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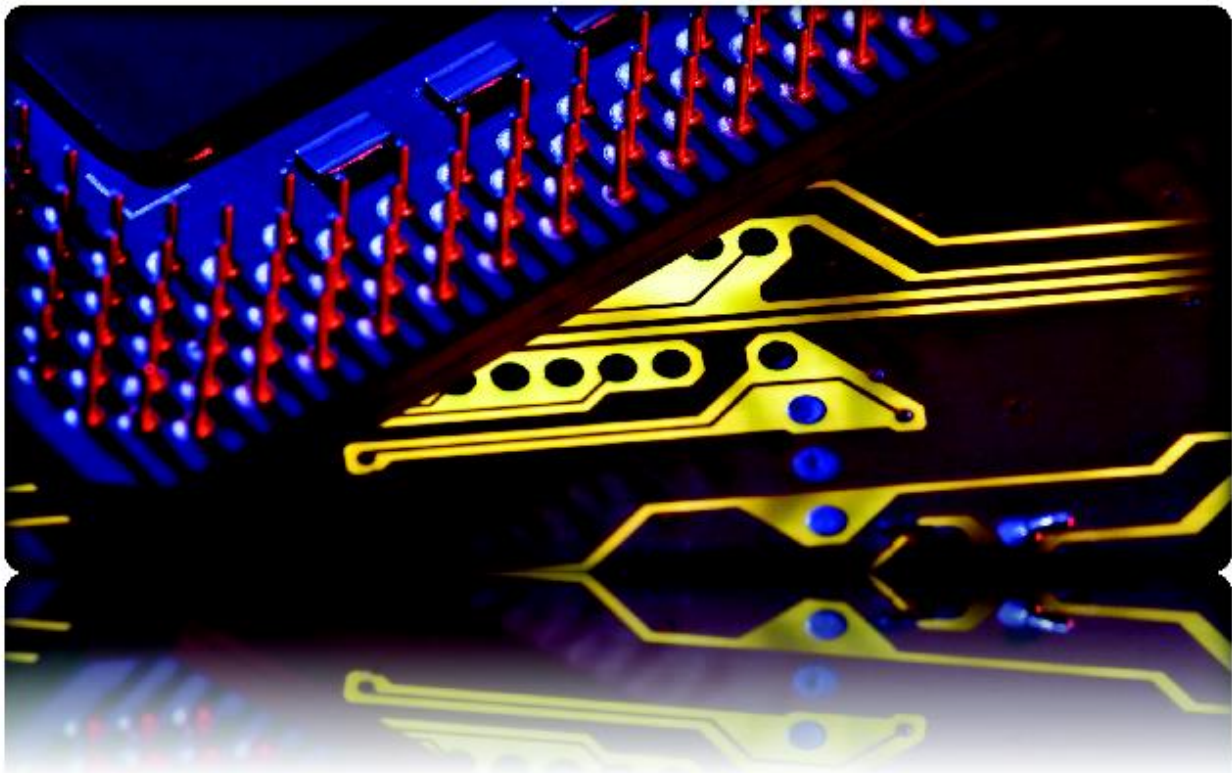
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EDF Test Descriptions

EDFTD V10.8

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Introduction

The purpose of the QA Test Descriptions manual is to provide you with an understanding of the specifics involved in running Test Modules. The test descriptions include information about each of the tests, test settings (parameters), error codes that may be returned and possible causes of failure.

The term "QA+WIN" is used throughout this document as generic coverage for:

- The integrated PC Builder diagnostic program PCB-Client
- The standalone diagnostic program QA+Win

These test programs use the same test descriptions: however, they have different user interfaces and functionality.

Not all components maybe supplied with every deliverable.

Document Structure

The first table that follows lists each Test Group, its mnemonic, number and name, and the tests it can provide. Tests requiring Eurosoft test hardware are indicated with an (L) after the test name. Interactive tests (which must be run in interactive mode) are indicated with an (I). Tests which are unavailable under WinPE are listed with the suffix "NPE".

The next table lists general Error Codes that may be returned by the tests. i.e. 0x02/3FF.

These Error Codes are made up of two parts; the first part is unique within the Diagnostic Group and is the identifier for the error, this error identifier will never change for a given error within a group. The second part is the Extra Information type that states the format of any extra information associated with an error code when it occurs. The extra information types are listed in the Extra Information Codes section of this document.

The test descriptions in the following sections are arranged numerically by group number and conform to a uniform generic structure. Each section starts with a general overview of the group and the devices it contains. Following this is a table that lists all the tests in the group and summarises the main requirements for the test to run. An '•' in the 'I' column indicates the test must be run in Interactive mode as it requires operator interaction or feedback. An '•' in the 'E' column indicates that specific Eurosoft hardware (i.e. a loopback plug) is required to run the test. An 'M' indicates a media requirement. An '•' in the 'C' column indicates that the test is compatible with running within the MI2 test. The next columns indicate which operating systems the test is available under (an '•' indicates the test can be run under that operating system).

The next table 'Parameters' lists, for each test that has them, the available parameters, their Default, Minimum and Maximum values and any explanatory notes. In order to avoid unnecessary duplication notes are only given against the first occurrence of the parameter in the table. In some parameters the default or limit may depend on the specific system under test, in these cases the value is given as 'SDP' (System Dependant Parameter).

Following Parameters are the individual test descriptions which generally also include an estimate of how long the test will take to run.

Finally for each group there are two tables giving the group specific error codes that the tests may return and a 'Troubleshooting' table that lists possible causes of the errors.

Note: For some parameters the maximum value may be defined as MAX_PATH. This is a system defined value of the maximum length of a file name and path and is normally 260 in Microsoft Windows® operating systems.

Note: For Boolean parameters and relevant system information, 1 represents True and 0 represents False.

Note: This document is platform independent and so each Group ID ends with an X. For the 32 bit platform this X is replaced with 0, and for 64 bit the X is replaced with 1.

Platforms

Where applicable the windows diagnostic framework does support the Windows Preinstallation Environment Operating System. However, the supported Windows PE version is always the most up to date from the standard Windows variant supported. In addition, any changes from a standard Windows PE creation may affect the diagnostic testing and therefore Eurosoft takes no responsibility for any results. This is because the Windows Environment that any user creates has not been tested by Eurosoft. Please contact Eurosoft if you do intend testing within Windows PE.

It is strongly recommended that if you do modify the Windows PE environment, all testing across all of your supported systems are re-integrated in order to ensure the results.

In order to perform any testing the environment must meet the minimum Windows requirements. If these requirements are not met or are significantly reduced i.e by reducing the minimum memory by running the Operating System from RAM, Eurosoft takes no responsibility for any testing results.

The table below shows the minimum memory requirement per the Operating system. These as well as any other System requirements recommended by Microsoft must be followed or the results will be unpredictable.

Operating System	X86	X64
Windows XP SP3	128MB	N/A
Windows Vista	512MB	N/A
Windows 7	1GB	2GB
Windows 8 and PE	1GB	2GB

Test Results

The overall result of each test will be one of five values:

- Passed: the test ran to completion and no error was found.
- Failed: the test ran but an error was found either with the hardware or an operator selected a Fail.
- Skipped: the test was skipped by the operator.
- Aborted: the test was aborted by the operator.
- Not Available: the system has determined the test cannot be run. The hardware is not present or the test parameters are out of scope.

If 'Failed' or 'Not Available' the error code will give details of the cause of the failure or the reason the test was not available.

Note: Some tests will populate extra information when a test completes. Where the extra information returns a completed proportion of the device, the Decimal System is used when converting between multiples of units i.e. a KB is 1000 Bytes. Only in the case of Memory the Binary System is used i.e. a KB is 1024 Bytes.

Advanced Windows

Some Groups and Categories contain Advanced Windows that hold additional information and functionality associated. Information on the Advanced Windows associated with Groups can be found in the relevant group's section of this document. Advanced Windows associated with Categories are explained in Appendix B at the bottom of this document.

Test Group	Group Name	Tests
20X	Parallel Ports	301 - Data Port 302 - External Loop-back (L) 303 - Status Register (L)
100X	Memory	301 - Quick 302 - Pseudo Random Data 303 - Walking Bit Left 304 - Walking Bit Right 305 - Inverse Walking Bit Left 306 - Inverse Walking Bit Right 307 - Chequerboard 308 - Bit Stuck High 309 - Bit Stuck Low 310 - Pseudo Random Address 311 - Micro-topology
110X	Gyroscope	301 - Core Recognition (NPE) 302 - Quick Status (NPE) 303 - Simple Roll Test (I NPE) 304 - Gyroscope Roll (I NPE)
120X	Accelerometer	301 - Core Recognition (NPE) 302 - Quick Status (NPE) 303 - Acceleration (I NPE)
180X	Location	301 - Core Recognition (NPE) 302 - Quick Status (NPE) 303 - Location (NPE)
221X	Network	301 - Configuration 302 - IPv4 Connection 303 - Wireless Strength (NPE) 304 - Wireless Connection (NPE) 305 - System Connected
260X	Hard Drives	309 - Butterfly Seek 310 - Random Read 311 - Linear Read 312 - S.M.A.R.T. Failure 313 - S.M.A.R.T. Short 314 - S.M.A.R.T. Conveyance 315 - S.M.A.R.T. Extended 316 - Hard Drive Temperature
291X	Modem	
310X	USB	301 - Detected Devices (L) 302 - Connectivity Test (I L)

Test Group	Group Name	Tests
330X	Floppy Drives	301 - Butterfly Seek 302 - Linear Read 303 - Read Write 304 - Media Change (I) 305 - Write Protect (I)
350X	Monitor	301 - Red Purity (I) 302 - Green Purity (I) 303 - Blue Purity (I) 304 - Mesh (I) 305 - Inverse Mesh (I) 306 - White MEME (I) 307 - Green MEME (I) 308 - Tonality (I) 309 - Grid (I) 310 - LCD Dead Pixel (I)
440X	FireWire	301 - IEEE1394 (FireWire)
450X	Serial Ports	301 - Configuration Registers 302 - Quick Loop-back (L) 303 - Baud Rates (L) 304 - Sustained Loop-back (L) 305 - Priority Transmit (L)
530X	Removable Media	301 - Linear Read 302 - Random Read 303 - Connectivity (I)
541X	System	301 - Stress 302 - Sleep (I NPE) 303 - Hibernate (I NPE)
550X	Processor	301 - Core Instruction Set 302 - Floating Point Instruction Set 303 - MMX Instruction Set 304 - SSE Instruction Set 305 - SSE2 Instruction Set 306 - SSE3 Instruction Set 307 - SSE 4.1 Instruction Set 310 - Cache Functionality 311 - SSE 4.2 Instruction Set 312 - SSE 4A Instruction Set 313 - Multi-core 314 - Multi-processor 315 - Core Priority 316 - Thermal Stress 317 - Power Stress 318 - CPU Fan Test 319 - CPU Temperature

Test Group	Group Name	Tests
561X	Audio	302 - Audio Connection (L) 303 - Loop-back Count (NPE L) 304 - Advanced Quality (NPE L) 305 - Quick Microphone (I NPE) 306 - Quick System Sound (I NPE)
570X	Display Adapter	301 - Linear Memory (NPE) 302 - Micro-topology Memory (NPE) 303 - Chaotic Addressing Memory (NPE) 304 - Hardware Acceleration (NPE) 305 - Graphics Card Temperature
590X	Video Capture	301 - Capture Driver 302 - Composite Capture Driver (NPE) 303 - S-Video Capture Driver (NPE) 304 - TV Capture Driver (NPE) 305 - RGB Capture Driver (NPE) 316 - Capture (I NPE) 317 - Composite Capture (I NPE) 318 - S-Video Capture (I NPE) 319 - TV Capture (I NPE) 320 - RGB Capture (I NPE)
610X	Battery	303 - Voltage 305 - Performance 306 - Quick State (I) 308 - Core Recognition 309 - Advanced State (I)
620X	Optical	301 - Linear Read 302 - Random Read 303 - Advanced Movement 304 - Media Erase 305 - Directory Write 306 - ISO Image Write 307 - Media Eject
641X	Biometric	301 - Core Recognition (NPE)
670X	Motherboard	301 - North-bridge 302 - South-bridge 303 - CMOS Clock 304 - CMOS Checksum 305 - CMOS Battery 306 - System Fan 307 - Voltage Core Detection 308 - System Temperature

Test Group	Group Name	Tests
681X	Operating System	301 - Activated (NPE) 302 - Genuine (NPE) 303 - Event Log 304 - Kernel Response 305 - Driver 306 - Signed Driver 307 - OS Requirements 308 - Security Support
690X	Hardware Monitor	312 - System Temperature 313 - CPU Temperature 314 - CPU Fan 315 - System Fan 316 - Voltage Core Detection Test 317 - Drive Temperature 318 - Graphics Card Temperature
700X	Solid State Drives	301 - Linear Read 302 - Random Read 306 - S.M.A.R.T. Failure 307 - S.M.A.R.T. Short 308 - S.M.A.R.T. Conveyance 309 - S.M.A.R.T. Extended
710X	RAID	301 - Linear Read
720X	Touch screen	301 - Quick Grid (I) 302 - Advanced Line (I) 303 - Pointing Accuracy (I)
730X	Input Peripherals	301 - Keyboard (I) 302 - Keyboard LED (I) 303 - Quick Mouse (I) 304 - Mouse Button (I) 305 - Movement (I) 306 - Quick Keyboard (I)
740X	Lenovo Custom Diagnostic Group	301 - Golden Key Test
750X	Compass	301 - Core Recognition (NPE) 302 - Quick Status (NPE) 303 - Direction (NPE)
760X	Ambient Light	301 - Core Recognition (NPE) 302 - Quick Status (NPE) 303 - Ambient Light Level (I NPE)

System Error Codes

Error Code	Name
0x30/3FF	Memory Allocation Error
0x31/3FF	Parameter read error
0x32/3FF	Parameter validation error
0x33/3FF	This test is not available on your OS
0x34/3FF	This test requires interactive mode
0x35/3FF	The specified test was not found
0x37/3FF	No testable devices were detected
0x38/3FF	Attribute read error
0x39/3FF	Test run failure
0x3B/01A	Media related test has failed that can be viewed in more detail with Windows® Event Viewer

Extra Information Codes

Extra Code	Description
001	Windows® standard error code
002	Loop-back or Eurosoft hardware Detected during testing
003	Percentage achieved during testing
004	Address location of error
005	Drive position for error
006	Read or Write transfer over or under
007	Colour reference of pixel found
008	Windows® Exception code
009	Core that has failed
00A	Media size returned
00B	Failed transfer speed
00C	Exceeded test maximum count threads are stated
00D	Pixel error on screen
00E	Audio output mixer
00F	Audio output and input endpoint
010	Serial port specific error
011	Key code for keyboard error

Extra Code	Description
012	Result that was outside of test tolerances
014	Detected jacks before and after testing (AUDIO specific)
015	S.M.A.R.T. failed attribute
016	Speed that was outside tolerance
017	Time that was outside tolerance
018	Charge difference that was outside tolerance
019	Temperature when failing
01A	Event Style Error can be seen in more detail from Windows® Event Viewer
01B	Under Frame rate
01C	Failed sub device number
080	Test general setting specific to test and relevant to parameter and error e.g battery charge failure would equal charge value
090	Stress specific - Device Identity in top 4 bytes. Windows Exception code in bottom 32 bits
091	Stress specific - Device Identity in top 4 bytes. No other extra.
092	Stress specific - Device Identity in top 4 bytes. Windows standard error in bottom 32 bits
093	Operating System specific - The count of failing items
094	Operating System specific - The category ID of the failing item
095	Operating System specific - The error code from the signing validation
096	Operating System specific - The Windows® licensing status
097	Sensor specific - The state of the sensor
3FF	No extra information and last error to be used

20X - Parallel Ports

Overview

This is a test group for Parallel Ports. Parallel Ports (sometimes called Line Print Terminal or Local Print Terminal ports) are an almost obsolete style of peripheral interface, superseded by USB and FireWire. The tests verify the performance of the parallel ports as they transmit data, handle interrupts, and perform handshaking with external devices. Loop-back plugs are required for certain tests in order to provide a controlled environment. Ensure that the parallel port is enabled in the system BIOS.

Tests

Test	Name	I	E	M	C	Windows® XP/S2003	Windows Vista®	Windows® Server 2008	Windows® 7	Windows® 8	Windows® PE
301	Data Port					•	•	•	•	•	•
302	External Loop-back		•			•	•	•	•	•	•
303	Status Register		•			•	•	•	•	•	•

Parameters

Test	Parameter	Name	Default	Min	Max	Note(s)
302	1	Test Error Loop-back Data Bit	1	1	8	The Loop-back bit to use

Descriptions

301 - Data Port

This test verifies that data can be transferred to and from the data port registers. The base address is determined from the global base address parameter. This test tests the internal portions of the device; it does not test the port connections.

Test Time: 5s

302 - External Loop-back

This test tests the connections to the back of the system case and header pins.

Test Time: 5s

303 - Status Register

This test checks the status register to ensure correct communication is achieved.

Test Time: 1s

Error Codes

Error Code	Name
0x00/3FF	The port test failed
0x01/3FF	The Loop-back test failed
0x02/3FF	The register status test failed

Troubleshooting

Error Code(s)	Potential Reason
0x00/3FF 0x01/3FF 0x02/3FF	The parallel port test failed. This could be due to a faulty device, incorrect data pin or missing loop-backs.

100X - Memory

Overview

This is a group that tests physical memory.

100% of the memory cannot be tested due to certain hardware devices and drivers that load in the Windows® environment. The memory between 641K and 1024K is not tested, as this is where BIOS and other system resources reside. The reported amount of tested memory may vary from one test to another due to background activity of the operating system. Once any test is executed the system maybe slow to respond as the Windows® OS has been reduced to a minimum amount of memory. Any subsequent tests maybe slow to respond whilst windows recovers the memory therefore it is recommended this test is executed last.

If you are executing 32 bit Windows® diagnostics the maximum amount of tested memory is 2GB. It is recommended all external programs are closed whilst executing this test. Any interface running the test will slow down dramatically in response.

Note: If the user tries to stop the running of a memory test or the entire group of tests when the system is busy, there may be a delay in the response.

Note: The Pseudo-random seed is shown twice in the table with the maximum value depending on platform. Only one will be valid and used.

Note: If testing with a duration, for all tests this should be greater than 59 seconds.

Tests

Test	Name	I	E	M	C	Windows® XP/S2003	Windows Vista®	Windows® Server 2008	Windows® 7	Windows® 8	Windows® PE
301	Quick					•	•	•	•	•	•
302	Pseudo Random Data					•	•	•	•	•	•
303	Walking Bit Left					•	•	•	•	•	•
304	Walking Bit Right					•	•	•	•	•	•
305	Inverse Walking Bit Left					•	•	•	•	•	•
306	Inverse Walking Bit Right					•	•	•	•	•	•
307	Chequerboard					•	•	•	•	•	•
308	Bit Stuck High					•	•	•	•	•	•
309	Bit Stuck Low					•	•	•	•	•	•
310	Pseudo Random Address					•	•	•	•	•	•
311	Micro-topology					•	•	•	•	•	•

Parameters

Test	Parameter	Name	Default	Min	Max	Note(s)
301	1	Duration	0	0	604800	Time to run the test. (in seconds) The minimum value for this parameter is 60 unless a test on coverage is desired. In this case, 0 should be used.
	2	Coverage	100	1	100	Percentage of maximum testable memory to test
	3	Enable Caching	TRUE	FALSE	TRUE	Specifies whether the cache should be enabled for memory tests
	5	Memory Allocation	98	50	98	Percentage memory allocated from available Physical memory to be used for the test
302	1	Duration	0	0	604800	
	2	Coverage	100	1	100	
	3	Enable Caching	TRUE	FALSE	TRUE	
	4	Pseudo Random Seed	0x0	0x0	0xFFFFFFFF FFFFFFFF	Seed used for initialising the Pseudo random number generator. In 32 bit only the first 32 bits are used.
	5	Memory Allocation	98	50	98	
303	1	Duration	0	0	604800	
	2	Coverage	100	1	100	
	3	Enable Caching	TRUE	FALSE	TRUE	
	5	Memory Allocation	98	50	98	
304	1	Duration	0	0	604800	
	2	Coverage	100	1	100	
	3	Enable Caching	TRUE	FALSE	TRUE	
	5	Memory Allocation	98	50	98	
305	1	Duration	0	0	604800	
	2	Coverage	100	1	100	
	3	Enable Caching	TRUE	FALSE	TRUE	
	5	Memory Allocation	98	50	98	

Test	Parameter	Name	Default	Min	Max	Note(s)
306	1	Duration	0	0	604800	
	2	Coverage	100	1	100	
	3	Enable Caching	TRUE	FALSE	TRUE	
	5	Memory Allocation	98	50	98	
307	1	Duration	0	0	604800	
	2	Coverage	100	1	100	
	3	Enable Caching	TRUE	FALSE	TRUE	
	5	Memory Allocation	98	50	98	
308	1	Duration	0	0	604800	
	2	Coverage	100	1	100	
	3	Enable Caching	TRUE	FALSE	TRUE	
	5	Memory Allocation	98	50	98	
309	1	Duration	0	0	604800	
	2	Coverage	100	1	100	
	3	Enable Caching	TRUE	FALSE	TRUE	
	5	Memory Allocation	98	50	98	
310	1	Duration	0	0	604800	
	2	Coverage	100	1	100	
	3	Enable Caching	TRUE	FALSE	TRUE	
	4	Pseudo Random Seed	0x0	0x0	0xFFFFFFFF FFFFFFFF	
	5	Memory Allocation	98	50	98	
311	1	Duration	0	0	604800	
	2	Coverage	100	1	100	
	3	Enable Caching	TRUE	FALSE	TRUE	
	5	Memory Allocation	98	50	98	

Descriptions

301 - Quick

Writes pattern 0xC into memory and verifies that it was stored correctly.

302 - Pseudo Random Data

Writes pseudo-random patterns into memory and verifies that they were stored correctly.

303 - Walking Bit Left

Walks a 1 bit through a byte of 0's from right to left shifting it 1 bit at a time.

304 - Walking Bit Right

Walks a 1 bit through a byte of 0's from left to right shifting it 1 bit at a time.

305 - Inverse Walking Bit Left

Walks a 0 bit through a byte of 1's from right to left shifting it 1 bit at a time.

306 - Inverse Walking Bit Right

Walks a 0 bit through a byte of 1's from left to right shifting it 1 bit at a time.

307 - Chequerboard

Writes pattern 0xA into memory and verifies that it was stored correctly. Then writes pattern 0x5 and verifies that this pattern was also stored correctly.

308 - Bit Stuck High

Writes all memory bits as 1, then writes all memory bits as 0. Verifies that all memory is now 0.

309 - Bit Stuck Low

Writes all memory bits as 0, then writes all memory bits as 1. Verifies that all memory is now 1.

310 - Pseudo Random Address

Writes pseudo-random data to pseudo-random addresses using a sequence generated with the start seed value. After memory is filled with data, the sequence is repeated to verify memory stored the values correctly.

311 - Micro-topology

This test uses a complex mathematical addressing method designed to stimulate physically adjacent bit cells, effective even where the precise physical arrangement of the device is unknown. Having proved itself in the field as an exceptionally effective test, this test has also proven to be very sensitive to issues of noise and timing in the memory system design as a whole.

Error Codes

Error Code	Name
0x00/3FF	Mismatch of memory
0x01/001	Unknown communication failure
0x02/3FF	Memory failed integrity check
0x04/004	Memory write error
0x07/001	Error attempting to obtain or free memory to test
0x08/3FF	Duration invalid
0x09/001	Failure to create process to execute memory tests
0x0A/3FF	Unknown memory result
0x0B/3FF	Internal error
0x11/008	General Windows® Exception during memory tests

Troubleshooting

Error Code(s)	Potential Reason
0x00/3FF 0x02/3FF 0x04/004 0x07/001 0x11/008	The data written and read did not match or information was unable to be read from the memory. The memory appears to be faulty.
0x08/3FF	Parameter error.
0x01/001 0x09/001 0x0A/3FF 0x0B/3FF	This error is most likely a Windows® Related Error.

110X - Gyroscope

Overview

A gyroscope is a device that measures angular rotational velocity and is often used to detect if the system is rotated, tilted or turned over.

Some smart-phones and tablets contain gyroscopes for user interface control. Often the gyroscope is used in conjunction with an accelerometer to present landscape or portrait views of the device's screen, based on the way the device is being held.

Tests

Test	Name	I	E	M	C	Windows® XP/S2003	Windows Vista®	Windows® Server 2008	Windows® 7	Windows® 8	Windows® PE
301	Core Recognition							•	•	•	
302	Quick Status							•	•	•	
303	Simple Roll Test	•						•	•	•	
304	Gyroscope Roll	•						•	•	•	

Parameters

Test	Parameter	Name	Default	Min	Max	Note(s)
303	1	Time-out	30	10	300	Test time-out
304	1	Time-out	30	10	300	
	2	Range Sensitivity	20	1	100	Gyroscope range sensitivity in percentage

Descriptions

301 - Core Recognition

The Core Recognition test checks the gyroscope to ensure it is connected and detected properly.

Test Time: 1 Second.

302 - Quick Status

The Quick Status test checks the status of the gyroscope to ensure that it is fully functional.

Test Time: 1 Second.

303 - Simple Roll Test

The test will check the orientation of the device, the test will pass once the device has achieved rotation in all 6 main directions. The operator is requested to:

1. Rotate the tablet such that the screen faces the operator. This might be portrait or landscape depending on system.

2. Turn 90 degrees from step 1.

3. Turn 90 degrees from step 2.

4. Turn 90 degrees from step 3.

5. Rotate the tablet such that the screen faces up.

6. Rotate the tablet such that the screen faces down.

Test Time: 30 Seconds

304 - Gyroscope Roll

The test will check the rotation of the device mimicking a 'steering wheel'. The test will pass once the device has achieved rotation in all 4 main directions as described below. - tablet angled forwards down (equivalent to the plane going to earth) - Tablet angled upwards (equivalent to the plane moving away from earth) - tablet angled left (equivalent to the plane banking left) - tablet angled right (equivalent to a plane banking right)

Test Time: Depends on the time-out parameter specified by the operator.

Error Codes

Error Code	Name
0x00/3FF	The sensor was not found
0x01/3FF	The sensor failed to start
0x02/3FF	Access to the sensor was denied
0x03/3FF	The sensor has encountered an error
0x04/097	The sensor is in an unknown state
0x05/001	Unable to create test window
0x06/3FF	The test timed out
0x07/3FF	The Operator chose to fail the test
0x08/3FF	Required files to perform the test are missing from the diagnostic directory
0x09/3FF	Unable to set rotation of the system

Troubleshooting

Error Code(s)	Potential Reason
0x00/3FF 0x01/3FF 0x02/3FF 0x03/3FF 0x04/097	The sensor was not detected. This could be caused by faulty drivers or a loose connection.
0x05/001 0x06/3FF	Creation of the interactive window failed or the test timed out.
0x07/3FF	The interactive test failed since the operator cancelled the test.
0x08/3FF	Required files to perform the test are missing from the diagnostic directory.
0x09/3FF	The interactive test requires rotation to be disabled.

120X - Accelerometer

Overview

An accelerometer is a device that measures linear acceleration of movement and is often used to detect if the system is dropped, picked up or interacted with using motions.

Some smart-phones and tablets contain accelerometers for user interface control. Often the accelerometer is used in conjunction with a gyroscope to present landscape or portrait views of the device's screen, based on the way the device is being held.

Tests

Test	Name	I	E	M	C	Windows® XP/S2003	Windows Vista®	Windows® Server 2008	Windows® 7	Windows® 8	Windows® PE
301	Core Recognition							•	•	•	
302	Quick Status							•	•	•	
303	Acceleration	•						•	•	•	

Parameters

Test	Parameter	Name	Default	Min	Max	Note(s)
303	1	Time-out	30	10	300	Test time-out
	2	Range Sensitivity	20	5	100	Accelerometer range sensitivity in percent

Descriptions

301 - Core Recognition

The Core Recognition test checks the accelerometer to ensure it is connected and detected properly.

Test Time: 1 Second.

302 - Quick Status

The Quick Status test checks the status of the accelerometer to ensure that it is fully functional.

Test Time: 1 Second.

303 - Acceleration

The acceleration test checks the measurements of acceleration in three directions. The interactive test requests moves the system from left to right, right to left, up-down, down-up, forward-reverse and reverse-forward direction. The test succeeds once the detected acceleration in each axis exceeds 20% as default of the sensors capable acceleration range.

Test Time: Depends on the time-out parameter set by the user.

Error Codes

Error Code	Name
0x00/3FF	The sensor was not found
0x01/3FF	The sensor failed to start
0x02/3FF	Access to the sensor was denied
0x03/3FF	The sensor has encountered an error
0x04/097	The sensor is in an unknown state
0x05/001	Unable to create test window
0x06/3FF	The test timed out
0x07/3FF	The Operator chose to fail the test
0x08/3FF	Required files to perform the test are missing from the diagnostic directory
0x09/3FF	Error attempting to read minimum and maximum range
0x0A/3FF	Error attempting to control screen rotation

Troubleshooting

Error Code(s)	Potential Reason
0x00/3FF 0x01/3FF 0x02/3FF 0x03/3FF 0x04/097	The sensor was not detected. This could be caused by faulty drivers or a loose connection.
0x05/001 0x06/3FF	Creation of the interactive window failed or the test timed out.
0x07/3FF	The interactive test failed since the operator cancelled the test.
0x08/3FF	Required files to perform the test are missing from the diagnostic directory.
0x09/3FF	In order to perform some tests the minimum and maximum range of acceleration in G must be supported.
0x0A/3FF	Screen rotation must be disabled to control tests otherwise this will effect

180X - Location

Overview

The location functionality is provided by one of a number of sensors including Global Positioning System.

Tests

Test	Name	I	E	M	C	Windows® XP/S2003	Windows Vista®	Windows® Server 2008	Windows® 7	Windows® 8	Windows® PE
301	Core Recognition							•	•	•	
302	Quick Status							•	•	•	
303	Location							•	•	•	

Parameters

Test	Parameter	Name	Default	Min	Max	Note(s)
303	1	Time-out	30	10	300	Test time-out
	2	Latitude Value	0	-90	90	Latitude
	3	Longitude Value	0	-180	180	Longitude
	4	Location Tolerance - latitude	5	0	100	Latitude tolerance in percent.
	5	Location Tolerance - longitude	5	0	100	Longitude tolerance in percent.

Descriptions

301 - Core Recognition

The Core Recognition test checks the location device to ensure it is connected and detected properly.

Test Time: 1 Second.

302 - Quick Status

The Quick Status test checks the status of the location sensor to ensure that it is fully functional. At certain instances the sensor status may be in initializing stage where the sensor driver is trying to acquire a fix. The sensor driver should pass this state after a fix is locked and tracked. The Quick Status test is passed if the location sensor is in an initializing stage and yet the sensor data are available.

Test Time: 1 Second.

303 - Location

This test has an non-interactive and an interactive test mode. In the non-interactive variant, the correct longitude and latitude require being set within a given tolerance value. The interactive test shows a map of the world and the identified geographic location using an icon. The Operator then selects pass or fail depending on the identified geographic location. Two general types of location sensors are present in systems, they can be either a physical Global Positioning System sensor or a triangulation device. In a physical Global Positioning System sensor, line of sight with satellites is expected to initialize the test. In an enumerated location sensor (Such as Windows Location Provider) a working wireless connection is required to find the location.

Test Time: 1 Second for the non interactive test. Interactive test time would depend on the time-out parameter given by the operator.

Error Codes

Error Code	Name
0x00/3FF	The sensor was not found
0x01/3FF	The sensor failed to start
0x02/3FF	Access to the sensor was denied
0x03/3FF	The sensor has encountered an error
0x04/097	The sensor is in an unknown state
0x05/001	Unable to create test window
0x06/3FF	The test timed out
0x07/3FF	The Operator chose to fail the test
0x08/3FF	Required bitmaps are missing
0x09/3FF	The location read is outside of tolerance

Troubleshooting

Error Code(s)	Potential Reason
0x00/3FF 0x01/3FF 0x02/3FF 0x03/3FF 0x04/097	The sensor was not detected. This could be caused by faulty drivers or a loose connection.
0x05/001 0x06/3FF	Creation of the interactive window failed or the test timed out.
0x07/3FF	The interactive test failed since the operator cancelled the test.
0x08/3FF	Required bitmap resources are missing.
0x09/3FF	The location from the sensor is outside of the tolerance for the test. This may be caused by a faulty sensor, issue reading the location or an incorrect test parameter. If the sensor type is Global Positioning System, then line of sight is required. If the sensor type is triangulation using wireless, signal strength should be confirmed.

221X - Network

Overview

This group is designed to test Network Adaptors.

A network adapter (also known as a network interface card, network interface controller, LAN adapter and by similar terms) is a computer hardware component that connects a computer to a network. The network physical layer can be implemented as an ethernet or wireless 802.11 standard. Interface controllers can be implemented on expansion cards that are plugged into a computer bus or built into the motherboard.

Wireless information if available is displayed in an advanced window that shows access points enumerated from the adaptors present on the system. A graph is present in the advanced window that will display the strongest wireless access point detected on each of the channels in the 802.11 2.4 GHz band. The access point selected in the table will be shown on the graph to display its strength and channels.

The wireless channel graph is designed to aid the selection of an access point by clearly displaying the strengths of the points against the strongest signals on the channel. The graph can also be used when creating or updating an access point. The point can be moved to a channel with lower signal strengths to reduce the noise experienced, increasing its reliability.

Note: Each access point on a channel will cause interference to the adjacent two channels. The graph includes this crosstalk range in order to reflect this.

Tests

Test	Name	I	E	M	C	Windows® XP/S2003	Windows Vista®	Windows® Server 2008	Windows® 7	Windows® 8	Windows® PE
301	Configuration					•	•	•	•	•	•
302	IPv4 Connection					•	•	•	•	•	•
303	Wireless Strength					•	•	•	•	•	
304	Wireless Connection						•	•	•	•	
305	System Connected					•	•	•	•	•	•

Parameters

Test	Parameter	Name	Default	Min	Max	Note(s)
302	1	Target IP	"0.0.0.0"	7	15	The IPv4 address to connect
	2	Target Name	""	0	255	The connection target's name; If set, this takes priority over IP
	7	Ping Packet Size	32	28	65500	The size in bytes of the ping packet
303	3	Strength Threshold	60	5	100	The Wireless strength threshold
304	3	Strength Threshold	60	5	100	
	4	Target SSID	""	0	255	The Service Set Identifier (SSID) of the access point to use. If empty then the access point already connected will be used
	5	Target Password	""	0	255	The password to connect to the supplied SSID
	6	Connection Time-out	10	0	300	The time to wait for a connection to be made

Descriptions

301 - Configuration

This is a configuration test on the network card to ensure that it can be configured for communication. The test also includes managing the Windows® driver.

Test Time: 5s

302 - IPv4 Connection

The IPv4 Connection test ensures two way communication between an end IPv4 Address or Host-name. This test will check that the Network card memory TCP\IP protocol stack can be loaded and that the network card configuration operates for communication purposes. It also establishes that the socket electrical contacts or WIFI radio are within tolerance.

Note: This is designed to test the network adapter and is not suitable to be used for testing your network or cabling.

Note: Two way communication is required for this test to operate and load the card therefore an efficient route to the target IP address is recommended.

Note: A valid IP address or Host Name parameter should be entered before running this test or the test will return Not Available.

Note: The IP address used should not be of a network adaptor present on the system.

Note: The local loop-back (127.0.0.1) address can not be used as this will not test the card.

Test Time: Approximately 5s but is network dependant.

303 - Wireless Strength

The Wireless Strength test checks the signal strength of the nearby wireless access points. If no signal is greater than the threshold set then the test will fail.

Note: Please contact Eurosoft to run this test on Windows® PE.

Test Time: 1s

304 - Wireless Connection

This test can be started in two different ways. If an SSID is supplied then the test will first connect to the access point. If no SSID is supplied then the existing wireless connection will be used.

The test will then check the signal strength of the connected access point. If the signal strength is lower than the threshold then the test will fail.

Note: Please contact Eurosoft to run this test on Windows® PE.

Test Time: Dependent on parameters

305 - System Connected

This test checks the most basic network connection is available for the entire system. This test can be applied to all devices but because it is a system test it is only worthwhile running on one.

Test Time: 1s

Error Codes

Error Code	Name
0x00/001	ARP Table failure
0x01/001	Adaptor IP Address change failure
0x02/3FF	Adaptor Info get failure
0x03/3FF	Internal failure
0x04/3FF	Socket Failure
0x05/3FF	Transfer Failure
0x06/3FF	The IP Address can't be accessed on this device
0x07/3FF	The Device is not connected to a network
0x08/3FF	There was no reply from the ping
0x09/001	Unable to find IP address for name
0x0A/3FF	The IP address parameter has not been set
0x0B/3FF	The IP address used is the local loop-back IP
0x0C/001	Unable to initialise the required Wireless device
0x0D/001	Unable to connect to the required Wireless access point
0x0E/012	The wireless strength did not meet the threshold
0x0F/001	General wireless error
0x10/3FF	The wireless network is not connected

Troubleshooting

Error Code(s)	Potential Reason
0x00/001 0x01/001 0x02/3FF 0x03/3FF 0x04/3FF 0x05/3FF	Potential Windows® driver issues. If the drivers are not installed in the basic version, they may need to be installed. Network card memory fault, control register DMI/IRQ access. Potential issues with motherboard connection for separate card, especially for the PCI bus. If the issue is on the initial connection, the fault may be on the electrical connections on the pins of the card.
0x06/3FF 0x07/3FF 0x08/3FF 0x09/001 0x0A/3FF 0x0B/3FF	Potential Configuration or Test Parameter issue. If trying to ping, check that the target IP is on the same network as the adapter under test and is configured to respond to the ping. Note: The local loop-back IP address can't be used for test as it will not test the adaptor.
0x0C/001 0x0D/001 0x0E/012 0x0F/001 0x10/3FF	A Wireless error has occurred. This could be caused by an issue with the wireless hardware, connection configuration or access point location.

260X - Hard Drives

Overview

This is a test group for fixed media disk drive (Hard Disks). Hard Disks consists of one or more rigid (hence "hard") rapidly rotating discs, coated with magnetic material and with magnetic heads arranged to write data to the surfaces and read it from them.

Tests are available to verify the head actuator mechanism, report the SMART status and predict the probability of imminent failure. Extended tests are also available on drives which have either a capacity greater than 2TB or a sector size greater than 512 bytes.

The drive being tested should have data on it to test otherwise the test may stall.

Note: 1. When comparing the test parameters duration and coverage for the actual testing time this will only be the same under one condition. A set parameter coverage of 100% or a set parameter duration which has sufficient time to test to the entire media. This is because of varying algorithms and delays moving to the next test location.

Note: 2. Other parameters may be irrelevant due to hardware access times with this type of test.

Note: 3. This is because with a duration setting, each physical read is performed sequentially. Whereas with the coverage parameter, the reading is distributed evenly across the hardware being tested. Therefore there maybe a delay due to moving to the next hardware location.

Note: 4. Where relevant, this group contains an advanced media window that has a visual display of blocks representing the testable area of the media.

Note: 5. Some tests use a drive's S.M.A.R.T. functionality to run. S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology), is a monitoring system for computer media to detect and report on various indicators of reliability. This functionality is not available on all devices. S.M.A.R.T documentation is available online for the tests and can be used for further information if required.

Tests

Test	Name	I	E	M	C	Windows® XP/S2003	Windows Vista®	Windows® Server 2008	Windows® 7	Windows® 8	Windows® PE
309	Butterfly Seek			•		•	•	•	•	•	•
310	Random Read			•		•	•	•	•	•	•
311	Linear Read			•		•	•	•	•	•	•
312	S.M.A.R.T. Failure					•	•	•	•	•	•
313	S.M.A.R.T. Short					•	•	•	•	•	•
314	S.M.A.R.T. Conveyance					•	•	•	•	•	•
315	S.M.A.R.T. Extended					•	•	•	•	•	•
316	Hard Drive Temperature					•	•	•	•	•	•

Parameters

Test	Parameter	Name	Default	Min	Max	Note(s)
309	1	Duration	0	0	604800	Time to run the test
	2	Coverage	100	1	100	Percentage of hard disk to test
	3	Maximum Errors	1	1	50	Continues to test until the maximum number of errors is reached. These are only errors directly associated with reading the drive.
	5	Maximum Retries	0	0	50	The maximum amount of retries per read. A warning message will be placed in the log on every retry that is performed.
	8	Windows Event Error Count	1000	0	10000	Windows® Event Error count between reads. 0 indicates the Windows® event error will not be read.
310	1	Duration	300	1	604800	
	3	Maximum Errors	1	1	50	
	5	Maximum Retries	0	0	50	
	8	Windows Event Error Count	1000	0	10000	
311	1	Duration	0	0	604800	
	2	Coverage	100	1	100	
	3	Maximum Errors	1	1	50	
	5	Maximum Retries	0	0	50	
	8	Windows Event Error Count	1000	0	10000	
312	9	S.M.A.R.T Error Log	FALSE	FALSE	TRUE	Enable SMART error log component of Imminent Failure test.
313	7	Maximum Duration	1800	0	302400	The maximum duration of the test. If the test takes longer than this time then the test will fail.
314	7	Maximum Duration	86400	0	302400	
315	7	Maximum Duration	86400	0	302400	

Test	Parameter	Name	Default	Min	Max	Note(s)
316	10	Minimum Temperature	20	0	100	Minimum Temperature. (Celsius)
	11	Maximum Temperature	80	0	100	Maximum Temperature. (Celsius)

Descriptions

309 - Butterfly Seek

Each Butterfly Seek test iteration consists of two seeks: one seek is lower than (below) the middle sector and one seek is higher than (above) the middle sector. After each iteration, the lower seek position increases by one sector increment and the higher seek position decreases by the same amount.

Test Time: Dependent on parameters

310 - Random Read

Each Random Seek test iteration is one seek to a pseudo random sector position. The purpose of this test is to test the head actuator mechanism, not the read head mechanism; so the actual sectors that are read, and even the accuracy of the data found, are not necessarily relevant. For this reason, it does not matter if the pseudo-random generator produces the same sector to check each time the test is run.

Test Time: Dependent on parameters

311 - Linear Read

Each Read Verify test iteration is one seek and verify. Each iteration, the seek position increases by one sector increment.

Test Time: Dependent on parameters

312 - S.M.A.R.T. Failure

This test checks the "SMART RETURN STATUS" of S.M.A.R.T. reporting, to ensure that the hard disk drive is in a reliable condition. A failure of this test indicates a relatively high probability that the drive will not be able to honour its specification and is about to fail.

Test Time: 1 to 5s

313 - S.M.A.R.T. Short

This test executes the sub-command "SMART Short self-test routine" within the "SMART EXECUTE OFF-LINE IMMEDIATE" command.

This test checks the electrical and mechanical performance as well as the read performance of the disk.

Electrical tests might include a test of buffer RAM, a read-write circuitry test, or a test of the read-write head elements.

Mechanical test includes seeking and servo on data tracks. Scans small parts of the drive's surface. Checks the list of Pending sectors that may have read errors.

Test Time: Usually under two minutes but is device dependent. There is a test time limit imposed by the manufacturer of the drive.

314 - S.M.A.R.T. Conveyance

This test executes the sub-command "SMART Conveyance self-test routine" within the "SMART EXECUTE OFF-LINE IMMEDIATE" command.

Intended as a quick test to identify damage incurred during transporting of the device from the drive manufacturer to the computer manufacturer.

Test Time: Several minutes but is device dependent.

315 - S.M.A.R.T. Extended

This test executes the sub-command "SMART Extended self-test routine" within the "SMART EXECUTE OFF-LINE IMMEDIATE" command.

A longer and more thorough version of the short self-test, scans the entire disk surface, with no time limit.

The test will progress from 0% to 70% using the manufacturer estimated run time for the drive under test and is obtained before the test executes. The Completion stage from 71% to 100% will take an unknown amount of time and is dependent on several factors within the drive. The test is still running during this stage and may take many hours to complete.

Test Time: Hundreds of minutes, this is device dependent. Approximately one gigabyte per minute for modern drives.

316 - Hard Drive Temperature

Hard Drive Temperature. The temperature of each drive is retrieved and checked to be residing within a maximum and minimum level. There can be a situation where the drive does not have an inbuilt temperature sensor.

Test Time: 1 Second

Error Codes

Error Code	Name
0x00/3FF	The device failed to open
0x02/00A	The drive is too small
0x03/00A	Unable to read drive geometry
0x04/3FF	Unable to set the test thread priority
0x05/3FF	Failed to set file pointer
0x06/001	Read failure
0x07/006	Read size mismatch
0x08/3FF	Drive does not support S.M.A.R.T.
0x0A/3FF	Unable to read the drive's capacity
0x0B/015	S.M.A.R.T. Attributes indicate an error
0x0C/001	Unable to communicate with device
0x0E/3FF	Failure to obtain memory for testing
0x0F/3FF	The S.M.A.R.T. Imminent Failure was detected.
0x10/001	The S.M.A.R.T. command failed and may not be supported
0x11/3FF	The self-test routine was aborted
0x12/3FF	The self-test routine was interrupted by a hard or soft power reset
0x13/3FF	An unknown test error occurred while running the self-test routine
0x14/3FF	The self-test has failed and the test element that failed is not known
0x15/3FF	The electrical part of the self-test has failed
0x16/3FF	The servo part of the self-test has failed
0x17/3FF	The read part of the self-test has failed
0x18/3FF	The device handling damage has been detected and the self-test has failed
0x19/015	An unknown self-test result has been received
0x1A/3FF	The S.M.A.R.T. Self-test is not supported
0x1B/3FF	The S.M.A.R.T. Self-test did not complete before the time-out
0x1C/3FF	The S.M.A.R.T. Error log part of the imminent test has failed
0x1D/019	The temperature result was outside the tolerance
0x1E/3FF	Temperature sensors are not found

Troubleshooting

Error Code(s)	Potential Reason
0x00/3FF 0x03/00A 0x04/3FF 0x05/3FF 0x06/001 0x07/006 0x0A/3FF 0x0C/001 0x0F/3FF 0x1C/3FF	The device may be faulty or another program may be limiting access to the device. Errors on the hard drive can be caused by power loss.
0x02/00A 0x08/3FF 0x0B/015 0x0E/3FF 0x10/001 0x1A/3FF 0x1C/3FF 0x1E/3FF	The device does not appear to support this test. Check the test descriptions manual for the test requirements.
0x11/3FF 0x12/3FF 0x13/3FF 0x14/3FF 0x15/3FF 0x16/3FF 0x17/3FF 0x18/3FF 0x19/015 0x1B/3FF	The S.M.A.R.T. self-test may indicate a fault or imminent fault present with the drive. Errors such as aborted tests and power resets may be caused by other programs accessing S.M.A.R.T. functionality while the test is running or the device entering a power saving state. It is recommended that hard drive power down is disabled and no other programs are running for the duration of the test.
0x1D/019	The retrieved value from the sensor is outside the tolerance. Check the system information for your drive to ensure the correct parameter values are being used.

291X - Modem

Overview

A modem (modulator-demodulator) is a device that modulates an analogue carrier signal to encode digital information, and also demodulates such a carrier signal to decode the transmitted information. The philosophy is to produce a signal that can be transmitted easily and decoded to reproduce the original digital data.

Generally this device has been superseded by other communication technologies and is only required for historic purposes.

Note: Only one system modem is currently supported.

310X - USB

Overview

This is a group that checks a USB interface, it does not check devices attached to a USB interface. USB (Universal Serial Bus) is a specification for the cables, connectors and communications protocols for a serial connection between PCs and peripherals. This group is only testable if Eurosoft USB hardware is detected when the program initialises: it will not be testable if there are no USB devices or only non-Eurosoft USB devices connected to the USB ports.

Note: Eurosoft USB devices should not be removed or inserted while diagnostics are running.

Tests

Test	Name	I	E	M	C	Windows® XP/S2003	Windows Vista®	Windows® Server 2008	Windows® 7	Windows® 8	Windows® PE
301	Detected Devices		•			•	•	•	•	•	•
302	Connectivity Test	•	•			•	•	•	•	•	•

Parameters

Test	Parameter	Name	Default	Min	Max	Note(s)
301	1	Number Of Devices	0	0	127	Number of Eurosoft USB devices expected

Descriptions

301 - Detected Devices

The test counts the number of Eurosoft USB devices (plugs or a Eurosoft mass storage test device) plugged into USB ports. The user specifies how many devices to check for via a 'Number of Devices' parameter, the test passes if it detects a corresponding number of devices, else it fails. If the Number of Devices parameter is set to 0, then at least one Eurosoft USB device is required to pass the test.

302 - Connectivity Test

The test checks the connectivity of the Eurosoft USB devices (plugs or a Eurosoft mass storage test device) plugged into USB ports. The user will be prompted to remove and re-connect the Eurosoft USB device.

Error Codes

Error Code	Name
0x00/3FF	Unable to get control of USB devices
0x01/002	An incorrect number of USB plugs were detected
0x02/001	An error occurred with the interactive test window
0x03/3FF	USB insertion timed out
0x04/3FF	USB insertion timed out
0x05/3FF	No USB plugs were detected
0x06/3FF	Building a tree of the USB physical devices failed

Troubleshooting

Error Code(s)	Potential Reason
0x00/3FF	The test was unable to get control of the USB devices. This may be caused by another program accessing the USB devices.
0x01/002 0x05/3FF	The number of devices found and specified with the test parameter did not match. This may be caused by an incorrect test parameter or a device failure. If the test parameter is 0, then no devices were found.
0x02/001	Error related to the creation of the interactive window. General Windows operating system issue.
0x03/3FF 0x04/3FF	Time-out in either the USB insert or remove interactive window. The USB socket maybe faulty or the user has not responded within the time limit.
0x06/3FF	Failure in creating the USB physical devices build tree. Windows operating system general issue or USB driver issue.

330X - Floppy Drives

Overview

This is a test group for removable media floppy drives. Floppy drives read from, and write to, a removable 'floppy disk' which is a disk of thin and flexible magnetic storage medium, sealed in a rectangular carrier. Though largely obsolete they are still used in legacy and specialist equipment.

Note: Floppy disks can degrade in performance after multiple uses: change the media regularly.

Note: To acquire device information on floppy drive media, the floppy disk must be present in the drive on initialisation.

Note: USB Floppy drives are not supported on Windows Vista® and above and should not be used.

Tests

Test	Name	I	E	M	C	Windows® XP/S2003	Windows Vista®	Windows® Server 2008	Windows® 7	Windows® 8	Windows® PE
301	Butterfly Seek			•		•	•	•	•	•	•
302	Linear Read			•		•	•	•	•	•	•
303	Read Write			•		•	•	•	•	•	•
304	Media Change	•		•		•	•	•	•	•	•
305	Write Protect	•		•		•	•	•	•	•	•

Parameters

Test	Parameter	Name	Default	Min	Max	Note(s)
301	1	Duration	0	0	604800	The duration of the test
	2	Coverage	100	5	100	The coverage of the test
302	1	Duration	0	0	604800	
	2	Coverage	100	5	100	
303	1	Duration	0	0	604800	
	2	Coverage	100	5	100	

Descriptions

301 - Butterfly Seek

The Butterfly Seek Test seeks back and forth, lower and higher, to sector positions centred on and around a "middle" sector. Each Butterfly Seek test iteration consists of two seeks: one seek lower than (below) the middle sector plus one seek higher than (above) the middle sector. After each iteration, the lower seek position increases by one sector increment and the higher seek position decreases by the same amount.

Test Time: 0.4 to 1.0 minutes (1.44MB floppy); 16.8 minutes (120MB floppy)

302 - Linear Read

The Linear Read Test seeks linearly and sequentially from the start to the end of the disk. Each Linear Seek test iteration is one seek. Each iteration, the seek position increases by one sector increment.

Test Time: 0.3 to 0.5 minutes (1.44MB floppy); 6.2 minutes (120MB floppy)

303 - Read Write

The Read Write Test seeks linearly and sequentially between start and stop points. At each seek position, it reads from the disk and then writes what was read back to the disk. Each Read Write test iteration is one seek. Each iteration, the seek position increases by one sector increment, a read is done from a number of sectors, and a write is done back to the same set of sectors. The Read Write test is always done with the seek position increasing each iteration.

Test Time: 1.4 to 2.2 minutes (1.44MB floppy); 31.4 minutes (120MB floppy)

304 - Media Change

The Media Change Test verifies that media change is correctly detected.

Test Time: 5 seconds; however, test times can vary considerably depending on user response.

305 - Write Protect

The Write Protect Test verifies that disk write protect is correctly detected.

Test Time: 5 seconds; however, test times can vary considerably depending on user response.

Error Codes

Error Code	Name
0x00/3FF	The initialisation failed for the test
0x01/3FF	Floppy disk seek failure
0x02/3FF	Floppy disk media open failure
0x03/3FF	There is no media in the drive
0x04/3FF	Media eject failure
0x05/3FF	Incorrect media was detected
0x06/3FF	The request timed out
0x07/3FF	No media change detected
0x08/3FF	The data write failed
0x09/3FF	The data read failed

Troubleshooting

Error Code(s)	Potential Reason
0x03/3FF 0x04/3FF 0x05/3FF 0x06/3FF 0x07/3FF	An error has occurred with the floppy disk media. Check to ensure the correct media is inserted when prompted.
0x00/3FF 0x01/3FF 0x02/3FF 0x08/3FF 0x09/3FF	An error has occurred with the floppy disk. This could be because of faulty media or a faulty device.

350X - Monitor

Overview

This is a test group for Monitors (LCD and CRT). This test group provides testing of the display monitor connected to the primary video adapter. All of the monitor tests use the Windows® API and do not require additional software libraries such as DirectX®.

Each of the monitor tests display a pattern used to check a particular feature of the monitor. All of the tests require the operator to interactively verify proper operation. The tests may be run using all screen resolutions and colour depths. Each test relies on user input, the actual duration is indeterminate. However, it should normally take no longer than 2-5 seconds for a user to determine whether the display is correct or not.

Before each test starts, a dialogue box is displayed indicating which test will run. It also contains text indicating how to start the test and how to indicate whether the test ran correctly. This box will be displayed once any key is pressed while the test pattern is shown. Once a key has been pressed a dialogue box appears asking whether the test was displayed correctly.

Tests

Test	Name	I	E	M	C	Windows® XP/S2003	Windows Vista®	Windows® Server 2008	Windows® 7	Windows® 8	Windows® PE
301	Red Purity	•				•	•	•	•	•	•
302	Green Purity	•				•	•	•	•	•	•
303	Blue Purity	•				•	•	•	•	•	•
304	Mesh	•				•	•	•	•	•	•
305	Inverse Mesh	•				•	•	•	•	•	•
306	White MEME	•				•	•	•	•	•	•
307	Green MEME	•				•	•	•	•	•	•
308	Tonality	•				•	•	•	•	•	•
309	Grid	•				•	•	•	•	•	•
310	LCD Dead Pixel	•				•	•	•	•	•	•

Parameters

Test	Parameter	Name	Default	Min	Max	Note(s)
301	1	Display Initial Test Message	FALSE	FALSE	TRUE	Specifies whether or not to display a test dialogue box before the test runs
302	1	Display Initial Test Message	FALSE	FALSE	TRUE	
303	1	Display Initial Test Message	FALSE	FALSE	TRUE	
304	1	Display Initial Test Message	FALSE	FALSE	TRUE	
305	1	Display Initial Test Message	FALSE	FALSE	TRUE	
306	1	Display Initial Test Message	FALSE	FALSE	TRUE	
307	1	Display Initial Test Message	FALSE	FALSE	TRUE	
308	1	Display Initial Test Message	FALSE	FALSE	TRUE	
309	1	Display Initial Test Message	FALSE	FALSE	TRUE	
310	1	Display Initial Test Message	FALSE	FALSE	TRUE	
	2	Screen Period	5	1	60	How long (in seconds) each pattern must be shown

Descriptions

301 - Red Purity

The display is filled completely red. Any pixels not coloured red indicate a DAC problem, colour gun misalignment, or burned-out LCD panel element. This test is especially valuable for LCD panels.

Test Time: 3s

302 - Green Purity

The display is filled completely green. Any pixels not coloured green indicate a DAC problem, colour gun misalignment, or burned-out LCD panel element. This test is especially valuable for LCD panels.

Test Time: 3s

303 - Blue Purity

The display is filled completely blue. Any pixels not coloured blue indicate a DAC problem, colour gun misalignment, or burned-out LCD panel element. This test is especially valuable for LCD panels.

Test Time: 3s

304 - Mesh

The display is completely filled with an alternating one-zero mesh pattern. Any 'splotches' of black or white indicate a DAC problem, phosphor bleeding, or LCD panel elements that are stuck off or on.

Test Time: 3s

305 - Inverse Mesh

The inverse mesh display is identical to the mesh display except that the pattern is reversed (i.e. ones become zeros and vice versa). Again, 'splotches' of black or white indicate a DAC problem, phosphor bleeding, or LCD panel elements that are stuck off or on.

Test Time: 3s

306 - White MEME

The display is completely filled with a 'MEME' pattern to allow adjustments to CRT displays.

Test Time: 3s

307 - Green MEME

The display is completely filled with a 'MEME' pattern to allow other adjustments to CRT displays.

Test Time: 3s

308 - Tonality

The tonality display consists of shaded red, green, and blue bars in addition to a variety of vertical and horizontal lines and circles. This test pattern can be used to detect colour granularity problems (i.e. transitions from one colour to the next are not smooth). In addition, it can be used to adjust the 'pincushion' control on CRT displays to attain minimal vertical skewing.

Test Time: 3s

309 - Grid

The grid display consists of single pixel wide squares, which are 16 across by 12 high with a square white box in the middle. This test pattern is used to check geometry and colour gun alignment.

Test Time: 3s

310 - LCD Dead Pixel

Testing for dead pixels is performed by displaying a series of coloured screens. The display is filled completely with the colour. Any pixels not coloured indicate a DAC problem, colour gun misalignment, or burned-out LCD panel element. This test is especially valuable for LCD panels.

There are 4 colour steps in order to cover all pixels with all colours:

- Red

- Green

- Blue

- Black

Test Time: depends on parameter

Error Codes

Error Code	Name
0x00/3FF	The operator has chosen to fail the device based on the appearance of the test
0x01/001	A function failed at the Windows® API level
0x02/3FF	A resource failure occurred
0x03/3FF	The operator has not responded in a reasonable time

Troubleshooting

Error Code(s)	Potential Reason
0x00/3FF 0x03/3FF	The operator has failed the test. Because this is an interactive only test, the operator should supply additional information to the reasons for the test failure.
0x01/001 0x02/3FF	The test failed due to a Windows® API failure. Check that your graphics drivers are up to date.

440X - FireWire

Overview

This is a test group for IEEE1394 (FireWire) hardware on the system. FireWire is a serial bus interface standard for high-speed communications and isochronous real-time data transfer.

Tests

Test	Name	I	E	M	C	Windows® XP/S2003	Windows Vista®	Windows® Server 2008	Windows® 7	Windows® 8	Windows® PE
301	IEEE1394 (FireWire)					•	•	•	•	•	•

Parameters

Test	Parameter	Name	Default	Min	Max	Note(s)
301	1	Number Of Buses	0	0	127	Number of IEEE1394 buses (Controllers) to try to detect

Descriptions

301 - IEEE1394 (FireWire)

The test counts the number of IEEE1394 buses that is required for the test to pass. The user specifies how many devices to check for via a 'Number of Buses' parameter: the test passes if it detects a corresponding number of devices, else it fails. If this parameter is set to 0, then the test will pass if at least one bus is detected.

Test Time: Less than 1 second.

Error Codes

Error Code	Name
0x00/3FF	No buses are available to perform the test
0x01/080	Incorrect number of buses detected to perform the test

Troubleshooting

Error Code(s)	Potential Reason
0x00/3FF	FireWire cabling if available incorrect. Windows® OS issues detecting device.
0x01/080	Check the test parameters for this test.

450X - Serial Ports

Overview

This is a group that tests Serial Ports. A serial port (typically designated COM) is a physical interface through which information transfers in or out one bit at a time according to the RS-232 standard. Tests are provided to verify the functionality of the serial ports as they transmit data, handle interrupts, and perform handshaking with external devices.

Note: Serial cards that have multiple serial ports must have the correct Windows® drivers loaded in order to be tested correctly.

Tests

Test	Name	I	E	M	C	Windows® XP/S2003	Windows Vista®	Windows® Server 2008	Windows® 7	Windows® 8	Windows® PE
301	Configuration Registers					•	•	•	•	•	•
302	Quick Loop-back		•			•	•	•	•	•	•
303	Baud Rates		•			•	•	•	•	•	•
304	Sustained Loop-back		•			•	•	•	•	•	•
305	Priority Transmit		•			•	•	•	•	•	•

Parameters

Test	Parameter	Name	Default	Min	Max	Note(s)
303	2	Minimum Baud Rate	300	300	921600	Minimum baud rate to test. If the entered value is not a preferred baud rate, the value is rounded down to the nearest preferred baud rate
	3	Maximum Baud Rate	115200	300	921600	Maximum baud rate to test. If the entered value is not a preferred baud rate, the value is rounded down to the nearest preferred baud rate
304	1	Test Duration	10	1	604800	Time to run the test for, seconds, maximum 1 week
	4	Baud Rate	115200	300	921600	Baud rate to test. If the entered value is not a preferred baud rate, the value is rounded down to the nearest preferred baud rate

Descriptions

301 - Configuration Registers

Tests the Configuration Settings of the serial port.

Test Time: 2s

302 - Quick Loop-back

This test performs an abbreviated loop-back test at a single baud rate, to test the port's ability to transmit and receive a short message.

Test Time: 3s

303 - Baud Rates

This test performs an abbreviated loop-back test at a variety of baud rates, specified by Min and Max values, to test the port's ability to transmit and receive a short message.

Test Time: up to 12s

304 - Sustained Loop-back

Tests the ability to withstand a transmission of sustained duration at a specified baud rate.

Test Time: dependant on parameter

305 - Priority Transmit

Tests serial port driver's priority transmit capability.

Test Time: 25s

Error Codes

Error Code	Name
0x00/3FF	The minimum and maximum baud rates are not valid
0x01/3FF	Unable to write the port configuration
0x02/3FF	The serial port is a modem and cannot be tested
0x03/3FF	Unable to transmit all the data
0x04/3FF	Unable to receive all the data
0x05/3FF	The transmitted and received data does not match
0x06/3FF	Unable to read the port configuration
0x07/3FF	The set and read configurations do not match
0x08/3FF	Unable to transmit the Priority character
0x09/3FF	Unable to receive the Priority character
0x0A/3FF	Unable to find a serial port

Troubleshooting

Error Code(s)	Potential Reason
0x00/3FF	The Minimum and Maximum baud rates may be the wrong way round. The Minimum and Maximum baud rates may be the same.
0x01/3FF 0x02/3FF 0x03/3FF 0x04/3FF 0x05/3FF 0x06/3FF 0x07/3FF 0x08/3FF 0x09/3FF 0x0A/3FF	The following are possible causes of errors: Faulty or wrong loop-back plug. Port to I/O interface (serial connector or interface chip) failure. Port does not support (all) status or flow control lines. Faulty port, device or serial chip (UART or chipset). Improper IRQ configuration. Test data rates exceed device capability.
0x08/3FF 0x09/3FF	The Priority Transmit mechanism may be inoperative.

530X - Removable Media

Overview

This is a test group for disk drives with "removable media". This includes devices which plug directly into a port, such as USB flash memory "drives", as well as those that have media which are inserted into purpose-built peripheral devices.

Note: 1. Removable media MUST be present in the appropriate devices BEFORE running the test.

Note: 2. When testing PCMCIA slots, a Removable "media" PCMCIA card with suitable "media" is a good way to test this hardware.

Note: 3. When testing removable "media" using Windows® Pre-installation Environment, both card bus driver and device drivers may need to be added to the image.

Note: 4. 1. When comparing the test parameters duration and coverage for the actual testing time this will only be the same under one condition. A set parameter coverage of 100% or a set parameter duration which has sufficient time to test to the entire media. This is because of varying algorithms and delays moving to the next test location. Other parameters may be irrelevant due to hardware access times with this type of test. This is because with a duration setting, each physical read is performed sequentially. Whereas with the coverage parameter, the reading is distributed evenly across the hardware being tested. Therefore there maybe a delay due to moving to the next hardware location.

Note: Where relevant, this group contains an advanced window that has a visual display of blocks representing the testable area of the media.

Tests

Test	Name	I	E	M	C	Windows® XP/S2003	Windows Vista®	Windows® Server 2008	Windows® 7	Windows® 8	Windows® PE
301	Linear Read			•		•	•	•	•	•	•
302	Random Read			•		•	•	•	•	•	•
303	Connectivity	•		•		•	•	•	•	•	•

Parameters

Test	Parameter	Name	Default	Min	Max	Note(s)
301	1	Duration	0	0	604800	Time to run the test for, seconds, maximum 1 week
	2	Coverage	100	1	100	The percentage of the "media" to test
	5	Windows Event Error Count	1000	0	10000	Windows® Event Error count between reads. 0 indicates the Windows® event error will not be read.
302	1	Duration	60	1	604800	
	5	Windows Event Error Count	1000	0	10000	
303	4	Time-out	30	0	120	The time-out for waiting for the media removal or reinsertion.

Descriptions

301 - Linear Read

Exercises a drive's read capability using linear (incrementally increasing) read addresses. Success or failure of each read is monitored.

302 - Random Read

Exercises a drive's read capability using pseudo-random read addresses. Success or failure of each read is monitored.

303 - Connectivity

This test checks the removable media detection functionality of the host device. This test will prompt the operator to remove and reinsert the media being tested.

Note: To test the media detection functionality, the media must be present when the group is initialised.

Error Codes

Error Code	Name
0x00/006	The buffer size read of the media does not match the buffer set to be read
0x01/005	Failed to set the position to read the media
0x02/005	General Failure to read the media
0x03/00A	The media is too small or does not exist
0x04/3FF	Unable to read the size of the media
0x05/3FF	The media has no assigned drive letters
0x06/001	The media insertion and removal events could not be configured
0x07/001	A required window could not be created
0x08/3FF	The media insertion or removal was not detected
0x09/3FF	This media is currently running the diagnostics

Troubleshooting

Error Code(s)	Potential Reason
0x00/006 0x01/005 0x02/005 0x04/3FF 0x06/001 0x07/001	Potential media issues. Possible Windows® OS issues.
0x03/00A	The size of the media is too small to be read. If the media is genuine this could be Media or Windows® OS related.
0x05/3FF	The media has no volumes with drive letters and can not be tested. Check that the media is formatted and visible on your computer.
0x08/3FF	The media insertion or removal was not detected. This could be because of a fault in the media or device for detecting the change in media. Alternatively this could be caused by the operator failing to insert or remove the media during the test.
0x09/3FF	The diagnostics are located and running from the removable media device under test. In order to test this device the diagnostics must be moved to another location.

541X - System

Overview

This group is used for testing the system as a whole. Stress testing refers to tests that determine the robustness of the system by testing up to the limits of normal operation. The Stress test puts a greater emphasis on robustness, availability, and error handling under a heavy load, than on what would be considered correct behaviour under normal circumstances.

This groups also contains information on SCSI controllers available within the system.

This group contains an advanced window that monitors the temperature of the Processors, Primary Drive and Primary Graphics card present on the system. The 550X, 260X, 700X and 570X groups should be loaded in order for the associated devices to be monitored. The Windows® Management Instrumentation Performance Adapter service will be set at automatic by the diagnostic group in order to ensure that the benchmarking operates at maximum efficiency. If this service is set at disabled or manual it may cause general benchmarking slow down and errors visible within the Windows® Event viewer.

Note: Multiple components are tested with the stress test therefore Information on the error is always be the last component to fail.

Note: Any failures during initialisation are considered catastrophic and irrespective of maximum failures testing will cease.

Note: The system stress test only currently supports up to 26 fixed drives.

Note: If the system under test has a considerable amount of memory say 32GB or more this will take some to allocate ready for testing. Therefore in this case the test time should be modified as appropriate.

Note: If the CPU temperature is unavailable then irrelevant of the parameter setting the test will not fail.

Tests

Test	Name	I	E	M	C	Windows® XP/S2003	Windows Vista®	Windows® Server 2008	Windows® 7	Windows® 8	Windows® PE
301	Stress			•		•	•	•	•	•	•
302	Sleep	•				•	•	•	•	•	
303	Hibernate	•				•	•	•	•	•	

Parameters

Test	Parameter	Name	Default	Min	Max	Note(s)
301	1	Duration	300	60	604800	Time to run the test
	2	Include Memory	TRUE	FALSE	TRUE	Include the memory in the Stress Test
	3	Include Optical	FALSE	FALSE	TRUE	Include any optical drives in the test
	4	Include Processor	TRUE	FALSE	TRUE	Include any processors in the test
	5	Include Fixed Drives	TRUE	FALSE	TRUE	Include Fixed Drives for testing i.e RAID, SSD and Hard Drive
	6	Include Video Graphics Test	TRUE	FALSE	TRUE	Include Video Graphics test
	7	Optical Media Resistance	2	1	1000	Optical Error allowance
	8	Maximum Failures	1	1	100000	Maximum number of non-catastrophic test failures before exiting
	9	Minimum Frame Rate	10	1	100000	Minimum Frame rate - only available during DirectX® test
	10	Maximum Video Card Temperature	92	1	100000	Maximum GPU Temperature
	11	Pseudo Random Seed (x64)	0x0	0x0	0xFFFFFFFF FFFFFFFF	Seed used for seeding random data and locations to use during test
	11	Pseudo Random Seed (x86)	0x0	0x0	0xFFFFFFFF	
	13	Display Sensors	TRUE	FALSE	TRUE	Output the current sensor readings on the screen - only available during DirectX® test
	14	Maximum CPU Temperature	92	1	100000	Maximum Processor Temperature - only available during DirectX® test
302	12	Force Sleep	FALSE	FALSE	TRUE	Force the sleep test to execute
303	12	Force Sleep	FALSE	FALSE	TRUE	

Descriptions

301 - Stress

Main stress test. The pseudo random seed ensures test repeatability.

Test Time: Dependent on user input.

302 - Sleep

S3 Sleep test.

Test Time: User dependant.

303 - Hibernate

S4 Sleep test.

Test Time: User dependant.

Error Codes

Error Code	Name
0x00/00C	Exceeded the maximum or minimum size of stress capabilities
0x01/008	General Error executing the test
0x02/091	General Error executing the test for the memory
0x03/090	Fatal Error executing the test for the Processor
0x04/091	Error executing the test for the Processor
0x05/001	Failed to open a device
0x06/090	General Error Executing Optical Tests
0x07/091	Failed to Read the optical Device
0x08/091	The transfer data amount is incorrect
0x09/092	Failed to Read the optical or hard drive Device
0x0A/092	The transfer data amount is incorrect
0x0B/092	Error with Video Graphics stress component
0x0C/090	Error Initialising video graphics with dependencies
0x0D/091	Failed to Set the location of media position
0x0E/091	The optical media is invalid
0x0F/019	Exceeded the maximum temperature set for the video graphics
0x10/01B	Under the minimum frame rate of video graphics
0x11/001	Failed to set sleep state
0x12/3FF	User failed to set sleep state
0x13/3FF	Sleep parameters not being set to force the test
0x14/090	General Error executing the test for the memory
0x15/090	Fatal Error executing the test for the video memory
0x16/3FF	A dependency on the sleep test is not available
0x17/091	Error with Video Graphics stress component
0x18/091	The media to be tested is too small
0x19/019	Exceeded the maximum temperature set for the processor

Troubleshooting

Error Code(s)	Potential Reason
0x00/00C 0x01/008 0x03/090 0x05/001 0x0F/019 0x10/01B 0x14/090 0x15/090 0x17/091 0x19/019	General Error executing stress tests.
0x02/091	Memory component of stress has failed.
0x04/091	CPU component of stress has failed.
0x06/090 0x07/091 0x08/091 0x0D/091 0x0E/091 0x18/091	Optical component of stress has failed. Check the media quality and size.
0x09/092 0x0A/092 0x0D/091 0x18/091	Main fixed drive component of stress has failed.
0x0B/092 0x0C/090	Video graphics component failed. Check video graphics drivers and card if available. If the error is based on the dependencies make sure you either have DirectX available.
0x13/3FF	The sleep tests must be explicitly enabled through the force sleep parameter.
0x11/001 0x12/3FF 0x16/3FF	Most likely to be a Windows® OS related issue.
0x0F/019 0x19/019	Check temperature thresholds for stress test they maybe too low for the system.
0x00/00C	No components of stress test selected to run.

550X - Processor

Overview

This group is a processor test group that consists of nine tests that can be run on various instruction sets supported by the logical processors (i.e. hardware-implemented threads) of the computer system: Core Instruction Set Test, Floating Point Instruction Set, MMX Instruction Set and SSE Instruction Sets.

Each device identified by this group represents a physical processor package.

Note: Each set of tests when selected are executed on every processor core.

Tests

Test	Name	I	E	M	C	Windows® XP/S2003	Windows Vista®	Windows® Server 2008	Windows® 7	Windows® 8	Windows® PE
301	Core Instruction Set					•	•	•	•	•	•
302	Floating Point Instruction Set					•	•	•	•	•	•
303	MMX Instruction Set					•	•	•	•	•	•
304	SSE Instruction Set					•	•	•	•	•	•
305	SSE2 Instruction Set					•	•	•	•	•	•
306	SSE3 Instruction Set					•	•	•	•	•	•
307	SSE 4.1 Instruction Set					•	•	•	•	•	•
310	Cache Functionality					•	•	•	•	•	•
311	SSE 4.2 Instruction Set					•	•	•	•	•	•
312	SSE 4A Instruction Set					•	•	•	•	•	•
313	Multi-core					•	•	•	•	•	•
314	Multi-processor					•	•	•	•	•	•
315	Core Priority					•	•	•	•	•	•
316	Thermal Stress					•	•	•	•	•	•
317	Power Stress					•	•	•	•	•	•
318	CPU Fan Test					•	•	•	•	•	•
319	CPU Temperature					•	•	•	•	•	•

Parameters

Test	Parameter	Name	Default	Min	Max	Note(s)
310	1	Duration	30	1	604800	The duration of the test in seconds
316	1	Duration	30	5	604800	
	2	Maximum Temperature	95	0	200	The maximum temperature the processor can reach during test
317	1	Duration	30	5	604800	
	3	Maximum Power	150	0	500	The maximum power the processor can draw during test
318	6	Minimum CPU Fan Speed	2000	0	5000	Minimum speed of the CPU fan in RPM.
319	4	Minimum Temperature Value	20	0	100	Minimum Temperature value. (Celsius)
	5	Maximum Temperature Value	80	0	100	Maximum Temperature value. (Celsius)

Descriptions

301 - Core Instruction Set

This test performs certain CPU operations and checks the results against expected results. The CPU Test is made up of the following categories:

General:

Loads registers with patterns, performs operations that affect certain flags, and then checks to see that everything is operating correctly.

Arithmetic:

Performs various addition, subtraction, multiplication, and division operations and verifies against expected results.

Logic:

Tests shift and rotate instructions.

Test Time: 4s

302 - Floating Point Instruction Set

The first seven sub-tests apply maths operations to the Numeric Coprocessor to see if it is functioning properly. The operation is compared to the expected result. A failure indicates a variance to the expected result.

Test Time: 4s

303 - MMX Instruction Set

The MMX Basic Functionality test verifies basic MMX instructions on processors that support the MMX instruction set.

Test Time: 4s

304 - SSE Instruction Set

Finds faults with SSE instructions, including:

-Data conversion instructions

-Integer arithmetic instructions

-Integer comparison instructions

-Integer logic instructions

-Floating point arithmetic instructions (including square root approximation)

Floating point comparison instructions

-Floating point logic instructions

Test Time: 4s

305 - SSE2 Instruction Set

The SSE2 Instruction Set Test finds faults with SSE2 instructions, including:

-Data conversion instructions

-Integer arithmetic instructions

-Integer comparison instructions

-Integer logic instructions

-Floating point arithmetic instructions (including square root approximation)

-Floating point comparison instructions

-Floating point logic instructions

Test Time: 4s

306 - SSE3 Instruction Set

The SSE3 Instruction Set Test finds faults with SSE3 instructions, including:

- Add-Subtract-Packed-Double

-Add-Subtract-Packed-Single

-Horizontal-Add-Packed-Double

-Horizontal-Add-Packed-Single

-Horizontal-Subtract-Packed-Double

-Horizontal-Subtract-Packed-Single

-Misaligned integer vector load

-Move Double precision floating point numbers to XMM

-Pop floating point Register Stack

Test Time: 4s

307 - SSE 4.1 Instruction Set

This Test finds faults with SSE4 instructions.

Test Time: 4s

310 - Cache Functionality

The Cache test checks the processor data and instruction caches to ensure they function as designed and free from faults.

The processor data caches are checked by performing a series of operations designed to utilise and stress the caches with a series of data patterns to ensure functionality.

Test Time: Dependent on test parameter.

311 - SSE 4.2 Instruction Set

The SSE 4.2 Instruction Set Test finds faults with SSE 4.2 instructions. These instructions are string and text comparison and a cyclic redundancy check (CRC) test.

Test Time: 1s

312 - SSE 4A Instruction Set

The SSE 4.A Instruction Set Test finds faults with the SSE 4.A instructions. These instructions are for performing bit manipulation or streaming without using the processor caches.

Test Time: 1s

313 - Multi-core

The Multi-core test checks each core in the processor to ensure it is working as expected.

Test Time: 1s

314 - Multi-processor

The Multi-processor test checks each processor to ensure its functionality.

Test Time: 1s

315 - Core Priority

The core priority test finds faults with thread priority switching on each of the cores in the system.

Test Time: 1s

316 - Thermal Stress

This test checks the Thermal Power Dissipation of the processor. While running a processor stress algorithm, the temperature of the processor will be monitored to ensure heat is being dissipated correctly.

Note: Most processors have an internal temperature threshold that, if reached, will cause the system to shut down. If this occurs during testing then it should be treated as a test failure.

Test Time: Dependent on test parameter

317 - Power Stress

This test checks the power draw of the processor. While running a processor stress algorithm, the power draw of the processor will be monitored to ensure the processor is not over-drawing.

Test Time: Dependent on test parameter

318 - CPU Fan Test

CPU Fan speed test. The test checks whether the CPU fan speed is greater than the minimum speed specified by the parameters.

Test Time: 1 Second

319 - CPU Temperature

CPU Temperature test. The test checks whether the CPU temperature resides between a minimum and a maximum value specified by the parameters.

Test Time: 1 Second

Error Codes

Error Code	Name
0x00/3FF	The test for this processor cannot be executed because it is not supported
0x01/009	Failed to set the core for this test
0x02/3FF	Failed to initialise external library in order to perform testing
0x03/3FF	Failed SSE 4.1 instructions test
0x04/3FF	Failed SSE 3 instructions test
0x05/3FF	Failed SSE 4.1 instructions test
0x06/3FF	Failed MMX instructions test
0x07/3FF	Failed Floating point instructions test
0x08/3FF	Failed Core instructions test
0x09/3FF	Failed SSE 4.2 instructions test
0x0A/3FF	Failed SSE instructions test
0x0B/3FF	Failed SSE 2 instructions test
0x0C/3FF	Failed Core sign bit test
0x0D/3FF	Failed Core carry bit test
0x0E/3FF	Failed Core zero bit test
0x0F/3FF	Failed Core parity bit test
0x10/3FF	Failed Core RCX register test
0x11/3FF	Failed Core RDX register test
0x12/3FF	Failed Core R8 register test
0x13/3FF	Failed Core R9 register test
0x14/3FF	Failed Core shift left test
0x15/3FF	Failed Core shift right test
0x16/3FF	Failed Core addition test
0x17/3FF	Failed Core subtraction test
0x18/3FF	Failed Core multiplication test
0x19/3FF	Failed Core division test
0x1A/3FF	This instruction set has been deprecated for 64 bit platforms
0x1B/3FF	The cache test has failed
0x1C/080	The priority test has failed
0x1D/080	The processor reading is outside of the tolerance
0x1E/019	The temperature result was outside the tolerance

Error Code	Name
0x1F/3FF	Unable to find sensor
0x20/3FF	The result was outside the tolerance

Error Code	Name
0x1F/3FF	Unable to find sensor
0x20/3FF	The result was outside the tolerance

Troubleshooting

Error Code(s)	Potential Reason
0x00/3FF	The processor does not have the capabilities to perform the test.
0x01/009 0x03/3FF 0x04/3FF 0x05/3FF 0x06/3FF 0x07/3FF 0x08/3FF 0x09/3FF 0x0A/3FF 0x0B/3FF 0x0C/3FF 0x0D/3FF 0x0E/3FF 0x0F/3FF 0x10/3FF 0x11/3FF 0x12/3FF 0x13/3FF 0x14/3FF 0x15/3FF 0x16/3FF 0x17/3FF 0x18/3FF 0x19/3FF 0x1B/3FF 0x1C/080 0x1D/080	Potential processor silicon failure. Unlikely Windows® OS issue.
0x02/3FF	Ensure all files are available for testing.
0x1A/3FF	These instruction sets are no longer supported natively on your processor. Newer instruction sets are now available
0x1E/019 0x1F/3FF 0x20/3FF	Sensor test issue. Either the sensor does not exist or the test result is outside the expected tolerance

561X - Audio

Overview

This test group is designed to test the PC audio subsystem. The electrical characteristics of audio subsystems vary from manufacturer to manufacturer.

In the majority of cases the Quick tests and Audio Connection test will be sufficient to test the core functionality of your audio devices.

In most cases the other audio tests require that a loop-back cable be connected from the LINE OUT jack to either or both the LINE IN or MIC IN. Consequently, the actual speakers will not be connected during most of these tests.

Tests

Test	Name	I	E	M	C	Windows® XP/S2003	Windows Vista®	Windows® Server 2008	Windows® 7	Windows® 8	Windows® PE
302	Audio Connection		•				•	•	•	•	•
303	Loop-back Count		•			•	•	•	•	•	
304	Advanced Quality		•			•	•	•	•	•	
305	Quick Microphone	•			•	•	•	•	•	•	
306	Quick System Sound	•			•	•	•	•	•	•	

Parameters

Test	Parameter	Name	Default	Min	Max	Note(s)
302	3	Test Connection Count	0	0	100	Count of jacks expected
303	1	Tolerance Percentage	10	1	100	The tolerance for received signals
	4	Test Loop-back Count	1	0	10	Count of loop-back connections expected
304	1	Tolerance Percentage	30	0	100	

Descriptions

302 - Audio Connection

The Audio connection test checks the system as a whole to confirm Jack sense functionality. To configure this test, initialise the group with no jacks plugged in and check the device information. The count of jacks given is the number of internal jacks connected.

If you wish to run interactively, set the parameter of 0 run the test and follow the instructions. To run automated, insert the count of jacks you wish to test and set the jack count parameter to equal the internal and additional jacks combined.

If the count of jacks detected does not equal the count of jacks expected, this test will fail.

Note: Not all sound devices support jack detection.

Test Time: 1s.

303 - Loop-back Count

The loop-back test checks the functionality of playback and recording on the system for ports with loop-backs connected. Once a loop-back is confirmed, it is recorded for use by the Advanced Quality test.

Note: A value of 0 for the Loop-back count parameter will check for at least one loop-back connection. If none are found using this parameter then the test will return not available.

Test Time: 10-60s.

304 - Advanced Quality

Each loop-back found by test 303 that supports 2 channels on the device is tested, to confirm the overall quality of the audio input and output.

Note: Test 303 must pass before this test is run.

Test Time: 10-60s.

305 - Quick Microphone

This interactive test will display a visual indicator of the level of sound detected from the microphone.

After at least 50% of the maximum sound levels is detected, the pass button will be enabled.

Test Time: Depending on user input.

Note: To ensure Windows® PE compatibility, the relevant audio drivers will need to be included in the Windows® PE package.

306 - Quick System Sound

The sound-play test is designed to test the functionality of the speakers or audio ports on the system. This interactive test contains several buttons to play a short sound through the Left, Right or Both speakers. The test window also includes a volume slider so that the sound range can be tested. Once all three sounds have been played, the green Pass button will become enabled.

Note: Windows® and any relevant audio connections will need to be configured prior to running each audio device or card.

Note: The sound playing is controlled by windows® and will play on all audio devices present. It is recommended to run the test more than once to check each of your audio devices in turn.

Note: It is recommended to remove all loop-backs connected to the system to ensure speakers connected are used. The Windows® volume should also be set to a reasonable level.

Note: To ensure Windows® PE compatibility, the relevant audio drivers will need to be included in the Windows® PE package.

Test Time: Dependent on user input.

Error Codes

Error Code	Name
0x00/00E	Unable to output sound
0x01/00E	Unable to record sound
0x02/00E	Unable to open mixer
0x03/00E	Received wave was outside tolerance
0x04/00E	The Input and Output device cannot be tested
0x05/00F	Unable to render sound
0x06/00F	Unable to capture sound
0x07/00F	The left channel signal was too small to test
0x08/00F	The right channel signal was too small to test
0x09/00F	The left channel signal was not within tolerances
0x0A/00F	The right channel signal was not within tolerances
0x0B/3FF	No Audio Jacks were detected
0x0C/002	An incorrect count of jacks were detected
0x0D/3FF	The operator chose to fail the test
0x0E/3FF	The sound could not be played
0x0F/3FF	The count of jacks was not set
0x10/014	The count of jacks did not change
0x11/002	The number of detected loop-backs did not match the Test Loop-back Count setting
0x12/3FF	The Loop-back Count Test must pass before this test is run
0x13/3FF	No stereo loop-backs were enumerated
0x14/00F	Received wave was outside tolerance
0x15/3FF	The tolerance parameter has not been set to a valid value.
0x16/001	Unable to create test window
0x17/3FF	The Operator chose to fail the test
0x18/3FF	Unable to set the volume
0x19/001	Failed to open Microphone handle
0x1A/3FF	The Microphone test is not supported on this system
0x1B/3FF	The Operator did not respond

Troubleshooting

Error Code(s)	Potential Reason
0x00/00E 0x01/00E 0x02/00E 0x04/00E 0x05/00F 0x06/00F 0x09/00F 0x0A/00F 0x0D/3FF 0x0E/3FF 0x14/00F 0x16/001 0x17/3FF 0x18/3FF 0x19/001 0x1A/3FF 0x1B/3FF	Potential hardware issue. Check if drivers are installed and up to date for the sound card.
0x00/00E 0x01/00E 0x03/00E 0x04/00E 0x05/00F 0x06/00F 0x07/00F 0x08/00F 0x09/00F 0x0A/00F 0x0B/3FF 0x0C/002 0x11/002 0x13/3FF 0x14/00F	Potential hardware issue. Check that loop-back plugs are inserted and that the correct port is being tested.
0x03/00E 0x0C/002 0x0F/3FF 0x11/002 0x12/3FF 0x14/00F 0x15/3FF	The test parameters are invalid for this device.
0x10/014	Check that jack detect is supported. A result of NOT AVAILABLE can be caused by the operator failing to remove the Audio Jack or a genuine fault.

570X - Display Adapter

Overview

This is a group that tests graphics hardware (the 'graphics card' not the monitor). It incorporates two of our most successful memory test algorithms to test the on-board graphics memory and a new 3D render test to verify the GPU is functioning correctly. A linear memory test has also been included to provide memory testing capabilities when Microsoft Windows® DirectX9 is unavailable.

Note: 1. When comparing the test parameters duration and coverage for the actual testing time this will only be the same under one condition. A set parameter coverage of 100% or a set parameter duration which has sufficient time to test to the entire memory. This is because of varying algorithms and delays moving to the next test location.

Note: 2. Other parameters may be irrelevant due to hardware access times with this type of test.

Note: 3. This is because with a duration setting, each physical read is performed sequentially. Whereas with the coverage parameter, the reading is distributed evenly across the hardware being tested. Therefore there maybe a delay due to moving to the next hardware location.

Note: 4. If you using Windows® Pre-installation Environment then other diagnostic groups should be considered for testing video memory.

Tests

Test	Name	I	E	M	C	Windows® XP/S2003	Windows Vista®	Windows® Server 2008	Windows® 7	Windows® 8	Windows® PE
301	Linear Memory					•	•	•	•	•	
302	Micro-topology Memory					•	•	•	•	•	
303	Chaotic Addressing Memory					•	•	•	•	•	
304	Hardware Acceleration					•	•	•	•	•	
305	Graphics Card Temperature					•	•	•	•	•	•

Parameters

Test	Parameter	Name	Default	Min	Max	Note(s)
302	1	Duration	60	1	604800	Maximum Testing time in seconds, this can be up to 7 days.
303	1	Duration	60	1	604800	
304	1	Duration	60	1	604800	
305	2	Minimum Temperature	20	0	100	Minimum test range value (Celsius).
	3	Maximum Temperature	80	0	100	Maximum test range value (Celsius).

Descriptions

301 - Linear Memory

The Linear Memory Test performs a basic memory test on all accessible video memory. The test works by filling the screen with a colour, then individually checking that each pixel is displaying this colour.

Note: This test cannot detect 'dead pixels' in an LCD display; only defective video memory.

Note: User interaction during the Linear Memory test should be avoided; as such interaction may cause the Operating System to update the screen and may result in erroneous results for this test.

302 - Micro-topology Memory

This test uses a complex mathematical addressing method designed to stimulate physically adjacent bit cells, effective even where the precise physical arrangement of the device is unknown. This test is also very sensitive to issues of noise and timing in the memory system design as a whole.

Test Time: Dependant on the duration test setting.

303 - Chaotic Addressing Memory

Memory is addressed in non-repeating pseudo-random sequences that are designed not to resolve to the same cells twice. The addressing and test data sequences are subsequently regenerated to ensure that data was not misdirected due to an addressing error or subject to a coupled fault.

Test Time: Dependant on the duration test setting.

304 - Hardware Acceleration

The Hardware Acceleration Test renders randomly generated 3-dimensional scenes with a video card's hardware acceleration and compares the resulting image with an emulated software rendering. If the difference between the hardware and software rendered frames exceeds a reasonable threshold (i.e. more than a variation in anti-aliasing algorithms), the test fails. If DirectX hardware is not supported then the rendering part of the algorithm is only performed.

305 - Graphics Card Temperature

Graphics Card Temperature. The test checks the temperature of the graphics card to reside between a minimum and a maximum value specified by the parameters.

Test Time: 1 Second

Error Codes

Error Code	Name
0x00/001	Unable to create window class
0x01/001	Unable to create window
0x02/001	Unable to set window parameters
0x03/3FF	Unable to update window
0x04/001	Unable to get control of window
0x05/3FF	Unable to set draw mode
0x06/001	Unable to set window size
0x07/007	Incorrect pixel detected
0x08/3FF	DirectX9 is not supported
0x09/3FF	Could not find Ship Model Resource
0x0A/001	Failed to initialise Z-Buffer
0x0B/001	Failed to initialise graphics
0x0C/3FF	Failed to initialise lights
0x0D/3FF	Failed to initialise font
0x0E/3FF	Failed to validate device
0x0F/3FF	Dx9 software rendering unavailable
0x10/3FF	The software and hardware rendered frames do not match
0x11/3FF	Unable to allocate texture memory
0x12/008	General Error allocating texture memory
0x13/3FF	The memory set and compared did not match
0x14/008	General error testing memory
0x15/001	Could not lock the texture memory
0x16/001	Could not unlock the texture memory
0x17/3FF	Error while rendering
0x18/3FF	Unknown format of DX9
0x19/019	The temperature result was outside the tolerance
0x1A/3FF	Unable to find sensor

Troubleshooting

Error Code(s)	Potential Reason
0x00/001 0x01/001 0x02/001 0x03/3FF 0x04/001 0x05/3FF 0x06/001 0x18/3FF	The test is unable to run because of a window failure. This could be caused by missing or incorrect display drivers or another application taking control of the window.
0x08/3FF 0x0A/001 0x0B/001 0x0C/3FF 0x0D/3FF 0x0E/3FF 0x0F/3FF 0x12/008 0x14/008 0x15/001 0x16/001 0x18/3FF	The test has failed due to a DX9 error. This could be caused by a missing or unsupported DX9 installation or a genuine fault with your device.
0x07/007 0x09/3FF 0x10/3FF 0x11/3FF 0x13/3FF 0x17/3FF 0x18/3FF	A failure has been detected with your device. This could be a genuine fault with your device or missing or incorrect device drivers. Note: For video cards with less than 32MB video memory the test may fail.
0x19/019 0x1A/3FF	Sensor test failed. Either the sensor does not exist or the test value is outside the tolerance

590X - Video Capture

Overview

CAP is a test group for capture devices. Capture devices receive data from items such as video cameras, DVD players or television antennae. The group consists of ten tests that can be run on a device. Included with the group are five tests that check basic functionality, the Capture Driver tests.

If a device is found, it is scanned for the different types of input it offers. If the inputs detected are of an unrecognised type then the Capture Driver Test can then be run to ensure basic functionality.

If the device only offers one video input, only the Capture Test is made available. If the device offers different inputs, the Group offers a test for each of the available inputs.

These tests facilitate performing a high-quality check of the device and its configuration by interactively checking the actual data received.

Tests

Test	Name	I	E	M	C	Windows® XP/S2003	Windows Vista®	Windows® Server 2008	Windows® 7	Windows® 8	Windows® PE
301	Capture Driver					•	•	•	•	•	•
302	Composite Capture Driver					•	•	•	•	•	
303	S-Video Capture Driver					•	•	•	•	•	
304	TV Capture Driver					•	•	•	•	•	
305	RGB Capture Driver					•	•	•	•	•	
316	Capture	•			•	•	•	•	•	•	
317	Composite Capture	•				•	•	•	•	•	
318	S-Video Capture	•				•	•	•	•	•	
319	TV Capture	•				•	•	•	•	•	
320	RGB Capture	•				•	•	•	•	•	

Parameters

Test	Parameter	Name	Default	Min	Max	Note(s)
301	1	Use the preview pin	0	0	1	Whether the capture pin (default) or preview pin should be used
302	1	Use the preview pin	0	0	1	
303	1	Use the preview pin	0	0	1	
304	1	Use the preview pin	0	0	1	
305	1	Use the preview pin	0	0	1	
316	1	Use the preview pin	0	0	1	
317	1	Use the preview pin	0	0	1	
318	1	Use the preview pin	0	0	1	
319	1	Use the preview pin	0	0	1	
320	1	Use the preview pin	0	0	1	

Descriptions

301 - Capture Driver

This test will check that the device has basic functionality.

302 - Composite Capture Driver

This test will check that the device has basic functionality.

303 - S-Video Capture Driver

This test will check that the device has basic functionality.

304 - TV Capture Driver

This test will check that the device has basic functionality.

305 - RGB Capture Driver

This test will check that the device has basic functionality.

316 - Capture

This digital test will try to display an input capture signal and display it on the interactive test window.

If the video quality is satisfactory then the green button should be pressed to pass the test.

Note: If the port being tested does not have a signal attached, the display is likely to be a pure blue screen. Input signals can be delivered to the port under test by devices such as video cameras, DVD players or television antennae.

Note: For this test to be available, suitable device drivers need to be loaded on the system under test.

317 - Composite Capture

This analogue test will try to connect an output pin on a source filter to a sink filter, and set the appropriate input port.

If the video quality is satisfactory then the green button should be pressed to pass the test.

Note: If the port being tested does not have a signal attached, the display is likely to be a pure blue screen. Input signals can be delivered to the port under test by devices such as video cameras, DVD players or television antennae.

Note: For this test to be available, suitable device drivers need to be loaded on the system under test.

318 - S-Video Capture

This analogue test will try to connect an output pin on a source filter to a sink filter, and set the appropriate input port.

If the video quality is satisfactory then the green button should be pressed to pass the test.

Note: If the port being tested does not have a signal attached, the display is likely to be a pure blue screen. Input signals can be delivered to the port under test by devices such as video cameras, DVD players or television antennae.

Note: For this test to be available, suitable device drivers need to be loaded on the system under test.

319 - TV Capture

This analogue test will try to connect an output pin on a source filter to a sink filter, and set the appropriate input port.

If the video quality is satisfactory then the green button should be pressed to pass the test.

Note: If the port being tested does not have a signal attached, the display is likely to be a pure blue screen. Input signals can be delivered to the port under test by devices such as video cameras, DVD players or television antennae.

Note: For this test to be available, suitable device drivers need to be loaded on the system under test.

320 - RGB Capture

This analogue test will try to connect an output pin on a source filter to a sink filter, and set the appropriate input port.

If the video quality is satisfactory then the green button should be pressed to pass the test.

Note: If the port being tested does not have a signal attached, the display is likely to be a pure blue screen. Input signals can be delivered to the port under test by devices such as video cameras, DVD players or television antennae.

Note: For this test to be available, suitable device drivers need to be loaded on the system under test.

Error Codes

Error Code	Name
0x00/001	Failed to pause the captured video test
0x01/001	Failed to run the captured video test
0x02/001	Failed to stop the captured video test
0x03/3FF	User chose to fail the test
0x04/001	Internal Error Control capture window
0x05/001	Failed to set window style
0x06/001	Failed to show the window
0x07/001	Internal Error
0x08/001	Failed to initialise the graph builder
0x09/001	Failed to create device enumeration
0x0A/3FF	The device available does not match the test to be executed
0x0B/3FF	The User did not respond

Troubleshooting

Error Code(s)	Potential Reason
0x00/001 0x01/001 0x02/001 0x03/3FF 0x04/001 0x05/001 0x06/001 0x07/001 0x08/001 0x09/001 0x0B/3FF	Windows® driver issues. Capture card issues.
0x0A/3FF	The device does not have the required capabilities for the test.
0x03/3FF	If it is testing a USB style Camera there may not be enough power for the device, especially it working off a non-powered hub.

610X - Battery

Overview

BAT is a test group for batteries. The battery group of tests has been designed to test the charging circuit and battery device attached to the system.

Tests

Test	Name	I	E	M	C	Windows® XP/S2003	Windows Vista®	Windows® Server 2008	Windows® 7	Windows® 8	Windows® PE
303	Voltage					•	•	•	•	•	•
305	Performance					•	•	•	•	•	•
306	Quick State	•				•	•	•	•	•	•
308	Core Recognition					•	•	•	•	•	•
309	Advanced State	•				•	•	•	•	•	•

Parameters

Test	Parameter	Name	Default	Min	Max	Note(s)
303	2	Minimum Voltage	10	1	50	Minimum Voltage in Volts
	3	Maximum Voltage	20	1	50	Maximum Voltage in Volts
305	1	Duration	600	360	604800	Time to run the test, in seconds, maximum 1 week
	4	Charge Threshold	2000	100	10000	Battery charge loss threshold in mWh
309	1	Duration	120	60	604800	

Descriptions

303 - Voltage

The Battery should be between 10 and 95% charged. Therefore it may be necessary to exercise the system unplugged with another test before executing this one. Measures the voltage rating for the battery in the system. If the voltage value supported by the system lies between Minimum Voltage and Maximum Voltage the test will pass.

Test Time: Approximately 4s

305 - Performance

The Performance test will attempt to add extra load to the system to increase battery charge usage for the duration of this test. The discharge of the battery will be checked to ensure the total consumed charge does not exceed the given Threshold. If the Battery charge is above 95% then the test will wait up to five minutes for the battery to discharge to a testable value. The duration parameter is the duration of the test after reaching 95% charge.

Test Time: Dependant on the duration

306 - Quick State

The Quick state test checks the power jack detection of the system's battery charging circuit. The user will be prompted to insert or remove the power jack, depending on the connectivity on the test start. If the state change is detected correctly then the user will be prompted to remove or reinsert the power jack once more. If this is successfully detected then the test will pass.

Test Time: Dependant on user input

308 - Core Recognition

Windows® Core detection of required functionality.

309 - Advanced State

The Advanced State test checks the discharge and charge states of the system's battery under load. It ensure the state returns to charging after discharging.

Note: If the Battery charge is above 95% then the test will wait up to five minutes for the battery to discharge to a testable value.

Test Time: Dependant on the duration

Error Codes

Error Code	Name
0x00/003	Battery charge is over 95%
0x01/003	Battery charge is under 10%
0x02/3FF	Battery charge has failed to discharge during the test
0x03/3FF	Battery voltage is outside the range of test settings
0x04/3FF	Unable to find a battery to test
0x05/3FF	Battery charge or discharge state detected as incorrect
0x06/3FF	Battery is not detected as rechargeable
0x07/3FF	Timed out detecting removal or insertion of ac adapter
0x08/3FF	Unable to retrieve the battery charge rate
0x09/3FF	Unable to retrieve the battery state
0x0A/3FF	Battery charge is over 95% after 5 minutes of testing
0x0B/018	The charge rate was outside the threshold
0x0C/3FF	The voltage test is not available on this battery
0x0D/001	An error occurred with the interactive test window

Troubleshooting

Error Code(s)	Potential Reason
0x00/003 0x01/003 0x0A/3FF	The battery in it's current charge state is not suitable for testing as it is required to be between 10 and 95%. The battery should be charged or discharged as required prior to test execution.
0x02/3FF 0x03/3FF 0x04/3FF 0x05/3FF 0x06/3FF 0x08/3FF 0x09/3FF 0x0B/018	Potential general battery failure. It is advisable to review your test settings as newer systems require longer discharge times. The system battery may require being less than default value especially if it is a tablet.
0x07/3FF	Timed out awaiting a response from the user. This could mean that the system does not support detection of the AC Adapter.
0x08/3FF 0x0C/3FF	On older systems there is potential that the charge or discharge reading is invalid or not supported.
0x0D/001	Unknown error unrelated to the battery.
0x02/3FF 0x03/3FF 0x04/3FF 0x05/3FF 0x06/3FF 0x08/3FF 0x08/3FF 0x09/3FF 0x0B/018 0x0C/3FF	This may occur due to a windows driver (Battery or Charging circuitry) related issue or malfunction in the electronics in the battery or the charging circuit.

620X - Optical

Overview

OPT is a group that tests optical hardware: CDR, CDRW, DVDR and DVDRW. There are a number of tests within this group covering reading, writing and Mechanical stress. Write tests are also available for both ISO images and simple directory transfer.

Supported Media

Assuming the media is supported by the device under test, the following media are supported:

CD-ROM, CD-R, CD-RW

DVD-ROM, DVD-R, DVD+R, DVD-RW, DVD+RW, DVD-DL

The following media are not supported: CD-Audio (All types), VCD, SVCD DVD-Audio (All types), DVD-Video (All types), DVD-RAM The tests does not currently support Blue Ray or HD DVD devices.

When testing on a DVD drive the test requires there to be DVD media in the drive with sufficient data for the test to be run. If the media is a CD then the tests will not be available, this also happens if the DVD does not have enough data for a good sample.

If there is no media in the drive and the user setting is interactive the media will be requested if no media is inserted a test failure will result. In non-interactive mode this will result in the test not being available.

Note: Where relevant, this group contains an advanced window that has a visual display of blocks representing the testable area of the media.

Note: It is very important during the tests that no other applications are also reading the media as this may affect the test result.

Tests

Test	Name	I	E	M	C	Windows® XP/S2003	Windows Vista®	Windows® Server 2008	Windows® 7	Windows® 8	Windows® PE
301	Linear Read			•		•	•	•	•	•	•
302	Random Read			•		•	•	•	•	•	•
303	Advanced Movement			•		•	•	•	•	•	•
304	Media Erase			•		•	•	•	•	•	•
305	Directory Write			•		•	•	•	•	•	•
306	ISO Image Write			•		•	•	•	•	•	•
307	Media Eject					•	•	•	•	•	•

Parameters

Test	Parameter	Name	Default	Min	Max	Note(s)
301	1	Duration	0	0	604800	Time to run the test for, seconds, maximum 1 week
	2	Coverage	100	1	100	Percentage of media to check
	7	Minimum Transfer Rate	15	0	1000	The minimum transfer speed the drive is allowed to reach before failing the test. This is in KB/S
	9	Maximum Errors	TRUE	1	50	Continues to test until the maximum number of errors is reached. These are only errors directly associated with reading the drive.
	10	Windows Event Error Count	1000	0	10000	Windows® Event Error count between reads. 0 indicates the Windows® event error will not be read.
302	1	Duration	60	1	604800	
	7	Minimum Transfer Rate	15	0	1000	
	9	Maximum Errors	TRUE	1	50	
	10	Windows Event Error Count	1000	0	10000	
303	1	Duration	60	1	604800	
	9	Maximum Errors	TRUE	1	50	
	10	Windows Event Error Count	1000	0	10000	
304	3	Eject or Reload Disc	TRUE	FALSE	TRUE	Eject or Reload disc after test.

Test	Parameter	Name	Default	Min	Max	Note(s)
305	3	Eject or Reload Disc	TRUE	FALSE	TRUE	
	4	Directory	"."	1	MAX_PATH	Path to an existing directory to be written to the disc. Files in this directory will be written to the root of the disc. When left blank, the test will write default test files to the root of the disc.
	5	Recursive	FALSE	FALSE	TRUE	True sets the test to include the writing of sub directories present in the specified directory of the Directory parameter. False sets the test to ignore sub directories present in the specified directory of the Directory parameter.
306	3	Eject or Reload Disc	TRUE	FALSE	TRUE	
	6	Filename	"."	1	MAX_PATH	Put in the path and Filename to the file to write.

Descriptions

301 - Linear Read

Performs read testing of the chosen media in the device using a basic reading algorithm. Test medium must have at least 50MB of data, more is recommended. The higher the data content of the media the better the test.

Test Time: Dependant on parameters.

302 - Random Read

Performs read testing of the chosen media in the device using a complex reading algorithm. Test medium must have at least 50MB of data, more is recommended. The higher the data content of the media the better the test.

Test Time: Dependant on parameters.

303 - Advanced Movement

Applies the maximum amount of stress to the laser positioning actuator for the duration of the test. Test medium must have at least 50MB of data, more is recommended. The higher the data content of the media the better the test.

The Advanced movement test includes a Laser Refocusing test, used for checking that the laser can refocus accurately. This test is dependent on the type of media inserted. If a Multi layer disc is inserted then the refocusing across the layers is also tested.

Test Time: Dependent on parameters.

304 - Media Erase

Tests the devices ability to erase an erasable disc. A device or medium fault will cause this test to fail. Test medium must be erasable and supported by the device.

Test Time: Dependent on the amount of data on the media.

305 - Directory Write

Tests the devices ability to write a directory structure. The test will write files from a specified directory source to the root of the disc. If no directory is specified then default test files are used. The test can also be set to include or exclude sub directories. Test medium must be writable and supported by the device.

Note: Directory structures written to disc must not exceed 100MB.

Note: The default "." means that the current working directory will be written to the medium. If medium is blank default parameter values execute without error.

Test Time: Dependant on the size of the directory being written.

306 - ISO Image Write

Tests the devices ability to write an ISO image. Test medium must be writable and supported by the device. Correct media type must be present.

Note: Images used must not exceed 100MB and be of type ISO only.

Note: The default value must be set with a valid ISO image or the test will not be available.

Test Time: Dependent on the size of the ISO file being written.

307 - Media Eject

Tests the devices ability to eject the media.

Test Time: 1s

Error Codes

Error Code	Name
0x00/00A	The medium inserted is too small to give meaningful results
0x01/00A	The amount of data is incorrect for this test
0x02/3FF	The media is not suitable for this test
0x03/001	Failed to read the media
0x04/00B	The transfer speed is too slow
0x05/3FF	Failed to write to the media
0x06/3FF	Cannot retrieve windows® operating system handle for the device
0x07/3FF	The drive is not ready
0x08/001	The Media is not ready
0x09/006	Read size mismatch
0x0A/006	Error Setting position of Read

Troubleshooting

Error Code(s)	Potential Reason
0x00/00A	The media is too small to perform this test.
0x01/00A 0x02/3FF 0x06/3FF	Check the parameters, data and media to perform the test.
0x03/001 0x04/00B 0x05/3FF 0x06/3FF 0x07/3FF 0x08/001 0x09/006 0x0A/006	Possible media or device failure.

641X - Biometric

Overview

This is a test group for biometric devices. The biometric group of tests has been designed to support the latest generation of biometric hardware.

Tests

Test	Name	I	E	M	C	Windows® XP/S2003	Windows Vista®	Windows® Server 2008	Windows® 7	Windows® 8	Windows® PE
301	Core Recognition						•	•	•	•	

Parameters

Descriptions

301 - Core Recognition

Check that the fingerprint device is detected within Windows®.

Error Codes

Error Code	Name
0x00/3FF	General Error Executing tests

Troubleshooting

Error Code(s)	Potential Reason
0x00/3FF	Windows® Driver for device not available. Device not working as required. The Biometric chipset is not supported.

670X - Motherboard

Overview

This is a group that tests the Motherboard. It consists of the following three tests: North-bridge Test Set, South-bridge Test Set and CMOS Tests. One or more sub-tests may not be available or compatible with all operating systems.

Tests may not run (or may not run all sub-tests) if drivers and libraries are missing, hardware is unsupported or errors are encountered.

Tests

Test	Name	I	E	M	C	Windows® XP/S2003	Windows Vista®	Windows® Server 2008	Windows® 7	Windows® 8	Windows® PE
301	North-bridge					•	•	•	•	•	•
302	South-bridge					•	•	•	•	•	•
303	CMOS Clock					•	•	•	•	•	•
304	CMOS Checksum					•	•	•	•	•	•
305	CMOS Battery					•	•	•	•	•	•
306	System Fan					•	•	•	•	•	•
307	Voltage Core Detection					•	•	•	•	•	•
308	System Temperature					•	•	•	•	•	•

Parameters

Test	Parameter	Name	Default	Min	Max	Note(s)
301	1	Duration	30	1	604800	Time in seconds individually allocated to the Graphics bus sub-test
	2	FSB Speed	SDP	0	50000	Target frequency - the expected value. A value of 0 means that the front side bus speed is not tested.
	6	FSB Tolerance	5	5	100	Tolerance percentage for FSB Speed.
305	4	Minimum Battery Voltage	150	0	10000	Minimum acceptable battery voltage in centi-volts. For example 180 = 1.8 volts
	5	Maximum Battery Voltage	350	0	10000	Maximum acceptable battery voltage in centi-volts. For example 180 = 1.8 volts
306	9	Minimum Speed	500	0	500	Minimum speed of the CPU fan in RPM.
308	7	Minimum Temperature	20	0	100	Minimum Temperature. (Celsius)
	8	Maximum Temperature	80	0	100	Maximum Temperature. (Celsius)

Descriptions

301 - North-bridge

Sub-tests:

1. FSB Speed - the FSB (HT link / QPI) speed is read and checked to see if it is within the tolerance of the target speed, as defined by the outlined parameters below.

2. Graphics bus - performs a basic memory test on all accessible video memory. The test works by filling the screen with a random colour, then individually checking that each pixel is displaying this colour.

3. Memory bus - performs a basic test on the memory configuration.

Note: If the whole test passes the extra information will contain a tested percentage of the graphics component of the North-bridge.

302 - South-bridge

Sub-tests:

1. I/O port - performs a basic test on the first detected serial port.

2. Ethernet - performs a basic local host ping test.

If any sub-test fails, the whole test is considered a fail.

Test Time: 5s

303 - CMOS Clock

Real-time clock - the CMOS real-time clock date and time are compared to the system date and time. A maximum difference of 5 seconds is permitted, to allow for small timing delays.

304 - CMOS Checksum

Checksum - the CMOS checksum is calculated and compared to the checksum stored in CMOS.

305 - CMOS Battery

Battery Voltage - the CMOS battery voltage is read and checked to see if it falls between the minimum and maximum defined by the parameters below.

306 - System Fan

System Fan Speed test. The system fan speed is tested to be larger than a given minimum value specified by a parameter. If there are multiple fans in the system, each fan is tested to be faster than the specified minimum speed.

Test Time: 1 Second

307 - Voltage Core Detection

The test will PASS if any of the system voltages can be retrieved.

Test Time: 1 Second

308 - System Temperature

This test retrieves the system temperature. The value is checked to see if it falls between the minimum and maximum defined by the parameters.

Test Time: 1 Second

Error Codes

Error Code	Name
0x00/3FF	Unable to load DLLs required for test
0x01/017	The CMOS Real-time clock is incorrect
0x02/3FF	The CMOS Checksum is incorrect
0x03/3FF	The CMOS Battery voltage is outside tolerances
0x04/3FF	The CMOS Battery voltage is unable to be read
0x05/016	The FSB speed is outside tolerances
0x06/3FF	Unable to create window class
0x07/3FF	Unable to create window
0x08/3FF	Unable to update window
0x09/3FF	Unable to get control of window
0x0A/3FF	Unable to set draw mode
0x0B/3FF	Unable to set window size
0x0C/080	Incorrect pixel detected
0x0D/3FF	Unable to find a serial port to test
0x0E/3FF	Unable to open a serial port to test
0x0F/3FF	Unable to create an ICMP file
0x10/3FF	General Ping-test error
0x11/3FF	Ping-test timed out
0x12/3FF	Ping-test reply buffer too small
0x13/010	Unable to write the port configuration
0x14/010	Unable to read the port configuration
0x15/010	The set and read configurations do not match
0x16/3FF	The battery voltage is unavailable to read
0x17/3FF	Memory controller check failed
0x18/3FF	The FSB speed parameter has not been set
0x19/3FF	Unable to find sensor
0x1A/019	The temperature result was outside the tolerance
0x1B/3FF	The fan speed was outside the tolerance

Troubleshooting

Error Code(s)	Potential Reason
0x00/3FF	A required DLL failed to load. Ensure that all extra directories are present and contain all required files.
0x01/017 0x02/3FF 0x03/3FF 0x04/3FF	The CMOS test has failed. This could be because of faulty CMOS or CMOS battery. Try replacing the battery.
0x17/3FF	The memory subtest has failed. Ensure there is enough memory available on the system to test.
0x06/3FF 0x07/3FF 0x08/3FF 0x09/3FF 0x0A/3FF 0x0B/3FF 0x0C/080	The graphics subtest has failed. This can occur if user interaction is detected during the test as the OS may access video memory to update cursor locations.
0x0D/3FF 0x0E/3FF 0x13/010 0x14/010 0x15/010	The serial subtest has failed.
0x0F/3FF 0x10/3FF 0x11/3FF 0x12/3FF	The network ping subtest has failed.
0x05/016 0x18/3FF	The FSB subtest has failed. Ensure the correct tolerance was entered for the test parameter.
0x16/3FF	Unable to read battery voltage to perform the test.
0x19/3FF 0x1A/019 0x1B/3FF	Related sensor test failed. Either the sensor is not available or the values are not in the range

681X - Operating System

Overview

This group tests the Operating System running on the computer. This diagnostic group is specifically for the Microsoft® Windows® operating system.

An operating system (OS) is software that manages computer hardware and software resources and provides common services for computer programs. The operating system is an essential component of the system software in a computer system. Application programs usually require an operating system to function. Time-sharing operating systems schedule tasks for efficient use of the system and may also include accounting software for cost allocation of processor time, mass storage, printing, and other resources. In the case of hardware functions such as input and output and memory allocation, the operating system acts as an intermediary between programs and the computer hardware, although the application code is usually executed directly by the hardware and will frequently make a system call to an OS function or be interrupted by it.

Many Windows® features can be accessed using the Toolbox advanced window. Information on this window can be found in Appendix B of this manual.

Tests

Test	Name	I	E	M	C	Windows® XP/S2003	Windows Vista®	Windows® Server 2008	Windows® 7	Windows® 8	Windows® PE
301	Activated					•	•	•	•	•	
302	Genuine						•	•	•	•	
303	Event Log					•	•	•	•	•	•
304	Kernel Response					•	•	•	•	•	•
305	Driver						•	•	•	•	•
306	Signed Driver						•	•	•	•	•
307	OS Requirements					•	•	•	•	•	•
308	Security Support						•	•	•	•	•

Parameters

Test	Parameter	Name	Default	Min	Max	Note(s)
303	1	Include Shut-down Events	TRUE	FALSE	TRUE	If "unexpected shut-down" events should be included
	3	Check Error level events	FALSE	FALSE	TRUE	If Error level events should be checked in addition to Critical
	5	Maximum Duration	3600	0	302400	The maximum duration of the test. If the test takes longer than this time then the test will fail
304	4	Time-out	10	1	120	The maximum time to wait for a kernel response
307	2	OS Level	1	0	2	The version of OS to test the requirements

Descriptions

301 - Activated

This test checks the operating system to ensure it is Microsoft® Activated.

Microsoft® Product Activation is a DRM technology used in its Windows® operating system. The procedure enforces compliance with the program's end-user license agreement by transmitting information about both the product key used to install the program and the user's computer hardware to Microsoft®, inhibiting or completely preventing the use of the program until the validity of its license is confirmed.

It is important to ensure that Windows® is properly activated. On some versions of Windows®, failure to activate before the end of the grace period will result in loss of operating system functionality.

302 - Genuine

This test checks the operating system to ensure it passes Microsoft® genuine validation.

Windows® Genuine Advantage is an anti-piracy system created by Microsoft® that enforces online validation of the licensing of several Microsoft® Windows® operating systems when accessing several services, such as Windows® Update, and downloading Windows® components from the Microsoft® Download Centre.

It is important that Windows® validates as a Genuine install to ensure that the latest Windows® updates can be installed to ensure operating system robustness and support.

303 - Event Log

This test checks the Security and System Event logs for any critical events. With the parameter set, error events can also be checked.

Applications and operating-system components can make use of this centralised event log service to report events that have taken place, such as a failure to start a component or to complete an action. Critical Event log errors can indicate a problem on the system, such as logging hard drive access failures on a failing hard drive.

Note: On a test failure, information on the most recent event log of each Event ID and Category will be added to the Toolbox advanced window.

304 - Kernel Response

This test checks the core functionality and responsiveness of the Windows® Kernel.

305 - Driver

This test checks the devices present in the system to ensure drivers have been installed. If any devices are found with missing or incorrectly installed drivers, the test will fail.

A driver provides a software interface to hardware devices, enabling operating systems and other computer programs to access hardware functions without needing to know precise details of the hardware being used. Correct device drivers are fundamental for the operation and functionality of the devices connected to your system. Incorrect drivers can result in incorrect device functionality and in some cases, damage to the hardware.

Note: On a test failure, information on the failing drivers will be added to the Toolbox advanced window.

306 - Signed Driver

This test checks that the drivers present in the system are properly signed. If any drivers are not properly signed, this test will fail.

It is important to ensure that the drivers installed on the system are signed. An unsigned or incorrectly signed driver indicates tampering or an untrustworthy source that could put the system at risk. A device with incorrectly signed drivers could malfunction or monitor system operation in ways it should not.

Note: On a test failure, information on the failing drivers will be added to the Toolbox advanced window.

307 - OS Requirements

This test checks the system requirements for the selected version of Windows® against the hardware present on the system. If the system does not meet the system requirements then the test will fail. In the case of the Hard-drive requirements, the largest available drive on the system will be compared.

The test parameter for this test selects the version of the OS to test the requirements of. If multiple variants of the same version exist, the medium to high end specifications are used. * A value of 1 will test the current OS. * A value of 0 will test for Windows® XP. * A value of 2 will test for Windows® 8.

Note: Although the base memory is considerably smaller for Windows® PE, the requirements are the same as the equivalent full OS. The reason for this is that the Windows® PE image resides within memory and because the Eurosoft Diagnostic Framework requires extensive memory in order to perform testing.

308 - Security Support

This test checks the status of the Windows® Security Centre security providers, such as the state of the system's firewall and anti-virus. If any of the security providers have errors, the test will fail. It is important to ensure that the system has up to date and active security features to ensure protection against viruses, spyware and malicious data access.

Error Codes

Error Code	Name
0x01/096	Windows® is not Activated
0x02/3FF	Windows® is not Genuine
0x03/001	The Genuine Windows® test is unable to run
0x04/001	An error occurred while Windows® was being checked
0x05/093	Failing Windows® event log errors were found
0x06/3FF	The kernel did not respond
0x07/001	An error occurred while checking drivers
0x08/093	One or more of the devices on the system had a missing or invalid driver
0x09/095	One or more of the drivers on the system is not properly signed
0x0A/3FF	The version of Windows® to test could not be determined
0x0B/3FF	The system does not meet the memory requirements for Windows®
0x0C/3FF	The system does not meet the processor requirements for Windows®
0x0D/3FF	The system does not meet the disk drive requirements for Windows®
0x0E/3FF	Windows® Security is not configured on the system
0x0F/094	One or more security features on the system have an error
0x10/3FF	The reading of the event log timed out

Troubleshooting

Error Code(s)	Potential Reason
0x01/096	Windows® is not activated. Windows® can be activated by going to the System Properties window and clicking "Activate Windows now" and following the on screen instructions. The System Properties window can be accessed from the Toolbox advanced window.
0x02/3FF 0x03/001	Windows® is not genuine or could not be checked. Windows® genuine checks are preformed periodically after Windows® has been activated and can fail if the system hardware changes. To ensure that Windows® runs and passes the genuine check, Windows® may need to be re-activated.
0x05/093	A critical or error Windows® event was found. This may be the sign of a hardware or software fault on the system. The Windows® Event Log or Toolbox window should be checked for further information on this event.
0x10/3FF	The event log read timed out. This may be a sign of a serious event log error or a very large event log. The Windows® Event Log should be cleared to increase the speed of its reading. This can be done by opening the Event Log from the Toolbox window and expanding the "Windows Logs" item on the left. By right clicking each of the items inside this item and selecting "Clear Log...", the event log can be cleared down. Alternatively the maximum duration parameter can be increased.
0x06/3FF	The kernel did not respond to the test. This may be caused by high system load or a fault in the operating system. If other applications are not running at the same time as the test, an operating system reinstall may be required.
0x07/001 0x08/093 0x09/095	An error was found with one or more device drivers present in the system. This may be caused by a missing or incorrectly signed driver. The Toolbox window should be checked for further information on the error. In the case of a missing driver, the Windows® Device Manager can be used. All devices with missing drivers will be shown with a yellow triangle. In the case of an incorrectly signed drivers, the failing device will need to be found in the device list.
0x0B/3FF 0x0C/3FF 0x0D/3FF	The system does not meet the required minimum specification for the version of Windows® being checked. Windows® performance will be reduced if the minimum specification is not met and may increase the maintenance required to keep the operating system running efficiently. The Windows® Experience Index can be used as an indication of operating system performance. This feature is available from the System Properties window from Windows® Vista to Windows® 8.
0x0E/3FF 0x0F/094	The Windows® Security Centre has found an error or is not currently monitoring any features. It is important to ensure the system security is kept up to date to ensure that the system performance and user data is not put at risk. The errors detected by the Windows® Security Centre can be viewed by opening the Windows® Action Centre. This can be accessed from the Toolbox window. Some errors detected may be hidden in the Windows® Action Centre, but can be displayed by clicking the drop down arrow next to the security category. Items marked with "Currently Not Monitored" should be checked and any errors shown in red should be corrected to pass this test. The Windows® Security Centre does not start monitoring immediately on system start-up and may take a few minutes to begin. This is dependent on the speed and load on the system, as well as the delay for security applications to start.
0x04/001 0x0A/3FF	A general error occurred with the test. This could be caused by a software or operating system error on the system.

690X - Hardware Monitor

Overview

Hardware Monitor is a group that provides the ability to test Hardware Monitor sensors. The types of sensor available are: temperature, fan speed and voltage.

All tests within this group have the same structure as follows:

The test checks the metric (temperature, speed or voltage) is within the percentage tolerance of the target. The user specifies the target value, tolerance and sensor identifier: the test passes if it the sensor value is within plus or minus the tolerance of the target, else it fails.

Test Tolerance

This is the percentage tolerance the sensor value must be within the target to pass the test. For example, if this is set to 10 and the target is 40C, then the sensor reading must be within 10% of 40C (36C to 44C).

Test Identifier

Each test has a parameter enabling the user to define the text identifier to match the particular sensor. This is because sensors may have different names on different systems and in different locales. For example, the default sensor name for test 302 is 'CPU'. The match can be partial, e.g. if the sensor name were 'Case Fan 1' and the identifier was 'Fan' then the sensor would be treated as a match. Only the last matching sensor value is tested and the identifier is case-insensitive.

Test Time: 1s

Tests

Test	Name	I	E	M	C	Windows® XP/S2003	Windows Vista®	Windows® Server 2008	Windows® 7	Windows® 8	Windows® PE
312	System Temperature					•	•	•	•	•	•
313	CPU Temperature					•	•	•	•	•	•
314	CPU Fan					•	•	•	•	•	•
315	System Fan					•	•	•	•	•	•
316	Voltage Core Detection Test					•	•	•	•	•	•
317	Drive Temperature					•	•	•	•	•	•
318	Graphics Card Temperature					•	•	•	•	•	•

Parameters

Test	Parameter	Name	Default	Min	Max	Note(s)
312	6	Minimum Temperature	20	0	100	Minimum Temperature. (Celsius)
	7	Maximum Temperature	80	0	100	Maximum Temperature. (Celsius)
313	6	Minimum Temperature	20	0	100	
	7	Maximum Temperature	80	0	100	
314	8	Minimum Speed	500	0	5000	Minimum speed of the CPU fan in RPM.
315	8	Minimum Speed	500	0	5000	
317	6	Minimum Temperature	20	0	100	
	7	Maximum Temperature	80	0	100	
318	6	Minimum Temperature	20	0	100	
	7	Maximum Temperature	80	0	100	

Descriptions

312 - System Temperature

This test retrieves the system temperature. The value is checked to see if it falls between the minimum and maximum defined by the parameters.

Test Time: 1 Second

313 - CPU Temperature

CPU Temperature test. The test checks whether the CPU temperature resides between a minimum and a maximum value specified by the parameters.

Test Time: 1 Second

314 - CPU Fan

Test Time: 1 Second

315 - System Fan

System Fan Speed test. The system fan speed is tested to be larger than a given minimum value specified by a parameter. If there are multiple fans in the system, each fan is tested to be faster than the specified minimum speed.

Test Time: 1 Second

316 - Voltage Core Detection Test

Voltage core detection test. The test would be succeeded if system voltages can be retrieved.

Test Time: 1 Second

317 - Drive Temperature

Hard Drive Temperature. The temperature of each drive would be retrieved and checked to be residing within a maximum and minimum level. There can be a situation where the drives does not have an inbuilt temperature sensor. If there are multiple temperature sensors, the extra information will indicate the first one that failed.

Test Time: 1 Second

318 - Graphics Card Temperature

Graphics Card Temperature. The test checks the temperature of the graphics card to reside between a minimum and a maximum value specified by the parameters.

Test Time: 1 Second

Error Codes

Error Code	Name
0x00/3FF	The sensor name parameter was not found
0x01/3FF	The result was outside the tolerance
0x02/019	The temperature result was outside the tolerance
0x03/3FF	Unable to find sensor
0x04/3FF	Failed to initialise external library in order to perform testing
0x05/01C	The result sensor value is outside the tolerance. Extra information contains the sub-device number

Troubleshooting

Error Code(s)	Potential Reason
0x00/3FF 0x01/3FF 0x02/019 0x03/3FF 0x05/01C	Check the system information for your system to ensure the correct parameter values are being used.
0x04/3FF	Ensure all files are available for testing.

700X - Solid State Drives

Overview

SSD is a test group for solid state drives and eMMC Devices. A solid-state drive or eMMC is a data storage device that uses solid-state memory to store persistent data in the same manner of a traditional block I/O hard disk drive. These devices are distinguished from traditional magnetic disks such as hard disk drives or floppy disk, which are electromechanical devices containing spinning disks and movable read-write heads. In contrast, these use microchips that retain data in non-volatile memory chips and contain no moving parts. Compared to electromechanical HDDs, they are typically less susceptible to physical shock, are silent, have lower access time and latency.

Note: 1. When comparing the test parameters duration and coverage for the actual testing time this will only be the same under one condition. A set parameter coverage of 100% or a set parameter duration which has sufficient time to test to the entire media. This is because of varying algorithms and delays moving to the next test location.

Note: 2. Other parameters may be irrelevant due to hardware access times with this type of test.

Note: 3. Where relevant, this group contains an advanced media window that has a visual display of blocks representing the testable area of the media.

Note: 4. Some tests use a drive's S.M.A.R.T. functionality to run. S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology), is a monitoring system for computer media to detect and report on various indicators of reliability. This functionality is not available on all devices. S.M.A.R.T documentation is available online for the tests and can be used for further information if required.

Note: 5. In order to be detected the device must be mounted as a windows volume.

Tests

Test	Name	I	E	M	C	Windows® XP/S2003	Windows Vista®	Windows® Server 2008	Windows® 7	Windows® 8	Windows® PE
301	Linear Read			•		•	•	•	•	•	•
302	Random Read			•		•	•	•	•	•	•
306	S.M.A.R.T. Failure					•	•	•	•	•	•
307	S.M.A.R.T. Short					•	•	•	•	•	•
308	S.M.A.R.T. Conveyance					•	•	•	•	•	•
309	S.M.A.R.T. Extended					•	•	•	•	•	•

Parameters

Test	Parameter	Name	Default	Min	Max	Note(s)
301	1	Duration	0	0	604800	Time to run the test for, seconds, maximum 1 week
	2	Coverage	100	1	100	Percentage coverage
	5	Windows Event Error Count	1000	0	10000	Windows® Event Error count between reads. 0 indicates the Windows® event error will not be read.
302	1	Duration	60	1	604800	
	5	Windows Event Error Count	1000	0	10000	
306	6	S.M.A.R.T Error Log	FALSE	FALSE	TRUE	Enable SMART error log component of Imminent Failure test.
307	4	Maximum Duration	1800	0	302400	The maximum duration of the test. If the test takes longer than this time then the test will fail.
308	4	Maximum Duration	86400	0	302400	
309	4	Maximum Duration	86400	0	302400	

Descriptions

301 - Linear Read

Exercises a drive's read capability using linear (incrementally increasing) read addresses. Success or failure of each read is monitored.

302 - Random Read

Exercises a drive's read capability using pseudo-random read addresses (these are randomly generated using a fixed computational process). A quick benchmark is performed on the device to display a read rate. Success or failure of each read is monitored.

306 - S.M.A.R.T. Failure

This test checks the "SMART RETURN STATUS" of S.M.A.R.T. reporting, to ensure that the drive is in a reliable condition. A failure of this test indicates a relatively high probability that the drive will not be able to honour its specification and is about to fail.

Test Time: 1 to 5s

307 - S.M.A.R.T. Short

This test executes the sub-command "SMART Short self-test routine" within the "SMART EXECUTE OFF-LINE IMMEDIATE" command.

This test checks the electrical and mechanical performance as well as the read performance of the disk.

Electrical tests might include a test of buffer RAM, a read-write circuitry test, or a test of the read-write head elements.

Mechanical test includes seeking and servo on data tracks. Scans small parts of the drive's surface. Checks the list of Pending sectors that may have read errors.

Test Time: Usually under two minutes but is device dependent. There is a test time limit imposed by the manufacturer of the drive.

308 - S.M.A.R.T. Conveyance

This test executes the sub-command "SMART Conveyance self-test routine" within the "SMART EXECUTE OFF-LINE IMMEDIATE" command.

Intended as a quick test to identify damage incurred during transporting of the device from the drive manufacturer to the computer manufacturer.

Test Time: Several minutes but is device dependent.

309 - S.M.A.R.T. Extended

This test executes the sub-command "SMART Extended self-test routine" within the "SMART EXECUTE OFF-LINE IMMEDIATE" command.

A longer and more thorough version of the short self-test, scans the entire disk surface, with no time limit.

Test Time: Hundreds of minutes, this is device dependent. Approximately one gigabyte per minute for modern drives.

Error Codes

Error Code	Name
0x00/001	Unable to read drive information
0x01/005	Unable to read from drive
0x03/005	Unable to set drive position pointer
0x04/3FF	Unable to open drive
0x08/006	Read size mismatch
0x09/3FF	The S.M.A.R.T. Imminent Failure was detected.
0x0A/001	The S.M.A.R.T. command failed and may not be supported
0x0B/3FF	The self-test routine was aborted
0x0C/3FF	The self-test routine was interrupted by a hard or soft power reset
0x0D/3FF	An unknown test error occurred while running the self-test routine
0x0E/3FF	The self-test has failed and the test element that failed is not known
0x0F/3FF	The electrical part of the self-test has failed
0x10/3FF	The servo part of the self-test has failed
0x11/3FF	The read part of the self-test has failed
0x12/3FF	The device handling damage has been detected and the self-test has failed
0x13/015	An unknown self-test result has been received
0x14/001	Drive does not support the S.M.A.R.T. self-test
0x15/001	The S.M.A.R.T. Self-test did not complete before the time-out
0x16/001	The S.M.A.R.T. Error Log was exceeded

Troubleshooting

Error Code(s)	Potential Reason
0x0A/001 0x14/001 0x15/001 0x16/001	The S.M.A.R.T. command is either not supported on the drive and interface or the drive is faulty.
0x00/001 0x01/005 0x03/005 0x04/3FF 0x08/006	The drive may be faulty.
0x09/3FF 0x0B/3FF 0x0C/3FF 0x0D/3FF 0x0E/3FF 0x0F/3FF 0x10/3FF 0x11/3FF 0x12/3FF 0x13/015 0x15/001	The S.M.A.R.T. self-test may indicate a fault or imminent fault present with the drive. Errors such as aborted tests and power resets may be caused by other programs accessing S.M.A.R.T. functionality while the test is running or the device entering a power saving state. It is recommended that hard drive power down is disabled and no other programs are running for the duration of the test.

710X - RAID

Overview

This group checks RAID devices. RAID (Redundant Array of Independent Disks) is a storage technology that combines multiple disk drive components into a single logical unit. This can give advantaged in terms of speed, reliability and cost.

Note: Where relevant, this group contains an advanced window that has a visual display of blocks representing the testable area of the media.

Tests

Test	Name	I	E	M	C	Windows® XP/S2003	Windows Vista®	Windows® Server 2008	Windows® 7	Windows® 8	Windows® PE
301	Linear Read			•		•	•	•	•	•	•

Parameters

Test	Parameter	Name	Default	Min	Max	Note(s)
301	1	Duration	0	0	604800	Time to run the test
	2	Coverage	100	1	100	Percentage of RAID disk to test
	3	Maximum Errors	1	1	50	Continues to test until the maximum number of errors is reached
	5	Windows Event Error Count	1000	0	10000	Windows® Event Error count between reads. 0 indicates the Windows® event error will not be read.

Descriptions

301 - Linear Read

Each Read Verify test iteration is one seek and verify. Each iteration, the seek position increases by one MB increment (determined by the range and coverage). The Read Verify test is always done with the seek position increasing each iteration.

Note: This test is only available on drives which have either a capacity greater than 2TB or a sector size greater than 512 bytes.

Test Time: 16 to 20 seconds per 1000 MB. Actual times will vary depending on several factors including: the device read speed, access times, the interface and medium used.

Error Codes

Error Code	Name
0x00/001	The device failed to open
0x01/001	Failed to set RAID hardware Address
0x02/001	Read failure
0x03/006	Read size mismatch

Troubleshooting

Error Code(s)	Potential Reason
0x00/001 0x01/001 0x02/001 0x03/006	The device may be faulty or another program may be limiting access to the device.

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720X - Touch screen

Overview

This group is for testing Touch screens.

A touch screen is an electronic visual display that can detect the presence and location of a touch within the display area. The term generally refers to touching the display of the device with a finger or hand. Touch screens can also sense other passive objects, such as a stylus.

Note: All the tests within the Touch screen group are interactive as user interaction is required.

Note: In Windows® 8.1 the "Touch and Swipe" features may interrupt testing during the Grid and Point tests. The Charm bar shown by swiping from the right has been disabled for the duration of these tests. As per all tests, it is recommended that no other applications or windows are open while running these tests to prevent the Windows® Application List swipe functionality from showing.

Tests

Test	Name	I	E	M	C	Windows® XP/S2003	Windows Vista®	Windows® Server 2008	Windows® 7	Windows® 8	Windows® PE
301	Quick Grid	•				•	•	•	•	•	•
302	Advanced Line	•				•	•	•	•	•	•
303	Pointing Accuracy	•				•	•	•	•	•	•

Parameters

Test	Parameter	Name	Default	Min	Max	Note(s)
301	1	Time-out	15	1	60	Time-out for input
	4	Grid Size	6	3	20	The number of grids in both the X and Y axis
	6	Display Initial Test Message	FALSE	FALSE	TRUE	Specifies whether or not to display a test dialogue box before the test runs.
302	1	Time-out	15	1	60	
	2	Max Failed Pixels	3	0	100	Max number of failed pixels allowed after test completion
	5	Line Width	2	1	10	The number of pixels either side of the touched point to highlight.
	6	Display Initial Test Message	FALSE	FALSE	TRUE	
303	1	Time-out	15	1	60	
	3	Tolerance	15	5	100	How close in pixels the touch must be to the target
	6	Display Initial Test Message	FALSE	FALSE	TRUE	

Descriptions

301 - Quick Grid

The Quick grid test fills the screen with a grid of sectors to test. Each sector needs to be touched to pass the test.

Test Time: Dependent on user input.

302 - Advanced Line

This test will test the whole of the screen. By tracing a line diagonally across the screen, every pixel on the X and Y axis will be tested.

Test Time: Dependent on user input.

303 - Pointing Accuracy

The Pointing Accuracy test is designed to test the accuracy and calibration of the touch device. A series of targets will be shown that should be touched. If the touch detected is outside the tolerance then the test will fail.

Test Time: Dependent on user input.

Error Codes

Error Code	Name
0x00/001	Failed to create window
0x01/3FF	The Operator chose to fail the test
0x02/012	The touch was outside the tolerance area
0x03/3FF	A time-out occurred before the Operator completed the test

Troubleshooting

Error Code(s)	Potential Reason
0x00/001	The test failed to start. This is most likely caused by a hardware or OS fault.
0x01/3FF 0x02/012 0x03/3FF	The test has failed. This could be due to an operator error, not calibrated or faulty touch device.

730X - Input Peripherals

Overview

This group covers system information gathering and testing of the input peripherals. The input peripherals are currently the keyboard and mouse.

A peripheral is a device that is connected to a host computer, but not part of it. It expands the host's capabilities but does not form part of the core computer architecture.

The Keyboard and Quick Keyboard Tests offer different processes for testing the Keyboard peripherals connected to your system. It is not necessary to run both tests for full coverage. Therefore it is recommended to only run the test configured in the way you find most appropriate for your process.

The Advanced window for this group can be used to create configuration files for the Keyboard and Quick Keyboard tests.

The Quick Keyboard test shows a visual representation of the keyboard and highlights the buttons pressed. The Keyboard test only shows a list of buttons pressed or to be pressed, depending on the test parameters.

At the top of the Advanced window is a drop down list of keyboard locales. The selected locale is used to decide the text and locations of the keys pressed and entered into the 'Keyboard Configuration Settings' table. The locale 00-00-00 is language independent and will get the key text from Microsoft Windows®, using a standard en-us keyboard layout for the key positions.

In order to start creating your keyboard configuration test file, click a row in the 'Keyboard Configuration Settings' table to highlight it. Once highlighted, clicking the left cell will allow editing and allow the name of the key to be entered. This is the name that will be shown within the test. Clicking the right cell will change to a key entry mode. The scan-code of the next keyboard key pressed will then be entered into the cell. This is the physical key that will need to be pressed during the test. The Clear button can be used to clear a row and remove the key name and code.

When the 00-00-00 keyboard locale is selected, the position of each key can be changed on the visual keyboard. To change a key's position, highlight the row for the key you wish to change. This will highlight the key's location on the visual keyboard in blue. You should then click on a key on the visual keyboard to change its position to the location clicked.

Once all the required keys have been entered, the configuration file can be saved by clicking the save button. There is the option of manually editing the Keyboard Configuration file instead of creating multiple files with small changes using the Advanced window. Please contact Eurosoft for more assistance if you wish to manually edit your files. In the 00-00-00 mode the name of the keyboard configuration file will be used as the selected test configuration when running the quick keyboard test.

Note: A key can be assigned multiple key locations by entering the key multiple times into the table and assigning a different key location for each entry.

Tests

Test	Name	I	E	M	C	Windows® XP/S2003	Windows Vista®	Windows® Server 2008	Windows® 7	Windows® 8	Windows® PE

Test	Name	I	E	M	C	Windows® XP/S2003	Windows Vista®	Windows® Server 2008	Windows® 7	Windows® 8	Windows® PE
301	Keyboard	•			•	•	•	•	•	•	•
302	Keyboard LED	•				•	•	•	•	•	•
303	Quick Mouse	•				•	•	•	•	•	•
304	Mouse Button	•			•	•	•	•	•	•	•
305	Movement	•				•	•	•	•	•	•
306	Quick Keyboard	•				•	•	•	•	•	•

Parameters

Test	Parameter	Name	Default	Min	Max	Note(s)
301	1	Test Configuration	"EDF\\xtra\\730X\\English_8Keys.txt"	5	MAX_PATH	The internal configuration file to use for the test. This file is created using the Advanced Window if the key-count parameter is not set. If the key-count is set then this parameter should be set to one of the Auto-fill identifiers listed on the Advanced Window.
	2	Contact Bounce Time	250	0	2000	The contact bounce time in Ms between each key check. A value greater than 0 will run the test in Ordered mode and a value of 0 will run in Unordered mode.
	3	Time-out	10	0	60	The time-out between key presses before the test will fail. If set to 0 then a fail button will be shown.
302	4	Time-out	15	1	60	The time-out for waiting for a response from the operator.
303	4	Time-out	15	1	60	
304	4	Time-out	15	1	60	
305	4	Time-out	15	1	60	
	7	Start-up Delay	5	0	60	The start up delay time in seconds before the test commences.
	8	Ring Size	125	100	500	The size of the ring the user will need to guide the cursor inside.
306	2	Contact Bounce Time	100	0	2000	
	3	Time-out	15	0	60	

Test	Parameter	Name	Default	Min	Max	Note(s)
	6	Keyboard Configuration	SDP	5	MAX_PATH	The keyboard configuration to use. If set to 00-00-00 then the option to select a keyboard configuration file will be available in the interactive test.

Descriptions

301 - Keyboard

The keyboard test has two modes of use to cover the ways a keyboard can be tested.

The keyboard can be tested in Ordered mode where key presses are expected in the order defined in the configuration file used. The keys pressed are also checked for contact bounce. This mode of operation is best suited for checking key zones on laptop keyboards.

The other mode of operation is Unordered mode where keys can be pressed in any order. Each key press is checked against the list of keys in the configuration, with each key match removing the key from the list. Any mismatched keys are ignored and no contact bounce checking is done. Once all the keys have been pressed the test passes. This mode of operation is best suited for mechanical keyboards for checking an entire keyboard to ensure each key works and does not get stuck.

Note: The Advanced window of this group can be used to create configuration files for use by this test.

Test Time: Dependent on user input.

302 - Keyboard LED

The LED test will activate and deactivate the Num lock, Scroll lock and Caps lock LEDs on the keyboards connected to the system

303 - Quick Mouse

The quick mouse test will display a box that must be clicked to pass the test.

304 - Mouse Button

The button test will prompt for mouse buttons to be pressed. This will test each of the requested buttons for correct functionality.

305 - Movement

The movement test will display a ring for the mouse to to be moved around to test mouse tracking functionality.

306 - Quick Keyboard

The Quick Keyboard Test is a streamlined version of the Keyboard Test.

A visual representation of the selected keyboard configuration is shown in the Interactive test window and the keys are coloured when they are pressed. A contact bounce time is also configurable. If any key is detected within the contact bounce time of the previous key the test will fail.

If the keyboard language test parameter is set to 00-00-00, then a drop down list of the keyboard configuration files in the 730X diagnostic extra directory will be shown where the keyboard configuration file name is the name of the selected keyboard configuration to be used. If there is no selection a default en-us layout will be assumed. The configuration file selected will define the locations of the keys on the visual keyboard.

Note: The Advanced window of this group can be used to create configuration files for use by this test.

Note: This test will automatically pass when all the keys have been pressed that are present in the keyboard configuration file if used.

Test Time: Dependant on user input.

Error Codes

Error Code	Name
0x00/3FF	Unable to load any keys to test
0x01/3FF	Unable to load the test configuration file
0x02/001	Unable to get the keyboard
0x03/001	Unable to create test window
0x04/3FF	The Operator chose to fail the test
0x05/011	The wrong key press was detected
0x06/011	Another key was detected during the contact bounce time
0x07/3FF	The test timed out
0x08/001	Unable to get the mouse
0x09/3FF	The cursor moved outside the test ring
0x0A/3FF	The cursor moved back into a tested area
0x0B/3FF	The keyboard configuration is invalid.

Troubleshooting

Error Code(s)	Potential Reason
0x00/3FF 0x01/3FF	The specified Key configuration file was not successfully loaded. Check that the file is present and contains keys to be tested.
0x02/001 0x03/001 0x08/001 0x0B/3FF	The test failed to start. This is most likely caused by a hardware or OS fault.
0x04/3FF 0x05/011 0x06/011 0x07/3FF 0x09/3FF 0x0A/3FF	The test failed due to a possible fault with the hardware or due to operator error.

740X - Lenovo Custom Diagnostic Group

Overview

This is a custom diagnostic test group for Lenovo.

Tests

Test	Name	I	E	M	C	Windows® XP/S2003	Windows Vista®	Windows® Server 2008	Windows® 7	Windows® 8	Windows® PE
301	Golden Key Test					•	•	•	•	•	•

Parameters

Test	Parameter	Name	Default	Min	Max	Note(s)
301	1	Configuration File	"."	0	MAX_PATH	Location of Configuration File used to identify a Lenovo Golden Key. The file name should be at least 5 Characters long. The path must be specified relative to the root directory of the drive. i.e. "\Golden.key"

Descriptions

301 - Golden Key Test

Test for the Lenovo Golden Key controlled by the configuration file.

Test Time: 1s

Error Codes

Error Code	Name
0x00/3FF	Failed to find the golden key.

Troubleshooting

Error Code(s)	Potential Reason
0x00/3FF	The Golden key test has failed either there was no golden key or the necessary configuration file was not present.

750X - Compass

Overview

The Compass sensor provides the system with a simple orientation in relation to the magnetic field of Earth. This is often used in mobile devices to allow north to be located so that digital maps can be auto rotated depending on the physical orientation of the device.

Tests

Test	Name	I	E	M	C	Windows® XP/S2003	Windows Vista®	Windows® Server 2008	Windows® 7	Windows® 8	Windows® PE
301	Core Recognition							•	•	•	
302	Quick Status							•	•	•	
303	Direction							•	•	•	

Parameters

Test	Parameter	Name	Default	Min	Max	Note(s)
303	1	Orientation Angle	0	0	359	Angle (in degrees) to north
	2	Time-out	30	0	300	Test time-out
	3	Tolerance	3	3	100	Angle tolerance
	4	Calibration Prefix	TRUE	FALSE	TRUE	Specifies whether or not to display a pre-calibration message before running the interactive test

Descriptions

301 - Core Recognition

The Core Recognition test checks the compass to ensure it is connected and detected properly.

Test Time: 1 Second.

302 - Quick Status

The Quick Status test checks the status of the compass to ensure that it is fully functional.

Test Time: 1 Second.

303 - Direction

The Direction test checks the orientation within a compass sensor. The test can be executed either interactively or non interactively. If the test parameter is set to zero, the operator is requested to rotate the device towards true north.

If the parameter is non zero, the test will be non interactive where the user is expected to enter the rotation of the device in degrees.

It is important that this test be executed ensuring the device resides on a planar surface, since compensation for device rotation is not added during this test. Further, the device should be kept away from any known ferrous material such as permanent magnets since they will affect the output of the electronic compass sensor.

A Pre-calibration sequence maybe necessary depending on the system. This will involve rotating the system, holding the system in all available planes for a few seconds and making a 'figure of eight'. Failure to do this may result in an incorrect result.

Note: The compass reads true north not magnetic north and any errors in declination should be taken into account as appropriate.

Test Time: 1 Second for the non-interactive test, and the time depends on the time-out parameter for the interactive test.

Error Codes

Error Code	Name
0x00/3FF	The sensor was not found
0x01/3FF	The sensor failed to start
0x02/3FF	Access to the sensor was denied
0x03/3FF	The sensor has encountered an error
0x04/097	The sensor is in an unknown state
0x05/3FF	The Operator chose to fail the test
0x06/001	Unable to create test window
0x07/3FF	The Operator did not respond within the time-out
0x08/3FF	The test timed out
0x09/3FF	Unable to set rotation
0x0A/3FF	The sensor heading is outside of the tolerance

Troubleshooting

Error Code(s)	Potential Reason
0x00/3FF 0x01/3FF 0x02/3FF 0x03/3FF 0x04/097	The sensor was not detected. This could be caused by faulty drivers or a loose connection.
0x05/3FF 0x07/3FF	The interactive test failed since the user cancelled the test or not responded.
0x06/001 0x08/3FF	The interactive window creation is failed or timed out.
0x09/3FF	The interactive test requires rotation to be disabled.
0x0A/3FF	The heading from the sensor is outside of the tolerance for the test. This may be caused by a faulty sensor, issue reading the heading or an incorrect test parameter. The sensor may also require calibration or may be experiencing interference from nearby ferrous metals or magnets.

760X - Ambient Light

Overview

The Ambient Light sensor is a sensor used to detect the amount of light in the environment it operates in. This sensor is most commonly used for portable devices to adjust the screen brightness as required to make the most of the battery life.

Tests

Test	Name	I	E	M	C	Windows® XP/S2003	Windows Vista®	Windows® Server 2008	Windows® 7	Windows® 8	Windows® PE
301	Core Recognition							•	•	•	
302	Quick Status							•	•	•	
303	Ambient Light Level	•						•	•	•	

Parameters

Test	Parameter	Name	Default	Min	Max	Note(s)
303	1	Time-out	30	0	300	Test time-out
	2	Minimum luminous intensity level	200	0	65536	Minimum luminous flux level

Descriptions

301 - Core Recognition

The Core Recognition test checks the light sensor to ensure it is connected and detected properly.

Test Time: 1 Second.

302 - Quick Status

The Quick Status test checks the status of the light sensor to ensure that it is fully functional.

Test Time: 1 Second.

303 - Ambient Light Level

This test will check the amount of light detected by the ambient light sensor of a system. The Operator is required to cover and uncover the ambient light sensor, where the test will read a significant amount of change of light within the specified time-out. The ambient light sensor is available in most tablet devices located on the front side or directly attached to the front facing camera. In folding systems the sensor might be located towards the bottom side.

Test Time: Depends on the time-out parameter specified by the operator.

Error Codes

Error Code	Name
0x00/3FF	The sensor was not found
0x01/3FF	The sensor failed to start
0x02/3FF	Access to the sensor was denied
0x03/3FF	The sensor has encountered an error
0x04/097	The sensor is in an unknown state
0x05/3FF	The Operator chose to fail the test
0x06/001	Unable to create test window
0x07/3FF	The test timed out
0x08/3FF	Required files to perform the test are missing from the diagnostic directory

Troubleshooting

Error Code(s)	Potential Reason
0x00/3FF 0x01/3FF 0x02/3FF 0x03/3FF 0x04/097	The sensor was not detected. This could be caused by faulty drivers or a loose connection.
0x06/001 0x07/3FF	Creation of the interactive window failed or the test timed out.
0x05/3FF	The interactive test failed since the operator cancelled the test.
0x08/3FF	Required files to perform the test are missing from the diagnostic directory.

APPENDIX A - XML Configuration Scripts

The following section defines the field values and types for the entities of the XML configuration script.

Entities

Eurosoft

Main entity of the configuration scripts, which is used as a wrapper for all groups and has no attributes.

Eurosoft_<group ID> (e.g. Eurosoft_7100)

Main entity of the group, which is used as a wrapper and has no attributes.
This should be the 32 bit group ID regardless of the platform.

Default

This entity is used to override default parameters for the tests within the group. This entity has no attributes and contains the Param entity.

Param

This entity defines a single override of a default parameter within the group and has the following attributes:

Attribute	Mandatory	Type	Range
ParamID	Yes	Integer	0 - 4294967295
TestID	Yes	Integer	0 - 4294967295
Value	Yes	String	512 characters

Eurosoft_7100

Main entity of the RAI group, which is used as a wrapper and has no attributes.

Section

The entity, which is used to describe a particular method of handling RAID information and has the following attributes:

Attribute	Mandatory	Type	Range
Name	Yes	String	512 characters
Method	No	String	512 characters

Device

The entity, which is used to describe a device within a section and has the following attributes:

Attribute	Mandatory	Type	Range
UniqueID	Yes	Integer	1-2147483647
VendorID	Yes	Hexadecimal integer	4 hexadecimal digits
DeviceID	Yes	Hexadecimal integer	4 hexadecimal digits
Name	No	String	512 characters

APPENDIX B –   API Advanced Windows

The following section details the advanced windows in the EDF API that form part of a category.

Toolbox

This advanced window makes up part of the Main category. This advanced window is used by some tests to display additional information on errors that have occurred during testing. Tests that display additional error information to this window will have a note in the test description.

In addition to this information, the Toolbox window has buttons for many Windows® that are useful for diagnosing and correcting Windows® related issues.

Media Window

This advanced window is used by all groups within the Storage Media category. This advanced window will visually represent the storage device being tested when a compatible test is run, and will show the areas of the device being tested and the location of any errors that occur.

In addition to this visual information, the Media window has buttons to access the Windows® Event Viewer and Windows® Disk Defragmentation.

Drive Info

This advanced window makes up part of the Storage Media category. This advanced window displays S.M.A.R.T. information on all the Storage Media devices in the system. This window can also display information on the data usage on the device and contains buttons to access the Windows® Disk Clean-up and the Windows® Scandisk. The Disk Clean-up button will only be enabled when data usage view is selected.

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