

Lenovo Diagnostics UEFI Embedded/Bootable v04.06.000

Contents

- 1 Contents
- 2 List of Figures
- 3 Objective
- 4 Install and Run the UEFI diagnostics
 - 4.1 Download the Lenovo Diagnostics UEFI Bootable and Create a Bootable USB Flash Drive Using Windows GUI
 - 4.2 Run the UEFI Diagnostics
 - 4.3 Run the Lenovo Diagnostics UEFI Bootable from a Bootable Flash Drive
 - 4.3.1 Home
 - 4.4 Run the Lenovo Diagnostics UEFI Embedded
 - 4.4.1 Home
- 5 Hierarchical Diagnostics
- 6 Battery
- 7 CPU
 - 7.1 CPU Quick Diagnostics
 - 7.2 CPU Extended Diagnostics
- 8 Display
- 9 Fan
- 10 Keyboard
- 11 Memory
 - 11.1 Memory Quick Diagnostics
 - 11.2 Memory Extended Diagnostics
- 12 Motherboard
- 13 Mouse
- 14 PCI Express
- 15 RAID
- 16 Storage
 - 16.1 Storage Quick Diagnostics
 - 16.2 Storage Extended Diagnostics
- 17 Optical
- 18 Video Card
- 19 Touch
- 20 Run All
- 21 Diagnostics Result Log
 - 21.1 Log Saving
- 22 System Information
- 23 Hardware Diagnostic Events (for ThinkStation)
- 24 Bad Block Recovery
- 25 Exit Application

List of Figures

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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:**
 1. Go to www.Lenovo.com/diags
 2. Click on "Downloads"
 3. Under "Lenovo Diagnostics UEFI Bootable", click on "Create Bootable USB with UEFI Diagnostics"
 4. 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.)*
 5. Download Bootable Generator Zip file
2. **Run the Bootable Generator application.**
 1. Insert a USB flash drive
 2. Go to the folder where you saved the bootable generator and double click on it
 3. Double click "BootableGenerator.exe"
 4. 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.
 5. Click on "Search". Click on the image name that you saved in step 1, letter d.
 6. Click on "Generate".
 7. 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.

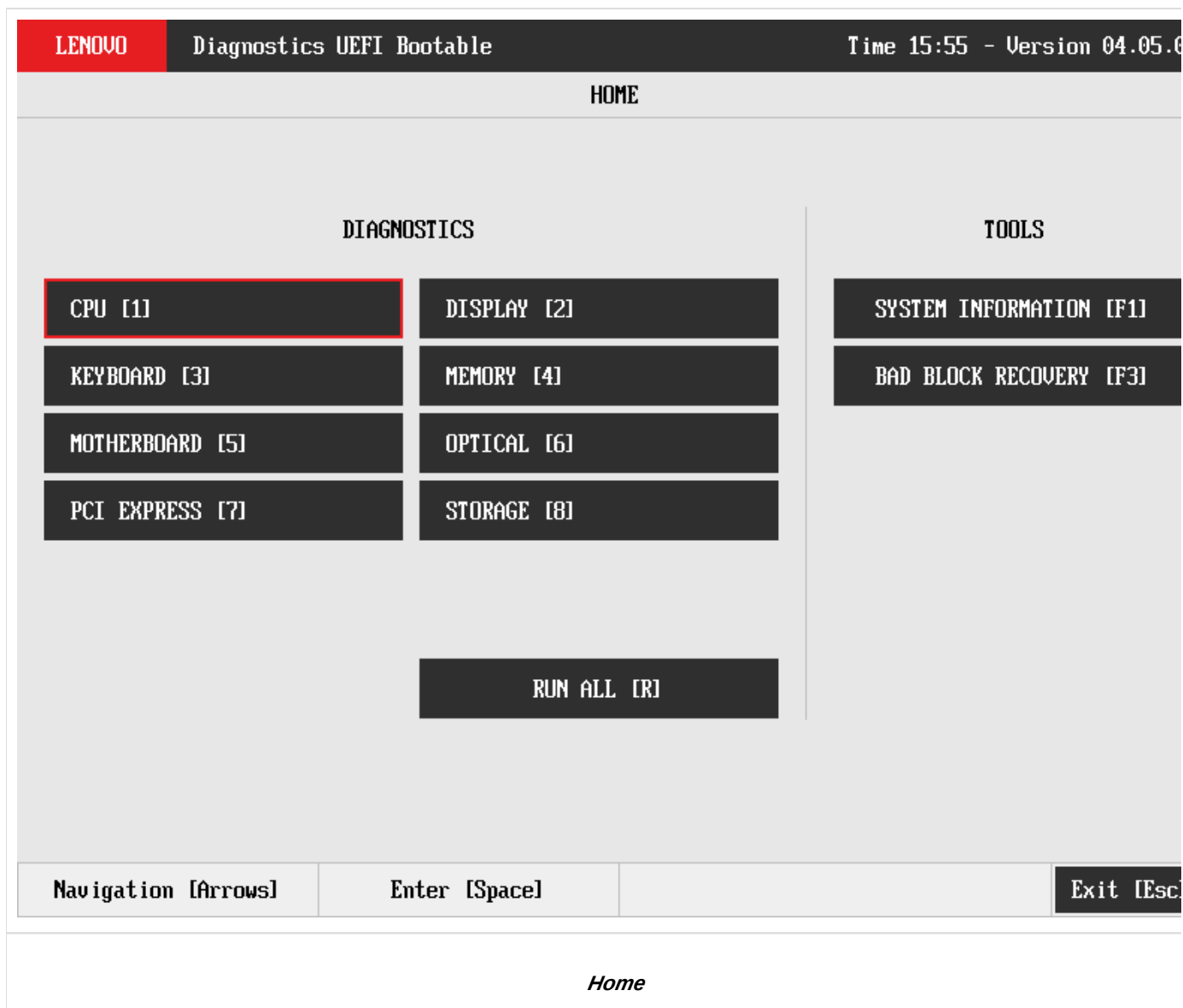
Run the UEFI Diagnostics

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.

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.
- Keyboard: It selects and runs keyboard 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.
- Mouse: It selects and runs mouse 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:

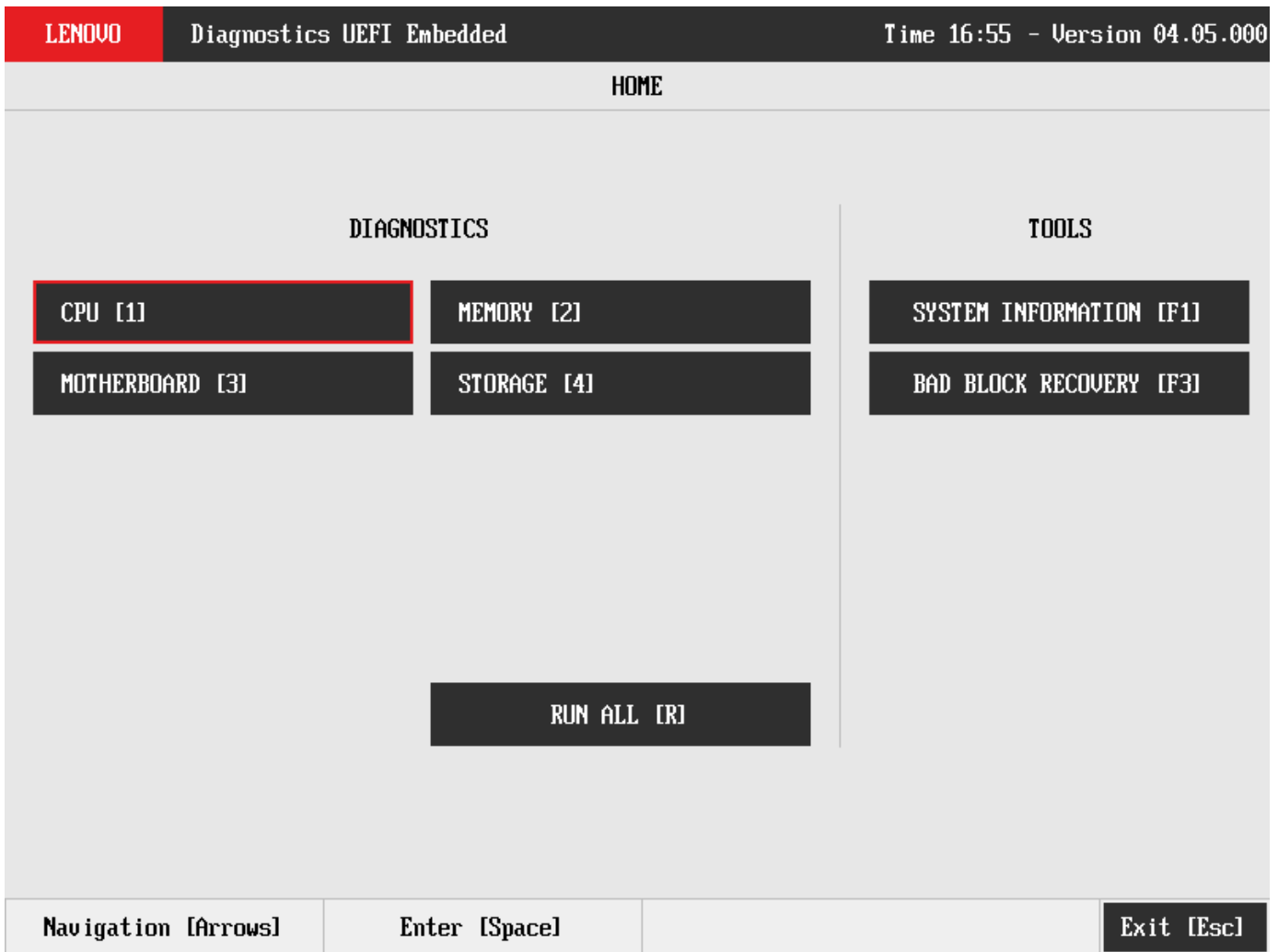
- System Information: On its main screen, it displays machine, BIOS and processor information, as well as a menu that it is possible to retrieve information from other devices modules.
- Bad Block Recovery: It allows to recover bad blocks on storage devices.
- Hardware Diagnostic Events: It exhibits diagnostic events retrieved from the hardware.

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 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:

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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.
- CPU
 - Quick: It selects and runs CPU quick diagnostics.
 - Extended: It selects and runs CPU extended 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.

- 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.
- Bad Block Recovery: It allows to recover bad blocks on storage devices.

Hierarchical Diagnostics

The hierarchical diagnostics functionality is a feature which conducts hierarchic sorted tests, in the way that the more independent is a module, the more its tests take precedent in the tests hierarchy.

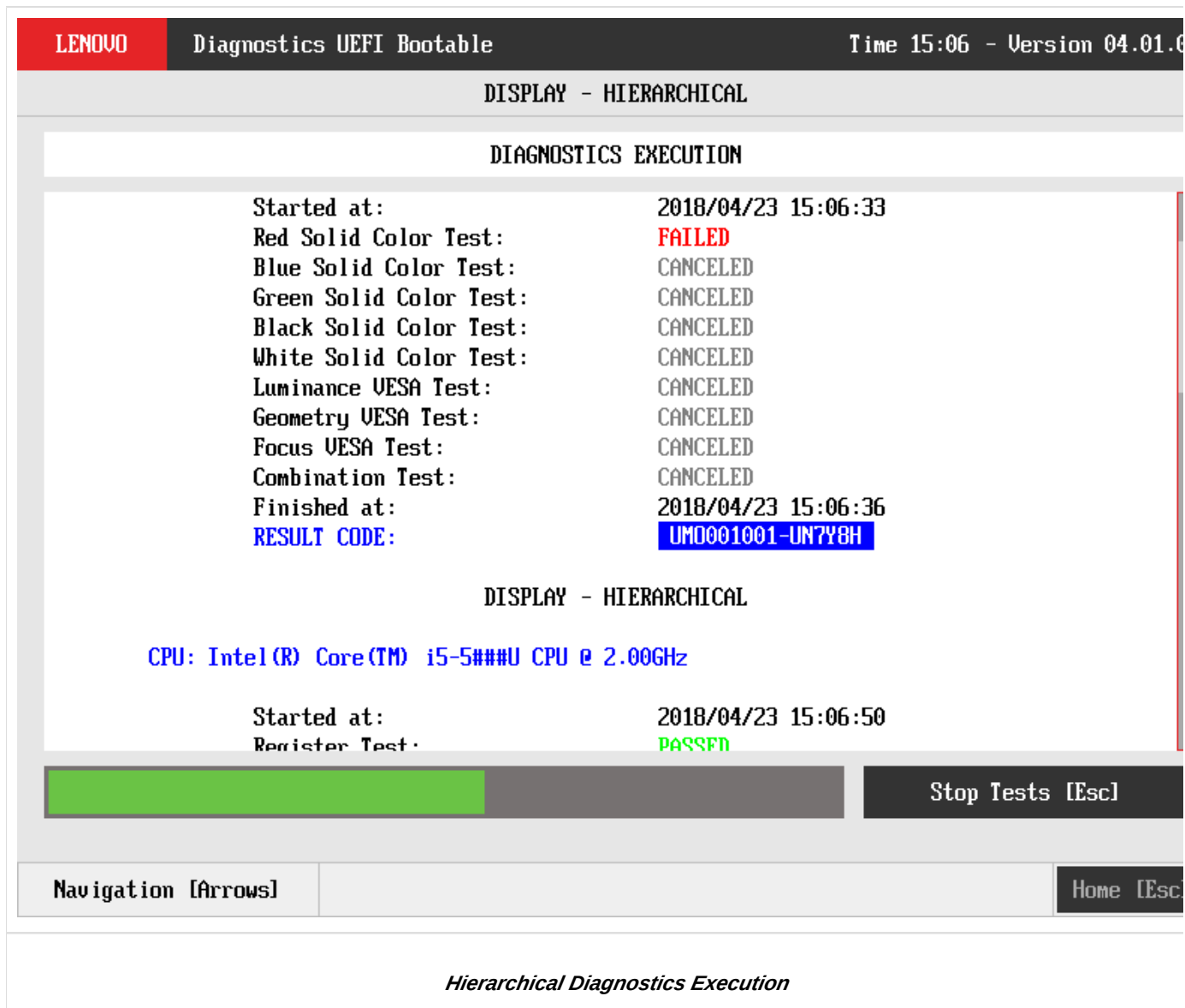
That allows the identification of modules' failures that precede a specific module being diagnosed, where its corresponding tests have firstly failed.

After testing a specific module, in the case of at least one failure has occurred, the following popup will be displayed.



Hierarchical Diagnostics Confirmation Popup

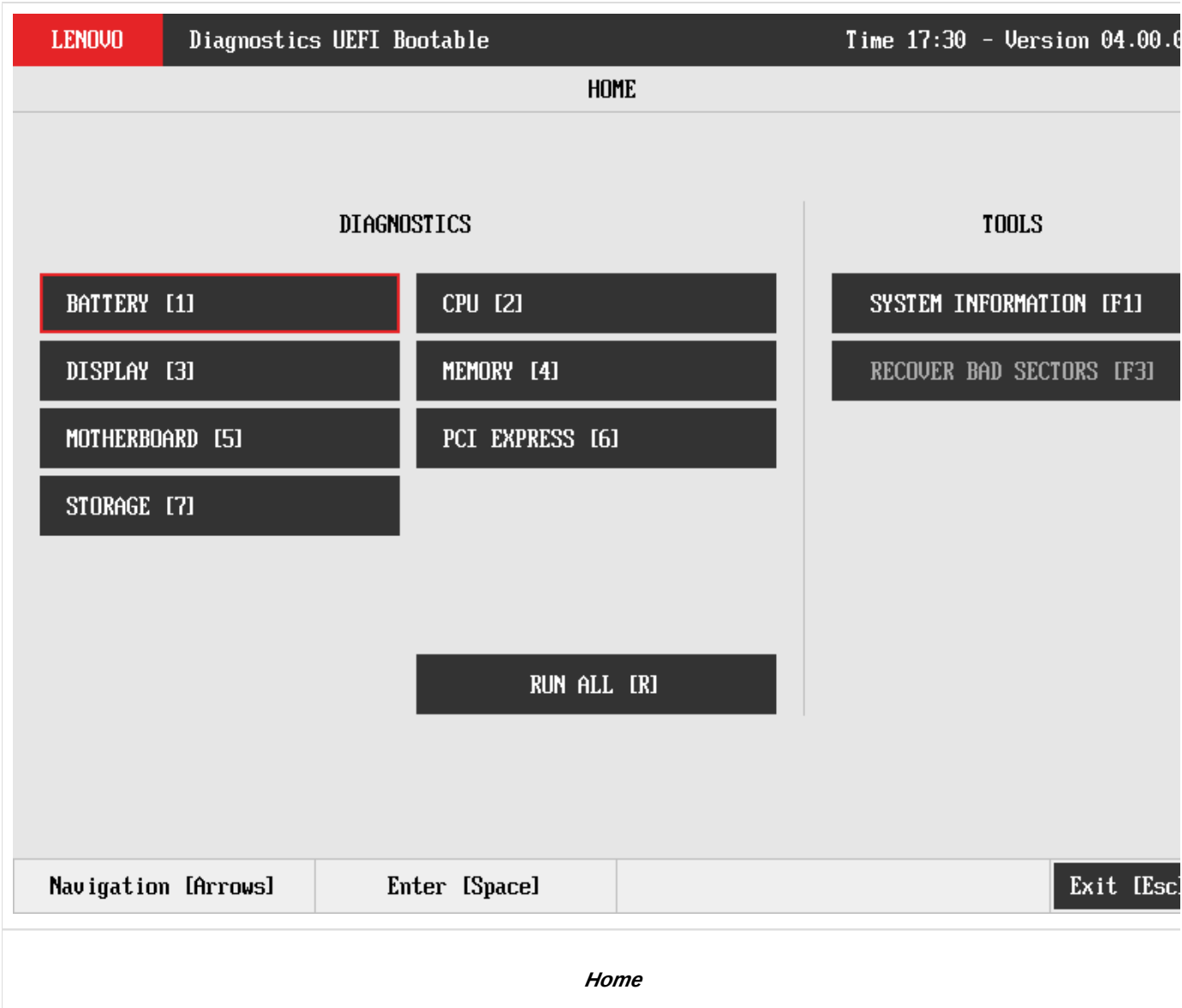
When choosing Yes, the application will test the correlated modules, as the following figure demonstrates it by using a Display test failure example.



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.

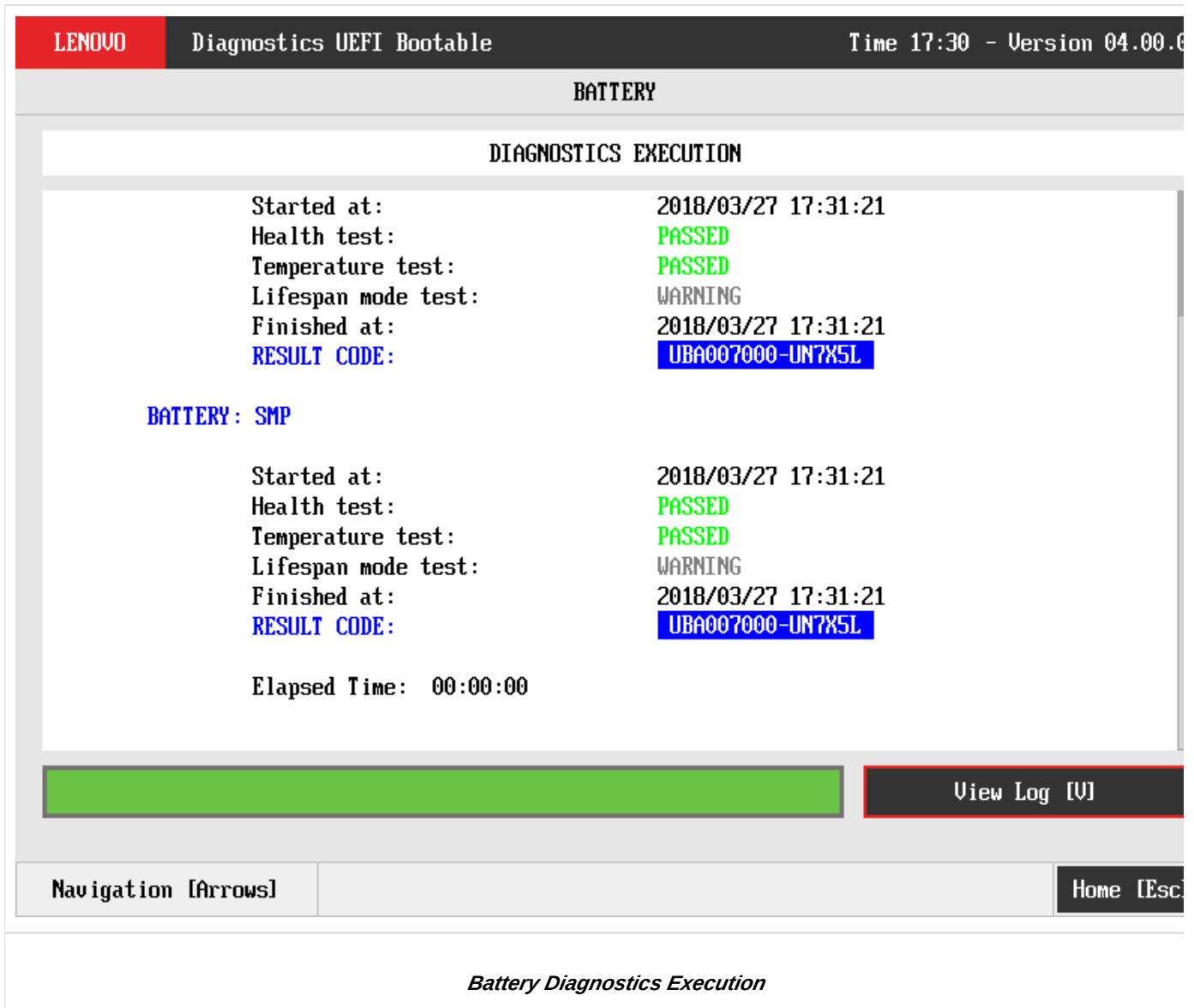
LENOVO	Diagnostics UEFI Bootable	Time 17:30 - Version 04.00.0
BATTERY 1: 213-SANYO		
ALGORITHM SELECTION		
[X] Select / Deselect All Options [X] Health test [X] Temperature test [X] Lifespan mode test		
Confirm [C]		
Navigation [Arrows]	Enter [Space]	Exit [Esc]

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 use the Confirm button. Consequently, the system will run all tests, as illustrated in the figure below.



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 seven status:
 - **Waiting**, indicating the test is waiting to be run.
 - **Progress** (plus the test execution percentage), indicating the test is being run.
 - **PASSED**, indicating the algorithm has found no problems at device.

- **WARNING**, when applicable, indicating the algorithm has detected signs to the user be aware (for instance, of an imminent failure).
- **FAILED**, indicating the algorithm has found one or more faults.
- **CANCELED**, indicating the algorithm has been canceled by user.
- **NOT APPLICABLE**, indicating the algorithm is not supported by device.
- Date and time that the tests are finished (displayed after test is finished).
- Result Code for test.
- 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 again) or visualize the test log (by pressing the V key).

CPU

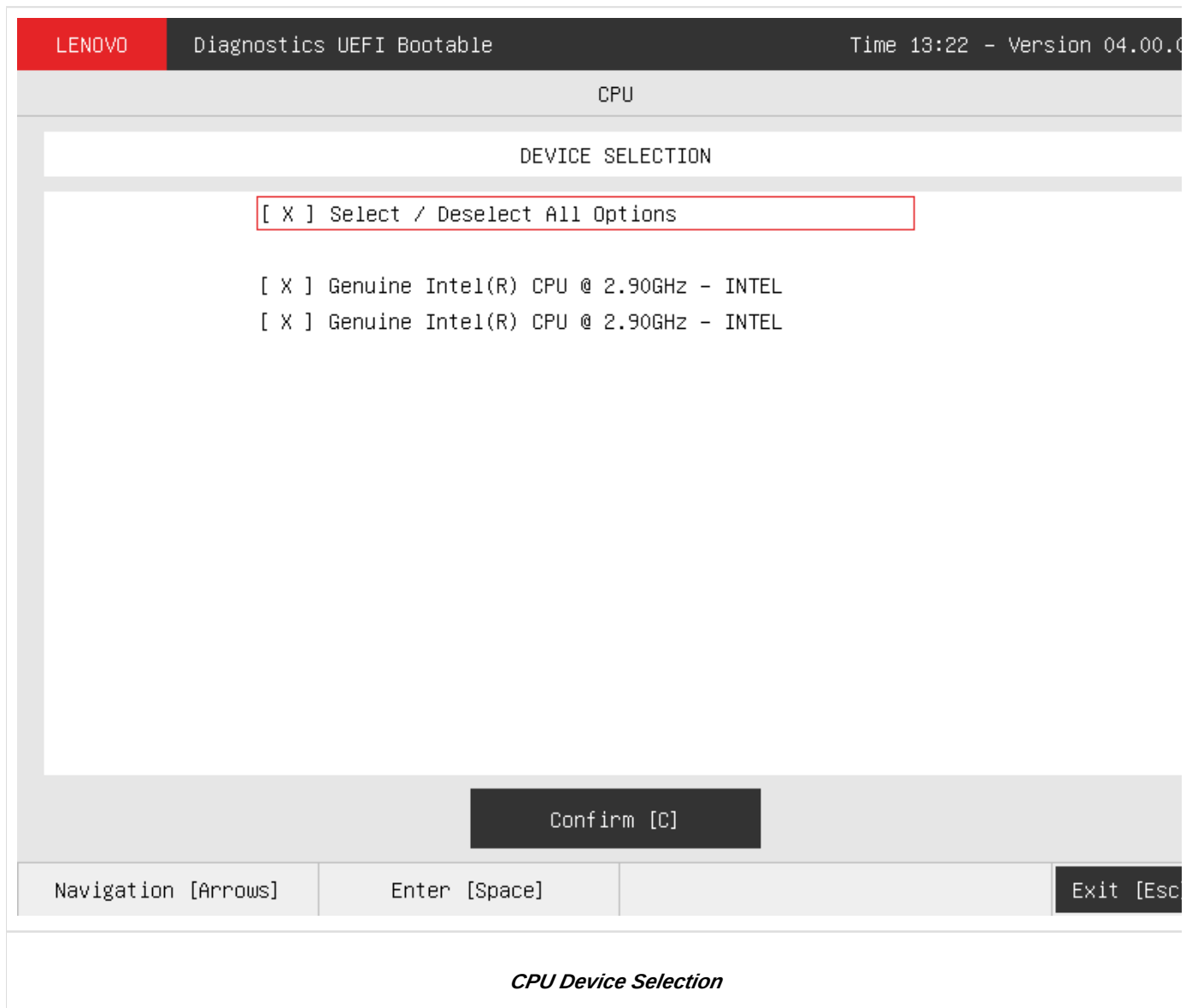
The system allows the user to access the CPU diagnostics from the Home screen, Diagnostics, CPU.

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

The screenshot shows the '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 13:22 - Version 04.00.0' on the right. Below this is a 'CPU' section header. Underneath, the 'DIAGNOSTICS TYPE' menu is displayed. It lists two options: '[X] Quick' and '[] Extended'. The 'Quick' option is highlighted with a red rectangular box. At the bottom of the menu, there is a 'Confirm [C]' button. Below the button, there is a navigation bar with three sections: 'Navigation [Arrows]', 'Enter [Space]', and 'Exit [Esc]'. The entire interface is titled 'CPU Diagnostics Type' at the bottom.

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 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.



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 15:00 - Version 04.01.0

CPU 1: Genuine Intel(R) CPU 0000 @ 2.70GHz - 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

[X] Cache Test

Confirm [C]

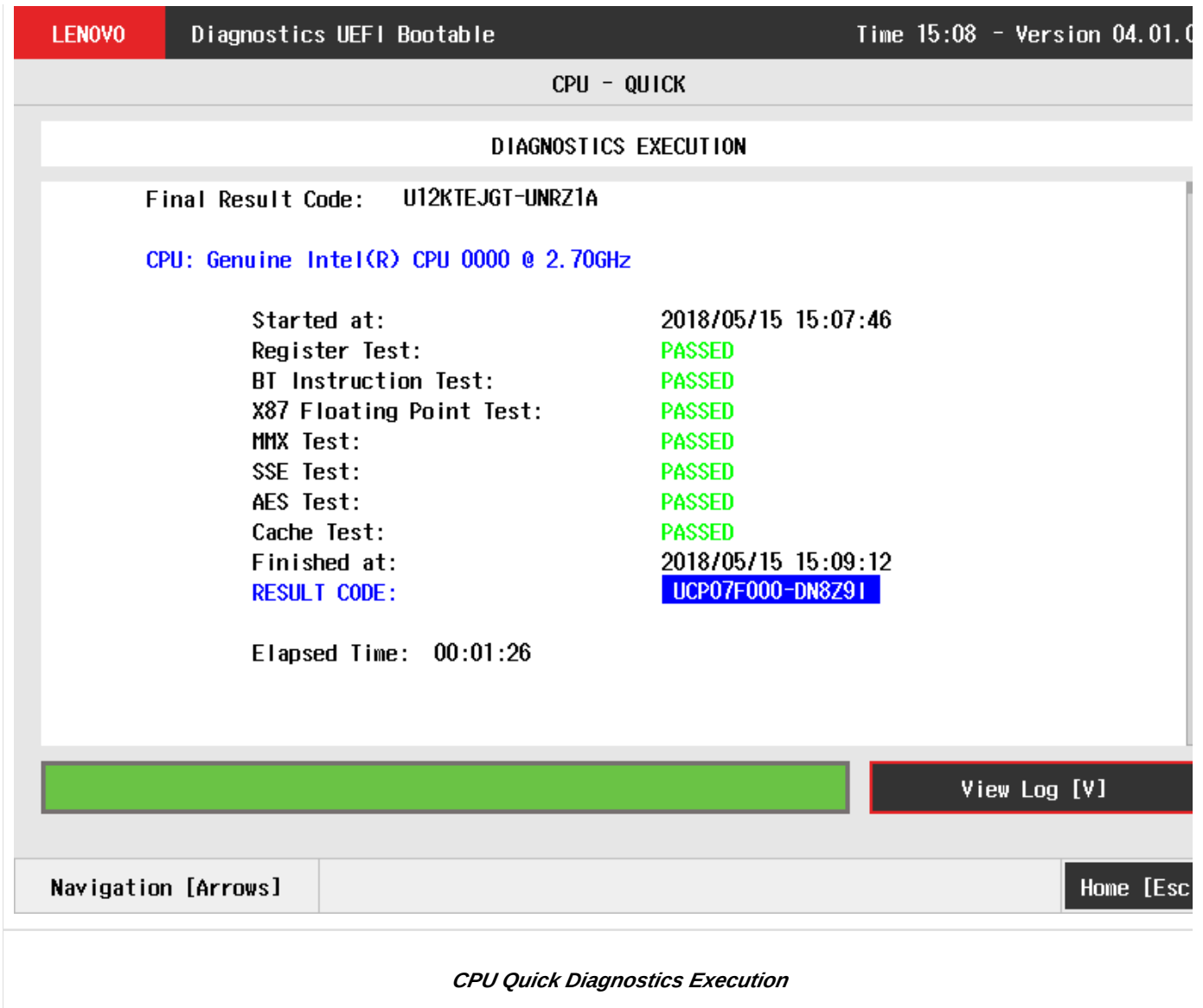
Navigation [Arrows]

Enter [Space]

Home [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 use the Confirm button. Consequently, the system will run all tests, as illustrated in the figure below.



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 seven status:
 - **Waiting**, indicating the test is waiting to be run.
 - **Progress** (plus the test execution percentage), indicating the test is being run.
 - **PASSED**, indicating the algorithm has found no problems at device.

- **WARNING**, when applicable, indicating the algorithm has detected signs to the user be aware (for instance, of an imminent failure).
- **FAILED**, indicating the algorithm has found one or more faults.
- **CANCELED**, indicating the algorithm has been canceled by user.
- **NOT APPLICABLE**, indicating the algorithm is not supported by device.
- Date and time that the tests are finished (displayed after test is finished).
- Result Code for test.
- 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 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:

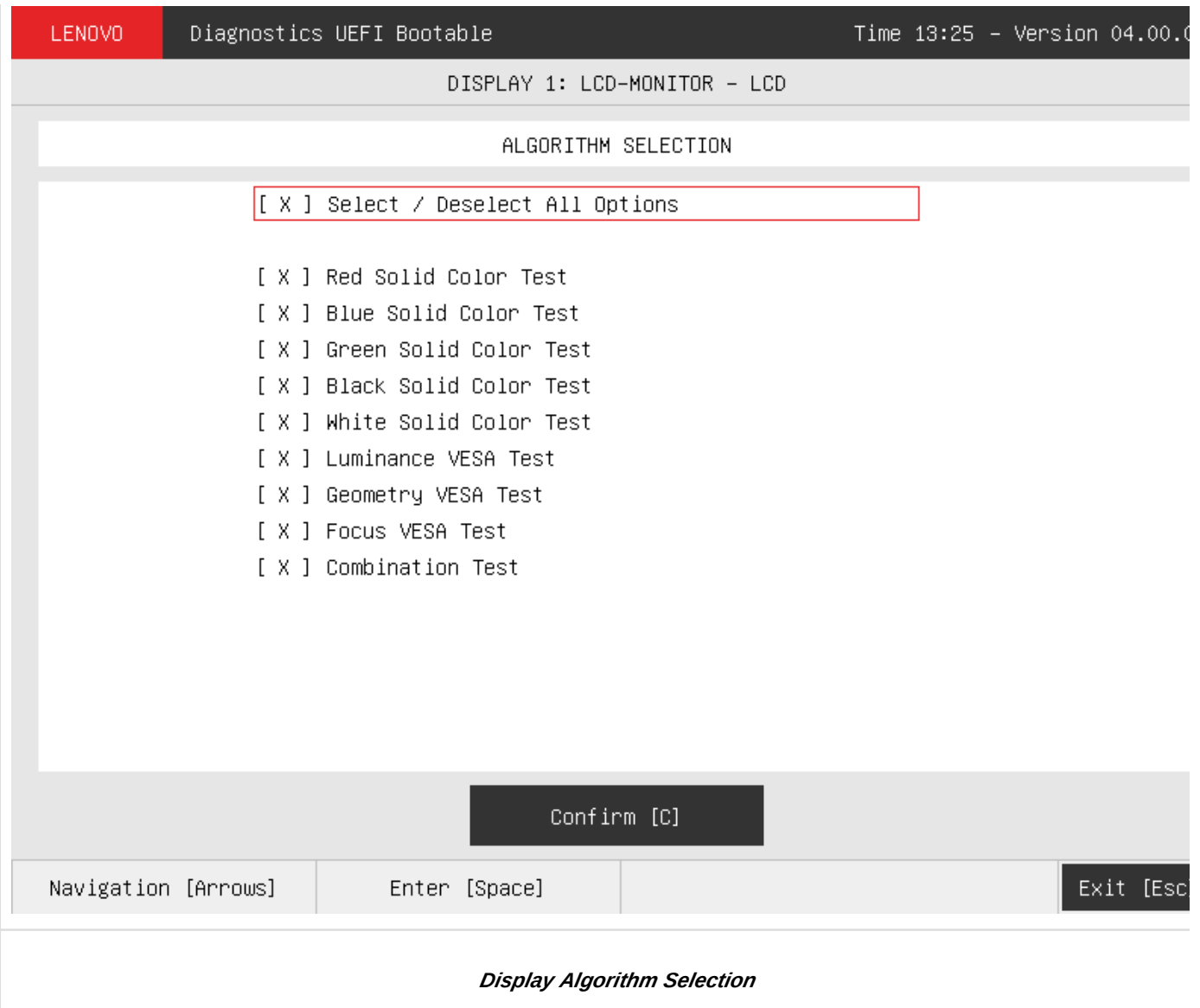
- Final Result Code (an encrypted code that informs which modules were tested).
- Date and time that diagnostic has started.
- Test (name of the test being currently run).
- Progress of the current test (current test's progress in percentage).
- A list with all the algorithms which compose device test and their respective status, whereas an algorithm can have seven status:
 - **Waiting**, indicating the test is waiting to be run.
 - **Progress** (plus the test execution percentage), indicating the test is being run.
 - **PASSED**, indicating the algorithm has found no problems at device.
 - **WARNING**, when applicable, indicating the algorithm has detected signs to the user be aware (for instance, of an imminent failure).
 - **FAILED**, indicating the algorithm has found one or more faults.
 - **CANCELED**, indicating the algorithm has been canceled by user.
 - **NOT APPLICABLE**, indicating the algorithm is not supported by device.
- Date and time that the tests are finished (displayed after test is finished).
- Result Code for test.
- 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 again) or visualize the test log (by pressing the V key).

Display

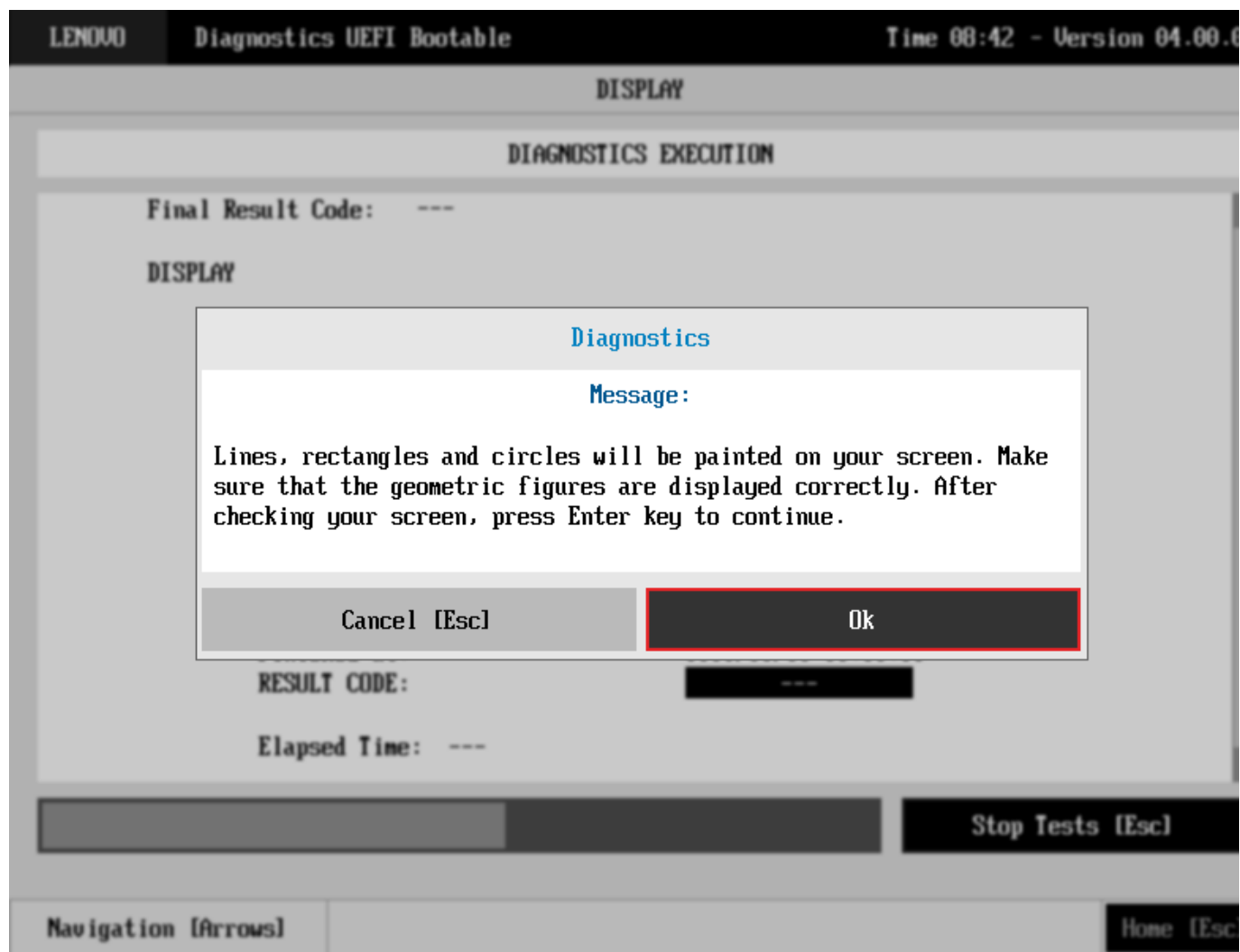
After the user enters the Display option, the application computes the number of algorithms that can be performed by the diagnostic. If the diagnostic has more than one algorithm, Algorithm Selection screen is displayed, as shown in the figure below.





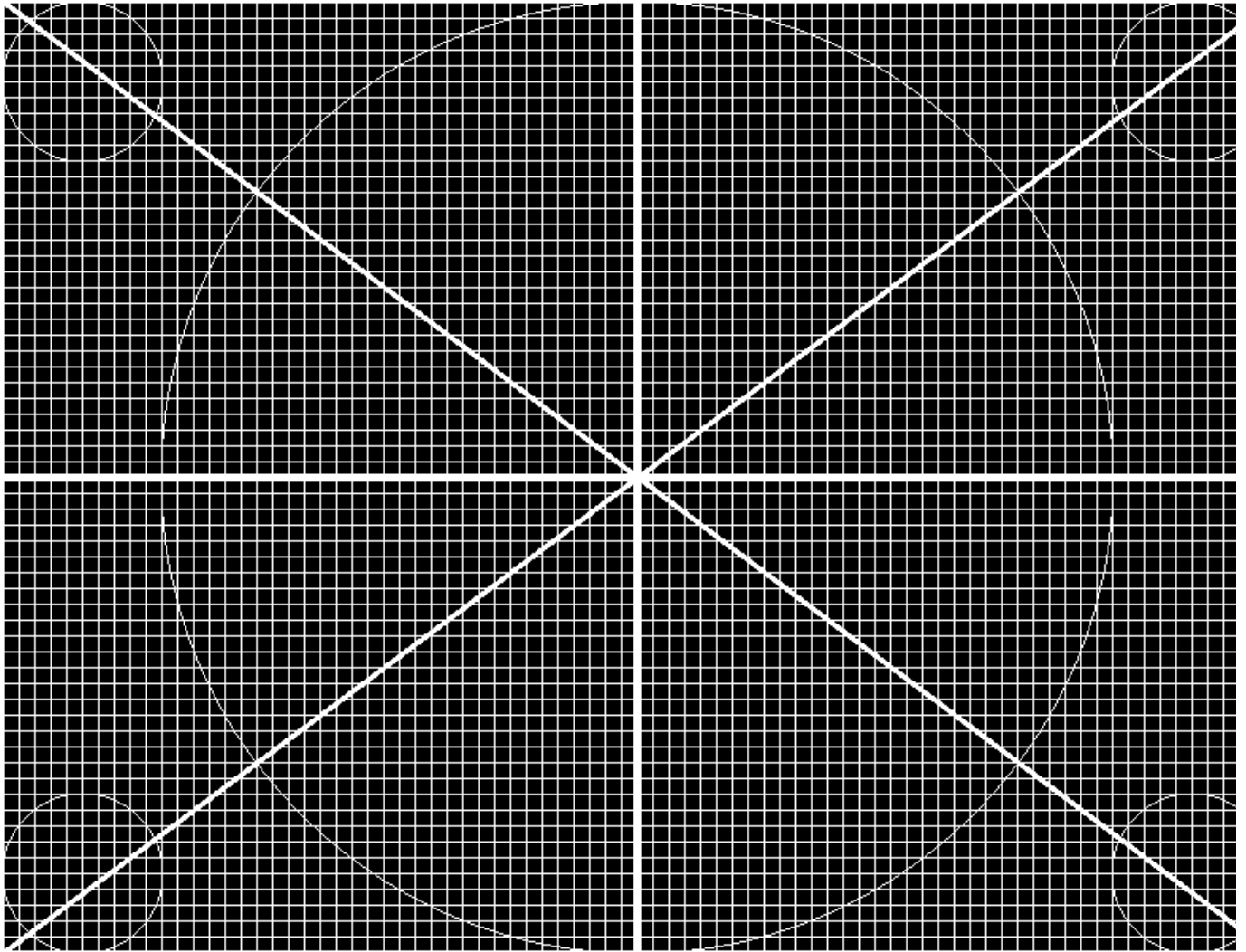
The Algorithm Selection screen allows the user to select which algorithms will be tested by the application. After the user chooses at least one test and chooses the Confirm button on the Algorithm Selection screen, the Display tests start.

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.



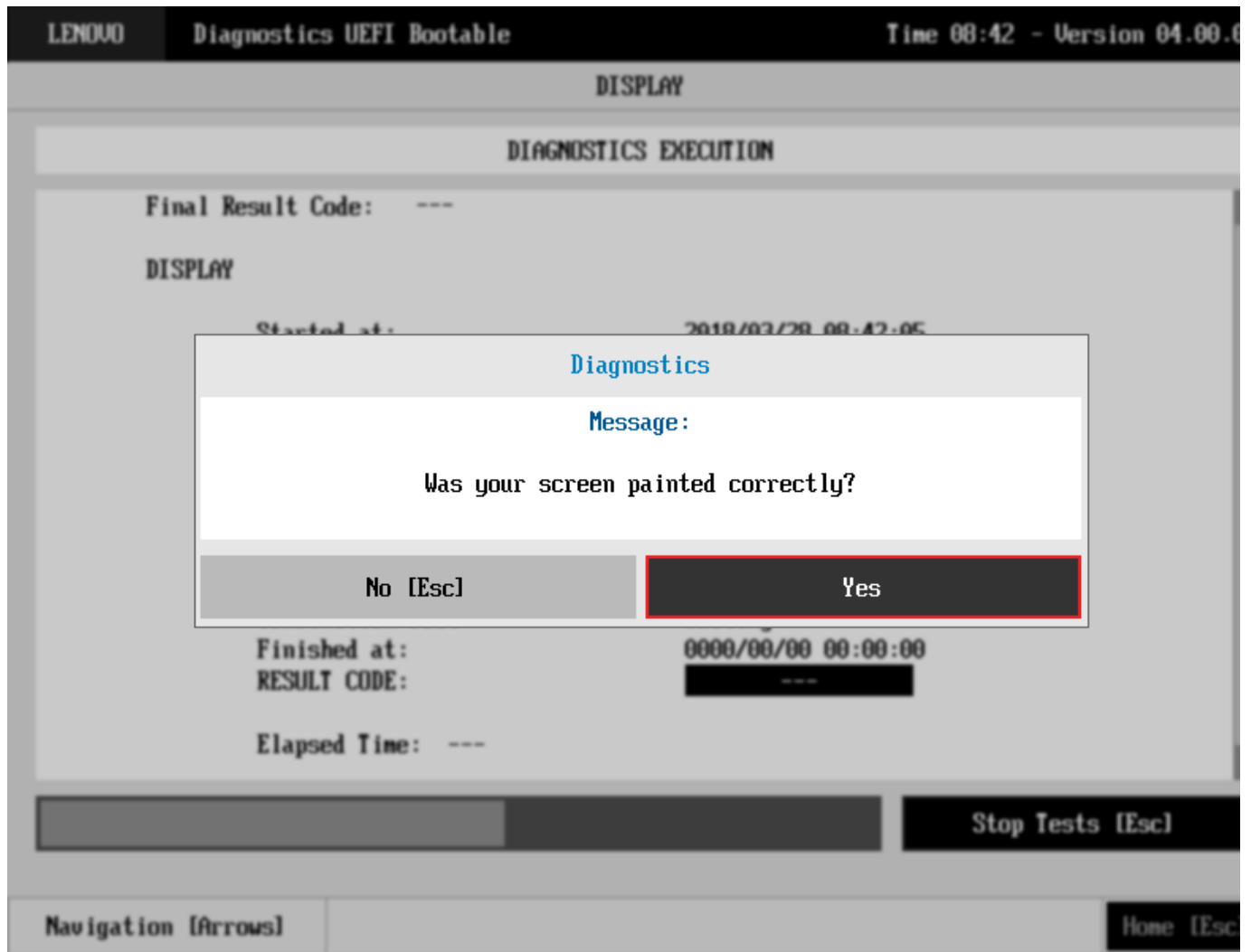
Display Test Instruction Popup

If the user chooses to proceed with the test's execution, 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 the test's execution.



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.

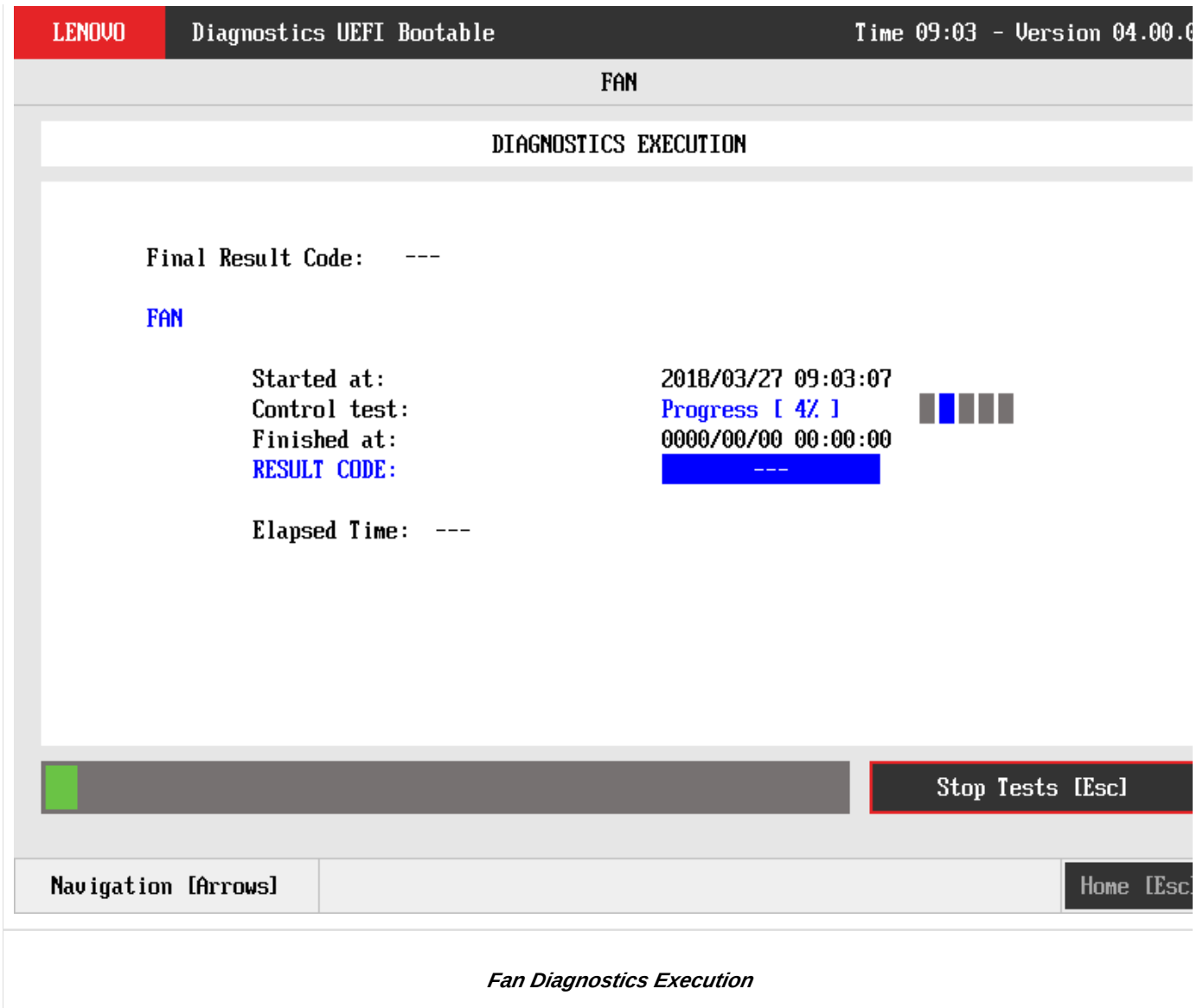


Display Test Result Inquiry Popup

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 diagnostic. 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 seven status:
 - **Waiting**, indicating the test is waiting to be run.
 - **Progress** (plus the test execution percentage), indicating the test is being run.
 - **PASSED**, indicating the algorithm has found no problems at device.

- **WARNING**, when applicable, indicating the algorithm has detected signs to the user be aware (for instance, of an imminent failure).
- **FAILED**, indicating the algorithm has found one or more faults.
- **CANCELED**, indicating the algorithm has been canceled by user.
- **NOT APPLICABLE**, indicating the algorithm is not supported by device.
- Date and time that the tests are finished (displayed after test is finished).
- Result Code for test.
- 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 again) or visualize the test log (by pressing the V key).

The dual fan support was added on v04.06.000 version.

Keyboard

The user can choose between PS/2 or USB keyboard as is shown in the figure below.

The screenshot shows the 'Lenovo Diagnostics UEFI Bootable' interface. At the top, it says 'Time 09:50 - Version 04.02.0'. Below this, it says 'KEYBOARD: KEYBOARD ID'. The main section is titled 'ALGORITHM SELECTION'. Inside this section, there are three options, each preceded by '[X]': 'Select / Deselect All Options', 'PS/2 Keyboard', and 'USB Keyboard'. A red box highlights the first option. At the bottom center, there is a 'Confirm [C]' button. At the very bottom, there are three buttons: 'Navigation [Arrows]', 'Enter [Space]', and 'Home [Esc]'. Below the screenshot, the text 'Keyboard type selection' is written in italics.

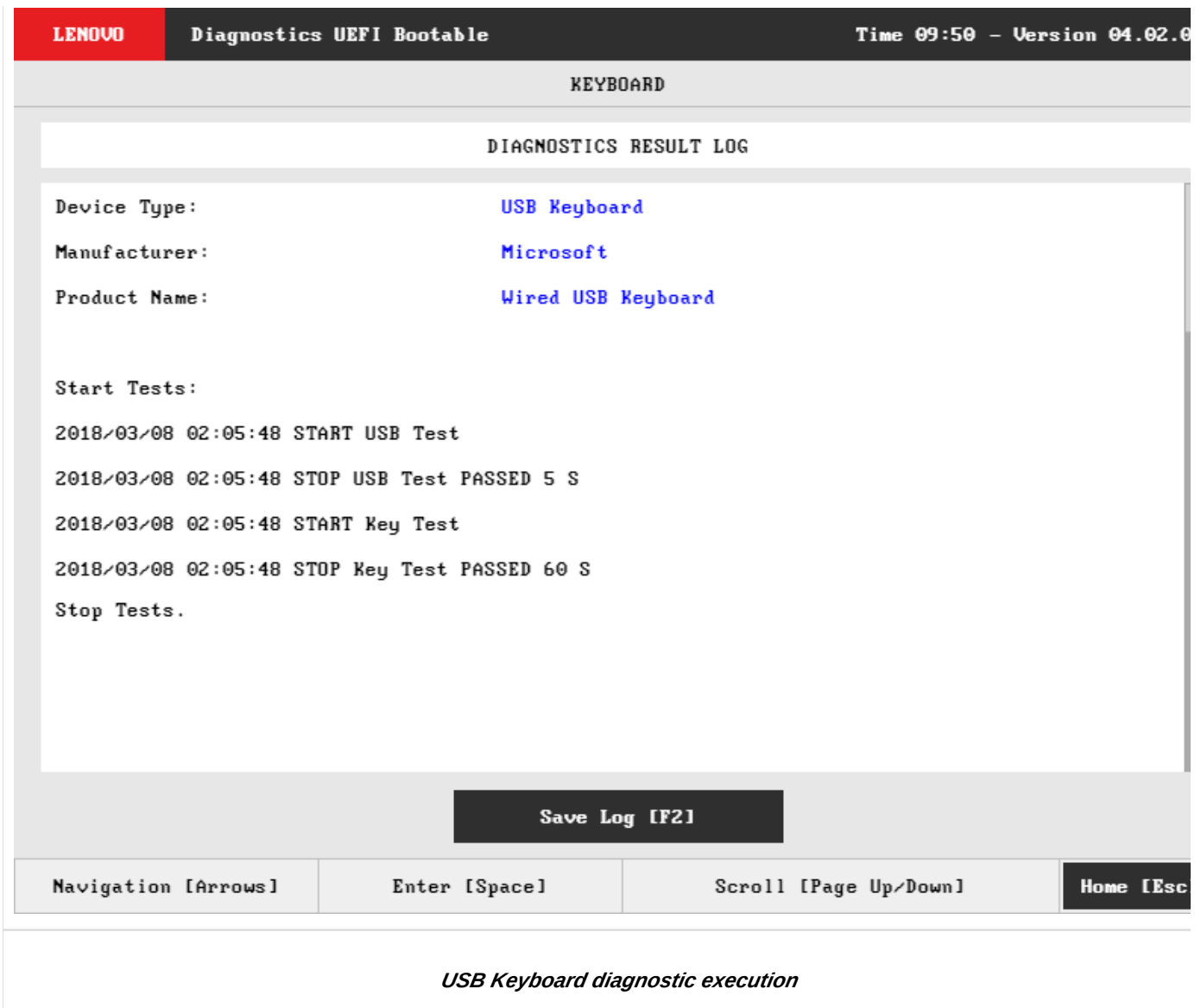
After the selection of the desired keyboard, the user can select the tests for the selected keyboard type:

- **PS/2 Test:**
 - **Description:** "PS/2 Test" is a keyboard test that checks the access to PS/2 type keyboards.
 - **Results:** **PASSED**; **FAILED**; CANCELED; NOT APPLICABLE.
- **USB Test:**
 - **Description:** "USB Test" is a keyboard test that checks the access to USB type keyboards.
 - **Results:** **PASSED**; **FAILED**; **WARNING**¹; CANCELED; NOT APPLICABLE.
 - ¹: This test presents similar behavior to USB keyboard Test from Lenovo Diagnostics Windows, consequently, the **WARNING** test result is given when some information is not retrieved.
 - **Warning Message** (when some information is not retrieved): *WARNING Manufacturer or Product Name was not possible to be retrieved*
- **Key Test:**
 - **Description:** "Key Test" is an attended keyboard test that the user can check whether the keys and existing LEDs are properly working for PS/2 Keyboards.
 - **Results:** **PASSED**; **FAILED**; CANCELED.
- **USB Key Test:**
 - **Description:** "USB Key Test" is an attended keyboard test that the user can check whether the keys and existing LEDs are properly working for USB Keyboards.
 - **Results:** **PASSED**; **FAILED**; CANCELED.

LENOVO	Diagnostics UEFI Bootable	Time 09:50 - Version 04.02.0
KEYBOARD 1: KEYBOARD ID		
ALGORITHM SELECTION		
☒ Select / Deselect All Options ☒ PS/2 Test ☒ Key Test		
Confirm [C]		
Navigation [Arrows]	Enter [Space]	Home [Esc]

Keyboard Test selection

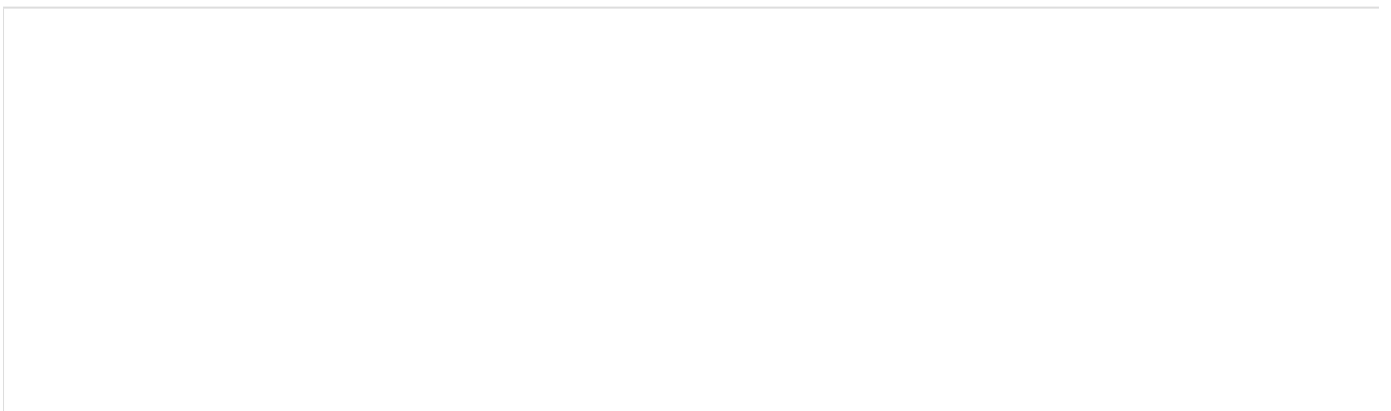
At least one test must be selected, so that the application can run the diagnostic. After the user chooses which tests must be performed, the user can use the Confirm button. Consequently, the system will run all tests, as illustrated in the figure below.

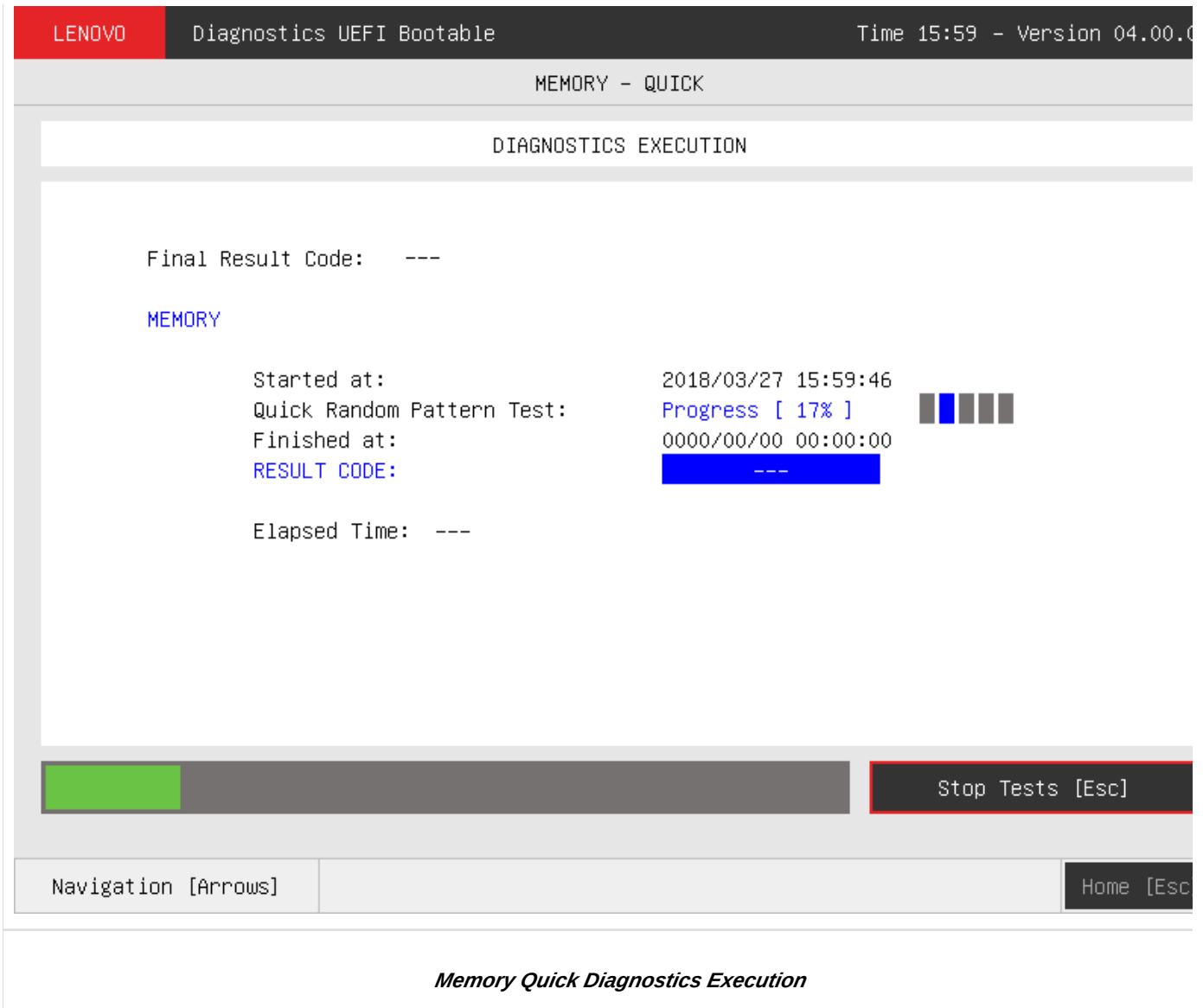


Memory

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).
- QR Code (QR code shown on the right side of Final Result Code and that contain the information below, concatenated with semicolon):
 - Final Result Code;
 - Serial Number;
 - Test Date (YYYYMMDD format)
- 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 seven status:
 - **Waiting**, indicating the test is waiting to be run.
 - **Progress** (plus the test execution percentage), indicating the test is being run.
 - **PASSED**, indicating the algorithm has found no problems at device.
 - **WARNING**, when applicable, indicating the algorithm has detected signs to the user be aware (for instance, of an imminent failure).
 - **FAILED**, indicating the algorithm has found one or more faults.
 - **CANCELED**, indicating the algorithm has been canceled by user.
 - **NOT APPLICABLE**, indicating the algorithm is not supported by device.
- Date and time that the tests are finished (displayed after test is finished).
- Result Code for test.
- 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 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]

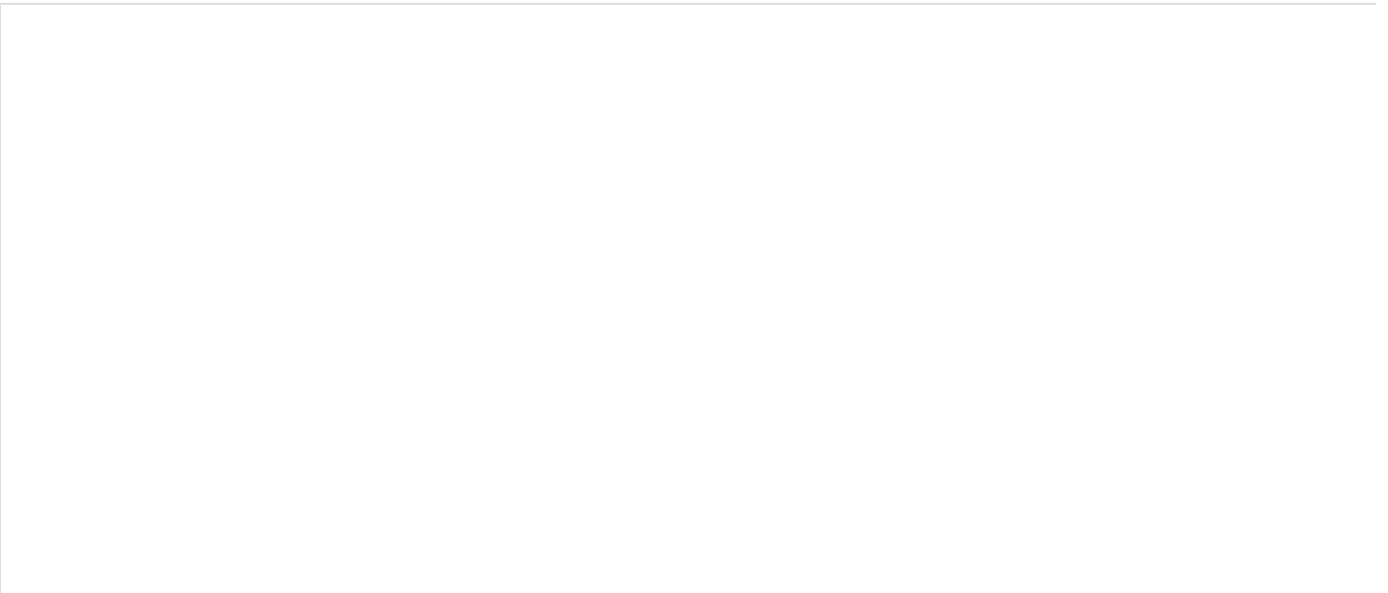
Navigation [Arrows]

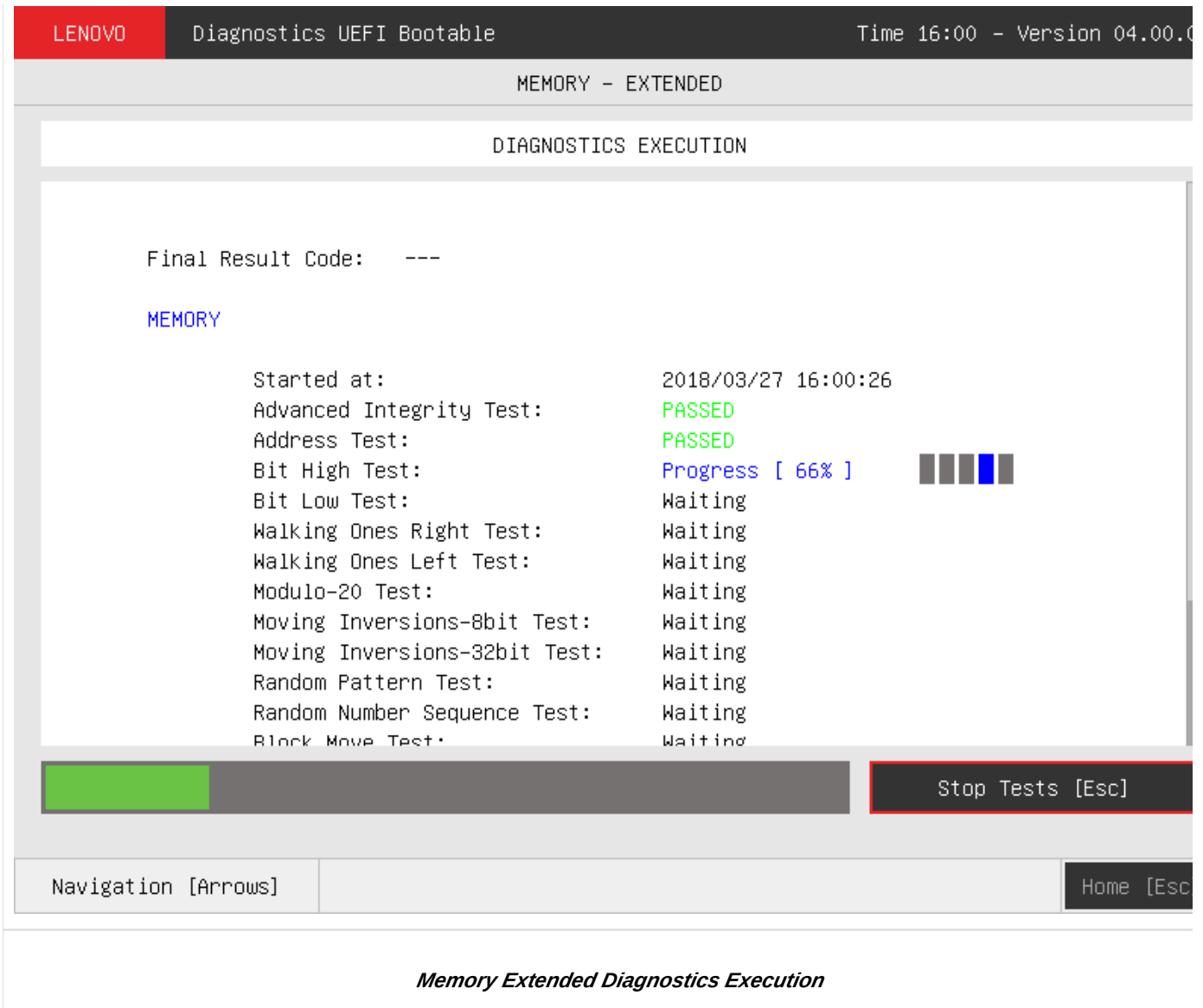
Enter [Space]

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 use the Confirm button. Consequently, the system will run all tests, as illustrated in the figure below.





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 seven status:
 - **Waiting**, indicating the test is waiting to be run.
 - **Progress** (plus the test execution percentage), indicating the test is being run.
 - **PASSED**, indicating the algorithm has found no problems at device.

- **WARNING**, when applicable, indicating the algorithm has detected signs to the user be aware (for instance, of an imminent failure).
- **FAILED**, indicating the algorithm has found one or more faults.
- **CANCELED**, indicating the algorithm has been canceled by user.
- **NOT APPLICABLE**, indicating the algorithm is not supported by device.
- Date and time that the tests are finished (displayed after test is finished).
- Result Code for test.
- 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 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 diagnostic. If the diagnostic has more than one algorithm, Algorithm Selection screen is displayed, as shown in the next figure.

The screenshot shows the 'MOTHERBOARD 1: MAIN_MOTHERBOARD' screen with an 'ALGORITHM SELECTION' section. A red box highlights the '[X] Select / Deselect All Options' text. Below it, four tests are listed, each with a checked box: '[X] Chipset Test', '[X] PCI/PCIe Test', '[X] RTC Test', and '[X] USB Test'. At the bottom, there is a 'Confirm [C]' button and a navigation bar with 'Navigation [Arrows]', 'Enter [Space]', and 'Exit [Esc]' options.

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]

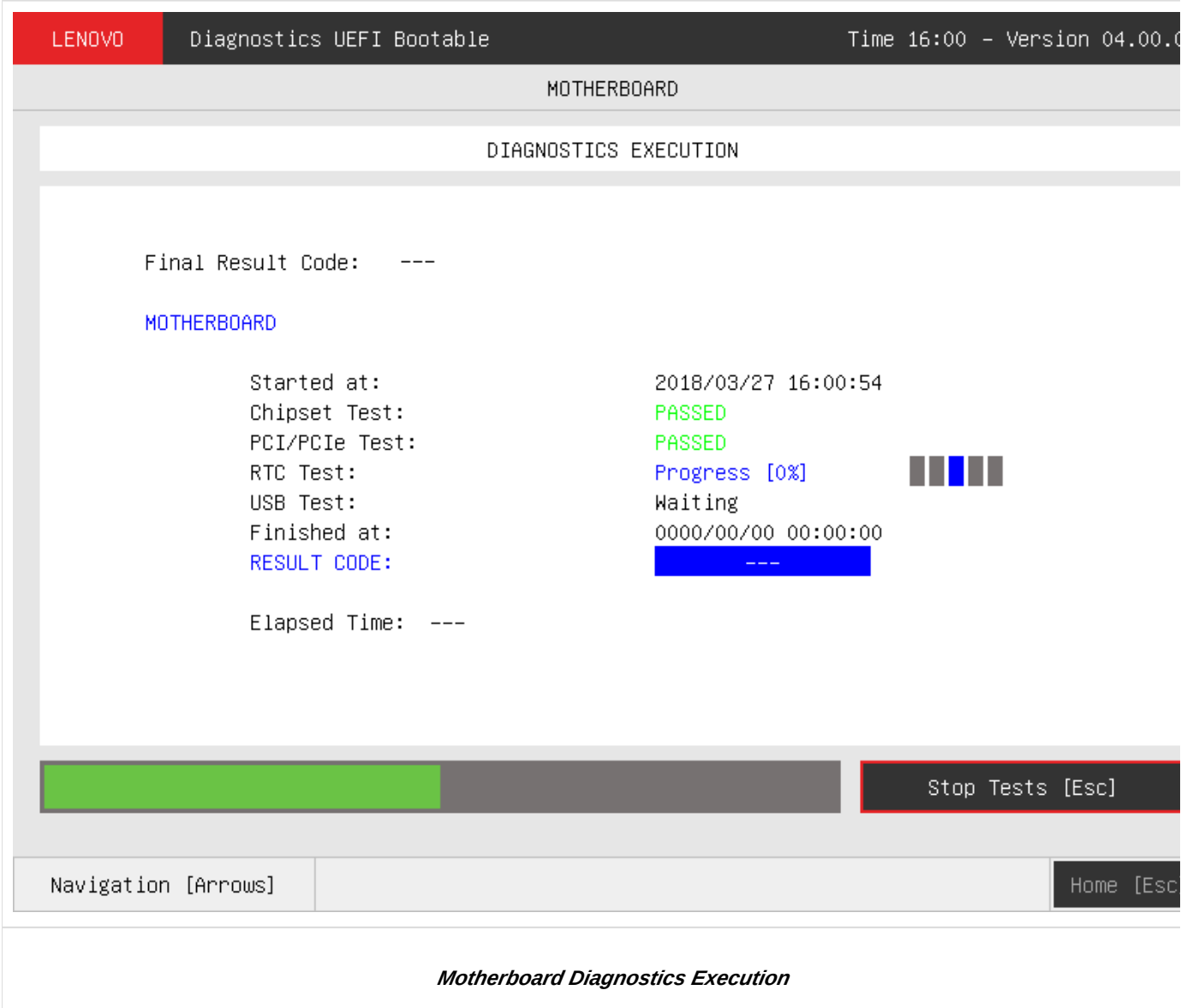
Motherboard Algorithm Selection

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 use the Confirm button. Consequently, the system will run all tests, as illustrated in the figure below.



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 seven status:
 - **Waiting**, indicating the test is waiting to be run.
 - **Progress** (plus the test execution percentage), indicating the test is being run.
 - **PASSED**, indicating the algorithm has found no problems at device.
 - **WARNING**, when applicable, indicating the algorithm has detected signs to the user be aware (for instance, of an imminent failure).
 - **FAILED**, indicating the algorithm has found one or more faults.
 - **CANCELED**, indicating the algorithm has been canceled by user.
 - **NOT APPLICABLE**, indicating the algorithm is not supported by device.
- Date and time that the tests are finished (displayed after test is finished).
- Result Code for test.
- 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 again) or visualize the test log (by pressing the V key).

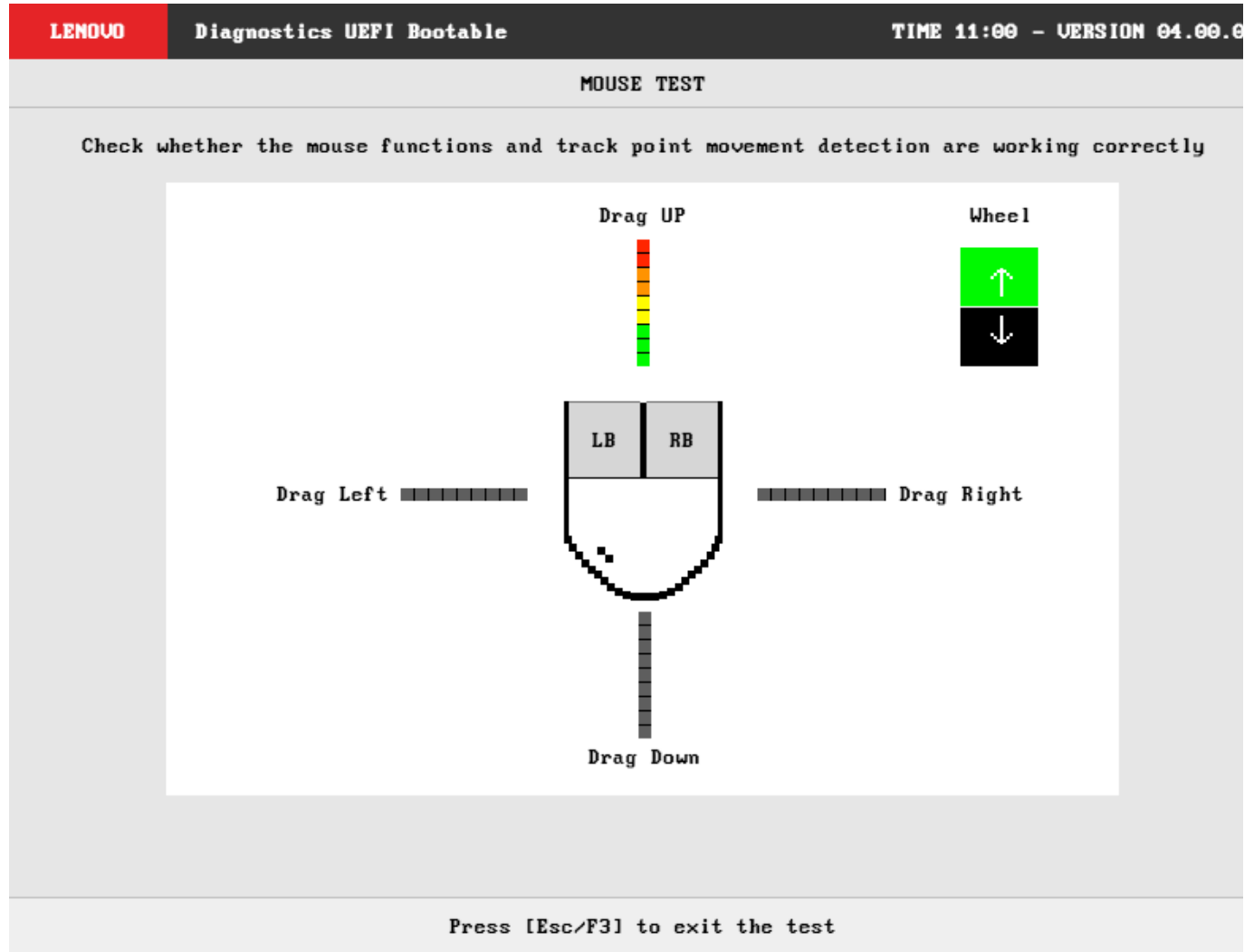
Mouse

List of tests that can be performed:

- **Reset Test:**
 - **Description:** *"Reset Test" is a mouse test that resets the connection for both PS/2 and USB External type mice.*
 - **Results:** **PASSED**; **FAILED**; **CANCELED**; **NOT APPLICABLE**.
- **Mouse Test:**
 - **Description:** *"Mouse Test" is a mouse test that checks the access and move detection to PS/2 type mice.*
 - **Results:** **PASSED**; **FAILED**; **CANCELED**; **NOT APPLICABLE**.
- **USB External Mouse Test:**
 - **Description:** *"USB External Mouse Test" is a mouse test that checks the access and move detection to USB type mouse.*
 - **Results:** **PASSED**; **FAILED**; **CANCELED**; **NOT APPLICABLE**.

After the selection of the desired mouse type, the test begins as the screen below:





Mouse Diagnostics Execution

The Mouse 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.

After the test finishes, a confirmation screen pop up to check if the test worked fine. After the confirmation, a screen with 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:

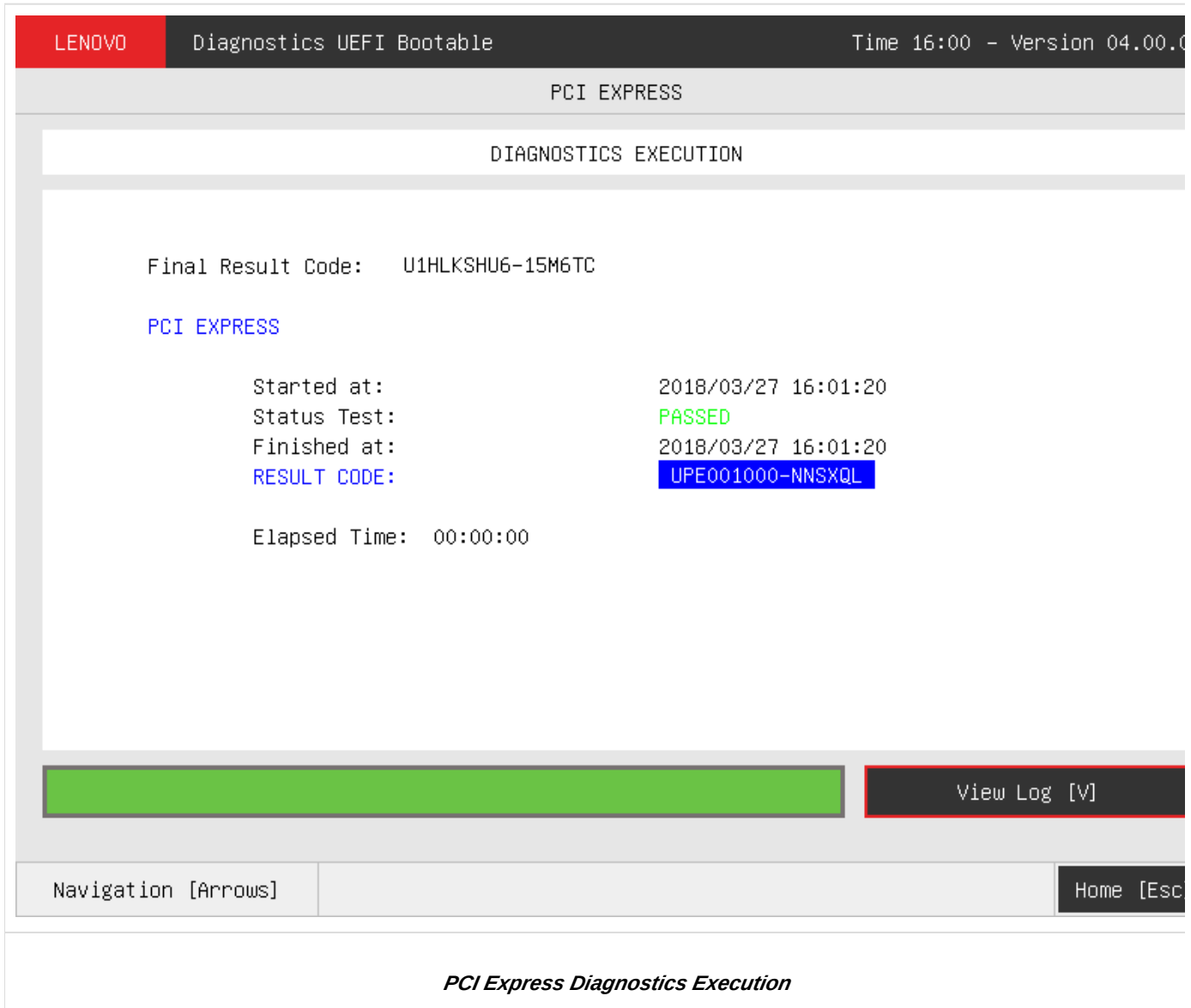
- Final Result Code (an encrypted code that informs which modules were tested).
- Date and time that diagnostic has started.
- Test (name of the test being currently run).
- A list with all the algorithms which compose device test and their respective status, whereas an algorithm can have seven status:
 - **PASSED**, indicating the algorithm has found no problems at device.
 - **WARNING**, when applicable, indicating the algorithm has detected signs to the user be aware (for instance, of an imminent failure).
 - **FAILED**, indicating the algorithm has found one or more faults.

- **CANCELED**, indicating the algorithm has been canceled by user.
- **NOT APPLICABLE**, indicating the algorithm is not supported by device.
- Date and time that the tests are finished (displayed after test is finished).
- Result Code for test.
- 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 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 diagnostic. 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 seven status:
 - **Waiting**, indicating the test is waiting to be run.
 - **Progress** (plus the test execution percentage), indicating the test is being run.
 - **PASSED**, indicating the algorithm has found no problems at device.
 - **WARNING**, when applicable, indicating the algorithm has detected signs to the user be aware (for instance, of an imminent failure).
 - **FAILED**, indicating the algorithm has found one or more faults.
 - **CANCELED**, indicating the algorithm has been canceled by user.
 - **NOT APPLICABLE**, indicating the algorithm is not supported by device.
- Date and time that the tests are finished (displayed after test is finished).
- Result Code for test.
- 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 again) or visualize the test log (by pressing the V key).

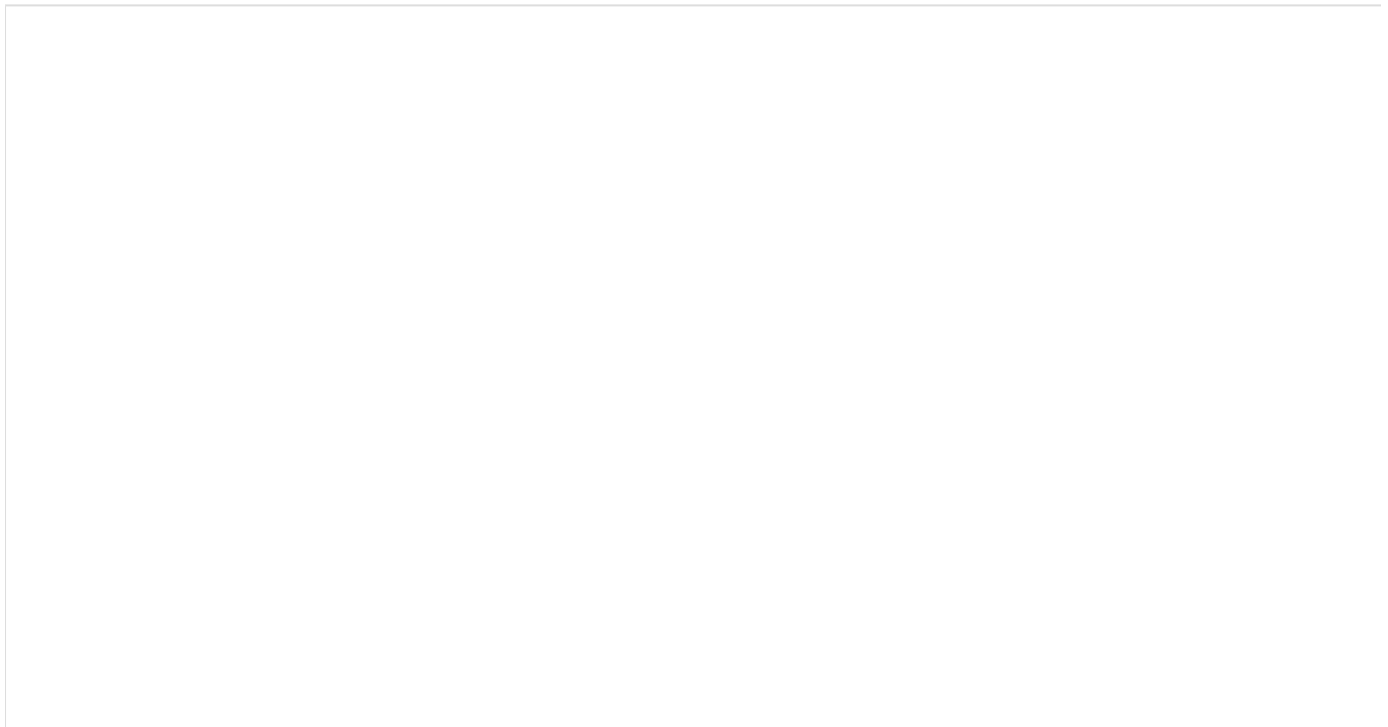
RAID

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. Consequently, the system will run the tests, as illustrated in the following figure.



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 seven status:
 - **Waiting**, indicating the test is waiting to be run.
 - **Progress** (plus the test execution percentage), indicating the test is being run.
 - **PASSED**, indicating the algorithm has found no problems at device.

- **WARNING**, when applicable, indicating the algorithm has detected signs to the user be aware (for instance, of an imminent failure).
- **FAILED**, indicating the algorithm has found one or more faults.
- **CANCELED**, indicating the algorithm has been canceled by user.
- **NOT APPLICABLE**, indicating the algorithm is not supported by device.
- Date and time that the tests are finished (displayed after test is finished).
- Result Code for test.
- 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 again) or visualize the test log (by pressing the V key).

Storage

The system allows the user to access the storage extended diagnostics from the Home screen, Diagnostics, Storage.

After the user enters the Storage option, the storage diagnostics type's menu will be displayed, as the following image.

LENOVO Diagnostics UEFI Bootable Time 17:41 - Version 04.03.0

STORAGE

DIAGNOSTICS TYPE

[X] Quick

[] Extended

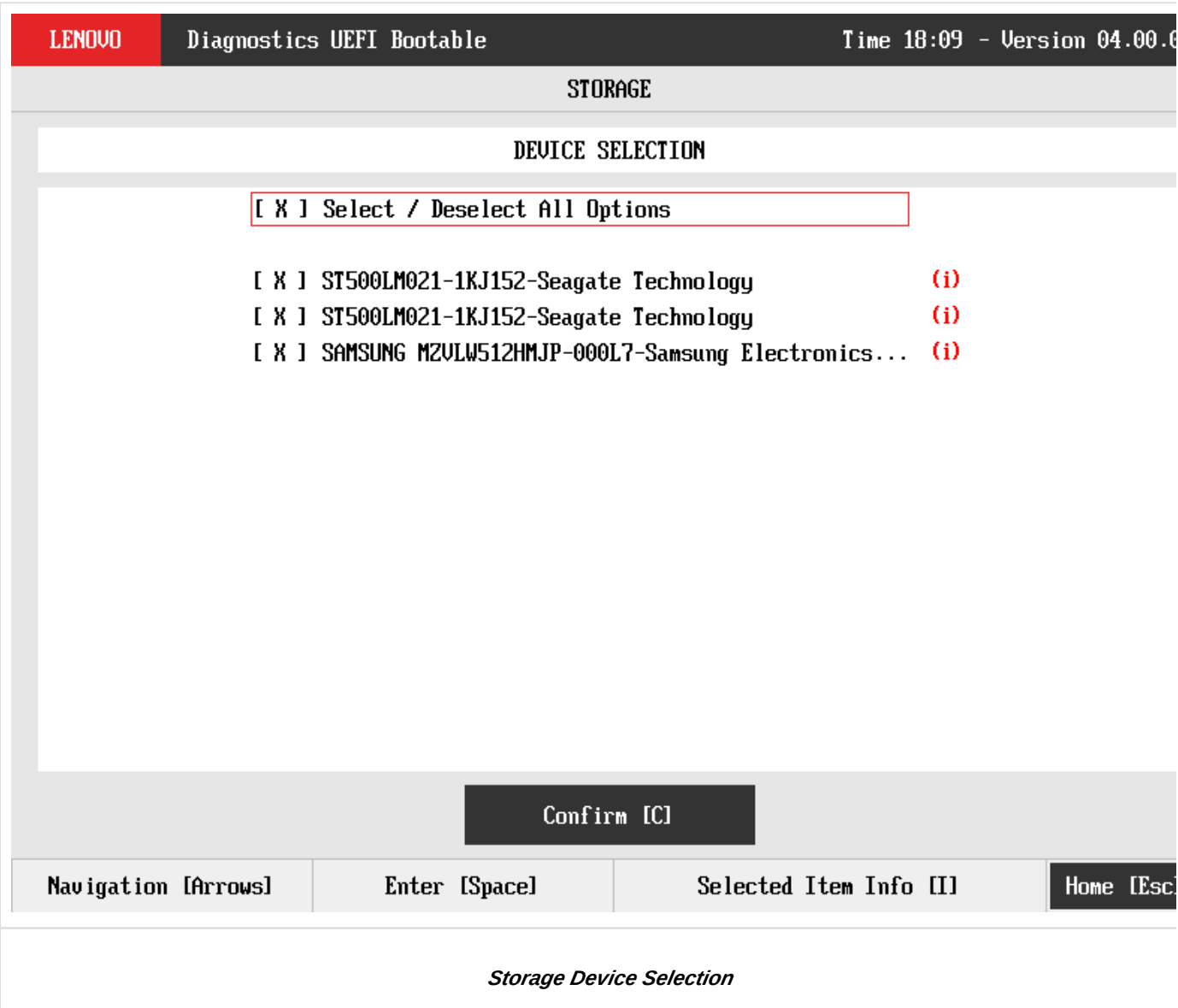
Confirm [C]

Navigation [Arrows] Enter [Space] Home [Esc]

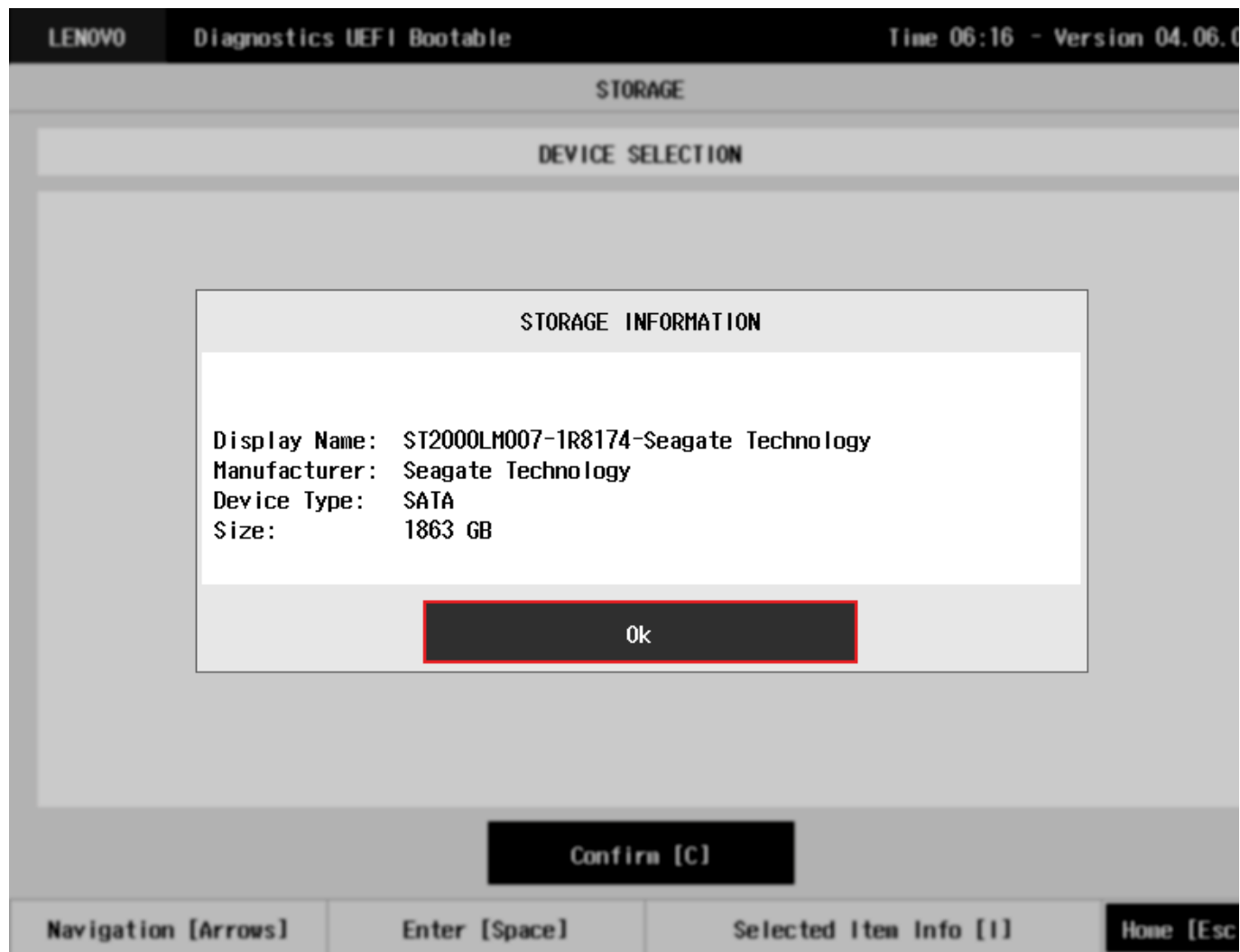
Storage Diagnostics Type

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 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 also allows seeing 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

Storage Quick Diagnostics

The system allows the user to access the storage quick diagnostics from the Home screen, Diagnostics, Storage.

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 storage 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 18:09 - Version 04.00.0

STORAGE 1: ST500LM021-1KJ152-Seagate Technology

ALGORITHM SELECTION

[X] Select / Deselect All Options

[X] SMART Status Test

[X] SMART Short Self-Test

[X] Drive Self-Test

[X] Random Seek Test

[X] Funnel Seek Test

[X] Target Read Test

(i)

(i)

(i)

(i)

(i)

(i)

Confirm [C]

Navigation [Arrows]

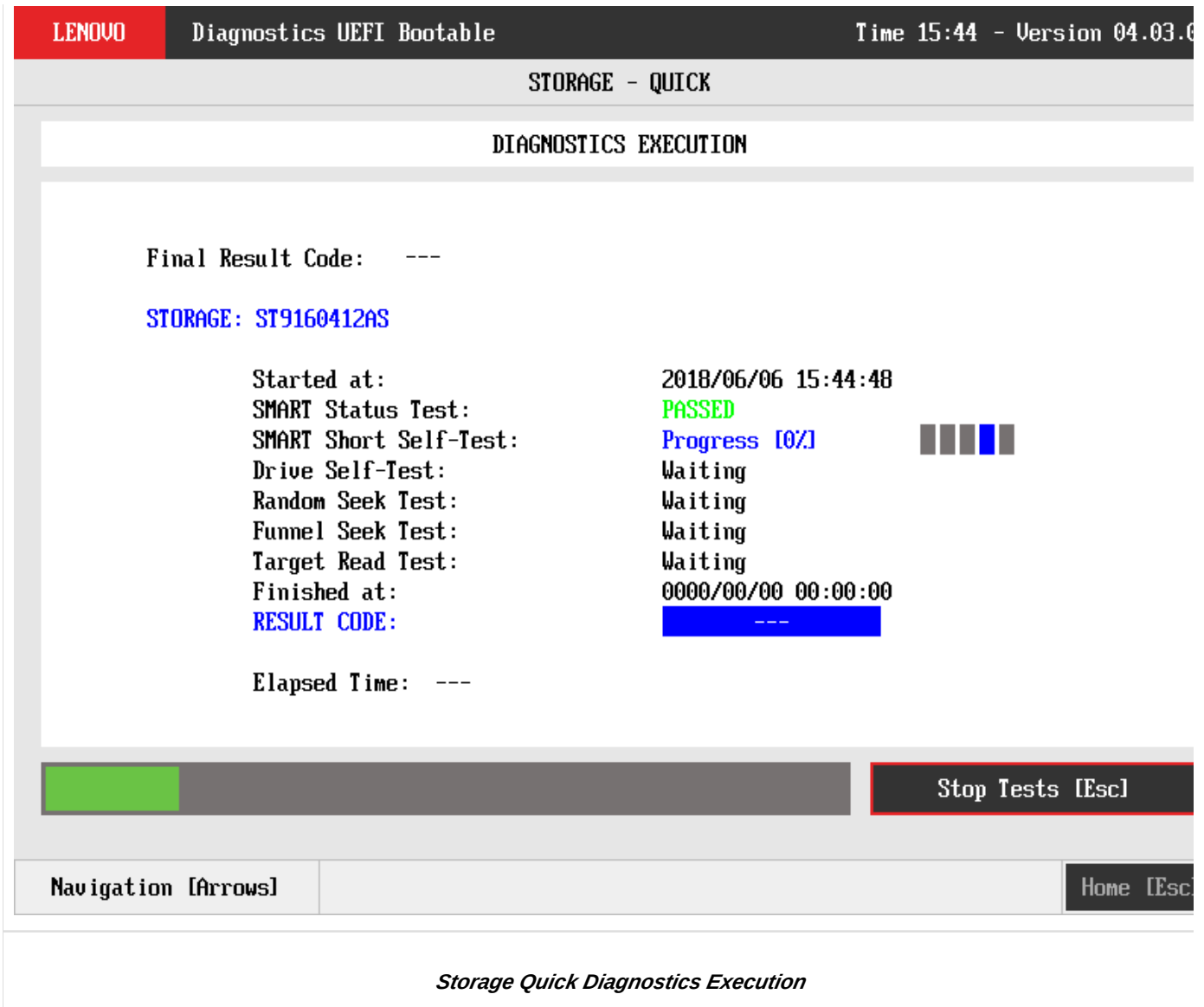
Enter [Space]

Selected Item Info [I]

Home [Esc]

Storage Quick 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 tested, the user can use the Confirm button. It will start the diagnostic, as demonstrated in the next figure.



The Storage Quick 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 seven status:
 - **Waiting**, indicating the test is waiting to be run.
 - **Progress** (plus the test execution percentage), indicating the test is being run.
 - **PASSED**, indicating the algorithm has found no problems at device.

- **WARNING**, when applicable, indicating the algorithm has detected signs to the user be aware (for instance, of an imminent failure).
- **FAILED**, indicating the algorithm has found one or more faults.
- **CANCELED**, indicating the algorithm has been canceled by user.
- **NOT APPLICABLE**, indicating the algorithm is not supported by device.
- Date and time that the tests are finished (displayed after test is finished).
- Result Code for test.
- 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 again) or visualize the test log (by pressing the V key).

Storage Extended Diagnostics

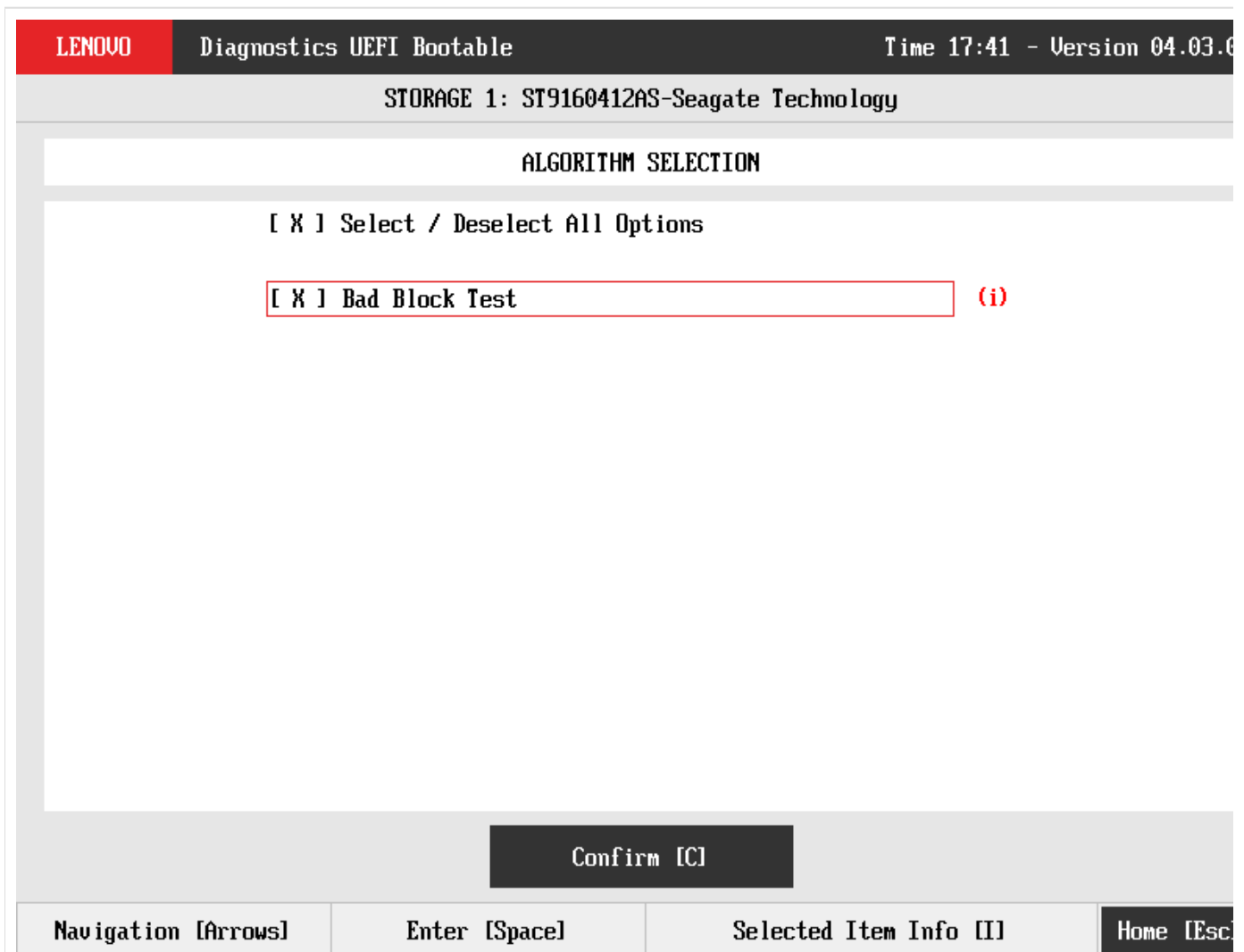
The system allows the user to access the storage extended diagnostics from the Home screen, Diagnostics, Storage.

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 storage 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.

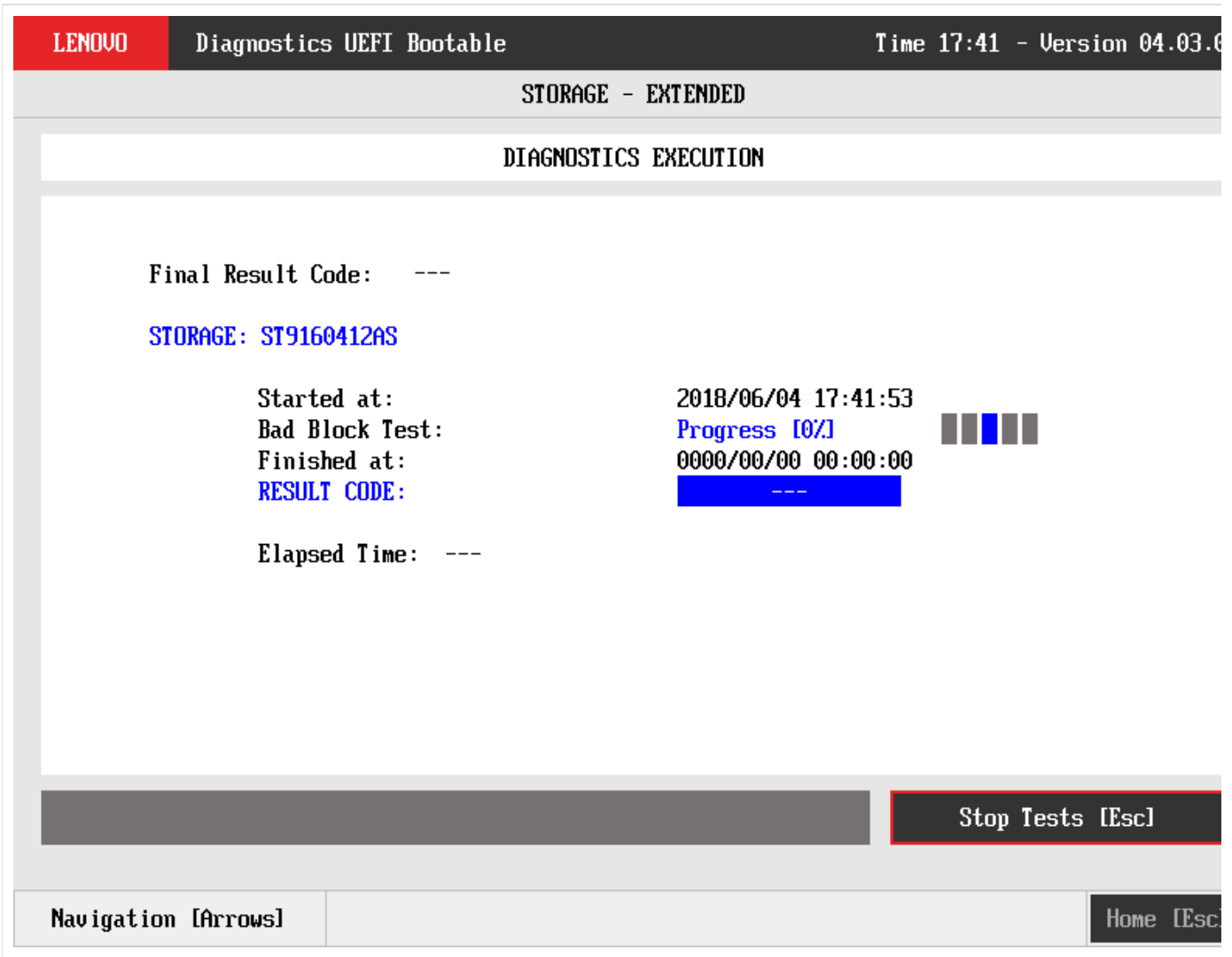
The user can deselect a selected test by pressing the SPACE key when the test is highlighted. An empty space will appear between the brackets. To select a test again, the user can press the SPACE key again.

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.



Storage 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 tested, the user can use the Confirm button. It will start the diagnostic, as demonstrated in the next figure.



Storage Extended Diagnostics Execution

The Storage Extended 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 seven status:
 - **Waiting**, indicating the test is waiting to be run.
 - **Progress** (plus the test execution percentage), indicating the test is being run.
 - **PASSED**, indicating the algorithm has found no problems at device.
 - **WARNING**, when applicable, indicating the algorithm has detected signs to the user be aware (for instance, of an imminent failure).
 - **FAILED**, indicating the algorithm has found one or more faults.
 - **CANCELED**, indicating the algorithm has been canceled by user.
 - **NOT APPLICABLE**, indicating the algorithm is not supported by device.
- Date and time that the tests are finished (displayed after test is finished).
- Result Code for test.
- 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 again) or visualize the test log (by pressing the V key).

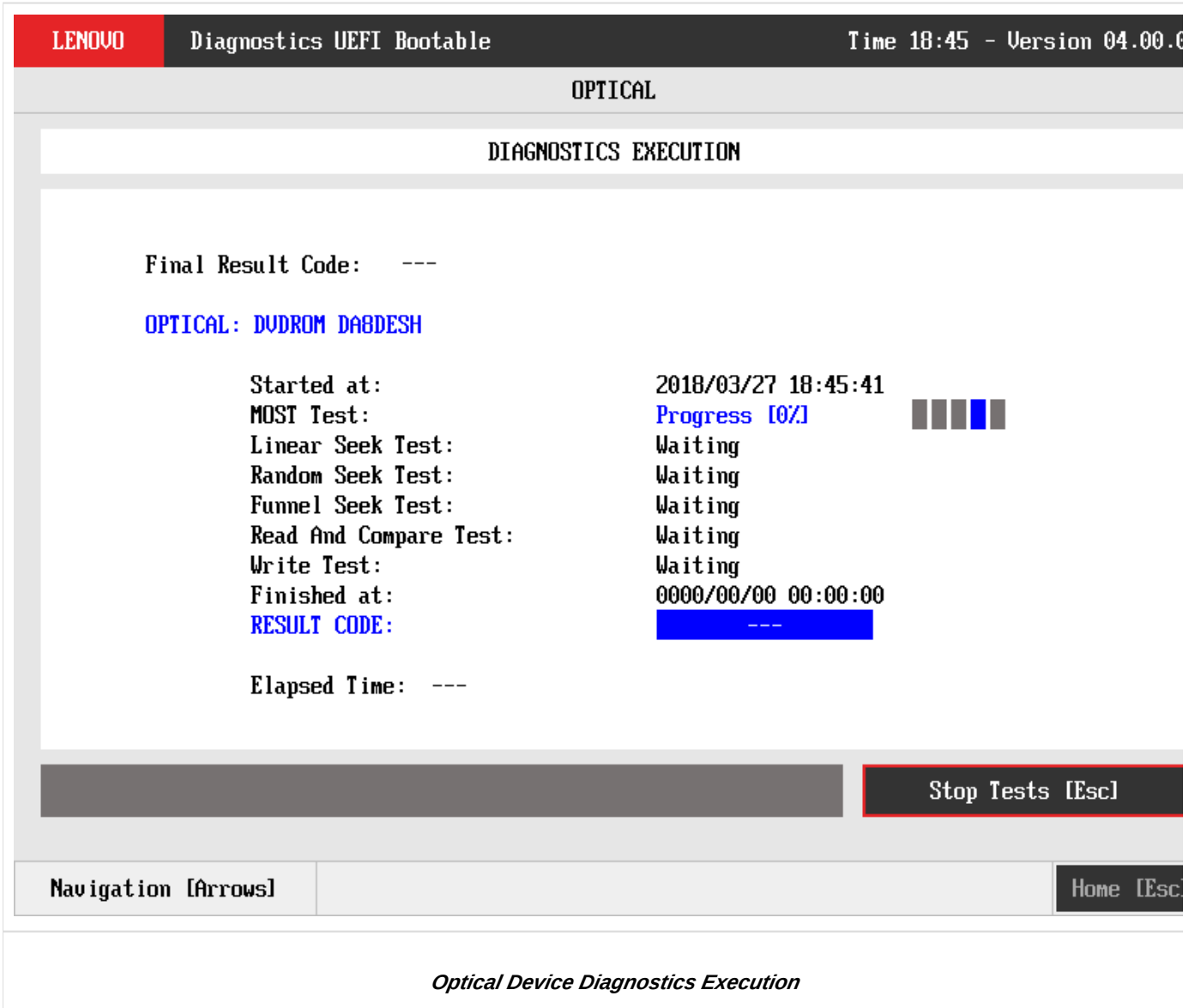
Optical

The system allows the user to access the optical diagnostics from the Home screen, Diagnostics, Optical. After the user accesses the Optical option, the application displays the number of algorithms that can be performed. If the diagnostic 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 use the Confirm button. Consequently, the system will run all tests, as illustrated in the next figure.



Optical Device Diagnostics Execution

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 seven status:
 - **Waiting**, indicating the test is waiting to be run.
 - **Progress** (plus the test execution percentage), indicating the test is being run.
 - **PASSED**, indicating the algorithm has found no problems at device.
 - **WARNING**, when applicable, indicating the algorithm has detected signs to the user be aware (for instance, of an imminent failure).
 - **FAILED**, indicating the algorithm has found one or more faults.
 - **CANCELED**, indicating the algorithm has been canceled by user.
 - **NOT APPLICABLE**, indicating the algorithm is not supported by device.
- Date and time that the tests are finished (displayed after test is finished).
- Result Code for test.
- 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 again) or visualize the test log (by pressing the V key).

Video Card

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

Touch

The system allows the user to access the touch diagnostics from the Home screen, Diagnostics, Touch. After the user accesses the Touch option, the application displays the number of algorithms that can be performed. If the diagnostic has more than one algorithm, Algorithm Selection screen is displayed:

- **Reset Test:**
 - **Description:** *"Reset Test" is a touch device test that resets the connection with touch device.*
 - **Results:** **PASSED**; **FAILED**; **CANCELED**; **NOT APPLICABLE**.
- **Grid Test:**
 - **Description:** *"Grid Test" is a touch device test that tracks all touch events on touch device.*
 - **Results:** **PASSED**; **FAILED**; **CANCELED**; **NOT APPLICABLE**

After the test finishes, a confirmation screen pop up to check if the test worked fine. After the confirmation, a screen with 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:

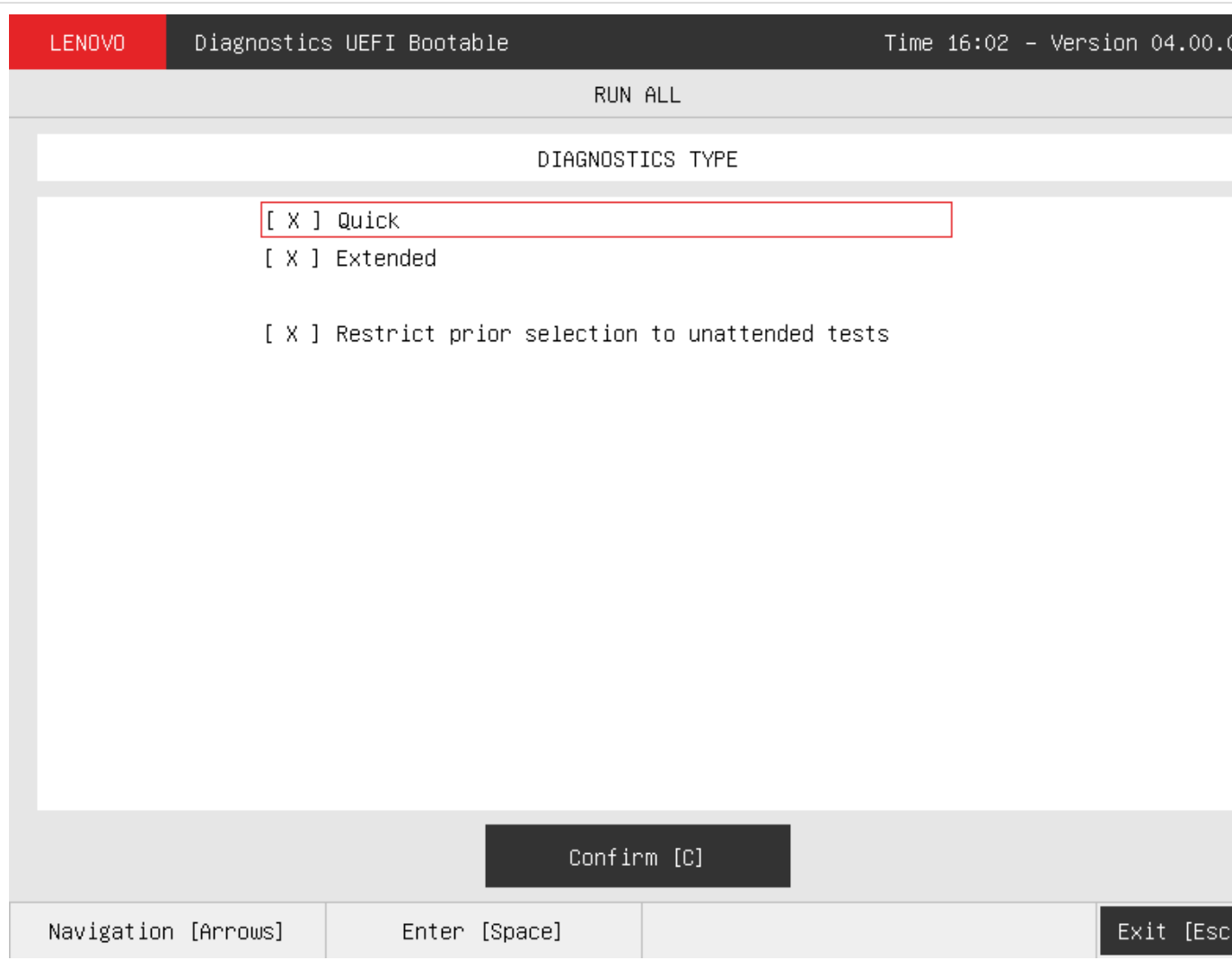
- Final Result Code (an encrypted code that informs which modules were tested).
- Date and time that diagnostic has started.
- Test (name of the test being currently run).
- A list with all the algorithms which compose device test and their respective status, whereas an algorithm can have seven status:
 - **PASSED**, indicating the algorithm has found no problems at device.
 - **WARNING**, when applicable, indicating the algorithm has detected signs to the user be aware (for instance, of an imminent failure).
 - **FAILED**, indicating the algorithm has found one or more faults.
 - **CANCELED**, indicating the algorithm has been canceled by user.
 - **NOT APPLICABLE**, indicating the algorithm is not supported by device.
- Date and time that the tests are finished (displayed after test is finished).
- Result Code for test.
- 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 again) or visualize the test log (by pressing the V key).

Run All

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

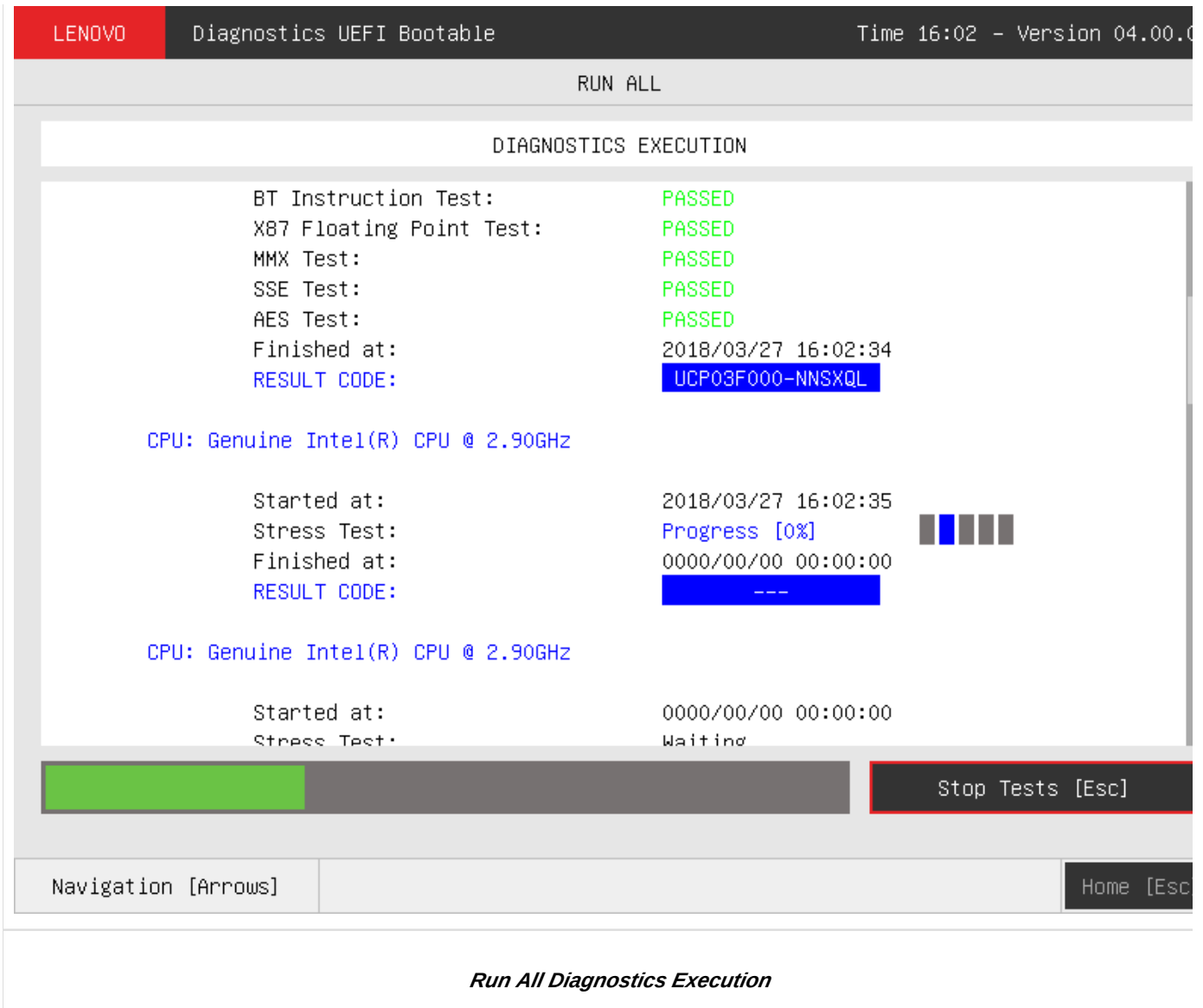
An item can be selected/deselected by pressing SPACE when it is highlighted. A desired item is selected when it shows "[X]" preceding it. To access a diagnostics type, the user can use the UP/DOWN arrow key until the desired item is focused and press SPACE key to select it, as illustrated in the figure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



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 use the Confirm button. Consequently, the system will run all tests, as illustrated in the figure below.



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:

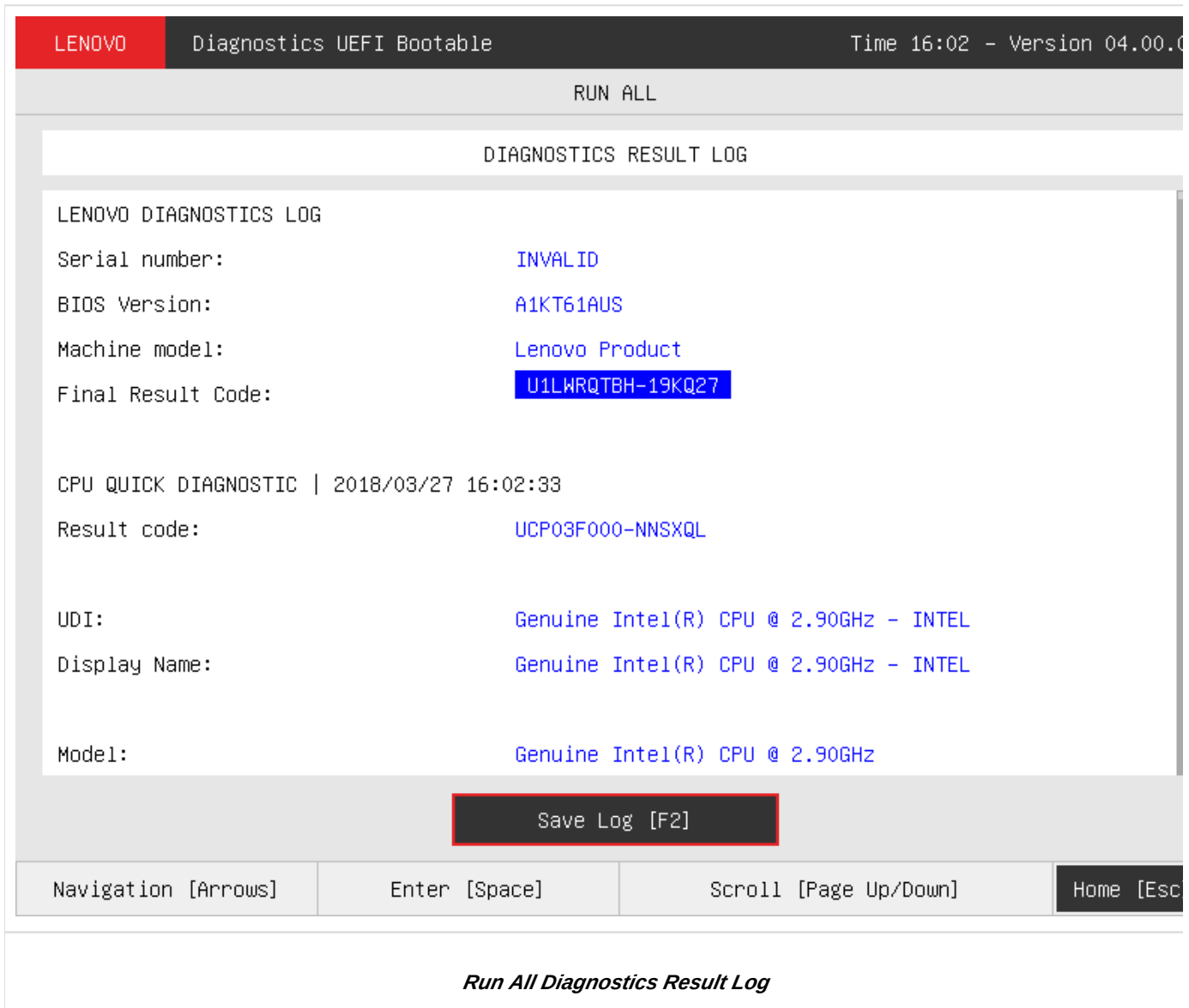
- Final Result Code (an encrypted code that informs which modules were tested).
- Date and time that diagnostic has started.
- Test (name of the test being currently run).
- Progress of the current test (current test's progress in percentage).
- A list with all the algorithms which compose device test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

- **WARNING**, when applicable, indicating the algorithm has detected signs to the user be aware (for instance, of an imminent failure).
- **FAILED**, indicating the algorithm has found one or more faults.
- **CANCELED**, indicating the algorithm has been canceled by user.
- **NOT APPLICABLE**, indicating the algorithm is not supported by device.
- Date and time that the tests are finished (displayed after test is finished).
- Result Code for test.
- 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 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.



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 Save Log button on the Diagnostics Result Log screen, the Log Saving screen is displayed, as shown in the figure below.

The screenshot displays the 'Log Saving' screen within a UEFI bootable environment. The top header bar shows 'LENOVO' on the left, 'Diagnostics UEFI Bootable' in the center, and 'Time 16:04 - Version 04.00.0' on the right. Below this, a 'LOG SAVING' title bar is present. The main content area is titled 'USB-STORAGE SELECTION' and lists two storage options: '[X] KINGS1' (which is selected and highlighted with a red box) and '[] KINGS2'. At the bottom of the screen, there is a 'Confirm [C]' button. The footer bar contains three sections: 'Navigation [Arrows]', 'Enter [Space]', and 'Exit [Esc]'. Below the footer bar, the text 'Log Saving USB-Storage Selection' is displayed.

The Log Saving screen is composed of:

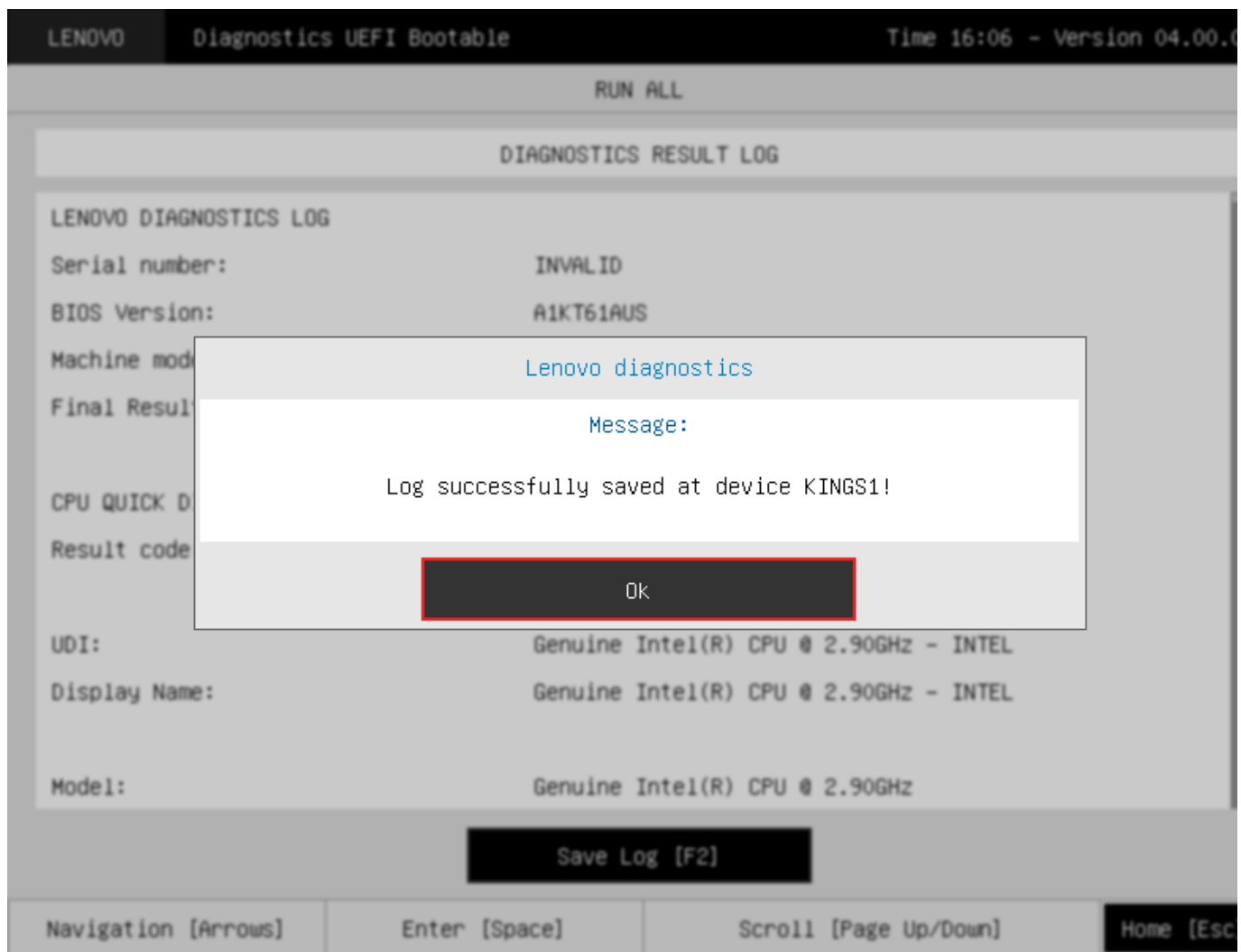
- Application Header Bar
- Screen Title Bar
- Screen Sub-title Bar

- 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 Information Popup

System Information

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



LENOVO

Diagnostics UEFI Bootable

Time 09:26 - Version 04.04.0

SYSTEM INFORMATION

CHOOSE A MODULE:

SYSTEM [0]

BATTERY [1]

CPU [2]

DISPLAY [3]

MEMORY [4]

MOTHERBOARD [5]

PCI EXPRESS [6]

STORAGE [7]

MACHINE INFORMATION

Machine manufacturer: LENOVO

Product name: 20F9Z1KQUS

Product version: ThinkPad T460s

Serial number: PC06046D

BIOS INFORMATION

BIOS Version: N1CET52BI (1.20)

BIOS release date: 01/10/2017

BIOS manufacturer: LENOVO

PROCESSOR INFORMATION

Export System Information [F2]

Navigation [Arrows]

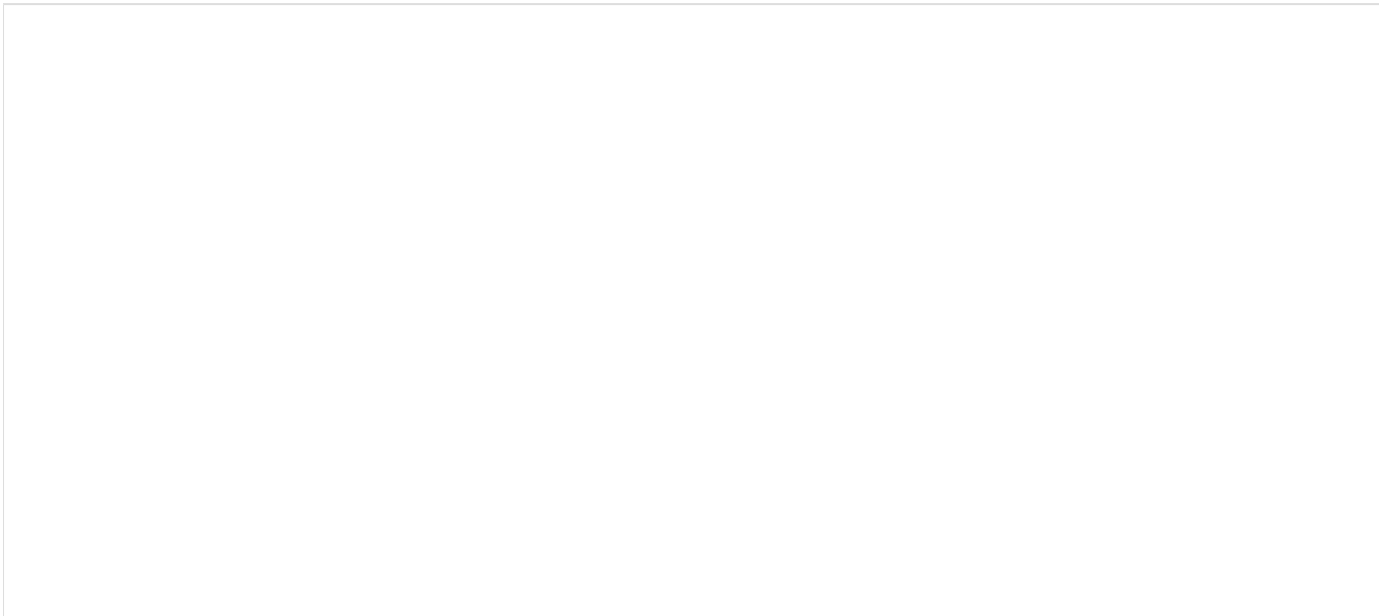
Enter [Space]

Scroll [Page Up/Down]

Home [Esc]

System Information's System Tab

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



LENOVO

Diagnostics UEFI Bootable

Time 09:26 - Version 04.04.0

SYSTEM INFORMATION

CHOOSE A MODULE:

SYSTEM [0]

BATTERY [1]

CPU [2]

DISPLAY [3]

MEMORY [4]

MOTHERBOARD [5]

PCI EXPRESS [6]

STORAGE [7]

BATTERY INFORMATION

UDI: SANYO

Display Name: 213-SANYO

Primary: YES

Manufacturer: SANYO

Serial number: 213

Bar code number: P1SG563006M

FRU number: 00HW022

Firmware level: 16

Manufacture date: 2015/06/03

First use date: 2000/12/31

Temperature: 292.8 K

Export System Information [F2]

Navigation [Arrows]

Enter [Space]

Scroll [Page Up/Down]

Home [Esc]

System Information's Battery Tab

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



LENOVO

Diagnostics UEFI Bootable

Time 09:26 - Version 04.04.0

SYSTEM INFORMATION

CHOOSE A MODULE:

SYSTEM [0]

BATTERY [1]

CPU [2]

DISPLAY [3]

MEMORY [4]

MOTHERBOARD [5]

PCI EXPRESS [6]

STORAGE [7]

CPU INFORMATION

UDI: Intel(R) Core(TM) i5-6300U CPU @ 2.40GHz - INTEL

Display Name: Intel(R) Core(TM) i5-6300U CPU @ 2.40GHz - INTEL

Model: Intel(R) Core(TM) i5-6300U CPU @ 2.40GHz

Vendor: INTEL

Number of cores: 2

Number of enabled cores: 2

Number of threads: 4

Signature: 406e3

Export System Information [F2]

Navigation [Arrows]

Enter [Space]

Scroll [Page Up/Down]

Home [Esc]

System Information's CPU Tab

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



LENOVO

Diagnostics UEFI Bootable

Time 09:26 - Version 04.04.0

SYSTEM INFORMATION

CHOOSE A MODULE:

SYSTEM [0]

BATTERY [1]

CPU [2]

DISPLAY [3]

MEMORY [4]

MOTHERBOARD [5]

PCI EXPRESS [6]

STORAGE [7]

DISPLAY INFORMATION

UDI:LP140QH1-SPF1 - LGD

Display Name:LP140QH1-SPF1 - LGD

Manufacturer ID:LGD

Model Name:LP140QH1-SPF1

EDID version:1.4

Max resolution:2560 x 1440 pixels

Max image size:31 cm x 17 cm

Input type:Digital

Display type:RGB 4:4:4

Export System Information [F2]

Navigation [Arrows]

Enter [Space]

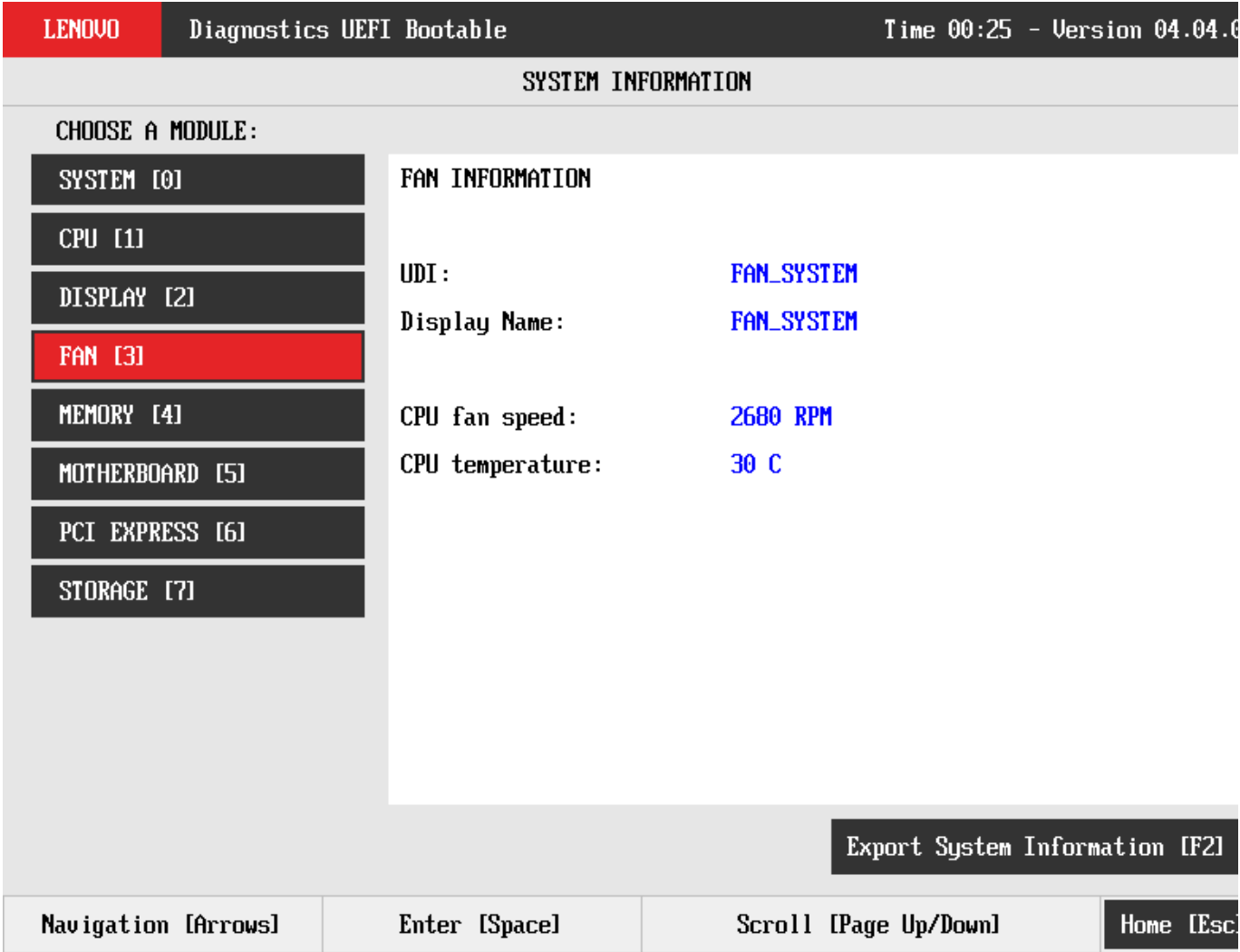
Scroll [Page Up/Down]

Home [Esc]

System Information's Display Tab

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





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



LENOVO

Diagnostics UEFI Bootable

Time 09:26 - Version 04.04.0

SYSTEM INFORMATION

CHOOSE A MODULE:

SYSTEM [0]

BATTERY [1]

CPU [2]

DISPLAY [3]

MEMORY [4]

MOTHERBOARD [5]

PCI EXPRESS [6]

STORAGE [7]

MEMORY INFORMATION

UDI:

Display Name:

Total physical memory:

Origin:

Type:

Manufacturer:

Maximum Speed:

Current Speed:

Size:

Serial number:

MEMORY_UDI

MAIN_MEMORY

8192 MB

SMBIOS

DDR4

0000 (JEDEC Manufacturer ID)

2133 MT/s

2133 MT/s

4096 MB

00000000

Export System Information [F2]

Navigation [Arrows]

Enter [Space]

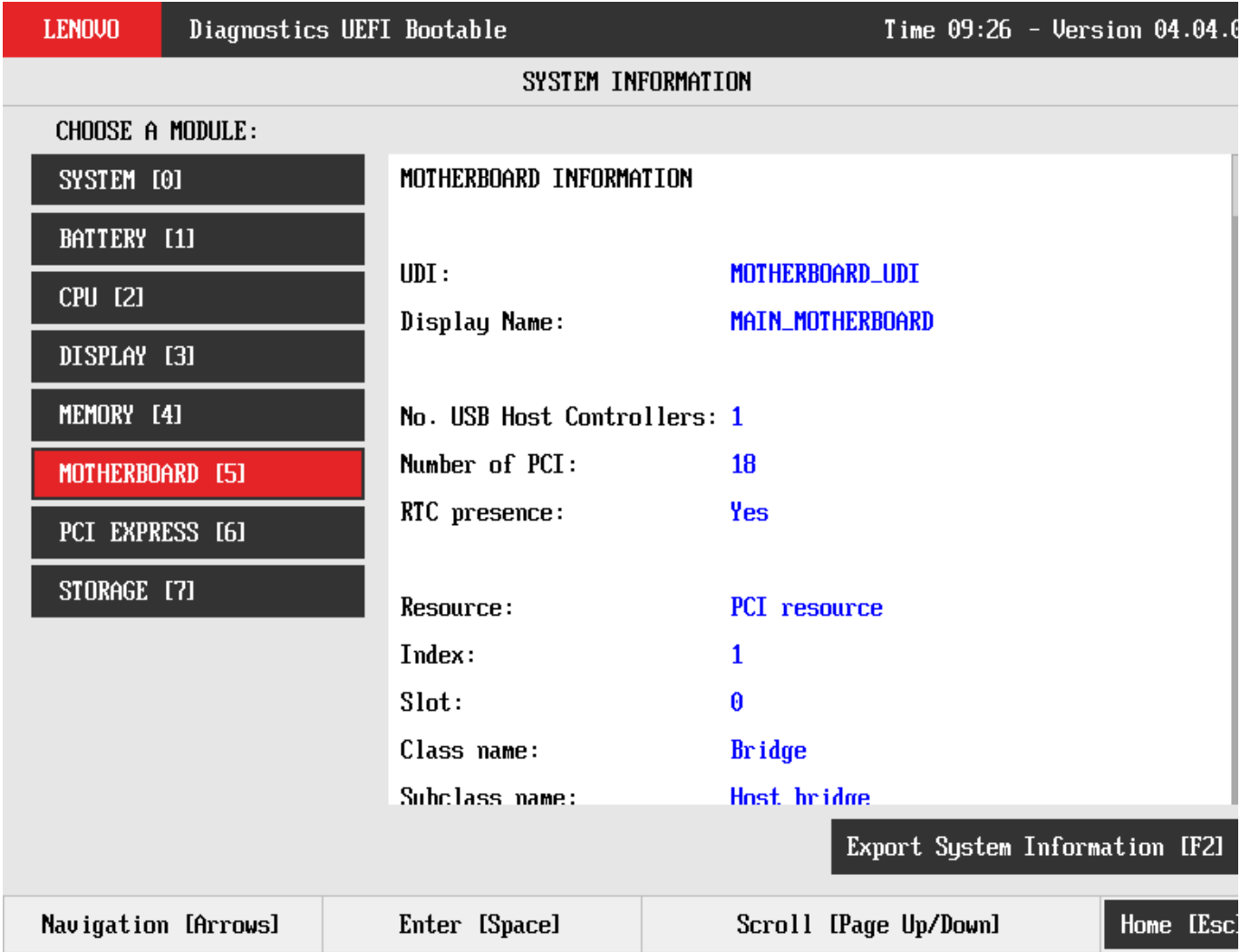
Scroll [Page Up/Down]

Home [Esc]

System Information's Memory Tab

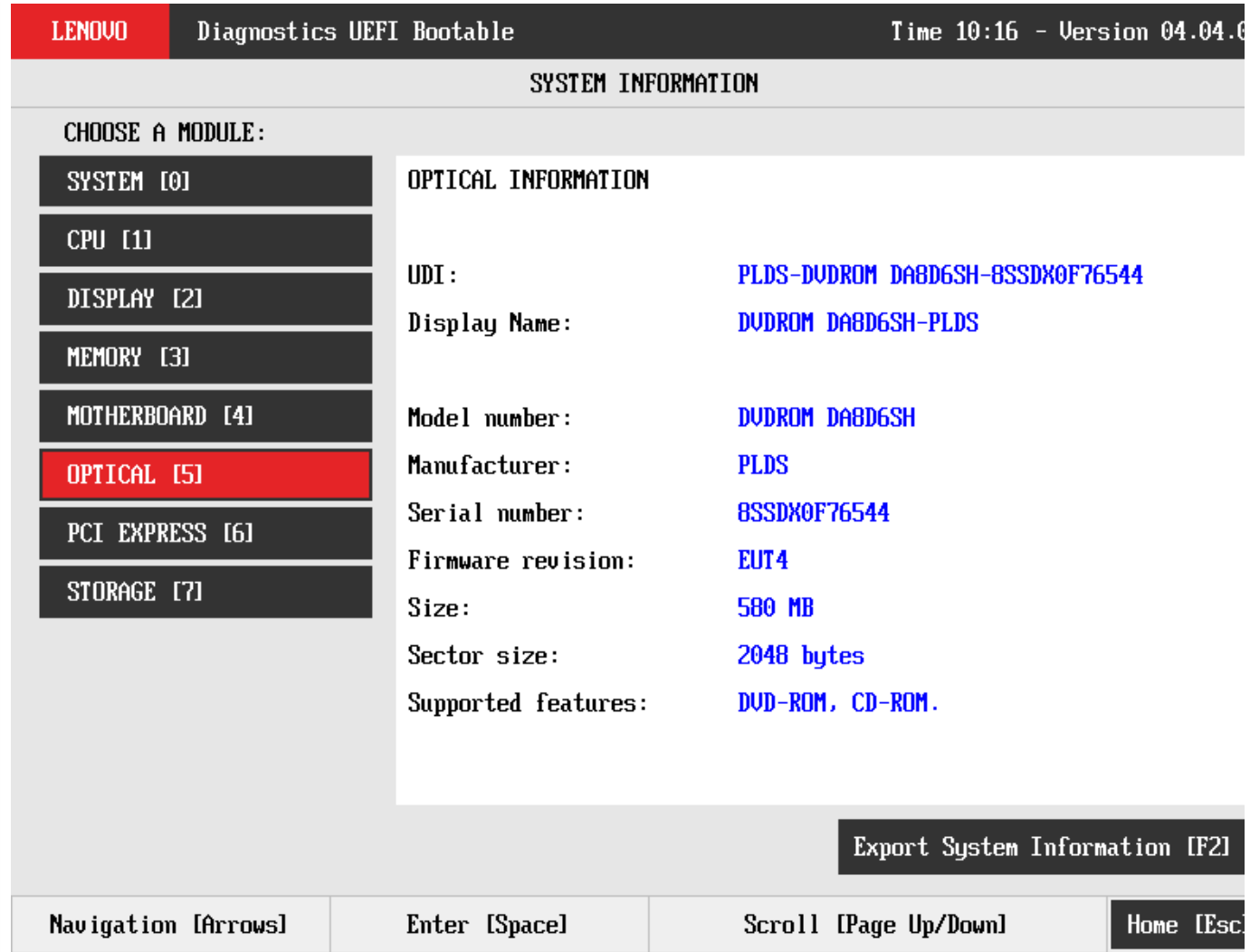
The System Information screen with the Motherboard tab selected is shown in the following figure.





System Information's Motherboard Tab

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



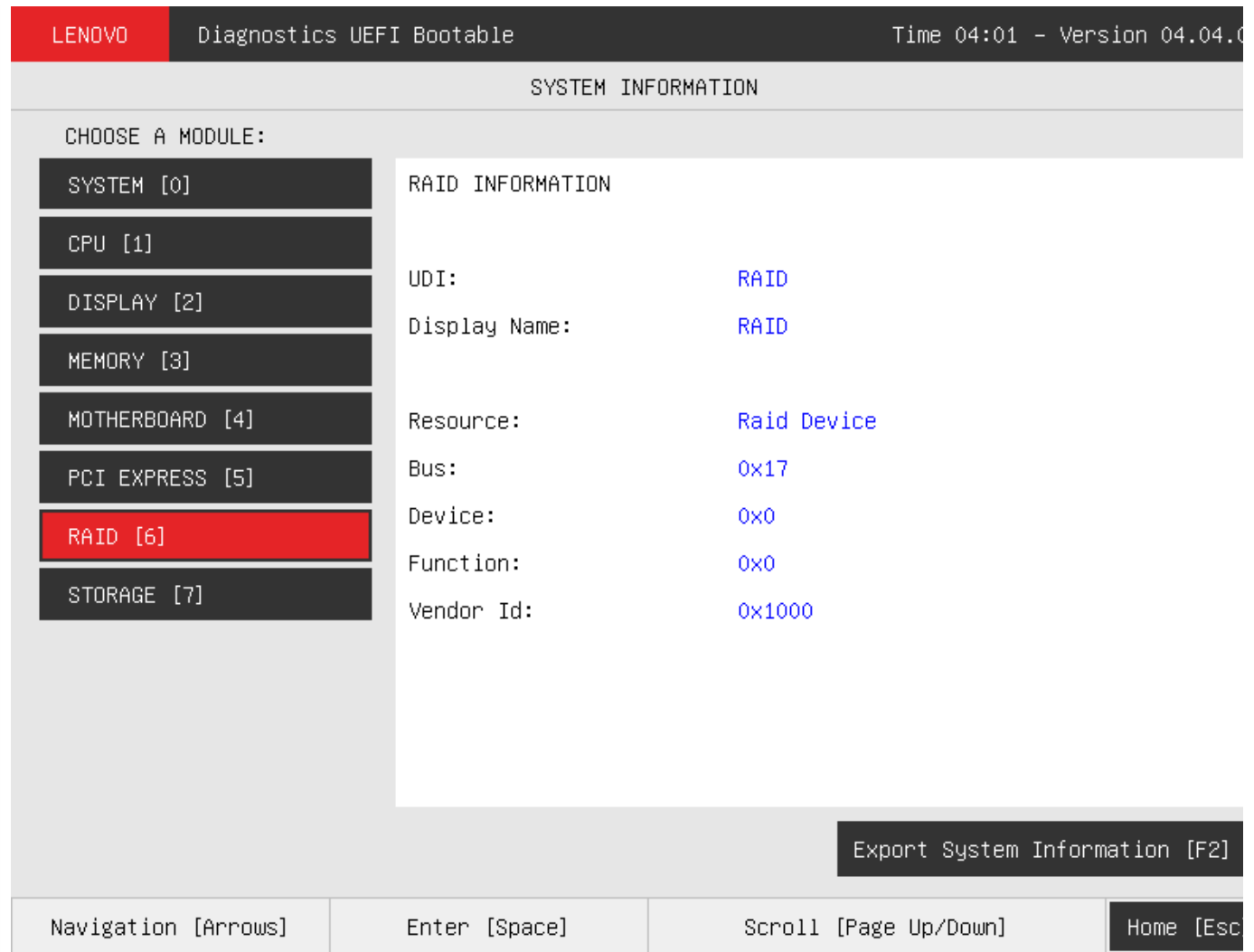
The System Information screen with the PCI Express tab selected is shown in the following figure.



LENOVO		Diagnostics UEFI Bootable		Time 09:26 - Version 04.04.0	
SYSTEM INFORMATION					
CHOOSE A MODULE:					
SYSTEM [0]		PCI EXPRESS INFORMATION			
BATTERY [1]		UDI: PCI_EXPRESS_SYSTEM			
CPU [2]		Display Name: PCI_EXPRESS_SYSTEM			
DISPLAY [3]		Resource: PCI-Express resource			
MEMORY [4]		Bus: 0x0			
MOTHERBOARD [5]		Device: 0x2			
PCI EXPRESS [6]		Function: 0x0			
STORAGE [7]		Offboard Device: No			
		Vendor Id: 0x8086			
		Class: Display controller			
		Subclass: UGA compatible controller			
				Export System Information [F2]	
Navigation [Arrows]		Enter [Space]		Scroll [Page Up/Down]	
				Home [Esc]	

System Information's PCI Express Tab

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



System Information's RAID Tab

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

LENOVO		Diagnostics UEFI Bootable		Time 09:26 - Version 04.04.0	
SYSTEM INFORMATION					
CHOOSE A MODULE:					
SYSTEM [0]		STORAGE INFORMATION UDI: Samsung Electronics Co., Ltd., Memory Division-SAMSUNG MZUKU512HAJH-000L1-S2CYNAG600336 Display Name: SAMSUNG MZUKU512HAJH-000L1-Samsung Electronics Co., Ltd., Memory Division Model number: SAMSUNG MZUKU512HAJH-000L1 Manufacturer: Samsung Electronics Co., Ltd., Memory Division Device Type: NUmE Serial number: S2CYNAG600336 Firmware revision: 3L0NRXX7			
BATTERY [1]					
CPU [2]					
DISPLAY [3]					
MEMORY [4]					
MOTHERBOARD [5]					
PCI EXPRESS [6]					
STORAGE [7]					
				Export System Information [F2]	
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;
- Export System Information 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 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.

Export System Information Button can be accessed between the Content Tab and the Instruction Footer Bar, where it is possible to export all the modules' information at once to an USB-Storage device.

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 Status;
- Remaining Charge;
- Capacity Mode;
- Full Charge Capacity;
- Remaining Capacity;
- Design Capacity;
- Current;
- Voltage;
- Design Voltage;
- Warranty Period;
- Warranty Cycles;
- OptionalMFGFunction2.

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:

- UDI;
- Display Name;
- 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;
 - Maximum Speed (in MT/s);
 - Current Speed (in MT/s);
 - Size (in MB);
 - Part Number;
 - Serial Number.

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

- UDI;
- Display Name;
- No. 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:

- UDI;
- Display Name;
- Model Number;
- Manufacturer;
- Serial Number;
- Firmware Revision;
- Size;
- Sector Size;
- Supported Features.

For the **PCI Express 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);
- 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;
- Device Type;
- Serial Number;
- Firmware Revision;
- Size (in GB);
- Rotation Rate;
- Temperature (in Celsius);
- Physical Block Size (in bytes);
- Logical Block Size (in bytes);
- No. of Logical Blocks;
- Supported Standards;
 - ATA/ATAPI 4;

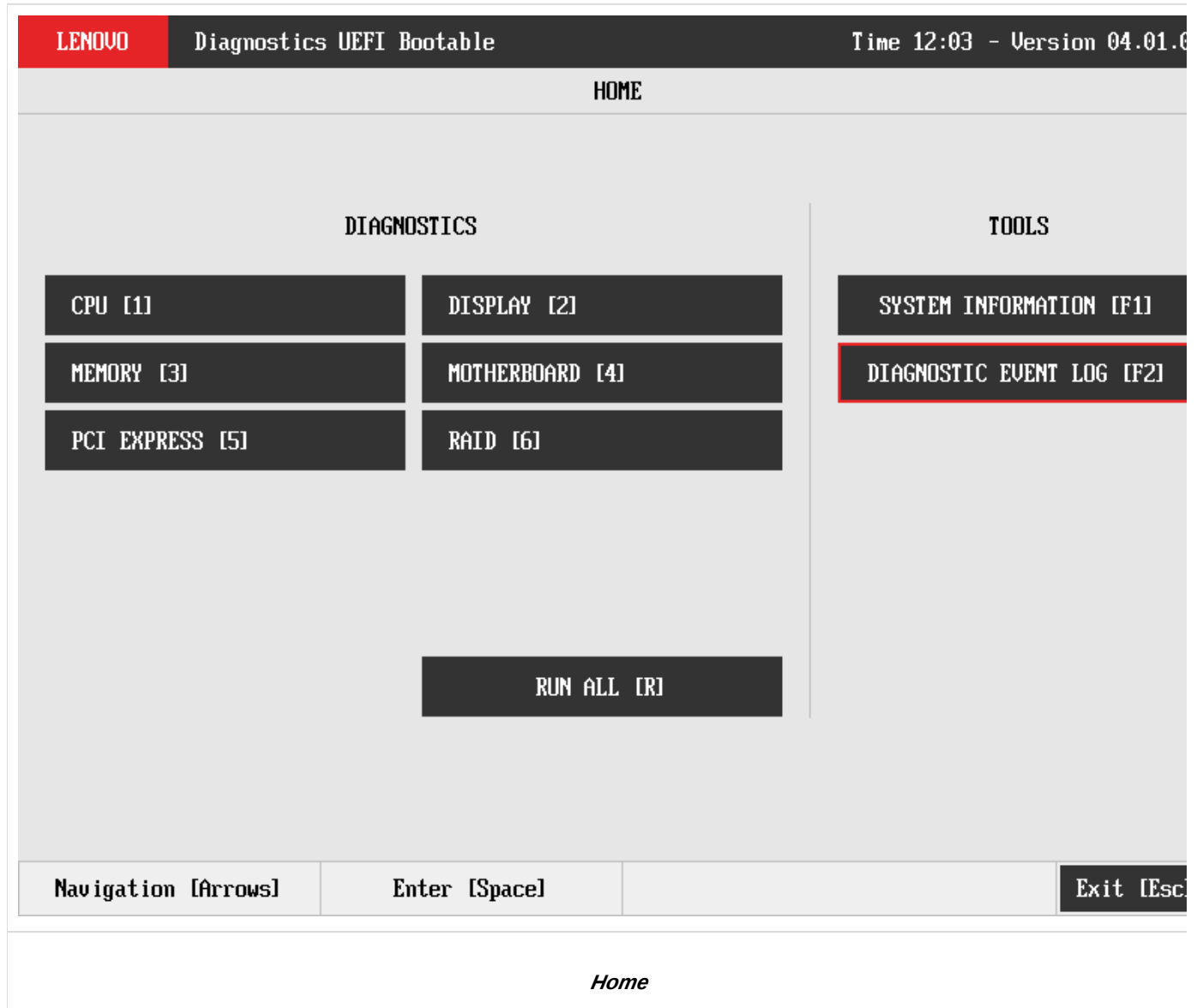
- ATA/ATAPI 5;
- ATA/ATAPI 6;
- ATA/ATAPI 7;
- ATA8_ACS;
- Standard Version;

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

Hardware Diagnostic Events (for ThinkStation)

Hardware Diagnostic Events are exhibited by accessing the Home screen, Tools, Diagnostic Event Log.

Nevertheless, this tool is currently limited to only ThinkStation products, specifically to P520C, P520, P720 and P920.



When entering the tool, the events are loaded and displayed, as demonstrated in the next image.

HARDWARE DIAGNOSTIC EVENTS

For more information about each event code, select "code lookup" on this web site:
<http://www.thinkworkstationsoftware.com>

Date	Time	Code	Descriptions
2018/08/10	03:57:05	S008	5V standby bus - High voltage error
2018/08/10	03:57:05	N000	Power button pressed
2018/08/09	09:16:56	N000	Power button pressed
2018/08/09	09:13:02	S008	5V standby bus - High voltage error
2018/08/09	09:13:02	N000	Power button pressed
2018/08/09	08:56:48	N000	Power button pressed
2018/08/09	08:49:04	S040	Motherboard voltage regulation error
2018/08/09	08:49:04	S014	Startup timing error
2000/01/01	12:00:00	S008	5V standby bus - High voltage error
2000/01/01	12:00:00	N000	Power button pressed
2018/08/06	14:08:04	S040	Motherboard voltage regulation error
2018/08/06	14:08:04	S014	Startup timing error
2018/08/06	14:08:03	N000	Power button pressed

Serial Number: INVALID

Clear Front Panel LED [Delete]

Navigation [Arrows]

Enter [Space]

Scroll [Page Up/Down]

Home [Esc]

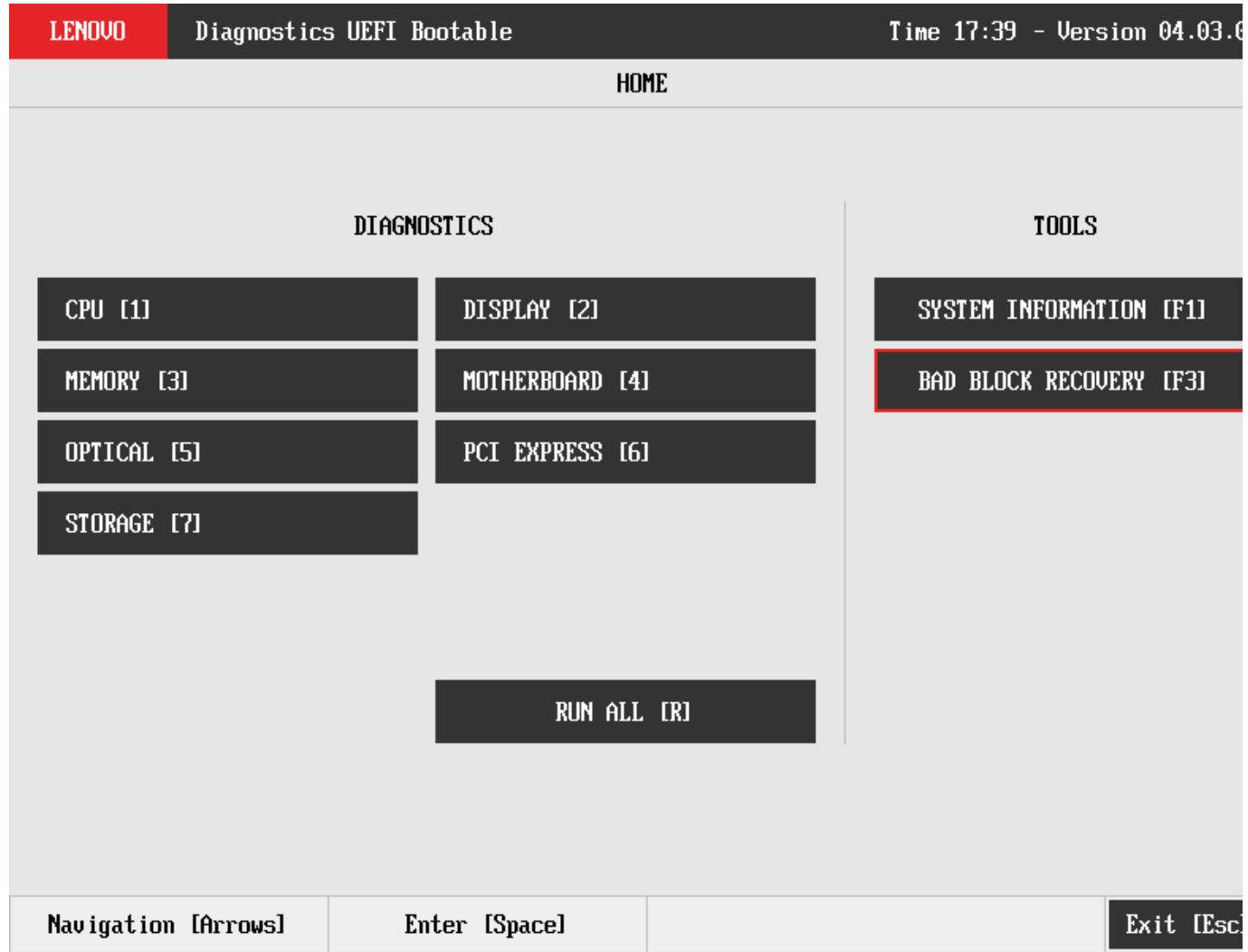
Hardware Diagnostic Events

The application may be unable to retrieve the requested information. When that occurs, users can use the "Clear Front Panel LED" button to be able again to retrieve hardware diagnostic events.

Bad Block Recovery

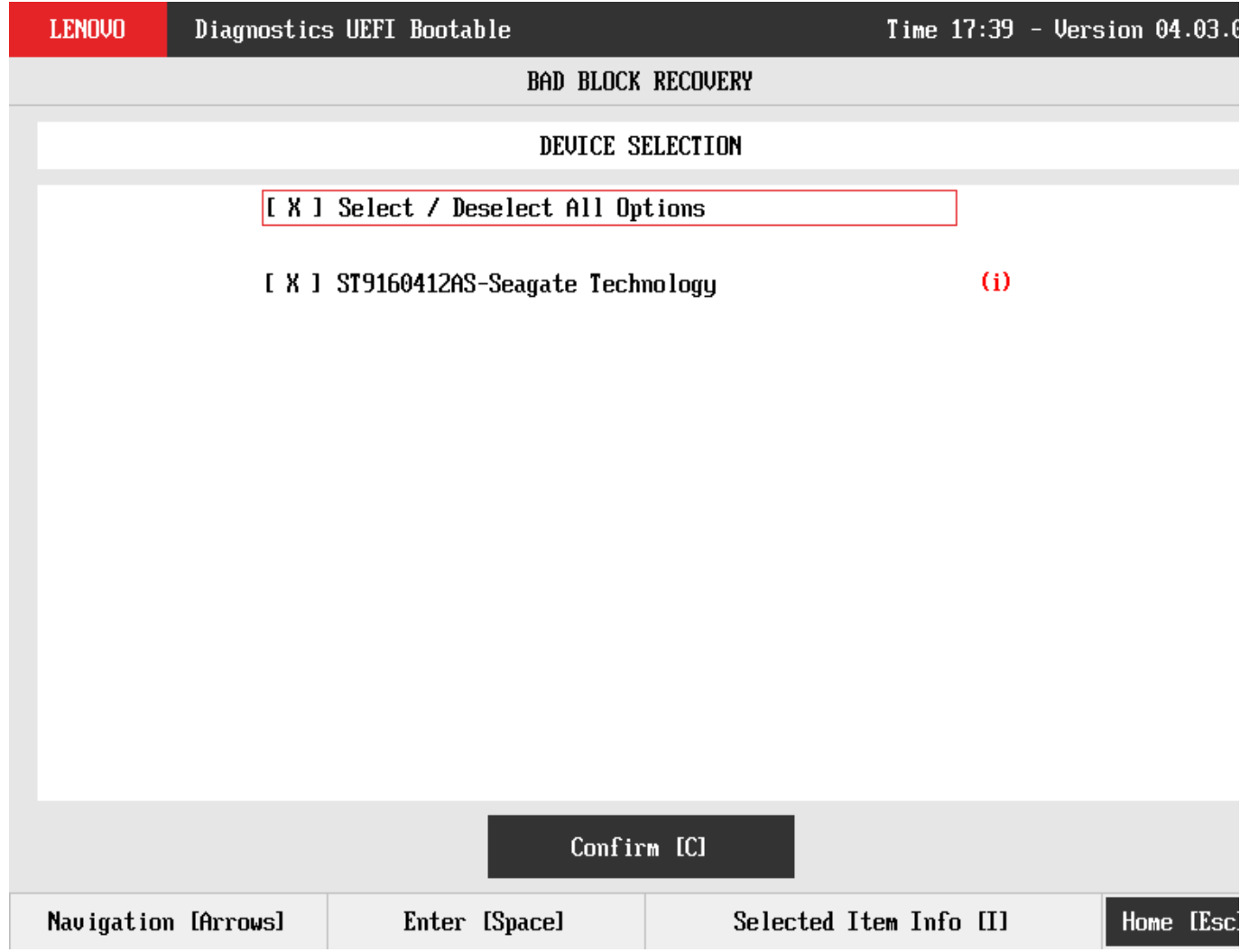
The Bad Block Recovery is a tool that recovers bad blocks in a storage device.

The system allows the user to access that tool by accessing the Home screen, Tools, Bad Block Recovery.



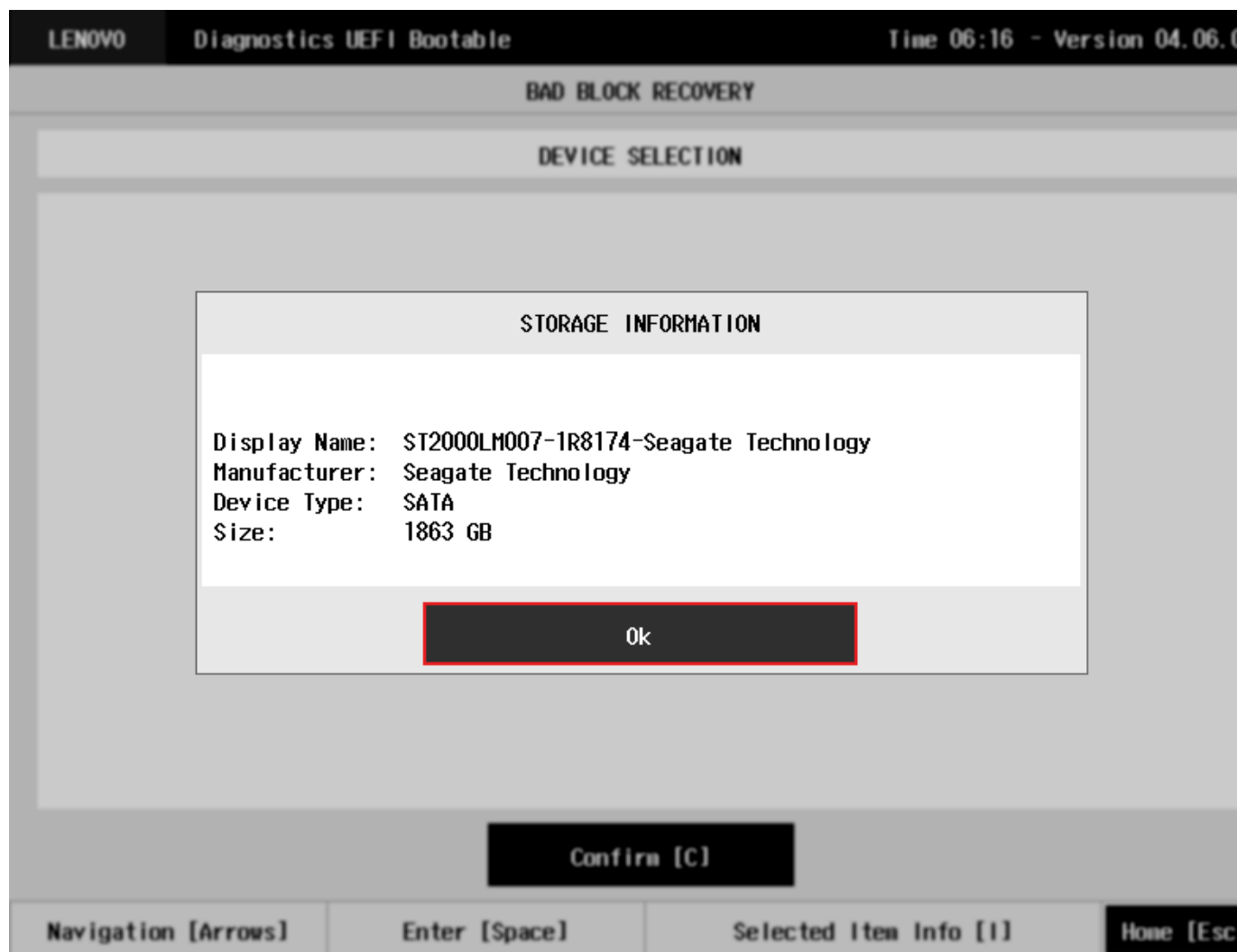
Home

After the user enters the Bad Block Recovery option, the application will display the storage devices available in the system. The menu Device Selection is displayed, as shown in the next figure.



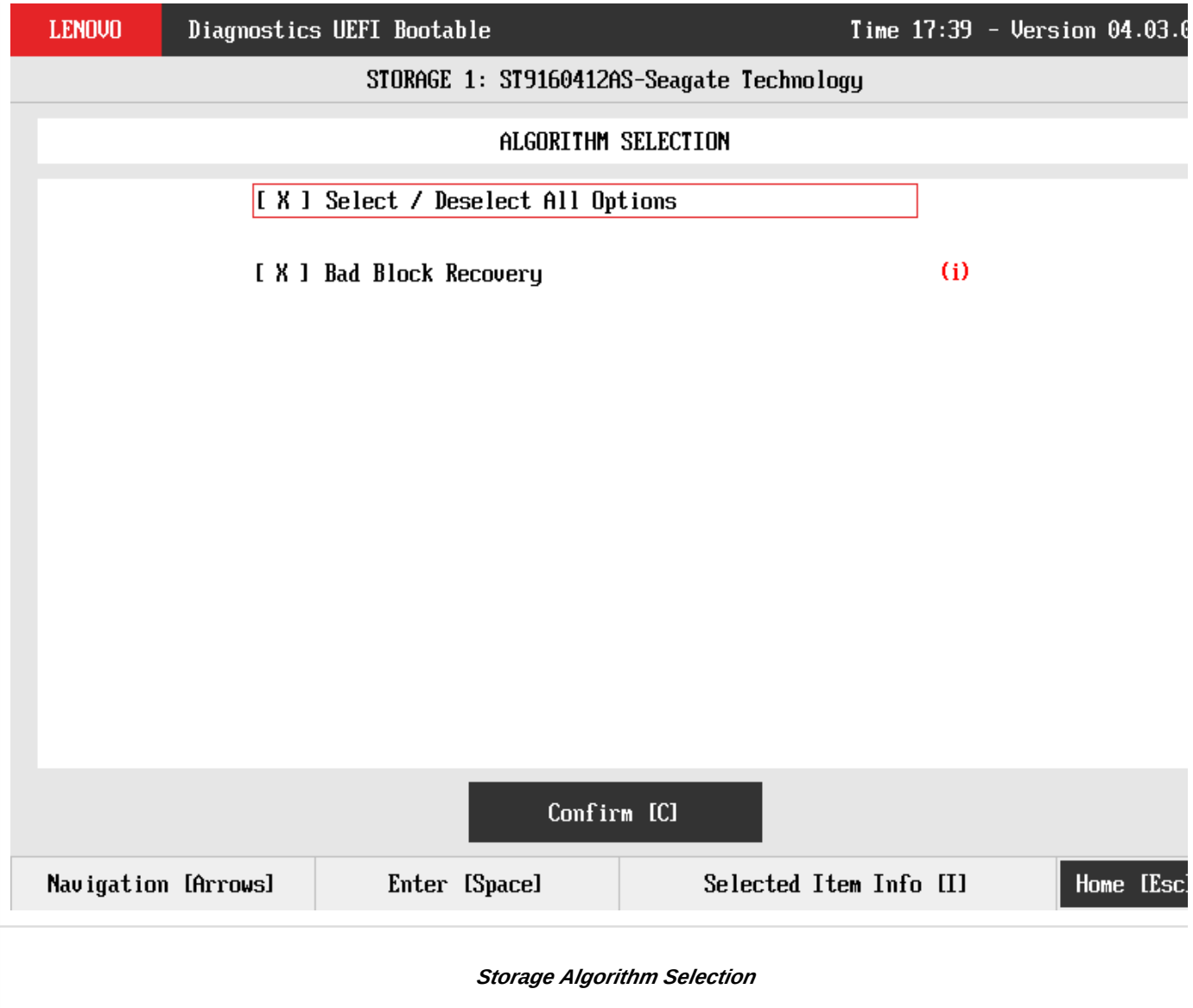
Bad Block Recovery Device Selection

This screen also allows seeing 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.

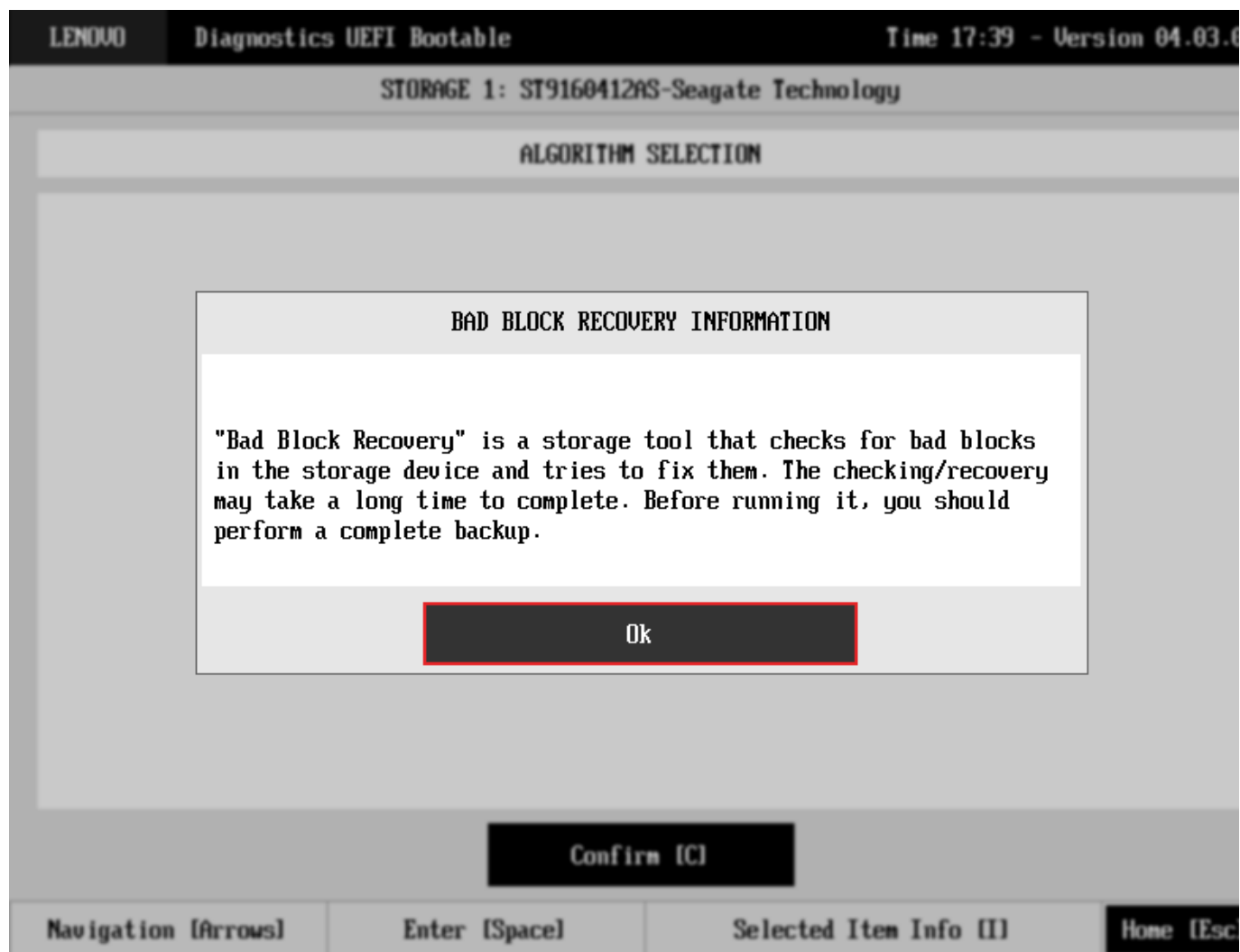


Bad Block Recovery Device Information

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 the Bad Block Recovery item, as illustrated in the next figure, where the item is selected to be executed.



That screen also allows seeing the algorithm details. To access this feature, the user has to press the I key when the Bad Block Recovery item is focused, leading to the exhibition of a popup with the algorithm information, as shown in the subsequent figure.

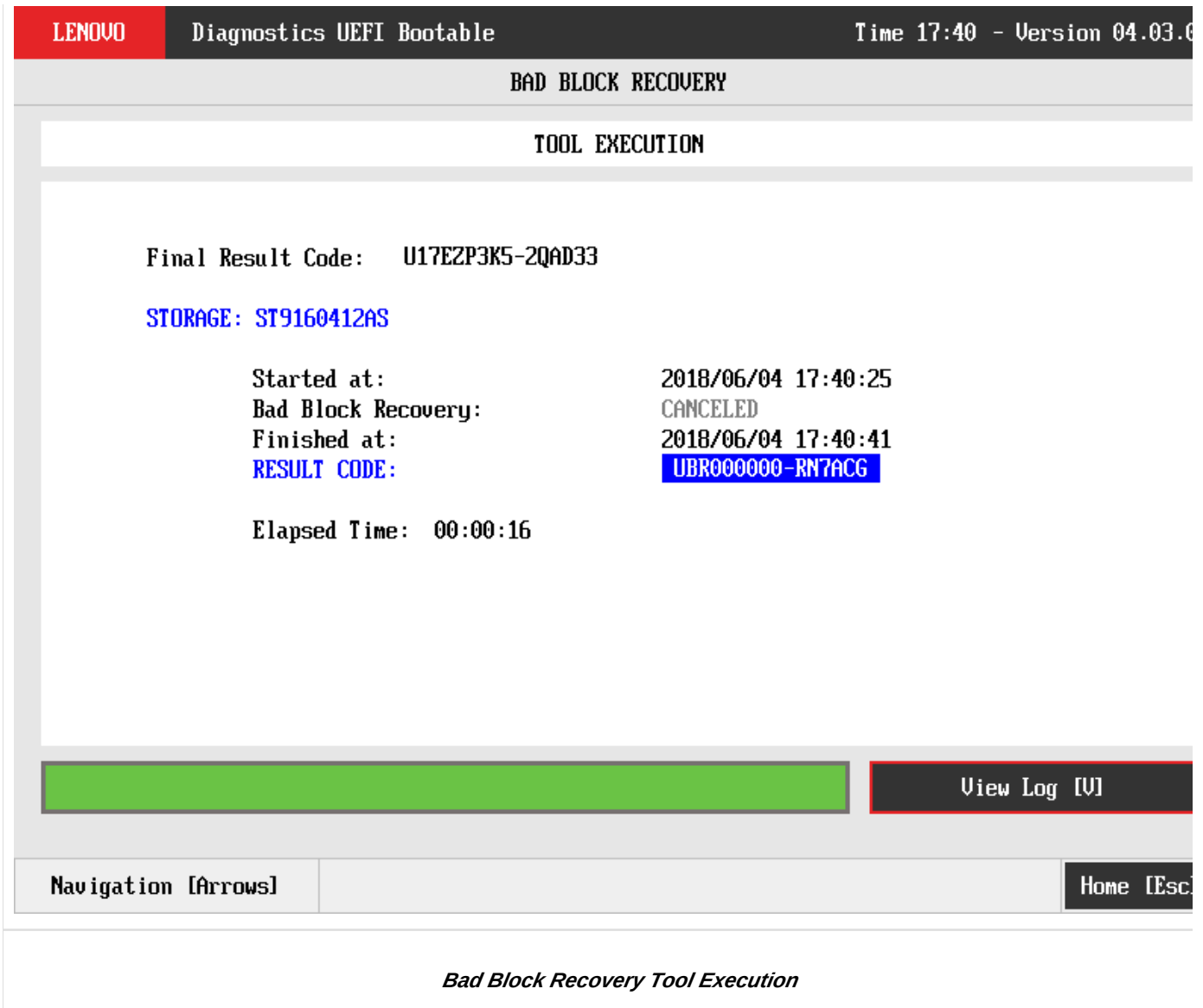


Bad Block Recovery Information Popup

Note

Once the Bad Block Recovery might perform write operations on a device, it may cause data loss. Consequently, the user must backup his or her data before running that operation.

In order to confirm the tool's execution, the user can use the Confirm button. Consequently, the system will run the tool, as illustrated in the figure below.



The Bad Block Recovery Tool Execution screen provides information about the Bad Block Recovery tool progress, as well as its result when it has finished. This screen is composed of:

- Application Header Bar
- Screen Title Bar
- Screen Sub-title Bar
- Tool 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 tool, 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 the algorithm execution details after finishing the tool execution. That section contains the following information:

- Final Result Code (an encrypted code that informs the algorithm's execution).
- Date and time that the operation has started.
- Bad Block Recovery (name of the algorithm being currently run).
- Progress of operation (algorithm's progress in percentage).
- The tool's algorithm can have seven status:
 - **Waiting**, indicating the algorithm is waiting to be run.
 - **Progress** (plus the tool execution percentage), indicating the tool is being run.
 - **PASSED**, indicating the algorithm has found no problems at device.

- **WARNING**, when applicable, indicating the algorithm has detected signs to the user be aware (for instance, of an imminent failure).
- **FAILED**, indicating the algorithm has found one or more faults.
- **CANCELED**, indicating the algorithm has been canceled by user.
- **NOT APPLICABLE**, indicating the algorithm is not supported by device.
- Date and time that the operation is finished (displayed after it is finished).
- Result Code for the tool's algorithm.
- Elapsed time, that is a duration of the tool's algorithm in hours, minutes and seconds (displayed after it is finished).

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