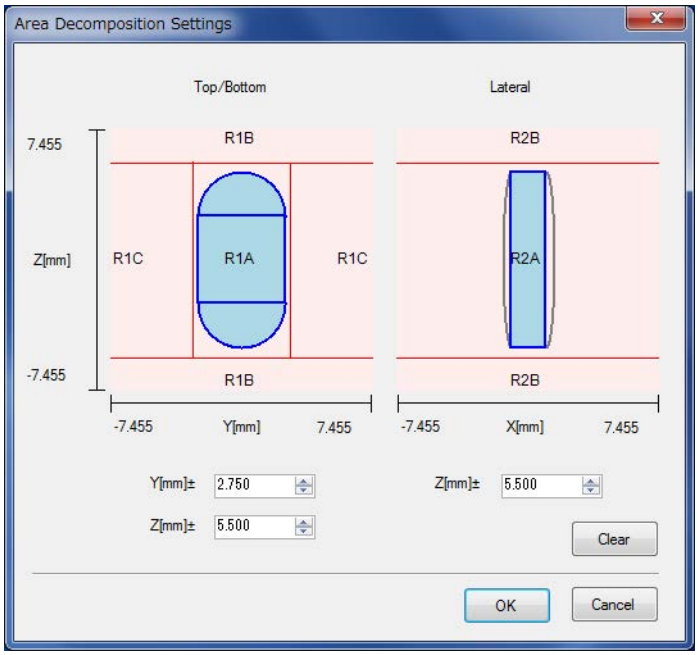


When applying background data acquired using multipoint background data settings to a tablet the area of which is divided for sample measurement, set On to Multiple Background Data Setting in 5. 2. 4. 2 "Condition Tab" on page 5-26.

7. 8. 1 Tablet Area Division

Use 5. 2. 6. 2 "Area Decomposition Settings Dialog Box" on page 5-37 to specify tablet area division settings. The top surface can be divided into three areas (R1A, R1B, and R1C) while the side surface can be divided into two areas (R2A and R2B). Figure 7-2 is an example of an oblong tablet for which the area has been divided.

Figure 7-2 Image of Oblong Tablet Area Division



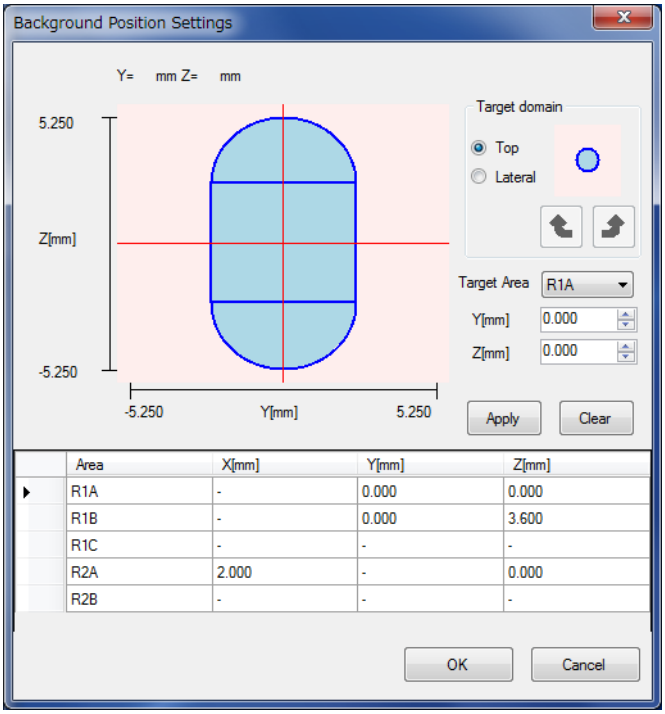
Tip

The settings for the top surface apply to the bottom surface as well.

7. 8. 2 Multipoint Background Data Settings

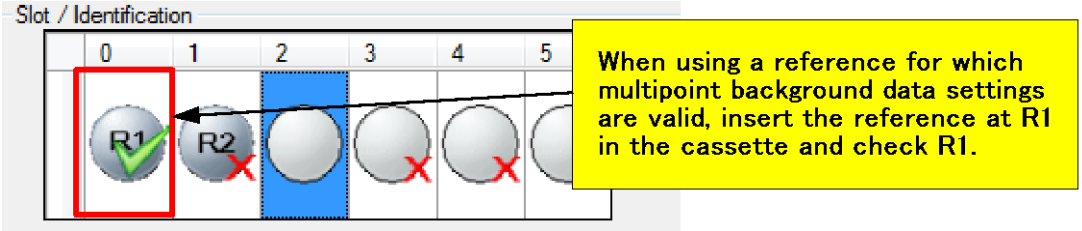
For multipoint background data settings, specify the background measurement position on the reference and the tablet area by using 5. 2. 6. 3 "Background Position Settings Dialog Box" on page 5-39. Figure 7-3 is an example of multipoint background data settings for oblong tablets.

Figure 7-3 Image of Multipoint Background Data Settings for Oblong Tablets



To use a reference for which multipoint background data settings are valid, insert the reference at the R1 position in the cassette to execute background measurement.

Figure 7-4 Position in Cassette for Reference for which Multipoint Background Data Settings Are Valid



Important

When using a reference for which multipoint background data settings are valid, only R1 is measured even if both R1 and R2 are checked before background measurement.

Tip

The settings for the top surface apply to the bottom surface as well.

7. 9 Tablet Shape Measurement

The tablet shape measurement function traces the tablet shape using the laser length measuring machine and executes imaging measurement according to the trace result. This function allows for more accurate imaging measurement than before.

To perform imaging measurement using tablet shape measurement, set Shape Measurement(Sample) in 5. 2. 4. 2 "Condition Tab" on page 5-26 to On.

Important

- Tablet shape measurement is valid only for imaging measurement. This setting is ignored for point measurement.
- Tablet shape measurement is valid only for sample measurement. This setting is ignored for background measurement.
- When tablet shape measurement is On, the settings for tablet center position correction are ignored.
  ➔ For more information on tablet center position correction, refer to 5. 2. 4. 2 "Condition Tab" on page 5-26.
- Only the top and bottom surfaces are processed during tablet shape measurement. The lateral surface is not processed. If the measured area contains the lateral surface (e.g. All or Top+Lateral), note that shape measurement and center correction are not executed for the lateral surface. To achieve highly accurate imaging data for the tablet as a whole, it is recommended to merge the imaging data of the lateral surface measured with center correction to the imaging data for the top and bottom surfaces measured by shape measurement.
  ➔ For more information on the portion to be measured, refer to 5. 2. 5 "Tablet Settings for Measurement Window" on page 5-29.
  ➔ For more information on tablet center position correction, refer to 5. 2. 4. 2 "Condition Tab" on page 5-26.
  ➔ For more information on imaging data merging, refer to 5. 7. 4. 2 "Merge Imaging Data Dialog Box" on page 5-63.

8. Using System Software Offline

This chapter describes how to install and uninstall the system software when using it offline and how to register the license.

8. 1 Installing Software

The procedure for installing the software is as follows:

1) Open Inventor license registration (for first installation)
   To operate this software offline, an Open Inventor license is required. Prepare the password received from Advantest.

> Tip
>
> *For the TAS7400, a license for Open Inventor does not need to be registered.*
> *Skip step 1).*

Figure 8-1 Example Password

```
# License IVOL+41233
FEATURE VolumeViz mcslmd 9.2 permanent uncounted \
        VENDOR_STRING=IVOL+41233 HOSTID=d4ae19c3635e \
        ISSUED=11-nov-2012 SIGN=4E123412B656
# End license
# License IOIV+41234
FEATURE OpenInventor mcslmd 9.2 permanent uncounted \
        VENDOR_STRING=IOIV+41234 HOSTID=d4ae19c3635e \
        ISSUED=11-nov-2012 SIGN=C11234EEA114
```

Create the following file and enter the preceding password:

```
C:\TAS7500\password.txt
```

2) When executing reinstallation to upgrade the version, first uninstall the old version with the procedure in 8. 2 "Uninstalling Software" on page 8-3.
3) Put the Offline Analysis Software installation CD in the disk tray.
4) Use Explorer to display the folders on the CD-ROM.
5) Click InstallTAS7x00SystemSoftwareOffline.bat with the right mouse button.

6) Execute **[Run as administrator (A) ...]**.

7) The User Account Control dialog box opens. Click the **[OK]** button to start installation.

- Microsoft Visual C++ 2010 redistributable package (x64)
  The Microsoft Visual C++ 2010 x64 Redistributable Setup dialog box opens up during installation. Check I accept to install the software.
  If the software is already installed, the Microsoft Visual C++ 2010 x64 Redistributable Maintenance dialog box opens. In this case, click the **[Cancel]** button to exit.
- Microsoft .NET Framework 4 (stand-alone installer)
  The Microsoft .NET Framework 4 Setup dialog box opens during installation. Check I accept to install the software.
  If the software is already installed, the Microsoft .NET Framework 4 Maintenance dialog box opens. In this case, click the **[Cancel]** button to exit.
- Microsoft Report Viewer 2010 redistributable package
  The Microsoft ReportViewer 2010 Redistributable Setup dialog box opens during installation. Check I accept to install the software.
  If the software is already installed, the Microsoft ReportViewer 2010 Redistributable Maintenance dialog box opens. In this case, click the **[Cancel]** button to exit.

8. 2 Uninstalling Software

The procedure for uninstalling the software is as follows:

1) Select **[Start]** → **[All Programs]** → **[TAS7x00]** → **[Uninstall TAS7x00 <version>]** (<version> represents system software version) and click it with the right mouse button.
2) Select **[Run as administrator (A) ...]**.
3) The User Account Control dialog box opens. Click the **[OK]** button to start uninstallation.

8. 3 Registering License

This section describes a procedure needed to enable the functions of this software.

1) Prepare the password sheet sent by Advantest.

Figure 8-2 Sample Password Sheet (CpuFixed)

```
        L i c e n s e  P a s s w o r d  S h e e t
                                              Date of issue: 2012/02/17
Serial#:  C050012
# Product Number              -> PYSA75-00M
# License Type                -> CpuFixed
# Expiration Client License   -> 000
# Password                    -> AA9DCC963F0B685A9FDF710091C164E9A
# Expiration Date             -> 2017/03/22
# Number of License           -> 1
#***** license *****
CpuFixed 000 AA9DCC963F0B685A9FDF710091C164E9A 00000edcba98 PYSA75-00M
2017/03/22 1 00000edcba98     ←  Enter this one line.
```

2) Select **[Start]** → **[All Programs]** → **[Accessories]** → **[Command Prompt]** and click it with the right mouse button, and then click **[Run as administrator (A) ...]**.

3) To register a license, enter the command using the one line that begins with "CpuFixed 000 ..." (shown in Figure 8-2) as an argument.
The following shows an example.

Figure 8-3 Example of License Server

```
C:\>%PLMS_ROOT%\bin\License_Add  CpuFixed 000 AA9DCC963F0B685A9FDF710091C164E9A0
00000edcba98 PYSA75-00M 2017/03/22 1 00000edcba98↵
License Added
C:\>
```

9. Coating Quality Analysis Option

This chapter describes the coating quality analysis option.

9. 1 Functions of Option

There are four types of physical quantities that can be displayed in imaging measurement and analysis as follows:

Thickness	Film thickness
Surface Reflectance	Surface reflectance
Interface Reflection	Interface reflection
FCSI	Film Coating Strength Index

The physical quantities other than film thickness can only be displayed when the coating quality analysis option is applied.

All of the procedures and figures used in this manual are described with this option applied.

9. 2 Registering License

➔ For more information on how to register the license, refer to 8. 3 "Registering License" on page 8-4.

10. Polarization Analysis Option

10. 1 Functions of Option

The polarization analysis option allows polarization measurement using the polarization module (polarization measurement type) and polarization measurement data analysis.

The functions described as (polarization analysis option) in this manual are enabled when a license is registered.

10. 2 Registering License

➔ For more information on how to register the license, refer to 8. 3 "Registering License" on page 8-4.

11. FDA Compatible Function Option

This chapter describes the FDA*1 compatible function option.

*1 FDA:U.S.Food and Drug Administration

11. 1 Functions of Option

This option can handle electronic records and signatures instead of printed documents and handwritten signatures, and supplies functions compliant with the 21 CFR Part 11*1 regulation.

*1 21 CFR Part11:Title 21 CFR Part 11 of the Code of Federal Regulations for the United States (guidelines on electronic records and signatures)

11. 2 Registering License

➔ For more information on the license, refer to 8. 3 "Registering License" on page 8-4.

11. 3 Setting and Managing Database

This option uses a database for data management, so Microsoft®SQL Server®2012 Express (included database) is installed at the same time.

The login ID, initial password, and ODBC data source name for the included database are as follows:

Login ID:	sa
Initial password:	tas7500database
ODBC data source name:	TAS7500DB

Important

The database size is limited to 10 GB in Microsoft® SQL Server® 2012 Express.
This option can be also connected to Microsoft® SQL Server® 2005, 2008, 2008 R2, and 2012. Data of 10 GB or greater can be stored by preparing one of these separately.

11. 3. 1 Creating Database

This section describes how to create the database used with this option.

This operation should be performed on the server to be connected. Microsoft® SQL Server® 2012 is used as an example.

Tip

This operation is not required if using the included database because it is created when this option is installed.

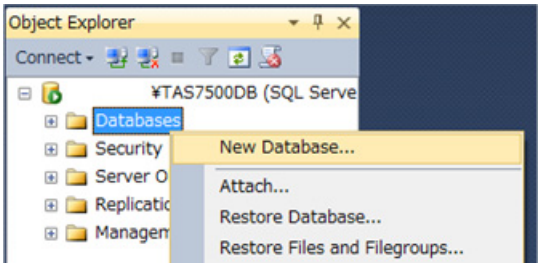
1) Click **[Start]** → **[All Programs]** → **[Microsoft SQL Server 2012]** → **[SQL Server Management Studio]** to start SQL Server Management Studio.
2) Enter the following items and click the **[Connect]** button:

Server name:	Name of server to be connected
Authentication:	SQL Server authentication
Login:	Login ID
Password:	Password

Figure 11-1 Connecting to Server

3) Right-click "Databases" in Object Explorer and select **[New Database…]**.

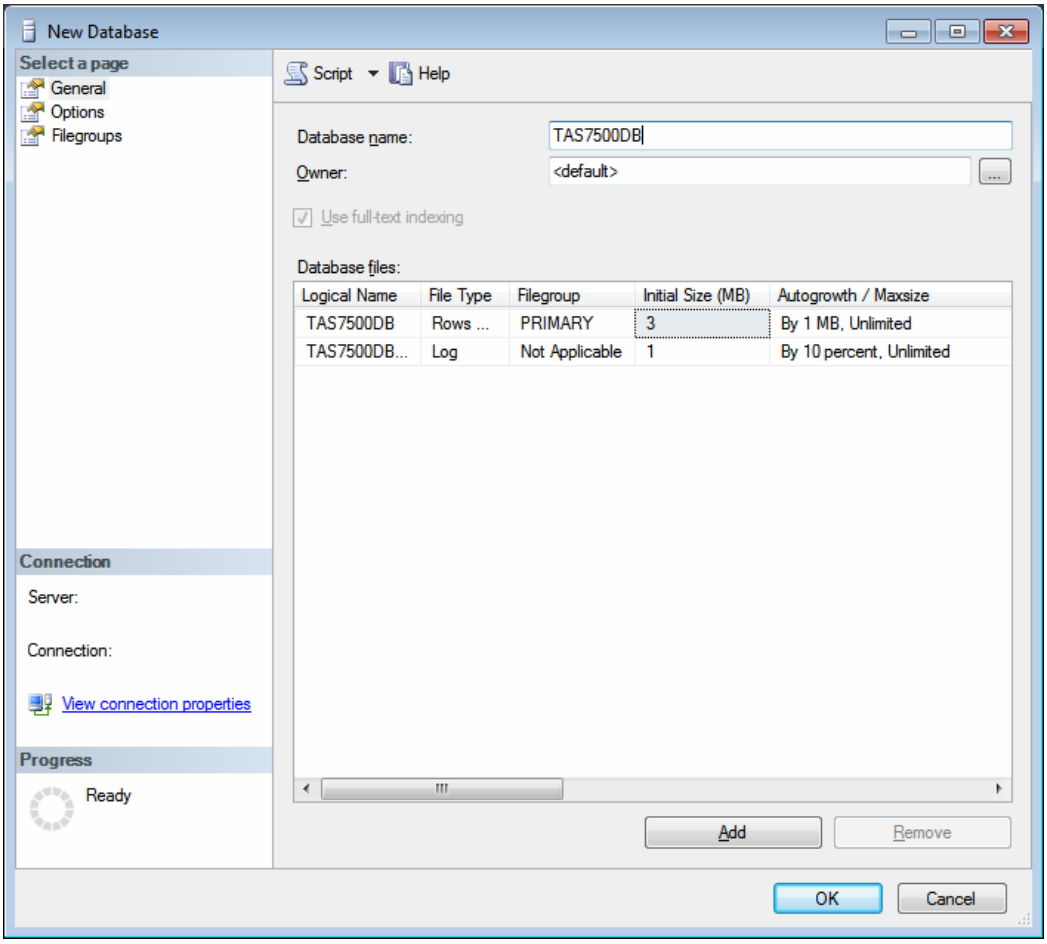
Figure 11-2 Object Explorer



4) Select **[General]** in the New Database dialog box, enter the following items, and click the **[OK]** button:

Database name: TAS7500DB

Figure 11-3 New Database



The creation of a database is now complete.

11. 3. 2 Registering ODBC Connection Settings

This section describes how to register ODBC connection settings to the system controller.

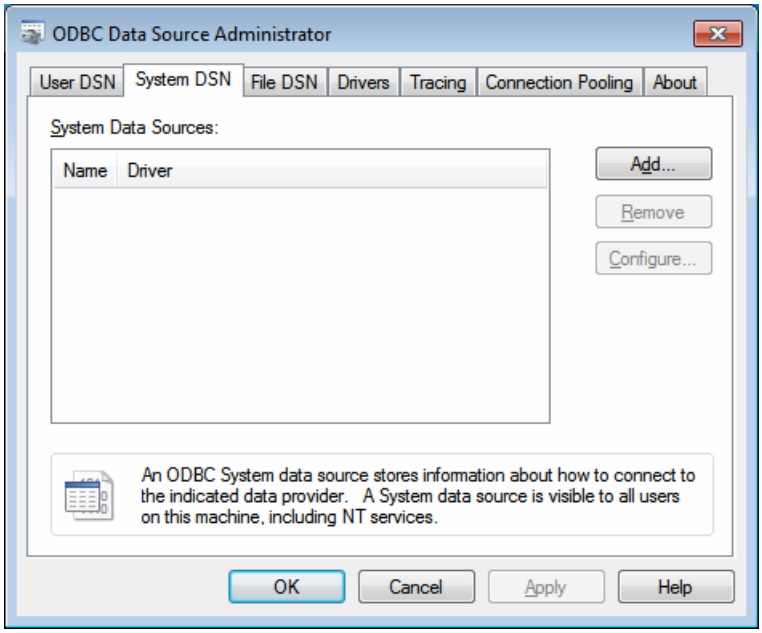
Tip

This operation is not required if using the included database because ODBC connection settings are registered when this option is installed.

1) Click **[Start]** → **[Control Panel]** → **[System and Security]** → **[Administrative Tools]** → **[Data Sources (ODBC)]**.

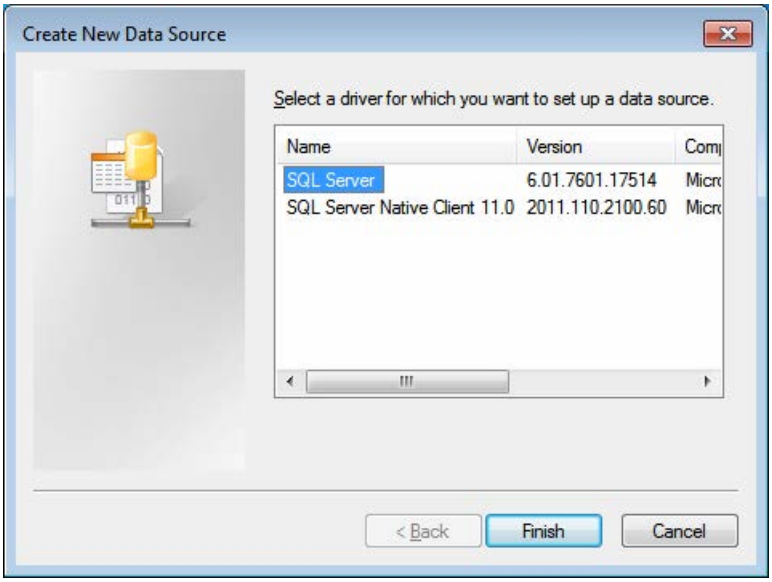
2) Select the System DSN tab and click the **[Add]** button.

Figure 11-4 System DSN



3) Select "SQL Server" and click the **[Finish]** button.

Figure 11-5 Creating New Data Source



4) Enter the following items and click the **[Next]** button:

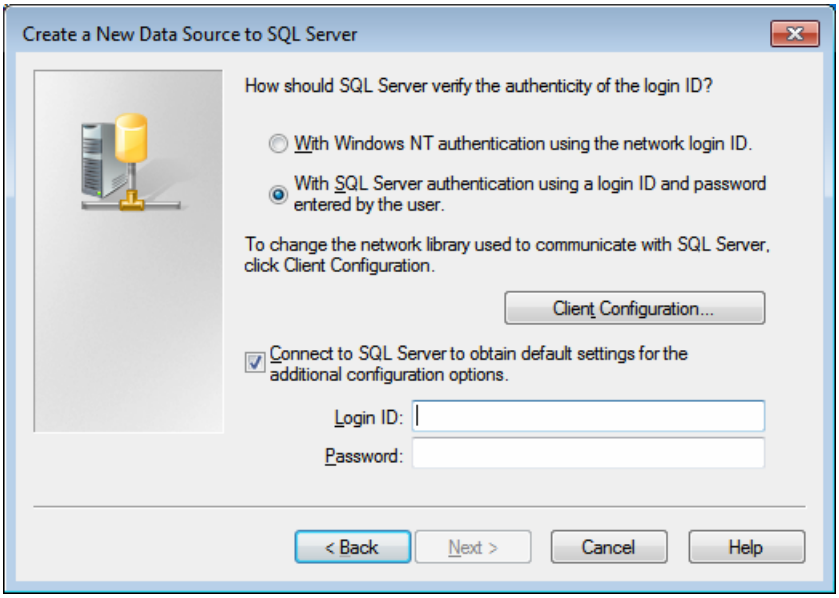
Name:	ODBC data source name (arbitrary value)
Server:	Name of server to be connected

Figure 11-6 Entering Server Name

5) Enter the following items and click the **[Next]** button.
Select "With SQL Server authentication using a login ID and password entered by the user."

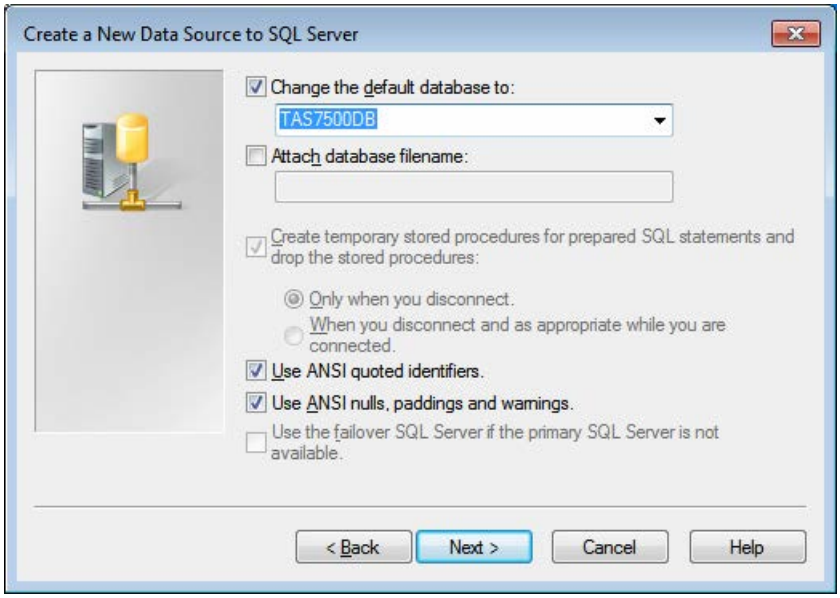
Login ID:	Login ID
Password:	Password

Figure 11-7 Entering Login ID



6) Select the "Change the default database to:" checkbox, select "TAS7500DB," and click the **[Next]** button.

Figure 11-8 Entering Default Database



7) Click the **[Finish]** button.

The registration of ODBC connection settings is now complete.

11. 3. 3 Initial Settings

Before using this option for the first time, specify database connection settings and register the user as the initial settings.

1) Click **[User]** → **[Database Settings…]** in the Navigation window to open the Database Settings dialog box.

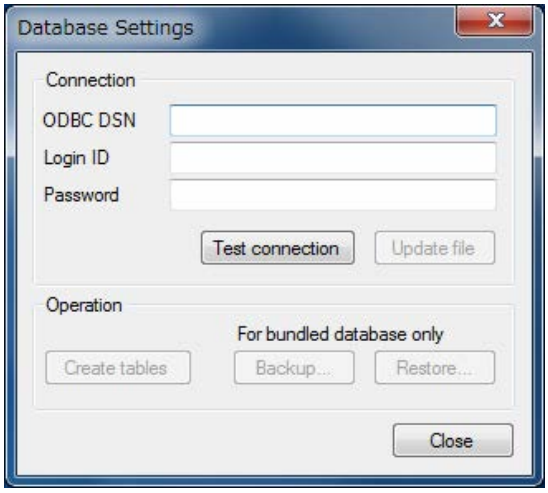
➔ For more information on the Database Settings dialog box, refer to 11. 3. 4 "Database Settings Dialog Box" on page 11-9.

2) The User Account Control dialog box opens. Click the **[OK]** button.

3) Enter the following items and click the **[Test connection]** button to verify that the database can be connected:

ODBC DSN:	ODBC data source name
Login ID:	Login ID
Password:	Password

Figure 11-9 Database Connection Settings



4) Click the **[Update file]** button and then click the **[Close]** button to close the Database Settings dialog box.

5) Log in for the first time.
Click **[User]** → **[Login…]** in the Navigation window to open the Login dialog box.

User ID:	Admin
Password:	tas7500

Enter the preceding user ID and password to log in.

➔ For more information on logging in, refer to 11. 11. 1 "Login Dialog Box" on page 11-25.
After logging in, register the user.

➔ For more information on user registration, refer to 11. 11. 3 "User Account Settings Dialog Box" on page 11-27.

11. 3. 4 Database Settings Dialog Box

The Database Settings dialog box can be used to update database connection settings and to create, back up, and restore tables.

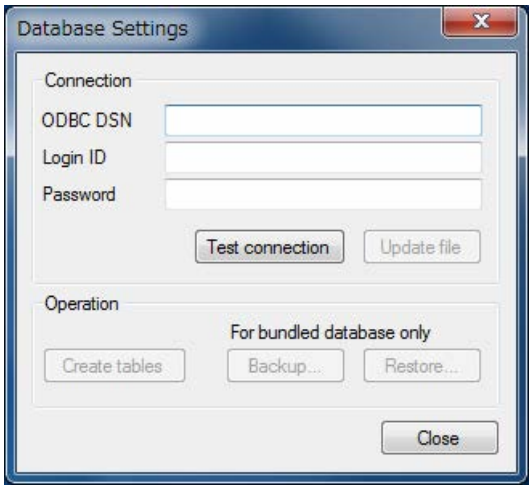
Open this dialog box by clicking **[User]** → **[Database Settings…]** in the Navigation window.

Tip

Windows administrator authorization is required to activate this dialog box.

When the User Account Control dialog box opens, click the **[OK]** button.

Figure 11-10 Database Settings Dialog Box



[ODBC DSN]	Enter the ODBC data source name to be connected.
[Login ID]	Enter the login ID.
[Password]	Enter the password. Entered characters are masked with asterisks(*).
[Test connection] button	Executes a database connection test. When the connection test is successful, the **[Update file]** and **[Create tables]** buttons are enabled. The **[Backup…]** and **[Restore…]** buttons are also enabled in online mode only.
[Update file] button	Updates database connection settings.
[Create tables] button	Creates a database table used with this option. Use this button after creating a new database.
[Backup…] button	Creates database backup files. This function is specific to the included database only.
[Restore…] button	Restores the database using a backup file. This function is specific to the included database only.
[Close] button	Closes the dialog box.

11. 3. 5 Migrating Database Data

Use the DTSWizard SQL Server tool to migrate data from the included database to another database.

Create a database on the migration destination server before starting the operation.

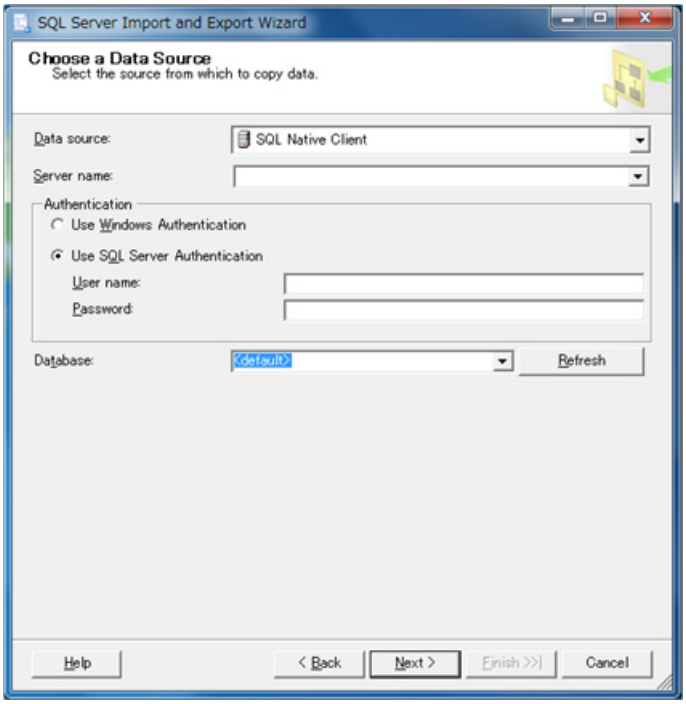
➔ For more information on how to create a database, refer to 11. 3. 1 "Creating Database" on page 11-3.

1) Click **[Start]** → **[All Programs]** → **[Microsoft SQL Server 2012]** → **[Import and Export Data (64-bit)]** to start DTSWizard.

2) Enter the following items in the Choose a Data Source window and click the **[Next]** button:

Data source:	SQL Native Client
Server name:	Server name for the included database Select "Use SQL Server Authentication."
User name:	Login ID
Password:	Password
Database:	TAS7500DB

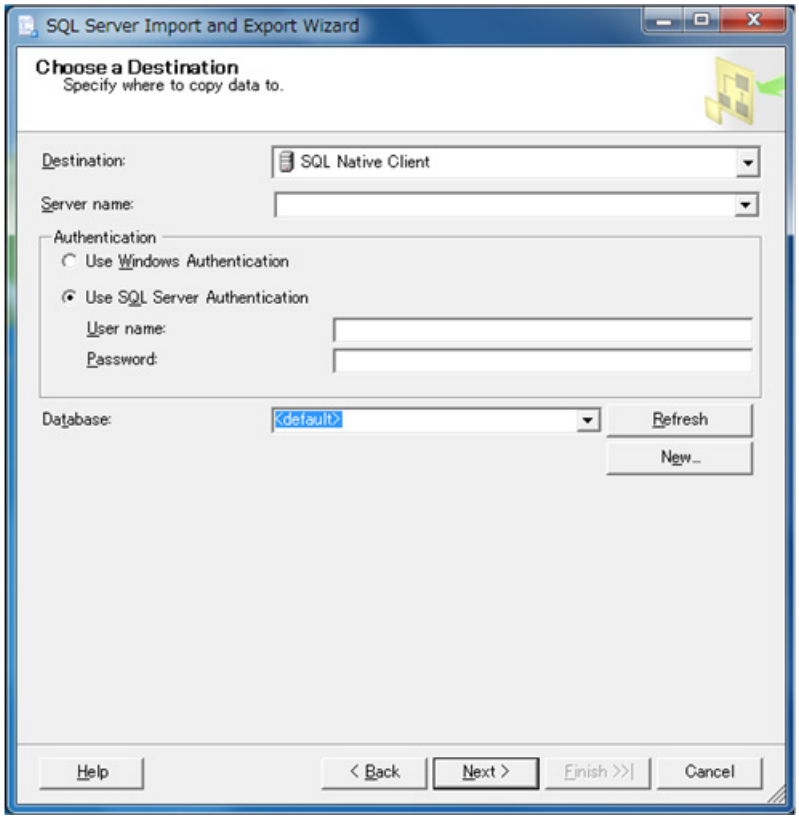
Figure 11-11 Choose a Data Source



3) Enter the following items in the Choose a Destination window and click the **[Next]** button:

Destination:	SQL Native Client
Server name:	Select the "User SQL Server Authentication" migration destination server name.
User name:	Login ID
Password:	Password
Database:	TAS7500DB

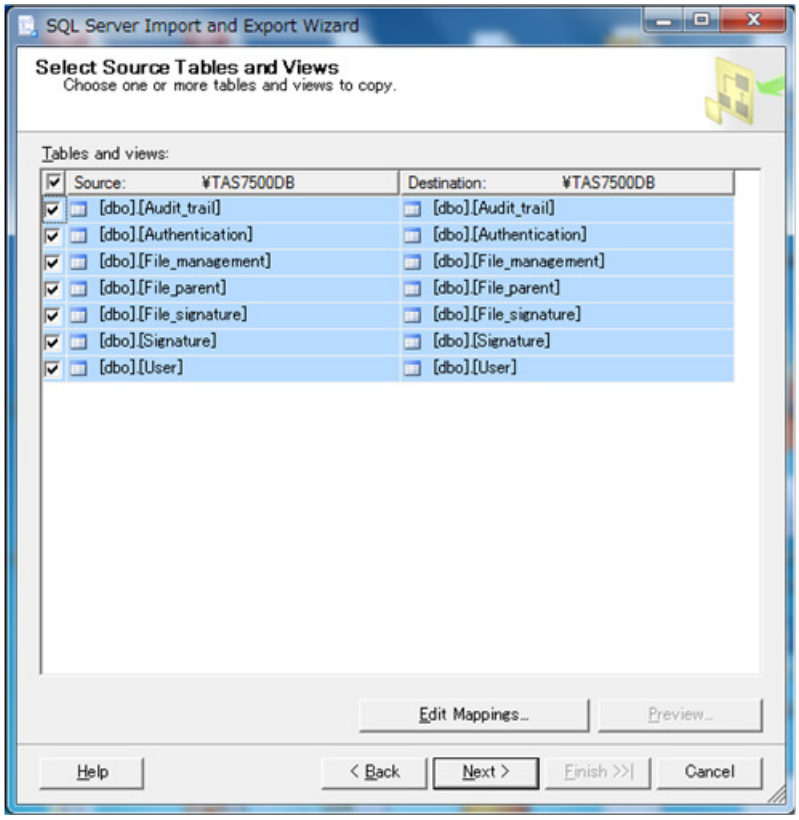
Figure 11-12 Choose a Destination



4) Select "Copy data from one or more tables or views" and click the **[Next]** button.

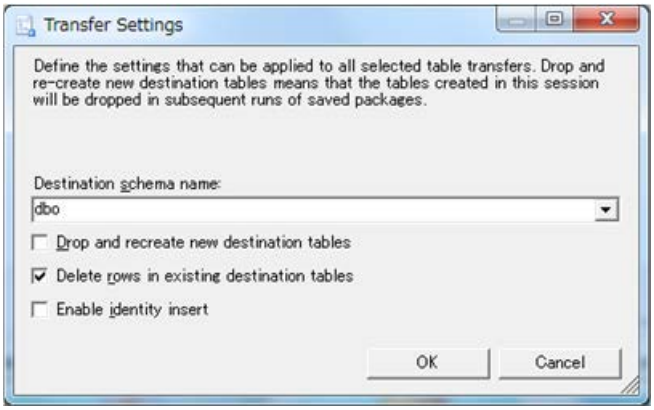
5) Select all tables and click the **[Edit Mappings…]** button.

Figure 11-13 Select Source Tables and Views



6) Select the "Delete rows in existing destination tables" checkbox and click the **[OK]** button.

Figure 11-14 Transfer Settings



7) Click the **[Finish]** button to start the data migration process.

8) Data migration is complete when "Success" is displayed. Click the **[OK]** button to terminate the process.

The migration of database data is now complete.

11. 4 Navigation Window

This section describes changes made to the existing functions, accompanied with this option.

11. 4. 1 Menu Bar

This section describes the items added for this option.

11. 4. 1. 1 [User]

The **[User]** menu allows the following selections:

◆ **[User] → [Login…]**

This command authenticates the user and allows login to the system.

Clicking this command opens the Login dialog box.

➔ For more information on this dialog box, refer to 11. 11. 1 "Login Dialog Box" on page 11-25.

◆ **[User] → [Logout]**

This command allows logging out from the system.

Logging out is impossible during measurement.

◆ **[User] → [Change Password…]**

This command changes the user password.
Clicking this command opens the Change Password dialog box.

➔ For more information on this dialog box, refer to 11. 11. 2 "Change Password Dialog Box" on page 11-26.

◆ **[User] → [Show Audit Trail…]**

This command outputs the audit trails on data and users.

Clicking this command opens the Audit Trail dialog box.

➔ For more information on this dialog box, refer to 11. 15 "Audit Trail" on page 11-37.

◆ **[User] → [User Account Settings…]**

This command performs user management such as user registration.

Clicking this command opens the User Account Settings dialog box.

➔ For more information on this dialog box, refer to 11. 11. 3 "User Account Settings Dialog Box" on page 11-27.

◆ [User] → [Database Settings…]

This command updates database connection settings and creates, backs up, and restores tables. Clicking this command opens the Database Settings dialog box.

➔ For more information on this dialog box, refer to 11. 3. 4 "Database Settings Dialog Box" on page 11-9.

11. 5 Measurement Window in Spectroscopic Unit

This section describes changes made to the existing functions, accompanied with this option.

11. 5. 1 Menu Bar

This section describes the items changed for this option.

11. 5. 1. 1 [File]

The following items are added to the **[File]** menu:

◆ **[File] → [Save to Database…]**

This command saves sample waveforms to a database.

Clicking this command opens the Save to Database dialog box.

➔ For more information on this dialog box, refer to 11. 13 "Saving Data" on page 11-34.

The following items are deleted from the **[File]** menu:

◆ **[File] → [Save Data…]**

11. 5. 2 Tool Bar

This section describes the items changed for this option.

	Shortcut to **[File] → [Save to Database…]**

11. 5. 3 Condition Setting Area

This section describes the items changed for this option.

11. 5. 3. 1 Condition Tab

The following items are changed on the Condition tab:

[Save…] button — Saves the background waveform to a database.
Clicking this command opens the Save to Database dialog box.

➔ For more information on this dialog box, refer to 11. 13 "Saving Data" on page 11-34.

[Load…] button — Loads the background waveform from a database.
Clicking this command opens the Data Browser dialog box.

➔ For more information on this dialog box, refer to 11. 12 "Data Browser" on page 11-31.

11. 6 Measurement Window in Imaging Unit

This section describes changes made to the existing functions, accompanied with this option.

11. 6. 1 Menu Bar

This section describes the items changed for this option.

11. 6. 1. 1 [File]

The following items are added to the **[File]** menu:

◆ **[File] → [Save to Database…]**

This command saves obtained data to a database. The sample waveform is saved after point measurement. Imaging data is saved after imaging measurement.

Clicking this command opens the Save to Database dialog box.

➔ For more information on this dialog box, refer to 11. 13 "Saving Data" on page 11-34.

The following items are deleted from the **[File]** menu:

◆ **[File] → [Save Data…]**

11. 6. 2 Tool Bar

This section describes the items changed for this option.

	Shortcut to **[File] → [Save to Database…]**

11. 6. 3 Condition Setting Area

This section describes the items changed for this option.

11. 6. 3. 1 Condition Tab

The following items are changed on the Condition tab:

[Save…] button — Saves the background waveform to a database.
Clicking this command opens the Save to Database dialog box.

➔ For more information on this dialog box, refer to 11. 13 "Saving Data" on page 11-34.

[Load…] button — Loads the background waveform from a database.
Clicking this command opens the Data Browser dialog box.

➔ For more information on this dialog box, refer to 11. 12 "Data Browser" on page 11-31.

11. 7 Analyze Window

This section describes changes made to the existing functions, accompanied with this option.

11. 7. 1 Menu Bar

This section describes the items changed for this option.

11. 7. 1. 1 [File]

The following items are added to the **[File]** menu:

- **[File] → [Show Data Browser…]**

  This command loads data from a database.

  Clicking this command opens the Data Browser dialog box.

  ➔ For more information on this dialog box, refer to 11. 12 "Data Browser" on page 11-31.

The following items are deleted from the **[File]** menu:

- **[File] → [Load Point Data…]**

- **[File] → [Load Imaging Data…]**

- **[File] → [Load JCAMPDX Data…]**

- **[File] → [Load SPC Data…]**

11. 8 Graph Window in Spectroscopic Unit

This section describes changes made to the existing functions, accompanied with this option.

11. 8. 1 Menu Bar

This section describes the items changed for this option.

11. 8. 1. 1 [File]

The following items are added to the **[File]** menu:

◆ **[File] → [Show Data Browser…]**

This command loads data from a database.

Clicking this command opens the Data Browser dialog box.

➔ For more information on this dialog box, refer to 11. 12 "Data Browser" on page 11-31.

◆ **[File] → [Save to Database…]**

This command saves sample waveforms to a database.

Clicking this command opens the Save to Database dialog box.

➔ For more information on this dialog box, refer to 11. 13 "Saving Data" on page 11-34.

The following items are deleted from the **[File]** menu:

◆ **[File] → [Load…]**

11. 9 Graph Window in Imaging Unit

This section describes changes made to the existing functions, accompanied with this option.

11. 9. 1 Menu Bar

This section describes the items changed for this option.

11. 9. 1. 1 [File]

The following items are added to the **[File]** menu:

◆ **[File] → [Save to Database…]**

This command saves sample waveforms to a database.

Clicking this command opens the Save to Database dialog box.

➔ For more information on this dialog box, refer to 11. 13 "Saving Data" on page 11-34.

11.10 Imaging Window

This section describes changes made to the existing functions, accompanied with this option.

11.10. 1 Menu Bar

This section describes the items changed for this option.

11.10. 1. 1 [File]

The following items are added to the **[File]** menu:

◆ **[File] → [Save to Database…]**

This command saves sample waveforms to a database.

Clicking this command opens the Save to Database dialog box.

➔ For more information on this dialog box, refer to 11. 13 "Saving Data" on page 11-34.

11.11 Option Access Control

Login users registered in the system can use this option.

The system provides three user authorizations, which are distinguished at login.

Authorization	Data	Electronic signature	User settings
Administrator	Access allowed Creation and deletion authorizations	Access allowed Signature authorization	Access allowed Registration, change, and deletion authorizations
Power User	Access allowed Creation and deletion authorizations	Access allowed Signature authorization	Access prohibited
User	Access allowed Creation and deletion authorizations However, note that this type of user is not allowed to delete signed data.	Access prohibited	Access prohibited

11.11. 1 Login Dialog Box

The Login dialog box is used to authenticate the user. Successfully authenticated users can use this option.

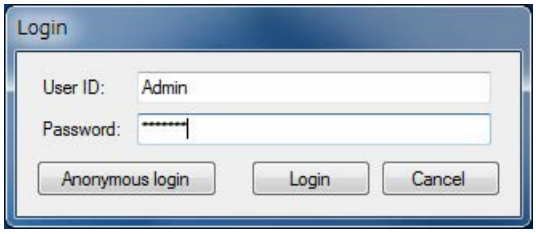
This dialog box opens in the following three cases:

1) When **[User]→ [Login…]** is clicked in the Navigation window.

2) When the mouse and keyboard are not operated for a certain period of time after startup.

3) When authentication is requested for electronic signature.

Figure 11-15 Login Dialog Box



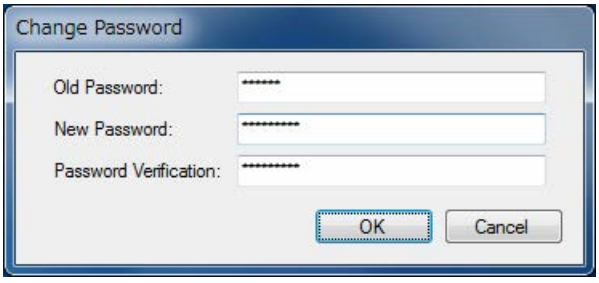
User ID	Enter the user ID.
Password	Enter the password. Entered characters are masked with asterisks (*).
[Anonymous login] button	Starts the TAS7x00 without using this option. When **[User]**→ **[Login…]** is clicked in the Navigation window, this button is displayed.
[Login] button	Closes the dialog box after successful login.
[Cancel] button	Closes the dialog box. When the mouse and keyboard are not operated for a certain period of time after startup, this button is disabled.

11.11. 2 Change Password Dialog Box

The Change Password dialog box is used to change the user password.

This dialog box opens if the password expires at system login or if it is forced to change the password.

Figure 11-16 Change Password Dialog Box



Old Password	Enter the old password. Entered characters are masked with asterisks(*).
New Password	Enter the new password. Entered characters are masked with asterisks(*).
Password Verification	Enter the new password again. Entered characters are masked with asterisks(*).
[OK] button	Updates the password.
[Cancel] button	Closes the dialog box.

11.11. 3 User Account Settings Dialog Box

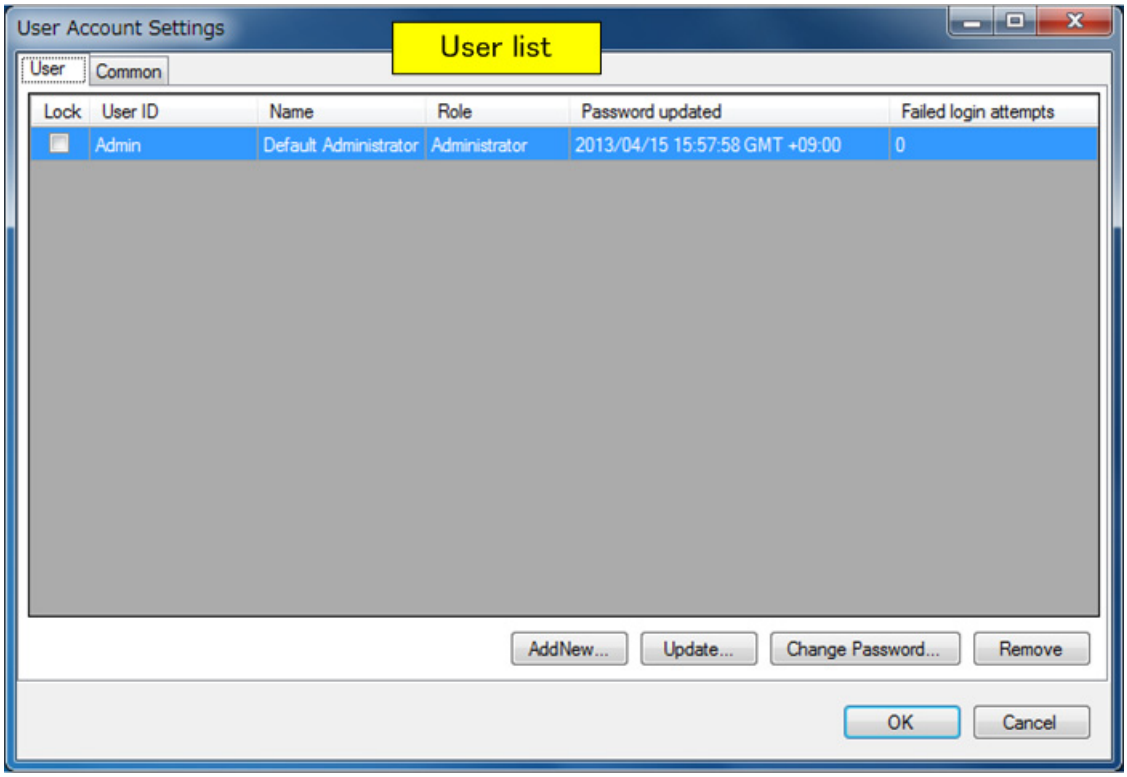
The User Account Settings dialog box is used to perform user management such as user registration.

Open this dialog box by clicking **[User]** → **[User Account Setting…]** in the Navigation window. Only users with Administrator authorization can activate this dialog box.

Tip

It is recommended that users be registered with a new Administrator authorization when logging into the system for the first time, which is then deleted.

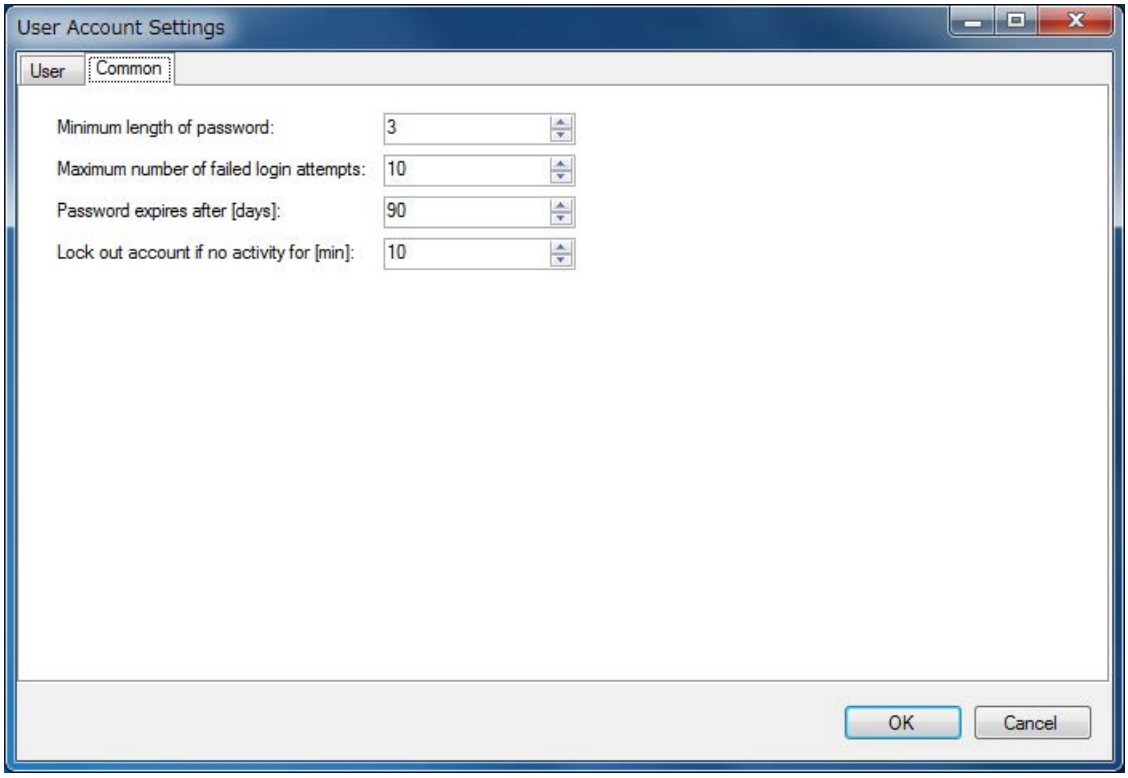
Figure 11-17 User Account Settings Dialog Box (User Tab)



The following describes the User tab in the User Account Settings dialog box:

User list	Displays the currently registered user.
Lock	Indicates whether the user is locked. If this checkbox is selected, that user is not allowed to log into the system.
User ID	Displays the user ID.
Name	Displays the user name.
Role	Displays the user authorization.
Password updated	Displays the password update date and time.
Failed login attempts	Displays the number of password entry attempts. If the maximum number of password entry attempts is exceeded, that user is locked.
[AddNew…] button	Registers new user data. Clicking this button opens the Add new user dialog box. For more information on this dialog box, refer to 11. 11. 4 "Add New User Dialog Box" on page 11-30. Inform the new user of the user ID and old password (password specified in user data) required to change the password.
[Update…] button	Updates user data. Clicking this button opens the Add new user dialog box. For more information on this dialog box, refer to 11. 11. 4 "Add New User Dialog Box" on page 11-30.
[Change Password…] button	Changes the password for the selected user. Clicking this button opens the Add new user dialog box. For more information on this dialog box, refer to 11. 11. 4 "Add New User Dialog Box" on page 11-30.
[Remove…] button	Deletes user data. Note that the login user cannot be deleted.
[OK] button	Closes the dialog box.
[Cancel] button	Closes the dialog box.

Figure 11-18 User Account Settings Dialog Box (Common Tab)



The following describes the Common tab in the User Account Settings dialog box:

Minimum length of password	Specify the minimum number of characters for the password (0 to 63).
Maximum number of failed login attempts	Specify the maximum number of password entry attempts (0 to 30). If a user consecutively fails to login the specified number of times or more, the user is locked out. When 0 is specified, there is not a limit on the number of attempts to log in.
Password expires after	Specify the password validity period (in days). When 0 is specified, the validity period is unlimited (0 to 360).
Lock out account if no activity for	Specify the duration (in minutes) following the last mouse or keyboard input before the operation is locked (0 to 180).If 0 is specified, it is not locked.
[OK] button	Applies the settings and closes the dialog box.
[Cancel] button	Closes the dialog box without applying the settings.

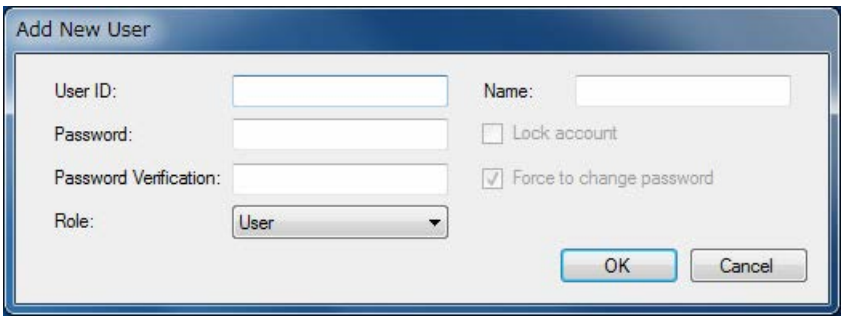
Tip

To cancel the user lock, select the relevant user on the User tab, and then click the ***[Update]*** *button.*

11.11. 4 Add New User Dialog Box

The Add new user dialog box is used for user registration, update, and password change.

Figure 11-19 Add New User Dialog Box



User ID	Specify the user ID. A duplicate user ID, including deleted user IDs, cannot be used.
Password	Enter the password. Entered characters are masked with asterisks (*).
Password Verification	Enter the password again. Entered characters are masked with asterisks (*).
Role	Specify the user authorization.
Name	Specify the user name.
Lock account	Specify the user lock.
Force to change password	Specify whether to forcibly change the password at the next login. This is checked when a new user is registered.
[OK] button	Applies the settings and closes the dialog box.
[Cancel] button	Closes the dialog box without applying the settings.

11.12 Data Browser

The Data Browser dialog box is used to load spectrum or imaging measurement data from a database.

Figure 11-20 Data Browser Dialog Box

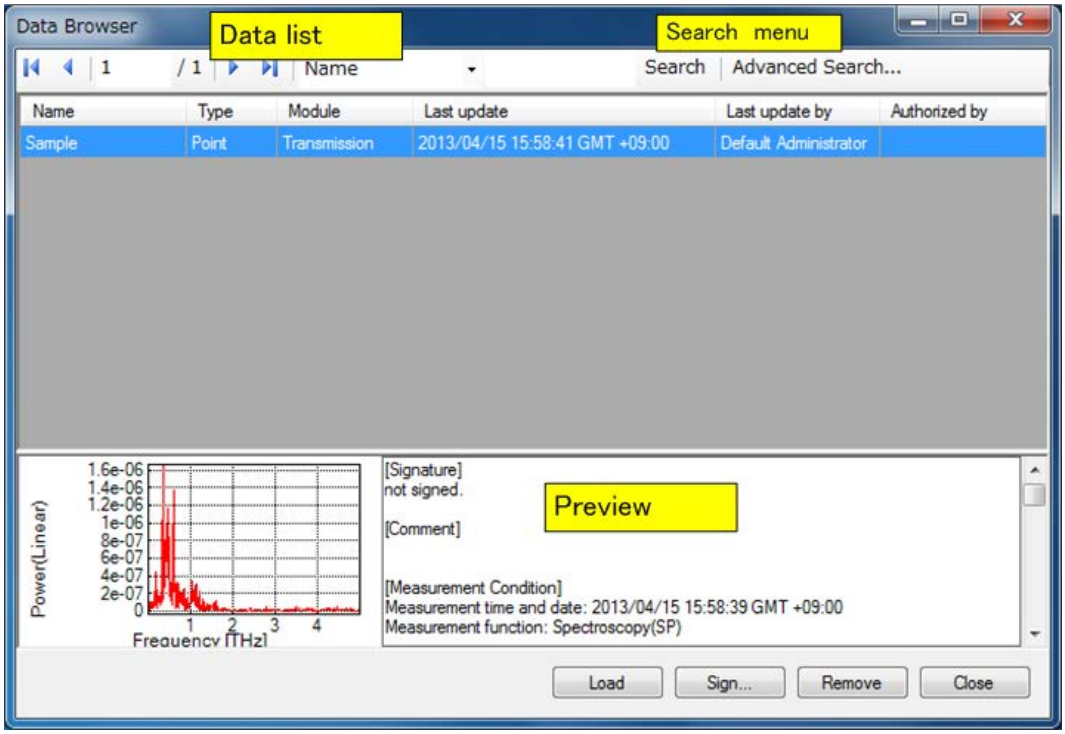
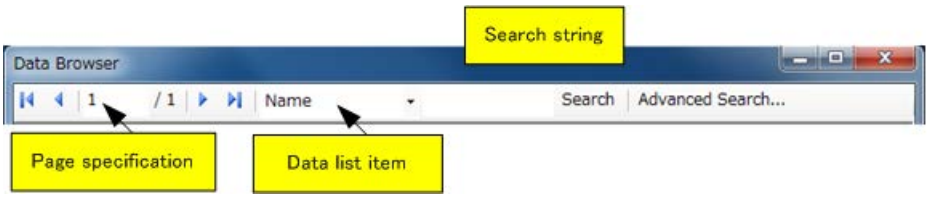


Figure 11-21 Search Menu

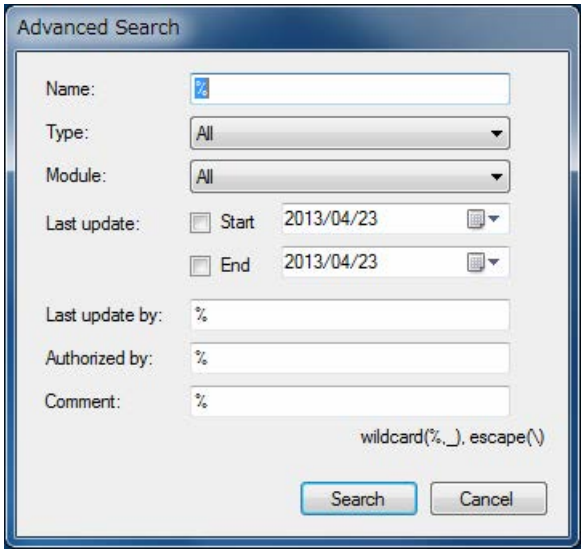


Page specification	From the left side, the first page, previous page, current page, next page, and last page buttons.
Data list item	Specify an item in the data list.
Search string	Specify a search string to search items in the data list.
[Search] button	Searches the database with the data list item and search string.
[Advanced Search…] button	Clicking this button opens the Advanced Search dialog box. ➔ For more information on this dialog box, refer to 11. 12. 1 "Advanced Search" on page 11-32.
Data list	
Name	Displays the waveform name.
Type	Displays the data type.
Module	Displays the unit module during measurement.
Last update	Displays the last update date.
Last update by	Displays the last person who updated the data.
Authorized by	Displays the person who electronically signed the data.
Preview	
Image	Displays the thumbnail image of the selected data.
Signature	Displays the electronic signature for the selected data.
Comment	Displays the comment on the selected data.
[Load] button	Loads the selected data.
[Sign…] button	Signs the selected data (with Administrator or Power User authorization). Clicking this button opens the Sign dialog box. ➔ For more information on this dialog box, refer to 11. 14 "Electronic Signature" on page 11-35.
[Remove] button	Deletes the selected data.
[Close] button	Closes the dialog box.

11.12. 1 Advanced Search

The Advanced Search dialog box is used to specify detailed conditions for database search.

Figure 11-22 Advanced Search Dialog Box

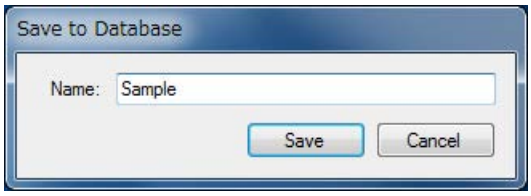


Name	Specify a waveform name.
Type	Specify a data type.
Module	Specify the unit module during measurement.
Last update	Specify the range of the last update date.
Start	Specify the earliest date to be included in the last update date range.
End	Specify the latest date to be included in the last update date range.
Last update by	Specify the last person who updated the data.
Authorized by	Specify the person who electronically signed the data.
Comment	Specify a comment.
[Search] button	Searches using the entered conditions.
[Cancel] button	Closes the dialog box.

11.13 Saving Data

The Save to Database dialog box is used to save spectrum or imaging measurement data to a database.

Figure 11-23 Save to Database Dialog Box

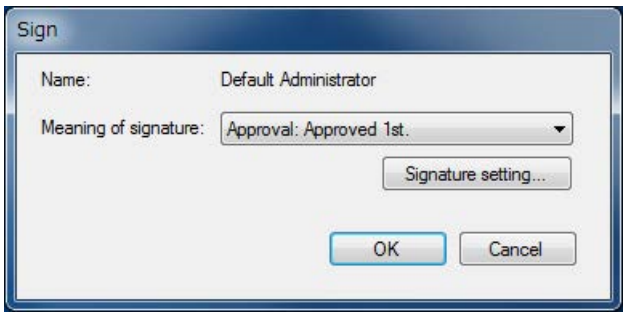


Name	Specify a waveform name.
[Save] button	Saves data to a database.
[Cancel] button	Closes the dialog box.

11.14 Electronic Signature

The Sign dialog box is used to sign data.

Figure 11-24 Sign Dialog Box

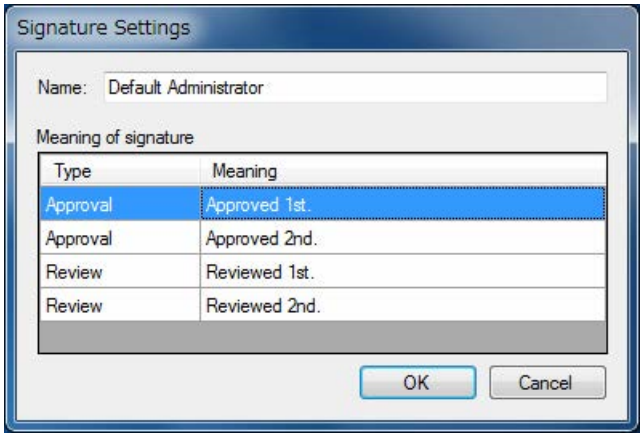


Name	Displays the person who signed the data.
Meaning of signature	Specify the signature content.
[Signature Setting…] button	Clicking this button opens the Signature settings dialog box. ➔ For more information on this dialog box, refer to 11. 14. 1 "Signature Settings Dialog Box" on page 11-35.
[OK] button	Opens the Login dialog box. Data is signed when authentication is successful. ➔ For more information on the Login dialog box, refer to 11. 11. 1 "Login Dialog Box" on page 11-25.
[Cancel] button	Closes the dialog box.

11.14. 1 Signature Settings Dialog Box

The Signature settings dialog box is used to specify the person who signs the data and the signature content.

Figure 11-25 Signature Settings Dialog Box



Name	Specify the person who signs the data.
Meaning of signature	Specify the details of approval and review. Two items can be specified for each.
Type	The kind of signature (Approval/Review)
Meaning	The meaning of signature (Review,Check,Inspection,Approval/etc...)
[OK] button	Saves entered data and applies it to the Sign dialog box.
[Cancel] button	Closes the dialog box.

11.15 Audit Trail

The Audit Trail dialog box is used to output the operation history records of data and users.

Figure 11-26 Audit Trail Dialog Box

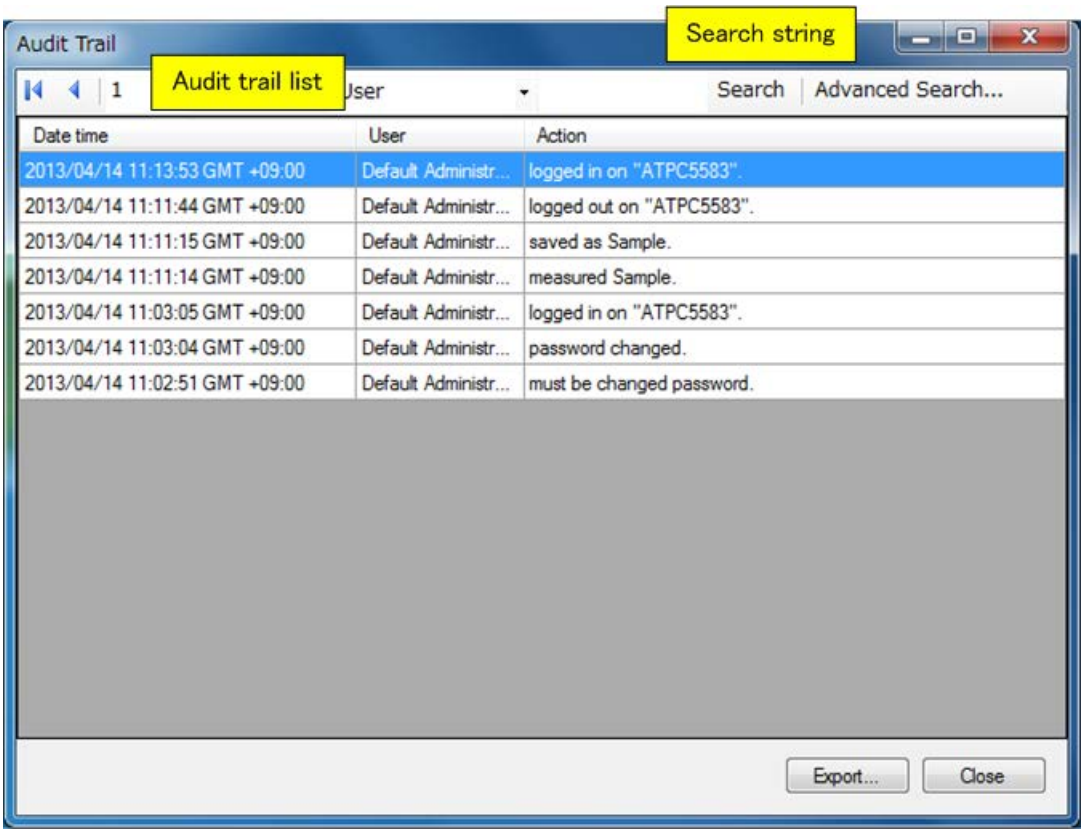
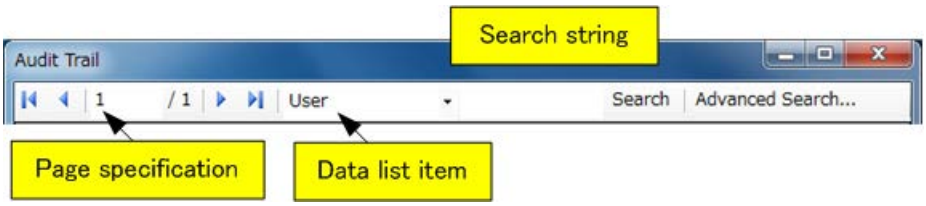


Figure 11-27 Search Menu

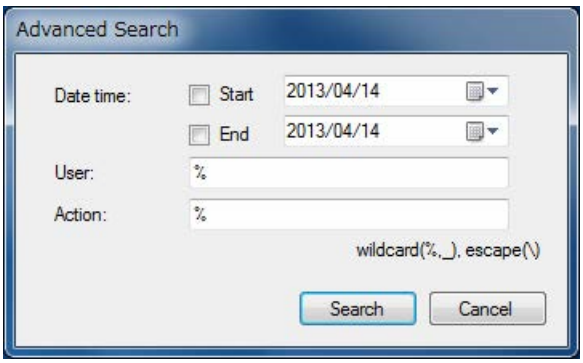


Page specification	From the left side, the first page, previous page, current page, next page, and last page buttons.
Data list item	Specify an item in the data list.
Search string	Specify a search string to search items in the data list.
[Search] button	Searches the database with the data list item and search string.
[Advanced Search…] button	Clicking this button opens the Advanced Search dialog box. ➔ For more information on this dialog box, refer to 11. 15. 1 "Advanced Search" on page 11-38.
Audit trail list	
Date Time	Displays the operation date and time.
User	Displays the operating user.
Action	Displays the details of operation.
[Export…] button	Outputs search results in CSV format.
[Close] button	Closes the dialog box.

11.15. 1 Advanced Search

The Advanced Search dialog box is used to specify detailed conditions for database searches.

Figure 11-28 Advanced Search Dialog Box



Date Time	Specify the range of the operation date.
Start	Specify the first operation date.
End	Specify the last operation date.
User	Specify the operating user.
Action	Specify the details of the operation.
[Search] button	Searches using the entered conditions.
[Cancel] button	Closes the dialog box.

12. Software Specifications

This chapter describes the specifications of system software.

12. 1 Configuration of Software

The configuration of this software and product model numbers are as follows:

Basic system software

TAS7500 System Software	PYSI75-00M
TAS7400 System Software	PYSI74-00M

Option software

TAS7500 Offline Software	PYSA75-00M
TAS7500 Coating Quality Analysis Application License	PYSI75-04M
TAS7500 Offline Coating Quality Analysis Application License	PYSA75-04M
TAS7500 Quantitative Analysis Application Software	PYSI75-02M
TAS7500 Offline Quantitative Analysis Application Software	PYSA75-02M
TAS7500 Polarization Analysis Application License	PYSI75-05M
TAS7500 Offline Polarization Analysis Application License	PYSA75-05M
TAS7500 FDA Compatible Function License	PYSI75-06M
TAS7500 Offline FDA Compatible Function License	PYSA75-06M
TAS7400 Offline Software	PYSA74-00M
TAS7400 Polarization Analysis Application License	PYSI74-05M
TAS7400 Offline Polarization Analysis Application License	PYSA74-05M
TAS7400 FDA Compatible Function License	PYSI74-06M
TAS7400 Offline FDA Compatible Function License	PYSA74-06M

12. 1. 1 Media and Documents

When the system or an updated version is delivered, media containing software and manuals is provided.

12. 1. 2 Installation

The first installation of software is conducted by Advantest at the time of shipment of the system.

Updated versions need to be installed by the user.

However, if it is desired that an updated version be installed by an Advantest engineer, contact our sales representative.

12. 1. 3 Requirements

The hardware and software configurations required for this software and system expansion are described in the following sections.

12. 1. 3. 1 Required Hardware Configuration

One PC is required when using this software offline.

The specifications required for hardware resources are described in the following table:

Hardware resource	Minimum value	Recommended value
CPU	Intel Core 2 Duo CPU E8200 @ 2.66 GHz or equivalent	Intel Core i7 CPU 860 @ 2.80 GHz
Memory capacity	2 GB	4 GB
Free disk space	3 GB	Depends on the number of saved data files
Video card	nVIDIA GeForce GTS 240 or equivalent	nVIDIA GeForce GTS 240 or equivalent

Important

- CPUs other than Intel's may provide insufficient performance.
- Video cards other than nVIDIA's may provide insufficient performance.

12. 1. 3. 2 Required Software Configuration

All software needed when this system is used online is included with the product.

The software needed when this system is used offline is as follows:

Software type	Software name
Basic OS	Windows 7 Professional Service Pack 1 (64 bit)

Important

- Windows 7 is used in the Japanese or English language environment.

12. 1. 3. 3 System Expansion

According to future enhancements of software and hardware, additional equipment and software may be required to operate system software.

12. 1. 4 Software Support

Delivered software is supported for one year without charge. The content of software support depends on Advantest software support criteria. Software support after one year has elapsed is charged to the customer.

To use the latest improved software, a software support contract is highly recommended after one year.

12. 1. 5 Orders

When ordering this software, specify the name and service location of the software, and also the TAS7x00 Series Terahertz Spectroscopy & Imaging System model in which the software is to be installed.

List of Figures