

# Impulse Winding Tester

## Sample Application User's Manual

HIOKI E.E. CORPORATION

Rev.1, February 2019

1. Overview.....	1
-1. Functionality .....	1
-2. Operating environment.....	1
-3. Supported products .....	2
2. Installation procedure.....	3
-1. Installation .....	3
-2. Uninstallation.....	6
3. Usage .....	9
-1. Startup .....	9
-2. Exit.....	10
-3. Menu bar configuration.....	10
(1) [File] menu .....	10
(2) [Tool] menu .....	10
(3) [Help] menu .....	11
-4. Setting the communication interface .....	11
-5. Setting the test conditions and the judgment conditions.....	12
(1) Setting the test conditions .....	12
(2) Setting the area judgment conditions of the LC and RC values .....	13
(3) Setting the discharge judgment conditions .....	14
(4) Setting the judgment conditions for the waveform surface area comparison .....	15
(5) Setting the judgment conditions for the waveform difference surface area comparison .....	16
(6) Setting the judgment conditions for the waveform flutter detection .....	17
(7) Setting the judgment conditions for the waveform secondary differential detections .....	18
-6. Executing the voltage calibration .....	19
-7. Executing the tests .....	19
-8. Displaying the waveform graph.....	20
-9. Displaying the graph of the LC and RC area judgment values.....	20
-10. Setting the graph .....	21
-11. Displaying the voltage values.....	22
-12. Displaying the discharge quantities.....	23
-13. Displaying the judgment results .....	24
-14. Displaying the test conditions.....	25
-15. Displaying the total judgment result .....	26
(1) Not judged .....	26
(2) PASS judgment.....	26
(3) FAIL judgment.....	26
-16. Selecting the tables .....	27
-17. Capturing the screen .....	28
-18. Saving the test data.....	30
-19. Loading the test data.....	30
-20. Saving the waveform graph .....	31
-21. Saving the graph of the LC and RC area judgment values .....	32
-22. Saving the voltage values .....	33

-23. Saving the discharge quantities .....	34
-24. Saving the total judgment result and the judgment results .....	35
-25. Saving the test conditions .....	36
-26. Displaying the version information .....	37

### **-3. Supported products**

This application is available for the following product:

- ST4030

# 1. Overview

This application is sample application software for the impulse winding tester (Impulse Winding Tester Sample Application).

## -1. Functionality

This application has the following functions:

- Setting the test conditions and the judgment conditions
- Executing the voltage calibration
- Executing the tests
- Displaying the waveform graph and the graph of the LC and RC area judgment values
- Saving the waveform graph and the graph of the LC and RC area judgment values
- Displaying the voltage values and the discharge quantities
- Saving the voltage values and the discharge quantities
- Displaying the judgment results
- Saving the judgment results
- Displaying the test conditions
- Saving the test conditions
- Selecting the tables
- Capturing the screen
- Loading the test data
- Saving the test data

## -2. Operating environment

Supported operating systems	Windows 7 (32 bit/64 bit) Windows 8 (32 bit/64 bit) Windows 10 (32 bit/64 bit)
Software environment	Microsoft .NET Framework 4.6
CPU	1 GHz or greater
RAM	512 MB or greater
Display resolution	1024 x 768 pixels or greater
Hard disk	At least 5 MB available (If .NET Framework 4.6 has not yet been installed, an additional 900 MB of space is required. Additional space is required in order to store recorded data.)
Communications interfaces	USB, LAN, RS-232C, GPIB

The following cables are required in order to connect the impulse winding tester to a computer:

- USB connection: USB cable (AB type)
- LAN connection: LAN cross cable
- RS-232C connection: RS-232C cross cable (9-pin female to 9-pin female)
- GPIB connection: National Instruments GPIB-USB-HS

## 2. Installation procedure

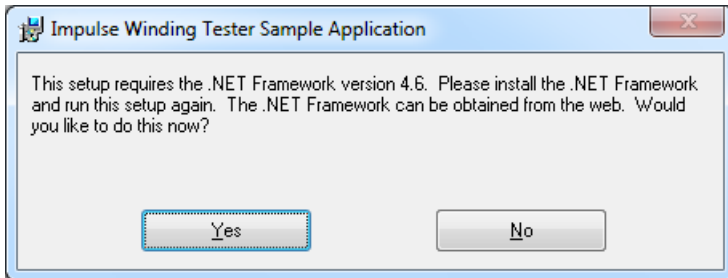
### -1. Installation

Execute the setup file (IWTSampAppENxxx.msi).

Note: "xxx" represents the version number.

Note: The operation of the application requires .NET Framework 4.6.

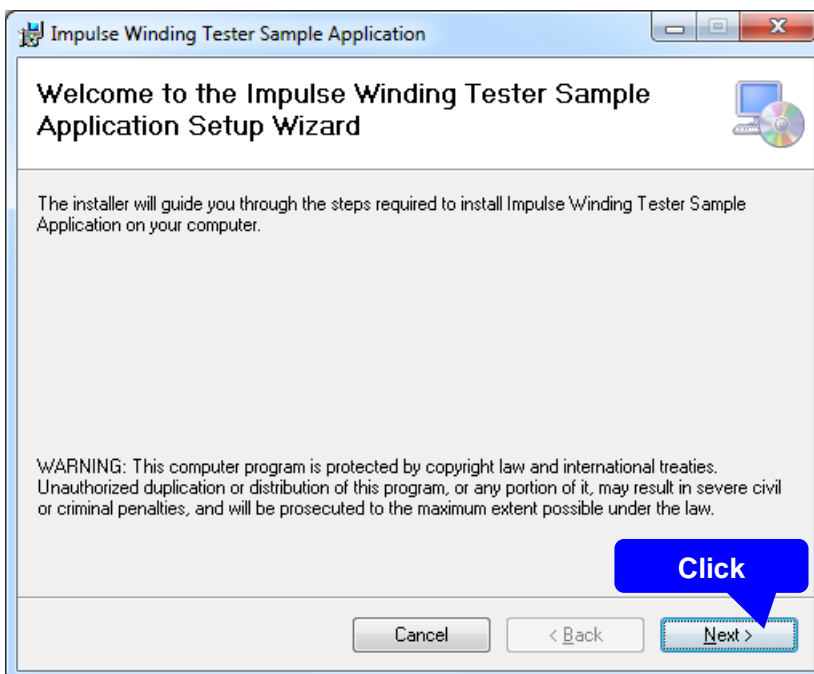
If .NET Framework 4.6 is not installed on the computer on which the application is to be installed, the following window appears.



Clicking the [Yes] button displays the website where you can download .NET Framework. Download and install .NET Framework.

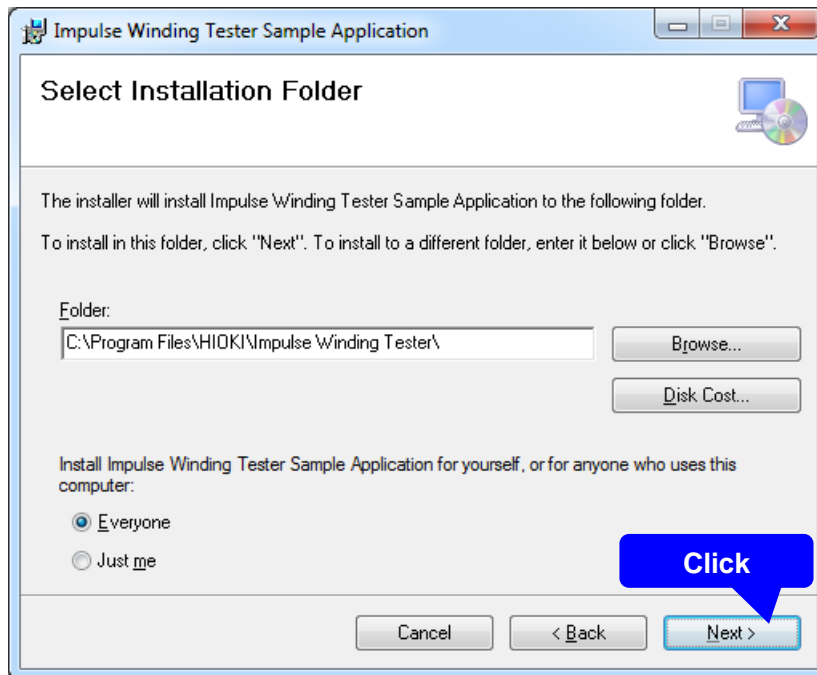
Note: If you use the application on a computer that is not connected to the Internet, download .NET Framework 4.6 from the Microsoft web page using another computer that is connected to the Internet and install the downloaded software.

Click the [Next] button.

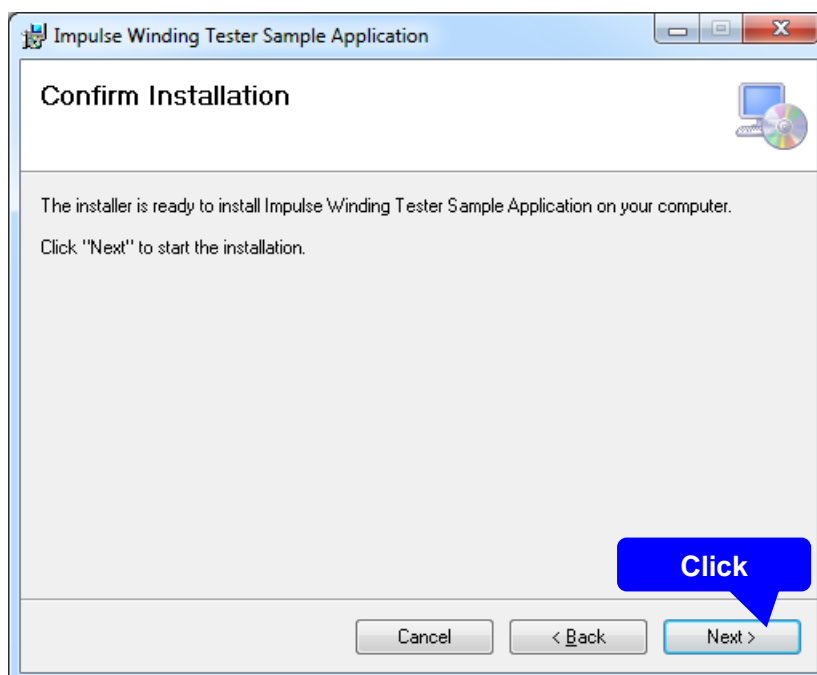


Click the [Next] button.

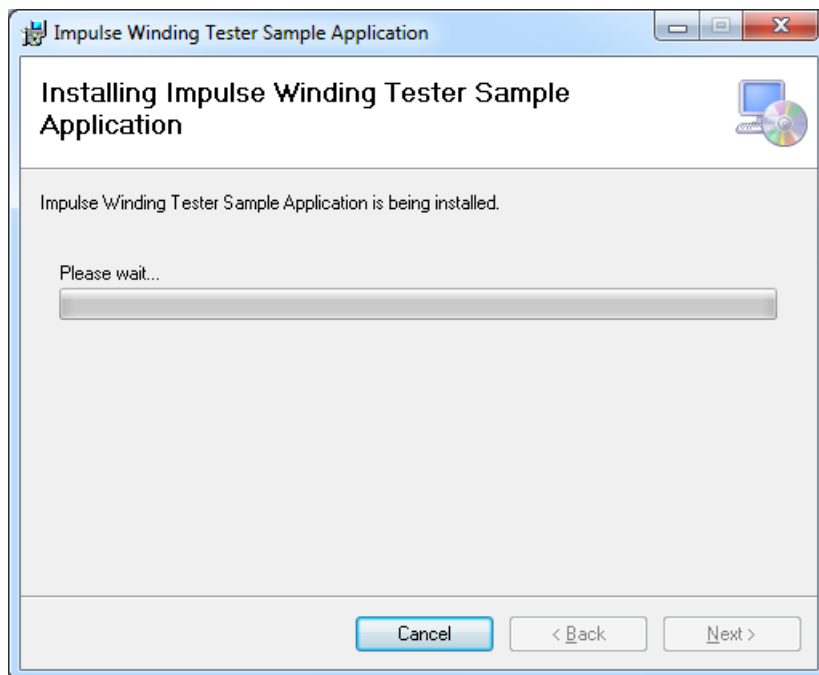
To change the installation destination, click the [Browse...] button to change the folder in which the application is to be installed. Normally, it is unnecessary to change the installation destination.



Click the [Next] button to start installation.

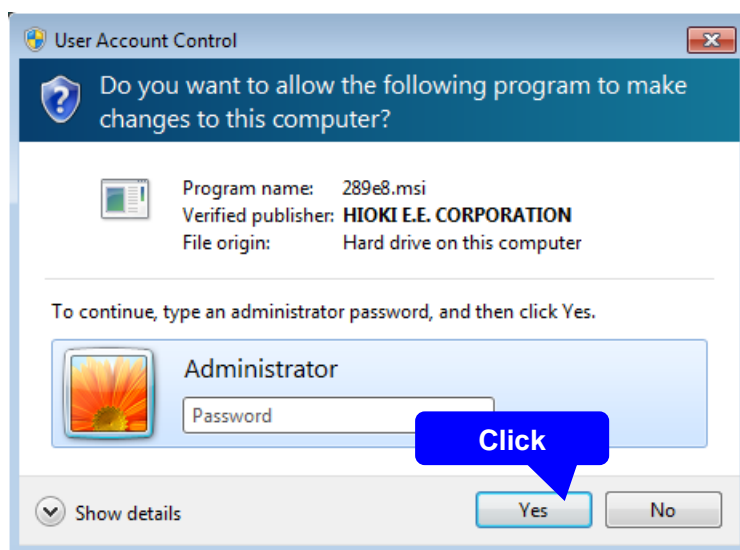


The installation starts.



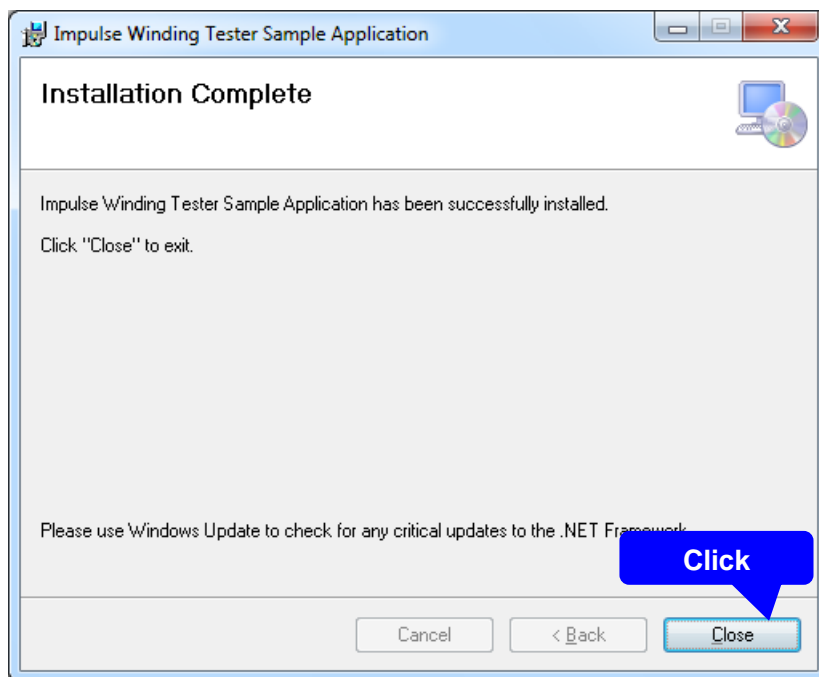
When the dialog box is displayed asking for permission to continue the program, click the [Yes] button.

If asked for the password of the administrator account, enter the password of the user.





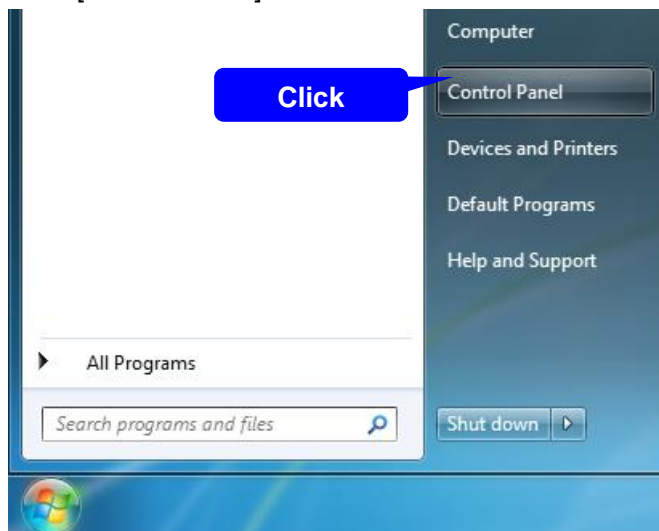
When the installation is completed and the dialog box is displayed, click the [Close] button.  
The installation of the application is now completed.



## -2. Uninstallation

Delete the application by following the steps below when it is no longer required.

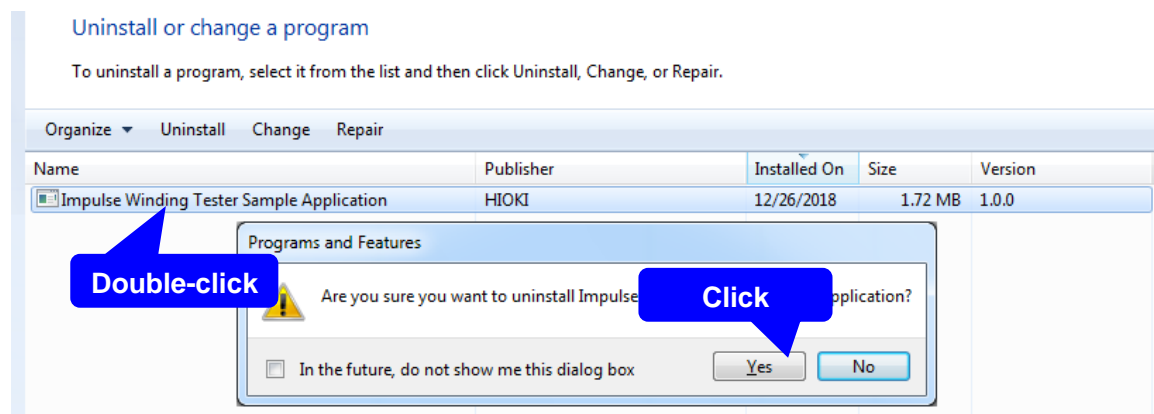
Click [Control Panel] in the Start Menu of Windows.



Click [Uninstall a program].



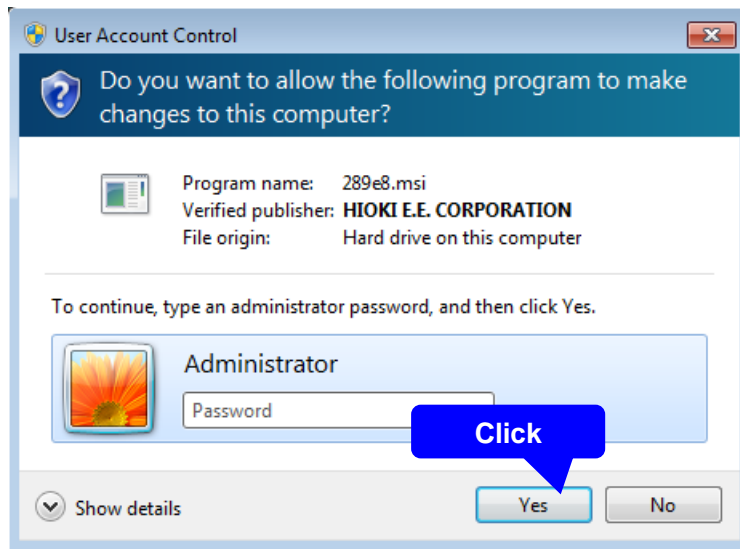
In the list of the currently installed programs, double-click [Impulse Winding Tester Sample Application].



When the [Programs and Features] dialog box is displayed, click the [Yes] button.

When the dialog box is displayed asking for permission to continue the program, click the [Yes] button.

If asked for the password of the administrator account, enter the password of the user.

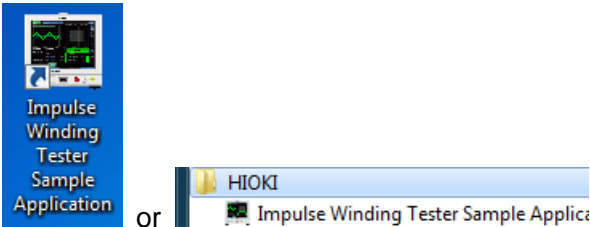


### 3. Usage

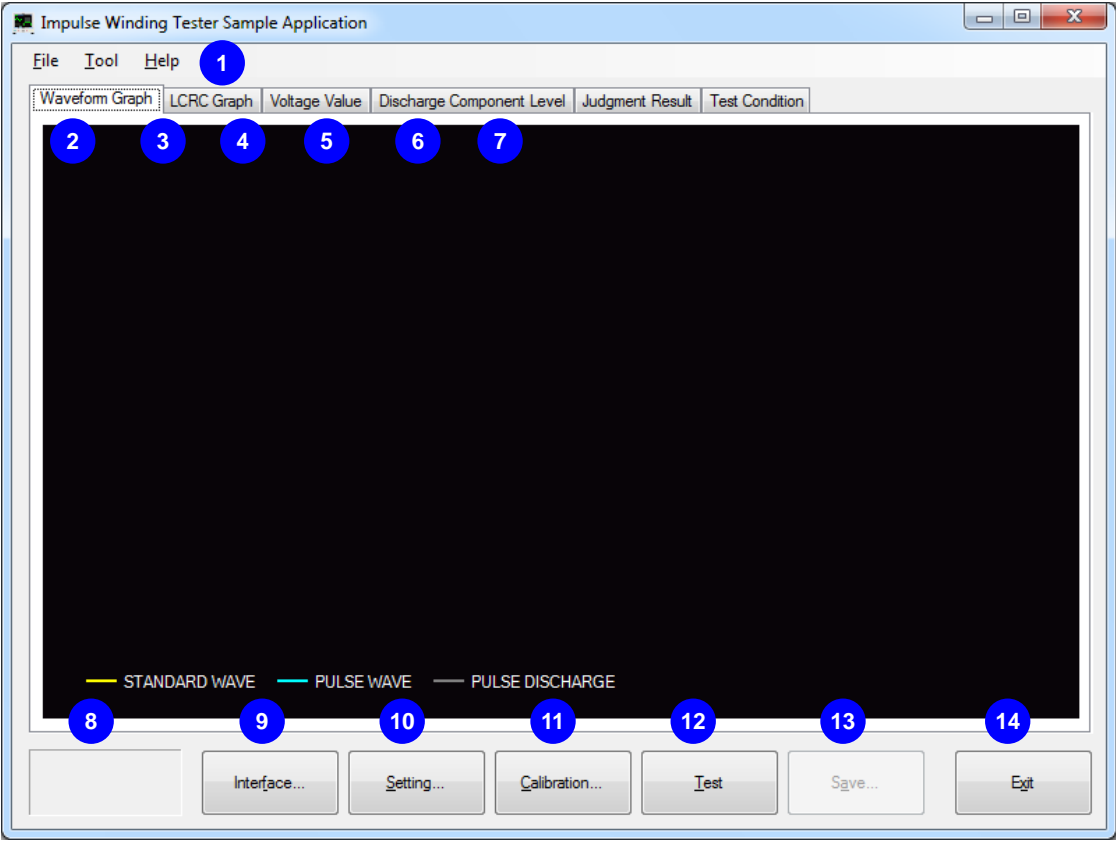
Before using the application, connect the impulse winding tester with the computer.  
To use the application with the USB connection, install the USB driver on the computer in advance.

#### -1. Startup

Click the icon on the desktop or click [Start] - [All Programs] - [HIOKI] - [Impulse Winding Tester Sample Application] to start the application.




When the application has started up, the Impulse Winding Tester Sample Application window is displayed.



No.	Item name	Description
1	Menu bar	Allows you to operate the [File], [Tool], and [Help] menus.
2	[Waveform Graph] tab	Displays the graph of the standard and test waveforms.
3	[LCRC Graph] tab	Displays the graph of the area judgment values for the LC and RC values.

No.	Item name	Description
4	[Voltage Value] tab	Lists the voltage values of the standard waveform and the voltage values of the test waveform for each pulse.
5	[Discharge Component Level] tab	Lists the discharge quantities of the test waveform for each pulse.
6	[Judgment Result] tab	Displays the judgment result for each judgment method.
7	[Test Condition] tab	Displays the test conditions.
8	Total judgment result display	Displays the total judgment result.
9	[Interface...] button	Sets the communication interface.
10	[Setting...] button	Sets the test conditions and the judgment conditions.
11	[Calibration...] button	Calibrates the voltages.
12	[Test] button	Executes the tests.
13	[Save...] button	Saves the contents of the selected tab page (the waveform graph, the graph of LC and RC area judgment values, the voltage values of the standard waveform, the voltage values of the test waveform, the discharge quantities of the test waveform, or the judgment results) to a file.
14	[Exit] button	Exits the application.

## -2. Exit

Click the [Exit] or  button or select the [File] - [Exit] menu to exit the application.

## -3. Menu bar configuration

File Tool Help

### (1) [File] menu

Menu	Description
Load Test Data...	Loads the test data from a file.
Save Test Data...	Saves the test data to a file.
Exit	Exits the application.

### (2) [Tool] menu

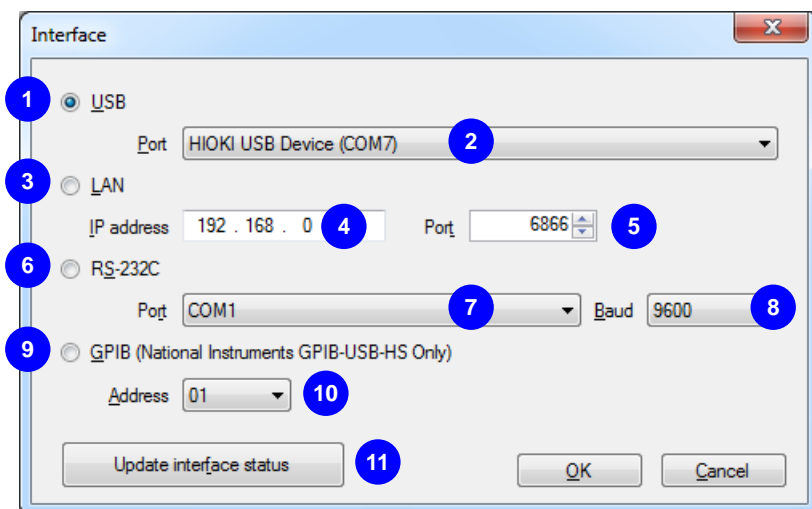
Menu	Description
Select Table...	Selects the table.
Graph Setting...	Specifies the display settings of the graphs.
Screen Capture...	Saves the measurement screen to a BMP file.
Option...	Switches the display language of the application.

(3) [Help] menu

Menu	Description
About Impulse Winding Tester Sample Application...	Displays the version information of the application.

#### -4. Setting the communication interface

Click [Interface...] to display the Interface screen.



Set the interface and the communication conditions to connect the computer and the impulse winding tester. Click the [OK] button to change the communication interface settings.

If the measurement instrument connected to the computer has been changed, clicking the [Update interface status] button updates the Interface window.

No.	Item name	Description
1	USB	Selects the USB interface.
2	USB - Port	Sets the port of the USB interface.
3	LAN	Selects the LAN interface.
4	LAN - IP address	Sets the IP address of the LAN interface.
5	LAN - Port	Sets the port of the LAN interface.
6	RS-232C	Selects the RS-232C interface.
7	RS-232C - Port	Sets the port of the RS-232C interface.
8	RS-232C - Baud	Sets the speed of the RS-232C interface.
9	GPIB	Selects the GPIB interface.
10	GPIB - Address	Sets the address of the GPIB interface.
11	[Update interface status] button	Updates the status of the interface.

## -5. Setting the test conditions and the judgment conditions

Click the [Setting...] button to display the Setting window.

Set the test conditions and the judgment conditions in each tab. Clicking the [OK] button sends the test conditions and the judgment conditions to the impulse winding tester.

### (1) Setting the test conditions

Set the test conditions.

Click the [OUTPUT] tab.

OUTPUT JUDGE

1 VOLT 100 V

2 PULSE NUM 5

3 DEGAUSS NUM 0

4 PULSE PERIOD 0.050 s

5 SAMPLING 200MHz

6 RECORD LENGTH 8001

7 AUTO SET OFF

8 TRIG DELAY 0.000 s

No.	Item name	Description
1	VOLT	Sets the voltage to be applied.
2	PULSE NUM	Sets the number of the measurement pulses.
3	DEGAUSS NUM	Sets the number of the degaussing pulses.
4	PULSE PERIOD	Sets the minimum applicable pulse interval.
5	SAMPLING	Sets the sampling frequency.
6	RECORD LENGTH	Sets the number of sampling data.
7	AUTO SET	Sets the auto settings for the waveform acquisition scope.
8	TRIG DELAY	Sets the trigger delay time.

(2) Setting the area judgment conditions of the LC and RC values

Set the area judgment conditions of the LC and RC values.

Click the [JUDGE] tab and then the [LCRC AREA] tab.

The screenshot shows the 'JUDGE' tab selected in the software interface. Under the 'LCRC AREA' sub-tab, there are two main settings: 'ENABLE' and 'JUDGE', both set to 'ON'. Below these, there are four point settings: POINT1, POINT2, POINT3, and POINT4. Each point has two input fields: 'LC' (Left Column) and 'RC' (Right Column). The values for LC are all 4.463E-014, and the values for RC are 1.197E-008 for POINT1 and POINT2, and 1.005E-008 for POINT3 and POINT4. The tabs at the top are OUTPUT, JUDGE, LCRC AREA, DISCHARGE, AREA, DIFF AREA, FLUTTER, and LAPLACIAN.

No.	Item name	Description
1	ENABLE	Enables or disables the LC/RC value area judgments.
2	JUDGE	Turns ON and OFF the LC/RC value area judgments.
3	POINT1	Sets the LC and RC coordinates of vertex 1 of the good area for the area judgment of the LC and RC values.
4	POINT2	Sets the LC and RC coordinates of vertex 2 of the good area for the area judgment of the LC and RC values.
5	POINT3	Sets the LC and RC coordinates of vertex 3 of the good area for the area judgment of the LC and RC values.
6	POINT4	Sets the LC and RC coordinates of vertex 4 of the good area for the area judgment of the LC and RC values.



(3) Setting the discharge judgment conditions

Set the discharge judgment conditions.

Click the [JUDGE] tab and then the [DISCHARGE] tab.

Note: If DISCHARGE DETECTION UPGRADE (ST9000) is not incorporated, the discharge judgment conditions cannot be set.

The screenshot shows a software interface for setting discharge judgment conditions. At the top, there are two tabs: 'OUTPUT' and 'JUDGE'. The 'JUDGE' tab is active. Below it, there are several sub-tabs: 'LCRC AREA', 'DISCHARGE' (which is selected), 'AREA', 'DIFF AREA', 'FLUTTER', and 'LAPLACIAN'. The 'DISCHARGE' sub-tab contains four numbered settings:

- 1. **ENABLE**: A dropdown menu currently set to 'AUTO'.
- 2. **JUDGE**: A dropdown menu currently set to 'ON'.
- 3. **LIMIT**: A numeric input field set to '6', followed by a 'sigma' label.
- 4. **CALCULATE LENGTH**: A dropdown menu currently set to '8001'.

No.	Item name	Description
1	ENABLE	Turns ON and OFF the discharge judgments.
2	JUDGE	Enables or disables the discharge judgments.
3	LIMIT	Sets the threshold for the discharge judgment.
4	CALCULATE LENGTH	Sets the number of data for the discharge judgment.

(4) Setting the judgment conditions for the waveform surface area comparison

Set the judgment conditions for the waveform surface area comparison.

Click the [JUDGE] tab and then the [AREA] tab.

The screenshot shows the 'JUDGE' tab with the 'AREA' sub-tab selected. The settings are as follows:

- 1** ENABLE: ON
- 2** LIMIT: ON
- 3** Limit value: 0.54 %
- 4** AUTO SET: ON
- 5** BEGIN: 868
- 6** END: 1139
- 7** Time threshold: 4.335 us
- 8** Time threshold: 5.690 us

No.	Item name	Description
1	ENABLE	Turns ON and OFF the waveform surface area comparison judgments.
2	LIMIT	Enables or disables the waveform surface area comparison judgment limit values.
3	LIMIT	Sets the limit value for the waveform surface area comparison judgments.
4	AUTO SET	Sets the automatic settings for the judgment scope and threshold value of waveform surface area comparison judgments.
5	BEGIN	Sets the beginning point of the judgment section for the waveform difference surface area comparisons.
6	END	Sets the end point of the judgment section for the waveform difference surface area comparisons.
7		Displays the beginning point of the judgment section for the waveform difference surface area comparisons in the time unit.
8		Displays the end point of the judgment section for the waveform difference surface area comparisons in the time unit.

- (5) Setting the judgment conditions for the waveform difference surface area comparison
- Set the judgment conditions for the waveform difference surface area comparison.
- Click the [JUDGE] tab and then the [DIFF AREA] tab.

The screenshot shows the 'JUDGE' tab with the 'DIFF AREA' sub-tab selected. The settings are as follows:

- 1** ENABLE: ON
- 2** LIMIT: ON
- 3** LIMIT: 3.03 %
- 4** AUTO SET: ON
- 5** BEGIN: 868
- 6** END: 1139
- 7** BEGIN: 4.335 us
- 8** END: 5.690 us

No.	Item name	Description
1	ENABLE	Turns ON and OFF the waveform difference surface area comparison judgments.
2	LIMIT	Enables/disables the limit value for the waveform difference surface area comparison judgments.
3	LIMIT	Sets the limit value for the waveform difference surface area comparison judgments.
4	AUTO SET	Sets the automatic settings for the judgment scope and threshold value of comparison judgments of waveform difference surface areas.
5	BEGIN	Sets the beginning point of the judgment section for the waveform difference surface area comparisons.
6	END	Sets the end point of the judgment section for the waveform difference surface area comparisons.
7		Displays the beginning point of the judgment section for the waveform difference surface area comparisons in the time unit.
8		Displays the end point of the judgment section for the waveform difference surface area comparisons in the time unit.

(6) Setting the judgment conditions for the waveform flutter detection

Set the judgment conditions for the waveform flutter detection.

Click the [JUDGE] tab and then the [FLUTTER] tab.

The screenshot shows the 'JUDGE' tab with the 'FLUTTER' sub-tab selected. The settings are as follows:

- 1** ENABLE: ON
- 2** LIMIT: ON
- 3** LIMIT: 269
- 4** AUTO SET: ON
- 5** BEGIN: 868
- 6** END: 1139
- 7** BEGIN: 4.335 us
- 8** END: 5.690 us

No.	Item name	Description
1	ENABLE	Turns ON and OFF the waveform flutter detection judgments.
2	LIMIT	Enables or disables the waveform flutter detection judgment limits.
3	LIMIT	Sets the limit value for the waveform flutter detection judgments.
4	AUTO SET	Sets the automatic settings for the judgment range and threshold value of the waveform flutter detection judgments.
5	BEGIN	Sets the beginning point of the judgment section for the waveform flutter detections.
6	END	Sets the end point of the judgment section for the waveform flutter detections.
7		Displays the beginning point of the judgment section for the waveform flutter detections in the time unit.
8		Displays the end point of the judgment section for the waveform flutter detections in the time unit.

- (7) Setting the judgment conditions for the waveform secondary differential detections
- Set the judgment conditions for the waveform secondary differential detections.
- Click the [JUDGE] tab and then the [LAPLACIAN] tab.

The screenshot shows the 'JUDGE' tab with the 'LAPLACIAN' sub-tab selected. The settings are as follows:

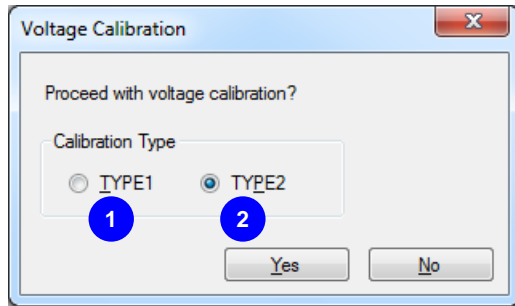
- 1** ENABLE: ON
- 2** LIMIT: ON
- 3** LIMIT: 44
- 4** AUTO SET: ON
- 5** BEGIN: 868
- 6** END: 1139
- 7** BEGIN: 4.335 us
- 8** END: 5.690 us

No.	Item name	Description
1	ENABLE	Turns ON and OFF the waveform secondary differential detection judgments.
2	LIMIT	Enables or disables the waveform secondary differential detection judgment limits.
3	LIMIT	Sets the limit value for the waveform secondary differential detection judgments.
4	AUTO SET	Enables the automatic settings for judgment scope and threshold value of waveform secondary differential detection judgments.
5	BEGIN	Sets the beginning point of the judgment section for the waveform secondary differential detections.
6	END	Sets the end point of the judgment section for the waveform secondary differential detections.
7		Displays the beginning point of the judgment section for the waveform secondary differential detections in the time unit.
8		Displays the end point of the judgment section for the waveform secondary differential detections in the time unit.

## -6. Executing the voltage calibration

Calibrates the voltages.

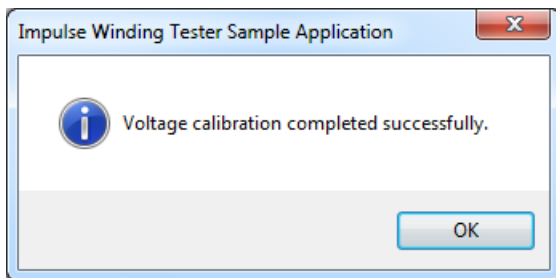
Click the [Calibration...] button to display the Voltage Calibration window.



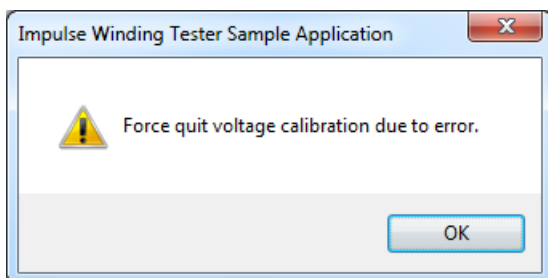
Select the calibration type and click the [Yes] button to start the voltage calibration.

No.	Item name	Description
1	TYPE1	Disables the voltage calibration if the output voltage is insufficient.
2	TYPE2	Enables voltage calibration even if the output voltage is insufficient.

After the voltage calibration finished normally, the following window is displayed.



After the voltage calibration finished with any errors, the following window is displayed.



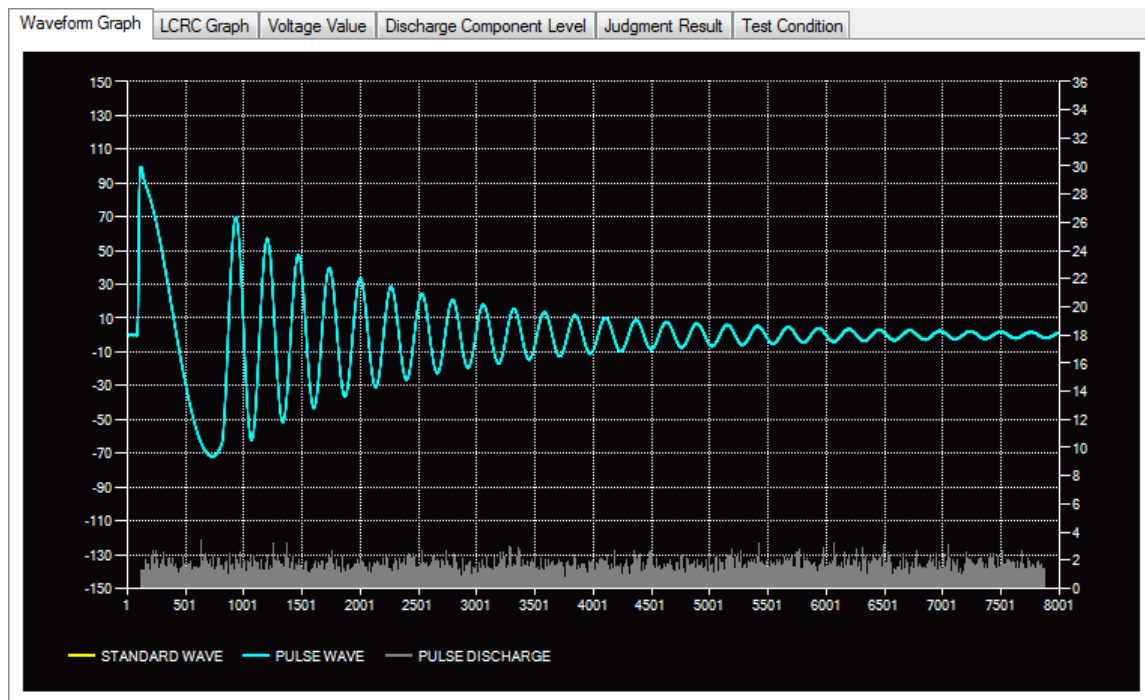
## -7. Executing the tests

Click the [Test] button to start the test. After the test finished, the test results are received and the following are displayed: the waveform graph, the graph of LC and RC area judgment values, the list of the voltage values, the list of the discharge quantities, the judgment results, and the total judgment result.

## -8. Displaying the waveform graph

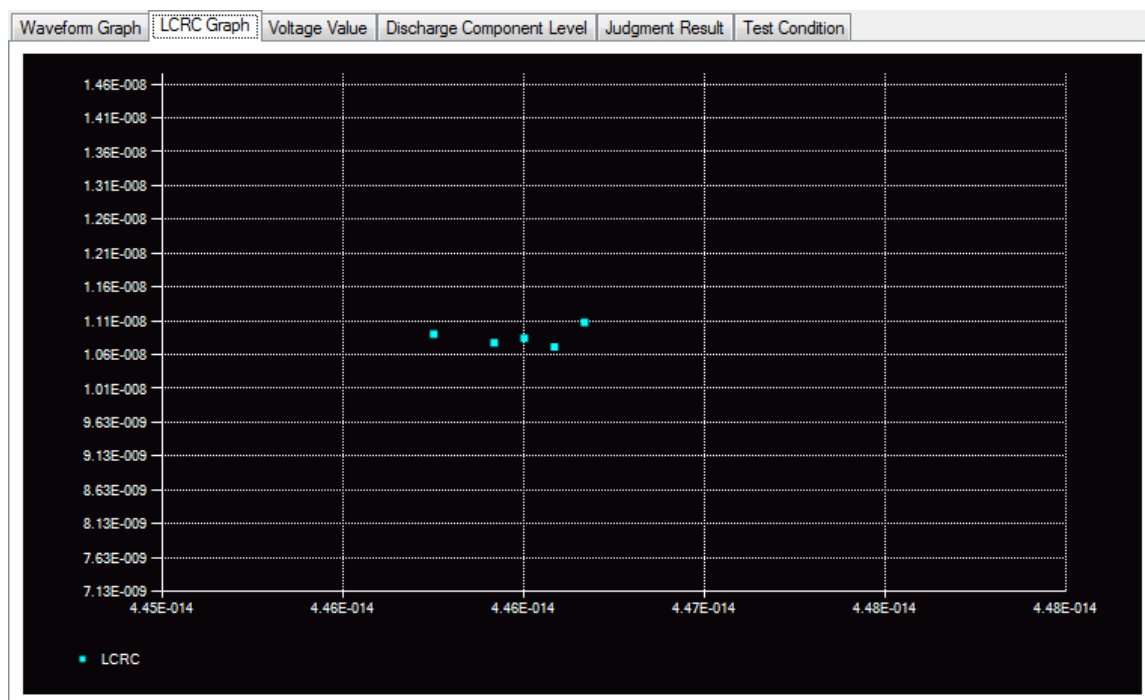
The graph of the standard and test waveforms is displayed in the [Waveform Graph] tab.

Note: If DISCHARGE DETECTION UPGRADE (ST9000) is not incorporated, the discharge quantities are not displayed.



## -9. Displaying the graph of the LC and RC area judgment values

The graph of the area judgment values for the LC and RC values is displayed in the [LCRC Graph] tab.

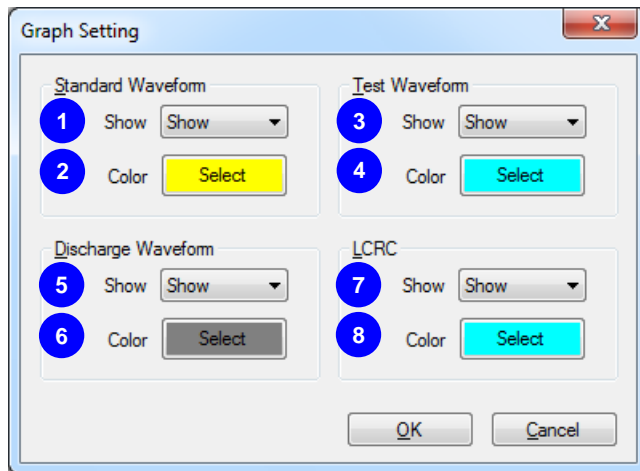


## -10. Setting the graph

Specifies the display settings of the graphs.

Select the [Tool] - [Graph Setting...] menu to display the Graph Setting window.

Note: If no test has been performed, the graph setting cannot be specified.



Change the setting and click the [OK] button to change the display of the graph.

No.	Item name	Description
1	Standard Waveform - Show	Sets whether to show the graph of the standard waveform.
2	Standard Waveform - Color	Sets the color to display the graph of the standard waveform.
3	Test Waveform - Show	Sets whether to show the graph of the test waveform.
4	Test Waveform - Color	Sets the color to display the graph of the test waveform.
5	Discharge Waveform - Show	Sets whether to show the graph of the discharge amount.
6	Discharge Waveform - Color	Sets the color to display the graph of the discharge amount.
7	LCRC - Show	Sets whether to show the graph of the LC and RC area judgment values.
8	LCRC - Color	Sets the color to display the graph of the LC and RC area judgment values.



## -11. Displaying the voltage values

The voltage values of the standard waveform and the voltage values of the test waveform for each pulse are displayed as a list in the [Voltage Value] tab.

Waveform Graph							
LCRC Graph							
Voltage Value							
Discharge Component Level							
Judgment Result							
Test Condition							
No.	STANDARD WAVE[V]	PULSE1 WAVE[V]	PULSE2 WAVE[V]	PULSE3 WAVE[V]	PULSE4 WAVE[V]	PULSE5 WAVE[V]	
1	0.18	-0.10	0.21	0.12	-0.04	-0.09	
2	-0.03	-0.08	0.06	0.22	0.03	0.05	
3	-0.19	-0.08	-0.10	0.14	-0.06	-0.02	
4	-0.08	-0.10	-0.07	0.01	-0.29	-0.26	
5	0.11	-0.13	0.07	-0.02	-0.41	-0.34	
6	0.08	-0.16	0.18	-0.03	-0.24	-0.10	
7	-0.11	-0.15	0.26	-0.15	-0.01	0.27	
8	-0.21	-0.10	0.29	-0.23	0.01	0.46	
9	-0.12	-0.06	0.19	-0.07	-0.17	0.38	
10	-0.05	-0.05	-0.02	0.19	-0.22	0.19	
11	-0.11	-0.06	-0.11	0.27	0.03	0.03	
12	-0.17	-0.07	0.05	0.17	0.29	-0.08	
13	-0.14	-0.06	0.24	0.10	0.21	-0.13	
14	-0.10	-0.05	0.20	0.12	-0.11	-0.10	
15	-0.09	-0.06	-0.01	0.15	-0.25	0.00	
16	-0.03	-0.09	-0.16	0.18	-0.10	0.11	
17	0.14	-0.15	-0.13	0.28	-0.04	0.16	
18	0.24	-0.18	-0.03	0.35	-0.33	0.11	
19	0.16	-0.11	0.04	0.24	-0.65	-0.05	
20	-0.01	0.07	0.04	0.08	-0.57	-0.20	

No.	Item name	Description
1	No.	Displays the point No.
2	STANDARD WAVE[V]	Displays the voltage values of the standard waveform.
3	PULSE1 WAVE[V] to PULSE32 WAVE[V]	Displays the voltage values of the test waveform for each pulse.

## -12. Displaying the discharge quantities

The discharge quantities of the test waveform for each pulse are displayed as a list in the [Discharge Component Level] tab.

Note: If DISCHARGE DETECTION UPGRADE (ST9000) is not incorporated, the discharge quantities are not displayed.

Waveform Graph	LCRC Graph	Voltage Value	Discharge Component Level	Judgment Result	Test Condition
No.	PULSE1 DISCHARGE	PULSE2 DISCHARGE	PULSE3 DISCHARGE	PULSE4 DISCHARGE	PULSE5 DISCHARGE
1	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00

No.	Item name	Description
1	No.	Displays the point No.
2	PULSE1 DISCHARGE to PULSE32 DISCHARGE	Displays the discharge quantities for each pulse.

### -13. Displaying the judgment results

The judgment result is displayed for each judgment method in the [Judgment Result] tab.

Note: If DISCHARGE DETECTION UPGRADE (ST9000) is not incorporated, the judgment result for the discharge is not displayed.

[illegible]

No.	Item name	Description
1	Judgment Method	Displays the judgment method (LCRC: LC and RC value area judgment, DISCHARGE: discharge judgment, AREA: waveform surface area comparison judgment, DIFF AREA: waveform difference surface area comparison judgment, FLUTTER: waveform flutter detection judgment, and LAPLACIAN: waveform secondary differential detection judgment).
2	ON/OFF	Displays whether the judgment is ON or OFF for each judgment method.
3	Limit value	Displays the judgment limit value for each judgment method.
4	Judgment Value	Displays the judgment value for each judgment method.
5	Judgment Result	Displays the judgment result for each judgment method.

## -14. Displaying the test conditions

The test conditions are displayed in the [Test Condition] tab.

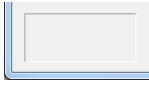
[illegible]

No.	Item name	Description
1	TABLE No.	Displays the table No. and name.
2	VOLTAGE	Displays the voltage to be applied.
3	PULSE NUM	Displays the number of the pulses to be applied (the number of the measured pulses and the number of the degaussing pulses).
4	S/s	Displays the sampling speed.
5	RECORD LENGTH	Displays the number of the sampling data.
6	DELAY	Displays the trigger delay time.

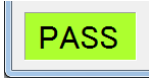
### **-15. Displaying the total judgment result**

Displays the total judgment result.

(1) Not judged



(2) PASS judgment



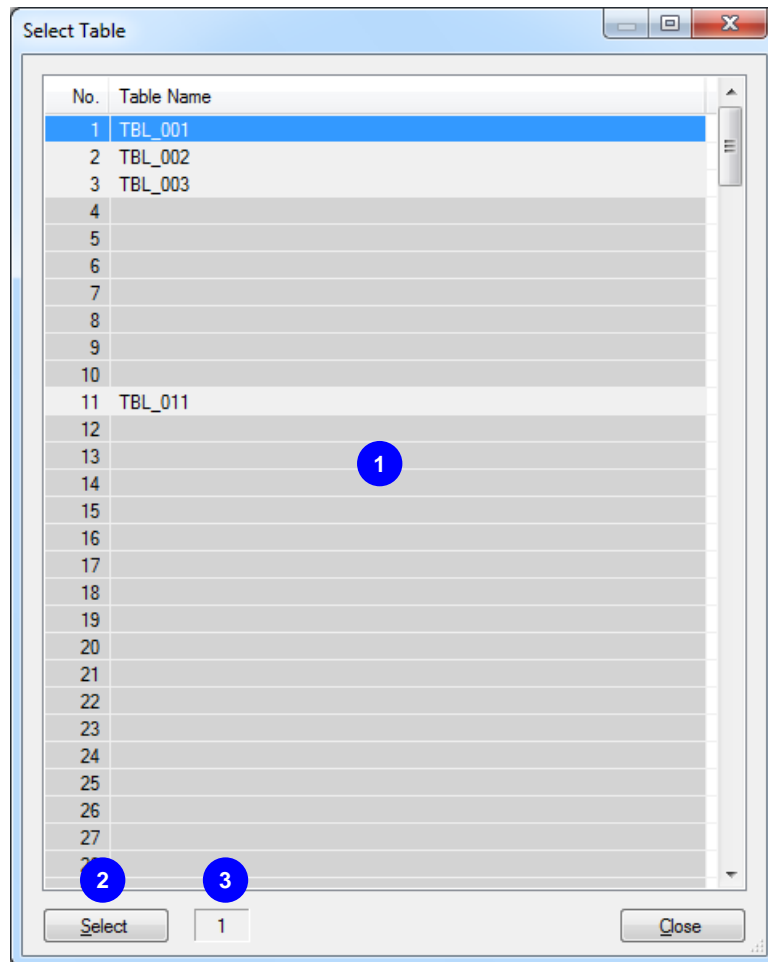
(3) FAIL judgment



## -16. Selecting the tables

Selects the table.

Select the [Tool] - [Select Table...] menu to display the Select Table window.



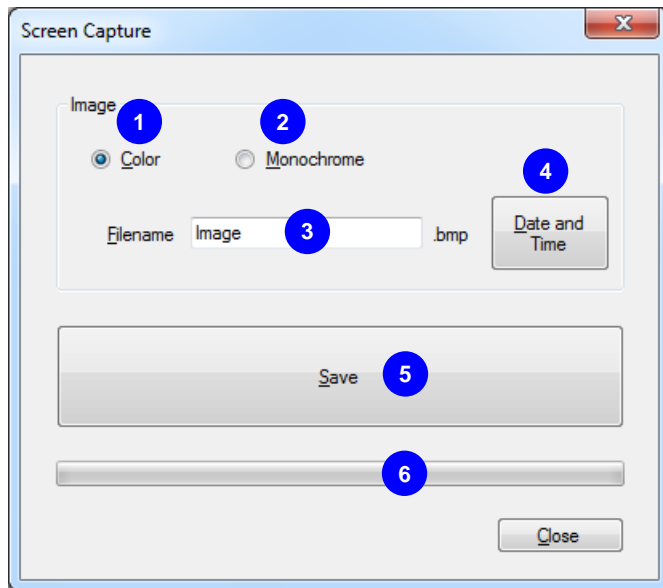
Select the line of the table No. to be selected and click the [Select] button to select the table.

No.	Item name	Description
1	Table list	The table No. and name are listed. The table whose line has a gray background has not been saved.
2	[Select] button	Selects the table whose line is selected in the table list.
3	Selected table No. display	The table No. of the selected table is displayed.

## -17. Capturing the screen

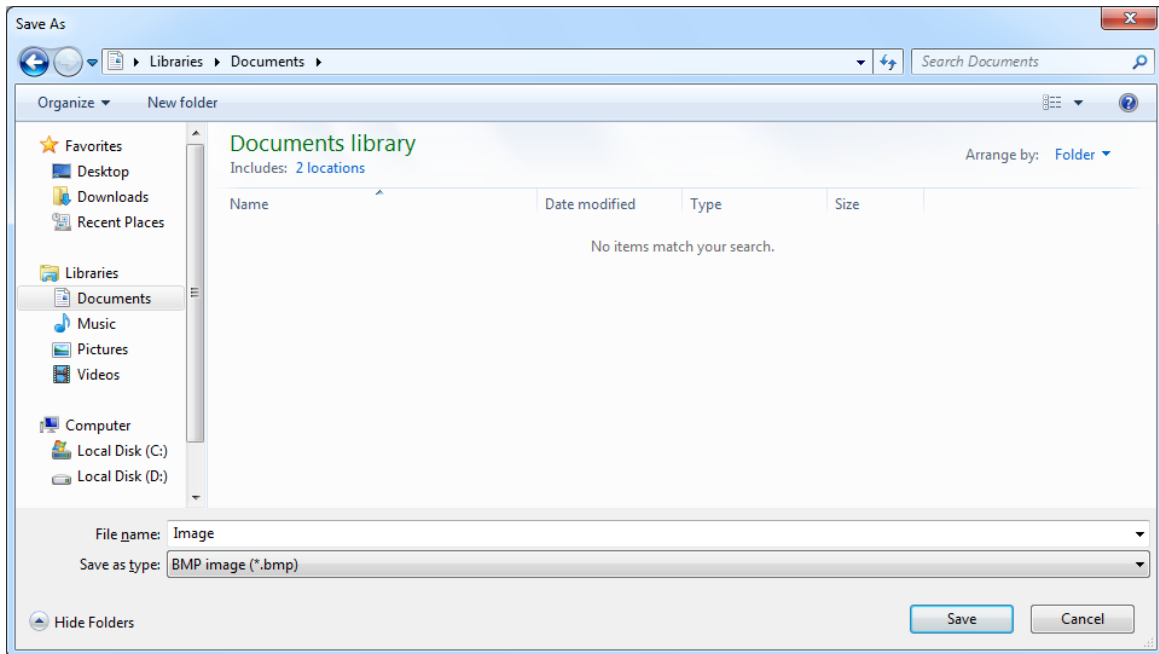
Saves the measurement screen to a BMP file.

Select the [Tool] - [Screen Capture...] menu to display the Screen Capture window.



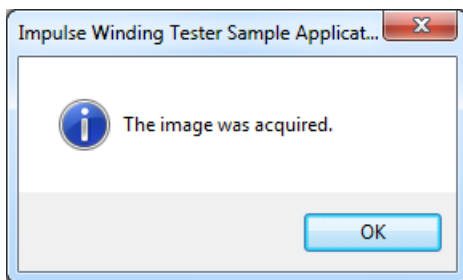
Specify the image type and the file name and click the [Save] button to display the Save As window.

No.	Item name	Description
1	Color	Saves as a color BMP file.
2	Monochrome	Saves as a monochrome BMP file.
3	Filename	Sets the image file name.
4	[Date and Time] button	Sets the current date and time for the file name.
5	[Save] button	Displays the Save As window to specify the file name.
6	Progress bar	The progress of saving is displayed.

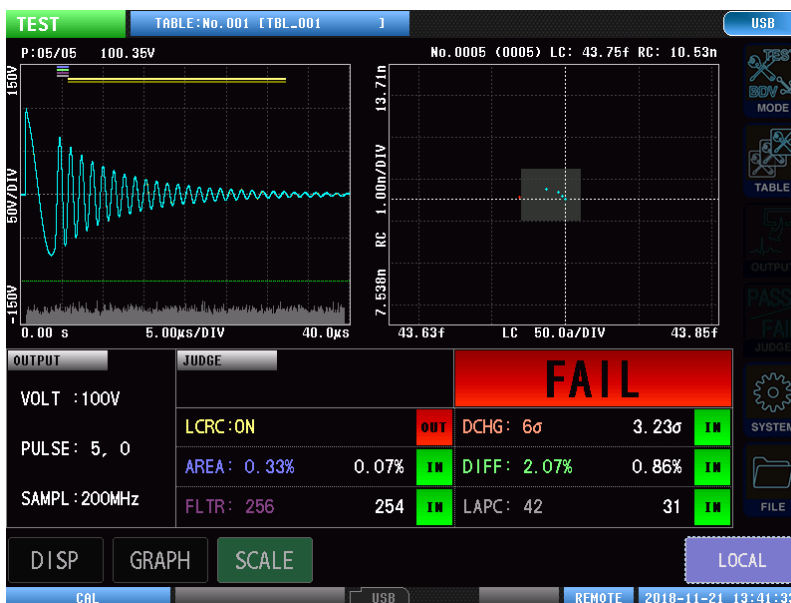


Specify the file name and click the [Save] button to receive the measurement screen of the impulse winding tester and save the screen to a file.

After the saving of the measurement screen finished, the following window is displayed.



Example of a BMP file of the measurement screen

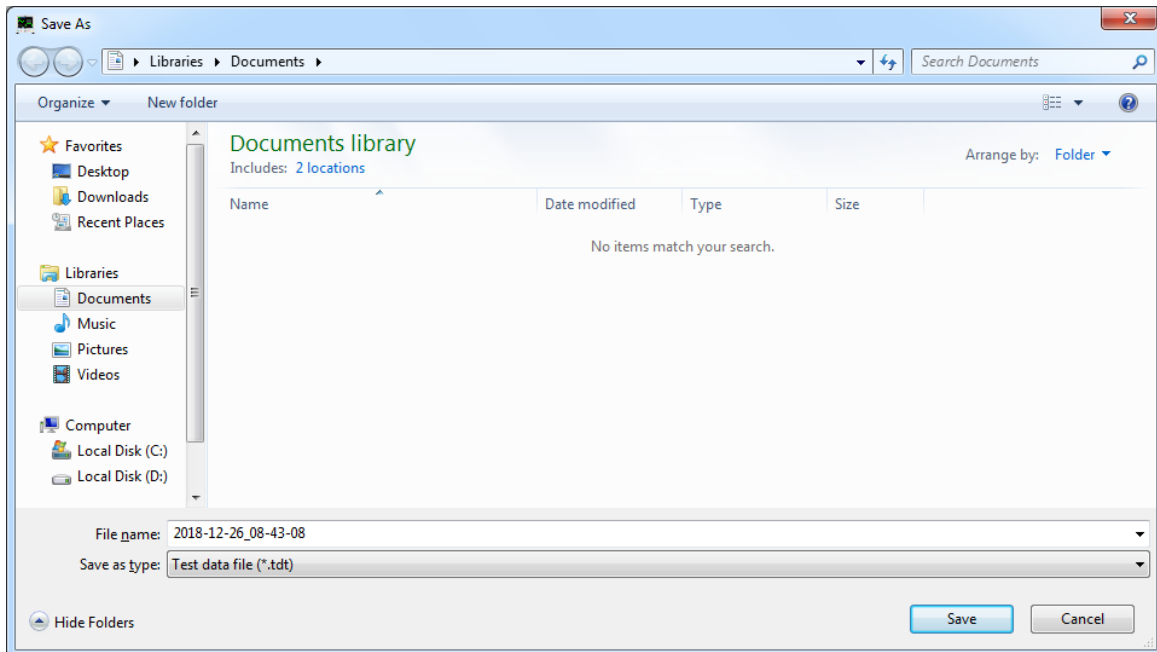




## -18. Saving the test data

Saves the test data to a file.

Select the [File] - [Save Test Data...] menu to display the Save As window.

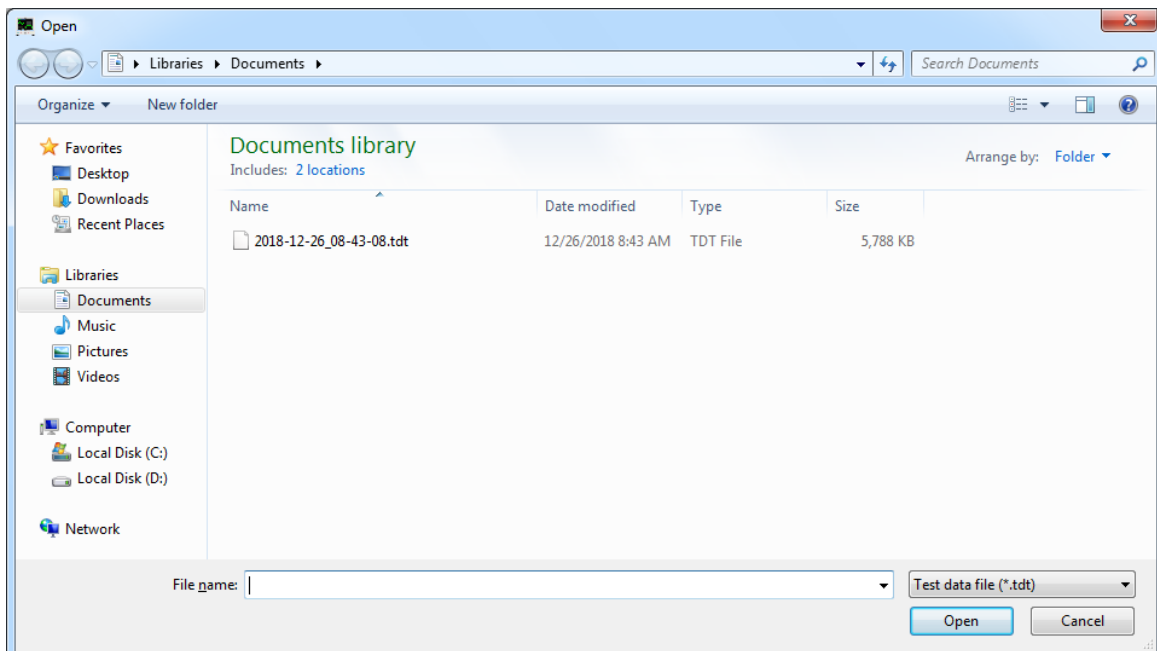


Specify the file name and click the [Save] button to save the test data to a file.

## -19. Loading the test data

Loads the test data from a file.

Select the [File] - [Load Test Data...] menu to display the Open window.

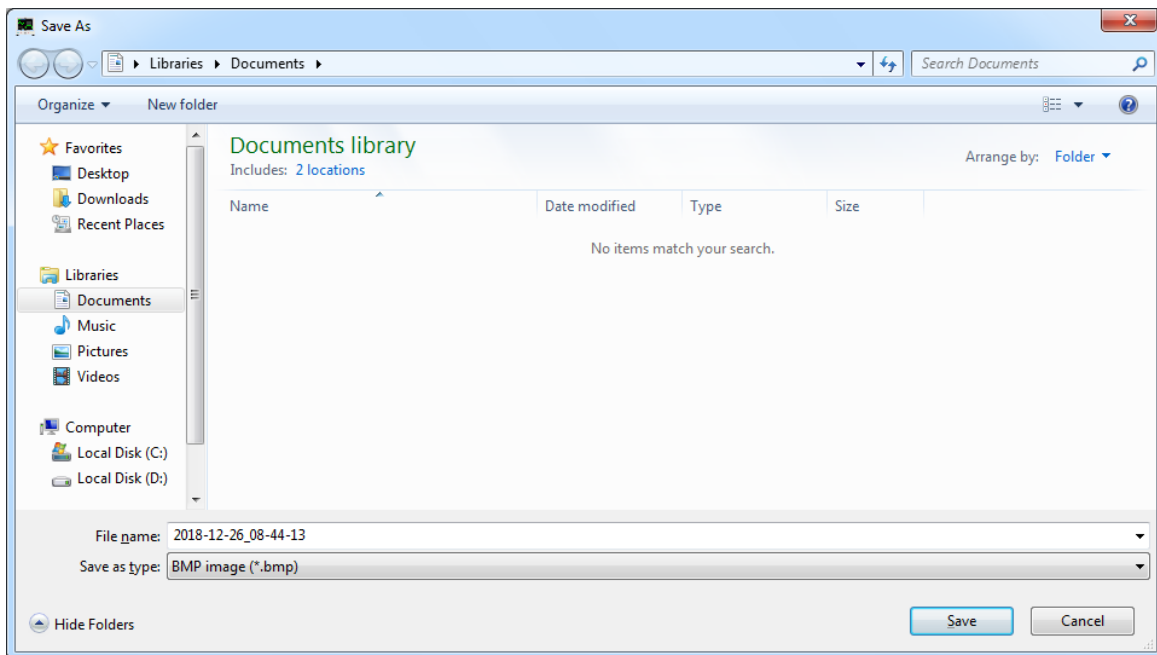


Select the target test data file and click the [Open] button to load the test data from the file.

## -20. Saving the waveform graph

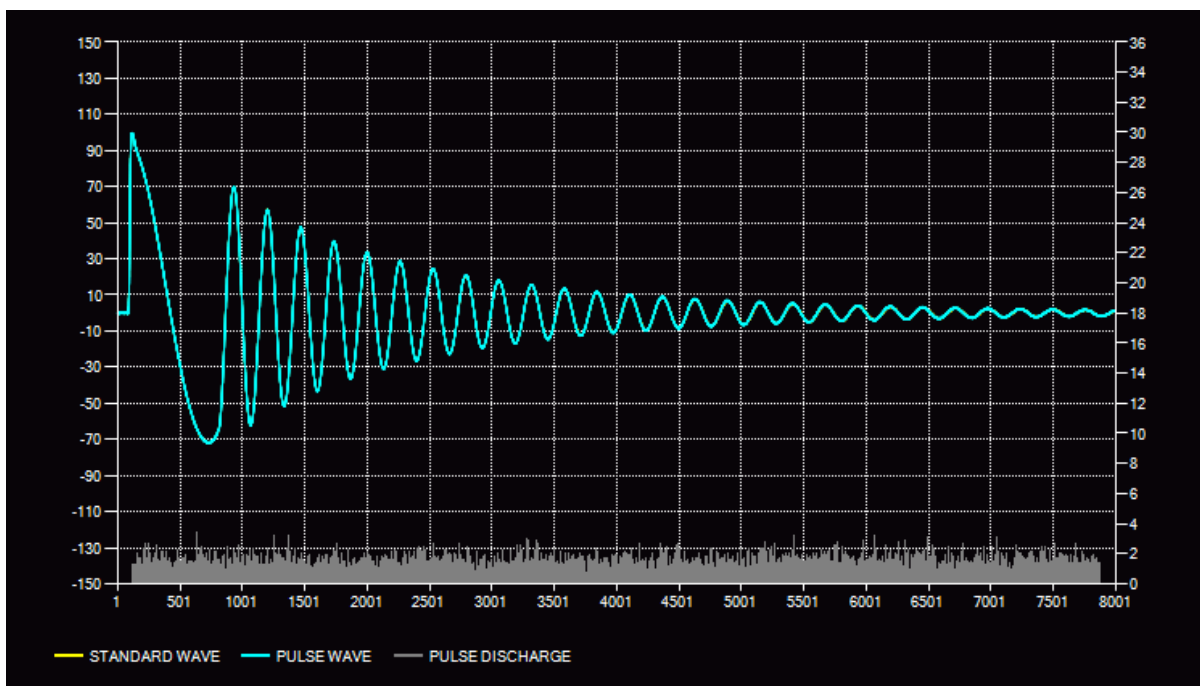
Save the waveform graph to an image file.

While the [Waveform Graph] tab is displayed, click the [Save...] button to display the Save As window.



Specify the file name and type and click the [Save] button to save the waveform graph to an image file.

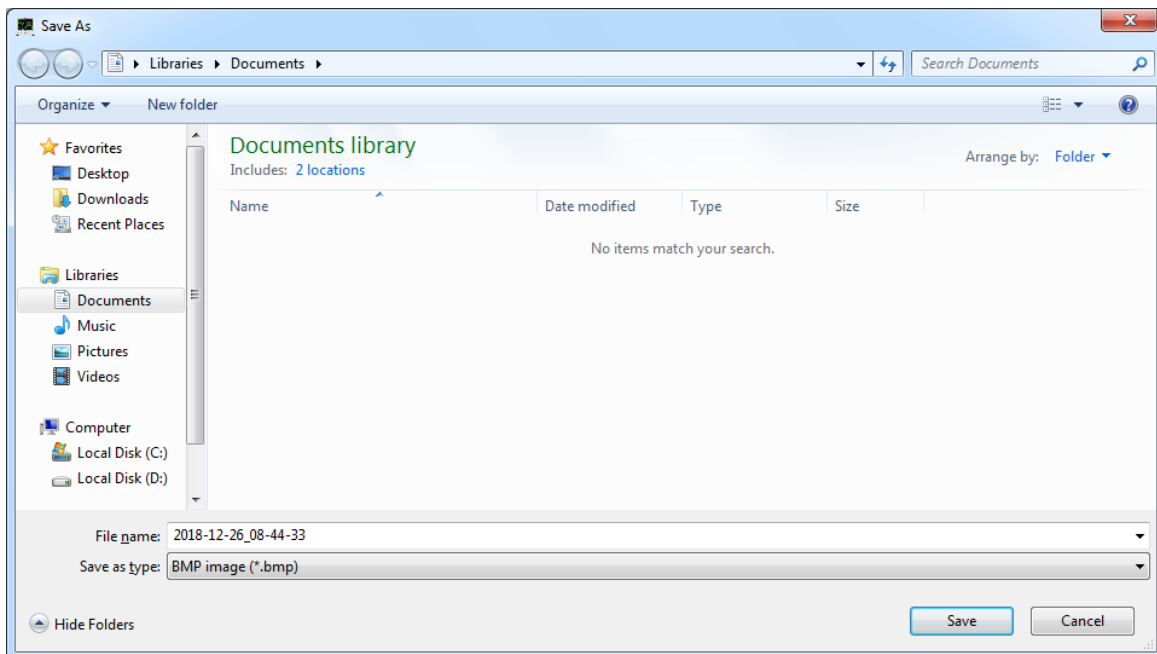
Example of an image file of the waveform graph



## -21. Saving the graph of the LC and RC area judgment values

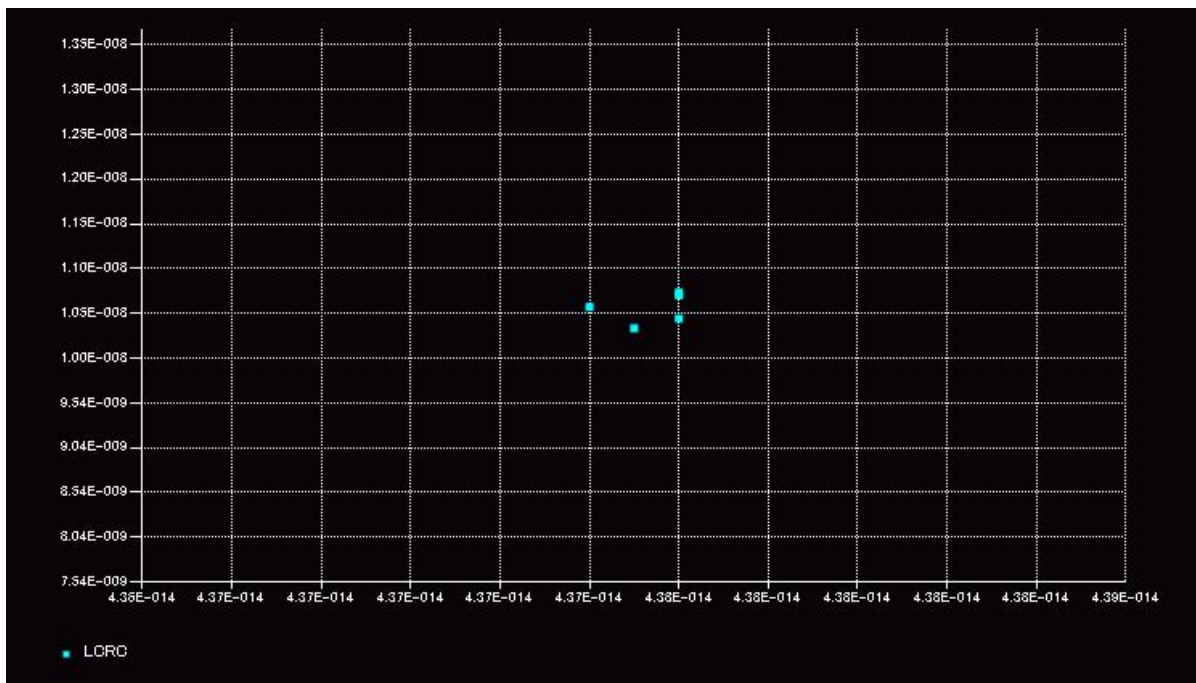
Save the graph of the LC and RC area judgment values to an image file.

While the [LCRC Graph] tab is displayed, click the [Save...] button to display the Save As window.



Specify the file name and type and click the [Save] button to save the graph of the LC and RC area judgment values to an image file.

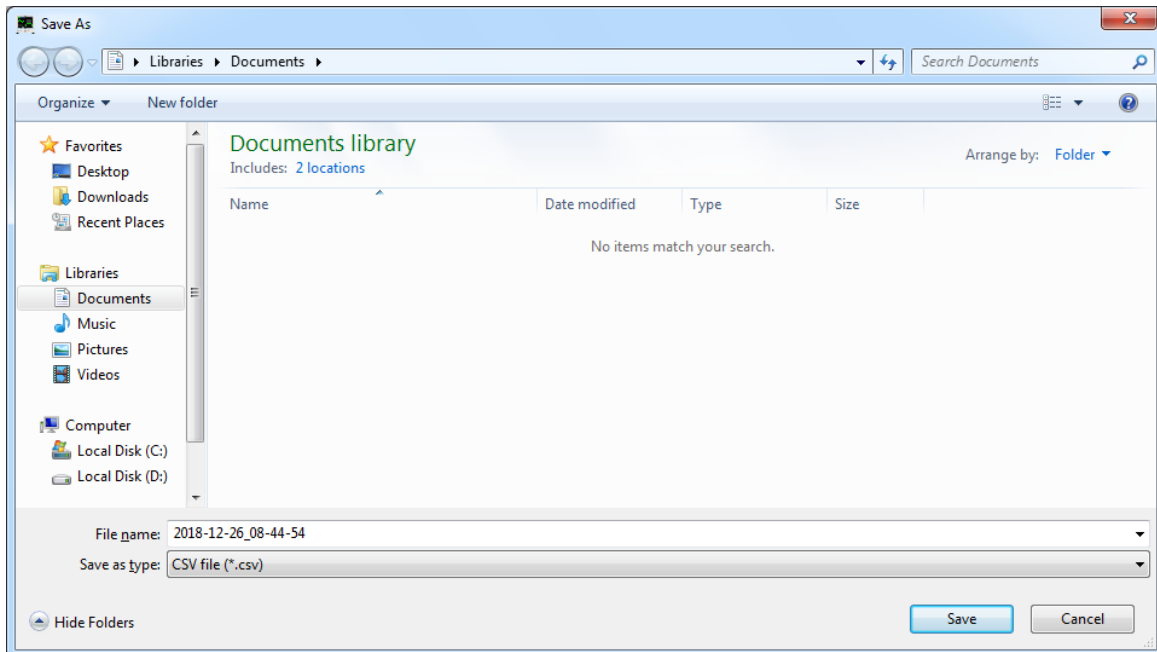
Example of an image file of the graph of the LC and RC area judgment values



## -22. Saving the voltage values

Save the voltage values to a CSV file.

While the [Voltage Value] tab is displayed, click the [Save...] button to display the Save As window.



Specify the file name and click the [Save] button to save the voltage values to a CSV file.

Example of a CSV file of the voltage values

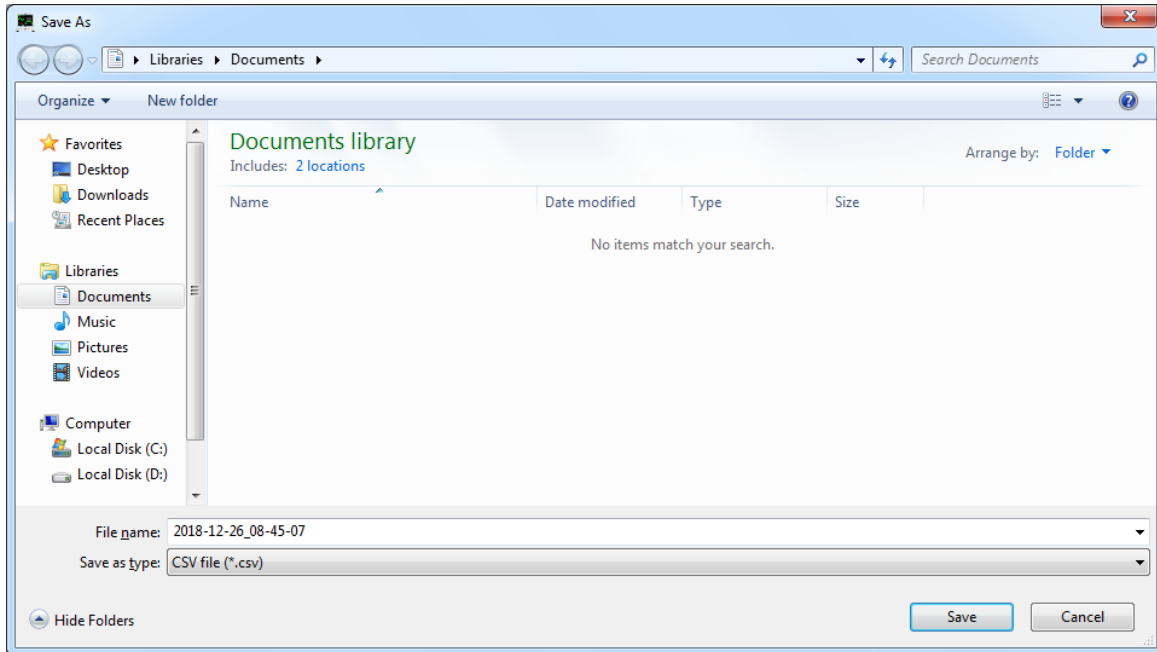
```
"No.", "STANDARD WAVE[V]", "PULSE1 WAVE[V]", "PULSE2 WAVE[V]", "PULSE3 WAVE[V]", "PULSE4  
WAVE[V]", "PULSE5 WAVE[V]"  
"1", "-1.30000E-001", "3.00000E-002", "-3.00000E-002", "1.30000E-001", "4.00000E-002", "-1.90000E-001"  
"2", "-1.00000E-001", "2.00000E-002", "-1.40000E-001", "2.90000E-001", "9.00000E-002", "-1.70000E-001"  
"3", "-1.00000E-002", "1.70000E-001", "2.00000E-002", "2.70000E-001", "5.00000E-002", "2.00000E-002"  
"4", "3.00000E-002", "2.40000E-001", "2.20000E-001", "6.00000E-002", "-9.00000E-002", "2.90000E-001"  
"5", "-1.00000E-002", "1.20000E-001", "1.80000E-001", "-1.60000E-001", "-1.90000E-001", "3.40000E-001"  
"6", "-6.00000E-002", "-3.00000E-002", "-7.00000E-002", "-1.90000E-001", "-1.90000E-001", "1.30000E-001"  
"7", "-2.00000E-002", "-4.00000E-003", "-2.50000E-001", "-6.00000E-002", "-9.00000E-002", "-3.00000E-002"  
"8", "-7.00000E-003", "1.50000E-001", "-1.90000E-001", "7.00000E-002", "1.00000E-001", "4.00000E-002"  
"9", "-1.40000E-001", "1.90000E-001", "2.00000E-002", "6.00000E-002", "3.30000E-001", "1.00000E-001"  
"10", "-3.20000E-001", "5.00000E-002", "1.70000E-001", "-1.00000E-002", "4.30000E-001", "1.00000E-002"  
:
```

### -23. Saving the discharge quantities

Save the discharge quantities to a CSV file.

Note: If DISCHARGE DETECTION UPGRADE (ST9000) is not incorporated, the discharge quantities cannot be saved.

While the [Discharge Component Level] tab is displayed, click the [Save...] button to display the Save As window.



Specify the file name and click the [Save] button to save the discharge components to a CSV file.

Example of a CSV file of the discharge components

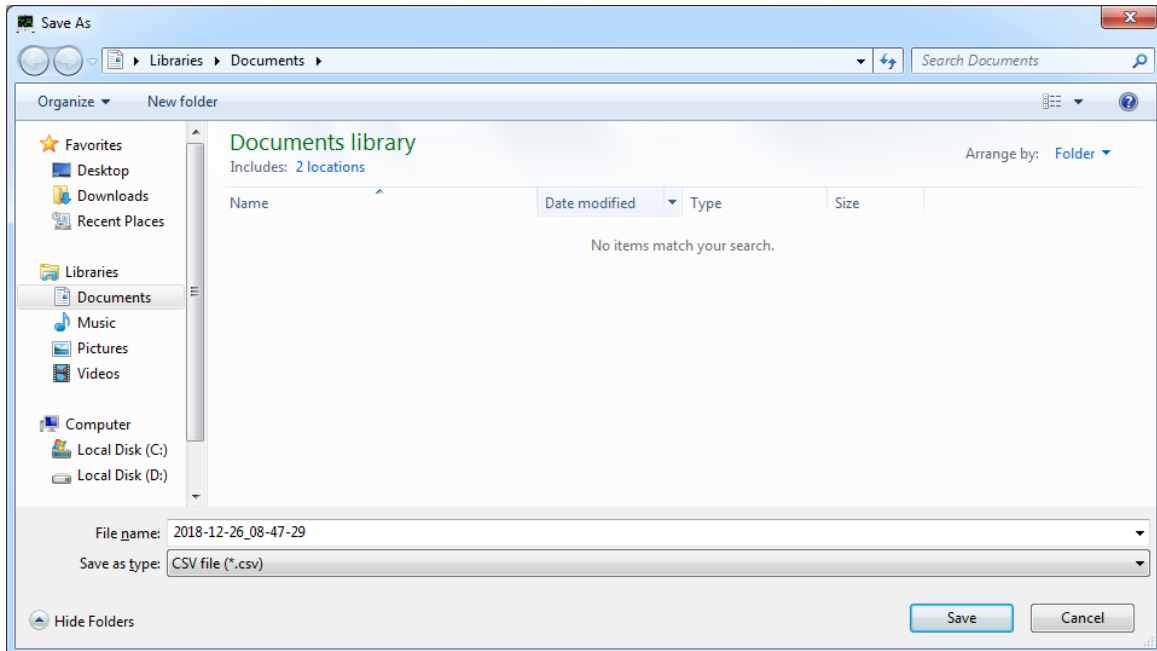
```
"No.", "PULSE1 DISCHARGE", "PULSE2 DISCHARGE", "PULSE3 DISCHARGE", "PULSE4  
DISCHARGE", "PULSE5 DISCHARGE"  
"1", "0.00", "0.00", "0.00", "0.00", "0.00"  
"2", "0.00", "0.00", "0.00", "0.00", "0.00"  
"3", "0.00", "0.00", "0.00", "0.00", "0.00"  
"4", "0.00", "0.00", "0.00", "0.00", "0.00"  
"5", "0.00", "0.00", "0.00", "0.00", "0.00"  
"6", "0.00", "0.00", "0.00", "0.00", "0.00"  
"7", "0.00", "0.00", "0.00", "0.00", "0.00"  
"8", "0.00", "0.00", "0.00", "0.00", "0.00"  
"9", "0.00", "0.00", "0.00", "0.00", "0.00"  
"10", "0.00", "0.00", "0.00", "0.00", "0.00"  
:
```

## -24. Saving the total judgment result and the judgment results

Save the measurement status, the total judgment result, the judgment value for each judgment method, and the judgment results to a CSV file.

Note: If DISCHARGE DETECTION UPGRADE (ST9000) is not incorporated, the discharge judgment value and result are not saved.

While the [Judgment Result] tab is displayed, click the [Save...] button to display the Save As window.



Specify the file name and click the [Save] button to save the total judgment result and the judgment results to a CSV file.

Example of a CSV file of the total judgment result and the judgment results

```
"STATUS","0"
"TOTAL JUDGE","FAIL"
"LCRC","ON"
"LCRC POINT1","4.500E-014","1.344E-008"
"LCRC POINT2","4.541E-014","1.344E-008"
"LCRC POINT3","4.541E-014","1.282E-008"
"LCRC POINT4","4.500E-014","1.282E-008"
"LCRC
VALUE","4.546E-014","1.311E-008","4.547E-014","1.310E-008","4.547E-014","1.306E-008","4.547E-014","1.30
9E-008","4.547E-014","1.297E-008"
"LCRC JUDGE","OUT"
"DISCHARGE","AUTO"
"DISCHARGE LIMIT","5","sigma"
"DISCHARGE VALUE","2.92","sigma"
"DISCHARGE JUDGE","IN"
"AREA","ON"
"AREA LIMIT","OFF",""
"AREA VALUE","-0.04","%"
```

```

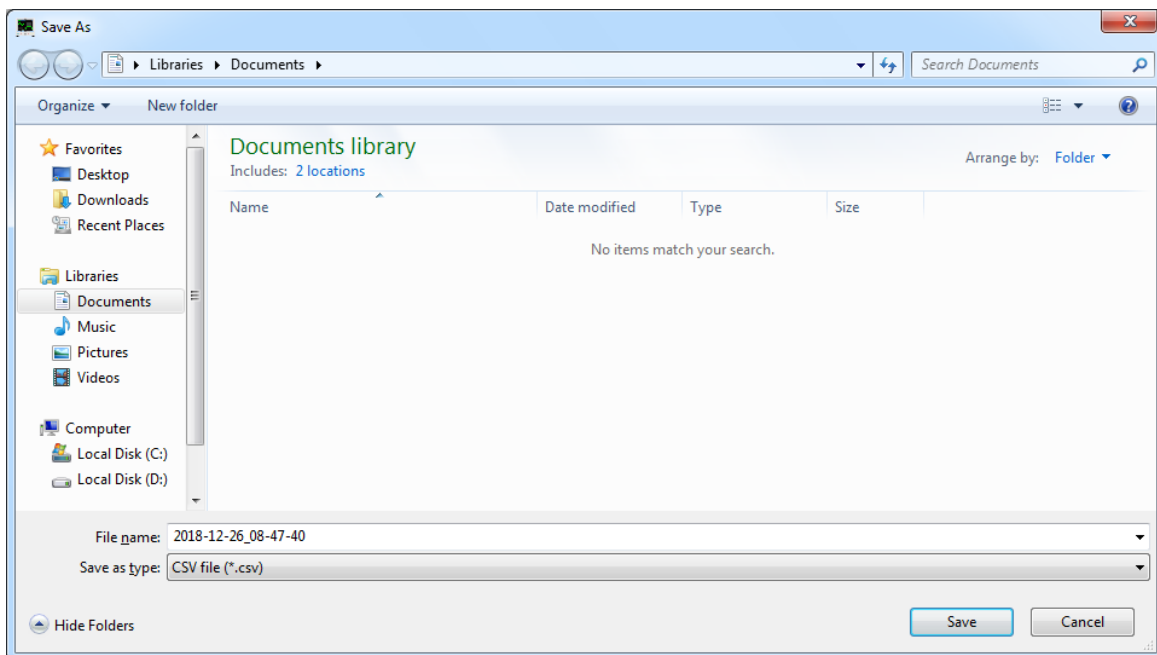
"AREA JUDGE","IN"
"DIFF AREA","ON"
"DIFF AREA LIMIT","2.74","%"
"DIFF AREA VALUE","1.11","%"
"DIFF AREA JUDGE","IN"
"FLUTTER","ON"
"FLUTTER LIMIT","1557"
"FLUTTER VALUE","1548"
"FLUTTER JUDGE","IN"
"LAPLACIAN","ON"
"LAPLACIAN LIMIT","131"
"LAPLACIAN VALUE","99"
"LAPLACIAN JUDGE","IN"

```

## -25. Saving the test conditions

Save the test conditions to a CSV file.

While the [Test Condition] tab is displayed, click the [Save...] button to display the Save As window.



Specify the file name and click the [Save] button to save the test conditions to a CSV file.

Example of a CSV file of the test conditions

```

"TABLE No.,"5","TBL_005"
"VOLTAGE","1000","V"
"PULSE NUM","5","0"
"S/s","2E+008","Hz"
"RECORD LENGTH","8001","pt"
"DELAY","0.000","s"

```

## -26. Displaying the version information

Displays the version information of the application.

Select [Help] - [About Impulse Winding Tester Sample Application...] to display the About Impulse Winding Tester Sample Application window.

