

# LCR Data Logger

## User Manual



# Notices

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# Introduction

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The LCR Data Logger is an application software that provides graphical user interface (GUI) for device programming and data logging. It is available for free on the LCR Research website (<http://www.lcrresearch.com/downloads>).

## System Requirements

Before installing the LCR Data Logger software, ensure that your PC meets the following minimum system requirements:

<b>32-bit OS Platforms</b>	Windows 7, 8 or 10
<b>Memory</b>	512 MB or higher
<b>Hard Disk Space</b>	1GB free disk space
<b>Supported Models</b>	LCR Pro1 portable LCR meter ("LCR Pro1")
<b>Required Accessory</b>	LCR Link1 communication dongle ("LCR Link1")
<b>Prerequisite</b>	Microsoft Excel 2007 or higher

# Installing Software

Please take the following steps to install the LCR Data Logger software on PC:

1. Download the LCR Data Logger software from <http://www.lcrresearch.com/downloads>.
2. Unzip the file **LCR Data Logger 0.13.zip**.
3. Open the folder **LCR Data Logger 0.13**, then open the **Release** folder.
4. Run **setup.bat** as Figure 2-1 shows.

Name	Date modified	Type	Size
CDM21218_Setup.exe	2016-07-23 6:18 PM	Application	2,077 KB
LCR Data Logger.msi	2016-08-01 7:43 PM	Windows Installer Pa...	862 KB
setup.bat	2016-07-31 12:46 PM	Windows Batch File	1 KB
setup.exe	2016-08-01 7:43 PM	Application	523 KB

Figure 2-1: Run setup.bat

5. It requests the permission to install FTDI CDM driver as Figure 2-2 shows. Click the **Yes** button to continue.

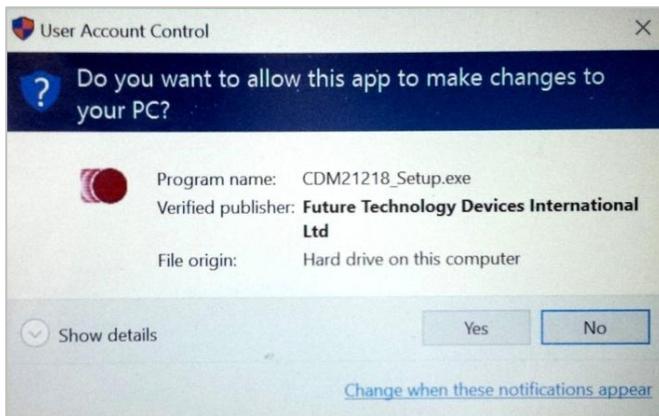


Figure 2-2: Request to Install FTDI CDM Driver

6. Click the **Extract** button to install FTDI CDM driver as Figure 2-3 shows.

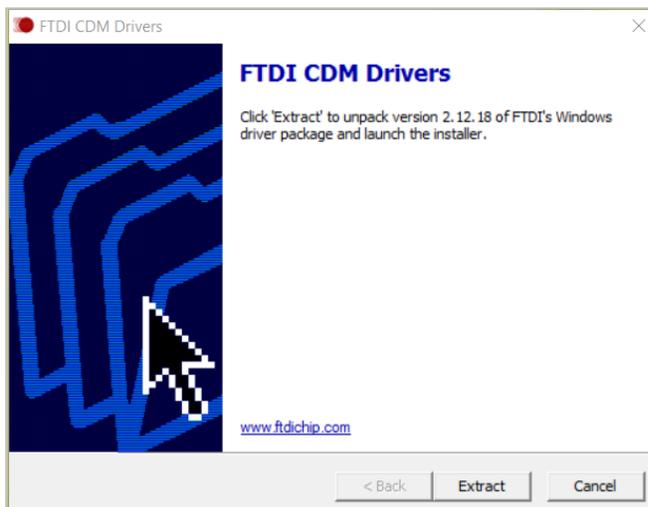


Figure 2-3: Extract FTDI CDM Driver

7. Click the **Next** button as Figure 2-4 shows.

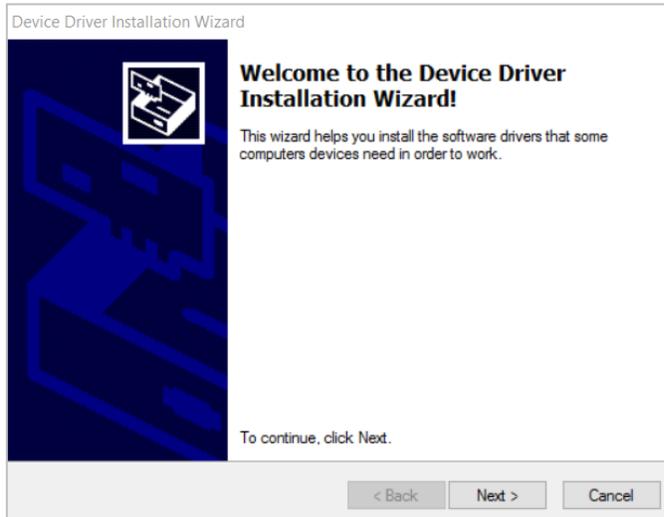


Figure 2-4: Install FTDI CDM Driver

8. Select the **I accept this agreement** option, then click the **Next** button as Figure 2-5 shows if you agree the FTDI license agreement.

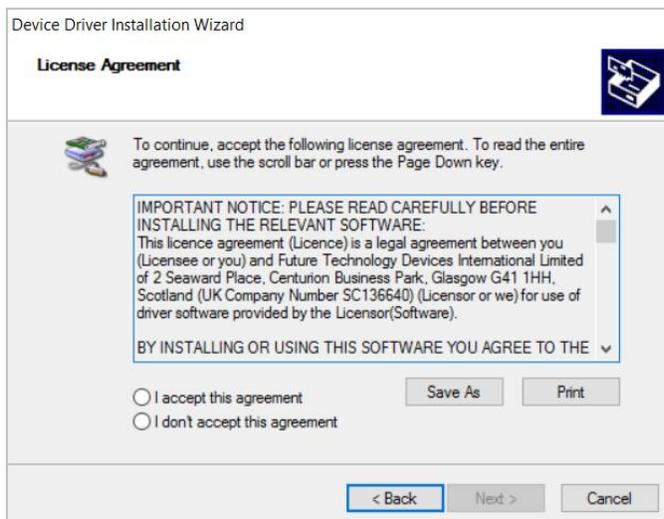


Figure 2-5: FTDI License Agreement

9. Click the **Finish** button as Figure 2-6 shows after the FTDI CDM driver is installed.



Figure 2-6: Finish FTDI CDM driver installation

10. Click the **Next** button as Figure 2-7 shows to start LCR Data Logger Setup Wizard.

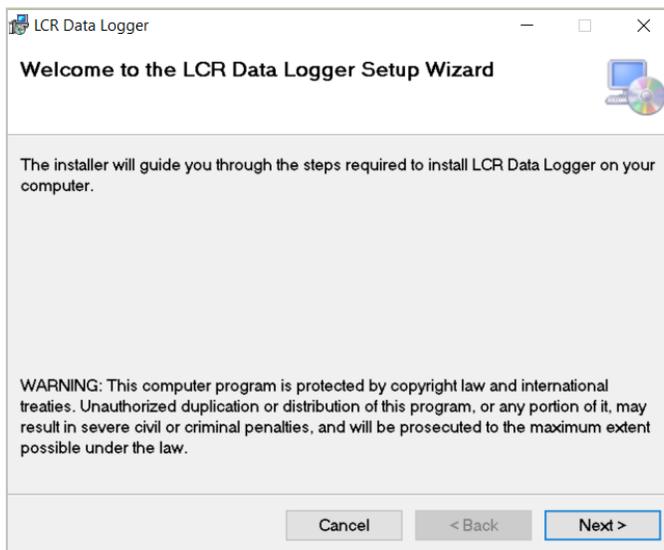


Figure 2-7: LCR Data Logger Setup Wizard

11. Select the **I Agree** option, then click the **Next** button as Figure 2-8 shows if you agree the LCR Research End-User License Agreement.

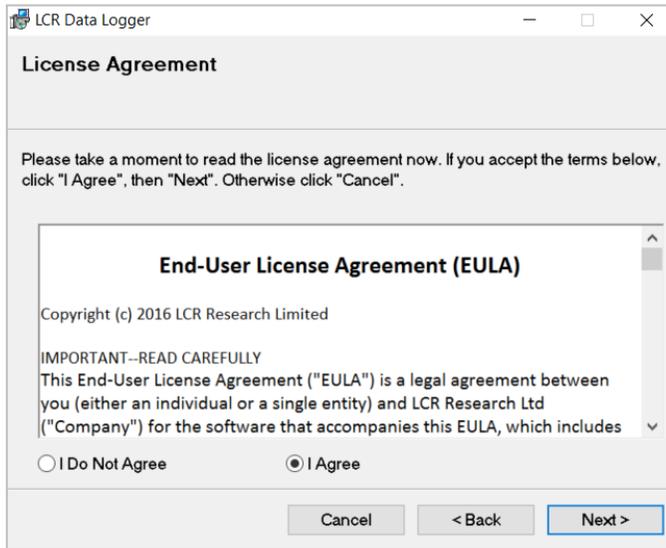


Figure 2-8: LCR Research End-User License Agreement

12. Select the installation folder and click the **Next** button. The default folder is **C:\Program Files (x86)\LCR Research\LCR Data Logger\**.

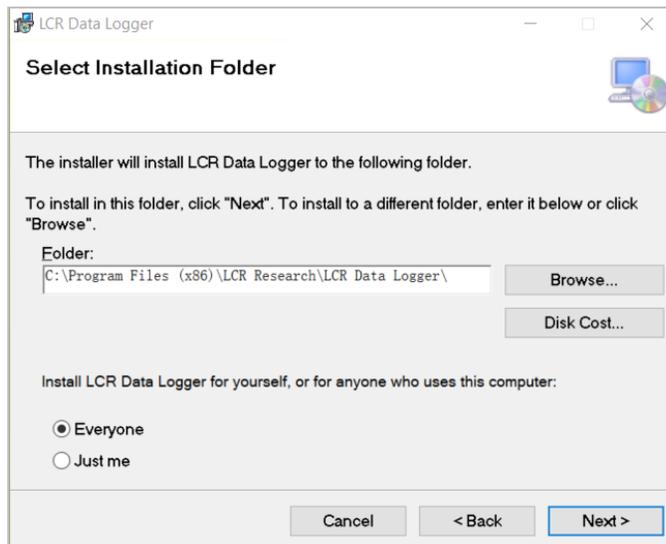


Figure 2-9: Select installation Folder

13. Click the **Next** button as Figure 2-10 shows.

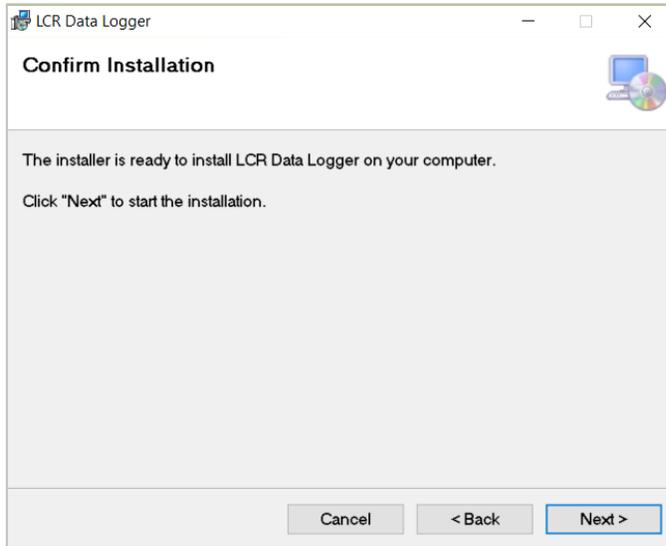


Figure 2-10: Start LCR Data Logger Installation

14. It requests the permission to install LCR Data Logger software as Figure 2-10 shows. Click the **Yes** button to continue.



Figure 2-10: Request the Permission to Install LCR Data Logger Software

15. Click the **Close** button as Figure 2-11 shows when LCR Data Logger software is installed.

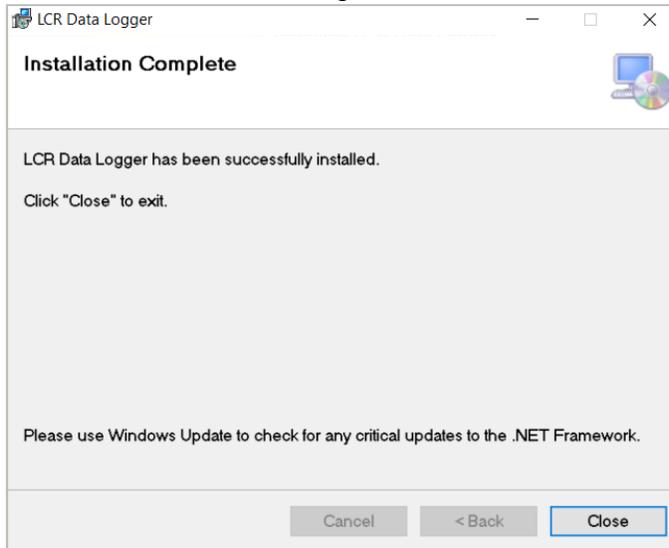


Figure 2-11: Finish LCR Data Logger Software installation

# Connecting to Device

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Please take the following steps to connect the LCR Pro1 to the LCR Data Logger software:

1. Plug in the LCR Link1 to a USB port on your PC.

## NOTE

The LCR Link1 is an optional accessory of LCR Pro1. It is a dongle style communication module that links the LCR Pro1 to PC. Using the LCR Link1, you can log data and charge the device simultaneously.

2. Use a USB cable to connect the LCR Pro1 to the LCR Link1 as Figure 3-1 shows.



Figure 3-1: Connect LCR Pro1 to PC

3. Run the LCR Data Logger software by opening **LCR\_PC\_IF.exe** from the location where the application is installed. The default location is at **Windows (C:) > Program Files (x86) > LCR Research > LCR Data Logger > LCR\_PC\_IF.exe**. Alternatively, you can open LCR\_PC\_IF.exe by double clicking the shortcut icon of LCR Data Logger on your PC desktop as Figure 3-2 shows.

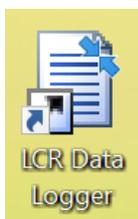


Figure 3-2: LCR Data Logger Shortcut Icon

4. The LCR Data Logger software will connect to the LCR Pro1 automatically. Once connected, you will see a duplicated device display from the bottom right on GUI as Figure 3-3 shows.

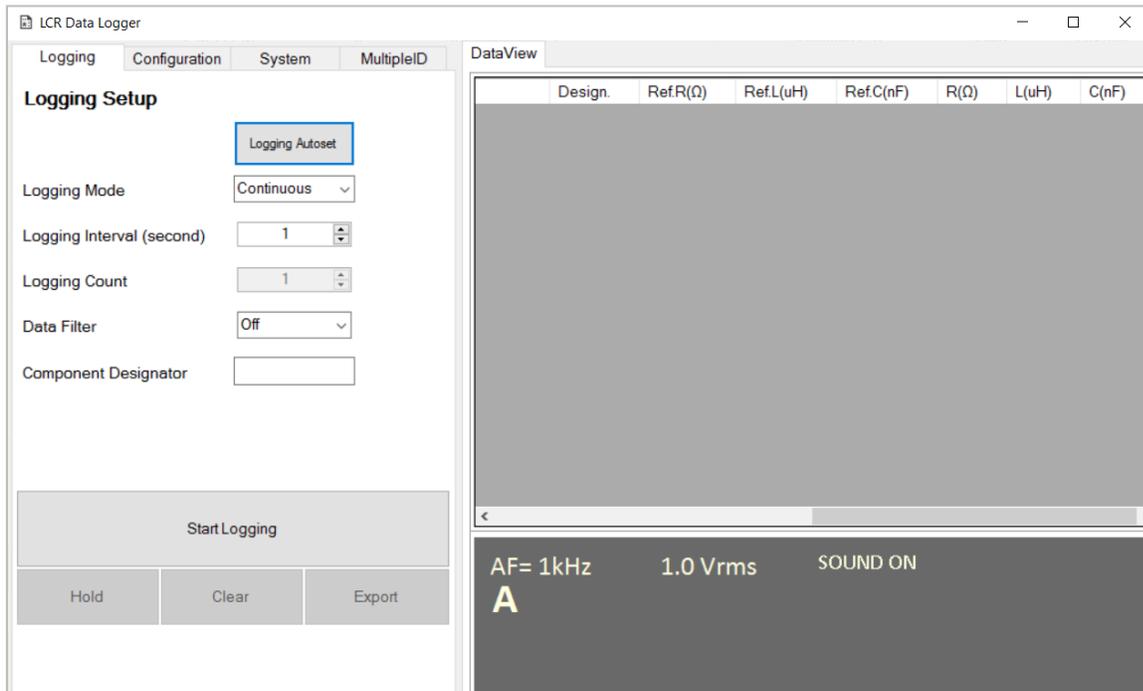


Figure 3-3: Message that Device being Connected

5. If the software hasn't connected to the device, GUI shows the "DEVICE DISCONNECTED, WAITING FOR CONNECTION" message as Figure 3-4 shows.

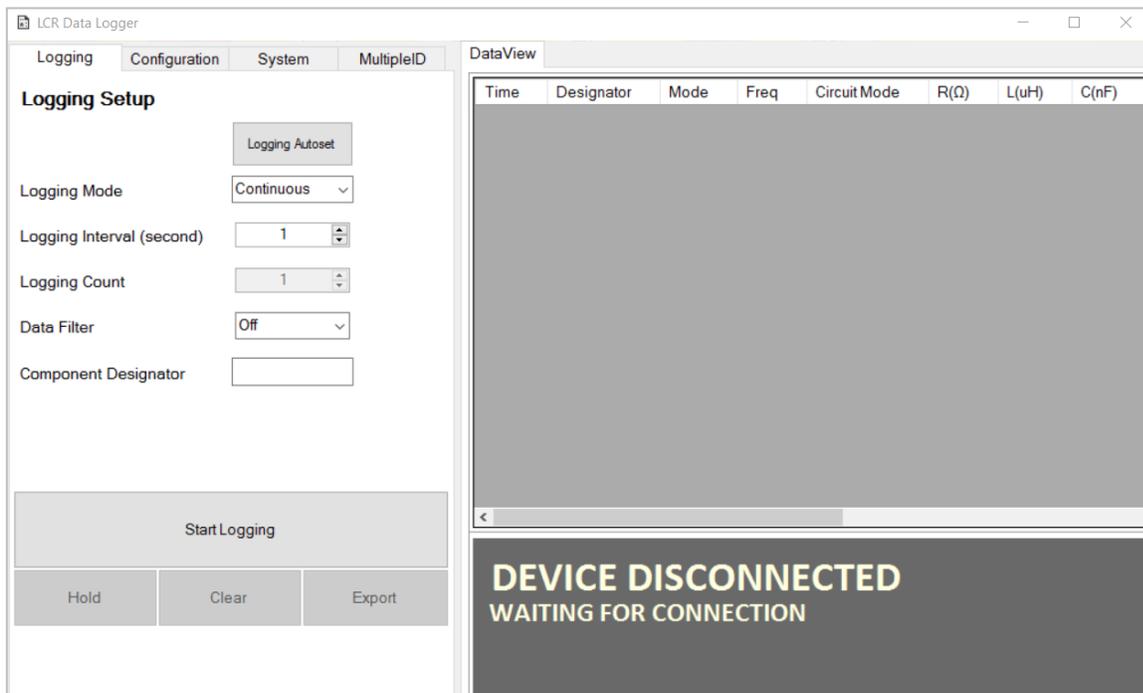


Figure 3-4: Message that Device not being Connected

#### NOTE

If the "DEVICE DISCONNECTED, WAITING FOR CONNECTION" message stays for more than 10 seconds since the LCR Pro1 has connected to PC, please try to close the software then reopen it to establish the connection.

# Logging Measurement Results

The logging settings can be configured from the Logging tab on the LCR Data Logger software. Figure 4-1 shows a typical screen in the logging tab.

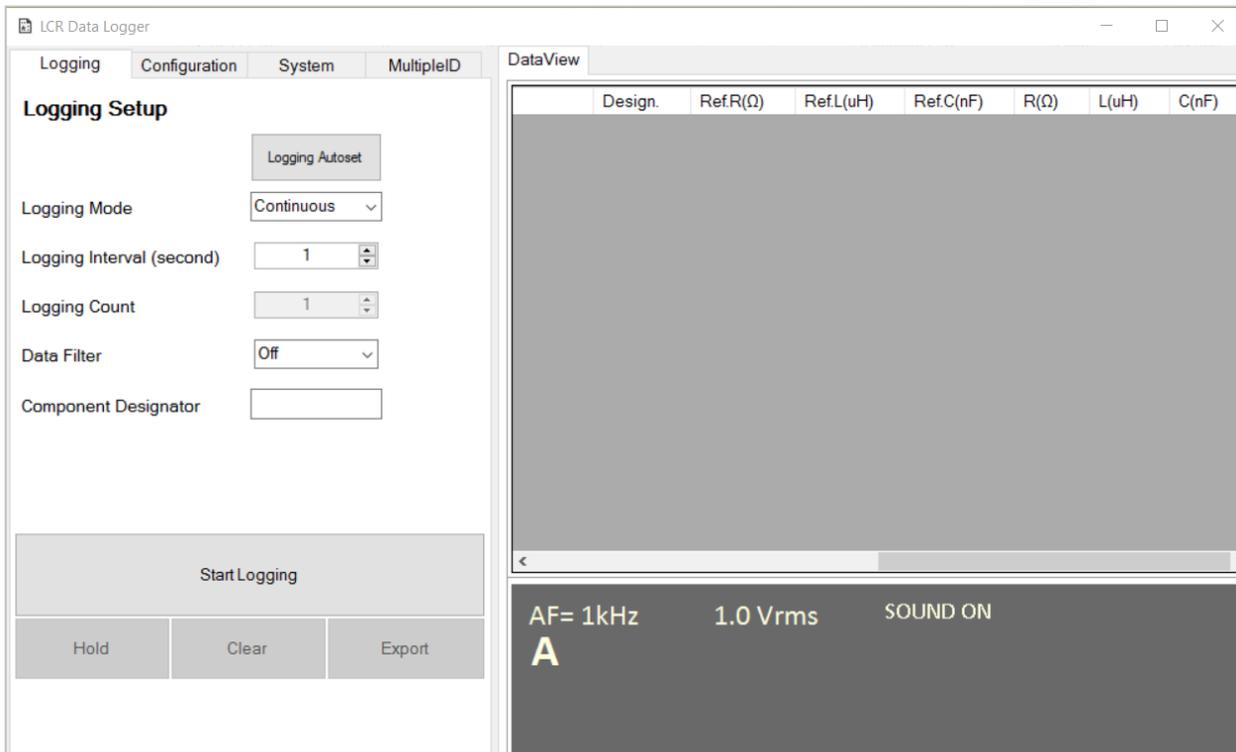


Figure 4-1: Logging Tab

## NOTE

In each tab, you will see some buttons or dropdown menus are grayed out. It means they are not available for the current situation. For example, the Export button is grayed out during logging period. After you stop logging the data, it becomes active for you to save the results.

The **Logging Autoset** button can reset the logging settings to default which are:

**Logging Mode: Continuous**  
**Logging Interval (second): 1**  
**Data Filter: Off**

The **Logging Mode** includes three options:

- **Continuous** - Continuously log the measurement results
- **Up to X Count** - Log the measurement results X times
- **Press R Key** - Log the measurement result every time when the R key on PC is pressed

The **Logging Interval (second)** sets how fast the measurement results will be recorded. It can be selected from 1 second to 100 seconds with 1 second per step.

When the **Logging Mode** is selected as **Up to X Count**, you can go to **Logging Count** to select how many times the results need to be recorded. The number can be selected from 1 to 65535.

The **Data Filter** is used to set a threshold to prevent undesired data from being logged due to bad contact, switching components, etc. It has 11 settings which are OFF, 1%, 2%,..., 9%, 10%. If OFF is selected, it records every result getting from the device. If a percentage is selected, it only records the results which are within the defined percentage range comparing to the previous 2 results.

For example, if 3% is selected on Data Filter and the device gets a series of results as 1uF, 1.05uF, 0.95uF, 0.99uF, 1.01uF, 1uF, 0.99uF, 1.01uF, 1uF, 1.05uF, 1uF. The software will only record the stable results which are 1uF, 0.99uF, 1.01uF, 1uF. The results that are crossed out below vary more than 3% comparing to their previous 2 results. Therefore, they are not recorded.

~~1uF, 1.05uF, 0.95uF, 0.99uF, 1.01uF, 1uF, 0.99uF, 1.01uF, 1uF, 1.05uF, 1uF~~

The **Component Designator** box is used to add a reference for the component under testing. Such reference name and/or number will be recorded in the table with other testing parameters and results during data logging period.

When the **Start Logging** button is clicked, the LCR Data Logger software starts to log data. Figure 4-2 shows a typical logging screen when measuring a 1uF capacitor. As you can see, the testing parameters and results are logged in the spreadsheet. The real time measurement result is displayed on the bottom right of the screen.

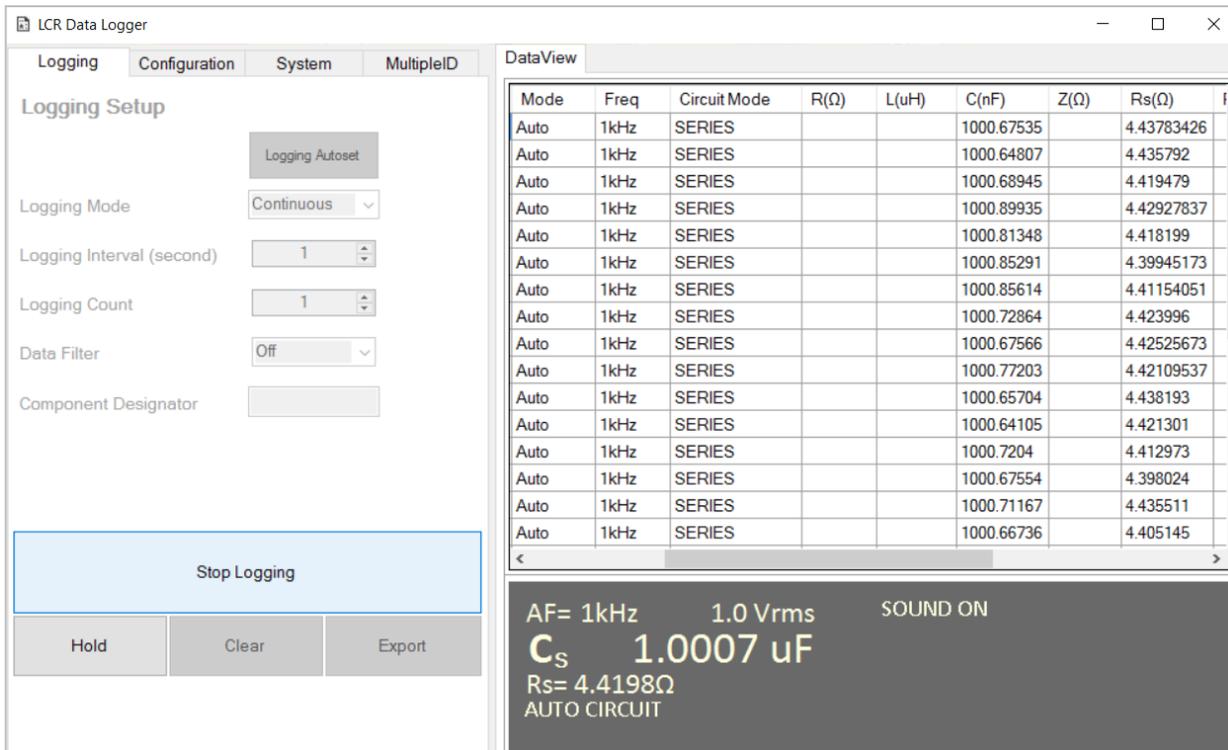


Figure 4-2: Logging Screen in Measurement

During the logging period, you can pause the logging by clicking the **Hold** button. Once it is clicked, the button message has been changed to **Resume**. You can resume the logging by clicking the **Resume** button.

To stop logging, please click the **Stop Logging** button. Once it is clicked, you will see the **Clear** button and **Export** button become active. Click the **Clear** button to clear all the logging data. Click the **Export** button to save the logging data as a spreadsheet to a directory you selected.

Once the **Export** button is clicked, a dialog box prompts to ask for a location for saving the test results as Figure 4-3 shows. Press the **Save** button on the dialog box to save the file. The default location is at **Windows(C:) > LCR\_DATA**.

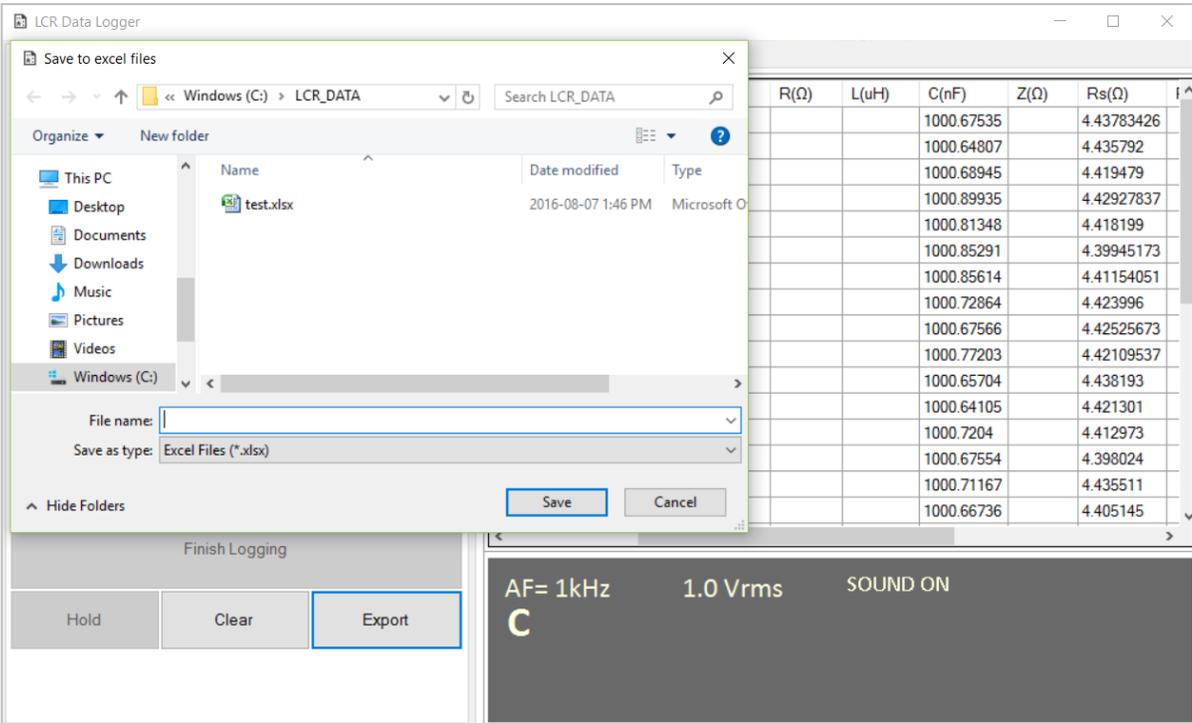


Figure 4-3: Save Logging Results

After the test results are saved, a dialog box prompts to indicate the file is saved successfully as Figure 4-4 shows.

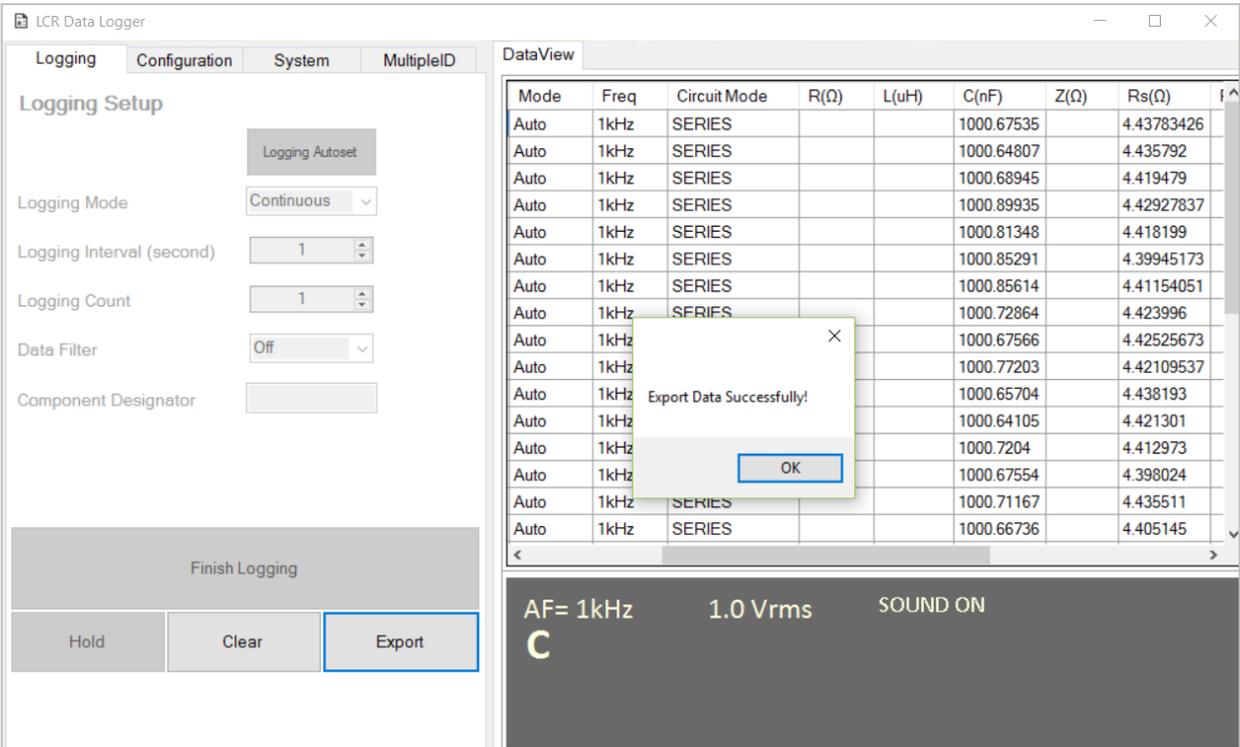


Figure 4-4: Successfully Saved Logging Results

# Setting Up Measurement Parameters

The configuration tab is used to set up your LCR Pro1 measurement parameters. Figure 5-1 shows a typical screen in the configuration tab.

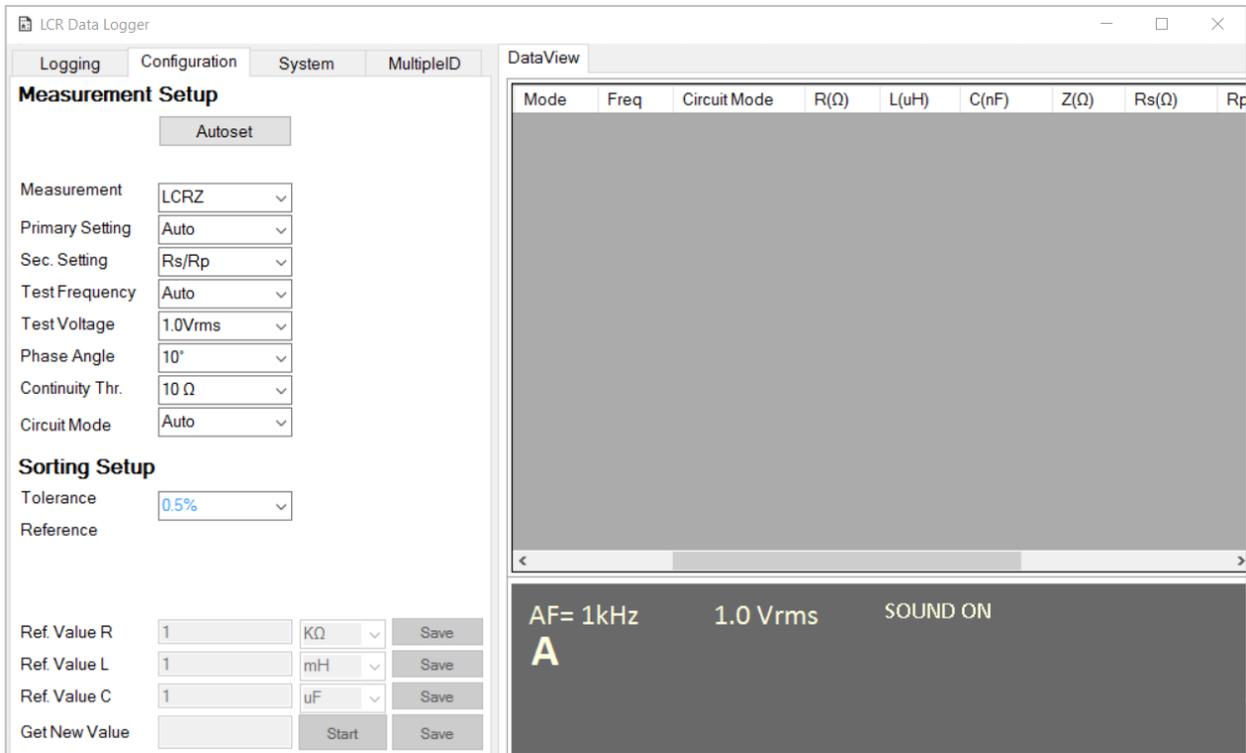


Figure 5-1: Configuration Tab

## NOTE

(1). The hardware reset function can reset all the device parameters to factory original settings no matter which mode it is currently in. To perform hardware reset, just press down both "Up" and "Down" buttons on the device for more than 10 seconds until the device display is off. Releasing both buttons will reboot the device.

(2). After the device is reset, all the self-calibration data will be removed. Please perform self-calibration again if necessary.

## Measurement Setup

The **Autoset** button is used to reset all the measurement parameters to default. Once it is clicked, the following parameters are reset to default:

- **LCRZ: Auto**
- **Secondary Parameters: Rs/Rp**
- **Test Frequency: Auto**
- **Test Voltage: 1.0Vrms**
- **Circuit Mode: Auto**
- **Phase Angle: 10°**

The **Measurement** dropdown menu provides the following options:

- **LCRZ:** Measure inductance (L), capacitance (C), resistance (R) or impedance (Z).
- **ESR:** Measure the equivalent series resistance (ESR) of a capacitor, independent of its capacitance.
- **DCR:** Measure the resistance of an unknown component by direct current resistance (DCR) mode.
- **Diode:** Test diode polarity or indicate a faulty diode if it sees short/open conditions.
- **Sorting:** Sort the component according to the preset tolerance.
- **Recording:** Record the maximum, minimum, average result and measurement cycles during a series of measurements.
- **Continuity:** Test whether the component under test is electrically connected.

The **Primary Setting** dropdown menu provides the following options:

- **Auto:** the meter automatically identifies the component under test (L, C or R).
- **R:** measure resistance.
- **L:** measure inductance.
- **C:** measure capacitance.
- **Z:** measure impedance.

The **Sec. Setting** (Secondary Setting) dropdown menu provides the following options:

- **Rs/Rp:** the meter displays series resistance (Rs) or parallel resistance (Rp). If the circuit mode is selected as series, Rs will be displayed. If the circuit mode is selected as parallel, Rp will be displayed.
- **D/Q/θ:** the meter displays dissipation factor (D), quality factor (Q) or phase angle (θ). If a capacitor is being measured, D will be displayed. If an inductor is being measured, Q will be displayed. If an resistor is being measured, θ will be displayed.

The **Test Frequency** dropdown menu provides the following options:

- **Auto:** auto frequency (AF) mode, the meter automatically selects the best test frequency.
- **100Hz:** set test frequency to 100Hz.
- **120Hz:** set test frequency to 120Hz.
- **1kHz:** set test frequency to 1kHz.
- **10kHz:** set test frequency to 10kHz.
- **100kHz:** set test frequency to 100kHz.

The **Test Voltage** dropdown menu provides the following options:

- **1.0Vrms:** set test voltage to 1.0Vrms.
- **0.5Vrms:** set test voltage to 0.5Vrms.
- **0.2Vrms:** set test voltage to 0.2Vrms.

The **Phase Angle** dropdown menu provides the following options:

- 5°
- 10°
- 15°
- 20°
- 30°
- 45°

#### **NOTE**

Phase angle menu is used to set the phase angle condition for auto component identification. When the meter works in auto mode, it automatically identifies the component type according to the phase angle setting.

The **Continuity Thr.** (Continuity Threshold) dropdown menu provides the following options:

- **0.1Ω**
- **1Ω**
- **10Ω**
- **100Ω**
- **1kΩ**

The **Circuit Mode** dropdown menu provides the following options:

- **Auto:** set to auto circuit mode. Series or parallel circuit mode will be automatically identified.
- **Series:** set to series circuit mode.
- **Parallel:** set to parallel circuit mode.

## Sorting Setup

When sorting mode is selected, the options in sorting setup section will become active. Figure 5-2 shows a typical sorting screen.

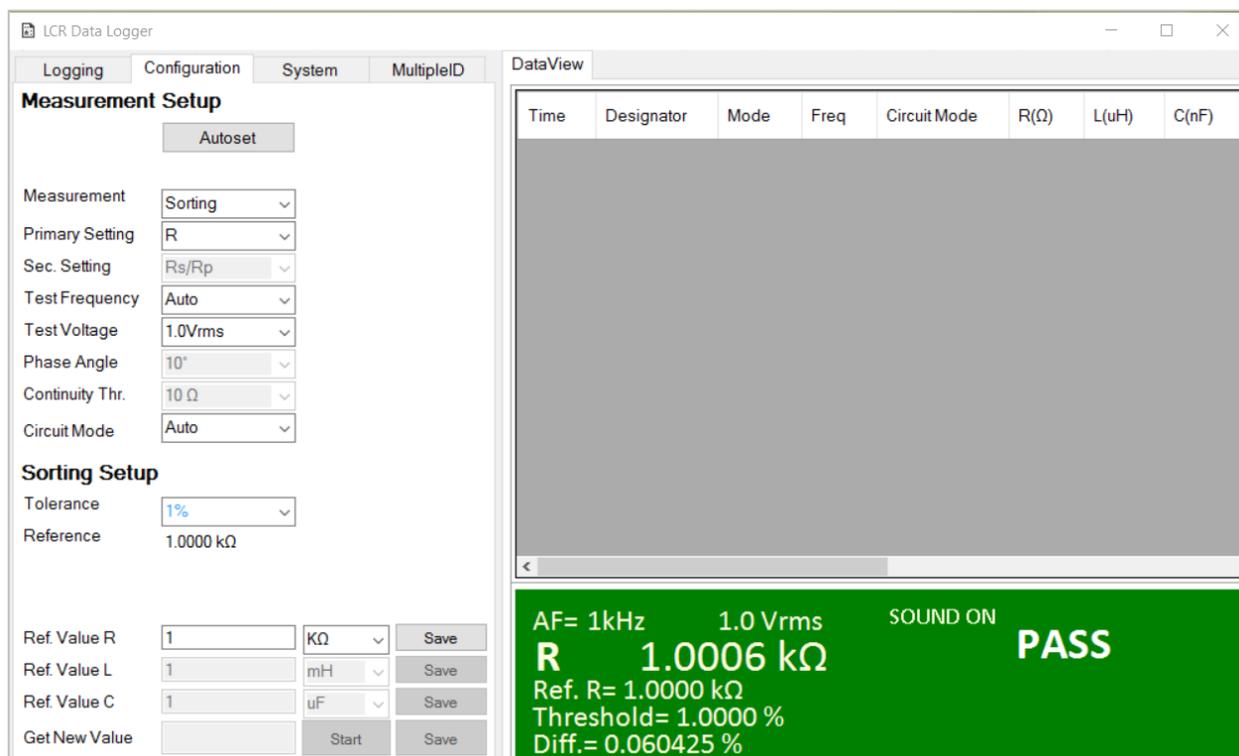


Figure 5-2: Sorting Screen with Passed Result

The **Tolerance** dropdown menu provides the following options:

- **0.5%**
- **1.0%**
- **5.0%**
- **10.0%**
- **20.0%**
- **30.0%**

The **Reference** shows the current reference value for sorting.

**Ref. Value R/L/C** allows you to input a new reference value. Once the **Save** button is clicked, the new value will overwrite the old reference value.

In sorting mode, the LCR Data Logger gets the measurement result from the device and calculates the error percentage using the measured result and the reference value. Then it compares the error percentage with the tolerance range. If the result is within the range, a green pass message will be on the display as Figure 5-2 shows. If the result is out of range, a red fail message will be on the display as Figure 5-3 shows.

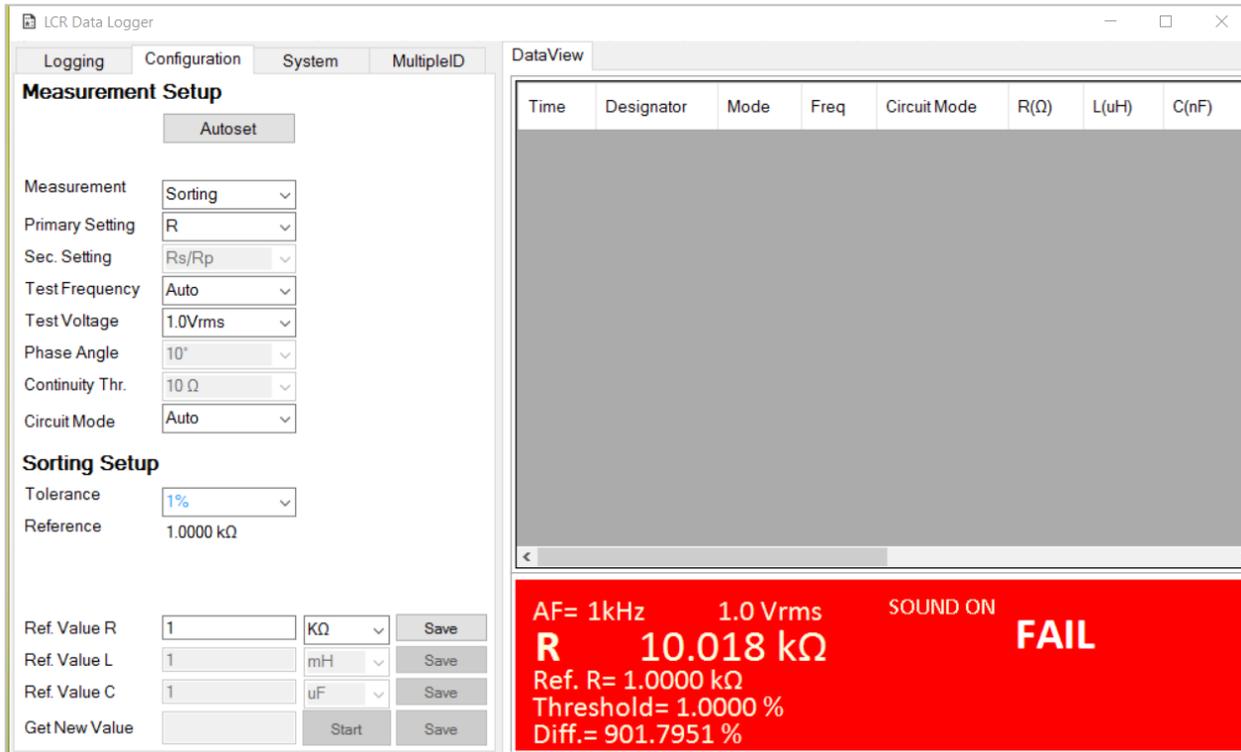


Figure 5-3: Sorting Screen with Failed Result

# Setting Up System Parameters

The system tab is used to set up your LCR Pro1 system parameters. Figure 6-1 shows a typical screen in the system tab.

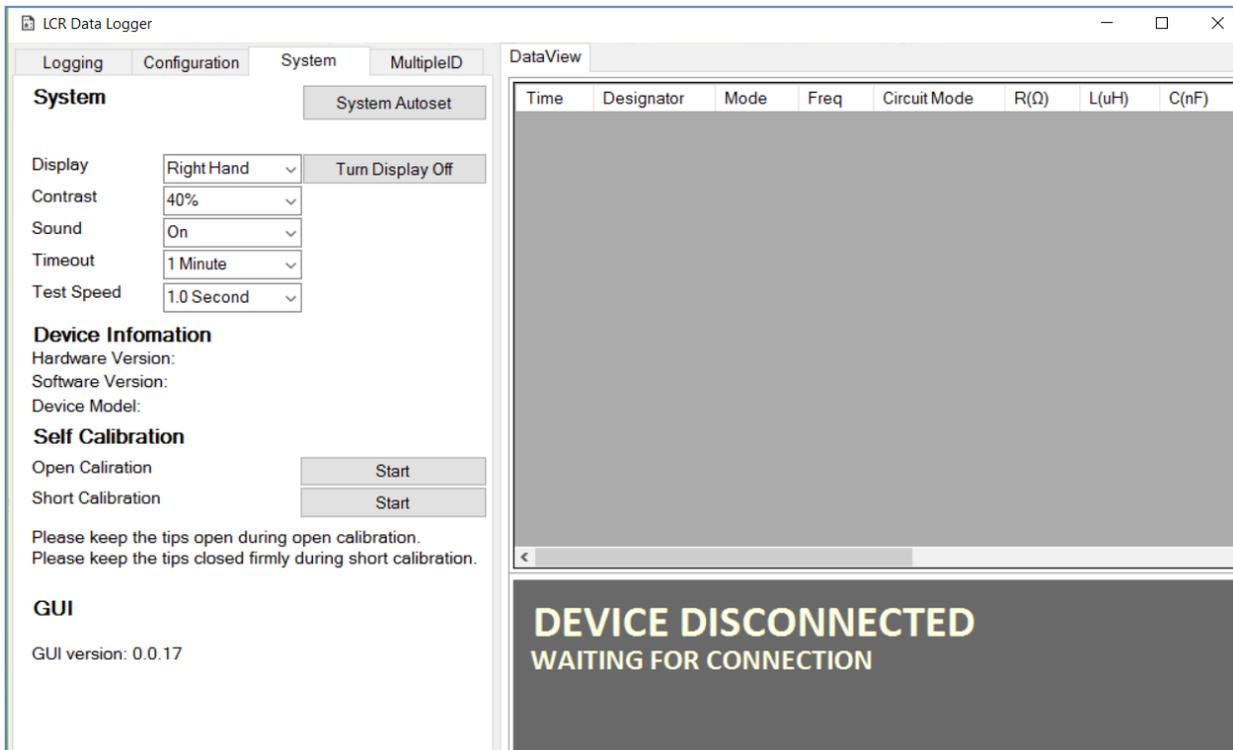


Figure 6-1: System Tab

## System Setup

The **System Autoset** button is used to reset all the system parameters to default. Once it is clicked, the following parameters are reset to default:

- **Display: Right Hand**
- **Contrast: 40%**
- **Sound: On**
- **Timeout: 1 Minute**
- **Test Speed: 1.0 Second**

The **Turn Display Off** button is used to turn off the display. Once the display is turned off, the message on the button is changed to **Turn Display On**. Click it again to turn the display back on.

The **Display** dropdown menu provides the following options:

- **Right Hand:** select the right hand operation mode.
- **Left Hand:** select the left hand operation mode.

The **Contrast** option is used to set display brightness. It provides the following options:

- 20%
- 30%
- 40%
- 50%
- 60%
- 70%
- 80%
- 90%
- 100%

The **Sound** dropdown menu provides the following options:

- **Sound On:** turn on sound.
- **Sound Off:** turn off sound.

The **Timeout** option is used to select the timer to powers off the meter automatically if neither a measurement is performed nor any button is clicked. It provides the following options:

- 30 Seconds
- 1 Minute
- 2 Minutes
- 4 Minutes

#### **NOTE**

The timeout setting only works when the LCR Pro1 is in standalone mode. When it is connected to PC, its display will be always on unless the "Turn Display Off" button is clicked.

The **Test Speed** option is used to select how fast the meter measures the component under test. It provides the following options:

- 0.5 Second
- 1.0 Second
- 2.0 Second

## **Device Information**

Once a device is connected to PC, this section shows the device hardware version, software version and device model.

## **Self Calibration**

The self-calibration includes short and open calibration. It offsets the meter's internal and external parasitic parameters for better accuracy. Performing this action will help the user correct the influence for temporary uses.

Click the **Start** button beside the **Open Calibration** message to start open calibration.

Click the **Start** button beside the **Short Calibration** message to start short calibration.

## **GUI**

It shows the version of the LCR Data Logger.

# Using Multiple Component Identification Function

You can perform multiple component identification testing on the multipleID tab. In multiple component identification testing, the LCT Data Logger software configures the device to do step by step measurement on several components. You don't need to switch parameters manually when switching from one component to another. The device automatically sets the parameters according to the programming. It records the results and reports Pass or Fail.

Figure 7-1 shows a typical screen in the multipleID tab.

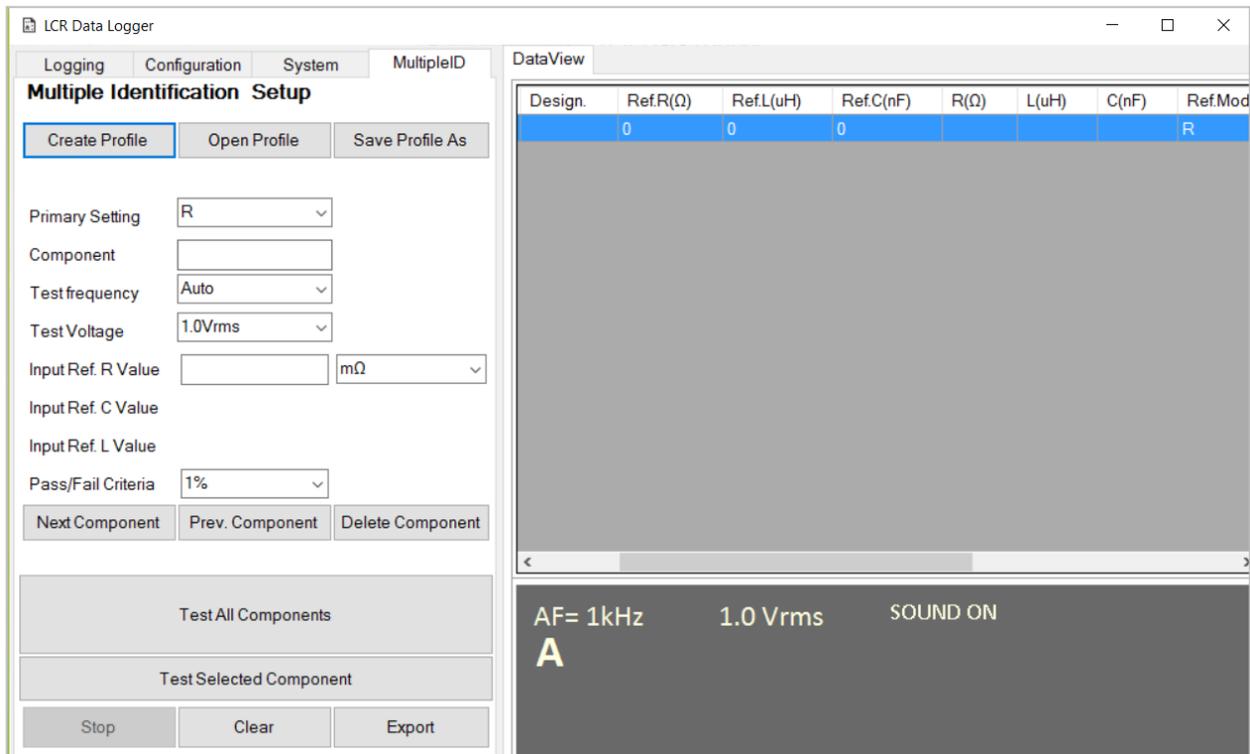


Figure 7-1: MultipleID Tab

When you enter the multipleID tab, only the **Create Profile** and **Open Profile** buttons are in active.

The **Create Profile** button is used to create a new profile for multiple component identification testing. Once it is clicked, the following grayed out options become active for you to program the parameters for each component going to be tested.

The **Primary Setting** dropdown menu provides the following options:

- **R:** measure resistance.
- **L:** measure inductance.
- **C:** measure capacitance.

The **Component** box is used to add a reference for the component under testing. Such reference name and/or number will be recorded in the table with other testing parameters and results during multiple component identification testing period.

The **Test Frequency** dropdown menu provides the following options:

- **Auto:** auto frequency (AF) mode, the meter automatically selects the best test frequency.
- **100Hz:** set test frequency to 100Hz.
- **120Hz:** set test frequency to 120Hz.
- **1kHz:** set test frequency to 1kHz.
- **10kHz:** set test frequency to 10kHz.
- **100kHz:** set test frequency to 100kHz.

The **Test Voltage** dropdown menu provides the following options:

- **1.0Vrms:** set test voltage to 1.0Vrms.
- **0.5Vrms:** set test voltage to 0.5Vrms.
- **0.2Vrms:** set test voltage to 0.2Vrms.

**Input Ref. R/L/C Value** allows you to input a reference value for the software to compare with the actual measurement result. You can select the unit as well from the dropdown menu on its right side.

The **Pass/Fail Criteria** dropdown menu provides the following options:

- **0.5%**
- **1.0%**
- **5.0%**
- **10.0%**
- **20.0%**
- **30.0%**

Click the **Next Component** button to start program the next component. Click the **Prev. Component** button to go back to the previous component. Click the **Delete Component** button to delete the current component.

After you are done all programming, you can click the **Save Profile As** button to save the profile. Once it is clicked, a dialog box prompts to ask for the location to save the file as Figure 7-2 shows. The default location is at **Windows (C:) > LCR\_DATA**.

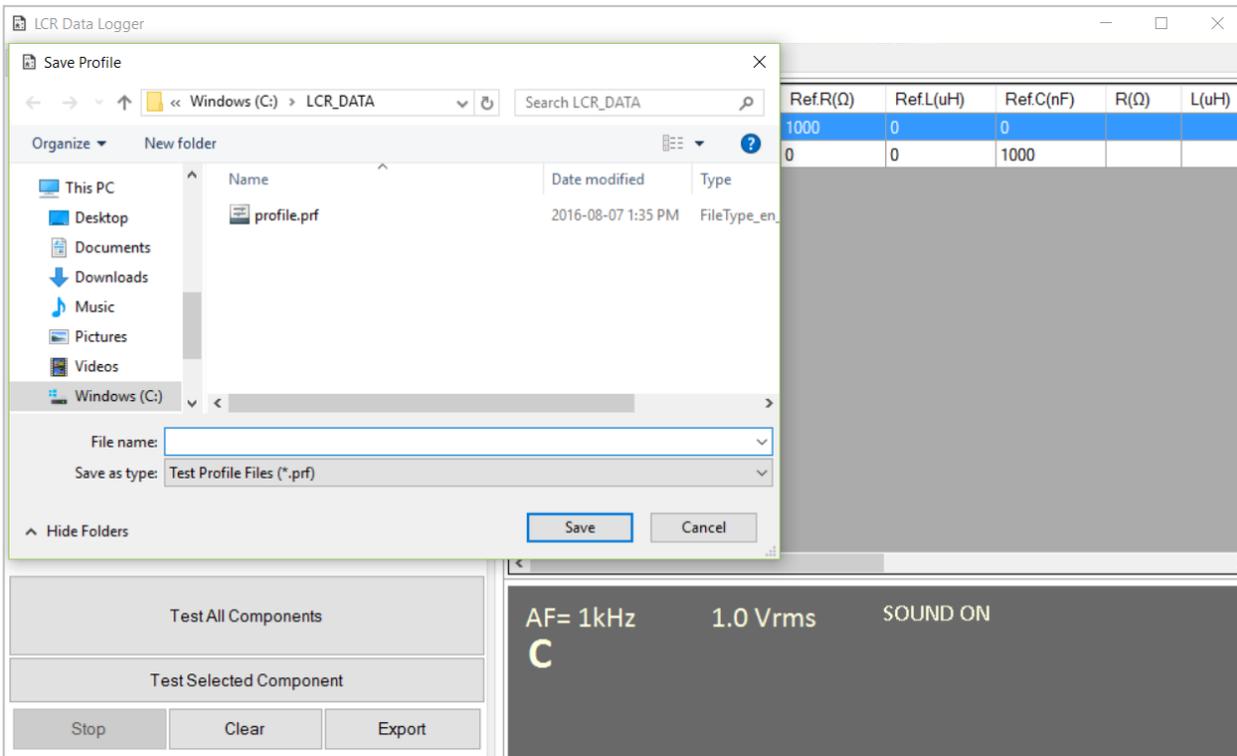


Figure 7-2: Save a Profile File

The **Open Profile** button is located on the left side of the **Save Profile As** button. It is used to open a saved profile as Figure 7-3 shows.

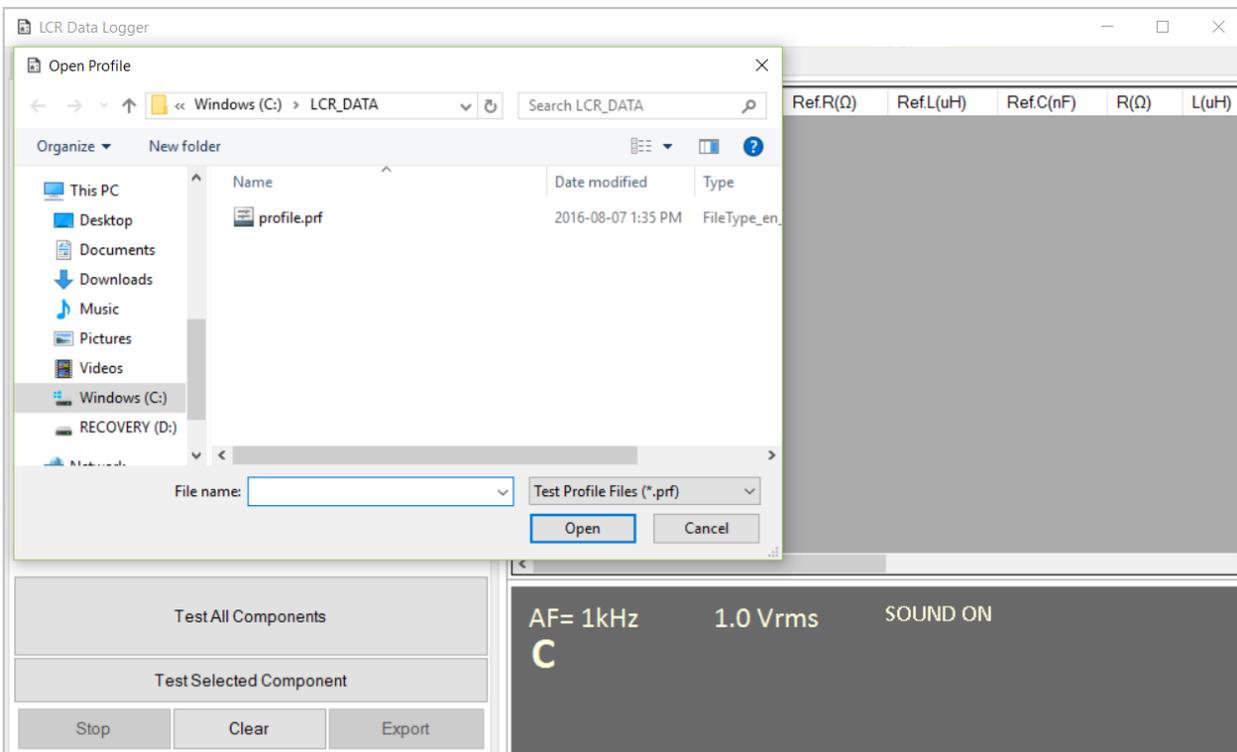


Figure 7-3: Open a Profile File

The **Test All Components** button is used for testing all the components one by one.

The **Test Selected Component** button is used for testing only the current component you selected. Once the **Test All Components** button is clicked, the LCR Data Logger software uses the parameters in the profile to set the device for testing the first component. A dialog box prompts to indicate the user which component is going to be tested as Figure 7-4 shows.

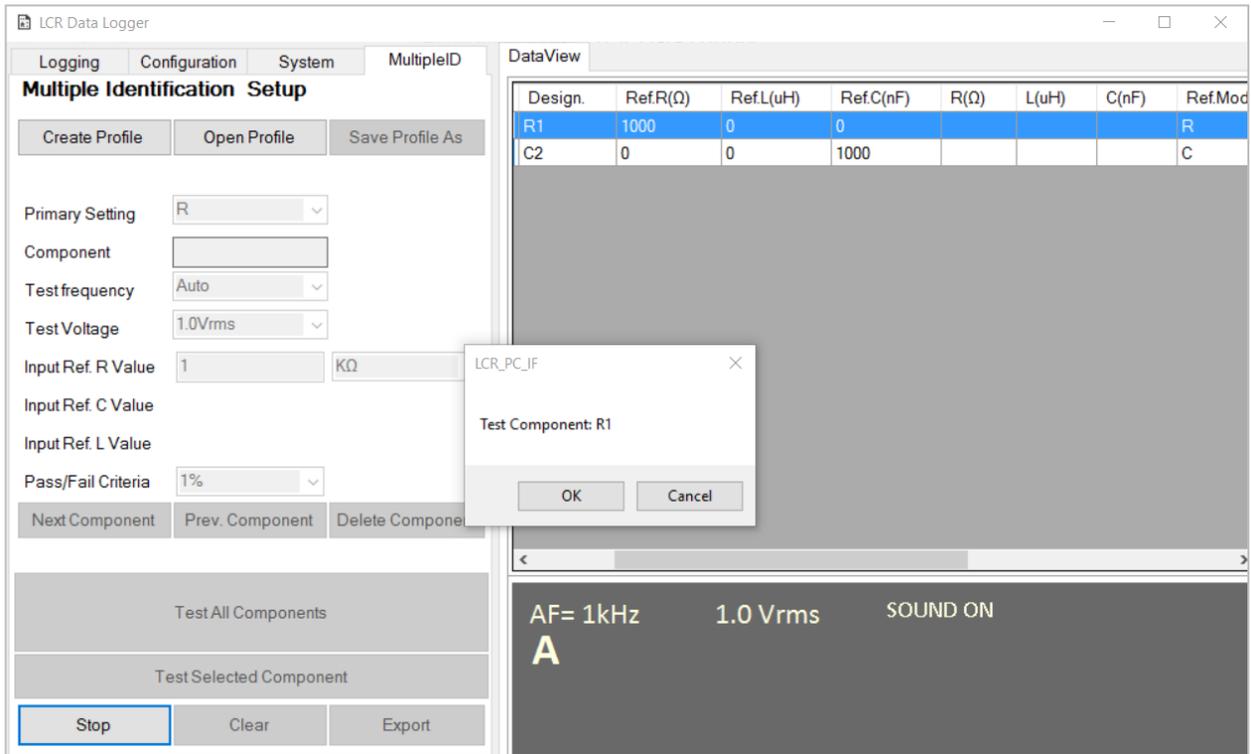


Figure 7-4: Start the First Component in Multiple Component Identification Testing

Click **OK** to close the dialog box and start testing the first component. If the result meets the pass/fail criteria, a green pass message will be on the display as Figure 7-5 shows. Otherwise, a red fail message will be on the display.

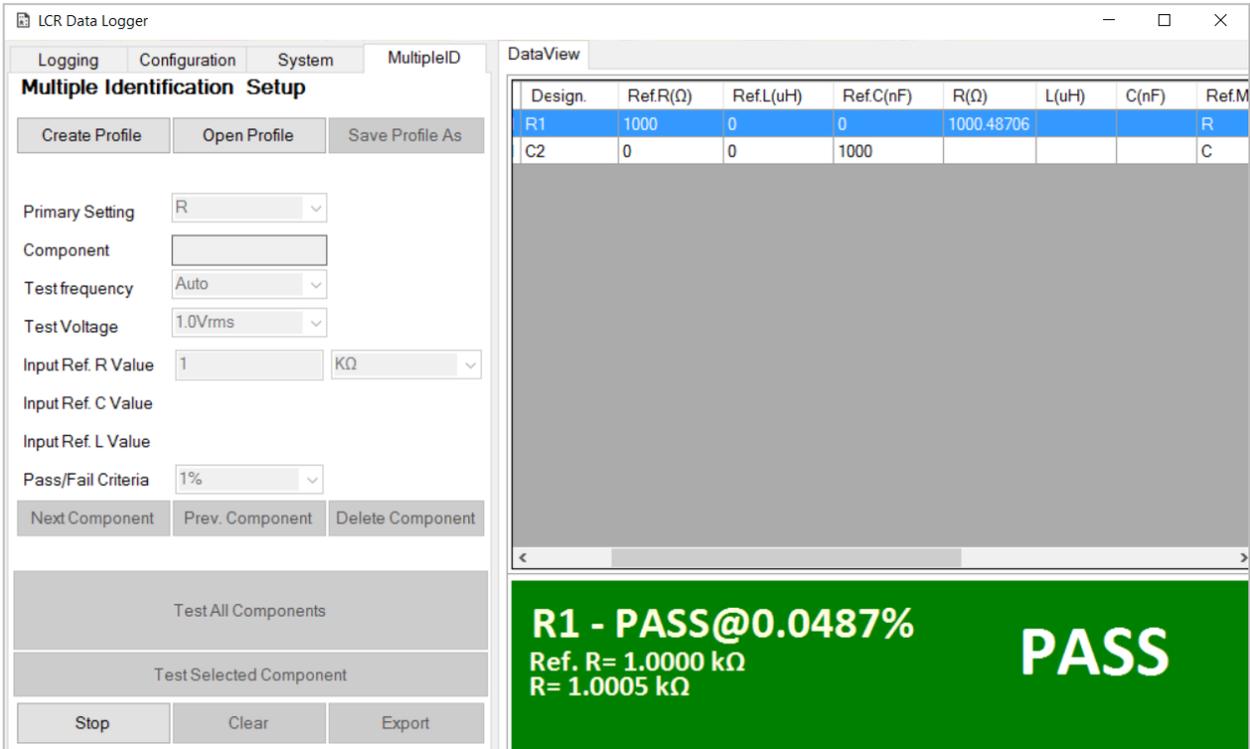


Figure 7-5: Pass the First Component in the Multiple Component Identification Testing

Next, the LCR Data Logger software sets the device parameters for the next component under testing. A dialog box prompts again to indicate the user which component is going to be tested next as Figure 7-6 shows.

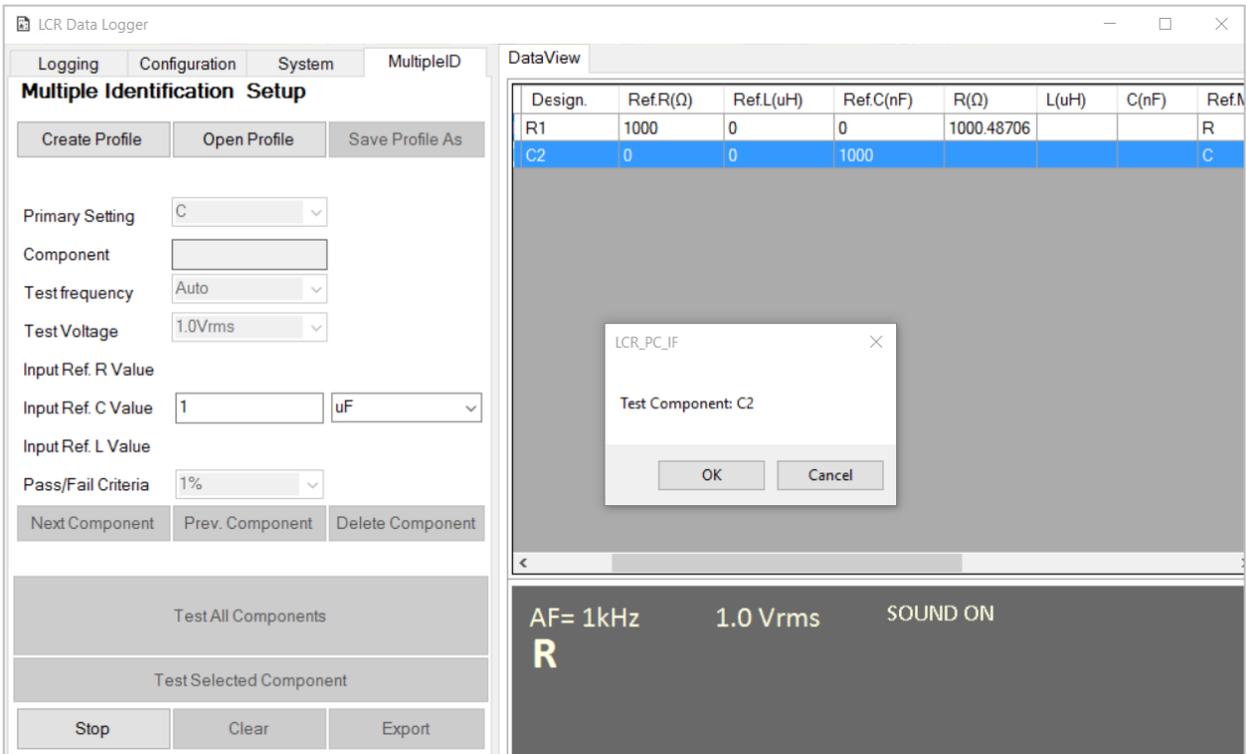


Figure 7-6: Start the Second Component in Multiple Component Identification Testing

Click **OK** to close the dialog box and start testing on the second component. If the result meets the pass/fail criteria, a green pass message will be on the display as Figure 7-7 shows. Otherwise, a red fail message will be on the display.

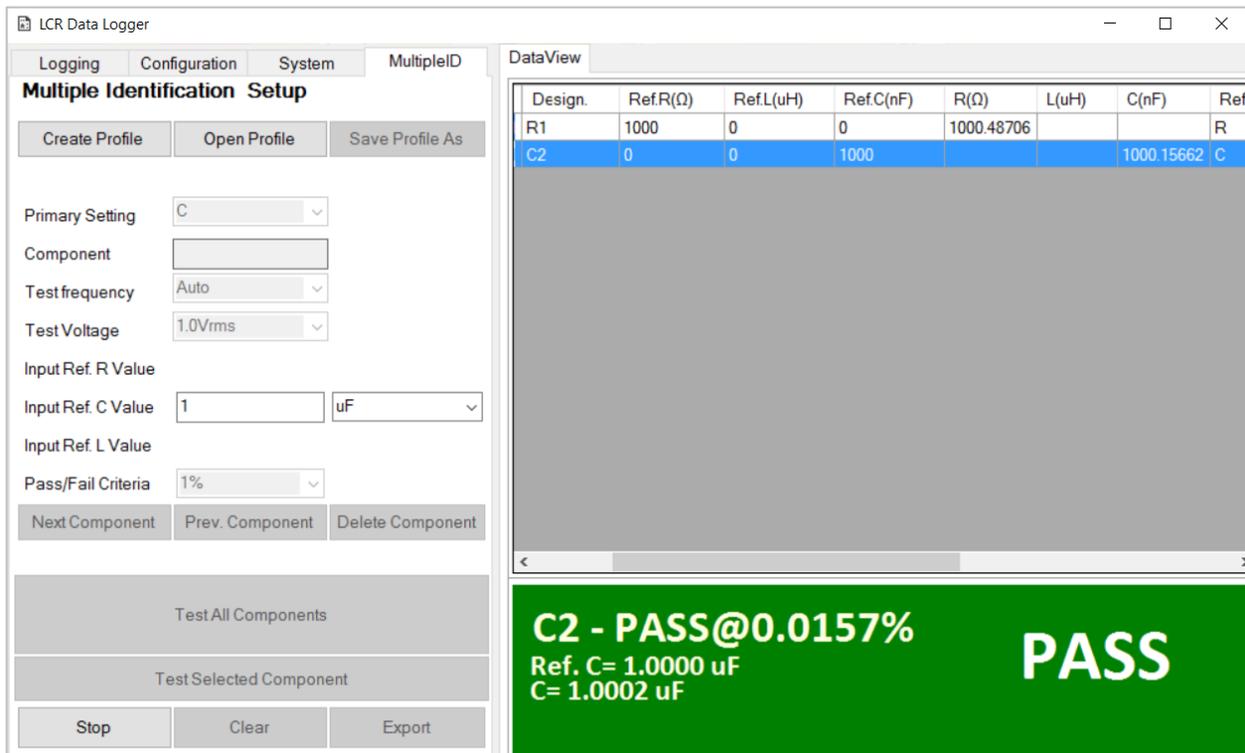


Figure 7-7: Pass the Second Component in the Multiple Component Identification Testing

Keep testing on each component. When you finish all the components, a "Test Completed" orange message shows on the display as Figure 7-8 shows. A dialog box also prompts to remind you to save the test results or keep editing current profile. You can save the test results by clicking the **Export** button. To keep editing the profile, please click the **Clear** button. It will keep the profile settings, but all the test results will be deleted.

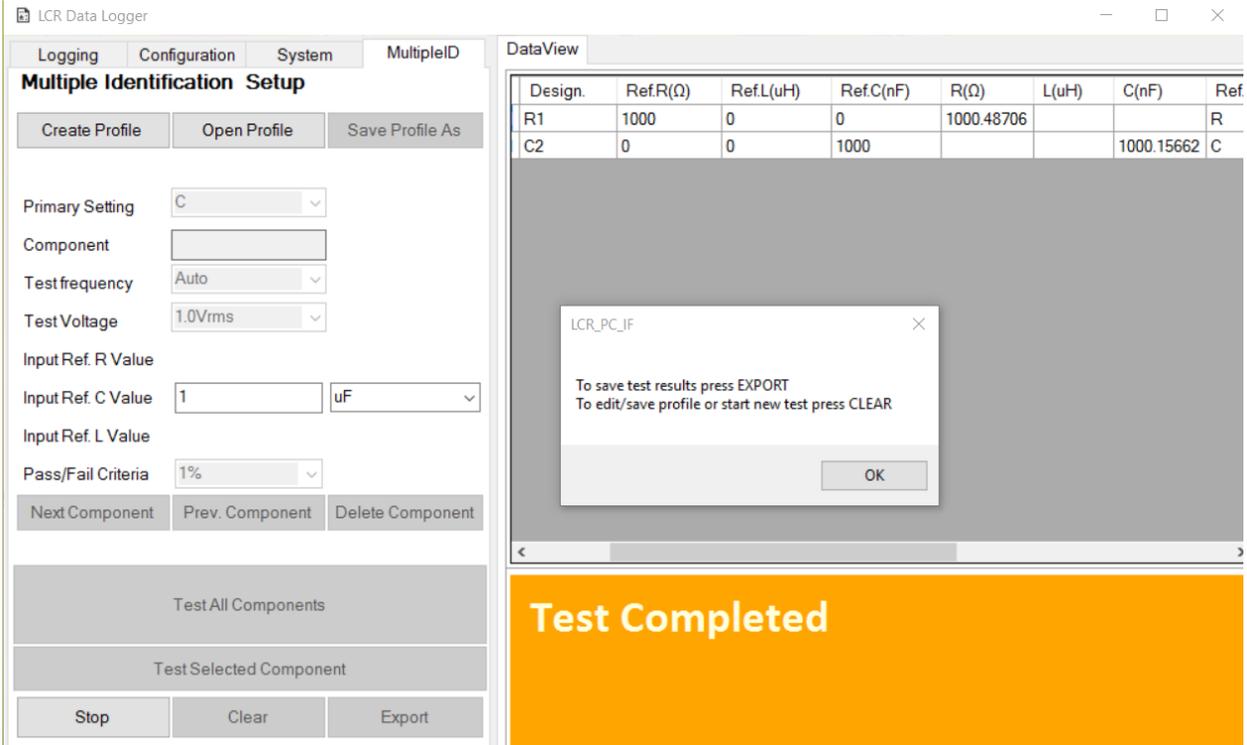


Figure 7-8: Finish the Multiple Component Identification Testing

All the test parameters and data are recorded in a spreadsheet. It has a Pass/Fail column to tell you the result is a PASS or FAIL as Figure 7-9 show.

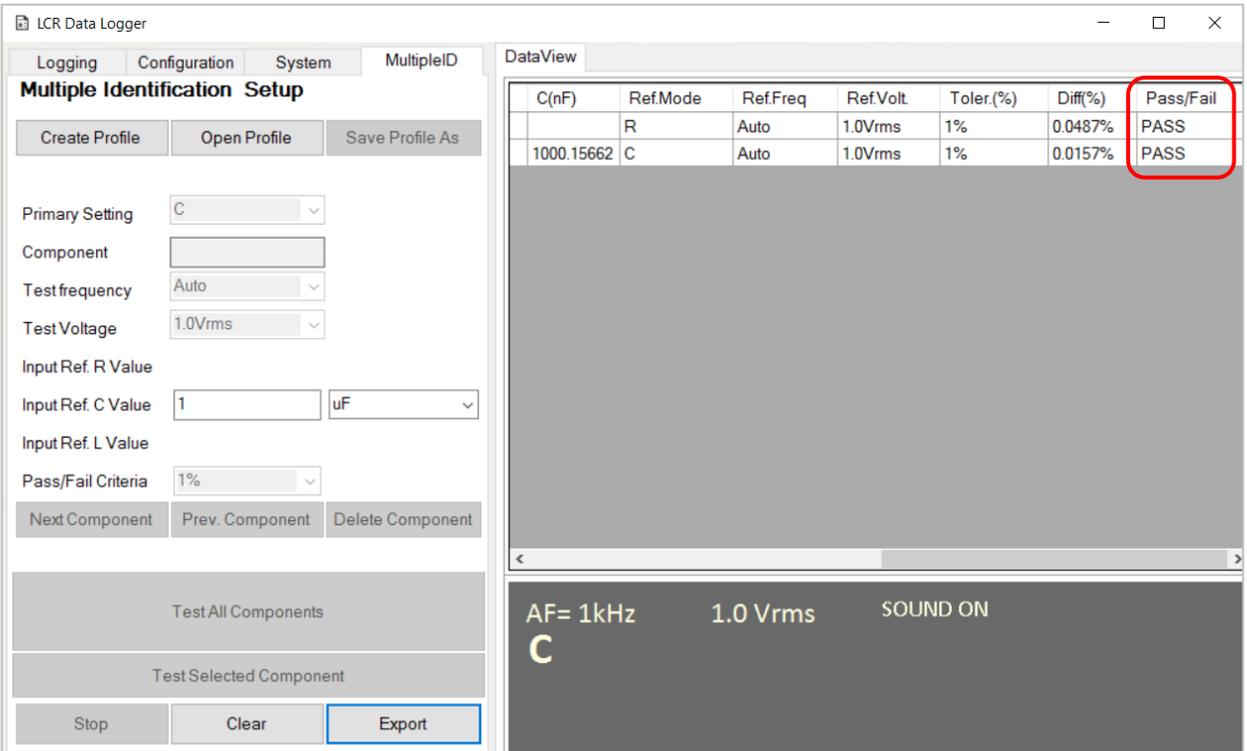


Figure 7-9: Test Result Spreadsheet

Once the **Export** button is clicked, a dialog box prompts to ask for a location for saving the test results as Figure 7-10 shows. Press the **Save** button on the dialog box to save the file. The default location is at **Windows(C:) > LCR\_DATA**.

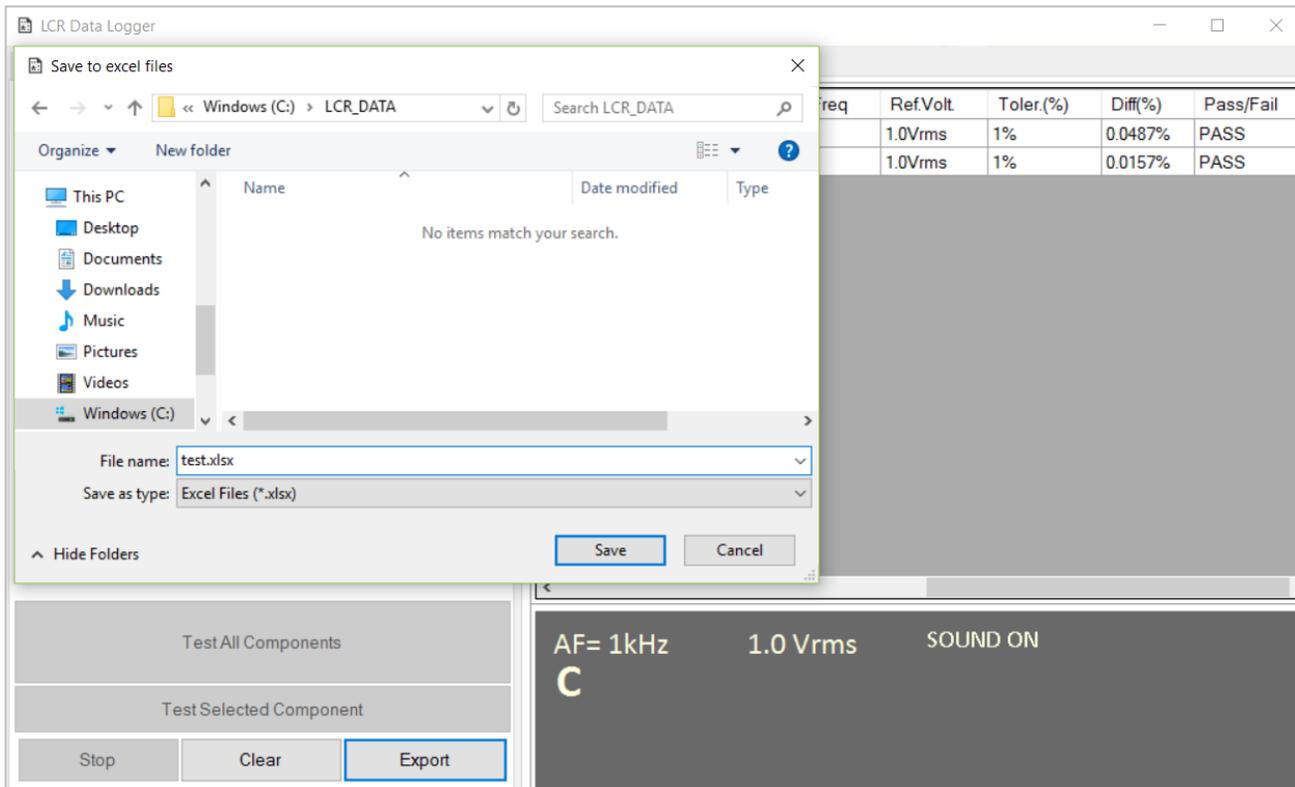


Figure 7-10: Save the Test Results in Multiple Component Identification Testing

After the test results are saved, a dialog box prompts to indicate the file is saved successfully as Figure 7-11 shows.

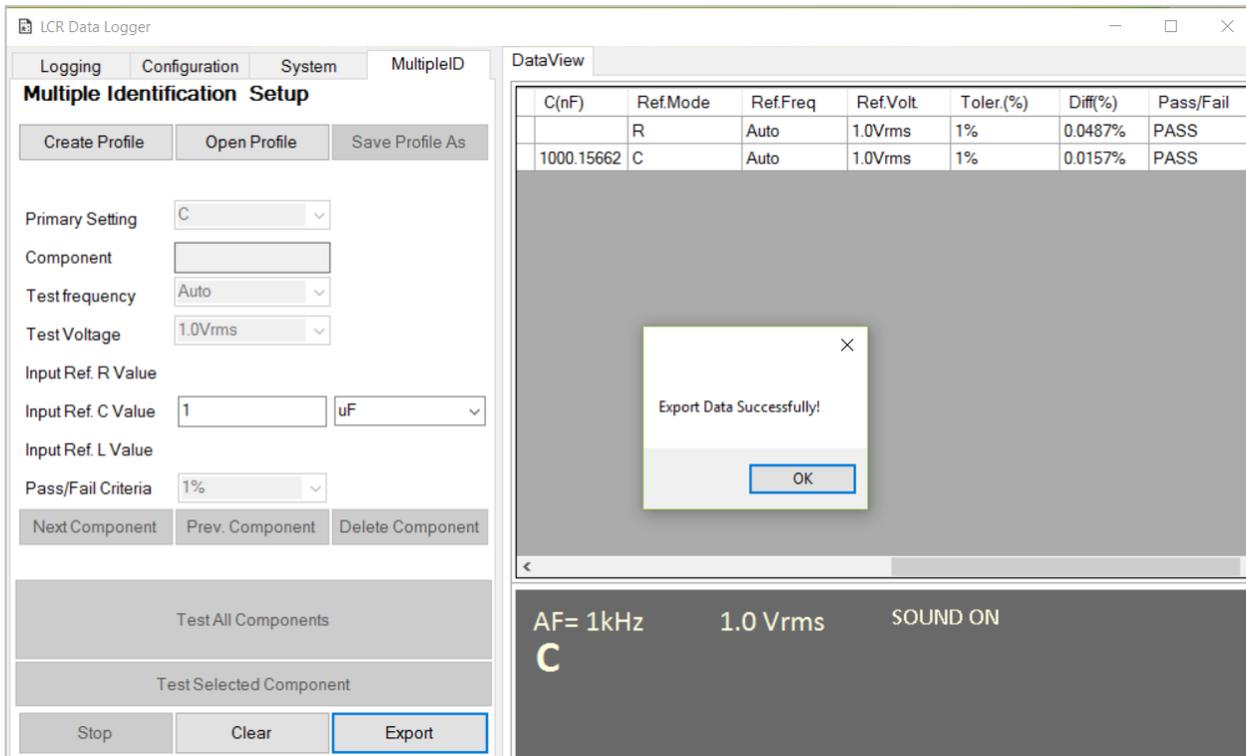


Figure 7-11: Successfully Saved the Test Results in Multiple Component Identification Testing

# Uninstalling Software

The LCR Data Logger software can be removed by taking the following steps:

1. Open the Windows **Control Panel** window.
2. Select the **Uninstall a program** option as Figure 8-1 shows.

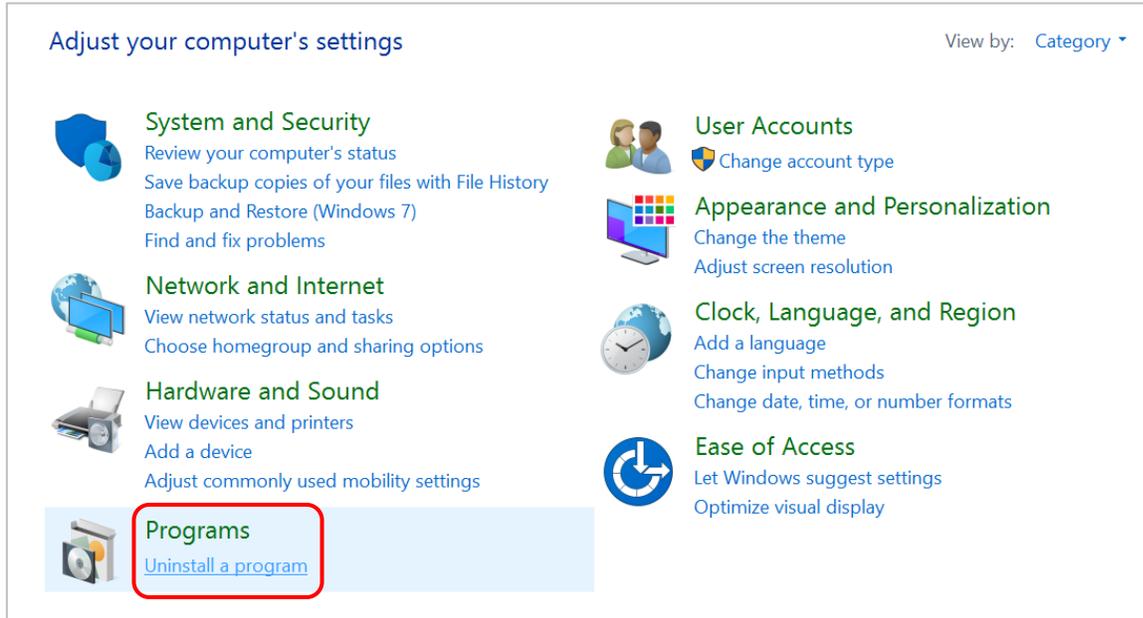


Figure 8-1: Select Uninstall a Program

3. Browse the list of currently installed programs and find the **LCR Data Logger** as Figure 8-2 shows.



Figure 8-2: Uninstall LCR Data Logger Software

4. Select the Uninstall button (the red circle in Figure 8-2) to uninstall the LCR Data Logger Software.
5. A dialog box will appear as Figure 8-3 shows. It prompts you to confirm the complete removal of the application. Click **Yes** to proceed. To cancel the uninstallation, click **No**.

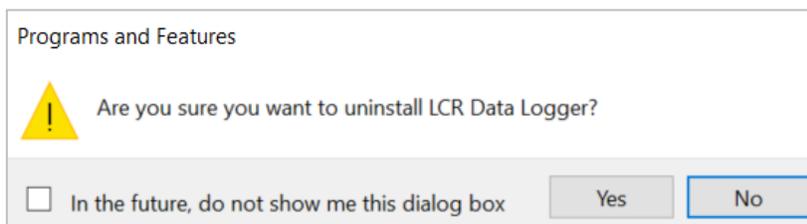


Figure 8-3: Confirm Uninstallation

6. Follow the instructions on the screen to complete the removal process.

**NOTE**

(1). The above procedures are based on Windows 10. Windows 7 or 8 might have slightly different procedures to uninstall a program.

(2). When you update a new version of LCR Data Logger, you may need to uninstall the old version prior to installing the new version.