

UEFI Graphic view 4.x

Contents

- 1 Contents
- 2 List of Figures
- 3 Revision History
- 4 Objective
- 5 Install and Run the UEFI diagnostics
 - 5.1 Download the Lenovo Diagnostics UEFI Bootable and Create a Bootable USB Flash Drive Using Windows GUI
 - 5.2 Run the UEFI Diagnostics
 - 5.2.1 Run the Lenovo Diagnostics UEFI Bootable from a Bootable Flash Drive
 - 5.2.2 Run the Lenovo Diagnostics UEFI Embedded
- 6 Home
- 7 Battery
- 8 CPU
 - 8.1 CPU Quick Diagnostics
 - 8.2 CPU Extended Diagnostics
- 9 Display
- 10 Fan
- 11 Memory
 - 11.1 Memory Quick Diagnostics
 - 11.2 Memory Extended Diagnostics
- 12 Motherboard
- 13 PCI Express
- 14 RAID
- 15 Storage
- 16 Optical
- 17 Video Card
- 18 Run All
- 19 Diagnostics Result Log
 - 19.1 Log Saving
- 20 System Information
- 21 Recover Bad Sectors (Not Available in this Version)
- 22 Exit Application
- 23 Approvals

List of Figures

- 1 Home
- 2 Home
- 3 Battery Device Selection
- 4 Battery Algorithm Selection
- 5 Battery Diagnostics Execution
 - 5.1 CPU Device Selection
 - 5.2 CPU Diagnostics Type
 - 5.3 CPU Algorithm Selection
 - 5.4 CPU Quick Diagnostics Execution
- 6 Display Algorithm Selection
- 7 Display Test Instruction Popup
- 8 Display Pattern Test Exhibition
- 9 Display Test Result Confirmation Popup
- 10 Fan Diagnostics Execution
 - 10.1 Memory Quick Diagnostics Execution
 - 10.2 Memory Extended Algorithm Selection
 - 10.3 Memory Extended Diagnostics Execution
- 11 Motherboard Algorithm Selection
- 12 Motherboard Diagnostics Execution
- 13 PCI Express Diagnostics Execution
- 14 RAID Algorithm Selection
- 15 RAID Diagnostics Execution
- 16 Storage Device Selection
- 17 Storage Information Popup
- 18 Storage Algorithm Selection
- 19 Storage Diagnostics Execution
- 20 Optical Algorithm Selection

- 21 Optical Device Diagnostics Execution
- 22 Run All Diagnostics Type
- 23 Run All Diagnostics Execution
 - 23.1 Run All Diagnostics Result Log
 - 23.2 Log Saving USB-Storage Selection
 - 23.3 Log Saving Successful Operation Popup
- 24 System Information's System Tab
- 25 System Information's Battery Tab
- 26 System Information's CPU Tab
- 27 System Information's Display Tab
- 28 System Information's Fan Tab
- 29 System Information's Memory Tab
- 30 System Information's Motherboard Tab
- 31 System Information's Optical Tab
- 32 System Information's PCI Express Tab
- 33 System Information's RAID Tab
- 34 System Information's Storage Tab

Revision History

Revision	Date	Author	Description	App. Version
1	April 18, 2016		Initial Version	
2	June 03, 2016		Updated to version 3.5	
3	Aug 12, 2016		Updated to version 03.06.000	
4	Aug 23, 2016		Updated to version 03.07.000 - Recover Bad Sectors tool runs on SSDs devices	
4.1	Oct 18, 2016		Updates for UEFI 03.07.001 - Minor changes and bugfixes	
4.2	Nov 21, 2016		Minor changes: - Improved section Download the Bootable UEFI Diagnostics and Create a Bootable USB - Replaced LCD by Display; - Removed any mentions of Configuration File as this version does not include that feature;	
4.3	Nov 29, 2016		Updated for UEFI 03.08.000 - Updated Storage test section; - Added new test: Smart Wearout Test - Updated Figure 21	
5	Jan 05, 2017		Reviewed the User's Guide - Minor changes and bugfixes; - Updated all mock-ups	
5.1	Jan 18, 2017		Updated for UEFI 03.09.000 - Updated Recover Bad Sectors section adding new images; - Minor changes and improvements across the document;	
5.2	Mar 3, 2017		Updated for UEFI 03.10.000 - Minor changes - Updated Figures 23 and 24: Media less optical self test has been removed;	
5.3	April 13, 2017		Updated for UEFI 03.10.001	

5.4	Jul 12, 2017		Updated for UEFI 03.11.000	
6	Oct 11, 2017		Updated for UEFI 03.12.001 - Battery Module - Optane new tests	
6.1	01 Mar 2018	Julio Cesar Silva	Adaptation to version 4x	04.00.000
6.2	28 Mar 2018	Julio Cesar Silva	Layout redesign	04.00.001

Objective

This document describes what is necessary to run the **Lenovo Diagnostics UEFI Embedded/Bootable** tests.

Install and Run the UEFI diagnostics

Note

No installation is required for the **Lenovo Diagnostics UEFI Embedded**.

Download the Lenovo Diagnostics UEFI Bootable and Create a Bootable USB Flash Drive Using Windows GUI

1. **Save the UEFI Diagnostics image and Bootable Generator:**
 - a. Go to www.Lenovo.com/diags
 - b. Click on "Downloads"
 - c. Under "Lenovo Diagnostics UEFI Bootable", click on "Create Bootable USB with UEFI Diagnostics"
 - d. Download UEFI Diagnostics zip file. Save the file. *(If your system has an Atom CPU, then click on "Lenovo UEFI Diagnostics – Bootable USB for Atom CPU based Tablet – ThinkPad 10" instead.)*
 - e. Download Bootable Generator Zip file
2. **Run the Bootable Generator application.**
 - a. Insert a USB flash drive
 - b. Go to the folder where you saved the bootable generator and double click on it
 - c. Double click "BootableGenerator.exe"
 - d. Your flash drive name will appear under "Select a device". Click to select it. If you want to, you can type a new name for the device.
 - e. Click on "Search". Click on the image name that you saved in step 1, letter d.
 - f. Click on "Generate".
 - g. A message will appear, warning that all existing files on the flash drive will be erased if you continue. If you are OK with that, then press "Yes" to continue.

Run the UEFI Diagnostics

Run the Lenovo Diagnostics UEFI Bootable from a Bootable Flash Drive

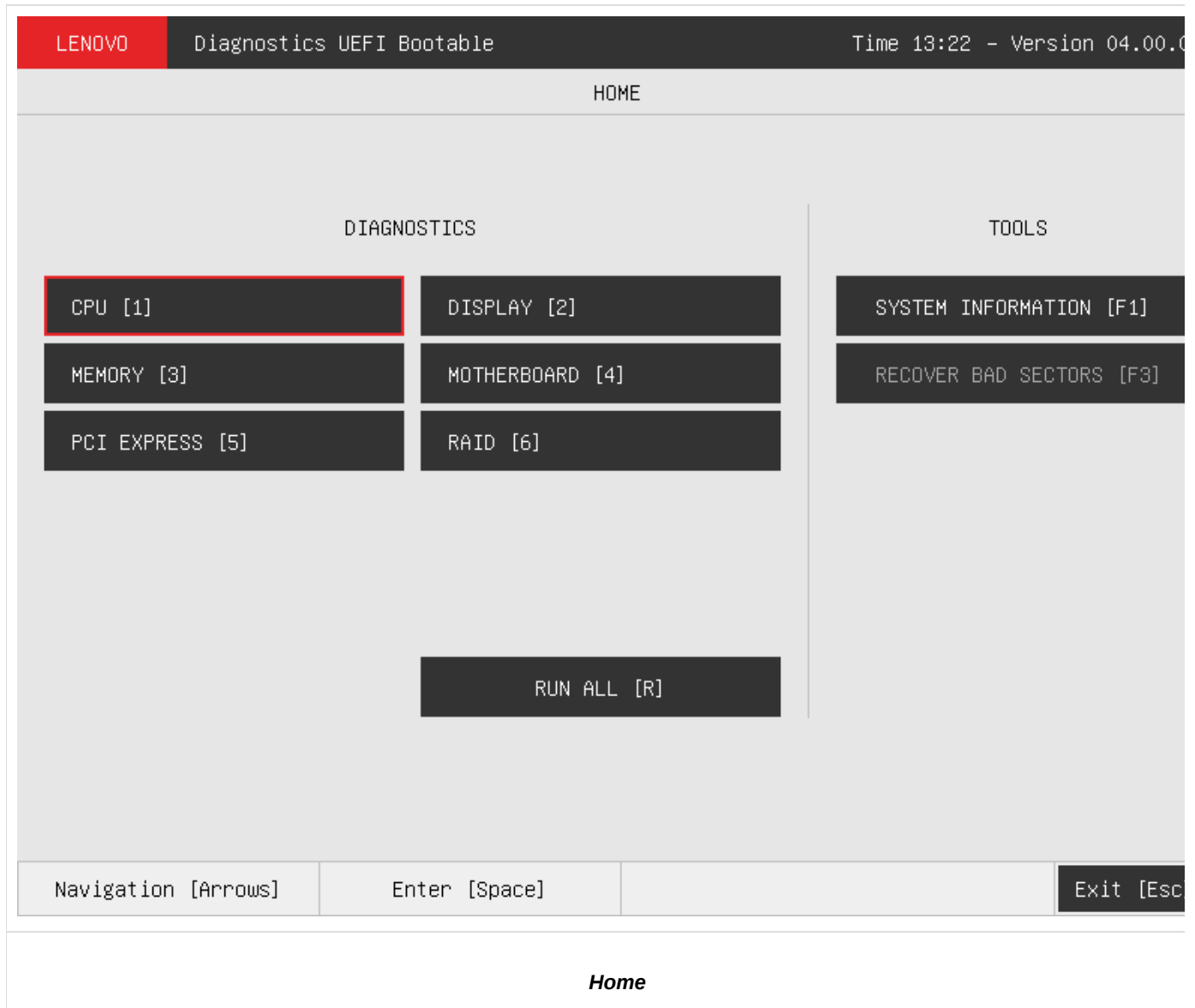
1. Create the Bootable flash drive, as explained in sections 1 and 2.
2. If Secure Boot is enabled in BIOS, disable it.
3. Insert the flash drive.
4. Restart the machine, then immediately press F12.
5. On the boot menu, select your usb flash drive, and press Enter.
6. The UEFI diagnostics menu will display on your screen.

Run the Lenovo Diagnostics UEFI Embedded

1. Boot the system, then immediately press:
 - F10 for Think systems
 - F11 for Idea systems
2. The UEFI diagnostics menu will be displayed on your screen.

Home

The Home screen for Lenovo Diagnostics UEFI is shown in the next figure.



The Home screen is displayed right after the machine is booted from a USB flash drive containing the application. The Home screen provides options to run all available tests for devices installed in the machine, options to see detailed information about these devices, and option to exit the application. The Home screen is composed of:

- Application Header Bar
- Screen Title Bar
- Two main sections (Diagnostics and Tools)
- Instruction Footer Bar

The Application Header Bar contains the name of the application, system's time and application's current version; the Screen Title Bar helps the user to be attentive of where s/he is throughout the application; and the Instruction Footer Bar contains additional instructions for using the screen, as well as the Exit button.

Additionally, the Home screen has two main sections: Diagnostics and Tools. The Diagnostics section provides options to run all installed tests; and the Tools section provides options of using extra tools.

The currently selected option is outlined in red. The user can change the selected option by using the arrow keys () and to enter the selected option by pressing SPACE or ENTER.

Diagnostics options, sub-options and their descriptions are subsequently described:

- Run All: It allows you to run all tests in one single execution.
 - Quick: It executes the modules' quick diagnostics.
 - Extended: It executes the modules' extended diagnostics.
 - Restrict prior selection to unattended tests: It restricts the prior selection to execute only tests that do not require human intervention.
- Battery: It selects and runs battery diagnostics.
- CPU
 - Quick: It selects and runs CPU quick diagnostics.
 - Extended: It selects and runs CPU extended diagnostics.
- Display: It selects and runs display diagnostics.
- Fan: It selects and runs fan diagnostics.
- Memory
 - Quick: It selects and runs memory quick diagnostics.
 - Extended: It selects and runs memory extended diagnostics.
- Motherboard: It selects and runs motherboard diagnostics.
- Optical: It selects and runs optical diagnostics.
- PCI Express: It selects and runs PCI express diagnostics.
- RAID: It selects and runs RAID diagnostics.
- Storage: It selects and runs storage diagnostics.

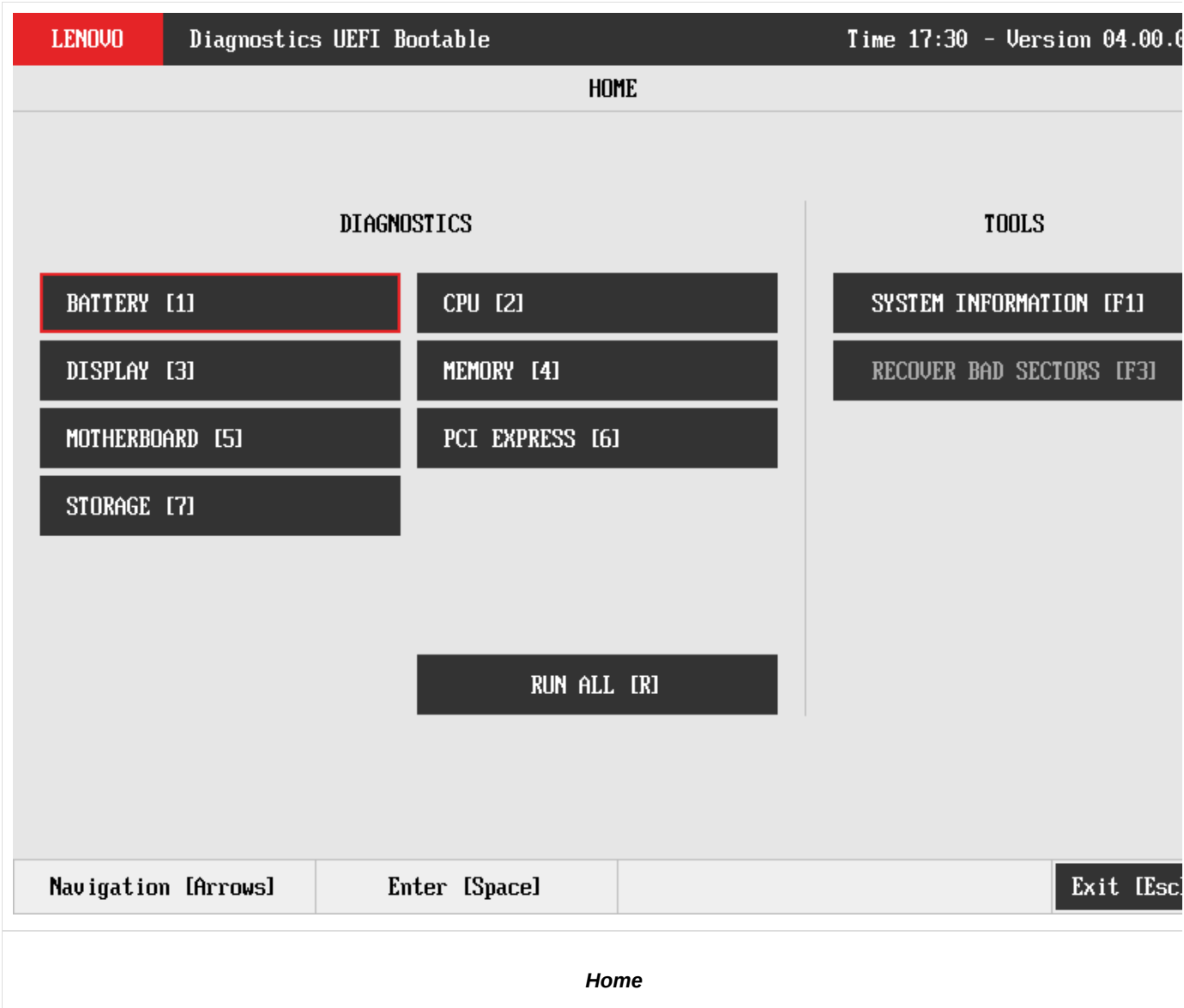
Tools options are:

- System Information: On its main screen, it displays machine, bios and processor information, as well as a menu that it is possible to retrieve information from other devices modules.
- Recover Bad Sectors: It allows to recover bad blocks/sectors on storage devices.

Battery

The battery module only works on Thorpe 64 bit system.

The system allows the user to access the battery diagnostics from the Home screen -> Diagnostics -> Battery.



After the user enters the Battery option, the application will display the battery devices available in the system. If there is more than one battery device installed, the menu Device Selection is displayed, as shown in the next figure.

BATTERY

DEVICE SELECTION

☒ Select / Deselect All Options☒ 213-SANYO☒ 63-SMP

Confirm [C]

Navigation [Arrows]

Enter [Space]

Exit [Esc]

Battery Device Selection

An item can be selected/deselected by pressing SPACE when it is highlighted. A desired item is selected when it shows "[X]" preceding it. In order to continue, the user has to press ENTER on the button Confirm. As a result, the system will show a list of tests, as illustrated in the next figure, where all the tests are initially selected to be tested.

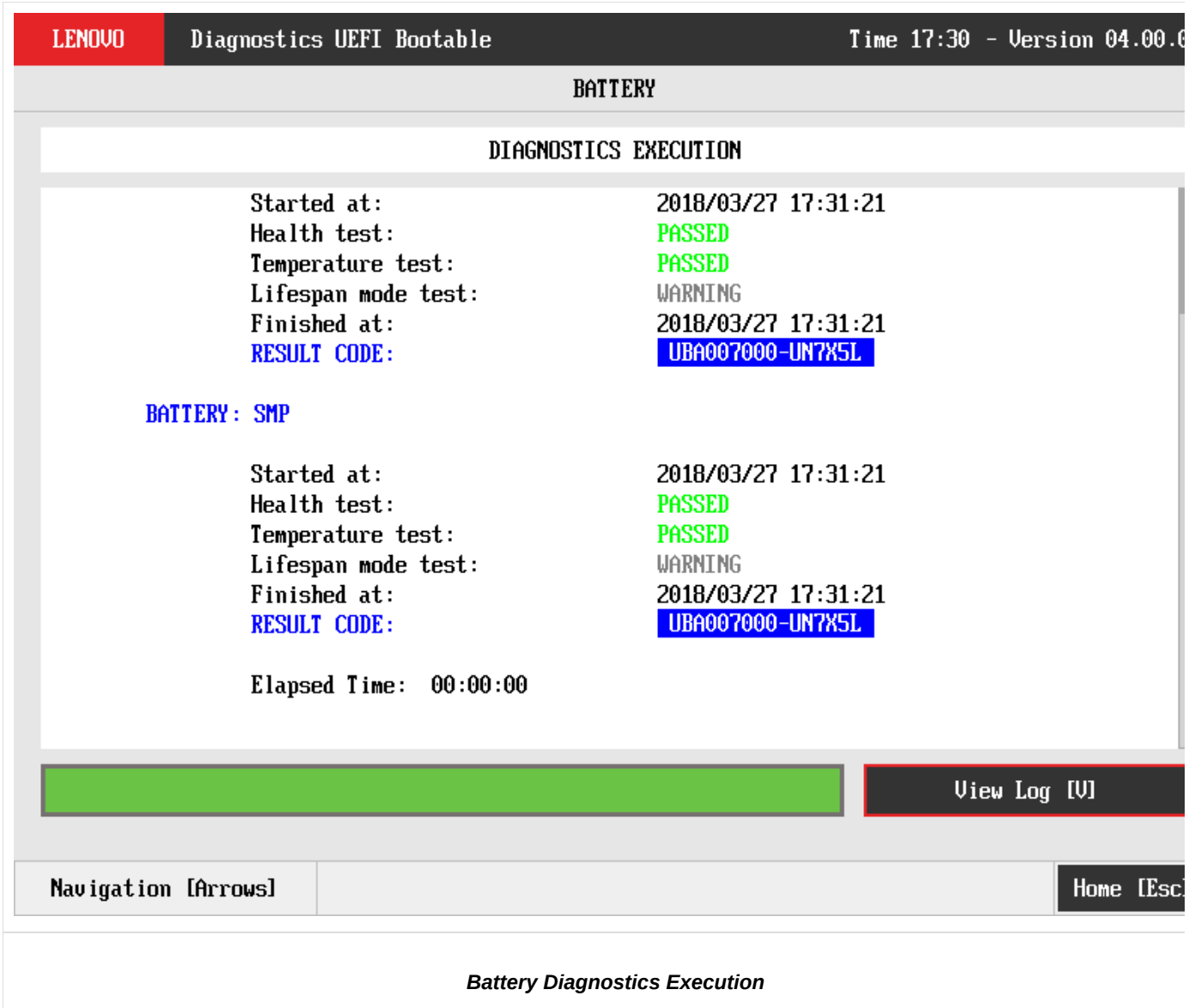
LENOVO	Diagnostics UEFI Bootable	Time 17:30 - Version 04.00.0
BATTERY 1: 213-SANYO		
ALGORITHM SELECTION		
[X] Select / Deselect All Options [X] Health test [X] Temperature test [X] Lifespan mode test		
Confirm [C]		
Navigation [Arrows]	Enter [Space]	Exit [Esc]

Battery Algorithm Selection

The user can deselect a selected test by pressing the SPACE key when the test is highlighted. An empty space will appear between the brackets. To select a test again, the user can press the SPACE key again.

Initially, the "Select/Deselect All Options" is selected. If the user presses the SPACE or ENTER key on that option, then all test options will be deselected. If the user selects the "Select/Deselect All Options" again, all tests options will be selected again.

At least one test must be selected, so that the application can run the diagnostic. After the user chooses which tests must be performed, the user can select the Confirm button by pressing the ENTER key. The system will run all tests, as illustrated in the figure below. The user can also press the ESC key to go back to the Home screen.



The Battery Diagnostics Execution screen provides information about the battery diagnostics progress, as well as information about the results. This screen is composed of:

- Application Header Bar
- Screen Title Bar
- Screen Sub-title Bar
- Diagnostic Information Section
- Instruction Footer Bar

The Application Header Bar contains the name of the application, system's time and application's current version; the Screen Title and Screen Sub-title Bars help the user to be attentive of where s/he is throughout the application; and the Instruction Footer Bar contains additional instructions for using the screen, as well as the Exit button.

The screen has one main section that provides information about the diagnostic, as well as a progress bar and a View Log button, both placed at the bottom of the section, where the former indicates the global execution progress and the latter allows to visualize tests details after finishing the diagnostic execution. That section contains the following diagnostics information:

- Final Result Code (an encrypted code that informs which modules were tested).
- Date and time that diagnostic has started.
- Test (name of the test being currently run).
- Progress of the current test (current test's progress in percentage).
- A list with all the algorithms which compose device test and their respective status, whereas an algorithm can have six status:
 - WAITING, indicating the test is waiting to be run.
 - IN PROGRESS, indicating the test is being run.
 - PASSED, indicating the algorithm has found no problems at device.
 - FAILED, indicating the algorithm has found one or more faults.

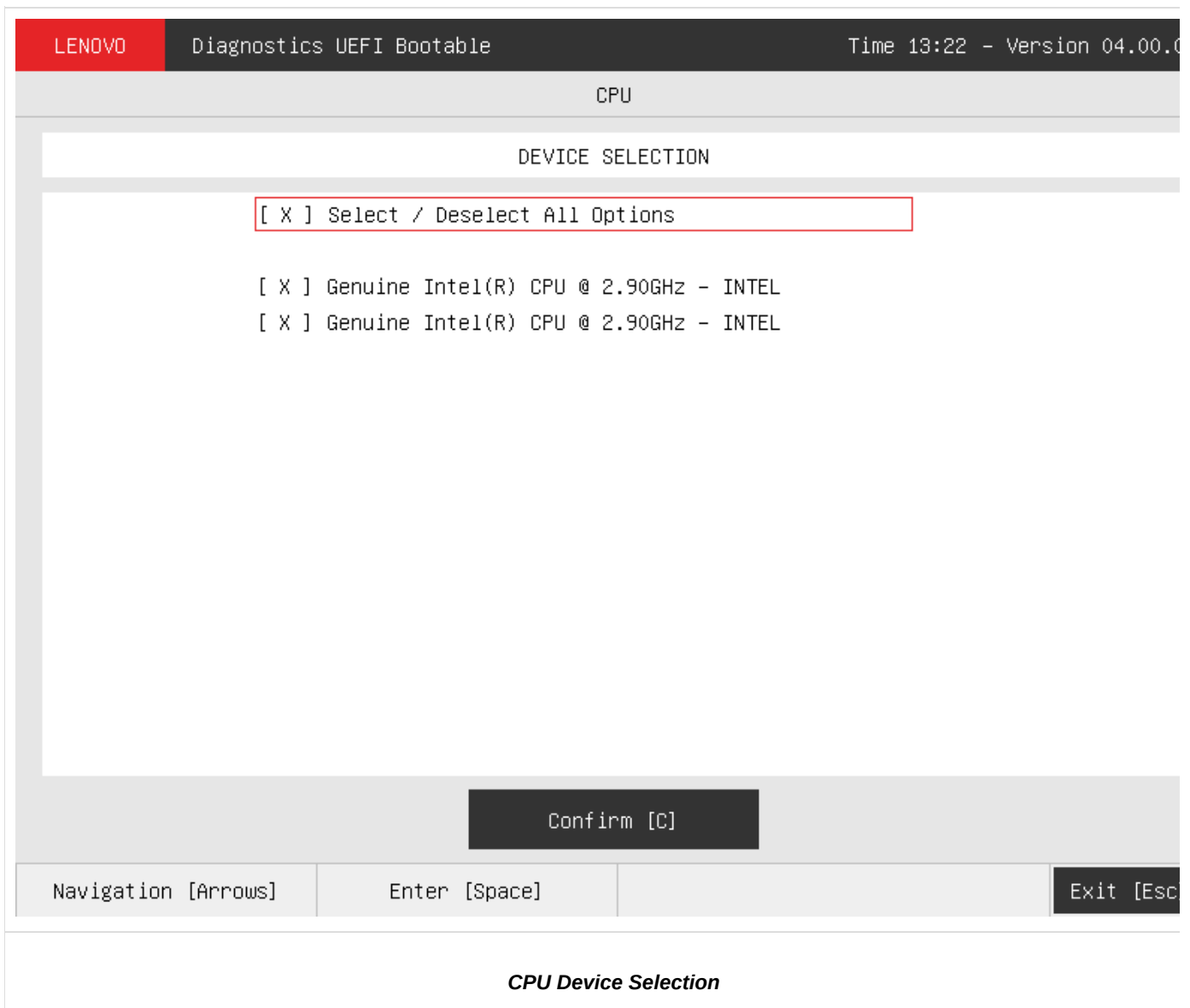
- CANCELED, indicating the algorithm was canceled by user.
- NOT APPLICABLE, indicating the algorithm is not supported by device).
- Result Code for test.
- Date and time that the tests are finished (displayed after test is finished).
- Elapsed time, that is a duration of test in hours, minutes and seconds (displayed after test is finished).

While the diagnostic is running, the user can stop it at any time by pressing the ESC key. If the user does that, the diagnostic is aborted and the status of the test that is being run is changed to CANCELED. After the diagnostic is finished or canceled, the user can go back to the Home screen (by pressing ESC key again) or visualize the test log (by pressing the V key).

CPU

The system allows the user to access the CPU diagnostics from the Home screen -> Diagnostics -> CPU.

After the user enters the CPU option, the application will display the CPU devices available in the system. If there is more than one CPU device installed, the menu Device Selection is displayed, as shown in the next figure.



An item can be selected/deselected by pressing SPACE when it is highlighted. A desired item is selected when it shows "[X]" preceding it.

After the user enters the Confirm button, the CPU diagnostics type's menu will be displayed, as the following image.

LENOVO	Diagnostics UEFI Bootable	Time 13:22 - Version 04.00.0
CPU		
DIAGNOSTICS TYPE		
[X] Quick [] Extended		
Confirm [C]		
Navigation [Arrows]	Enter [Space]	Exit [Esc]

CPU Diagnostics Type

CPU Quick Diagnostics

The system allows the user to access the CPU quick diagnostics from the Home screen -> Diagnostics -> CPU.

An item can be selected/deselected by pressing SPACE when it is highlighted. A desired item is selected when it shows "[X]" preceding it. To access the CPU quick diagnostics, the user can use the UP/DOWN arrow key until "Quick" is focused and press SPACE key to select it.

In order to continue, the user has to press ENTER on the button Confirm. As a result, the system will show a list of tests, as illustrated in the next figure, and all the tests are initially selected to be tested.

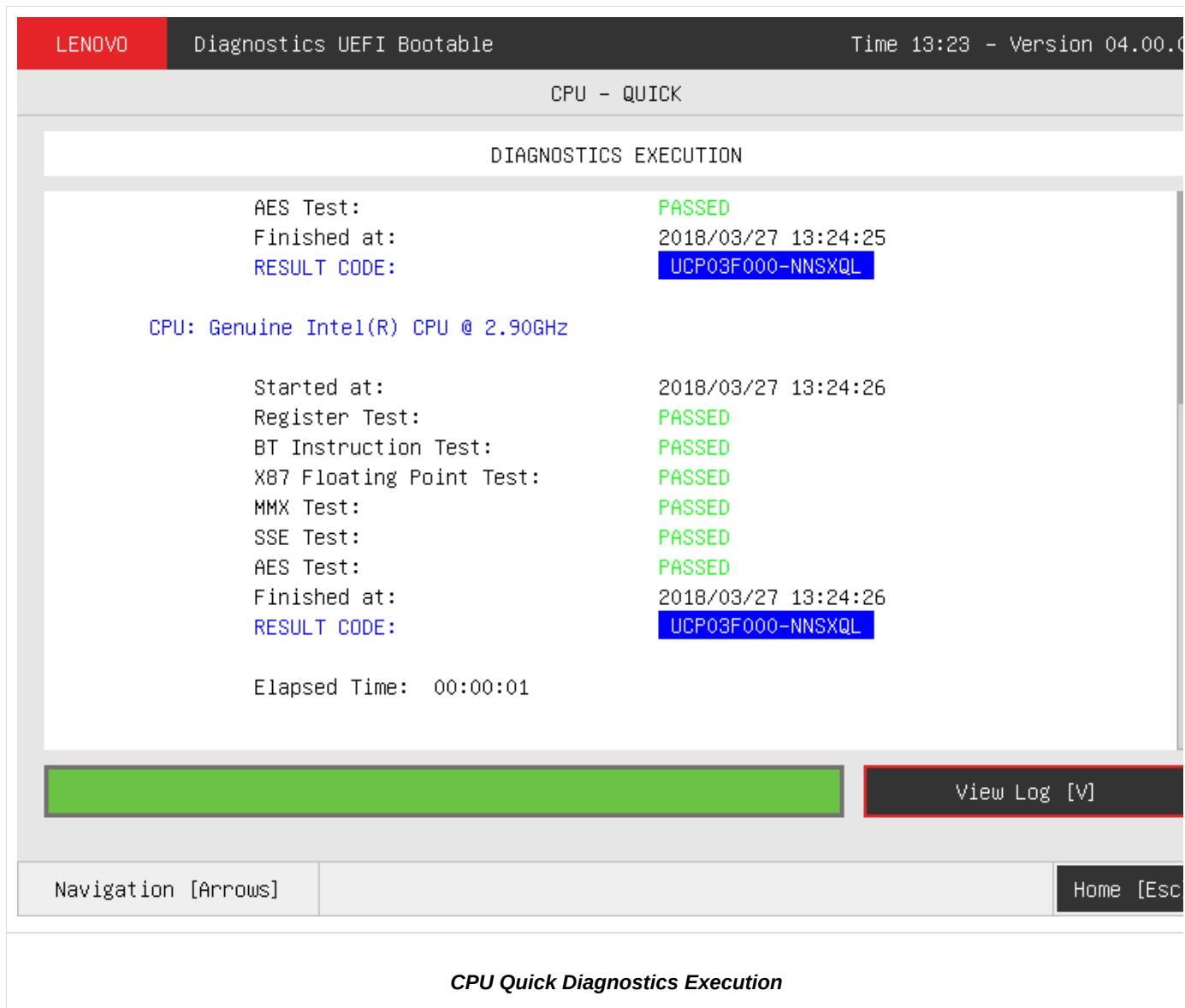
The user can deselect a selected test by pressing the SPACE key when the test is highlighted. An empty space will appear between the brackets. To select a test again, the user can press the SPACE key again.

Initially, the "Select/Deselect All Options" is selected. If the user presses the SPACE or ENTER key on that option, then all test options will be deselected. If the user selects the "Select/Deselect All Options" again, all tests options will be selected again.

LENOVO	Diagnostics UEFI Bootable	Time 13:23 - Version 04.00.0
CPU 1: Genuine Intel(R) CPU @ 2.90GHz - INTEL		
ALGORITHM SELECTION		
[X] Select / Deselect All Options [X] Register Test [X] BT Instruction Test [X] X87 Floating Point Test [X] MMX Test [X] SSE Test [X] AES Test		
Confirm [C]		
Navigation [Arrows]	Enter [Space]	Exit [Esc]

CPU Algorithm Selection

At least one test must be selected, so that the application can run the diagnostic. After the user chooses which tests must be performed, the user can select the Confirm button by pressing the ENTER key. The system will run all tests, as illustrated in the figure below. The user can also press the ESC key to go back to the Home screen.



The CPU Quick Diagnostics Execution screen provides information about the CPU diagnostics progress, as well as information about the results. This screen is composed of:

- Application Header Bar
- Screen Title Bar
- Screen Sub-title Bar
- Diagnostic Information Section
- Instruction Footer Bar

The Application Header Bar contains the name of the application, system's time and application's current version; the Screen Title and Screen Sub-title Bars help the user to be attentive of where s/he is throughout the application; and the Instruction Footer Bar contains additional instructions for using the screen, as well as the Exit button.

The screen has one main section that provides information about the diagnostic, as well as a progress bar and a View Log button, both placed at the bottom of the section, where the former indicates the global execution progress and the latter allows to visualize tests details after finishing the diagnostic execution. That section contains the following diagnostics information:

- Final Result Code (an encrypted code that informs which modules were tested).
- Date and time that diagnostic has started.
- Test (name of the test being currently run).
- Progress of the current test (current test's progress in percentage).
- A list with all the algorithms which compose device test and their respective status, whereas an algorithm can have six status:
 - WAITING, indicating the test is waiting to be run.
 - IN PROGRESS, indicating the test is being run.
 - PASSED, indicating the algorithm has found no problems at device.
 - FAILED, indicating the algorithm has found one or more faults.

- CANCELED, indicating the algorithm was canceled by user.
- NOT APPLICABLE, indicating the algorithm is not supported by device).
- Result Code for test.
- Date and time that the tests are finished (displayed after test is finished).
- Elapsed time, that is a duration of test in hours, minutes and seconds (displayed after test is finished).

While the diagnostic is running, the user can stop it at any time by pressing the ESC key. If the user does that, the diagnostic is aborted and the status of the test that is being run is changed to CANCELED. After the diagnostic is finished or canceled, the user can go back to the Home screen (by pressing ESC key again) or visualize the test log (by pressing the V key).

CPU Extended Diagnostics

The system allows the user to access the CPU extended diagnostics from the Home screen -> Diagnostics -> CPU.

An item can be selected/deselected by pressing SPACE when it is highlighted. A desired item is selected when it shows "[X]" preceding it. To access the CPU extended diagnostics, the user can use the UP/DOWN arrow key until "Extended" is focused and press SPACE key to select it.

In order to continue, the user has to press ENTER on the button Confirm. When the user presses ENTER, the application will run the "Stress test", and it will take about 10 minutes to complete.

The CPU Extended Diagnostics Execution screen provides information about the CPU diagnostics progress, as well as information about the results. This screen is composed of:

- Application Header Bar
- Screen Title Bar
- Screen Sub-title Bar
- Diagnostic Information Section
- Instruction Footer Bar

The Application Header Bar contains the name of the application, system's time and application's current version; the Screen Title and Screen Sub-title Bars help the user to be attentive of where s/he is throughout the application; and the Instruction Footer Bar contains additional instructions for using the screen, as well as the Exit button.

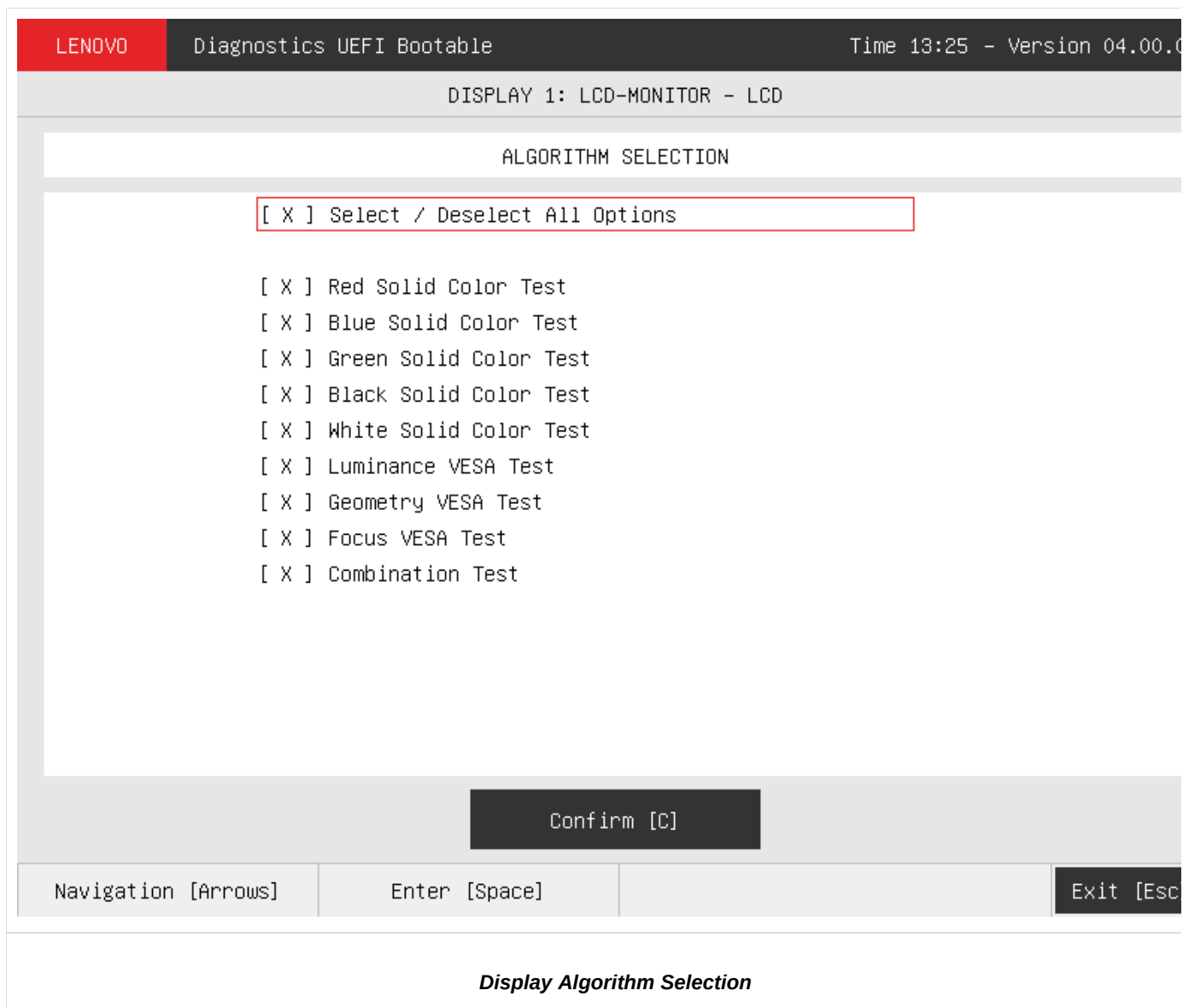
The screen has one main section that provides information about the diagnostic, as well as a progress bar and a View Log button, both placed at the bottom of the section, where the former indicates the global execution progress and the latter allows to visualize tests details after finishing the diagnostic execution. That section contains the following diagnostics information:

- Final Result Code (an encrypted code that informs which modules were tested).
- Date and time that diagnostic has started.
- Test (name of the test being currently run).
- Progress of the current test (current test's progress in percentage).
- A list with all the algorithms which compose device test and their respective status, whereas an algorithm can have six status:
 - WAITING, indicating the test is waiting to be run.
 - IN PROGRESS, indicating the test is being run.
 - PASSED, indicating the algorithm has found no problems at device.
 - FAILED, indicating the algorithm has found one or more faults.
 - CANCELED, indicating the algorithm was canceled by user.
 - NOT APPLICABLE, indicating the algorithm is not supported by device).
- Result Code for test.
- Date and time that the tests are finished (displayed after test is finished).
- Elapsed time, that is a duration of test in hours, minutes and seconds (displayed after test is finished).

While the diagnostic is running, the user can stop it at any time by pressing the ESC key. If the user does that, the diagnostic is aborted and the status of the test that is being run is changed to CANCELED. After the diagnostic is finished or canceled, the user can go back to the Home screen (by pressing ESC key again) or visualize the test log (by pressing the V key).

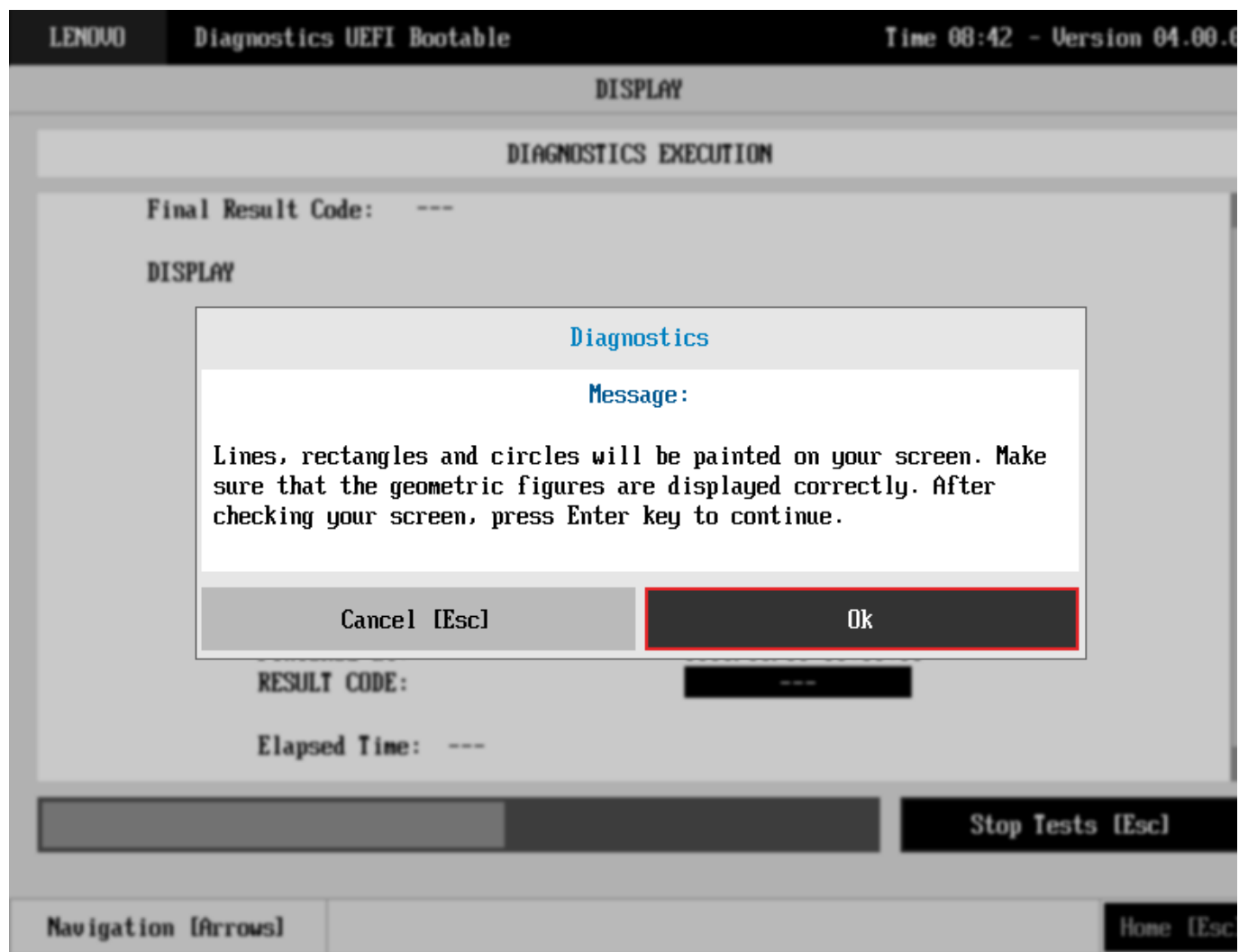
Display

After the user enters the Display option, the application computes the number of algorithms that can be performed by the test. If the test has more than one algorithm, Algorithm Selection screen is displayed, as shown in the figure below.



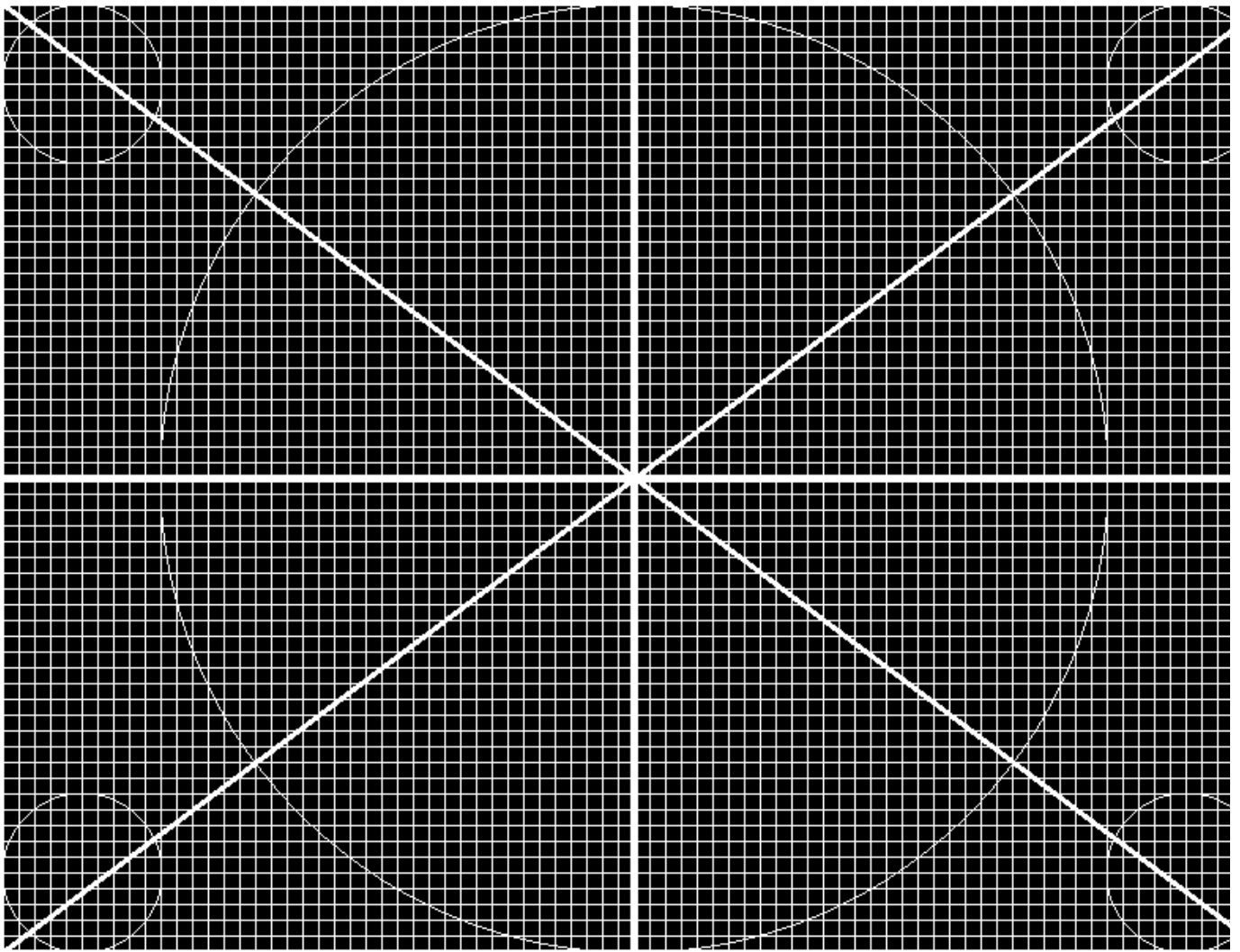
The Algorithm Selection screen allows the user to select which algorithms will be tested by the application. After the user chooses at least one test and chooses the Confirm button on the Algorithm Selection screen, the Display tests start.

Before an algorithm is run, a popup containing instructions about the algorithm is displayed, as shown in the following figure. The user can press the ENTER key to proceed with the algorithm execution or can press ESC to abort the test.



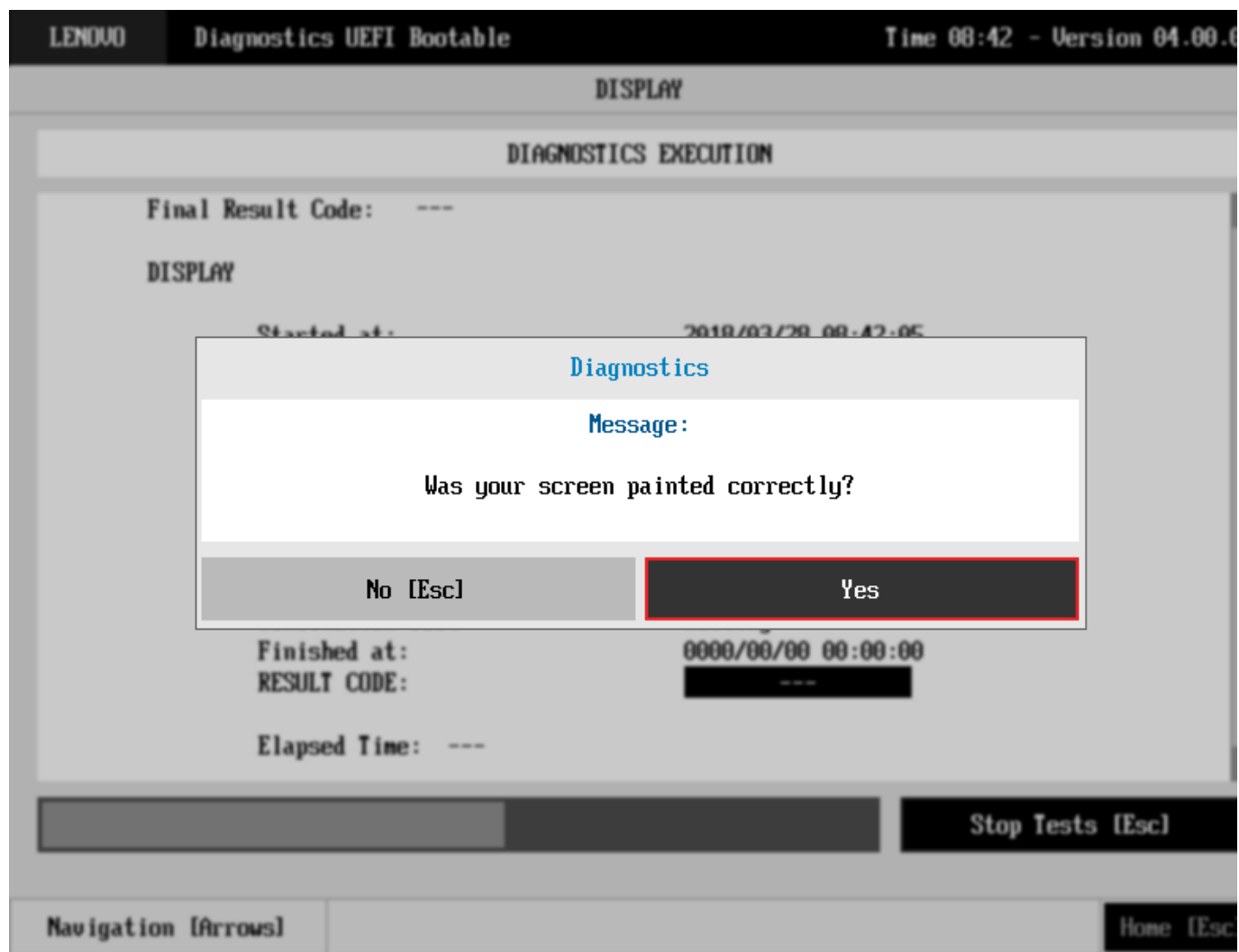
Display Test Instruction Popup

If the user chooses to proceed with running the test, an image pattern will be displayed on the screen, as shown in the following figure. After the user checks the screen, any key can be pressed to proceed with running the test.



Display Pattern Test Exhibition

After that, a popup shows up, asking the user if the pattern was correctly painted on the display. If so, the user must press the ENTER key; if not, the user must press the ESC key. This popup can be seen in the next figure.

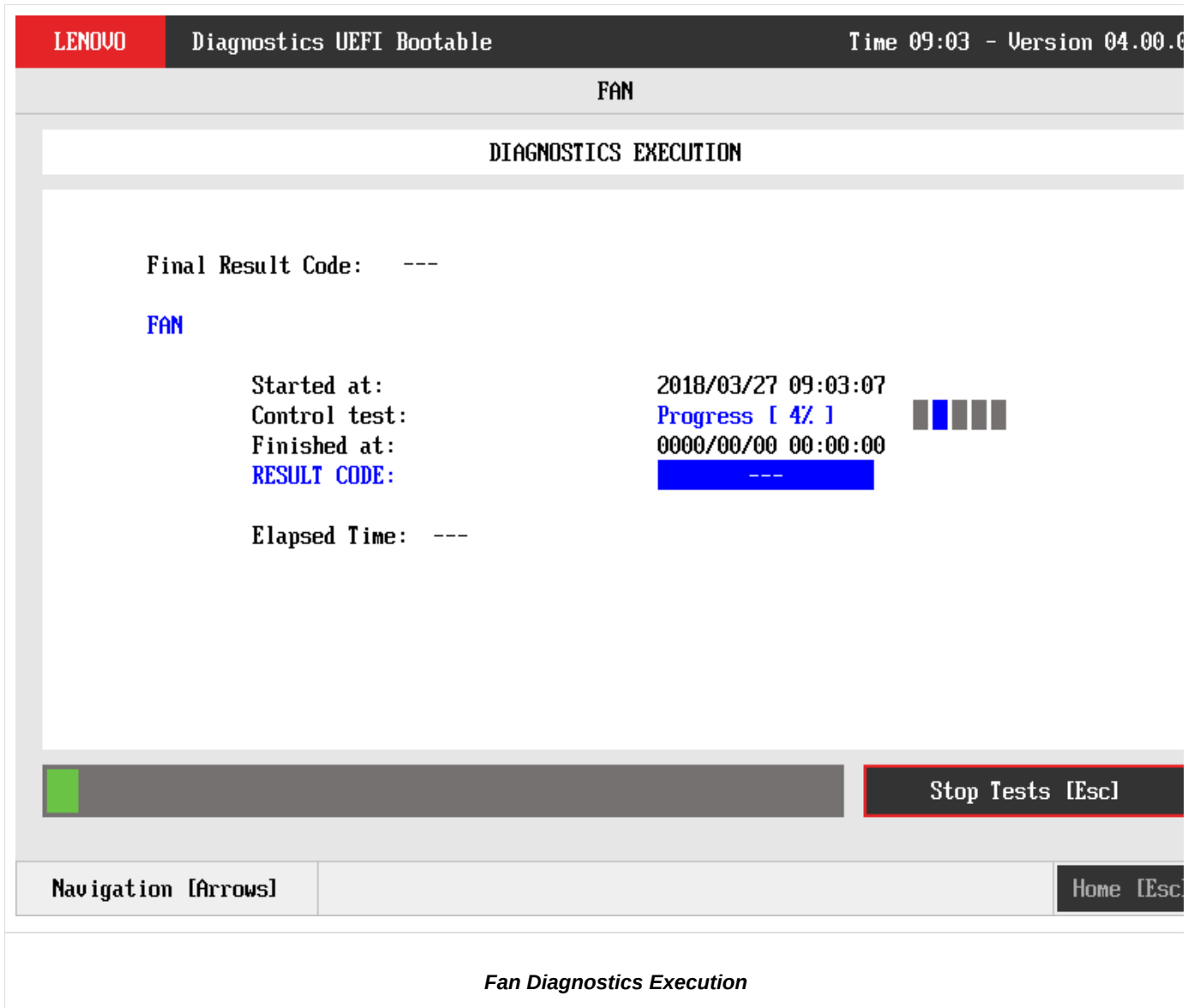


Display Test Result Confirmation Popup

This process is repeated for each selected algorithm. After the test is finished or canceled, the user can go back to the Home screen by pressing the ESC key again or to the Diagnostics Result Log screen by pressing the V key.

Fan

After the user enters the Fan option, the application verifies the number of algorithms that can be performed by the test. If the diagnostic has only one algorithm, it will be started, as shown in the next figure.



The Fan Diagnostics Execution screen provides information about the fan diagnostics progress, as well as information about the results. This screen is composed of:

- Application Header Bar
- Screen Title Bar
- Screen Sub-title Bar
- Diagnostic Information Section
- Instruction Footer Bar

The Application Header Bar contains the name of the application, system's time and application's current version; the Screen Title and Screen Sub-title Bars help the user to be attentive of where s/he is throughout the application; and the Instruction Footer Bar contains additional instructions for using the screen, as well as the Exit button.

The screen has one main section that provides information about the diagnostic, as well as a progress bar and a View Log button, both placed at the bottom of the section, where the former indicates the global execution progress and the latter allows to visualize tests details after finishing the diagnostic execution. That section contains the following diagnostics information:

- Final Result Code (an encrypted code that informs which modules were tested).
- Date and time that diagnostic has started.
- Test (name of the test being currently run).
- Progress of the current test (current test's progress in percentage).
- A list with all the algorithms which compose device test and their respective status, whereas an algorithm can have six status:
 - WAITING, indicating the test is waiting to be run.
 - IN PROGRESS, indicating the test is being run.
 - PASSED, indicating the algorithm has found no problems at device.
 - FAILED, indicating the algorithm has found one or more faults.

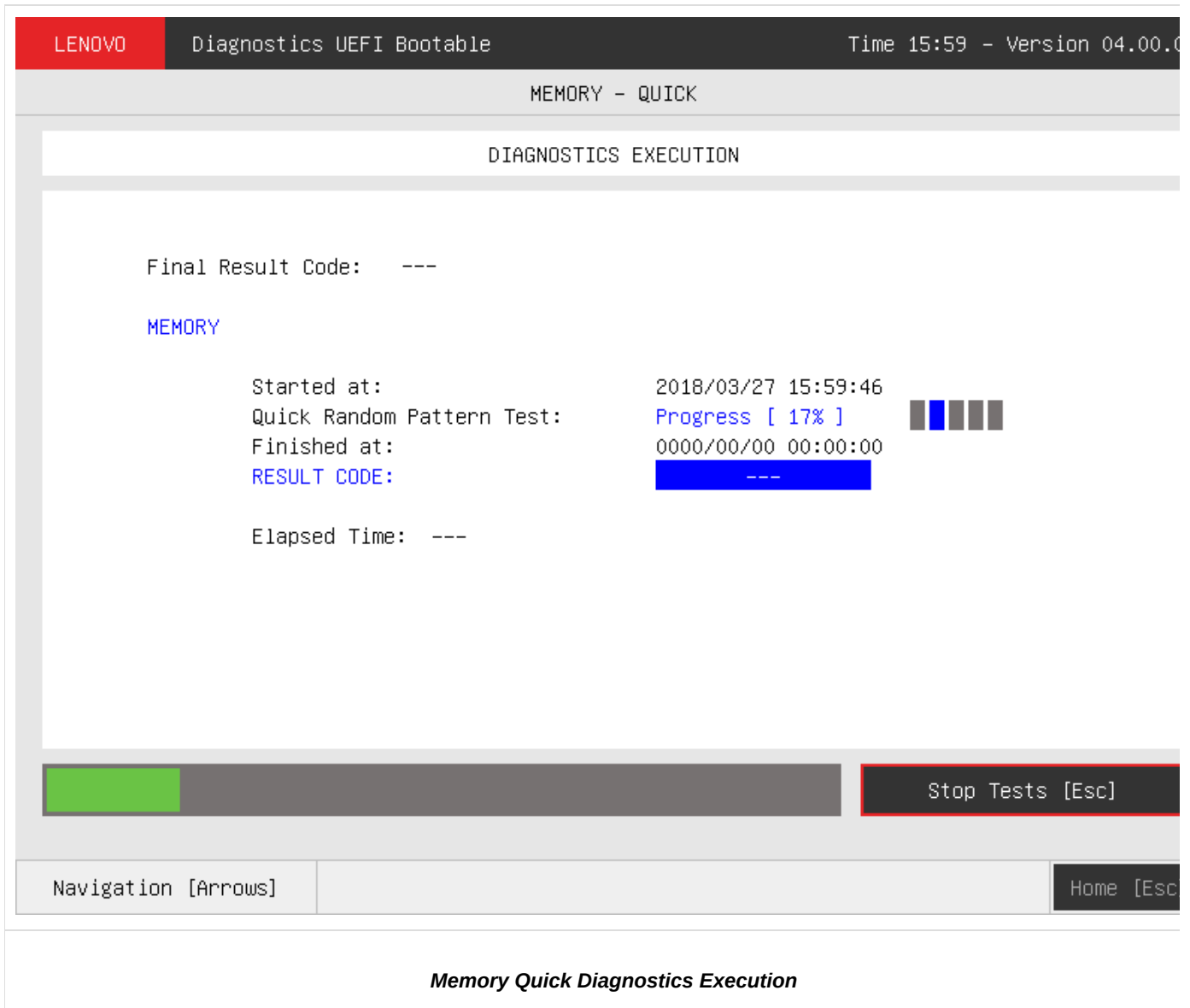
- CANCELED, indicating the algorithm was canceled by user.
- NOT APPLICABLE, indicating the algorithm is not supported by device).
- Result Code for test.
- Date and time that the tests are finished (displayed after test is finished).
- Elapsed time, that is a duration of test in hours, minutes and seconds (displayed after test is finished).

While the diagnostic is running, the user can stop it at any time by pressing the ESC key. If the user does that, the diagnostic is aborted and the status of the test that is being run is changed to CANCELED. After the diagnostic is finished or canceled, the user can go back to the Home screen (by pressing ESC key again) or visualize the test log (by pressing the V key).

Memory

Memory Quick Diagnostics

The Memory Quick Diagnostics Execution screen is shown in the figure below.



The system allows the user to access the memory quick diagnostics from the Home screen -> Diagnostics -> Memory.

The Memory Quick Diagnostics Execution screen provides information about the memory diagnostics progress, as well as information about the results. This screen is composed of:

- Application Header Bar

- Screen Title Bar
- Screen Sub-title Bar
- Diagnostic Information Section
- Instruction Footer Bar

The Application Header Bar contains the name of the application, system's time and application's current version; the Screen Title and Screen Sub-title Bars help the user to be attentive of where s/he is throughout the application; and the Instruction Footer Bar contains additional instructions for using the screen, as well as the Exit button.

The screen has one main section that provides information about the diagnostic, as well as a progress bar and a View Log button, both placed at the bottom of the section, where the former indicates the global execution progress and the latter allows to visualize tests details after finishing the diagnostic execution. That section contains the following diagnostics information:

- Final Result Code (an encrypted code that informs which modules were tested).
- Date and time that diagnostic has started.
- Test (name of the test being currently run).
- Progress of the current test (current test's progress in percentage).
- A list with all the algorithms which compose device test and their respective status, whereas an algorithm can have six status:
 - WAITING, indicating the test is waiting to be run.
 - IN PROGRESS, indicating the test is being run.
 - PASSED, indicating the algorithm has found no problems at device.
 - FAILED, indicating the algorithm has found one or more faults.
 - CANCELED, indicating the algorithm was canceled by user.
 - NOT APPLICABLE, indicating the algorithm is not supported by device).
- Result Code for test.
- Date and time that the tests are finished (displayed after test is finished).
- Elapsed time, that is a duration of test in hours, minutes and seconds (displayed after test is finished).

While the diagnostic is running, the user can stop it at any time by pressing the ESC key. If the user does that, the diagnostic is aborted and the status of the test that is being run is changed to CANCELED. After the diagnostic is finished or canceled, the user can go back to the Home screen (by pressing ESC key again) or visualize the test log (by pressing the V key).

Memory Extended Diagnostics

The system allows the user to access the memory extended diagnostics from the Home screen -> Diagnostics -> Memory.

An item can be selected/deselected by pressing SPACE when it is highlighted. A desired item is selected when it shows "[X]" preceding it. To access the memory extended diagnostics, the user can use the UP/DOWN arrow key until "Extended" is focused and press SPACE key to select it.

In order to continue, the user has to press ENTER on the button Confirm. As a result, the system will show a list of tests, as illustrated in the next figure, and all the tests are initially selected to be tested.

The user can deselect a selected test by pressing the SPACE key when the test is highlighted. An empty space will appear between the brackets. To select a test again, the user can press the SPACE key again.

Initially, the "Select/Deselect All Options" is selected. If the user presses the SPACE or ENTER key on that option, then all test options will be deselected. If the user selects the "Select/Deselect All Options" again, all tests options will be selected again.

LENOVO

Diagnostics UEFI Bootable

Time 15:59 - Version 04.00.0

MEMORY 1: MAIN_MEMORY

ALGORITHM SELECTION

[X] Select / Deselect All Options

[X] Advanced Integrity Test

[X] Address Test

[X] Bit High Test

[X] Bit Low Test

[X] Walking Ones Right Test

[X] Walking Ones Left Test

[X] Modulo-20 Test

[X] Moving Inversions-8bit Test

[X] Moving Inversions-32bit Test

[X] Random Pattern Test

[X] Random Number Sequence Test

[X] Block Move Test

[1/2]

Confirm [C]

...More [M]

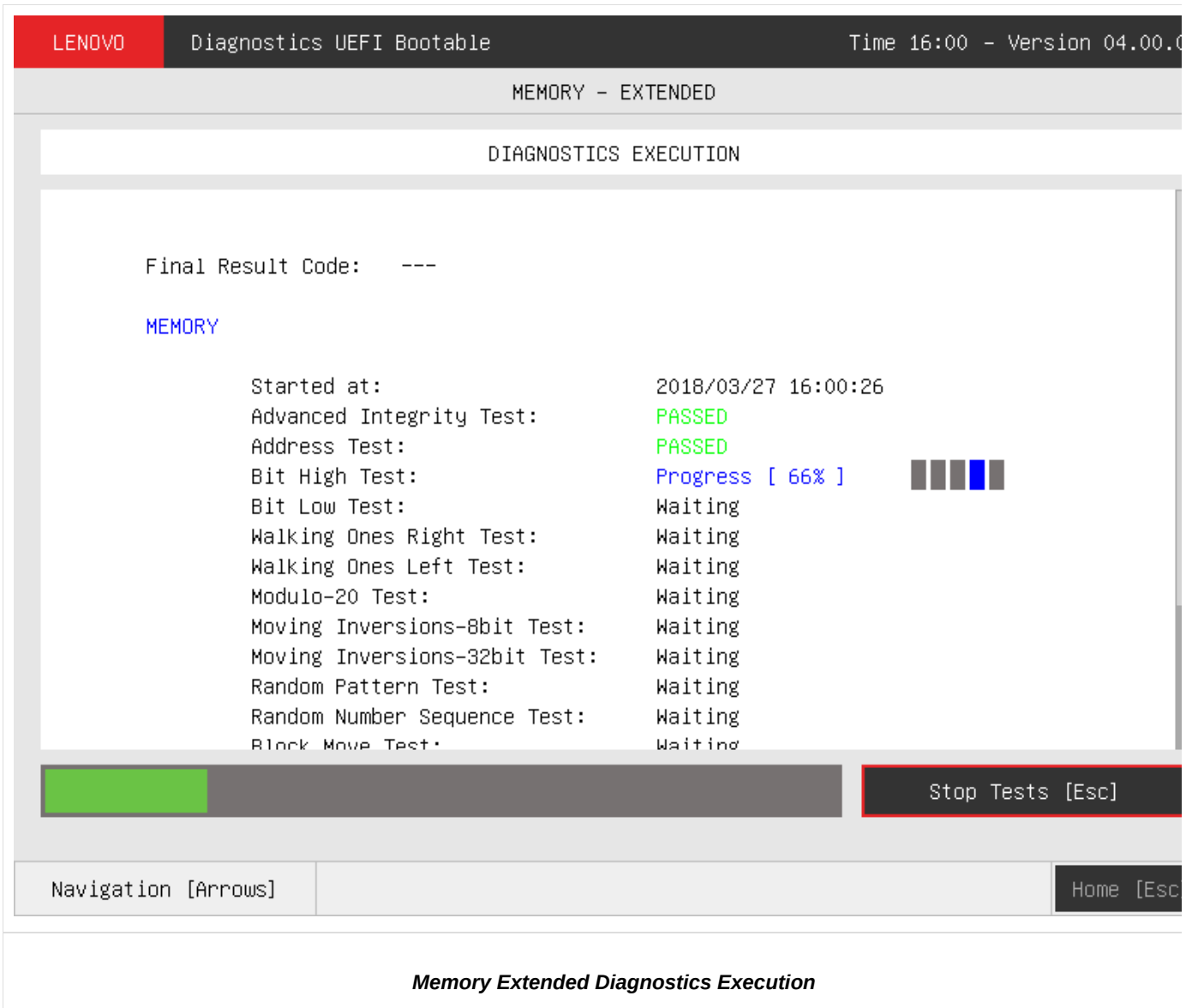
Navigation [Arrows]

Enter [Space]

Exit [Esc]

Memory Extended Algorithm Selection

At least one test must be selected, so that the application can run the diagnostic. After the user chooses which tests must be performed, the user can select the Confirm button by pressing the ENTER key. The system will run all tests, as illustrated in the figure below. The user can also press the ESC key to go back to the Home screen.



The Memory Extended Diagnostics Execution screen provides information about the memory diagnostics progress, as well as information about the results. This screen is composed of:

- Application Header Bar
- Screen Title Bar
- Screen Sub-title Bar
- Diagnostic Information Section
- Instruction Footer Bar

The Application Header Bar contains the name of the application, system's time and application's current version; the Screen Title and Screen Sub-title Bars help the user to be attentive of where s/he is throughout the application; and the Instruction Footer Bar contains additional instructions for using the screen, as well as the Exit button.

The screen has one main section that provides information about the diagnostic, as well as a progress bar and a View Log button, both placed at the bottom of the section, where the former indicates the global execution progress and the latter allows to visualize tests details after finishing the diagnostic execution. That section contains the following diagnostics information:

- Final Result Code (an encrypted code that informs which modules were tested).
- Date and time that diagnostic has started.
- Test (name of the test being currently run).
- Progress of the current test (current test's progress in percentage).
- A list with all the algorithms which compose device test and their respective status, whereas an algorithm can have six status:
 - WAITING, indicating the test is waiting to be run.
 - IN PROGRESS, indicating the test is being run.
 - PASSED, indicating the algorithm has found no problems at device.
 - FAILED, indicating the algorithm has found one or more faults.

- CANCELED, indicating the algorithm was canceled by user.
- NOT APPLICABLE, indicating the algorithm is not supported by device).
- Result Code for test.
- Date and time that the tests are finished (displayed after test is finished).
- Elapsed time, that is a duration of test in hours, minutes and seconds (displayed after test is finished).

While the diagnostic is running, the user can stop it at any time by pressing the ESC key. If the user does that, the diagnostic is aborted and the status of the test that is being run is changed to CANCELED. After the diagnostic is finished or canceled, the user can go back to the Home screen (by pressing ESC key again) or visualize the test log (by pressing the V key).

Motherboard

After the user enters the Motherboard option, the application computes the number of algorithms that can be performed by the test. If the test has more than one algorithm, Algorithm Selection screen is displayed, as shown in the next figure.

LENOVO Diagnostics UEFI Bootable Time 16:00 - Version 04.00.0

MOTHERBOARD 1: MAIN_MOTHERBOARD

ALGORITHM SELECTION

[X] Select / Deselect All Options

[X] Chipset Test

[X] PCI/PCIe Test

[X] RTC Test

[X] USB Test

Confirm [C]

Navigation [Arrows] Enter [Space] Exit [Esc]

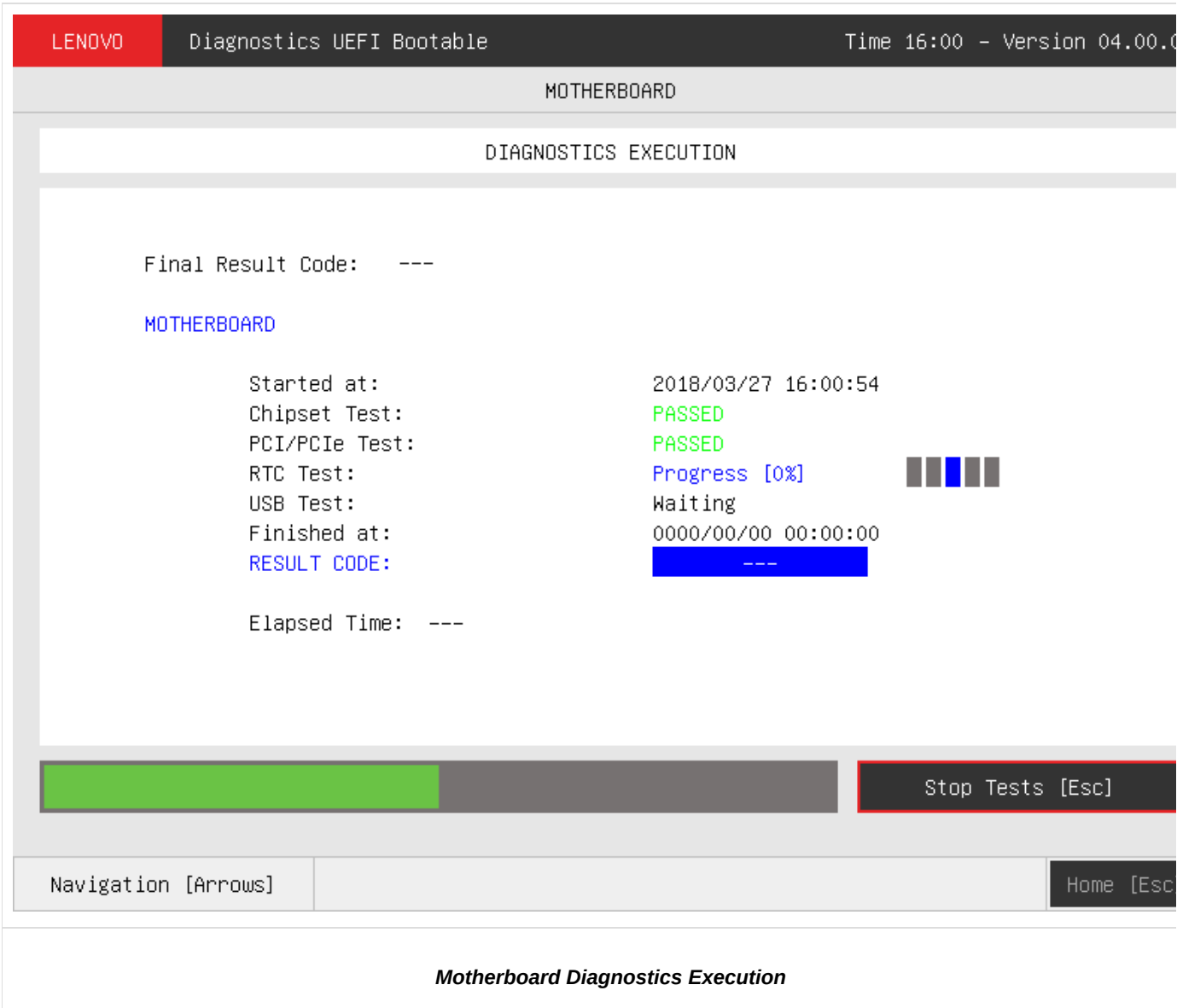
Motherboard Algorithm Selection

The system allows the user to access the motherboard diagnostics from the Home screen -> Diagnostics -> Motherboard.

The user can deselect a selected test by pressing the SPACE key when the test is highlighted. An empty space will appear between the brackets. To select a test again, the user can press the SPACE key again.

Initially, the "Select/Deselect All Options" is selected. If the user presses the SPACE or ENTER key on that option, then all test options will be deselected. If the user selects the "Select/Deselect All Options" again, all tests options will be selected again.

At least one test must be selected, so that the application can run the diagnostic. After the user chooses which tests must be performed, the user can select the Confirm button by pressing the ENTER key. The system will run all tests, as illustrated in the figure below. The user can also press the ESC key to go back to the Home screen.



The Motherboard Diagnostics Execution screen provides information about the motherboard diagnostics progress, as well as information about the results. This screen is composed of:

- Application Header Bar
- Screen Title Bar
- Screen Sub-title Bar
- Diagnostic Information Section
- Instruction Footer Bar

The Application Header Bar contains the name of the application, system's time and application's current version; the Screen Title and Screen Sub-title Bars help the user to be attentive of where s/he is throughout the application; and the Instruction Footer Bar contains additional instructions for using the screen, as well as the Exit button.

The screen has one main section that provides information about the diagnostic, as well as a progress bar and a View Log button, both placed at the bottom of the section, where the former indicates the global execution progress and the latter allows to visualize tests details after finishing the diagnostic execution. That section contains the following diagnostics information:

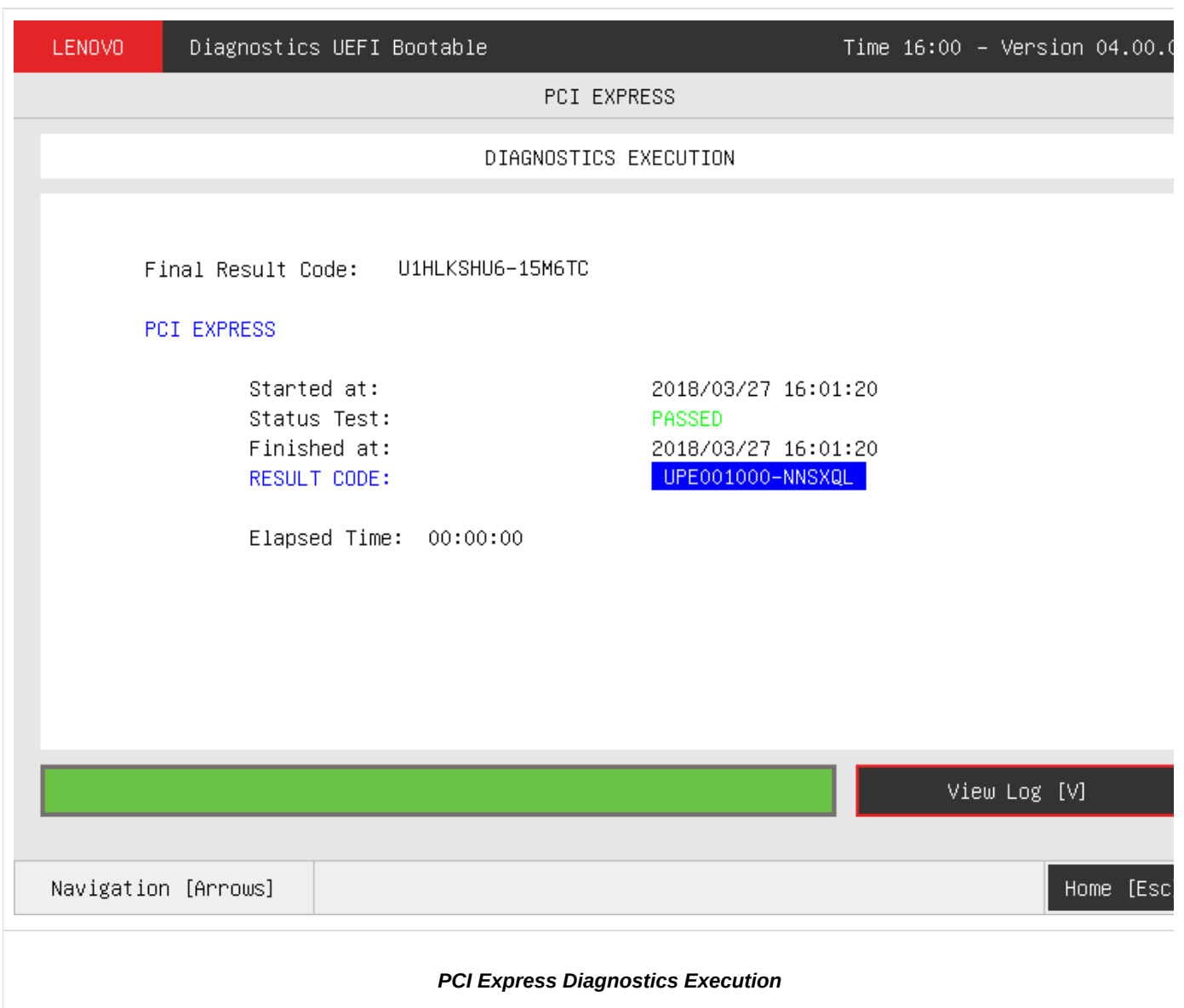
- Final Result Code (an encrypted code that informs which modules were tested).
- Date and time that diagnostic has started.
- Test (name of the test being currently run).
- Progress of the current test (current test's progress in percentage).
- A list with all the algorithms which compose device test and their respective status, whereas an algorithm can have six status:

- WAITING, indicating the test is waiting to be run.
- IN PROGRESS, indicating the test is being run.
- PASSED, indicating the algorithm has found no problems at device.
- FAILED, indicating the algorithm has found one or more faults.
- CANCELED, indicating the algorithm was canceled by user.
- NOT APPLICABLE, indicating the algorithm is not supported by device).
- Result Code for test.
- Date and time that the tests are finished (displayed after test is finished).
- Elapsed time, that is a duration of test in hours, minutes and seconds (displayed after test is finished).

While the diagnostic is running, the user can stop it at any time by pressing the ESC key. If the user does that, the diagnostic is aborted and the status of the test that is being run is changed to CANCELED. After the diagnostic is finished or canceled, the user can go back to the Home screen (by pressing ESC key again) or visualize the test log (by pressing the V key).

PCI Express

After the user enters the PCI Express option, the application computes the number of algorithms that can be performed by the test. If the diagnostic has only one algorithm, it will be started, as shown in the next figure.



The PCI Express Diagnostics Execution screen provides information about the PCI Express diagnostics progress, as well as information about the results. This screen is composed of:

- Application Header Bar

- Screen Title Bar
- Screen Sub-title Bar
- Diagnostic Information Section
- Instruction Footer Bar

The Application Header Bar contains the name of the application, system's time and application's current version; the Screen Title and Screen Sub-title Bars help the user to be attentive of where s/he is throughout the application; and the Instruction Footer Bar contains additional instructions for using the screen, as well as the Exit button.

The screen has one main section that provides information about the diagnostic, as well as a progress bar and a View Log button, both placed at the bottom of the section, where the former indicates the global execution progress and the latter allows to visualize tests details after finishing the diagnostic execution. That section contains the following diagnostics information:

- Final Result Code (an encrypted code that informs which modules were tested).
- Date and time that diagnostic has started.
- Test (name of the test being currently run).
- Progress of the current test (current test's progress in percentage).
- A list with all the algorithms which compose device test and their respective status, whereas an algorithm can have six status:
 - WAITING, indicating the test is waiting to be run.
 - IN PROGRESS, indicating the test is being run.
 - PASSED, indicating the algorithm has found no problems at device.
 - FAILED, indicating the algorithm has found one or more faults.
 - CANCELED, indicating the algorithm was canceled by user.
 - NOT APPLICABLE, indicating the algorithm is not supported by device).
- Result Code for test.
- Date and time that the tests are finished (displayed after test is finished).
- Elapsed time, that is a duration of test in hours, minutes and seconds (displayed after test is finished).

While the diagnostic is running, the user can stop it at any time by pressing the ESC key. If the user does that, the diagnostic is aborted and the status of the test that is being run is changed to CANCELED. After the diagnostic is finished or canceled, the user can go back to the Home screen (by pressing ESC key again) or visualize the test log (by pressing the V key).

RAID

The system allows the user to access the RAID diagnostics from the Home screen -> Diagnostics -> RAID.

An item can be selected/deselected by pressing SPACE when it is highlighted. A desired item is selected when it shows "[X]" preceding it. In order to continue, the user has to press ENTER on the button Confirm. As a result, the system will show a list of tests, as illustrated in the next figure, and all the tests are initially selected to be tested.

The user can deselect a selected test by pressing the SPACE key when the test is highlighted. An empty space will appear between the brackets. To select a test again, the user can press the SPACE key again.

Initially, the "Select/Deselect All Options" is selected. If the user presses the SPACE or ENTER key on that option, then all test options will be deselected. If the user selects the "Select/Deselect All Options" again, all tests options will be selected again.

LENOVO	Diagnostics UEFI Bootable	Time 16:01 - Version 04.00.0
RAID 1: RAID		
ALGORITHM SELECTION		
[X] Select / Deselect All Options [X] Status test [X] Slot test [X] Link test [X] Advanced error test		
Confirm [C]		
Navigation [Arrows]	Enter [Space]	Exit [Esc]

RAID Algorithm Selection

At least one test must be selected so that the application can run the diagnostic. After the user chooses which tests will be performed, the user can press Confirm by pressing the ENTER key. The system will run the tests, as illustrated in the following figure. The user can also press the ESC key to go back to the Home screen.



The RAID Diagnostics Execution screen provides information about the RAID diagnostics progress, as well as information about the results. This screen is composed of:

- Application Header Bar
- Screen Title Bar
- Screen Sub-title Bar
- Diagnostic Information Section
- Instruction Footer Bar

The Application Header Bar contains the name of the application, system's time and application's current version; the Screen Title and Screen Sub-title Bars help the user to be attentive of where s/he is throughout the application; and the Instruction Footer Bar contains additional instructions for using the screen, as well as the Exit button.

The screen has one main section that provides information about the diagnostic, as well as a progress bar and a View Log button, both placed at the bottom of the section, where the former indicates the global execution progress and the latter allows to visualize tests details after finishing the diagnostic execution. That section contains the following diagnostics information:

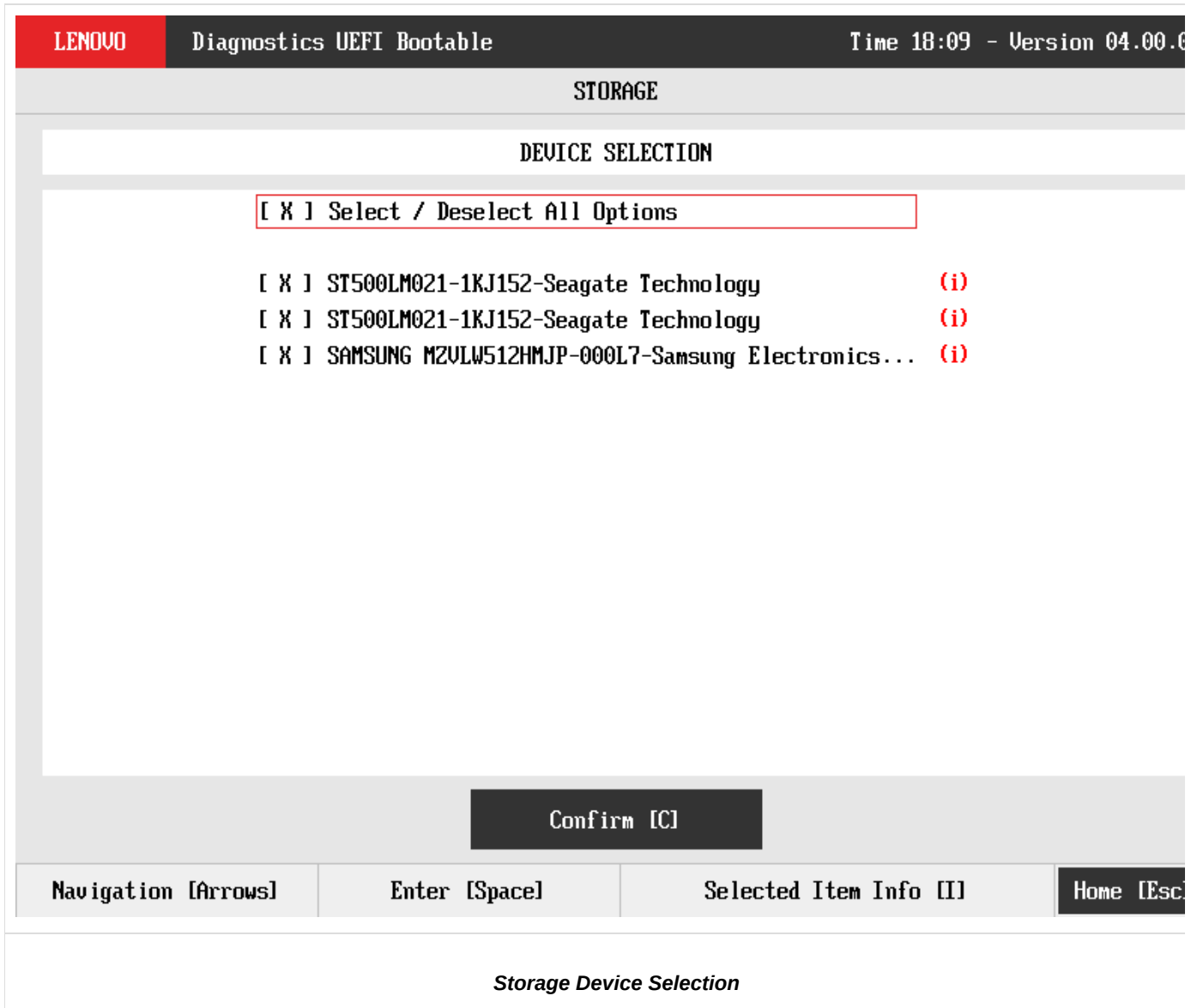
- Final Result Code (an encrypted code that informs which modules were tested).
- Date and time that diagnostic has started.
- Test (name of the test being currently run).
- Progress of the current test (current test's progress in percentage).
- A list with all the algorithms which compose device test and their respective status, whereas an algorithm can have six status:
 - WAITING, indicating the test is waiting to be run.
 - IN PROGRESS, indicating the test is being run.
 - PASSED, indicating the algorithm has found no problems at device.
 - FAILED, indicating the algorithm has found one or more faults.

- CANCELED, indicating the algorithm was canceled by user.
- NOT APPLICABLE, indicating the algorithm is not supported by device).
- Result Code for test.
- Date and time that the tests are finished (displayed after test is finished).
- Elapsed time, that is a duration of test in hours, minutes and seconds (displayed after test is finished).

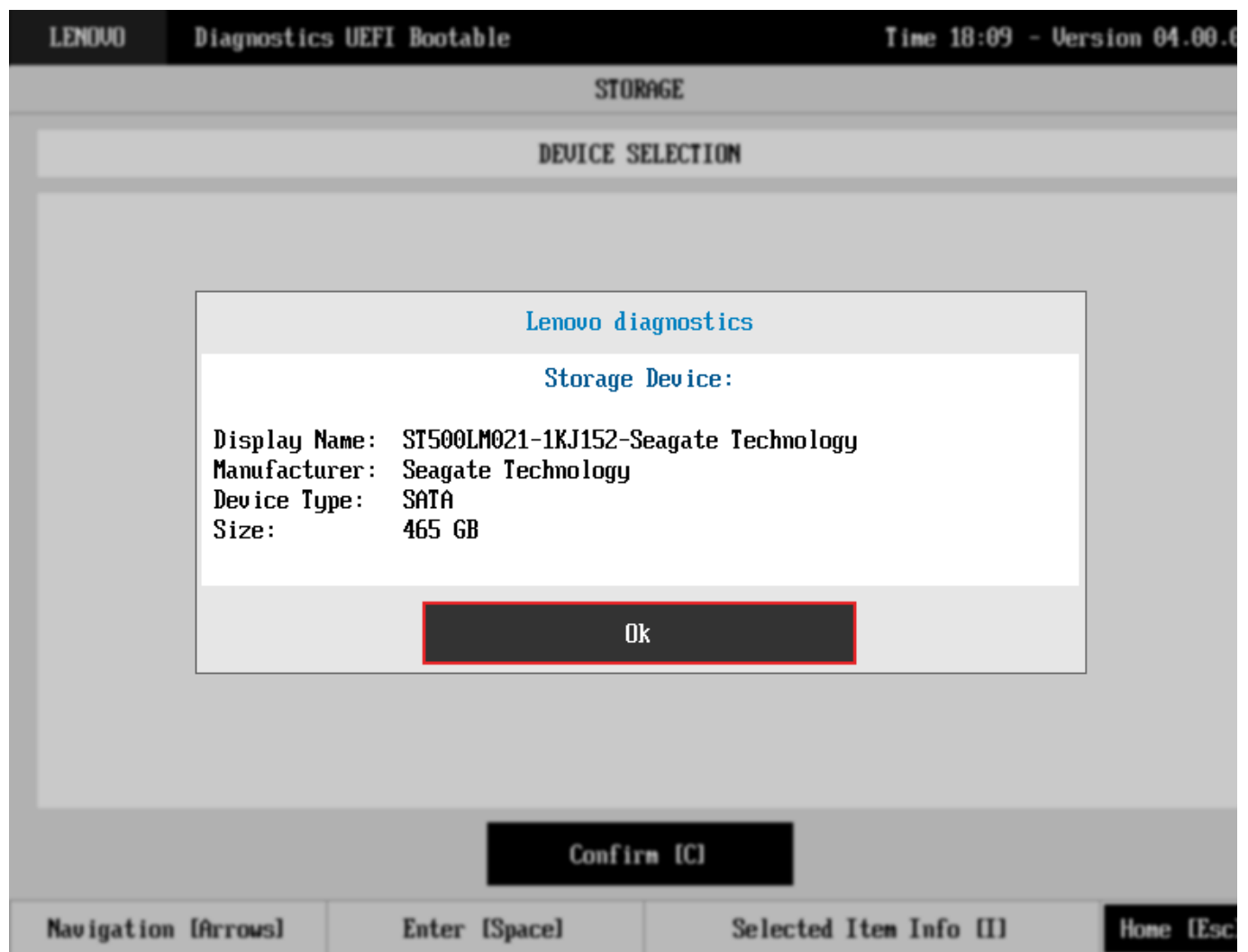
While the diagnostic is running, the user can stop it at any time by pressing the ESC key. If the user does that, the diagnostic is aborted and the status of the test that is being run is changed to CANCELED. After the diagnostic is finished or canceled, the user can go back to the Home screen (by pressing ESC key again) or visualize the test log (by pressing the V key).

Storage

After the user enters the Storage option, the application will display the number of storage devices available in the system. If there is more than one storage device installed, the menu Device Selection is displayed, as shown in the next figure.



This screen has also an option where user can view the devices details. To access this feature, the user has to press the I key when the desired device is focused, leading to the exhibition of a popup with the device information, as shown in the subsequent figure.



Storage Information Popup

An item can be selected/deselected by pressing SPACE when it is highlighted. A desired item is selected when it shows "[X]" preceding it. In order to continue, the user has to press ENTER on the button Confirm. As a result, the system will show a list of tests, as illustrated in the next figure, and all the tests are initially selected to be tested.

The user can deselect a selected test by pressing the SPACE key when the test is highlighted. An empty space will appear between the brackets. To select a test again, the user can press the SPACE key again.

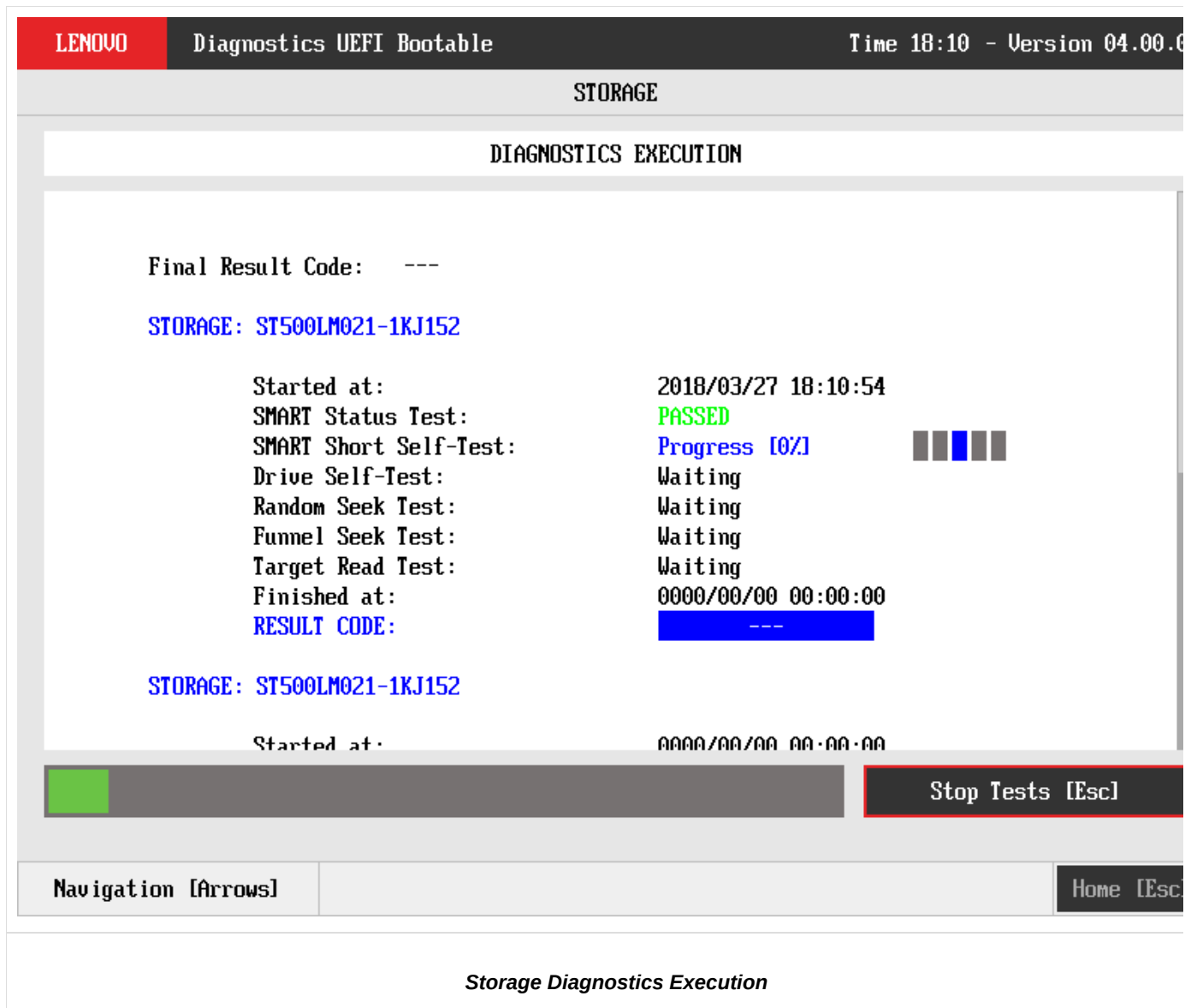
Initially, the "Select/Deselect All Options" is selected. If the user presses the SPACE or ENTER key on that option, then all test options will be deselected. If the user selects the "Select/Deselect All Options" again, all tests options will be selected again.

LENOVO	Diagnostics UEFI Bootable	Time 18:09 - Version 04.00.0
STORAGE 1: ST500LM021-1KJ152-Seagate Technology		
ALGORITHM SELECTION		
[X] Select / Deselect All Options		
[X] SMART Status Test		(i)
[X] SMART Short Self-Test		(i)
[X] Drive Self-Test		(i)
[X] Random Seek Test		(i)
[X] Funnel Seek Test		(i)
[X] Target Read Test		(i)
Confirm [C]		
Navigation [Arrows]	Enter [Space]	Selected Item Info [I]
Home [Esc]		

Storage Algorithm Selection

The screen will list the tests that can be performed for each selected device type. The example displayed in the prior figure, it is possible to see that user selected a "SATA" device type, so the tests that can be performed for each device as listed below them.

At least one test must be selected, so that the application can run the diagnostic. After the user chooses which devices must be tested, the user can select the Confirm button by pressing the ENTER key. It will start the diagnostic, as demonstrated in the next figure.



The Storage Diagnostics Execution screen provides information about the storage diagnostics progress, as well as information about the results. This screen is composed of:

- Application Header Bar
- Screen Title Bar
- Screen Sub-title Bar
- Diagnostic Information Section
- Instruction Footer Bar

The Application Header Bar contains the name of the application, system's time and application's current version; the Screen Title and Screen Sub-title Bars help the user to be attentive of where s/he is throughout the application; and the Instruction Footer Bar contains additional instructions for using the screen, as well as the Exit button.

The screen has one main section that provides information about the diagnostic, as well as a progress bar and a View Log button, both placed at the bottom of the section, where the former indicates the global execution progress and the latter allows to visualize tests details after finishing the diagnostic execution. That section contains the following diagnostics information:

- Final Result Code (an encrypted code that informs which modules were tested).
- Date and time that diagnostic has started.
- Test (name of the test being currently run).
- Progress of the current test (current test's progress in percentage).
- A list with all the algorithms which compose device test and their respective status, whereas an algorithm can have six status:
 - WAITING, indicating the test is waiting to be run.
 - IN PROGRESS, indicating the test is being run.
 - PASSED, indicating the algorithm has found no problems at device.
 - FAILED, indicating the algorithm has found one or more faults.

- CANCELED, indicating the algorithm was canceled by user.
- NOT APPLICABLE, indicating the algorithm is not supported by device).
- Result Code for test.
- Date and time that the tests are finished (displayed after test is finished).
- Elapsed time, that is a duration of test in hours, minutes and seconds (displayed after test is finished).

While the diagnostic is running, the user can stop it at any time by pressing the ESC key. If the user does that, the diagnostic is aborted and the status of the test that is being run is changed to CANCELED. After the diagnostic is finished or canceled, the user can go back to the Home screen (by pressing ESC key again) or visualize the test log (by pressing the V key).

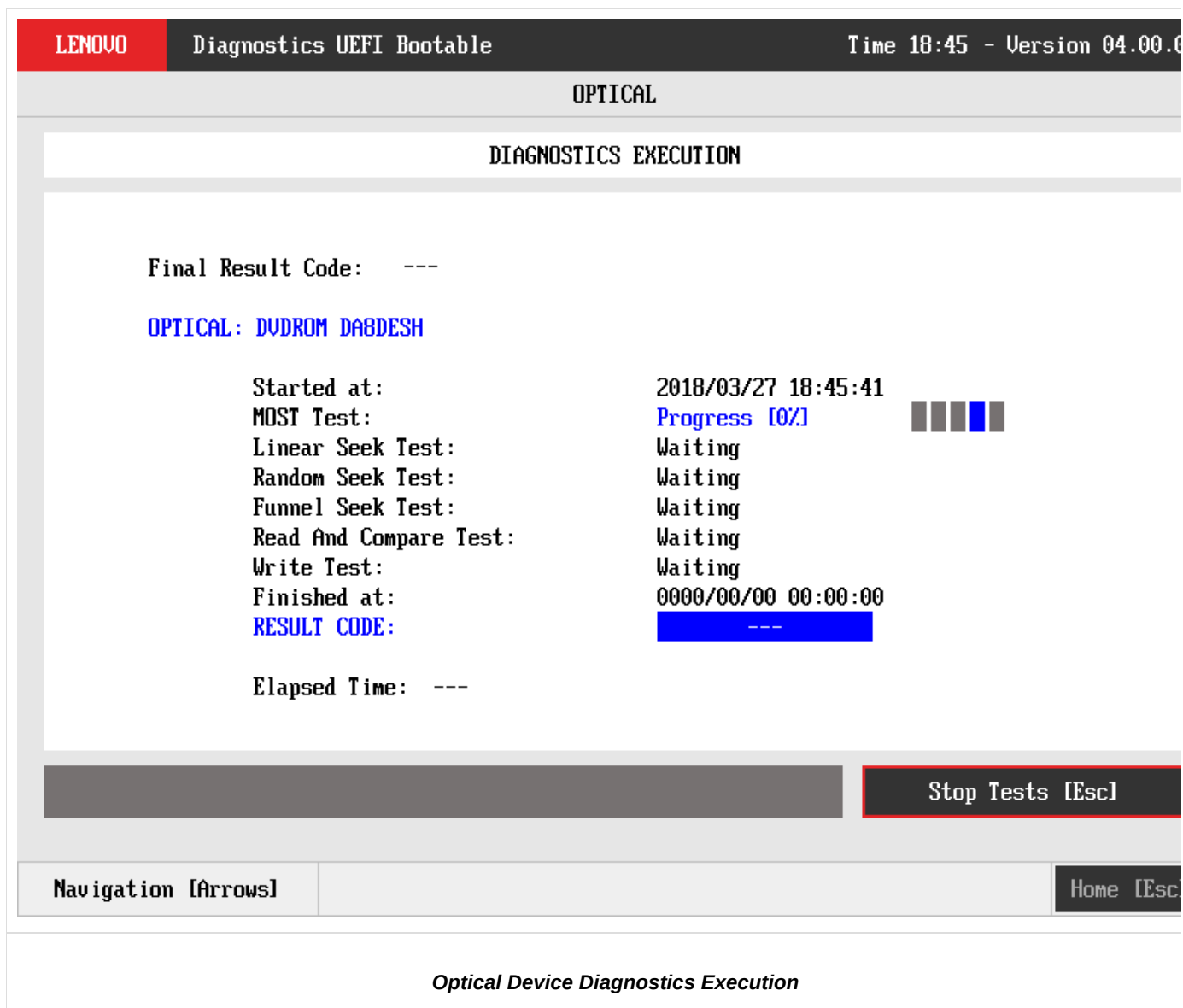
Optical

The system allows the user to access the optical diagnostics from the Home screen -> Diagnostics -> Optical. After the user access the Optical option, the application displays the number of algorithms that can be performed. If the test has more than one algorithm, Algorithm Selection screen is displayed, as shown in the figure below.

LENOVO	Diagnostics UEFI Bootable	Time 18:45 - Version 04.00.0
OPTICAL 1: DVDROM DA8DESH - PLDS		
ALGORITHM SELECTION		
[X] Select / Deselect All Options [X] MOST Test [X] Linear Seek Test [X] Random Seek Test [X] Funnel Seek Test [X] Read And Compare Test [X] Write Test		
Confirm [C]		
Navigation [Arrows]	Enter [Space]	Exit [Esc]

Optical Algorithm Selection

At least one test must be selected, so that the application can run the diagnostic. After the user chooses which tests must be performed, the user can select the Confirm button by pressing the ENTER key. The system will run all tests, as illustrated in the next figure. The user can also press the ESC key to go back to the Home screen.



The Optical Diagnostics Execution screen provides information about the optical diagnostics progress, as well as information about the results. This screen is composed of:

- Application Header Bar
- Screen Title Bar
- Screen Sub-title Bar
- Diagnostic Information Section
- Instruction Footer Bar

The Application Header Bar contains the name of the application, system's time and application's current version; the Screen Title and Screen Sub-title Bars help the user to be attentive of where s/he is throughout the application; and the Instruction Footer Bar contains additional instructions for using the screen, as well as the Exit button.

The screen has one main section that provides information about the diagnostic, as well as a progress bar and a View Log button, both placed at the bottom of the section, where the former indicates the global execution progress and the latter allows to visualize tests details after finishing the diagnostic execution. That section contains the following diagnostics information:

- Final Result Code (an encrypted code that informs which modules were tested).
- Date and time that diagnostic has started.
- Test (name of the test being currently run).
- Progress of the current test (current test's progress in percentage).
- A list with all the algorithms which compose device test and their respective status, whereas an algorithm can have six status:
 - WAITING, indicating the test is waiting to be run.
 - IN PROGRESS, indicating the test is being run.
 - PASSED, indicating the algorithm has found no problems at device.
 - FAILED, indicating the algorithm has found one or more faults.

- CANCELED, indicating the algorithm was canceled by user.
- NOT APPLICABLE, indicating the algorithm is not supported by device).
- Result Code for test.
- Date and time that the tests are finished (displayed after test is finished).
- Elapsed time, that is a duration of test in hours, minutes and seconds (displayed after test is finished).

While the diagnostic is running, the user can stop it at any time by pressing the ESC key. If the user does that, the diagnostic is aborted and the status of the test that is being run is changed to CANCELED. After the diagnostic is finished or canceled, the user can go back to the Home screen (by pressing ESC key again) or visualize the test log (by pressing the V key).

Video Card

The video card diagnostic is not available to end user, but it's possible to access it from ShellView version. The user has to type the command on ShellView and the test is started. S/he will know the result of the test on log generated by application after test diagnostic is finished.

Run All

The system allows the user to access the run all diagnostics from the Home screen -> Diagnostics -> Run All.

An item can be selected/deselected by pressing SPACE when it is highlighted. A desired item is selected when it shows "[X]" preceding it. To access a diagnostics type, the user can use the UP/DOWN arrow key until the desired item is focused and press SPACE key to select it, as illustrated in the figure below.

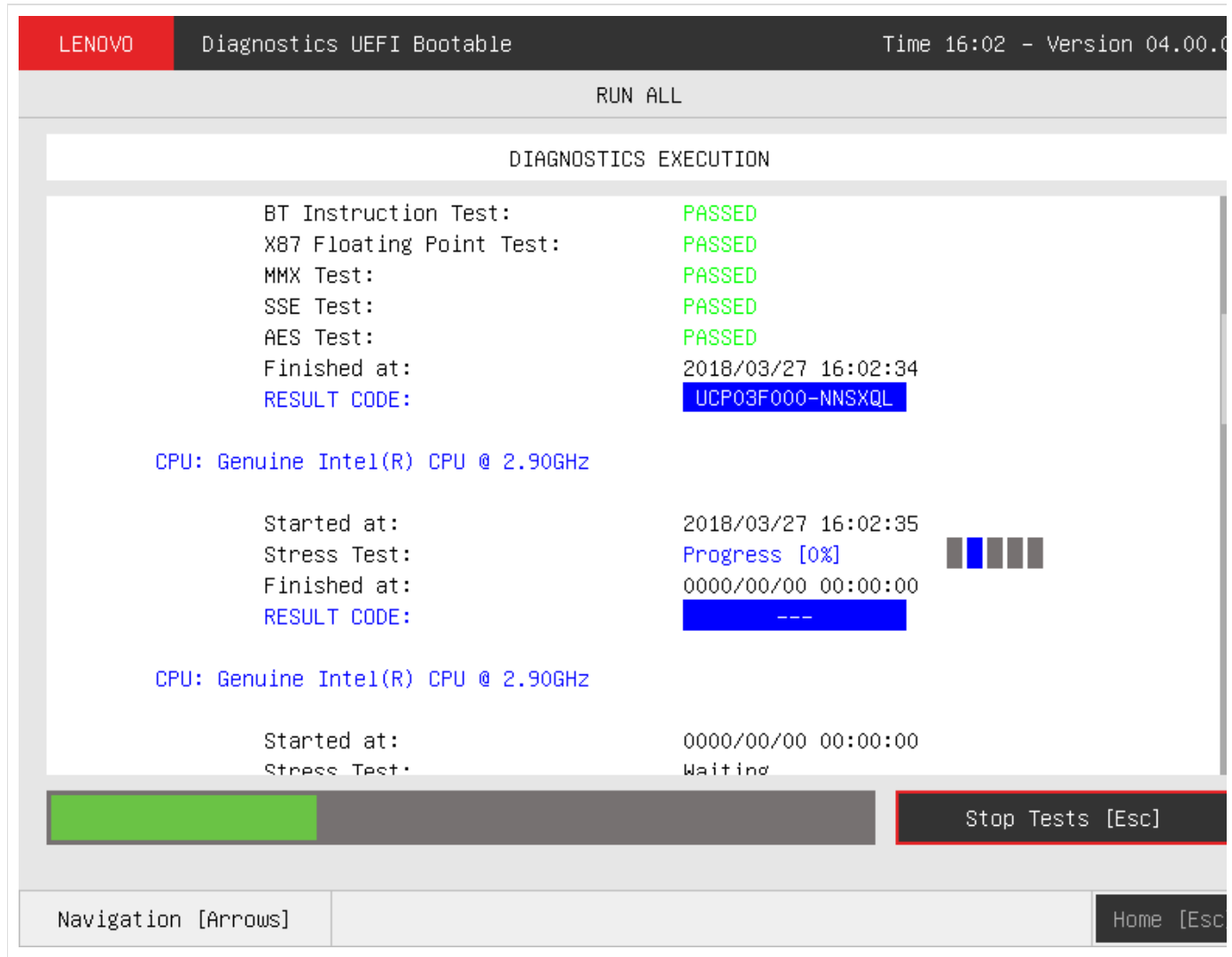
The screenshot shows the LENOVO Diagnostics UEFI Bootable interface. At the top, there is a header bar with 'LENOVO' on the left, 'Diagnostics UEFI Bootable' in the center, and 'Time 16:02 - Version 04.00.0' on the right. Below the header, there is a large 'RUN ALL' button. Underneath, the 'DIAGNOSTICS TYPE' section is visible, containing three options: '[X] Quick', '[X] Extended', and '[X] Restrict prior selection to unattended tests'. The 'Quick' option is highlighted with a red border. At the bottom, there is a 'Confirm [C]' button. The footer contains navigation instructions: 'Navigation [Arrows]', 'Enter [Space]', and 'Exit [Esc]'.

LENOVO Diagnostics UEFI Bootable Time 16:02 - Version 04.00.0		
RUN ALL		
DIAGNOSTICS TYPE		
[X] Quick		
[X] Extended		
[X] Restrict prior selection to unattended tests		
Confirm [C]		
Navigation [Arrows]	Enter [Space]	Exit [Esc]

Run All Diagnostics Type

Run All is an option that runs all the available diagnostics, such as Battery, CPU, Display, Fan, Memory, Motherboard, Optical, PCI-e, RAID and Storage. The choices the user have are: "Quick", "Extended" and "Restrict prior selection to unattended tests".

At least one diagnostic type must be selected so the application can run the diagnostic. After the user chooses which one must be performed, the user can select the Confirm button by pressing the ENTER key. The system will run all tests, as illustrated in the figure below. The user can also press the ESC key to go back to the Home screen.



Run All Diagnostics Execution

The Run All Diagnostics Execution screen provides information about the diagnostics progress of all modules, as well as information about the results. This screen is composed of:

- Application Header Bar
- Screen Title Bar
- Screen Sub-title Bar
- Diagnostic Information Section
- Instruction Footer Bar

The Application Header Bar contains the name of the application, system's time and application's current version; the Screen Title and Screen Sub-title Bars help the user to be attentive of where s/he is throughout the application; and the Instruction Footer Bar contains additional instructions for using the screen, as well as the Exit button.

The screen has one main section that provides information about the diagnostic, as well as a progress bar and a View Log button, both placed at the bottom of the section, where the former indicates the global execution progress and the latter allows to visualize tests details after finishing the

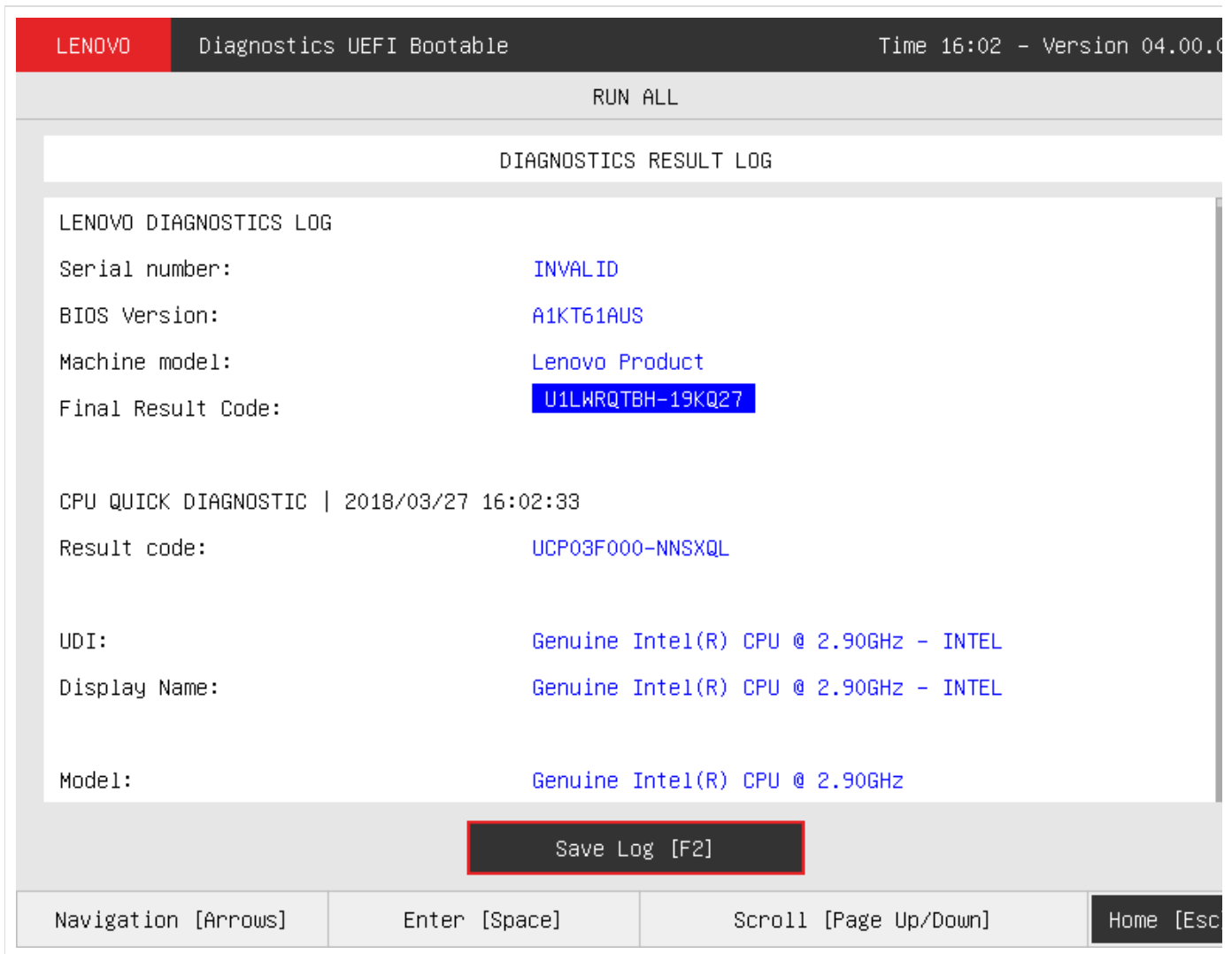
diagnostic execution. That section contains the following diagnostics information:

- Final Result Code (an encrypted code that informs which modules were tested).
- Date and time that diagnostic has started.
- Test (name of the test being currently run).
- Progress of the current test (current test's progress in percentage).
- A list with all the algorithms which compose device test and their respective status, whereas an algorithm can have six status:
 - WAITING, indicating the test is waiting to be run.
 - IN PROGRESS, indicating the test is being run.
 - PASSED, indicating the algorithm has found no problems at device.
 - FAILED, indicating the algorithm has found one or more faults.
 - CANCELED, indicating the algorithm was canceled by user.
 - NOT APPLICABLE, indicating the algorithm is not supported by device).
- Result Code for test.
- Date and time that the tests are finished (displayed after test is finished).
- Elapsed time, that is a duration of test in hours, minutes and seconds (displayed after test is finished).

While the diagnostic is running, the user can stop it at any time by pressing the ESC key. If the user does that, the diagnostic is aborted and the status of the test that is being run is changed to CANCELED. After the diagnostic is finished or canceled, the user can go back to the Home screen (by pressing ESC key again) or visualize the test log (by pressing the V key).

Diagnostics Result Log

After a test or a recover operation is finished, the user can see the Diagnostics Result Log screen by pressing the V key. That screen is shown in the following figure.



Run All Diagnostics Result Log

The Diagnostics Result Log screen is composed of:

- Application Header Bar
- Screen Title Bar
- Screen Sub-title Bar
- Diagnostic Log Section
- Save Log Button
- Instruction Footer Bar

The Application Header Bar contains the name of the application, system's time and application's current version; the Screen Title and Screen Sub-title Bars help the user to be attentive of where s/he is throughout the application; and the Instruction Footer Bar contains additional instructions for using the screen, as well as the Exit button.

Additionally, the screen has one main section that shows the diagnostic log, and a Save Log button that allows the user to store the log into an USB-Storage.

If the log content has many rows, user can scroll by pressing the Page Up and Page Down to move the displayed region up and down, respectively. The user can also go back to the Home screen by pressing the ESC key and save the log by pressing the F2 key.

Log Saving

If the user chooses to save the log by pressing the F2 key on the Diagnostics Result Log screen, the Log Saving screen is displayed, as shown in the figure below.

The screenshot shows the 'Log Saving' screen within the 'Diagnostics UEFI Bootable' application. The top header bar displays 'LENOVO' on the left, 'Diagnostics UEFI Bootable' in the center, and 'Time 16:04 - Version 04.00.0' on the right. Below the header, the screen is titled 'LOG SAVING'. The main content area is labeled 'USB-STORAGE SELECTION' and lists two storage options: '[X] KINGS1' and '[] KINGS2'. The 'KINGS1' option is selected, indicated by an 'X' in the brackets and a red rectangular highlight. At the bottom of the screen, there is a 'Confirm [C]' button. The footer bar contains navigation instructions: 'Navigation [Arrows]', 'Enter [Space]', and 'Exit [Esc]'.

LENOVO	Diagnostics UEFI Bootable	Time 16:04 - Version 04.00.0
LOG SAVING		
USB-STORAGE SELECTION		
[X] KINGS1		
[] KINGS2		
Confirm [C]		
Navigation [Arrows]	Enter [Space]	Exit [Esc]

Log Saving USB-Storage Selection

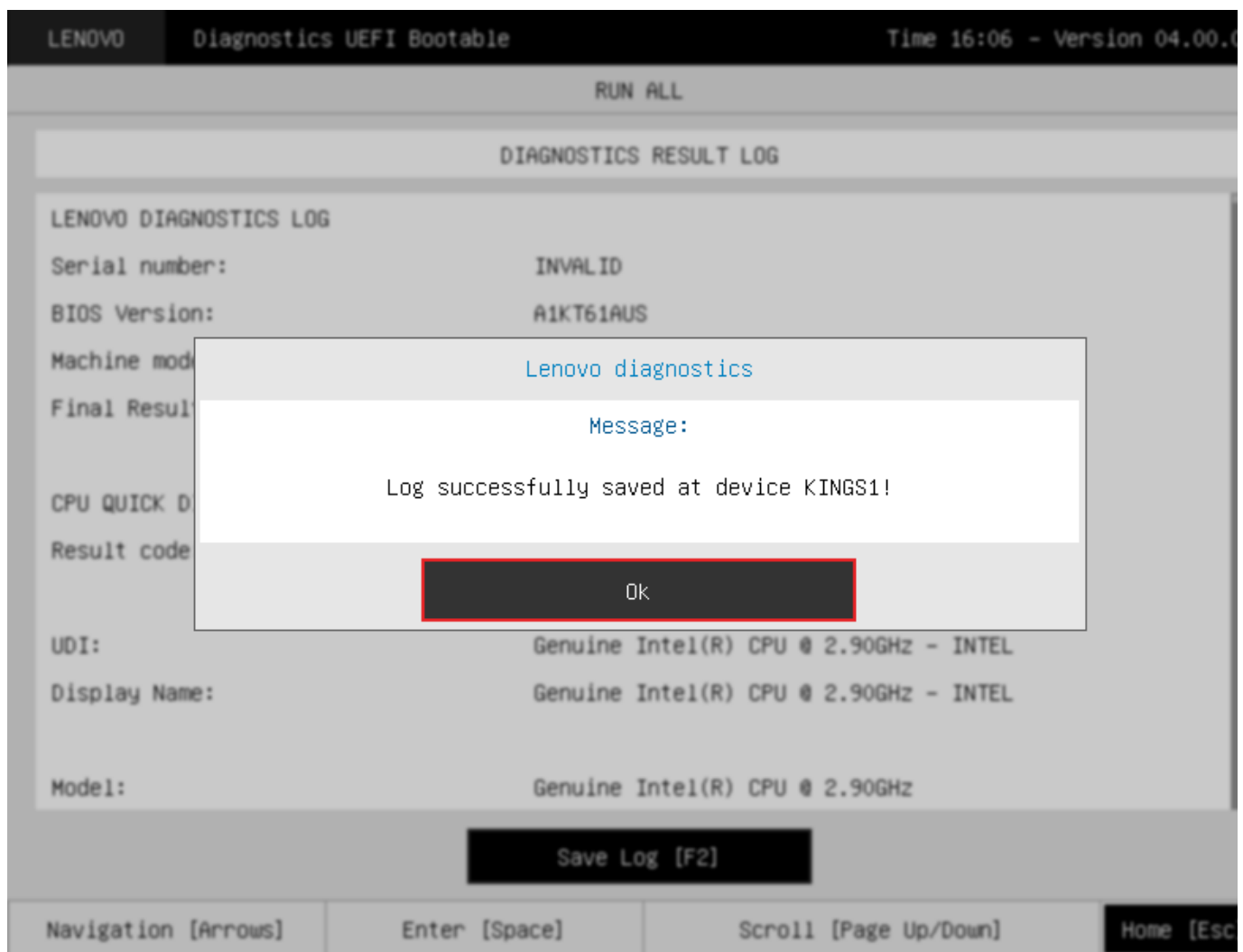
The Log Saving screen is composed of:

- Application Header Bar
- Screen Title Bar
- Screen Sub-title Bar
- USB-Storage Selection List
- Confirm Button
- Instruction Footer Bar

The Application Header Bar contains the name of the application, system's time and application's current version; the Screen Title and Screen Sub-title Bars help the user to be attentive of where s/he is throughout the application; and the Instruction Footer Bar contains additional instructions for using the screen, as well as the Exit button.

In addition, user can choose a device from the USB-Storage Selection List to save the log in. After the user chooses a device, s/he can press Confirm. The application will attempt to save the log into the selected device.

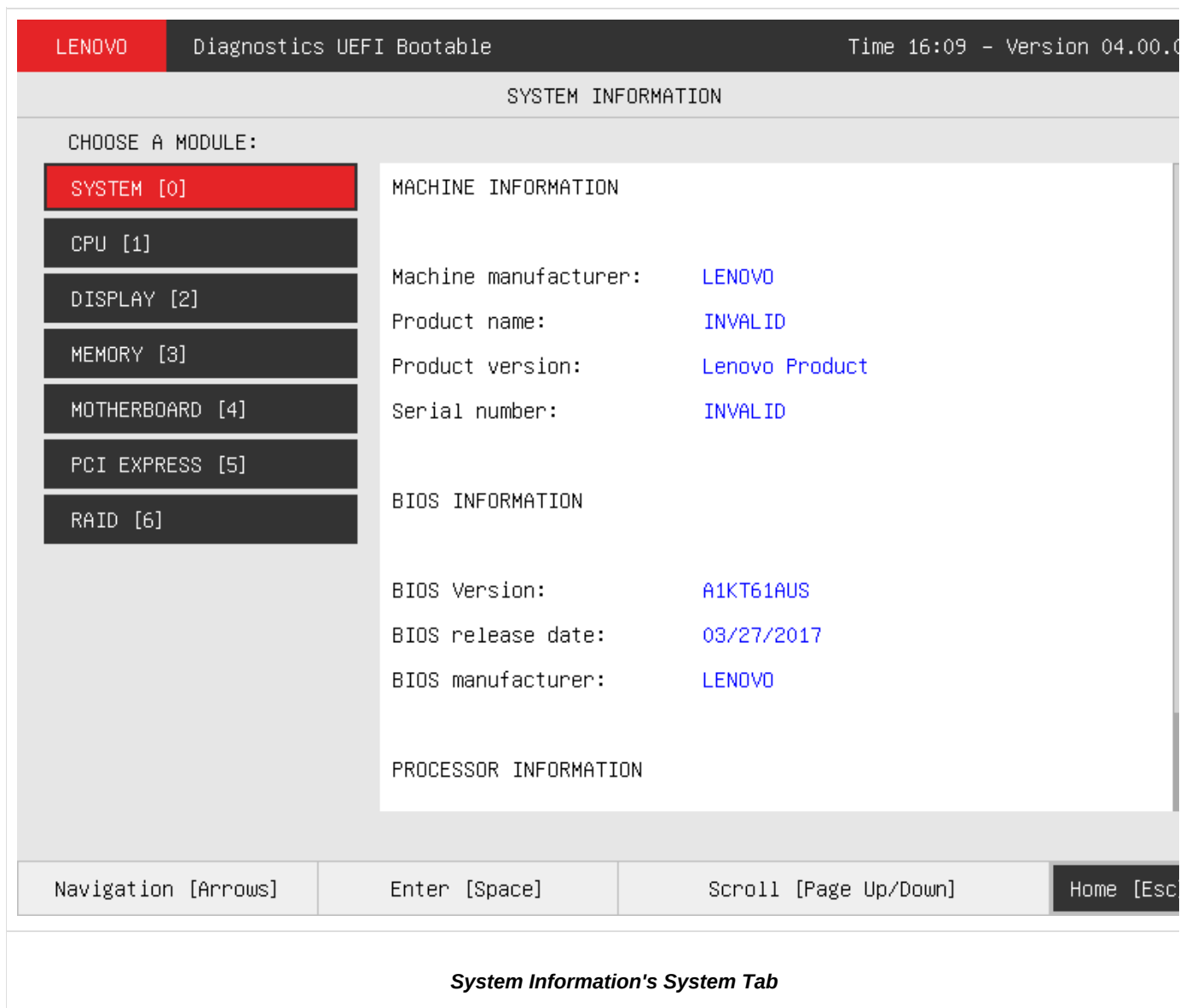
If the saving operation is successful, a window will be displayed to inform the user that the operation was successful (as shown in the next figure). If the operation does not work, a window will be displayed to inform the user that the operation was not successful. In both cases, the user must press ENTER, and the Diagnostics Result Log screen will be displayed again.



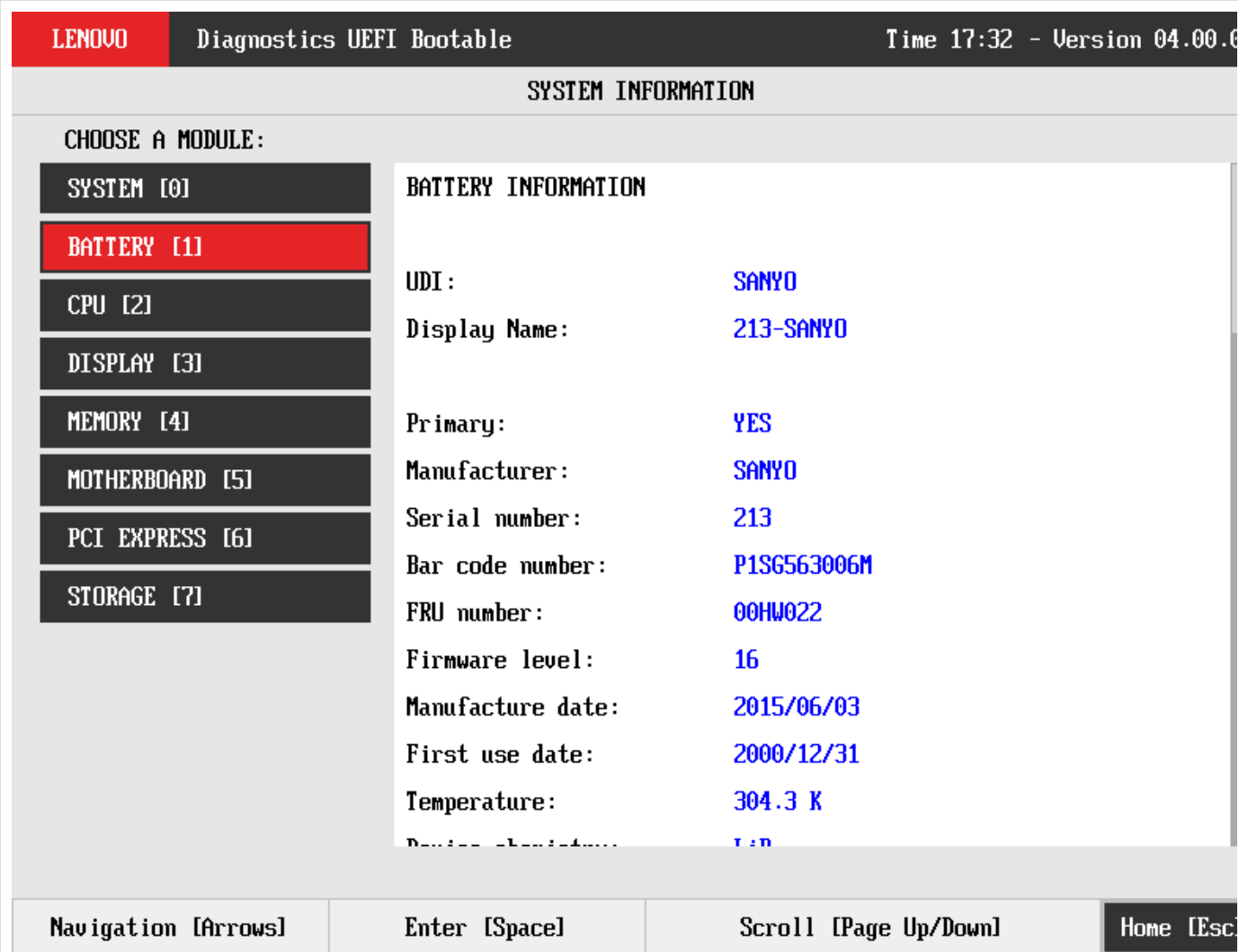
Log Saving Successful Operation Popup

System Information

The System Information screen with the System tab selected is shown in the following figure.



System Information screen with the Battery tab selected is shown in the following figure.



System Information's Battery Tab

System Information screen with the CPU tab selected is shown in the following figure.

LENOVO

Diagnostics UEFI Bootable

Time 16:09 - Version 04.00.0

SYSTEM INFORMATION

CHOOSE A MODULE:

SYSTEM [0]

CPU [1]

DISPLAY [2]

MEMORY [3]

MOTHERBOARD [4]

PCI EXPRESS [5]

RAID [6]

CPU INFORMATION

UDI: Genuine Intel(R) CPU @ 2.90GHz - INTEL

Display Name: Genuine Intel(R) CPU @ 2.90GHz - INTEL

Model: Genuine Intel(R) CPU @ 2.90GHz

Vendor: INTEL

Number of cores: 8

Number of enabled cores: 8

Number of threads: 16

Signature: 206d5

Max speed: 4.0 GHz

Current speed: 2.893 GHz

Features: MMX, EM64T, SSE, SSE2, SSE3, SSSE3,

Navigation [Arrows]

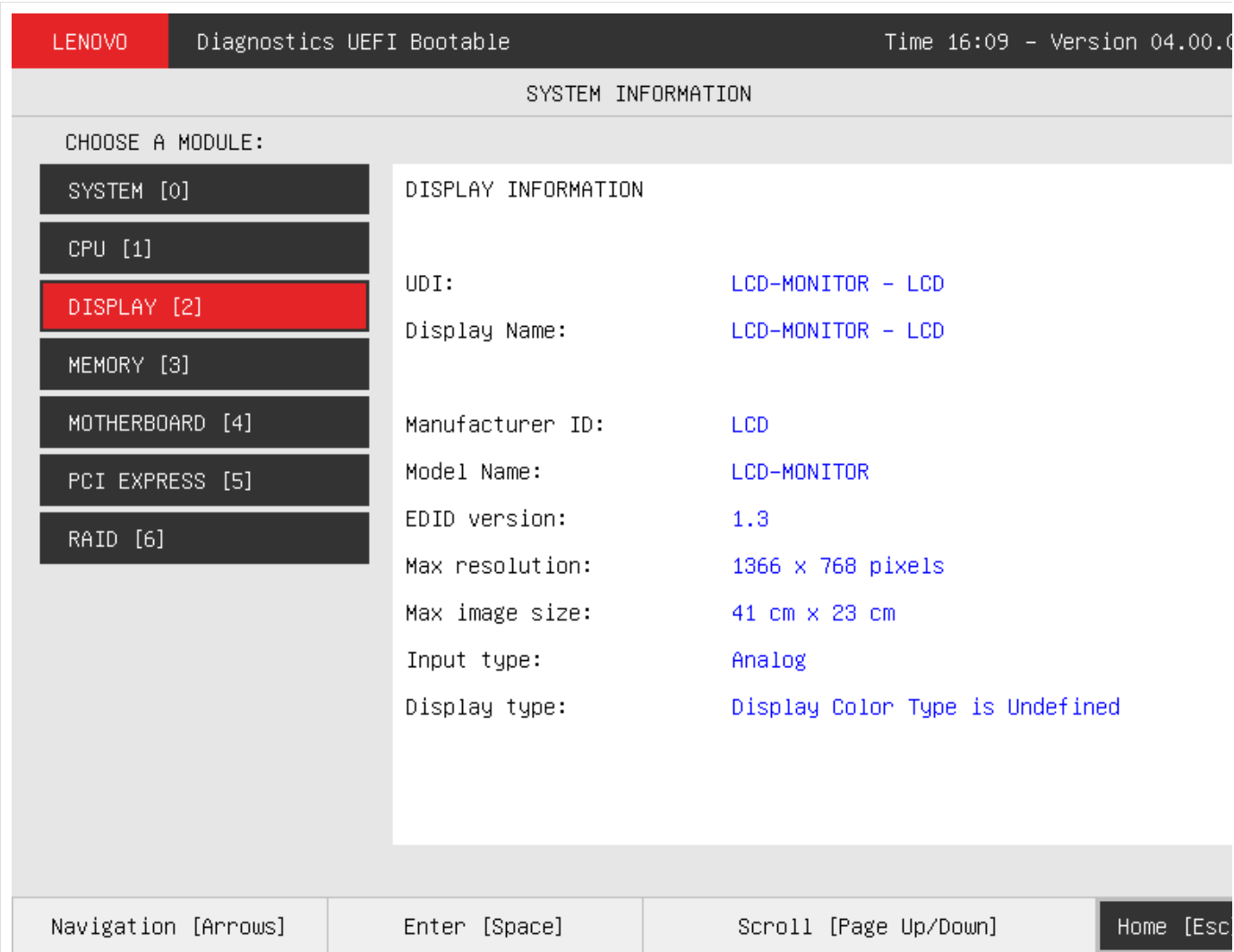
Enter [Space]

Scroll [Page Up/Down]

Home [Esc]

System Information's CPU Tab

System Information screen with the Display tab selected is shown in the following figure.



System Information's Display Tab

System Information screen with the Fan tab selected is shown in the following figure.

SYSTEM INFORMATION

CHOOSE A MODULE:

SYSTEM [0]

CPU [1]

DISPLAY [2]

FAN [3]

MEMORY [4]

MOTHERBOARD [5]

PCI EXPRESS [6]

STORAGE [7]

FAN INFORMATION

UDI: FAN_SYSTEM

Display Name: FAN_SYSTEM

CPU fan speed: 3680 RPM

CPU temperature: 29 C

Navigation [Arrows]

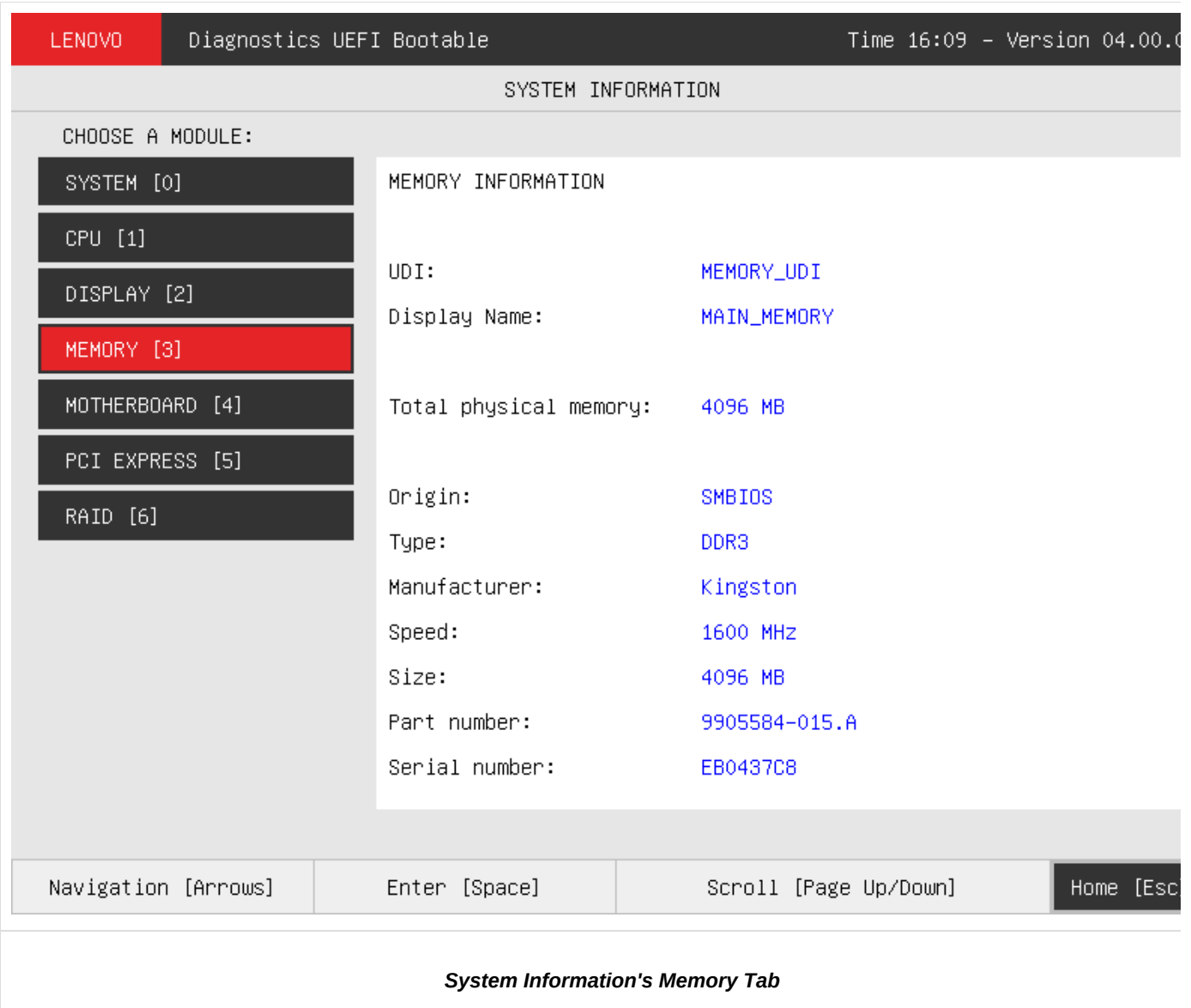
Enter [Space]

Scroll [Page Up/Down]

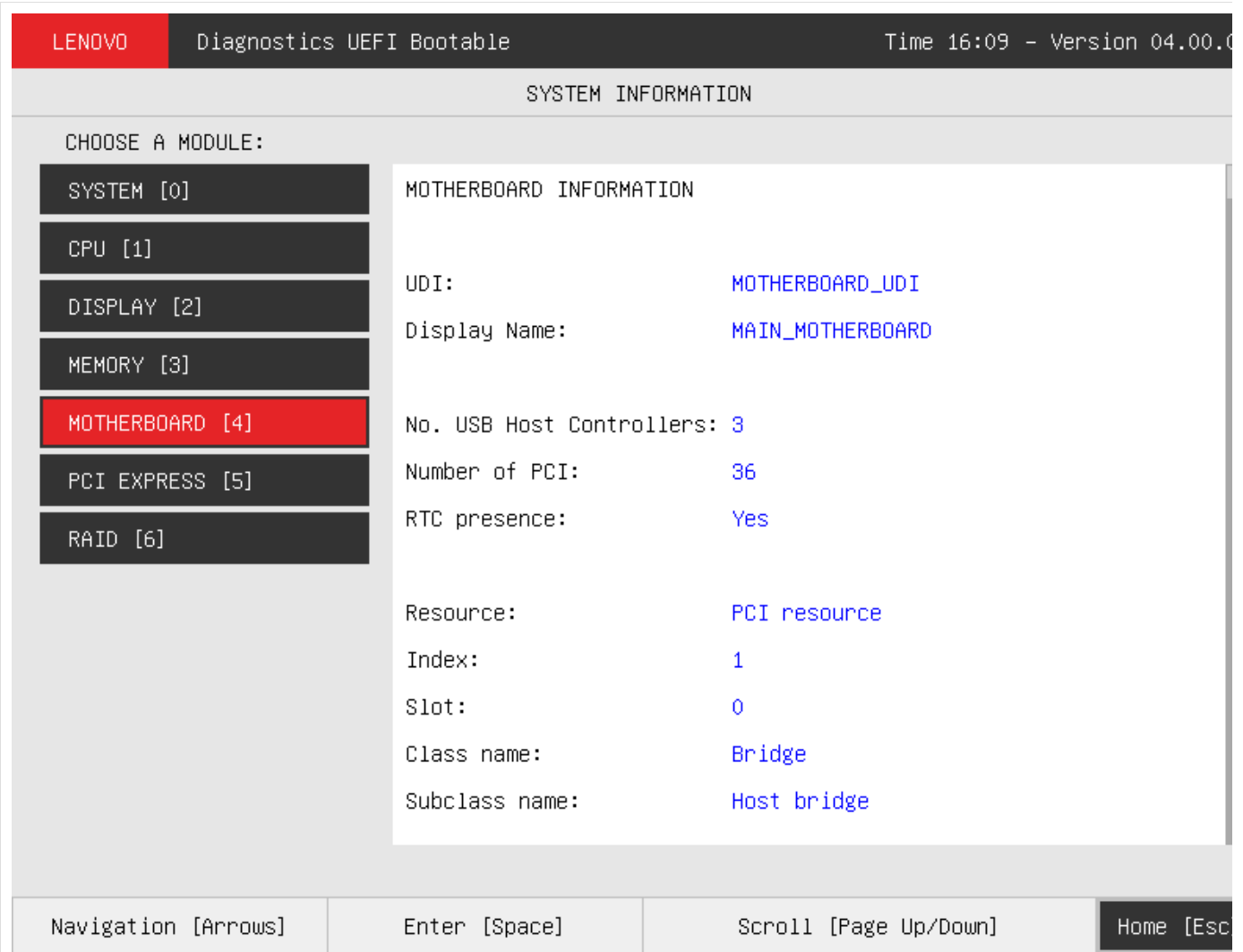
Home [Esc]

System Information's Fan Tab

System Information screen with the Memory tab selected is shown in the following figure.

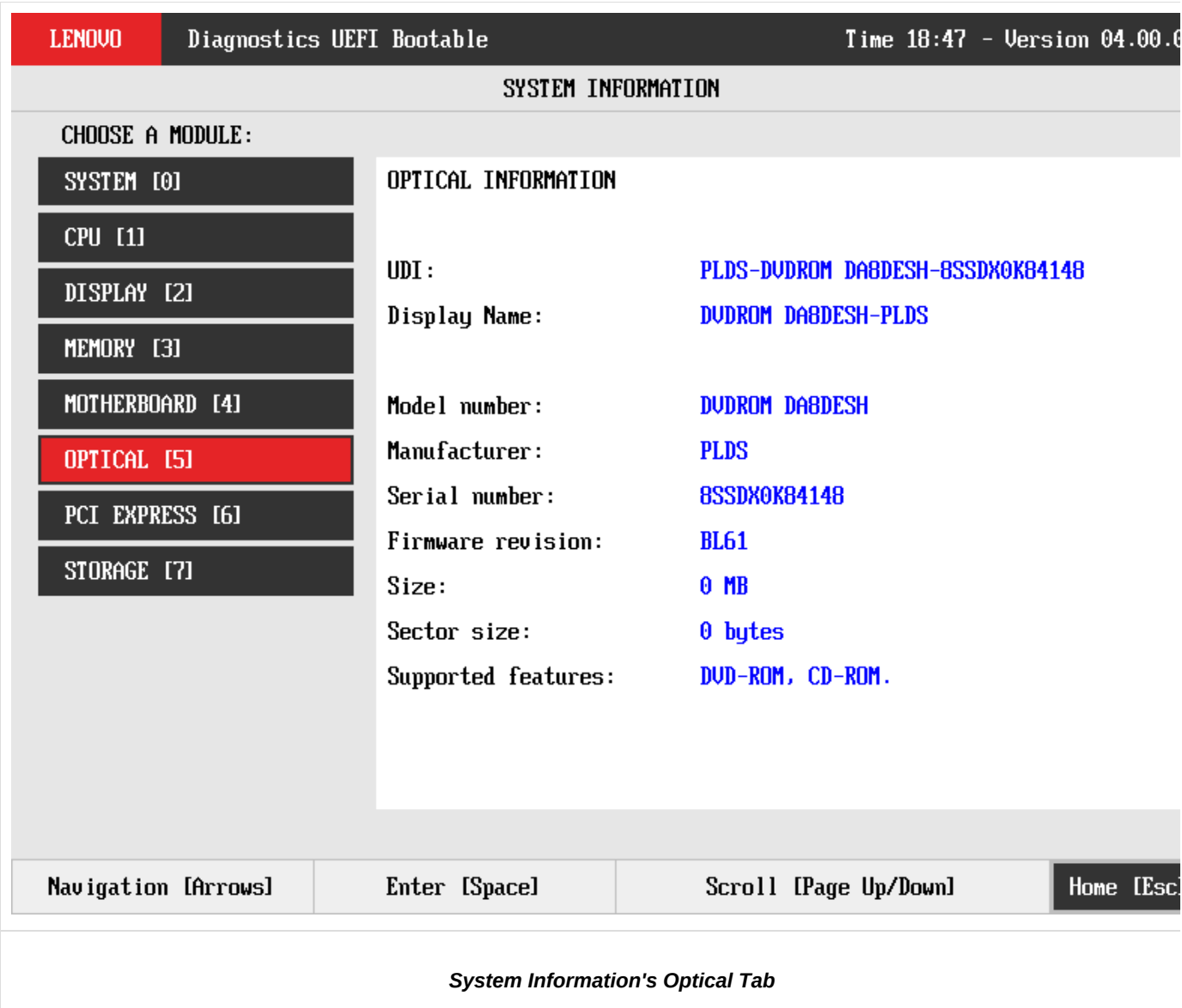


System Information screen with the Motherboard tab selected is shown in the following figure.

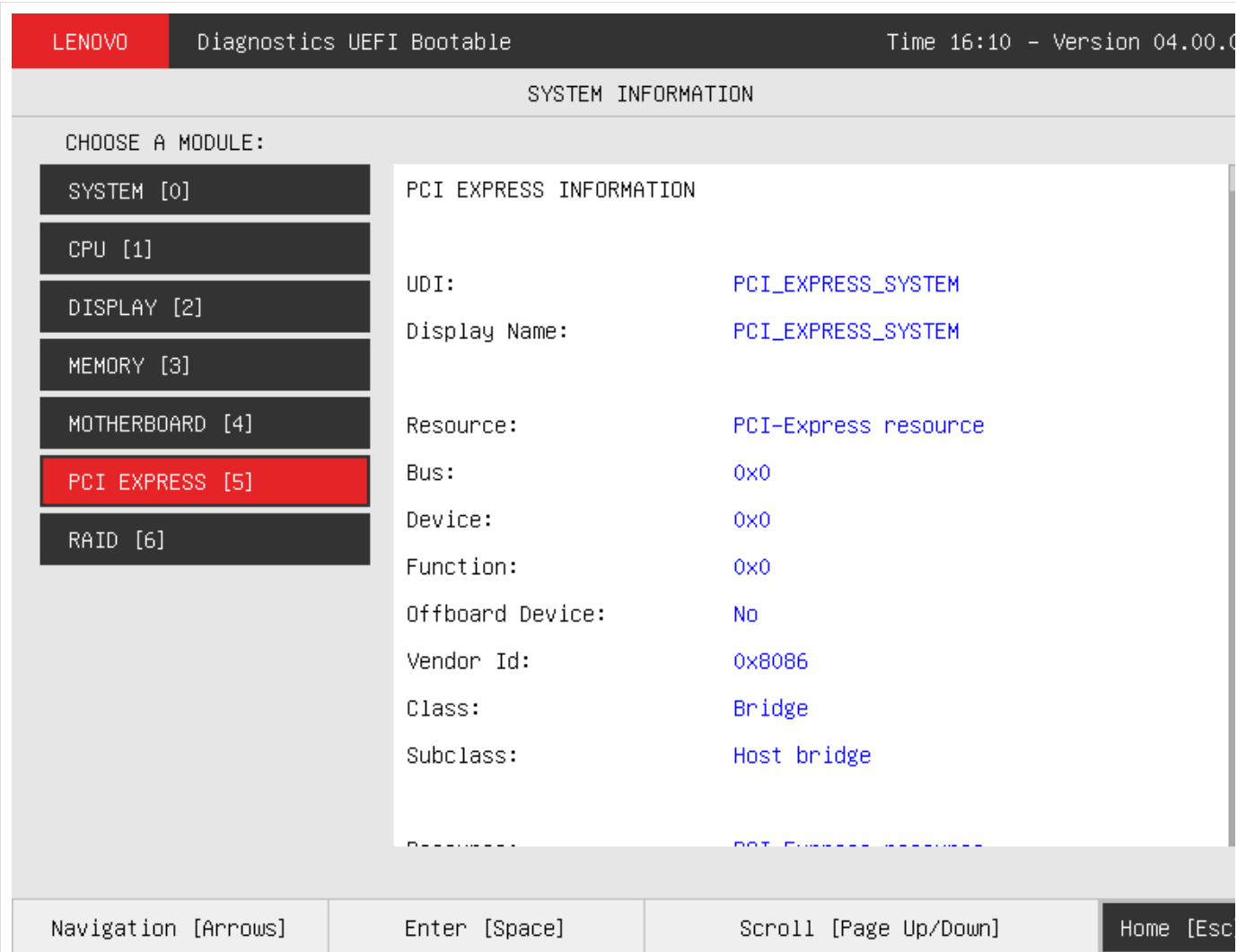


System Information's Motherboard Tab

System Information screen with the Optical tab selected is shown in the following figure.

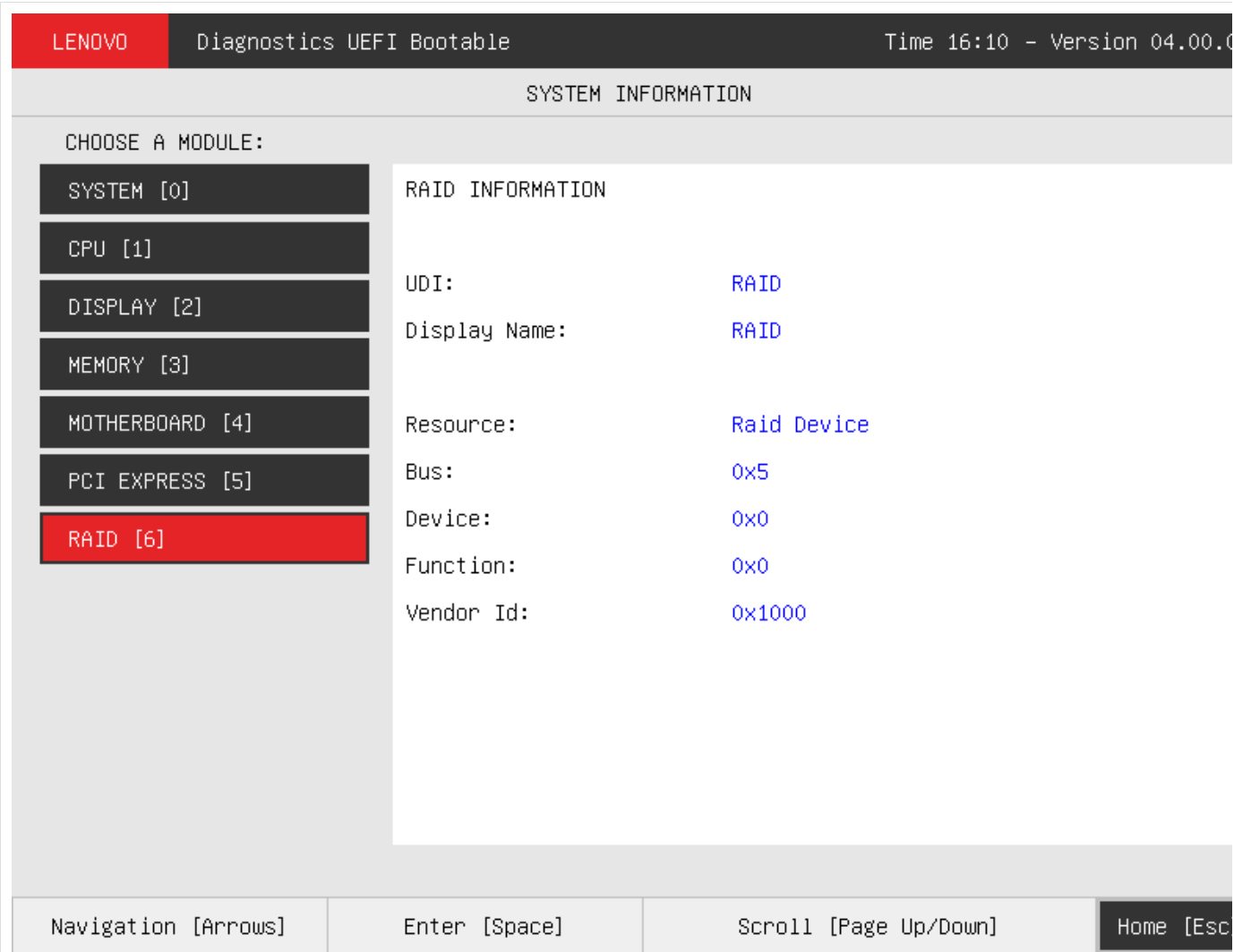


System Information screen with the PCI Express tab selected is shown in the following figure.



System Information's PCI Express Tab

System Information screen with the RAID tab selected is shown in the following figure.



System Information's RAID Tab

System Information screen with the Storage tab selected is shown in the following figure.

LENOVO

Diagnostics UEFI Bootable

Time 18:10 - Version 04.00.0

SYSTEM INFORMATION

CHOOSE A MODULE:

SYSTEM [0]

CPU [1]

DISPLAY [2]

MEMORY [3]

MOTHERBOARD [4]

PCI EXPRESS [5]

STORAGE [6]

STORAGE INFORMATION

UDI:

Seagate

Technology-ST500LM021-1KJ152-W626015K

Display Name:

ST500LM021-1KJ152-Seagate Technology

Model number:

ST500LM021-1KJ152

Manufacturer:

Seagate Technology

Device Type:

SATA

Serial number:

W626015K

Firmware revision:

0003LIM1

Size:

465 GB

Rotation rate:

7200 rpm

Temperature:

37 C

Physical location:

400C SATA

Navigation [Arrows]

Enter [Space]

Scroll [Page Up/Down]

Home [Esc]

System Information's Storage Tab

The System Information screen is displayed after the user enters the option System Information on the Home screen. The System Information screen provides detailed information about the machine, the memory devices, and the storage devices. This screen is composed of:

- Application Header Bar
- Screen Title Bar
- Modules Tabs Bar;
- Content Tab;
- Instruction Footer Bar

The Application Header Bar contains the name of the application, system's time and application's current version; the Screen Title Bar helps the user to be attentive of where s/he is throughout the application; and the Instruction Footer Bar contains additional instructions for using the screen, as well as the Exit button.

Modules Tabs Bar contains the modules options to load information and displays the tab currently selected (the name of current tab has a red background to differentiate it from the other tabs), while the Content Tab is the region that exhibits information corresponding to the selected tab.

The user can change the current tab by using the up () and down () keys to navigate among the options and by pressing ENTER to access the option. The Content Tab region will display information about the device on the selected tab. The user can also scroll information content using the Page Up and Page Down keys if the number of content rows is greater than the number of rows on the screen.

For the **System tab**, the following information is displayed on the Content Tab:

- Machine Manufacturer;
- Product Name;
- Product Version;
- Serial Number;

- BIOS Version;
- BIOS Release Date;
- BIOS Manufacturer;
- Processor Manufacturer;
- Processor Version.

For the **Battery tab**, the following information is displayed on the Content Tab:

- Primary;
- Manufacturer;
- Serial Number;
- Bar Code Number;
- FRU Number;
- Firmware Level;
- Manufacture Date;
- First Use Date;
- Temperature;
- Device Chemistry;
- Cycle Count;
- Charging State;
- Remaining Capacity;
- Capacity Mode;
- Full Charge Capacity;
- Design Capacity;
- Current;
- Voltage;
- Design Voltage;
- Warranty Period;
- Warranty Cycles;
- Optional MFG Function 2.

For the **CPU tab**, the following information is displayed on the Content Tab:

- UDI;
- Display Name;
- Model;
- Vendor;
- Number of Cores;
- Number of Enabled Cores;
- Number of Threads;
- Signature;
- Max Speed;
- Current Speed;
- Features;
- Cache L1;
- Cache L2;
- Cache L3.

For the **Display tab**, the following information is displayed on the Content Tab:

- UDI;
- Display Name;
- Manufacturer ID (a three-letter code identifying the manufacturer);
- Model Name;
- EDID Version;
- Max Resolution (in pixels);
- Max Image Size (in cm);
- Input Type (Analog or Digital);
- Display Type.

For the **Fan tab**, the following information is displayed in the Content Tab:

- CPU fan speed;
- CPU temperature;

For the **Memory tab**, the following information is displayed on the Content Tab:

- UDI;
- Display Name;
- Total Physical Memory (total of physical memory of machine in MB) and, for each memory device installed on machine:
 - Origin (Identification of memory device);
 - Type (DDR2, DDR3, EEPROM and so on);
 - Manufacturer;
 - Speed (in MHz);

- Size (in MB);
- Part Number;
- Serial Number.

For the **Motherboard tab**, the following information is displayed on the Content Tab:

- UDI;
- Display Name;
- Number of USB Host Controllers;
- Number of PCI;
- RTC Presence;
- Resource:
- Index;
- Slot;
- Class Name;
- Subclass Name;

For the **Optical tab**, the following information is displayed on the Content Tab:

- Model number;
- Manufacturer;
- Serial number;
- Firmware revision;
- Size;
- Sector size;

For the **PCI Express tab**, the following information is displayed on the Content Tab:

- Resource;
- Bus (current item bus hexadecimal id);
- Device (current item device hexadecimal id);
- Function (current item function hexadecimal id);
- Offboard Device (in case it's an external PCI Express off board connected);
- Vendor ID (current item vendor hexadecimal id);
- Class (current item class name);
- Subclass (current item subclass name);

For the **RAID tab**, the following information is displayed on the Content Tab:

- UDI;
- Display Name;
- Resource;
- Bus (current item bus hexadecimal id);
- Device (current item device hexadecimal id);
- Function (current item function hexadecimal id);
- Vendor ID (current item vendor hexadecimal id);

For the **Storage tab**, the following information is displayed on the Content Tab:

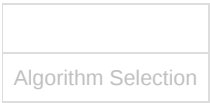
- UDI;
- Display Name;
- Model Number;
- Manufacturer;
- Serial Number;
- Firmware Revision;
- Size (in GB);
- Rotation Rate;
- Temperature (in Celsius);
- Physical Block/Sector Size (in bytes);
- Logical Block/Sector Size (in bytes);
- Number of Logical Blocks/Sectors;
- Supported Standards;
 - ATA/ATAPI 4;
 - ATA/ATAPI 5;
 - ATA/ATAPI 6;
 - ATA/ATAPI 7;
 - ATA8_ACS;
- Standard Version;

To exit the System Information screen and go back to the Home screen, the user must press the ESC key.

Recover Bad Sectors (Not Available in this Version)

Recover bad sectors is a tool that allows user to perform a test on system storages, identifying bad slots and allows user to recover these found bad blocks. When user selects this option on Home screen it displays two options to user.

- Check bad sector: this option makes a test on system storages and list the found bad blocks.
- Check and recover bad sector: this option makes a test on system storages list them to user and starts to correct the found bad blocks.



When one of the options above are selected the application computes the number of storage devices installed on the system. If there is more than one storage device installed on the system, Device Selection screen is displayed.

The Device Selection screen for the Repair Bad Sectors Tool is very similar to the Device Selection screen for Storage Diagnostics Execution. One difference is that, for the Storage Diagnostics Execution, the user can choose more than one device to be tested. For the Recover Bad Sectors Tool, the user can select only one device to be recovered.

Initially, only one device is selected. If the user selects another device, this device is selected and the device selected previously is deselected.

Another difference is that the Device Selection screen for the Recover Bad Sectors Tools does not have a "Select/Deselect All Options".

For the Recover Bad Sectors Tool, the user can only select one operation to be run.

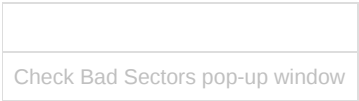
Initially, only one operation is selected. If the user selects another operation, this operation is selected and the operation selected previously is deselected.

Another difference is that the Algorithm Selection screen for the Recover Bad Sectors Tools does not have a "Select/Deselect All Options".

Initially, the selected operation is "Check Bad Sectors". This operation checks all Storage Device's sectors looking for bad sectors. The other selectable operation is "Check and Recover Bad Sectors" (to check all sectors and recover found bad sectors).

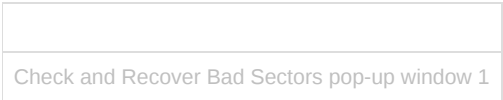
IMPORTANT: The "Check and Recover Bad Sectors" operation performs write operations on a device, which may cause data loss. The user must make a backup of his data before running that operation.

If the user selects the "Check Bad Sectors" operation, a pop-up window will appear as shown in the following figure.

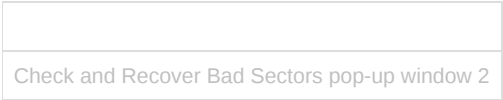


This pop-up window tells the user that this operation will take more than one hour to be finished and asks if the user wants to continue. To continue, the user must press the ENTER key. If the user doesn't want to continue, the user must press the ESC key.

If the user selects the "Check and Recover Bad Sectors" operation, a pop-up window will appear as shown in the next figure.

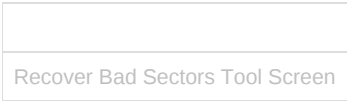


This pop-up window warns user that this operation may cause data loss on Storage Device. To continue, user must press ENTER key. After that, another pop-up window will appear as shown in the subsequent figure. The user can also abort operation pressing ESC key.



This pop-up window asks the user if the user really wants to continue this operation, due to the possibility of data loss. If the user wants to continue, the user must press the ENTER key. If not, the user must press the ESC key.

After all pop-up windows are closed, the Recover Bad Sectors screen is displayed, as shown in the figure below.



The Recover Bad Sectors screen is very similar to the Storage Diagnostics Execution screen, with a few differences.

In the Recover Results section, besides test start time, test end time, duration of Recover and instructions to user after operation is finished, additional information is shown.

For the Check Bad Sectors operation, the found bad sectors are displayed on the screen. For the Check and Recover Bad Sectors operation, the found bad sectors and result of their recovery (i.e. if bad sectors could be recovered or not) are displayed on the screen.

The Recover Result section can be scrolled up or down using the Up and Down arrow keys if the number of content rows for this section is greater than the number of rows on the screen.

During execution of the Recovery operation, the user can stop it at any time by pressing the ESC key. If the user does that, the operation is aborted. After the operation is finished or aborted, the user can go back to the Home screen by pressing the ESC key again or the user can see the Repair Log screen by pressing the V key.

Exit Application

To exit the application, the user must select the option "Exit" on the Home screen and press the ENTER key. Then, the interface will be closed and the machine will be reset.

Approvals

Revision	Reviser	Revision Date	Approver	Approval Date
6.1	Fellipe Souza	01 Mar 2018	Marcelo Ferreira	