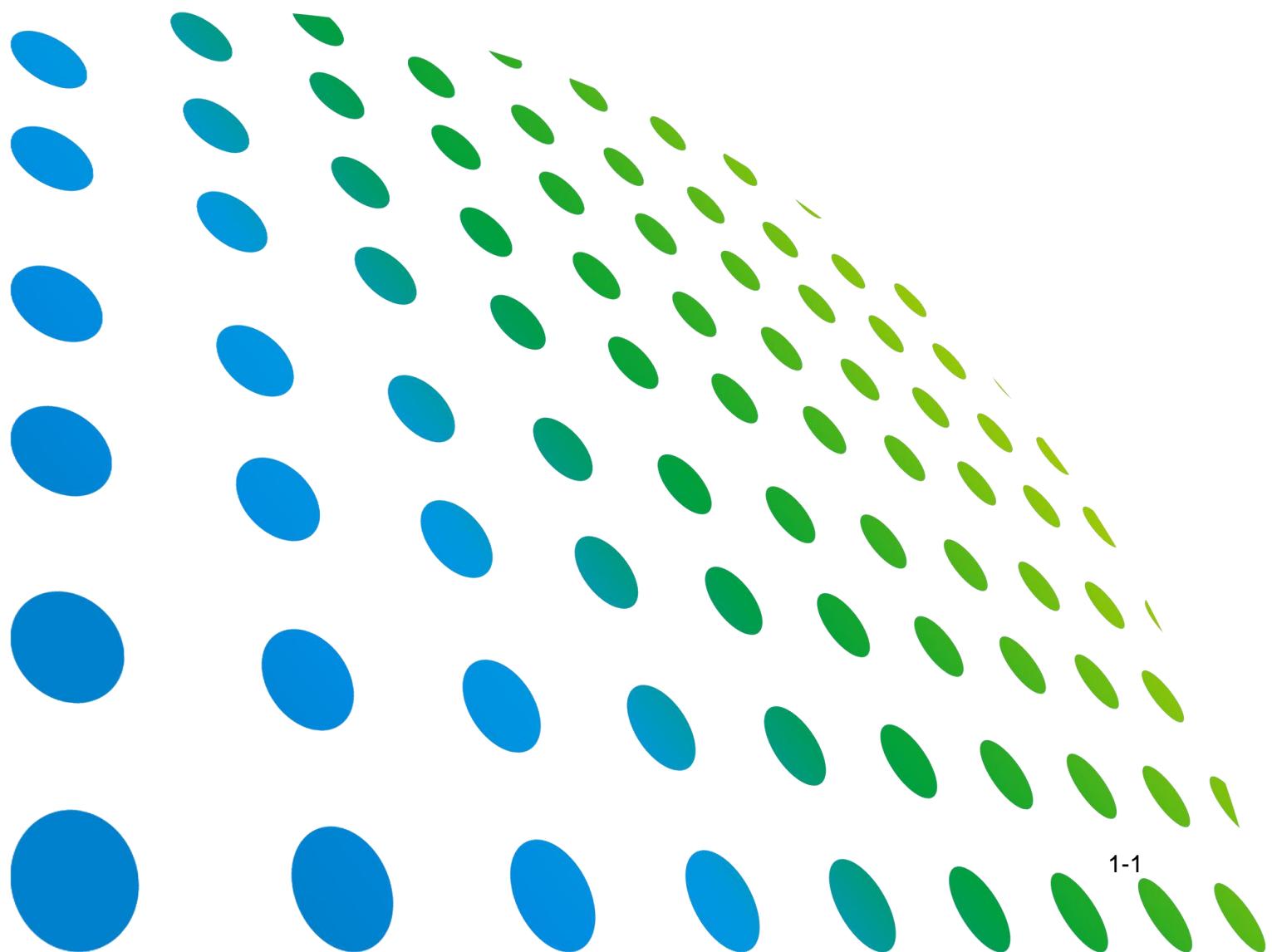


Chroma

**VLSI Test System
3380/3380P
Operation Manual**



VLSI Test System

3380/3380P

Operation Manual



Version 1.0
Oct. 2013

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Material Contents Declaration

The recycling label shown on the product indicates the Hazardous Substances contained in the product as the table listed below.



: See <Table 1>.



: See <Table 2>.

<Table 1>

Part Name	Hazardous Substances					
	Lead	Mercury	Cadmium	Hexavalent Chromium	Polybrominated Biphenyls	Polybromodiphenyl Ethers
	Pb	Hg	Cd	Cr ⁶⁺	PBB	PBDE
PCBA	O	O	O	O	O	O
CHASSIS	O	O	O	O	O	O
ACCESSORY	O	O	O	O	O	O
PACKAGE	O	O	O	O	O	O

"O" indicates that the level of the specified chemical substance is less than the threshold level specified in the standards of SJ/T-11363-2006 and EU 2005/618/EC.

"X" indicates that the level of the specified chemical substance exceeds the threshold level specified in the standards of SJ/T-11363-2006 and EU 2005/618/EC.

Disposal

Do not dispose of electrical appliances as unsorted municipal waste, use separate collection facilities. Contact your local government for information regarding the collection systems available. If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, damaging your health and well-being. When replacing old appliances with new one, the retailer is legally obligated to take back your old appliances for disposal at least for free of charge.



<Table 2>

Part Name	Hazardous Substances					
	Lead	Mercury	Cadmium	Hexavalent Chromium	Polybrominated Biphenyls	Polybromodiphenyl Ethers
	Pb	Hg	Cd	Cr ⁶⁺	PBB	PBDE
PCBA	×	O	O	O	O	O
CHASSIS	×	O	O	O	O	O
ACCESSORY	×	O	O	O	O	O
PACKAGE	O	O	O	O	O	O

“O” indicates that the level of the specified chemical substance is less than the threshold level specified in the standards of SJ/T-11363-2006 and EU 2005/618/EC.

“×” indicates that the level of the specified chemical substance exceeds the threshold level specified in the standards of SJ/T-11363-2006 and EU 2005/618/EC.

1. Chroma is not fully transitioned to lead-free solder assembly at this moment; however, most of the components used are RoHS compliant.
2. The environment-friendly usage period of the product is assumed under the operating environment specified in each product's specification.

Disposal

Do not dispose of electrical appliances as unsorted municipal waste, use separate collection facilities. Contact your local government for information regarding the collection systems available. If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, damaging your health and well-being. When replacing old appliances with new one, the retailer is legally obligated to take back your old appliances for disposal at least for free of charge.



Safety Summary

The following general safety precautions must be observed during all phases of operation, service, and repair of this instrument. Failure to comply with these precautions or specific WARNINGS given elsewhere in this manual will violate safety standards of design, manufacture, and intended use of the instrument. *Chroma* assumes no liability for the customer's failure to comply with these requirements.



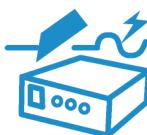
BEFORE APPLYING POWER

Verify that the power is set to match the rated input of this power supply.



PROTECTIVE GROUNDING

Make sure to connect the protective grounding to prevent an electric shock before turning on the power.



NECESSITY OF PROTECTIVE GROUNDING

Never cut off the internal or external protective grounding wire, or disconnect the wiring of protective grounding terminal. Doing so will cause a potential shock hazard that may bring injury to a person.



FUSES

Only fuses with the required rated current, voltage, and specified type (normal blow, time delay, etc.) should be used. Do not use repaired fuses or short-circuited fuse holders. To do so could cause a shock or fire hazard.



DO NOT OPERATE IN AN EXPLOSIVE ATMOSPHERE

Do not operate the instrument in the presence of flammable gases or fumes. The instrument should be used in an environment of good ventilation.



DO NOT REMOVE THE COVER OF THE INSTRUMENT

Operating personnel must not remove the cover of the instrument. Component replacement and internal adjustment can be done only by qualified service personnel.

Safety Symbols



DANGER – High voltage.



Explanation: To avoid injury, death of personnel, or damage to the instrument, the operator must refer to an explanation in the instruction manual.



High temperature: This symbol indicates the temperature is now higher than the acceptable range of human. Do not touch it to avoid any personal injury.



Protective grounding terminal: To protect against electrical shock in case of a fault. This symbol indicates that the terminal must be connected to ground before operation of equipment.



The **WARNING** sign denotes a hazard. It calls attention to a procedure, practice, or the like, which, if not correctly performed or adhered to, could result in personal injury. Do not proceed beyond a **WARNING** sign until the indicated conditions are fully understood and met.



The **CAUTION** sign denotes a hazard. It may result in personal injury or death if not noticed timely. It calls attention to procedures, practices and conditions.



The **Notice** sign denotes important information in procedures, applications or the areas that require special attention. Be sure to read it carefully.

Revision History

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

Date	Version	Revised Sections
Oct. 2013	1.0	Complete this manual

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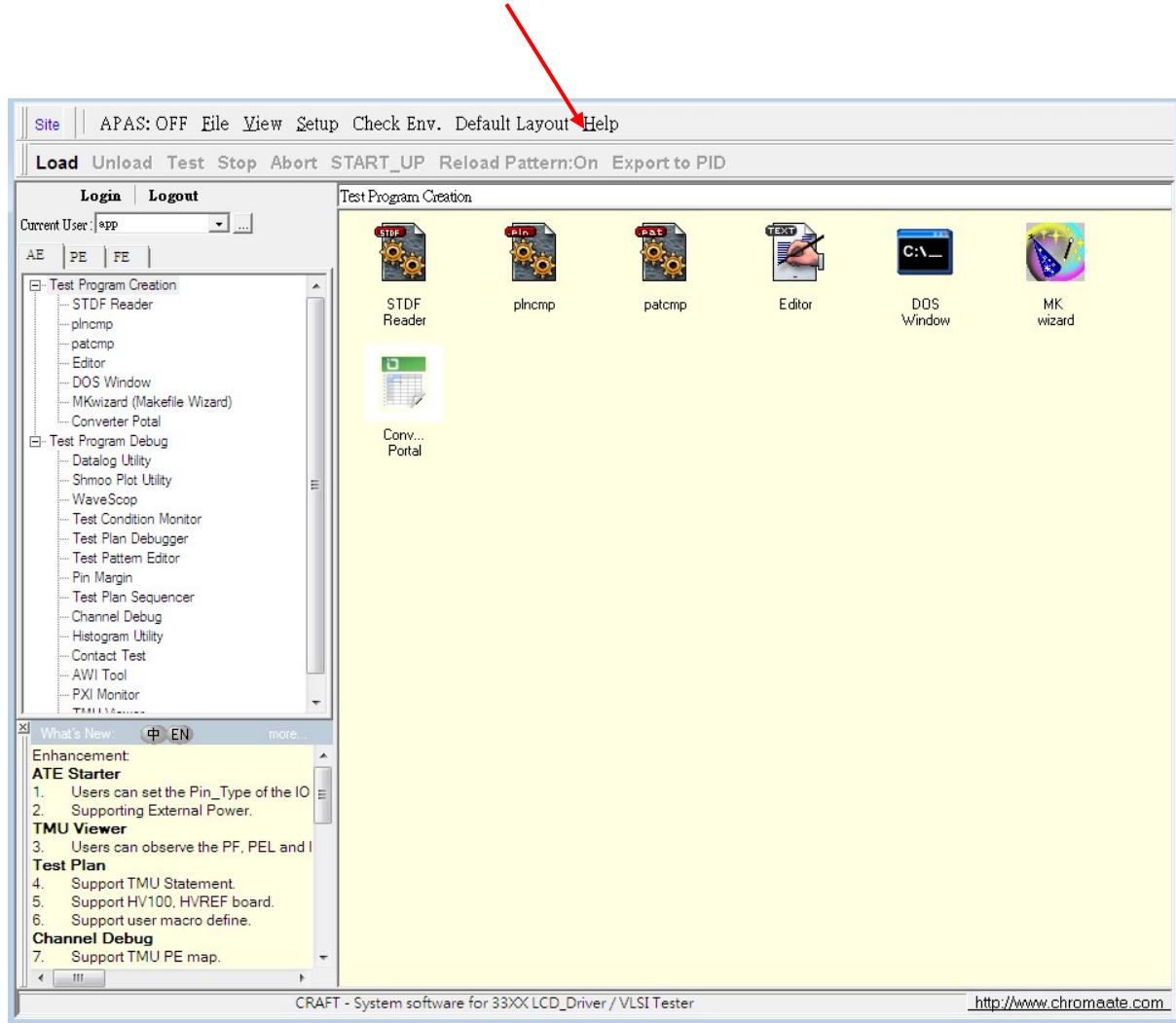
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Preface

This manual describes how to use the 3380 Series VLSI Test System. The 3380 Series VLSI Test System employs a window system. Target processes can be performed simply by sequentially clicking the mouse on appropriate options. If, for instance, you are not familiar with the functions of a specific button within a window, click on Help in the menu bar within the window. The associated Help window then appears to explain the functions of the relevant buttons.



1. ATE Starter

1.1 Main Functions

1.1.1 Overview

There are five main functions in the ATE Starter.

Function Overview

No.	Function	Description					
1	Power ON	Turn on all the power supplies.					
2	Power OFF	Turn off all the power supplies.					
3	Config	Board configuration check.					
4	Init.	Initialize the system.					
5	History	Displays all the logged messages of the ATE Starter.					

1.1.2 Window Layout

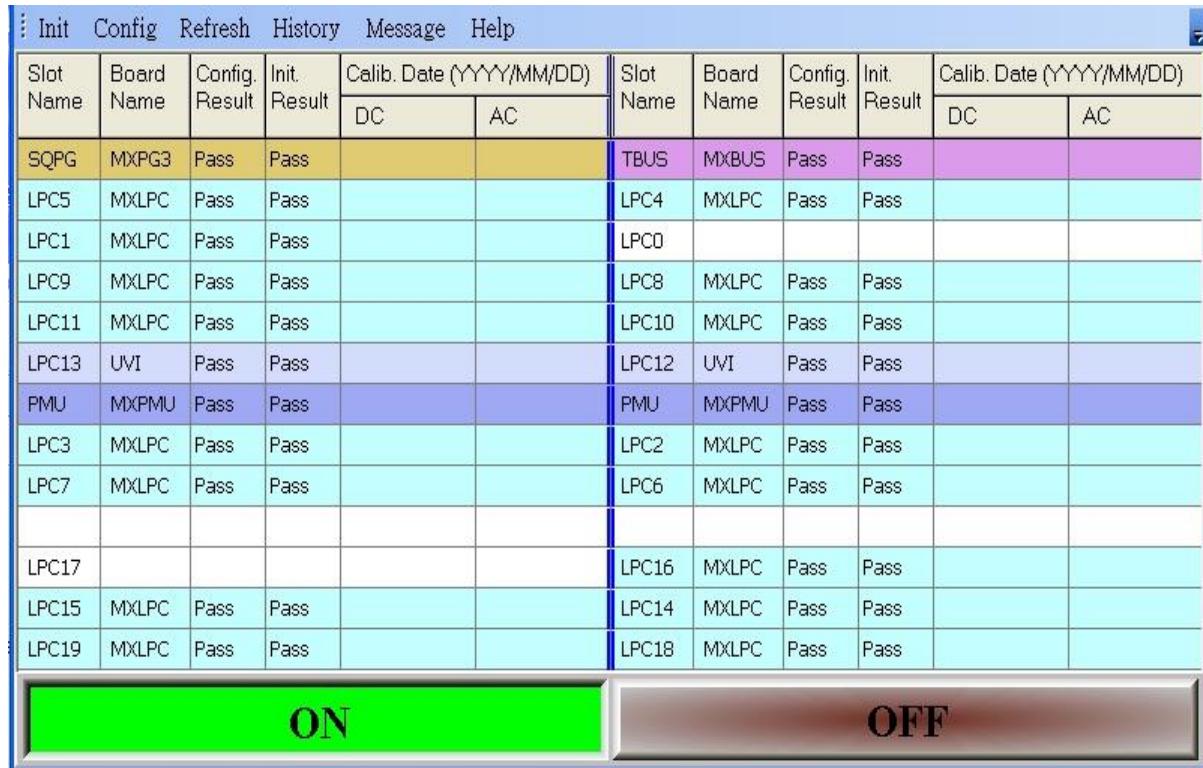


Figure 1-1 3380 ATE Starter

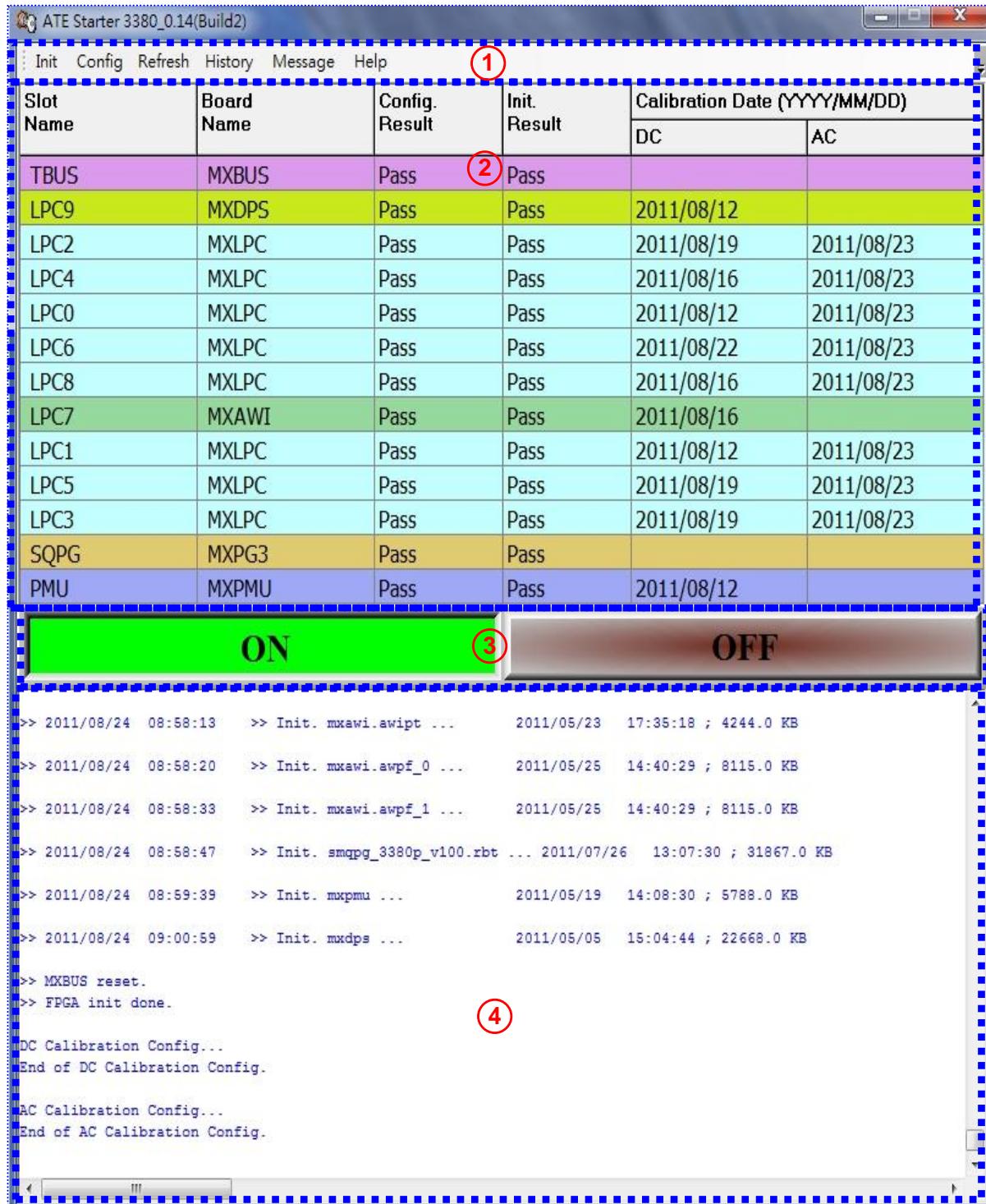


Figure 1-2 3380P ATE Starter

There are four main areas,

- (1) Main Menu: Including Init, Config, Refresh, Message and Help.

A: Init.

 Press "Init" to initialize the system.

B: Config. As (Figure 1-3), it contains 3 submenus.

 Press "Open System Configuration Table", Table like Figure 1-4 popped up.

 Press "Calibration Configuration" to do the board configuration check.

- C: Refresh
Press to refresh data of all boards.
- D: History. As (Figure 1-6), it contains 3 submenus.
Press it to display all the logged messages of the ATE Starter.
The log history will be displayed on the message window.
- E: Message.
Press it to display/hide the message window (part 4 of Figure 1-2). If the message window is already displayed, press it to close the message window.
Press "Clear" to clear the message window.

- (2) Board status area.
It displays the status of all slots of the system. Use different colors to represent each board type such as White for vacancy slot.
- (3) Power On / Power Off button.
Press ON/OFF button to turn the power on or off.
- (4) Message window.
All the process of the action and all the log files will be displayed here.

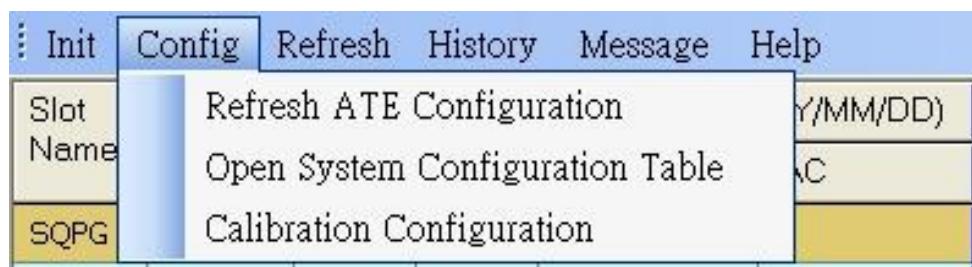


Figure 1-3 Config Menu

System Configuration Table					
Slot Name	Board Name	Description	Memory	Scan	
	PC Hostname : HC-3380P-ATE-03	Intel(R) Core(TM) i3 CPU 550 @ 3.20GHz Current DateTime : 2011/08/24 , 10:16 AM	2047M		
	Back Plane	ATE PowerOn : 2011/08/24 , 08:56:19 AM		0 Pin Exp. :	
TBUS	MXBUS	64 Ch of(URC) signals,(UR5V/Max current 5A), (\pm 5V//Max current 4A)			
LPC9	MXDPS	8 channel @2A/12V			
LPC2	MXLPC	ATE IO 64 channel 100MHz	32M	Y	
LPC4	MXLPC	ATE IO 64 channel 100MHz	32M	Y	
LPC0	MXLPC	ATE IO 64 channel 100MHz	32M		
LPC6	MXLPC	ATE IO 64 channel 100MHz	32M		
LPC8	MXLPC	ATE IO 64 channel 100MHz	32M		
LPC7	MXAWI	4 channel WG @50M/256K memory, 4 channel WD @250K/256K memory			
LPC1	MXLPC	ATE IO 64 channel 100MHz	32M		
LPC5	MXLPC	ATE IO 64 channel 100MHz	32M		
LPC3	MXLPC	ATE IO 64 channel 100MHz	32M		
SQPG	MXPG3	sequence controller, \pm 15V	16M		
PMU	MXPMU	16 channel @250mA/48V			

Figure 1-4 System Configuration Table (Part1)

Scan	Alpg	DC Calib	AC Calib	Board ID.
0 Pin	0 Pin			3381-XXX-XX-0102-000006
Exp. :	Exp. :			3380-MXBUS-00-0202-000005
		2011/08/12		3380-MXDPS-00-0102-000004
Y	Y	2011/08/19	2011/08/23	3380-MXLPC-32-0103-000017
Y	Y	2011/08/16	2011/08/23	3380-MXLPC-32-0103-000018
		2011/08/12	2011/08/23	3380-MXLPC-32-0104-000022
		2011/08/22	2011/08/23	3380-MXLPC-32-0103-000013
		2011/08/16	2011/08/23	3380-MXLPC-32-0104-000023
		2011/08/16		3380-MXAWI-00-0101-000002
		2011/08/12	2011/08/23	3380-MXLPC-32-0104-000026
		2011/08/19	2011/08/23	3380-MXLPC-32-0103-000014
		2011/08/19	2011/08/23	3380-MXLPC-32-0104-000025
				3380-MXPG3-16-0101-000005
		2011/08/12		3380-MXPMU-00-0101-000001

Figure 1-5 System Configuration Table (Part2)

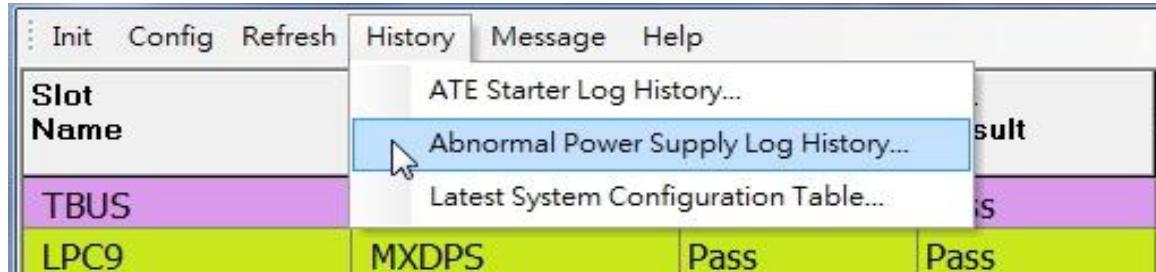


Figure 1-6 Submenus of History

```
-----
2011/5/18 下午 02:45:00 ( Abnormal Power Supply ) ; STBUS_ERRORRF=0x00800
PowerName           [Low Lim. ,High Lim.] Real_Voltage
Digital +3.3V       [  2.970V,   3.630V]  3.277V
Digital +5.0V       [  4.500V,   5.500V]  5.000V
EXT +5V            [  4.500V,   5.500V]  5.039V
Analog +3.3V       [  2.970V,   3.630V]  3.298V
I/O VSS -5.7V      [ -6.327V,  -5.177V] -4.839V  (****Error****)
I/O VDD +10V       [  9.000V,  11.000V]  9.824V
IO +53V            [ 47.700V,  58.300V] 52.676V
IO -53V            [-58.302V, -47.702V] -53.375V
Analog +15V         [ 13.500V,  16.500V] 14.964V
Analog -15V         [-16.502V, -13.502V] -14.952V
LB +5V             [  4.500V,   5.500V]  4.992V
Analog +53V         [ 47.700V,  58.300V] 52.984V
Analog -53V         [-58.302V, -47.702V] -53.403V
Floating +48V       [ 40.800V,  55.200V] 48.147V
Fan +12V            [ 10.200V,  13.800V] 12.139V
-----
2011/5/26 上午 09:05:32 ( Abnormal Power Supply ) ; STBUS_ERRORRF=0x00000
PowerName           [Low Lim. ,High Lim.] Real_Voltage
```

Figure 1-7 Example of Abnormal Power Supply Log History

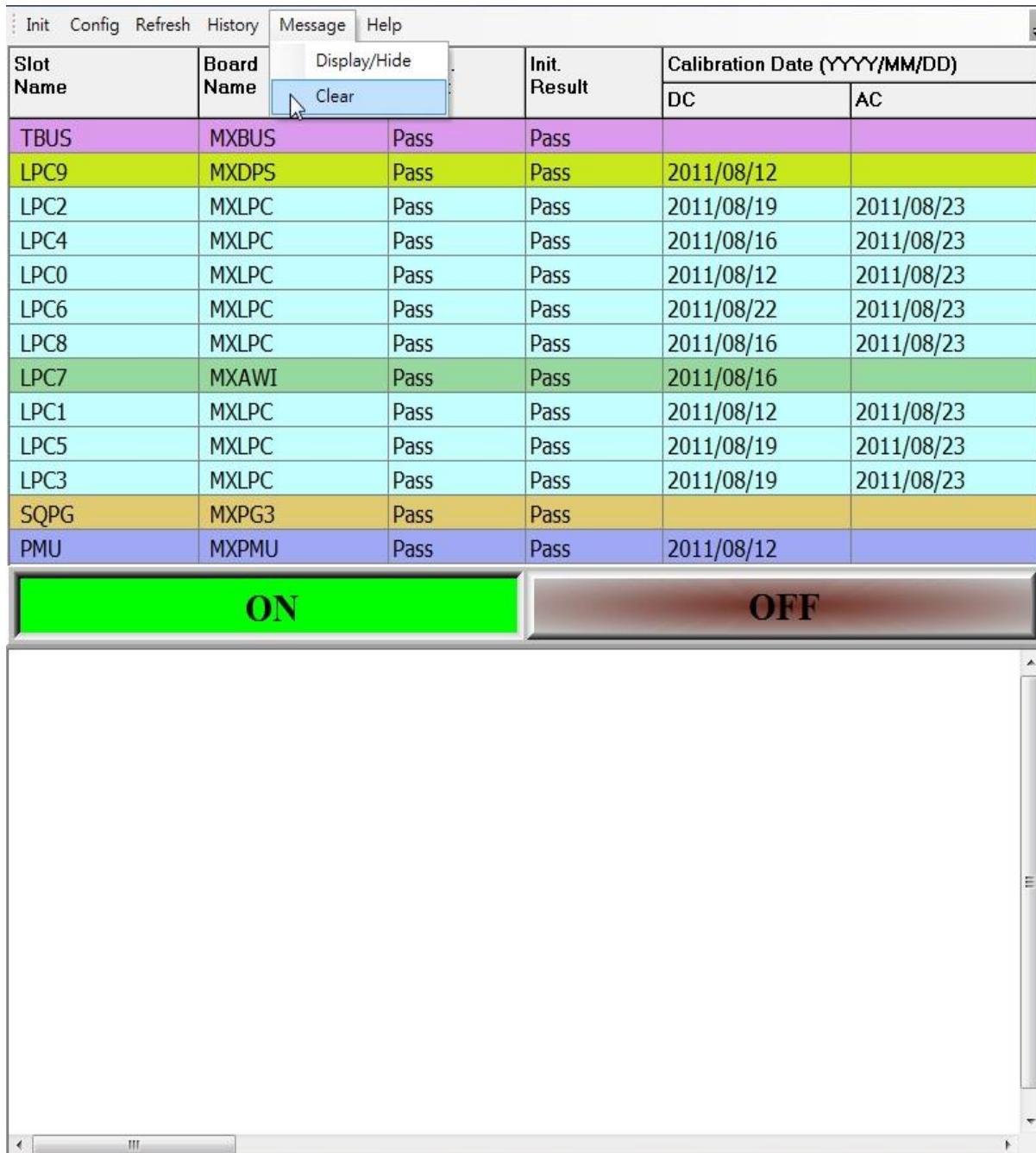


Figure 1-8 Clear Message Window

1.2 Start & Quit ATE Starter

The ATE starter is to be started from the System Control window. The procedure for starting and quitting, the tools are described below.

(1) Open the ATE Starter

The ATE Starter opens when you click on the ATE Starter in the System Control Window.

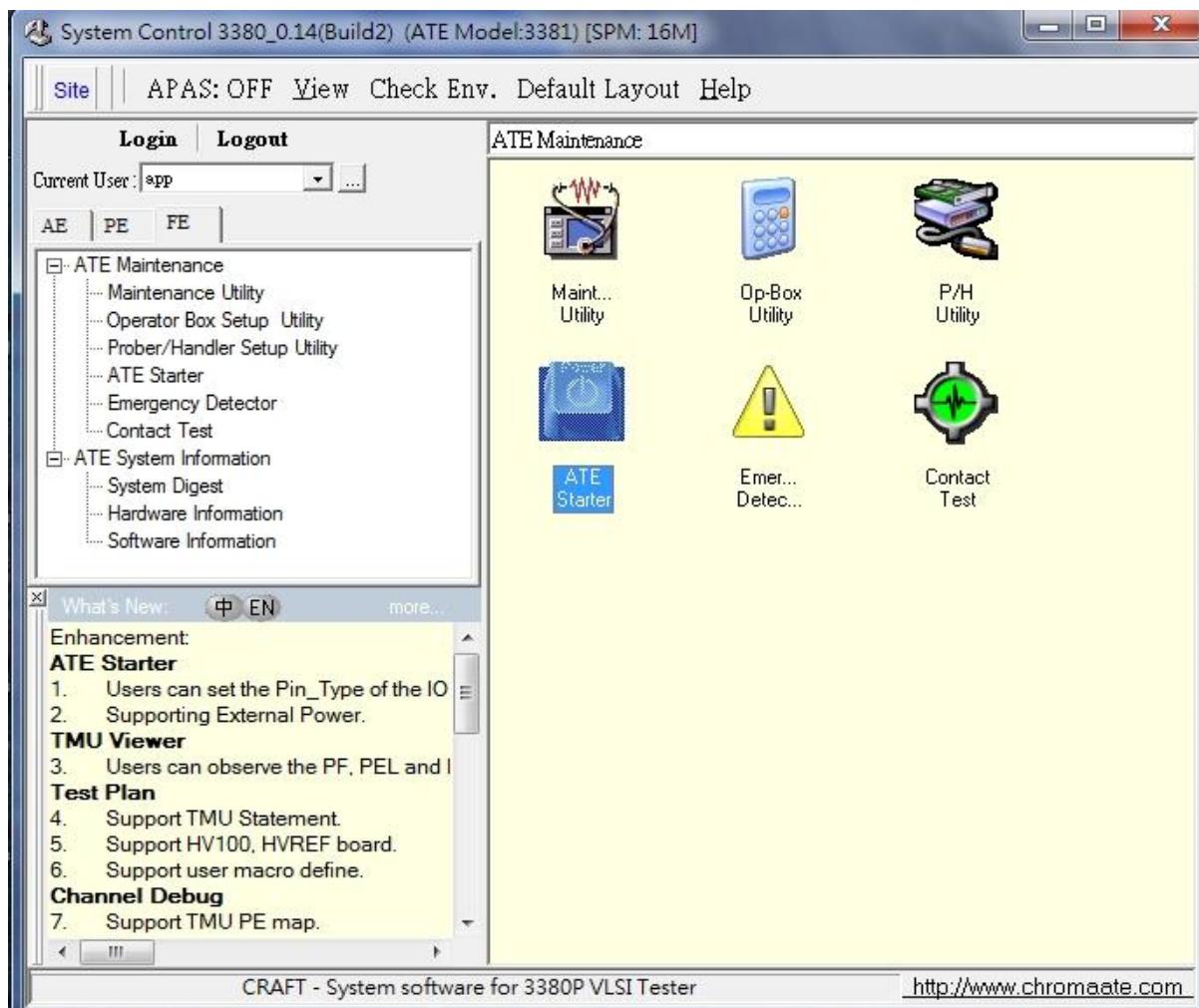


Figure 1-9 System Control Window

(2) Quit the ATE Starter

Click on the Close icons on the top right of the ATE Starter window.



Figure 1-10 Close ATE Starter Window

1.3 Power On & Off

(1) Power On, Turning on the ATE

Press the “ON” button than press the “Yes” of the confirm dialogue to turn on the power. If success, all the power supplies will be turned on, and the system will automatically doing board configuration and system initialization.



Figure 1-11 Confirm Dialogue for Power On

(2) Power Off, Turning off the ATE

Press the “OFF” button and the “Yes” of the confirm dialogue, the system will be burned off.



Figure 1-12 Confirm Dialogue for Power Off

1.4 Board Configuration and System Initialization

(1) Board Configuration

Doing “Power ON”, Board Configuration will automatically be executed. Whenever the system is in the “Power On” state, user can press the “Refresh ATE Configuration” menu to do the board configuration. The result of the board configuration displays in the “Config. Result” column.

There will be only three possible states for each slot: Vacancy, Pass, and Fail.

Vacancy: The slot is empty.

Pass: The slot has the right board plugged in.

Fail: There is the wrong board type plugged in the slot.

(2) System Initialization

Like “Board Configuration”, system initialization will automatically be executed when doing “Power On”, and whenever the system is in the “Power On” state, user can press the “System Initialization” menu to do the system initialization alone.

Also, there are 3 possible system initialization results for each slot: vacancy, pass and fail.

1.5 Calibration Date

The DC and AC calibration date of each board will be displayed on the board status area. If doing calibration again then pressing the “Refresh” menu, the updated date will be displayed in the “Calib. Date (YYYY/MM/DD)” columns of the board status area.

2. Test Program Creation

The test program consists of the test plan program, test pattern program, and declaration file. This chapter deals with all program components and explains how to edit a source program and conduct compilation for converting to an object program.

2.1 Test Program Components

The test program is used for device testing. This section shows the structure of the test program to be created for device testing.

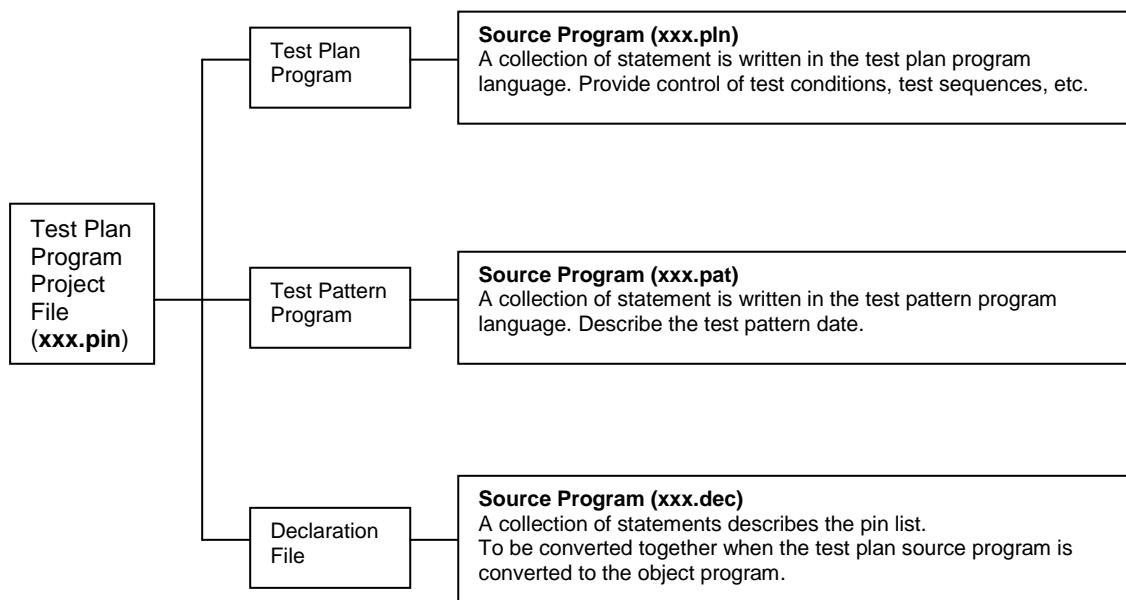


Figure 2-1 Test Program Components

2.2 Test Plan Program Creation

The test plan program defines a device test by specifying the tests to be executed and the order in which they will be executed. A test plan project consists of three text files with each own extension filename “.pln”, “.dec” and “.pat”. Any editor tool, such as WordPad, NotePad, Word and Ultra Editor, etc., are fine to create plan project files. For the test plan program language, refer to the Language Manual.

Make Your Test Plan

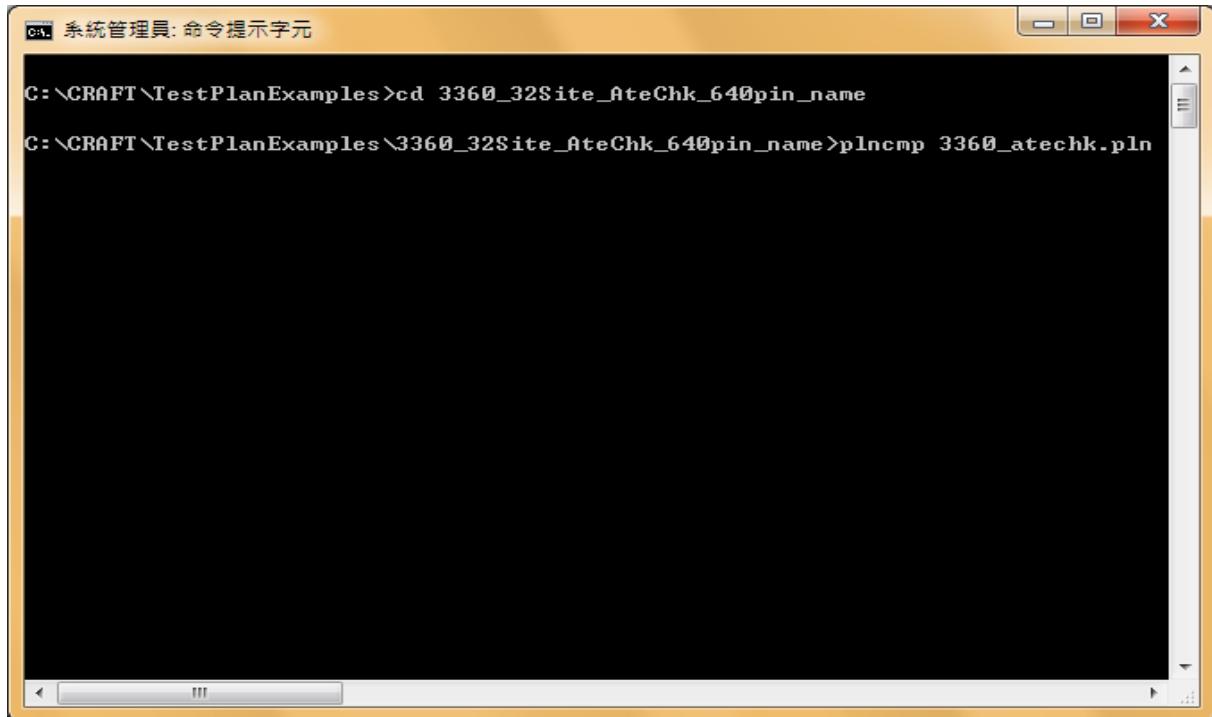


Figure 2-2 How to Use plncmp 1

In MS-DOS command mode, type “plncmp <<your plan source file>>” and press **Enter**. Then it starts compiling your plan source code and generates some information files and executable file. This is the simplest plan file without any other extra library.

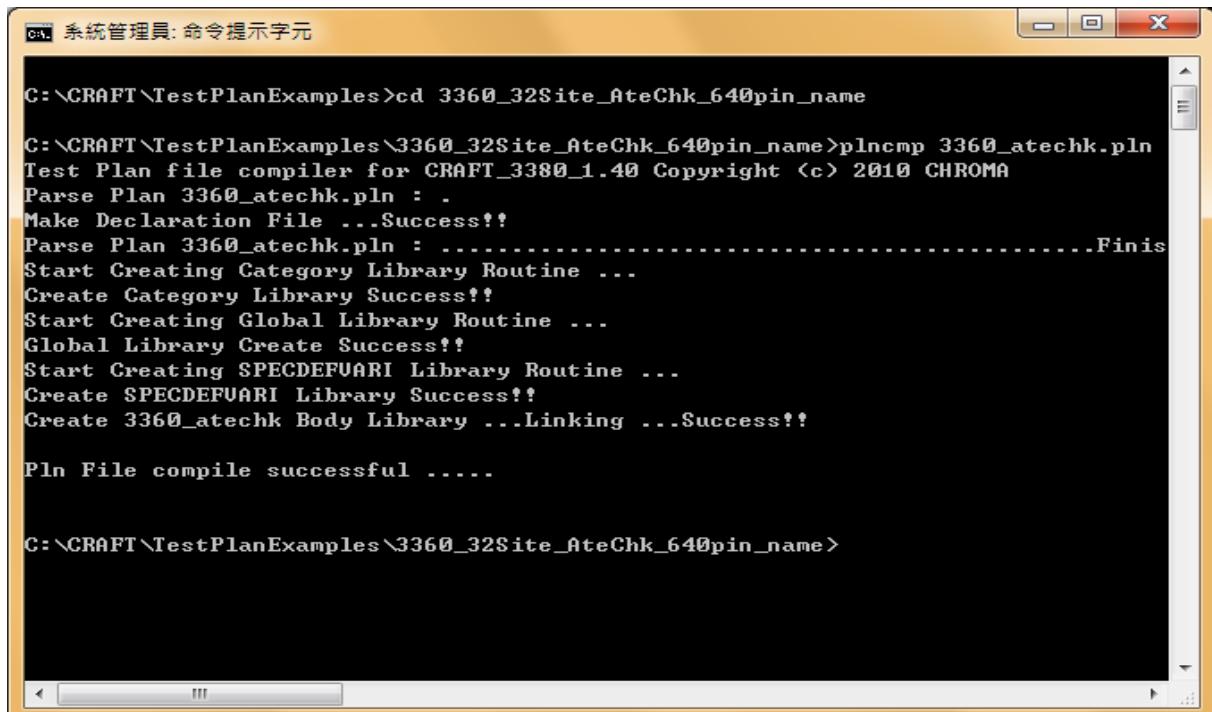
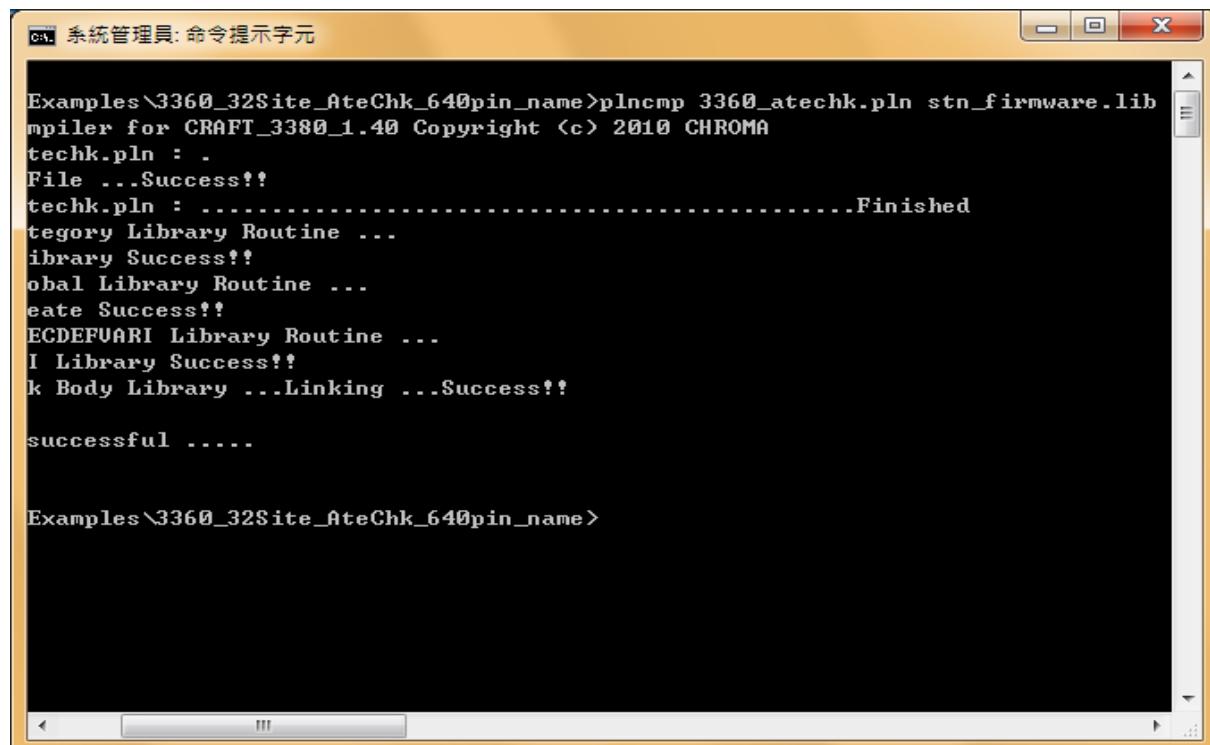


Figure 2-3 How to Use plncmp 2

After it finished compilation, it will output successful information. And in the same directory, information plan file, xxx.pin, is generated simultaneously. Just like C language, the usage of using extra included file or library is very simple. Use –I directory to indicate where extra included file directory is and –L directory to indicate where extra library directory is. When using extra library, it needs to add library file name.



```

Examples\3360_32Site_AteChk_640pin_name>plncmp 3360_atechk.pln stn_firmware.lib
mpiler for CRAFT_3380_1.40 Copyright <c> 2010 CHROMA
techk.pln : .
File ...Success!!
techk.pln : .....Finished
tory Library Routine ...
ibrary Success!!
obal Library Routine ...
eate Success!!
ECDEFUARI Library Routine ...
I Library Success!!
k Body Library ...Linking ...Success!!

successful .....

Examples\3360_32Site_AteChk_640pin_name>

```

Figure 2-4 How to Use plncmp 3

2.3 Test Pattern Program Creation

The test pattern program defines the data pattern for device testing. For the test pattern program language, refer to the Language Manual.

2.3.1 Source Program Editing

To initiate test pattern source program editing, start any text editor such as Textpad, Micro Word, or Ultra Editor. After program editing is finished, save the file with extension name in “pat”.

2.3.2 Compilation

(1) Overview

To execute a program written in the test pattern language, it is necessary to translate the source program into an executable program (object program). Translating the source program into the object program is called as compiling or compilation.

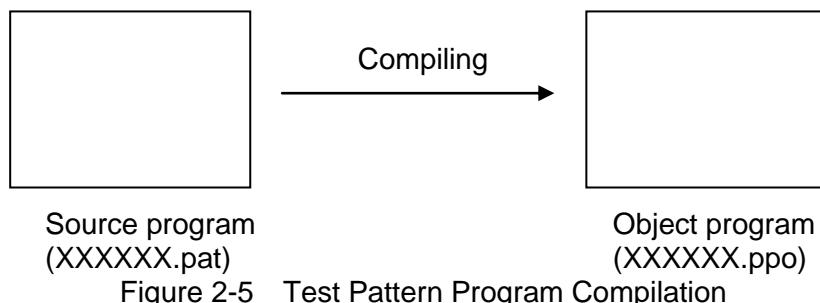


Figure 2-5 Test Pattern Program Compilation

(2) Compiling with the Pattern Compile window

The following shows how to complete pattern program compilation with the Compile window.

(a) Open the Pattern Compile window.

1. Click on “patcmp” item on left side of system control window.
2. The Pattern Compiler window is shown as the following.

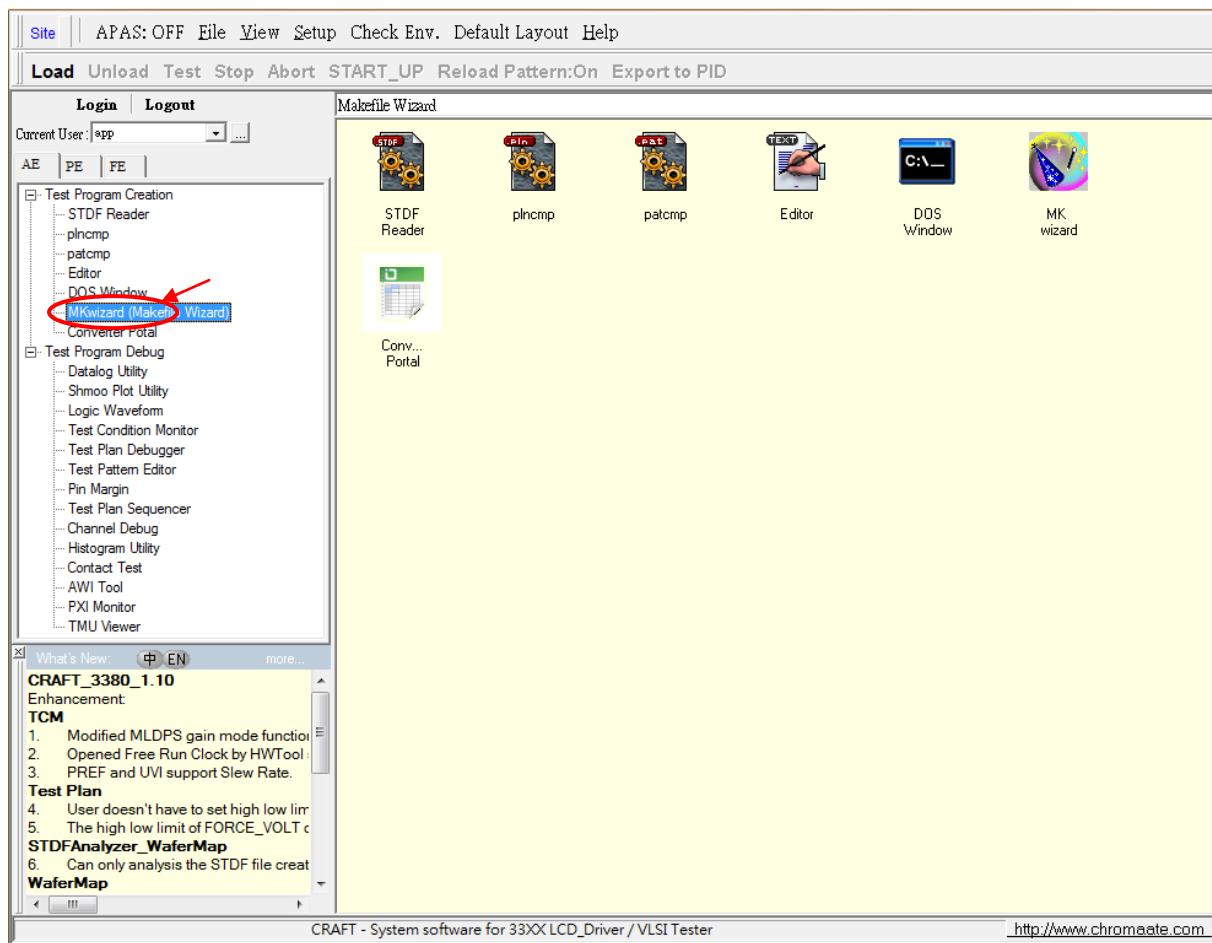
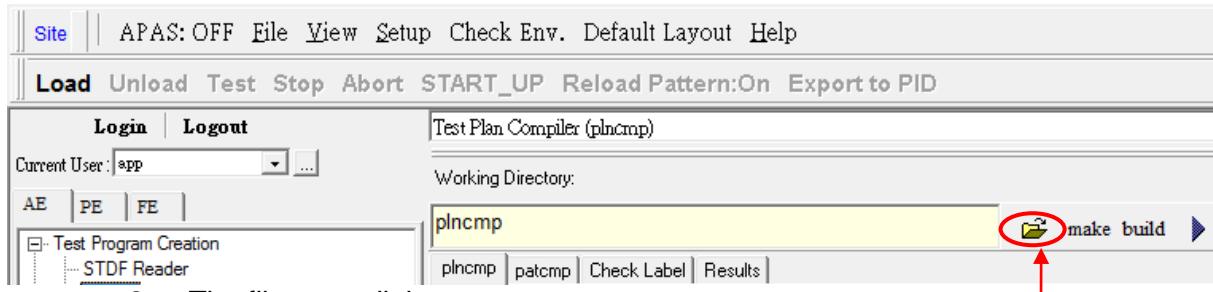


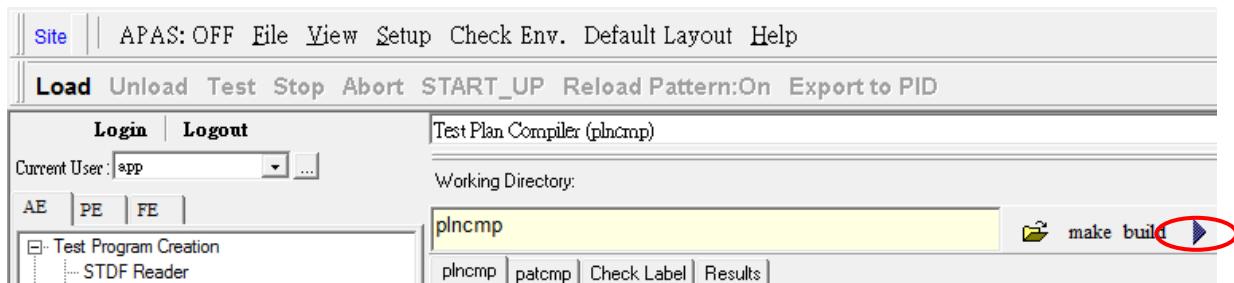
Figure 2-6 Compile Window

(b) Select the name of the file to be compiled.

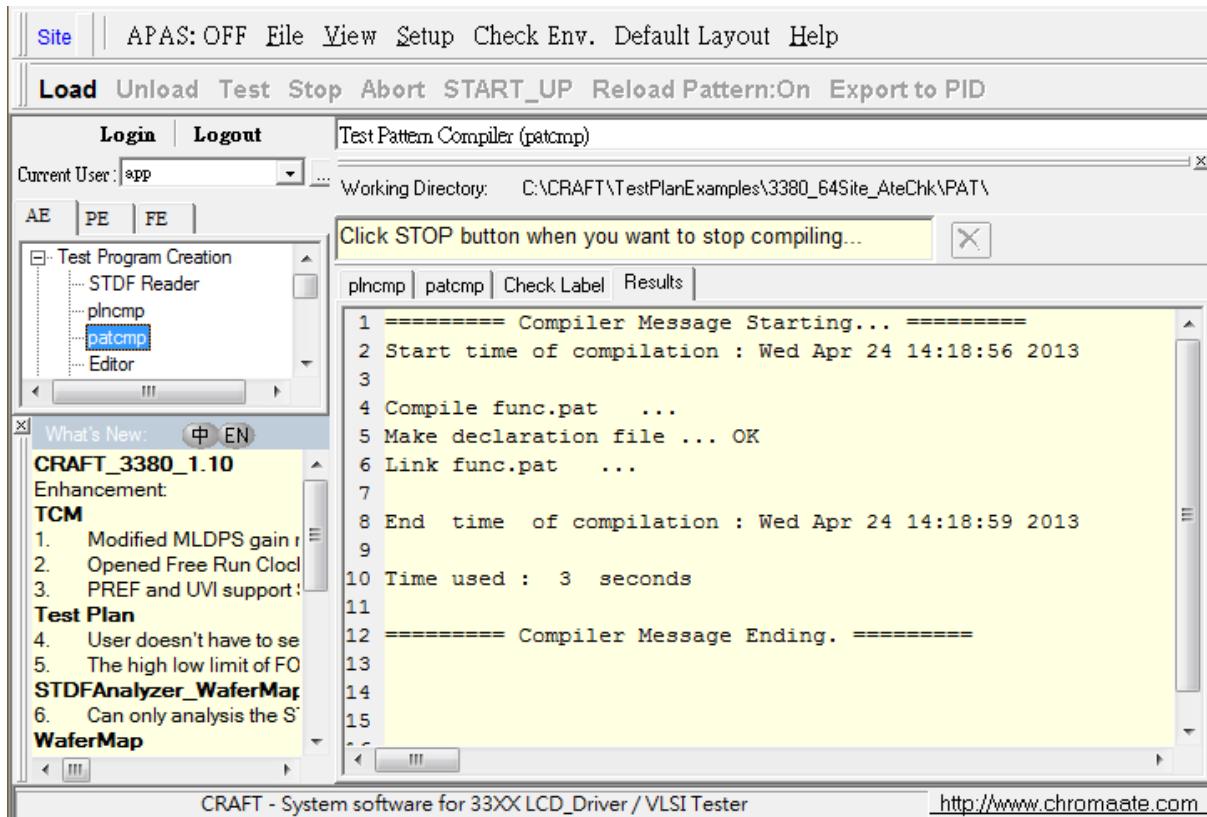
1. Click on file choosing button in system control.



2. The file open dialog appears.
 3. Select pattern file that have full path to be compiled. (The test pattern program file name is in XXXXXX.pat form.)
 4. Click on open button within file open dialog then the dialog will be disappeared.
- (c) Determine pattern compiler parameter. (There are eight parameters.)
1. Click on check boxes, then symbol V indicates corresponding parameters are enabled.
 2. Click on check boxes again, then symbol disappeared means corresponding parameters are disabled.
- (d) Initiate compilation
1. Click on the Compile button in the Compile window.



2. The Compile message window is shown. A message appears in this window to indicate pattern compilation result and derived table information.



(3) Compiling with commands

The following shows the test pattern program compilation procedure to be performed with command entries made. Position the cursor within the console window and then sequentially enter the following commands (underlined portions).

(Prompt)	<u>cd</u> directory-name Return	①
(Prompt)	<u>patcmp</u> option souce-program-name	
Return	②
XXXXXXXXXXXXXXXXXXXX	③
XXXXXXXXXXXXXXXXXXXX	④
(Prompt)	

① Command for moving into a directory where the source program to be compiled exists (this command execution is not needed when such a directory change is done).
 ② Compiling command.
 ③ Error message (displayed only when an error occurs).
 ④ End message

Figure 2-7 Compiling the Test Pattern Program with Commands

(4) Compiling with TextPad

Use Build or Make command in TextPad to compile pattern file. The usage can reference the Section 2.5.

No.	Item	Description
1	Patcmp	Command for starting the compilation program (pattern compiler).
2	Source program name	Name of the source program file to be compiled.
3	Option	Option for compilation. The option entry is ommissible to compile pattern programs.
	1. -h	Describe all options along with corresponding meanings.
	2. -c	Notify compiler to compile pattern but not linking pattern object file. (No object [*.ppo] is generated.)
	3. -r	Output information such as header, module and label data to screen.
	4. -x	Use preprocessor to process comment that is written in pattern file. (The option is not required usually.)
	5. -p	Don't check if pin declared in HEADER is reused. In other words, it allows the pin to declare twice or above in HEADER.
	6. -z	Pattern source file can be compressed file that is zip format.
	7. -u	Mark this pattern as unopened(secret) pattern
	8. -L	Long pattern mode that maximum size of pattern is 31.5M (default is 15.5M)
	9. -m	Display module vector number and real address offset to start address of the ppo in pattern memory.
	10. -b	Replace SPM with BPM.
	11. -B xxx	Replace SPM with BPM for modules which are listed in file.
	12. -f	Read pattern source files from file list that contains pattern source files.
	13. -e xxx	Stop to compile pattern when error count specified by the option is reached.
	14. -o xxx	Assign pattern object name which associated with path. (*.ppo)
	15. -g nnn	Reserve SPM memory gap between two module when loading pattern.
	16. -g nnn:xxx	set SPM memory gap between two module when loading pattern for specified pattern file.

Table 2-1 Descriptions of Input Command

Option for reporting information (-r)

```
*****
Time Set Name
0. TM1 = 1
1. TM2 = 2
2. TM3 = 3
3. TM4 = 4
4. TM5 = 5
5. TM6 = 6
6. TM7 = 7
7. TM8 = 8
8. TM9 = 9
9. TM10 = 10
0. TM11 = 11
1. TM12 = 12
42. TM13 = 13
43. TM14 = 14
44. TM15 = 15
Time Set no.= 45
*****
Header no. : 322
Pin no. : 304
*****
Module Name :idd_pat      Type :SPM   Address :0      vector no. :5013
Module no.= 1
*****
Label Name :idd_pat      Module Name : idd_pat      Offset : 0
Label Name :idd_cont_st   Module Name : idd_pat      Offset : 0
Label Name :idd_cont_sp   Module Name : idd_pat      Offset : 5012
Label Name :__idd_pat     Module Name : idd_pat      Offset : 5012
Label no.= 4
*****
File : tp3500_fail.pat  SPM :( 0)-(5012)  FPM :( 0)-(-1)
SPM memory size = 5013
FPM memory size = 0
*****
```

1. Display time set declared in declaration file.
2. Display both header no. and pin no. are declared in HEADER section.
Header no. : The count for items declared in HEADER.
Pin No. : The count of pins that items in HEADER contain.
3. Display each module along with module address offset and size.
4. Display each label along with label address offset.
5. Display memory size needed for pattern data.

2.4 Make Test Plan Project Wizard

Use this tool can make a test plan project in one time, included multiple test plan files and pattern files. And the wizard let user to choose the file step by step. The tool makes it easily to build a project.

2.4.1 Source Program Editing

Like the description which is explained in the previous section, the first step is the source code editing. The source codes include the extension files “pln” and “pat”.

2.4.2 Compile the Units

The following shows how to use Makefile Wizard to make a test project.

- (1) Open the Makefile Wizard window.

1. Click on “MKwizard (Makefile Wizard)” item on left side of system control window.
2. The Makefile Wizard window is shown as the following.

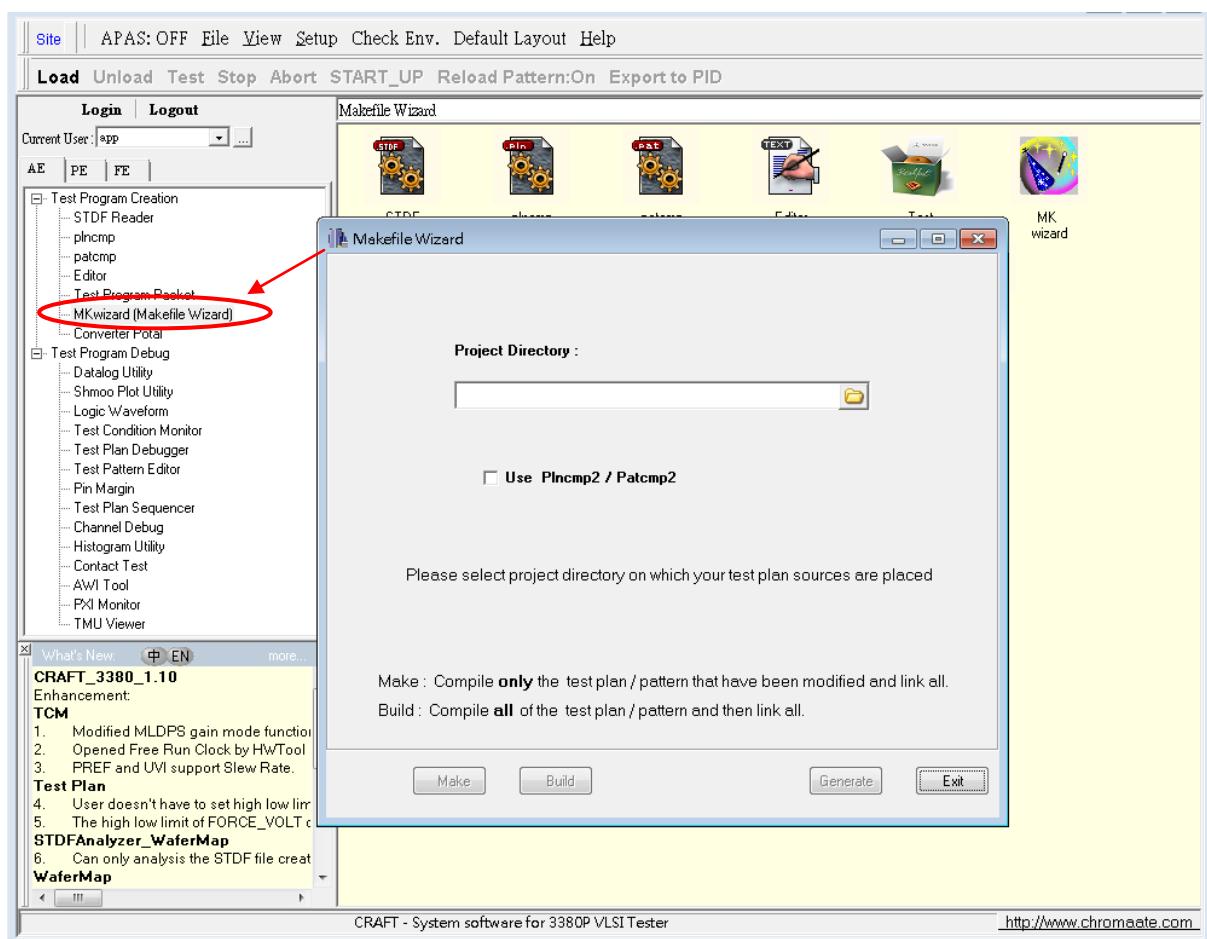


Figure 2-8 Wizard Window

- (2) Select the project directory which the test plan sources are placed.
1. Click file open button.

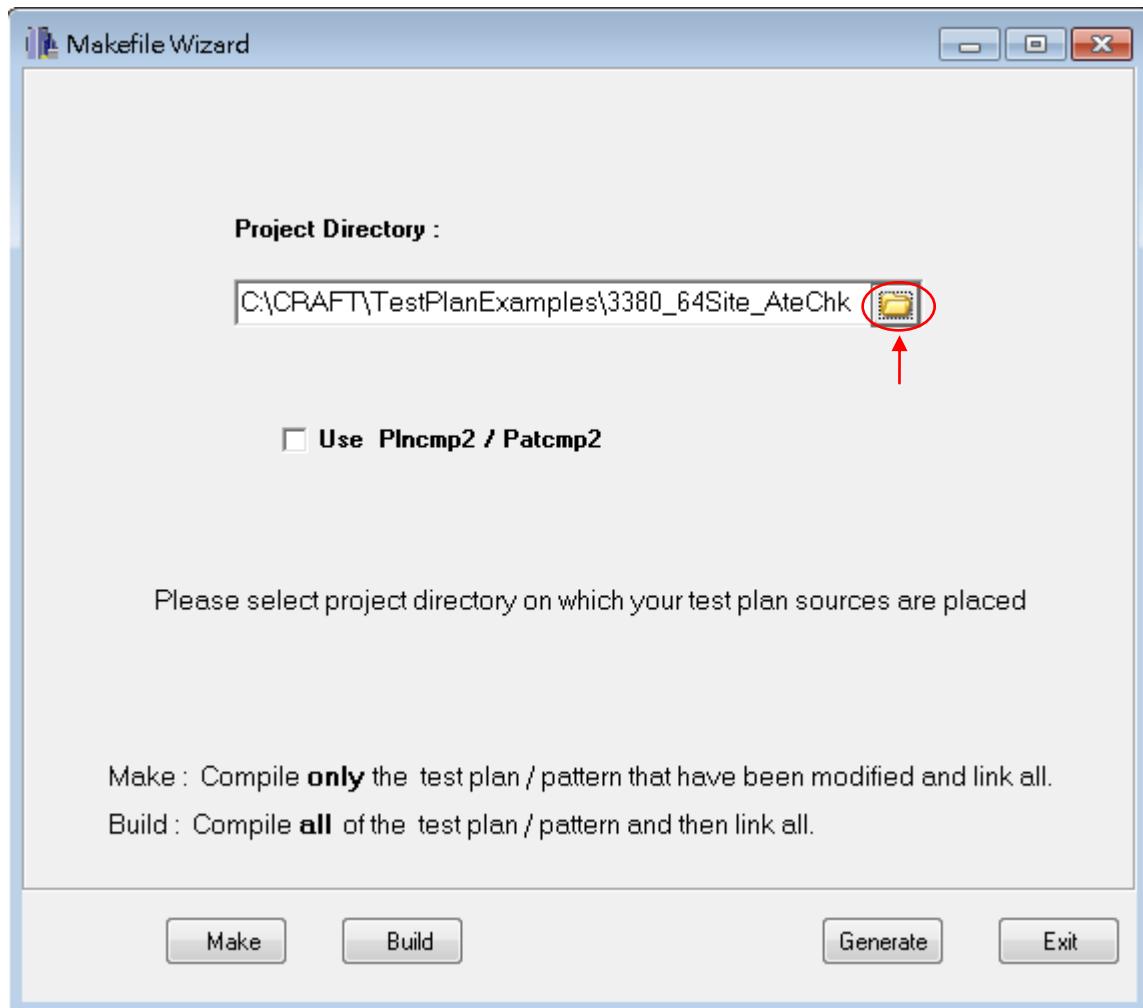


Figure 2-9 Project Directory Window

2. The directory open dialog appears.
3. Select the directory that the test plan file to be compiled.
4. Click **OK** button within directory open dialog, then the directory open dialog disappears.
5. If needed, select “Use Plncmp2/Patcmp2” to compile test plan and pattern file with Plncmp2 and Patcmp2 tool.
6. Then click the **Generate** button to the next step.
7. If the make file exists already and it is not necessary to be modified, Click **Make** or **Build** to compile test plan and pattern file. And then the message window will appear.

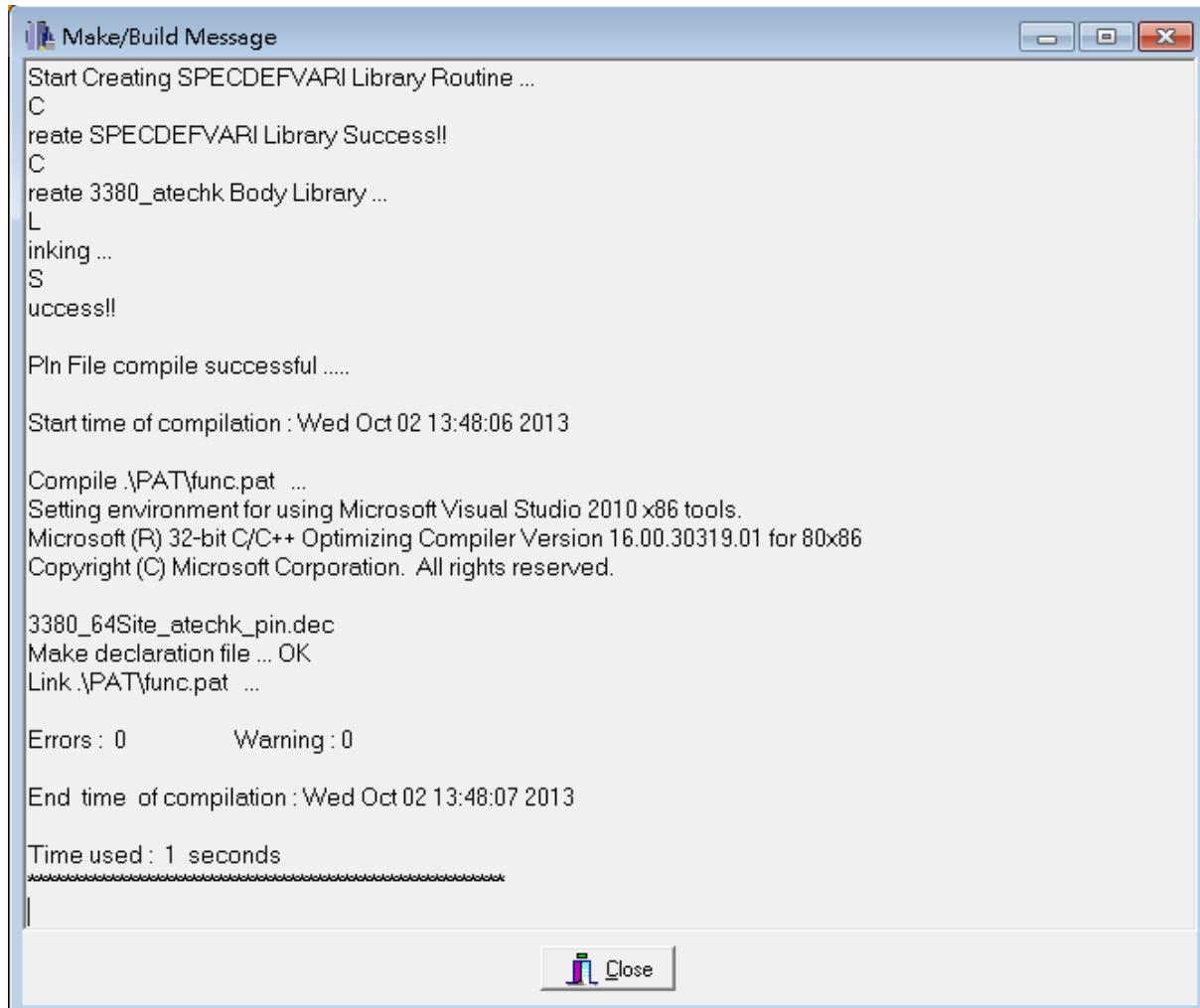


Figure 2-10 Choose Test Plan Window

(3) Select the test plan source files

1. If the directory which was chosen in the previous step includes multiple test plan files, select the required files. On the case where there are many files in current directory, click right button on mouse, then click "select all" item to select all test plan files or click "deselect all" item to deselect all test plan files.
2. If the selected source files need to include some other libraries, select the check box, and click the file choosing button, then the file open dialog appears.

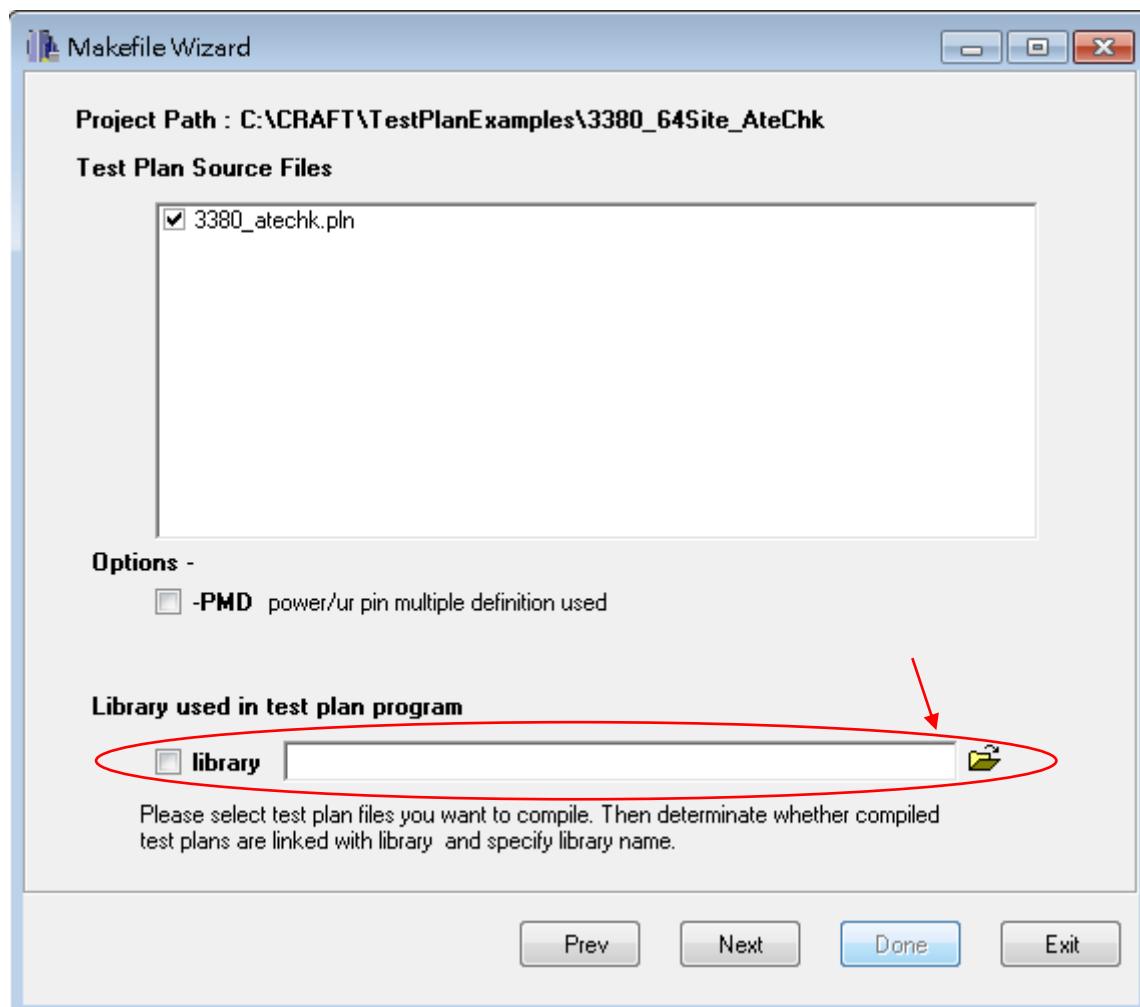


Figure 2-11 Choose Test Plan Window

3. Select the library that will be used and click “file open” button, the open file dialog will be disappeared.
 4. If Plncmp2/Patcmp2 is used, input macro definition parameter for Plncmp2. Note that if Plncmp2/Patcmp2 is not selected in previous window, the “Parameters for Macro” item will be invisible.
 5. Click **Next** button to the next step, or click **Prev** button to the previous step.
- (4) Select pattern files to be compiled.
1. Select the pattern files in the default directory. On the case where there are many pattern files in the directory, click right button on mouse, then click “select all” item to select all test plan files or click “deselect all” item to deselect all test plan files.
 2. If some files in another directory are needed, click the “add” button and click the file choosing button, then the file open dialog appears.
 3. Select the pattern files that will be included and click file open button, the open file dialog then disappears.

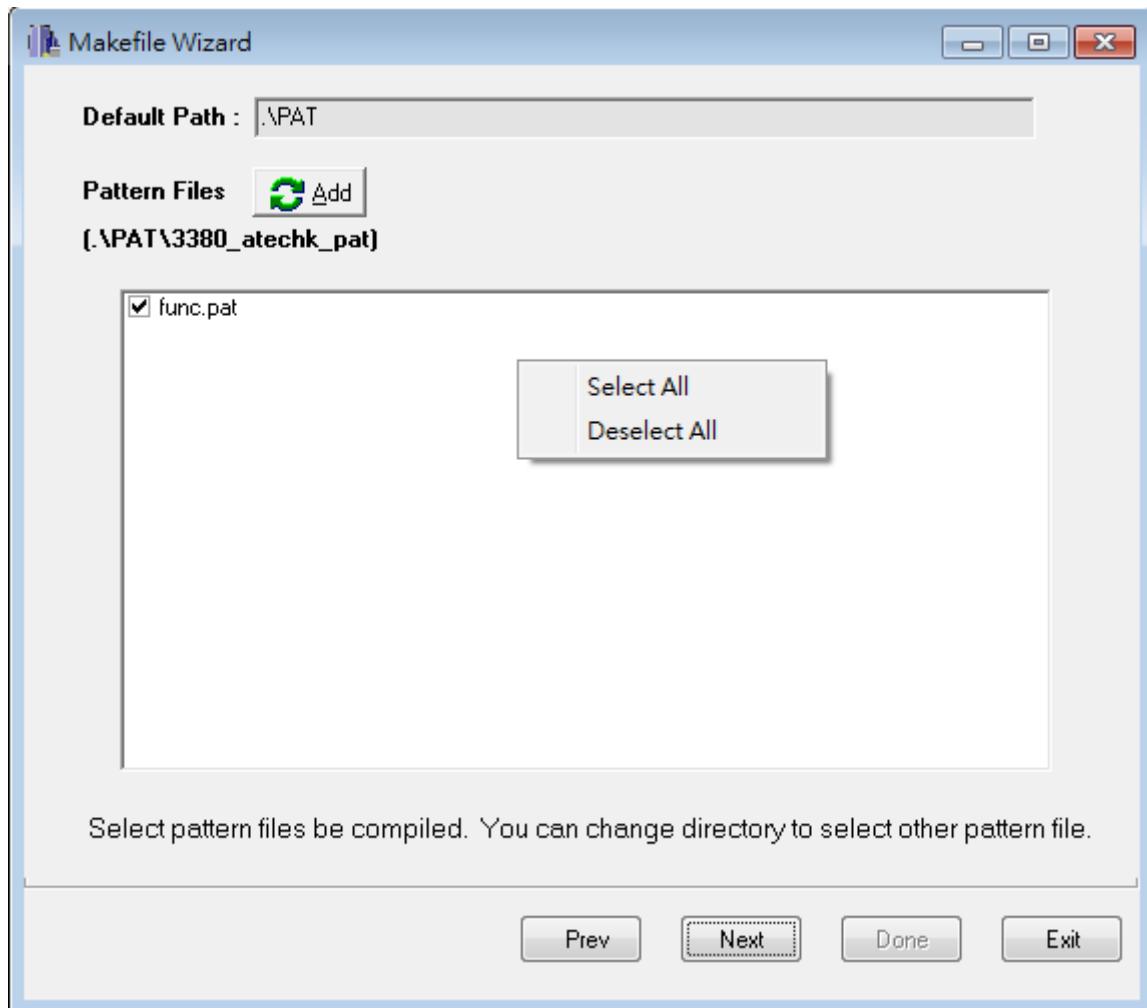


Figure 2-12 Choose Pattern Files Window

4. Check the pattern files need to be compiled, click **Next** to the next step, or click **Prev** to the previous step.
- (5) Set the option of Test Pattern Compiler
 1. Click check boxes, and then symbol **V** indicates corresponding parameters are enabled.
 2. Click check boxes again, then no symbol **V** means corresponding parameters are disabled.

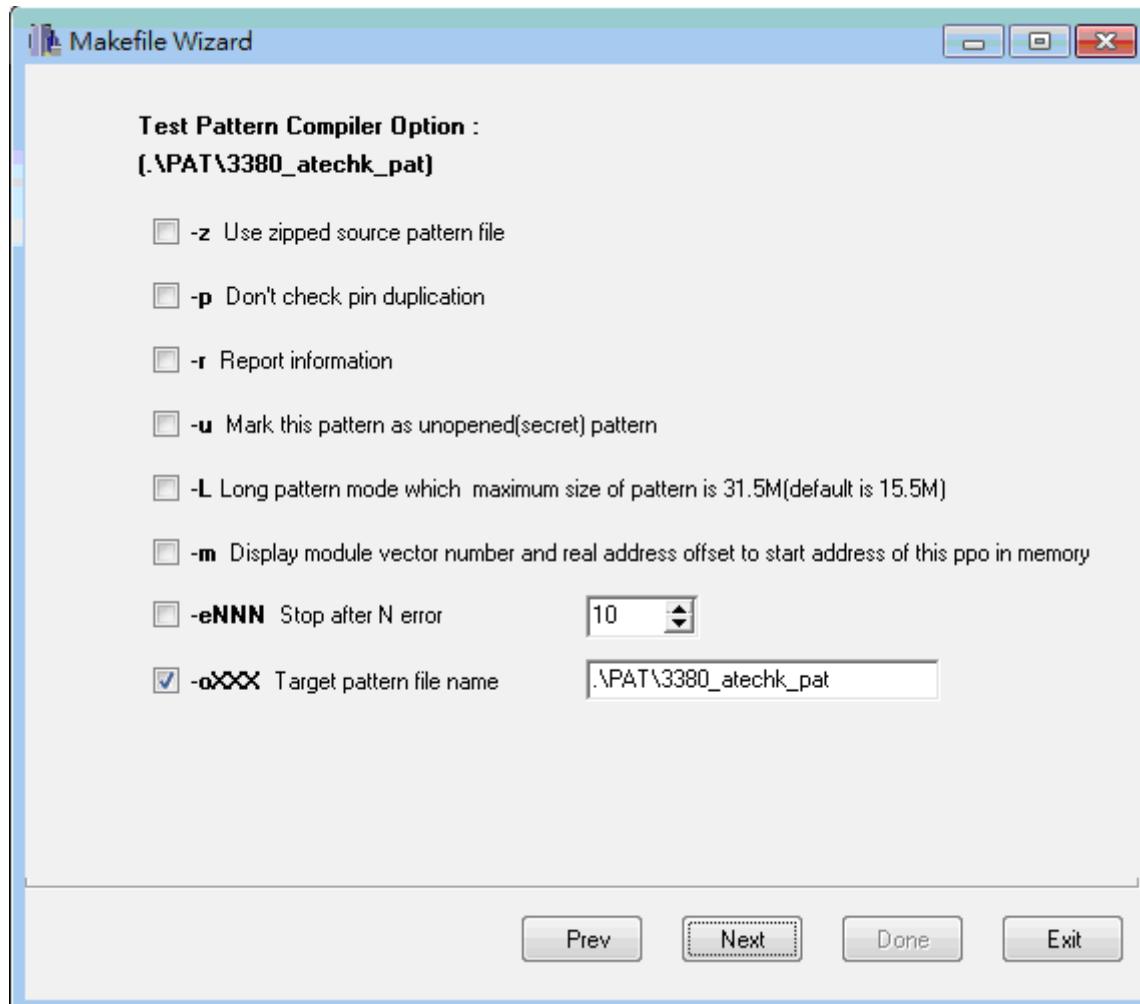


Figure 2-13 Pattern Compiler Option Window

3. If Plncmp2/Patcmp2 is used, input macro definition parameter for Patcmp2. Note that if Plncmp2/Patcmp2 is not selected in first window, the “Parameters for Macro” item will be invisible.
 4. Click **Next** button to the next step, or click **Prev** button to back to the previous step.
- (6) If the number of pattern object files is more than one (.eg. load pattern statement in test plan files is not only used once), the step 4 and step 5 may repeat for next pattern object file.
- (7) Confirm the summary about the test plan project
1. By default, test plan and pattern files will be made when done. If need, click Make/Build check boxes, and then symbol **V** indicates that test plan and pattern files are compiled regardless of whether files are modified or not when done button is pressed.
 2. Click **Done** to generate makefile and compile test plan/pattern, or choose **Prev** to return to the previous step.

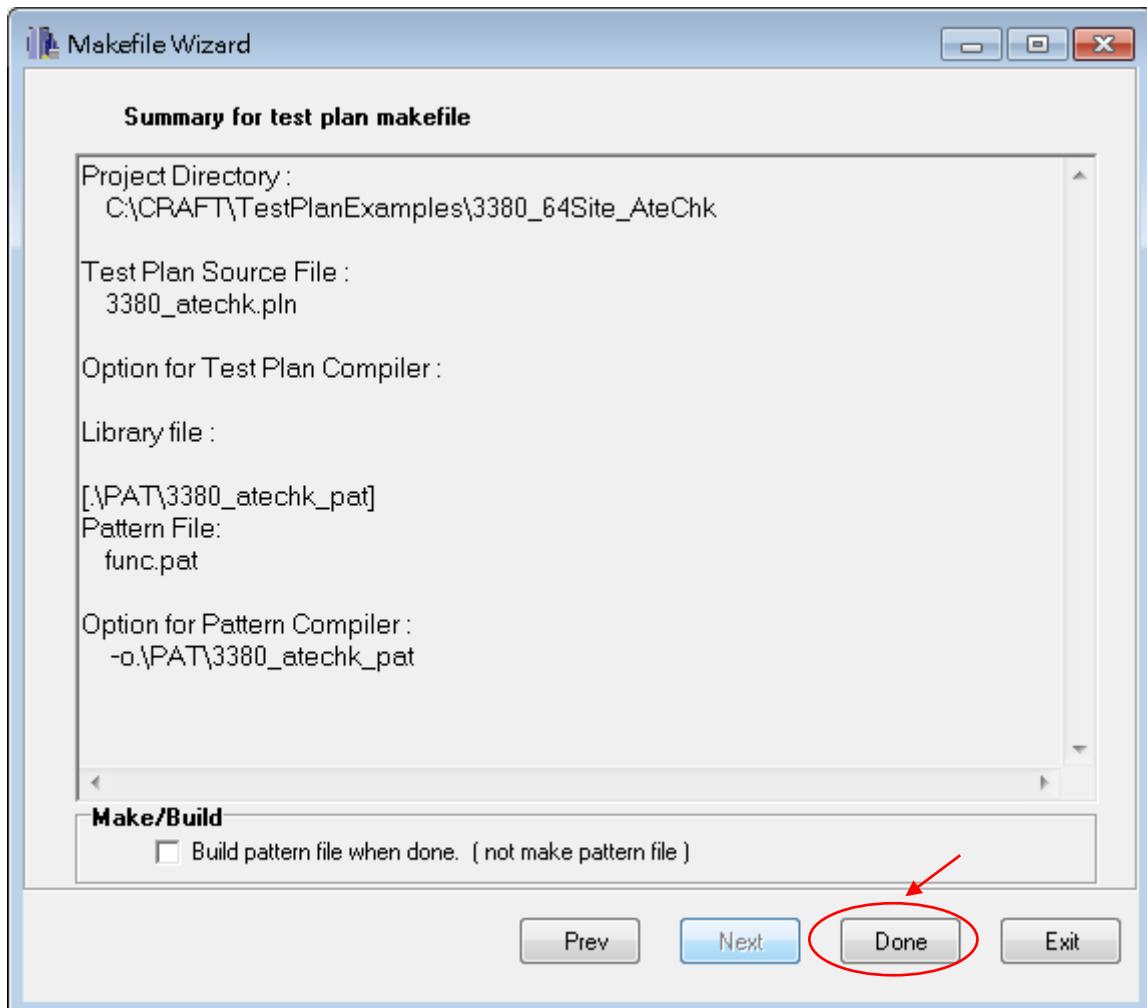


Figure 2-14 Summary of Test Plan Project Window

- (8) The window will display if the project can compile successfully or not.

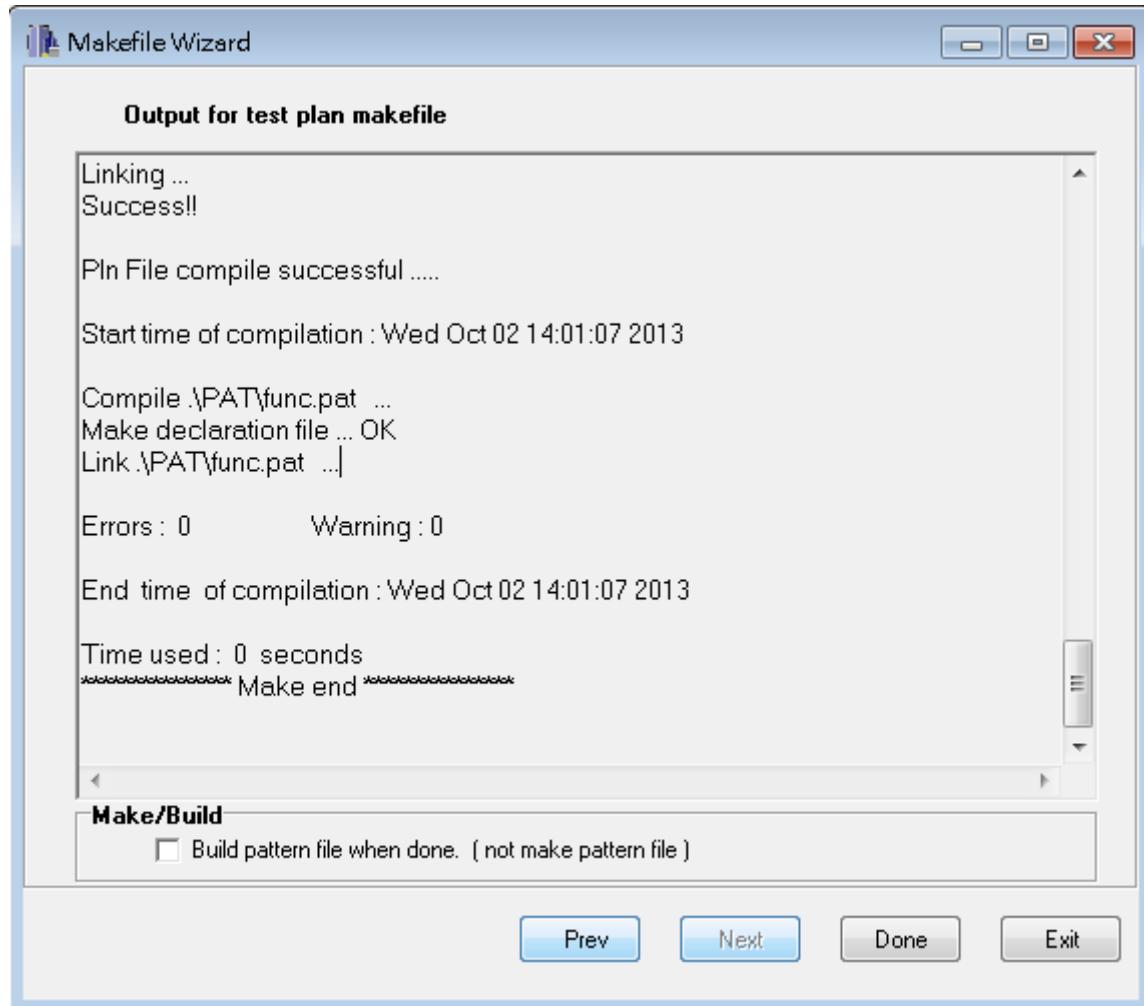


Figure 2-15 Output for Test Plan Project Window

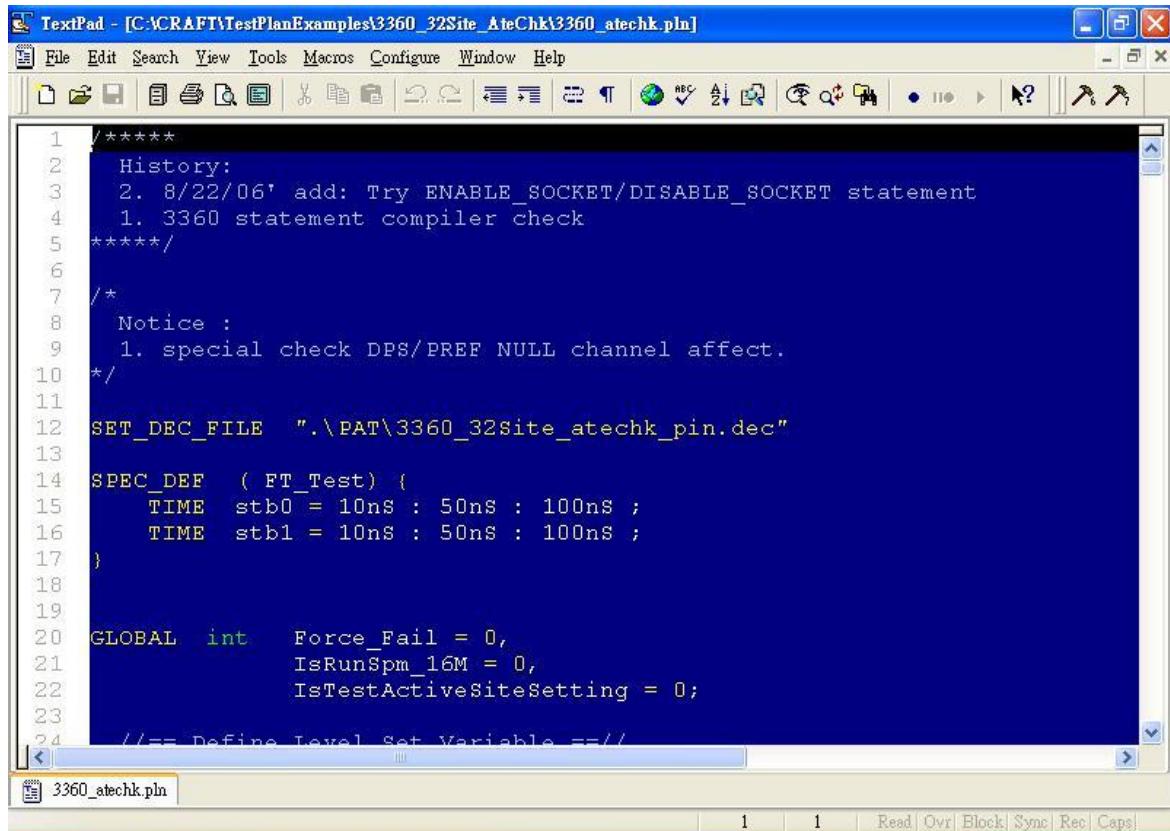
1. Click **Done** to execute the project again or click **Exit** to quit the wizard.

2.5 Make Test Plan Project with TextPad

Use this tool can also make a test plan project, included multiple test plan files and pattern files. After using the wizard to generate makefile, the tool makes it easily to build a project more quickly.

2.5.1 Test Plan Program Editing

Like the description which is explained in the previous section, the first step is the source code editing. The source codes include the extension files “pln” and “pat”.



```

1  *****
2   History:
3   2. 8/22/06' add: Try ENABLE_SOCKET/DISABLE_SOCKET statement
4   1. 3360 statement compiler check
5  *****/
6
7 /*
8  Notice :
9  1. special check DPS/PREF NULL channel affect.
10 */
11
12 SET_DEC_FILE ".\PAT\3360_32site_atechk_pin.dec"
13
14 SPEC_DEF ( FT_Test ) {
15   TIME stb0 = 10ns : 50ns : 100ns ;
16   TIME stb1 = 10ns : 50ns : 100ns ;
17 }
18
19
20 GLOBAL int Force_Fail = 0,
21      IsRunSpm_16M = 0,
22      IsTestActiveSiteSetting = 0;
23
24 //== Define Level Set Variable ==//

```

Figure 2-16 Edit Test Plan Using TextPad

2.5.2 Compile the Units

The following shows how to use TextPad to make a test project, when test plan is ready to be executed.

- (1) Click menu bar [Tools]\make | [Tools]\build, or click the speed button on the tool bar to compiler directly.

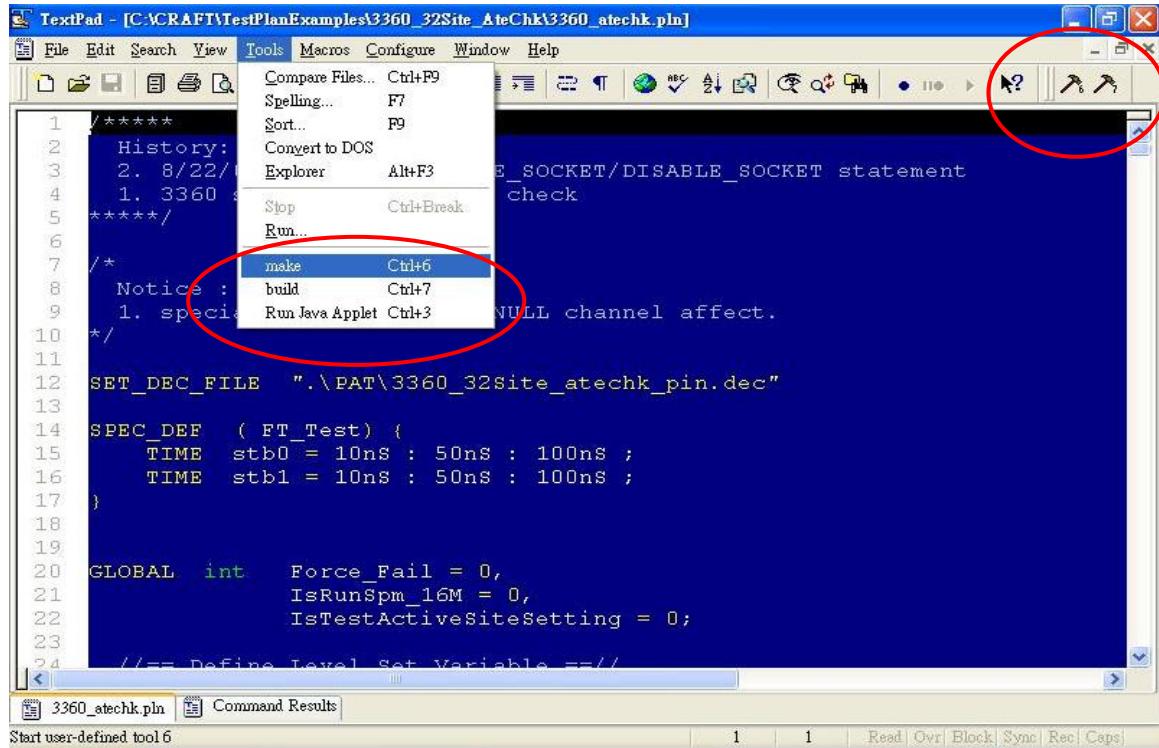


Figure 2-17 Make Test Plan

- (2) Compiler result will be displayed in another page as follow.

A screenshot of the TextPad editor window titled "TextPad - [Command Results]". The menu bar is identical to Figure 2-17. The code area displays the following compiler output:

```

20 Start time of compilation : Wed Sep 21 10:01:00 2011
21
22 Compile .\PAT\func.pat ...
23 Make declaration file ... OK
24 Link .\PAT\func.pat ...
25     Errors : 0           Warning : 0
26
27 End time of compilation : Wed Sep 21 10:01:02 2011
28
29 Time used : 2 seconds
30
31 Tool completed successfully
32

```

The status bar at the bottom shows "3360_atechk.pln" and "Command Results".

Figure 2-18 Compiler Result

2.5.3 Fast Debug Test Plan

In the result page, any warning or error line information can be clicked to link the text plan source code directly.

The screenshot shows two TextPad windows. The top window is titled "TextPad - [Command Results]" and displays a log of a test plan compilation process. A red box highlights a warning message: "Message:[Warning : Current VIH is for STLPC board.]". A red arrow points from this message to a callout box containing the text "Change to the relative source code automatically". The bottom window is titled "TextPad - [C:\CRAFT\TestPlanExamples\3360_32Site_AteChk\3360_atechk.pln]" and shows the corresponding source code for the test plan. The same red arrow points from the warning message in the command results window to the source code window, specifically highlighting the line where the warning occurred.

```

1 MAKE Version 5.2 Copyright (c) 1987, 2000 Borland
2 Test Plan file compiler for CRAFT_3360D_3.10 Copyright (c) 2005 CHROMA
3 Parse Plan 3360_atechk.pln :
4 Make Declaration File ...Success!!
5 Parse Plan 3360_atechk.pln :
6 << File:[3360_atechk.pln] Line:[117] Last statement:[SET_LEVELN] Last Token:[] >>
7 Message:[Warning : Current VIH is for STLPC board.]
8 .....Finished
9 Start Creating Label Library Routine ...
10 Create SPECDEFVARI Library Success!!
11 Start Creating Category Library Routine ...
12 Create Category Library Success!!
13 Start Creating Global Library Routine ...
14 Global Library Create Success!!
15 Start Creating SPECDEFVARI Library Routine ...
16 Create SPECDEFVARI Library Success!!
17 Create 3360_atechk Body Library ...Linking ...Success!!
18
19 Pln File compile successful ....
20
21
22 Tool completed successfully
23

```

Change to the relative source code automatically

```

105 }
106
107
108 START_UP() {
109
110     SET_LEVELN( rst_lvl, Allpins, 0.0V, 0.5V, 0.0V, 0.0V, 0.0mA, 0.0mA, 0.
111     LEVELS(rst_lvl, 3mS);
112
113     SET_LEVELN(freq_lvl, Allpins, 0V, 5V, 2.5V, 2.5V, , , , );
114
115     SET_LEVELN(func_lvl, Allpins, 0V, 5V, 2V, 3V, , , , );
116
117     SET_LEVELN(leak_lvl, Allpins, 0V, 7.0V, 2V, 3V, , , , );
118
119     SET_LEVELN(func_io_lvl, Allpins, 0V, 3V, 1V, 2V, 10mA, -10mA, 1.
120
121     LOAD_PAT("./PAT/3360_atechk_pat.ppo");
122
123 }
124
125 test_start()
126 {
127     LEVELS( rst_lvl, 2mS) ;
128     RELAY_OFF( Allpins, ALL, 1mS) ;

```

Figure 2-19 Jump to Interesting Code

2.5.4 Quickly Reference

Check clip library and choose statement item, it will list all the statement info. Click the list contents will generate a sample about the statement in the current document.

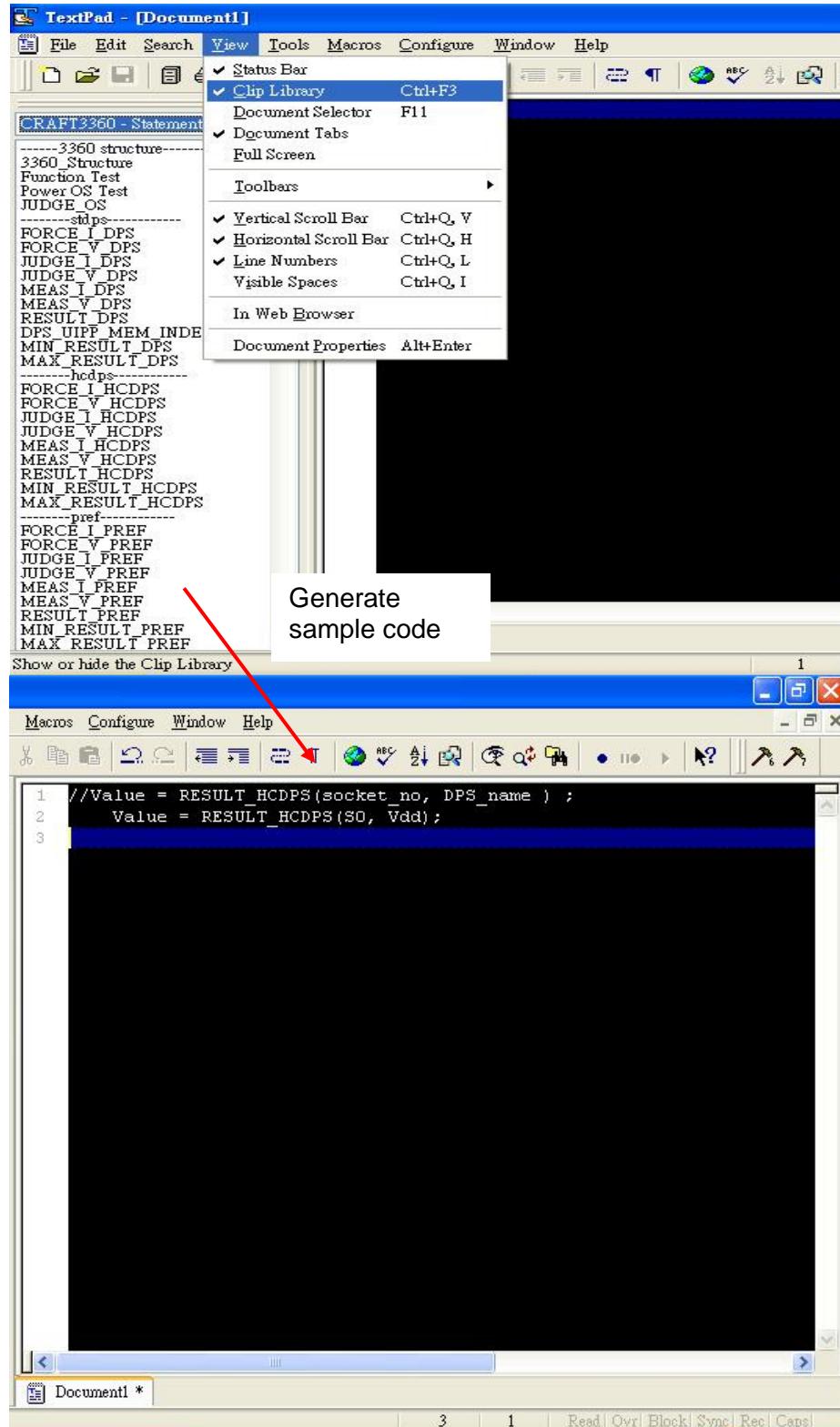


Figure 2-20 Show Statement Information

3. Preview Test Execution

Device testing is conducted either with the tester alone or with the handler or prober connected to the tester. This chapter explains a basically flow about various testing procedures to be performed in such different cases. This chapter supposes that test program (test plan and test pattern) had been compiled already. (Refer to Chapter 1 for how to compile test program)

3.1 Test Program Execution

The following three different windows (as Table 3-1) are available for test program execution. Select one depending on the purpose.

No.	Item	Test Execution Window		
		“AE” window	“PE” window	“Operator” window
1	Purpose of window use	Test program developing and debugging or device evaluation.	Volume production setup and evaluation.	Volume production
2	Test Plan selection method	The path of test program is to be designated directly.	The Production ID is to be specified indirectly to select a proper test program.	The Production ID is to be specified indirectly to select a proper test program.
3	Test program compiler	○	×	×
	Plan Debugger	○	×	×
	Plan Sequencer	○	×	×
	Data log	○	○	×
	Pattern Editor	○	×	×
	Shmoo plot	○	×	×
	Waveform Display	○	×	×
	TCM	○	×	×
	Pin Margin	○	×	×
	Channel Debugger	○	×	×
	Test Summary	×	○	○
	P/H Setup	×	○	×
	Production ID Setup	×	○	×
	Operator Box	×	○	○
	Load board management	×	○	○

Table 3-1 Test Program Execution Window Functions

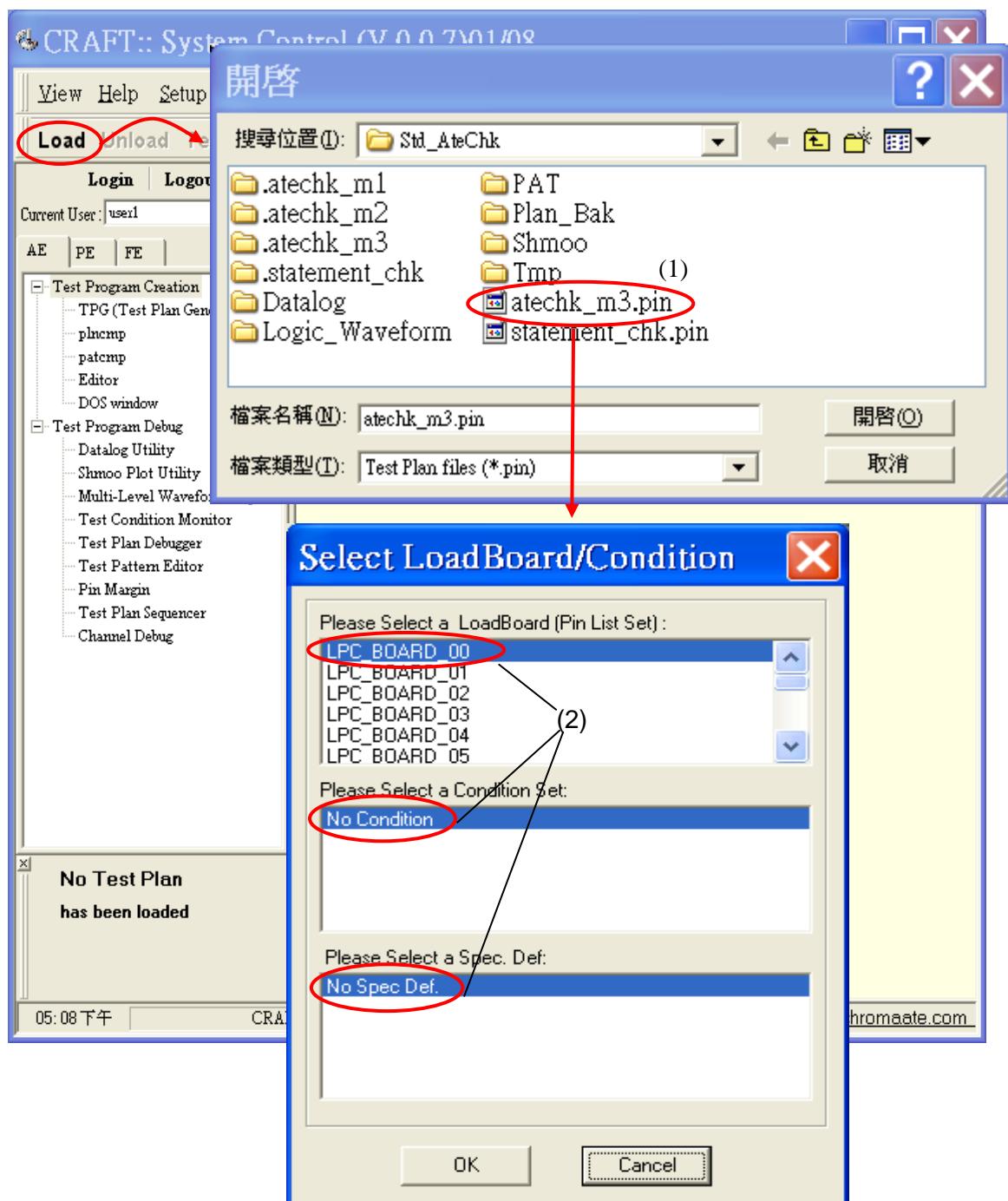
3.1.1 Execute a Test Program with “AE” Window

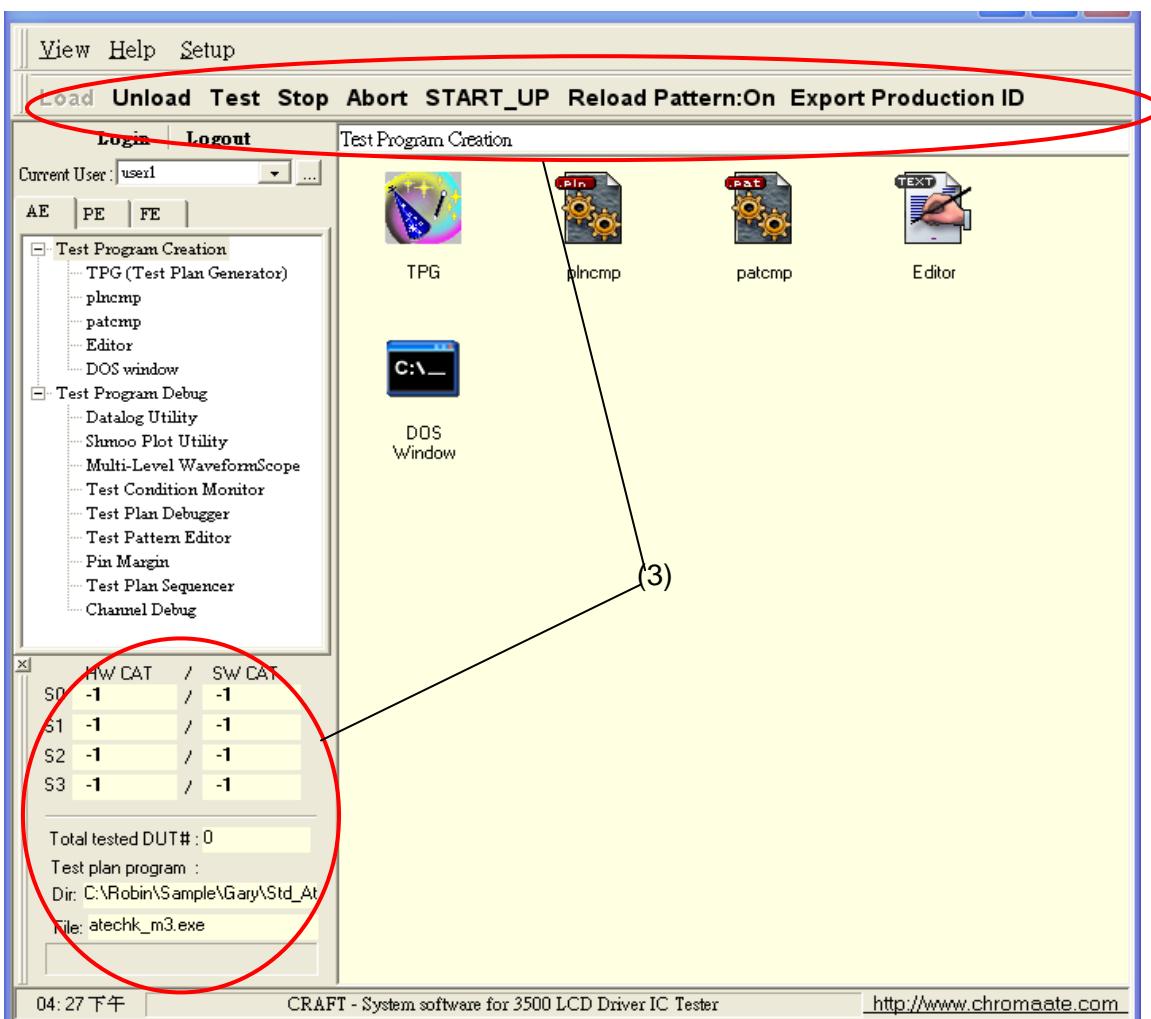
In System Control’s user login window, input a user who had the Application Engineer permission then it will enter to the “AE window”. (Refer to Chapter 4 for detailed description) Perform procedure (3.1.1.1) through (3.1.1.3) below to complete one basically operation of test execution.

Load → Test → Unload

3.1.1.1 Load

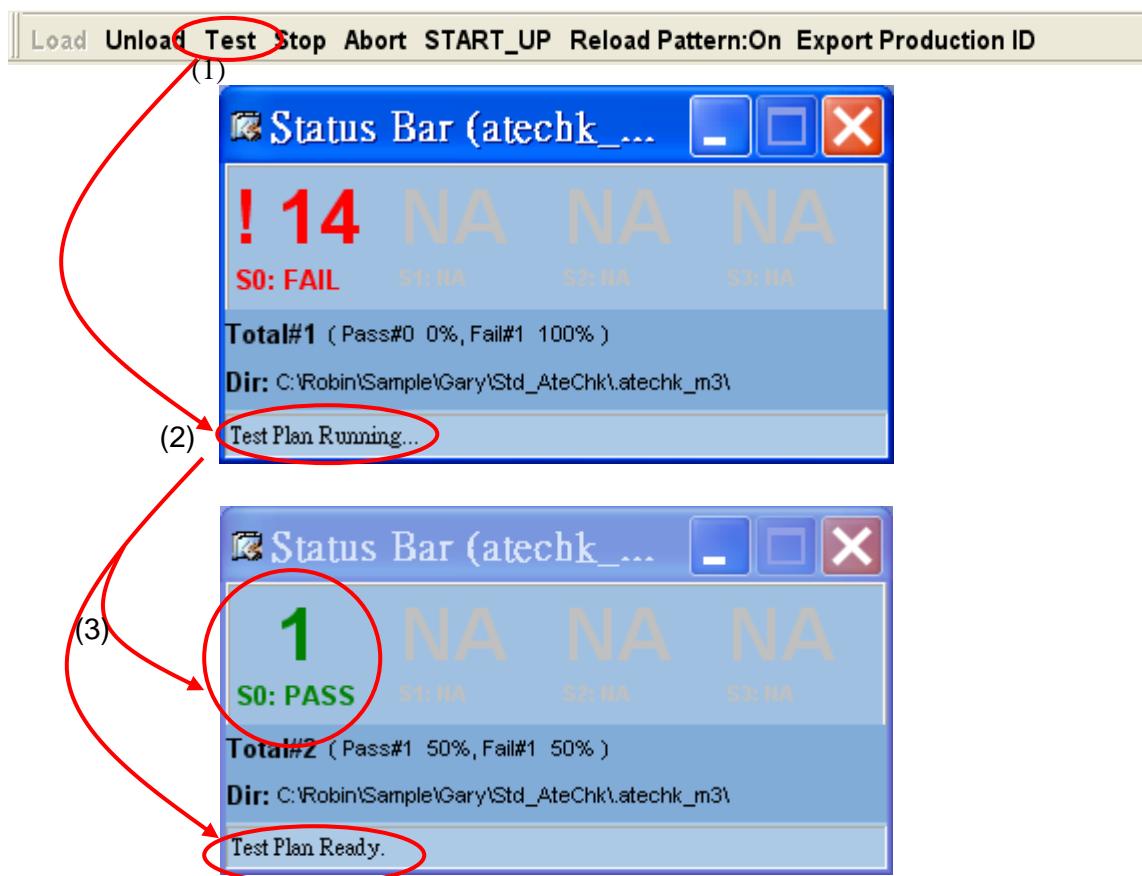
- (1) When click **Load** button on Test Bar, it will invoke a file browse dialog which lists the contents of your working directory, then you can select the binary file of test plan(*.pin) you want to load.
- (2) After select this target file, it will follow another pop-up dialog, listing the load board names, condition names and spec. names (refer to Language Manual). Associated with load board names are physical interface connections that make your program appear the relation to the hardware used to interface between the test head and the DUT (Device Under Test). Associated with condition names are branches selectors that make test plan run the route you want.
- (3) After you select the desired names combination, the test plan will then be loaded, and you will see the other buttons in Test Bar get sensitive and the test plan’s abstracted.





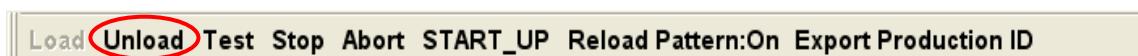
3.1.1.2 Test

- (1) When the **Test** button in Test Bar is sensitive, that means test plan has already been loaded.
- (2) You can start the test plan execution (testing) just by clicking this option, and you will see the status is "Test Plan Running".
- (3) When the execution is finished, you will see the status is "Test Plan Ready" and pass/fail and also binning result.



3.1.1.3 Unload

Unload the test plan which has been loaded. The test plan must be in "Test Plan Ready" status. Whenever you want to compile the loaded test plan or for tester safe reason, remember to do this operation certainly, it will clear the test program from memory, making all of the resources available for another program.



3.1.2 Execute a Test Program with "PE" Window

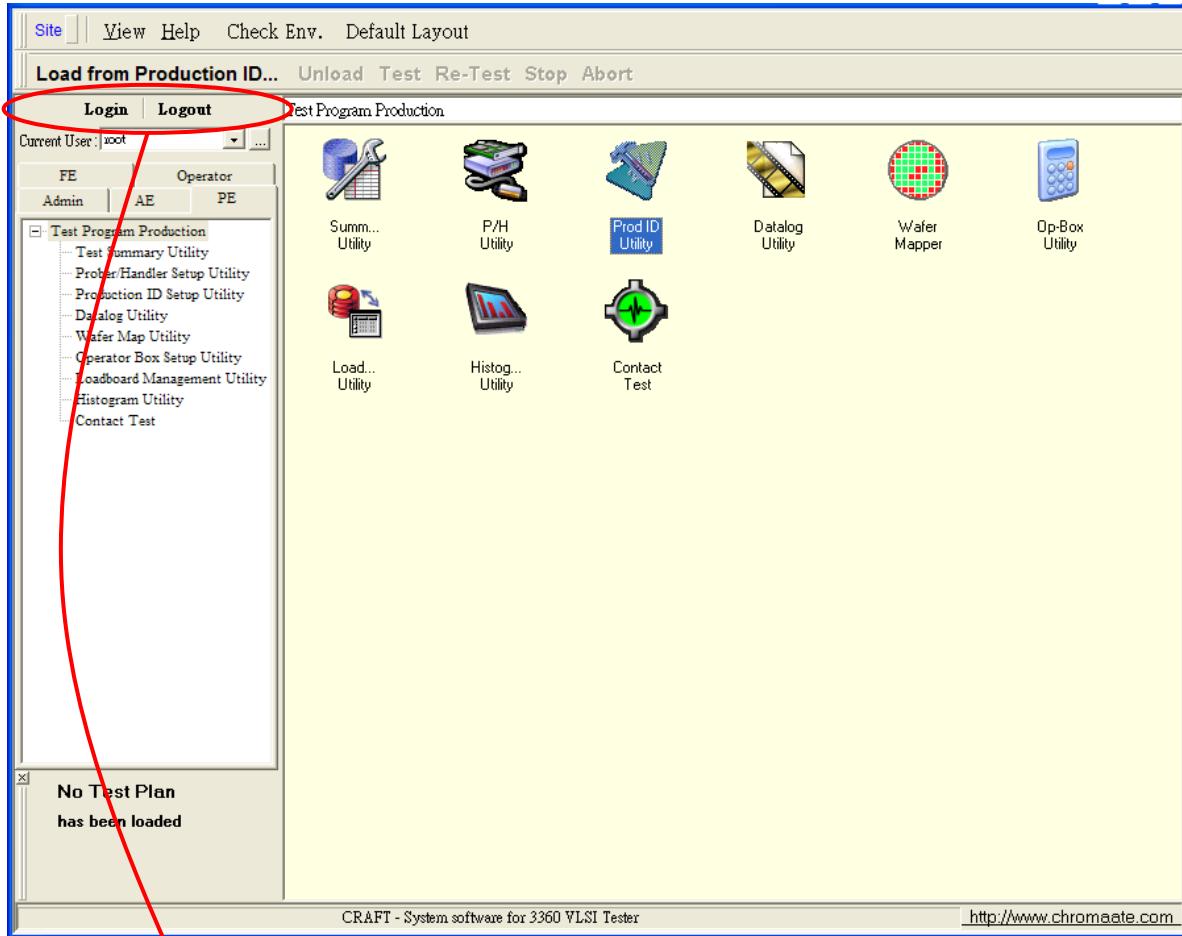
In System Control's user login window, input a user who has the production engineer permission then it will enter to the "PE" window". (Refer to Chapter 5 for detailed description) Perform procedure (3.1.2.1) through (3.1.2.3) below to complete one basically operation of test execution.

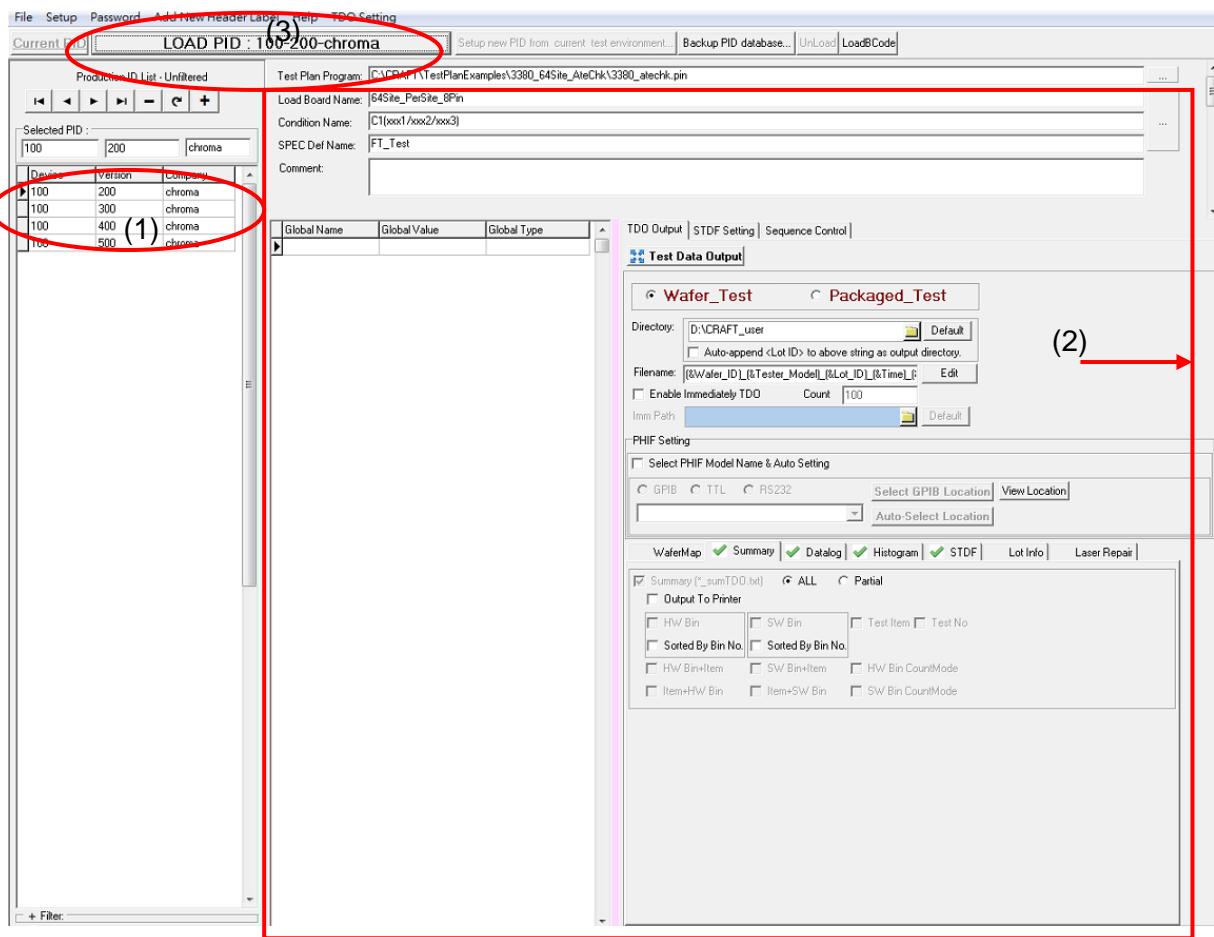
Load from Production ID → Test → Unload

3.1.2.1 Load from Production ID

When there is not any test plan has been loaded, the **Load from Production ID** button will be sensitive. Click this option then:

- (1) Select one PID from the Production ID List. (Refer to Chapter 17 for Production ID Setup)
- (2) After processing the step 1, check if the test plan's information is correct.
- (3) Press **LOAD Selected PID: xxx-xxx-xxx** button to load.





3.1.2.2 Test

- (1) When the **Test** button is sensitive, that means test plan has already been loaded.
- (2) You can start the test plan program execution (testing) just by clicking this button, and you will see the status is “Test Plan Running”.
- (3) When the execution is finished, you will see the status is “Test Plan Ready” and pass/fail and also binning result. Start the test plan program execution (testing) when clicked this option.



3.1.2.3 Unload

Unload the test plan which has been loaded. The test plan must in “ready” status. Whenever you want to compile the loaded test plan or for tester safe reason, remember to do this operation certainly, it will clear the test program from memory, making all of the resources available for another program.



3.1.3 Execute a Test Program with “Operator” Window

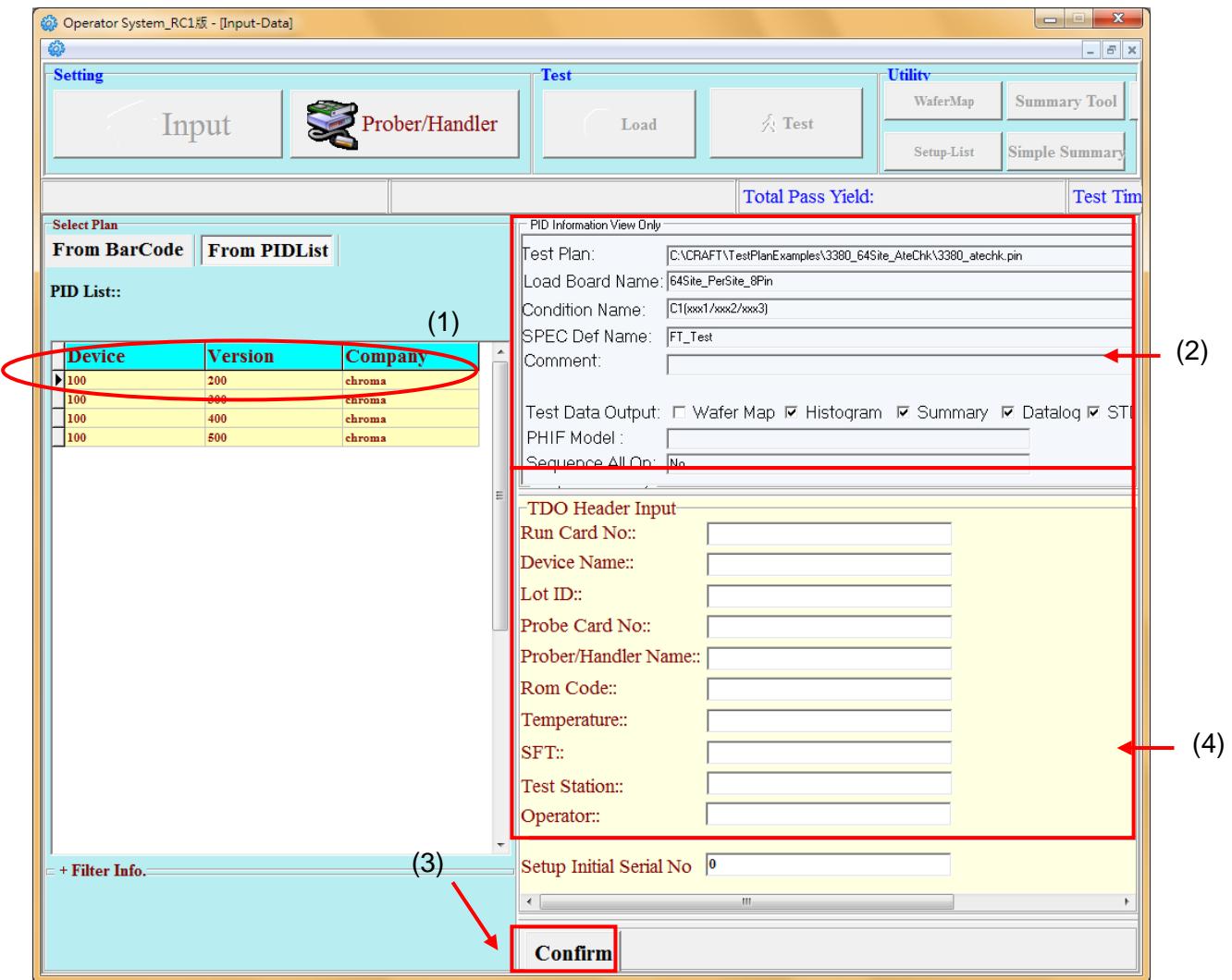
In System Control’s user login window, input a user who has the Production Operator permission then it will enter to the “Operator” window”. (Refer to Chapter 4 for detailed description) Perform procedure (3.1.3.1) through (3.1.3.3) below to complete one basically operation of test execution.

LOAD: xxx-xxx-xxx → Test → Unload

3.1.3.1 LOAD: xxx-xxx-xxx

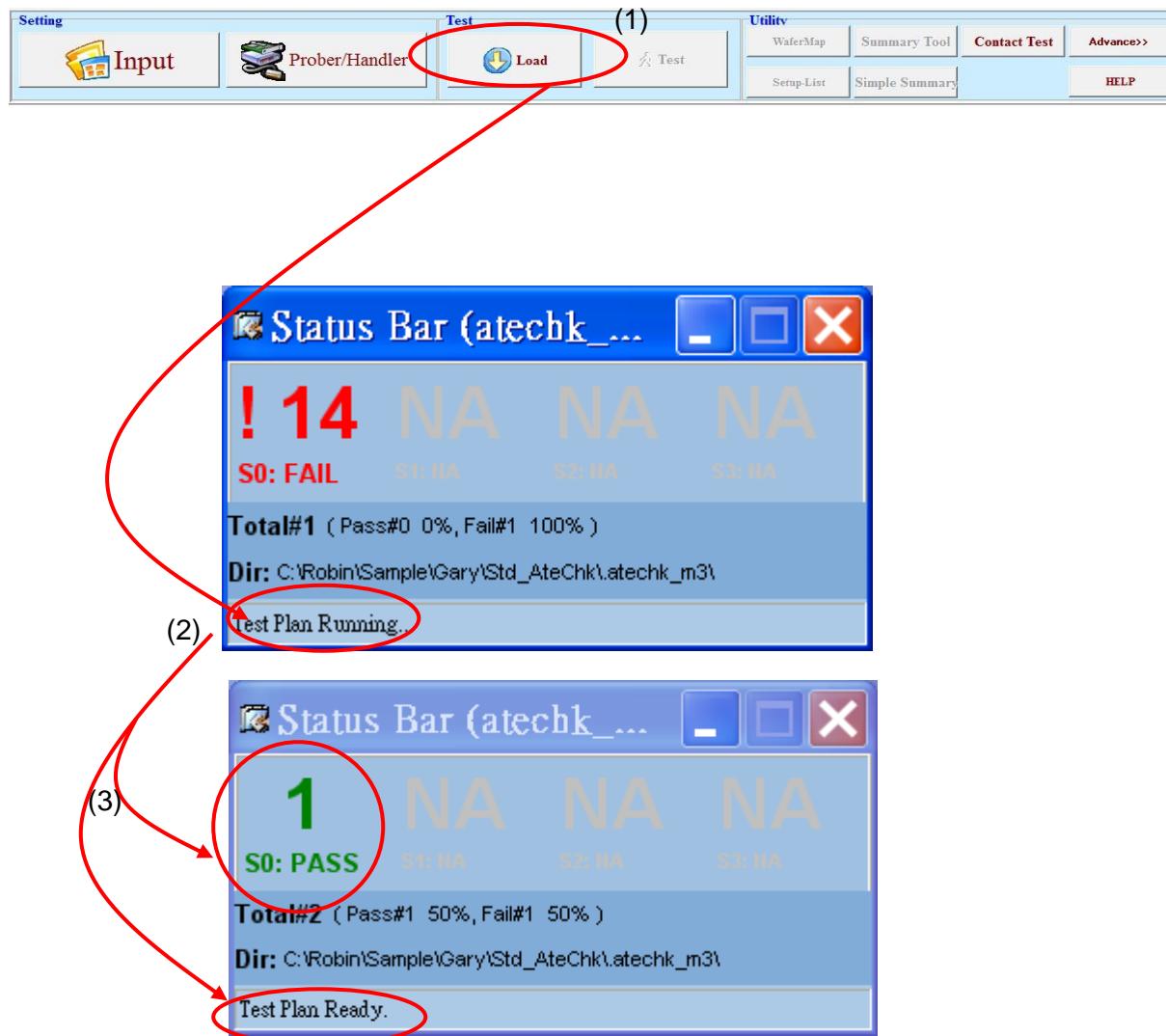
When there is not any test plan has been loaded, the **LOAD: xxx-xxx-xxx** button will be sensitive.

- (1) Select one PID from the Production ID List (Refer to Chapter 17 for Production ID Setup), then **LOAD:xxx-xxx-xxx** button will follow to display the selected PID number.
- (2) Check if the test plan's information is correct.
- (3) Press **LOAD:xxx-xxx-xxx** button to load.
- (4) Operator can input some information which will be printed on report.



3.1.3.2 Test

- (1) When **Test** button is sensitive, that means test plan has already been loaded.
- (2) You can start the test program execution (testing) just by clicking this button, and you will see the status is "Test Plan Running".
- (3) When the execution is finished, you will see the status is "Test Plan Ready", pass/fail and also binning result.



3.1.3.3 Unload

Unload the test plan which has been loaded. The test plan must be in “ready” status. Whenever you want to compile the loaded test plan or for tester safe reason, remember to do this operation certainly, it will clear the test program from memory, making all of the resources available for another program.



4. System Control

4.1 Overview

The System Control is the set of utilities which forms the user interface to the tester. This interface is used to start other utilities and dialog boxes used to obtain information about the desired state of the tester. Applications of this tool include such operations as loading the test plan program, enabling summaries, invoking debug and characterization tools, etc. In this regard, it can be viewed as the “front panel” to the tester. The menu is basically divided into five main sections.

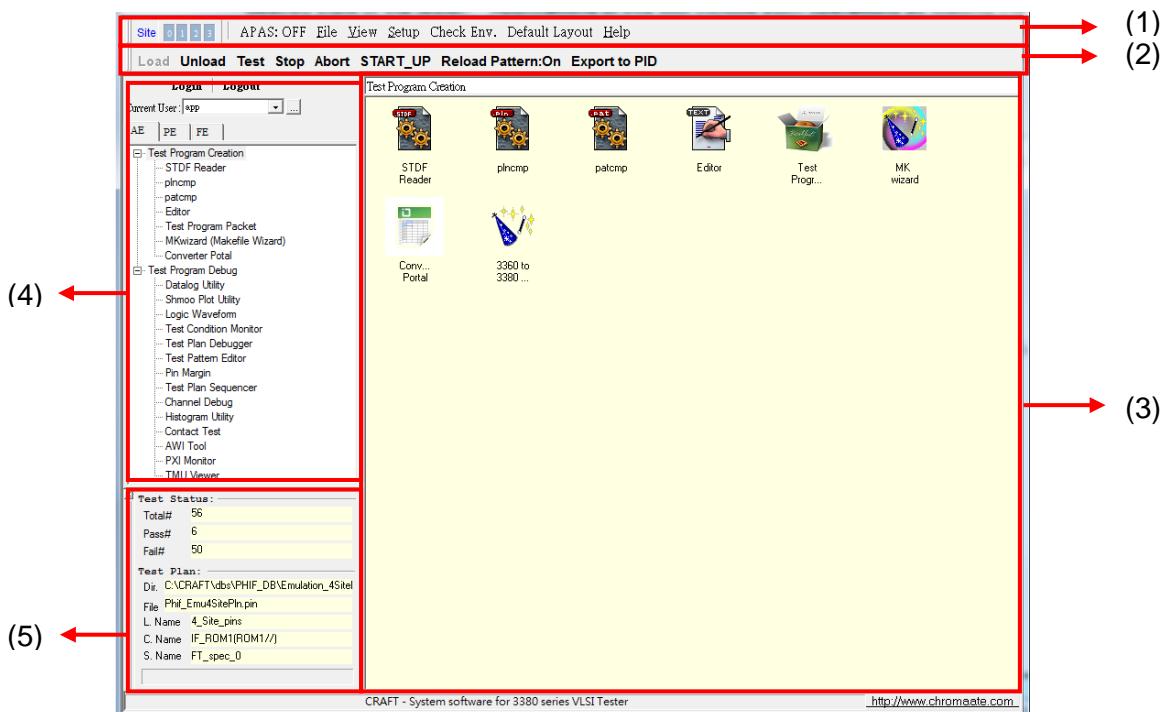


Figure 4-1 CRAFT: System Control

No.	Description
(1)	The top horizontal row of entries is known as the menu bar, it provides file and set-up operations.
(2)	The central strip of push buttons is used to control basic functions of the software such as testing, looping and initialization. This is referred to as the “Test Bar”.
(3)	The bottom-right window contains all of the tools available for using by the user which makes up the Tool Area. Each tool can be accessed by double-clicking on the icon of the desired tool. This window is referred to as the “List View Window”.
(4)	This window contains the user information. It provides user login/logout operation, current login user’s information including this user’s relative permissions and available tools. The available tools area is referred to as the “Tree View Window”
(5)	This window specifies the loaded test plan’s current status.

Table 4-1 Descriptions for System Control Window

4.2 System Control Execution Windows

The following five different windows are available in System Control for test execution. Select one is depending on the purpose.

No.	Item	Execution window (depends on the user permission)				
		Application Engr. Window	Production Engr. window	Operator Window	Field Engr. Window	Administrator Window
1	Purpose of window use	Test plan program developing and debugging or device evaluation.	Volume production setup and evaluation.	Volume production	Setup or maintain tester and peripherals.	Maintain user/group, backup and other system management.
2	Test plan program selection method	The test plan program directory and file are to be designated directly.	The production ID is to be specified to select a proper test plan program indirectly.	The production ID is to be specified to select a proper test plan program indirectly.	N/A	N/A
3	Test program compiler	○	×	×	×	×
	Plan Debugger	○	×	×	×	×
	Plan Sequencer	○	×	×	×	×
	Data log	○	○	×	×	×
	Pattern Editor	○	×	×	×	×
	Shmoo plot	○	×	×	×	×
	Waveform Display	○	×	×	×	×
	TCM	○	×	×	×	×
	Pin Margin	○	×	×	×	×
	Channel Debugger	○	×	×	×	×
	Test Summary	×	○	○	×	×
	P/H Setup	×	○	×	○	×
	Production ID Setup	×	○	×	×	×
	Operator Box	×	○	○	○	×
	Load Board Management	×	○	○	×	×
	Maintenance Tool	×	×	×	○	×
	ATE Starter	×	×	×	○	×
	Emergency Detector	×	×	×	○	×
	ATE Information	×	×	×	○	○
	User/Group Management	×	×	×	×	○

Table 4-2 Various Execution Window Functions

4.3 Start and Quit System Control

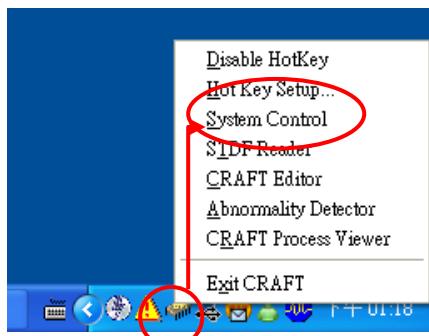
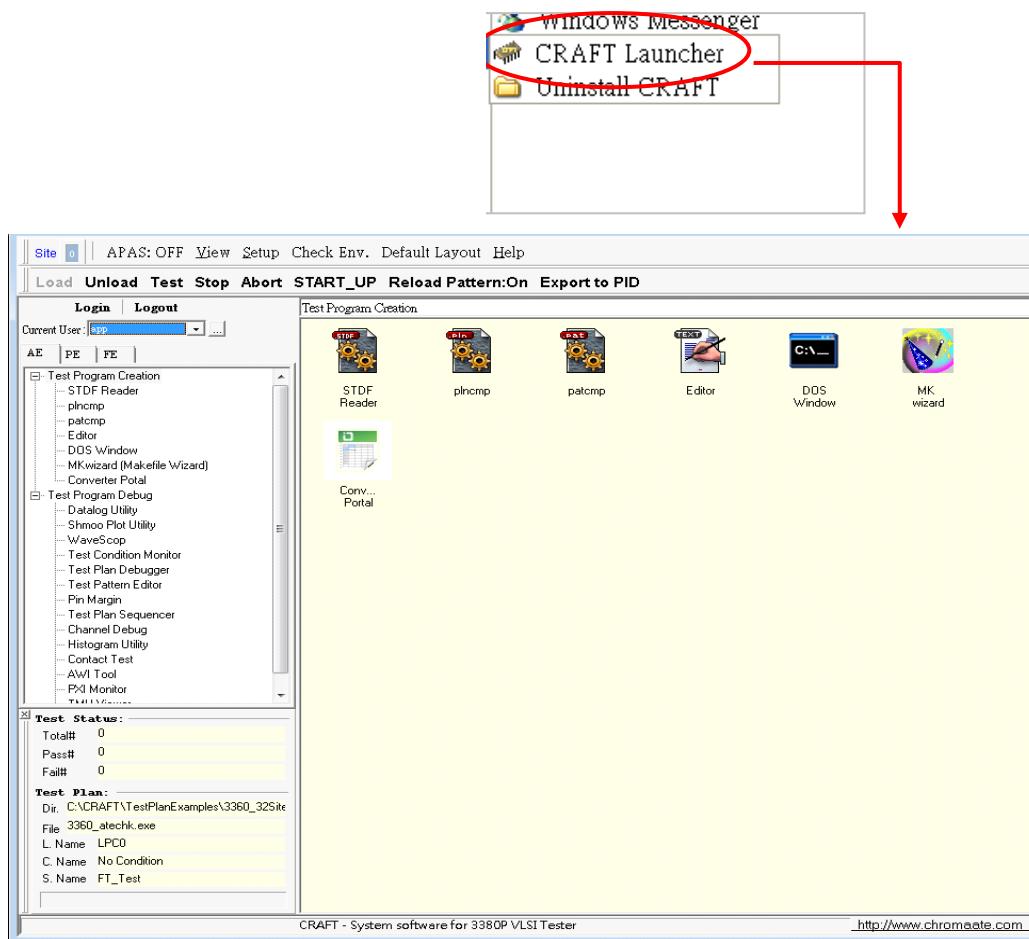
The system control is executed automatically whenever the CRAFT launched. This is because that there is a file “craft_autoexec.ini” in %CRAFT_HOME%\bin which had already registered the default executed utilities as follows:

...

[AUTOEXEC FILEs]
BATCH FILE=CRAFT_Console_Project.exe, EmergencyDetector.exe, SBar.exe

...

If you don't like any utility to be executed whenever CRAFT launched, just let “BATCH FILE=” to nothing, or you can assign the execution files that you want to this variable.



The other way to start System Control is just right click the CRAFT icon's menu and select System Control.

To quit the System Control, just click on the close button of system menu bar.

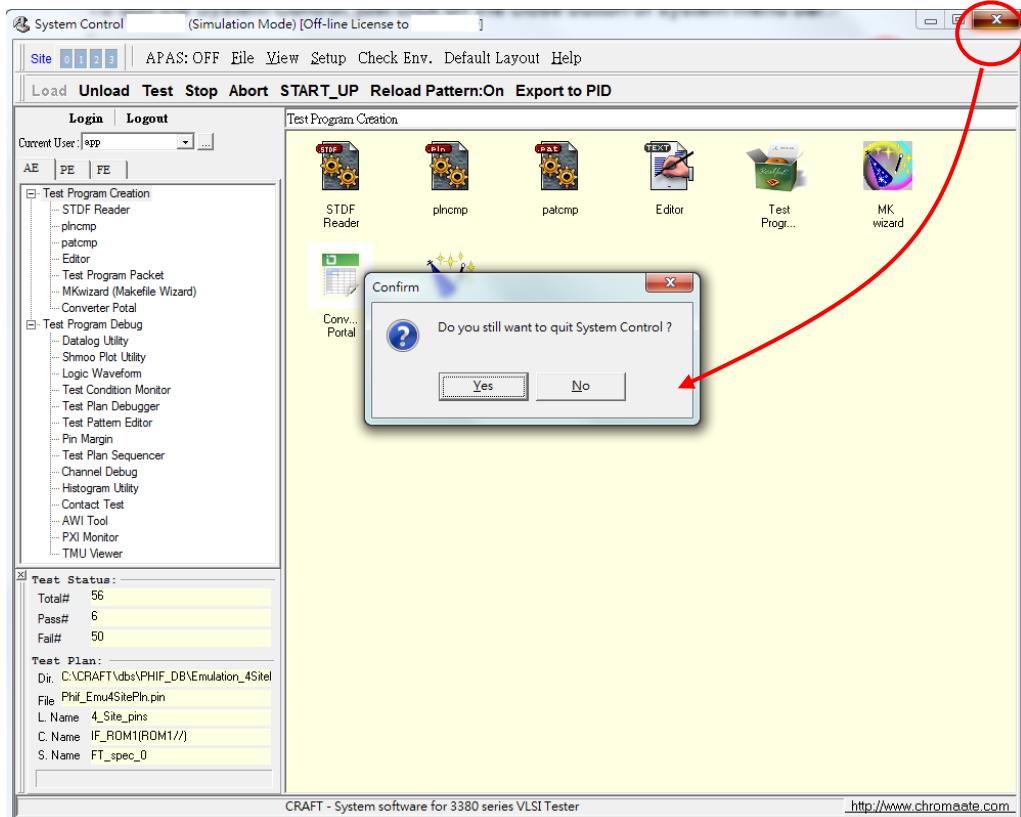


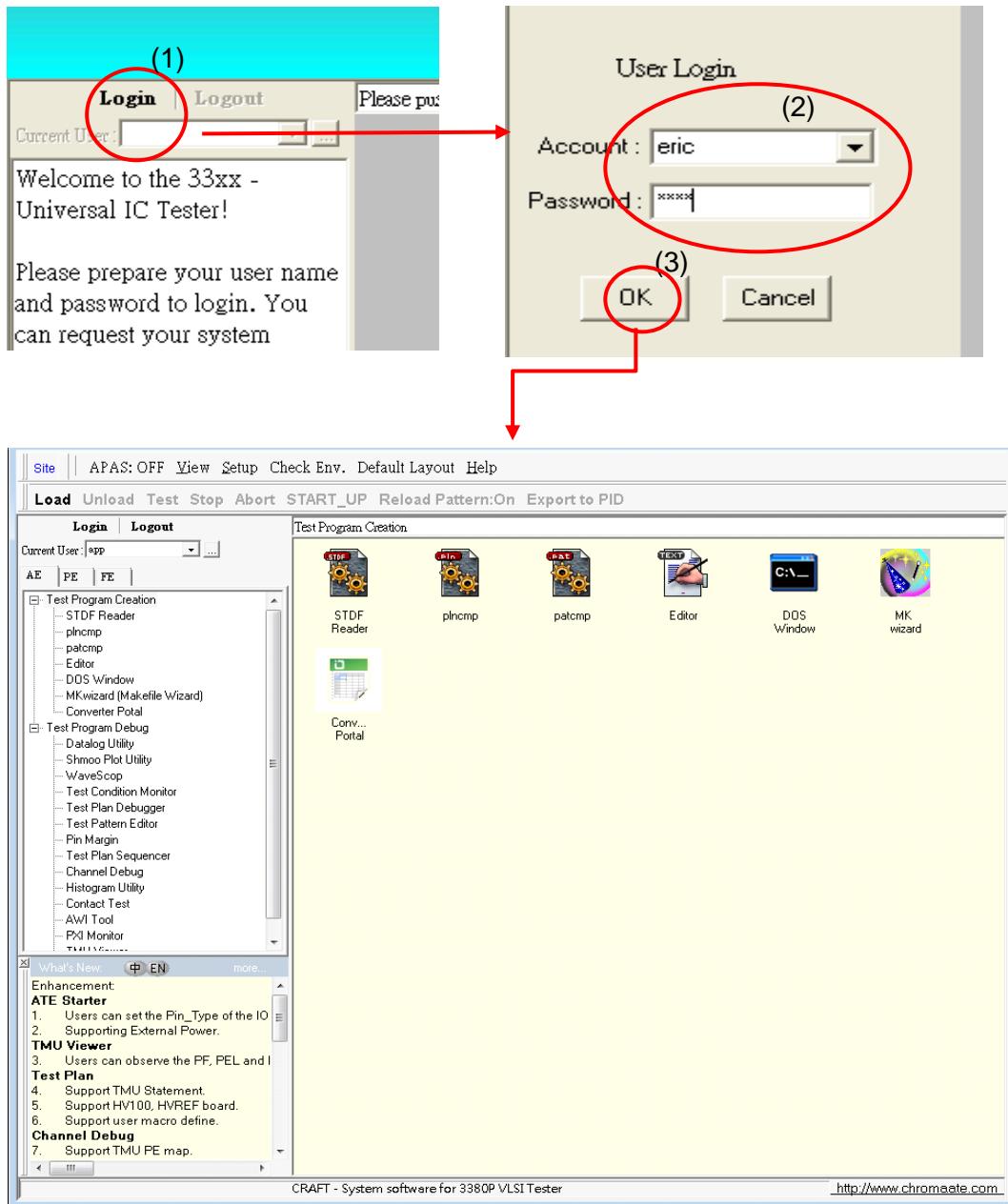
Figure 4-2 Quit System Control Window

4.4 System Control Execution

4.4.1 User Login

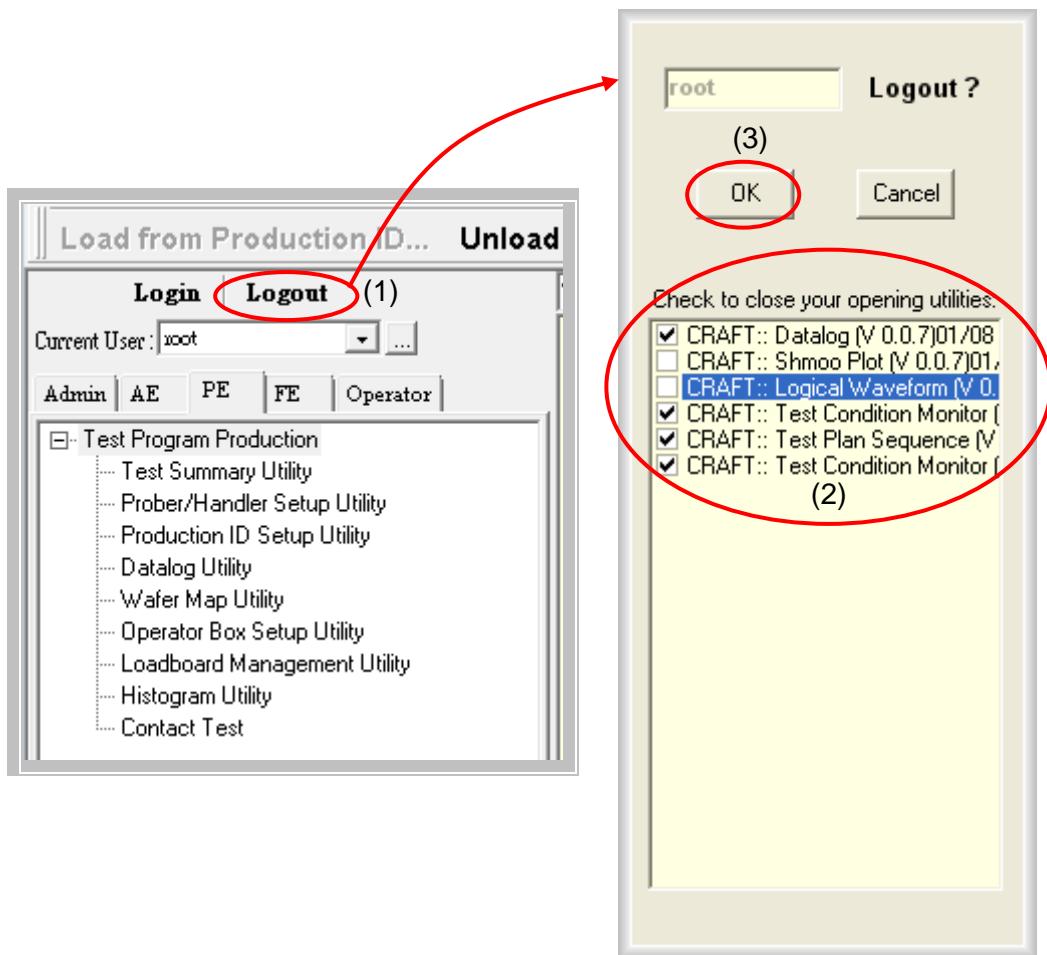
When starting system control, click on the **Login** button to login first.

- (1) Click here to display login window.
- (2) Input account name and password. (This user must be added by administrator permission first.) There are five default users: **app** who has Application Engr. permission, **prod** who has Production Engr. permission, **field** who has Field Engr. permission, **oper** who has Operator permission and **admin** who has Administrator permission. You also can add one user who has combined permission. (Please refer to the section below.)
- (3) Confirm login.



4.4.2 User Logout

- (1) Click here to display logout window.
- (2) There are some utilities that this user opening, check if certain utility want to close.
- (3) Confirm logout.



4.4.3 Administrator Permission User

In system control's user login window, input a user who has the administrator permission then it will enter to the "Admin Window". The following sample uses the default account "admin" and password "admin" to login (Please refer to following section "Users" for how to add a new user who owns the administrator permission). If the system confirms the account and relative password, the "Admin Window" will be showed like Figure 4-3.

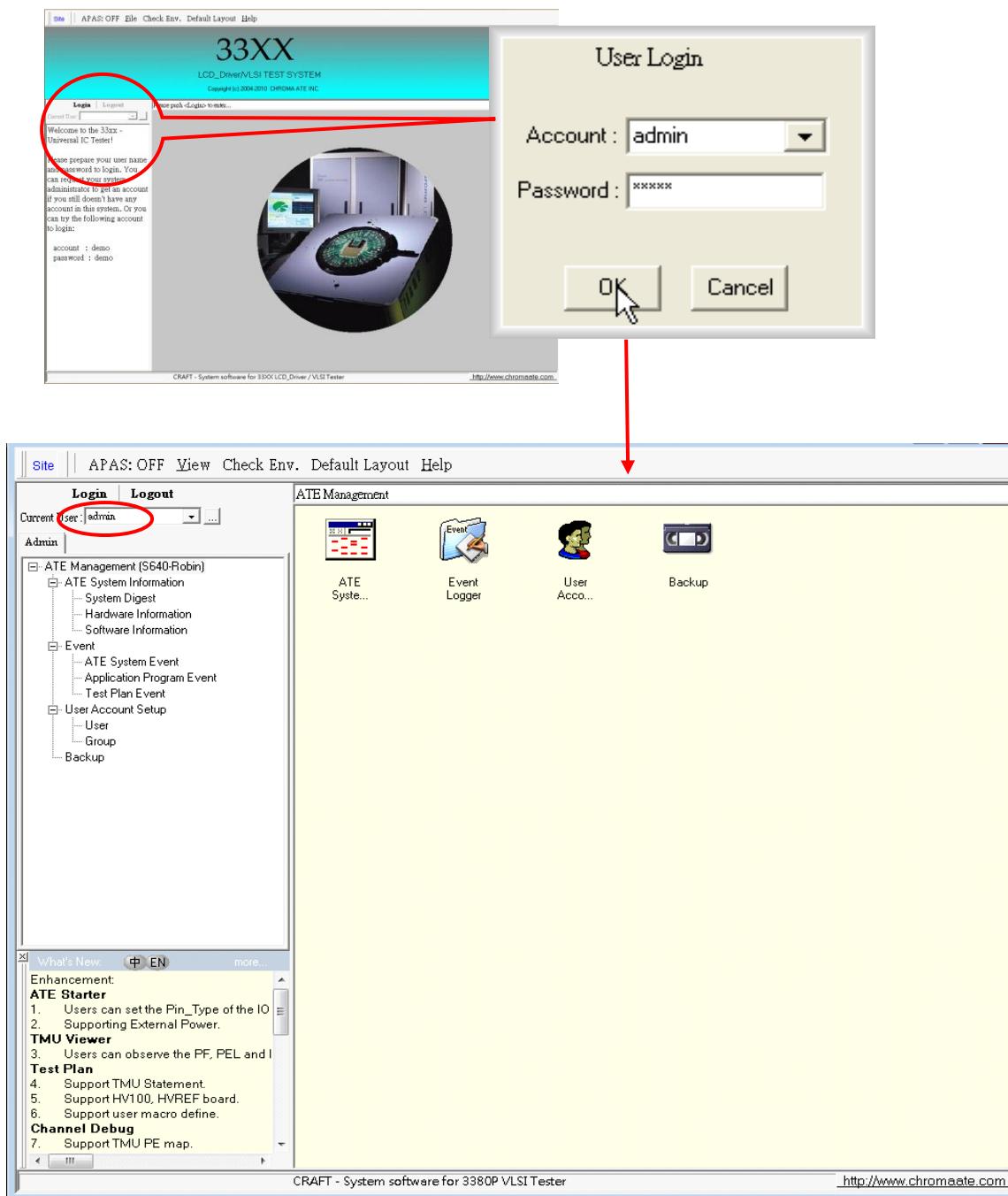


Figure 4-3 Administrator User Login

4.4.3.1 Functions of Administrator Permission User

In the tree view window, there are many available tools, include ATE System Information, Event Logger and User Account Setup, that Administrator permission user just can click it to use.

4.4.3.1.1 System Digest

Display the whole ATE information. This window displays the digest information including model, system ID, pins, memory, and software version and so on as below Figure 4-4. It is a window for reading only, you can click it to save as or print out.

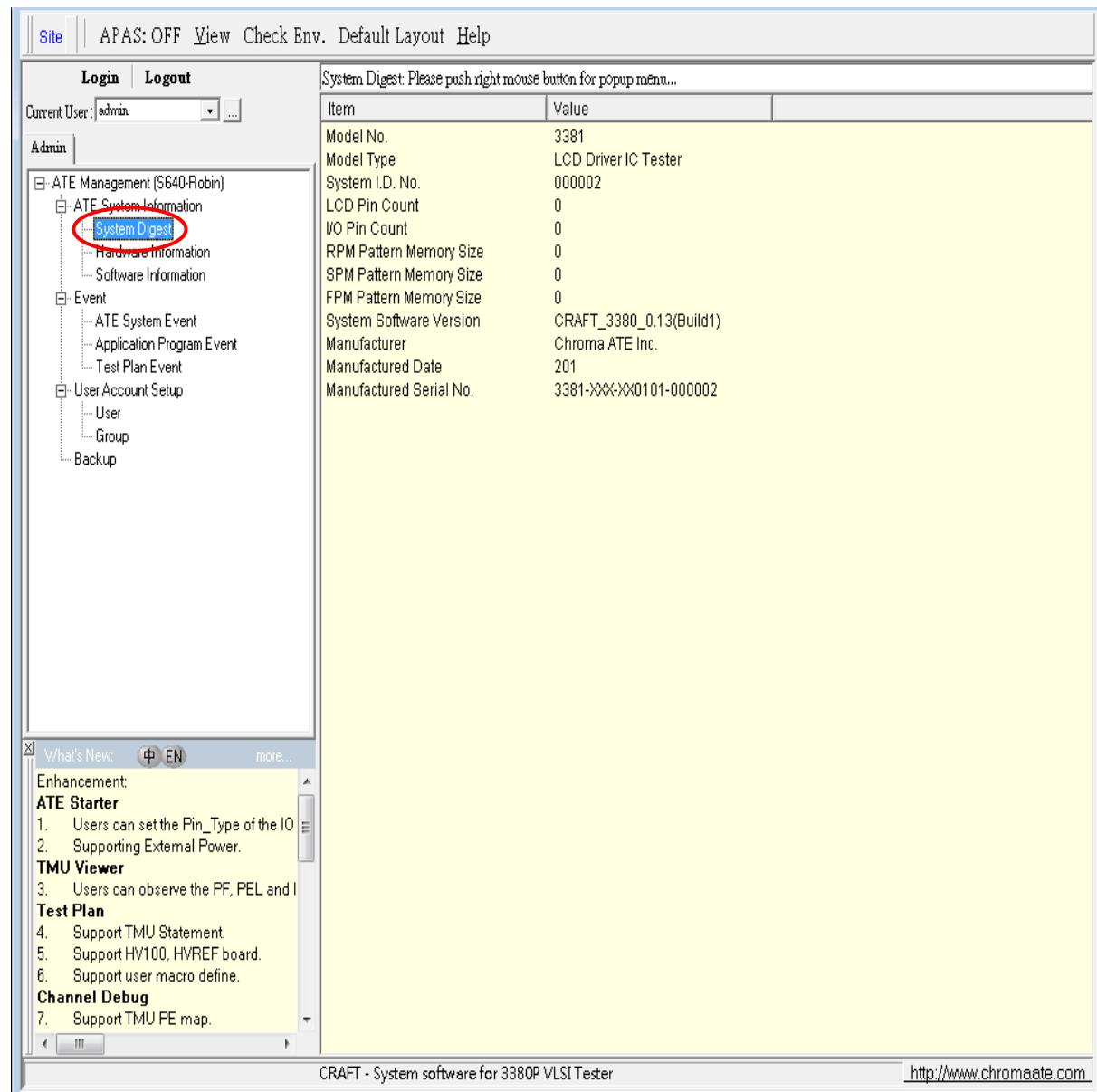


Figure 4-4 System Digest Window

4.4.3.1.2 Hardware Information

Display the whole ATE hardware board status. This window displays each board's status including board name, type, model, revision, serial no and so on as below Figure 4-5. It is a window for reading only, you can click it to save as or print out.

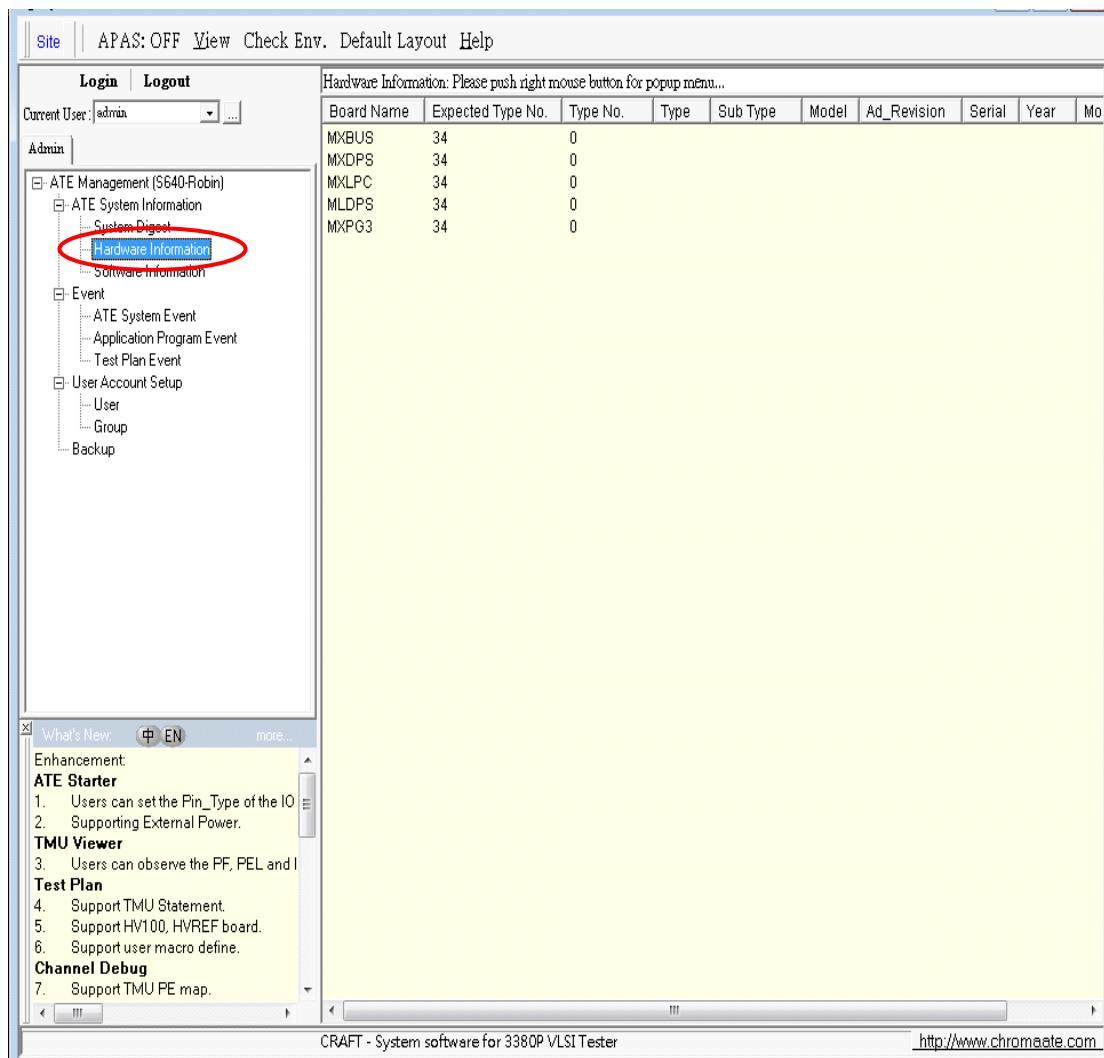


Figure 4-5 Hardware Information Window

4.4.3.1.3 Software Information

Display the whole ATE software utilities status. This window displays each software utility's status including name, running or exit, full path and so on as below Figure 4-6. It is a window for reading only, you can click it to save as or print out.

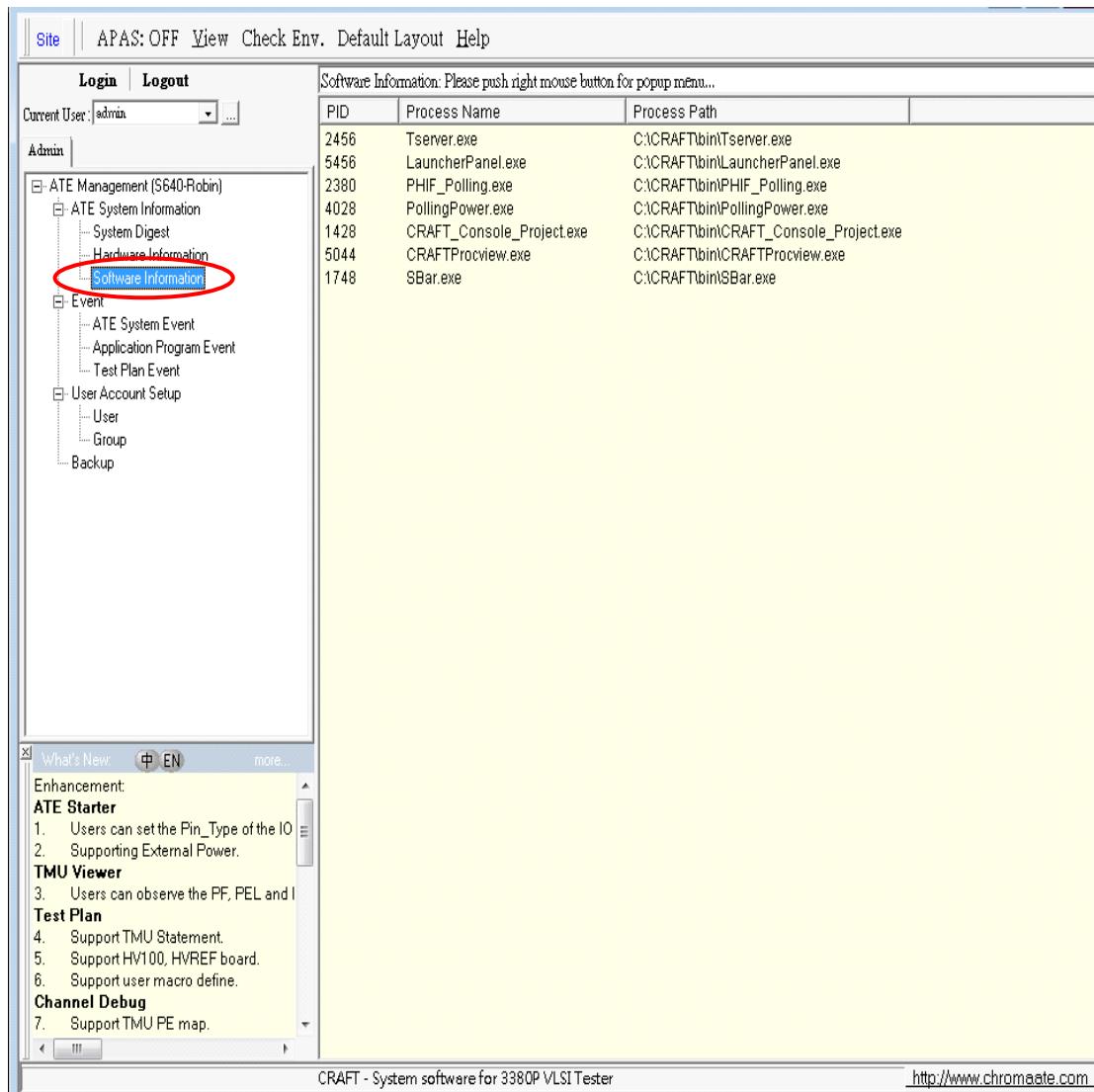


Figure 4-6 Software Information Window

4.4.3.1.4 Event Logger

Log various events including ATE System Event, Application Program Event, and Test Plan Event and so on.

4.4.3.1.5 Users

Users setup window as below Figure 4-7. Using this window to add, delete or modify users. Each operation has to provide name, group (permission), and working directory information first.

How to add a user:

- (1) Click the right key of mouse on this window and select Add.
- (2) Input the requirement information into each fields.

User Name: Input the account name you want to add.

Group Name: Select the group name for permission. (Refer to 4.4.3.1.6 for how to add group)

Working Directory: Select the initial directory will be located whenever the test plan has been loaded by this account.

Password: Account password for login.

Confirm Password: Confirm password again when typing mistake.

- (3) Click **OK** for completing Add operation, and you will see the new user in this window.

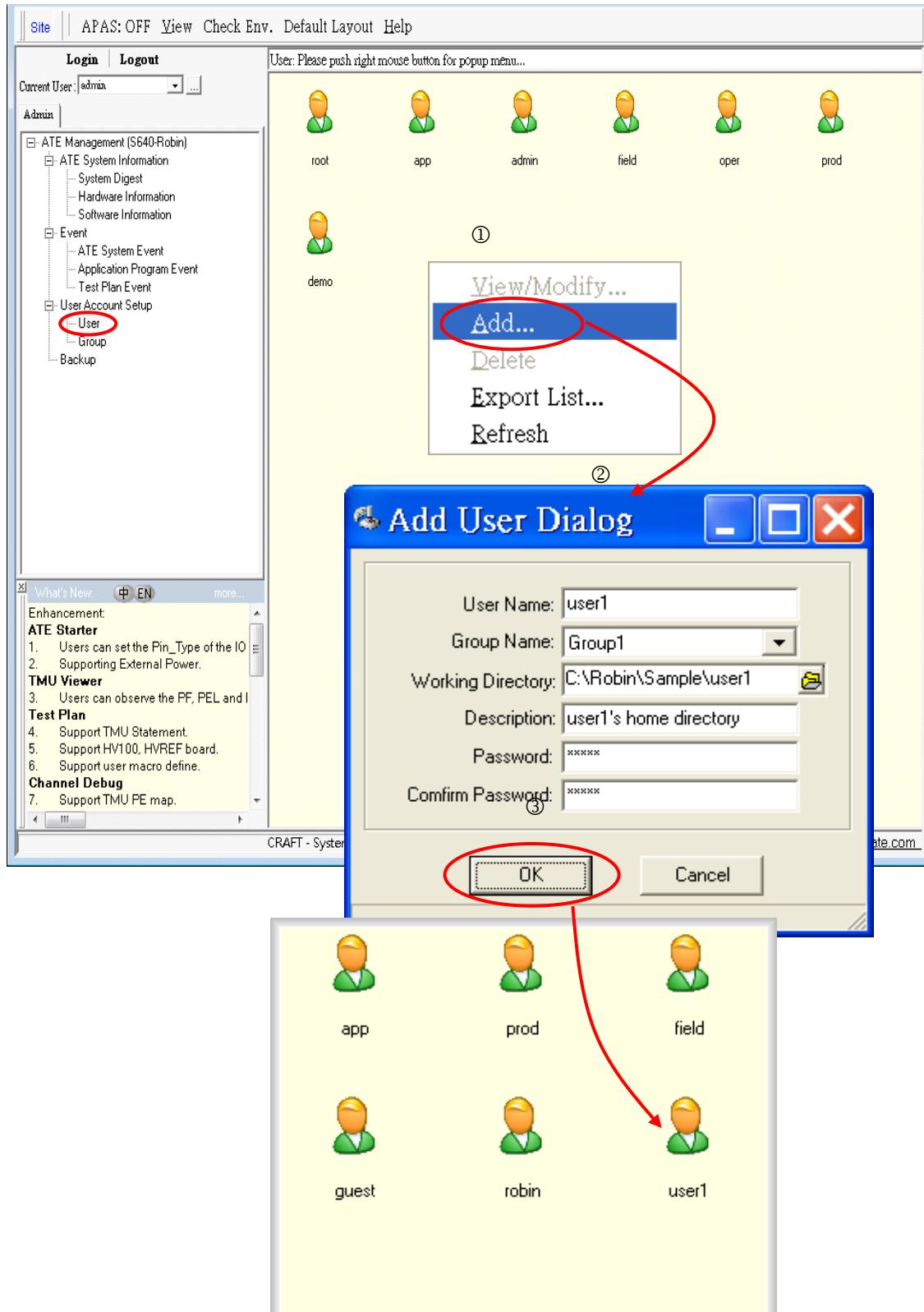


Figure 4-7 Add User Window

4.4.3.1.6 Group

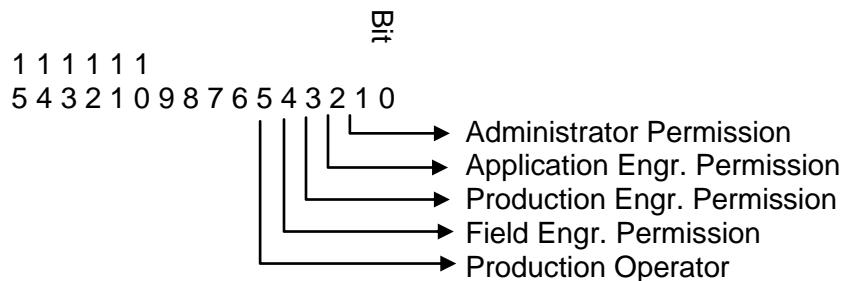
Group setup window is as below Figure 4-8. Using this window to add, delete or modify groups. Each operation has to provide group name, permission, and description information first.

How to add a group:

- (1) Click the right key of mouse on this window and select Add.
- (2) Input the requirement information in each fields.

Group Name: Input the group name you want to add.

Permission: Setup the permission value as below



For example, if you want a permission that owns Application Engr., Product Engr., and Field Engr. permissions, you can input 0x0E to "Permission" field.

Description: It is just for comment.

- (3) Click **OK** for completing Add operation, and you will see the new group in this window. This new added group then can be selected in adding user operation.

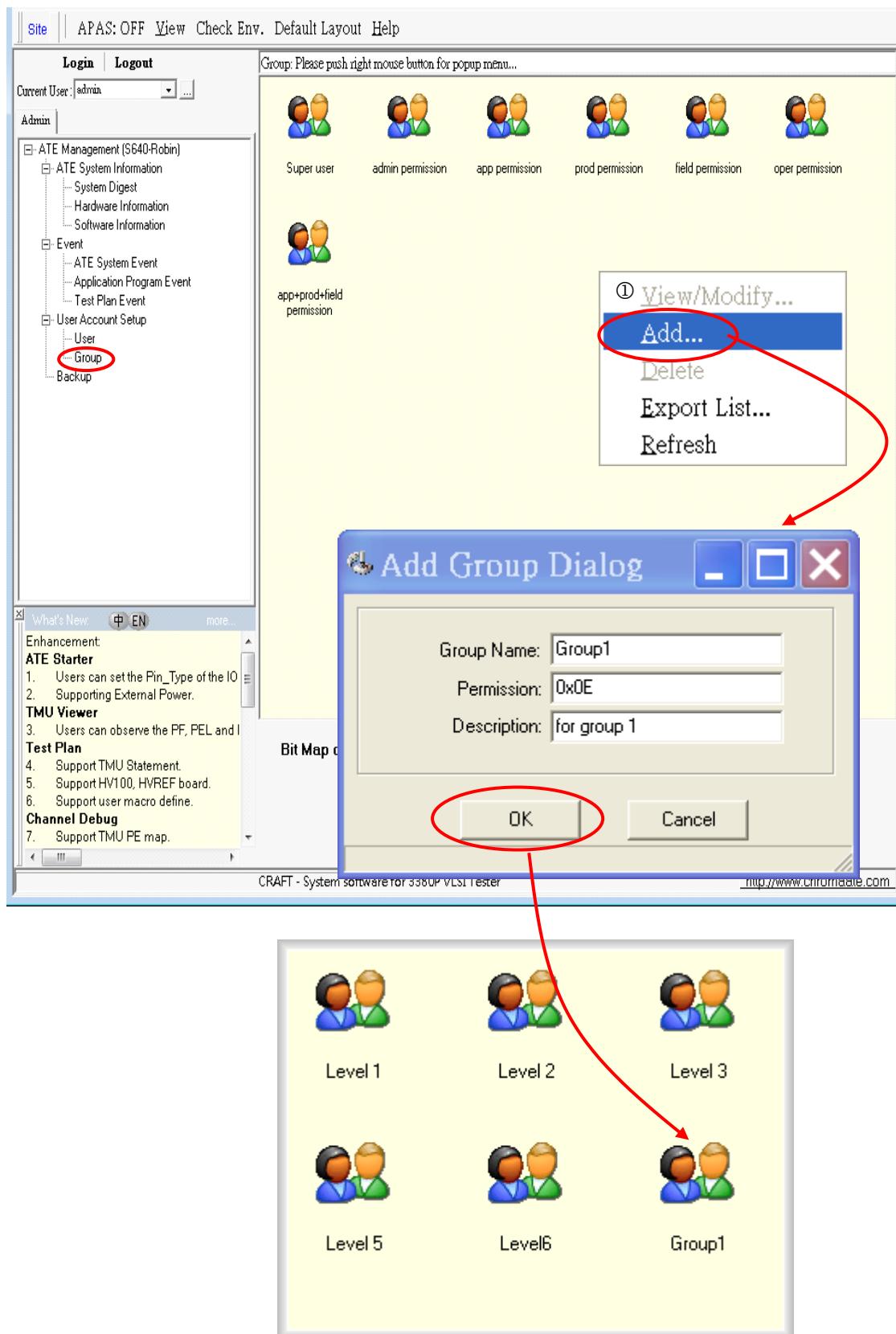


Figure 4-8 Add Group Window

4.4.3.2 Environment setup of Administrator Permission User

In the title bar window as below, there are some buttons that can set-up system environment value, include View, Check Environment...etc, but only Administrator and application permission users can change the set-up value.

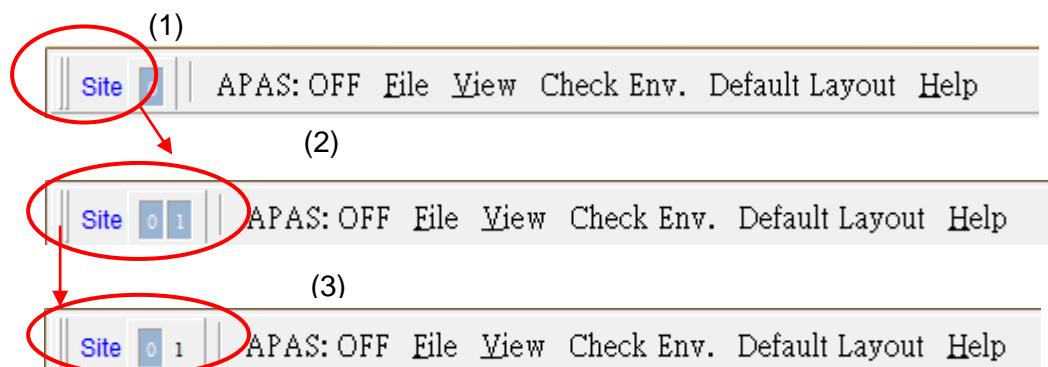


4.4.3.2.1 Site

Enable or disable sites when test plan have been loaded. The test plan must in “ready” status. If test plan have not been loaded, it is useless. Default setting is all on site.

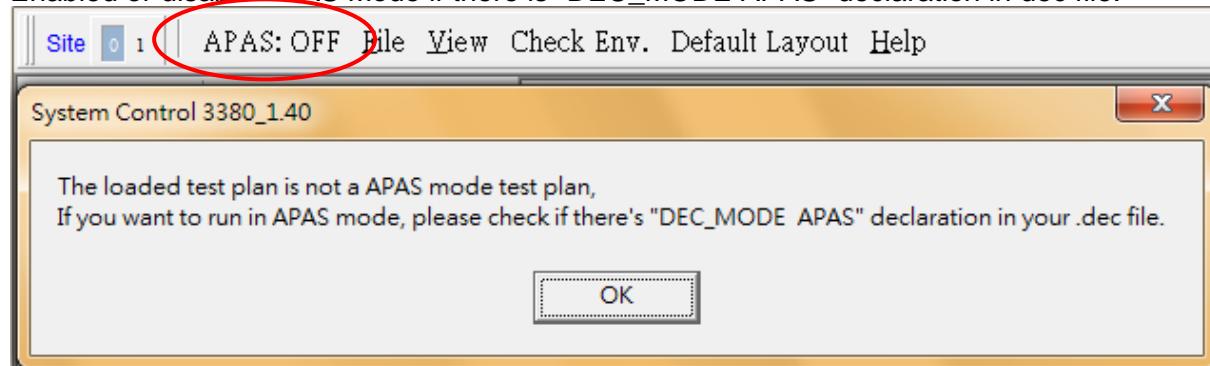
How to do it:

- (1) Click the “Site” button
- (2) Display the total site according to the test plan
- (3) Disable or enable the sites



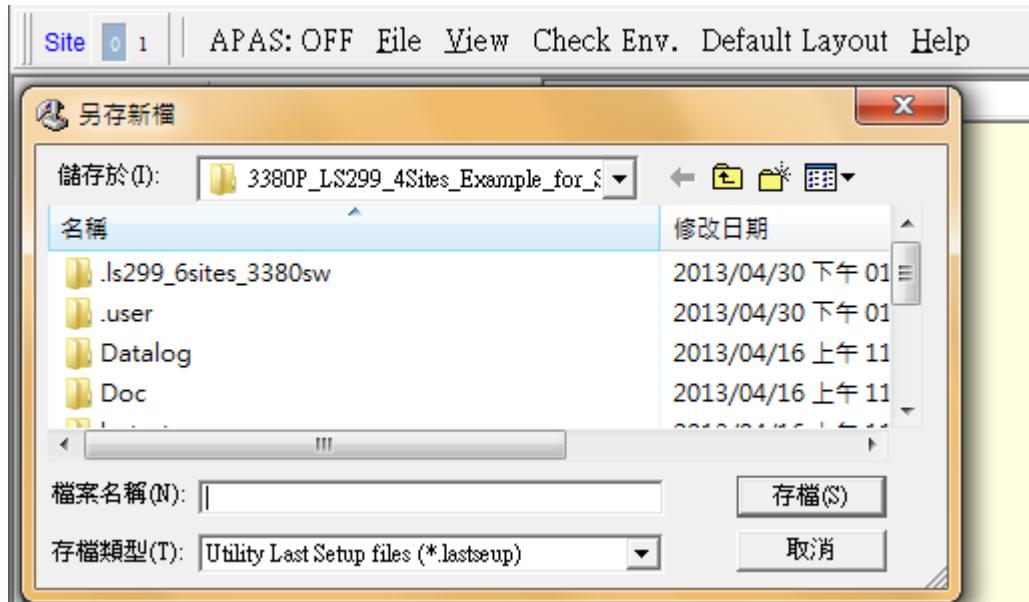
4.4.3.2.2 APAS

Enabled or disable APAS Mode if there is “DEC_MODE APAS” declaration in dec file.



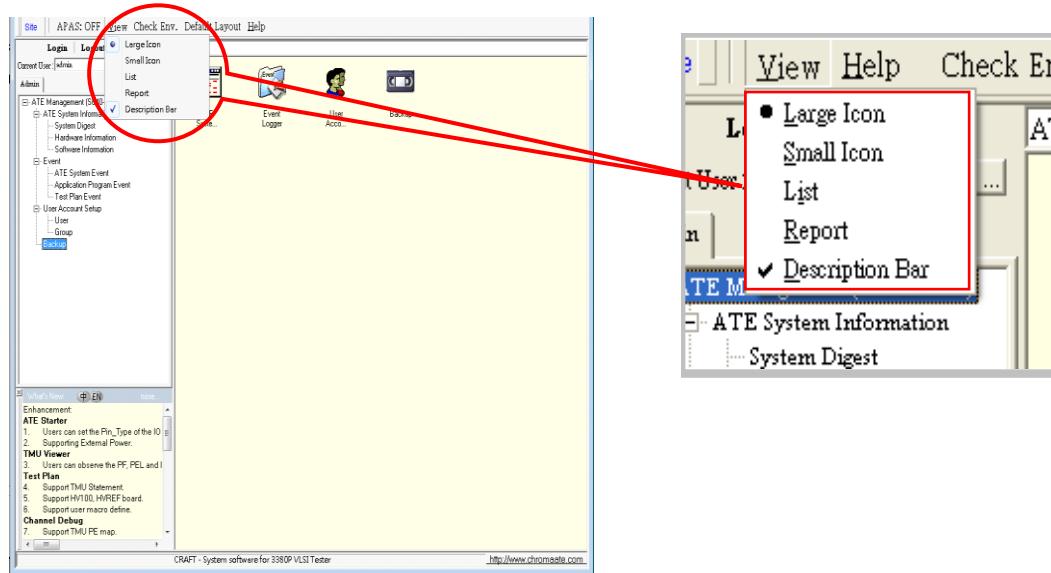
4.4.3.2.3 File

Save all utility last setup files, system will use last setup value when test plan be loaded next time.



4.4.3.2.4 View

There are five modes to change icon size, include large icon, small icon, list, report, and description bar will show or not.

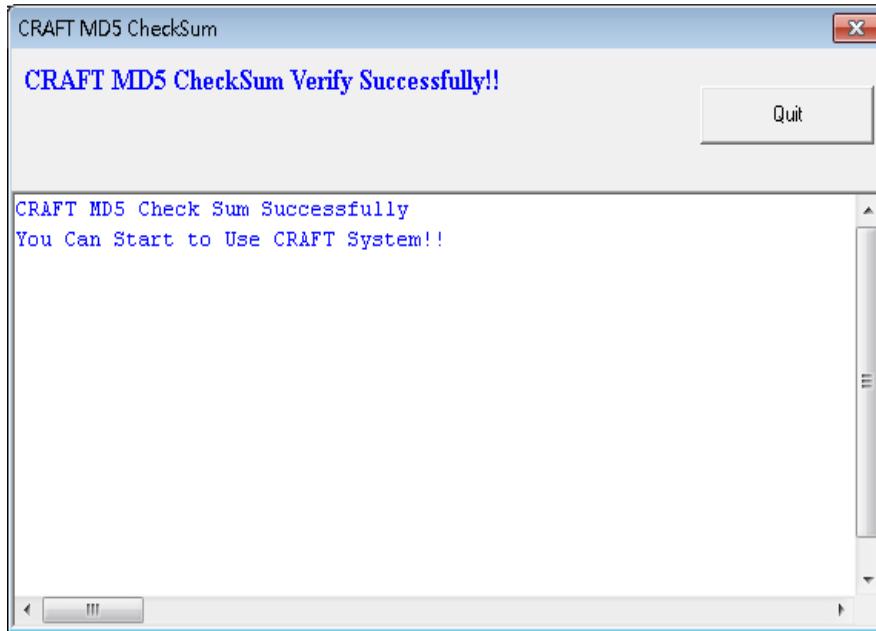


4.4.3.2.5 Help

Find online operation help and view craft version.

4.4.3.2.6 Check Env.

List all history if Craft utility or any element is changed before. Include modified data, and file size...etc.

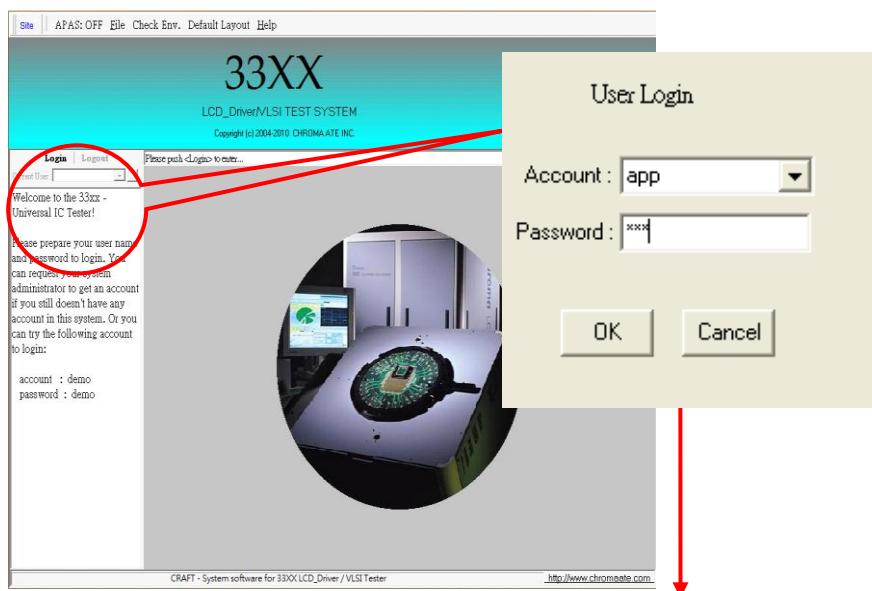


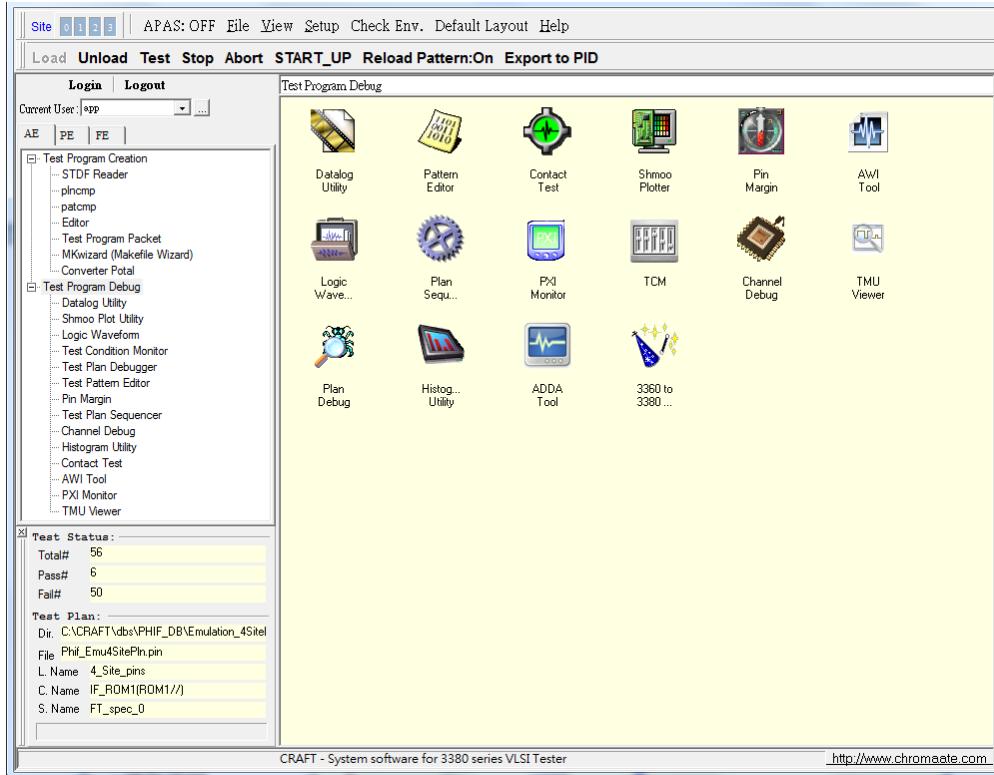
4.4.3.2.7 Default Layout

System will return default layout, if system layout is changed.

4.4.4 Application Engr. Permission User

In system control's user login window, input a user who has the Application Engr. permission then it will enter to the “AE” window”. The following sample uses the account “user1” who had been added in previous section to login (Please refer to 4.4.3.1.5 for how to add a new user “user1” who owns the Application Engr., Product Engr. and Field Engr. three permissions). If the system confirms the account and relative password, the “AE window” will be showed.



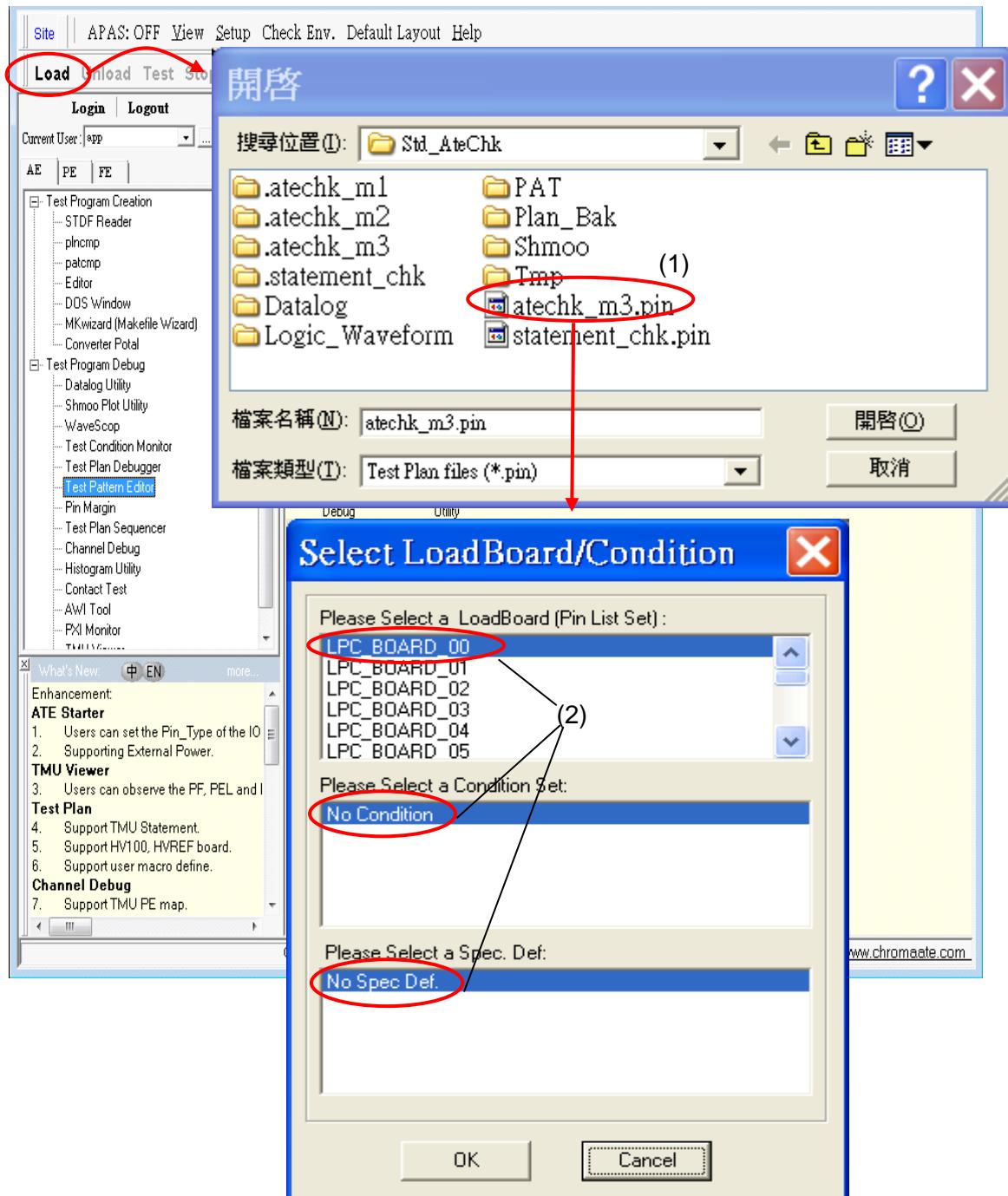


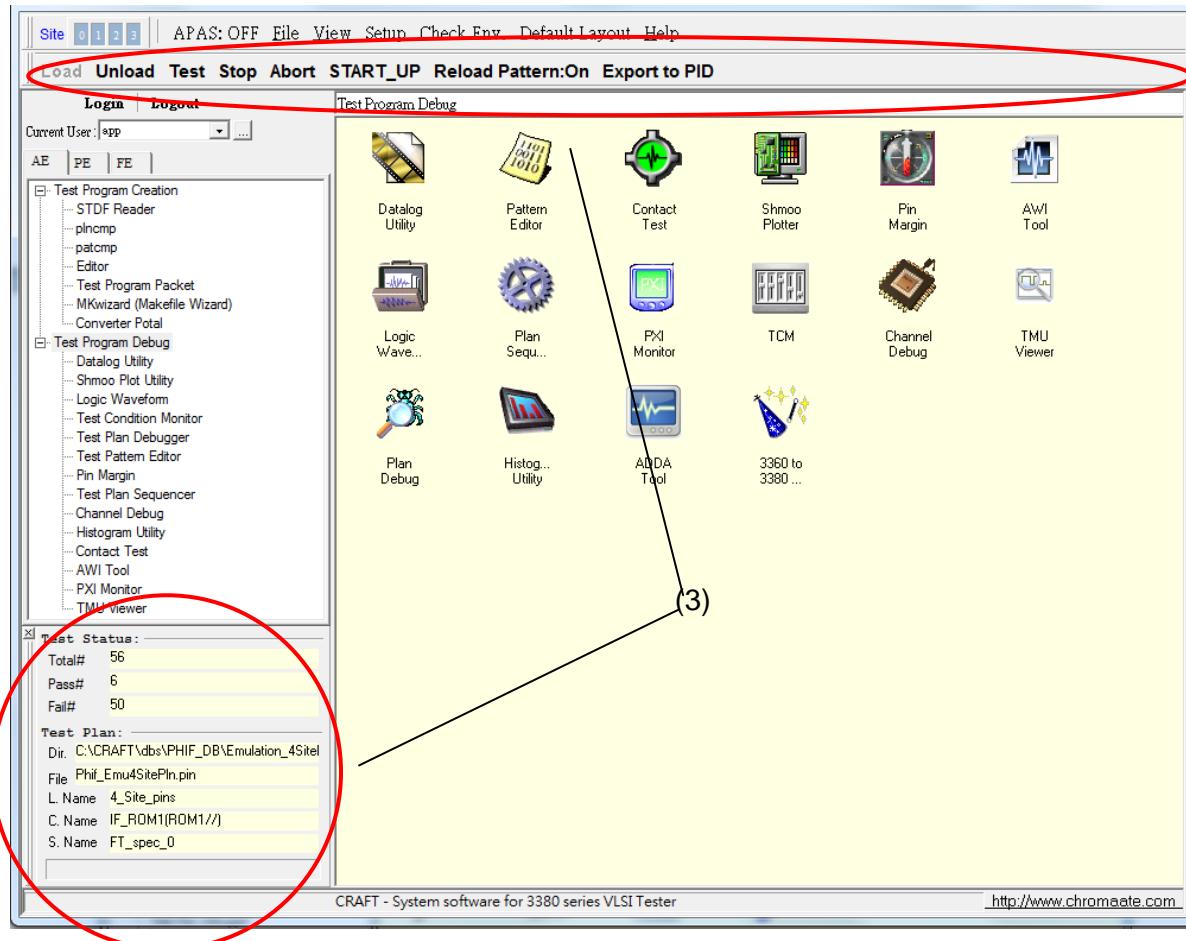
4.4.4.1 Test Bar of Application Engr. Permission User

The push buttons of central strip are used to control basic functions of the test plan program for application engineer to do commands such as loading, testing, looping and initialization. This is referred to as the Test Bar.

4.4.4.1.1 Load

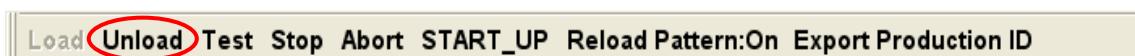
- (1) Invokes a file pop-up which lists the contents of your working directory, after you select the binary file (*.pin) you want to load.
- (2) Another pop-up appears, listing the load board names, condition names and spec. names refer to Language manual). Associated with load board names are physical interface connections that make your program appear the relation to the hardware used to interface between the test head and the DUT (Device Under Test). Associated with condition names are branches selector that make test plan run the route you want.
- (3) After you select the desired names combination, the test plan program is then loaded, and you will see the other button get sensitive and the test plan's abstract.





4.4.4.1.2 Unload

Unload the test plan which has been loaded. The test plan must in “ready” status. Whenever you want to compile the loaded test plan or for tester safe reason, remember do this operation certainly, it will clear the test plan program from memory, making all of the resources available for another program.



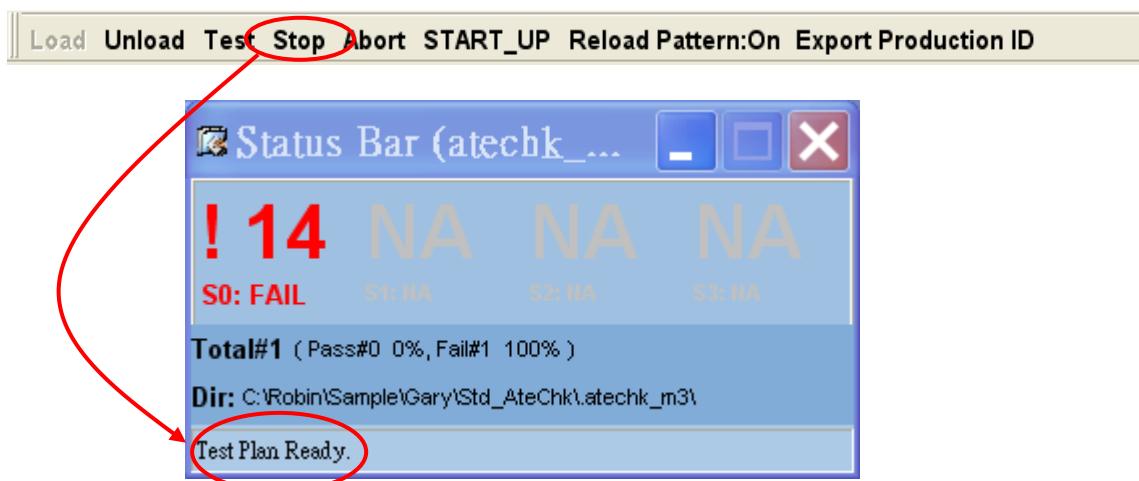
4.4.4.1.3 Test

Start the test plan program execution (testing) when pressed. The test plan will state in “running” status. After this operation, DUT has been tested completely, tester will do mini reset action to a safe state and test plan will return to “ready” status.



4.4.4.1.4 Stop

Stop the test plan program execution (testing) when pressed. The test plan must in “break” status. After this operation, tester will do mini reset action to a safe state and test plan will return to “ready” status.



4.4.4.1.5 Abort

This button does the same operation as the Stop button but also forces the test plan to unload.



4.4.4.1.6 START_UP

Call the test program START_UP function.



4.4.4.1.7 Reload Pattern: On/Off

This button toggles between forcing the patterns to always be loaded when the same program is reloaded (On), or to leave the patterns as previously loaded (Off).



4.4.4.1.8 Export Production ID

Save the whole loaded test plan's setup value/environment and export to some Production ID for production purpose.



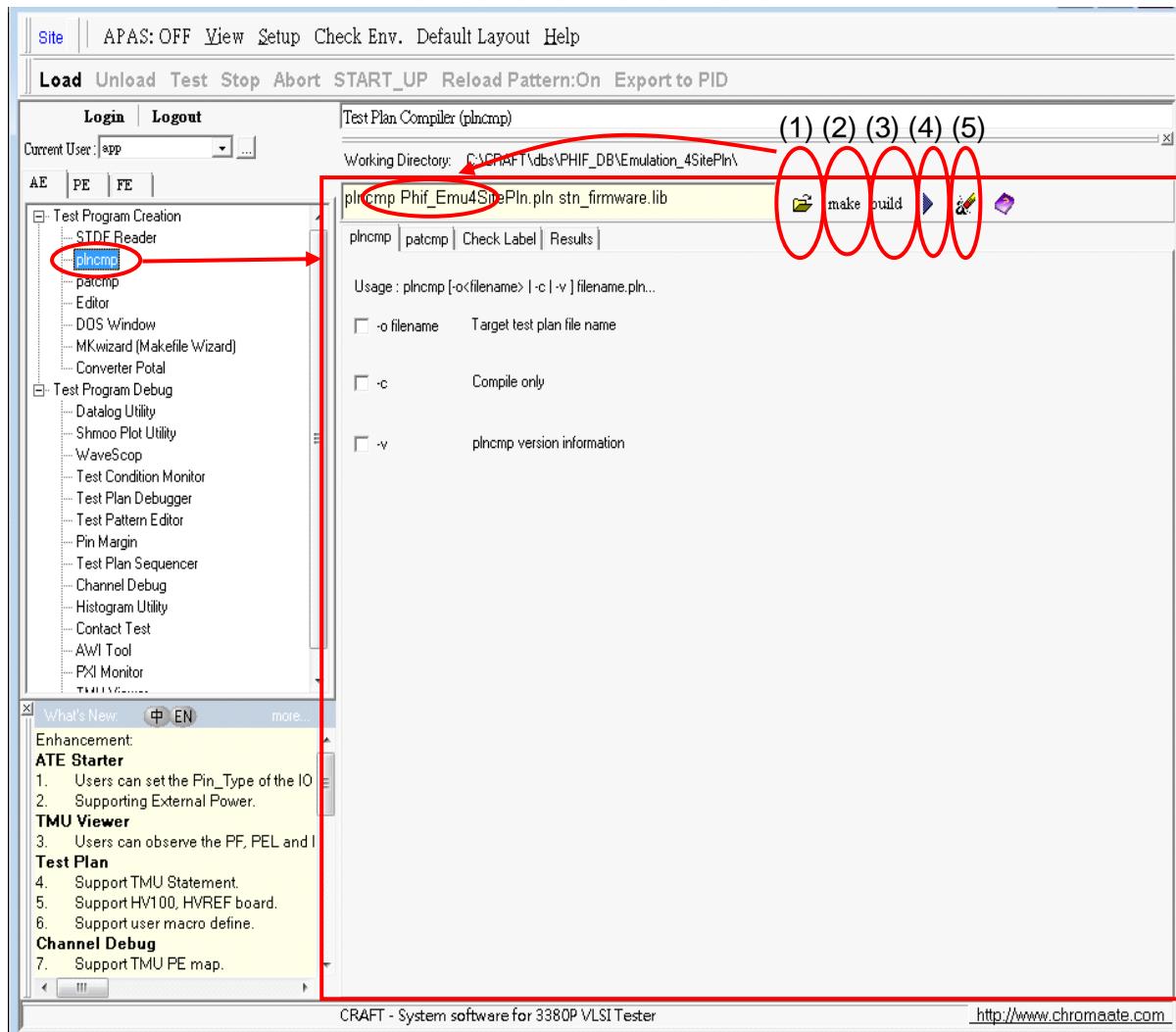
4.4.4.2 Functions of Application Engr. Permission User

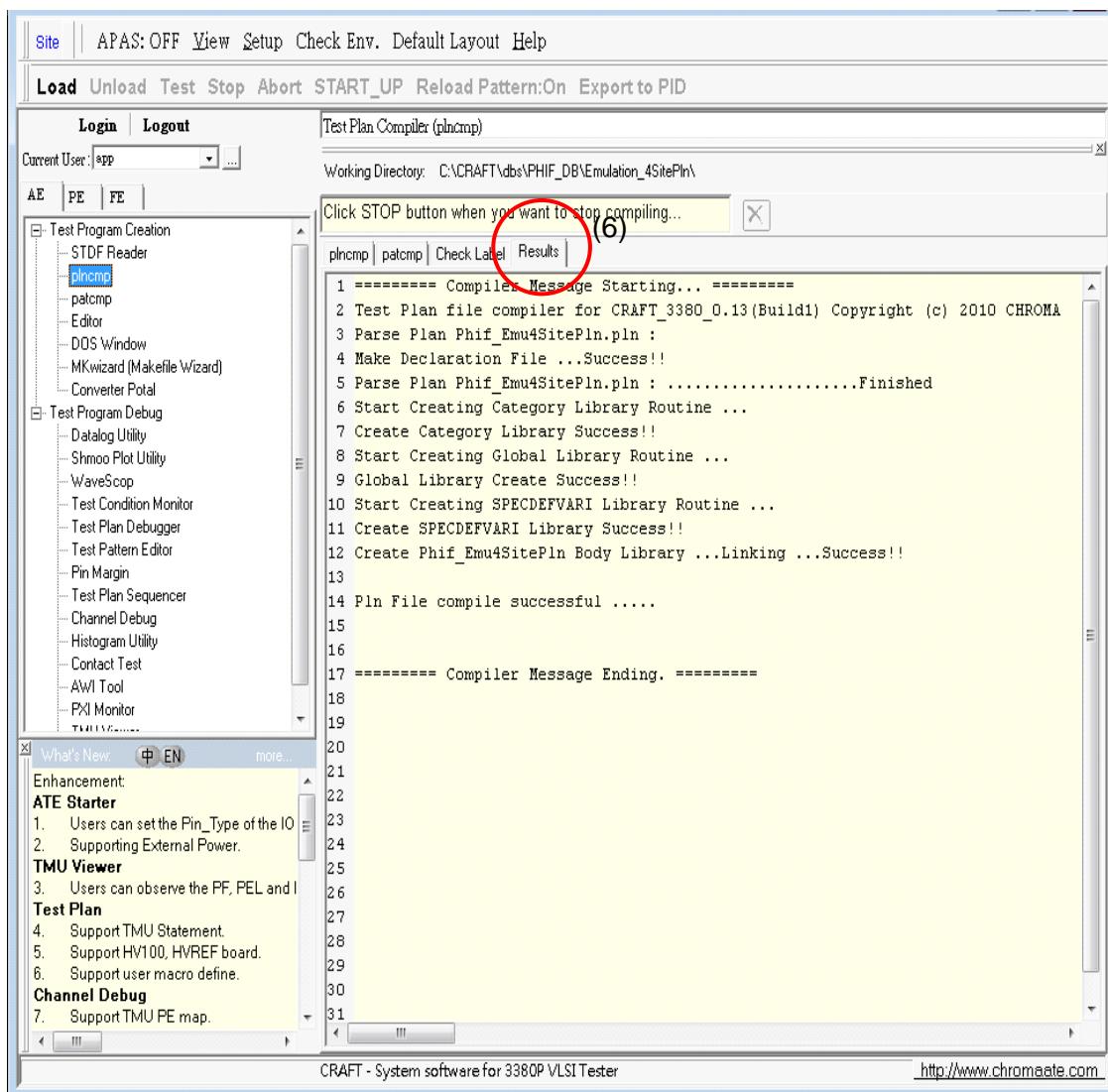
In the tree view window, there are many available tools, include Test Program Creation and Test Program Debug, that Application Engr. permission user can click it to use.

4.4.4.2.1 plncmp

Invoke the plan compiler interface, which allows a user to compile a test program from a menu driven interface instead of the command line. This may be helpful for the beginning users.

- (1) Invoke a file pop-up which lists the contents of test plan programs. After you select the test plan file (*.pln), the file name will be added to command line field.
- (2) Execute the make command if you already have the makefile.
- (3) Execute the build command if you already have the makefile.
- (4) Execute the plncmp compile command.
- (5) Erase the command line field when press this button.
- (6) After compiled, the output will display on Results page window. (Refer to Chapter 2 for plncmp's options.)





4.4.4.2.2 patcmp

Invoke the pattern compiler interface, which allows a user to compile a test program from a menu driven interface instead of the command line. This may be helpful for the beginning users. (Refer to Chapter 2 for patcmp's options)

4.4.4.2.3 Editor

Invoke CRAFT Editor for users to edit and compile the test plan and pattern programs in this tool.

4.4.4.2.4 DOS Window

Invoke a DOS window which located at loaded test plan's directory if there is a test plan had already been loaded.

4.4.4.2.5 Datalog Utility

Invoke this tool for displaying all data log and summary events of test plan. (Refer to Chapter 7)

4.4.4.2.6 Shmoo Plot Utility

Invoke the Shmoo utility, designed to perform parameter plots. (Refer to Chapter 11)

4.4.4.2.7 Multi-Level Waveform Scope

Invoke the logic waveform utility, which displays the actual signals at the test head, for all of the selected pins. (Refer to Chapter 12 & 13)

4.4.4.2.8 Test Condition Monitor

Invoke the TCM utility, which allows the user to visualize the current program set-ups, and to modify them temporarily in a debug session. (Refer to Chapter 10)

4.4.4.2.9 Test Plan Debugger

Invoke the Debug utility, used for setting breakpoints and overrides, etc. (Refer to Chapter 5)

4.4.4.2.10 Test Pattern Editor

Invoke the Pattern Edit utility which allows you to view and modify test patterns loaded into the hardware. (Refer to Chapter 8)

4.4.4.2.11 Pin Margin

Invoke the Pin Margin tool to get pins' parameter plot. (Refer to Chapter 14)

4.4.4.2.12 Test Plan Sequencer

Invoke the Program sequence utility, which allows the user to modify a test sequence. (Refer to Chapter 8)

4.4.4.2.13 Channel Debug

Invoke the Channel Debug utility, which allows the user to visualize the current program set-ups, and to modify them temporarily by pin's view point. (Refer to Chapter 15)

4.4.4.3 Environment Setup of Application Engr. Permission User

In the title bar window as below, there are some buttons that can set-up environment value, include View, Check Environment...etc, but only Administrator and application permission users can change the set-up value.

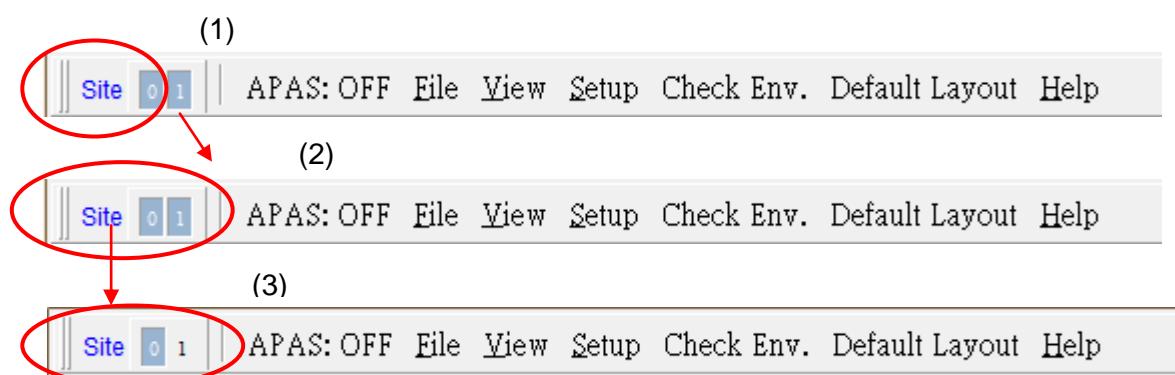


4.4.4.3.1 Site

Enable or disable sites when test plan have been loaded. The test plan must in “ready” status. If test plan have not been loaded, it is useless. Default setting is all on site.

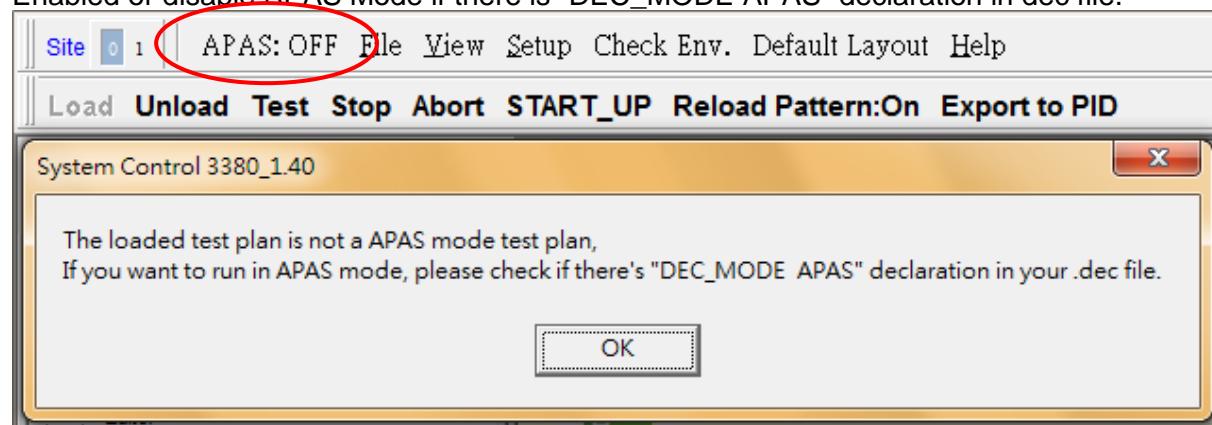
How to do it:

- (4) Click the “Site” button
- (5) Display the total site according to the test plan
- (6) Disable or enable the sites



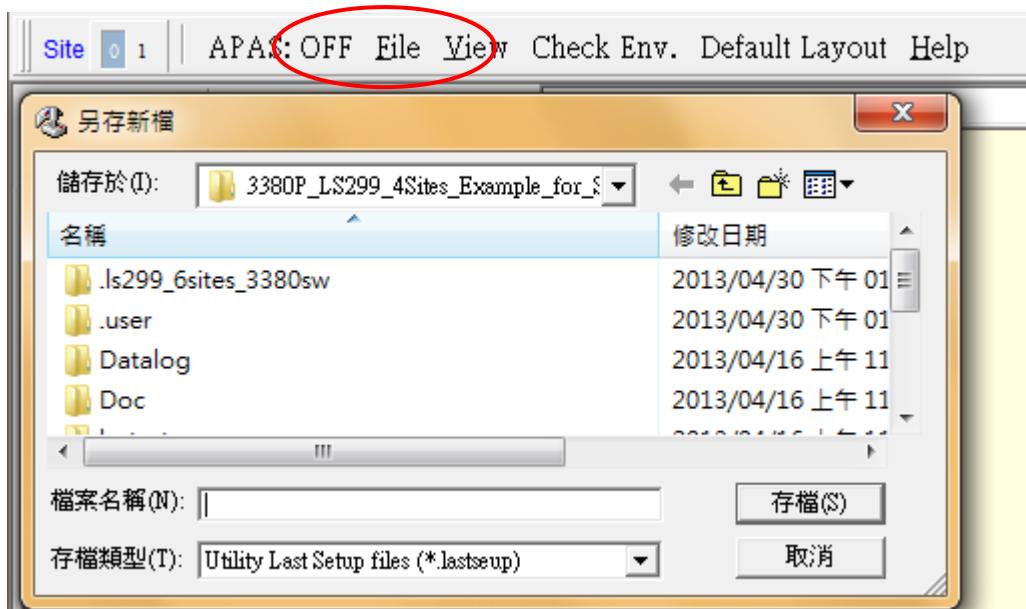
4.4.4.3.2 APAS

Enabled or disable APAS Mode if there is “DEC_MODE APAS” declaration in dec file.



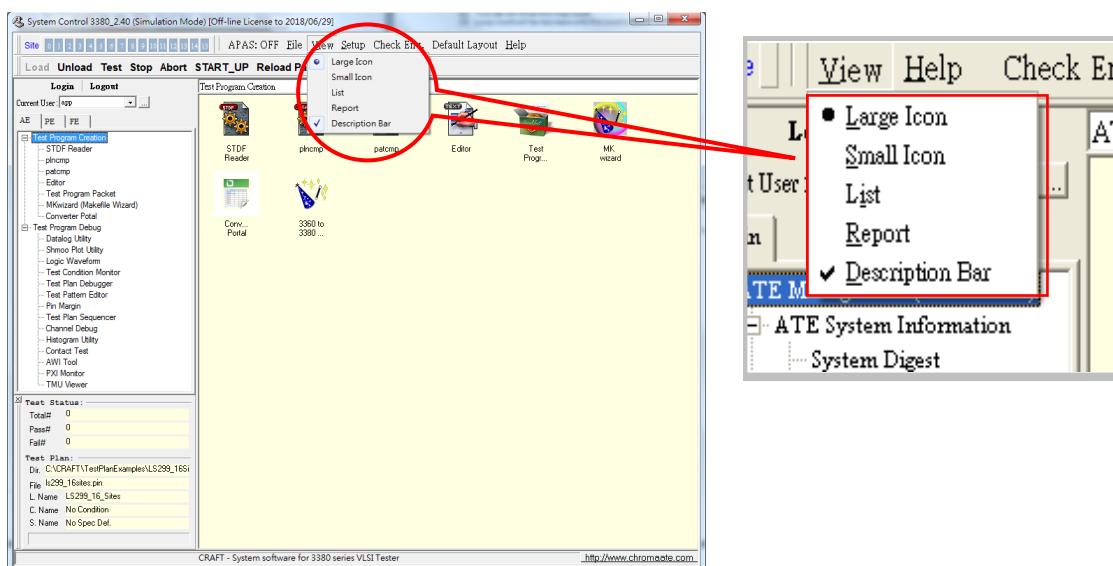
4.4.4.3.3 File

Save all utility last setup files, system will use last setup value when test plan be loaded next time.



4.4.4.3.4 View

There are five modes to change icon size, include large icon, small icon, list, report, and description bar will show or not.



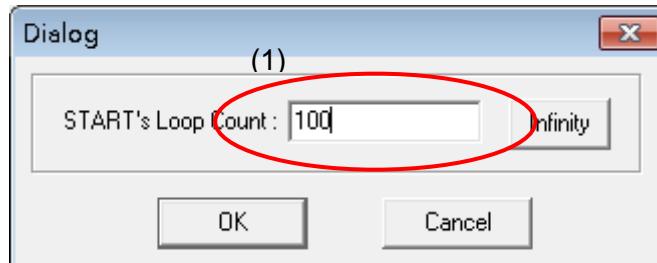
4.4.4.3.5 Setup

Edit some conditions for Craft system before starting test. And user can change set-up values, include start loop, run time check, default editor chooser, FS Map, disable FS Map, and enable FS Map. This option is enabled in the AE mode.

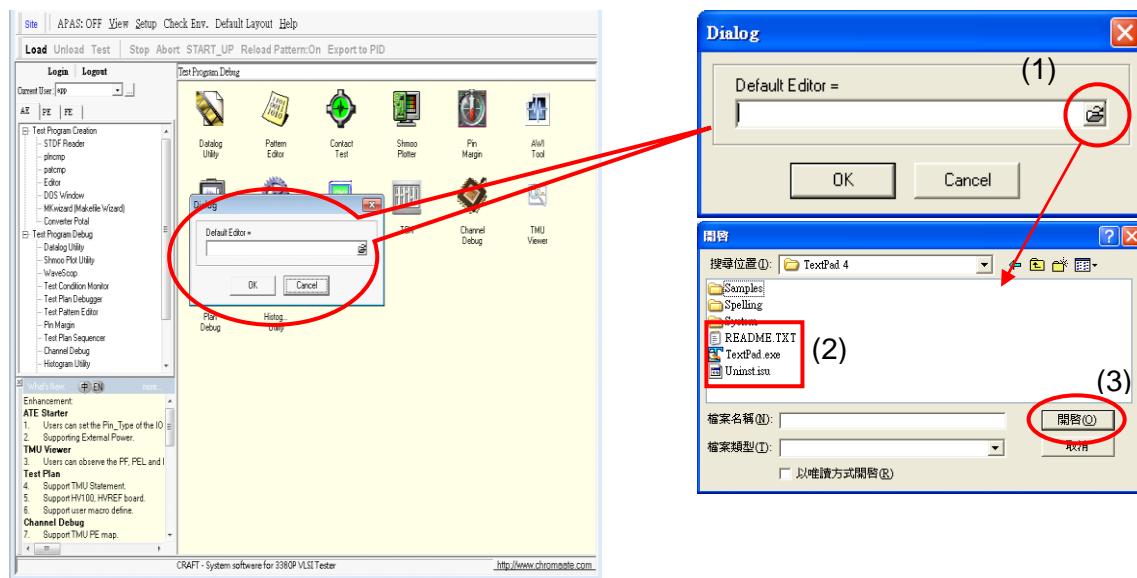
- Start Loop
Set up test loop count in the dialog box.

How to set-up:

- (1) Enter the loop count
- (2) Tool bar will show this loop count
- (3) Loop count will be decrease until the count is zero



- Run Time Check
This function provides more detail system check for testing. System will check return value from the firmware, and print the result on the data log.
- Default Editor Chooser
Choose one Editor as default editor, such as TextPad...etc.

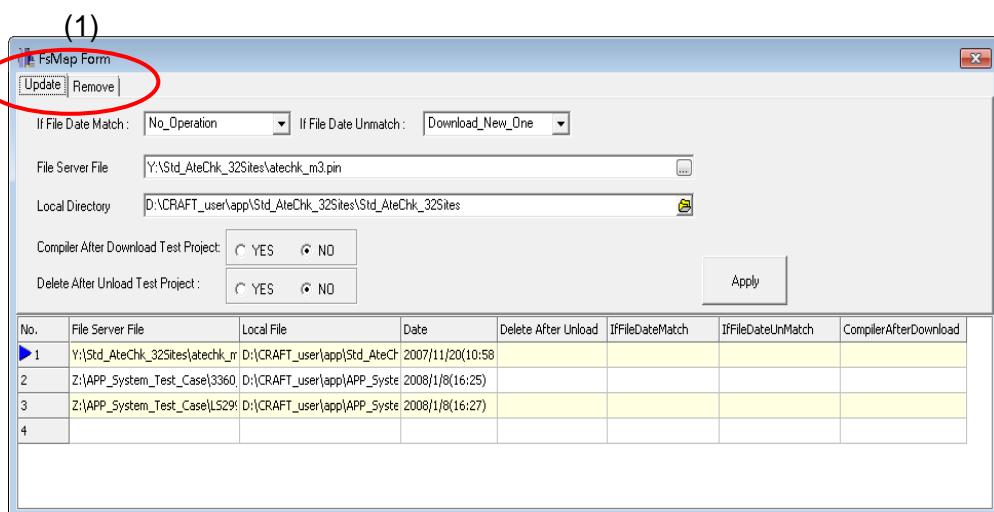


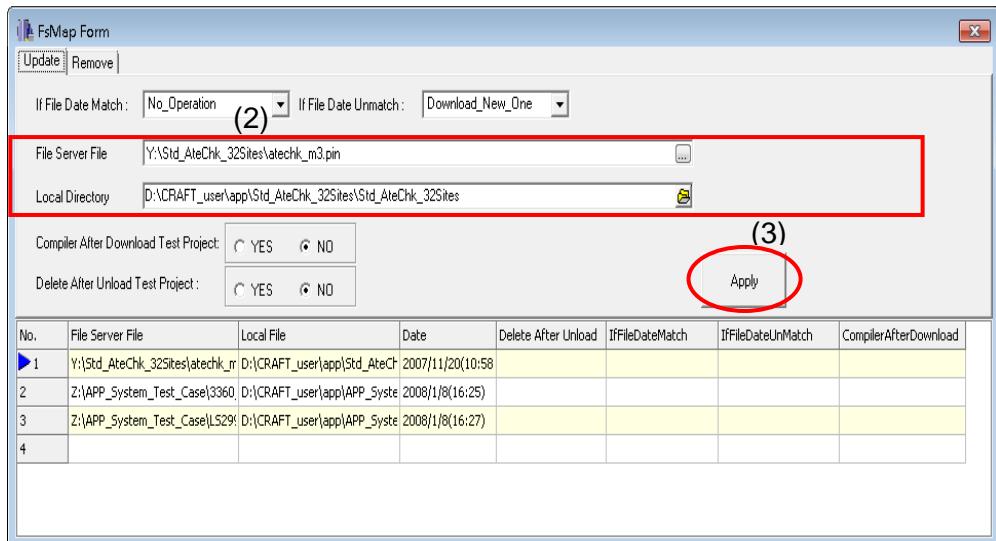
- **FS Map**

FS Map can download the test plan form network server to local disk and the load the test plan in the local disk directly. User can setup local location manually. Detail FS Map methods are shown in next section.

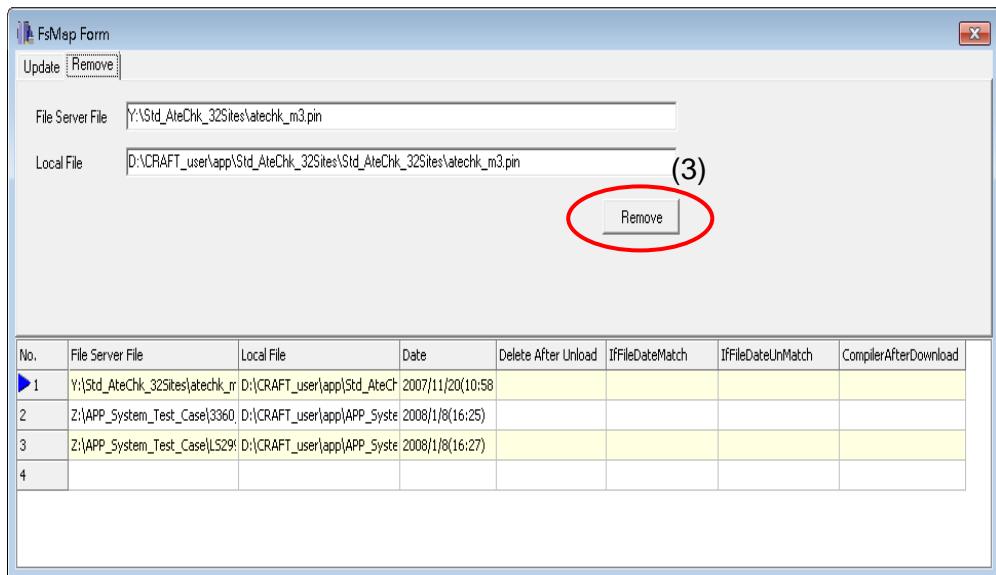
How to set-up:

- (1) Select Update or Remove mode
- (2) Edit File Server file location and local Directory
- (3) Update or you can remove it





Choose the No. that you want to delete.



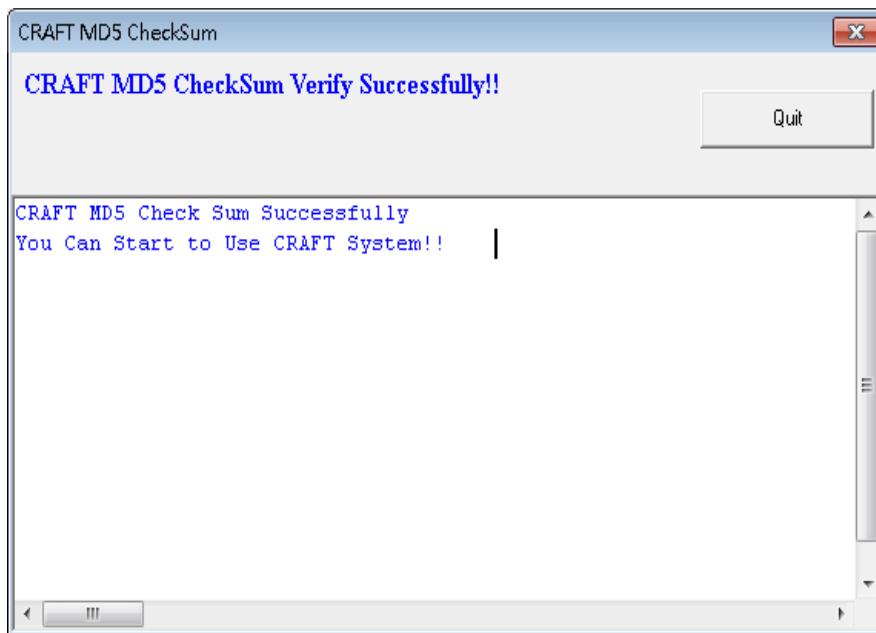
- **Disable FS Map**
Disable FS Map. If test plan is on the network server, system will load test plan form server directly.
- **Enable FS Map**
Enable FS Map. If test plan is on the network server, system will copy test plan from server to local then load it.

4.4.4.3.6 Help

Find online operation help and view Craft version.

4.4.4.3.7 Check Env.

List all history if Craft utility is changed before. Include modified data, and file size...etc.

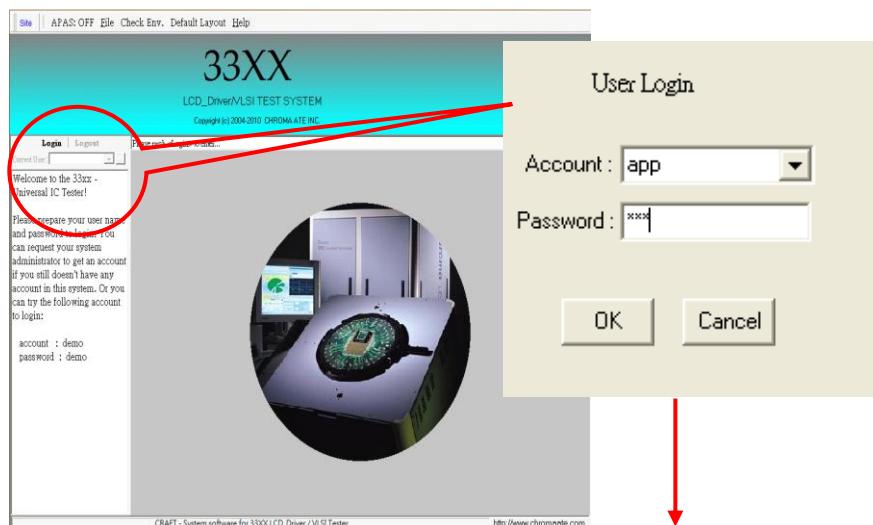


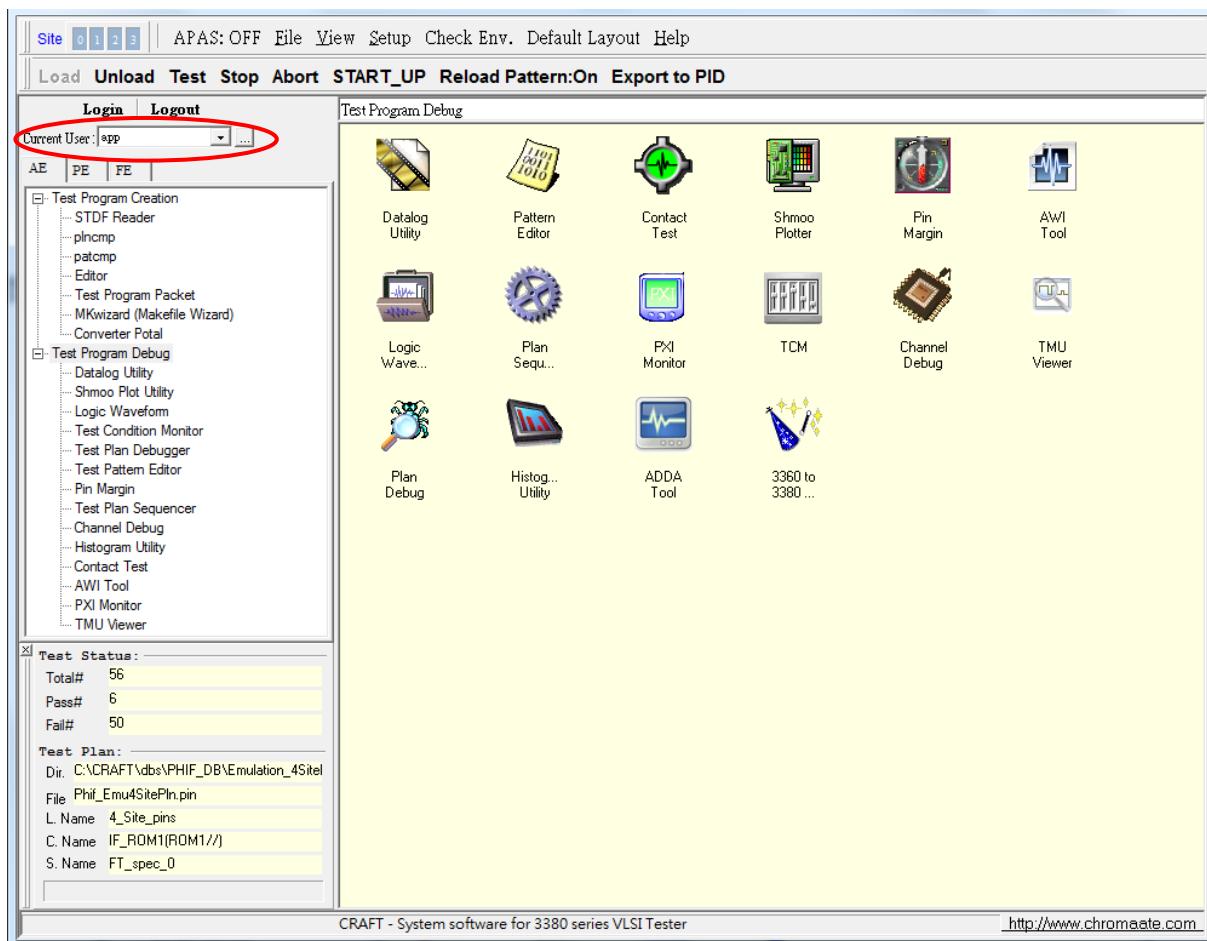
4.4.4.3.8 Default Layout

System will return default layout, if system layout is changed.

4.4.5 Production Engr. Permission User

In system control's user login window, input a user who has the Production Engr. permission then it will enter to the “PE” window”. The following sample uses the account “user1” who had been added in the previous section to login (Please refer to 4.4.3.1.5 for how to add a new user “user1” who owns the Application Engr., Product Engr. and Field Engr. three permissions). If the system confirms the account and relative password, the “AE window” will be showed, please change to “PE” window.





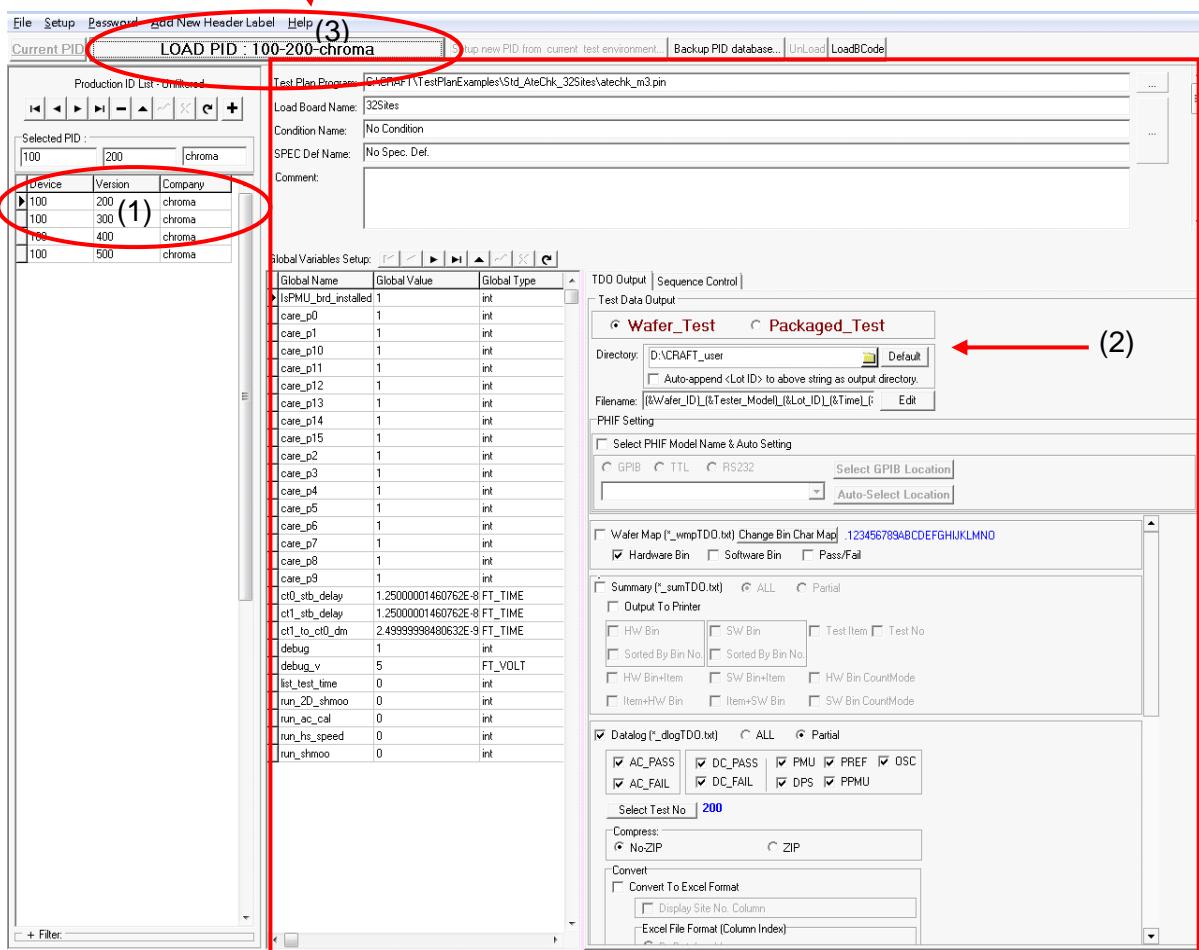
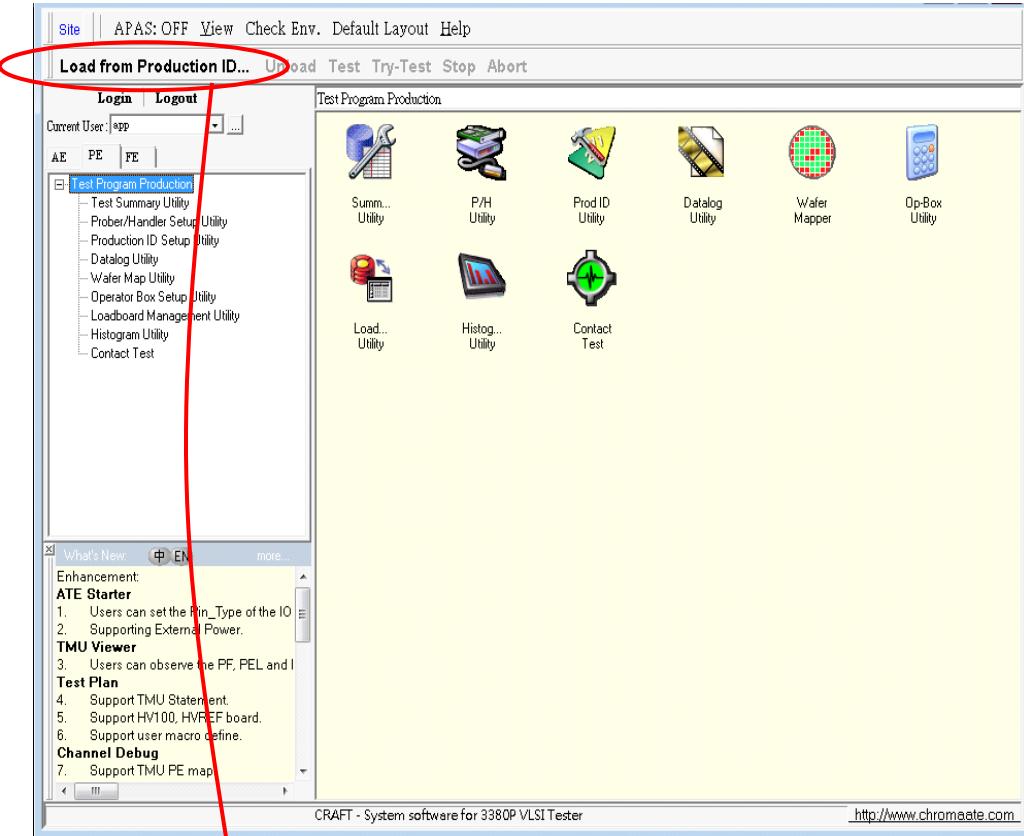
4.4.5.1 Test Bar of Production Engr. Permission User

The push buttons of central strip are used to control basic functions of the test plan program for production engineer to do commands such as loading, testing, looping and initialization. This is referred to as the Test Bar.

4.4.5.1.1 Load from Production ID

When there is no test plan has been loaded, the button will be sensitive.

- (1) Select one PID from the Production ID List. (Refer to Chapter 16 for Production ID Setup.)
- (2) Check if the test plan's information is correct.
- (3) Press this button to load.



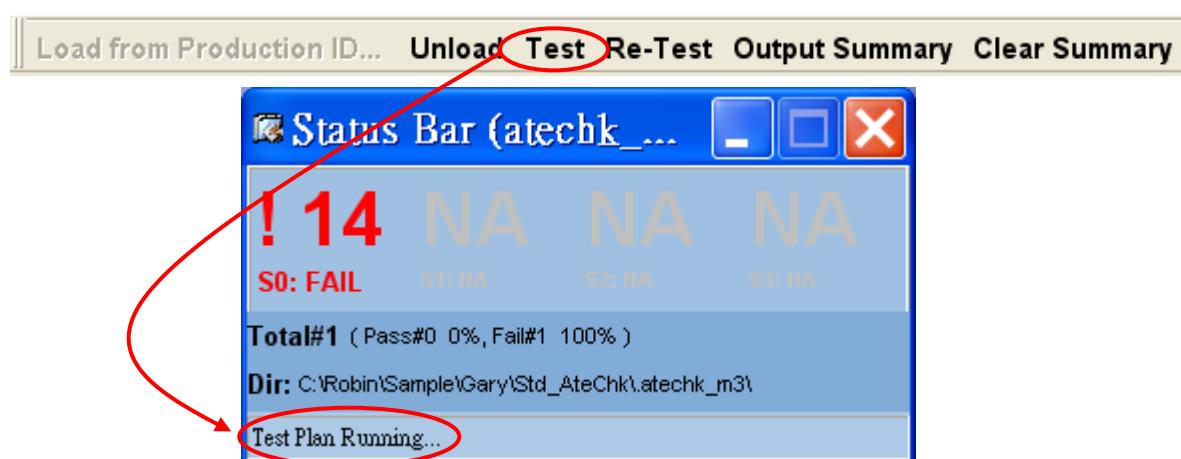
4.4.5.1.2 Unload

Unload the test plan which has been loaded. The test plan must in “ready” status. Whenever you want to compile the loaded test plan or for tester safe reason, remember do this operation certainly, it will clear the test plan program from memory, making all of the resources available for another program.



4.4.5.1.3 Test

Start the test plan program execution (testing) when pressed this item.



4.4.5.1.4 Re-Test

Re-execute the test program without increasing the summary’s serial number.



4.4.5.1.5 Output Summary

Output the summary result to a file or printer. (Refer to Chapter 17 for Test Summary Utility)



4.4.5.1.6 Clear Summary

It is for clearing summary the result. (Refer to Chapter 17 for Test Summary Utility)



4.4.5.2 Functions of Production Engr. Permission User

In the tree view window, there are many available tools, include Test Program Production that Production Engr. permission user can click it to use.

4.4.5.2.1 Test Summary Utility

Invoke the Test Summary utility, which generate summary test plan output result. (Refer to Chapter 17)

4.4.5.2.2 Prober/Handler Setup Utility

Invoke the Prober/Handler utility, which provide the interface to setup Prober or Handler.

4.4.5.2.3 Production ID Setup Utility

Invoke the Production ID Setup utility, which allows a user to edit PID in a user friendly interface. (Refer to Chapter 16)

4.4.5.2.4 Datalog Utility

Invoke this tool for displaying all data log and summary events of test plan. (Refer to Chapter 7)

4.4.5.2.5 Wafer Map Utility

Invoke the Wafer Map utility, which allows a user to map probed wafers for later analysis. This utility can be used whether the user is actually on a tester.

4.4.5.2.6 Operator Box Setup Utility

Invoke the Operator Box Setup utility, which provides the interface to setup op-box panel.

4.4.5.2.7 Load Board Management Utility

Invoke the Load Board Management utility, which allows the user to load proper test plan automatically just from the load board's bar code.

4.4.5.3 Environment Setup of Production Engr. Permission User

In the title bar window as below, there are some buttons that can set-up environment value, include View, Check Environment...etc, but only Administrator and application permission users can change the set-up value.

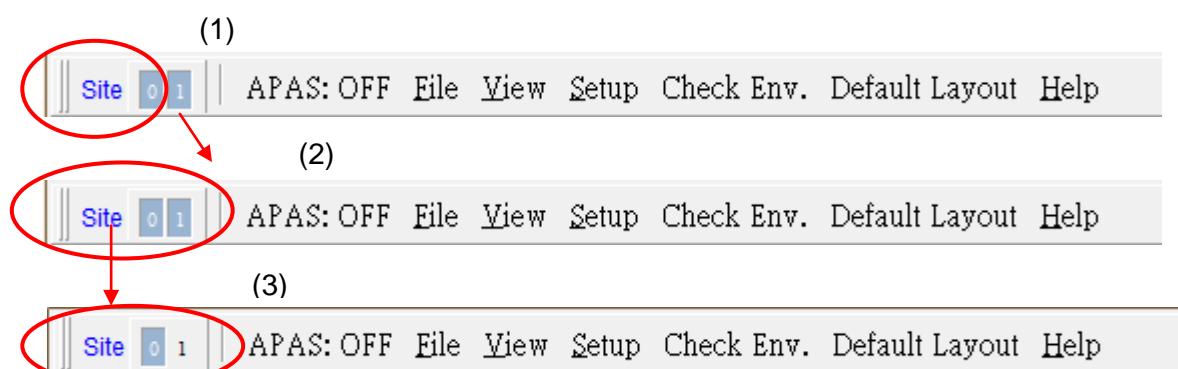


4.4.5.3.1 Site

Enable or disable sites when test plan have been loaded. The test plan must in “ready” status. If test plan have not been loaded, it is useless. Default setting is all on site.

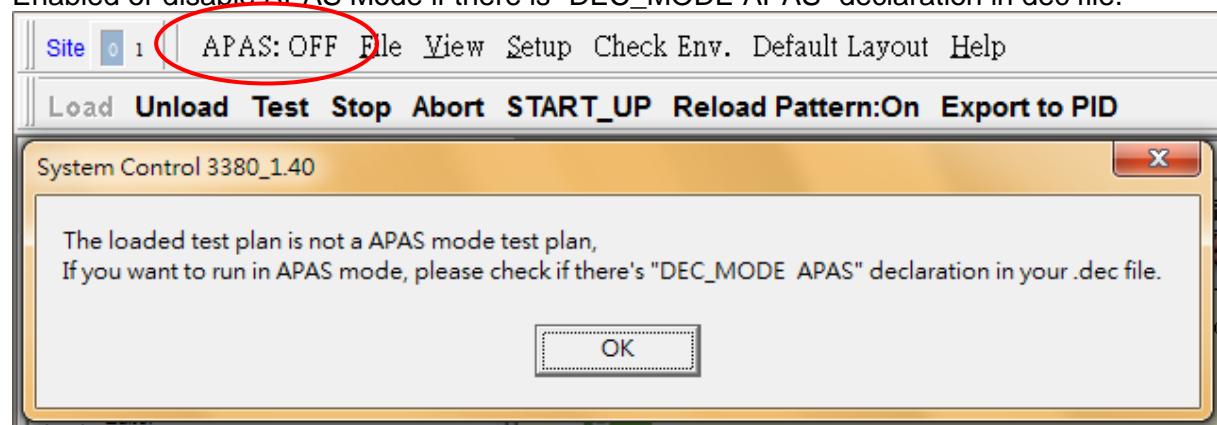
How to do it:

- (7) Click the “Site” button
- (8) Display the total site according to the test plan
- (9) Disable or enable the sites



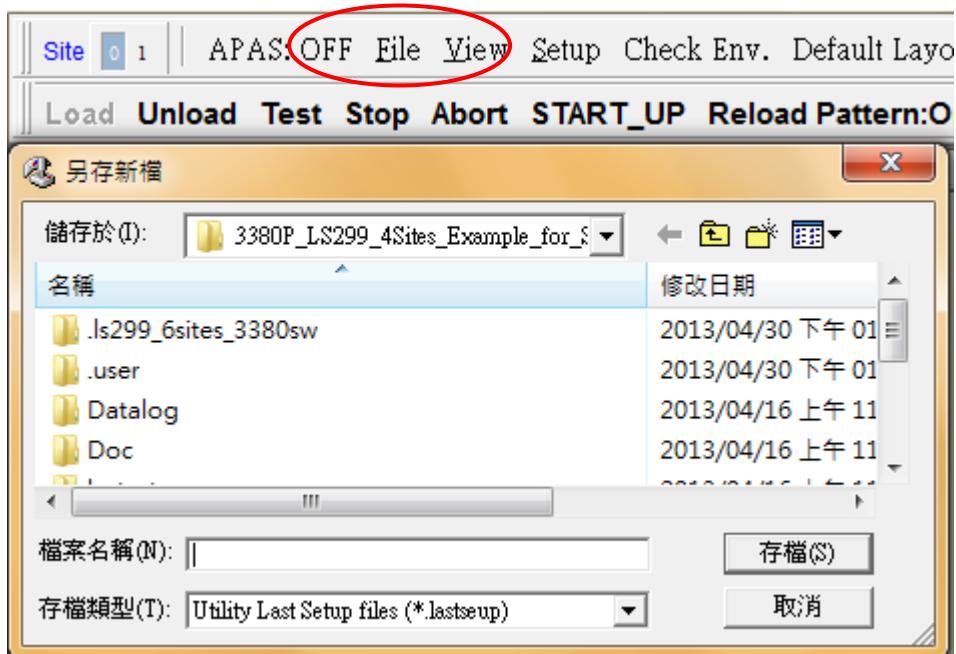
4.4.5.3.2 APAS

Enabled or disable APAS Mode if there is “DEC_MODE APAS” declaration in dec file.



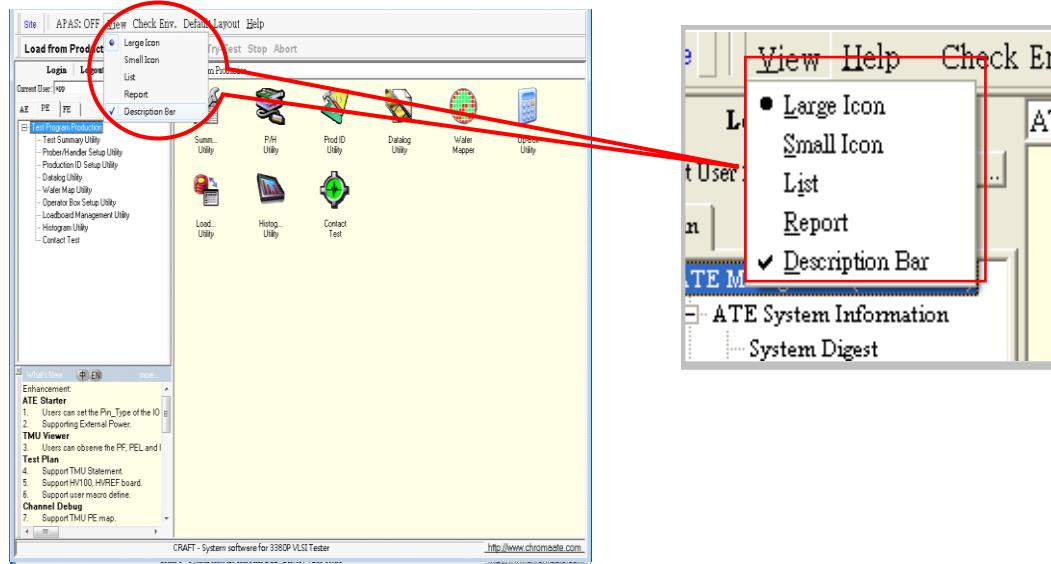
4.4.5.3.3 File

Save all utility last setup files, system will use last setup value when test plan be loaded next time.



4.4.5.3.4 View

There are five modes to change icon size, include large icon, small icon, list, report, and description bar will show or not.

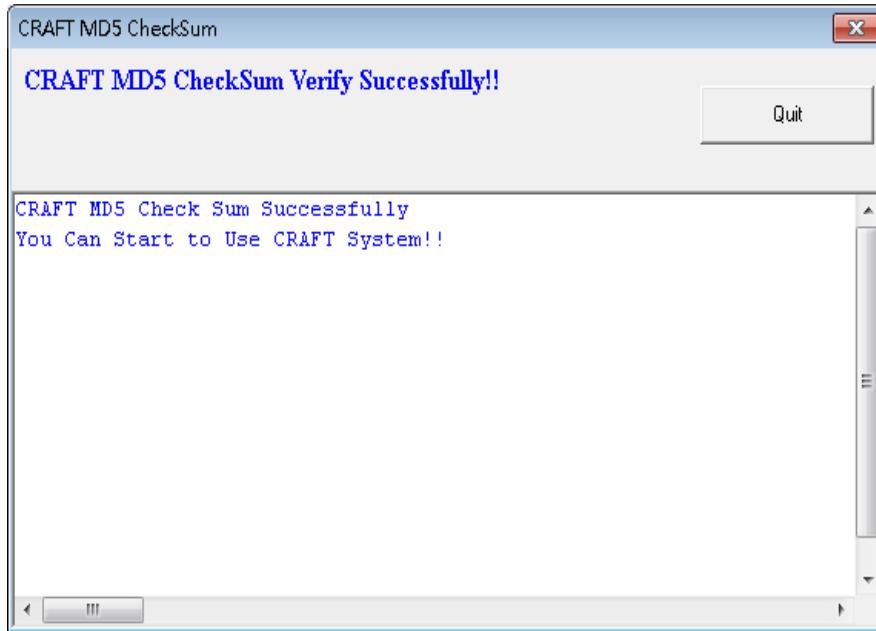


4.4.5.3.5 Help

Find online operation help and view craft version.

4.4.5.3.6 Check Env.

List all history if Craft utility is changed before. Include modified data, and file size...etc.

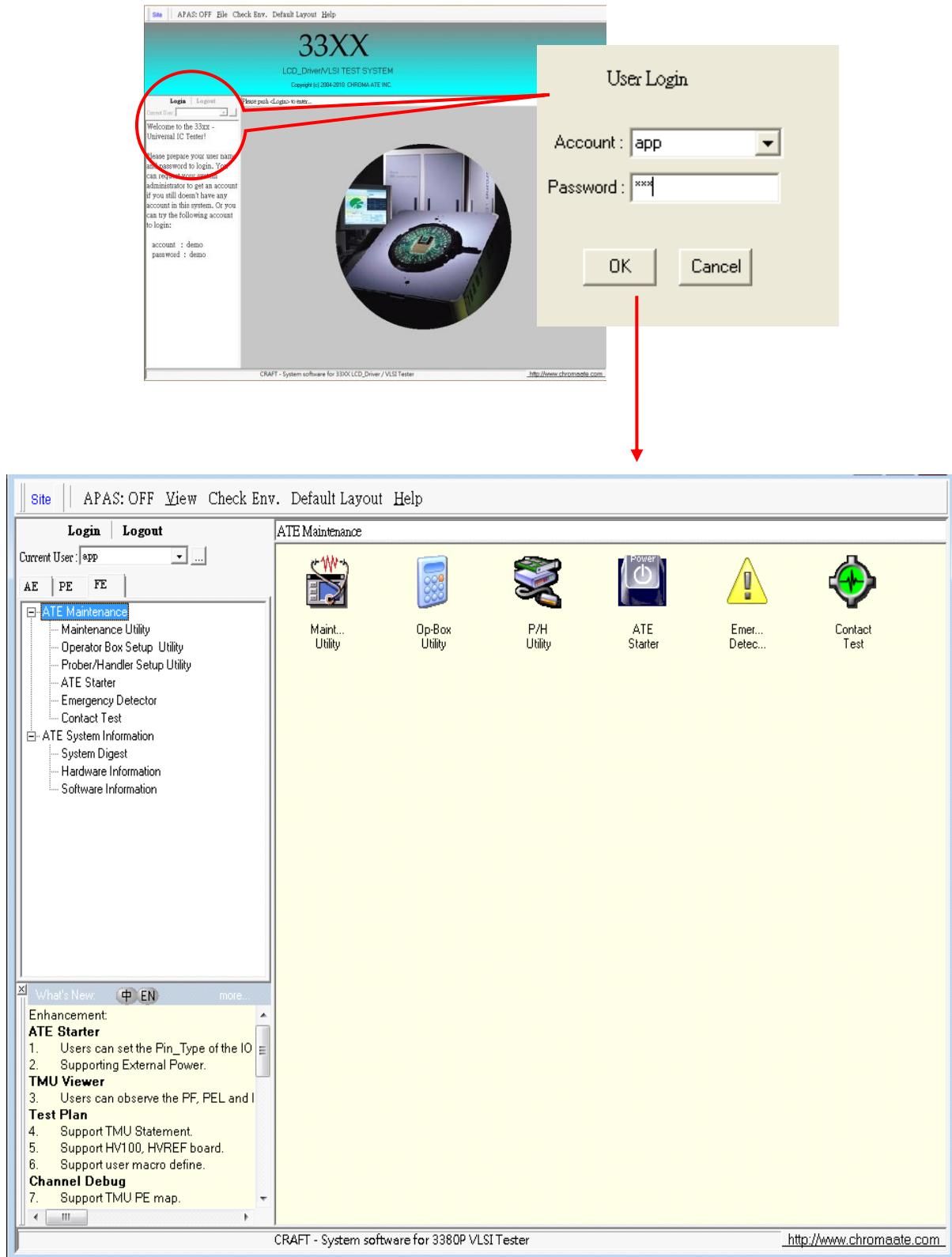


4.4.5.3.7 Default Layout

System will return default layout, if system layout is changed.

4.4.6 Field Engr. Permission User

In system control's user login window, input a user who has the Field Engr. permission then it will enter to the "FE" window". The following sample uses the account "user1" who had been added in previous section to login (Please refer to 4.4.3.1.5 for how to add a new user "user1" who owns the Application Engr., Product Engr. and Field Engr. three permissions). If the system confirms the account and relative password, the "AE window" will be showed, please change page to "FE" window.



4.4.6.1 Functions of Field Engr. Permission User

In the tree view window, there are many available tools, include ATE Maintenance and ATE System Information, that Field Engr. permission user can click it to use.

4.4.6.1.1 Maintenance Utility

Invoke the Maintenance utility, which allows the user to perform calibration and/or system diagnostics on the hardware resources.

4.4.6.1.2 Operator Box Setup Utility

Invoke the Operator Box Setup utility, which provides the interface to setup op-box panel.

4.4.6.1.3 Prober/Handler Setup Utility

Invoke the Prober/Handler utility, which provide the interface to setup Prober or Handler.

4.4.6.1.4 ATE Starter Utility

Invoke the ATE Starter utility, which allows a user to access the main power resources of the tester directly. This should only be used by qualified maintenance personnel for performing tester repair or preventive maintenance. (Refer to Chapter 1)

4.4.6.1.5 Emergency Detector

Invoke the Emergency Detector utility, which allows the user to know the current tester status like temperature, voltage, and so on.

4.4.6.2 Environment Setup of Field Engr. Permission User

In the title bar window as below, there are some buttons that can setup up environment value, include View, Check Environment...etc, but only Administrator and application permission users can change the setup value.



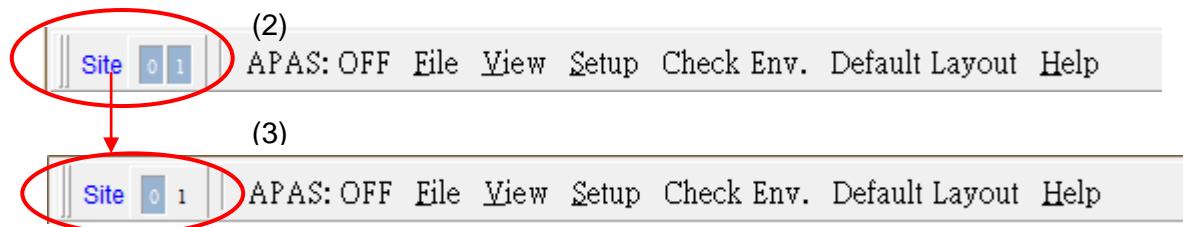
4.4.6.2.1 Site

Enable or disable sites when test plan have been loaded. The test plan must in “ready” status. If test plan have not been loaded, it is useless. Default setting is all on site.

How to do it:

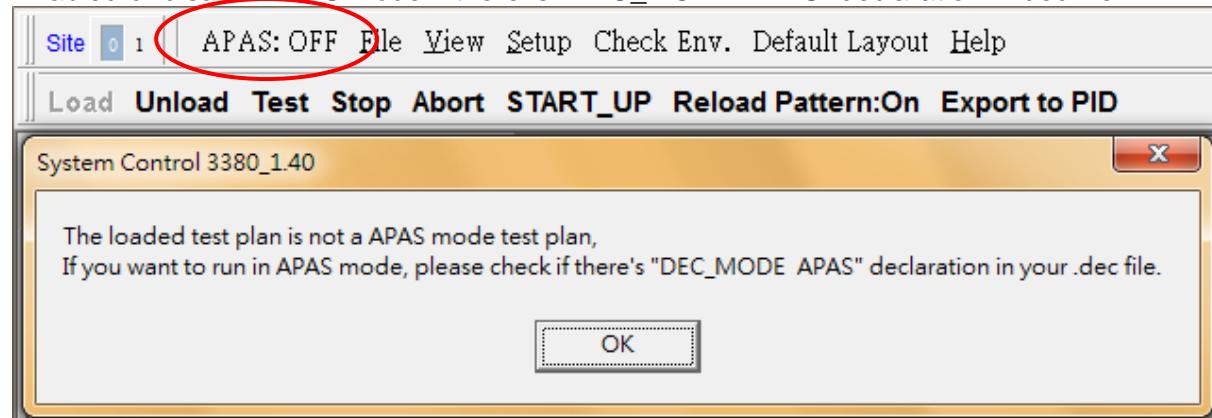
- (10) Click the “Site” button
- (11) Display the total site according to the test plan
- (12) Disable or enable the sites





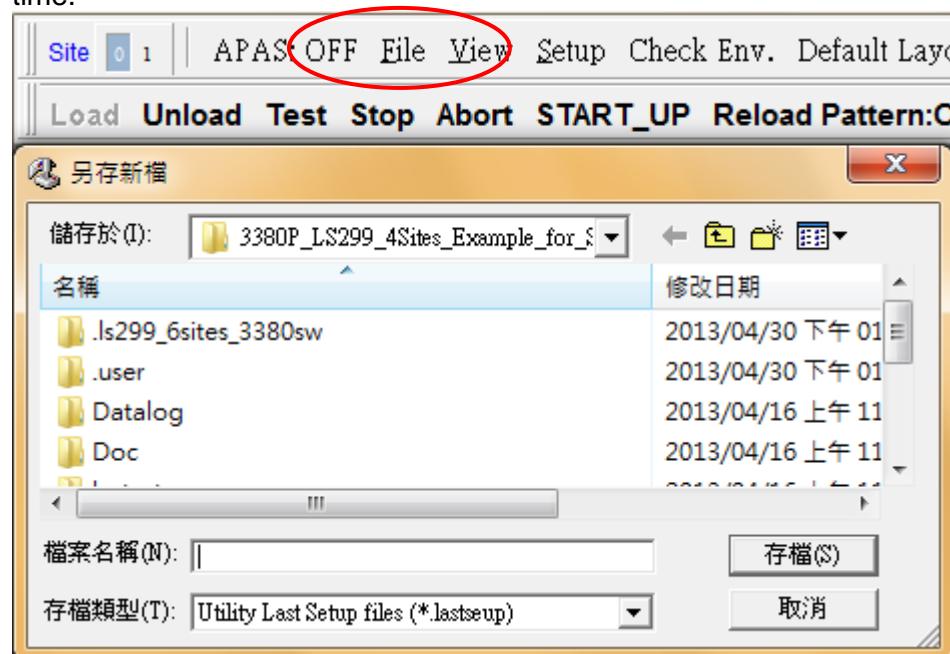
4.4.6.2.2 APAS

Enabled or disable APAS Mode if there is "DEC_MODE APAS" declaration in dec file.



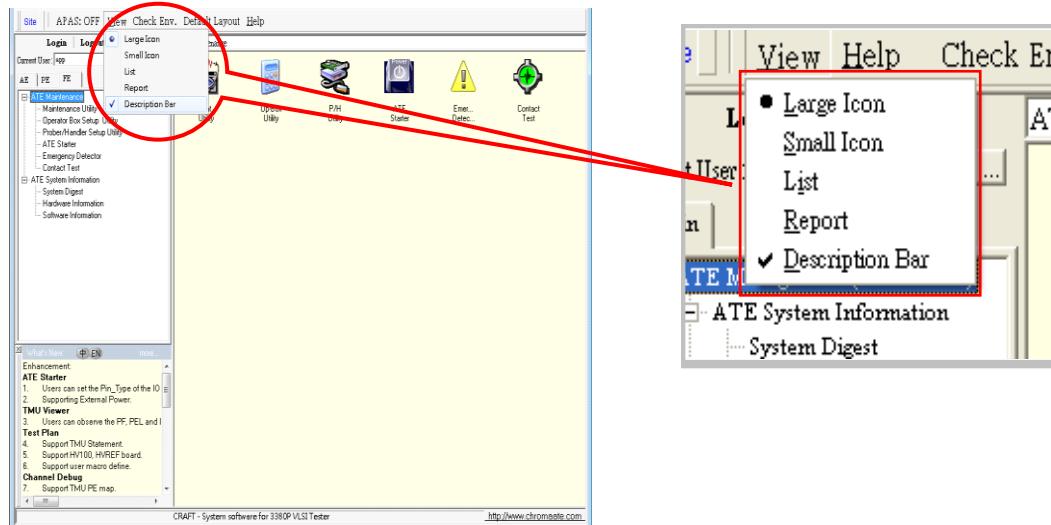
4.4.6.2.3 File

Save all utility last setup files, system will use last setup value when test plan be loaded next time.



4.4.6.2.4 View

There are five modes to change icon disappear, include large icon, small icon, list, report, and description bar will show or not.

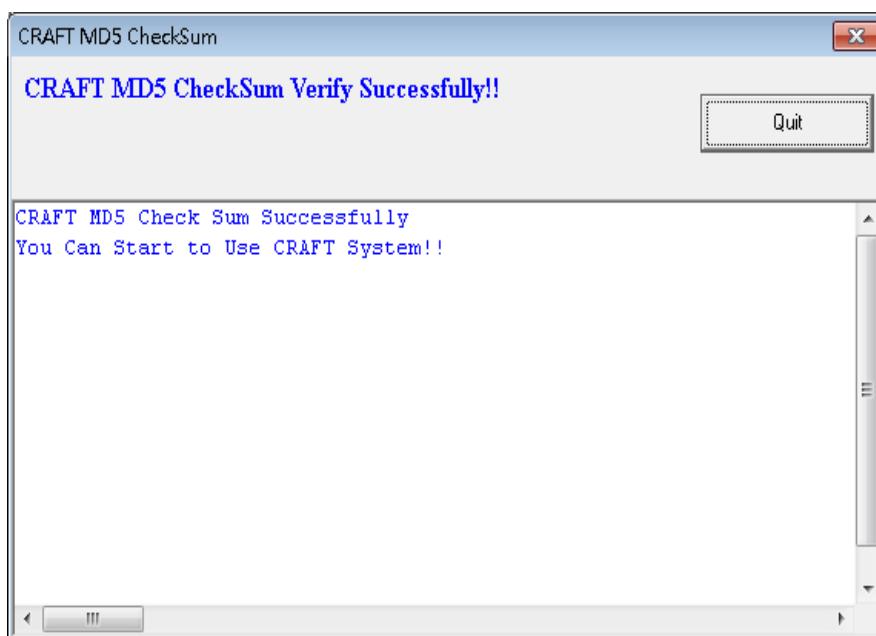


4.4.6.2.5 Help

Find online operation help and view craft version.

4.4.6.2.6 Check Env.

List all history if Craft utility is changed before. Include modified data, and file size...etc.

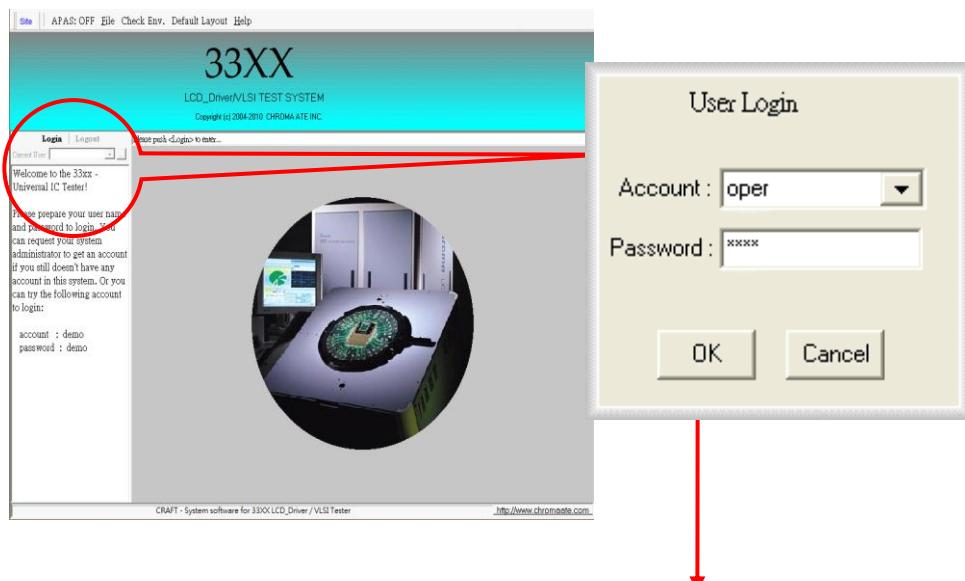


4.4.6.2.7 Default Layout

System will return default layout, if system layout is changed.

4.4.7 Production Operator

In system control's user login window, input a user who has the Production Operator permission then it will enter to the "Operator Window". The following sample uses the default account "oper" and password "oper" to login (Please refer to following section "Users" for how to add a new user who owns the Production Operator permission). If the system confirms the account and relative password, the "Operator window" will be showed like Figure 4-9.



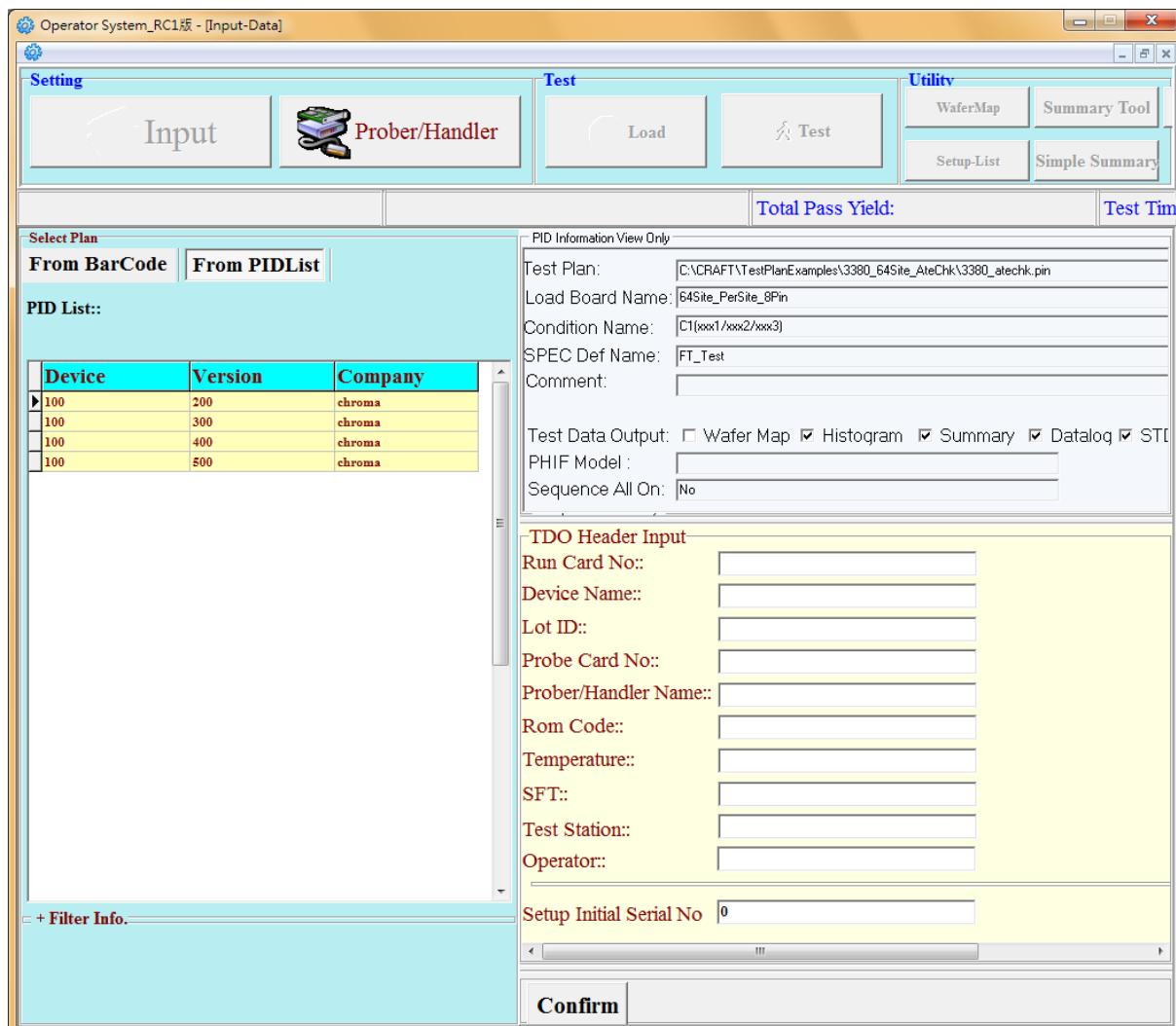
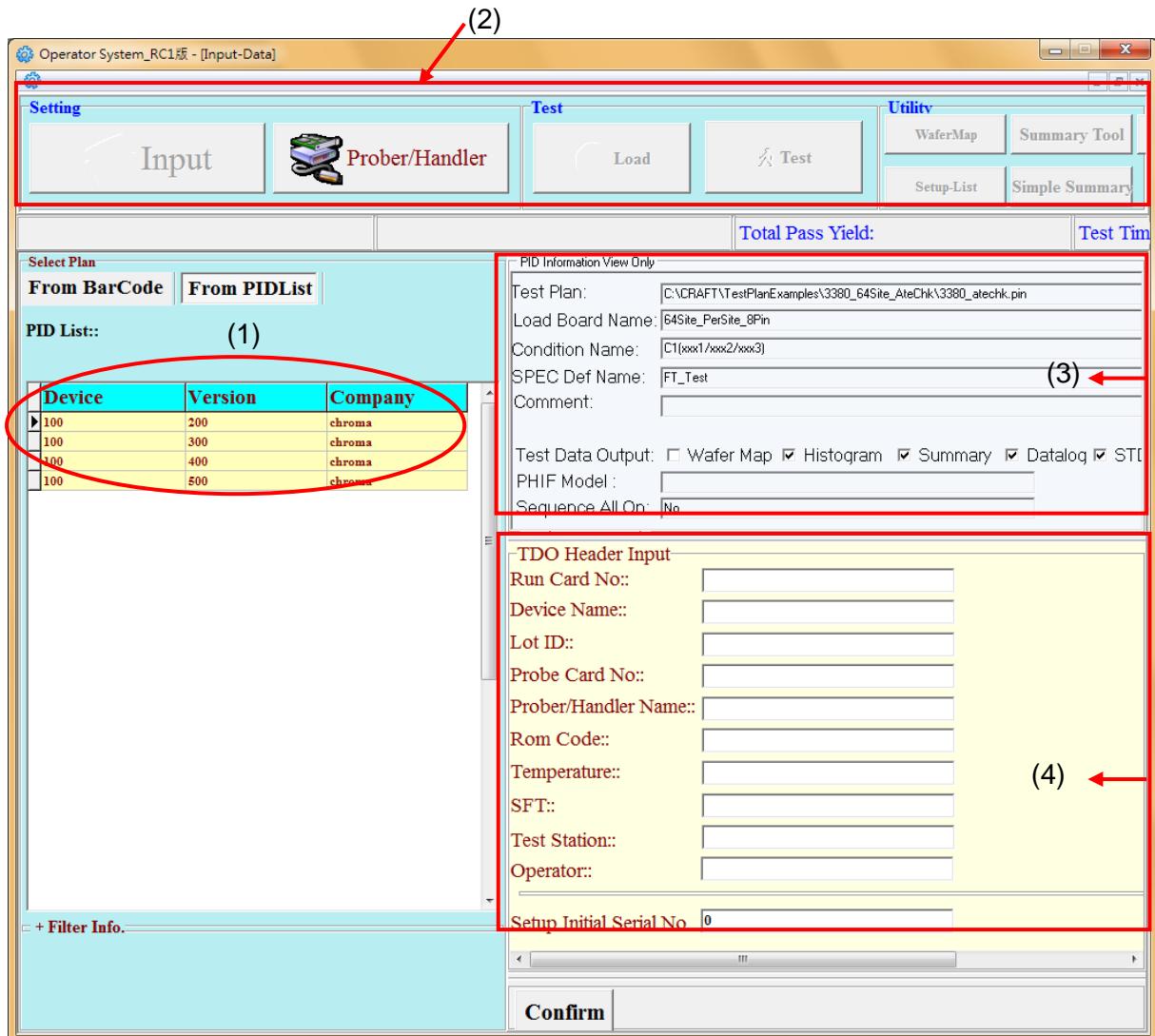


Figure 4-9 Operator User Login

4.4.7.1 Overview of Production Operator Window

- (1) Production ID list window. Operator can select the proper PID from this window.
- (2) This is referred to as the Test Bar. Operator can do load, unload, test and output summary report by these buttons.
- (3) When a PID is selected, this window will display the abstract information, which includes test plan name, load board name and so on. This window is for viewing only.
- (4) In this area, user can input some information which will also be printed to output report files. These data will be effective after Test Plan loaded.



4.4.7.2 Functions in Production ID List Window

Refresh:

Read back PID list from database (in %CRAFT_HOME%\dbs\ProdID_DB) again.

Filter:

Re-list PID by primary or second key value.

For example, set primary key to 100 will just list PIDs which owns primary key equal to 100.

- Filter Info.

Device:::100

Version::*

Company::*

4.4.7.3 Test Bar of Production Operator Permission User

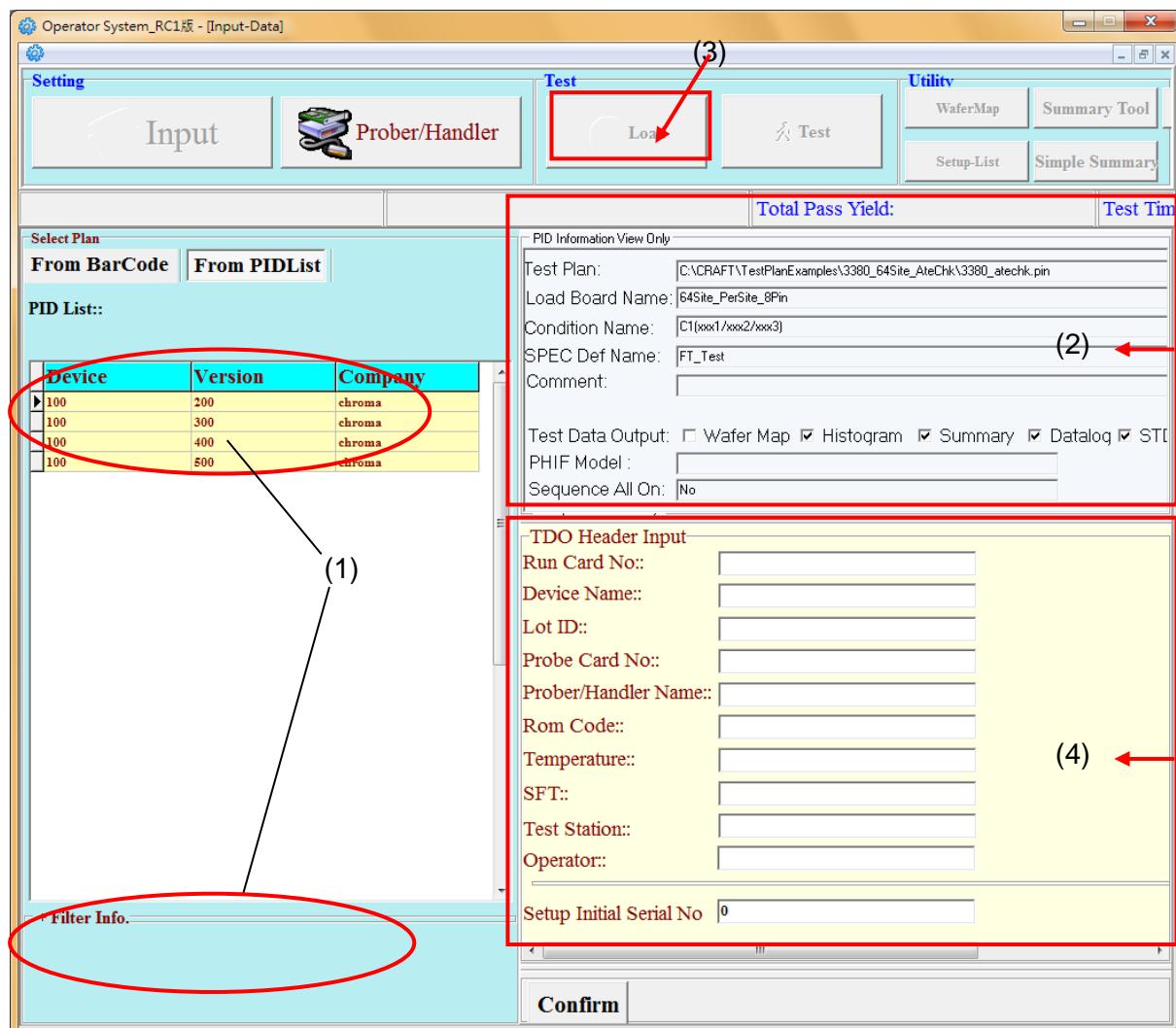
The bottom strip of push buttons are used to control basic functions of the test plan program

for production operator to do commands such as loading, testing. This is referred to as the Test Bar.

4.4.7.3.1 LOAD: xxx-xxx-xxx

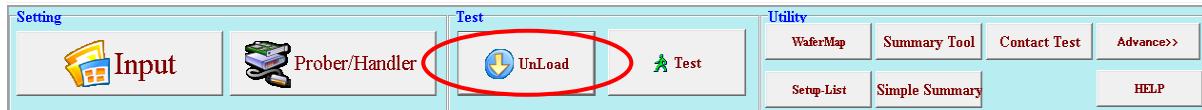
When there is without test plan has been loaded, the **LOAD:** button will be sensitive.

- (1) Select one PID from the Production ID List (Refer to Chapter 16 for Production ID Setup), then **LOAD:** button will follow to display the selected PID number.
- (2) Check if the test plan's information is correct.
- (3) Press **LOAD:** button to load.
- (4) Operator can input some information which will be printed on output report files.



4.4.7.3.2 Un-LOAD

Unload the test plan which has been loaded. The test plan must in "ready" status. Whenever you want to compile the loaded test plan or for tester safe reason, remember do this operation certainly, it will clear the test plan program from memory, making all of the resources available for another program.



4.4.7.3.3 TEST

Start the test plan program execution (testing) when pressed it and then the test plan's status will get into "Test Plan Running".



4.4.7.3.4 Output Summary

This button is for outputting summary result to a file or printer. (Refer to Chapter 17 for Test Summary utility)



4.4.7.4 Environment Setup of Production Operator

In the title bar window as below, there are some buttons that can set-up environment value, include View, Check Environment...etc, but only Administrator and application permission users can change the set-up value.

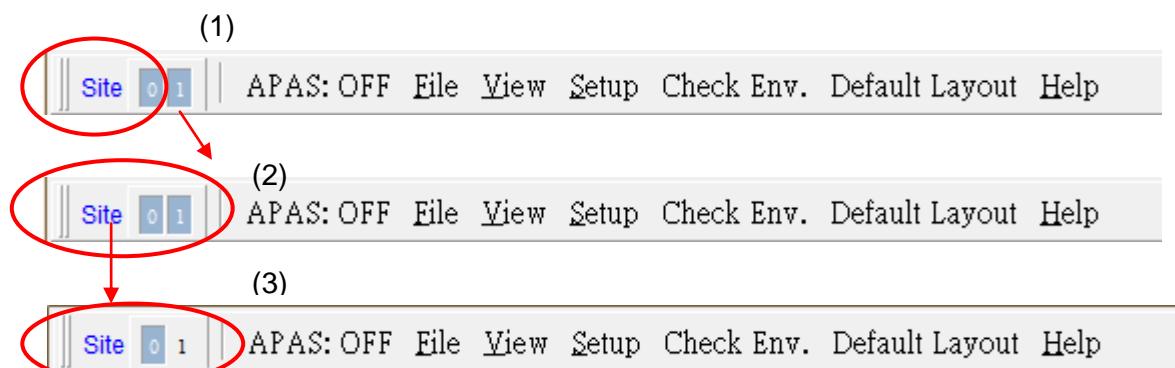


4.4.7.4.1 Site

Enable or disable sites when test plan have been loaded. The test plan must in “ready” status. If test plan have not been loaded, it is useless. Default setting is all on site.

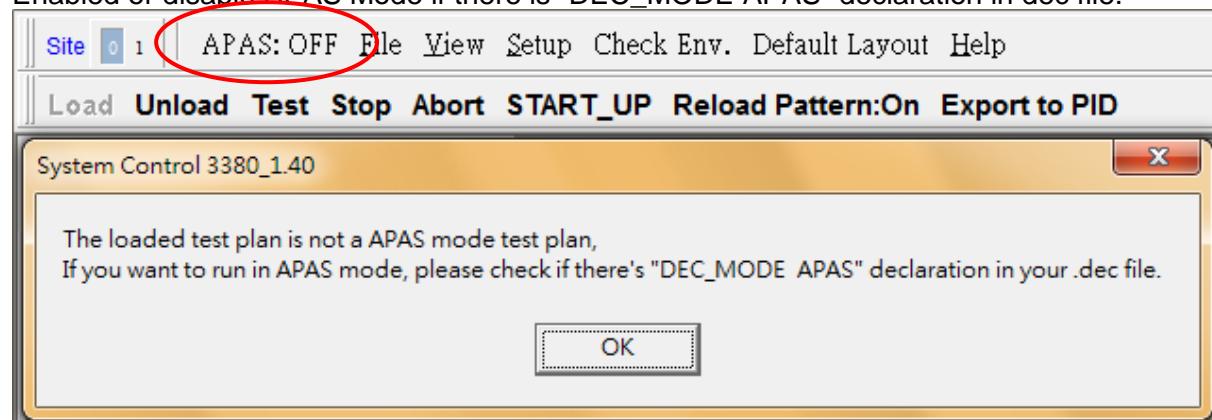
How to do it:

- (13) Click the “Site” button
- (14) Display the total site according to the test plan
- (15) Disable or enable the sites



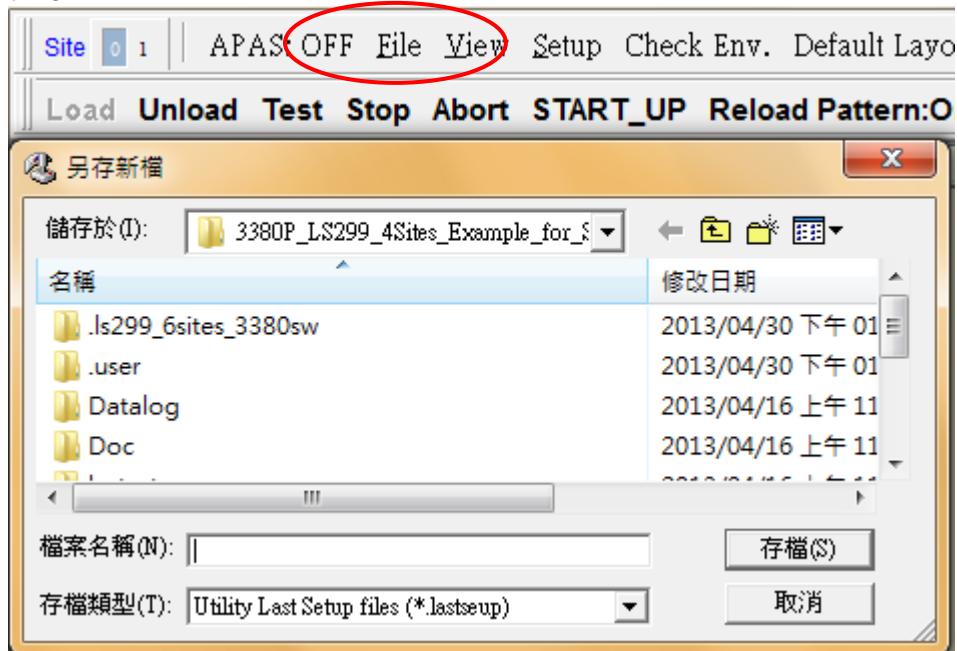
4.4.7.4.2 APAS

Enabled or disable APAS Mode if there is “DEC_MODE APAS” declaration in dec file.



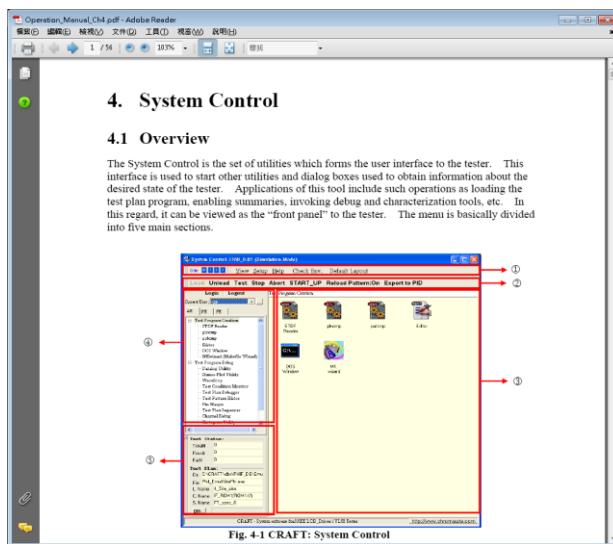
4.4.7.4.3 File

Save all utility last setup files, system will use last setup value when test plan be loaded next time.



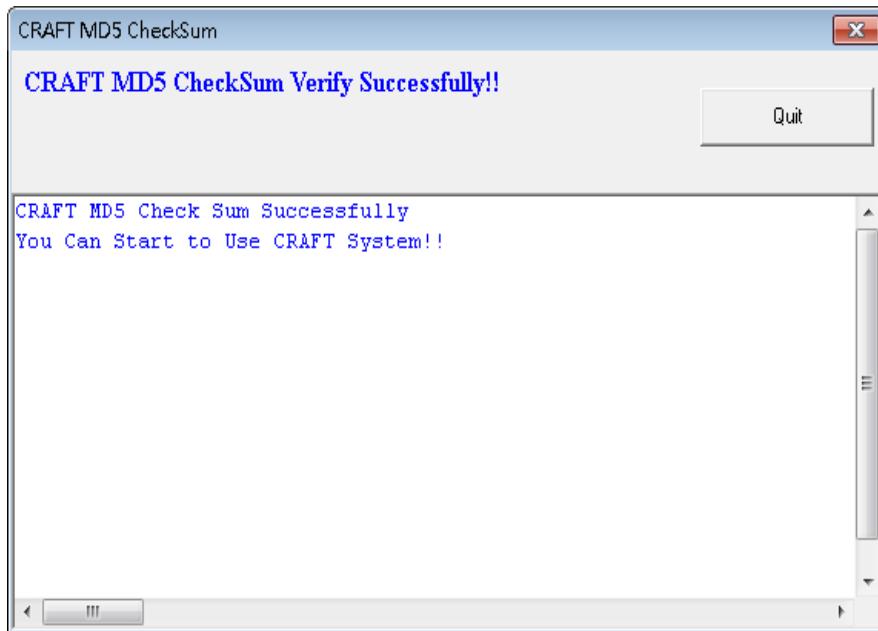
4.4.7.4.4 Help

Find online operation help and view craft version.



4.4.7.4.5 Check Env.

List all history if Craft utility is changed before. Include modified data, and file size...etc.



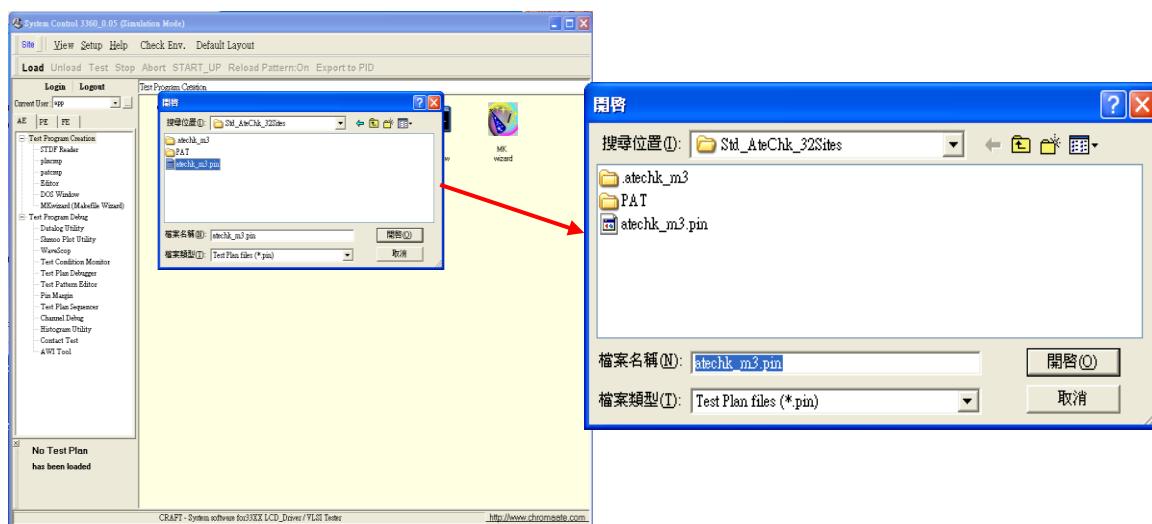
4.4.7.4.6 Default Layout

System will return default layout, if system layout is changed.

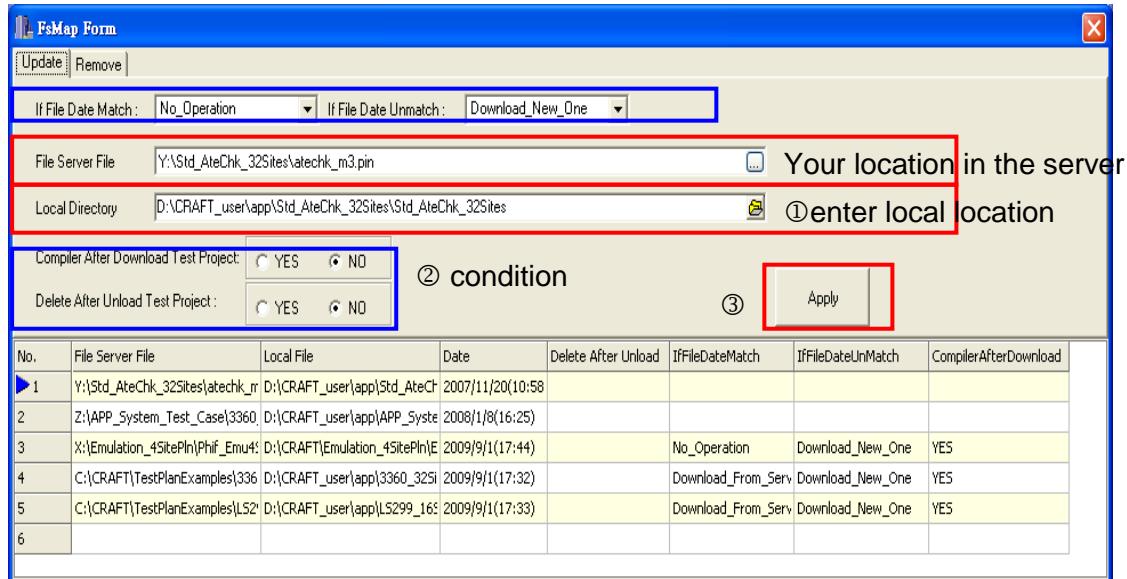
4.4.8 FS Map Setup

FS Map helps administrator to provide more convenient method to manage the entire Tester. In the network structure system, it can download test plan form network server automatically. Administrator need not to maintain test plans of all Tester, he just maintains test plan in the server. Detail steps are below:

- (1) Invokes a file pop-up, which lists the contents of your working directory, after you select the binary file (*.pin) you want to load in the server.



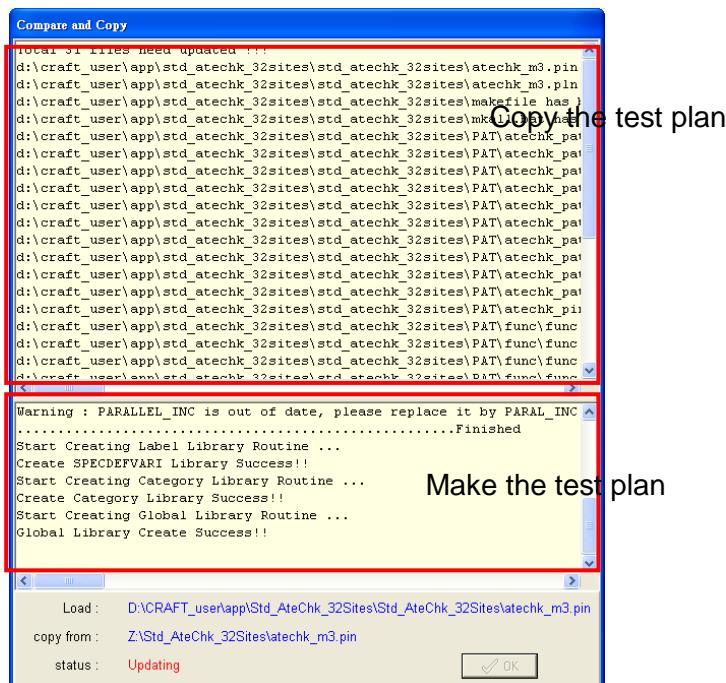
- (2) Because the test plan is in the network server, Pop-up FS Map. You must enter the local location you want to download and select conditions at the first time, and then click "Update".



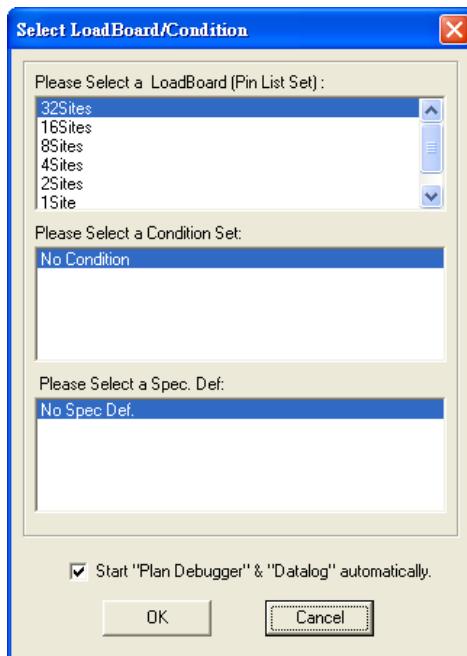
Conditions as below:

- How to do, if server and local file date are match.(Use Server\No Oper)
- How to do, if server and local file date are un-match. (Use Server\No Oper\Use New)
- If it will auto compiler test pln after download or not.
- If it will auto delete local test pln after user unload test pln or not.

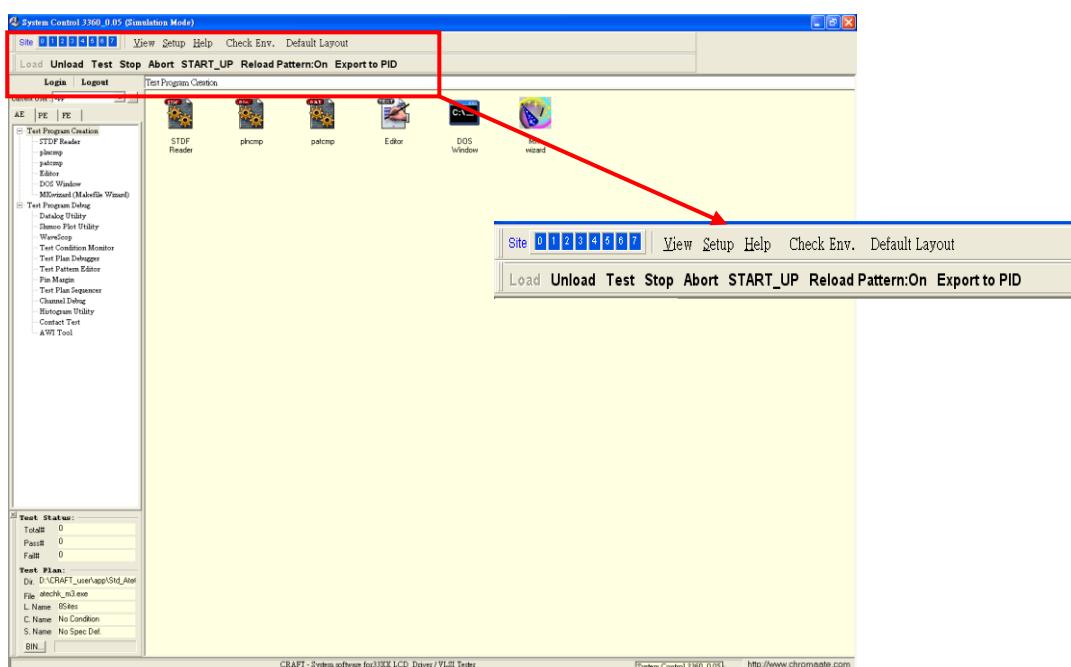
- (3) Starting download test plan from server to local and make the test plan, and then load automatically.



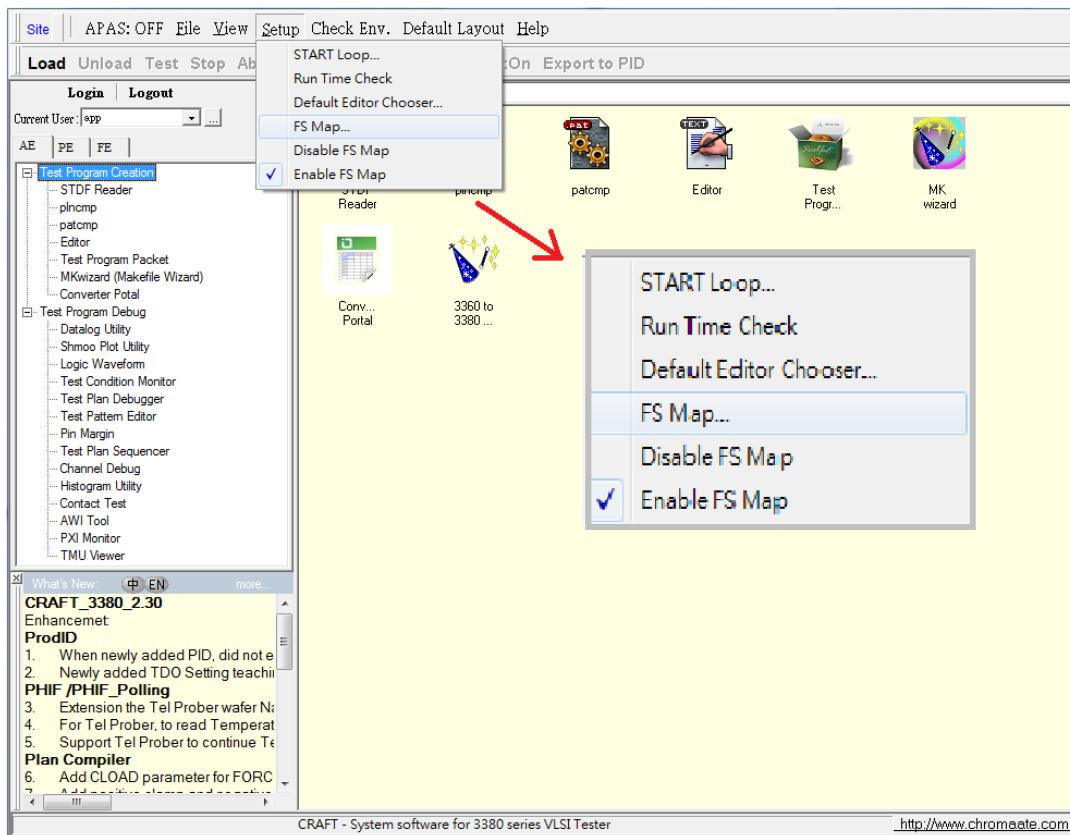
- (4) Another pop-up appears, listing the load board names, condition names and spec. names refer to Language manual). Associated with load board names are physical interface connections that make your program appear the relation to the hardware used to interface between the test head and the DUT (Device Under Test). Associated with condition names are branches selector that make test plan run the route you want.



- (5) After you select the desired names combination, the test plan program is then loaded, and you will see the other button get sensitive and the test plan's abstract.



- (6) If administrator wants to edit local location, click “Setup” and choose “FS Map” on the title tool bar.

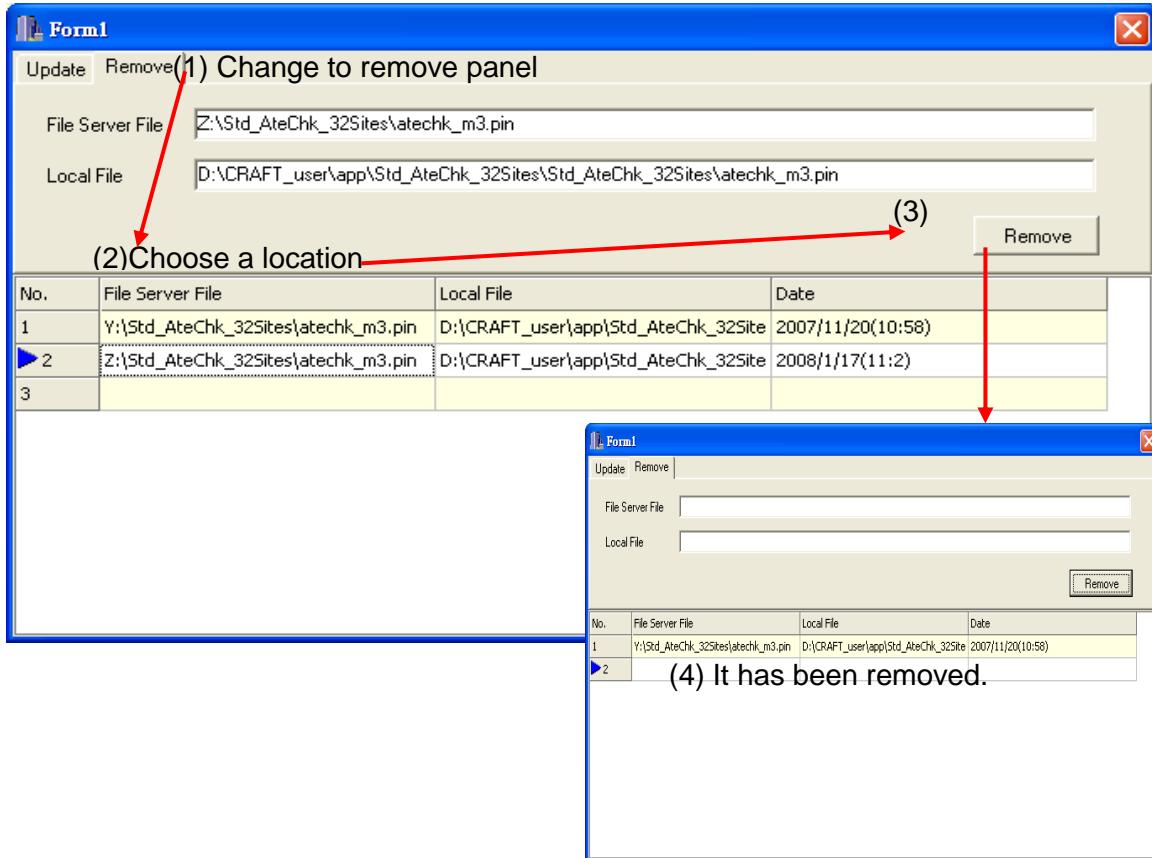


- (7) Choose one empty block to generate new location and enter File server file and the new location, then click “Update”.

The 'FsMap Form' dialog box is shown. The 'File Server File' input field is highlighted with a red arrow and labeled '(2) Enter File server File and Local directory and conditions'. Another red arrow points to the 'Apply' button, which is labeled with a circled '③'. Below the dialog is a table listing five existing file mappings, each with a circled '1' next to its row number. The first row is highlighted with a red arrow and labeled '(1) Choose empty block'.

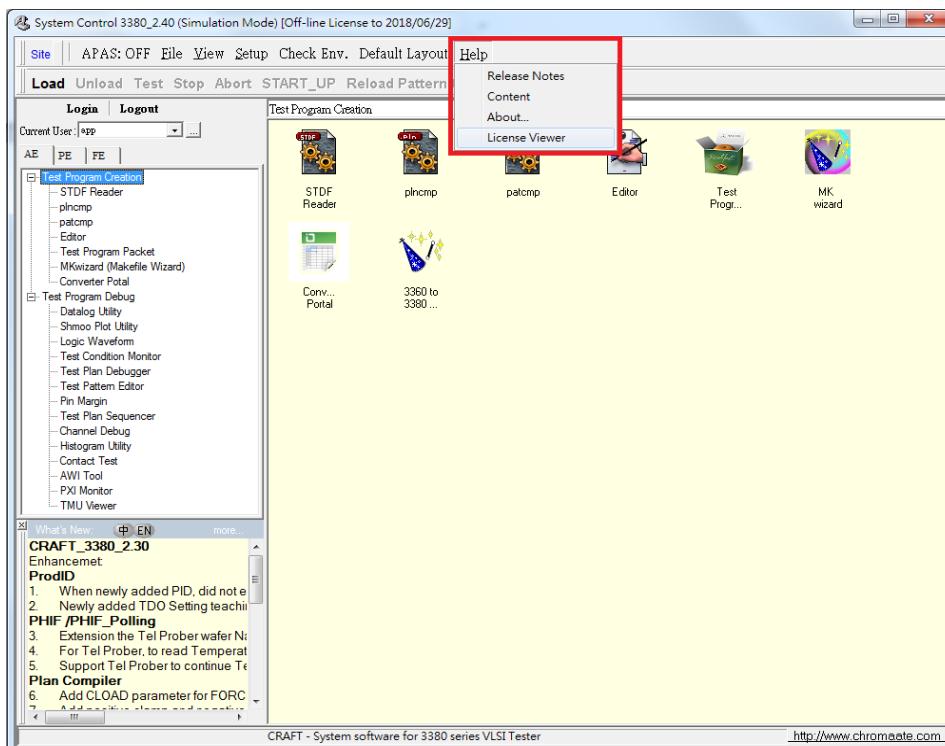
No.	File Server File	Local File	Date	Delete After Upload	IfFileDateMatch	IfFileDateUnMatch	CompilerAfterDownload
1	Y:\Std_AteChk_325\les\atechk_nr	D:\CRAFT_user\app\Std_AteChk	2007/11/20(10:58)				
2	Z:\APP_System_Test_Case\3360	D:\CRAFT_user\app\APP_Syste	2008/1/8(16:25)				
3	X:\Emulation_45itePln\Phif_Emu4\	D:\CRAFT\Emulation_4SitePln\Em	2009/9/1(17:44)		No_Operation	Download_New_One	YES
4	C:\CRAFT\TestPlanExamples\336	D:\CRAFT_user\app\3360_325i	2009/9/1(17:32)		Download_From_Serv	Download_New_One	YES
5	C:\CRAFT\TestPlanExamples\LS2	D:\CRAFT_user\app\LS299_16s	2009/9/1(17:33)		Download_From_Serv	Download_New_One	YES
6							

- (8) To choose Remove panel and select block that you want to delete, and then click “Remove”, if you want to delete some location.

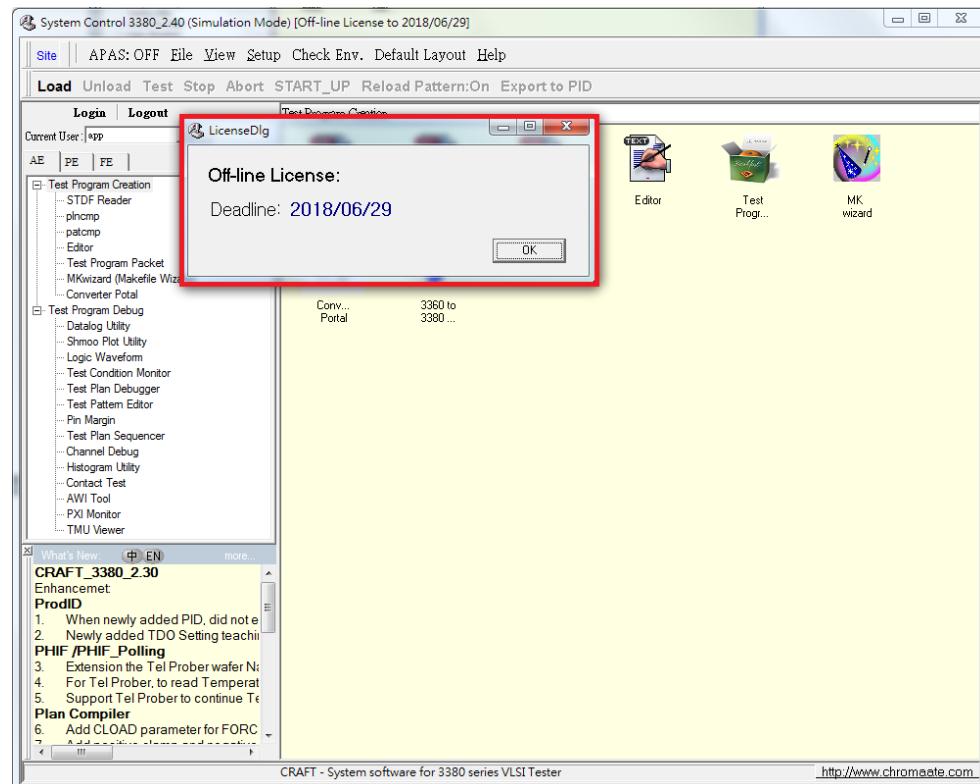


4.4.9 License Viewer

(1) Checking license deadline by Help -> License Viewer.



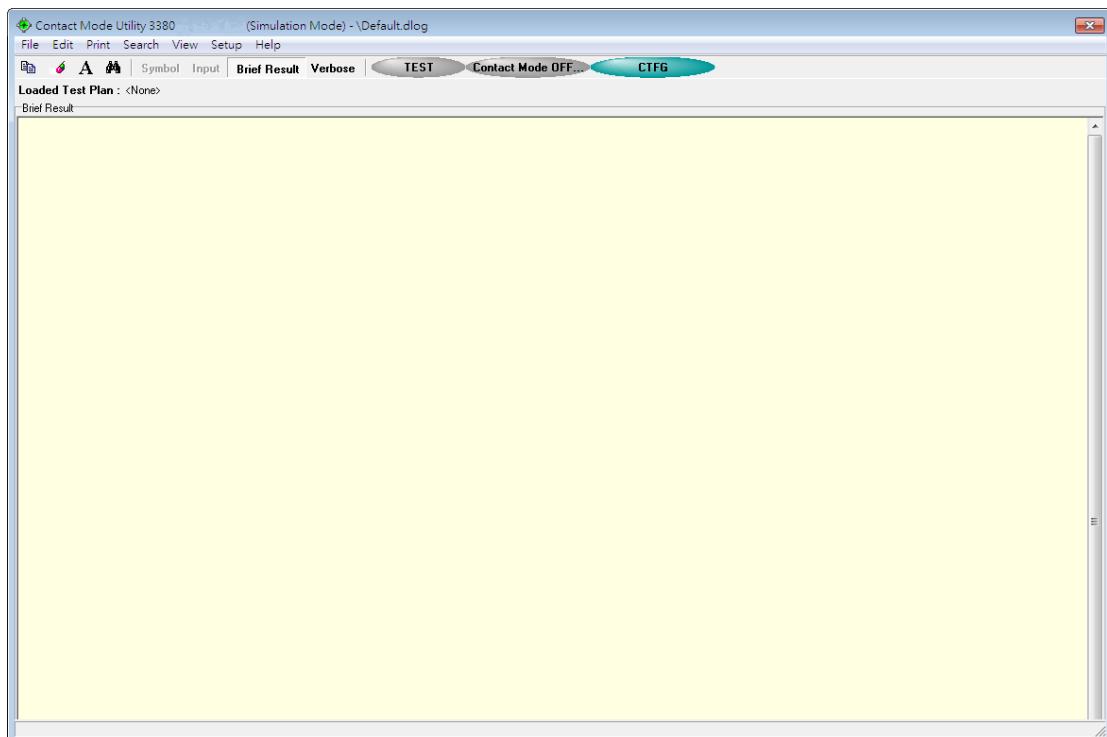
(2) License deadline will show on the pop-out window.



5. Contact Mode Utility / CTFG

5.1 Overview

In order to make sure the probe card and contact of wafer, we use contact mode utility to confirm its contact success or not. The sign shows ‘-’ equals pass, and shows ‘O’ means open, ‘S’ means short. For the users’ convenience, we provide a tool of CTFG. CTFG is Contact Test Function Generator. CTFG can easily make the function CONTACT_TEST(). Let users add the function of CONTACT_TEST() into the test program. And then use contact mode utility to do contact test.



5.2 Function List

The contact mode utility functions are summarized in the table below.

No.	Function	Overview
1	CTFG Function	CTFG means Contact Test Function Generator. CTFG can create CONTACT_TEST() easily.
2	Generator Result	Users select relative declaration file first. After selecting IO, LCD or Power pins, CTFG can make relative source code and combine them. Generator Result shows the entire source code of CONTACT_TEST().
3	Test Function	Contact Mode Utility can test if probe card contacts wafer well. This function can show the result of contact in Brief Result window.

Table 5-1 Contact Mode Utility Function List

5.3 Start and Quit Contact Mode Utility

The contact mode utility starts when you double click the Contact Test Utility icon on the system control list view window or click Contact Test Utility string from the system control tree view window. To quit the Contact Test tool, click the exit of file menu or Contact Mode Off button in the Contact Mode Window.

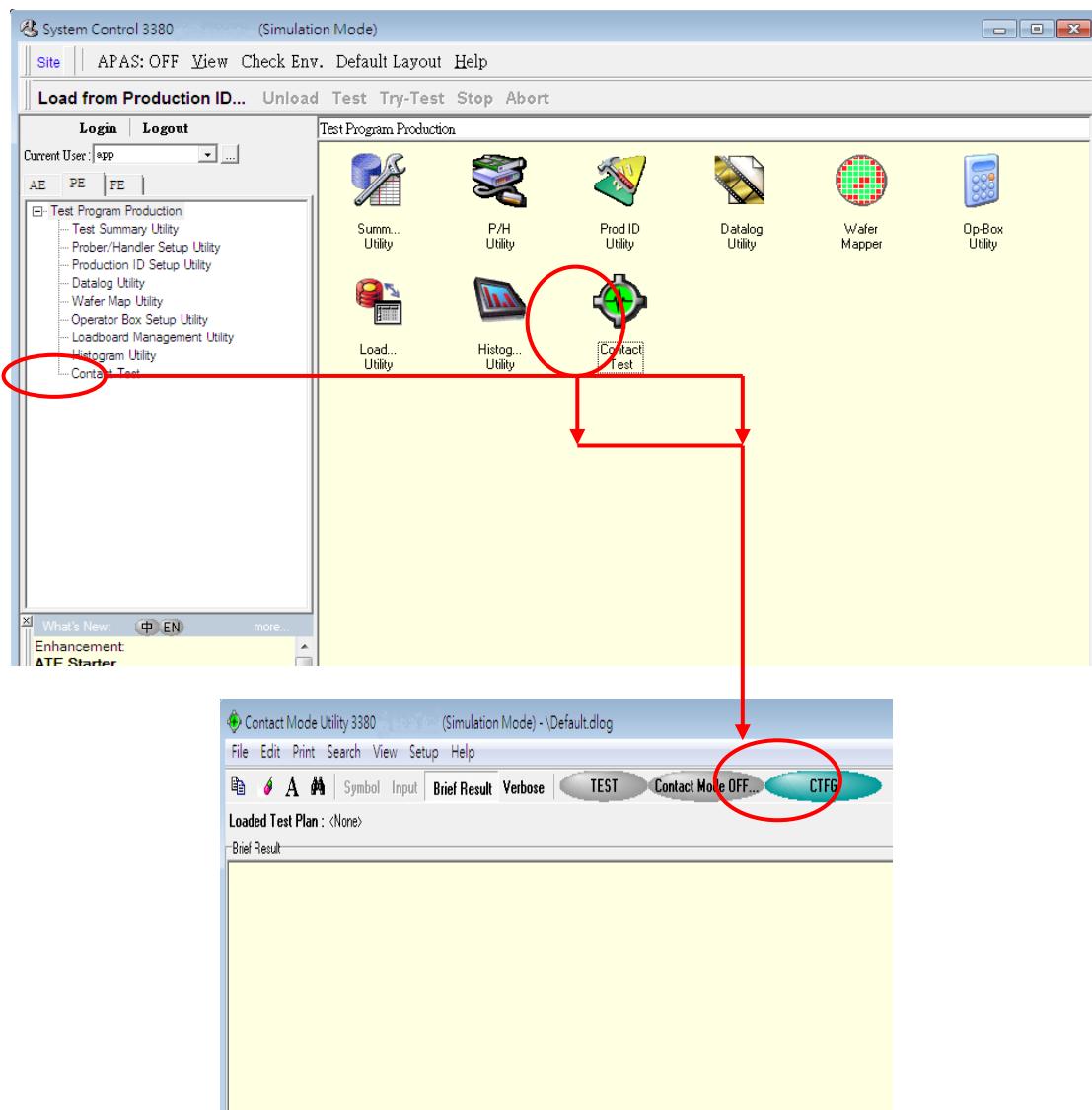
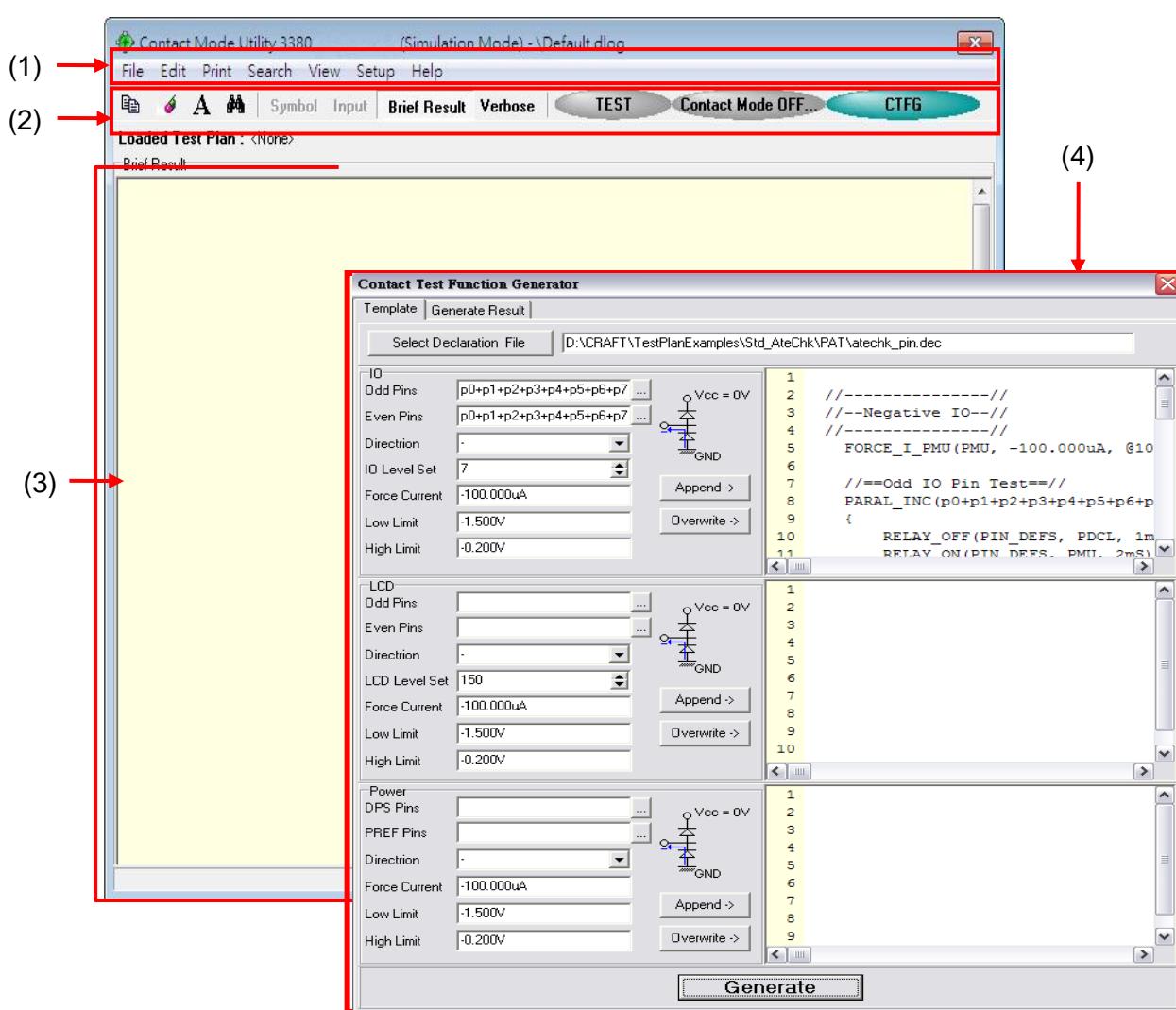


Figure 5-1 Contact Mode Window

5.4 Using the Contact Mode Utility

The contact mode utility window is composed of (1) Menu Bar, (2) Tool Bar, and (3) Brief Result Window. In this section, these windows will be defined; the (4) CTFG Tool window will also be described here.



5.4.1 Using Menu Bar

■ Menu bar structure

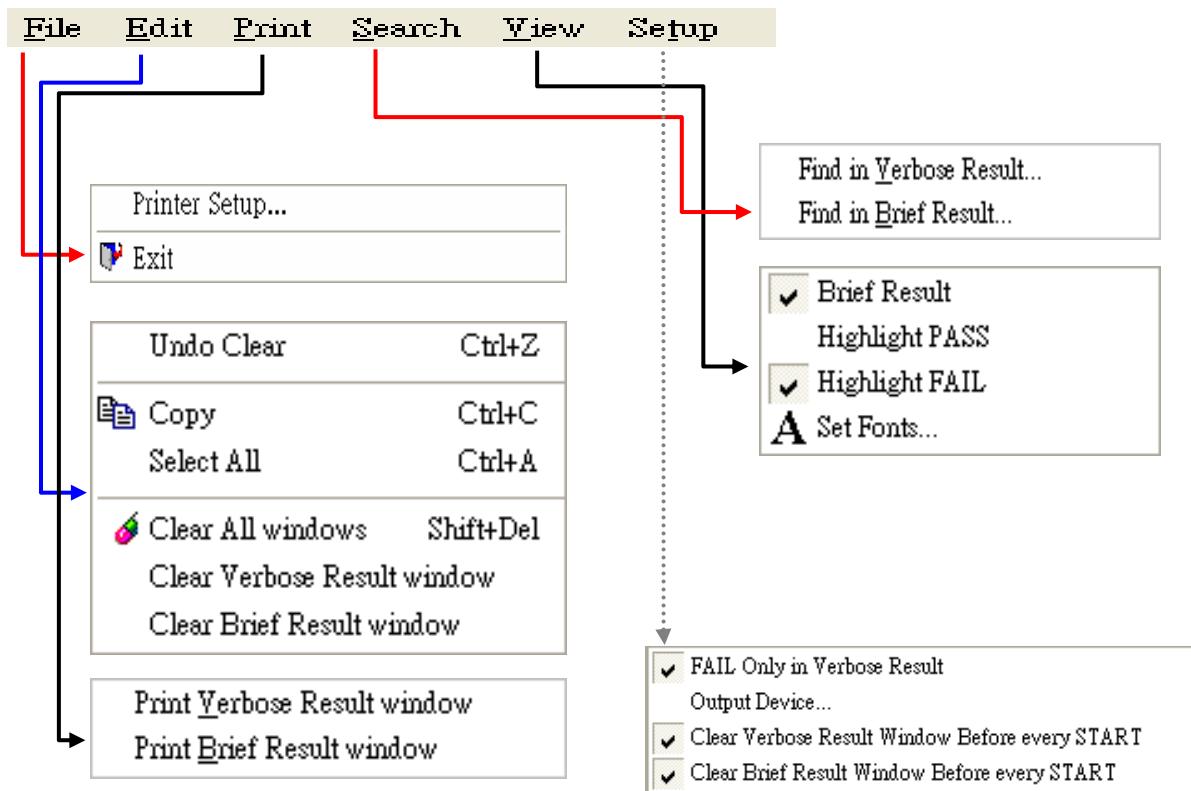


Figure 5-2 Menu Bar Structure

No.	File Manipulation Function	Description
1	File	Perform printer parameter setup to output data.
2	Edit	The Edit menu provides commands to undo, copy, save and select areas of active view windows.
3	Print	Send the active view window's content to the printer.
4	Search	Use the Search menu commands to locate pass/fail, test no, ... and any text in the active windows.
5	View	Use the View menu commands to display or hide tool buttons which are the elements of the menu bar.
6	Setup	Use the Search menu commands to setup parameter values.

Table 5-2 Menu Bar Descriptions

(1) File menu

No.	Option	Description
1	Printer Setup	Change printer options and select a printer from a list.
2	Exit	End the contact mode window process and close the window.

Table 5 -3 File Menu Functions

(2) Edit menu

No.	Option	Description
1	Undo Clear	Choose this command to undo the last performed “Clear” operation.
2	Copy	Choose Edit→Copy (or click the right key of mouse on the active window and choose copy) to place an exact copy of the selected text on the clipboard and leave the original untouched. Copy to replace the current clipboard contents with the selected items.
3	Select All	Edit→Select all (or click the right key of mouse on the active view window and choose Select All). Select every text in the active window.
4	Clear All Windows	Clear all the view windows.
5	Clear Verbose Result Window	Clear the verbose result view window’s every text.
6	Clear Brief Result Window	Clear the brief result view window’s every text.

Table 5-4 Edit Menu Functions

(3) Print menu

No.	Option	Description
1	Print Verbose Result Window	Execute a process for outputting every text in the Verbose Result view window to the printer.
2	Print Brief Result Window	Executes a process for outputting every text in the Brief Result view window to the printer.

Table 5-5 Print Menu Functions

(4) Search menu

No.	Option	Description
1	Find in Verbose Result	Choose Search→Find in Verbose Result (or click the right key of mouse on the verbose result view window and choose Find...) to list occurrences of a specified string.
2	Find in Brief Result	Choose Search→Find in Brief Result (or click the right key of mouse on the brief result view window and choose Find...) to list occurrences of a specified string.

Table 5-6 Search Menu Functions

(5) View menu

No.	Option	Description
1	Brief Result	Display or hide the brief result view window.
2	Highlight PASS	Display or hide the background color (Green) of PASS result in brief result view window.
3	Highlight FAIL	Display or hide the background color (Red) of FAIL result in brief result view window.
4	Set Fonts	Change the font style, size, and character set settings for any active view window with this command.

Table 5-7 View Menu Functions

(6) Setup menu

No.	Option	Description
1	FAIL Only in Verbose Result	Display FAIL only in verbose result view window.
2	Output Device...	Choose the output device.
3	Clear Verbose Result Window Before every START	Clear the verbose result view window's every text before TEST command start.
4	Clear Brief Result Window Before every START	Clear the brief result view window's every text before TEST command start.

Table 5-8 Setup Menu Functions

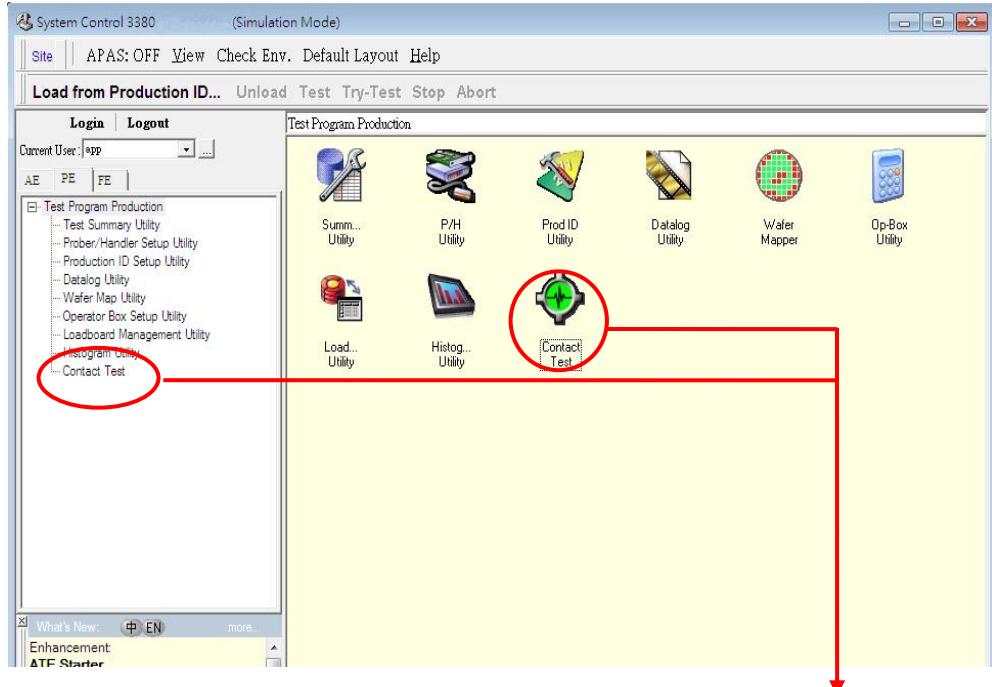
5.5 CTFG Tool Execution

5.5.1 CTFG Procedure

The manual CTFG tool execution procedures are described below.

(1) Display the contact mode utility window.

1. With the contact mode utility item in the system control window, display the Contact Mode Window.



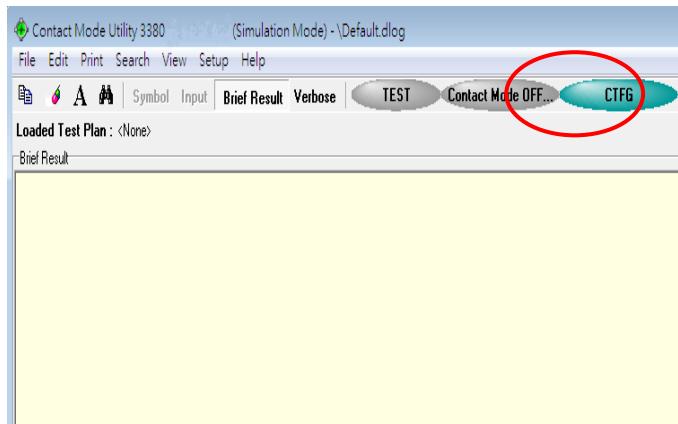
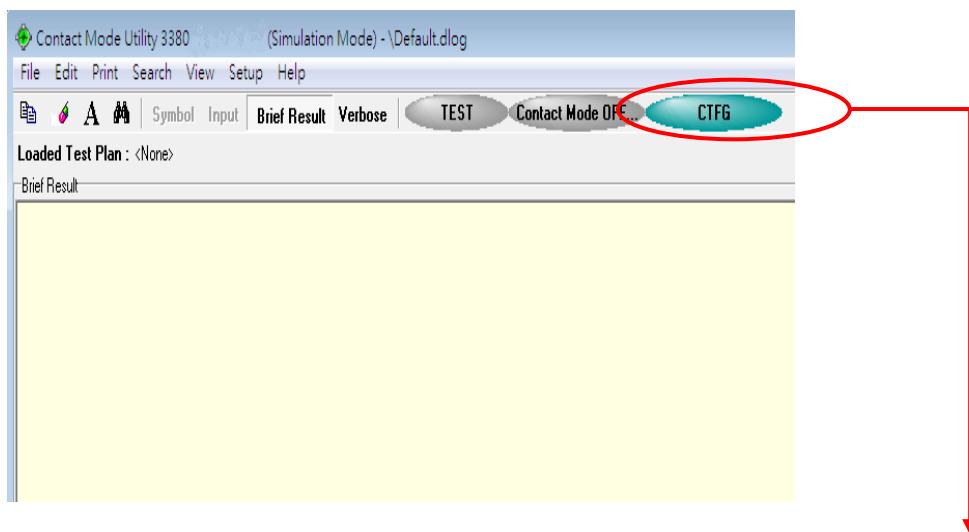


Figure 5-3 Contact Mode Window

- (2) Display the CTFG tool window.
1. With the CTFG Tool item in the Contact Mode Utility window, display the CTFG Tool window.
 2. Make necessary data entries from the CTFG Tool window (see Section 5.4, *Using the Contact Mode Window*).
 3. Click the **Generate** button on the CTFG Tool window to generate the relative source code of test program in the Generate Result Window.



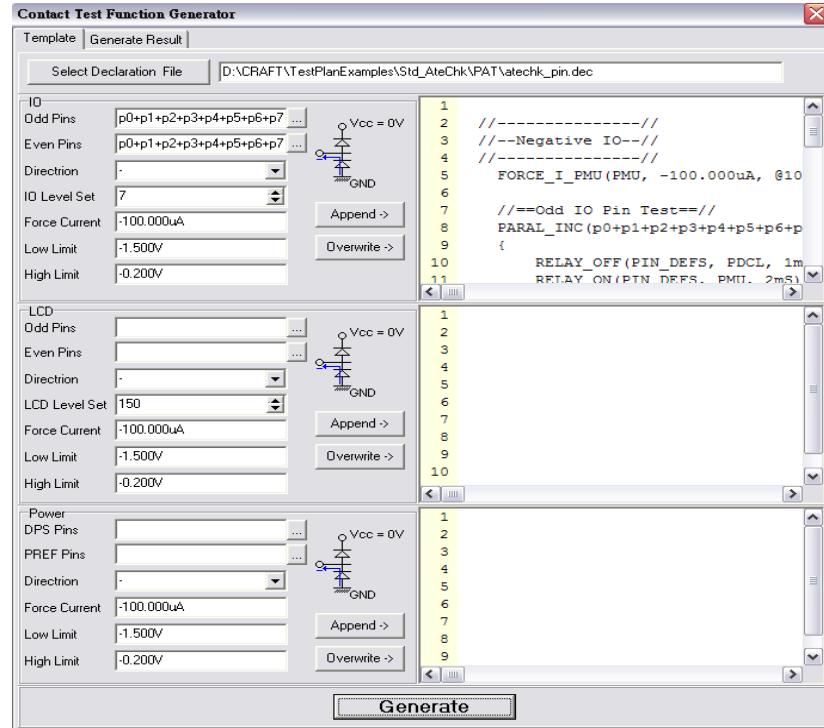
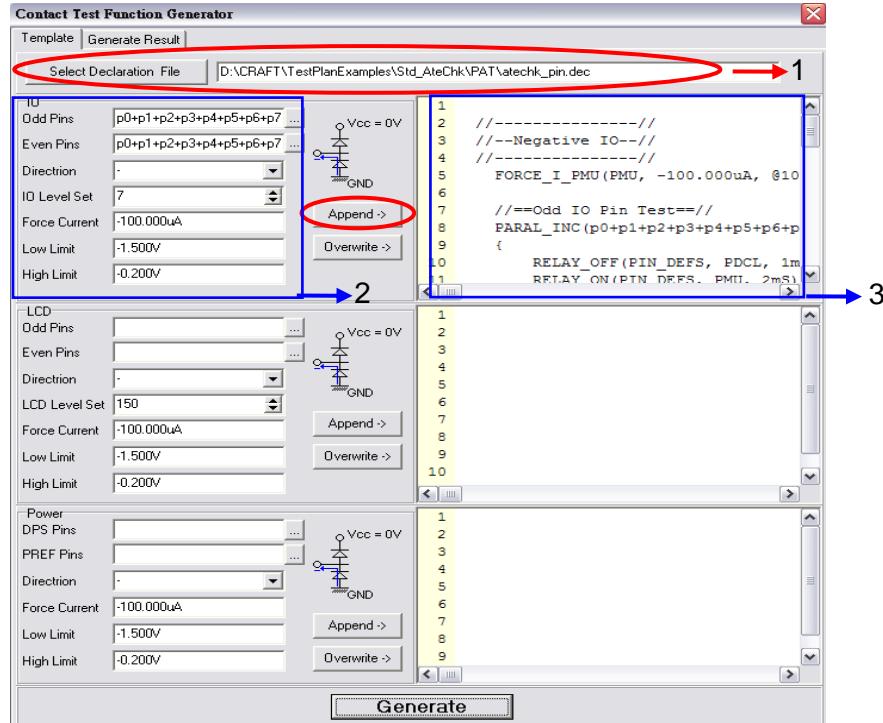


Figure 5-4 CTFG Tool Window

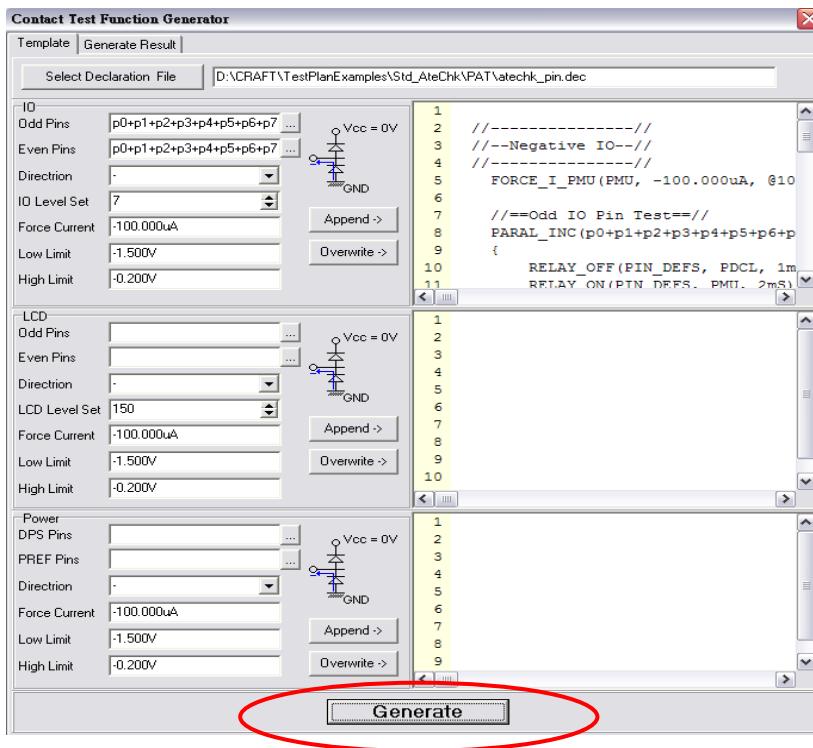
(3) Setup parameter of CTFG.

1. Click the **Select Declaration File** button in the CTFG tool window to point a declaration file.
2. According to IO pins, LCD pins and Power pins, users need to set some parameters. In IO pins, users need to set parameters, such as Odd Pins, Even Pins, Direction, IO Level Set, Force Current, Low Limit and High Limit.
In LCD pins, users need to set parameters, such as Odd Pins, Even Pins, Direction, LCD Level Set, Force Current, Low Limit and High Limit.
In Power pins, users need to set parameters, such as DPS Pins, PREF Pins, Direction, Force Current, Low Limit and High Limit.
3. Click **Append** button to generate the related source codes of IO pins, LCD pins and Power pins.

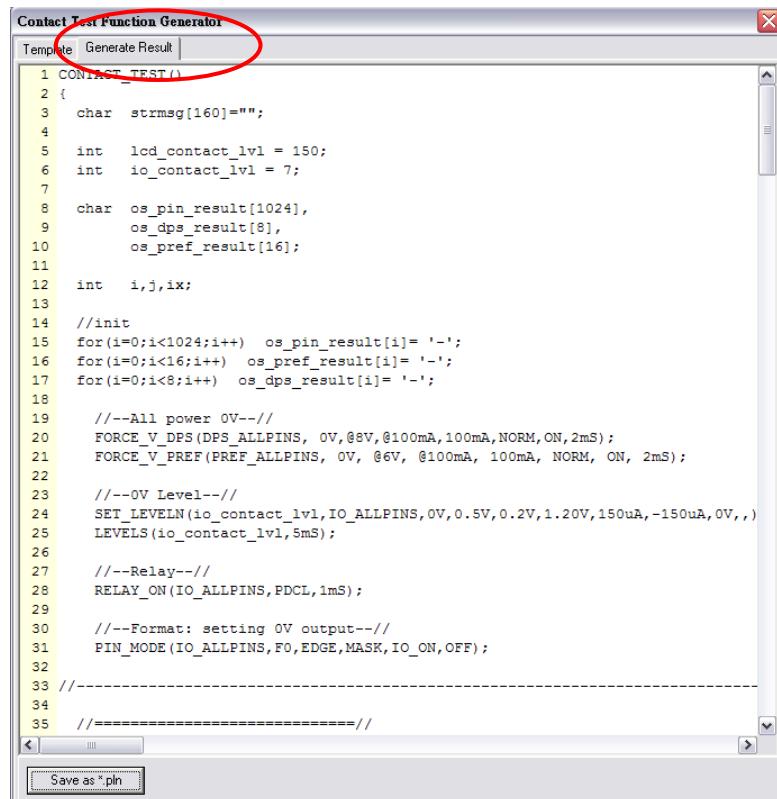


(4) Generate source code of CONTACT_TEST function.

1. Click **Generate** button on the CTFG tool window to generate the relative source code of test program in the Generate Result Window.



1



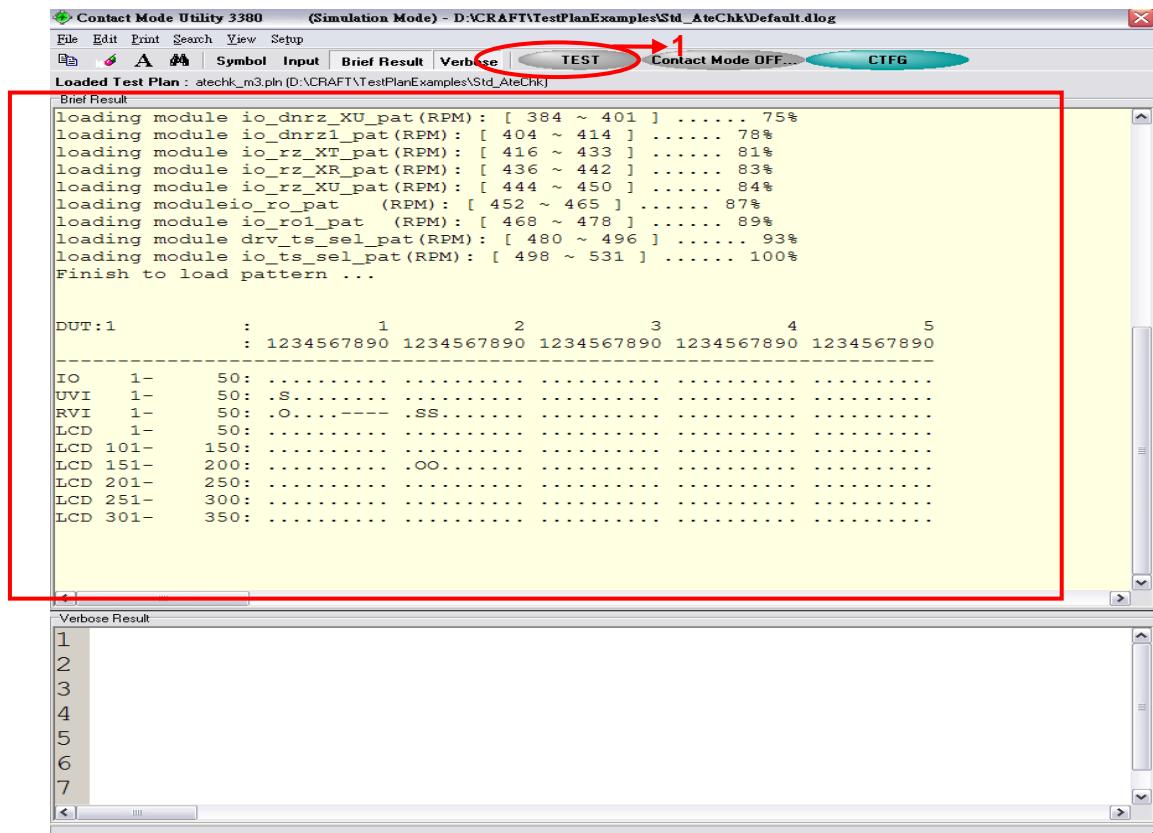
The screenshot shows a software window titled "Contact Test Function Generator". At the top, there are two tabs: "Template" (which is circled in red) and "Generate Result". The main area contains a large block of C-like code with line numbers from 1 to 35. The code includes various initialization and control statements, such as setting power levels, configuring pins, and managing relay outputs. A "Save as *.pln" button is located at the bottom of the code editor.

```
1 CONTACT_TEST()
2 {
3     char strmsg[160]="";
4
5     int lcd_contact_lvl = 150;
6     int io_contact_lvl = 7;
7
8     char os_pin_result[1024],
9         os_dps_result[8],
10    os_pref_result[16];
11
12    int i,j,ix;
13
14    //init
15    for(i=0;i<1024;i++) os_pin_result[i]= '-';
16    for(i=0;i<16;i++) os_pref_result[i]= '-';
17    for(i=0;i<8;i++) os_dps_result[i]= '-';
18
19    //---All power OV--//
20    FORCE_V_DPS(DPS_ALLPINS, OV, @8V, @100mA, 100mA, NORM, ON, 2mS);
21    FORCE_V_PREF(PREF_ALLPINS, OV, @6V, @100mA, 100mA, NORM, ON, 2mS);
22
23    //---OV Level--//
24    SET_LEVELN(io_contact_lvl,IO_ALLPINS,OV,0.5V,0.2V,1.20V,150uA,-150uA,OV,,)
25    LEVELS(io_contact_lvl,5mS);
26
27    //---Relay--//
28    RELAY_ON(IO_ALLPINS,PDCL,1mS);
29
30    //---Format: setting OV output--//
31    PIN_MODE(IO_ALLPINS,F0,EDGE,MASK,IO_ON,OFF);
32
33 //-----
34
35 //=====
```

Figure 5-5 Generate Result Window

5.6 Contact Mode Window Output

After generating CONTACT_TEST function, users add this function into their test program. And then click the “TEST” button on the Contact Mode Utility Window to test open and short for contact test. Contact Mode Utility will display the result of contact test on the Brief Result Window. It can show appreciably which pins are open or short.



6. Test Plan Program Debugging

6.1 Plan Debugger Overview

The plan debugger is a tool which furnishes the following functions to the test plan program to support program debugging and test data acquisition.

No.	Function	Description
1	Start	Start of a test plan program execution.
2	Stop	Stop of a running test plan program.
3	Abort	Pause of a running test plan program (the program can continue execution).
4	Loop	Continue to execute the current line statement.
5	Step	Execution of the plan program line by line.
6	Re-execute	Returning one line from the breakpoint, and execution of the 1 step.
7	Category display	Display the current category of each site.
8	Item display	Display the last test item of each site.

9	Source list display	Displays the test plan program source list and permits break, datalog, override and setup 1-step execution relative to the source list.
10	Break On	Sets a point at a running test plan program that is to be temporarily halted.
11	Break Off	Cancel the break point setting.
12	Datalog On	Set a point at a running test plan program that is to show the datalog.
13	Datalog Off	Cancel the datalog point setting.
14	Override On	Set a point at a running test plan program that the statement test result is to be ignored.
15	Override Off	Cancel the override point setting.
16	Break On Event	There are five conditions to be set as break, All, AC Fail, DC Fail, AC Judge and DC Judge.
17	Extension window	In this section contains Global, Pin List, Pin Group, Time Set, Pattern Debug and SPEC Define Setting.

Table 6-1 Plan Debugger Function List

6.2 Start and Quit Plan Debugger

The plan debugger is to be started from the system control window. The procedures for starting and quitting the plan debugger are described below.

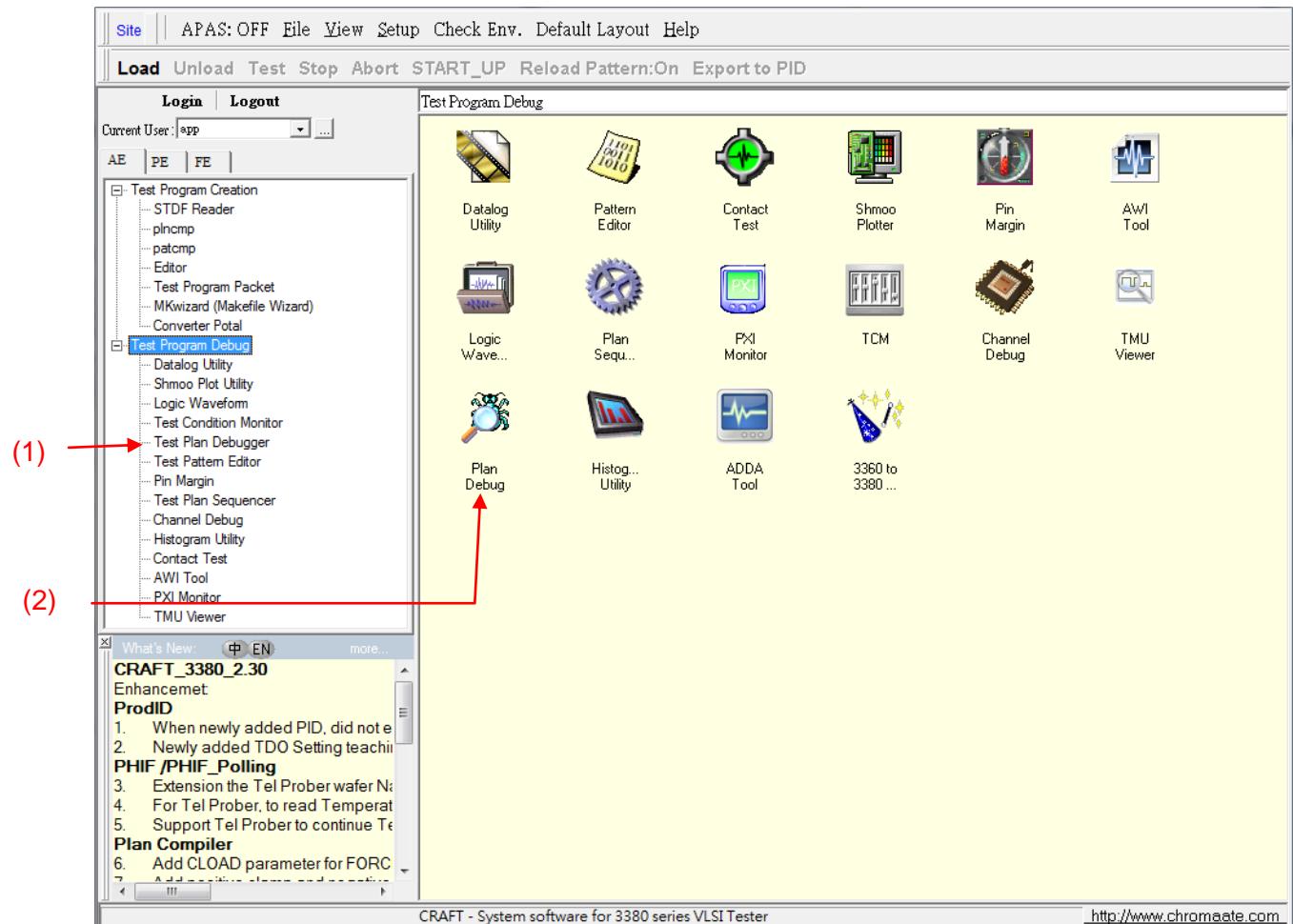
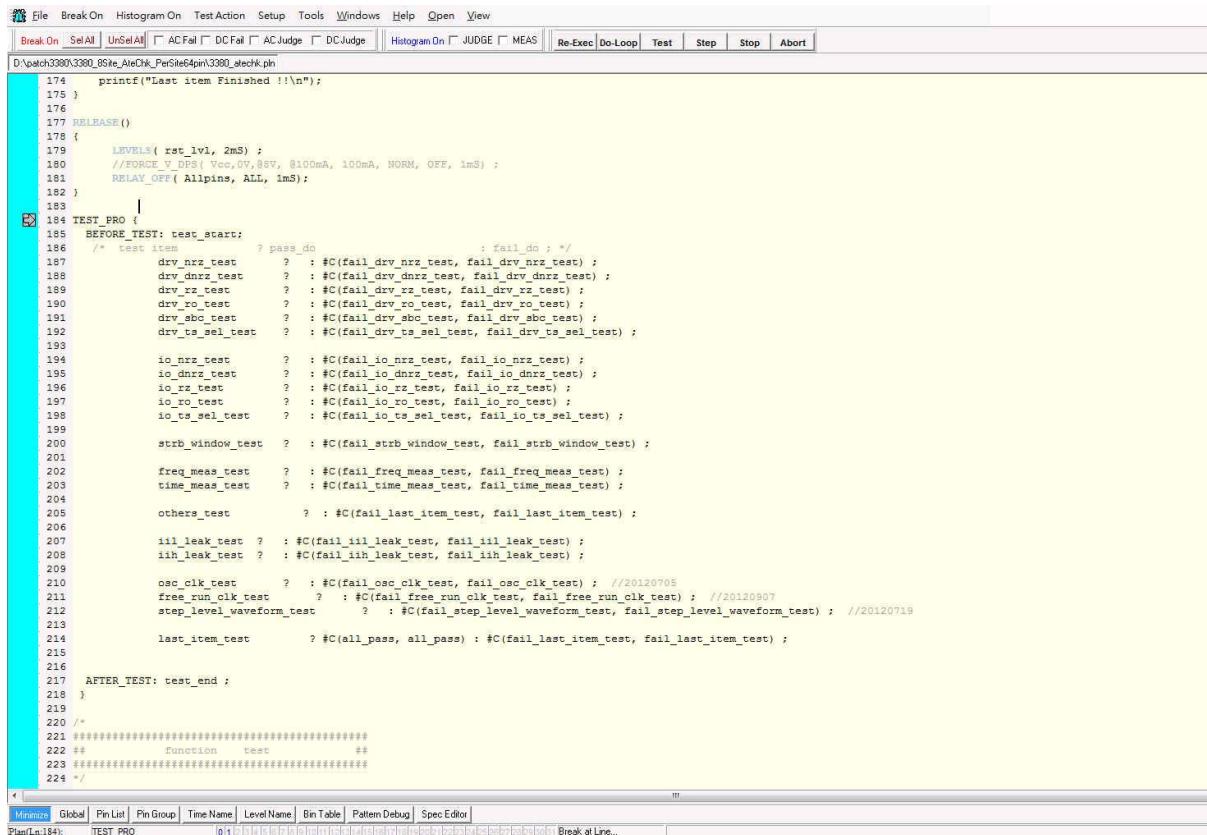


Figure 6-1 System Control Window

(1) Start the plan debugger

The plan debugger window is opened when you click the debugger item (1) or the debugger icon (2) in the system control window (Figure 6-1).



```

File Break On Histogram On TestAction Setup Tools Windows Help Open View
Break On Sel All UnSel All AC Fail DC Fail AC Judge DC Judge Histogram On JUDGE MEAS Re-Exec Do-Loop Test Step Stop Abort
D:\patch3380\3380_85Me_AleChk_PerSite64pin3380_stechk.pln
174     printf("Last item Finished !!\n");
175 }
176
177 RELEASE();
178 {
179     LEVELS( rst_lvl, 2mS );
180     //FORCE_V_DBS( Vcc, OV, 88V, 810mA, 100mA, NORM, OFF, 1mS );
181     RELAY_OFF( Allpins, ALL, 1mS );
182 }
183
184 TEST_PRO {
185     BEFORE_TEST: test_start;
186     /* test item ? pass do : fail do ; */
187     drv_nrz_test ? : #C(fail_drv_nrz_test, fail_drv_nrz_test);
188     drv_dnrz_test ? : #C(fail_drv_dnrz_test, fail_drv_dnrz_test);
189     drv_rz_test ? : #C(fail_drv_rz_test, fail_drv_rz_test);
190     drv_ro_test ? : #C(fail_drv_ro_test, fail_drv_ro_test);
191     drv_sbc_test ? : #C(fail_drv_sbc_test, fail_drv_sbc_test);
192     drv_ts_sel_test ? : #C(fail_drv_ts_sel_test, fail_drv_ts_sel_test);
193
194     io_nrz_test ? : #C(fail_io_nrz_test, fail_io_nrz_test);
195     io_dnrz_test ? : #C(fail_io_dnrz_test, fail_io_dnrz_test);
196     io_rz_test ? : #C(fail_io_rz_test, fail_io_rz_test);
197     io_ro_test ? : #C(fail_io_ro_test, fail_io_ro_test);
198     io_ts_sel_test ? : #C(fail_io_ts_sel_test, fail_io_ts_sel_test);
199
200     strb_window_test ? : #C(fail_strb_window_test, fail_strb_window_test);
201
202     freq_meas_test ? : #C(fail_freq_meas_test, fail_freq_meas_test);
203     time_meas_test ? : #C(fail_time_meas_test, fail_time_meas_test);
204
205     others_test ? : #C(fail_last_item_test, fail_last_item_test);
206
207     iil_leak_test ? : #C(fail_iil_leak_test, fail_iil_leak_test);
208     iih_leak_test ? : #C(fail_iih_leak_test, fail_iih_leak_test);
209
210     osc_clk_test ? : #C(fail_osc_clk_test, fail_osc_clk_test); //20120705
211     free_run_clk_test ? : #C(fail_free_run_clk_test, fail_free_run_clk_test); //20120907
212     step_level_waveform_test ? : #C(fail_step_level_waveform_test, fail_step_level_waveform_test); //20120719
213
214     last_item_test ? : #C(all_pass, all_pass) : #C(fail_last_item_test, fail_last_item_test);
215
216
217 AFTER_TEST: test_end ;
218 }
219
220 /*
221 #####
222 ##      function test ##
223 #####
224 */

```

Figure 6-2 Plan Debugger Window

- (2) Quit the plan debugger
Click the Quit submenu of File in the plan debugger window.



Figure 6-3 Plan Debugger Main Menu

6.3 Execution and Halt of Test Plan Program

This section describes the procedures for executing and halting the test plan program from the plan debugger.

**** Note:** Make a test plan program selection in advance from the plan selection window.
While the plan debugger is running, do not change the test plan program.

- (1) Execute the test plan program from its beginning.
Click the **Test** button in the plan debugger window.



Figure 6-4 Plan Debugger Window

- (2) Stop the current executed test plan program.



Figure 6-5 Plan Debugger Window

Click the **Stop** button in the plan debugger window.
When you stop the running test plan program, it goes initial state.

- (3) Abort the current executed test plan program.



Figure 6-6 Plan Debugger Window

Click the **Abort** button in the plan debugger window.
This action will terminate the running test plan and release from the system.

6.4 Setting Break Points

This section describes the procedure of setting break points at running plan program.

- (1) Set Break Event



Figure 6-7 Plan Debugger Window Break on Setting

1. AC Fail: When the current running statement is AC type and its judgment result is Fail, it breaks if you tick this item off.
2. DC Fail: When the current running statement is DC type and its judgment result is Fail, it breaks if you tick this item off.
3. AC Judge: When the current running statement is AC Judge type, it breaks if you tick this item off.
4. DC Judge: When the current running statement is DC Judge type, it breaks if you tick this item off.
5. Sel ALL: Click Sel All, AC Fail/DC Fail/AC Judge/DC Judge will be checked automatic.
6. UnSel ALL: Click UnSel All, AC Fail/DC Fail/AC Judge/DC Judge will not be checked automatic.

(2) Set Break Line

The screenshot shows the Plan Debugger window with the source code for a test function. A context menu is open at line 295, specifically at the character position before the opening brace '{'. The menu items visible are:

- SetBreak
- SetLogFile
- SetOverride
- SetHistogram
- SetMask
- SetTrigger
- StatementLoopCount
- LogicWaveForm
- TQM

The 'SetBreak' option is highlighted with a blue selection bar.

```

258     //pref_idd_static_test    ? : #C(fail_pref_idd_static_test, fail_pref_idd_static_test) ;
259     //pref_idd_dynamic_test  ? : #C(fail_pref_idd_dynamic_test, fail_pref_idd_dynamic_test) ;
260
261     //uvi_idd_static_test    ? : #C(fail_uvi_idd_static_test, fail_uvi_idd_static_test) ;
262     //uvi_idd_dynamic_test   ? : #C(fail_uvi_idd_dynamic_test, fail_uvi_idd_dynamic_test) ;
263
264     last_item_test          ? #C(all_pass, all_pass) : #C(fail_last_item_test, fail_last_item_test) ;
265
266
267     AFTER_TEST: test_end ;
268 }
269
270 /*
271 #####function test#####
272
273 #####
274 */
275
276 drv_nrz_test()
277 {
278     double time_value;
279
280     PIN_MODE(Allpins, NRZ, EDGE, ENABLE, IO_NRZ, OFF);
281
282     //SET_LEVELIN(func_lv1, Allpins, 0V, 5V, 2V, 3V, , , , , );
283     LEVELS(func_lv1, 3mS);
284
285     RATTEN(TS1, 100nS);
286     MARKER(TS1, Allpins, 20ns, 70ns, OnS, OnS, OnS, 40nS, 80nS);
287     DATALOC View TestNoWithItem
288     //JUDGE
289     Go to Line Ctrl+G
290     Go to Item Ctrl+I
291     Go to TestNo Ctrl+T
292     SET_JU JU
293     SET_JU Find Ctrl+F
294     //if(I)
295     TIME SOCKET
296     SetBreak
297     SetLogFile
298     SetOverride
299     SetHistogram
300     SetMask
301     SetTrigger
302     printf("time_v
303     time_v
304     printf("time_value= %f \n", time_value);
305     JUDGE_ TQM
306     DRV_NRZ_UT_SP;

```



```

258     //pref_idd_static_test    ? : #C(fail_pref_idd_static_test, fail_pref_idd_static_test) ;
259     //pref_idd_dynamic_test  ? : #C(fail_pref_idd_dynamic_test, fail_pref_idd_dynamic_test) ;
260
261     //uvi_idd_static_test    ? : #C(fail_uvi_idd_static_test, fail_uvi_idd_static_test) ;
262     //uvi_idd_dynamic_test   ? : #C(fail_uvi_idd_dynamic_test, fail_uvi_idd_dynamic_test) ;
263
264     last_item_test          ? #C(all_pass, all_pass) : #C(fail_last_item_test, fail_last_item_test) ;
265
266
267     AFTER_TEST: test_end ;
268 }
269
270 /*
271 #####function test#####
272
273 #####
274 */
275
276 drv_nrz_test()
277 {
278     double time_value;
279
280     PIN_MODE(Allpins, NRZ, EDGE, ENABLE, IO_NRZ, OFF);
281
282     //SET_LEVELIN(func_lv1, Allpins, 0V, 5V, 2V, 3V, , , , , );
283     LEVELS(func_lv1, 3mS);
284
285     RATTEN(TS1, 100nS);
286     MARKER(TS1, Allpins, 30nS, 70nS, OnS, OnS, OnS, 40nS, 80nS);
287     DATALOC MSG="drv_nrz_UT_test";
288     //JUDGE_PAT(drv_nrz_ut_st, drv_nrz_ut_sp); //should pass
289
290     SET_JUDGE_MODE(DBL);
291     JUDGE_PAT(drv_nrz_ut_st, drv_nrz_ut_sp); //should pass
292     SET_JUDGE_MODE(NORM);
293
294     //if(IsRunSpm_16M) JUDGE_PAT(spm_drv_nrz_ut_pat, __spm_drv_nrz_ut_pat); //should pass
295
296     TIMER_ON();
297     SOCKET_INC //FRE_ON
298     {
299         JUDGE_PAT(drv_nrz_ut_st, drv_nrz_ut_sp); //should pass
300     }
301     time_value = TIMER_OFF();
302     printf("SOCKET_INC loop time_value= %f \n", time_value);
303
304     JUDGE_PAT(drv_nrz_ut_st, drv_nrz_ut_sp);

```

Figure 6-8 Plan Debugger Window Break on Setting

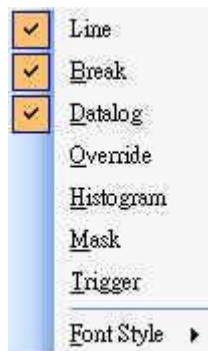
1. Click the right key of mouse on the source window and then it displays the submenu. Then, select “Set Break”, it will set the cursor line to be breakable and

- break symbol  displayed.
2. Click the left key of mouse on the left blue area directly, it will set break point too.
 3. Set the point again will turn off the break point.

6.5 Set Datalog Points

This section describes the procedure of setting datalog points at running plan program.

- (1) Click the Menu Bar “View” Item, and Checked the “Datalog” Item.
- (2) Click the right key of mouse on the source window and then it displays the submenu. Then, select “Set Datalog”, it will set the cursor line to be datalogable and datalog symbol  displayed.
- (3) Click the left key of mouse on the left blue area directly, it will set datalog point too.
- (4) Set the point again will turn off the datalog point.



```

279 PIN_MODE(Allpins, NRZ, EDGE, ENABLE, IO_NRZ, OFF);
280 //SET_LEVELN(func_lv1, Allpins, OV, SV, 2V, 3V, , , );
281 LEVELS(func_lv1, 3mS);
282
283 RATER(TS1, 100nS);
284 MARKERN(TS1, Allpins, 30nS,70nS, OnS, OnS, OnS, 40nS, 80nS);
285 DATALOC MSG="drv_nrz_UT test";
286 //JUDGE_PAT(drv_nrz_ut_st, drv_nrz_ut_sp); //should pass
287
288 SET_JUDGE_MODE(DBL);
289     JUDGE_PAT(drv_nrz_ut_st, drv_nrz_ut_sp); //should pass
290 SET_JUDGE_MODE(NORM);
291
292 //if(IsRunSpm_16H) JUDGE_PAT(spm_drv_nrz_ut_pat, __spm_drv_nrz_ut_pat); //should pass
293
294 TIMER_ON();
295 SOCKET_INC //FRZ_ON
296 {
297     JUDGE_PAT(drv_nrz_ut_st, drv_nrz_ut_sp); //should pass
298 }
299 time_value = TIMER_OFF();
300 printf("SOCKET_INC loop time_value= %f \n", time_value);
301
302 JUDGE_PAT(drv_nrz_ut_st, drv_nrz_ut_sp);
303
304 SOCKET_INC (FRZ_OFF)
305 {
306     JUDGE_PAT(, View TestNo WithItem , rz_ut_sp); //should pass
307 }
308
309 JUDGE_PAT(, Go to Line CtrlG , rz_ut_sp);
310 JUDGE_PAT(drv, Go to Item CtrlI , rz_ut_sp);
311 JUDGE_PAT(, Go to TestNo CtrlT , rz_ut_sp);
312
313 SOCKET_INC (FI
314 {
315     JUDGE_PAT(, Find CtrlF , rz_ut_sp); //should pass
316     JUDGE_PAT(, Find All in File CtrlS , rz_ut_sp);
317     JUDGE_PAT(, Find History , rz_ut_sp);
318
319 MARKERN(TS1, , Set Break , OnS, OnS, 20nS, 80nS);
320 JUDGE_PAT(drv, Set DataLog , rz_ut_sp); //should fail
321
322 SOCKET_INC
323 {
324     DEBUG_BREAK;
325     if(PLAN_RI Statement Loop Count
326     else LogWaveForm
327 }

```

Figure 6-9 Plan Debugger Window

6.6 Set Override Points

This section describes the procedure of setting override points at running plan program.

- (1) Click the Menu Bar “View” Item, and Checked the “Override” Item.
- (2) Click the right key of mouse on the source window and then it displays the submenu. Then, select “Set Override”, it will set the cursor line to be overridable and override

-  displayed.
- (3) Click the left button of mouse on the right blue area directly, it will set override point too.
 - (4) Set the point again will turn off the override point.



```

279 PIN_MODE(Allpins, NRZ, EDGE, ENABLE, IO_NRZ, OFF);
280
281 //SET_LEVELN(func_lvl, Allpins, OV, EV, 2V, 3V, , , , );
282 LEVELS(func_lvl, 3mS);
283
284 RATED(TS1, 100nS);
285 MARKERN(TS1, Allpins, 3OnS,7OnS, OnS, OnS, OnS, 40nS, 80nS);
286 DATALOG_MSG="drv_nrz_UT_test";
287 //JUDGE_PAT(drv_nrz_ut_st, drv_nrz_ut_sp); //should pass
288
289 SET_JUDGE_MODE(DBL);
290 JUDGE_PAT(drv_nrz_ut_st, drv_nrz_ut_sp); //should pass
291 SET_JUDGE_MODE(NORM);
292
293 //if(IsRunSpm_16N) JUDGE_PAT(spm_drv_nrz_ut_pat, __spm_drv_nrz_ut_pat); //should pass
294
295 TIMER_ON();
296 SOCKET_INC //FRZ_ON
297 {
298     JUDGE_PAT(drv_nrz_ut_st, drv_nrz_ut_sp); //should pass
299 }
300 time_value = TIMER_OFF();
301 printf("SOCKET_INC loop time_value= %f \n", time_value);
302
303
304
305 JUDGE_PAT(drv_nrz_ut_st, drv_nrz_ut_sp);
306
307 SOCKET_INC (FRZ_OFF)
308 {
309     JUDGE View TestNo WithItem trv_nrz_ut_sp); //should pass
310 }
311 Go to Line Ctrl+G
312 JUDGE_PAT Go to Item Ctrl+I trv_nrz_ut_sp);
313 Go to TestNo Ctrl+T
314 SOCKET_IN
315 (
316     JUDGE Find Ctrl+F trv_nrz_ut_sp); //should pass
317     Find All in File Ctrl+S
318     Find History
319 MARKERN(TS1, Set Break
320 JUDGE_PAT Set DataLog
321 Set Override
322 SOCKET_IN Set Histogram
323 Set Mask
324 DEBUG Set Trigger
325 if(PL SegmentLoopCount !=PASS) PLAN_RESULT_MS[SOCKET] = FAIL ;
326 else LogicWaveForm PLAN_RESULT_MS[SOCKET] = PASS ;
327 }

```

Figure 6-10 Plan Debugger Window

6.7 Setting Histogram Points

This section describes the procedure of setting histogram points at running plan program.

(1) Set Histogram Event



Figure 6-11 Plan Debugger Window Histogram on Setting

1. **JUDGE:** When the current running statement is JUDGE type, it logs data to be Histogram data if you tick this item off.
2. **MEAS:** When the current running statement is MEAS type, it logs data to be histogram data if you tick this item off.

(2) Set Histogram Line

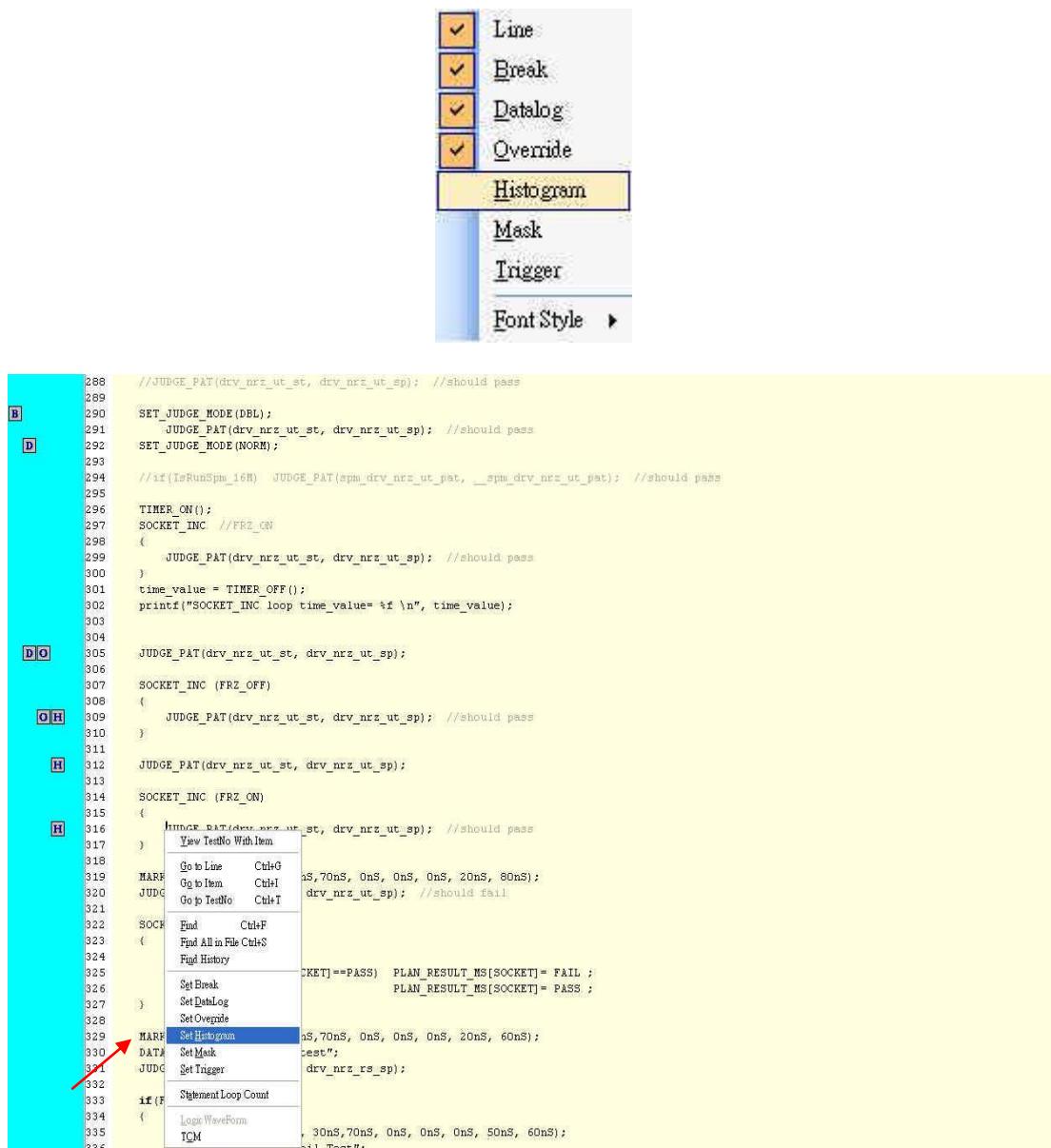


Figure 6-12 Plan Debugger Window Break on Setting

1. Click the Menu Bar “View” Item, and Checked the “Histogram” Item.
2. Click the right key of mouse on the source window and then it displays the submenu. Then, select “Set Histogram”, it will set the cursor line to be logable and histogram symbol displayed.
3. Click the left button of mouse on the left blue area directly, it will set histogram point too.
4. Set the point again will turn off the histogram point.

6.8 Setting Mask Points

This section describes the procedure of setting Mask points at running plan program.

- (1) Click the Menu Bar “View” Item, and Checked the “Mask” Item.
- (2) Click the right key of mouse on the source window and then it displays the submenu. Then, select “Set Override”, it will set the cursor line to be overridable and override symbol  displayed.
- (3) Click the left button of mouse on the right blue area directly, it will set override point too.
- (4) Set the point again will turn off the override point.

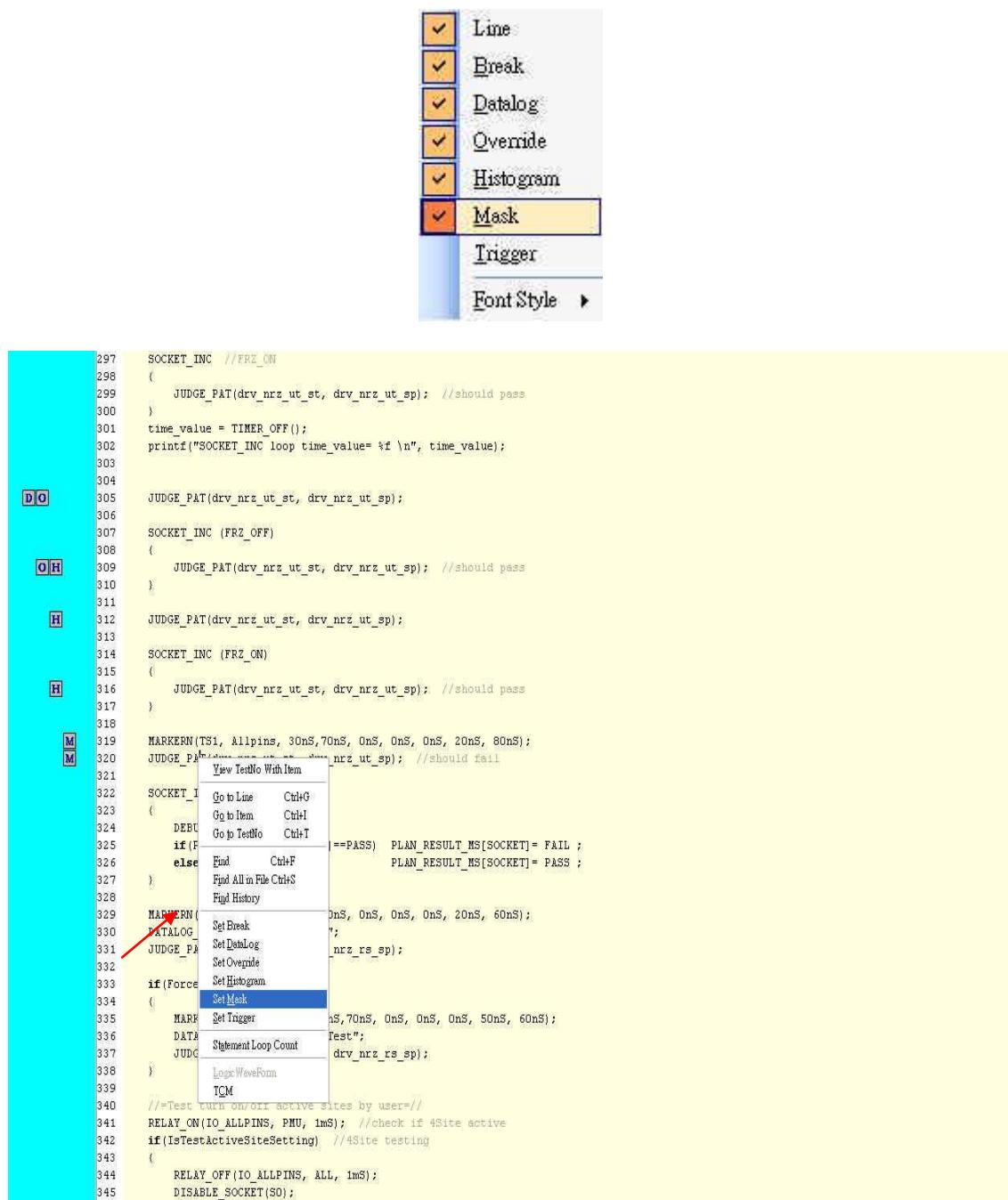


Figure 6-13 Plan Debugger Window

6.9 Setting Trigger Points

6.10 Display Extra Window

This section describes how to use the extra window. The extra window contains Global Setting, Pin List, Pin Group, Time Name, Bin Table, Pattern Debug setting, Spec Editor and Current Active Sites (Testplan over 32 sites only).

(1) Default setting of the extra window is in minimum state.

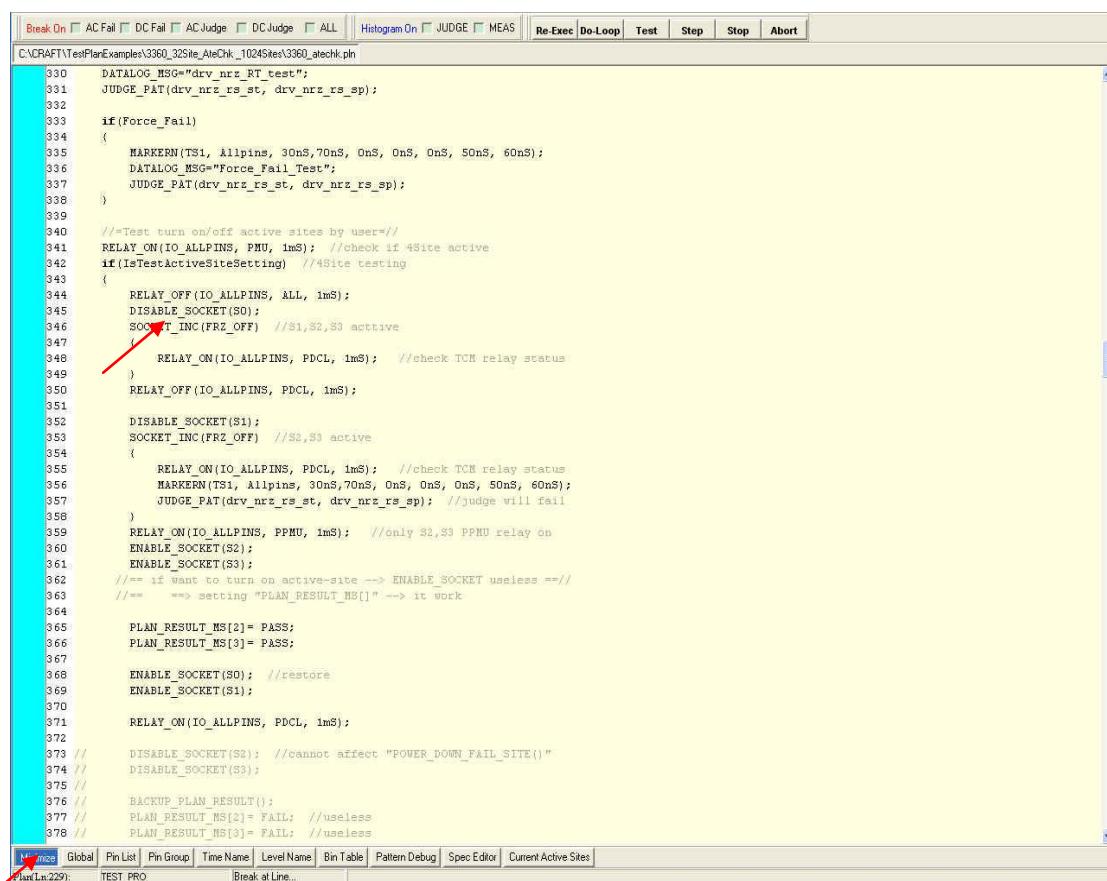


Figure 6-14 Default State of Extra Window

- (2) Click any button on the panel list will show its settings in the extra window.

Nr.	Name	Type	Value
1	sw1	int	0
2	Force_Fail	int	0
3	IsRunSpm_16M	int	0
4	IsTestActiveSiteSetting	int	0

Figure 6-15 Show Extra Window

6.11 Global Variable

This section describes how to use global variable setting.

- (1) The Global setting is embedded in extra window. It changes the value of global variable which declared in running plan program immediately.

Nr.	Name	Type	Value
1	sw1	int	0
2	Force_Fail	int	0
3	IsRunSpm_16M	int	0
4	IsTestActiveSiteSetting	int	0

Figure 6-16 Plan Debugger Window Global Variable

- (2) Move the cursor to the blue block at left top corner of global window. Global setting window will be brought out. Set the style or just select item you want.



Figure 6-17 Global Setting Window

6.12 Pin List, Pin Group, Time Name, Level Name & Bin Table

This section describes how to show Pin List, Pin Group, Time Name and Bin Table.

- (1) Click **Pin List** button will change the window to Pin List.

The Plan Debugger Extra Window displays a Pin List table:

No.	Pin Name	DUT	TYPE	S0	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16
1	p0	I	IO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

Figure 6-18 Plan Debugger Extra Window

- (2) Click **Pin Group** button will change the window to Pin Group.

The Plan Debugger Extra Window displays a Pin Group table:

No.	Name	Type	Element
1	IO_ALLPINS	PG	p0
2	Allpins	PG	p0

Figure 6-19 Plan Debugger Extra Window

- (3) Click **Time Name** button will change window to Time Name window.



Figure 6-20 Plan Debugger Extra Window

- (4) Click **Level Name** button will change window to Time Name window.



Figure 6-21 Plan Debugger Extra Window

- (5) Click **Bin Table** button will change window to Bin Table list.

No.	Name	Type	Value
1	all_pass	HW Bin	1
2	fail_drv_nrz_test	HW Bin	!2
3	fail_drv_drv2_test	HW Bin	!3
4	fail_drv_rz_test	HW Bin	!4
5	fail_drv_ro_test	HW Bin	!5
6	fail_drv_sbc_test	HW Bin	!6
7	fail_drv_ts_sel_test	HW Bin	!7
8	fail_io_nrz_test	HW Bin	!8
9	fail_in_down_bank	HW Bin	!9

Figure 6-22 Plan Debugger Bin Table List

6.13 Pattern Debug

This section describes how to use Pattern Debug.

- (1) Click **Pattern Debug** button will change window to Pattern Debug window.

The screenshot shows a software interface with a menu bar at the top. Below the menu is a table with columns: P.M.A., Type, Local Label, Offset, Global label, Offset, and Plus count. The rows include Start, Stop, Ignore Start, Ignore Stop, Log Begin, and PMA Trigger. The 'Type' column for Start, Stop, and Log Begin is set to FPM, while others are NULL. The 'Offset' column for Log Begin is 8, and for PMA Trigger is 98. The 'Plus count' column for Start, Stop, and Log Begin is NA, while others are 0.

This screenshot shows the same pattern debug window, but the 'Read' and 'Write' buttons in the menu bar are grayed out, indicating they are disabled. The table structure is identical to the first screenshot.

If test plan doesn't break on "JUDGE_PAT" statement, the Read/Write Buttons will disable. When test plan breaks on "JUDGE_PAT" statement, user will see the following picture and this page will enable except the "Reload Pattern Modual" Button.

This screenshot shows the pattern debug window with several controls highlighted by numbered arrows:

- Arrow 1 points to the 'Watch' button in the menu bar.
- Arrow 2 points to the 'Fail Count Limit' input field, which has the value '1'.
- Arrow 3 points to the 'Read' button in the menu bar.
- Arrow 4 points to the 'Write' button in the menu bar.
- Arrow 5 points to the 'HexDec Switch' button in the menu bar.
- Arrow 6 points to the 'ReLoad Pattern Modual' button in the menu bar.
- Arrow 7 points to the 'Type' column in the table, where a dropdown menu is open showing options: FPM, BPM, and SPM. The 'FPM' option is selected.
- Arrow 8 points to the 'Offset' column in the table.

Figure 6-23 Pattern Debug Window

1. Load Pattern displaying block
2. Watch flag, toggled it will update data immediately.
3. Write through to hardware
4. Read back from hardware
5. Integral style switch, hexadecimal or decimal
6. Input Fail Count Limit
7. Pattern type selection
8. Reload Pattern Module, it will enable when test plan doesn't break on "JUDGE_PAT" Statement.



Figure 6-24 Moved the Mouse to Load Pattern Displaying Block

1. Here, select/input your pattern file
2. Input your loading entry
3. After finished step 1 and 2, press this button.

It provides the method to load pattern from outside of the plan program. You must assign the compiled pattern *.ppo and starting address. Then press the **Load Pattern** button.

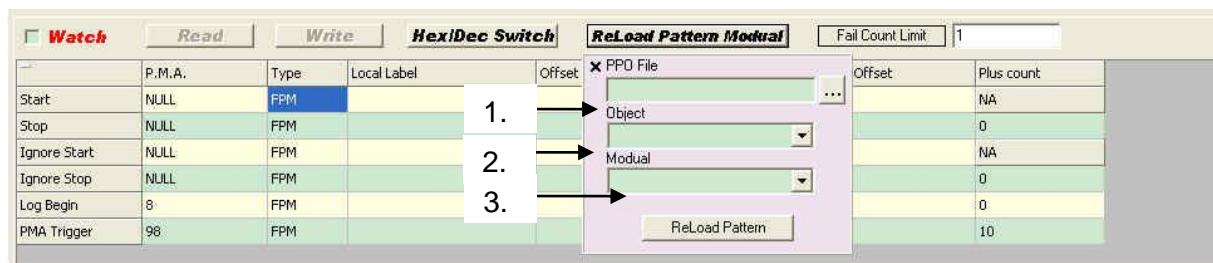


Figure 6-25 Reload Pattern Module Function

Reload Pattern Module provides the method to Reload pattern Module when Testplan not Break at "JUDGE_PAT" statement. You must assign the compiled pattern *.ppo and select the object name and module name which want to reload. Then press the **Reload Pattern** button.

6.14 Spec Editor

This section describes how to use Spec Editor.

- (1) Click **Spec Editor** will change window to Spec Editor.

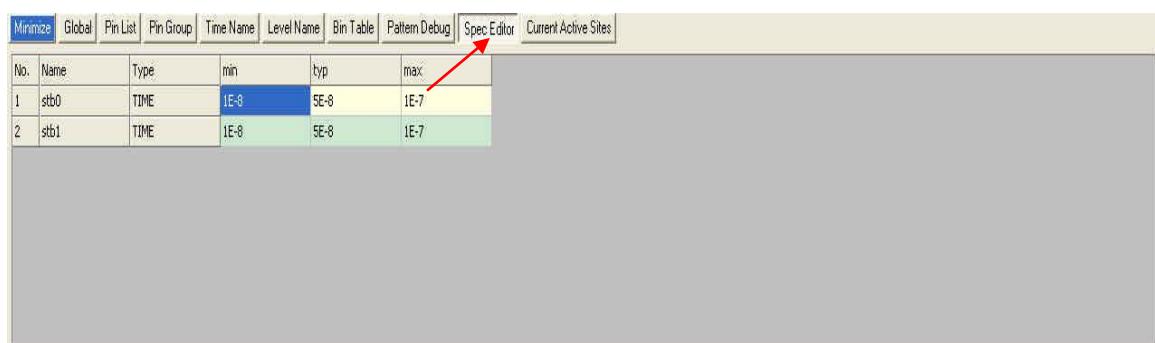


Figure 6-26 Spec Editor Window

Spec Editor is similar to global variable editor. Change the value you want and it updates the variable value in running plan program at the same time.

6.15 Current Active Sites

This section describes how to use Current Active Site. This button is only visible when the test plan is over 64 sites. If test plan is less the 64 sites, the Current Active Sites will display in status bar.

- (1) Click **Current Active Site** button will change the window to Current Active Site.

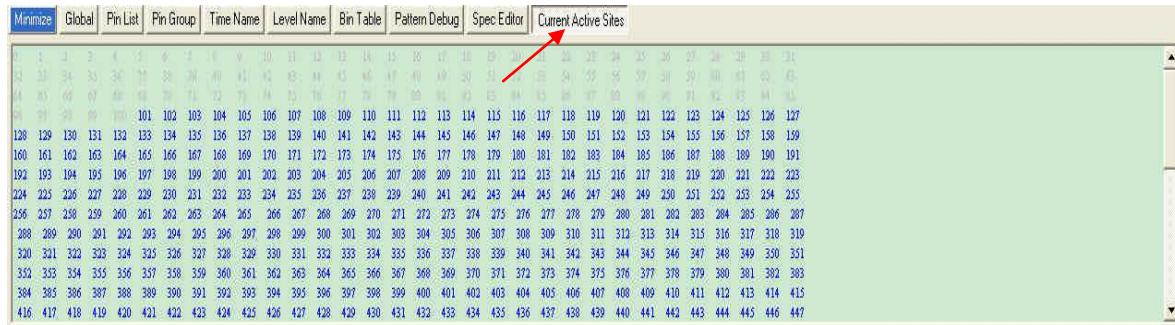


Figure 6-27 Plan Debugger Extra Window Change to Current Active Site Window

The gray numbers are un-active Sites, and the blue numbers are current active sites.

6.16 Step Do-Loop & Re-Exec

This section describes how to use Step, Do-Loop and Re-Exec. Set a break point and hit **Test** button, plan program executed and stop at the break point.

```

140      LEVELS( 1,1ms) ;
141      JUDGE_REG(S0,0x80,0xffff,0xffffffff);
142      FORCE_V_DPS ( DPS1|DPS2|DPS3|DPS4,0V,08V, 0100mA, 100mA, NORM, ON, 1mS) ;
143      FORCE_V_DPS ( Vcc,0V,08V, 0100mA, 100mA, NORM, ON, 1mS) ;
144      FORCE_V_DPS ( powerpins,0V,08V, 0100mA, 100mA, NORM, ON, 1mS) ;
145      READ_BTN_TMR /***** */

```

Figure 6-28 Plan Debugger on Break State

Then, hit **Step** button to execute step forward.



Figure 6-29 Action Control Panel

Hit the **Re-Exec** button to re-execute the current statement once.



Figure 6-30 Action Control Panel

Hit the **Do-Loop** button to keep executing the current line statement and the label of this button is changed to “UnLooping”. It never stops unless you press the same button with the “UnLooping” label.



Figure 6-31 Action Control Panel

6.17 Show Test Time

This section describes how to display test time in Datalog Tool. User can set display the test time In PlanDebug Tool's Menu bar.

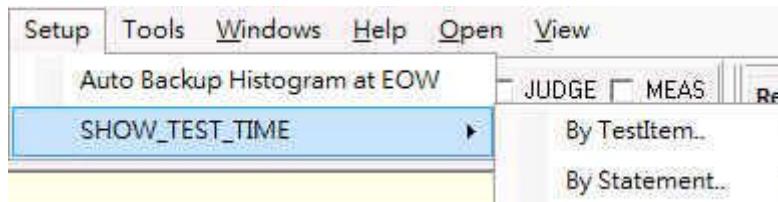


Figure 6-32 Action Control Panel

User can select By TestItem or By Statement. By TestItem means that Datalog will display each testitem's test time. By Statement means that datalog will display each statement's test time.

(1). By TestItem

If user click “By TestItem”, the following windows will popup and user need to select by testplan or by plandbg. By TestPlan means that user control this by Statement “Timer_On”. By Plandbg means that user control this by plandebug tool. So, user can select by Plandbg, and when test end, datalog tool will display each TestItem's TestTime.



(2). By Statement

If user click “By Statement”, the button will be checked and the Datalog Tool will add one window to display the Statement Test Time.



Datalog	[File]	[Line]	[Statement]	,Time
1	3380_atechk.pln	,	LEVELS	,9.697500e-004 S
2	3380_atechk.pln	,	RELAY_OFF	,8.543687e-003 S
3	3380_atechk.pln	,	LEVELS	,1.750000e-006 S
4	3380_atechk.pln	,	SET_JUDGE_MODE	,2.676187e-003 S
5	3380_atechk.pln	,	RATEN	,1.741625e-003 S
6	3380_atechk.pln	,	MARKERN	,3.315937e-003 S
7	3380_atechk.pln	,	PIN_MODE	,4.310000e-004 S
8	3380_atechk.pln	,	JUDGE_PAT	,1.014950e-002 S
9	3380_atechk.pln	,	MARKERN	,3.687500e-006 S
10	3380_atechk.pln	,	JUDGE_PAT	,1.851250e-004 S
11	3380_atechk.pln	,	MARKERN	,3.500000e-006 S
12	3380_atechk.pln	,	SET_JUDGE_MODE	,3.125000e-007 S
13	3380_atechk.pln	,	JUDGE_PAT	,1.323125e-004 S
14	3380_atechk.pln	,	SET_JUDGE_MODE	,6.875000e-007 S
15	3380_atechk.pln	,	JUDGE_PAT	,1.214375e-004 S
16	3380_atechk.pln	,	JUDGE_PAT	,1.214375e-004 S
17	3380_atechk.pln	,	JUDGE_PAT	,1.214375e-004 S

7. Data Log Utility

7.1 Overview

The tester arranges the tested devices under Pass or Fail category in compliance with the judgment instruction (judge) and measurement instruction (meas) within the test plan program, and eventually sorts the tested devices into conforming or nonconforming group. When test plan program debugging or device evaluation is intended, for instance, the measured values are necessary in addition to the pass/fail results. The data log feature is a tool which outputs the values measured by the “judge” or “meas” instruction whichever is designated. The data log tool displays test judgment results and values for each DUT’s socket or pin. The following data logs are available.

- (1) DC data log
Display the measured values and judgment results (pass/fail) in compliance with DC system/OSC system judgment instruction (judge) and measurement instruction (meas).
- (2) AC data log
Display the judgment results (pass/fail) in compliance with AC system judgment instruction (judge).
- (3) EOT result log
Display the abstract of judgment results (pass/fail, HW/SW category, etc...) of each tested DUT socket whenever “End of Test” event happened.

7.2 Function List

The data log functions are summarized in the below table.

No.	Function	Overview		
1	Automatic Parameter Setup Function	When the parameter file (*.dlog) having the same name as the test plan program is prepared in advance, data log setup is accomplished also. In this case, ensure that the parameter file is named the same as and placed in the same directory as the test plan program.		
2	Manual Parameter Setup Function	Whenever data log is called for, the data log utility can be started from the System Control window to perform parameter setup as needed to achieve data log acquisition. The parameter setup used can be saved into a file for later reuse.		
3	Log Socket Designation	Output the data log result by selected socket(s).		
4	Setup Page(s) Designation	The following modes, which include in one setup page, can be selected within the Log Range.		
		No.	Mode	Function
		1	Default	Outputs the whole data log without regard to pass/fail results.
		2	Options	DC Turns ON or OFF the data log feature for DC.
				Pass Outputs the data log about pass results only within the designated range.
				Fail Outputs the data log about fail results only within the designated range.
		AC		Turns ON or OFF the data log feature for AC.
				Pass Outputs the data log about pass results only within the designated range.
				Fail Outputs the data log about fail results only within the designated range.
		3	Format: Detail	Display data log with minute and complicated format.
		4	Format: Digest	Display the data log with summary format.
5	Log Range Designation	There are different acquisition ranges can be defined by employing differing combinations based on test number/judgment number (up to 20) and test items designation.		
6	Output Switch Designation	Data log results can be switched on/off to the display, printer, or file. (p.s.: When in production mode, this switch will be off automatically.)		

Table 7-1 Data Log Function List

7.3 Start & Quit Data Log Tool

The data log tool starts when you double click the Datalog Utility icon from the System Control list view window or just click Datalog Utility string from the System Control tree view window. To quit the data log tool, click the “Exit” item of File menu in the Data Log window.

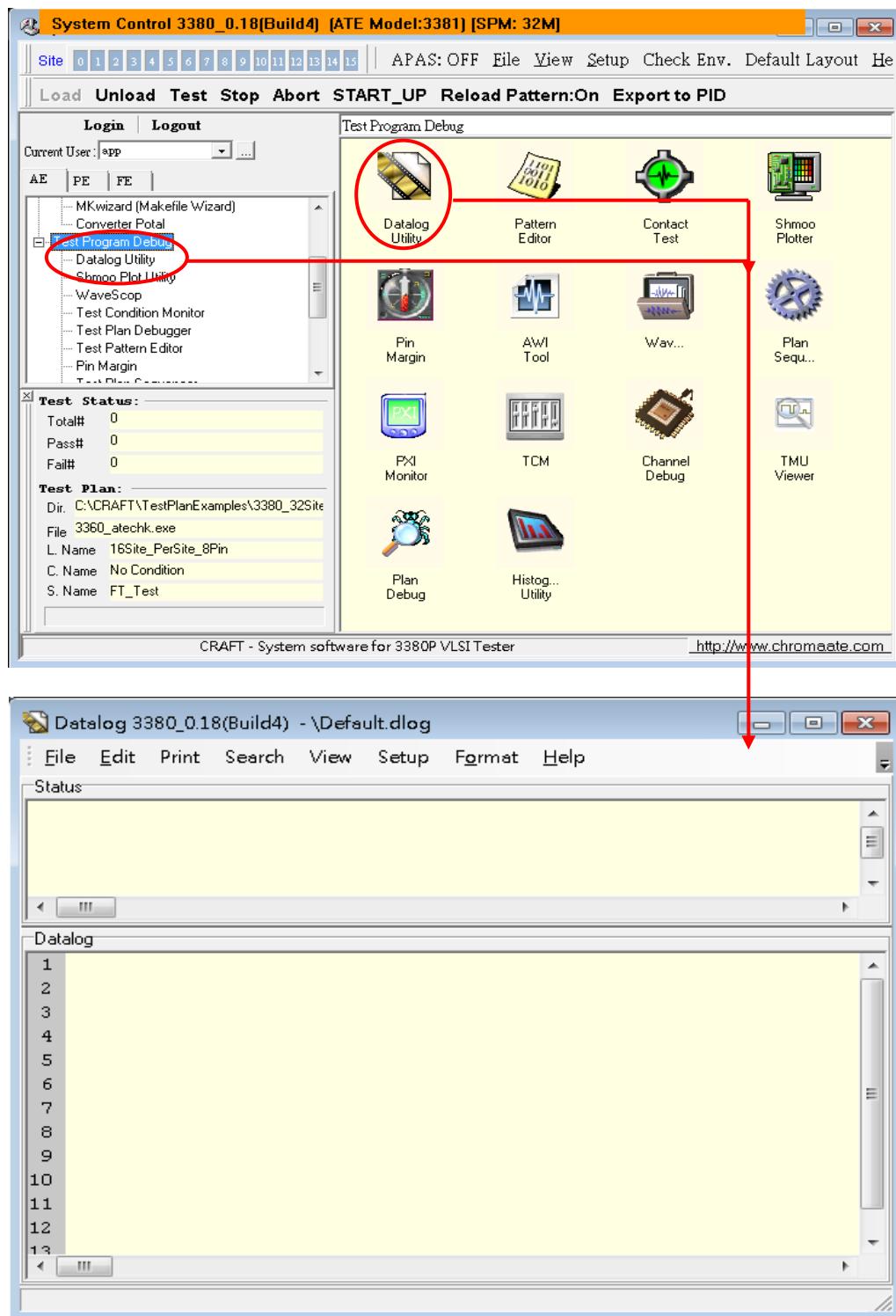


Figure 7-1 Data Log Window

7.4 Data Log Tool Execution

7.4.1 By Manual Data Log Parameter Setup

The manual data log parameter setup procedure is described below.

(1) Display the Data Log window

- Click the Datalog Utility icon on System Control window or that of string on System Control tree view window, then display Data Log window.

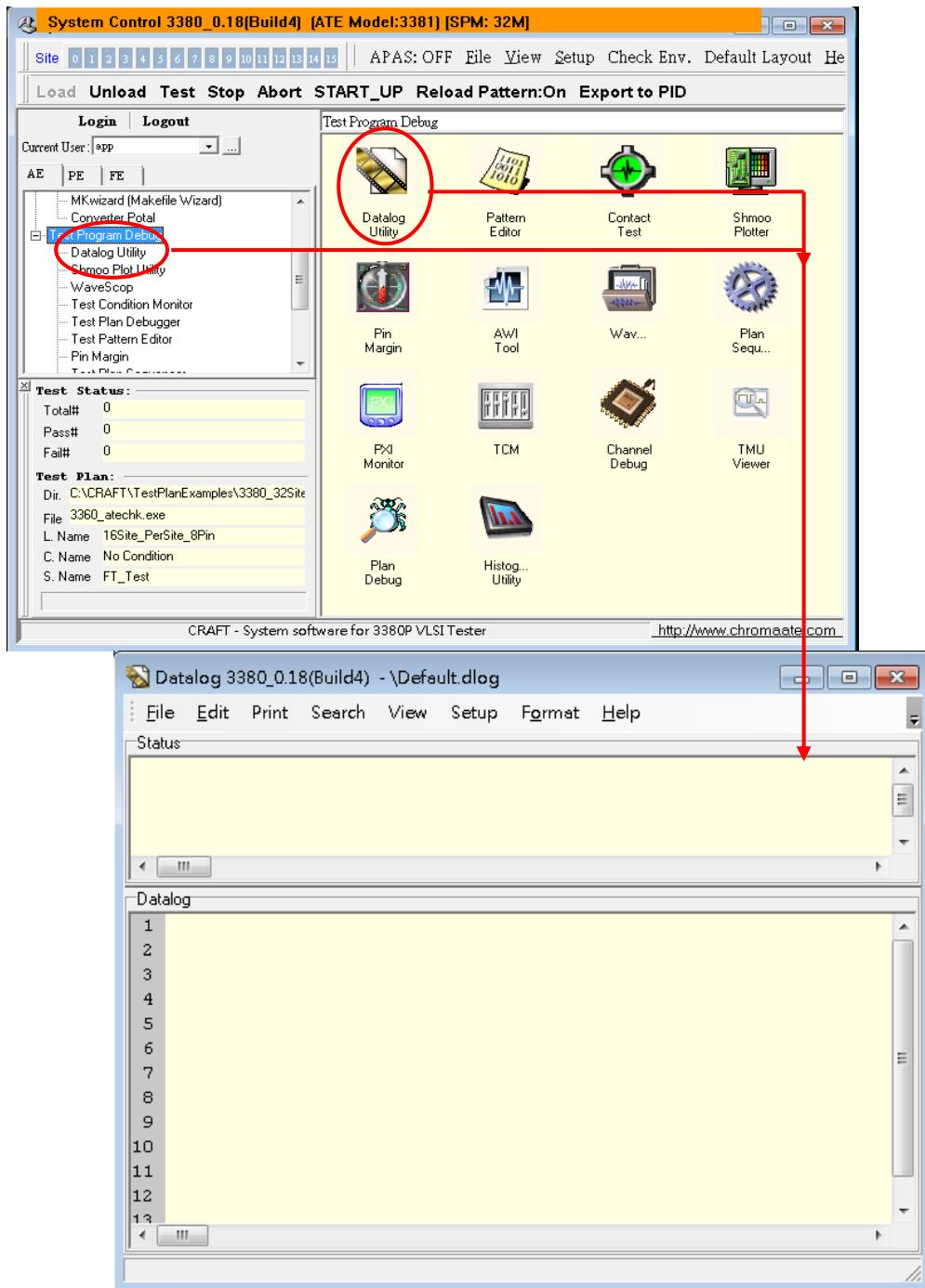


Figure 7-2 Data Log Window

(2) Perform parameter setup

1. Select the item of "Setup Parameter" in Setup submenu of Datalog window and then display the Set Up Parameters window.
2. Make necessary data entries from the Setup Parameter window (see section 7.5 "Using the Data Log Window").
3. Click **OK** button on the Set Up Parameters window to perform parameter setup.

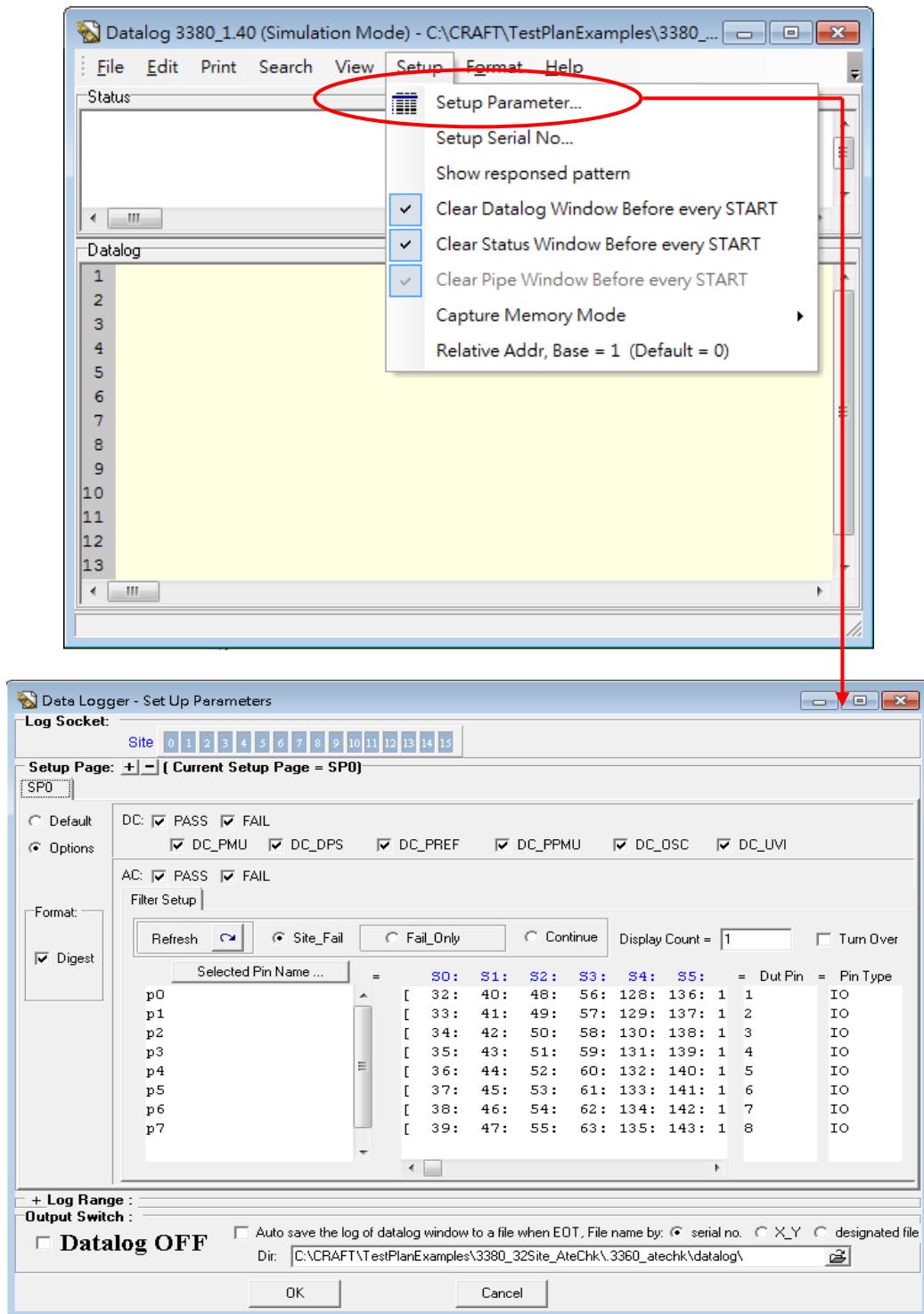


Figure 7-3 Data Log Parameter Setup Window

(3) Initiate data acquisition

1. Start data acquisition by using the **Test**, **Step**, **Do-Loop** or **Re-Exec** button in the Plan Debugger Window.
2. Upon completion of data acquisition, the data log appears in Datalog view or Status view windows directly.

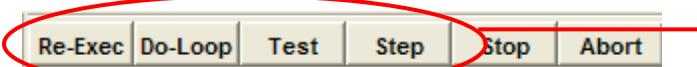


Figure 7-4 Plan Debugger Window

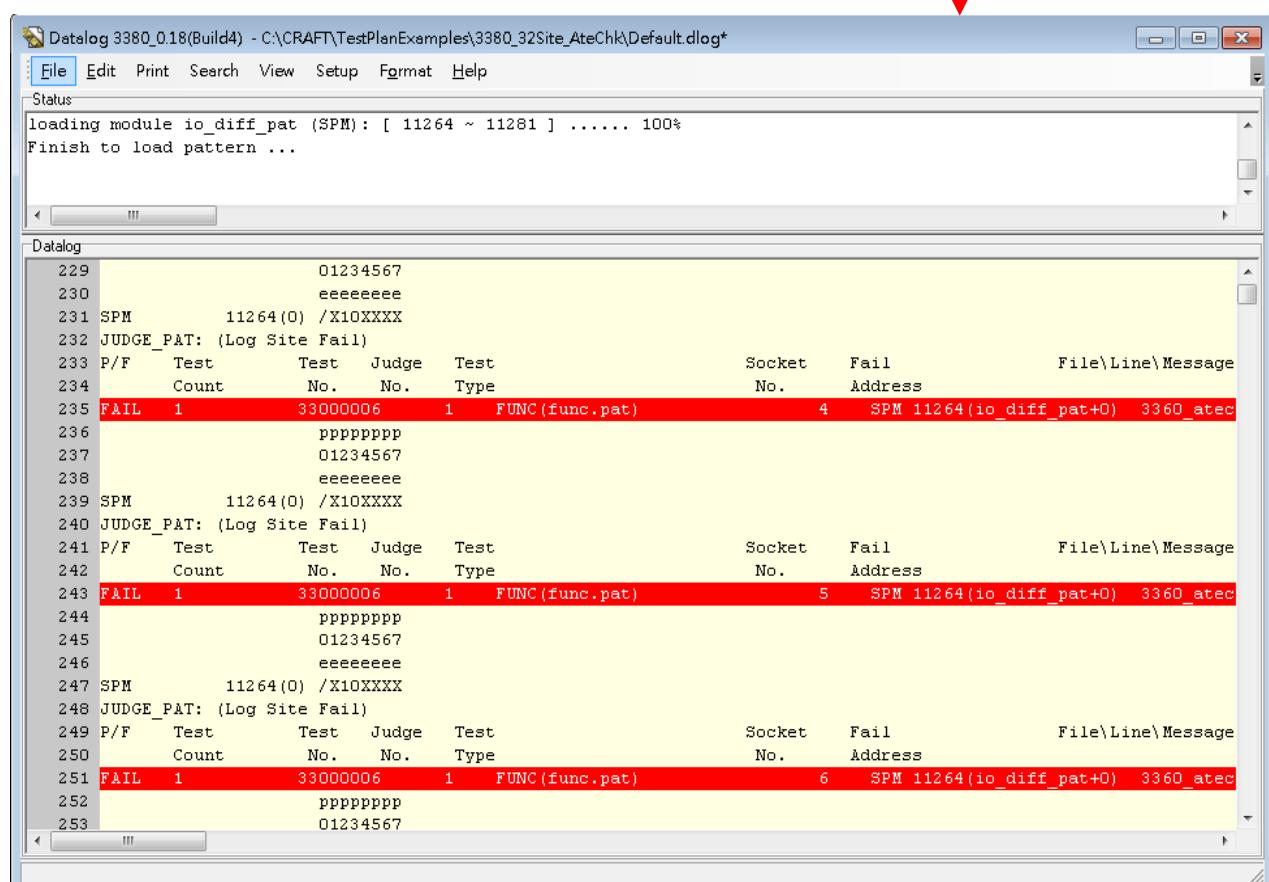


Figure 7-5 Data Log Display Window

7.4.2 By Automatic Data Log Parameter Setup

The automatic data acquisition parameter setup procedure is described below.

(1) Save the parameter setup into the parameter file.

1. Save the parameter setup into the file by clicking “Save parameter file As” in the File menu (the parameter file name is that displayed on the Parameter File Name column).

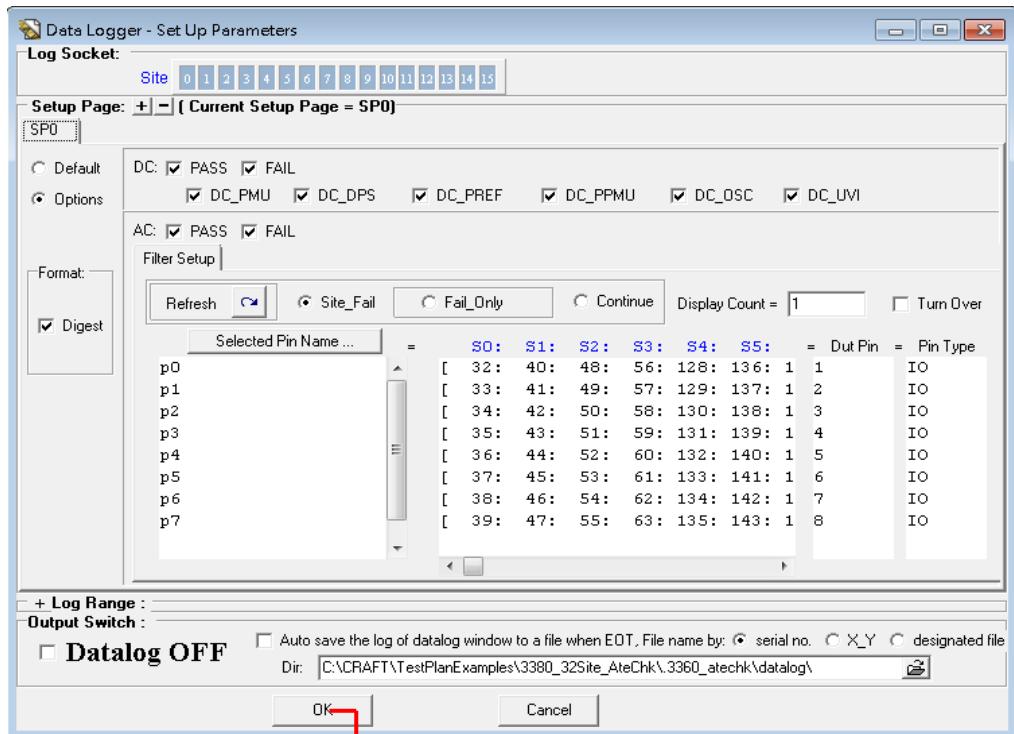


Figure 7-6 Data Log Parameter Setup Window

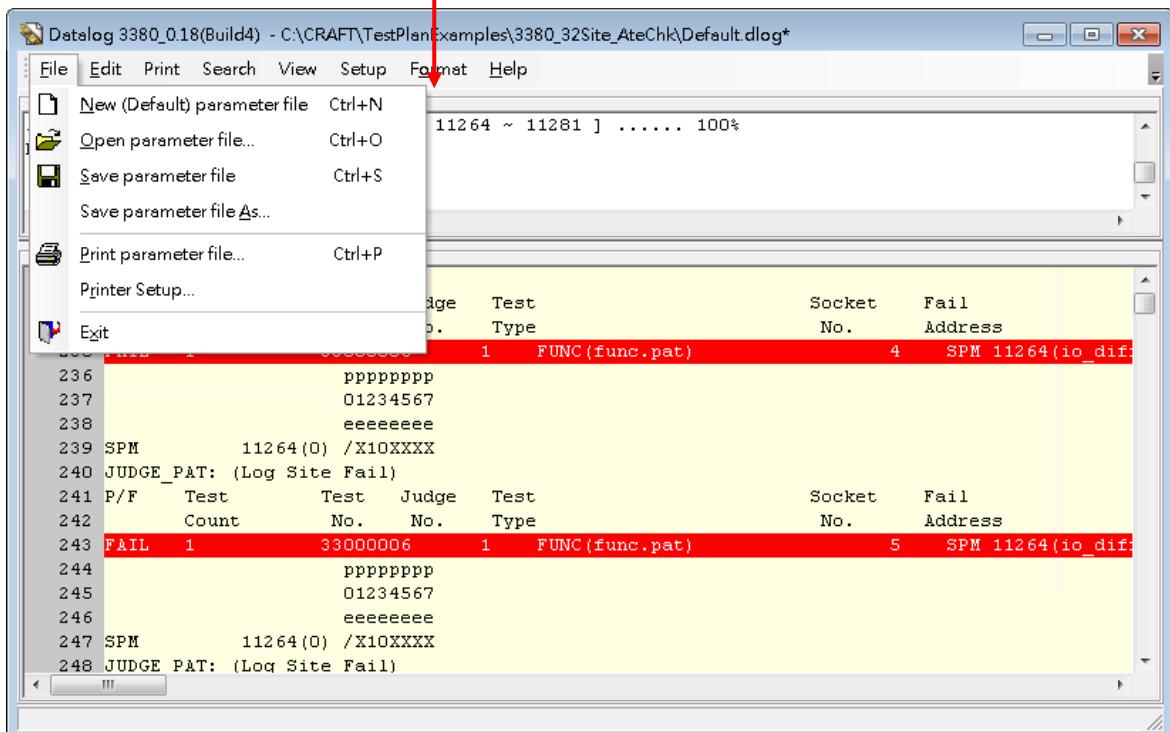
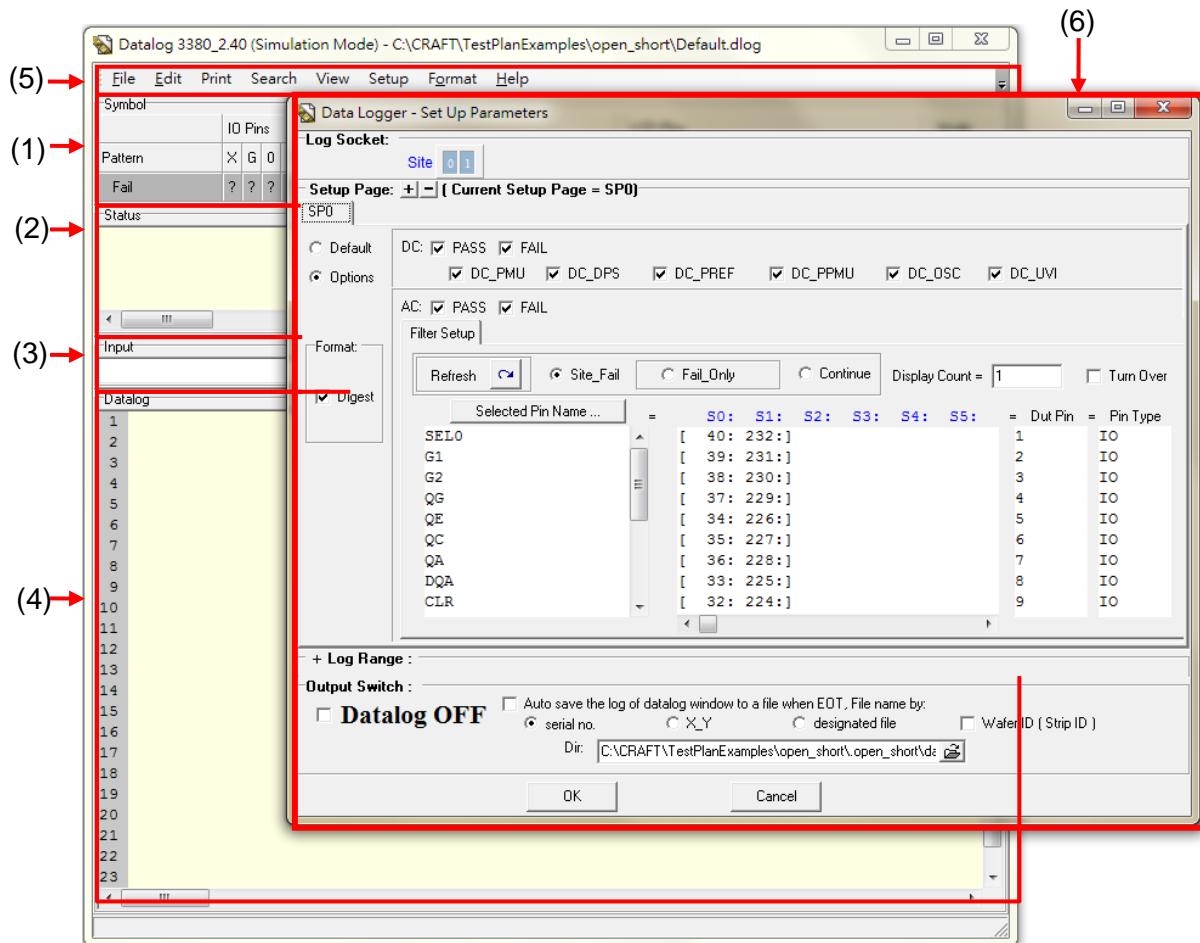


Figure 7-7 Data Log Display Window

- (2) initiate data acquisition
 It is the same as 7.5.1 "Manual Data Log Parameter Setup".

7.5 Using the Data Log Window

The Data Log Window is composed of (1) Symbol, (2) Status, (3) Input, and (4) Datalog windows. In this section, these windows will be defined the (5) menu bar and (6) parameter setup window will be described here also.



7.5.1 Using Menu Bar

Menu bar structure

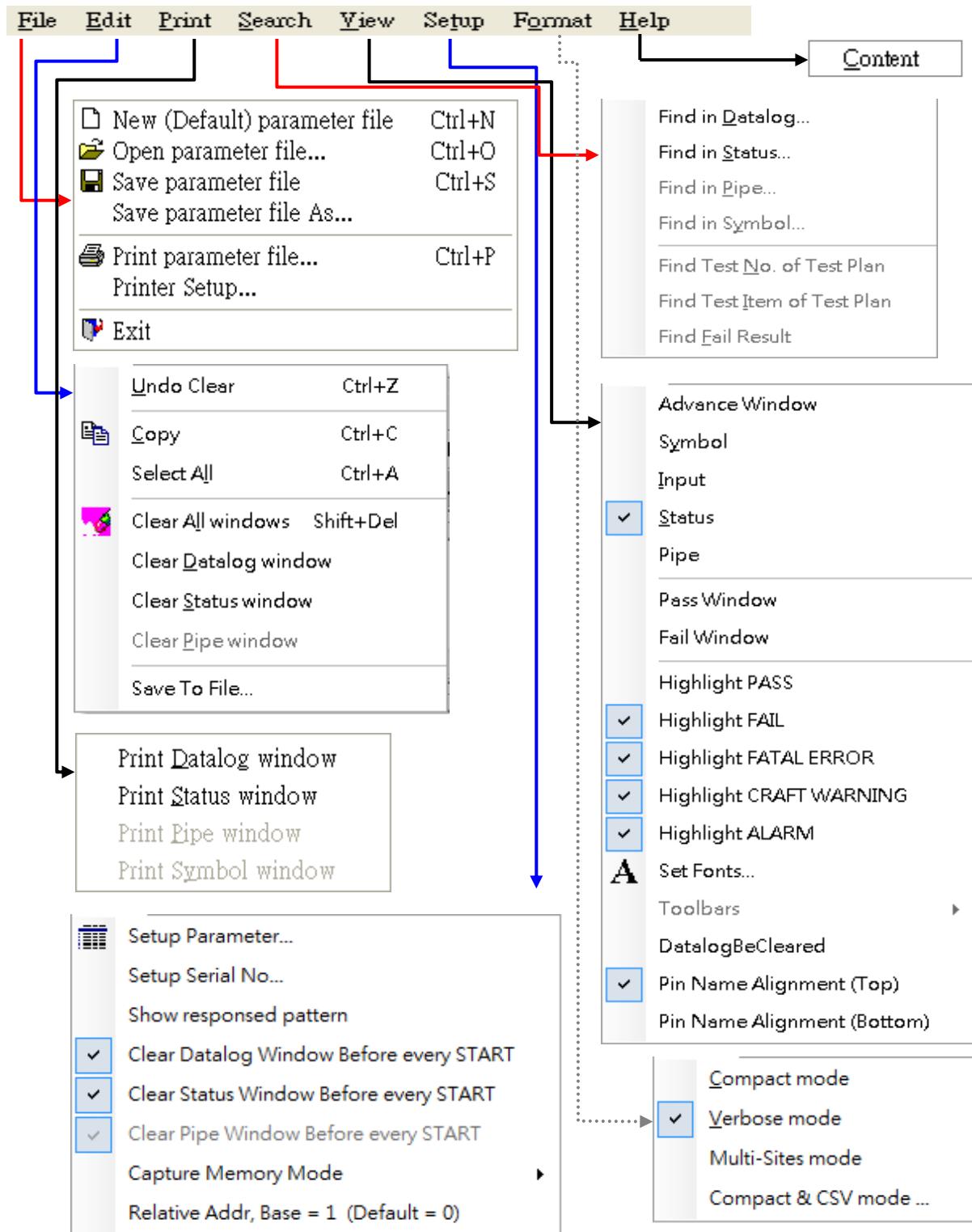


Figure 7-8 Menu Bar Structure

No.	File manipulation function	Description
1	File	Use an existing parameter file to perform parameter setup or other parameter file manages tasks or finalizes or initializes the parameter window setup.
2	Edit	The Edit menu provides commands to undo, copy, save and select areas of active view windows.
3	Print	Send the active view window's content to the printer.
4	Search	Use the Search menu commands to locate pass/fail, test no, ... and any text in the active windows.
5	View	Use the View menu commands to display or hide tool buttons which are the elements of the menu bar.
6	Setup	Use the Search menu commands to setup parameter values.
7	Format	Use the Format menu to select data log format.
8	Help	Open the explanation window which furnishes the overall parameter window information and the details of the parameter window.

Table 7-2 Menu Bar Descriptions

■ File menu

No.	Option	Description
1	New (Default) parameter file	Open a default parameter file for parameter setup purposes.
2	Open parameter file	Open an existing parameter file for parameter setup purposes.
3	Save parameter file	Save the contents displayed on the parameter window into a file having the name is same as loaded test plan's name.
4	Save parameter file as	Save the contents displayed on the parameter window into a file having the name by user defined.
5	Print parameter file	Prints the active parameter setup value.
6	Printer setup	Change the printer options and select a printer from a list.
7	Exit	End the data log window process and close the window.

Table 7-3 File Menu Functions

■ Edit menu

No.	Option	Description
1	Undo Clear	Choose this command to undo the last performed "Clear" operation.
2	Copy	Choose Edit→Copy (or click the right key of mouse on the active window and choose Copy) to place an exact copy of the selected text on the Clipboard and leave the original untouched. Copy replaces the current Clipboard contents with the selected items.
3	Select All	Edit→Select All (or click the right key of mouse on the active view window and choose Select All) selects every text in the active window.
4	Clear All Windows	Clear all the view windows (Datalog, Status, Pipe windows).
5	Clear Datalog Window	Clear the Datalog view window's every text.
6	Clear Status Window	Clear the status view window's every text.
7	Clear Pipe Window	Clear the pipe view window's every text.
8	Save To File	Edit→Save To File (or click the right key of mouse on the active view window and choose Save To File) save every text in the active window to a file.

Table 7-4 Edit Menu Functions

■ Print menu

No.	Option	Description
1	Print Datalog window	Execute a process for outputting every text in the Datalog view window to the printer.
2	Print Status window	Execute a process for outputting every text in the Status view window to the printer.
3	Print Pipe window	Execute a process for outputting every text in the Pipe view window to the printer.
4	Print Symbol window	Execute a process for outputting every text in the Symbol view window to the printer.

Table 7-5 Print Menu Functions

■ Search menu

No.	Option	Description
1	Find in Datalog	Choose Search→Find in Datalog (or click the right key of mouse on the Datalog view window and choose Find...) to list occurrences of a specified string.
2	Find in Status	Choose Search→Find in Status (or click the right key of mouse on the Status view window and choose Find...) to list occurrences of a specified string.
3	Find in Pipe	Choose Search→Find in Pipe (or click the right key of mouse on the Pipe view window and choose Find...) to list occurrences of a specified string.
4	Find Test No. of Test Plan	Choose this command to list occurrences of Test No. which has to be selected in the field of "Find Test No." of Datalog view window firstly. Note: Remember do not switch view mode to simple mode.
5	Find Test Item of Test Plan	Choose this command to list occurrences of Test Item which has to be selected in the field of "Find Test Item" of Datalog view window firstly. Note: Remember do not switch view mode to simple mode.
6	Find Fail Result	Choose this command to list occurrences of FAIL result.

Table 7-6 Search Menu Functions

■ View menu

No.	Option	Description
1	Advance Window	Change the data log window to advance view.
2	Symbol	Display or hide the Symbol view window.
3	Input	Display or hide the Input view window.
4	Status	Display or hide the Status view window.
5	Pass Window	Display or hide the Pass window that shows pass result log. See the Figure 7-9.
6	Fail Window	Display or hide the Fail window that shows fail result log. See the Figure 7-10.
7	Highlight PASS	Display or hide the background color (Green) of PASS result in Datalog view window.
8	Highlight FAIL	Display or hide the background color (Red) of FAIL result in Datalog view window.
9	Highlight FATAL ERROR	Display or hide the background color (Maroon) of FATAL ERROR result in Datalog view window.
10	Highlight CRAFT WARNING	Display or hide the background color (Olive) of CRAFT WARNING result in Datalog view window.
11	Highlight ALARM	Display or hide the background color (Red) of ALARM result in Datalog view window. “ALARM” signal shows up when the DC resource just like DPS, PMU, PREF or UVI occur clamp, no matter DC or AC test items

		are being detected.
12	Set Fonts	Change the font style, size, and character set settings for any active view window with this command.
13	Toolbars	Display or hide the toolbars.
14	Datalog Be Cleared	Show the overflowed data log to a *.txt file
15	Pin Name Alignment (Top)	Align the pin name at the top
16	Pin Name Alignment(Bottom)	Align the pin name at the bottom

Table 7-7 View Menu Functions

■ Setup menu

No.	Option	Description
1	Setup Parameter	Setup data log parameter for getting formatted data log result. (Refer to 7.5.2 <i>Using the Parameter Setup Columns</i>)
2	Setup Serial No.	Setup initial serial no. for next test.
3	Show responded pattern	Display the responded pattern of FAIL result symbol.
4	Output Device	Setup data log output device path
5	Clear Datalog Window Before every START	Clear the Datalog view window's every text before TEST command start
6	Clear Status Window Before every START	Clear the Status view window's every text before TEST command start.
7	Clear Pipe Window Before every START	Clear the Pipe view window's every text before TEST command start.
8	Capture Memory Mode	Set capture memory log mode. When it occurs memory shortage (1K per pin), add the statement "SET_CAPTURE_MEM_MODE" in the test plan program could use the other pin's memory temporarily. See Table 7-9.
9	Relative Addr, Base = 1 (Default = 0)	Setup address base from 1 or 0. (Default is 0)

Table 7-8 Setup Menu Functions

■ Capture Memory Mode SubMenu

No.	Option	Description
1	Header Only (Default)	Add the statement "SET_CAPTURE_MEM_MODE" in the test plan program (for example: set on QA pin), displays test judgment results and values. (Default is Header Only) See Figure 7-12.
2	Capture Pins Only	Displays test judgment results and values Capture Pins Only. See the Figure 7-13.
3	Normal Pins Only (available: less than 1K)	Displays test judgment results and values Normal Pins Only. See the Figure 7-14. Note: The result is on the Capture Memory Mode, not the real log of that pin.

Table 7-9 Setup SubMenu Functions

■ Format menu

No.	Option	Description
1	Compact Mode	Display data log by simple mode like YOKOGAWA.
2	Verbose Mode	Display data log by detailed mode with every judge item.
3	Multi-Sites Mode	Display data log by multi-sites mode to debug easily.
4	Compact&CSV mode	Setup to output real-time CSV file.

Table 7-10 Format Menu Functions

■ Help menu

No.	Option	Description
1	Content	Provide help and reference information of Data Log.

Table 7-11 Help Menu Functions

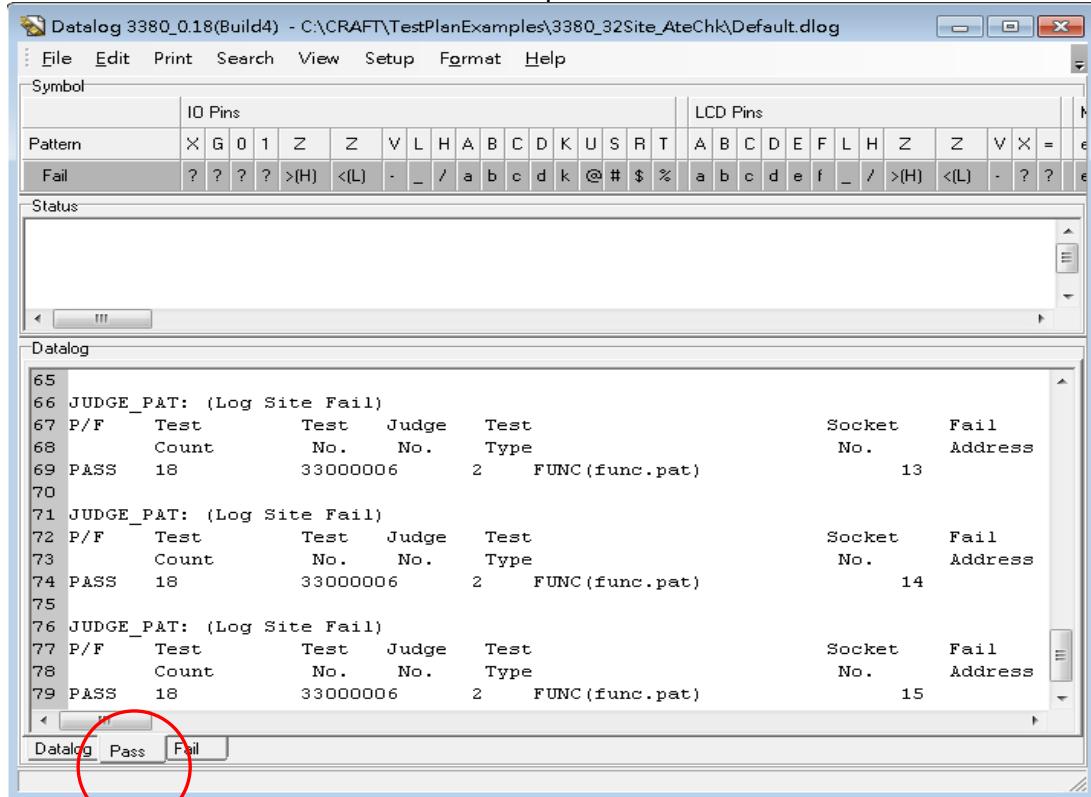


Figure 7-9 Pass Window

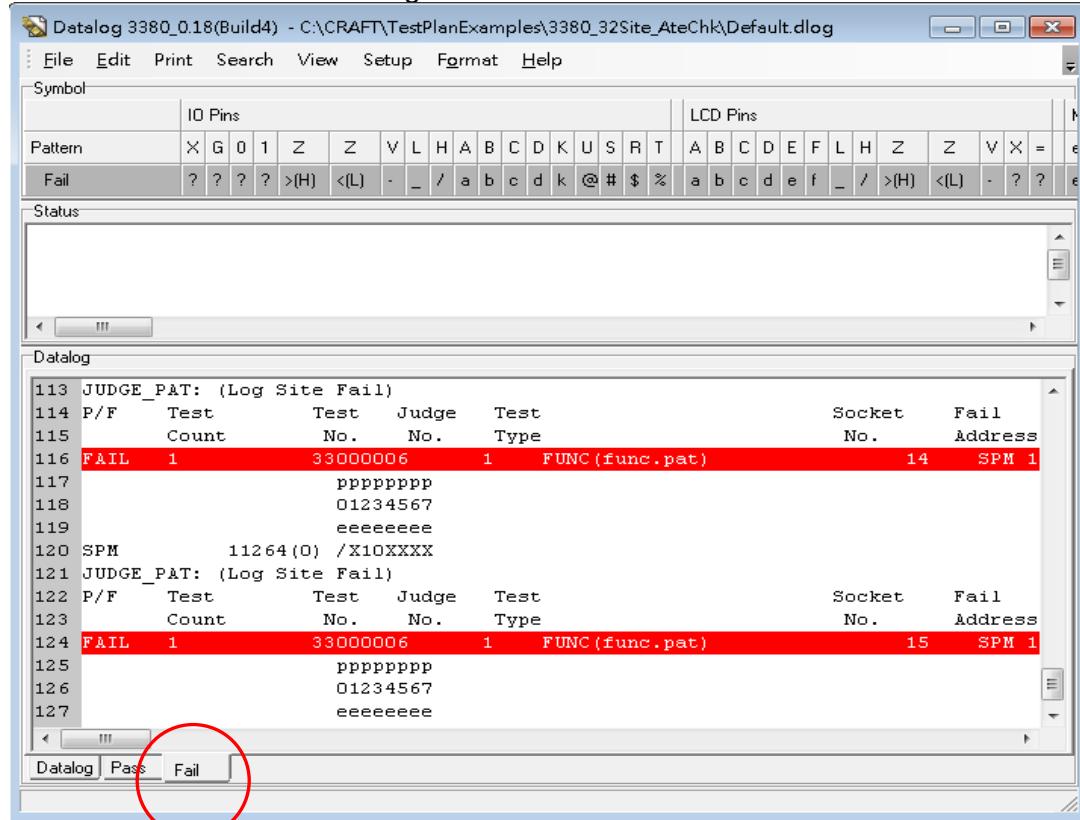


Figure 7-10 Fail Window

Datalog 3380_1.40 (Simulation Mode) - C:\CRAFT\TestPlanExamples\3380_8Site_AteChk_PerSite64pin\Default.dlog

File Edit Print Search View Setup Format Help

Status
Waiting for Tserver's event...

Datalog

	[File]	[Line]	[Statement]	Time
1	3380_atechk.pln	148	LEVELS	,4.883125e-003 S
2	3380_atechk.pln	149	RELAY_OFF	,3.998000e-003 S
3	3380_atechk.pln	230	LEVELS	,2.125000e-006 S
4	3380_atechk.pln	232	SET_JUDGE_MODE	,2.291687e-003 S
5	3380_atechk.pln	233	RATEN	,2.250000e-006 S
6	3380_atechk.pln	234	MARKERN	,4.081438e-003 S
7	3380_atechk.pln	235	PIN_MODE	,5.687500e-006 S
8	3380_atechk.pln	238	JUDGE_PAT	,3.234100e-002 S
9	3380_atechk.pln	240	MARKERN	,1.337500e-005 S
10	3380_atechk.pln	241	JUDGE_PAT	,2.211250e-003 S
11	3380_atechk.pln	252	MARKERN	,1.381250e-005 S
12	3380_atechk.pln	254	SET_JUDGE_MODE	,9.375000e-007 S
13	3380_atechk.pln	255	JUDGE_PAT	,1.016875e-004 S
14	3380_atechk.pln	256	SET_JUDGE_MODE	,8.750000e-007 S
15	3380_atechk.pln	261	JUDGE_PAT	,8.137500e-005 S
16	3380_atechk.pln	261	JUDGE_PAT	,7.037500e-005 S
17	3380_atechk.pln	261	JUDGE_PAT	,7.343750e-005 S
18	3380_atechk.pln	261	JUDGE_PAT	,1.202375e-003 S
19	3380_atechk.pln	261	JUDGE_PAT	,8.981250e-005 S
20	3380_atechk.pln	261	JUDGE_PAT	,7.412500e-005 S
21	3380_atechk.pln	261	JUDGE_PAT	,7.025000e-005 S
22	3380_atechk.pln	261	JUDGE_PAT	,7.187500e-005 S
23	3380_atechk.pln	261	JUDGE_PAT	,7.187500e-005 S
24	3380_atechk.pln	261	TIMEOF_PAT	,7.187500e-005 S

Datalog Time

Figure 7-111 Time Window

Note: the window appears when the statement time is set on Plan Debugger tool.

JUDGE_PAT: (Log Fail Only)(Capture Memory Mode)				File\Line\Message			
P/F	Test	Judge	Test	Socket	Fail	Address	
Count	No.	No.	Type	No.	RPM	26(func_pat+0)	ls299_2sites_scan.pln\197\scan_func_test
FAIL	1	30	2				
JUDGE_PAT: (Log Fail Only)(Capture Memory Mode)				File\Line\Message			
P/F	Test	Judge	Test	Socket	Fail	Address	
Count	No.	No.	Type	No.	RPM	26(func_pat+0)	ls299_2sites_scan.pln\197\scan_func_test
FAIL	1	30	2				

Figure 7-12 Capture Memory Mod Header Only

JUDGE_PAT: (Log Fail Only)(Capture Memory Mode)				File\Line\Message
P/F	Test	Judge	Test	Fail Address
Count	No.	No.	Type	RPM 26(func_pat+0)
FAIL	1	30	4	FUNC(is299_func.pat)
is299_2sites_scan.ph\n197	scan_func_test	Q	A	
				e
	0	1	1	0
	1	1	1	1
	2	1	1	2
	3	1	1	3
	4	1	1	4
	5	1	1	5
	6	1	1	6
	7	1	1	7
	8	1	1	8
	9	1	1	9
	10	1	1	10
	11	1	1	11
	12	1	1	12
	13	1	1	13
	14	1	1	14
	15	1	1	15
	16	1	1	16
	17	1	1	17
	18	1	1	18
	19	1	1	19
	20	1	1	20
	21	1	1	21
	22	1	1	22
	23	1	1	23
	24	1	1	24
	25	1	1	25
	26	1	1	26
	27	1	1	27
	...	1	1	...

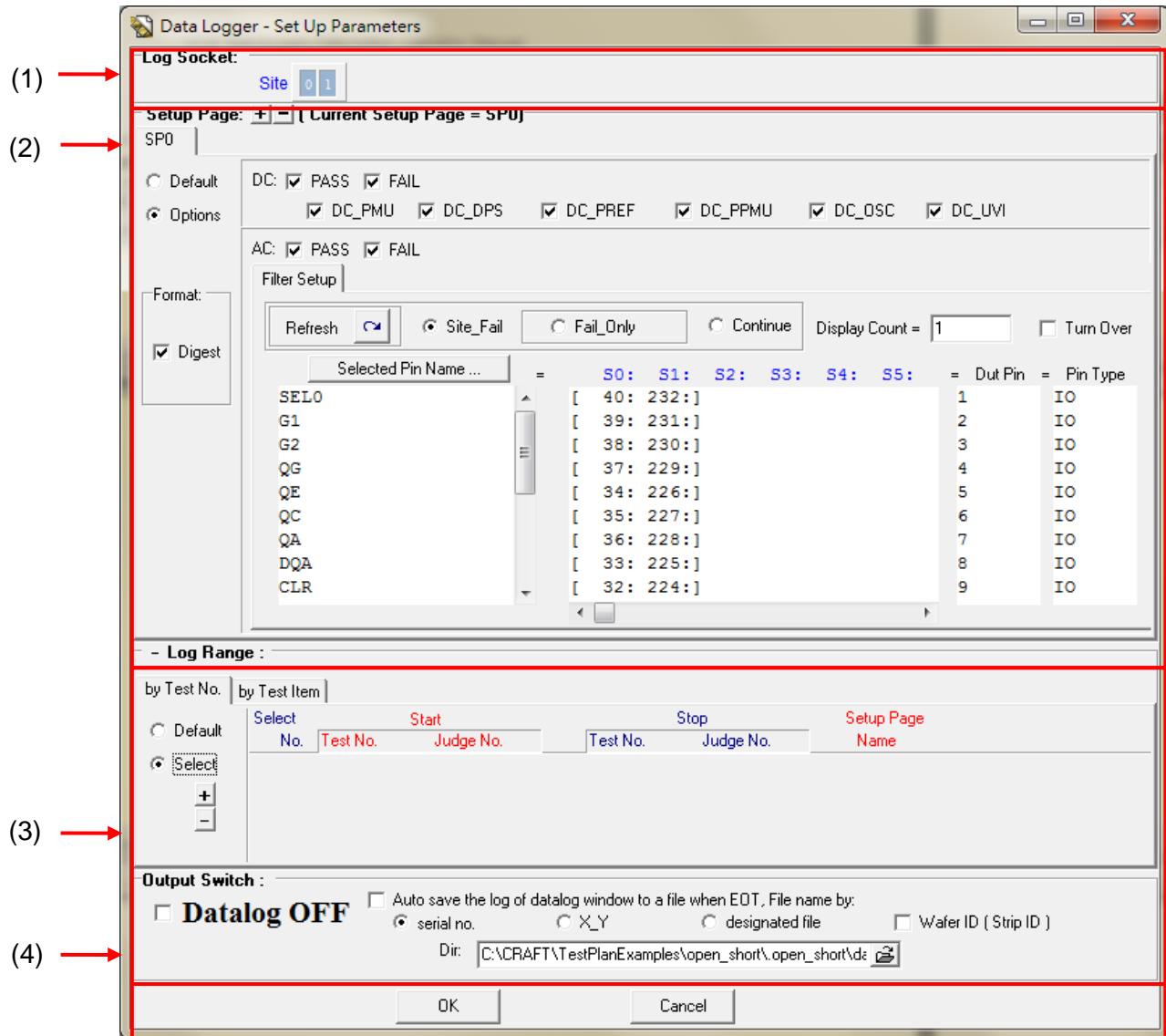
Figure 7-13 Capture Memory Mod Capture Pins Only

JUDGE_PAT: (Log Fail Only)(Capture Memory Mode)				File\Line\Message
P/F	Test	Judge	Test	Fail Address
Count	No.	No.	Type	No. SPM 26(func_pat+0)
FAIL	1	20	1	FUNC(lc299_func.pat)
ls299_2sites_scan.ph159ifunc_1MHz_test				
CSSGGCSSQQQQQQ				
LEE12LLRBCDEFGH				
RLL_K				
01				
PMA (offset)	m	eeeeeee	Test_Count	
SPM	26(0)	^00000000~~~~	1	
SPM	27(1)	^00000000~~~~	2	
SPM	28(2)	^00000000~~~~	3	
SPM	29(3)	^00000000~~~~	4	
SPM	30(4)	^00000000~~~~	5	
SPM	31(5)	^00000000~~~~	6	
SPM	36(10)	^00000000~~~~	7	
SPM	40(14)	^00000000~~~~_H	8	
SPM	42(16)	^00000000~~~~H_H	9	
SPM	43(17)	^00000000~~~~	10	
SPM	44(18)	^10000001~~~~	11	
SPM	45(19)	^10000001~~~~	12	
SPM	46(20)	^10000001~~~~	13	
SPM	47(21)	^10000001~~~~	14	
SPM	48(22)	^10000001~~~~	15	
SPM	49(23)	^10000001~~~~H	16	
SPM	50(24)	^10000001~~~~HH	17	
SPM	52(26)	^10000001~~~~HHH	18	
SPM	53(27)	^10000001~~~~HHH	19	
SPM	54(28)	^10000001~~~~HHH	20	
SPM	55(29)	^10000001~~~~HHH	21	
SPM	56(30)	^10000001~~~~HHH	22	
SPM	57(31)	^10000001~~~~_HH	23	
SPM	58(32)	^10000001~~~~H_H	24	
CDM	eecccc	^1~~~~~1~~~~~1~~~~~1	25	

Figure 7-14 Capture Memory Mod Normal Pins Only

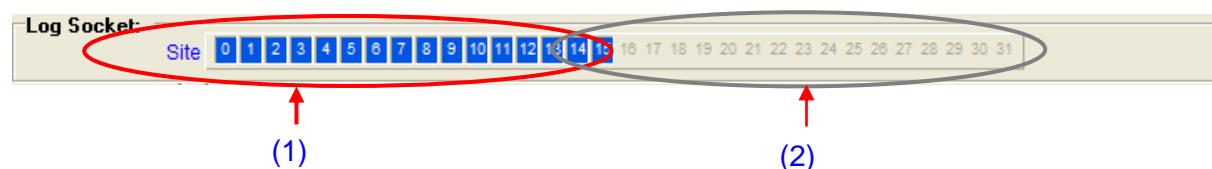
7.5.2 Using Parameter Setup Columns

The parameter setup window is divided into four parts; there are (1) Log Socket, (2) Setup Page, (3) Log Range and (4) Output Switch.

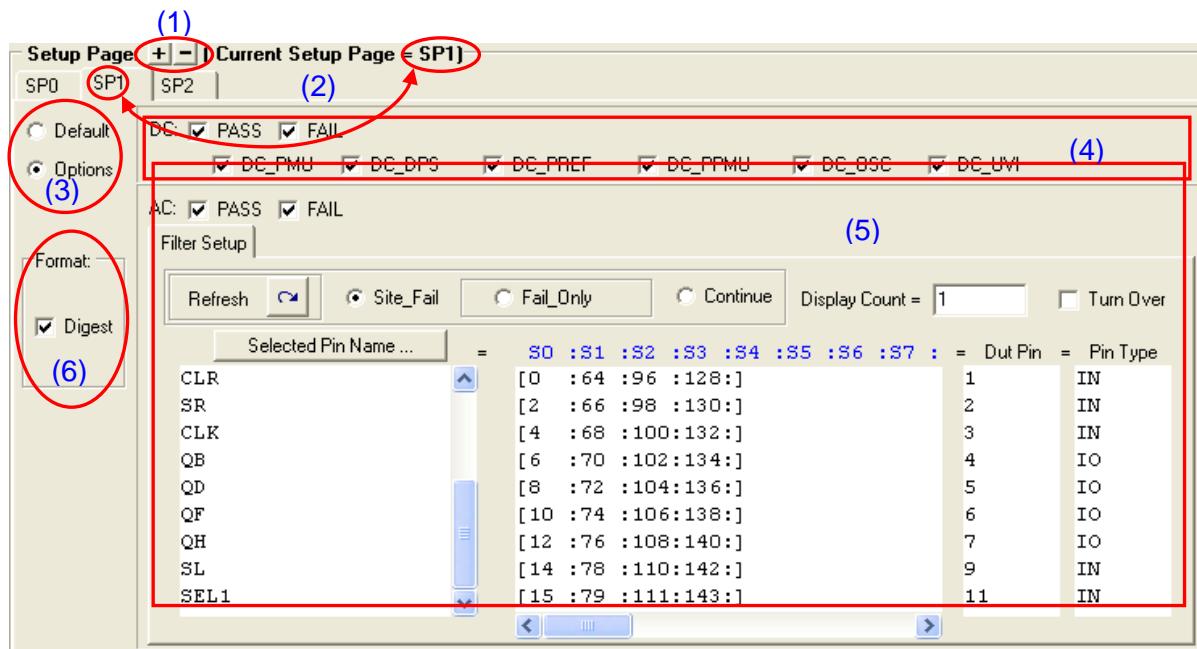


7.5.2.1 Log Socket

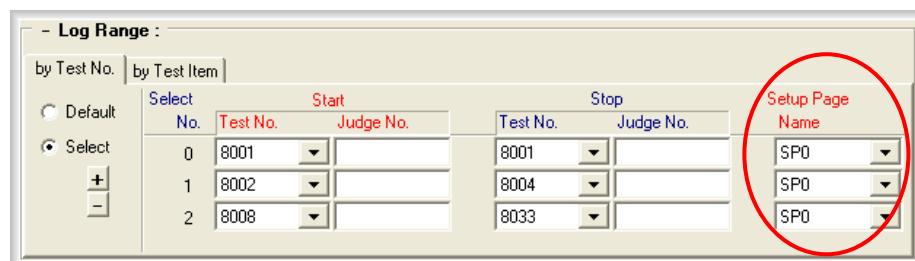
- (1) Select which socket data will be logged out.
- (2) The check button will be not sensitive if these sites are not activity.



7.5.2.2 Setup Page



- (1) Add new setup page, which can be selected in Log Range window.



- (2) Indicate the current active setup page, which can affect the current data log result.
- (3) Default: Output the whole data log without regard to pass/fail results.
Options: Output the data log only within the designated range. When this item is checked, windows (4) and (5) will be sensitive.
- (4) Output the data log results in the following DC setup ranges:
PASS: Output the data log about pass results.
FAIL: Output the data log about fail results.
When DC is designated for PASS or FAIL, PMU/PPMU/PREF/DPS/OSC/UVI measurement unit designation is possible. The following units can be simultaneously designated.
DC_PMU: Output the data log about DC measurement unit results.
DC_DPS: Output the data log about device power supply measurement unit results.
DC_PREF: Output the data log about device power supply measurement unit result.
DC_PPMU: Output the data log about per pin DC measurement unit results.
DC_OSC: Output the data log about frequency measurement unit results.
DC_UVI: Output the data log about device power supply measurement unit results.
- (5) Output the data log results in the following AC setup ranges:
PASS: Output the data log about pass results.
FAIL: Output the data log about fail results.
Site_Fail: This is default mode, if one site fail then data log will stop.
Fail_Only: This mode can log fail cycles only, the display count can be set in "Display Count".

Count" field.

Continue: This mode can log pass and fail cycles.

Display Count: Indicate how many log count want to display.

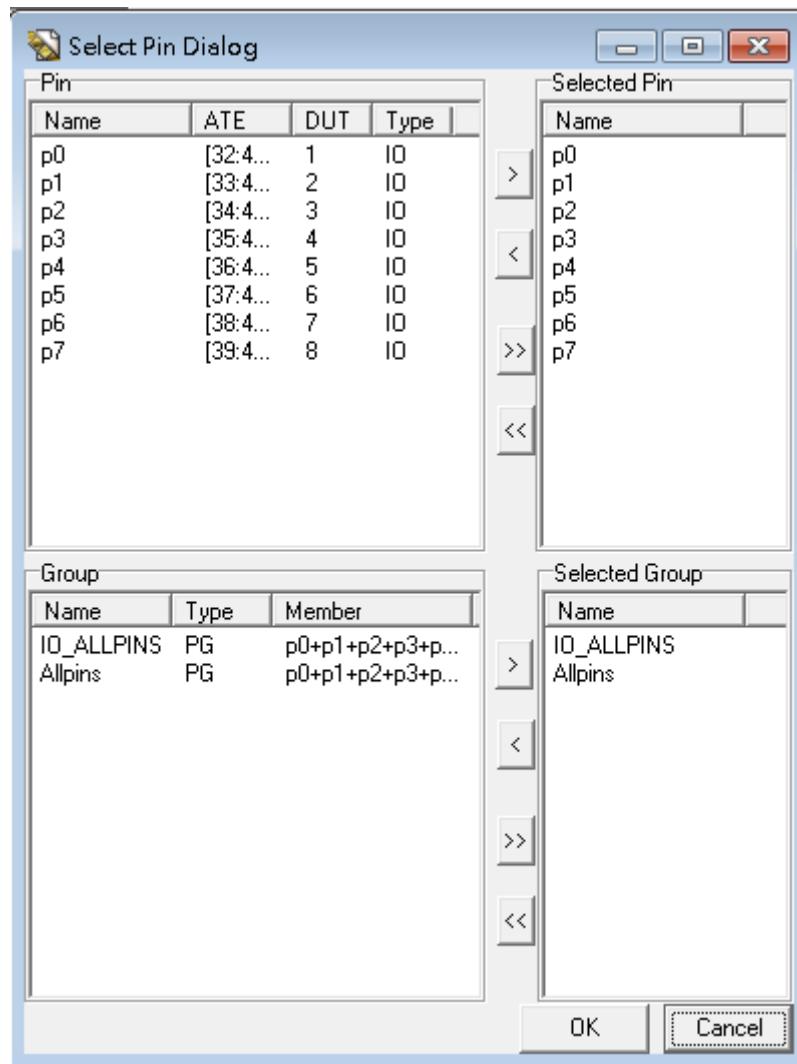
Turn Over: Show the overflowed measured values and judgment results (pass/fail) cover from the first line or just the last line.

Selected Pin Name: This button will invoke popup window below for selecting pins.

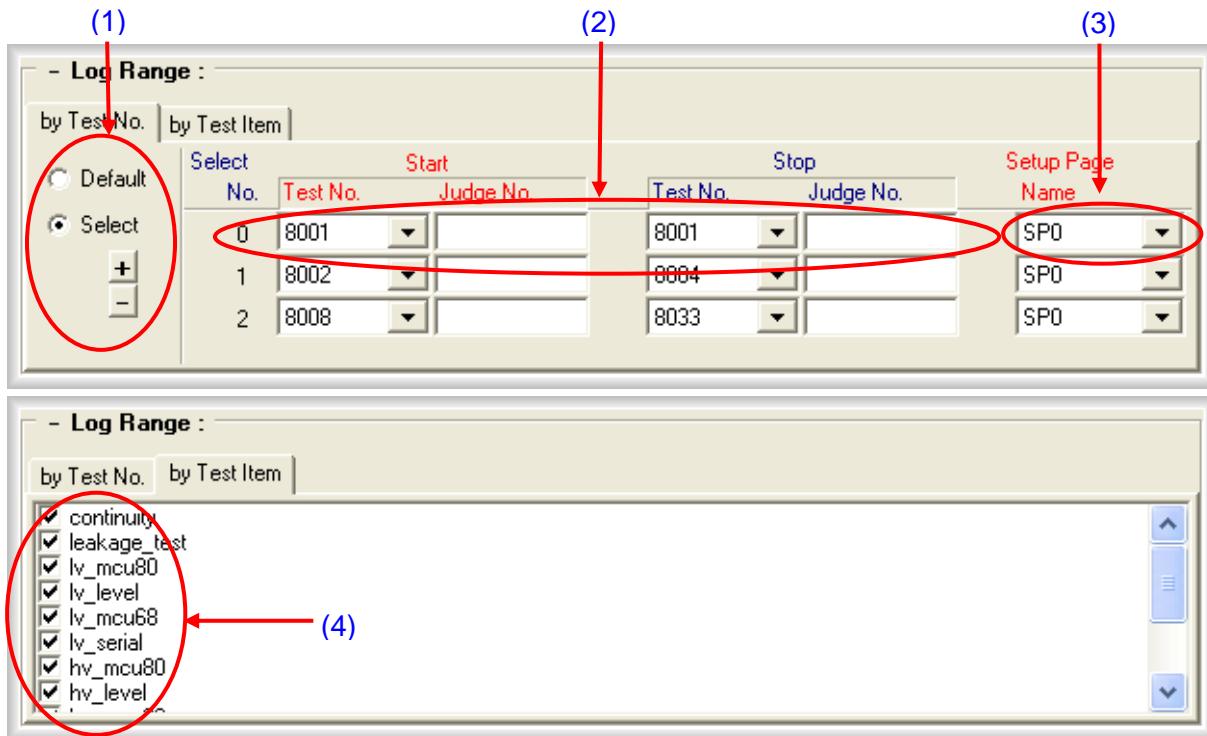
(Refer to Chapter 20 for how to use the Select Pin Dialog Window)

- (6) Output the data log results with the following format:

Digest: Output the data log results with digest information in the end.

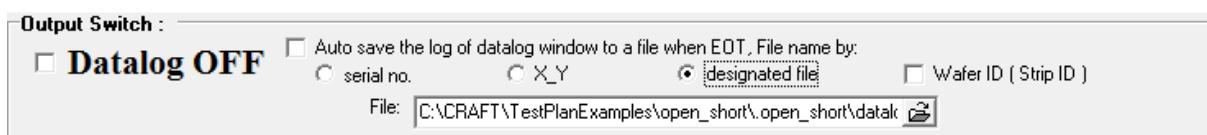
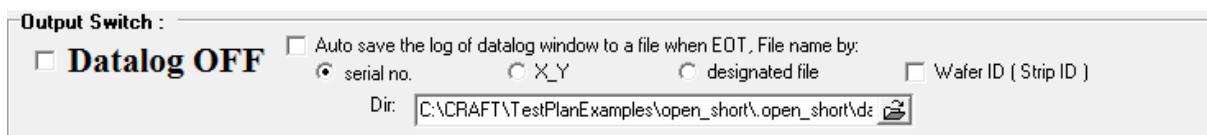


7.5.2.3 Log Range



- (1) Specify the data acquisition range.
Default: Subject all test numbers to data logging.
Select: Subject the test and judge numbers designated in area (2) and (3) to data logging.
- (2) When (1) Select is chosen as the data log acquisition range, the range defined by the data log acquisition Start and Stop test numbers/judge numbers will be subjected to data logging. Numeric letters are only effective. The judge number entries are omissible.
- (3) Each Start/Stop combination can select one setup page for relative range.
- (4) Choose which test item will log or not.

7.5.2.4 Output Switch

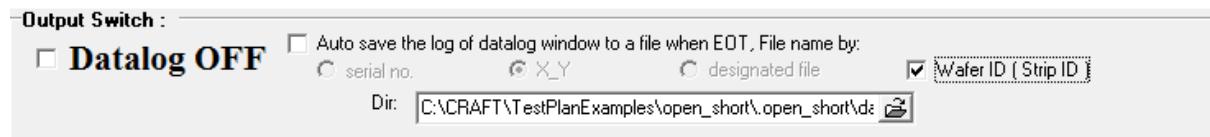


If Datalog OFF check box is chosen, the data log result will be not executed. For the sake of performance, this option will be always checked when in production mode

If “Auto save the log of datalog window” check box is chosen, the data log on datalog window will be saved automatically when each test is ready. There are three options for file name: (1)

serial no: file named by serial no. of test. (2) X_Y: file named by X and Y coordinate of first die for current test on wafer. (3) designated file: file selected by user.

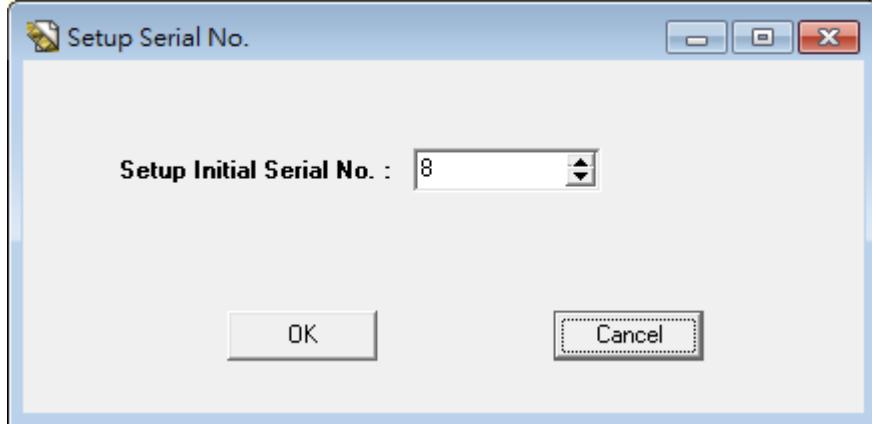
For serial no and X_Y options, the file path can be chosen by the following “Dir” setup. For designated file option, the file can be chosen by the following “File” setup.



If “Wafer ID(Strip ID)” check box is chosen, , the data log on datalog window will be created folder and saved to folder automatically when each test is ready.

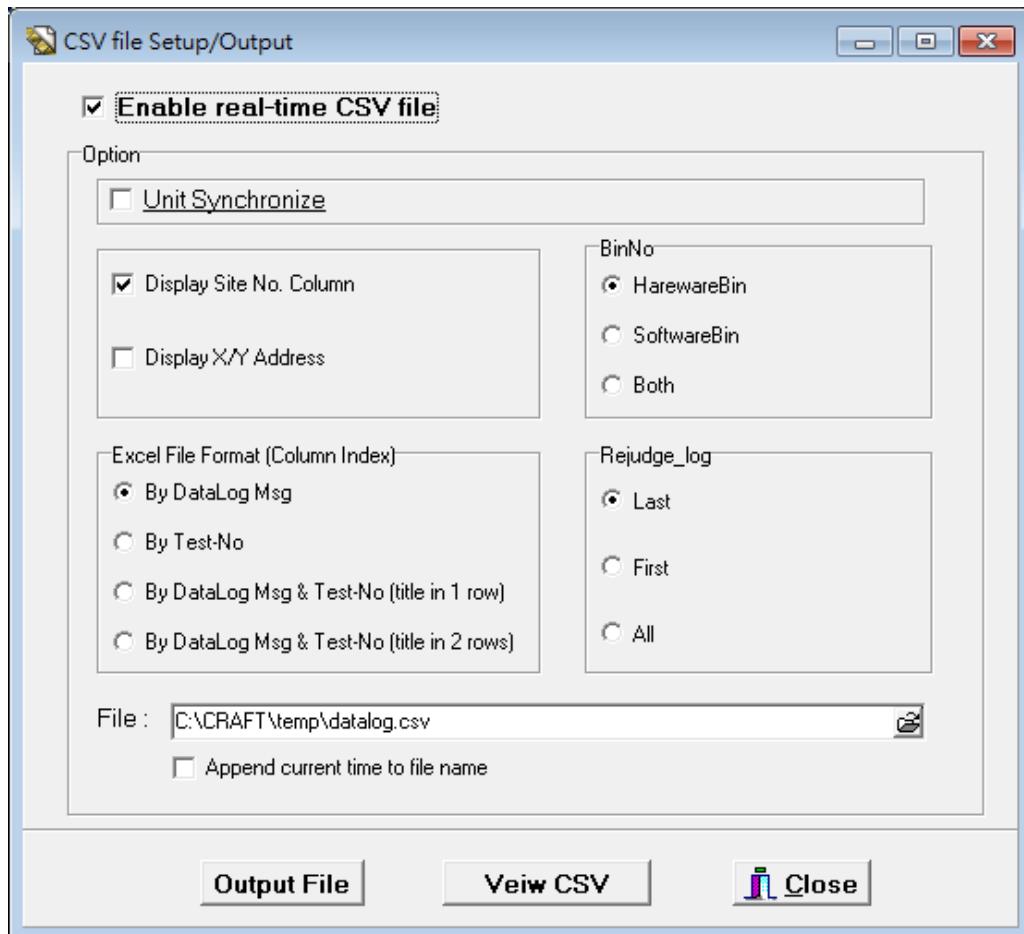
7.5.3 Using Serial No Setup

The following window appears when the Setup Serial No menu is clicked. The window contains one column to set initial serial no for next test.



7.5.4 Using CSV Output Setup

The following window appears when the Compact & CSV mode menu is clicked.



The window contains many options for CSV as follows:

- ① Enable real-time CSV file: when only the option is set, the tool can output CSV file when user want to save/view CSV file.
- ② Unit Synchronize: The unit of test data in CSV file is the same as the unit of high/low limit.
- ③ Display Site No. Column: Write site no to CSV file.
- ④ Display X/Y Address: Write X/Y address to CSV file.
- ⑤ Bin No: output Hardware bin, Software bin or both to CSV file.
- ⑥ Excel File Format(Column Index): Set columns are index by Datalog message, Test no, or Both.
- ⑦ Rejudge_log: decide which re-judge test data will be written into CSV file.
- ⑧ File: Set the output CSV file name. User can enable “Append...” option to append time to file name automatically.

Output File: Output CSV file to the directory that user designates.

View CSV: Display datalog as CSV format directly.

7.5.5 Using Symbol Window

You can choose View->Symbol in menu bar to display this window and click (1) Symbol caption to hide.

(1)

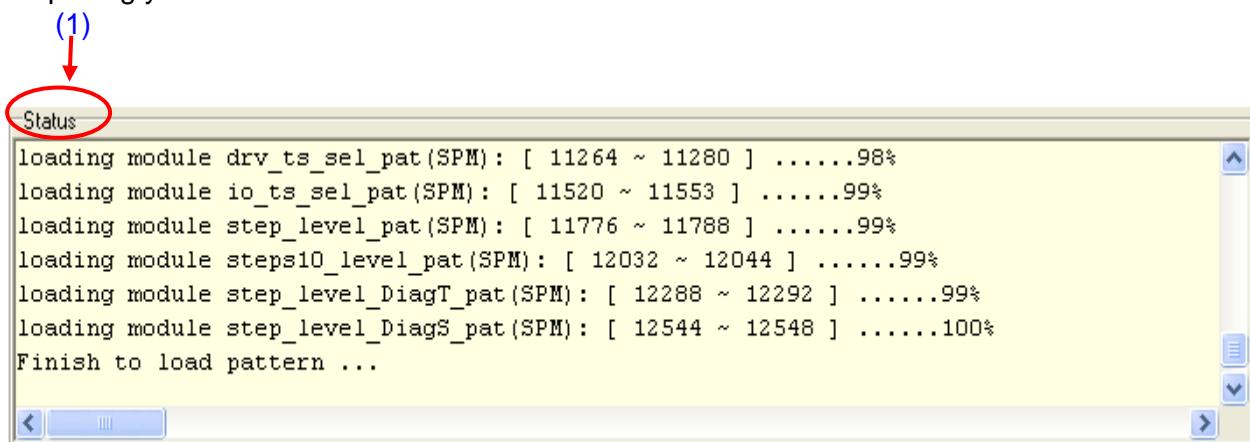
(2)

Symbol	IO Pins	LCD Pins	Mode	Capture Pin
Pattern	X G 0 1 Z Z V L H A B C D K U S R T	A B C D E F L H Z Z V X =	e w m	^
Fail	? ? ? ? >(H) <(L) - _ / a b c d k @ # \$ %	a b c d e f - / >(H) <(L) - ? ?	edge window mask	capture

- (2) Indicate I/O pins' available pattern symbols and their relative fail symbols.
- (3) Indicate LCD pins' available pattern symbols and their relative fail symbols.
(Refer to Language Manual for pattern symbol's description.)
For example:
If pattern "H" fails then symbol is “ ”.
If pattern "L" fails then symbol is “_”.
The fail symbol “?” means patterns (for example X, 0, 1, ... etc) which should not be fail but fail happened.
- (4) Indicate the judge mode.
- (5) Indicate the Capture Pin.

7.5.6 Using Status Window

You can choose View->Status in menu bar to display this window and click ① Status caption to hide. This window displays the standard error channel data of test plan, for example load pattern's information. You can also use `fprintf(stderr, "...")` in your test plan program for outputting your data here.



7.5.7 Using Input Window

This window provides the standard input channel to test plan. You can click (1) Input caption to hide. Whenever test plan run into wait statement in test plan program, for example `getchar()`, you can input char from this window to your test plan program.



7.5.8 Using Datalog Window

This window is mainly window for data log. It displays the standard out channel data of test plan, for example all CRAFT statement's datalog. You can also use `fprintf(stdout, "...")` in your test plan program for outputting your data here. The green color indicates PASS result and the red color indicates FAIL result, you can click the right key of mouse to enable/disable this function. The datalog output format will be described in next section.

Datalog									
840									
841 JUDGE_PAT: (Log Site Fail)									
842 P/F Test Test Judge Test									
843 Count No. No. Type									
844 PASS 10 100 40 FUNC(func.pat)									
845									
846 JUDGE_PAT: (Log Site Fail)									
847 P/F Test Test Judge Test									
848 Count No. No. Type									
849 PASS 10 100 40 FUNC(func.pat)									
850									
851 JUDGE_PAT: (Log Site Fail)									
852 P/F Test Test Judge Test									
853 Count No. No. Type									
854 PASS 10 100 40 FUNC(func.pat)									
855									
856									
857 JUDGE_FREQ:									
858 P/F Test Judge Test Socket Pin_name									
859 No. No. Type No.									
860 FAIL 100 41 OSC_FRE0 p15(263)									
861 FAIL 100 41 OSC_FRE1 p15(271)									
862 FAIL 100 41 OSC_FRE2 p15(279)									

7.6 Data Log Output Format

There are some common items in all of data log format as following Table 7-12.

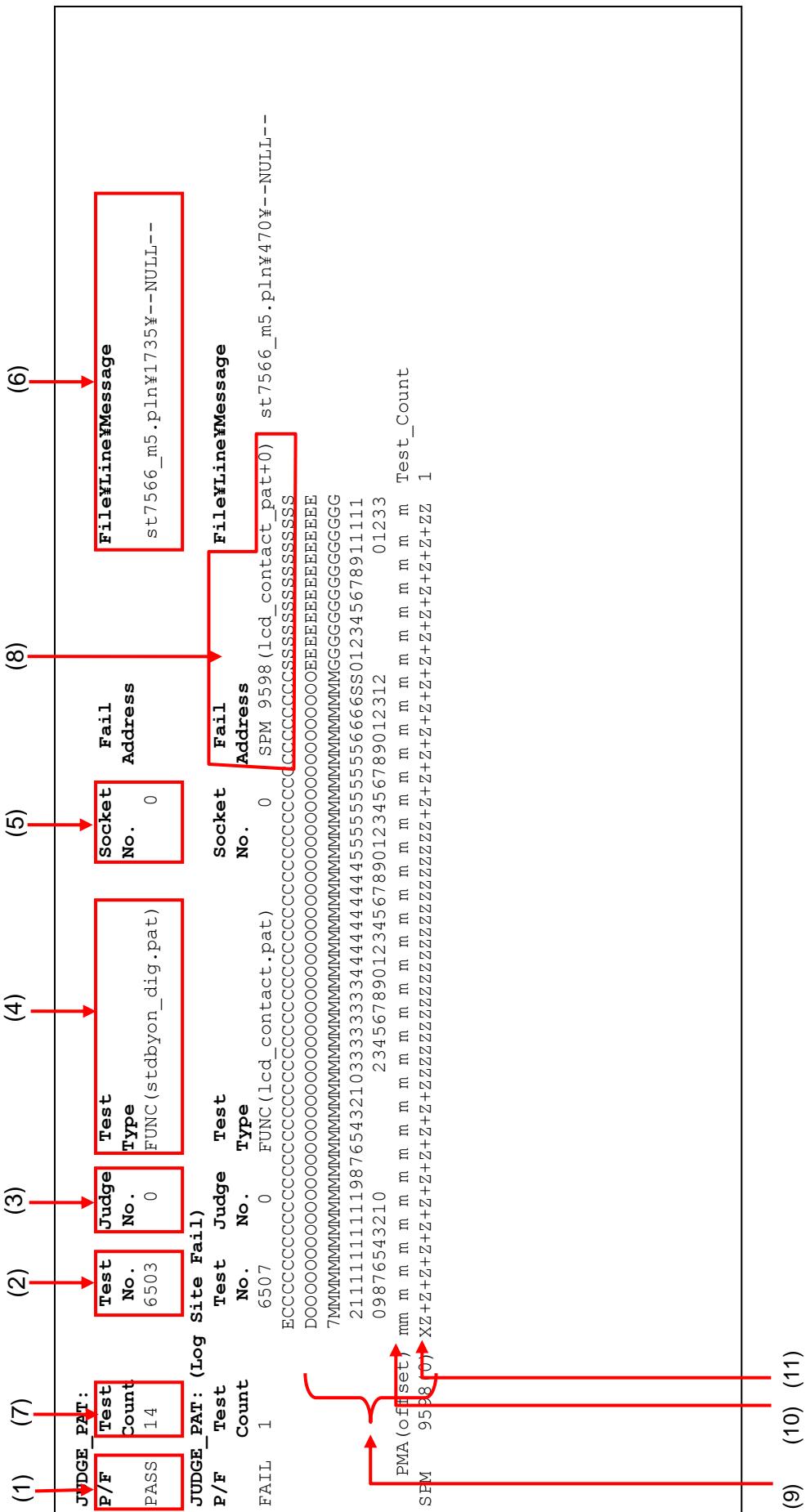
No.	Item	Description
(1)	P/F	Show the measurement judgment result. 1. Pass: Pass (conforming). 2. Fail: Fail (nonconforming).
(2)	Test No.	Measurement test number.
(3)	Judge No.	Judge number of a measurement test number.
(4)	Test Type	Show the test type used for measurement. FUNC (pattern name)
(5)	Socket No.	Show the measurement target DUT socket number.
(6)	File/Line/Message	Show the fail occurrence pattern file name, line number and message for comment.

Table 7-12 Common Data Log Items

7.6.1 AC Data Log Output Format (PATTERN)

When the test plan run into JUDGE_PAT() statement, and the output switch (refer to the previous section “Using the Parameter Setup Columns”) is on, the judgment result as follows will be displayed in Datalog view window. The table below lists each format item description. If a PASSED judgment result is obtained, items ⑦ to ⑨ of the following format will not be displayed.

No.	Item	Description
(7)	Test Count	Show the fail occurrence pattern execution step (cycle) value.
(8)	Fail Address	Show the fail occurrence pattern internal relative address value.
(9)	Fail PIN	Show the fail occurrence pin name.
(10)	Mask Flag	Show character ‘m’ if this pin had been masked.
(11)	Fail pattern symbol	Refer to Language Manual for pattern symbol’s description.

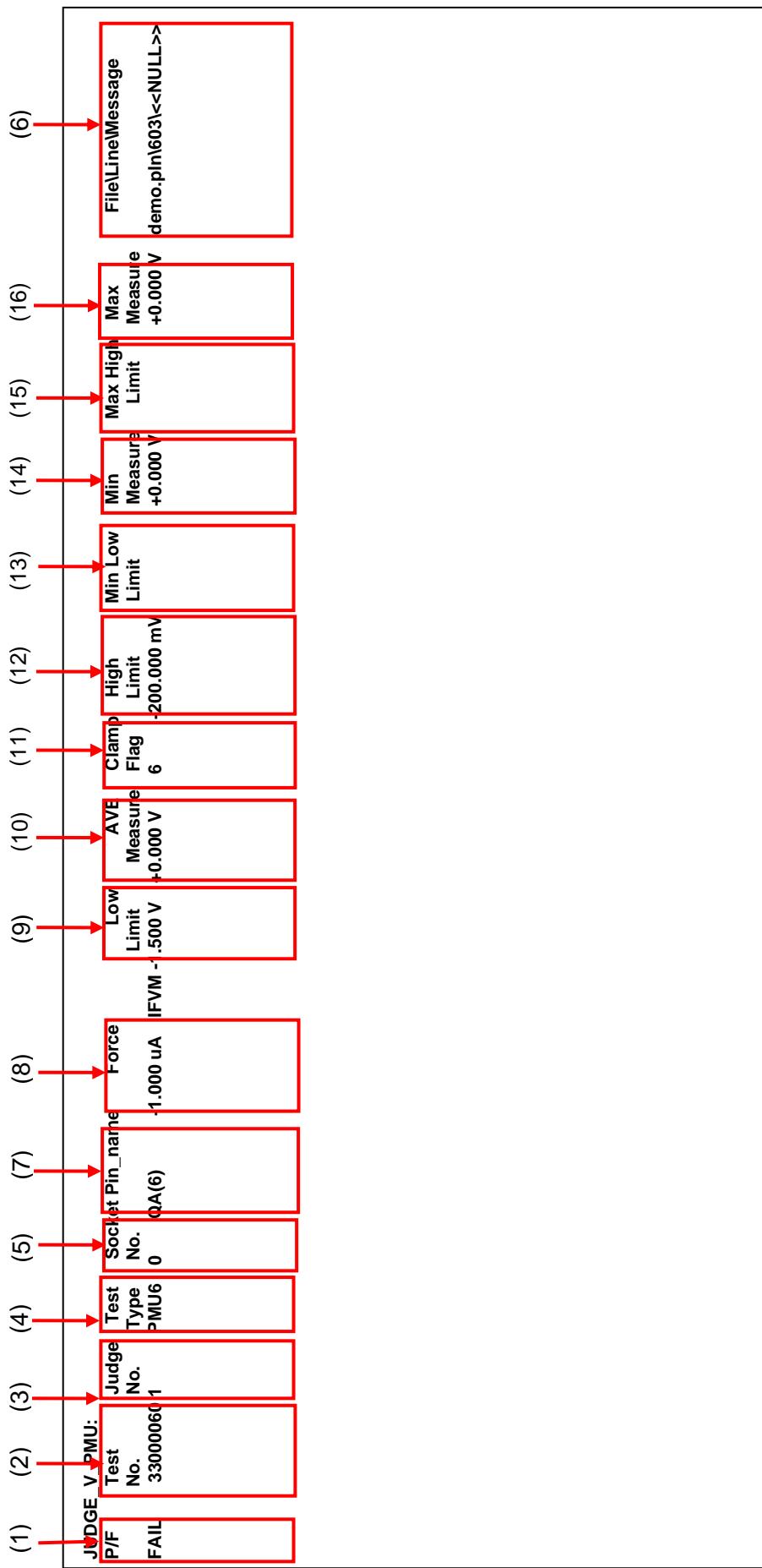


7.6.2 DC Data Log Output Format (PMU/PPMU/DPS/PREF)

7.6.2.1 PMU

When the test plan run into JUDGE_X_PMU() statement, and the output switch (refer to the previous section “Using the Parameter Setup Columns”) is on, the judgment result as follows will be displayed in Datalog view window. The table below lists each format item description.

No.	Item	Description
(7)	Pin_name	All PMU relay connected pins will be showed here.
(8)	Force	Applied force value for the measurement process (with VFIM, IFVM, VMM indicated for discrimination purposes).
(9)	Low	Lower-limit value for the measurement process.
(10)	Measured	Measured value.
(11)	Clamp Flag	If any “Clamp” happened
(12)	High	Upper-limit value for the measurement process.
(13)	Min Low Limit	Lower-limit value for Min measure value
(14)	Min Measure	Min measure value of all measure values
(15)	Max High Limit	Upper-limit value for Max measure value
(16)	Max Measure	Max measure value of all measure values



7.6.2.2 PREF

When the test plan run into JUDGE_X_PREF() statement, and the output switch (refer to the previous section “Using the Parameter Setup Columns”) is on, the judgment result as follows will be displayed in Datalog view window. The table below lists each format item description.

No.	Item	Description
(7)	Pin_name	Show PREF resource by pin_name which pin_type is PREF. (Refer to Language Manual for PIN_LIST description.)
(8)	Force	Applied force value for the measurement process (with IFVM and VMM indicated for discrimination purpose).
(9)	Low	Lower-limit value for the measurement process.
(10)	Measured	Measured value.
(11)	High	Upper-limit value for the measurement process.
(12)	Clamp Flag	If any “Clamp” happened
(13)	Min Low Limit	Lower-limit value for Min measure value
(14)	Min Measure	Min measure value of all measure values
(15)	Max High Limit	Upper-limit value for Max measure value
(16)	Max Measure	Max measure value of all measure values

(1)	JUDGE_V_PREF	P/F	Test No.	Judge No.	Socket No.	Pin_name	Force	Low Limit	Ave Measure	Clamp Flag	High Limit	Min Low Limit	Max High Limit	Measure Limit	Max Measure	FileLineMessage
(2)	FAIL	33000015	1	1	0	ydd(800)	-1.000 mA	+1.000 V	+0.000 V	48	+10.000 V	-500.000 mV	+500.000 mV	+0.000 V	+0.000 V	demo.println(<NULL>)
(3)	PREF	Test No.	1	1	0	PREFF800	-1.000 mA	+1.000 V	+0.000 V	48	+10.000 V	-500.000 mV	+500.000 mV	+0.000 V	+0.000 V	demo.println(<NULL>)
(4)	PREFF800	Test No.	1	1	0	PREFF800	-1.000 mA	+1.000 V	+0.000 V	48	+10.000 V	-500.000 mV	+500.000 mV	+0.000 V	+0.000 V	demo.println(<NULL>)
(5)	PREFF800	Test No.	1	1	0	PREFF800	-1.000 mA	+1.000 V	+0.000 V	48	+10.000 V	-500.000 mV	+500.000 mV	+0.000 V	+0.000 V	demo.println(<NULL>)
(6)																
(7)																
(8)																
(9)																
(10)																
(11)																
(12)																
(13)																
(14)																
(15)																
(16)																

7.6.2.3 DPS

When the test plan run into JUDGE_X_DPS() statement, and the output switch (refer to the previous section “Using the Parameter Setup Columns”) is on, the judgment result as follows will be displayed in Datalog view window. The table below lists each format item description.

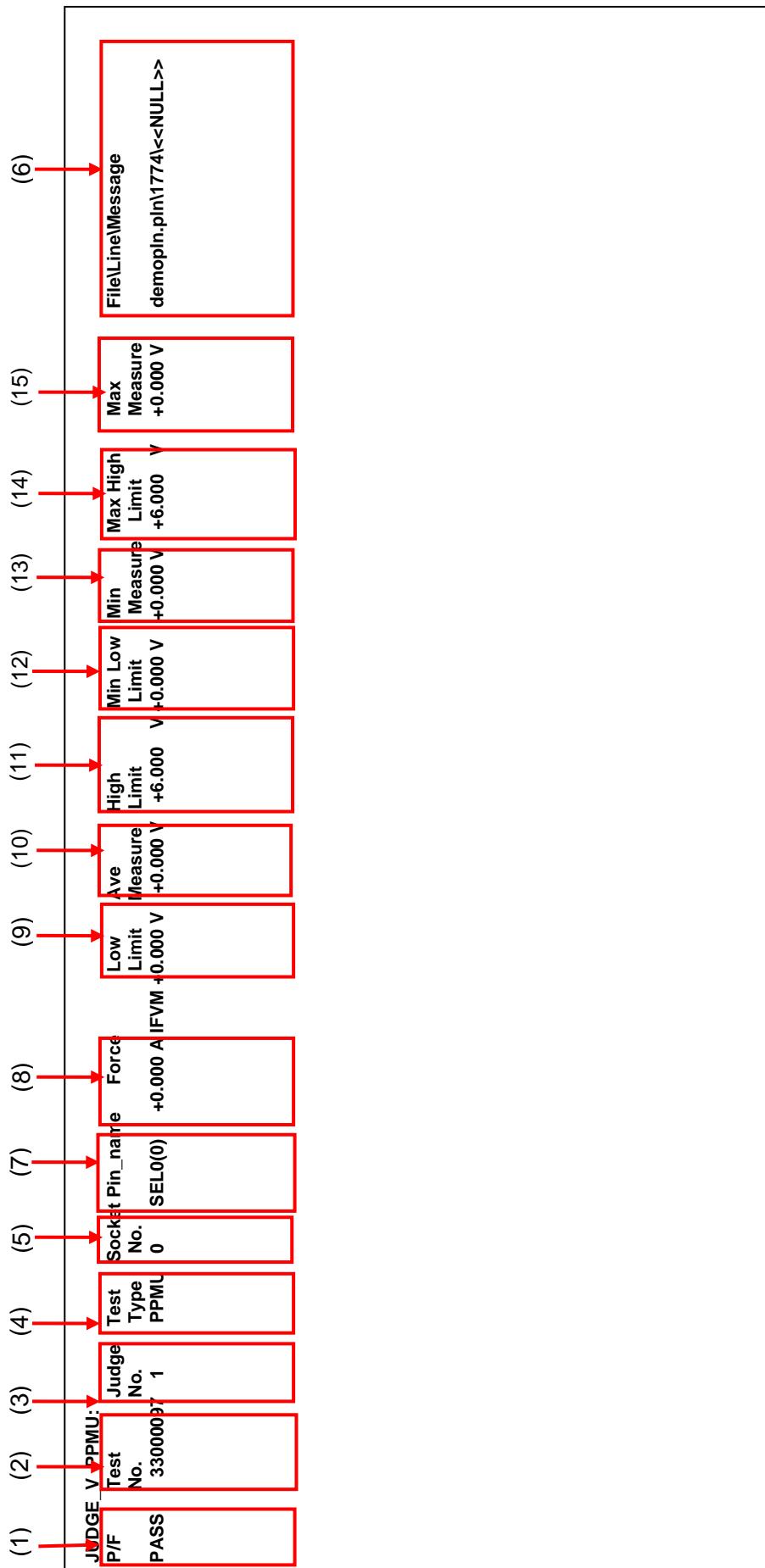
No.	Item	Description
(7)	Pin_name	Show DPS resource by pin_name which pin_type is DPS. (Refer to Language Manual for PIN_LIST description.)
(8)	Force	Applied force value for the measurement process.
(9)	Low	Lower-limit value for the measurement process.
(10)	Measured	Measured value.
(11)	High	Upper-limit value for the measurement process.
(12)	Clamp Flag	If any “Clamp” happened
(13)	Min Low Limit	Lower-limit value for Min measure value
(14)	Min Measure	Min measure value of all measure values
(15)	Max High Limit	Upper-limit value for Max measure value
(16)	Max Measure	Max measure value of all measure values

(1)	JUDGE_I DPS: P/F Test No. 100 FAIL
(2)	JUDGE_I DPS: V_DPS Test No. 100 FAIL
(3)	Judge No. 1
(4)	Test Type DPS861
(5)	Socket No. 0
(6)	Pin_name Vdps(864)
(7)	Force 0.000 A
(8)	Low Limit +2.000V
(9)	Ave Measure +0.000 V
(10)	Clamp Flag 0
(11)	High Limit
(12)	Min Low Limit
(13)	Min Measure +0.000 V
(14)	Max High Limit
(15)	Max Measure -0.000 V
(16)	File\Line\Message demo.pIn265\<<NULL>>
(6)	

7.6.2.4 PPMU

When the test plan run into JUDGE_X_PPMU() statement, and the output switch (refer to the previous section “Using the Parameter Setup Columns”) is on, the judgment result as follows will be displayed in Datalog view window. The table below lists each format item description.

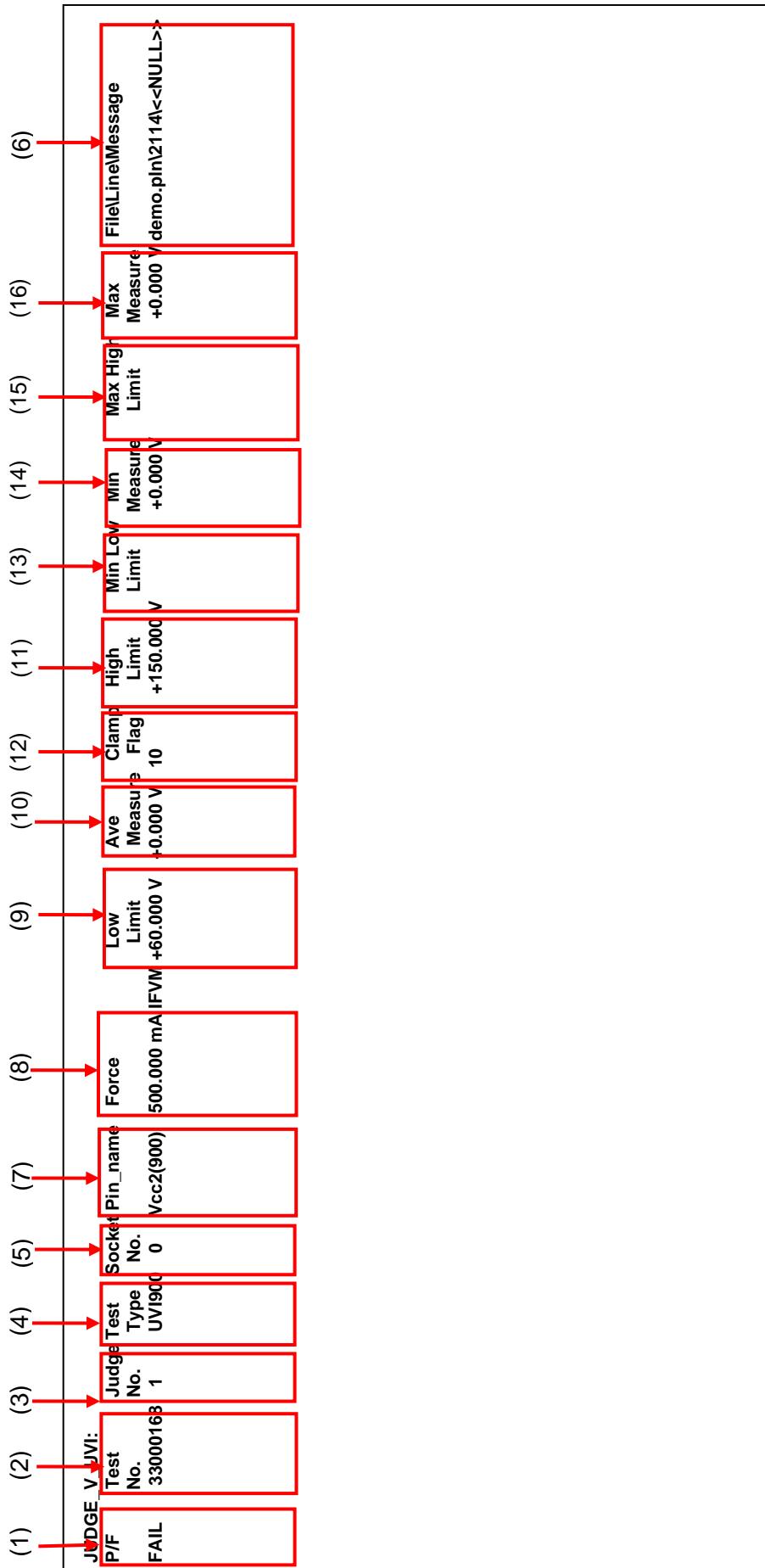
No.	Item	Description
(7)	Pin_name	Judged pins (only suit for IO-Pins) will be shows here.
(8)	Force	Applied force value for the measurement process (with VFIM, IFVM indicated for discrimination purposes).
(9)	Low	Lower-limit value for the measurement process.
(10)	Measured	Measured value.
(11)	High	Upper-limit value for the measurement process.
(12)	Min Low Limit	Lower-limit value for Min measure value
(13)	Min Measure	Min measure value of all measure values
(14)	Max High Limit	Upper-limit value for Max measure value
(15)	Max Measure	Max measure value of all measure values



7.6.2.5 UVI

When the test plan run into JUDGE_X_UVI() statement, and the output switch (refer to the previous section “Using the Parameter Setup Columns”) is on, the judgment result as follows will be displayed in Datalog view window. The table below lists each format item description.

No.	Item	Description
(7)	Pin_name	Show DPS resource by pin_name which pin_type is DPS. (Refer to Language Manual for PIN_LIST description.)
(8)	Force	Applied force value for the measurement process.
(9)	Low	Lower-limit value for the measurement process.
(10)	Measured	Measured value.
(11)	High	Upper-limit value for the measurement process.
(12)	Clamp Flag	If any “Clamp” happened
(13)	Min Low Limit	Lower-limit value for Min measure value
(14)	Min Measure	Min measure value of all measure values
(15)	Max High Limit	Upper-limit value for Max measure value
(16)	Max Measure	Max measure value of all measure values



7.6.3 OSC Data Log Output Format (TIME/FREQ)

7.6.3.1 JUDGE_TIME

When the test plan run into JUDGE_TIME() statement, and the output switch (refer to the previous section “Using the Parameter Setup Columns”) is on, the judgment result as follows will be displayed in Datalog view window. The table below lists each format item description.

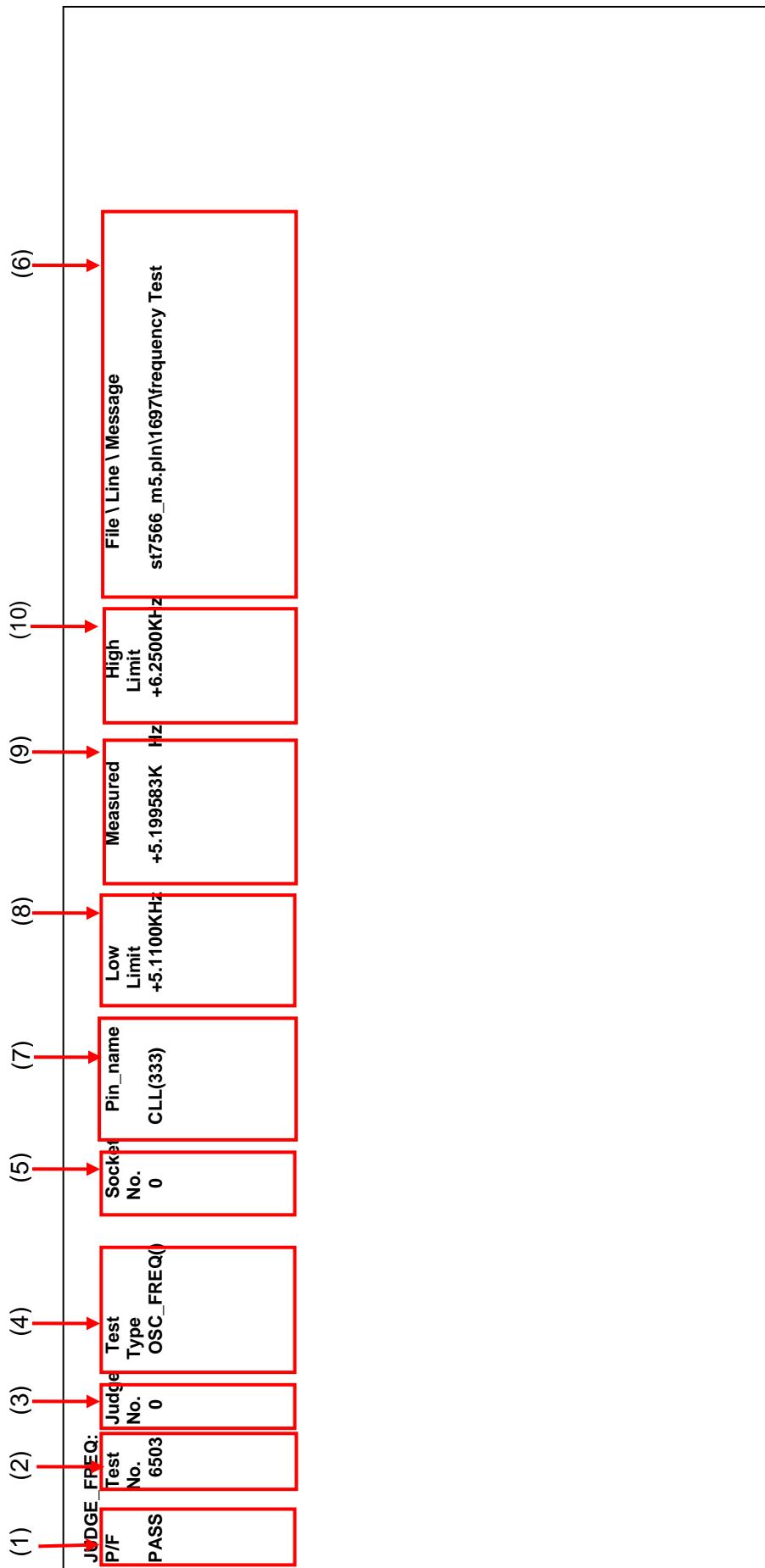
No.	Item	Description
(7)	Pin_name	Judged pins will be showed here.
(8)	Low	Lower-limit value for the measurement process.
(9)	Measured	Measured value.
(10)	High	Upper-limit value for the measurement process.

(1)	JUDGE_TIME:	Test	Judge	Test	Type	OSC_TIME()
(2)	PF	No.	6503	No.	0	
(3)	PASS					
(4)						
(5)		Socket	No.	CLL(333)	Low	+5.1100 nS
(6)					Measured	+5.15 nS
(7)					High	+6.2500 nS
(8)						
(9)						
(10)						
(6)					File\Line\Message	st7566_m5.pln\16977Time Test

7.6.3.2 JUDGE_FREQ

When the test plan run into JUDGE_FREQ() statement, and the output switch (refer to the previous section “Using the Parameter Setup Columns”) is on, the judgment result as follows will be displayed in Datalog view window. The table below lists each format item description.

No.	Item	Description
(7)	Pin_name	Judged pins will be showed here.
(8)	Low	Lower-limit value for the measurement process.
(9)	Measured	Measured value.
(10)	High	Upper-limit value for the measurement process.



8. Test Plan Program Sequencer

8.1 Plan Sequencer Overview

The plan sequencer is a tool which furnishes the following functions to the test plan program.

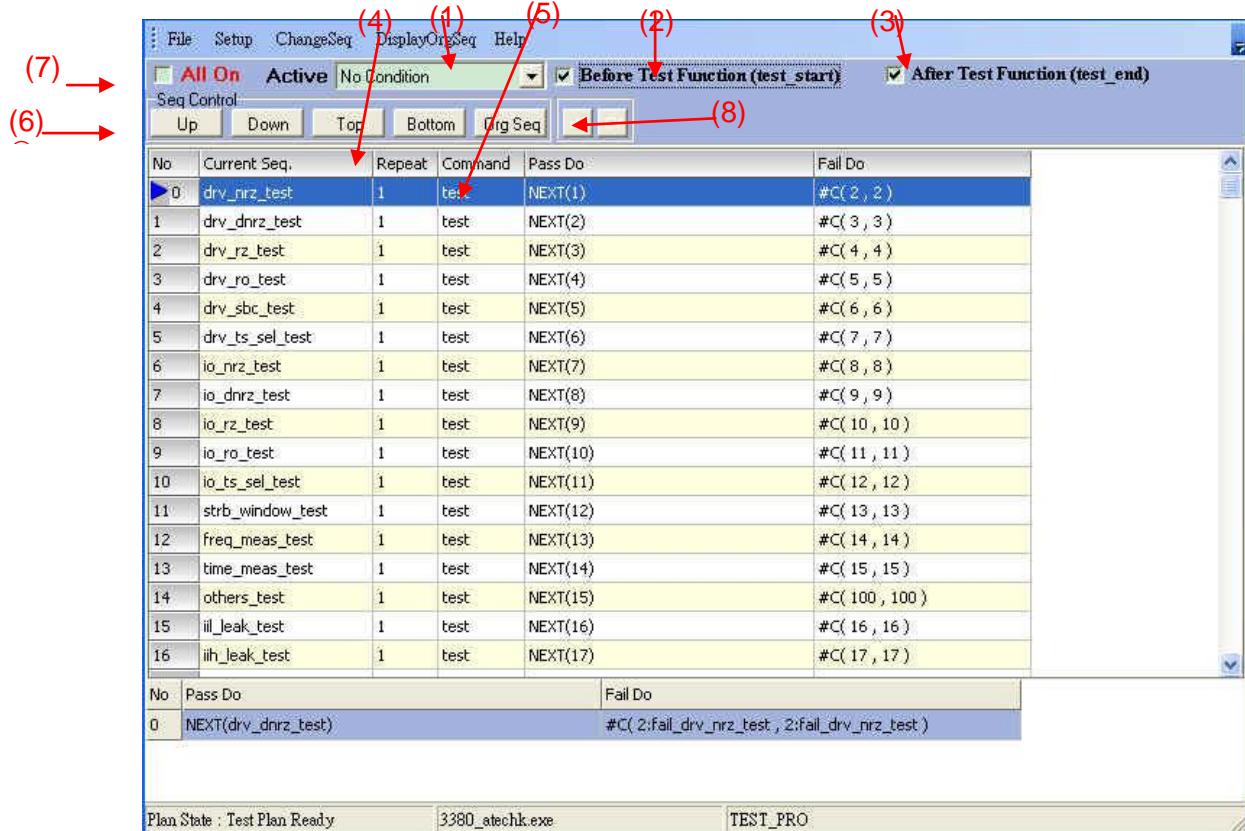


Figure 8-1 Plan Sequencer

No.	Function	Description
(1)	Active Condition	Change active condition at run-time, this affects running-sequence.
(2)	Before Test Function	Specify that plan program use or does not use before-test function.
(3)	After Test Function	Specify that plan program use or does not use after-test function.
(4)	Item Repeat Count	Specify how many times the selected item run.
(5)	Item Command	Specify what type the selected item run, provide test, override and skip.
(6)	Sequence Redefine	Change the execution-sequence of plan.
(7)	Command All On	If any test item fails, next test item in execution-sequence will continue.
(8)	Undo/Redo Function	Support Undo/Redo function when user modifies the sequence.

Table 8-1 Plan Sequencer Function List

8.2 Start and Quit Plan Sequencer

The plan sequencer is to be started from the System Control window. The procedure for starting and quitting the plan sequencer is described below.

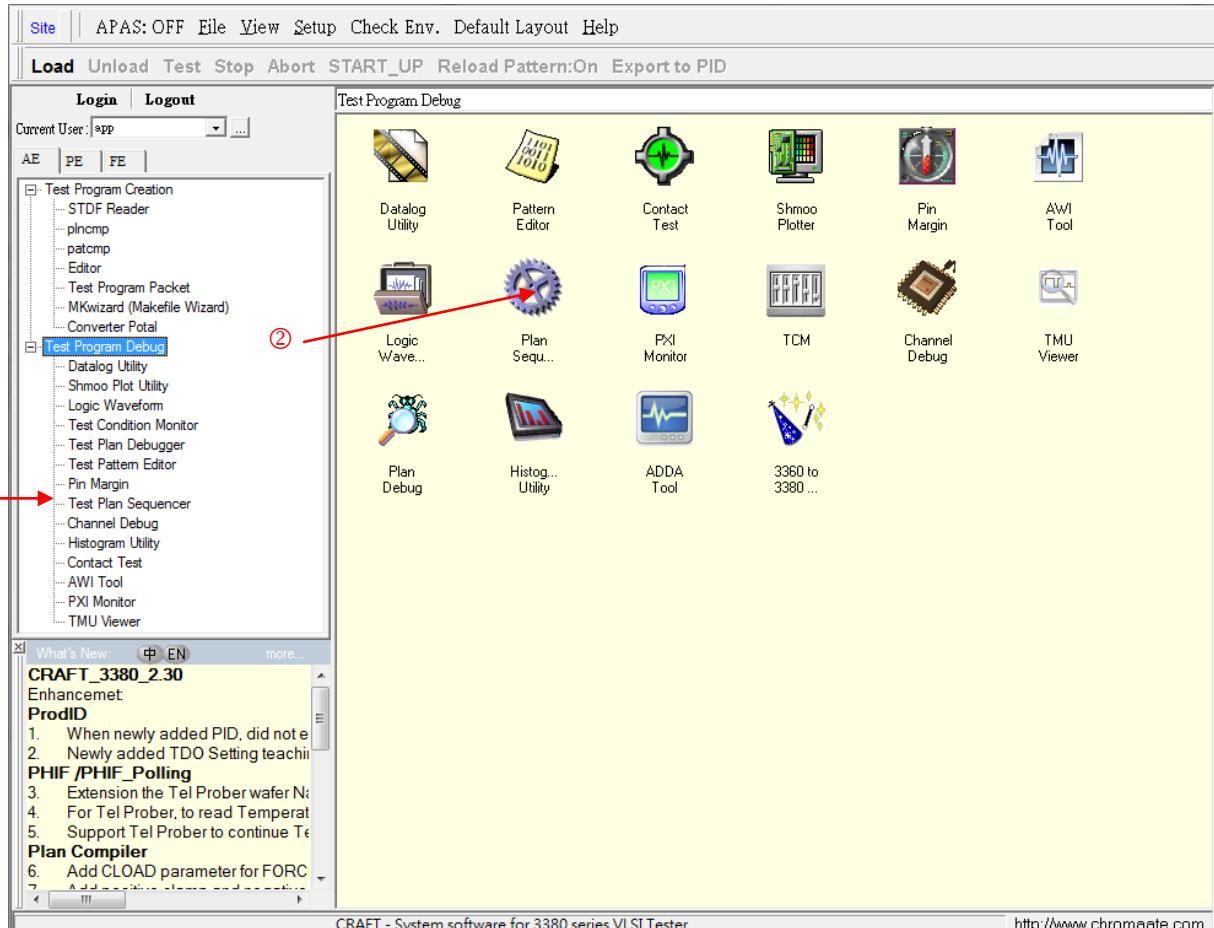


Figure 8-2 System Control Window

(1) Start the plan sequencer

The plan sequencer window opens when you click the sequencer item (1) or the sequencer icon (2) in the system control window (Figure 8-2).

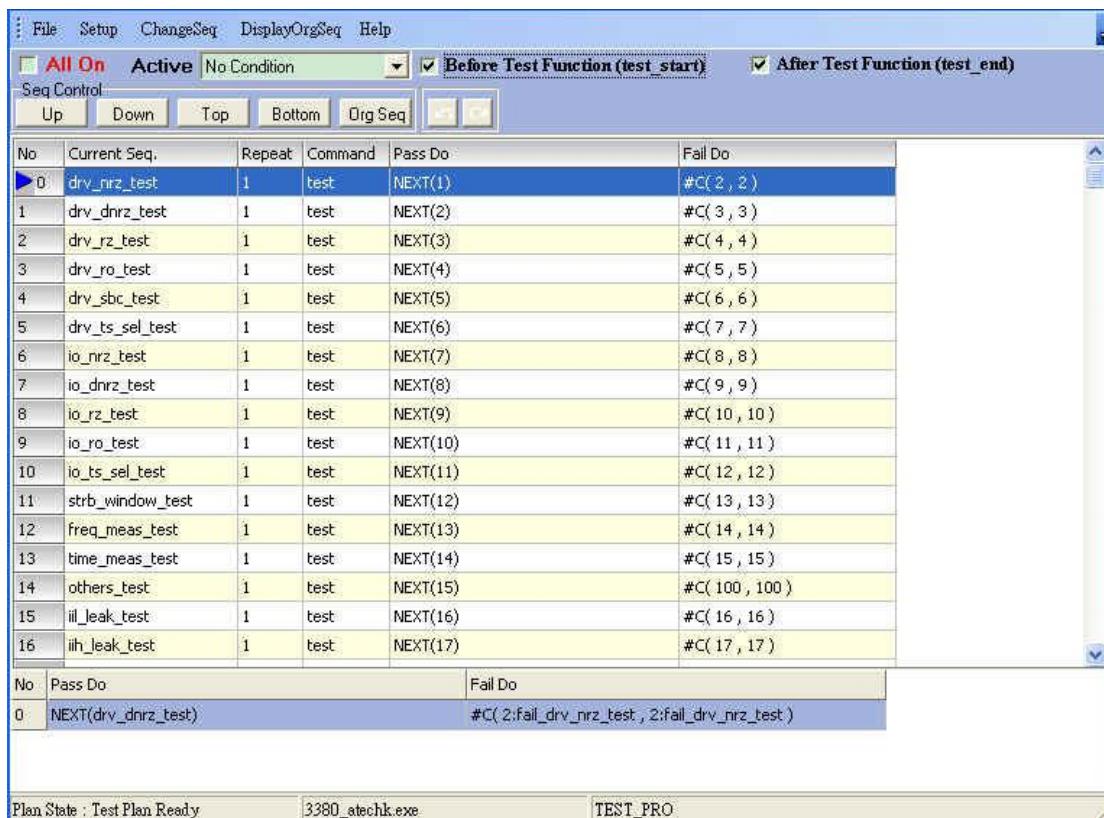


Figure 8-3 Plan Sequencer Window

(2) Quit the plan sequencer

Click the “Quit” of File in the plan sequencer window.

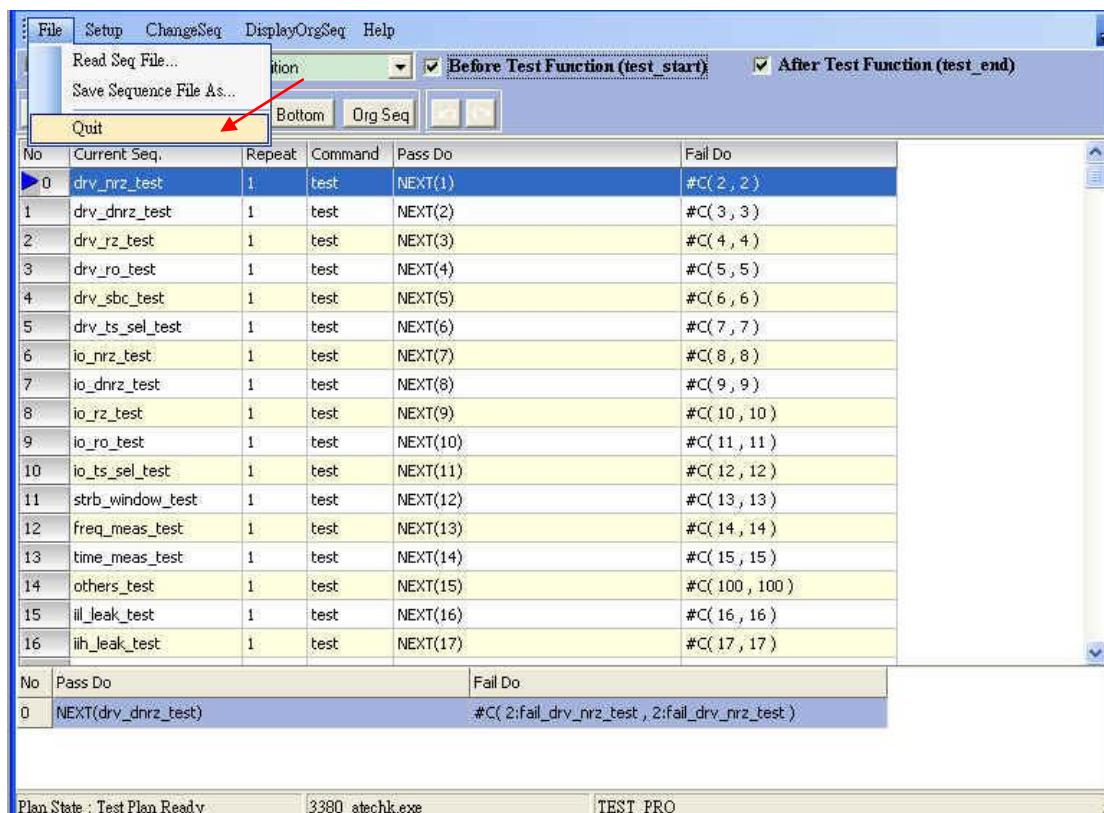


Figure 8-4 Plan Sequencer Main Menu

8.3 Change Active Condition

This section describes how to change the active condition of running test plan program.

Click the Active Condition pull down menu. It appears current selectable conditions. Meanwhile, select your desired condition.



Figure 8-5 Change Active Condition

8.4 Decide Before-Test & After-Test Function Execution State

This section describes how to decide Before-Test Function and After-Test Function run can execute or not.

(1) Before-Test Function



Figure 8-6 Before-Test Function

Click “Before Test Function” check box to specify to run the before-test function.

(2) After-Test Function



Figure 8-7 After-Test Function

Click “After Test Function” check box to specify to run the after-test function.

8.5 Item Repeat Count

This section describes the procedure of setting item repeat count at running plan program.

No	Current Seq.	Repeat	Command
▶ 0	drv_nrz_test	3	test
1	drv_dnrz_test	1	test
2	drv_rz_test	1	test
3	drv_ro_test	1	test
4	drv_sbc_test	1	test
5	drv_ts_sel_test	1	test
6	io_nrz_test	1	test
7	io_nrz1_test	1	test
8	io_rz_test	1	test
9	io_rz1_test	1	test
10	io_ro_test	1	test
11	io_ro1_test	1	test

1. Pick up one or more items
2. Input repeat count

Figure 8-8 Change Item Repeat Count

8.6 Item Command

This section describes the procedure of setting item command at running plan program.

No	Current Seq.	Repeat	Command
▶ 0	drv_nrz_test	1	skip ▾
1	drv_dnrz_test	1	test
2	drv_rz_test	1	skip over
3	drv_ro_test	1	test
4	drv_sbc_test	1	test
5	drv_ts_sel_test	1	test
6	io_nrz_test	1	test
7	io_nrz1_test	1	test
8	io_rz_test	1	test
9	io_rz1_test	1	test
10	io_ro_test	1	test
11	io_ro1_test	1	test
12	io_ts_sel_test	1	test

1. Pick up one or more items
2. Select command

Figure 8-9 Item Command

You can click All On checkbox and Command column will become o_on type.

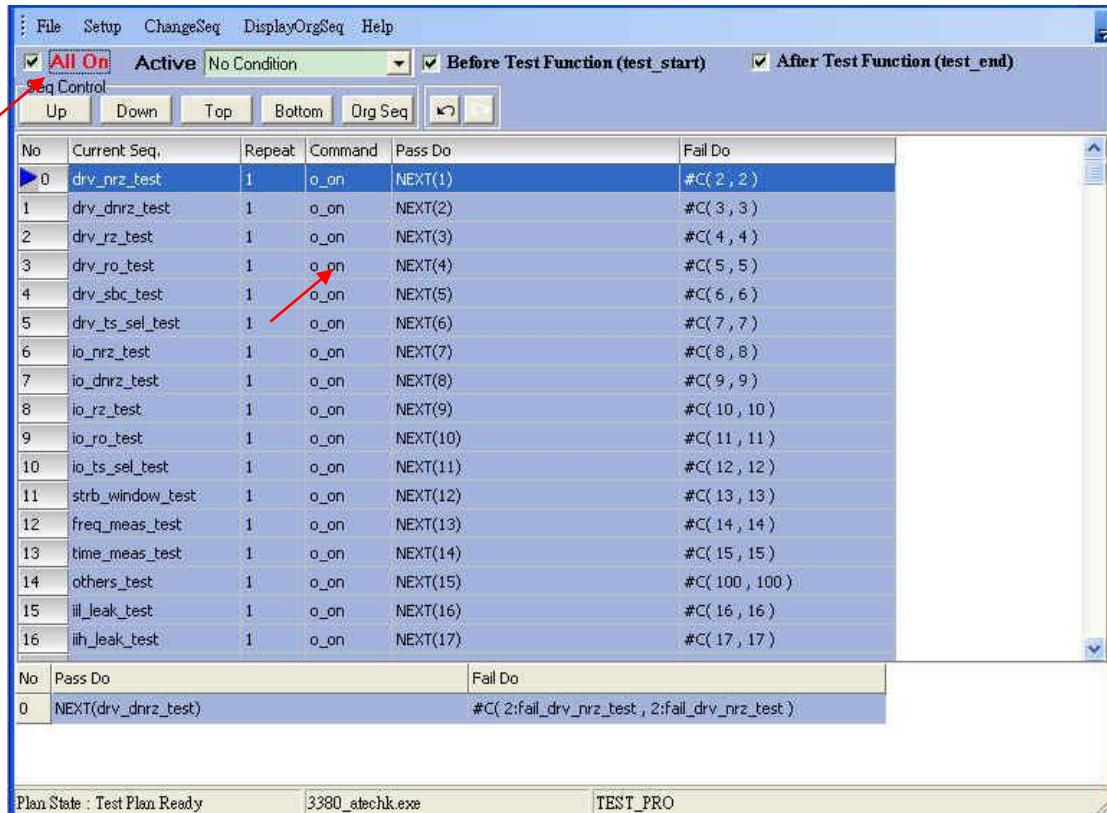


Figure 8-10 Click All On Checkbox

When all item commands are o_on type, if any test item fails, the next test item will continue and the final test result will be classified as fail bin.

8.7 Sequence Redefine

This section describes the procedure of redefine execution sequence at running plan program.

(1) Change Sequence Operation

1. Pick up being changed item in the Current Seq column.
2. Click your operation in the ChangeSeq menu.

No	Current Seq.	Repeat	Command	Pass Do	Fail Do
0	drv_nrz_test	1	test	NEXT(1)	#C(2,2)
1	drv_dnrz_test	1	test	NEXT(2)	#C(3,3)
2	drv_rz_test	1	test	NEXT(3)	#C(4,4)
3	drv_ro_test	1	test	NEXT(4)	#C(5,5)
4	drv_sbc_test	1	test	NEXT(5)	#C(6,6)
5	drv_ts_sel_test	1	test	NEXT(6)	#C(7,7)
6	io_nrz_test	1	test	NEXT(7)	#C(8,8)
7	io_dnrz_test	1	test	NEXT(8)	#C(9,9)
8	io_rz_test	1	test	NEXT(9)	#C(10,10)
9	io_ro_test	1	test	NEXT(10)	#C(11,11)
10	io_ts_sel_test	1	test	NEXT(11)	#C(12,12)
11	strb_window_test	1	test	NEXT(12)	#C(13,13)
12	freq_meas_test	1	test	NEXT(13)	#C(14,14)
13	time_meas_test	1	test	NEXT(14)	#C(15,15)
14	others_test	1	test	NEXT(15)	#C(100,100)
15	iil_leak_test	1	test	NEXT(16)	#C(16,16)
16	iil_leak_test	1	test	NEXT(17)	#C(17,17)
17	osc_clk_test	1	test	NEXT(18)	#C(18,18)

Plan State : Test Plan Ready 3380_atechk.exe TEST_PRO

Figure 8-11 Pick Up being Changed Item

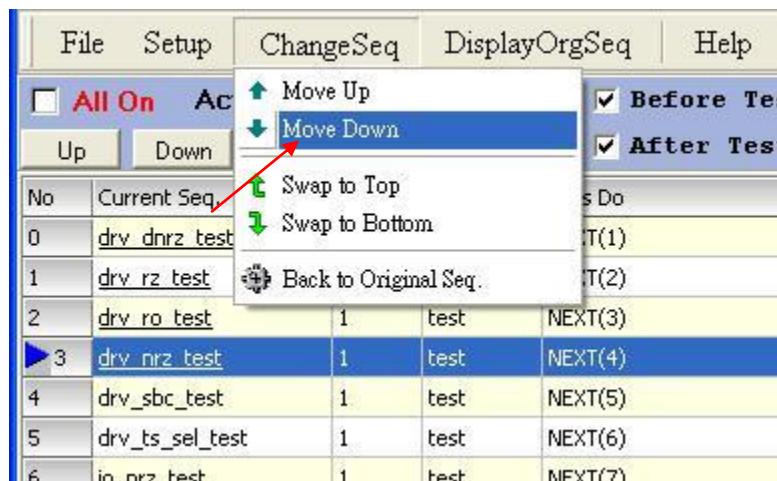


Figure 8-12 Clicking for Your Operation

Move Up: Exchange the selected item with the previous item.

Move Down: Exchange the selected item with the next item.

Swap to Top: Exchange the selected item with the first item.

Swap to Bottom: Exchange the selected item with the last item.

Back to Original Seq.: Re-arrange the changed sequence to initial one.

3. Besides 3, you can click buttons below menu list immediately.



Figure 8-13 Change Sequence by Clicking Button Immediately

(2) Display Original Sequence

Select the "Display Original Seq Column" in DisplayOrgSeq submenu of Plan Sequencer window to see the original execution sequence.

A screenshot of the Plan Sequencer window. The 'DisplayOrgSeq' menu is open, and the 'Display Original Seq Column' option is highlighted with a red box and a red arrow pointing to it. The main table shows a list of test sequences with columns for No, Original Seq., Current Seq., Repeat, Command, Pass Do, and Fail Do. The 'Pass Do' row at the bottom shows the command: NEXT(io_dnrz_test). The status bar at the bottom indicates 'Plan State : Test Plan Ready' and '3380_atechk.exe'.

No	Original Seq.	Current Seq.	Repeat	Command	Pass Do	Fail Do
0	drv_nrz_test	drv_nrz_test	1	test	NEXT(1)	#C(2,2)
1	drv_dnrz_test	drv_dnrz_test	1	test	NEXT(2)	#C(3,3)
2	drv_rz_test	drv_rz_test	1	test	NEXT(3)	#C(4,4)
3	drv_ro_test	drv_ro_test	1	test	NEXT(4)	#C(5,5)
4	drv_sbc_test	drv_sbc_test	1	test	NEXT(5)	#C(6,6)
5	drv_ts_sel_test	drv_ts_sel_test	1	test	NEXT(6)	#C(7,7)
6	io_nrz_test	io_nrz_test	1	test	NEXT(7)	#C(8,8)
7	io_dnrz_test	io_dnrz_test	1	test	NEXT(8)	#C(9,9)
8	io_rz_test	io_rz_test	1	test	NEXT(9)	#C(10,10)
9	io_ro_test	io_ro_test	1	test	NEXT(10)	#C(11,11)
10	io_ts_sel_test	io_ts_sel_test	1	test	NEXT(11)	#C(12,12)
11	strb_window_test	strb_window_test	1	test	NEXT(12)	#C(13,13)
12	freq_meas_test	freq_meas_test	1	test	NEXT(13)	#C(14,14)
13	time_meas_test	time_meas_test	1	test	NEXT(14)	#C(15,15)
14	others_test	others_test	1	test	NEXT(15)	#C(100,100)
15	il_leak_test	il_leak_test	1	test	NEXT(16)	#C(16,16)
16	iil_leak_test	iil_leak_test	1	test	NEXT(17)	#C(17,17)
17	osc_clk_test	osc_clk_test	1	test	NEXT(18)	#C(18,18)
No		Pass Do		Fail Do		
0						#C(8:fail_io_nrz_test, 8:fail_io_nrz_test)

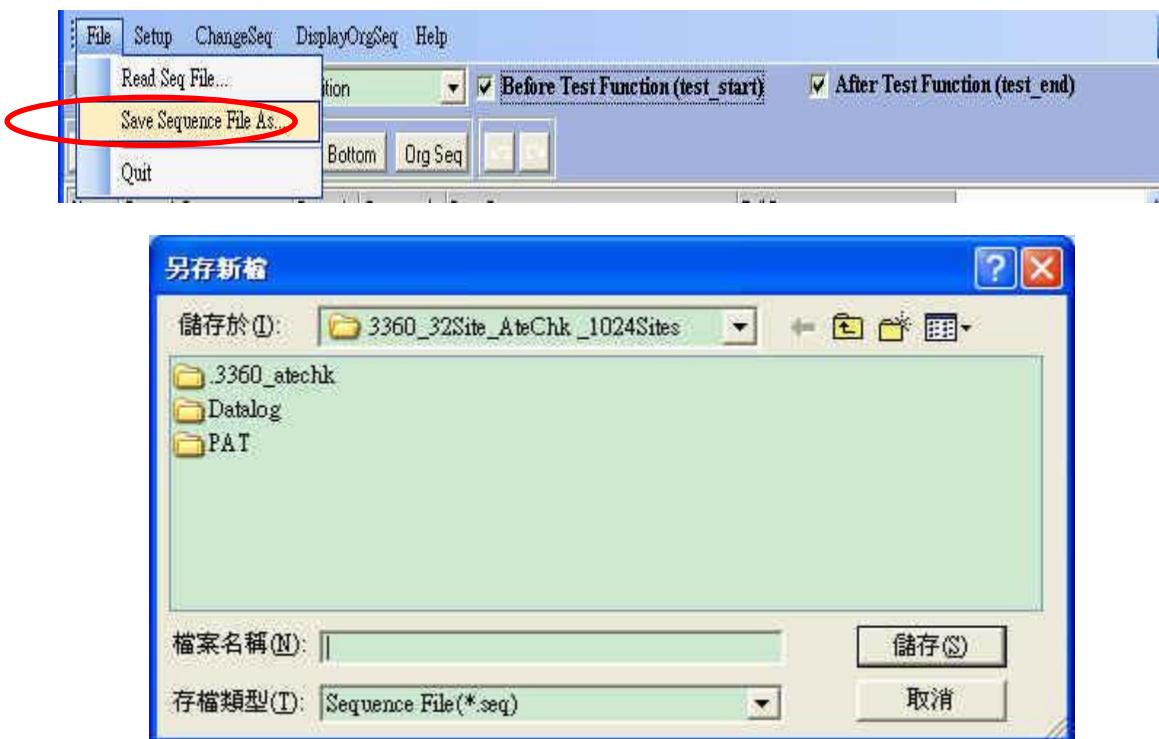
Figure 8-14 Display Original Sequence Column

8.8 Save & Load Seq. File

User can save current plan sequence setting and load the saved plan sequence setting next time.

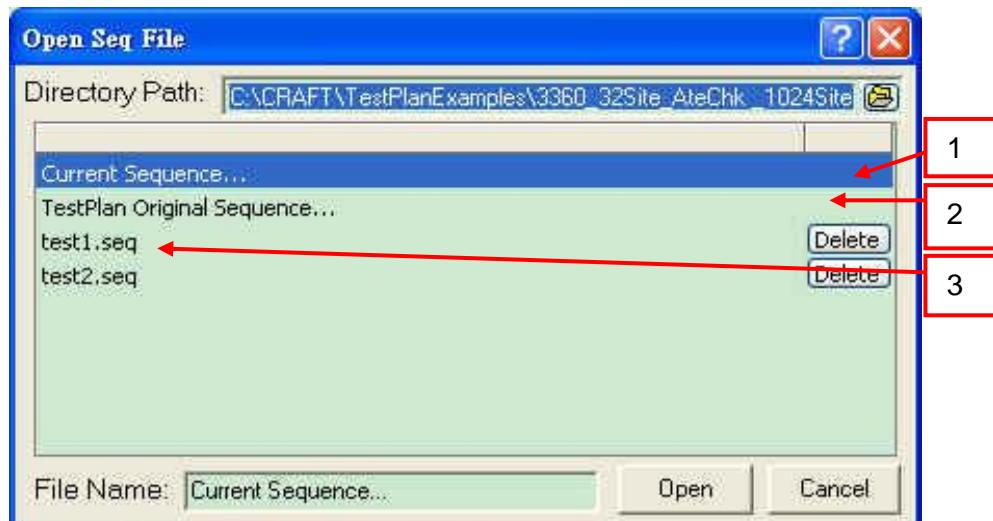
(1) Save current plan sequence setting.

Click the Menu Bar "File" item and Select the "Save Sequence File as..." item. Then, a save file dialog will pop up for user to select the save file's path and file name.



(2) Load the saved plan sequence setting file.

If there are saved sequence file in test plan path, when Plan Sequence Tool open, Plan Sequence Tool will pop up a dialog for user to select which saved sequence to load.



1. Open Plan Sequence Tool, and keep the current sequence setting.
2. Open Plan Sequence Tool, and set the sequence to the test plan original sequence setting.
3. Open Plan Sequence Tool, and load the saved sequence file “test1.seq” setting.
User can delete the saved file by click the “Delete” button.

9. Test Pattern Editor

9.1 Overview

The pattern editor is a tool for referencing the pattern data in the test pattern memory. The target pattern data must be within the tester pattern memory. Therefore, the target pattern program must be previously executed one or loaded by the pattern debugger. Furthermore, the tool can retrieve the pass/fail log data, which is generated upon function testing, from the hardware fail memory on an individual pin basis, and outputs it to a window, printer or file.

No.	Function	Description
1	Pattern display	Display a pattern stored in the pattern memory or the information set up by the pattern debugger.
2	Pattern editing	Edit the pattern data in the pattern memory.
3	Pattern saving	Save edited pattern data into a pattern source file and write pattern to ATE.
4	Fail memory display	Output the pattern test result from the fail memory to the display, printer or file.

Table 9-1 Pattern Editor Overview

9.2 Instruction to Pattern Editor

9.2.1 Contents of Pattern Editor Window

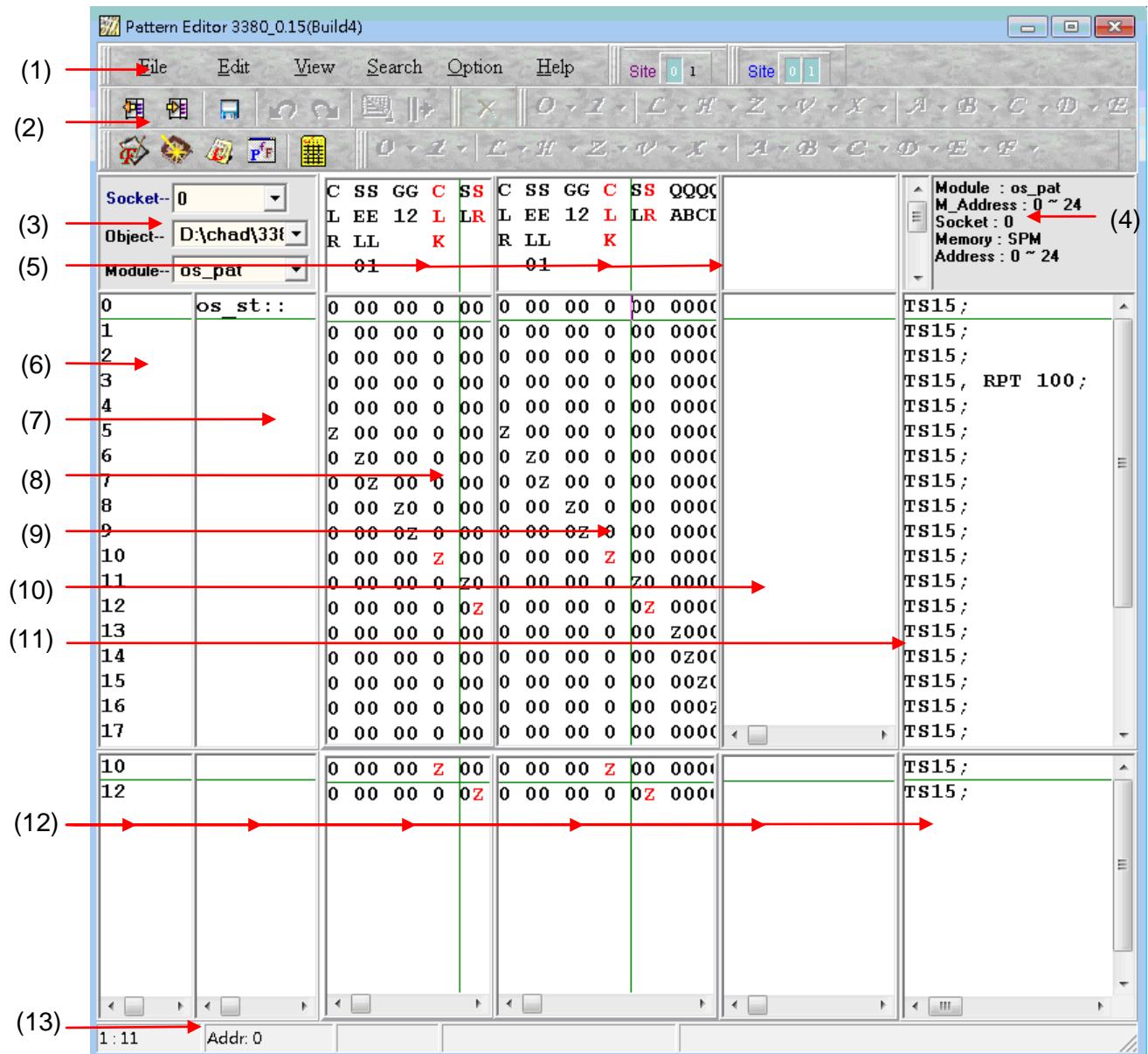


Figure 9-1 Pattern Editor Window

No.	Name	Function
(1)	Menu Area	Provide file saving, data editing and setup.
(2)	Tool Bar	Assist to edit pattern easily.
(3)	Selection Area	Select pattern module to display.
(4)	Information Area	Display the pattern information loaded into the pattern memory. Module Name: Pattern module name. M_Address: Module start & end address Socket: The socket no where pattern is read from. Memory: Memory type for the module.

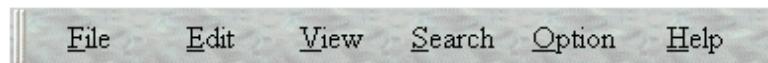
		Address : Current FPM/RPM/SPM data relative address.
(5)	Pin Area	Show Pin Name
(6)	Address Area	Pattern memory address (hexadecimal notation).
(7)	Label Area	Display label user defined in source file.
(8)	Pattern Area	Display pattern data download from ATE.
(9)	Reference Area	Display pattern data (same as pattern within Pattern Area).
(10)	AWI Pattern Area	Display AWI pattern data
(11)	Instruction Area	Display time set no. , and micro instruction
(12)	Fail Window Area	Display pattern accompanied with pattern test result (PASS/FAIL).
(13)	Status Bar	Display status (coordinate, modified status) and message.

Figure 9-2 Pattern Editor Window Functions

Note The pin name or pin I/O information about tester pins that are not declared by the test pattern program will not be displayed.

9.2.2 Menu Bar

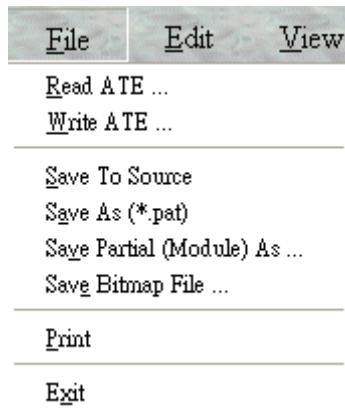
Main Menu



No.	Name	Function
1	File	Manipulate pattern file
2	Edit	Assist to edit pattern data
3	View	Show/Hide some area
4	Search	Search pin name, address, pattern data....
5	Option	Set options
6	Help	Provide help and reference information

Table 9-2 Main Menu Bar

■ [File] Menu



No.	Name	Function
1	Read ATE...	Read pattern data and microinstruction from ATE.
2	Write ATE...	Write pattern and instruction modified to ATE.
3	Save To Source	Store pattern data to original source file.
4	Save As(*.pat)	Store pattern to another file (context is the same as source file.)
5	Save Partial (Module) As...	Save pattern displayed in window to file(*.txt, *.htm).
6	Save Bitmap File...	Save the pattern in the bitmap module.
6	Print	Print pattern within current module
7	Exit	Close the pattern editor

Table 9-3 File Menu

■ [Edit] Menu



No.	Name	Function
1	Undo	Undo the action, which modified pattern or instruction.
2	Redo	Redo the action that user undo.
3	Copy	Copy marked pattern to clipboard.
4	Paste	Paste pattern on clipboard to position in which cursor is.
5	Select all	Mark all patterns.
6	Replace	Replace pattern for selected pin in address which range is specified.
7	Invert	Invert marked pattern.
8	Replace Fail	Replace fail pattern for selected pin in address which range is specified.
9	Invert Fail	Invert marked fail pattern.
10	Modify Instruction	Modify the microinstruction in opcode.
11	Edit Scan Pattern	Edit scan patterns in the pattern file

Table 9-4 Edit Menu

■ [View] Menu



No.	Name	Function
1	Label	Show/hide Label Area.
2	Reference Pattern	Show/hide Reference Pattern Area.
3	AWI pattern	Show/hide AWI Pattern Area.
4	Instruction	Show/hide Instruction Area.
5	Sub/Fail Window	Show/hide Fail Window.
6	Tool Bars	Show/hide tool bars.

Table 9-5 View Menu

■ [Search] Menu



No.	Name	Function
1	Pin Name	Search pin name.
2	Address	Search pattern address.
3	Label	Search global label or local label name.
4	Pattern	Search pattern data.
5	Instruction	Search instruction code or operand.
6	Pin Fail	Search fail of the selected pin

Table 9-6 Search Menu

■ [Option] Menu



No.	Name	Function
1	Setup	Assign extra options.
2	Font	Set font type
3	Pattern File	Select pattern file when loading multiple pattern.
4	Learn Setup	Setup the burst times of the learn mode.
5	Trigger Setup	Setup the trigger pin's value.

Table 9-7 Option Menu

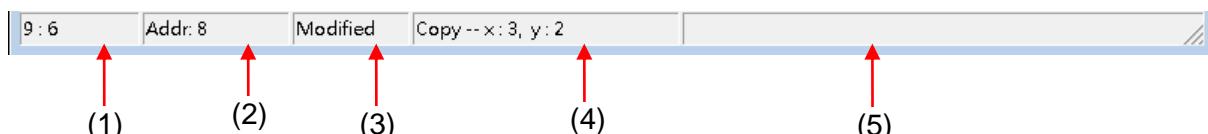
■ [Help] Menu



No.	Name	Function
1	Content	Present how to operate pattern editor.
2	Module Information	Display pattern module information.
3	Pattern Symbol	Display pattern symbol as well as symbol's meaning.
4	Pattern Report	Display pattern information report generated by pattern compiler.

Table 9-8 Help Menu

9.2.3 Status Bar



- (1) This section shows horizontal and vertical coordinate associated with cursor.
- (2) This section shows pattern address the cursor point to.
- (3) This section shows whether pattern data or microinstruction is modified. When pattern is modified, the keyword **Modified** appears. Otherwise, the section is empty.
- (4) This section shows horizontal width and vertical length about block that user copy pattern to clipboard.
- (5) This section shows general message or hint about buttons.

9.3 Start & Quit Pattern Editor

This section describes the procedure for starting and quitting the pattern editor.

(1) Start the System Control

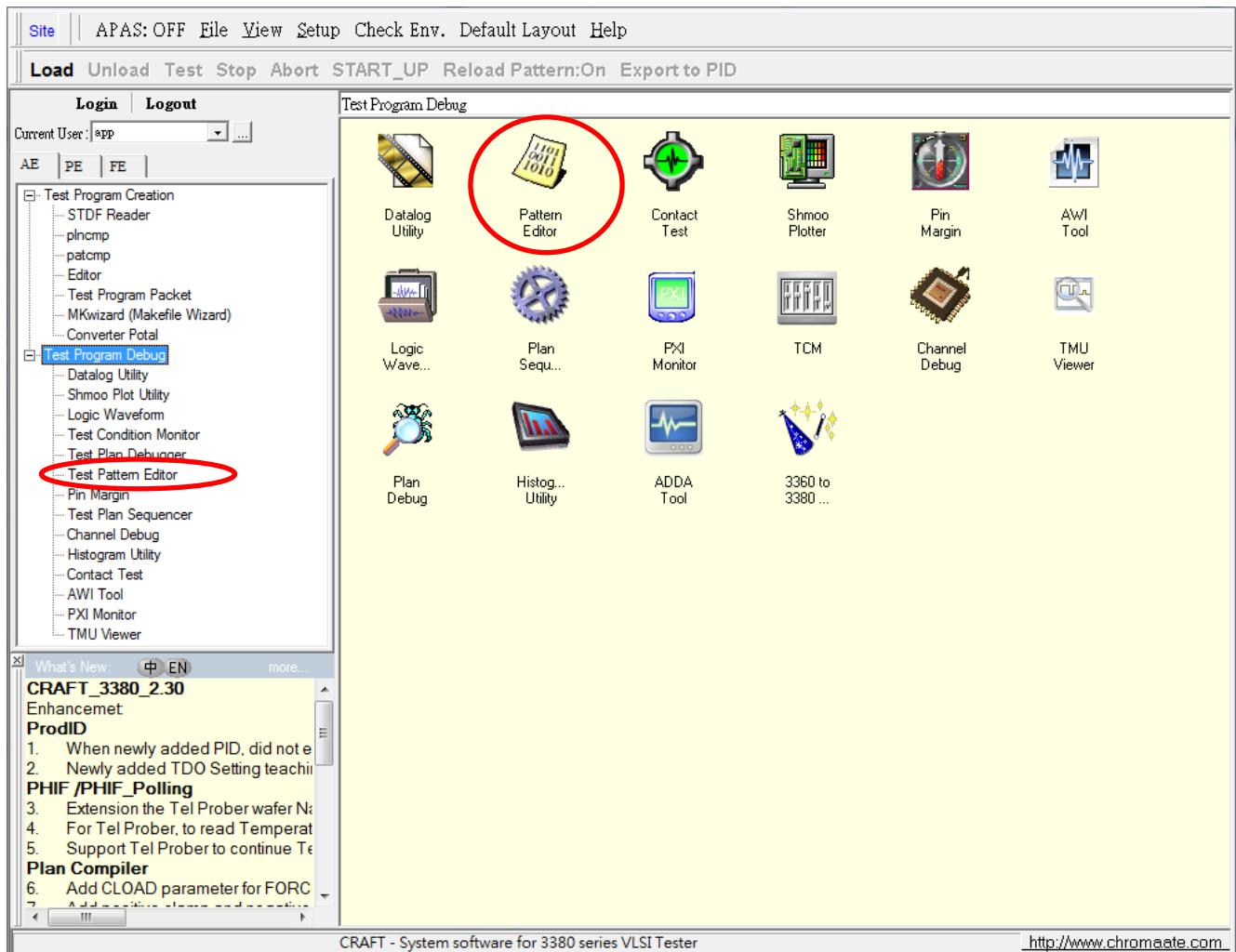


Figure 9-3 CRAFT: System Control Window

(2) Start the pattern editor

Click the pattern editor icon of the System Control (red circle shown as the above). The pattern editor window then opens.

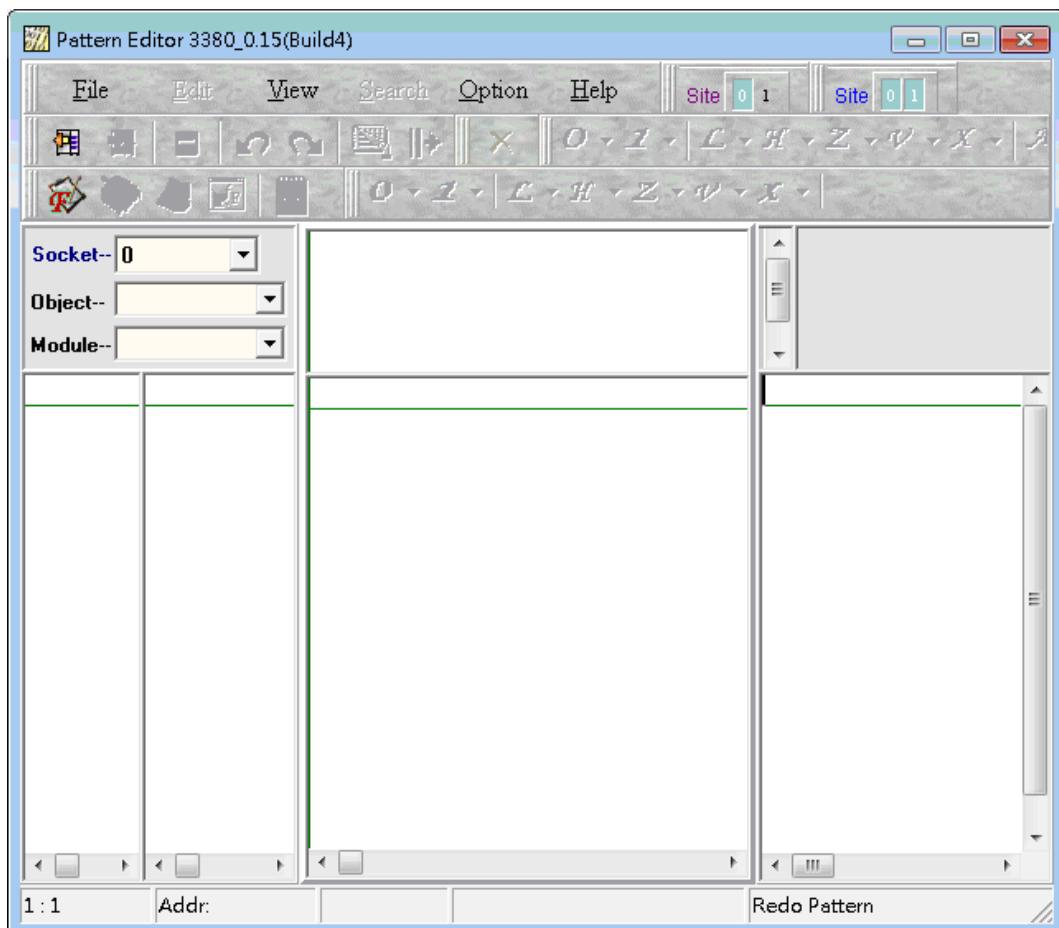


Figure 9-4 Pattern Editor Initialing Window

(3) Quit the pattern editor

1. Click the **Exit** item on the **File** menu or the close button at the top-right corner of the window, the following dialog box will appear.

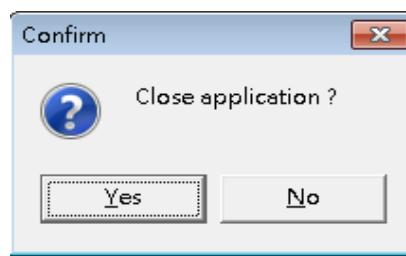


Figure 9-5 Close Dialog

2. To close the pattern editor window, click **Yes** button. To continue to manipulate pattern editor, click **No** button.

Note

- When the pattern has been modified, the editor will ask user if write the pattern to ATE.

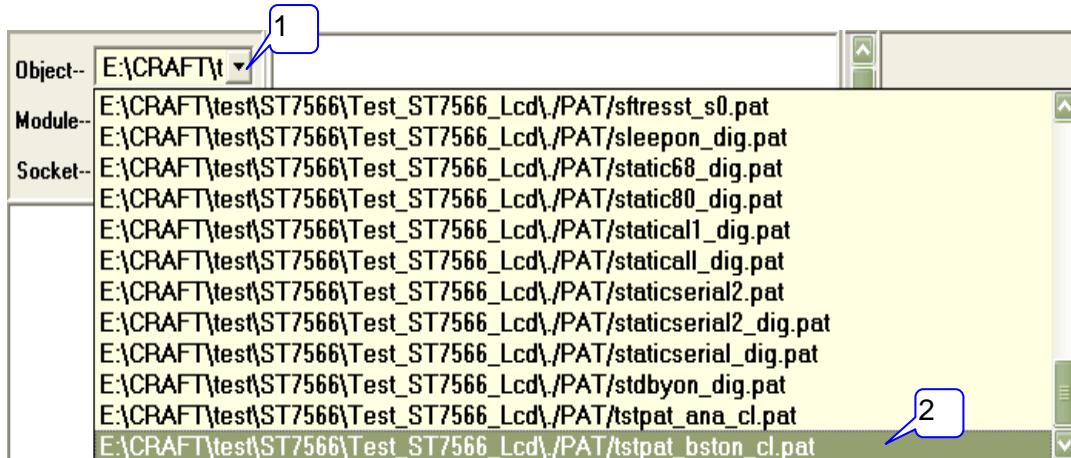
9.4 Pattern Program Display

9.4.1 Select Pattern to Display

This section describes the procedure for selecting the pattern data to be displayed as the pattern editor target.

(1) Select object file

1. Click object selection ▾ button in selection area.
2. Select pattern file in pull-down window.



(2) Select module name

1. Click module selection ▾ button in selection area.
2. Select module in pull-down window.



(3) Select socket

1. Click socket selection ▾ button in selection area.
2. Select socket in pull-down window.



(4) Read pattern from ATE

1. Click READ ATE item in menu bar, then the following dialog will appear.

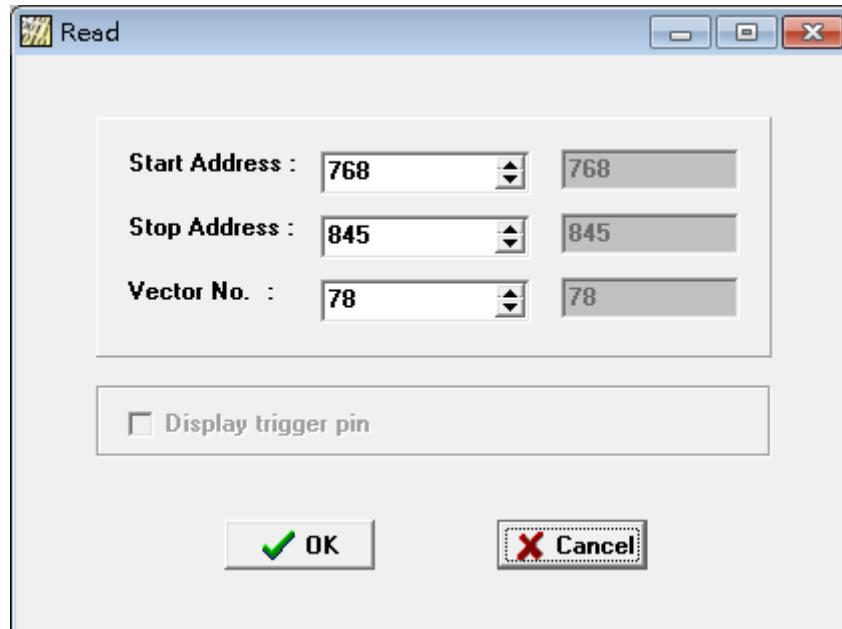
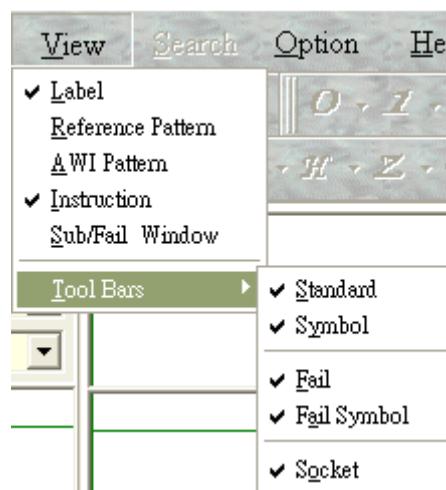


Figure 9-6 Read Pattern Dialog

2. Enter first address where pattern is downloaded.
3. Enter last address where pattern is downloaded. You can also assign vector number that will be downloaded.
4. Determine whether to display trigger pin or not. If yes, then turn on the "Display trigger pin". Otherwise, turn it off.
5. Click **OK** button to read pattern from ATE. If you want to stop the action, click **Cancel** button.

9.4.2 Show and Hide Displayed Areas

This section describes the procedure for determination to show or hide each view.



(1) Label Area

The default status for the area is visible.

1. To hide the label area, click "Label" from View menu. (The check mark on "Label" item will disappear.)

2. To show the label area again, repeat the action as the above. (The check mark on “Label” item will appear.)

(2) Reference Pattern Area

The default status for the area is invisible.

1. To show the reference pattern area, click “Reference Pattern” from View menu. (The check mark on “Reference Pattern” item will appear.)
2. To hide the reference pattern area again, repeat the action as the above. (The check mark on “Reference Pattern” item will disappear.)

(3) AWI Pattern Area

The default status for the area is visible if WG or WD pins are defined. Otherwise, the default status for the area is invisible.

1. To hide the AWI pattern area, click “AWI Pattern” from View menu. (The check mark on “AWI Pattern” item will disappear.)
2. To show the AWI pattern area again, repeat the action as the above. (The check mark on “AWI Pattern” item will appear.)

(4) Instruction Area

The default status for the area is visible.

1. To hide the instruction area, click “Instruction” from View menu. (The check mark on “Instruction” item will disappear.)
2. To show the instruction area again, repeat the action as the above. (The check mark on “Instruction” item will appear.)

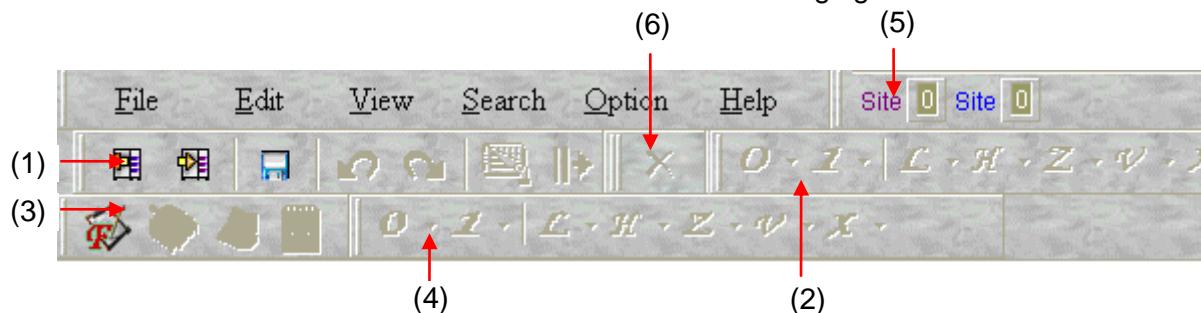
(5) Sub/Fail Window Area

The default status for the area is invisible.

1. To show the sub/fail area, click “Sub/Fail Window” from View menu. (The check mark on “Sub/Fail Window” item will appear.)
2. To hide the sub/fail area again, repeat the action as the above. (The check mark on “Sub/Fail Window” item will disappear.)

Tool Bars Area

The area contains five tool bars are illustrated as the following figure.



- (1) Click “Standard” in Tool Bars of View menu. Or press the right key of mouse when the cursor point to tool bar area, click the item of “Standard” in popup menu. The tool bar becomes visible when the check mark appears on “Standard” item. The tool bar is hided when the check mark disappears on “Standard” item.
- (2) Click “Symbol” in Tool Bars of View menu. Or press the right key of mouse when the cursor point to tool bar area, click the item of “Symbol” in popup menu. The tool bar becomes visible when the check mark appears on “Symbol” item. The tool bar is hided when the check mark disappears on “Symbol” item.

- (3) Click "Fail" in Tool Bars of View menu. Or press the right key of mouse when the cursor point to tool bar area, click the item of "Fail" in popup menu. The tool bar becomes visible when the check mark appears on "Fail" item. The tool bar is hided when the check mark disappears on "Fail" item.
- (4) Click "Fail Symbol" in Tool Bars of View menu. Or press the right key of mouse when the cursor is on tool bar area, click the item of "Fail Symbol" in popup menu. The tool bar becomes visible when the check mark appears on "Fail Symbol" item. The tool bar is hided when the check mark disappears on "Fail Symbol" item.
- (5) Click "Socket" in Tool Bars of View menu. Or press the right key of mouse when the cursor point to tool bar area, click the item of "Socket" in popup menu. The tool bar becomes visible when the check mark appears on [Socket] item. The tool bar is hided when the check mark disappears on [Socket] item.
- (6) Use the Abort tool bar to abort operation when read/write/burst/learn pattern.

9.4.3 Search Function

This section describes the procedure for search data (such as pin name, address, pattern ...) in various areas.

- (1) Search Pin Name
 1. Click "Pin Name" in Search menu. The Search Pin Name window then opens.

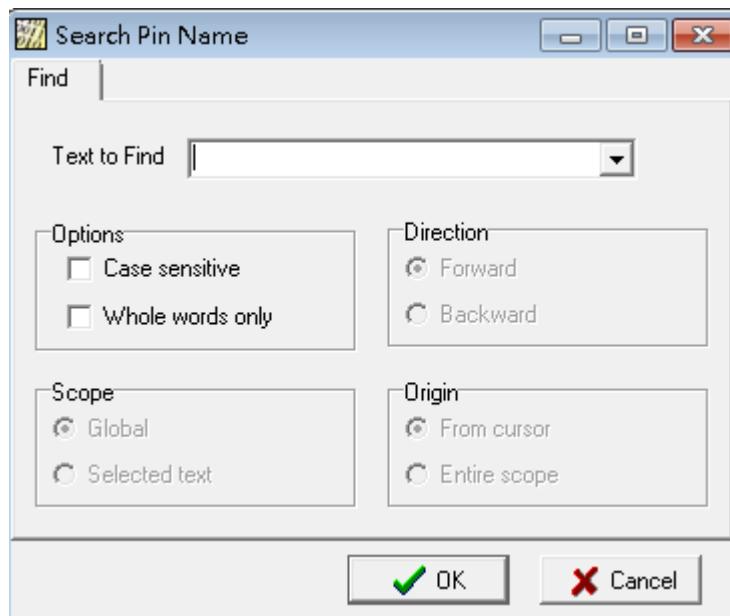


Figure 9-7 Search Pin Name Dialog

2. Input pin name to "Text to Find" field.
3. Press **OK** button. The Search Pin Name window closes and the pin name specified is marked on pin area.

(2) Search Address

1. Click “Address” in Search menu. The Search Address window then opens.

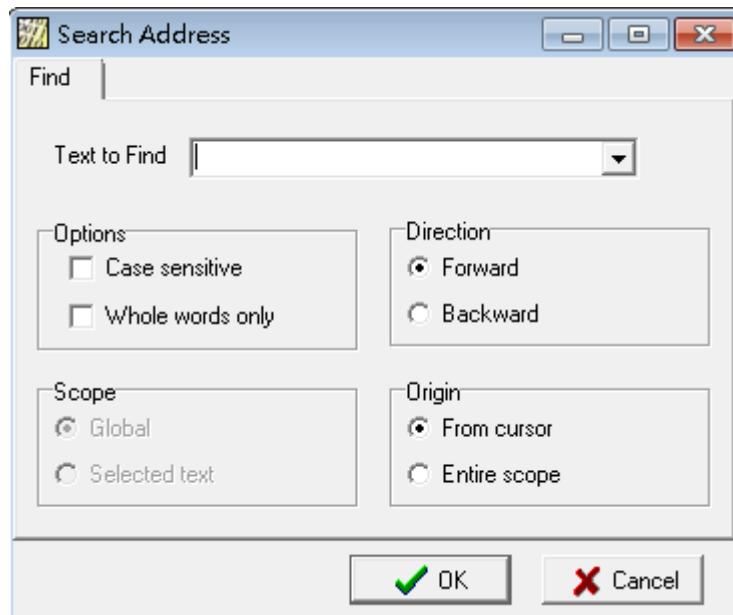


Figure 9-8 Search Address Dialog

2. Input address to “Text to Find” field.
3. Press **OK** button. The Search Address window closes and the address specified is marked on address area.

(3) Search Label

1. Click “Label” in Search menu. The Search Label window then opens.

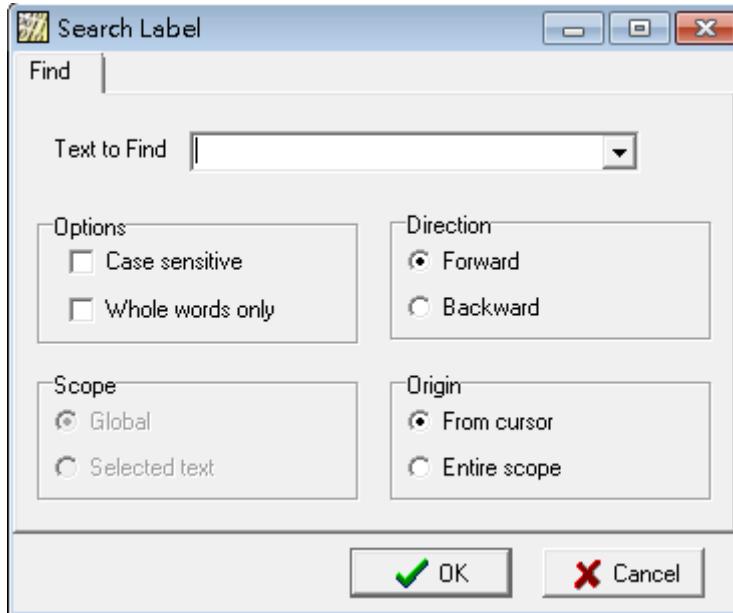


Figure 9-9 Search Label Dialog

2. Input label name to “Text to Find” field.
3. Press **OK** button. The Search Label window closes and the label specified is marked on label area.

(4) Search Pattern

- Click "Pattern" in Search menu. The Search Pattern window then opens.

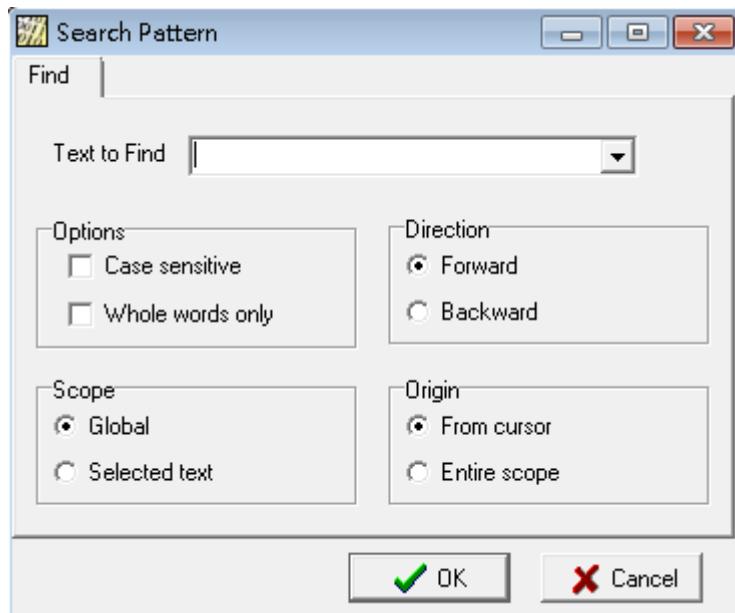


Figure 9-10 Search Pattern Dialog

- Input pattern data to "Text to Find" field.
- Press **OK** button. The Search Pattern window closes and the pattern specified is marked on pattern area.

(5) Search Instruction

- Click "Instruction" in Search menu. The Search Instruction window then opens.

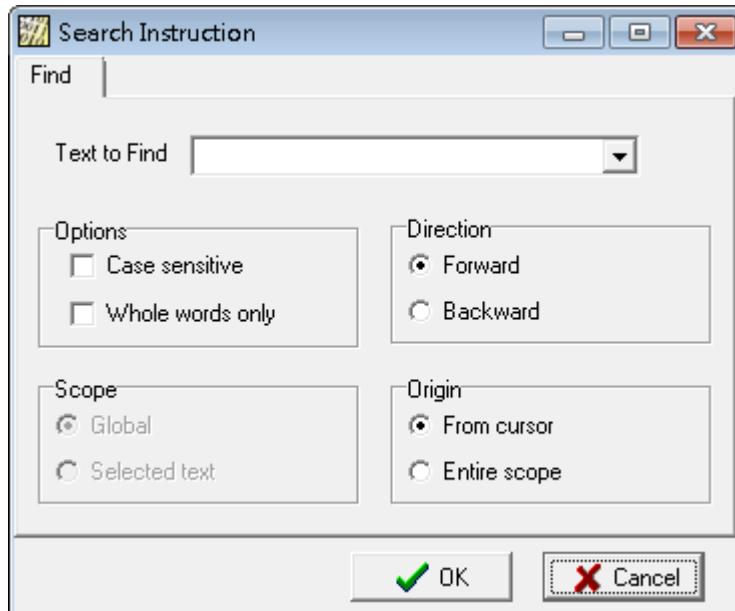


Figure 9-11 Search Instruction Dialog

- Input microinstruction or operand to "Text to Find" field.
- Press **OK** button. The Search Instruction window closes and the instruction (or operand) specified is marked on instruction area.

(6) Search Pin Fail

1. Click "Pin Fail" in Search menu. The Search Fail window then opens.

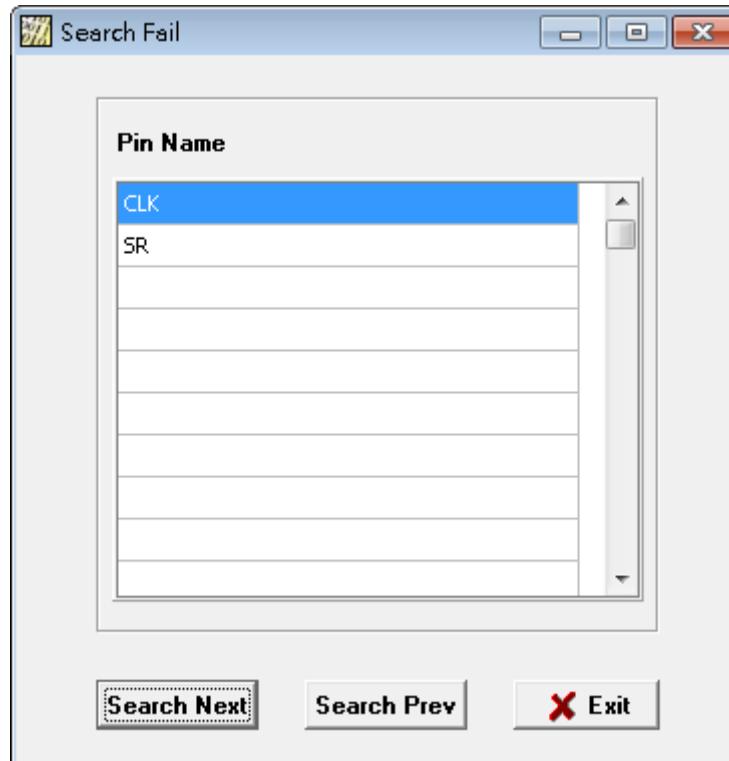


Figure 9-12 Search Instruction Dialog

2. Select target pin.
3. Press **Search Next** button to mark next fail for the selected pin on pattern area.
4. Press **Search Prev** button to mark previous fail for the selected pin on pattern area.
5. Press **Exit** button and the Search Fail window closes area.

9.4.4 Option Setting

This section describes the procedure for setting options to display text in various types.

(1) Option setup

- Click "Setup" in Option menu. The Option Setup window then opens.

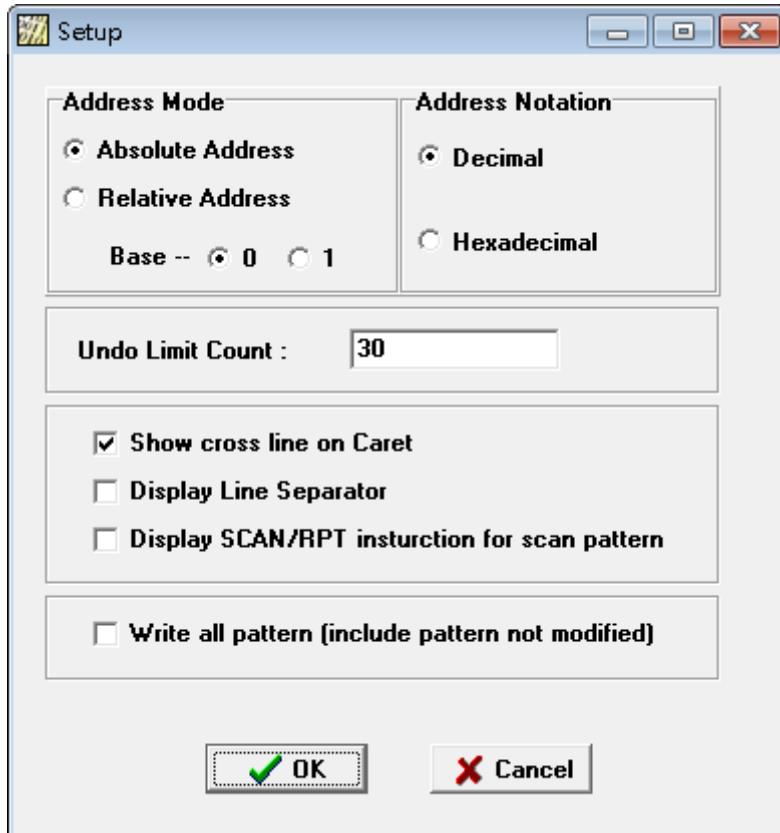


Figure 9-13 Option Setup Window

- Select option as you need.
- Press **OK** button to complete the setting or **Cancel** to abort it.

Address Mode --

Absolute Address: The address shown in address area is actual pattern address.

Relative Address: The address shown in address area is relative position corresponding to current module that contains current pattern.

Base --

0: start address of first pattern in current module is zero.
1: start address of first pattern in current module is one.

Address Notation --

Decimal : The address in address area is presented in decimal format.

Hexadecimal: The address in address area is presented in hexadecimal format.

Undo Limit Count --

Set the maximum amount that user can undo pattern modified.

Show cross line on Caret --

Default is on, show the pin name and address corresponding to the pattern in which cursor point.

Display Line Separator --

Determinate if show line separator in address area, label area, pattern area and instruction area.

Display SCAN/RPT instruction for scan pattern --

Determinate if show SCAN/RPT instruction in instruction area of scan pattern window.

Write all pattern (include pattern not modified) --

Write the pattern whether it has been modified or not.

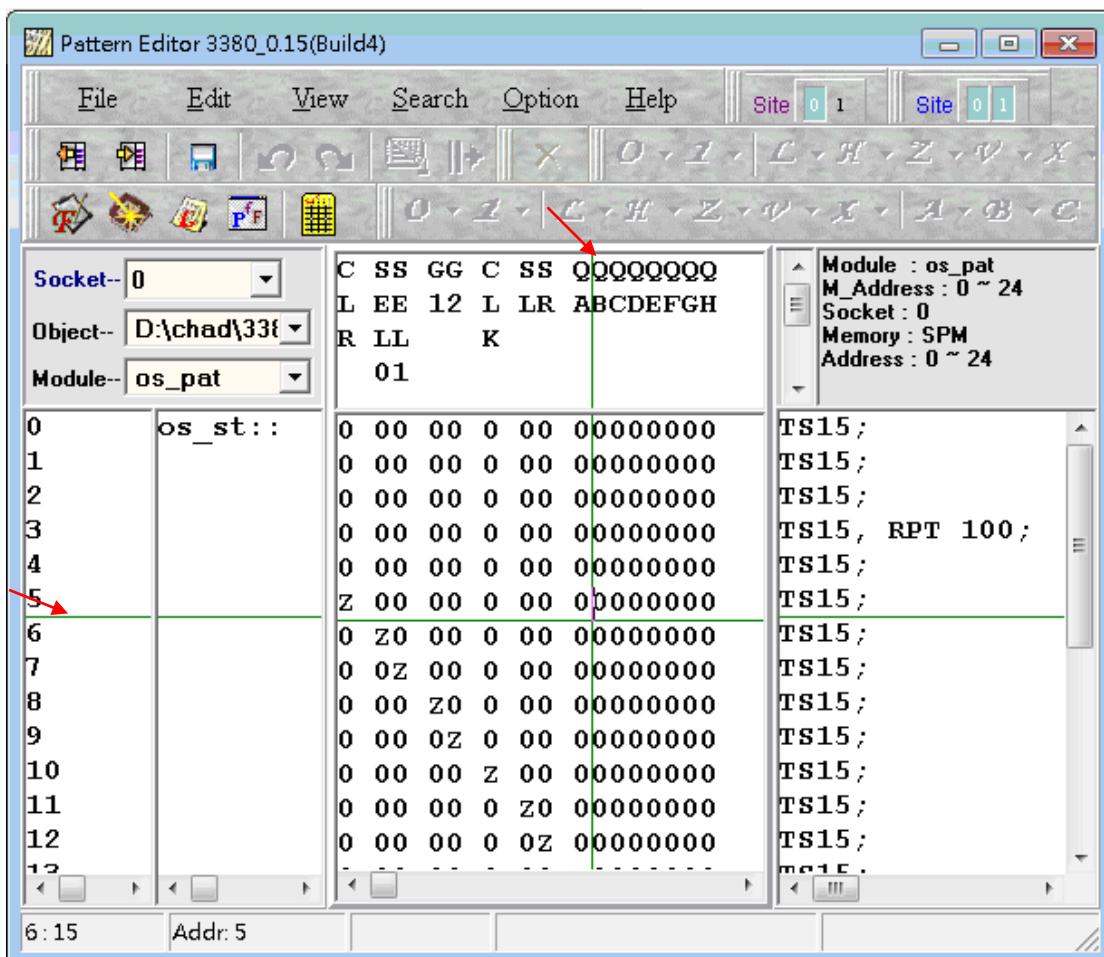


Figure 9-14 Cross Line on Caret

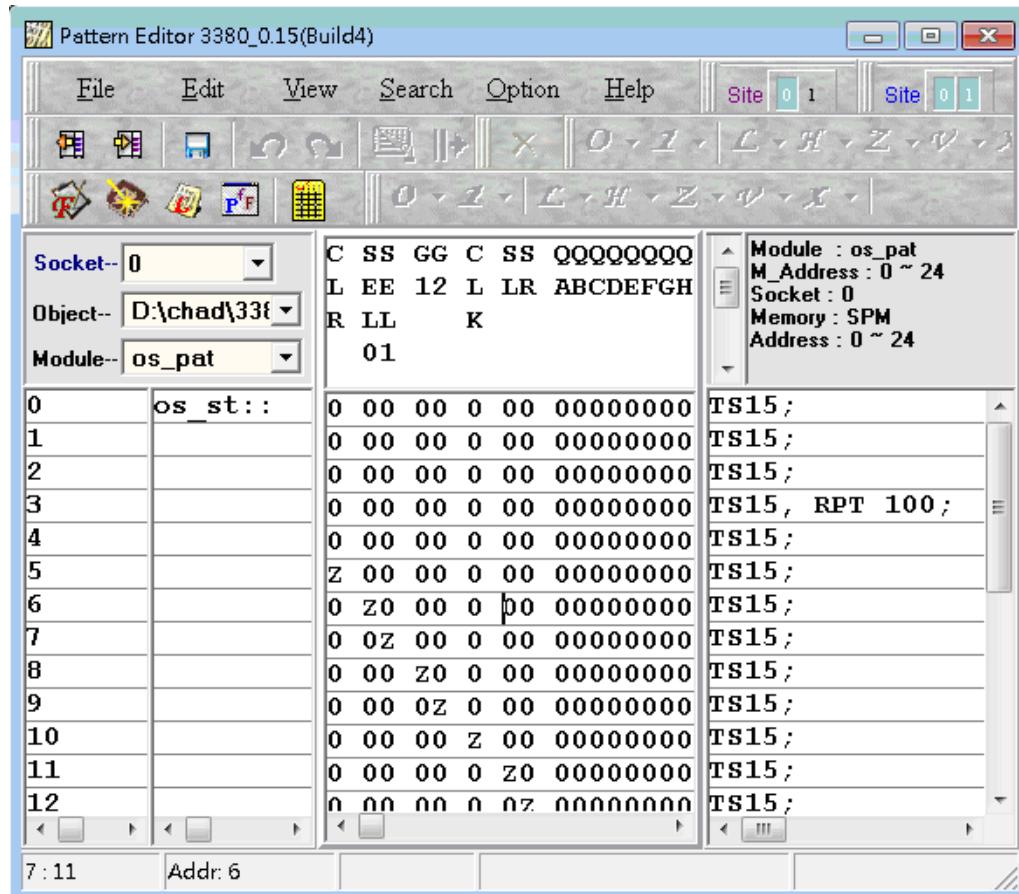


Figure 9-15 Line Separator

(2) Font setting

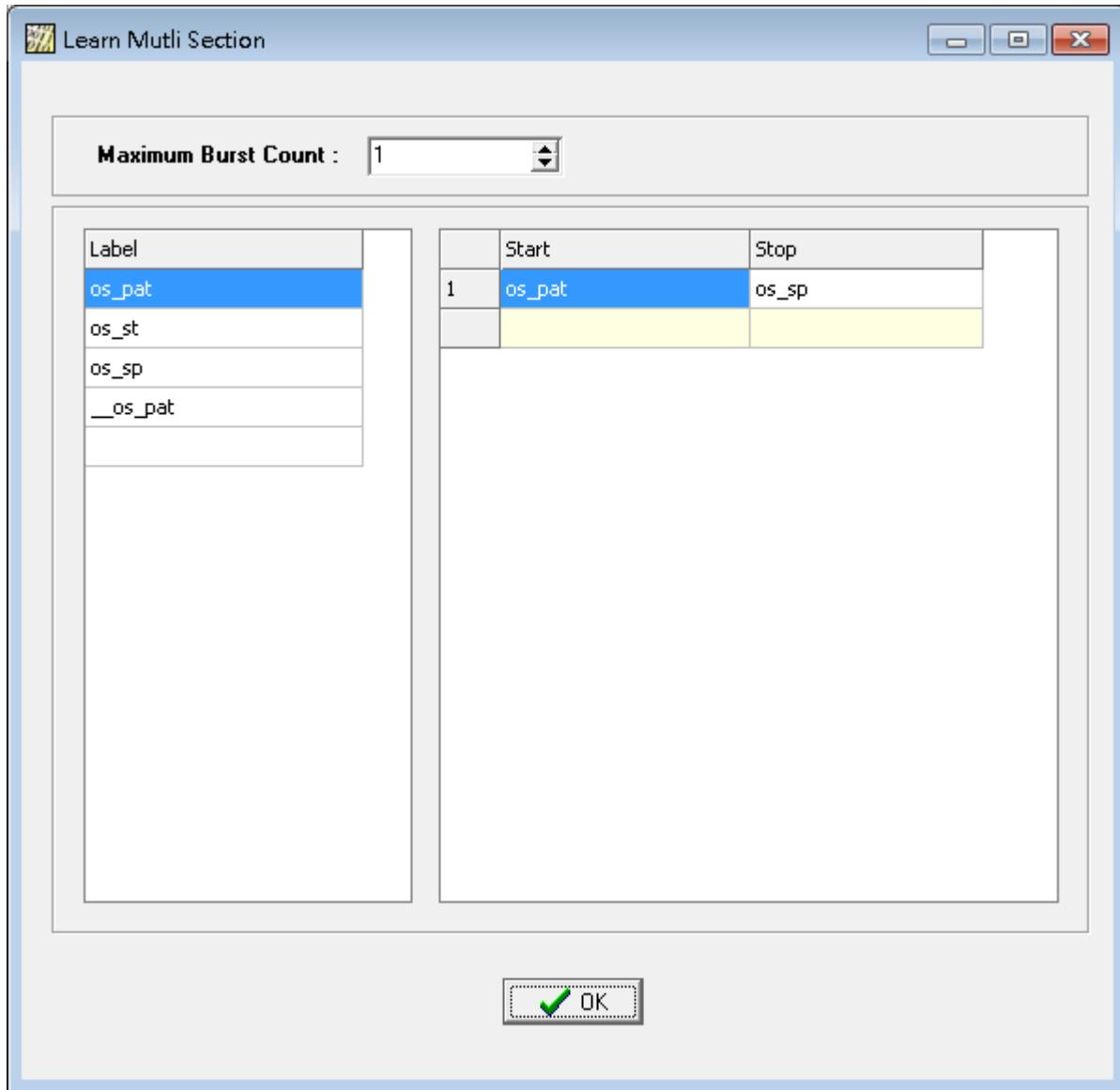
1. Click "Font" in Option menu. The Font window then opens.



2. Select type as you need.
3. Press **OK** button to complete the setting or **Cancel** to abort it.

(3) Learn setting

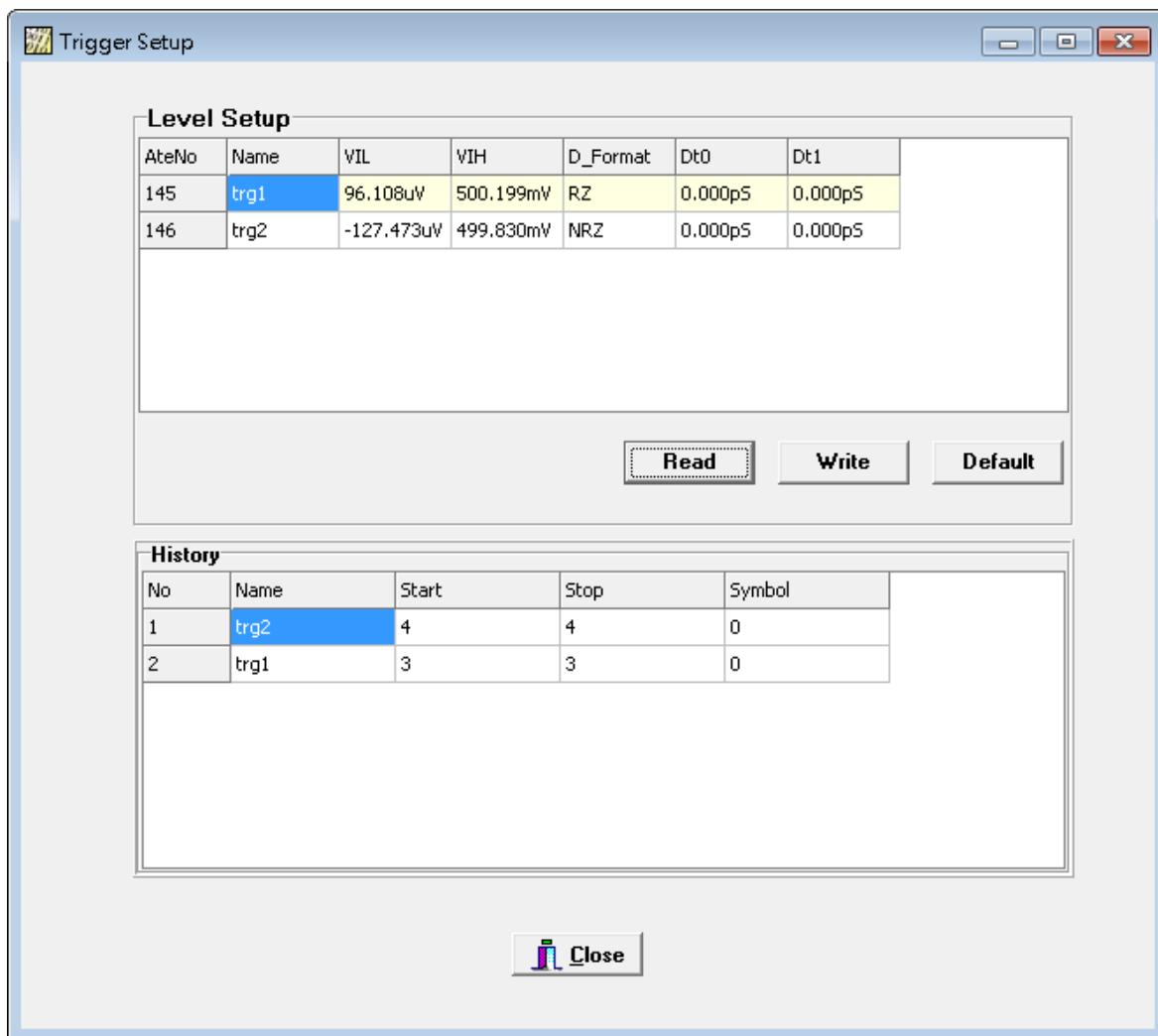
1. Click "Setup" in Learn Setup menu. The Learn Multi Section Window then opens. Choose the Label of the learning pattern.
2. Input the Maximum Burst Count Times.



3. Double click on label in the left side, the label will append to start field or stop field in the right side.
4. Drag the selected label and drop to the start or stop field in the right side, the content within the start or field may be replaced by the selected label.
5. Move mouse to the right side and push the right button on mouse, the popup menu appears. Click the Add item in popup menu to add new record without any data. Click the Delete item in popup menu to delete current record that is highlighted. Click the Clear item in popup menu to clear all records. Press **OK** button to complete the setting.

(4) Trigger setting

1. Click "Setup" in Trigger Setup menu. The Trigger Setup window then opens.



2. This option can setup the trigger pin's values. Such as VIL, VIH, D_Format and Dt, DT1, move the mouse on the values and press the left key.
3. **Read** button can read the trigger pin's current value. **Write** button can save the changed values. **Default** button can show the default values.
4. Press the **Close** button when all the values have been set.

9.4.5 Change Area Size

This section describes the procedure for changing size about label area, pattern area, instruction area and fail window.

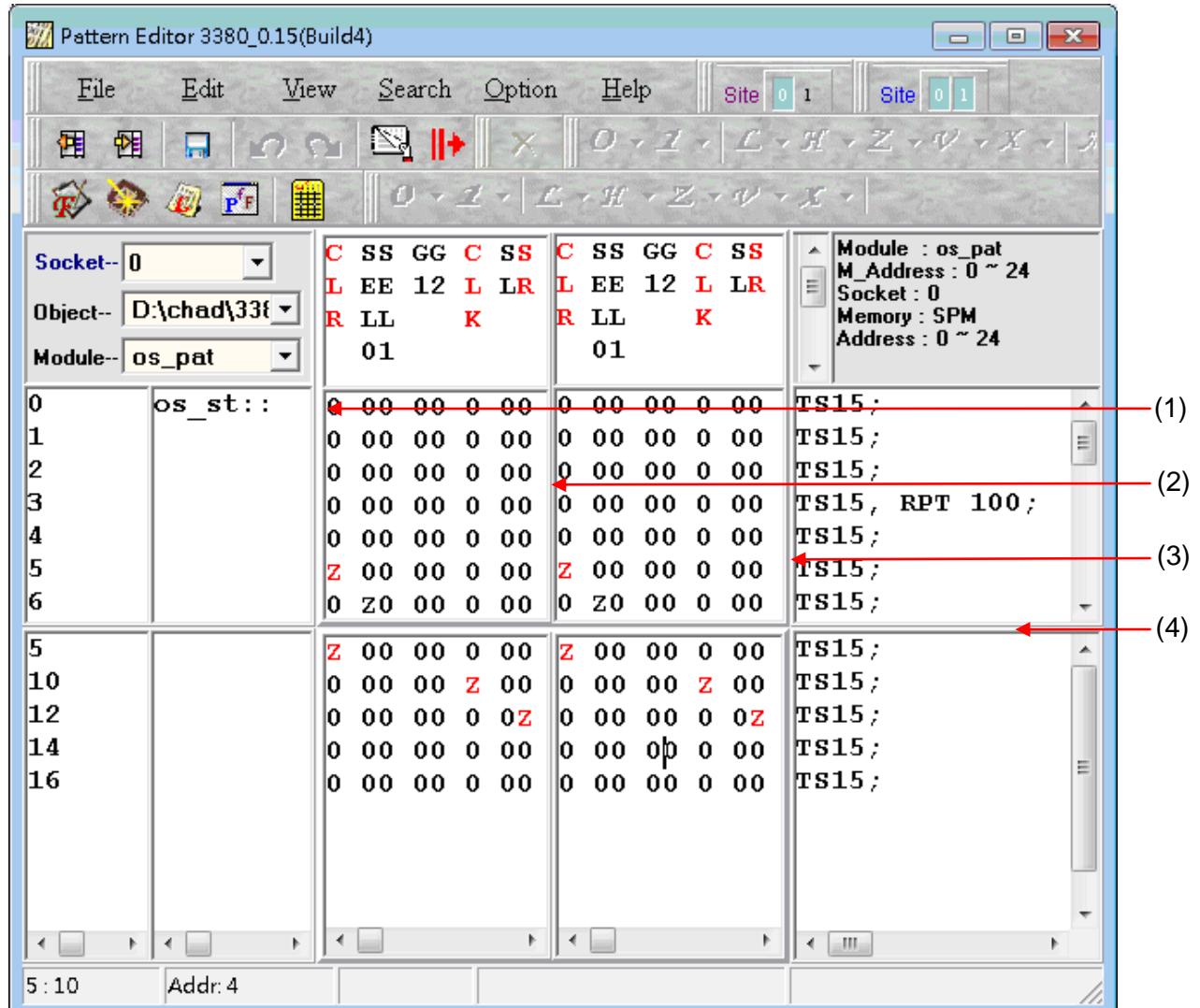


Figure 9-16 Area Size Adjust

Move the cursor to the position arrow point to shown as the above, then $\leftarrow | \rightarrow$ appears.
Press the right key of mouse (don't release) and move the mouse until the size is suitable.

- (1) Change size about label area and pattern area.
- (2) Change size about pattern area and reference area.
- (3) Change size about reference area and instruction area.
- (4) Change size about general window (top window) and fail window (bottom window).

9.5 Pattern Program Modification

9.5.1 Edit Test Pattern Data

This section describes the procedure for editing the test pattern data on an individual cycle unit.

(1) Mark Pattern Data

There are several methods shown as the following to select block on pattern.

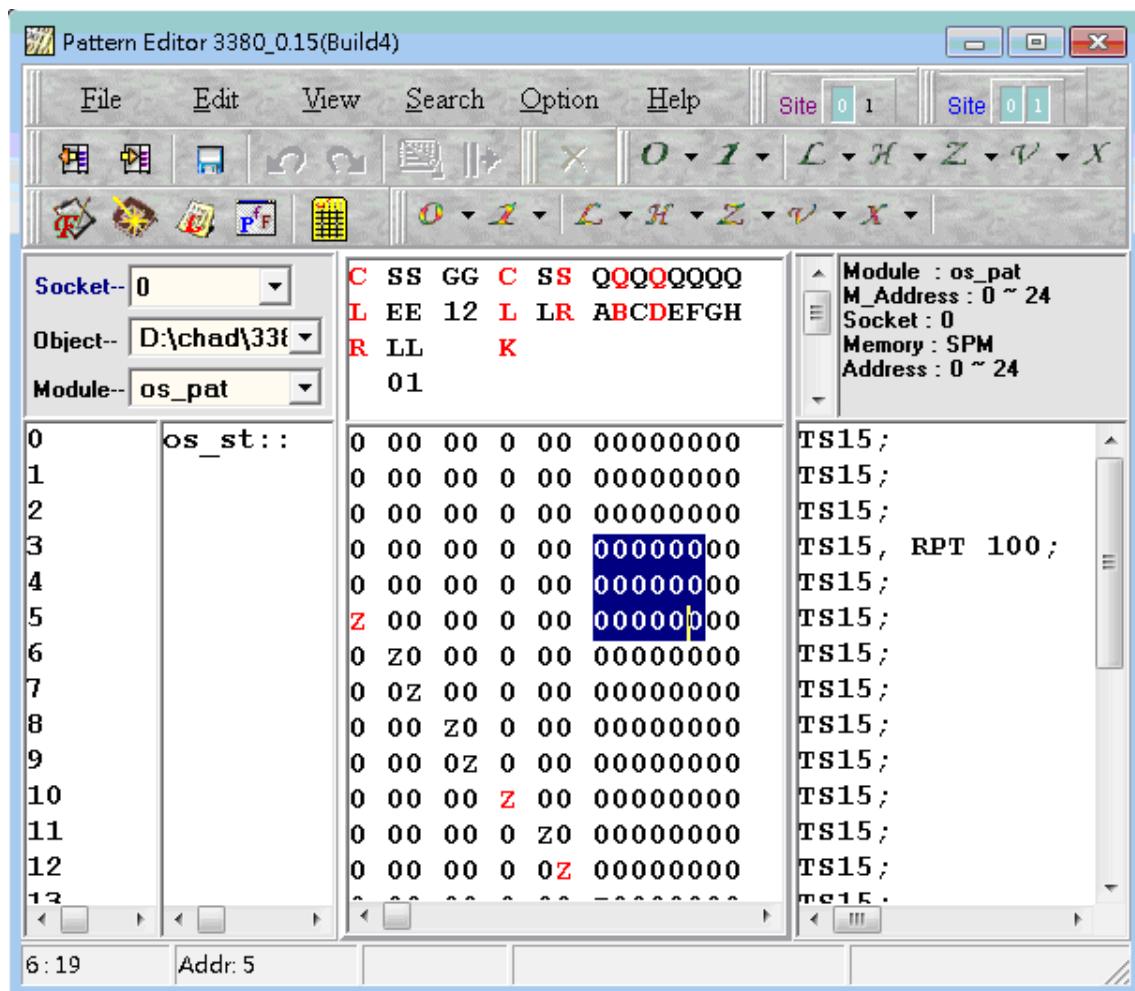


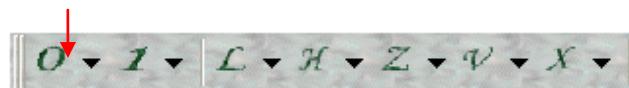
Figure 9-17 Block Marking

1. Press the right key of mouse and move the cursor. Release the right key when the marked pattern is you want.
2. Click start point and press shift key. Then click end point and release shift key. Note: After pressing shift key, you can drag scroll bar to the place where end point is.
3. Mark several continuous pins in pin area to select all patterns of these pins.
4. Mark several continuous addresses in address area to select all patterns in these addresses.

- (2) Copy pattern to clipboard
 1. Select target patterns.
 2. Click "Copy" in Edit menu. Then all patterns marked are copied to clipboard.
- (3) Paste pattern from clipboard
 1. Move the cursor to top left corner of area need to be replaced.
 2. Click "Paste" in Edit menu then all patterns in clipboard are pasted.
- (4) Invert pattern
 1. Select patterns as you need to invert.
 2. Click "Invert" in Edit menu, or press the right key of mouse to popup menu and click invert of popup menu. Then all patterns marked are inverted.

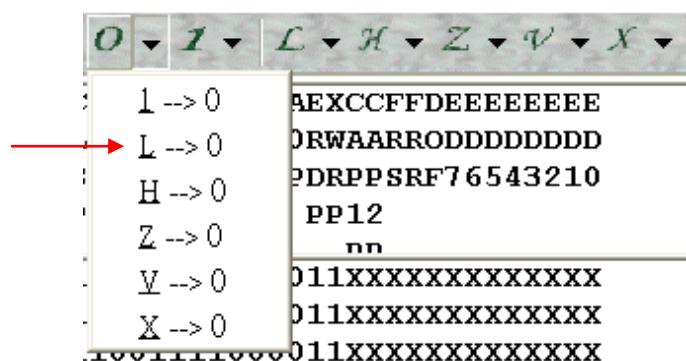
0 \leftrightarrow 1
 L \leftrightarrow H
 Z \leftrightarrow V
 U \leftrightarrow R
 S \leftrightarrow T

- (5) Enter key directly
 1. If there is no marked pattern, the pattern cursor point to is replaced by symbol you entered.
 2. If there are marked patterns, the selected patterns are replaced by symbol you entered.
- (6) Use tool bar
 1. All the selected patterns are replaced by the symbol on the tool button.



For example, when clicking button 0, the patterns in selected area are assigned as 0.

2. Only the specified pattern in marked area is replaced by the symbol on the tool button.



For example, click triangle of tool button 0 and the popup menu appears. Once the user selected item "L->0", all the patterns "L" in selected area are replaced by symbol "0".

(7) Use Replace Dialog

- Click "Replace" in Edit menu. The Replace Dialog then opens.

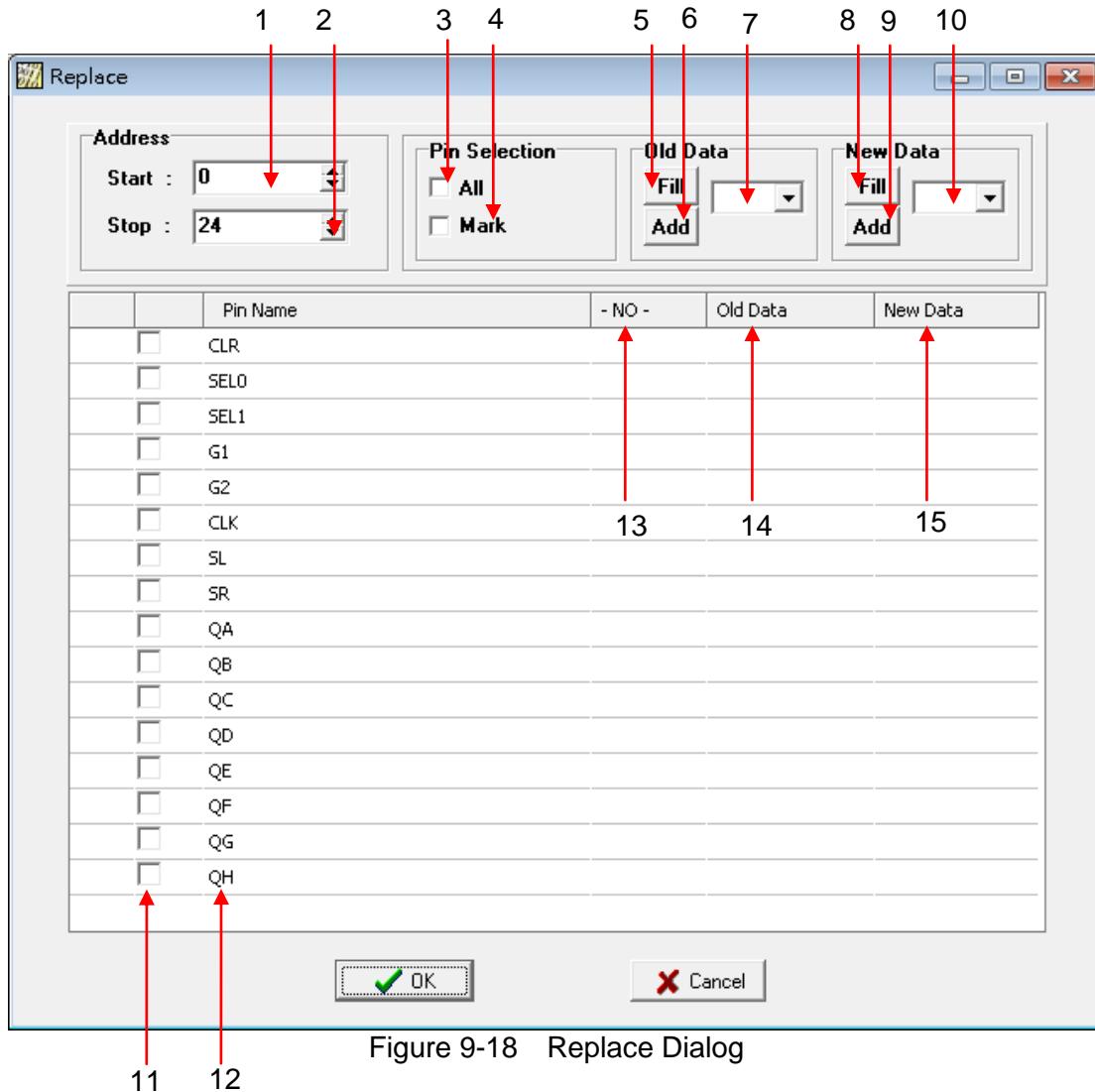


Figure 9-18 Replace Dialog

No.	Function	Description
1	Start Address	Determinate the first address where pattern will be replaced.
2	Stop Address	Determinate the last address where pattern will be replaced.

The following is used to manipulate symbol assignment for pins.

No.	Description
3	Select / deselect all the pins.
4	Select / deselect the marked pins.
5	All the old data fields are replaced by specified symbol (the symbol assigned in item 7).
6	The marked old data fields are replaced by specified symbol (the symbol assigned in item 7).
7	Determinate the symbol that will be filled into <u>old data field</u> when clicking item 5 or 6.
8	All the new data fields are replaced by specified symbol (the symbol assigned in item 10).

9	The marked new data fields are replaced by specified symbol (the symbol assigned in item 10).
10	Determinate the symbol that will be filled into <i>new data field</i> when clicking item 8 or 9.

No.	Function	Description
11	Checked	Determinate if the pattern for the corresponding pin is replaced with specified when user click OK button.
12	Pin Name	Display pin name
13	No	Display the pin number for pin group.
14	Old Data	Select the symbol will be replaced for the pin. If the field left empty, then all symbols will be replaced for the pin.
15	New Data	Determinate the symbol will replace which in Old Data field.

Table 9-9 Replace Window Description

2. Click **OK** button to execute the action, or click on **Cancel** button to abort the action.

Note : If symbol can't be applied to one pin, the pattern of pin won't be modified.

(8) Recover pattern for trigger pin

The way is used to recover pattern since the pattern is shown in pattern editor. Click reset trigger pattern button on tool bar.



(9) Pattern Undo

- **Menu**

Click "Pattern" under Undo item in Edit menu.



- **Tool Bar**

Click Undo Pattern button on tool bar.



(10) Pattern Redo

- **Menu**

Click "Pattern" under Redo item in Edit menu.



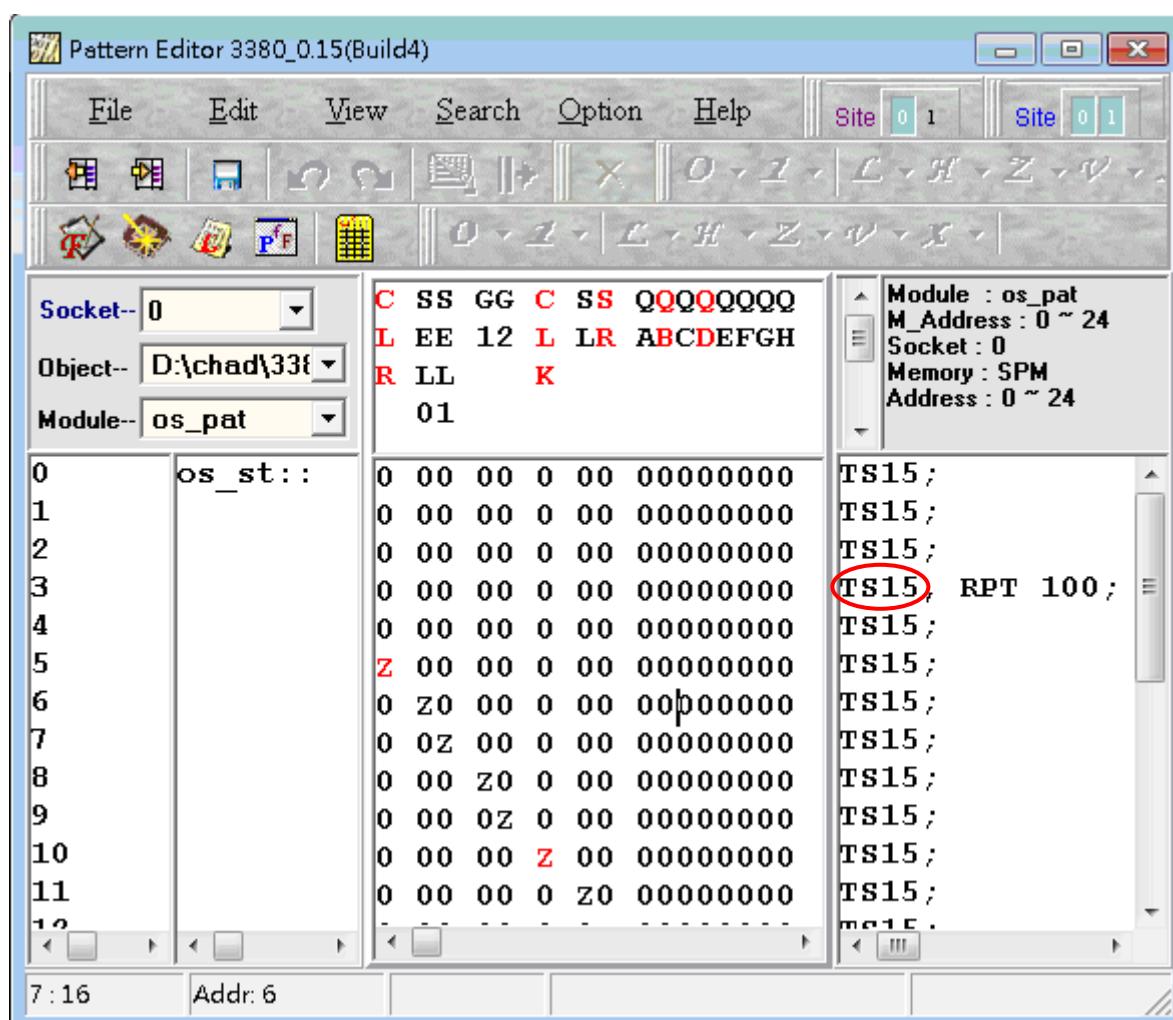
■ **Tool Bar**

Click Redo Pattern button on tool bar.



9.5.2 Edit Time Set

This section describes the procedure for editing the time set no. on an individual cycle unit.



- (1) Move the cursor to the time set need to be modified in instruction area.

Note When modifying time set, both menu bar and tool bar become unavailable.

(2) Enter the time set number.

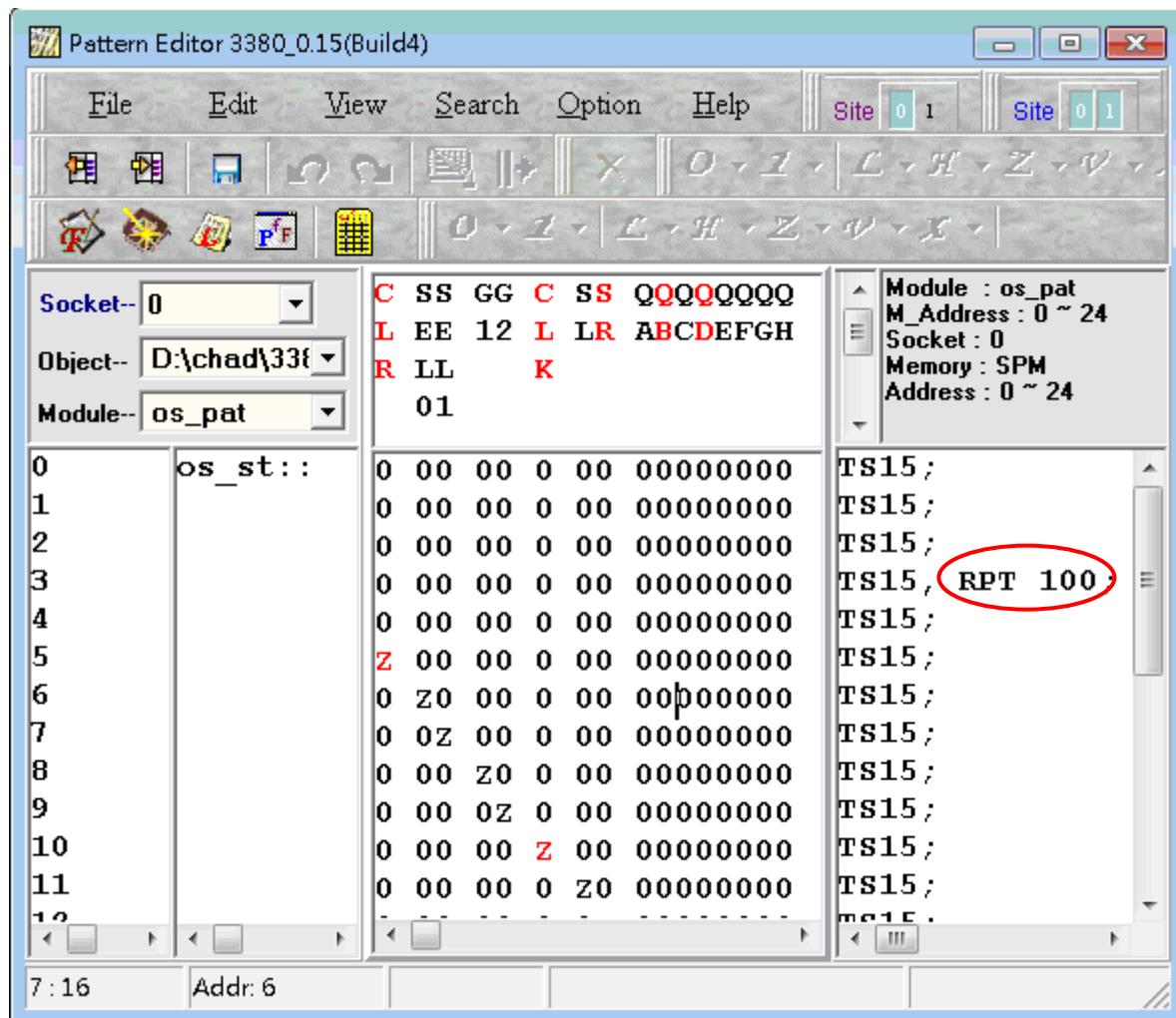
- Note**
- a. The time set can be number ranged from 0 to 15. It can be assigned as TS0 –TS15.
 - b. The time set must be first item in instruction area. The example shown as follows: TS1, RPT 3;

(3) Press **Enter** key or move cursor to other line, then pattern editor will parse the syntax. If syntax is correct, the action is completed. Otherwise, the pattern editor will ask user to assign time set again.

Note To abort the current modification, press the right key of mouse and select cancel item in popup menu.

9.5.3 Edit Micro Instruction

(1) This section describes the procedure for editing microinstruction on an individual cycle unit.



- Move the cursor to microinstruction need to be modified in instruction area.

Note When modifying microinstruction, both menu bar and tool bar become unavailable.

- Enter the microinstruction and operand if operand is expected.

Note

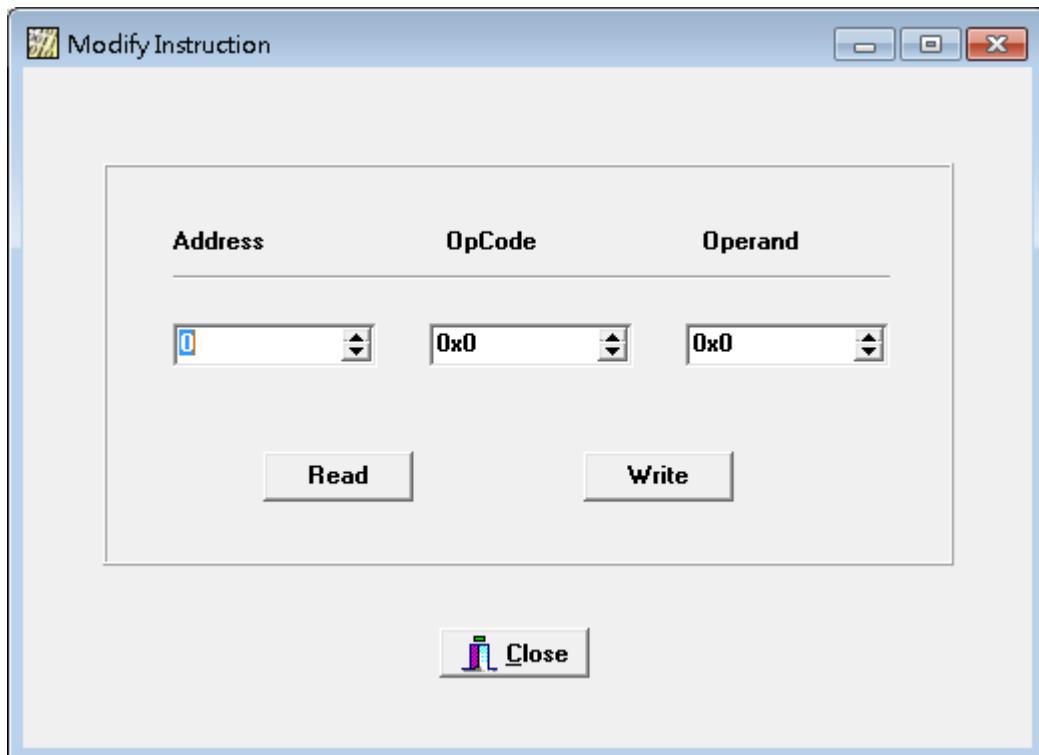
- a. The time set can be number ranged from 0 to 15. It can be assigned as TS0 – TS15.
- b. The microinstruction must be second item or successive items in instruction area. The format shown as follows:
TIME_SET, INSTRUCTION [OPERAND] [, INSTRUCTION [OPERAND]];

- Press **Enter** key or move cursor to other line, then pattern editor will parse the syntax. If syntax is correct, the action is completed. Otherwise, the pattern editor will ask user to modify microinstruction again.

Note To abort the current modification, press the right key of mouse and select cancel item in popup menu.

- (2) This section describes the procedure for editing the microinstruction of Modify Instruction in Edit menu. This method is usually used for debugging situation.

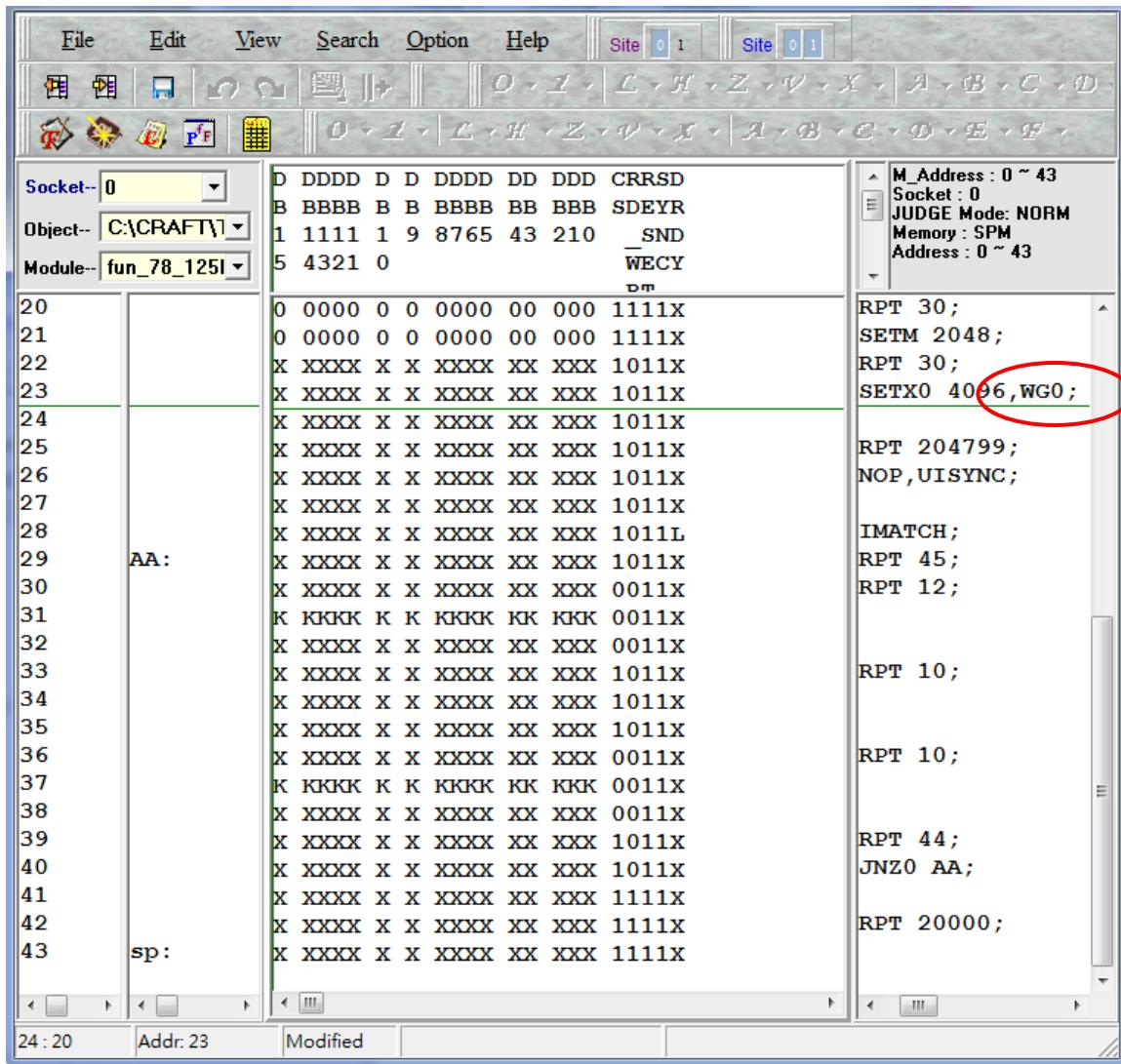
 - Click Modify Instruction in Edit menu. The Modify Instruction window will show as below.



- Select Address Label we want to add the instruction.
- Choose the instruction's OpCode and Operand.
- Press **Write** button to save the instruction to the pattern, or press **Read** button to read the original instruction from pattern.
- Press **Close** to quit the Modify Instruction window.

9.5.4 Edit AWI2 Micro Instruction

This section describes the procedure for editing AWI2 micro instruction on an individual cycle unit.



- Move the cursor to where micro instruction needs to be modified in instruction area.

Note When modifying micro instruction, both menu bar and tool bar become unavailable.

- Enter the micro instruction and operand if operand is expected.

Note The microinstruction must be second item or successive items in instruction area. The format shown as follows:
TIME_SET, INSTRUCTION [OPERAND] [, INSTRUCTION [OPERAND]];

- Press **Enter** key or move cursor to other line, then pattern editor will parse the syntax. If syntax is correct, the action is completed. Otherwise, the pattern editor will ask user to modify microinstruction again.

- Note** To abort the current modification, press the right key of mouse and select cancel item in popup menu.

9.6 Save Pattern Program

9.6.1 Write to ATE

This section describes the procedure for uploading both pattern and microinstruction into ATE memory.

(1) Use menu bar

- Click File menu and then select “Write ATE” to open the write window.



Figure 9-19 Write Pattern Dialog

- Select the socket you desire to write pattern.
- To accomplish writing pattern, click **OK** button. Or click **Cancel** button to abort the action.

(2) Use tool bar



- When **socket** tool bar is visible
 - Select socket in socket tool bar.
 - Click **Write** button in standard tool bar, then pattern modified is writing into ATE.
- When **socket** tool bar is invisible
 - Click **Write** button in standard tool bar to open the write window.
 - Select socket you desire to write pattern.
 - To accomplish writing pattern, click **OK** button. Or click **Cancel** button to abort the action.

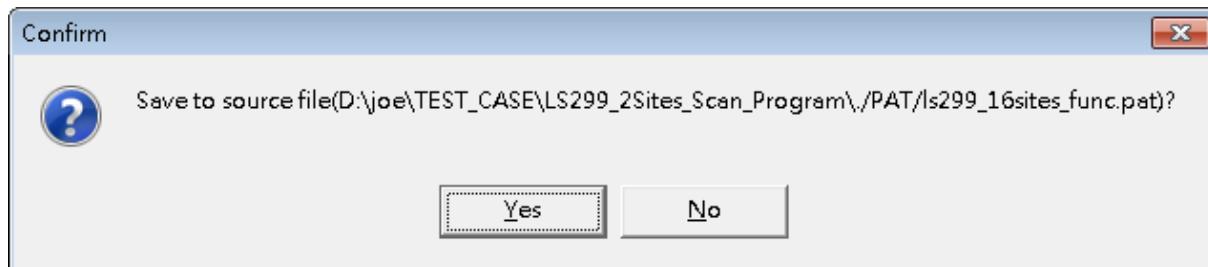
9.6.2 Save Pattern File

After a test pattern in the memory is edited with the pattern editor, it can be saved into a file as below.

(1) Save to source file

This function replaces the corresponding pattern in source file by pattern shown in pattern editor window.

- Select “Save to source file” of File menu and the following dialog appears.

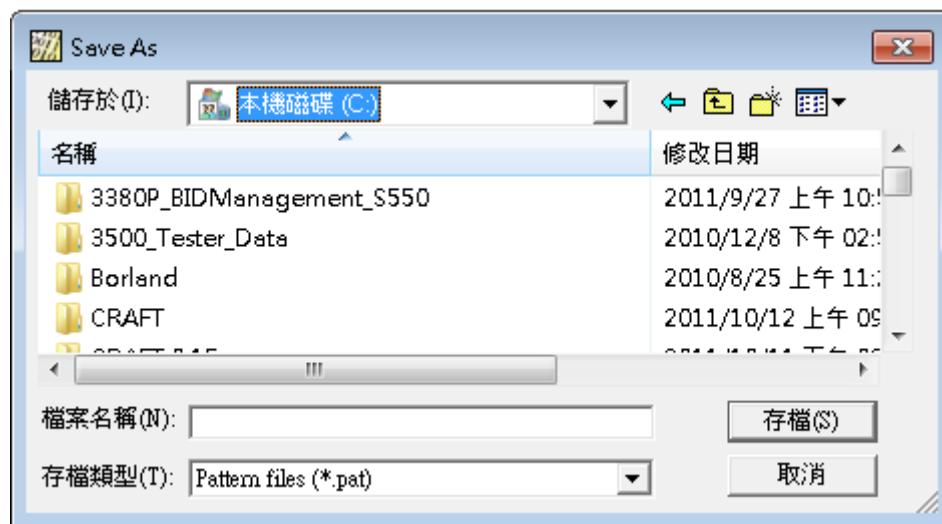


- Press **Yes** button to confirm the action or **No** button to abort writing pattern.

(2) Save to another file.

The function is similar to “Save to source file” except for saving to another file.

- Select “Save As” of File menu and the following dialog appears.

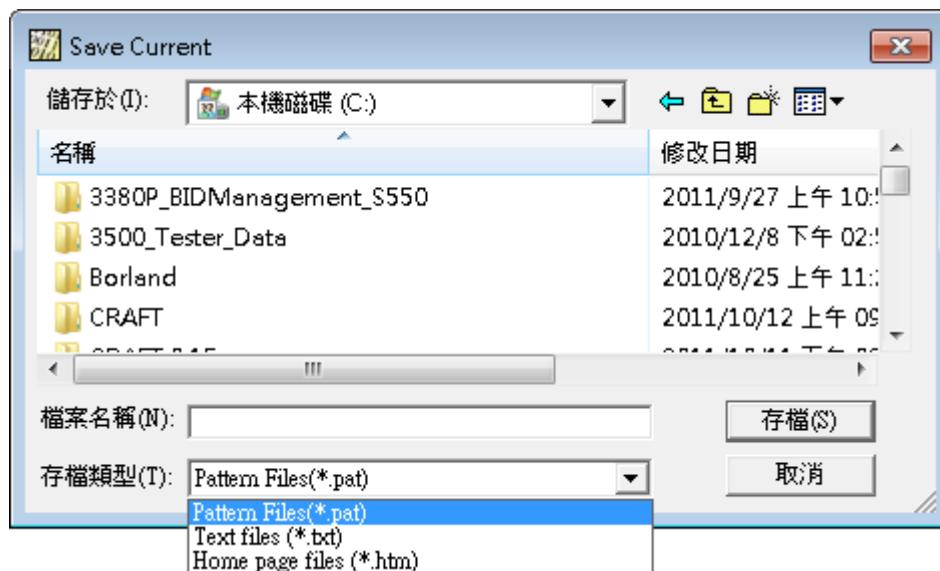


- Specify pattern and file name, then press **Store** button. Also, you can press **Cancel** button to abort the manipulation.

9.6.3 Save Partial Pattern

This function stores the pattern loaded by pattern editor into text file or html file. The file format is the same as the view format in pattern editor and the format is different from the format of source file.

- (1) Select “Save Partial As” in File menu and the following dialog appears.

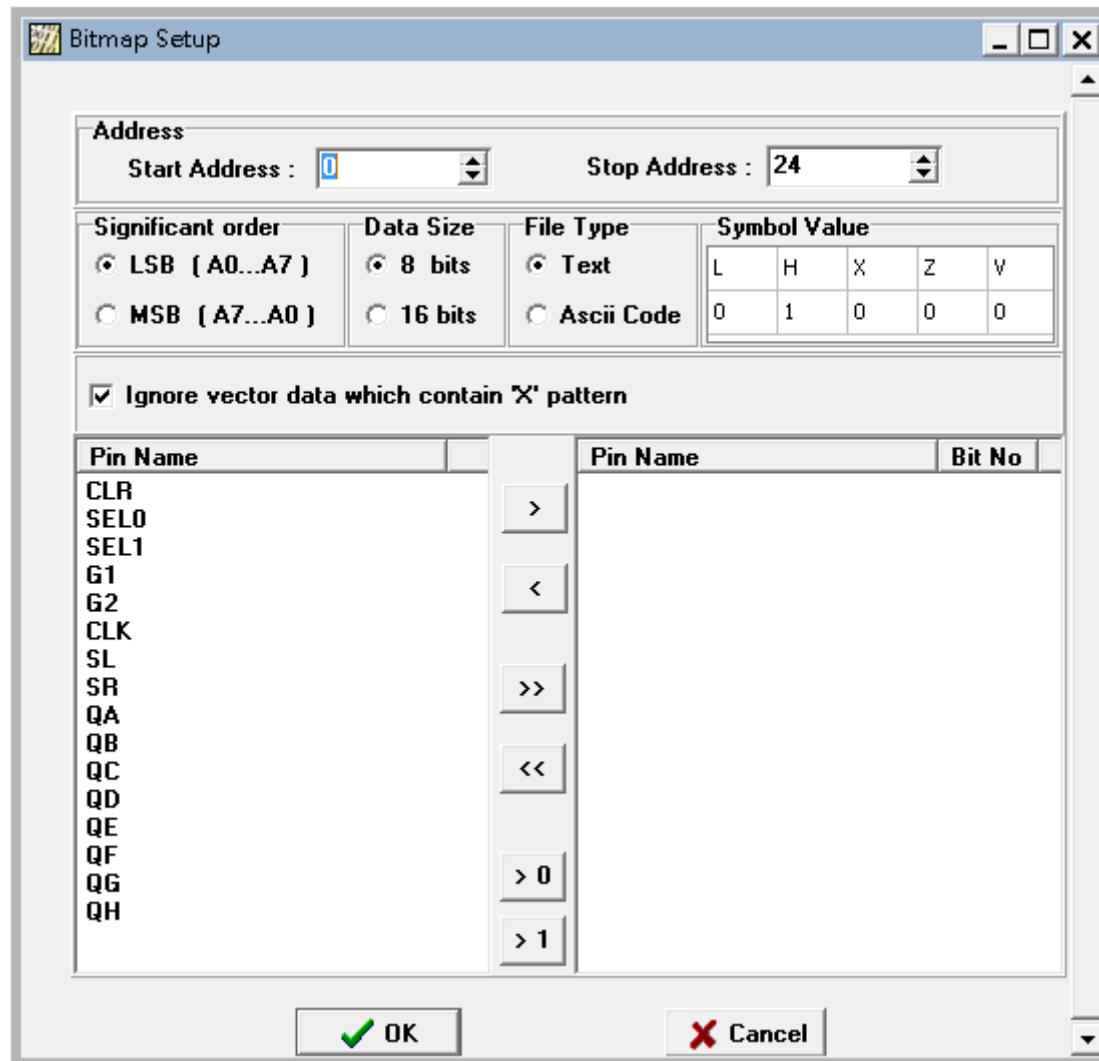


- (2) Select “Text files” in file type item to store pattern data as text file. Or select “Home page files” in file type item to store pattern data as html file.
- (3) Press **Store** button to confirm the action or **Cancel** button to abort writing pattern.

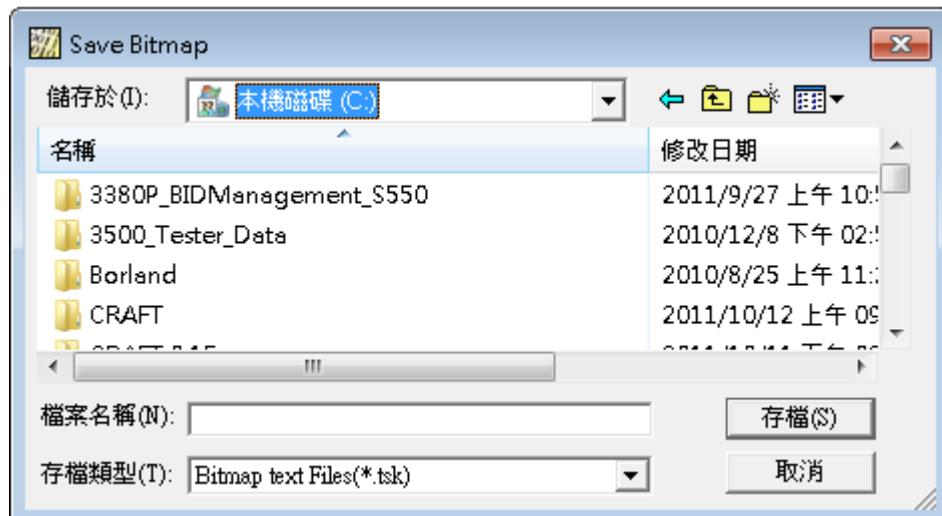
9.6.4 Save Bitmap File...

This function can store the pin's pattern in bitmap module.

- (1) Select “Save Bitmap File...” in File menu and the following dialog appears.



- (2) Select Start Address and Stop Address, and then choose Significant order, Data Size, File Type and Symbol Value.
- (3) Select the pin(s) what you want to show in bitmap file, and press to confirm, or press to cancel; can make all pins to the right side and makes all right side pins to cancel. can let one Bit No always show 0, so can always show 1.
- (4) Press **OK** to save the file and Save Bitmap window shows up or press **Cancel** to quit saving bitmap option.



- (5) Specify pattern and file name, then press **Store** button. Also, you can press **Cancel** button to abort the manipulation.

9.7 Fail Memory

9.7.1 Load Pattern

This section describes the procedure for determining the pattern data to be displayed as the pattern editor target.

- (1) The test plan is breaking under judge pattern statement.

For example:

```
JUDGE_PAT(lcd_contact_pat, __lcd_contact_pat);
lcd_contact_pat: burst start address
__lcd_contact_pat: burst stop address
```

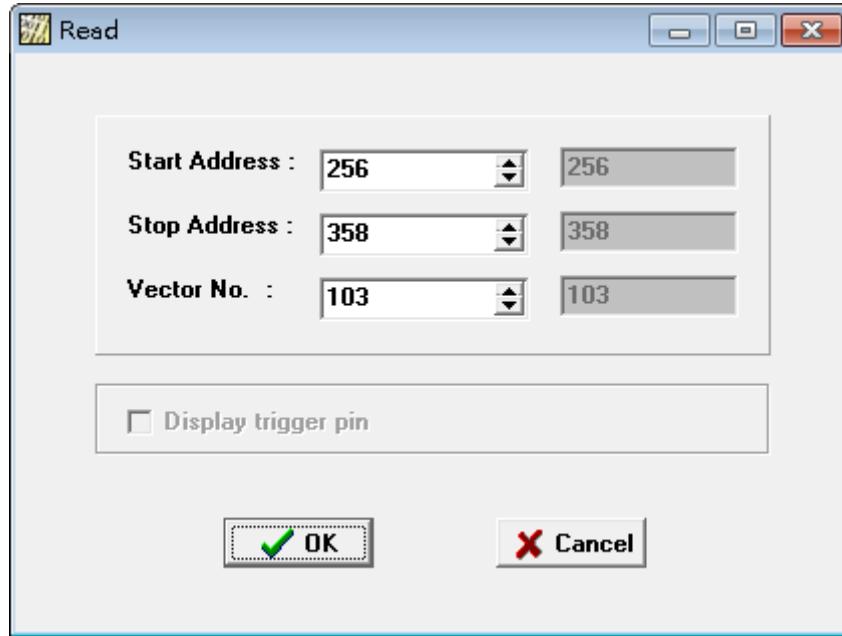
- (2) The fail tool bar in pattern editor will appear as the following figure.



- (3) Click fail memory tool button on fail tool bar, then the read dialog will appear..



- (4) Enter first address where pattern is downloaded. Enter last address where pattern is downloaded. You can also assign vector number that will be downloaded.



- (5) Determinate whether to display trigger pin or not. If yes, then turn on the "Display trigger pin". Otherwise, turn it off.
- (6) Click **OK** button to read pattern from ATE. If you want to stop the action, click **Cancel** button.

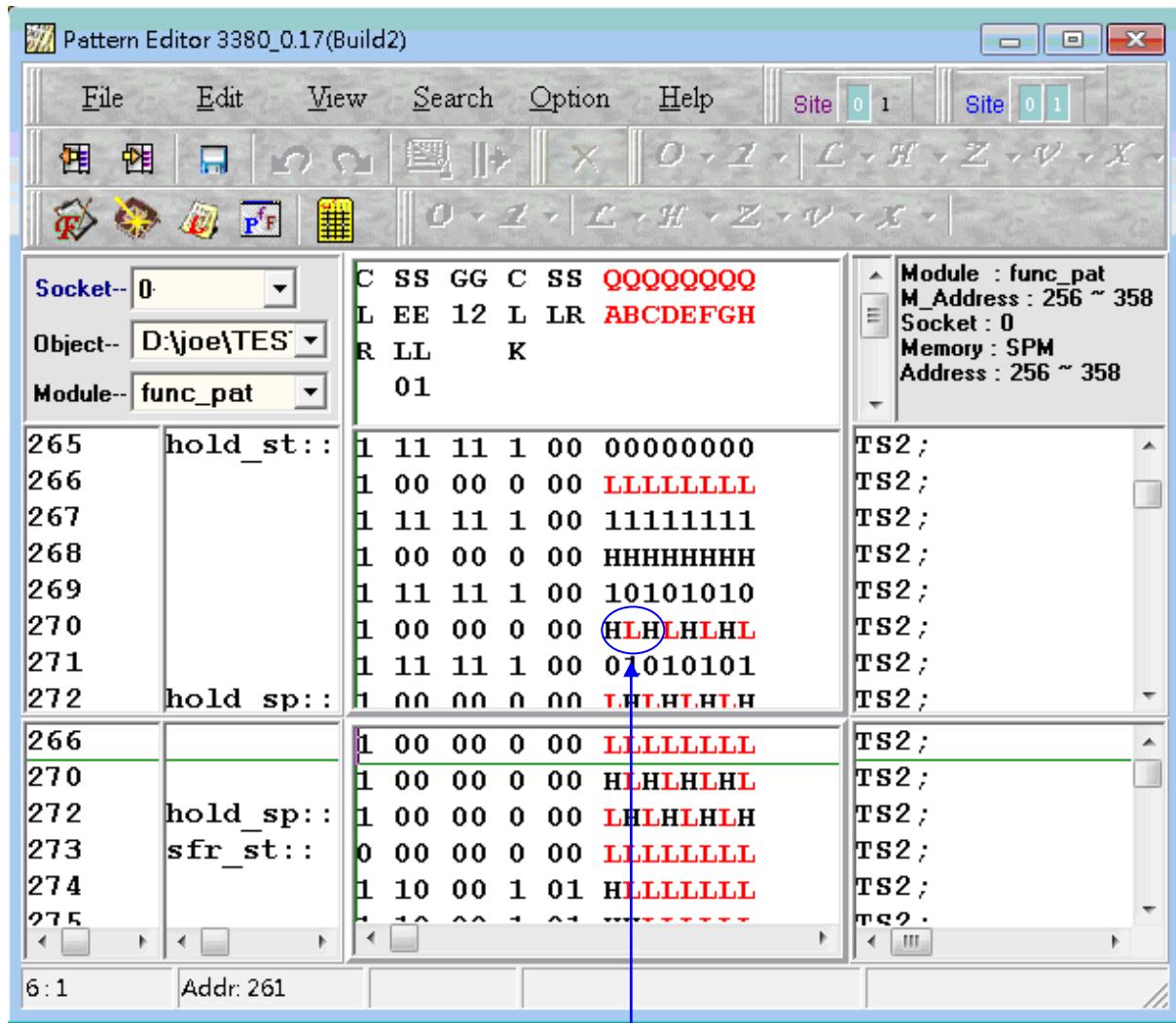
9.7.2 Burst Pattern

This section describes the procedure for displaying fail pattern in pattern editor.

- (1) Click Burst Pattern button on fail tool bar, then system begins to burst pattern.



- (2) As soon as burst pattern is finished, the fail pattern is shown in red color. All fail patterns are shown in sub/fail window.



Fail Pattern

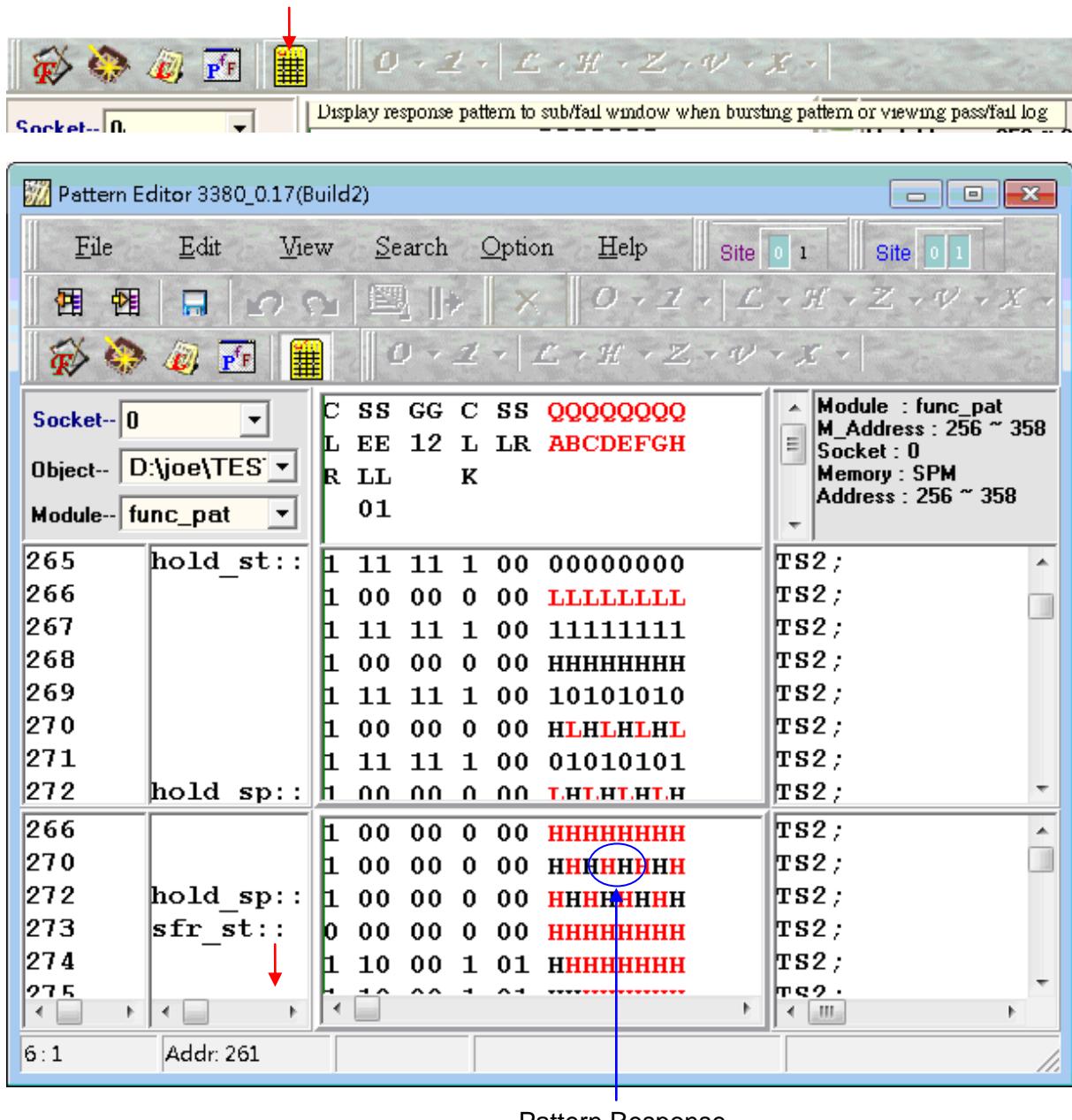
- (3) Click Learn Pattern button to learn pattern which inverts automatically fail pattern to opposite pattern, e.g. inverts 'L' to 'H'. The fail pattern is shown in purple color.



- (4) Click Display pass/fail button to display current pass/fail in log memory result for all pins without bursting pattern. The pass/fail is shown in sub/fail window.



- (5) Click Display Response button to display burst pattern result after pattern is burst. The burst results are shown in sub/fail window.



9.7.3 Edit Fail Pattern

This section describes the procedure for editing the fail pattern data on an individual cycle unit.

- (1) Invert fail pattern
 1. Select patterns needed to invert.
 2. Select “Invert fail” in Edit menu, or press the right key of mouse to popup menu and click “**Invert fail**”. Then all fail patterns marked are inverted.

0 \leftrightarrow 1
 L \leftrightarrow H
 Z \leftrightarrow V
 U \leftrightarrow R
 S \leftrightarrow T

(2) Use tool bar

- All selected patterns are replaced by the symbol on the tool button.



For example, when clicking button **0**, the fail patterns in selected area are assigned as 0.

- Only the specified fail pattern in marked area is replaced by the symbol on the tool button.



For example, click triangle in tool button 0 and the popup menu appears. Once user selects item “L->0”, all the patterns “L” which are fail in selected area are replaced by symbol “0”.

(3) Use Replace Dialog

- Click “Replace Fail” in Edit menu. The Replace Fail Dialog then opens.

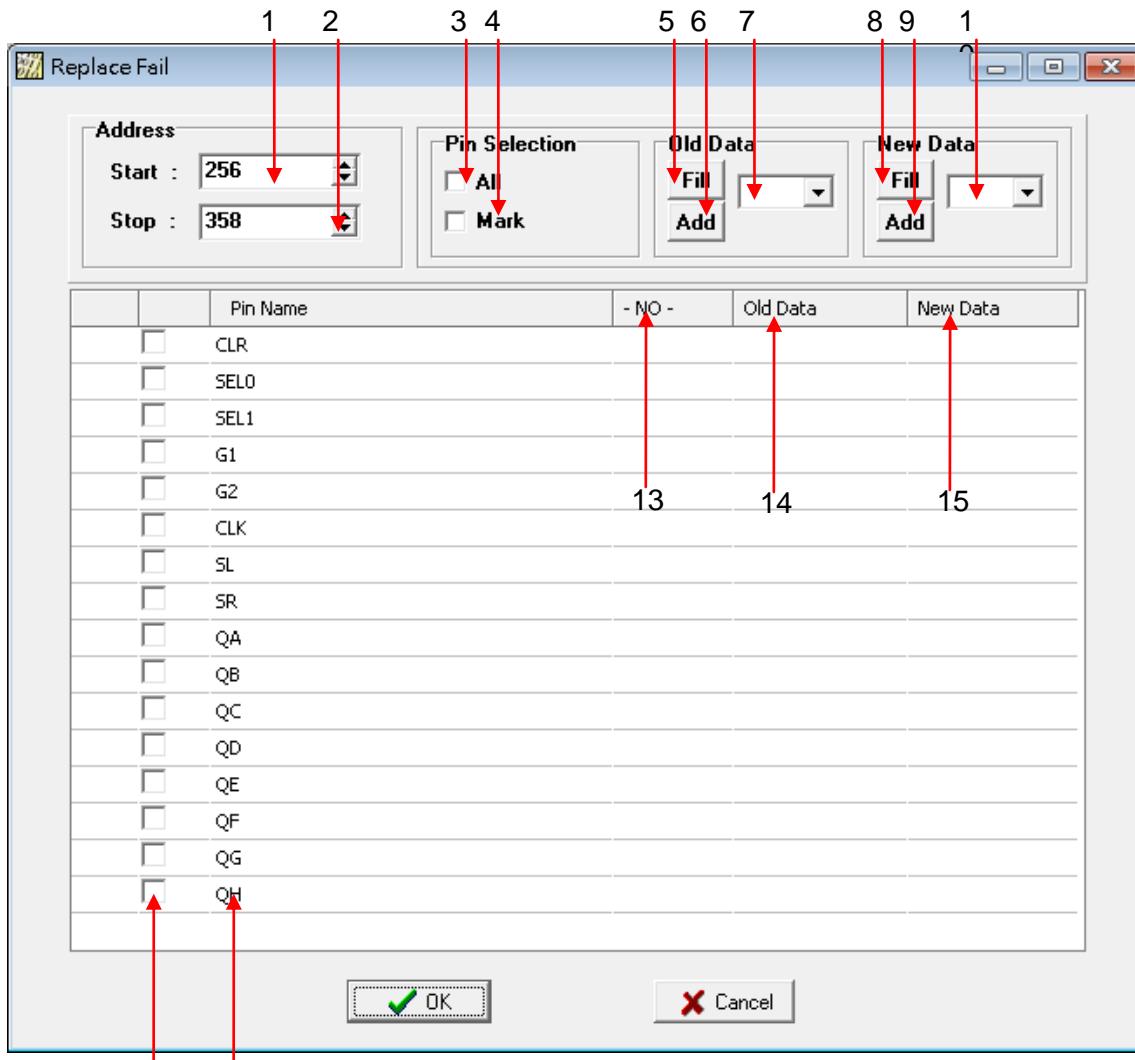


Figure 9-20 Replace Fail Dialog

No.	Function	Description
1	Start Address	Determinate the first address where pattern will be replaced.
2	Stop Address	Determinate the last address where pattern will be replaced.

The following is used to manipulate symbol assignment for pins.

No.	Description
3	Select / deselect all the pins.
4	Select / deselect the marked pins.
5	All the old data fields are replaced by specified symbol (the symbol is assigned in item 7).
6	The marked old data fields are replaced by specified symbol (the symbol is assigned in 7).
7	Determinate the symbol that will be filled into <i>old data field</i> when clicking on item 5 or 6.
8	All the new data fields are replaced by specified symbol (the symbol is assigned in item 10).
9	The marked new data fields are replaced by specified symbol (the symbol is

	assigned in item 10).
10	Determinate the symbol that will be filled into <u>new data field</u> when clicking item 8 or 9.

No.	Function	Description
11	Checked	Determinate if the pattern for the corresponding pin is replaced with specified when user clicks OK button.
12	Pin Name	Display pin name
13	No	Display the pin number for pin group.
14	Old Data	Select the symbol will be replaced for the pin. If the field left empty, then all symbols will be replaced for the pin.
15	New Data	Determinate the symbol will replace the symbol in <i>Old Data field</i> .

Table 9-10 Replace Fail Window Description

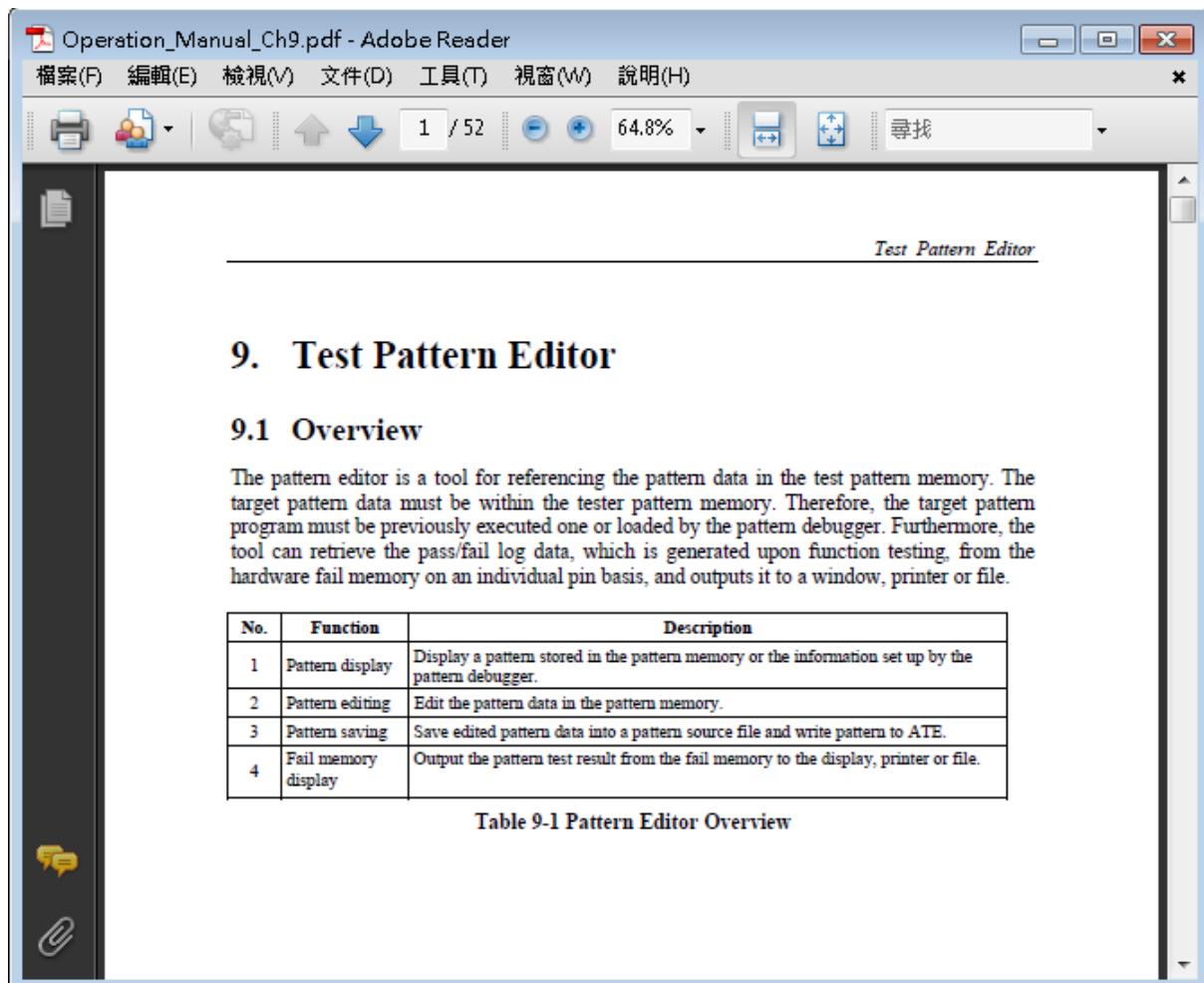
2. Click **OK** button to execute the action, or click **Cancel** button to abort the action.

Note : If symbol can't be applied to one pin, the pattern of pin won't be modified.

9.8 Help

9.8.1 Content

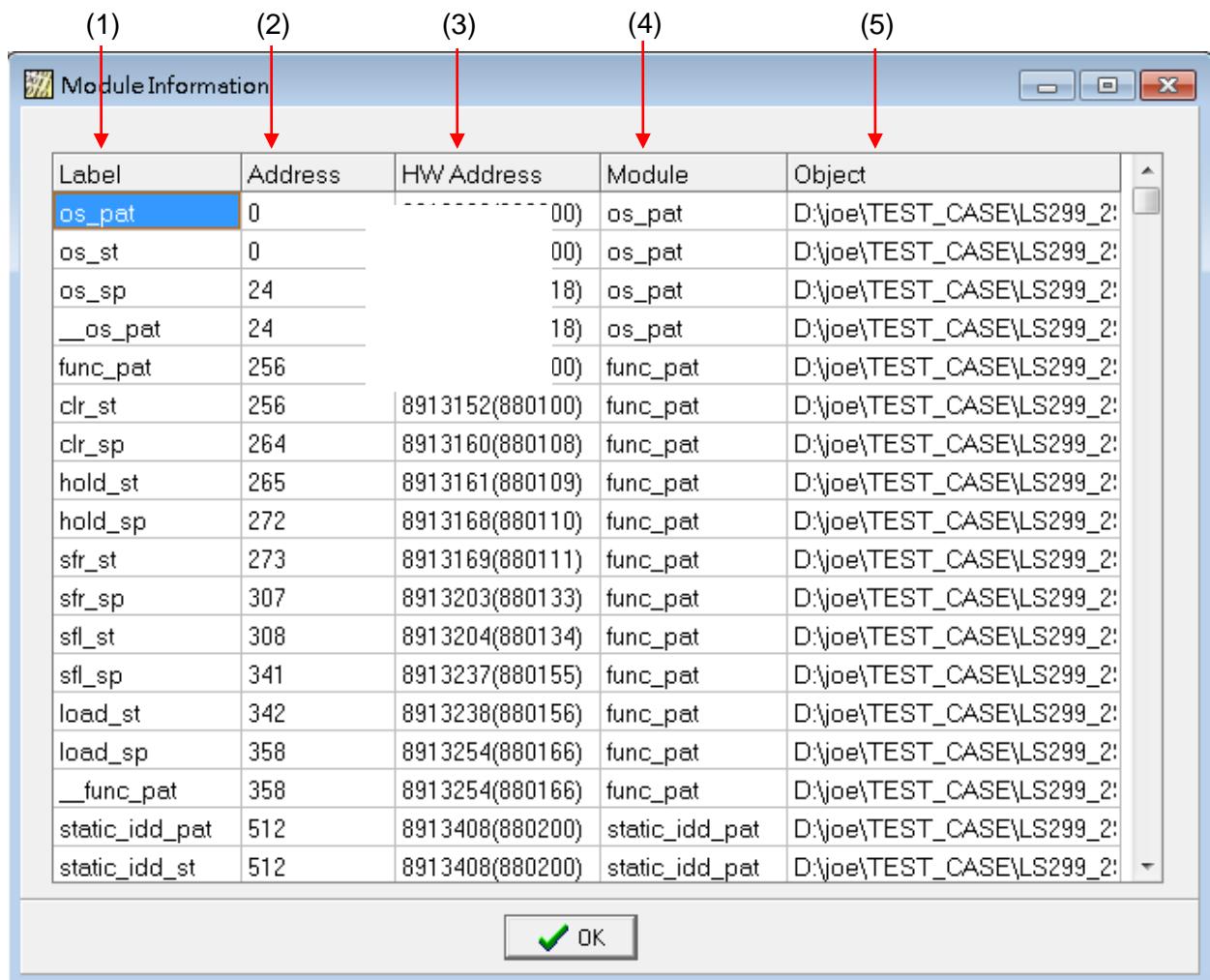
Display operation document for the pattern editor.



No.	Function	Description
1	Pattern display	Display a pattern stored in the pattern memory or the information set up by the pattern debugger.
2	Pattern editing	Edit the pattern data in the pattern memory.
3	Pattern saving	Save edited pattern data into a pattern source file and write pattern to ATE.
4	Fail memory display	Output the pattern test result from the fail memory to the display, printer or file.

Table 9-1 Pattern Editor Overview

9.8.2 Module Information



The screenshot shows the 'Module Information' window with a title bar and a table of labels. The table has columns: Label, Address, HW Address, Module, and Object. Red arrows labeled (1) through (5) point to the first five columns of the table. An 'OK' button is at the bottom.

Label	Address	HW Address	Module	Object
os_pat	0	00	os_pat	D:\joe\TEST_CASE\LS299_2:
os_st	0	00	os_pat	D:\joe\TEST_CASE\LS299_2:
os_sp	24	18	os_pat	D:\joe\TEST_CASE\LS299_2:
_os_pat	24	18	os_pat	D:\joe\TEST_CASE\LS299_2:
func_pat	256	00	func_pat	D:\joe\TEST_CASE\LS299_2:
clr_st	256	8913152(880100)	func_pat	D:\joe\TEST_CASE\LS299_2:
clr_sp	264	8913160(880108)	func_pat	D:\joe\TEST_CASE\LS299_2:
hold_st	265	8913161(880109)	func_pat	D:\joe\TEST_CASE\LS299_2:
hold_sp	272	8913168(880110)	func_pat	D:\joe\TEST_CASE\LS299_2:
sfr_st	273	8913169(880111)	func_pat	D:\joe\TEST_CASE\LS299_2:
sfr_sp	307	8913203(880133)	func_pat	D:\joe\TEST_CASE\LS299_2:
sfl_st	308	8913204(880134)	func_pat	D:\joe\TEST_CASE\LS299_2:
sfl_sp	341	8913237(880155)	func_pat	D:\joe\TEST_CASE\LS299_2:
load_st	342	8913238(880156)	func_pat	D:\joe\TEST_CASE\LS299_2:
load_sp	358	8913254(880166)	func_pat	D:\joe\TEST_CASE\LS299_2:
_func_pat	358	8913254(880166)	func_pat	D:\joe\TEST_CASE\LS299_2:
static_idd_pat	512	8913408(880200)	static_idd_pat	D:\joe\TEST_CASE\LS299_2:
static_idd_st	512	8913408(880200)	static_idd_pat	D:\joe\TEST_CASE\LS299_2:

Figure 9-21 Module Information Window

- (1) Display label name.
- (2) Display address for the label.
- (3) Display hardware address for the label.
- (4) Display module name where the label is declared.
- (5) Display pattern file name where the label is declared.

9.8.3 Pattern Symbol

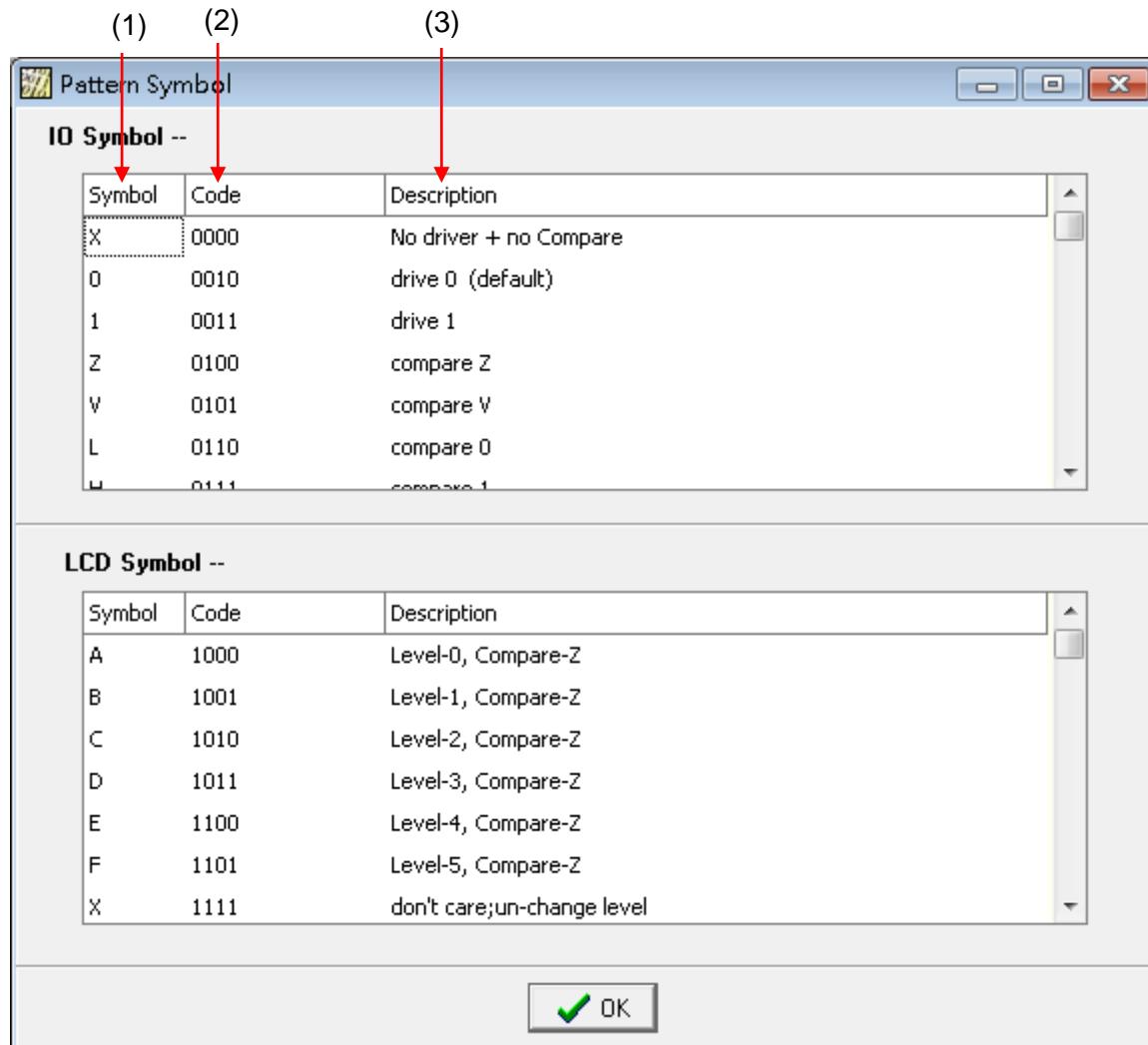
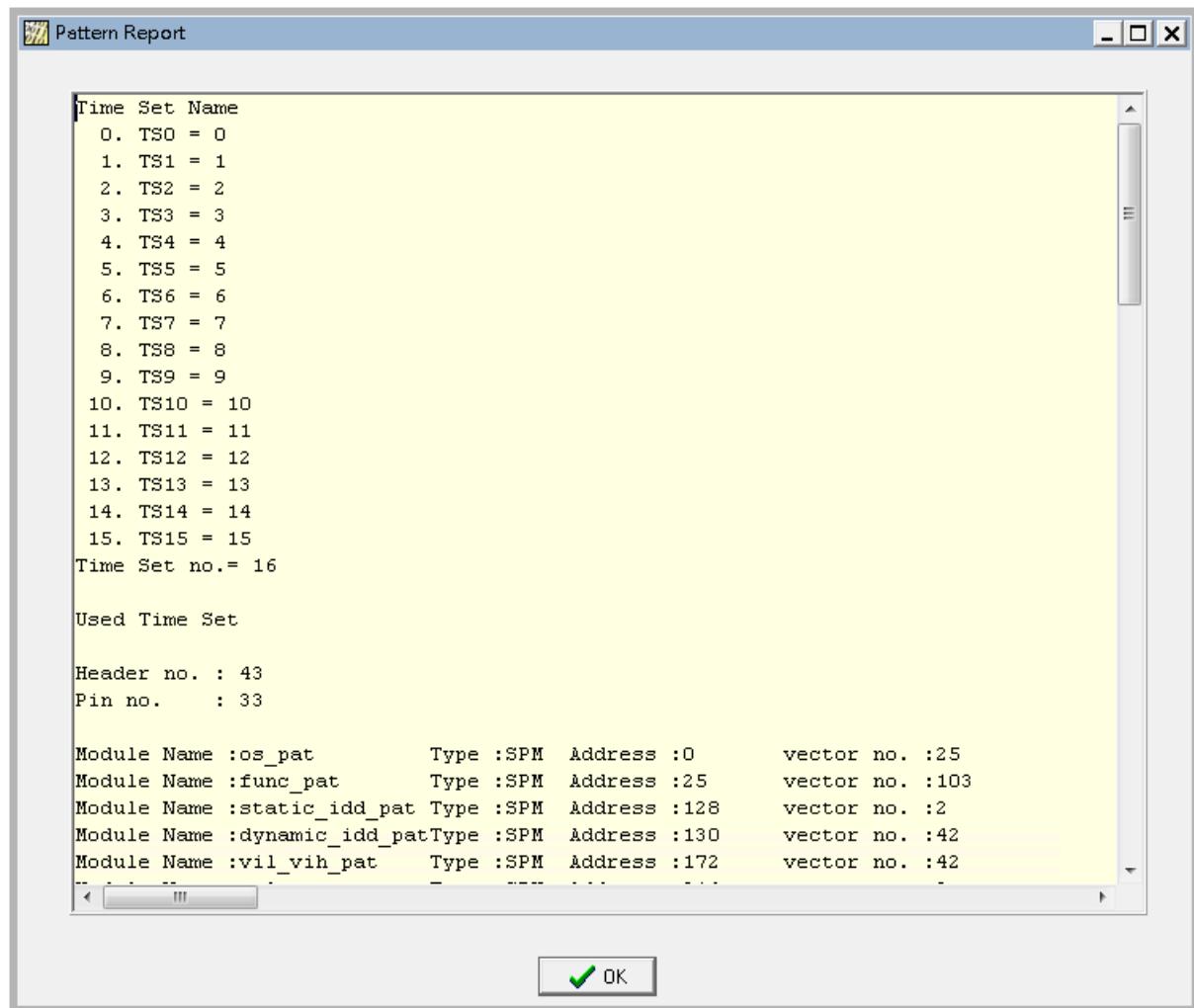


Figure 9-22 Pattern Symbol Window

- (1) Display pattern symbol.
- (2) Display pattern code for the symbol.
- (3) Describe the meaning for the symbol.

9.8.4 Pattern Report

Display pattern report generated by pattern compiler.



9.9 Scan Pattern Window

9.9.1 Scan Pattern

When the pattern uses the SCAN pattern, the line in the pattern editor main window won't show directly. But in the microinstruction section, the scan pattern will show the symbol "SCAN", and the "RPT 64" means the scan pattern has 64 cycles.

The screenshot shows the Pattern Editor interface with the following details:

- Title Bar:** Pattern Editor 3380_0.17(Build2)
- Menu Bar:** File, Edit, View, Search, Option, Help
- Toolbars:** Standard toolbar with icons for Open, Save, Print, etc.
- Control Panel:**
 - Site 0 1, Site 0 1
 - Socket dropdown: 0
 - Object dropdown: D:\joe\TES
 - Module dropdown: scan_func_
- Microinstruction Table:**

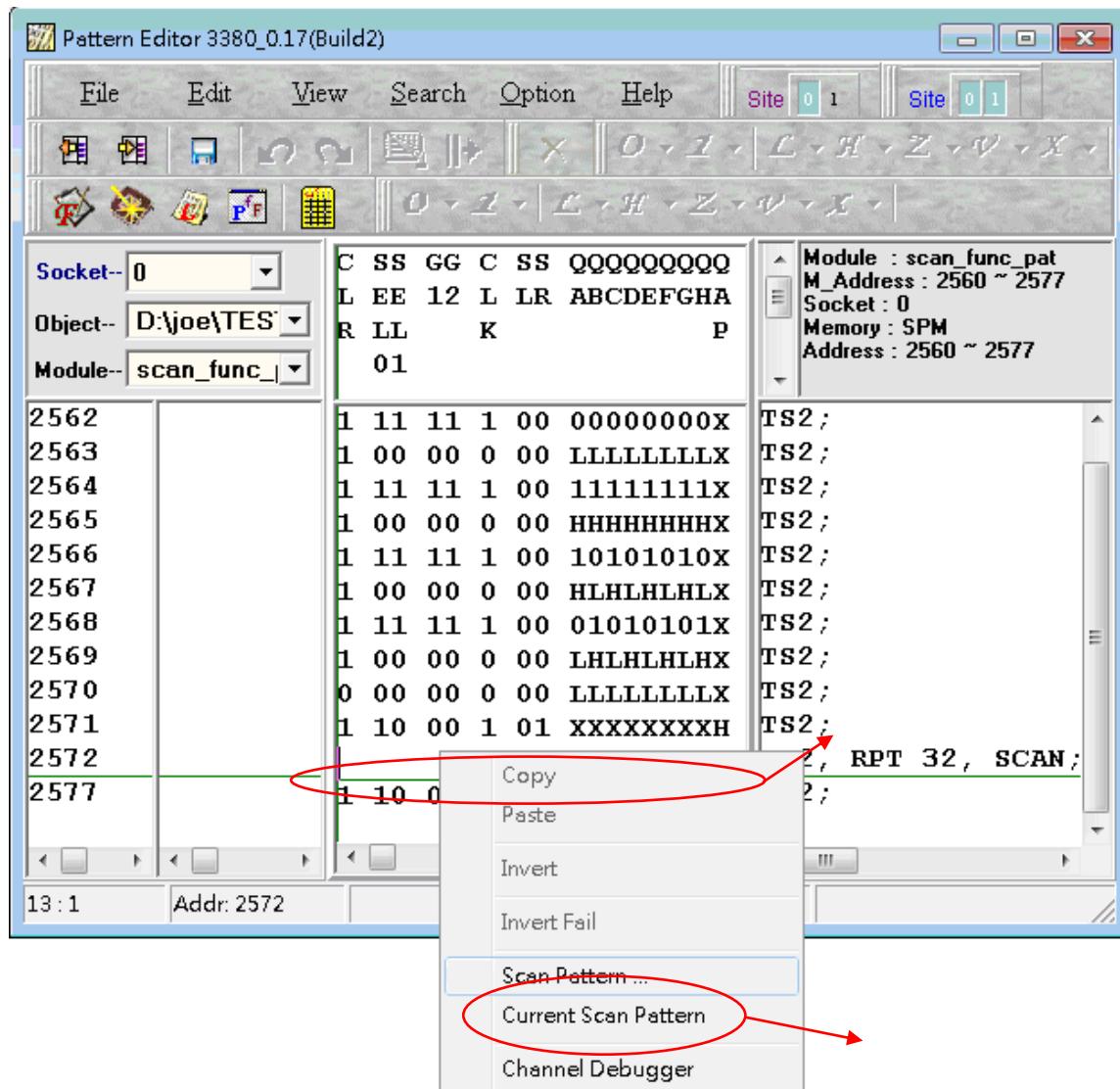
	C SS GG C SS	QQQQQQQQQQ
2560	L EE 12	L LR ABCDEFGHA
2561	R LL	K P
2562		01
2563		
2564		
2565		
2566		
2567		
2568		
2569		
2570		
2571		
2572		
2573		
2574		
2575		
2576		
2577		
- Right Panel:**
 - Module : scan_func_pat
 - M_Address : 2560 ~ 2577
 - Socket : 0
 - Memory : SPM
 - Address : 2560 ~ 2577
- Bottom Status:**
 - 13 : 7
 - Addr: 2572
 - Read Progress ... 100%

9.9.2 Show Scan Pattern Window

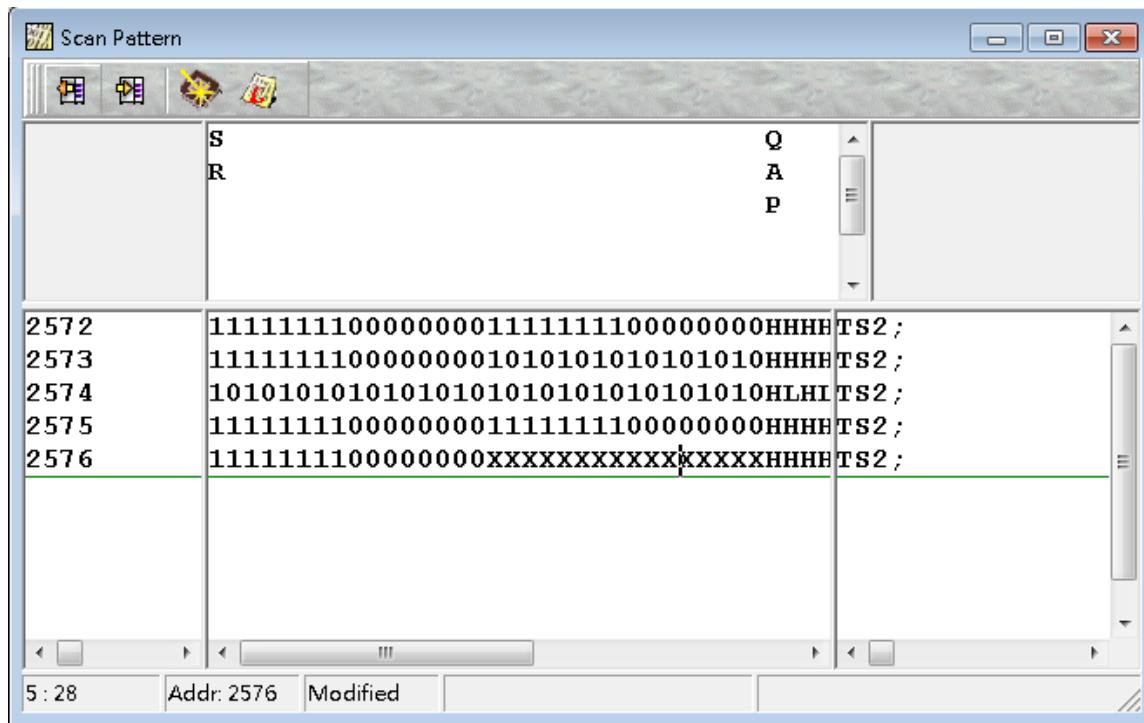
This section describes the procedure for showing the scan pattern window.

- (1) Move the mouse on the blank section of the scan pattern, and click the right key of mouse.

An option list shows as below.

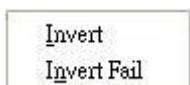


- (2) “Scan Pattern” will show all scan patterns in the pattern file; “Current Scan Pattern” will show the scan pattern of the line which the cursor is on.



9.9.3 Modify Scan Pattern

- (1) Directly Key in
 1. The usage of modifying the pattern is simpler than the description in Section 9.5.1.
Press the left key of mouse to mark a region or a pattern symbol.
 2. Modify the selected pattern symbol(s) by keyboard.
 3. Press to write in.
- (2) Invert / Fail Invert option
 1. Press the left key of mouse to mark a region or a pattern symbol.
 2. Click the right key of mouse and the option menu shows up.



3. Invert: Invert all the marked pattern symbol(s).
Invert Fail: Invert only the failed symbol(s) in the marked pattern.
4. Press to write in.

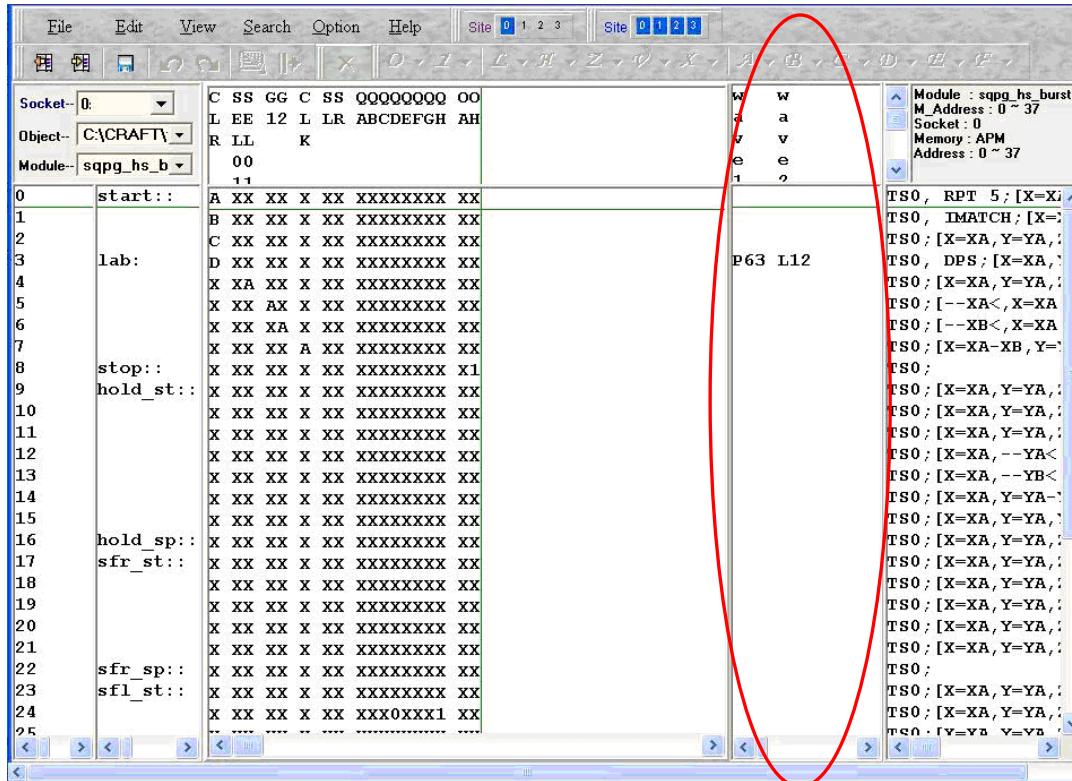
9.9.4 Burst and learn Scan Pattern

- Press to re-burst the pattern.
Press to learn the pattern.

9.10 AWI Pattern Section

9.10.1 AWI Pattern

When the pattern header has defined the AWI pins (pin type: WD, WG). Pattern editor tool will show an additional section to describe the AWI pins.



Each AWI pin has three bits symbol to describe the property.

- (1) The first symbol means the Trigger Type:
 P: Pattern trigger on
 L: LS trigger on
 O: Trigger
 E: External trigger on
- (2) The second and the third symbols mean the Waveform Set, from 0 to 63.

9.10.2 Modify AWI Pattern

AWI pattern can be modified only by key-in.

- (1) Move the cursor on the AWI symbol. Click the left key of mouse or press it to mark a region.
- (2) Modify the selected pattern symbol(s) by keyboard.
- (3) ③ Press to write in.

10. Reference & Change Test Conditions

10.1 Test Condition Monitor Overview

The test condition monitor is a plan program test condition confirmation tool that provides means of referencing and establishing the test condition setup for the tester hardware on an individual unit basis. In situations where a break is set up subsequently to the target judge instruction or measure instruction with the plan debugger, you can use this tool to check and edit the actual test condition setup for hardware while a program execution is halted at a breakpoint.

No.	Function	Description
1	Site selection	Select an operation target site.
2	Display target pin selection	Select a display target pin by specifying the pin name, pin group and tester pin number.
3	DPS reference, change, print and file	Reference, change, print and file the values measured by device power supply unit (DPS).
4	PMU reference, change, print and file	Reference, change, print and file the values measured by DC measuring unit (PMU).
5	Level condition reference, change, print and file	Reference, change, print and file the level conditions related to pins.
6	Timing condition reference, change, print and file	Reference, change, print and file the timing conditions stored in the timing memory.
7	Relay status reference, change, print and file	Reference, change, print and file the relay ON/OFF status of each pin and user relays (UR).
8	Pin function mode reference, change, print and file	Reference, change, print and file in the operation functions mode for each pin.
9	Reference/Change Timing Measurement	Reference or change the timing measurement of individual pins, perform the following procedures.
10	Reference/Change Frequency Measurement	Reference or change the frequency measurement of individual pins, perform the following procedure.
11	IO PPMU reference, print and file	Reference, print and file the current measurement results (pass/fail) of each pin and unit.
12	OST reference, change, print and file	Reference, change, print and file the operation function mode for OST
13	UVI reference, change, print and file	Reference, change, print and file the values measured by device power supply unit (UVI).
14	PREF reference, change, print and file	Reference, change, print and file the values measured by device power supply unit (PREF).
15	AWI reference, change, print and file	Reference, change, print and file the values measured by device power supply unit (AWI).
16	Dynamic Level reference, change, print and file	Reference, change, print and file the level conditions related to pins.
17	MLDPS reference, change, print and file	Reference, change, print and file the values measured by device power supply unit (MLDPS).

Table 10-1 Test Condition Monitor Function List

10.2 Start & Quit Test Condition Monitor

(1) Start test condition monitor

1. The test condition monitor starts when you click TCM icon of System Control window.

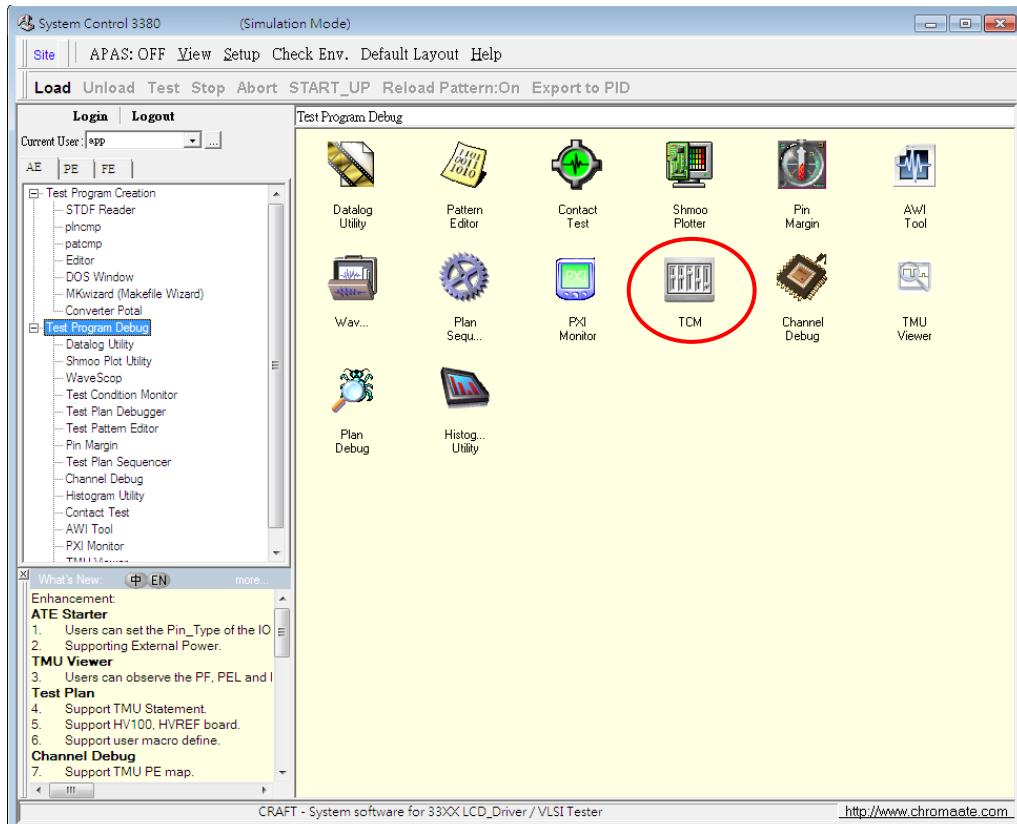


Figure 10-1 System Control Window

2. Test Condition Monitor window popped up.

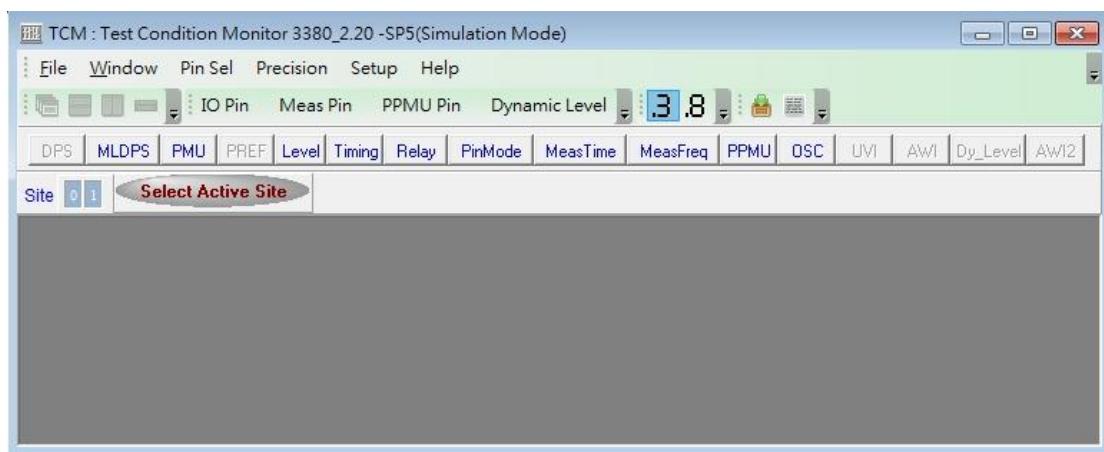


Figure 10-2 Test Condition Monitor Window

(2) Quit test condition monitor

To quit the test condition monitor, choose “Exit” in File Menu to exit Test Condition Monitor.

10.3 Site Selection

Upon test condition monitor startup, Test Condition Monitor window opens. This window provides means of referencing, changing (writing) and printing the test conditions (hardware setup data).

Initially, all the sites are selected (Figure 10-3). User can change the site selection by clicking the site number.

Note The displayed site count choices vary depending how many DUTs are to be measured in parallel.

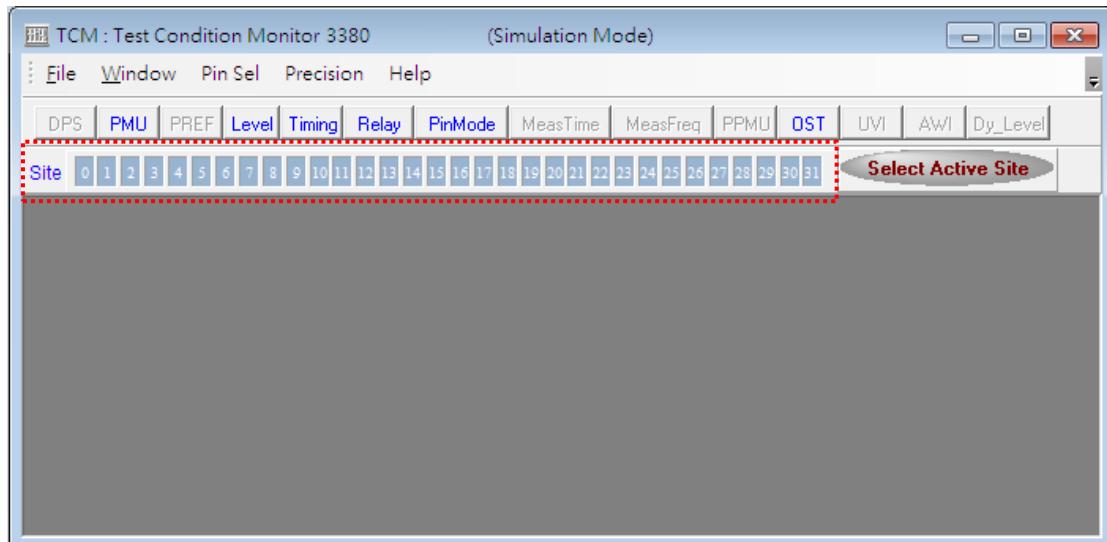


Figure 10-3 Site Selection (select all sites)

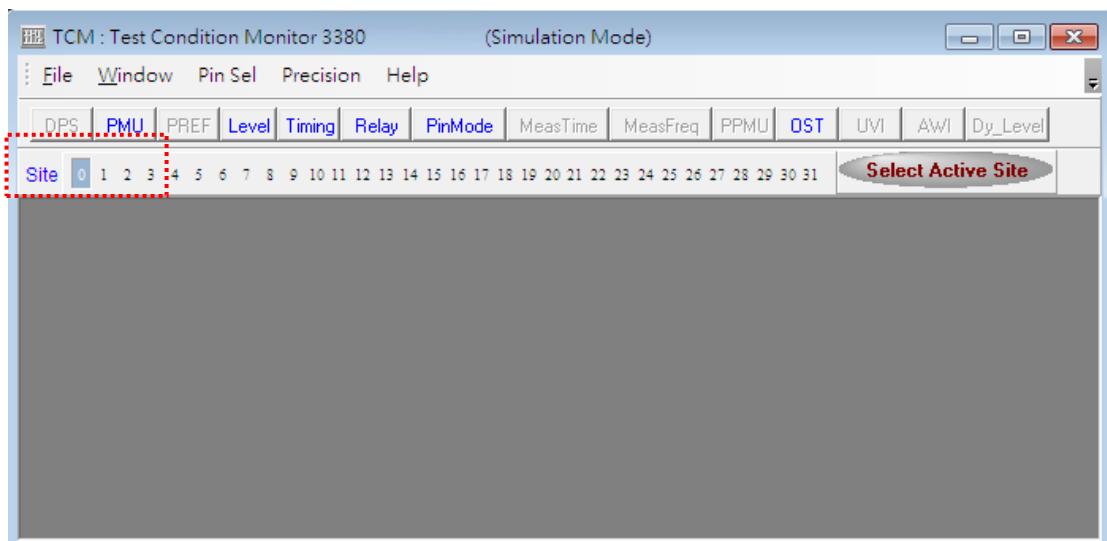


Figure 10-4 Site Selection (select one site only)

10.4 Pin Name Selection

Select one or more target pins by specifying their names. Click the Pin Sel Menu (Figure 10-5) to select the pins to be monitored. By default, all the IO Pins are the target of display. But, none of the Meas. Pin (MT/MF), IO PPMU Pin is the target of display.

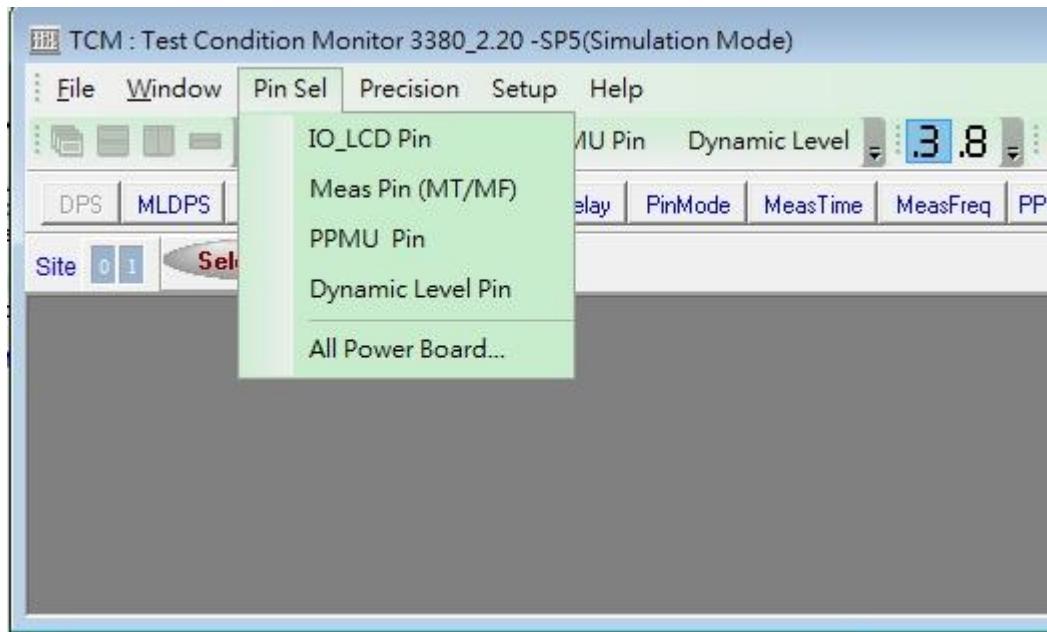


Figure 10-5 Pin Sel Menu

10.4.1 IO/LCD Pin Selection

Select Pins for Level, Relay, Timing, Pin Mode and OST conditions.

- (1) Click Pin Sel in the Test Condition Monitor window menu bar and then select IO_LCD Pin.
- (2) The pin selection dialog then opens (see chapter 19).

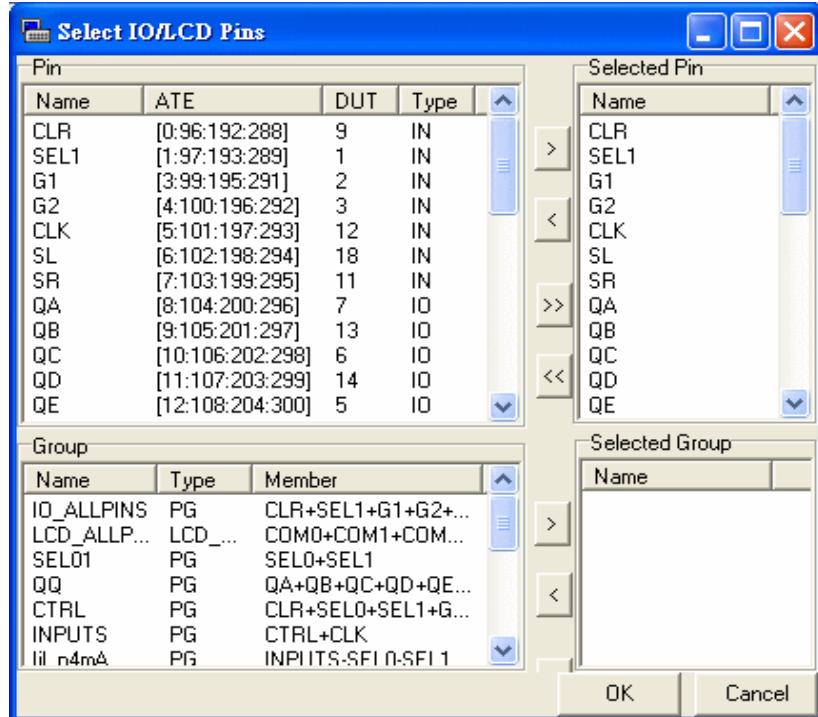


Figure 10-6 Select IO_LCD Pins Dialog

- (3) Specify the pins to be displayed.
- (4) Close the pin selection dialog.

10.4.2 Measurement Pin Selection

Select single IO pin for Measure Time and Measure Frequency conditions.

- (1) Click “Pin Sel” in the Test Condition Monitor window menu bar and then select Meas Pin (MT/MF).
- (2) The pin selection dialog then opens (see Chapter 1).

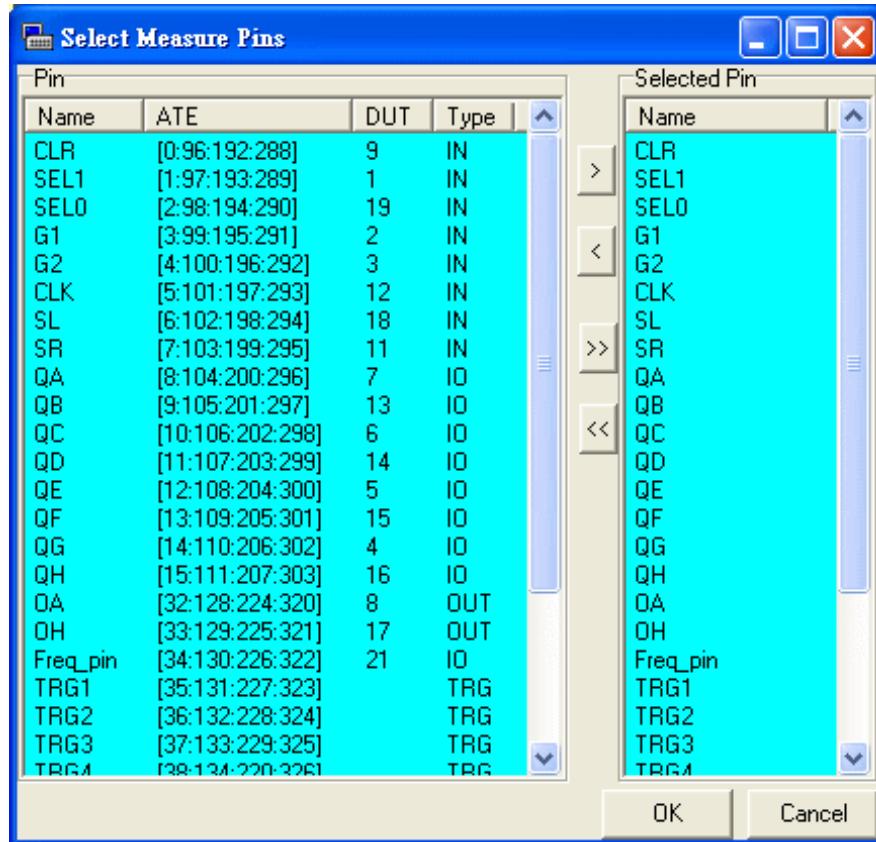


Figure 10-7 Measurement Pins Selection Dialog

- (3) Specify the pins to be displayed.
- (4) Close the pin selection dialog.

10.4.3 PPMU Pin Selection

Figure 10-8 shows the Pins selection dialog of PPMU Pins.

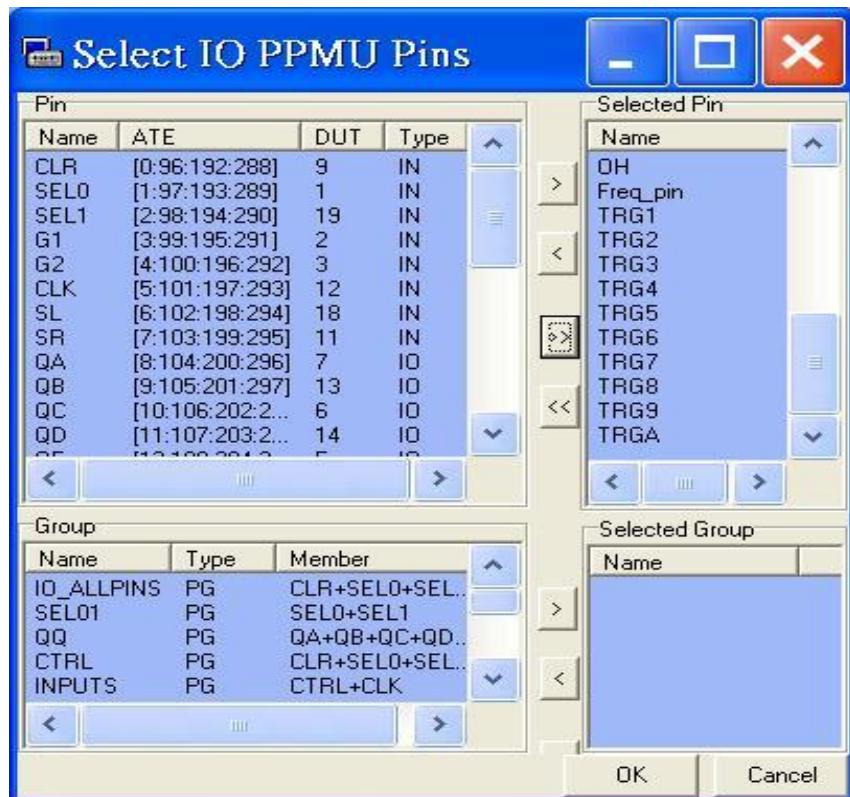


Figure 10-8 IO PPMU Pin Selection Dialog

10.4.4 Dynamic Level Pin

It is for Dynamic Level programming. After selecting the pins, user can press the Dy_Level button to enable the Dynamic level Form.

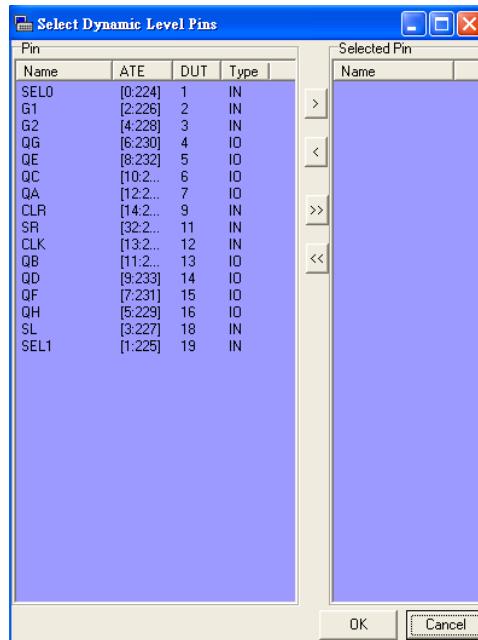
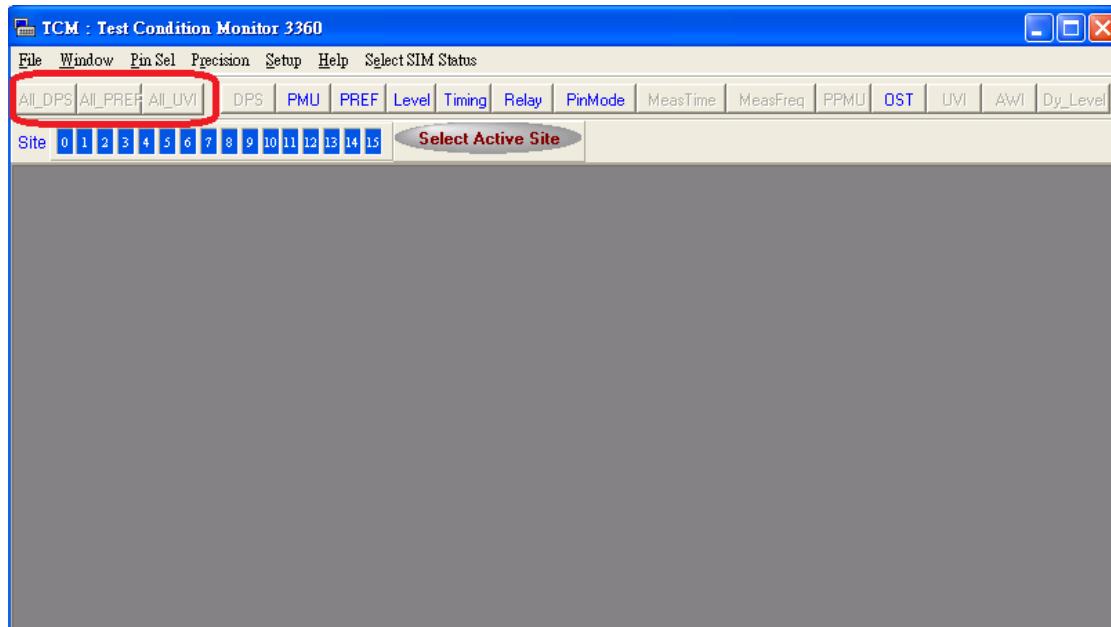


Figure 10-9 Dynamic Level Pin Selection Dialog

10.4.5 All power board Selection



10.5 Reference/Change DPS Setup

To reference or change the device power supply unit (DPS) setup values, use the following procedures.

Reference the DPS setup

- (1) Click DPS button in the Test Condition Monitor window.
- (2) The DPS window then opens.

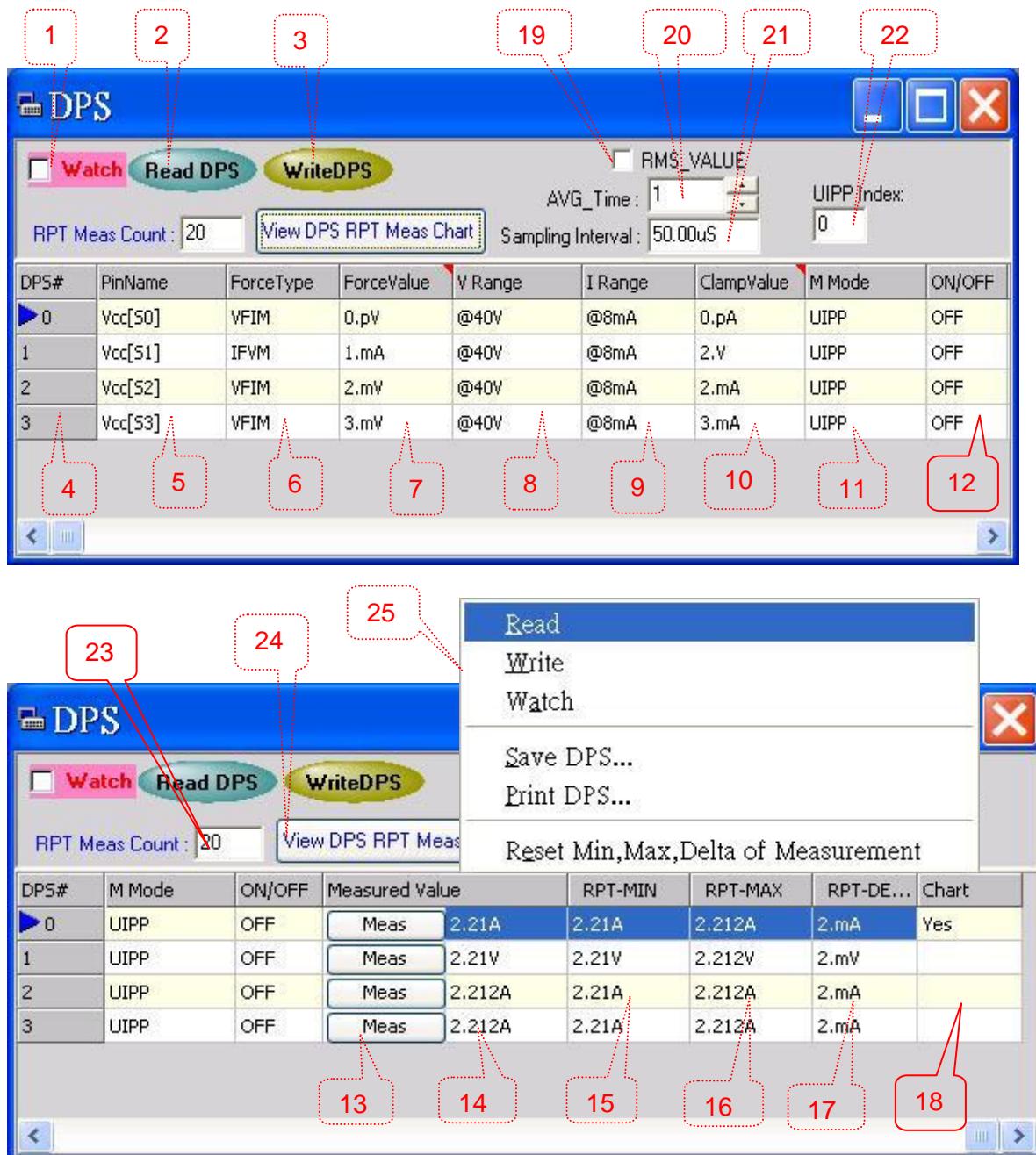


Figure 10-10 DPS Window

No.	Name	Classification	Description
1	Watch	Check box	Specify if the watch mode is On or Off.
2	Read DPS	Button	Read data from hardware.
3	Write DPS	Button	Writes edited data into hardware (write to current site only).
4	DPS #.	Display	Show DPS number.
5	Pin_Name	Display	Show Pin Name.
6	Force Type	Input	Can be VFIM or IFVM.
7	Force Value	Input	Specify the application force value.
8	V_Range	Input	Fixed to @40V for the force value; For the measurement value, it could be @10V, @20PV, @20NV and @40V.
9	I_Range	Input	Open the DPS current force/measurement range selection window, which permits the I_range selection.
10	Clamp Value	Input	Specify clamp value.
11	M_Mode	Button	Specify Trigger mode.
12	ON/OFF	Button	Specify DPS relay status.
13	Meas	Button	Press to get the measured values.
14	Measured Value	Display	Display the measured value
15	RPT-MIN	Display	Display the minimum measured value of the repeat measurement.
16	RPT-MAX	Display	Display the maximum measured value of the repeat measurement.
17	PRT-DELTA	Display	Display the delta of (RPT-MIN, RPT-MAX).
18	Chart	Button	Specify if need to see the chart of the repeat measurement result.
19	RMS_VALUE	Check box	Specify if the measured value is RMS or not.
20	AVG_Time	Input	Specify the measured value is the average of time measurement.
21	Sampling Interval	Input	Specify the sampling interval between each repeat measurement.
22	UIPP Index	Input	When the M_Mode is UIPP, specify the UIPP index.
23	RPT Meas Count	Input	Specify the count of repeat measurement.
24	View DPS RPT Meas Chart	Button	Press to display the chart of the repeat measurement results of the pins with the "Chart" column set to "Yes".
25	PopupMenu	PopupMenu	Click the right key of mouse on the DPS window; this menu will be popped up. User can save the content to a text file or print out the content.

Table 10-2 Contents of DPS Window

Note When "Watch" is enabled, the fixed rows and columns will change the color to pink. Whenever the hardware is changed, all the contents of this window will be auto refreshed.

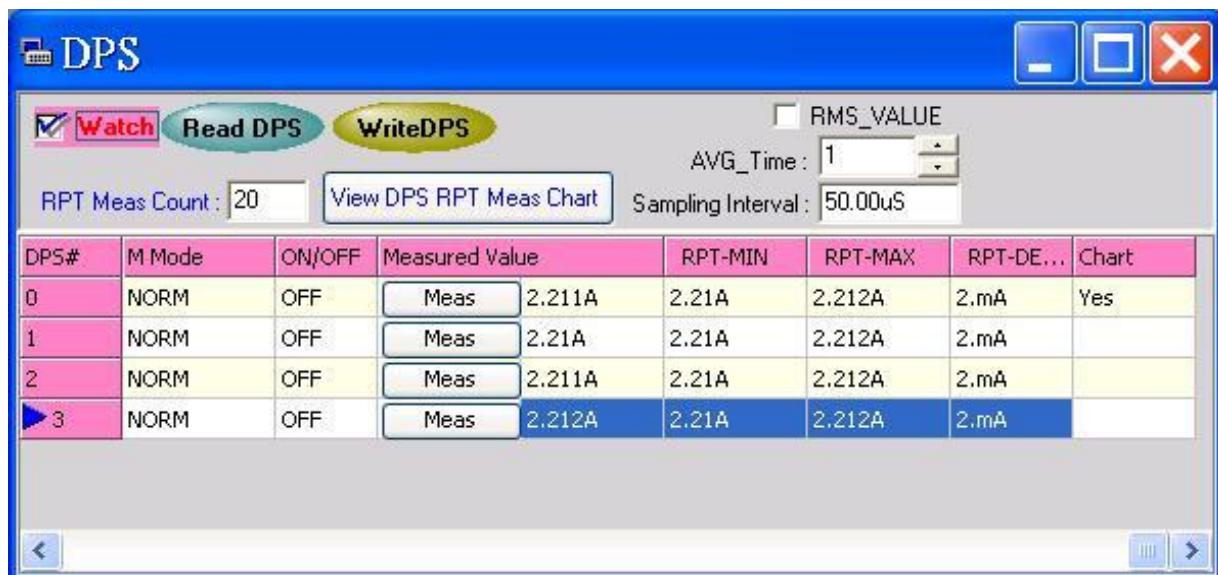


Figure 10-11 “Watch” DPS Window

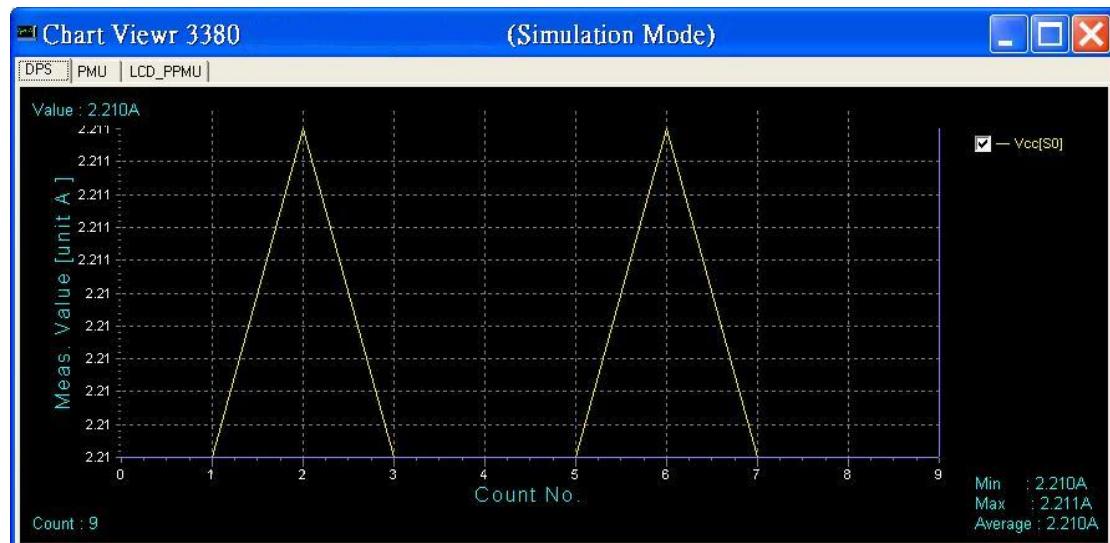


Figure 10-12 DPS Repeat Measure Chart

10.6 Reference/Change PMU Setup

To reference or change the DC measuring unit (PMU) setup values, use the following procedures.

Reference PMU setup

- (1) Click PMU button in the Test Condition Monitor window.
- (2) The PMU window then opens.

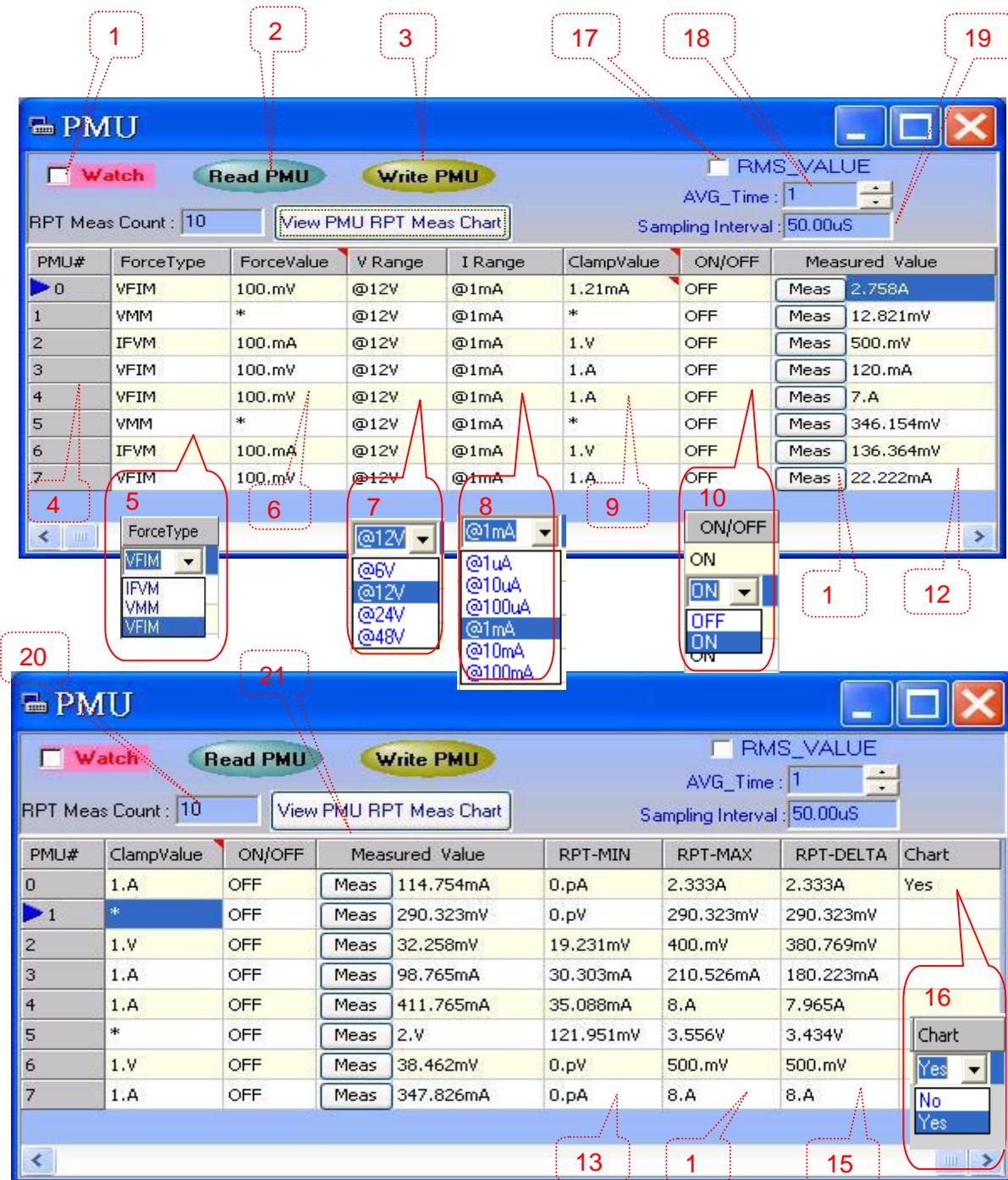


Figure 10-13 PMU Window

No.	Name	Classification	Description
1	Watch	Check box	Specify if the watch mode is On or Off.
2	Read PMU	Button	Read data from hardware.
3	Write PMU	Button	Write edited data into hardware.
4	PMU #.	Display	Show the PMU number.
5	Force_Type	Button	Specify the force or measurement mode. VFIM: Voltage application current measurement. IFVM: Current application voltage measurement. VMM: Voltage measurement.
6	Force Value	Input	Specify the application voltage/current value.
7	V_Range	Button	Specify the voltage range.
8	I_Range	Button	Specify the current range.
9	Clamp Value	Input	Specify the clamp value of the measured value.
10	ON/OFF	Button	Specify the PMU relay status.
11	Meas	Button	Press to get the measured value.
12	Measured Value	Display	Display the measured value.
13	RPT-MIN	Display	Display the minimum measured value of the repeat measurement.
14	RPT-MAX	Display	Display the maximum measured value of the repeat measurement.
15	PRT-DELTA	Display	Display the delta of (RPT-MIN, RPT-MAX).
16	Chart	Button	Specify if need to see the chart of the repeat measurement result.
17	RMS_VALUE	Check box	Specify if the measured value is RMS or not.
18	AVG_Time	Input	Specify the measured value is the average of time measurement.
19	Sampling Interval	Input	Specify the sampling interval between each repeat measurement.
20	RPT Meas Count	Input	Specify the count of repeat measurement.
21	View PMU RPT Meas Chart	Button	Press to display the chart of the repeat measurement results of the pins with the "Chart" column set to "Yes".

Table 10-3 Contents of PMU Window

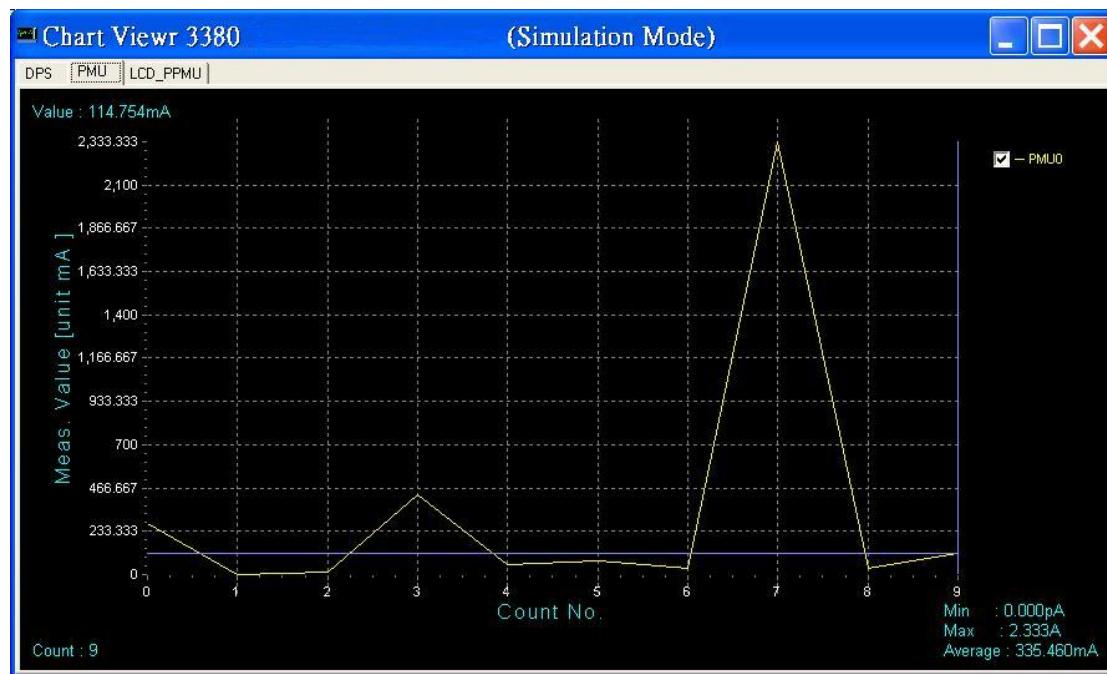


Figure 10-14 PMU Repeat Measurement Chart

10.7 Reference/Change Level Setup

To reference or change the level conditions for individual pins, use the following procedures.

Reference the level conditions

- (1) Click Level button in the Test Condition Monitor window.
- (2) The Level window then opens.

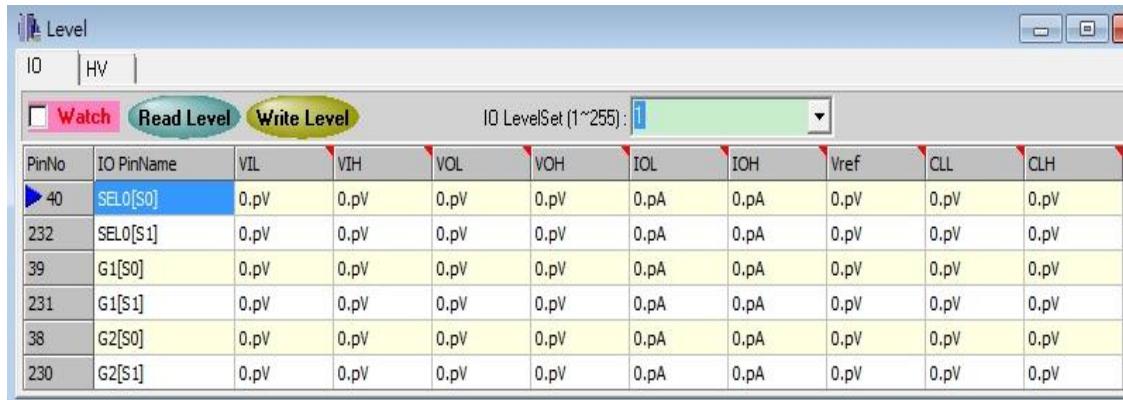


Figure 10-15 Level Window

No.	Name	Classification	Description
1	Watch	Check box	Specify if the watch mode is On or Off.
2	Read Level	Button	Read data from hardware.
3	Write Level	Button	Write edited data into hardware (write to current site only).
4	IO LevelSet	Input	Specify the level set number of the IO pins.
6	PinNo.	Display	Show the Ate channel of the selected pin.
7	IO PinName	Display	Show the Pin Name.
8	VIL, VIH, VOL, VOH, IOL, IOH, Vref, CLL, CLH	Input	Display or change the values of VIL, VIH, VOL, VOH, IOL, IOH, Vref, CLL and CLH of the IO pin.

Table 10-4 Contents of the Level Window

10.8 Reference/Change Timing Setup

You can reference or edit the timing conditions stored in the timing memory.

Reference the timing conditions

- (1) Click Timing button in the Test Condition Monitor window.
- (2) The Timing window then opens.

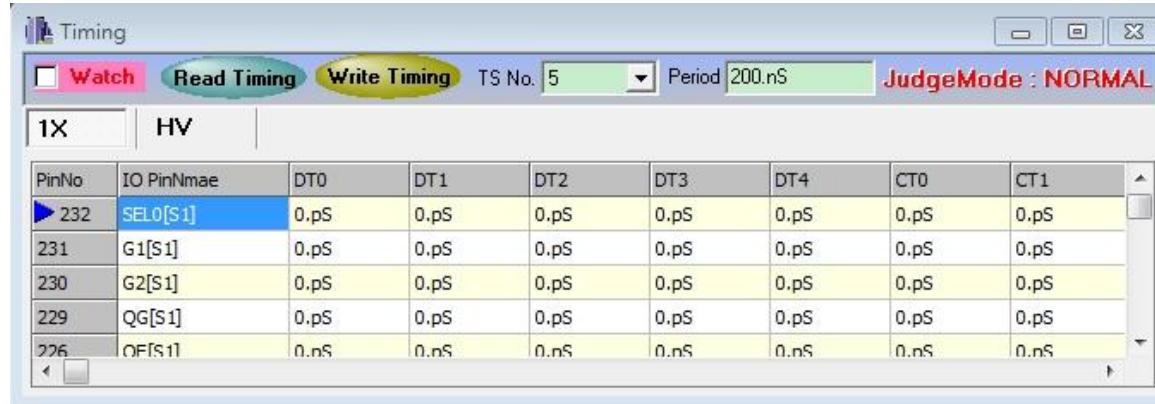


Figure 10-16 Timing Window

No.	Name	Classification	Description
1	Watch	Check box	Specify if the watch mode is On or Off.
2	Read Timing	Button	Read data from hardware.
3	Write Timing	Button	Write edited data into hardware (write to current site only).
4	TS No.	Input	Specify the Timing set number.
5	Period	Input	Specify the period value.
6	PinNo	Display	Show the Ate channel of the selected pin.
7	IO PinName	Display	Show the Pin Name of the selected IO pin.
8	DT0, DT1, DT2, DT3, DT4, CT0, CT1	Input	Display or change the values of DT0, DT1, DT2, DT3, DT4, CT0 and CT1 of the IO pin.

Table 10-5 Contents of the Timing Window

10.9 Reference/Change Relay Setup

To reference or change ON/OFF status of an individual pin or a user relay, use the following procedure.

Reference the relay status

1. Click Relay button in the Test Condition Monitor window menu.
2. The Relay window then opens.

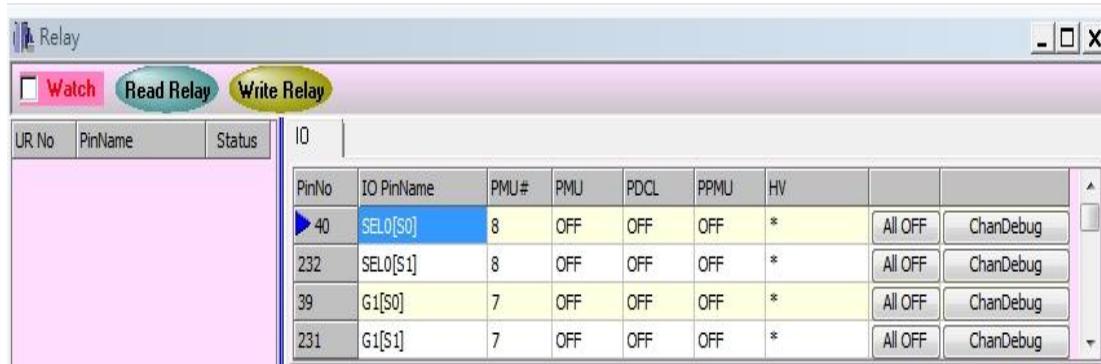


Figure 10-17 Relay Window

No.	Name	Classification	Description
1	Watch	Check box	Specify if the watch mode is On or Off..
2	Read Relay	Button	Read data from hardware.
3	Write Relay	Button	Write edited data into hardware (write to current site only).
4	UR No	Display	Show User Relay number.
5	PinName	Display	Show Pin Name of the User Relay.
6	Status	Button	Specify ON/OFF status of all the User Relays.
7	PinNo	Display	Show ate channel of the selected IO pin.
8	IO PinName	Display	Show the Pin Name of the selected IO pin.
9	PMU#	Display	Show the PMU# connected to the IO pin.
10	PMU	Button	Specify the status of the PMU Relay.
11	PDCL	Button	Specify the status of the PDCL Relay.
12	PPMU	Button	Specify the status of the PPMU Relay.
13	HV	Button	Specify the status of the HV Relay.
14	All OFF	Button	Press to turn the PMU, PDCL, PPMU and OST relay OFF.
15	ChanDebug	Button	Open Channel Debug Tool.

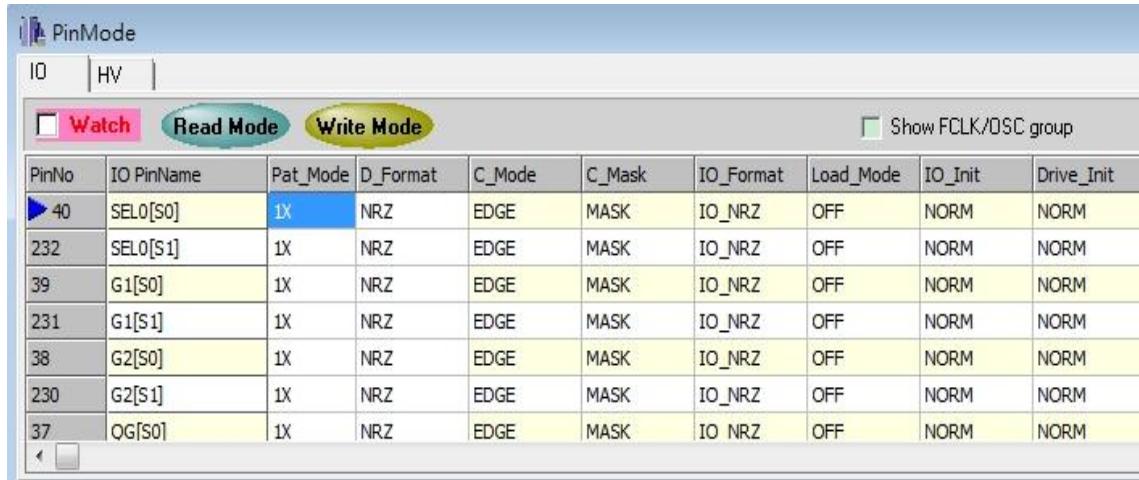
Table 10-6 Contents of Relay Window

10.10 Reference/Change Pin Function Mode

To reference or change the operation function mode setup for an individual pin, use the following procedure.

Reference the pin function mode setup

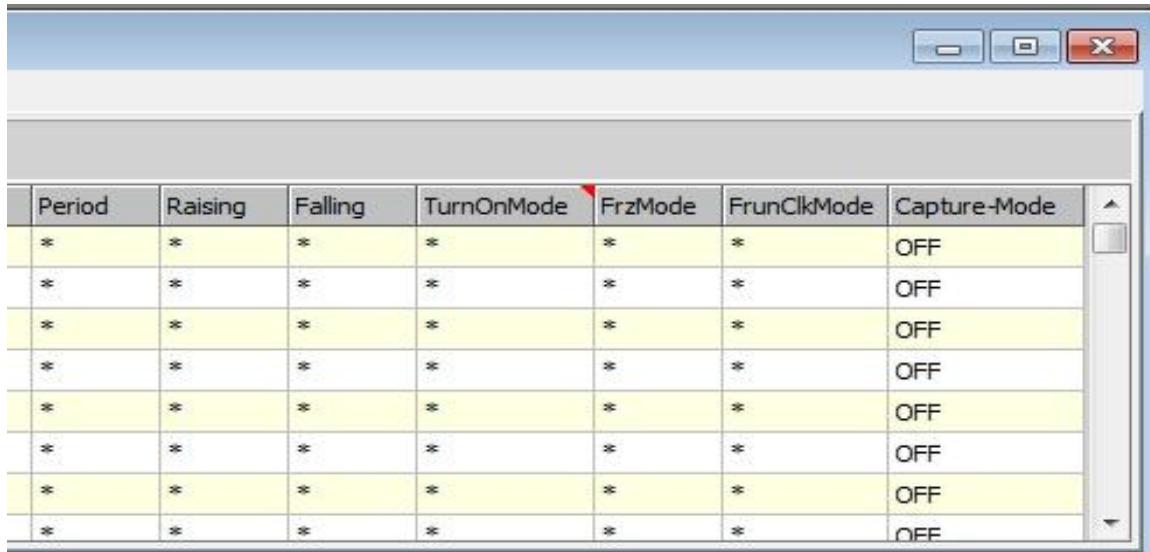
1. Click the PinMode button in the Test Condition Monitor window.
2. The PinMode window then opens.



The screenshot shows a software interface titled "PinMode". At the top, there are two tabs: "Watch" (highlighted in pink) and "Read Mode" (highlighted in blue). Below these tabs is a checkbox labeled "Show FCLK/DSC group". The main area is a table with the following columns: PinNo, IO PinName, Pat_Mode, D_Format, C_Mode, C_Mask, IO_Format, Load_Mode, IO_Init, and Drive_Init. The rows list various pins with their corresponding settings. Row 40 is highlighted in yellow.

PinNo	IO PinName	Pat_Mode	D_Format	C_Mode	C_Mask	IO_Format	Load_Mode	IO_Init	Drive_Init
40	SELO[S0]	1X	NRZ	EDGE	MASK	IO_NRZ	OFF	NORM	NORM
232	SELO[S1]	1X	NRZ	EDGE	MASK	IO_NRZ	OFF	NORM	NORM
39	G1[S0]	1X	NRZ	EDGE	MASK	IO_NRZ	OFF	NORM	NORM
231	G1[S1]	1X	NRZ	EDGE	MASK	IO_NRZ	OFF	NORM	NORM
38	G2[S0]	1X	NRZ	EDGE	MASK	IO_NRZ	OFF	NORM	NORM
230	G2[S1]	1X	NRZ	EDGE	MASK	IO_NRZ	OFF	NORM	NORM
37	OG[S0]	1X	NRZ	EDGE	MASK	IO_NRZ	OFF	NORM	NORM
4									

Figure 10-18 Pin Mode Window



The screenshot shows a software interface titled "Pin Mode Window". It features a table with the following columns: Period, Raising, Falling, TurnOnMode, FrzMode, FrunClkMode, and Capture_Mode. The rows consist of eight entries, each containing an asterisk (*) in all columns. The window has standard Windows-style controls (minimize, maximize, close) at the top right.

Period	Raising	Falling	TurnOnMode	FrzMode	FrunClkMode	Capture_Mode
*	*	*	*	*	*	OFF
*	*	*	*	*	*	OFF
*	*	*	*	*	*	OFF
*	*	*	*	*	*	OFF
*	*	*	*	*	*	OFF
*	*	*	*	*	*	OFF
*	*	*	*	*	*	OFF

Figure 10-19 Pin Mode Window

No.	Name	Classification	Description
1	Watch	Check box	Specify if the watch mode is On or Off..
2	Read Mode	Button	Read data from hardware.
3	Write Mode	Button	Write edited data into hardware.
4	PinNo.	Display	Show Ate channel.
5	IO Pin_Name	Display	Show Pin Name of the selected IO pin.
6	Pat_Mode	Display	Display current patent mode.
7	D_Format	Button	Specify the drive format of the IO pin.
8	C_Mode	Button	Specify the compare mode of the IO pin.
9	C_Mask	Button	Specify the compare mask of the IO pin.
10	IO_Format	Button	Specify the IO format of the IO pin.
11	Load Mode	Button	Open the current load circuit mode selection window, which allows you to select a current load circuit mode.
12	IO_Init	Button	Specify the IO_Init.
13	Drive_Init	Button	Specify the Drive_Init.
14	Period, Raising, Falling	Input	If the Drive Format is "FCLK", user can specify the Period, Raising and Falling values.
15	Pat_Mode	Display	Show the Pattern Mode of the selected IO Pin.
16	TurnOnMode	Display	Show the Turn On Mode of the selected IO Pin.
17	FrzMode	Display	Show the Freeze Mode of the selected IO Pin.
18	FrunClkMode	Display	Show the Free Run Clock Mode of the selected IO Pin.
19	Capture-Mode	Button	Specify the Capture mode of the IO pin.

Table 10-7 Contents of Pin Mode Window

10.11 Reference/Change Timing Measurement

To reference or change the timing measurement of individual pins, perform the following procedure.

Reference timing measurement conditions

1. Click MeasTime button in the Test Condition Monitor window.
2. The Measure Time window then opens.

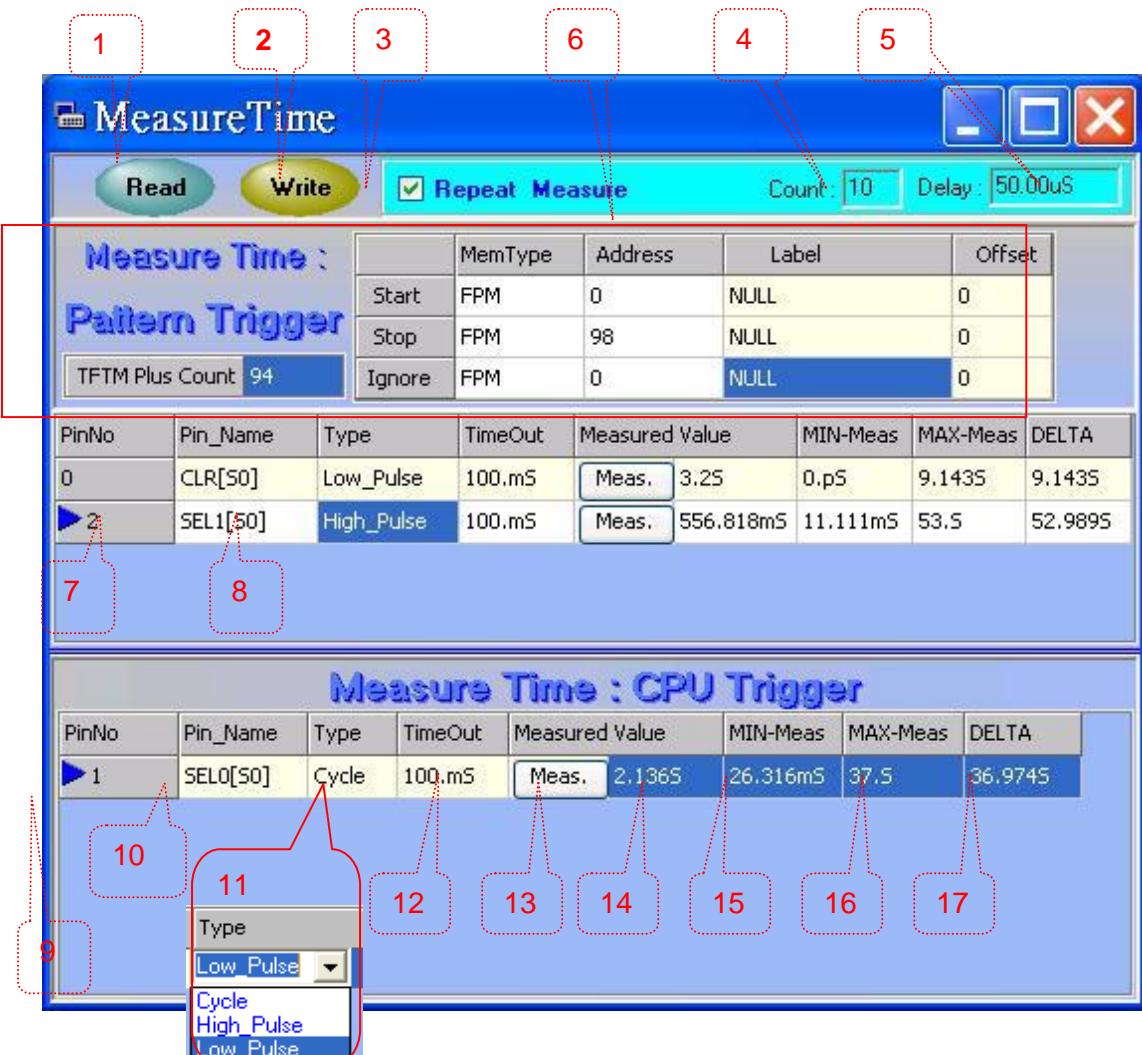


Figure 10-20 Measure Time Window

No.	Name	Classification	Description
1	Read MeasTime	Button	Read data from hardware.
2	Write MeasTime	Button	Write edited data into hardware.
3	Repeat Measure	Checkbox	Check if need to measure more than one time. If it is not checked, the Count (4) and the Delay (5) will be disabled.
4	Count	Input	Specify repeat measure count.
5	Delay	Input	Specify the delay time between each measurements.
6	Address panel	Input	If there is pattern trigger pin, this panel specifies the address for the pattern trigger.
7	PinNo	Display	Show Ate channel of the pattern triggered measure pin.
8	Pin_Name	Display	Show Pin Name of the pattern triggered measure pin.
9	PinNo	Display	Show the channel of the CPU triggered measure pin.
10	Pin_Name	Display	Show Pin Name of the CPU triggered measure pin.
11	Type	Button	Specify the measured type.
12	TimeOut	Input	Specify the timeout value.
13	Meas	Button	Press to get the measured value of the pin in that row.
14	MeasuredValue	Display	Show the measured value.
15	MIN-Meas	Display	Show the minimum measured value in the repeat measurement.
16	MAX-Meas	Display	Show the maximum measured value in the repeat measurement.
17	DELTA	Display	Show the delta of (MIN-Meas, MAX-Meas)

Table 10-8 Contents of Measure Time Window

10.12 Reference/Change Frequency Measurement

To reference or change frequency measurement of individual pins, perform the following procedure.

Reference frequency measurement conditions

1. Click MeasFreq button in Test Condition Monitor window.
2. The MeasureFreq window then opens.

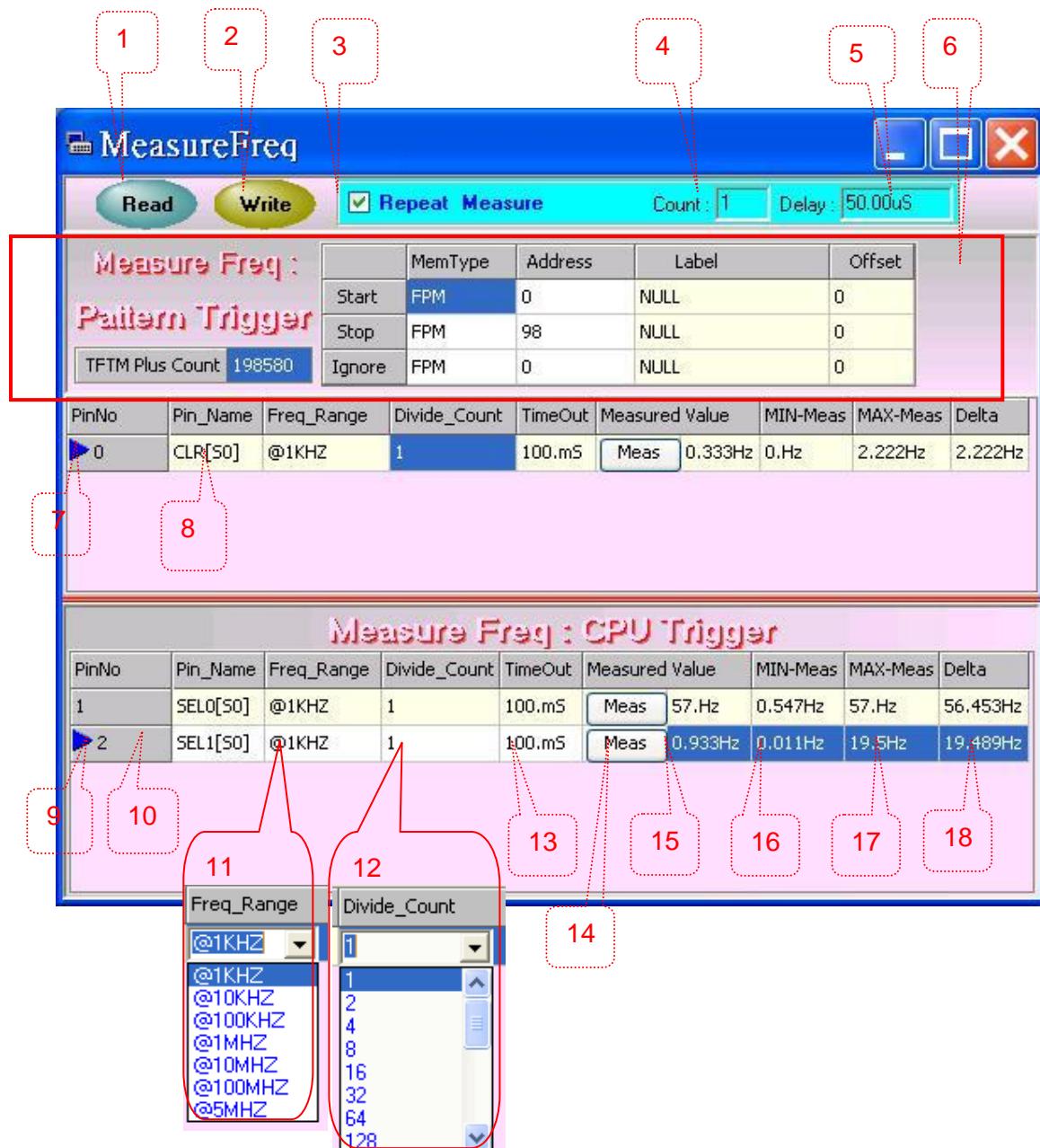


Figure 10-21 Measure Freq Window

No.	Name	Classification	Description
1	Read MeasFreq	Button	Read data from hardware.
2	Write MeasFreq	Button	Write edited data into hardware.
3	Repeat Measure	Checkbox	Check if need to measure more than one time. If it is not checked, the Count (4) and the Delay (5) will be disabled.
4	Count	Input	Specify repeat measure count.
5	Delay	Input	Specify the delay time between each measurement.
6	Address panel	Input	If there is pattern trigger pin, this panel specifies the address for the pattern trigger.
7	PinNo	Display	Show Ate channel of the pattern triggered measure pin.
8	Pin_Name	Display	Show Pin Name of the pattern triggered measure pin.
9	PinNo	Display	Show Ate channel of the CPU triggered measure pin.
10	Pin_Name	Display	Show Pin Name of the CPU triggered measure pin.
11	Freq_Range	Button	Specify frequency range for the measurement.
12	Divide_Count	Button	Like Freq_Range, each range has a matched divide_count. Not all divide_counts have a matched frequency range.
13	TimeOut	Input	Specify timeout value.
14	Meas	Button	Press it to get the measured value of the pin in that row.
15	MeasuredValue	Display	Show the measured value.
16	MIN-Meas	Display	Show the minimum measured value in the repeat measurement.
17	MAX-Meas	Display	Show the maximum measured value in the repeat measurement.
18	DELTA	Display	Show the delta of (MIN-Meas, MAX-Meas).

Table 10-9 Contents of Measure Freq Window

10.13 Reference/Change Judge PPMU Setup

To reference or change judge PPMU result of individual IO pins, perform the following procedure.

Reference Judge PPMU conditions

1. Click IO PPMU button in the Test Condition Monitor window.
2. The IO PPMU window then opens.



Figure 10-22 IO PPMU Window

No.	Name	Classification	Description
1	Read	Button	Read data from hardware.
2	Write	Button	Write edited data into hardware.
3	PinNo	Display	Show Ate channel of the selected IO pin.
4	Pin_Name	Display	Show Pin Name of the selected IO pin..
5	JudgeMode (Relay status)	Display	Show Judge Mode and Relay status of the selected IO pin. If both PDCL and PPMU relays are off, all the contents of this pin will be disabled and displayed as “**”.
6	Force Value	Input	Specify force value for judge ppmu.
7	Lower Limit	Input	Specify the lower limit value for judge ppmu.
8	Upper Limit	Input	Specify the upper limit value for judge ppmu.
9	Wait Time	Input	Specify the delay time for judge ppmu.
10	Judge PPMU	Button	Press it to get the judge result.
11	Judge Result	Display	Show the judge result.

Table 10-10 Contents of IO PPMU Window

10.14 Reference/Change Judge OST Setup

To reference or change Judge OST result of individual IO pins, perform the following procedure.

Reference judge OST conditions

1. Click OST button in Test Condition Monitor window.
2. The OST window then opens.

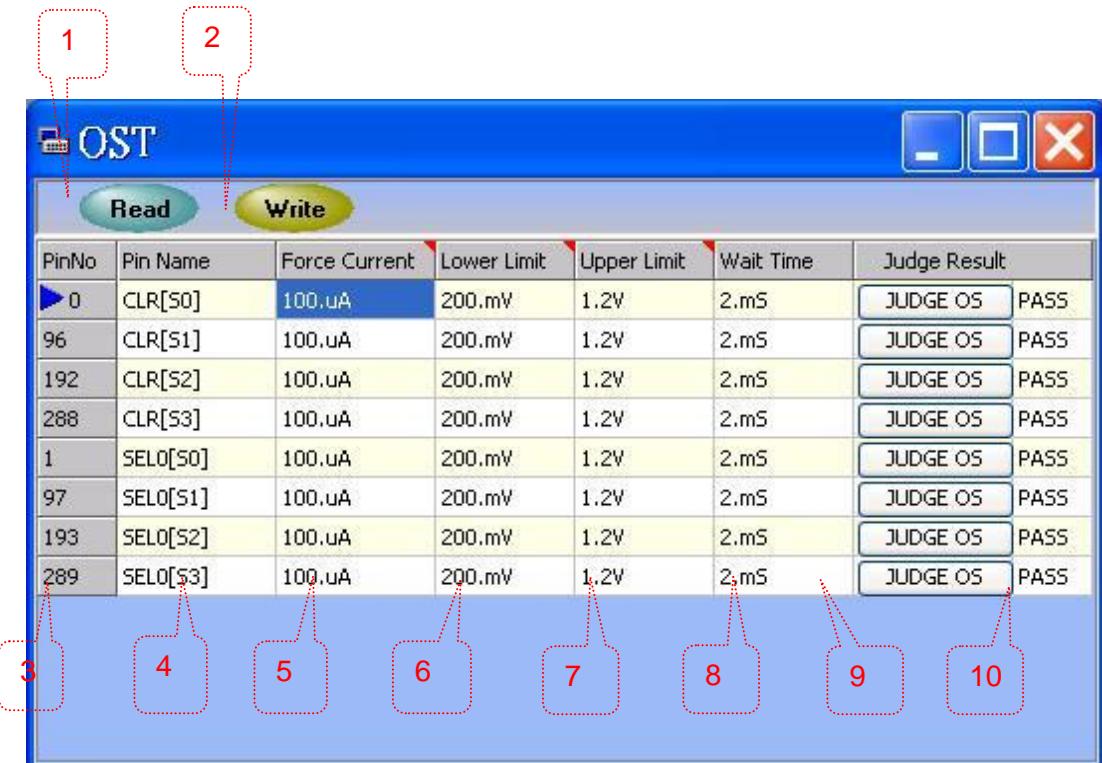


Figure 10-23 OST Window

No.	Name	Classification	Description
1	Read	Button	Read data from hardware.
2	Write	Button	Write edited data into hardware.
3	PinNo	Display	Show Ate channel of the selected IO pin.
4	Pin_Name	Display	Show Pin Name of the selected IO pin.
5	Force Current	Input	Specify force current (-200uA ~ 200uA).
6	Lower Limit	Input	Specify the lower limit value for judgment.
7	Upper Limit	Input	Specify the upper limit value for judgment.
8	Wait Time	Input	Specify the delay time for judgment.
9	Judge OS	Button	Press it to get the judge result.
10	Judge Result	Display	Show the judge result.

Table 10-11 Contents of OST Window

10.15 Reference/Change PREF Setup

To reference or change the device power supply unit (PREF) setup values, use the following procedures.

Reference the PREF setup

- (1) Click PREF button in the Test Condition Monitor window.
- (2) The PREF window then opens.

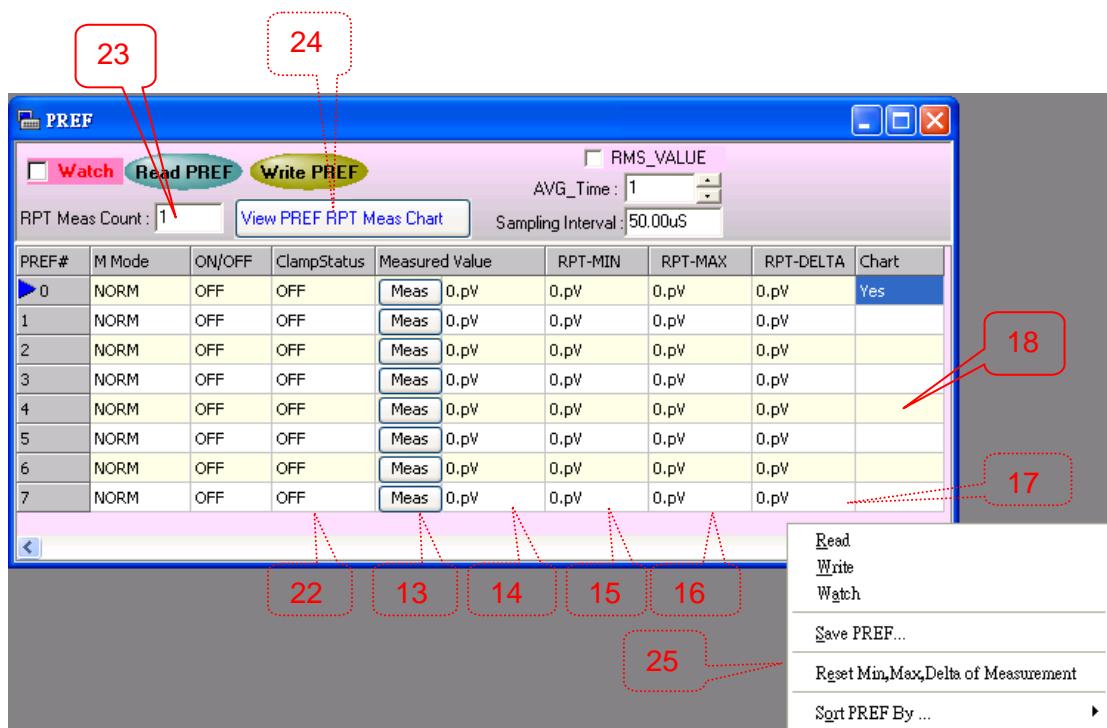
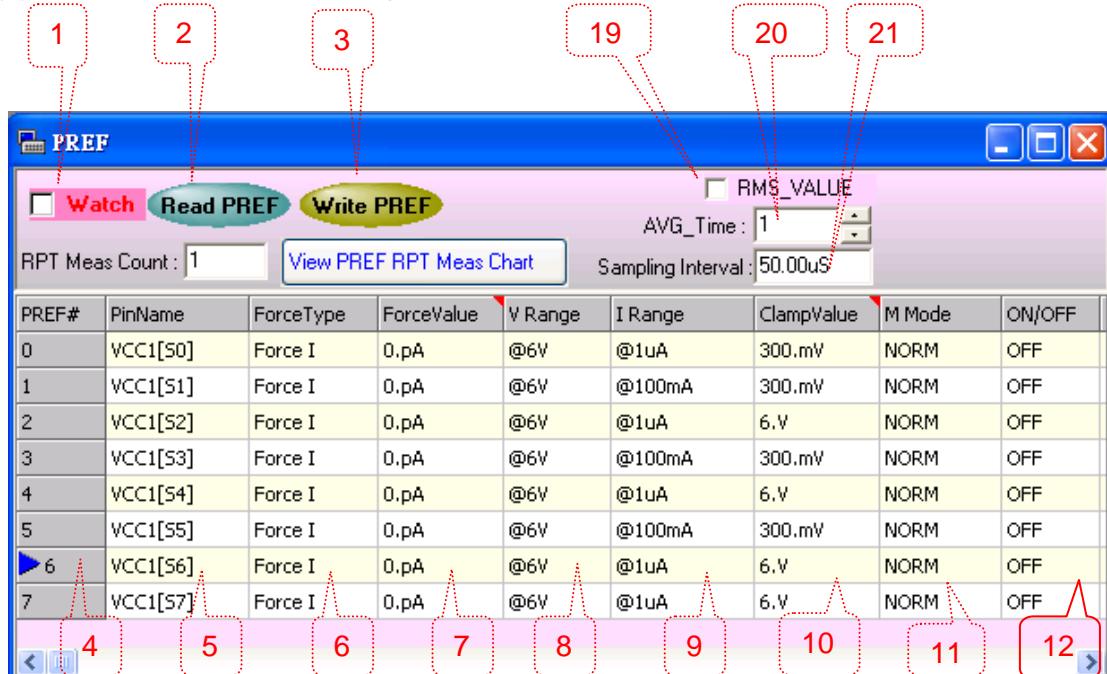


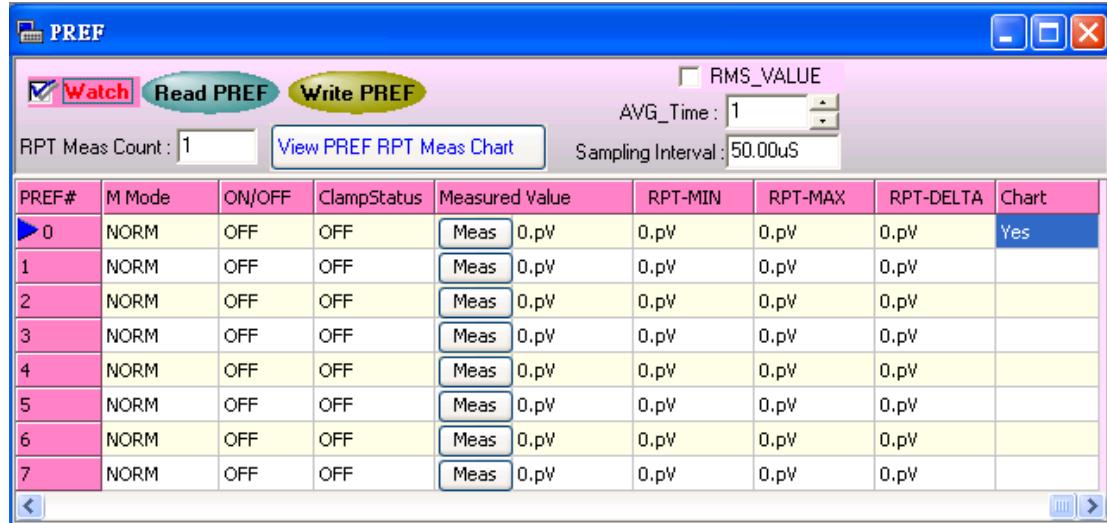
Figure 10-24 PREF Window

No.	Name	Classification	Description
1	Watch	Check box	Specify if the watch mode is On or Off.
2	Read PREF	Button	Read data from hardware.
3	Write PREF	Button	Writes edited data into hardware (write to current site only).
4	PREF #.	Display	Show PREF number.
5	Pin_Name	Display	Show Pin Name.
6	Force Type	Input	Can be VFIM or IFVM.
7	Force Value	Input	Specify the application force value.
8	V_Range	Input	Open the PREF volt force/measurement range selection window, which permits the V_range selection.
9	I_Range	Input	Open the PREF current force/measurement range selection window, which permits the I_range selection.
10	Clamp Value	Input	Specify clamp value.
11	M_Mode	Button	Specify Trigger mode.
12	ON/OFF	Button	Specify PREF relay status.
13	Meas	Button	Press to get the measured values.
14	Measured Value	Display	Display the measured value
15	RPT-MIN	Display	Display the minimum measured value of the repeat measurement.
16	RPT-MAX	Display	Display the maximum measured value of the repeat measurement.
17	PRT-DELTA	Display	Display the delta of (RPT-MIN, RPT-MAX).
18	Chart	Button	Specify if need to see the chart of the repeat measurement result.
19	RMS_VALUE	Check box	Specify if the measured value is RMS or not.
20	AVG_Time	Input	Specify the measured value is the average of time measurement.
21	Sampling Interval	Input	Specify the sampling interval between each repeat measurement.
22	ClampStatus	Display	Display the clamp status of PREF pins.
23	RPT Meas Count	Input	Specify the count of repeat measurement.
24	View PREF RPT Meas Chart	Button	Press to display the chart of the repeat measurement results of the pins with the "Chart" column set to "Yes".
25	PopupMenu	PopupMenu	Click the right key of mouse on the PREF window; this menu will be popped up. User can save the content to a text file or print out the content.

Table 10-12 Contents of PREF Window



When "Watch" is enabled, the fixed rows and columns will change the color to pink. Whenever the hardware is changed, all the contents of this window will be auto refreshed.



Figure

10-25 "Watch" PREF Window

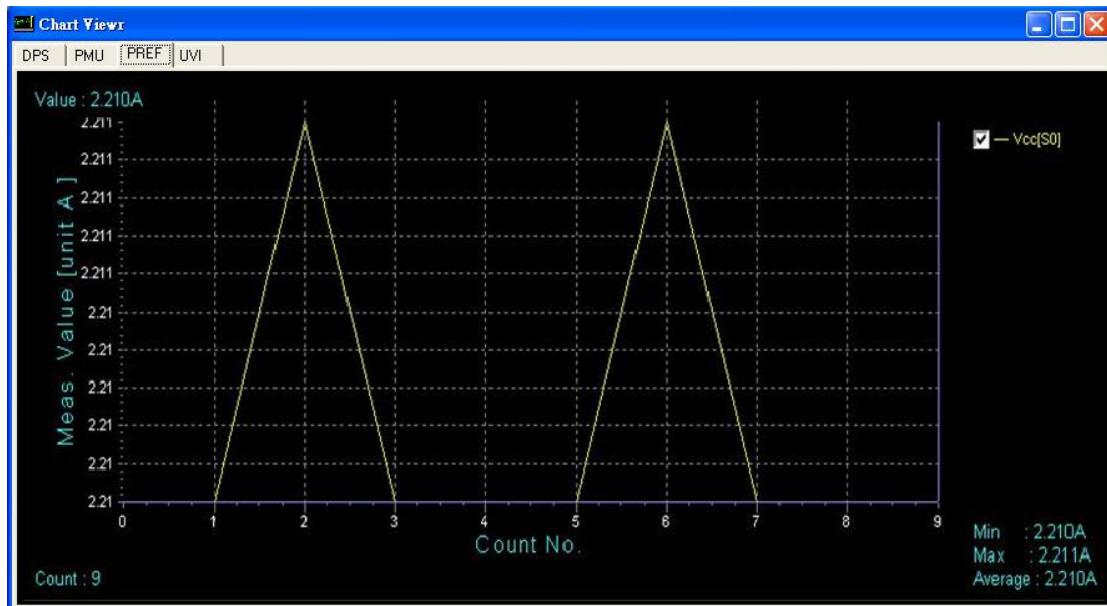


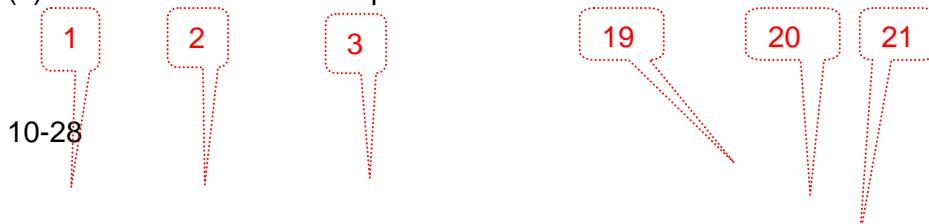
Figure 10-26 PREF Repeat Measure Chart

10.16 Reference/Change UVI Setup

To reference or change the device power supply unit (UVI) setup values, use the following procedures.

Reference the UVI setup

- (3) Click UVI button in the Test Condition Monitor window.
- (4) The UVI window then opens.



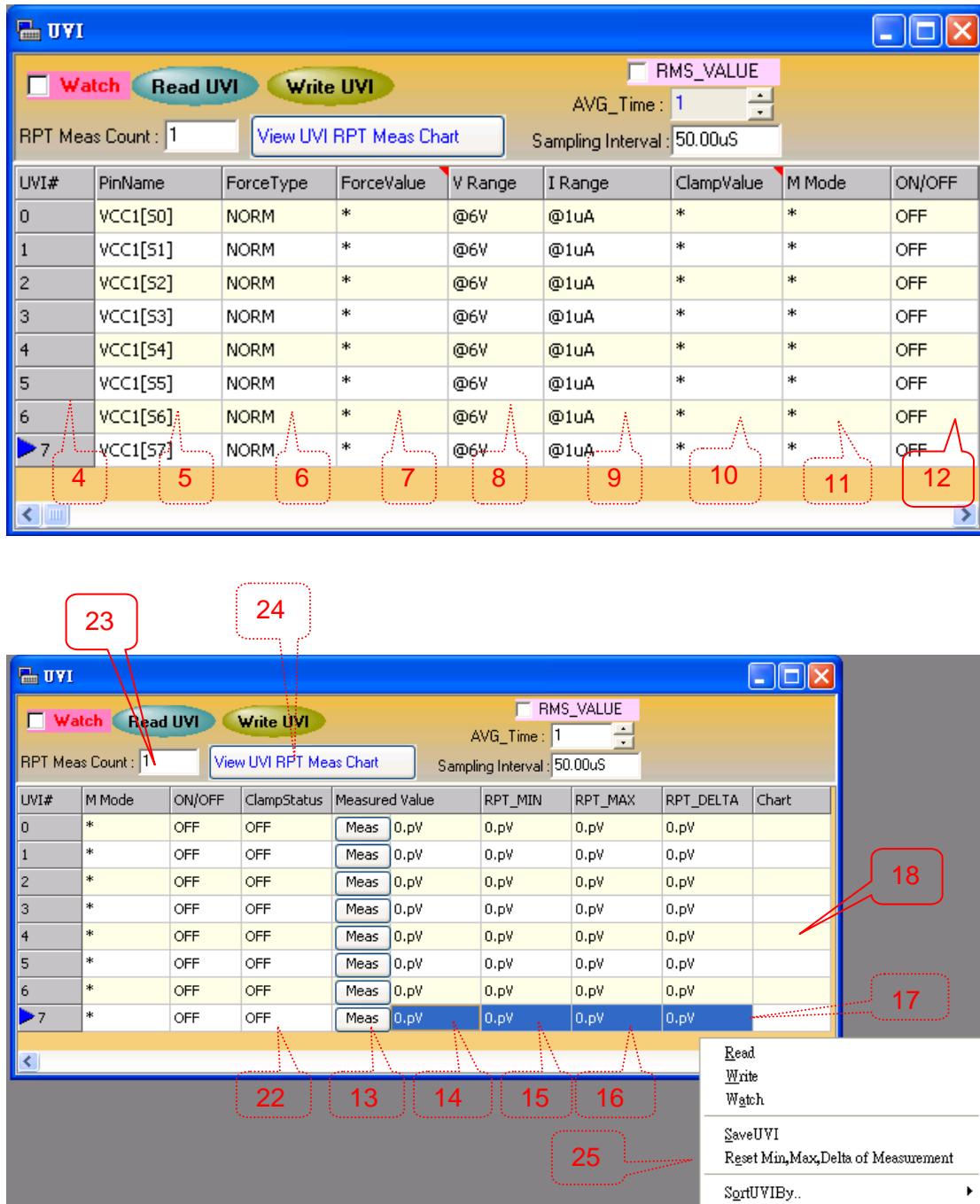


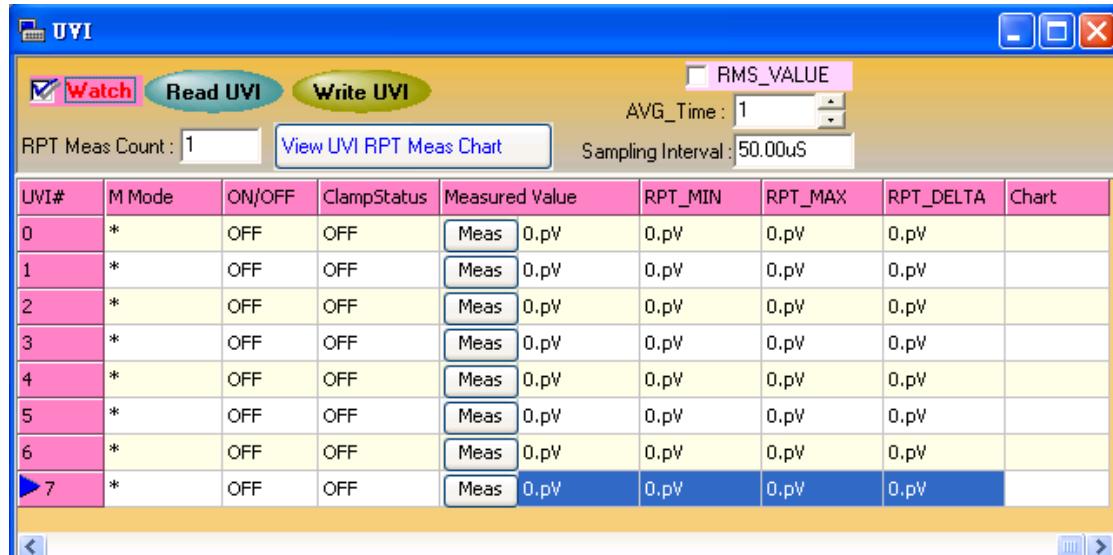
Figure 10-27 UVI Window

No.	Name	Classification	Description
1	Watch	Check box	Specify if the watch mode is On or Off.
2	Read UVI	Button	Read data from hardware.
3	Write UVI	Button	Writes edited data into hardware (write to current site only).
4	UVI #.	Display	Show UVI number.
5	Pin_Name	Display	Show Pin Name.
6	Force Type	Input	Can be VFIM or IFVM or VMM.
7	Force Value	Input	Specify the application force value.
8	V_Range	Input	Open the UVI volt force/measurement range selection window, which permits the V_range selection.
9	I_Range	Input	Open the UVI current force/measurement range selection window, which permits the I_range selection.
10	Clamp Value	Input	Specify clamp value.
11	M_Mode	Button	Specify Trigger mode.
12	ON/OFF	Button	Specify UVI relay status.
13	Meas	Button	Press to get the measured values.
14	Measured Value	Display	Display the measured value
15	RPT-MIN	Display	Display the minimum measured value of the repeat measurement.
16	RPT-MAX	Display	Display the maximum measured value of the repeat measurement.
17	PRT-DELTA	Display	Display the delta of (RPT-MIN, RPT-MAX).
18	Chart	Button	Specify if need to see the chart of the repeat measurement result.
19	RMS_VALUE	Check box	Specify if the measured value is RMS or not.
20	AVG_Time	Input	Specify the measured value is the average of time measurement.
21	Sampling Interval	Input	Specify the sampling interval between each repeat measurement.
22	ClampStatus	Display	Display the clamp status of UVI pins.
23	RPT Meas Count	Input	Specify the count of repeat measurement.
24	View UVI RPT Meas Chart	Button	Press to display the chart of the repeat measurement results of the pins with the "Chart" column set to "Yes".
25	PopupMenu	PopupMenu	Click the right key of mouse on the UVI window; this menu will be popped up. User can save the content to a text file or print out the content.

Table 10-13 Contents of UVI Window



When "Watch" is enabled, the fixed rows and columns will change the color to pink. Whenever the hardware is changed, all the contents of this window will be auto refreshed.



Figure

10-28 "Watch" UVI Window

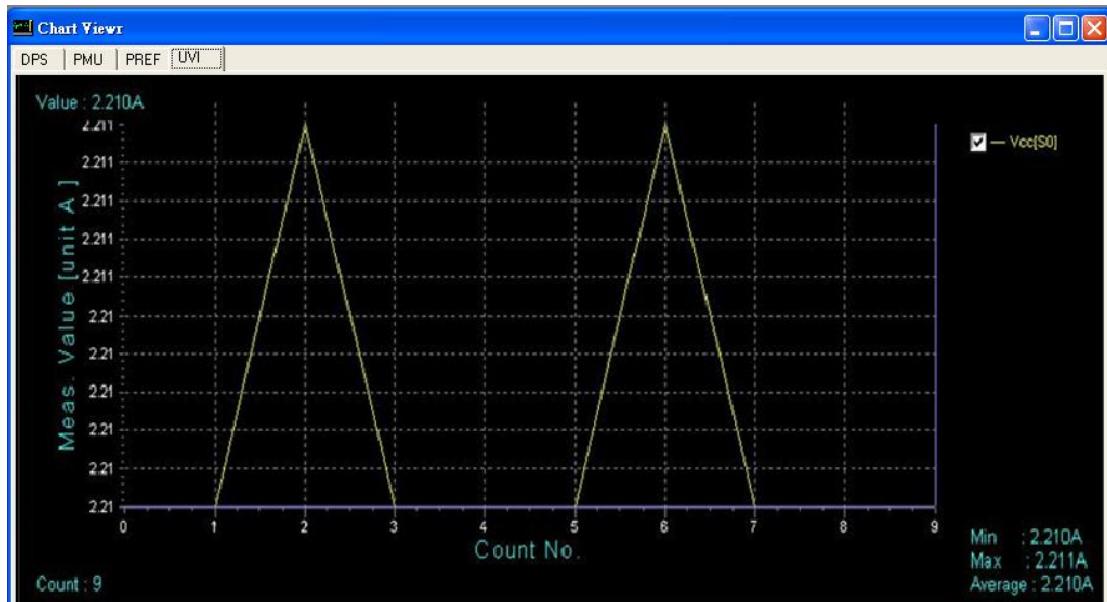


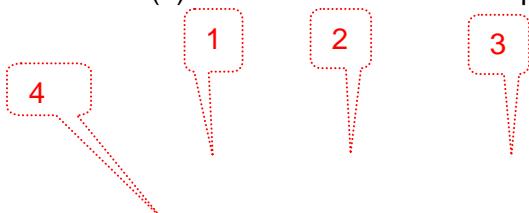
Figure 10-29 UVI Repeat Measure Chart

10.17 Reference/Change AWI Setup

To reference or change the device WD/WG unit setup values, use the following procedures.

Reference the UVI setup

- (5) Click AWI button in the Test Condition Monitor window.
- (6) The AWI window then opens.



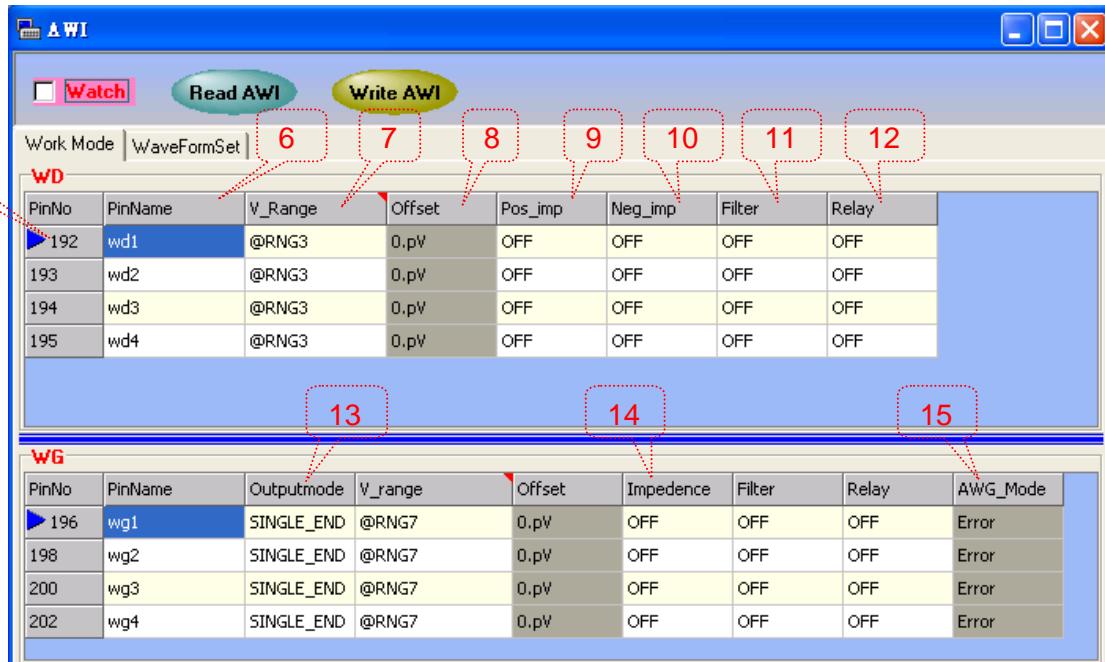


Figure 10-30 AWI Mode Window

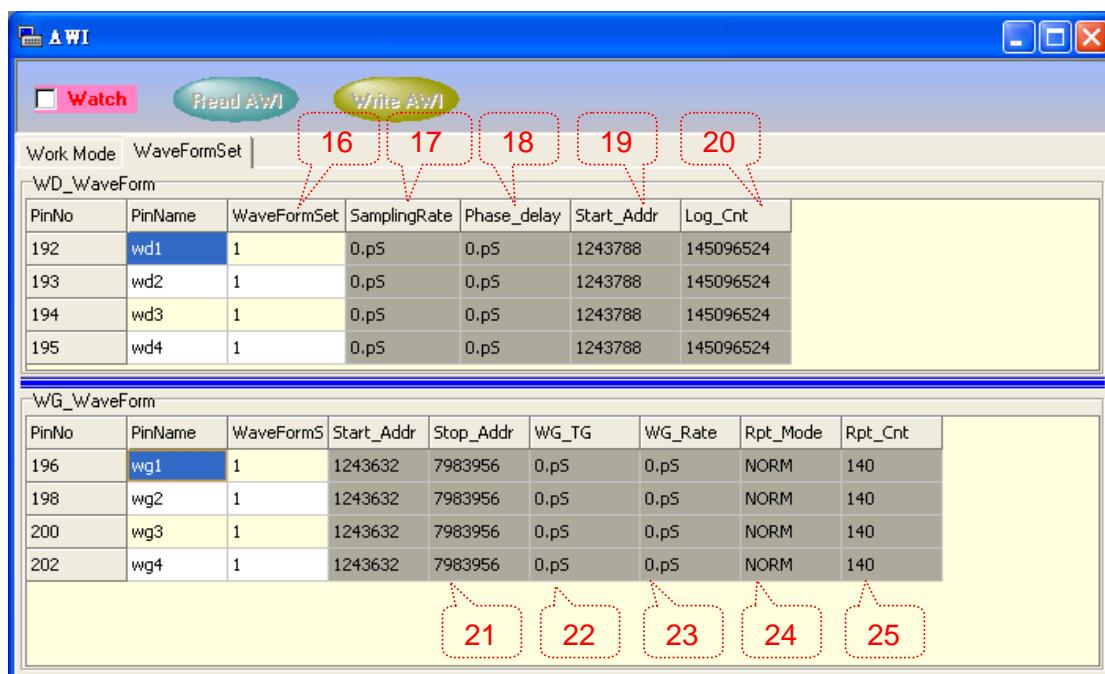


Figure 10-31 AWI Mode Window

No.	Name	Classification	Description
1	Watch	Check box	Specify if the watch mode is On or Off.
2	Read AWI	Button	Read data from hardware.
3	Write AWI	Button	Writes edited data into hardware (write to current site only).
4	Work Mode	Button	Switch the information of two pages:work mode and waveform set.
5	AWI #.	Display	Show AWI number.

6	Pin_Name	Display	Show Pin Name.
7	V_Range	Input	Open the AWI volt force/measurement range selection window, which permits the V_range selection.
8	Offset	Display	Show the AWI offset.
9	Pos_Imp	Button	Specify WD positive impedance.
10	Neg_Imp	Button	Specify WD negative impedance.
11	Filter	Button	Specify WD/WG filter status.
12	Relay	Button	Specify WD/WG relay status.
13	OutputMode	Button	Specify WD/WG output mode is Single_end or Differential.
14	Impedance	Button	Specify WG's impedance.
15	AWG_Mode	Display	Display the AWG mode is MODE_A or MODE_B.
16	WaveformSet	Button	Specify Waveform Set number from1 to 31.
17	SamplingRate	Display	Display the sampling rate.
18	Phase_delay	Display	Display the phase delay time.
19	Log_Cnt	Display	Display the log count.
20	Start_Addr	Display	Display the start address.
21	Stop_Addr	Display	Display the stop address.
22	WG_TG	Display	Display the WG trigger time.
23	WG_Rate	Display	Display the WG rate.
24	Rpt_Mode	Display	Display the repeat mode.
25	Rpt_Cnt	Display	Display the repeat count.

Table 10-14 Contents of UVI Window

10.18 Reference/Change Dynamic Level Setup

To reference or change frequency measurement of individual pins, perform the following procedure.

Reference frequency measurement conditions

- (1) Choose Dynamic Level pins in Pin Sel menu.
- (2) Click Dy_Level button in Test Condition Monitor window.
- (3) The Dynamice level window then opens.



Figure 10-32 Dynamic Level Window

No.	Name	Classification	Description
1	Read AWI	Button	Read data from hardware.
2	Write AWI	Button	Writes edited data into hardware (write to current site only).
3	Pin #.	Display	Show Pin number.
4	Pin_Name	Display	Show Pin Name.
5	TRG Src	Input	Specify Trigger Source from 0 to 15
6	LVL Src	Input	Specify Level Source:VIH/VIL/VOH/VOL
7	Inc Delta	Input	Specify Increment delta.
8	Mode	Input	Specify Dynamic mode

Table 10-15 Contents of UVI Window

10.19 Reference/Change MLDPS Setup

To reference or change the device power supply unit (MLDPS) setup values, use the following procedures.

Reference the MLDPS setup

- (3) Click MLDPS button in the Test Condition Monitor window.
- (4) The MLDPS window then opens.

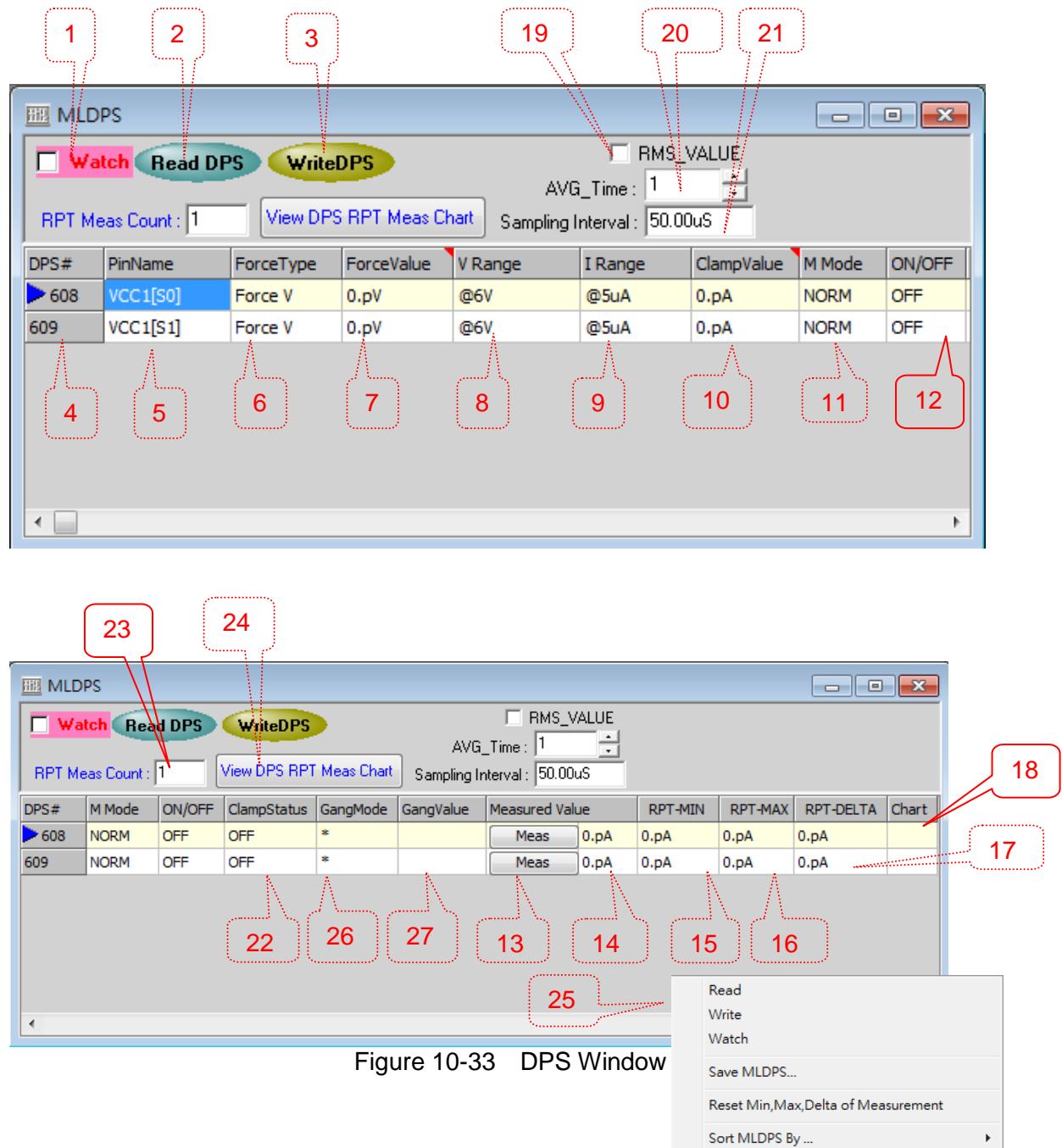


Figure 10-33 DPS Window

No.	Name	Classification	Description
1	Watch	Check box	Specify if the watch mode is On or Off.
2	Read DPS	Button	Read data from hardware.
3	Write DPS	Button	Writes edited data into hardware (write to current site only).
4	DPS #.	Display	Show MLDPS number.
5	Pin_Name	Display	Show Pin Name.
6	Force Type	Input	Can be VFIM or IFVM or VMM.
7	Force Value	Input	Specify the application force value.
8	V_Range	Input	Open the MLDPS volt force/measurement range selection window, which permits the V_range selection.
9	I_Range	Input	Open the MLDPS current force/measurement range selection window, which permits the I_range selection.
10	Clamp Value	Input	Specify clamp value.
11	M_Mode	Button	Specify Trigger mode.
12	ON/OFF	Button	Specify MLDPS relay status.
13	Meas	Button	Press to get the measured values.
14	Measured Value	Display	Display the measured value
15	RPT-MIN	Display	Display the minimum measured value of the repeat measurement.
16	RPT-MAX	Display	Display the maximum measured value of the repeat measurement.
17	PRT-DELTA	Display	Display the delta of (RPT-MIN, RPT-MAX).
18	Chart	Button	Specify if need to see the chart of the repeat measurement result.
19	RMS_VALUE	Check box	Specify if the measured value is RMS or not.
20	AVG_Time	Input	Specify the measured value is the average of time measurement.
21	Sampling Interval	Input	Specify the sampling interval between each repeat measurement.
22	ClampStatus	Display	Display the clamp status of MLDPS pins.
23	RPT Meas Count	Input	Specify the count of repeat measurement.
24	View UVI RPT Meas Chart	Button	Press to display the chart of the repeat measurement results of the pins with the "Chart" column set to "Yes".
25	PopupMenu	PopupMenu	Click the right key of mouse on the MLDPS window; this menu will be popped up. User can save the content to a text file or print out the content.
26	GangMode	Display	To Show Gang Mode Status of pins
27	GangValue	Display	To show the gang value.

Table 10-16 Contents of MLDPS Window

Note

When "Watch" is enabled, the fixed rows and columns will change the color to pink. Whenever the hardware is changed, all the contents of this window will be auto refreshed.

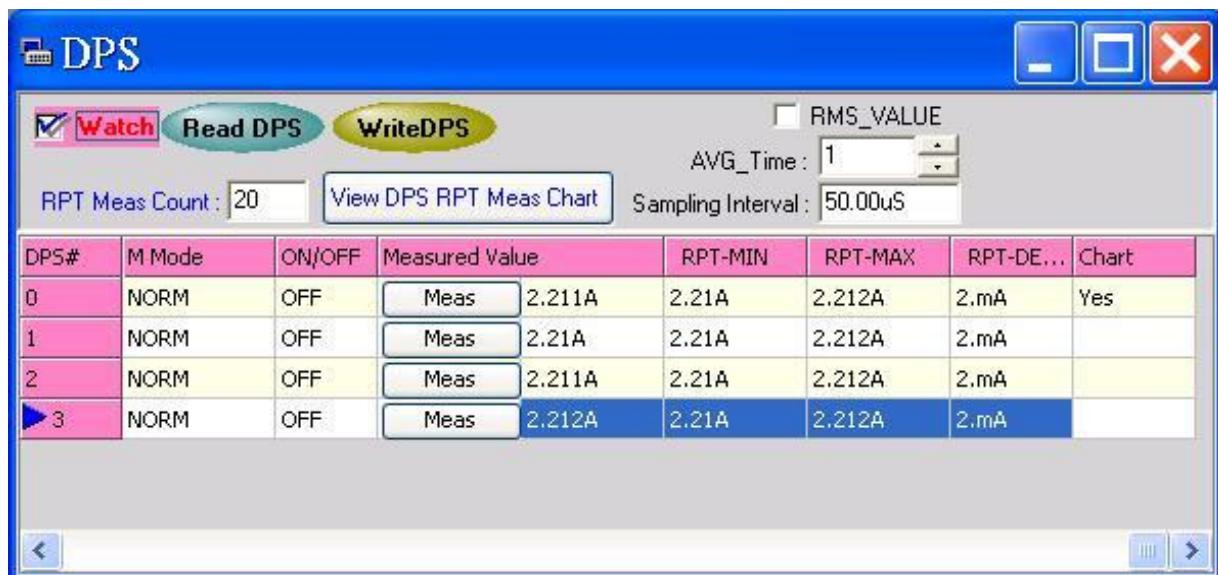


Figure 10-34 “Watch” DPS Window

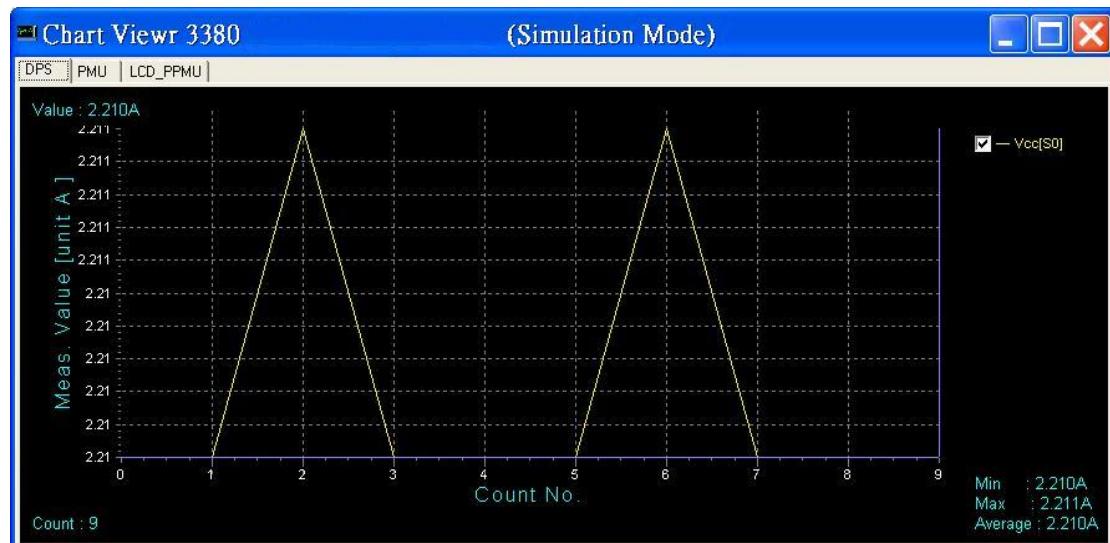


Figure 10-35 DPS Repeat Measure Chart

11. Shmoo Plot Acquisition

11.1 Overview

The shmoo plot is a parametric characteristics evaluation tool which conducts testing while subjecting arbitrary test conditions to one- or two-dimensional changes relative to the last-executed judgment statement (judge) and displays pass/fail results.

No.	Category	Function	Description
1	Setup conditions	Parameter generation	Generates parameters necessary for shmoo plot acquisition. Axis types: one to or two dimensions of X and Y.
2	New Page	Create a new page	Maximum page number is 20.
3	Display Mode	Select the display mode	Display with character mode or colored graphic mode
4	Execution mode	Page Mode	Display the whole plot page after get all the pass/fail results of all cells.
		Point Mode	Display each cell after get the result of that cell. This way will be slower than Page Mode.
		Step Mode	After pressing the "Step" button, the next step will be displayed.
5	Composite	Composite result of all sites	For multi site case only. Not only displays the result of each site, but also displays the AND / OR / Ex.OR result of all sites.
6	Accumulate	OFF	If the iteration number is greater than 1, there will be three possible results for each cell, pass, fail or unknown.
		ON	If the iteration number is greater than 1, the result of a cell which is neither pass nor fail will be ranged from 0 (1%~9%) to 9.(90%~99%)
7	Display	Shmoo plot display	Displays a resultant shmoo plot in character or color mode.
8	Stop	Abort the plot	If it takes too long to plot, user can press the stop button to abort.
9	Zoom	Zoom in	Automatically generates test conditions to acquire a more detailed shmoo plot of a mouse-designated area of shmoo plot displayed in the window.
10	Delta	Display the delta information of any two selected points	Choose two points in the shmoo plot, then displays all the delta values of all the selected test conditions.
11	Information	Display information of a cell	Click the left button of a shmoo_plot point, then display the test condition information of that point.
12	Compare	Compare the plots	Compare the resultant plots and note the differences.
13	Save	Save the plot(s)	Save the plot to a binary or text file.
		Save the test conditions	Save the conditions to a binary file. The file name extension is *.cdl.
14	Open	Open Shmoo File	Redisplays an already acquired shmoo plot file.
		Open CondLib File	Open the saved test conditions.
15	Print	Print shmoo plot	Print out the character plot or the graphic plot.

Table 11-1 Function Overview

11.2 Shmoo Plot Window Operation

When the shmoo plot tool is started, the Shmoo Plot window appears on the display. Using the setup functions of this window to set up the shmoo plot conditions and initiate execution.

Menu	Item	Description
File	Open Shmoo Binary File ...	Load and redisplay a saved shmoo plot file.
	Open CondLib ...	Load the saved conditions to CondLib
	Save Current Page As Binary File...	Save the shmoo plot of current page to a binary *.shp file.
	Save All Pages As Binary File...	Save all the shmoo plots to a *.shp file.
	Save Current Page As Text File...	Save the shmoo plot of current page to a text file.
	Save the plot as Bitmap file...	Save the plot to a bitmap file.
	Save CondLib As Binary File ...	Save all the test conditions in the CondLib to a binary *.cdl file.
	Save Conditions as Shmoo Statement File...	Save the test conditions of type "LEVEL" or "TG" to a .ssf file for test plan file to read.
	Create New Page	Create a new page.
	Delete Current Page	Delete Current Page.
Setup Conditions	Print Shmoo Plot	Print the shmoo plot of current pag.
	Exit	Quit the shmoo plot tool.
Options	(1) DPS, PMU, PREF, UVI, LEVEL, TG, FCLK, STATEMENT (2) DC Delay Time	(1) Display the DPS / PMU / PREF / /LEVEL / UVI / TG / FCLK ...setup window. (2) Set the delay time of DPS / PMU / PREF/ UVI / IO Levels
	Display Mode (Graphic / Character)	Graphic Mode or Character Mode
	Exec. Mode (Page / Point / Step)	Page Mode: After getting all the results, display all at one time. Point Mode: Display each point whenever getting the point result. Step Mode: There is a "Step" button displayed, press it to run the next step.
	Exec. Direction. (X Axis First / Y Axis First)	Execute the conditions of the X Axis First or Y Axis First.
	Y Axis Orientation (Bottom Up / Top Down)	Default is Bottom Up, the bottom is the Start value of the test condition of the "Y Axis", and the Top is the Stop value. Selecting "Top Down", the plot will be displayed upside down.

	Setup...	Reset the Display Mode, Exec. Mode, Exec. Direction and Y Axis Orientation. Specify the characters to be correlated with shmoo plot results (pass/fail/unknown). Specify the colors to be correlated with the shmoo plot results (pass/fail/unknown).
	Set All By Default	Set Display Mode to Graphic Mode, Exec. Mode to Page Mode, Exec. Direction to X Axis First, Y Axis Orientation to Bottom Up.
Composite	AND / OR / ExOR	For multi site test plan only, plots not only the results of each sites, but also display the composite result of all sites. If the test plan is a single site case, this menu will be disabled.
Accumulate	ON / OFF	If the "Iteration" is greater than one : Accumulate OFF: The result of each cell can be pass/fail/unknown. If the iteration is 10, and for one cell there are not 10 pass or not 10 fail, the result of that cell will be unknown. Accumulate ON: If the cell is not pass or fail, range the result from 0(1% ~ 9%) to 9 (90% ~ 99%)
Info	Show	Show the information page.
	Hide	Hide the information panel.
Axis	X Only	Display the conditions of X_Axis only.
	Y Only	Display the conditions of Y_Axis only.
	X and Y	Display both the conditions of X_Axis and Y_Axis.
	Lib	Show the Condition Library page.
	Hide	Hide the information panel.
Help	Content	Open the shmoo plot Help window.

Table 11-2 Menu Bar Functions

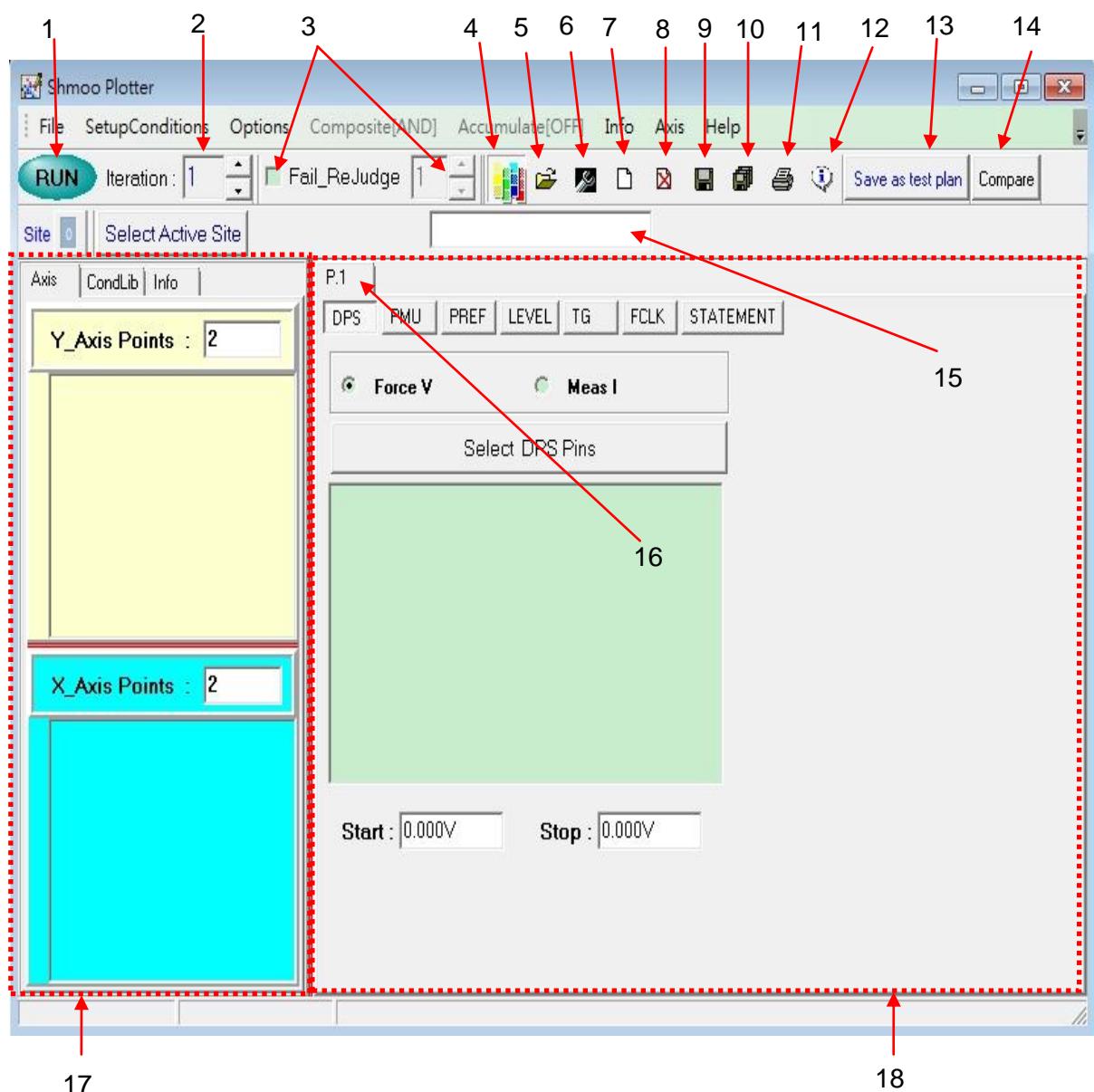


Figure 11-1 Shmoo Plot Window

No.	Item	Description
1	Run	This button starts to run shmoo plot.
2	Iteration	Specify the iteration number.
3	Fail Re Judge	If the check box is checked, and the Fail ReJudge filed is filled with N, the failed cell will be ReJudged at most N times.
4	DisplayMode	Press it to change the display mode.
5	OpenFile	Load the saved shmoo plot file (*.shp), condition library file(*.cdl) or information text file.
6	Setup	Change to display Setup window or plot window.
7	Create new page	Create a new page
8	Delete current page	Delete current page.
9	Save current page	Save current page to a binary shmoo plot file.
10	Save all pages	Save all the pages to a binary shmoo plot file.
11	Print	Print out current page.
12	Show/Hide Information panel	Display or Hide the information panel.
13	Save as test plan	Saving current test condition as test plan statement.
14	Compare	Compare the resultant plots and note the differences.
15	Comment	Key in the comment of this page.
16	Page tab	The maximum page number is 20. When reload a saved shmoo plot to display, the page number will be embraced with "[" and "]", like [P.3].
17	Information Panel	Including 3 pages, Axis page, Condition Library page, and Information page.
18	Setup/Plot window	Press the Setup button to change between setup window and plot window.

Table 11-3 Shmoo Plot window

11.2.1 Page Tab

Initially it has only one page “P.1”. When the “Create new page” button pressed, “P.2”, “P.3”, .. will be added. If the saved plot file is reloaded, system will create new pages for it. The page tab will be embraced with “[]”. As Figure 11-2, [P.2], [P.4] and [P.5] are reloaded pages.

If the test plan is a multi site case, there will be site tabs displayed under the Page tab (Figure 11-2 (1)).

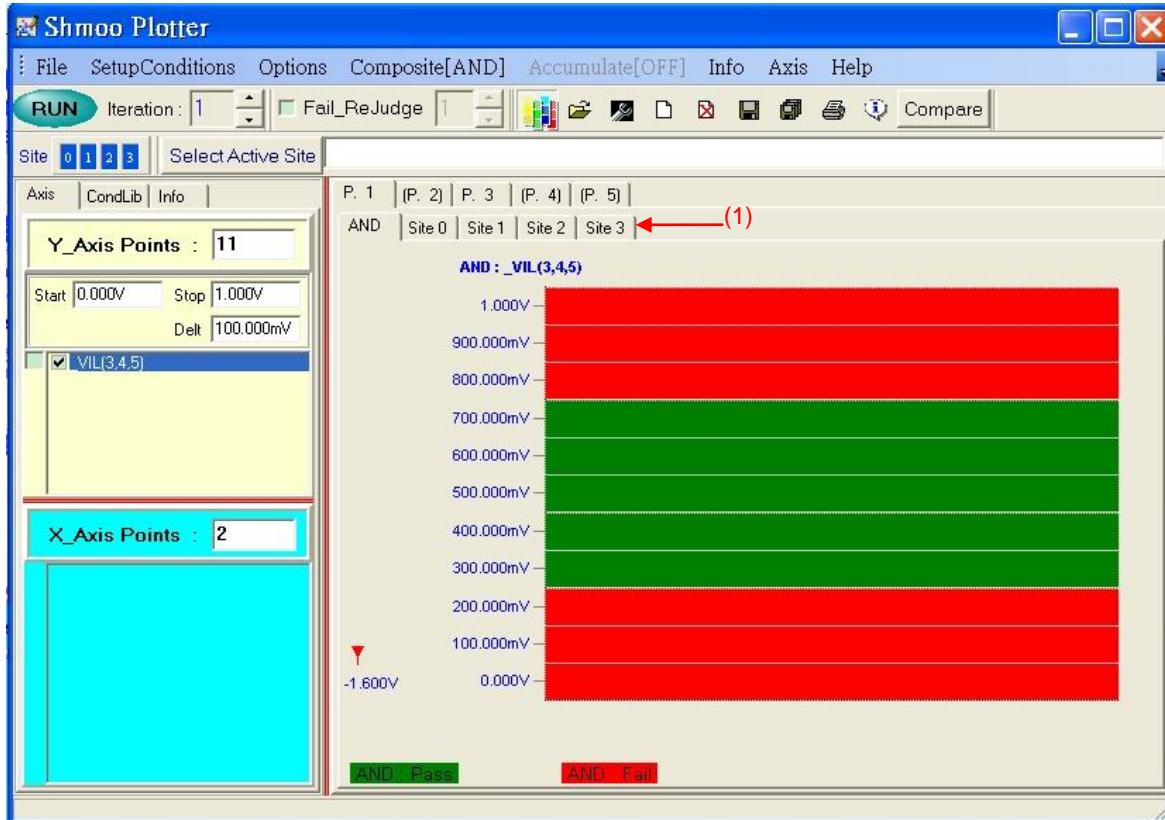


Figure 11-2 Page Tab of Shmoo Plot

11.2.2 Setup Window

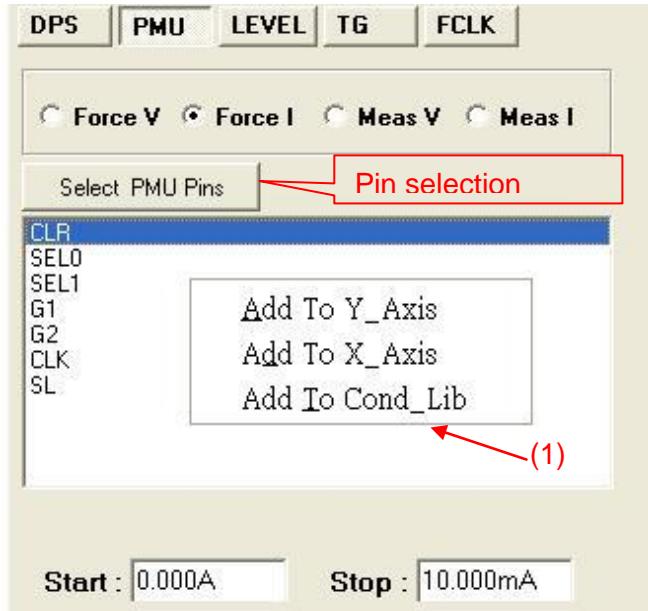


Figure 11-3 Setup Window (PMU)

- (1) There are setup pages of DPS, PMU, PREF, UVI, TG, LEVELS and FCLK. If there is a Pin selection button, press it to select the pins. Key in the “Start” and “Stop” values. Click the right button of mouse to popup a menu ((1) of Figure 11-3).
- (2) For the DC measure conditions, Meas_I_DPS, Meas_V_PMU, Meas_I_PMU, can be

added to X_Axis only and that page can have only this one condition.

11.2.3 List of Symbols Available for Shmoo Plot

All possible symbols are list as below,

- DPS related
 - “Force V DPS”, “MEAS I DPS”.
- PMU related
 - “Force V PMU”, “Force I PMU”, “MEAS V PMU”, “MEAS I PMU”.
- IO_LEVEL related
 - “VIL”, “VIH”, “VOL”, “VOH”, “IOL”, “IOH”, “VREF”.
- TG : Rate related
 - “TS1_RATE”, “TS2_RATE”,”TS15_RATE”.
 - “TS1_FREQ_SHMOO, TS2_FREQ_SHMOO,...TS15_FREQ_SHMOO,
- TG : IO_Markers related
 - “TS1_DT0”, “TS1_DT1”, ..., “TS1_DT4”, “TS1_CT0”, “TS1_CT1”,
“TS2_DT0”, “TS2_DT1”, ..., “TS2_DT4”, “TS2_CT0”, “TS2_CT1”,
“TS3_DT0”, “TS3_DT1”, , “TS3_CT1”,
.....
.....
“TS15_DT0”, “TS15_DT1”, , “TS15_CT0”, “TS15_CT1”
- Statement
WAIT.

11.2.4 Information Panel

This panel included 3 pages, Axis, CondLib, and Info.

11.2.4.1 Axis Page

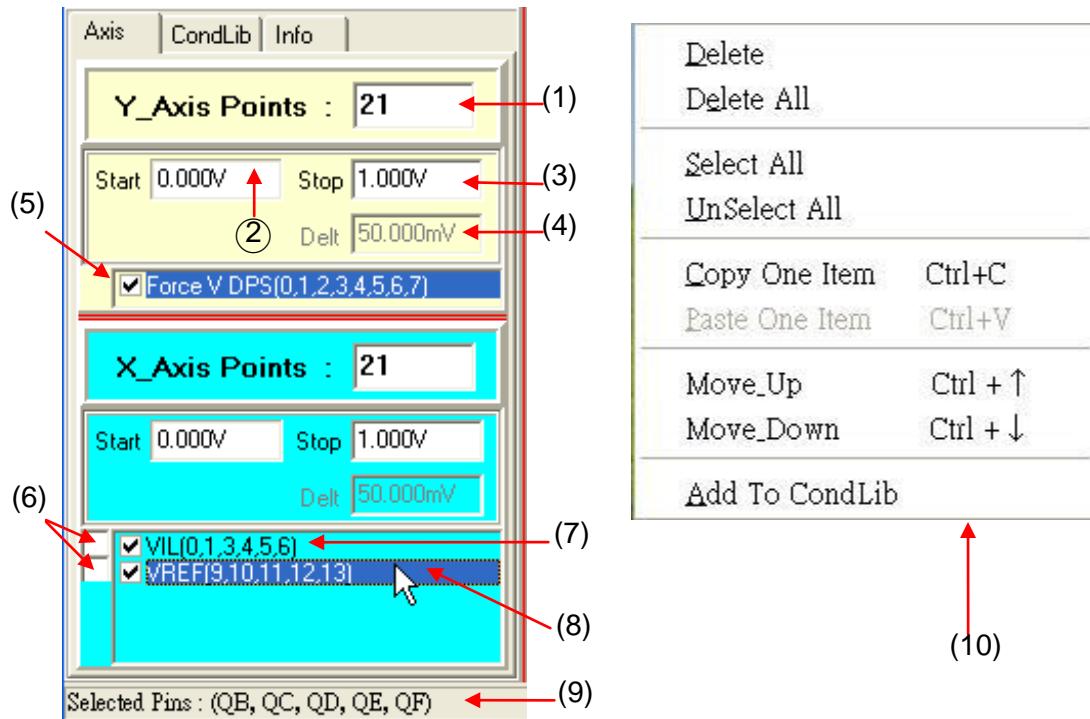


Figure 11-4 Axis Page of Information

- (1) X_Axis/Y_Axis Points: Minimum value is 2.
- (2) Start: Display the start value of the highlighted condition. It's editable.
- (3) Stop: Display the stop value of the highlighted condition. It's editable.
- (4) Delta: The increment value polarity is automatically determined according to the Start and Stop values. It's read only. Displays the value of " $(\text{Stop} - \text{Start}) / (\text{Axis}_\text{Points}-1)$ "
- (5) Condition checkbox: Each condition item has a condition checkbox. If not checked, that condition is useless when running shmoo.
- (6) Pin Care checkbox: A Pin Care checkbox will display if the condition is PMU Pin, IO Pin, or LCD pin related. Once selected when running shmoo, all the other pins which are not included in the checked conditions will be masked to be pseudo pass.
- (7) Test condition with condition checkbox checked
- (8) Main Item: All the conditions in X_Axis or in Y_Axis, only one can be highlighted, call this item as the main item. The values of (2) Start value, (3) Stop value, and (4) delta value are the values of the main item.
- (9) The symbol of the condition are attached with the channel number of the selected pins. Moving the cursor to any condition item, the pin name of the selected pins will be displayed on the status bar.
- (10) Click the right button of the mouse to popup a menu. User can delete items, copy/paste an item and add an item to condition library.

11.2.4.2 CondLib (Condition Library) Page

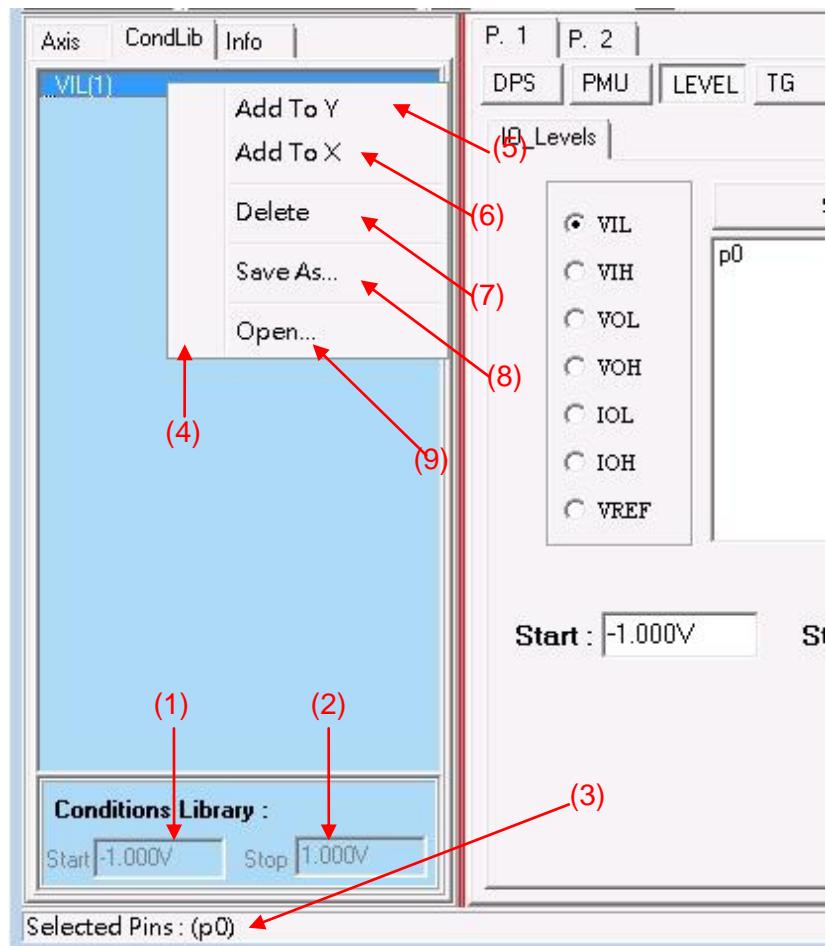


Figure 11-5 Condition Library Page of Information

- (1) Start: Display the start value of the clicked condition. It's read only.
- (2) Stop: Display the stop value of the clicked condition. It's read only.
- (3) Moving the cursor to any condition item, the pin name of the selected pins will be displayed on the status bar.
- (4) Click the right button of the mouse to popup a menu.
- (5) Add the selected conditions to Y_Axis.
- (6) Add the selected conditions to X_Axis.
- (7) Delete the selected conditions from the list.
- (8) Save all the conditions to a (*.cdl) binary file.
- (9) Open a saved (*.cdl) file, add the saved conditions to the list.

11.2.4.3 Info Page

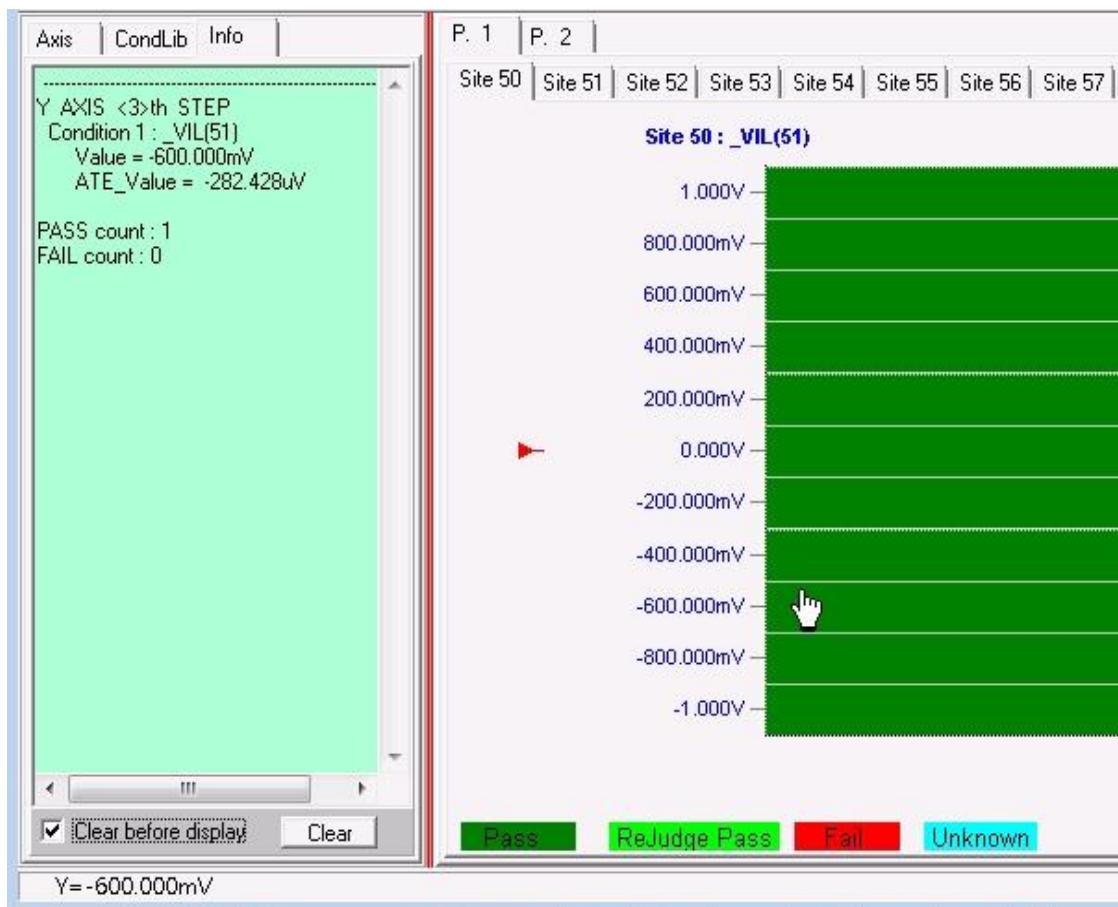


Figure 11-6 Info Page of Information Panel (1)

While reading the plot, move the cursor on the cells to read the x/y values of each cell on the status bar.

Click on any cell, all the information of that cell will be displayed on the Info Page, including the step index of X Y_Axis, all the values of the conditions of the cell, ate current values of all conditions, pass/fail count, fail address.

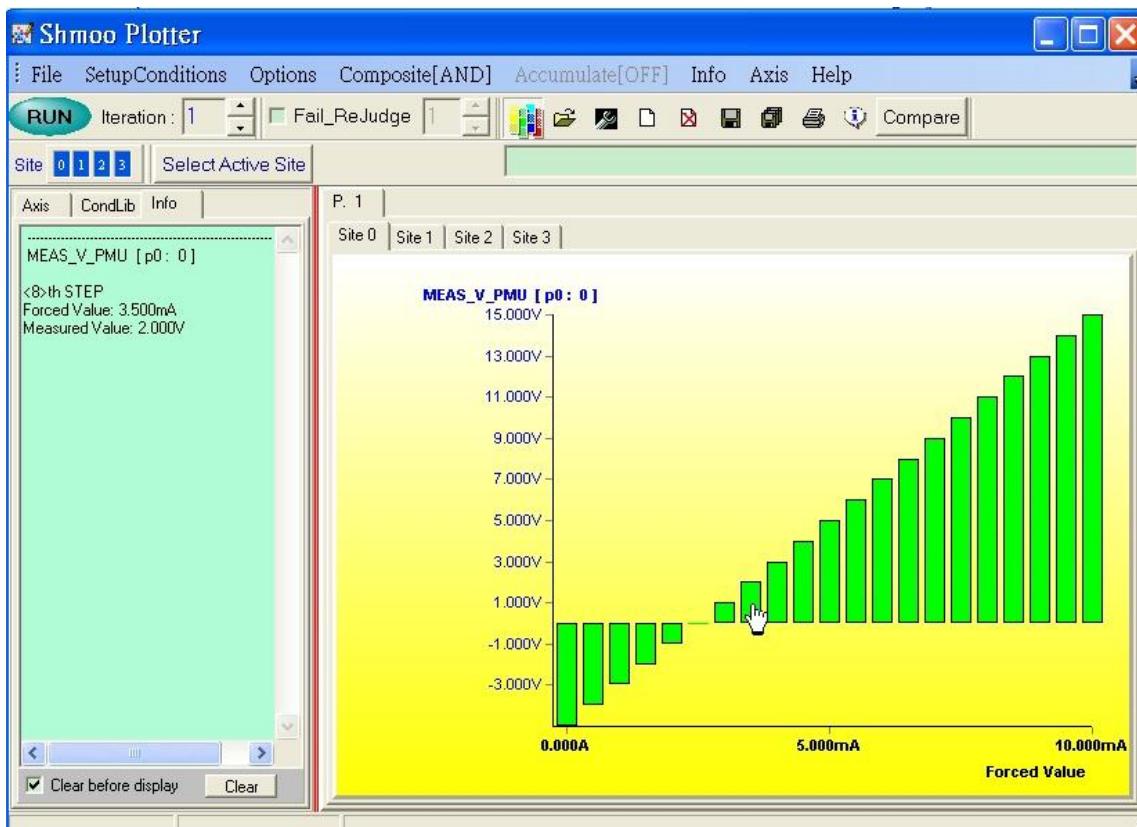


Figure 11-7 Info Page of Information Panel (2)

While reading the DC_Meas plot, moving the cursor on the bar chart to read the force and measured values from the status bar.

Click the bar chart, the force and measured value of the clicked bar will be displayed on the Info page too.

11.2.5 Plot window

As Figure 11-1, the Plot window and setup window are overlapped in the same area. User can press the setup button to change between setup window and the plot window.

No matter the display mode is character mode or graphic mode, the result are all displayed in the plot window.

11.3 Display Character and Color Designation

The procedure of selecting the characters and colors for the shmoo plot to be displayed is described below.

- (1) When you click on Options in the Shmoo Plot window, a pull-down menu appears.
- (2) After selecting the “Setup...” item a reset all options window appears (Figure 11-8).

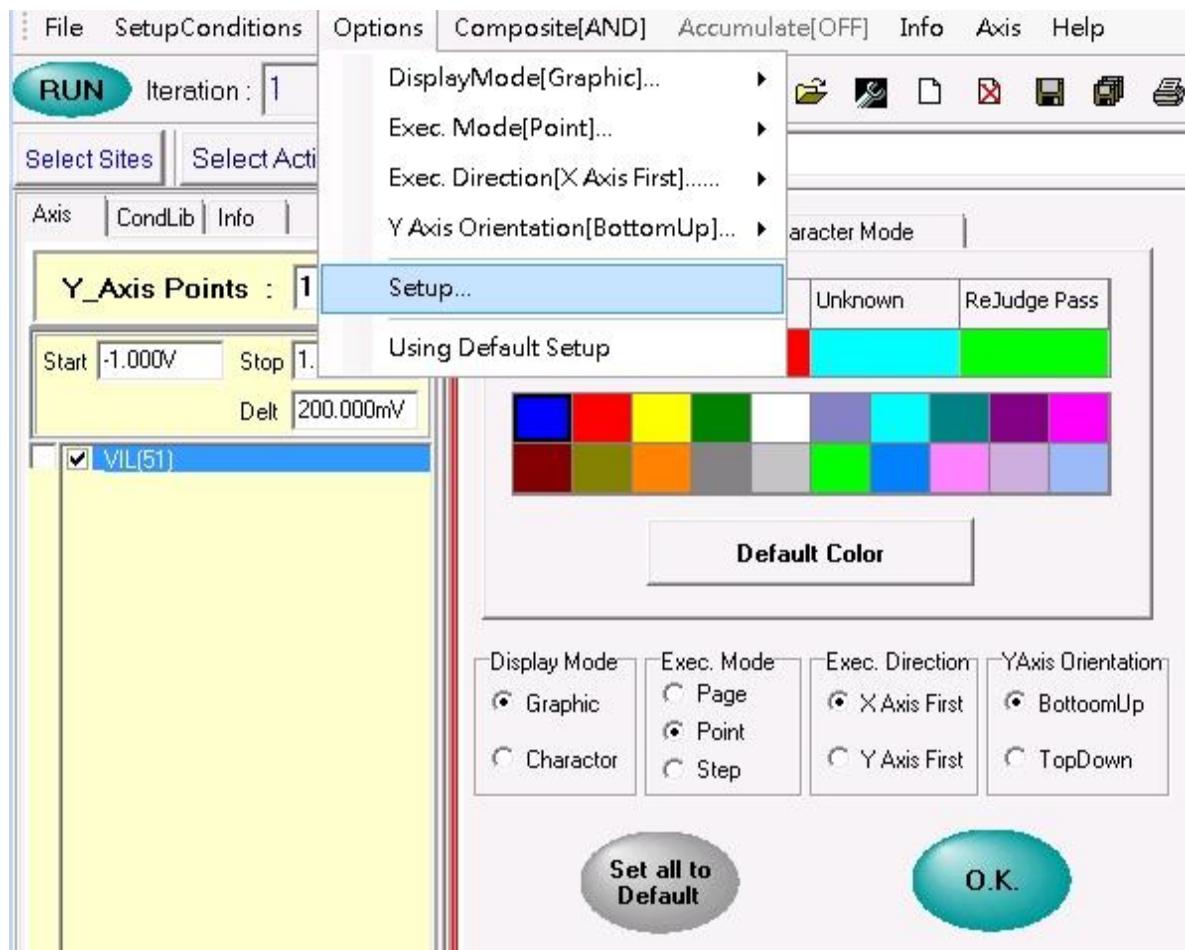


Figure 11-8 Reset all Options Window

- (3) If want to set the colors of the graphic mode.
First of all, select the Display Mode to “Graphic Mode”, then set the pass, fail and unknown colors.
- (4) If want to set the characters of the “Character Display Mode”.
First of all, select the Display Mode to “Character Mode”, then set the pass, fail and unknown characters.

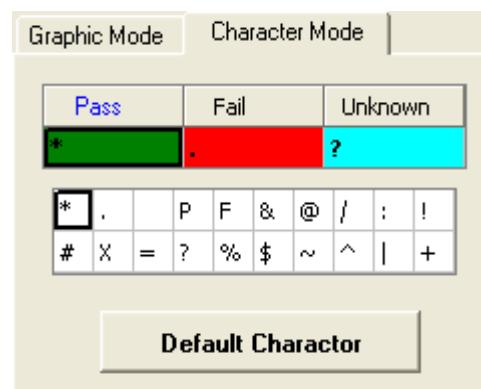


Figure 11-9 Set Characters for Character Mode

Figure 11- displays '*' is set to describe the pass result. If we want to change pass as 'P'.

Here is the procedure.

- (1) Press the Pass character as Figure 11-2.

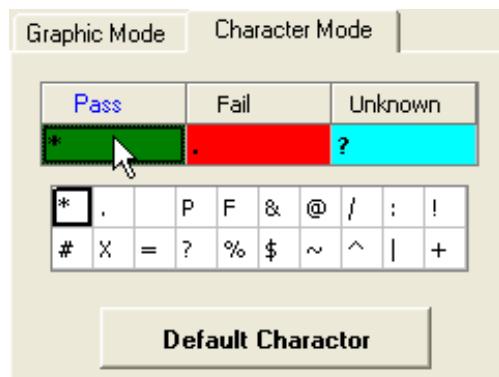


Figure 11-2 Change the Characters Setting (1)

- (2) Press the 'P' character as Figure 11-3.
Pass character has been changed to 'P'.

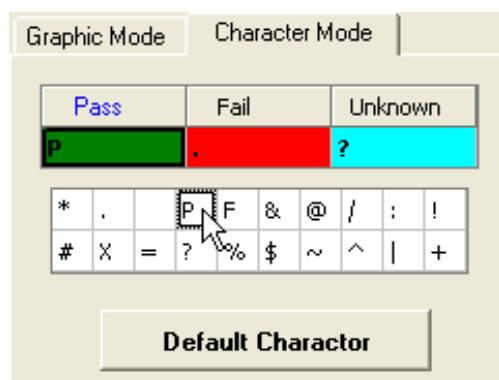


Figure 11-3 Change the Characters Setting (2)

Notice

Unknown occurs only when the iteration number is greater than one, and the result of a cell is not pass or fail all the time, sometimes pass, sometimes fail.

11.4 Shmoo Plot Execution

- (1) For normal shmoo plot to be executed, the test plan must set a break point on the “JUDGE_PATTERN” statement.

For the DC_Measre shmoo, the test plan must break on the related judge or measure statements, like “MEAS_I_DPS”, “JUDGE_I_DPS”, “JUDGE_I_PMU”, “MEAS_I_PMU”, “MEAS_V_PMU”, “JUDGE_V_PMU”.

- (2) Set the start and stop value of each condition.
- (3) Set the main item of X_Axis and Y_Axis, only the main item will be the displayed in the plot.
- (4) Set the iteration number.
- (5) Press the “Run” button to run.
- (6) The maximum point count of X_Axis_Points and Y_Axis_Points are 128.
- (7) While running, there is a “Abort” button displayed as Figure 11- shows. Click the Abort button to abort the shmoo plotting.

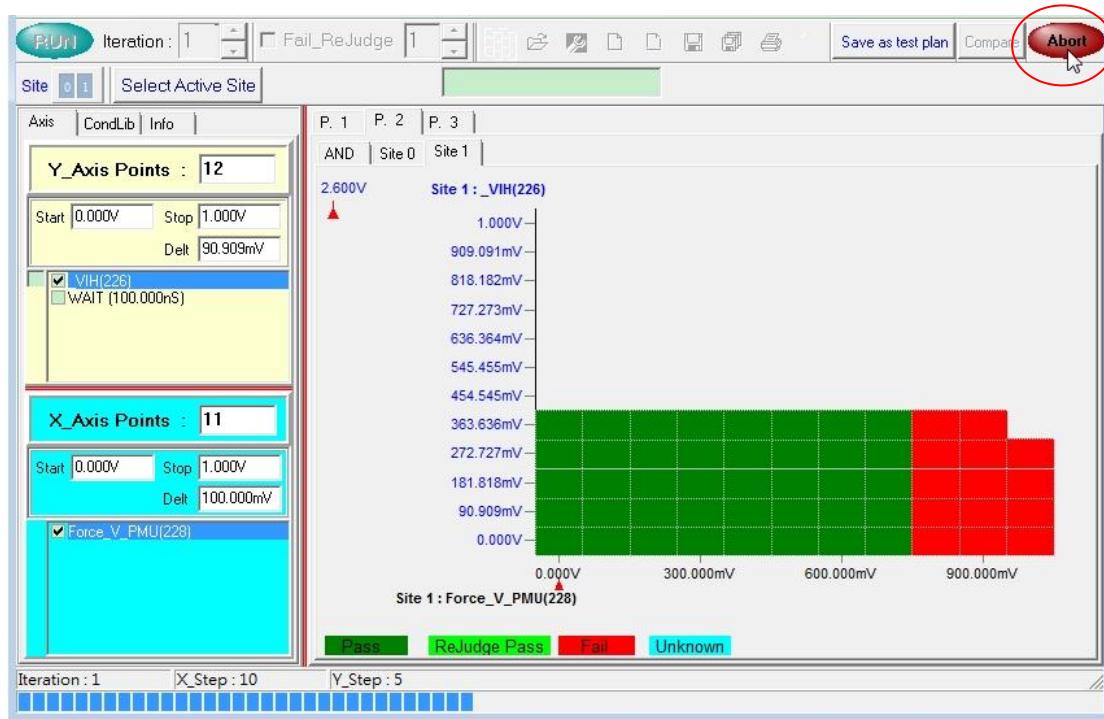


Figure 11-12 Abort Button

11.5 Shmoo Plot Output Format

11.5.1 Pass/Fail Display Designation

The shmoo plot tool provides one- or two-dimensional parametric testing. The results can be displayed in a mode which is selectable from the listings in the table below.

To choose a result display mode, select either Character or Graphic from the Options menu of the Shmoo Plot window.

No.	Item	Display mode specification	
		Character mode	Graphic mode
1	Choices	Alphabetical letters and special characters	20 colors (Figure 11-)
2	Operating mode	For normal shmoo only.	For normal shmoo or DC_Measure shmoo

Table 11-4 Pass/Fail Display Designation

 DC_Measure shmoo has only one display mode (graphic mode).

11.5.2 Iteration Number is 1

If the iteration number is set to 1, all the results can only be either pass or fail.

11.5.2.1 Graphic Mode Display Format (Iteration: 1)

Figure 11-4 shows the graphic mode display format of a test plan with 4 sites, and the composition results of all site is set to “AND”.

- (1) Composite:
For multi site test plan only, plots not only the results of each sites, but also display the composite result of all sites.
If the test plan is a single site case, this menu will be disabled.
- (2) Site Tabs :
No site tabs if not multi site test plans.
For multi sites test plans, the result of each site will be displayed.
First page in the site tabs is the sites composite result.
- (3) Main item of Y_Axis will be the title of the plot.
- (4) Main item of X_Axis will be the foot of the plot.
- (5) Y_Axis is labeled the value of the main item with ticks.
The start value is on the bottom, stop value is on the top.
- (6) X_Axis labeled the value of the main item with ticks.
The start value is at the leftmost, stop value at the rightmost.
- (7) Mark the position of the Current ATE value of the main item.
If current ATE value is not in the range of (Start, Stop), this marker won't be displayed.

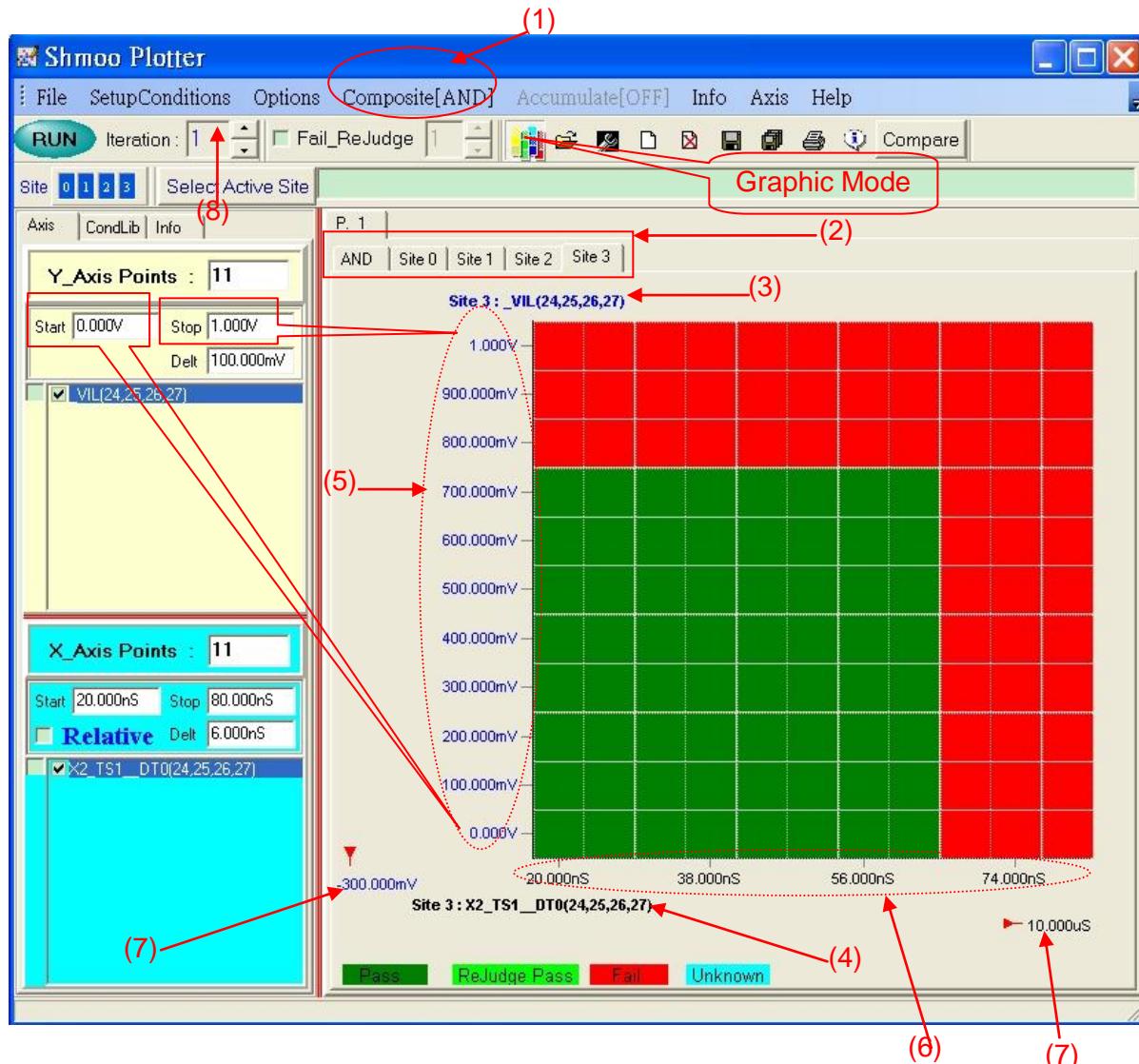


Figure 11-4 Graphic Mode Display Format (1)

11.5.2.2 Character Mode Display Format (Iteration: 1)

The display format of Character Mode is like Figure 11-5.
If don't want to see the test conditions, don't check the "Display Test Conditions".

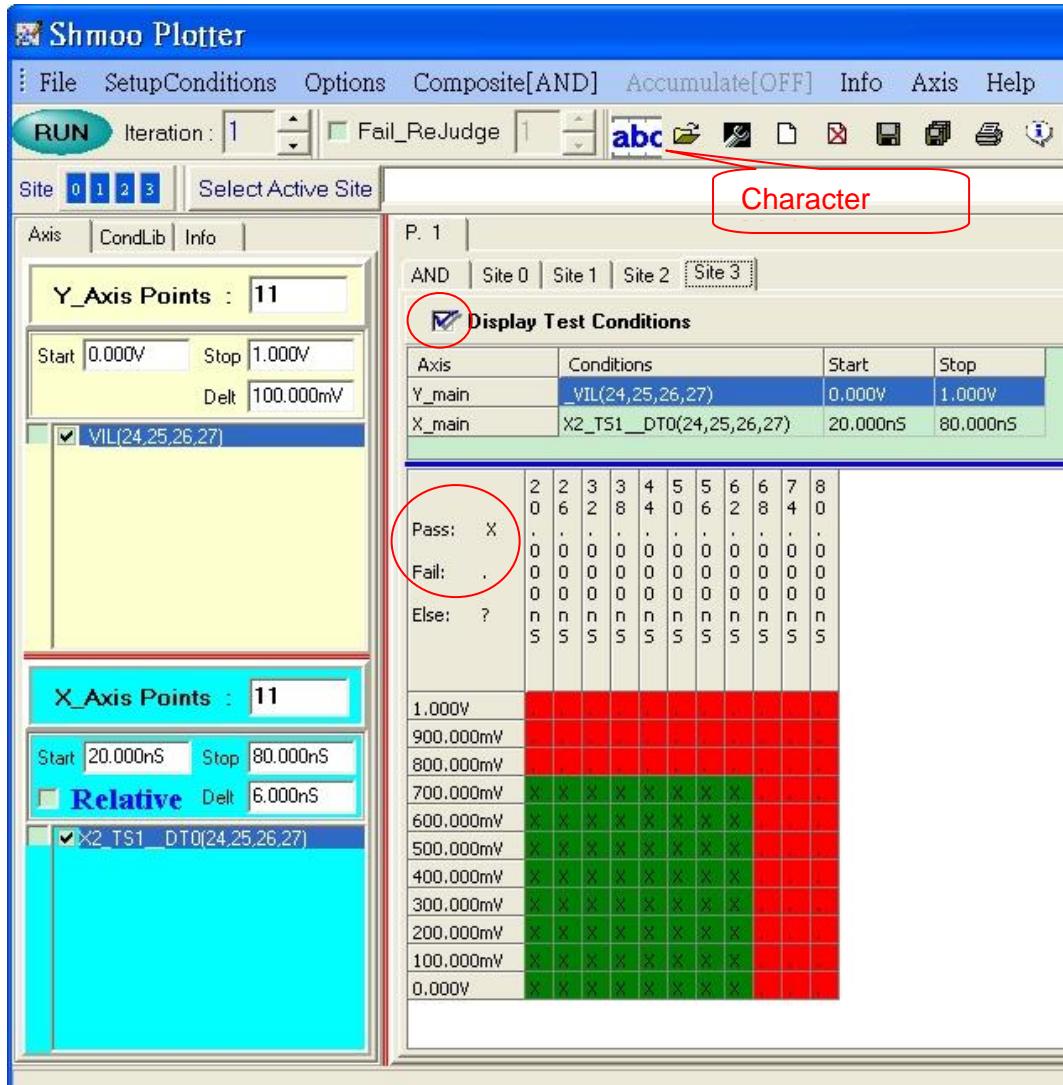


Figure 11-5 Character Mode Display

11.5.3 Iteration Number is Greater than One

If the iteration number is greater than one

- (1) If the pass_count of a cell is equals to the iteration number, then the cell is plotted as pass.
- (2) If the fail_count of a cell is equals to the iteration number, the cell is plotted as fail.
- (3) If not the condition of (1) or (2) ,
 - If the accumulate mode is set to “OFF”: the cell is plotted as “unknown”.
 - If the accumulate mode is set to “ON”: range the unknown cell from 0 to 9.

11.5.3.1 Graphic Mode Display Format (Accumulate OFF)

If iteration number is greater than 1, and accumulate is set to "OFF", there are only three possible results, pass, fail and unknown.

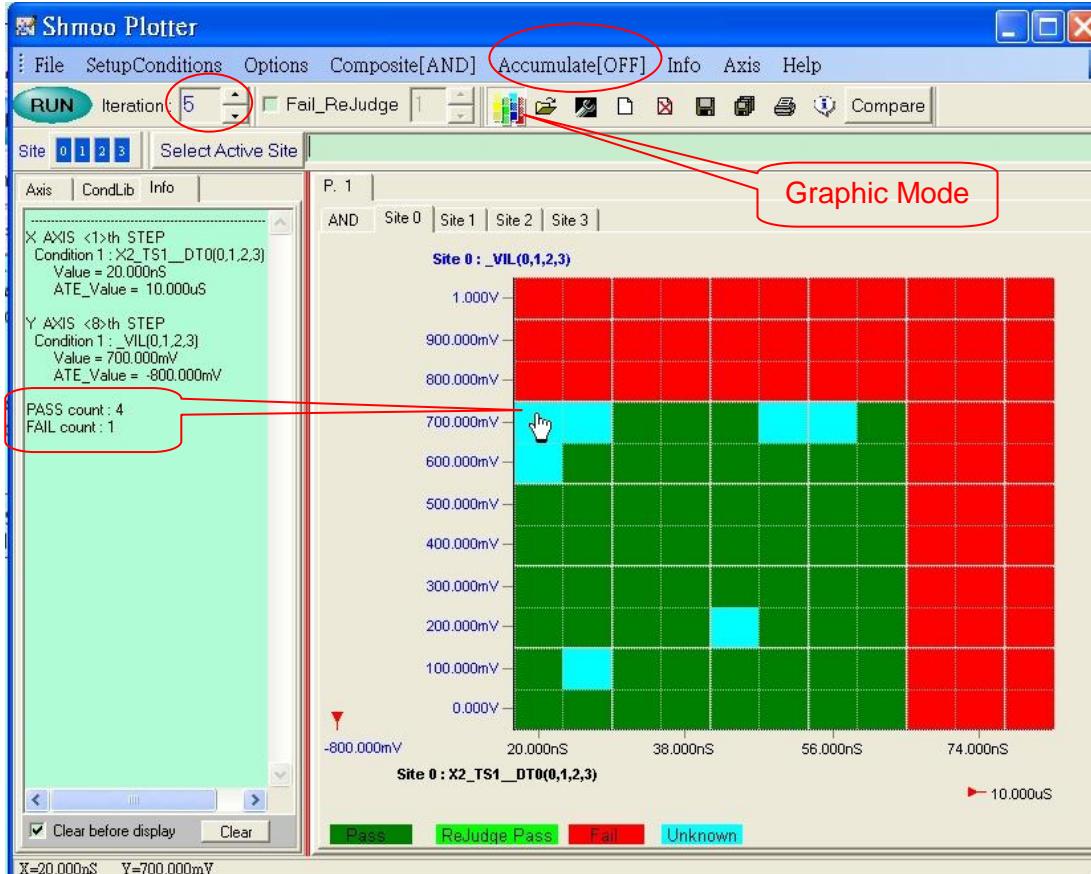


Figure 11-6 Graphic Mode Display Format (Accumulate OFF)

11.5.3.2 Character Mode Display Format (Accumulate OFF)

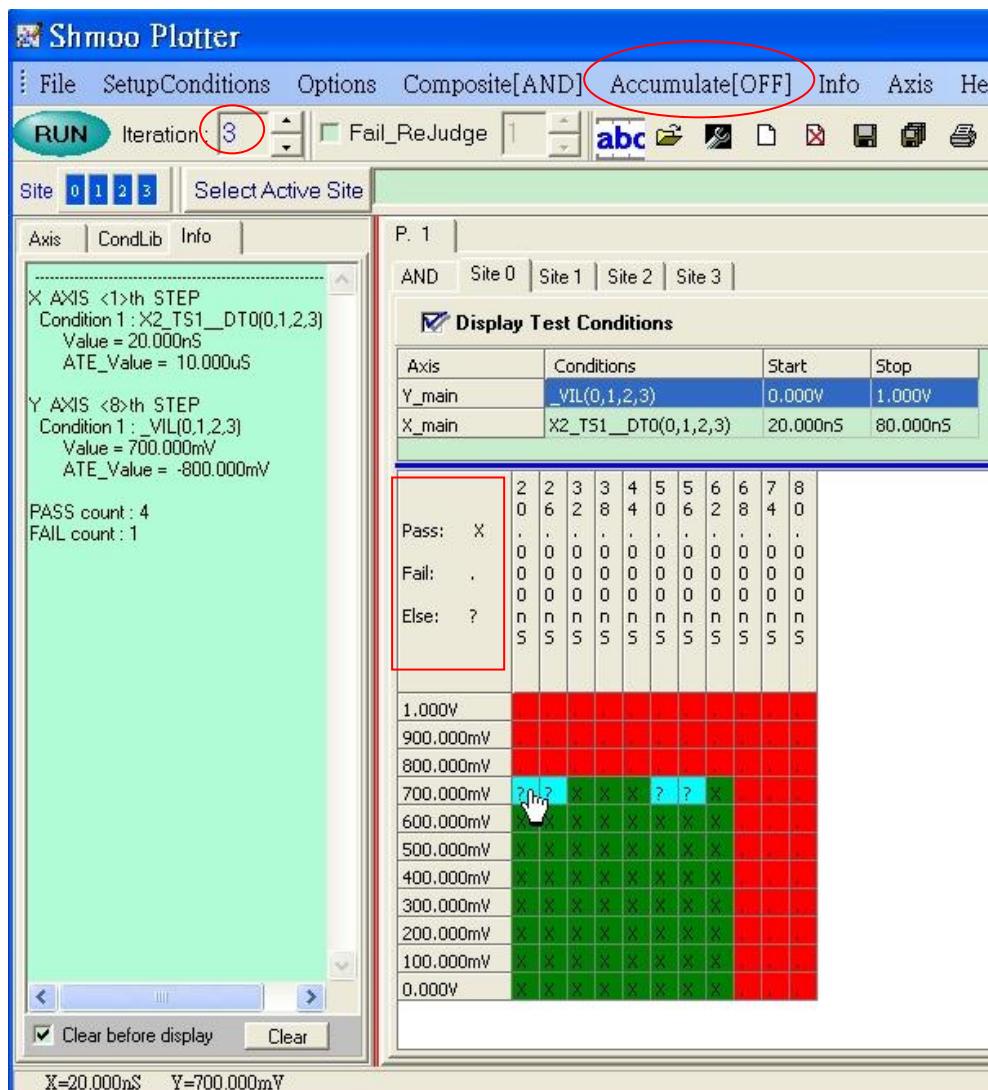


Figure 11-7 Character Mode Display Format (Accumulate OFF)

11.5.3.3 Graphic Mode Display Format (Accumulate ON)

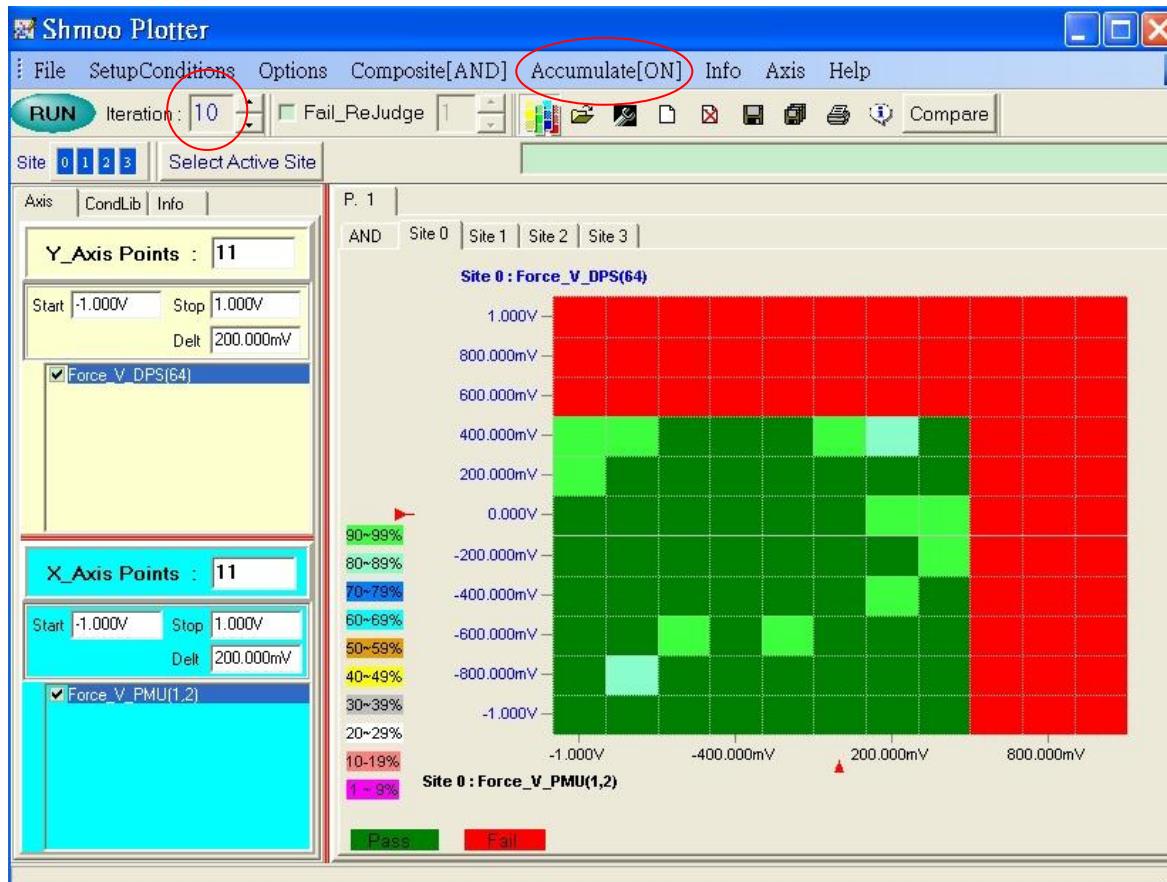


Figure 11-8 Graphic Mode Display Format (Accumulate ON)

11.5.3.4 Character Mode Display Format (Accumulate ON)

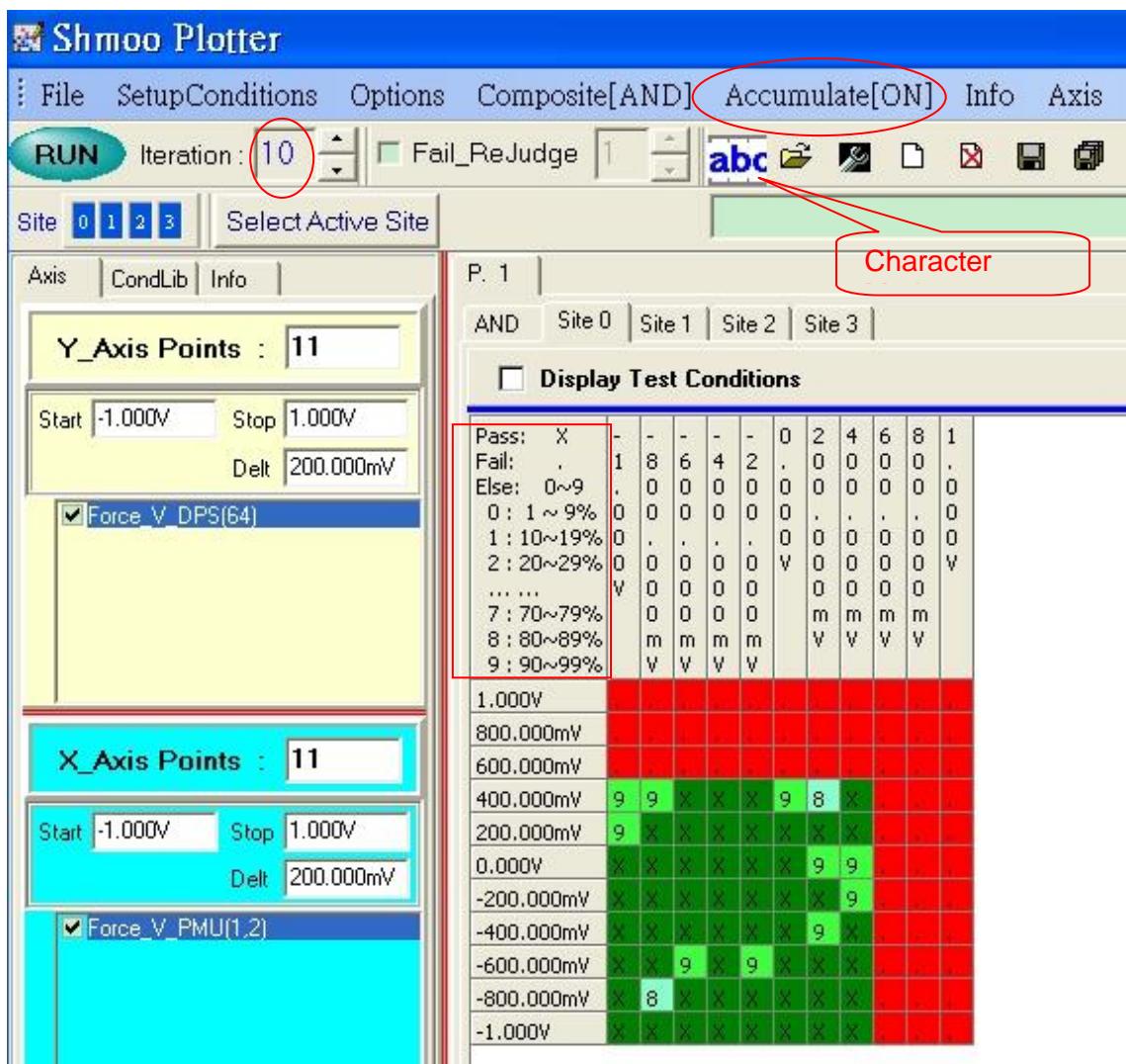


Figure 11-9 Character Mode Display Format (Accumulate ON)

11.5.4 Printout Format

When the “Print” button is pressed, a preview window is popped up.

No matter what the display mode user has set, the printout format is the same as the plot displayed in the plotting area.

Press the “Print” button to printout.

If don't want to print, press the “Close” button to abort.

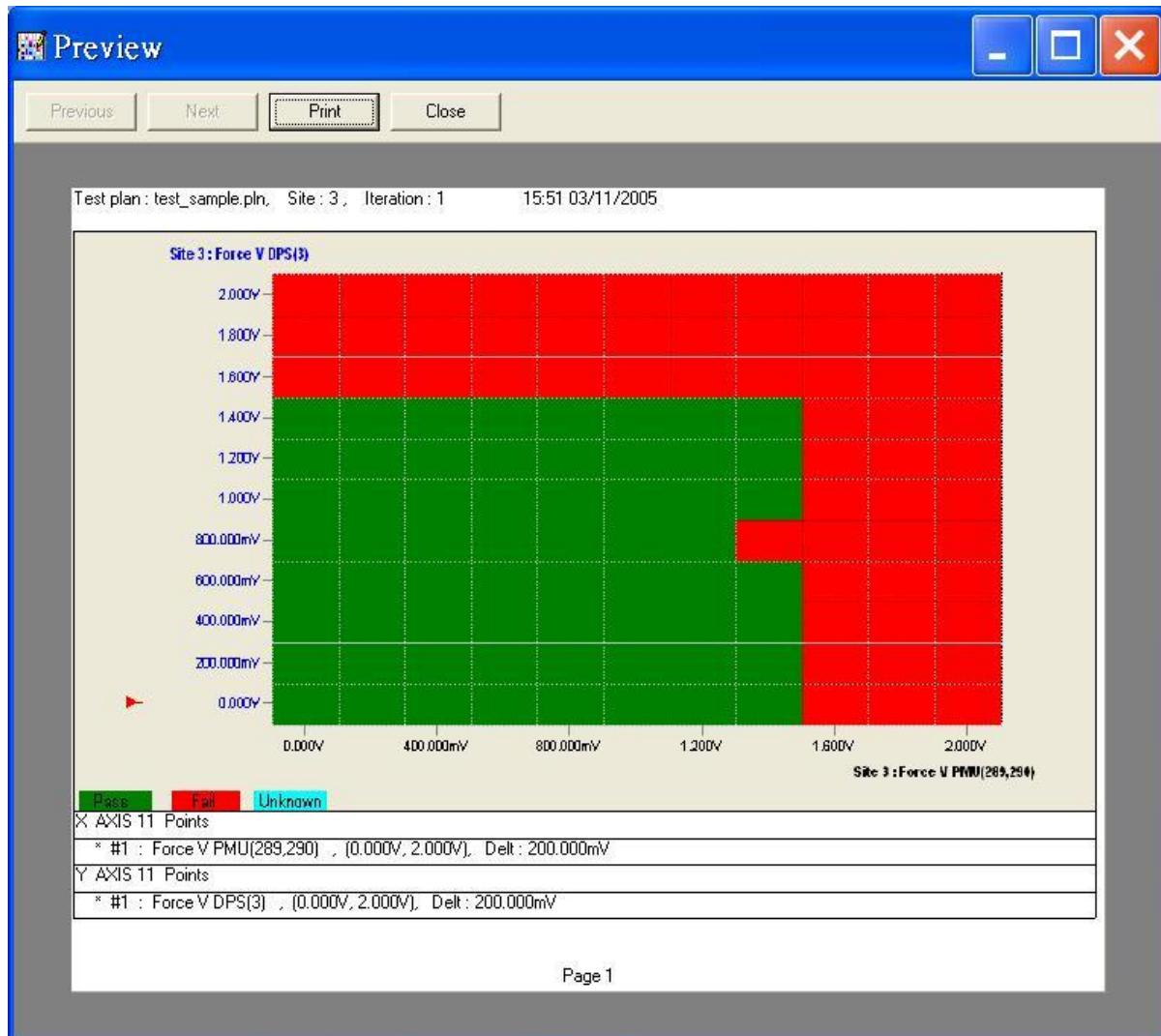


Figure 11-19 Printout Format of Graphic Mode

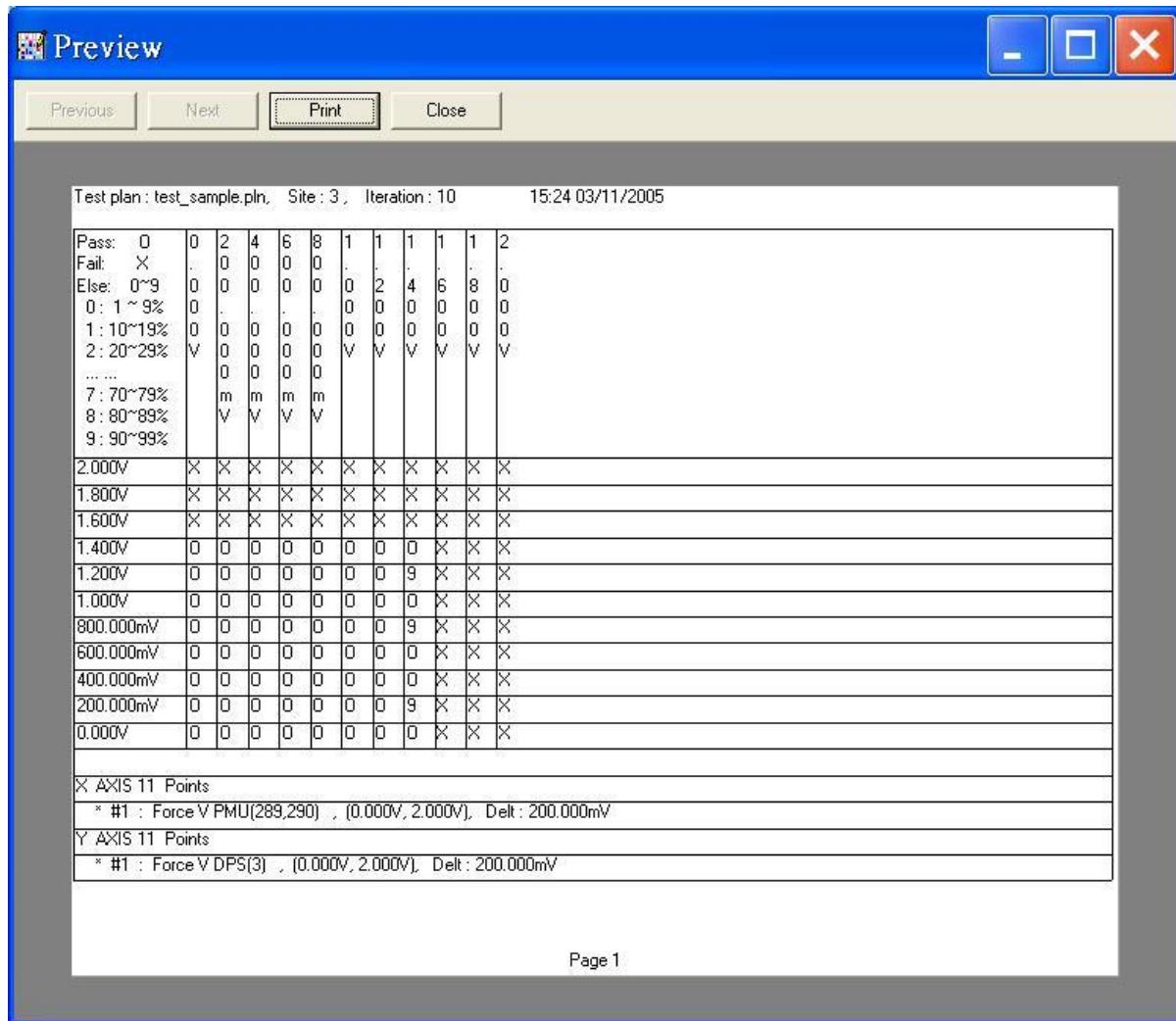


Figure 11-10 Printout Format of Character Mode

11.6 Fail ReJudge Function

If the check box is checked, and the Fail ReJudge filed is filled with N, the failed cell will be ReJudged at most N times.

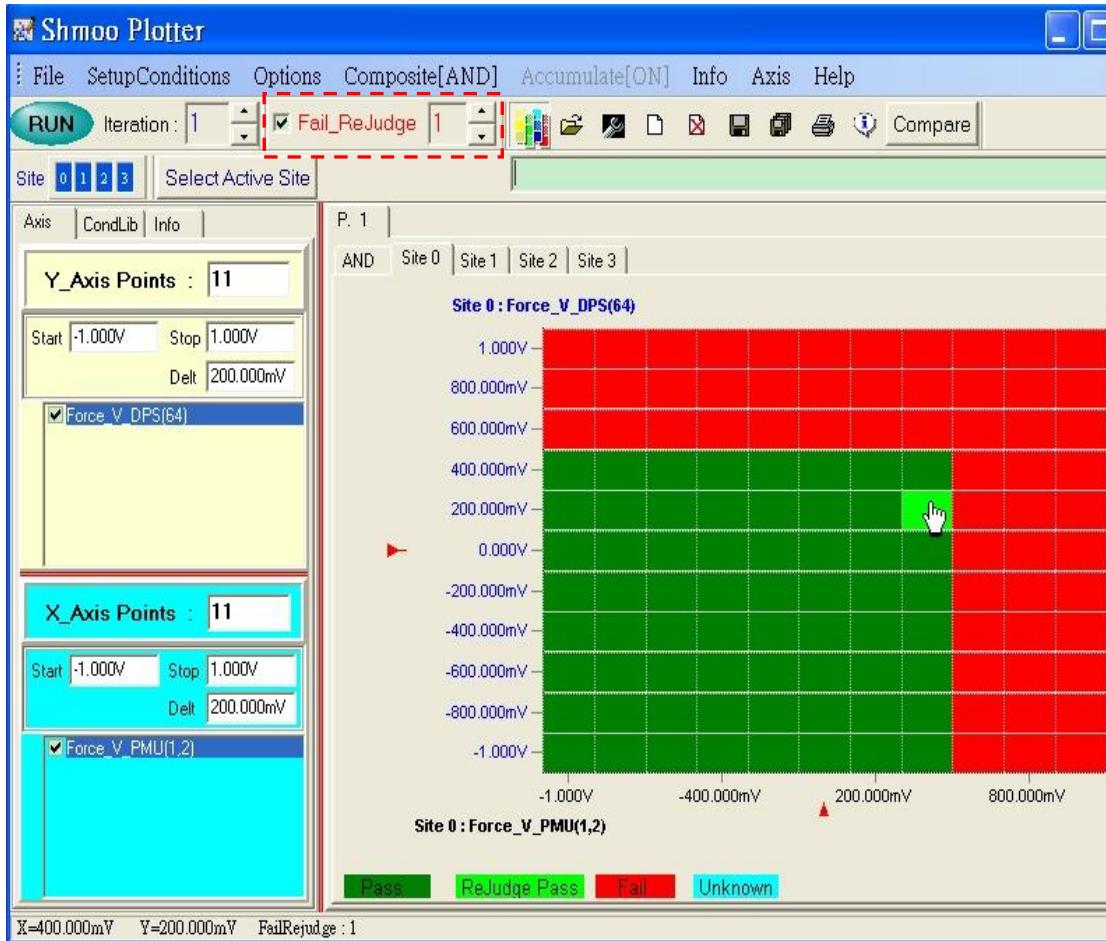


Figure 11-11 Fail ReJudge Function

11.7 Zoom Function

Using the zoom function

- (1) With the mouse, select a square area of shmoo plot displayed in the Plot window. (Figure 11-12①)
- (2) Right click on the square area, a menu popped up (Figure 11-12②)
- (3) Click "Zoom In".
- (4) The Condition page shows the start and stop values of the parameters enclosed within the square area (Figure 11-13).
- (5) A new page is created, and the plot of the conditions with the new start and stop values are automatically displayed.

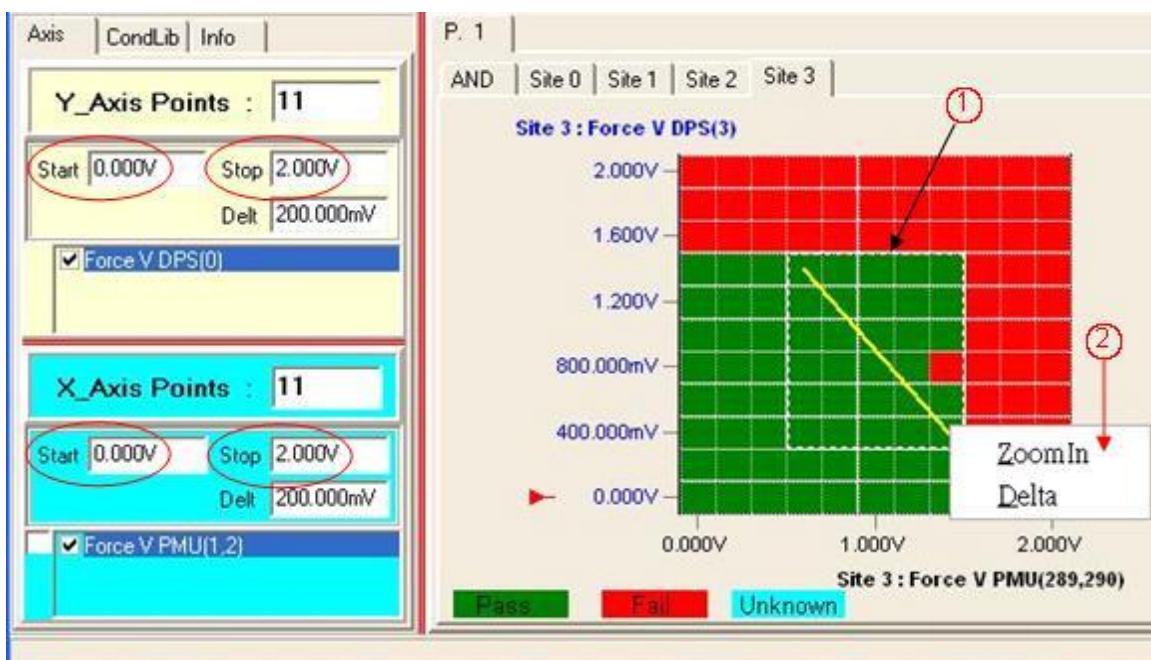


Figure 11-122 Zoom In Function

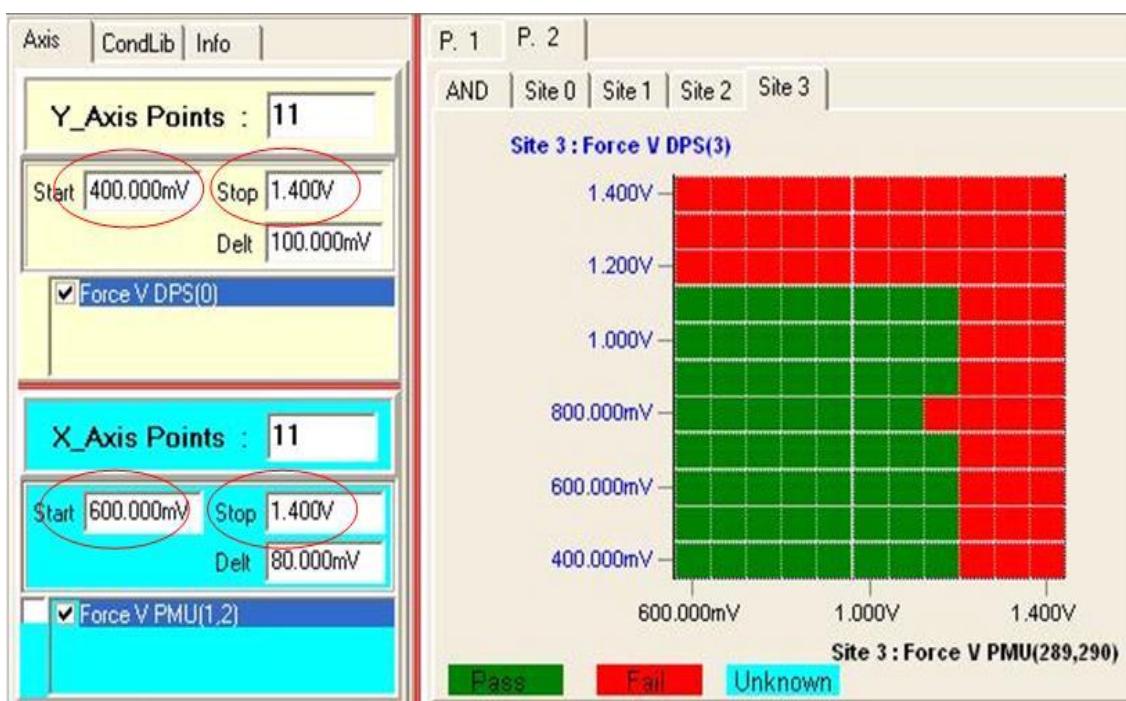


Figure 11-13 Zoom In Result

11.8 Delta Function

- (1) With the mouse, select a square area of shmoo plot displayed in the Plot window. (Figure 11-12①)
- (2) Right click on the square area, a menu popped up (Figure 11-12②)
- (3) Click "Delta".
- (4) The delta values of the two points at the two ends of the yellow diagonal line are displayed in the Info page.

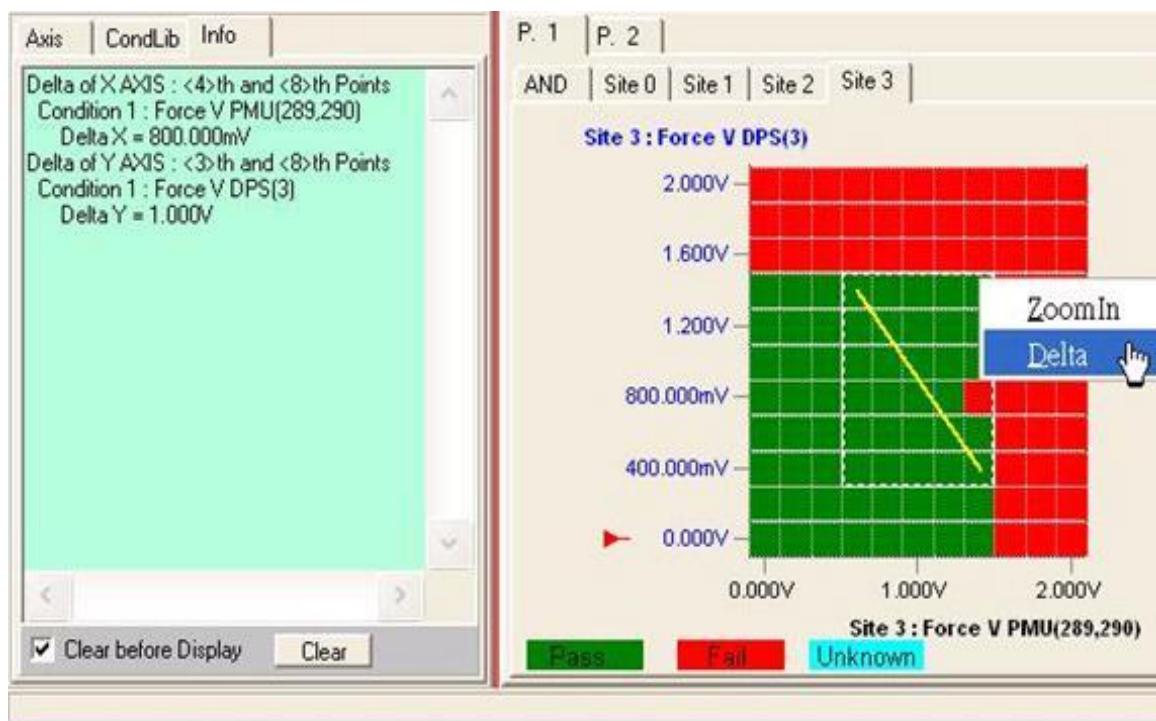


Figure 11-14 Delta Function

11.9 Page Compare Function

Page compare function can compare the differences of pages of shmoo plots (2 to 10 pages). Note that the page compare function is applicable to graphic shmoo only.

Figures below describe how the function works.

- (1) Click the Compare button, a window titled as “Compare Shmoo Plots” popped up, and current page be one of its compare resource (Figure 11-15).
- (2) Add one more page to be compared (Figure 11-16).
- (3) Press the “Start to compare”, a “Compare Result” Page displays the difference of all the resource pages with black color (Figure 11-17).

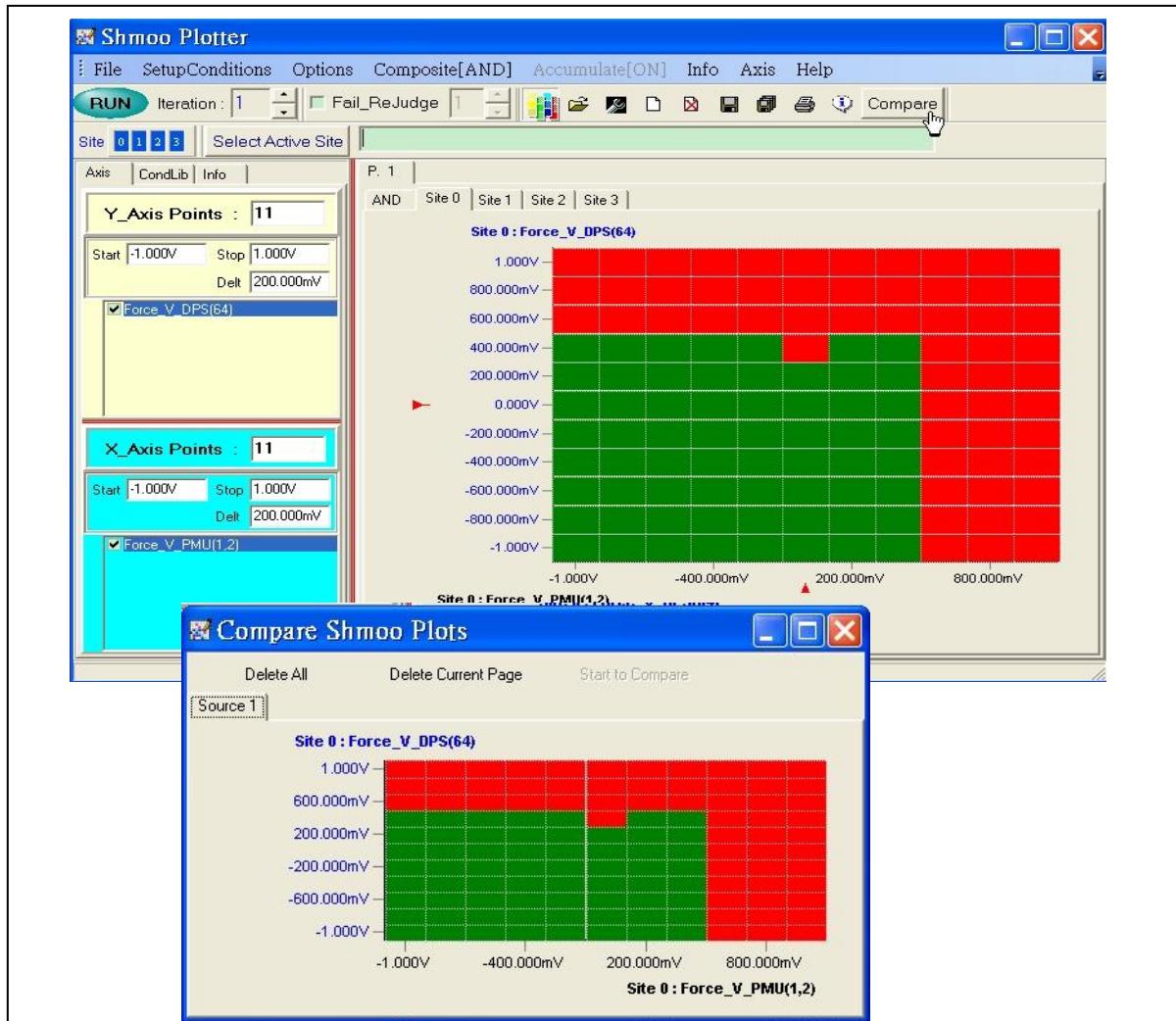


Figure 11-155 Page Compare (1)

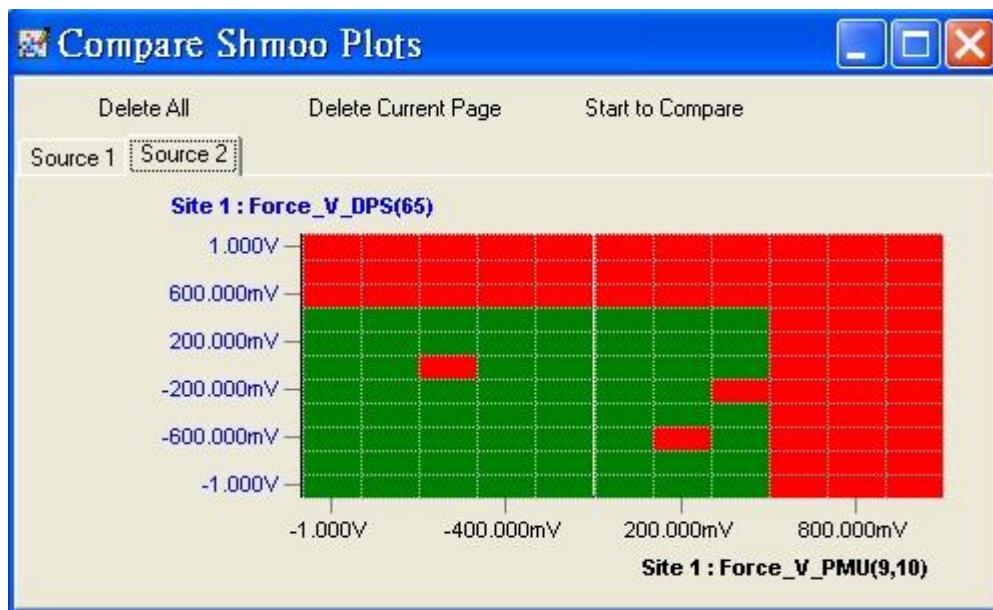


Figure 11-16 Page Compare (2)

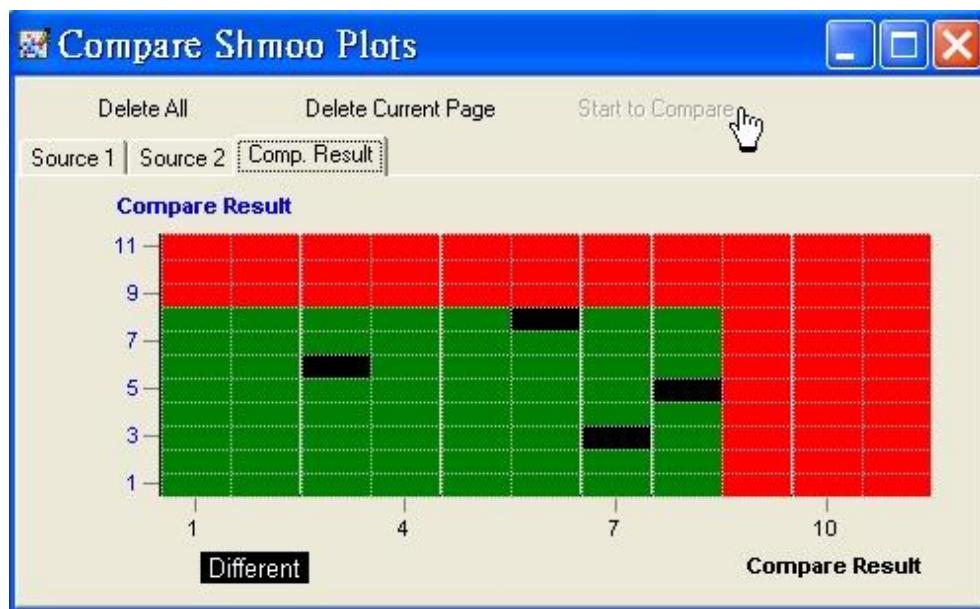


Figure 11-17 Page Compare (3)

11.10 DC Measure Shmoo

DC Measure Shmoo has only one of these three test conditions, Meas_I_DPS, Meas_V_PMU, and Meas_I_PMU in the X_Axis.

The output of the DC Measure Shmoo including,

- (1) Titled with the test condition (1 in Figure 11-188), PinName (2 in Figure 11-18), and ATE channel (3 in Figure 11-18).
- (2) X axis is the forced values.
- (3) Y axis is the measured values.
- (4) If select more than one pin, only one pin displayed in the plot window. Using the buttons and the pin selection combo on the bottom panel (4 in Figure 11-18) to change the displayed pin.

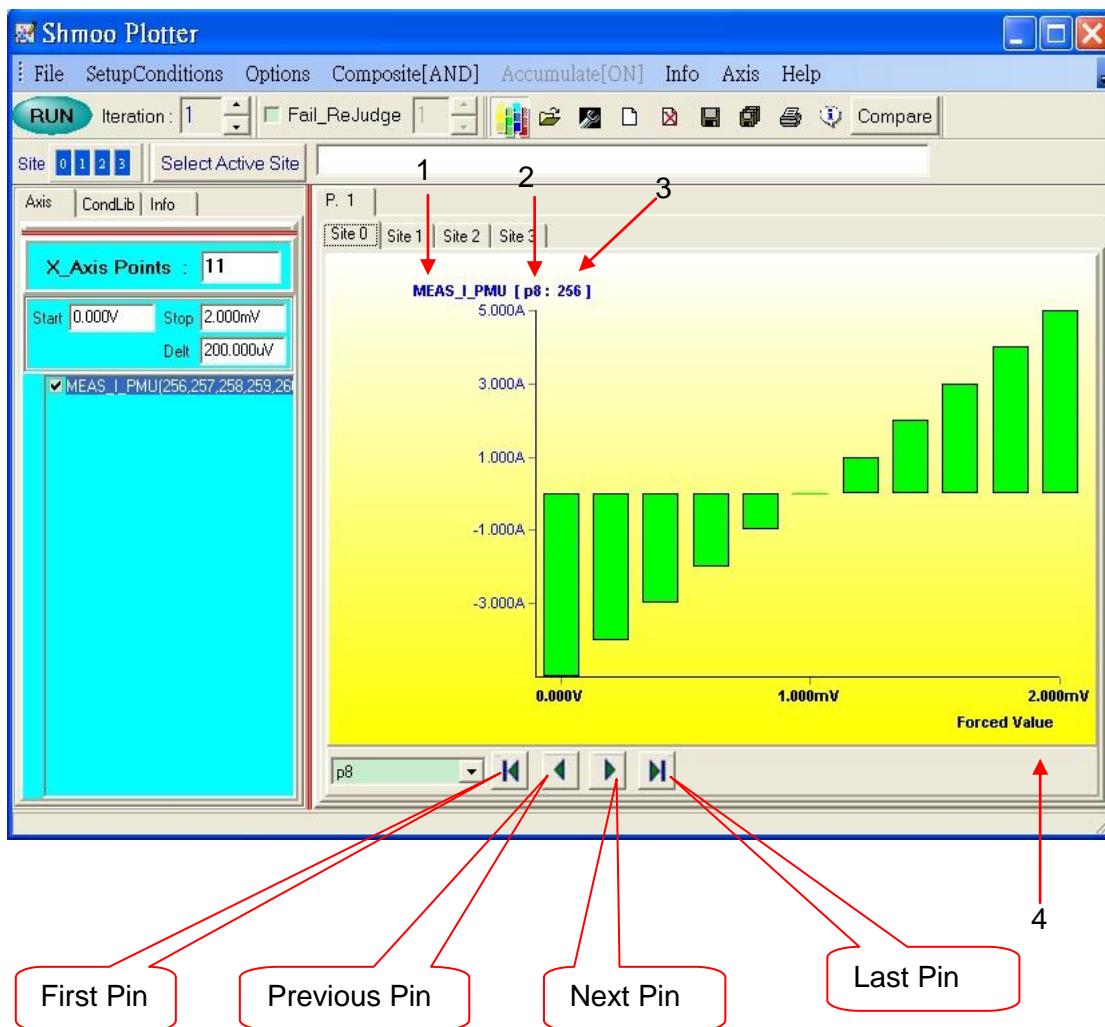


Figure 11-18 DC_Measure Shmoo (1)

12. Logic Waveform

12.1 Overview

The logic waveform combines the judgment results of a test pattern (stimulus pattern) and a device actual output pattern, and indicates them by displaying a waveform image.

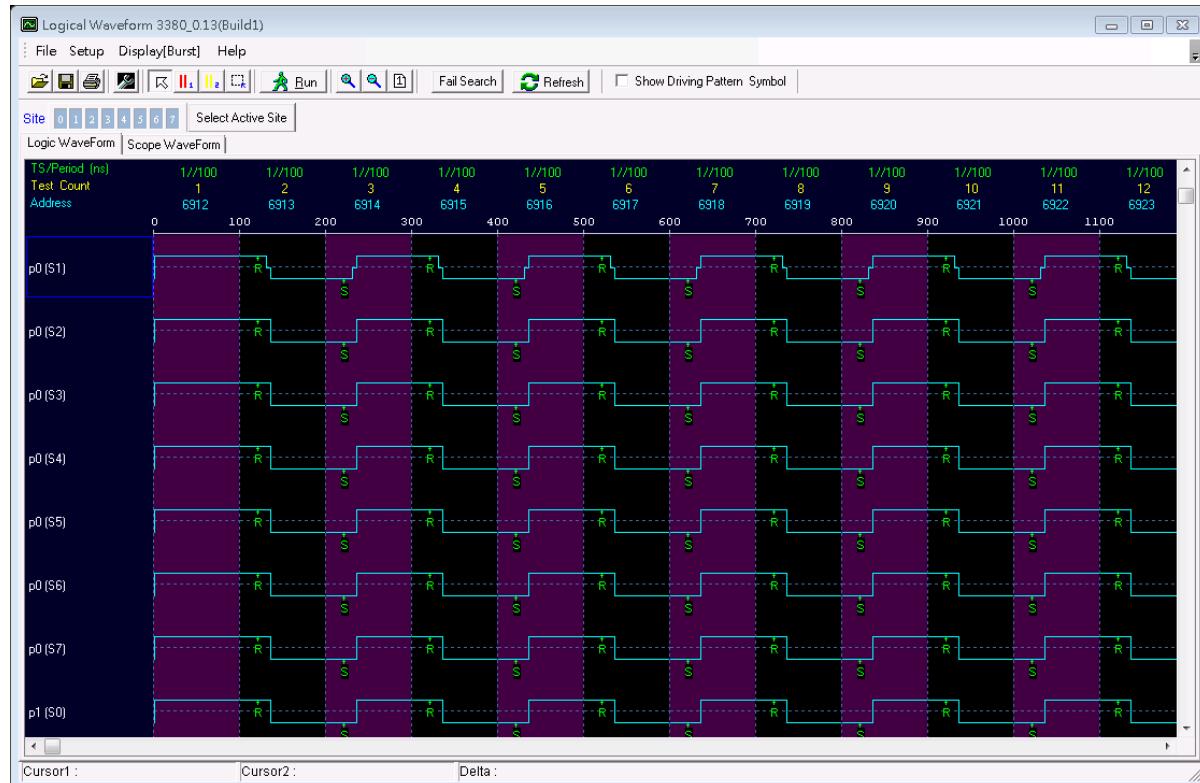


Fig. 12-1 Logic Waveform Main Window

12.2 Start and Quit Waveform Tool

12.2.1 Start from System Control

The logic waveform starts when you click "Logic waveform" on system control window. There are two ways to start logic waveform. (See fig. 12-2)

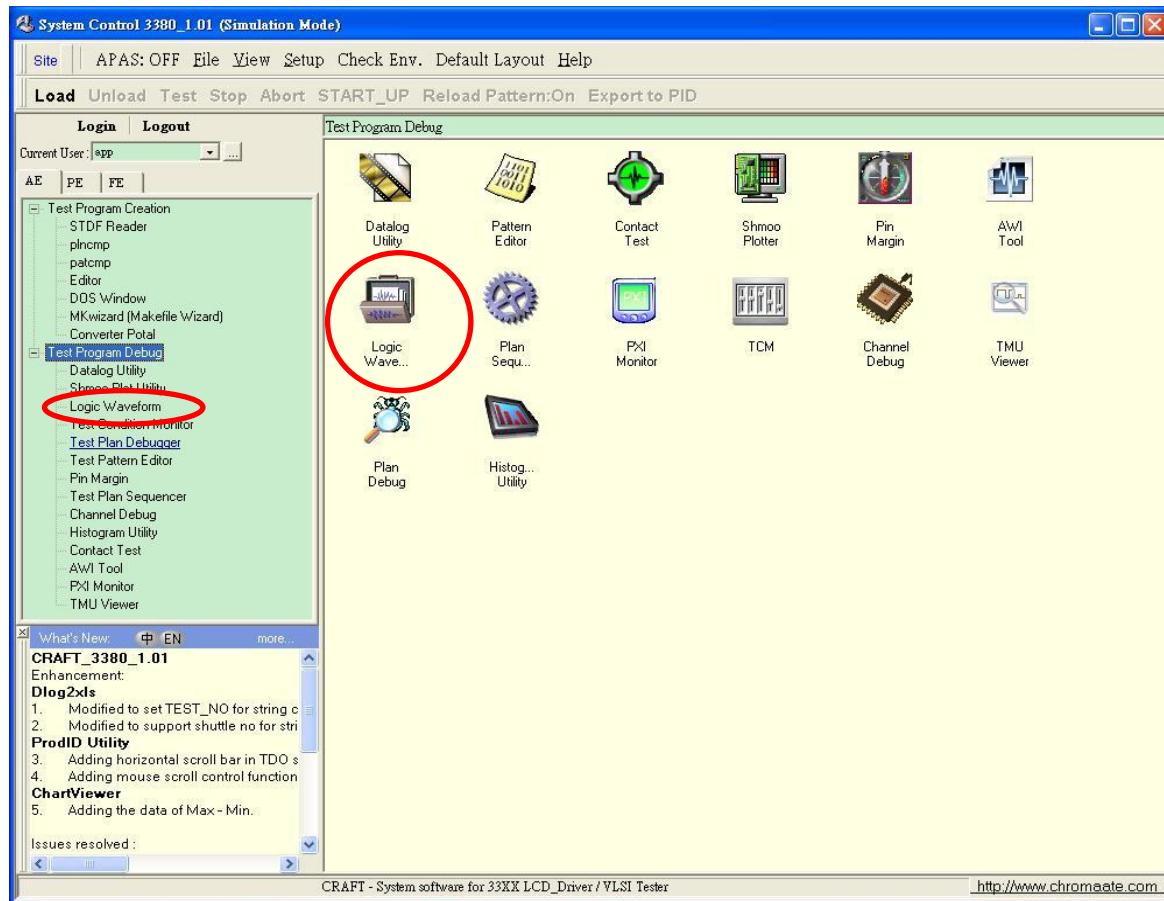


Fig. 12-1 Start form System Control window

12.2.2 Quit Logic Waveform

To quit the Logic waveform tool, click File->Exit or close button on waveform window (see fig. 12-3)

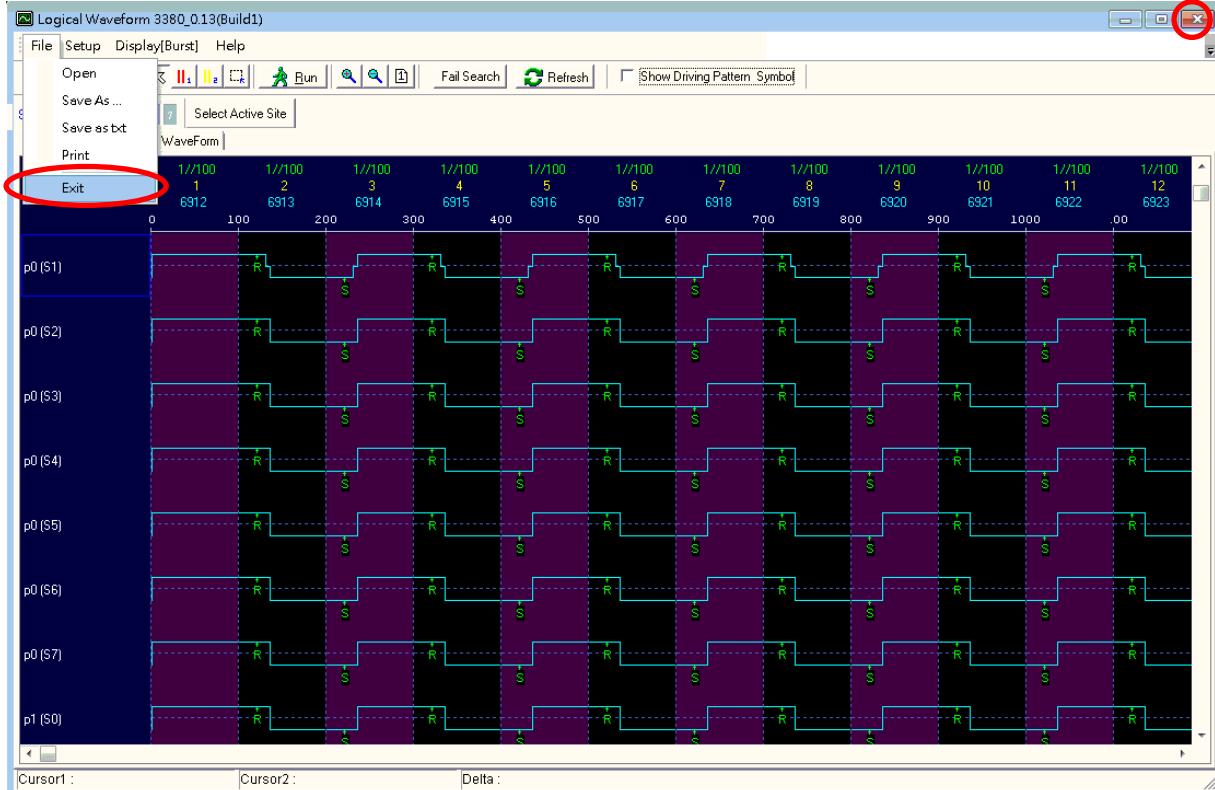


Fig. 12-2 Quitting Logic Waveform

12.3 Logic Waveform Execution

12.3.1 Open Logic Waveform Parameter Setup Window

- (1) Verify that Plan Debugger window is READY or BREAK state.
- (2) With the Logic Waveform window, open the waveform parameter setup window.

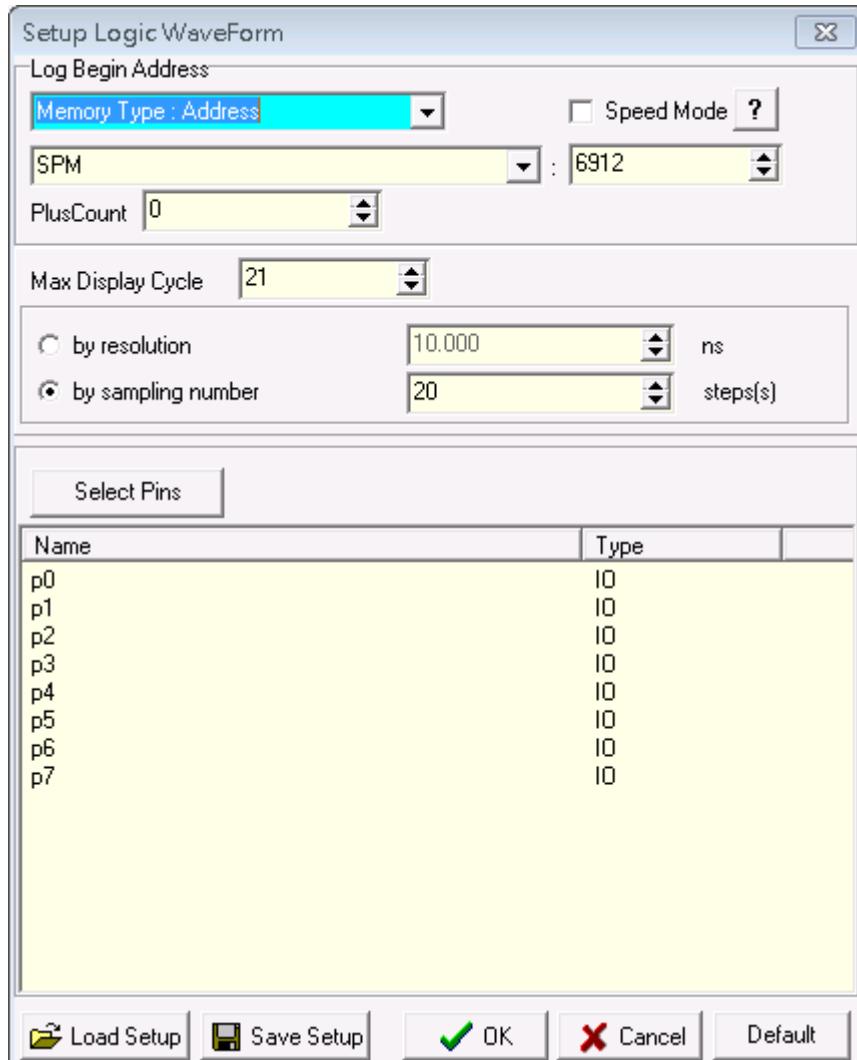


Fig. 12-4 Waveform Parameter Setup Window

12.3.2 Parameters Setting

- (1) From the waveform parameter setup window, make necessary parameter entries (see fig. 12.4).
- (2) Click **OK** button to finalize the parameter input. At the moment, the parameters are setup in this manner.

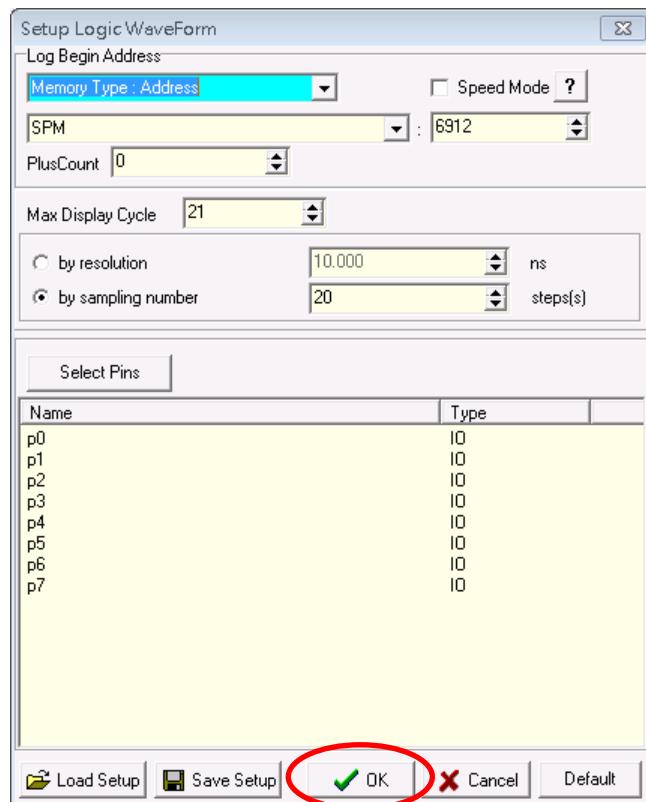


Fig. 12-3 Setup logic waveform parameters

12.3.3 Burst Pattern

- (1) Burst pattern by clicking on the Run button in the waveform tool window. The parameter information referenced at this moment is the information that has been set up in the setup parameter window.
- (2) Upon completion of burst pattern, the waveform display window opens.

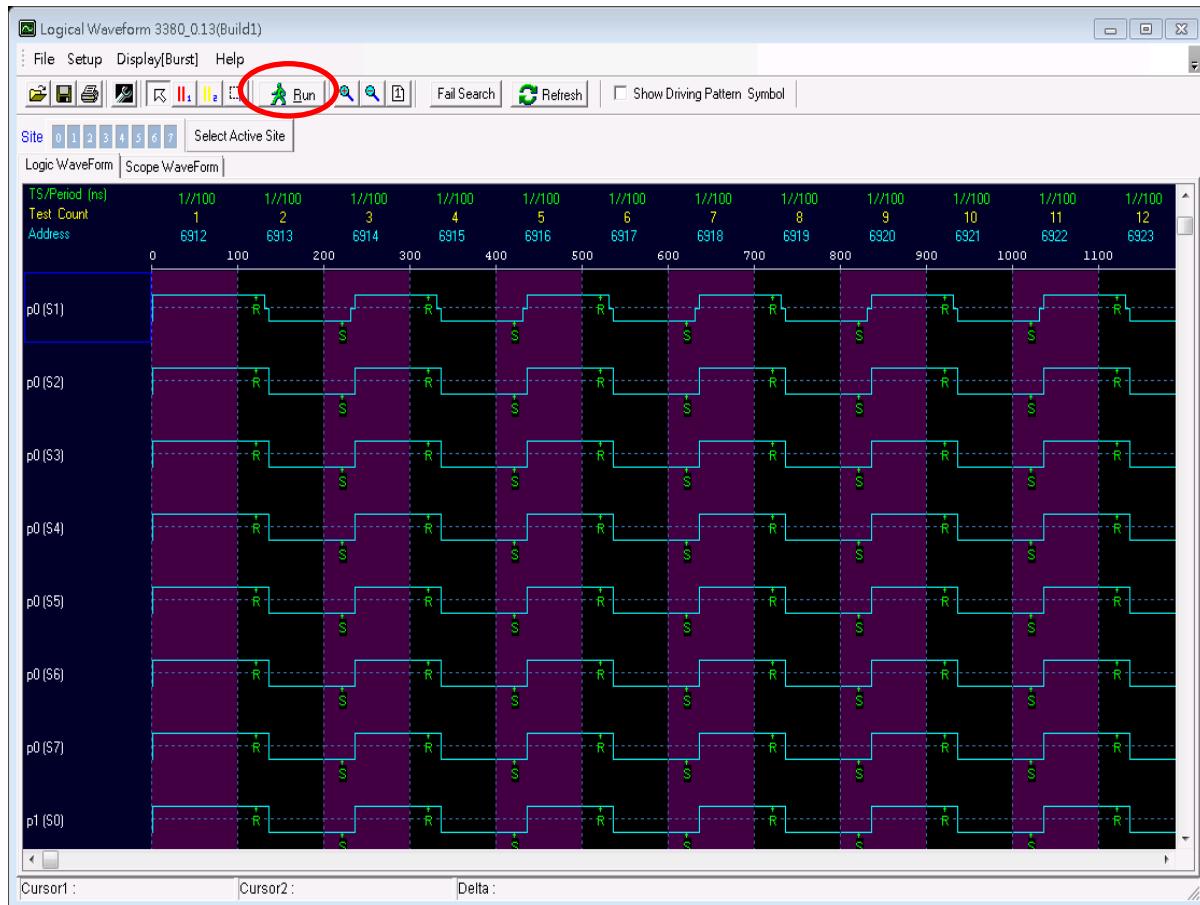


Fig. 12-4 Logic Waveform Burst

12.3.4 Programming Waveform

- (1) Programming Waveform by selecting the option “Display[Programming]” in Menu Bar. Then clicking on the Run button in the waveform tool window. The parameter information referenced at this moment is the information that has been set up in the setup parameter window.
- (2) The waveform color of input cycle will be yellow. The output cycle will be still displayed by Burst Mode but only showing strobe point while offline.

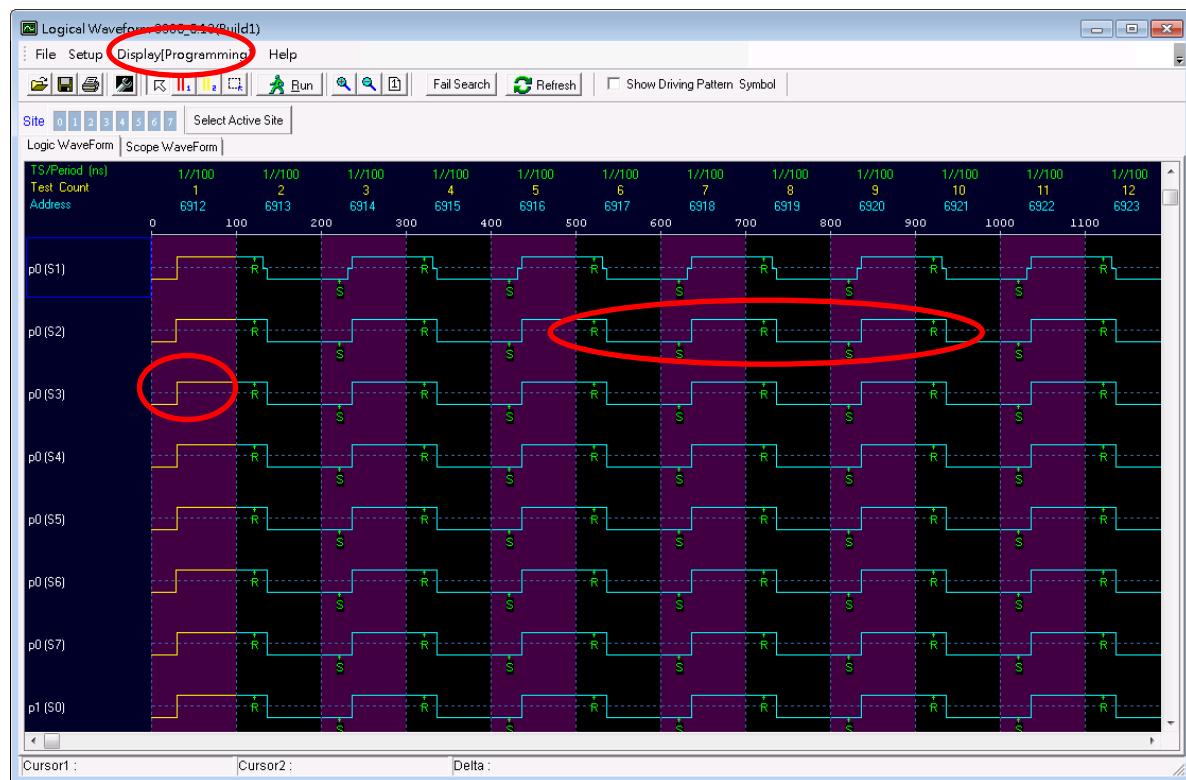


Fig. 12-7 Programming Waveform

12.4 Using Waveform Parameter Setup Window

The following window is used to set waveform display condition parameters and display wave data.

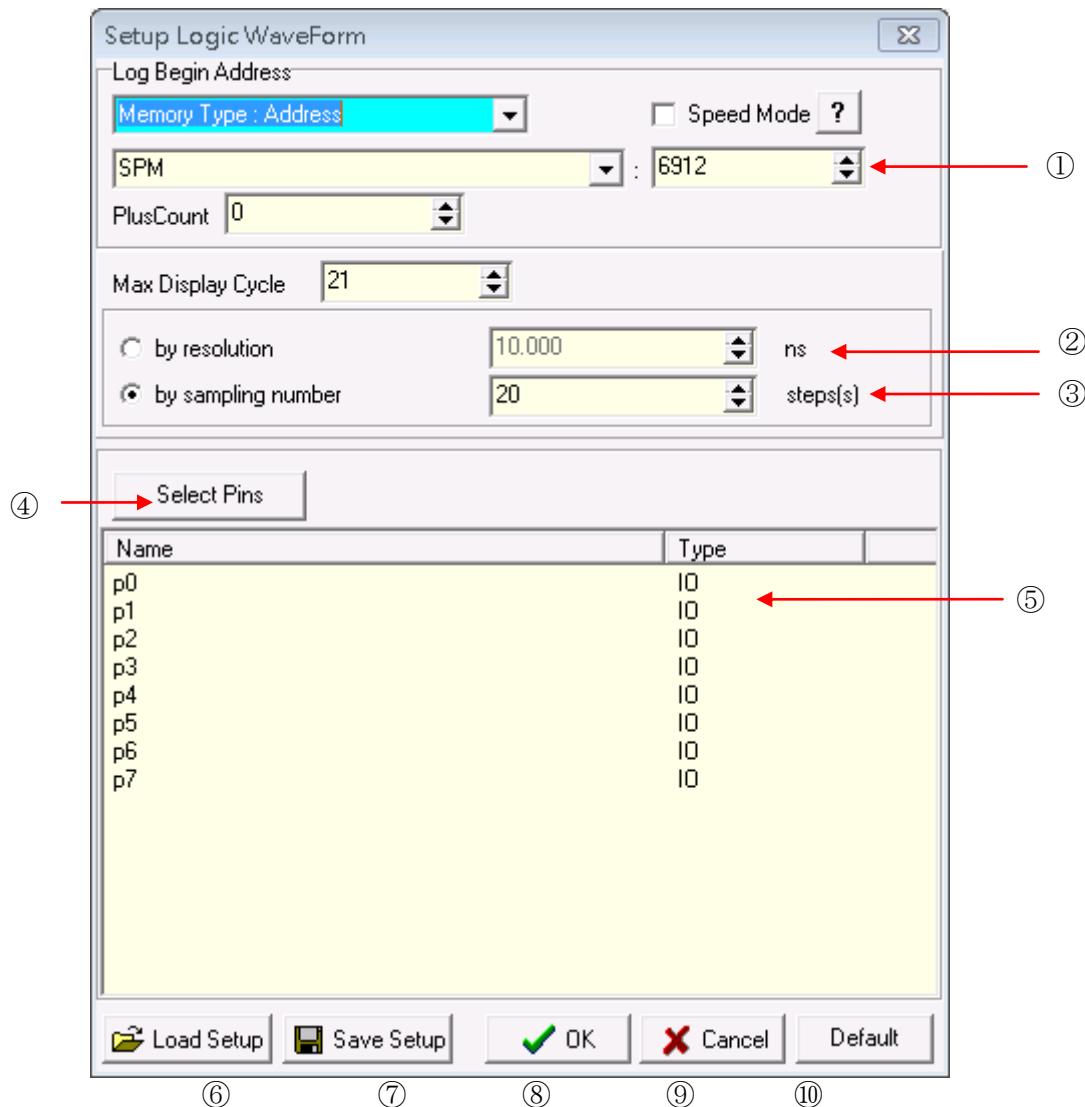


Fig. 12-8 Waveform parameter setup

No.	Function	Description
1	Log Begin Address	The appropriate pattern information, such as start address and plus count should be specified here. Speed mode: Checked: Enable speed mode, that means the pattern will setup the burst stop address = start address and stop plus count = plus count + max log count. Unchecked: Disable speed mode, that means the pattern will burst to end of pattern.
2	Max Display Cycle	Specify how many vectors to obtain data.
3	Sampling Method	By resolution: The sampling resolution depends on resolution. By sampling number: The sampling resolution depends on cycle time / sampling number.
4	Select Pin(s)	Specify the pin(s)/group(s) you care about.
5	Selected pin(s) information	The information of selected pin(s), including name and type.
6	Load Setup	Load the setup information from a specified file.
7	Save Setup	Save the setup information to a specified file.
8	OK	Finish the parameter setting.
9	Cancel	Cancel the parameter setting.
10	Default	Setting, Speed mode: unchecked; Plus Count: 0; Max Display Cycle: 100; By sampling number: 20 (steps).

Table 12-1 Waveform Parameter Setup Window Functions

12.5 Display a Waveform

12.5.1 Waveform Display Window

This window displays waveform information.

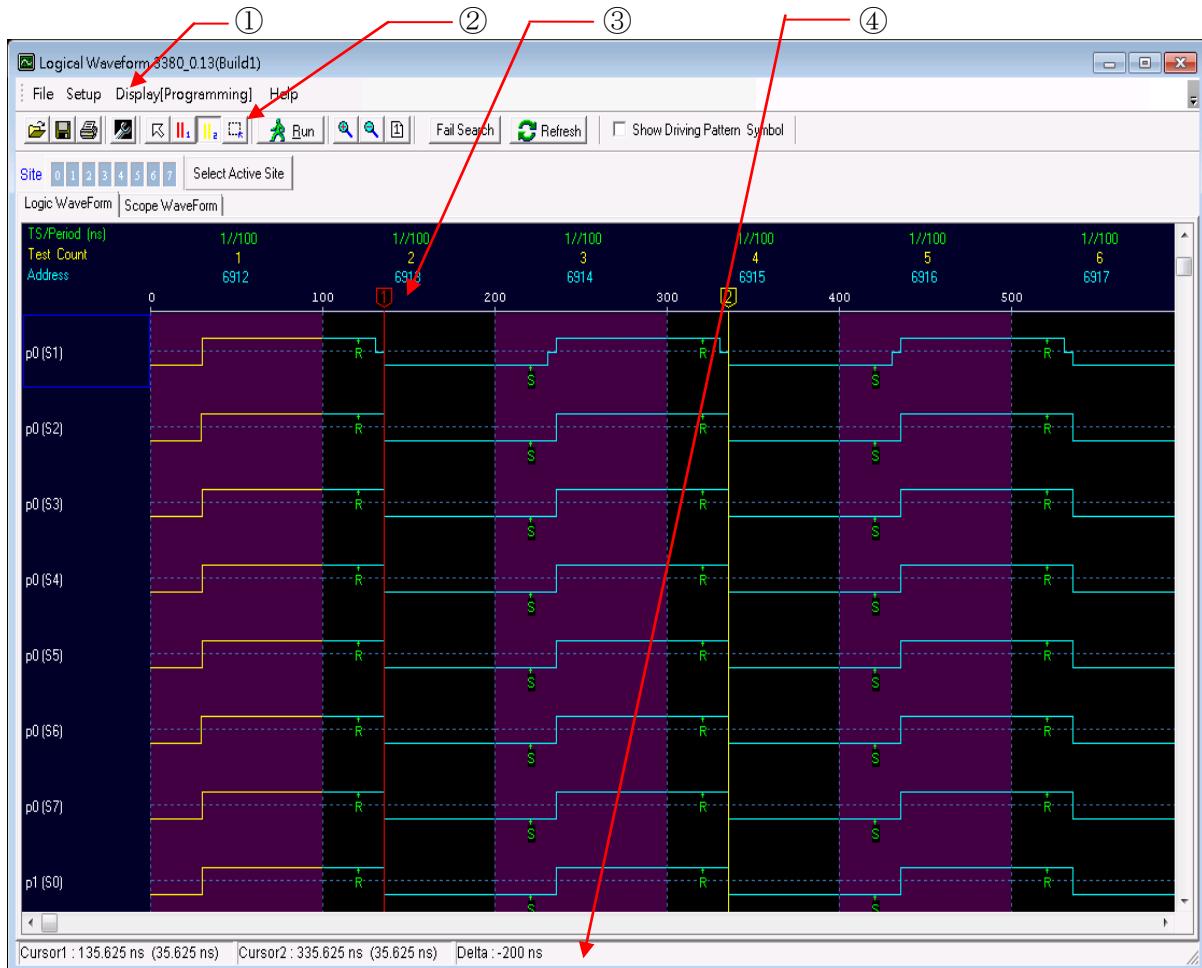


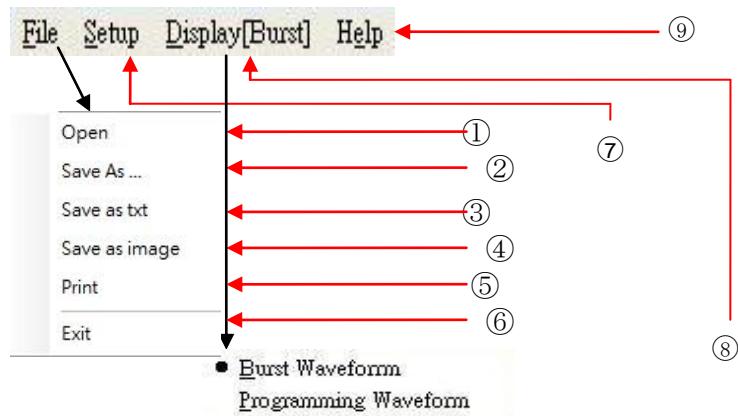
Fig. 12-9 Waveform display window

No.	Function	Description
1	Menu bar	Select a function for waveform display window manipulation.
2	Tool bar	Speed function button (see table 12-4).
3	Data display area	Display waveform of the selected pins.
4	Status area	Specify the pin(s)/group(s) you care about.

Table 12-2 Waveform Display Window Function List

12.5.2 Manipulate Menu Bar and Tool Bar

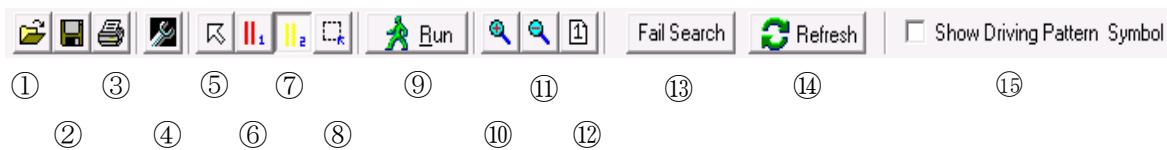
12.5.2.1 Menu Bar



No.	Function	Description
1	Open File	Open an existed Waveform file (*.lwg)
2	Save File As	Save Waveform (including the display waveform and setup parameters) to a file (*.lwg).
3	Save as txt	Save Waveform information to a text file(including Pass/Fail, CT Maker, Pattern Symbol and Waveform information)
4	Save as image	Save the displayed waveform as bmp or jpg file.
5	Print Waveform	Print the displayed waveform.
6	Exit	Exit logic waveform tool.
7	Setup Parameter	Parameter setup dialog will appear.
8	Display Mode	Display the waveform by Burst Mode or Programming Mode.(Default is Burst Mode)
9	Help	Launch waveform help.

Table 12-3 Menu Bar Function List

12.5.2.2 Tool Bar



No .	Function	Description
1	Open File	Open an existed waveform file (*.lwg). Note that when open an existed waveform file (*.lwg), Logic Waveform will auto check if it could be clicked RUN button in current JUDGE_PAT. IF not, it will be displayed by "VIEW ONLY" mode(just display the loaded waveform).
2	Save File As	Save Waveform (including the display waveform and setup parameters) to a file (*.lwg).
3	Print Waveform	Print the displayed waveform.
4	Setup Parameter	Parameter setup dialog will appear.
5	Normal Cursor	Set cursor mode to normal mode, it means does not the mode of (6), (7), (8) in this table.
6	Cursor Mode: Cursor 1	Set cursor mode to cursor-1 mode, it means click the left button of mouse will draw a cursor 1.
7	Cursor Mode: Cursor 2	Set cursor mode to cursor-2 mode, it means click the left button of mouse will draw a cursor 2
8	Cursor Mode: Mark Region	Set Cursor mode to mark-region mode. The first click will start a mark and the followed second click will end the mark.
9	Run: Burst Pattern	Burst the pattern then the actual waveform will show.
10	Zoom In	Zoom in the displayed waveform.
11	Zoom Out	Zoom out the displayed waveform.
12	One Page	Show all periods in one page.
13	Fail Message	Open the fail message dialog. (See fig. 12-10)
14	Refresh	Refresh the waveform display window.
15	Show Driving Pattern Symbol	Display driving pattern symbol in display window.

Table 12-4 Tool Bar Function List

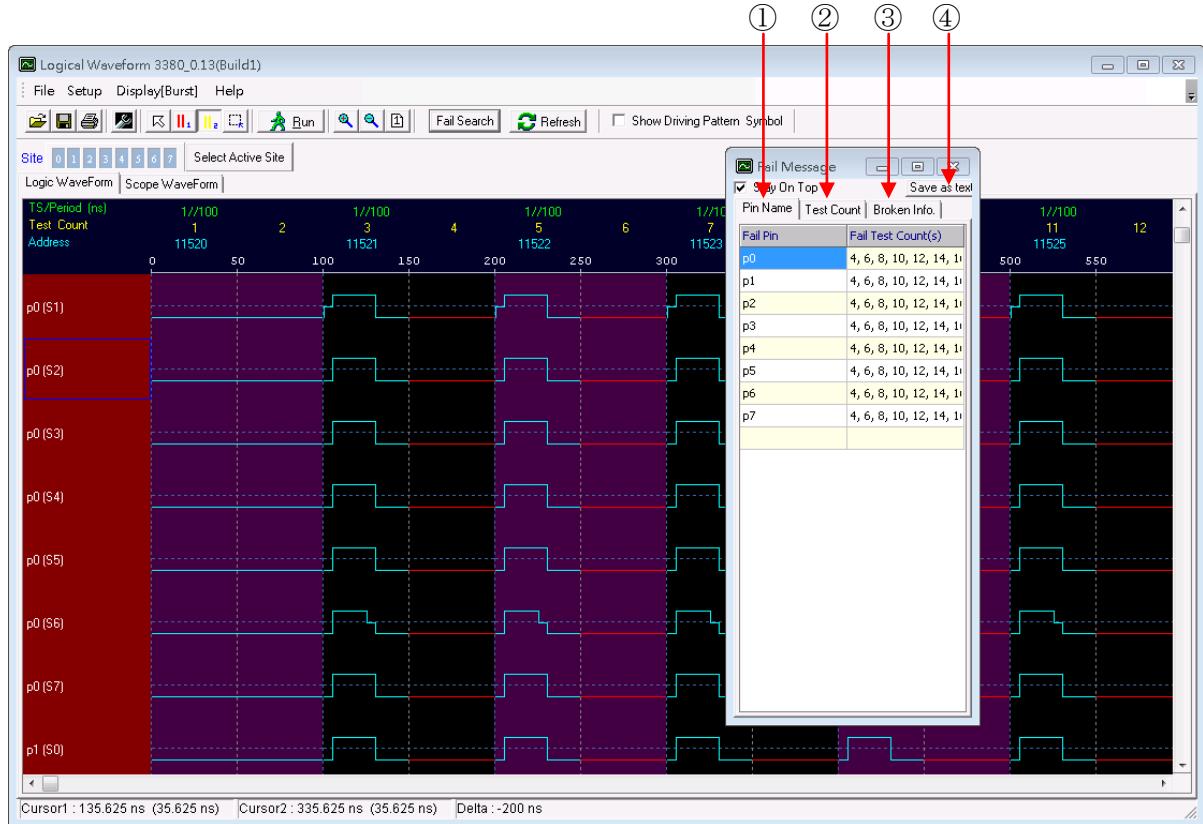


Fig. 12-10 Fail Message form

No.	Tab	Description
1	PinName	List the fail test count(s) by fail pin(s).
2	TestCount	List the fail pin(s) by fail test count(s).
3	Broken info.	List the broken test count(s) by broken pin(s).
4	Save as text	Save three information above as a *.txt file.

Table 12-5 Fail Message form Tab List

12.5.3 Data Display Format

12.5.3.1 Display Main Window

The actual waveform data is displayed on the main window. (See fig. 12-11)

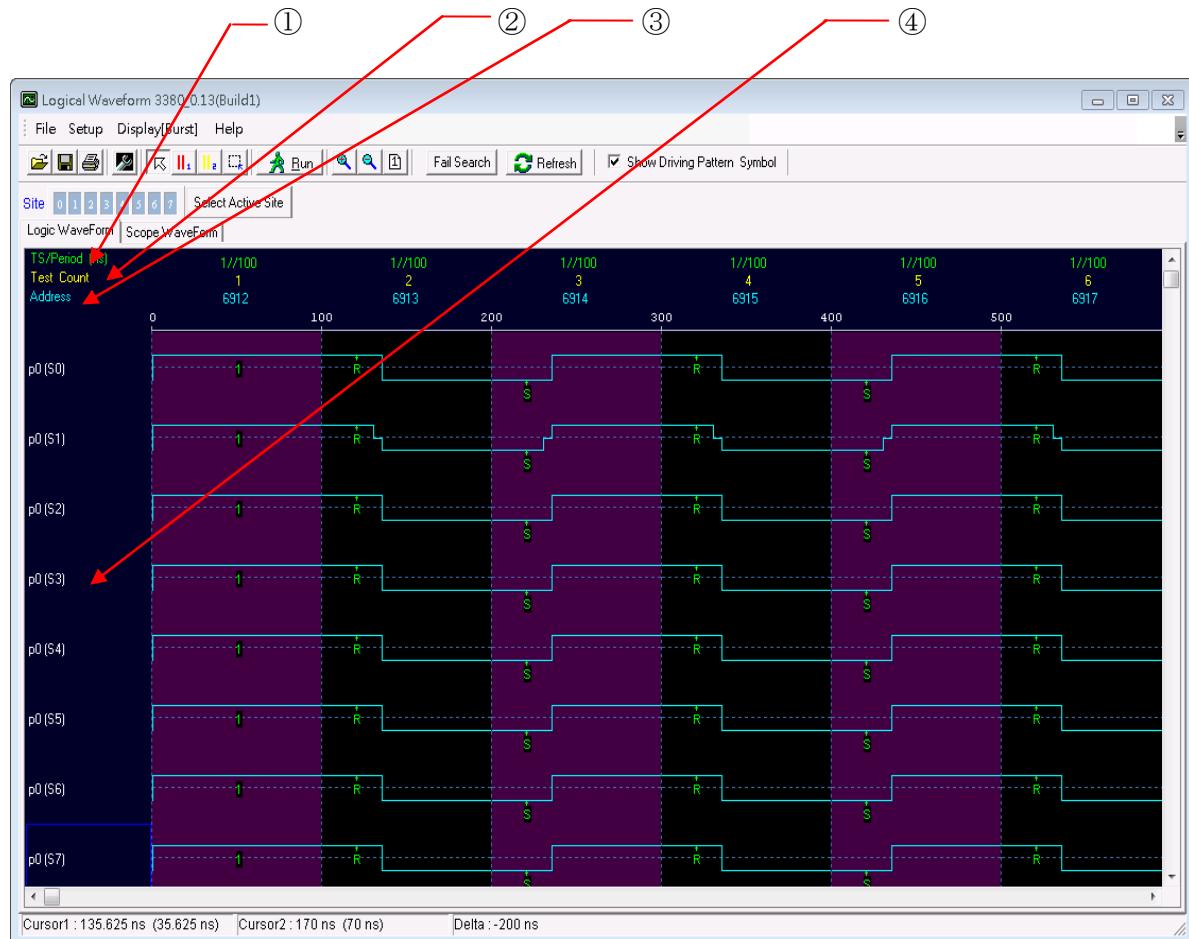


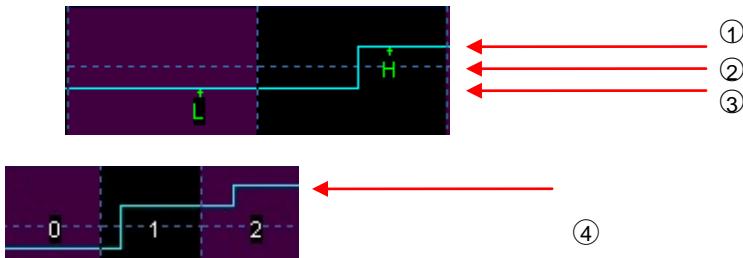
Fig. 12-11 Waveform display window

No.	Function	Description
1	TS/Period	Show TS (Timing Set) and period.
2	Test Count	Show test count
3	Address	Show the employed physical address.
4	Pin name	Show the pin name.

Table 12-6 Display Window Function List

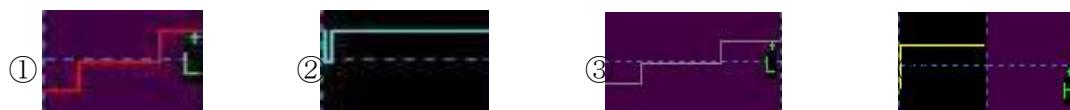
12.5.3.2 Waveform State

The information shows on a waveform which consists of actual waveform, compare symbol and strobe point time.



No.	Level	Description
1	High	Voltage is high pass.
2	Tri-state	Voltage is high fail and low fail
3	Low	Voltage is low pass
4	HV high	HV pin symbol 2

Table 12-7 Two-Level Waveform State



No.	Color	Description
1	Red	Means the cycle is failed.
2	Lime	Means the normal cycle.
3	Gray	Means pinfail and sitefail are not match in this cycle.
4	Yellow	Means the input cycle when displayed by Programming Mode. (Output cycle only shows strobe point programmed by user.)

Table 12-8 Three kinds of Waveform Color





No.	Color	Description
1	Gray	Means the pin that pinfail and sitefail are not match.
2	Red	Means the failed pin..
3	Default	Means the normal pin.

Table 12-9 Three kinds of Pin name area Color

12.5.3.3 Compare Format

Symbol	Description
↑	Edge strobe
└┐	Window strobe begin
┐└	Window strobe end
└┌	Window start
┌└	Window end

Table 12-10 Compare Form

13. Scope Waveform

13.1 Overview

The scope waveform is like an oscilloscope, it shows the almost actual (depends on your setting) waveform of pin.

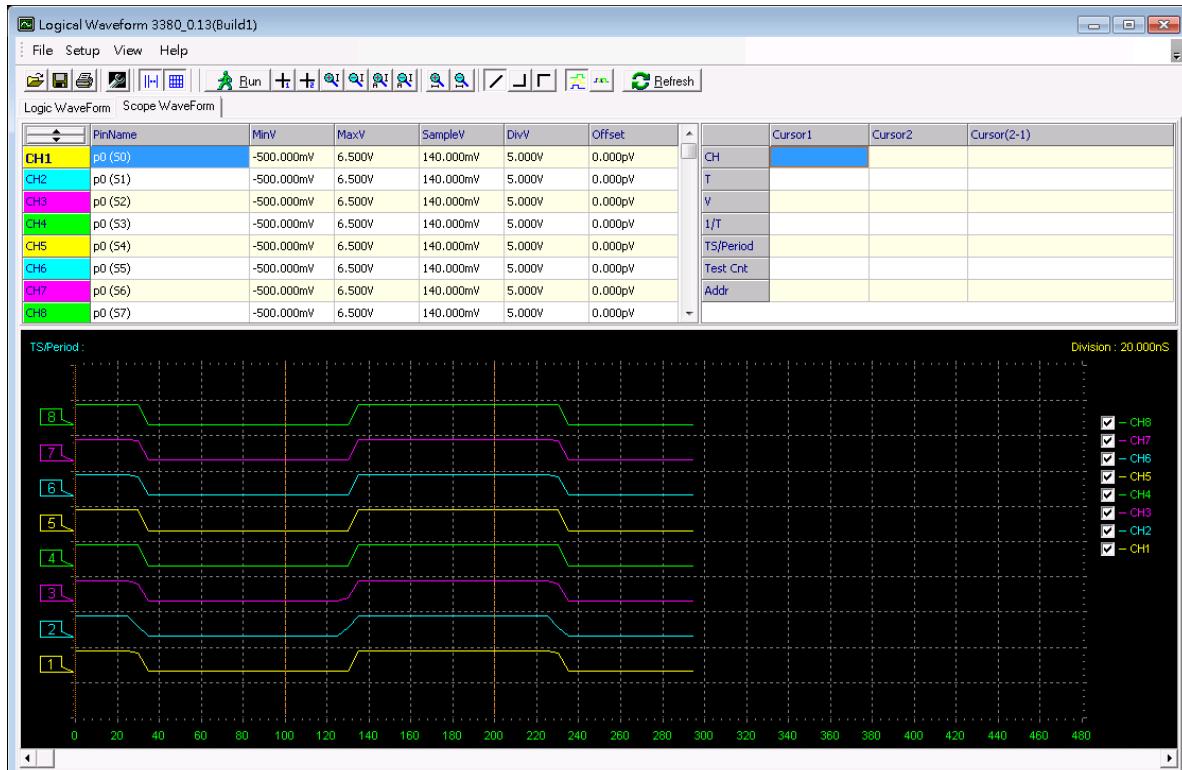


Figure 13-1 Scope Waveform Main Window

13.2 Start & Quit Scope Waveform

13.2.1 Start from System Control

The waveform tool starts when you click “Logic Scope” on system control window. There are two ways to start scope waveform. (See Figure 13-2).

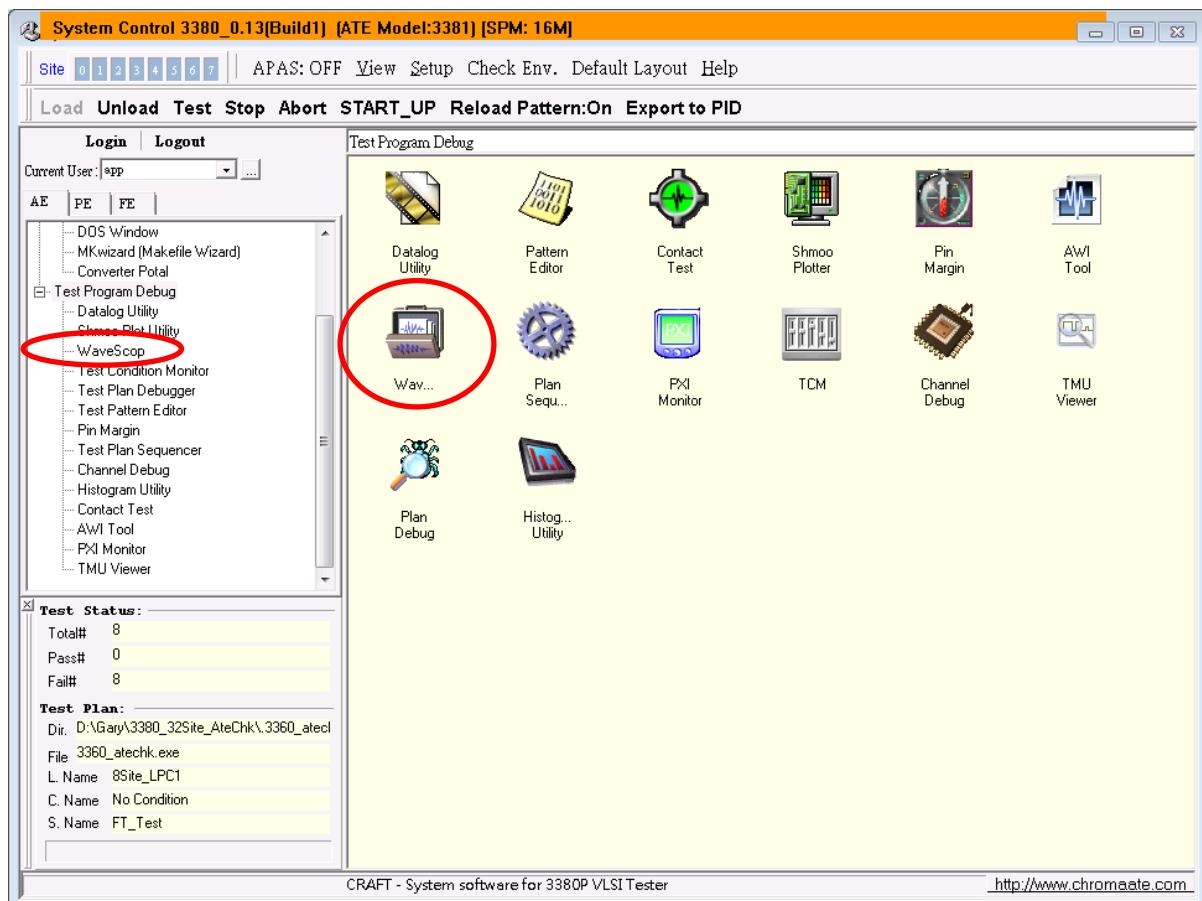


Figure 13-2 Start from System Control Plan Select Window

13.2.2 Quit Scope Waveform

To quit scope waveform, click menu File->Exit or close button on scope waveform window.

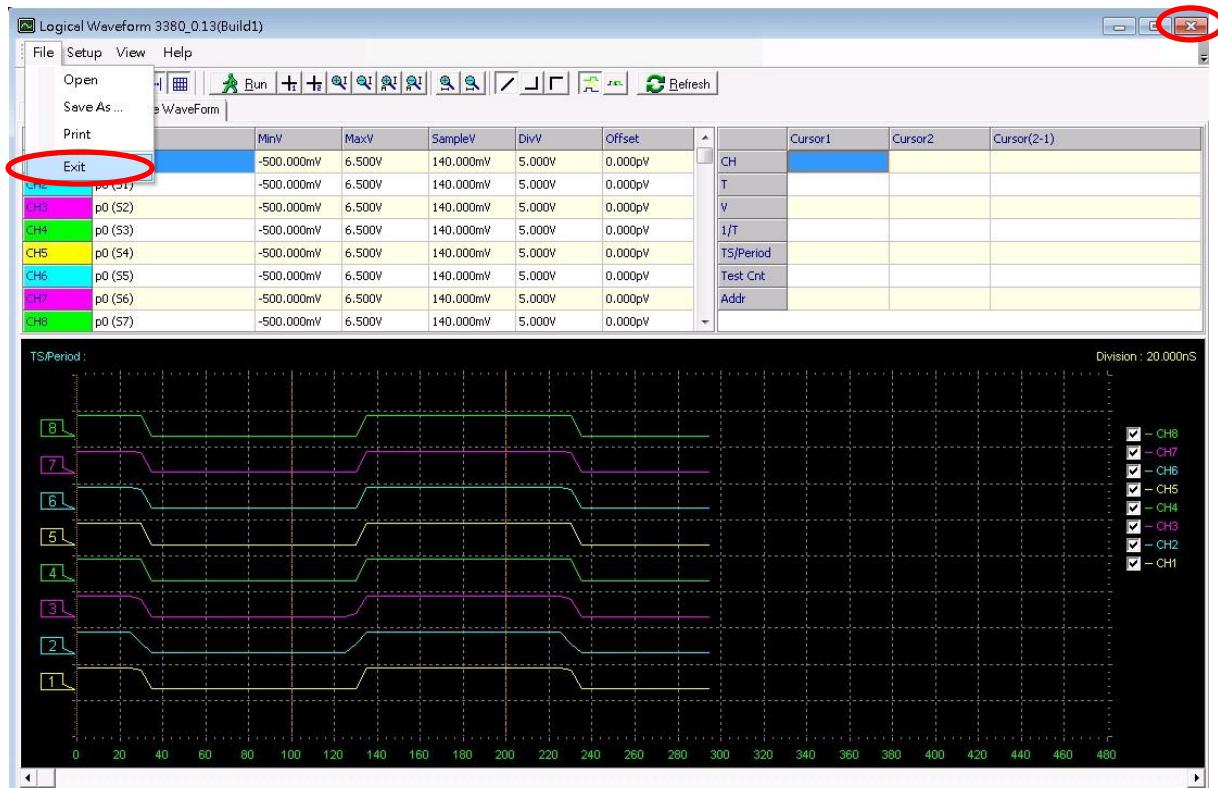


Figure 13-3 Exit Scope Waveform

13.3 Scope Waveform Execution

13.3.1 Open Scope Waveform Parameter Setup Window

- (1) Verify that Plan Debugger window is in READY or BREAK state.
- (2) With Scope Waveform window, open waveform parameter setup window.

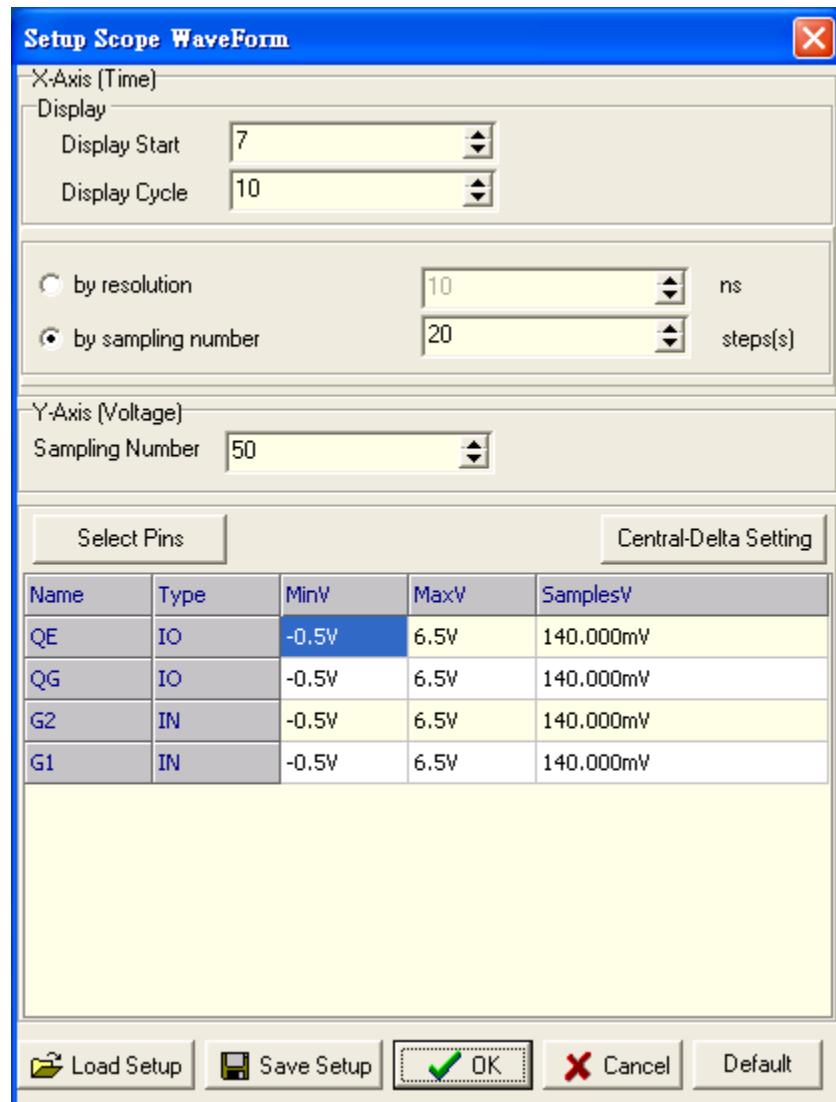


Figure 13-4 Scope Waveform Parameter Setup Window

13.3.2 Set Parameters

- (1) From scope waveform setup window, make necessary parameter entries (see Figure 13-4).
- (2) Click **OK** button to finalize the parameter input. At the moment, the parameters are set up in this manner.

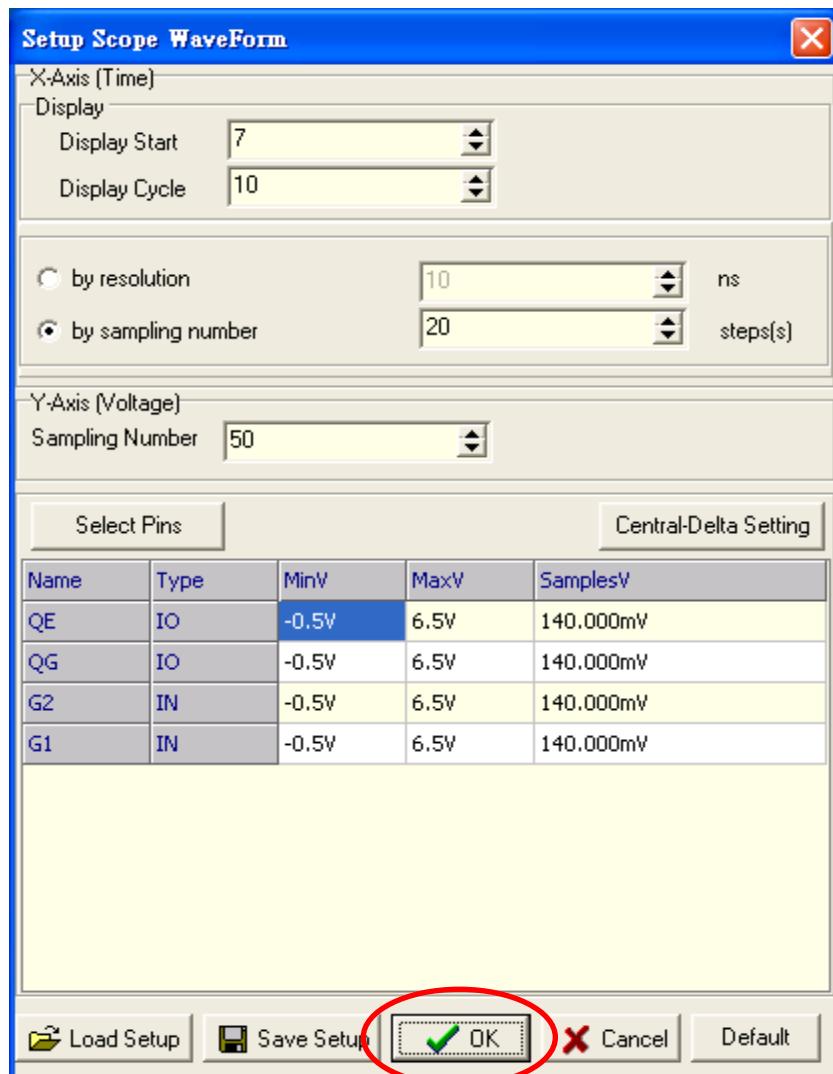


Figure 13-5 Setup Scope Waveform Parameters

13.3.3 Burst Pattern

- (1) Burst pattern by clicking **Run** button on the scope waveform window. The parameter information referenced, at this moment is the information that has been set up in the setup parameter window.
- (2) Upon completion of burst pattern, the waveform display window opens.

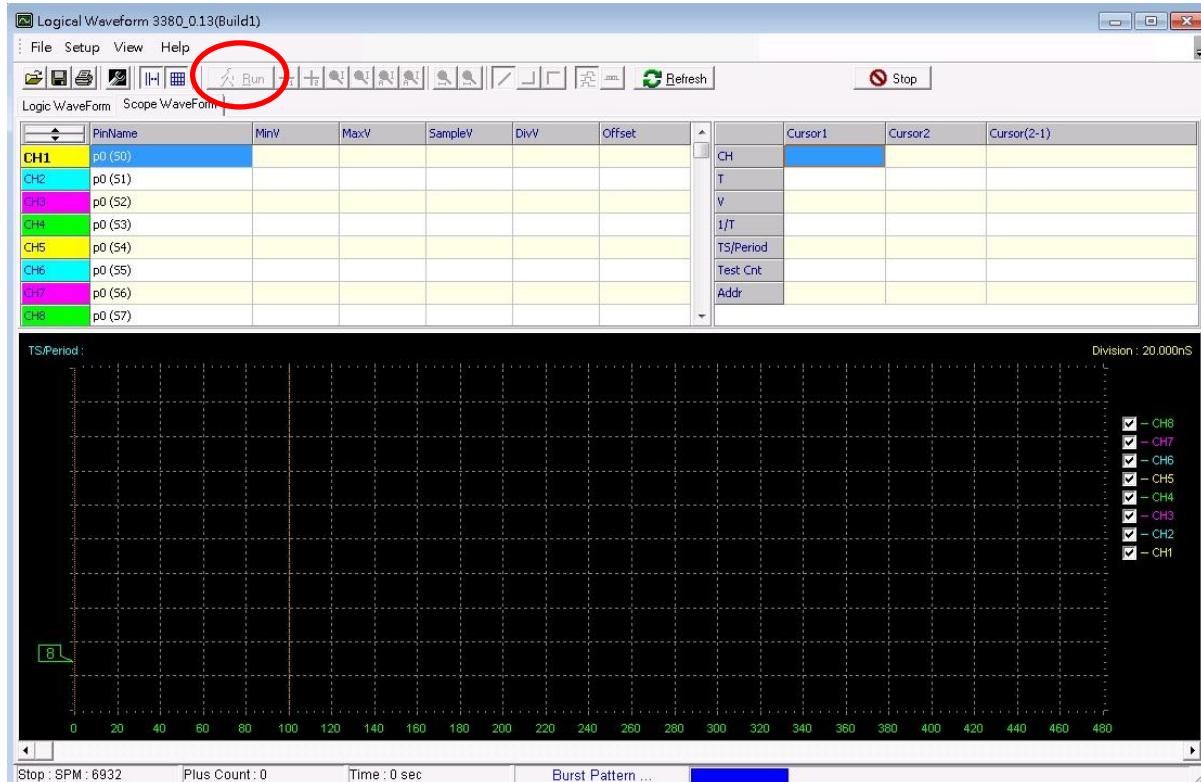


Figure 13-6 Scope Waveform Bursting

13.4 Use Scope Waveform Parameter Setup Window

The following window is used to set the waveform display condition parameters and display wave data.

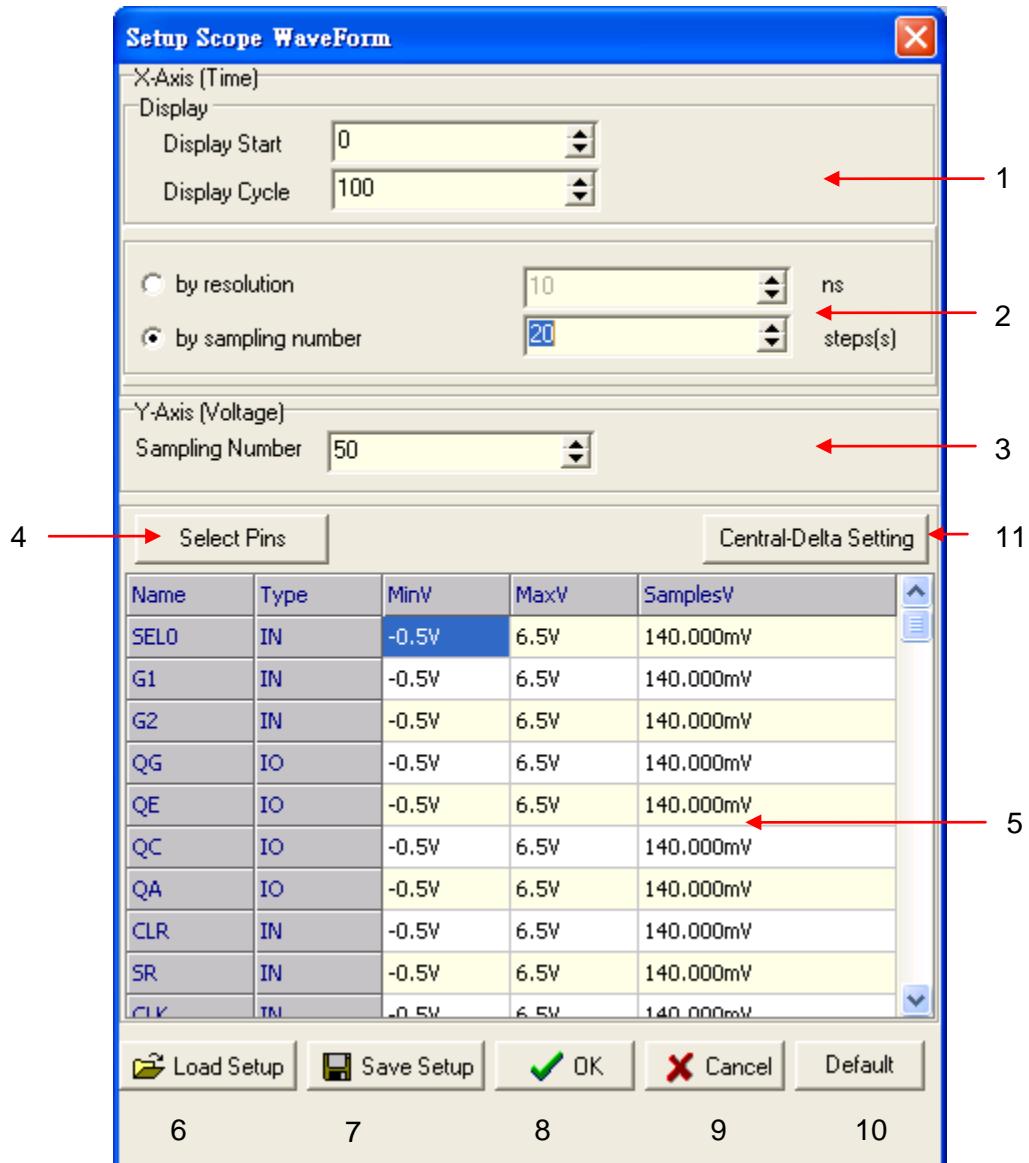


Figure 13-7 Scope Waveform Parameter Setup Window

No.	Function	Description
1	X-Axis Display	Specify how many cycles to display, and start from which cycle in the view (start from zero).
2	Sampling Method	By resolution: The sampling depends on resolution. By sampling number: The sampling resolution depends on cycle time / sampling number.
3	Y-Axis Sampling Number	The Y-Axis sampling number. That means the resolution voltage of each pin will be $(\text{MaxV} - \text{MinV})/\text{Sampling No.}$
4	Select Pin(s)	Specify the pin(s)/group(s) you care about.
5	Selected pin(s) Information	The information of selected pin(s), includes name, type, MinV and MaxV.
6	Load Setup	Load the setup information from a specified file.
7	Save Setup	Save the setup information to a specified file.
8	OK	Finish the parameter setting.

9	Cancel	Cancel the parameter setting.
10	Default	Setting, By sampling number: 20 (steps). Y-Axis Sampling Number: 50; MinV: -0.5V; MaxV: 6.5V. SamplesV: 140.000mV.
11	Central-Delta Setting	Set central and delta value by pin. (See Figure 13-8)

Table 13-1 Waveform Parameter Setup Window Function List

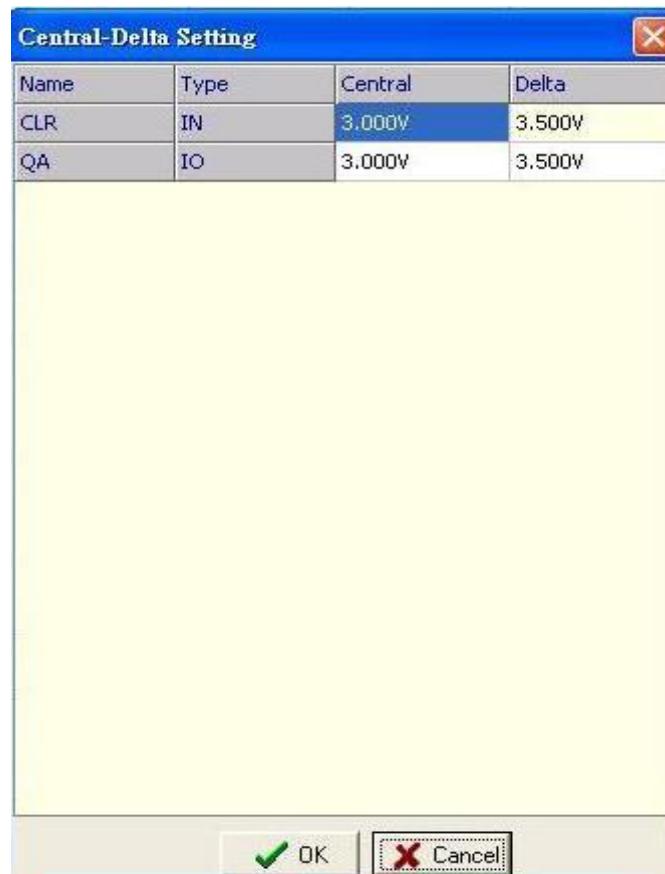


Figure 13-8 Central-Delta Setting Form

13.5 Display a Scope Waveform

13.5.1 Waveform Display Window

This window displays waveform information.

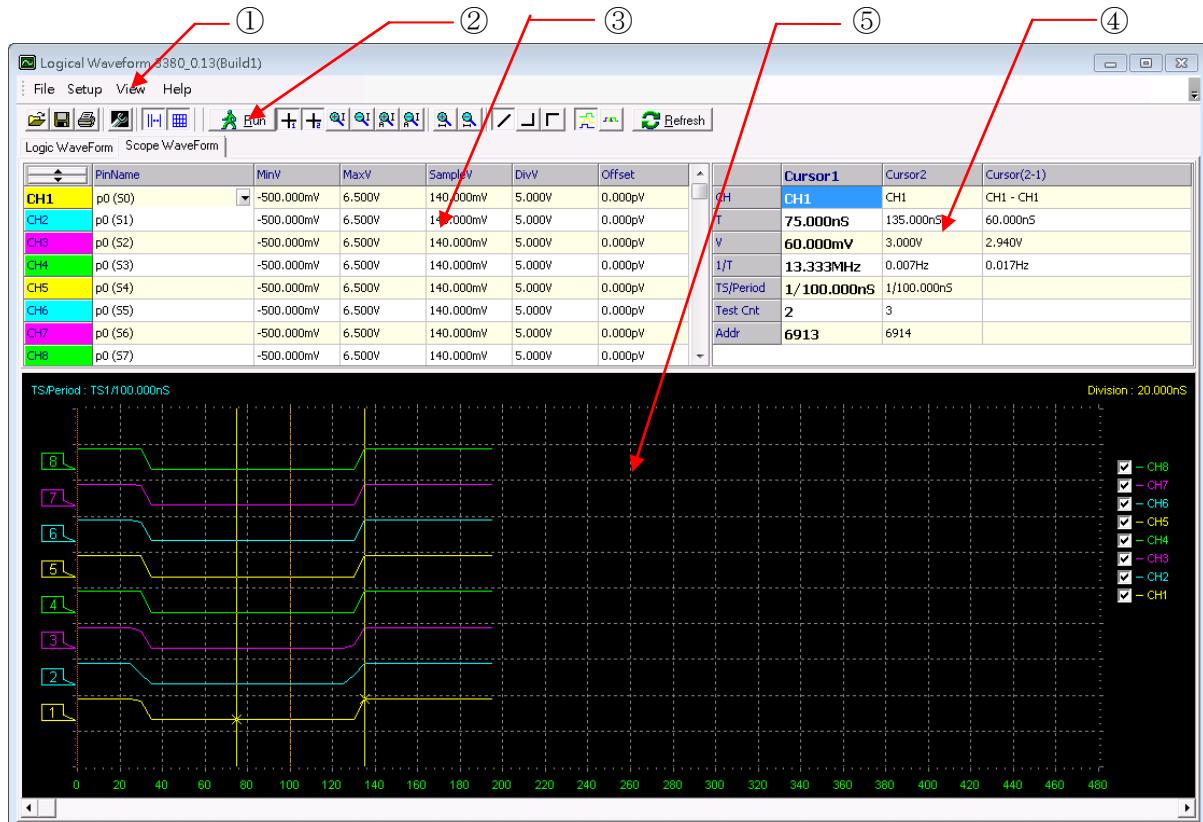


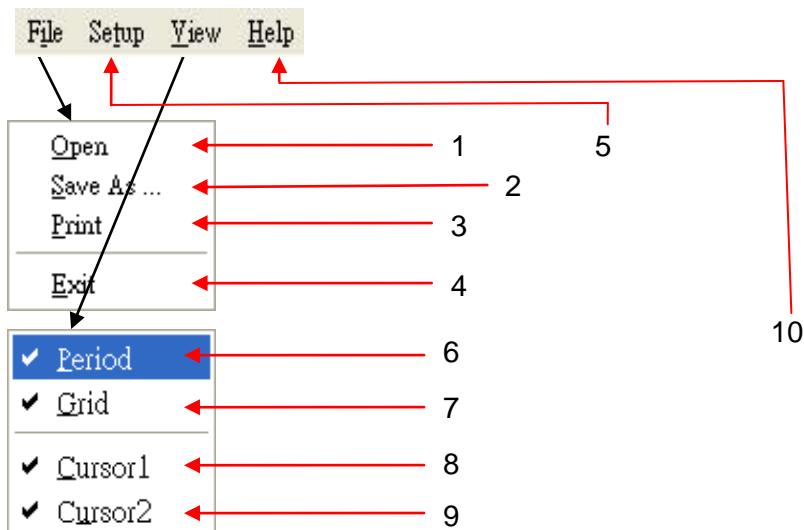
Figure 13-9 Scope Waveform Display Window

No.	Function	Description
1	Menu bar	Select a function for waveform display window manipulation.
2	Tool bar	Speed function button (see Table 13-4).
3	Channel status area	Display the status (pin name, max voltage, min voltage, sample voltage, voltage resolution, and offset) of each channel.
4	Cursor status area	Display the cursor1/2 status, include channel, time, voltage, 1/t, timing set, and period.
5	Display area	Display the actual waveform.

Table 13-2 Scope Waveform Display Window Function List

13.5.2 Manipulate Menu Bar & Tool Bar

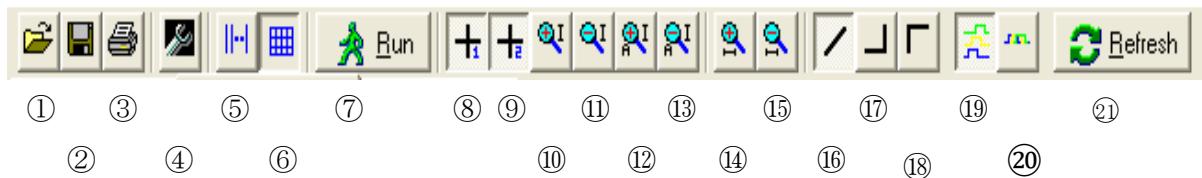
13.5.2.1 Menu Bar



No.	Function	Description
1	Open File	Open an existed scope waveform file (*.swg).
2	Save File As	Save scope waveform (just save the display waveform except setup parameters) to a file (*.swg).
3	Print Waveform	Print the displayed waveform.
4	Exit	Exit scope waveform.
5	Setup Parameter	Parameter setup dialog will appear.
6	Period View	Show/Hide period line.
7	Grid View	Show/Hide grid line.
8	Cursor1 View	Show/Hide Cursor1
9	Cursor2 View	Show/Hide Cursor2
10	Help	Launch waveform help.

Table 13-3 Menu Bar Function List

13.5.2.2 Tool Bar



No.	Function	Description
1	Open File	Open an existed scope waveform file (*.swg). Note that when open an existed scope waveform file (*.swg), user can't click RUN again!
2	Save File As	Save scope waveform (just save the display waveform except setup parameters) to a file (*.swg).

3	Print Waveform	Print the displayed waveform.
4	Setup Parameter	Parameter setup dialog will appear.
5	Period View	Show/Hide period line
6	Grid View	Show/Hide grid line.
7	Run: Burst Pattern	Burst the pattern then the actual waveform will show.
8	Cursor1	Active Cursor 1
9	Cursor2	Active Cursor 2
10	Zoom In (Y axis)	Zoom in the active channel waveform in Y axis.
11	Zoom Out (Y axis)	Zoom out the active channel waveform in Y axis.
12	Zoom In All (Y axis)	Zoom in all channels waveform in Y axis.
13	Zoom Out All (Y axis)	Zoom out all channels waveform in Y axis.
14	Zoom In (X axis)	Zoom in X axis (time).
15	Zoom Out (X axis)	Zoom out X axis (time).
16	Point Connect Mode: direct	Set point connect mode to direct connect.
17	Point Connect Mode: right then up	Set point connect mode to connect right first then up.
18	Point Connect Mode: up then right	Set point connect mode to connect up first then right
19	Split channel	Split each channel.
20	Combine channel	Combine all channels.
21	Refresh	Refresh all the waveforms in the displayed area.

Table 13-4 Tool Bar Function List

13.6 Relation between Logic Waveform & Scope Waveform

In the waveform tool:

- (1) Choose the region select mode.
- (2) Mark the region you want to view by scope waveform
- (3) Click the right key of mouse.

If you select “Setup Scope”, the scope parameter setup dialog will appear. If you select “Run Scope”, the scope waveform of selected pins will be displayed.

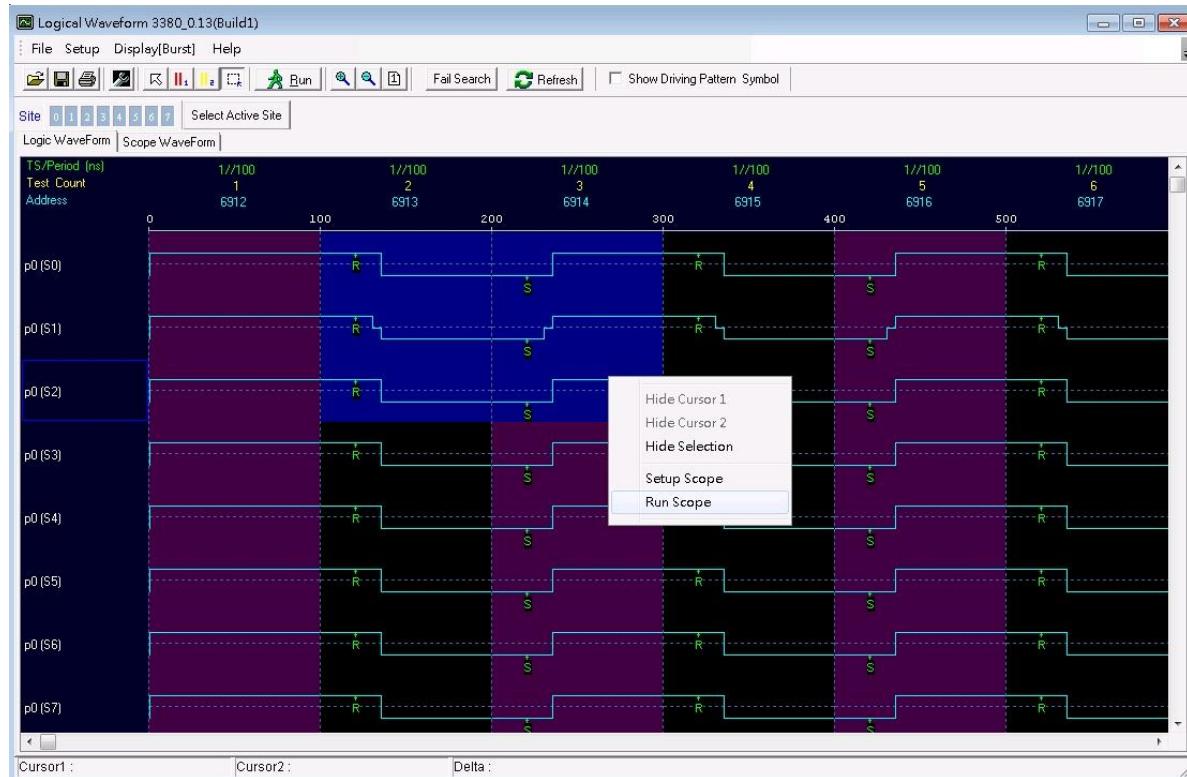


Figure 13-10 Relation between Waveform Tool and Scope Waveform

14. Pin Margin Acquisition

14.1 Overview

The pin margin is a program for checking DUT operating margin and acquiring failure analysis data.

No.	Function	Description
1	Execution	Execute pin margin.
2	Stop	Stop pin margin.
3	Initialization	Restore the acquisition conditions to those prevailing at startup.
4	Save test conditions	Save the current setup conditions into a file.
5	Load test condition	Load the saved test conditions.
6	Plot save	Save an acquired plot into a binary file.
7	Load plot	Load the saved binary plot file.
8	Plot print	Print an acquired plot into the printer.

Table 14-1 Pin Margin Function List

14.2 Start & Exit Pin Margin

The Pin Margin is to be started from the Craft.

Before starting pin margin, please be sure to place the plan in a break state with test plan debugger.

- (1) Perform break setup
- (2) Launch Pin Margin
Click Pin_Margin icon (Figure 14-1) in system control window. The pin margin window then opens. The pin margin window looks like Figure 14-2.
- (3) Exit Pin Margin
Choose File→Exit to close pin margin.

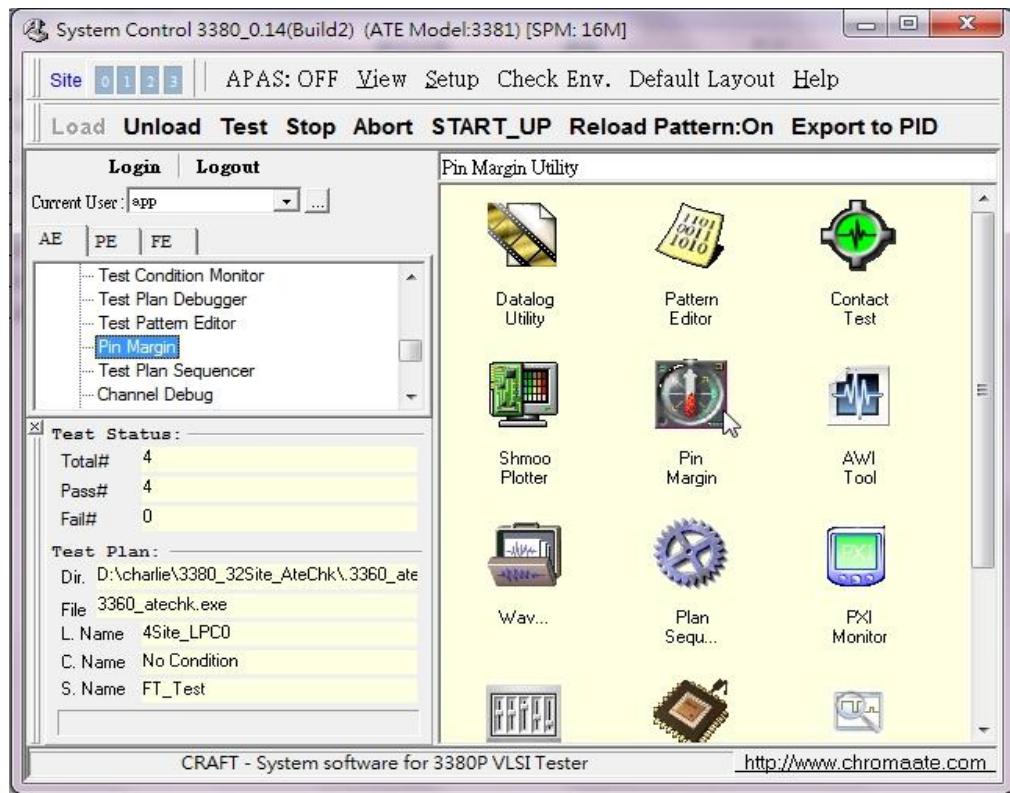


Figure 14-1 CRAFT: System Control Window

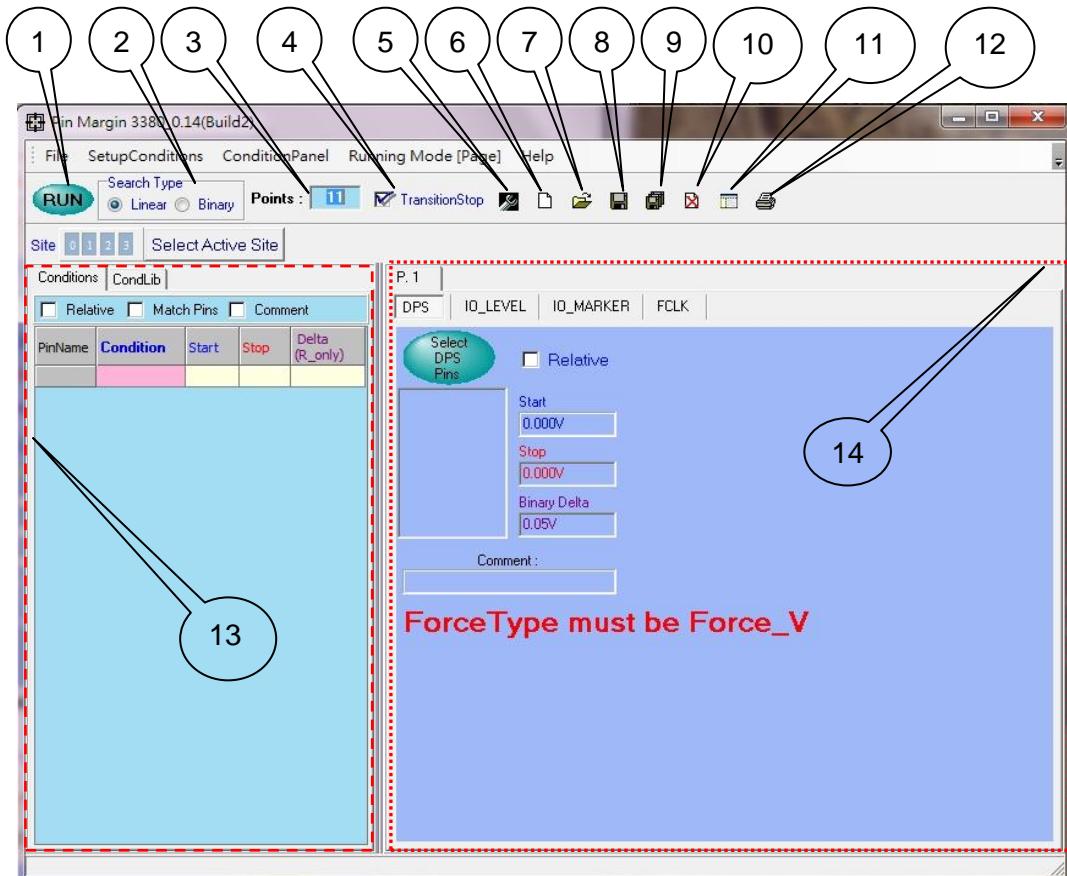


Figure 14-2 Initial Window of Pin Margin

14.3 Overview of Initial Window (Figure 14-2)

- (1) Run Button:
Press to start running linear or binary search.
- (2) Search Type:
Choose to search by linear or binary mode.
- (3) Points of linear search:
For linear search only. It makes the resolution of linear search. If you choose binary search in (2), it will be disabled.
- (4) Transition Stop:
For linear search only. Generally speaking, binary search is stopped to search when the first transition is found. If running the linear search with the "Transition Stop" checked, linear search will keep running no matter the first transition is found or not, and display all the pass/fail results of each point.
Like "Points of linear search", if choosing binary search, it will be disabled too.
- (5) Setup Button:
Press it to setup the test condition.
- (6) New Page Button:
Press it to create a new page. In Figure 14-2, there is only one page (P.1) displayed, if press this button, there will be a new page (P.2) created.
- (7) Open the saved binary pin margin plot file or open the saved test condition library.
- (8) Save the pin margin plot of current page to a binary file.
- (9) Save all pin margin plots of all pages to a binary file.
- (10) Delete current page.
- (11) To hide/display the test condition panel (Figure 14-2(13)).
- (12) Print out pin margin plot of current page.
- (13) Test condition panel:
Display the test condition of current page and the test condition library.
User can modify each condition here.
- (14) Setup/Plot area:
Set the test condition of each pin here. Also the pin margin plot will be displayed here.
Press the setup button (Figure 14-2(5)) to change from setup window to pin margin plot window, press again to change from pin margin plot window to setup window.

14.4 Overview of Main Menu

14.4.1 File Menu

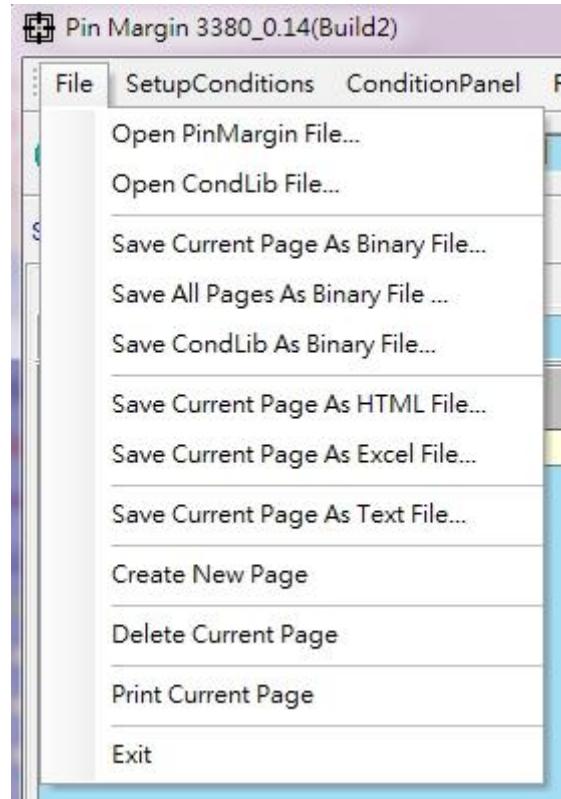


Figure 14-3 File Menu

- (1) Open Pin Margin File: Open the saved binary pin margin plot file.
- (2) Open CondLib File: Open the saved test condition library.
- (3) Save Current Page As Binary File: Save the pin margin plot of current page to a binary file.
- (4) Save All Pages As Binary File: Save all pin margin plots of all pages to a binary file.
- (5) Save CondLib As Binary File: Save all test conditions in the CondLib list to a binary file.
- (6) Save Current Page As HTML File: Save the pin margin plot of current page to a HTML file.
- (7) Save Current Page As Excel File: Save the pin margin plot of current page to an Excel file.
- (8) Save Current Page As Text File: Save the pin margin plot of current page to a text file.
- (9) Create New Page: Create a new page to the plot area.
- (10) Delete Current Page: Delete current page in the plot area.
- (11) Print Current Page: Print out the pin margin plot of current page.
- (12) Exit: Exit the pin margin utility.

14.4.2 Setup Conditions

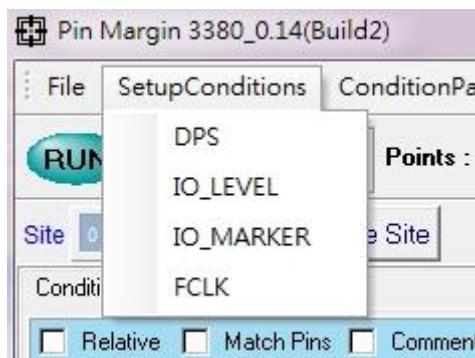


Figure 14-4 Setup Conditions Menu

Setup window has many sub-windows, as the list in this “Setup Conditions” menu. Click any one to display the setup window.

14.4.3 Condition Panel

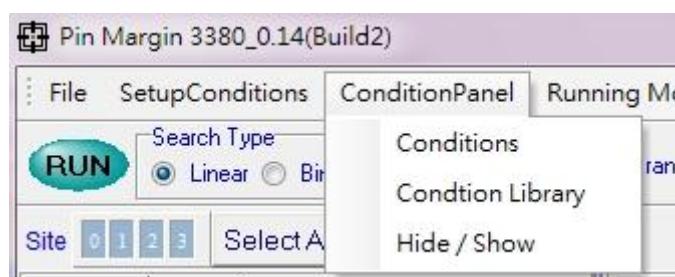


Figure 14-5 Condition Panel Menu

The condition panel (Figure 14-2 (13)) includes two pages, conditions list and condition library.

- (1) Conditions: Display the conditions list.
- (2) Condition Library: Display the condition library.
- (3) Hide / Show: To hide/display the test condition panel.

14.4.4 Running Mode

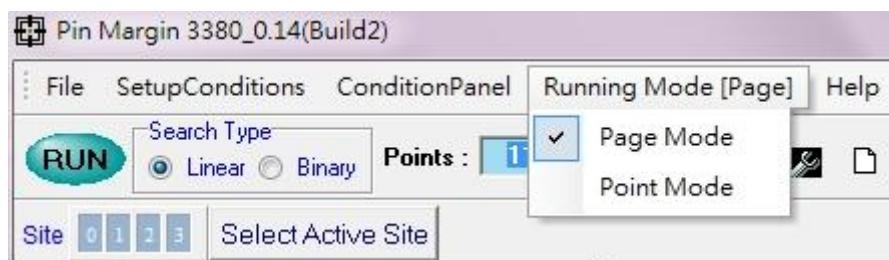


Figure 14-6 Running Mode Menu

- (1) Page Mode: While running, the screen doesn't show the result of each step only display the margin value of each pin.

- (2) Point Mode: While running, the searching result of each step and the margin value of each pin are all displayed.

14.5 Setup Test Conditions

User can set the search conditions of DPS, IO_LEVEL, LCD_LEVEL, IO_MK, LCD_MK pins, FCLK.

- (1) Press the pin selection button to popup the “Select Pin Dialog” (Figure 14-8).
- (2) Select the pins you want to get the margin value. After the selection is finished, all the selected pins will be displayed on the selected pins list.
- (3) Key in start/stop values as the searching range.
- (4) Key in “Binary Delta” for binary search to stop.
- (5) To add a comment to a plot display of pin margin, key in a desired character string in the comment area.
- (6) Click the right key of mouse and select “Add To This Page” (Figure 14-9). If you want to add this test condition to “Test Condition Library”, then select the “Add to Cond_lib”.
- (7) If you want to use “Relative”, you just click the mouse on the CheckBox.
- (8) If you want to use “Match Function”, you just click the mouse on the CheckBox, and the match pin selection button will be displayed. Not all test conditions has this selection.
- (9) Press “Select Match Pins” button to popup “Select Pin Dialog”.
- (10) Select the match pins you want to mask it.

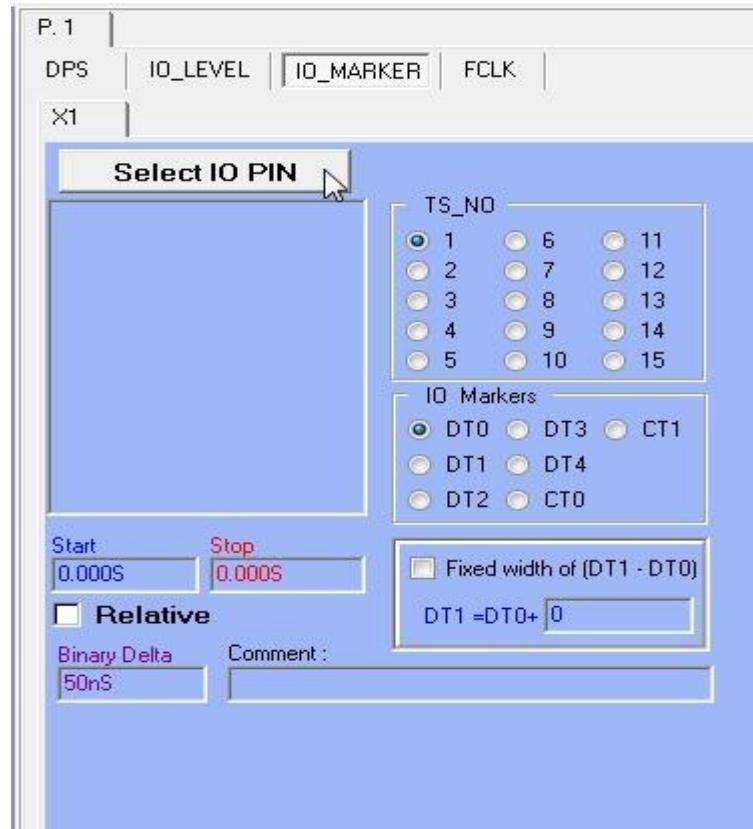


Figure 14-7 Setup Window of IO_MARKER

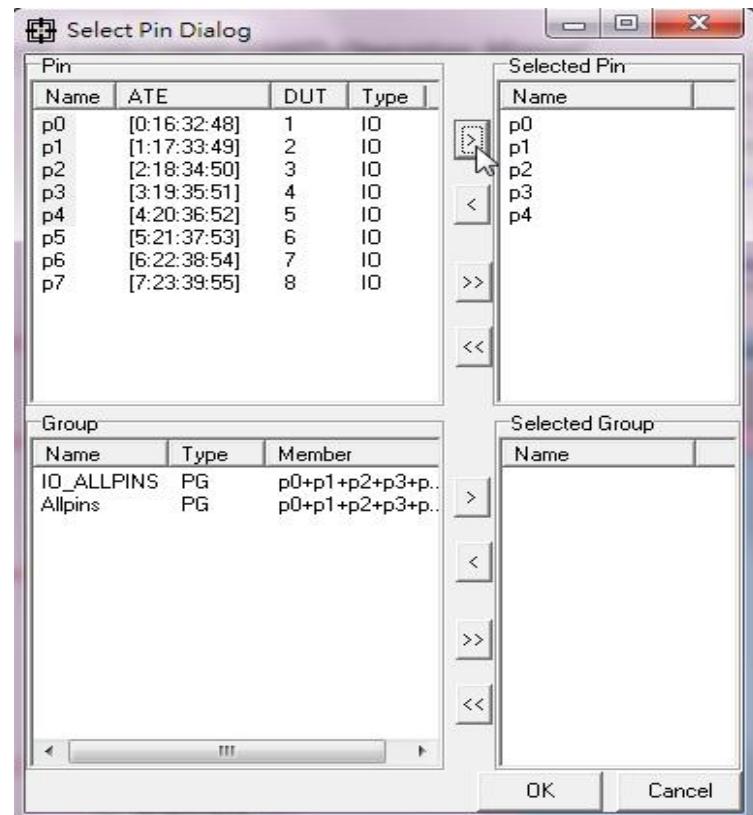


Figure 14-8 Pin Selection Dialog

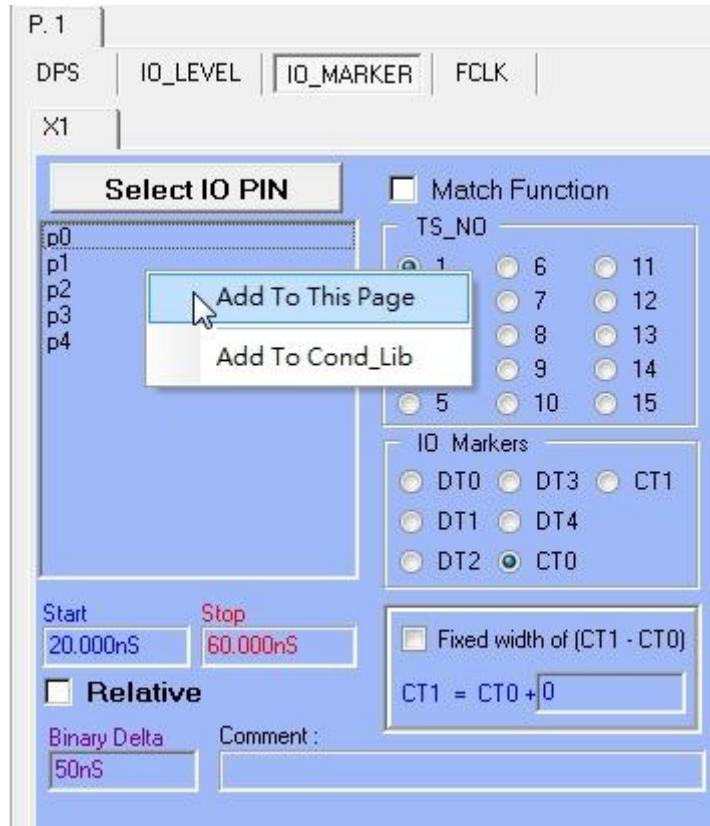


Figure 14-9 Popup menu of setup window

14.6 Conditions List

There are 8 columns and 3 checkboxes in the conditions list as Figure 14-10. The 3 checkboxes are selecting columns of “Relative”, “Match Pins” and “Comment”, if you want to display or hide the columns.

- (1) Pin Name: Display the selected pin name on setup window.
- (2) Symbol: All possible symbols are described in Section 14.8 “Symbol List”.
- (3) Relative: Click the checkboxes of columns can enable or disable it. If the column of “Relative” is enabled, “start” and “stop” columns’ color will be changed, and add red marks on the upper right of “start” and “stop” columns.
- (4) Start: Display the “Start Value” on the setup window user can modify it here.
- (5) Stop: Display the “Stop Value” on the setup window user can modify it here.
- (6) Binary Delta: If the search mode is “Binary”, this column will be the “Binary Delta”; user can modify the value here. If the search mode is “Linear”, then this column is read only, because the delta value (resolution) of linear search depends on the “Points” (Figure 14-2 (3)).
- (7) Match Pins: The selected match pins show on this column.
- (8) Comment: Display the comment on setup window, and it’s editable.

Click the right key of mouse on test conditions window, there is a menu popped up (Figure 14-11), user can delete conditions from the list or add the selected rows of condition to the condition library.

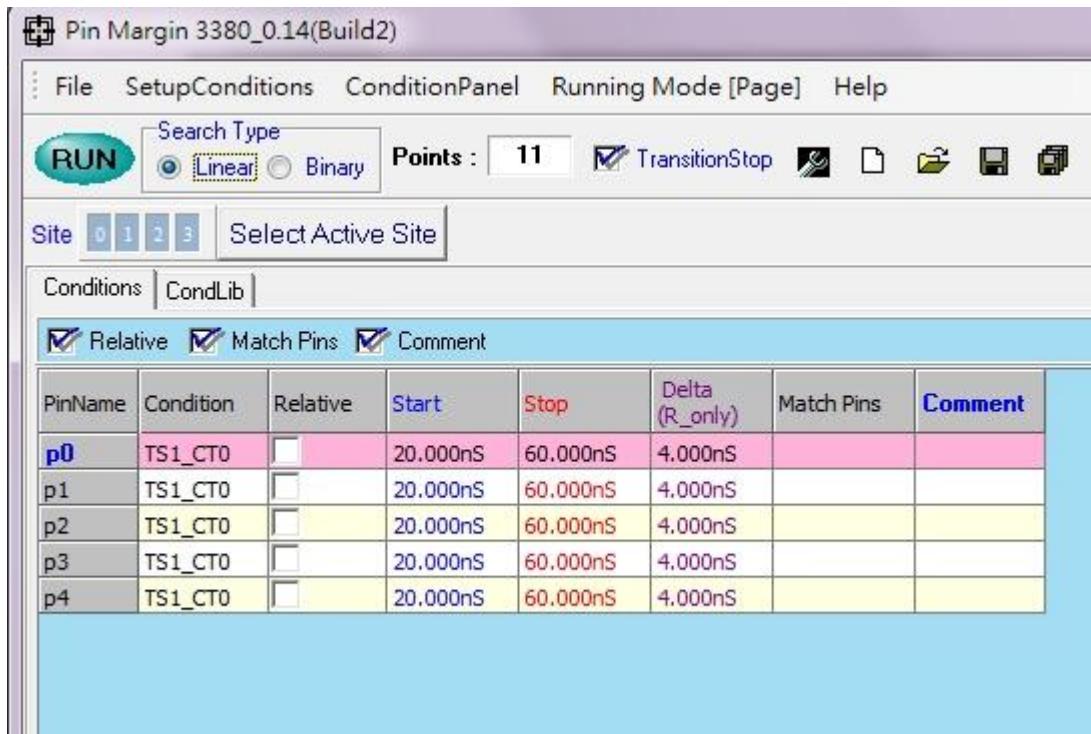


Figure 14-10 Test Conditions for Linear Search



Figure 14-11 Popup Menu of Test Conditions Window

14.7 Condition Library

The screenshot shows a software interface for managing test conditions. At the top, there is a navigation bar with tabs for "Site" (containing buttons for 0, 1, 2, 3) and "Select Active Site". Below this is another tab bar with "Conditions" and "CondLib" (which is currently selected). The main area contains a table with the following data:

PinName	Condition	Relative	Start	Stop	Binary Delta
p0	TS1_CT0	<input checked="" type="checkbox"/>	15.000nS	60.000nS	50.000nS
p1	TS1_CT0	<input checked="" type="checkbox"/>	15.000nS	60.000nS	50.000nS
p2	TS1_CT0	<input type="checkbox"/>	15.000nS	60.000nS	50.000nS
p3	TS1_CT0	<input type="checkbox"/>	15.000nS	60.000nS	50.000nS
p4	TS1_CT0	<input type="checkbox"/>	15.000nS	60.000nS	50.000nS

A context menu is displayed over the row for pin p3, containing the following options:

- Add to this Page
- Delete the selected Rows
- Delete All
- Save CondLib As...
- Open CondLib File...

Figure 14-12 Condition Library

For condition library, there are 8 columns as Conditions List described in Section 14.6, but it only displays the “Binary Delta” (Figure 14-12).

Also, click the right key of mouse user can select rows of condition to delete or to add to conditions list. Condition library can be saved as a binary. If you want to open the saved condition file, select “Open CondLib File ...” in popup menu.

14.8 Symbol List

All possible symbols are listed as below.

- DPS related
“Search_DPS”.
- PREF related
“Search_PREF”.
- IO_LEVEL related
“VIL”, “VIH”, “VOL”, “VOH”, “IOL”, “IOH”, “VREF”, “VOL_minVOH”, “VOH_maxVOL”.
- LCD_LEVEL related
“VOL”, “VOH”, “VREF”, “VOL_minVOH”, “VOH_maxVOL”.
- IO_MK related
If you select a timing set no., a marker and not check the “Fixed Width”, the symbol will

be one of below.

"TS1_DT1", "TS1_DT2", "TS1_DT3", "TS1_DT4", "TS1_CT0", "TS1_CT0",
 "TS2_DT1", "TS2_DT2"..... "TS15_DT1", "TS15_DT2".

However, if you set "Fixed Width of ..." that means set the selected io_markers with the fixed timing period as you key in the fixed width field (figure 14-13).

For example, in figure 14-13, the symbol is "TS1_DT0_DT1_FIX" and the fixed width titled as "DT1 – DT0" is 20.000nS. This means that when set DT0 to 20nS, DT1 will be set to 40nS automatically. And when DT0 is set to 40ns, DT1 will be set to 60nS.

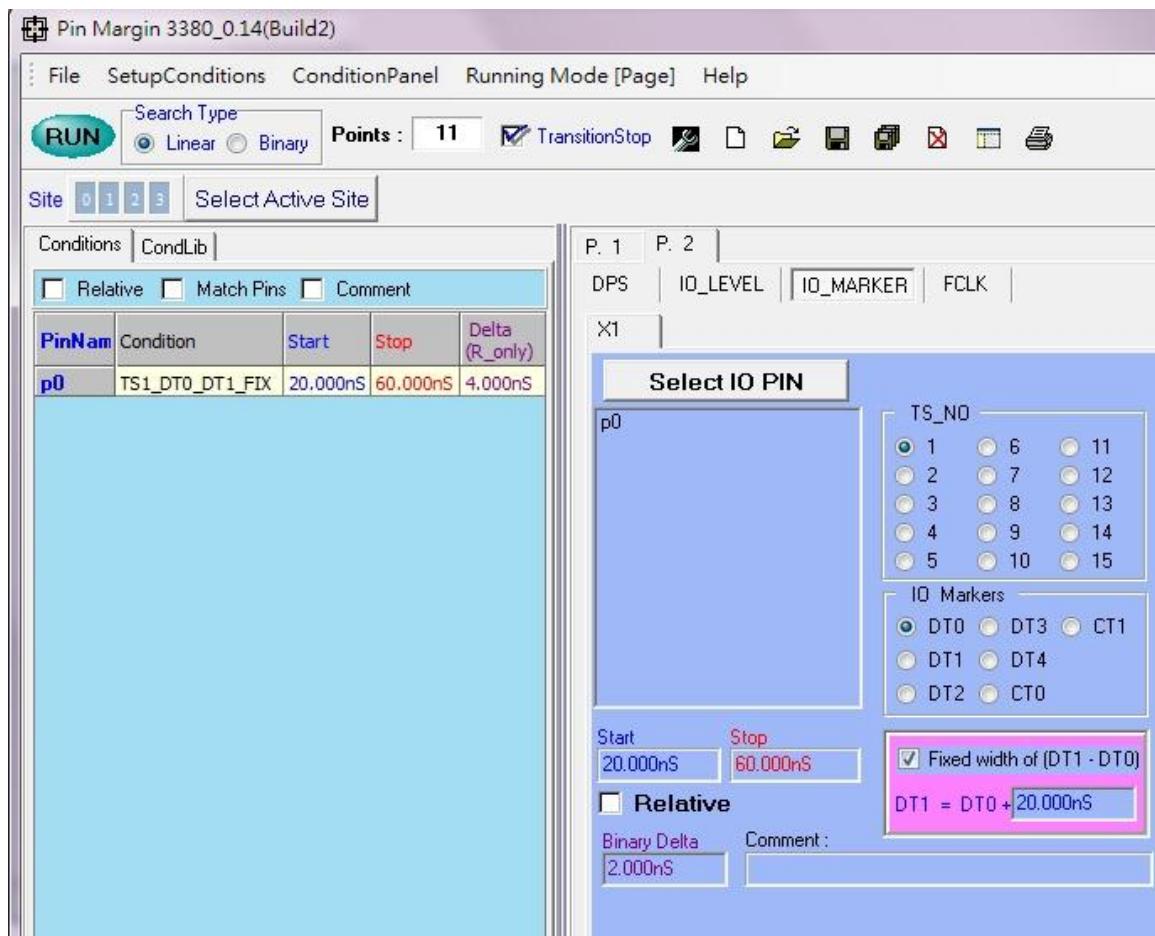


Figure 14-13 Setup IO_MK with Fixed Width

- LCD_MK related
 "TS1_LCD_MK", "TS2_LCD_MK", "TS3_LCD_MK", "TS4_LCD_MK",.....
 "TS11_LCD_MK", "TS15_LCD_MK",
- FCLK related
 "FCLK RATE", "Rising Edge", "Falling Edge".

14.9 Search Mode Designation

Selecting either linear or binary search from Search Type: Linear/Binary (Figure 14-2(2)) can specify the search mode for pin margin execution.

Linear Search: Increase/decrease the setting for symbol in the unit of increment value (Delta) so that the start value (Start) is positioned at the leftmost end of the plot while the end value (End) is positioned at the rightmost end of the plot.

Binary Search: Conduct a binary search to locate a PASS-FAIL transition point when there is one such transition point between the start and end values.

- (1) Designate the linear search mode:
Click “Linear” on the Search Type (Figure 14-2 (2)).
- (2) Designate the binary search mode:
Click “Binary” on the Search Type (Figure 14-2 (2)).

14.10 Execute Pin Margin

The procedures for executing pin margin are described below.

- (1) Load test plan and break on certain JUDGE statement.
- (2) Setup and add test conditions to the conditions list.
- (3) Decide the search mode (Linear or Binary). If choose the binary search mode, check the “Points” and “Transition Stop”.
- (4) Press “Run” button to get Pin Margin Plot.
- (5) While running, there is an “Abort” button appears on the right top of window (Figure 14-14). To stop the current running pin margin program, click “Abort” button.

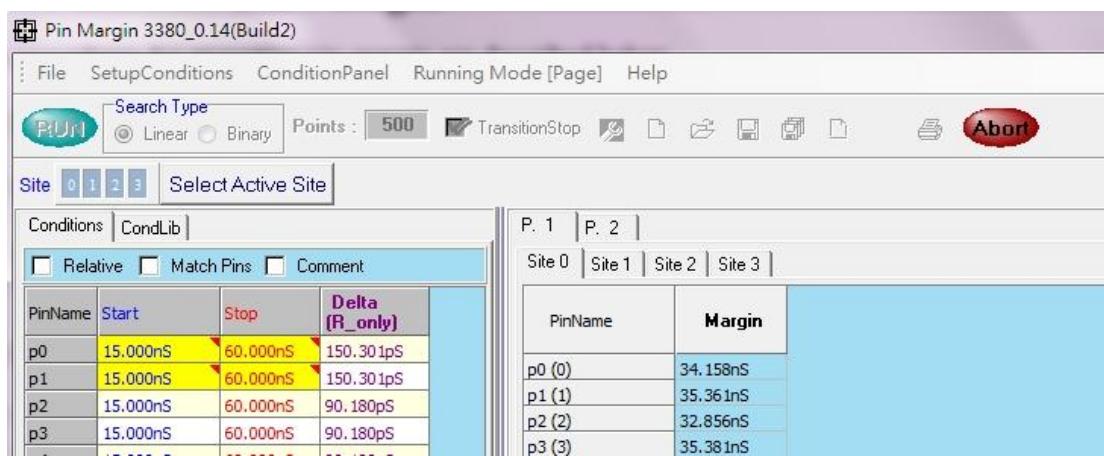


Figure 14-14 Press “Abort” Button to Stop Running

14.11 Descriptions of Displayed Contents

If the test plan is a multi site case, then each site has an exclusive sub-page to display the plot.

The plot is titled with the search type. For binary search, the “point number” will also be displayed on the title ((1) in Figure 14-16 to Figure 14-18).

The contents of pin margin plot window are described as below.

- (1) Pin Name: The same as item 1 in Section 14.6, display the pin name on the condition list.
- (2) Symbol: The same as item 2 in Section 14.6, display the symbol on the condition list.
- (3) Margin: The found pin margin value after searching. It's impossible to get the margin value of the masked pin. For the masked pin, we put “Mask” in this field.

For linear search:

When there is a transition occurred, no matter transition from pass to fail or from fail to pass, the margin value is the value at that transition pass point. If no transition is occurred, this means all points are pass or fail. If all the searched points are pass, then this field is displayed as “PP”; otherwise, if all points are fail, then “FF” is displayed.

For binary search:

If the test results of the first two ends (“Start” and “Stop”) are pass or fail, then stop the search, and “PP” or “FF” is displayed.

If the test results of the first two ends are one pass and one fail, and the delta value of the two ends is greater than “binary delta”, then keep going for searching the pin margin until reach the “binary delta”. The results of the last two points must be one pass and one fail. The condition value of the last pass point is the pin margin value.

It's impossible to get the margin value of null pin. For the masked pin, we put be “Null” in this field.

- (4) Start: Display the start value on the condition list.
- (5) Stop: Display the stop value on the condition list.
- (6) Delta / Binary Delta: Display the delta value on the condition list.
- (7) Last Fail Address: Display the last fail address.
- (8) Fail Label: Display the fail label.
- (9) Fail Offset: If the margin value is found, as described in item (3), there must be a transition of pass to fail or fail to pass. Get the fail address of that fail point in the transition, and this fail address is named as “Last Fail Address”. Since the absolute pattern memory address equals to a label address plus offset between the labels. So, we can say that, “Last Fail Address” = “Fail Label” + “Fail Offset”.

If fail to get the margin value after searched, the margin filed is “PP”, “FF”, or “Mask”, (7), (8) and (9) will be empty.

(10) Match Pins: Display the match pins from the condition list.

(11) Comment: Display the comment on the condition list.

(12) Results: Display the pass/fail results of each searching point.

Linear search:

The maximum linear search point is “Points of Linear search” (Figure 14-2 (3)). If “Transition Stop” (Figure 14-2 (4)) is not checked, there will be exactly the maximum points of searching results displayed. And all the results are sequentially displayed in the order of the condition value, the condition value of the first result is “Start”, the second one is “Start + Delta” and the third one is “Start + 2*Delta”, ...etc.

For “Transition non stop” mode, the condition value of the last point must be the same as “Stop” value.

Binary search:

The point count of the result depends on “binary delta value” and when is the transition occurred. The displayed points are not in the linear order, but in the binary search order.

Move the cursor to any result cells, the value of that point will be displayed not only is as the hint but also be displayed on the status bar.

If pin margin is found, the cell represents the margin value will be marked with a red triangle.

The contents of (4),(5),(6),(7),(8),(9),(10),(11),(12) are all options, user can select these by checking the option in the top of plot area (Figure 14-15).

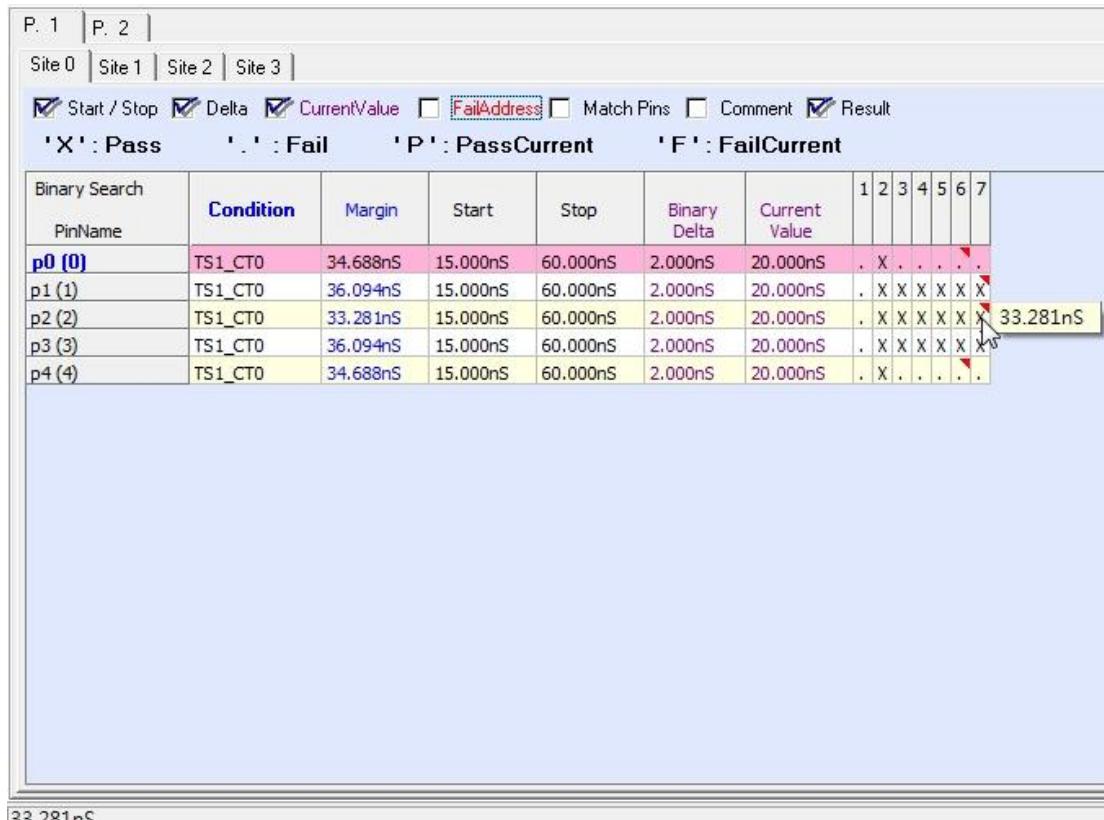


Figure 14-15 Pin Margin Plot Window (Binary Search)

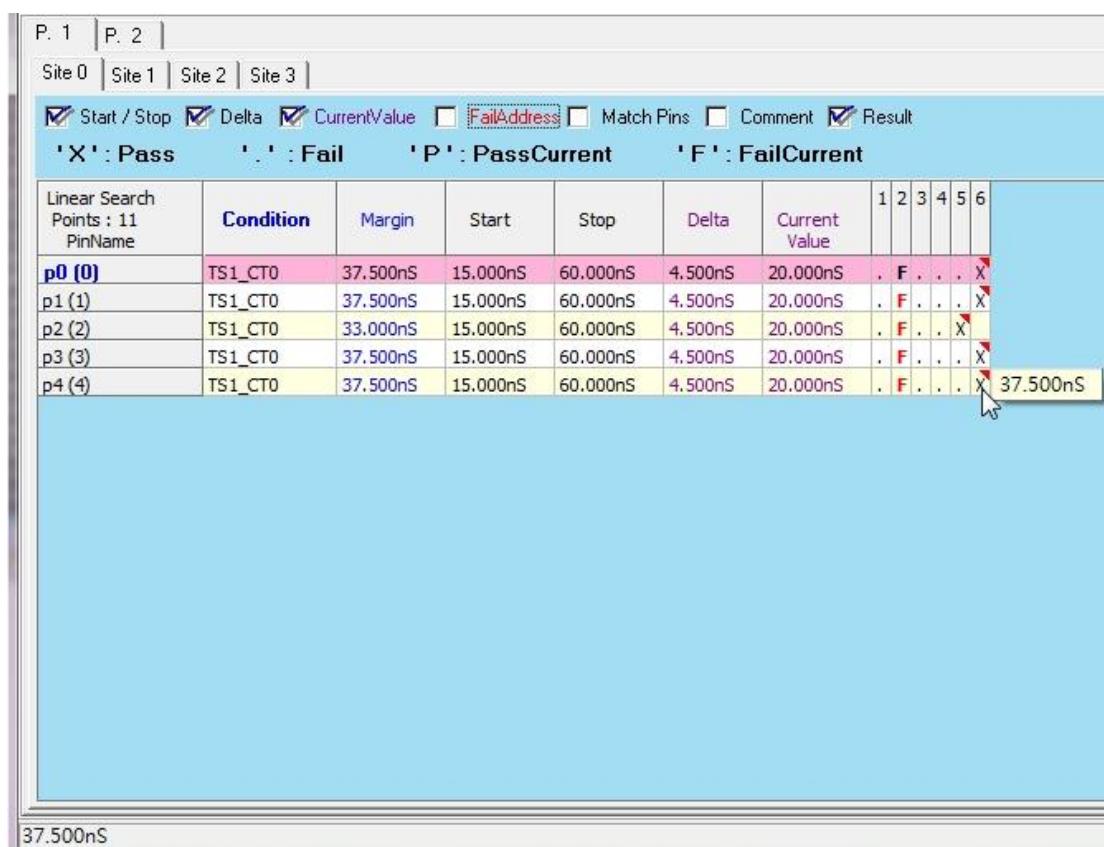


Figure 14-16 Pin Margin Plot Window (Linear Search, Transition Stop)

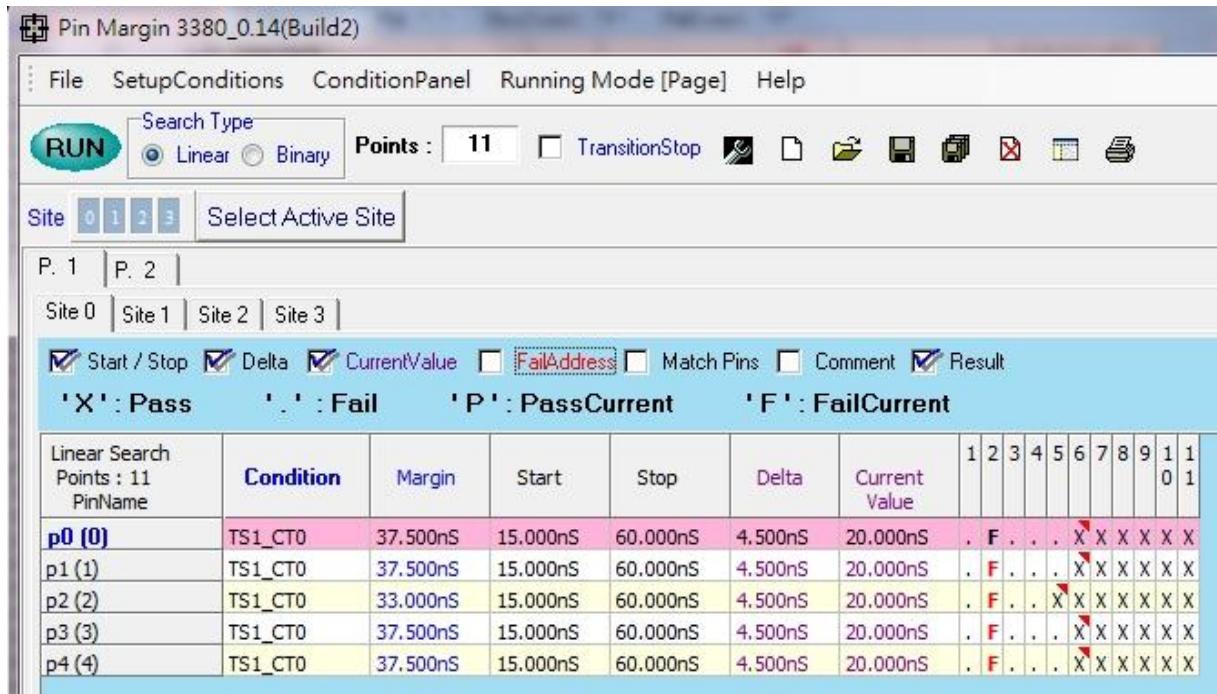


Figure 14-17 Pin Margin Plot Window (Linear Search, Non Stop)

14.12 Print a Plot

Press the print icon (Figure 14-2(12)) to popup a preview window. Press “Print” button of the preview window to print the plot. The print out format is the same as you see in the plot area, all the selected display options will be print out. The output will be titled with the print time, name and site number of test plan.

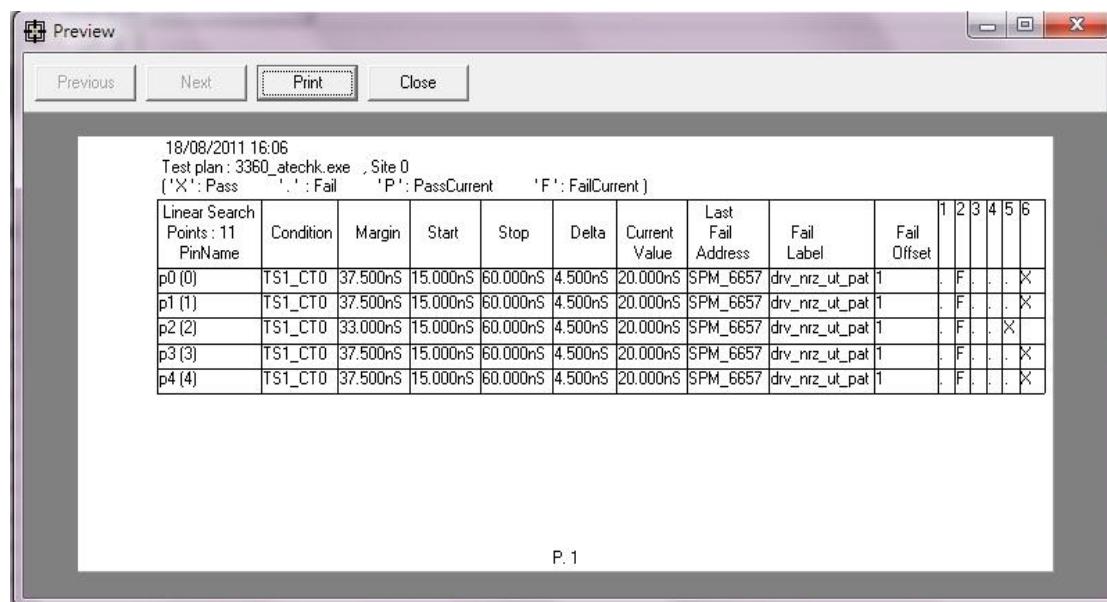


Figure 14-18 Preview Window

14.13 Save Pin Margin Plot

The pin margin plot can be saved into a binary file by pressing the “Save”, “Save All” button, or selecting “Save Current Page As ...”, “Save All Pages As ...” from file menu.

Note : The pin margin plot extension file name is ".pmg".

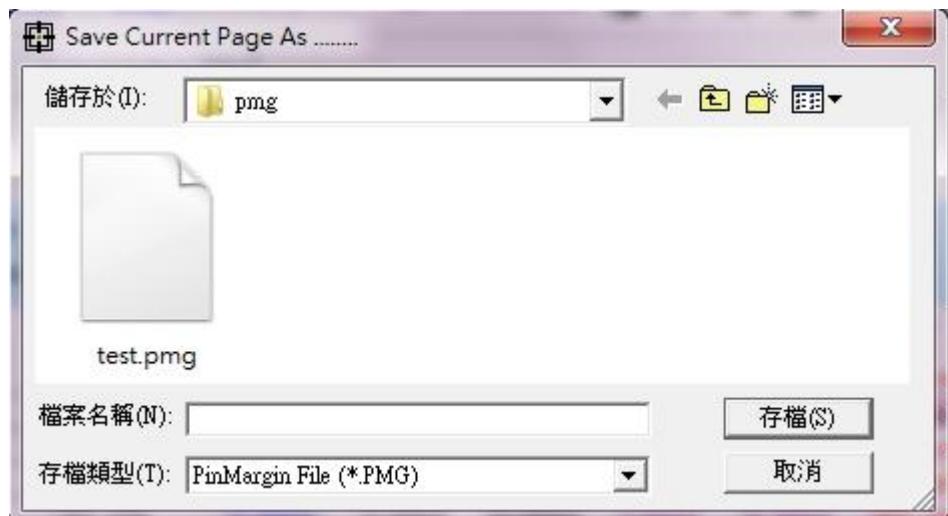


Figure 14-19 Pin Margin Plot Save Window (Save Current Page Only)

14.14 Save Condition Library

All the test conditions in CondLib can be saved to a binary file by selecting “Save CondLib As ...” in file menu.

Note : The condition library extension file name is ".pcl".



Figure 14-20 Condition Library Save Window

14.15 Open Saved Pin Margin Plot File

The saved pin margin plot file can be loaded to re-display.

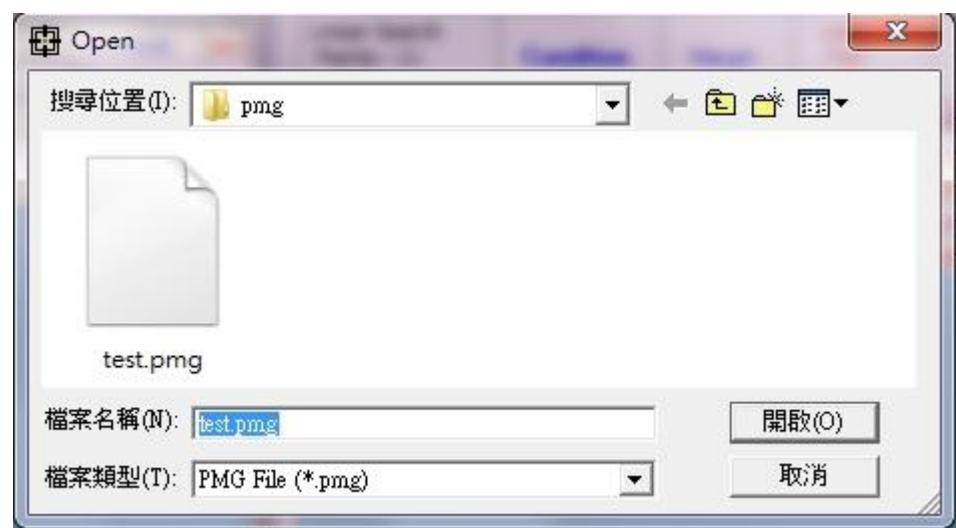


Figure 14-21 Load Pin Margin Plot File Window

When loading the saved plot file, current page won't be changed, the system will create new pages for re-display, and the page tab is embraced with " []".

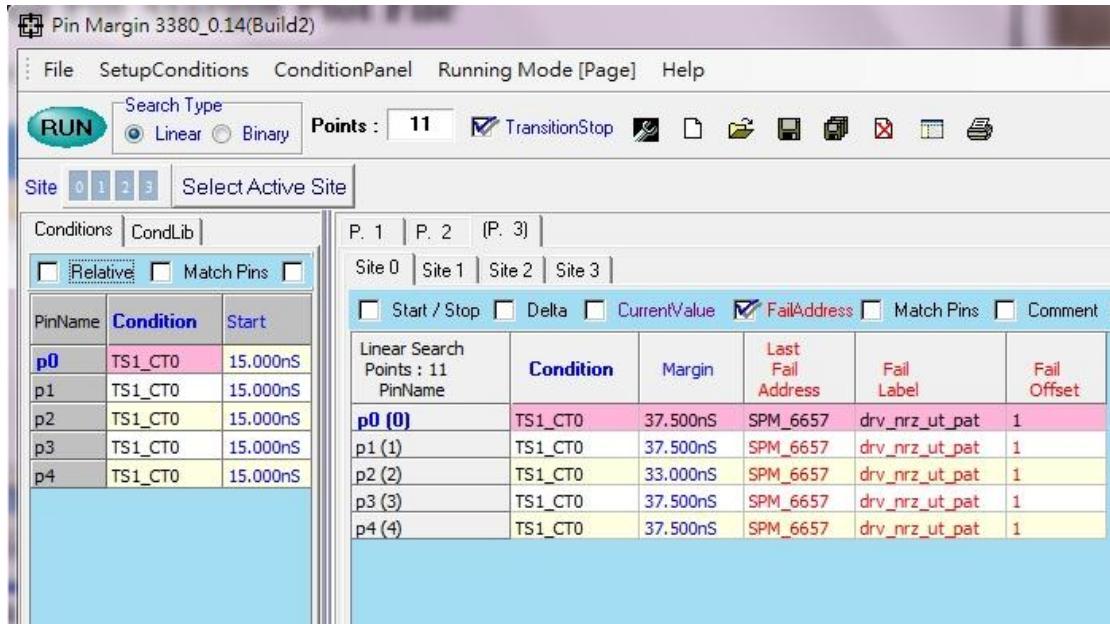


Figure 14-22 Page Tab of loaded Pin Margin Plot

15. Channel Debug

15.1 Channel Debug Overview

The channel debug is a plan program test condition debug tool which provides the means of referencing and establishing the test condition setup for the tester hardware on an individual pin.

No.	Function	Description
1	Site selection	Select an operation target site.
2	Pin Mode reference/change	Reference, change the pin mode of a single pin.
3	Timing reference, change	Reference, change the timing of a single pin.
4	Level reference, change	Reference, change the level of a single pin.
5	Relay reference, change	Reference, change the relays of a single pin.

Table 15-1 Channel Debug Function List

15.2 Start & Quit Channel Debug

(1) Start the test condition monitor

1. The test condition monitor starts when you click Channel Debug icon on System Control window.

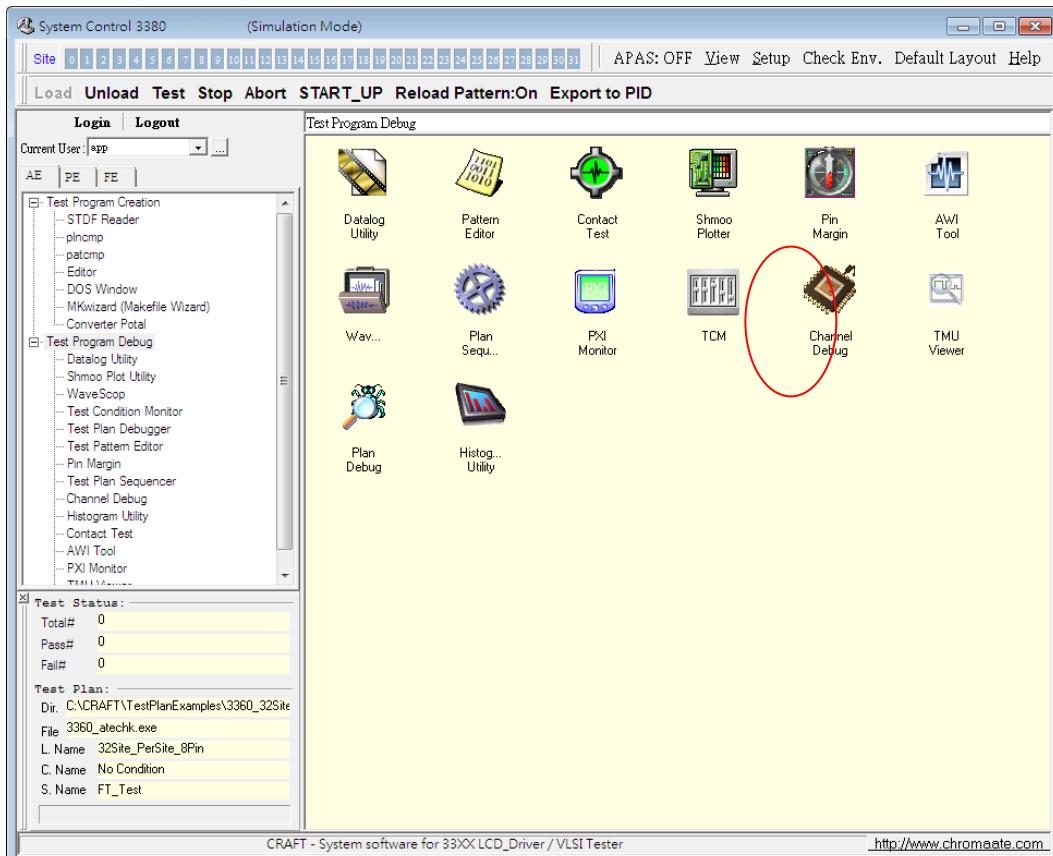


Figure 15-1 CRAFT: System Control Window

2. Channel Debug window is popped up.

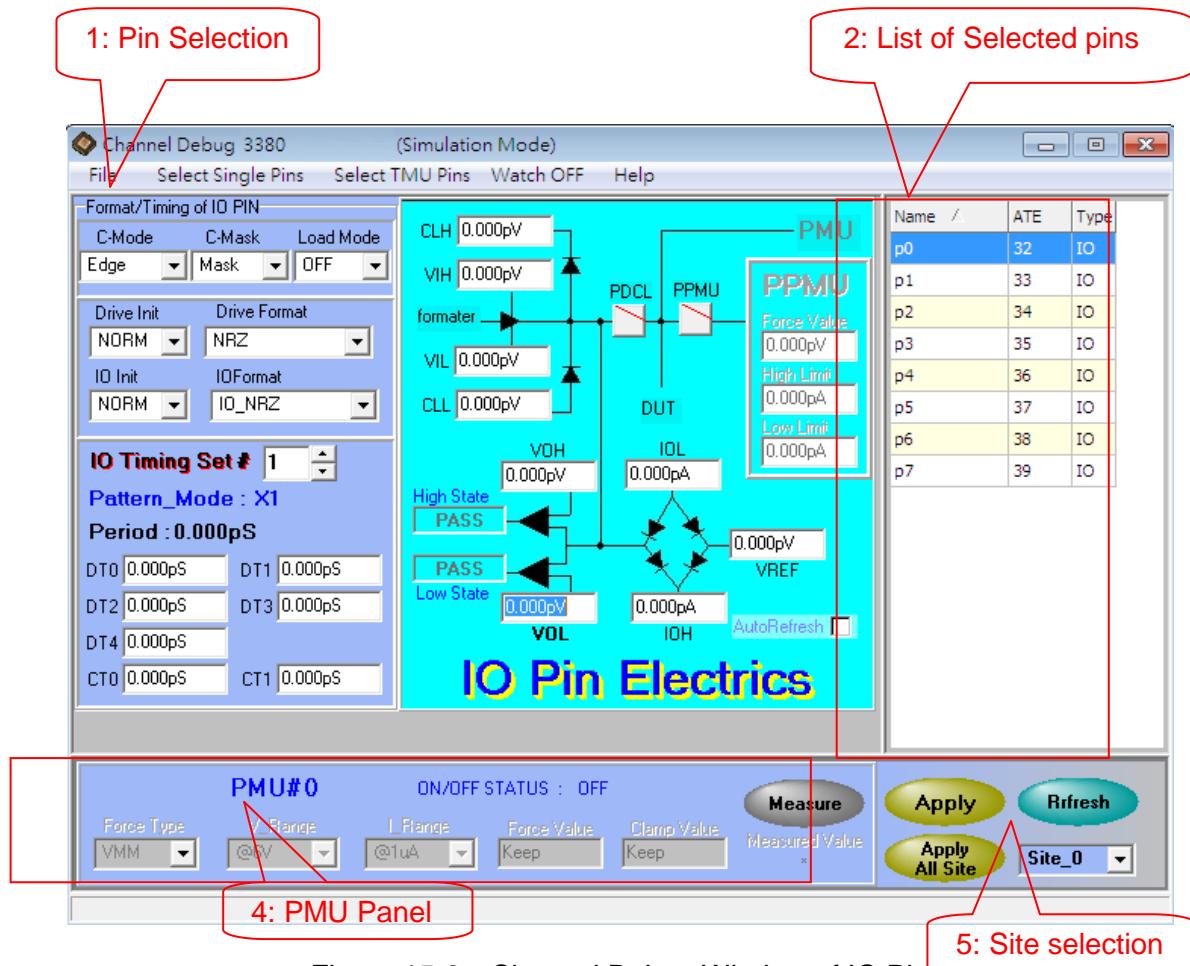


Figure 15-2 Channel Debug Window of IO Pin

(2) Quit the Channel Debug

To quit the Channel Debug, choose File → Exit to exit Channel Debug Window.

15.3 Pin Selection

Select one or more target pins by pressing the “Select Single Pins” (1 of Figure 15-2). By default, all the single pins are the targets of display.

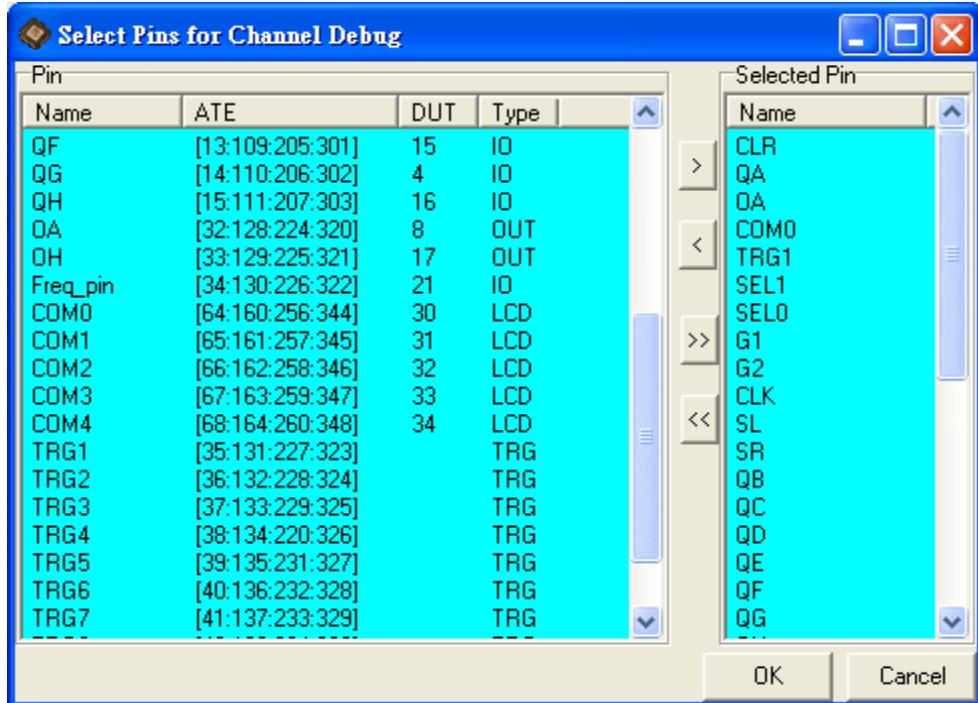


Figure 15-3 Pin Selection Dialog

15.4 Site Selection

Make a site selection:

- (1) Select one operation target site.

Note The displayed site count choices vary depending how many DUTs to be measured in parallel.

- (2) After selecting a site, the content of displayed pin will be auto refreshed.

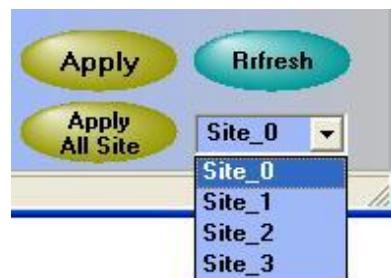


Figure 15-4 Site Selection

15.5 Debug IO Pin

15.5.1 Format (Pin Mode) of IO Pin

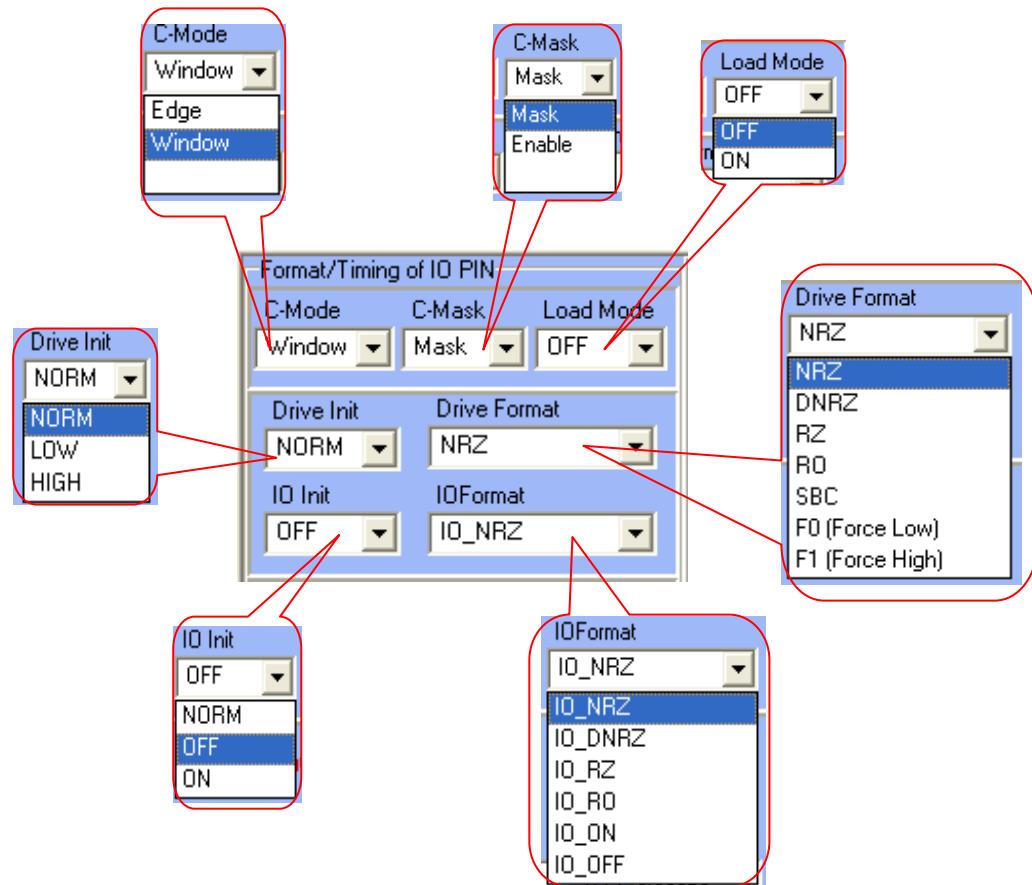


Figure 15-5 Format of IO Pin

15.5.2 Timing of IO Pin

- (1) Period value is displayed only.
- (2) IO Timing Set #, DT0, DT1, DT2, DT3, DT4, CT0 and CT1 are editable.



Figure 15-6 Timing of IO Pin

15.5.3 Relays of IO Pin

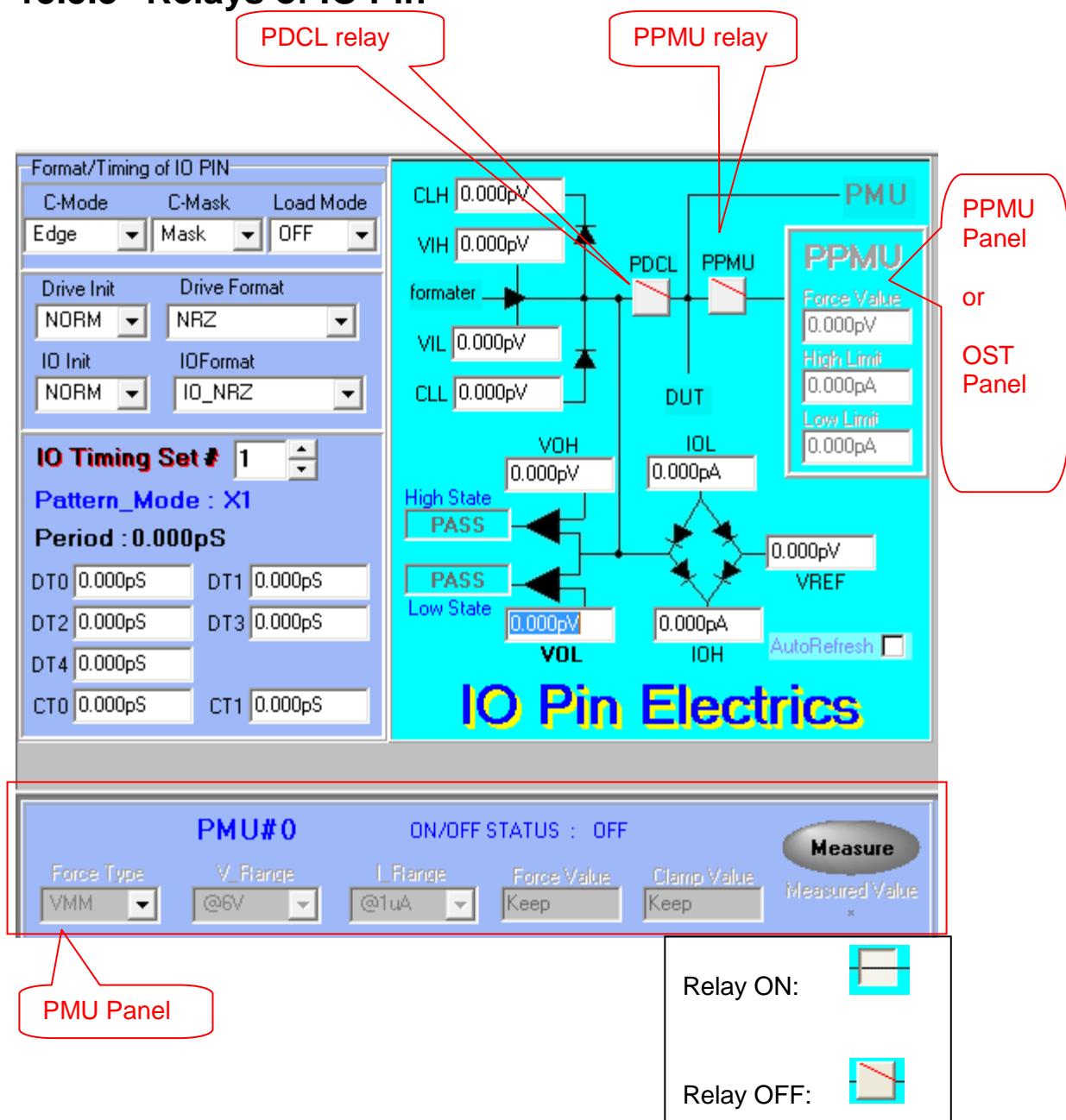


Figure 15-7 Relays of IO Pin

15.5.4 Levels of IO Pin

All the level values of IO Pin are changeable.

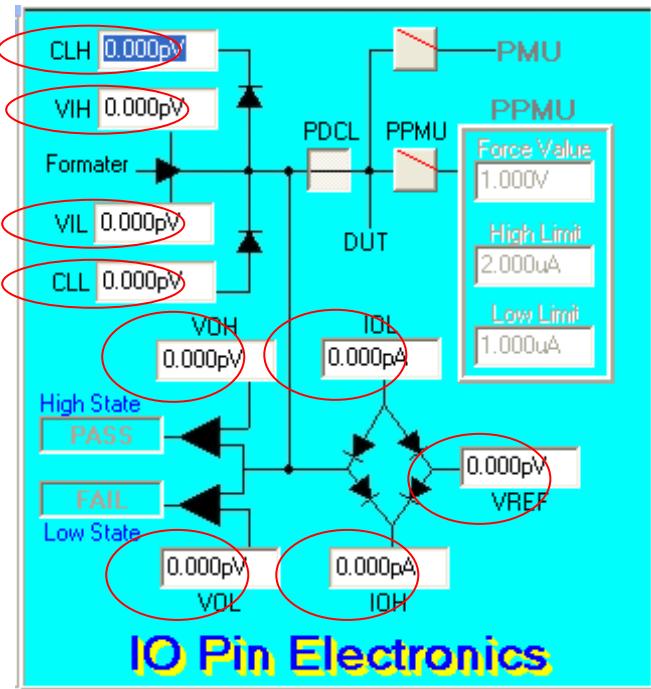


Figure 15-8 Levels of IO Pin

15.6 PMU Panel

PMU panel is enabled when the PMU relay of pin is set to “ON”.

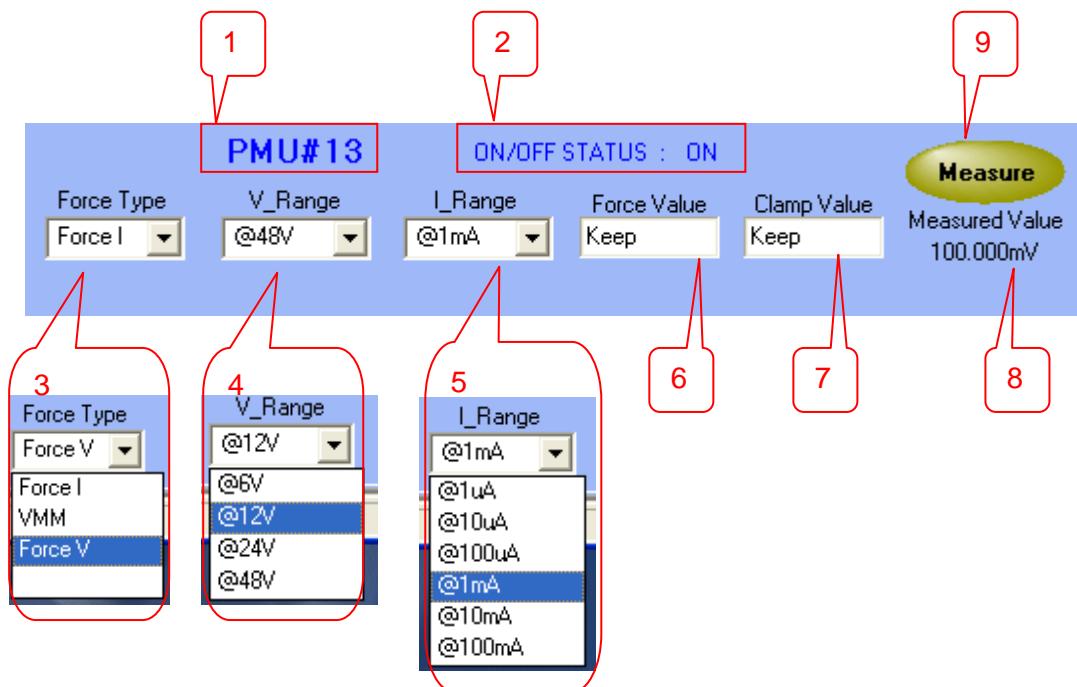


Figure 15-9 PMU Panel

No.	Name	Classification	Description
1	PMU #	Display	Show PMU number.
2	ON/OFF Status	Display	Show PMU relay status.
3	Force_Type	Button	Specify the force or measurement mode. Force V: Voltage application current measurement. Force I: Current application voltage measurement. VMM: Voltage measurement.
4	V_Range	Button	Specify the voltage range.
5	I_Range	Button	Press to enable/disable the watch mode.
6	Force Value	Input	Specify the application voltage/current value.
7	Clamp Value	Input	Specify the clamp value of measured value.
8	Measured Value	Display	Display the measured value.
9	Measure	Button	Press to get the measured value.

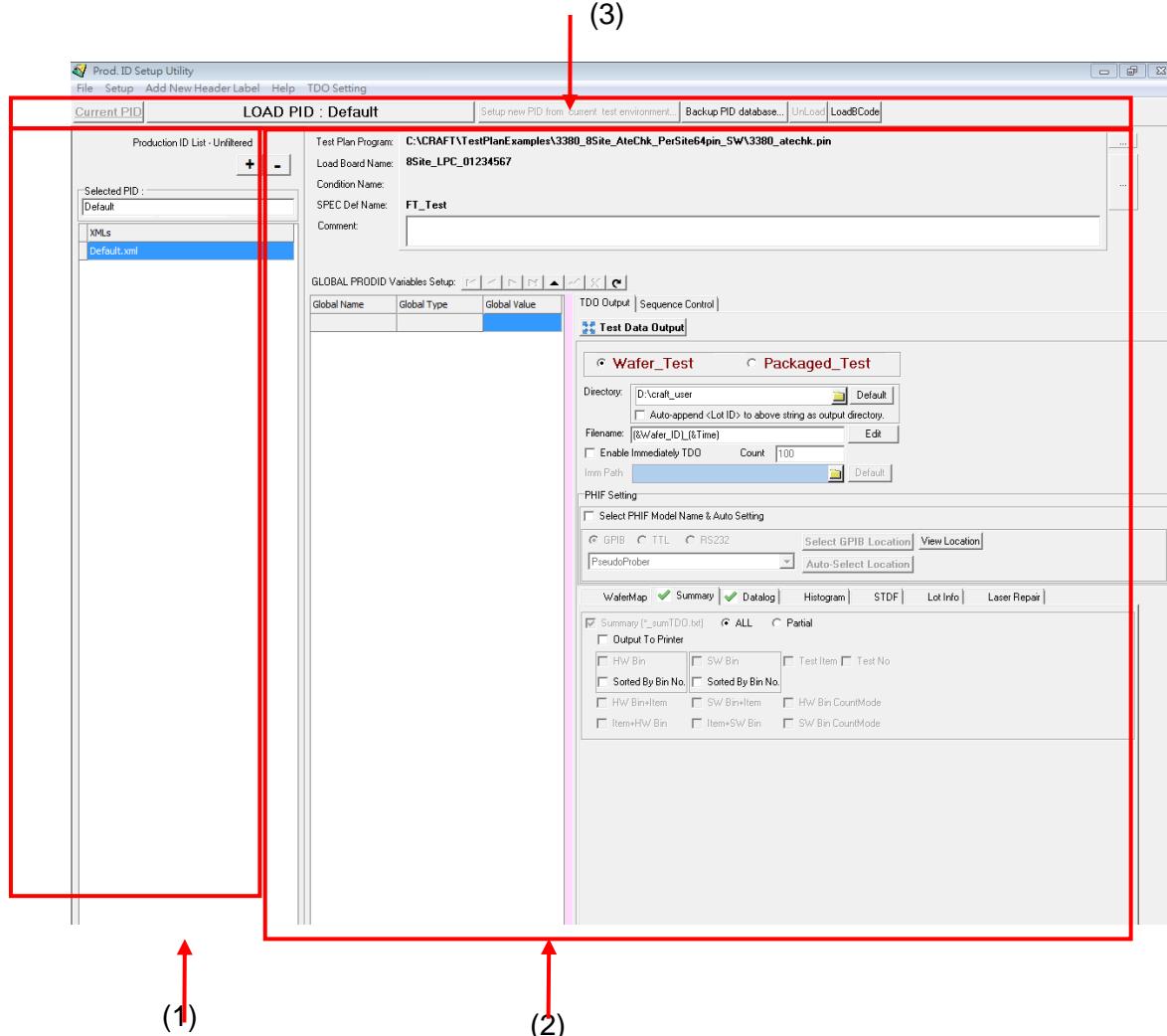
Table 15-2 Contents of PMU Panel

16. Production ID Setup

16.1 Overview

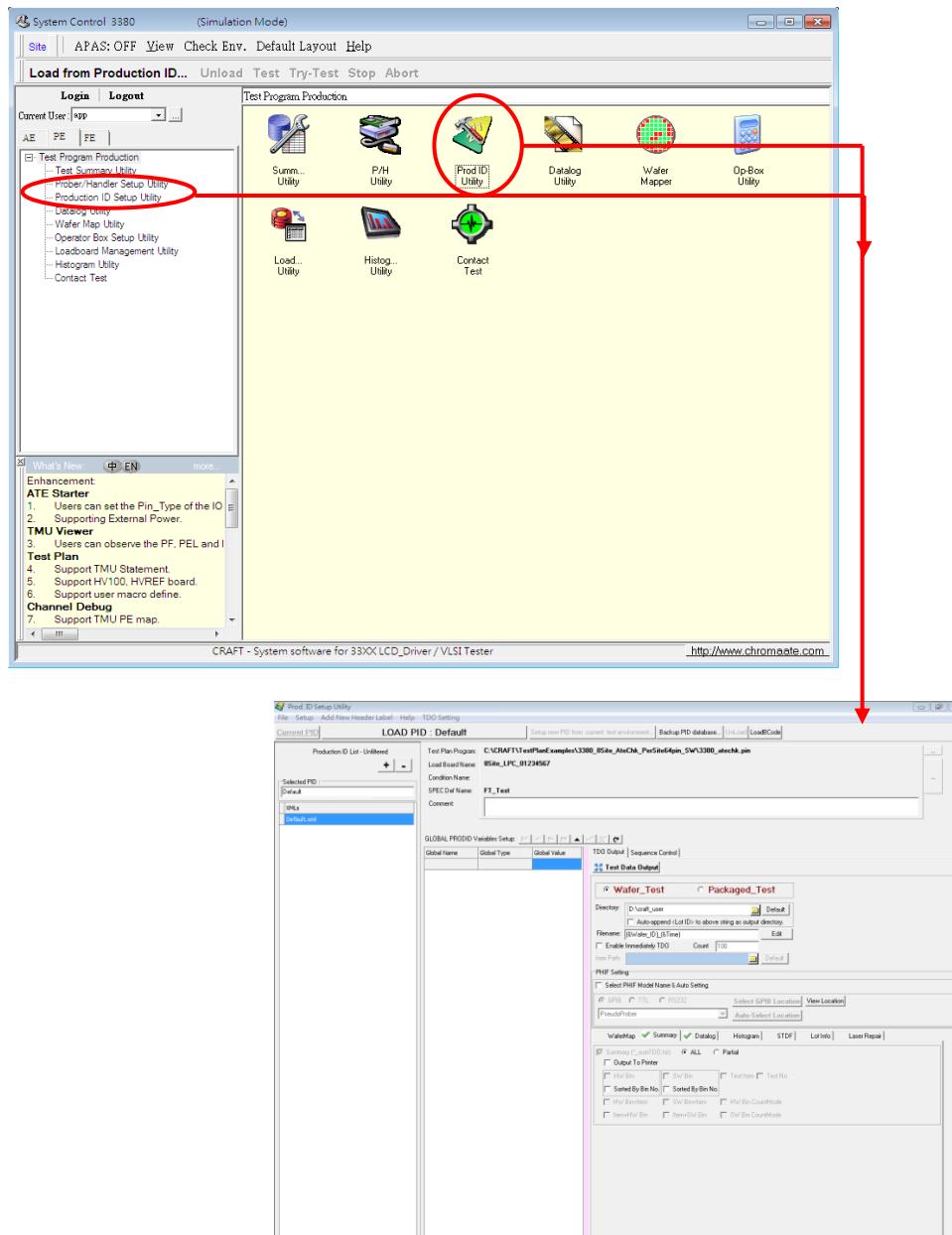
The production ID setup tool provides the user-friendly interface for production engineer to setup test program to one package number; this is referred to as the “Production ID” or “PID”, which can be directly loaded by operator for volume production. The operator doesn’t need to understand where the test program is nor what conditions he needs to set up, he just needs to load the scheduled Production ID which had already been set up by production engineer. The Production ID Setup window is basically divided into three main sections:

- (1) PID database operation interface window.
- (2) The content window of one PID record and TDO output settings.
- (3) Push button area for loading or backup PID.



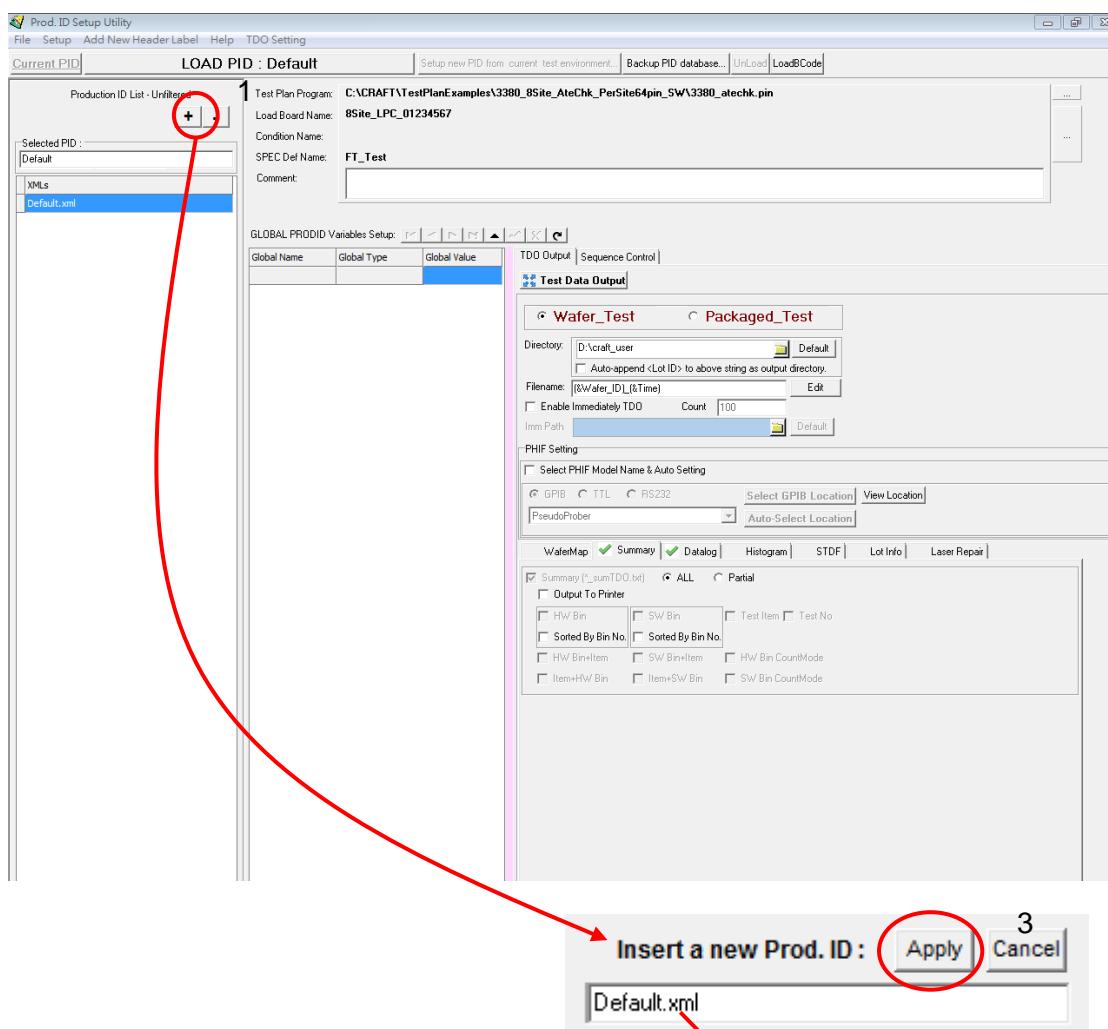
16.2 Start & Quit Production ID Tool

The production ID setup tool starts when you double click the “Prod. ID Setup Utility” icon in the System Control list view window or just clicks “Production ID Setup Utility” string in the System Control tree view window. To quit the data log tool, click on the Close button of system menu in this window. The user must have “PE” permission when execute this tool (refer to Chapter 4 for how to add a user who own “PE” permission).



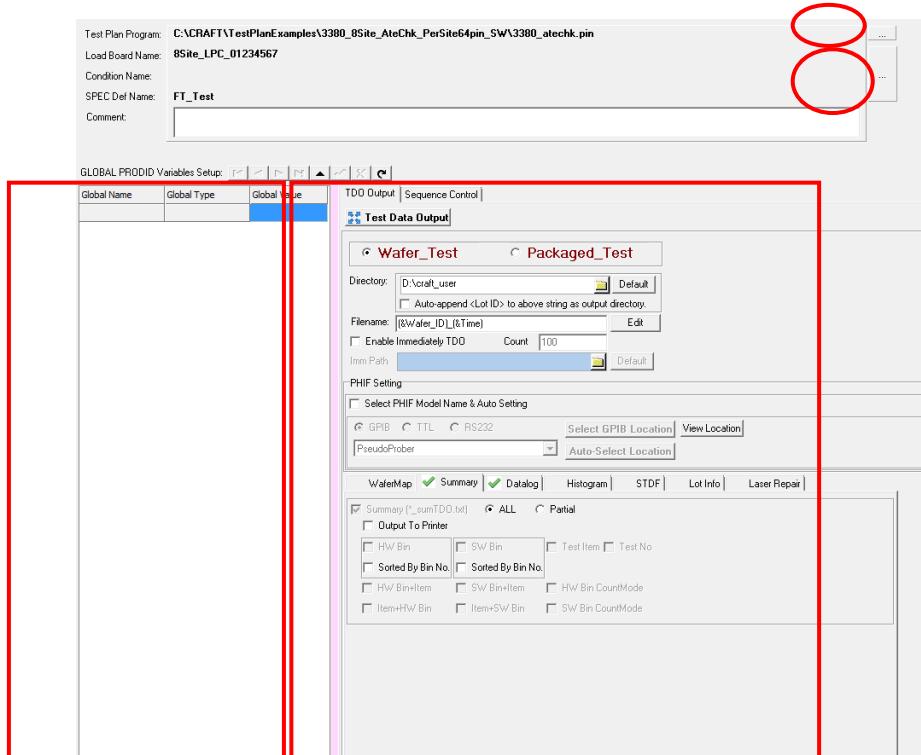
16.3 Production ID Setup Tool – Insert a New PID Number

- (1) Display Production ID Setup window (Refer to the previous section “Start & Quit Production ID Tool”).
- (2) Insert a new PID number.
 1. In PID database operation interface window, press **[+]** button.
 2. Input a new production ID name.
 3. Press **Apply** button then focus on content window.



- (3) In content window, select the test program and set up condition value.
 1. Press this button for invoking a file dialog window to choose one test plan program.
 2. After pressing button of item 4, press this button and choose the “load board name”, “condition name” or “spec. def name” as you want.
 3. Modify the global variable’s value as you want if there are global variables in this test plan program.
 4. Test Data Output (TDO) & STDF Output: Test Data and STDF can be made by

these options when EOW is send from a prober. TDO includes WaferMapTDO, DataLogTDO, SummaryTDO, and HistogramTDO.



3

4

1

2

16.4 Use Production ID Setup Window

16.4.1 Use PID Database Operation Interface Window

Here we use XML file as our PID database. Each file can be edited manually or by our ProdID tool. And all XML files are in “C:\CRAFT_SETUP\ dbs\ProdID_DB\XML\” as default folder. User can change this folder by editing the file:

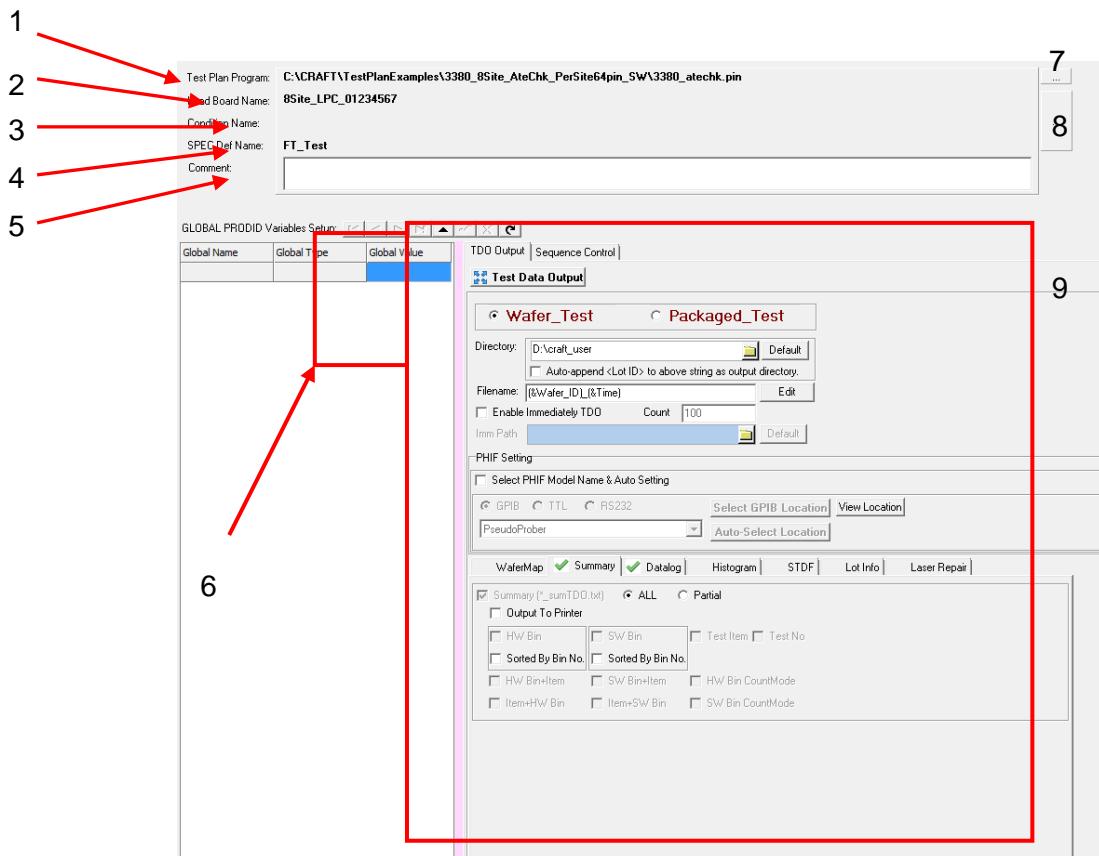
“C:\CRAFT_SETUP\ dbs\craft_utility.ini”, in section [ProdID.exe] and set the value as follow:

[ProdID.exe]

XML_Path = user's path

16.4.2 Use of Content Window

The content window is an editable area of current PID record includes test plan designation and its relative conditions set up.



No.	Item	Description
1	Test Plan Program	This field shows the current PID record's test plan program name. By pressing (7) can modify to invoke a file selection dialog for change. When this field has been re-selected, (2) (3) (4) (5) will be updated, too.
2	Load Board Name	Display the load board name (refer to Language Manual) which had already been defined in test plan program (1). When (1) has been re-selected, this field will be updated, too.
3	Condition Name	Display the condition name (refer to Language Manual) which had already been defined in test plan program (1). When (1) has been re-selected, this field will be updated, too.
4	SPEC. Def Name	Display the SPEC. Def name (refer to Language Manual) which had already been defined in test plan program (1). When (1) has been re-selected, this field will be updated, too.
5	Comment	Applied the comments to the current PID record.
6	Global Variable Value	Display the global variable (refer to Language Manual) which had already been defined in test plan program (1). When (1) has been re-selected, this field will be updated, too.
7	Test plan selector	Press this button to popup dialog window for selecting test plan program.
8	Options selector	After (1) has been selected, press this button to popup dialog window for selecting relative "Load board name", "Condition name" and "SPEC. Def. name"
9	TDO Output/ STDF Setting	Choose TDO/STDF options to make data output.

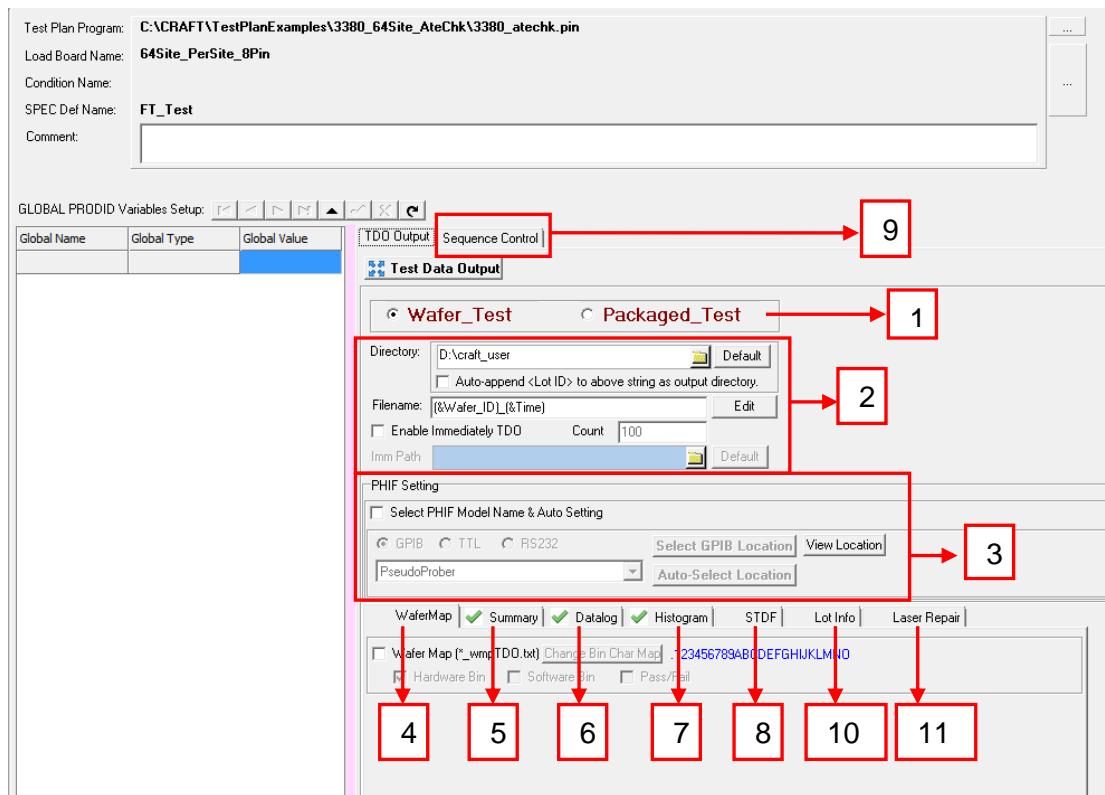
16.4.3 Use of Push Button Area



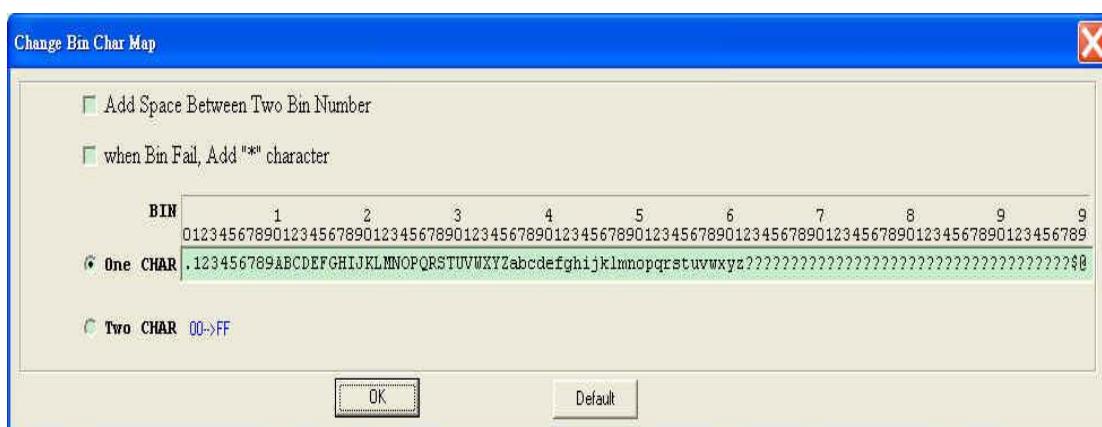
No.	Item	Description
1	LOAD Selected PID	Press this button to load test plan program and its relative environment setup which had been bundled in current PID record. Remember to unload the executed test plan program before pressing this button.
2	Setup Prod. ID from current environment	This button can save whole the current test plan environment, includes test plan file name, load board name, condition name, spec def. name and global variables' value to a PID record automatically. You also have to input primary, second and third keys for combining new PID.
3	LoadBarcode	Press this button can load PID Number from barcode. User can generate Bar Code that the same with PID Number, then user can scan the Barcode to load test plan from this button.

16.4.4 PHIF, TDO & Plan Sequence Setting

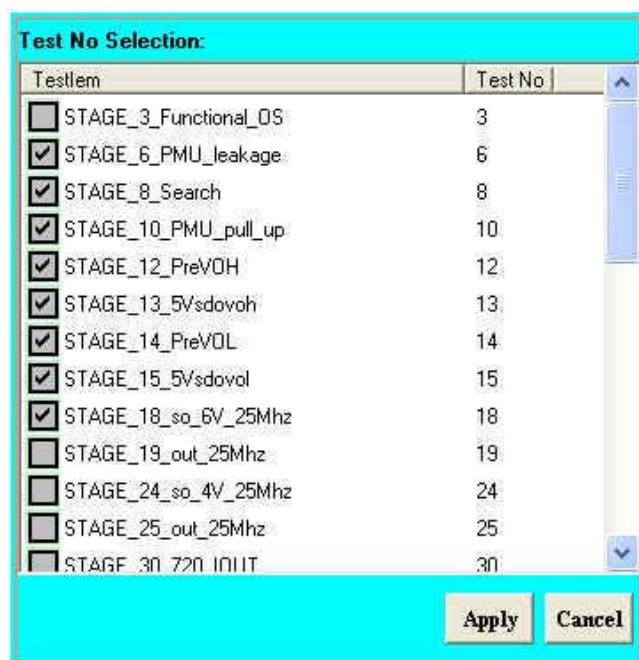
In TDO Setting Page, the user can set the TDO output directory, Package or Wafer Test, select what kind of TDO to output, PHIF setting and Plan Sequence setting.



- (1) Package Test / Wafer Test: Setting what kind of test for this PID. If Package Test, the PID can't output "Wafer Map TDO".
- (2) TDO Output Directory and File Name Setting: User set the TDO output directory and TDO file name.
- (3) PHIF Setting: User can set the PHIF Model for the PID Number. If user select a PHIF model name, when the PID Loaded, the PHIF will auto Connect. If PHIF model is GPIB, user can click "Select GPIB Location" to select the relative location for this GPIB model. If user click "Auto Select Location", the location will auto detect when GPIB connect successfully.
- (4) Wafer Map TDO: Only select "Wafer Test" can generate Wafer Map TDO. User can select which kind of Wafer Map TDO to output. Click "Change Pin Char Map" Button, user can select one character or two character to display bin map. User also can select "add space between two bin number" or add '*' when bin fail in TDO map in this setting window.



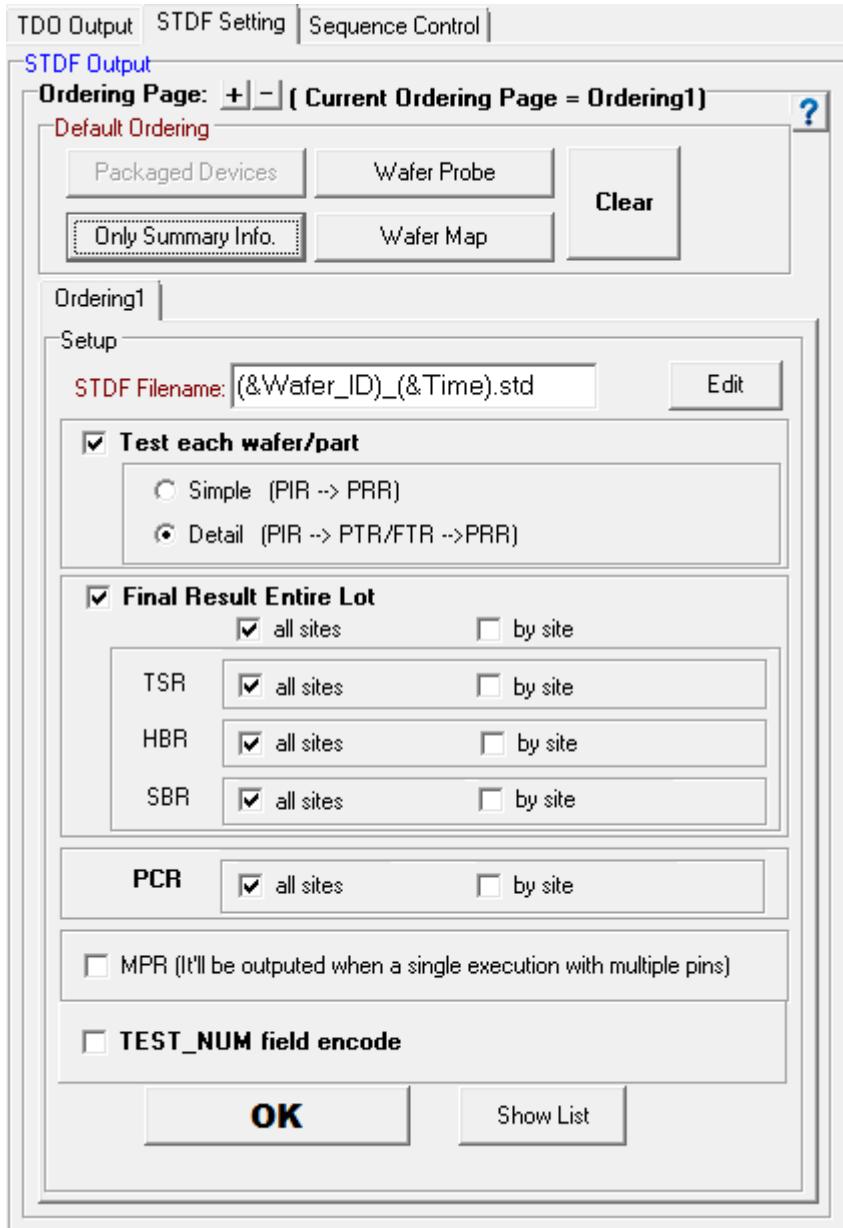
- (5) Summary TDO: User can select what kind of Summary TDO to Output.
- (6) DataLog TDO: User can select what kind of DataLog TDO to Output. User also can select whether or not compress Datalog TDO File, or Convert to Excel file format. Click "Select Test No" Button, user can select which test no to output DataLog TDO.



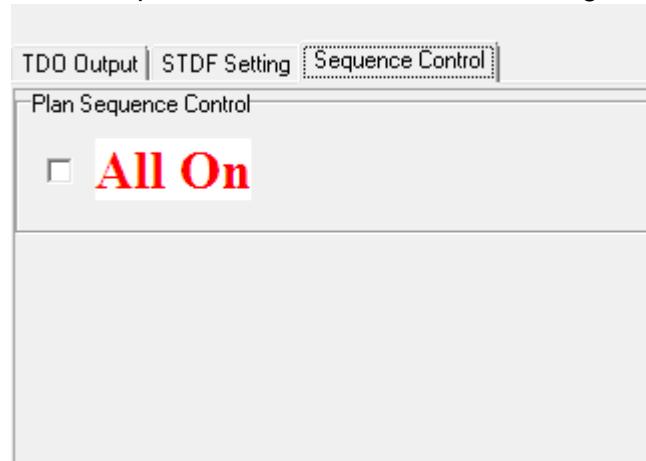


Click mouse right button, the selection menu will pop out.

- (7) Histogram TDO: User can select what kind of Histogram TDO to Output. User also can select whether or not compress Histogram TDO File. Click “Select Test No” Button, user can select which test no to output Histogram TDO, user can select test no like DataLog TDO.
- (8) STDF: User can click “STDF Setting” Button to set STDF Format.

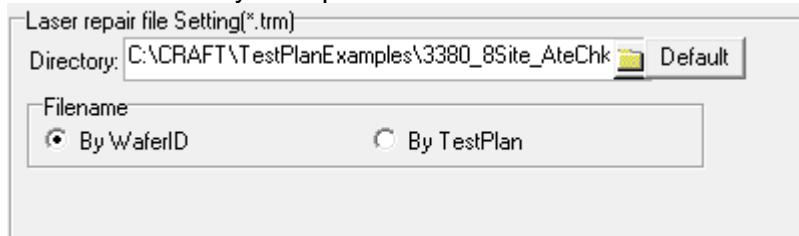


- (9) Sequence Control: When select “Sequence Control” page, it has only one selection: “All On”. When checking “All On”, test plan will test all the items and categorize to the first

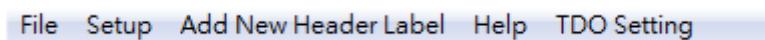


fail bin (If Fail happened).

- (10) Lot Info : User can select the option to output a lot information file.
- (11) Laser Repair : User can indicate the laser repair file (*.trm) path and select the file by WaferID or by Test plan.



16.4.5 Menu Bar



- (1) File: “File” Menu Bar include “Save As” and “Exit” Function.



1. Save as : It can save current setting to another XML file.
2. Exit : Terminate the ProdID tool.

- (2) Setup: “Setup” Menu Bar include “setup TDO default Path” and “setup Backup PID Database path”. User can click this button to re-setting the default TDO output path and Backup PID Database path.
- (3) Add new Header Label: In CRAFT system, the default TDO Header only contains ten information data. If users want to add new header information for operator input, engineer can click this button to create new TDO Header Label.
- (4) Help: Click this Button to read Production ID Tool Help File.
- (5) TDO Setting: User can save current TDO output setting to a file. And load the file as default setting when create a new XML PID.

17. Test Summary Acquisition

17.1 Overview

The test summary program collects the measurement information necessary for yield control and nonconformance cause analysis on an individual station/DUT socket basis.

No.	Purpose	Description
1	Yield control	Acquire the data about all the measured DUTs and nonconforming DUTs to provide yield control (on an individual station/DUT socket basis).
2	Nonconformance cause analysis	Enable you to examine the pass/fail count of each test number to analyze the cause of yield decrease.
3	Throughput increase	Acquire the data for throughput increase by deleting the test numbers that are irrelevant to "fail" results.
4	Deterioration detection	Acquire tester deterioration/failure judgment data about individual sockets depends on the individual socket fail count.

Table 17-1 Test Summary Program Use Purposes

No.	Name	Description
1	Total count	Collect the individual DUT socket data about the total number of measured DUTs.
2	Pass/fail count	Collect the individual DUT socket data about the conforming DUT count and nonconforming DUT count.
3	Nonconforming DUT count by cause	Collect the individual DUT socket data about the nonconformance measurements classified by nonconformance cause.
4	Categorization (HW BIN, SW BIN)	Categorize the measurement results and gather them on an individual DUT socket basis.
5	Fail count by test number	Categorize the measurement results by test number and gather them on an individual DUT socket basis.
6	Fail count by test item	Categorize the measurement results by test item and gather them on an individual DUT socket basis.
7	Hw/Sw - Item count	Categorize the measurement Bin-Item relative results by HW/SW bin basis view and gather them on an individual DUT socket basis.
8	Item - Hw/Sw count	Categorize the measurement Item-Bin relative results by test item basis view and gather them on an individual DUT socket basis.
9	Hw/Sw count mode	Categorize the measurement results by HW/SW bin basis view and gather them on an individual DUT socket basis.

Table 17-2 Test Summary Program Function List

The test summary window (as Figure 17-1) is composed by (1) action buttons area, (2) output file information area, (3) comments area, and (4) summary result area windows. These windows will be defined in the following section 17.3 to 17.6.

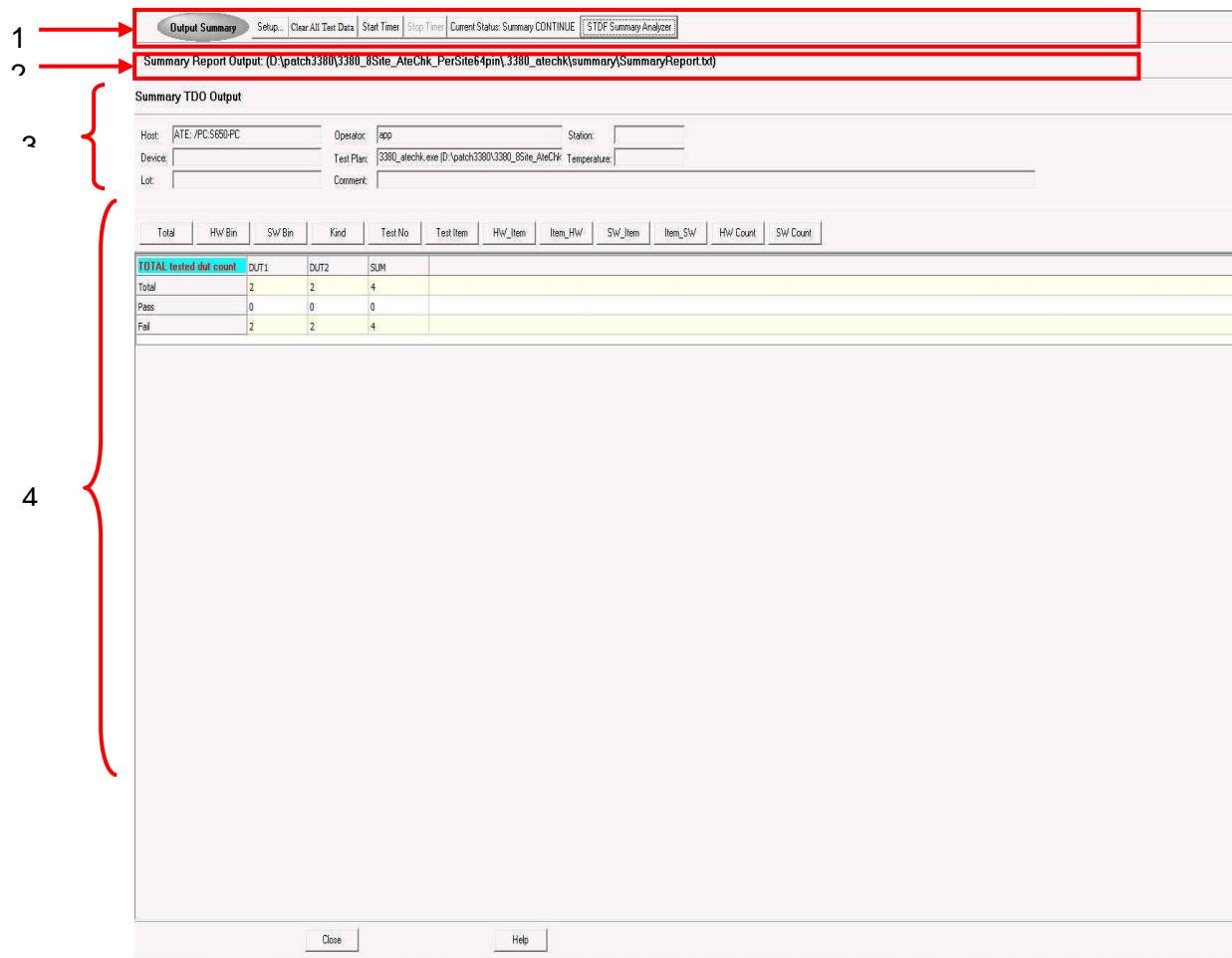
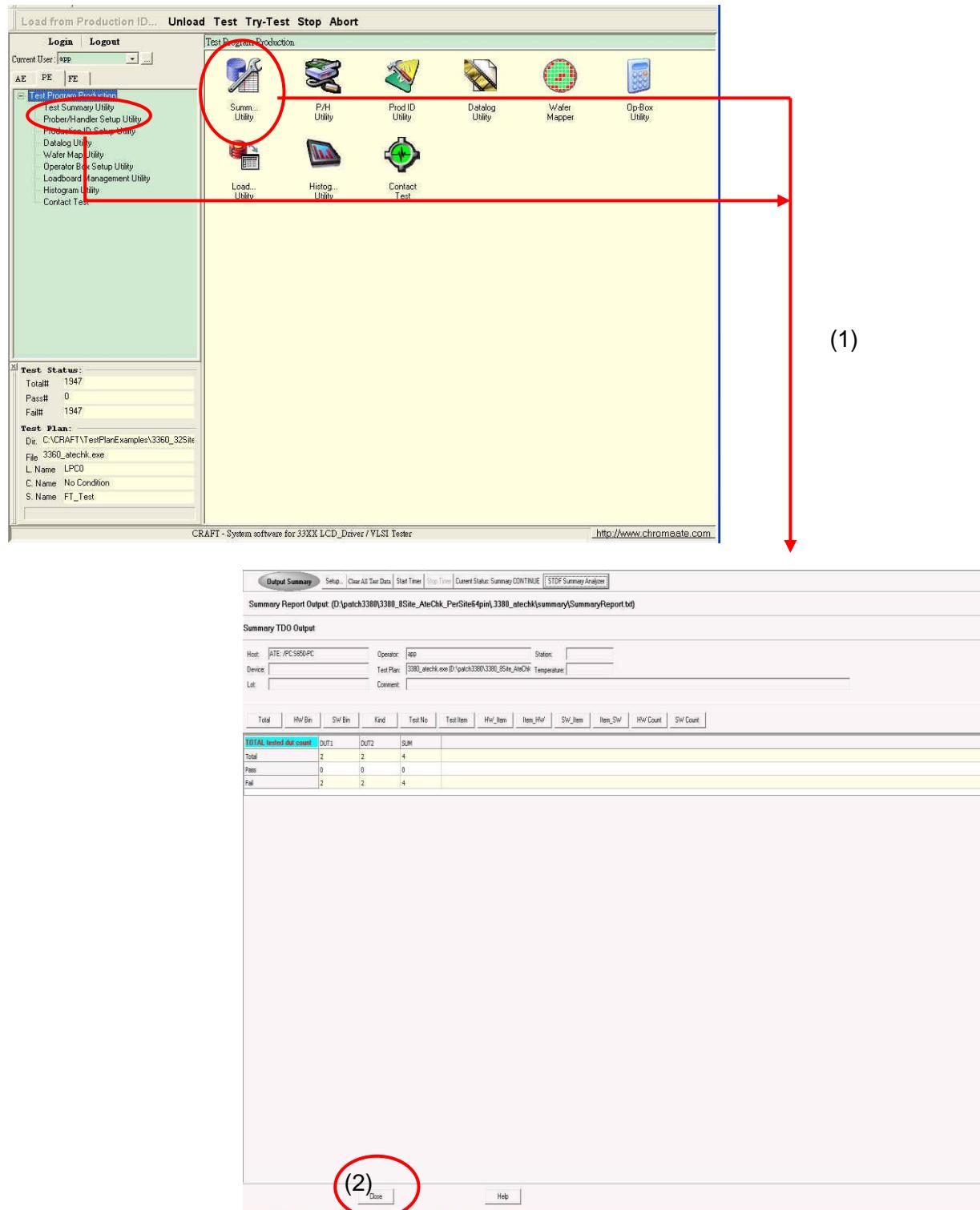


Figure 17-1 Test Summary Window

17.2 Start & Quit Test Summary Utility

- (1) The test summary utility starts when you double click the Test Summary Utility icon on the System Control's list view window or just click "Test Summary Utility" string on the System Control's tree view window.
- (2) To quit the test summary utility, click **Close** button on Summary Report window.



17.3 Action Buttons

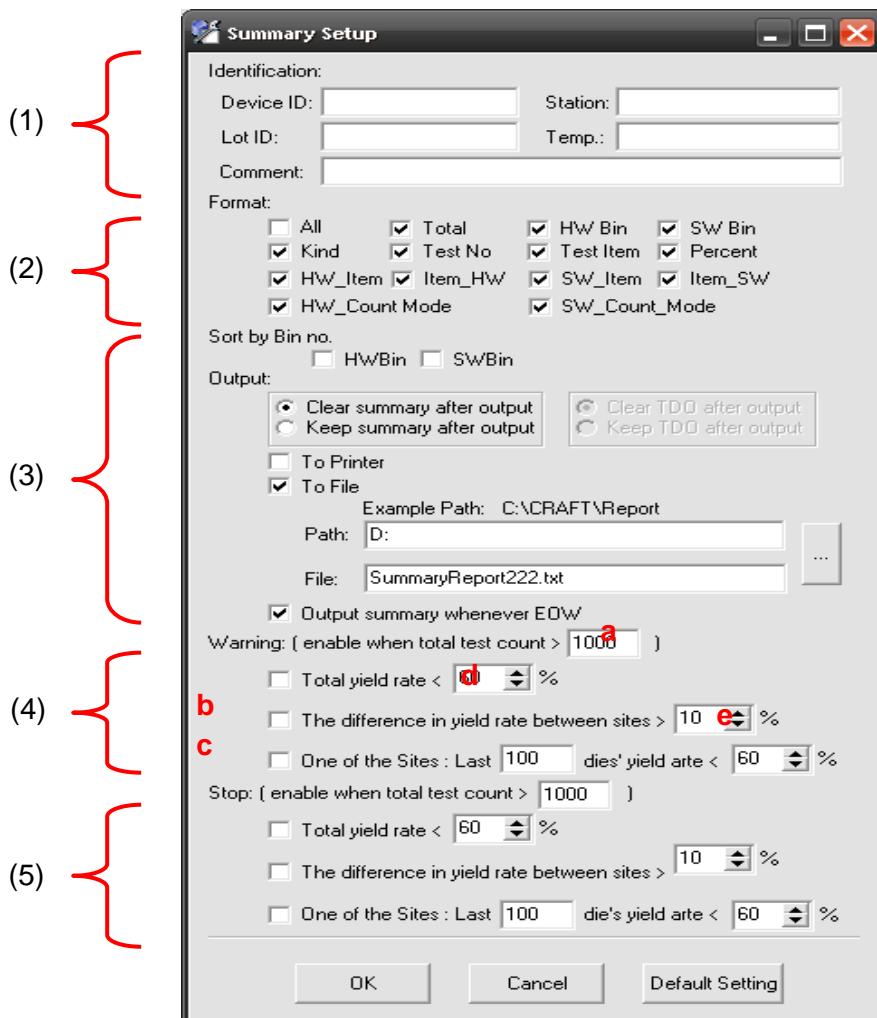
There are “Output Summary”, “Setup”, “Clear All Test Data”, “Start Timer”, “Stop Timer”, “Current Status” and “STDF Summary Analyzer” 7 buttons in this area.



17.3.1 Output Summary

This button can output the acquired test summary data to output devices which will be a file or printer. Before pressing this button to acquire the test summary data, you can modify the setup value as the next section “Setup”.

17.3.2 Setup



- (1) Make a comment entry.

The comment is entered here will be added at the time of test summary data output. If enters nothing here, a blank comment is set.

(2) Specify the output data.

You may designate two or more output data. To designate all data, you need select "All" item.

Total: Total measured device counts, pass counts and fail counts.

HW Bin: Hardware category number.

SW Bin: Software category number.

Kind: Fail count by fail cause.

Test No.: Fail count of each test number.

Test Item: Fail count of each test item.

Percent: Show the percentage of fail count on the measured device, count to one decimal place.

Hw/Sw-Item: Count by relative of Bin basis and Item.

Item-Hw/Sw: Count by relative of Item and Bin basis.

Hw/Sw Count: Count by relative of Bin basis from different Bin name with the same no.

(3) Specify the output device.

Clear summary after output: Clear test summary data after "Output Summary" is pressed.

Keep summary after output: Keep summary data after "Output Summary" is pressed.

To Printer: Output the data to the printer.

To File: Save the data to a file (hard disk).

Output summary whenever EOW: Execute "Output Summary" automatically whenever "End of Wafer" (from prober) event happened.

The file format is the same as the printer output. The test summary data revealing at the time just after "Output Summary" button has been pressed.

(4) Specify the warning condition.

If the total test count is greater than **a**, **b-e** then in effect.

If **b** check box is checked, then warning when yield rate less than **d**.

If **c** check box is checked, then warning when the difference in yield rate between sites is greater than **e**.

(5) Specify the stop condition, fields are the same meaning as warning condition but just stop test plan's running.

17.3.3 Clear All Test Data

When this button is pressed, the following dialog window will be popup. If you select **Yes** then all Test's data will be cleared.



17.3.4 Current Status

There are two statuses in summary counting.

(1) Summary CONTINUE:

When press this button to this normal status, whenever EOT, summary will be counted.

(2) Summary PAUSE:

When press this button to this status, summary will stop to count temporarily. This is useful when you try to re-test your DUT but don't want to count summary.

17.3.5 STDF Summary Analyzer

Click this button will open "STDF Summary Analyzer" Tool. It can use to open one or more STDF File and display the Summary Result.

17.4 Comment Area

1	2	3	4	5	6
Host: ATE:3500-004 /PC:HCC922166	Device:	Lot:	Operator: app	Test Plan: SS138a.exe [D:\CRAFT\TestPlanE]	Station: Temperature:

No.	Name	Description
1	Host	Show the tester ID in summary output.
2	Device	Show the device ID in summary output.
3	Lot	Show the lot ID in summary output.
4	Operator	Show the operator ID in summary output.
5	Test Plan	Show the test plan file name in summary output.
6	Comment	Show the comment which entered by the user in summary output.

17.5 Summary Result Area

17.5.1 Total Tested DUT Count

This window reveals (1) Total measured device count, (2) Pass count and (3) Fail count.

	TOTAL tested dut count	DUT 1	DUT 2	DUT 3	DUT 4	SUM
1	Total	55056				55056
2	Pass	54432 (98.9%)				54432 (98.9%)
3	Fail	624 (1.13%)				624 (1.13%)

Each site's count

All sites' total count

HW BIN Count

This window reveals the measured device count by (1) hardware category (binning) number.

1

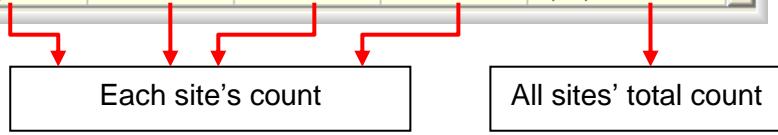
HW BIN count	DUT 1	DUT 2	DUT 3	DUT 4	SUM
all_pass	54432 (98.9%)				54432 (98.9%)
! fail_continuity	4 (0.00727%)				4 (0.00727%)
! fail_leakage_test	0 (0%)				0 (0%)
! fail_lv_mcu80	0 (0%)				0 (0%)
! fail_lv_level	0 (0%)				0 (0%)
! fail_lv_mcu68	0 (0%)				0 (0%)
! fail_lv_serial	0 (0%)				0 (0%)
! fail_hv_mcu80	0 (0%)				0 (0%)
! fail_hv_level	0 (0%)				0 (0%)
! fail_hv_mcu68	0 (0%)				0 (0%)
! fail_hv_serial	0 (0%)				0 (0%)
! fail_ezram_bv5	620 (1.13%)				620 (1.13%)
! fail_trim_fuse	0 (0%)				0 (0%)
! fail_ana_fv5	0 (0%)				0 (0%)
! fail_fuse_check	0 (0%)				0 (0%)
! fail_analog_func	0 (0%)				0 (0%)
! fail_last_item_test	0 (0%)				0 (0%)

Each site's count

All sites' total count

17.5.2 SW BIN Count

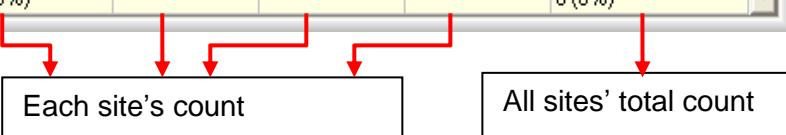
This window reveals the measured device count by software category (binning) number.



SW BIN count	DUT 1	DUT 2	DUT 3	DUT 4	SUM
all_pass	54432 (98.9%)				54432 (98.9%)
! fail_continuity	4 (0.00727%)				4 (0.00727%)
! fail_leakage_test	0 (0%)				0 (0%)
! fail_lv_mcu80	0 (0%)				0 (0%)
! fail_lv_level	0 (0%)				0 (0%)
! fail_lv_mcu68	0 (0%)				0 (0%)
! fail_lv_serial	0 (0%)				0 (0%)
! fail_hv_mcu80	0 (0%)				0 (0%)
! fail_hv_level	0 (0%)				0 (0%)
! fail_hv_mcu68	0 (0%)				0 (0%)
! fail_hv_serial	0 (0%)				0 (0%)
! fail_ezram_bv5	620 (1.13%)				620 (1.13%)
! fail_trim_fuse	0 (0%)				0 (0%)
! fail_ana_fv5	0 (0%)				0 (0%)
! fail_fuse_check	0 (0%)				0 (0%)
! fail_analog_func	0 (0%)				0 (0%)
! fail_last_item_test	0 (0%)				0 (0%)

17.5.3 Fail Count (by Test Item)

This window reveals fail count of each test item.



Fail count (by TEST ITEM)	DUT 1	DUT 2	DUT 3	DUT 4	SUM
continuity	4 (0.641%)				4 (0.641%)
leakage_test	0 (0%)				0 (0%)
lv_mcu80	0 (0%)				0 (0%)
lv_level	0 (0%)				0 (0%)
lv_mcu68	0 (0%)				0 (0%)
lv_serial	0 (0%)				0 (0%)
hv_mcu80	0 (0%)				0 (0%)
hv_level	0 (0%)				0 (0%)
hv_mcu68	0 (0%)				0 (0%)
hv_serial	0 (0%)				0 (0%)
ezram_bv5	620 (99.4%)				620 (99.4%)
ana_fv5	0 (0%)				0 (0%)
final_item_test	0 (0%)				0 (0%)

17.5.4 Fail Count (by Kind)

This window reveals fail count by DC or AC or other fail causes.

Fail count (by KIND)	DUT 1	DUT 2	DUT 3	DUT 4	SUM
AC Fail	4 (0.641%)				4 (0.641%)
DC Fail	0 (0%)				0 (0%)
PMU	0 (0%)				0 (0%)
DPS	0 (0%)				0 (0%)
PREF	0 (0%)				0 (0%)
PPMU	0 (0%)				0 (0%)
FREQ/TIME	0 (0%)				0 (0%)
OTHER Fail	620 (99.4%)				620 (99.4%)

Each site's count
All sites' total count

17.5.5 Fail Count (by Test No)

This window reveals fail count of each test number.

Fail count (by TEST NO)	DUT 1	DUT 2	DUT 3	DUT 4	SUM
8001	624 (100%)				624 (100%)
8002	0 (0%)				0 (0%)
8003	0 (0%)				0 (0%)
8004	0 (0%)				0 (0%)
8005	0 (0%)				0 (0%)
8006	0 (0%)				0 (0%)
8008	0 (0%)				0 (0%)
8011	0 (0%)				0 (0%)
8012	0 (0%)				0 (0%)
8013	0 (0%)				0 (0%)
8014	0 (0%)				0 (0%)
8015	0 (0%)				0 (0%)
8016	0 (0%)				0 (0%)
8017	0 (0%)				0 (0%)
8018	0 (0%)				0 (0%)
8021	0 (0%)				0 (0%)

Each site's count
All sites' total count

17.5.6 HW-ITEM Count

This window reveals HW bin basis count of relation with HW Bin and Test Item.

HWBIN - ITEM count	DUT1	DUT2	DUT3	DUT4	SUM	
all_pass (255)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_drv_nrz_test (!2)	3(100%)	3(100%)	3(100%)	3(100%)	12(100%)	
----drv_nrz_test	3(100%)	3(100%)	3(100%)	3(100%)	12(100%)	
fail_drv_dnrz_test (!3)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_drv_rz_test (!4)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_drv_ro_test (!5)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_drv_sbc_test (!6)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_drv_ts_sel_test (!7)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_io_nrz_test (!8)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_io_dnrz_test (!9)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_io_rz_test (!10)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_io_ro_test (!11)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_io_ts_sel_test (!12)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_io_nrz1_test (!12)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_io_dnrz1_test (!13)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_io_rz1_test (!14)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_io_ro1_test (!15)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_strb_window_test (!13)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_freq_meas_test (!14)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_time_meas_test (!14)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_ill_leak_test (!16)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_iih_leak_test (!17)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_dps_idd_static_test (...)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_dps_idd_dynamic_te...	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_pref_idd_static_te...	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
last_item_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	

Each site's count
All sites' total count

17.5.7 ITEM-HW Count

This window reveals Test Item basis count of relation with HW Bin and Test Item.

ITEM - HWBIN count	DUT1	DUT2	DUT3	DUT4	SUM	
drv_nrz_test	3(100%)	3(100%)	3(100%)	3(100%)	12(100%)	
----fail_drv_nrz_test (!2)	3(100%)	3(100%)	3(100%)	3(100%)	12(100%)	
drv_dnrz_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
drv_rz_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
drv_ro_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
drv_sbc_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
drv_ts_sel_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
io_nrz_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
io_nrz1_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
io_rz_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
io_rz1_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
io_ro_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
io_ro1_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
io_ts_sel_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
strb_window_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
freq_meas_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
time_meas_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
ill_leak_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
iih_leak_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
dps_idd_static_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
dps_idd_dynamic_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
pref_idd_static_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
pref_idd_dynamic_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
last_item_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	

Each site's count
All sites' total count

17.5.8 SW-ITEM Count

This window reveals SW bin basis count of relation with SW Bin and Test Item.

SWBIN - ITEM count	DUT1	DUT2	DUT3	DUT4	SUM	
all_pass (1000)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_drv_nrz_test (!12)	3(100%)	3(100%)	3(100%)	3(100%)	12(100%)	
----drv_nrz_test	3(100%)	3(100%)	3(100%)	3(100%)	12(100%)	
fail_drv_dnrz_test (!13)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_drv_rz_test (!14)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_drv_ro_test (!15)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_drv_sbc_test (!16)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_drv_ts_sel_test (!17)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_io_nrz_test (!18)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_io_dnrz_test (!19)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_io_rz_test (!110)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_io_ro_test (!110)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_io_ts_sel_test (!110)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_io_nrz1_test (!122)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_io_dnrz1_test (!123)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_io_rz1_test (!124)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_io_ro1_test (!125)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_strb_window_test (...)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_freq_meas_test (!113)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_time_meas_test (!113)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_iil_leak_test (!115)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_iih_leak_test (!117)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_dps_idd_static_test (...)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_dps_idd_dynamic_te...	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
fail_pref_idd_static_te...	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
last_item_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	

Each site's count
All sites' total count

17.5.9 ITEM-HW Count

This window reveals Test Item basis count of relation with SW Bin and Test Item.

ITEM - SWBIN count	DUT1	DUT2	DUT3	DUT4	SUM	
drv_nrz_test	3(100%)	3(100%)	3(100%)	3(100%)	12(100%)	
----fail_drv_nrz_test (!12)	3(100%)	3(100%)	3(100%)	3(100%)	12(100%)	
drv_dnrz_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
drv_rz_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
drv_ro_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
drv_sbc_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
drv_ts_sel_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
io_nrz_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
io_nrz1_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
io_rz_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
io_rz1_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
io_ro_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
io_roi_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
io_ts_sel_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
strb_window_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
freq_meas_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
time_meas_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
iil_leak_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
iih_leak_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
dps_idd_static_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
dps_idd_dynamic_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
pref_idd_static_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
pref_idd_dynamic_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
last_item_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	

Each site's count
All sites' total count

17.5.10 HW Count Mode

This window reveals HW count from different HW Bin Name but has the same bin no.

HWBin count Mode	DUT1	DUT2	DUT3	DUT4	SUM	
HWBIN2	3(100%)	3(100%)	3(100%)	3(100%)	12(100%)	
HWBIN3	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
HWBIN4	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
HWBIN5	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
HWBIN6	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
HWBIN7	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
HWBIN8	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
HWBIN9	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
HWBIN10	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
HWBIN11	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
HWBIN12	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
HWBIN13	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
HWBIN14	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
HWBIN16	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
HWBIN17	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
HWBIN18	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
HWBIN19	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
HWBIN20	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
HWBIN21	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
HWBIN22	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
HWBIN23	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
HWBIN24	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
HWBIN25	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
HWBIN255	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	

Each site's count All sites' total count

17.5.11 SW Count Mode

This window reveals SW count from different SW Bin Name but has the same bin no.

SWBin count Mode	DUT1	DUT2	DUT3	DUT4	SUM	
SWBIN12	3(100%)	3(100%)	3(100%)	3(100%)	12(100%)	
SWBIN13	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
SWBIN14	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
SWBIN15	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
SWBIN16	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
SWBIN17	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
SWBIN18	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
SWBIN19	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
SWBIN110	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
SWBIN113	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
SWBIN115	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
SWBIN117	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
SWBIN118	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
SWBIN119	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
SWBIN120	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
SWBIN121	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
SWBIN122	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
SWBIN123	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
SWBIN124	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
SWBIN125	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
SWBIN800	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
SWBIN1000	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	

Each site's count All sites' total count

17.6 Print Output Format

Chroma 3360 Summary Report

```
=====
1 Host Name          : S640-ROBIN
2 { Test Plan        : C:\LCD_Sample_Program\lcd_sample\lcd_sample.exe
  Device ID         :
  Lot ID            :
  Operator ID       : user1
3 { Test Plan Loaded Time : 02/13/06 10:53:13
  Output Summary Time : 02/13/06 11:34:43
  Comment           :
=====
```

5 { Total tested dut count:

	DUT1	DUT2	DUT3	DUT4	SUM
Total	85				85
Pass	78 (91.8%)				78 (91.8%)
Fail	7 (8.24%)				7 (8.24%)

6 { HW BIN count:

	DUT1	DUT2	DUT3	DUT4	SUM
all_pass	78 (91.8%)				78 (91.8%)
! fail_continuity	2 (2.35%)				2 (2.35%)
! fail_leakage_test	0 (0%)				0 (0%)
! fail_ezram_bv5	5 (5.88%)				5 (5.88%)
! fail_trim_fuse	0 (0%)				0 (0%)
! fail_ana fv5	0 (0%)				0 (0%)
! fail_fuse_check	0 (0%)				0 (0%)
! fail_analog_func	0 (0%)				0 (0%)
! fail_last_item_test	0 (0%)				0 (0%)

6 { SW BIN count:

	DUT1	DUT2	DUT3	DUT4	SUM
all_pass	78 (91.8%)				78 (91.8%)
! fail_continuity	2 (2.35%)				2 (2.35%)
! fail_leakage_test	0 (0%)				0 (0%)
! fail_ezram_bv5	5 (5.88%)				5 (5.88%)
! fail_trim_fuse	0 (0%)				0 (0%)
! fail_ana fv5	0 (0%)				0 (0%)
! fail_fuse_check	0 (0%)				0 (0%)
! fail_analog_func	0 (0%)				0 (0%)
! fail_last_item_test	0 (0%)				0 (0%)

7 { Fail count (by KIND):

	DUT1	DUT2	DUT3	DUT4	SUM
AC Fail	2 (28.6%)				2 (28.6%)
DC Fail	0 (0%)				0 (0%)
PMU	0 (0%)				0 (0%)
DPS	0 (0%)				0 (0%)
PREF	0 (0%)				0 (0%)
PPMU	0 (0%)				0 (0%)
FREQ/TIME	0 (0%)				0 (0%)
OTHER Fail	5 (71.4%)				5 (71.4%)

Fail count (by TEST NO):		DUT1	DUT2	DUT3	DUT4	SUM
8001		7 (100%)				7 (100%)
8002		0 (0%)				0 (0%)
8003		0 (0%)				0 (0%)
6812		0 (0%)				0 (0%)
7100		0 (0%)				0 (0%)
7101		0 (0%)				0 (0%)
9004		0 (0%)				0 (0%)
6502		0 (0%)				0 (0%)
6503		0 (0%)				0 (0%)
6505		0 (0%)				0 (0%)
6506		0 (0%)				0 (0%)
6507		0 (0%)				0 (0%)

Fail count (by TEST ITEM):		DUT1	DUT2	DUT3	DUT4	SUM
Continuity		2 (28.6%)	2 (28.6%)			
leakage_test		0 (0%)	0 (0%)			
lv_mcu80		0 (0%)	0 (0%)			
lv_level		0 (0%)	0 (0%)			
lv_mcu68		0 (0%)	0 (0%)			
lv_serial		0 (0%)	0 (0%)			
hv_mcu80		0 (0%)	0 (0%)			
hv_level		0 (0%)	0 (0%)			
hv_mcu68		0 (0%)	0 (0%)			
hv_serial		0 (0%)	0 (0%)			
ezram_bv5		5 (71.4%)	5 (71.4%)			
ana_fv5		0 (0%)	0 (0%)			
final_item_test		0 (0%)	0 (0%)			

Figure 17-2 Test Summary Data Output Format (Printout/Text File)

No.	Name	Description
1	Tester ID	Show the tester ID.
2	Comment data	Show the comment which entered by the user.
3	Start Time Stop Time	Show the date and time when the data area was cleared to zero. Show the date and time when the data output button was pressed.
4	Socket number	Show the fail count of each socket number.
5	Total data	Show the total measured device count, pass count and fail count.
6	Category data	Show the fail count of each category number.
7	Fail Kind data	Show the fail count of each fail cause.
8	Test no. fail data	Show the fail count of each test number.
9	Test item fail data	Show the fail count of each test item.
10	Fail count percentage	Show the percentage of fail count to the measured device count of each socket number.

Table 17-3 Test Summary Output Format

HW-Item count:

	HBin name and Hbin no.			T3	DUT4	SUM
	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
all_pass (255)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
fail_drv_nrz_test (!2)	3(100%)	3(100%)	3(100%)	3(100%)	3(100%)	12(100%)
----drv_nrz_test	3(100%)	3(100%)	3(100%)	3(100%)	3(100%)	12(100%)
fail_drv_dnrz_test (!3)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
fail_drv_rz_test (!4)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
fail_drv_ro_test (!5)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
fail_drv_sbc_test (!6)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
fail_drv_ts_sel	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
fail_io_nrz_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
fail_io_dnrz_test (!9)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
fail_io_rz_test (!10)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
fail_io_ro_test (!11)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
fail_io_ts_sel_test (!12)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
fail_io_nrz1_test (!22)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)

Item-HW count:

	Test Item	DUT2	DUT3	DUT4	SUM
	3(100%)	3(100%)	3(100%)	3(100%)	12(100%)
drv_nrz_test	3(100%)	3(100%)	3(100%)	3(100%)	12(100%)
----fail_drv_nrz_test (!2)	3(100%)	3(100%)	3(100%)	3(100%)	12(100%)
drv_dnrz_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
drv_rz_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
drv_ro_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
drv_sbc_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
drv_ts_sel_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
io_nrz_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
io_nrz1_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)

SW-Item count:

	DUT1	DUT2	DUT3	DUT4	SUM
	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
all_pass (1000)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
fail_drv_nrz_test (!12)	3(100%)	3(100%)	3(100%)	3(100%)	12(100%)
----drv_nrz_test	3(100%)	3(100%)	3(100%)	3(100%)	12(100%)
fail_drv_dnrz_test (!13)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
fail_drv_rz_test (!14)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
fail_drv_ro_test (!15)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
fail_drv_sbc_test (!16)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
fail_drv_ts_sel_test (!17)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
fail_io_nrz_test (!18)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)

Item-SW count:

	Test Item	DUT2	DUT3	DUT4	SUM
	3(100%)	3(100%)	3(100%)	3(100%)	12(100%)
drv_nrz_test	3(100%)	3(100%)	3(100%)	3(100%)	12(100%)
----fail_drv_nrz_test (!12)	3(100%)	3(100%)	3(100%)	3(100%)	12(100%)
drv_dnrz_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
drv_rz_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
drv_ro_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
drv_sbc_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
drv_ts_sel_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
io_nrz_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
io_nrz1_test	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)

HWBIN count mode:

	DUT1	DUT2	DUT3	DUT4	SUM
HWBIN2	3(100%)	3(100%)	3(100%)	3(100%)	12(100%)
HWBIN3	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
HWBIN4	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
HWBIN5	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
HWBIN6	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
HWBIN7	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
HWBIN8	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)

SWBIN count mode:

	DUT1	DUT2	DUT3	DUT4	SUM
SWBIN12	3(100%)	3(100%)	3(100%)	3(100%)	12(100%)
SWBIN13	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
SWBIN14	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
SWBIN15	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
SWBIN16	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
SWBIN17	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
SWBIN18	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
SWBIN19	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
SWBIN110	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)

No.	Name	Description
1	HW-ITEM	Show relative of HW Bin and Test ITEM
2	ITEM-SW	Show relative of Test ITEM and HW Bin
3	SW-ITEM	Show relative of SW Bin and Test ITEM
4	ITEM-SW	Show relative of Test ITEM and SW Bin
5	HW Count Mode	Show relative of HW Bin count with the same bin no but different bin name
6	SW Count Mode	Show relative of SW Bin count with the same bin no but different bin name

Table 17-4 Test Summary Output Format

18. Wafer Map

18.1 Overview

The wafer map is a utility that provides the detailed information regarding wafer test results. It illustrates the pass/fail status of every single dice on the wafer and assorts all dices into different groups in terms of BIN numbers.

No.	Function	Description
1	Display	Display hardware bin, software bin or dice testing result (pass/fail).
2	Save testing result	Save dice testing results into a file.
3	View	Zoom in or zoom out the wafer map.

Table 18-1 Wafer Map Function List

18.2 Start and Quit Wafer Map

(1) Start Wafer Map

1. The wafer map is to be started from system control window.

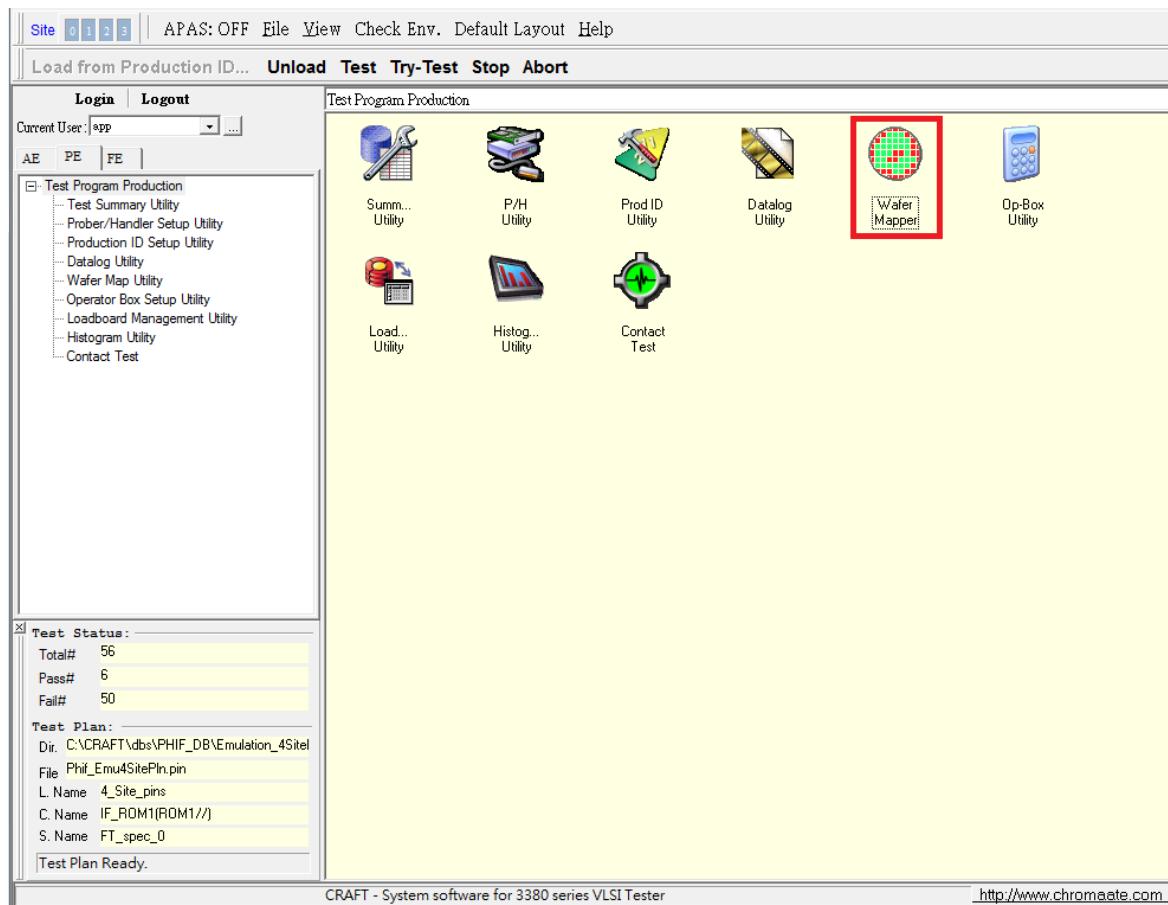


Figure 18-1 CRAFT: System Control Window

Wafer map window popped up.

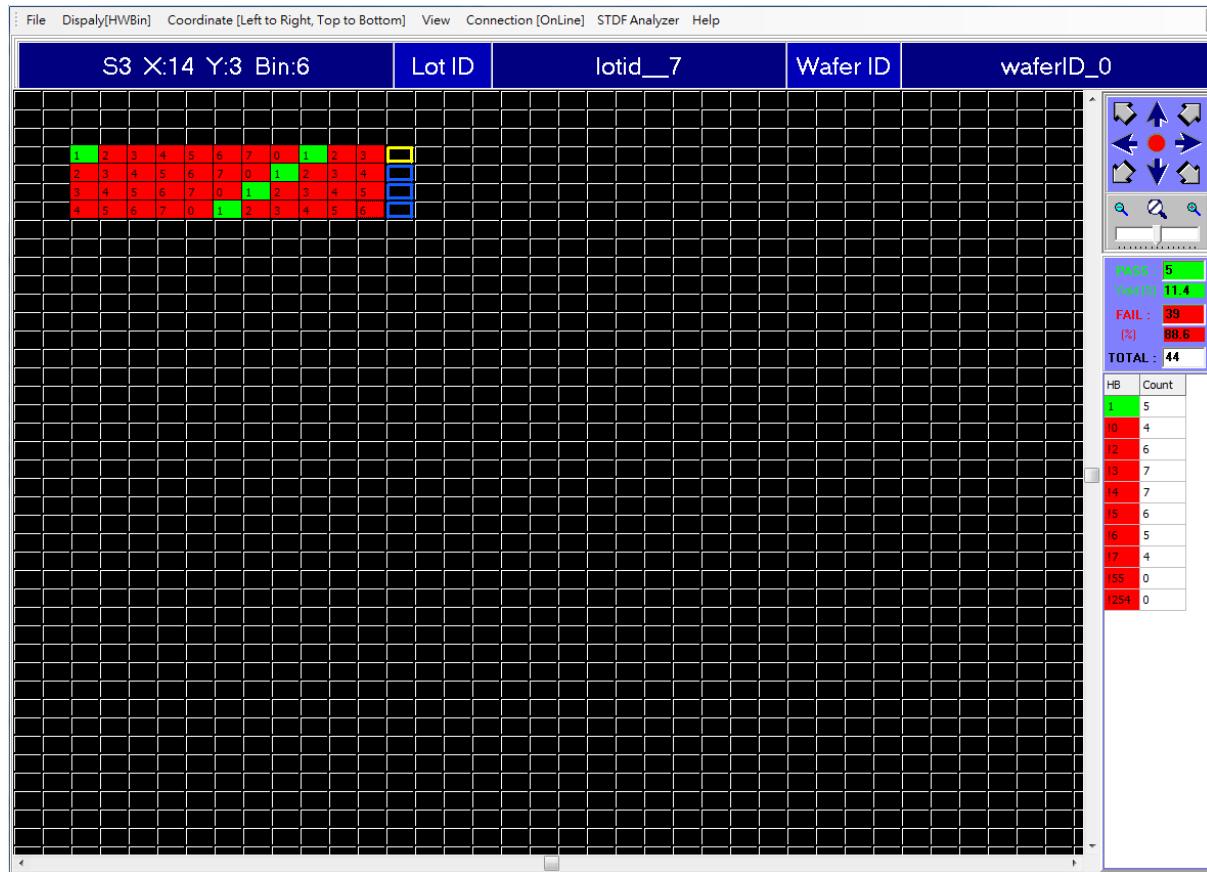


Figure 18-2 Wafer Map

(2) Quit Wafer Map

To quit wafer map, choose File | Exit to exit wafer map.

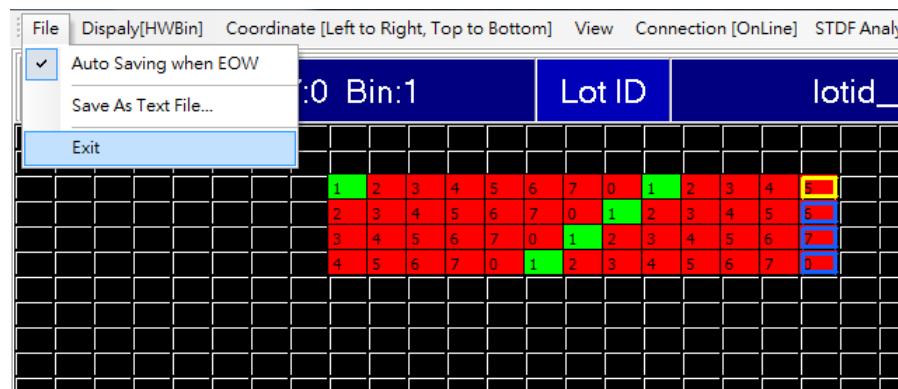


Figure 18-3 Quit Wafer Map

18.3 Overview of Initial Window

- (1) The following parameters are indicated in section A of the wafer map shown in Figure 18-4:
 - Dice testing result (pass or fail)
 - Site number
 - Coordinate of X and Y
 - Bin number
- (2) Section B in Figure 18-4 displays the following test results,
 - Count of pass dices
 - Percentage of pass dices
 - Count of fail dices
 - Percentage of fail dices
 - Total count
 - Every count of bin
- (3) Section C in figure 18-4 provides the following information:
 - Dice location
 - Dice testing result (pass or fail)
 - Bin number

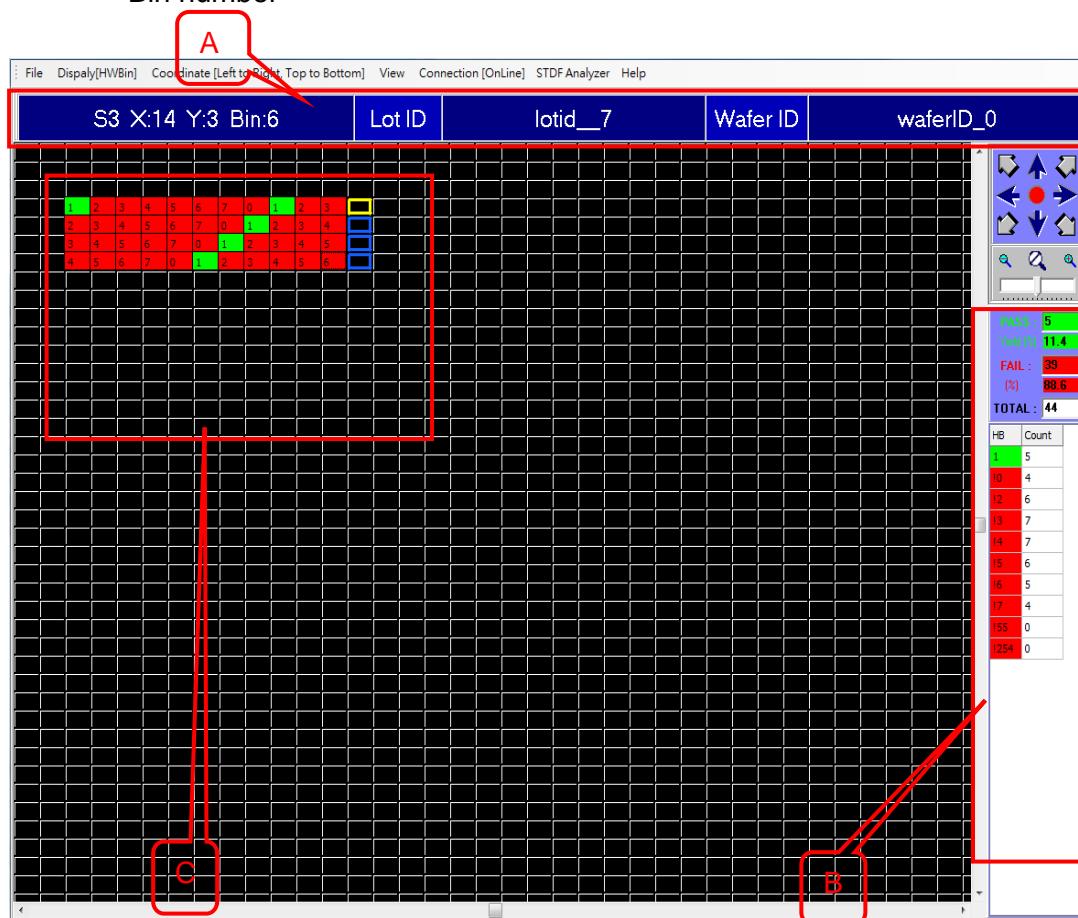


Figure 18-4 Initial Window

In Figure 18-5, click the icon or draw the scroll bar to zoom in or zoom out the wafer map of display (Figure 18-6, Figure 18-7),

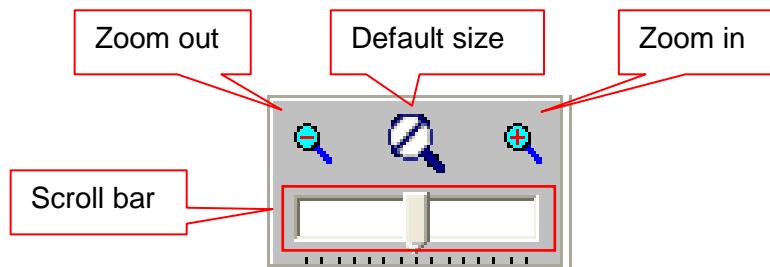


Figure 18-5 Control Zoom in or Zoom out Icon and Scroll Bar

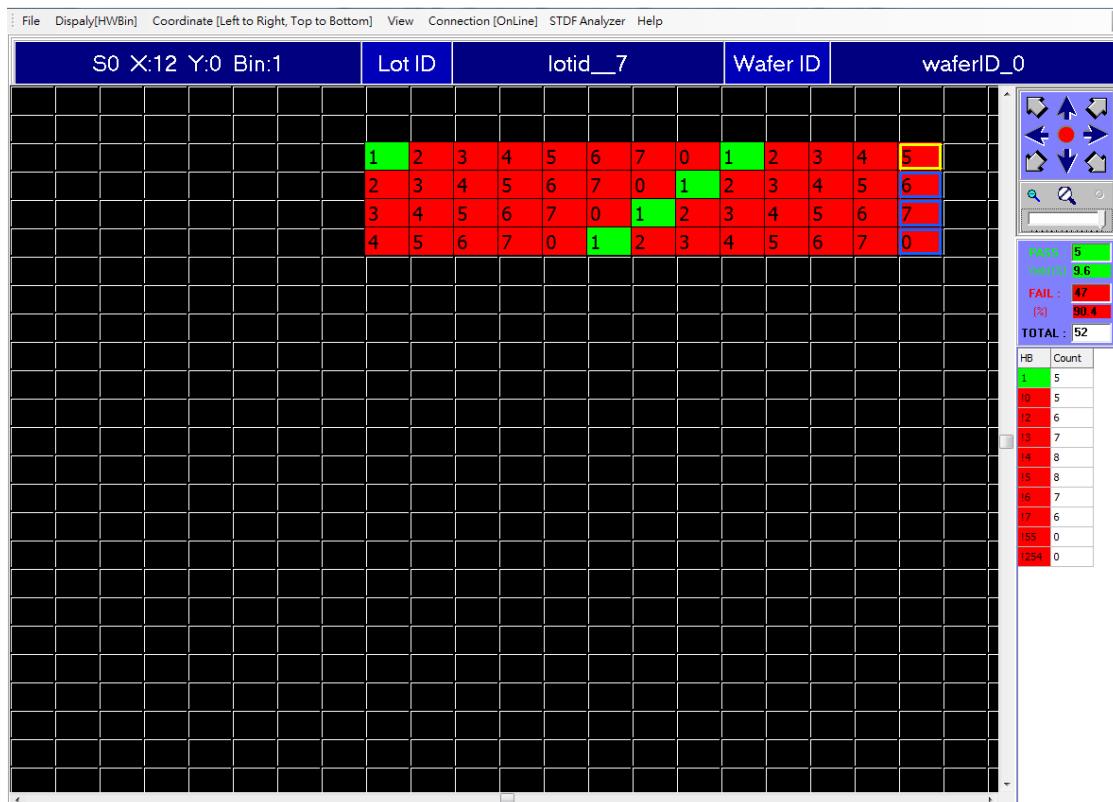


Figure 18-6 Zoom In

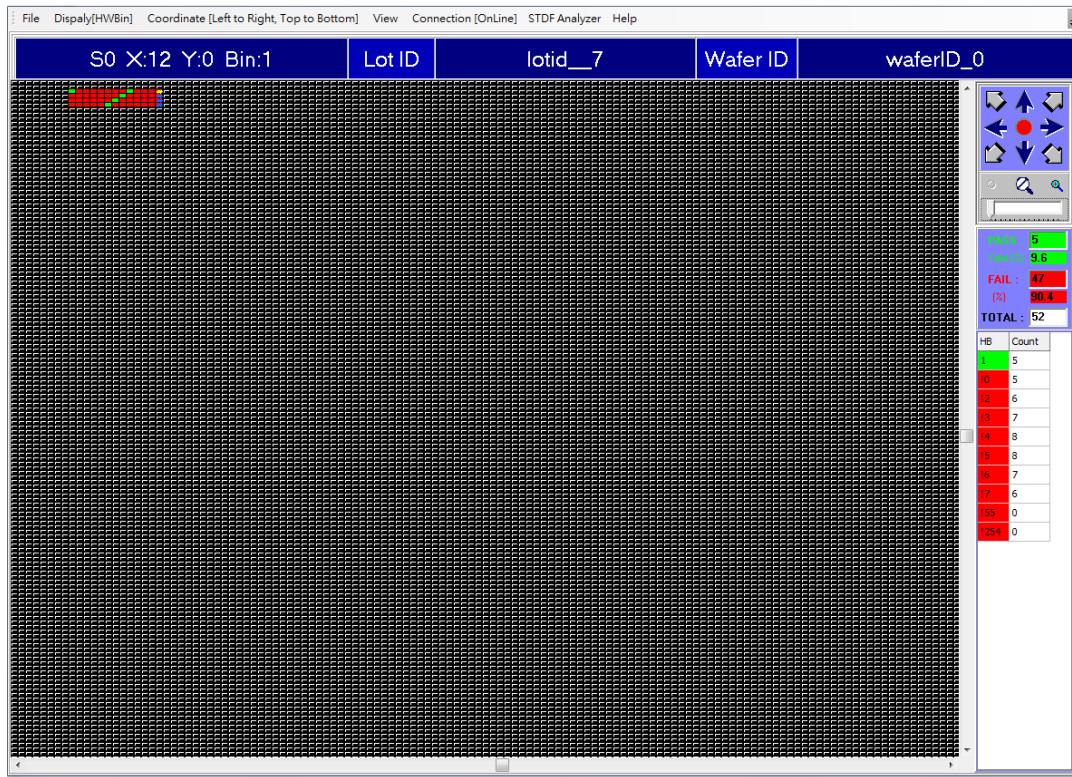


Figure 18-7 Zoom Out

In Figure 18-8, click any dice of wafer map or click the aspect icon. It can provide dice information.

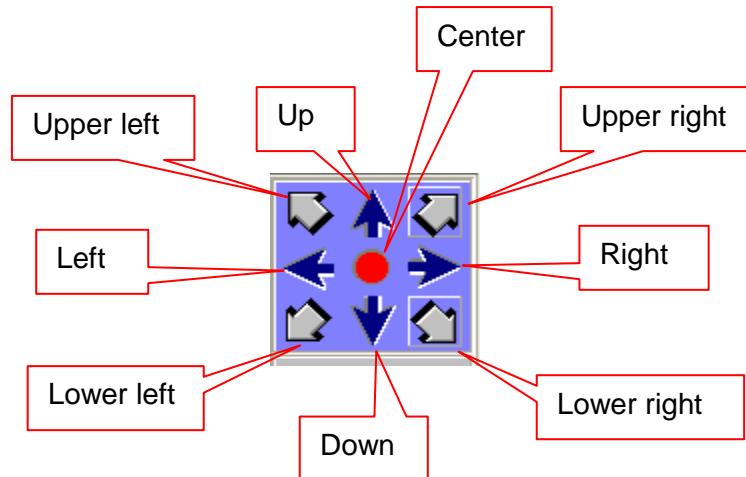


Figure 18-8 Control Aspect Icon

18.3.1 File Menu

In figure 18-9 provides the following information.

- (1) Auto Saving: When the test finished a piece of wafer, the utility will save the wafer map data.
- (2) Save as text file... : Save the wafer map data.

(3) Exit: Quit the wafer map.

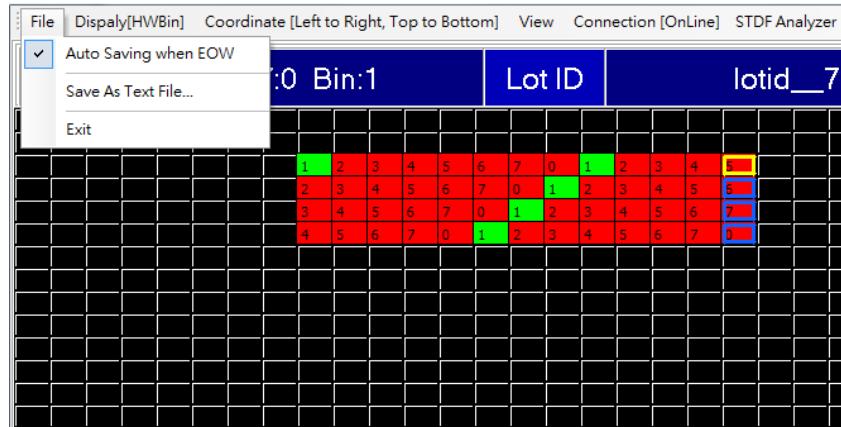


Figure 18-9 File Menu

18.3.2 Display Menu

In Figure 18-10 provides the following information.

- (1) HW Bin: Display the hardware bin.
- (2) SW Bin: Display the software bin.
- (3) Pass Fail*: Display the dice's testing result (pass or fail).

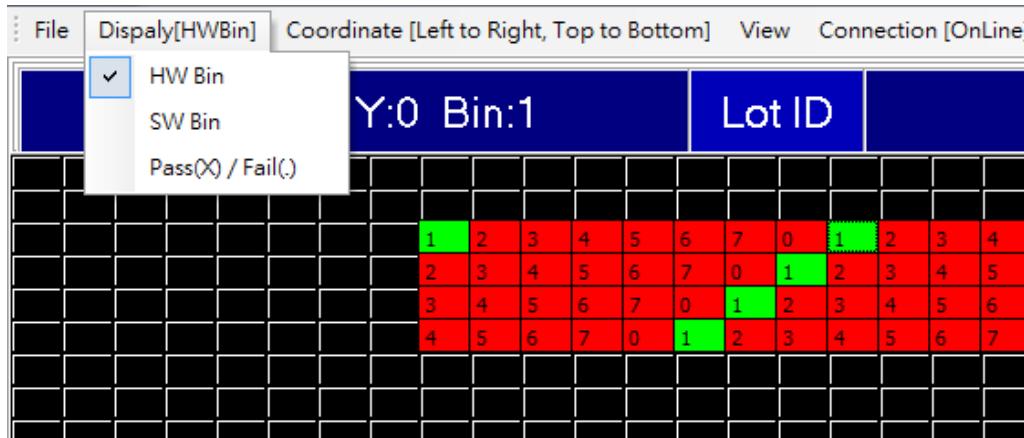


Figure 18-10 Display Menu

18.3.3 Coordinate Menu

Coordinate menu provides four coordinate systems for user to select.



Figure 18-11 Coordinate Menu

18.3.4 View Menu

In Figure 18-12 view menu provides the following information.

- (1) Auxiliary window: Display or hide the auxiliary window (Figure 18-13).
- (2) Zoom in: Zoom in the wafer map of display.
- (3) Default size: The wafer map of display size is default.
- (4) Zoom out: Zoom out the wafer map of display.
- (5) Refresh Wafer Map: Refresh wafer map information.

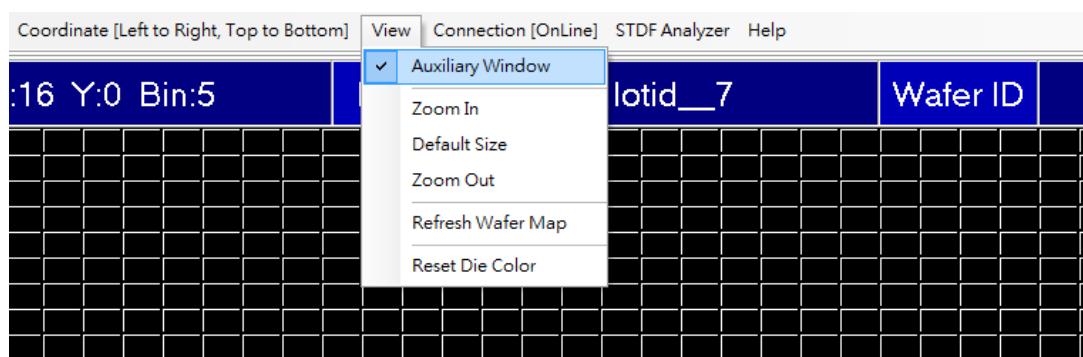


Figure 18-12 View Menu

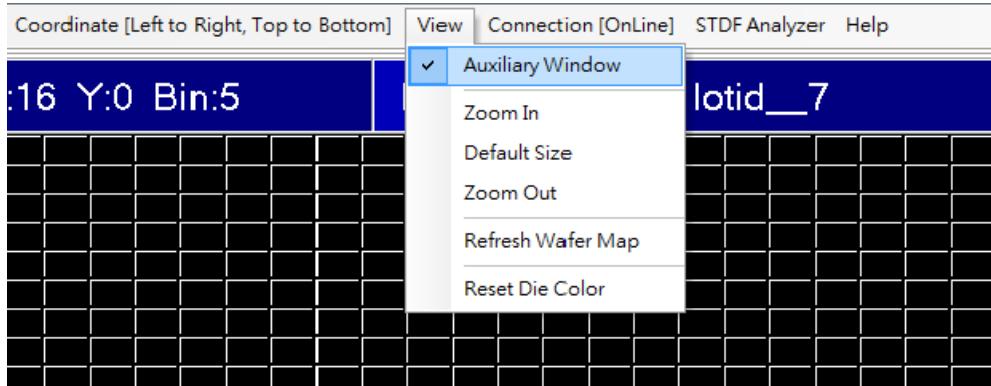


Figure 18-13 Hide the Auxiliary Window

- (6) Reset dice color (Figure 18-14): Reset display color for every bin, in the reset dice color provides the following button.

- Set All HWBin: Set all hardware bin.
- Cancel: Cancel setting
- Default: Default setting
- Apply: Apply setting
- Set All SWBin: Set all software bin.

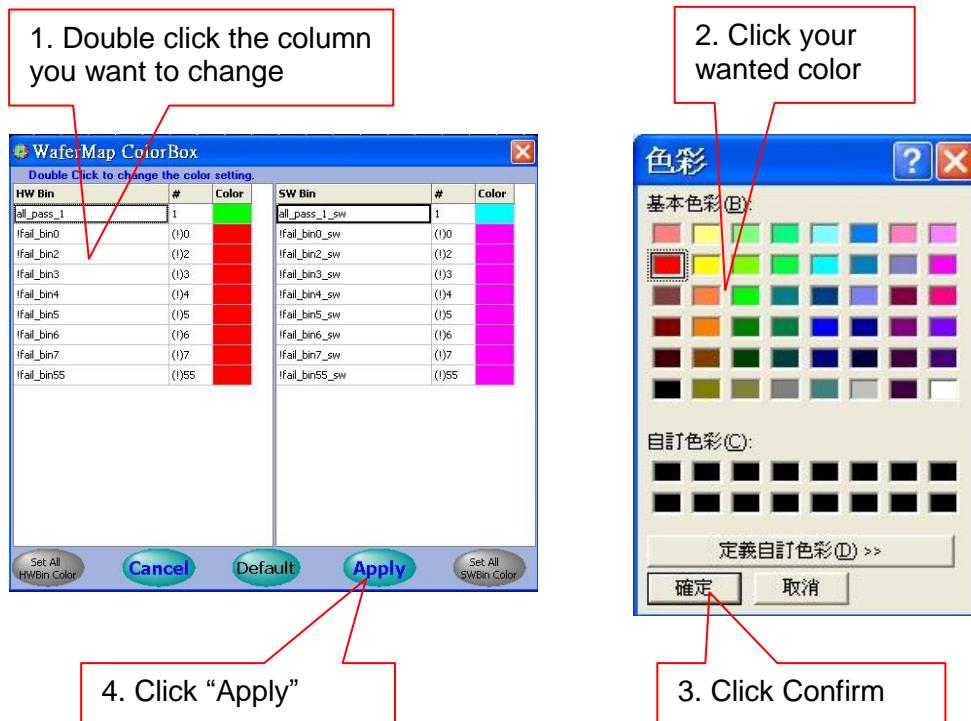


Figure 18-14 Reset Dice Color Step

18.3.5 Connection Menu

In Figure 18-15 provides the following information.

- (1) On Line: The wafer map will show the testing result of each wafer.

- (2) Off Line: No testing result will be indicated in spite of wafer testing being in progress

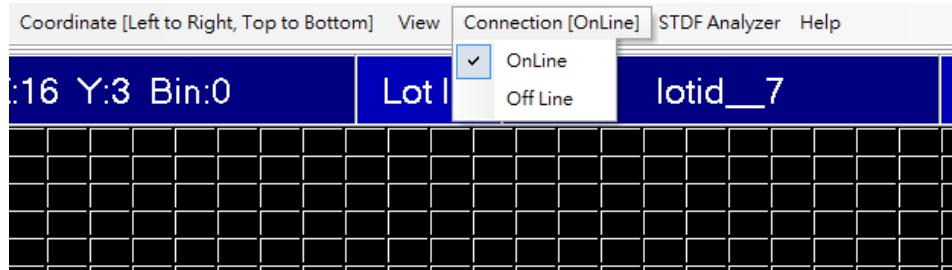


Figure 18-15 Connection Menu

19. Pin Selection Dialog

19.1 Overview

Pin Selection Dialog is a common dialog which uses in many of CRAFT utilities, such as Logic Scoper, Shmoo, Datalog ...etc. The user can select pin(s) and group(s) as desired (see Figure 19-1.).

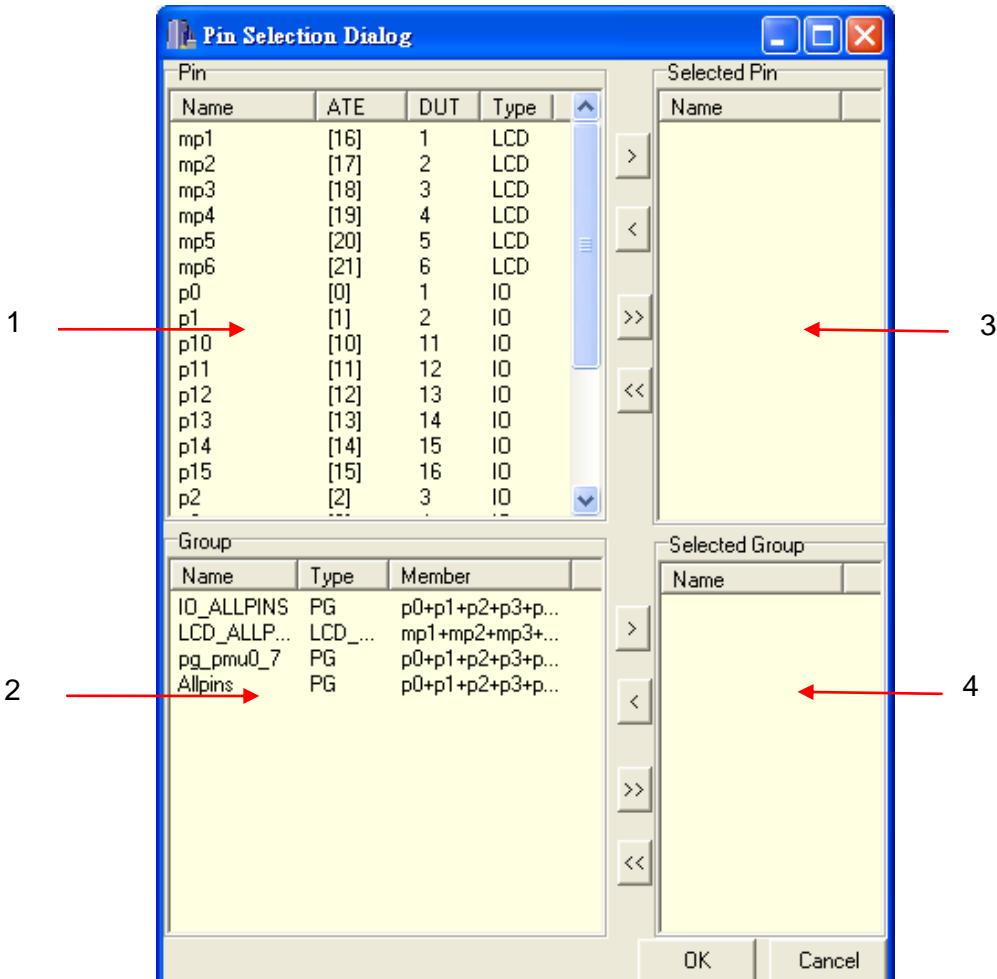


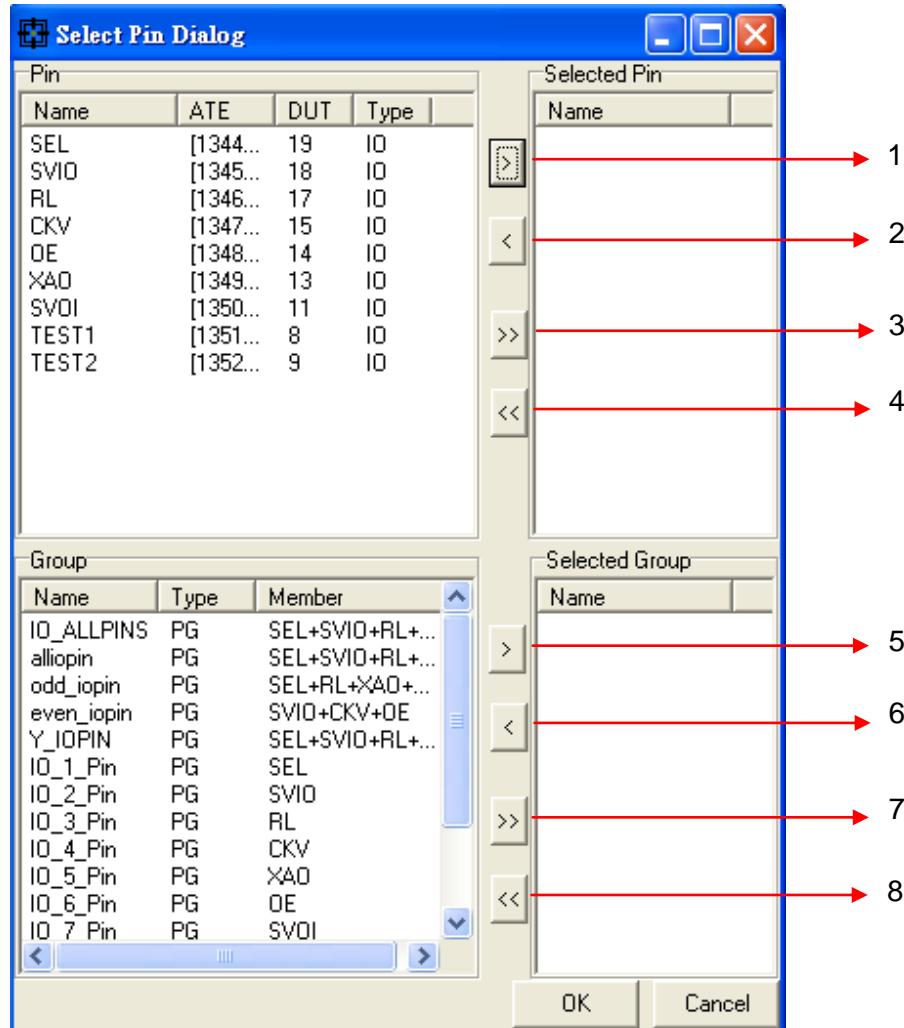
Figure 19-1 Pin Selection Dialog

No.	Function	Description
1	Pin Area	The pin(s) you can choose.
2	Group Area	The group(s) you can choose.
3	Selected Pin Area	The pin(s) that you selected.
4	Selected Group Area	The group(s) that you selected.

Table 19-1 Pin Selection Dialog Areas

19.2 Function List

19.2.1 Function of Pin Selection Dialog



No.	Function	Description
1	Add pin(s)	Add the marked pin(s) from Pin Area to Selected Pin Area.
2	Remove pin(s)	Remove marked pin(s) from Selected Pin Area.
3	Add all pin(s)	Add all pin(s) from Pin Area to Selected Pin Area.
4	Remove all pin(s)	Remove all pin(s) from Selected Pin Area.
5	Add group(s)	Add marked group(s) from Group Area to Selected Group Area.
6	Remove group(s)	Remove marked group(s) from Selected Group Area.
7	Add all group(s)	Add all group(s) from Group Area to Selected Group Area
8	Remove all group(s)	Remove all group(s) from Selected Group Area.

Table 19-2 Pin Selection Dialog Function List

19.3 Using Pin Selection Dialog

19.3.1 Mark Pins

- Click the pin (see Figure 19-2)

Name	ATE	DUT	Type
p0	[0]	1	IO
p1	[1]	2	IO
p2	[2]	3	IO
p3	[3]	4	IO
p4	[4]	5	IO
p5	[5]	6	IO
p6	[6]	7	IO
p7	[7]	8	IO
p8	[8]	9	IO
p9	[9]	10	IO
p10	[10]	11	IO
p11	[11]	12	IO
p12	[12]	13	IO
p13	[13]	14	IO
n14	[14]	15	IN

Figure 19-2 Select Pin by Clicking the Left Key of Mouse

- Hold on ctrl key and click the pin(s) to select multi pin(s) (see Figure 19-3).

Name	ATE	DUT	Type
p0	[0]	1	IO
p1	[1]	2	IO
p2	[2]	3	IO
p3	[3]	4	IO
p4	[4]	5	IO
p5	[5]	6	IO
p6	[6]	7	IO
p7	[7]	8	IO
p8	[8]	9	IO
p9	[9]	10	IO
p10	[10]	11	IO
p11	[11]	12	IO
p12	[12]	13	IO
p13	[13]	14	IO
n14	[14]	15	IN

Figure 19-3 Select Pin by Holding Ctrl with Clicking the Left Key of Mouse

- Hold on shift key and click the pin to select more pins. (See Figure 19-4)

Name	ATE	DUT	Type
p0	[0]	1	IO
p1	[1]	2	IO
p2	[2]	3	IO
p3	[3]	4	IO
p4	[4]	5	IO
p5	[5]	6	IO
p6	[6]	7	IO
p7	[7]	8	IO
p8	[8]	9	IO
p9	[9]	10	IO
p10	[10]	11	IO
p11	[11]	12	IO
p12	[12]	13	IO
p13	[13]	14	IO
n14	[14]	15	IN

Figure 19-4 Select Pin by Holding Shift with Clicking the Left Key of Mouse

- Drag a region with mouse then the pins in the region will be selected. (See Figure 19-5)

Name	ATE	DUT	Type
p0	[0]	1	IO
p1	[1]	2	IO
p2	[2]	3	IO
p3	[3]	4	IO
p4	[4]	5	IO
p5	[5]	6	IO
p6	[6]	7	IO
p7	[7]	8	IO
p8	[8]	9	IO
p9	[9]	10	IO
p10	[10]	11	IO
p11	[11]	12	IO
p12	[12]	13	IO
p13	[13]	14	IO
n14	[14]	15	IN

Figure 19-5 Select Pin by Dragging the Cursor

- Use hotkey: The Ctrl and A keys to select all (see Figure 19-6)

Name	ATE	DUT	Type
p0	[0]	1	IO
p1	[1]	2	IO
p2	[2]	3	IO
p3	[3]	4	IO
p4	[4]	5	IO
p5	[5]	6	IO
p6	[6]	7	IO
p7	[7]	8	IO
p8	[8]	9	IO
p9	[9]	10	IO
p10	[10]	11	IO
p11	[11]	12	IO
p12	[12]	13	IO
p13	[13]	14	IO
n14	[14]	15	IN

Figure 19-6 Select All Pins by Ctrl and A Keys

- Click a group, the pin member will be selected. (See Figure 19-7)

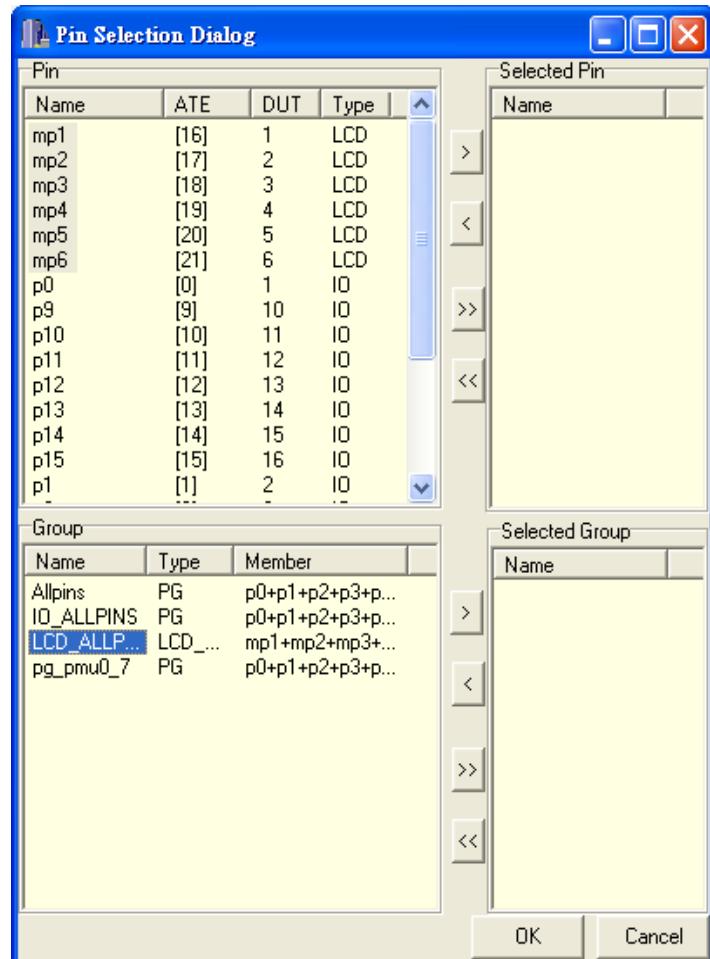


Figure 19-7 Select Pin(s) by Clicking Group

19.3.2 Add/Remove Pin(s)

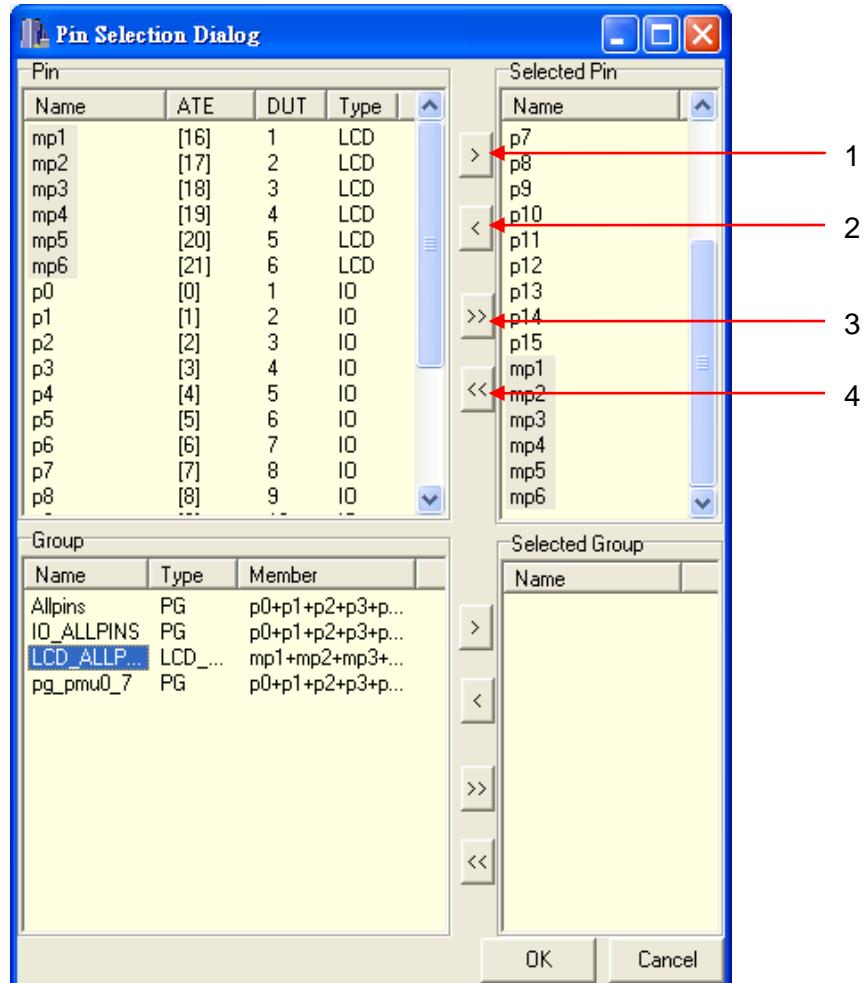


Figure 19-8 Add/Remove Pin(s)

No.	Function	Description
1	Add pin(s)	Add marked pin(s) from Pin Area to Selected Pin Area
2	Remove pin(s)	Remove marked pin(s) from Selected Pin Area.
3	Add all pin(s)	Add all pin(s) from Pin Area to Selected Pin Area
4	Remove all pin(s)	Remove all pin(s) from Selected Pin Area.

Table 19-3 Add/Remove Pin(s)

19.3.3 Add/Remove Group(s)

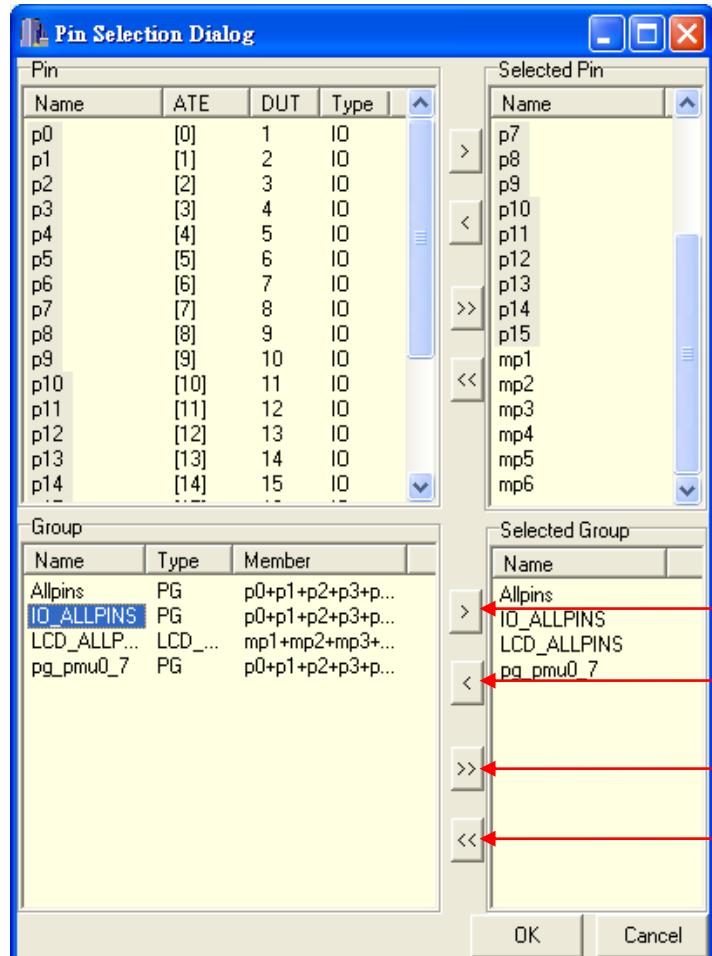


Figure 19-9 Add/Remove Group(s)

No.	Function	Description
1	Add group(s)	Add marked group(s) from Group Area to Selected Group Area.
2	Remove group(s)	Remove marked group(s) from Selected Group Area.
3	Add all group(s)	Add all group(s) from Group Area to Selected Group Area
4	Remove all group(s)	Remove all group(s) from Selected Group Area.

Table 19-4 Add/Remove Group(s)

20. AWI Tool

20.1 Overview

The AWI Tool is a utility that provides Analog Waveform Generator (WG) and Waveform Digitizer (WD) functions.

There are three main functions in the AWI Tool

No.	Function	Description
1	Waveform Generator (WG)	(1) Generate Sine / Ramp waveform. (2) Saving the generated waveform to a WG (*.awi) file. (3) Loading the saved WG file and redisplaying the waveform.
2	Waveform Digitizer (WD)	(1) Loading the raw data and getting the corresponding values of INL, DNL, THD, SND, SNR and THD+N. (2) Reading the raw data of the LXA WI Pin. (3) Displaying the raw data as WD_AC / WD_DC spectrum.

Table 20-1 Functions of the AWI Tool

20.2 Starting the AWI Tool

To open the AWI Tool, click the icon of “AWI Tool” from the System Control window or click on “AWI Tool” on left side of system control window.

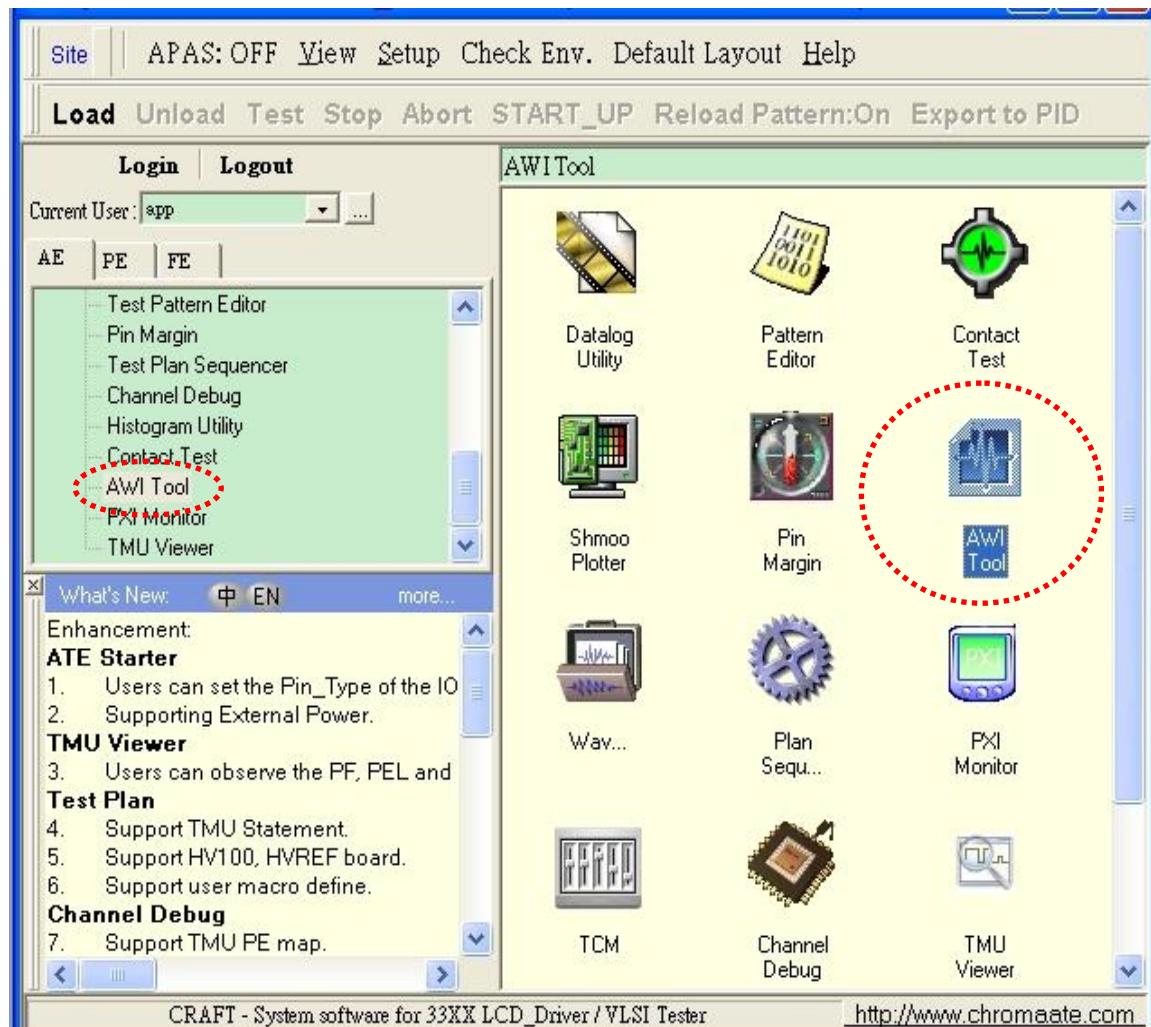


Figure 20-1 Starting the AWI Tool

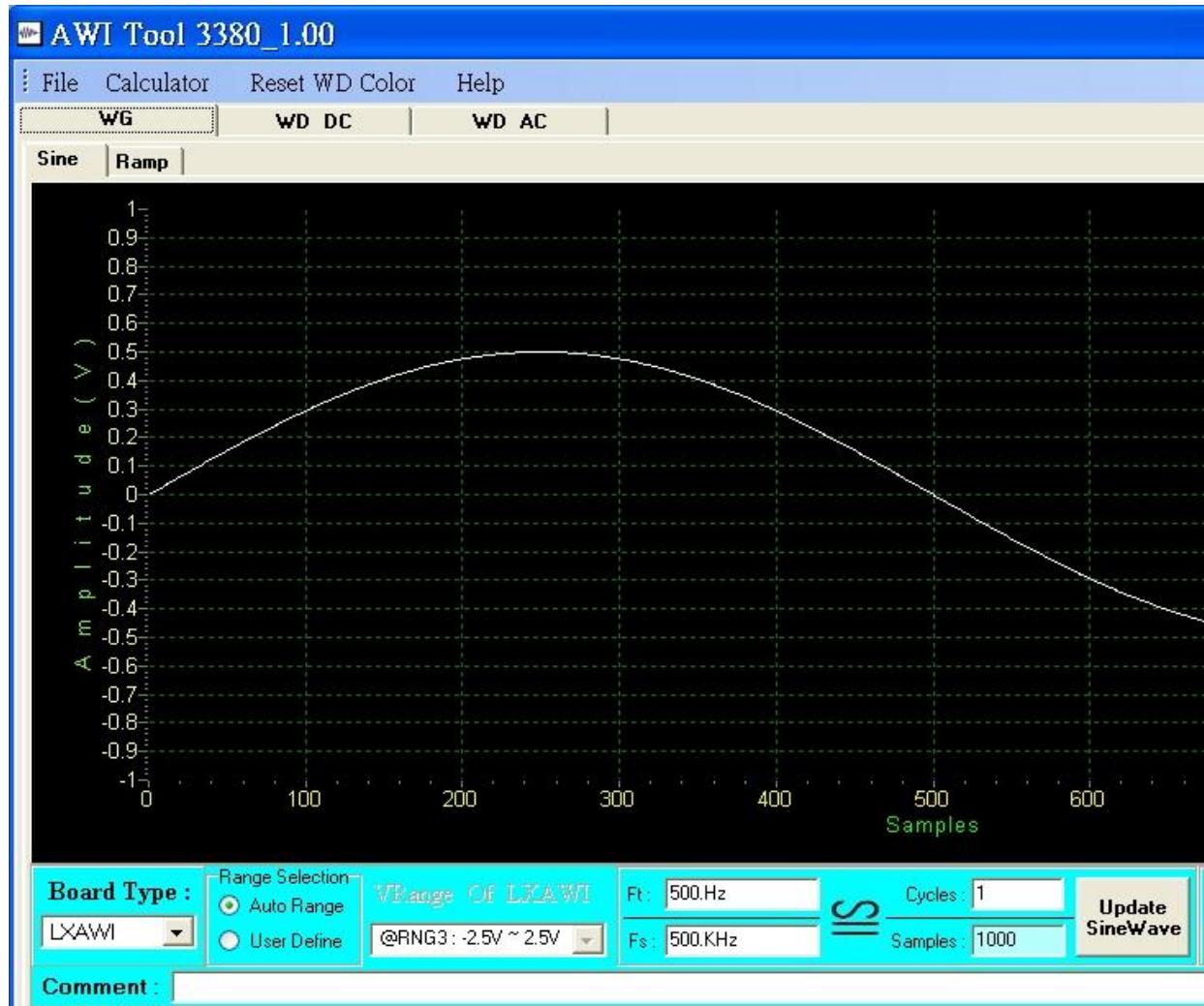


Figure 20-2 AWI Tool

20.3 Waveform Generator (WG)

20.3.1 Sine Wave Generator

Fill in the Frequency (Ft), Sample Rate (Fs), and the Cycle number then press the button of “Update Sine Wave”, user can get the corresponding number of the “sample points” and the sine wave.

Where “Ft” is the test signal frequency, “Fs” is the sampling rate, “Cycle” is the test signal cycles, and the “Samples” is the sample points.

Note that the “Samples” is uneditable.

For example, setting “Ft” as 3.3KHz, “Fs” as 519.97KHz, “Cycle” as 13, then pressing the “Update Sine Wave” button, we getting the samples number is 2048 and the generated sine wave as Figure 20-3

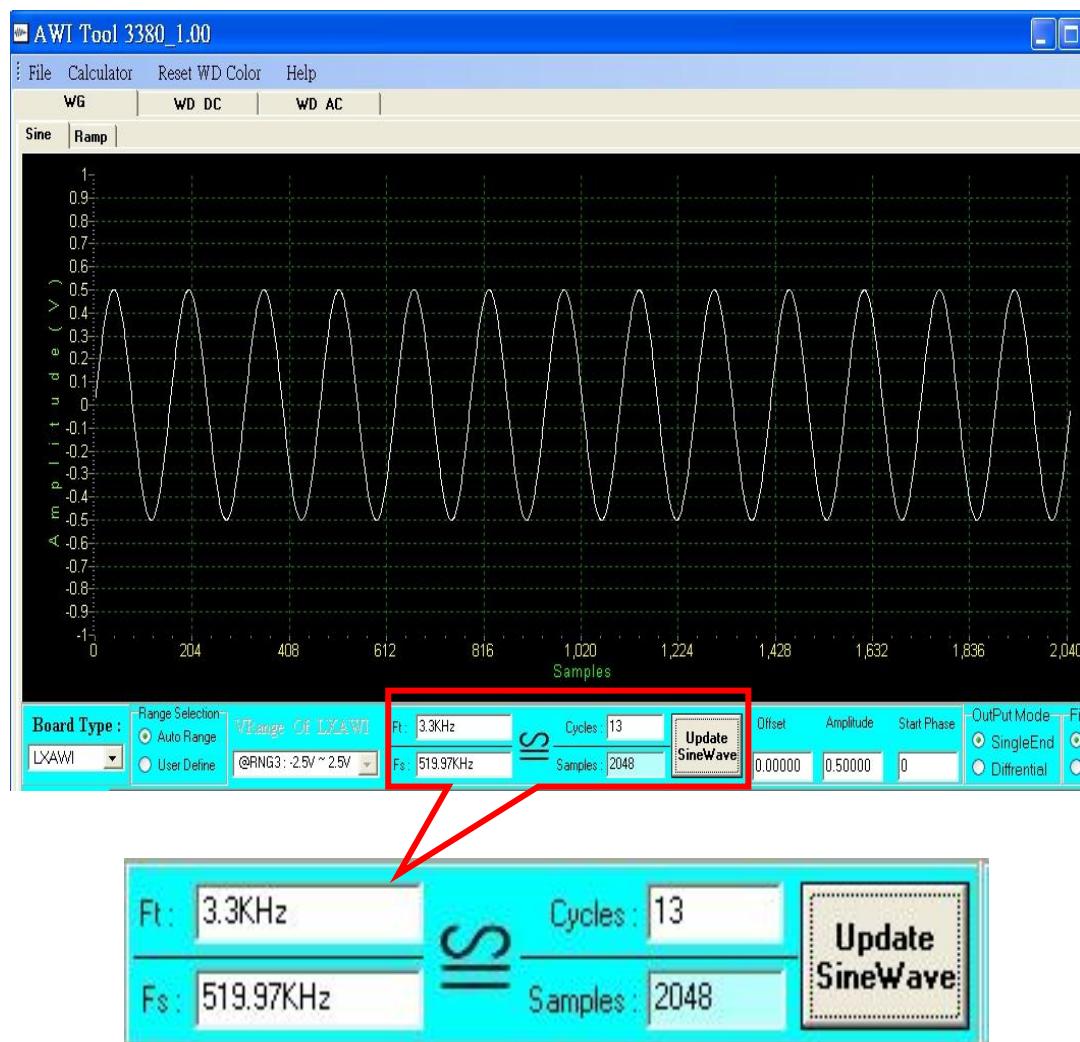


Figure 20-3 Example of Generating Sine Wave by Key in Ft, Fs & Cycles

Note that there is an auxiliary calculator to help user to getting the demanding sine wave (see 20.4)

We can also modify the “Offset”, “Amplitude”, and “Start Phase” of the waveform by modifying the corresponding field.

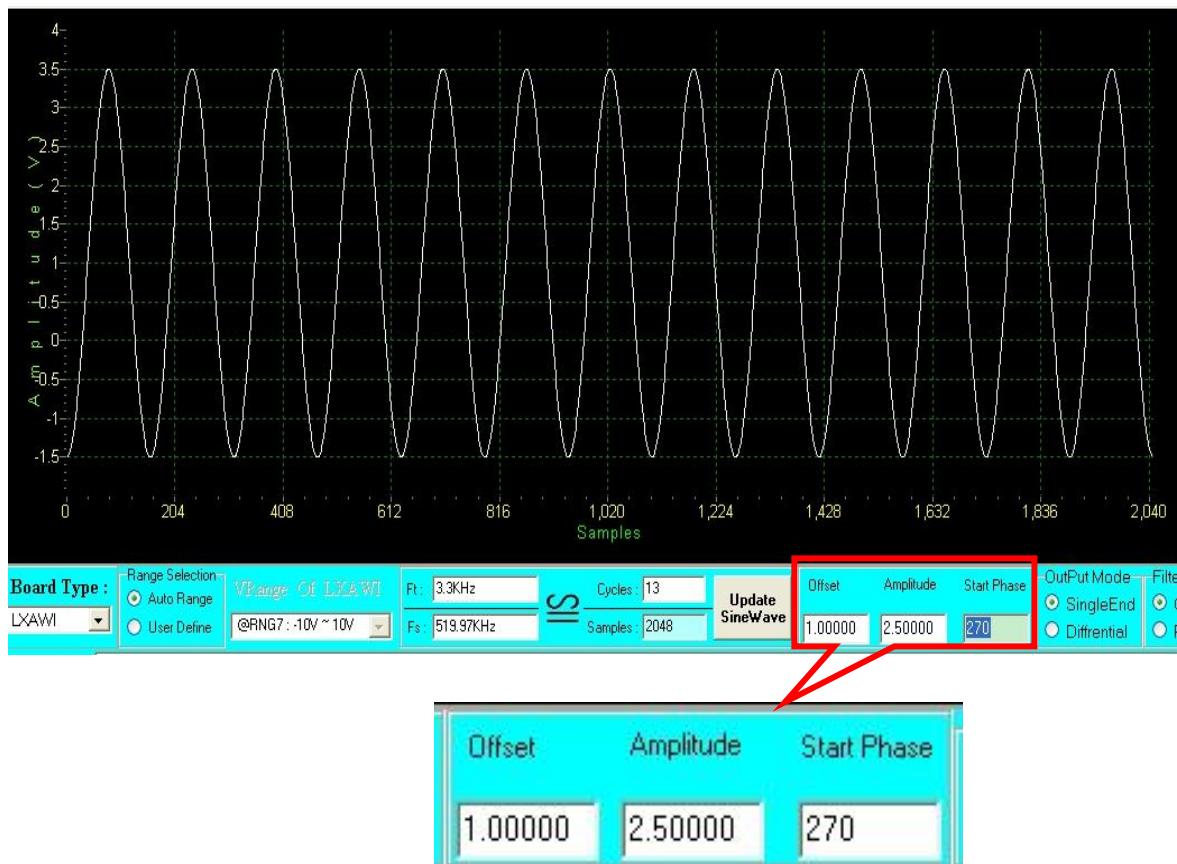


Figure 20-4 Modifying the Offset, Amplitude & Start Phase of Sine Wave

20.3.2 Ramp Wave Generator

To generate the ramp wave:

Step 1: Click the WG tab then choose the “Ramp” tab.

Step 2: Fill in the “Start Voltage”, “Stop Voltage” and “Stairs”, the relative ramp wave will be generated.

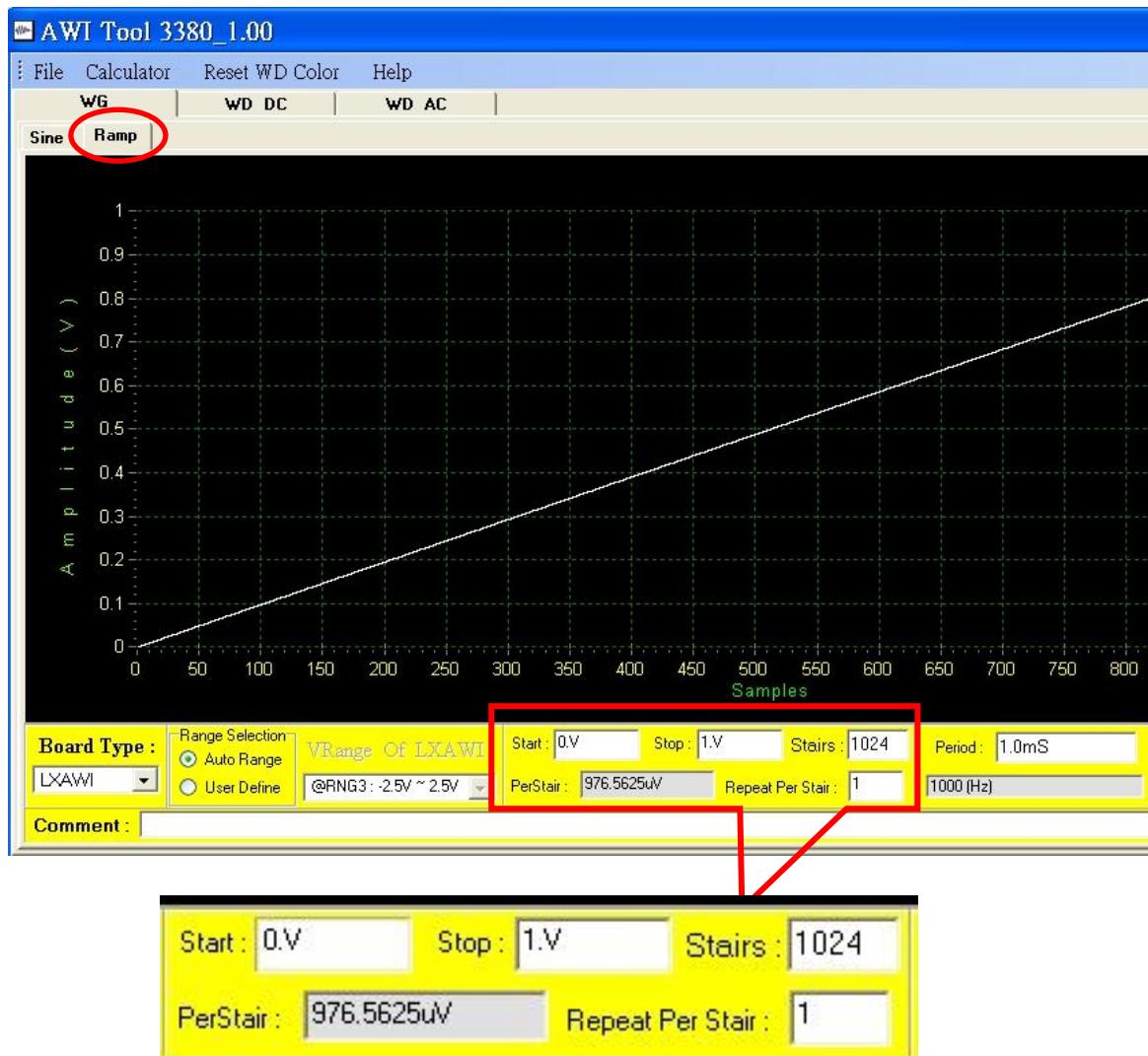


Figure 20-5 User interface of the Ramp Waveform Generator

20.3.3 Save the generated Waveform as the AWI File

- Step 1: Click the item of “Save WG Data As...” from the File menu, a “Save As...” dialog will pop up.
 Step 2: Select the directory and key in the filename, then press the “Save” button.

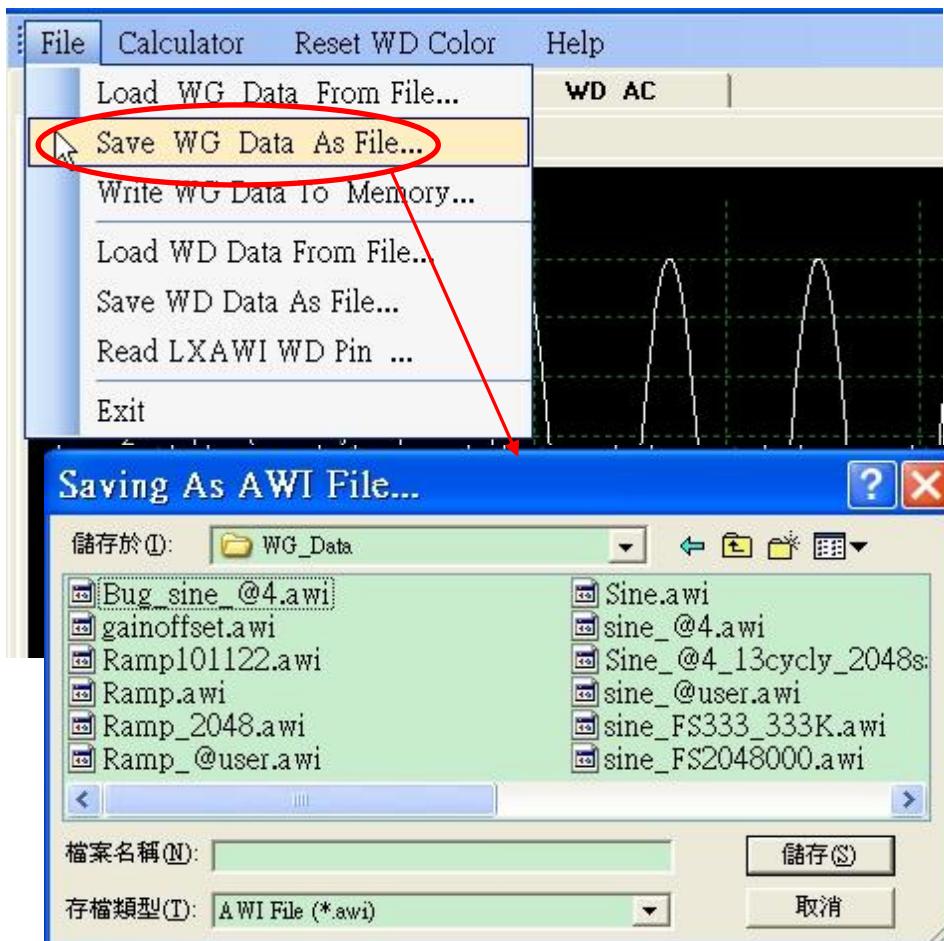


Figure 20-6 Save the Generated Waveform as the AWI File

20.3.4 Load the Saved AWI File

Step 1: Click the item of “Load WG Data ...” from the File menu, there will be an “Open” dialog popped up.

Step 2: Select the saved AWI file you want to open.

Step 3: After the “Open” button is pressed, the saved waveform will be redisplayed.

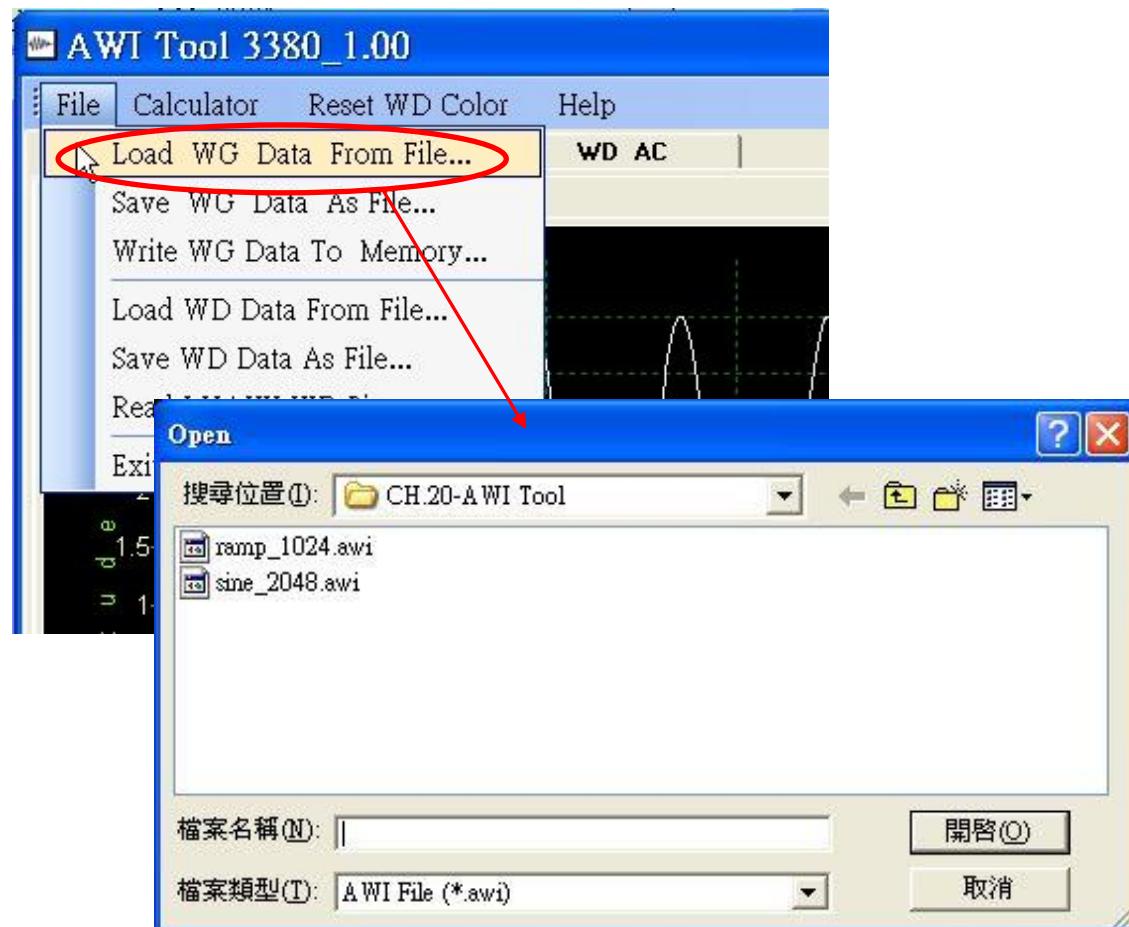


Figure 20-7 Load the Saved AWI File

As Figure 20-8 and Figure 20-9, there are two main section of information in the *.awi file. User had better don't try to modify the awi file. If the modified file not fit in with the format, it can't be reloaded by AWI_Tool.

```
VERSION: 1.00          // AWI Tool 3380_1.00
BOARD_TYPE: LXAWI
AWG_WAVE: sine
AWG_SAMPLING_PERIOD: 0.0000020000000000
AWG_OUTPUT_MODE: SINGLE_END
AWG_FILTER: OFF
AWG_VRNG: @RNG3
AWG_SAMPLING_RATE: 500000.00000 //Reference Only
AWG_SAMPLES_NO: 1000          //Reference Only
OUTPUT_FREQUENCY: 500.000000 //Reference Only
OUTPUT_CYCLES_NO: 1           //Reference Only
OUTPUT_OFFSET: 0.00          //Reference Only
OUTPUT_AMPLITUDE: 0.50       //Reference Only
AWG_SAMPLING_PHASE: 0         //Reference Only
COMMENT: (null)
AWG_PATTERN (sine) {
0.000000000000
0.003141571983
0.006283019942
0.009424219858
...
...
...
-0.021984059159
-0.018845091335
-0.015705379539
-0.012565047722
-0.009424219858
-0.006283019942
-0.003141571983
}
```

Header

Raw
Data

Figure 20-8 AWI File Format of Sine Waveform

```
VERSION: 1.00          //AWI Tool 3380_1.00
BOARD_TYPE: LXAWI
AWG_WAVE: ramp
AWG_SAMPLING_PERIOD: 0.0010000000
AWG_OUTPUT_MODE: SINGLE_END
AWG_FILTER: OFF
AWG_VRNG: @RNG3
AWG_START: 0.000000 0      //Reference Only
AWG_STOP: 1.000000        //Reference Only
AWG_STAIRS: 512           //Reference Only
AWG_PER_STAIR: 0.001953125 //Reference Only
AWG_REPEAT_PER_STAIR: 1    //Reference Only
OUTPUT_OFFSET: 0.00        //Reference Only
COMMENT: (null)
AWG_PATTERN (ramp) {
0.000000000000
0.001953125000
0.003906250000
0.005859375000
0.007812500000
...
...
...
0.990234375000
0.992187500000
0.994140625000
0.996093750000
0.998046875000
}
```

Figure 20-9 AWI File Format of Ramp Waveform

20.4 Calculator for the Sine Wave Generator

On the menu bar there is a menu of “Calculator”, and it has four sub menus, “General”, “LXAWI”, “NI4461” and “NI5422”. It’s an assistant tool for user to get the wanted sine waveform.

(1) General Calculator

1. Press the “Calculator” on the menu bar
2. Press the sub menu of “General”.
3. “General Calculator” popped up.
4. There are 4 fields of data for user to key in (Ft, Fs, Cycles and Samples), Note that fill in the field of Fs will get “1/Fs”; also, fill in the data of “1/Fs” will get Fs too. Fill in 3 fields and let one field be empty, and then press the **Calculate** button to get the result of the empty field.

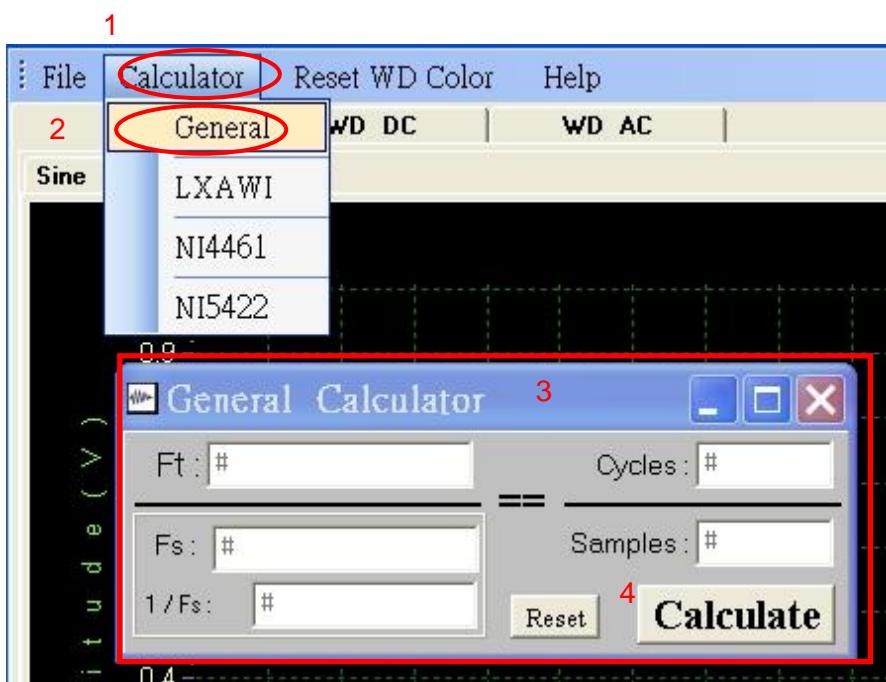


Figure 20-10 General Calculator

(2) Calculator for LXAWI.

This Calculator is almost all the same as the General Calculator. Fill in 3 fields of data then press the **Calculate** button to get the result. Be sure that the maximum sampling rate (Fs) for the LXAWI board is 50MHz, that is the resolution of the “1 / Fs” is 10nS, and the maximum “Samples” is 242144 (256K)

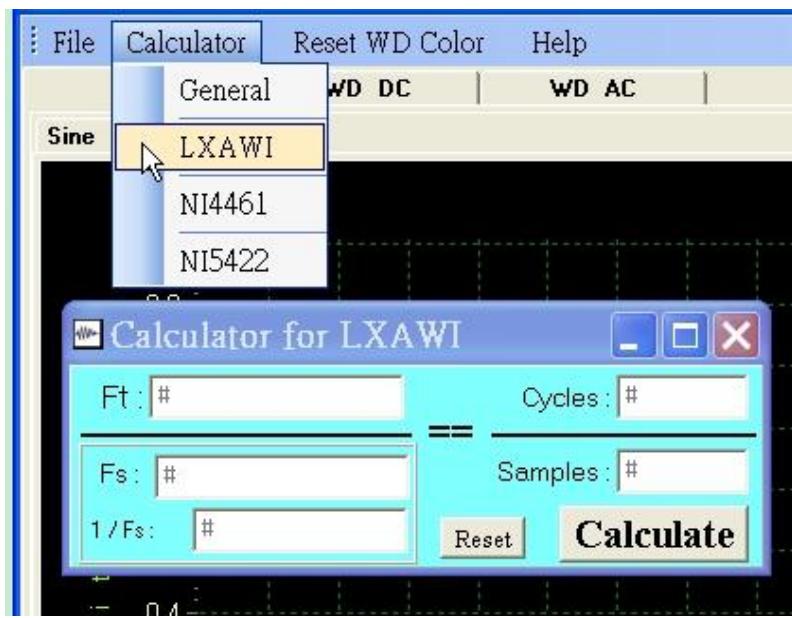


Figure 20-11 Calculator for the LXAWI

(3) Calculator for NI4461.

This Calculator is almost all the same as the Calculator for the LXAWI board. The range of the sampling rate (Fs) for the NI4461 is 1KHz ~ 204.8KHz, and the minimum value of "1 / Fs" is 4.88uS.

(4) Calculator for NI5422.

Like Calculator for NI4461, but the range of the Fs is (5MHz ~ 200MHz), and $F_s = (200\text{MHz} / X)$, X can be the integer of 1 ~ 40.

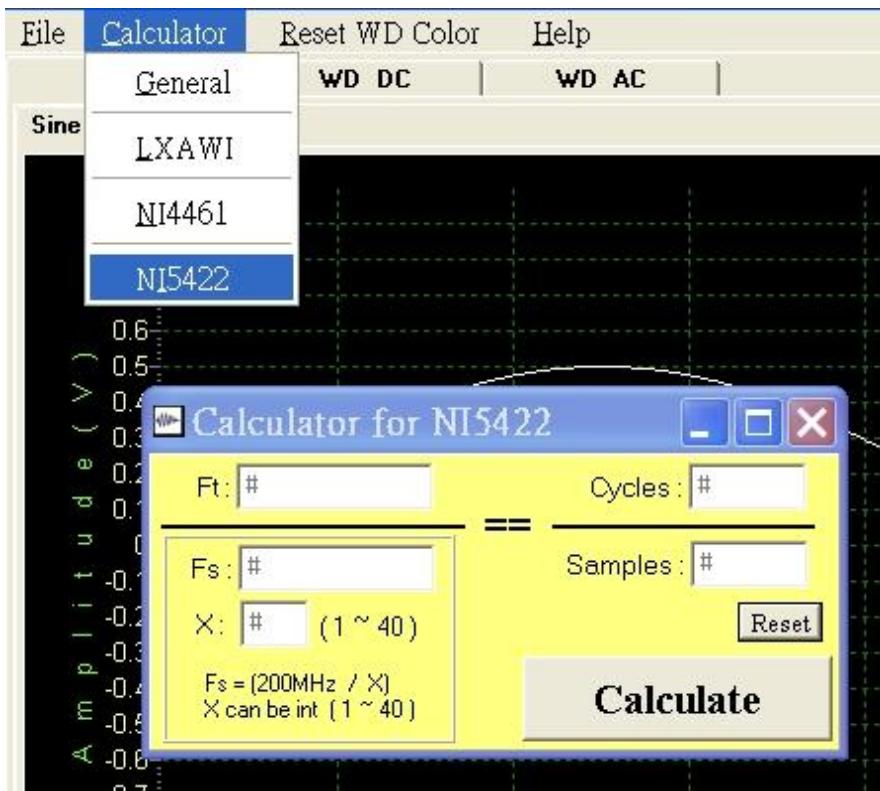


Figure 20-12 Calculator for the LX461

20.5 Waveform Digitizer (WD)

User can load the generated WD data file or directly read the hardware data by the LXAWI pin.

20.5.1 Load WD Data

User can load WD Date from the File Menu or from a popup menu of the String Grid of the “WD DC” tab or “WD AC” tab.

(1) From the File Menu

Click the item of “Load WD DC Data ...” from the File menu, there will be an “Open” dialog popped up. Select the file type and file name then press the Open button.

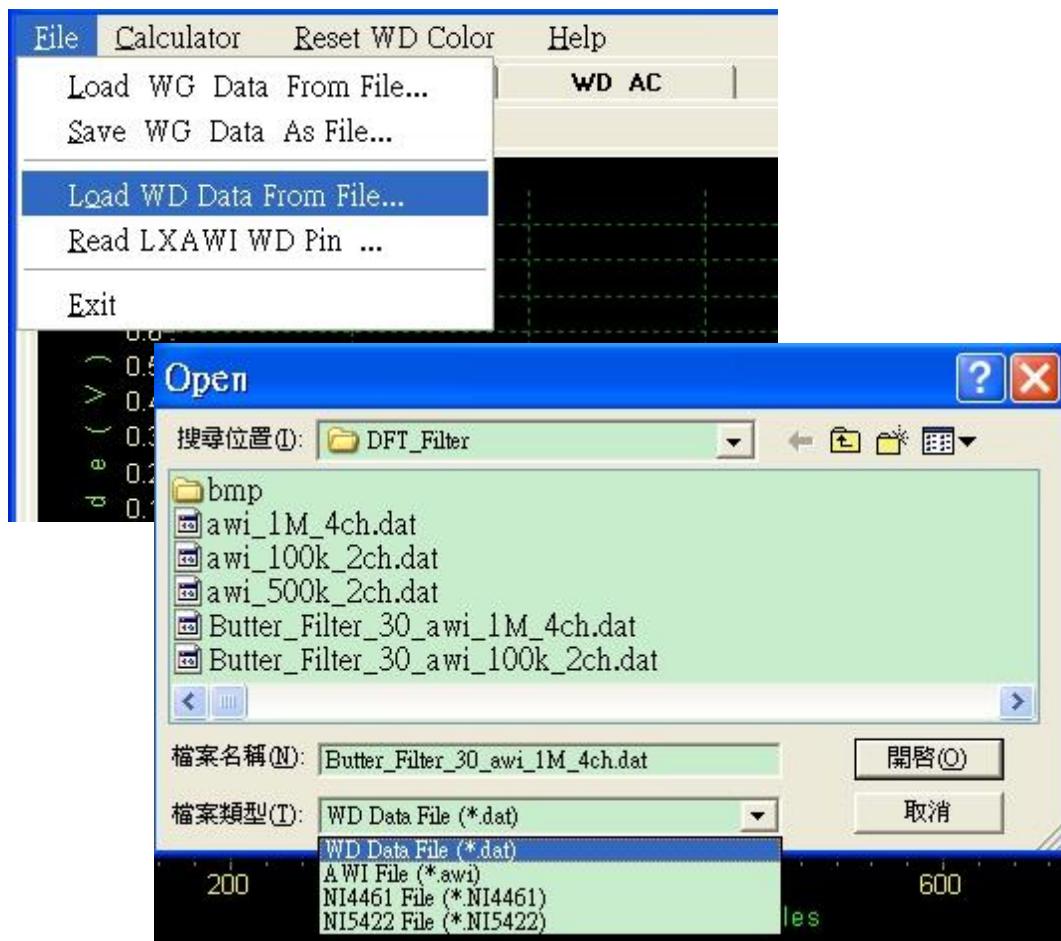


Figure 20-13 Load WD Data from File Menu

- (2) From the popup menu of the String Grid of the “WD DC” tab or “WD AC” tab. Right Click the String Grid area of the “WD DC” or “WD AC” and there will be a menu popped up. Click the item of “Load WD DC Data ...” from the menu, there will be an “Open” dialog popped up. Select the file type and file name then press the Open button.

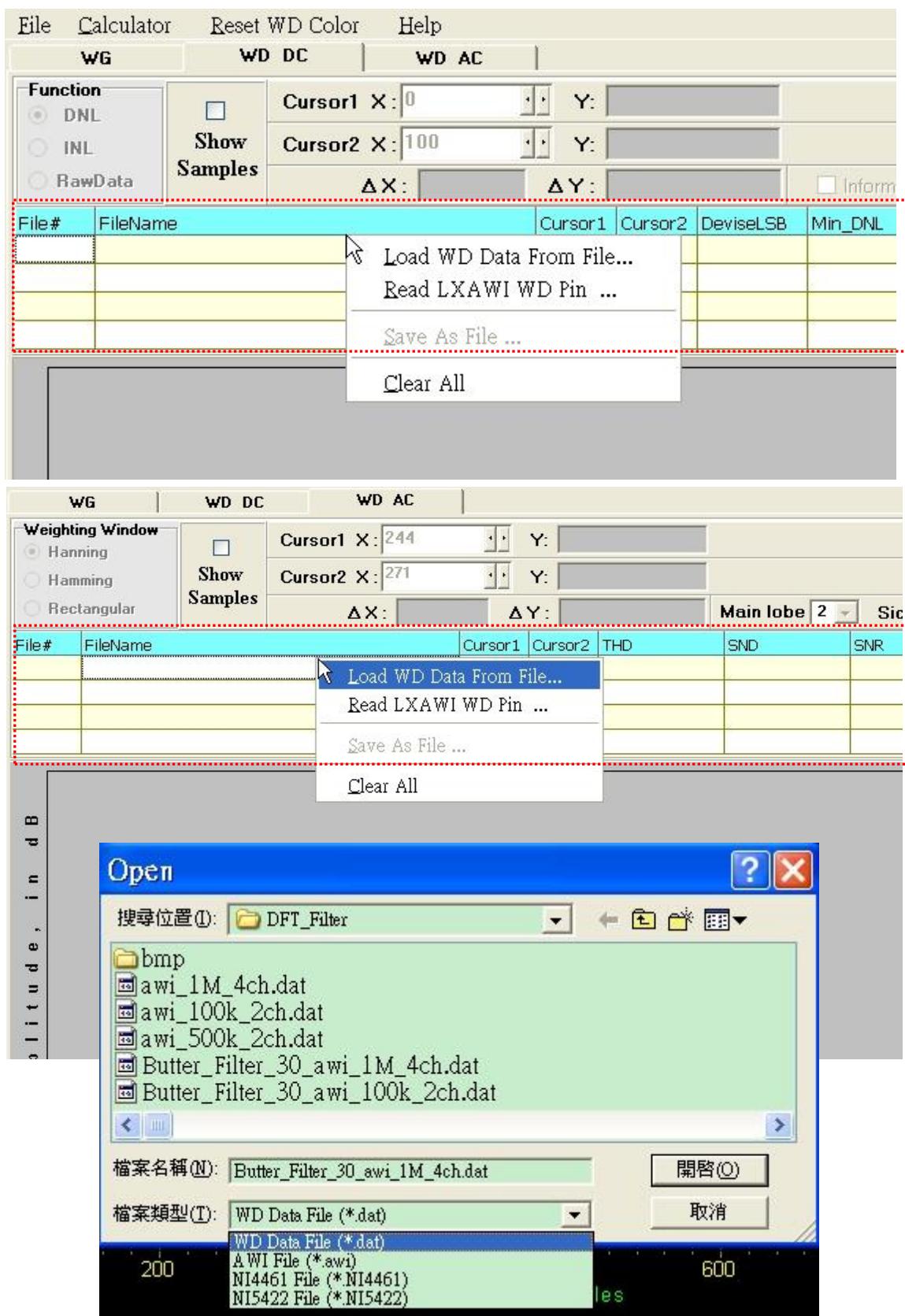


Figure 20-14 Load WD Data from Popup Menu of String Grid

20.5.2 WD DC Functions

After loading the WD data, there are functions of **DNL**, **INL**, and **Raw Data** for user to select.

(1) Raw Data function

Figure 20-15 displays the Raw Data of the two loaded files with different color, and the minimal and maximum raw data value of the loaded file will be displayed on the “Min” and “Max” field.

If the value of the “Min” field is “-2.457851(455)”, means that the minimum raw data value is at the 455th point of the file (index of the 1st point is 0), and the minimum value is -2.457851.

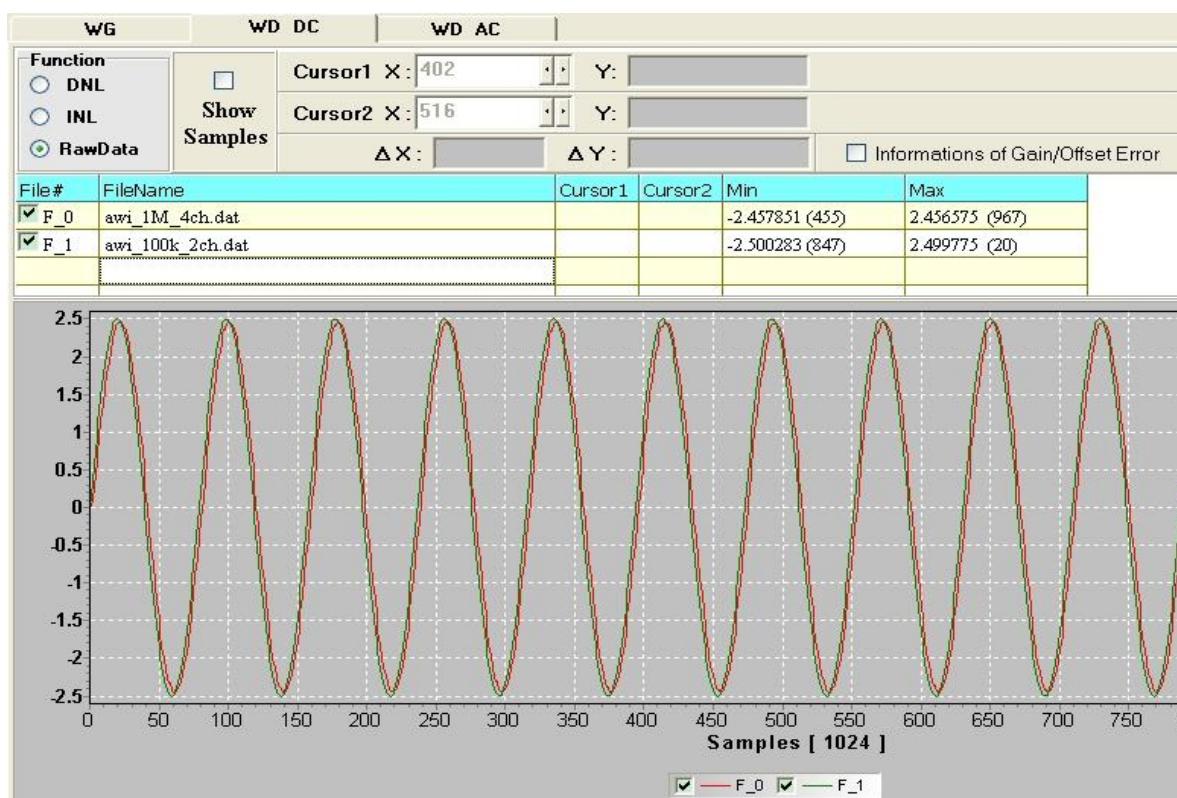


Figure 20-15 WD_DC Raw Data Function

(2) DNL function

Figure 20-16 is the DNL Plot. The DeviceLSB, minimal and maximum DNL value of the loaded file will be displayed on the “DeviceLSB”, “Min_DNL” and “Max_DNL” field.

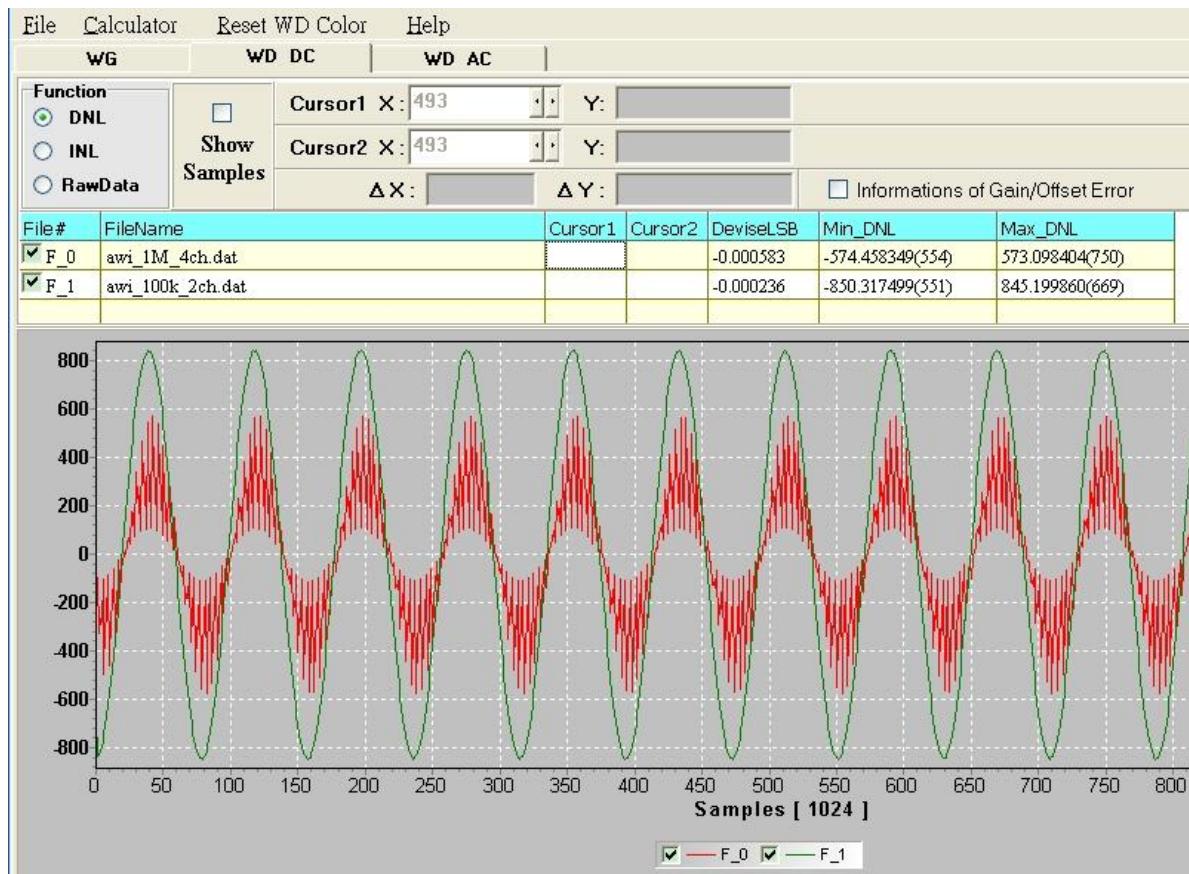


Figure 20-16 WD_DC DNL Function

(3) INL function

Figure 20-17 is the INL Plot. The DeviceLSB, minimal and maximum INL value of the loaded file will be displayed on the “DeviceLSB”, “Min_INL” and Max_INL field.

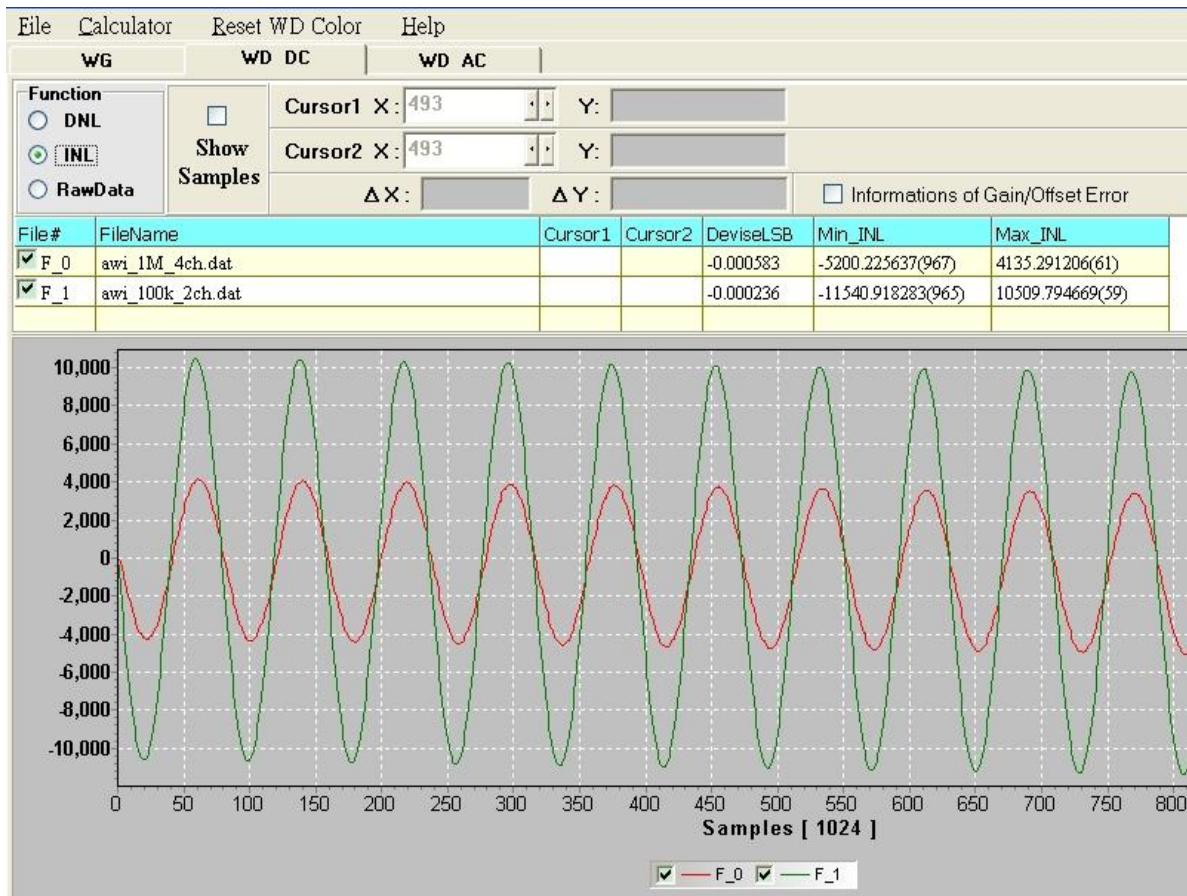


Figure 20-17 WD_DC INL Function

(4) Getting the Gain Error and Offset Error

It's useful for the ramp wave only. For the sine wave, it's useless.

After loading the raw data of the ramp wave, check the “Information of Gain/Offset Error” than fill in the “**Full Scale Range**” and “**Zero Scale Voltage**”, user can get the value of “**Gain Error**” and “**Offset Error**”.

As Figure 20-18, we fill in “10” as the “**Full Scale Range**” and “-5” as the “**Zero Scale Voltage**”, we get the “**Gain Error**” is “-0.009766” and the “**Offset Error**” is “0.000000”.

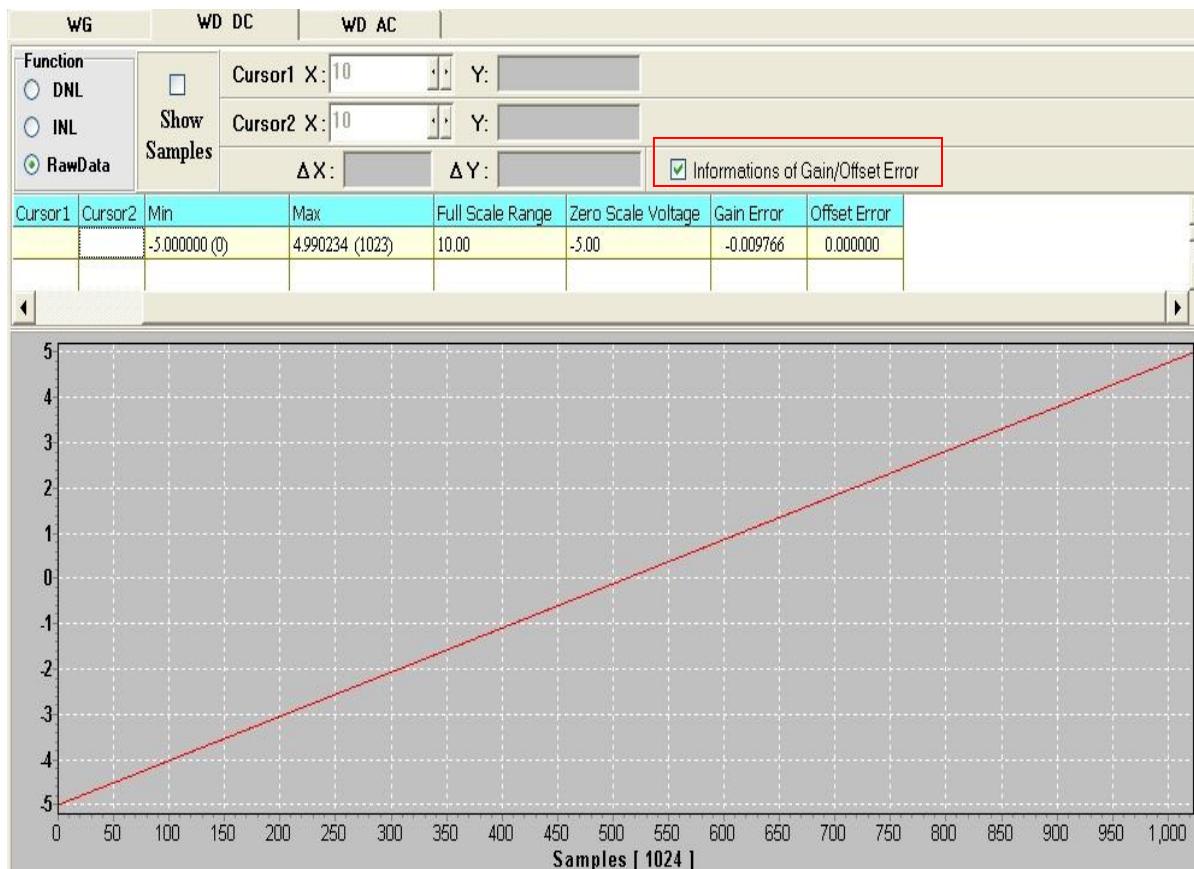


Figure 20-18 Getting Values of Gain Error & Offset

20.5.3 WD AC Functions

(1) Weighting Window

After loading the WD data and clicking the WD_AC tab, there are three kind of Weighting Window for user to choose. There are “Hanning window”, “Hamming window” and “Rectangular window”. Select different “Weighting Window” to get different values of “**THD**”, “**SND**”, “**SNR**” and “**THD+N**” and these values will be displayed on the String Grid above the spectrum.

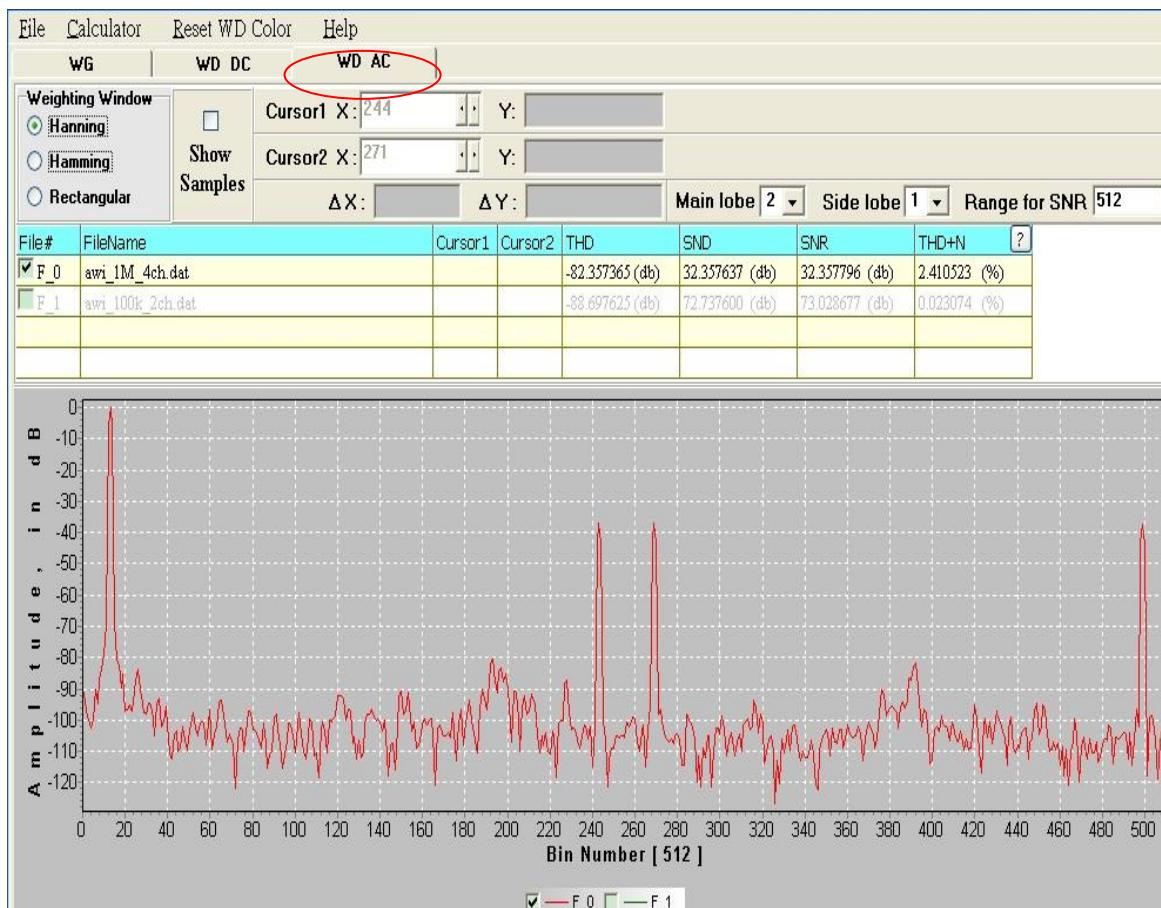


Figure 20-19 Spectrum of Selecting Hanning Weighting Window

(2) Diagram to explain the “THD+N”

Click the **?** on the right of “THD+N”, a diagram will display to describe what is “THD+N”.

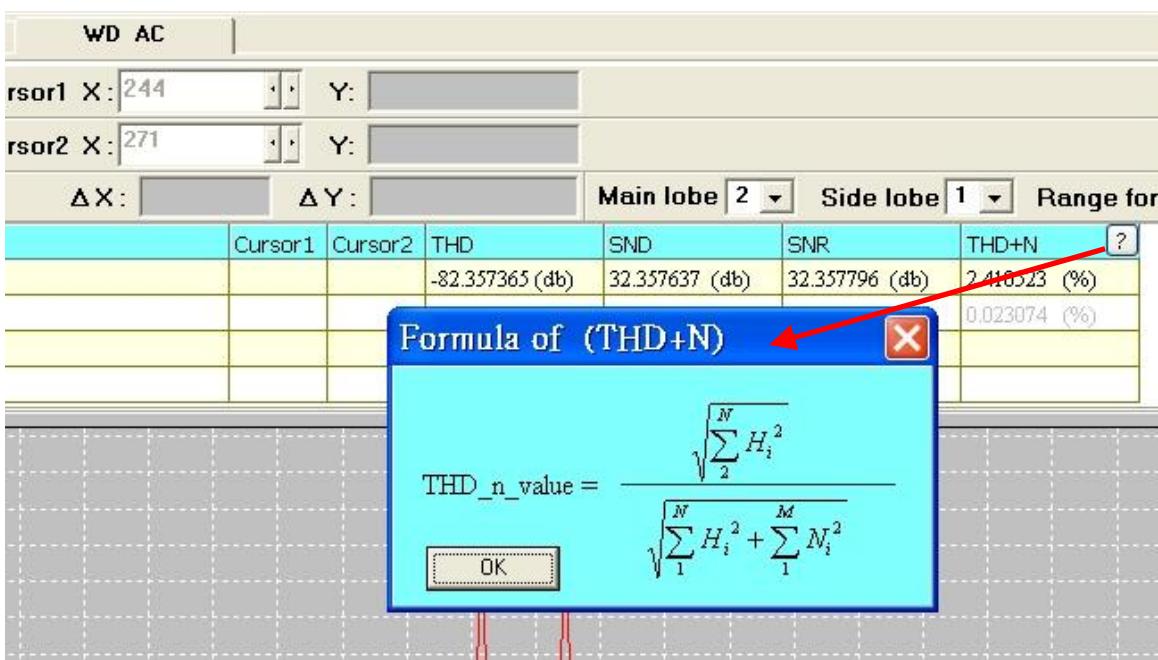


Figure 20-20 Formula of the “THD+N”

20.5.4 Read LXAWI WD Pin

To read the hardware data by the LXAWI pin:

- (1) Press the “Read LXAWI WD Pin...” from the File menu (Figure 20-13) or from the popup menu of the String Grid area of “WD DC” and “WD AC” (Figure 20-14).
- (2) A dialog named “Select WD Pin” popped up.
- (3) Select one pin in the dialog.
- (4) Select the “Waveform Set”.
- (5) Press the OK button.

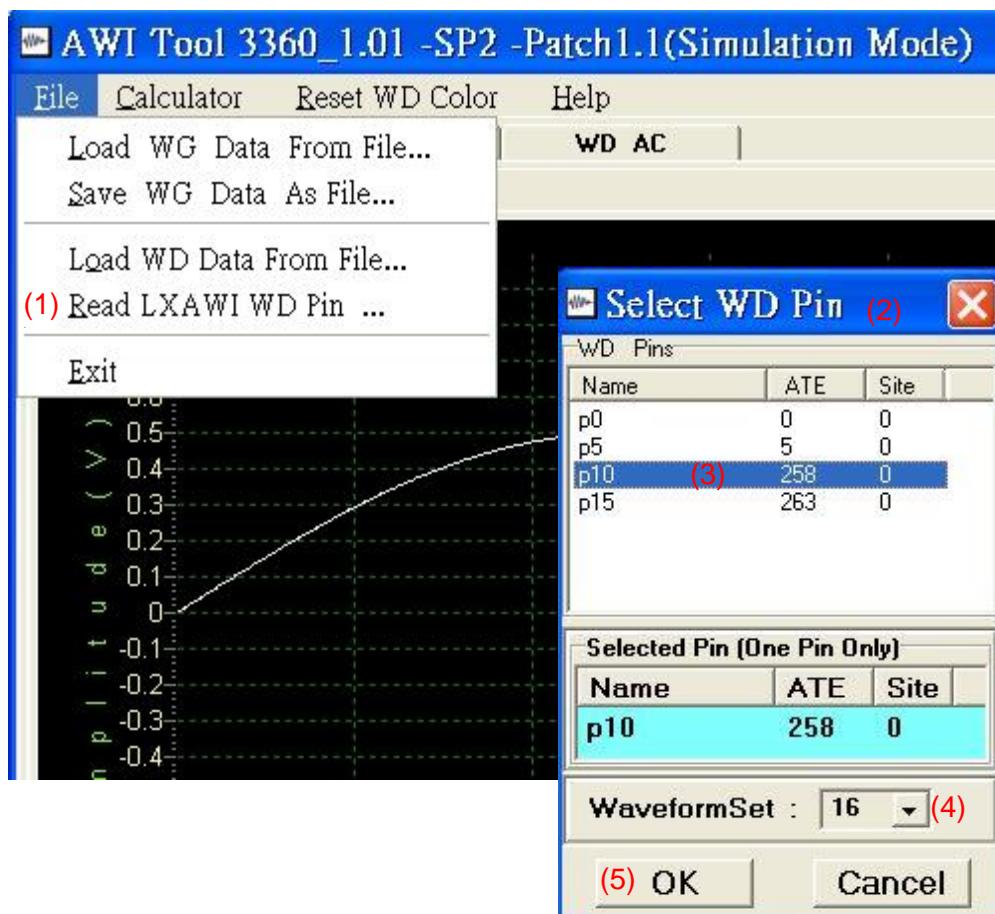


Figure 20-21 Read LXAWI WD Pin

After getting the data, the spectrums of WD_DC and WD_AC will automatically displayed.

20.5.5 Show Samples

Checking the “Show Samples”, the plot of each point will be displayed as a small square.

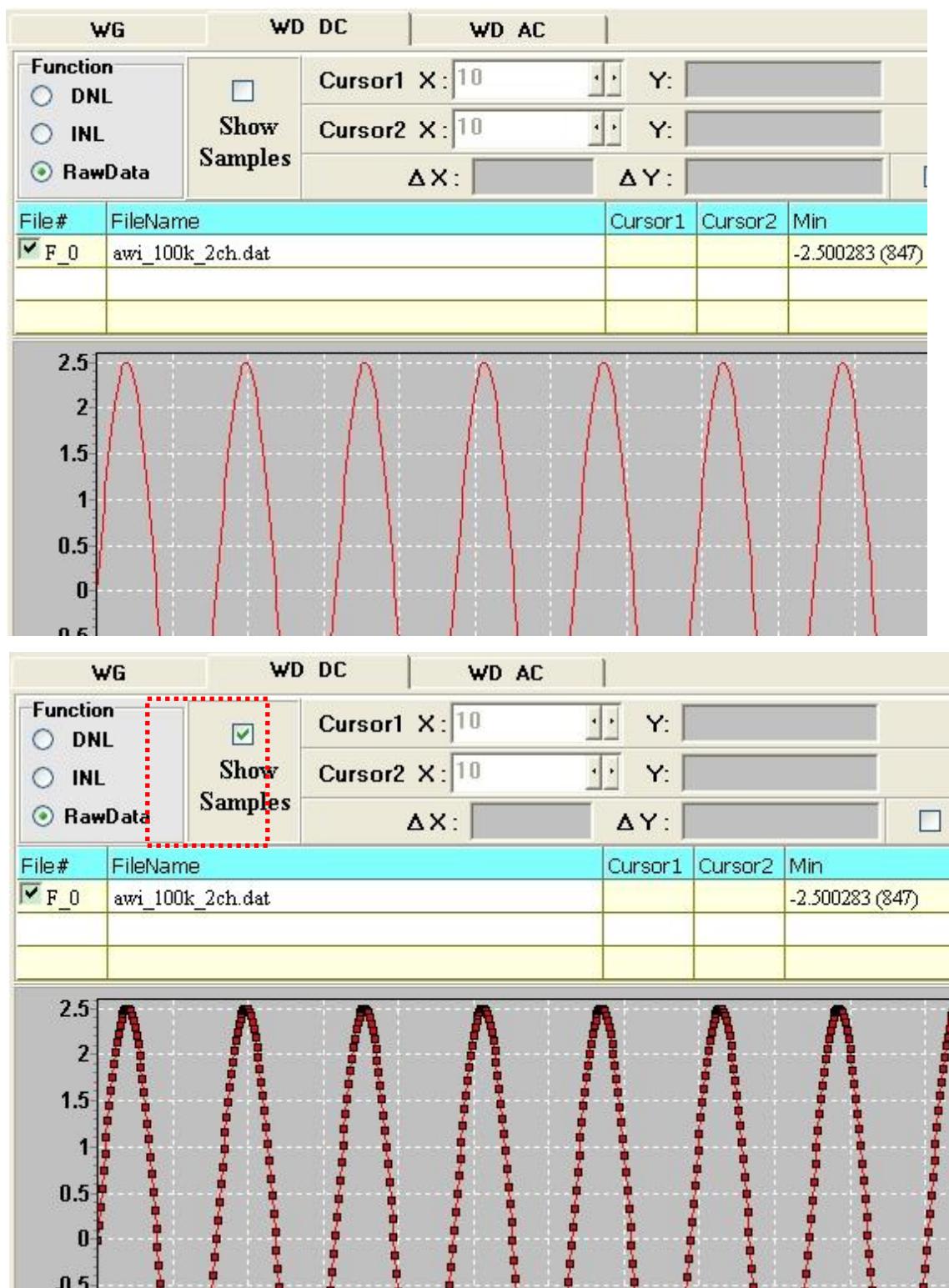


Figure 20-22 "Show Samples" has been Checked & Unchecked

20.5.6 Using the Cross-Cursor

If clicking the Cursor1 or Cursor2 field of a file, there will be a cross-cursor displayed. The position of the cursor can be modified from the “Cursor1 X”, “Cursor2 X” field, or directly drag the cursor to the left or right, and the corresponding Y value will be displayed on the “Y” field. If both Cursor1 and Cursor2 are checked, the “delta X” (ΔX) and “delta Y” (ΔY) will be displayed.

The color of the cursor will be the same as the color of the file it attached.

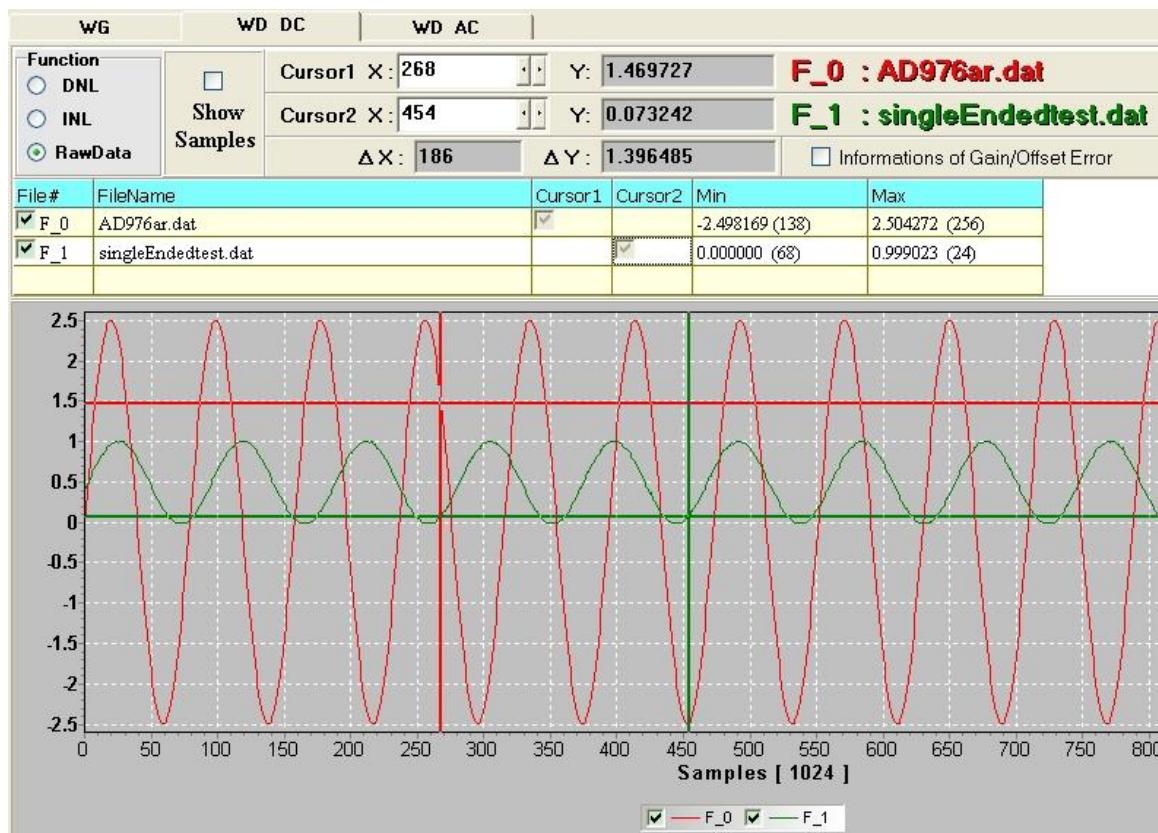


Figure 20-23 Both Cursor1 & Cursor2 are Checked

20.5.7 Reset WD Color

User can change the background, foreground colors of the WD plot. Also the color for the loaded file (F_0, F_1, F_2, ...; at most 15 files can be loaded) may be changed too.

Press the “Reset WD Color”, there will be a setup window named “Reset the colors of WD AC and WD DC” popped up.

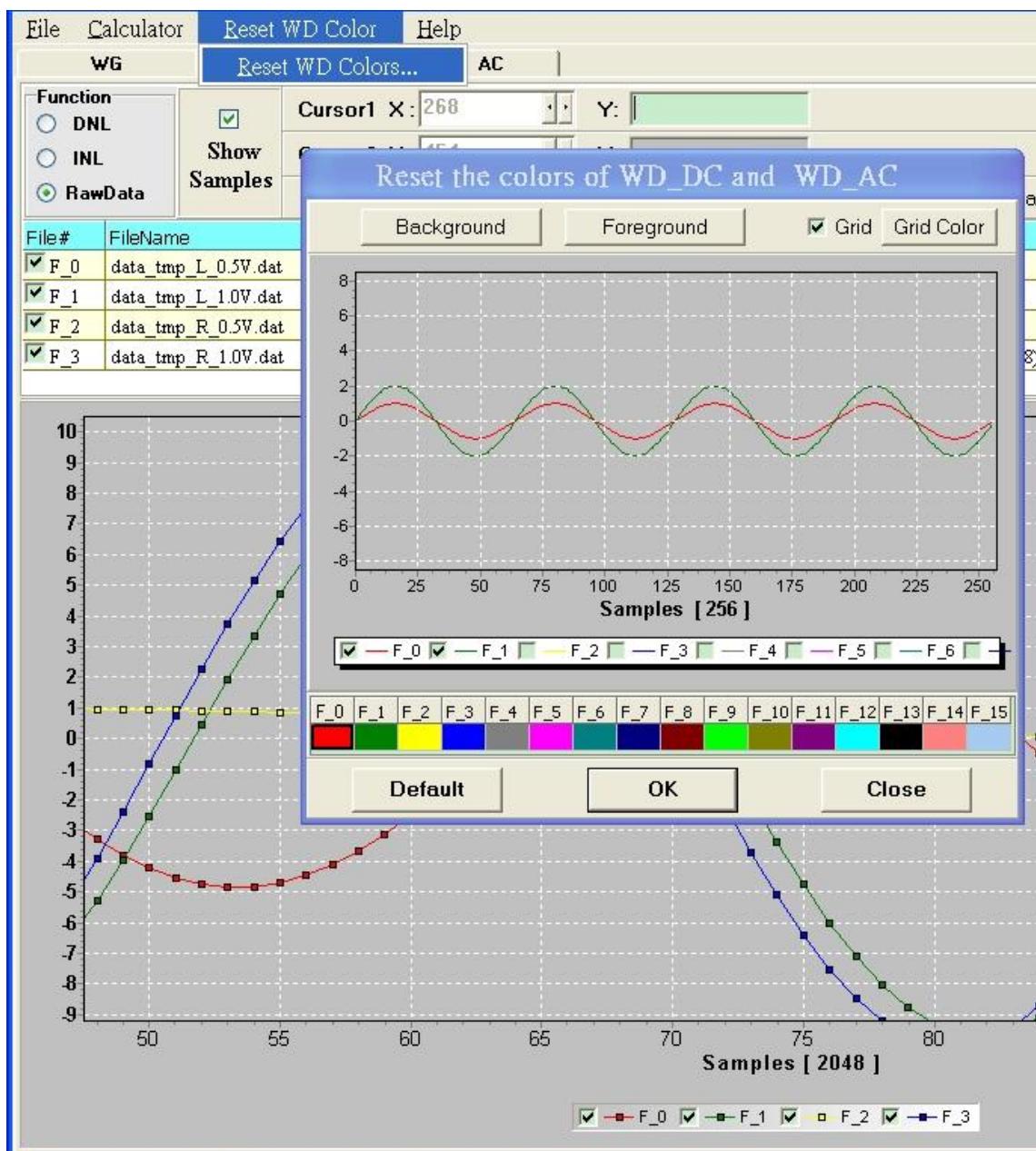


Figure 20-24 Reset the Colors of WD AC & WD DC

Press the “Background”, “Foreground”, “Grid Color” button, or click on F_0, F1, ..., F_15, there will be a palette popped up. User can select any color he likes.

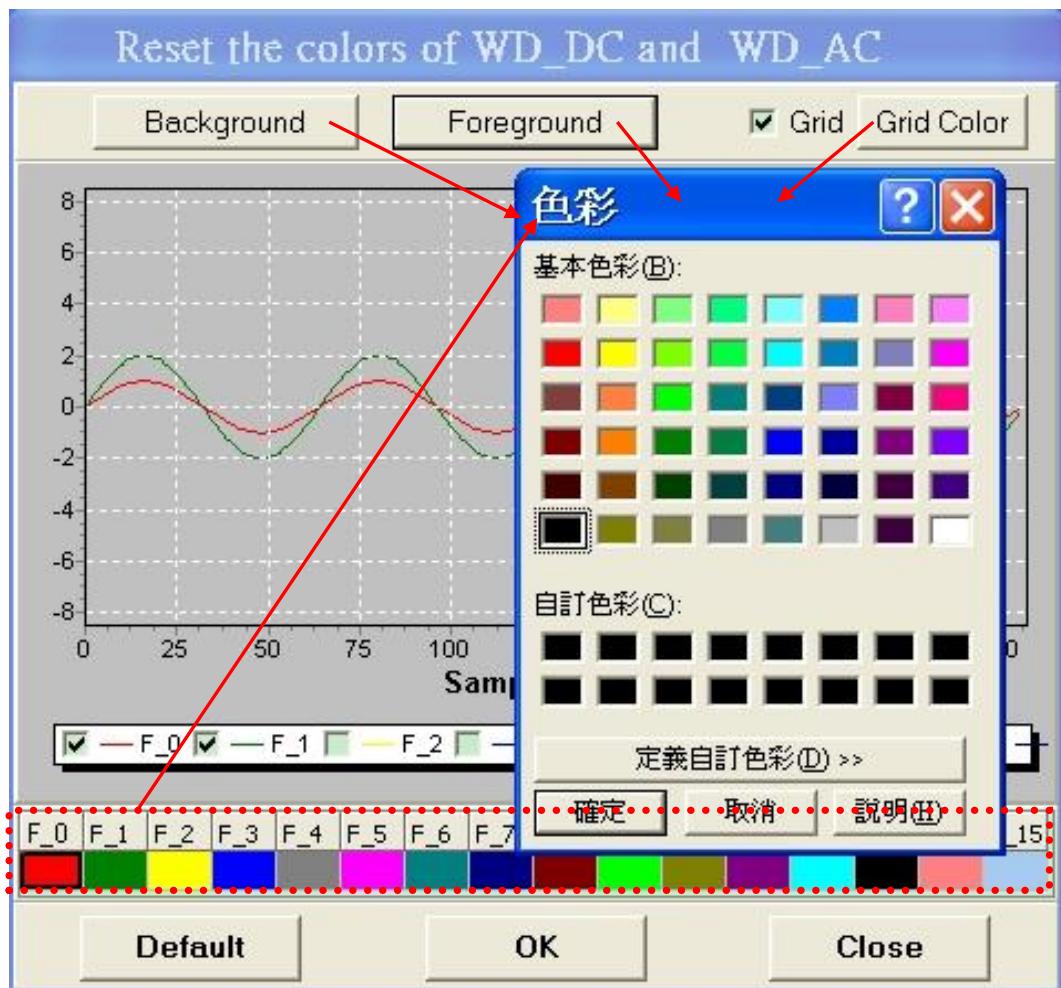


Figure 20-25 Using Palette to Reset WD Colors

21. Operator Tool

21.1 Overview

The operator tool is only used in Operator Mode. It is used to substitute the old operator software in system control. This tool provide not only load plan easily but also display each test result clearly. This tool also displays each test time, phif information, pass/fail result, plan setup information etc, so that it will make the operators manipulate craft system more efficiently and accurately.

21.2 How to Start the Operator Tool

The user will see the system control user login page when craft system start. The operator tool will auto execute when the user, “oper”, login successfully. If the user wants to use old operator software, a check box will appear after user key in the user name, “oper”. The old operator software will auto execute if user select the check box and login successfully.

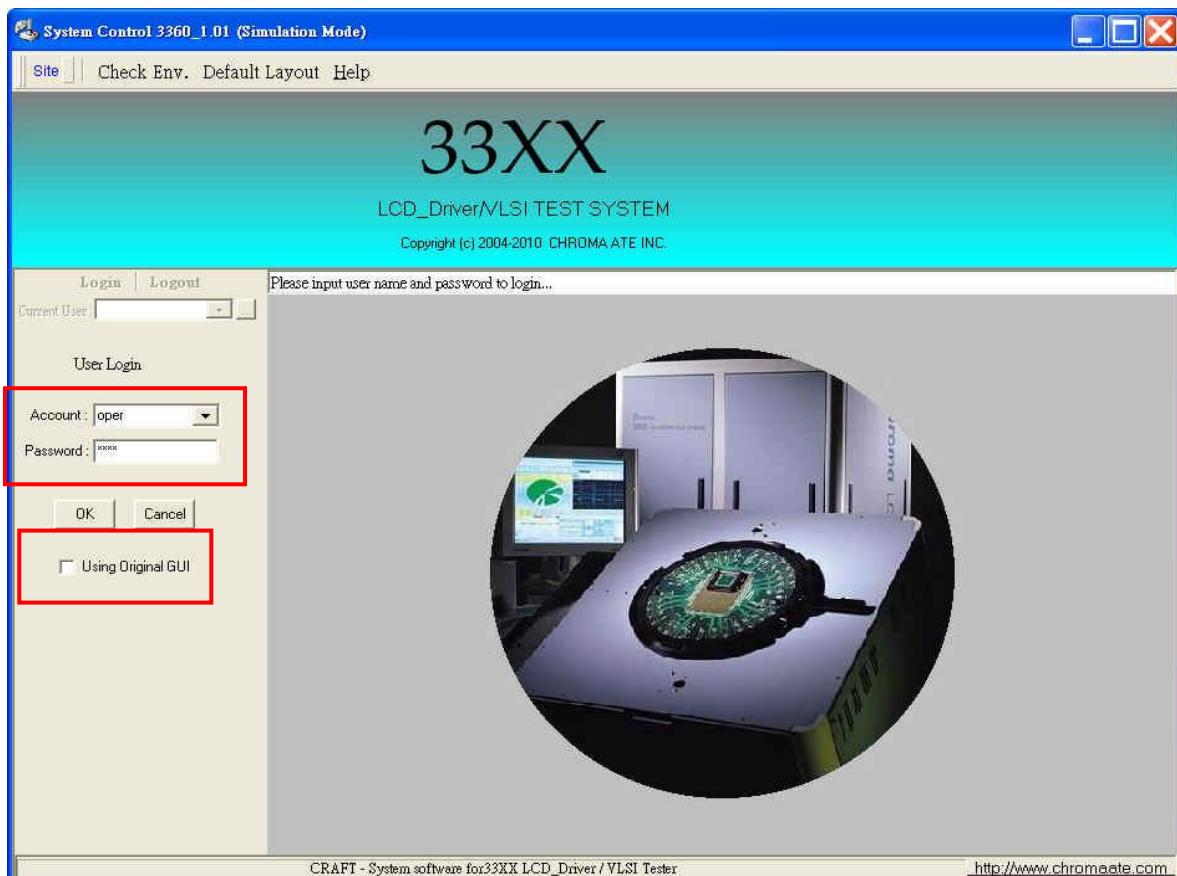


Figure 21-1 Operator Tool Main Window

The operator tool will auto execute after “oper” user login successfully. If want to use old operator software, select the check box.

21.3 Operator Tool Window/Function introduction

When starting Operator Tool, user can click the “Input” button to select test-plans that were setup in ProdID tool or click the “Prober/Handler” button to select which model of prober/(handler to use.

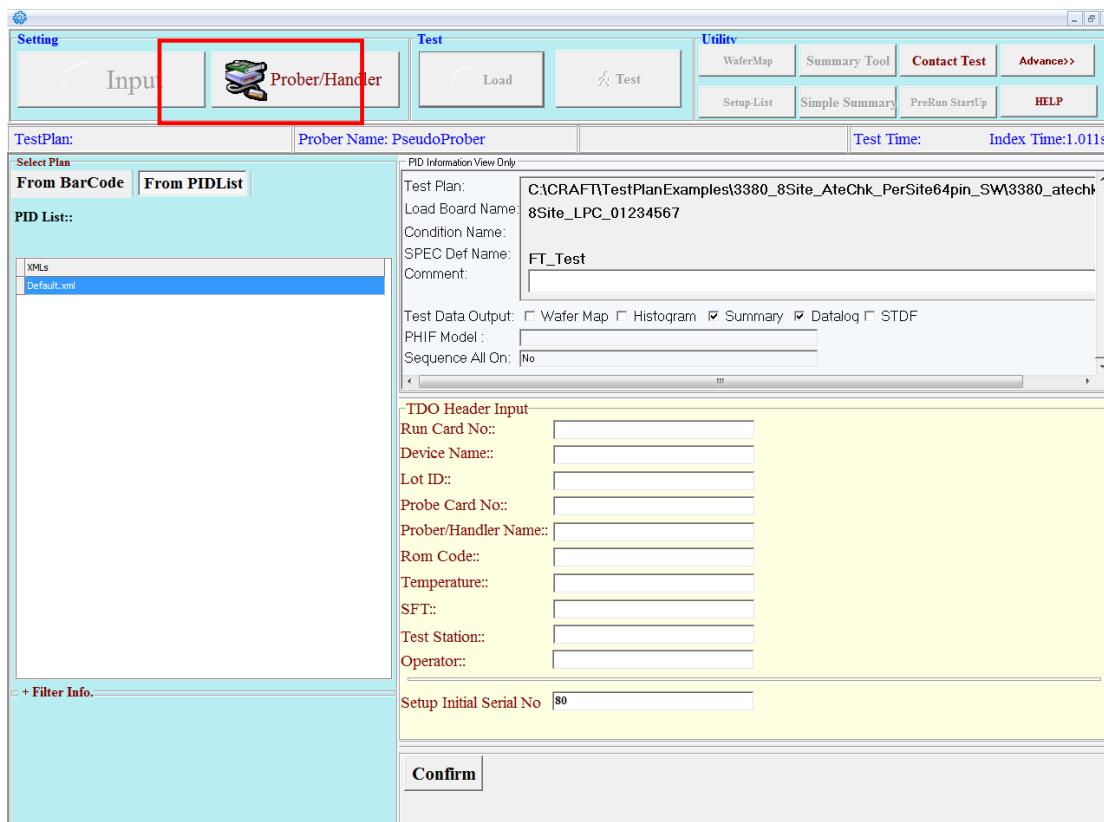


Figure 21-2 Operator Tool Execution Window

21.3.1 Selecting Prober/Handler Model

The user can connect the tester and Prober/Handler at any time. Clicking the “Prober/Handler” button, the PHIF Tool will pop up and the operator can select which model of Prober/Handler to connect. Pay attention to this PHIF Tool, it only can select the model of Prober/Handler; operator can't do any setting in this PHIF Tool. After the “Apply” button clicking in PHIF Tool, the Operator Tool will display the model of Prober/Handler operator selected.

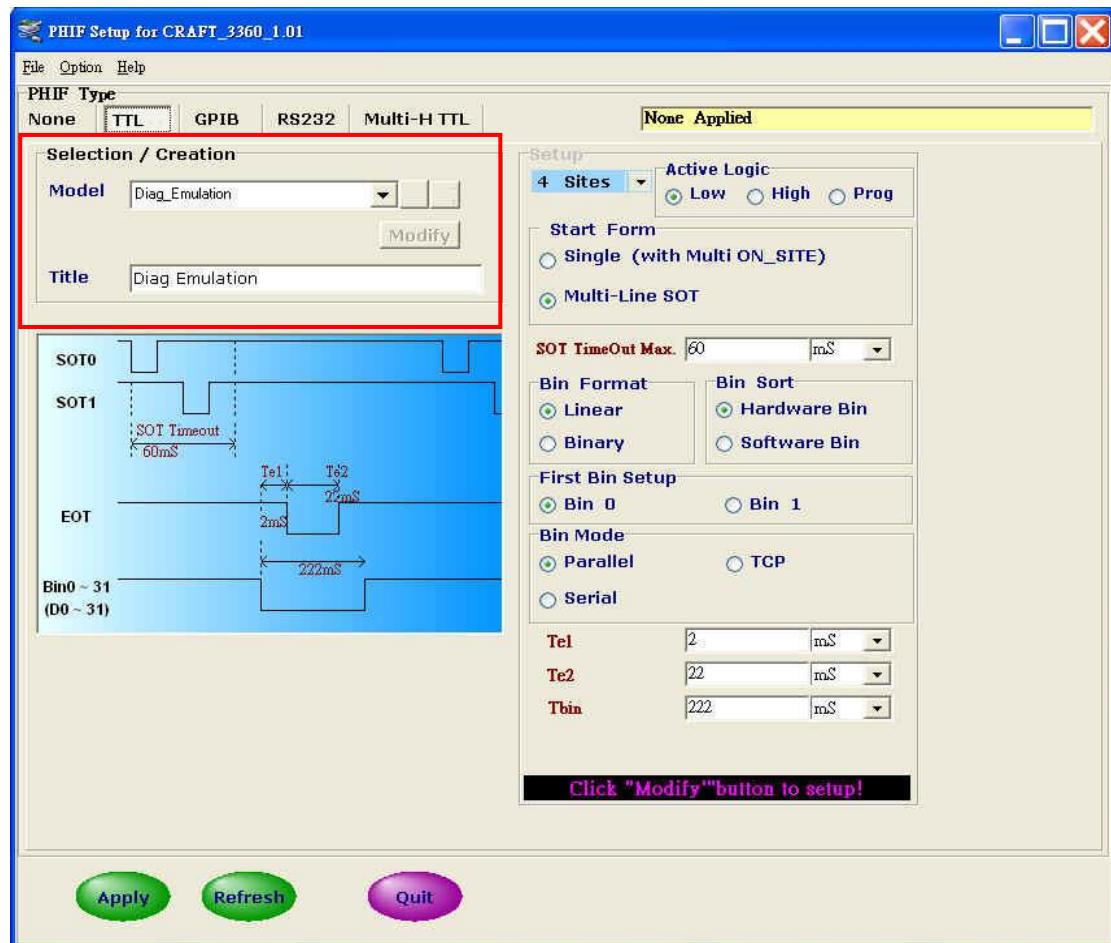


Figure 21-3 Selecting the Model of Prober/Handler

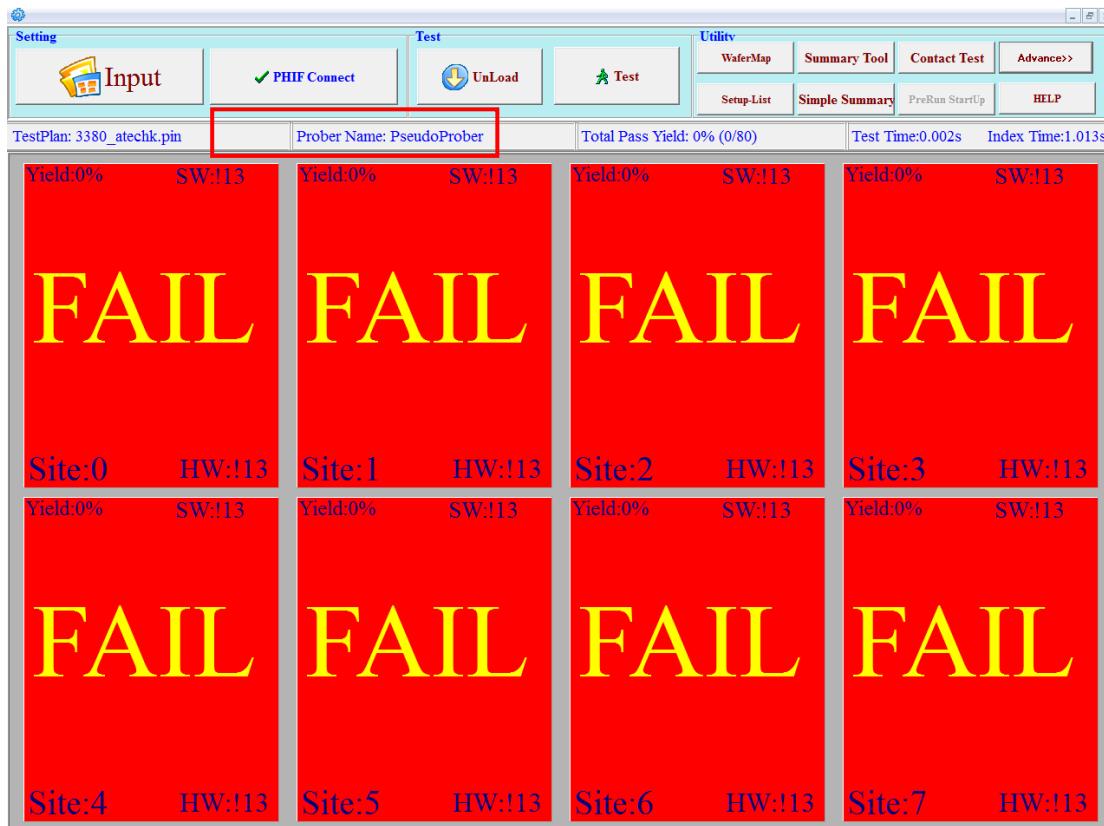


Figure 21-4 The Model of Prober/Handler

21.3.2 Load Test Plan

The operator click “Input” button to select test-plans which were set in Prod_ID Tool before. In plan-selection window, user can select plan from PID-List or from Barcode Scanner.

21.3.2.1 From PID-List



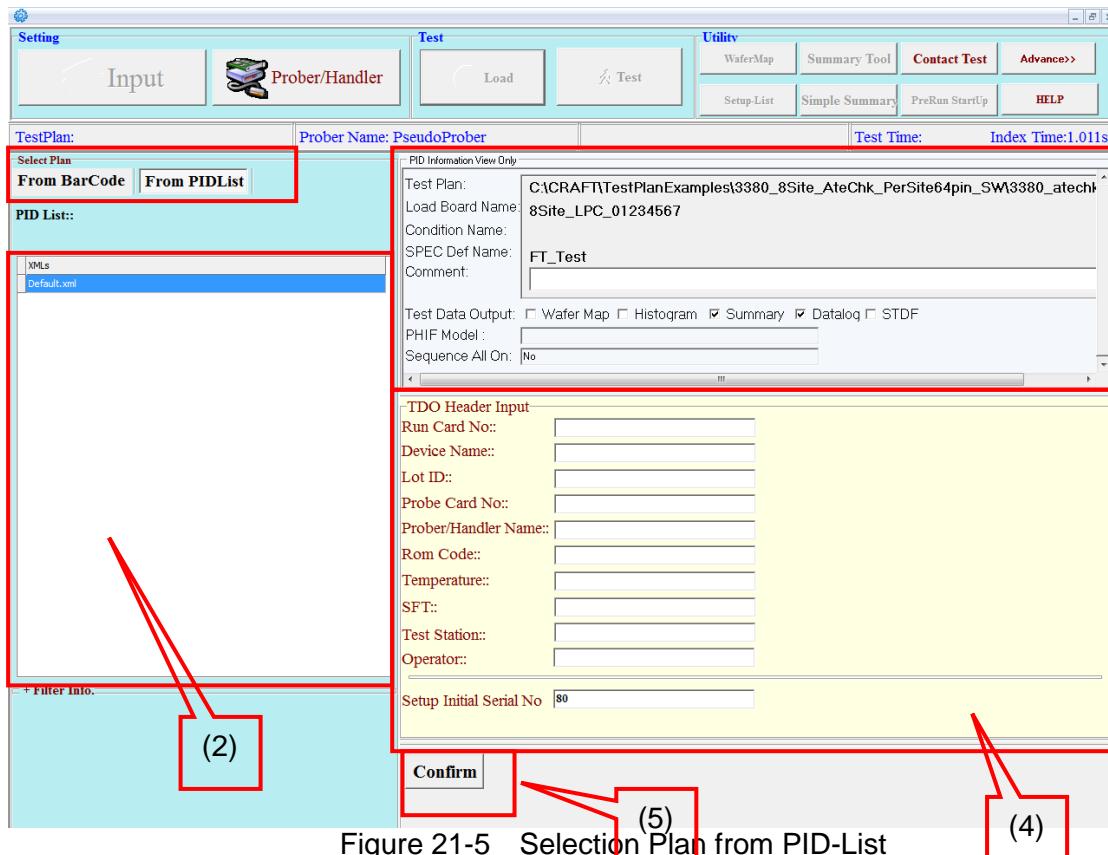


Figure 21-5 Selection Plan from PID-List

- (1) User can select plan from Barcode or from PID-List in part 1. In this picture, the user selects “From Barcode”.
- (2) Prod-ID Plan List that have been set in Prod-ID Tool. User selects the plan in this part.
- (3) The information of the user-selected-plan, which contents the test-plan’s directory, the load board name, the condition name, the spec definition name, TDO-output setting, and TDO-output directory that were setup in Prod_ID Tool.
- (4) The TDO file Header information input block. User can input the header information in this block and click “apply” or “Save & Quit” Button to save the information.
- (5) Clicking “Comfirm” Button if user makes sure the selected plan is correct. The Button is just save the selected-plan information, not yet loads the plan.

21.3.2.2 From Barcode

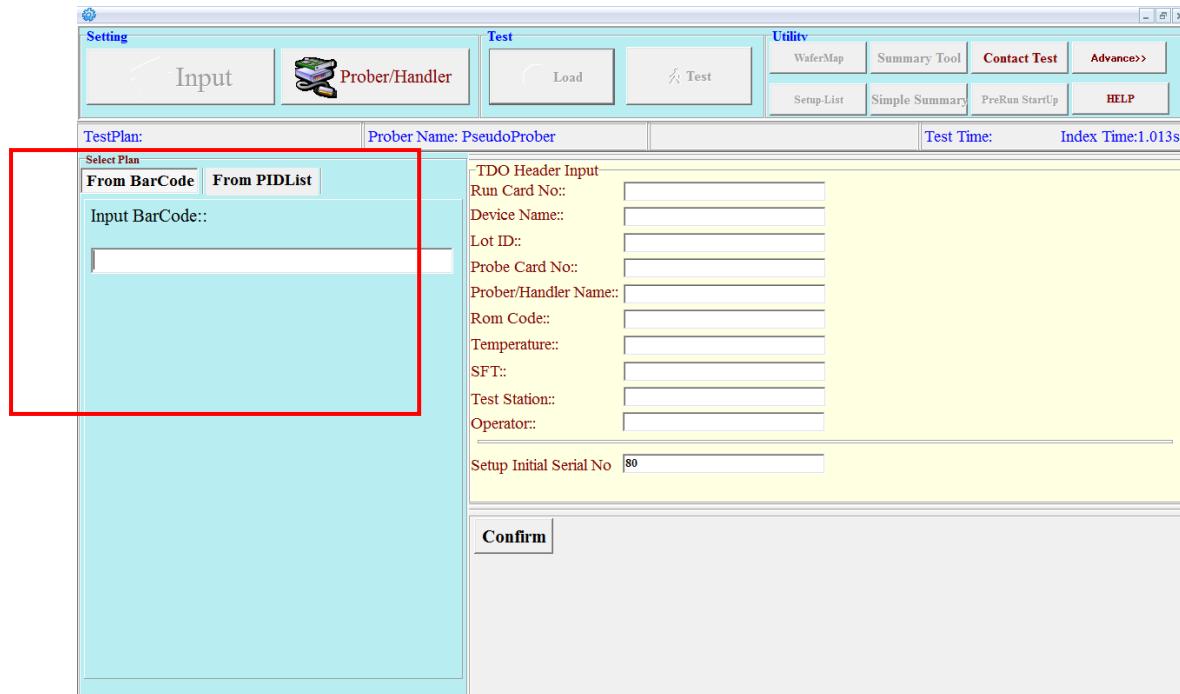


Figure 21-6 Selecting Plan from Barcode

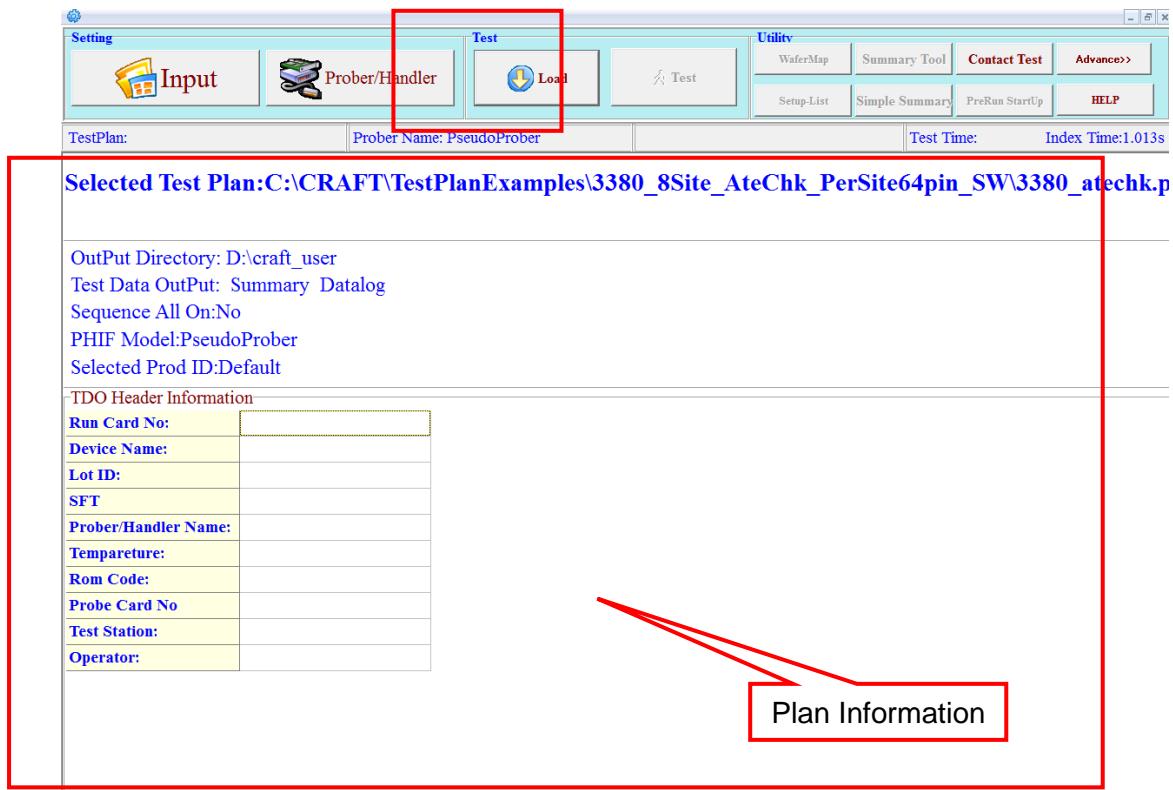
The only difference of “From Barcode” window and “From PID-List” window is the red block. User needs to scan the device, version, and company barcode from barcode scanner. After scanning all fields, clicking “Save & Quit” Button, the program will check the input data is correct or not. If the input data are not found in prod-id list, it will pop up an error message to request the user re-input again.



Figure 21-7 Error Message

21.3.2.3 Load Test Plan

After Clicking the “Save & Quit” Button (if the input data is correct in from barcode window), the plan-information window will pop up. User can check the selected-plan and plan-information again. If correct, click the “Load” Button to load plan. If incorrect, click the “Input” Button to re-select plan.



Click Load Button to Load Selected Test Plan!!

Figure 21-8 Check Plan Information

21.4 Test Information

After loading test-plan, the following window pop up and the buttons in the “Utility Block” become sensitive. After each test command, the window will display each site's test result, pass yield, bin result, total site pass yield and each test time.

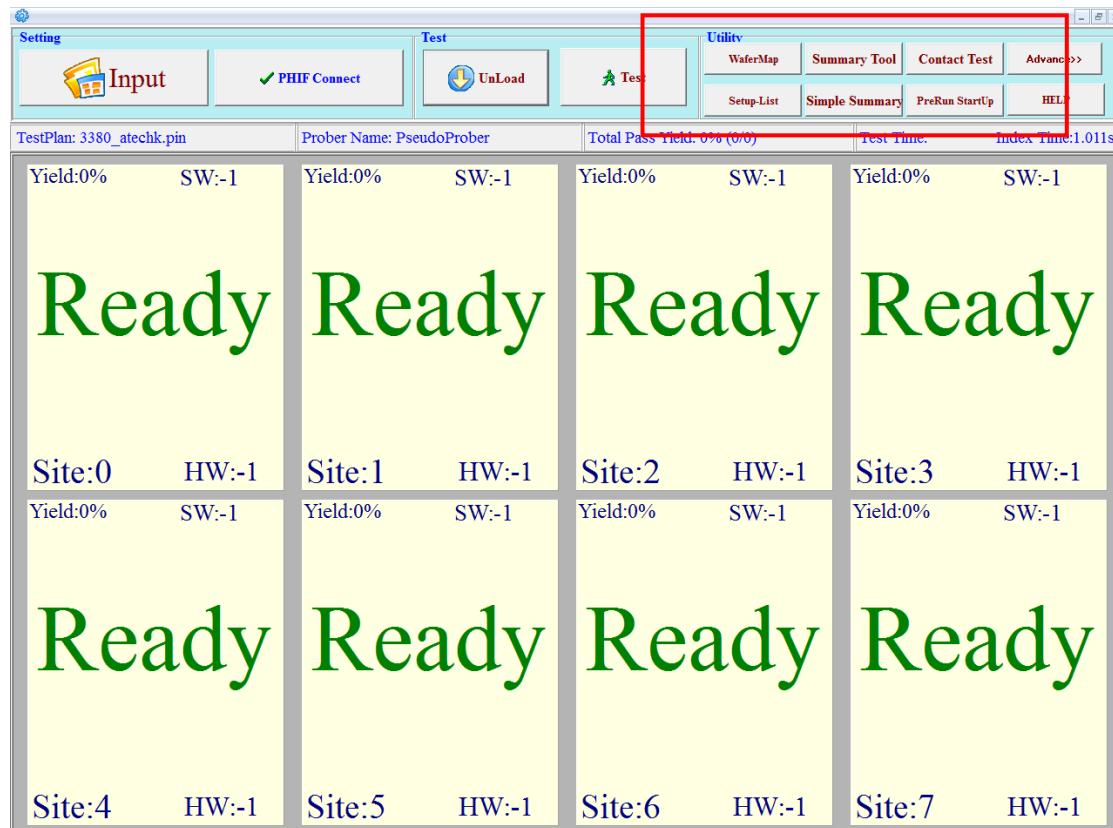


Figure 21-9 Window when Test-Plan Ready

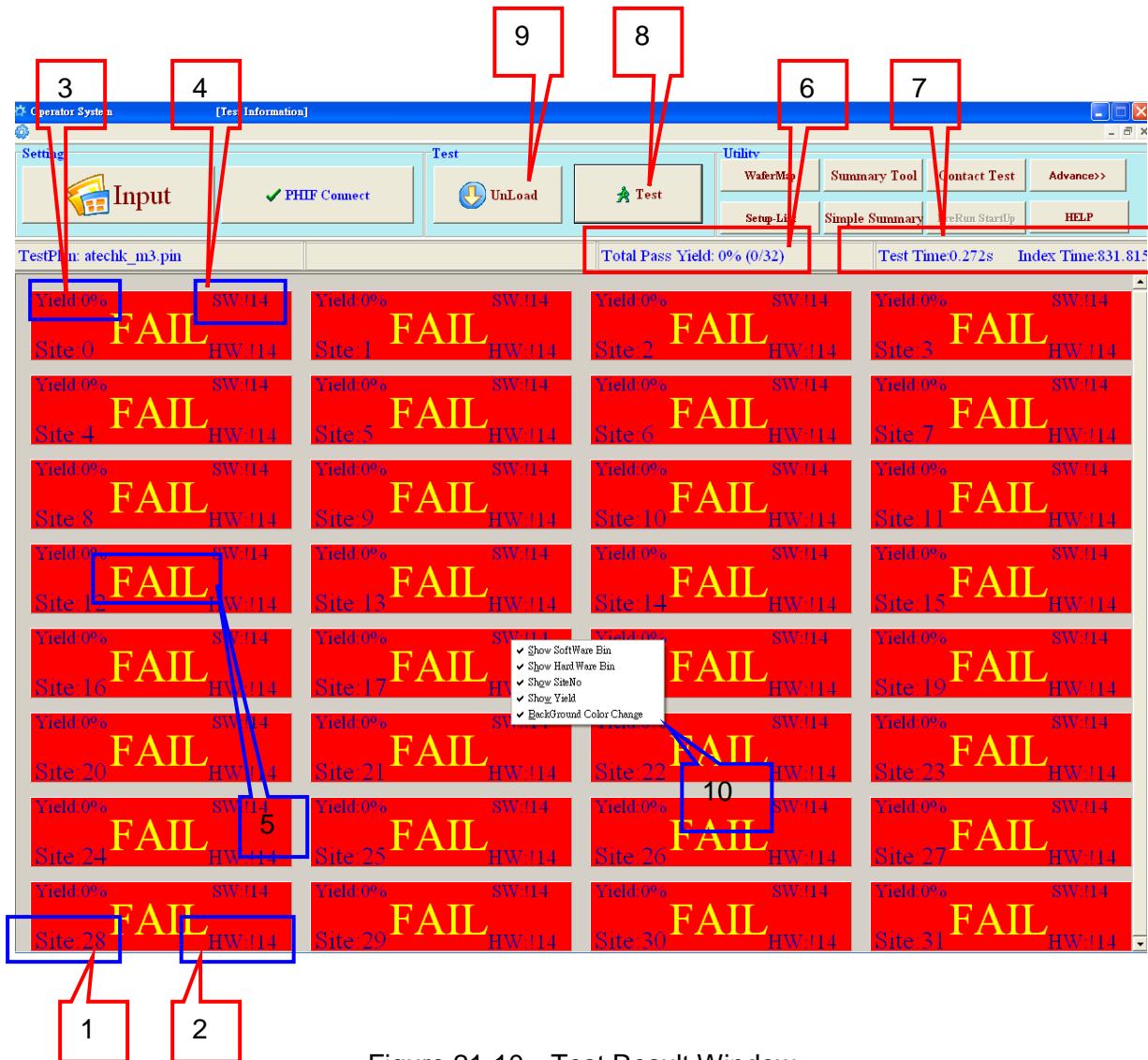


Figure 21-10 Test Result Window

The window's information is explained as follow:

1. Site Number.
2. Hardware bin result for each site.
3. Pass Yield for each site.
4. Software bin result for each site.
5. Test result for each site.
6. Total sites pass yield.
7. Test time for each test start till test end.
8. Test Button, it will send test command to system when clicking it. However, if the phif is connected (GPIB), the button will be useless.
9. UnLoad Plan Button. If user wants to load another plan, he must unload the loaded plan first.
10. The user can select the result information 1(site number), 2 (Hardware bin), 3 (pass yield), 4 (Software bin) display or not by clicking the mouse right button.

21.5 Modify the TDO Header Data

The user can modify the TDO Header when the plan is loaded. Clicking the “Input” Button, the input window will pop up. When plan loaded, the left part of window is un-sensitive. However, user can input the Header Data in right part of window. Finally click the “Confirm” Button to save the input data and return to the test-information window.

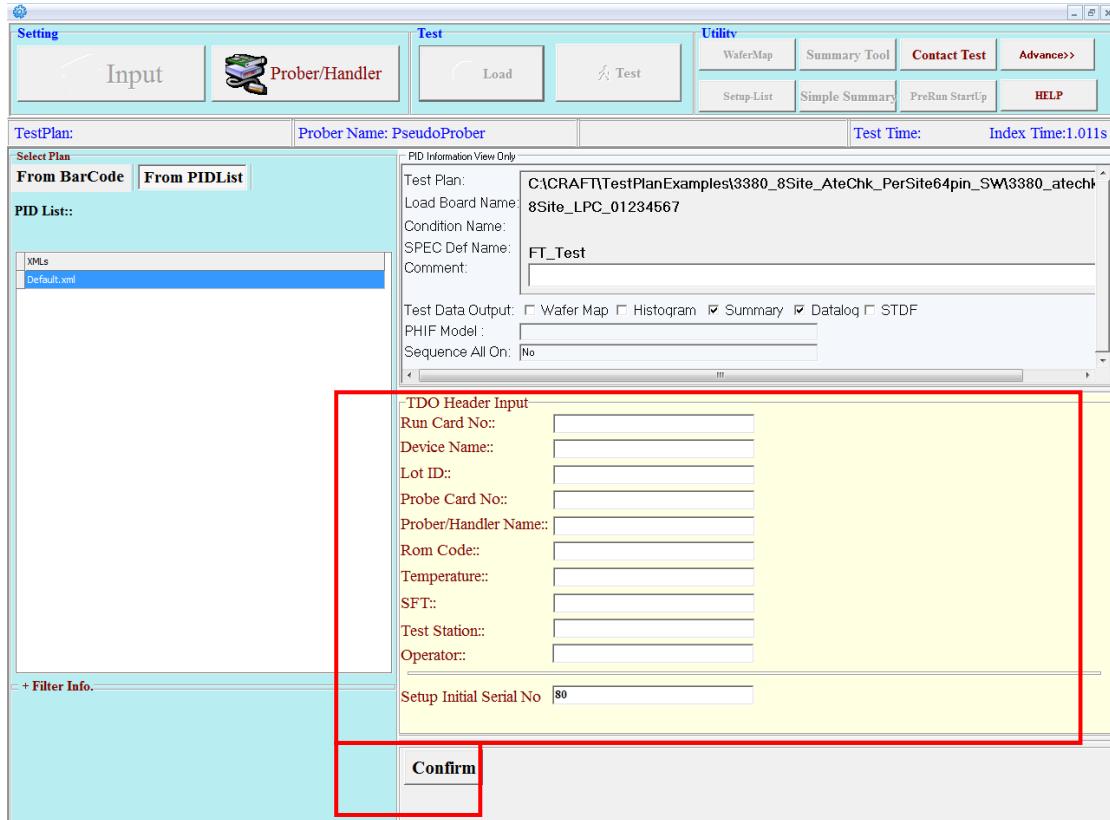


Figure 21-11 Header Input Window

In Figure 21-11, the select plan block in the left part of the window can't be modified when plan loaded. However, User can input Header Data in red block.

21.6 Utility Introductions

In Operator Tools, there are some simple utilities for operators using and some advance utilities for engineers using.

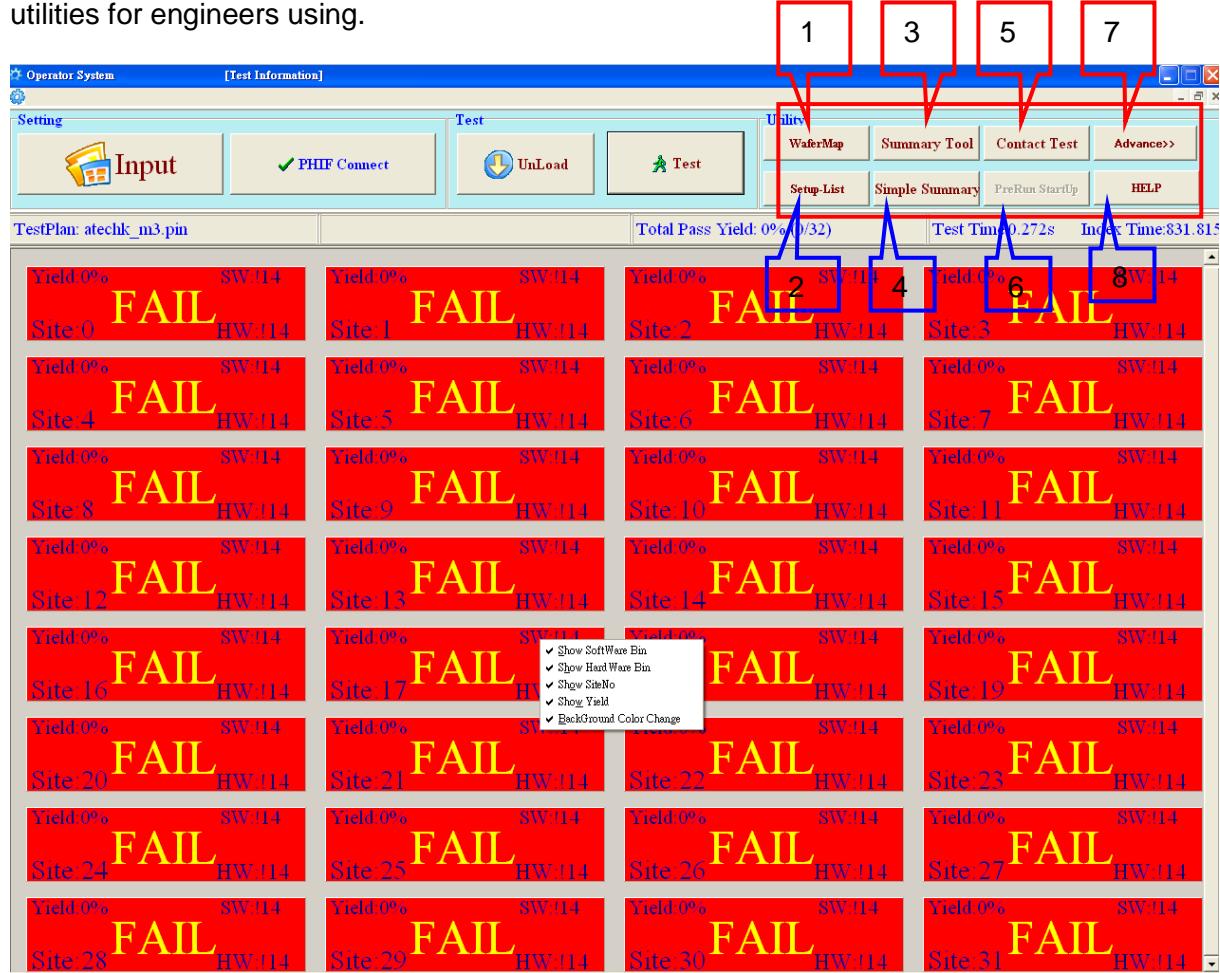


Figure 21-12 Utility Block in Operator Tool

21.6.1 Wafer Map

Click the first Button, the Wafer Map Tool will execute. Operator can look the Wafer's situation by this tool.

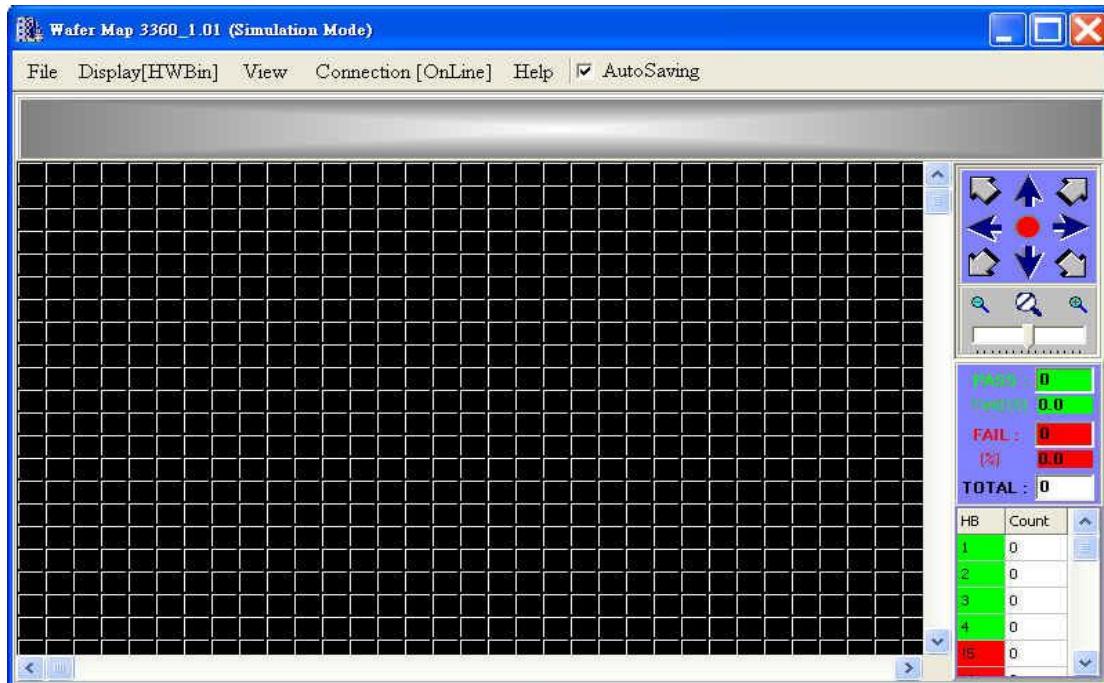


Figure 21-13 Wafer Map Tool

21.6.2 Set-up List

Click the second button, a small window at the right top corner of the screen will pop up. This window displays the information about the loaded test-plan. It includes the plan's PID, prod-id's comment and the TDO Header Information.



Figure 21-14 Setup List.

21.6.3 Summary Tool

Click the third button, the simple Summary Report Tool will execute. The Simple Summary Report Tool is different from the same tool that is executed in Application mode. The most different is that the operator can't do any setting in this tool. Operator only can output the report data and clear the data in this tool.

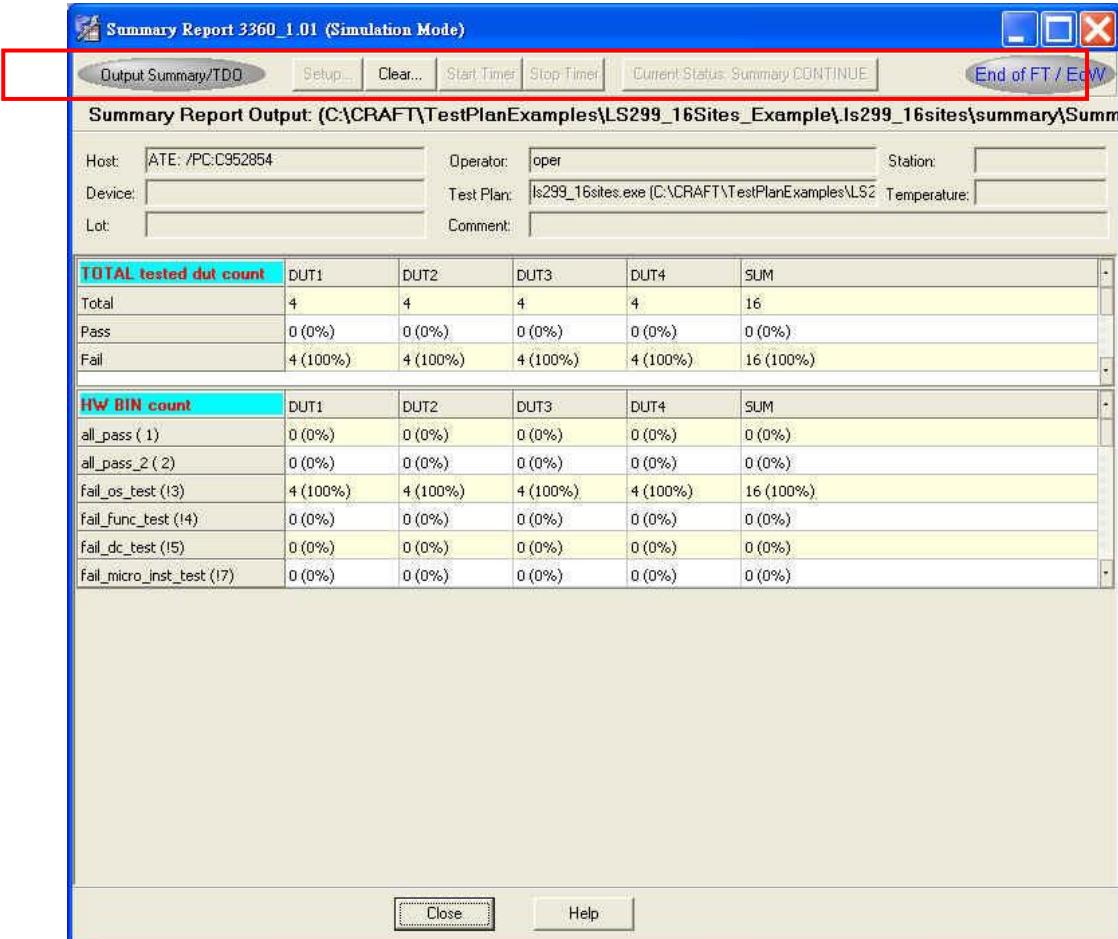


Figure 21-15 Simple Summary Report Tool for Operator

The important setting buttons are disabled in this tool.

21.6.4 Simple Summary

Click the fourth button, the simple summary information window will pop up. The window displays the pass and fail count for each site. It also displays the total test count and total pass and fail rate for the test.

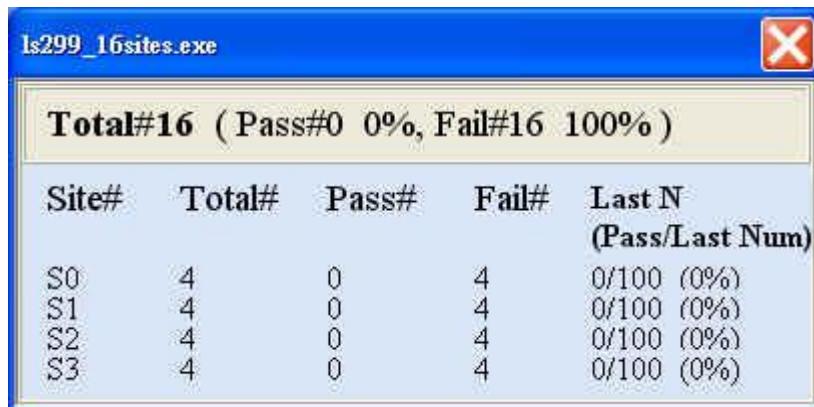


Figure 21-16 Simple Summary Information Window

21.6.5 Contact Test

The “Contact Test” Button is to execute the Contact test Tool. It is just convenient for user to callback the Contact Test Tool.

21.6.6 PreRun StartUp

The “PreRun StartUp” Button is to do StartUp action, such as loading pattern and initialing resource.

21.6.7 Advance

The “Advance” Button is some function that only for application engineers using. So it must login by application engineers’ account and password first. The advance functions are “Start-Up”, “Try-Test”, “DataLog” and “Summary Setting”.

- (1) Start-Up: The function of Start-Up is to re-load pattern again.
- (2) Try-Test: The function of Try-Test is to send “test command” to the craft system but the test count will not be increase.
- (3) DataLog: It will execute the datalog status window.
- (4) Summary Setting: It is the setting page the same with the setting page in the Summary Report Tool. It is more convenient for engineers to do some setting without opening the Summary Report Tool.

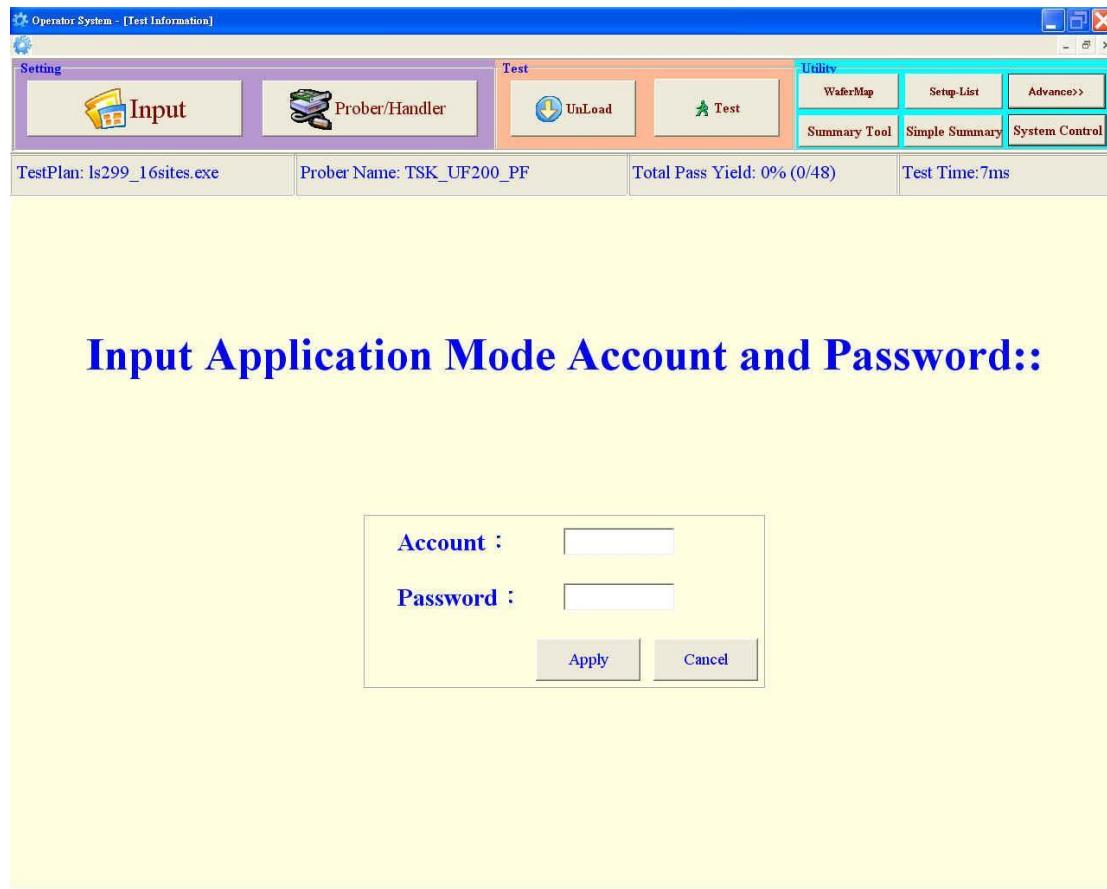


Figure 21-17 Advance Function Login Window



Figure 21-18 Advance Function Window

21.6.8 HELP

The “HELP” Button is to call this document manual.

21.7 Extra & Advance Function

Besides the basic and simple functions introduced before, there are some extra and advance functions in Operator Tool. Because the customers have different requests, users can do some setting in “craft_utility.ini” file according to their own requests. The “craft_utility.ini” file’s directory is “c:\\craft_setup\\dbs”. The extra and advance functions will detail describe as follows.

21.7.1.1 Selecting TDO Header Column

In our craft system, there are ten default TDO Header columns. If user wants to add new Header in TDO output file, he can do some setting in Prod-ID Tool. In the example, the “xxx”, “yyy”, “zzz” are new added TDO Header. However, if user feel that ten default Headers are too much, and don’t allow operator to key-in data in some headers. User needs to modify the “craft_utility.ini” file. (P.S The new Headers added from Prod-ID Tool don’t adapt to this way.)

Open the “craft_utility.ini” file; find the “[Oper.exe]” string as follows:

```
...
[Oper.exe]
RunCardNo=N
DeviceName=N
LotID=Y
ProdCardNo=Y
ProberName=Y
RomCode=N
Temperature=N
SFT=Y
Operator=Y
TestStation=Y
...
```

This is the ten default TDO headers setting. User can set the value to “N” then the operator can’t key in any data in Operator Tool.

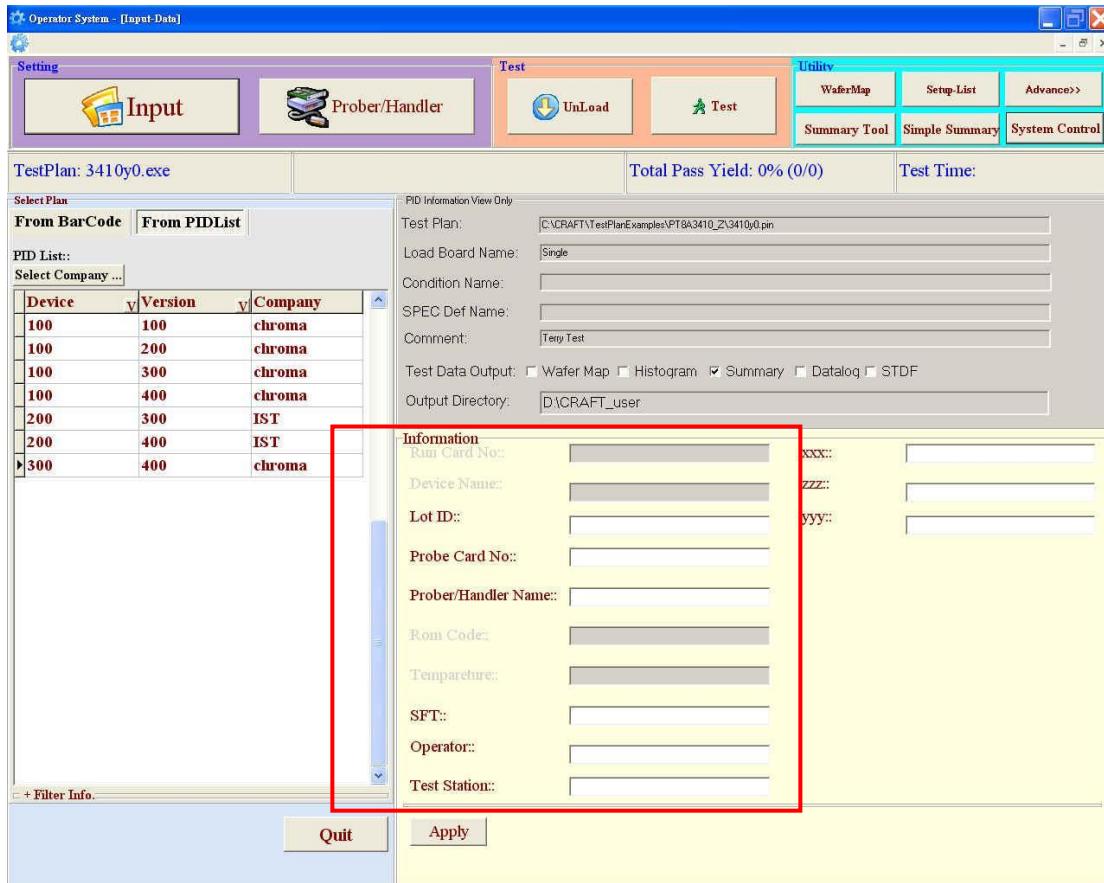


Figure 21-19 Header Selection Setting Result

The operator can input data in the column that the value is set to “N” in “craft_utility.ini” file.

21.7.1.2 Lock TDO Header (**LotID**, **RomCode**) Input

The TDO Header can be input data by operator at any time. However, Header, **LotID**, **RomCode** are sometimes generated by test plan and can't be change value after starting test. So it is necessary to prevent the operator modify the **LotID** and **RomCode** value after starting test in Operator Tool. Application engineers can lock the important Header input by modify the “craft_utility.ini” file value as follows:

```
...
[Oper.exe]
IsLockLotID=Y
...
```

Set the “IsLockLotID” value to “Y”, the operator tool will lock the “Lot ID” and “Rom Code” Header input edit. Operator can't input data when starting test. However operator can input data before starting Test.

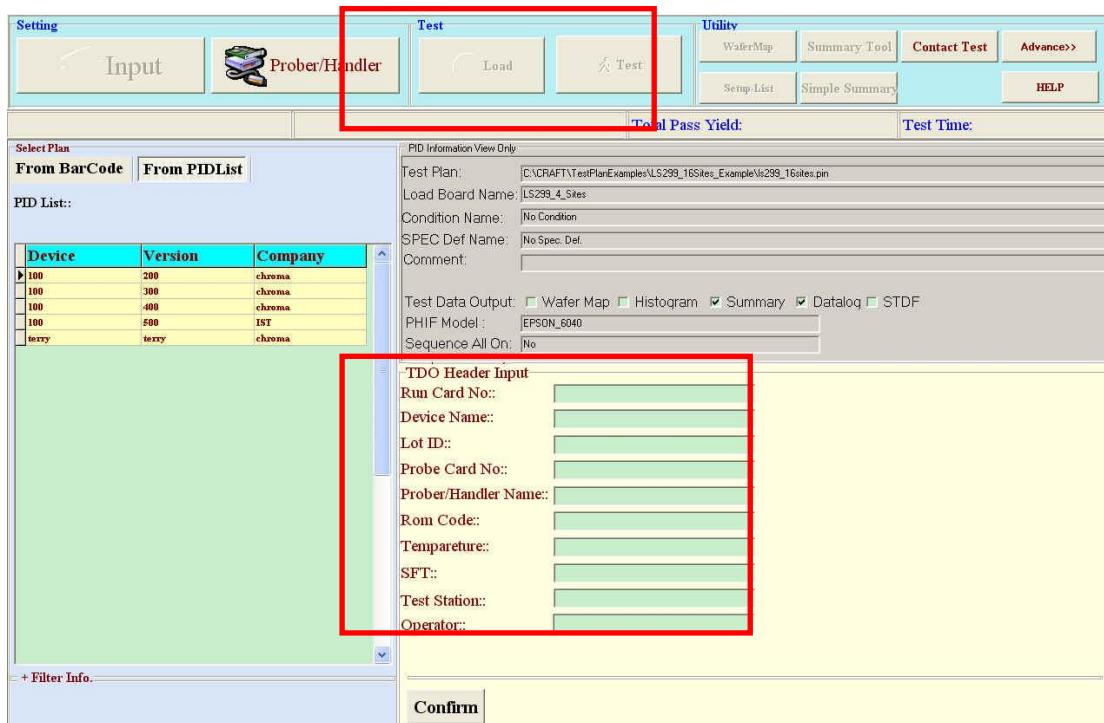


Figure 21-20 Unlock “Lot ID” & “Rom Code” before Testing

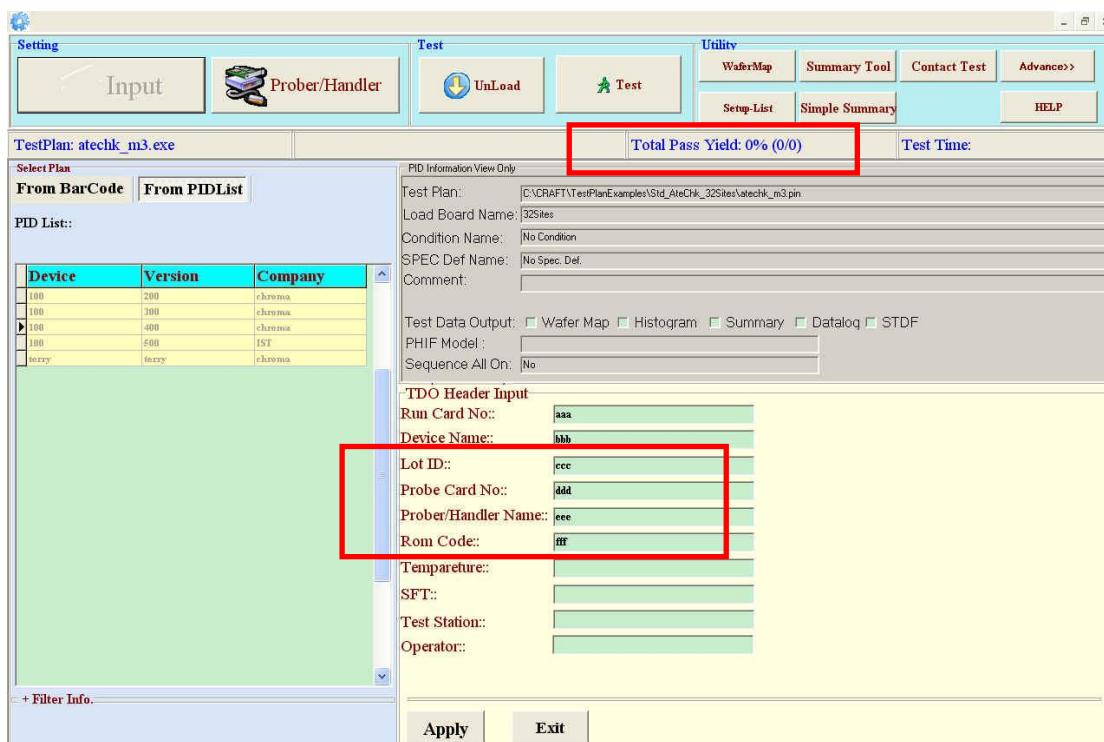


Figure 21-21 “Lot ID” & “Rom Code” still Unlock after Loaded Test Plan

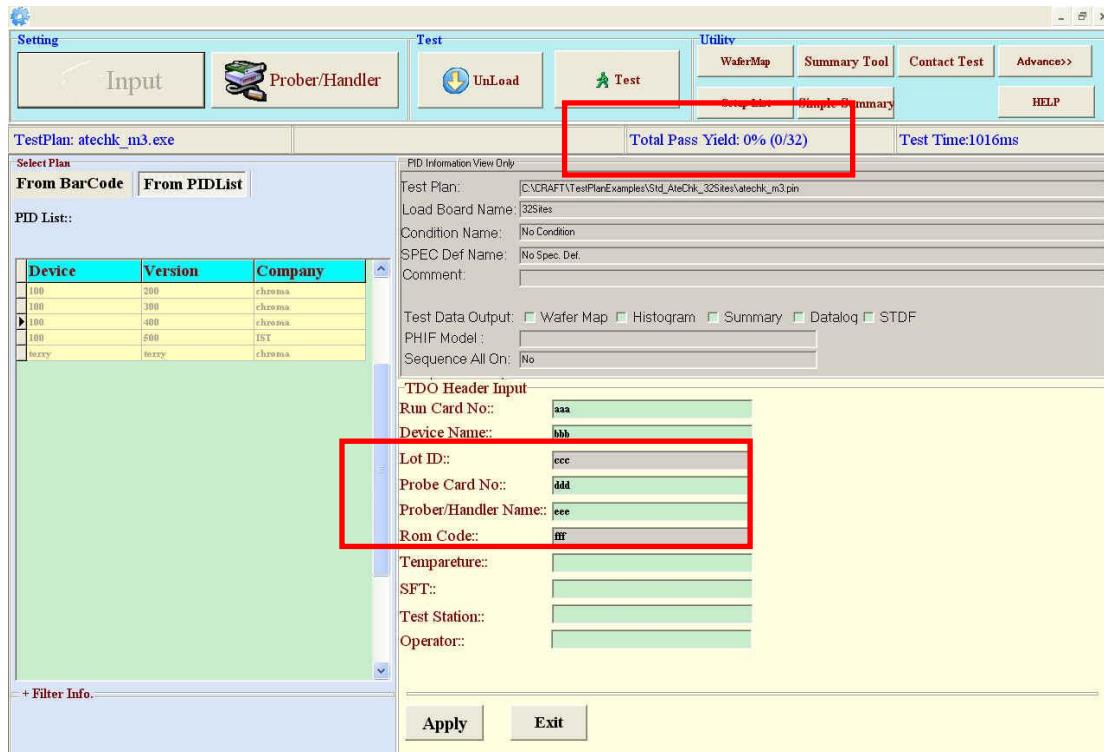


Figure 21-22 Lock “Lot ID” & “Rom Code” after Starting Test

21.7.1.3 Barcode Scanning Selection

In the normal situation, user need to scan three columns include device, version and company in from barcode page. However, user can find the only one plan just scan one or two important column. So user must make sure that the important column's values are not duplicated in Prod-ID List. Application engineer can set which column is important in “craft_utility.ini” file.

```
...
[Oper.exe]
CareDevice=Y
CareVersion=N
CareCompany=N
...
```

The value of “CareDevice”, “CareVersion” and “CareCompany” is to define which columns are needed to scan. Set the value to “Y” means the column needs to care and to scan. The following example means that operator can find the only one plan just by scan “Device” column.

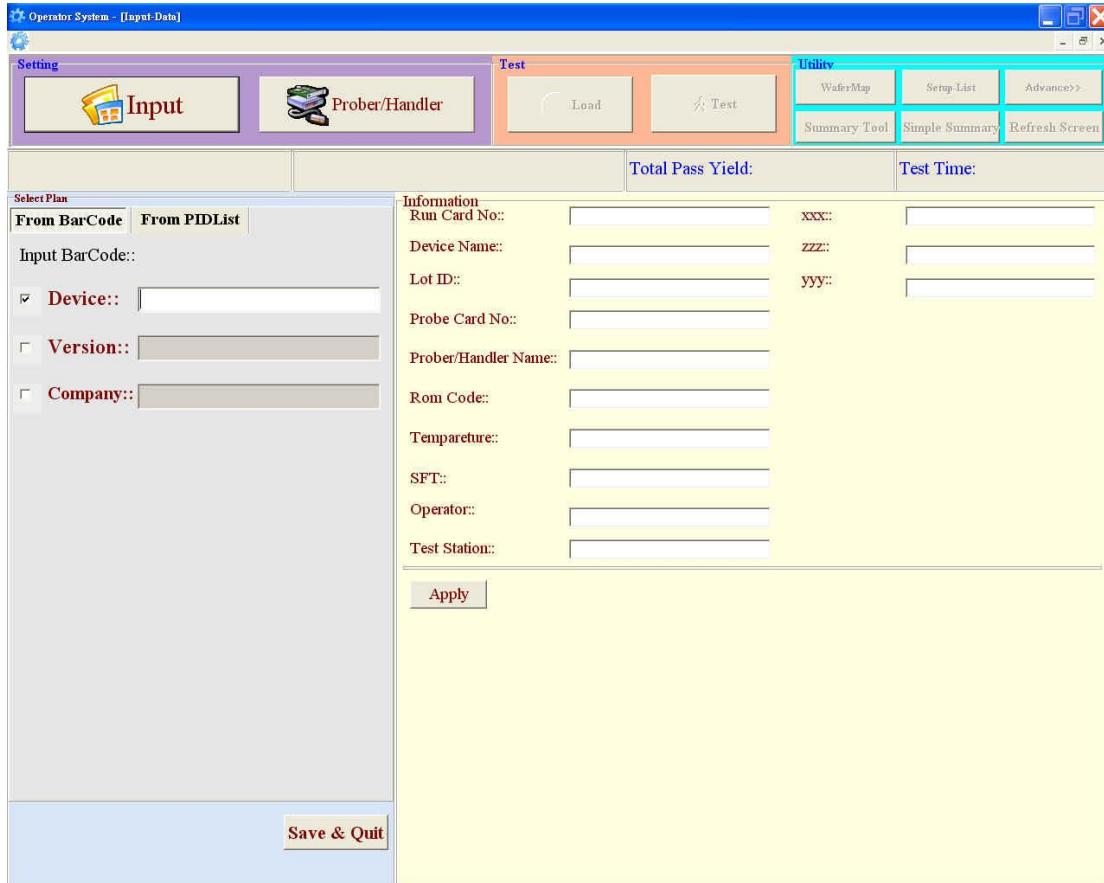


Figure 21-23 Scan the Device Column to Search for Test Plan

21.7.1.4 Pre-Run Startup Function

“Pre-Run Startup” Function provide user to run startup function before receiving Test command from Prober/Handler. Due to the Pattern is larger and larger; Load Pattern will spend much time and maybe overtake the Prober/Handler waiting time. So Prober/Handler will alarm the warning message because it is timeout. This Function provide user to Pre-Run Startup Function before Testing. This Button only can click one time after plan loaded and the test state is in initial. After receiving the Test Command from Prober/Handler, the button will disable.

If user want to use “**Pre-Run Startup**” Function, Application Engineer need to modify the “Craft_Utility.ini” file to open this function.

```
[Oper.exe]
IsPreLoadPattern=Y
```

Add this line in “Craft_Utility.ini” and reopen craft_oper tool, user can see a “PreRun Startup” Button in the Utility Part.

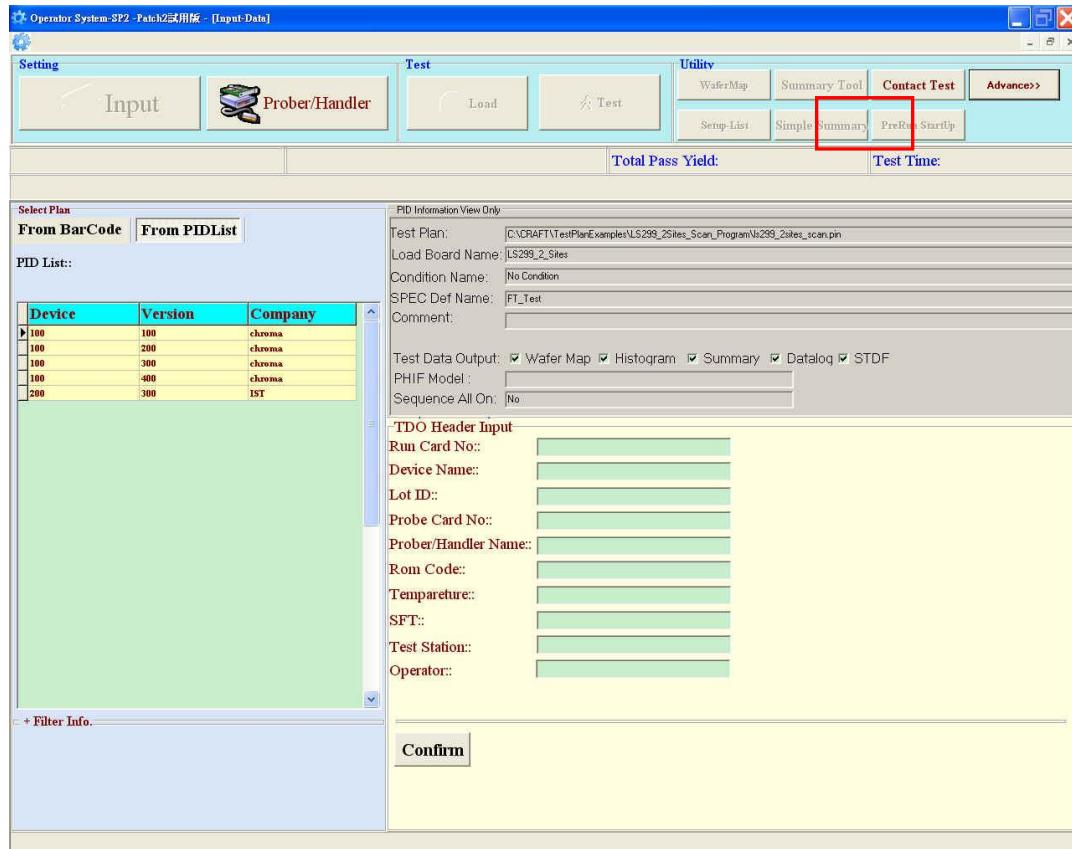


Figure 21-24

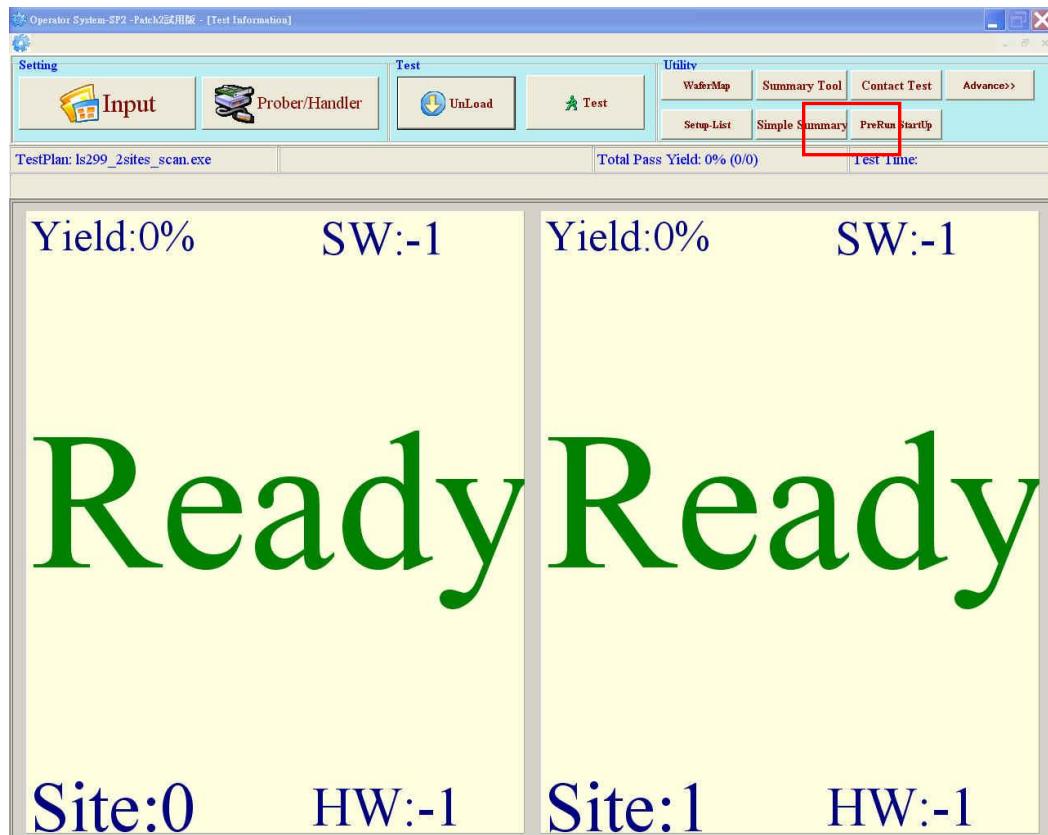


Figure 21-25

22. TMU Viewer

22.1 Overview

22.1.1 Start from System Control

The logic waveform starts when you click “TMU Viewer” on system control window. There are two ways to start TMU Viewer. (See Figure 22-1)

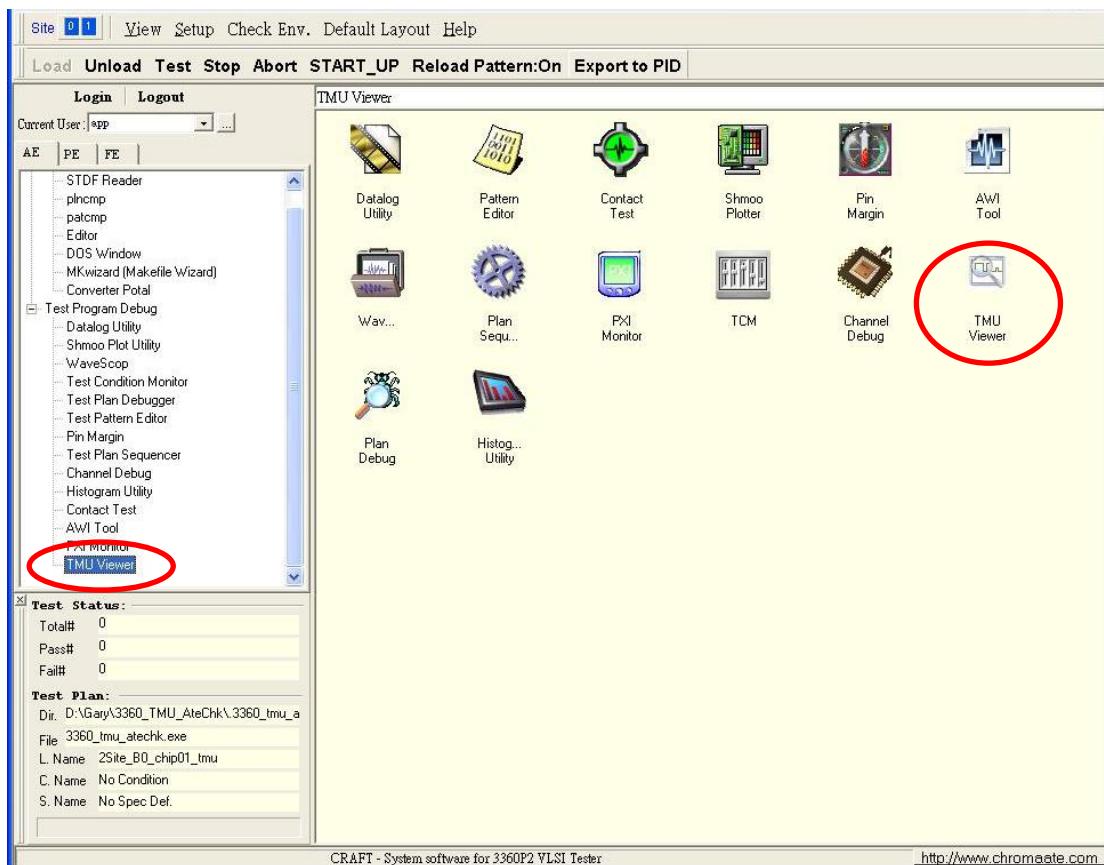


Figure 22-1 Start form System Control Window

22.1.2 TMU Viewer Main Window

The TMU Viewer shows the results of PF_data, PEL_data and PEH_data which are dumped by statement READ_TMU_LOG_MEM_BLOCK, and indicates them by displaying a waveform image. (See Figure 22-2)



Figure 22-2 TMU Viewer Main Window

22.2 TMU Viewer Execution

22.2.1 Open TMU Viewer Parameter Setup Window

- (1) Verify that the statement READ_TMU_LOG_MEM_BLOCK has already been tested.
- (2) With the TMU Viewer window, open the TMU Viewer parameter setup window.

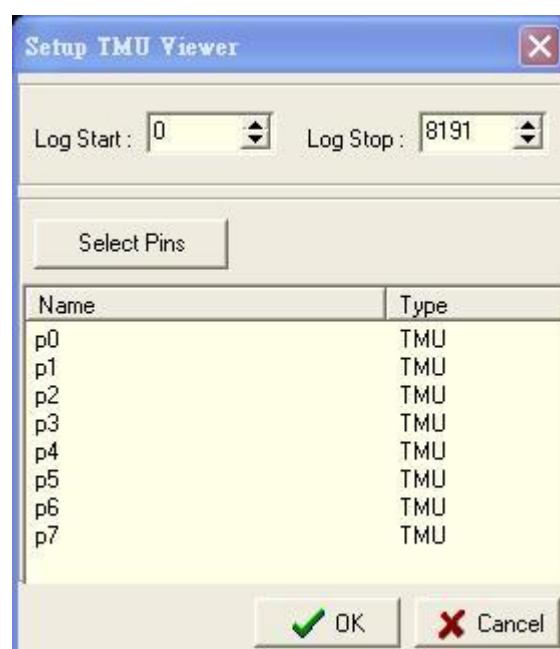


Figure 22-3 TMU Viewer Parameter Setup Window

22.2.2 Parameters Setting

- (1) From the TMU Viewer parameter setup window, make necessary parameter entries (see Figure 22-4).
- (2) Click **OK** button to finalize the parameter input. At the moment, the parameters are setup in this manner.

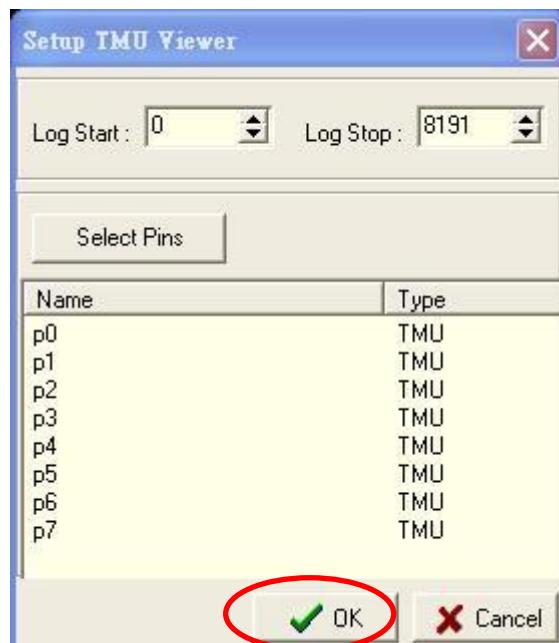


Figure 22-4 Setup TMU Viewer Parameters

22.2.3 Dump TMU waveform data

- (1) Dump TMU waveform data by clicking on the Run button in the TMU Viewer window. The parameter information referenced at this moment is the information that has been set up in the setup parameter window.
- (2) Upon completion of dumping data, the waveform display window opens.

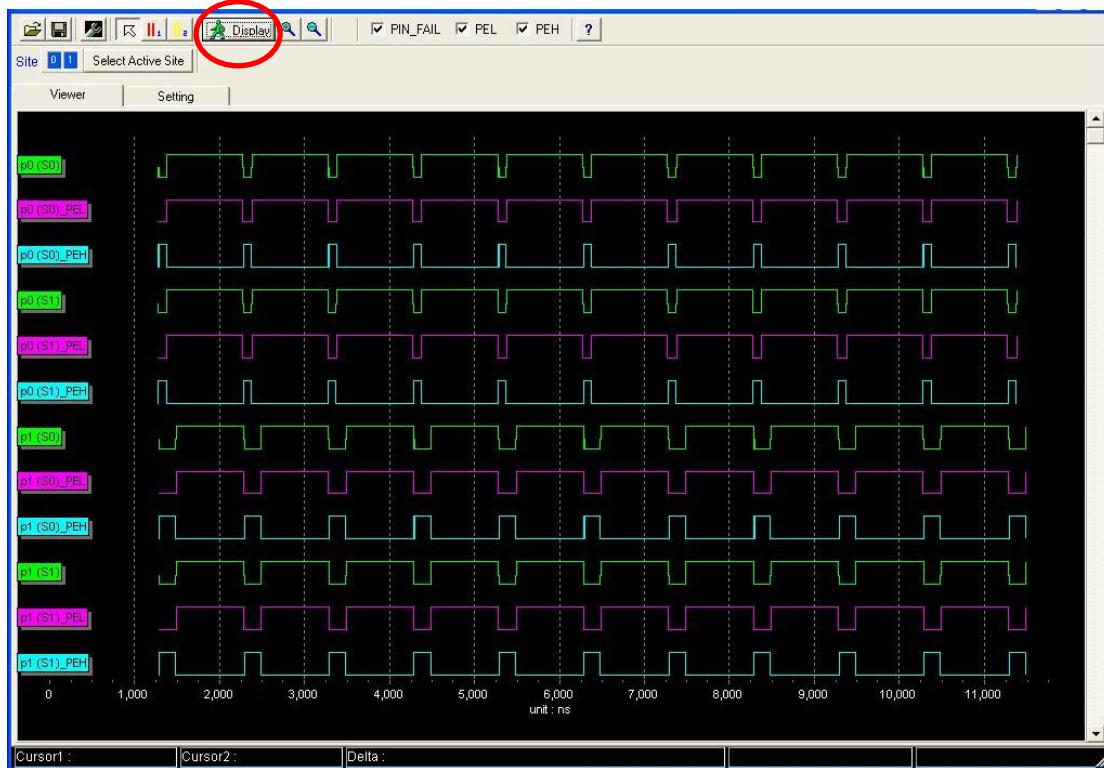


Figure 22-5 Dump TMU Waveform Data

22.3 Using TMU Viewer Parameter Setup Window

The following window is used to set TMU waveform display condition parameters and display wave data.

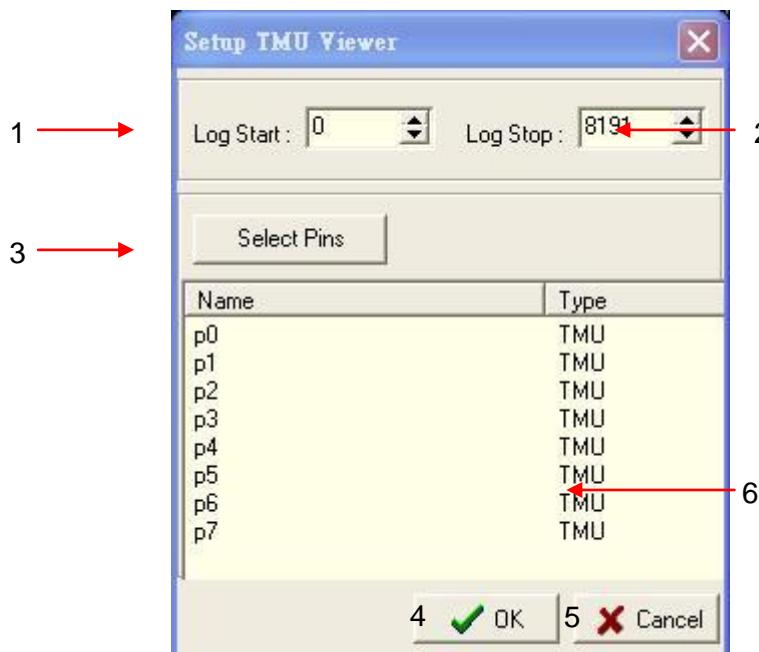


Figure 22-6 TMU Viewer Parameter Setup

No.	Function	Description
1	Log Start	Specify which number of TMU data to log begins with.
2	Log Stop	Specify which number of TMU data to log ends with.
3	Select Pin(s)	Specify the pin(s)/group(s) you care about.
4	OK	Finish the parameter setting.
5	Cancel	Cancel the parameter setting.
6	Selected pin(s) information	The information of selected pin(s), including name and type.

Table 22-1 TMU Viewer Parameter Setup Window Functions

22.4 Display a TMU waveform

22.4.1 TMU waveform Display Window

This window displays TMU waveform information.

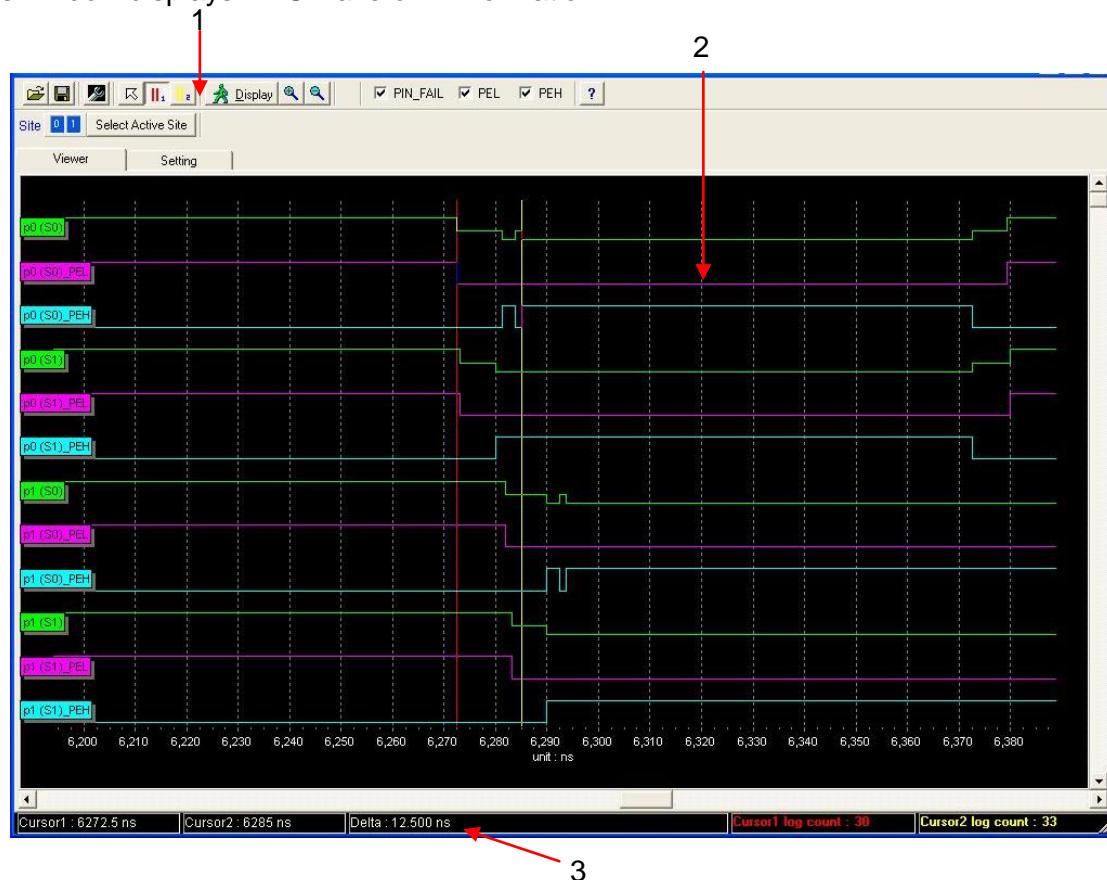


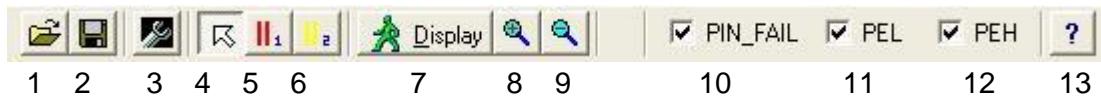
Figure 22-7 TMU Waveform Display Window

No.	Function	Description
1	Tool bar	Speed function button (see Table 22-3).
2	TMU Data display area	Display TMU waveform of the selected pins.
3	Status area	Specify the pin(s)/group(s) you care about.

Table 22-2 TMU Waveform Display Window Function List

22.4.2 Manipulate Tool Bar

22.4.2.1 Tool Bar



No.	Function	Description
1	Open file	Open an existed tmu graph file (*.tgf).
2	Save file	User can choose to save tmu graph file (including the display tmu waveform and setup parameters) to a file (*.tgf) or only tmu waveform part to a graphic file (*.bmp).
3	Setup Parameter	Parameter setup dialog will appear.
4	Normal Cursor	Set cursor mode to normal mode, it means does not the mode of (5), (6) in this table.
5	Cursor Mode: Cursor 1	Set cursor mode to cursor-1 mode, it means click the left button of mouse will draw a cursor 1.
6	Cursor Mode: Cursor 2	Set cursor mode to cursor-2 mode, it means click the left button of mouse will draw a cursor 2.
7	Display TMU waveform	Log TMU data then the actual waveform will show.
8	Zoom In	Zoom in the displayed waveform. (X-Axis)
9	Zoom Out	Zoom out the displayed waveform. (X-Axis)
10	PIN_FAIL checkbox	Show TMU PIN_FAIL data waveform in display window if checked.
11	PEL checkbox	Show TMU PEL data waveform in display window if checked.
12	PEH checkbox	Show TMU PEH data waveform in display window if checked.
13	Help	Launch TMU Viewer help.

Table 22-3 Tool Bar Function List

22.4.3 TMU Data Display Format

22.4.3.1 Display Main Window

The actual TMU waveform data is displayed on the main window. (See Figure 22-7)



Figure 22-8 TMU Waveform Display Window

No.	Meaning	Description
1	Pin name	Show the pin name. Each pin will show three kinds of waveform including PIN_FAIL, PEL and PEH data.
2	Waveform color	The waveform color of PIN_FAIL data is GREEN. The waveform color of PEL data is Fuchsia. The waveform color of PEH data is Aqua.

Table 22-4 Display Window Meaning List

22.5 Reference\Change TMU Setup

22.5.1 TMU Setup Window

This window provides user to reference\change current TMU setup conditions. User can see this window by clicking the tab "Setting".

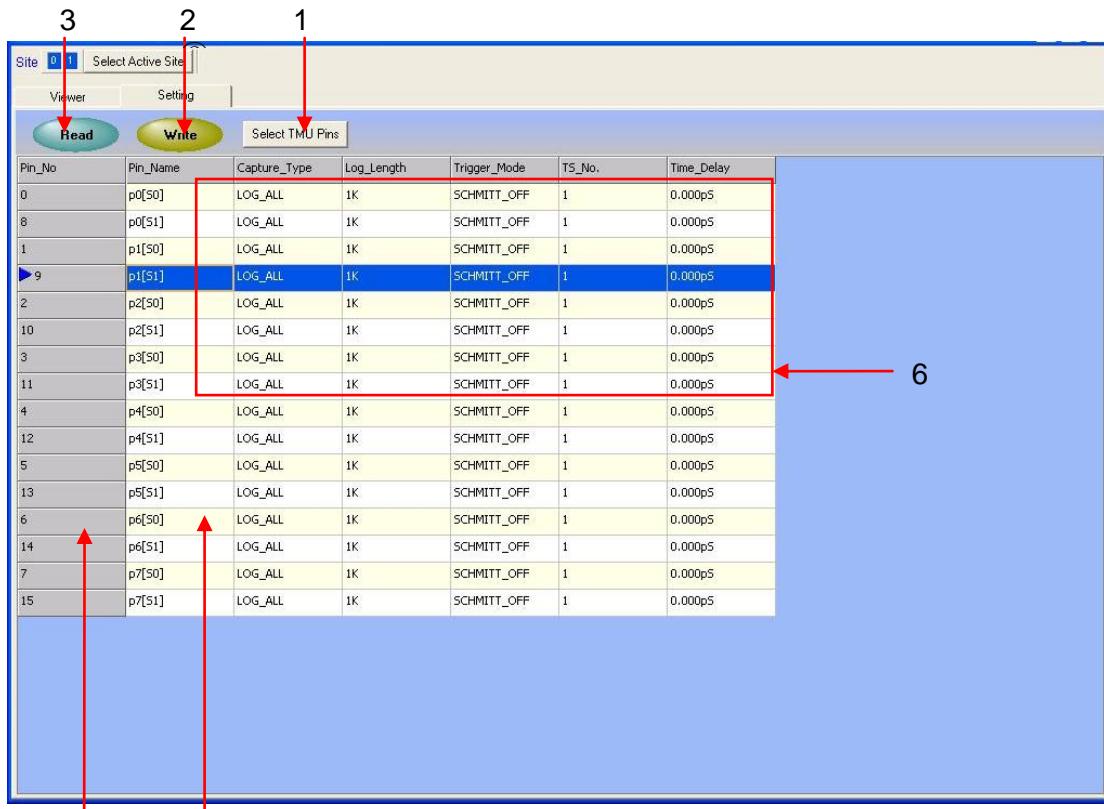


Figure 22-9

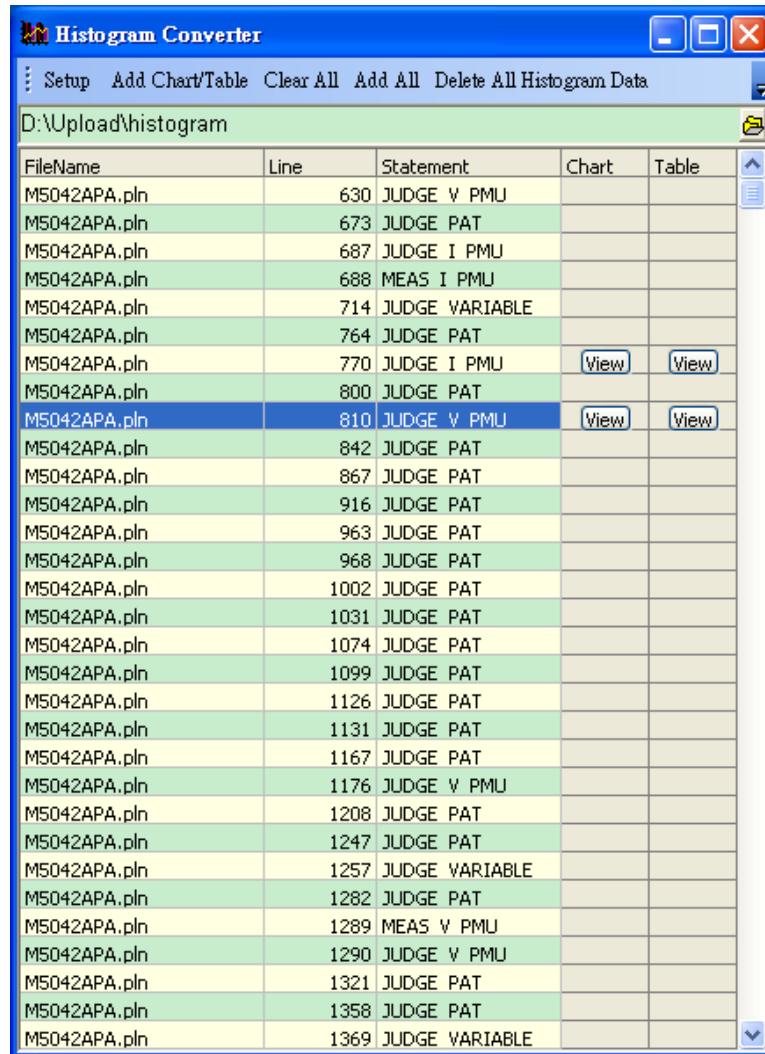
No.	Name	Classification	Description
1	Select Pin(s)	Button	Specify the pin(s)/group(s) you care about.
2	Write Conditions	Button	Write edited data into hardware (write to current site only).
3	Read Conditions	Button	Read data from hardware.
4	PinNo	Display	Show the ATE channel of the selected pin.
5	TMU PinName	Display	Show the Pin Name of the selected TMU pin.
6	TMU Conditions	Input	Display or change the values of Capture_Type, Log_Length, Trigger_Mode, TS_No and Time_Delay of the TMU pin.

Table 22-5 Contents of the TMU Setup Window

23. Histogram Utility

23.1 Overview

The histogram utility combines the measurement or judgment results of tests, and user can select an individual statement to display statistical data by histogram chart or table.



The screenshot shows the Histogram Converter application window. The title bar reads "Histogram Converter". The menu bar includes "Setup", "Add Chart/Table", "Clear All", "Add All", "Delete All", and "Histogram Data". The main area displays a table with columns: "FileName", "Line", "Statement", "Chart", and "Table". The table lists numerous entries for "M5042APA.pln" across various lines (e.g., 630, 673, 687, 688, 714, 764, 770, 800, 810, 842, 867, 916, 963, 968, 1002, 1031, 1074, 1099, 1126, 1131, 1167, 1176, 1208, 1247, 1257, 1282, 1289, 1290, 1321, 1358, 1369) with their corresponding statements like "JUDGE V PMU", "JUDGE PAT", "JUDGE I PMU", etc. There are also "View" buttons next to some entries. The path "D:\Upload\histogram" is shown above the table.

FileName	Line	Statement	Chart	Table
M5042APA.pln	630	JUDGE V PMU		
M5042APA.pln	673	JUDGE PAT		
M5042APA.pln	687	JUDGE I PMU		
M5042APA.pln	688	MEAS I PMU		
M5042APA.pln	714	JUDGE VARIABLE		
M5042APA.pln	764	JUDGE PAT		
M5042APA.pln	770	JUDGE I PMU	[View]	[View]
M5042APA.pln	800	JUDGE PAT		
M5042APA.pln	810	JUDGE V PMU	[View]	[View]
M5042APA.pln	842	JUDGE PAT		
M5042APA.pln	867	JUDGE PAT		
M5042APA.pln	916	JUDGE PAT		
M5042APA.pln	963	JUDGE PAT		
M5042APA.pln	968	JUDGE PAT		
M5042APA.pln	1002	JUDGE PAT		
M5042APA.pln	1031	JUDGE PAT		
M5042APA.pln	1074	JUDGE PAT		
M5042APA.pln	1099	JUDGE PAT		
M5042APA.pln	1126	JUDGE PAT		
M5042APA.pln	1131	JUDGE PAT		
M5042APA.pln	1167	JUDGE PAT		
M5042APA.pln	1176	JUDGE V PMU		
M5042APA.pln	1208	JUDGE PAT		
M5042APA.pln	1247	JUDGE PAT		
M5042APA.pln	1257	JUDGE VARIABLE		
M5042APA.pln	1282	JUDGE PAT		
M5042APA.pln	1289	MEAS V PMU		
M5042APA.pln	1290	JUDGE V PMU		
M5042APA.pln	1321	JUDGE PAT		
M5042APA.pln	1358	JUDGE PAT		
M5042APA.pln	1369	JUDGE VARIABLE		

Fig. 23-1 Histogram Utility Main Window

23.2 Start and Quit Histogram Utility

23.2.1 Start from System Control

The histogram utility starts when you click “Histogram Utility” on system control window. There are two ways to start histogram utility. (See fig. 23-2)

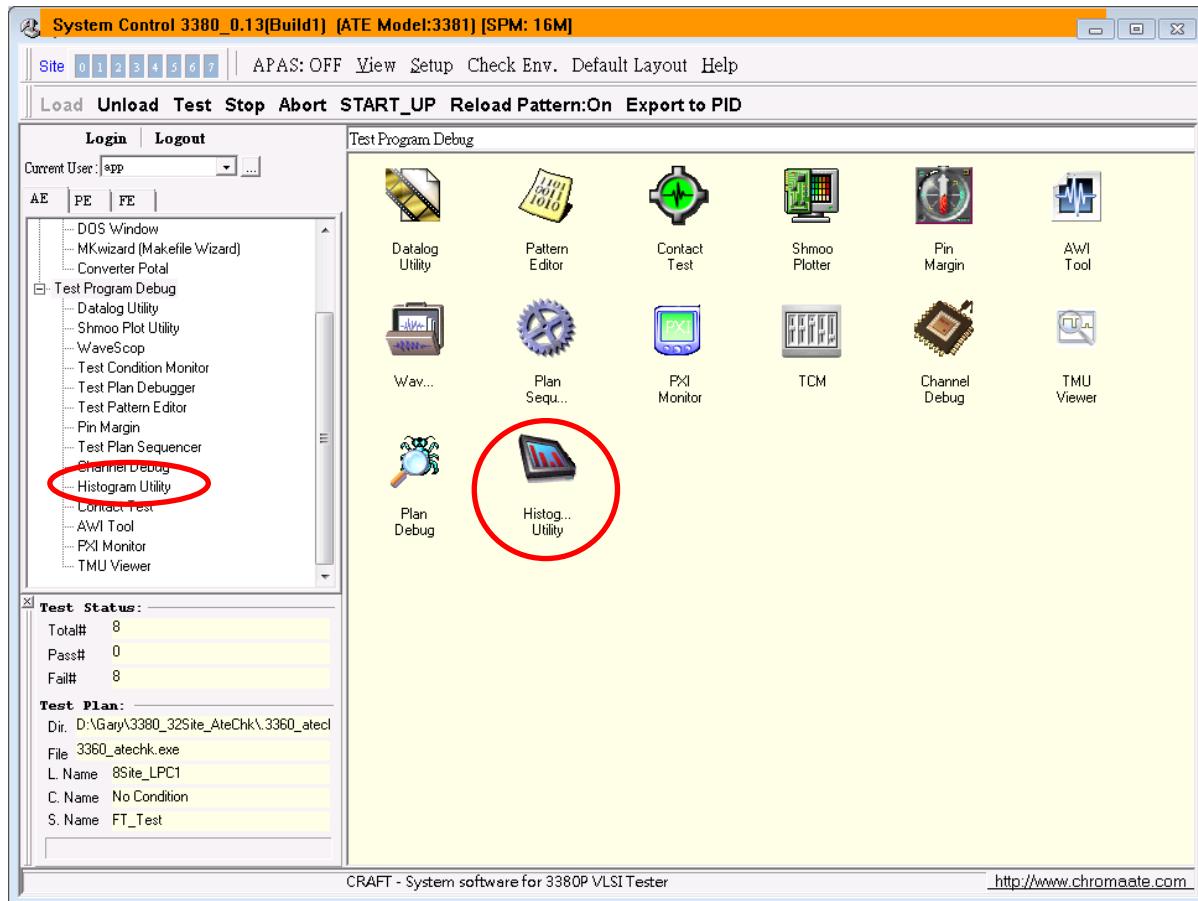


Fig. 23-1 Start form System Control window

23.2.2 Quit Histogram Utility

To quit the histogram tool, click close button on histogram window (see fig. 23-3)

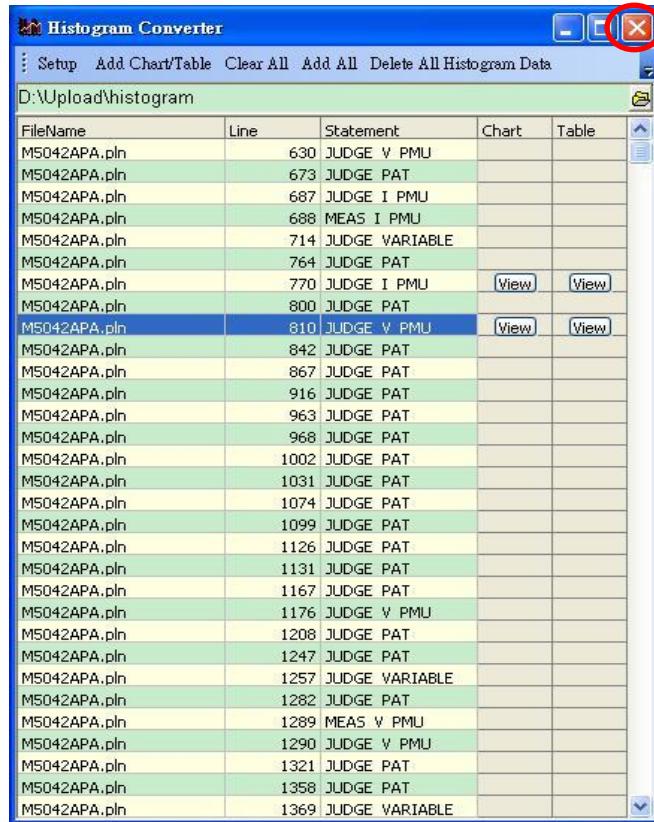


Fig. 23-2 Quitting Histogram Utility

23.3 Histogram Utility Execution

23.3.1 Open Histogram Utility

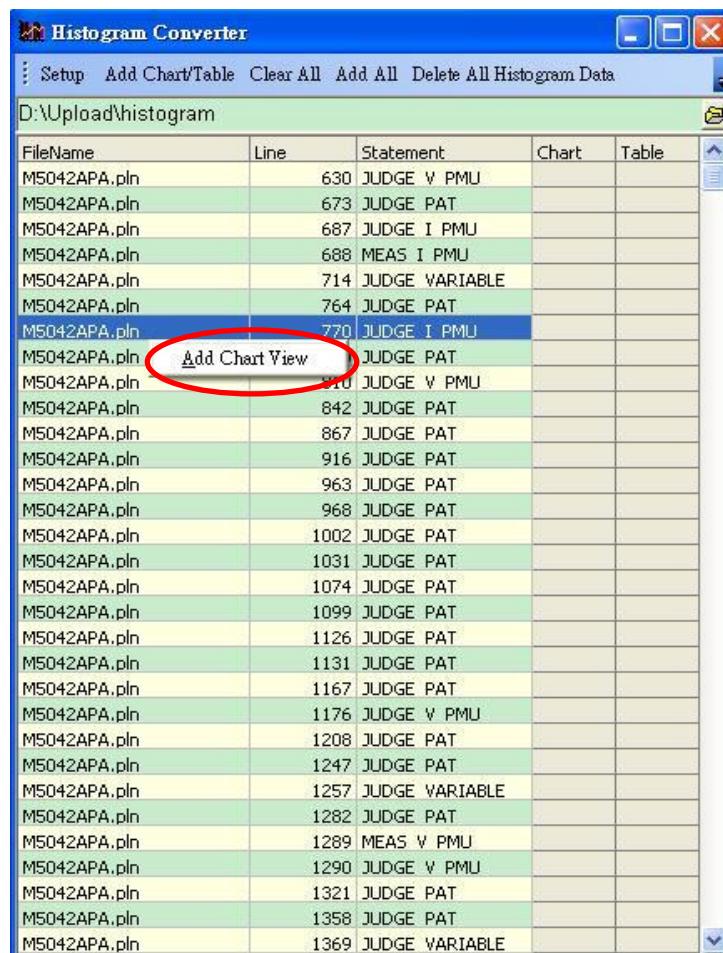
- (3) Choose to collect measurement or judgment results in Plan Debugger window.
- (4) Open the histogram utility and select the folder contains histogram data.



Fig. 23-4 Select histogram data window

23.3.2 Select the statement to display statistical data

- (3) From the select histogram data window, make necessary histogram data entries (see fig. 23.4).
- (4) Click **OK** button to show all statements after testing in histogram utility main window(if the size of histogram data is very large, it will take more time to access). In the main window, clicking the right button of mouse at the cared statement column.



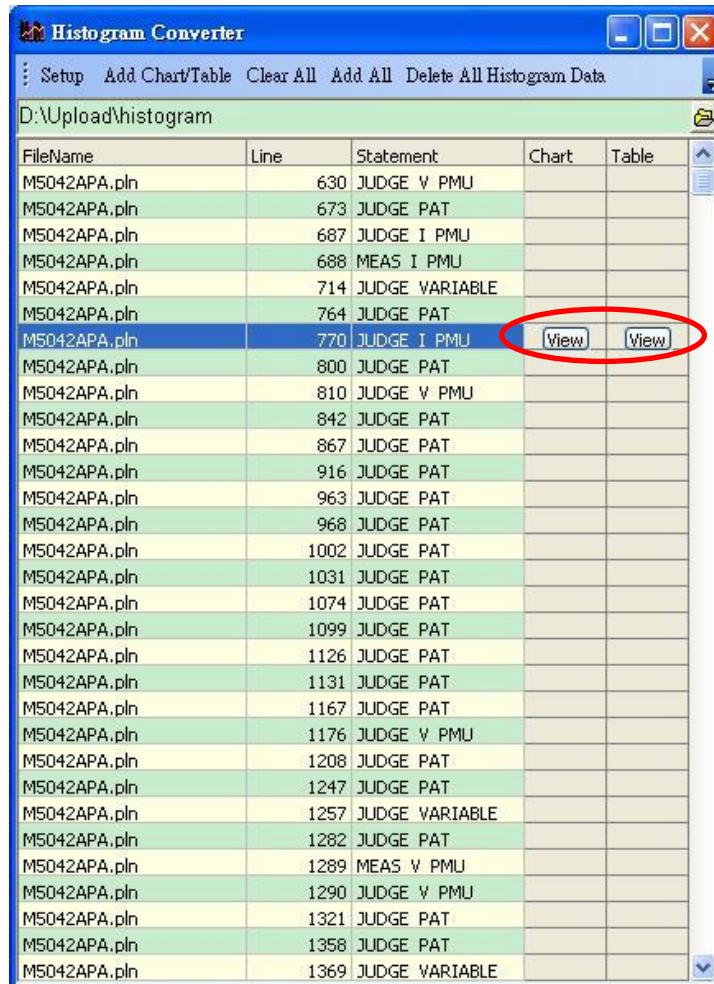
The screenshot shows a Windows application window titled "Histogram Converter". The menu bar includes "Setup", "Add Chart/Table", "Clear All", "Add All", "Delete All", and "Histogram Data". Below the menu is a toolbar with icons for file operations. The main area is a table with columns: "FileName", "Line", "Statement", "Chart", and "Table". The table lists numerous entries for "M5042APA.pln" with various line numbers and statements like "JUDGE V PMU", "JUDGE PAT", etc. A context menu is displayed over the table, with the option "Add Chart View" highlighted by a red oval. The menu also includes "Edit", "Copy", "Cut", "Paste", "Delete", "Select All", and "Exit".

FileName	Line	Statement	Chart	Table
M5042APA.pln	630	JUDGE V PMU		
M5042APA.pln	673	JUDGE PAT		
M5042APA.pln	687	JUDGE I PMU		
M5042APA.pln	688	MEAS I PMU		
M5042APA.pln	714	JUDGE VARIABLE		
M5042APA.pln	764	JUDGE PAT		
M5042APA.pln	770	JUDGE I PMU		
M5042APA.pln	770	Add Chart View	JUDGE PAT	
M5042APA.pln	770	JUDGE V PMU		
M5042APA.pln	842	JUDGE PAT		
M5042APA.pln	867	JUDGE PAT		
M5042APA.pln	916	JUDGE PAT		
M5042APA.pln	963	JUDGE PAT		
M5042APA.pln	968	JUDGE PAT		
M5042APA.pln	1002	JUDGE PAT		
M5042APA.pln	1031	JUDGE PAT		
M5042APA.pln	1074	JUDGE PAT		
M5042APA.pln	1099	JUDGE PAT		
M5042APA.pln	1126	JUDGE PAT		
M5042APA.pln	1131	JUDGE PAT		
M5042APA.pln	1167	JUDGE PAT		
M5042APA.pln	1176	JUDGE V PMU		
M5042APA.pln	1208	JUDGE PAT		
M5042APA.pln	1247	JUDGE PAT		
M5042APA.pln	1257	JUDGE VARIABLE		
M5042APA.pln	1282	JUDGE PAT		
M5042APA.pln	1289	MEAS V PMU		
M5042APA.pln	1290	JUDGE V PMU		
M5042APA.pln	1321	JUDGE PAT		
M5042APA.pln	1358	JUDGE PAT		
M5042APA.pln	1369	JUDGE VARIABLE		

Fig. 23-3 Right click in the main window

23.3.3 Access statistical data

- (3) Access statistical data by clicking “Add Chart View” button shown by right click of mouse in the main window.
- (4) According to the size of statistical data, it will take a few minutes to access it. Showing “View” button in both Chat and Table columns when finished.



The screenshot shows a Windows application window titled "Histogram Converter". The menu bar includes "Setup", "Add Chart/Table", "Clear All", "Add All", and "Delete All Histogram Data". The main area displays a table with the following columns: FileName, Line, Statement, Chart, and Table. The rows list various entries from "M5042APA.pln" with corresponding line numbers and statements like "JUDGE V PMU", "JUDGE PAT", etc. In the second column of the 770 row, there are two "View" buttons, which are circled in red.

FileName	Line	Statement	Chart	Table
M5042APA.pln	630	JUDGE V PMU		
M5042APA.pln	673	JUDGE PAT		
M5042APA.pln	687	JUDGE I PMU		
M5042APA.pln	688	MEAS I PMU		
M5042APA.pln	714	JUDGE VARIABLE		
M5042APA.pln	764	JUDGE PAT		
M5042APA.pln	770	JUDGE I PMU	<input type="button" value="View"/>	<input type="button" value="View"/>
M5042APA.pln	800	JUDGE PAT		
M5042APA.pln	810	JUDGE V PMU		
M5042APA.pln	842	JUDGE PAT		
M5042APA.pln	867	JUDGE PAT		
M5042APA.pln	916	JUDGE PAT		
M5042APA.pln	963	JUDGE PAT		
M5042APA.pln	968	JUDGE PAT		
M5042APA.pln	1002	JUDGE PAT		
M5042APA.pln	1031	JUDGE PAT		
M5042APA.pln	1074	JUDGE PAT		
M5042APA.pln	1099	JUDGE PAT		
M5042APA.pln	1126	JUDGE PAT		
M5042APA.pln	1131	JUDGE PAT		
M5042APA.pln	1167	JUDGE PAT		
M5042APA.pln	1176	JUDGE V PMU		
M5042APA.pln	1208	JUDGE PAT		
M5042APA.pln	1247	JUDGE PAT		
M5042APA.pln	1257	JUDGE VARIABLE		
M5042APA.pln	1282	JUDGE PAT		
M5042APA.pln	1289	MEAS V PMU		
M5042APA.pln	1290	JUDGE V PMU		
M5042APA.pln	1321	JUDGE PAT		
M5042APA.pln	1358	JUDGE PAT		
M5042APA.pln	1369	JUDGE VARIABLE		

Fig. 23-4 Showing “View” button

23.3.4 Display Histogram Chart Viewer

- (3) Clicking “View” button at Chart column, Pop the Histogram Chart Viewer window.
 (4) The Viewer displays statistical data in histogram way. User can observe the trend of data distribution. It will be introduced in detail at section 23.4.

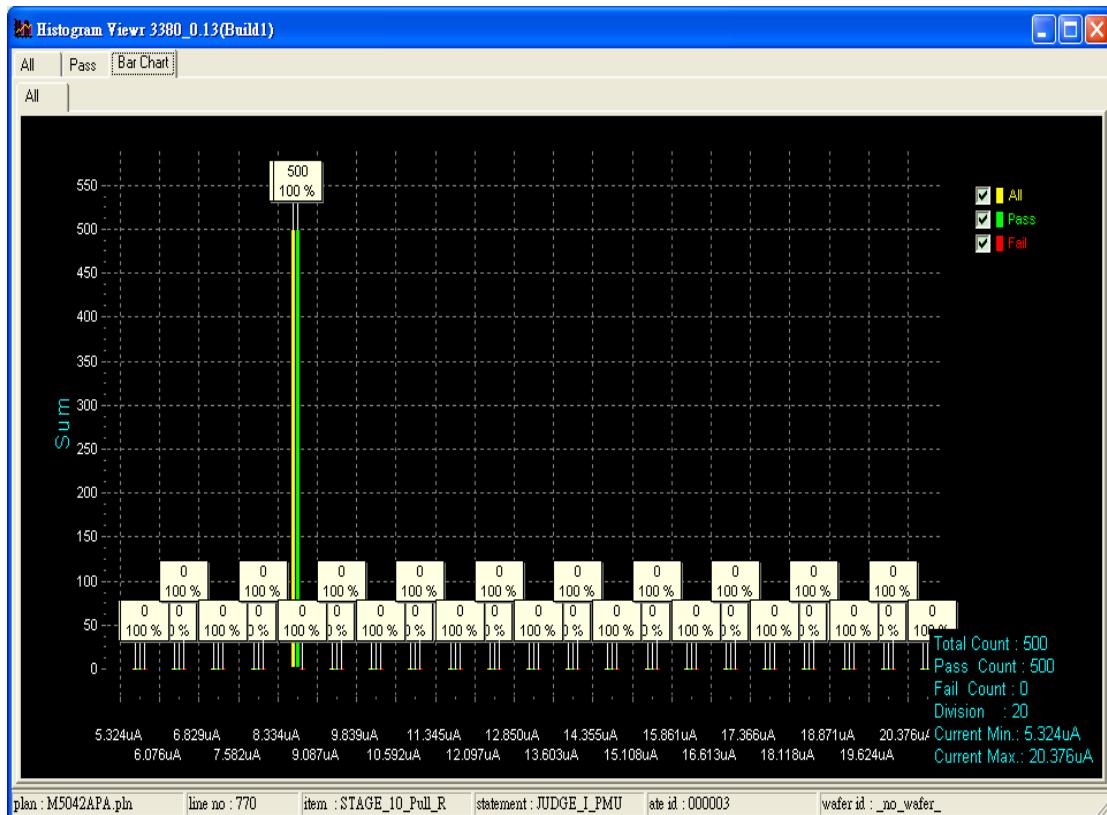


Fig. 23-7 Histogram Chart Viewer

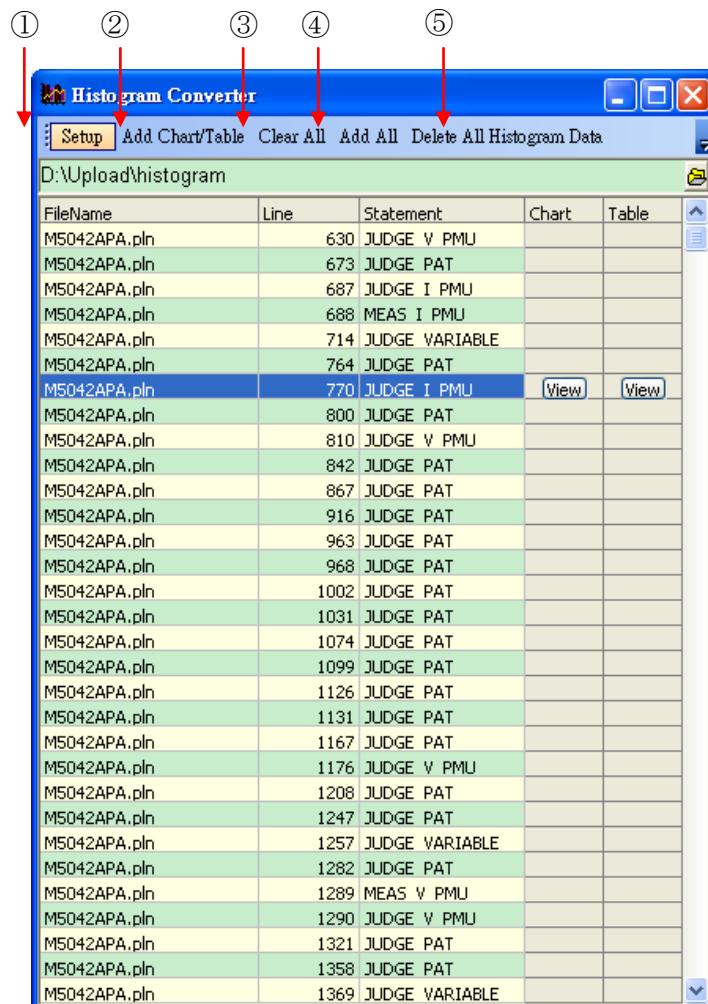
23.3.5 Display Statistical Data Table

- (1) Clicking “View” button at Table column, Pop the Statistical Data Table.
 (2) The Table displays statistical data in text way. User can observe the measure data in each testing flow.

Time	File Name	Line	Item Name	Statement	Test Count	Item Count	Statement C	Pin Name	Measure	Result	PHIF_X	PHIF_Y	LOT_ID	WAFER_ID	ATE_ID	LOW_LIMIT
2011/09/02	M5042APA.i	770	STAGE_10_i	JUDGE_I_PM_0	0	0	LE(S0)		8.873071E-1	-1024	-1024	-NAN-	_no_wafer_	000003	5.7E-6	
2011/09/02	M5042APA.i	770	STAGE_10_i	JUDGE_I_PM_1	1	1	LE(S0)		8.879662E-1	-1024	-1024	-NAN-	_no_wafer_	000003	5.7E-6	
2011/09/02	M5042APA.i	770	STAGE_10_i	JUDGE_I_PM_2	2	2	LE(S0)		8.875512E-1	-1024	-1024	-NAN-	_no_wafer_	000003	5.7E-6	
2011/09/02	M5042APA.i	770	STAGE_10_i	JUDGE_I_PM_3	3	3	LE(S0)		8.872827E-1	-1024	-1024	-NAN-	_no_wafer_	000003	5.7E-6	
2011/09/02	M5042APA.i	770	STAGE_10_i	JUDGE_I_PM_4	4	4	LE(S0)		8.871118E-1	-1024	-1024	-NAN-	_no_wafer_	000003	5.7E-6	
2011/09/02	M5042APA.i	770	STAGE_10_i	JUDGE_I_PM_5	5	5	LE(S0)		8.872339E-1	-1024	-1024	-NAN-	_no_wafer_	000003	5.7E-6	
2011/09/02	M5042APA.i	770	STAGE_10_i	JUDGE_I_PM_6	6	6	LE(S0)		8.86526E-6 1	-1024	-1024	-NAN-	_no_wafer_	000003	5.7E-6	
2011/09/02	M5042APA.i	770	STAGE_10_i	JUDGE_I_PM_7	7	7	LE(S0)		8.868921E-1	-1024	-1024	-NAN-	_no_wafer_	000003	5.7E-6	
2011/09/02	M5042APA.i	770	STAGE_10_i	JUDGE_I_PM_8	8	8	LE(S0)		8.865992E-1	-1024	-1024	-NAN-	_no_wafer_	000003	5.7E-6	
2011/09/02	M5042APA.i	770	STAGE_10_i	JUDGE_I_PM_9	9	9	LE(S0)		8.867457E-1	-1024	-1024	-NAN-	_no_wafer_	000003	5.7E-6	
2011/09/02	M5042APA.i	770	STAGE_10_i	JUDGE_I_PM_10	10	10	LE(S0)		8.871118E-1	-1024	-1024	-NAN-	_no_wafer_	000003	5.7E-6	
2011/09/02	M5042APA.i	770	STAGE_10_i	JUDGE_I_PM_11	11	11	LE(S0)		8.870142E-1	-1024	-1024	-NAN-	_no_wafer_	000003	5.7E-6	
2011/09/02	M5042APA.i	770	STAGE_10_i	JUDGE_I_PM_12	12	12	LE(S0)		8.866724E-1	-1024	-1024	-NAN-	_no_wafer_	000003	5.7E-6	
2011/09/02	M5042APA.i	770	STAGE_10_i	JUDGE_I_PM_13	13	13	LE(S0)		8.869654E-1	-1024	-1024	-NAN-	_no_wafer_	000003	5.7E-6	
2011/09/02	M5042APA.i	770	STAGE_10_i	JUDGE_I_PM_14	14	14	LE(S0)		8.857692E-1	-1024	-1024	-NAN-	_no_wafer_	000003	5.7E-6	
2011/09/02	M5042APA.i	770	STAGE_10_i	JUDGE_I_PM_15	15	15	LE(S0)		8.87063E-6 1	-1024	-1024	-NAN-	_no_wafer_	000003	5.7E-6	
2011/09/02	M5042APA.i	770	STAGE_10_i	JUDGE_I_PM_16	16	16	LE(S0)		8.866236E-1	-1024	-1024	-NAN-	_no_wafer_	000003	5.7E-6	
2011/09/02	M5042APA.i	770	STAGE_10_i	JUDGE_I_PM_17	17	17	LE(S0)		8.865016E-1	-1024	-1024	-NAN-	_no_wafer_	000003	5.7E-6	
2011/09/02	M5042APA.i	770	STAGE_10_i	JUDGE_I_PM_18	18	18	LE(S0)		8.865016E-1	-1024	-1024	-NAN-	_no_wafer_	000003	5.7E-6	
2011/09/02	M5042APA.i	770	STAGE_10_i	JUDGE_I_PM_19	19	19	LE(S0)		8.86648E-6 1	-1024	-1024	-NAN-	_no_wafer_	000003	5.7E-6	
2011/09/02	M5042APA.i	770	STAGE_10_i	JUDGE_I_PM_20	20	20	LE(S0)		8.86233E-6 1	-1024	-1024	-NAN-	_no_wafer_	000003	5.7E-6	

Fig. 23-8 Statistical Data Table

23.3.6 Manipulate Menu Bar



No.	Function	Description
1	Setup	Field setup : indicate cared information in different kind of statement. Sort by Filename : indexed by filename first in main window. Sort by Line : indexed by line first in main window. Sort by Statement : indexed by statement first in main window.
2	Add Chart/Table	Add Chart/Table button in single statement. Same function with clicking the right button of mouse at the cared statement column.
3	Clear All	Clear all Chart/Table "View" button.
4	Add All	Add all Chart/Table button with existing statements. It may take long time according the size of statistical data.
5	Delete All Histogram Data	Delete the all test histogram data. Reset before next testing.

Table 23-1 Histogram Utility Menu Bar Functions

23.4 Histogram Chart Viewer

The Histogram Chart Viewer is used to display statistical data. User can observe the measure data and the trend of data distribution. (see fig. 23.7)

23.4.1 Bar Chart

User can observe the trend of data distribution by all pins or single pin. And lots of functions for user to apply. (see Table 23.2)

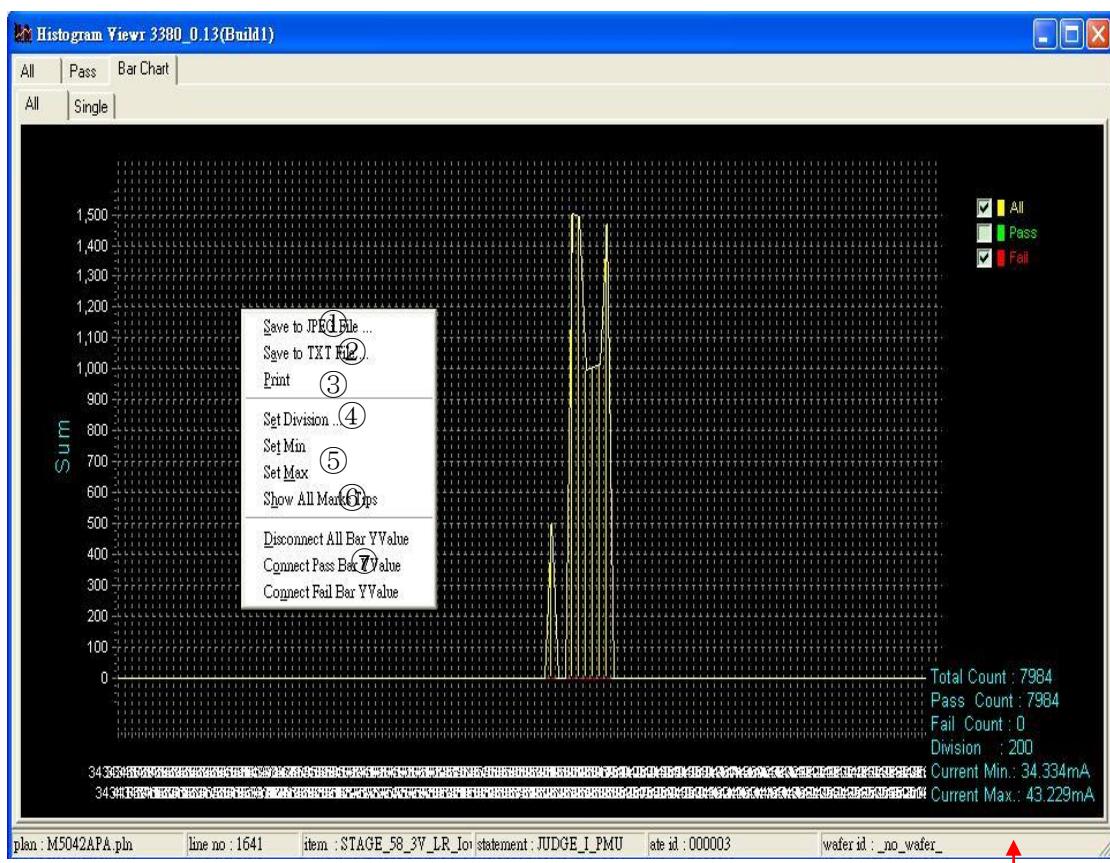


Fig. 23-9 Bar Chart shown in all pins

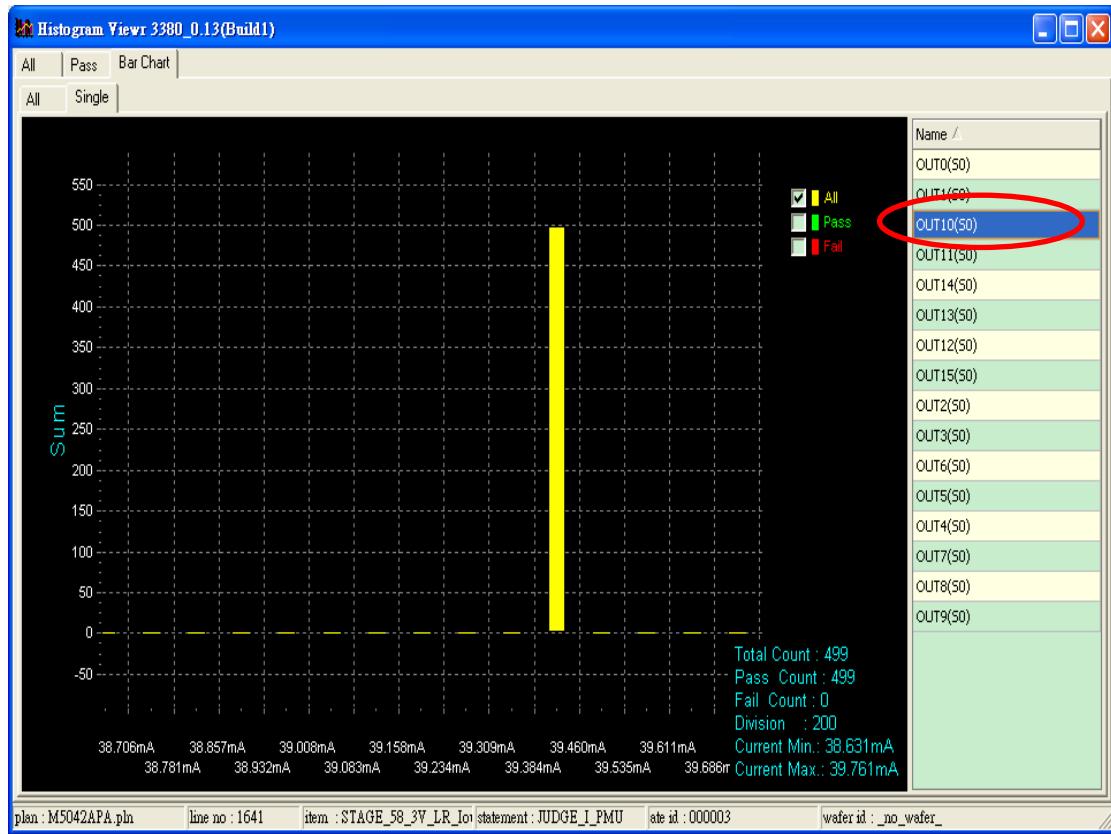


Fig. 23-10 Bar Chart shown in single pin

No.	Function	Description
1	Save To JPEG File	Save the bar chart to JPEG format file.
2	Save To TXT File	Save the bar chart data information in text mode.
3	Print	Print the displayed bar chart.
4	Set Division	Set division to decide how many bins to be shown in bar chart.
5	Set Min/Max	Set Min and Max value in x-coordinate.
6	Show All Marks Tips	Show marks tips information.(including counts and percentage).
7	Connect Bar Y Value	Connect the top of all bars so that user can see the trend of data distribution clearly.
8	Status Bar	Specify the statement that user cares about.

Table 23-2 Functions in Bar Chart of Histogram Chart Viewer

23.4.2 Measure Status Chart

User can observe the measure data in each count by all pins or single pin.

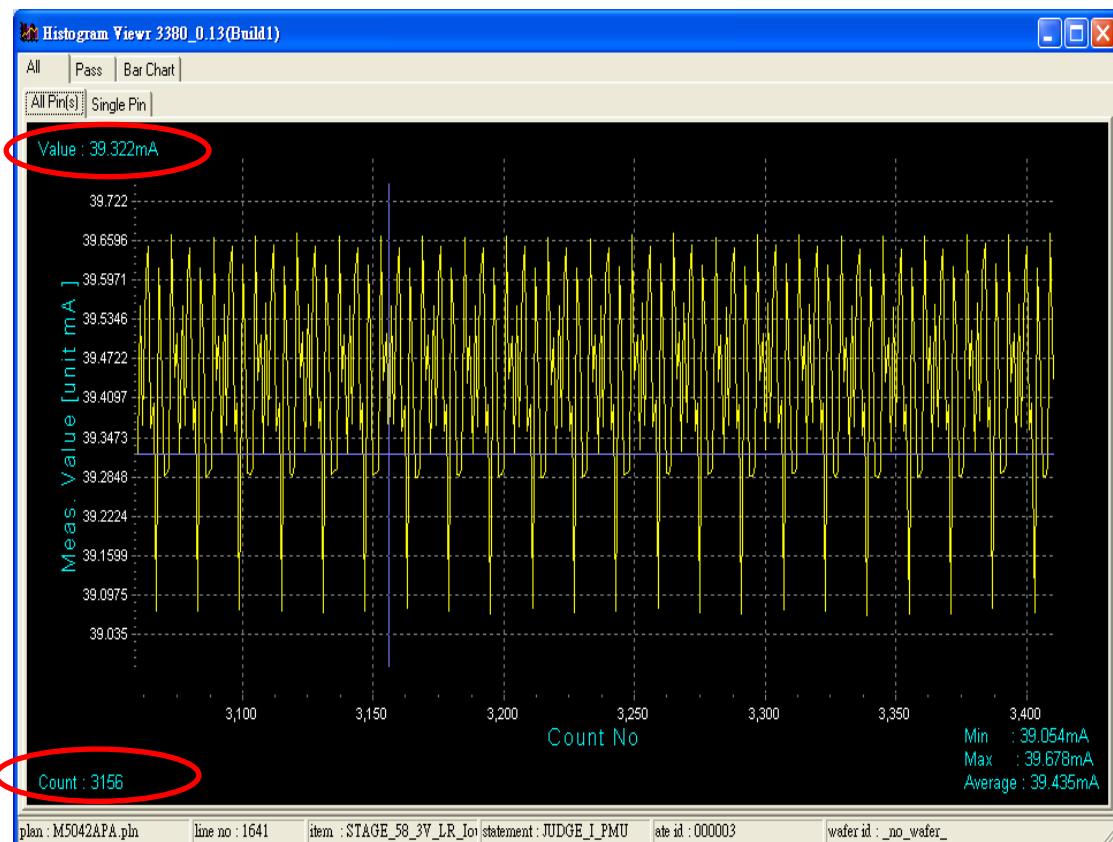


Fig. 23-11 Measure Status Chart shown in all pins

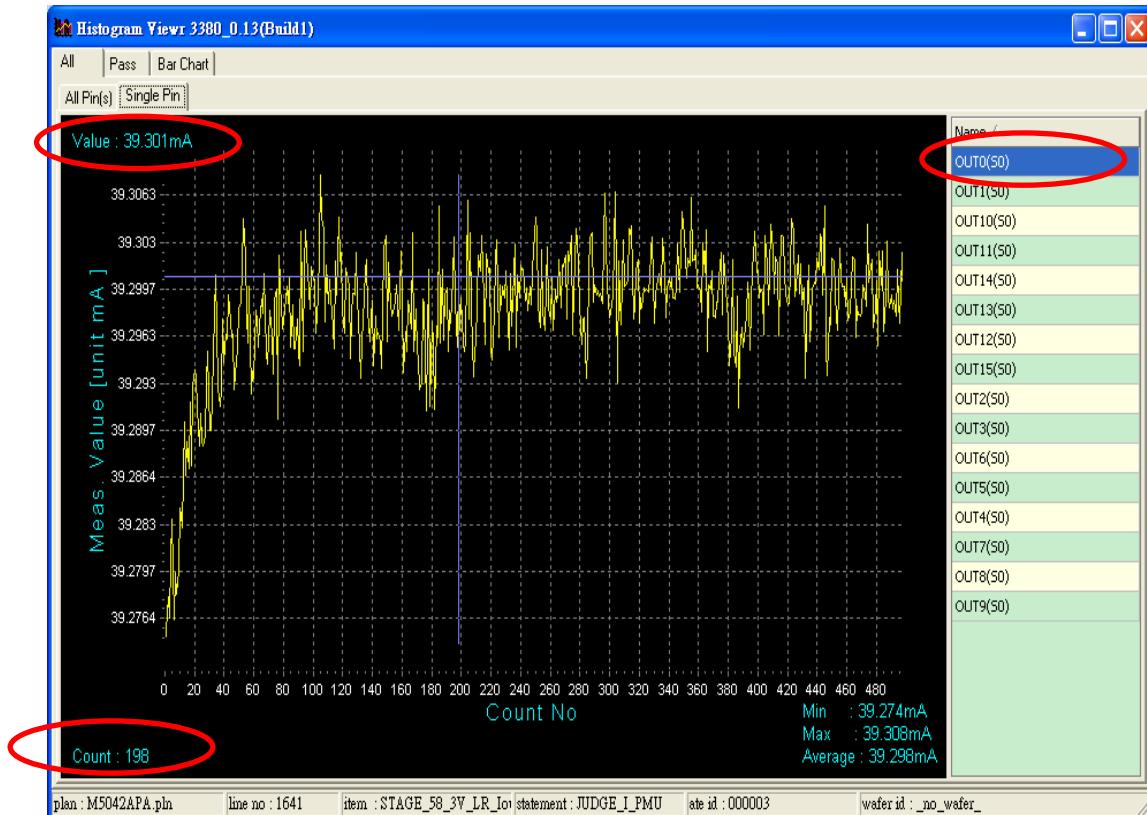


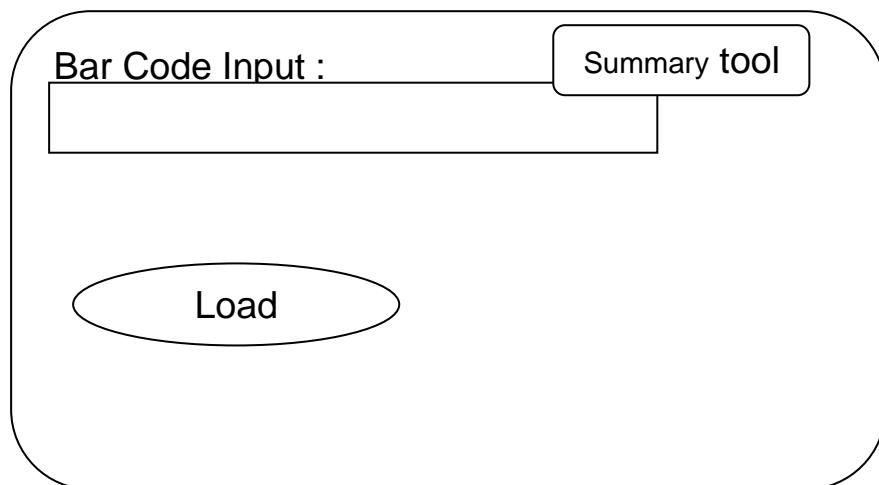
Fig. 23-12 Measure Status Chart shown in single pin

24. Automation

24.1 Using Autoload function Flow

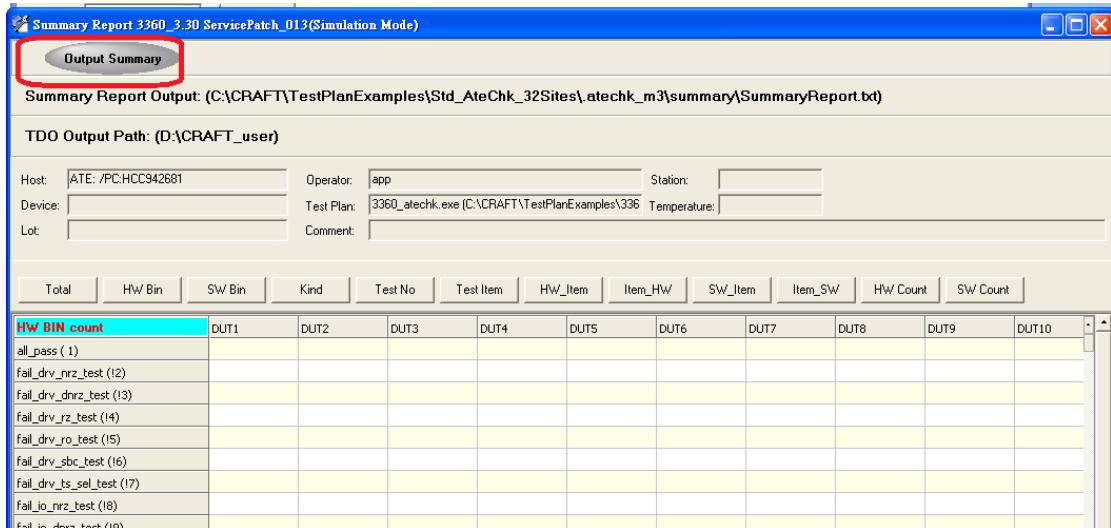
- Step 1. Create XML/RCP files and set the relationship between these files, about the detail setting we will discuss later.
- Step 2. The setting files (XML/RCP) can be put in any accessible location.
- Step 3. Launch CRAFT system.
- Step 4. User can use customized UI to input XML files by keying in, bar code scanner or file selecting window.
- Step 5. Call Craft_Oper.exe with XML file as parameter to activate Automation Process.
- Step 6. ATE can start to test.

24.2 Simple Bar Code UI



24.3 File output :

In FT test mode, user can press “Output Summary” button in Summary tool to output testing data files .



System will start to output summary, datalog, etc and save these files to user defined location.

24.4 XML file format :

The main content is to indicate Recipe file's path, Test data output's final path and file name, and the header data in output files.

The whole file is concluded by <BARCODE_SYSTEM> and </BARCODE_SYSTEM>.

20.4.1 Format : In XML File, each line means an independent condition setting. The condition setting format is : <XXXXX>YYYYY</YYYYY>. If the setting value is a path, please use "/" to replace "¥", such as :

<RECIPEFILE>/terry/LS299_2Sites_Scan_Program/test.rcp</RECIPEFILE_PATH>

20.4.2 Condition : (the necessary field will show in **Blue color**)

- (1) **RECIPEFILE** : Indicate rcp filename and path.
- (2) **PROGRAM** : Indicate test plan name and file path.
- (3) **LOADBOARD** : Indicate the PinList of test plan.
- (4) **CONDITION** : Indicate Condition Set of test plan.
- (5) **SPEC** : Indicate Specification of test plan.
- (6) **RUN_CARD_NO** : This filed data will show as header in TDO output file.
- (7) **ROM_CODE** : This filed data will show as header in TDO output file.
- (8) **SFT** : This filed data will show as header in TDO output file.
- (9) **Customer** : This filed data will show as header in TDO output file.
- (10) **LOT_NUMBER** : This filed data will show as header in TDO output file.
- (11) **ProberID** : This filed data will show as header in TDO output file.
- (12) **OPERATOR_ID** : This filed data will show as header in TDO output file.
- (13) **TEMPERATURE** : This filed data will show as header in TDO output file.
- (14) **DEVICE_TYPE** : This filed data will show as header in TDO output file.
- (15) **PROBECARDID** : This filed data will show as header in TDO output file.
- (16) **GLOBAL_VAULE** : Indicate GLB setting file name and path, such as :

<GLOBAL_VALUE> C:/CRAFT_SETUP/dbs/ProdID_DB/GLB/test.glb</GLOBAL_VALUE>

```

<BARCODE_SYSTEM>
<RECIPEFILE>c:\\craft\\1.rcp</RECIPEFILE>
<PROGRAM>C:\\CRAFT\\TestPlanExamples\\3380_64Site_AteChk\\3380_atechk.pin</PROGRAM>
<RUN_CARD_NO>Run_Card1</RUN_CARD_NO>
<DEVICE_TYPE>Device_demo1</DEVICE_TYPE>
<LOT_NUMBER>LOT01</LOT_NUMBER>
<PROBECARDID>Probe_Card1</PROBECARDID>
<ProberID>TSK1</ProberID>
<ROM_CODE>Rom_Code1</ROM_CODE>
<SFT>1</SFT>
<TEMPERATURE>21</TEMPERATURE>
<TEST_STATION>Station1</TEST_STATION>
<OPERATOR_ID>942681</OPERATOR_ID>
</BARCODE_SYSTEM>

```

24.5 Recipe file format :

The main content is to define : Each Data output format and detail settings.

20.5.1 Format : In rcp File, each Section (included by “[“ and ”]”) means one data output class, such as [Datalog]. And the following setting format is **XXXXX = YYYYY**, use “=” to separate field name and setting value. If the setting value is a path, please use “/” to replace “¥”, such as : **Output Directory=D:/CRAFT_user**.

20.5.2 Section and detail setting :

The following necessary detail settings will be showed in **Red Color**.

- (1) **[Wafer Test]** : Define the Test mode is CP or FT.
 - i. **Wafer Test Enable** : When the value is YES, means CP test; NO means FT test.
- (2) **[Histogram]** : Define to output HistogramTDO and detail setting.
 - i. **Enable Output** : When the value is YES, the following settings showed in **Blue Color** means **necessary items**. Value : YES/NO.
 - ii. **Output Directory** : Setting output path.
 - iii. **File Name** : Setting output file name. Here user can use these parameter as file name :
 - A. (&Wafer_ID)
 - B. (&Tester_Model)
 - C. (&Lot_ID)
 - D. (&Time)
 - E. (&PC_Name)
 - F. (&OPERATOR)
 - G. (&SFT)
 - H. (&Probe_Card_No)
 - I. (&Device_Name)
 - J. (&Prober_Handler)
 - K. (&Test_Station)
 - L. (&Temperature)
 - M. (&Rom_Code)

- N. (&Run_Card_No)
- O. (&SLOTNO)
- P. (&Start_Time)

example : **File Name=AAA_(&Time)_(&Lot_ID)**

- iv. **Auto-append Lot ID** : Setting auto-create Lot ID as a folder after output path. Value : YES/NO.
- v. **ALL** : Define Histogram will output All Test_No or not. Value : YES/NO.
- vi. **Partial** : Define Histogram will output Partial Test_No or not. Value : YES/NO. Must be opposite to ALL.
- vii. **Test No** : When **Partial=YES**, user can use this item to set Test-No by ‘-’ to set a range or by ‘,’ to set multi test-no. Example :

Test No=10-100,150,200,300-310

- viii. **BySite** : Means the relationship between output file an Site. Value : YES/NO .
- ix. **ByFile** : Means the relationship between output file an Site. Value : YES/NO .
When **BySite=NO ByFile=NO** → All Sites save in the same file and the data does not separate by Site ;
When **BySite=YES ByFile=NO** → All Sites save in the same file and the data displayed in separated site ;
When **BySite=YES ByFile=YES** → Each Site saves to different file ;
When **BySite=NO ByFile=YES** → No such option.

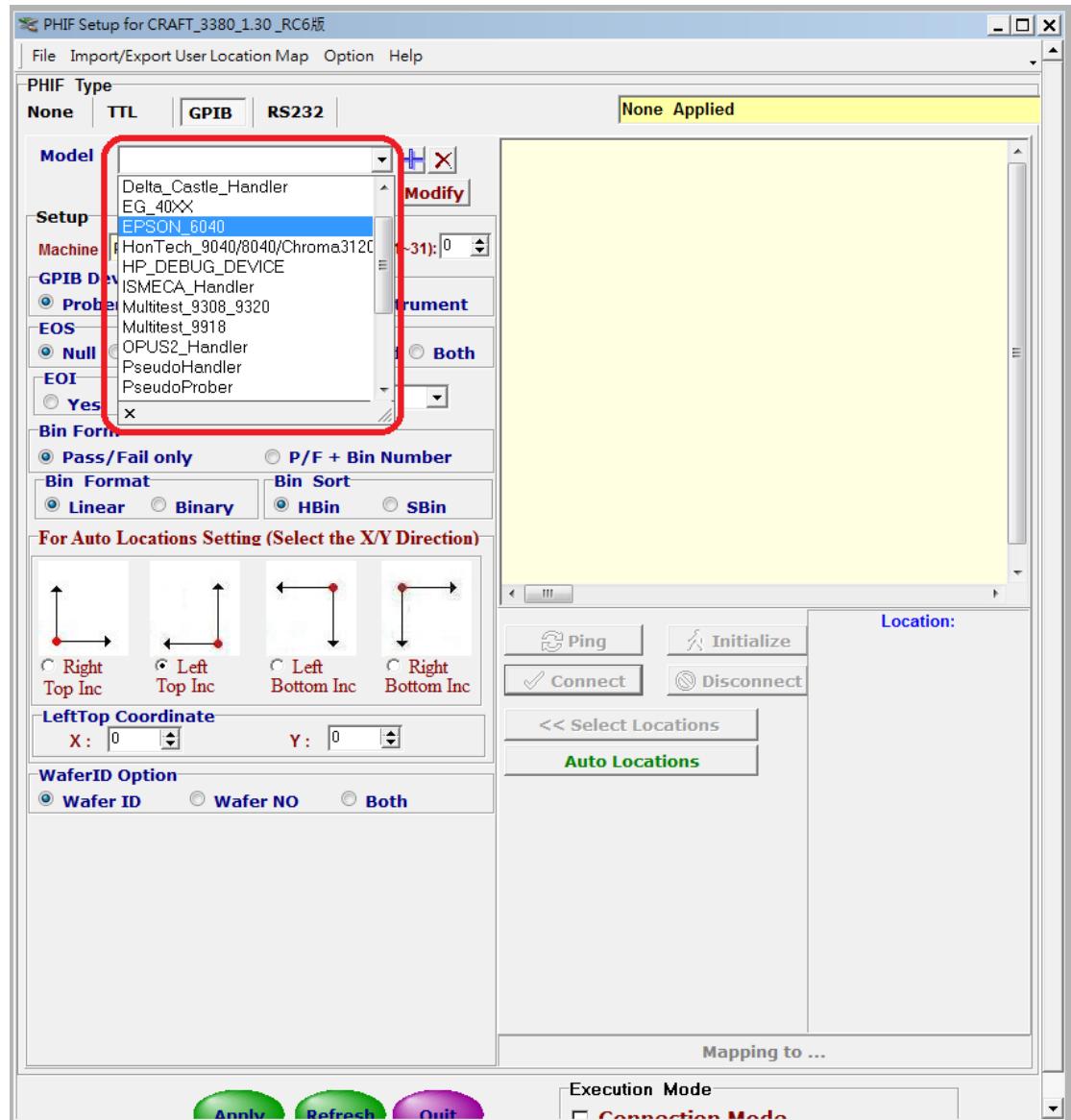
(3) **[Wafer Map]** : Define to output WaferMapTDO and detail setting.

- i. **Enable Output** : When the value is YES, the following settings showed in **Blue Color** means **necessary items**. Value : YES/NO.
- ii. **Output Directory** : Setting output path.
- iii. **File Name** : Setting output file name. And parameters we just have mentioned.
- iv. **Auto-append Lot ID** : Setting auto-create Lot ID as a folder after output path. Value : YES/NO.
- v. **Bin Char Map** : Setting Bin value's mapping character; each bin value is mapped to a character from Bin0 to Bin99. Example :
Bin Char
Map=.123456789ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz?@
- vi. **TwoCharBin** : Decide if each bin value need to be displayed by two character. Value : YES/NO. If YES, **Bin Char Map** value need to change to **Bin Char Map=00-->FF**.
- vii. **AddStar** : Setting if Fail Bin need to show '*' in front of the bin character. Value : YES/NO.
- viii. **AddSpace** : Setting to separate Bin value by space character. Value : YES/NO.
- ix. **HW BIN** : Setting if WaferMap needs to output Hardware BIN. Value : YES/NO.
- x. **SW BIN** : Setting if WaferMap needs to output Software BIN. Value : YES/NO.
- xi. **Pass/Fail** : Setting if WaferMap needs to output PASS/FAIL. Value : YES/NO.

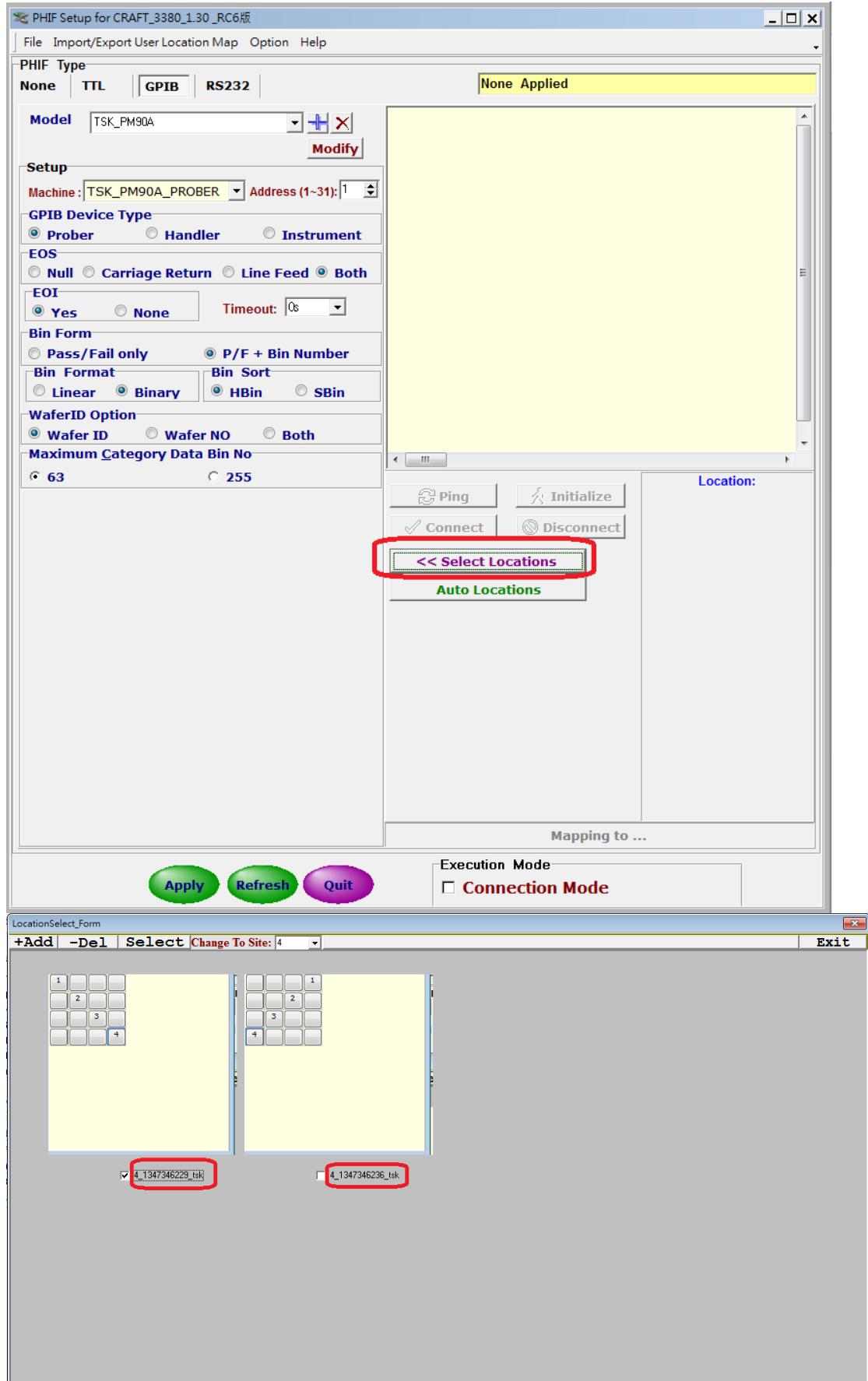
(4) **[Summary]** : Define to output SummaryTDO and detail setting.

- i. **Enable Output** : When the value is YES, the following settings showed in **Blue Color** means **necessary items**. Value : YES/NO.
 - ii. **Output Directory** : Setting output path.
 - iii. **File Name** : Setting output file name. And parameters we just have mentioned.
 - iv. **Auto-append Lot ID** : Setting auto-create Lot ID as a folder after output path. Value : YES/NO.
 - v. **TOPRINTER** : Setting to output to printer when outputting data files. Value : YES/NO .
- (5) **[Datalog]** : Define to output DatalogTDO and detail setting.
- i. **Enable Output** : When the value is YES, the following settings showed in **Blue Color** means **necessary items**. Value : YES/NO.
 - ii. **Output Directory** : Setting output path.
 - iii. **File Name** : Setting output file name. And parameters we just have mentioned.
 - iv. **Auto-append Lot ID** : Setting auto-create Lot ID as a folder after output path. Value : YES/NO.
 - v. **ALL** : Define Datalog will output All Test_No or not. Value : YES/NO.
 - vi. **Partial** : Define Datalog will output Partial Test_No or not. Value : YES/NO. Must be opposite to ALL. When **Partial=YES**, the detail settings are :
 - A. **Test No** : When **Partial=YES**, user can use this item to set Test-No by ‘-’ to set a range or by ‘,’ to set multi test-no. Example :
Test No=10-100,150,200,300-310
 - B. **DC PASS** : Setting if DC JUDGE PASS data need to output. Value : YES/NO.
 - C. **DC FAIL** : Setting if DC JUDGE FAIL data need to output. Value : YES/NO.
 - D. **AC PASS** : Setting if AC JUDGE PASS data need to output. Value : YES/NO.
 - E. **AC FAIL** : Setting if AC JUDGE FAIL data need to output. Value : YES/NO.
 - F. **PMU** : Setting if PMU JUDGE data need to output. Value : YES/NO.
 - G. **DPS** : Setting if DPS JUDGE data need to output. Value : YES/NO.
 - H. **PREF** : Setting if PREF JUDGE data need to output. Value : YES/NO.
 - I. **PPMU** : Setting if PPMU JUDGE data need to output. Value : YES/NO.
 - J. **OSC** : Setting if OSC JUDGE data need to output. Value : YES/NO.
 - K. **UVI** : Setting if UVI JUDGE data need to output. Value : YES/NO.
 - vii. **Imm Count** : Setting if datalog outputting per n dies. Value : 0 means disable, other number will enable the function. When EOL/EOW these immediately files will be merged to a single DatalogTDO file and save to **Output Directory** that user selected..
 - viii. **Imm Path** : Setting immediately file output path.
 - ix. **BackupTDO** : Setting if auto-backup DatalogTDO in **¥CRAFT¥temp¥TDO¥** or not. Value : YES/NO
 - x. **ZIP** : Setting if auto compressing DatalogTDO file. Value : YES/NO .
 - xi. **UnitSyn** : Setting if all data in need to use identical scientific notation (such as m,u,n,p) in DatalogTDO. Value : YES/NO .

- (6) **[Lot Info]** : Define to output Lot information file and detail setting.
 - i. **Enable Output** : When the value is YES, the following settings showed in **Blue Color** means **necessary items**. Value : YES/NO.
 - ii. **Output Directory** : Setting output path.
 - iii. **File Name** : Setting output file name. And parameters we just have mentioned.
 - iv. **Auto-append Lot ID** : Setting auto-create Lot ID as a folder after output path. Value : YES/NO.
- (7) **[Sequence]** : Setting special test flow.
 - i. **AllOn** : Setting no matter PASS/FAIL, all the test items will be ran once. If testing result is FAIL, system will categorize to the first failed item bin. Value : YES/NO.
- (8) **[PHIF]** : Setting PHIF will auto connect or not. If user wants to connect by manual, please set the follow three options to NULL.
 - i. **Type** : Setting connecting interface. Value : NULL/GPIB/TTL/RS232.
 - ii. **Model** : Setting connecting machine. Value : NULL/models that have been set in PHIF tool. (Please reference Model section in PHIF tool manual)



- iii. **LOCATION** : Setting DUT sequence and direction. NULL means Auto-Location. Value : NULL/ Locations which have been set in PHIF tool (Please reference Select Locations section in PHIF tool manual)



Example :

[PHIF]
Type=GPIB
Model=TSK_PM90A
LOCATION=4_1347346236_tsk

- (9) **[STDF]** : Define to output STDF and detail setting.
- i. **Enable Output** : When the value is YES, the following settings showed in **Blue Color** means **necessary items**. Value : YES/NO.
 - ii. **Total Page No** : Select STDF index of detail settings. Value : Fix to 1.
 - iii. **Output Directory** : Setting output path.
 - iv. **Auto-append Lot ID** : Setting auto-create Lot ID as a folder after output path. Value : YES/NO.
 - v. **OutputTiming** : Setting STDF output timing : EOL/EOW .
- (10) **[STDF_Page1]** : This setting is mapped to the **Total Page No** in [STDF] . If **Total Page No=1**, then here the section name must be **[STDF_Page1]**.
- i. **STDF File Name** : Indicate STDF file name format. Here user needs to add **.std** as extension file name. Example :
STDF File Name=(&Wafer_ID)_(&Time).std
 - ii. **Ordering Page Name** : The value is fixed to
Ordering Page Name=Ordering1
 - iii. **Ordering_TestEachWafer** : The value is fixed to
Ordering_TestEachWafer =YES
 - iv. **Ordering_FinalResults** : The value is fixed to
Ordering_TestEachWafer =YES
 - v. **Ordering_FinalResults_AllSite** : Decide if all site data need to merge together. Value : YES/NO .
 - vi. **Ordering_FinalResults_BySite** : Decide if data being recorded by Site. Value : YES/NO .
 - vii. **Ordering_FinalResults_TSR_Mode** : Decide whether outputting TSD data or not. Value : -1/1/2/3 means No / All Site / By Site / All Site + By Site.
 - viii. **Ordering_FinalResults_HBR_Mode** : Decide whether outputting HBR data or not. Value : -1/1/2/3 means No / All Site / By Site / All Site + By Site.
 - ix. **Ordering_FinalResults_SBR_Mode** : Decide whether outputting SBR data or not. Value : -1/1/2/3 means No / All Site / By Site / All Site + By Site.
 - x. **Ordering_FinalResults_PCR_Mode** : Decide whether outputting PCR data or not. Value : -1/1/2/3 means No / All Site / By Site / All Site + By Site.
 - xi. **MPR_Mode** : Decide whether outputting HBR data or not. Value : YES/NO.

Rcp file Example :

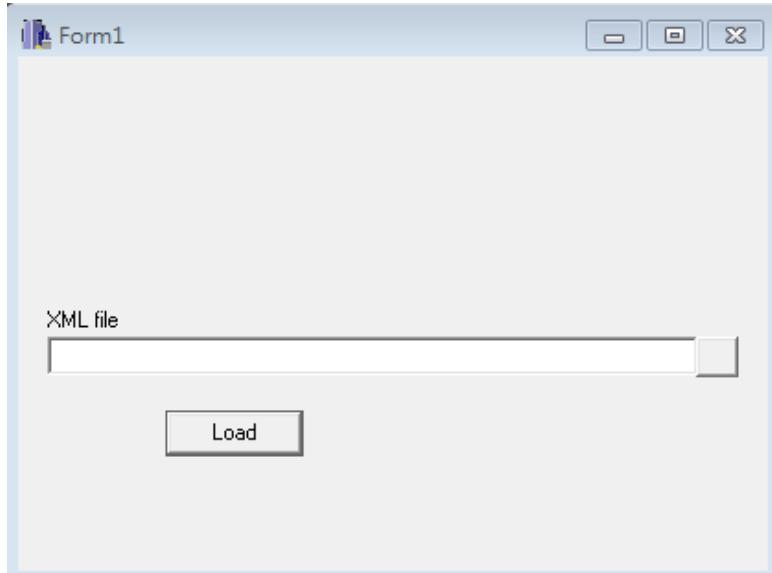
[Wafer Test]
Wafer Test Enable=YES
[Histogram]
Enable Output=YES
Output Directory=D:\%craft_user
File Name=(&Wafer_ID)_(&Time)
Auto-append Lot ID=NO
ALL=NO

```
Partial=YES
BySite=YES
ByFile=NO
Test No=33000002-33000003
[Wafer Map]
Enable Output=YES
Output Directory=D:\$craft_user
Auto-append Lot ID=NO
File Name=(&Wafer_ID)_(&Time)
Bin Char
Map=.123456789ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz???
????????????????????????????????$@
TwoCharBin=NO
AddStar=NO
AddSpace=NO
HW BIN=YES
SW BIN=NO
Pass/Fail=NO
[Summary]
Enable Output=YES
Output Directory=D:\$craft_user
File Name=(&Wafer_ID)_(&Time)
Auto-append Lot ID=NO
TOPRINTER=NO
[Datalog]
Imm Count=0
Imm Path=
BackupTDO=NO
Enable Output=YES
Verbose Mode=NO
Output Directory=D:\$craft_user
File Name=(&Wafer_ID)_(&Time)
Auto-append Lot ID=NO
Partial=NO
ALL=YES
Test No=
DC PASS=NO
DC FAIL=NO
AC PASS=NO
AC FAIL=NO
PMU=NO
DPS=NO
PREF=NO
PPMU=NO
OSC=NO
UVI=NO
ZIP=NO
UnitSyn=NO
[Lot Info]
Enable Output=NO
Output Directory=D:\$craft_user
File Name=(&Wafer_ID)_(&Time)
Auto-append Lot ID=NO
[Sequence]
```

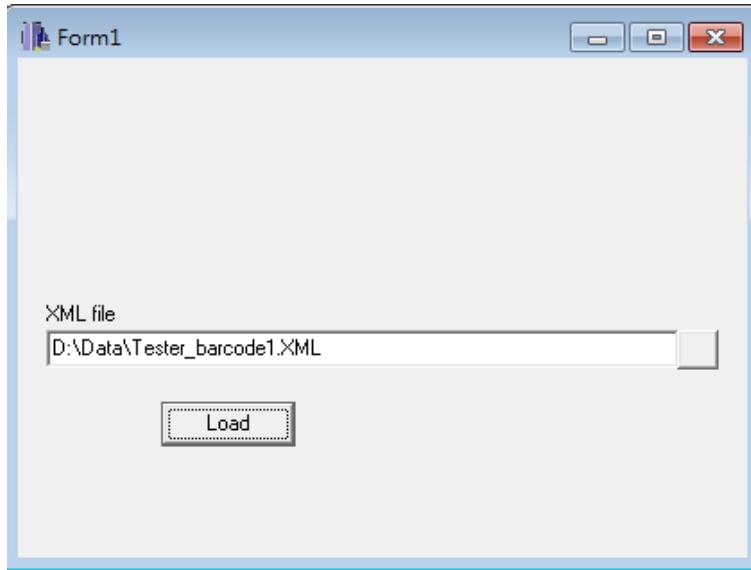
```
AllOn=NO
[PHIF]
Type=NULL
Model=NULL
LOCATION=NULL
[STDF]
Output Directory=D:\%craft_user
Enable Output=YES
Auto-append Lot ID=NO
OutputTiming=EOW
[STDF_Page1]
STDF File Name=(&Wafer_ID)_(&Time).std
Ordering Page Name=Ordering1
Ordering_TestEachWafer=YES
Ordering_FinalResults=YES
Ordering_FinalResults_AllSite=YES
Ordering_FinalResults_bySite=YES
Ordering_FinalResults_TSR_Mode=3
Ordering_FinalResults_HBR_Mode=3
Ordering_FinalResults_SBR_Mode=3
Ordering_FinalResults_PCR_Mode=1
MPR_Mode=NO
```

24.6 Operation Example :

1. Design a simple UI which can select XML files and call Craft_Oper.exe with parameters.
Such as :



2. Select XML file.



3. Click Load button and UI will send such a command :



4. The original UI will appear periodically and it will disappear when Loading process having finished.



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