Chroma

Digital Power Meter

66200 Series

Soft Panel User's Manual

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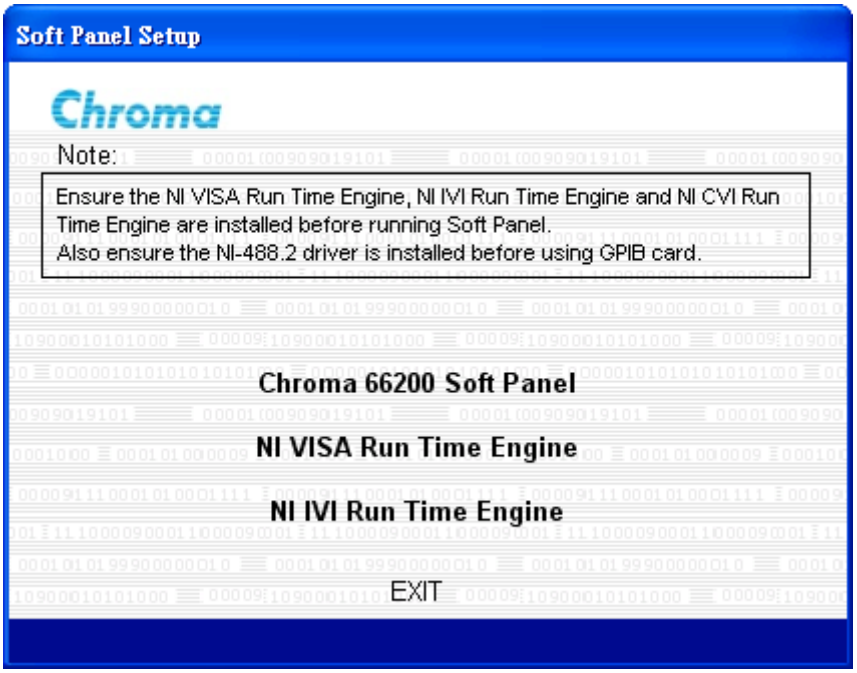

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Revision History

The following lists the additions, deletions and modifications in this manual at each revision.

Date	Version	Revised Sections
May 2007	1.0	Complete this manual.
Apr. 2008	1.1	Add the following contents: – "*Setting CT Ratio*" in the section of "*System Configuration*." – Plot and Statistics functions in the chapter of "*Recording Window*."
June 2009	1.2	Add Class "C>25W/C<=25W" & V_Fund(V) display in the chapter of "*Harmonic Measurement Window*."
Nov. 2011	1.3	Modify the following sections in the chapter of "*Harmonic Measurement Window*": – "*Setting V/I Para.*" – "*Measurement Display*."
Aug. 2013	1.4	Add the following chapters: – "*Multi-Channel Main Measurement Window*." – "*Multi-Channel Recording Window*." Modify the "*Installation of Required Drivers*" section in the chapter of "*Installation*."
Apr. 2014	1.5	Add the following: – Add "*Setting Ext. Shunt*" section in the chapter of "*Multi-Channel Main Measurement Window*." – "*IEC62301 Window*" chapter. Update the figure of "*Waveform Display*" in the chapter of "*Multi-Channel Main Measurement Window*."

Table of Contents

1. System Structure

This chapter explains the structure and functions of Digital Power Meter 66200 Series Soft Panel application. The supported instruments and communication interfaces that connect to PC are listed below for users to identify the required environment easily.

1.1 Introduction

This software is applicable to Chroma Digital Power Meter 66200 Series instruments only. The remote transmission between PC and Digital Power Meter must be active before using the software in order to communicate by commands.

The software application can perform internal parameter settings for Digital Power Meter and monitor the input measurements. It has parameter saving and report generating functions. Users can open an existing file for execution from hard disk easily. In addition the functions of voltage and current harmonic measurements can be used to identify if they comply with the IEC61000-3-2 regulation in advance.

1.2 Supported Hardware

The Chroma 66200 Series Digital Power Meters contain the following models:

A. 66201
B. 66202
C. 66203
D. 66204

1.3 Communication Interface

There are two types of communication interfaces between PC and the Digital Power Meter:

A. GPIB
B. USB

1.4 Operation

It is recommended to use the Soft Panel via the mouse and keyboard input for operation.

1.5 Software & Hardware Requirements

It is suggested to use the PC software and hardware environments as listed below:

- Intel CPU 500MHz or above
- Microsoft Windows 2000 or XP
- Drivers: NI VISA Run Time Engine 4.1 or above, NI IVI Run Time Engine 1.83 or above, NI CVI Run Time Engine 8.5 or above
- 400 MB or above hard disk with at least 40 MB or more free space
- 256 MB memory at least
- VGA or SVGA color monitor
- PS2 mouse

2. Installation

First install the NI VISA Run Time Engine, NI IVI Run Time Engine and NI CVI Run Time Engine drivers to the PC under Operating System before using Chroma 66200 Soft Panel. It is necessary to install NI 488.2 if GPIB card is in use. This chapter describes how to install the software on Windows step by step. First place the CD that contains Chroma 66200 Soft Panel application to the CD drive.

2.1 Files in CD

The CD contains the files shown in Figure 2-1 in which the "**Manual**" directory has the user's manual of both English and Traditional Chinese version.

Figure 2-1 Files in CD

2.2 Installing Chroma 66200 Soft Panel

1. After placing the CD in CD drive, the program "`Setup.exe`" will execute automatically and prompt a Soft Panel Setup screen as shown in Figure 2-2. If it does not run automatically, double-click "`Setup.exe`" to execute it manually.

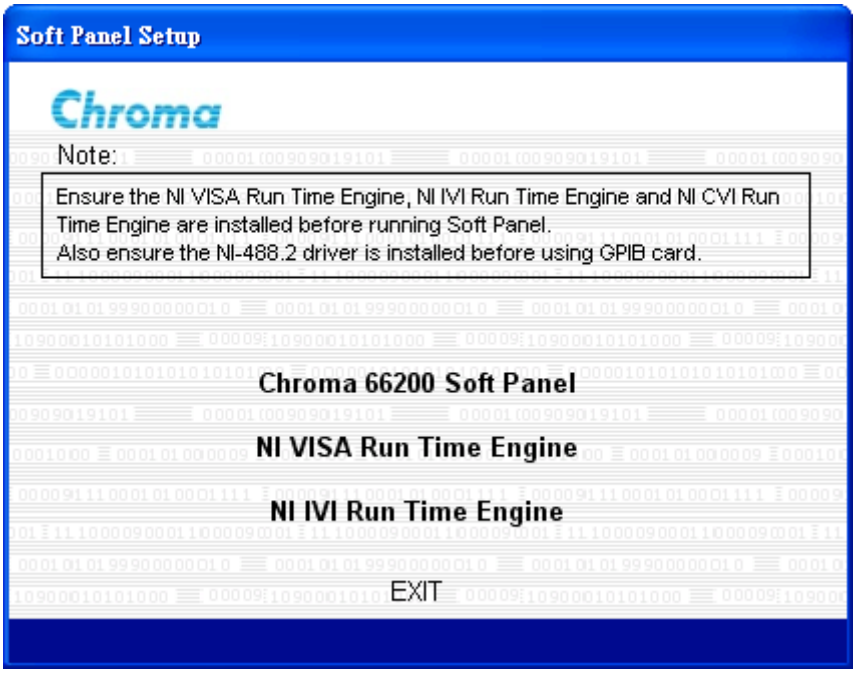


Figure 2-2 Soft Panel Setup Screen

2. Click **Chroma 66200 Soft Panel** and it will prompt a window as shown in Figure 2-3.

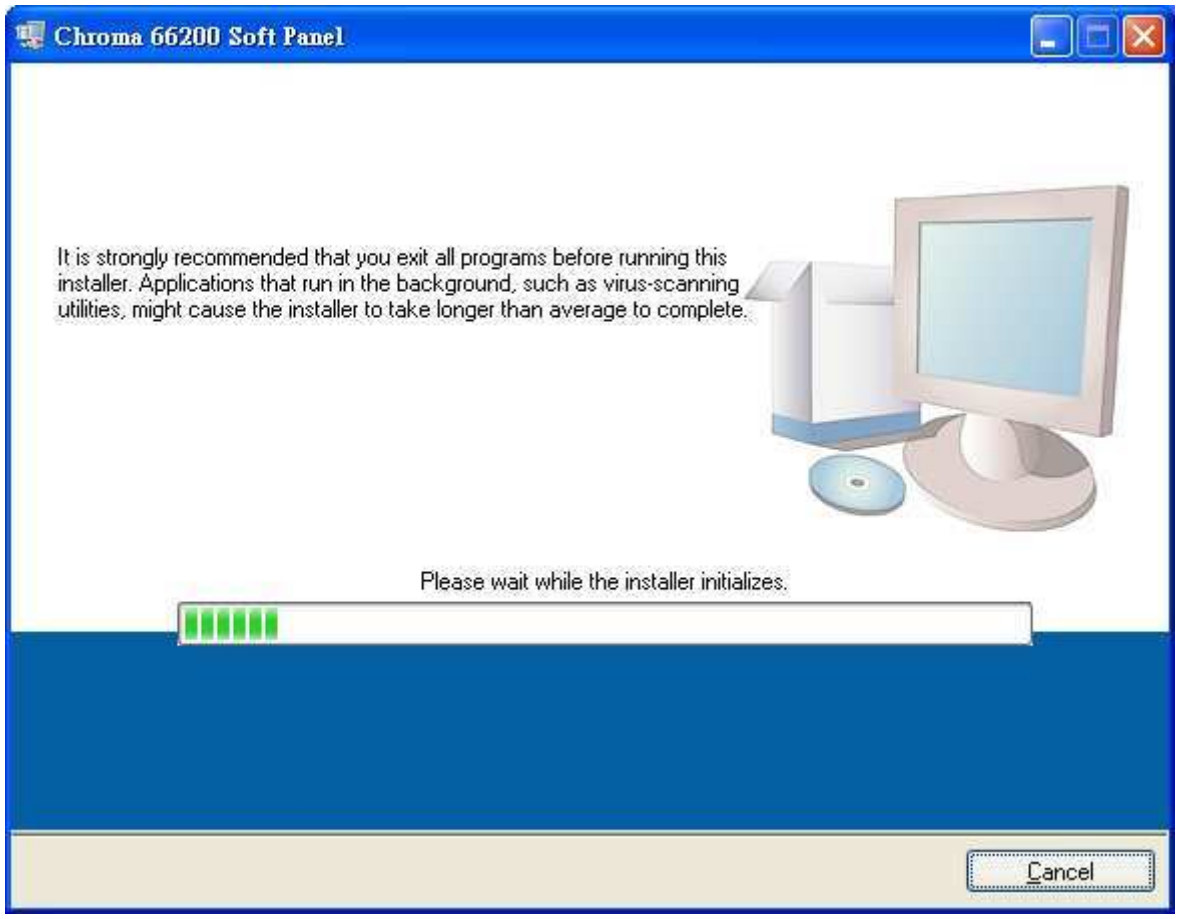


Figure 2-3 Chroma 66200 Soft Panel Installation Screen

3. Select the installation path. The program is default installed in `C:\Program Files\Chroma` directory as shown in Figure 2-4. To change it, click **Browse** and specify the path for installation and click **Next >>** to proceed.

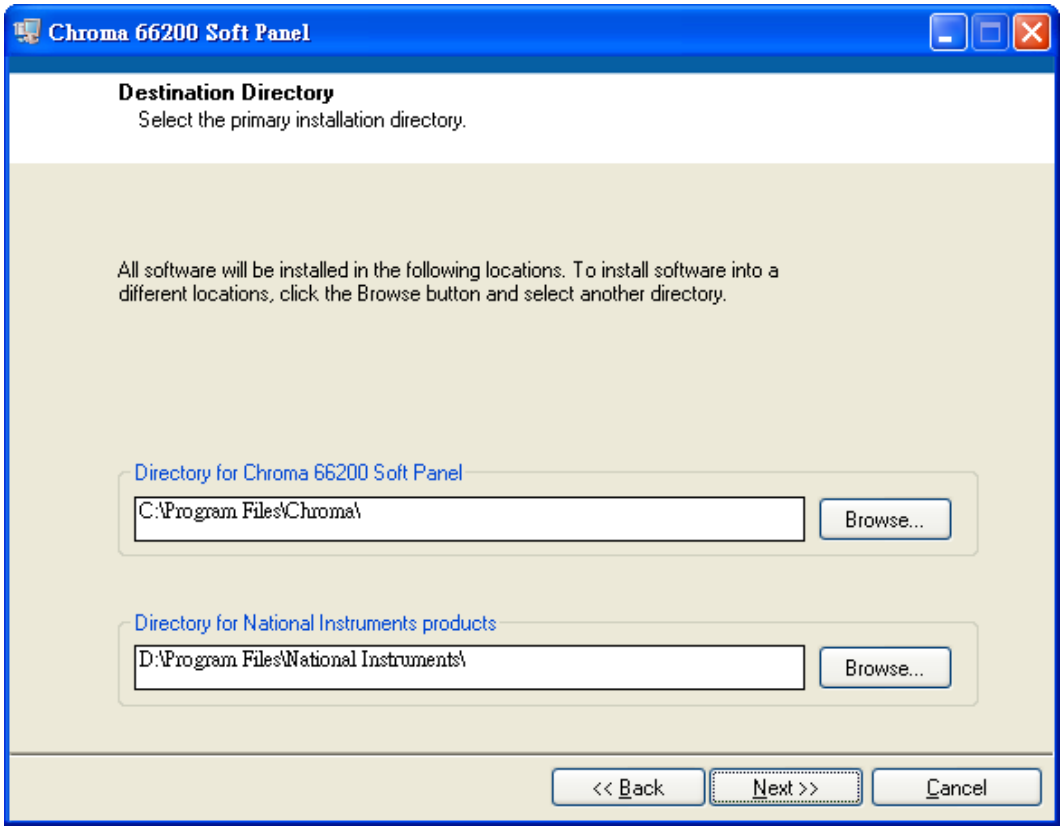


Figure 2-4 Selecting Chroma 66200 Soft Panel Installation Path

4. Ready to begin the installation. Click **Next >>** to go on.

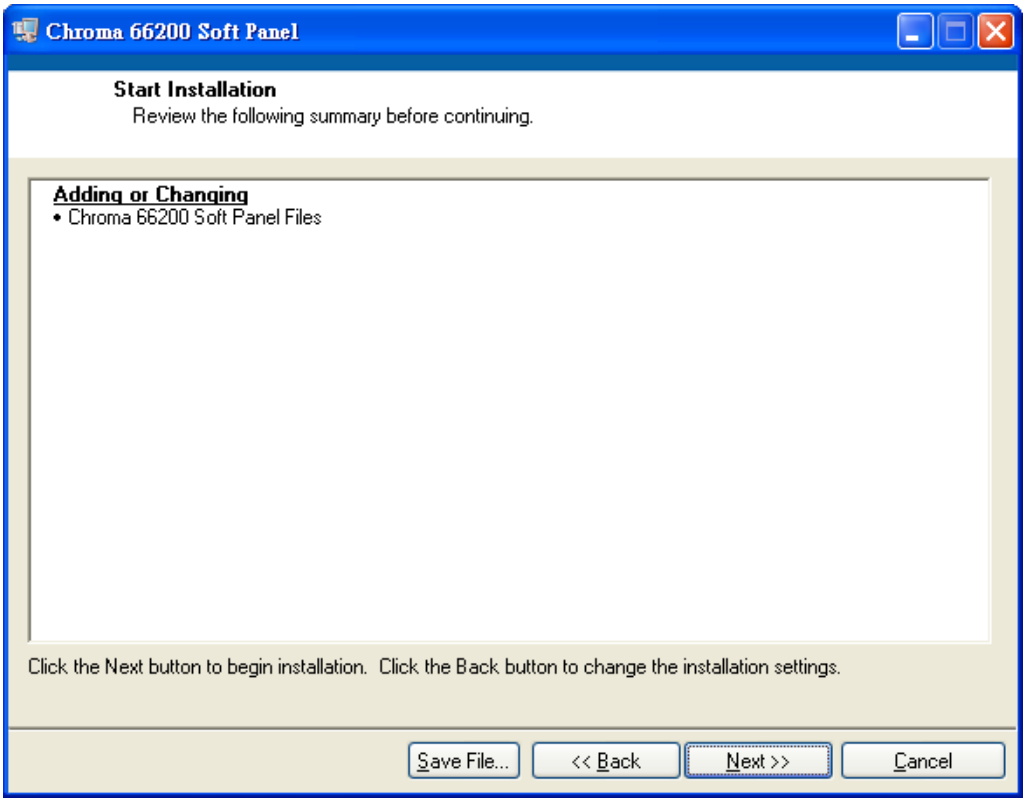


Figure 2-5 Screen of Ready to Install the Application

5. Click **Cancel** to stop the installation if any mistake is found during the installation.

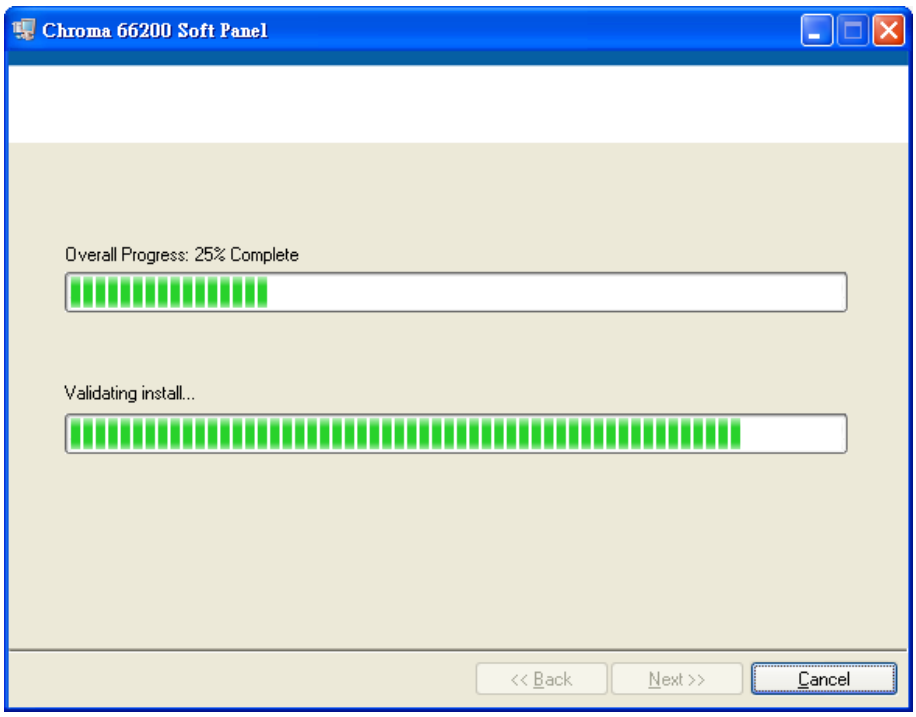


Figure 2-6 Progress of Installation

6. Once it is done, an installation complete window will prompt as shown in Figure 2-7. Click **Finish** to end the program without reboot the PC.

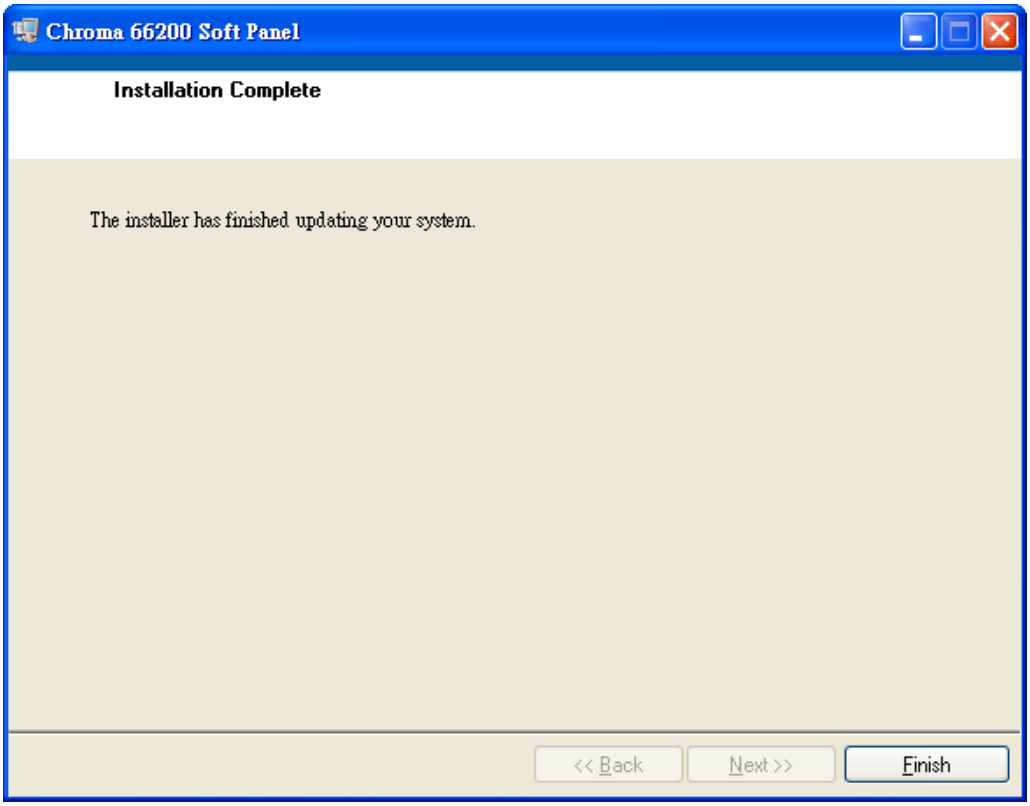


Figure 2-7 Installation Complete Screen

2.3 Installation of Required Drivers

The NI directory in the Soft Panel installation CD has NI VISA Run Time Engine 3.0 and 4.1 (default installation version) two versions. These two versions have tested by Chroma for feasibility; however, the user can still install the proper VISA version based on the Operating System in use. For more information, please visit the website http://www.ni.com/support/zht/. Ignore this section if the NI VISA Run Time Engine driver has been installed.

1. Click the **NI VISA Run Time Engine** as shown in Figure 2-2 and the following screen will prompt to install the NI VISA Run Time Engine driver version 4.1. Click **Next >>** to continue.

Figure 2-8 NI VISA Ver. 4.1 Installation Screen

2. The following window shows the decompressed NI VISA file. Click **Next >>** to carry on the installation.

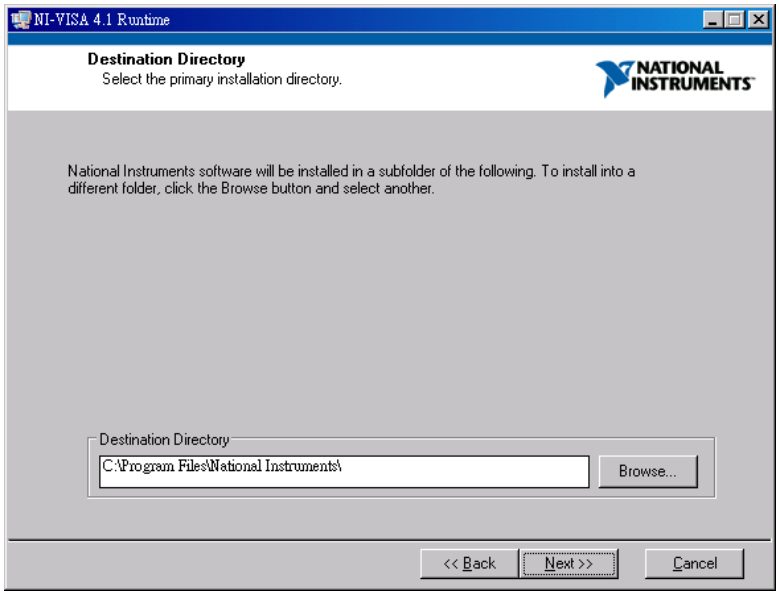


Figure 2-9 Decompressed NI VISA File

3. Click **Next >>** following the prompted message for installation. When all the procedures are done, the installation complete is shown as Figure 2-10.

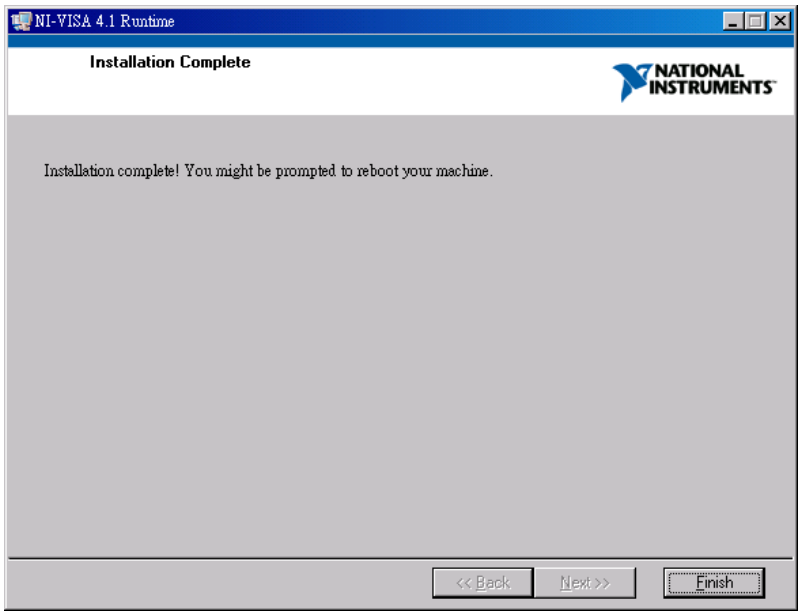


Figure 2-10 NI VISA Installation Complete Screen

4. For new OS upgrade, the NI VISA has to be upgraded to support the new OS. Please see the website of http://www.ni.com/support/zht / for upgrade and download.

5. Click the **NI IVI Run Time Engine** as shown in Figure 2-2 and the following screen will prompt to install the NI IVI Run Time Engine driver. Click **Next >** to continue.

Figure 2-11 NI IVI Installation Screen

6. The License Agreement Window of NI IVI prompts. Click “I accept the license agreement” and **Next >** to continue.

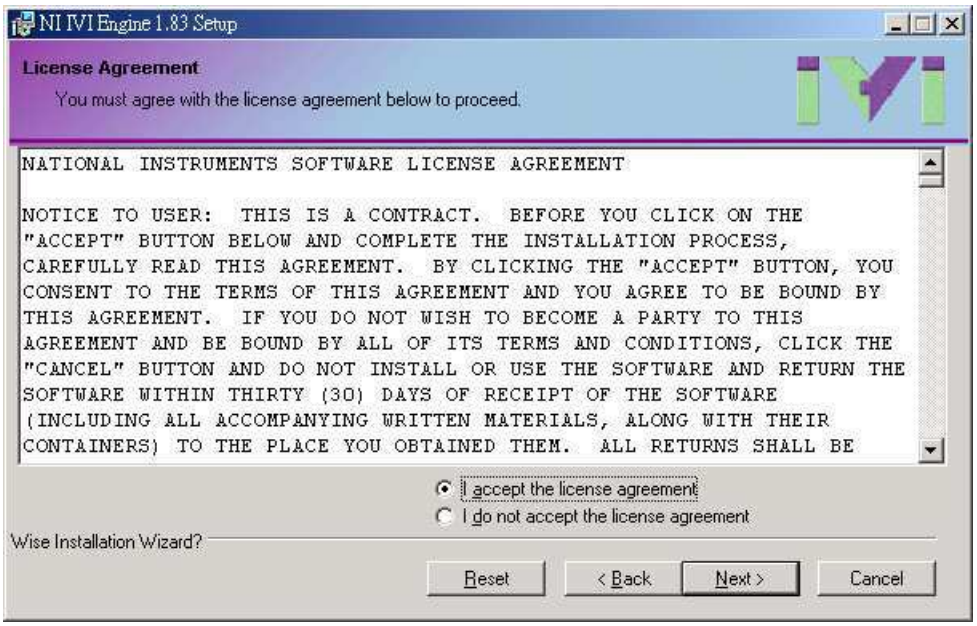


Figure 2-12 License Agreements of NI IVI

7. Select the NI IVI feature for installation. Click **Next >** to continue.

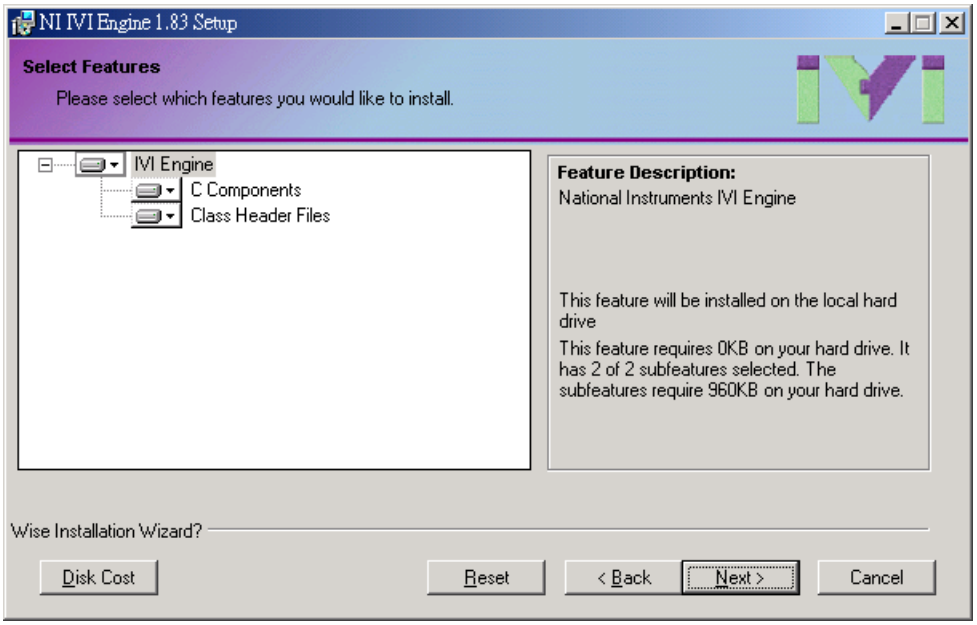


Figure 2-13 Selecting NI IVI Feature for Installation

8. Ready to install NI IVI. Click **Next >** to go on.

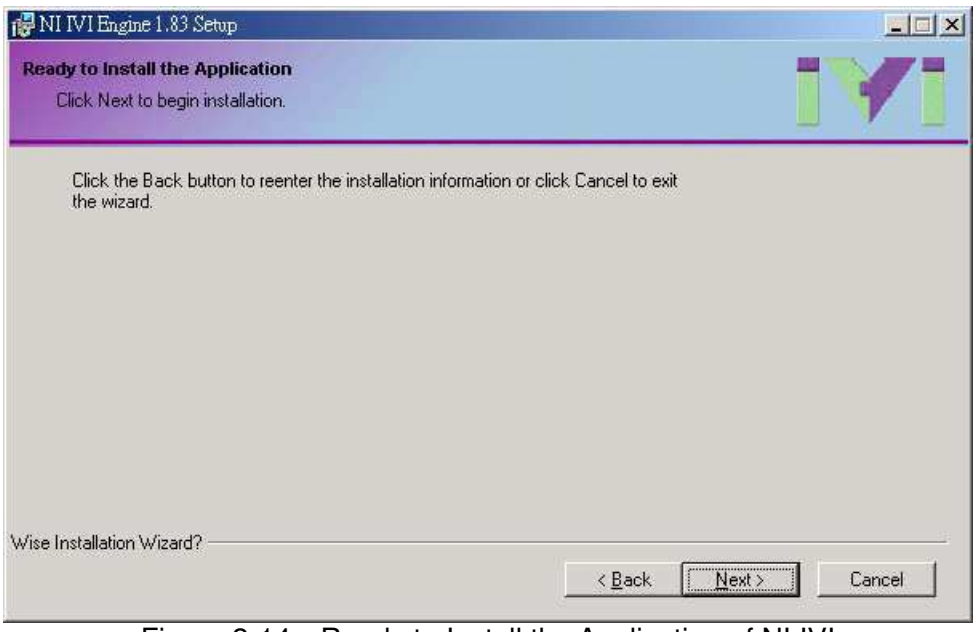


Figure 2-14 Ready to Install the Application of NI IVI

9. The installation progress of NI IVI is shown in Figure 2-15 and if any mistake is found, click **Cancel** to stop the installation.

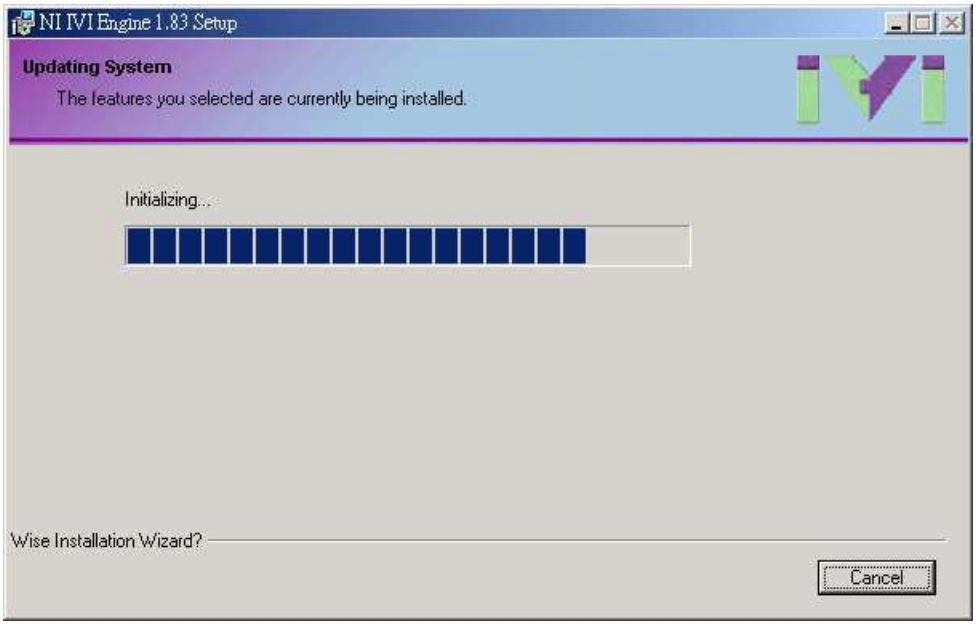


Figure 2-15 NI IVI Installation Progress

10. The following screen prompts when the NI IVI installation is done successfully. Click **Finish** to end it.

Figure 2-16 NI IVI Installation Complete Screen

2.4 Installing GPIB Interface Driver

Follow the steps listed in the user's manual of GPIB Interface Driver for installation. There is no need to install this driver if USB interface is in use.

2.5 Uninstalling Chroma 66200 Soft Panel

To remove the Chroma 66200 Soft Panel application, it is suggested to click **Start→Settings→ Control Panel→Add/Remove Programs** to uninstall the related items.

3. Starting Chroma 66200 Soft Panel

3.1 Starting

Once the installation is done, click **Start****Programs**\`Chroma 66200 Soft Panel`\`Chroma 66200 Soft Panel` will prompt the start window as shown in Figure 3-1.

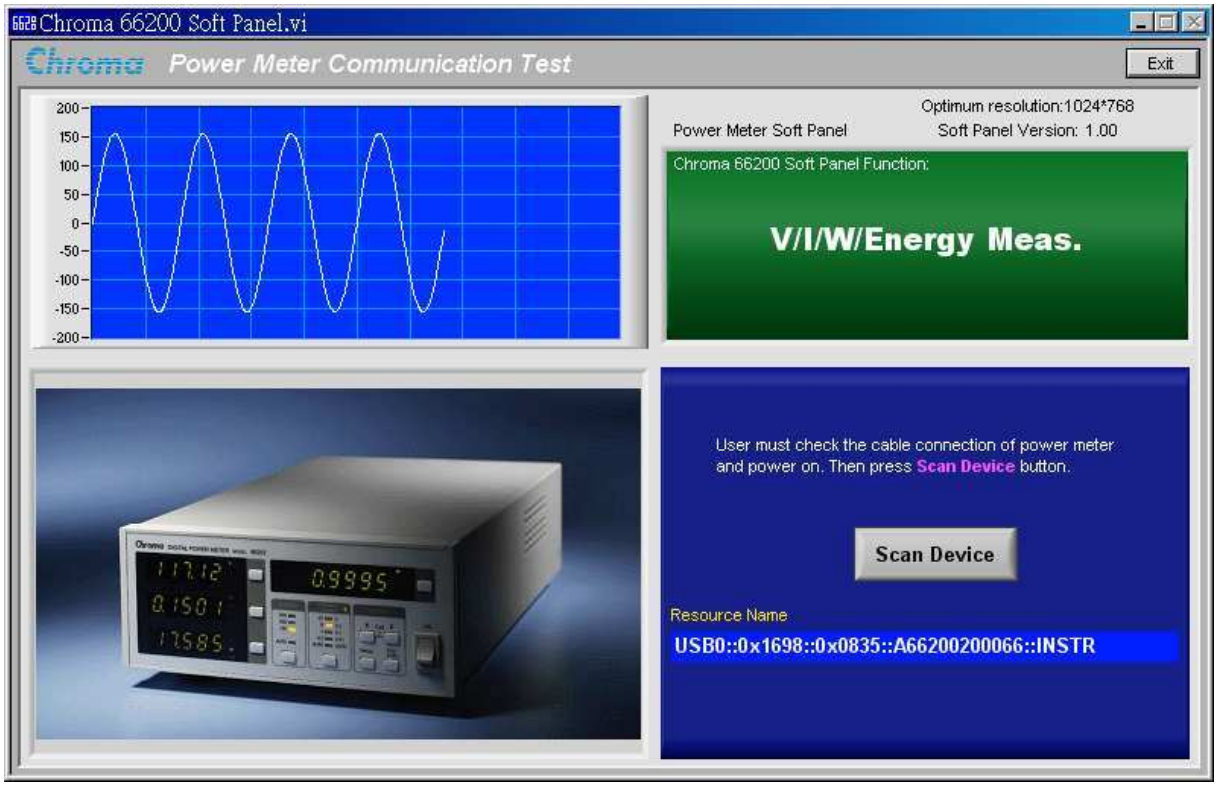


Figure 3-1 Start Window of Chroma 66200 Soft Panel

Ensure the PC and Digital Power Meter are well connected. Turn on the Digital Power Meter and click **Scan Device**. A Select Device screen as shown in Figure 3-2 will prompt for the user to select the correct one if the program detects more than two devices.

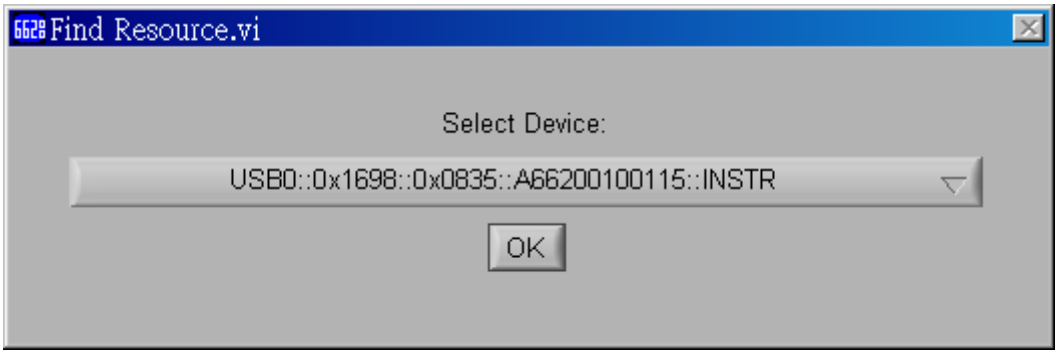


Figure 3-2 Selecting Device

4. Main Measurement Window

Click **Scan Device** from the start screen and it will prompt the window as shown in Figure 4-1 when the connected device is single channel.

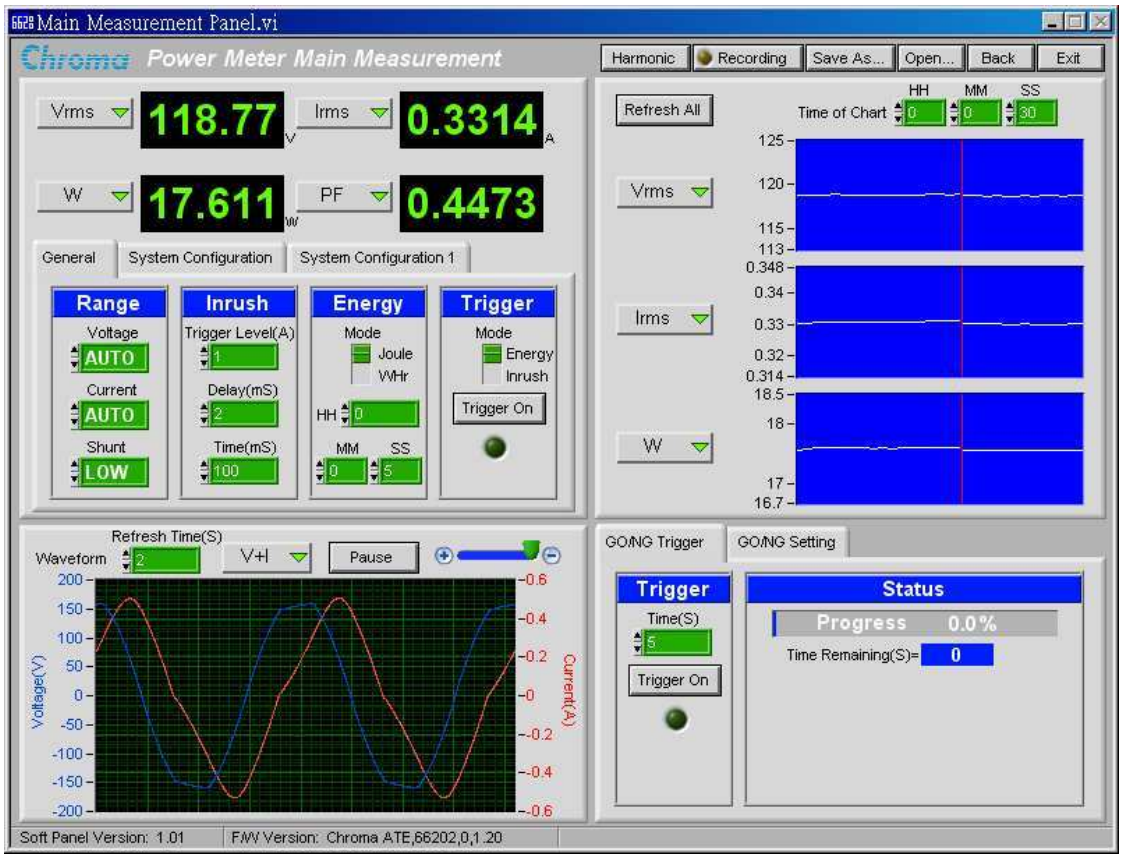


Figure 4-1 Main Measurement Window

If the communication checked ok it will read back the F/W version info of the instrument and show on the bottom of the window. If there is any error in the communication protocol, the message “Connection Error” will appear.

4.1 Using Demo Mode

The software will enter into Demo mode if no hardware device is connected, and users can understand the functions of Soft Panel through the Demo program.

4.2 Digital Type Elements

There are four digital type elements to show the measured value. Available parameters are varied with 66201 and 66202; or choosing Off not to show any measurement.

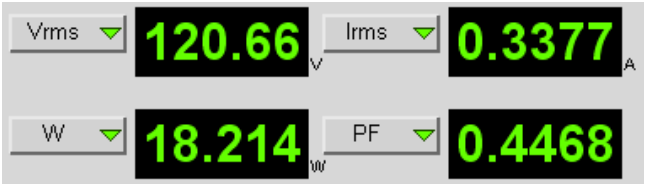


Figure 4-2 Digital Type Element

4.3 General

The General tab sets the Voltage/Current/Shunt range of Power Meter as well as the Inrush Current and Energy parameters.

4.3.1 Setting Voltage

It sets the voltage range for Power Meter.

Figure 4-3 Setting Voltage

4.3.2 Setting Current

It sets the current range for Power Meter.

Figure 4-4 Setting Current

4.3.3 Setting Shunt

It sets the Current Shunt range for Power Meter. This function is not valid for 66201.

Figure 4-5 Setting Shunt

4.3.4 Setting Trigger Level

It sets the inrush current trigger level for Power Meter. This function is not valid for 66201.

Figure 4-6 Setting Trigger Level

4.3.5 Setting Delay

It sets the delay time of inrush current for Power Meter. This function is not valid for 66201.

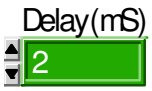


Figure 4-7 Setting Delay

4.3.6 Setting Time

It sets the inrush current measurement time for Power Meter. This function is not valid for 66201.

Figure 4-8 Setting Time

4.3.7 Setting Energy Mode and Time

It sets the energy measurement mode and time for Power Meter. This function is not valid for 66201.

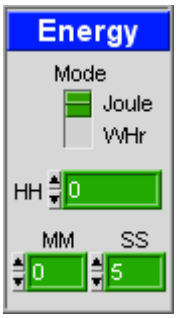


Figure 4-9 Setting Energy Mode and Time

4.3.8 Setting Trigger Mode and On/Off

Once the measurement parameters of inrush current and energy are set, select the Mode for measuring inrush current or energy, click **Trigger On** to start the measurement and the light beneath will be on. To stop the measurement, just click **Trigger Off**. This function is not valid for 66201.

Figure 4-10 Setting Trigger Mode and On/Off

4.4 System Configuration

The System Configuration is used to set the measure, THD calculation, digital filter, power integrate and protection mode clear of Power Meter.

4.4.1 Setting Measure Mode & Window Time

It sets the measure to Window or Average along with no. of times for Power Meter.

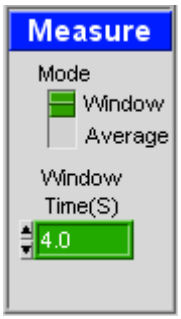


Figure 4-11 Setting Measure Mode and Window Time

4.4.2 Setting THD Mode & Order

It sets the order calculated by the THD (Total Harmonic Distortion) of voltage and current for Power Meter. If Full Mode is selected, it means 100 orders are used for THD calculation; and if Order is selected, it indicates the orders set by users are applied for THD calculation. This function is not valid for 66201.

Figure 4-12 Setting THD Mode and Order

4.4.3 Setting Filter

It sets the digital filter to On or Off for Power Meter.

Figure 4-13 Setting Filter

4.4.4 Setting Power Integrate

It sets the power integrate for Power Meter. When set to 0 it means to disable the power integrate; while set to 1 or above it means to enable the power integrate and the time set is the integration time.

Figure 4-14 Setting Power Integrate

4.4.5 Setting Protection Clear

When protection occurred on the Power Meter, click **Protection Clear** can clear the protection mode.

Figure 4-15 Setting Protection Clear

4.4.6 Setting CT Ratio

It sets the CT Ratio for Power Meter. This function is not valid for 66201.

Figure 4-16 Setting CT Ratio

4.5 Waveform Display

The Power Meter captured voltage/current waveform is shown in Figure 4-17. It can select to display V or I or V+I. Use Refresh Time to set the seconds interval for capturing the waveform, to pause the capture or zoom in/out the waveform display. This function is not valid for 66201.

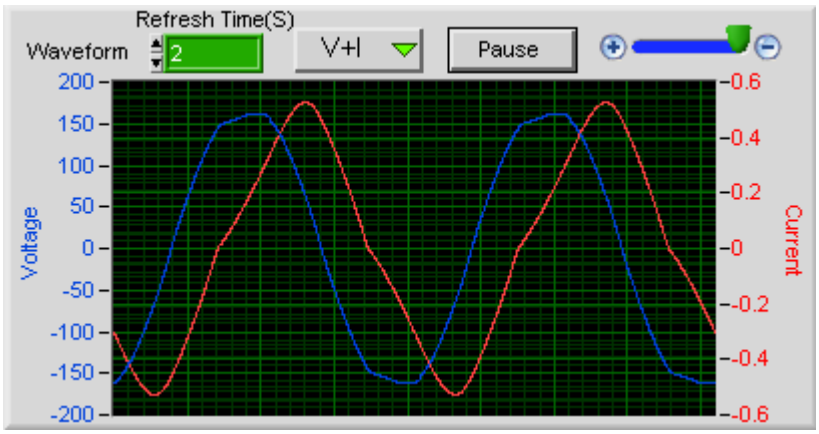


Figure 4-17 Waveform Display

4.6 Chart Display

There are 3 Charts to show the measurement variation curve. The parameters are varied with 66201 and 66202. Select Off can suspend the curve from update and click **Refresh All** can update the Chart from the beginning. Time of Chart is able to set the time for entire Chart, for instance, if users wish to see the variation curve of voltage, current and power within 1 hour, the fastest measure time for Chart is 1 second and the measure time will increase due to the increment of Time of Chart. It is determined by the program automatically.

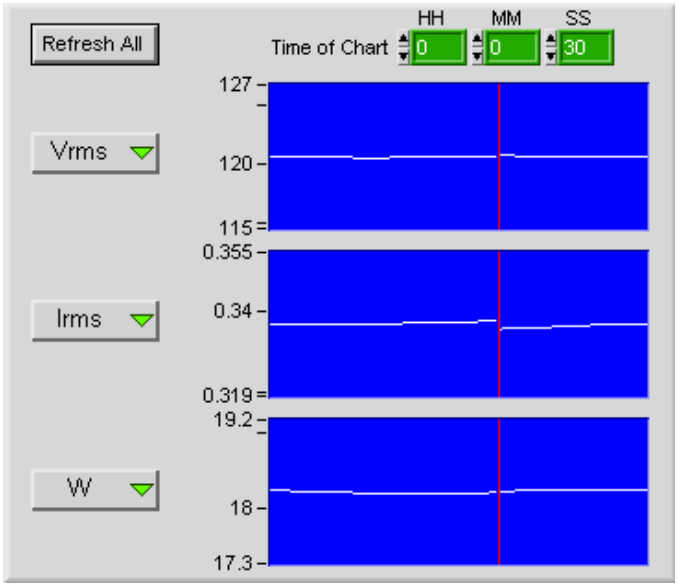


Figure 4-18 Chart Display

4.7 GO/NG Setting

The specification ranges input to GO/NG Setting can judge the DUT for PASS and FAIL as shown in Figure 4-19. Enable the parameter to do GO/NG judgment. Lower Bound is the low limit of specification and Upper Bound is the high limit of specification.

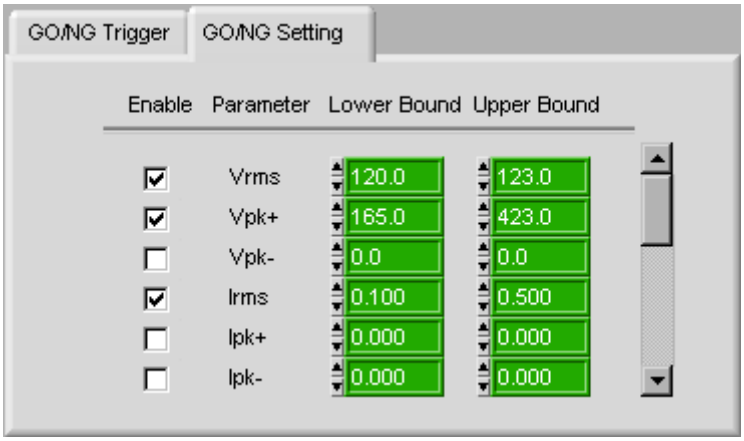


Figure 4-19 GO/NG Setting

Switch to GO/NG Trigger screen as shown in Figure 4-20 after the GO/NG Setting is done. Time(S) sets the detection time of GO/NG and the light beneath the button **Trigger On** will turn on when it is clicked to start the judgment. To pause it, just click **Trigger Off**. If the measured value is inside the specification range within the time set, PASS will appear when the time is due; or FAIL will prompt as well as the parameter that exceeds the specification rang as shown in Figure 4-21.

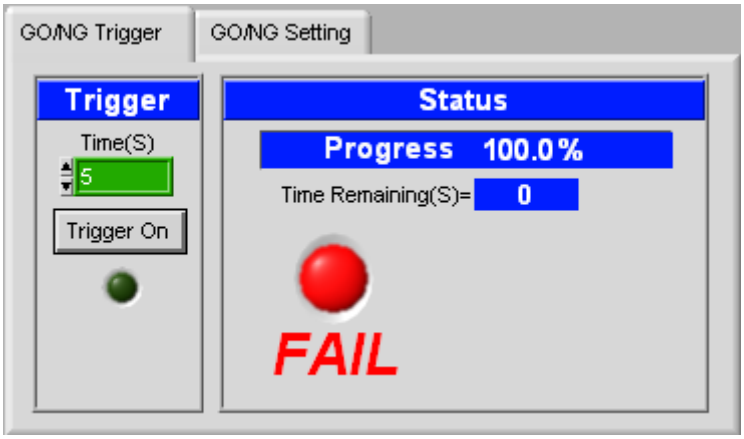


Figure 4-20 GO/NG Trigger

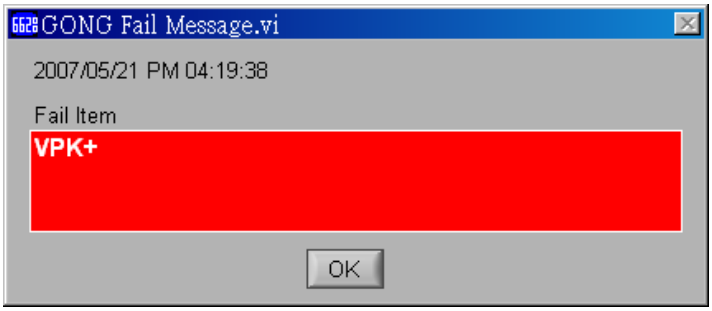


Figure 4-21 GONG Fail Message

4.8 Status Monitor

When the program detects error on the Power Meter such as over voltage/current protection or over current range, a dialog box will appear as shown in Figure 4-22. It is necessary for users to switch to proper voltage/current range to avoid incorrect measurement or resolve the error condition as soon as possible.

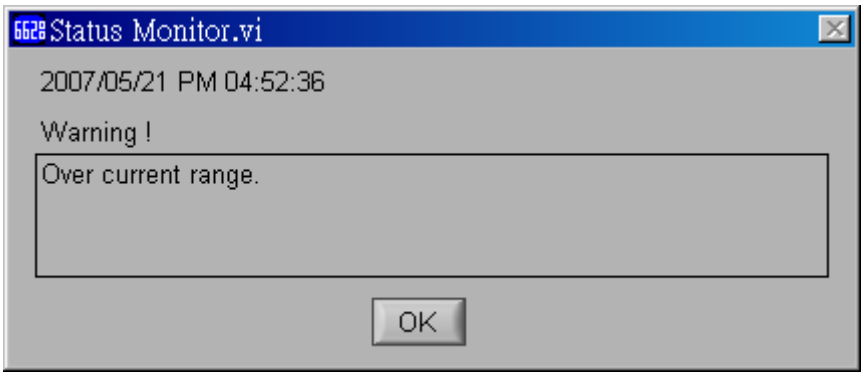


Figure 4-22 Status Monitor

4.9 Save As Button

Click the **Save As** button as shown in Figure 4-23 and save the parameters set on the present window to a .Mea file.

Figure 4-23 Button to Save Current Settings

To save the present parameters for use at next power on, users can click **Save As…** and select a directory path and a filename (with extension .Mea) for storage. Users can save the settings to different files through this function. The saved files will take some disk space, thus if the disk space is big enough it can store many kinds of settings.

4.10 Open Button

Click the **Open…** button as shown in Figure 4-24 to open an existing .Mea file. It simplifies the action of parameter input and avoids error from occurrence.

Figure 4-24 Open Button

4.11 Back Button

Click this button to skip the present window and return to previous window.

Figure 4-25 Back Button

4.12 Exit Button

Click this button to exit the Soft Panel.

Figure 4-26 Exit Button

5. Recording Window

Click **Recording** in the Main Measurement window will enter into the window as shown in Figure 5-1 to log the measured data and save them to file.

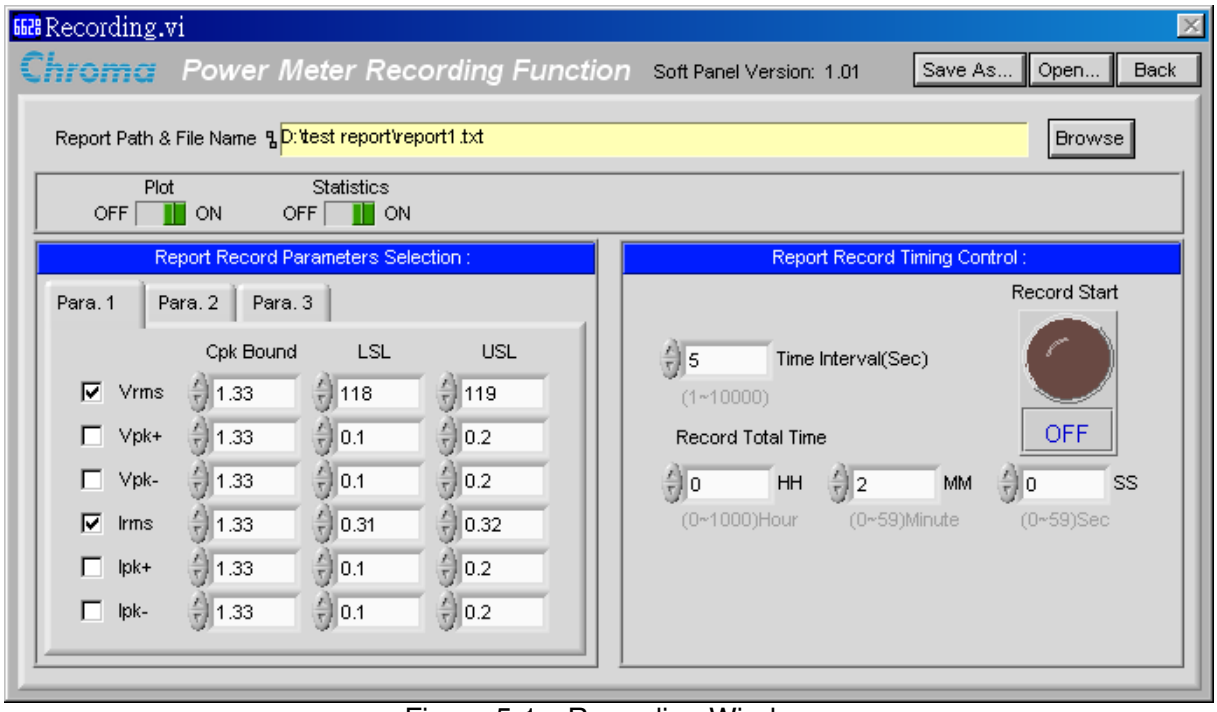


Figure 5-1 Recording Window

First, click **Browse** to select the directory path and filename for save and then select the parameters to be logged at the left side of window. Next, set the Record Total Time and Time Interval at the right side of window, and click **Record Start** to begin recording. See section 4.9, 4.10 and 4.11 for the descriptions of **Save As…**, **Open…** and **Back** buttons. The report is a pure text *.txt file and its format is shown in Figure 5-2.

Time	Vrms(V)	Irms(A)	W	PF	THDv(%)	THDi(%)
2007/05/21 19:28:41	120.30	0.2990	18.016	0.5007	2.4340	12.760
2007/05/21 19:28:46	120.39	0.2999	18.055	0.4999	2.4419	12.740
2007/05/21 19:28:51	120.27	0.2999	18.032	0.4999	2.4639	12.690
2007/05/21 19:28:56	120.27	0.3004	18.047	0.4993	2.4695	12.670
2007/05/21 19:29:01	120.04	0.2999	17.996	0.4997	2.7337	12.715
2007/05/21 19:29:06	120.05	0.3010	18.034	0.4990	2.7465	12.659
2007/05/21 19:29:11	119.96	0.3014	18.029	0.4985	2.7529	12.637
2007/05/21 19:29:16	119.96	0.3020	18.034	0.4977	2.7458	12.604
2007/05/21 19:29:21	119.94	0.3023	18.019	0.4968	2.7242	12.557
2007/05/21 19:29:26	119.98	0.3032	18.037	0.4957	2.6960	12.509
2007/05/21 19:29:31	120.02	0.3042	18.057	0.4945	2.7491	12.483
2007/05/21 19:29:36	119.99	0.3046	18.194	0.4976	2.7195	13.054
2007/05/21 19:29:41	120.07	0.3066	18.449	0.5009	2.7476	12.990
2007/05/21 19:29:46	119.99	0.3070	18.423	0.5000	2.7644	12.946
2007/05/21 19:29:51	120.04	0.3081	18.446	0.4986	2.7670	12.902
2007/05/21 19:29:56	120.10	0.3095	18.288	0.4919	2.7481	12.162
2007/05/21 19:30:01	120.09	0.3101	18.188	0.4882	2.7102	12.103
2007/05/21 19:30:06	120.04	0.3106	18.182	0.4876	2.7430	12.105
2007/05/21 19:30:11	120.13	0.3118	18.217	0.4862	2.7289	12.055
2007/05/21 19:30:16	120.16	0.3126	18.222	0.4850	2.7388	11.983
2007/05/21 19:30:21	120.23	0.3137	18.243	0.4836	2.7656	11.920
2007/05/21 19:30:26	120.22	0.3141	18.234	0.4827	2.7657	11.888
2007/05/21 19:30:31	120.23	0.3148	18.232	0.4816	2.7437	11.845
2007/05/21 19:30:36	120.24	0.3158	18.247	0.4804	2.7481	11.816

Figure 5-2 Report Format of Recording

When the Plot is set to ON, it can log the change curve, minimum, maximum and average of parameter. When the Statistics is set to ON, it can set Cpk Bound, LSL and USL, also create a statistics histogram. The file extension is *.doc.

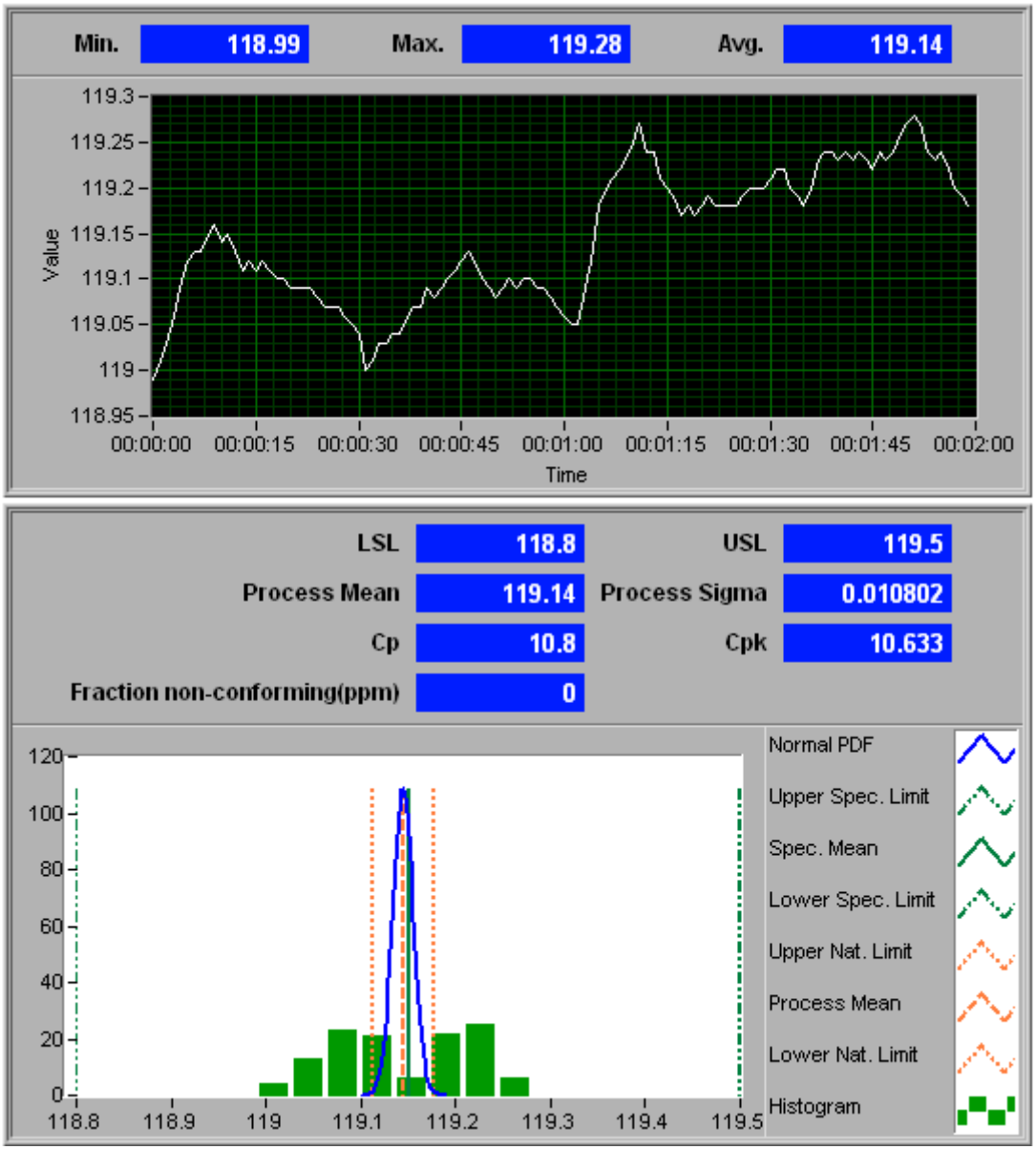


Figure 5-3 Graphs of Plot and Statistics

Notice Please make sure Microsoft® Word has been installed on the PC when using Plot and Statistics function.

6. Harmonic Measurement Window

Click **Harmonic** in the Main Measurement window will enter into the window as shown in Figure 6-1 to measure the harmonic of voltage and current, also to save the measured results to files. In addition, it can pre test the harmonic of input voltage and current for Class A/B/C>25W/C<=25W/D DUT based on the IEC61000-3-2 regulation. This function is not valid for 66201.

Notice

This test function is only pre-compliance with IEC61000-3-2 because the measurement method of Chroma 66202 Digital Power Meter does not fully follow the regulation.

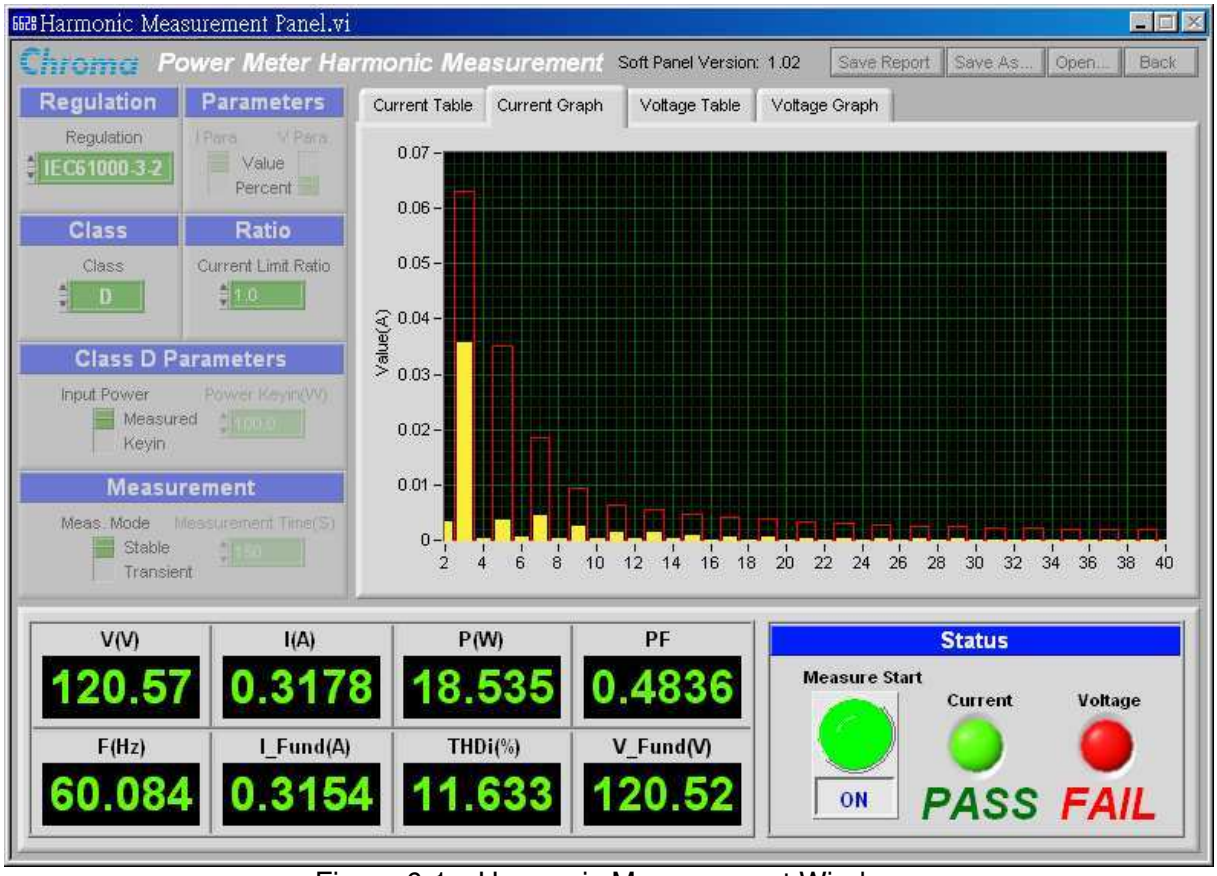


Figure 6-1 Harmonic Measurement Window

6.1 Setting Regulation

When None is selected it means to do voltage and current harmonic test only, and when IEC61000-3-2 is selected it means to check if the measured voltage and current harmonic meets the IEC61000-3-2 regulation.

Figure 6-2 Setting Regulation

6.2 Setting V/I Para.

It selects voltage and current harmonic in Value or Percent. V Para. is only valid when the Regulation is set to None.

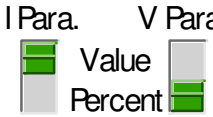


Figure 6-3 Setting V/I Para.

6.3 Setting Class

It sets the DUT class for regulation. There are A, B, C>25W, C<=25W and D 5 classes for selection. When the DUT is in the class of C<=25W, it can select Class D for test as stated in the regulation.

Figure 6-4 Setting DUT Class

6.4 Setting Current Limit Ratio

It sets the current limit ratio of regulation. The default is 1. For example, when testing in Japan with voltage 100V, the ratio can set to 2.3 to comply with the test.

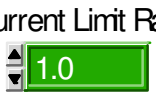


Figure 6-5 Setting Current Limit Ratio

6.5 Setting Class D Parameters

Input Power and Power Keyin are only valid when the Class is set to D. Input Power can select the power value to be measured by Power Meter or got from keyin.

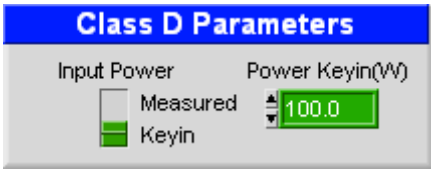


Figure 6-6 Setting Class D Parameters

6.6 Measurement

Selecting Stable in Meas. Mode indicates it captures the voltage and current harmonic once every one second for PASS/FAIL judgment. While in Transient mode it means to capture the voltage and current harmonic once every one second during Measurement Time and calculates the average and maximum; and PASS/FAIL judgment only performs when the time ends.

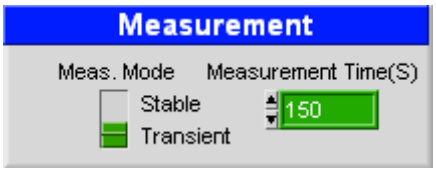


Figure 6-7 Measurement

6.7 Status

Click **Measure Start** to start measurement after all parameters are set. When the Regulation is set to IEC61000-3-2, there are Current and Voltage lights to show if they meet the regulation.

Standard criteria of voltage: Do not exceed the value of Limit column in Voltage Table tab.

Standard criteria of current:

1. The average harmonic currents of entire test period shall be less or equal to the limits.
2. The harmonic currents of entire test period shall be less or equal to 150% of the limits.
3. For harmonics of the order above 19, an overview of the spectrum is taken. If this overview shows an envelope of the spectrum with a monotonic decrease of the increasing order harmonics, measurement can be restricted to harmonics up to and including over 19.
4. Harmonic currents less than 0.6% of the input current, or less than 5mA, are disregarded.
5. The manufacturer may specify any power which is within +-10% of the actual measured value for class D.

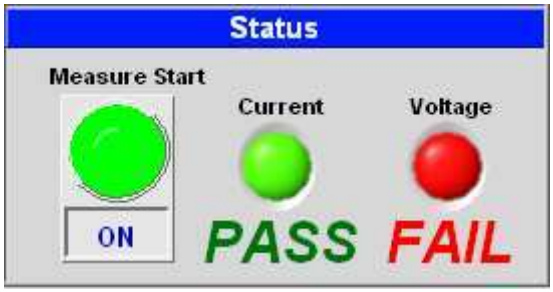


Figure 6-8 Status

6.8 Measurement Display

Click **Measure Start** the measurement starts to update. There are two measurement display areas. As shown in Figure 6-9, the I_Fund(A) indicates the Fundamental Current and V_Fund(V) indicates the Fundamental Voltage.

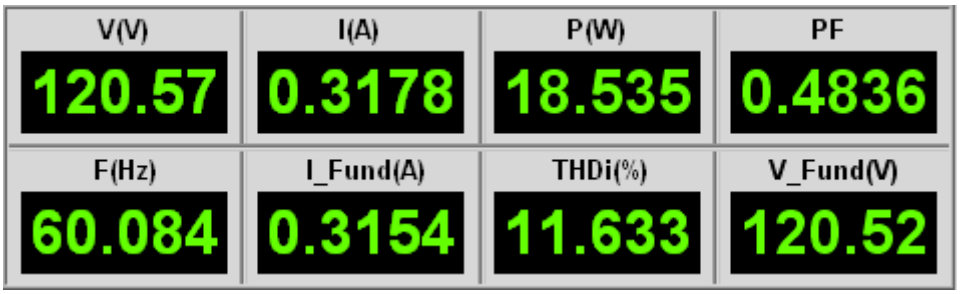
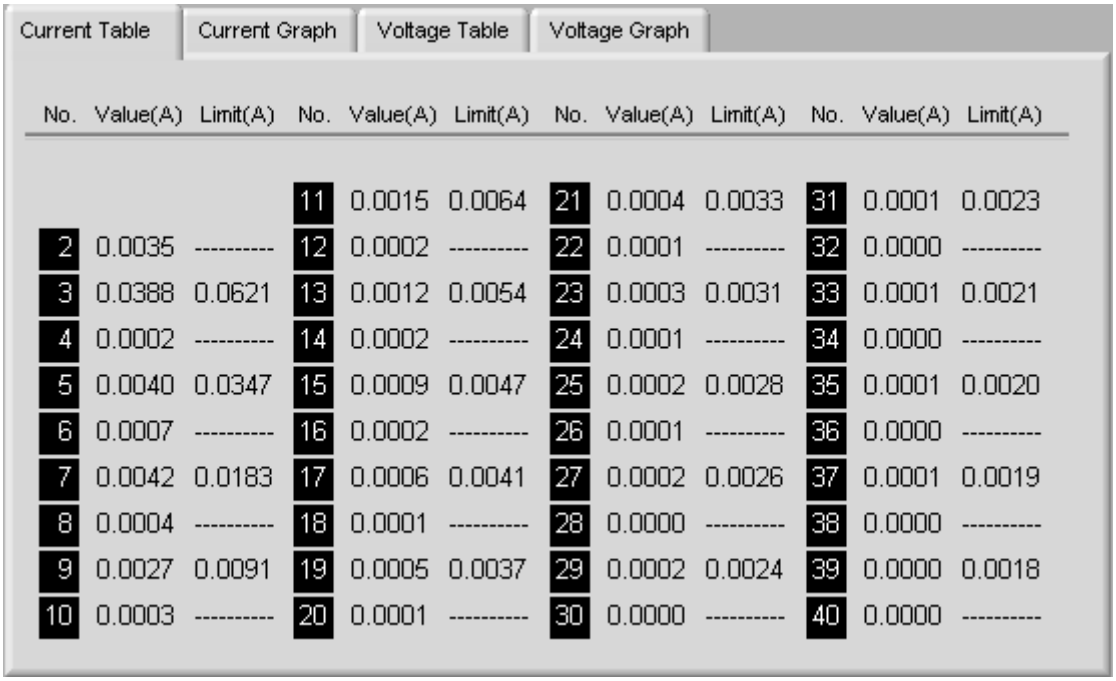


Figure 6-9 Measurement Display 1

The other display area has 4 tabs as shown in Figure 6-10 that are Current Table, Current Graph, Voltage Table and Voltage Graph. Current Table shows the value of current harmonic where the measured data is in the Value column and the limit is in Limit column. Current Graph shows the Bar Plot of current harmonic where yellow indicates the measured data and red indicates the limit. Other two tabs are the harmonic value and bar plot of voltage.

In IEC 61000-3-2 Class C<25W harmonic measurement, it can measure the angles of current start phase, peak phase and end phase.



No.	Value(A)	Limit(A)	No.	Value(A)	Limit(A)	No.	Value(A)	Limit(A)	No.	Value(A)	Limit(A)
			11	0.0015	0.0064	21	0.0004	0.0033	31	0.0001	0.0023
2	0.0035	----------	12	0.0002	----------	22	0.0001	----------	32	0.0000	----------
3	0.0388	0.0621	13	0.0012	0.0054	23	0.0003	0.0031	33	0.0001	0.0021
4	0.0002	----------	14	0.0002	----------	24	0.0001	----------	34	0.0000	----------
5	0.0040	0.0347	15	0.0009	0.0047	25	0.0002	0.0028	35	0.0001	0.0020
6	0.0007	----------	16	0.0002	----------	26	0.0001	----------	36	0.0000	----------
7	0.0042	0.0183	17	0.0006	0.0041	27	0.0002	0.0026	37	0.0001	0.0019
8	0.0004	----------	18	0.0001	----------	28	0.0000	----------	38	0.0000	----------
9	0.0027	0.0091	19	0.0005	0.0037	29	0.0002	0.0024	39	0.0000	0.0018
10	0.0003	----------	20	0.0001	----------	30	0.0000	----------	40	0.0000	----------

Figure 6-10 Measurement Display 2

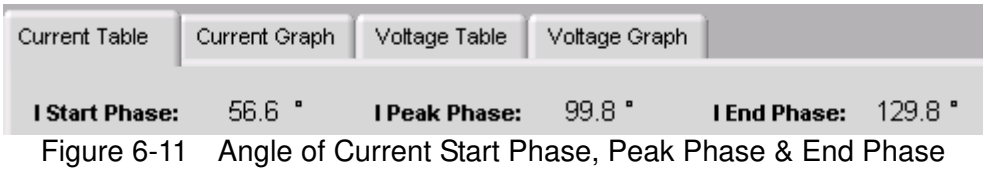


Figure 6-11 Angle of Current Start Phase, Peak Phase & End Phase

6.9 Save Report Button

Click this button as shown in Figure 6-12 and save the test result to a pure text *.txt file. The format is shown in Figure 6-13.

Figure 6-12 Save Report Button

```
                Current Harmonic Test Report

Date/Time:              2007/05/21 14:23:03

======================== Setting ========================
Regulation:             IEC61000-3-2
Class:                  D
Current Limit Ratio:    1.0
Input Power:            Measured
Meas. Mode:             Stable

======================== Reading ========================
Voltage Test Result:    FAIL
Current Test Result:    PASS
V(V)                    120.61
I(A)                    0.3106
P(W)                    18.527
PF                      0.4943
F(Hz)                   59.987
I_Fund(A)               0.3076
THDi(%)                 12.911

**** Voltage Reading ****
Unit: %
No.     Value   Limit           Pass/Fail
2       0.0247  0.2000          Pass
3       4.6396  0.9000          Fail
4       0.0038  0.2000          Pass
5       1.6306  0.4000          Fail
6       0.0046  0.2000          Pass
7       1.0746  0.3000          Fail
8       0.0102  0.2000          Pass
9       0.3328  0.2000          Fail
10      0.0118  0.2000          Pass
11      0.1847  0.1000          Fail
12      0.0055  0.1000          Pass
13      0.4006  0.1000          Fail
14      0.0079  0.1000          Pass
15      0.0321  0.1000          Pass
```

Figure 6-13 Harmonic Test Report Format

6.10 Save As, Open and Back Buttons

See section 4.9, 4.10 and 4.11 for the descriptions of **Save As…**, **Open…** and **Back** buttons.

7. Multi-Channel Main Measurement Window

Click **Scan Device** on the start screen and it will enter the following window as shown in Figure 7-1 when the device connected has multiple channels.

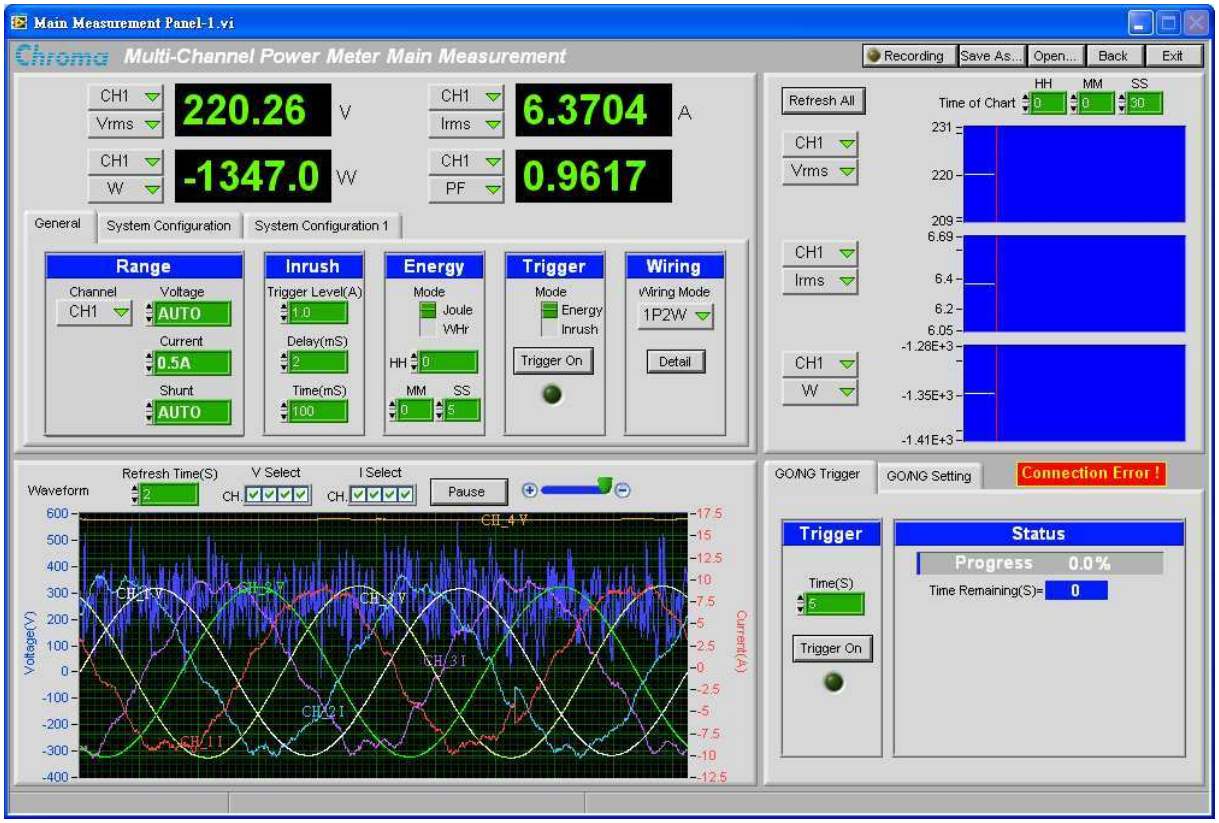


Figure 7-1 Multi-Channel Main Measurement Window

The F/W version will display on the bottom of the window if the device is connected successfully. The message "*Connection Error*" will prompt if there is any communication error.

7.1 Using Demo Mode

If no hardware device is connected, the Soft Panel will enter into Demo Mode. The user can use it to understand the functions of the Soft Panel.

7.2 Digital Display

There are 4 sets of digital displays to show the measured values. Different channels and parameters can be specified for display. Off can also be selected not to show any measured value.

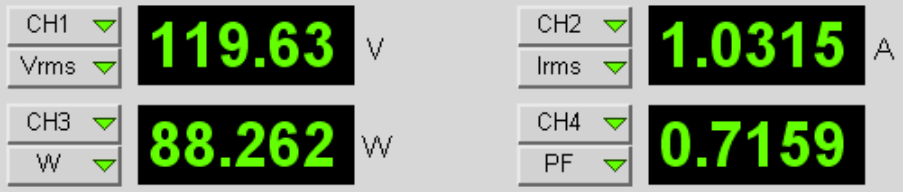


Figure 7-2 Digital Display

7.3 General

It sets the Voltage/Current/Shunt range of the power meter as well as the Inrush Current, Energy and Wiring Mode parameters in General page.

7.3.1 Setting Channel

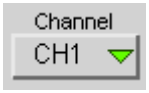


Figure 7-3 Setting the Channel

7.3.2 Setting Voltage

It sets the voltage range of power meter.

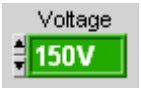


Figure 7-4 Setting the Voltage

7.3.3 Setting Current

It sets the current range of power meter.

Figure 7-5 Setting the Current

7.3.4 Setting Shunt

It sets the Current Shunt range of power meter.

Figure 7-6 Setting the Shunt

7.3.5 Setting Trigger Level

It sets the inrush current trigger level of power meter.

Figure 7-7 Setting the Trigger Level

7.3.6 Setting Delay

It sets the inrush current delay time for power meter.

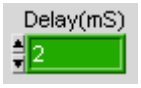


Figure 7-8 Setting the Delay Time

7.3.7 Setting Time

It sets the inrush current measurement time for power meter.

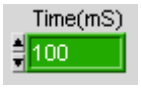


Figure 7-9 Setting the Measurement Time

7.3.8 Setting Energy Mode & Time

It sets the energy mode and time for power meter.

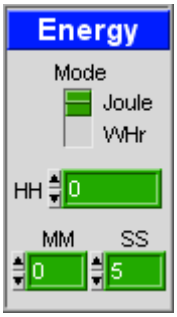


Figure 7-10 Setting Energy Mode & Time

7.3.9 Setting Trigger Mode & On/Off

When the inrush current and energy parameters are set, use Mode to select the desired inrush current or energy to be measured and click **Trigger On** to start the measurement. The light beneath it will turn on as well. To quit it, just click **Trigger Off**.

Figure 7-11 Setting the Trigger Mode & On/Off

7.3.10 Setting Wiring Mode

It sets the wiring mode of power meter. Click **Detail** to display the chart as shown in Figure 7-13.

Figure 7-12 Setting the Wiring Mode

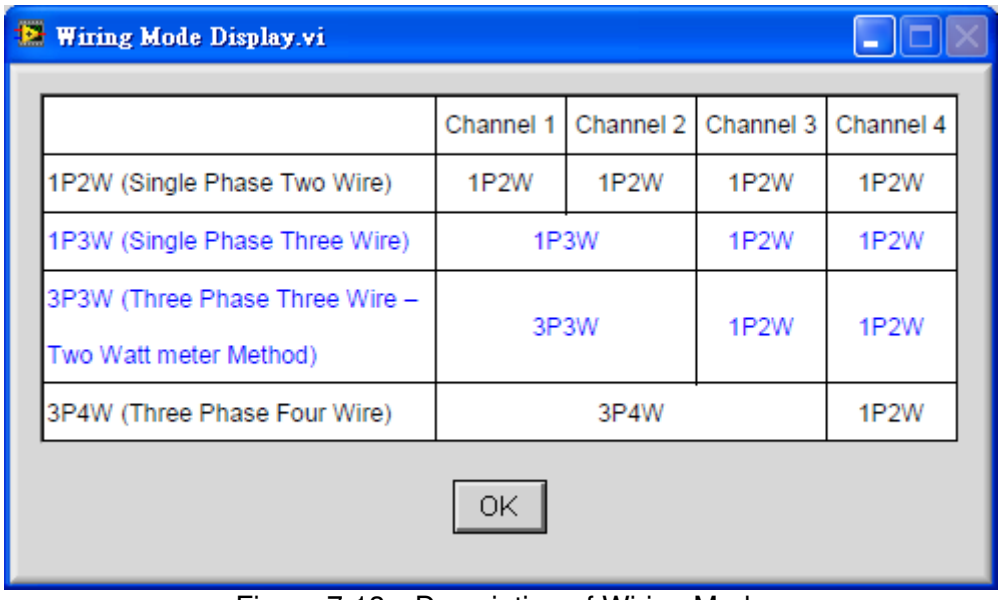


Figure 7-13 Description of Wiring Mode

7.4 System Configuration

It sets the sampling method, THD calculation, digital filter, Efficiency mode and power measurement type of power meter as well as the CT and External Shunt parameters of each channel in the System Configuration page.

7.4.1 Setting Measure Mode & Window Time

It sets the sampling method to Window or Average as well as window time or number of times for average for power meter.

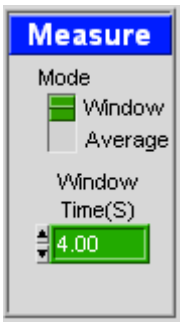


Figure 7-14 Setting Measure Mode & Window Time

7.4.2 Setting THD Mode & Order

It sets the order calculated by the voltage and current Total Harmonic Distortion THD for power meter. If Full is selected for the Mode, the THD calculation order is 100. If Order is selected, the THD calculation order is set by the user.

Figure 7-15 Setting the THD Mode & Order

7.4.3 Setting Filter

It sets the digital filter of power meter to be on or off.

Figure 7-16 Setting the Filter

7.4.4 Setting Efficiency Mode

It sets the Efficiency to A/B or B/A mode for power meter. Click **Detail** to display the chart as shown in Figure 7-18.

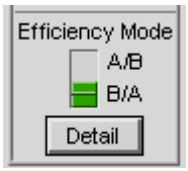


Figure 7-17 Setting the Efficiency Mode

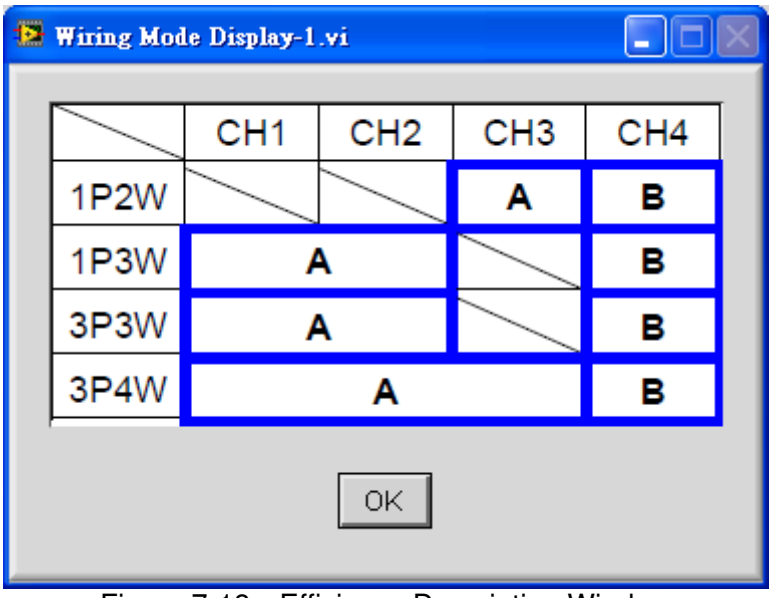


Figure 7-18 Efficiency Description Window

7.4.5 Setting Integration

It sets the required integration time when turning on or off the energy accumulation for power meter.

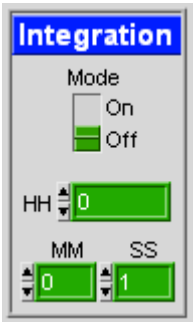


Figure 7-19 Setting the Integration Mode & Time

7.4.6 Setting CT Mode & CT Ratio

It sets the CT function to on or off and CT ratio of each channel for power meter.

Figure 7-20 Setting the CT Mode & Ratio

7.4.7 Setting Ext. Shunt

It sets the Ext. Shunt to on or off and resistance of each channel for power meter.

Figure 7-21 Setting Ext. Shunt Mode & Resistance

7.5 System Configuration 1

It sets the HV parameter and protection clear of each channel for power meter in the System Configuration 1 page.

7.5.1 Setting HV Mode

It sets the HV function to on or off for every channel on the power meter.

Figure 7-22 Setting the HV Mode

7.5.2 Setting Protection Clear

When protection occurs on the power meter, click **Protection Clear** to clear the protection state.

Figure 7-23 Protection Clear Button

7.6 Waveform Display

The voltage/current waveform captured by the power meter is displayed as shown in Figure 7-24. It can select the channel, V or I or V+I to be displayed. The Refresh Time sets the waveform capture interval; while the rest of the buttons can pause the capture and enlarge/reduce the waveform display.

Figure 7-24 Waveform Display

7.7 Chart Display

There are 3 charts to show the measurement change curve of specified channel with different parameters for selection and Off to pause the refresh. **Refresh All** can make the Chart to refresh from the beginning. Time of Chart sets the time of entire chart, for instance to view the voltage, current and power change curve within 1 hour. The fastest sampling time of Chart is 1 second which will increase by the Time of Chart and determined by the program automatically.

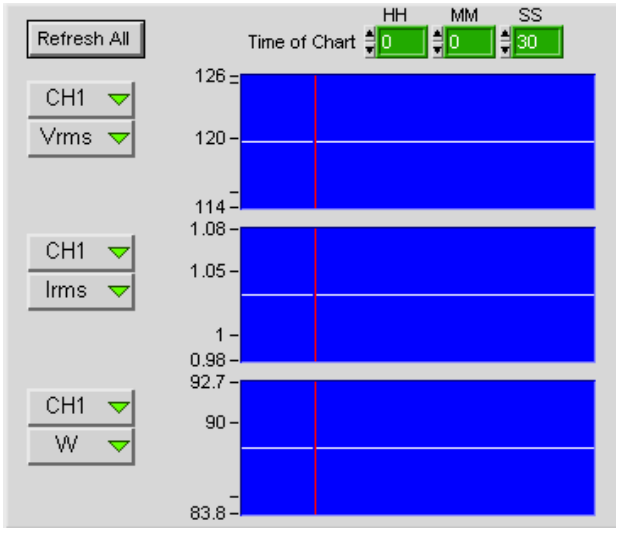


Figure 7-25 Chart Display

7.8 GO/NG

GO/NG follows the inputted specification range to judge the UUT to be PASS/FAIL for the selected channel. The settings of GO/NG are shown in Figure 7-26. The selection of Enable specifies if performing GO/NG judgment on the parameter. Lower Bound is the specification low limit and Upper Bound is the specification high limit.

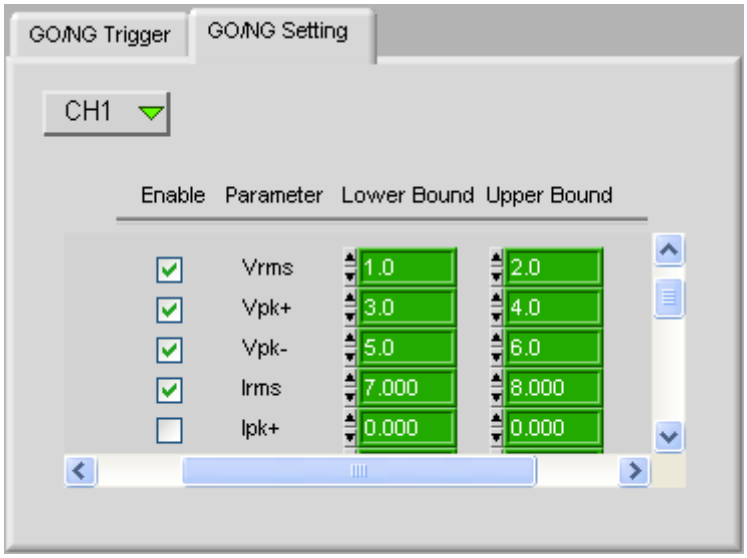


Figure 7-26 Setting GO/NG

When GO/NG is set, switch to GO/NG Trigger page as shown in Figure 7-27. The Time sets the GO/NG detecting time and click **Trigger On** to begin the judgment. The light beneath it is turned on as well. To quit it, simply click **Trigger Off**. PASS will show if nothing exceeds the specification range when the time is due. Or, it will prompt FAIL and the parameter that exceeds the specification range as shown in Figure 7-28.

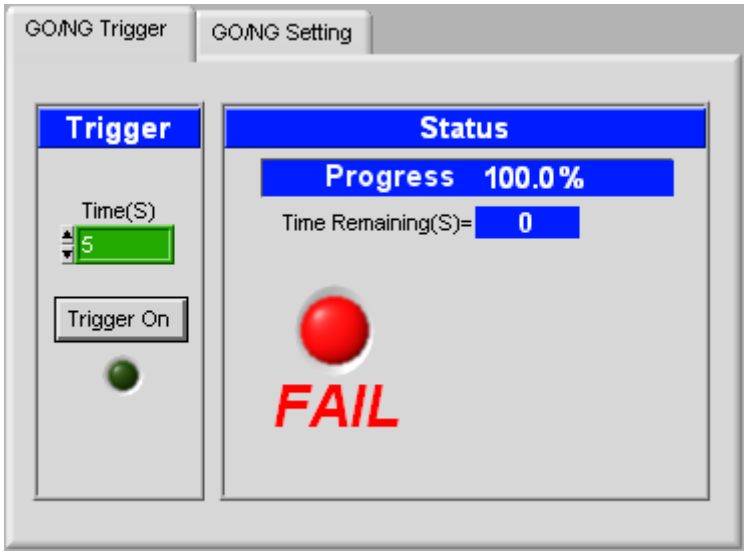


Figure 7-27 Setting GO/NG Trigger

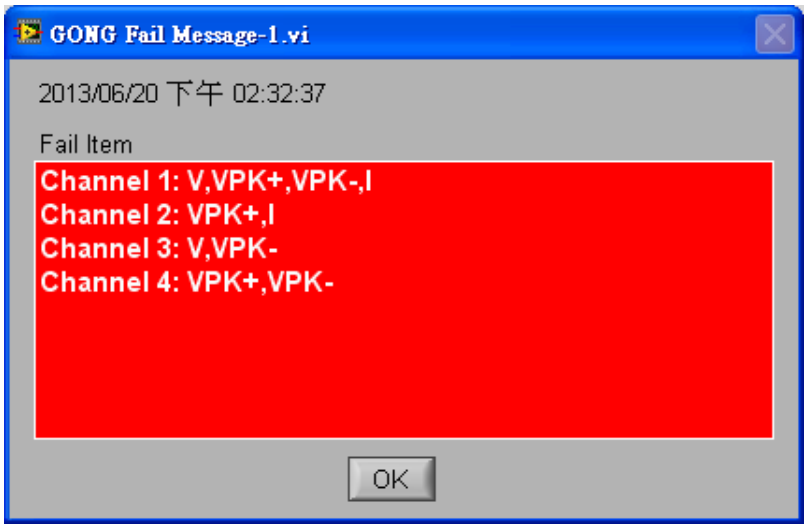


Figure 7-28 GONG Fail Message

7.9 Status Monitor

When the program detects error on the power meter such as over voltage, over current protection or over current range, etc., a dialog box will appear as shown in Figure 7-29. At this time, the user needs to switch to proper voltage/current range to avoid measurement error or to troubleshoot the error condition as soon as possible.

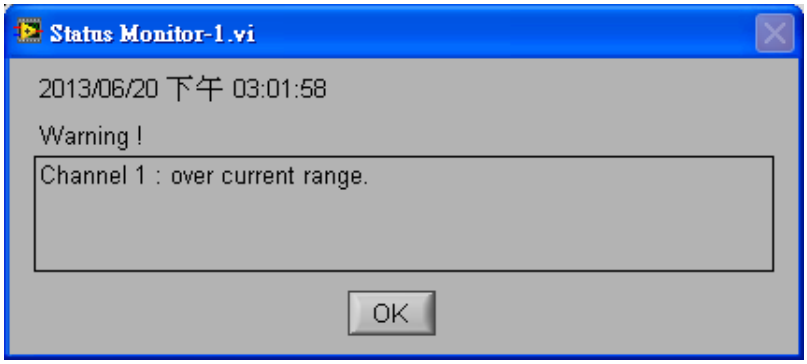


Figure 7-29 Status Monitor

7.10 Save As

Click this button as shown in Figure 7-30 and save the parameters set on the window to a .Mea file.

Figure 7-30 Save As Button

Click **Save As…** can save the present parameters for use next time after power on. Select the path and a file name (extension .Mea) to store it. The settings can also save to different files if the disk space is large enough for storage.

7.11 Open

Click this button as shown in Figure 7-31 to open an existing .Mea file in the hard disk. It can simplify the input the parameters and avoid input error.

Figure 7-31 Open Button

7.12 Back

Click this button to skip this window and return to the previous one.

Figure 7-32 Back Button

7.13 Exit

Click this button to leave the Soft Panel.

Figure 7-33 Exit Button

8. Multi-Channel Recording Window

Click **Recording** in the Main Measurement window will enter into the recording function as shown in Figure 8-1 to record the measured values and save them to files.

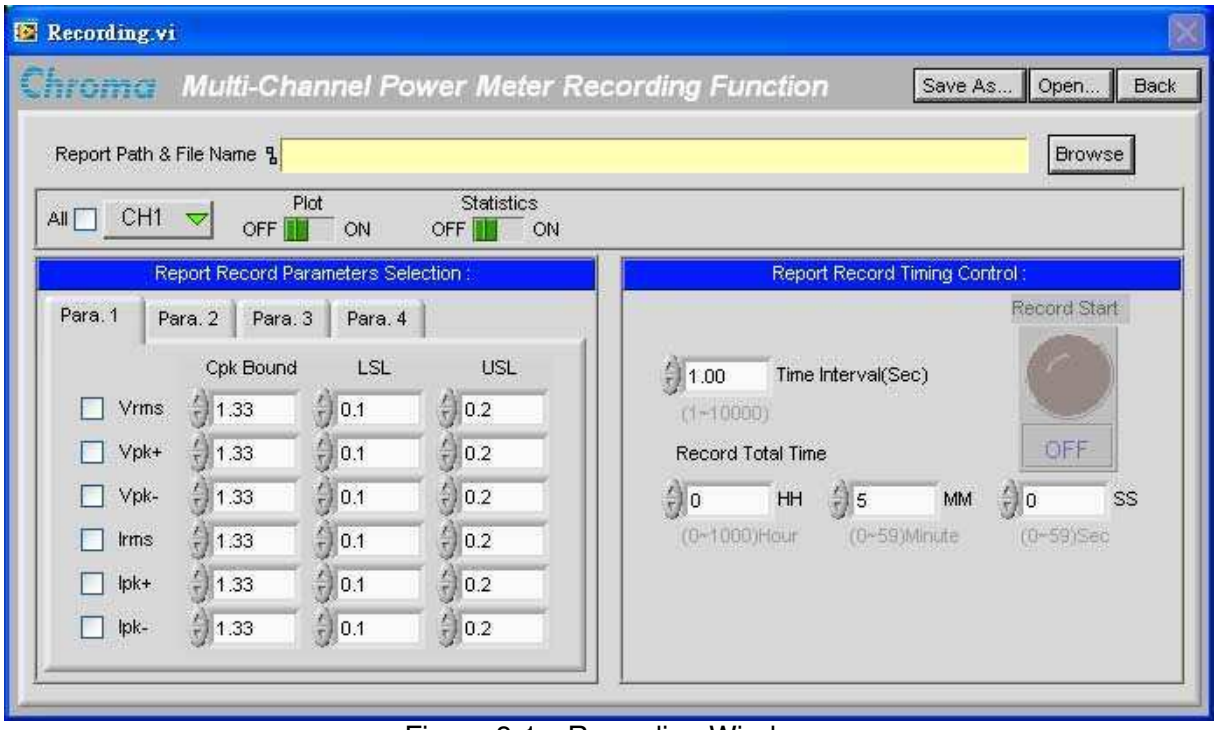


Figure 8-1 Recording Window

First, click **Browse** to select the file path and name to save the record. Select the parameters desired for recording from the left and then set Record Total Time and Time Interval on the right. At last, click **Record Start** to start recording. For the functions of **Save As…**, **Open…** and **Back** buttons, please see the descriptions in section 7.10, 7.11 and 7.12. The report is a pure text file (*.txt) and the format is shown in Figure 8-2.

Time	Vrms(V)	Vpk+(V)	Vpk-(V)	Irms(A)	Ipk+(A)	Ipk-(A)	W
2013/06/24 13:40:45	118.4900	156.9500	157.0300	0.296380	0.585694	0.559537	29.54600
2013/06/24 13:40:46	118.5200	156.9500	157.0300	0.296381	0.581258	0.556139	29.56900
2013/06/24 13:40:47	118.5100	156.9500	157.0300	0.296251	0.585059	0.554358	29.55900
2013/06/24 13:40:48	118.5300	156.9100	156.8800	0.296244	0.585059	0.554358	29.56200
2013/06/24 13:40:49	118.5800	157.1800	157.2000	0.296504	0.585059	0.554358	29.59700
2013/06/24 13:40:50	118.6400	157.1800	157.2000	0.296716	0.585059	0.554358	29.62100
2013/06/24 13:40:51	118.7400	157.1800	157.2000	0.296895	0.581589	0.556993	29.65900
2013/06/24 13:40:52	118.7700	157.1800	157.2000	0.296921	0.581589	0.556993	29.66500
2013/06/24 13:40:53	118.7900	157.1800	157.1700	0.296925	0.581589	0.556993	29.66800
2013/06/24 13:40:54	118.7800	157.1200	157.2000	0.296822	0.581652	0.556993	29.65700
2013/06/24 13:40:55	118.7400	157.1200	157.2000	0.296677	0.581652	0.557909	29.63700
2013/06/24 13:40:56	118.7000	157.1200	157.2000	0.296551	0.581652	0.553753	29.62000
2013/06/24 13:40:57	118.6300	157.1200	157.2000	0.296366	0.581652	0.553753	29.59300

Figure 8-2 Recording Report Format

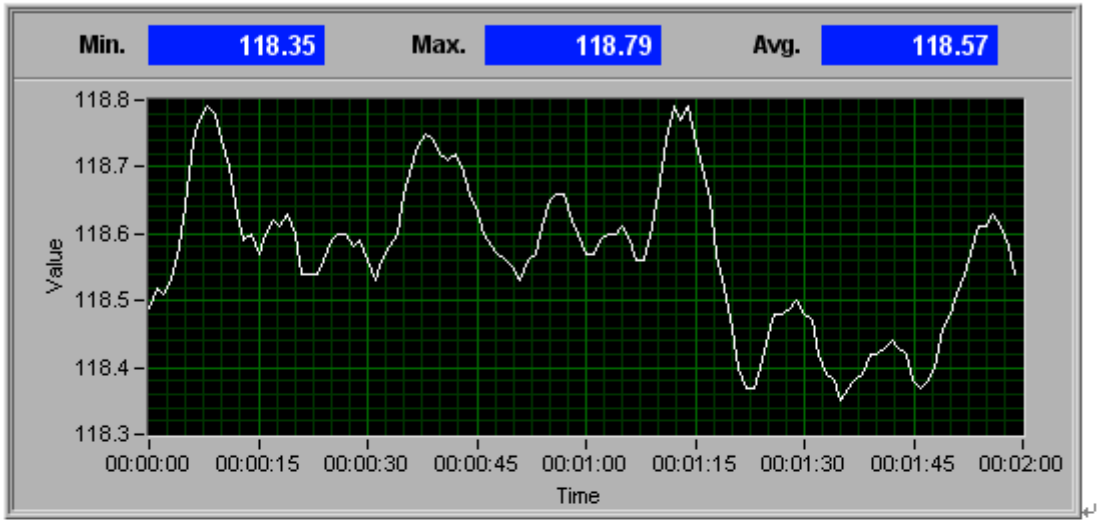
When the Plot is set to ON, it can record the parameter change curve, minimum, maximum and average value. When the Statistics is set to ON, it can set Cpk Bound, LSL, USL and generate Histogram. The file is saved in the filename with *.doc extension.

Channel 1

========== ***** ==========

Parameter: Vrms(V)

Plot



Statistics Result: FAIL(@Cpk Bound=118.3)

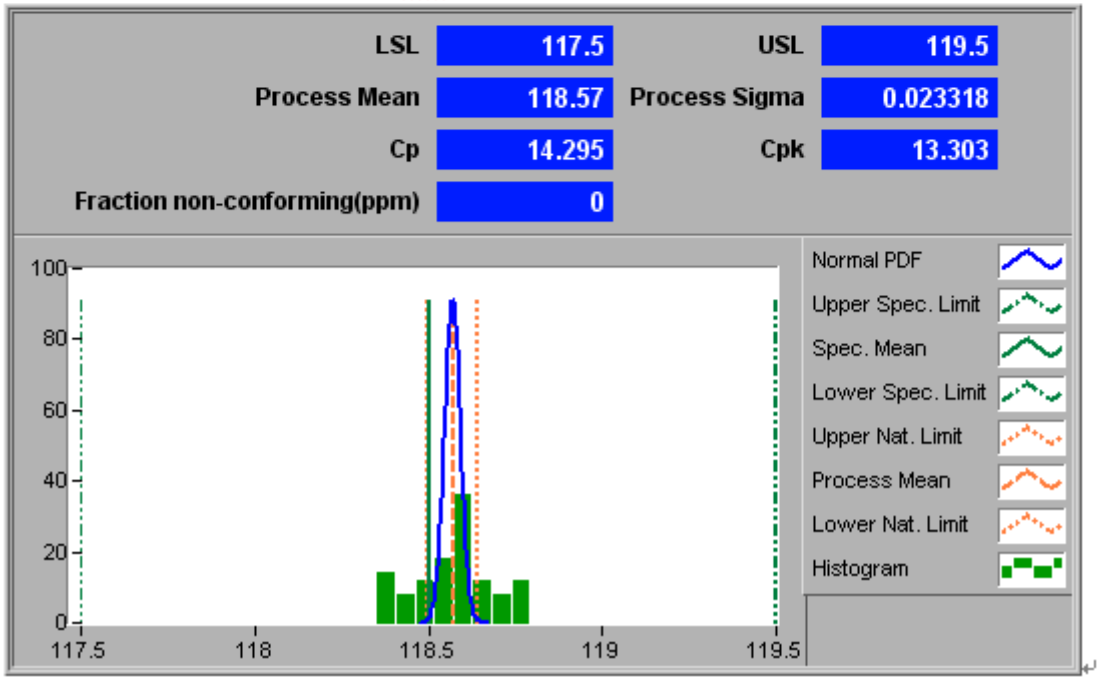


Figure 8-3 Plot & Statistics Charts

Notice Please make sure the Microsoft® Word is installed in the PC when using the function of Plot and Statistics.

9. IEC62301 Window

Click IEC62301 in the Main Measurement window will prompt the IEC62301 Test Panel as shown in Figure 9-1. This test panel can test the UUT's characteristics such as energy consumption test and standby power test to see if they comply with the (IEC) 62301 standards. Refer to (IEC) 62301 standards for detail description.

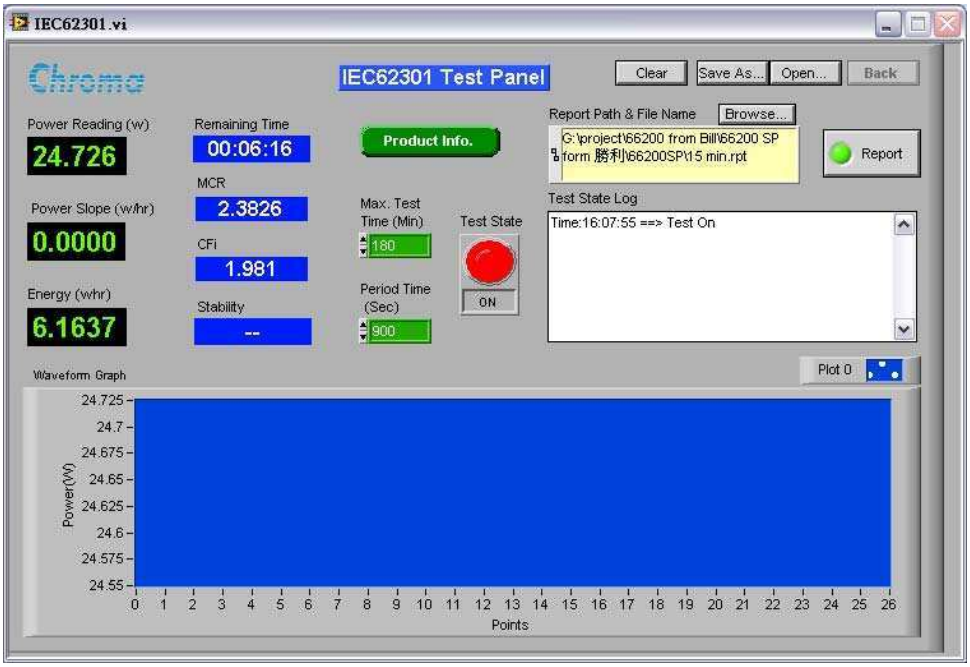


Figure 9-1 IEC62301 Test Panel

9.1 Power Reading

: It shows the measured power reading in watt simultaneously when the test begins.

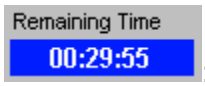
9.2 Power Slope

: When the test begins, the software will calculate and display the slope of measured power based on the variation within the set unit. The unit is watt/per hour.

9.3 Energy

: It shows the measured energy in watt/per hour simultaneously when the test begins.

9.4 Remaining Time



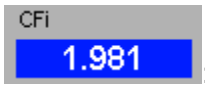
: The software follows the time set by 

as a test cycle to display and count down the remaining time in the format of hour:minute:second.

9.5 MCR (Maximum Continuous Rating)

: When the test begins, the software will calculate and display the maximum continuous rating based on the power variation. Maximum Continuous Rating (MCR) = Crest Factor (CF)/ Power Factor (PF).

9.6 CFi (Current Crest Factor)



: When the test begins, the software will display the current crest factor (CFi) in real time based on the power variation.

9.7 Test Result Display

: The software displays the last test result.

9.8 UUT Product Info.

: Click this button before testing and a parameter setting window will prompt for the user to enter the UUT product info which will automatically become the header of a test report as shown in Figure 9-2.

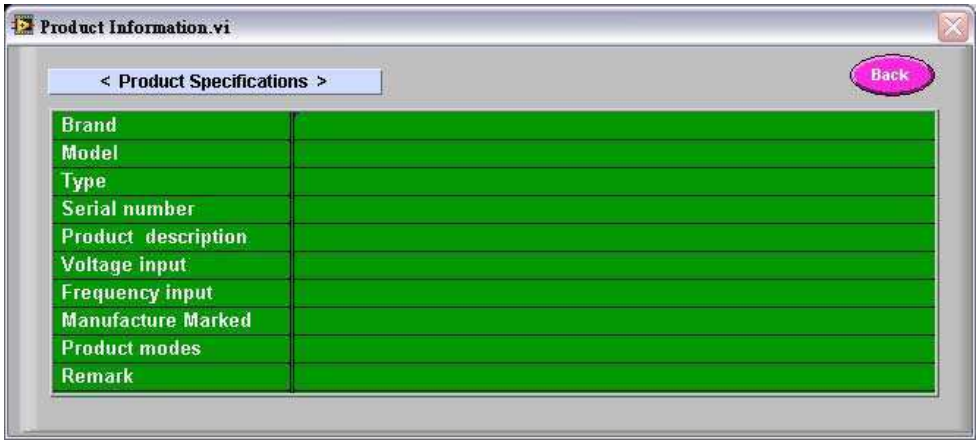


Figure 9-2 Product Specifications of UUT

9.9 Max. Test Time

: It can set the maximum test time. If the UUT does not meet the test standard within the set time period, the software will follow the cycle set by 

to perform retest until it passes the test. If the test time exceeds the Maximum Test Time, the software will automatically stop. The available setting range is 60~180 minutes. If 180 minutes (3 hours) are set, the Test Sate Log will show a “Maximum Time (Min) ==>180” message.

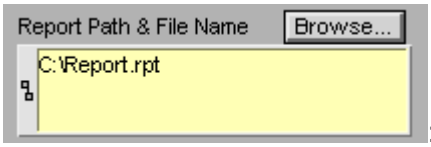
9.10 Period Time

: It sets the measurement time ranging from 0 to 900 seconds (15 minutes) in the unit of second. If 900 seconds (15 minutes) are set, the Test Sate Log will show a “Period Time (Sec) ==>900” message.

9.11 Trigger for Testing

: It triggers the software to begin or stop testing.

9.12 Report Path & File Name



: It is necessary to specify the location for storing the test report before testing. Once the test is done, the test report will automatically save to this location. It can also click 

to setup the path and file name via a dialog window.

9.13 Clearing Test Stat Log

: Click button to clear all records in Test Sate Log.

9.14 Test State Log

The important parameter settings and the output status of test readings are logged in real time as shown in Figure 9-3：

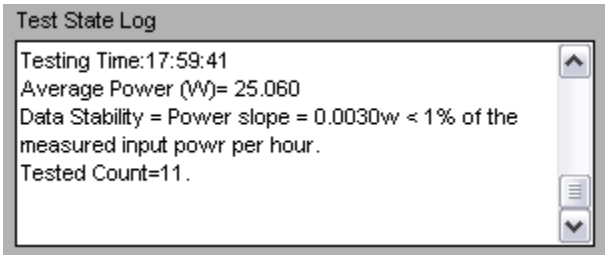


Figure 9-3 Output Status of Test Readings

9.15 Report

Click 

and a Report Data Selection will prompt as shown in Figure 9-4. Select the desired parameters to be listed in the test report and the software will save the test result to pure text *.txt as shown in Figure 9-5.

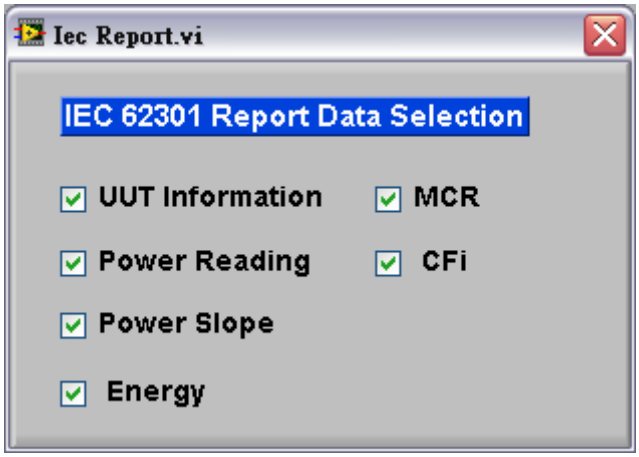


Figure 9-4 Test Report Data Selection

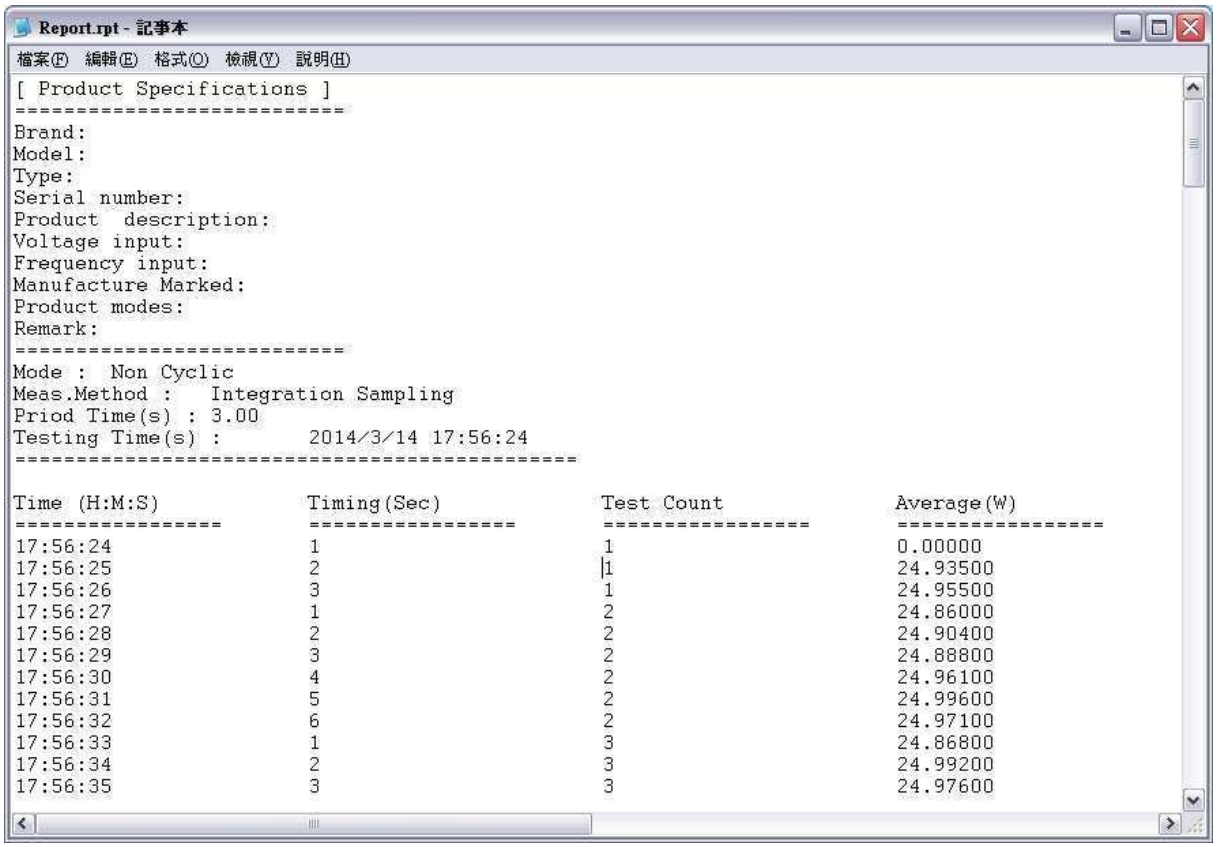


Figure 9-5 Test Result Text File Format

9.16 Distribution of Average Power Readings

When the test is done, the software will draw an average power readings distribution graph based on the data of each power as shown in Figure 9-6 for user reference.

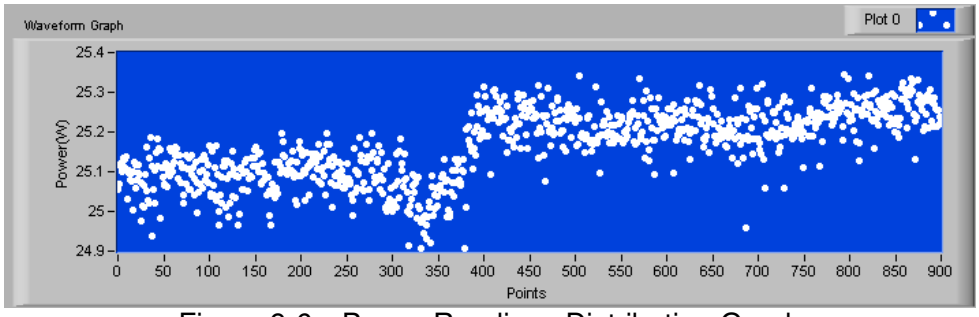


Figure 9-6 Power Readings Distribution Graph

9.17 Save As, Open & Back Buttons

See section 4.9, 4.10 and 4.11 for the detail function description of **Save As…**, **Open…** and **Back** buttons.

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