

**Dynabook Personal Computer**  
**PORTÉGÉ X30W-J**  
**dynabook V\*/VZ\*/VC\* Series**  
**Maintenance Manual**

Rev.00    Oct. 2020    First issue

Rev.01    Mar. 2021    Addition of 5G/LTE information

**Dynabook Inc.**  
**File Number (960-941)**

*[CONFIDENTIAL]*

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## Preface

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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 PRECAUTIONS

Four types of messages are used in this manual to bring important information to your attention. Each of these messages will be italicized and identified as shown below.

***DANGER:*** “Danger” indicates the existence of a hazard that could result in death or serious bodily injury, if the safety instruction is not observed.

***WARNING:*** “Warning” indicates the existence of a hazard that could result in bodily injury, if the safety instruction is not observed.

***CAUTION:*** “Caution” indicates the existence of a hazard that could result in property damage, if the safety instruction is not observed.

***NOTE:*** “Note” contains general information that relates to your safe maintenance service.

Improper repair of the computer may result in safety hazards. Toshiba 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 Toshiba. 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
  - ☐ Pin assignments
  - ☐ Keyboard Matrix
  - ☐ Key layout
  - ☐ Wiring diagrams
  - ☐ BIOS rewrite procedures
  - ☐ EC/KBC rewrite procedures
  - ☐ Reliability



## Conventions

This manual uses the following formats to describe, identify, and highlight terms and operating procedures.

### *Acronyms*

On the first appearance and whenever necessary for clarification acronyms are enclosed in parentheses following their definition. For example:

Read Only Memory (ROM)

### *Keys*

Keys are used in the text to describe many operations. The key top symbol as it appears on the keyboard is printed in **boldface** type.

### *Key operation*

Some operations require you to simultaneously use two or more keys. We identify such operations by the key top symbols separated by a plus (+) sign. For example, **Ctrl + Pause (Break)** means you must hold down **Ctrl** and at the same time press **Pause (Break)**. If three keys are used, hold down the first two and at the same time press the third.

### *User input*

Text that you are instructed to type in is shown in the boldface type below:

**DISKCOPY A: B:**

### *The display*

Text generated by the computer that appears on its display is presented in the type face below:

Format complete  
System transferred

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# **Chapter 1**

## **Hardware Overview**

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## 1.1 Features

This model belongs to a convertible type PC and realizes 3 styles, clamshell, flat and tablet, at use.

The following shows each unit position and system unit configuration of this model.

□ Front view

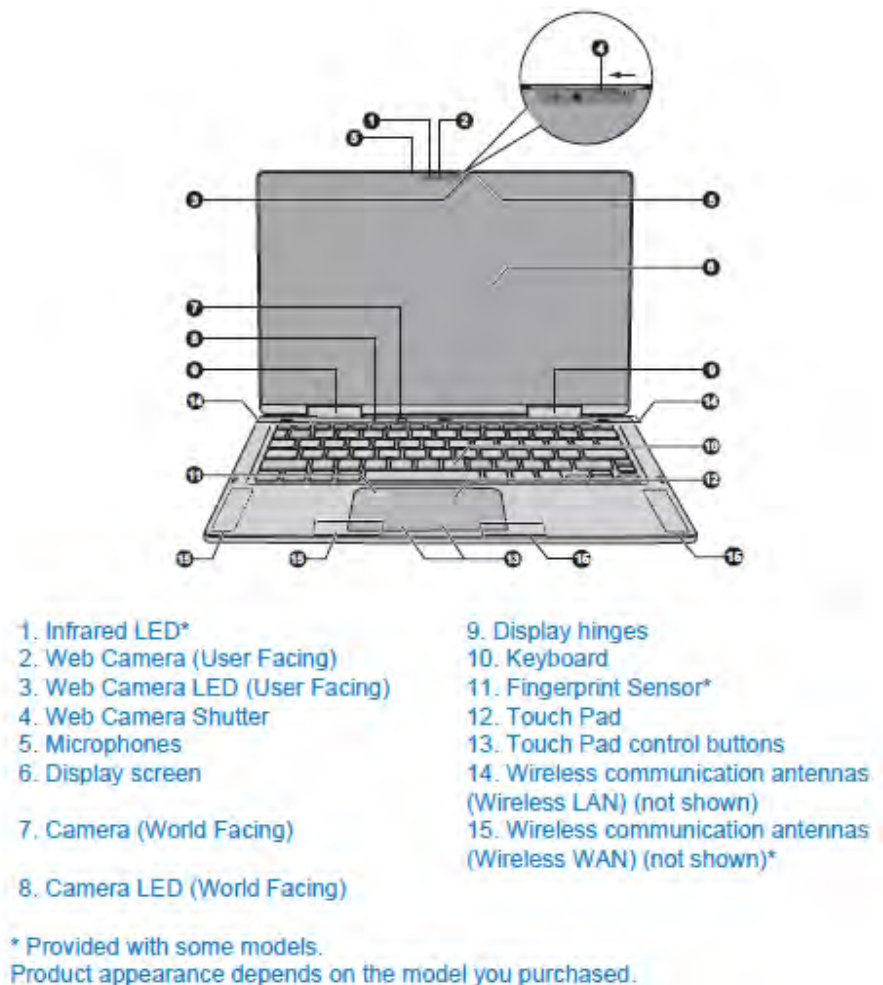
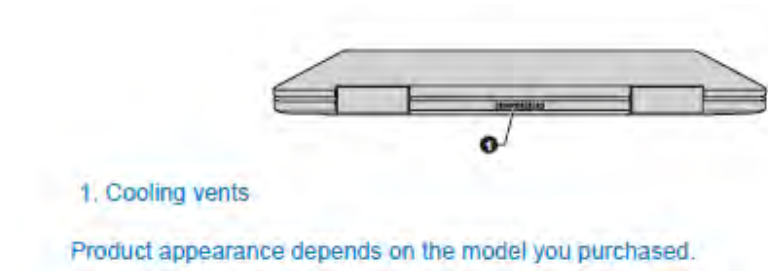
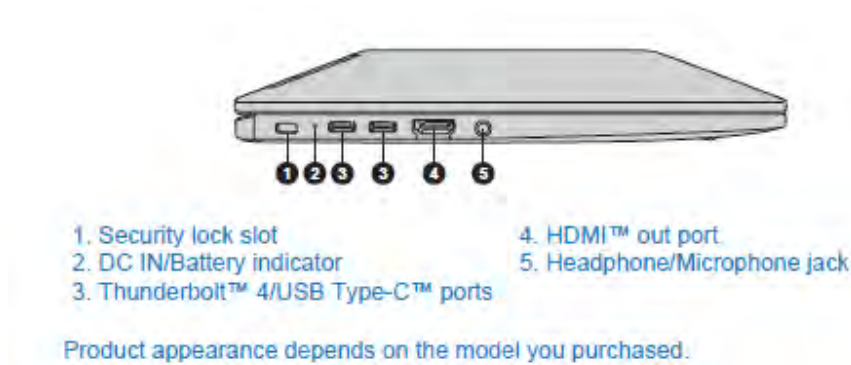


Figure 1-1 Appearance and each unit position (1)

❑ Back view



❑ Left side



❑ Right side

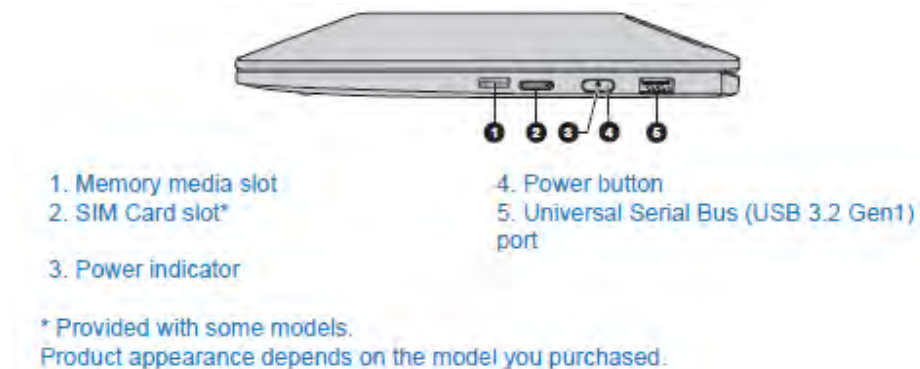
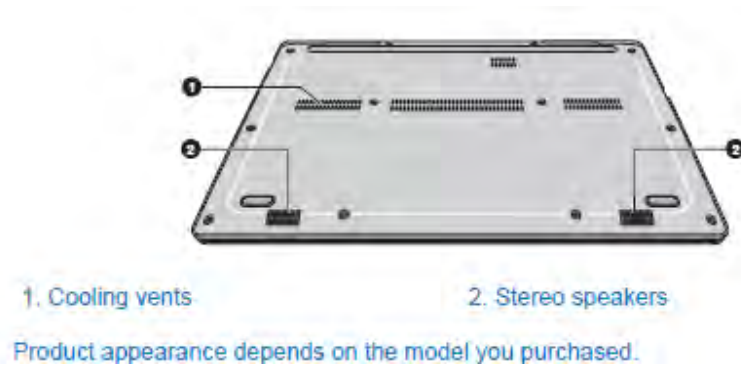


Figure 1-1 Appearance and each unit position (2)

❑ Underside



*Figure 1-1 Appearance and each unit position (3)*

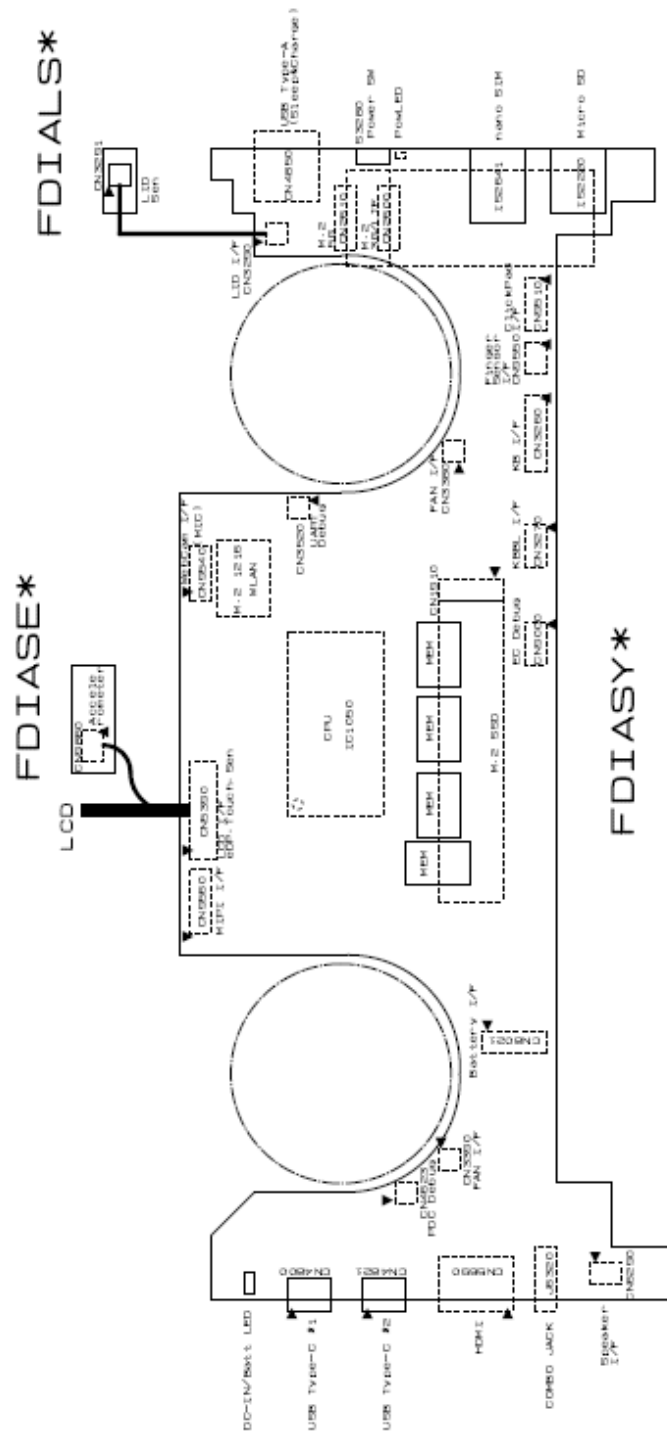
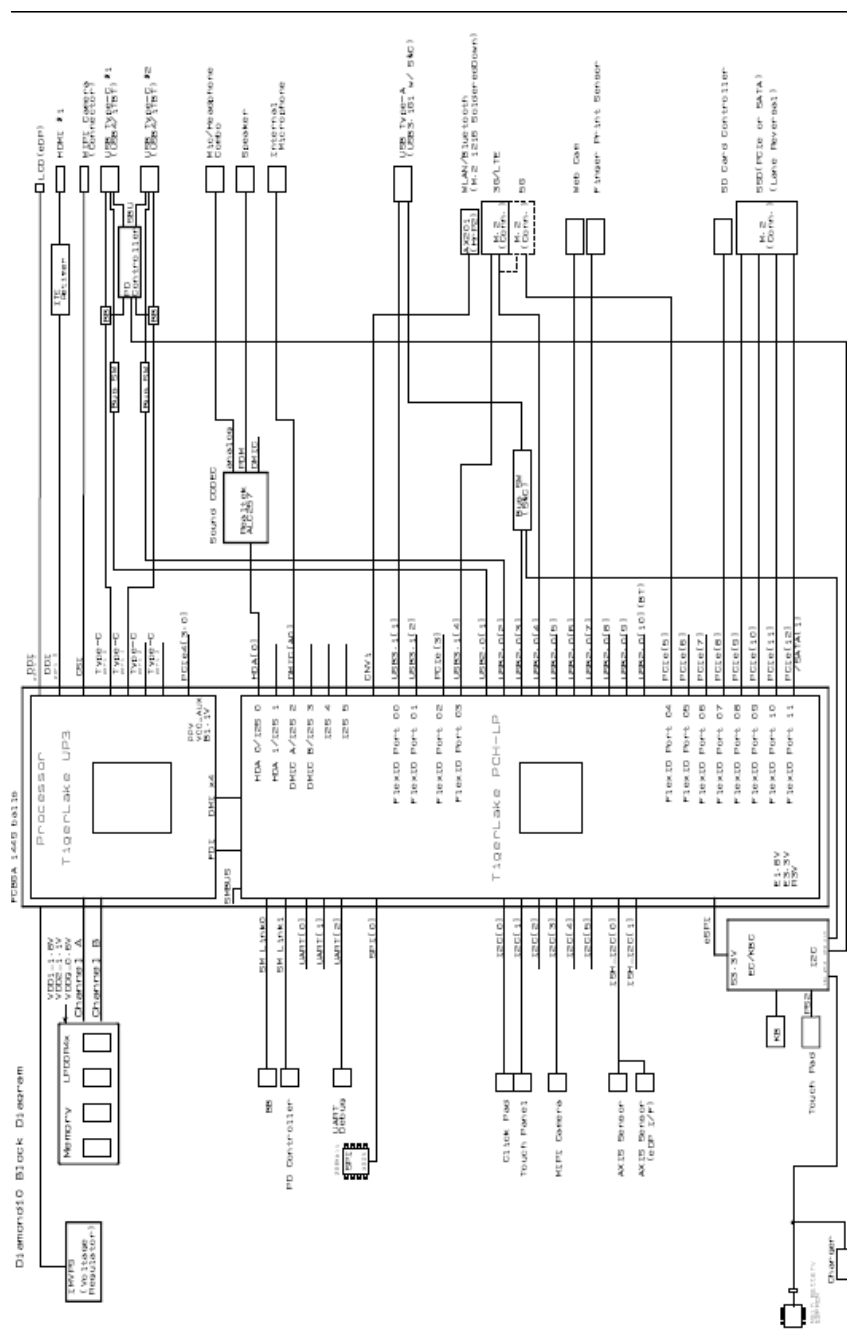


Figure 1-2 Board connection diagram



This computer incorporates the following features/major components. The configuration depends on the model. Refer to the Parts List for the configuration of each model and options.

### ☐ Microprocessor

Rev.01

This chip incorporates the CPU, chipset and graphics functions in it. The PC comes with one of the following CPU:

Core Frequency	L3 Cache Size	Turbo	Number of cores /threads
Tigerlake Core i7-1185G7 vPro	12MB	4.80GHz	4/8
Tigerlake Core i7-1165G7	12MB	4.70GHz	4/8
Tigerlake Core i5-1145G7 vPro	8MB	4.40GHz	4/8
Tigerlake Core i5-1135G7	8MB	4.20GHz	4/8

### ☐ Memory

Memory module in 16GB, 32GB or 64GB size of LDDR4-4266 is mounted on the board.

### ☐ SSD

The computer is equipped with one of the following storage devices:

- M.2 PCIe SSD: 256GB/512GB/1T/2T/512G Optane/1T Optane

### ☐ Display

The computer has a 13.3-inch FHD with AG (Anti-glare) sheet as the display. Capacitive-type touch panel supporting 10 points multi-finger is mounted by direct-bonding.

### ☐ Touch pen

On some models, a rechargeable touch pen or entry pen (with dry-cell battery) is bundled.

### ☐ Keyboard

The keyboard is the frameless keyboard in B5-size. The back light is supported.

### ☐ Touch Pad (Click pad)

A click pad supporting gesture control function is mounted in the palm rest.



The click pad with the finger print sensor is called “Secure pad”. The finger print sensor can register the maximum of 20 fingers data.

On some models, a secure pad is mounted.

☐ Wireless LAN/Bluetooth

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

☐ 5G/LTE

Rev.01

On some models, one SIM card slot for 5G or LTE function is mounted.

☐ Web camera

The computer has two web camera; front camera (user facing camera) on the display side and rear camera (world facing camera) on the upper side of the keyboard. The camera shutter is equipped on the front camera. Some models support Face Recognition by Windows Hello.

☐ Sound system

The sound system is equipped with the following features:

- Stereo speakers: harman/kardon
- Built-in microphone: Two microphones (beam foaming/noise cancellation)
- Headphone/Mic combo-jack
- Audio enhancement software: Dolby Atmos

☐ Universal Serial Bus (USB) port

The computer has two Type-C and one type-A USB port. The type-C port (Thunderbolt 4/USB Type-C port) complies to USB3.1 Gen2, PD, DP, TBT, USB3.0, USB2.0 and USB1.1. The type-A port complies with USB3.1 (Gen1), USB3.0, USB2.0 and USB1.1, and also supports Power-off&Charge function.

☐ Battery

As a main battery, a rechargeable Lithium-Ion (Polymer) battery pack is mounted. A part of this battery pack is used for RTC battery function.

☐ Sensors and others

- 3D Acceleration sensor
- Finger print sensor: on SecurePad (BTO)
- IR Camera (Face Recognition Sensor) (BTO)
- GPS (for **5G**/LTE models (BTO))
- Gyro sensor
- EC/KBC: MEC1703

## 1.2 SSD

Solid State Drive (SSD) is a non-volatile semi-conductor memory device enabling reading and writing of the data in random access.

The specifications are listed in Table 1-1.

*Table 1-1 M.2 PCIe SSD specifications*

Items		Specifications		
Maker		TOSHIBA		
Part code		G8BC000CD120	G8BC000CD250	G8BC000CD510
Capacity		128GB	256GB	512GB
Outline	Width (mm)	22.00±0.15		
	Height (mm)	2.23 Max		
	Length (mm)	80.0±0.15		
	Weight (g)	5.2 (typ.)		
Data transfer speed				
Maximum Data Read		2,000MB/s	2,200MB/s	2,200MB/s
Maximum Data Write		800MB/s	1,400MB/s	1,400MB/s

Items		Specifications		
Maker		Longsys		
Part code		G8BC000CN120	G8BC000CN250	G8BC000CN510
Capacity		128GB	256GB	512GB
Outline	Width (mm)	22.00±0.15		
	Height (mm)	2.25 Max		
	Length (mm)	80.00±0.15		
	Weight (g)	8.0 Max.		
Data transfer speed				
Maximum Data Read		1,800MB/s	2,000MB/s	2,000MB/s
Maximum Data Write		600MB/s	1,200MB/s	1,600MB/s

Items		Specifications		
Maker		Samsung		
Part code		G8BC000CG250	G8BC000CG510	G8BC000CG1A0
Capacity		256GB	512GB	1TB
Outline	Width (mm)	22.00±0.15		
	Height (mm)	2.38 (Max)		
	Length (mm)	80.0±0.15		
	Weight (g)	9.0g (Max)		
Data transfer speed				
Maximum Data Read (Sequential)		3,500MB/s	3,500MB/s	3,500MB/s
Maximum Data Write (Sequential)		2,200MB/s	2,900MB/s	3,000MB/s

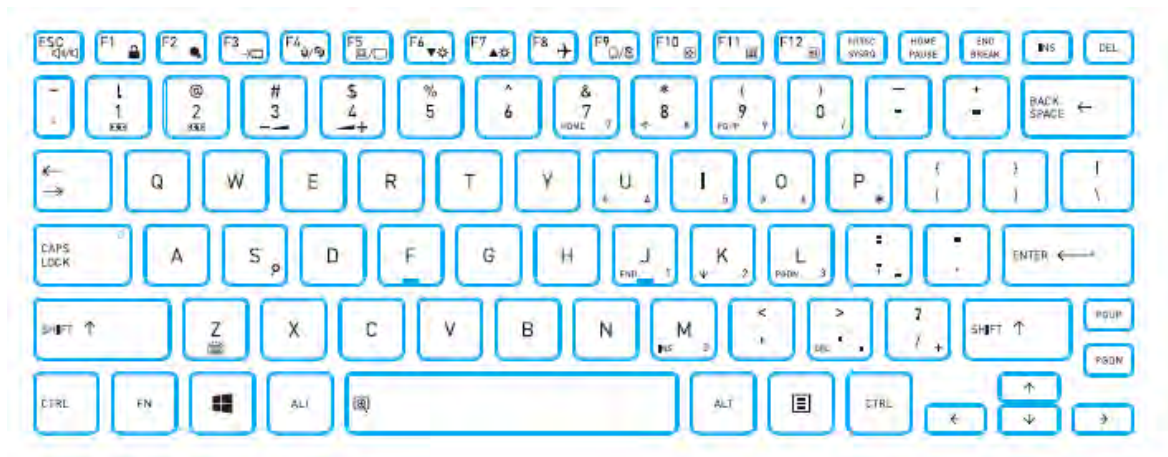
Items		Specifications	
Maker		Samsung (Intel® Optane™ Memory H10 Series)	
Part code		<b>G8BC000CB510</b>	<b>G8BC000CB1A0</b>
Capacity		32GB+512GB	32GB+1TB
Outline	Width (mm)	TBD	
	Height (mm)	TBD	
	Length (mm)	TBD	
	Weight (g)	TBD	
Data transfer speed			
Maximum Data Read		TBD	TBD
Maximum Data Write			

Items		Specifications		
Maker		Samsung		
Part code		<b>G8BC000CL120</b>	<b>G8BC000CL250</b>	<b>G8BC000CL510</b>
Capacity		128GB	256GB	512GB
Outline	Width (mm)	22.00±0.15		
	Height (mm)	2.38 (Max)		
	Length (mm)	80.0±0.15		
	Weight (g)	6.0g (Max)		
Data transfer speed				
Maximum Data Read (Sequential)		2,000MB/s	2,050MB/s	2,200MB/s
Maximum Data Write (Sequential)		1,000MB/s	1,000MB/s	1,200MB/s

## 1.3 Keyboard

The keyboard is connected to the connector on the system board with the membrane and controlled by the keyboard controller.

The followings show the layout of the US keyboard and specifications of UK/JP/US keyboards. As for the layout of UK/JP keyboards, see Appendix E. As for the key matrix, see Appendix D.



*Figure 1-4 US keyboard layout*

Table 1-2 Keyboard specifications

Item	Specifications		
Maker	Transimage		
Part code	G83C000L45JP	G83C000L45US	G83C000L45EN
Outline	271.6(L) x 101.8(W) x 3.8±0.2(H)(mm)		
Weight	54.0±1.0g		
Key Pitch	19 mm (X direction), 18 mm (Y direction) (mm)		
keystroke	1.5±0.2 (mm)		
Number of keys	86 (conformity with JIS)	85	85
Backlight	Yes (White)		
AccuPoint	No		

Item	Specifications	
Maker	Transimage	
Part code	G83C000L45ZU	G83C000L45ZK
Outline	271.6(L) x 101.8(W) x 3.8±0.2(H)(mm)	
Weight	54.0±1.0g	
Key Pitch	19 mm (X direction), 18 mm (Y direction) (mm)	
keystroke	1.5±0.2 (mm)	
Number of keys	85	85
Backlight	Yes (White)	
AccuPoint	No	

Item	Specifications		
Maker	Transimage		
Part code	G83C000L55JP	G83C000L55US	G83C000L55EN
Outline	271.6(L) x 101.8(W) x 3.8±0.2(H)(mm)		
Weight	54.0±1.0g		
Key Pitch	19 mm (X direction), 18 mm (Y direction) (mm)		
keystroke	1.5±0.2 (mm)		
Number of keys	86 (conformity with JIS)	85	85
Backlight	Yes (Red)		
AccuPoint	No		

Item	Specifications		
Maker	Transimage		
Part code	G83C000L55ZU		G83C000L55ZK
Outline	271.6(L) x 101.8(W) x 3.8±0.2(H)(mm)		
Weight	54.0±1.0g		
Key Pitch	19 mm (X direction), 18 mm (Y direction) (mm)		
keystroke	1.5±0.2 (mm)		
Number of keys	85		85
Backlight	Yes (Red)		
AccuPoint	No		



## 1.4 TFT Color Display

The TFT color display consists of 13.3-inch LCD module and capacitive touch panel by direct-bonding.

The LCD module used for the TFT color display uses a backlight as the light source and can display a maximum of 16.77 million colors with 1,920×1,080 (FHD) resolutions.

Following shows a view of the LCD module and lists the specifications.

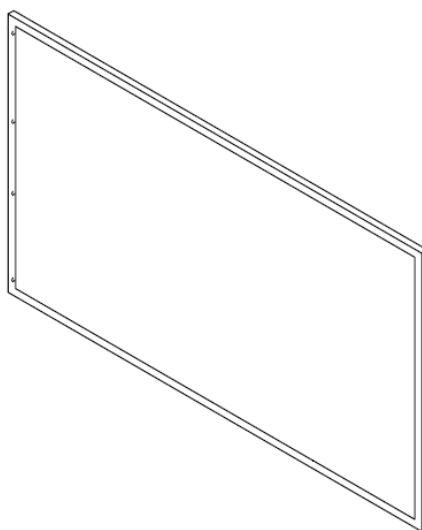


Figure 1-5 LCD module

Table 1-3 LCD module specifications

Item	Specifications
Maker	WACOM
Part code	G83C000L3110
Outline [mm] (Typ)	$298.76 \pm 0.3(W) \times 177.84(\text{Max})(H) \times 2.05\text{Max}(D)$
Number of Dot	1920(H) $\times$ 1080(V) (1 pixel = R+G+B dot)
Active display area [mm]	$293.76(H) \times 165.24(V)$
Dot pitch [mm]	$0.153(H) \times 0.153(V)$
Pixel configuration	R.G.B. Vertical Stripe
Weight [g]	170 (max)

## 1.5 Web camera

This model has two web cameras (front and rear). They offer video stream to preview/record motion image. The web camera (front) has also dual microphones. On some models, an IR camera for Face Recognition is mounted on the web camera (front).

*Table 1-4 Web camera module specifications (Front)*

Item	Specifications	
	Chicony	
	G9BC0006F110	G9BC0006E110
	HD	HD + FA Camera
Size [mm] (Max)	72±0.3 × 4±0.2 × 2.85±0.2	72±0.3 × 4±0.2 × 2.9±0.2
Weight [g]	0.81 ± 0.05	0.6 ± 0.05
Output size (Max)	1,280 × 720	
Focus Distance	50 cm	50 cm

*Table 1-5 Web camera module specifications (Rear)*

Item	Specifications
<b>Maker</b>	Chicony
	G9BC0006G110
	8M AF
Size [mm] (Max)	26.4 × 24.12 × 4.1mm
Weight [g]	0.67 ± 0.03
Image transfer rate (fps) (Max)	3,264 × 2,448: 30fps
Focus Distance	10 cm~infinity

## 1.6 Power Supply

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

1. Judges that the DC power supply (AC adapter) is connected to the computer.
2. Detects DC output and circuit malfunctions.
3. Controls the battery icon, and DC IN 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.

## 1.7 Batteries

The computer has one battery as follows:

- ❑ Main battery pack

The battery specifications are listed in the following table.

*Table 1-6 Battery specifications*

Battery name	Part code	material	Nominal voltage	Capacity
Main battery	G71C000M7110	Lithium-Ion	15.4 V	4Cell, 53Wh
	G71C000M9110	Lithium-Ion	15.4 V	4Cell, 53Wh

### 1.7.1 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.

## 1.7.2 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.

### ☐ Battery Charge

When the AC adaptor is attached, the battery is charged. There are two types of charge depending on the power conditions: power on and power off. The following table lists the charging time required for charges.

*Table 1-7 Time required for charges*

Battery type	Power on (hours)	Power off (hours)
Battery (4Cell, 53Wh)	About 3.5	About 3.5 – 10.0

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. Output voltage from main battery or AC adapter is abnormal.
4. Charging current is abnormal.

### ☐ Data preservation time

When turning off the power in being charged fully, the preservation time is as follows.

*Table 1-8 Data preservation time*

Type of battery	Preservation time	
	Sleep	Shutdown/Hibernation
Main battery (4Cell, 53Wh)	About 5 days	About 50 days

## 1.8 AC Adapter

The AC adapter is also used to charge the battery. At the charging, connect it to Thunderbolt/USB Type-C connector on the PC or to the USB Type-C adapter. It corresponds to USB-PD.

The following table lists the AC adapter specifications.

*Table 1-9 AC adapter specifications*



Item	Specifications	
Maker	Chicony	
Parts code	G71C000LR210 (2-pin)	G71C000LS210 (3-pin)
Power	65W	
Input voltage	100V/240V	
Input frequency	50Hz to 60Hz	
Output voltage	20V	
Output current	3.25A	
Dimension (mm)	63(W) x 63(L) x 28(H) (Typ.)	
Cable length (mm)	1800(±50)	



## 1.9 Stylus pen

On some models, a stylus pen is bundled. Some kinds of stylus pens are prepared for this model.

The following shows the appearance of the stylus pens and their specifications.

*Table 1-10 Stylus pen specifications*

item	Specifications	
Type	Rechargeable Active Electrostatic (AES) stylus	Rechargeable USB Type-C Dongle (pen cap is included)
Appearance		
Maker	Wacom	HHK
Parts code	G83C000KC310	G83C000KE210
Pressure resolution	Up to 4,096 level (depends on touch IC's F/W setting)	-
Returning time from sleep [ms]	$5 \pm 30\%$	-
Shifting time to sleep	Approximately 10 minutes	-
Length (mm)	127.2	-
Weight(g)	$6.4 \pm 0.5$ (excluding battery)	-

item	Specifications	
Type	Universal Stylus Pen	Entry pen
Appearance		
Maker	Wacom	Wacom
Parts code	G83C000JV310/ G83C000JV410	G83C000LD210
Pressure resolution	Up to 4,096 level (depends on touch IC's F/W setting)	Up to 4,096 level (depends on touch IC's F/W setting)
Returning time from sleep [ms]	100	50 [msec] ± 30 %
Shifting time to sleep	Approximately 10 minutes	Approximately 10 minutes
Length (mm)	129.6	140 (excluding pen tip)
Weight(g)	11.9 (excluding battery)	17.4 (Including battery)
Battery	AAAA dry cell	AAAA dry cell

Before you handle the battery, read carefully the following instructions to avoid potential hazards that could cause bodily injury, property damage, or damage the product



**WARNING:** *Never attempt to dispose of a battery by burning or by throwing it into a fire, and never allow exposure to a heating apparatus (e.g., microwave oven).*

*Never attempt to disassemble, tamper with or repair a battery. The battery could overheat and ignite.*

*Never short-circuit the battery by either accidentally or intentionally bringing the battery terminals in contact with another conductive object.*

*Never drive a nail or any other sharp object into the battery, hit battery with a hammer or other object or step on it.*

*Never charge the battery.*

*Always use the proper battery (AAAA dry cell battery). Other battery has different voltage and terminal polarities. Use of non-conforming battery could generate smoke or cause fire or rupture, possibly resulting in serious injury.*

*Never allow caustic electrolyte fluid leaked from the battery to contact your eyes, body or clothing.*

*Use appropriate protective gloves when handling a damaged battery.*

*If caustic electrolyte fluid from the battery should contact your eyes, immediately wash your eyes with large amounts of running water and obtain prompt medical attention, to help prevent permanent eye damage.*

*Always dispose of used battery in compliance with all applicable laws and regulations. Put insulating tape, such as cellophane tape, on the electrode during transportation to avoid a possible short circuit, fire or electric shock. Failure to do so could possibly result in serious injury.*

*Never leave the battery in the product for a long time*


*Never leave the battery in the product for a long time if it is not in use. Failure to do so could possibly damage your product.*

## 1.10 USB Type-C Adapter

To expansion the PC functions, a USB Type-C adapters is prepared.

The following table shows the USB Type-C adapter specifications.

*Table 1-11 USB Type-C adapter specifications*

Item	Specifications
Maker	Goodway
Appearance	
Specifications	USB-C TO VGA/LAN ADAPTER
Parts code	G83C000LP110
Functions	VGA/LAN/USB Type-C port (Power Delivery Charging)

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## **Chapter 2**

# **Troubleshooting Procedures**

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## 2.1 Troubleshooting

Chapter 2 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 are:

1. Power supply
2. System Board
3. USB
4. M.2 SSD
5. Keyboard
6. Touch Pad (Click Pad)
7. Display (LCD, touch panel)
8. Optical Disk Drive: Not used
9. LAN: Not used
10. Wireless LAN +Bluetooth
11. 5G/LTE
12. WiGig: Not used
13. Sound
14. Memory media (micro SD Card) slot
15. Fingerprint sensor
16. Web camera
17. HDMI port
18. USB Type-C adapter

Rev.01

The Test Program operations are described in Chapter 3. Detailed procedures for replacement are described in Chapter 4.

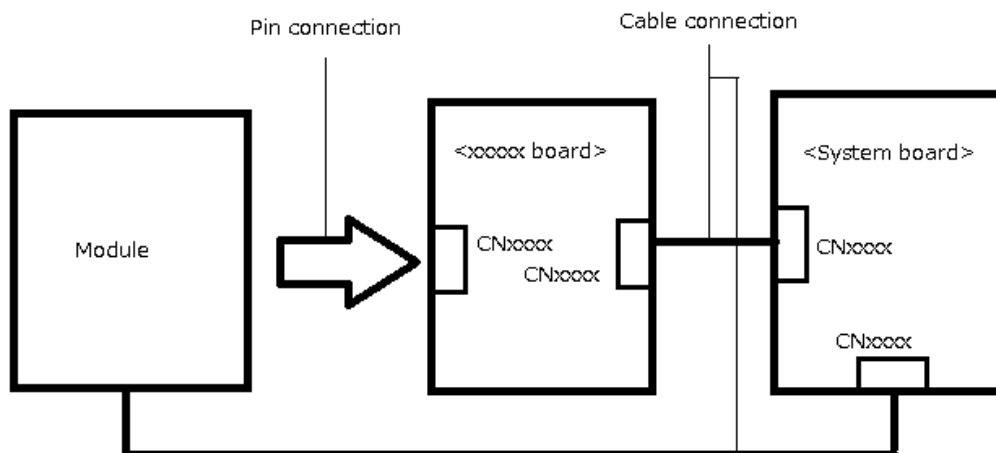
**NOTE:**

1. Before exchanging a system board, write down the DMI information by performing the test program. Register it to a new board by performing “DMI Entry utility” in the test program. For details, refer to “3.3 Entry of the DMI information”.
2. After exchanging to a new board, update also the EC/KBC to the latest version by the test program or BIOS update. For details, refer to the Chapter 3 or Appendix G “BIOS rewrite Procedures”.
3. After replacing the LCD, update the EC/KBC to the latest version by the test program or BIOS update to set the SVP parameter.

There are following two types of connections in the figure of board and module connection in this chapter.

- (1) Cable connection is described with lines in the figure.
- (2) Pin connection is described with arrow in the figure.

< Sample figure of connection >





## 2.2 Troubleshooting Flowchart

Use the flowchart in Figure 2-1 as a guide for determining the troubleshooting procedures to execute. Before going through the flowchart steps, verify the following:

- ☐ Ask him or her to enter the password if a password is registered.
- ☐ Make sure that Toshiba Windows is installed on the hard disk. Non-Windows operating systems can cause the computer to malfunction.
- ☐ Make sure all the optional equipment is removed from the computer.

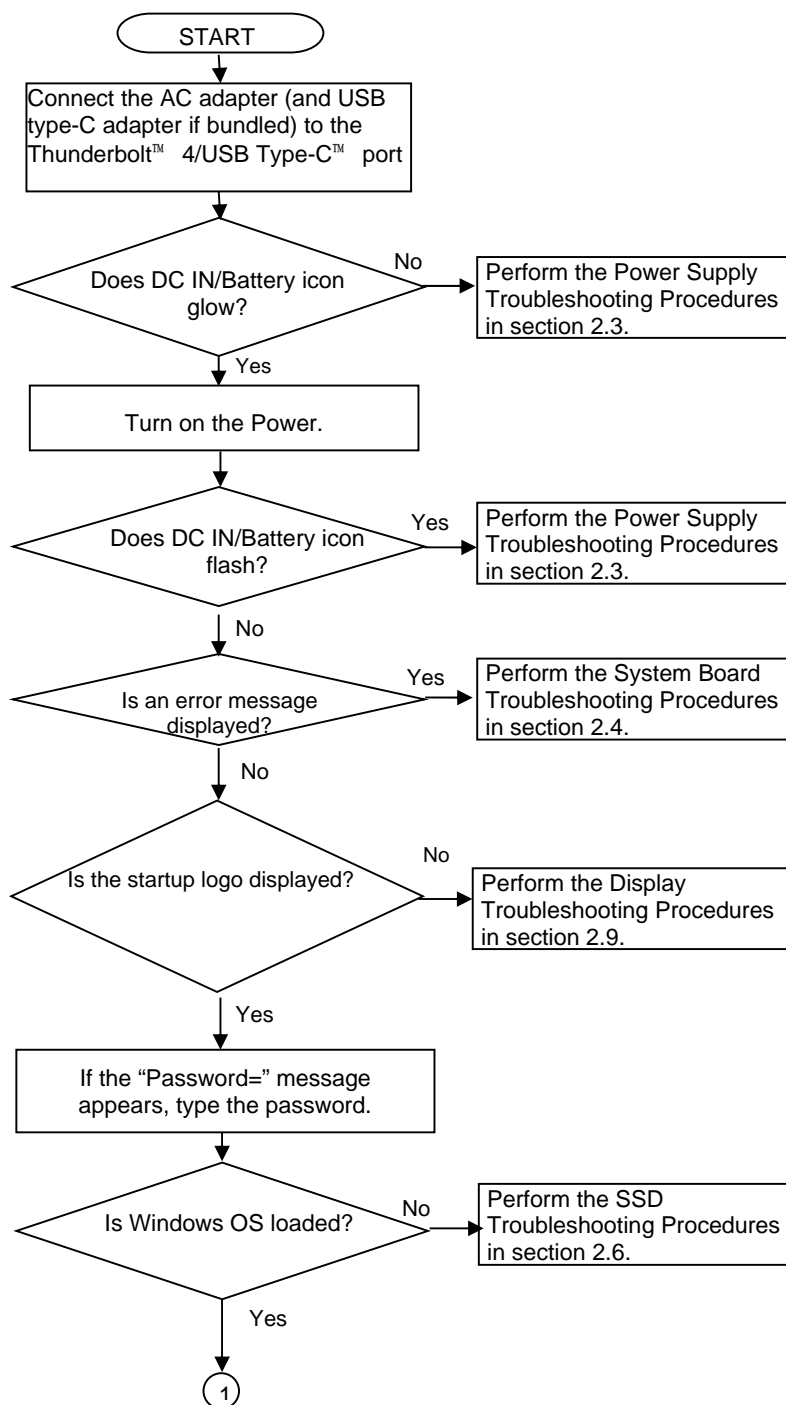


Figure 2-1 Troubleshooting flowchart (1/2)

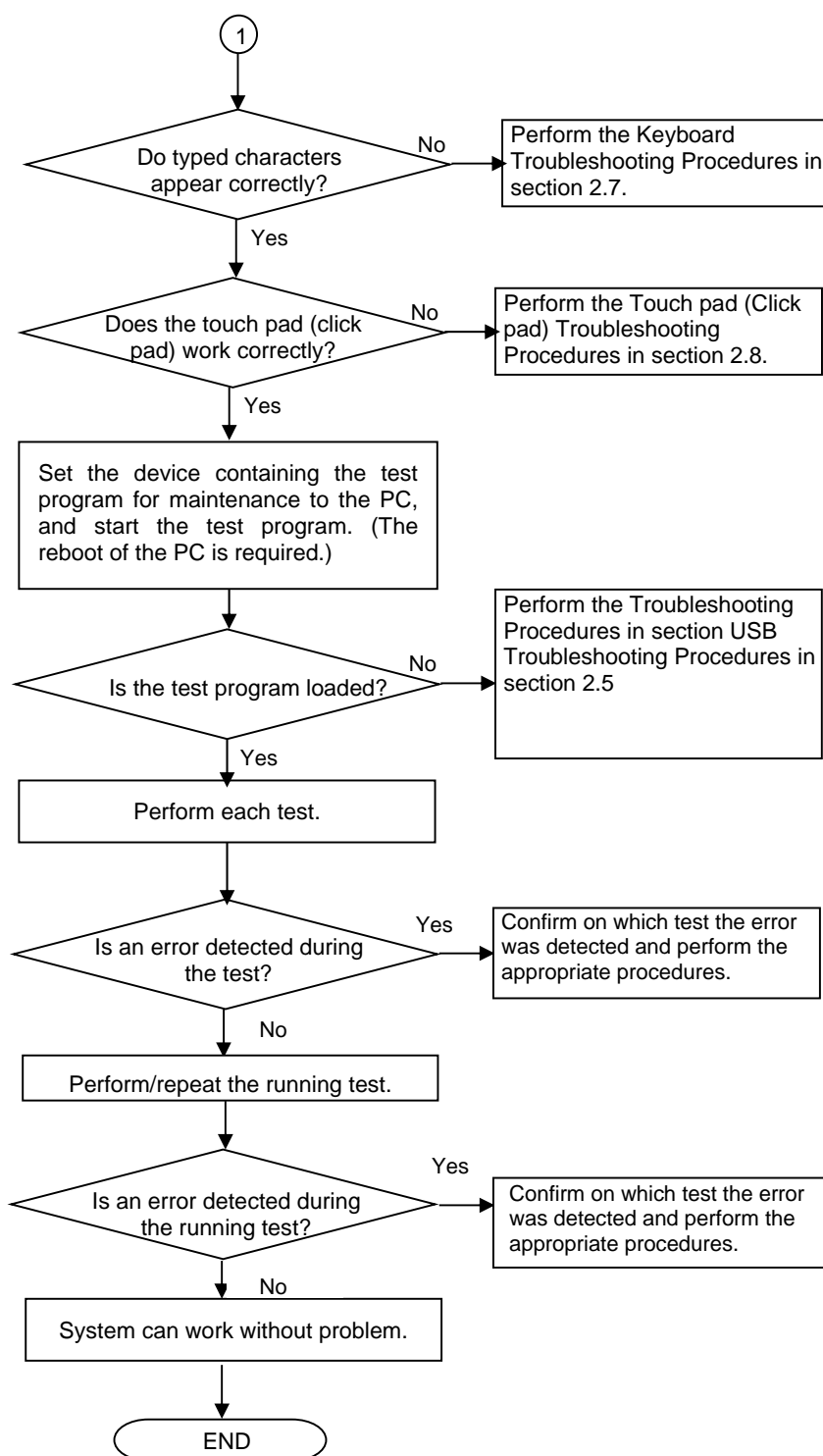


Figure 2-1 Troubleshooting flowchart (2/2)

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), 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 Section 2.3.
2. If an error is detected by error message or Memory test, perform the System Board Troubleshooting Procedures in Section 2.4.
3. If an error is detected on the USB, perform the USB Troubleshooting Procedures in Section 2.5.
4. If an error is detected on the HDD/ SSD test, perform the SSD Troubleshooting Procedures in Section 2.6.
5. If an error is detected on the Keyboard test, perform the Keyboard Troubleshooting Procedures in Section 2.7.
6. If an error is detected on the Touch Pad test, perform the Touch Pad (Click pad) Troubleshooting Procedures in Section 2.8.
7. If an error is detected on the LCD Panel test, perform the Display Troubleshooting Procedures in Section 2.9
8. If an error is detected on the Optical Disk Drive, perform the Optical Disk Drive Troubleshooting Procedures in Section 2.10.: Not used
9. If an error is detected on the functions related to LAN, perform the LAN Troubleshooting Procedures in Section 2.11.: Not used
10. If an error is detected on the functions related to Wireless LAN or Bluetooth, perform the Wireless LAN +Bluetooth Troubleshooting Procedures in Section 2.12. Rev.01
11. If an error is detected on the 5G or LTE, perform the 5G/LTE Troubleshooting Procedures in Section 2.13.
12. If an error is detected on the WiGig, perform the WiGig Troubleshooting Procedures in Section 2.14: Not used
13. If an error is detected on the Sound, perform the Sound Troubleshooting Procedures in Section 2.15.
14. If an error is detected on the Memory media (SD Card) Slot, perform the Memory media (SD Card) Slot Troubleshooting Procedures in Section 2.16.

15. If an error is detected on the Fingerprint sensor, perform the Fingerprint Sensor Troubleshooting Procedures in Section 2.17.
16. If a malfunction is detected on the Web camera, perform the Web Camera Troubleshooting Procedures in Section 2.18.
17. If a malfunction is detected on the HDMI port, perform the HDMI port Troubleshooting Procedures in Section 2.19.
18. If a malfunction is detected on the USB Type-C adapter, perform the USB Type-C Adapter Troubleshooting Procedures in Section 2.20.

## 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:

Procedure 1: Power Status Check

Procedure 2: Error Code Check

Procedure 3: Connection Check

Procedure 4: Charging Check

Procedure 5: Replacement Check

### 2.3.1 Procedure 1 Power Status Check

The following indicators indicate the PC and its power supply status:

- ☐ Power indicator
- ☐ DC IN/Battery indicator

*Table 2-1 Power indicator*

Power indicator	PC status
White	Indicates the computer is turned on.
No light	Indicates that the computer is turned off, hibernation mode or sleep mode.

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

*Table 2-2 DC IN/Battery indicator*

DC IN/Battery indicator	Power supply status
White	Indicates the AC adaptor is connected and the battery is fully charged.
Amber	Indicates the AC adaptor is connected and the battery is charging.
Flashing White	Indicates a problem with the computer.
Flashing Amber	Indicates the battery charge is low. The AC adaptor must be connected in order to recharge the battery.
No light	Indicates the AC adaptor is not connected In the case of other than the above, there might be a problem on the battery.

## 2 Troubleshooting Procedures

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

1. Remove the AC adapter and USB Type-C adapter (if bundled) to cut off the power.
2. Re-connect the AC adapter and USB Type-C adapter (if bundled).

**CAUTION:**

- Use a supplied AC adapter, G71C000LR210 (2-pin) or G71C000LS210 (3-pin).
- Use only the Type-C adapter comes with the PC or Dynabook authorized adapter.

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.

- Check 1 If the USB Type-C adapter is not used, go to Procedure 3.
- Check 2 If any other devices except to the AC adapter are not connected to the USB Type-C adapter, go to Check 3. If any devices are connected, remove all the devices except to the AC adapter and check the DC IN/Battery indicator again. If the indicator lights, there is no problem. If not, go to Check 3.
- Check 3 Remove the USB Type-C adapter and connect the AC adapter to the computer directly. Then check the DC IN/Battery indicator again. If the indicator doesn't light, go to Procedure 3. If it lights, go to Check 4.
- Check 4 The USB Type-C adapter may be faulty or the battery pack may be exhausted. Connect the AC adapter to the computer via a new USB Type-C adapter. If the DC IN/Battery indicator lights, it shows that the original USB Type-C adapter has any trouble. If the indicator still does not light, the battery pack may have any trouble. So go to Procedure 4.



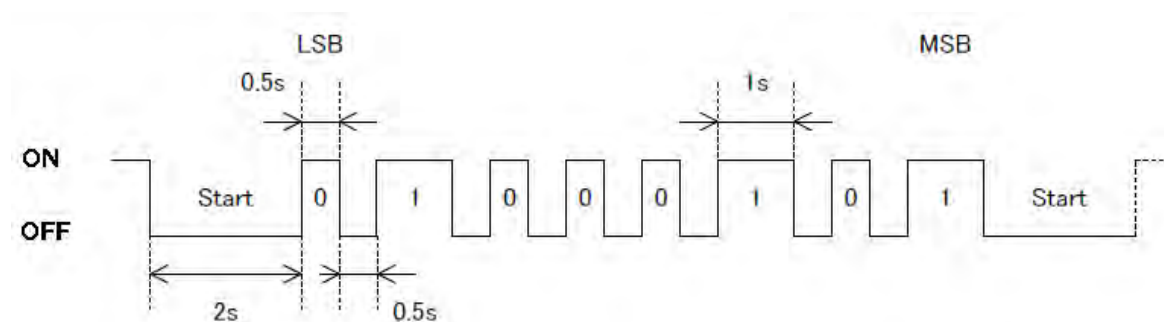
### 2.3.2 Procedure 2 Error Code Check

If the power supply microprocessor detects a malfunction, the DC IN /Battery indicator is flashing. 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 A2h (Error codes are given in hexadecimal format.)



Check 1 Convert the flashing pattern of the DC IN /Battery indicator into the hexadecimal error code and compare it to the tables below to clarify the cause of error.

Table 2-3 Error code (1/2)

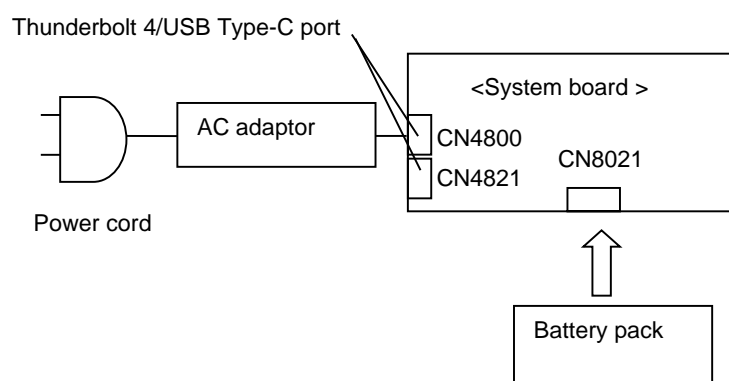
Abnormal content	Error code	Meaning
AC adapter 0 [A] correction value error	10h	Error detection & 400 mA current default value
AC adapter DC supply current over rating	11h	AC adapter connection & AC adapter current value > DC-In normal current upper limit value
AC adapter DC supply current no load over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

Table 2-3 Error code (2/2)

Abnormal content	Error code	Meaning
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
Output error at power start of 5G power supply	60h	During power 5G on sequence, Waiting for 5G3VPG signal assertion 1s timeout occurred
Steady-state output error at power on of 5G power supply	61h	At power on steady time, 5G3VPG signal deassertion
Steady-state output error at power off of 5G power supply (No output)	62h	Power off steady state & When the 5G3VPG signal is deasserted with the 5G3VON signal asserted
Steady-state output error at power off of 5G power supply (With output)	63h	Power off steady state & When the 5G3VPG signal is asserted with the 5G3VON signal deasserted

### 2.3.3 Procedure 3 Connection Check

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



**Check 1** Check if Power cord and AC adaptor are connected firmly each other and to the outlet and computer. If any connection is loose, connect it firmly and go to Procedure 1. Though these cables are connected firmly, the DC IN Battery/LED doesn't light, go to Procedure 4.

### 2.3.4 Procedure 4 Charging Check

Check if the battery pack is charged properly by performing the following procedures:

- Check 1** The battery pack may be completely discharged. Wait a few minutes to charge the battery pack while connecting the AC adaptor to the computer. 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. One of them may be damaged so perform the following Checks.

To disassemble the computer, follow the steps described in Chapter 4, *Replacement Procedures*.

**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    Battery pack may be disconnected. Disassemble the computer and connect surely the battery pack to the system board. If the problem still occurs, perform Check 3.
- Check 3    Battery pack 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.

## 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:

Procedure 1: Message Check

Procedure 2: Diagnostic Test Program Execution Check

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

Perform the test program for maintenance to determine the cause. Refer to Chapter 3, *Tests and Diagnostic*, for more information on how to perform the tests.

If any error is detected during the tests, go to Procedure 3.

### 2.4.3 Procedure3 Replacement Check

Perform the trouble shooting procedure for the device which doesn't pass the test program. Refer to 2.5 *USB Troubleshooting* or later for details.

If the system board is faulty and replacement is needed, disassemble the computer following the steps described in Chapter 4, *Replacement Procedures*. When replacing, please note the followings.

**NOTE:** *Before exchanging a system board, write down the DMI information, and after the exchange, register the DMI information to the new system board according to Chapter 3.*

*At that time, update the BIOS and EC/KBC to the latest ones.*



## 2.5 USB Troubleshooting

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

Procedure 1: Reading check of data

Procedure 2: Replacement Check of USB unit

Procedure 3: Replacement Check of system board

### 2.5.1 Procedure 1 Reading check of data

**NOTE:** Be sure to check the USB unit condition with care for the followings.

1. USB unit is not loosening.
2. USB unit is connected straight to the connector.
3. USB unit is connected fully in the connector.
4. USB unit or connector is not broken.

Insert the USB unit to the computer and check if the data in the USB unit can be read. This check should be done on all the USB connectors.

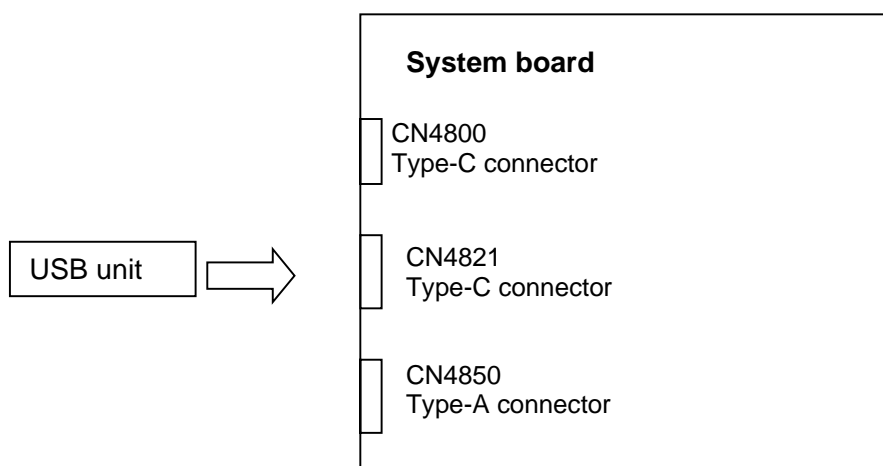
If the data cannot be read, confirm that the USB unit is firmly connected to the connector. If the problem still occurs, go to Procedure 2.

### 2.5.2 Procedure 2 Replacement Check of USB unit

Check 1 USB unit may be faulty. Replace it with a new one. If the problem still occurs, go to Procedure 3.

### 2.5.3 Procedure 3 Replacement Check of system board

USB connectors are mounted on the system board directly. So the system board may be faulty. Disassemble the computer following the steps described in Chapter 4, *Replacement Procedures*, and replace the system board with a new one.



## 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: Connection Check

Procedure 3: Replacement Check

**CAUTION:** *The contents of the hard disk/SSD will be erased when the test program for the hard disk/SSD is performed. Transfer the contents of the hard disk/SSD to other storage drive(s). For the backup, refer to the User's Manual.*

### 2.6.1 Procedure 1 Diagnostic Test Program Execution Check

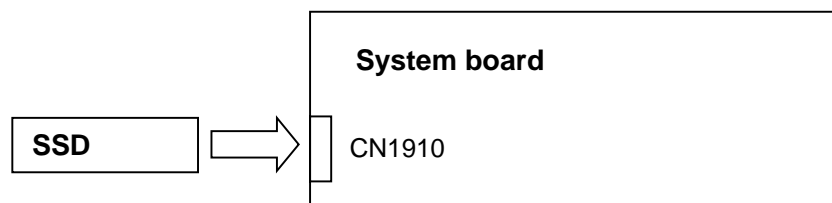
The test program for HDD/SSD is stored in the Diagnostic Test Program. Perform all of the items in the HDD/SSD Test. Refer to Chapter 3, *Tests and Diagnostics*, for more information.

If any error is detected, go to Procedure 2.

### 2.6.2 Procedure 2 Connection Check

The M.2 SSD is connected to the system board. The connection between them may be loose. Disassemble the computer following the steps described in Chapter 4, *Replacement Procedures* to check the connection.

Check 1 Make sure the M.2 SSD is connected firmly to the connector on the system board.



If the connection is loose, reconnect it firmly and repeat Procedure 1. If there is still an error, go to Procedure 3.

### 2.6.3 Procedure 3      Replacement Check

- Check 1    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 2.
- Check 2    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 and Check on Windows

Procedure 2: Connector Check and Replacement Check

### 2.7.1 Procedure 1 Diagnostic Test Program Execution Check and Check on Windows

Execute the Keyboard Test in the Diagnostic Program. Refer to Chapter 3, *Tests and Diagnostics*, for more information on how to perform the test program.

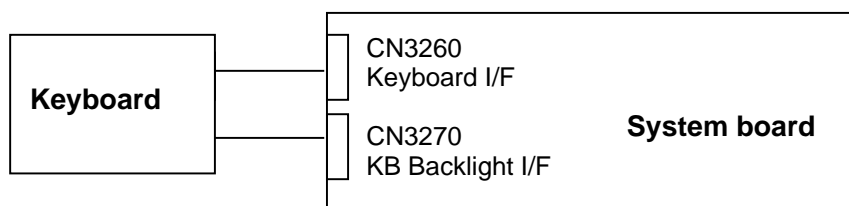
Some models support the backlit function. To check the keyboard backlit, press **Fn+Z** after starting Windows. By repeating the key operation twice, turn-on and -off of the keyboard illumination function can be checked.

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 between the keyboard and system board may be loosening. Or the keyboard 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 Make sure keyboard cable is firmly connected to the connectors on both the system board and keyboard.



If any 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 (or Click pad. Herein after referred to as Touch 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

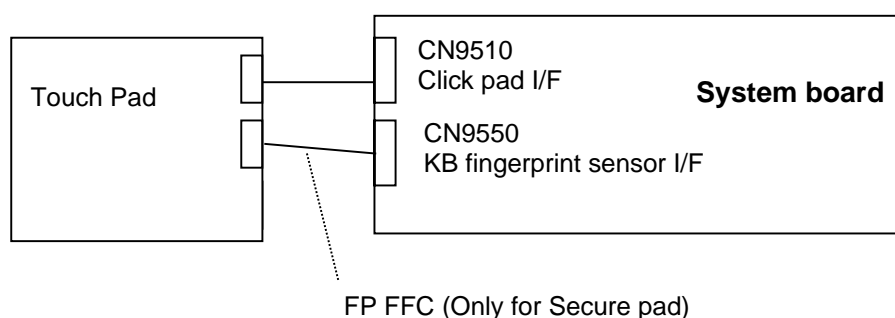
Execute the subtest for the touch pad in Keyboard test of the Diagnostic Program. Refer to Chapter 3, *Tests and Diagnostics*, for more information.

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 between the Touch Pad and the system board may be loose.

Check 1 Touch pad is connected to the system board as shown below. As any connection between the touch pad and the system board may be defective, disassemble the computer referring to the steps in Chapter 4, *Replacement Procedures* and reconnect each part firmly.



If the problem still occurs, go to Procedure 3.

### 2.8.3 Procedure 3      Replacement Check

- Check 1    Touch Pad or the cable(s) may be faulty. Replace them with new ones one by one following the steps in Chapter 4, *Replacement Procedures*. If the problem still occurs, perform Check 2.
- Check 2    System board may be faulty. Replace it with a new one following the instructions in Chapter 4, *Replacement Procedures*.

## 2.9 Display (LCD, Touch panel) Troubleshooting

This section describes how to determine if the computer's display or touch panel 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 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 LCD panel test in the Diagnostic Program. Refer to Chapter 3, *Tests and Diagnostics*, for more information on how to perform the test program.

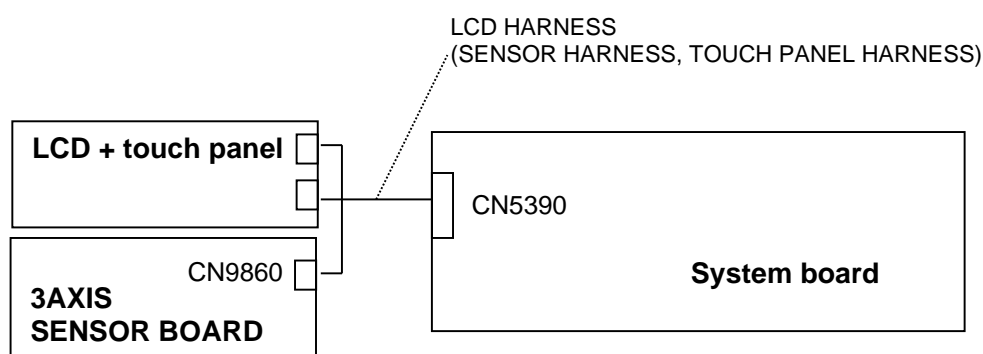
If any error occurs during the test program, go to Procedure 3. If not, both the LCD should work properly.



### 2.9.3 Procedure 3 Connector Check and Replacement Check

The connection between the display (LCD, touch panel) and system board may be loosening or either may be defective. Disassemble the computer referring to the steps in Chapter 4, *Replacement Procedures* and check the followings.

- Check 1 Make sure the cable (LCD HARNESS) is securely connected to the connectors on the display and the system board.



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

- Check 2 The harness may be damaged. Replace it with a new one and go to Procedure 2 to test the display again. If the problem still exists, perform Check 3.
- Check 3 The LCD unit may be damaged. Replace it with a new one and go to Procedure 2 to 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.

### 2.10 Optical Disk Drive Troubleshooting: Not used

To check if optical disk drive 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

#### 2.10.1 Procedure 1 Diagnostic Test Program Execution Check

As for the CD-ROM-type test program, the test to check the Optical Disk Drive function is prepared. Execute that test program. Refer to Chapter 3, *Tests and Diagnostics*, for more information on how to perform the test program.

As for the USB memory-type test program, the test to check the Optical Disk Drive function is not prepared. So check if the Optical Disk Drive is working properly by using the function of Windows.

If any error is detected, go to Procedure 2.

#### 2.10.2 Procedure 2 Connector Check and Replacement Check

The SATA ODD may be disconnected, or the SATA ODD 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 SATA ODD is firmly connected to the connector 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 SATA ODD or FPC (FASROD0\*) may be damaged. Replace it with a new one following the instructions in Chapter 4, *Replacement Procedures*. If the problem still exists, perform Check 3.

Check 3 System board may be faulty. Replace it with new one following the instructions in Chapter 4, *Replacement Procedure*.

## 2.11 LAN Troubleshooting: Not used

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

Procedure 1: Check on Windows

Procedure 2: Connector Check and Replacement Check

### 2.11.1 Procedure 1 Check on Windows

To check if the LAN function is working properly, use a function on Windows.

If any error is found, go to Procedure 2.

### 2.11.2 Procedure 2 Connector Check and Replacement Check

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

- Check 1 Make sure LAN cable is firmly connected to the LAN jack on the USB board/LTE board. 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 Make sure the USB FPC is firmly connected to the boards following the instruction in Chapter 4, *Replacement Procedure*. If the connection is loose, connect it firmly. If the problem still occurs, go to Check 4
- Check 4 USB FPC may be faulty. Replace it with a new one. If the problem still occurs, perform Check 5.
- Check 5 USB board/LTE board may be faulty. Replace it with a new one. If the problem still occurs, perform Check 6.
- Check 6 USB board/LTE board or USB FPC may be faulty. Replace it with a new one. If the problem still occurs, perform Check 7.
- Check 7 System board may be faulty. Replace it with a new one following the instruction in Chapter 4, *Replacement Procedure*.

### 2.12 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

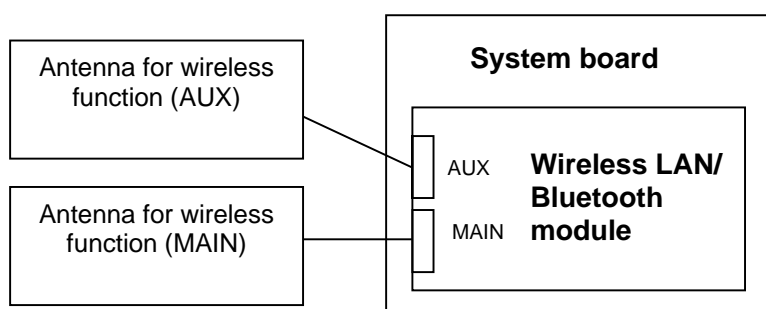
#### 2.12.1 Procedure 1 Module/Antennas' Check

**Check 1** Since the test program for the Wireless LAN and Bluetooth is not prepared in the test program, check if the module and antenna of Wireless LAN/Bluetooth are recognized on Windows OS. Refer to Chapter 3 for more information about that.

If there is no problem, Wireless LAN/Bluetooth function should work properly.  
If there is any error, perform Procedure 2.

#### 2.12.2 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 that the antenna cables for wireless function (MAIN, AUX) are firmly connected to the connectors on the module. If the cables are not connected properly, connect them firmly to the correct position and perform Procedure 1. If the problem still occurs, go to the procedure 3.

### 2.12.3 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    The antennas for wireless function may be faulty. Replace them with new ones. If the problem still occurs, perform Check 2.
- Check 2    Wireless LAN/Bluetooth Combo module or System board may be faulty. Since the Combo module is installed on the system board directly, replace the system board with a new one.

## 2.13 5G/LTE Troubleshooting

This section describes how to determine if the computer's 5G or 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

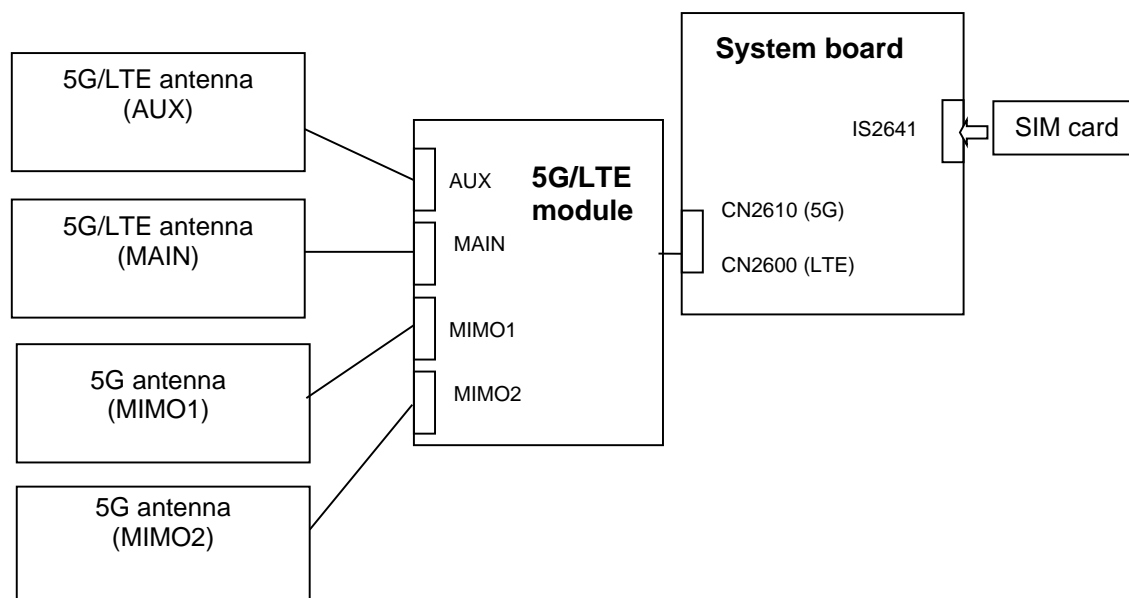
### 2.13.1 Procedure 1      Module Installation Check

Check 1      This procedure checks if the 5G or LTE module can be found on the Windows application. Refer to Chapter 3 for more information about that.

If any problem is found on that check, perform Procedure 2.

### 2.13.2 Procedure 2      Antenna/Connector Check

The 5G/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 re-insert it surely. Then perform Procedure 1 again. If the problem still exists, perform Check 2.
- Check 2    The connection of 5G/LTE antenna cables (MAIN, AUX, MIMO1, MIMO2) may be loose or connected connector is wrong. Connect the antenna cables correctly to the 5G/LTE module. Then perform Procedure 1 again. If the problem still exists, perform Check 3.
- Check 3    The connection between 5G/LTE module and system board may be loose. Connect 5G/LTE module surely to the system board. Then perform Procedure 1 again. If the problem still exists, go to procedure 3.

### 2.13.3 Procedure 3      Replacement Check

The SIM card or SIM tray may be defective or damaged. Replace it new one.

If the problem still exists, 5G/LTE module, antenna 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:

## 2 Troubleshooting Procedures

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- Check 1 5G/LTE module may be defective or damaged. Replace it with a new one and perform Procedure 1 again. If the problem still exists, perform Check 2.
- Check 2 Antennas may be defective or damaged. Replace them with new ones and perform Procedure 1 again. If the problem still exists, perform Check 3.
- Check 3 System board may be defective or damaged. Replace it with a new one.



## 2.14 WiGig Troubleshooting: Not used

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

Procedure 1: Module Installation Check

Procedure 2: Antennas/Connectors Check

Procedure 3: Replacement Check

**NOTE:** Since the Wireless LAN function is also installed in the WiGig module, the MAC address should be changed if this module is replaced to new one. It is recommended to inform this information to the user if the replacement is needed.

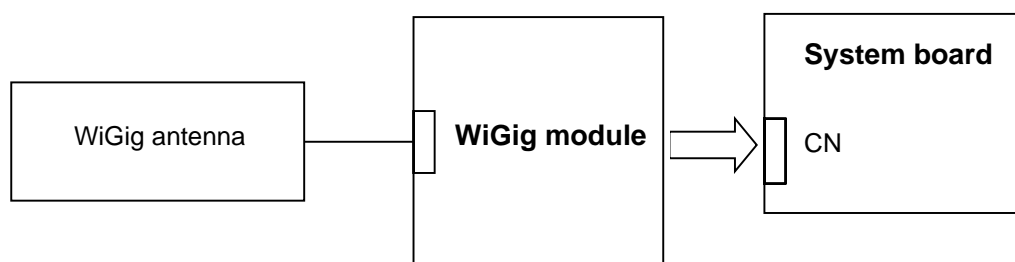
### 2.14.1 Procedure 1 Module Installation Check

Check 1 This procedure checks if the WiGig module can be found on the Windows application. Refer to Chapter 3 for more information about that.

If the computer has no problem on that check, WiGig function works correctly.  
If any problem is found on that check, perform Procedure 2.

### 2.14.2 Procedure 2 Antennas/Connectors Check

The WiGig module and antennas' 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 that WiGig module is firmly connected to the connector 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 WiGig antenna cable is firmly connected to the correct connector on the WiGig module. If the cable is not connected properly, or connected to another connector, connect it to the correct connector firmly and perform Procedure 1. If the problem still occurs, go to the procedure 3.

### 2.14.3 Procedure 3            Replacement Check

WiGig module, WiGig antenna 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    WiGig module may be faulty. Replace it with a new one. If the problem still occurs, perform Check 2.
- Check 2    WiGig antenna may be faulty. Replace it with a new one. If the problem still occurs, perform Check 3.
- Check 3    The system board may be faulty. Replace it with a new one.

## 2.15 Sound Troubleshooting

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

Procedure 1: Check on Windows

Procedure 2: Connector Check

Procedure 3: Replacement Check

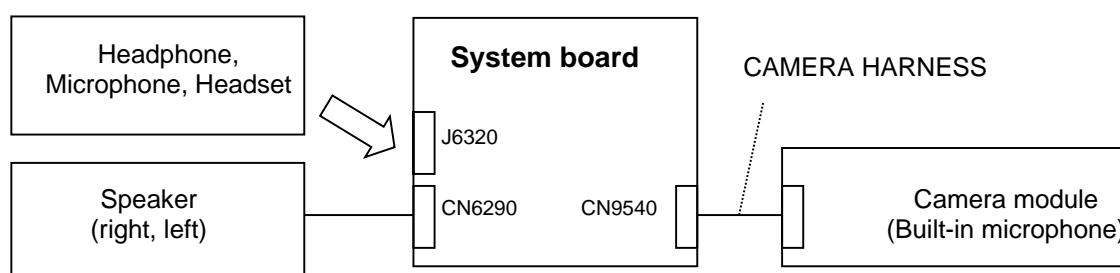
### 2.15.1 Procedure 1 Check on Windows

To check if the sound function is working properly, play a music file on Windows and check functions related to sound.

If any error is found, go to Procedure 2.

### 2.15.2 Procedure 2 Connector Check

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



As the connection may be defective, check each connection first.

- ☐ If headphone, microphone or headset does not work properly, reconnect it surely. If there is still problem, perform Check 1 of Procedure 3.
- ☐ If speaker (right or left) does not work properly, reconnect it surely following the steps in Chapter 4, *Replacement Procedures*. If there is still problem, perform Check 2 of Procedure 3.
- ☐ If built-in microphone does not work properly, reconnect it surely following the steps in Chapter 4, *Replacement Procedures*. If there is still problem, perform Check 3 of Procedure 3.

### 2.15.3 Procedure 3      Replacement Check

- Check 1    Headphone, microphone or headset may be faulty. Replace it with a new one. If the problem still occurs, perform Check 4.
- Check 2    Speaker (Right, Left) may be faulty. Replace it with a new one following the steps in Chapter 4, *Replacement Procedures*. If the problem still occurs, perform Check 4.
- Check 3    The built-in microphone (on camera module) or CAMERA HARNESS may be faulty. Replace them with new ones in order following the steps in Chapter 4, *Replacement Procedures*. If the problem still occurs, perform Check 4.
- Check 4    System board may be faulty. Replace it with a new one following the instructions in Chapter 4, *Replacement Procedures*.

## 2.16 Memory media (SD Card) Slot Troubleshooting

This section describes how to determine if the computer's Memory media (SD 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

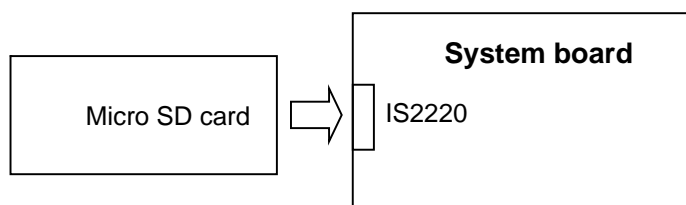
### 2.16.1 Procedure 1 Check on Windows OS

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

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

### 2.16.2 Procedure 2 Connector Check and Replacement Check

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



- Check 1 Memory media (micro SD Card) may be disconnected. Make sure the Memory media is firmly inserted to the SD card slot. If not, insert it firmly. If the Memory media is still not functioning properly, perform Check 2.
- Check 2 Memory media (micro SD Card) may be faulty. Replace it with a new one. If the problem continues, perform Check 3.
- Check 3 System board may be faulty. Replace it with a new one following the step in Chapter 4 *Replacement Procedures*.

## 2.17 Fingerprint sensor Troubleshooting

**CAUTION:** *To delete the account for checking the fingerprint operation, it is necessary to log on the account for 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.

**NOTE:** *When you register your fingerprint data for operation check, clear the data after the check. To clear it, refer to the User's manual.*

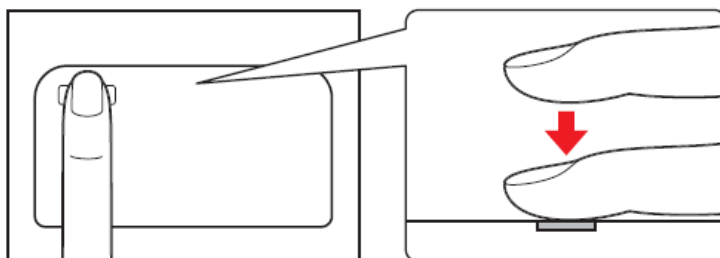
Procedure 1: Setting Windows sign-in password

Procedure 2: Registration of PIN and fingerprint

Procedure 3: Authentication of fingerprint

Procedure 4: Connector Check and Replacement Check

**NOTE:** *Scan your finger as shown below.  
Straight your finger and touch the center of the fingerprint sensor lightly and lift your finger.*



### 2.17.1 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.

### 2.17.2 Procedure 2 Registration of Pin and fingerprint

As for the registration of the fingerprint information, refer to the User's manual.

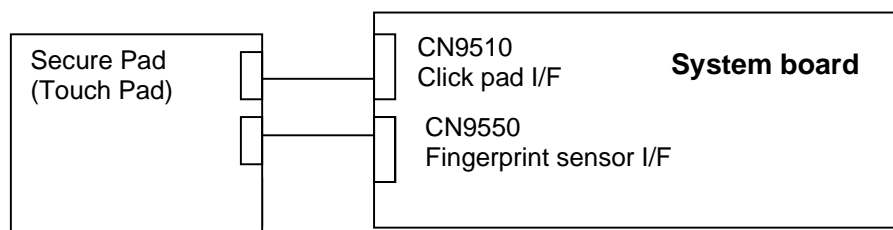
### 2.17.3 Procedure 3 Authentication of fingerprint

1. Turn on the computer.
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 cannot 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**.

### 2.17.4 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 new ones. 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 The system board may be faulty. Replace it with a new one.



## 2.18 Web camera (Front/Rear) 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

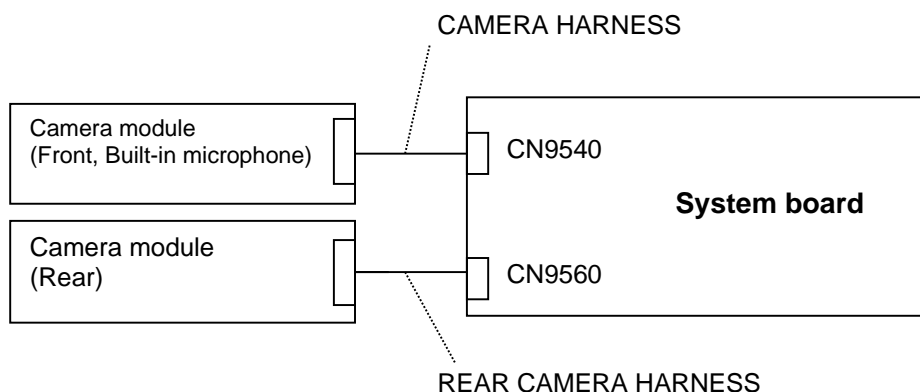
### 2.18.1 Procedure 1 Check on Windows OS

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

### 2.18.2 Procedure 2 Connector Check and Replacement Check

The connection between the camera modules and the system 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 CAMERA HARNESS or REAR CAMERA HARNESS is firmly connected to the system board. Then perform Procedure 1 again. If the problem still occurs, perform Check 2.



Check 2 Camera module (Front or Rear) may be faulty. Referring to error condition, replace them with new ones and perform Procedure 1 again. If the problem still occurs, perform Check 3

Check 3 System board may be faulty. Replace it with a new one.

## 2.19 HDMI port Troubleshooting

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

Procedure 1: Check on HDMI TV

Procedure 2: Connector Check and Replacement Check

### 2.19.1 Procedure 1 Check on HDMI TV

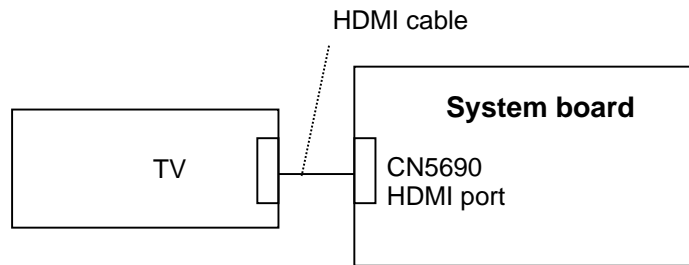
Connect a HDMI-compatible TV to the HDMI output port. If the HDMI port works, a desktop screen of Windows will appear on the TV display. Also the sound made on Windows will be output via the TV.

Check the HDMI port condition following the steps below. For details of each operation, refer to User's manual.

1. Connecting to the computer
2. Switching the sound output from computer's speakers to TV
3. Switching the image output from computer's screen to TV

### 2.19.2 Procedure 2 Connector Check and Replacement Check

The connection between the TV and the system board may be defective. Otherwise, they may be faulty. Perform the following checks.



- Check 1 Make sure the TV is connected surely to HDMI port with the HDMI 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 TV and returns to Procedure 1.  
As for the setting of the TV, refer to the instructions manual for the TV. If the problem still exists, perform Check 3.
- Check 3 HDMI cable may be damaged. Replace it with a new one and repeat Procedure 1. If the problem still exists, perform Check 4.
- Check 4 The TV may be damaged. Replace it with a new one and repeat Procedure 1. If the problem still exists, perform Check 5.
- Check 5 The system board may be damaged. Disassemble the computer following the steps described in Chapter 4, *Replacement Procedures*, and replace it with a new one.

### 2.20 USB Type-C adapter Troubleshooting

On some models, a USB Type-C adapter (USB-C to VGA/LAN adapter) is bundled.

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

#### 2.20.1 USB Type-C port (power delivery charging)

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

Procedure 1: Connection Check

Procedure 2: Replacement Check

##### Procedure 1 Connection Check

Check if the USB Type-C port charges the power with an AC adapter (USB-PD type). How to connect the AC adapter and the USB Type-C adapter is as follows;

1. Connect the power cord to the AC adapter (USB-PD type). Then connect it to the USB Type-C connector (power delivery charging) on the USB Type-C adapter.
2. Plug the power cord into a live wall outlet.
3. Connect the USB Type-C adapter to the USB Type-C connector on the PC.
4. Make sure that the DC IN/battery LED glows.

If the DC IN/battery LED glows, power delivery function is working.

If the DC IN/battery LED does not glow, make sure that the power cord, USB Type-C adapter and PC are connected firmly each other. If connection is loose, reconnect it firmly and return to Procedure 1. If the problem still occurs, perform Procedure 2.

##### Procedure 2 Replacement Check

- Check 1 The power cord or the AC adapter may be faulty. Replace them with new ones. If the problem still occurs, perform Check 2.
- Check 2 USB Type-C adapter may be faulty. Replace it with a new one. If the problem still exists, check the PC condition.

### 2.20.2 RGB (VGA) port

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

Procedure 1: Check on the external display

Procedure 2: Connector Check and Replacement Check

#### Procedure 1 Check on the 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 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 **F5 (Fn+F5 for Japanese keyboard)**, 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 TV.

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 firmly 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 instruction manual for the TV. If the problem still exists, perform Check 3.

- Check 3 Connect the USB Type-C adapter to another USB connector on the PC and returns to Procedure 1. If the problem still exists, perform Check 4.
- Check 4 The external display may be damaged. Replace it with a new one and repeat Procedure 1. If the problem still exists, perform Check 5.
- Check 5 USB Type-C adapter may be damaged. Replace it with a new one. If the problem still exists, check the PC condition.

### 2.20.3 LAN port

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

Procedure 1: Check on Windows OS

Procedure 2: Connector Check and Replacement Check

#### Procedure 1 Check on Windows OS

Check if the LAN is working properly by using the function of Windows. How to connect the LAN cable is as follows;

1. Connect the USB Type-C adapter to the USB Type-C connector on the computer.
2. Turn off the other devices connected to the computer and the USB Type-C adapter.
3. Plug the one end of the LAN cable to the LAN port of the USB Type-C adapter.
4. Plug the other end of the LAN cable into the connector on the network device.

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

#### Procedure 2 Connector Check and Replacement Check

- Check 1 Make sure LAN cable is firmly connected to the LAN port on the USB Type-C adapter. If connection is loose, reconnect it firmly and return to Procedure 1. 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 USB Type-C adapter may be faulty. Replace it with a new one. If the problem still exists, check the PC condition.

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## **Chapter 3**

# **Tests and Diagnostics**

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## 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

### 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)

#### **3.1.6 Setting of Battery Off mode**

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

Check the [Advanced] – [System Configuration] in the BIOS setup screen. You can see [Battery disconnect] item. Connect the AC adapter and execute it to set the “Battery Off mode” state.

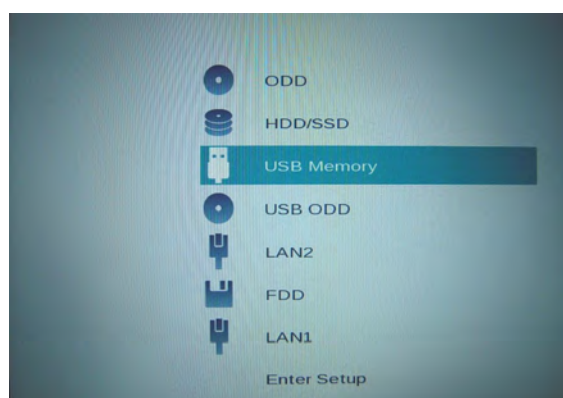
## 3.2 How to execute the test program

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.

**NOTE:** If the test program doesn't start, set Secure Boot to "Disabled" in Setup program. As for Setup program, refer to 3.18 SETUP.

### 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)? or

Do you want to update ME-FW(NonAMT)?(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.

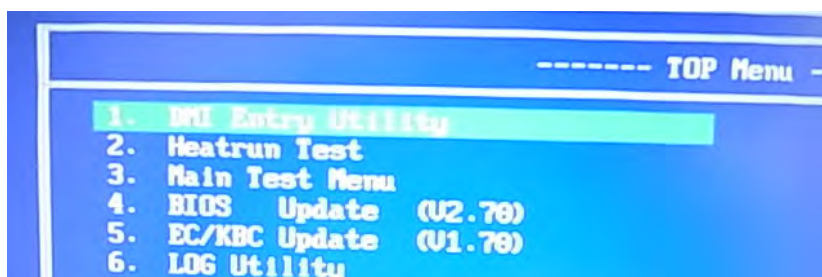
If the update is not needed, press **N**.

- NOTE:**
1. Connect the AC adapter 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, the power LED may flash or a message may be displayed. In that case, turn on the power again and perform Procedure 3 or 4.

The following message will appear. If the PCB exchange or MDI 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**.

**NOTE:** Before starting the diagnostics, be sure to that all the cables are connected firmly.

### 3.3 Entry of the DMI information

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

**NOTE:** Before replacing the system board, make a note of DMI information of the current system board. The information can be confirmed by the “System Information” screen displayed after start of test program or with “DMI Entry utility”.

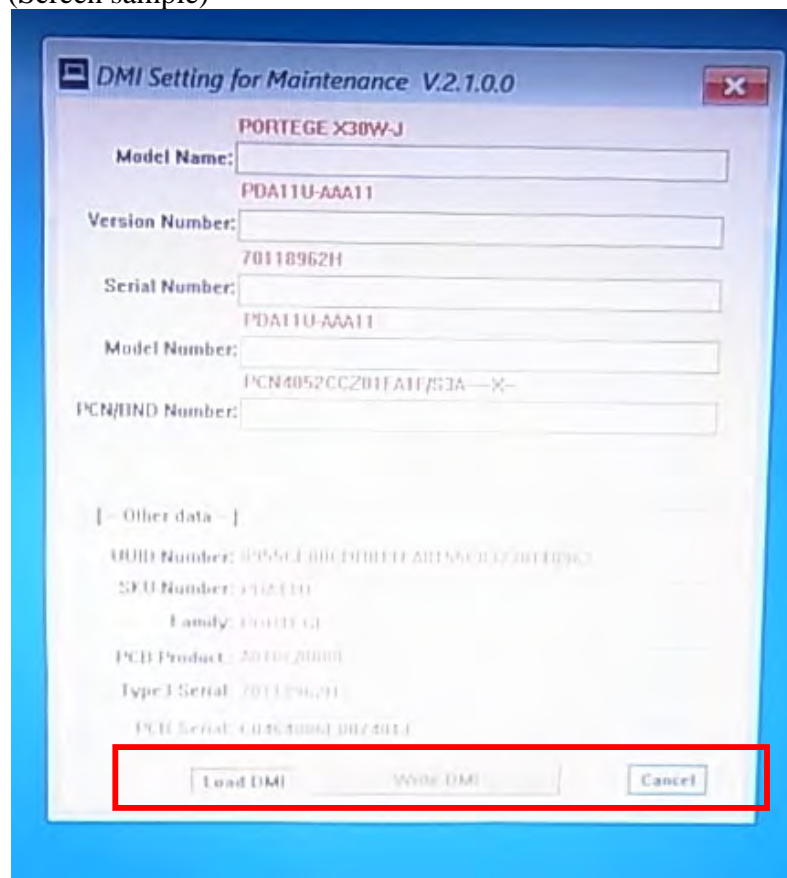
After replacing the system board, execute “DMI Entry utility” to register the DMI information of the note to the new system board.

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.

(Screen sample)





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 Cancel button is pressed, 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. Sequential Read Test
3. V-RAM Memory test

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

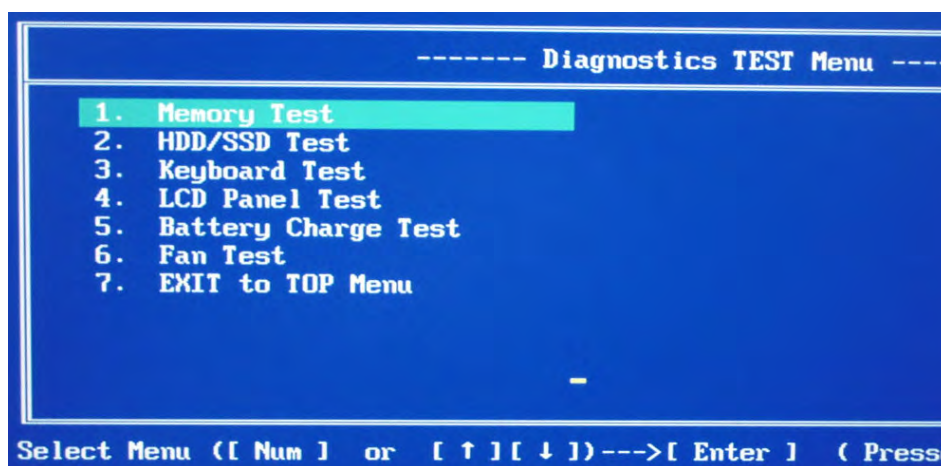
Explanation of each test;

1. Main Memory test  
Refer to Subtest 1 of 3.6 Memory Test
2. Sequential Read Test  
Refer to Subtest 1 of 3.7 Hard disk/SSD Test
3. V-RAM Memory test  
Refer to Subtest 2 of 3.6 Memory 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.)



**Note:** 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.

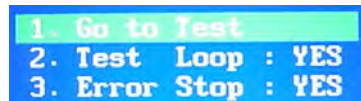
Table 3-1 Subtest names (1/2)

TEST No	TEST NAME	SUBTEST No	SUBTEST NAME
1	MEMORY	1	Main Memory Test
		2	V-RAM Memory Test

Table 3-1 Subtest names (2/2)

TEST No	TEST NAME	SUBTEST No	SUBTEST NAME
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 Test
		3	H - pattern Test
		4	LCD brightness Test
5	Battery Charge Test	-	
6	Fan Test	-	
7	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.

### **Subtest 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:

FFFFFFFh, AAAAAAAAh, 5555555h, 0000000h.

If the test data and read data is not the same, this test displays a message of the data comparing 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**.)

### Subtest1 [Sequential Read Test]

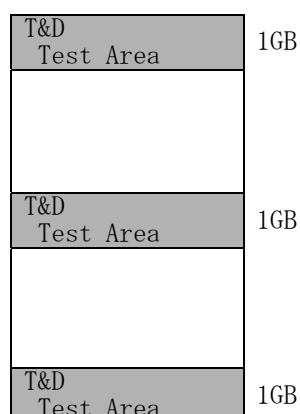
This test reads out the whole data from the address of LBA 0 to the last. The data is read by 64-LBA unit.

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 Keyboard test 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 Keyboard test menu screen, press the button A and B.

(Displayed information)

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

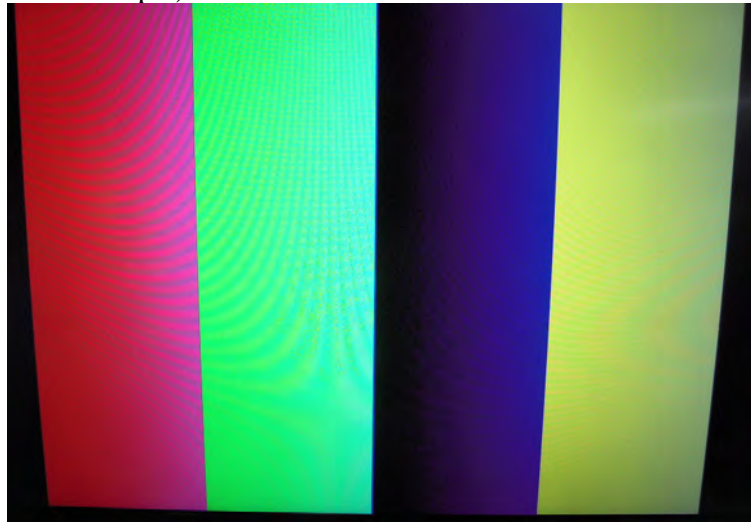
### 3.9 LCD Panel Test

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 LCD Panel test menu screen, press **ENTER**.

(Screen sample)



#### **Subtest 2 [All dot on/off Test]**

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

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

This test displays the letter “H” on the whole screen. To back to the LCD Panel test menu screen, press **ENTER**.

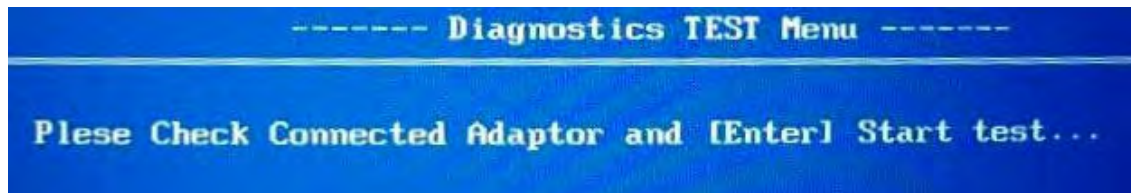
**Subtest 4 [LCD Brightness Test]**

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 LCD Panel test menu screen automatically.

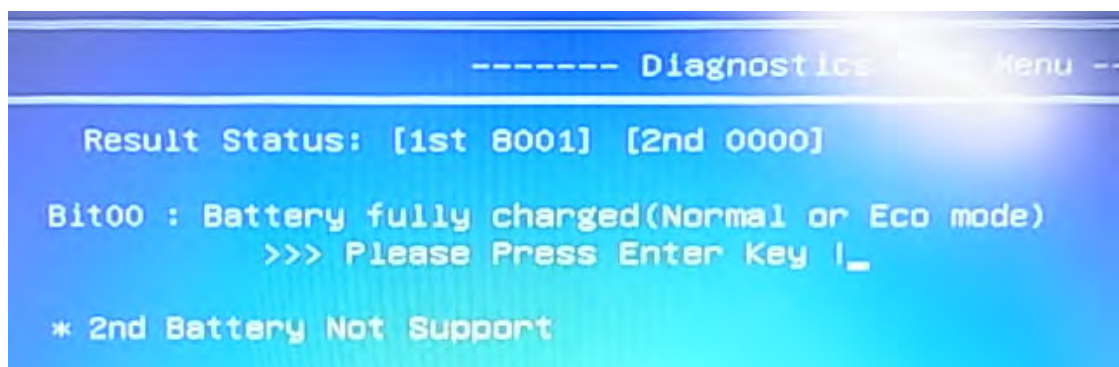
### 3.10 Battery Charge Test

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 test checks if FANs work properly.

FAN1 Test

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

FAN2 Test

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 during the tests and stores the results in USB memory.

(file name: errorlog.txt)

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...LBA 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

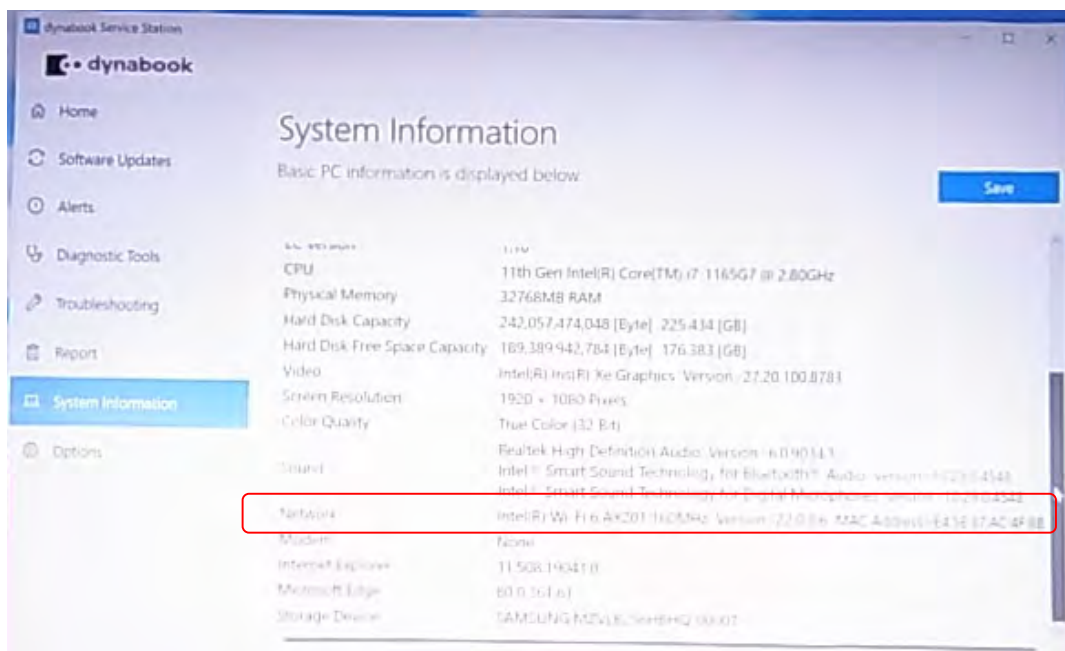
Since there is no test program to check the wireless function, check if the wireless module and antenna are working without problem on Windows.

#### 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 サービスステーション(dynabook Service Station)] -> [システム情報(System information)].  
Check the content of “ネットワーク(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.



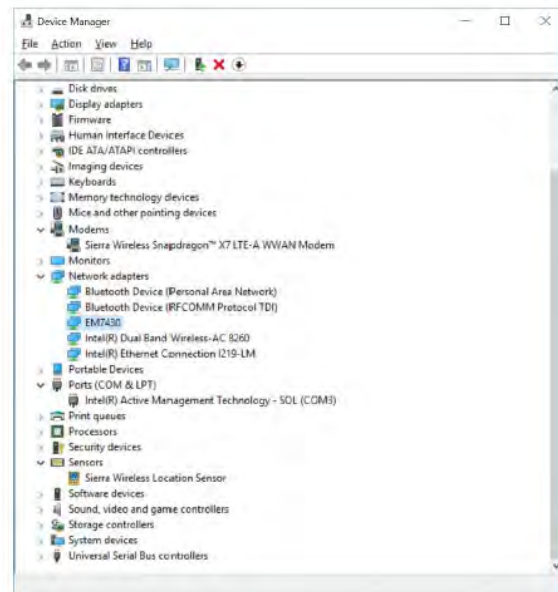
In the case of no-antenna connection

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 5G/LTE Test

Since there is no 5G/LTE test in the test program for maintenance, check if the 5G or LTE module is recognized by the PC on Windows.

Start the device manager. If “EMxxxx” is shown under “Network adapters”, the module is recognized.



(Sample of a module name)

### **3.15 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.

## 3.16 SETUP

### 3.16.1 Function Description

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

## Main menu

System Time  
System Date  
CPU Type  
CPU Speed  
HDD/SSD  
Total Memory Size  
System BIOS Version  
EC Version  
PDC Version  
AMT Setup Prompt (\*2)  
Language

## Security menu

BIOS Password  
-User  
-Supervisor  
BIOS Access Rights (\*1)  
HDD/SSD Password (\*2)  
-User  
-Master  
Bypass Mode at Restart (\*2)(\*3)  
Secure Erase(\*1)(\*2)  
Secure Boot  
-3rd party CA (\*1)  
-Clear Secure Boot keys (\*1)  
-Clear System data (\*1)  
Clear Fingerprint data (\*1) (\*2)  
TPM  
-Clear TPM Owner  
USB provisioning of AMT (\*2)  
Device Access Control (\*1)  
Device Boot Control (\*1)

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

\*2: This item is shown only on some models.

\*3: This item is shown only when both the User and Master HDD Password.

## Power Management menu

Wake-up on LAN  
Wake on Keyboard  
Panel Open - Power On  
Power on by AC  
Intel Turbo Boost Technology (\*2)  
Intel Display Power Management (\*2)  
Keyboard Backlight Control Mode (\*2)  
Backlight Lighting Time (\*2)

## Advanced menu

Virtualization Technology  
Trusted Execution Technology (\*2)  
Power off and Charge  
System ON CDP Charge Mode  
USB Power in Off State  
USB Legacy Emulation  
System Configuration  
- Wireless LAN  
- Wireless WAN (\*2)  
- Bluetooth  
- Web Camera  
- SD Host Controller  
- Fingerprint Sensor (\*2)  
- Internal Thunderbolt Controller  
- Microphone (\*2)  
- LAN Boot Selection  
- MAC Address Pass Through  
- Power On Display  
- Wait for monitor detection  
- Boot Up NumLock Status  
- ACPI Secure Devices Table  
- Large aperture graphics adapters  
- eco Charge Mode  
- Battery Disconnect  
- Absolute Persistence Configuration  
Diagnostic  
- Start HDD/SSD Test  
- HDD/SSD Test Mode  
- Start Memory Test

## Boot menu

Priority

- Boot Option #1
- Boot Option #2
- Boot Option #3
- Boot Option #4

Priority for devices

- Add New Boot Option

## Exit menu

Exit Saving Changes

Exit Discarding Changes

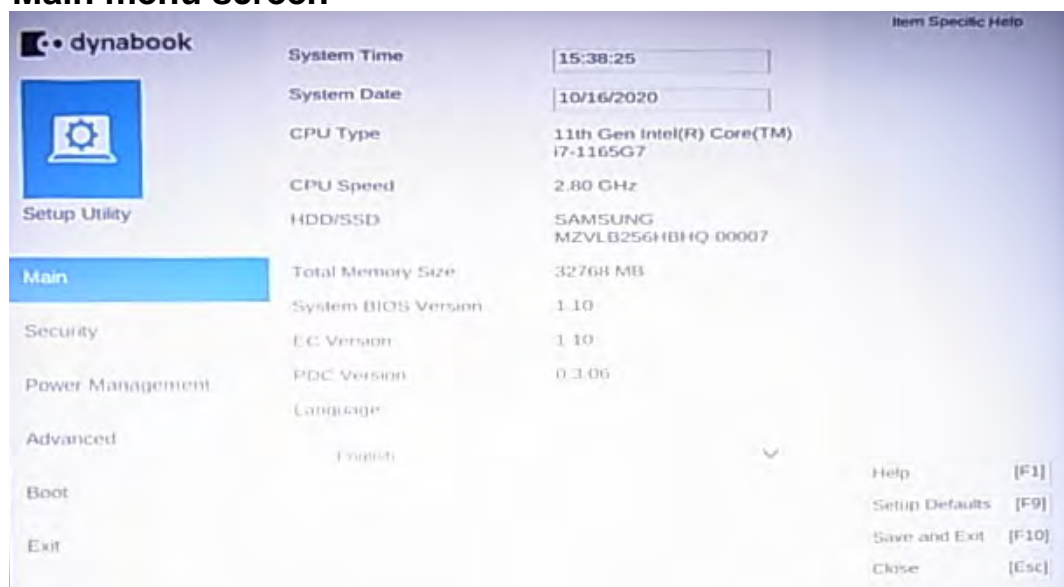
Load Setup Defaults

Save Changes and Power Off

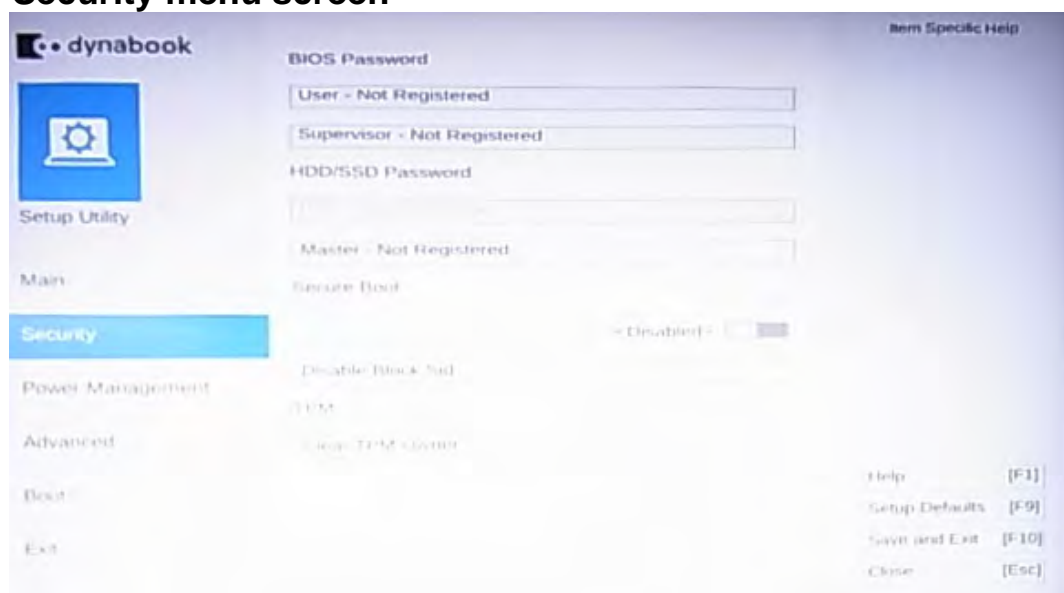
### 3.16.2 Accessing to the SETUP Program

Turn on the power while pressing **F2** of the keyboard. The following display appears.

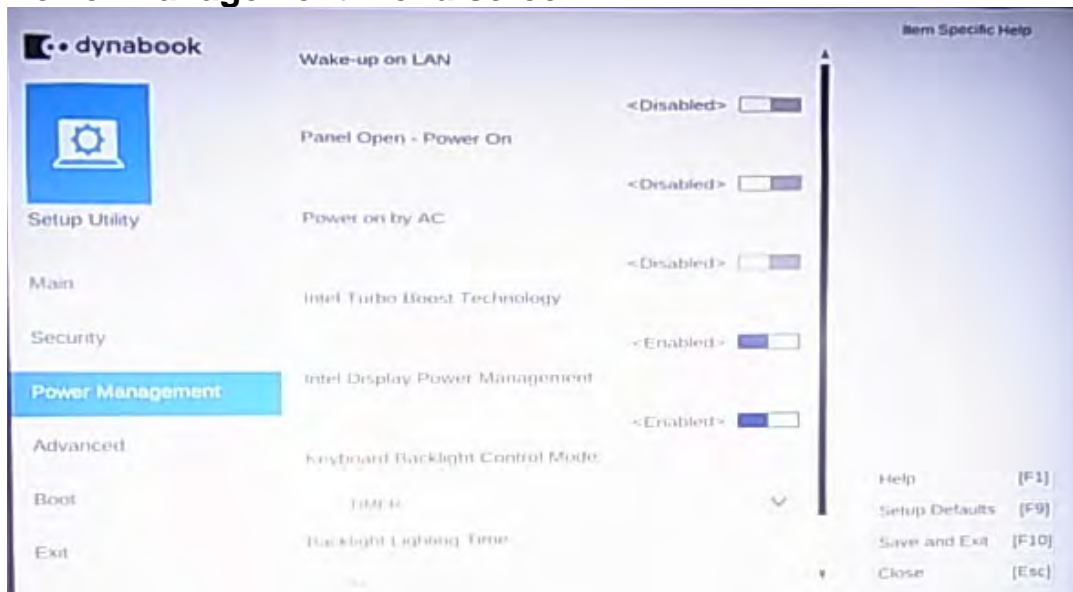
#### Main menu screen



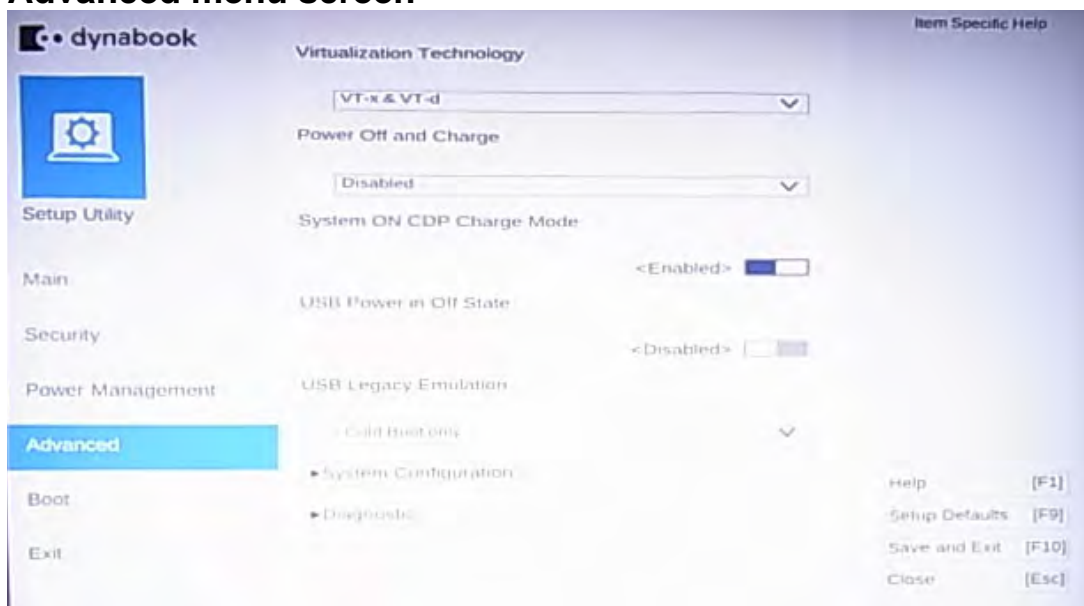
#### Security menu screen



## Power Management menu screen



## Advanced menu screen

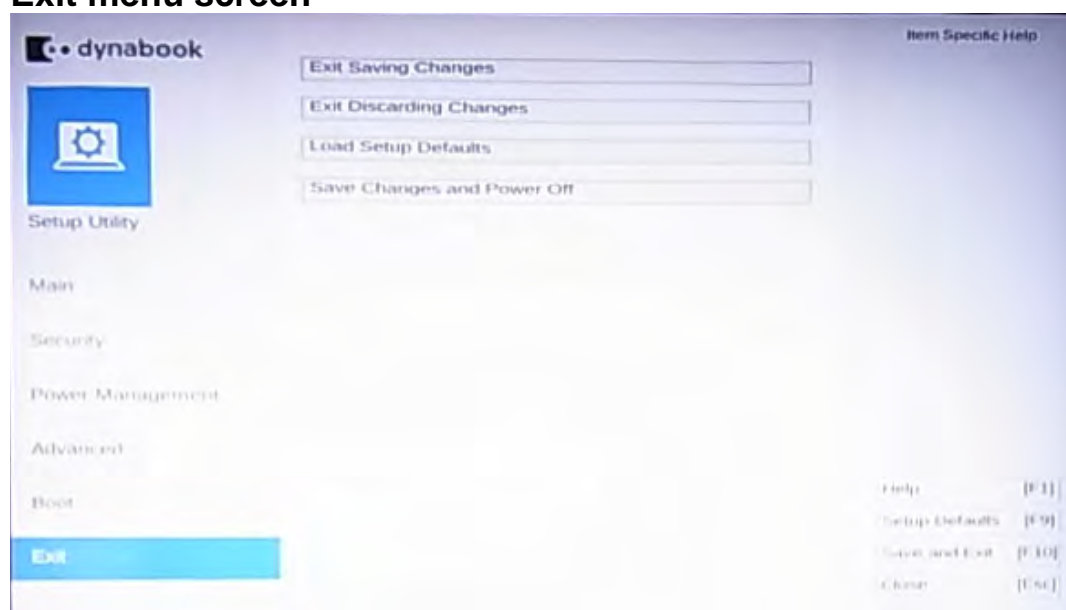




## Boot menu screen



## 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 either the **Enter** to change the value.

### Accepting Changes and Exiting the SETUP Window

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

**NOTE:** 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 show the factory preset configuration, press **F9**.
2. To accept the default settings, press **Y**.

### **How to change setup Options**

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

## 3.17 Sensor calibration tool

### 3.17.1 Outline

This tool should be needed to calibrate the sensors if the following change is applied to the computer.

<p><b>NOTE:</b> <i>Before implementing this tool, be sure to write the DMI information.</i></p>
---

- Replacing of System board (FDIASY\*), 3AXIS sensor board (FDIASE\*) and Lid board (FDIALS\*)
- Replacing of the chassis or keyboard
- Disassembling/assembling of PC including removal and attachment of the sensor harness
- Replacing of the front Web camera

The following explains how to operate the tool.

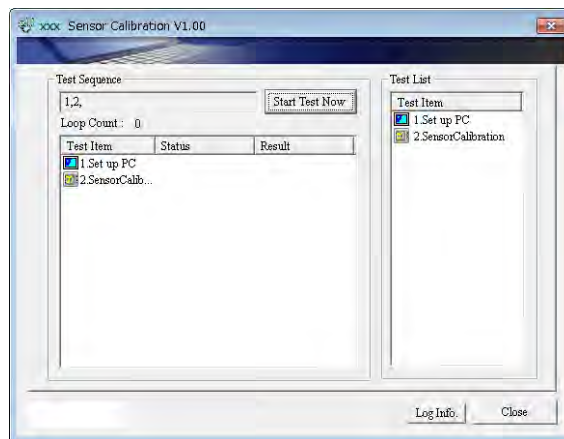
### **3.17.2 Preparation**

Unzip the following file and copy all the contents to a USB memory.

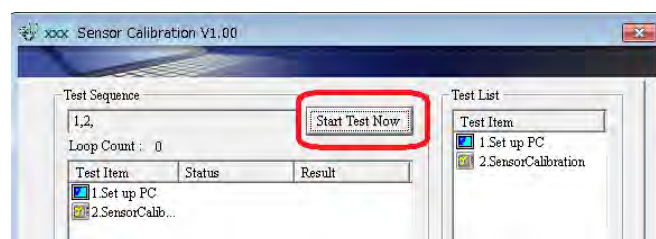
- Diamond10SensorCalibrationToolV\*\*\*.Zip

### 3.17.3 Start and Test procedure

- Procedure 1: Write the DMI information with the test program for maintenance.
- Procedure 2: Insert the USB memory created in the preparation step into the USB connector.
- Procedure 3: Turn on the computer while pressing **F12** to display the screen to select a boot device.
- Procedure 4: Chose USB device on the selection screen, and press **Enter**. Then the calibration tool appears (below is the sample screen).



- Procedure 4: Remove the USB memory.
- Procedure 5: Change the PC to be tested into Tablet style and lay it on the horizontal and stable table as the screen faces up.
- Procedure 6: Touch “Start Test Now“ button to start the test.



**NOTE:** During the test, change the PC's position according to the directions on each step. After setting to the specified position, the tool will go to the next step automatically.

1. Do not apply any vibration or shock to the PC.
2. Keep the position specified in each Step for 2 to 3 seconds.

#### < Gyro Calibration test>

**Step 1:** The side with the power button is X-axis. Set the PC as the Y-axis is set to north and put it on the horizontal table.

Touch "Setup OK" button when the PC is ready. The Gyro calibration is performed automatically.

Place the device screen's Z axis directed UP, Y axis directed to North

Device's final expected status:

X axis: Points towards the right of the device.

Y axis: Points towards the top of the device.

Z axis: Points up from the face of the device.



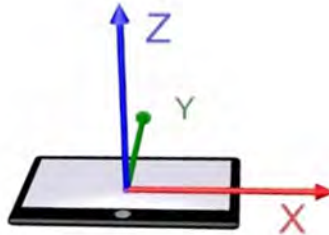
When the Gyro calibration test is completed, the screen Step 1 of Acceleration calibration test will appear.

#### < Acceleration Calibration test>

There are four steps in the Acceleration calibration test.

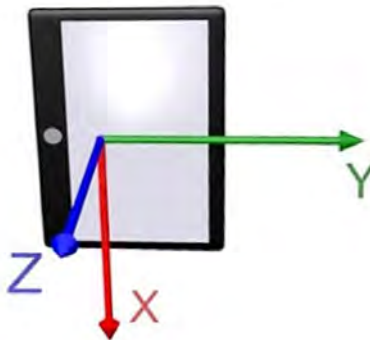
##### **Step 1: Lay the PC as the display faces up.**

Touch “Setup OK” button when the PC is ready.



When “STEP 1 xxxxxxxx” is displayed, go to the next step.

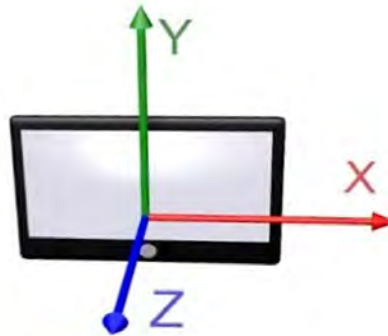
##### **Step 2: Make the side with the power button bottom side slowly.**



When “STEP 2 xxxxxxxx” is displayed, go to the next step.

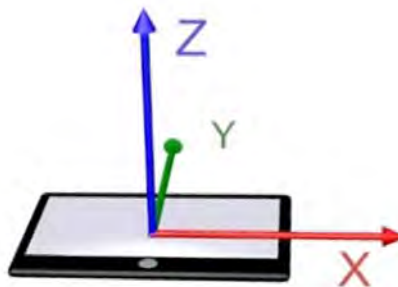


**Step 3: Rotate the PC 90 degrees counterclockwise slowly.**



When “STEP 3 XXXXXXX” is displayed, go to the next step.

**Step 4: Lay the PC as the display faces up.**



When “STEP 4 XXXXXXX” is displayed, the Acceleration calibration test is completed.

#### 3.17.4 Result

**PASS**

If this test ends successfully, “PASS” is displayed.



Tap “OK” button to back to the start screen.

**FAIL**

If any problem occurred, “FAIL” will be displayed.

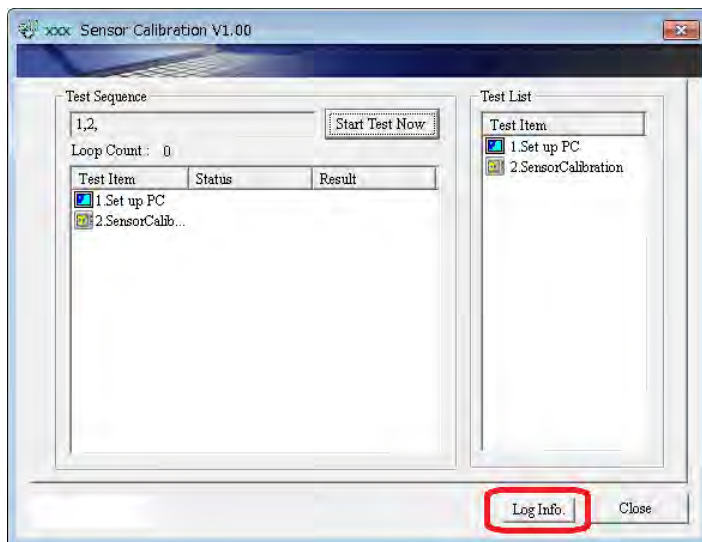


Tap “OK” button to back to the start screen.

### 3.17.5 Log

< To check the log contents without save >

Touch "Log Info." to display the "Log Information Display".

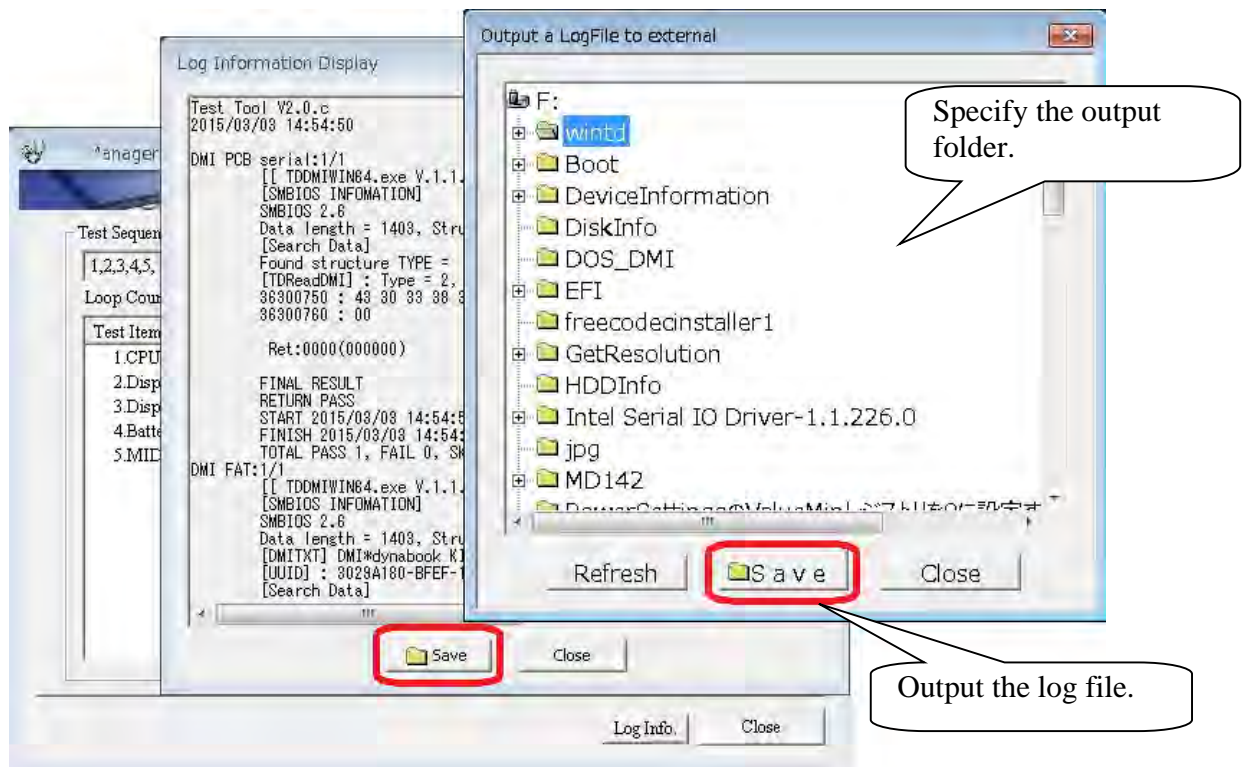


< To save the log contents in an external memory device >

The log contents can't be saved in the internal disk to keep the user files.

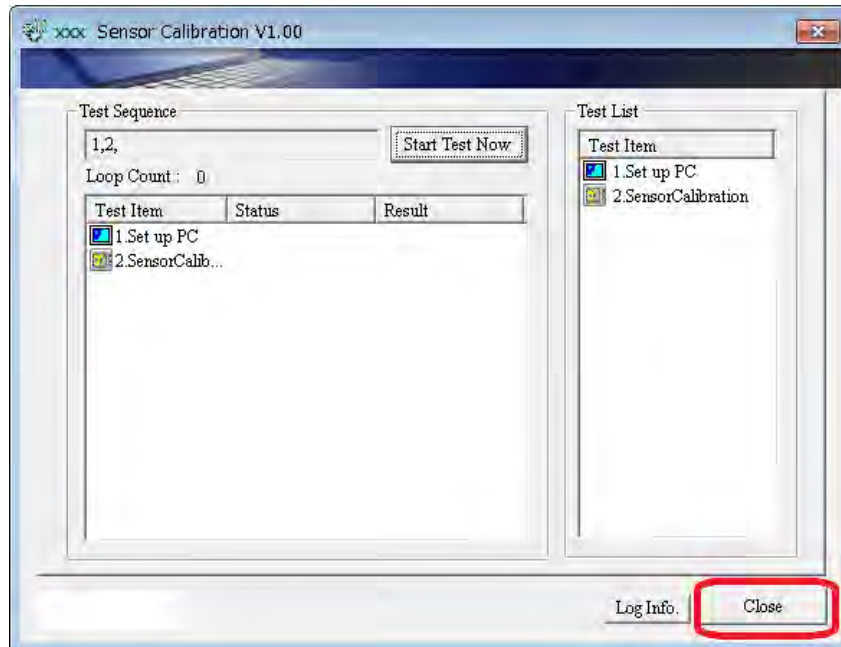
1. Touch "Log Info." to display the "Log Information Display".
2. Touch "Save" on "Log Information Display" to display "Output a LogFile to external".
3. Select a folder to save the information file and touch "Save".

The log file named "wintndx.log" or "wintndx64.log" will be output to (saved in) the specified folder.



### 3.17.6 How to terminate this tool

Select “Close” on the tart screen. The computer is powered off.





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## **Chapter 4**

# **Replacement Procedures**

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

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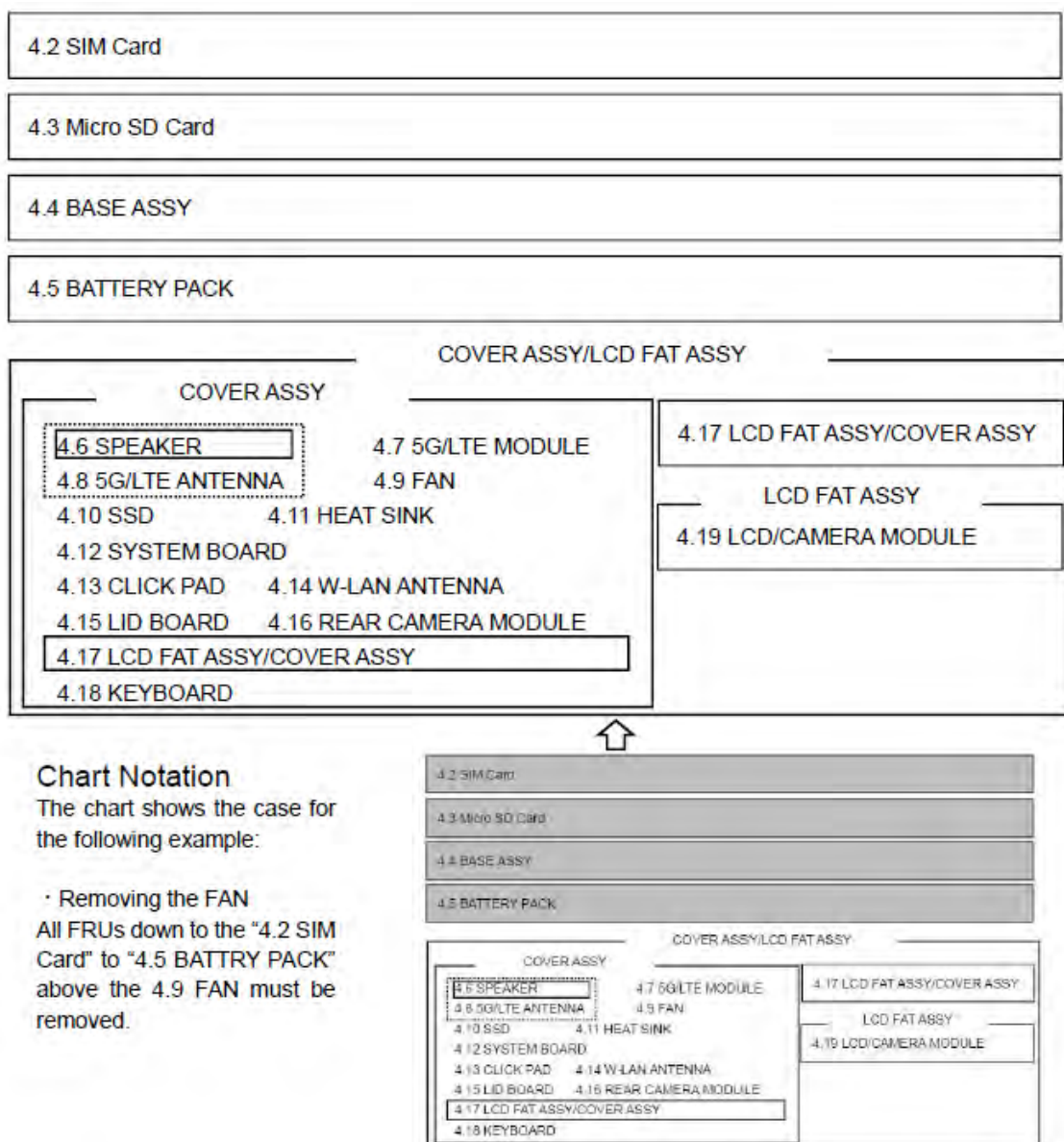
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## 4.1 Overview

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, shut down the computer and the BATTERY PACK (Micro SD card) must 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.



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

ITEM	Parts List ITEM No	PART NAME	Quantity		
			Non 5G/LTE	LTE	5G
BASE ASSY	40	BASE ASSY	1	0	0
		BASE LTE ASSY	0	1	1
		SQUARE CUSHION (351)	1	1	1
	90,91	CAUTION SEAL	1	1	1

ITEM	Parts List ITEM No	PART NAME	Quantity		
			Non 5G/LTE	LTE	5G
5G/LTE ANTENNA		MAIN ANTENNA	0	1	1
		AUX ANTENNA	0	1	1
		MIMO1 ANTENNA	0	0	1
		MIMO2 ANTENNA	0	0	1
		INSU SQUARE(111)	0	3	3

ITEM	Parts List ITEM No	PART NAME	Quantity		
			Non 5G/LTE	LTE	5G
SYSTEM BOARD (MOTHER BOARD ASSY)	01	MOTHER BOARD ASSY	1	1	1
	68	SQUARE CUSHION (161)	1	1	1
	66	COOL SHEET(H10)	1	1	1
	67	COOL SHEET(J10)	1	1	1

ITEM	Parts List ITEM No	PART NAME	Quantity		
			Non 5G/LTE	LTE	5G
CLICK PAD		CLICK PAD	1	1	1
	77	AL TAPE	1	1	1
		D TAPE PAD	1	1	1
		MIMO2 ANTENNA	0	0	1

ITEM	Parts List ITEM No	PART NAME	Quantity		
			Non 5G/LTE	LTE	5G
LID BOARD	82	LID BOARD	1	1	1
	64	D TAPE PCB LID	1	1	1

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ITEM	Parts List ITEM No	PART NAME	Quantity		
			Non 5G/LTE	LTE	5G
COVER ASSY	60	COVER ASSY	1	0	0
		COVER LTE ASSY	0	1	1
	77	AL TAPE	1	1	1
		CLICK PAD	1	1	1
		MAIN ANTENNA	0	1	1
		AUX ANTENNA	0	1	1
		MIMO1 ANTENNA	0	0	1
		MIMO2 ANTENNA	0	0	1
		GASKET(R10)	0	1	0
		GASKET(T10)	0	1	0
	61	INSU KB LOW	1	0	0
		INSU KB LOW 5G	0	1	1
		FIN CUSHION COV	2	2	2
		INSU SQUARE(111)	0	3	3

ITEM	Parts List ITEM No	PART NAME	Quantity		
			Non 5G/LTE	LTE	5G
KEYBOARD	11	KEYBOARD	1	1	1
	61	INSU KB LOW	1	0	0
		INSU KB LOW 5G	0	1	1
		FIN CUSHION COV	2	2	2

ITEM	Parts List ITEM No	PART NAME	Quantity		
			Non 5G/LTE	LTE	5G
LCD COVER ASSY	50	LCD COVER ASSY	1	1	1
	52	HINGE CAP L ASSY	1	1	1
	53	HINGE CAP R ASSY	1	1	1
		INSU SQUARE(261) (HD camera model)	1	1	1
	35	CU TAPE (FA camera model)	1	1	1
	75	MAGNET (310)	1	0	0
		MAGNET (410)	0	1	1

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ITEM	Parts List ITEM No	PART NAME	Quantity		
			Non 5G/LTE	LTE	5G
LCD UNIT/CAMERA	03,13,14	LCD UNIT/CAMERA	1	1	1
	52	HINGE CAP L ASSY	1	1	1
	53	HINGE CAP R ASSY	1	1	1
	A07	D TAPR SEPA (201)	1	1	1
	A08	D TAPR SEPA (211)	1	1	1
	A05	D TAPE TP SIDE L	1	1	1
	A11	D TAPE TP LS L	1	1	1
	A09	D TAPE TP LOW L	1	1	1
	A06	D TAPE TP SIDE R	1	1	1
	A12	D TAPE TP LS R	1	1	1
	A10	D TAPE TP LOW R	1	1	1
	A13	D TAPE TP L CE	1	1	1

Parts which must not be reused are SQUARE CUSHION (351), CAUTION SEAL, MAIN ANTENNA, AUX ANTENNA, MIMO1 ANTENNA, MIMO2 ANTENNA, INSU SQUARE(111), SQUARE CUSHION (161), COOL SHEET (H10), COOL SHEET (J10), AL TAPE, D TAPE PAD, CLICK PAD, D TAPE PCB LID, INSU KB LOW, INSU KB LOW 5G, FIN CUSHION COV, HINGE CAP L ASSY, HINGE CAP R ASSY, INSU SQUARE (261), CU TAPE, MAGNET (310), MAGNET (410), D TAPE SEPA (201), D TAPE SEPA (211), D TAPE TP SIDE L, D TAPE TP LS L, D TAPE TP LOW L, D TAPE TP SIDE R, D TAPE TP LS R, D TAPE TP LOW R and D TAPE TP L CE.

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The main parts in this manual are indicated in the part list by the following names.

Parts List ITEM No	Manual NAME	PART NAME
01	SYSTEM BOARD	MOTHER BOARD ASSY
S01	M2.5×4B FLAT HEAD	SCREW M2.5X4 PAN HEAD
S02	M2.5×2.5C S-THIN HEAD	SCREW M2.5X2.5 FLAT HEAD
S03	M2×2.3C S-THIN HEAD	SCREW M2X2.3 FLAT HEAD
S04	M2×2.5 FLAT HEAD DANTUKI	G SCREW M2X2.5SBN
S05	M1.2×1.1B S-THIN HEAD	SCREW M1.2X1.1 FLAT HEAD
S06	M2.5×4B FLAT HEAD	SCREW M2.5X4 FLAT HEAD
S07	M2.5×6B FLAT HEAD	SCREW M2.5X6 FLAT HEAD
S08	M2.5×4B FLAT HEAD	SCREW M2.5X4 FLAT HEAD
S09	M2.5×6B FLAT HEAD	SCREW M2.5X6 FLAT HEAD
S10	M2×4C S-THIN HEAD	SCREW M2X4 S-THIN
	M2.5×4B TORX HEAD	SCREW M2.5X4 TORX HEAD

## Safety Precautions

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

**DANGER:** 1) *Always use the genuine battery that is authorized by our company 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.*

**WARNING:** 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.*

**CAUTION:** 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 our company.*

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.*



## Before You Begin

Take note of the following points before starting work. Always remove the AC adapter and BATTERY PACK before commencing any of the procedures. The procedure for removing the BATTERY PACK is described in section “4.4 BATTERY PACK”.

1. Do not disassemble the computer unless it is operating abnormally.
2. Use the designated 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 determine which FRU is the cause of the fault.
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. When disassembling, ensure that not to put the excessive power to avoid breaking the parts and latches.
11. Be careful that not to break the computer casing and harnesses by the removed parts.
12. After replacing an FRU, check that the computer and replaced part operate correctly.

## Disassembly Procedures

Four main types of cable connector are used.

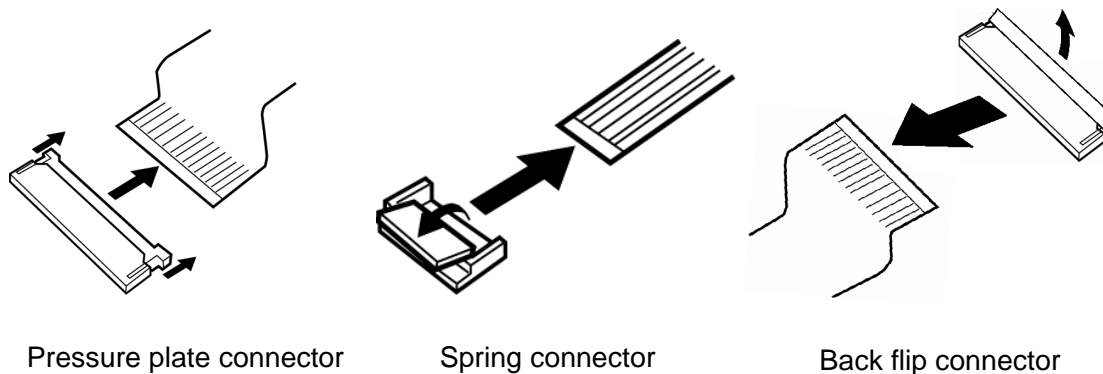
- Pressure plate connector
- Spring connector
- Back flip connector
- Normal pin connector

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.



## 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.
- When re-assembling, ensure that not to put the excessive power to avoid breaking the pins and latches.
- 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.
- When re-assembling, ensure that not to break the computer casing and harnesses by the tools and equipment.
- When checking the computer moved correctly, do not put the excessive power on the hinges and computer itself.

After installing FRUs, check that the computer operates correctly.

## **Tools and Equipment**

The use of Electrostatic Discharge (ESD) equipment is very important for your safety and the safety of those around you. Proper use of these devices will increase the success rate of your repairs and lower the cost for damaged or destroyed parts. The following equipment is necessary to disassemble and reassemble the computer:

- One Philips screwdriver with type 00 bit (for S-THIN HEAD screws removing/fixing the KEYBOARD)
- One Philips screwdriver with type 0 bit (for S-THIN HEAD screws)
- One Philips screwdriver with type 1 bit (for screws other than above)
- 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
- One T8-size torx screwdriver (star screwdriver) corresponding to tamper-proof pin (only for JP 5G/LTE model) (for TORX HEAD screws removing/fixing the BASE ASSY)

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## Screw Tightening Torque

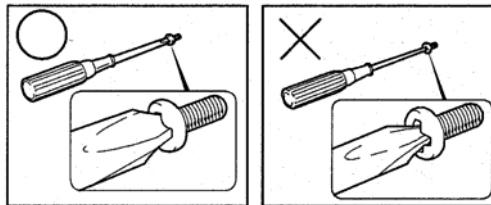
When you fasten screws, be sure to follow the torque list below.

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

**NOTE:** Our company recommends that you use an electric screwdriver for quick and easy operations.

- M1.2 (1.2mm) 0.0245 N·m (0.25 kgf·cm)
- M2 (2mm) 0.167 N·m (1.7 kgf·cm)
- M2.5 (2.5mm) 0.294 N·m (3.0 kgf·cm)

**NOTE:** 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).



## Grip Color

Some screws have a colored grip area.

[Nylok screw]

- Grip color : Blue (The seven screws fixing the HINGE ASSY are Yellow)



## 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.

Format:

**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.)

## 4.2 SIM Card

### Removing the SIM Card

To remove the SIM Card, follow the steps below and refer to Figure 4-1.

**CAUTION:** Before you remove the SIM card, refer to the card's documentation and to your operating system documentation for proper procedures and precautions.

1. Insert a **slender object** (about 0.8mm) such as a straightened paper clip into the eject hole and pull the **SIM card tray**.
2. Remove the **SIM card** from the SIM card tray.

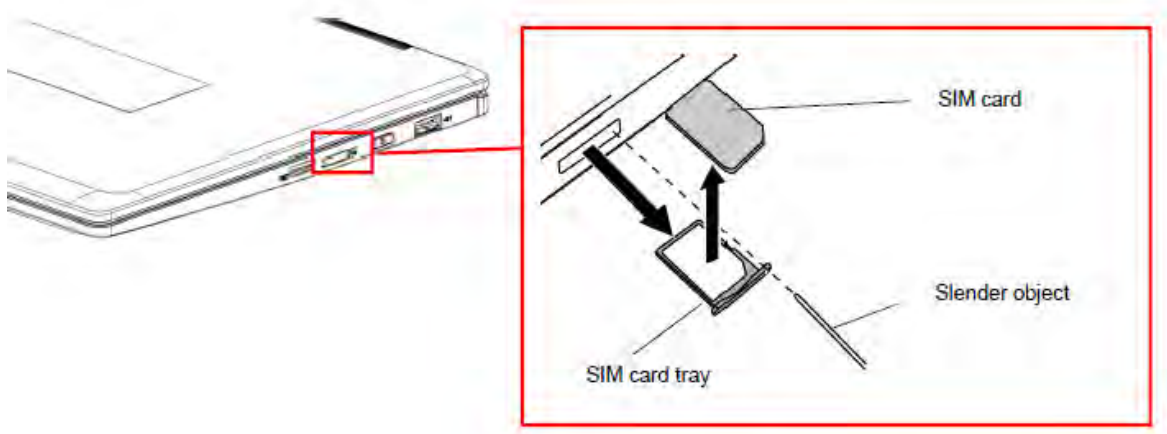


Figure 4-1 Removing the SIM card

### Installing the SIM Card

To install the SIM Card, follow the steps below and refer to Figure 4-1.

1. Set the **SIM card** on the SIM card tray.
2. Set the **SIM card tray** (with the SIM card) into the SIM card slot.

## 4.3 Micro SD Card

### Removing the Micro SD Card

To remove the Micro SD Card, follow the steps below and refer to Figure 4-2.

**CAUTION:** Before you remove the Micro SD card, refer to the card's documentation and to your operating system documentation for proper procedures and precautions.

3. Push the **Micro SD card**. It will pop out partly, so pull out the card.

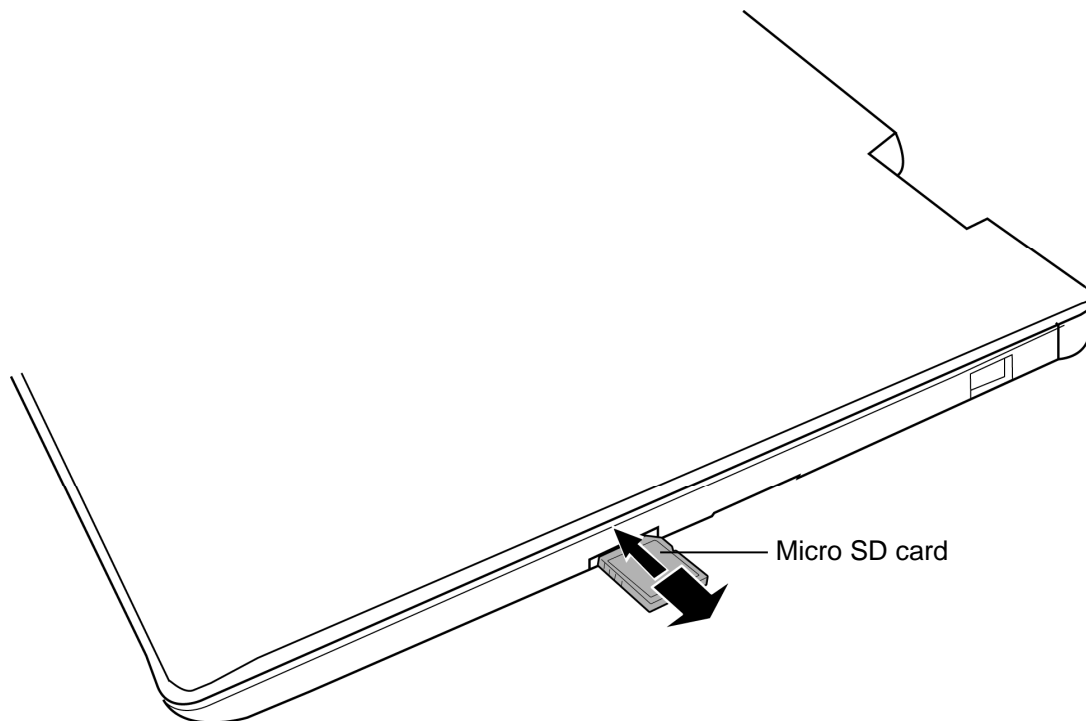


Figure 4-2 Removing the Micro SD card

### Installing the Micro SD Card

To install the Micro SD Card, follow the steps below and refer to Figure 4-2.

3. Insert the **Micro SD card** into the slot and push it carefully to ensure a firm connection.



## 4.4 BASE ASSY

### Removing the BASE ASSY

To remove the BASE ASSY or BASE LTE ASSY, follow the steps below and refer to Figure 4-3 and 4-4.

1. Click “Start” – “Power” and then click “Shut down” while holding down the SHIFT key to turn off the power of the computer.
2. Disconnect the AC adapter and other external devices from the computer.
3. Turn over the computer.
4. Remove the following screws securing the BASE ASSY or BASE LTE ASSY.

< non 5G/LTE model >

- M2.5×4B FLAT HEAD screw ×4 (Described as “4” in the Figure 4-3)
- M2.5×6B FLAT HEAD screw ×8 (Described as “6” in the Figure 4-3)

< 5G/LTE (JP) model >

- M2.5×4B TORX HEAD screw ×2 (Described as “4” in the Figure 4-4)
- M2.5×6B FLAT HEAD screw ×8 (Described as “6” in the Figure 4-4)

< 5G/LTE (US, UK) model >

- M2.5×4B FLAT HEAD screw ×2 (Described as “4” in the Figure 4-4)
- M2.5×6B FLAT HEAD screw ×8 (Described as “6” in the Figure 4-4)

**NOTE:** When the color of the computer is dark blue, fix the BASE ASSY or BASE LTE ASSY with the dark blue electrodeposition coating screws.  
When the color of the computer is black, fix the BASE ASSY or BASE LTE ASSY with the black nickel screws.

5. Remove the BASE ASSY or BASE LTE ASSY while releasing the latches.

< non 5G/LTE model >

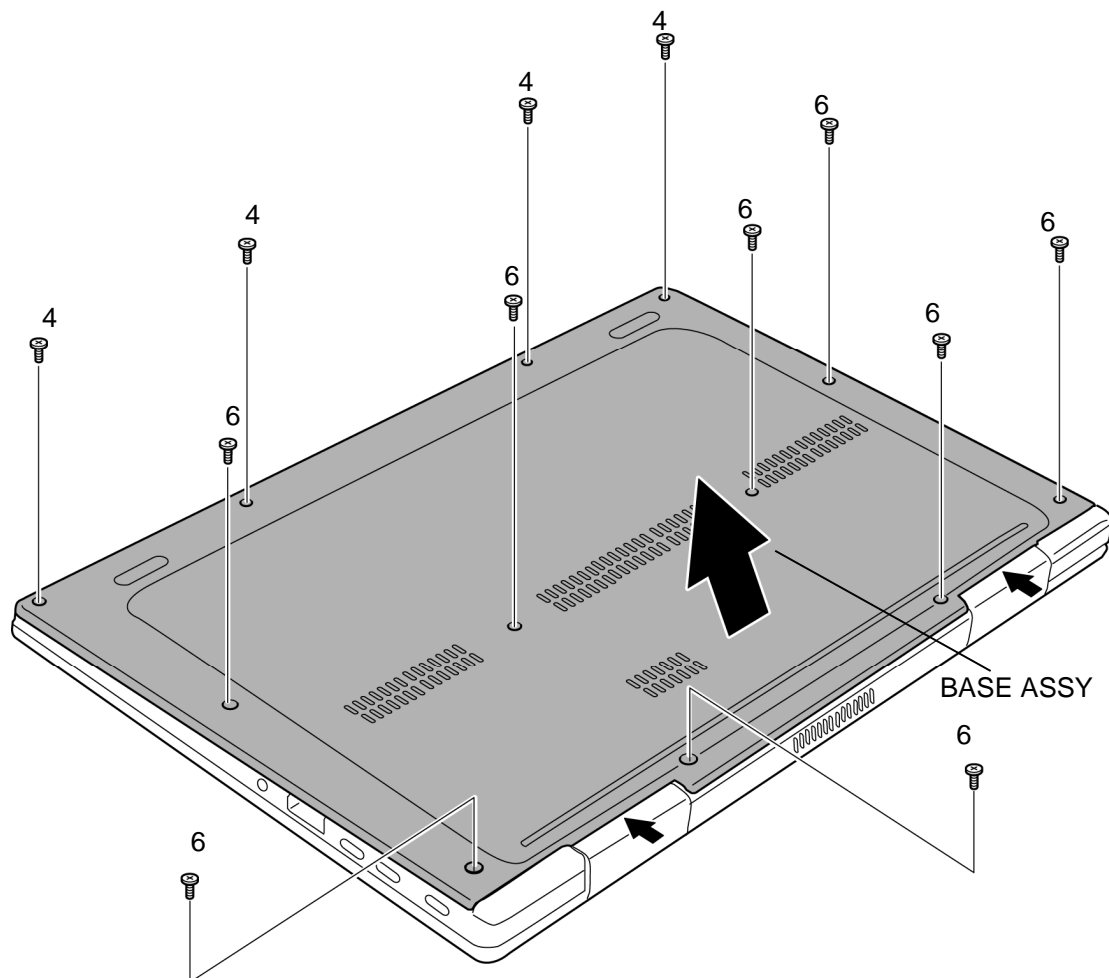
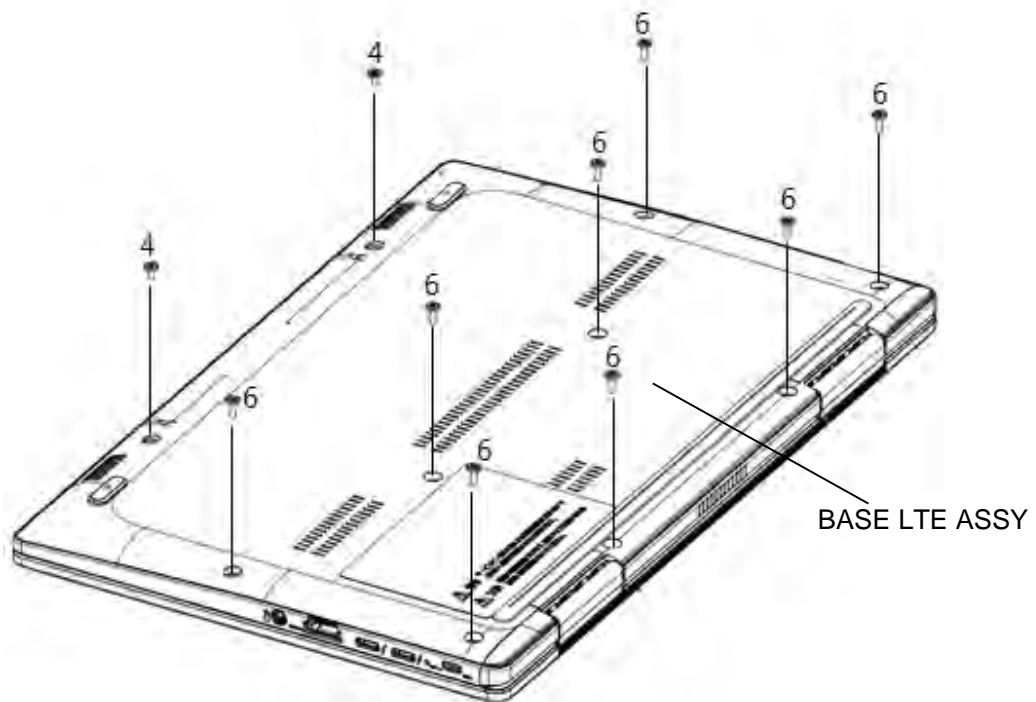


Figure 4-3 Removing the BASE ASSY (1)

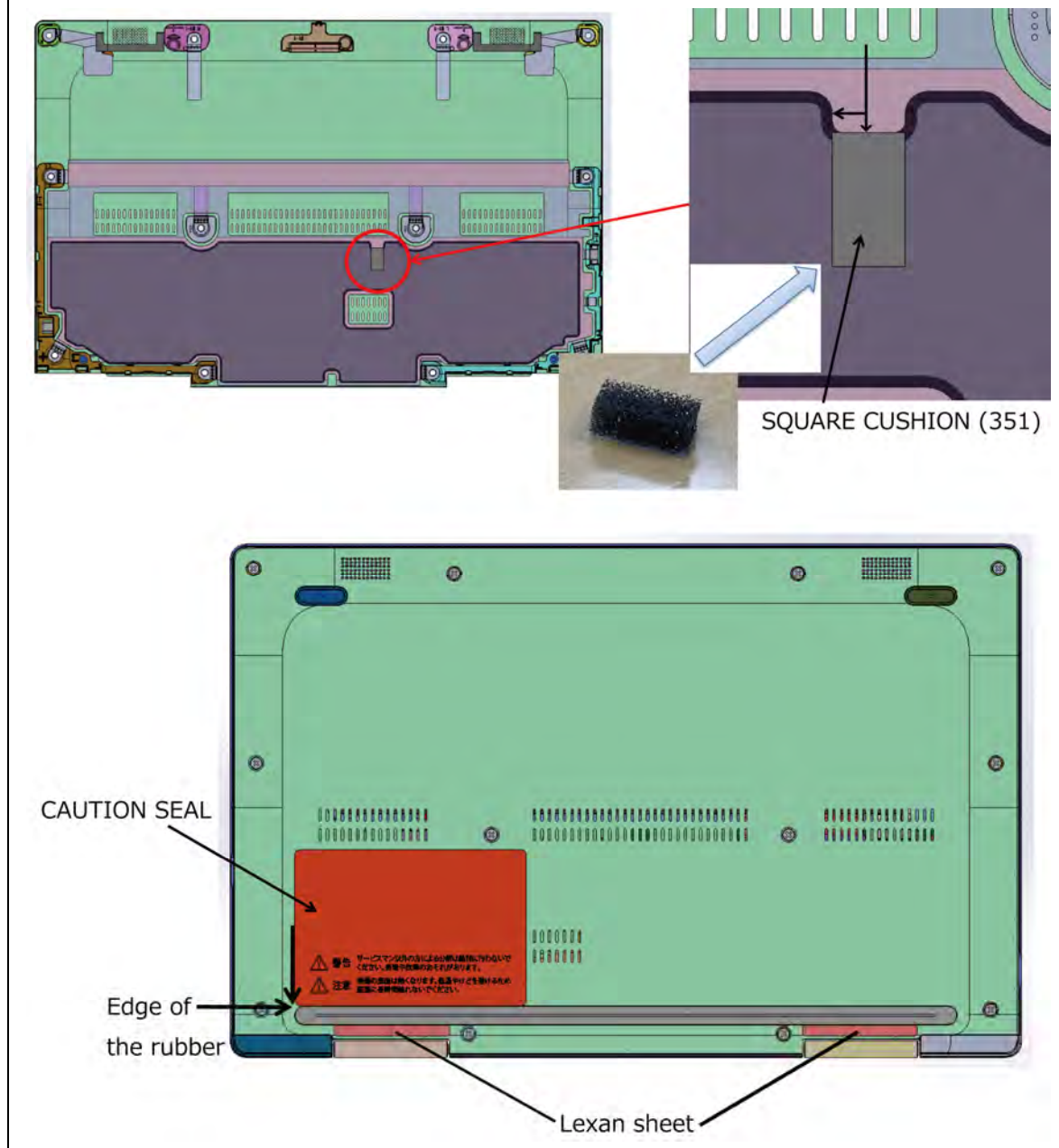
&lt; 5G/LTE model &gt;

*Figure 4-4 Removing the BASE ASSY (2)*

### Installing the BASE ASSY

To install the BASE ASSY **or BASE LTE ASSY**, follow the steps below and refer to Figure 4-3 and 4-4.

**NOTE:** When replacing the BASE ASSY **or BASE LTE ASSY** with a new one, stick new **SQUARE CUSHION (351)** and **CAUTION SEAL** to the BASE ASSY **or BASE LTE ASSY** in place.



1. Set the **BASE ASSY** or **BASE LTE ASSY** to the COVER ASSY and secure it with the following screws.

< non 5G/LTE model >

- M2.5×4B FLAT HEAD screw ×4 (Described as “4” in the Figure 4-3)
- M2.5×6B FLAT HEAD screw ×8 (Described as “6” in the Figure 4-3)

< 5G/LTE (JP) model >

- M2.5×4B TORX HEAD screw ×2 (Described as “4” in the Figure 4-4)
- M2.5×6B FLAT HEAD screw ×8 (Described as “6” in the Figure 4-4)

< 5G/LTE (US, UK) model >

- M2.5×4B FLAT HEAD screw ×2 (Described as “4” in the Figure 4-4)
- M2.5×6B FLAT HEAD screw ×8 (Described as “6” in the Figure 4-4)

Prepare required parts in advance, when replacing the following items.

ITEM	Parts List ITEM No	PART NAME	Quantity		
			Non 5G/LTE	LTE	5G
BASE ASSY	40	BASE ASSY	1	0	0
		BASE LTE ASSY	0	1	1
		SQUARE CUSHION (351)	1	1	1
	90,91	CAUTION SEAL	1	1	1

## 4.5 BATTERY PACK

### Removing the BATTERY PACK

To remove the BATTERY PACK, follow the steps below and refer to Figure 4-5.

**CAUTION:** *When handling the BATTERY PACK, be careful not to short circuit the terminals. Also do not drop, hit, apply impact, scratch, break, twist or bend the BATTERY PACK.*

1. Peel off the **INSU SQUARE**.
2. Disconnect the **BATTERY HARNESS** from the connector **CN8021** on the **SYSTEM BOARD**.
3. Remove the following **screws** and the **BATTERY PACK**.
  - M2×4C S-THIN HEAD screw ×2

**CAUTION:** *The replaced battery must be disposed according to the laws and ordinances of your local authority.*

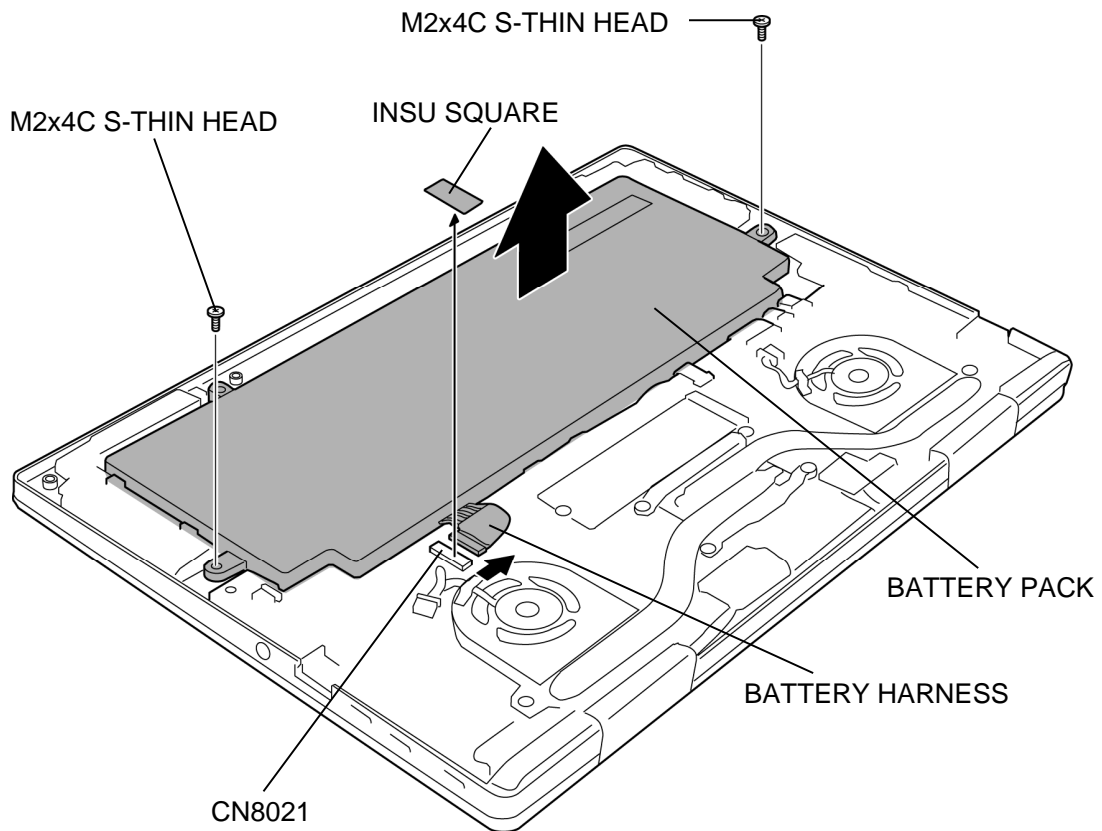


Figure 4-5 Removing the BATTERY PACK

## Installing the BATTERY PACK

To install the BATTERY PACK, follow the steps below and refer to Figure 4-5.

**CAUTION:** *The BATTERY PACK is a lithium ion battery, which can explode if not properly replaced, used, handled or disposed of. For environmental reasons, collect the spent BATTERY PACKs. Use only batteries recommended by our company for replacements.*

1. Set the **BATTERY PACK** to the COVER ASSY and secure it with the following screws.
  - M2×4C S-THIN HEAD screw ×2
2. Connect the **BATTERY HARNESS** to the connector **CN8021** on the SYSTEM BOARD.
3. Stick the **INSU SQUARE** in place.



## 4.6 SPEAKER

### Removing the SPEAKER

To remove the SPEAKER, follow the steps below and refer to Figure 4-6 to 4-8.

1. Disconnect the **FP FFC** (finger print sensor model) and **CPAD FFC** from the connectors on the CLICK PAD.
2. Disconnect the **FP FFC** (finger print sensor model) and **CPAD FFC** from the connectors **CN9550** and **CN9510** on the SYSTEM BOARD.

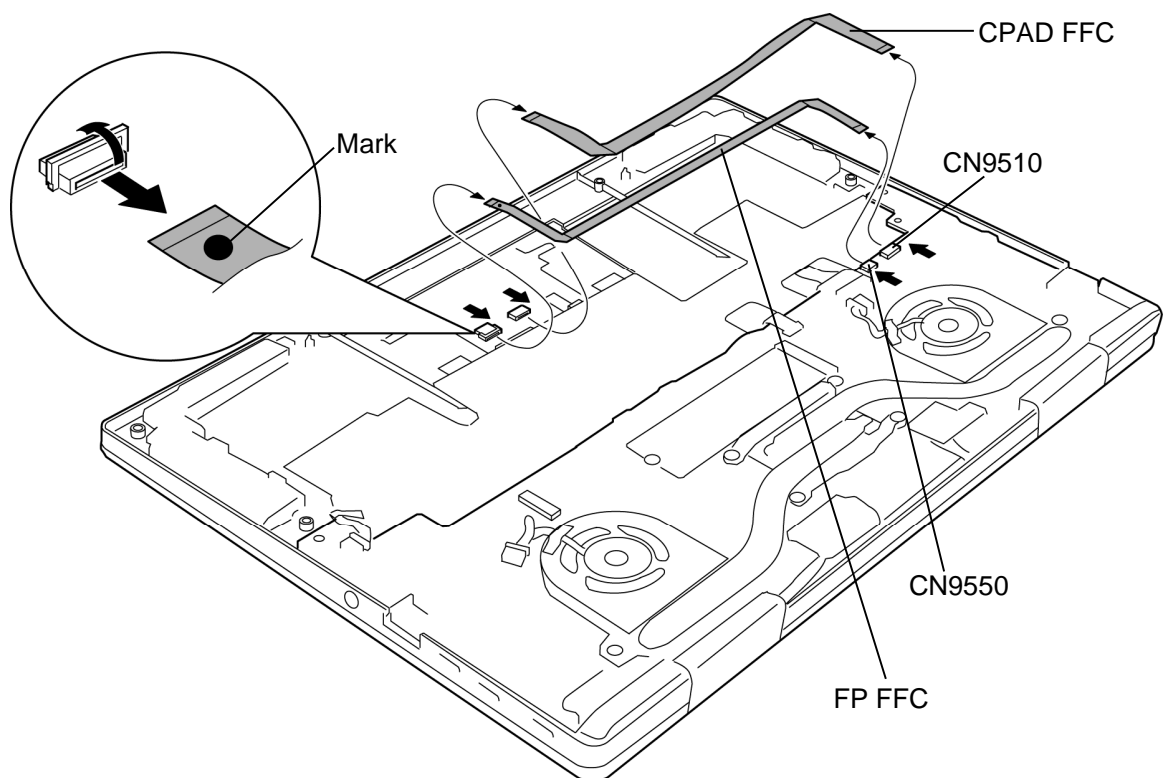


Figure 4-6 Removing the SPEAKER (1)

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3. Open the **INSU KB LOW** or **INSU KB LOW 5G**.

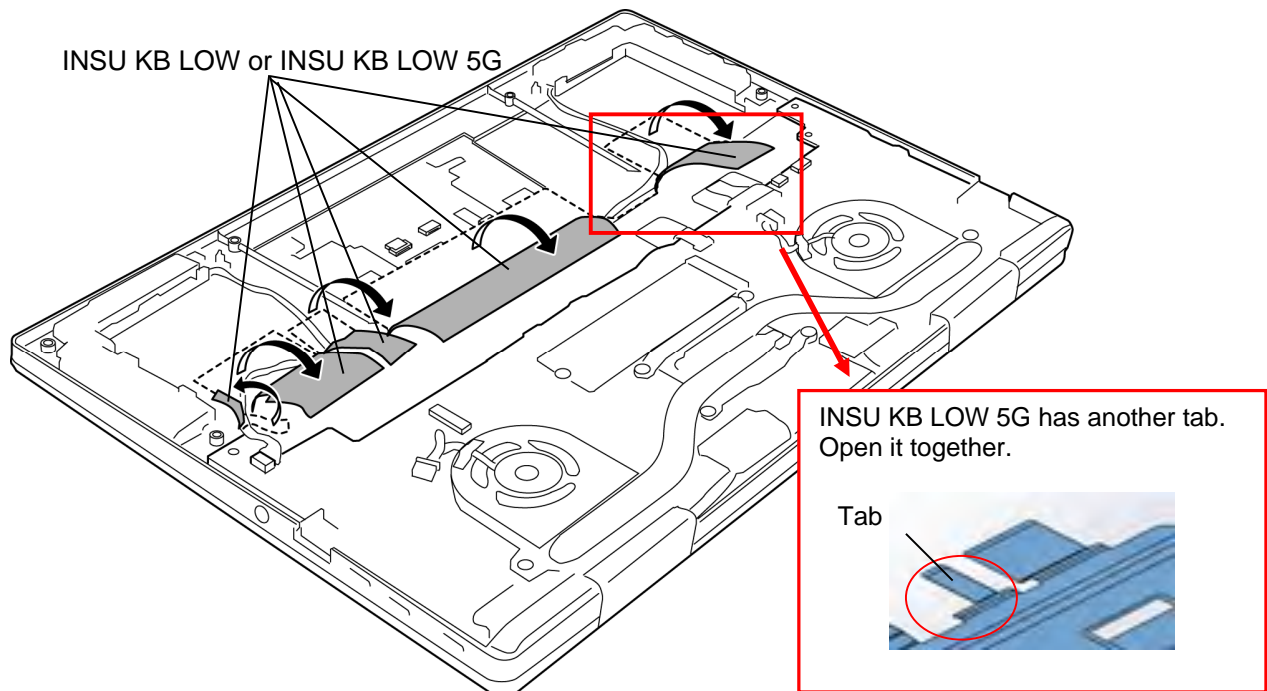


Figure 4-7 Removing the SPEAKER (2)

4. Disconnect the **SPEAKER HARNESS** from the connector **CN6290** on the SYSTEM BOARD.
5. Remove the **SPEAKER** or **SPEAKER 5G** (left and right) from the slots of the COVER ASSY.

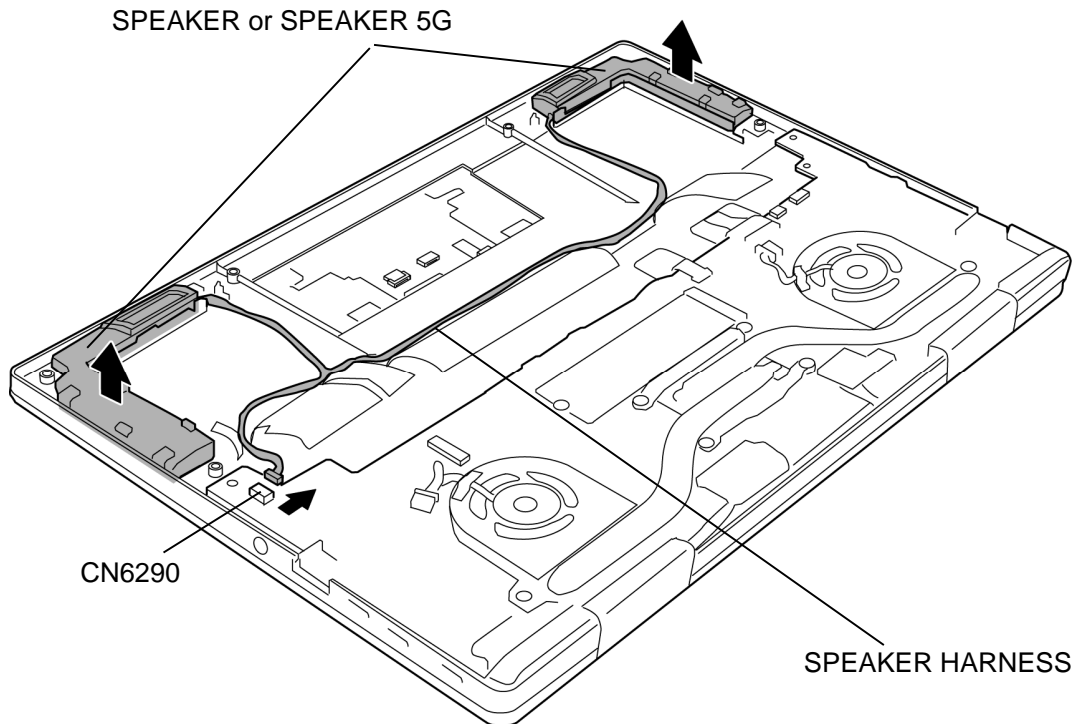
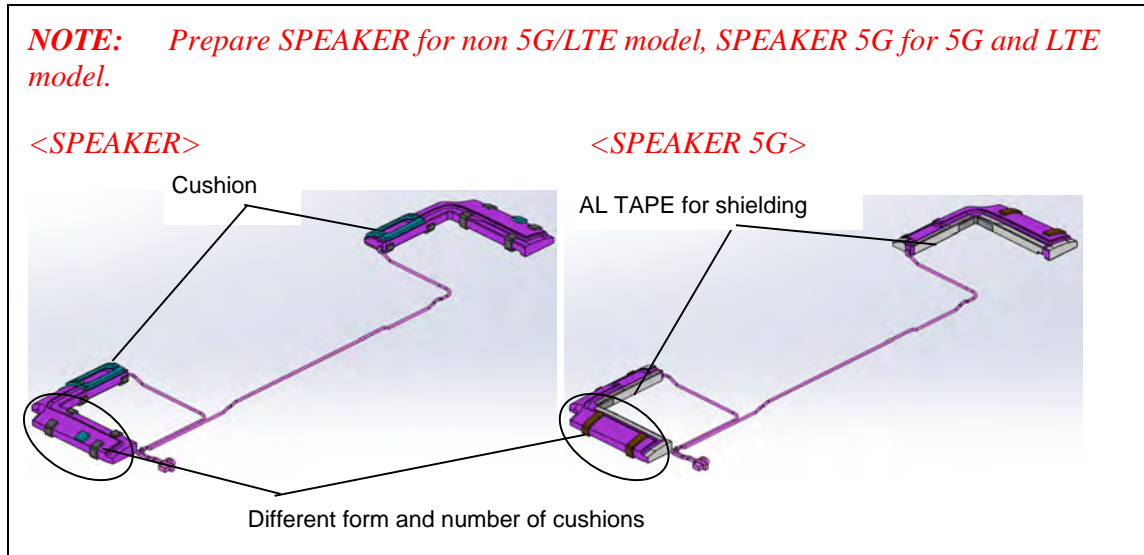


Figure 4-8 Removing the SPEAKER (3)

Rev.01

## Installing the SPEAKER

To install the SPEAKER, follow the steps below and refer to 4-6 to 4-8.



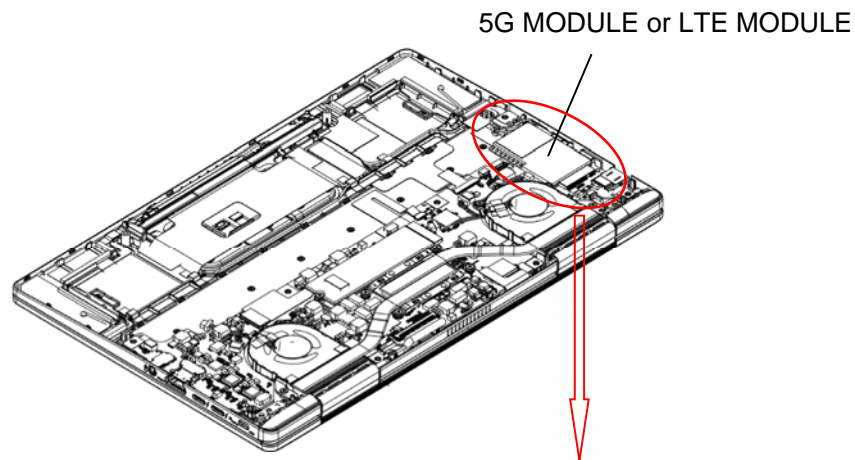
1. Set the **SPEAKER** or **SPEAKER 5G** (left and right) to the slots of the COVER ASSY.
2. Arrange the **SPEAKER HARNESS** in place and fix it with the **INSU KB LOW** or **INSU KB LOW 5G**.
3. Connect the **SPEAKER HARNESS** to the connector **CN6290** on the SYSTEM BOARD.
4. Connect the **FP FFC** (finger print sensor model) and **CPAD FFC** to the connectors **CN9550** and **CN9510** on the SYSTEM BOARD.
5. Connect the marked side of the **FP FFC** (finger print sensor model) and **CPAD FFC** to the connectors on the CLICK PAD.

## 4.7 5G/LTE MODULE

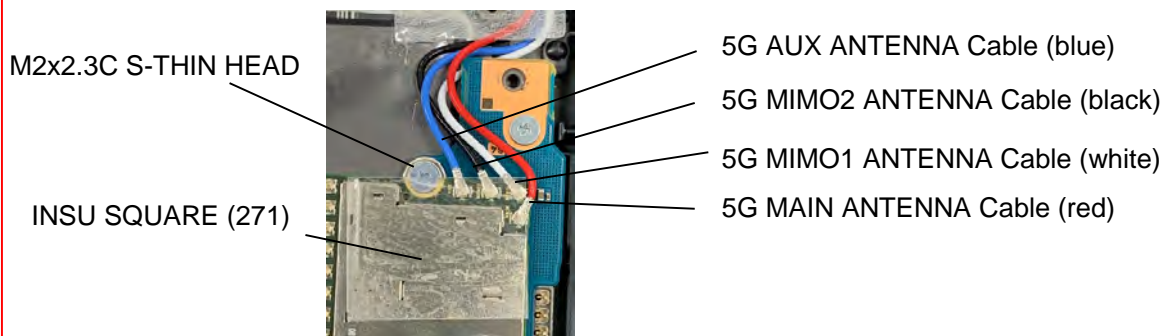
### Removing the 5G/LTE MODULE

To remove the 5G/LTE MODULE, follow the steps below and refer to Figure 4-9.

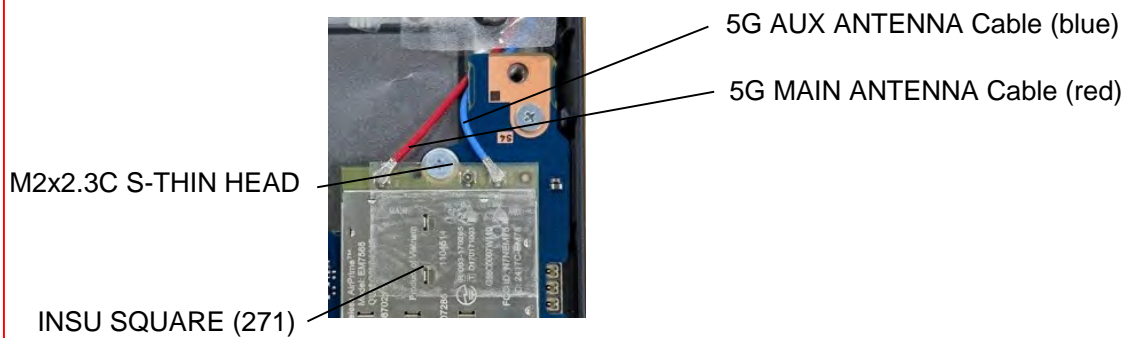
1. Peel off the **INSU SQUARE** on the **5G MODULE** or **LTE MODULE**.
2. Disconnect the **ANTENNA CABLES** (4 cables for 5G model, 2 cables for LTE model) from the connectors on the **5G MODULE** or **LTE MODULE**.
3. Remove the following **screw** and disconnect **5G MODULE** from the connector **CN2610** or **LTE MODULE** from the connector **CN2600** on the **SYSTEM BOARD**.
  - M2×2.3C S-THIN HEAD screw                      ×1



## &lt; 5G MODULE &gt;



## &lt; LTE MODULE &gt;

*Figure 4-9 Removing the 5G/LTE MODULE*

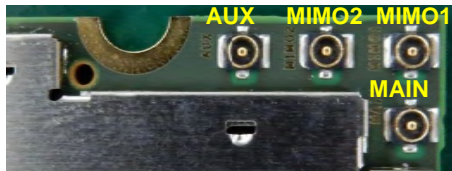
## Installing the 5G/LTE MODULE

To install the 5G/LTE MODULE, follow the steps below and refer to Figure 4-9.

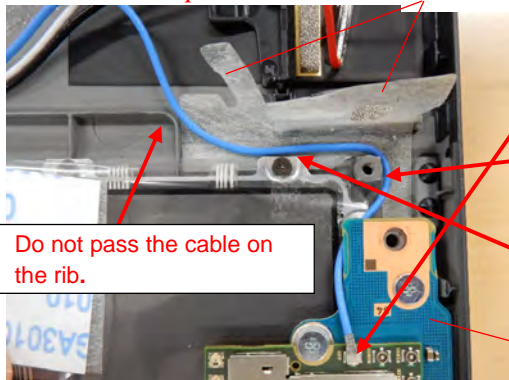
1. Connect the **5G MODULE** to the connector **CN2610** or **LTE MODULE** to the connector **CN2600** on the SYSTEM BOARD and secure it with the following screw.
  - M2×2.3C S-THIN HEAD screw ×1
2. Connect the **ANTENNA CABLES** (4 cables for 5G model, 2 cables for LTE model) to the connectors on the **5G MODULE** or **LTE MODULE**

**NOTE:** Connect the cables according to the following order and steps;  
< 5G model >

AUX → MIMO2 → MIMO1 → MAIN



### • Detailed steps

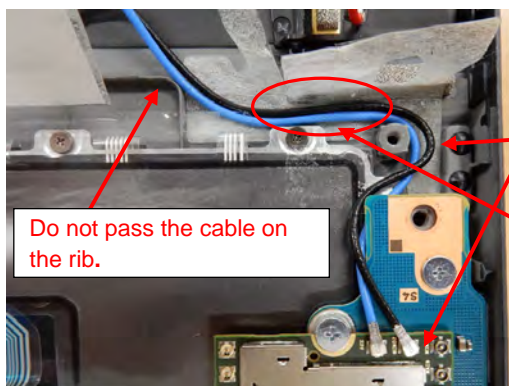


① Connect the AUX cable (blue) to the AUX connector on the 5G module.

② Pass the AUX cable (blue) under the System board corner first. Then hook it to the boss.

③ Stick the AUX cable (blue) to the INSU. To make the space for MIMO1 and MIMO2 cables, stick it to the KB side.

System board

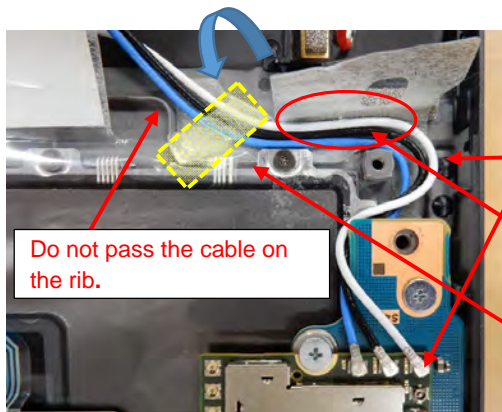


① Connect the MIMO2 cable (black) to the MIMO2 connector on the 5G module.

② Pass the MIMO2 cable (black) along to the AUX cable (blue).

③ Stick the MIMO2 cable (black) to the INSU. To make the space for MIMO1 cable, stick it along to the AUX cable (blue).



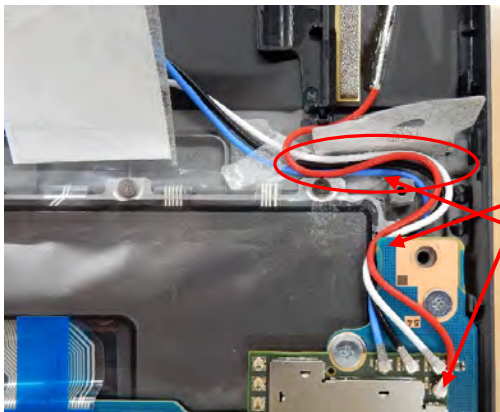


① Connect the MIMO1 cable (white) to the MIMO1 connector on the 5G module.

② Pass the MIMO1 cable (white) along to the MIMO2 cable (black).

③ Stick the MIMO1 cable (white) to the INSU. Make sure that the cables are not overlapped.

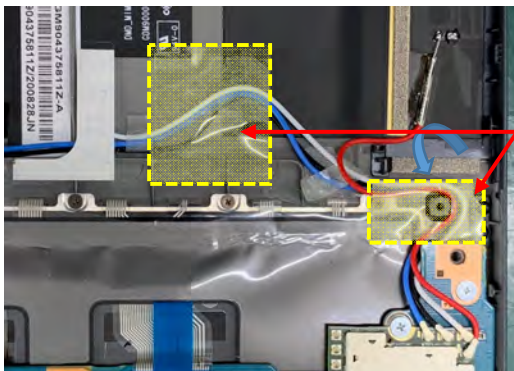
④ Fix the AUX, MIMO1 and MIMO2 cables with the INSU.



① Connect the MAIN cable (red) to the MAIN connector on the 5G module.

② Pass the MAIN cable (red) along to the MIMO1 cable (white) and pass it under the System board corner.

③ Pass the MAIN cable (red) on the AUX, MIMO2 and MIMO1 cables.



① Fix the cables with INSU.

② Fix the cables with INSU KB LOW 5G.

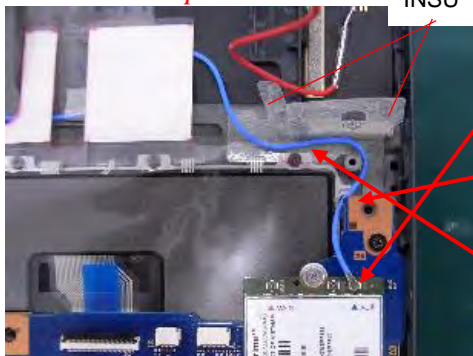


&lt; LTE model &gt;

AUX → MAIN



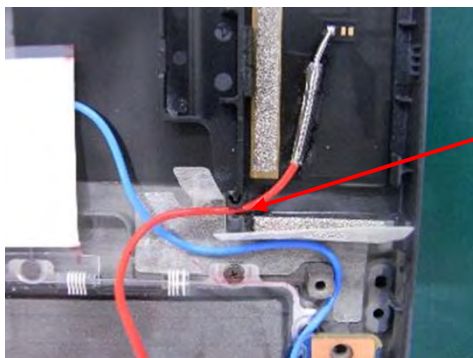
## • Detailed steps



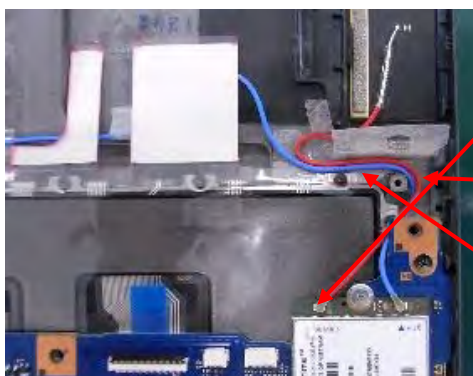
① Connect the AUX cable (blue) to the AUX connector on the LTE module.

② Pass the AUX cable (blue) under the System board corner first. Then hook it to the boss.

③ Stick the AUX cable (blue) to the INSU.



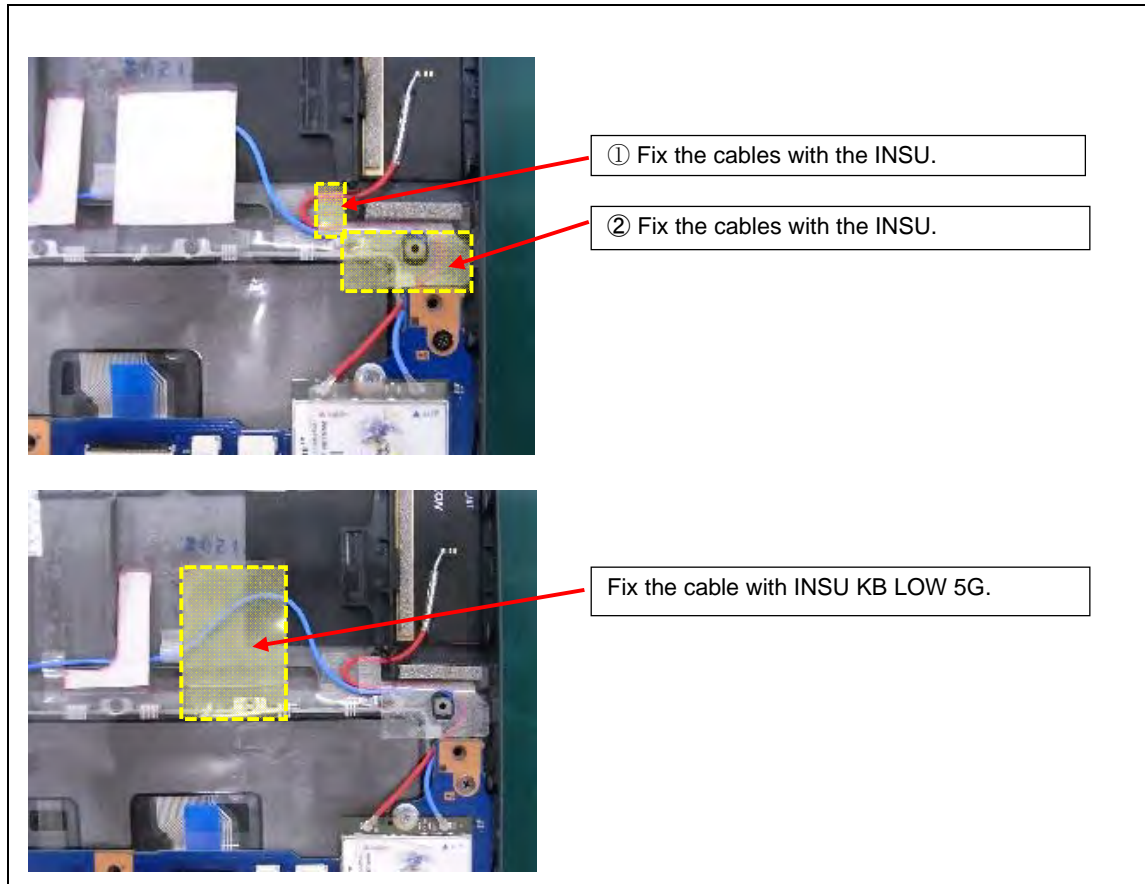
Pass the MAIN cable (red) in the rib.



① Connect the MAIN cable (red) to the MAIN connector on the LTE module.

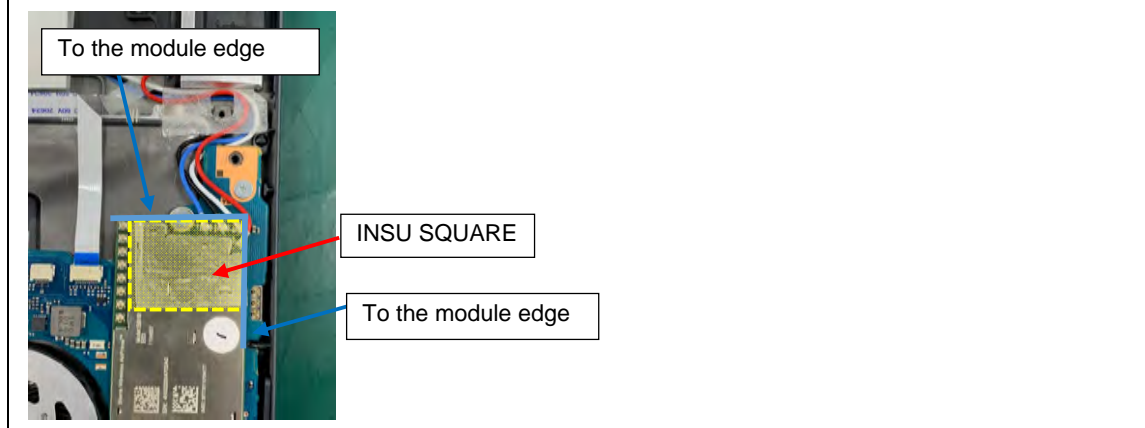
② Pass the MAIN cable (red) under the System board corner first. Then hook it to the boss.

③ Stick the MAIN cable (red) to the INSU.



### 3. Stick the **INSU SQUARE** to the **5G MODULE** or **LTE MODULE**

**NOTE:** (5G model) Stick the **INSU SQUARE** as shown below;



## 4.8 5G/LTE ANTENNA

### Removing the 5G/LTE ANTENNA

To remove the 5G/LTE ANTENNA, follow the steps below and refer to Figure 4-10 to 4-12.

1. Press the latch to the arrow direction to release.
2. Pull up the **GASKET HOLDER**.
3. Release the latch and remove the **GASKET HOLDER**.

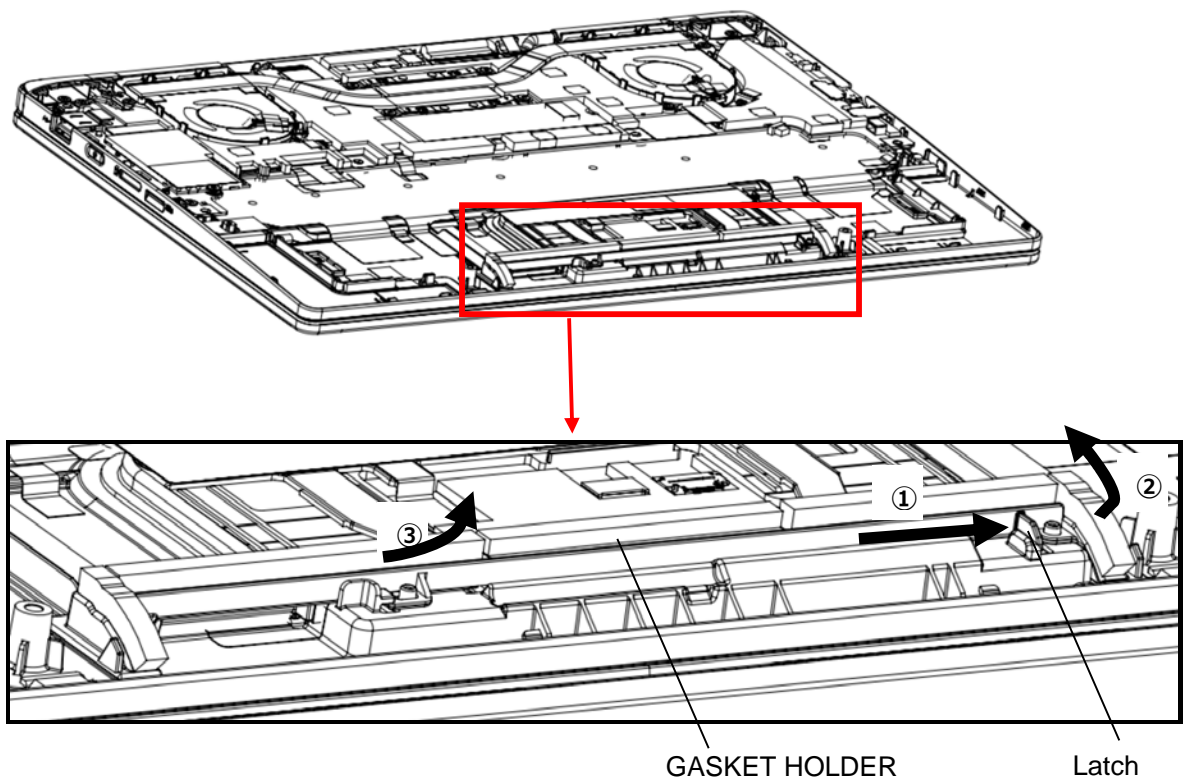


Figure 4-10 Removing the 5G/LTE ANTENNA (1)

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4. Remove the **5G ANTENNA SPACERS** and the **INSU SQUAREs**. Turn up the **INSU ANT HOLD**.

**NOTE:** Do not reuse the removed **INSU SQUAREs**. Be sure to use new ones.

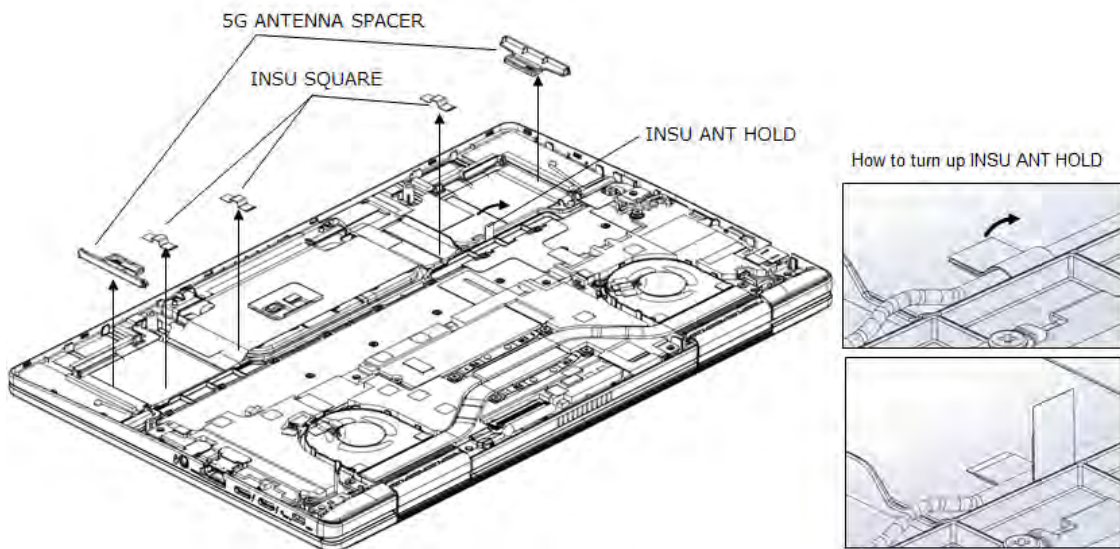


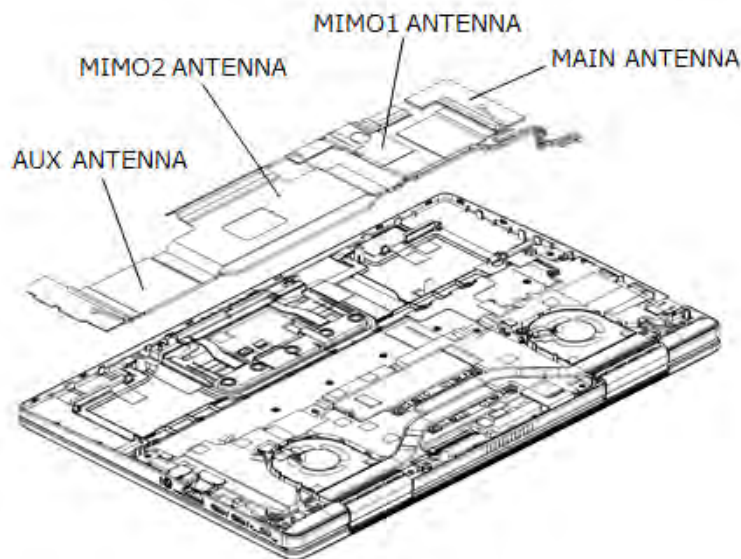
Figure 4-11 Removing the 5G/LTE ANTENNA (2)

Rev.01

5. (5G model) Remove the **MAIN ANTENNA, AUX ANTENNA, MIMO1 ANTENNA** and **MIMO2 ANTENNA**.  
(LTE model) Remove the **MAIN ANTENNA** and **AUX ANTENNA**.

**NOTE:** Do not reuse the removed ANTENNAS. Be sure to use new ones.

< 5G model >



< LTE model >

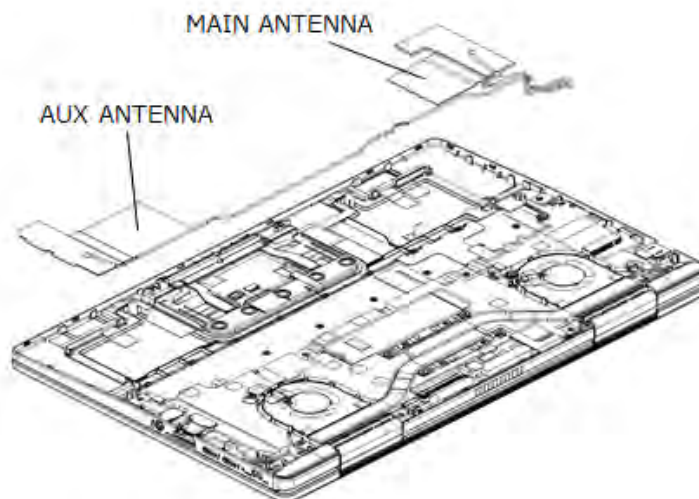


Figure 4-12 Removing the 5G/LTE ANTENNA (3)

**Installing the 5G/LTE MODULE**

To install the 5G/LTE MODULE, follow the steps below and refer to Figure 4-10 to 4-12.

1. (5G model) Stick the **MAIN ANTENNA**, **AUX ANTENNA**, **MIMO1 ANTENNA** and **MIMO2 ANTENNA** to the **COVER ASSY** and arrange the cables in place.

(LTE model) Stick the **MAIN ANTENNA** and **AUX ANTENNA** to the **COVER ASSY** in place and arrange the cables in place.

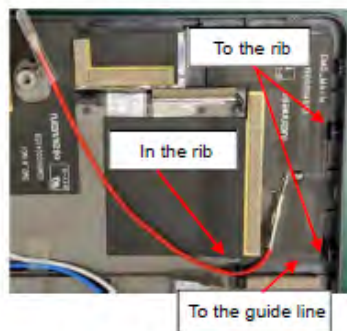
2. Stick the **5G ANTENNA SPACERS** and the **INSU SQUAREs** in place. Close the **INSU ANT HOLD**.



**NOTE:** Stick the ANTENNAS and arrange the cables according to the order and the steps below;

< 5G model >

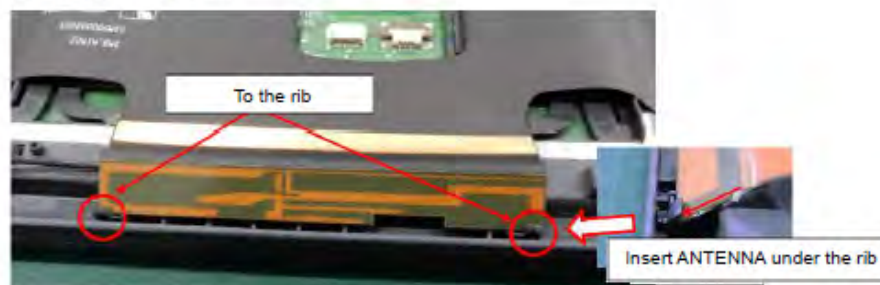
(1) MAIN ANTENNA



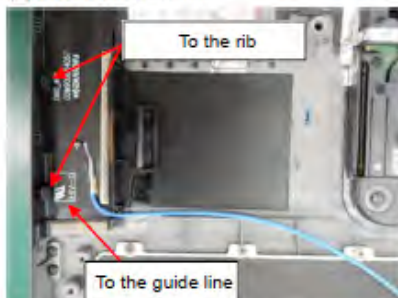
(2) MIMO1 ANTENNA



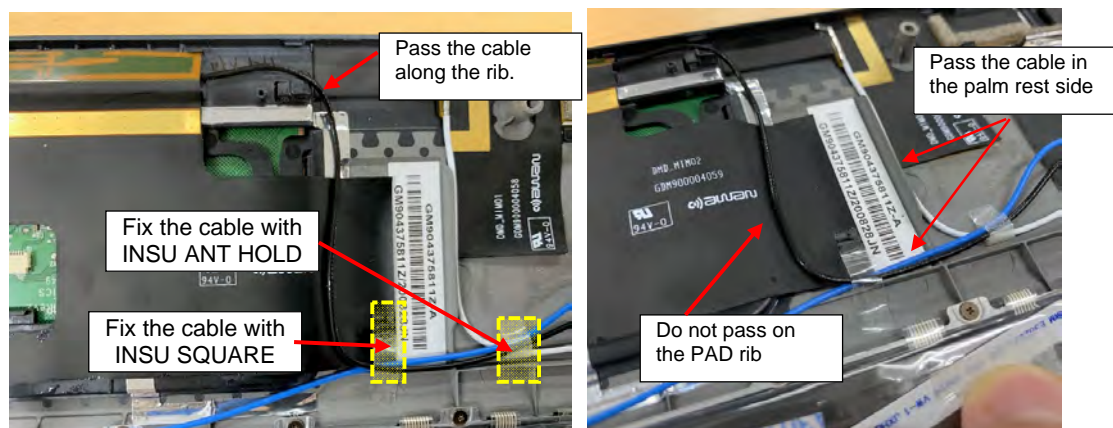
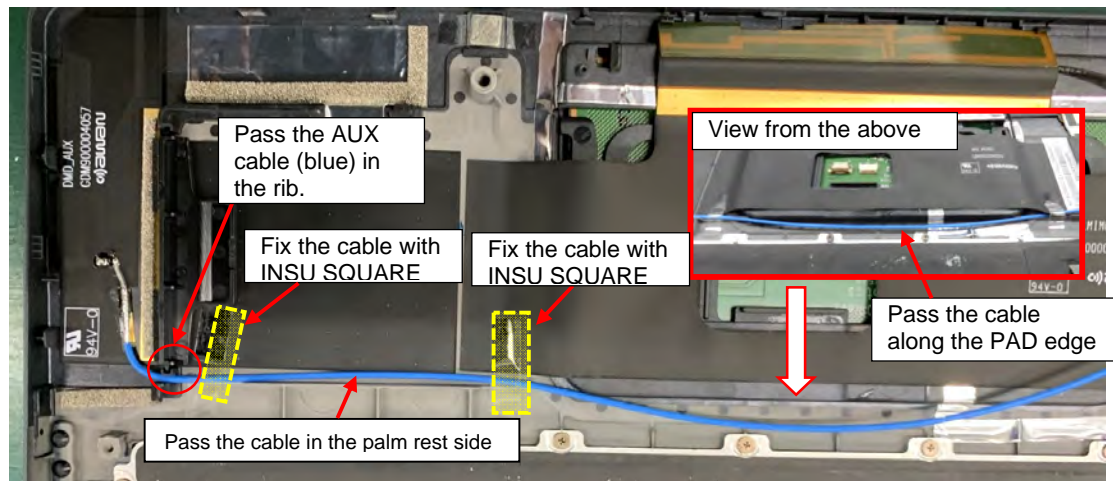
(3) MIMO2 ANTENNA



(4) AUX ANTENNA



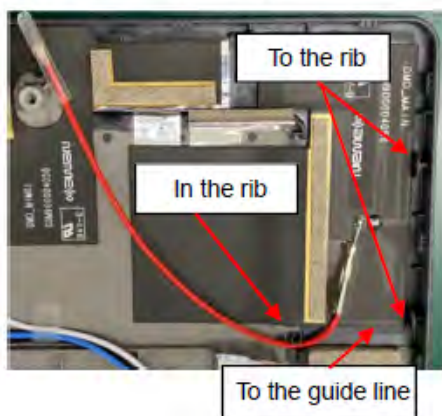
• Arrangement of ANTENNA cables



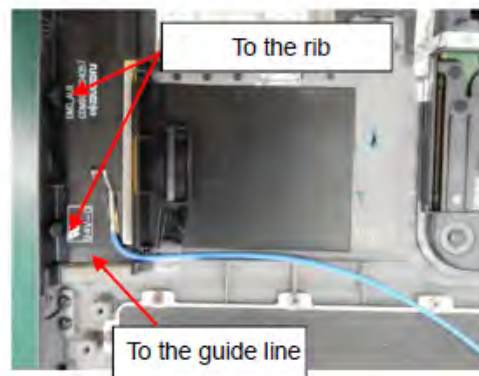


&lt; LTE model &gt;

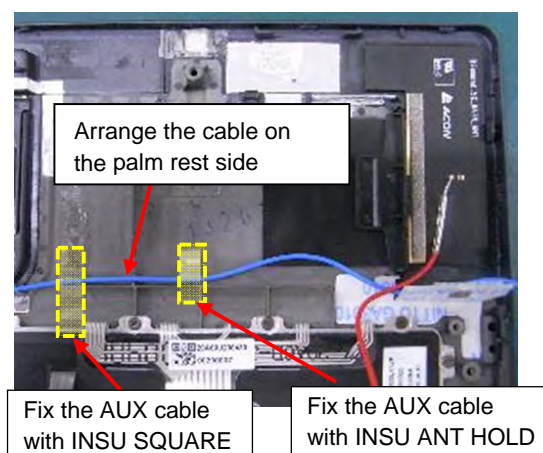
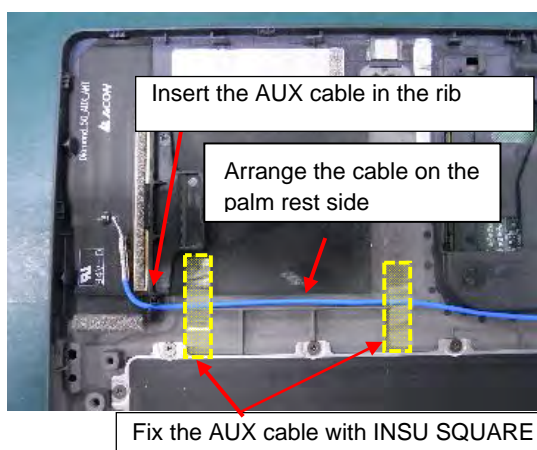
(1) MAIN ANTENNA



(2) AUX ANTENNA



## • Arrangement of ANTENNA cables

3. Set the **GASKET HOLDER** in place firmly.

Prepare required parts in advance, when replacing the following items.

ITEM	Parts List ITEM No	PART NAME	Quantity		
			Non 5G/LTE	LTE	5G
5G/LTE ANTENNA		MAIN ANTENNA	0	1	1
		AUX ANTENNA	0	1	1
		MIMO1 ANTENNA	0	0	1
		MIMO2 ANTENNA	0	0	1
		INSU SQUARE(111)	0	3	3

## 4.9 FAN

### Removing the FAN

To remove the FAN, follow the steps below and refer to Figure 4-13.

1. Disconnect the **FAN R HARNESS** from the connector **CN3380** on the SYSTEM BOARD.
2. Remove the following screws and the **FAN R**.
  - M2x4C S-THIN HEAD screw ×2
3. Disconnect the **FAN L HARNESS** from the connector **CN3390** on the SYSTEM BOARD.
4. Remove the following screws and the **FAN L**.
  - M2x4C S-THIN HEAD screw ×2

**NOTE:** Do not touch the center portion of the FANs.

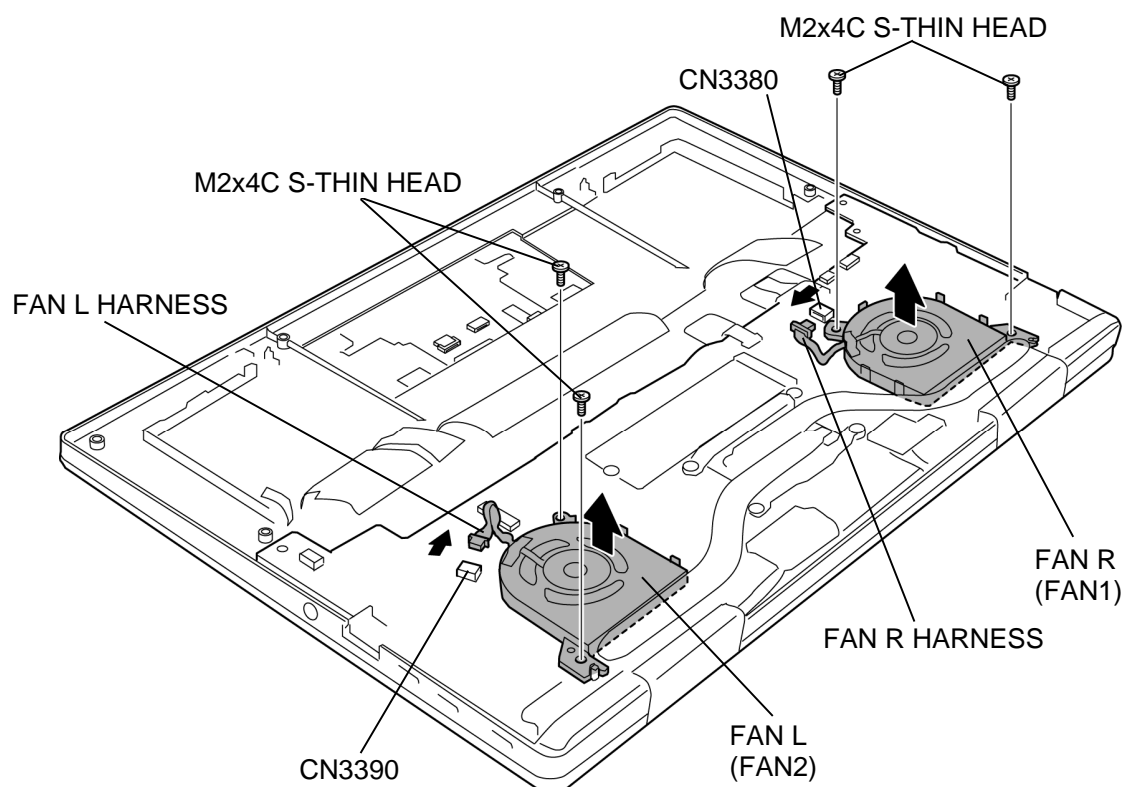


Figure 4-13 Removing the FAN

**Installing the FAN**

To install the FAN, follow the steps below and refer to Figure 4-13.

4. Set the **FAN R** to the COVER ASSY and secure it with the following **screws**.
  - M2×4C S-THIN HEAD screw ×2
3. Connect the **FAN R HARNESS** to the connector **CN3380** on the SYSTEM BOARD.
4. Set the **FAN L** to the COVER ASSY and secure it with the following **screws**.
  - M2×4C S-THIN HEAD screw ×2
4. Connect the **FAN L HARNESS** to the connector **CN3390** on the SYSTEM BOARD.

## 4.10 SSD

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

### Removing the SSD

To remove the SSD, follow the steps below and refer to Figure 4-14.

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

- M2×2.5 FLAT HEAD DANTUKI screw ×1

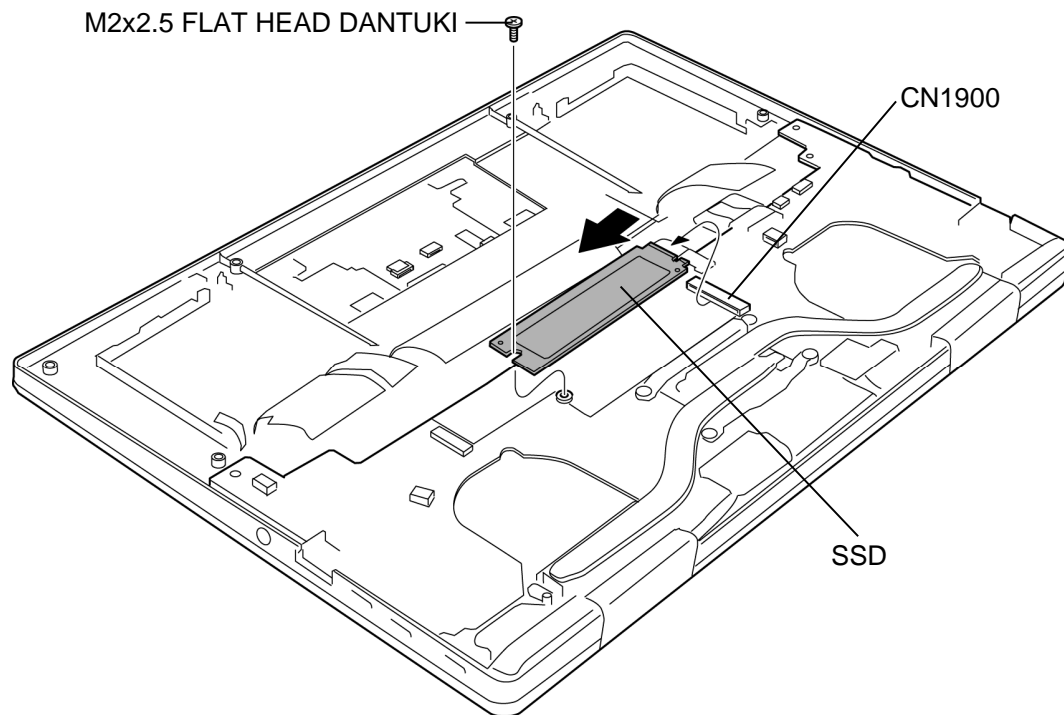


Figure 4-14 Removing the SSD

### Installing the SSD

To install the SSD, follow the steps below and refer to Figure 4-14.

1. Insert the **SSD** to the connector **CN1900** on the SYSTEM BOARD.
2. Secure the SSD with the following **screw**.
  - M2×2.5 FLAT HEAD DANTUKI screw ×1

## 4.11 HEAT SINK

### Removing the HEAT SINK

To remove the HEAT SINK, follow the steps below and refer to Figure 4-15.

1. Remove the following **screws** and the **HEAT SINK**.

- M2×2.3C S-THIN HEAD screw ×4

**NOTE:** When removing the HEAT SINK, be sure to remove the screws in the reverse order of the number marked on the HEAT SINK.

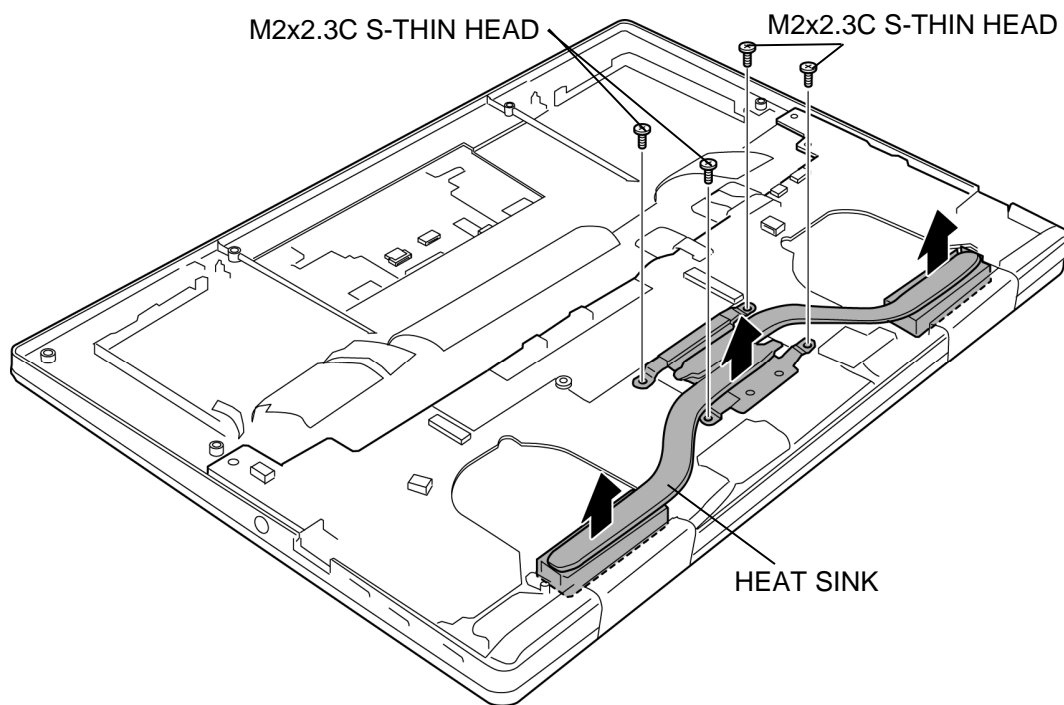


Figure 4-15 Removing the HEAT SINK

### Installing the HEAT SINK

To install the HEAT SINK, follow the steps below and refer to Figure 4-15.

1. When silicon grease is already applied to the CPU or HEAT SINK, wipe them off with a cloth in advance.
2. Apply new **silicon grease** (Shin-Etsu Chemical Co. X-23-7921-5) on the CPU using a special syringe.

**NOTE:** Apply new silicon grease as shown in the figure below.



3. Set the **HEAT SINK** in place and secure it with the following **screws**.

- M2×2.3C S-THIN HEAD screw ×4

**NOTE:** When securing the HEAT SINK, be sure to secure the screws in the order of the number marked on the HEAT SINK.

## 4.12 SYSTEM BOARD

- CAUTION:**
1. If replacing with a new SYSTEM BOARD, update the DMI information as described in Chapter 3 “Test Program”. Also update with the latest BIOS and EC/KBC as described in Appendix G and in Appendix H.
  2. When replacing the SYSTEM board with a new one, use the sensor calibration tool to adjust the sensors.
  3. When replacing the SYSTEM BOARD with a new one, the ProductKey (MBR-DPK) must be written on the SYSTEM BOARD.
  4. When removing/installing the SYSTEM BOARD, handle with both hands and do not handle with the handling prohibition area (refer to the figure below).



Handling prohibition area

FRONT





**Removing the SYSTEM BOARD**

To remove the SYSTEM BOARD, follow the steps below and refer to Figure 4-16 and 4-17.

1. Disconnect the **KB BL FPC** (back light KB model), **KB MEMBRANE** and **LID HARNESS** from the connector **CN3270**, **CN3260** and **CN3290** on the SYSTEM BOARD.
2. Turn up the **INSUs** and disconnect the **CAMERA HARNESS** from the connector **CN9540** on the SYSTEM BOARD.
3. Disconnect the **W-LAN ANTENNA CABLEs** from the connectors on the W-LAN MODULE. (white cable from “▲MAIN 2” and black cable from “△AUX 1”)
4. Release the **lock bar** and disconnect the **LCD HARNESS** from the connector **CN5390** on the SYSTEM BOARD.
5. Disconnect the **REAR CAMERA FPC** from the connector **CN9560** on the SYSTEM BOARD.

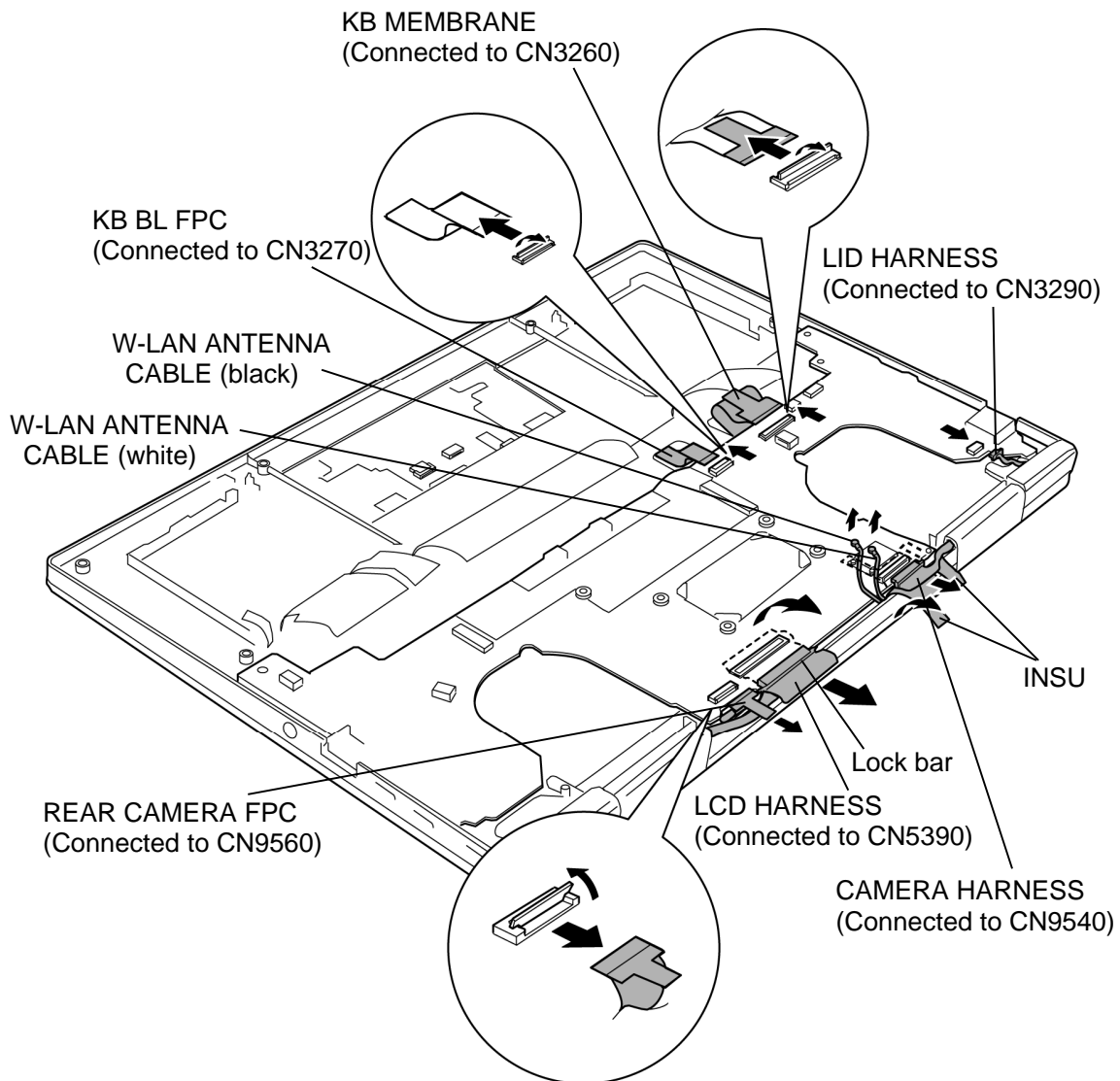


Figure 4-16 Removing the SYSTEM BOARD (1)

6. Remove the following **screws** and the **SYSTEM BOARD**.

- M2×4C S-THIN HEAD screw ×2

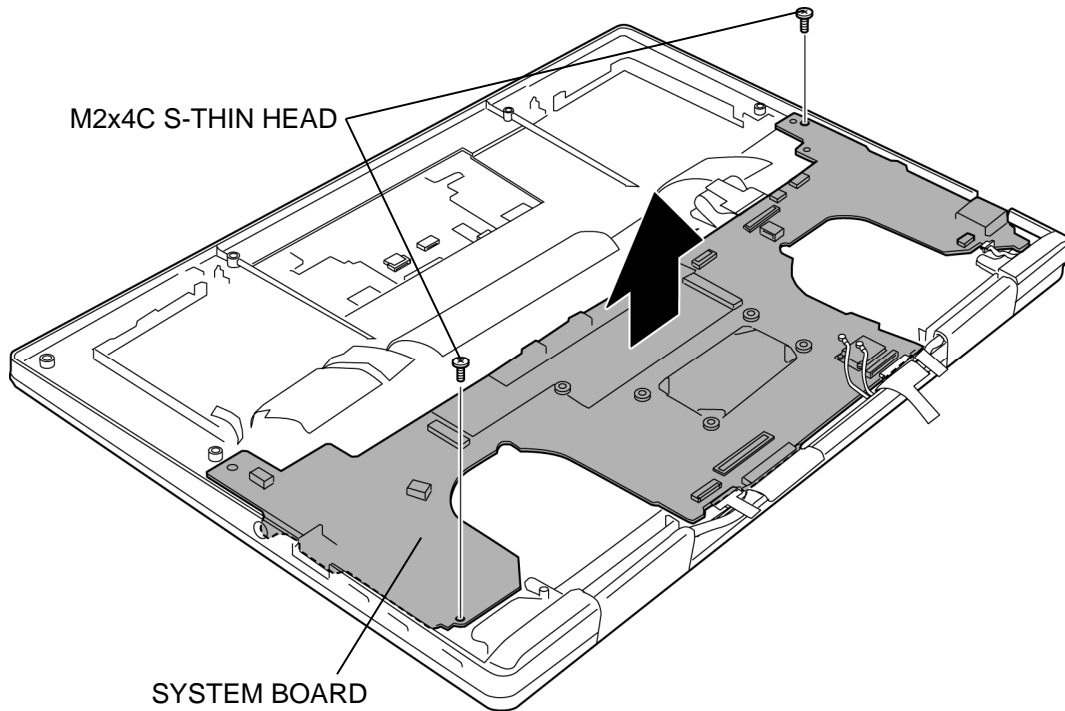
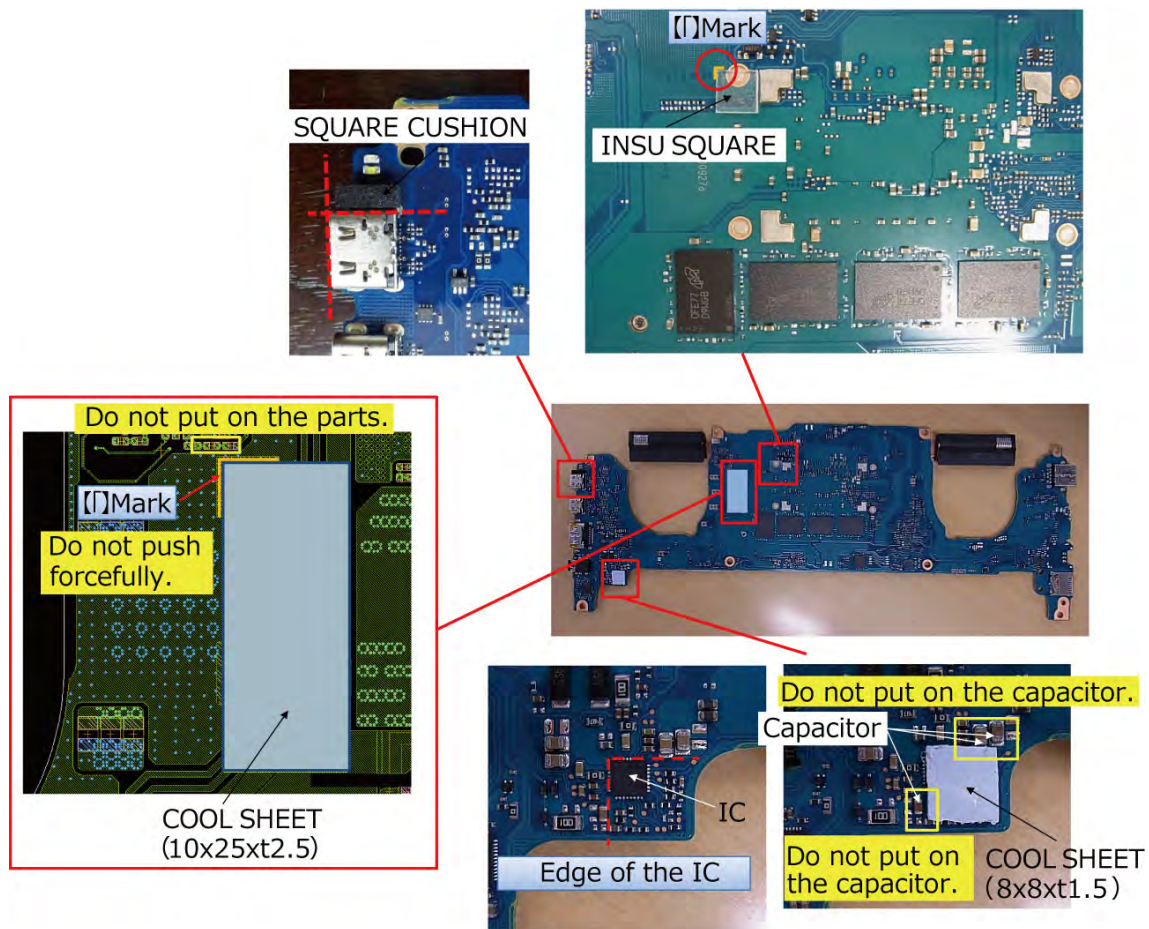


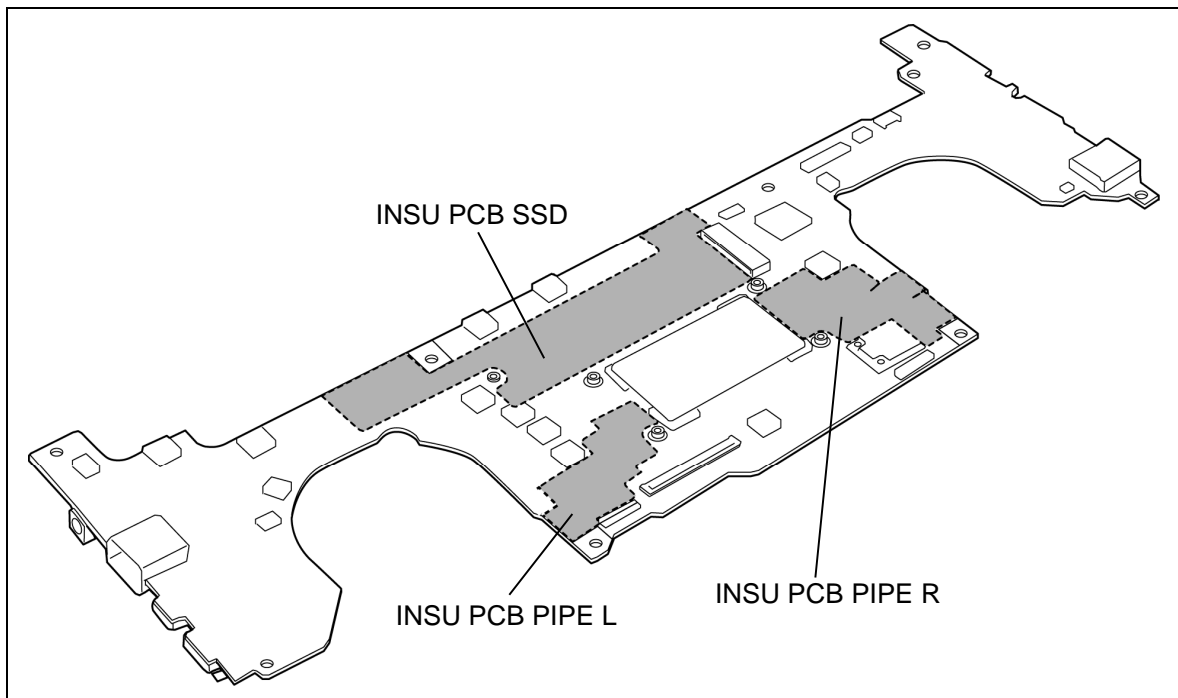
Figure 4-17 Removing the SYSTEM BOARD (2)

## Installing the SYSTEM BOARD

To install the SYSTEM BOARD, follow the steps below and refer to Figure 4-16 and 4-17.

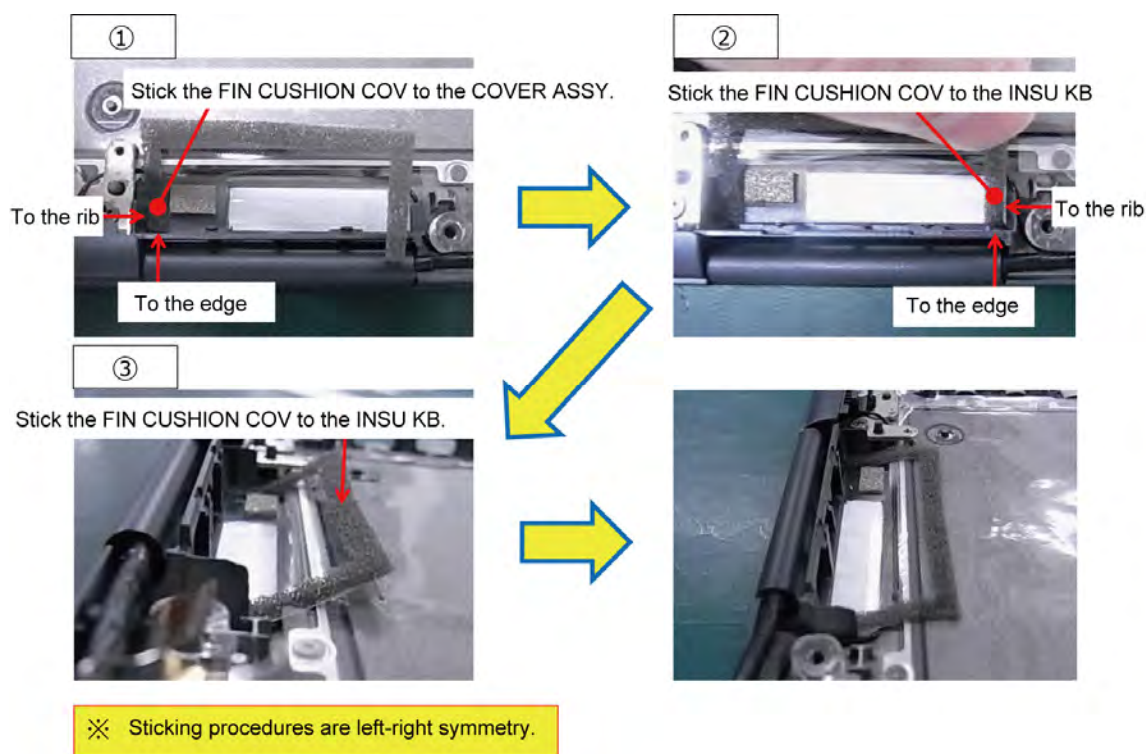
**NOTE:** When replacing the SYSTEM BOARD with a new one, stick the **INSU SQUARE** (321), **COOL SHEET (H10)**, **COOL SHEET (J10)**, **SQUARE CUSHION** (161), **INSU PCB SSD**, **INSU PCB PIPE L** and **INSU PCB PIPE R** to the SYSTEM BOARD in place.





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**NOTE:** When replacing the **INSU KB LOW** or **INSU KB LOW 5G** with a new one, stick new **FIN CUSHION COV**s to the **INSU KB LOW** or **INSU KB LOW 5G** in place before setting the **SYSTEM BOARD**. (Please note that “**INSU KB**” in the following pictures indicates **INSU KB LOW** or **INSU KB LOW 5G**.)

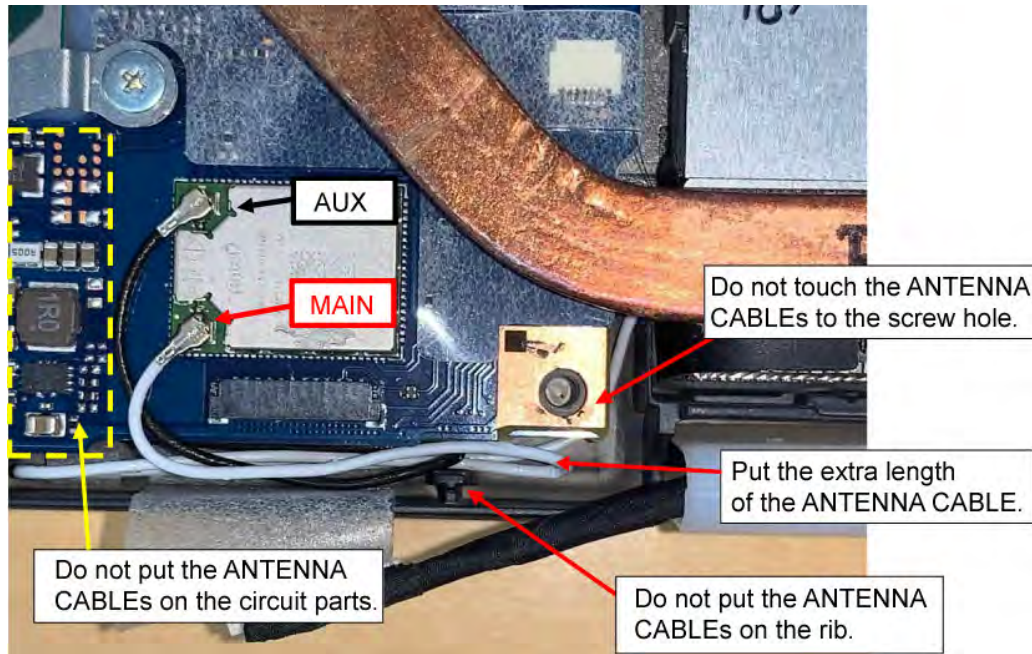


1. Set the **SYSTEM BOARD** to the **COVER ASSY** in place and secure it with the following **screws**.
  - M2×4C S-THIN HEAD screw ×2
2. Connect the **REAR CAMERA FPC** to the connector **CN9560** on the **SYSTEM BOARD**.
3. Connect the **LCD HARNESS** to the connector **CN5390** on the **SYSTEM BOARD** and fix it with the **lock bar**.



4. Connect the **W-LAN ANTENNA CABLES** to the connectors on the W-LAN MODULE. (white cable to “▲MAIN 2” and black cable to “△AUX 1”)

**NOTE:** Arrange the W-LAN ANTENNA CABLES as shown in the figure below.



5. Connect the **CAMERA HARNESS** to the connector **CN9540** on the SYSTEM BOARD.
6. Close the **INSU**.
7. Connect the **KB BL FPC** (back light KB model), **KB MEMBRANE** and **LID HARNESS** to the connector **CN3270**, **CN3260** and **CN3290** on the SYSTEM BOARD.

Prepare required parts in advance, when replacing the following items.

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ITEM	Parts List ITEM No	PART NAME	Quantity		
			Non 5G/LTE	LTE	5G
SYSTEM BOARD (MOTHER BOARD ASSY)	01	MOTHER BOARD ASSY	1	1	1
	68	SQUARE CUSHION (161)	1	1	1
	66	COOL SHEET(H10)	1	1	1
	67	COOL SHEET(J10)	1	1	1

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## 4.13 CLICK PAD

### Removing the CLICK PAD

To remove the CLICK PAD, follow the steps below and refer to Figure 4-18.

**NOTE:** (5G model) Remove MIMO2 ANTENNA first before removing the CLICK PAD.

1. Peel off the **AL TAPE**.
2. Peel off the **CLICK PAD** from the COVER ASSY.

**NOTE:** Do not reuse the removed AL TAPE and CLICK PAD. Be sure to use new ones.

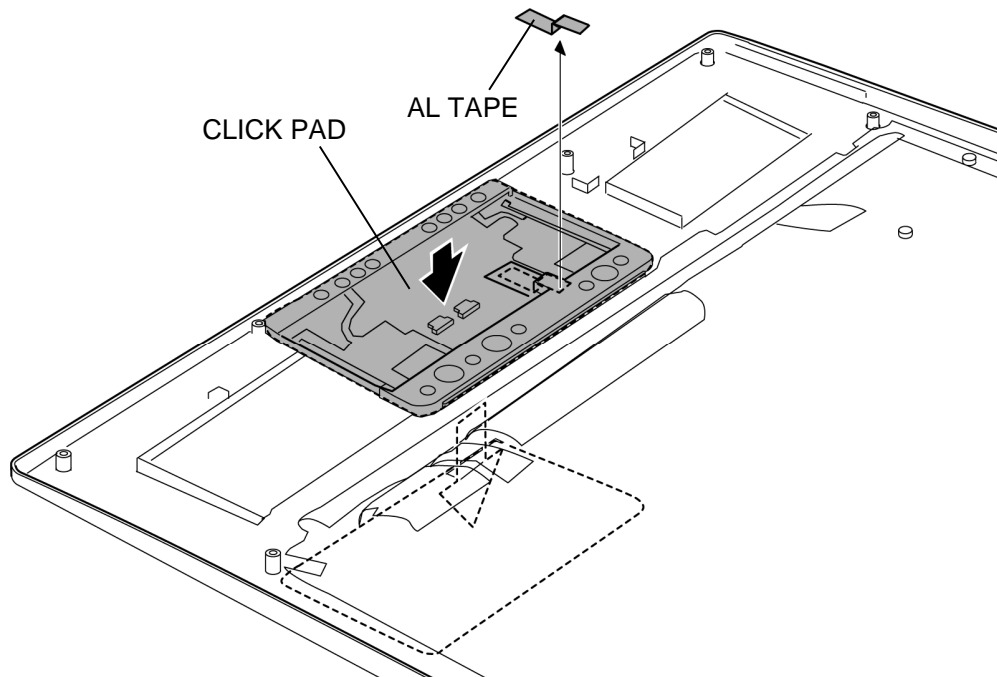


Figure 4-18 Removing the CLICK PAD



### Installing the CLICK PAD

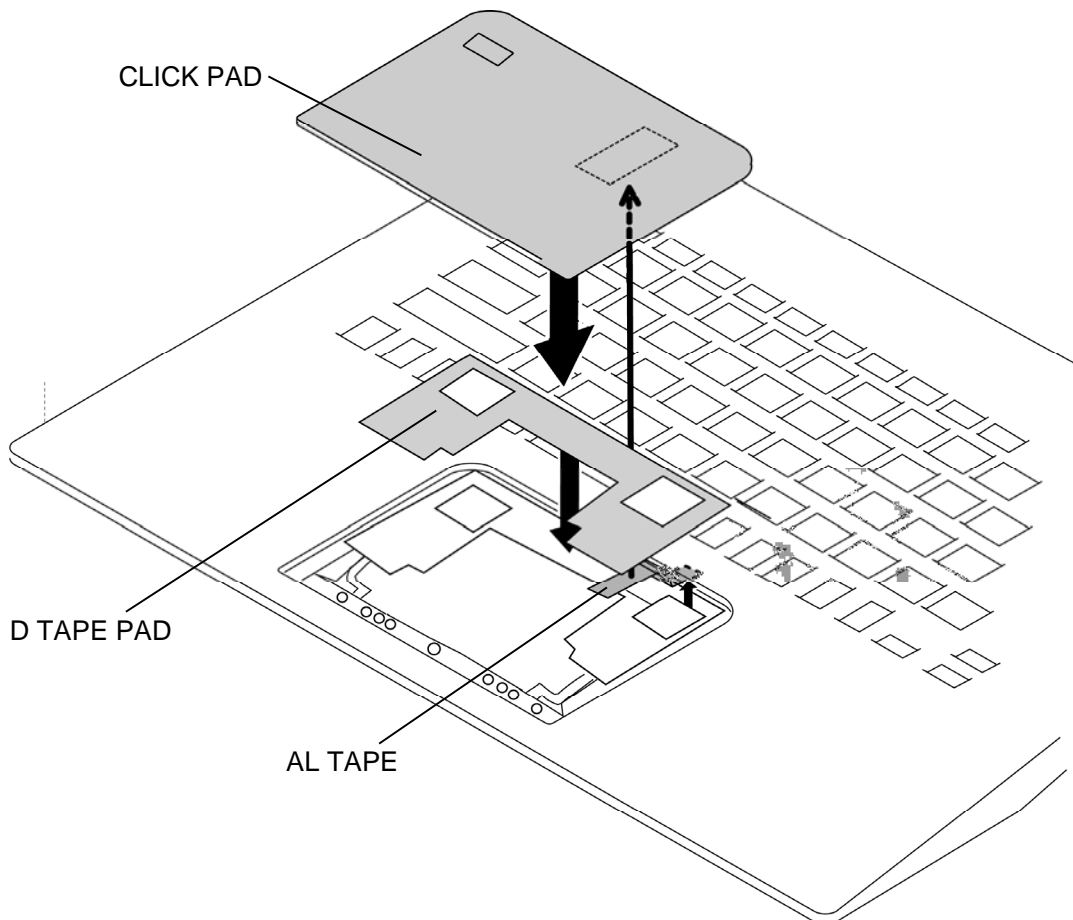
To install the CLICK PAD, follow the steps below and refer to Figure 4-18.

1. Stick a new **CLICK PAD** to the **COVER ASSY**.
2. Turn over the **COVER ASSY** and stick a new **AL TAPE** in place.

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**NOTE:**

1. When replacing the **CLICK PAD** with a new one, replace the **D TAPE PAD** on the **COVER ASSY** with a new one in place.



2. (5G model) Stick a new **MIMO2 ANTENNA** in place.

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Prepare required parts in advance, when replacing the following items.

ITEM	Parts List ITEM No	PART NAME	Quantity		
			Non 5G/LTE	LTE	5G
CLICK PAD		CLICK PAD	1	1	1
	77	AL TAPE	1	1	1
		D TAPE PAD	1	1	1
		MIMO2 ANTENNA	0	0	1

## 4.14 W-LAN ANTENNA

### Removing the W-LAN ANTENNA

To remove the W-LAN ANTENNA, follow the steps below and refer to Figure 4-19 and 4-20.

1. Open the **INSUs** and release the **W-LAN ANTENNA CABLES**.
2. Remove the following **screw** to remove the **CORNER CAP R** (W-LAN MAIN ANTENNA (white cable)).
  - M2×4C S-THIN HEAD screw ×1
3. Peel off the **W-LAN MAIN ANTENNA** (white cable) from the CORNER CAP R.

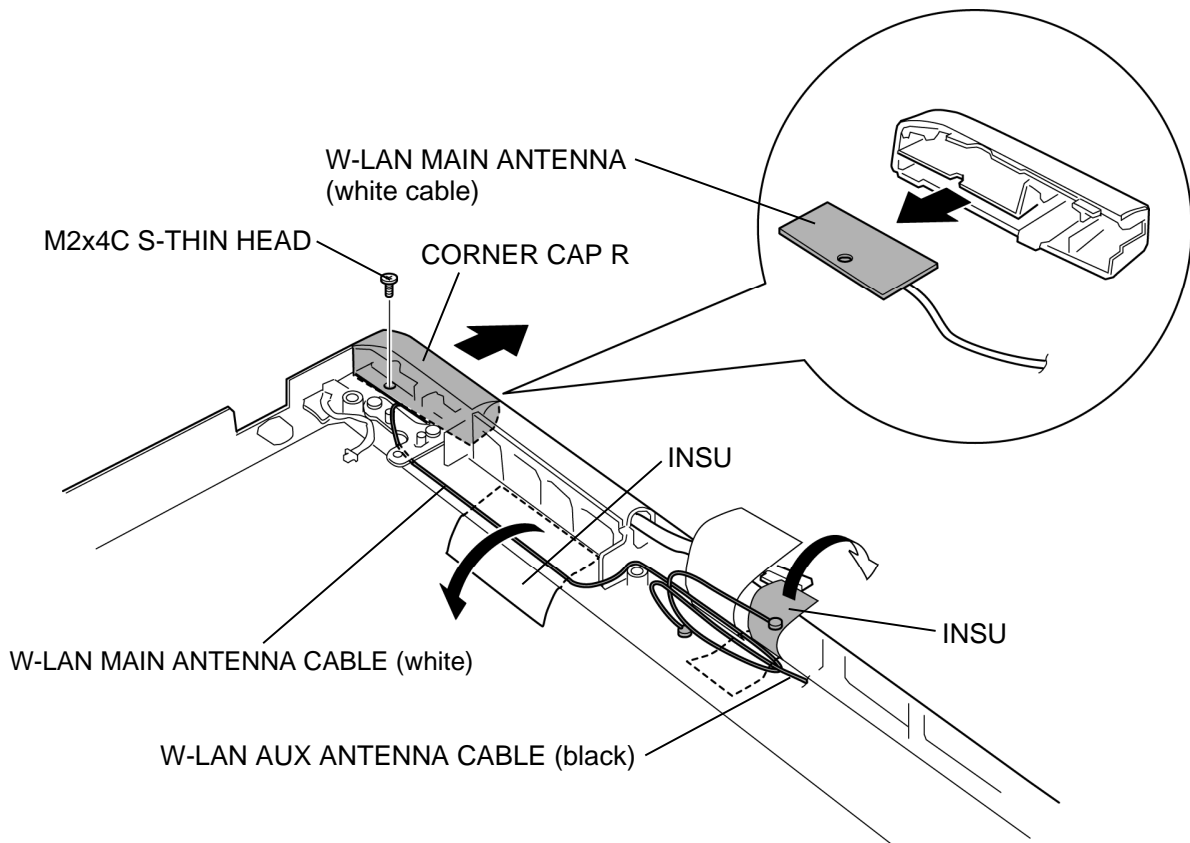


Figure 4-19 Removing the W-LAN ANTENNA (1)

4. Open the **INSUs** and release the **W-LAN AUX ANTENNA CABLE** (black).
5. Remove the following **screw** to remove the **CORNER CAP L** (W-LAN AUX ANTENNA (black cable)).
  - M2×4C      S-THIN HEAD screw      ×1
6. Peel off the **W-LAN AUX ANTENNA** (black cable) from the **CORNER CAP L**.

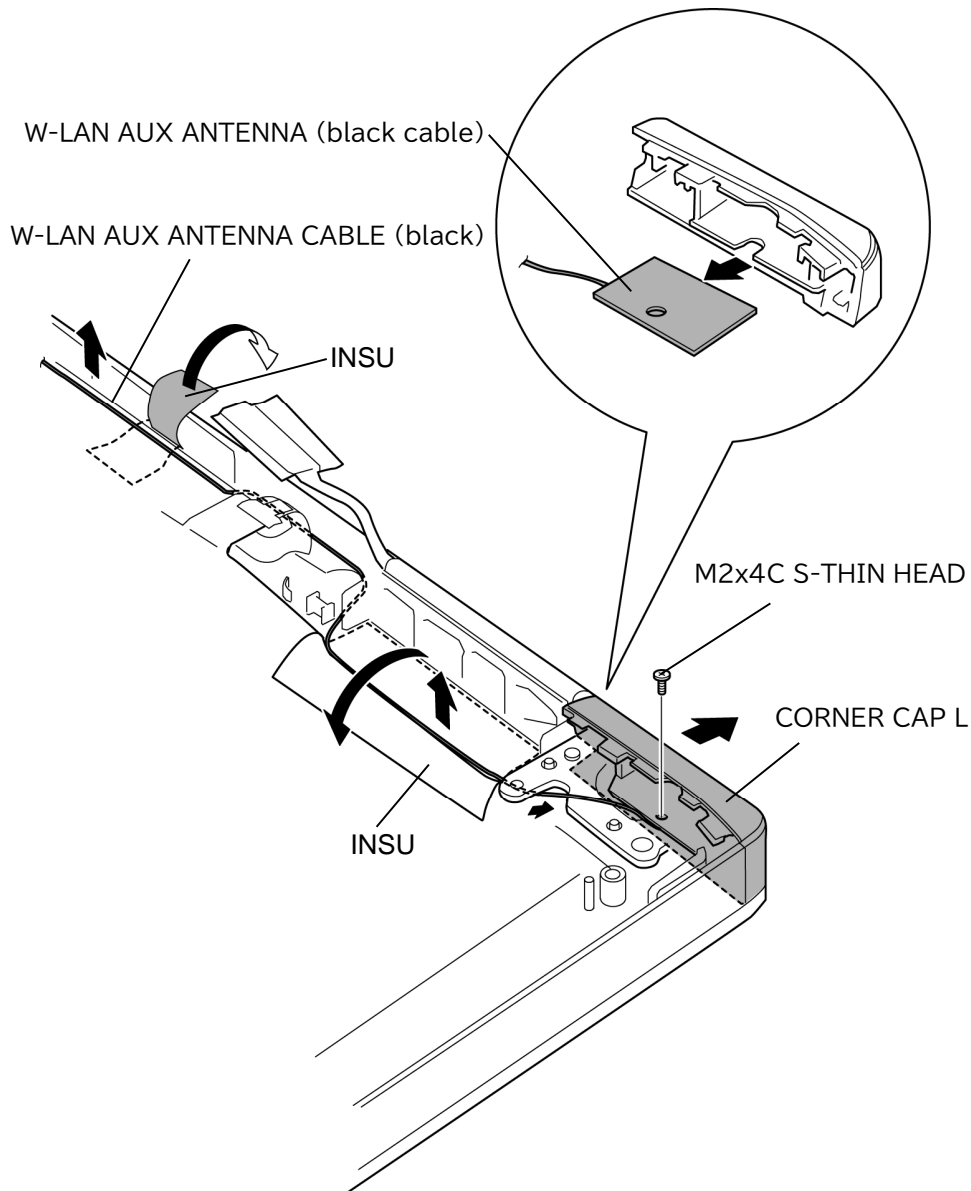


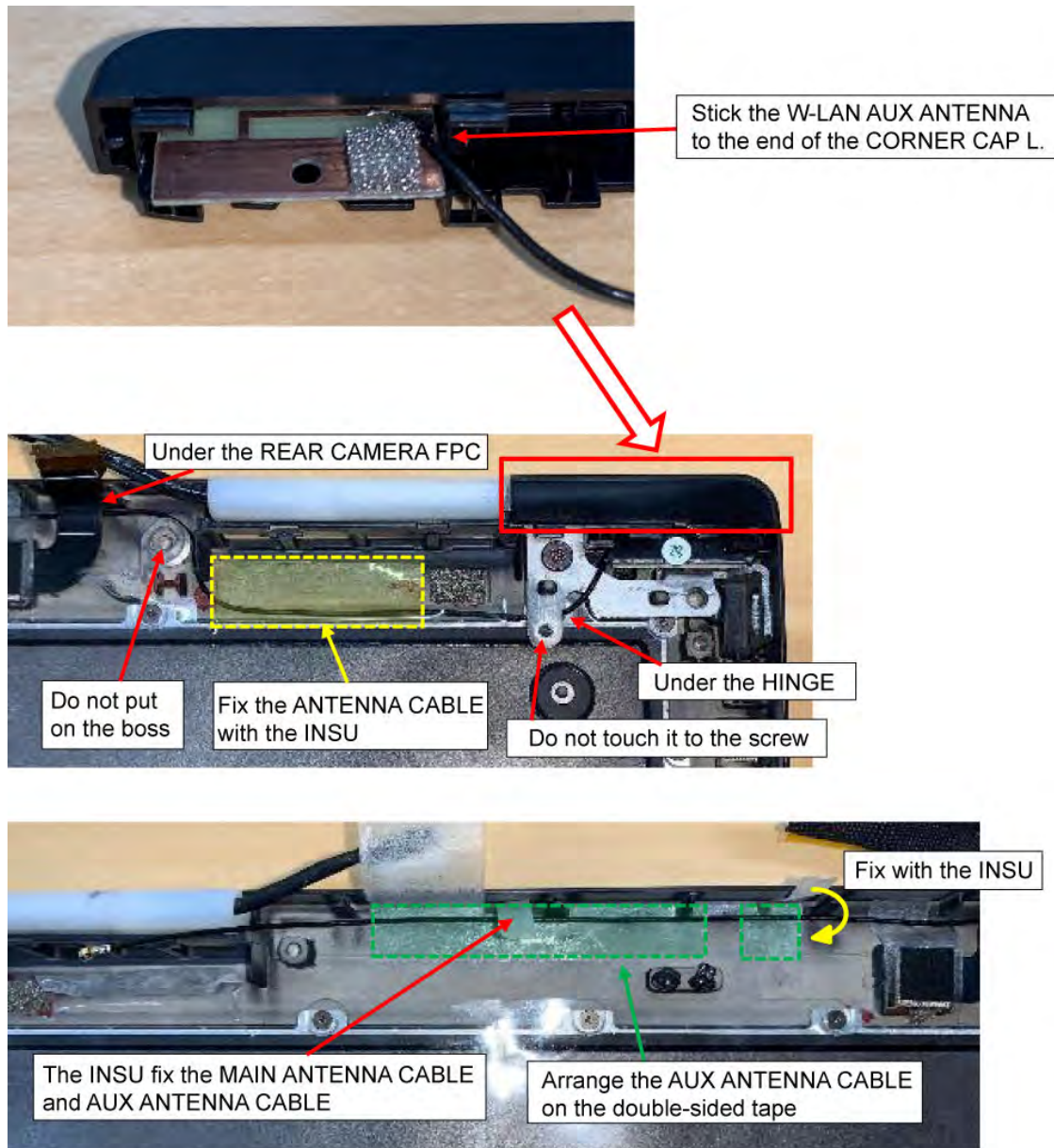
Figure 4-20 Removing the W-LAN ANTENNA (2)

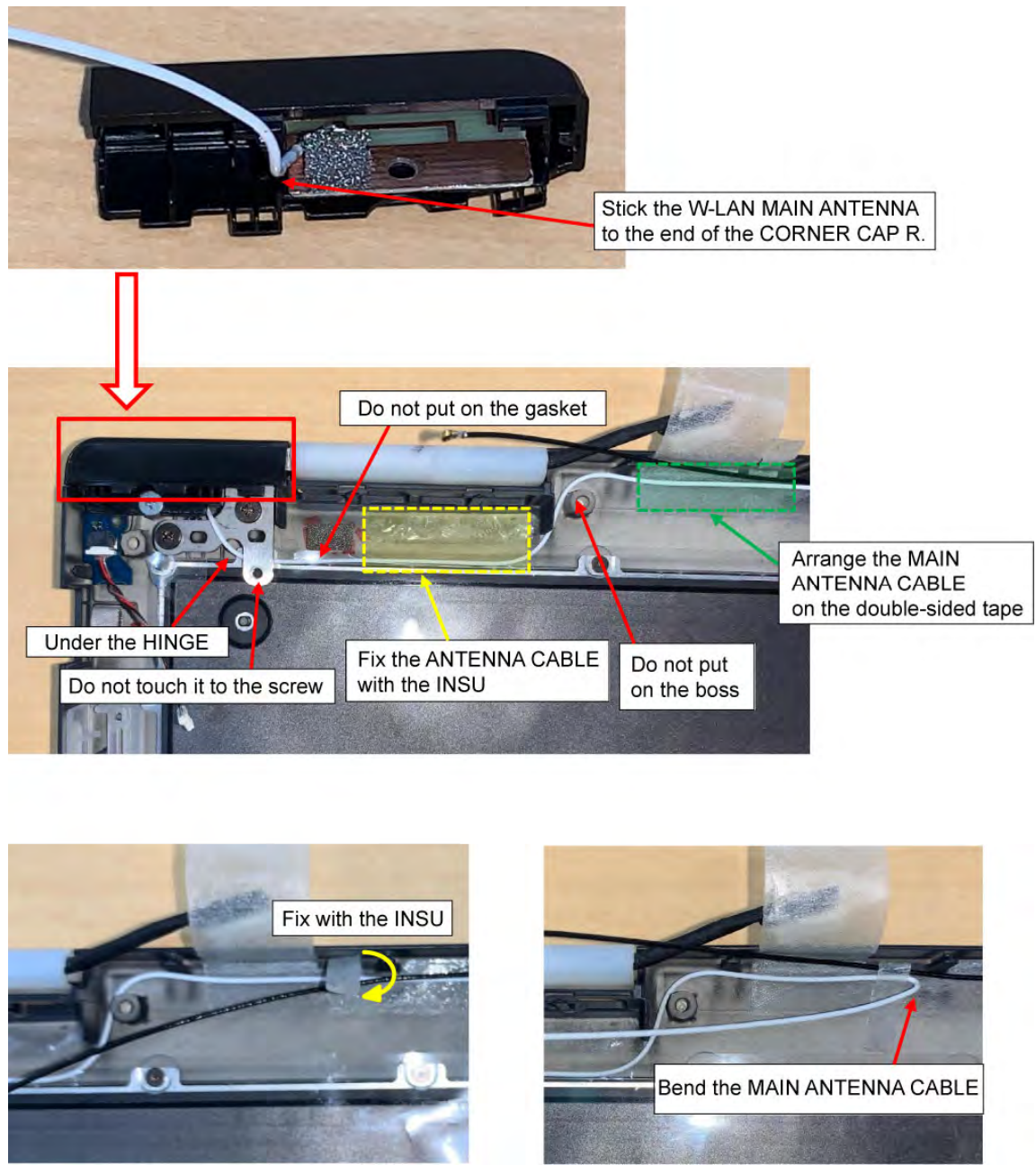
**Installing the W-LAN ANTENNA**

To install the W-LAN ANTENNA, follow the steps below and refer to Figure 4-19 and 4-20.

1. Stick the **W-LAN AUX ANTENNA** (black cable) to the **CORNER CAP L**.
2. Set the **CORNER CAP L** (W-LAN AUX ANTENNA (black cable)) to the COVER ASSY and secure it with the following **screw**.
  - M2×4C          S-THIN HEAD screw          ×1
3. Stick the **W-LAN MAIN ANTENNA** (white cable) to the **CORNER CAP R**.
4. Set the **CORNER CAP R** (W-LAN MAIN ANTENNA (white cable)) to the COVER ASSY and secure it with the following **screw**.
  - M2×4C          S-THIN HEAD screw          ×1
5. Arrange the **W-LAN ANTENNA CABLES** in place.
6. Close the **INSUs**.

**NOTE:** Arrange the W-LAN ANTENNA CABLES as shown in the figure below.





## 4.15 LID BOARD

### Removing the LID BOARD

To remove the LID BOARD, follow the steps below and refer to Figure 4-21.

1. Peel off the **LID BOARD** from the **guides** of the COVER ASSY.
2. Disconnect the **LID HARNESS** from the connector **CN3291** on the LID BOARD.

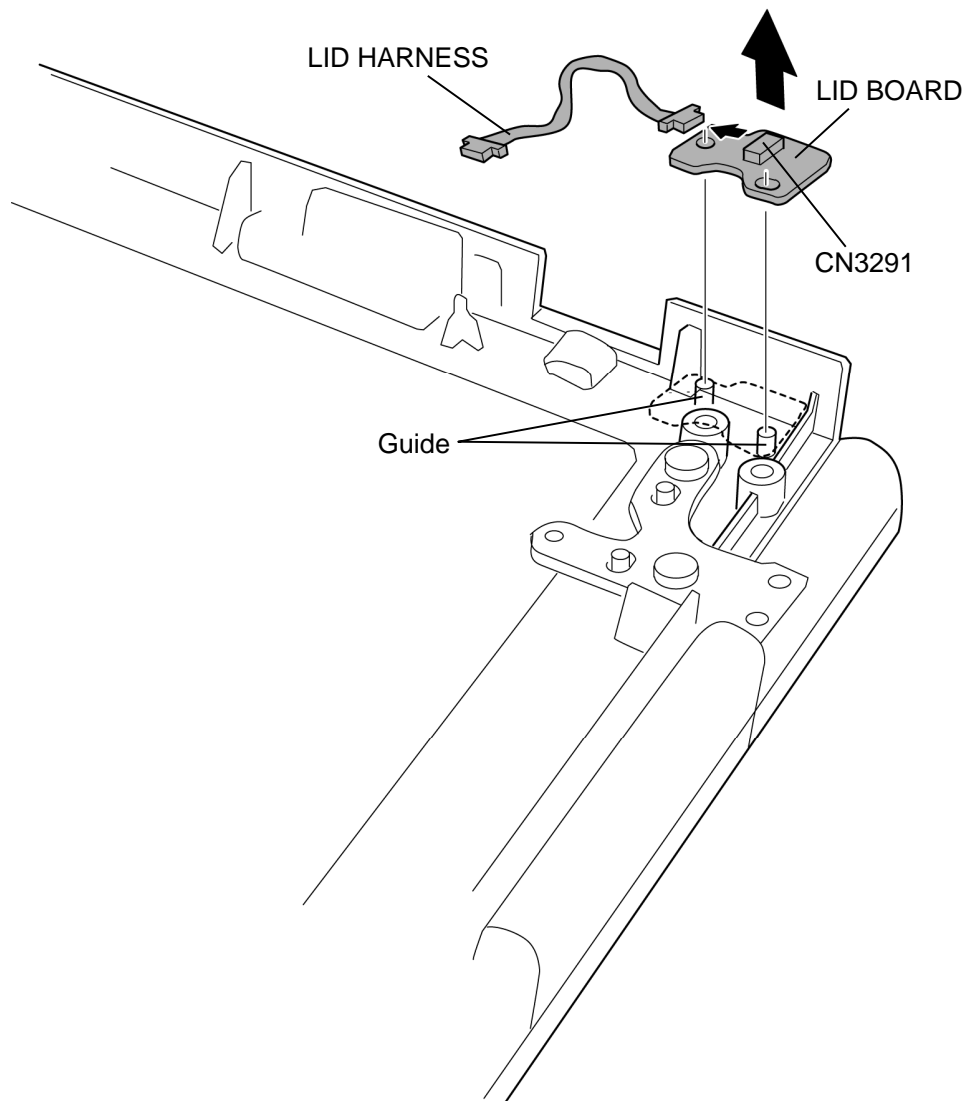


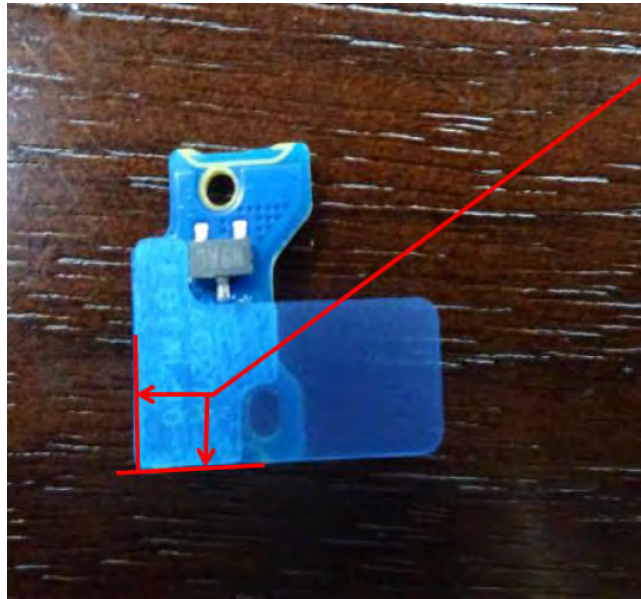
Figure 4-21 Removing the LID BOARD



### Installing the LID BOARD

To install the LID BOARD, follow the steps below and refer to Figure 4-21.

**NOTE:** When replacing the LID BOARD with a new one, replace the D TAPE PCB LID on the LID BOARD with a new one in place.



D TAPE PCB LID

1. Connect the **LID HARNESS** to the connector **CN3291** on the LID BOARD.
2. Set the **LID BOARD** to the **guides** of the COVER ASSY.

Prepare required parts in advance, when replacing the following items.

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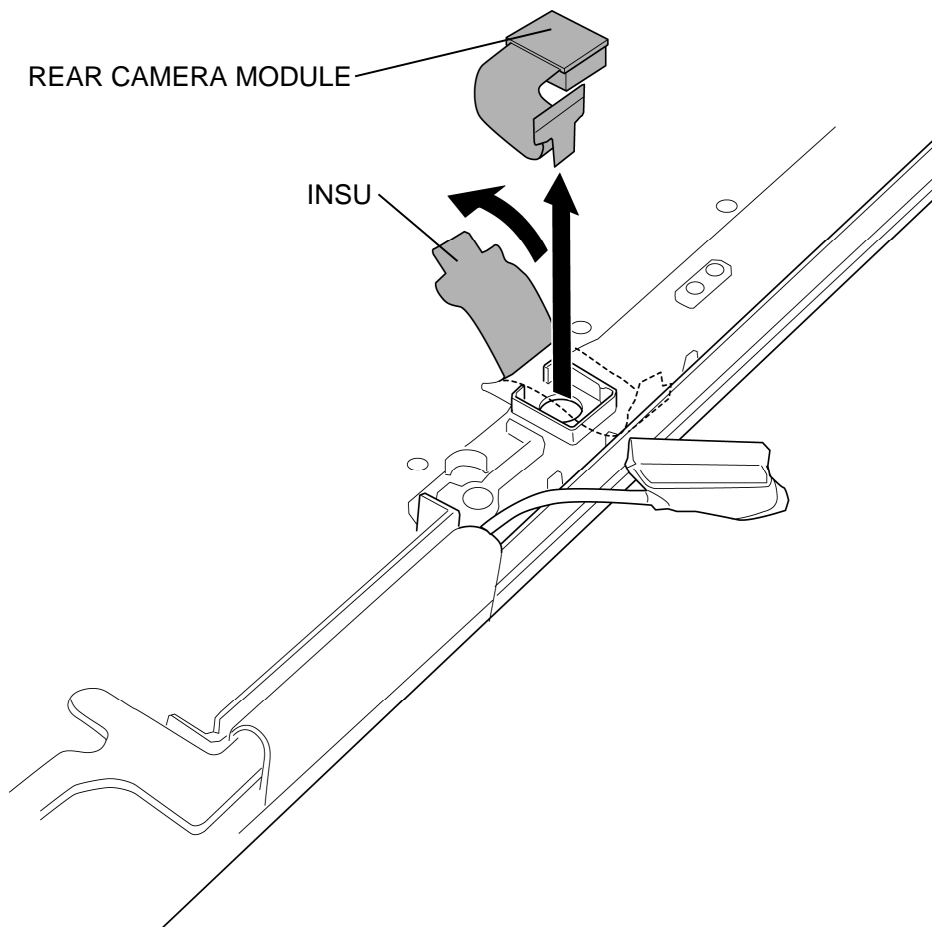
ITEM	Parts List ITEM No	PART NAME	Quantity		
			Non 5G/LTE	LTE	5G
LID BOARD	82	LID BOARD	1	1	1
	64	D TAPE PCB LID	1	1	1

## 4.16 REAR CAMERA MODULE

### Removing the REAR CAMERA MODULE

To remove the REAR CAMERA MODULE, follow the steps below and refer to Figure 4-22.

1. Open the **INSU**.
2. Remove the **REAR CAMERA MODULE** from the slot of the COVER ASSY.



*Figure 4-22 Removing the REAR CAMERA MODULE*

**Installing the REAR CAMERA MODULE**

To install the REAR CAMERA MODULE, follow the steps below and refer to Figure 4-22.

1. Set the **REAR CAMERA MODULE** to slot of the COVER ASSY.
2. Close the **INSU**.

## 4.17 LCD FAT ASSY/COVER ASSY

### Removing the LCD FAT ASSY/COVER ASSY

To remove the LCD FAT ASSY/COVER ASSY, follow the steps below and refer to Figure 4-23.

1. Remove the following screws and separate the **LCD FAT ASSY** and **COVER ASSY**.

- M2.5×4B FLAT HEAD screw ×3

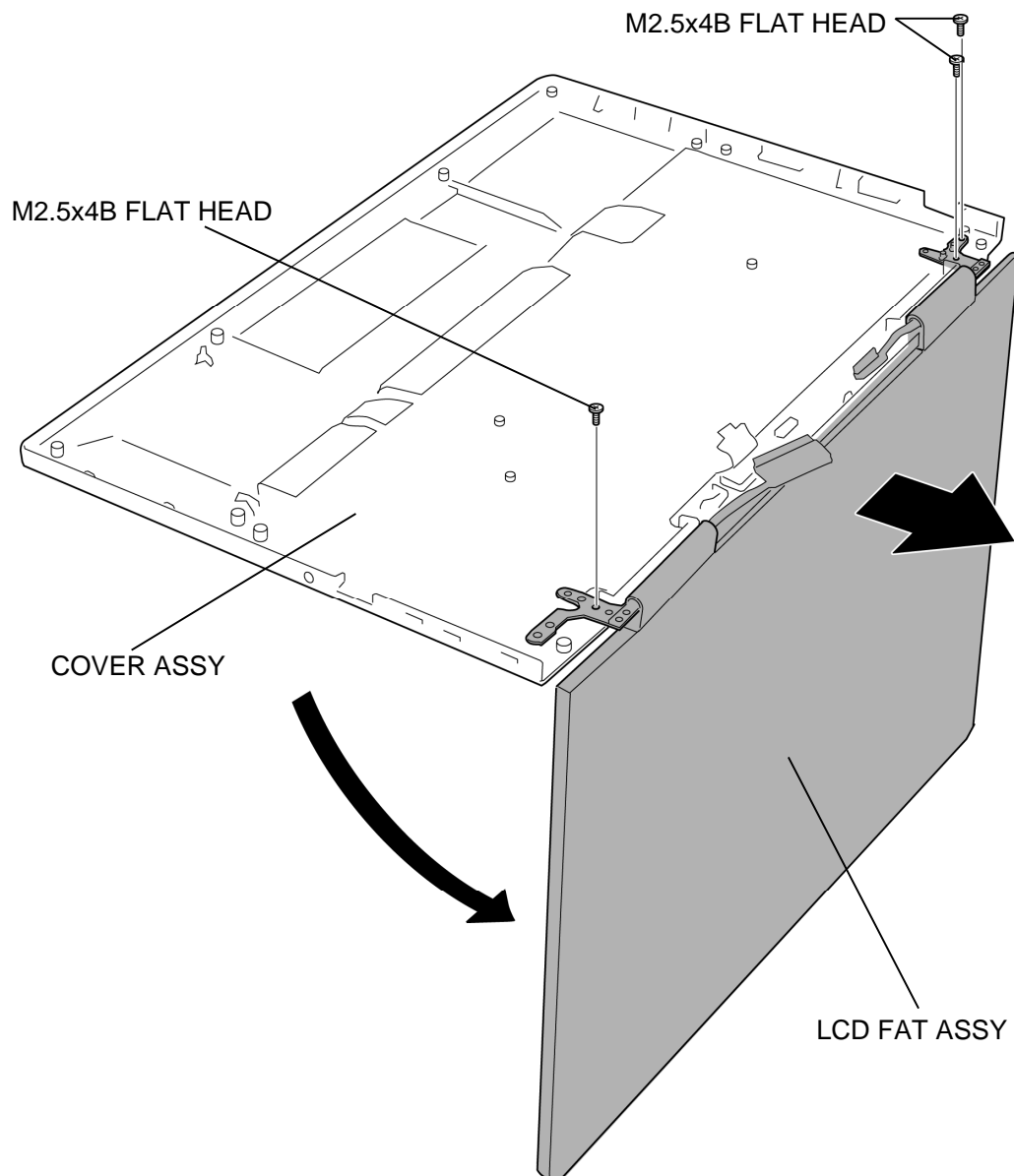


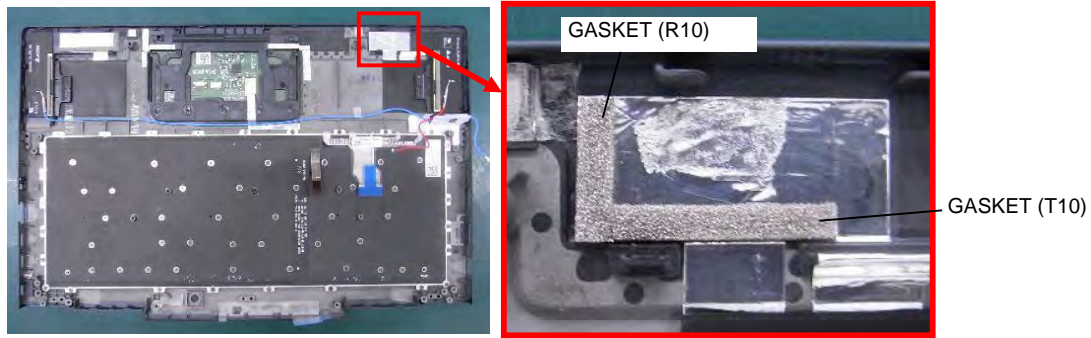
Figure 4-23 Removing the LCD FAT ASSY/COVER ASSY

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**Installing the LCD FAT ASSY/COVER ASSY**

To install the LCD FAT ASSY/COVER ASSY, follow the steps below and refer to Figure 4-23.

**NOTE:** (LTE model) Stick the GASKETs in place beforehand.



1. Set the **LCD FAT ASSY** to the **COVER ASSY** and secure it with the following screws.

- M2.5×4B FLAT HEAD screw ×3

Prepare the required parts in advance, when replacing the following items.

ITEM	Parts List ITEM No	PART NAME	Quantity		
			Non 5G/LTE	LTE	5G
COVER ASSY	60	COVER ASSY	1	0	0
		COVER LTE ASSY	0	1	1
	77	AL TAPE	1	1	1
		CLICK PAD	1	1	1
		MAIN ANTENNA	0	1	1
		AUX ANTENNA	0	1	1
		MIMO1 ANTENNA	0	0	1
		MIMO2 ANTENNA	0	0	1
		GASKET(R10)	0	1	0
		GASKET(T10)	0	1	0
	61	INSU KB LOW	1	0	0
		INSU KB LOW 5G	0	1	1
		FIN CUSHION COV	2	2	2
		INSU SQUARE(111)	0	3	3

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## 4.18 KEYBOARD

### Removing the KEYBOARD

To remove the KEYBOARD, follow the steps below and refer to Figure 4-24 and 4-25.

1. Peel off the **INSU KB LOW** or **INSU KB LOW 5G**.

**NOTE:** Do not reuse the removed **INSU KB LOW** or **INSU KB LOW 5G**. Be sure to use a new one.

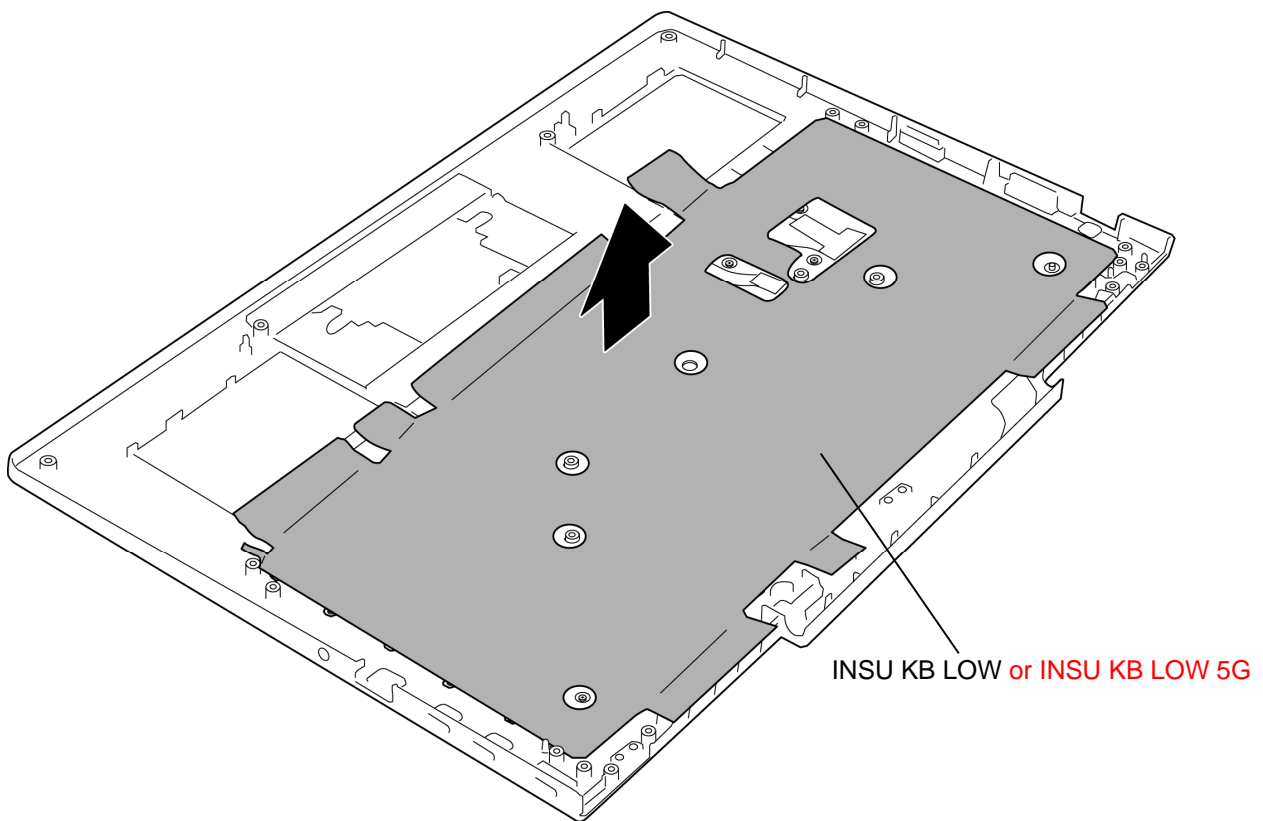


Figure 4-24 Removing the KEYBOARD (1)

2. Remove the following **screw** securing the KEYBOARD.

- M1.2×1.1B S-THIN HEAD screw ×63

3. Remove the **KEYBOARD**.

**NOTE:** The KEYBOARD is very thin, so be careful of handling.

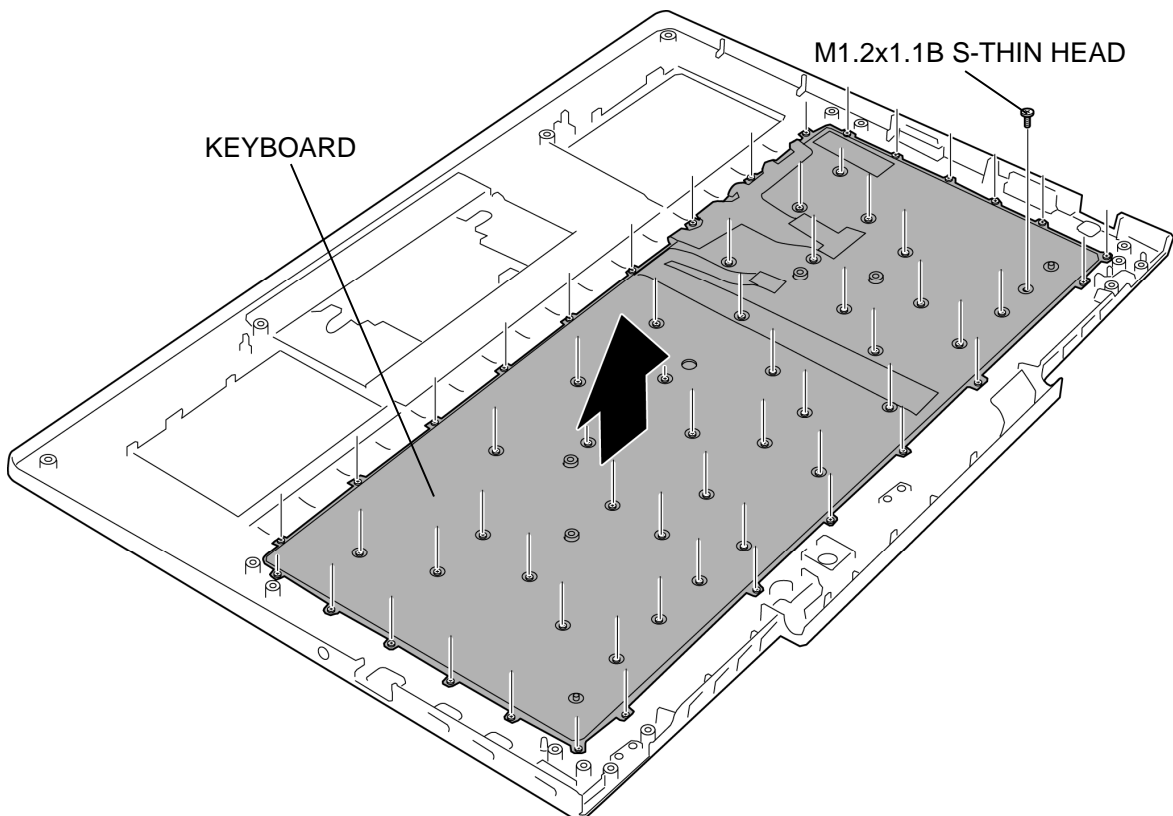
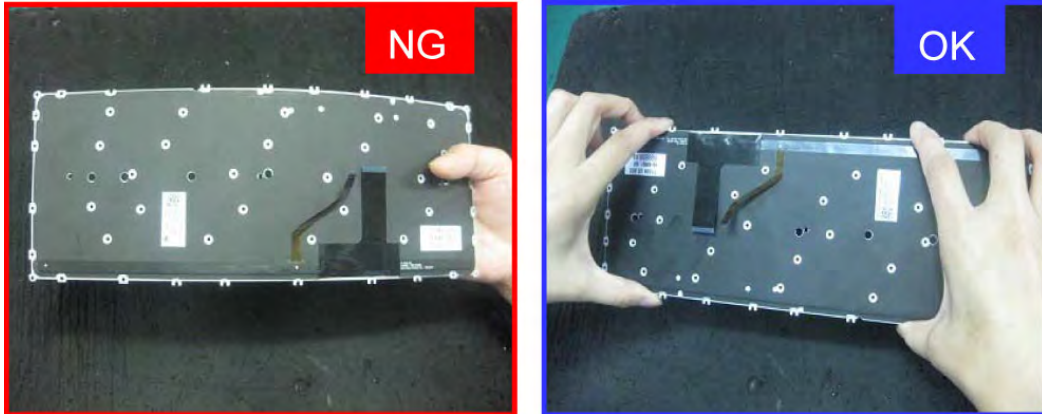


Figure 4-25 Removing the KEYBOARD (2)

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**Installing the KEYBOARD**

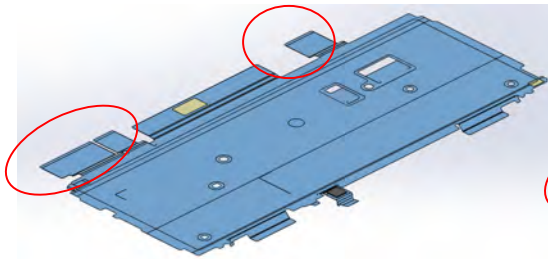
To install the KEYBOARD, follow the steps below and refer to Figure 4-24 and 4-25.

1. Set the **KEYBOARD** to the COVER ASSY in place and secure it with the following screws.
  - M1.2×1.1B S-THIN HEAD screw ×63
2. Stick a new **INSU KB LOW** or **INSU KB LOW 5G** to the COVER ASSY in place.

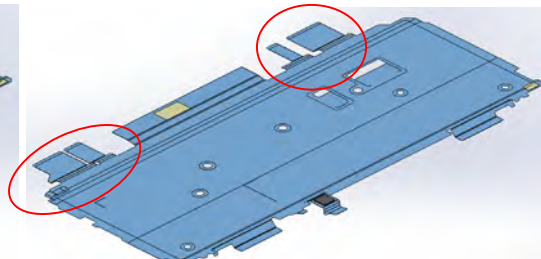
**NOTE:**

1. Prepare **INSU KB LOW** for non 5G/LTE model, **INSU KB LOW 5G** for 5G and LTE model.

< INSU KB LOW >

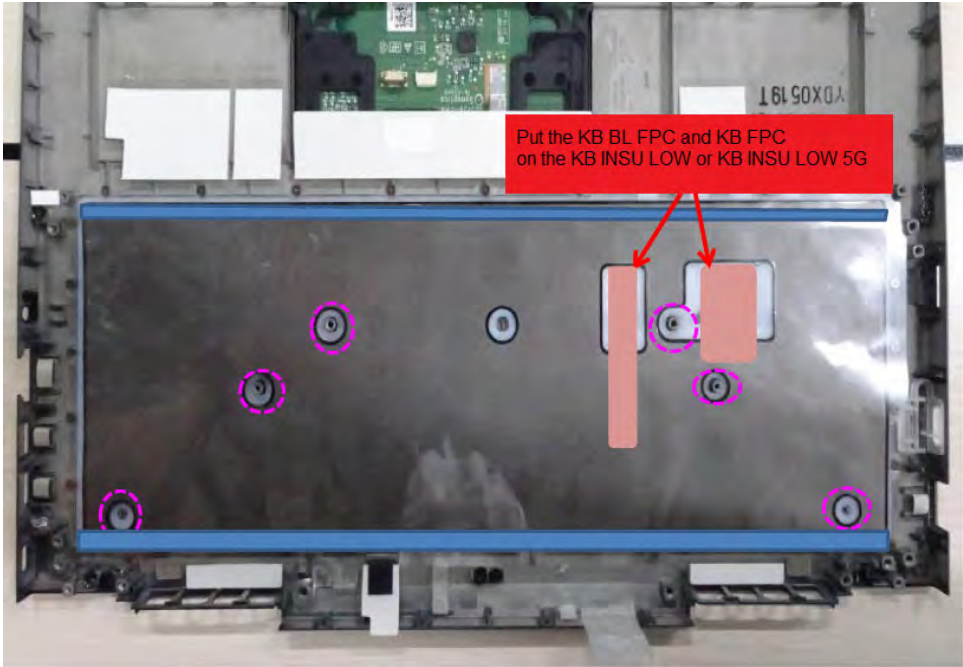


< INSU KB LOW 5G >





2. Stick the *INSU KB LOW* or *INSU KB LOW 5G* to the *COVER ASSY* as shown in the figure below.



Prepare the required parts in advance, when replacing the following items.

ITEM	Parts List ITEM No	PART NAME	Quantity		
			Non 5G/LTE	LTE	5G
KEYBOARD	11	KEYBOARD	1	1	1
	61	INSU KB LOW	1	0	0
		INSU KB LOW 5G	0	1	1
		FIN CUSHION COV	2	2	2

## 4.19 LCD/CAMERA MODULE

### Removing the LCD/CAMERA MODULE

To remove the LCD/CAMERA MODULE, follow the steps below and refer to Figure 4-26 to 4-31.

**NOTE:** *Handle with care of removing/installing the LCD UNIT.  
Refer to [LCD unit\_remove.mp4] file for the details of removing the LCD UNIT.*

1. Release the **latches** and remove the **LCD LOW CAP ASSY**.
2. Release the **latches** and peel off the **HINGE CAP L ASSY** and **HINGE CAP R ASSY** from the LCD COVER ASSY.

**NOTE:** *Do not reuse the removed HINGE CAP L ASSY and HINGE CAP R ASSY, be sure to use new ones.*

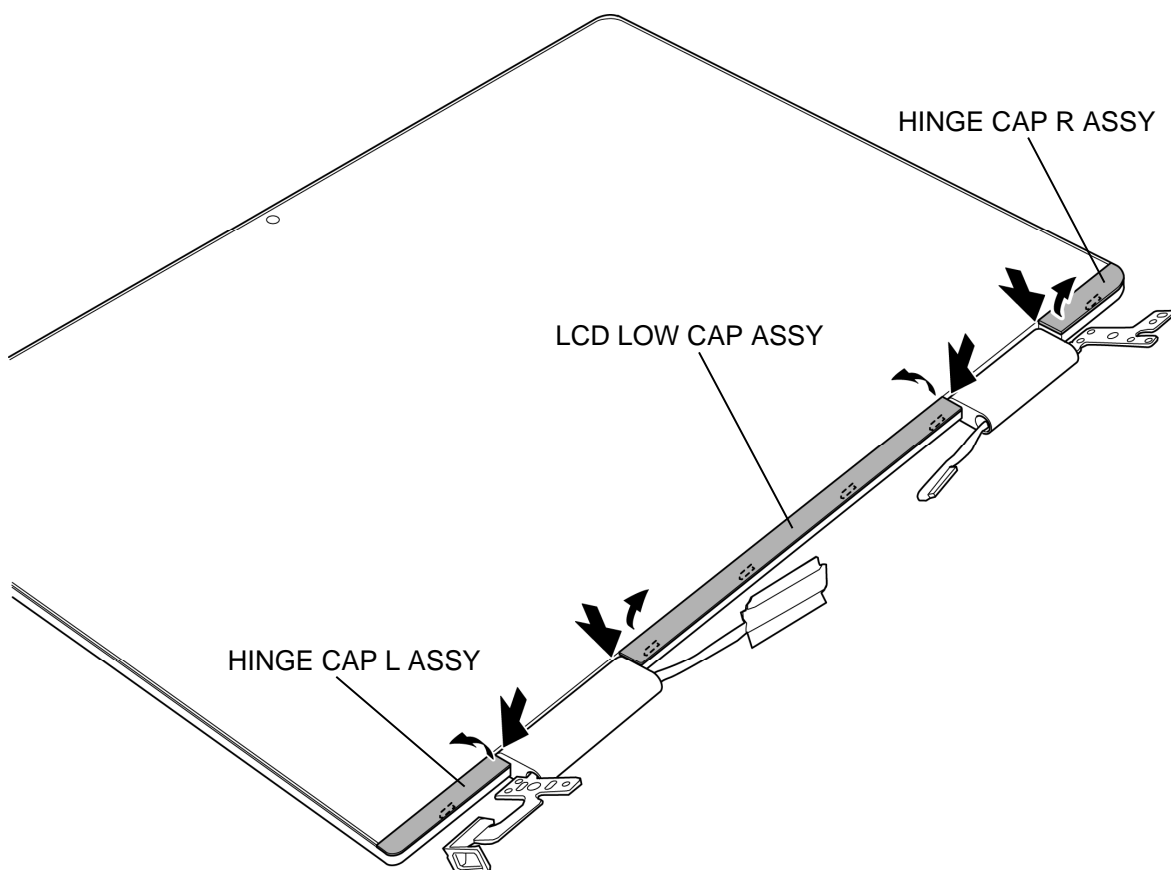
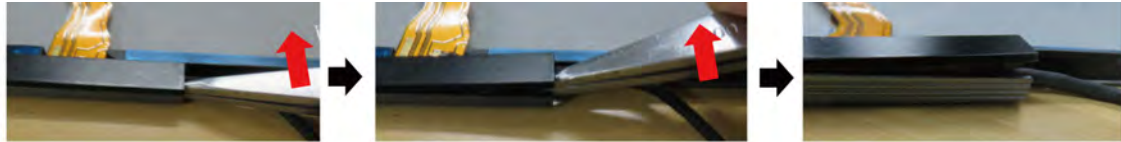


Figure 4-26 Removing the LCD (1)

**NOTE:** Remove the *HINGE CAP L ASSY*, *LCD LOW CAP ASSY* and *HINGE CAP R ASSY* as shown in the figure below.



Insert the tweezers and lift it up to release the latches.

LCD LOW CAP ASSY



Slide the pick to release the latches.



Open the HINGE more than 180°



Insert the tweezers between the HINGE CAP and HINGE CASE.

For scratch-prevention



Slide the pick to release the latches.



3. Remove the following **screws** and the **HINGE L/R ASSY** from the LCD COVER ASSY
  - M2.5×2.5C S-THIN HEAD screw ×4
4. Release the **LCD HARNESS** and **CAMERA HARNESS** from the HINGE L/R ASSY.

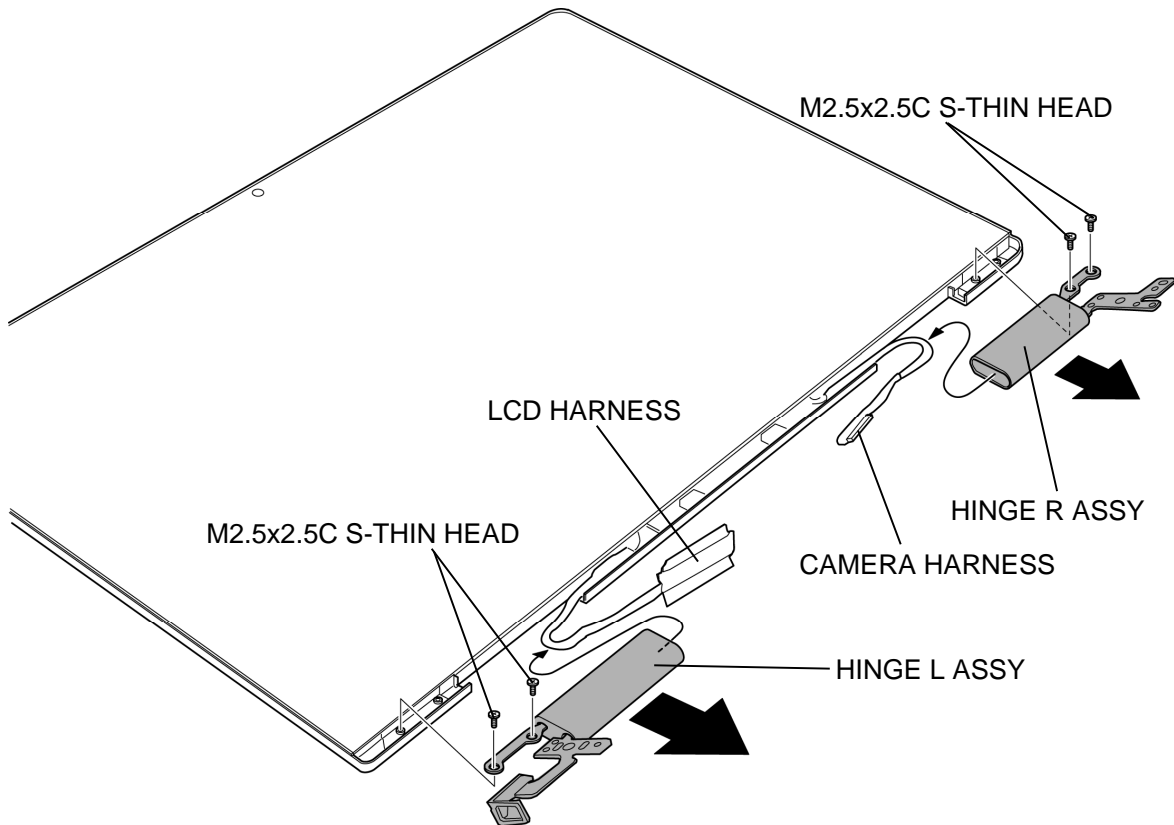


Figure 4-27 Removing the LCD (2)

5. Pull the **D TAPE TP LS R**, **D TAPE TP LOW R** and **D TAPE TP SIDE R** to the arrow pointing.
6. Pull the **D TAPE TP LS L**, **D TAPE TP LOW L** and **D TAPE TP SIDE L** to the arrow pointing.
7. Pull the **D TAPE TP L CE** to the arrow pointing.
8. Peel the **3AXIS SENSOR BOARD**.
9. Close the **SHUTTER SWITCH**.
10. Peel the **LCD UNIT** slowly.

**NOTE:** Remove the LCD UNIT as shown in the figure below.

Peel off the D TAPES



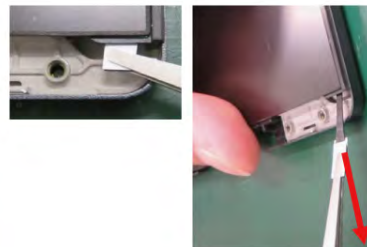
① D TAPE TP LS R  
Pull toward the  
arrow pointing



② D TAPE TP LOW R  
Pull toward the arrow  
pointing



③ D TAPE TP SIDE R  
Pull toward the  
arrow pointing







## Peel off the LCD UNIT

- ① Peel the 3AXIS SENSOR BOARD  
(Do not touch the IC portion  
of the 3AXIS SENSOR BOARD.)



- ② Close the SHUTTER SWITCH



- ③ Put your fingers under the  
LCD UNIT until the double-sided  
tapes are peeled.



- ④ When the double-sided tapes (D TAPE SEPA) start peeling, Peel off the LCD UNIT toward the arrow pointing slowly.



- ⑤ Peel off the double-sided tape  
on the back of the LCD UNIT.



- ※1 If the MAGNETs stick to the double-sided tape, peel off the MAGNET and set it to the LCD COV ASSY. (Stick the D-STICK TAPE side of the MAGNET to the LCD COV ASSY)



Adhesive  
side



- ※2 If the SHUTTER SWITCH is removed, remove the CAMERA COVER and set the SHUTTER SWITCH to the CAMERA COVER.



CAMERA COVER



CAMERA COVER

CAMERA COV ASSY

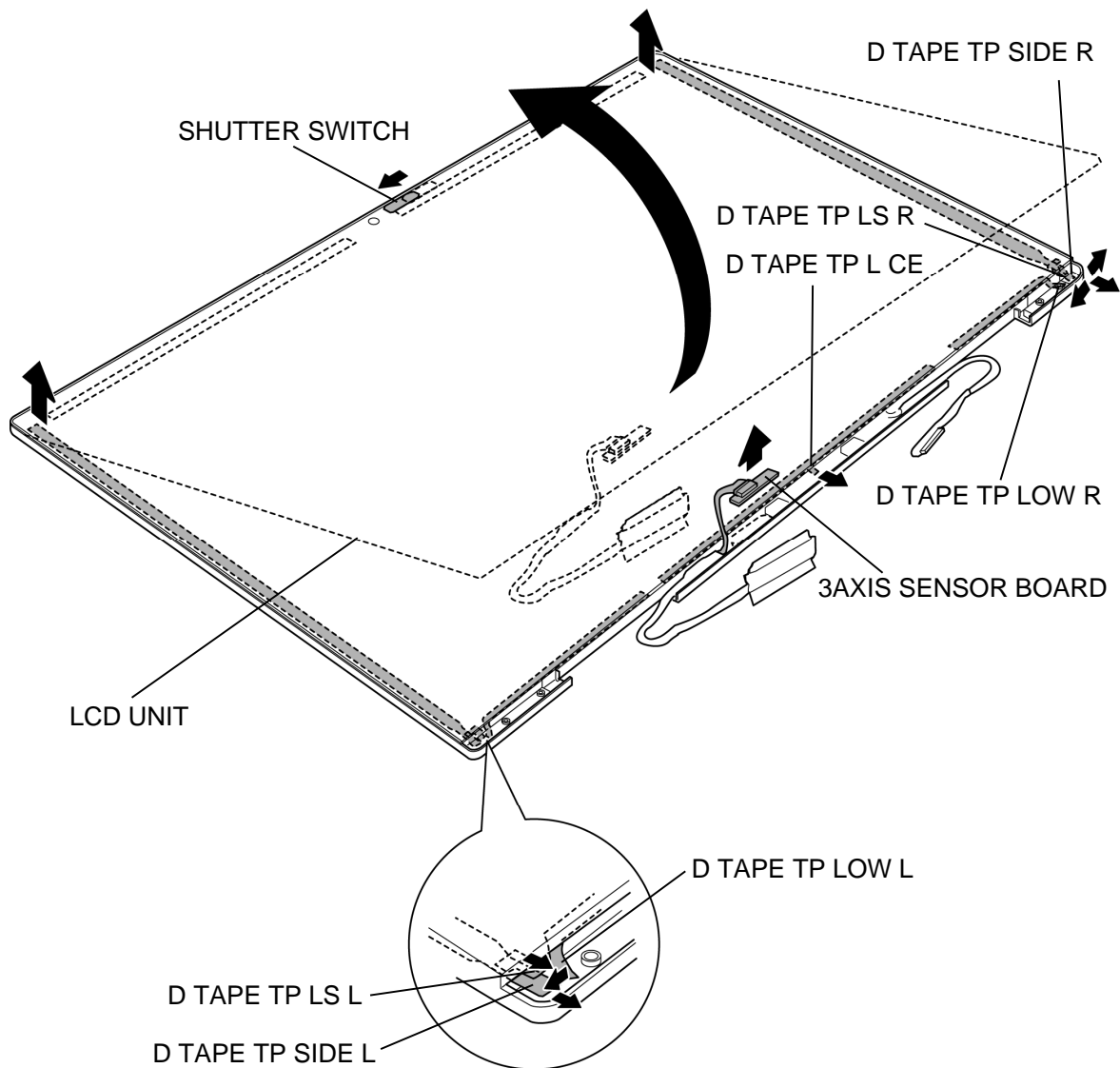


Figure 4-28 Removing the LCD (3)



11. Peel off the **INSU SQUARE**.
12. Release the **lock bar** and disconnect the **LCD HARNESS** from the connector on the LCD UNIT.
13. Disconnect the **TOUCH PANEL HARNESS** from the connector on the TOUCH PANEL.
14. Disconnect the **SENSOR HARNESS** from the connector **CN9860** on the 3AXIS SENSOR BOARD.

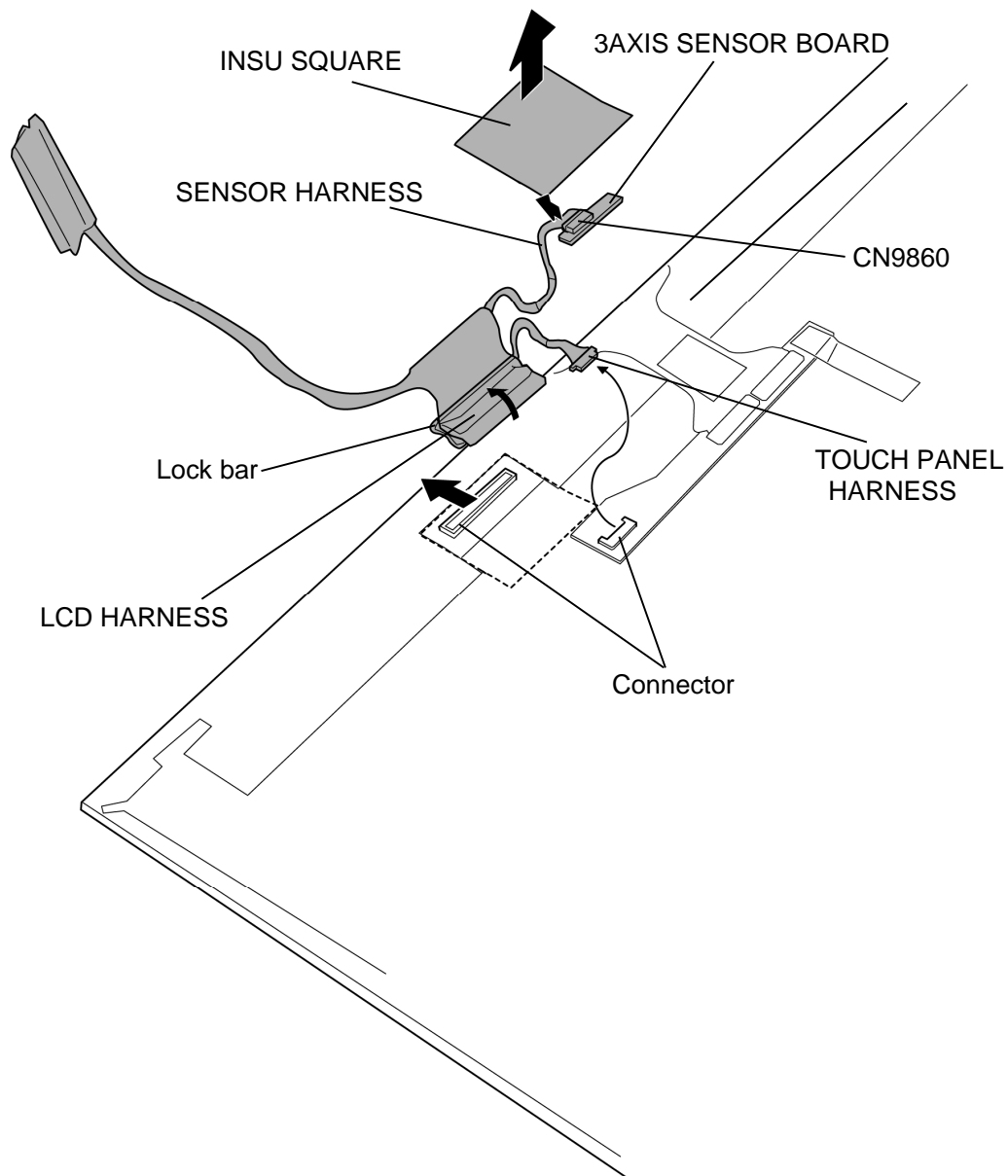


Figure 4-29 Removing the LCD (4)

15. Disconnect the **CAMERA HARNESS** (FPC portion) from the connector on the **CAMERA MODULE**.
16. Remove the **CAMERA COV ASSY** from the LCD COVER ASSY.
17. Remove the **SHUTTER SWITCH** from the CAMERA COV ASSY.
18. Remove the **CAMERA MODULE** from the LCD COVER ASSY.

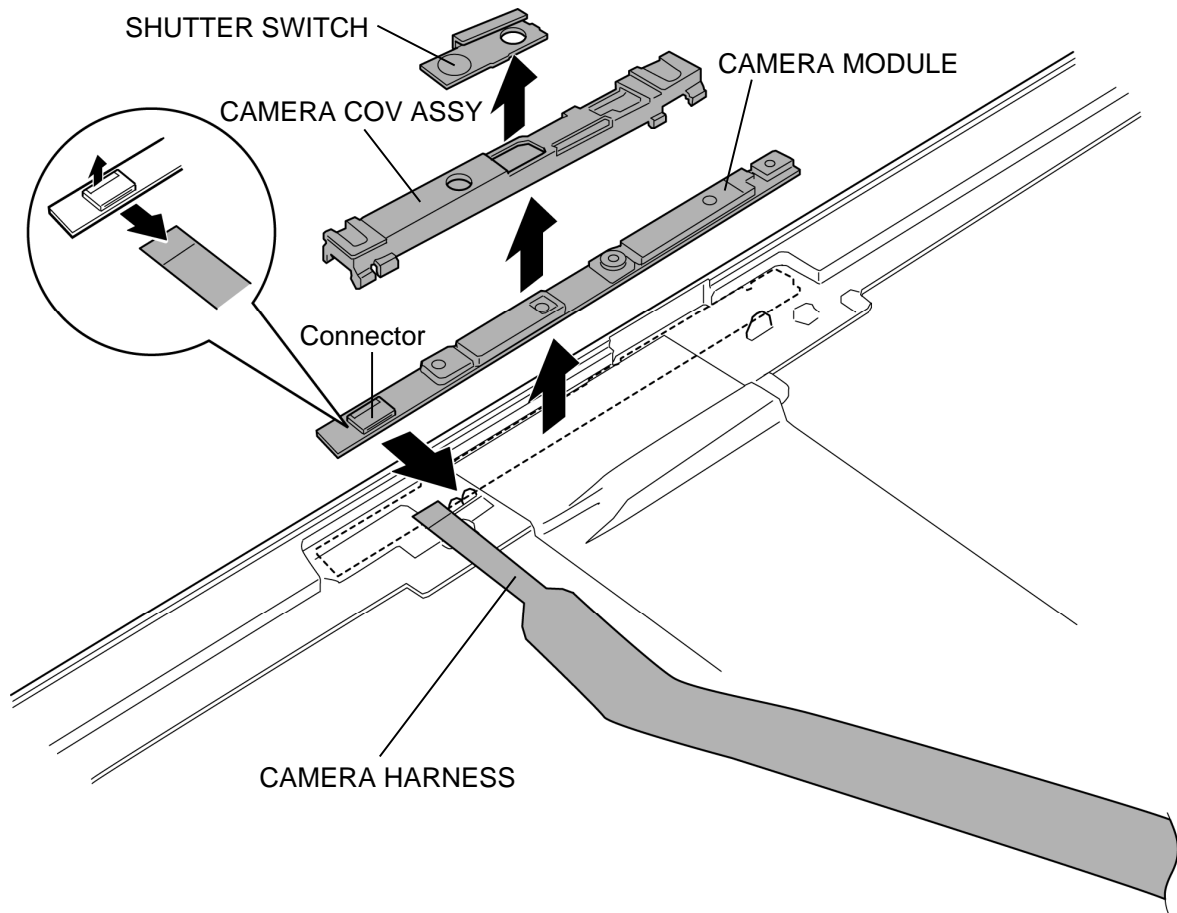


Figure 4-30 Removing the CAMERA MODULE (1)

19. Remove the **CAMERA HARNESS** (FPC portion) from the LCD COVER ASSY.

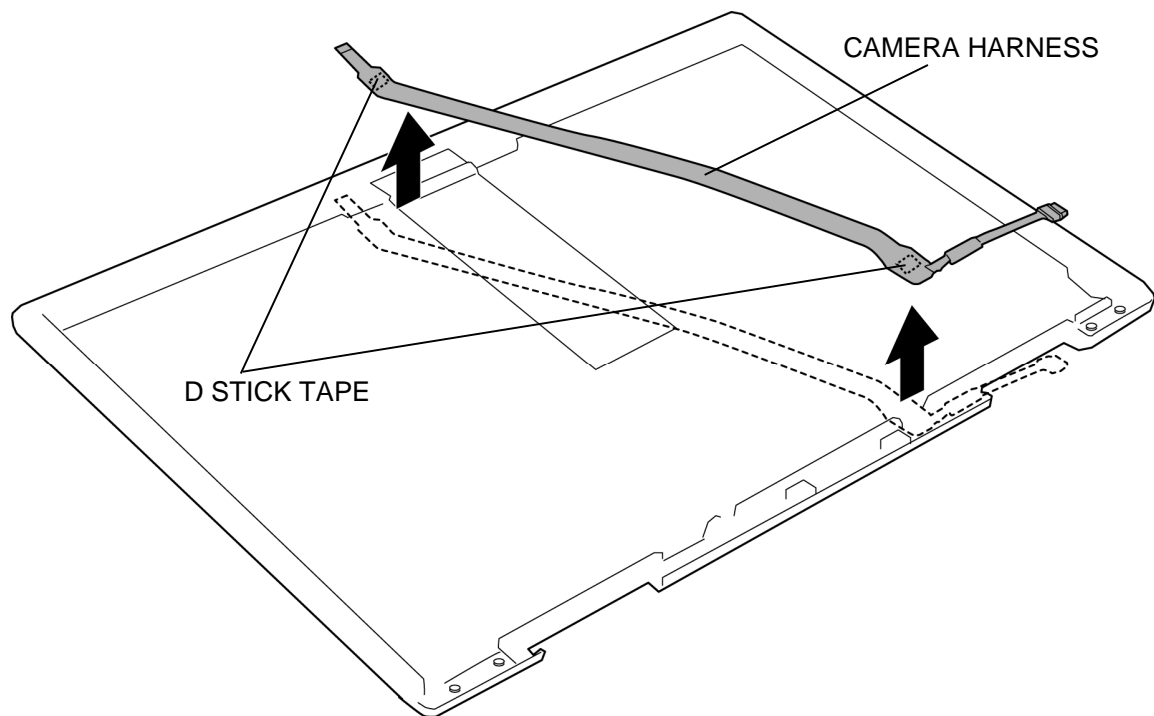
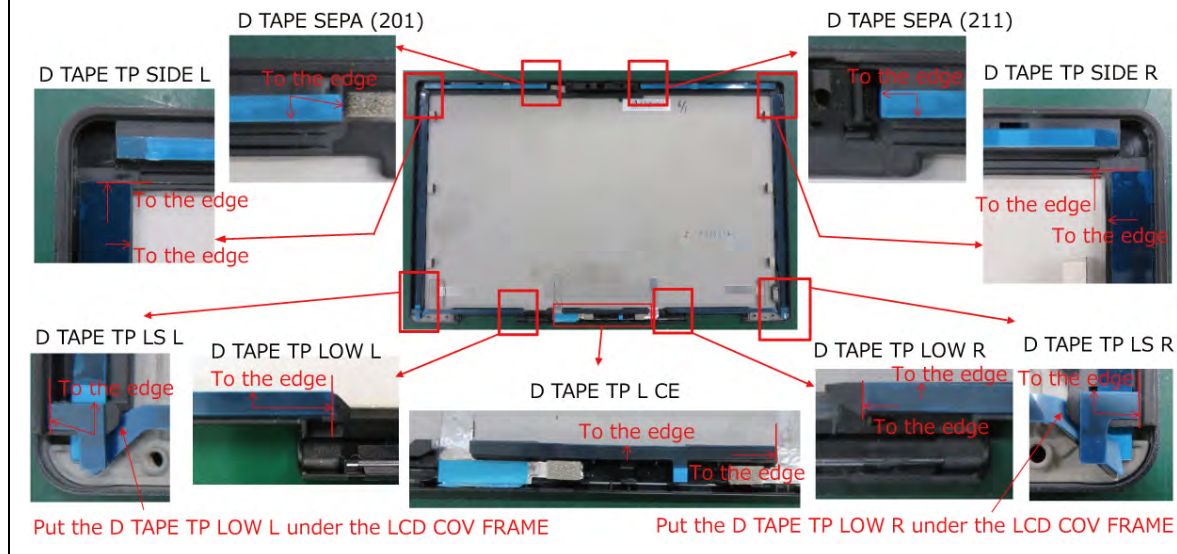


Figure 4-31 Removing the CAMERA MODULE (2)

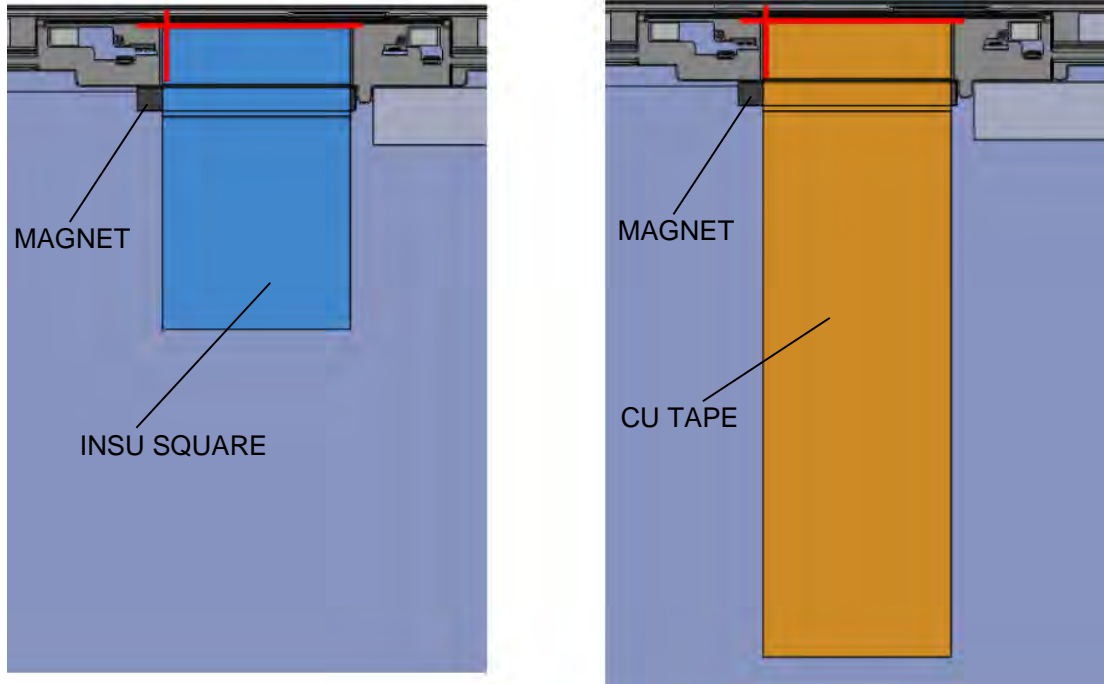
## Installing the LCD/CAMERA MODULE

To install the LCD/CAMERA MODULE, follow the steps below and refer to Figure 4-26 to 4-31.

**NOTE:** When replacing the LCD COVER ASSY with a new one, stick new D TAPE SEPA (201/211), D TAPE TP SIDE L, D TAPE TP LS L, D TAPE TP LOW L, D TAPE TP SIDE R, D TAPE LS R, D TAPE TP LOW R and D TAPE TP L CE to the LCD COVER ASSY in place.



**NOTE:** When replacing the LCD COVER ASSY with a new one, stick new **INSU SQUARE (061)** (HD camera model) or **CU TAPE (FA camera model)**, **MAGNET (310)** (*non 5G/LTE model*) and **MAGNET (410)** (*5G/LTE model*) to the LCD COVER ASSY in place.



1. Stick the **CAMERA MODULE** to the LCD COVER ASSY in place.
2. Connect the **CAMERA HARNESS** (FPC portion) to the connector on the CAMERA MODULE.
3. Arrange the **CAMERA HARNESS** (FPC portion) to the LCD COVER ASSY in place.
4. Set the **SHUTTER SWITCH** to the CAMERA COV ASSY.
5. Set the **CAMERA COV ASSY** to the LCD COVER ASSY.
6. Stick new **D TAPE SEPA (131/141)**, **D TAPE TP SIDE L**, **D TAPE TP LS L**, **D TAPE TP LOW L**, **D TAPE TP SIDE R**, **D TAPE LS R**, **D TAPE TP LOW R** and **D TAPE TP L CE** to the LCD COVER ASSY in place.
7. Connect the **LCD HARNESS** to the connector on the LCD UNIT and lay down the **lock bar** to engage.
8. Connect the **TOUCH PANEL HARNESS** to the connector on the TOUCH PANEL.

9. Stick the **INSU SQUARE** in place.
10. Set the **LCD UNIT** on the LCD COVER ASSY in place.
11. Connect the **SENSOR HARNESS** to the connector **CN9860** on the 3AXIS SENSOR BOARD.
12. Set the **3AXIS SENSOR BOARD** to the LCD COVER ASSY in place.

**NOTE:** When setting the 3AXIS SENSOR BOARD, do not touch the IC portion of the 3AXIS SENSOR BOARD.

13. Confirm that the SHUTTER SWITCH moves properly and move it open position.
14. Set the **LCD LOW CAP ASSY** to the LCD COVER ASSY while engaging the latches.
15. Insert the **LCD HARNESS** into the HINGE L ASSY.
16. Set the **HINGE L ASSY** to the LCD COVER ASSY and secure it with the following screws.
  - M2.5×2.5C      S-THIN HEAD screw      ×2
17. Insert the **CAMERA HARNESS** into the HINGE R ASSY.
18. Set the **HINGE R ASSY** to the LCD COVER ASSY and secure it with the following screws.
  - M2.5×2.5C      S-THIN HEAD screw      ×2
19. Peel off the separator and set the **HINGE CAP L ASSY** to the LCD COVER ASSY while engaging the latches.
20. Peel off the separator and set the **HINGE CAP R ASSY** to the LCD COVER ASSY while engaging the latches.

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Prepare required parts in advance, when replacing the following items.

ITEM	Parts List ITEM No	PART NAME	Quantity		
			Non 5G/LTE	LTE	5G
LCD COVER ASSY	50	LCD COVER ASSY	1	1	1
	52	HINGE CAP L ASSY	1	1	1
	53	HINGE CAP R ASSY	1	1	1
		INSU SQUARE(261) (HD camera model)	1	1	1
	35	CU TAPE (FA camera model)	1	1	1
	75	MAGNET (310)	1	0	0
		MAGNET (410)	0	1	1

ITEM	Parts List ITEM No	PART NAME	Quantity		
			Non 5G/LTE	LTE	5G
LCD UNIT/CAMERA	03,13,14	LCD UNIT/CAMERA	1	1	1
	52	HINGE CAP L ASSY	1	1	1
	53	HINGE CAP R ASSY	1	1	1
	A07	D TAPR SEPA (201)	1	1	1
	A08	D TAPR SEPA (211)	1	1	1
	A05	D TAPE TP SIDE L	1	1	1
	A11	D TAPE TP LS L	1	1	1
	A09	D TAPE TP LOW L	1	1	1
	A06	D TAPE TP SIDE R	1	1	1
	A12	D TAPE TP LS R	1	1	1
	A10	D TAPE TP LOW R	1	1	1
	A13	D TAPE TP L CE	1	1	1





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# Appendices

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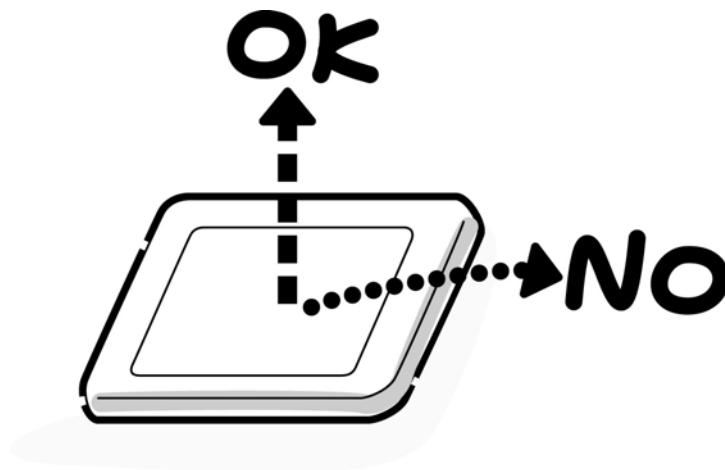
## Appendix A Handling the LCD Module

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### 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.

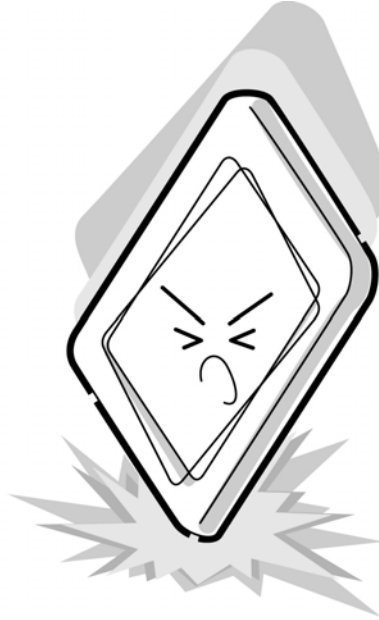
If the surface is very dirty, we recommend a CRT cleaning agent. Apply the agent to a cloth and then wipe the panel's surface. Do not apply cleanser directly to the panel.



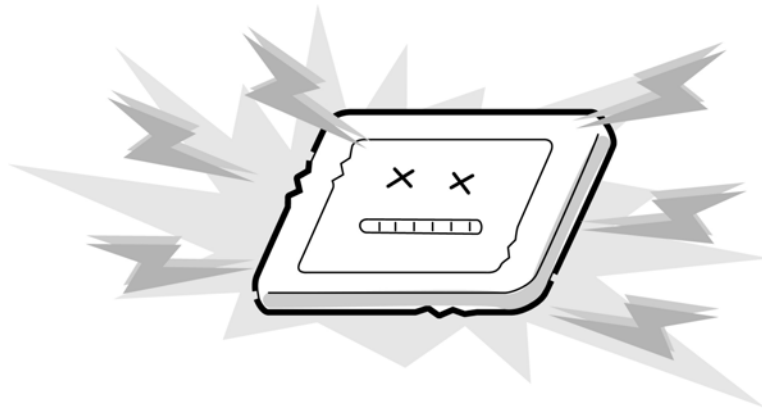
4. If water or other liquid is left on the panel's surface for a long period, it can change the screen's tint or stain it. Be sure to quickly wipe off any liquid.



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.



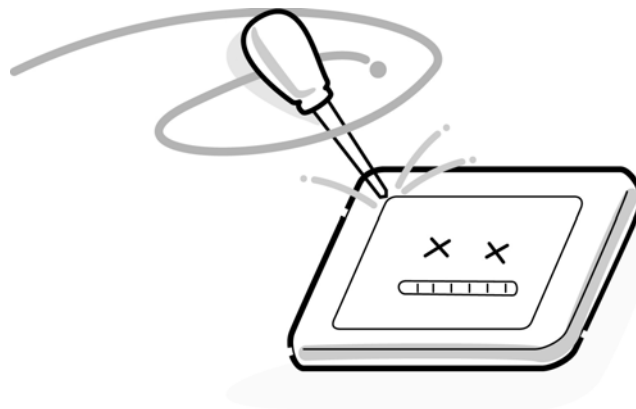
7. Do not expose the module to direct sunlight or strong ultraviolet rays for long periods.



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.

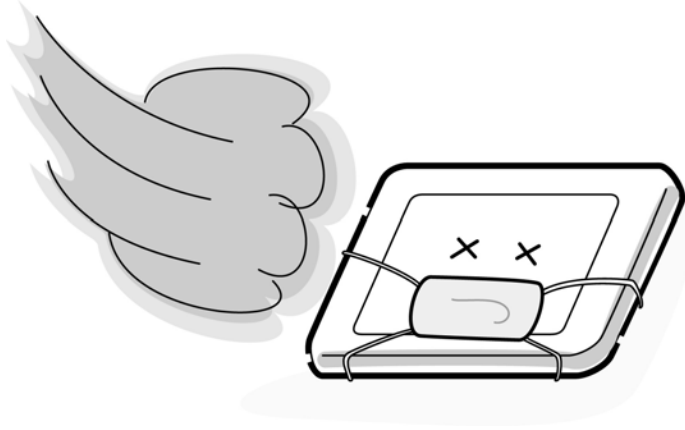


9. Do not disassemble the LCD module. Disassembly can cause malfunctions.





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.





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## Appendix B PCB Layout

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## B.1 System board (FDIASY\*) Front View



Figure B-1 System board (FDIASY\*) layout (Front)

Table B-1 System board (FDIASY\*) connectors and ICs (Front)

No.	Name
CN4800	USB Type-C connector
CN4821	USB Type-C connector
IS2641	nano SIM card I/F connector
IS2220	Micro SD card I/F connector

## B.2 System board (FDIASY\*) Back View

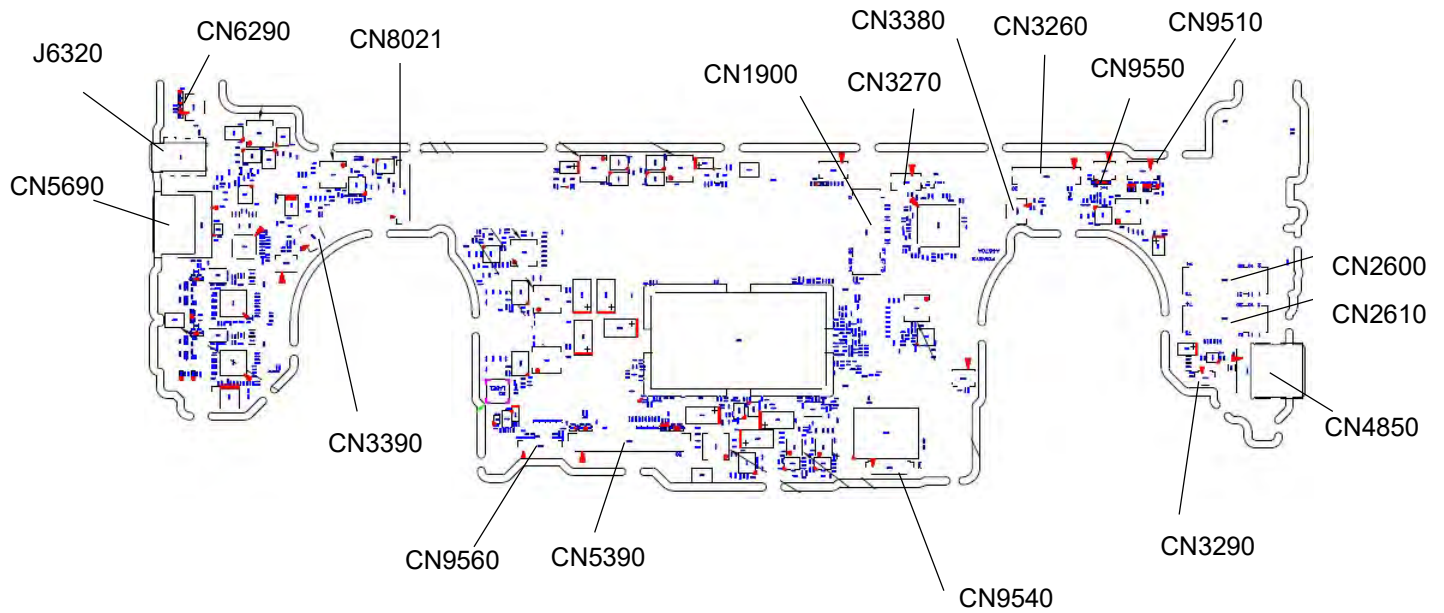


Figure B-2 System board (FDIASY\*) layout (Back)

Table B-2 System board (FDIASY\*) connectors and ICs (Back)

No.	Name
CN5690	HDMI I/F connector
J6320	Headphone/Microphone combo jack
CN6290	Speaker I/F connector
CN8021	Battery connector
CN1900	SATA/PCIe SSD I/F connector
CN3270	KB backlight I/F connector
CN3380	FAN (1) I/F connector
CN3390	FAN (2) I/F connector
CN3260	KB I/F connector
CN9550	Fingerprint sensor I/F connector
CN9510	Click pad (Touch pad) I/F connector
CN2600	M.2 LTE I/F connector
CN2610	M.2 5G I/F connector
CN4850	USB Type-A connector
CN3290	Lid board I/F connector
CN9540	Web camera+FA I/F connector
CN5390	LCD(eDP)&TouchPanel&Axis sensor board I/F connector
CN9560	Web camera (Rear) I/F connector

### B.3 3AXIS sensor board (FDIASE\*) View

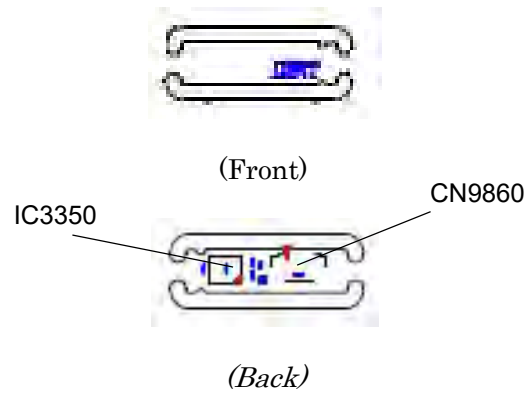


Figure B-3 Sensor board (FDIASE\*) layout

Table B-3 Sensor board (FDIASE\*) connectors and ICs

No.	Name
IC3350	Accelerometer
CN9860	System board I/F connector



## B.4 Lid board (FDIALS\*) View

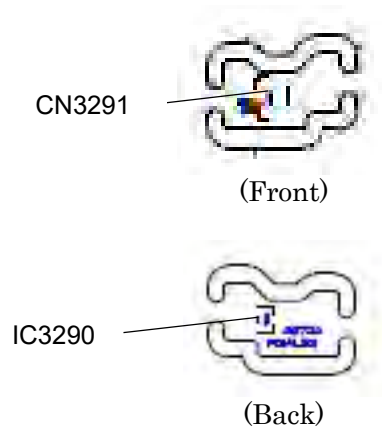


Figure B-4 Lid board (FDIALS\*) layout

Table B-4 Lid board (FDIALS\*) connectors

No.	Name
CN3291	System board I/F connector
IC3290	Lid sensor



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**System board (FDIASY\*)****C.1 CN9560 Web camera (Rear) I/F connector (31-pin)***Table C-1 Web camera (Rear) I/F connector (31-pin)*

Pin No.	Signal name	Pin No.	Signal name
1	GND	18	XCSIBC-E1P
2	MCMV2R8-P2V	19	XCSIBC-E1N
3	MCMV2R8-P2V	20	GND
4	GND	21	ZCSIB1-E1P
5	GND	22	ZCSIB1-E1N
6	MCMA2R8-P2V	23	GND
7	GND	24	ZCSIB3-E1P
8	MCM1R2-P1V	25	ZCSIB3-E1N
9	GND	26	GND
10	IMGCK0-E1P	27	MCMRST-E1N
11	GND	28	I2CDT3-P1P
12	ZCSIB2-E1P	29	I2CCK3-P1P
13	ZCSIB2-E1N	30	MCM1R8-P1V
14	GND	31	GND
15	ZCSIB0-E1P	1T	GND
16	ZCSIB0-E1N	2T	GND
17	GND		

## C.2 CN5390 LCD(eDP)&TouchPanel&Axis sensor board I/F connector (50-pin)

Table C-2 LCD(eDP)&TouchPanel&Axis sensor board I/F connector (50-pin)

Pin No.	Signal name	Pin No.	Signal name
1	ISHIN0-E3N	28	ZEDPAU-P1P
2	E3V	29	GND
3	ISHDA0-E3P	30	ZEDPA0-P1P
4	GND	31	ZEDPA0-P1N
5	ISHCL0-E3P	32	GND
6	PVT-EF	33	ZEDPA1-P1P
7	PVT-EF	34	ZEDPA1-P1N
8	PVT-EF	35	GND
9	PVT-EF	36	(ZEDPA2-P1P)
10	BKLPWM-E3P	37	(ZEDPA2-P1N)
11	321 530	38	GND
12	GND	39	(EDPA3-P1P)
13	GND	40	(EDPA3-P1N)
14	GND	41	GND
15	GND	42	TPNLDT-P3N
16	EDPHPD-P3P	43	GND
17	GND	44	GND
18	GND	45	TPINT-P3N
19	GND	46	I2CDT1-P3P
20	GND	47	I2CCK1-P3P
21	NC	48	IC5390-4
22	PNL-P3V	49	TP-P3V
23	PNL-P3V	50	TP-P3V
24	PNL-P3V	1T	GND
25	PNL-P3V	2T	GND
26	NC	3T	GND
27	ZEDPAU-P1N	4T	GND

**C.3 CN9540 Web camera+FA I/F connector (12-pin)***Table C-3 Web camera+FA I/F connector (12-pin)*

Pin No.	Signal name	Pin No.	Signal name
1	P3V	8	GND
2	P3V	9	GND
3	P3V	10	ZUSBCF-E3N
4	DMICIN-P1P	11	ZUSBCF-E3P
5	XDMCLK-E1P	12	GND
6	CAMDET-P3N	1T	GND
7	GND	2T	GND

**C.4 CN3380 FAN (1) I/F connector (4-pin)***Table C-4 FAN (1) I/F connector (4-pin)*

Pin No.	Signal name	Pin No.	Signal name
1	P5V	2	FANG0-P3P
3	GND	4	IC3380-4
1T	GND	2T	GND

**C.5 CN2600 M.2 LTE I/F connector (75-pin)***Table C-5 M.2 LTE I/Fconnector (75-pin) (1/2)*

Pin No.	Signal name	Pin No.	Signal name
1	NC	2	E3V
3	GND	4	E3V
5	GND	6	3GON-E1P
7	ZUSB3G-E3P	8	GRFON-E3P
9	ZUSB3G-E3N	10	NC
11	GND	12	-
13	-	14	-
15	-	16	-
17	-	18	-
19	-	20	NC
21	NC	22	NC
23	NC	24	NC
25	3GSAR-E1N	26	NC
27	GND	28	NC
29	ZU33GR-E1N	30	UIMRS3G-E3P
31	ZU33GR-E1P	32	UIMCL3G-E3P
33	GND	34	UIMIO3G-E3P
35	ZU33GT-E1N	36	UIMPW3G-E3V
37	ZU33GT-E1P	38	NC
39	GND	40	NC
41	NC	42	NC
43	NC	44	NC
45	GND	46	NC
47	NC	48	NC
49	NC	50	NC
51	GND	52	NC
53	NC	54	NC
55	NC	56	NC
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	NC	64	NC



Table C-5 M.2 LTE I/Fconnector (75-pin) (2/2)

Pin No.	Signal name	Pin No.	Signal name
65	NC	66	UIMDT3G-E3N
67	NC	68	NC
69	NC	70	E3V
71	3GDET-E3N	72	E3V
73	GND	74	E3V
75	NC		
1T	GND	2T	GND

**C.6 CN2610 M.2 5G I/F connector (75-pin)***Table C-6 M.2 5G I/Fconnector (75-pin) (1/2)*

Pin No.	Signal name	Pin No.	Signal name
1	NC	2	5G-E3V
3	GND	4	5G-E3V
5	GND	6	5GON-E1P
7	ZUSB5G-E3P	8	5GRFON-E3P
9	ZUSB5G-E3N	10	NC
11	GND	12	-
13	-	14	-
15	-	16	-
17	-	18	-
19	-	20	NC
21	NC	22	NC
23	5GWAKE-E3N/PEWAKE-E3N	24	5G-E3V
25	5GSAR-E1N	26	NC
27	GND	28	IC2612-2
29	NC	30	IMRS5G-E3P
31	NC	32	UIMCL5G-E3P
33	GND	34	UIMIO5G-E3P
35	NC	36	UIMPW5G-E3V
37	NC	38	5G-E3V
39	GND	40	NC
41	ZER5G0-E1N	42	NC
43	ZER5G0-E1P	44	NC
45	GND	46	NC
47	ZET5G0-E1N	48	NC
49	ZET5G0-E1P	50	PLTRS0-E3N
51	GND	52	5GXRQ-P3N
53	XPE5G-E0N	54	5GWAKE-E3N/PEWAKE-E3N
55	XPE5G-E0P	56	NC
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	NC	64	NC

Table C-6 M.2 5G I/F connector (75-pin) (2/2)

Pin No.	Signal name	Pin No.	Signal name
65	NC	66	UIMDT5G-E3N
67	NC	68	5G-E3V
69	NC	70	5G-E3V
71	5GDET-E3N	72	5G-E3V
73	GND	74	5G-E3V
75	NC		
1T	GND	2T	GND

**C.7 CN3290 Lid board I/F connector (3-pin)**

Table C-7 Lid board I/F connector (3-pin)

Pin No.	Signal name	Pin No.	Signal name
1	S3V	2	PNLOFF-S3N
3	GND		
1T	GND	2T	

**C.8 CN4850 USB Type-A connector (9-pin)**

Table C-8 USB Type-A connector (9-pin)

Pin No.	Signal name	Pin No.	Signal name
1	USBPS0-E5V	8	ZU3D1T-E1N
2	ZUSBE3-E3N	9	ZU3D1T-E1P
3	ZUSBE3-E3P	1T	GND
4	GND	2T	GND
5	ZU3D1R-E1N	3T	GND
6	ZU3D1R-E1P	4T	GND
7	GND		

**C.9 IS2641 nano SIM card I/F connector (10-pin)***Table C-9 nano SIM card I/F connector (10-pin)*

Pin No.	Signal name	Pin No.	Signal name
1	UIMPW1-E3V/ UIMPW5G-E3V/ UIMPW3G-E3V	2	UIMRS5G-E3P/ UIMRS3G-E3P
3	UIMCL5G-E3P/ UIMCL3G-E3P	4	-
5	GND	6	NC
7	UIMIO5G-E3P/ UIMIO3G-E3P	8	-
9	GND	10	E3V/ UIMDT5G-E3N/ UIMDT3G-E3N
1T	GND	2T	GND
3T	GND	4T	GND
5T	GND	6T	GND
7T	GND		

**C.10 IS2220 SD card I/F connector (13-pin)***Table C-10 SD card I/F connector (13-pin)*

Pin No.	Signal name/	Pin No.	Signal name
1	SDAT2-P3P	2	SDAT3-P3P
3	SDCMD-P3P	4	FMC-P3V
5	SDCLK-P3P	6	GND
7	SDAT0-P3P	8	SDAT1-P3P
9	SDCD-P3N	10	GND
11	GND	12	GND
13	GND		

**C.11 CN9510 Click pad I/F connector (10-pin)***Table C-11 Click pad I/F connector (10-pin)*

Pin No.	Signal name	Pin No.	Signal name
1	P3V	2	PDTINT-P3N
3	GND	4	PDCLK-P3P
5	GND	6	IPDDAT-P3P
7	IC9560-4	8	I2CDT0-P3P
9	GND	10	I2CCK0-P3P
1T	GND	2T	GND

**C.12 CN9550 Fingerprint sensor I/F connector (6-pin)***Table C-12 Fingerprint sensor I/F connector (6-pin)*

Pin No.	Signal name	Pin No.	Signal name
1	GND	2	GND
3	ZUSBFS-E3P	4	ZUSBFS-E3N
5	FSDet-P3P	6	FS-P3V
1T	GND	2T	GND

**C.13 CN3260 KB I/F connector (30-pin)***Table C-13 KB I/F connector (30-pin)*

Pin No.	Signal name	Pin No.	Signal name
1	GND	17	KBSC03-S3N
2	KBSEL-E1N	18	KBSC02-S3N
3	CPSLED-S3P	19	KBSC05-S3N
4	P5V	20	KBSC04-S3N
5	NC	21	KBSC06-S3N
6	KBRT06-S3N	22	KBSC08-S3N
7	KBRT02-S3N	23	KBSC10-S3N
8	KBRT03-S3N	24	KBSC01-S3N
9	KBRT05-S3N	25	KBSC11-S3N
10	KBRT01-S3N	26	KBSC07-S3N
11	KBRT04-S3N	27	KBSC15-S3N
12	KBRT07-S3N	28	KBSC12-S3N
13	KBRT00-S3N	29	KBSC13-S3N
14	NC	30	KBSC14-S3N
15	KBSC00-S3N	1T	GND
16	KBSC09-S3N	2T	GND

**C.14 CN3270 KB backlight I/F connector (4-pin)***Table C-14 KB backlight I/F connector (4-pin)*

Pin No.	Signal name	Pin No.	Signal name
1	P5V	2	GND
3	KBBLDT-P3N	4	GND
1T	GND	2T	GND

**C.15 CN8021 Battery connector (17-pin)***Table C-15 Battery connector (17-pin)*

Pin No.	Signal name	Pin No.	Signal name
1	GND	2	GND
3	GND	4	GND
5	GND	6	GND
7	ESCL-S3P	8	ESDA-S3P
9	BDET-M5N	10	GND
11	IC8020-4	12	PVNVDC
13	PVNVDC	14	PVNVDC
15	PVNVDC	16	PVNVDC
17	PVNVDC		PVNVDC
1T	GND	2T	GND

**C.16 CN3390 FAN (2) I/F connector (4-pin)***Table C-16 FAN (2) I/F connector (4-pin)*

Pin No.	Signal name	Pin No.	Signal name
1	P5V	2	FANG1-P3P
3	GND	4	IC3390-4
1T	GND	2T	GND

**C.17 CN6290 Speaker I/F connector (4-pin)***Table C-17 Speaker I/F connector (4-pin)*

Pin No.	Signal Name	Pin No.	Signal Name
1	SPOTL-PXN	2	SPOTL-PXP
3	SPOTR-PXP	4	SPOTR-PXN
1T	GND	2T	GND

**C.18 J6320 Headphone/Microphone combo jack (6-pin)***Table C-18 Headphone/Microphone combo jack (6-pin)*

Pin No.	Signal name	Pin No.	Signal name
1	SLEEVE-PXP	2	RING2-PXP
3	HEADR-PXP	4	HEADL-PXP
5	A-GND	6	DETECT-P3N

**C.19 CN5690 HDMI I/F connector (19-pin)***Table C-19 HDMI I/Fconnector (19-pin)*

Pin No.	Signal name	Pin No.	Signal name
1	ZHDMT2-P3P	2	GND
3	ZHDMT2-P3N	4	ZHDMT1-P3P
5	GND	6	ZHDMT1-P3N
7	ZHDMT0-P3P	8	GND
9	ZHDMT0-P3N	10	XHDMCK-P3P
11	GND	12	XHDMCK-P3N
13	NC	14	NC
15	HDMSCL-P5P	16	HDMSDA-P5P
17	GND	18	HDMI-P5V
19	IC5692-1		
1T	GND	2T	GND
3T	GND	4T	GND



**C.20 CN4800 USB Type-C (1) I/F connector (24-pin)***Table C-20 USB Type-C (1) I/F connector (24-pin)*

Pin No.	Signal name	Pin No.	Signal name
A1	GND	B1	GND
A2	ZSS0T1-E0P	B2	ZSS0T0-E0P
A3	ZSS0T1-E0N	B3	ZSS0T0-E0N
A4	PDVBUS1	B4	PDVBUS1
A5	PA1CC2-SXP	B5	PA1CC1-SXP
A6	ZUSBE1-E3P	B6	ZUSBE1-E3P
A7	ZUSBE1-E3N	B7	ZUSBE1-E3N
A8	ZP1SB2-EXP	B8	ZP1SB1-EXP
A9	PDVBUS1	B9	GND
A10	ZSS0R0-E0N	B10	ZSS0R1-E0N
A11	ZSS0R0-E0P	B11	ZSS0R1-E0P
A12	GND	B12	GND
1T	GND	3T	GND
2T	GND	4T	GND

**C.21 CN4821 USB Type-C (2) I/F connector (24-pin)***Table C-21 USB Type-C (2) I/F connector (24-pin)*

Pin No.	Signal name	Pin No.	Signal name
A1	GND	B1	GND
A2	ZSS1T1-E0P	B2	ZSS1T0-E0P
A3	ZSS1T1-E0N	B3	ZSS1T0-E0N
A4	PDVBUS2	B4	PDVBUS2
A5	PA2CC2-SXP	B5	PA2CC1-SXP
A6	ZUSBE2-E3P	B6	ZUSBE2-E3P
A7	ZUSBE2-E3N	B7	ZUSBE2-E3N
A8	ZP2SB2-EXP	B8	ZP2SB1-EXP
A9	PDVBUS2	B9	GND
A10	ZSS1R0-E0N	B10	ZSS1R1-E0N
A11	ZSS1R0-E0P	B11	ZSS1R1-E0P
A12	GND	B12	GND
1T	GND	3T	GND
2T	GND	4T	GND

**3AXIS sensor board (FDIASE\*)****C.22 IC3350 Accelerometer&Gyroscope (14-pin)***Table C-22 Accelerometer&Gyroscope (14-pin)*

Pin No.	Signal name	Pin No.	Signal name
1	E3V	2	E3V
3	E3V	4	ISHIN0-E3N
5	E3V	6	GND
7	GND	8	E3V
9	NC	10	NC
11	NC	12	E3V
13	ISHCL0-E3P	14	ISHDA0-E3P

**C.23 CN9860 System board I/F connector (5-pin)***Table C-23 System board I/F connector (5-pin)*

Pin No.	Signal name	Pin No.	Signal name
1	ISHCL0-E3P	2	GND
3	ISHDA0-E3P	4	E3V
5	ISHIN0-E3N		
1T	GND	2T	GND

**Lid board (FDIALS\*)****C.24 CN3291 System board I/F connector (3-pin)***Table C-24 System board I/F connector (3-pin)*

Pin No.	Signal name	Pin No.	Signal name
1	S3V	2	PNLOFF-S3N
3	GND		
1T	GND	2T	GND



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**Appendix D Keyboard Matrix**

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D.1	Keyboard for UK .....	D-1
D.2	Keyboard for US .....	D-2
D.3	Keyboard for JP .....	D-3

Figure D-1	UK Keyboard .....	D-1
Figure D-2	US Keyboard .....	D-2
Figure D-3	JP Keyboard .....	D-3



## D.1 Keyboard for UK

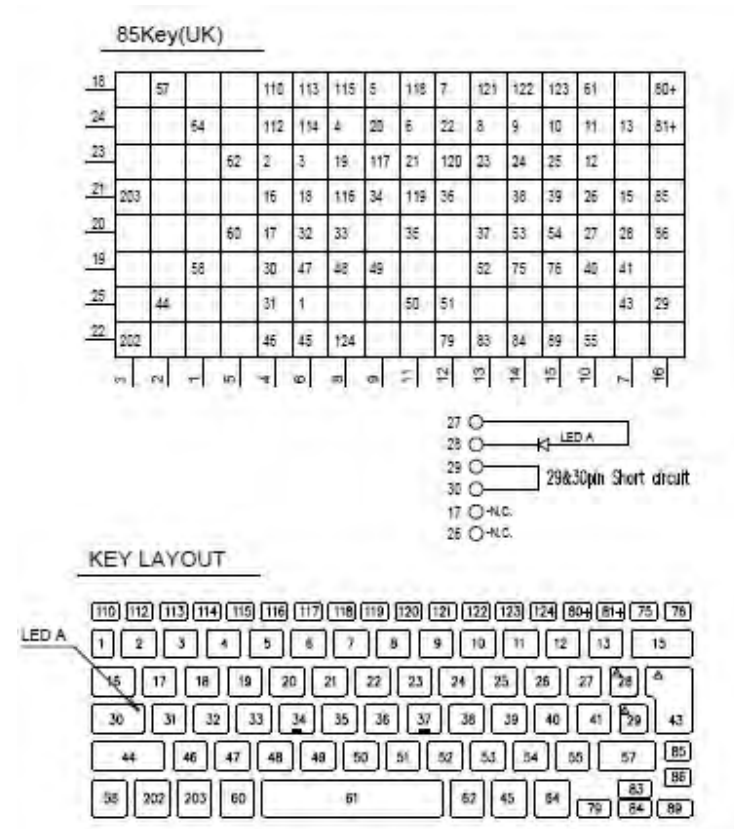


Figure D-1 UK Keyboard

## D.2 Keyboard for US

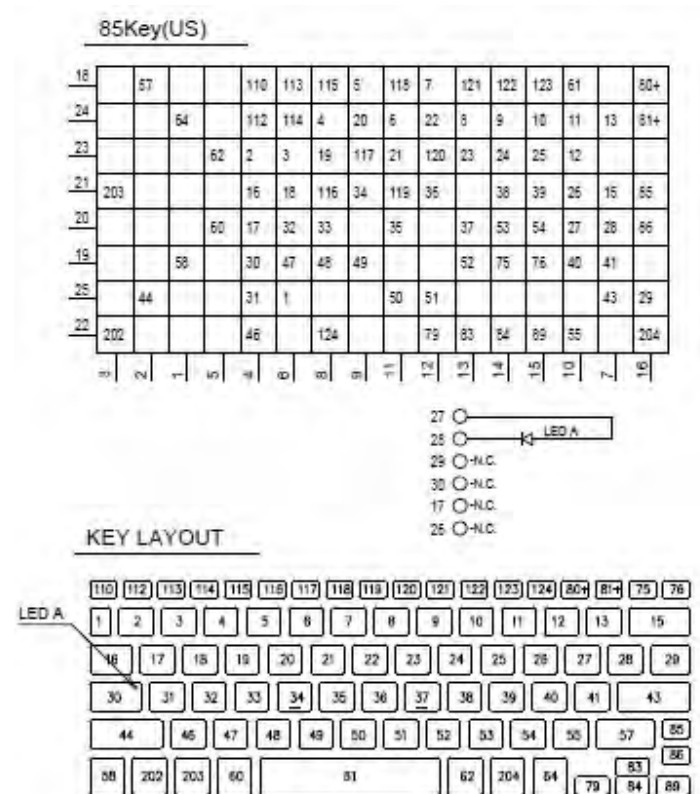


Figure D-2 US Keyboard



### D.3 Keyboard for JP

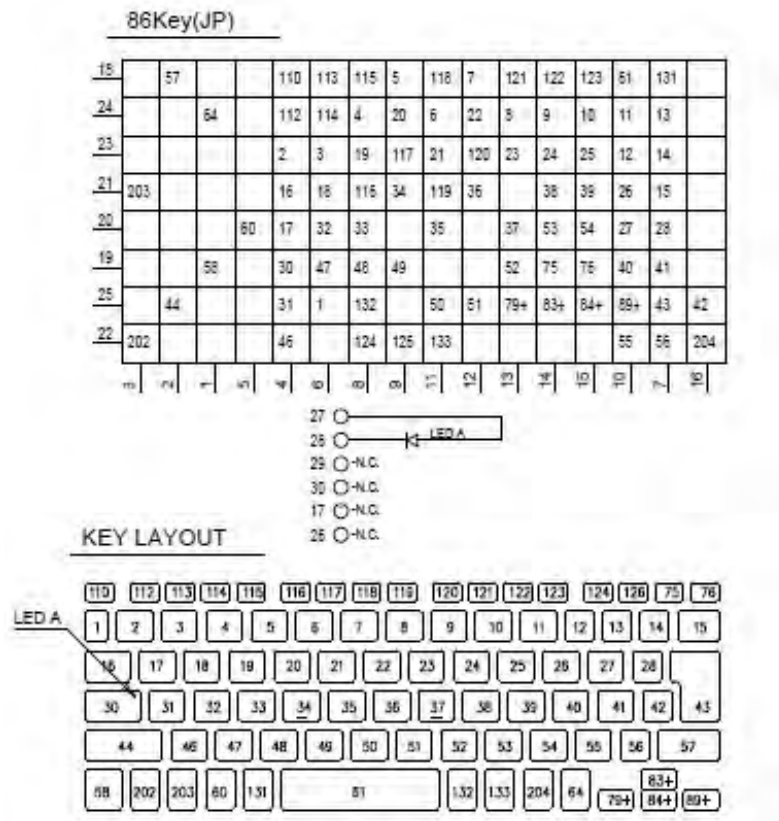


Figure D-3 JP Keyboard



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## Appendix E Key Layout

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E.1	Keyboard for UK .....	E-1
E.2	Keyboard for US .....	E-1
E.3	Keyboard for JP .....	E-2
Figure E-1	UK Keyboard.....	E-1
Figure E-2	US Keyboard .....	E-1
Figure E-3	JP Keyboard.....	E-2



## E.1 Keyboard for UK



Figure E-1 UK Keyboard

## E.2 Keyboard for US



Figure E-2 US Keyboard

### E.3 Keyboard for JP



Figure E-3 JP Keyboard

## Appendix F Wiring diagrams (Not used)

### F.1 RGB Monitor Loopback Connector

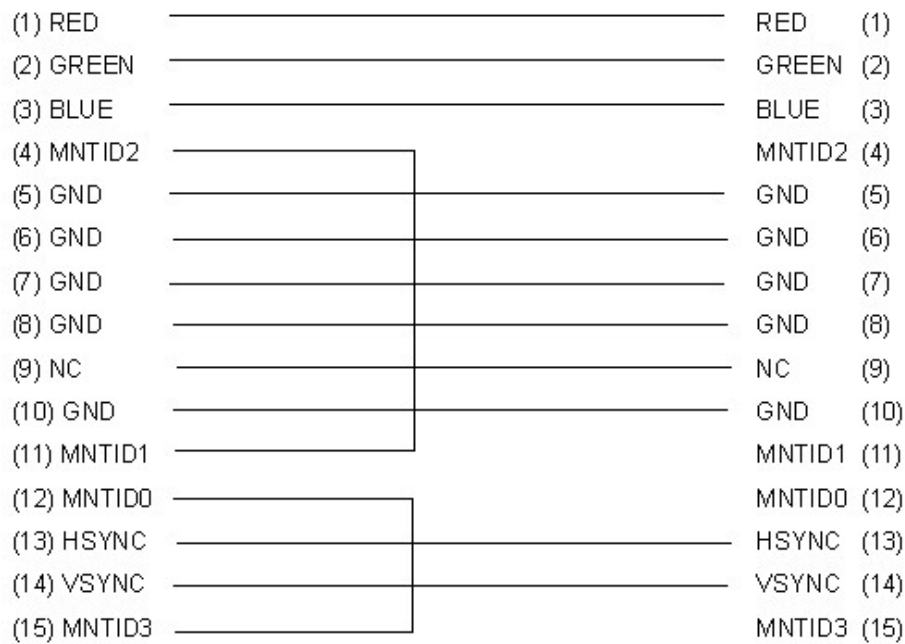


Figure F-1 RGB Monitor Loopback Connector

### F.2 LAN Loopback Connector

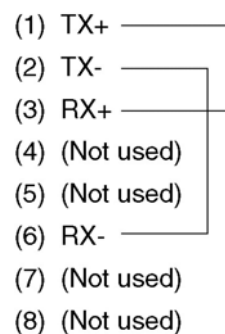


Figure F-2 LAN Loopback Connector





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## Appendix G BIOS Rewrite Procedures

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This Appendix explains how to rewrite the system BIOS program when you update the system BIOS. It updates also the EC/KBC simultaneously.

### Tools

To rewrite the BIOS, you need the following tool:

- ❑ BIOS/EC/KBC rewriting disk

### Rewriting the BIOS

1. Turn off the power to the computer (Shut down the computer while holding **SHIFT** key).
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.  
If the Japanese keyboard is installed, hold down [半/全] key instead of tilde key.

For example



(US Keyboard)



(UK Keyboard)

(Keep holding down the key.)

5. The BIOS rewriting starts. (No message will appear.)
6. When the process is completed, it the system automatically reboots.

**NOTE:**

1. Connect the AC adapter 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.  
If the rewrite fails, it might be impossible to start up the computer.
3. If you fail to rewrite BIOS, then when you next turn on the power, the power icon may flash in orange or an error message may be displayed. In this case, repeat the rewriting procedure.



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## **Appendix H EC/KBC Rewrite Procedures**

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This Appendix explains how to rewrite the EC/KBC system.

The EC/KBC solely can't be updated. It is updated at the BIOS update simultaneously.  
As for the BIOS update, refer to Appendix G.



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## Appendix I Reliability

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The following tables show MTBF (Mean Time between Failures) in maximum configuration.

*Table I-1 MTBF*

< non 5G/LTE model >

Time (hours)
5,152.95 h

< 5G model >

Time (hours)
5,116.07 h

< LTE model >

Time (hours)
5,119.07 h

