

Apple Service Diagnostic

User Guide

4.1

February, 2009

Scope	3
Building and using USB ASD bootable drive	3
Apple Service Diagnostic EFI User Interface	4
ASD Apout Box	5
Hardware Profile	6
Application Interface Interface	7
Test Control tab	8
Test Selections Tab - Stand Alone Tests	9
Test operations and Test Status	10
Test Log	11
Test Status Region	12
Testing Passed	13
Testing Failed	14
Testing Stopped By User	15
User Controls and Progress Bar	17
Key Commands	17
Apple Service Diagnostic OSX User Interface	18
OS Test Window	19
View Log	20
Test Control	21
Selecting tests - Stand Alone	22
User Interactive Tests	23
Test Log	24
Testing Passed	25
Testing Failed	26
Menu Items....	27
Menu Items	28
Menu Items	29

Scope

Apple Service Diagnostic tests the hardware for correct operation. Apple Service Diagnostic (EFI) performs low-level tests of hardware directly and does not require an operating system to run. Apple Service Diagnostic OS tests use an OS X operating system to perform tests.

Building the bootable USB drive

Refer to Creating a ASD USB Bootable Drive.pdf document.

Booting and using the Apple Service Diagnostic application

Before using Apple Service Diagnostic disconnect any Ethernet network, USB and Audio cables. Plug in the ASD USB drive.

With the USB drive plugged into a USB port restart the machine and hold down the option key as the computer boots up into the system picker. To run EFI tests select the ASD EFI drive icon and press return or select it with a mouse click. To run OS tests select the ASD OS drive icon and press return or select it with a mouse click. For EFI tests the application will boot in 20-30 seconds. For OS tests the application will boot in 2-3 minutes. After running EFI or OS diagnostics press the Restart button to restart the Mac and hold down the option key to get back to the system picker or do nothing to get back to the normal boot drive.

Apple Service Diagnostic EFI User Interface

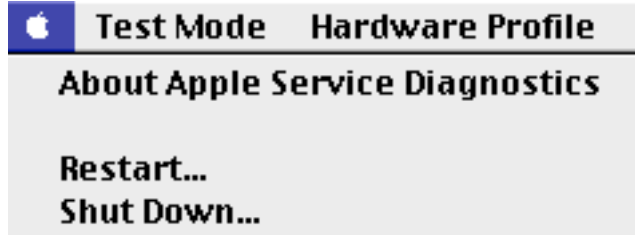
Non Supported Machines

An alert box will be displayed if the user is attempting to use Apple Service Diagnostic on a system that is not supported by this application.

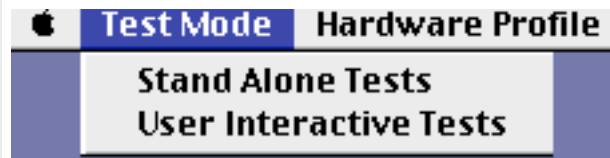


There are two menus; an Apple icon for displaying the About box, and Hardware Profile for displaying the hardware components on this macintosh .

Apple menu



Test Mode menu



Hardware Profile menu

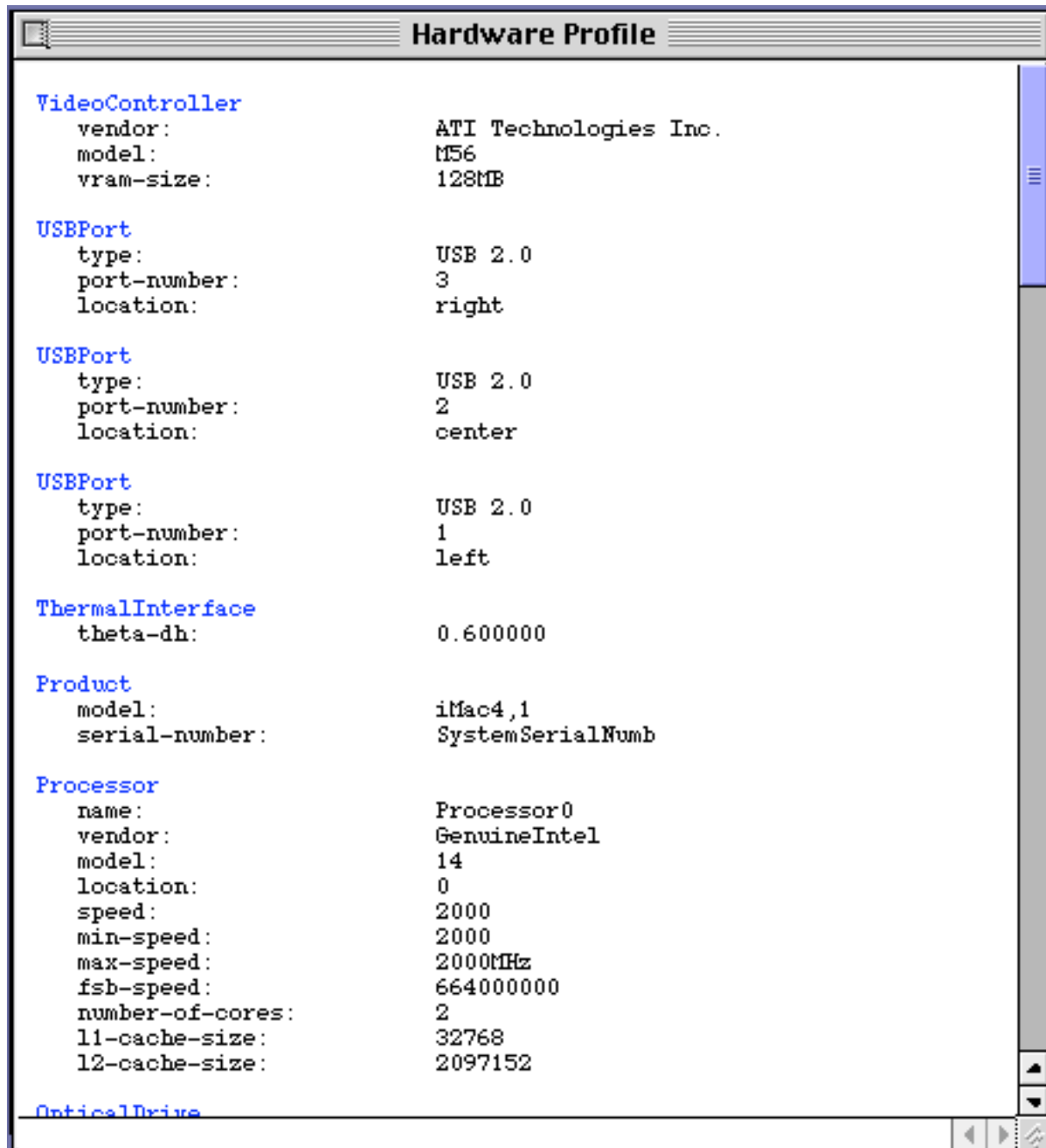


The about box displays the application's version and copyright information. Press OK button to dismiss this window. Restart restarts the Macintosh and Shut Down will shut down the Macintosh.



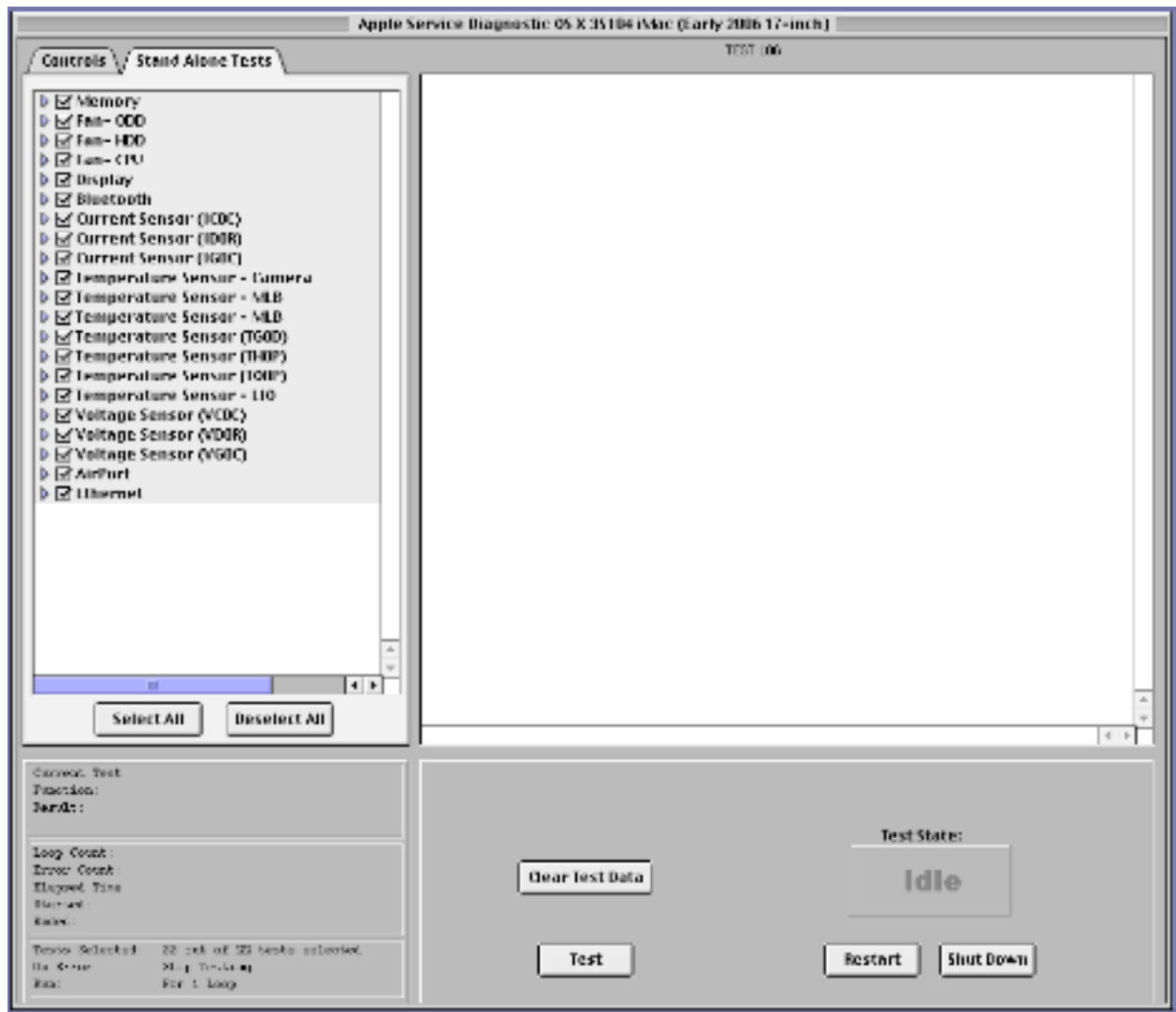
Hardware Profile

Hardware Profile displays the Macintosh's hardware components and their associated sub component values. Press the Close Box to dismiss this window.



Application Interface

The Apple Service Diagnostic window is divided into four areas: Controls (upper left tab 1) for setting up test requirements, Test Selections (upper left tab 2) for selecting/deselecting tests. Test Log (upper right) for displaying test information, Test Statistics (lower left) displays current test status, and Test Progress and User Control (lower right).

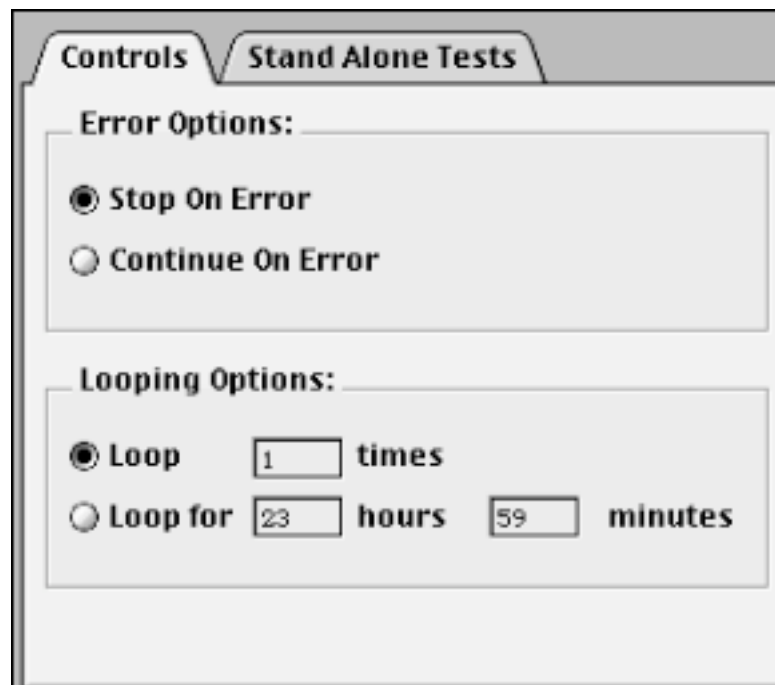


Tabs

The test controls and test selection quadrant (upper left) is divided into two tabbed panels.

Test Controls Tab

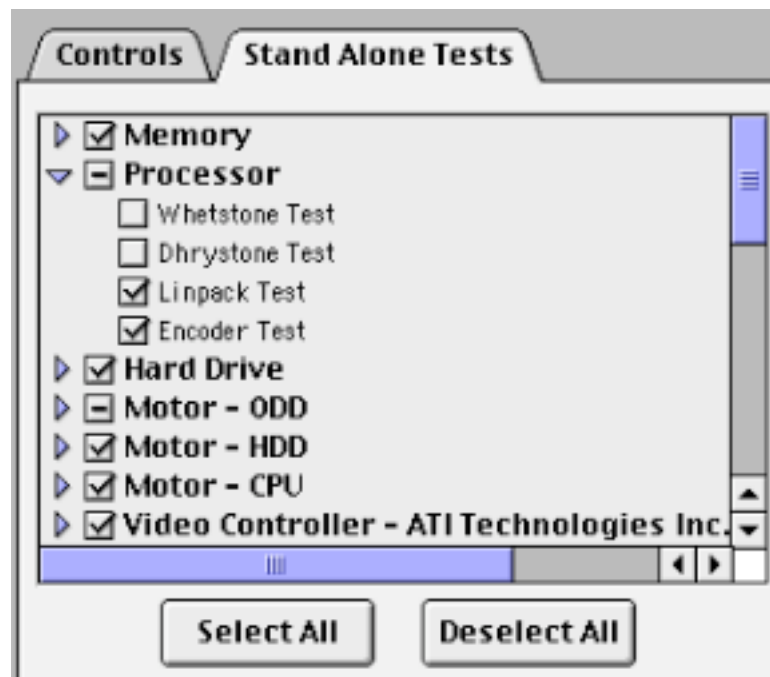
The Test Controls panel has settings to handle error options to either Stop On Error or Continue On Error and looping options to Loop on set number of loops or Loop For a specified amount of time. If set to stop on error testing will stop if an error is detected. If set to continue on error testing will continue to run until the number of loops set or time has expired. Apple Service Diagnostic can be set to run for a set number of loops, maximum 1000, or run for a set amount of time, maximum 23 hours and 59 minutes. The default selections are to run one loop and stop on error. Changes to the default selections are not saved when the machine is shut down or restarted.



The screenshot shows a software window with two tabs: "Controls" and "Stand Alone Tests". The "Controls" tab is active. It contains two sections: "Error Options:" and "Looping Options:". Under "Error Options:", there are two radio buttons: "Stop On Error" (selected) and "Continue On Error". Under "Looping Options:", there are two radio buttons: "Loop" (selected) and "Loop for". The "Loop" option has a text input field with the value "1" followed by the word "times". The "Loop for" option has two text input fields: "23" followed by "hours" and "59" followed by "minutes".

Test Selection Tab - Stand Alone Tests

The test selections panel allows tests to be selected or deselected individually. Each test group listed has an associated disclosure triangle next to it. Clicking the disclosure triangle expands the listing to show the individual tests for a group. Clicking on the group check box will enable or disable tests for a group. If not all tests are selected for a group a - appears in the group check box. If all tests are deselected the group check box will be deselected also. To deselect a test click on its check box. Upon startup all available tests are selected as default. The "Select All" button selects all tests and groups. The "Deselect All" button deselects all tests and groups. Changes to the test selections are not saved when the machine is shut down or restarted.



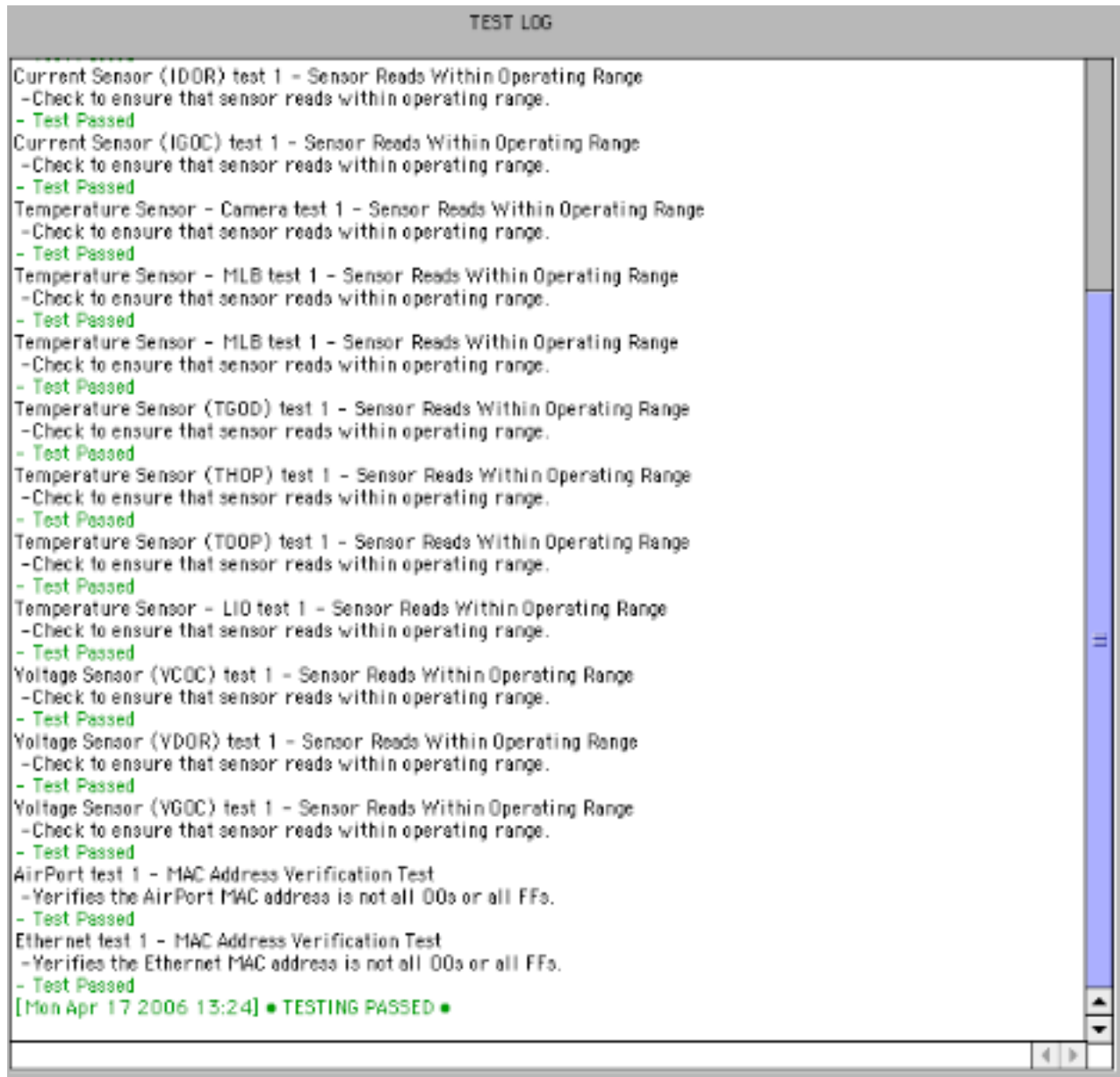
Test Operation and Test Status

After selecting tests press the Test button to commence testing. The test progress bar is displayed in the test state region (lower left). The total bar represents 100 percent of the selected test. If four tests are selected then the bar increments 1/4 of its length for each test completed



Test Log

During testing the test log window will display current test information. Date, time, test name, test description, and test results when the test is finished.



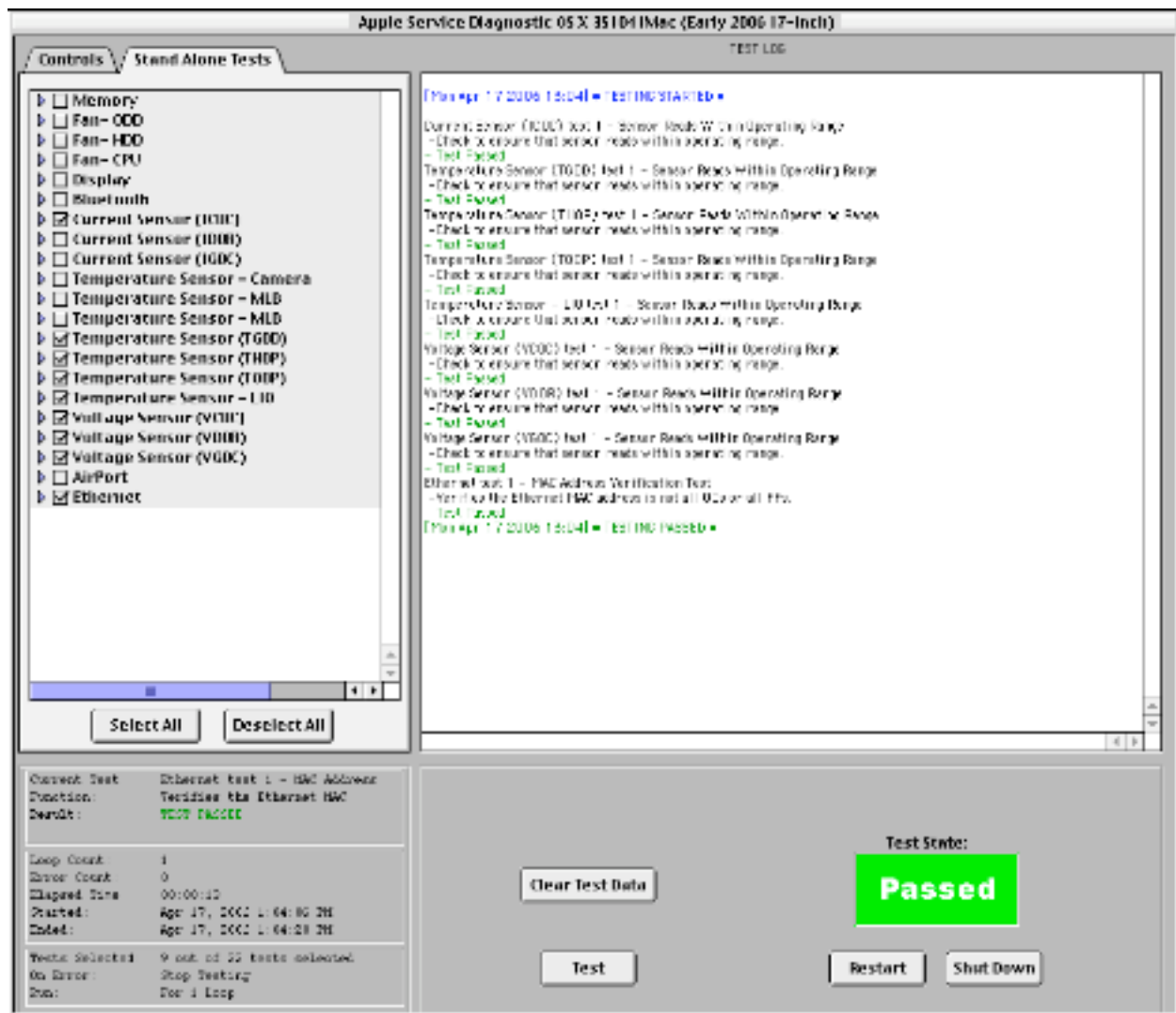
Test Status Region

In the test status region all test activity is displayed. Current active test, Function or test description, test result. Loop count shows the current test loop. Error Count displays total errors in red. Started time and Stop time show date and time. Elapsed test time is updated every few seconds during the test cycle and only shows time. The number of Tests selected shows how many tests are currently selected out of the total number available. On Error indicates what test mode, stop on error or continue on error, is selected. Run indicates which type of looping is set either X number of loops or for specified amount of time.

Current Test:	Video Controller - ATI
Function:	Render Solid Red Model with
Result:	TEST PASSED
Loop Count:	20
Error Count:	0
Elapsed Time:	00:28:28
Started:	12/28/05 2:16 PM
Ended:	12/28/05 2:44 PM
Tests Selected:	11 out of 47 tests selected
On Error:	Stop Testing
Run:	For 20 Loops

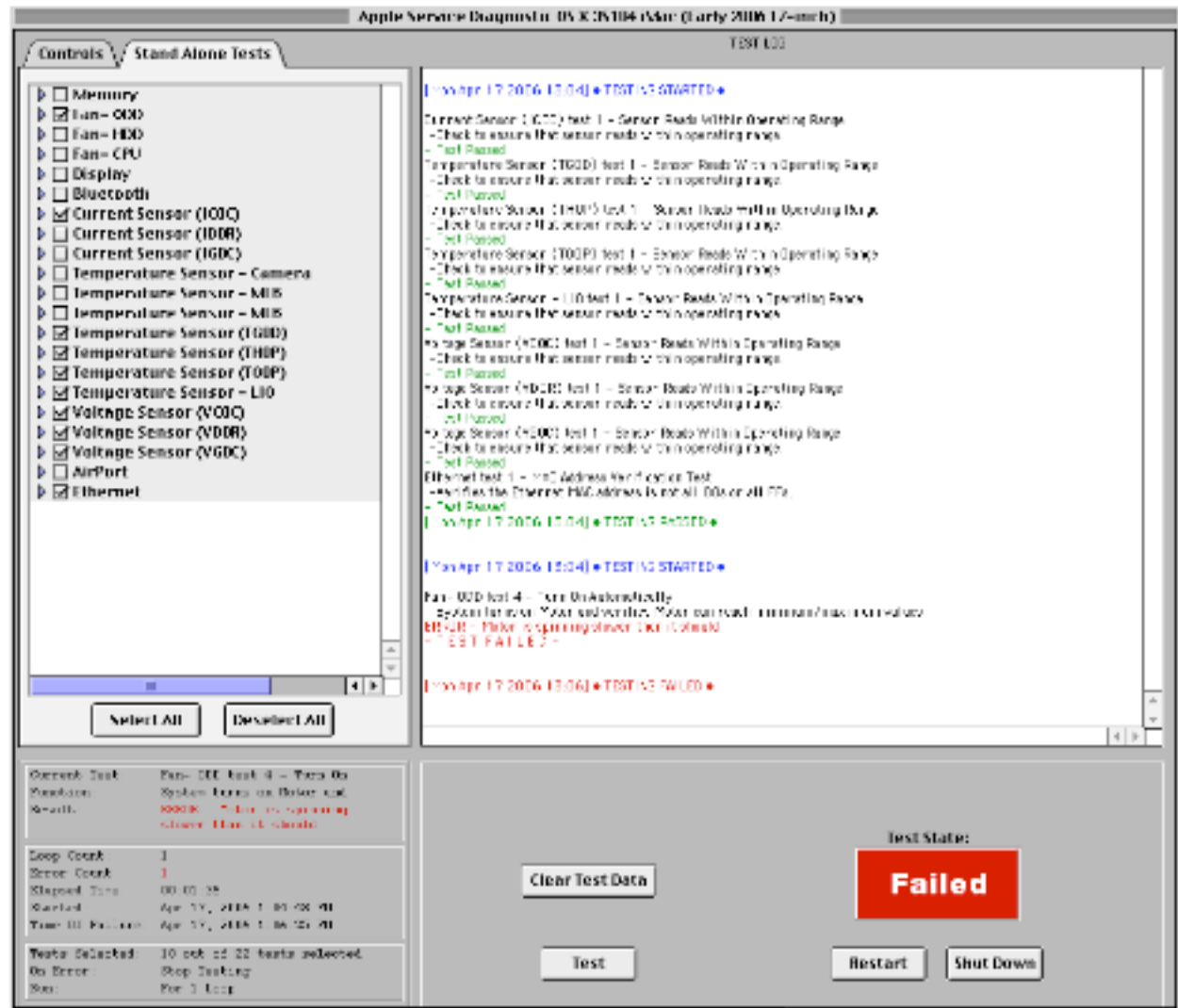
Testing Passed

If all tests passed the text "TESTING PASSED" is displayed in the test log window and the test state will be displayed in green and the status region will be updated.

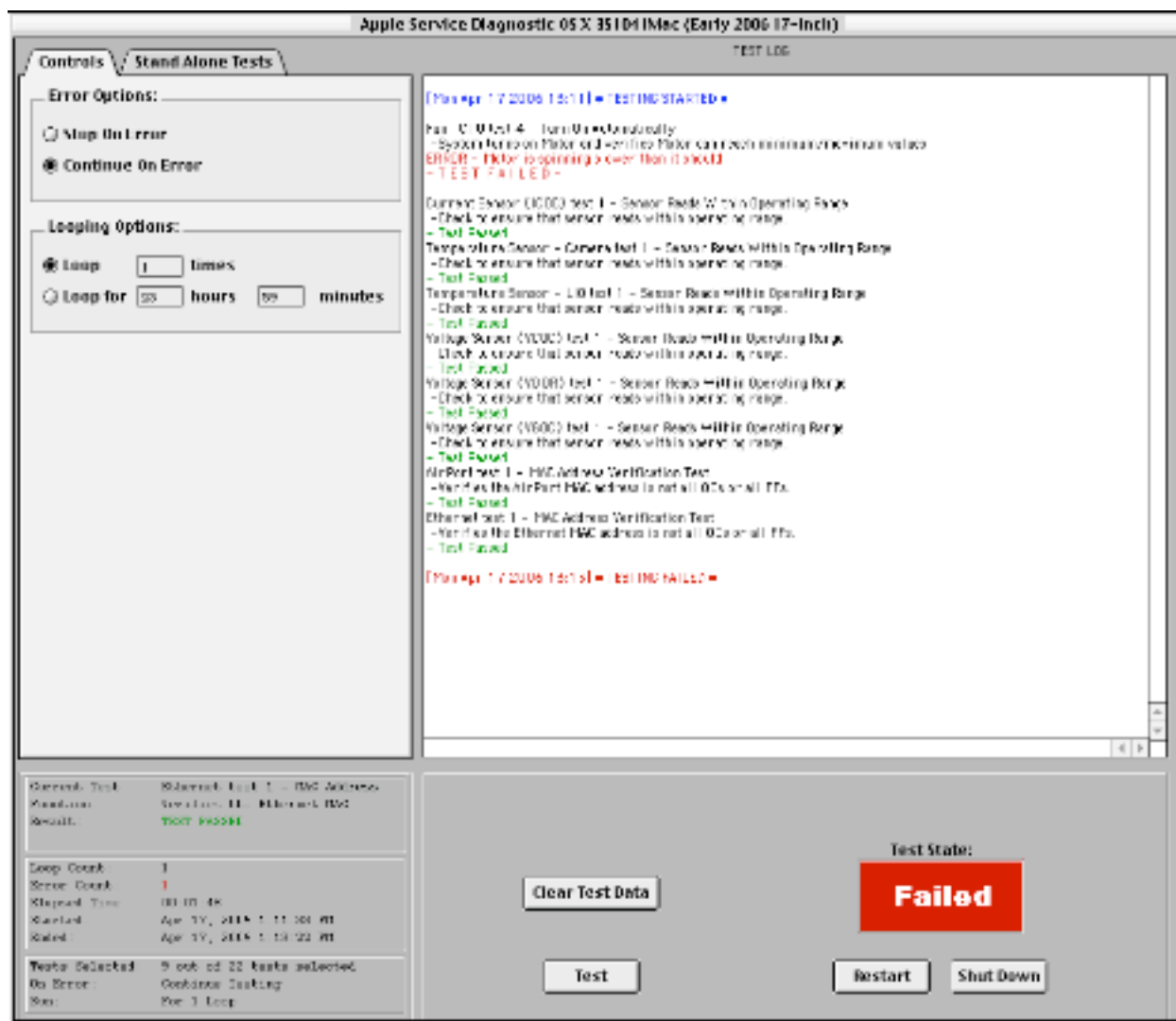


Testing Failed

If a test failure occurred during testing the text "TESTING FAILED" and Test State will be displayed in red and the status region will reflect the failed test results.

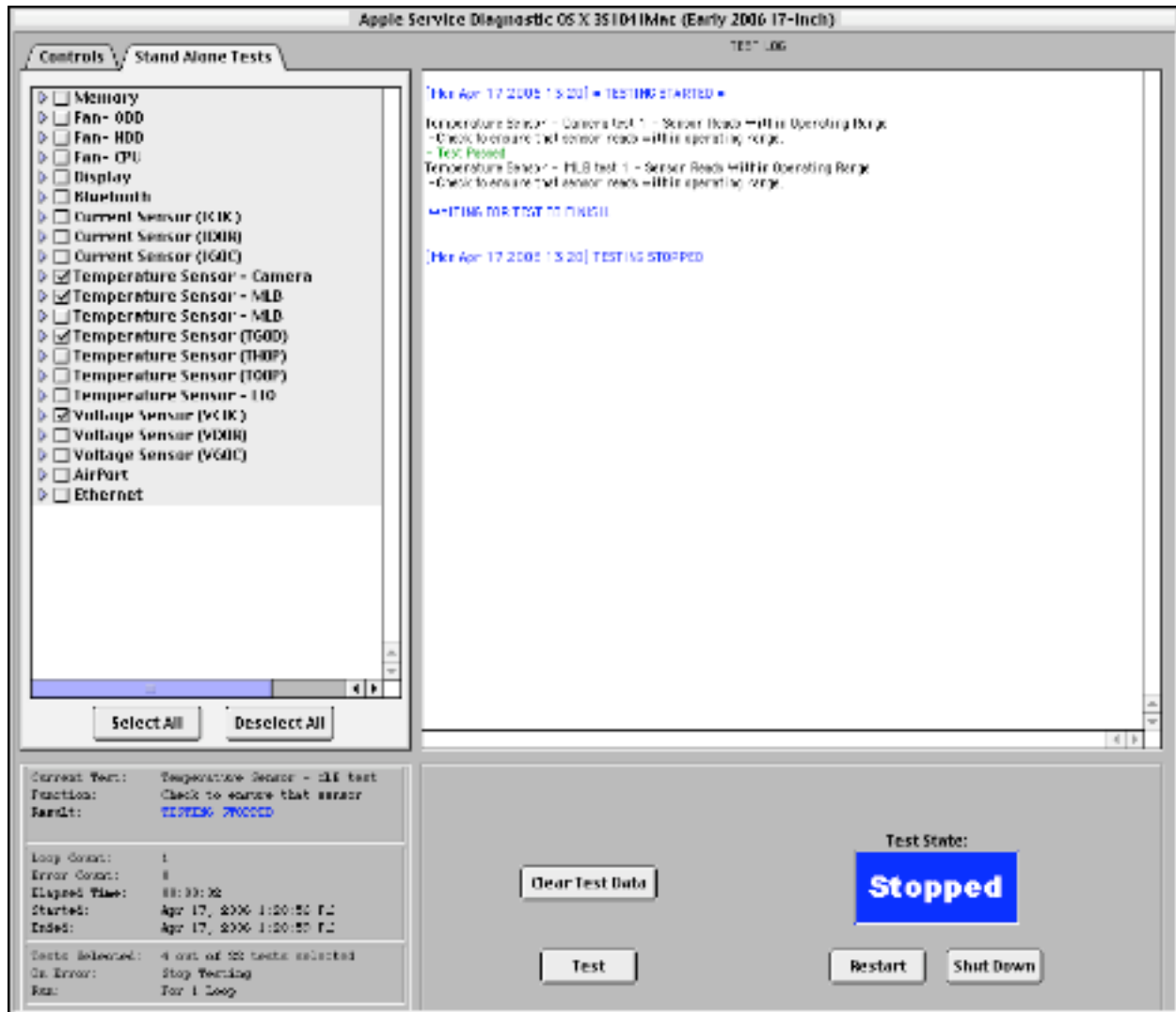


If the controls have been set to Continue On Error testing will continue until either the set loop count or time has expired. If the error was not with the last test run the status region will show a green Test Passed and Error Count in red. The Test State will also indicate a failure occurred during testing. To determine what component failed scroll back through the test log to find the red test error text.



Testing Stopped By User

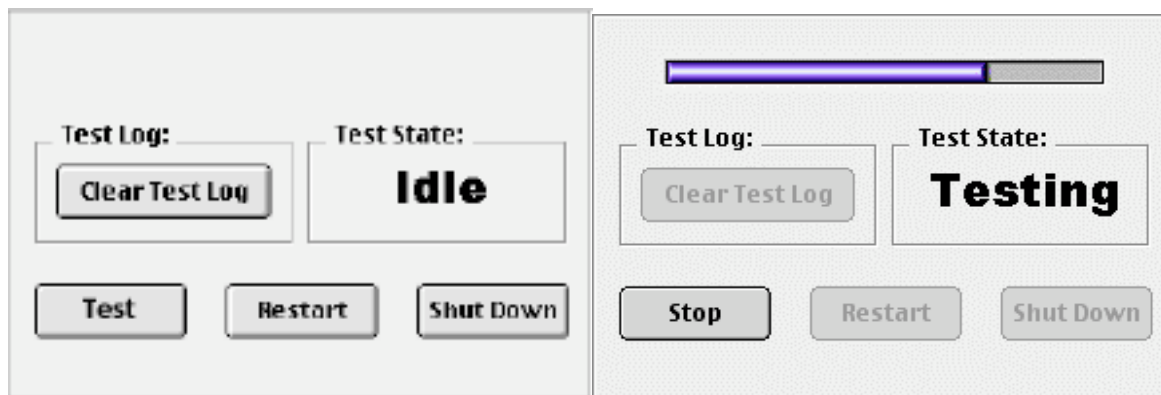
If the user stopped testing by either pressing the Stop Test button or control . (period) keys the text "TESTING STOPPED" will be displayed in blue in the test log window, status region and the Test State: STOPPED will be displayed in blue. Testing will stop once the current test has completed.



User Controls and Progress Bar

To start testing press the Test button or control . (period) keys. A progress bar appears when tests are running indicating the percentage of all selected tests that have been completed, 0 to 100%, and the test button changes from Test to Stop Test. When testing has finished the progress bar disappears and the Stop Test button changes back to Test. You may stop testing by pressing the Stop Test button or control . (period) keys. Some tests are not as responsive to the Stop request as others.

The Test State area gives the user a quick visual evaluation of the current state of Apple Service Diagnostic. The text in this area can contain one of five different states: Idle, Testing, Passed, Failed, and Stopped. Idle is dark gray, Testing is blue and green, Passed is green, Failed is red, and Stopped is blue. Restart and Shut Down buttons are dimmed during testing. Restart will restart the CPU and boot into its boot volume. Shut Down will eject the DVD before shutting down.



Key Commands

Press the control . (period) keys or Test button to start testing. Once the tests have started, the Test button label switches to Stop Test. Click the Stop Test button or press control . (period) keys to stop testing. When testing is stopped or after all testing has completed, the button label will toggle from Stop Test back to Test.

Apple Service Diagnostic OSX User Interface

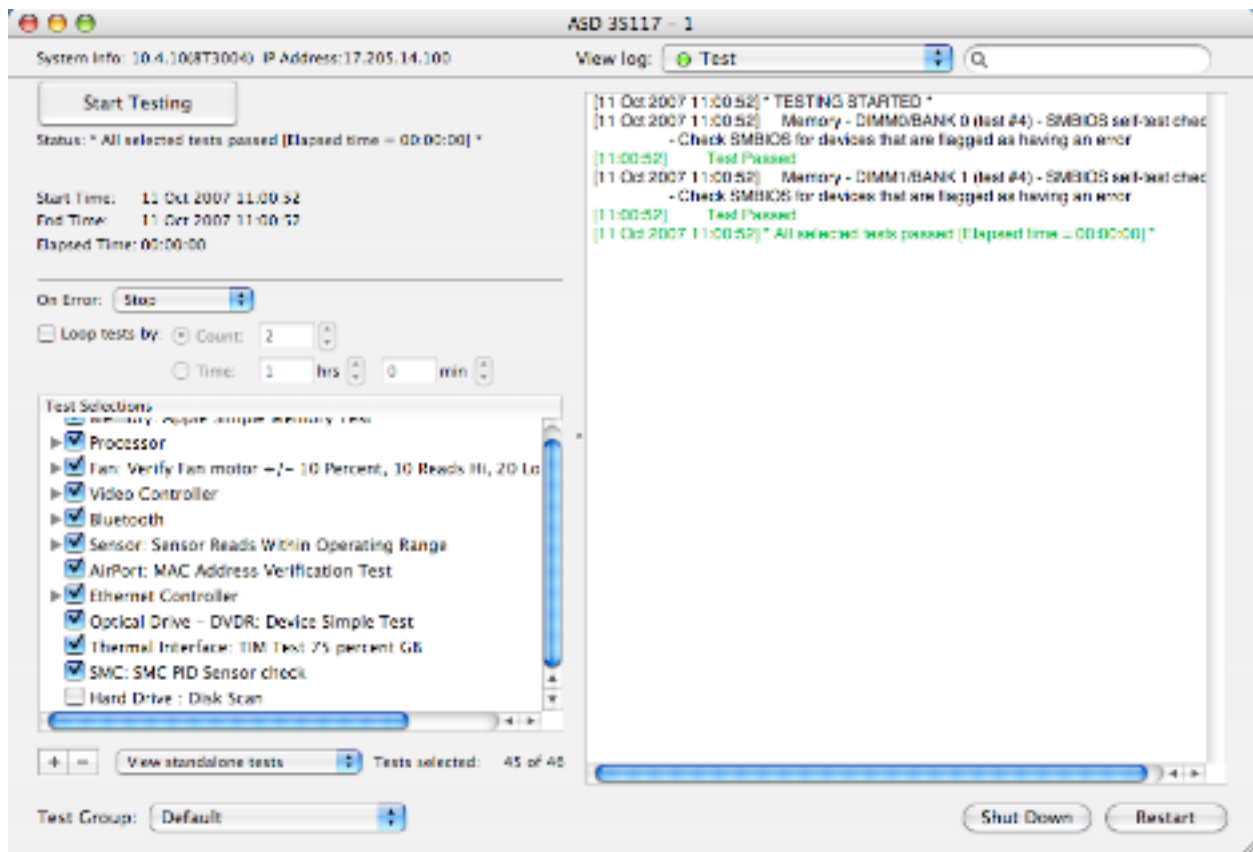
Non Supported Machines

An alert box will be displayed if the user is attempting to use Apple Service Diagnostic on a system that is not supported.

OSX

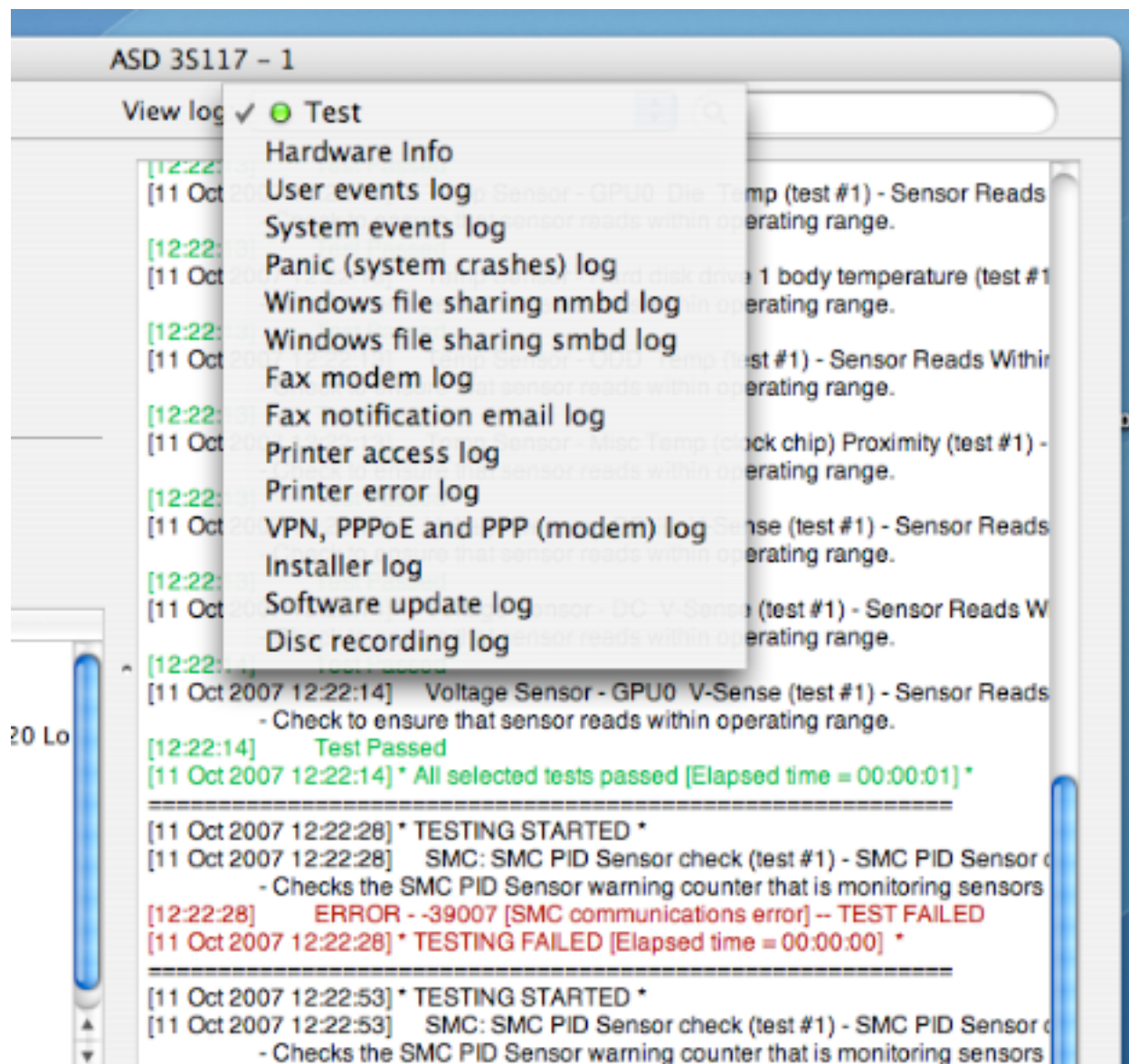


Apple Service Diagnostic OS Test Window



The primary sections are test controls, test selection, test log window, and general test logs.

View Log



View Log drop down menu allows viewing of various application and system logs. To view the Macintosh hardware configuration use the Hardware Info log. By default, the other logs pertain to the booted operating system. To view other logs from the hard drive of the Macintosh under test, select View Different System's Logs from the Log menu, and select the appropriate system. When you view a log, and it currently has no information in it, ASD tries to load that information. If ASD can load information, it marks that popup with a green circle; if no information was available, it marks it with a yellow circle.

Test Controls

The screenshot shows a window titled "Test Controls" with a light gray background. At the top, there are three small circular icons on the left and the text "AS" on the right. Below this is a header bar with "System Info: 10.4.10(8T3004) IP Address:17.205.14.100" on the left and "V" on the right. The main area contains a "Start Testing" button. Below the button, the status is displayed as "Status: * TESTING FAILED [Elapsed time = 00:00:00] *". Further down, the start time, end time, and elapsed time are all listed as "11 Oct 2007 12:22:53". At the bottom, there is a section for "On Error:" with a dropdown menu set to "Stop". Below this is a checkbox labeled "Loop tests by:" followed by two radio button options: "Count:" with a value of "2" and "Time:" with values of "1" hour and "0" minutes.

System Info: 10.4.10(8T3004) IP Address:17.205.14.100

Start Testing

Status: * TESTING FAILED [Elapsed time = 00:00:00] *

Start Time: 11 Oct 2007 12:22:53
End Time: 11 Oct 2007 12:22:53
Elapsed Time: 00:00:00

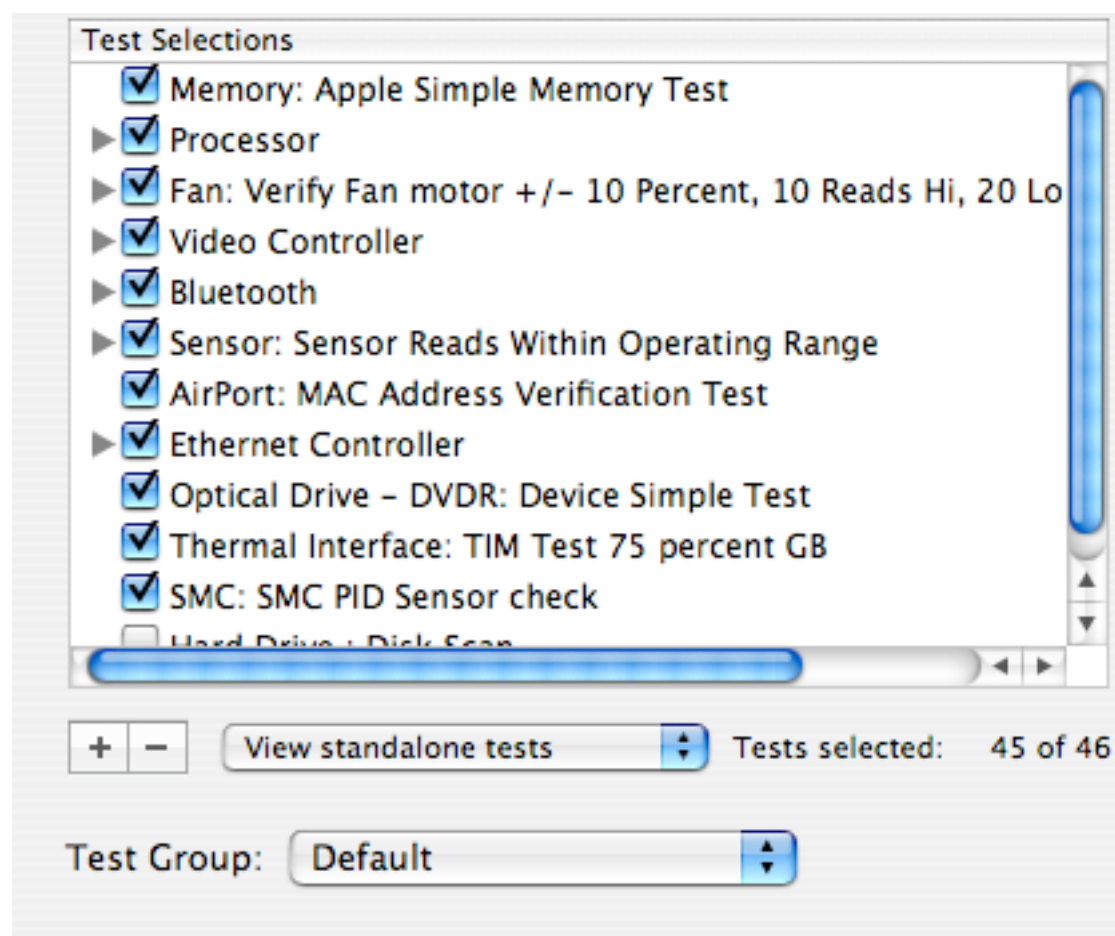
On Error: Stop

☐ Loop tests by: ☒ Count: 2 ☐ Time: 1 hrs 0 min

To start testing press the Start Testing button. The Start Testing button will dim and test status, start time, end time, and elapsed time will be displayed along with a test progress bar. On Error has two states: Stop On Error or Continue On Error. Select the state with On Error pop down menu. You can also set the number of times (Loops) you want the tests to run or you can set the amount of time you want the selected tests to run in hours and minutes. If a failure occurs during testing testing will stop if On Error is set to Stop. If On Error is set to Continue testing will proceed until the set number Loops or Time has expired even if a failure occurs.

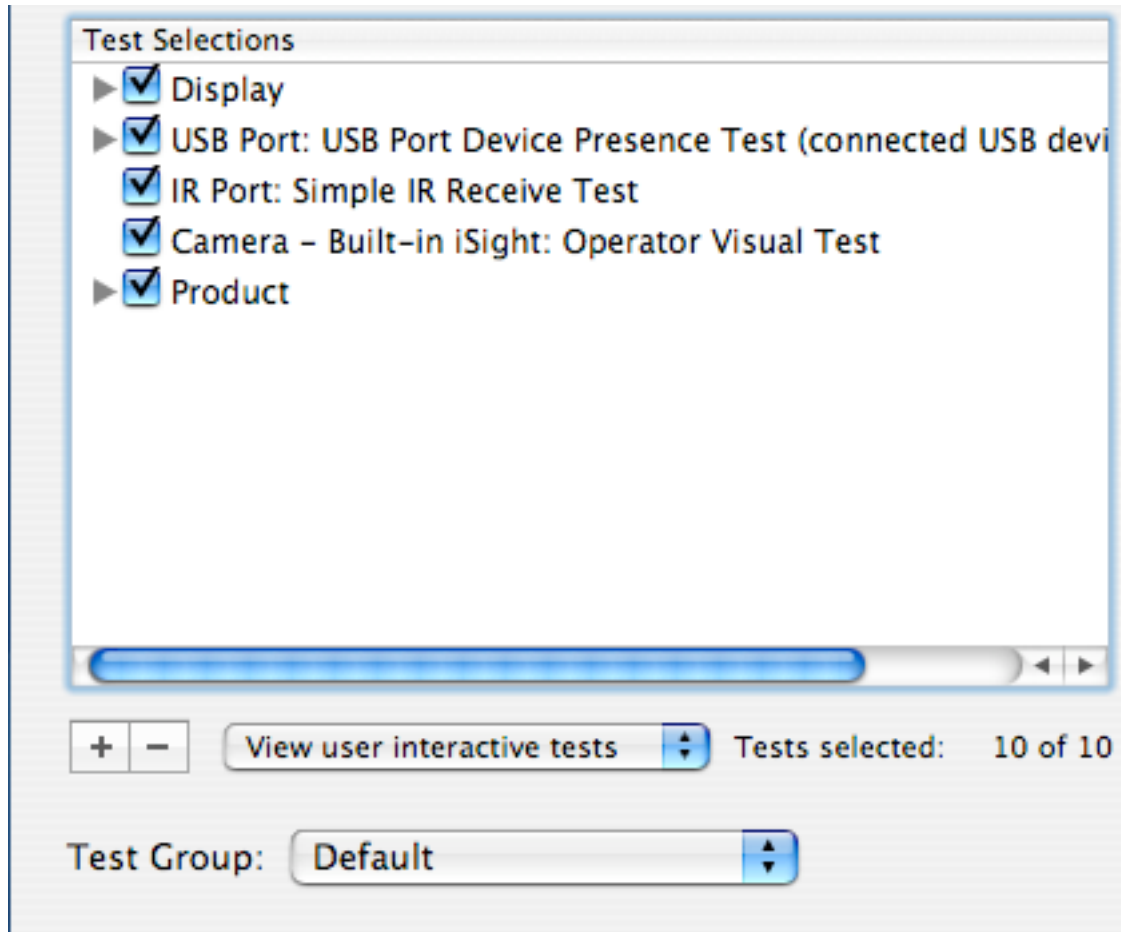
Selecting Tests

Stand Alone Tests



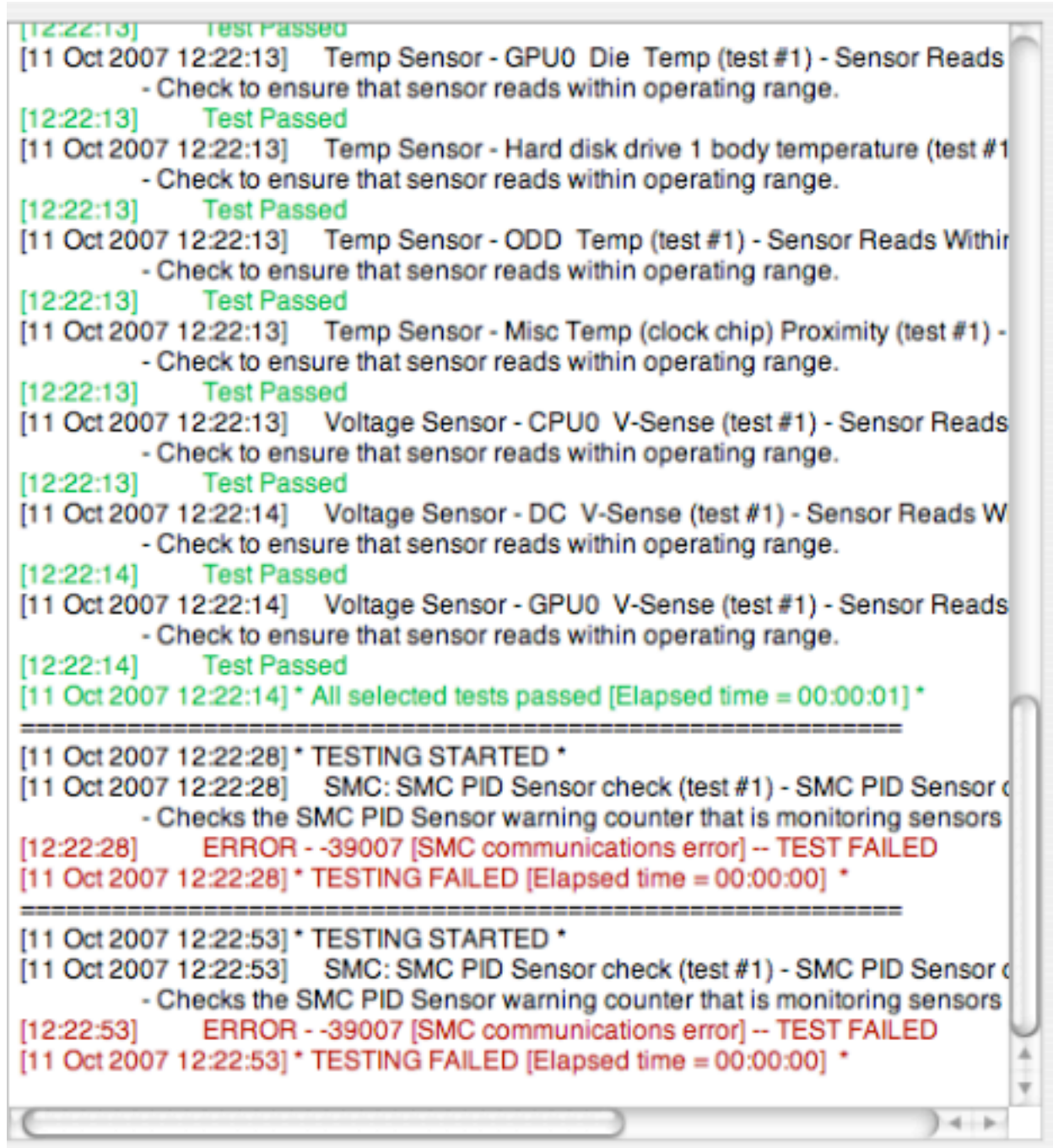
There are two types of tests, Stand Alone and User Interactive. Stand Alone tests do not require any user interaction during testing. Test selections panel allows tests to be selected or deselected individually. Each test group listed has an associated disclosure triangle next to it. Clicking the disclosure triangle expands the listing to show the individual tests for a group. Clicking on the group check box will enable or disable tests for a group. If group tests are not selected for a group a -, hyphen, appears in the group check box. If all tests are deselected the group check box will be deselected also. To deselect a test click on its check box. The +, plus, button selects all tests and groups. The -, minus, button deselects all tests and groups. Changes to the test selections are not saved when the machine is shut down or restarted.

User Interactive Tests



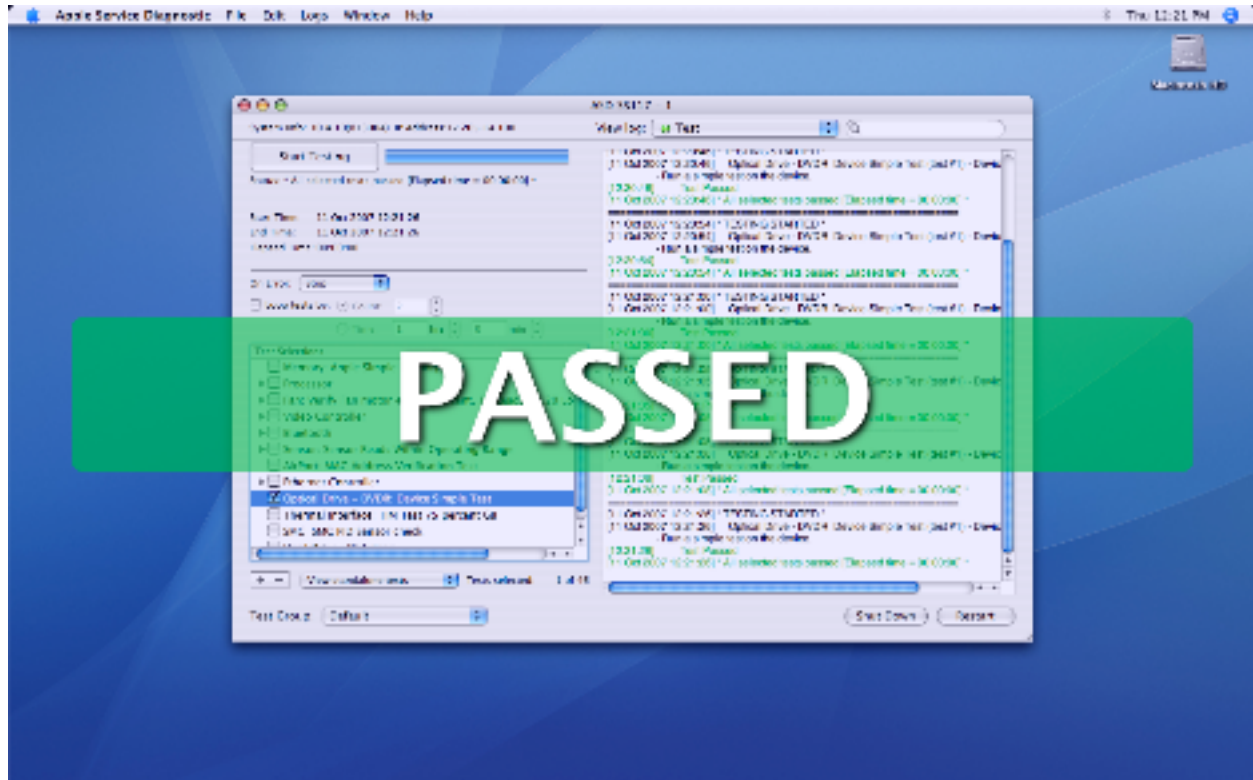
User interaction tests requires user to be part of the test process. A dialog will come up informing the user as to what that requirement is and what action is to be taken.

Test Log



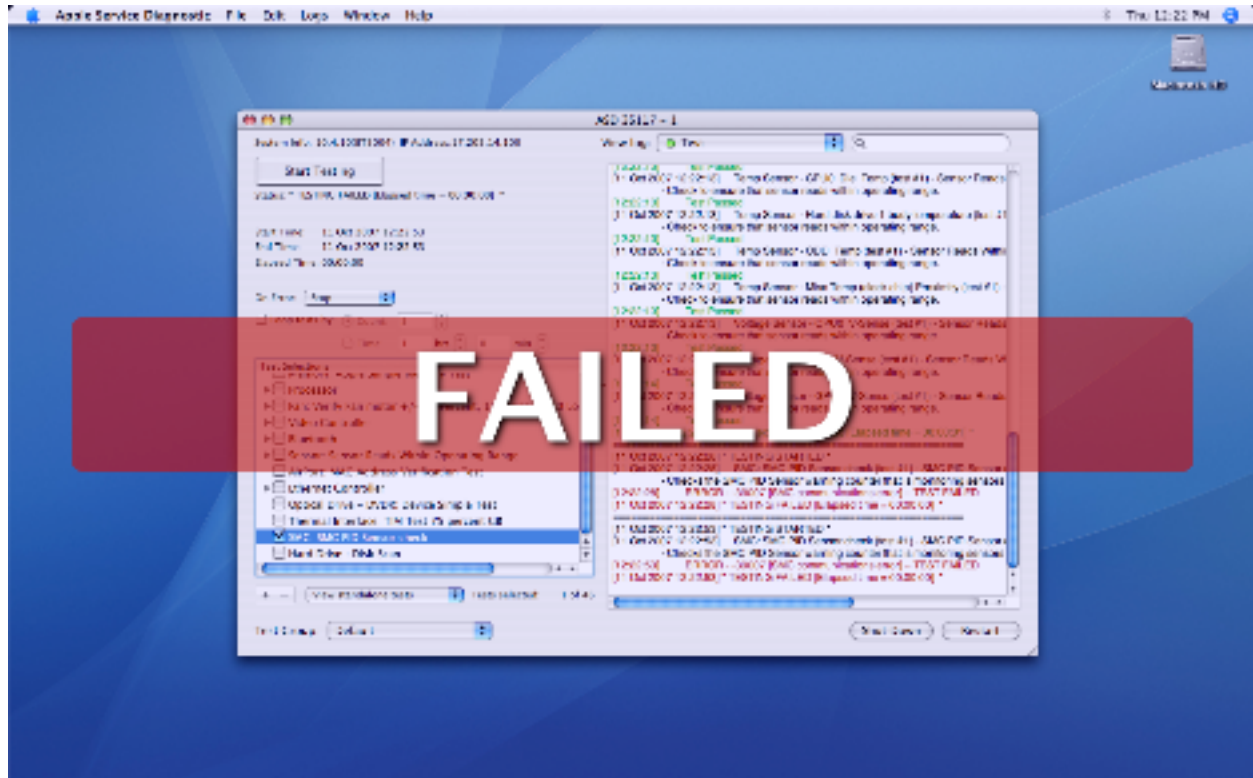
During testing the test log window will display current test information. Date, time, test name, test description, and test results when the test is finished. Green text indicates that the test passed and red text for a failure.

Testing Passed



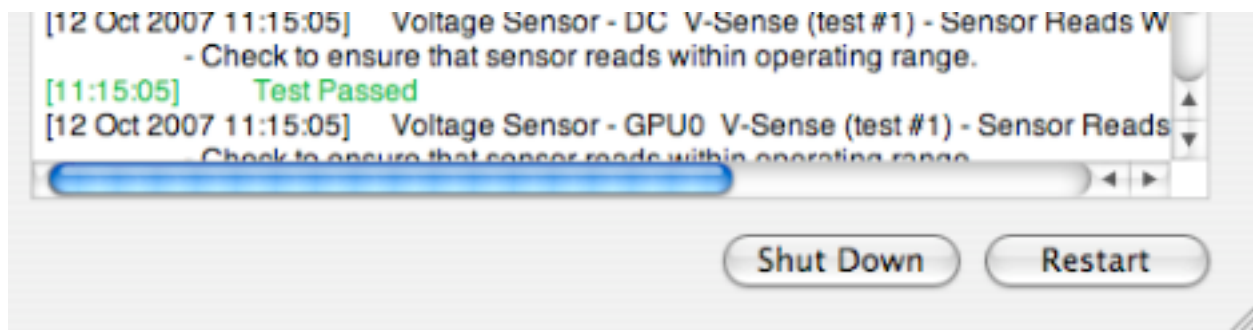
When testing has finished and there were no failures the the green PASSED banner appears. Click anywhere on the screen to dismiss it.

Testing Failed



When testing has finished and there were failures the the red FAILED banner appears. Click anywhere on the screen to dismiss it.

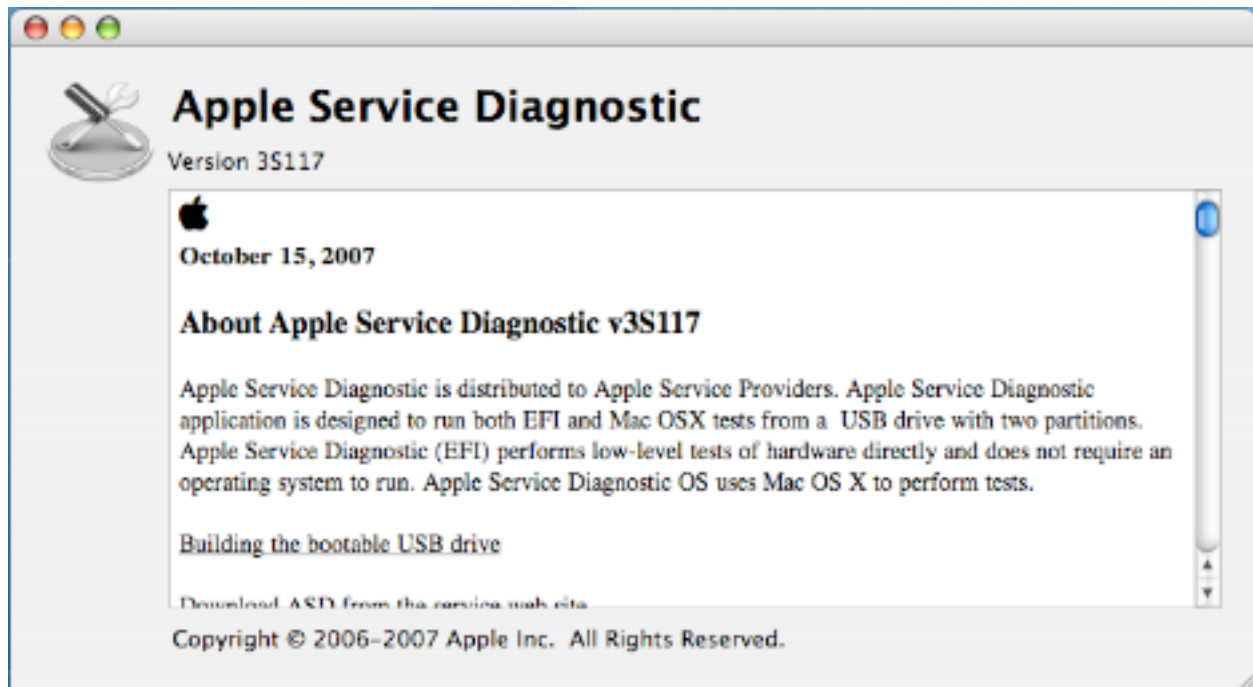
Quitting the application



When unit testing is done press Shut Down or Restart.

Menu Items

About Apple Service Diagnostic



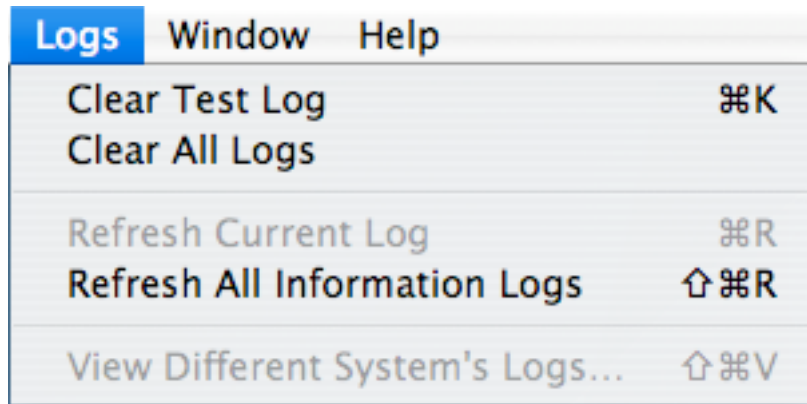
Selecting About Apple Service Diagnostic from the Apple Service Diagnostic menu brings up the about box. This is the same information that's displayed by the Help menu.

File	Edit	Logs	Window	Help
New				⌘N
Open...				⌘O
Open Recent				▶
Close				⌘W
Save Test Log				⌘S
Save All Gathered Logs...				⇧⌘S
Export Test Group...				⇧⌘T
Page Setup...				⇧⌘P
Print Test Log...				⌘P
Print All Gathered Logs...				⌘P

Select File menu for general File functions and custom Log functions.

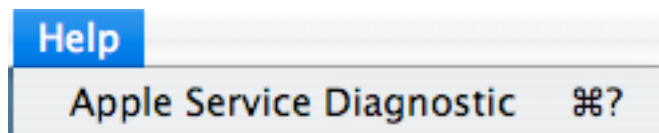
Edit	Logs	Window	Help
Undo			⌘Z
Redo			⇧⌘Z
Cut			⌘X
Copy			⌘C
Paste			⌘V
Delete			
Select All			⌘A
Delete Test Group			
Select All Tests			⌘+
Deselect All Tests			⌘-
Find			▶
Special Characters...			⌘T

Select Edit menu for general edit functions and to Select all tests or Deselect all tests.



Select Logs menu to control Log states.

Selecting Apple Service Diagnostic from the Help menu brings up ASD User Guide document.



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