Chapter 1
Hardware Overview

Chapter 1 Contents

Figures

Tables

1.1 System Features

Dynabook Satellite C50D/ Satellite Pro C50D is a Slim and Light entry notebook PC based on the mobile AMD Ryzan Cezanne & Lucienne series processor, providing high-speed processing capabilities and advanced features. The computer employs a Lithium Ion battery that allows it to be battery-operated for a longer period of time. The display uses 15.6-inch FHD and HD LED panel, at a resolution of 1920x1080 and 1366x768. The CPU package is BGA type.

The computer has the following features:

- Processor

1. CPU is AMD Ryzan Cezanne & Lucienne series processor:

AMD Ryzen 7 5850U CPU

Ryzen 7 5850U (4.4 G) Hz

AMD Ryzen 5 5650U CPU

Ryzen 5 5650U (4.2 G) Hz

AMD Ryzen 5 5650U CPU

Ryzen 5 5650U (4.2 G) Hz

AMD Ryzen 7 5800U CPU

Ryzen 7 5800U (4.4 G) Hz

AMD Ryzen 5 5600U CPU

Ryzen 5 5600U (4.2 G) Hz

AMD Ryzen 3 5400U CPU

Ryzen 3 5400U (4.0 G) Hz

AMD Ryzen 7 5700U CPU

Ryzen 7 5700U (4.3 G) Hz

AMD Ryzen 5 5500U CPU

Ryzen 5 5500U (4.0 G) Hz

AMD Ryzen 3 5300U CPU

Ryzen 3 5300U (3.8 G) Hz

- Host Bridge System Controller

  System Controller: AMD integrated Host bridge system into CPU.

- Graphics

  AMD Integrated Graphics

- Memory

  The computer has 2 SO-DIMM DDR4 memory particles which support double channel. DDR4 is driven at 1.2V. It can incorporate up to 32GB of memory configuration.

  Using the following sizes of memory configuration:

  - 4096 MB SO-DIMM DDR4-3200MHz
  - 8192 MB SO-DIMM DDR4-3200MHz
  - 16384 MB SO-DIMM DDR4-3200MHz

- Solid State Drive (SSD)

  The computer accommodates SSD with following types:

  - SSD M.2 128GB/256GB/512GB (PCIe)

- Display

  LCD displays come in the following type at resolution 1920x1080 and

1366x768:

- 15.6” FHD 250nits eDP 1920x1080 LED display
- 15.6" HD 220nits eDP 1366x768 LED display

❑ On-Board LAN

The internal LAN supports 10/100/1Gbit Ethernet, enabling connection to a LAN at up to 1Gbps. It supports Wake-up on LAN from S3/S4 and PXE boot support. This internal LAN has RJ45 jack to directly accommodate a LAN cable.

❑ Wireless LAN

The internal Mini Card slot supports Intel Jefferson Peak1 (802.11ac+BT5.0), Intel Jefferson Peak2 (802.11ac+BT5.0), Non-Intel CM251(802.11ac+BT5.0), and Intel Harrison Peak2, 802.11ax+BT5.1 Wireless LAN cards. The Antenna has two wires dual band.

❑ Sound System

REALTEK ALC256N integrated audio controller supports multimedia.

The sound system contains the following:

- Stereo speakers
- External microphone &Headphone combo jack
- Integrated microphone (with Webcam)

❑ Keyboard

many kinds’ countries keyboard, which is Non-backlight keyboard with UK/US/ JPkeyboard.

❑ Pointing Device

Click Pad pointing device support. Gesture support for precision function as Tapping/Tap and Drag/Pinch zoom/Up to 4 fingers.

❑ USB Port

The computer has three USB ports, two for USB3.0 type A, Another One is USB type C (USB3.1 Gen1/DP/PD). High-Speed USB3.0/3.1 allows data transfers up to 5Gbps

- HDMI Out Port

  A HDMI monitor can be connected to HDMI Out Port on the computer.

- Bridge Media Slot

  This slot is for your memory card requirements like SD/Mini SD (need adaptor)/Micro SD (need adaptor)/SDHC/SDXC and MMC Cards to provide memory card read on your computer.

- Webcam with embedded internal microphone

  The computer has an internal camera. It supports HD (0.9M) with Camera shutter. It also supports Camera LED, LED is on when Camera working. The internal microphone is embedded in this camera module.

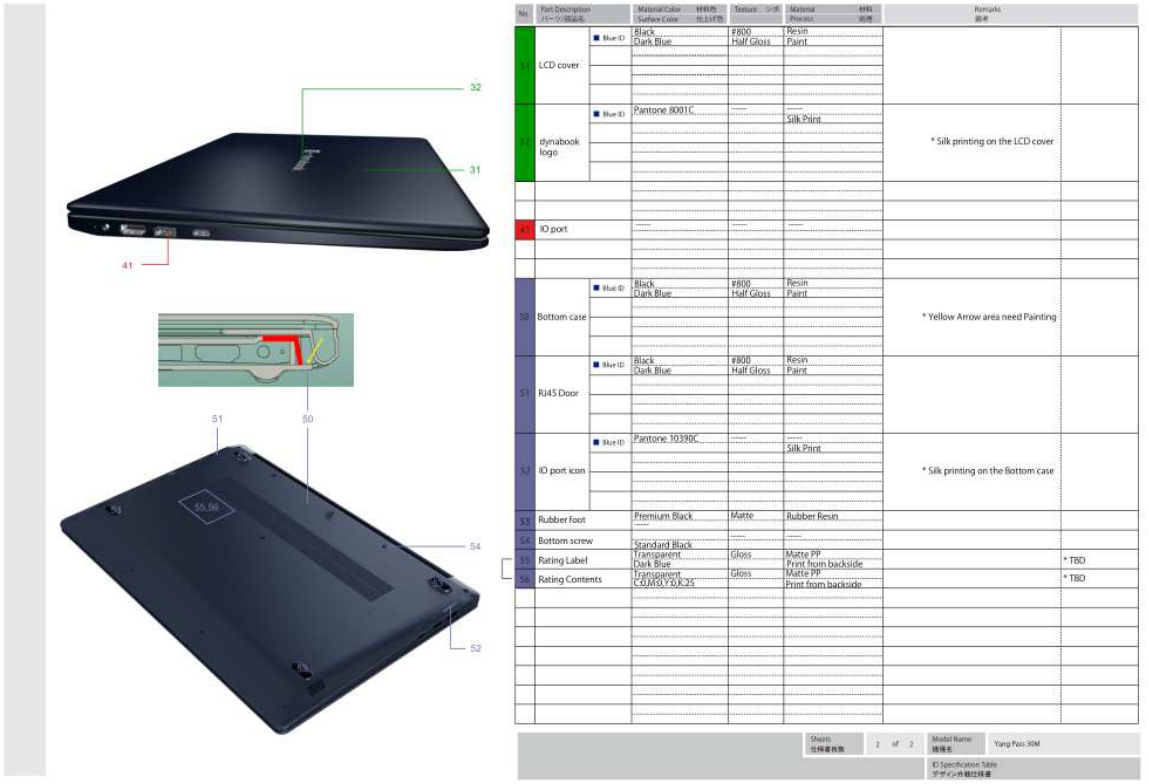
- Battery

  The computer has a 2 Cell (6000mAh) Lithium Ion battery pack.

- Figures 1-1/1-2/1-3 and 1-4 show the computer and its system unit configuration, respectively.

No.	Part Description パーツ/部品名		Material Color Surface Color 材料色 仕上げ色	Texture シボ	Material Process 材料 処理	Remarks 備考
1	LCD bezel		Black Premium Black	#800 Half Gloss	Resin Paint	
3	Rubber Cushion		Premium Black	Matte	Rubber Resin	
4	Mylar sheet of camera		Transparent Base:Premium Black	Gloss	Mylar Sheet Silk Print from back side	
7	TOP cover	■ Blue ID	Black Dark Blue	#800 Half Gloss	Resin Paint	
8	Sub brand logo	■ Blue ID	Pantone 10390C	-----	---- Silk Print	* Silk printing on the TOP cover
9	PWR button		Premium Black TOSHIBA Standard black	Texture	Resin	* Same parts as Keyboard
10	PWR button icon		Main: White for KB	-----	---- Silk Print	
13	Click Pad	■ Blue ID	Transparent Base: Dark Blue	HN2002G	Mylar Sheet Silk Print from backside	
14	Keyboard cap		Premium Black TOSHIBA Standard black	Texture	Resin	
15	Keyboard cap printing		Main: White for KB	-----	---- Silk Print	
16	Status LED		Clear	DS-05	Resin	
17	Status LED Icon	■ Blue ID	Pantone 10390C	-----	---- Silk Print	* Silk printing on the TOP cover

Designer 担当者		Director 承認者		Sheets 仕様書枚数	1 of 2	Model Name 機種名	Yang Pass 30M
Job No.		Date 最終更新日	2020-07-08	Version	Ver	ID Specification Table デザイン外観仕様書	



No.	Part Description パーツ/部品名		Material Color Surface Color 材料色 仕上げ色	Texture シボ	Material Process 材料 処理	Remarks 備考
31	LCD cover	■ Blue ID	Black Dark Blue	#800 Half Gloss	Resin Paint	
32	dynabook logo	■ Blue ID	Pantone 8001C	-----	---- Silk Print	* Silk printing on the LCD cover
41	IO port		-----	-----	-----	
50	Bottom case	■ Blue ID	Black Dark Blue	#800 Half Gloss	Resin Paint	* Yellow Arrow area need Painting
51	RJ45 Door	■ Blue ID	Black Dark Blue	#800 Half Gloss	Resin Paint	
52	IO port icon	■ Blue ID	Pantone 10390C	-----	---- Silk Print	* Silk printing on the Bottom case
53	Rubber foot		Premium Black	Matte	Rubber Resin	
54	Bottom screw		Standard Black	-----	-----	
55	Rating Label		Transparent Dark Blue	Gloss	Matte PP Print from backside	* TBD
56	Rating Contents		Transparent C:0,M:0,Y:0,K:25	Gloss	Matte PP Print from backside	* TBD

Sheets 仕様書枚数	2 of 2	Model Name 機種名	Yang Pass 30M
		ID Specification Table デザイン外観仕様書	

Figure 1-1 ID Parts Description Placement

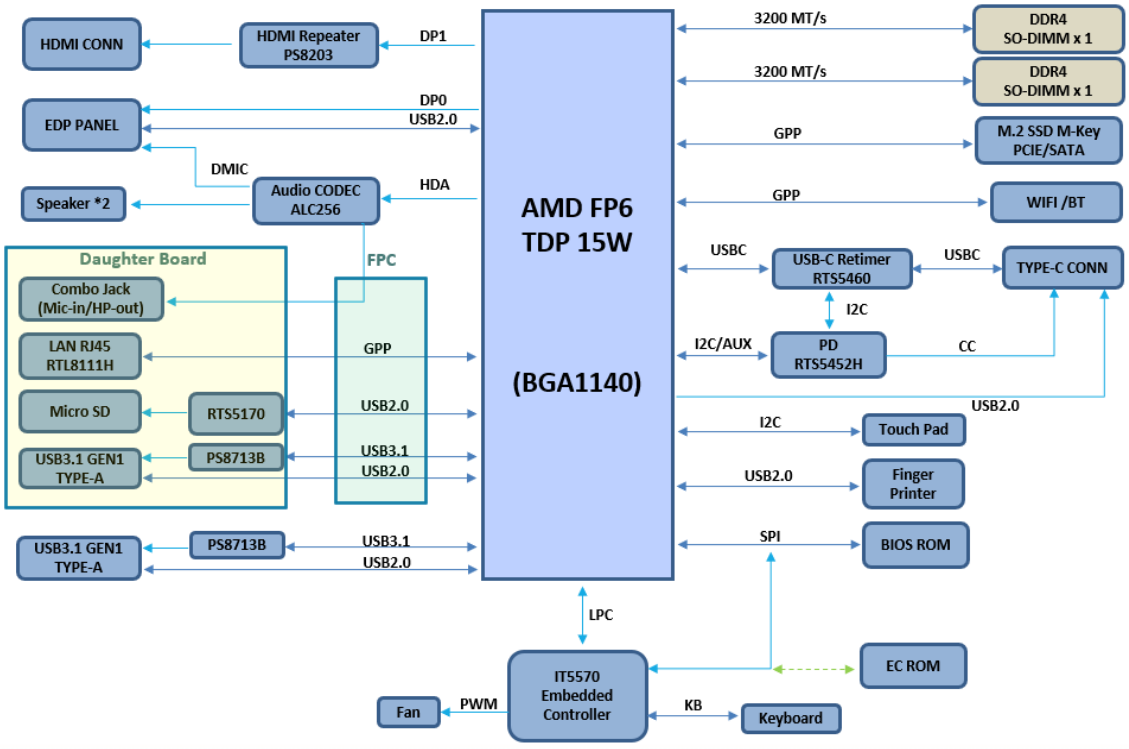


Figure 1-2 Computer Block Diagram

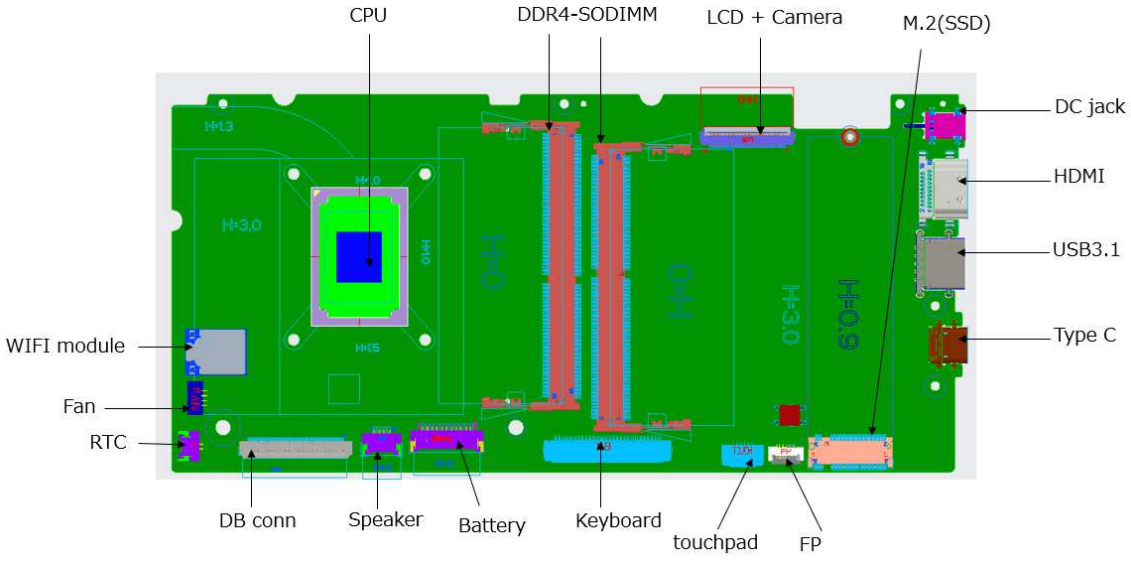


Figure 1-3 M/B I/O Placement

1.2 System Unit Components

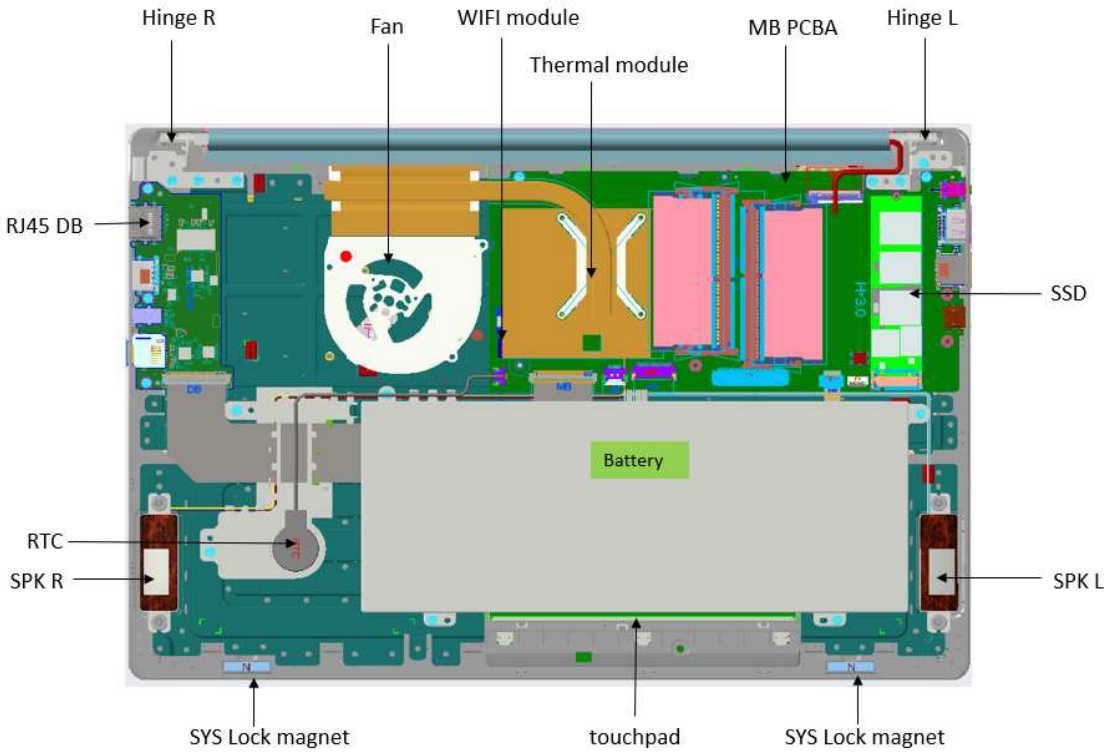


Figure 1-4 System Unit Block Diagram

The system unit of the computer consists of the following components:

1. Processor: CPU is AMD Ryzan Cezanne & Lucienne series processor:

AMD Ryzen 7 5850U CPU

Ryzen 7 5850U (4.4 G) Hz

AMD Ryzen 5 5650U CPU

Ryzen 5 5650U (4.2 G) Hz

AMD Ryzen 5 5650U CPU

Ryzen 5 5650U (4.2 G) Hz

AMD Ryzen 7 5800U CPU

Ryzen 7 5800U (4.4 G) Hz

AMD Ryzen 5 5600U CPU

Ryzen 5 5600U (4.2 G) Hz

AMD Ryzen 3 5400U CPU

Ryzen 3 5400U (4.0 G) Hz

AMD Ryzen 7 5700U CPU

Ryzen 7 5700U (4.3 G) Hz

AMD Ryzen 5 5500U CPU

Ryzen 5 5500U (4.0 G) Hz

AMD Ryzen 3 5300U CPU

Ryzen 3 5300U (3.8 G) Hz

- Memory: The computer has 2 SO-DIMM DDR4 memory particles which support double channel. It can incorporate up to 16GB of memory configuration.
  - PC4-3200(3200MHz) SO-DIMM DDR4 supported
  - DDR4 1.2V operation
  - Data transfer rates: PC4-3200
- BIOS ROM (Flash memory)
  - Storage Size
  - Data transfer rates: PC4-3200
  - FV_BB_AMD_FEATURE_FV size: 3072k
  - FV_MAIN_WRAPPER size: 4744k
  - FV_MAIN Size:7664K
  - OA_TABLE. Size:128k
  - NVRAM_BACKUP size: 128k
  - NVRAM size: 128k

- Card Bus Controller
  - REALTEK RTS5170
    - Memory Card Reader Controller

- Audio Controller

  REALTEK ALC256N integrated audio controller supports multimedia. The sound system features contain the following:

  - integrates a 4-channel DAC, 4-channel ADC, and a stereo Class-D Speaker Amplifier with 2 watts per channel output power.
  - 4-channel ADC that supports 16/20/24-bit PCM format for independent two stereo channel audio inputs. All ADCs support 44.1K/48K/96/192KHz sample rates.
  - 4 GPIOs for customized applications (pin-shared with digital microphone interface and SPDIF-OUT)
  - Supports combo jack with stereo headphone output and mono microphone input on a 4-pole jack

- KBC/EC (Keyboard Controller/Embedded Controller)

  A KBC IT5570E-128 chip is used to serve as KBC/EC and Super IO:

  - KBC
    - KB Matrix scan function
    - KBC Interface function

  - EC
    - Power Supply sequence control
    - Overheat shutdown support
    - LED control
    - Beep control
    - Cooling fan speed control
    - Universal I/O port

- Battery capacity check
- Flash memory reprogramming function
- EC access interface
- I2C communication control

❑ Clock Generator

• Mobile AMD Ryzan Cezanne & Lucienne integrated Clock Generator

- Generating the clock signal required for the system

❑ LAN Controller

• REALTEK _ RTL8111H-CG& RTL8125BG 10/100M/1000M bit

- Fully compliant with IEEE 802.3,
- Supports PCI Express 1.1
- Transmit/Receive on-chip buffer support
- Supports PCI MSI (Message Signaled Interrupt) and MSI-X
- Wake-On LAN and "RealWoW!" Technology (remote wake-up) support
- Supports Microsoft Wake-up frame

❑ Wireless LAN Controller

• Support following M.2: PCIe CNVio2 wireless LAN cards

- CM251, 802.11ac+BT4.1
- CM421 802.11ac+BT5.0
- Intel AX200 802.11ac+BT5.2

• Data Rate

Non-Intel CM251

- IEEE 802.11b: 11Mbps
- IEEE 802.11a/g: 54Mbps
- IEEE 802.11n: 150Mbps
- IEEE 802.11ac: 433Mbps

Non-Intel CM451

- IEEE 802.11b: 11Mbps
- IEEE 802.11a/g: 54Mbps
- IEEE 802.11n: 3000Mbps

- IEEE 802.11ac: 866.7Mbps

Intel AX200

- IEEE 802.11b: 11Mbps
- IEEE 802.11a/g: 54Mbps
- IEEE 802.11n: 3000Mbps
- IEEE 802.11ac: 866.7Mbps

Frequency Channel

INon-Intel CM251

- IEEE802.11b/g :2.4GHz
- IEEE802.11n :2.4GHz/5GHz
- IEEE802.11a: 5GHz
- IEEE802.11ac: 5GHz

Non-Intel CM421

- IEEE802.11b/g :2.4GHz
- IEEE802.11n :2.4GHz/5GHz
- IEEE802.11a: 5GHz
- IEEE802.11ac: 5GHz

Intel AX200

- IEEE802.11b/g :2.4GHz
- IEEE802.11n :2.4GHz/5GHz
- IEEE802.11a: 5GHz
- IEEE802.11ac: 5GHz

1.3 Solid State Drive (SSD)

The M.2 PCIe SSD is fully consist of semiconductor device and using NAND flash Memory which has a high reliability and a high technology in a small form factor for using a SSD

The SSD is shown in Figure 1-5 and some of its specifications are listed in Table 1-1.

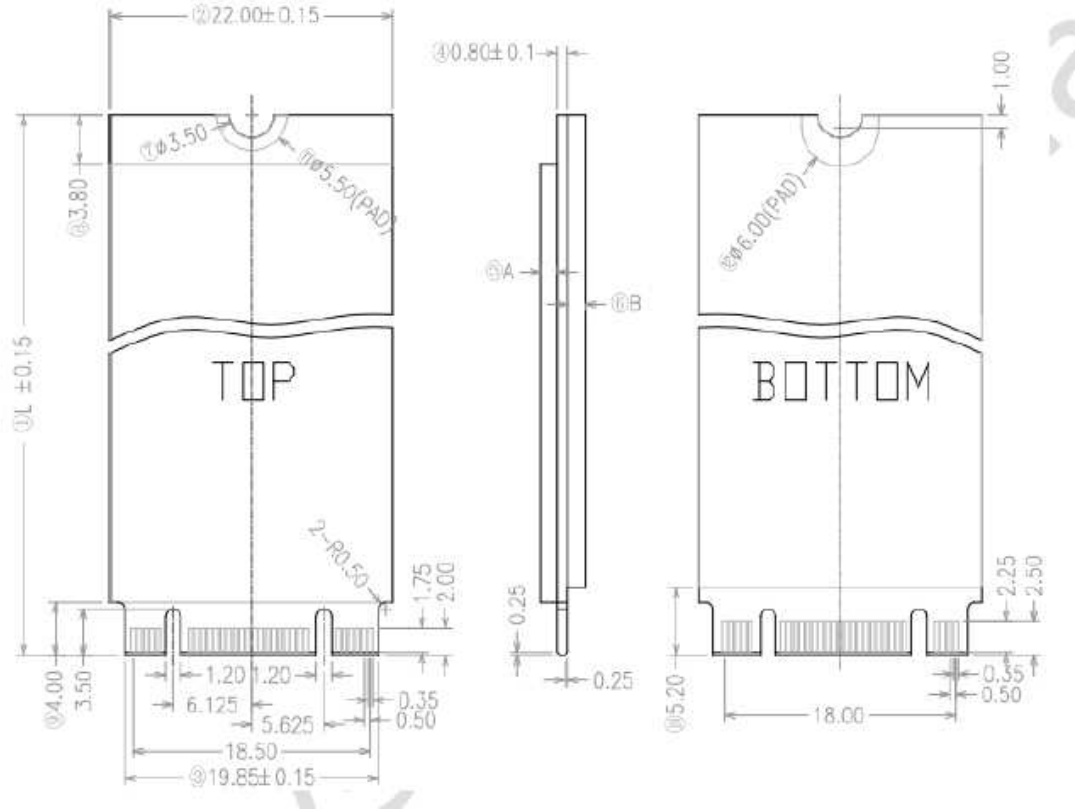


Figure 1-5 *Solid state driver*

Table 1-1 SSD Specifications

Item	Read	Write	Bytes per sector
M.2 128G PCIe SSD	2250MB/s	600MB/s	512Byte
M.2 256G PCIe SSD	2500MB/s	1100MB/s	512Byte
M.2 512G PCIe SSD	2500MB/s	2100MB/s	512Byte

1.4 Power Supply

The power supply unit provides many different voltages for the system board and performs the following functions:

1. Power input monitor

   - Checks whether the DC power supply (AC adapter) is connected to the computer.
   - Checks whether the battery pack is connected to the computer.
   - Monitors the DC power supply input (AC Adapter output).

2. Power supply's internal control

   - Turns on and off the battery pack charging power supply.
   - Issues a charging current instruction to the PWM control IC of the battery pack charging power supply.
   - Controls the supply of power to the system block (load/logic circuit side).
   - Controls forced shutdown if the power supply malfunctions.

3. Logic circuit control

   - Controls power-on/off operation.

4. Status display

- Turns on the Power.
- Battery indicator

5. External interface

   Performs communication through the SMBUS (via the internal EC/KBC).

   Transfers the power supply operation mode.

6. Output monitor

- Monitors the voltage, over voltage, input/output current of the battery pack.
- Monitors the internal temperature of the battery pack.

1.5 Batteries

The computer has the following type of battery:

- ❑ Main Battery Pack

Table 1-2 list the specifications of battery.

Table 1-2 Battery Specifications

Battery Type		Material	Output voltage	Capacity
Main Battery Pack	2 Cell	Lithium Ion	7.6 V	6000 mAh

1.51 Main Battery

The main battery pack serves as the computer's main power source when the AC adapter is not attached. The main battery maintains the state of the computer so that it can resume it.

1.52 Battery Charging Control

Battery charging is controlled by TI BQ24780S. When AC adapter and battery pack are attached to the computer, BQ24780S controls the charge on/off state and detects a full charge.

- Battery Charge

When the AC adapter is attached, the battery is charged by off-state charge when the system is powered off or by on-state charge when it is powered on.

Table 1-3 Quick/Normal Charging Time

State	Charge Time	
Off-State Charge	2 Cell	Less than 4 hours
On-State Charge	2 Cell	over 4 hours

NOTE: *The time required for normal charge depends on the power consumption by the system. Using the fluorescent lamp and frequently accessing the disk consume much power and lengthen the charge time.*

Any of the following cases stops battery charge:

1. The battery becomes fully charged.
2. The AC adapter or battery pack is removed.
3. The battery or AC adapter voltage is abnormal.

- Detection of full charge

A full charge is detected only when the battery is being charged by quick or normal charge. A full charge is detected when either of the following conditions is met:

1. The current in the battery charging circuit drops below the predetermined value.

Chapter 2
Troubleshooting

Chapter 2 Contents

Figures

2.1 Outline

This chapter describes the fault diagnostic procedures for field replaceable units (FRUs) in the computer.

The FRUs covered here are as follows:

1. System Board
2. Keyboard
3. Display
4. SSD
5. Audio
6. Touch pad
7. USB Port
8. Headphone / Microphone port
9. HDMI Port
10. SD Card Port
11. Camera
12. Wireless LAN
13. Battery Pack
14. Finger Print
15. Bluetooth
16. LAN(RJ45)

This Model support Intel Gemini lake with GPU. See Chapter 4 for the procedures to replace FRU and Chapter 3 for the procedures to use test programs.

The following tools are required to perform the diagnostic procedures:

1. USB Memory
2. Screwdrivers (2.0mm, 2.5mm)
3. Multi-meter
4. External monitor with HDMI In Port
5. Headphone
6. SD card

2.2 Basic Flowchart

The basic flowchart in Figure 2-1 serves as a guide for identifying a possibly faulty FRU.

Before going through the diagnostic flowchart steps, verify the following:

- Ask the user if a password has been registered and, if so, ask him or her to enter the password. If the user has forgotten the system password, please follow below erase password process. The computer will override password protection and automatically erases the current password.

  1. press Power button to turn the computer power on
  2. password will erase when computer booted

- Make sure Windows® 10 has been installed on the HDD. Any other operating system can cause the computer to malfunction.

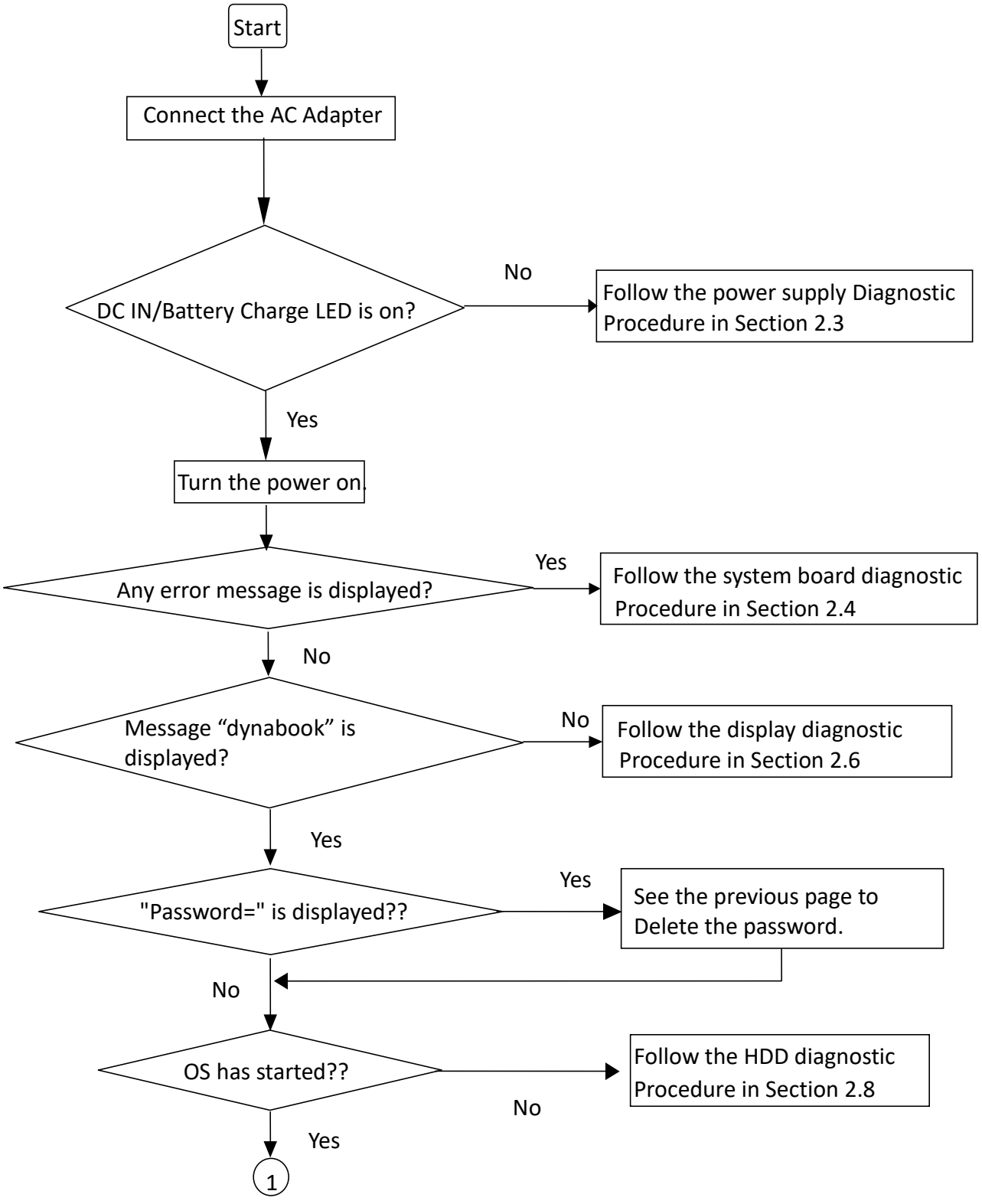


Figure 2-1 Basic Flowchart (1/2)

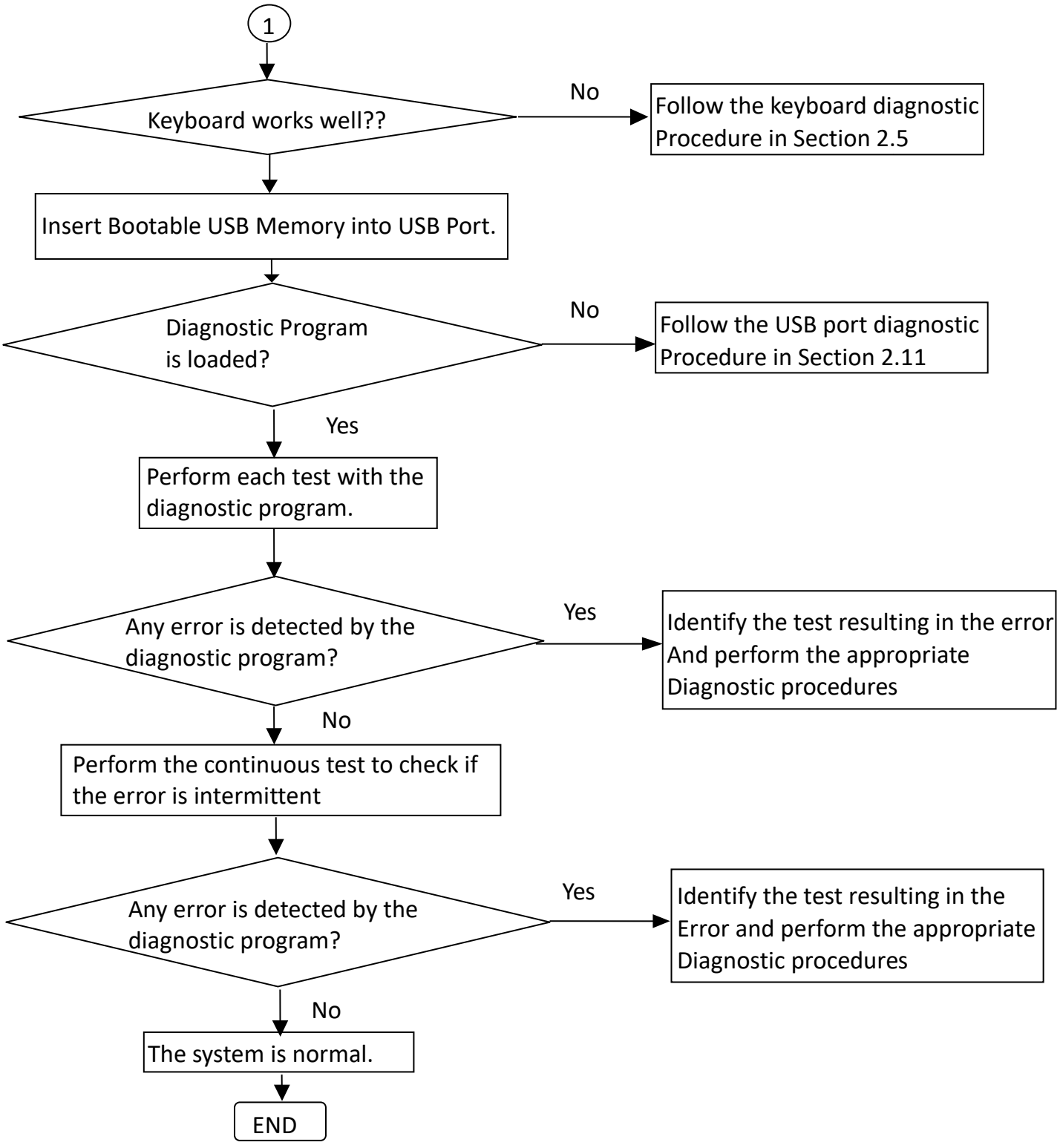


Figure 2-1 Basic Flowchart (2/2)

If diagnostic program cannot detect an error, the error may be intermittent. Run continuous test program repeatedly to isolate problem. Check log utility function to confirm which diagnostic test detects error, and perform appropriate troubleshooting procedures as below:

1. If an error is detected by CPU Test, follow the system board troubleshooting procedures in Section 2.4.
2. If an error is detected by SSD Test, follow the SSD troubleshooting procedures inSection 2.8.
3. If an error is detected by Keyboard Test, follow the keyboard troubleshootingprocedures in Section 2.5.
4. If an error is detected by Display Test, follow the display troubleshooting proceduresin Section 2.6.
5. If an error is detected by Memory Test, follow the memory troubleshootingprocedures in Section 2.7
6. If Audio error is detected by Windows application, please follow the audiotroubleshooting procedures in Section 2.9
7. If Touch pad error is detected by Windows application, please follow the touchpad trouble shooting procedures in Section 2.10.
8. If USB error is detected by Windows application, please follow the USB port troubleshooting procedures in Section 2.11.
9. If Headphone/Microphone error is detected by Windows application, please follow the headphoneport troubleshooting procedures in Section 2.12.
10. If HDMI error is detected by Windows application, please follow the HDMI porttroubleshooting procedures in Section 2.13
11. If Micro SD Card error is detected by Windows application, please follow the SD Card Porttroubleshooting procedures in Section 2.14
12. If Camera error is detected by Windows application, please follow the Cameratroubleshooting procedures in Section 2.15
13. If Wireless LAN error is detected by Windows application, please follow the WirelessLAN troubleshooting procedures in Section 2.16
14. If Battery error is detected by Windows application, please follow the Batterytroubleshooting procedures in Section 2.17
15. If Finger Print error is detected by Windows application, please follow the FingerPrint troubleshooting procedures in Section 2.18
16. If Bluetooth error is detected by Windows application, please follow the Bluetoothtroubleshooting procedures in section 2.19
17. If LAN Port error is detected by Windows application, follow the LAN Port troubleshooting procedures in section 2.20.

2.3 Power Supply

The power supply in the computer controls many functions and components. To check if the power supply is defective or malfunctioning, follow the troubleshooting procedures below as instructed.

Procedure 1 Power Icon Check
Procedure 2 Connection Check
Procedure 3 Replacement Check
Procedure 4 Replacement Check

Procedure 1: Power Icon Check

The following power LED indicates the power supply status:

- Power LED

The power supply controller displays the power supply status through the DC IN/Battery Charge LED as in the table below.

- DC IN/Battery Charge LED

DC IN/Battery Charge LED	Power Supply Status
On in White	Battery is fully Charged.
On in Amber	Battery is been Charging from AC Adapter.
Blinking in Amber	Pre-Charge mode (I2C no ack). Battery not detected
All Off	Discharge mode/Stop Charge

If the Power LED and DC IN/Battery Charge LED are off, follow the steps below:

1. Shut down the computer. Remove the AC adapter to shut off power supply to the computer. Then disassemble the computer and replace the battery. Next, assemble to check the battery.
2. AC adapter back again.

If the Power LED on IO board is still off, follow the steps below.

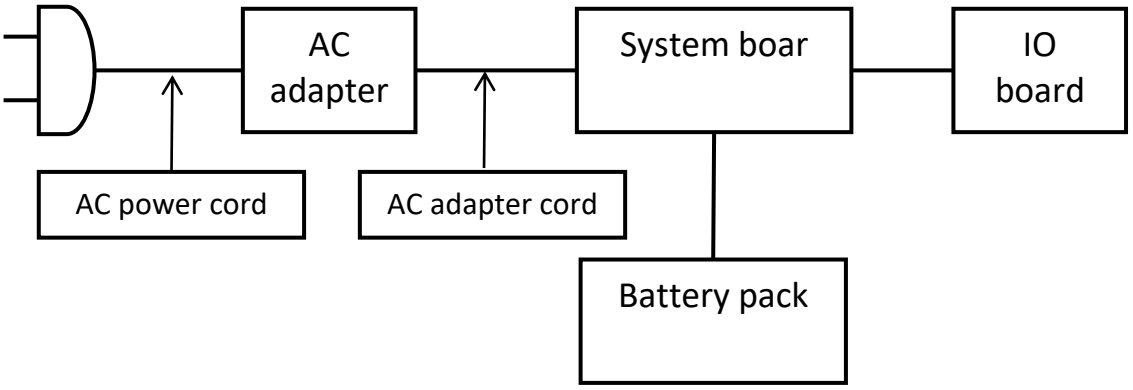
Check 1 Turn on your computer and make sure the Power LED color is white. If it does not, go to Procedure 2.

If the DC IN/Battery Charge LED on System board is still off, follows the steps below:

Check 1 Make sure the M/B DC IN/Battery Charge LED on System board goes on in White or Amber. If it does not, go to Procedure 2.

Procedure 2: Connection Check

Power is supplied to the system board as illustrated below:



Follow the steps below to check whether each connector has been connected correctly:

Check 1 Make sure the AC adaptor and AC power cord have been firmly plugged into the DC IN socket and wall outlet, respectively. When they have been connected correctly, perform Check 2.

Check 2 Connect a new AC adaptor and AC power cord.

Check 3 About the DC IN/Battery Charge LED on System board: Make sure the AC adapter cord is properly attached to your computer. If the LED does not light when the AC adapter cord is properly installed, go to Procedure 3.

Check 4 About the I/O board Power LED: Make sure the System board and IO board are firmly connected with the FFC cable. If the LED does not light even if the M/B and IO board are properly connected with the FFC cable, go to Procedure 4.

Procedure 3 Replacement Check

The system board may be defective. Disassemble the computer and replace the system board with a new one according to Chapter 4.

Procedure 4 Replacement Check

The IO board or FFC cable may be defective. Disassemble the computer and replace the IO board or FFC cable with a new one according to Chapter 4.

2.4 System Board

To check if the system board is defective or malfunctioning, follow the troubleshooting procedures below as instructed.

Procedure 1: Message Check

Procedure 2: Test Program Check

Procedure 3: Replacement Check

Procedure 1: Message Check

When the power is turned on, the system performs the self-diagnostic Power On Self Test (POST) embedded in the BIOS ROM. The POST tests and initializes each IC on the system board.

- If an error message appears on the display, perform Procedure 3.
- If there is no error message, go to Procedure 2.
- If Window 10 is loaded normally, go to Procedure 3.

Procedure 2: Test Program Check

The maintenance test program contains several programs for diagnosing the system board and CPU. Execute the following test programs using the procedures described in Chapter 3.

1. System Information Test
2. KEYBOARD Test
3. TOUCH PAD Test
4. BATTERY CAPACITY Test
5. BATTERY OFF Test (Setting)
6. HDD PHYSICAL Test
7. HDD LOGICAL Test
8. MEMORY Test
9. USB STORAGE Test
10. SD STORAGE Test
11. WIRED LAN Test
12. CPU Test
13. GRAPHICAL DISPLAY Test
14. Timer Test

If an error is detected during these tests, go to Procedure 3.

Procedure 3: Replacement Check

The system board or memory may be defective. Disassemble the computer following the steps described in Chapter 4 and replace the system board, memory module with a new one.

2.5 Keyboard

To check if the computer's keyboard is defective or malfunctioning, follow troubleshooting procedures below as instructed.

Procedure 1: Test Program Check

Procedure 2: Connector Check and Replacement Check

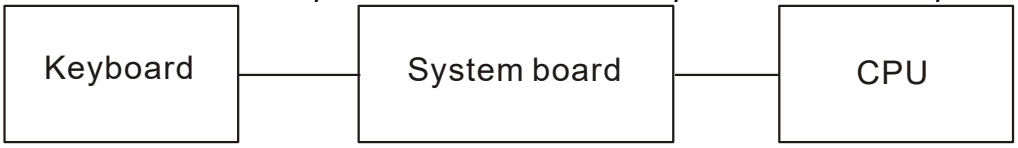
Procedure 1: Test Program Check

Execute the Keyboard test available as part of the maintenance test program. See Chapter 3 for information on how to perform the test. Some Keyboard have support Illumination (Backlit) function, check this function during Keyboard test when press any key.
If an error is detected in the test, go to Procedure 2. If no error is detected, the keyboard itself is normal.

Procedure 2: Connector Check and Replacement Check

The keyboard or system board may be disconnected or faulty. Disassemble the computer following the steps described in Chapter 4 and perform the following checks:

Check 1 Make sure the keyboard cable has been firmly connected to the system board.



If the cable is loose or off, reconnect it firmly and return to Procedure 1. If there is still an error, perform Check 2.

Check 2 The keyboard may be faulty. Replace it with a new one following the instructions in Chapter 4. If the problem persists, perform Check 3.

Check 3 The System board may be faulty. Replace it with a new one following the instructions in Chapter 4. If the keyboard is still not functioning properly, perform Procedure 1

2.6 Display

To check if the computer's display is defective or malfunctioning, follow the troubleshooting procedures below as instructed.

Procedure 1: External Monitor Check (Monitor with HDMI terminal)

Procedure 2: Test Program Check

Procedure 3: Connector Check and Replacement Check

Procedure 1: External Monitor Check

Connect an external monitor to the computer's external monitor port, then boot the computer. The computer automatically detects the external monitor even if resume mode is enabled.

If the external monitor works correctly, the internal LCD, or LCD cable may be faulty. Go to Procedure 3.

If the external monitor appears to have the same problem as the internal monitor, the system board may be faulty. Go to Procedure 2.

Procedure 2: Test Program Check

Insert the diagnostics USB Memory into the computer's USB Port, turn on the computer and run the test. See Chapter 3 for information on how to perform the test.

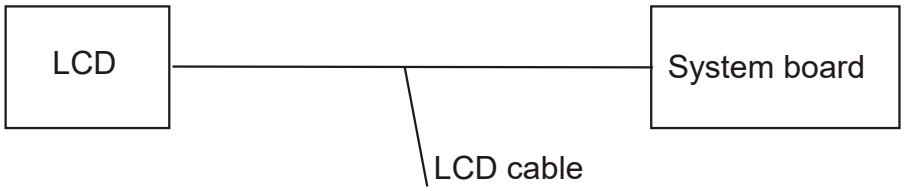
If an error is detected in the test, go to Procedure 3. If no error is detected, the display itself is normal.

Procedure 3: Connector Check and Replacement Check

The display unit has an LCD module, LED Backlight module, panel close switch. Any of the components or their connections may be defective. Disassemble the computer following steps described in Chapter 4, and then perform the following checks:

(1) If the FL does not light, perform Check 1.
(2) If characters or graphics are not displayed normally, perform Check 5.
(3) If the FL remains lit when the display is closed, the panel close switch may be defective. Perform Check 5.

Check 1 Make sure the following cables have been firmly connected to the system board.



If any of the cables is loose or off, reconnect it firmly and return to Procedure 3. If there is still an error, perform Check 2.

Check 2 The LCD cable may be faulty. Replace it with a new one and return to Procedure 3. If there is still an error, perform Check 3.

Check 3 Make sure the LCD cable has been firmly connected to the system board and LCD module, if the cable is loose or off, reconnect it firmly and return to Procedure 3. If there is still an error, perform Check 4.

Check 4 The LCD module may be faulty. Replace it with a new one and return to Procedure 3. If there is still an error, perform Check 5.

Check 5 The System board may be faulty. Replace it with a new one. If there is still an error, perform Check 1.

2.7 Memory

To check if the computer's Memory Module is defective or malfunctioning, follow the troubleshooting procedures below as instructed.

Procedure 1: Test Program Check

Procedure 2: Connector Check and Replacement Check

Procedure 1: Test Program Check

Execute Memory Test Program available as part of the maintenance test program. This test program checks the memory module. Insert the diagnostics USB Memory into the computer's USB Port, turn on the computer and run the test. See Chapter 3 for information on how to perform the test.

2.8 SSD (Solid-state Drive) or eMMC

To check if the SSD is defective or malfunctioning, follow the troubleshooting procedures below as instructed.

Procedure 1: Test Program Check

Procedure 2: Connector Check and Replacement Check

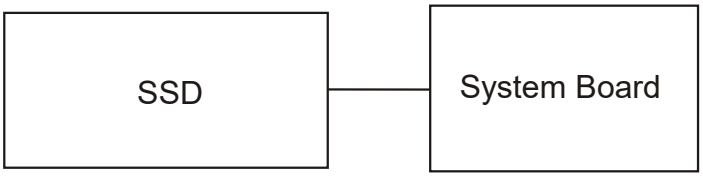
NOTE: The contents of the SSD or eMMC will be erased when the SSD or eMMC diagnostic test or formatting is executed. Save the required contents of the SSD or eMMC to other storage drive in advance.

Procedure 1: Test Program Check

Run the storage test program stored on the maintenance test program disk for all test items. See Chapter 3 for details on how to use the test program.
If an error is detected during the SSD or eMMC test, go to Procedure 2.

Procedure 2: Connector Check and Replacement Check for SSD
The SSD or system board may be faulty. Disassemble the computer following the steps described in Chapter 4 and perform the following checks s:

Check 1 Make sure the following connectors have been firmly connected to the SSD and system board.



If any connector is loose or off, reconnect it firmly and return to Procedure 1.
If there is still an error, perform Check 2.

Check 2 The SSD may be faulty. Replace it with a new one following the instructions in Chapter 4. If the problem persists, perform Check 3.

Check 3 The System board may be faulty. Replace it with a new one following the instructions in Chapter 4.

2.9 Audio Test

To check if the computer's Speaker is defective or malfunctioning, follow troubleshooting procedures below as instructed.

Procedure 1: Windows Application Test

Procedure 2: Connector Check and Replacement Check

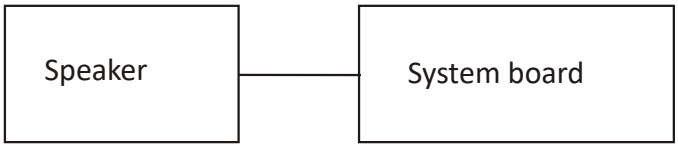
Procedure 1: Windows Application Test

Speakers are connected to System Board through cable. Please power on the computer into Windows. The computer will automatically detect these speakers.
If an error is detected in the test, go to Procedure 2. If no error is detected, the Audio itself is normal.

Procedure 2: Connector Check and Replacement Check

The system board may be disconnected or faulty. Disassemble the computer following the steps described in Chapter 4 and perform the following checks:

Check 1 Make sure the Speaker cable has been firmly connected to the system board.



If the cable is loose or off, reconnect it firmly and return to Procedure 1. If there is still an error, perform Check 2.

Check 2 The Speaker may be faulty. Replace it with a new one following the instructions in Chapter 4. If the problem persists, perform Check 3.

Check 3 The System board may be faulty. Replace it with a new one following the instructions in Chapter 4. If the Audio is still not functioning properly, perform Procedure 1.

2.10 Touchpad

This model has support two kind types Touch Pad. One is normal touch pad, another is secure pad. To check if the computer's Touchpad or Secure pad is defective or malfunctioning, follow troubleshooting procedures below as instructed.

Procedure 1: Test Program Check

Procedure 2: Connector Check and Replacement Check

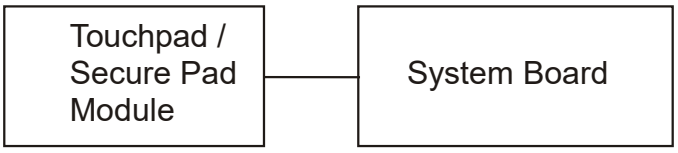
Procedure 1: Test Program Check

Run the test program stored on the maintenance test program disk for test items. See Chapter 3 for details on how to use the test program.
If an error is detected during the test, go to Procedure 2.

Procedure 2: Connector Check and Replacement Check

Touchpad or Secure Pad Module is connected to the system board through FFC Cable.
If Touchpad or Secure Pad Module malfunctions, there may be a bad connection between Module and System Board, or either might be faulty. Disassemble the computer following the steps described in Chapter 4 and perform the following checks:

Check 1 Make sure Touchpad or Secure Pad Module has been firmly connected to the connector on System Board. Also make sure the tape is not stuck to any part of Touchpad Module and Touchpad or Secure Pad Module is free of foreign matters.



And if connector is disconnected, connect it firmly to system board & return to Procedure 1. If the tape is stuck to any part of Touchpad or Secure pad, stick it back to the specified point and if a foreign matter is found on Touchpad or Secure pad, remove it and then return to Procedure 1. If there is still an error, perform Check 2.

Check 2 Touchpad or Secure Pad Module may be faulty. Replace it with a new one following the steps described in Chapter 4. If Touchpad or Secure Pad Module replaced is still not functioning properly, perform Check 3.

Check 3 System Board may be defective. Replace System Board with new one following steps described in Chapter 4.

2.11 USB Port

To determine if the computer's USB Port is functioning properly or malfunctions, perform following procedures. Start with Procedure 1 and continue with the other procedure as instruction below.

Procedure 1: Test Program Check

Procedure 2: Connector Check and Replacement Check

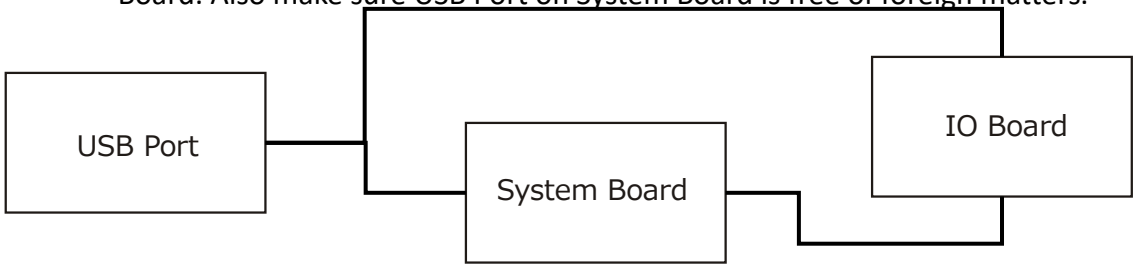
Procedure 1: Test Program Check

Run the test program stored on the maintenance test program disk for test items. See Chapter 3 for details on how to use the test program.
If an error is detected during the test, go to Procedure 2.

Procedure 2: Connector Check and Replacement Check

If USB Port on System or IO Board malfunctions, there may be a bad connection between USB device and System or IO Board, or either of System or IO Board might be faulty. Disassemble the computer following the steps described in Chapter 4 and perform the following checks:

Check 1 Make sure USB device cable has been firmly connected to USB Port of System Board. Also make sure USB Port on System Board is free of foreign matters.



And if the connector is disconnected, connect it firmly to the system or IO board and return to Procedure 1. If a foreign matter is found on USB Port of System or IO Board, remove it and then return to Procedure 1. If the problem persists, perform Check 2.

Check 2 System or IO Board may be faulty. Replace it with a new one following the steps described in Chapter 4.

2.12 Headphone/Microphone Port

To determine if the computer's Headphone Port is functioning properly or malfunctions, perform following procedures. Start with Procedure 1 and continue with the other procedure as instruction below.

Procedure 1: Windows Application Test

Procedure 2: Connector Check and Replacement Check

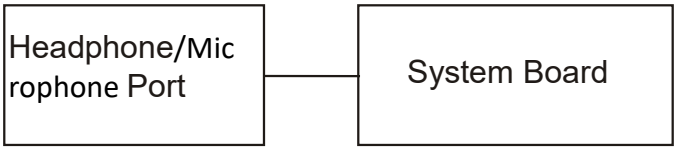
Procedure 1: Windows Application Test

Headphone/Microphone Port Connector is mounted on System Board. Connect external Headphone/Microphone with Headphone Jack interface to the computer's Headphone/Microphone Port, then power on the computer into Windows. The computer will automatically detect this Headphone device through Headphone/Microphone Port. Execute Function Programs in Windows, if the Headphone device appears to have a certain problem, go to Procedure 2. If an error is not located, Headphone/Microphone Port is functioning properly.

Procedure 2: Connector Check and Replacement Check

If Headphone/Microphone Port on System Board malfunctions, there may be a bad connection between Headphone/Microphone device and System Board, or either of System Board might be faulty. Disassemble the computer following the steps described in Chapter 4 and perform the following checks:

Check 1 Make sure Headphone/Microphone device cable has been firmly connected to Headphone/Microphone Port of System Board. Also make sure Headphone/Microphone Port on System Board is free of foreign matters.



And if the connector is disconnected, connect it firmly to the system board and return to Procedure 1. If a foreign matter is found on Headphone Port of System Board, remove it and then return to Procedure 1. If the problem persists, perform Check 2.

Check 2 System Board may be faulty. Replace it with a new one following the steps described in Chapter 4.

2.13 HDMI Port

To determine if the computer's HDMI Port is functioning properly or malfunctions, perform following procedures. Start with Procedure 1 and continue with the other procedure as instruction below

Procedure 1: Windows Application Test

Procedure 2: Connector Check and Replacement Check

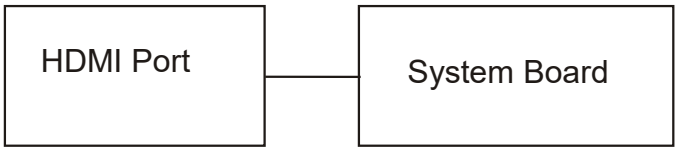
Procedure 1: Windows Application Test

The HDMI Port Connector is mounted on System Board. Connect an external monitor with HDMI interface to the computer's HDMI port, then power on the computer into Windows. The computer will automatically detect this external monitor through HDMI Port. If the external monitor appears to have a certain problem, go to Procedure 2. If an error is not located, HDMI Port is functioning properly.

Procedure 2: Connector Check and Replacement Check

If HDMI Port on System Board malfunctions, there may be a bad connection between External Monitor and System Board. Or System Board might be faulty. Disassemble the computer following the steps described in Chapter 4 and perform the following checks:

Check 1 Make sure External Monitor HDMI Cable has been firmly connected to HDMI Port on System Board. Also make sure HDMI Port on System Board is free of foreign matters.



And if the connector is disconnected, connect it firmly to the system board and return to Procedure 1. If a foreign matter is found on HDMI Port of System Board, remove it and then return to Procedure 1. If the problem persists, perform Check 2.

Check 2 System Board may be faulty. Replace it with a new one following the steps described in Chapter 4.

2.14 Micro SD card Port

IO Board or System Board may be the reason of Micro SD fault. Either of these two components may be damaged. To determine if the computer's IO Board is functioning properly, perform following procedures. Start with Procedure 1 and continue with the other procedure as instruction below.

Procedure 1: Test Program Check

Procedure 2: Connector Check and Replacement Check

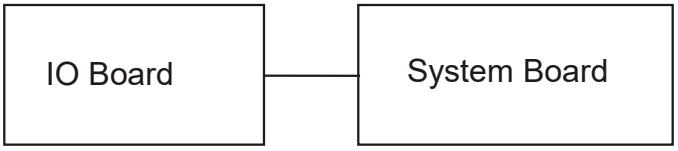
Procedure 1: Test Program Check

Run the test program stored on the maintenance test program disk for test items. See Chapter 3 for details on how to use the test program.
If an error is detected during the test, go to Procedure 2.

Procedure 2: Connector Check and Replacement Check

IO Board is connected to System Board through FFC Cable. If SD Card malfunctions, there may be a bad connection between IO Board and System Board, or either of these two components might be faulty. Disassemble the computer following the steps described in Chapter 4 and perform the following checks:

Check 1 Make sure IO Board FFC Cable has been firmly connected to the connectoron System Board. Also make sure IO Board is free of foreign matters.



And if the connector is disconnected, connect it firmly to the system board and return to Procedure 1. If a foreign matter is found on IO Board, remove itand then return to Procedure 1. If the problem persists, perform Check 2.

Check 2 IO Board may be faulty. Replace it with a new one following the steps described inChapter 4. If IO Board replaced is still not functioning properly, perform Check 3.

Check 3 System Board may be defective. Replace System Board with a new one following steps described in Chapter 4.

2.15 Camera

Camera Module or System Board may be the reason of Camera fault. Either of these two components may be damaged. To determine if the computer's Camera is functioning properly, perform following procedures. Start with Procedure 1 and continue with the other procedure as instruction below.

Procedure 1: Windows Application Test

Procedure 2: Connector Check and Replacement Check

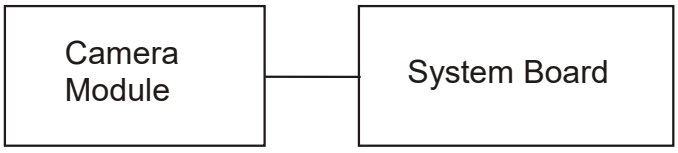
Procedure 1: Windows Application Test

Execute Function Programs in Windows, LED of Camera Module should be turned on when Camera is working, if Camera Module is not functioning properly, go to Procedure 2. If an error is not located, Camera system is functioning properly.

Procedure 2: Connector Check and Replacement Check

Camera Module is connected to System Board through FPC Cable. If Camera malfunctions, there may be a bad connection between Camera Module and System Board, or either of these two components might be faulty. Disassemble the computer following the steps described in Chapter 4 and perform the following checks:

Check 1 Make sure Camera Module FPC Cable has been firmly connected to the connector on System Board. Also make sure Camera Module is free of foreign matters.



And if the connector is disconnected, connect it firmly to the system board and return to Procedure 1. If a foreign matter is found on Camera Module, remove it and then return to Procedure 1. If the problem persists, perform Check 2.

Check 2 Camera Module may be faulty. Replace it with a new one following the steps described in Chapter 4. If Camera Module replaced is still not functioning properly, perform Check 3.

Check 3 System Board may be defective. Replace System Board with a new one following the steps described in Chapter 4.

2.16 Wireless LAN

Wireless Module or system board may be the reason of Wireless LAN fault. Either of these two components may be damaged. To determine if the computer's Wireless LAN module is functioning properly, perform following procedures. Start with Procedure 1 and continue with the other procedures as instruction below.

Procedure 1: Windows Application Test

Procedure 2: Connector Check and Replacement Check

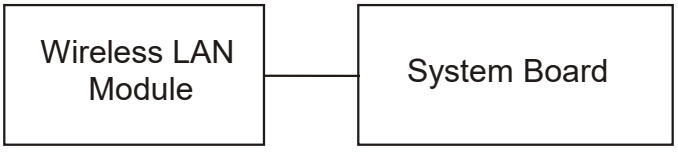
Procedure 1: Windows Application Test

Place unit to location near wifi hotspot. Execute wifi applications in Windows, then active wireless connection. Check whether unit can normally connect to wifi hotspot. If connection is fail, go to Procedure 2. If error is not located, Wireless LAN system is functioning properly.

Procedure 2: Connector Check and Replacement Check

Wireless LAN Module is connected to the system board. If Wireless LAN malfunctions, there may be a bad connection between Wireless LAN Module and the system board, or either might be faulty. Disassemble the computer following the steps described in Chapter 4 and perform the following checks:

Check 1 Make sure Wireless LAN module has been firmly connected to the connector on the system board. Also make sure Wireless LAN module is free of foreign matters.



And if the connector is disconnected, connect it firmly to the system board and return to Procedure 1. If a foreign matter is found on Wireless LAN Module, remove it and then return to Procedure 1. If there is still an error, perform Check 2.

Check 2 Wireless LAN Module may be faulty. Replace it with a new one following the steps described in Chapter 4. If Wireless LAN Module replaced is still not functioning properly, perform Check 3.

Check 3 System Board may be defective. Replace System Board with a new one following the steps described in Chapter 4.

2.17 Battery Pack(RTC)

Battery Pack or system board may be the reason of Battery fault. Either of these two components may be damaged. To determine if the computer's Battery Pack is functioning properly, perform following procedures. Start with Procedure 1 and continue with the other procedures as instruction below.

Procedure 1: Windows Application discharge Test

Procedure 2: Test Program Check

Procedure 3: Connector Check and Replacement Check

Procedure 1: Windows Application discharge Test

Boot up unit from Battery only, make sure AC adaptor power cable doesn't connect to unit.
If unit can't boot up after pressing power button, connect AC adaptor power cable to unit to charge battery.
After 10 minus, remove AC adaptor power cable then press power button.
If unit can boot up after pressing power button, go to Procedure 2.
If it cannot boot up, go to Procedure 3.

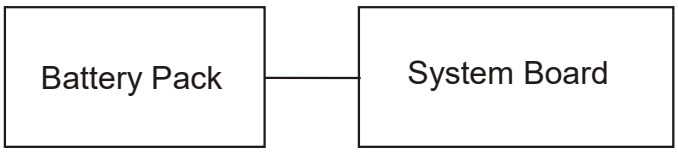
Procedure 2: Test Program Check

Run the test program stored on the maintenance test program disk for test items. See Chapter 3 for details on how to use the test program.
If an error is detected during the test, go to Procedure 2.

Procedure 3: Connector Check and Replacement Check

Battery Pack is connected to the system board. If Battery Pack malfunctions, there may be a bad connection between Battery Pack and the system board, or either might be faulty. Disassemble the computer following the steps described in Chapter 4 and perform the following checks:

Check 1 Make sure Battery Pack has been firmly connected to the connector on the system board. Also make sure Battery Pack is free of foreign matters.



And if the connector is disconnected, connect it firmly to the system board and return to Procedure 1 or 2. If a foreign matter is found on Battery Pack, remove it and then return to Procedure 1 or 2. If there is still an error, perform Check 2.

Check 2 Battery Pack may be faulty. Replace it with a new one following the steps described in Chapter 4. If Battery Pack replaced is still not functioning properly, perform Check 3.

Check 3 System Board may be defective. Replace System Board with a new one following the steps described in Chapter 4.

RTC Battery

If the system time is delayed or stopped, the RTC battery may be defective.

Procedure 1: Check the System date and time

Procedure 2: Connector Check and Replacement Check

Procedure 1: Check the System date and time

If the system time is delayed or stopped, go to Procedure 2.

Procedure 2: Connector Check and Replacement Check

The RTC battery is connected to the system board. If the RTC battery malfunctions, the connection between the RTC battery and the system board may be poor or the RTC battery may be defective. Disassemble the computer following the steps described in Chapter 4 and replace them.

2.18 Finger Print

To check if the computer's Finger Print is defective or malfunctioning, follow the troubleshooting procedures below as instructed.

Procedure 1: Windows Application Test
Procedure 2: Connector Check

Procedure 1: Windows Application

Execute Applications in Windows, move finger above Finger Print Reader.
If it can detect finger print, Finger Print is functioning properly.
If it cannot detect finger print, go to Procedure 2.

Procedure 2: Connector Check and Replacement Check

Finger Print is on Secure Pad, and is connected to System Board through FFC cable. If the Finger Print malfunctions, the system board or Secure Pad might be faulty.
Disassemble the computer following the steps described in Chapter 4 and perform the following checks:

Check 1 The Secure Pad may be faulty. Replace it with a new one following the instructions in Chapter 4. Then go through procedure 1 again. If the Finger Print is still not functioning properly, perform Check 2.

Check 2 The system board may be defective. Replace the system board with a new one following the steps described in Chapter 4. Then go through procedure 1 again.

2.19 Bluetooth

Bluetooth is combo module with Wireless LAN on this model. Bluetooth Module or system board may be the reason of Bluetooth fault. Either of these two components may be damaged. To determine if the computer's Bluetooth module is functioning properly, perform following procedures. Start with Procedure 1 and continue with the other procedures as instruction below.

Procedure 1: Windows Application Test

Procedure 2: Connector Check and Replacement Check

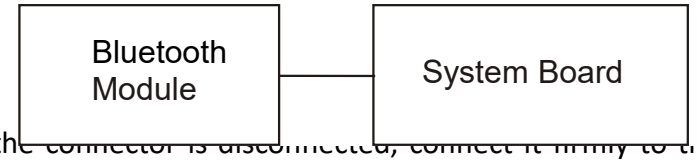
Procedure 1: Windows Application Test

Place unit to location near Bluetooth device. Execute Bluetooth applications in Windows, then active Bluetooth connection. Check whether unit can normally connect to Bluetooth device. If connection is fail, go to Procedure 2. If error is not located, Bluetooth is functioning properly.

Procedure 2: Connector Check and Replacement Check

Bluetooth Module is connected to the system board. If Bluetooth malfunctions, there may be a bad connection between Bluetooth Module and the system board, or either might be faulty. Disassemble the computer following the steps described in Chapter 4 and perform the following checks:

Check 1 Make sure Bluetooth module has been firmly connected to the connector on the system board. Also make sure Bluetooth module is free of foreign matters.



And if the connector is disconnected, connect it firmly to the system board and return to Procedure 1. If a foreign matter is found on Bluetooth Module, remove it and then return to Procedure 1. If there is still an error, perform Check 2.

Check 2 Bluetooth Module may be faulty. Replace it with a new one following the steps described in Chapter 4. If Bluetooth Module replaced is still not functioning properly, perform Check 3.

Check 3 System Board may be defective. Replace System Board with a new one following the steps described in Chapter 4.

2.20 LAN Port

To determine if the computer's LAN Port is functioning properly or malfunctions, perform following procedures. Start with Procedure 1 and continue with the other procedure as instruction below.

Procedure 1: Windows Application Test

Procedure 2: Connector Check and Replacement Check

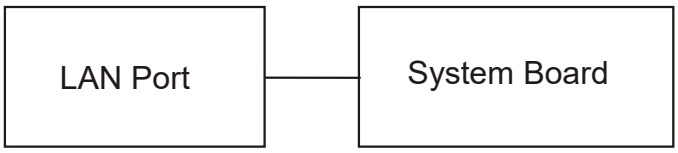
Procedure 1: Windows Application Test

The LAN Port Connector is mounted on System Board. Connect an LAN Cable with Internet interface to the computer's LAN port, then power on the computer into Windows. Execute Function Programs in Windows, which will display the LAN Test Result. If the test and diagnostics result is abnormal, go to Procedure 2. If an error is not located, LAN system is functioning properly.

Procedure 2: Connector Check and Replacement Check

If LAN Port on System Board malfunctions, there may be a bad connection between LAN Cable and System Board. Or System Board might be faulty. Disassemble the computer following the steps described in Chapter 4 and perform the following checks:

Check 1 Make sure LAN Cable has been firmly connected to LAN Port on System Board. Also make sure LAN Port on System Board is free of foreign matters.



And if the connector is disconnected, connect it firmly to the system board and return to Procedure 1. If a foreign matter is found on LAN Port on System Board, remove it and then return to Procedure 1. If the problem persists, perform Check 2.

Check 2 System Board may be faulty. Replace it with a new one following the steps described in Chapter 4.

Chapter 3
Diagnostic Programs

Chapter 3 Contents

1 Outline

This document describes the specification of "Windows PE Test & Diagnostics" (Hereafter referred to as "WPETD") for Hokusai10 series product.

1-1 Target Model

The target model(s) are as follows:

21A model(s): IP3 Hokusai10

1-2 Target OS

WPETD can run on the Windows Pre-installation Environment as follows:

Windows PE 10 19H1 X64

2 Preparation

2-1 Creating WPETD USB memory

Get the ISO image of WPETD released from Dynabook Inc., usually by NEXTCloud system.
Burn the ISO image to USB memory. The USB memory will be Windows PE bootable media.
Regarding the USB, use a USB Memory the size of which is 1GB or more.

1) Format USB memory to FAT32 file system.
2) Copy all files of ISO image to USB memory.

2-2 Equipment Configuration for Tests

The following table indicates the equipment configuration necessary for WPETD's test items.

Test Item	Equipment required	Remarks
USB PORT	USB Memory	Free space: More than 12MB During the test WPETD creates a file in the USB Memory.
WIRED LAN	Wired router, LAN cable	The router must have the DHCP server function.

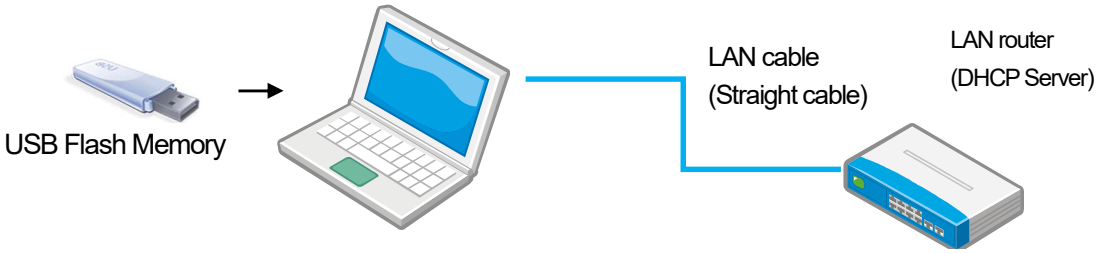


Fig.1 Equipment Configuration

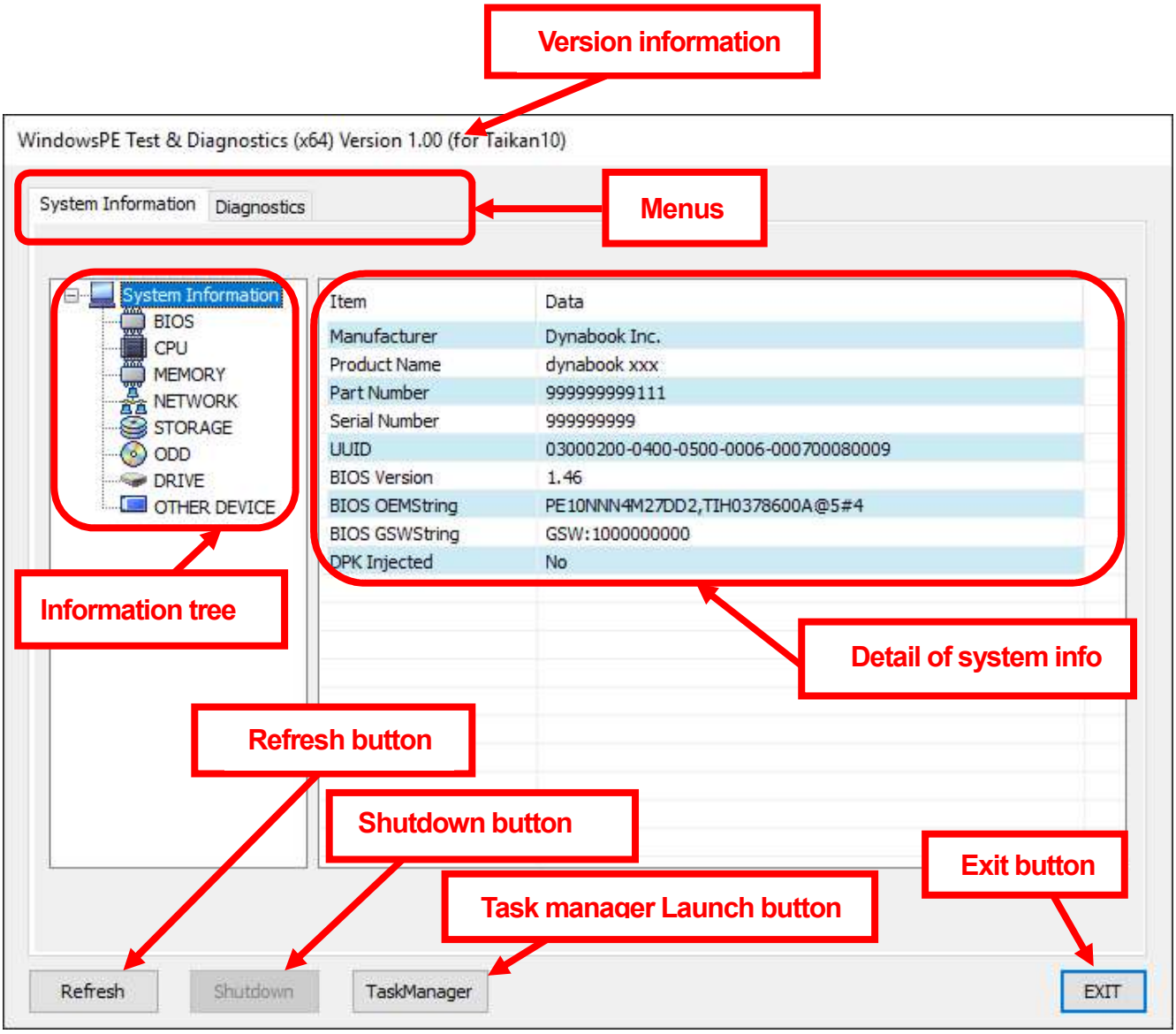
3 dynabook WPETD Operation

3-1 Launch WPETD in Windows PE

Boot up the target PC by WPETD USB memory created in "2-1 Creating WPETD USB memory". Windows PE starts then dynabook WPETD will launch.

3-2 System Information Menu

When you launch WPETD in Windows PE, you see "System Information" menu first.
There are 2 tabs as "System Information" and "Diagnostics", you can switch each other by clicking the tab name.



3-2-1 Each item

- ✓ [Refresh] button — This obtains the system information again. If you have some grayed-out test items by missing something for example "missing test medium", recover the situation then click this button and check if it turns to enable.
- ✓ [Shutdown] button — It shuts down Windows PE.
- ✓ [TaskManager] button — Launches Task Manager
- ✓ [EXIT] button — Terminates WPETD

- ✓ Version information — The version of WPETD
- ✓ Menus — Tabs for the menus that WPETD supports.
- ✓ Information tree — You can select the device that you want to check its system information
- ✓ Detail of system information — Detailed information of the item selected in Information tree. Refer the section 3-2-2 below.

3-2-2 Details of the system information

The following tables list the system information items for each device of the "Information tree" structure.
If the multiple components exist, index will be added after the Item like "CPU0"。

- BIOS

The following items show DMI and BIOS information.

Item	Description	WMI
Manufacturer	Manufacturer of the PC	Win32_ComputerSystem
Product Name	Product Name of the PC	Win32_ComputerSystemProduct
Part Number	Part Number of the PC	Win32_ComputerSystemProduct
Serial Number	Serial Number of the PC	Win32_ComputerSystemProduct
UUID	UUID of the PC	Win32_ComputerSystemProduct
BIOS Version	BIOS Version of the PC	Win32_BIOS
BIOS OEMString	OEMString of the PC	Win32_ComputerSystem
BIOS GSWString	GSWString (Baseboard ConfigOptions) of the PC	Win32_BaseBoard
DPK Injected	Yes/No (Whether DPK is injected into BIOS)	N/A (it uses Win32 APIs)

- CPU

The following items show CPU information.

Item	Description	WMI
CPU Name0 - 3	CPU's name mounted on the PC	Win32_Processor
CPU Clock0 - 3	Current Clock(MHz) and Max Clock(MHz) of the CPU	Win32_Processor
CPU Socket0 - 3	Socket Name of the CPU	Win32_Processor
CPU Description0 - 3	Processor Name of the CPU and CPUID(Family, Model, Stepping)	Win32_Processor
L2 Cache0 - 3	The second cache (KB) of the CPU	Win32_Processor

- MEMORY

The following item shows memory information.

Item	Description	WMI
Physical Memory	The size of the memory	Win32_PhysicalMemory
Memory Device0 - 7	The memory device	Win32_PhysicalMemory

- NETWORK

The following items show network card information.

Item	Description	WMI
Network0 - 7	The name of the LAN device connected to the PC	Win32_NetworkAdapter
MAC Address0 - 7	MAC address of the LAN device	Win32_NetworkAdapter

- STORAGE

The following items show IDE, SCSI, and USB memory storage information.

Item	Description	WMI
IDE HDD/SSD0 - 1	The name and the capacity of IDE HDD/SSD connected to the PC.	Win32_DiskDrive
SCSI HDD/SSD0 - 1	The name and the capacity of SCSI HDD/SSD connected to the PC.	Win32_DiskDrive
USB Flash Disk0 - 7	The name and the capacity of USB Flash Disk connected to the PC.	Win32_DiskDrive
Other Disk0	The name and the capacity of the HDD other than the above types which is connected to the PC	Win32_DiskDrive

Note:
This tool does not check whether it is HDD disk or SSD/eMMC disk, "HDD/SSD" is common description for all the fixed hard disk media including HDD, SSD and eMMC.

- ODD

The following item shows ODD information.

Item	Description	WMI
ODD0 - 1	The name and the media type of the ODD connected to the PC. Media type is information of the medium, such as CD-ROM, DVD-RW and etc.	Win32_CDROMDrive

Note:
Please ignore this item for Hokusai products, it will show nothing for Hokusai since it does not have ODD device.

- DRIVE

The following item shows the information on logical drives from A: to Z: on the PC.

Item	Description
DRIVE	The type, volume name, size of the free space and the used space for each assigned logical drive

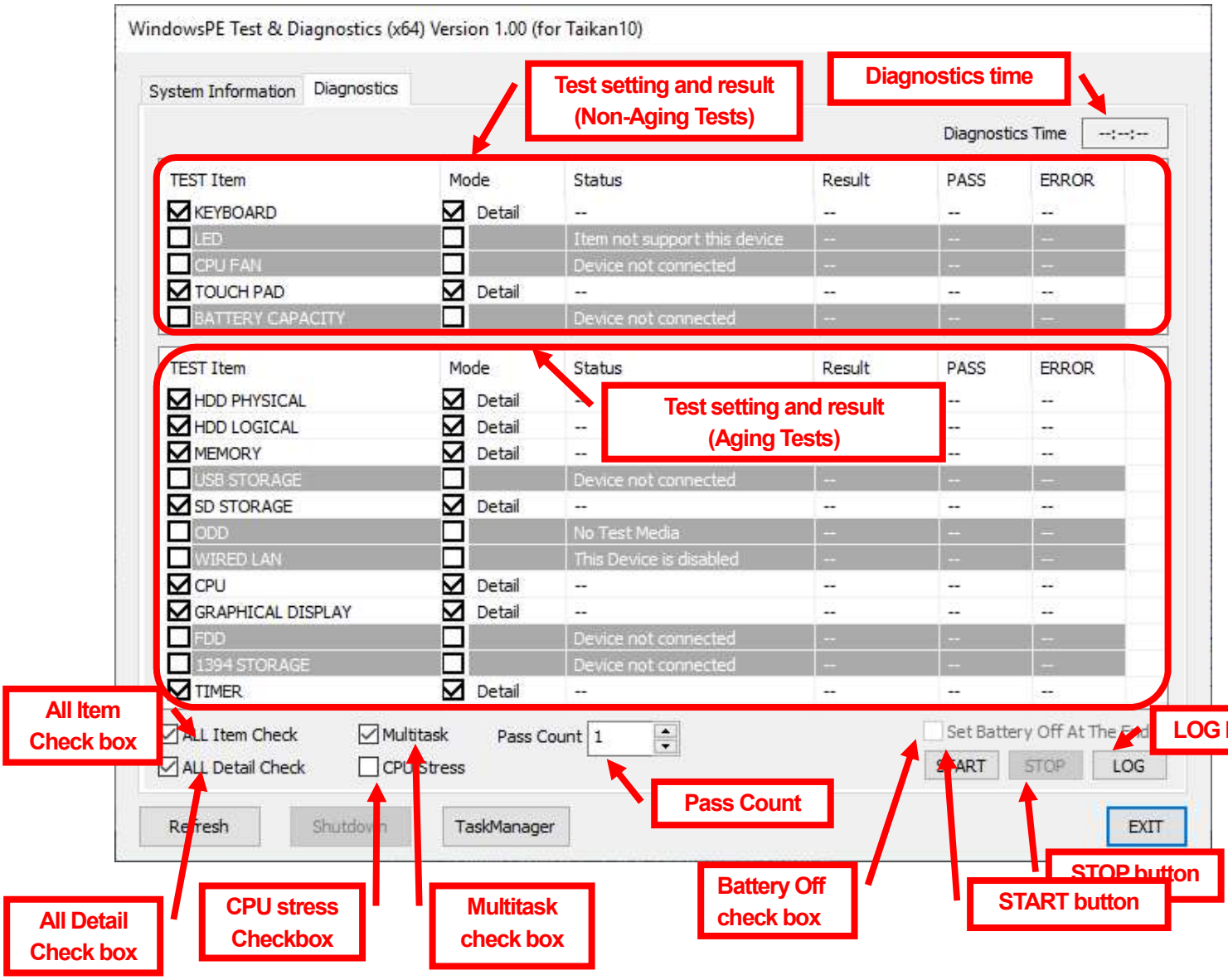
- OTHER DEVICE

The following items show other device information of the PC.

Item	Description	WMI
Key Board0 - 3	The name of the Keyboard connected to the PC. If more than one keyboard is connected, the information of up to 4 keyboards are displayed.	Win32_Keyboard
Mouse0 - 3	The name of the mouse connected to the PC.	Win32_PointingDevice

3-3 Diagnostics Test Item Menu

This section explains the Diagnostics screen.



On this dialog, you can select which tests you run and how you run them, then you can start the tests.
You can stop the tests during their running when you need.
You can also save log files for the tests in the external media such as a USB Memory.

3-3-1 Aging tests and Non-aging tests

The following items are grouped as Aging tests. If you like you can run them simultaneously, repeatedly and with “CPU Stress”.

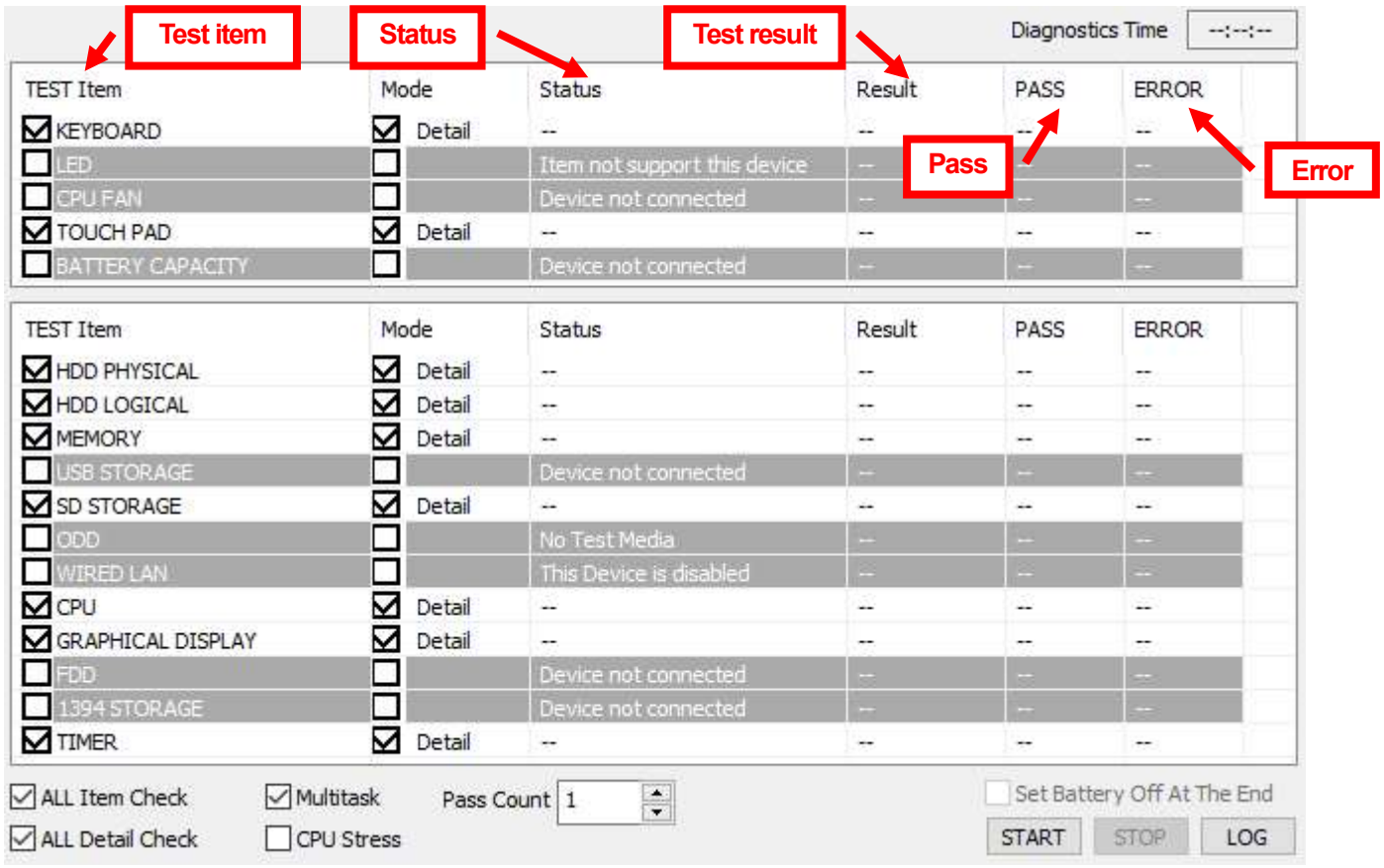
Aging Tests: HDD PHYSICAL, HDD LOGICAL, MEMORY, USB STORAGE, SD STORAGE, WIRED LAN, CPU, GRAPHYCAL DISKPLAY, TIMER.

Other than those, we call them “Non-Aging tests”. Each Non-Aging test is executed only once, and most of the tests require the user’s intervention.
When you start the test items on "Diagnostic" by clicking [START] button and [Multitask] checkbox is checked, Non-Aging tests you selected are executed first. Each Non-Aging test runs once in order. When all Non-Aging tests are done, Aging tests you selected will start.

3-3-2 Each item for the operations

✓ [All Items Check] check box	Check this box, you can select or deselect all test items.
✓ [All Detail Check] check box	Check this box, you can select or deselect all test items in detail.
✓ [Multitask] check box	Only for Aging tests. If you check this box, the selected Aging-tests will run simultaneously. If you uncheck it, the selected Aging tests are executed one by one.
✓ [Pass Count] edit box	Only for Aging tests Set the number of times for a test, which allows you to specify from 1 to 999. Each Aging test runs until reaching "Pass Count" you set. If you also set "Multitask" option, all selected Aging tests will keep running until when the last one reaches the "Pass Count". However, if an Aging test gets error 10 times, the test item will be terminated.
✓ [CPU Stress] check box	Only for Aging tests Checking this box applies some stress to the CPU during the test.
✓ [Set Battery Off At the End] check box	if you check this box, it will run battery off test/setting once at the end of all tests. Default is checked. And it will be grayed out and unchecked if no battery or the running PC cannot be supported (Currently only Hokusai10 model is supported) by this item [Set Battery Off At the End].
✓ [START] button	Start the test.
✓ [LOG] button	Shows the detailed test result or to save it.
✓ [STOP] button	Stops the test during the execution. This button is effective for each Aging test and at the interval between two Non-Aging tests.
✓ Diagnostics Time	The elapsed time for the test

3-3-3 Test setting and Result



✓ TEST Item Select the check boxes for the items to be tested.

✓ Status The following table explains the status of each test item (test device).

Status	Explanation
--	Ready for the test prior to the start of it.
TESTING	The test is running.
SKIP	The test was skipped.
DONE	The test finished
**********	Grayed out. The test item cannot launch as the current environment is not suitable for running the item. Refer to the table below for details.

Note: Grayed-out test items
A test item will be grayed out if the environment is not good enough for the test.
In that case, the "Status" will be shown as follows:

Status (when grayed out)	Explanation
Device is not equipped	The PC does not equip the device for the test.

IP Address cannot be acquired	The IP address is not able to be obtained. The LAN cable may not be connected.
No Intel PRO Set found	For WIRELESS LAN test, Intel Pro Set utility is necessary to be installed in the system.
No executable file	The program file (executable file) for the test is missing.
Device not connected	The device necessary for the test is not connected/existed (Hokusai 10 will have this status for ODD, FDD and 1394 STORAGE test item since this machine has no these devices).
Device has a problem	Some failure occurred in the device driver.
This Device is disabled	The device has been removed.
This Device is currently stopped	The device is in the STOPPED state.
Space Size Error	There is not enough space for test in the test device
No partition or file	There is no partition in HDD (includes SSD/eMMC) or USB/SD storage, or no file exists in HDD (includes SSD/eMMC) storage.
Item not support this device	The test item not support this device.

✓ Test result ... The test results to be shown on the screen are as follows:

Result	Explanation
--	This means that the test has not started yet or the test has been skipped.
OK	The test was successful
NG	The test failed

✓ PASS ... Shows the current PASS count for the test.

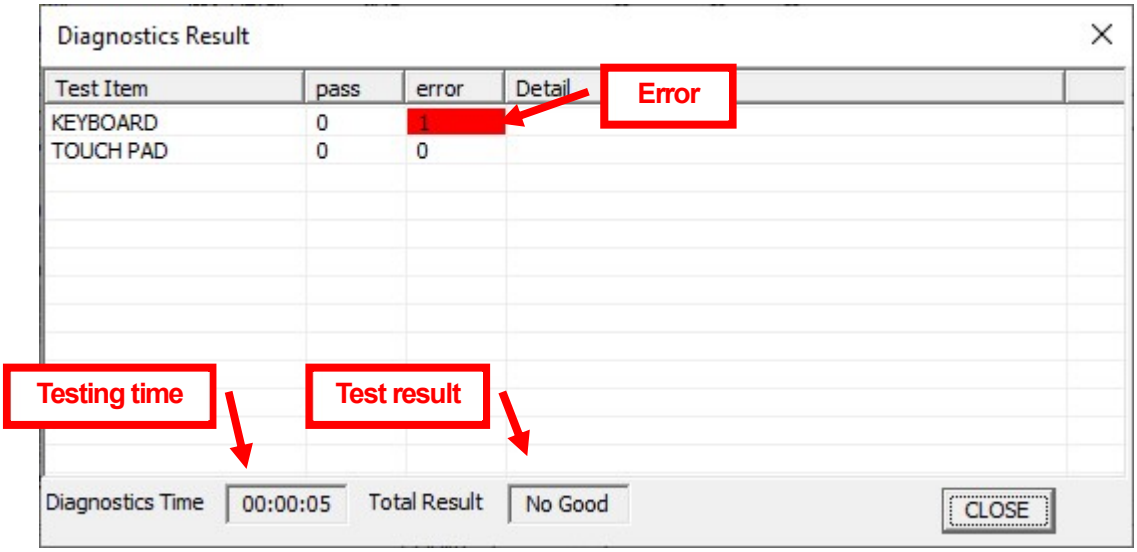
3-3-4 Test Procedure

This section describes the general procedure for executing the test items.

1) Select the test items to run from Test Item and check it.
If you check or un-check "Check all Items", you can select or deselect the all test items.
2) Set the LOOP count, and check or un-check Multitask and CPU Stress for the Aging tests.
4) Click the [START] button and the test starts.
5) If Multitask is checked, after all Non Aging tests are done, Aging tests you selected will run simultaneously.
6) If each test's pass count reaches the "LOOP count" you set or if the [STOP] button is clicked, the test will terminate.

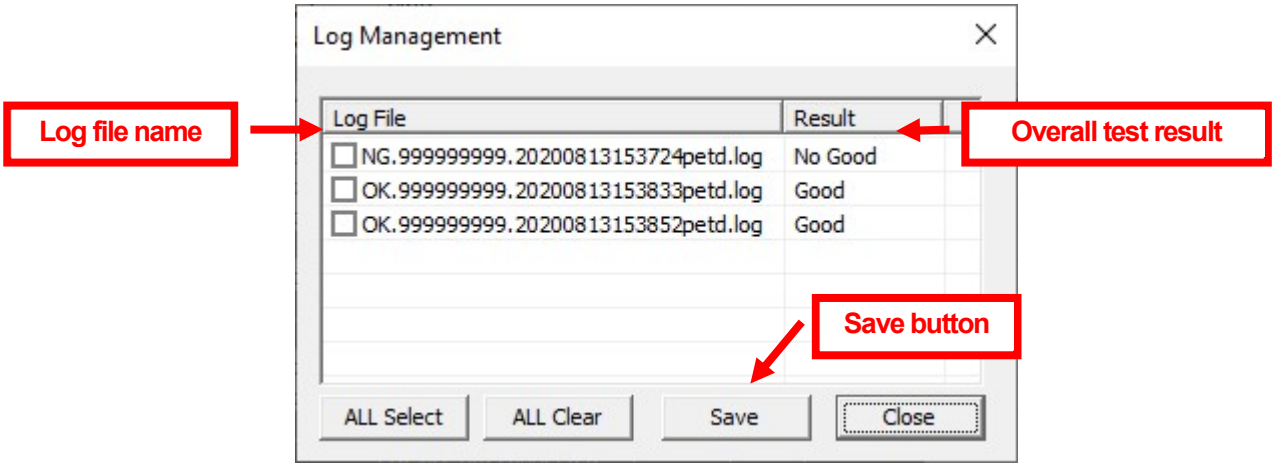
3-3-5 Test Result

If the all tests you selected ends or the [STOP] button is clicked, the following Result windows will come up.
After confirming the result, click the [CLOSE] button to close the "Diagnostics Result" window.



3-3-6 Log Management Screen

When you click the [LOG] button on the "Diagnostics" dialog, the following "Log Management "screen will open.



1) To show a log file
If you click on a log file name, the file will be opened in the text format.

2) How to save log files

Note:
Currently log files are already saved under "\Logs" folder of WPETD tool's USB storage root automatically, so you don't need to use this function any more unless you want to save them to another USB storage (not the USB storage of WPETD tool).

2-1) Make sure that you have plugged an external storage device such as a USB Memory into the PC.

2-2) select the log file that you save.

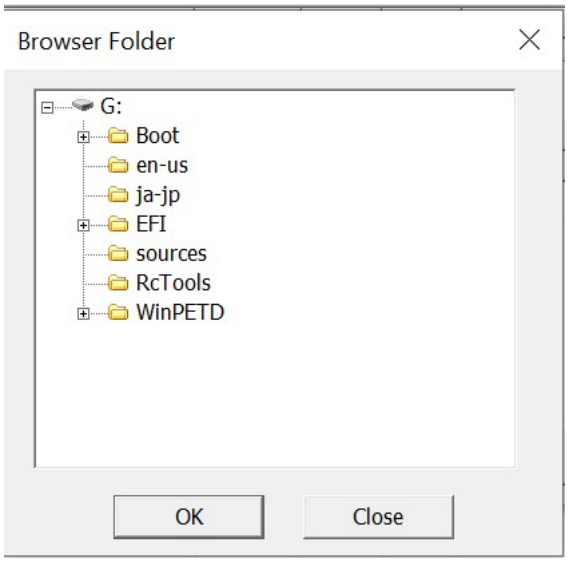
For each log you select, Text and HTML format files will be saved.

By the [All Select] button, you can select all log files.

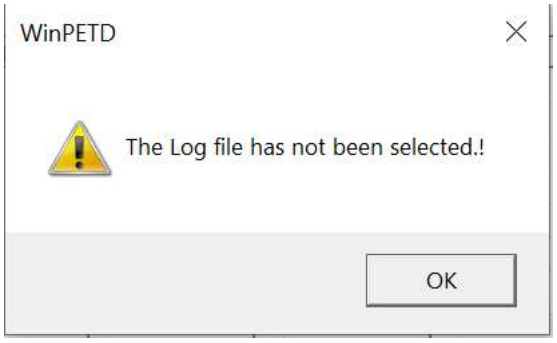
By the [All Clear] button, you can un-check all log files.

2-3) Click [Save] button and "Browser Folder" dialog box will open.

Note: Only the drives that have "Removable" attribute will be shown such as USB Memory, etc.

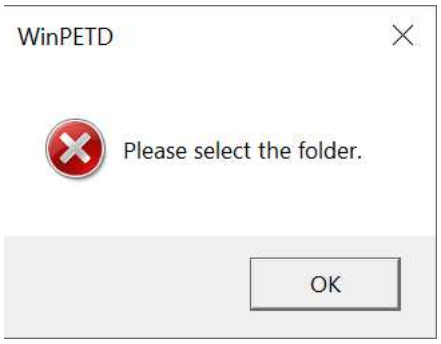


When you click [Save] button, if no log file is selected, the following warning message will be shown.



2-4) Select a folder for saving the logs, then click [OK] button

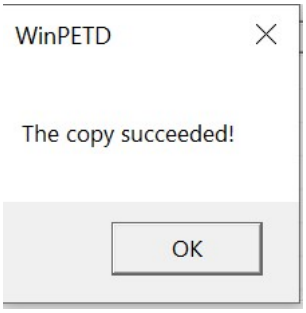
When you click [OK] button without selecting a destination folder, the following warning message will be shown.



2-5) The confirmation message will pop up as follows.

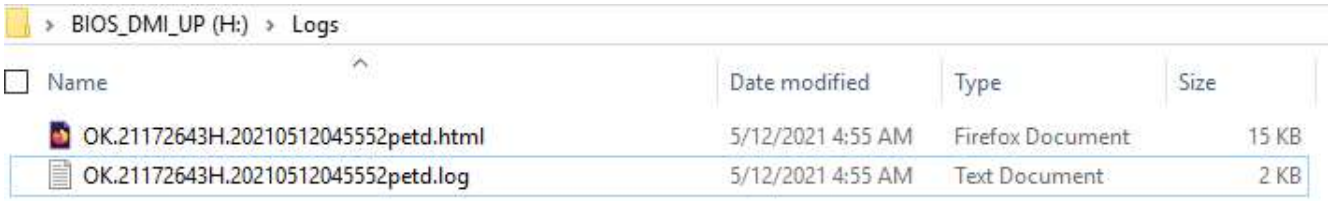
If the destination folder is OK, click the [OK] button.

2-6) If the log files are saved successfully, the following message will come.
Click the [OK] button.



2-7) Click the [Close] button on the "Log Management" screen.

3) The location of Log files created
When you have run the diagnostics one cycle (*1) or even when you stop the diagnostics by [STOP] button during they are running, log files for the execution will be created at the following location (under "¥Logs" folder of WPETD tool's USB storage root).



*1) "the diagnostics one cycle" means from selecting test items, click [START] button to getting the results.

4 Diagnostics Test Items

This chapter explains each test item you launch from the "Diagnostics" dialog.

4-1 Non Aging Tests

When you click [START] button on the "Diagnostics" dialog, Non Aging Tests you selected run first.
They are executed one by one from the top to the bottom in the list.

4-1-1 KEYBOARD Test

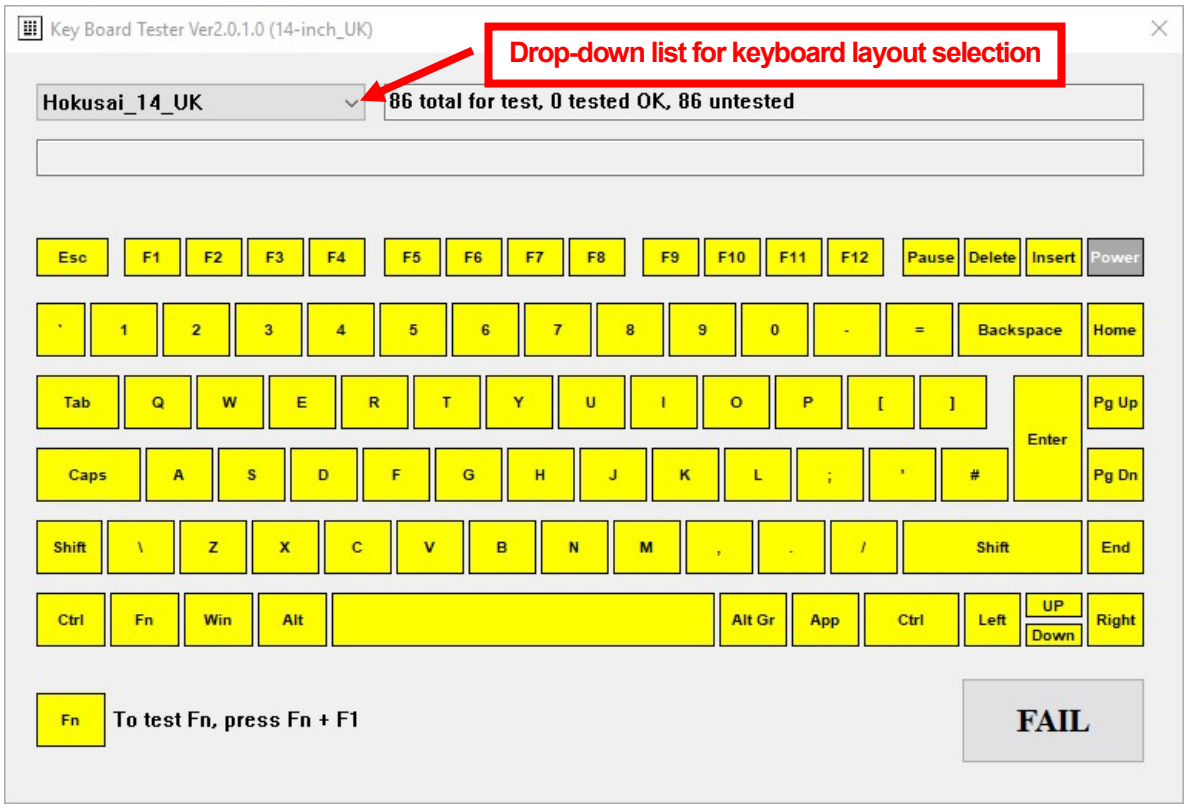
1) Test contents

This test checks if each key on the keyboard works properly.

Note: To test Fn key, press Fn + F1 (It cannot only capture Fn key).

2) Test screen

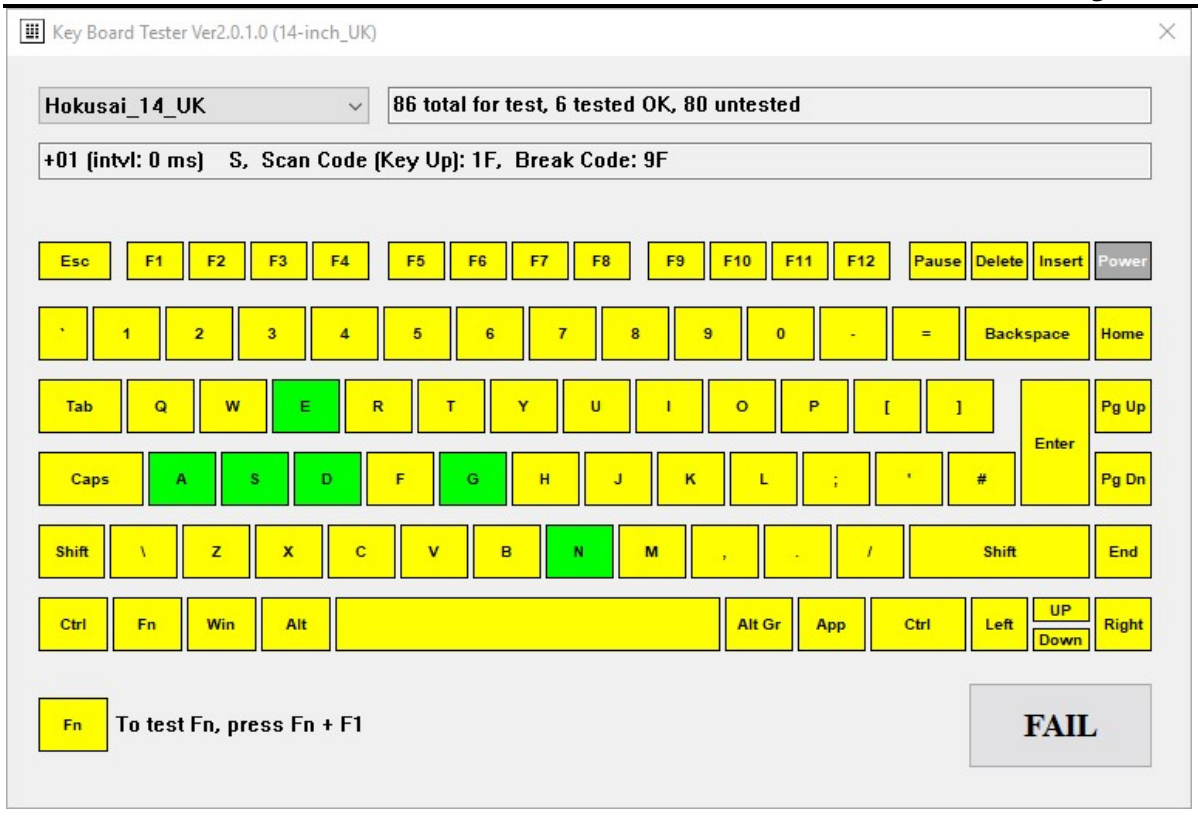
2-1) - it is "Hokusai 14_UK" layout as an example



The keyboard layout is shown as above. This is the initial state.

Note:

1. This test supports different keyboard layouts, you can switch each layout at any time using the drop-down list. You need to select the one that matched the actual keyboard layout of current running PC by yourself.
2. If you selected a wrong keyboard layout or you use the default keyboard layout that doesn't matched the running PC, you may not be able to test all the keys fully, so please select the right one.
3. When you switch a keyboard layout, the keyboard test is started over. Please refer to 5-2 Keyboard layouts for total 5 supported keyboard layouts.
4. Before you select the layout, the drop-down list already filtered out (only show) the layouts of 14-inch for Hokusai 10M model, and filtered out (only show) the layouts of 15-inch for Hokusai 10L models.



Check method:

Press all the keys to test the keyboard, and when you presses the Key board, it marks like below:

(Yellow: waiting for test; Green: Tested OK; Red: NG (Break code NOT paired with make code); Blue: Key Down)

3) Test result

If you want to end current test as a result of NG, you can click FAIL button or just close (X) the KB Test module.

After clicking FAIL button, it will be display like below:

(Click the "Cancel" button to exit this KB test as a result of NG, or you can also click "Retry" to reset/start over the KB test)

If all the keys are tested OK, this module will automatically exit and has a result of OK.

■ In case of PASS

"OK" is shown in the "Result" field on the "Diagnostics" dialog.

■ In case of FAIL

"NG" is shown in the "Result" field on the "Diagnostics" dialog.

4) Test file

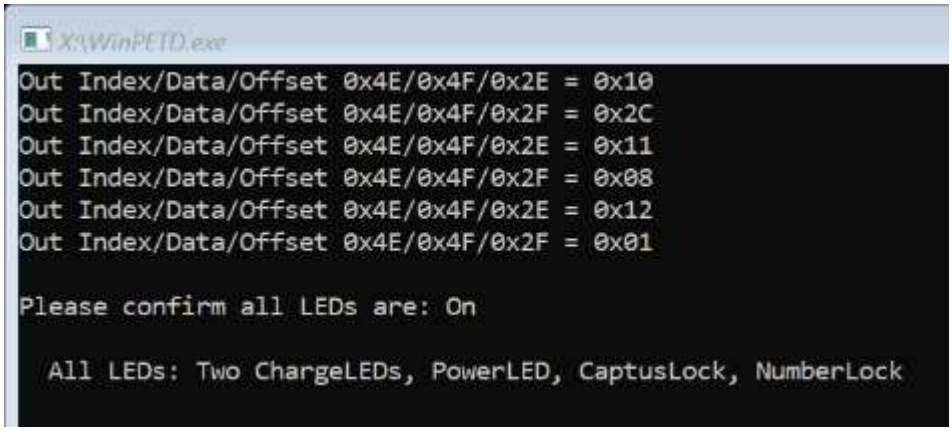
Keyboard.exe: Test program.

4-1-2 LED Test

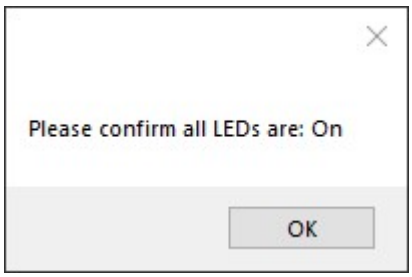
1) Test contents

This test checks if all the LEDs (Two Charge LEDs at left side, Power LED, Caps Lock and Num Lock on left top of KB) works properly.

2) Test screen



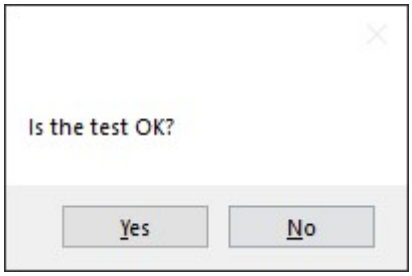
The LED test starts like above, and some prompt message boxes will be popped-up.



When above message box appears, please confirm all the LEDs (Two Charge LEDs at left side, Power LED, Caps Lock and Num Lock on left top of KB) are: On

When above message box appears, please confirm all the LEDs (Two Charge LEDs at left side, Power LED, Caps Lock and Num Lock on left top of KB) are: Off

3) Test Result



As above message box appears, select [Yes] or [No] button depending on your judgment based on the confirmed result previously. If you click [Yes] here, the test will be “Pass”. If you click [No], the “LED Test” will be recognized as “NG”.

■ In case of PASS

"OK" is shown in the "Result" field on the "Diagnostics" dialog.

■ In case of FAIL

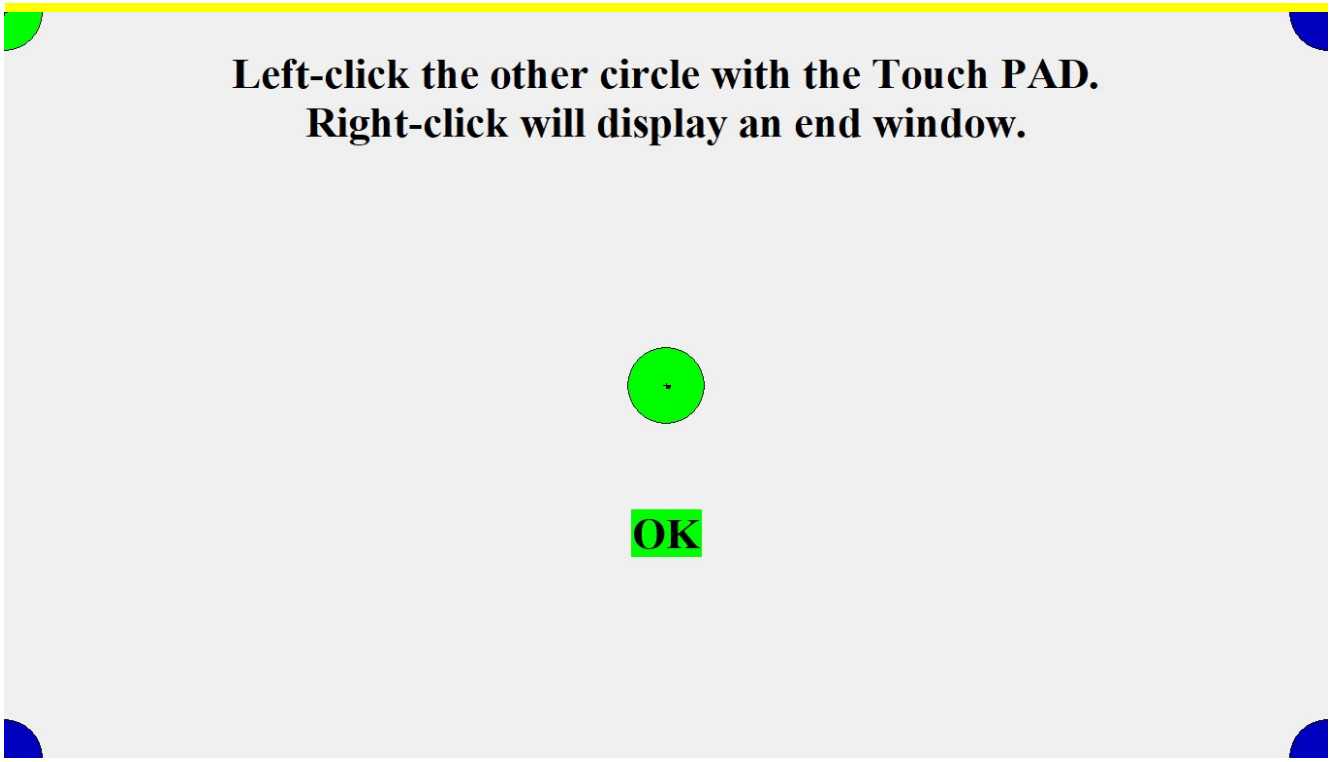
"NG" is shown in the "Result" field on the "Diagnostics" dialog.

4-1-3 TOUCH PAD Test

1) Test contents

This test checks if the touch pad works properly.

2) Test screen



Check method:

a. Left-click all the circles with the touch pad.
b. Right-click to display an end window when you clicked all the circles.
c. Click OK or NG button depending on your judgment.

3) Test Result

Select [OK] or [NG] button depending on your judgment based on the result on the "TOUCH PAD Test" window.
If you click [OK] here, the test will be "Pass". If you click [NG], the "TOUCH PAD Test" will be recognized by "ERR".

■ In case of PASS

"OK" is shown in the "Result" field on the "Diagnostics" dialog.

■ In case of FAIL

"NG" is shown in the "Result" field on the "Diagnostics" dialog.

4) Test file

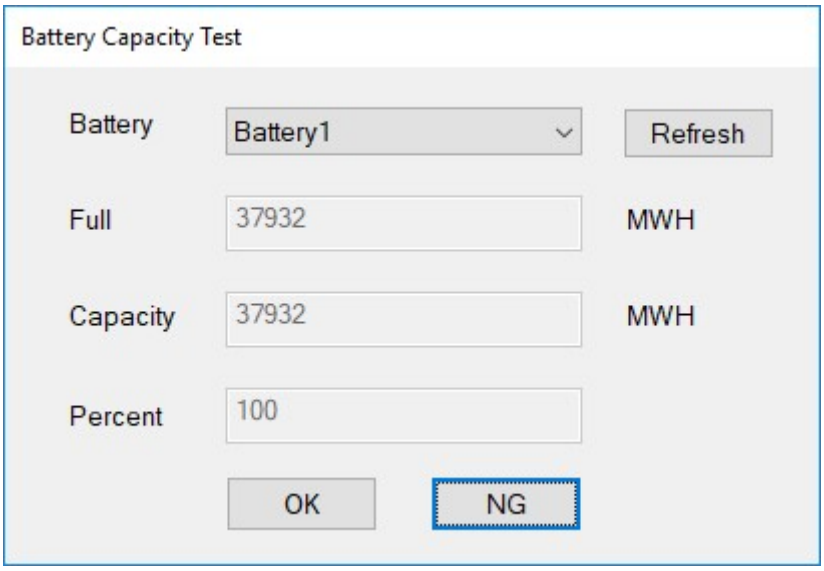
TouchPad.exe: Test program.

4-1-4 BATTERY CAPACITY Test

1) Test contents

This test checks if the Battery Capacity is OK or not.

2) Test screen



Check method:

a. If current battery is charging, you can click refresh to get an updated capacity (currently charged capacity)
b. Click OK or NG button depending on your judgment.

Note: About confirmation of charge/discharge function

We can get the current capacity of the battery by pressing the refresh button. it means that we can check the discharge/charge function of the battery. If we want to check the discharge/charge function, we need to control the time of DC in/out for testing by ourselves.

a. To check the discharge function of the battery: unplug the DC, wait some times and then click the refresh button to see if the battery capacity reduced by 1%, wait and click again if it hasn't reduced.
b. To check the charge function of the battery: when above discharge function checked OK (battery capacity reduced), you can plug-in the DC back, wait some times and then click the refresh button to see if the battery capacity increased by 1%, wait and click again if it hasn't increased. Charge function is OK if the battery capacity can be increased.

3) Test Result

Select [OK] or [NG] button depending on your judgment based on the result on the "Battery Capacity Test" window. If you click [OK] here, the test will be "Pass". If you click [NG], the "Battery Capacity Test" will be recognized by "ERR".

■ In case of PASS
"OK" is shown in the "Result" field on the "Diagnostics" dialog.
■ In case of FAIL
"NG" is shown in the "Result" field on the "Diagnostics" dialog.

4) Test file

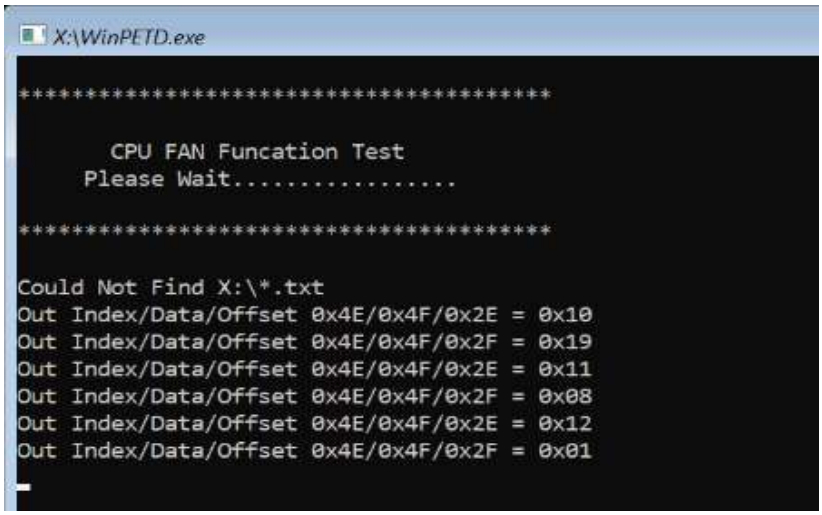
BatteryCapacity.exe: Test program.

4-1-5 CPU FAN Test

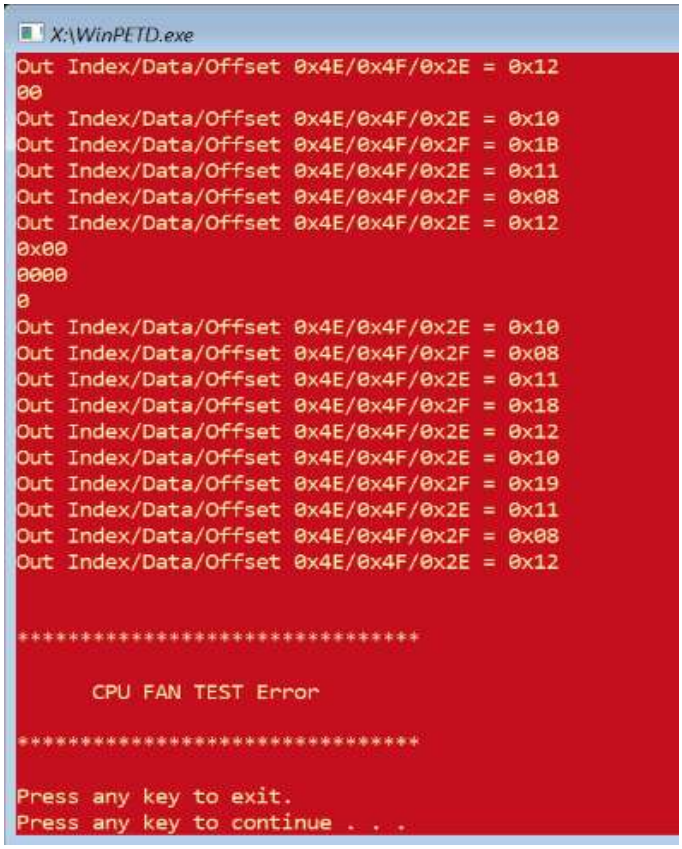
1) Test contents

This test checks if the CPU fan works properly.

2) Test screen



The CPU fan test starts like above, it will test the full speed and half speed of the CPU fan.
You can hear the sound when the CPU fan running at full/half speed during the test.



This test will read out the CPU fan speed it reached, and checks if it meets the speed requirement, if the test is NG, it will show as red and pause like above, you can press any key to exit and end this test as NG.

3) Test Result

As previously picture shown, if there is NG, it will pause and the result will be NG.
If the test finished OK, it will show as green and then quit the test after a while and the test result will be OK.

■ In case of PASS
"OK" is shown in the "Result" field on the "Diagnostics" dialog.

■ In case of FAIL
"NG" is shown in the "Result" field on the "Diagnostics" dialog.

4) Test file

CPUFan.exe: Test program.

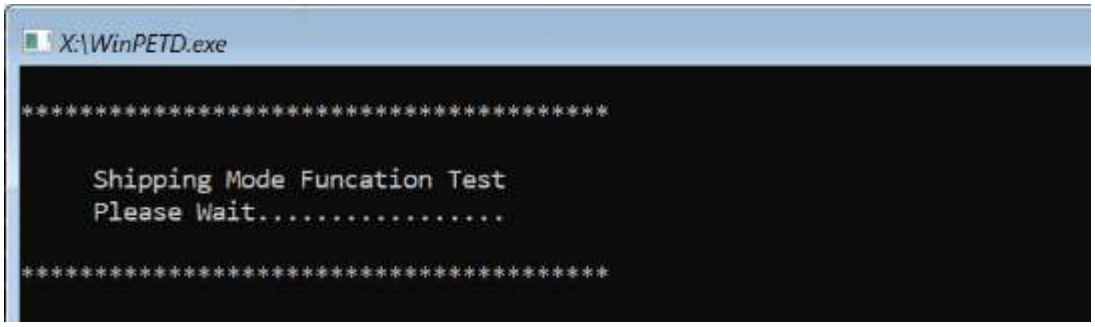
4-1-6 BATTERY OFF Test (Setting)

1) Test contents

This test sets the battery off. And it run only once at the end of all other tests.

> **Note:** After the test/setting, you can only turn on the PC after power adapter (AC) plugged-in, and this is what "Shipping Mode" for.

2) Test screen



Check method:

a. Check the [Set Battery Off At the End] check box as introduced in "3-3-2 Each item for the operations".
b. The battery off (Shipping Mode) test/setting starts as above at the end of all other tests, and it will exit automatically when finished.

3) Test Result

If the test finished and exit automatically, then the test/setting result is OK.
If there is error, then the test/setting will pause and the result is NG.

■ In case of PASS
"OK" is shown in the "Result" field on the "Diagnostics" dialog.
■ In case of FAIL
"NG" is shown in the "Result" field on the "Diagnostics" dialog.

4) Test file

BatteryOff.exe: Test program.

4-2 Aging Tests

The following items are grouped as the Aging tests.
Aging Tests: HDD PHYSICAL, HDD LOGICAL, MEMORY, USB STORAGE, SD STORAGE, WIRED LAN, CPU, GRAPHICAL DISPLAY, Timer

These "Aging Tests" are integrated in WPETD (WinPETD.EXE) itself.
Aging Tests start when the all selected Non Aging Tests have finished.
You can run these Aging Tests more than once by setting the "LOOP COUNT".
If you check "Multitask" check box, all Aging Tests you select run simultaneously. The tests run repeatedly until the last one reaches the "LOOP COUNT".
If you un-check "Multitask", the Aging Tests you select run one by one from the top to the bottom in the list.
Then the cycle will repeat the number of times you set in the "LOOP COUNT".
Regardless the "LOOP COUNT" you set, if an aging test encounters total 10 errors during the execution, the aging test will terminate.

4-2-1 HDD PHYSICAL Test

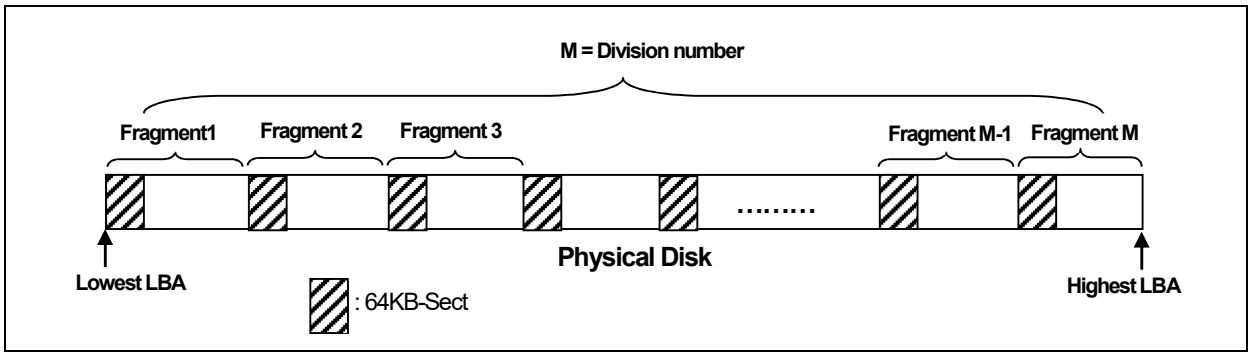
1) Test contents

This test treats PC's each HDD/SSD/eMMC as a physical unit, and reads the sectors on the disk to check if the device works correctly. The test never writes any data on the HDD/SSD/eMMC.
The Test checks up to the first 16 built-in ATA/SATA/SCSI/iSCSI/NVMe/MMC/SD bus type's HDD/SSD/eMMC.

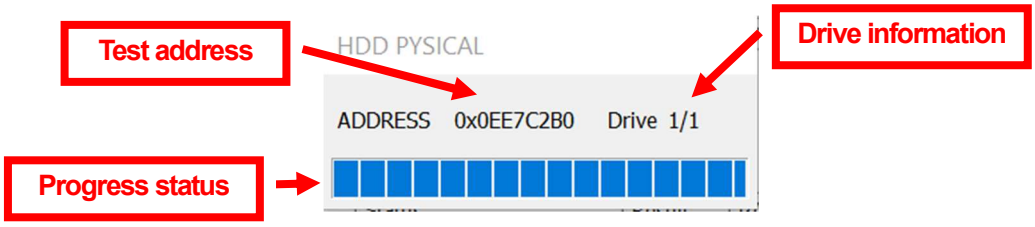
The test reads a data chunk at a time, which consists of consecutive sectors the size of which equals to 64K bytes. Hereafter, the data chunk is called "64KB-Sectors".
Depending on the test mode (Detail or Simple), the test defines "Division number" as follows:

- In case of Simple mode: Division number = 1000
- In case of Detail mode: Division number = 5000

The test divides the HDD/SSD/eMMC virtually to "Division counts" of the fragments. Then, it reads 64KB-Sectors in each fragment of HDD/SSD/eMMC from low LBA (Logical Block Address of HDD/SSD/eMMC) to high. If the test reads the 64KB-Sectors from all of the fragments successfully, it will get 1 Pass.
This is the one cycle of the test. If you set the pass count more than one, the test runs more than one cycle.
The test reads 64KB-Sectors (it is part of one fragment) at same LBA for each cycle.



2) Test screen



- ▼ Test address ...The LBA (Logical Block Address) of HDD/SSD/eMMC being tested now
- ▼ Drive information ... The drive number currently being tested
- ▼ Progress status ... The test progress by the progress bar

3) Test result

If the test runs successfully with all equipped HDD/SSD/eMMC, it will get a pass count. However, if an error occurs with one of the HDD/SSD/eMMC, the test is regarded as an error and it will get an error count.

■ In case of PASS

"OK" is shown in the "Result" field on the "Diagnostics" dialog.
The pass count is shown in the "PASS" field.

■ In case of FAIL

"NG" is shown in the "Result" field on the "Diagnostics" dialog.
The pass and error count are shown in the "pass" and" error" fields respectively.

The detail of the error is recorded in the log file as follows.

Message	Explanation	Remarks
Read Hdd Create File Error.Address=XX	Failed in opening of HDD/SSD/eMMC driver. XX is LAB value.	The HDD/SSD/eMMC driver may not be normal or installed.
Read Hdd Set File Pointer Error.Address=XX	Failed in the HDD/SSD/eMMC file pointer setting command. XX is LAB value.	It indicates that a read error occurred at the specified LBA.
Read Hdd Command Error. Address=XX	Failed in the HDD/SSD/eMMC read command. XX is LAB value.	
Read Hdd Check Size Error. Address=XX	The size read by the HDD/SSD/eMMC read command does not equal to the specified size. XX is LAB value.	

4-2-2 HDD LOGICAL Test

1) Test contents

This test checks if it can read the files on the first built-in HDD/SSD/eMMC successfully.

Note: The test is only checking those files that have a file size greater than 0 Bytes and less than 1 MBytes.

■ In case of Simple mode

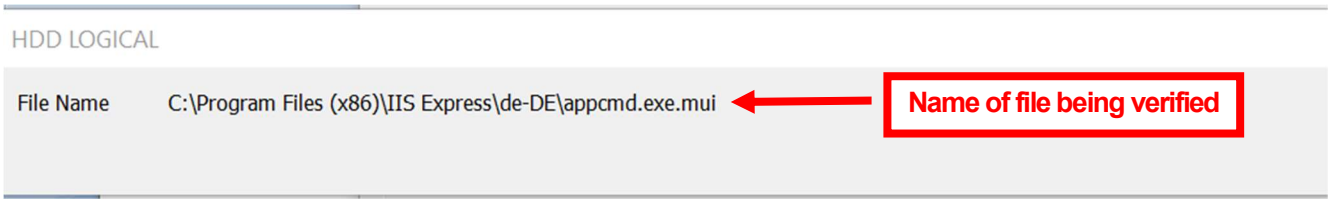
The simple test mode performs a read test on the first 400 files.

■ In case of Detail mode

The detailed test mode performs read test on the first 2000 files.

The status is updated sequentially (the file name being verified is displayed in "File Name" dynamically) during the test, the test finished until it reads last file (400th file for Simple mode, 2000th file for Detail mode) successfully. This is the one cycle of the test. If you set the pass count more than one, the test runs more than one cycle.

2) Test screen



▼ File Name ... The name of the file being verified with full path

3) Test result

■ In case of PASS

"OK" is shown in the "Result" field on the "Diagnostics" dialog.

The pass count is shown in the "PASS" field.

■ In case of FAIL

"NG" is shown in the "Result" field on the "Diagnostics" dialog.

The pass and error count are shown in the "pass" and "error" fields respectively.

The detail of the error is recorded in the log file as follows.

(The following example indicates the case where an error was found in file-A.)

```
[HDDL]
ERROR0000=(2008/09/10, 12:00:00)C:¥file-A
```

4-2-3 MEMORY Test

1) Test contents

This test allocates a test area in the free space in the system memory and performs Write, Read and Compare operations in the area.

1-1) Allocate the test area

First, MEMORY Test allocates the test area in the free memory space in the system memory.

MEMORY Test tries to allocate 50% of the free space as the test area.
If it succeeds in allocating the test area, the test will go to MEMORY Test: Address Test, High/Low Test, and Burst Transfer Test.

If the test fails the memory allocation, it will try again decreasing of 1M bytes from the previous size.
The process will be repeated until it succeeds in the allocation.
However, if the allocation size comes down to 256M bytes before success, the test will recognize that it cannot acquire enough memory for the test and the MEMORY Test will end without proceeding to the tests.

2) Test screen

▼Memory information ... The test area's memory size/ The total free memory size (at most 2GB)
▼Test item ... The test item being executed: Address Test(1), High/Low Test(2), Burst Transfer Test(3).
▼Progress status ... The test progress

3) Test result

If the test cannot allocate the test area or if a compare error occurs, the test will get an error count.

■ In case of PASS

"OK" is shown in the "Result" field on the "Diagnostics" dialog.
The pass count is shown in the "PASS" field.

■ In case of FAIL

"NG" is shown in the "Result" field on the "Diagnostics" dialog.

The pass and error count will be shown in the "pass" and "error" fields respectively.

The detail of the error will be recorded to the WPETD log file as below.

Message	Explanation
Memory compareerror(MEMORY Test 1)	An error occurred during MEMORY Test 1.
Memory compareerror(MEMORY Test 2)	An error occurred during MEMORY Test 2
Memory compareerror(MEMORY Test 3)	An error occurred during MEMORY Test 3

4-2-4 USB STORAGE Test

This test checks if the connection of the USB Ports on the PC works by using a USB Memory.

You need to prepare a USB Memory.

The test writes some data to the USB memory. The USB memory needs at least 12 MB free space.

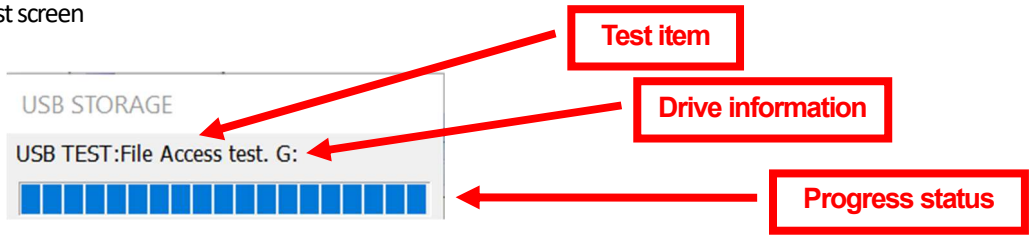
> **Note:**
> The current version of the test does not check if the connection level is whether USB3.0 or USB2.0/1.0. We recommend you to use a USB2.0 Memory for this test.

1) Test contents

The test detects a USB Memory plugged to one of the USB ports on your PC. Then the test copies some data to the USB Memory, read the data back from the memory and compare it to the original data. If the comparison is OK, the test will say that the port is passed.

> **Important Note:**
> Do not take WPETD USB Memory out during USB STORAGE Test trying to check the port that WPETD USB Memory plugged in. Recognize that the USB port works fine as long as WPETD has launched. Again, when you launch WPETD from WPETD USB Memory, you must not take the USB Memory out of the USB port. If you do so, the WPETD's behavior will be unstable and it will not be guaranteed.

2) Test screen



- ▼ Drive information ... The drive letter of the USB being tested
- ▼ Test item ... The test item being executed: File Access test.
- ▼ Progress status ... The test progress

3) Test result

■ In case of PASS

"OK" is shown in the "Result" field on the "Diagnostics" dialog.

■ In case of FAIL

"NG" is shown in the "Result" field on the "Diagnostics" dialog.

The detail of the error will be recorded to the WPETD log file as below.

Message	Explanation	Remarks
File Access Error. xx:.	Failed in accessing the file.	

	XX is the USB drive letter.	
Space Size Error. xx:	There is no free space for creating the file. XX is the USB drive letter.	

Note:
If you need to test USB storage on different USB port, before the test, please prepare some USB storage and then insert them into all the USB ports you want to test, or insert it into different USB port and start over the test if you have only one USB storage.

4) Test file

WinPETD.exe: Test program.

4-2-5 SD STORAGE Test

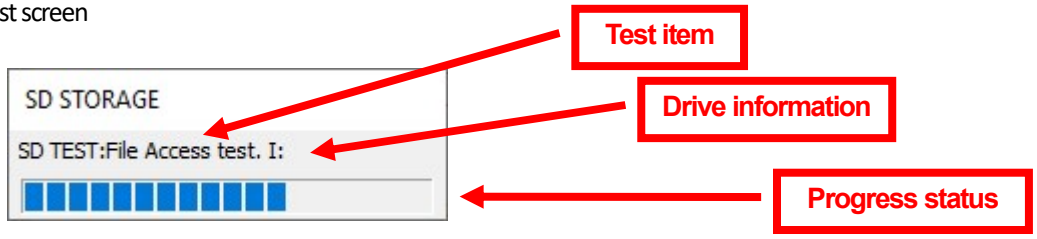
This test checks if the connection of the SD Port on the PC works by using a SD storage card.
You need to prepare a SD storage card.
The test writes some data to the SD storage card. The SD storage card needs at least 12 MB free space.

1) Test contents

The test detects a SD storage card plugged to the SD port on your PC. Then the test copies some data to the SD storage card, read the data back from the SD storage card and compare it to the original data. If the comparison is OK, the test will say that the port is passed.

Important Note:
Do not take SD storage card out during SD STORAGE Test trying to check the port that SD storage card plugged in.

2) Test screen



- ▼ Drive information ... The drive letter of the SD storage card being tested
- ▼ Test item ... The test item being executed: File Access test.
- ▼ Progress status ... The test progress

3) Test result

■ In case of PASS
"OK" is shown in the "Result" field on the "Diagnostics" dialog.

■ In case of FAIL
"NG" is shown in the "Result" field on the "Diagnostics" dialog.

The detail of the error will be recorded to the WPETD log file as below.

Message	Explanation	Remarks
File Access Error. xx:.	Failed in accessing the file. XX is the SD storage card drive letter.	
Space Size Error. xx:	There is no free space for creating the file. XX is the SD storage card drive letter.	

4) Test file

WinPETD.exe: Test program.

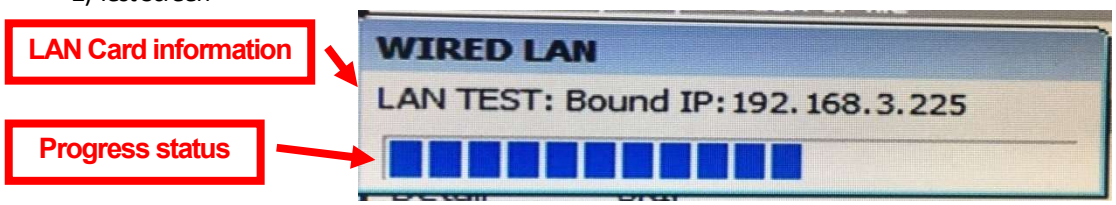
4-2-6 WIRED LAN Test

1) Test content

This test checks if the data is sent and received without timeout between the built-in LAN device and DHCP server. The 32-packet sized data is sent from the PC and will confirm to get the response from the server.
The check is executed 5 times for 1 Pass.

> **Note:**
> It is necessary that the IP Address has to be assigned to the Wired LAN adapter by a DHCP server for executing the test.
> If you use an attached Wired LAN adapter such as a USB LAN adapter, remove it from the PC as WPETD cannot detect the built-in adapter correctly.

2) Test Screen



▼LAN Card information ...IP address.
▼Progress status ... Test progress by the progress bar.

3) Test result

■ In case of PASS
"OK" is shown in the "Result" field on the "Diagnostics" dialog.
The pass count is shown in the "PASS" field.

■ In case of FAIL
"NG" is shown in the "Result" field on the "Diagnostics" dialog.
The pass and error count are shown in the "PASS" and "ERROR" fields respectively.

The detail of the error is recorded in the log file as follows.

Message	Explanation	Remarks
An IP address has not been assigned.	IP address cannot be obtained.	This error occurs when the test is conducted with a LAN card to which IP is not assigned.
WSAStartup failed: xx	In-use API error xx is the error code.	This is a message that is caused by an error of Windows Socket API used in the test.
failed to set recv timeout: xx	In-use API error xx is the error code.	
failed to set send timeout: xx	In-use API error xx is the error code.	
Invalid in-address: xx	In-use API error xx it the IP address	
sendto failed: xx	In-use API error xx is the error code.	
Wrote xx bytes	Communication data size unmatched xx is the reception size	

recvfrom failed: xx	In-use API error xx is the error code.	
timed out.	Time out occurred.	

4-2-7 CPU Test

1) Test contents

1-1) The test gets how many CPU cores exist on the PC.

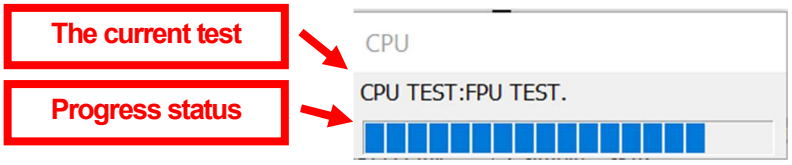
1-2) The test executes ALU (Arithmetic Logic Unit) test and FPU (Floating Point Unit) test five times on the process.

1-3) The executes ALU test and FPU test five times on the each CPU core.

WPETD supports to test up to 8 cores.

If there is no problem with test 1-2 and 1-3, the test will get 1 Pass.

2) Test screen



▼The current test ... ALU or FPU

▼Progress status ... Test progress by the progress bar.

3) Test result

■ In case of PASS

"OK" is shown in the "Result" field on the "Diagnostics" dialog.

The pass count is shown in the "PASS" field.

■ In case of FAIL

"NG" is shown in the "Result" field on the "Diagnostics" dialog.

The pass and error count are shown in the "pass" and "error" fields respectively.

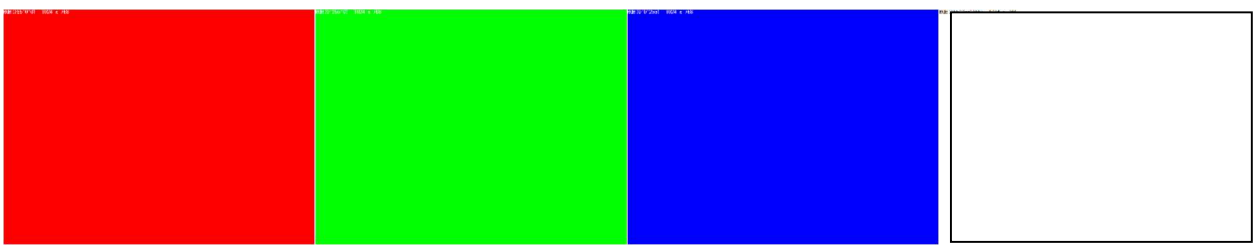
The detail of the error is recorded in the log file as follows.

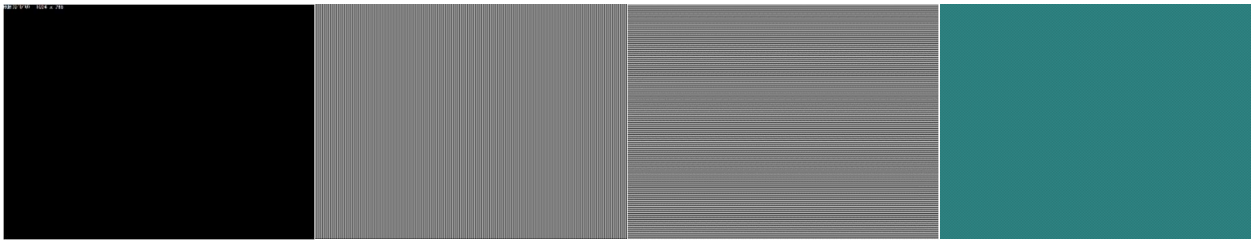
Message	Explanation
The ALU test made an error.	An error occurred during ALU test.
The FPU test made an error.	An error occurred during FPU test.

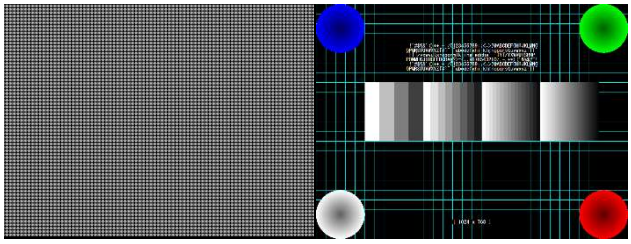
4-2-8 GRAPHICAL DISPLAY Test

1) Test contents

This test will go through a series of solid color screen test followed by H pattern test and circles/line-gradation/ASCII-characters test and as follows:







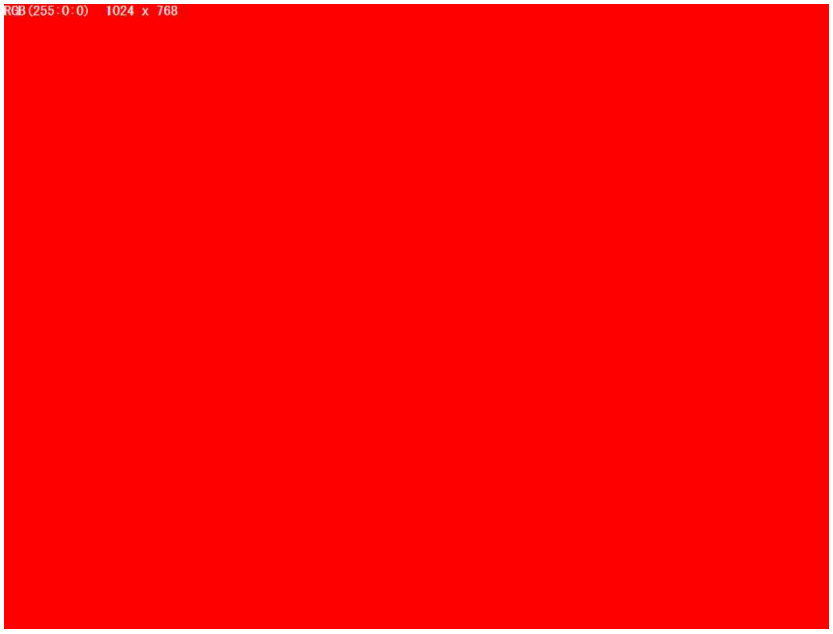
Note: During the test you can press "ESC" or "STOP" key if you need to stop the test. For example, in case the test somehow takes too long time.

3) Test file

"GRAPHICAL DISPLAY Test" is integrated in WPETD (WinPETD.EXE) itself.

4) Test Screens

4-1) Red screen



(1) The screen will turn all red "RGB(255, 0, 0)" color.

(2) The white text "RGB(255:0:0) <Screen width> x <Screen height>" will be shown at the upper left corner of the screen

(3) It will pause for 3 seconds

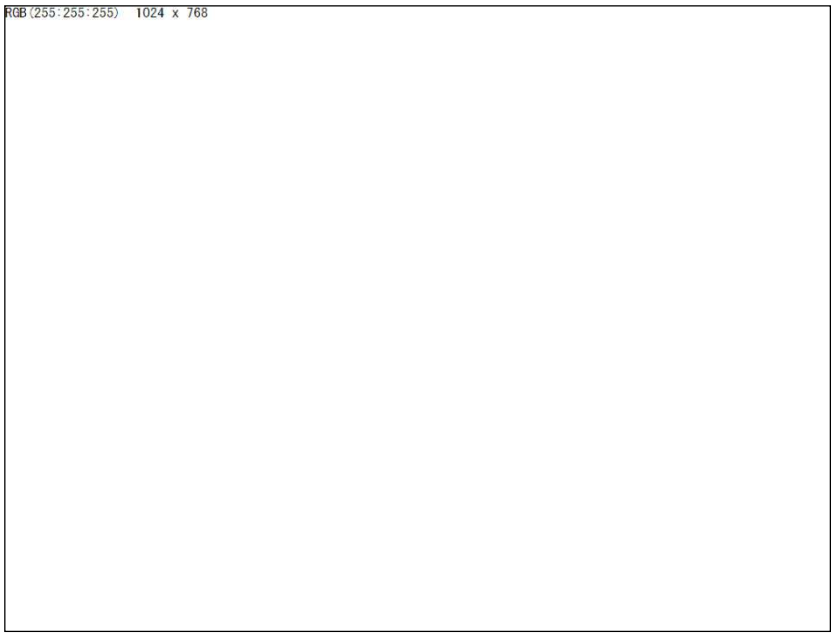
4-2) Green Screen

(1) The screen will turn all green "RGB(0, 255, 0)"color.
(2) The white text "RGB(0:255:0) <Screen width> x <Screen height>" will be shown at the upper left corner of the screen
(3) It will pause for 3 seconds

4-3) Blue Screen

(1) The screen will turn all blue "RGB(0, 0, 255)"color.
(2) The white text "RGB(0:0:255) <Screen width> x <Screen height>" will be shown at the upper left corner of the screen
(3) It will pause for 3 seconds

4-4) White Screen



Note:
Any border lines of the white screen are not displayed during the test.
This rectangle is just for the explanation here.

(1) The screen will turn all white "RGB(255,255,255)"color.
(2) The black text "RGB(255:255:255) <Screen width> x <Screen height>" will be shown at the upper left corner of the screen
(3) It will pause for 3 seconds

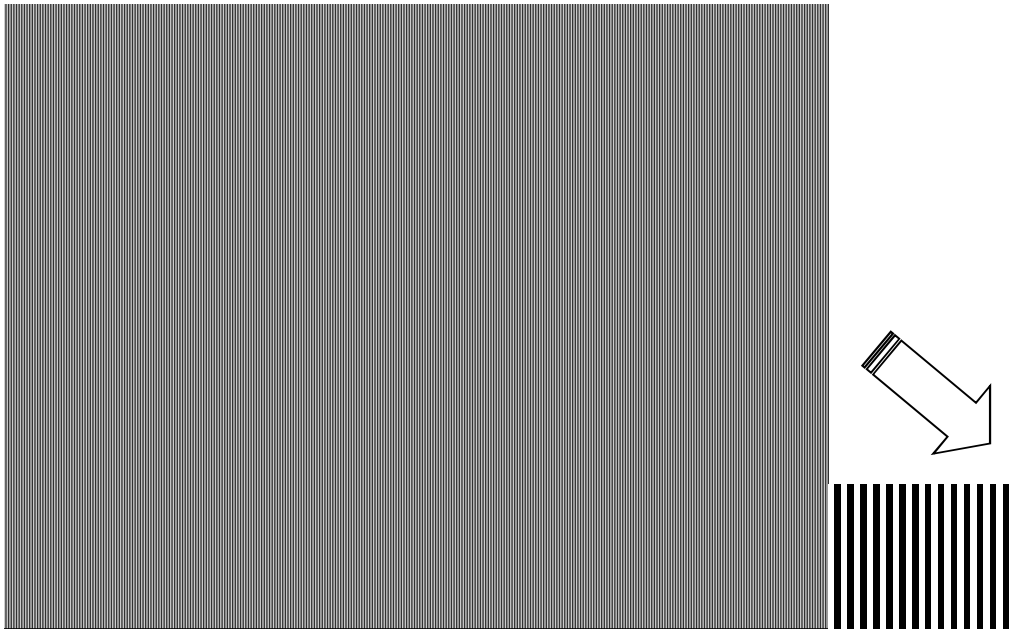
4-5) Black Screen

(1) The screen will turn all black "RGB(0, 0, 0)"color.

(2) The white text "RGB(0:0:0) <Screen width> x <Screen height>" will be shown at the upper left corner of the screen

(3) It will pause for 3 seconds

4-6) Vertical Lines Screen



(1) The screen will turn all black "RGB(0, 0, 0)"color.

(2) 1 pixel wide white vertical lines will be drawn with every 2 pixels.

(3) It pause for 3 seconds

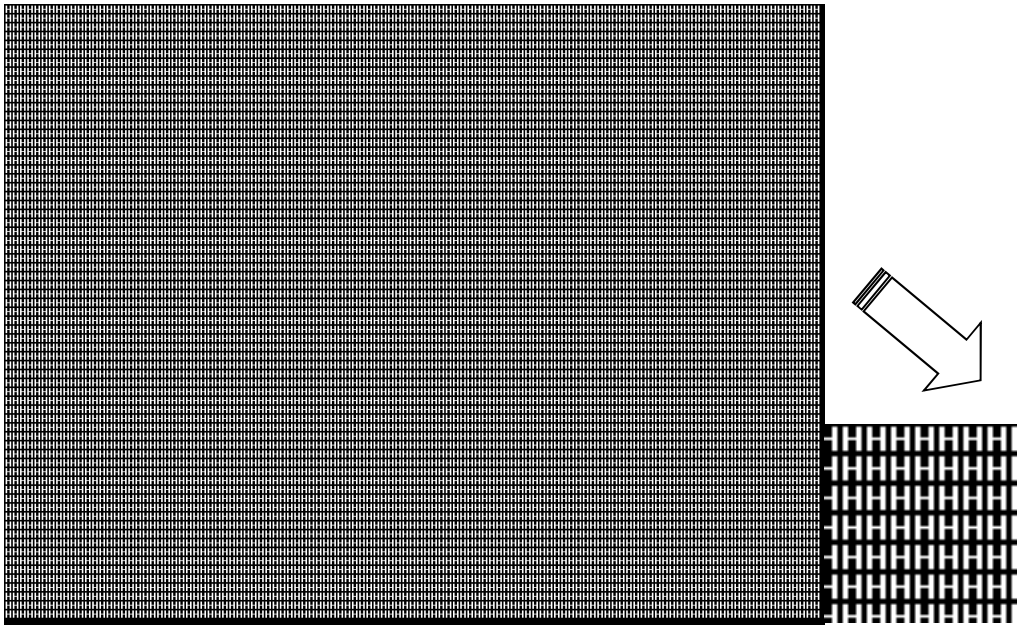
4-7) Horizontal Lines Screen

(1) The screen will turn all black "RGB(0, 0, 0)"color.
(2) 1 pixel wide white horizontal lines will be drawn with every 2 pixels.
(3) It pause for 3 seconds

4-8) Cyan and Black Screen

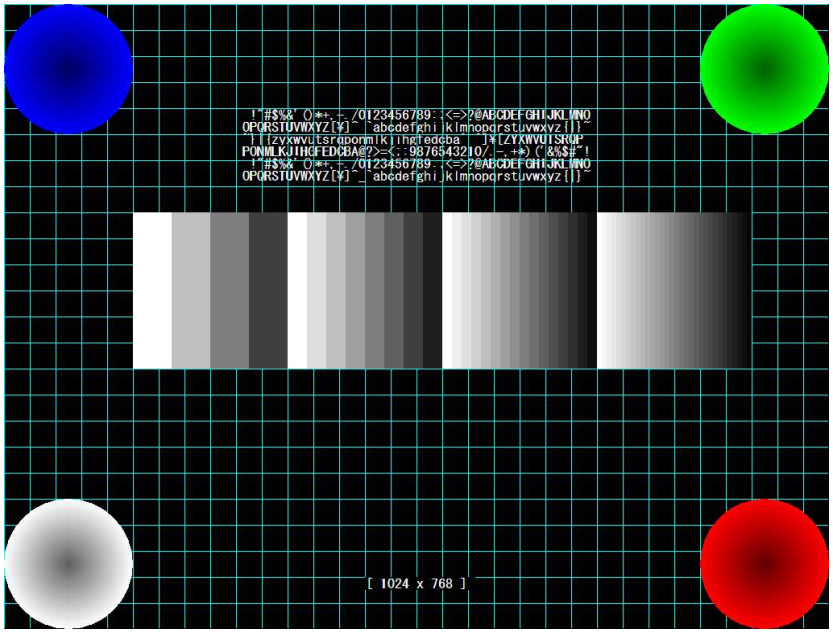
(1) The screen will turn all black "RGB(0, 0, 0)"color.
(2) Alternate cyan1and black, 1 x 1 pixel dots will be drawn in a check pattern.
WPETD uses 1 x 1 pixel / 24bit color bitmap for "a cyan point" and "a black point" here.
Even line (including line 0 (the most upper line)) : Cyan, Black, Cyan, Black, ...
Odd line: Black, Cyan, Black, Cyan, ...
(3) It pause for 5 seconds

4-9) H patterns Screen

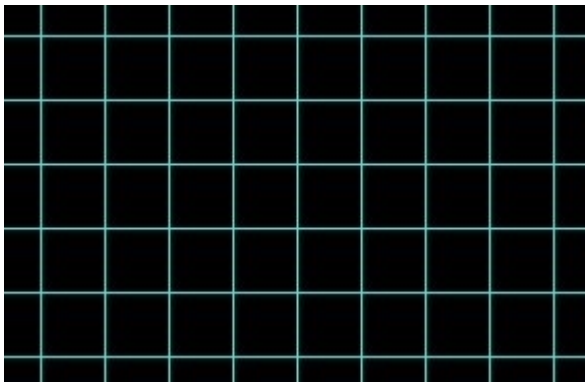


(1) The screen will turn all black “RGB(0, 0, 0)”color.
(2) An “H” bitmap (; 9 x 11 pixel / 4 bit color) will uniformly fill the screen.
(3) It pause for 5 seconds

4-10) Circles/Line-gradation/ASCII-characters Screen



Before describing how to display each element on the screen, how the interval of the vertical lines and the horizontal lines derived will be explained.



As you see this figure, the vertical lines and horizontal lines are drawn with equal intervals.
Additionally, the vertical and horizontal intervals are identical. It means that every grid made by two pair of the adjacent vertical and horizontal lines is a square.
The interval's value or the grid side's length, which is referred as "Z" in this section 4-10, is calculated as follows.

"Z" is calculated based on the Greatest Common Measure (GCM) of the Full screen's width and height.
Suppose that X = Full screen's width, Y = Full screen's height and "z" is the GCM of X and Y.
Hence,

```
z = GCM(X, Y);          // z is calculated by Euclidean algorithm for GCM.
```

Usually, as "z" is a large integer value, it will be adjusted by the following logic to get a factor of "z" that is approximately equal to X/40. The factor will be defined as "Z".

```
    z = GCM(X, Y);                  // X = Full screen's width, Y = Full screen's height.
for (d = 2; d<= z; d++)
 {
      if (z % d == 0)
      { // "z" is dividable by "d"
      z = z / d;
      if (X<= 1000) {if (z <= 25)break;}
      else if (X<= 2000) {if (z <= 50)break; }
      else if (X<= 3000) {if (z <= 75)break; }
      else if (X<= 4000) {if (z <= 100)break;}
      else if (X<= 5000) {if (z <= 125)break;}
      else if (X<= 6000) {if (z <= 150)break; }
      else if (X<= 7000) {if (z <= 175)break;}
      else {if (z <= 200)break;}

            d = 1; // to find the next factor of "z
      }
      }
```

Z = z; // "Z" will be the interval for both of the vertical and horizontal lines
// In case that z=GCM(X, Y) is a prime number, Z = GCM(X, Y), too.

Note for this logic
The logic to define "Z" above does not seem to be very good because "z" is always divided by the smallest factor.
Although the logic can be acceptable for a while as long as there is no problem with the target PCs for this time, it is better to modify the logic sometime in future as follows for example:

First, factorize "z" into prime factors:
$z= S_1^{t_1}*S_2^{t_2}*....*S_n^{t_n}$ where $S_1,S_2,...,S_n$ are prime numbers with $S_1<S_2<....<S_n$ and $0 < t_1, t_2, ... t_n$
Next, based on the factorization, calculate all factors of "z" and choose the one that is the nearest to X/40.
The one will be defined as "Z".

Additionally as commented in the logic above, it might be better to consider the case that z=GCM(X, Y) is a prime number.

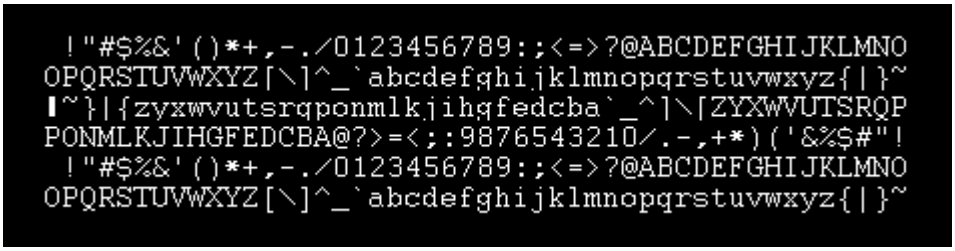
Another Important Note: If a new PC is added as a target, check its screen resolution out.

Usually, the value "Z" derived from z = GCM(X, Y) is large enough.
However, if "z" itself is too small, we have no choice but to use "z" as "Z".
For example, when the screen resolution is 1366 x 768, GCM (1366, 786) =2 that is too small.
If you draw the vertical and horizontal lines with the very small interval, no other graphics components can be seen.
After checking the target PC's screen resolutions, it was found that this happens only when the screen resolution is 1366 x 768.
Therefore, the work around, in case of the resolution 1366x768, WPETD treats it as 1280x768 where GCM

Drawing procedure

(1) Fill the full screen with black "RGB (0, 0, 0)"color.

(2) Draw texts as follows:



Draw 48 1byte-chracters a line as follows:

Font = Courier, standard (non-bold, non-italic), Fixed pitch, Width = 9, Height = 16, Character color = White RGB (255, 255, 255), Background color = Black RGB (0, 0, 0)

- 1st line: Position (X/2-9*24, 4*Z), 48 characters
  0x20 (Space), 0x21('!'), ... up to 0x4F ('O')

- 2nd line: Position (X/2-9*24, 4*Z + 15), 48 characters
  0x4F ('O'), 0x50 ('P'), ... up to 0x7E ('~');

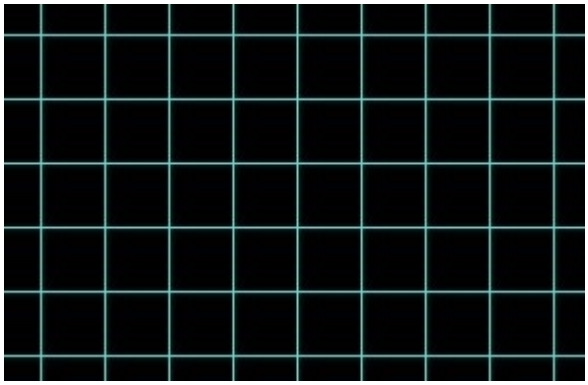
- 3rd line: Position (X/2-9*24, 4*Z + 30), 48 characters
  0x7F, 0x7E ('~'), ... down to 0x50 ('P')

- 4th line: Position (X/2-9*24, 4*Z + 45), 48 characters
  0x50 ('P'), 0x4F ('O'), ... down to 0x21('!')

- 5th line: Position (X/2-9*24, 4*Z + 60), 48 characters
  0x20 (Space), 0x21('!'), ... up to 0x4F ('O')

- 6th line: Position (X/2-9*24, 4*Z + 75), 48 characters
  0x4F ('O'), 0x50 ('P'), ... up to 0x7E ('~')

(3) Vertical lines are drawn then Horizontal lines.



As described above, the intervals of vertical lines and horizontal lines are identical "Z".
All grids made by adjacent vertical lines and horizontal lines are congruent squares.

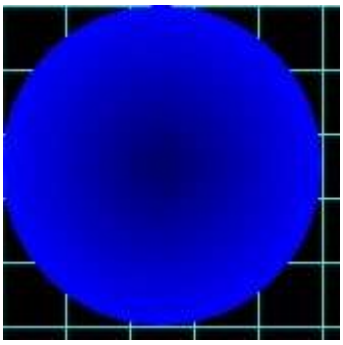
(4) Gradational colored circles are drawn at each corner as the following order:
Blue circle at the upper left corner
Green circle at the upper right corner
Red circle at the lower right corner

White circle at the lower left corner

For the blue circle, it is drawn gradually smaller and less brightly as follows:

```
across = diagram of the circle = 5*Z;
(x1, y1) = (0, 0); , (x2, y2) = (across, across);
blue = 255;                                    ..... (A)
for ( I = across/2; I > 1; I--)
{
    Pen_Color = RGB (0, 0, blue--);          ....(B)
    Brush_Color = RGB (0, 0, blue--);    ....(C)
    Ellipse(x1++, y1++, x2--, y2--);
}
```

(0, 0)



(across, across)

For other color circled circles, the followings are for "(A)", "(B)" and "(C)" besides the positions:

Green : green = 255; , Pen_Color = RGB(0, green--, 0); , Brush_Color = RGB(0, green--, 0);

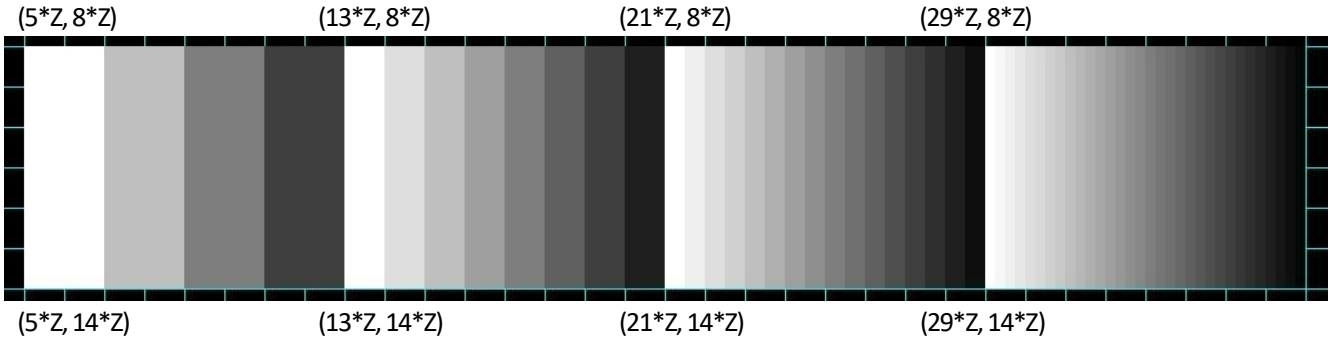
Red : red = 255; , Pen_Color = RGB(red--, 0, 0); , Brush_Color = RGB(red--, 0, 0);

White: red = green = blue = 255; ,

Pen_Color = RGB(red--, green--, blue--); , Brush_Color = RGB(red--, green--, blue--);

(5) White gradational rectangles are drown

4-level gradational rectangle is drawn first followed by 8-level, 16-level and 32-level rectangles.



4-level gradational rectangle:	**8-level gradational rectangle:**	**16-level gradational rectangle:**	**32-level gradational rectangle:**
- Position: (5*Z, 8*Z)	- Position: (13*Z, 8*Z)	- Position: (21*Z, 8*Z)	- Position: (29*Z, 8*Z)
- Width: 8*Z, Height: 6*Z	- Width: 8Z, Height: 6*Z	- Width: 8*Z, Height: 6*Z	- Width: 8*Z, Height: 6*Z
- Co-rectangle width: 2*Z	- Co-rectangle width: Z	- Co-rectangle width: Z/2	- Co-rectangle width: Z/4
- Gradation: 4 levels	- Gradation: 8 levels	- Gradation: 16 levels	- Gradation: 32 levels
red=green=blue= 255-64*L	red=green=blue= 255-32*L	red=green=blue= 255-16*L	red=green=blue= 255-8*L
where L = 0,1,2,3	where L = 0,1,2,..., 7	where L = 0,1,2,..., 15	where L = 0,1,2,..., 31
0: RGB(255,255,255)	0: RGB(255,255,255)	0: RGB(255,255,255)	0: RGB(255,255,255)
1: RGB(191,191,191)	1: RGB(223, 223, 223)	1: RGB(239, 239, 239)	1: RGB(247, 247, 247)
2: RGB(127,127,127)	2: RGB(191, 191, 191)	2: RGB(223, 223, 223)	2: RGB(239, 239, 239)
3: RGB(63, 63, 63)	3: RGB(159, 159, 159)	3: RGB(207, 207, 207)	3: RGB(231, 231, 231)
	4: RGB(127, 127, 127)	4: RGB(191, 191, 191)	4: RGB(223, 223, 223)
	5: RGB(95, 95, 95)	:	:
	6: RGB(63, 63, 63)	: -16, -16, -16	: -8, -8, -8
	7: RGB(31, 31, 31)	:	:
		14: RGB(31, 31, 31)	30: RGB(15, 15, 15)
		15: RGB(15, 15, 15)	31: RGB(7, 7, 7)

4-2-9 Timer Test

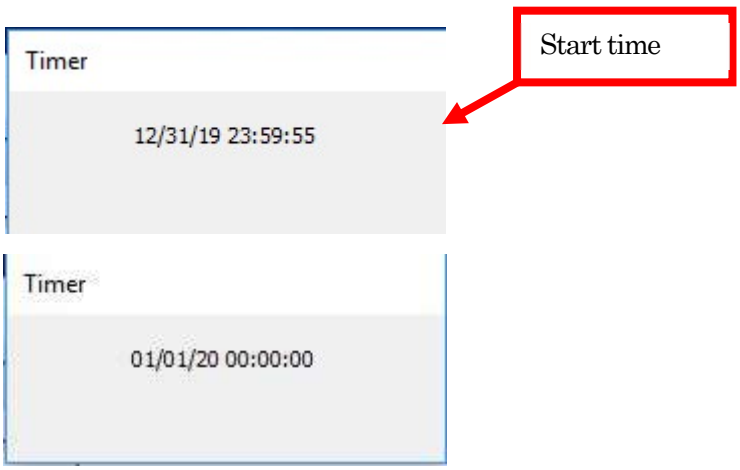
1) Test contents

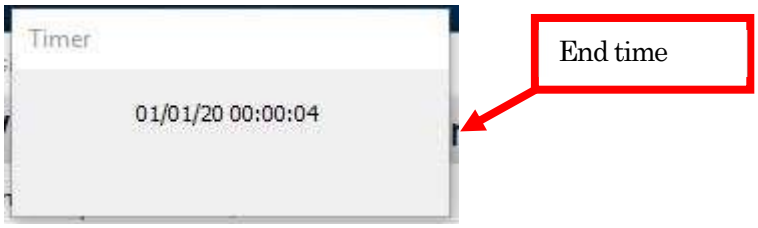
Adjust internal time to verify timer accuracy after a year.

In the simple test mode, the test is carried out at intervals of 5 seconds before and after 10 seconds in advanced test mode.

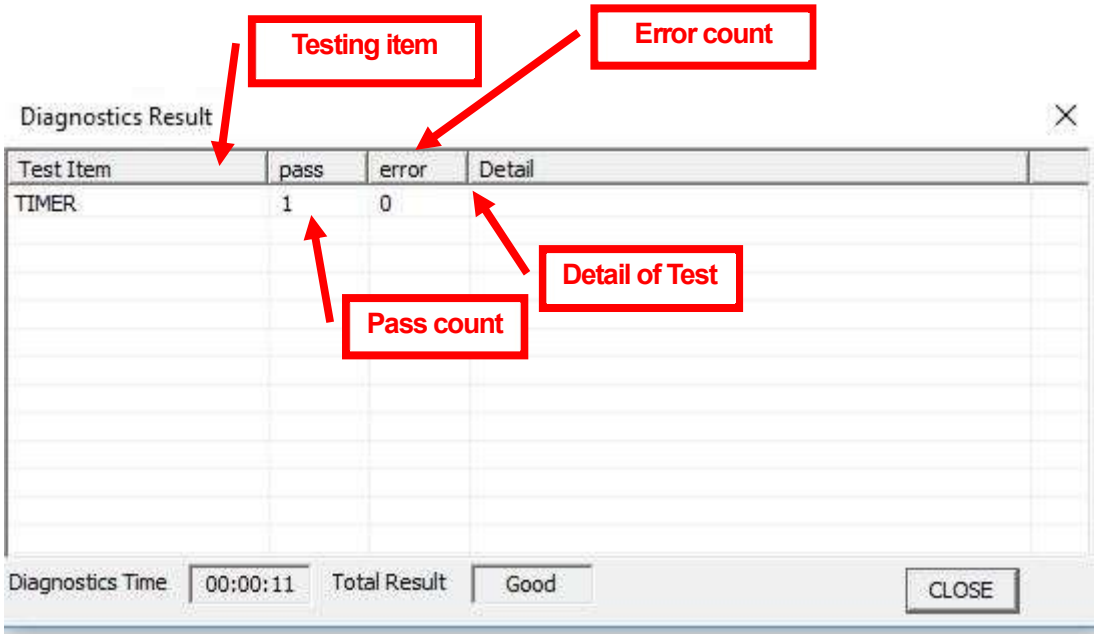
It verifies that there is no deviation between the estimated time of calculation and the actual acquisition time.

2) Test screen





3) Test result



5 Appendix

5-1 Log file samples

Log files includes text log and html log, and they will be saved under "¥Logs" folder of WPETD tool's USB storage root.
And the log file names will be format as:
<OK or NG>.<SN>.<date time>petd.<html/log>

5-1-1 Text log file sample

[System Information]
Manufacturer=Dynabook Inc.
Product Name=SATELLITE PRO C40D-B
Part Number=PYU16L-AAA11
Serial Number=Y1122222H
UUID=5281B280-485E-11EC-BC84-2257E43A4600
BIOS Version=ACN16V024
BIOS OEMString=PYU16L-AAA11,TIH06326ZVB#B
BIOS GSWString=GSW:1000000000
DPK Injected=Yes
CPU Name0=AMD Ryzen 5 5500U with Radeon Graphics
CPU Clock0=Current Clock=2096 MHz Max Clock=2096 MHz
CPU Socket0=FP6
CPU Description0=AMD64 Family 23 Model 104 Stepping 1
L2Cache0=3072 KB
Physical Memory=8192 MB
Memory Device0=Locator=DIMM 0 Size=8192 MB

Network0=Realtek PCIe GbE Family Controller
MAC Address0=84:47:09:06:3A:A1
SCSI HDD/SSD0=SAMSUNG MZVLQ256HBJD-00B00 Capacity=256.05 GByte
USB Flash Disk0=ADATA USB Flash Drive USB Device Capacity=7.77 GByte
Key Board0=Standard PS/2 Keyboard
Mouse0=HID-compliant mouse
C:¥=DriveType=HDD/SSD VolumeName=TIH0632600B FreeSize= 193.88 GB UseSize=44.90 GB
D:¥=DriveType=USB Flash VolumeName=WINPE FreeSize= 7.17 GB UseSize=587.09 MB
X:¥=DriveType=OTHER VolumeName=Boot FreeSize= 504.14 MB UseSize=2.55 MB
[STATISTIC]
T&D Version=1.00 (for Hokusai10)
Start Time=2022/01/14 08:06:52
Finish Time=2022/01/14 08:16:00
Diagnostics Time=00:08:59
test mode=Multitask
limit pass=1
CPU stress=No
Set Battery Off At The End=Yes
Test Result=Good
[HDD PHYSICAL]
pass count=22
error count=0
test mode=Detail
[HDD LOGICAL]
pass count=23
error count=0
test mode=Detail
[MEMORY]
pass count=1
error count=0
test mode=Detail
[USB STORAGE]
pass count=10
error count=0
test mode=Detail
[SD STORAGE]
pass count=15
error count=0
test mode=Detail
[WIRED LAN]
pass count=7
error count=0
test mode=Detail
[CPU]
pass count=10
error count=0
test mode=Detail
[GRAPHICAL DISPLAY]
pass count=1
error count=0
test mode=Detail

[TIMER]
pass count=4
error count=0
test mode=Detail
[KEYBOARD]
pass count=1
error count=0
test mode=Detail
[LED]
pass count=1
error count=0
test mode=Detail
[CPU FAN]
pass count=1
error count=0
test mode=Detail
[TOUCH PAD]
pass count=1
error count=0
test mode=Detail
[BATTERY CAPACITY]
pass count=1
error count=0
test mode=Detail
[BATTERY OFF]
pass count=1
error count=0
test mode=Detail

Note: About Start Time, Finish Time and Diagnostics Time, please see below.

```
      :
[STATISTIC]
      :
Start Time=2019/03/24 23:45:07
Finish Time=2019/03/24 23:46:55
Diagnostics Time=00:01:44
      :
      :
```

As you see in the example above, “Finish Time - Start Time” does not equal to “Diagnostics Time” usually.

Start Time: The time when you push the [START] button.
Finish Time: The time when all tests you selected finish
Diagnostic Time: The time shown at the top-right on the Diagnostics dialog.

Diagnostic time starts when the first test starts and ends when all selected tests finish.
There is some time interval between being pushed the [START] button and the first test starts.
That is why the value "End Time - Start Time" is usually bigger than "Diagnostic Time".

5-1-2 Html log file sample

Test report

2022/01/14

dynabook

1.System Information

System Name	Information
Manufacturer	Dynabook Inc.
Product Name	SATELLITE PRO C40D-B
Part Number	PYU16L-AAA11
Serial Number	Y1122222H
UUID	5281B280-485E-11EC-BC84-2257E43A4600
BIOS Version	ACN16V024
BIOS OEMString	PYU16M-AAA12,TIH06326ZVB#B
BIOS GSWString	GSW:2000000000
DPK Injected	Yes
##### CPU #####	
CPU Name0	AMD Ryzen 5 5500U with Radeon Graphics
CPU Clock0	Current Clock=2096 MHz Max Clock=2096 MHz
CPU Socket0	FP6
CPU Descripsion0	AMD64 Family 23 Model 104 Stepping 1
L2 Cache0	3072 KB
##### Memory #####	
Memory Device0	Locator=DIMM 0 Size=8192 MB
##### Network #####	
NetWork0	Realtek PCIe GbE Family Controller
MAC address0	84:47:09:06:3A:A1
##### IDE HDD/SSD device #####	
IDE HDD/SSD0	No Device
IDE HDD/SSD1	No Device
##### SCSI HDD/SSD device #####	
SCSI HDD/SSD0	SAMSUNG MZVLQ256HBJD-00B00 Capacity=256.05 GByte
SCSI HDD/SSD1	No Device
##### USB Flash Device #####	
USB Flash Disk0	ADATA USB Flash Drive USB Device Capacity=7.77 GByte
##### SD Card Device #####	
SD Card Disk0	SDHC Card Capacity=31.91 GByte
##### ODD Device #####	
ODD0	No Device
##### Others Device #####	
Key Board0	Standard PS/2 Keyboard
Mouse0	HID-compliant mouse
Other Disk0	No Device
##### Drive Information #####	
C:¥	DriveType=HDD/SSD VolumeName=TIH0632600B FreeSize= 193.91 GB UseSize44.86 GB
D:¥	DriveType=USB Flash VolumeName=WINPE FreeSize= 6.54 GB UseSize1.22 GB
E:¥	DriveType=SD Card VolumeName=boot FreeSize= 193.29 MB UseSize71.00 MB
X:¥	DriveType=OTHER VolumeName=Boot FreeSize= 504.13 MB UseSize2.55 MB

2.Test conditions

Item Name	Information
T&D Version	1.00 (for Hokusai10)
Test mode	Multitask
CPU Stress	No
Limit pass count	1
Set Battery Off At The End	Yes

3.Test Result

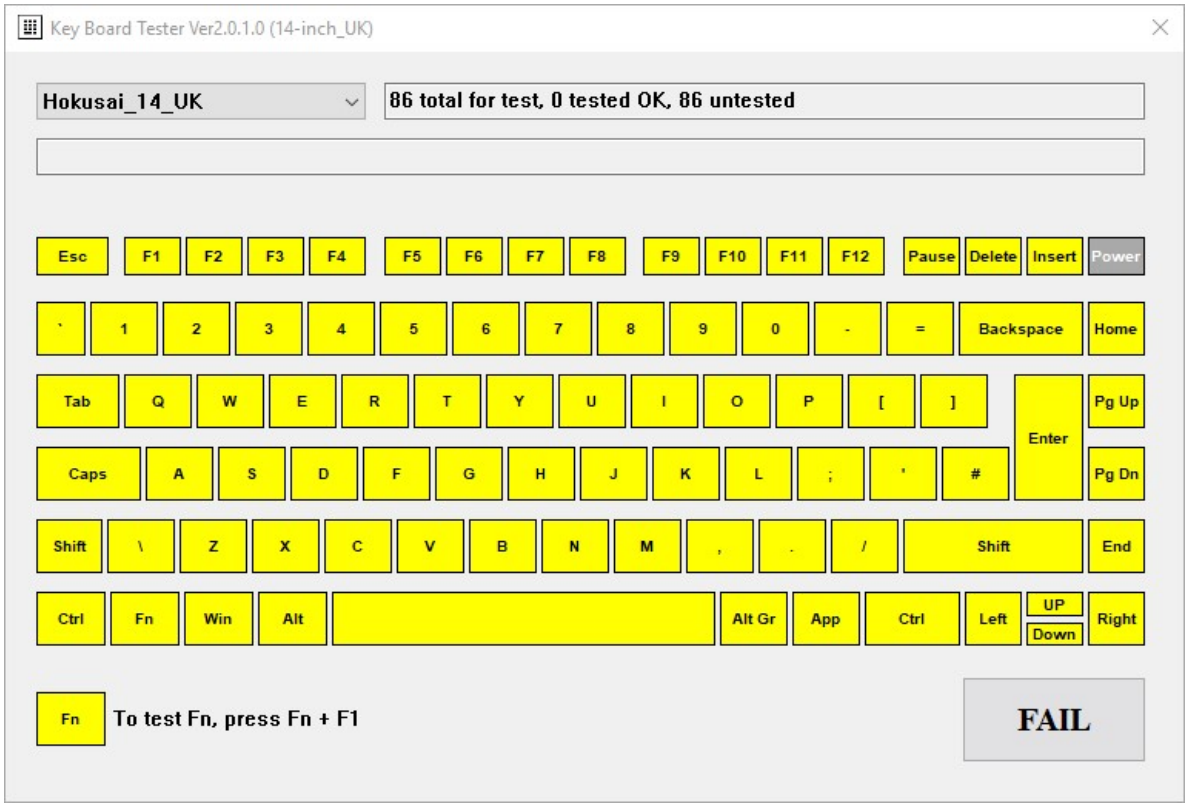
Test Name	Test Information	Pass Count	Error Count	Simple Mode	Detail Mode	Heart Run	Comment
HDD PHYSICAL	Hard disk physical Read test	0022	0000	★	●	-	
HDD LOGICAL	Hard disk logical Read test	0023	0000	★	●	-	
MEMORY	Memory allocate Read/Write /Compare	0001	0000	★	●	-	
USB STORAGE	Usb flash disk file access test	0010	0000	★	●	-	
SD STORAGE	SD card disk file access test	0015	0000	★	●	-	
ODD	ODD data file Read/Compare	0000	0000	★	★	-	
WIRED LAN	Loopback test	0007	0000	★	●	-	
CPU	CPU Operation test	0010	0000	★	●	-	
GRAPHICAL DISPLAY	Gradation test	0001	0000	★	●	-	
FDD	Floppy disk file access test	0000	0000	★	★	-	
1394 STORAGE	IEEE1394 disk file access test	0000	0000	★	★	-	
TIMER	Timer clock test	0004	0000	★	●	-	
KEYBOARD	Keyboard push test	0001	0000	★	●	-	
LED	LED test	0001	0000	★	●	-	
CPU FAN	CPU fan test	0001	0000	★	●	-	
TOUCH PAD	Touch pad test	0001	0000	★	●	-	
BATTERY CAPACITY	Battery capacity test	0001	0000	★	●	-	
BATTERY OFF	Battery off setting	0001	0000	★	●	-	
Over-all judgement							●

●Not problem ▲Conditioned pass ★Not prepared

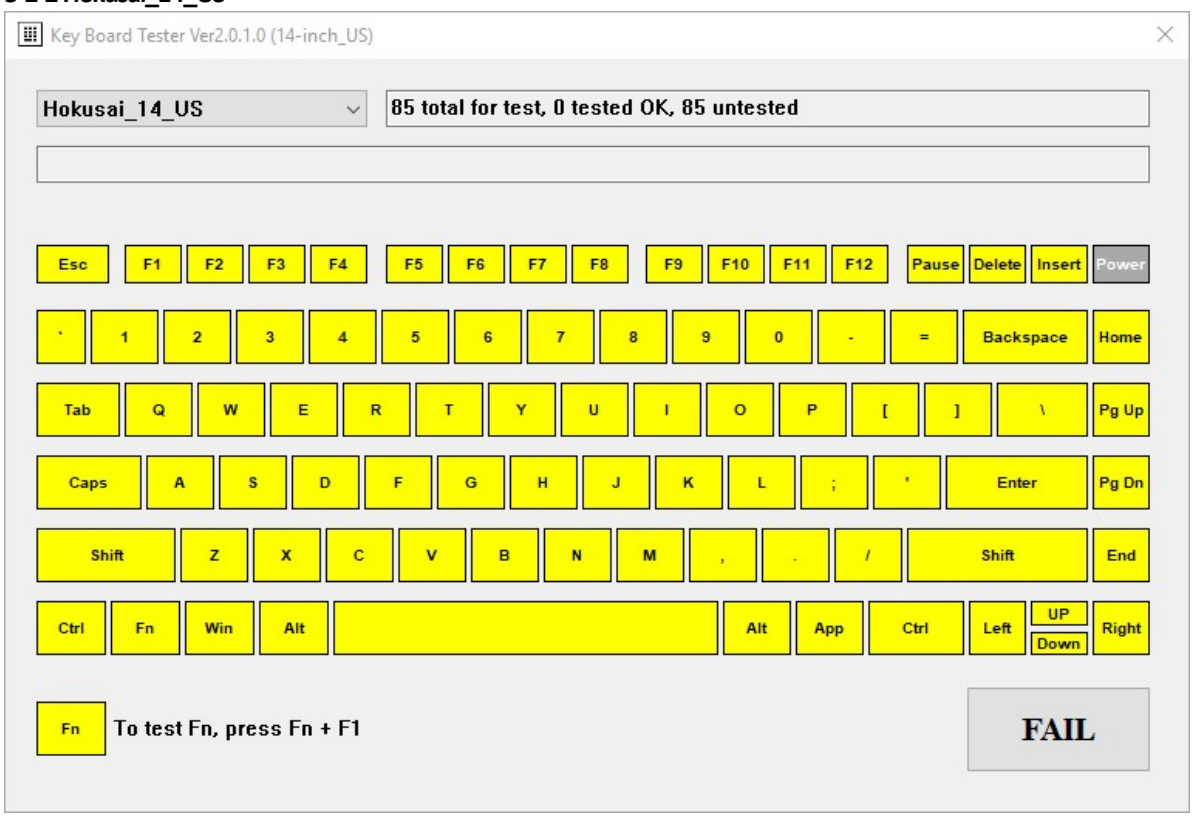
■reservation ◆reservation

5-2 Keybaord layouts

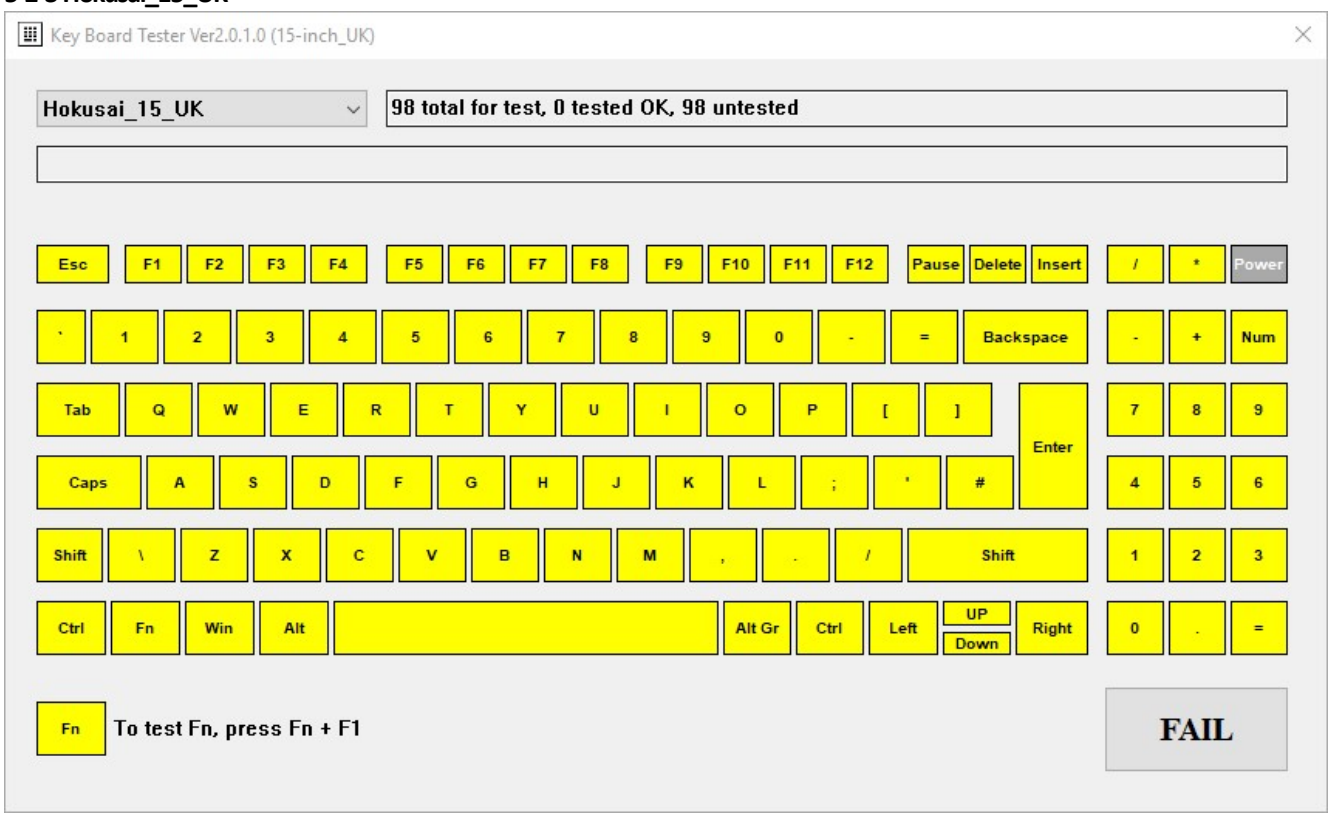
5-2-1 Hokusai_14_UK



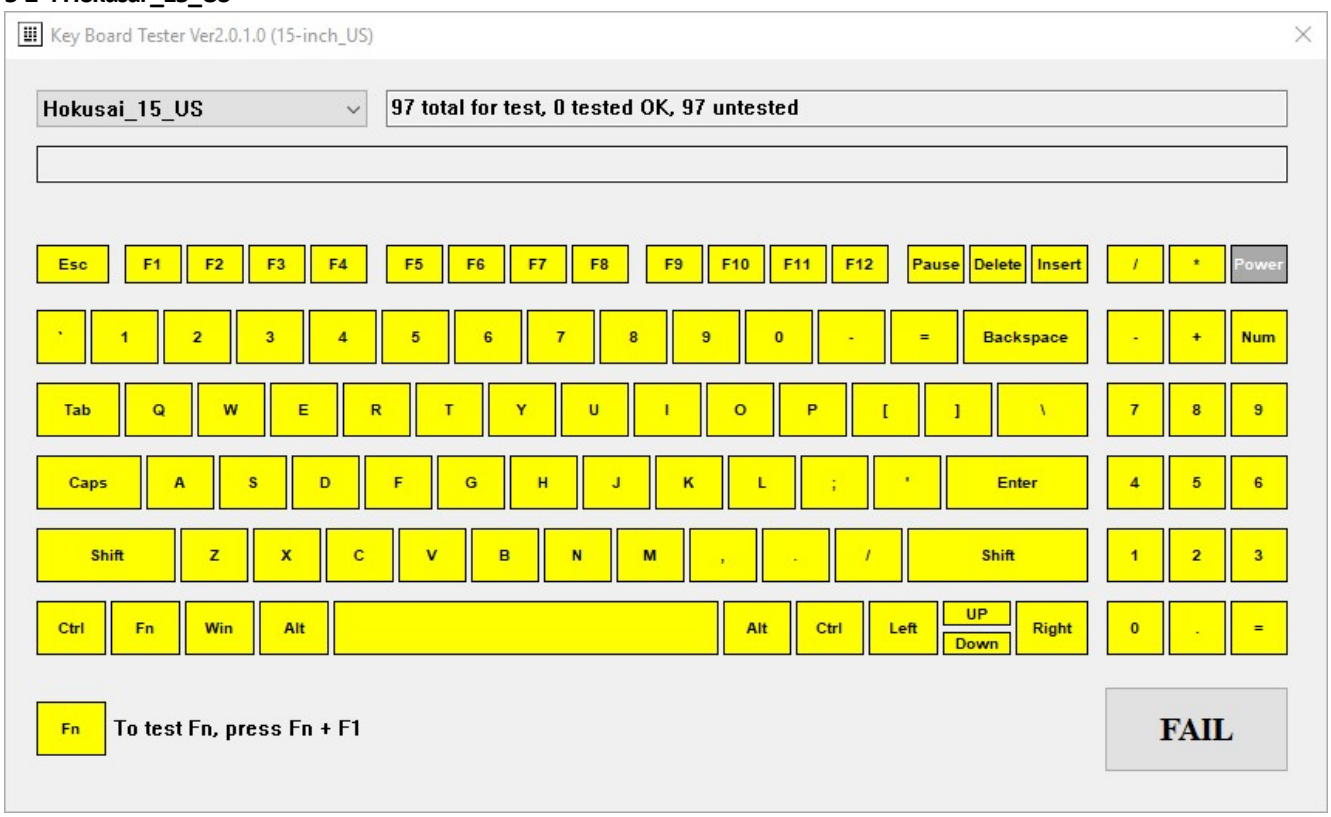
5-2-2 Hokusai_14_US



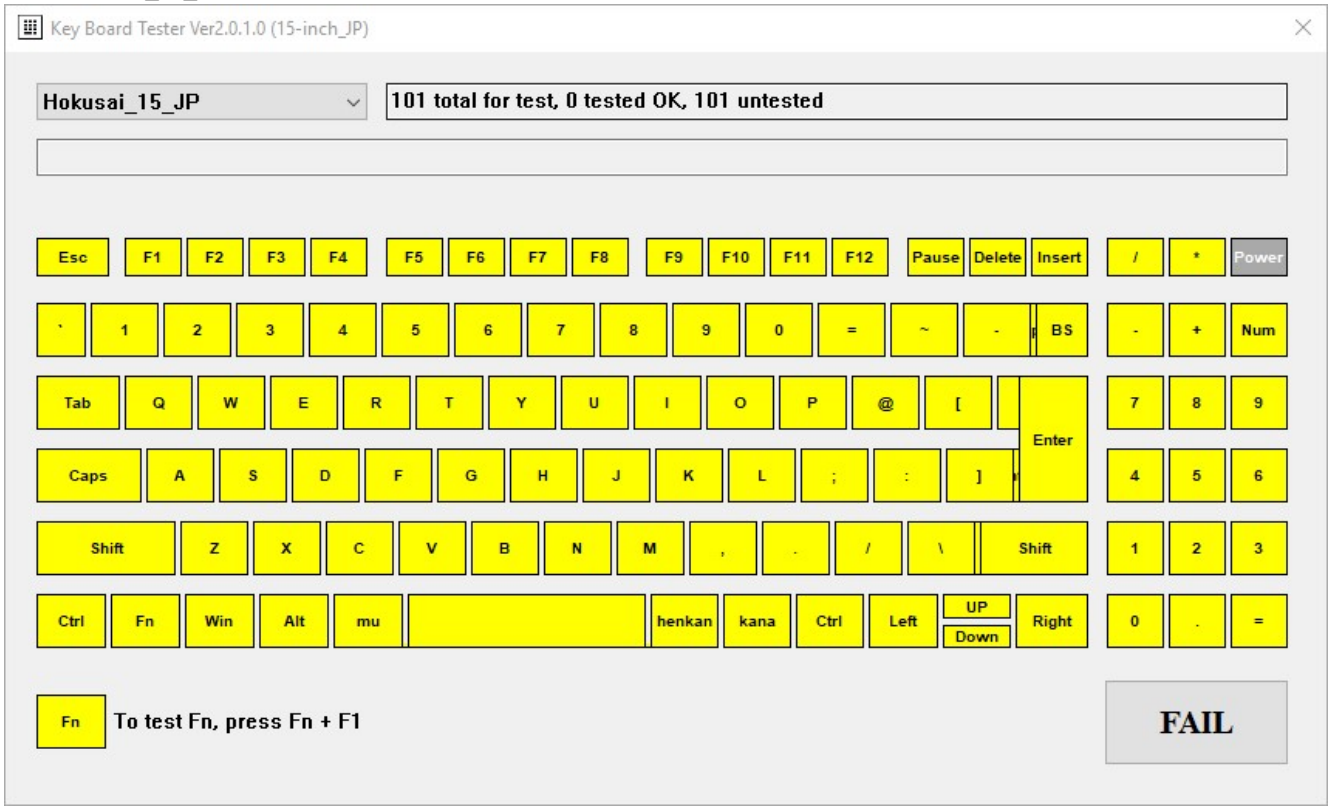
5-2-3 Hokusai_15_UK



5-2-4 Hokusai _15_US



5-2-5 Hokusai_15_JP



6 Maintenance Functions

6-1 BIOS Ver. & DMI Info Display

6-1-1 Function Description

BIOS version & DMI info of the PC are displayed on the initial (WinPE booted up) screen like below, above the maintenance menu:

```
This PC's info:
 Name                      Information
 ------------------------    ------------------------------------------------
 BIOS version               "1.10"
 System manufacture          "Dynabook Inc."
 System product             "SATELLITE PRO C40D-B"
 System version             "PYU16L-AAA11"
 System Serial number        "71076857H"
 System UUID                "00020003000400050006000700080009h"
 System SKU number           "PYU16L"
 OEM String                 "PYU16L-AAA11,TIH05829ZVA#B"
 GSW String                 "GSW:1000000000"
 System date & time           2022/01/19 14:37
*******************************************************************************
* 1 - DMI Update                                                              *
* --------------------------------------------------------------------------- *
* 40 - Reboot & Enter BIOS Setup                                               *
```

6-1-2 Display Items

Name	Information
BIOS version	BIOS version in Type 0
System manufacture	System manufacture in Type 1
System product	System product in Type 1
System version	System version in Type 1
System Serial number	System Serial number in Type 1
System UUID	System UUID in Type 1
System SKU number	System SKU number in Type 1
OEM string	OEM string in Type 11
GSW string	GSW string in Type 12
System date & time	The PC's date time

6-1-3 Maintenance Tips for DMI Info

When DMI info is not written (in case of "Default string" or "To Be Filled"), the corresponding portion will be displayed in red like below:

```
This PC's info:
 Name                      Information
 ------------------------    ------------------------------------------------
 BIOS version               "1.10"
 System manufacture          "Dynabook Inc."
 System product             "Default String"
 System version             "Default String"
 System Serial number        "Default String"
 System UUID                "00020003000400050006000700080009h"
 System SKU number           "Default String"
 OEM String                 "Default String"
 GSW String                 "Default String"
 System date & time           2022/01/19 15:37
```

6-2 DMI Update

6-2-1 Function Description

When motherboard is replaced for maintenance parts, DMI info needs to be updated/restored. Please use this menu to update DMI info.

Note:

6. This function will try to write Manufacture Name as "Dynabook Inc." first directly in case of it is not (for the first time). And if current UUID is invalid (all 0 or 1), it will generate a System UUID automatically and write it to the PC.

6-2-2 Update Procedure

1) Startup the Hokusai 10 Maintenance Tool, on the initial screen, input **[1]** and press the **[Enter]** key.
   (The DMI update program will be executed.)

```
* 1 - DMI Update                                                    *
```

2) The program can update Product Name/Version Number/Serial Number/SKU Number/OEM String/GSW String as shown like below.

```
  dynabook DMI Information data maintenance program Ver. 1.0.1.0

Manufacturer Name         : Dynabook Inc.
Product Name              : SATELLITE PRO C40D-B
Version Number            : PYU16L-AAA11
Serial Number             : 71076857H
SKU Number                : PYU16L
OEM String                : PYU16L-AAA11,TIH05829ZVA#B
GSW String                : GSW:1000000000
------------------------------------------------------------------------

New Product Name          : _
New Version Number        :
New Serial Number         :
New SKU Number            :
New OEM String            :
New GSW String            :
```

3) Enter the new DMI data that you wish to update, it will show like below when updated successfully.

```
  dynabook DMI Information data maintenance program Ver. 1.0.1.0

 Manufacturer Name         : Dynabook Inc.
 Product Name              : SATELLITE PRO C40D-B
 Version Number            : PYU16L-AAA11
 Serial Number             : 71076857H
 SKU Number                : PYU16L
 OEM String                : PYU16L-AAA11,TIH05829ZVA#B
 GSW String                : GSW:1000000000
------------------------------------------------------------------------
5/11/2021 12:22:49 AM DMI Data SATELLITE PRO C40D-B written successfully
 New Product Name          : SATELLITE PRO C40D-B
 New Version Number        : _
 New Serial Number         :
 New SKU Number            :
 New OEM String            :
 New GSW String            :
```

4) And you can skip updating current DMI data by pressing **[Enter]** directly like below:

```
  dynabook DMI Information data maintenance program Ver. 1.0.1.0

 Manufacturer Name         : Dynabook Inc.
 Product Name              : SATELLITE PRO C40D-B
 Version Number            : PYU16L-AAA11
 Serial Number             : 71076857H
 SKU Number                : PYU16L
 OEM String                : PYU16L-AAA11,TIH05829ZVA#B
 GSW String                : GSW:1000000000
------------------------------------------------------------------------
5/11/2021 12:24:33 AM Skip updating DMI Data
 New Product Name          : SATELLITE PRO C40D-B
 New Version Number        :
 New Serial Number         : _
 New SKU Number            :
 New OEM String            :
 New GSW String            :
```

5) If you enter a DMI data that does not match the pattern (regular expression), it will show prompt like below.

```
  dynabook DMI Information data maintenance program Ver. 1.0.1.0

 Manufacturer Name          : Dynabook Inc.
 Product Name               : SATELLITE PRO C40D-B
 Version Number             : PYU16L-AAA11
 Serial Number              : 71076857H
 SKU Number                 : PYU16L
 OEM String                 : PYU16L-AAA11,TIH05829ZVA#B
 GSW String                 : GSW:1000000000
------------------------------------------------------------------------
5/11/2021 12:25:12 AM Not pattern ^[A-Z0-9]{9}$
 New Product Name           : SATELLITE PRO C40D-B
 New Version Number         :
 New Serial Number          : XX
 New SKU Number             :
 New OEM String             :
 New GSW String             :
```

6) The patterns (regular expressions) for the DMI data can be configured in below file (\bin\update_dmi_info.exe.config).

update_dmi_info.exe.config

```
1  <?xml version="1.0" encoding="utf-8" ?>
2  <configuration>
3    <appSettings>
4      <add key="product_name_input" value="^(dyna|SATELLITE).*$" />
5      <add key="version_no_input" value="^[A-Z0-9-,/]{8,}$" />
6      <add key="serial_no_input" value="^[A-Z0-9]{9}$" />
7      <add key="sku_no_input" value="^[A-Z0-9]{6}$" />
8      <add key="oem_string_input" value="^[A-Z0-9-]+(,[A-Z0-9]{11}.+)?$" />
9      <add key="gsw_string_input" value="^(GSW:1000000000|GSW:2000000000|GSW:0000000000)$" />
10   </appSettings>
11 </configuration>
```

6-3 Others

6-3-1 Reboot into BIOS

On the initial screen, input **[40]** and press the **[Enter]** key to reboot & enter BIOS Setup.

(You can use this menu handily to reboot into BIOS & to do some confirmation or BIOS settings if you want.)

6-3-2 Shutdown

On the initial screen, input **[50]** and press the **[Enter]** key to shut down the system.

7 Appendix

7-1 How to create a bootable Hokusai10 Maintenance Tool

7-1-1 Create Procedure

1) Prepare a USB flash media and insert it to a PC that running Windows 10/11.
2) Search cmd.exe (Command Prompt), right-click on it and select [Run as administrator].
3) Enter diskpart, and then enter below commands:

> **Note:** Please make sure you format the correct drive (select a correct disk number of the USB media in below step 2), because all the data of that drive will be lost!

1. List disk // Check the disk number for the USB media inserted.
2. Select disk **2** // Select the USB media (number **2** in this case as an example).
3. Clean // Clean the partition table of USB media
4. Convert gpt // Convert the disk to GPT format.
5. Create partition primary // Create a primary partition.
6. Format fs=fat32 label=BIOS_DMI_UP quick // Format it to a FAT32 file system partition
7. Exit // Exit the diskpart program.

```
C:¥Windows¥system32>diskpart
Microsoft DiskPart version 10.0.17763.1
Copyright (C) Microsoft Corporation.
On computer: SCD-LIZC-P01
DISKPART> list disk
  Disk ###  Status        Size     Free     Dyn  Gpt
  --------  -------------  -------  -------  ---  ---
  Disk 0    Online         931 GB      0 B        *
  Disk 1    Online         476 GB  5120 KB        *
  Disk 2    Online        7415 MB  7413 MB        *
DISKPART> sel disk 2
Disk 2 is now the selected disk.
DISKPART> clean
DiskPart succeeded in cleaning the disk.
DISKPART> convert gpt
DiskPart successfully converted the selected disk to GPT format.
DISKPART> create partition primary
DiskPart succeeded in creating the specified partition.
DISKPART> format fs=fat32 label=YP40_MT_v1.00 quick
  100 percent completed
DiskPart successfully formatted the volume.
DISKPART> exit
Leaving DiskPart...
C:¥Windows¥system32>
```

Make sure here select the correct USB disk number
(Below "clean" command will erase the disk)

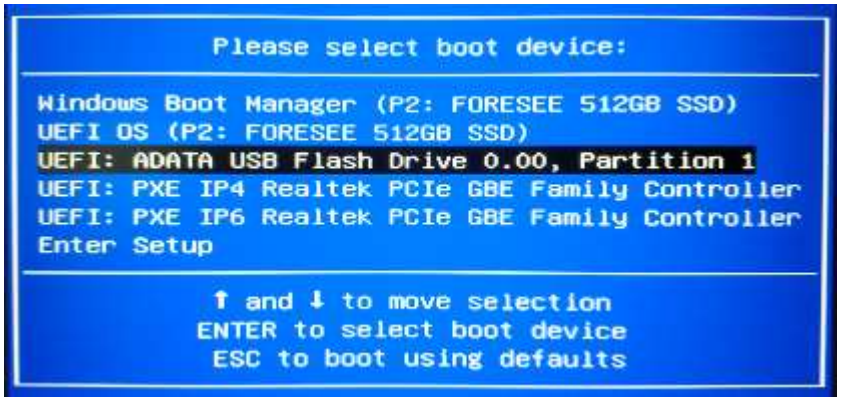
4) Mount the Hokusai10**_Maintenance_Tool_V*.**.iso image to a virtual drive.
   (On windows 10/11, you can right-click it and select "Mount" menu. Here V*.** is the tool version.)
5) Copy all the image files from the mounted virtual drive to the USB flash media.
   (You can press Ctrl +A to select all, right-click it and "Send to" the USB flash media.)

6) Right-click the drive of USB flash media, select "Eject" menu to get a bootable USB flash media of this tool.

7-2 How to startup the Hokusai10 Maintenance Tool

7-2-1 Startup Procedure

1) Create a bootable USB flash media of the WinPE Maintenance Tool according to the Create Procedure in Appendix 3.1.
2) Insert the created USB flash media to the target PC that needs maintenance and then turn on the power.
3) After turning on the power, immediately press the **[F12]** key several times to show the boot device selection screen.
4) Select "UEFI: <USB flash media name>" and press the **[Enter]** key.
   (Below "UEFI: ADATA USB Flash Drive 0.00, Partition 1" is the created USB flash media as an example.)



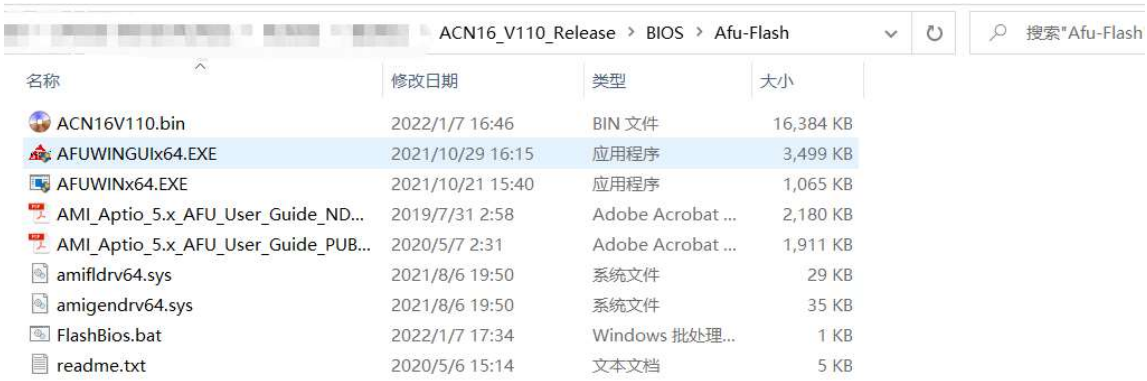
5) The Hokusai10 Maintenance Tool starts up.
6) After WinPE booted up, the initial screen (main menu) is shown like below:

```
This PC's info:
 Name                      Information
 ------------------------    ---------------------------------------------
 BIOS version               "1.00"
 System manufacture          "Dynabook Inc."
 System product             "SATELLITE PRO C40D-B"
 System version             "PYU16L-AAA11"
 System Serial number        "71076857H"
 System UUID                "00020003000400050006000700080009h"
 System SKU number           "PYU16L"
 OEM String                 "PYU16L-AAA11,TIH05829ZVA#B"
 GSW String                 "GSW:1000000000"
 System date & time           2022/01/19 14:37
*********************************************************************************
* 1 - DMI Update                                                          *
* ----------------------------------------------------------------------- *
* 40 - Reboot & Enter BIOS Setup                                           *
```

8 BIOS update

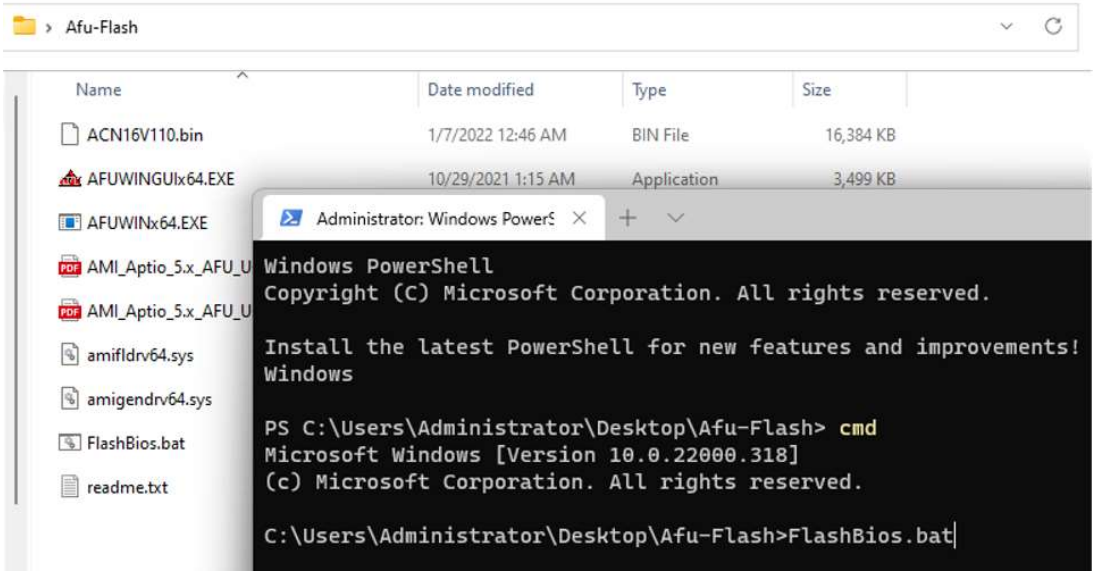
8-1 Windows mode update

1). Decompression bios package to desktop



2). click on "Open Windows PowerShell as administrator (menuitem)

3). Please connect the charger beforerunning, And ensure that the battery capacity is higher than 15%; Type cmd and press ente key;type Flash Bios.bat and press enter key，



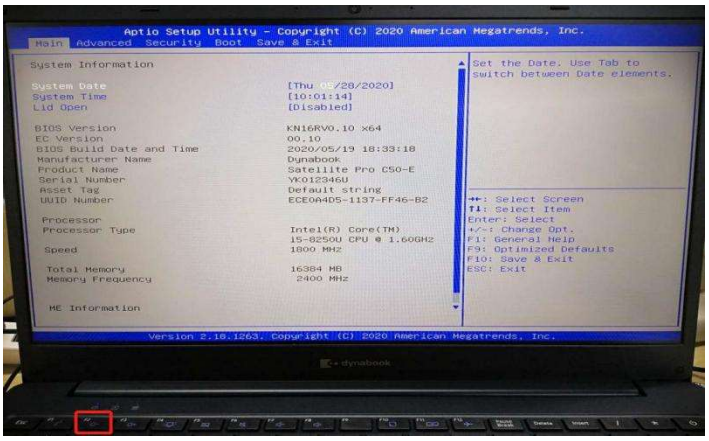
Make sure **Process completed** shows before restart otherwise

Please Run f.bat again.

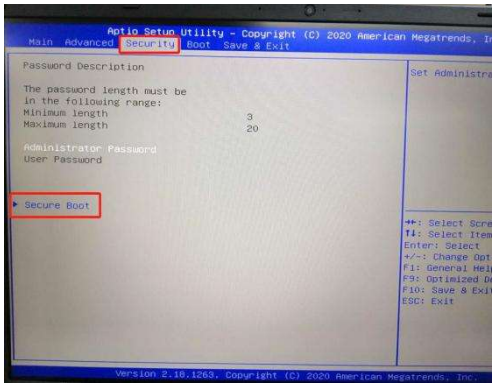
8-2 Shell mode update (USB flash)

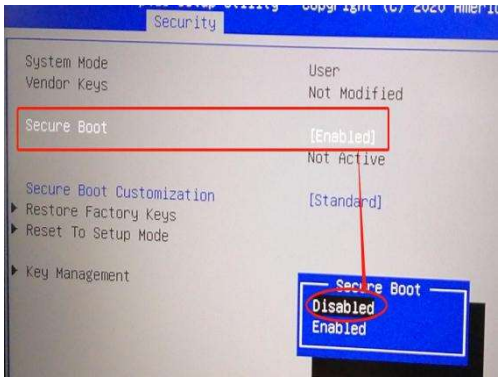
1). Decompression EFI package & BIOS package to the root path of the FAT32 format U-disk ;

2). Insert U-disk to the system, Power on and Press F2 to enter BIOS setup;

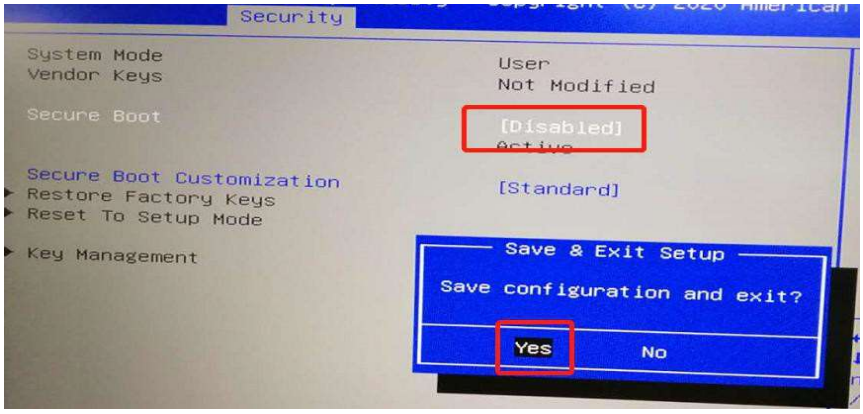


3). Check “Secure Boot” item, if secure boot is enable, set it to disable;

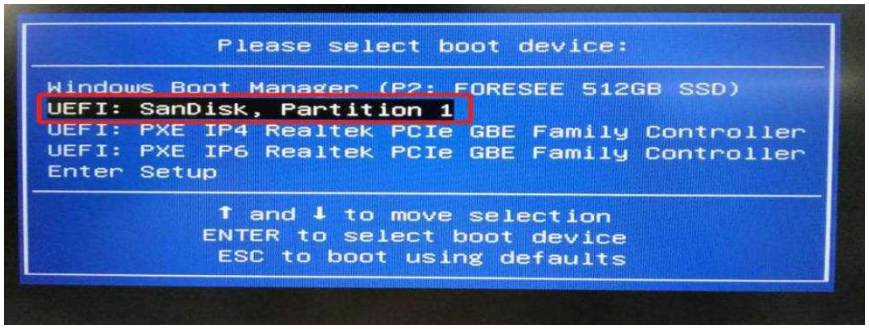




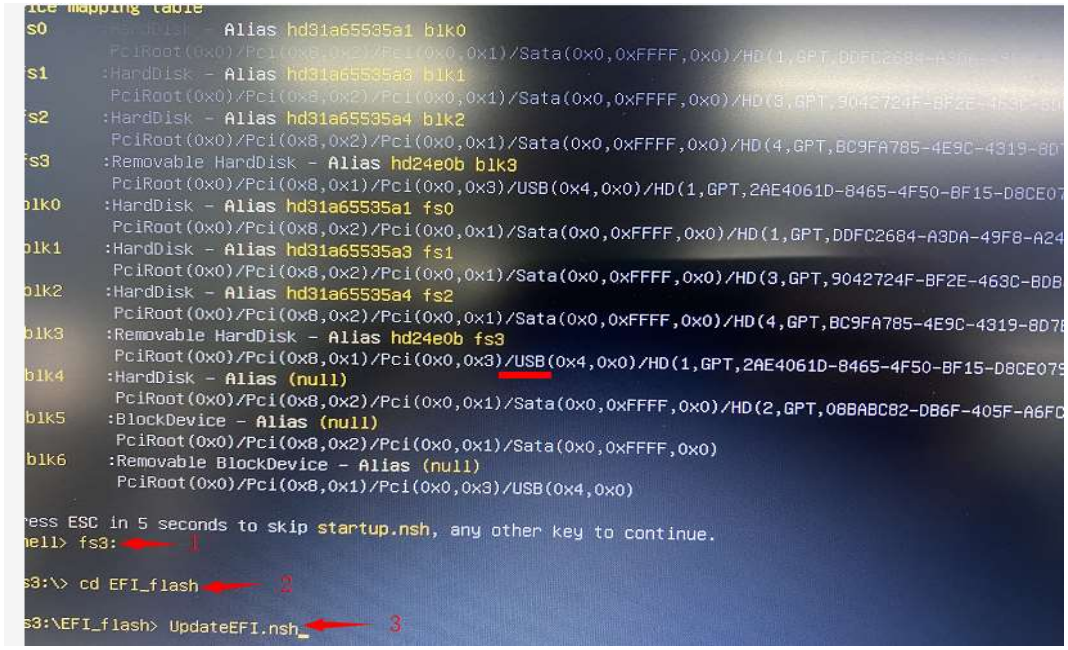
4). Press F10 to save change.



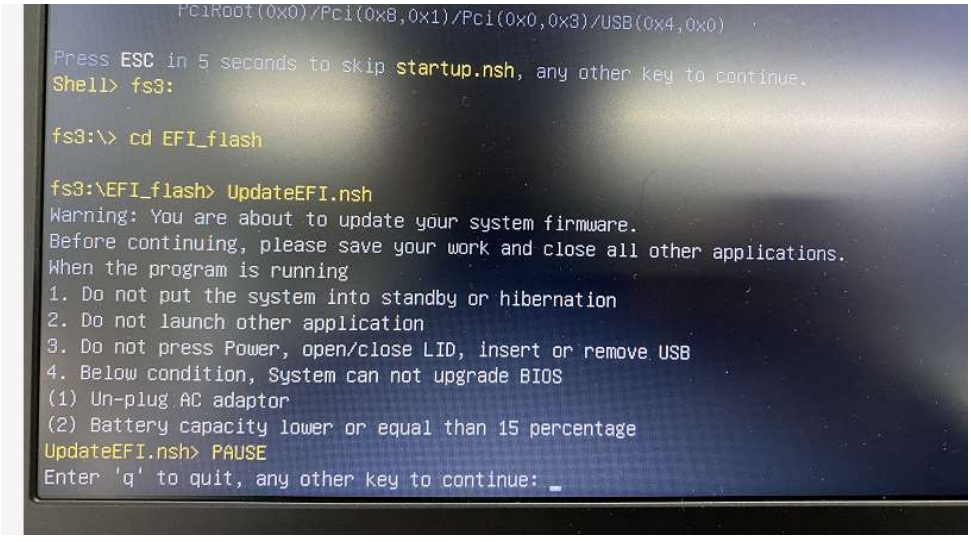
5). Reboot system, and Press F12 to enter Boot Menu and select u-disk to boot, system will boot to shell;



6). Into the USB drive path; e.g. fs3 is the USB drive path,then type fs3: and press Enter key;Go to the EFI_flash directory, Type UpdateEFI.NSH and press Enter key to run



7). Press any key to continue



8). After the BIOS is updated, the system will automatically restarts

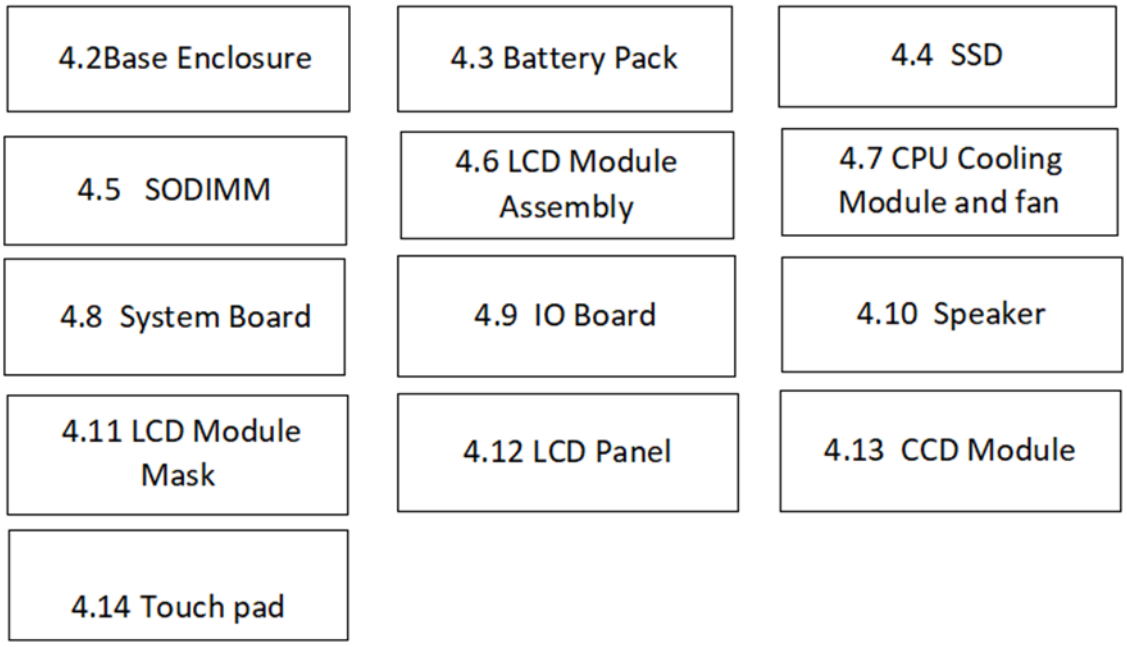
Chapter 4
Replacement Procedures

Chapter 4 Contents

Figures

4.1 General

This chapter explains how to disassemble the computer and replace Field Replaceable Units (FRUs). Some replacement procedures may not require you to remove all the surrounding FRUs to replace only one FRU. The chart below shows the FRUs in the order in which they should be removed in a top-down manner, irrespective of their physical locations. The FRUs shown in the top area of the chart should normally be removed before removing the FRUs shown in the bottom area. To replace the FRUs, first identify the suspect FRU for the system failure. Next, according to this chart, determine the FRUs that need to be removed before removing the suspect FRU. After you determine those FRUs, go to the appropriate sections according to the section numbers shown in the boxes. Then start removal and replacement.



How to use the chart (two examples):

• For removing the System Board:

First, remove Base Enclosure, Battery Pack and display assembly. Then, remove SSD, and all cable, all of which are shown above the System Board.

• For removing the LCD Module:

First, remove the display mask, both of which are shown above the LCD module.

Safety Precautions

Before you begin to disassembly read the following safety precautions carefully. Be sure to follow them while you are working.

DANGER:

1. ***Always use the genuine batteries or replacement batteries authorized by Dynabook. Batteries other than those differ in specifications and are incompatible with the computer. They may burst or explode. To avoid leakage of alkaline solutions, never heat or disassemble the battery packs. Never throw the battery packs into a fire. If this is violated, they will explode.***
2. ***The components such as the power supply and FL inverter carry high voltages. When you partially disassemble the computer and turn on the components, use extreme care not to touch the connectors and components to avoid the risk of electrical shock. Do not disassemble individual components during first-level maintenance.***

WARNING:

1. ***To avoid the risk of electrical shock, turn the computer off and remove the AC adapter from the electrical outlet.***
2. ***Because the battery in the computer is left charged, the risk of electrical shock remains even after the AC adapter is removed from the electrical outlet. To avoid the risk of electrical shock, be sure to remove any metal jewelry or accessories such as necklaces, bracelets, and rings before starting work. Never work with damp or wet hands.***
3. ***To avoid personal injury, use care to avoid the sharp edges or corners of the components.***

CAUTION:

1. ***Before replacing a component, make sure that the replacement component meets the required specifications. To avoid computer failures, never use components that do not meet the specifications.***
2. ***To avoid internal damage such as short circuits and fire, never drop metal objects such as screws, pins, paper clips, etc. into the components. When a screw is removed, be sure to replace a screw that is the same size as the original screw. Make sure that all the screws are fastened securely. Loose screws can cause short circuits, overheating, smoke, or fire.***
3. ***Before raising a FRU or other component, make sure that all the component cables have been disconnected to avoid the risk of electrical shock caused by accidental contact with the energized components.***
4. ***For AC input, be sure to use the AC adapter and AC power cable that come with your computer or Dynabook-recommended equivalents.***
5. ***To avoid the risk of electrical shock, make sure that all the replacement components meet the specifications of the computer and that all the cables and connectors are fastened securely.***
6. ***Inside the PC are components that become hot during operation (such as the CPU and cooling module). To avoid burns, let the hot components cool down before starting inspection or repair task.***

Before You BeginBefore

Before you begin to disassembly the computer, keep in mind the precautions and advice in this section. Always begin disassembly by removing the AC adapter and battery pack. Remove the optional parts and accessories as well. The procedures for removing the batteries will be explained later.

Disassemble the computer only when an abnormality has occurred.

Use only the recommended tools.

To run and store the computer, be sure to prepare a working environment that is free from:

- Dust and contaminants
- Static electricity
- Extremely high or low temperatures and extremely high humidity

Run the diagnostic tests explained in Chapter 3 of this manual to identify the FRU that has probably caused the system failure.

Perform only the required machine operations. Use only the disassembly and reinstallation procedures described in this manual.

Place the removed components in a safe place away from the computer so that they are not damaged or get in the way of you doing your work.

Normally, a number of screws need to be removed or replaced during disassembling. Place the removed screws in a safe place so that you can easily find the right screws for the right components.

When assembling the computer, use the specified screws to fasten the parts to the specified locations. See the appropriate explanations and figures for screw sizes.

To avoid personal injury, use care to handle components that have sharp edges or corners.

After you have replaced a FRU, check that the FRU works correctly to ensure normal computer operation.

Disassembly Procedures

The cable connectors come in these two basic types:

- Pressure plate connectors
- Normal pin connectors

To remove a pressure plate connector, pull up the tabs on either side of the connector's plastic pressure plate and gently pull the cable out of the connector. To reconnect the cable to the pressure plate's connector, raise the pressure plate up to a satisfactory height and slide the cable into the connector. Secure the cable in the correct position by pressing down the sides of the pressure plate so that the plate is flush with the sides of the connector. Grasp and pull the cable gently to check that the cable is connected firmly. If the cable comes off the connector, reinsert the cable by raising the pressure plate up to a satisfactory height.

Normal pin connectors are used for all the other types of cables. These connectors can be installed or removed by simply inserting them or pulling them out.

Assembly Procedures

You have to reassemble the computer after you have disassembled the computer and fixed the component that caused the problem.

When reassembling the computer, keep the following general guidelines in mind:

- Take your time to carry out the suggested instructions completely. Hurried reassembly can often cause problems.
- Check that all the cable and connectors are fastened securely.
- Before securing the FRUs or other parts, check that the cables are not caught by the screws or FRUs.
- Check that all the latches are closed securely.
- Check that all the required screws are used to secure the FRUs. Using wrong screws can damage the threads or heads of the screws or does not ensure that the FRUs are secure.

After installing a FRU, make sure that the FRU and computer work normally.

Tools and Equipment

For your safety and that of other people in the working environment, it is strongly recommended that you use electrostatic discharge (ESD) equipment. The proper use of this equipment will ensure successful repair work and reduce the costs for repairing damaged components. The equipment and tools required for disassembly and reassembly are:

- One 2 mm Phillips screwdriver
- Tweezers (for pulling out screws)
- ESD mats (for the floor and work desks)
- An ESD wrist strap or heel grounder
- Anti-static carpets or flooring
- Air ionizers (for highly electrostatic sensitive areas)
- A plastic card (in credit card size)

Screw Tightening Torque

To secure screws, follow the torque values listed below. Over tightening can damage components and screws. Under tightening can loosen the screw or cause screws to come off, which may result in short circuits or other damage.

- M2.0*L3.0*D7.5*T0.5 0.36 N·m (2.0 kgf·cm)
- M2.0*L3.0*D4.5*T0.5 0.22 N·m (1.5 kgf·cm)
- M2.0*L2.5*D5.0*T0.5 0.22 N·m (1.5 kgf·cm)
- M2.0*L3.5*D4.5*T0.5 0.36 N·m (2.0 kgf·cm)
- M2.0*L5.5*D4.5*T0.5 0.36 N·m (2.0 kgf·cm)
- M2.0*L7.5*D4.5*T0.5 0.36 N·m (2.0 kgf·cm)

4.2 Base Enclosure

Removing Base Enclosure

Remove Base Enclosure according to the following procedures and Figure 4-7.

1. Remove seven M2.0x7.5x4.5black Phillips head screws securing Base Enclosure and four M2.0x.3.5x4.5black Phillips head screws securing Base Enclosure .

2. Remove Base Enclosure..

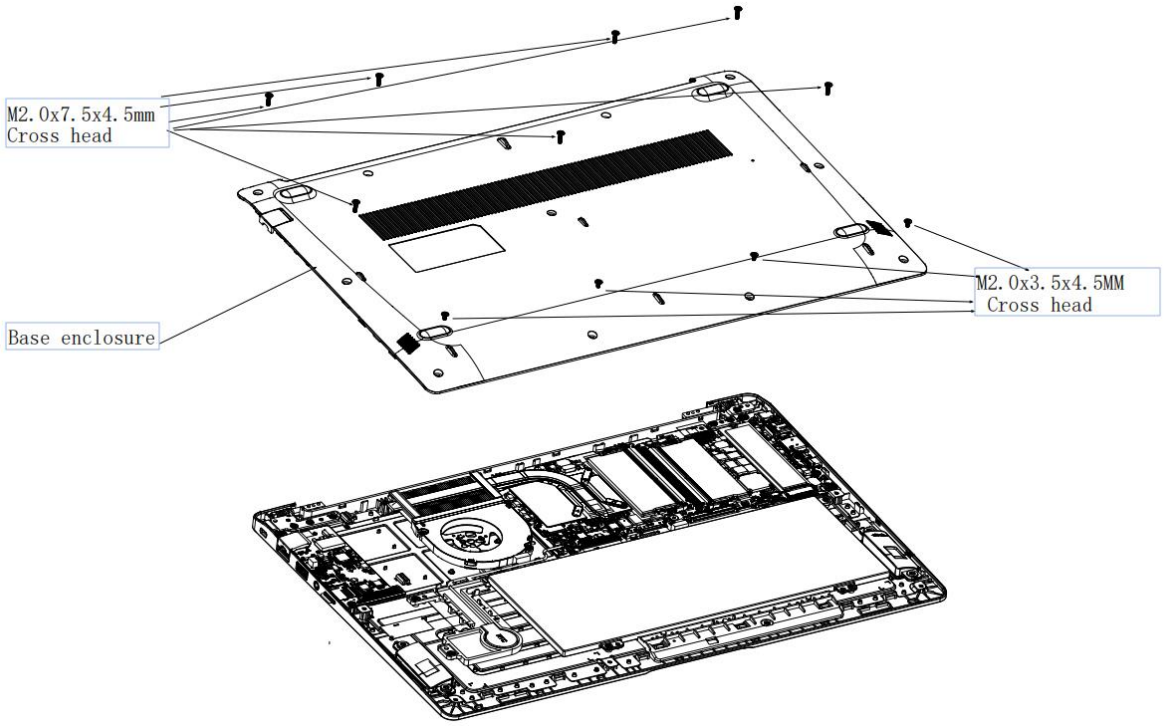


Figure 4-7 Removing Base Enclosure

Installing Base Enclosure

Install Base Enclosure according to the following procedures and Figure 4-7.

1. Place Base Enclosure in correct position.
2. Secure Base Enclosure with seven M2.0x7.5x4.5black Phillips head screws and M2.0x3.5x4.5black Phillips head screws .

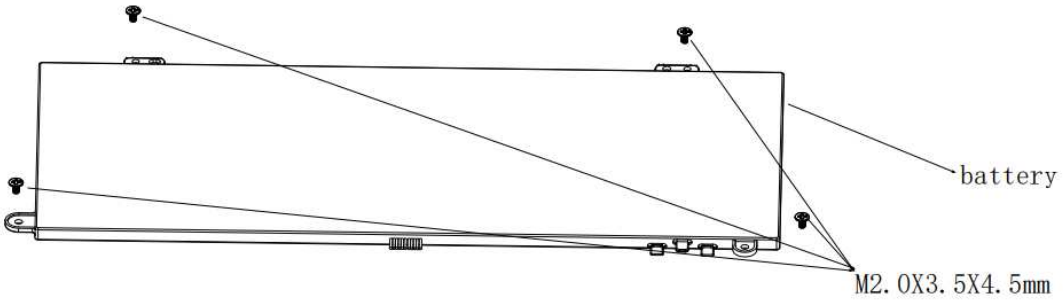
4.3 Battery Pack

Removing Battery Pack

Remove battery pack according to the following procedures and Figure 4-9.

CAUTION: When handling the battery packs, use care not to short circuit the terminals. Do not drop, hit, twist, or bend the battery packs. Do not scratch or break up their casing.

1. Remove Battery Maly.
2. Disconnect Battery cable from CN3 on system board.
3. Remove four M2.0x3.5x4.5 black Phillips head screws securing Battery.
4. Remove Battery.



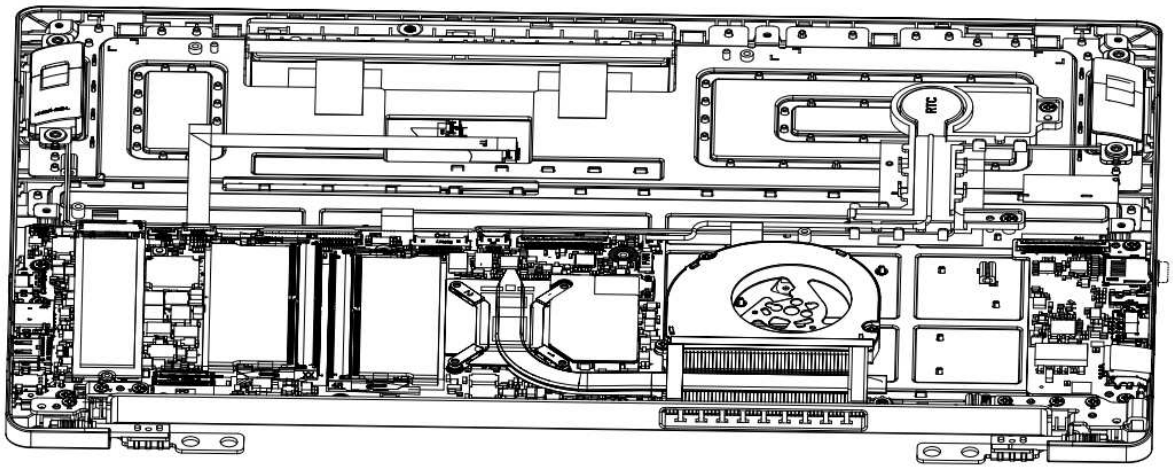


Figure 4-9Removing battery pack

NOTE: Dispose of the used battery packs as required by local ordinances or regulations.

Installing Battery Pack

Install battery pack according to the following procedures and Figure 4-9.

CAUTION: The battery packs contain a lithium ion battery, which can explode due to improper replacement, use, handling, or disposal. Always dispose of the battery packs as required by local ordinances or regulations. Use only replacement batteries recommended by Dynabook.

NOTE: Visually check the battery's terminals. If they are dirty, clean them with a dry cloth.

1. Take a new or recharged Battery Pack.
2. Place Battery Pack in correct position.
3. Secure Battery with four M2.0x3.5x4.5 black Phillips head screws.
4. Check the battery screw hole ,if there is cracking,please replace the parts.
5. Connect Battery cable to CN3 on system board.
6. Installing Battery Maly.

4.4 SSD

Removing SSD

Remove SSD according to the following procedures and Figures 4-13.

CAUTION: Do not touch the connectors on SSD and in the computer with your bare hands. SSD can fail if they are contaminated with sweat, natural oils, etc. from your hands.

1. Remove thermally conductive pad
2. Remove one M2_L0.3xL2.2×OD5.5×T0.6 black Phillips head screw securing the SSD.
3. Pull SSD from CN8 on system board.

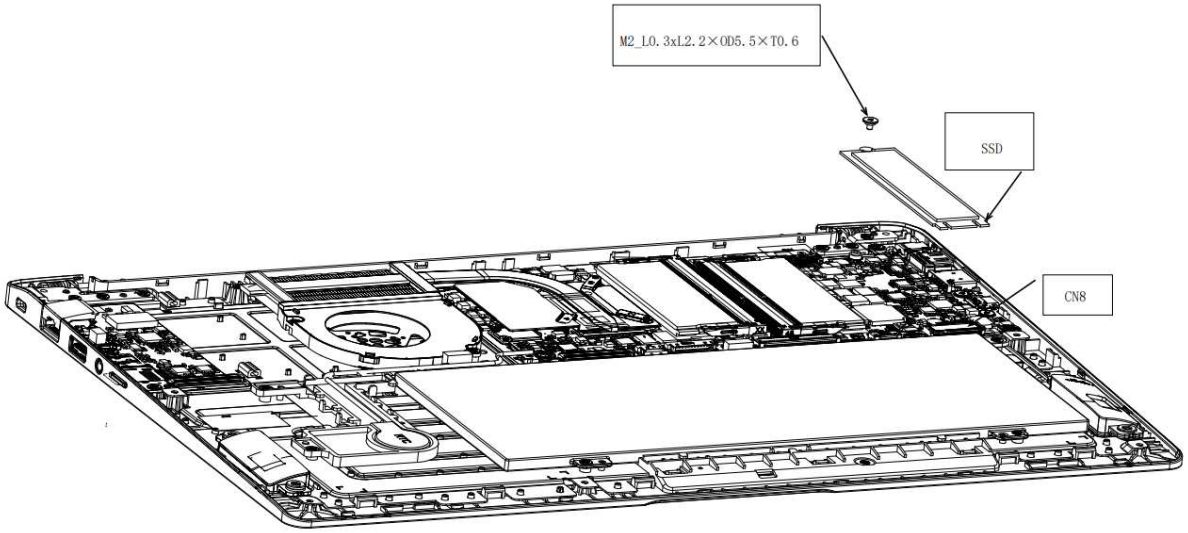


Figure 4-13Removing SSD

Installing SSD

Install SSD according to the following procedures and Figures 4-13.

1.Insert SSD into CN8 on system board.

2.Secure it with one M2_L0.3xL2.2×OD5.5×T0.6 black Phillips head screw.

3.Install thermal silica gel

CAUTION: Do not touch the connectors on SSD and in the computer with your bare hands. SSD can fail if they are contaminated with sweat, natural oils, etc. from your hand

4.5 SODIMM

Removing SODIMM

Remove SODIMM according to the following procedures and Figures 4-14.

*CAUTION: Do not touch the connectors on **SODIMM** and in the computer with your bare hands. **SODIMM** can fail if they are contaminated with sweat, natural oils, etc. from your hands.*

1.Press both sides of the J1 connector shrapnel 15° with both index fingers

2.Take out the SODIMM at 45° horizontal

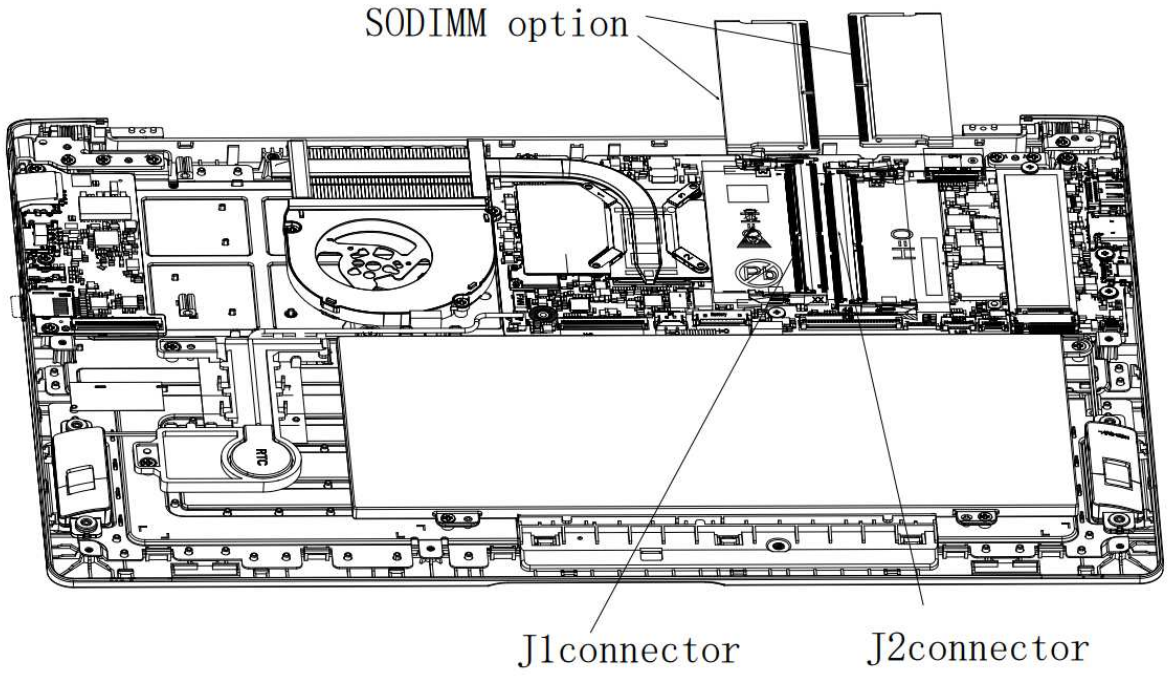


Figure 4-14 Removing SODIMM

Installing SODIMM

Install SODIMM according to the following procedures and Figures 4-14.

1.Aim the SODIMM at the JI slot

2.Lightly press the SODIMM upper and lower sides with two fingers

CAUTION: Do not touch the connectors on ***SODIMM*** *and in the computer with your bare hands.* ***SODIMM*** *can fail if they are contaminated with sweat, natural oils, etc. from your hands*

4.6 LCD Module Assembly

NOTE: Touch SKU will provide the FRU parts as LCD Module Assembly.

Removing LCD Module Assembly

Remove LCD Module Assembly according to the following procedures and Figure 4-17.

1. Remove tape for fasten LCD cable.
2. Remove PC gasket from WIFI module Remove plastic chips on wifi module.
3. Disconnect LCD cable from CN6 on system board.
4. Released wireless antenna cables from top cover latch.
5. Open LCD Module Assembly at an angle of 90 degrees.
6. Remove six M2.0x5.5x4.5 black Phillips head screws securing LCD Module Assembly with top cover.
7. Remove LCD Module Assembly.

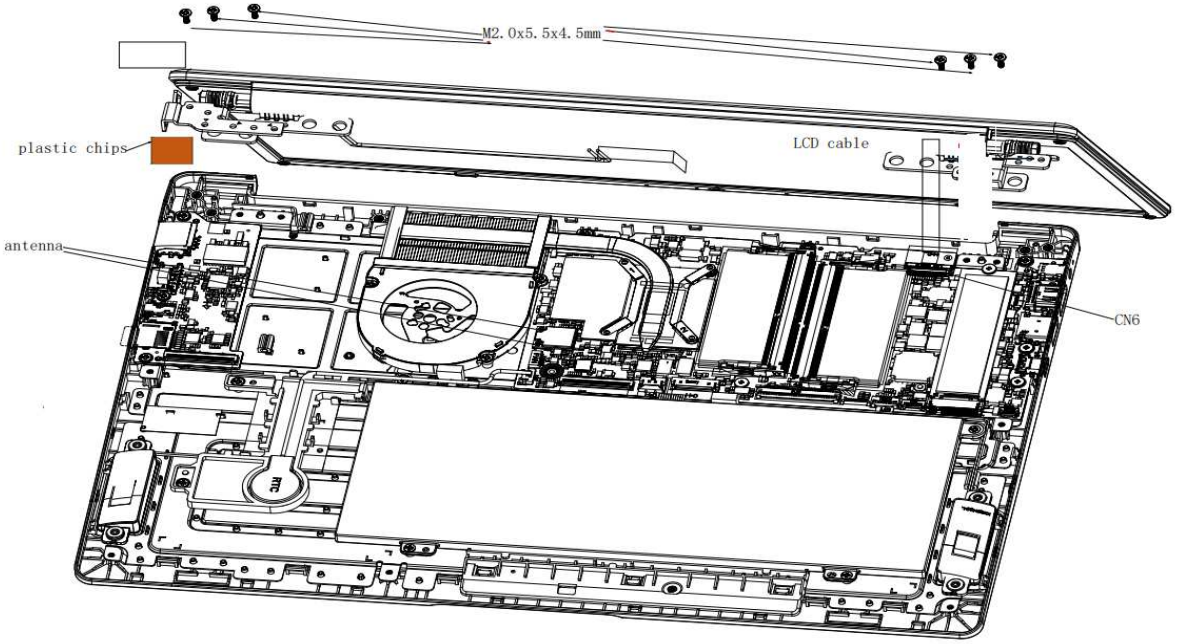


Figure 4-17 Removing the LCD Module assembly

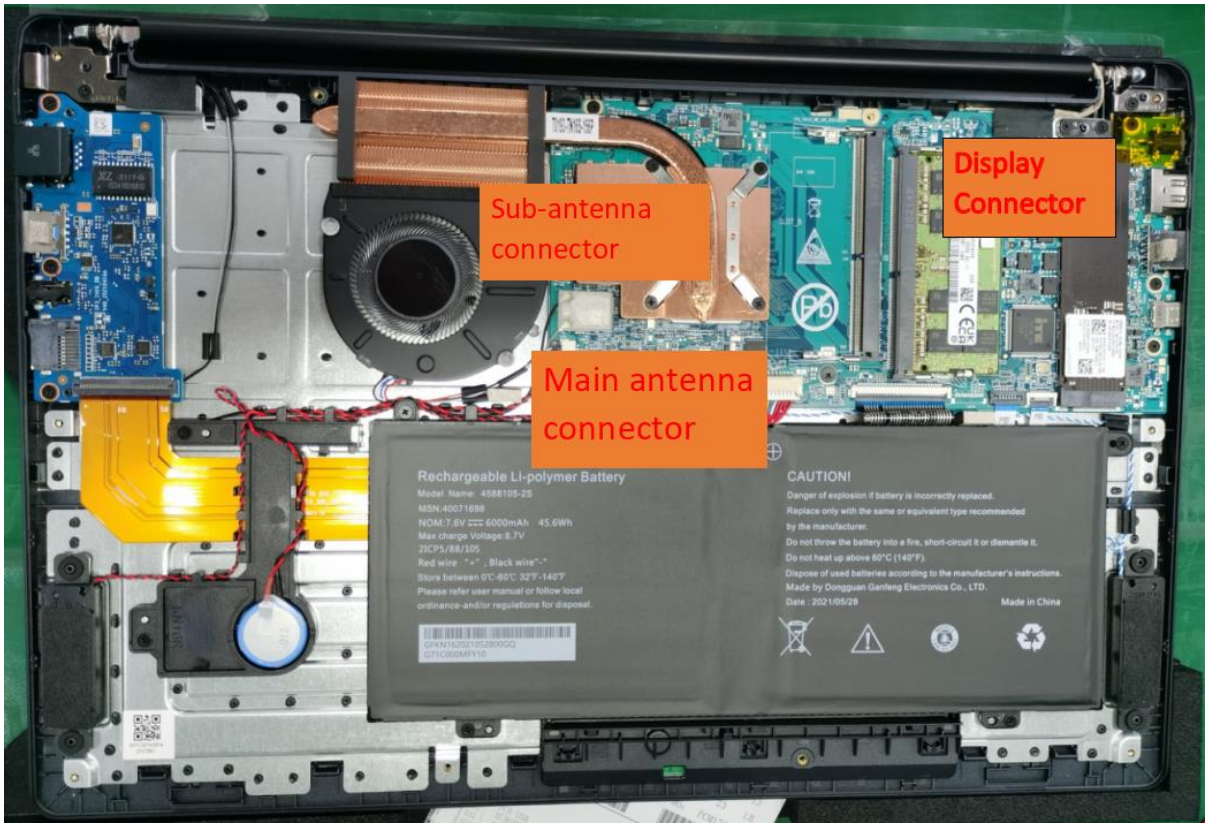


Figure 4-18 Removing the LCD Module assembly

Installing the LCD Module Assembly

Install the LCD Module Assembly according to the following procedures and Figure 4-17and 4-18.

1. Place the LCD Module Assembly in the correct position.
2. Secure LCD Module Assembly with four M2.0x5.5x4.5 black Phillips head screws.

   (▲ mark portions)
3. Close LCD Module Assembly.
4. Note the module definition :grey wire connects MAIN interface and black wire connects AUX
5. Routing antenna cables under Rib on Top cover to secure antenna cables according to Figure 4-18.
6. Put the PC gasket back on the WiFi module Install plastic chips on wifi module.
7. Connect LCD cable to CN6 on system board.
8. Routing LCD cable according to Figure 4-18, need to under Rib on Top Cover.
9. Stick tape to fasten LCD cable.

4.7 CPU Cooling Module and Fan

CAUTION: When removing CPU Cooling Module and Fan, keep following in mind:
The CPU Cooling Module can become very hot during operation. Be sure to let it cool down before starting the repair work. Hold Fan on its outline, do not press on its center.
Do not touch or cause damage to the fan in the CPU Cooling Module.

Remove CPU Cooling Module and Fan_VGA SKU only

Remove CPU Cooling Module and Fan according to the following procedures and Figures 4-19 and 4-20.

1. Remove cushion for FAN.
2. Remove four M2.0x3.0x4.5 black Phillips head screws securing CPU Cooling Module.
3. Remove CPU Cooling Module.
4. Disconnect Fan cable from CN21 on system board.
5. Remove the plastic pad from the fan screw.Remove the plastic pad from the fan screw.
6. Remove three M2.0x3.0x4.5 black Phillips head screws securing Fan.
7. Remove FAN.

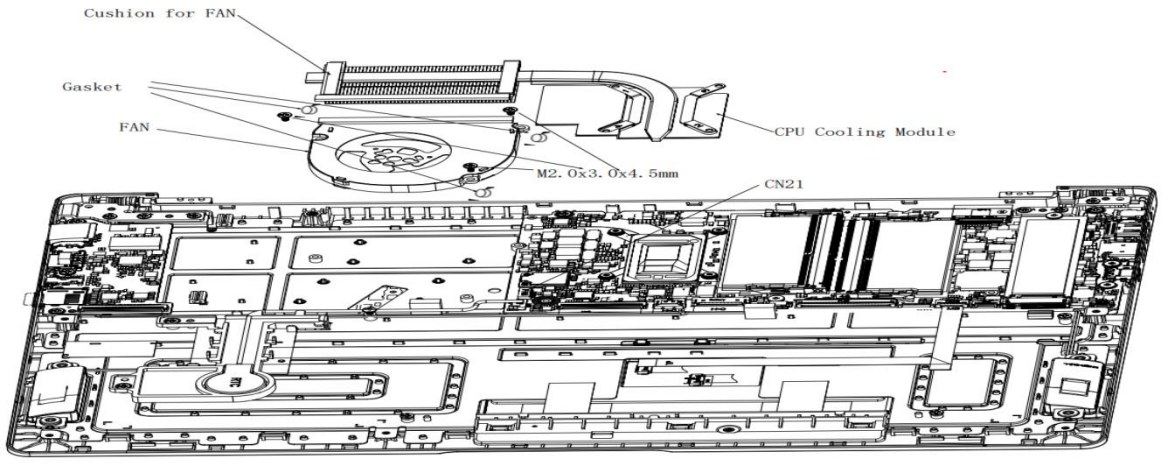


Figure 4-19Removing the CPU Cooling Module and Fan

Figure 4-20 Applying silicon grease

4.8 System Board

Removing System Board

Remove System Board according to the following procedures and Figures 4-21.

1. Disconnect the following cable from the connector on System Board:
   - Speaker cable from SPK.
   - LCD cable from CN6.
   - IO Board cable from CON19
   - Touch Pad cable from TPCON1.
   - Keyboard cable from KBCON1.
   - FAN cable from CN21.
   - Battery Pack cable from CN3.
   - RTC Battery from RTC CN1.
   - Released wireless antenna cables from top cover latch.

2. Remove four M2.0x3.0x4.5and one M2.0x2.5x5.0 black Phillips head screw securing System Board.

3. Remove System Board.

4. Remove the high position adhesive paper of DC seat

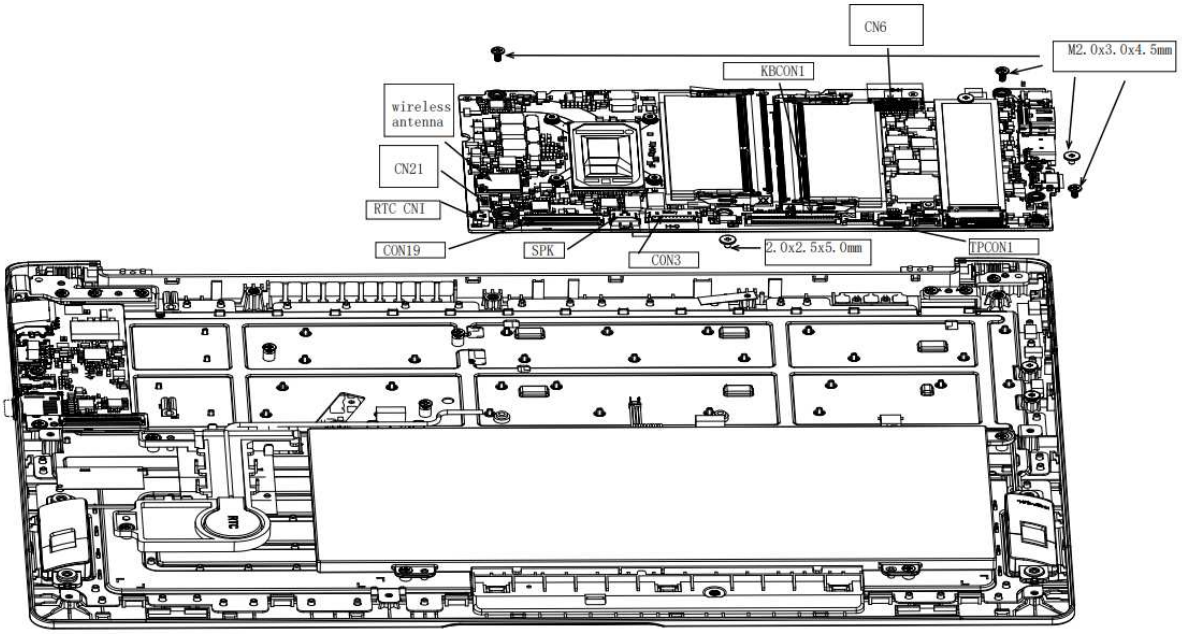


Figure 4-21 Removing System Board

Install System Board according to the following procedures and Figures 4-21.

1. Place System Board in correct position.

2. Securing System Board with four M2.0x3.0x4.5and one M2.0x2.5x5.0 black Phillips head screw.

   (▲ mark portions)

3. Connect following cable to the connector on System Board:

   - Speaker cable from SPK.
   - LCD cable from CN6.
   - IO Board cable from CON19
   - FFC-MB terminal connected to TP-CON1
   - keyboard connection KBCON1,over the speaker wire wiring.
   - FAN cable from CN21.
   - Battery Pack cable from CN3.
   - RTC Battery from RTCCN1.
   - Released wireless antenna cables from top cover latch**.**
   - Place System Board in correct position
   - DC block paste high temperature adhesive paper

NOTE:

Be sure to place all cables into the ditch to avoid the damage during assembling the bottom cover.

NOTE:

Be sure to align Type-C connector to Top Cover, when place system board on the unit..

4.9 IO Board

Removing IO Board

Remove IO Board according to the following procedures and Figures 4-23.

1. Disconnect the following cable from the connector on IO Board:
   - IO Board cable from JDB1

2. Remove three M2.0x3.0x4.5 black Phillips head screw securing IO Board.

3. Remove the IO panel Myla.

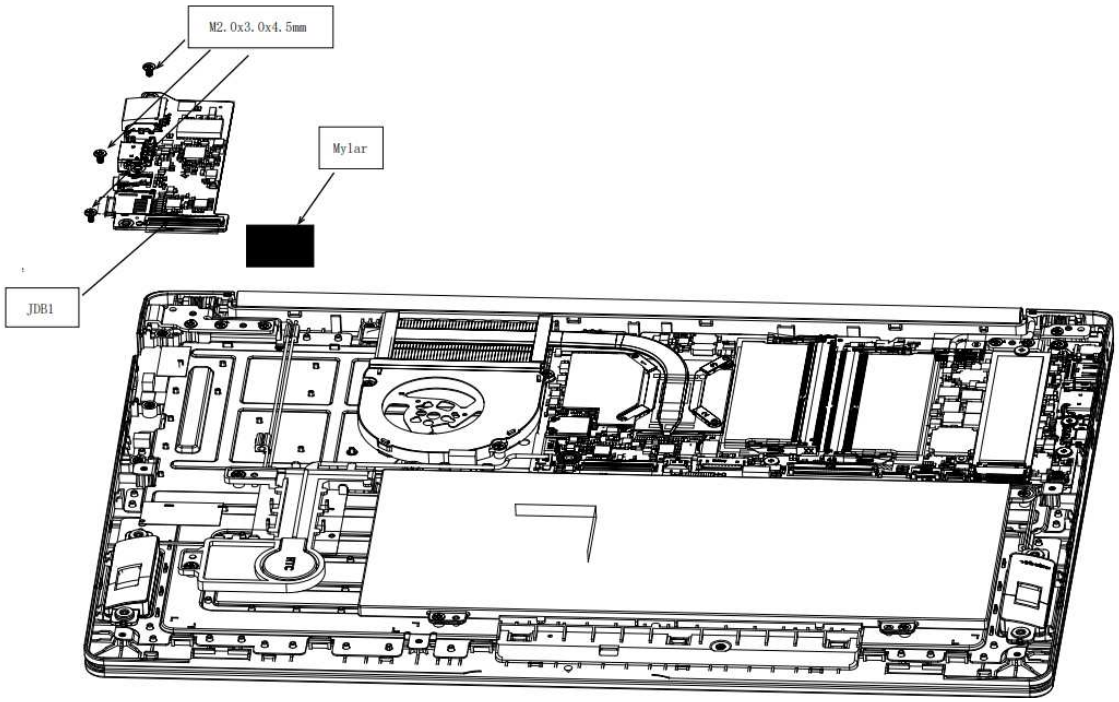


Figure 4-23 Removing IO Board

Install IO Board according to the following procedures and Figures 4-23.

1. *Place IO Board in correct position.*

2. Securing IO Board with three M2.0x3.0x4.5 black Phillips head screw.

3. Connect following cable to the connector on System Board:

    -IO Board cable from JDB1

4. Stick tape on the IO Board.

4.10 Speaker

Removing Speaker

Remove Speake according to the following procedures and Figure 4-25.

1. Disconnect Speaker cable from SPK on system board.
2. Remove left and right Speaker.

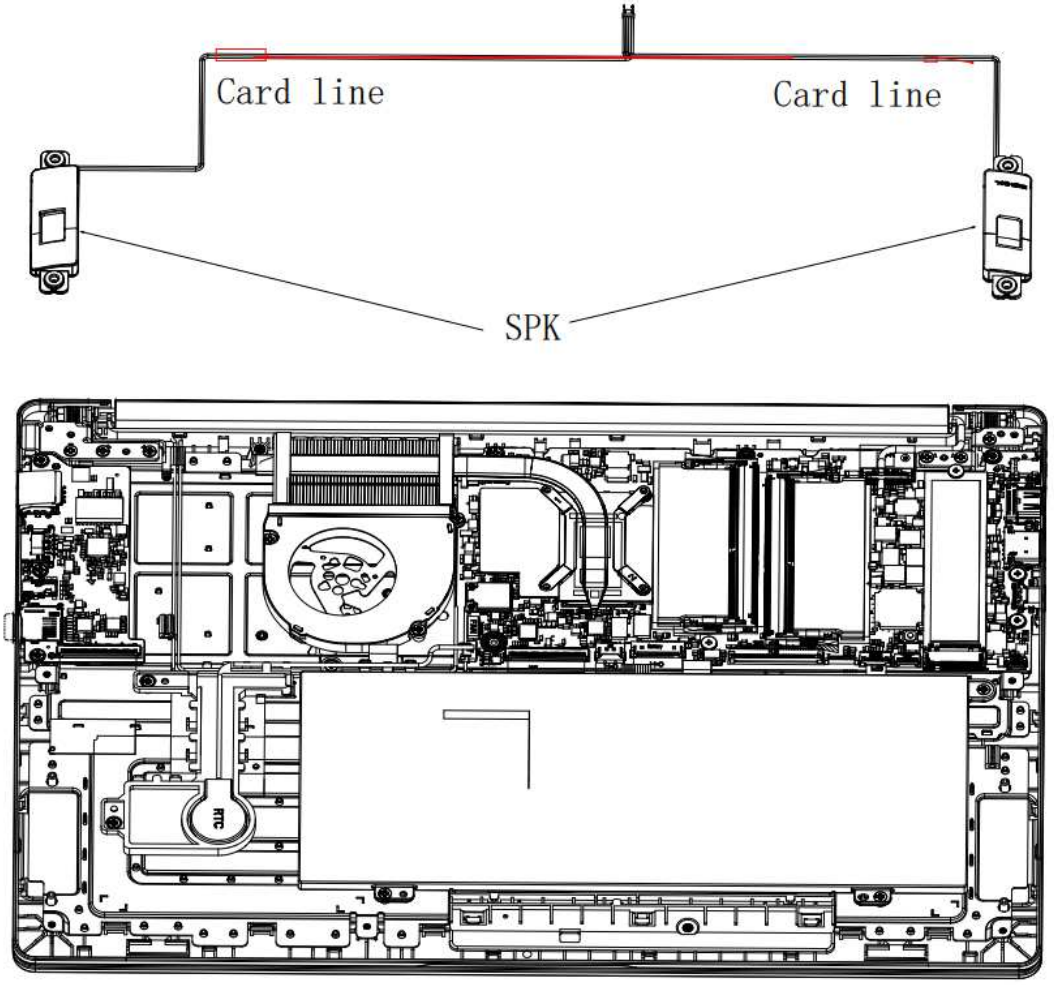


Figure 4-25 Removing Speaker

Installing Speaker

Install Speaker according to the following procedures and Figure 4-25.

1. Place speaker in correct position.
2. Connect speaker cable to SPK on system board

4.11 LCD Module Mask

NOTE: *This chapter is only for Non-Touch SKU. We provide Touch Panel Assembly for Touch SKU.*

Remove the LCD Module Mask

Removing the LCD Module Mask according to the following procedures and Figure 4-11 & 4-12.

1. 1.Remove four Black (Remove the four rubber footpads from the B shell)
2. Remove four M2.0x3.0x4.5 black Phillips head screws securing the LCD Module Mask as Figure 4-11 shown .
3. Insert your finger between the edge of LCD Module Mask and the LCD panel by twist in correct indication and follow step 1, 2 & 3 to release the latches as Figure 4-27 shown.
4. Remove the LCD Module Mask while unlatching the LCD Module Mask.

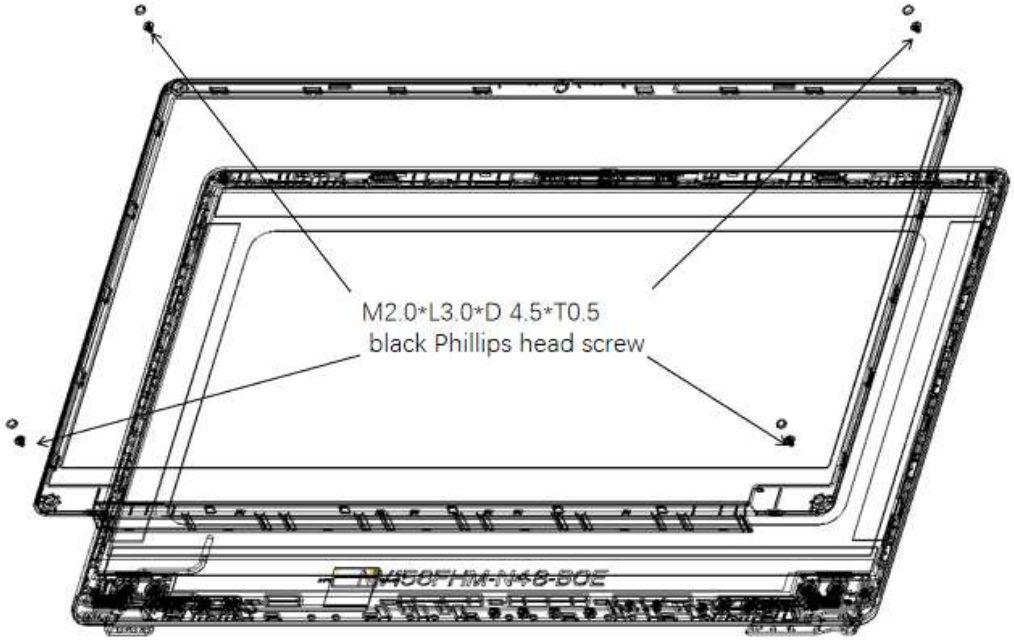


Figure 4-27 Removing the LCD Module Mask

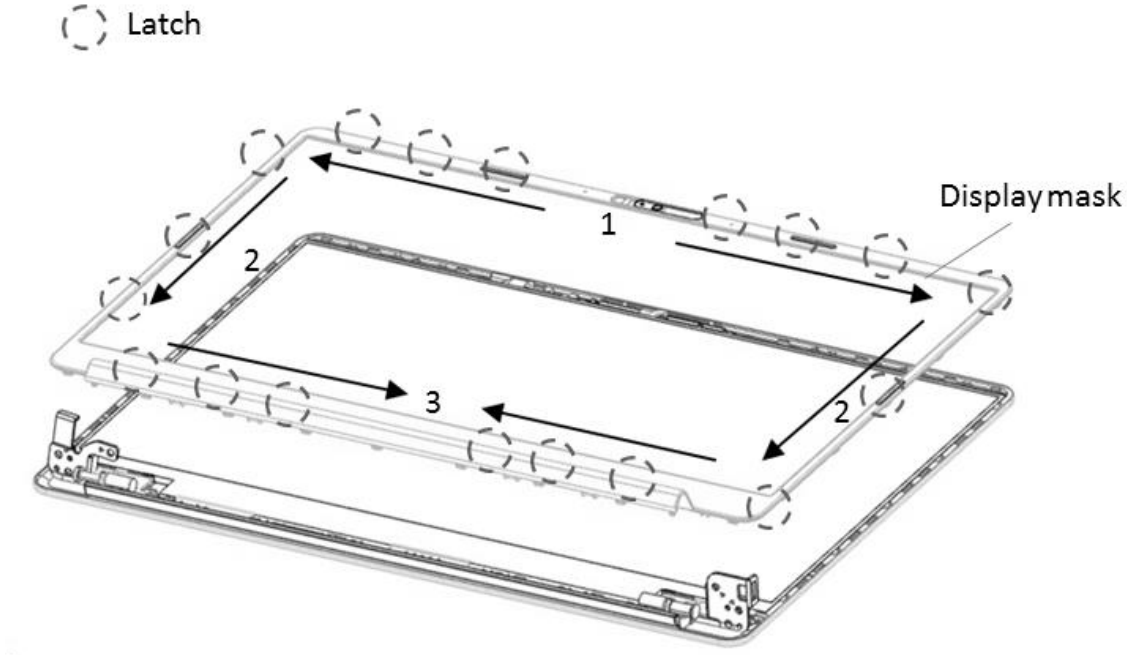


Figure 4-28 Removing the LCD Module Mask

Installing the LCD Module Mask

Install the LCD Module Mask according to the following procedures and Figure 4-27 & 4-28.

1. Install the LCD Module Mask and follow step 3, 2 & 1 to press & lock the latches.
2. Securing the LCD Module Mask with four M2.0x3.0x4.5 black Phillips head screw.
3. Install 4 rubber foot pads Install four plastic pads.

NOTE: *When installing the LCD Module Mask, ensure there is no gap between the LCD Module Mask and the LCD module cover.*

NOTE: *Do not lose the Camera Shutter.*

4.12 LCD Panel

NOTE: *Touch SKU will provide the FRU parts as LCD Module Assembly.*

This chapter only for Non-Touch SKU.

NOTE: *ICs are fragile. Use extreme care not to apply pressure to the ICs along the edges of the LCD module.*

NOTE: *Dispose of used LCD Panel (fluorescent (FL) tubes) as required by local ordinances or regulations.*

NOTE: *The LCD cable must be carefully peeled away before disconnecting it from the module.*

Removing the LCD Panel

Remove the LCD Panel according to the following procedures and Figures 4-29 & 4-30.

1. Follow the Figure 4-29 direction 1 to lift up LCD panel.
2. Carefully tilt the LCD module toward you.
3. Turn the LCD upside down. Be sure to place it on a cushioned surface such as a foam pad.
4. Remove the tape and LCD cable connector. Then disconnect the LCD cable as Figure 4-30 shown.

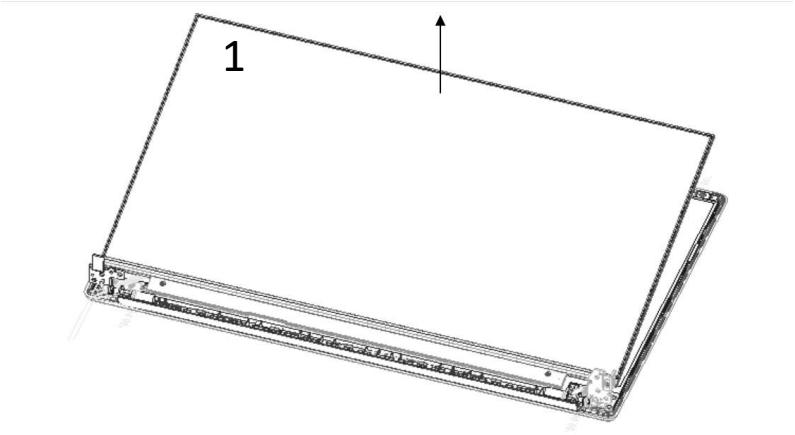


Figure 4-29 Removing LCD Panel follow direction 1.

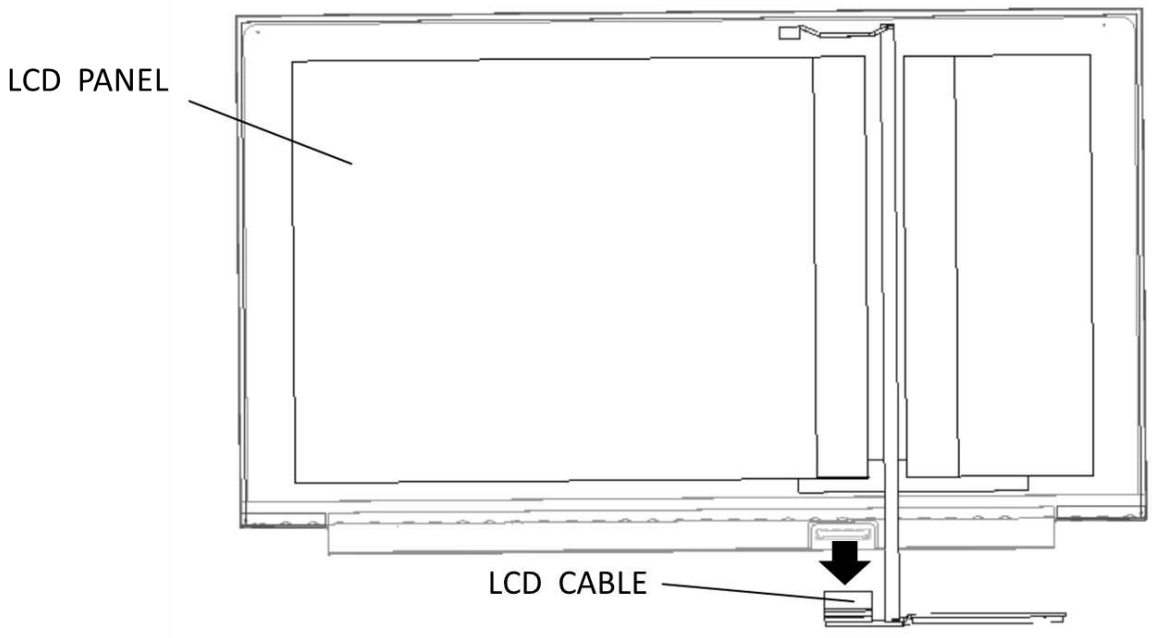


Figure 4-30 removing the LCD cable

Installing the LCD Panel

NOTE: *LCD/FL cable must be carefully peeled away before disconnecting it from the module.*

Install the LCD Panel according to the following procedures and Figures 4-29and4-30

Installing the LCD panel

Install the LCD Panel according to the following procedures.

1. Turn the LCD upside down.
2. Connect the LCD cable to the LCD module connector as Figure 4-30-1 shown.
3. Lift LCD panel top side up as Figure4-30 shown anbottom side down on the LCD module cover.
4. d then place the LCD panel Check LCD cable below the LCD module cover latch as Figure 4-30 shown.

CAUTION: *When installing the LCD module, please follow below instruction:*
When plug in LCD/FL cable into LCD panel connector, need to plug horizontally.

4.13 CCD Module

NOTE: *Touch SKU will provide the FRU parts as LCD Module Assembly. This chapter only for Non-Touch SKU.*

Removing the CCD Module

Remove the CCD Module according to the following procedures and Figure 4-33

1. Lift the CCD Module from the LCD module cover.
2. Disconnect LCD cable from CCD Module connector.

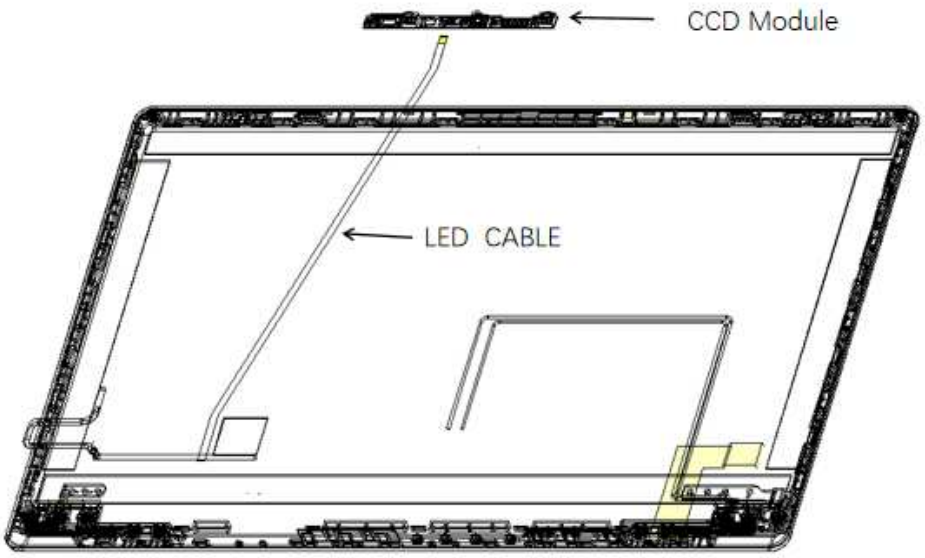


Figure 4-33Removing the CCD Module

Installing the CCD Module

Install the CCD Module according to the following procedures and Figure 4-33.

1. Remove CCD Module release paper.

2.Connect LCD cable to CCD module connector.

3.After ripping off FPC release paste FPC into shell LCD cover.

4.Seat the CCD Module in the correct position.

5.Route the LCD cables according to Figure 4-29, place the cable into the ditch and correct position. Avoid to pinching the cables.

4.14 Touch pad

Removing Touch pad

Remove Touch pad according to the following procedures and Figures 4-35.

CAUTION: Do not touch the connectors on Touch pad and in the computer with your bare hands. Touch pad can fail if they are contaminated with sweat, natural oils, etc. from your hands.

1.Separate the touchpad from the C shell

2.Detach the bracket from the trackpad

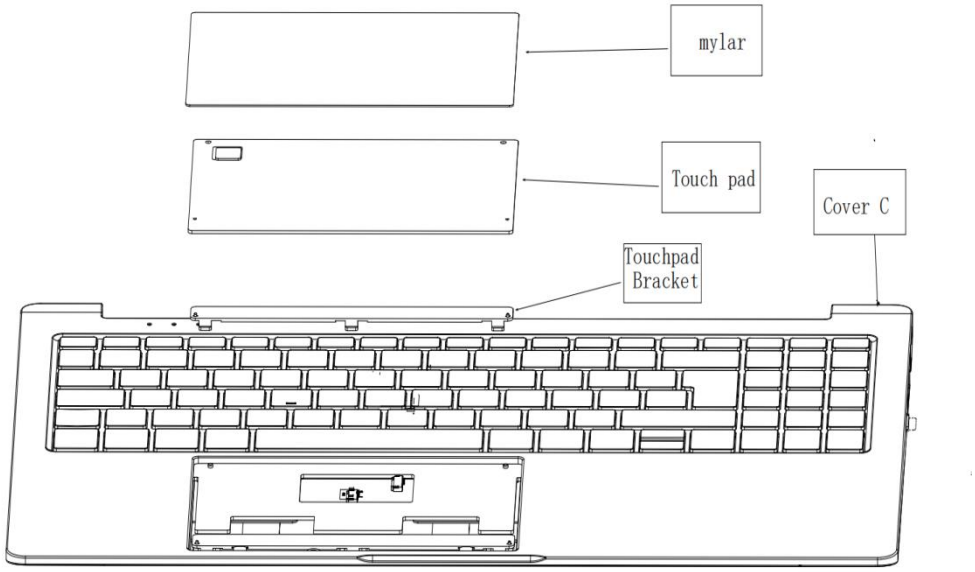


Figure 4-35 Removing Touch pad

Installing Touch pad

Install Touch pad according to the following procedures and Figures 4-35.

1.Tear off 3MM adhesive release paper

2.Paste the touchpad holder

3.Tear off fingerprint high temperature tape

4.Tilt the touchpad to 45°, put the bottom into the C shell, paste and press

5.Remove the mylar release paper and paste the adhesive

*CAUTION: Do not touch the connectors on **Touch pad** and in the computer with your bare hands. **Touch pad** can fail if they are contaminated with sweat, natural oils, etc. from your hands*