

# Maintenance Manual

**TECRA A40-K**  
**SATELLITE PRO A40-K/R40-K**  
**dynabook EX40L-K/GX40L-K**  
**TECRA A45-KW**  
**TECRA A4\*-K**  
**Series**

**File Number (960-950)**

## Revision History

Rev.	Rev. on	Description	Div. Dept	Prepared
00	2022-04-07	Initial release	(DBH)[DT](SYD)	Rong Jing
01	2022-06-30	Update the contents for adopting Amira2 Secure Pad in Chapter 2&4	(DBH)[DT](SYD)	Rong Jing

## Copyright

© 2022 Dynamabook Inc. All rights reserved. Under the copyright laws, this manual cannot be reproduced in any form without the prior written permission of Dynamabook. No patent liability is assumed, with respect to the use of the information contained herein.

Second edition June 2022

Copyright authority for music, movies, computer programs, databases and other intellectual property covered by copyright laws belongs to the author or to the copyright owner. Copyrighted material can be reproduced only for personal use or use within the home. Any other use beyond that stipulated above (including conversion to digital format, alteration, transfer of copied material and distribution on a network) without the permission of the copyright owner is a violation of copyright or author's rights and is subject to civil damages or criminal action. Please comply with copyright laws in making any reproduction from this manual.

## Disclaimer

This manual has been validated and reviewed for accuracy. The instructions and descriptions it contains are accurate for your computer at the time of this manual's production. However, succeeding computers and manuals are subject to change without notice. Dynamabook assumes no liability for damages incurred directly or indirectly from errors, omissions or discrepancies between the computer and the manual.

Any references in this Guide to "Dynamabook" shall mean Dynamabook Inc. and/or its affiliates.

## Trademarks

Intel, Intel logo, Thunderbolt, Thunderbolt logo are trademark of Intel Corporation or its subsidiaries in the United States and/or other countries.

Microsoft, Windows are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

---

The Bluetooth® word mark is a registered trademark owned by Bluetooth SIG, Inc.

The terms HDMI and HDMI High-Definition Multimedia Interface, and the HDMI Logo are registered trademarks or trademarks of HDMI Licensing LLC in the United States and other countries.

Wi-Fi is a registered trademark of Wi-Fi Alliance.

USB Type-C™ and USB-C™ are trademarks of USB Implementers Forum.

All other company names, product names, and service names mentioned herein may be trademarks of their respective companies.

## Preface

This maintenance manual describes how to perform hardware service maintenance for the computer.

The procedures described in this manual are intended to help service technicians isolate faulty Field Replaceable Units (FRUs) and replace them in the field.

## Safety Icons

Safety icons are used in this manual to bring important information to your attention. Each type of message is identified as shown below.



*Indicates a potentially hazardous situation, which could result in death or serious injury, if you do not follow instructions.*



*A caution informs you that improper use of equipment or failure to follow instructions may cause data loss, equipment damage, or may result in minor or moderate injury.*



*Please read. A note is a hint or advice that helps you make best use of your equipment.*

Improper repair of the computer may result in safety hazards. Dynabook requires service technicians and authorized dealers or service providers to ensure the following safety precautions are adhered to strictly.

- Be sure to fasten screws securely with the right screwdriver. If a screw is not fully fastened, it could come loose, creating a danger of a short circuit, which could cause overheating, smoke or fire.
- If you replace the battery pack or RTC battery, be sure to use only the same model battery or an equivalent battery recommended by Dynabook. Installation of the wrong battery can cause the battery to explode.

---

The manual is divided into the following parts:

Chapter 1

Hardware Overview describes the system unit and each FRU.

Chapter 2

Troubleshooting Procedures explains how to diagnose and resolve FRU problems.

Chapter 3

Test and Diagnostics describes how to perform test and diagnostic operations for maintenance service.

Chapter 4

Replacement Procedures describes the removal and replacement of the FRUs.

Appendices

The appendices describe the following:

- Handling the LCD module
- Board layout
- Keyboard scan/character codes
- Key layout
- Wiring diagrams
- BIOS rewrite procedures
- EC/KBC rewrite procedures
- Reliability



# Table of Contents

## *Chapter 1* **Hardware Overview**

1.1	Features and System Unit Block Diagram	1-1
1.2	SSD	1-6
1.3	Keyboard	1-7
1.4	Display	1-7
1.5	Power Supply	1-9
1.6	Batteries	1-10
1.7	AC adaptor	1-11
1.8	USB Type-C Adapter	1-12

## *Chapter 2* **Troubleshooting Procedures**

2.1	Troubleshooting	2-1
2.2	Troubleshooting Flowchart	2-2
2.3	Power Supply Troubleshooting	2-6
2.4	System Board Troubleshooting	2-10
2.5	USB Troubleshooting	2-11
2.6	SSD Troubleshooting	2-13
2.7	Keyboard Troubleshooting	2-14
2.8	Touch Pad (Click Pad) Troubleshooting	2-15
2.9	Display Troubleshooting	2-16
2.10	Wireless LAN + Bluetooth Troubleshooting	2-17
2.11	3G/LTE Troubleshooting	2-19
2.12	Sound Troubleshooting	2-20
2.13	Memory media (SD Card) Slot Troubleshooting	2-22
2.14	Fingerprint sensor Troubleshooting	2-23
2.15	Web camera Troubleshooting	2-25
2.16	HDMI Port Troubleshooting	2-26
2.17	LAN Troubleshooting	2-27
2.18	USB Type-C adapter Troubleshooting	2-28

## *Chapter 3* **Tests and Diagnostics**

3.1	Test program for maintenance	3-1
3.2	How to execute the test program	3-2

3.3	Entry of the DMI information	3-4
3.4	Heatrun Test	3-6
3.5	Main Test Menu	3-6
3.6	Memory Test	3-8
3.7	Hard Disk (&SSD) Test	3-9
3.8	Keyboard Test	3-11
3.9	LCD Panel Test	3-11
3.10	Battery Charge Test	3-12
3.11	Fan Test	3-12
3.12	Log Utility	3-13
3.13	Wireless Module Test	3-14
3.14	Sound Test	3-15
3.15	SETUP	3-15

#### *Chapter 4* **Replacement Procedures**

4.1	Safety Precautions	4-2
4.2	Before You Begin	4-3
4.3	Disassembly Procedure	4-4
4.4	Assembly Procedures	4-4
4.5	Tools and Equipment	4-5
4.6	Screw Tightening Torque	4-5
4.7	Grip Color	4-6
4.8	Screw Notation	4-6
4.9	Memory media	4-7
4.10	SIM card (3G model)	4-8
4.11	Cover Assembly and Base Assembly	4-9
4.12	Battery pack	4-11
4.13	Memory module	4-13
4.14	SSD	4-15
4.15	Smart Card slot	4-16
4.16	Wireless LAN card	4-18
4.17	3G module	4-20
4.18	Fans	4-21
4.19	Fin	4-22
4.20	Click pad	4-23
4.21	Speaker	4-25
4.22	3G antennas	4-27
4.23	System board	4-28
4.24	DC IN jack	4-32
4.25	USB board	4-33
4.26	Keyboard/Cover Assembly	4-34
4.27	LCD Assembly	4-37
4.28	Display hinges	4-43
4.29	Wireless LAN antennas	4-43
4.30	Camera module	4-44

---

<i>Appendix A</i>	<b>Handling the LCD Module</b>	
	A.1 Precautions for handling the LCD module . . . . .	A-1
<i>Appendix B</i>	<b>Board Layout</b>	
	B.1 System Board (FME2SY*) Front View . . . . .	B-1
	B.2 System Board (FME2SY*) Back View . . . . .	B-2
	B.3 USB board (FME2LT*) Front View . . . . .	B-3
	B.4 USB board (FME2LT*) Back View . . . . .	B-4
<i>Appendix C</i>	<b>Keyboard Scan/Character Codes</b>	
	C.1 Scan Codes . . . . .	C-1
<i>Appendix D</i>	<b>Key Layout</b>	
	D.1 United Kingdom (UK) Keyboard . . . . .	D-1
	D.2 United States (US) Keyboard . . . . .	D-1
	D.3 Japan (JP) Keyboard . . . . .	D-2
<i>Appendix E</i>	<b>Wiring diagrams</b>	
	E.1 RGB Monitor Loopback Connector . . . . .	E-1
	E.2 LAN Loopback Connector . . . . .	E-2
<i>Appendix F</i>	<b>BIOS Rewrite Procedures</b>	
	F.1 Tools . . . . .	F-1
	F.2 Rewriting the BIOS . . . . .	F-1
<i>Appendix G</i>	<b>EC/KBC Rewrite Procedures</b>	
<i>Appendix H</i>	<b>Reliability</b>	

---

# List of Figures

Figure 1-1 System unit configurations .....	1-2
Figure 1-2 System unit block diagram .....	1-3
Figure 1-3 Keyboard.....	1-7
Figure 1-4 LCD module.....	1-8
Figure 1-5 Power supply output rating.....	1-10
Figure 2-1 Troubleshooting flowchart (1/2) .....	2-3
Figure 2-2 Troubleshooting flowchart (2/2) .....	2-4
Figure 2-3 Connection Check.....	2-9
Figure 2-4 Connection Check.....	2-12
Figure 2-5 Scan the finger.....	2-23
Figure 2-6 Connecting the HDMI out port .....	2-27
Figure 4-1 Pressure plate connector/Spring connector/Back flip connector .....	4-4
Figure 4-2 Inserting memory media.....	4-7
Figure 4-3 Installing the SIM card .....	4-8
Figure 4-4 Removing the Base Assembly (1) .....	4-9
Figure 4-5 Removing the Base Assembly (2) .....	4-10
Figure 4-6 Removing the Base Assembly (3) .....	4-10
Figure 4-7 Installing the Base Assembly .....	4-11
Figure 4-8 Releasing the battery pack (1) .....	4-12
Figure 4-9 Releasing the battery pack (2) .....	4-12
Figure 4-10 Removing the memory module(s) .....	4-14
Figure 4-11 Seating the memory module.....	4-14
Figure 4-12 Removing the SSD .....	4-15
Figure 4-13 Installing the SSD.....	4-16
Figure 4-14 Removing the Smart Card slot (1) .....	4-16
Figure 4-15 Removing the Smart Card slot (2) .....	4-17
Figure 4-16 Removing the Smart Card slot (3) .....	4-17
Figure 4-17 Installing the Smart Card slot (1).....	4-18
Figure 4-18 Installing the Smart Card slot (2).....	4-18
Figure 4-19 Removing the Wireless LAN card.....	4-19
Figure 4-20 Installing the Wireless LAN card .....	4-20
Figure 4-21 Removing the 3G module.....	4-20
Figure 4-22 Installing the 3G module .....	4-21
Figure 4-23 Removing the Fans .....	4-22
Figure 4-24 Removing the Fin .....	4-23
Figure 4-25 Removing the Click pad (1) .....	4-24
Figure 4-26 Removing the Click pad (2) .....	4-24
Figure 4-27 Installing the Click pad .....	4-25

Figure 4-28 Removing the Speaker (1) .....	4-26
Figure 4-29 Removing the Speaker (2) .....	4-26
Figure 4-30 Installing the Speaker .....	4-27
Figure 4-31 Removing the 3G antennas (1) .....	4-27
Figure 4-32 Removing the 3G antennas (2) .....	4-28
Figure 4-33 Removing the system board (1).....	4-29
Figure 4-34 Removing the system board (2).....	4-29
Figure 4-35 Removing the system board (3).....	4-30
Figure 4-36 Installing the system board.....	4-32
Figure 4-37 Removing the DC IN jack.....	4-33
Figure 4-38 Removing the USB board.....	4-34
Figure 4-39 Removing the Keyboard/Cover Assembly.....	4-35
Figure 4-40 Removing the LCD unit (1) .....	4-37
Figure 4-41 Removing the LCD unit (2) .....	4-38
Figure 4-42 Removing the LCD unit (3) .....	4-39
Figure 4-43 Installing the LCD unit (1).....	4-39
Figure 4-44 Installing the LCD unit (2).....	4-40
Figure 4-45 Installing the LCD unit (3).....	4-40
Figure 4-46 Installing the LCD unit (4).....	4-41
Figure 4-47 Installing the LCD unit (5).....	4-42
Figure 4-48 Installing the LCD unit (6).....	4-42
Figure 4-49 Removing the display hinges .....	4-43
Figure 4-50 Sticking the Wireless LAN antennas .....	4-44
Figure 4-51 Arranging the Wireless LAN antenna cables .....	4-44
Figure 4-52 Removing the camera module (1).....	4-45
Figure 4-53 Removing the camera module (2).....	4-45
Figure 4-54 Removing the camera module (3).....	4-45
Figure 4-55 Installing the Camera module (1).....	4-46
Figure 4-56 Installing the Camera module (2).....	4-47
Figure B-1 System Board (FME2SY*) layout (front) .....	B-1
Figure B-2 System Board (FME2SY*) layout (back) .....	B-2
Figure B-3 USB board (FME2LT*) layout (front) .....	B-3
Figure B-4 USB board (FME2LT*) layout (back) .....	B-4
Figure D-1 UK keyboard .....	D-1
Figure D-2 US keyboard.....	D-1
Figure D-3 JP keyboard .....	D-2
Figure E-1 RGB Monitor Loopback Connector.....	E-1
Figure E-2 LAN Loopback Connector .....	E-2

---

# List of Tables

Table 1-1	M.2 SSD specifications (Phison)	1-6
Table 1-2	M.2 SSD specifications (Samsung)	1-6
Table 1-3	M.2 SSD specifications (Micron)	1-7
Table 1-4	LCD module specifications	1-9
Table 1-5	Battery specifications	1-10
Table 1-6	Time required for charges	1-11
Table 1-7	Data preservation time	1-11
Table 1-8	AC adaptor specifications	1-12
Table 1-9	USB Type-C adapter specifications	1-12
Table 2-1	DC IN/Battery indicator	2-6
Table 2-2	Power indicator	2-6
Table 2-3	Error code	2-7
Table 2-4	Main Test Menu	2-11
Table 4-1	the case for the following example	4-1
Table B-1	System Board (FME2SY*) connectors (front)	B-1
Table B-2	System Board (FME2SY*) connectors (back)	B-2
Table B-3	USB board (FME2LT*) connectors (front)	B-3
Table B-4	USB board (FME2LT*) connectors (back)	B-4
Table C-1	Scan codes (set 1 and set 2)	C-1
Table C-2	Scan codes with left Shift key	C-5
Table C-3	Scan codes in Numlock mode	C-6
Table C-4	Scan codes with Fn key	C-6
Table C-5	Scan codes in overlay mode	C-6
Table C-6	No.124 key scan code	C-7
Table C-7	No.126 key scan code	C-7
Table H-1	MTBF	H-1

# Chapter 1

## Hardware Overview

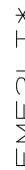
### 1.1 Features and System Unit Block Diagram

Dynabook Personal Computer uses extensive Large Scale Integration (LSI), and Complementary Metal-Oxide Semiconductor (CMOS) technology extensively to provide compact size, minimum weight, low power usage and high reliability. This computer incorporates the following features/major components.

There are some models and options. Refer to the Parts List for the configuration of each model and options.

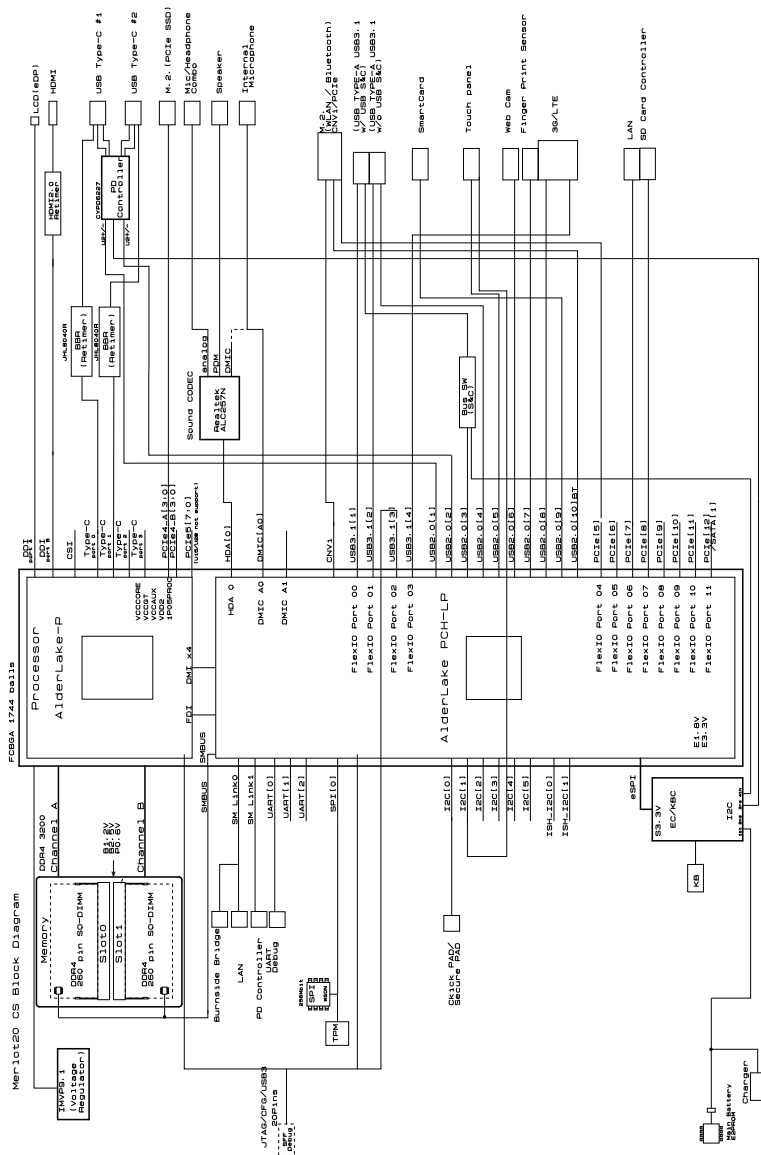
The system unit configuration is shown below:

\*YSSSENE





*Figure 1-2 System unit block diagram*



## ■ Microprocessor

The computer is equipped with an Intel® Processor.

The PC comes in with one of the following speeds:

Core Frequency	L3 Cache Size	Turbo	Number of cores/number of threads
Alder Lake Core i7-1280P 6C+8c vPro	24MB	4.8GHz	14/20
Alder Lake Core i7-1270P 4C+8c vPro	18MB	4.8GHz	8/16
Alder Lake Core i7-1260P 4C+8c	18MB	4.7GHz	8/16
Alder Lake-P Core i5-1250P 4C+8c vPro	12MB	4.4GHz	8/16
Alder Lake-P Core i5-1240P 4C+8c	12MB	4.4GHz	8/16
Alder Lake Core i3-1215U 2C+4c Non-IPU	10MB	4.4GHz	6/8
Alder Lake Celeron 7305 1C+4c	8MB	-	5/5

## ■ Memory

Two DDR4 3200 SDRAM slot. Memory modules can be installed to provide a maximum of 32GB. Memory modules are available in 4 GB, 8 GB and 16GB sizes.

## ■ VGA Controller

The PC comes in with the following type:

- The internal graphics controller in Intel Processor is used.

## ■ SSD

The computer supports M.2 SSD. The following capacities are available.

- 128GB (PCIe I/F)
- 256GB (PCIe I/F)
- 512GB (PCIe I/F)
- 1TB (PCIe I/F)

## ■ Display

The PC comes in with one of the following types:

- 14.0" HD (1366x768) Non CSV
- 14.0" FHD (1920x1080) Non CSV

## ■ Keyboard

The computer's keyboard layouts are compatible with a 104/105-key enhanced keyboard - by pressing some keys in combination, all of the 104/105-key enhanced keyboard functions can be performed on the computer.

The number of keys available on your keyboard will depend on which country/region your computer is configured for, with keyboards being available for numerous languages.

In use there are different types of keys, specifically typewriter keys, function keys, hot keys, and Windows special keys.

#### ■ Touch Pad

The Touch Pad located in the palm rest is used to control the movement of the on-screen pointer.

#### ■ Batteries

The computer has a rechargeable Lithium-Ion main battery pack. A part of this battery pack is used for RTC battery function.

#### ■ Universal Serial Bus (USB) port

The computer has two type-C and two type-A USB ports. The type-C port (Thunderbolt 4/USB Type-C port) complies to USB4, PD, DP, TBT, USB3.0, USB2.0 and USB1.1. The type-A port complies with USB3.2 Gen1, USB3.0, USB2.0 and USB1.1, and also supports Power Off and Charge function.

#### ■ HDMI out port

HDMI out port can connect with Type A connector HDMI cable.

#### ■ Memory media slot

This slot lets you insert a micro SD™/SDHC™/SDXC™ memory card.

#### ■ Internal LAN

The adapter has built-in support for Ethernet LAN (10 megabits per second, 10BASE-T), Fast Ethernet LAN (100 megabits per second, 100BASE-TX) and Gigabit Ethernet LAN (1000 megabits per second, 1000BASE-T).

#### ■ Sound system

The sound system is equipped with the following features:

- Stereo speakers: No-brand
- Built-in microphone (Webcam, provided with some models)
- Headphone/Microphone jack
- Corresponding to Cortana Near-Field

#### ■ Wireless LAN/Bluetooth, Wireless WAN

As a wireless module, Intel802.11ax supporting also bluetooth function is mounted.

Some models also support 3G/LTE function as wireless WAN function.

#### ■ 3G/LTE

On some models, one SIM card slot for 3G/LTE function is mounted.

#### ■ Web Camera

Web Camera is a device that allows you to record video or take photographs with your computer. You can use it for video chatting or video conferences using a communication tool such as Windows Live Messenger. The Web Camera equipped on some models can support face recognition feature for Windows Hello.

- Sensors and others
  - Finger print sensor: on SecurePad (BTO)
  - EC/KBC (Embedded Controller/Keyboard Controller): SMSC ME C1632

## 1.2 SSD

### 1.2.1 M.2 SSD

The computer supports a 128GB, 256GB, 512GB or 1TB SSD.

The SSD specifications are listed in below.

*Table 1-1 M.2 SSD specifications (Phison)*

Items	Specifications		
	G8BC000CJ121	G8BC000CJ251	G8BC000CJ511
Width (mm)	22.00 ± 0.15	22.00 ± 0.15	22.00 ± 0.15
Height (mm)	1.35 Max	1.35 Max	1.35 Max
Depth (mm)	80.0 ± 0.15	80.0 ± 0.15	80.0 ± 0.15
Weight (g)	6.9 typ.	6.9 typ.	6.9 typ.
Storage size (formatted)	128GB	256GB	512GB
	G8BC000CX250	G8BC000CX510	
Width (mm)	22.00 ± 0.15	22.00 ± 0.15	
Height (mm)	2.15 Max	2.15 Max	
Depth (mm)	80.0 ± 0.15	80.0 ± 0.15	
Storage size (formatted)	256GB	512GB	

*Table 1-2 M.2 SSD specifications (Samsung)*

Items	Specifications		
	G8BC000CT120	G8BC000CT250	G8BC000CT510
Width (mm)	22.00 ± 0.15	22.00 ± 0.15	22.00 ± 0.15
Height (mm)	2.38 Max	2.38 Max	2.38 Max
Depth (mm)	80.0 ± 0.15	80.0 ± 0.15	80.0 ± 0.15
Weight (g)	6.0 Max	6.0 Max	6.0 Max
Storage size (formatted)	128GB	256GB	512GB
	G8BC000CS510	G8BC000CS1A0	
Width (mm)	22.00 ± 0.15	22.00 ± 0.15	

Items	Specifications		
Height (mm)	2.38 Max	2.38 Max	
Depth (mm)	80.0 ± 0.15	80.0 ± 0.15	
Weight (g)	9.0 Max	9.0 Max	
Storage size (formatted)	512GB	1TB	

Table 1-3 M.2 SSD specifications (Micron)

Items	Specifications	
	G8BC000CU510	G8BC000CU1A0
Width (mm)	22.00 ± 0.15	22.00 ± 0.15
Height (mm)	2.3 Max	2.3 Max
Depth (mm)	80.0 ± 0.15	80.0 ± 0.15
Weight (g)	10.0 Max	10.0 Max
Storage size (formatted)	512GB	1TB

## 1.3 Keyboard

The computer's keyboard layouts are compatible with a 104/105-key enhanced keyboard - by pressing some keys in combination, all of the 104/105-key enhanced keyboard functions can be performed on the computer.

Figure 1-3 is a view of the keyboard. See Appendix D about the layout of the keyboard.

Figure 1-3 Keyboard



## 1.4 Display

The display consists of 14.0-inch FHD LCD module.

### 1.4.1 LCD Module

The LCD module used for the TFT color display uses a backlight as the light source and can display a maximum of 16M colors with 14.0-inch HD (1366x768) or FHD (1920x1080) resolutions.

Figure 1-4 shows a view of the LCD module and Table 1-4 lists the specifications.

*Figure 1-4 LCD module*

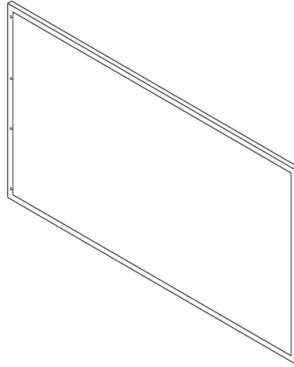


Table 1-4 LCD module specifications

Item	G33C0009Z110	G33C000AP110	G33C000AC110
Number of Dots	1366(W) × 768(H)	1366(W) × 768(H)	1920(W) × 1080(H)
Dot pitch (mm)	0.2265(H)×0.2265(V)	0.2265(H)×0.2265(V)	0.1611(H)×0.1611(V)
Active area (mm)	309.4(W) × 173.95(H)	309.399(W) × 173.952(H)	309.31(W) × 173.99(H)
Outline (mm)	315.9±0.3(W) × 185.7±0.3(H) × 3.0max.(D)	315.81±0.3(W) × 186.07±0.3(H) × 3.0max. w/PCB(D)	315.81±0.3(W) × 185.74±0.3(H) × 3.0max.(D)
Item	G33C000AT110	G33C000AQ110	G33C000A1110
Number of Dots	1920(W) × 1080(H)	1920(W) × 1080(H)	1920(W) × 1080(H)
Dot pitch (mm)	0.1611(H)×0.1611(V)	0.252(H)×0.252(V)	0.1611(H)×0.1611(V)
Active area (mm)	309.31(W) × 173.99(H)	309.31(W) × 173.99(H)	309.31(W) × 173.99(H)
Outline (mm)	315.81±0.3(W) × 186.07±0.3w/o PWB(H) × 3.0max.(D)	315.81±0.3(W) × 197.35±0.5(H) × 3.0max. w/PCB(D)	315.81±0.3(W) × 197.48±0.5(H) × 3.0max.(D)

## 1.5 Power Supply

The power supply supplies different voltages to the system board and performs the following functions:

1. Judges that the DC power supply (AC adaptor) is connected to the computer.
2. Detects DC output and circuit malfunctions.
3. Controls DC IN/Battery icon.
4. Turns the battery charging system on and off and detects a fully charged battery.
5. Turns the power supply on and off.
6. Provides more accurate detection of a low battery.
7. Calculates the remaining battery capacity.
8. Controls the transmission of the status signal of the main battery.

The power supply output rating is specified below.

Figure 1-5 Power supply output rating

高	备注	ACPI state M state	S0		S0ix		S3		S4		S5		G3	使用先
			M0	M0	M0	M0	M3	Moff	M3	Moff	M3	Moff		
P	待机 0.1-1.5V	PPV	○	×	×	×	×	×	×	×	×	×	×	Processor (VCCIN)
	待机 0.1-1.5V	VCCALX-PPV	○	×	×	×	×	×	×	×	×	×	×	Processor (VCCINAX)
	待机 0.1-1.5V	IGD-PPV	○	×	×	×	×	×	×	×	×	×	×	Processor (VCCGT)
	1.8	SNDRB-PIV	○	○	○	○	×	×	×	×	×	×	×	Audio CODEC
	3.3	PIV	○	○	○	○	×	×	×	×	×	×	×	PCIe SSD, Camera, Click Pad, HDMI
		FS-PIV	○	○	○	○	×	×	×	×	×	×	×	Finger sensor
		SDCD-PIV	○	○	○	○	×	×	×	×	×	×	×	SD-Card Cont.(Bayhub92210)
		FMCP-PIV	○	○	×	×	×	×	×	×	×	×	×	SD-Card Cont.(RealtekC2200)
		PML-PIV	○	○	×	×	×	×	×	×	×	×	×	LDD Panel
	5.0	PSV	○	○	○	○	×	×	×	×	×	×	×	KB, FAN, Audio
		HDMI1-PSV	○/×	○/×	○	○	×	×	×	×	×	×	×	HDMI
		RGBLT-PSV	○/×	○/×	×	×	×	×	×	×	×	×	×	RGB Backlight
	0.8	ODS-POV	○	○	○	○	×	×	×	×	×	×	×	DDR4 SODIMM
	1.2	TR2-B1V	○	○	○	○	×	×	×	×	×	×	×	Processor (VDDG), DDR4 SODIMM
	2.5	2R5-B2V	○	○	○	○	×	×	×	×	×	×	×	DDR4 SODIMM
E														PCIe (VCC1R05_P0DC)
	1.66	1R6SPC-E1V	○	○/×	○/×	○/×	×	×	×	×	×	×	×	PCIEVCCA_CLKLDO_1PB,VCCOPRIM_1PB, ECRDC, HDMI2
	1.8	1R8-E1V	○	○	○	○	○	○	○/×	○/×	○	○/×	×	PCIEVCCPRIM_3PB,VCCPSW_3PB,VCCSTORR, SPI RO
	3.3	EVV	○	○	○	○	○	○	○/×	○/×	○	○/×	×	M_BBR_SPL_TPM_3G
		WLAN-EV	○	○	○	○/×	○/×	○	○/×	○/×	○	○/×	×	WLAN
		LAN-EV	○	○	○	○/×	○/×	○	○/×	○/×	○	○/×	×	LAN
		3G-EV	○	○	○	○/×	○/×	○	○/×	○/×	○	○/×	×	3G
	5.0	EVV	○	○	○	○	○	○	○/×	○/×	○	○/×	×	HDMI, Type-C VBUS_P_P01
		PDVBUS1	○/×	○/×	○/×	○/×	○/×	○/×	○/×	○/×	×	×	×	Type-C Port1 during Source
		PDVBUS2	○/×	○/×	○/×	○/×	○/×	○/×	○/×	○/×	×	×	×	Type-C Port2 during Source
		USBPS1-EV	○	○	○/×	○/×	×	×	×	×	×	×	×	USB Type-A Port#1 (3.6G)
		USBPS2-EV	○	○	○/×	○/×	×	×	×	×	×	×	×	USB Type-A Port#2
	3.3	SVV	○	○	○	○	○	○	○	○	○	○	×	ECRDC, Thermal Sensor, Lid Sensor, PD Controller, EC Deb, g port
	5	MOV	○	○	○	○	○	○	○	○	○	○	×	LED
	2-3.47	RVV	○	○	○	○	○	○	○	○	○	○	○	PCIEVCCORTC

## 1.6 Batteries

The computer has one battery as follows:

- Main battery pack

The battery specifications are listed in [Table 1-5](#).

*Table 1-5 Battery specifications*

Battery name	Parts Code	Material	Output voltage	Capacity
Main battery	G71C000ML110	Lithium-Ion	15.4V	53Wh, 4 cell
	G71C000NA110	Lithium-Ion	15.4V	53Wh, 4 cell
	G71C000MM110	Lithium-Ion	15.4V	53Wh, 4 cell
	G71C000MM210	Lithium-Ion	15.4V	53Wh, 4 cell

### 1.6.1 Main Battery

The main battery pack is the computer's main power source when the AC adaptor is not attached. The main battery maintains the state of the computer when the computer enters in sleep mode.



## 1.6.2 Battery Charging Control

Battery charging is controlled by a power supply microprocessor. The microprocessor controls whether the charge is on or off and detects a full charge when the AC adaptor and battery are attached to the computer. The system charges the battery.

### Battery Charge

When the AC adaptor is attached, there are two types of charge: When the system is powered off and when the system is powered on. [Table 1-6](#) lists the charging time required for charges.

*Table 1-6 Time required for charges*

Battery type	Power off	Power on
Battery (53Wh, 4 cell)	about 3 hours	about 3 to 10.0 hours



The time required when the system is powered on is affected by the amount of power the system is consuming. Use of the fluorescent lamp and frequent disk access diverts power and lengthens the charge time.

If any of the following occurs, the battery charge process stops.

1. The battery becomes fully charged.
2. The AC adaptor or battery is removed.
3. The battery or output voltage is abnormal.

### Data preservation time

When turning off the power in being charged fully, the preservation time is as following [Table 1-7](#).

*Table 1-7 Data preservation time*

Battery type	Sleep Mode	Shut Down Mode
Battery (53Wh, 4 cell)	about 6 days	about 20 days

## 1.7 AC adaptor

The AC adaptor is also used to charge the battery.

[Table 1-8](#) lists the AC adaptor specifications.

Table 1-8 AC adaptor specifications

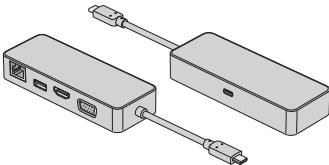
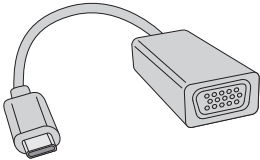
Parameter	Specification		
	G71C000M3410 (2-pin)	G71C000M4410 (3-pin)	USB-C straight G71C000LS310 (3-pin)
Power	65W		65W
Input voltage	100V/240V		100V/240V
Input frequency	50Hz to 60Hz		50Hz to 60Hz
Input current	1.7 A (100V-240V)		1.5 A (100V-240V)
Output voltage	19 V		5 ~ 20 V
Output current	3.42 A		3 A (Peak 3.25 A)

## 1.8 USB Type-C Adapter

To expansion the PC functions, some USB Type-C adapters are prepared.

Table 1-9 lists the USB Type-C adapter specifications.

Table 1-9 USB Type-C adapter specifications

Item	Specifications	
Maker	Goodway	Acrox
Appearance		
Specifications	USB-C to HDMI/VGA Travel Adapter	Type-C to RGB adapter
Parts code	G83C000L2110	G83C000LQ110
Functions	USB 3.0 port/HDMI out port/RGB monitor port/LAN jack/USB Type-C port (Power Delivery Charging)	RGB monitor port

# Chapter 2

## Troubleshooting Procedures

### 2.1 Troubleshooting

This chapter describes how to determine which Field Replaceable Unit (FRU) in the computer is causing the computer to malfunction. (The “FRU” means the replaceable unit in the field.) The FRUs covered here are as follows:

1. Power supply
2. System Board
3. USB
4. M.2 SSD
5. Keyboard
6. Touch Pad (Click Pad)
7. Display
8. Wireless LAN + Bluetooth
9. 3G/LTE
10. Sound
11. Memory media (SD Card) slot
12. Fingerprint sensor
13. Web camera
14. HDMI
15. LAN
16. USB Type-C adapter

\* Please note that some units are installed only on some models.

The Test Program operations are described in Chapter 3, [Tests and Diagnostics](#). Detailed [Replacement Procedures](#) are described in Chapter 4.



Before exchanging a system board, write down the DMI information on TOP Menu. Register this DMI information after exchanging a system board by performing “DMI Entry utility” in the test program. For details, refer to [3.3 Entry of the DMI information](#).

Also update with the latest EC/KBC as described in Appendix G “EC/KBC Rewrite Procedures”.

After replacing the LCD, update with the latest EC/KBC as described in Appendix G “EC/KBC Rewrite Procedures” to set the SVP parameter.

## 2.2 Troubleshooting Flowchart

Use the flowchart in [Figure 2-1](#) and [Figure 2-2](#) as a guide for determining which troubleshooting procedures to execute. Before going through the 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.
- Verify with the customer that Windows is installed on the hard disk. Non-Windows operating systems can cause the computer to malfunction.
- Make sure all optional equipment is removed from the computer.
- (Fingerprint sensor model) Make sure that the user has deleted all the registered fingerprint data.

Figure 2-1 Troubleshooting flowchart (1/2)

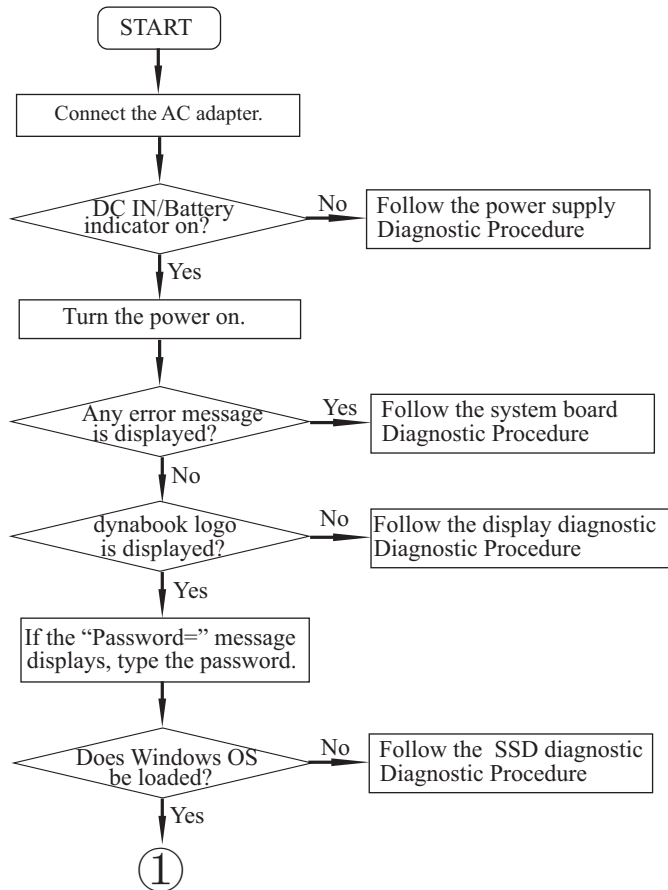
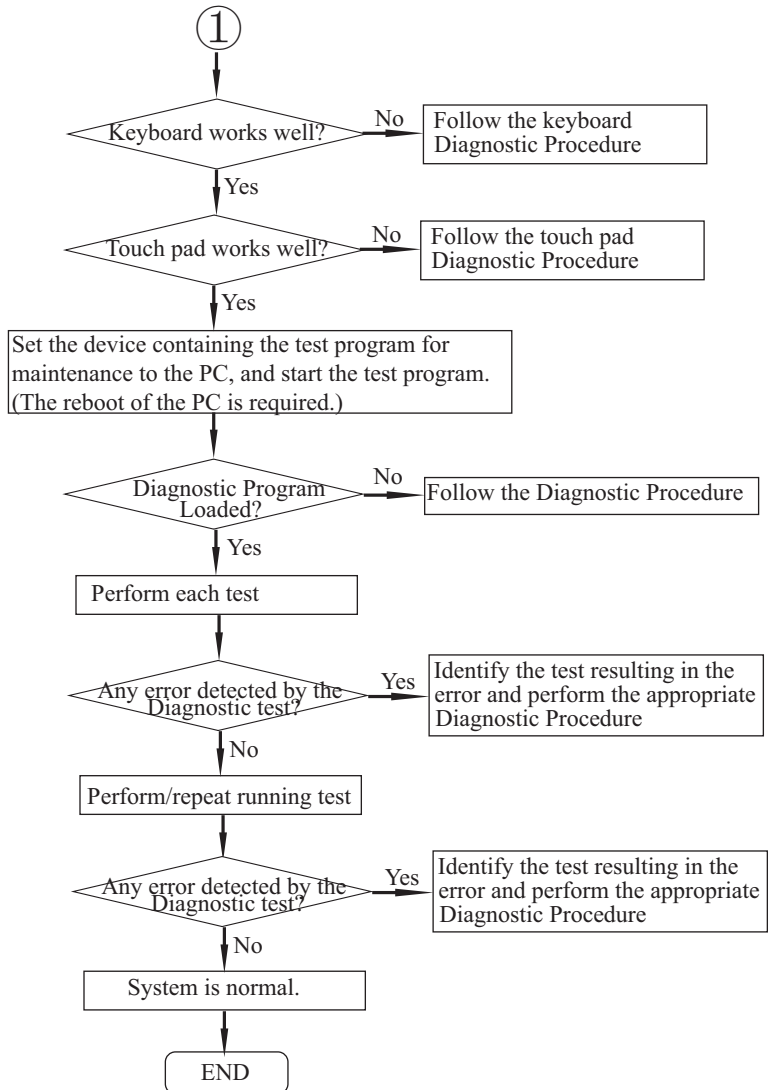


Figure 2-2 Troubleshooting flowchart (2/2)



If the diagnostics program cannot detect an error, the problem may be intermittent. The Test program should be executed several times to isolate the problem. Check the Log Utilities function to confirm which diagnostic test detected an error(s), and then perform the appropriate troubleshooting procedures as follows:

1. If an error is detected on the power supply, perform the power supply Troubleshooting Procedures in [2.3 Power Supply Troubleshooting](#).
2. If an error is detected by an error message or a Memory test, perform the System Board Troubleshooting Procedures in [2.4 System Board Troubleshooting](#).
3. If an error is detected on the USB, perform the USB Troubleshooting Procedures in [2.5 USB Troubleshooting](#).
4. If an error is detected on HDD/SSD test, perform the SSD Troubleshooting Procedures in [2.6 SSD Troubleshooting](#).
5. If an error is detected on the Keyboard test, perform the Keyboard Troubleshooting Procedures in [2.7 Keyboard Troubleshooting](#).
6. If an error is detected on the Touch Pad test, perform the touch pad Troubleshooting Procedures in [2.8 Touch Pad \(Click Pad\) Troubleshooting](#).
7. If an error is detected on the LCD Panel test, perform the Display Troubleshooting Procedures in [2.9 Display Troubleshooting](#).
8. If an error is detected on the Wireless LAN + Bluetooth test, perform the Wireless LAN + Bluetooth Troubleshooting Procedures in [2.10 Wireless LAN + Bluetooth Troubleshooting](#).
9. If an error is detected on the 3G or LTE, perform the 3G/LTE Troubleshooting Procedures in [2.11 3G/LTE Troubleshooting](#).
10. If an error is detected on the sound, perform the Sound Troubleshooting Procedures in [2.12 Sound Troubleshooting](#).
11. If an error is detected on the Memory media (SD Card) Slot, perform the Memory media (SD Card) Slot troubleshooting Procedures in [2.13 Memory media \(SD Card\) Slot Troubleshooting](#).
12. If an error is detected on the Fingerprint sensor, perform the Fingerprint sensor Troubleshooting Procedures in [2.14 Fingerprint sensor Troubleshooting](#).
13. If an error is detected on the Web camera, perform the Web camera Troubleshooting Procedures in [2.15 Web camera Troubleshooting](#).
14. If an error is detected on the HDMI port, perform the HDMI Port Troubleshooting Procedures in [2.16 HDMI Port Troubleshooting](#).
15. If an error is detected on the LAN, perform the LAN Troubleshooting Procedures in [2.17 LAN Troubleshooting](#).
16. If a malfunction is detected on the USB Type-C adapter, perform the USB Type-C adapter Troubleshooting Procedures in [2.18 USB Type-C adapter Troubleshooting](#).

## 2.3 Power Supply Troubleshooting

The power supply controller controls many functions and components. To determine if the power supply is functioning properly, start with Procedure 1 and continue with the other procedures as instructed. The procedures described in this section are:

[2.3.1 Procedure 1 Power Status Check](#)

[2.3.2 Procedure 2 Error Code Check](#)

[2.3.3 Procedure 3 Connection Check](#)

[2.3.4 Procedure 4 Charging Check](#)

[2.3.5 Procedure 5 Replacement Check](#)

### 2.3.1 Procedure 1 Power Status Check

The following icons indicate the power supply status:

■ DC IN/Battery indicator

■ Power indicator

The power supply controller displays the power supply status with the DC IN/Battery indicator as listed in the tables below.

*Table 2-1 DC IN/Battery indicator*

DC IN/Battery indicator	Power supply status
Amber	Indicates the AC adaptor is connected and the battery is charging.
White	Indicates the AC adaptor is connected and the battery is fully charged.
Flashing Amber	The battery charge is low. The AC adaptor must be connected in order to recharge the battery.
Flashing White	Indicates a problem with the computer.
Doesn't light	Any condition other than those above.

*Table 2-2 Power indicator*

Power indicator	Power supply status
White	Indicates power is being supplied to the computer and the computer is turned on.
Doesn't light	Any condition other than those above.



If the DC IN/Battery indicator is flashing white and the power supply controller detects a malfunction, perform the following procedure:

1. Remove the battery pack and the AC adaptor to shut off power supply to the computer.
2. Attach the battery and AC adaptor back again.

When the DC IN/Battery indicator is still flashing, go to Procedure 2. When the DC IN/Battery indicator is turned off, go to Procedure 3:



Use a supplied AC adapter G71C000M3410 (2pin), G71C000M4410 (3pin) or G71C000LS310 (3-pin).

### 2.3.2 Procedure 2 Error Code Check

If the power supply microprocessor detects a malfunction, the DC IN/battery indicator flashes white. The blink pattern indicates an error as shown below.

■ Start Off for 2 seconds

■ Error code (8 bit)

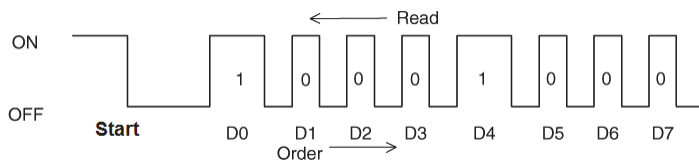
“1” On for one second

“0” On for half second

Interval between data bits Off for half second

The error code begins with the least significant digit.

Example: Error code 11h (Error codes are given in hexadecimal format.)



Check 1 Convert the DC IN/battery indicator blink pattern into the hexadecimal error code and compare it to the tables below.

Table 2-3 Error code

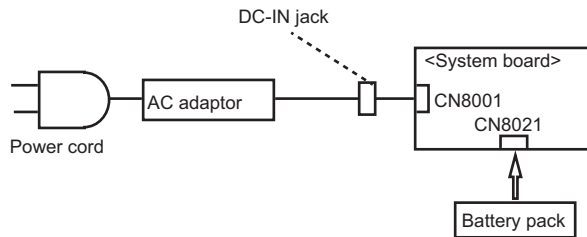
Abnormal definition	Error code	Conditions
AC adapter 0 [A] correction value error	10h	Error detection & 400 mA current default value
AC adapter DC supply current over rating	11h	AC adapter connection & AC adapter current value > DC-In normal current upper limit value
AC adapter DC supply current no load over	12h	AC adapter all power off & charge stop & AC adapter current> 0.5A
AC adapter over rating	13h	AC adapter current value > DC-In normal current upper limit value

DC adapter over rating	14h	Dock AC adapter voltage > DC-In normal voltage upper limit
Output error at power start of E system power supply	20h	During power on sequence, Waiting for PCNFEV signal assertion 1s timeout occurred
Steady-state output error at power on of E system power supply	21h	At power on steady time, PCNFEV signal deassertion
Steady-state output error at power off of E system power supply (No output)	22h	Power off steady state & When the PCNFEV signal is deasserted with the EVON signal asserted
Steady-state output error at power off of E system power supply (With output)	23h	Power off steady state & When the PCNFEV signal is asserted with the EVON signal deasserted
Output error at startup of system B power supply	30h	1s timeout occurs while waiting for PCNFBV signal assertion during power on sequence.
B system power supply ON steady output error	31h	PCNFBV signal deassertion at power on steady state.
B system power supply OFF steady output error (No output)	32h	Power off steady state & PCNFBV signal deasserted when BVON signal is asserted
B system power supply OFF steady output error (With output)	33h	Power off steady state & PCNFBV signal asserted when BVON signal is deasserted.
Output error at P system and CPU system power supply startup	40h	1s timeout waiting for PPVOK (PCNFPV) signal assertion occurred during power on sequence.
P system and the CPU system power supply On the steady-state output error	41h	At power on steady time, PPVOK(PCNFPV) signal deassertion
P system and the CPU system power supply Off the steady-state output error (With output)	43h	At power off steady time, PPVOK(PCNFPV) signal assertion.
Output error at other P system power supply start-up	50h	1s timeout waiting for OPGOOD signal assertion occurred during power on sequence
Other P system power supply On steady-state output error	51h	OPGOOD signal deasserted at power on steady state.
Other P system power supply off steady-state output error (with output)	53h	OPGOOD signal asserted at power off steady state

### 2.3.3 Procedure 3 Connection Check

The wiring diagram related to the power supply is shown below:

Figure 2-3 Connection Check



Any of the connectors may be disconnected. Perform Check 1.

- Check 1 Make sure the AC adaptor and the AC power cord are connected firmly each other and to the outlet and computer. If these cables are connected firmly, go to Check 2.
- Check 2 Replace the AC adaptor and the AC power cord with new ones.
- Check 3 Make sure the battery pack is installed in the computer correctly. If the battery is properly installed and the battery icon still does not light or flashes white, go to Procedure 4.

### 2.3.4 Procedure 4 Charging Check

Check if the power supply controller charges the battery pack properly. Perform the following procedures:

- Check 1 The battery pack may be completely discharged. Wait a few minutes to charge the battery pack while connecting the battery pack and the AC adaptor. If the battery pack is still not charged, go to Check 2.
- Check 2 The battery's temperature is too high or low. Leave the battery for a while to adjust it in the right temperature. If the battery pack is still not charged, go to Procedure 5.

### 2.3.5 Procedure 5 Replacement Check

The power is supplied to the system board by the AC adaptor or the battery pack. If one of them was damaged, perform the following Checks.

To disassemble the computer, follow the steps described in Chapter 4, [Replacement Procedures](#).

When AC adaptor is connected:

- Check 1 AC adaptor may be faulty. Replace the AC adaptor with a new one. If the problem still occurs, perform Check 2.
- Check 2 System board may be faulty. Replace the system board with a new one.

When AC adaptor is not connected (while powered by the battery pack):

- Check 1 Battery harness may be faulty. Replace it with a new one. If the problem still occurs, perform Check 2.
- Check 2 Battery pack may be faulty. Replace it with a new one. If the problem still occurs, perform Check 3.
- Check 3 System board may be faulty. Replace it with a new one.

## 2.4 System Board Troubleshooting

This section describes how to determine if the system board is malfunctioning or not. Start with Procedure 1 and continue with the other procedures as instructed. The procedures described in this section are:

*2.4.1 Procedure 1 Message Check*

*2.4.2 Procedure 2 Diagnostic Test Program Execution Check*

*2.4.3 Procedure 3 Replacement Check*

### 2.4.1 Procedure 1 Message Check

When the power is turned on, the system performs the Initial Reliability Test (IRT) installed in the BIOS ROM. The IRT tests each IC on the system board and initializes it.

- If an error message is shown on the display, perform Check 1.
- If there is no error message, go to Procedure 2.

#### Check 1

If one of the following error messages is displayed on the screen, press a key or button specified by the message.

If you press the key or button, the SETUP screen will appear. Set the correct date and time. If the following error message appears often at power-on, replace the battery pack or RTC battery (if RTC battery is installed).

If any other error message other than below is displayed, perform Check 2.

- (a)\*\*\*\* Date and Time reset to default \*\*\*\*  
Press [F2] key to set Date and Time.
- (b)\*\*\*\* Date and Time reset to default \*\*\*\*  
Press Windows button to set the Date/Time in OS.
- (c)\*\*\*\* Date and Time reset to default \*\*\*\*  
Press ENTER to set Date and Time.

#### Check 2

If the following error message is displayed on the screen, perform Check 3. If any other error message is displayed, perform Procedure 3.

Insert system disk in drive.

Press any key when ready....

Please check if the Boot Mode is correct in the BIOS settings.

The BIOS settings menu is launched by pressing the [F2] key after you reboot.

### Check 3

A device without any system information is installed and it may be designated as the boot device. Remove the device, press any key and reboot the computer. At the reboot, press **F2** to display the BIOS setup screen. Set the correct boot device and repeat Procedure 1. If any error occurs or any device is not installed, go to Procedure 2.

## 2.4.2 Procedure 2 Diagnostic Test Program Execution Check

Execute the following tests from the Diagnostic Test Menu. These tests check the system board. Refer to Chapter 3, *Tests and Diagnostics* for more information on how to perform these tests.

*Table 2-4 Main Test Menu*

Test No	Test Name	Sub Test No	Sub Test Name
1	MEMORY	1	Main Memory Test
		2	V-RAM Memory Test
2	HDD/SSD Test	1	Sequential Read Test
		2	Partial Read Test
		3	Address Jump Test
		4	Address Uniqueness Test
		5	Specify Address Test
3	Keyboard Test	1	Key-code Test
		2	Touch Pad Test
4	LCD Panel Test	1	LCD Panel Test
		2	All dot on/off for LCD
		3	H - pattern display
		4	LCD brightness
5	Battery Charge Test		
6	Fan Test		
7	Acceleration Sensor Test		
8	EXIT to TOP Menu		

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

## 2.4.3 Procedure 3 Replacement Check

System board may be faulty. Disassemble the computer following the steps described in Chapter 4, *Replacement Procedures* and replace system board with a new one.

## 2.5 USB Troubleshooting

To check if the USB is malfunctioning or not, follow the troubleshooting procedures below as instructed.

### 2.5.1 Procedure 1 The test program reading check for maintenance by a USB unit

### 2.5.2 Procedure 2 Connector Check and Replacement Check

#### 2.5.1 Procedure 1 The test program reading check for maintenance by a USB unit

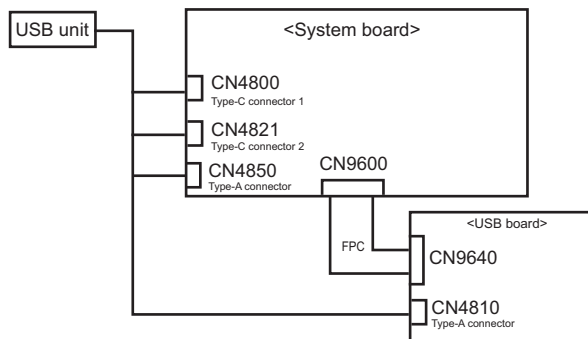
USB connector and the test program for maintenance is read. If the test program cannot be executed on the computer, go to Procedure 2.

#### 2.5.2 Procedure 2 Connector Check and Replacement Check

USB unit is connected to USB ports on USB board and System board. The connection of the cable and board may be defective. Otherwise, they may be faulty. Disassemble the computer following the steps described in Chapter 4, *Replacement Procedures* and perform the following checks.

If the error is detected on Type-A connector, go to Check 1. If the error is detected on Type-C connector, go to Check 5.

*Figure 2-4 Connection Check*



#### Check 1

Make sure USB unit is firmly connected to USB port. If the connection is loose, connect firmly and repeat Procedure 1. If the problem still occurs, go to Check 2



When checking the connection, be sure to check it with care for the followings.

1. USB unit can not be disconnected from the connector.
2. USB unit is connected straight to the connector.
3. USB unit is connected all the way seated in the connector.
4. USB unit or connector can not be broken.

#### Check 2

Connect USB unit to other USB port and check if it works properly. If it does not work properly, perform Check 3

#### Check 3

USB unit may be faulty. Replace it with a new one. If the problem still occurs, perform Check 4

Check 4

USB board or FPC/FFC may be faulty. Replace it with a new one following the steps in Chapter 4, [Replacement Procedures](#). If the problem still occurs, perform Check 5.

Check 5

System board may be faulty. Replace it with a new one following the steps in Chapter 4, [Replacement Procedures](#).

## 2.6 SSD Troubleshooting

To check if the M.2 SSD is malfunctioning or not, follow the troubleshooting procedures below as instructed.

Procedure 1: Diagnostic Test Program Execution Check

Procedure 2: Connector Check and Replacement Check



The contents of the hard disk/SSD will be erased when the hard disk/SSD troubleshooting procedures are executed. Save the required contents of the hard disk/SSD to other storage drive in advance. For the backup, refer to the User's Manual.

### 2.6.1 Procedure 1 Diagnostic Test Program Execution Check

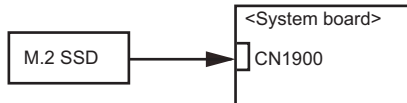
The hard disk/SSD test program is stored in the Diagnostic Test Program. Perform all of the HDD/SSD tests in the HDD/SSD Test. Refer to Chapter 3, [Tests and Diagnostics](#), for more information about the HDD/SSD test program.

### 2.6.2 Procedure 2 Connector Check and Replacement Check

The SSD may be disconnected, or the SSD or system board may be damaged. Disassemble the computer following the steps described in Chapter 4, [Replacement Procedures](#) and perform the following checks:

Check 1

Make sure the M.2 SSD is firmly connected to CN1900 on the system board.



If any of the connections are loose, reconnect firmly and repeat Procedure 1. If there is still an error, go to Check 2.

Check 2

The M.2 SSD may be damaged. Replace it with a new one following the instructions in Chapter 4, [Replacement Procedures](#) and check the operation. If the problem still exists, perform Check 3.

### Check 3

System board may be faulty. Replace it with a new one following the instructions in Chapter 4, [Replacement Procedures](#)

## 2.7 Keyboard Troubleshooting

To check if the computer's keyboard is malfunctioning or not, follow the troubleshooting procedures below as instructed.

Procedure 1: Diagnostic Test Program Execution Check

Procedure 2: Connector Check and Replacement Check

### 2.7.1 Procedure 1 Diagnostic Test Program Execution Check

Execute the Keyboard Test, pressed key display test and Touch Pad test in the Diagnostic Program. Refer to Chapter 3, [Tests and Diagnostics](#), for more information on how to perform the test program.

Press Fn+Z key after starting Windows. By repeating the key operation twice, it checks that keyboard illuminations light up or put out the light.

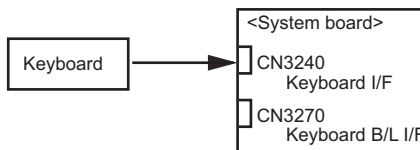
If an error occurs, go to Procedure 2. If an error does not occur, keyboard is functioning properly.

### 2.7.2 Procedure 2 Connector Check and Replacement Check

The connection of cable and board may be disconnected or faulty. Disassemble the computer following the steps described in Chapter 4, [Replacement Procedures](#), and perform the following checks:

#### Check 1

Make sure keyboard cable is firmly connected to CN3240 and CN3270 on the system board.



If the connection is loose, reconnect firmly and repeat Procedure 1. If the problem still occurs, go to Check 2.

#### Check 2

Keyboard may be faulty. Replace it with a new one following the instructions in Chapter 4, [Replacement Procedures](#). If the problem still occurs, perform Check 3.

#### Check 3



System board may be faulty. Replace it with a new one following the instructions in Chapter 4, [Replacement Procedures](#).

## 2.8 Touch Pad (Click Pad) Troubleshooting

To check if the computer's Touch Pad (Click Pad) is malfunctioning or not, follow the troubleshooting procedures below as instructed.

Procedure 1: Diagnostic Test Program Execution Check

Procedure 2: Connector Check

Procedure 3: Replacement Check

### 2.8.1 Procedure 1 Diagnostic Test Program Execution Check

Execute the Keyboard test, pressed key display test and Touch pad test in the Diagnostic Program. Refer to Chapter 3, [Tests and Diagnostics](#), for more information on how to perform the test program.

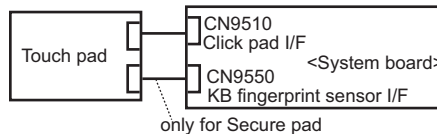
If an error occurs, go to Procedure 2. If an error does not occur, touch pad is functioning properly.

### 2.8.2 Procedure 2 Connector Check

The connection of the Touch Pad (Click Pad) and board may be defective. Otherwise, they may be faulty. Disassemble the computer following the steps described in Chapter 4, [Replacement Procedures](#), and perform the following checks:

Check 1

Make sure the cables are firmly connected to the system board.



If the connection is loose, reconnect firmly and repeat Procedure 1. If the problem still occurs, go to Procedure 3.

### 2.8.3 Procedure 3 Replacement Check

■ If Touch Pad (Click pad) does not work properly, perform check 1.

Check 1

Touch Pad (Click Pad) or the cable(s) may be faulty. Replace them with new ones following the instructions in Chapter 4, [Replacement Procedures](#). If the problem still occurs, go to Check 2.

Check 2

System board (FME2SY\*) may be faulty. Replace it with a new one following the instructions in Chapter 4, [Replacement Procedures](#).

## 2.9 Display Troubleshooting

This section describes how to determine if the computer's display is functioning properly.

To check the touch function, start with Procedure 1. To check the display function, start with Procedure 2.

Procedure 1: Check on Windows OS

Procedure 2: Diagnostic Test Program Execution Check

Procedure 3: Connector Check and Replacement Check

### 2.9.1 Procedure 1 Check on Windows OS

This procedure checks if the touch screen (provide with some models) is working properly by using the function of Windows.

Check 1

Make sure the mouse cursor is following your finger when you move your finger on the display. If it does not work properly, go to Procedure 2.

Check 2

Make sure the "click" function works properly when you tap the display with the finger. If it does not work properly, go to Procedure 2.

### 2.9.2 Procedure 2 Diagnostic Test Program Execution Check

Execute the Display Test, pressed LCD panel test in the Diagnostic Program. See Chapter 3, [Tests and Diagnostics](#) for information on how to perform the test.

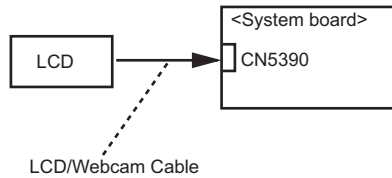
If an error is detected in the test, go to Procedure 3. If no error is detected, the display itself is normal.

### 2.9.3 Procedure 3 Connector Check and Replacement Check

The connection among LCD and board may be disconnected or faulty. Disassemble the computer following the steps described in Chapter 4, [Replacement Procedures](#), and perform the following checks:

Check 1

Make sure the LCD/Webcam cable is securely connected to CN5390 on the system board.



If the connection is loose, reconnect firmly and restart the computer. If there is still an error, go to Check 2.

#### Check 2

The LCD/Webcam cable may be damaged. Replace it with a new one following the instructions in Chapter 4, [Replacement Procedures](#) and test the display again. If the problem still exists, perform Check 3.

#### Check 3

The LCD module may be damaged. Replace it with a new one following the instructions in Chapter 4, [Replacement Procedures](#) and test the display again. If the problem still exists, perform Check 4

#### Check 4

The display controller on the system board may be damaged. Replace the system board with a new one following the instructions in Chapter 4, [Replacement Procedures](#).

## 2.10 Wireless LAN + Bluetooth Troubleshooting

To check if the computer's Wireless LAN + Bluetooth module is malfunctioning or not, follow the troubleshooting procedures below as instructed.

Procedure 1: Module/Antennas' Check

Procedure 2: Connection Check

Procedure 3: Replacement Check

### 2.10.1 Procedure 1 Module/Antennas' Check

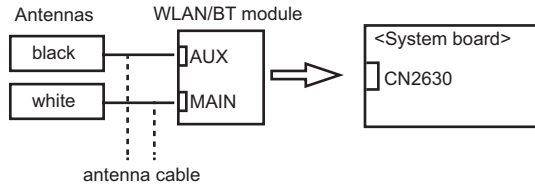
#### Check 1

This procedure checks if the Wireless LAN and Bluetooth is working properly by using the function of Windows. Refer to Chapter 3, [Tests and Diagnostics](#) for more information.

If the computer passes the test, the function is correctly working.  
If the computer does not pass the test, perform Procedure 2.

### 2.10.2 Procedure 2 Connection Check

The wireless LAN/Bluetooth module's wiring diagram is shown below:



Any of the connections may be defective. Disassemble the computer following the steps described in Chapter 4, [Replacement Procedures](#), and perform the following checks:

#### Check 1

Make sure Wireless LAN/Bluetooth Combo module is firmly connected to the CN2630 on the system board. If the connection is loose, connect it firmly and perform Procedure 1. If the problem still occurs, perform Check 2.

#### Check 2

Make sure that antenna cables for wireless function (black and white) are firmly connected to the connectors on the module. If the cables are not connected properly, connect them firmly and perform Procedure 1. If the problem still occurs, go to the Procedure 3.

### 2.10.3 Procedure 3 Replacement Check

Wireless LAN/Bluetooth module, antenna for wireless function or system board may be faulty. Refer to Chapter 4, [Replacement Procedures](#), for instructions on how to disassemble the computer and then perform the following checks:

#### Check 1

Wireless LAN/Bluetooth Combo module may be faulty. Replace it with a new one following the instructions in Chapter 4, [Replacement Procedures](#). If the problem still occurs, perform Check 2.

#### Check 2

The antennas for wireless function may be faulty. Replace them with new ones following the instructions in Chapter 4, [Replacement Procedures](#). If the problem still occurs, perform Check 3.

#### Check3

System board may be faulty. Replace it with a new one following the instructions in Chapter 4, [Replacement Procedures](#).

## 2.11 3G/LTE Troubleshooting

This section describes how to determine if the computer's 3G/LTE is functioning properly. Perform the steps below starting with Procedure 1 and continuing with the other procedures as required.

Procedure 1: Module Installation Check

Procedure 2: Antenna/Connector Check

Procedure 3: Replacement Check

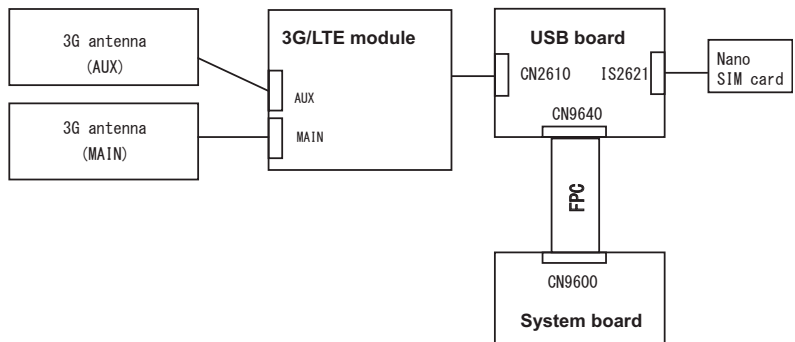
### 2.11.1 Procedure 1 Module Installation Check

Check 1

This procedure checks if the 3G/LTE module can be found on the Windows application. Refer to Chapter 3, [Tests and Diagnostics](#) for more information about that. If any problem is found on that check, perform Procedure 2.

### 2.11.2 Procedure 2 Antenna/Connector Check

The 3G/LTE module, antennas and SIM card wiring diagram is shown below:



Any of the connections may be defective. Disassemble the computer following the steps described in Chapter 4, [Replacement Procedures](#), and perform the following checks:

Check 1

SIM card may not be firmly inserted. Remove it once and reinsert it surely. Then perform Procedure 1 again. If the problem still exists, perform Check 2.

Check 2

The connection between 3G/LTE module and USB board may be loose. Connect 3G/LTE module surely to the USB board. Then perform Procedure 1 again. If the problem still exists, perform Check 3.

Check 3

The connection of 3G antenna cables (MAIN, AUX) may be loose or connected connector is wrong. Connect 3G antenna cable correctly to the 3G/LTE module. Then perform Procedure 1 again. If the problem still exists, perform Check 4.

Check 4

The USB board is connected to the system board with FPC/FFC. The connection between them may be loose. Connect each board and the cable firmly, and perform Procedure 1 again. If the problem still exists, go to procedure 3.

### 2.11.3 Replacement Check

The SIM card or SIM tray may be defective or damaged. Replace it with a new one following the instructions in Chapter 4, [Replacement Procedures](#). If the problem still exists, 3G/LTE module, antenna, USB board, FPC/FFC or system board may be faulty. Disassemble the computer following the steps described in Chapter 4, [Replacement Procedures](#), and perform the following checks:

Check 1

3G/LTE module may be defective or damaged. Replace it with a new one following the instructions in Chapter 4, [Replacement Procedures](#) and perform Procedure 1 again. If the problem still exists, perform Check 2.

Check 2

USB board may be defective or damaged. Replace it with a new one following the instructions in Chapter 4, [Replacement Procedures](#) and perform Procedure 1 again. If the problem still exists, perform Check 3.

Check 3

FPC/FFC may be defective or damaged. Replace it with a new one following the instructions in Chapter 4, [Replacement Procedures](#) and perform Procedure 1 again. If the problem still exists, perform Check 4.

Check 4

Antennas may be defective or damaged. Replace them with new ones following the instructions in Chapter 4, [Replacement Procedures](#) and perform Procedure 1 again. If the problem still exists, perform Check 5.

Check 5

System board may be defective or damaged. Replace it with a new one following the instructions in Chapter 4, [Replacement Procedures](#).

## 2.12 Sound Troubleshooting

To check if the sound function is malfunctioning or not, follow the troubleshooting procedures below as instructed.

Procedure 1: Check on Windows OS

Procedure 2: Connector Check

Procedure 3: Replacement Check

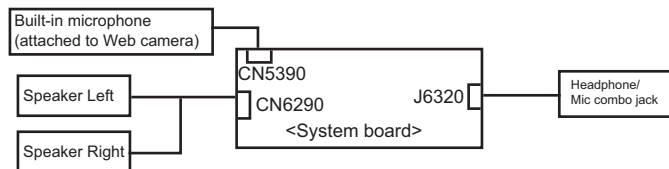
### 2.12.1 Procedure 1 Check on Windows OS

This procedure checks if the Sound is working properly by using the function of Windows.

If any error is detected, go to Procedure 2.

### 2.12.2 Procedure 2 Connector Check

The connection of sound system is shown in the following figure.



As the connection may be defective, disassemble the computer and check each connection.

If the problem still occurs, go to Procedure 3.

### 2.12.3 Procedure 3 Replacement Check

- If headphone (HP/Mic Combo Jack in) does not work properly, perform Check 1.
- If external microphone does not work properly, perform check 2.
- If built-in microphone (Web camera) does not work properly, perform check 3.
- If Speaker Right does not work properly, perform check 4.
- If Speaker Left does not work properly, perform check 5.

Check 1

Headphone (HP/Mic Combo Jack in) may be faulty. Replace it with a new one following the steps in Chapter 4, [Replacement Procedures](#). If the problem still occurs, perform Check 6.

Check 2

External microphone (HP/Mic Combo Jack in) may be faulty. Replace it with a new one following the steps in Chapter 4, [Replacement Procedures](#). If the problem still occurs, perform Check 6.

Check 3

Built-in microphone (Web camera) may be faulty. Replace it with a new one following the steps in Chapter 4, [Replacement Procedures](#). If the problem still occurs, perform Check 7.

Check 4

Speaker Right or harness may be faulty. Replace it with a new one following the steps in Chapter 4, [Replacement Procedures](#). If the problem still occurs, perform Check 6.

#### Check 5

Speaker Left or harness may be faulty. Replace it with a new one following the steps in Chapter 4, [Replacement Procedures](#). If the problem still occurs, perform Check 6.

#### Check 6

System board may be faulty. Replace it with a new one following the instructions in Chapter 4, [Replacement Procedures](#).

## 2.13 Memory media (SD Card) Slot Troubleshooting

This section describes how to determine if the computer's Memory media (microSD Card) functions are functioning properly. Perform the steps below starting with Procedure 1 and continuing with the other procedures as required.

Procedure 1: Check on Windows OS

Procedure 2: Connector Check and Replacement Check

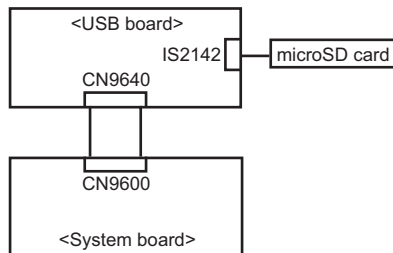
### 2.13.1 Procedure 1 Check on Windows OS

Insert a microSD Card into the slot. Check if the installed Windows recognizes automatically the microSD Card and the data in the microSD Card can be read.

If the card is not recognized or data are not read, go to Procedure 2.

### 2.13.2 Procedure 2 Connector Check and Replacement Check

The Memory media (microSD Card) connection is shown in the following figure.



As the connection may be defective, disassemble the computer and check each connection.

If the problem still occurs, go to Check 1.

#### Check 1

Memory media (microSD Card) may be disconnected. Make sure the Memory media is firmly inserted to IS2142. If not, insert it firmly. If the it is still not functioning properly, perform Check 2.



## Check 2

Memory media (microSD Card) may be faulty. Replace it with a new one following the step in Chapter 4 [Replacement Procedures](#). If the problem continues, perform Check 3.

## Check 3

USB board (FME2LT\*) or FPC/FFC may be faulty. Replace it with a new one following the step in Chapter 4 [Replacement Procedures](#). If the problem continues, perform Check 4.

## Check 4

System board may be faulty. Replace it with a new one following the step in Chapter 4 [Replacement Procedures](#).

## 2.14 Fingerprint sensor Troubleshooting



*To delete the account for confirming the fingerprint operation, it is necessary to log on by the account with the management authority. If the sign-in password has been set, ask the password to the user beforehand.*

To check if the Fingerprint sensor works correctly or not, follow the troubleshooting procedures below as instructed.

When failed in Procedure 1 to Procedure 3, execute Procedure 4.

Procedure 1: Setting Windows sign-in password

Procedure 2: Registration of PIN and fingerprint

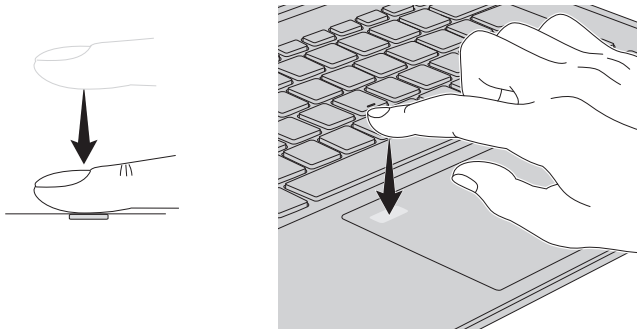
Procedure 3: Authentication of fingerprint

Procedure 4: Connector Check and Replacement Check

Scan your finger shown below:

Straight your finger and touch the center of the fingerprint sensor lightly and lift your finger.

*Figure 2-5 Scan the finger*



### 2.14.1 Procedure 1 Setting Windows sign-in password

To use the fingerprint functions, registration of your fingers on “Windows Hello” after setting the Windows sign-in password and PIN.

### 2.14.2 Procedure 2 Registration of PIN and fingerprint

1. Sign-in to a user account where you want to register the fingerprint information.
2. Click [Start] button.
3. Click [Settings].
4. Click [Accounts] -> [Sign-in options].
5. Click [Add] of [Windows Hello PIN].  
The message to confirm the account's password will appear.
6. Input the Windows password to [Password] and click [OK] button.  
The display to set PIN will appear.
7. Input numbers you want to set to [New PIN].  
Set four or more numbers as the PIN.
8. Input the PIN number you set to [PIN confirmation] and click [OK].
9. Then click [Setup] of [Windows Hello Fingerprint] in [Sign-in options].  
[Windows Hello Setup] screen will appear.
10. Click [Start].  
The screen with a message for checking the user will appear.
11. Input PIN number to [PIN].  
The screen requesting to touch on the fingerprint sensor will appear.
12. Touch your finger on the fingerprint sensor and lift it.  
Repeat it until setup is complete. (The message to show the completion will appear.)
13. When the message to show the registration completion appears, click [Close].  
To register another finger, click [Add another finger] and repeat steps from the step 12.

### 2.14.3 Procedure 3 Authentication of fingerprint

1. Turn on the computer to start up Windows.
2. Touch your registered finger on the fingerprint sensor and lift it.  
When your fingerprint is authenticated, you can sign-in Windows.

If you fail this authentication continually five times, you can not use the fingerprint authentication. In that case, type the password to sign in to Windows. If you want to type the password on the finger print authentication screen, press **BACKSPACE**.

### 2.14.4 Procedure 4 Connector Check and Replacement Check

The fingerprint sensor is installed in the Secure Pad (Touch pad) and touch pad is connected as follows.



Disassemble the computer following the steps described in Chapter 4, [Replacement Procedures](#), and perform the following checks:

**Check 1**

The connection between Secure Pad and System board may be loose. Make sure the cables are firmly connected to both the Secure pad and system board. If the problem still occurs, go to Check 2.

**Check 2**

The cables may be faulty. Replace it with a new one. If the problem still occurs, perform Check 3.

**Check 3**

The Secure pad may be faulty. Replace it with a new one. If the problem still occurs, perform Check 4.

**Check 4**

System board may be faulty. Replace it with a new one following the step in Chapter 4, [Replacement Procedures](#).

## 2.15 Web camera Troubleshooting

To check if the computer's web camera is malfunctioning or not, follow the troubleshooting procedures below as instructed.

Procedure 1: Check on Windows OS

Procedure 2: Connector Check and Replacement Check

### 2.15.1 Procedure 1 Check on Windows OS

Use the application software which is originally installed in the computer to check if the web camera can record/replay still images and moving images (including sound) without problems.

Click **Start** -> **Camera** to open the Camera app.

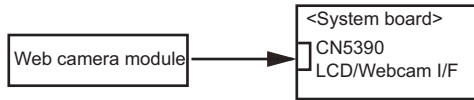
If any troubles occur on recording/replaying of still or moving images, perform Procedure 2.

### 2.15.2 Procedure 2 Connector Check and Replacement Check

If Web camera malfunctions, there may be a bad connection between web camera 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 the LCD/Webcam cable is firmly connected to the system board and the Web camera module. Then perform Procedure 1 again. If the problem still occurs, perform Check 2.



#### Check 2

Web camera module or the LCD/Webcam cable may be faulty. Replace it with a new one following the steps in Chapter 4, [Replacement Procedures](#). If the problem still occurs, perform Check 3.

#### Check 3

System board may be faulty. Replace it with a new one following the step in Chapter 4, [Replacement Procedures](#).

## 2.16 HDMI Port Troubleshooting

To check if the computer's HDMI is malfunctioning or not, follow the troubleshooting procedures below as instructed.

Procedure 1: Check on HDMI port

Procedure 2: Connector Check and Replacement Check

### 2.16.1 Procedure 1 Check on HDMI TV

HDMI (High-Definition Multimedia Interface) port digitally transfers both video and audio data without reducing the quality. HDMI-compatible external display devices including televisions can be connected via the HDMI port.

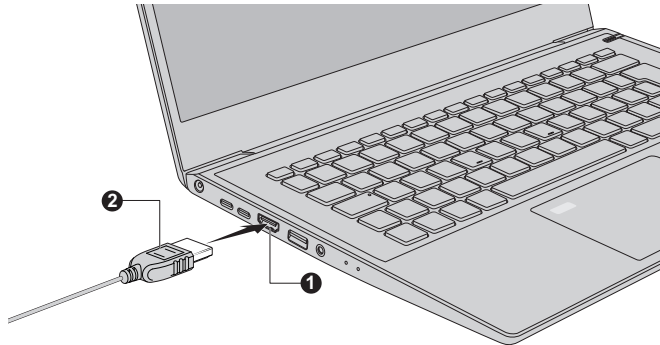
To connect an HDMI-compatible display device, follow the steps as detailed below:



As the port operation of all HDMI (High-Definition Multimedia Interface) monitors have not been confirmed, some HDMI monitors may not function properly.

1. Plug one end of the HDMI cable into the HDMI in port of the HDMI display device.
2. Plug the other end of the HDMI cable into the HDMI out port on your computer.
3. Turn the HDMI display device's power on.

Figure 2-6 Connecting the HDMI out port



1. HDMI out port

2. HDMI cable

### 2.16.2 Procedure 2 Connector Check and Replacement Check

The connection of cables, boards and module may be defective. Otherwise, they may be faulty. Disassemble the computer following the steps described in Chapter 4 and perform the following checks:

#### Check 1

Make sure HDMI TV is firmly connected to the HDMI out port on the system board. If the problem still occurs, perform Check 2.

#### Check 2

It checks whether there are any abnormalities in a setup of HDMI TV, and returns to Procedure 1. In addition, an HDMI setup of television should check "the instructions manual of attachment on HDMI TV." If the problem still exists, perform Check 3.

#### Check 3

HDMI cable may be damaged. Replace it with a new one. If the problem still exists, perform Check 4.

#### Check 4

HDMI TV may be damaged. Replace it with a new one and check the operation. If the problem still exists, perform Check 5.

#### Check 5

System board may be damaged. Replace it with a new one following the instructions in Chapter 4, [Replacement Procedures](#).

## 2.17 LAN Troubleshooting

To check if the computer's LAN is malfunctioning or not, follow the troubleshooting procedures below as instructed.

Procedure 1: Check on Windows OS

Procedure 2: Connector Check and Replacement Check

### 2.17.1 Procedure 1 Check on Windows OS

The test program to check the LAN function is not prepared on the diagnostic test for maintenance program. So check if the LAN is working properly by using the function of Windows. How to connect the LAN cable is as follows:

1. Turn off the power to all external devices connected to the computer.
2. Plug one end of the cable into the LAN jack on the computer. Press gently until you hear the latch click into place.
3. Plug the other end of the cable into a LAN hub connector or router.

If any error is detected by the test, go to Procedure 2.

### 2.17.2 Procedure 2 Connector Check and Replacement Check

LAN cable is connected to system board. If LAN malfunctions, the connection of the cable and board may be defective. Otherwise, they may be faulty.

Check 1

Make sure LAN cable is firmly connected to the LAN jack. If the problem still occurs, perform Check 2.

Check 2

LAN cable may be faulty. Replace it with a new one. If the problem still occurs, perform Check 3.

Check 3

LAN jack may be faulty. Replace it with a new one following the instruction in Chapter 4, [Replacement Procedures](#). If the problem still occurs, perform Check 4.

Check 4

USB board (FME2LT\*) or FPC/FFC may be faulty. Replace it with a new one following the instruction in Chapter 4, [Replacement Procedures](#). If the problem still occurs, perform Check 5.

Check 5

System board may be faulty. Replace it with a new one following the instruction in Chapter 4, [Replacement Procedures](#).

## 2.18 USB Type-C adapter Troubleshooting

On some models, one of the USB Type-C adapters is bundled. The following functions are available with the USB Type-C adapters. But supporting functions vary depending on the USB Type-C adapter bundled.

- RGB port

To check if each function of USB Type-C adapter work properly or not, follow the steps below.

### 2.18.1 RGB port

To check if RGB port is malfunctioning or not, follow the troubleshooting procedures below as instructed.

Procedure 1: Check on external display

Procedure 2: Connector Check and Replacement Check

#### ***Procedure 1 Check on external display***

Connect an external display to the RGB port on the USB Type-C adapter. If the RGB port works, a desktop screen of Windows will appear on the external display.

#### ***Connecting to the computer***

1. Connect the USB Type-C adapter to the Thunderbolt 4/USB type-C connector on the computer.
2. Plug one end of the cable into the RGB port of the external display.
3. Turn on the power of the external display.
4. Plug the other end of the cable into the RGB port on the USB Type-C adapter.

#### ***Switching the image output from computer's screen to the external display***

When you press **FN + F5**, the screen for selecting the device to show image will appear. Select [Second screen only]. Then check if the desktop image is shown on the external display. If any problem occurs on sound and image output, perform Procedure 2.

#### ***Procedure 2 Connector Check and Replacement Check***

##### Check 1

Make sure the external display is connected to RGB port with the cable. If the connection is loose, reconnect it firmly and repeat Procedure 1. If there is still an error, go to Check 2.

##### Check 2

Check the setup condition of the external display and returns to Procedure 1. As for the setting of the external display, refer to the instructions manual for the external display. If the problem still exists, perform Check 3.

##### Check 3

The external display may be damaged. Replace it with a new one and repeat Procedure 1. If the problem still exists, perform Check 4.

##### Check 4

USB Type-C adapter may be damaged. Replace it with a new one. If the problem still exists, check the PC condition.



# Chapter 3

## Tests and Diagnostics

### 3.1 Test program for maintenance

The test program for maintenance consists of the following items:

- Check and update of ME FW information
- Check of hardware information
- Check and update of BIOS information
- Check and update of EC/KBC information
- Diagnostic test programs

After performing the Diagnostic test programs, setting to “Battery Off mode” state is needed.

#### 3.1.1 Check and update of ME FW information

The ME FW version is checked and if the update is needed, the message is displayed.

#### 3.1.2 Check of hardware information

The information about hardware, such as HDD/SSD, memory and DMI, is displayed.

If no DMI information is registered, the message to request the DMI information registration is displayed.

#### 3.1.3 Check and update of BIOS information

The BIOS version is checked and if it is not the latest one, the message to confirm if update is needed or not.

#### 3.1.4 Check and update of EC/KBC information

The EC/KBC version is checked and if it is not the latest one, the message to confirm if update is needed or not.

### 3.1.5 Diagnostic test programs

There are programs to write the HW information and to check the function of HW components in the diagnostic test.

You will need the following equipment to perform some of the diagnostic test programs.

- The diagnostic program for maintenance (USB Memory),
- A Headphones and microphone (Sound test)
- The calibration tool for sensor (USB memory, depending on the model to be tested)

### 3.1.6 Setting of Battery Off mode

Before returning to user, set the "Battery Off mode" to the PC.

Select [Advanced] -> [System Configuration] in the BIOS setup screen. You can see [Battery Disconnect] item. Connect the AC adaptor and execute it to set the "Battery Off mode" state.

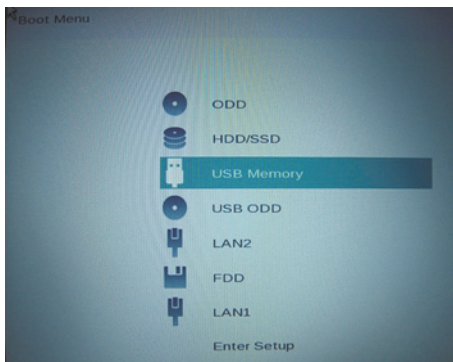
## 3.2 How to execute the test program

To start the test program for the maintenance, follow these steps below:

Step 1: Insert the USB memory which includes the test program into the USB connector.

Step 2: Turn on the computer while pressing F12 of the keyboard.

Step 3: Chose USB device on the selection screen, and press Enter of the keyboard.



Step 4: Then this program executes the followings automatically.

Procedure 1: Check and update of ME FW information

The ME FW version is checked and if the update is needed, the following message is displayed.

Do you want to update ME-FW (AMT) ? (Y) ?

When the message above is displayed, press **Y**. The ME FW will be updated and the computer will restart. Then repeat from Step 2.

#### Procedure 2: Check of hardware information

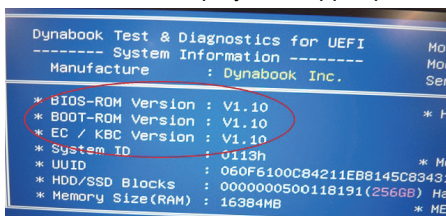
The program checks and displays the hardware information such as HDD and SSD of the computer.

When a system board is exchanged and DMI information is not written in, the DMI information can be registered with this program.

Refer to [3.3 Entry of the DMI information](#) for details.

#### Procedure 3: Check and update of BIOS information

The BIOS version is checked and if it is not the latest one, the message to confirm if update is needed or not. The current version is displayed at upper part of the display.



Does it update BIOS (Vx.xx->Vx.xx)? (Y or N), or press [Enter] (Selection=Y)?

When the message above appears, pressing **ENTER** will start BIOS update.

Then, since the computer reboots automatically, repeat from Step 2.

If BIOS update is not needed, press **N**.

#### Procedure 4: Check and update of EC/KBC information

The EC/KBC version is checked and if it is not the latest one, the message to confirm if update is needed or not. The current version is displayed at upper part of the display.

Does it update EC/KBC (Vx.xx->Vx.xx)? (Y or N), or press [Enter] (Selection=Y)?

When the message above appears, pressing **ENTER** will start EC/KBC update.

Then, since the computer reboots automatically, repeat from Step 2.

If BIOS update is not needed, press **N**.



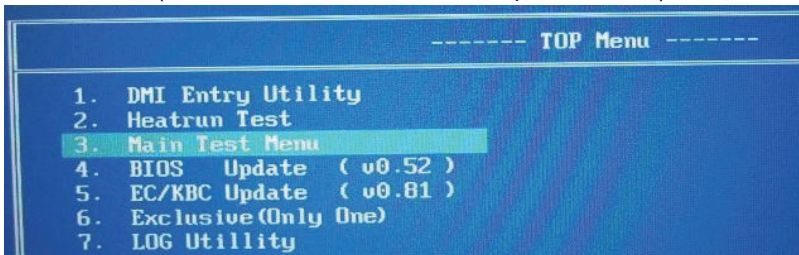
1. Connect the AC adaptor and the charged battery to the computer when you update the BIOS, EC/KBC or ME FW.
2. Do not turn off the power while you are updating the BIOS or EC/KBC. If the update fails, it might be impossible to start up the computer.
3. If the update rewrite fails, when you next turn on the power, a message may be displayed that the contents of the BIOS or EC/KBC have been erased. In that case, turn on the power again and perform Procedure 2 or 3.

The following message will appear. If the PCB exchange or DMI information rewrite has been done, press **Y**. Otherwise, press **N**.

Change PCB ? or After Update DMI ? (y/n)

After that, the following test program menu (Top Menu) is displayed.

(The menu below shows an example of screen.)



Select Menu ( [NUM] or [↑][↓] ) → [Enter]

To start the DMI Entry Utility, press **1** and **Enter**.

To start the Heatrun Test, press **2** and **Enter**.

To start the Main Test Menu, press **3** and **Enter**.



*Before starting the diagnostics, be sure to follow these steps:*

1. Check all cables are connected firmly.
2. Exit any application and close Windows.

### 3.3 Entry of the DMI information

To execute the DMI Entry Utility, select **1** from the test program menu (Top Menu), press **Enter**.



When replacing the system board, be sure to execute the following procedures.

Before replacing the system board, make a note of DMI information of the current PCB. The information can be confirmed by the “System Information” screen displayed after start of test program.

After replacing the system board, execute “DMI Entry utility” to register the DMI information to the new system board according to the note.

The following message will appear. Press **Y**.

\*\*\*\* Warning : Update DMI really? (y/n) \*\*\*\*

The PC will restart. Press **F12** and select the USB memory as the boot device. Then the following screen will appear.

DMI Setting for Maintenance V.0.9.3.0

dynabook F82/B

Model Name:

Version Number:

Serial Number:

Family:

PCB Product Name:

Model Number:

PCN/BND Number:

Information

UID Number: 01A2A3BB53D611E60140C03747121732

SKU Number: PRT10N

Type 3 Serial: 7G121732H

PCB Serial: C0428214100671000

Input the information one by one. (If you have not replaced the system board, the DMI information should not be changed.)

- Model Name (e.g. PORTEGE Z830)
- Version Number (e.g. XF82BFGCTL7AA21)
- Serial number (e.g. 7G121732H)
- Model Number (e.g. PRT10N-AAAA2)
- PCN/BND Number (e.g. PCN3384T0Z01FA1F/XXX)

The meaning of buttons at the bottom is as follows:

- Load DMI : reads out the current DMI information and display it.
- Write DMI : writes the DMI information input to this screen when pressed.
- Cancel : ends this program.

When Write DMI button is pressed, the message will appear. Select WRITE button and then OK button.

To finish this utility, press Cancel button. The PC will restart. Press **F12** and select the USB memory as the boot device. Then this program will return to the test program screen.

### 3.4 Heatrun Test

The Heatrun test is an automatic test program that executes the following tests successively.

1. Main Memory test
2. V-RAM Memory test
3. Sequential Read Test

To execute this test, select **2** from the test program menu (Top Menu), and press **Enter**.

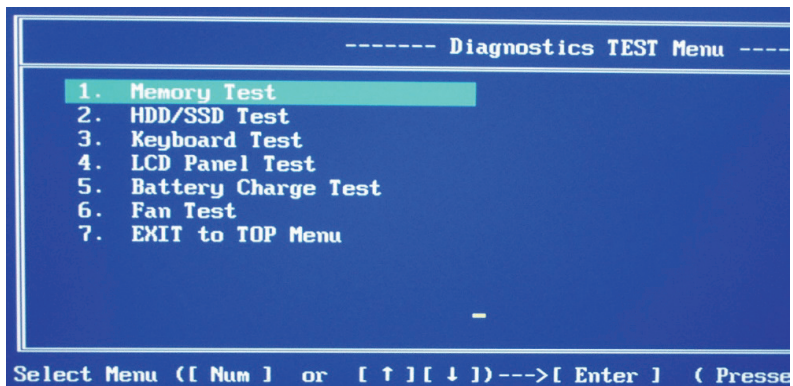
Explanation of each test:

1. Main Memory test  
Refer to Subtest 1 of 3.6 Memory Test
2. V-RAM Memory test  
This test sets the display mode to the maximum resolution. Then it writes/reads the test data to/from the VRAM area, and compares them. This test checks the VRAM area in order with the following 4 test data: FFFFFFFFh, AAAAAAAAh, 55555555h, 00000000h.
3. Sequential Read Test  
Refer to Subtest 1 of 3.7 Hard disk/SSD Test

To terminate the program, press **[SHIFT] + [Q]**.

### 3.5 Main Test Menu

To display the Main Test Menu, select **3** from the test program menu (Top Menu) and press **Enter**. (The menu below shows an example of screen.)





If you want to stop the test program under running temporarily, press **SHIFT + Q**.

After the stop, pressing **C** continues the test and pressing **E** ends the test.

To return to the Top menu, move the cursor to **EXIT to TOP Menu** on the screen above and press **ENTER**.

Others are the diagnostic tests. Move the cursor on the test item you want to execute and press **ENTER**.

The following table shows the subtests names of each test.

TEST NO.	TEST NAME	SUBTEST No.	SUBTEST NAME
1	MEMORY	1	Main Memory Test
2	HDD/SSD Test	1	Sequential Read Test
		2	Partial Read Test
		3	Address Jump Test
		4	Address Uniqueness Test
		5	Specify Address Test
3	Keyboard Test	1	Key-code Test
		2	Touch Pad Test
4	LCD Panel Test	1	LCD Panel Test
		2	All dot on/off for LCD
		3	H - pattern display
		4	LCD brightness
5	Battery Charge Test	-	-
6	Fan Test	-	-
8	EXIT to TOP Menu		

After a subtest is selected, the following message may appear.

```

1. Go to Test
2. Test Loop : YES
3. Error Stop : YES
  
```

The meaning of each item is as follows:

■ Test Loop

Select No: After testing, the program returns to the screen to select Error Stop and Test Loop item selection.

Select Yes: After testing, the pass count is increased by one, and the test is performed again from the test top. Repeat the test until **SHIFT + Q** is entered.

The setting of Yes/No can be changed by pressing **ENTER**.

■ Error Stop

Select Yes: if any error occurs during the test, the test is suspended and key input is required.

Enter **C** .....Restarts the test execution

Enter **E**.....Ends the test. The program returns to the screen to select Error Stop and Test Loop item selection.

Select No: though any error occurs during the test, the test is continued.

The setting of Yes/No can be changed by pressing **ENTER**.

■ Go to Test

The subtest is started in the conditions selected above by entering **ENTER**.

For more information about the tests in the Main Test Menu and other tests, refer to Section 3.6 or later.

## 3.6 Memory Test

To execute the Memory Test, select **1** from the DIAGNOSTIC TEST Menu (Main Test Menu), press **Enter** and follow the directions on the screen. (Move the highlight bar to the subtest you want to execute and press **Enter**.)

### Subtest 1 [Main memory Test]

This test writes/reads the test data to/from the main memory, and compares them.

The test procedure is as follows:

- (1) This test gets the memory map table.
- (2) It seeks empty area more than 1MB.
- (3) To the whole empty area, it writes the test data and reads out them to compare the test data and read data.
- (4) Up to the maximum address of the mounted memory, it repeats to seek the empty area, to write the test data, to read out the data and to compare the test data and read data.
- (5) It repeats the process from (1) to (4) above with the 4 test data.

The test patterns are 4-byte data: 00000000h, 55555555h, AAAAAAAAh and FFFFFFFFh. If empty area less than 3-byte length is found, the test data is not written.



If the empty memory is 64MB or less, this test is not executed. In the case that this test is never executed because of the memory size shortage, this test displays the message “Data Not Found “and writes the information to the text file (errorlog.txt) as an error log.

If the test data and read data is not the same at comparing, this test displays the message “Data Compare error “and writes the information to the text file (errorlog.txt) as an error log.

As for the details of the error log, refer to 3.12 Log utility.

### 3.7 Hard Disk (&SSD) Test

To execute the Hard Disk Test, select **2** from the DIAGNOSTIC TEST MENU (Main Test Menu), press **Enter** and follow the directions on the screen. (Move the highlight bar to the subtest you want to execute and press **Enter**.)

**Subtest 1    [Sequential Read Test]**

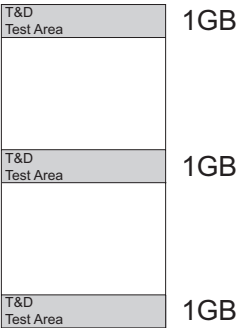
This test reads out the whole data from the address of LBA 0 to the last. The data is read by 64-LBA unit.

If any errors occur, this test displays the message “HDD Read error “and writes the information to the text file (errorlog.txt) as an error log.

**Subtest 2    [Partial Read Test]**

This test reads the data from the top and middle of the HDD area by 1GB. It reads also from 1GB area before of the last address to the last.

If any errors occur, this test displays the message “HDD Read error “and writes the information to the text file (errorlog.txt) as an error log.



**Subtest 3    [Address Jump Test]**

This test writes the test data (AAAAAAAAh) to

1. LBA 63 (by 512-byte)
2. LBA 22 (=63 - 41) (by 512-byte)

- 3. LBA 86 (=22 + 64) (by 512-byte)
- 4. LBA 45 (=86 - 41) (by 512-byte)

At Step 1, this test starts from the LBA 63 and writes the test data by 512-byte.  
At Step 2, it writes the 512-byte data to the LBA decreased by 41 LBAs from the LBA designated at the previous step.  
At Step 3, it writes the 512-byte data to the LBA increased by 64 LBAs from the LBA designated at the previous step.  
At Step 4, it writes the 512-byte data to the LBA decreased by 41 LBAs from the LBA designated at the previous step.  
By repeating the decrease and increase of the LBA's address, this test continues to write the test data up to the last address. After that, it reads out the data from the same LBAs to compare.

If there are no 64 LBAs at last, this test is not executed for the last address.  
If any errors occur, this test displays the message "HDD Write error" and writes the information to the text file (errorlog.txt) as an error log.

**Subtest 4    [Address Uniqueness Test]**

This test writes the number of passes (UNIT32) (default is 0) per LBA and the LBA number (UNIT32). To the rest of a LBA (calculated as "LBA size - (UNIT32)\*2"), it writes "0".  
This test writes the test data up to the last address. Then it reads out the data to compare. The number of passes will be 0 (default value) unless comparing of the whole data is completed. At the beginning of the test in the second round, the number would become 1 (when Test Loop Yes is selected. When Test Loop No is selected, the number will not be changed. In that case, the number remains 0 at the end of the test. ) If the test data and read data is not the same, this test displays a message of "Data Compare error" and writes the information to the text file (errorlog.txt) as an error log.

(1 LBA (512-byte))

Number of Passes (UINT32)	LBA No. (UINT32)	0 0 0 0 0 0 . . . . .
---------------------------	------------------	-----------------------

**Subtest 5    [Specify Address Test]**

First, specifying of the address of the start LBA, the data length and test data for writing (Dword) is needed for this test. Then this test writes the specified test data to the specified address and read them to compare.  
If any errors occur at comparing, this test displays the message "Compare error" and writes the information to the text file (errorlog.txt) as an error log.

As for the details of the error log, refer to 3.12 Log utility.

## 3.8 Keyboard Test

To execute the Keyboard Test, select **3** from the DIAGNOSTIC TEST Menu (Main Test Menu), press **Enter** and follow the directions on the screen. (Move the highlight bar to the subtest you want to execute and press **Enter**.)

### **Subtest 1 [key-code Test]**

This test displays the key code and scan code of a pressed key. To back to the main menu screen, press **Del + Enter**.

(Displayed information)

( Presses Key Code : xx )

( Presses Scan Code : xx )

### **Subtest 2 [Touch Pad Test]**

This test gets the information of moving amount of the touch pad, both for direction X and Y, and pressing (ON)/releasing (OFF) information of the button A (left click button) and B (right click button), and displays the information in real time. To back to the main menu screen, press the button A and B.

(Displayed information)

[X: xxxx] [Y: xxxx] [Button A : x] [Button B : x]

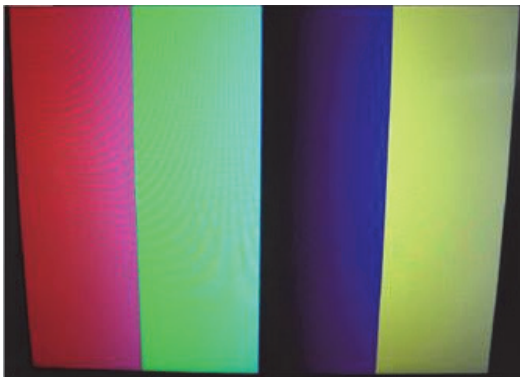
## 3.9 LCD Panel Test

To execute the LCD Panel Test, select **4** from the DIAGNOSTIC TEST Menu (Main Test Menu), press **Enter** and follow the directions on the screen. Move the highlight bar to the subtest you want to execute and press **Enter**.

### **Subtest 1 [LCD Panel Test]**

This test displays the following 4 colors, Red, Green, Blue and Yellow, from the left side of the display to right side, from the black to the maximum brightness. To back to the main menu screen, press **ENTER**.

(Screen sample)



**Subtest 2 [All dot on/off for LCD]**

This test displays the white screen for 5 sec. and then the black screen for 5 sec. After that, this test backs to the main menu screen automatically.

**Subtest 3 [H - pattern display]**

This test displays the letter "H" on the whole screen. To back to the main menu screen, press **ENTER**.

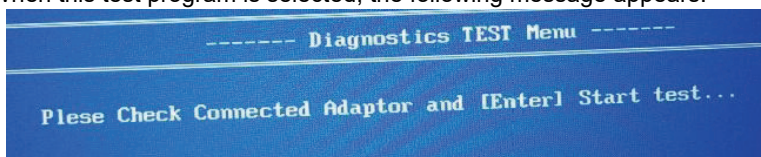
**Subtest 4 [LCD brightness]**

This test displays the white screen and changes the LCD brightness to the maximum, middle and low setting in order with 5-sec intervals. After that this test backs to the main menu screen automatically.

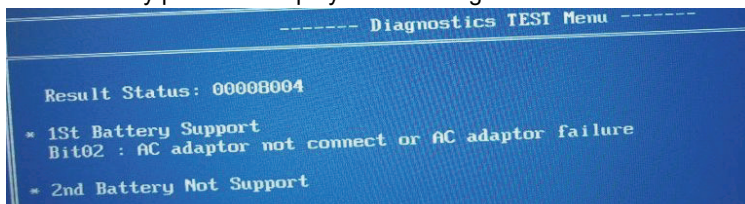
## 3.10 Battery Charge Test

To execute the Battery Charge Test, select **5** from the DIAGNOSTIC TEST Menu (Main Test Menu), press **Enter** and follow the directions on the screen.

When this test program is selected, the following message appears.



The test starts by pressing **ENTER**. The test gets the charging status of the mounted battery pack and displays the message.



To back to the main menu screen, press **ENTER**.

## 3.11 Fan Test

To execute the FAN Test, select **6** from the test program menu (Top Menu), press **Enter** and follow the directions on the screen.

This subtest checks if FAN works properly.

FAN Low-speed ... Target Low: XXXX Rpm Result  
Low: XXXX Rpm OK/NG

FAN High-speed... Target High: XXXX Rpm Result  
High: XXXX Rpm OK/NG

OK appears in the display if the test ends without an error.  
NG appears in the display if an error is found during the test.  
To back to the main menu screen, press **ENTER**.

3.12 Log Utility

This function logs error information generated while a test is in progress and stores the results in USB memory.  
(file name: errorlog.txt)

1. Each test description

To execute the Log Utility, select LOG Utility from the test program menu (Top Menu), and press **ENTER**. The following screen will appear.

Display examples

T-Name	Pass	Sts	Address	Write	Read
HDD_001	12345678	1234	1234567812345678	00000000	55555555
RAM_001	12345678	1234	1000007812345678	00000000	55555555

- T-NAME..... Test name

(Test name example)  
RAM\_01.....Main Memory Test  
HDD\_01.....Sequential Read Test  
HDD\_02.....Partial Read Test  
HDD\_03.....Address Jump Test  
HDD\_04.....Address uniqueness Test  
HDD\_05.....Specify Address Test  
BAT\_01.....Battery Charge Test

- Pass..... Pass count which the error occurred
- Sts..... . Status

(Value)  
00FF..... Data compare error (Memory Test/HDD Test)  
00E0.....Data Not Found (Memory Test)  
0002..... Protocol error (Memory Test/HDD Test)

- Address... Address (Memory Test/HDD Test...Sector No.)
- Write..... . Write value (Memory Test/HDD Test)
- Read..... . Read value (Memory Test/HDD Test/ Battery Charge Test)

To clear the log information, press **C**. To back to the main menu screen, press **ENTER**.

## 3.13 Wireless Module Test

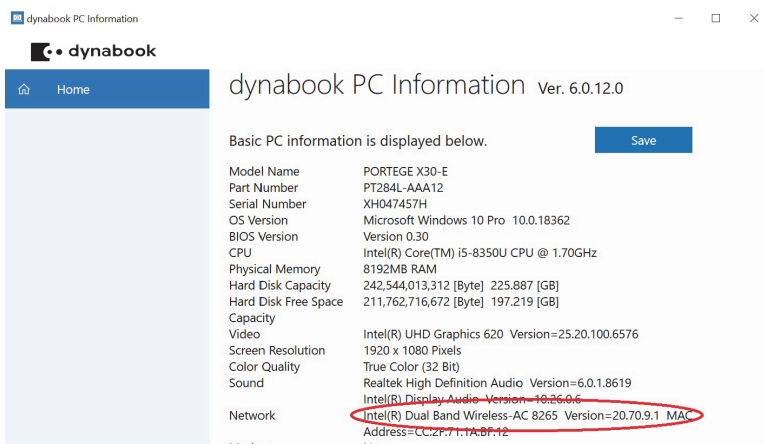
Since there is no test program to check the wireless function, check if the wireless module and antenna are working without problem on Windows.

### 3.13.1 Check of the wireless module

Turn on the wireless communication function and check the module name via the application, PC system information. On this model, a combo module which has both wireless LAN and Bluetooth function is mounted.

<How to display PC system information screen>

- 1) Click Start button.
- 2) Click [dynabook PC Information].  
Check the content of "Network".



If "Wireless\*\*" appears in the screen, it means the wireless module has been recognized.

### 3.13.2 Check of the antenna connection

Confirm that the icon for wireless LAN appears at the lower right of the screen under the circumstances the wireless communication function is available.



Click the icon. If the computer can find any AP (Access Point), the network names like below will appear. It shows the antenna cables are surely connected to the wireless module.



If the antenna cables are not connected to the wireless module or no available AP is found, the following icon will appear.



In the case of no-antenna connection

If AP should be ready but no AP point appears, any problem might occur on the wireless module or on the antenna connection.

## 3.14 Sound Test

Since there is no sound test in the test program for maintenance, check the functions related to sound on Windows with music data, etc.

## 3.15 SETUP

### 3.15.1 Function Description

This program displays the current system setup information as listed below:

### ***Main menu***

- System Time (System time)
- System Date (System time)
- CPU Type
- CPU Speed
- HDD/SSD
- Total Memory Size
- System BIOS Version
- EC Version
- Language

### ***Security menu***

- BIOS Password
  - User
  - Supervisor
- HDD/SSD Password
  - Mode
- Secure Boot
- Clear Secure Boot keys (\*1)
- Clear Fingerprint data (\*1)
- Clear System data (\*1)
- TPM
- Clear TPM Owner
- Hide TPM
- BIOS Access Rights (\*1)
- Boot Menu (\*1)
- USB Provisioning of AMT (\*1)
- Device Access Control/Device Boot Control (\*1)

\*1 : This item is shown only when a supervisor password is set.

### ***Power Management menu***

- Wak on Keyboard
- Critical Battery Wake-up
- Panel Open – Power On
- Power on by AC
- Intel Turbo Boost Technology
- Intel Display Power Management
- SATA interface setting
- Keyboard Backlight Control Mode
- Backlight Lighting Time



## ***Advanced menu***

- Virtualization Technology
- SW Guard Extensions (SGX)
- Select Owner EPOCH input type
- Beep Sound
- Sleep and charge
- USB Power in Off State
- USB Legacy Emulation
- Wireless LAN Configuration
  - Wi-Fi Configuration
  - TIs Auth Configuration
- System Configuration
  - Wireless LAN
  - Bluetooth
  - Web Camera
  - SD Host Controller
  - Fingerprint Sensor
  - Internal Thunderbolt Controller
  - Microphone
  - Memory Performance Mode
  - LAN Boot Selection
  - MAC Address Pass Through
  - Power On Display
  - Boot Up NumLock Status
  - Function Keys Mode (without pressing Fn first)
  - Large aperture graphics adapters
- Thunderbolt Configuration
  - Devices under Thunderbolt
  - Native Thunderbolt Support
- Evaluation
  - Advanced
  - Chipse
  - Main
  - Security
  - Boot
  - Save & Exit

### **Boot menu**

- Boot Option #1
- Boot Option #2
- Boot Option #3
- Boot Option #4
- Priority for devices

### **Exit menu**

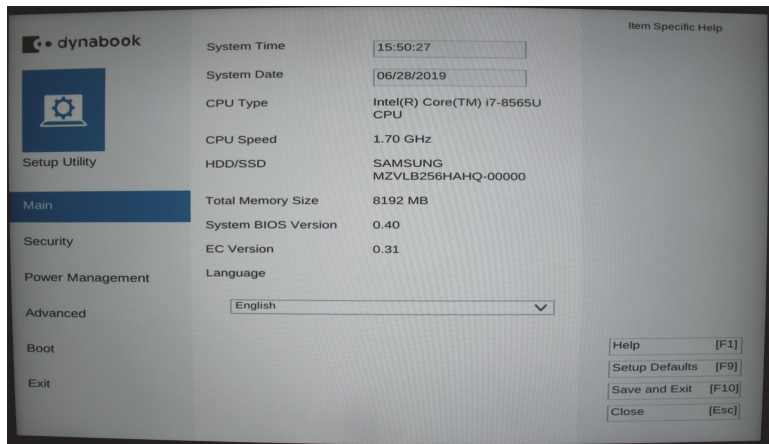
- Exit Saving Changes
- Exit Discarding Changes
- Load Setup Defaults
- Save Changes and Power off

## **3.15.2 Accessing the SETUP Program**

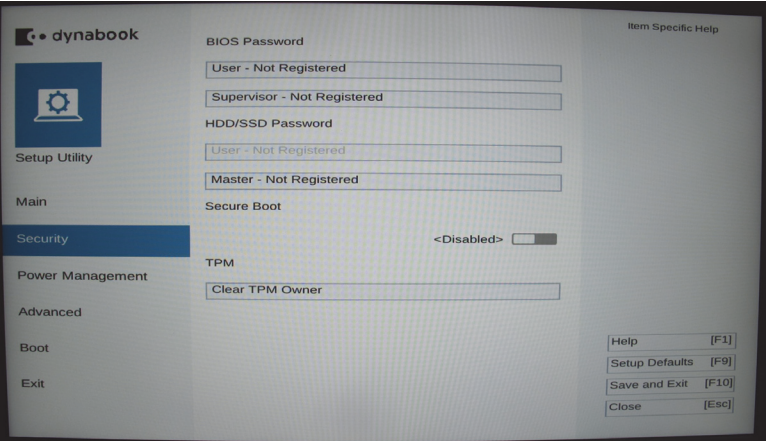
Turn on the power SW.

Then press **F2** key of the keyboard. The following display appears.

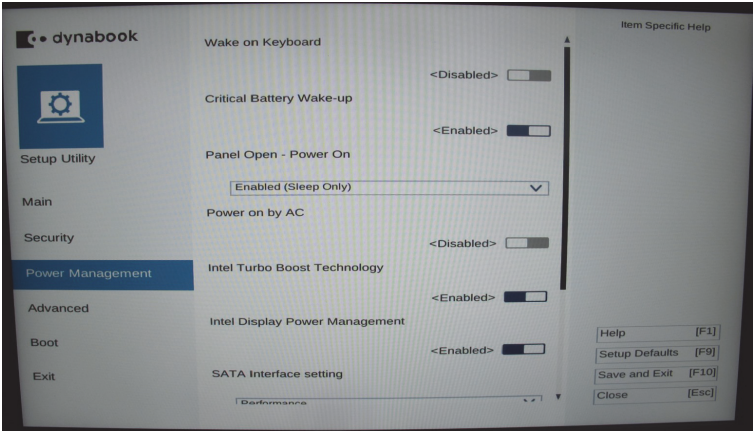
### **Main menu screen**



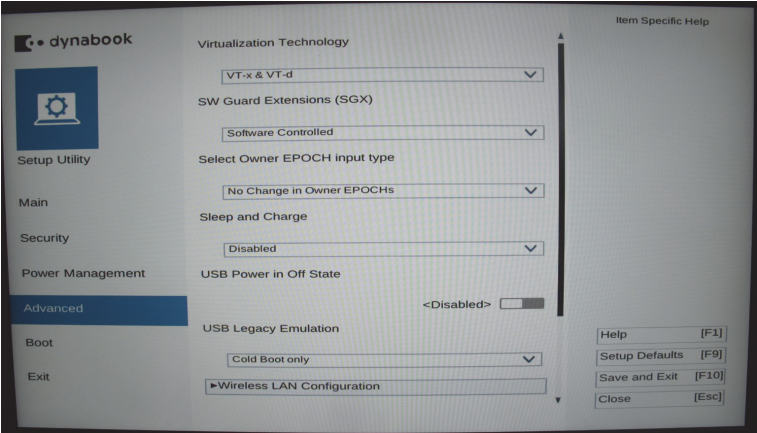
Security menu screen



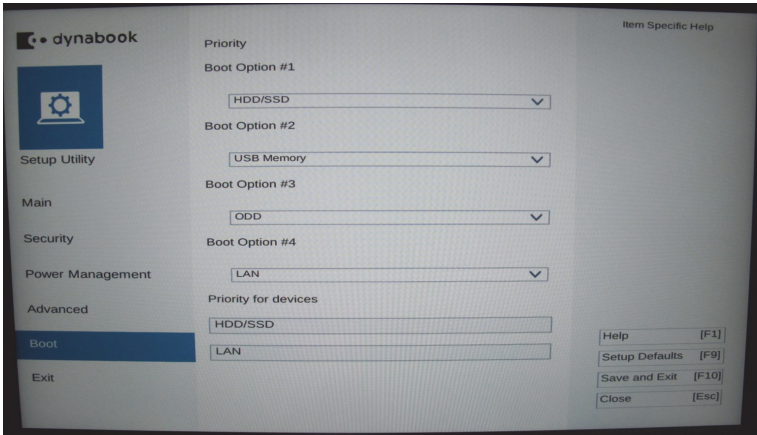
Power Management menu screen



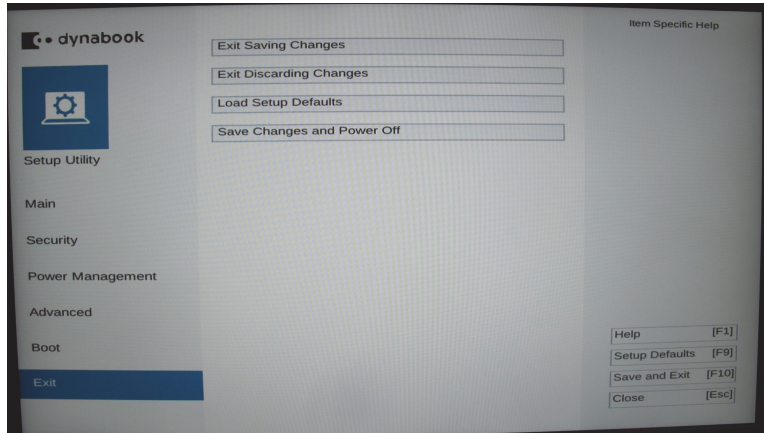
Advanced menu screen



Boot menu screen



## Exit menu screen



### *Moving Within the SETUP Menu and Changing Values*

1. Press ← and → to move between the two columns. Press ↑ and ↓ to move between items in a column.
2. Press the **[Enter]** Key to change the value.

### *Accepting Changes and Exiting the SETUP Window*

1. Press **[F10]** key to accept the changes you made.
2. To make other changes, press **N**. Repeat the steps above.
3. To accept the changes, press **Y**.



*You can press **ESC** to quit at any time without saving changes. **SETUP** asks you to confirm that you do not want to save your changes. When **SETUP** is displayed at the next time, the current configuration appears.*

### *The Factory Preset Configuration*

When you access **SETUP**, the current configuration is displayed.

1. To load the factory preset configuration, press **[F9]** key.
2. To accept the default settings, press **[Y]** key.

### *How to change setup Options*

Since a help is displayed on the right-hand side of each menu screen, refer to it before change.

# Chapter 4

## Replacement Procedures

This chapter describes the procedure for removing and replacing the field replaceable units (FRUs) in the PC. It may not be necessary to remove all the FRUs in order to replace one. The chart below provides a guide as to which other FRUs must be removed before a particular FRU can be removed. The numbers in the chart indicate the relevant section numbers in this manual.

In all cases when removing an FRU, the battery pack must also be removed. When repairing an FRU that is the potential cause of a computer fault, use the chart to determine the order in which FRUs need to be removed.

Table 4-1 the case for the following example

4.9 Memory media	
4.10 SIM card (3G model)	
4.11 Cover Assembly and Base Assembly	
Cover	4.27 LCD Assembly
4.26 Keyboard/Cover Assembly	4.30 Camera module
4.25 USB board	4.29 Wireless LAN antennas
4.24 DC IN jack	4.28 Display hinges
4.23 System board	
4.22 3G antennas	
4.21 Speaker	
4.20 Click pad	
4.19 Fin	
4.18 Fans	
4.17 3G module	
4.16 Wireless LAN card	
4.15 Smart Card slot	
4.14 SSD	
4.13 Memory module	
4.12 Battery pack	

Chart Notation

The chart shows the case for the following example:

Removing the Memory module

All FRUs ([4.9 Memory media](#), [4.10 SIM card \(3G model\)](#), [4.11 Cover Assembly and Base Assembly](#), [4.12 Battery pack](#)) above “[4.13 Memory module](#)” unit must be removed.

Please prepare required parts in advance, when replacing the relevant items.

## 4.1 Safety Precautions

Please read the following safety instructions before disassembling the computer and always follow the instructions while working on the computer.



1. Always use the genuine battery that is authorized by Dynabook or compatible with the unit. Since other battery packs have different specifications, they may be incompatible with the unit, and may burst or explode.  
Never heat or disassemble the battery pack, as that could cause leakage of alkaline solution. Never throw the battery pack into a fire, as that could cause the battery pack to explode.
2. The power supply and other components carry high voltages. If you need to turn on the power of a partially disassembled computer to check its operation, be very careful not to touch connectors or components, in order to avoid the risk of electric shock.  
Also, do not disassemble individual components in first-level maintenance.



1. Turn off the power and disconnect the AC adaptor from the power source, to avoid exposure to electric shock.
2. Batteries in the computer retain an electrical charge, so there is danger of electrical shock even when the computer is disconnected from an AC power source. Remove any metal jewelry or accessories such as necklaces, bracelets or rings, in order to reduce the risk of electric shock. Never work with wet or damp hands.
3. Be careful of edges and corners as these may cut.



1. When you change a component, be sure the replacement component meets the required specifications. Never use foreign parts, to avoid any risk of damage to the computer.
2. To avoid any risk of short-circuit, fire or other internal damage, never allow any metal objects such as screws or paper clips to fall into the unit. Be sure to replace screws with the same size as those removed. Make sure all screws are securely fastened. Loose screws can cause short circuits, resulting in heat, smoke or fire.
3. Before lifting out an FRU or other component, make sure all cables to the component have been disconnected, in order to reduce the risk of accidental electric shock.
4. If you use AC power, be sure to use the cable that came with the computer or one recommended by Dynabook.
5. Make sure that all replacement components meet the specifications for the computer and that all cables and connectors are securely fastened, in order to avoid the risk of electric shock.
6. Some parts inside the computer, such as the CPU and cooling module, become very hot during operation. Conduct repair work after they have cooled. Be careful around the CPU and cooling module to avoid burns.

## 4.2 Before You Begin

Take note of the following points before starting work. Always remove the AC adaptor and battery pack before commencing any of the procedures. The procedure for removing the battery pack is described in [4.12 Battery pack](#).

1. Do not disassemble the computer unless it is operating abnormally.
2. Use the recommended tools.
3. Ensure that the environment for working on and storing parts does not contain any of the following.
  - Dust or dirt
  - Static electricity
  - Extremely hot, cold, or humid conditions
4. Perform the diagnostic tests described in Chapter 2 to identify the FRU that has probably caused the system failure.
5. Do not perform any unnecessary work. Always work in accordance with the disassembly and re-assembly procedures in this manual.
6. Keep parts removed from the computer in a safe place away from the computer where they will not be damaged or interfere with your work.
7. Disassembling requires the removal of a large number of screws. Keep removed screws in a safe place such that you can determine which screws belong to which part.
8. When re-assembling, ensure that you use the correct screws and fit parts in the correct position. Screw sizes are noted in the text and figures.



9. As all parts have sharp edges and corners, take care not to cut yourself.
10. After replacing an FRU, check that the computer and replaced part operate correctly.

### 4.3 Disassembly Procedure

Four main types of cable connector are used.

- Pressure plate connector
- Spring connector
- Back flip connector
- Normal pin connector

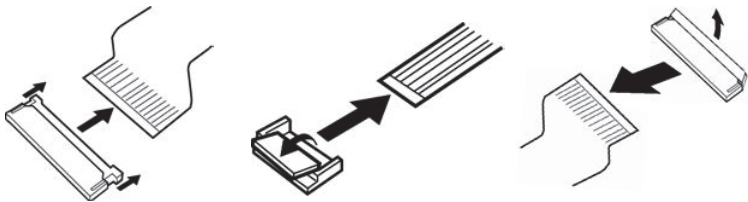
For pressure plate connectors, slide the pressure plate holding tags on both sides of the plastic pressure plate on the connector and pull the cable out from the connector. When reconnecting the cable to the pressure plate connector, slide the pressure plate holding tags on both sides of the plastic pressure plate on the connector and insert the cable into the connector. Push both tags of the pressure plate such that the cable is fixed in the correct position. Pull the cable to ensure that it is securely connected.

For spring connectors, lift up the stopper frees the cable and allow it to be pulled out. To reconnect, hold the stopper in the up position and insert the cable, then lower the stopper to secure the cable. Pull the cable to ensure that it is securely connected.

For back flip connectors, lift up the flip plate frees the cable and allow it to be pulled out. To reconnect, hold the flip plate in the up position and insert the cable, then lower the flip plate to secure the cable. Pull the cable to ensure that it is securely connected.

Normal pin connectors are used for all other cables. Simply pull out or push in these connectors to disconnect or reconnect.

*Figure 4-1 Pressure plate connector/Spring connector/Back flip connector*



### 4.4 Assembly Procedures

After the computer has been disassembled and the part that caused the fault has been repaired or replaced, the computer must be reassembled.

Take note of the following general points when assembling the computer.

- Take your time and follow the instructions carefully. Hurrying the assembly work will only introduce new problems.
- Check that all cables and connectors are securely connected.
- Before fastening FRUs or other parts in place, ensure that no cables are caught on screws or the FRU.
- Check that all latches are securely closed.
- Ensure that you have installed all FRUs correctly and do not have any screws left over. Using an incorrect screw may damage the thread or screw head and result in the FRU not being securely fastened in place.

After installing FRUs, check that the computer operates correctly.

## 4.5 Tools and Equipment

For your safety and the safety of the people around you, it is important that you use Electrostatic Discharge (ESD) equipment. Correctly utilizing of the equipment increases the percentage of successful repairs and saves on the cost of damaged or destroyed parts. The following equipment is required for disassembly and assembly.

- One Philips screwdriver with type 0 bit (for S-THIN HEAD screws)
- One Philips screwdriver with type 1 bit (for screws other than above)
- One flat-blade screwdriver (for removing the CPU)
- Tweezers (for lifting screws)
- ESD mats (lay on work table or floor)
- An ESD wrist strap and heel grounder
- Anti-static carpet or flooring
- Air-ionizers in highly static sensitive areas
- Antenna coaxial cable disconnecter
- Special syringe (for applying grease)

## 4.6 Screw Tightening Torque

When you fasten screws, be sure to follow the torque list below.



Overtightening can damage components and screws; undertightening can result in electrical shorts or other damage if screws or components come loose.

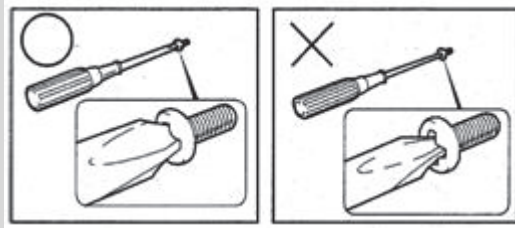


Dynabook recommends that you use an electric screw driver for quick and easy operations.

- M2 (2mm) 0.167 N•m (1.7 kgf cm)
- M2.5 (2.5mm) 0.294 N•m (3.0 kgf cm)



To prevent damage to THIN HEAD screws, use type 0 bit philips screwdriver. Press along the axis of the screwdriver while turning the screw. This is because the contact area between the screw and driver is less than for a pan head screw (standard pan-shaped screw head).



## 4.7 Grip Color

Some screws have a colored grip area to help you determine the length of the screw.

[Normal grip]

- Normal length screws: Blue
- Special length screws: Green
- Tight grip screw: Yellow

“Special length screw” means screws whose length is indicated in an integral number to the first decimal places such as 2.5 mm, 2.6 mm and so on.



## 4.8 Screw Notation

To make maintenance of the computer easier, markings of the kinds of the screws including the types and lengths of the screws are indicated on the computer body.

### **Screw type + Screw length (mm)**

Screw shape

B: Bind screw

F: Flat head screw

S: Super thin head screw

T: Tapping screw

U: Other screws (Unique screws: pan head, stud, etc.)

Example: B6 ... 6mm BIND screw

Screw color/material

B: Black/Nickel

C: Silver/Non-Hexavalent Chromate

U: Other screws (Unique screws: such as stud, etc.)

## 4.9 Memory media



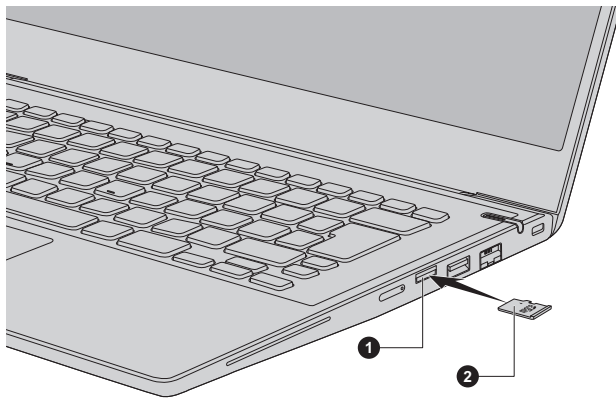
Insert or remove a Memory media in accordance with any instructions in each Memory Media manual or the manuals of the computer system you are using.

### 4.9.1 Installing the Memory media

To insert memory media, follow the steps as detailed below and refer to [Figure 4-2](#).

1. Turn the memory media so that the contacts (metal areas) face down.
2. Insert the memory media into the memory media slot on your computer.
3. Press the memory media gently until it clicks into place.

*Figure 4-2 Inserting memory media*



1. Memory media slot

2. Memory media

### 4.9.2 Removing the Memory media

To remove memory media, follow the steps as detailed below and refer to [Figure 4-2](#).

1. Open the **Safely Remove Hardware and Eject Media** icon on the Windows Taskbar.
2. Select the memory media that you want to remove.
3. Push the memory media until you hear a click to partially release it.

4. Grasp the media and remove it.

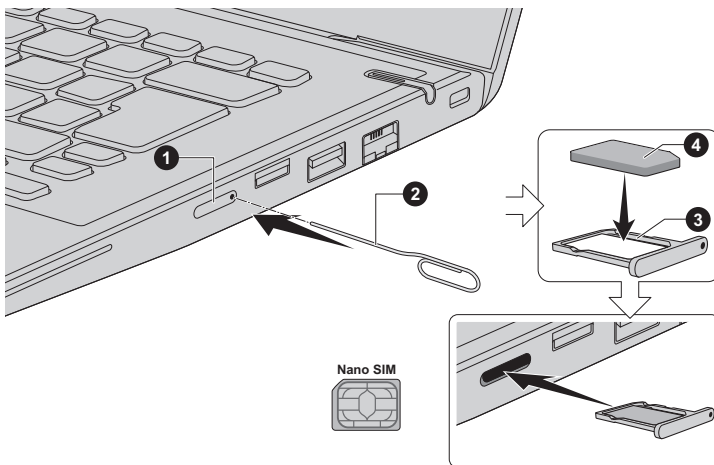
## 4.10 SIM card (3G model)

### 4.10.1 Installing a SIM card

To install a SIM card, follow the steps as detailed below and refer to [Figure 4-3](#).

1. Shut down the computer. Make sure the **Power** indicator is off.
2. Remove the AC adaptor and all cables and peripherals connected to the computer.
3. Locate the SIM card slot.
4. To pop the SIM card tray partially open, insert a slender object (about 10mm, diameter 0.8mm), such as a straightened paper clip, into the eject hole. Gently pull to open the SIM card tray.
5. Place the SIM card into the SIM card tray with the metal connectors facing down.
6. Insert the SIM card tray into the SIM card slot, and push the center of the tray to close it. Press gently until it locks into place.

*Figure 4-3 Installing the SIM card*



- |                                    |                  |
|------------------------------------|------------------|
| 1. SIM card slot                   | 3. SIM card tray |
| 2. Slender object (Diameter 0.8mm) | 4. SIM card      |

## 4.10.2 Removing a SIM Card

To remove a SIM card, follow the steps as detailed below and refer to [Figure 4-3](#).

1. Shut down the computer. Make sure the **Power** indicator is off.
2. To pop the SIM card tray partially open, insert a slender object (about 10mm, diameter 0.8mm), such as a straightened paper clip, into the eject hole. Gently pull to open the SIM card tray.
3. Remove the SIM card from the SIM card tray.
4. Insert the SIM card tray back into the SIM card slot.

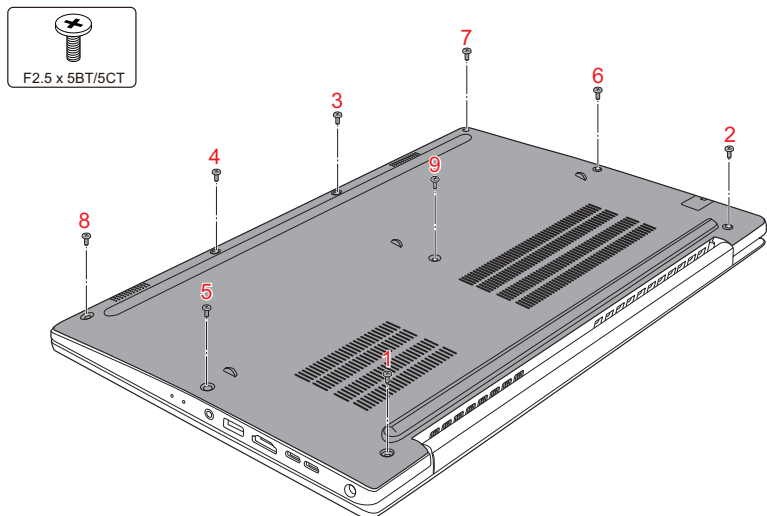
## 4.11 Cover Assembly and Base Assembly

### 4.11.1 Removing the Cover Assembly and Base Assembly

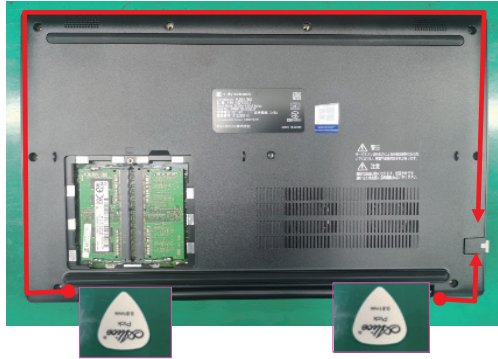
To remove the Base Assembly, follow the steps below and refer to [Figure 4-4](#) to [Figure 4-6](#).

1. Close the display panel and turn the computer face down.
2. Remove the following screws securing the Cover Assembly and the Base Assembly.

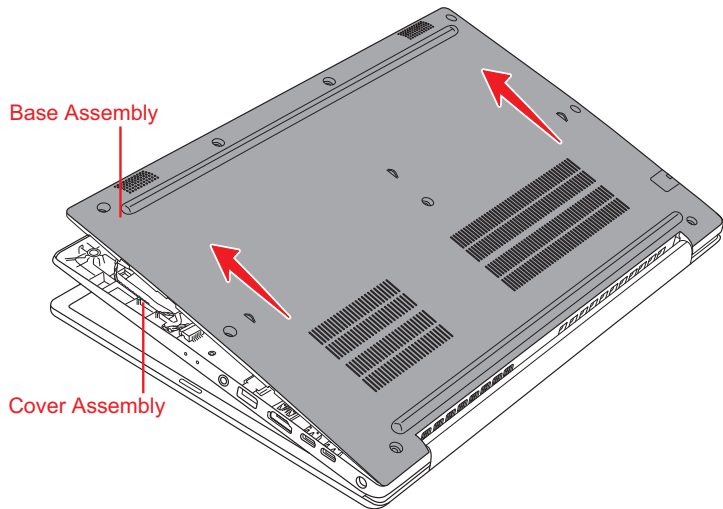
*Figure 4-4 Removing the Base Assembly (1)*



3. Separate the Base Assembly and Cover Assembly while releasing the latches using the plectrum.

*Figure 4-5 Removing the Base Assembly (2)*

4. Remove the **Base Assembly**.

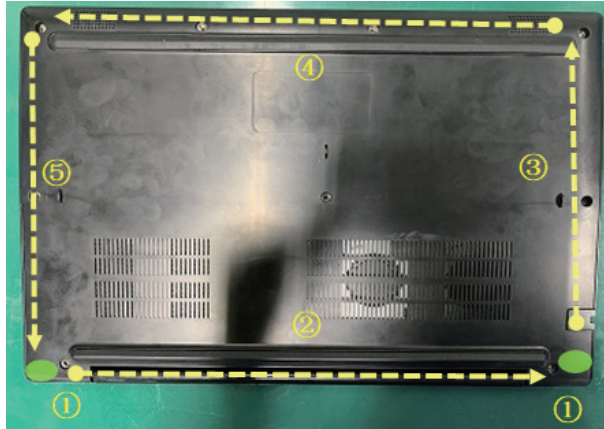
*Figure 4-6 Removing the Base Assembly (3)*

### 4.11.2 Installing the Base Assembly

To install the Base Assembly, follow the steps below and refer to [Figure 4-4](#) to [Figure 4-7](#).

1. Set the Cover Assembly on the Base Assembly while securing the latches.

*Figure 4-7 Installing the Base Assembly*



2. Secure the Cover Assembly and Base Assembly with the screws.



When securing the Base Assembly, be sure to drive the screws in the order of the number on [Figure 4-4](#).

3. Turn the computer, and open the display.

## 4.12 Battery pack

### 4.12.1 Removing the Battery pack

To remove the battery pack, follow the steps below and refer to [Figure 4-8](#) and [Figure 4-9](#).

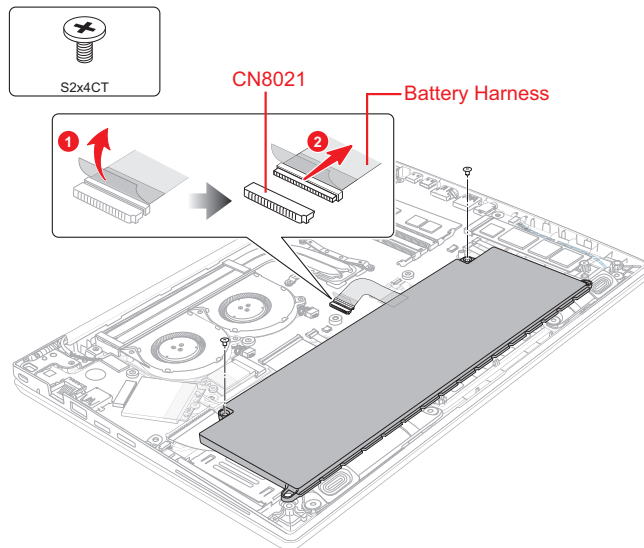


Take care not to short circuit the terminals when removing the battery pack. Similarly, do not drop, knock, scratch, disassemble, twist, or bend the battery pack.

1. Disconnect the **BATTERY HARNESS** from the connector **CN8021** on the SYSTEM board.
2. Remove the following screws and the battery pack.

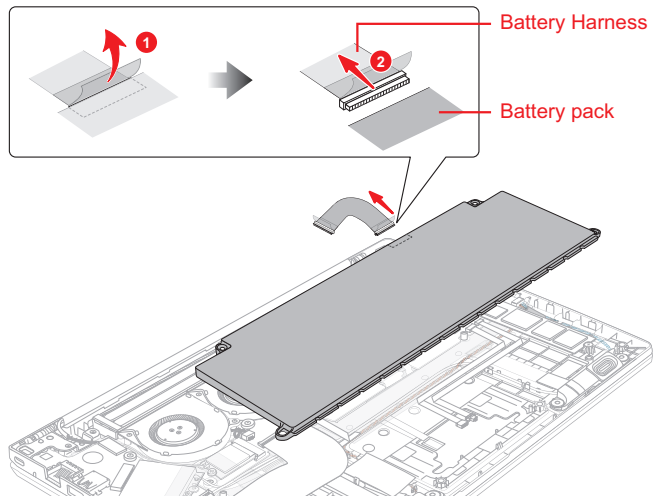


Figure 4-8 Releasing the battery pack (1)



3. Disconnect the **BATTERY HARNESS** from the connector on the battery pack.

Figure 4-9 Releasing the battery pack (2)



Dispose of the used/removed battery pack in accordance with the laws and ordinances of your local authority.

### 4.12.2 Installing the Battery pack

To install the battery pack, follow the steps below and refer to [Figure 4-8](#) and [Figure 4-9](#).



The lithium ion battery pack may explode if not fitted, operated, handled, or disposed correctly. Dispose always the used battery pack in accordance with the laws and ordinances of your local authority.

Use only the batteries approved by Dynabook.



Check the battery's terminals visually. If they are dirty, wipe them clean with a dry cloth.

1. Peel off the separator on one side of the battery harness and connect the **BATTERY HARNESS** to the connector on the battery pack.
2. Set the battery pack to the COVER ASSY and secure it with the screws.
3. Peel off the separator on the other side of the battery harness and connect the **BATTERY HARNESS** to the connector CN8021 on the SYSTEM board.

## 4.13 Memory module

### 4.13.1 Removing the Memory module

To remove the memory module, follow the steps as detailed below:

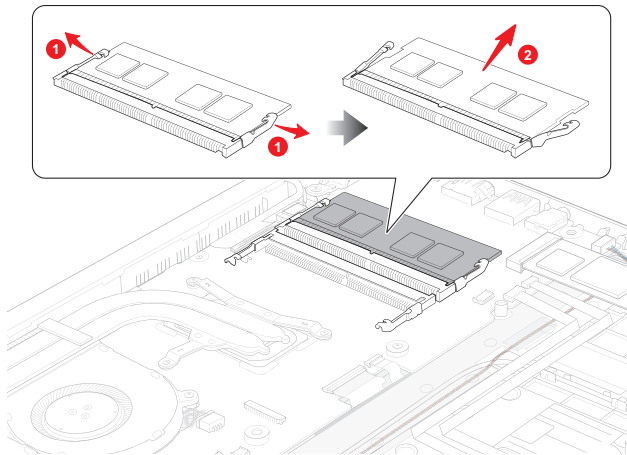


Do not touch the connectors on the memory module or on the computer. Dust or stains on the connectors may cause memory access problems.

Never press hard or bend the memory module.

1. Open the left and right **latches** outside and remove the **memory module(s)**.

Figure 4-10 Removing the memory module(s)



1. Latches

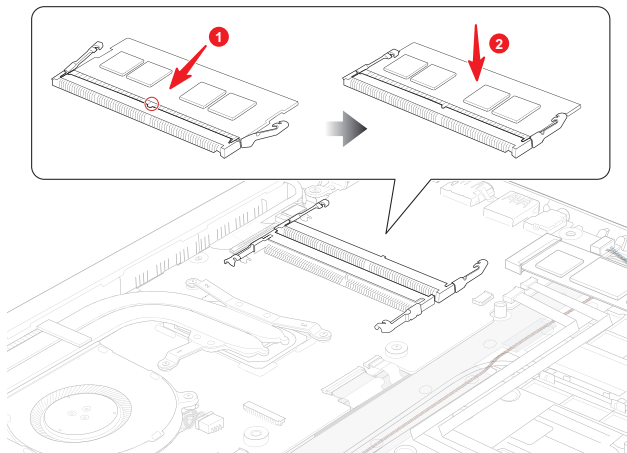
2. Memory module

#### 4.13.2 Installing the Memory module

To install a memory module, follow the steps as detailed below:

1. Align the notch of the memory module with that of the memory slot and gently insert the module into the slot at about a 30 degree angle before holding it down until the latches on either side snap into place.

Figure 4-11 Seating the memory module



After installing the memory module, make sure that the memory module is secured with the left and right latches.

## 4.14 SSD

### 4.14.1 Removing the SSD

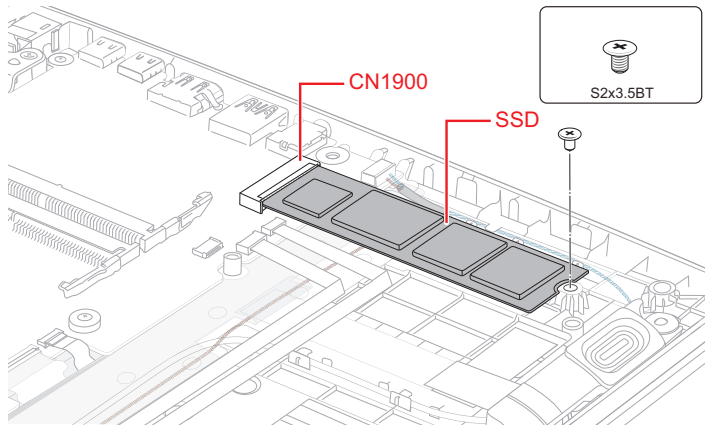
To remove the SSD, follow the steps below and refer to [Figure 4-12](#).



Take care not to press on the top or bottom of a SSD. Pressure may cause the data loss or damage to the device.

1. Remove the the following screw and disconnect the **SSD** from the connector **CN1900** on the **SYSTEM** board.

*Figure 4-12 Removing the SSD*



### 4.14.2 Installing the SSD

To install the SSD, follow the steps below and refer to [Figure 4-13](#).

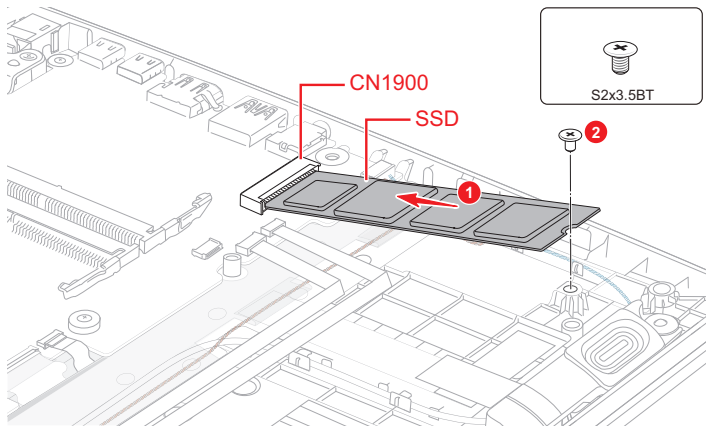


To avoid damage, always hold the SSD only by its sides.

To prevent the SSD from being distorted when installing the SSD pack into the computer, do not press the center of the SSD pack. Always hold the SSD pack by its sides.

1. Insert the **SSD** to the connector **CN1900** on the **System Board (FME2SY\*)** slantwise.
2. Push down the **SSD** and secure it with the screw.

Figure 4-13 Installing the SSD



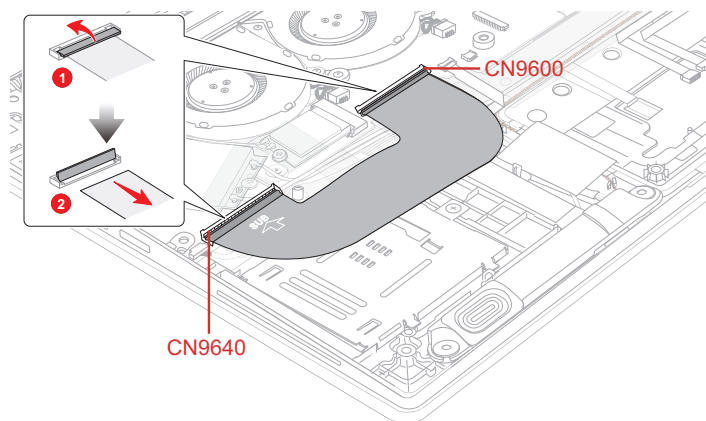
## 4.15 Smart Card slot

### 4.15.1 Removing the Smart Card slot

To remove the Smart Card slot unit, follow the steps below and refer to [Figure 4-14](#) to [Figure 4-16](#).

1. Disconnect the FPC/FFC from the connector **CN9600** on the SYSTEM board and **CN9640** on the USB board.

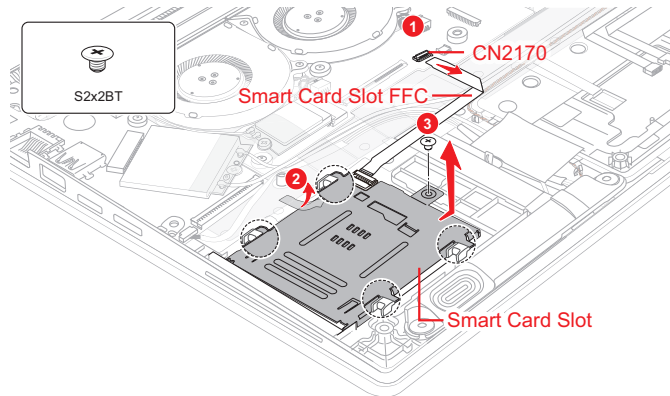
*Figure 4-14 Removing the Smart Card slot (1)*



2. Peel off the INSU SC from the Smart Card slot.
3. Disconnect the **Smart Card FFC** from the connector **CN2170** on the system board.

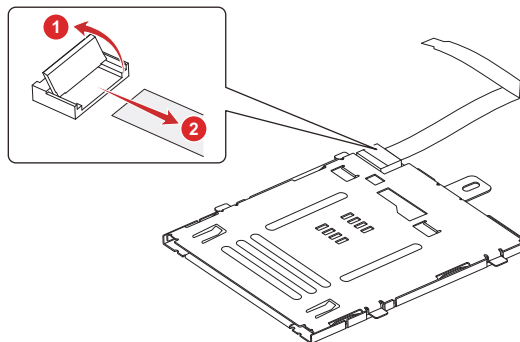
- Remove the following screw and peel off the AL TAPE. Then slide and lift the Smart Card slot unit shown in the following figure to remove the Smart Card slot.

*Figure 4-15 Removing the Smart Card slot (2)*



- Disconnect the **Smart Card FFC** from the connector on the Smart Card slot.

*Figure 4-16 Removing the Smart Card slot (3)*

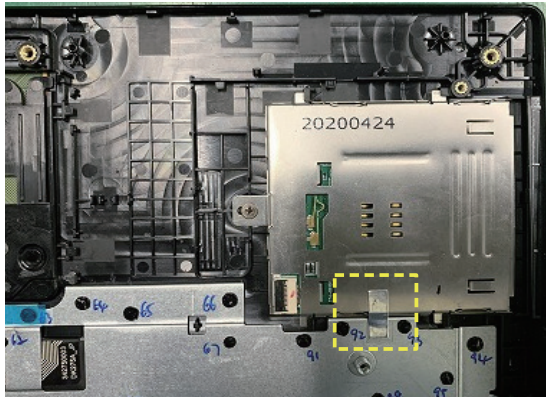


#### 4.15.2 Installing the Smart Card slot

To install the Smart Card slot, follow the steps below and refer to [Figure 4-14](#) to [Figure 4-18](#).

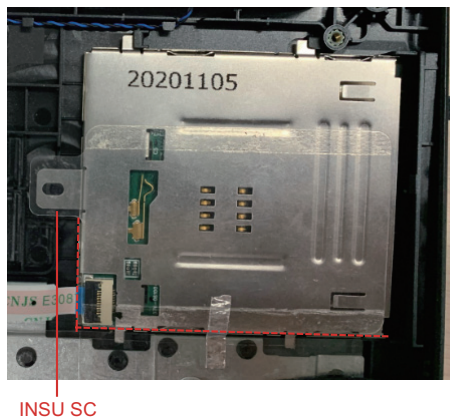
- Connect the **Smart Card FFC** to the connector on the Smart Card slot.
- Set the **Smart Card slot** in place and secure it with the screw.
- Connect the **Smart Card FFC** to the connector **CN2170** on the system board.
- Stick the **AL TAPE** in place.

Figure 4-17 Installing the Smart Card slot (1)



5. Stick the **INSU SC** in place.

Figure 4-18 Installing the Smart Card slot (2)



6. Connect the FPC/FFC to the connector **CN9600** on the SYSTEM board and **CN9640** on the USB board.

## 4.16 Wireless LAN card

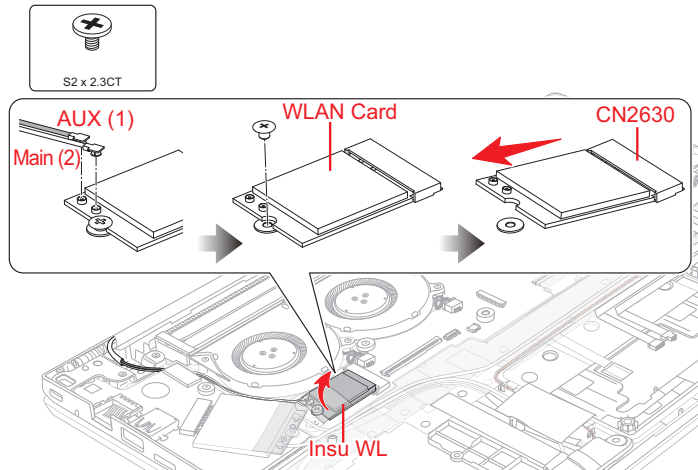
### 4.16.1 Removing the Wireless LAN card

To remove the Wireless LAN card, follow the steps below and refer to [Figure 4-19](#).

1. Peel off the **INSU WL**.
2. Disconnect the **Wireless LAN antenna cable** from the connector on the Wireless LAN card (black cable from "**AUX**" or "**1**" and white cable from "**Main**" or "**2**").

3. Release the **Wireless LAN antenna cable** from the guides on the Cover Assembly.
4. Remove the screw securing the **Wireless LAN card**.
5. Disconnect the **Wireless LAN card** from the connector **CN2630** on the **System Board (FME2SY\*)**.

*Figure 4-19 Removing the Wireless LAN card*



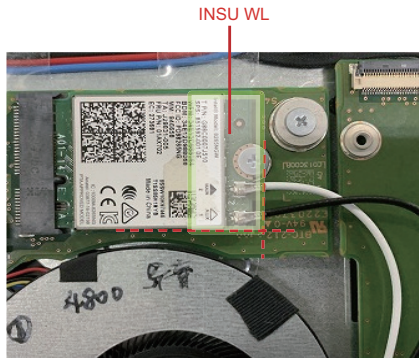
#### 4.16.2 Installing the Wireless LAN card

To install the Wireless LAN card, follow the steps below.

1. Insert the **Wireless LAN card** to the connector **CN2630** on the **System Board (FME2SY\*)** slantwise and press it to connect firmly.
2. Push down the **Wireless LAN card** and secure it with the screw.
3. Arrange the **Wireless LAN antenna cables** to the guides.
4. Connect the **Wireless LAN antenna cables** to the connectors (black cable to “**AUX**” or “**1**” and white cable to “**Main**” or “**2**”) on the **Wireless LAN card**.
5. Stick a new **INSU WL** in place.



Figure 4-20 Installing the Wireless LAN card



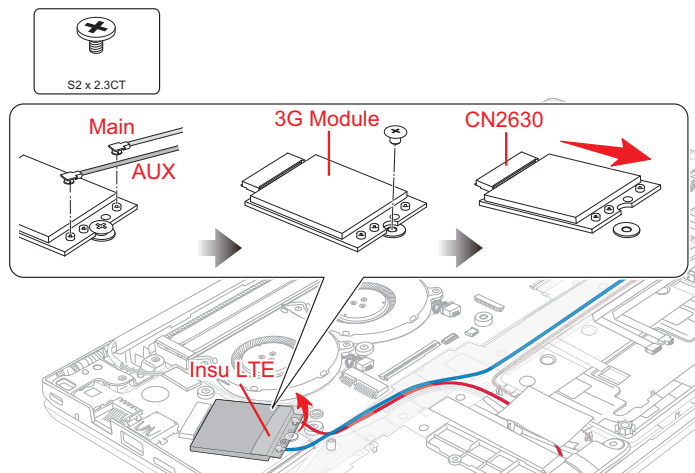
## 4.17 3G module

### 4.17.1 Removing the 3G module

To remove the 3G module, follow the steps below and refer to [Figure 4-21](#).

1. Peel off the **INSU LTE**.
2. Disconnect the **3G ANTENNA** cables from the connectors on the 3G MODULE. (red tube from "MAIN")
3. Remove the following screw and disconnect the **3G MODULE** from the connector **CN2610** on the **USB board (FME2LT\*)**.

Figure 4-21 Removing the 3G module



### 4.17.2 Installing the 3G module

To install the 3G module, follow the steps below.

1. Insert the **3G MODULE** to the connector **CN2610** on the USB board. Secure the 3G MODULE with the screw.
2. Connect the **3G ANTENNA cables** to the connectors on the 3G MODULE. (red tube to "MAIN")
3. Stick a new **INSU LTE** in place.

*Figure 4-22 Installing the 3G module*



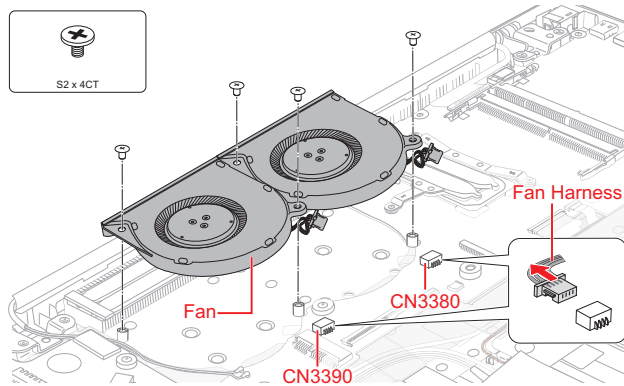
## 4.18 Fans

### 4.18.1 Removing the Fans

To remove the Fans, follow the steps below and refer to [Figure 4-23](#).

1. Disconnect the **Fan harness** from the connector **CN3380** and **CN3390** on the **System Board (FME2SY\*)**.
2. Remove the following screws and the Fans from the Cover Assembly.

Figure 4-23 Removing the Fans



## 4.18.2 Installing the Fans

To install the Fans, follow the steps below and refer to [Figure 4-23](#).

1. Set the Fans in place on the Cover Assembly and secure them with the screws.
2. Connect the **Fan harness** to the connector **CN3380** and **CN3390** on the **System Board (FME2SY\*)**.

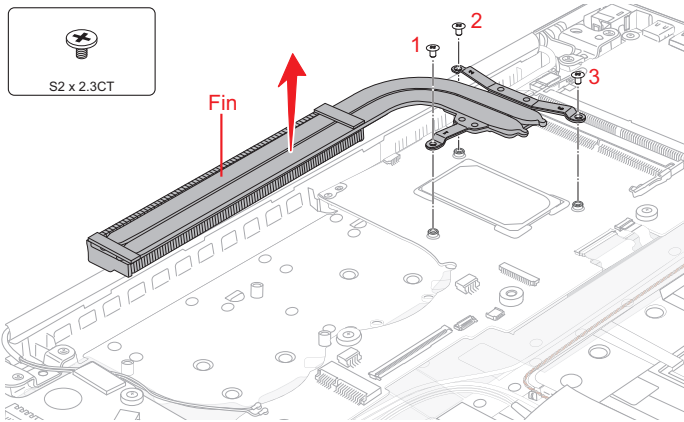
## 4.19 Fin

### 4.19.1 Removing the Fin

To remove the Fin, follow the steps below and refer to [Figure 4-24](#).

1. Remove the following screws and then the **Fin**.

Figure 4-24 Removing the Fin



When removing the Fin, be sure to remove the screws in the reverse order of the number marked on the Fin.

### 4.19.2 Installing the Fin

To install the Fin, follow the steps below and refer to [Figure 4-24](#).

1. Set the **Fin** in place and secure it with the screws.



When installing the Fin, be sure to install the screws in the order of the number marked on the Fin.

## 4.20 Click pad

### 4.20.1 Removing the Click pad

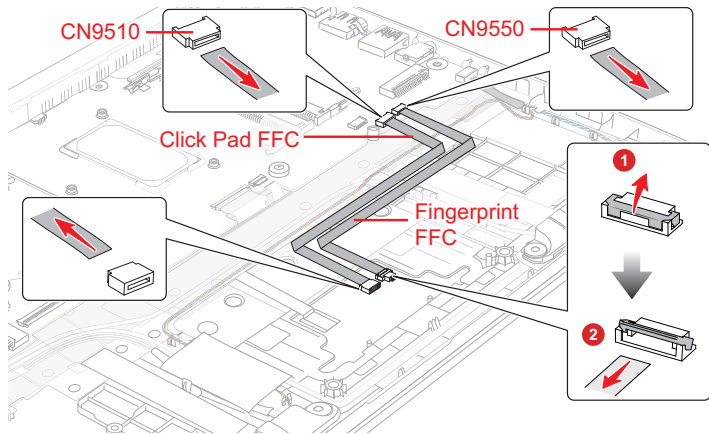
To remove the click pad, follow the steps below and refer to [Figure 4-25](#) to [Figure 4-26](#).



(Fingerprint sensor model) Before replacing the Click Pad, confirm that the user has deleted all the registered fingerprint data. If any fingerprint data remains, OS recovery will be needed after the replacement to clear the data inconsistency.

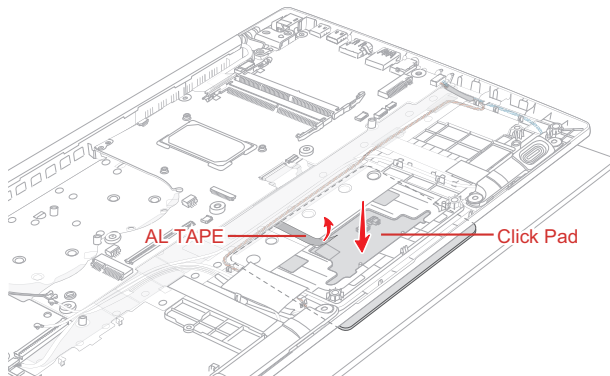
1. Disconnect the **Click Pad FFC** and **Fingerprint FFC** from the connectors on the Click Pad and the connectors **CN9510** and **CN9550** on the **System Board**.

*Figure 4-25 Removing the Click pad (1)*



2. Peel off the **AL TAPE** from the Click Pad and then peel off the **Click Pad** from the Cover Assembly.

*Figure 4-26 Removing the Click pad (2)*



## 4.20.2 Installing the Click pad

To install the Click pad, follow the steps below and refer to [Figure 4-25](#) to [Figure 4-27](#).

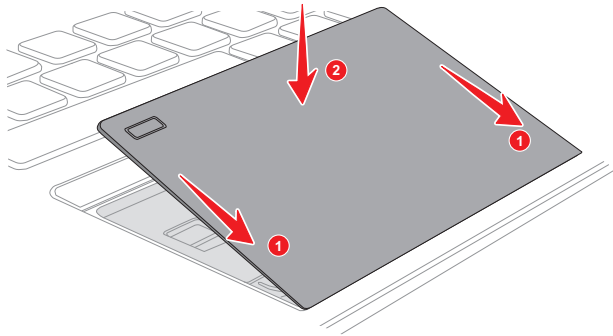


(Fingerprint sensor model) When replacing the Click Pad, be sure to use the same vendor's new one.

1. Stick the Click Pad Mylar to a new Click Pad and remove the protective film from the Click Pad.

2. Peel off the separator on the Click Pad RIM ASSY and stick the new **Click Pad** to the Cover Assembly.

*Figure 4-27 Installing the Click pad*



3. Stick the **AL TAPE** to the Click pad and Click Pad RIM ASSY.
4. Connect the **Click Pad FFC** and **Fingerprint FFC** to the connector on the Click Pad and the connector **CN9510** and **CN9550** on the **System Board**.



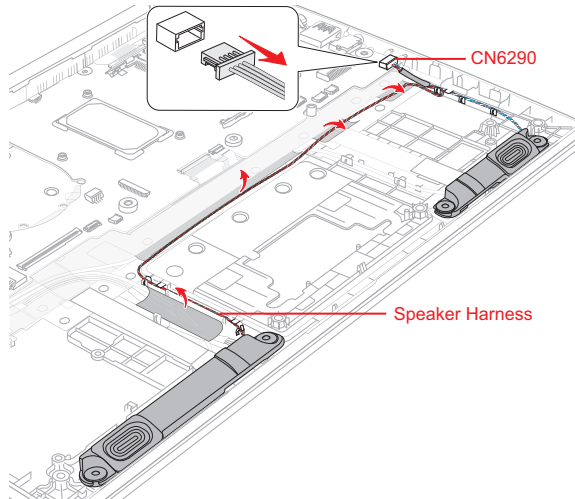
(Fingerprint sensor model) After replacing the Click Pad, be sure to run the test program for maintenance described in Chapter 3.

## 4.21 Speaker

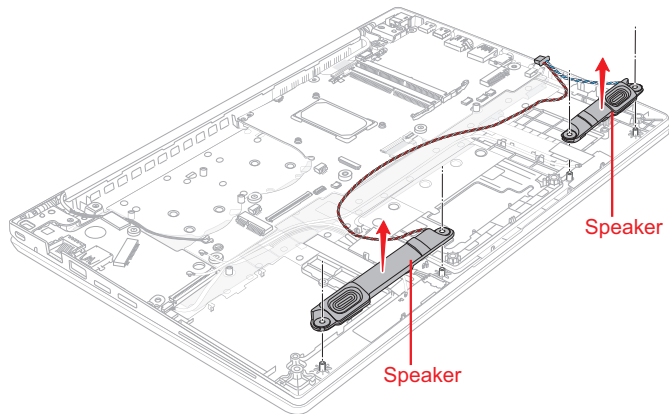
### 4.21.1 Removing the Speaker

To remove the Speaker, follow the steps below and refer to [Figure 4-28](#) to [Figure 4-29](#).

1. Disconnect the **Speaker harness** from the connector **CN6290** on the system board.
2. Open the stick tapes. Release the **Speaker harness** from the guides.

*Figure 4-28 Removing the Speaker (1)*

3. Remove the Speaker from the Cover Assembly.

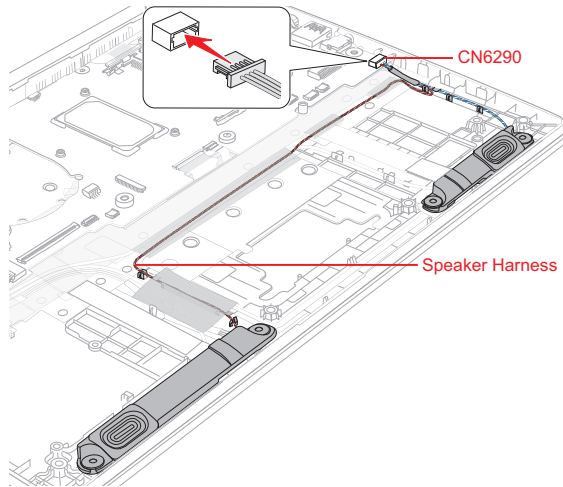
*Figure 4-29 Removing the Speaker (2)*

### 4.21.2 Installing the Speaker

To install the Speaker, follow the steps below.

1. Set the speakers to the Cover Assembly in place.
2. Arrange the **Speaker harness** under the guides as shown below.
3. Connect the **Speaker harness** to the connector **CN6290** on the system board.
4. Arrange the rest of **Speaker harness** as shown below, and fix it with the stick staples.

Figure 4-30 Installing the Speaker



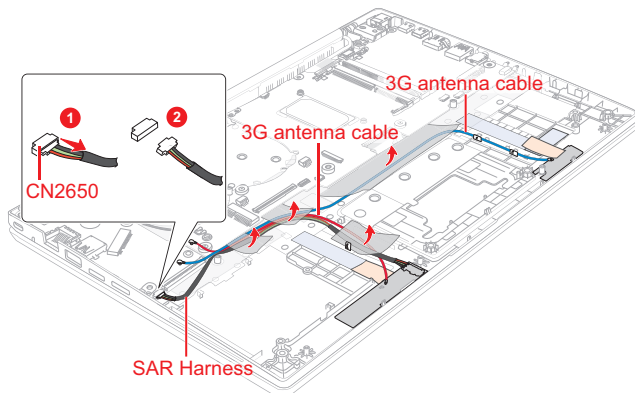
## 4.22 3G antennas

### 4.22.1 Removing the 3G antennas

To remove the 3G antennas, follow the steps below.

1. Disconnect the **SAR harness** from the connector **CN2650** on the **USB board (FME2LT\*)**.
2. Open the stick tapes. Release the 3G antenna cables and SAR harness from the guides on the Cover Assembly.

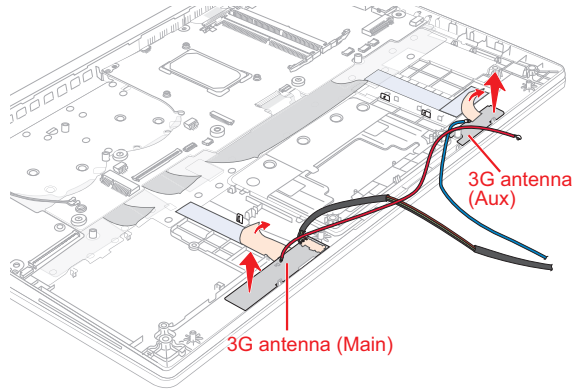
Figure 4-31 Removing the 3G antennas (1)



3. Peel off the 3G antennas from the Cover Assembly.



Figure 4-32 Removing the 3G antennas (2)



Do not reuse the removed 3G antennas. Be sure to use new 3G antenna.

#### 4.22.2 Installing the 3G antennas

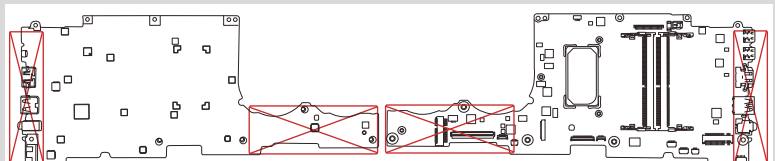
To install the 3G antennas, follow the steps below and refer to [Figure 4-31](#) to [Figure 4-32](#).

1. Stick new **3G antennas (AUX/Main)** in place.
2. Arrange the **3G antenna cables** and **SAR harness** in place on the Cover Assembly, and fix them with the stick staples.
3. Connect the **SAR harness** to the connector **CN2650** on the **USB board (FME2LT\*)**.

### 4.23 System board



1. If replacing with a new system board, update the DMI information as described in Chapter 3, [Tests and Diagnostics](#). Also update with the latest BIOS and EC/KBC as described in Appendix F, [BIOS Rewrite Procedures](#), and Appendix G, [EC/KBC Rewrite Procedures](#).
2. When replacing the system board with a new one, the ProductKey (MBR-DPK) must be written on the system board.
3. When removing/installing the system board, do not handle with the handling prohibition area.

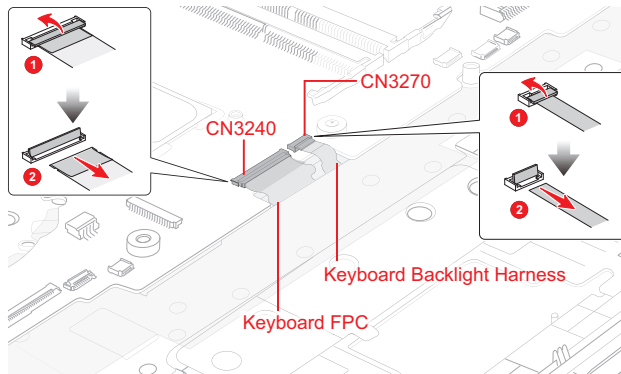


### 4.23.1 Removing the System board

To remove the system board, follow the steps below and refer to [Figure 4-33](#) to [Figure 4-35](#).

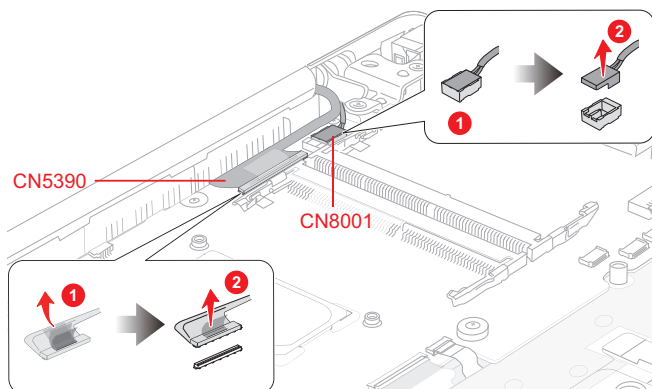
1. Disconnect the **Keyboard FPC** from the connector **CN3240** and **Keyboard Backlight harness** from the connector **CN3270** on the **System Board (FME2SY\*)**.

*Figure 4-33 Removing the system board (1)*



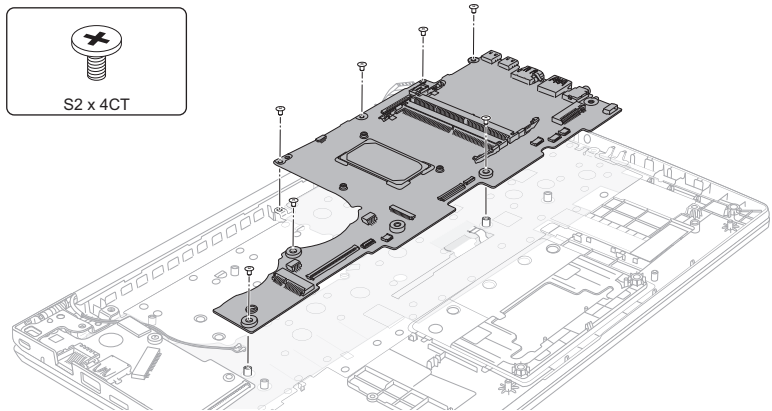
2. Disconnect the **LCD/Webcam harness** from the connector **CN5390** and **DC IN harness** from the connector **CN8001** on the **System Board (FME2SY\*)**.

*Figure 4-34 Removing the system board (2)*



3. Remove the following the screws. Carefully lift up the system board.

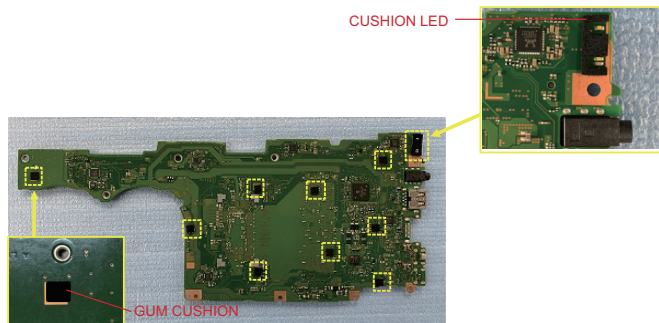
Figure 4-35 Removing the system board (3)



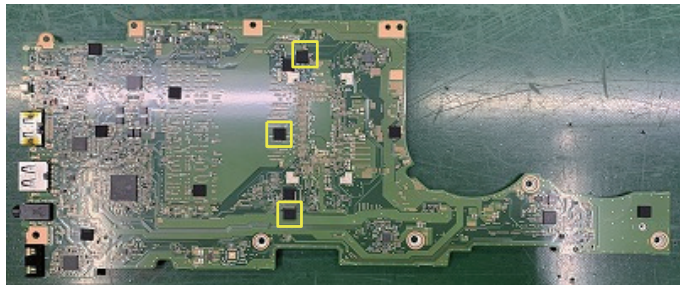
#### 4.23.2 Installing the System board

**Note:** When replacing the system board with a new one

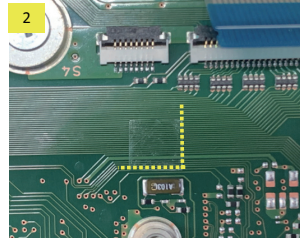
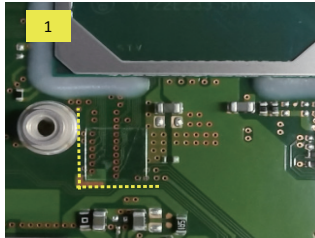
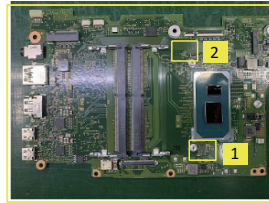
- Stick nine pieces of new **GUM CUSHION** and one piece of new **CUSHION LED** on one side of the system board in place.



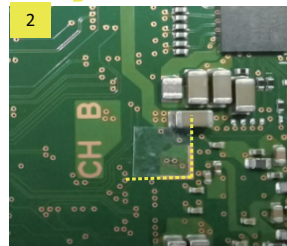
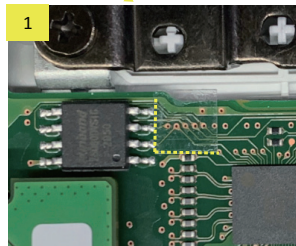
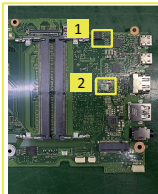
**(For models with memory module cover)** Stick another three pieces of new **GUM CUSHION** in place.



- (For models with memory module cover) Stick two pieces of new **INSU SQUARE** on the other side of the system board in place.



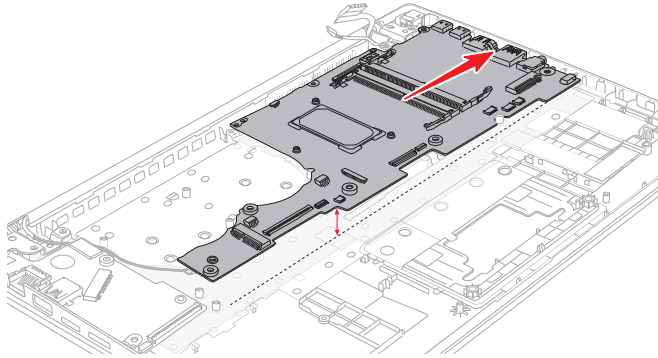
- Stick two pieces of new **INSU SQUARE** on the other side of the system board in place.



To install the system board, follow the steps below and refer to [Figure 4-33](#) to [Figure 4-36](#).

1. Set the system board in place.

*Figure 4-36 Installing the system board*



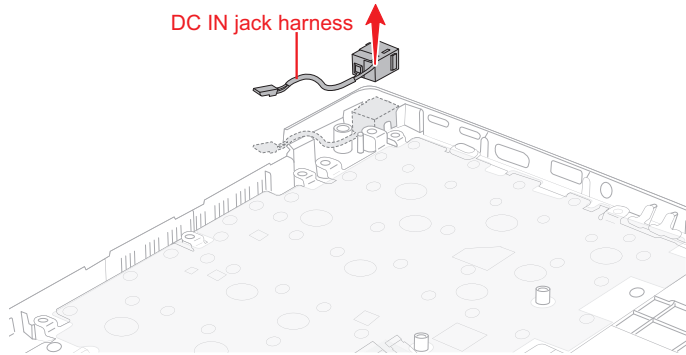
2. Secure the system board with the screws.
3. Connect the LCD/Webcam harness to the connector **CN5390** and DC IN harness to the connector **CN8001** on the **System Board (FME2SY\*)** and arrange the harness to the guide on the Cover Assembly.
4. Connect the **Keyboard FPC** to the connector **CN3240** and **Keyboard Backlight harness** to the connector **CN3270** on the **System Board (FME2SY\*)**.

## 4.24 DC IN jack

### 4.24.1 Removing the DC IN jack

To remove the DC IN jack, follow the steps below and refer to [Figure 4-37](#).

1. Release two screws securing the right display hinge and rotate the display hinge to upright position.
2. Release the DC IN jack harness from the guide, and remove the DC IN jack from the slot on the Cover Assembly.

*Figure 4-37 Removing the DC IN jack*

#### 4.24.2 Installing the DC IN jack

To install the DC IN jack, follow the steps below and refer to [Figure 4-37](#).

1. Set the DC IN jack to the slot on the Cover Assembly and arrange the DC IN jack harness to the guide.
2. Rotate the right display hinge to original position and secure it with two screws.

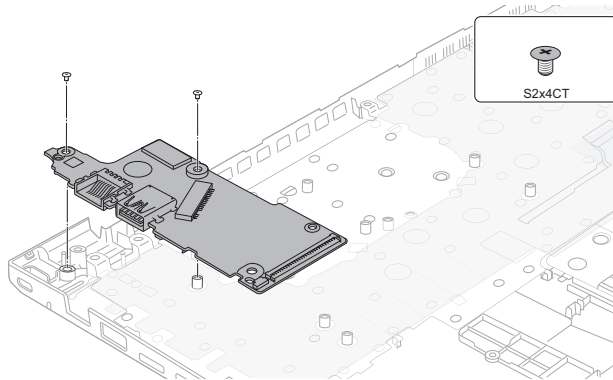
### 4.25 USB board

#### 4.25.1 Removing the USB board

To remove the USB board, follow the step below and refer to [Figure 4-38](#).

1. Release two screws securing the left display hinge and rotate the display hinge to upright position.
2. Remove the following screws and the USB board from the Cover Assembly.

Figure 4-38 Removing the USB board

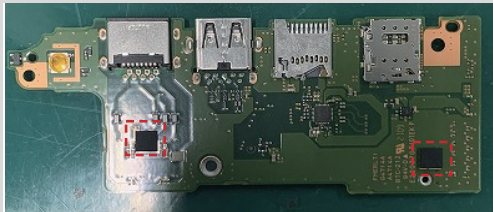


### 4.25.2 Installing the USB board

To install the USB board (FME2LT\*), follow the step below and refer to Figure 4-38.



When replacing the USB board with a new one, stick two pieces of **GUM CUSHION** on the USB board in place.



1. Set the **USB board (FME2LT\*)** to the Cover Assembly in place and secure it with the screws.
2. Rotate the left display hinge to original position and secure it with two screws.

## 4.26 Keyboard/Cover Assembly

The keyboard is assembled to the Cover Assembly by hot melt glue. When either the keyboard or the Cover Assembly needs to be replaced with a new one, please replace them all with a new set of keyboard and Cover Assembly which are already assembled.

### 4.26.1 Removing the Keyboard/Cover Assembly

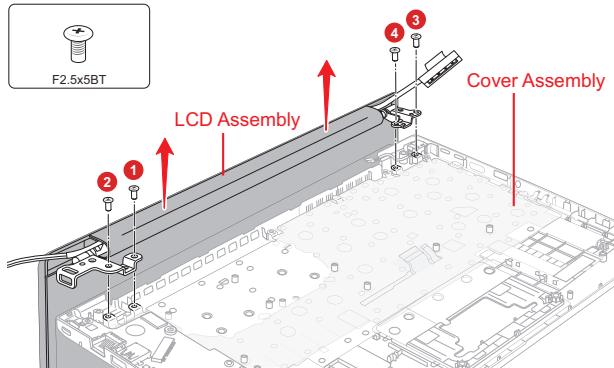
To remove the Keyboard/Cover Assembly, follow the step below and refer to Figure 4-39.



As the keytop may fall out, when handling the keyboard, always hold it by the frame and do not touch the key top.

1. Release the following screws and separate the **LCD Assembly** and **Cover Assembly**.

*Figure 4-39 Removing the Keyboard/Cover Assembly*



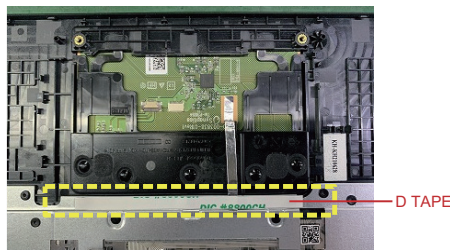
#### 4.26.2 Installing the Keyboard/Cover Assembly

To install the Keyboard/Cover Assembly, follow the step below and refer to [Figure 4-39](#).

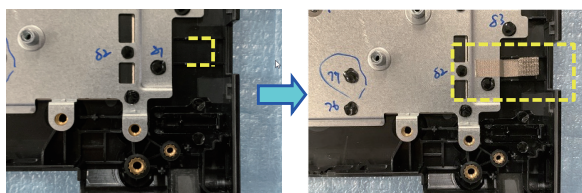
1. Set the LCD Assembly on the Cover Assembly and secure them with the screws.

**Note:** When replacing the Cover Assembly with a new one

- Stick the **D TAPE** on the cover assembly in place and remove the separator on it.

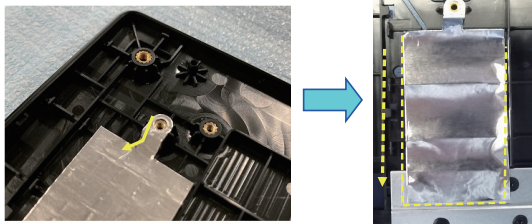


- Stick one piece of **GASKET** on the cover assembly in place.

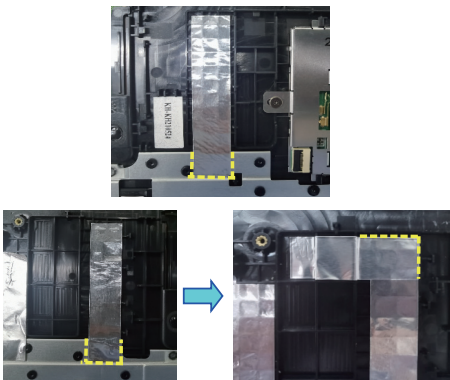




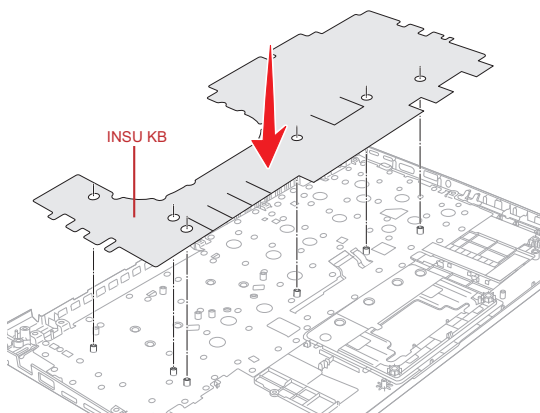
- Stick the **AL TAPE** on the cover assembly in place.



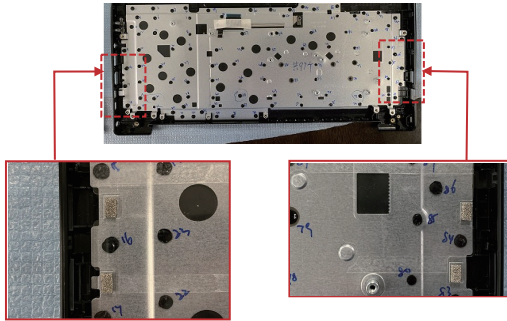
- (For LTE models) Stick three pieces of **AL TAPE** on the cover assembly in place.



- Stick the **INSU KB** on the cover assembly in place.



- Stick four pieces of **GASKET** on the cover assembly in place.



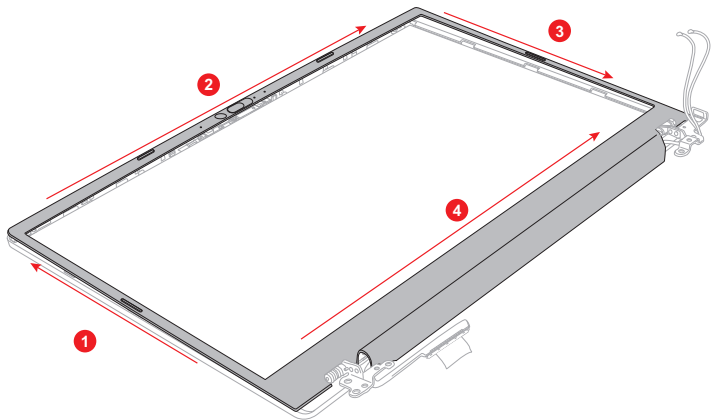
## 4.27 LCD Assembly

### 4.27.1 Removing the LCD unit

To remove the LCD unit, follow the steps below and refer to [Figure 4-40](#) to [Figure 4-42](#).

1. Release the latches from each side and detach the LCD mask from the LCD cover.

*Figure 4-40 Removing the LCD unit (1)*

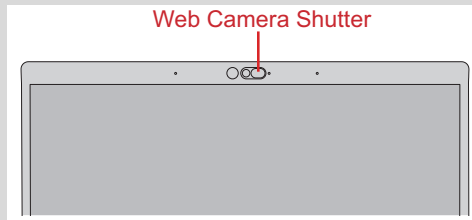


Do not lift the LCD mask too much from the LCD covers when detaching the LCD mask.

2. Remove the LCD mask.

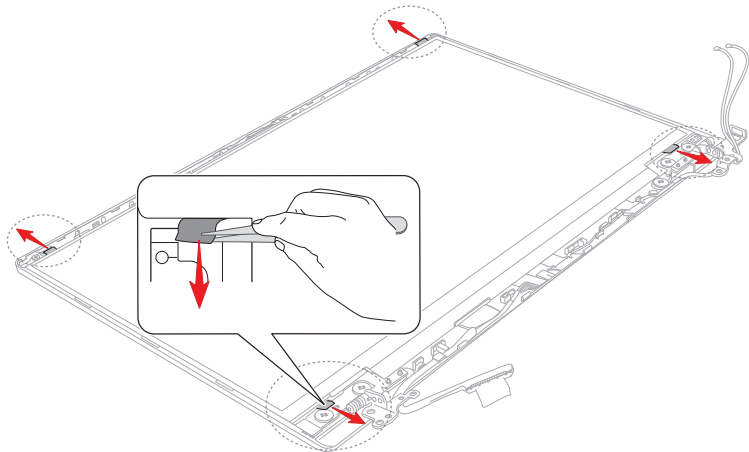


The Web Camera Shutter is attached to the LCD mask by magnet. Please be care not to lose it during removing the LCD mask.

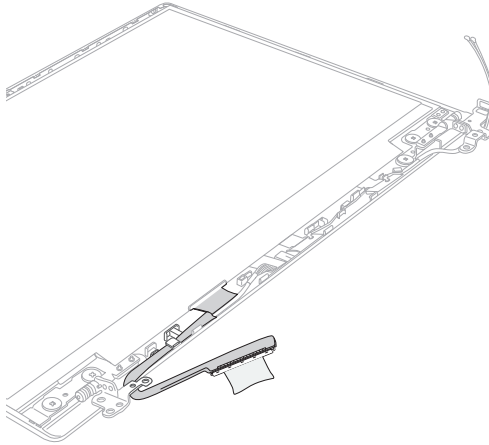


3. Release the LCD/Webcam harness from the guides on the LCD cover.
4. Grasp the bound & detach tapes and pull out the tapes slowly and parallelly from the LCD cover.

*Figure 4-41 Removing the LCD unit (2)*



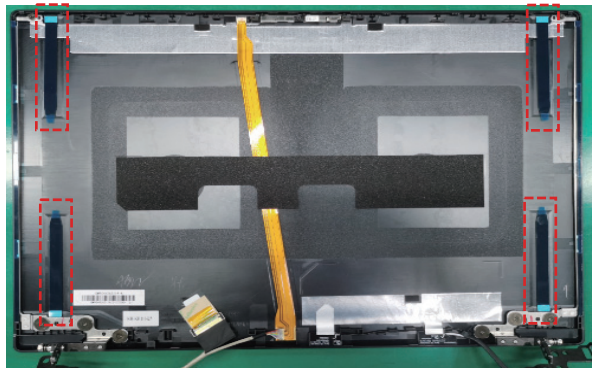
5. Take out the LCD unit.  
Be careful that the LCD/Webcam harness is connected to the connector on the back of the LCD unit.
6. Peel the pull tape and disconnect the LCD/Webcam harness from the connector on the LCD unit.

*Figure 4-42 Removing the LCD unit (3)*

#### 4.27.2 Installing the LCD unit

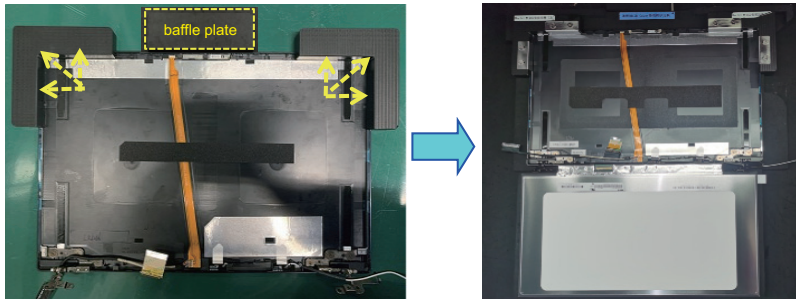
To install the LCD unit, follow the steps below.

1. Stick four pieces of bound & detach tape on the LCD cover and peel off the separators on the tapes .

*Figure 4-43 Installing the LCD unit (1)*

2. Align the LCD cover with the baffle plate (additional) and set the LCD unit assembly jig (additional) on the LCD cover. Place the LCD unit as below.

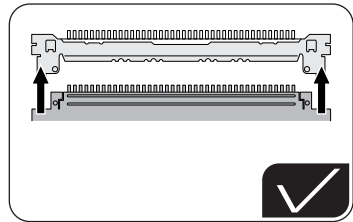
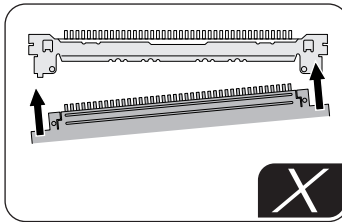
Figure 4-44 Installing the LCD unit (2)



3. Connect the LCD/Webcam harness to the connector on the LCD unit and secure it with the pull tape and glass tape.

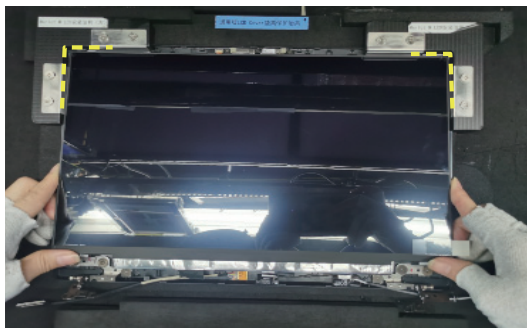


When connect the LCD harness, make sure to connect the right and left side at the same time as shown in the figure below.



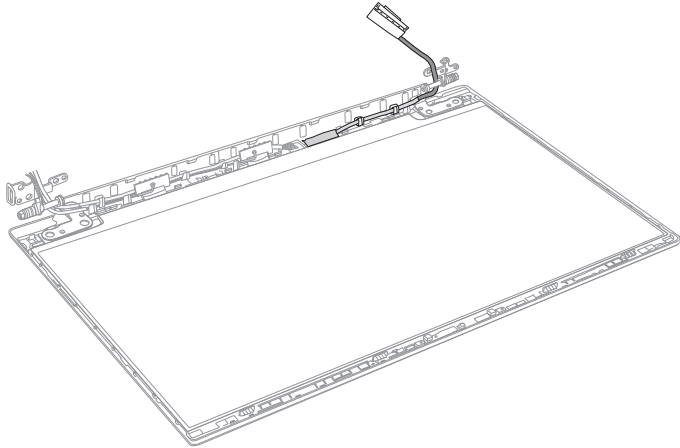
4. Set the LCD unit to the LCD cover in place.

Figure 4-45 Installing the LCD unit (3)



5. Arrange the LCD/Webcam harness under the guides of the LCD cover.

Figure 4-46 Installing the LCD unit (4)

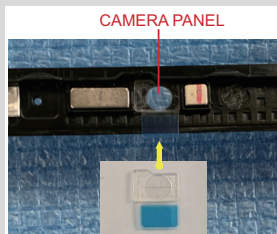


6. Lift the separators a little away from the stick tapes on both left and right edge side of the LCD cover.
7. Remove the separators on the top and bottom side of the LCD mask.



When replacing the LCD mask with a new one:

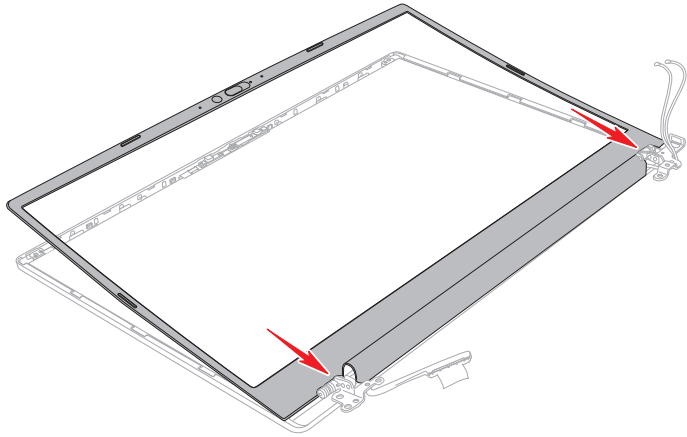
- Stick the **CAMERA PANEL** on the LCD mask in place and remove the separator on it.



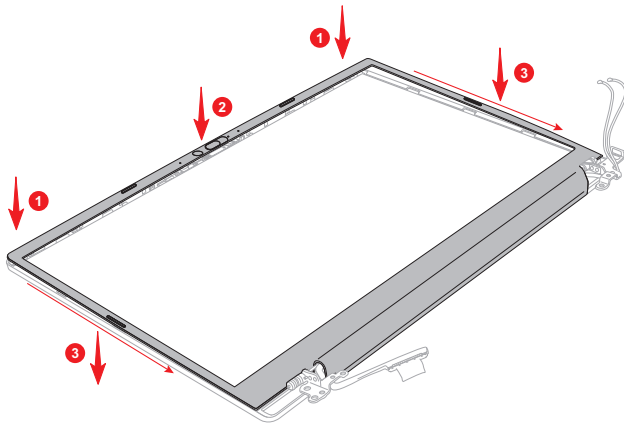
- **(For FA CAM models)** Stick the **CAM SEAL FA** on the LCD mask in place.



8. Align the LCD mask to the bottom side of the LCD cover first and engage the latches.

*Figure 4-47 Installing the LCD unit (5)*

9. Remove the separators from the stick tapes on both left and right edge side of the LCD cover.
10. Set the LCD mask on the LCD cover while engaging all the latches.

*Figure 4-48 Installing the LCD unit (6)*

## 4.28 Display hinges

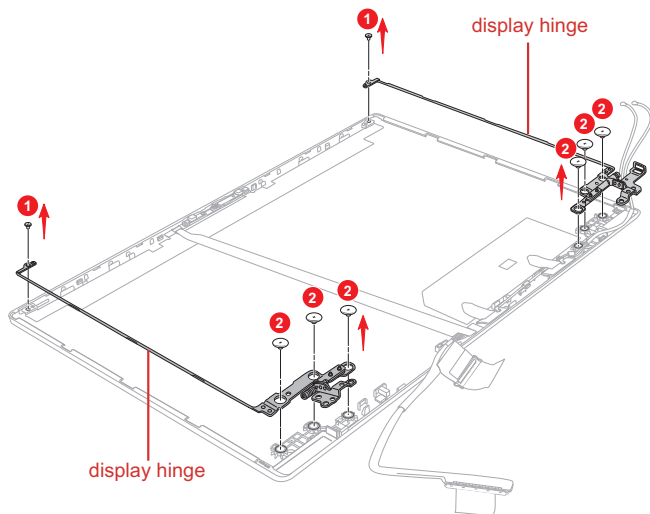
### 4.28.1 Removing the display hinges

To remove the display hinges, follow the steps below and refer to [Figure 4-49](#).

1. Release the following screws and remove the left & right hinges.

- S2x2.5BT x2 (Described as “1” in the figure)
- SH2.5x2.5BT x6 (Described as “2” in the figure)

*Figure 4-49 Removing the display hinges*



### 4.28.2 Installing the display hinges

To install the display hinges, follow the steps below and refer to [Figure 4-49](#).

1. Set the left & right hinges and secure them with the screws.

## 4.29 Wireless LAN antennas

### 4.29.1 Removing the Wireless LAN antennas

To remove the Wireless LAN antennas, follow the steps below.

1. Release the Wireless LAN antenna cables from the guides on the LCD cover.
2. Peel off the Wireless LAN antennas from the LCD cover.



Do not reuse the removed wireless antennas. Be sure to use new wireless antenna.

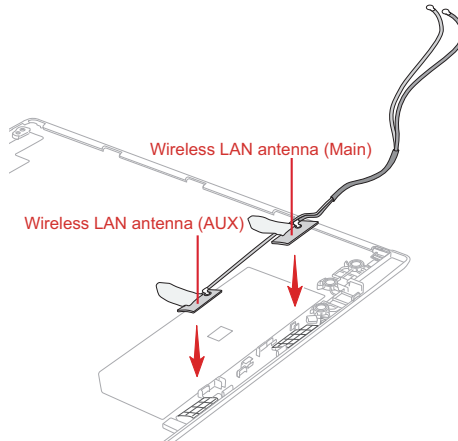


## 4.29.2 Installing the Wireless LAN antennas

To install the Wireless LAN antennas, follow the steps below.

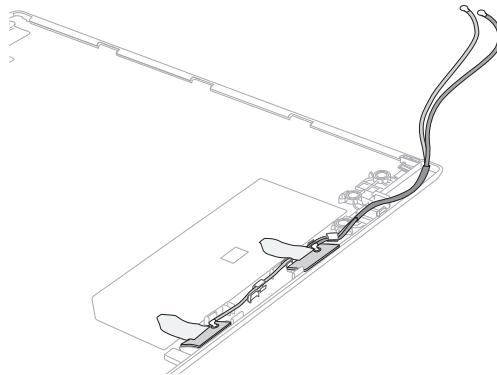
1. Stick new **Wireless LAN antennas (AUX/Main)** in place.

*Figure 4-50 Sticking the Wireless LAN antennas*



2. Arrange the **Wireless LAN antenna cables** in place as shown in below figure.

*Figure 4-51 Arranging the Wireless LAN antenna cables*

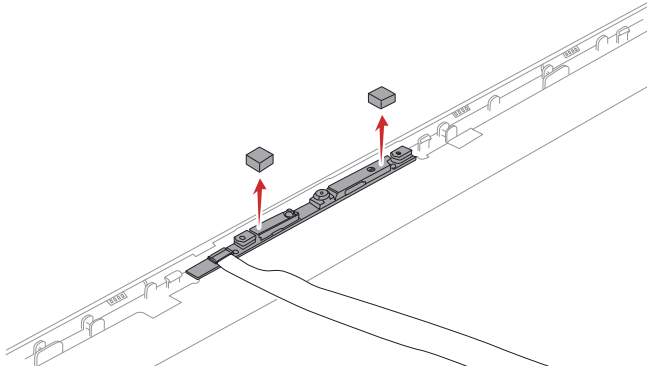


## 4.30 Camera module

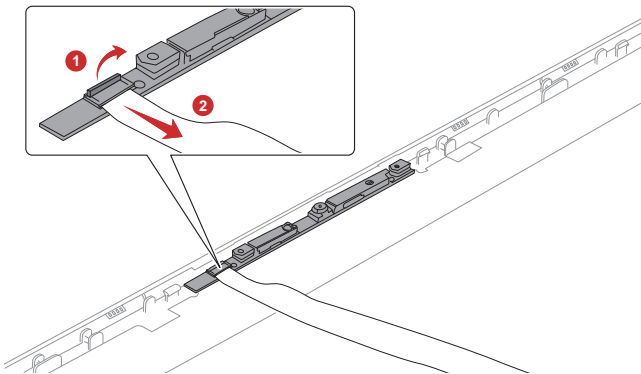
### 4.30.1 Removing the Camera module

To remove the camera module, follow the steps below and refer to [Figure 4-52](#) to [Figure 4-54](#).

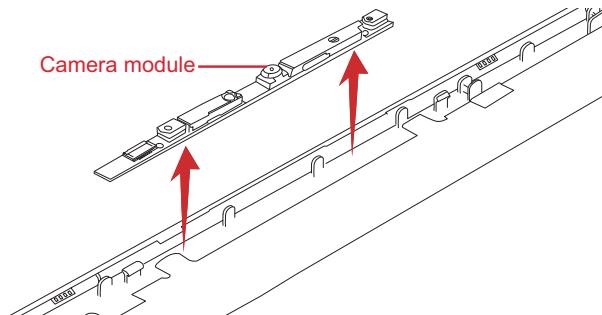
1. Remove two pieces of **GASKET** on the camera module.

*Figure 4-52 Removing the camera module (1)*

2. Disconnect the camera FPC from the connector on the camera module and peel off the FPC from the LCD cover.

*Figure 4-53 Removing the camera module (2)*

3. Peel off the **camera module** from the LCD cover.

*Figure 4-54 Removing the camera module (3)*



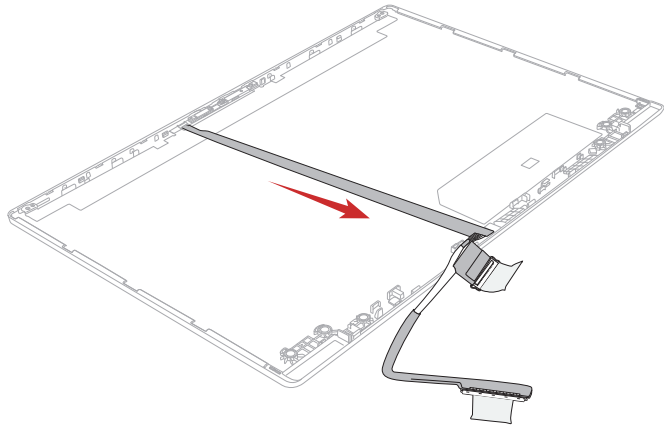
Do not reuse the removed camera module. Be sure to use new camera module.

### 4.30.2 Installing the Camera module

To install the camera module, follow the steps below and refer to [Figure 4-52](#) to [Figure 4-56](#).

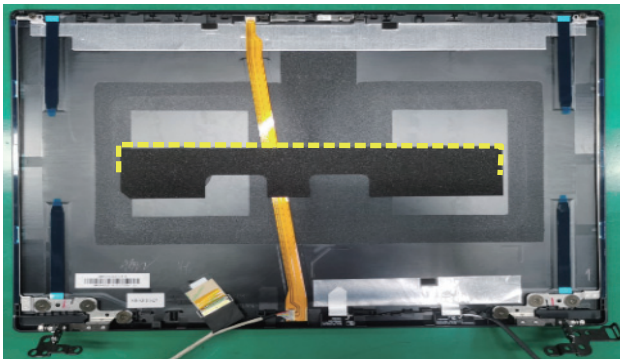
1. Peel off two protection sheets from the LCD cover.
2. Peel off the protection sheet from a new camera module and stick the **new camera module** to the LCD cover.
3. Stick two pieces of **GASKET** on the new camera module.
4. Connect the camera FPC to the connector on the camera module.
5. Peel off the separators on the camera FPC and stick the FPC to the LCD cover in place.

*Figure 4-55 Installing the Camera module (1)*



6. **(For FHD LCD models)** Stick the **SQUARE CUSHION LCD** to the LCD cover.

*Figure 4-56 Installing the Camera module (2)*



7. Arrange the LCD/Webcam harness to the guides on the LCD cover.

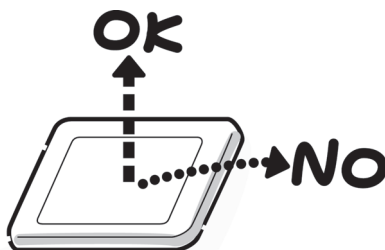
# Appendix A

## Handling the LCD Module

### A.1 Precautions for handling the LCD module

The LCD module can be easily damaged during assembly or disassembly. Observe the following precautions when handling the LCD module:

1. When installing the LCD module in the LCD cover, be sure to seat it so that it is properly aligned and maximum visibility of the display is maintained.



2. Be careful to align the holes at the four corners of the LCD module with the corresponding holes in the LCD cover before securing the module with screws.  
Do not force the module into place, because stress can affect its performance.  
Also, the panel's polarized surface is easily scarred, so be careful when handling it.



3. If the panel's surface gets dirty, wipe it with cotton or a soft cloth. If it is still dirty, try breathing on the surface to create a light condensate and wipe it again. If the surface is very dirty, we recommend a CRT cleaning agent. Apply the agent to a cloth and then wipe the panel's surface. Do not apply cleanser directly to the panel.



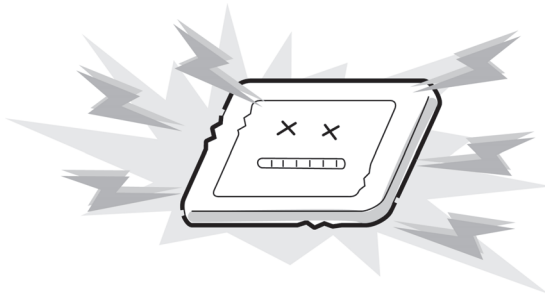
4. If water or other liquid is left on the panel's surface for a long period, it can change the screen's tint or stain it. Be sure to quickly wipe off any liquid.



5. Glass is used in the panel, so be careful not to drop it or let it strike a hard object, which could cause breakage or cracks.



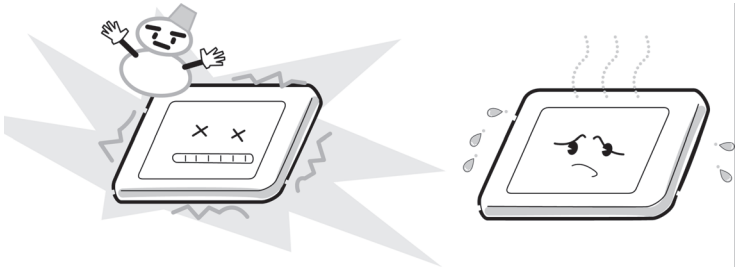
6. CMOS-LSI circuits are used in the module, so guard against damage from electrostatic discharge. Be sure to wear a wrist or ankle ground when handling the module.



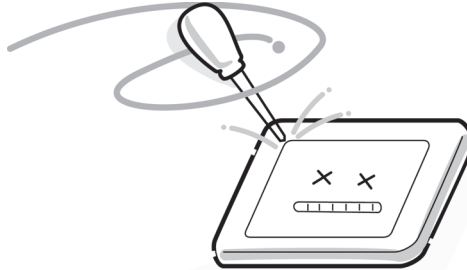
7. Do not expose the module to direct sunlight or strong ultraviolet rays for long periods.



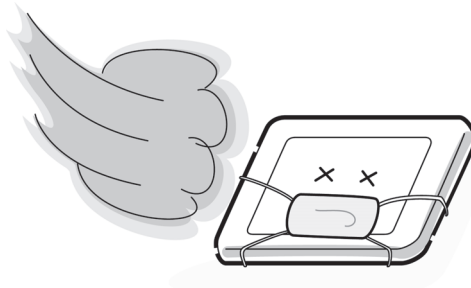
8. Do not store the module at temperatures below specifications. Cold can cause the liquid crystals to freeze, lose their elasticity or otherwise suffer damage.



9. Do not disassemble the LCD module. Disassembly can cause malfunctions.



10. If you transport the module, do not use packing material that contains epoxy resin (amine) or silicon glue (alcohol or oxide). These materials can release gas that can damage the panel's polarization.





# Appendix B

## Board Layout

### B.1 System Board (FME2SY\*) Front View

Figure B-1 System Board (FME2SY\*) layout (front)

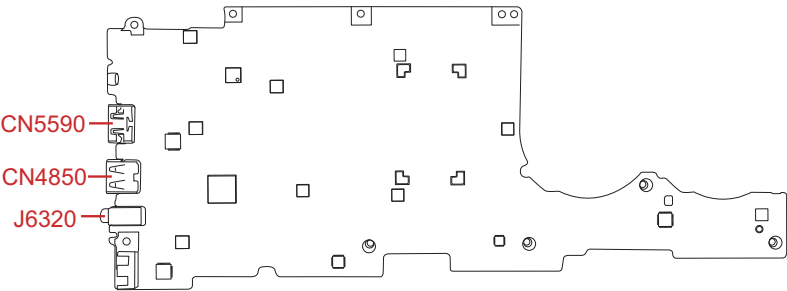


Table B-1 System Board (FME2SY\*) connectors (front)

Number	Name
CN5590	HDMI I/F connector
CN4850	USB Type-A I/F connector
J6320	HeadPhone/Mic jack

## B.2 System Board (FME2SY\*) Back View

Figure B-2 System Board (FME2SY\*) layout (back)

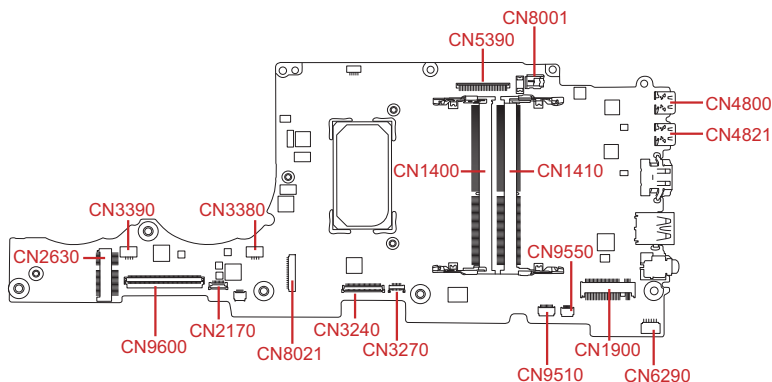


Table B-2 System Board (FME2SY\*) connectors (back)

Number	Name
<b>CN1900</b>	M.2 SSD I/F connector (PCIe)
<b>CN8021</b>	Battery I/F connector
<b>CN2170</b>	SmartCard I/F connector
<b>CN3240</b>	Keyboard I/F connector
<b>CN3270</b>	Keyboard backlight I/F connector
<b>CN9510</b>	Click pad (touch pad) I/F connector
<b>CN9550</b>	Fingerprint sensor I/F connector
<b>CN6290</b>	Speaker I/F connector
<b>CN9600</b>	FME2LT* board I/F connector
<b>CN5390</b>	LCD/Webcam interface connector
<b>CN3380</b>	FAN I/F connector
<b>CN3390</b>	FAN I/F connector
<b>CN2630</b>	M.2 W-LAN I/F connector
<b>CN1400</b>	DDR4 Memory Slot
<b>CN1410</b>	DDR4 Memory Slot
<b>CN4800</b>	USB Type-C I/F connector

<b>CN4821</b>	USB Type-C I/F connector
<b>CN8001</b>	DC-IN connector

B.3 USB board (FME2LT\*) Front View

Figure B-3 USB board (FME2LT\*) layout (front)

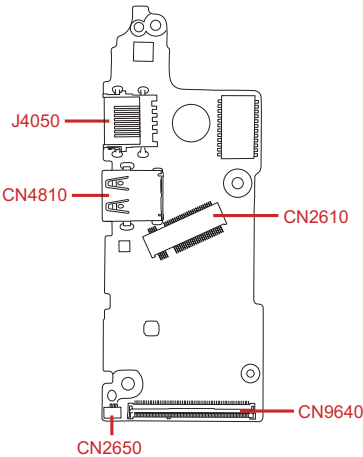


Table B-3 USB board (FME2LT\*) connectors (front)

Number	Name
<b>CN4810</b>	USB Type-A I/F connector
<b>CN9640</b>	System Board (FME2SY*) interface connector
<b>CN2610</b>	M.2 3G I/F connector
<b>CN2650</b>	SAR connector
<b>J4050</b>	LAN jack

## B.4 USB board (FME2LT\*) Back View

Figure B-4 USB board (FME2LT\*) layout (back)

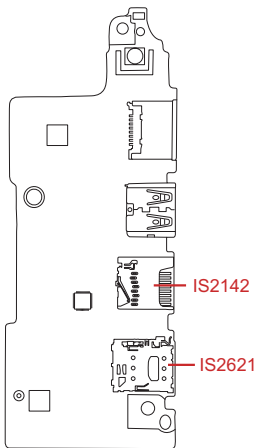


Table B-4 USB board (FME2LT\*) connectors (back)

Number	Name
IS2142	Micro SD I/F connector
IS2621	Nano SIM card I/F connector

# Appendix C

## Keyboard Scan/Character Codes

### C.1 Scan Codes

Table C-1 Scan codes (set 1 and set 2)

Cap No.	Keytop	Code set 1		Code set 2		Note
		Make	Break	Make	Break	
01	‘ ~	29	A9	0E	F0 0E	
02	1 !	02	82	16	F0 16	
03	2 @	03	83	1E	F0 1E	
04	3 #	04	84	26	F0 26	
05	4 \$	05	85	25	F0 25	
06	5 %	06	86	2E	F0 2E	
07	6 ^	07	87	36	F0 36	
08	7 &	08	88	3D	F0 3D	*2
09	8 *	09	89	3E	F0 3E	*2
10	9 (	0A	8A	46	F0 46	*2
11	0 )	0B	8B	45	F0 45	
12	- _	0C	8C	4E	F0 4E	
13	= +	0D	8D	55	F0 55	

Cap No.	Keytop	Code set 1		Code set 2		Note
		Make	Break	Make	Break	
15	BkSp	0E	8E	66	F0 66	
16	Tab	0F	8F	0D	F0 0D	
17	Q	10	90	15	F0 15	
18	W	11	91	1D	F0 1D	
19	E	12	92	24	F0 24	
20	R	13	93	2D	F0 2D	
21	T	14	94	2C	F0 2C	
22	Y	15	95	35	F0 35	
23	U	16	96	3C	F0 3C	*2
24	I	17	97	43	F0 43	*2
25	O	13	98	44	F0 44	*2
26	P	19	99	4D	F0 4D	*2
27	[ {	1A	9A	54	F0 54	
28	] }	1B	9B	5B	F0 5B	
29	\	2B	AB	5D	F0 5D	*5
30	Caps Lock	3A	BA	58	F0 58	
31	A	1E	9E	1C	F0 1C	
32	S	1F	9F	1B	F0 1B	
33	D	20	A0	23	F0 23	
34	F	21	A1	2B	F0 2B	
35	G	22	A2	34	F0 34	
36	H	23	A3	33	F0 33	
37	J	24	A4	3B	F0 3B	*2
38	K	25	A5	42	F0 42	*2
39	L	26	A6	4B	F0 4B	*2
40	; :	27	A7	4C	F0 4C	*2
41	' "	28	A8	52	F0 52	
43	Enter	1C	9C	5A	F0 5A	*3
44	Shift (L)	2A	AA	12	F0 12	
45	No.102 key	56	D6	61	F0 61	

Cap No.	Keytop	Code set 1		Code set 2		Note
		Make	Break	Make	Break	
46	Z	2C	AC	1A	F0 1A	
47	X	2D	AD	22	F0 22	
48	C	2E	AE	21	F0 21	
49	V	2F	AF	2A	F0 2A	
50	B	30	B0	32	F0 32	
51	N	31	B1	31	F0 31	
52	M	32	B2	3A	F0 3A	*2
53	, <	33	B3	41	F0 41	*2
54	. >	34	B4	49	F0 49	*2
55	/ ?	35	B5	4A	F0 4A	*2
57	Shift (R)	36	B6	59	F0 59	
58	Ctrl	1D	9D	14	F0 14	*3
60	Alt (L)	38	B8	11	F0 11	*3
61	Space	39	B9	29	F0 29	
62	ALT (R)	E0 38	E0 B8	E0 11	E0 F0 11	
75	Ins	E0 52	E0 D2	E0 70	E0 F0 70	*1
76	Del	E0 53	E0 D3	E0 71	E0 F0 71	*1
79	←	E0 4B	E0 CB	E0 6B	E0 F0 6B	*1
80	Home	E0 47	E0 C7	E0 6C	E0 F0 6C	*1
81	End	E0 4F	E0 CF	E0 69	E0 F0 69	*1
83	↑	E0 48	E0 C8	E0 75	E0 F0 75	*1
84	↓	E0 50	E0 D0	E0 72	E0 F0 72	*1
85	PgUp	E0 49	E0 C9	E0 7D	E0 F0 7D	*1
86	PgDn	E0 51	E0 D1	E0 7A	E0 F0 7A	*1
89	→	E0 4D	E0 CD	E0 74	E0 F0 74	*1

Cap No.	Keytop	Code set 1		Code set 2		Note
		Make	Break	Make	Break	
110	Esc	01	81	76	F0 76	
112	F1	3B	BB	05	F0 05	
113	F2	3C	BC	06	F0 06	
114	F3	3D	BD	04	F0 04	
115	F4	3E	BE	0C	F0 0C	
116	F5	3F	BF	03	F0 03	
117	F6	40	C0	0B	F0 0B	
118	F7	41	C1	83	F0 83	
119	F8	42	C2	0A	F0 0A	
120	F9	43	C3	01	F0 01	
121	F10	44	C4	09	F0 09	*3
122	F11	57	D7	78	F0 78	*3
123	F12	58	D8	07	F0 07	*3
124	PrintSc	*6	*6	*6	*6	*6
126	Pause	*7	*7	*7	*7	*7
202	Fn	—	—	—	—	*4
203	Win	E0 5B	E0 DB	E0 1F	E0 F0 1F	
204	App	E0 5D	E0 DD	E0 2F	E0 F0 2F	

## Notes:

1. Scan codes differ by mode.
2. Scan codes differ by overlay function.
3. Combined with the Fn key makes different codes.
4. Fn key does not generate a code by itself.
5. This key corresponds to key No. 42 in a 102-key model.
6. Refer to [Table C-6](#), No. 124 key scan code.
7. Refer to [Table C-7](#), No. 126 key scan code.



Table C-2 Scan codes with left Shift key

Cap No.	Keytop	Code set 1		Code set 2	
		Make	Break	Make	Break
55	/	E0 AA E0 35	E0 B5 E0 2A	E0 F0 12 E0 4A	E0 F0 4A E0 12
75	INS	E0 AA E0 52	E0 D2 E0 2A	E0 F0 12 E0 70	E0 F0 70 E0 12
76	DEL	E0 AA E0 53	E0 D3 E0 2A	E0 F0 12 E0 71	E0 F0 71 E0 12
79	←	E0 AA E0 4B	E0 CB E0 2A	E0 F0 12 E0 6B	E0 F0 6B E0 12
80	Home	E0 AA E0 47	E0 C7 E0 2A	E0 F0 12 E0 6C	E0 F0 6C E0 12
81	End	E0 AA E0 4F	E0 CF E0 2A	E0 F0 12 E0 69	E0 F0 69 E0 12
83	↑	E0 AA E0 48	E0 C8 E0 2A	E0 F0 12 E0 75	E0 F0 75 E0 12
84	↓	E0 AA E0 50	E0 D0 E0 2A	E0 F0 12 E0 72	E0 F0 72 E0 12
85	PgUp	E0 AA E0 49	E0 C9 E0 2A	E0 F0 12 E0 7D	E0 F0 7D E0 12
86	PgDn	E0 AA E0 51	E0 D1 E0 2A	E0 F0 12 E0 7A	E0 F0 7A E0 12
89	→	E0 AA E0 4D	E0 CD E0 2A	E0 F0 12 E0 74	E0 F0 74 E0 12
203	Win	E0 AA E0 5B	E0 DB E0 2A	E0 F0 12 E0 1F	E0 F0 1F E0 12
204	App	E0 AA E0 5D	E0 DD E0 2A	E0 F0 12 E0 2F	E0 F0 2F E0 12

Note : The table above shows scan codes with the left **SHIFT** key. In combination with the right **SHIFT** key, scan codes are changed as listed below:

	With left Shift	With right Shift
<b>Set 1</b>	E0 AA	E0 B6
	E0 2A	E0 36
<b>Set 2</b>	E0 F0 12	E0 F0 59
	E0 12	E0 59

Table C-3 Scan codes in Numlock mode

Cap No.	Keytop	Code set 1		Code set 2	
		Make	Break	Make	Break
75	INS	E0 2A E0 52	E0 D2 E0 AA	E0 12 E0 70	E0 F0 70 E0 F0 12
76	DEL	E0 2A E0 53	E0 D3 E0 AA	E0 12 E0 71	E0 F0 71 E0 F0 12
79	←	E0 2A E0 4B	E0 CB E0 AA	E0 12 E0 6B	E0 F0 6B E0 F0 12
80	Home	E0 2A E0 47	E0 C7 E0 AA	E0 12 E0 6C	E0 F0 6C E0 F0 12
81	End	E0 2A E0 4F	E0 CF E0 AA	E0 12 E0 69	E0 F0 69 E0 F0 12
83	↑	E0 2A E0 48	E0 C8 E0 AA	E0 12 E0 75	E0 F0 75 E0 F0 12
84	↓	E0 2A E0 50	E0 D0 E0 AA	E0 12 E0 72	E0 F0 72 E0 F0 12
85	PgUp	E0 2A E0 49	E0 C9 E0 AA	E0 12 E0 7D	E0 F0 7D E0 F0 12
86	PgDn	E0 2A E0 51	E0 D1 E0 AA	E0 12 E0 7A	E0 F0 7A E0 F0 12
89	→	E0 2A E0 4D	E0 CD E0 AA	E0 12 E0 74	E0 F0 74 E0 F0 12
203	Win	E0 2A E0 5B	E0 DB E0 AA	E0 12 E0 1F	E0 F0 1F E0 F0 12
204	App	E0 2A E0 5D	E0 DD E0 AA	E0 12 E0 2F	E0 F0 2F E0 F0 12

Table C-4 Scan codes with Fn key

Cap No.	Keytop	Code set 1		Code set 2	
		Make	Break	Make	Break
43	ENT	E0 1C	E0 9C	E0 5A	E0 F0 5A
58	CTRL	E0 1D	E0 9D	E0 14	E0 F0 14
60	LALT	E0 38	E0 B8	E0 11	E0 F0 11
121	ARROW	45	C5	77	F0 77
122	NUMERIC	45	C5	77	F0 77
123	Scrl	46	C5	7E	F0 7E

Table C-5 Scan codes in overlay mode

Cap No.	Keytop	Code set 1		Code set 2	
		Make	Break	Make	Break
09	8 (8)	48	C8	75	F0 75
10	9 (9)	49	C9	7D	F0 7D
11	0 (*)	37	B7	7C	F0 7C
23	U (4)	4B	CB	6B	F0 6B
24	I (5)	4C	CC	73	F0 73
25	O (6)	4D	CD	74	F0 74
26	P (-)	4A	CA	7B	F0 7B
37	J (1)	4F	CF	69	F0 69
38	K (2)	50	D0	72	F0 72
39	L (3)	51	D1	7A	F0 7A
40	; (+)	4E	CE	79	F0 79
52	M (0)	52	D2	70	F0 70
54	. (.)	53	D3	71	F0 71
55	/ (/)	E0 35	E0 B5	40 4A	E0 F0 4A

Table C-6 No.124 key scan code

Key top	Shift	Code set 1				Code set 2			
		Make		Break		Make		Break	
Prt Sc	Common	E0 2A	E0 37	E0 B7	E0 AA	E0 12	E0 7C	E0 F0	7C E0 F0 12
	Ctrl +	E0 37		E0 B7		E0 7C		E0 F0 7C	
	Shift +	E0 37		E0 B7		E0 7C		E0 F0 7C	
	Alt +	54		D4		84		F0 B4	

Table C-7 No.126 key scan code

Keytop	Shift	Code set 1				Code set 2			
		Make				Make			
Pause	Common* Ctrl*	E1 1D 45 E1 9D C5 E0 46 E0 C6				E1 14 77 E1 F0 14 F0 77 E0 7E E0 F0 7E			

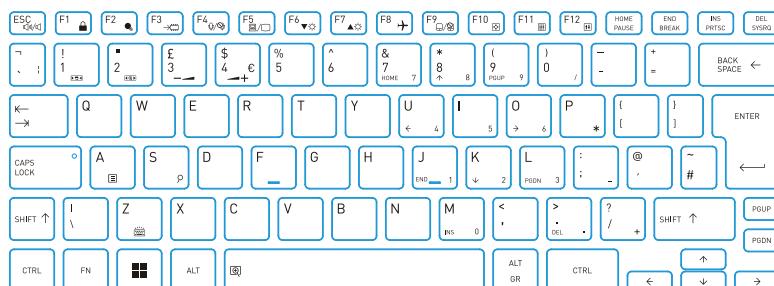
\*: This key generates only make codes.

# Appendix D

## Key Layout

### D.1 United Kingdom (UK) Keyboard

*Figure D-1 UK keyboard*



### D.2 United States (US) Keyboard

*Figure D-2 US keyboard*



## D.3 Japan (JP) Keyboard

Figure D-3 JP keyboard

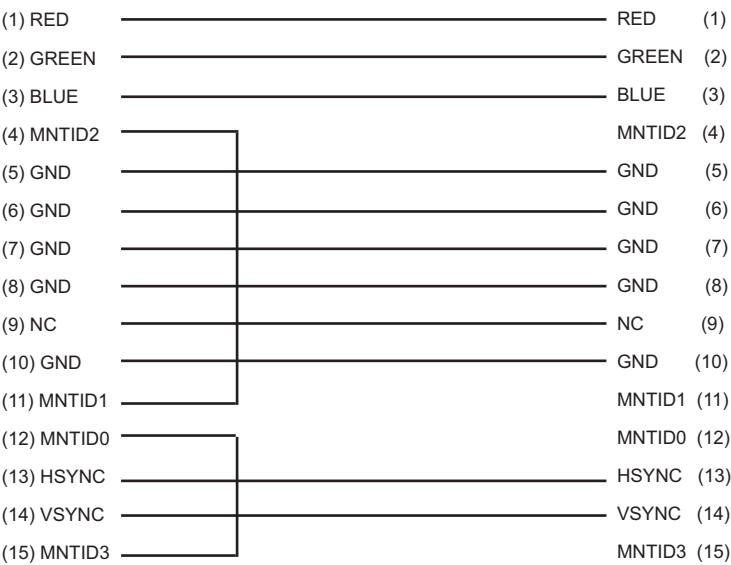


# Appendix E

## Wiring diagrams

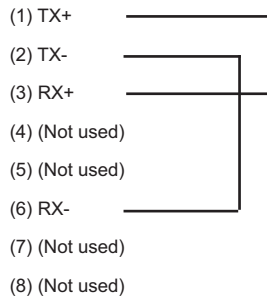
### E.1 RGB Monitor Loopback Connector

Figure E-1 RGB Monitor Loopback Connector



## E.2 LAN Loopback Connector

*Figure E-2 LAN Loopback Connector*



# Appendix F

## BIOS Rewrite Procedures

This Appendix explains how to rewrite the system BIOS program when you update the system BIOS.

### F.1 Tools

To rewrite the BIOS, you need the following tool:

- BIOS/EC/KBC rewriting disk

### F.2 Rewriting the BIOS

1. Turn off the power to the computer.
2. Remove the external cables and cards.
3. Set the USB Flash Memory containing BIOS rewriting data.
4. Turn on the power while holding down the tilde character key or 半 / 全 key Until LED blinks

For example  
(US Keyboard)



(UK Keyboard)





(JP Keyboard)



(Keep holding down the key.)

5. The BIOS rewriting starts.
6. When the process is completed, the system automatically reboots.



1. Connect the AC adaptor and the charged battery to the computer when you rewrite the BIOS.
2. Do not turn off the power while you are rewriting the BIOS.
3. If the rewrite fails, it might be impossible to start up the computer.
4. If you fail to rewrite BIOS, then when you next turn on the power, a message may be displayed that the contents of the BIOS have been erased. In this case, insert the BIOS rewriting disk and the BIOS will be rewritten.

# Appendix G

## EC/KBC Rewrite Procedures

It is necessary to rewrite the EC/KBC system program when the following changes are made.

1. Replacing of system board
2. Replacing of LCD

The EC/KBC can't be updated solely. It will be updated simultaneously during the BIOS update.

As for the BIOS update, refer to Appendix F.

# Appendix H

## Reliability

The following table shows MTBF (Mean Time Between Failures) in maximum configuration.

*Table H-1 MTBF*

Time (hours)
9444