

**Toshiba Personal Computer**  
*Satellite/Satellite PRO*  
**Maintenance Manual**

**TOSHIBA CORPORATION**

*[CONFIDENTIAL]*

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Toshiba Personal Computer STREAMLINE-M 10 SERIES MAINTENANCE MANUAL Maintenance Manual

First edition April, 2010

## **Disclaimer**

The information presented in this manual has been reviewed and validated for accuracy. The included set of instructions and descriptions are accurate for the STREAMLINE-M 10 SERIES MAINTENANCE MANUAL Series at the time of this manual's production. However, succeeding computers and manuals are subject to change without notice. Therefore, Toshiba assumes no liability for damages incurred directly or indirectly from errors, omissions, or discrepancies between any succeeding product and this manual.

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## Preface

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This maintenance manual describes how to perform hardware service maintenance for the Toshiba Personal Computer STREAMLINE-M 10 SERIES MAINTENANCE MANUAL, referred to as the STREAMLINE-M 10 SERIES MAINTENANCE MANUAL Series in this manual.

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 STREAMLINE-M 10 SERIES MAINTENANCE MANUAL Series 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 scan/character codes
- Key layout
- Screw torque list
- 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*

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Format complete  
System transferred

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# **Chapter 1**

## **Hardware Overview**

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## 1.1 Features

The Toshiba Satellite T230/T235/Pro T230/Pro T235/PORTEGE T230 is a small-size PC notebook equipped with a Dual Core Processor, providing high-speed processing capabilities and advanced features. The computer employs a lithium ion battery that allows it to be battery-operated for long periods of time. The display uses 13.3-inch WXGA LCD panel. Many features can be Built To Order (BTO) to customize the system for each user.

The computer has the following features:

Processor (BTO)

The computer is equipped with one of the following Intel<sup>®</sup> processors:

- Intel<sup>®</sup> Arrandale Processor

Memory (BTO)

The computer has two SODIMM slots which come standard with 1GB/2GB/4GB, accepting BTO for your memory requirements. It can incorporate up to 8 GB of main memory and supports DDR3 at 800MHz.

Battery Pack

The computer is powered by one rechargeable and removable lithium ion battery pack. The capacity is 6-cell.

RTC Battery

The internal RTC battery backs up the Real Time Clock and calendar.

Hard Disk Drive (HDD) (BTO)

The computer accommodates a 9.5 mm HDD with the following storage capacities:

- 160/250/320/500/640 GB, S-ATA (5,400rpm)
- 250/320/500GB S-ATA (7200rpm)

The computer has an optional 9.5mm SSD with the following capacities:

- 64/128/256/512GB

Display

The LCD display comes with the following:

- 13.3" W (16:9) HD+ (1366x768) CSV LED

Graphics (BTO)

- Intel® Arrandale Chipset for integrated graphics display

Keyboard

The computer is equipped with a Toshiba standard 300mm keyboard, which has 86/87 keys support without stick-point. It is a Win7-compliant keyboard with optional Windows keys and application keys.

Pointing Device

The integrated Wide Touch Pad and two control buttons in the palm rest allow control of the on-screen pointer and support functions such as the scrolling of windows.

External Monitor Port

The analog VGA port provides support for VESA DDC2B compatible functions. A WDDM driver is ready for Win7.

Universal Serial Bus (USB) Ports

The computer has two USB 2.0 ports along with one USB/eSATA combo port (see below). It is supported to daisy-chain a maximum of 127 USB devices. The serial data transfer rate is 480 Mbps or 12 Mbps and 1.5 Mbps. These ports support PnP installation and hot plugging.

eSATA

The external SATA or eSATA port executes high-speed data transfer to external devices and supports shielded cable lengths of up to 2 meters outside the PC. The port also provides dual USB compatibility.

Bridge Media Slot

This slot allows you to insert SD, MiniSD/ MicroSD (through an adaptor), Memory Stick, Memory Stick Pro, Memory Stick Duo (through an adaptor), xD and MMC memory cards. It supports high-speed SD and SDHC. This model does not support CF, SmartMedia cards.

Sound system

The integrated sound system is composed of two Realtek Azalia internal speakers, an internal microphone (BTO with internal camera), and standard Microphone-IN and Headphone-OUT ports.

Internal Camera (BTO)

It supports 0.3M and 1.3M pixels without Auto Macro and comes with a blue LED indicator. An internal microphone is BTO with the internal camera and includes echo cancellation. The camera is not a rotation type.

Headphones/Line-out Jack

This jack connects digital speakers or stereo headphones (16 ohm minimum). When connected to digital speakers or headphones, the internal speaker is automatically disabled.

Microphone/ Line-in Jack

A 3.5mm mini microphone jack enables connection of a three-conductor microphone for monaural input and also enables the connection of a stereo device for audio input.

HDMI Out Port (BTO)

The HDMI 1.3 out port can connect with a Type A connector HDMI cable. The HDMI out port can send SD and HD video/audio signals.

LAN (BTO)

The computer has built-in support for 10M/100M Ethernet LAN (10/100 megabits per second, 10/100BASE-T). It employs a Realtek 8105 for 10M/100Mbit LAN. It is pre-installed as a standard device in some markets.

Wireless LAN (BTO)

Some computers in this series are equipped with a Wireless LAN (WLAN) card. This WLAN module may come with the following types (depending on the model):

- Atheros 802.11 b/g HB95 (1x1)
- KilmerPeak 802.11 a/b/g/n (2x2)
- Realtek 802.11 b/g/n (8191SE)



- Broadcom 802.11 bgn/bg 4313 (WLAN/BT) w/Bluetooth V3.0+HS

*Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.*

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3G (BTO)

The 3G module employs a PCI Express Mini Card. It enables computer users to have mobile access to the internet or to a corporate network.

Bluetooth (BTO)

Some computers in this series offer Bluetooth wireless communication functionality which eliminates the need for cables between electronic devices such as computers and printers. When implemented, Bluetooth provides wireless communication in a small space. This module is Version 2.1 + EDR (BC04 ROM with Antenna), ie – Toshiba stack support.

❑ Figure 1-1A shows the computer and its system unit configuration.

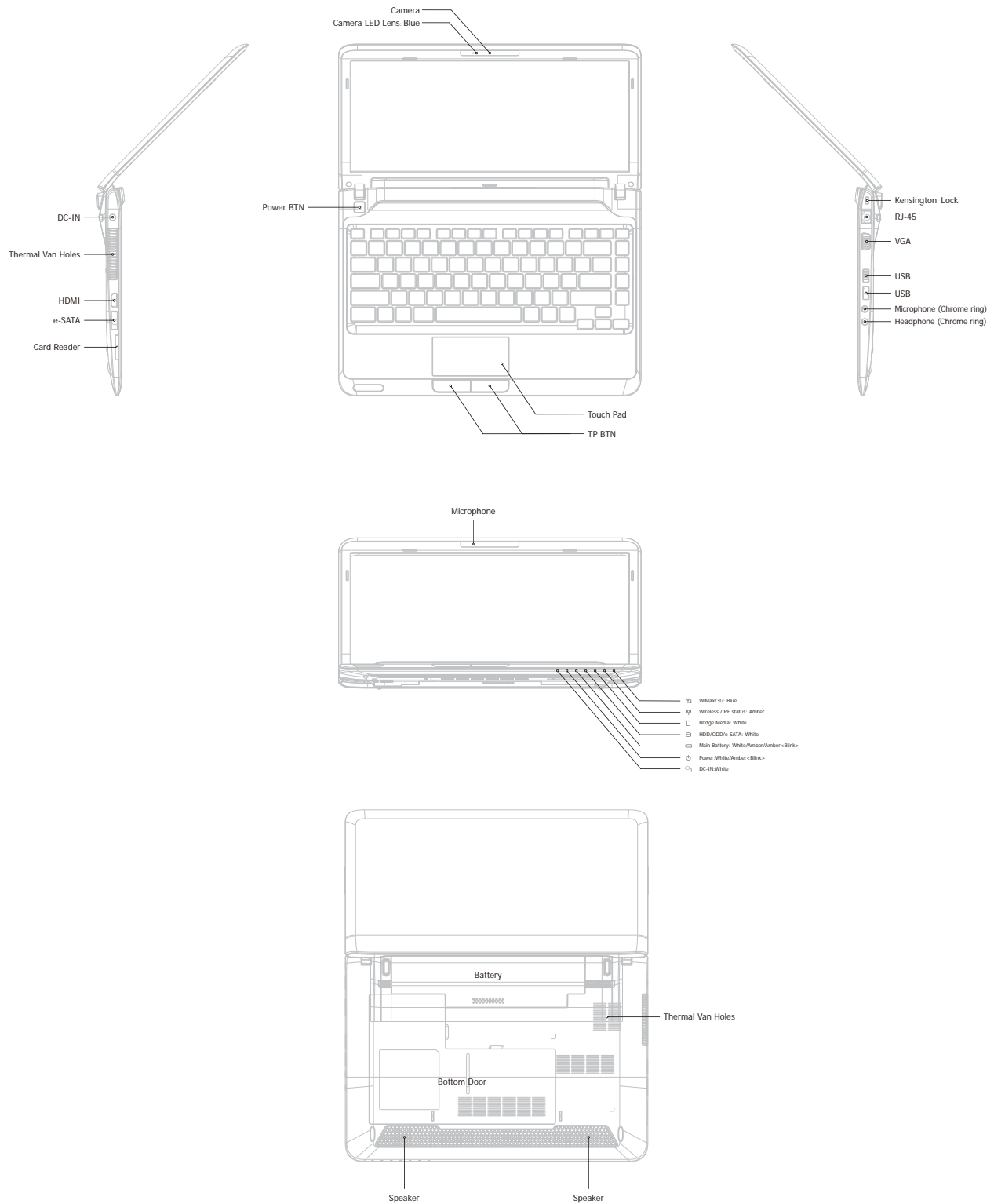
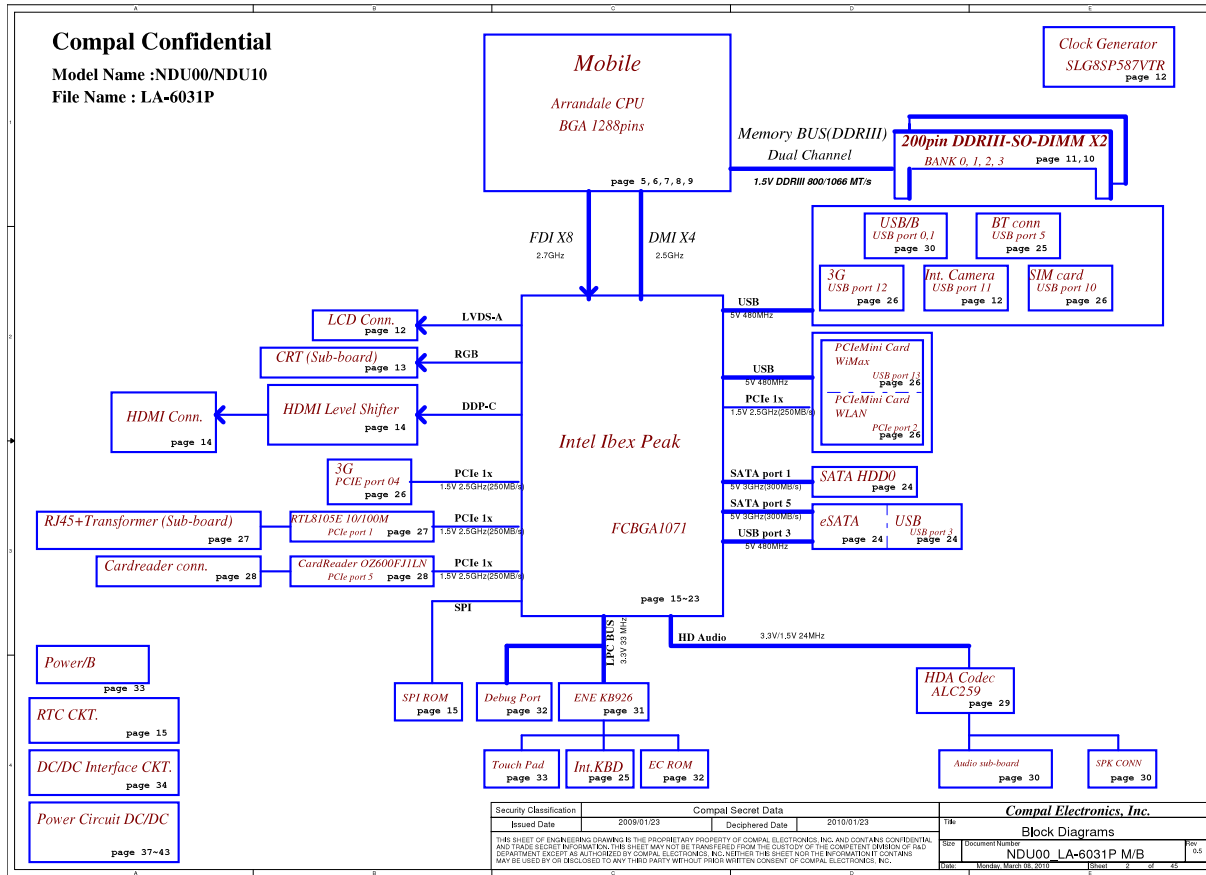


Figure 1-1A ID Parts Description Placement Part A

Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

**1 Hardware Overview**



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

Processor (BTO)

The computer is equipped with one of the following Intel® processors:

- Intel® Arrandale Processor

Memory (BTO)

The computer has two SODIMM slots which come standard with 1GB/2GB/4GB, accepting BTO for your memory requirements. It can incorporate up to 8 GB of main memory. It supports DDR3 at 800MHz.

BIOS ROM (EEPROM)

The system BIOS uses one 4096KB flash ROM and the Keyboard BIOS uses another 256KB flash ROM. The flash utility can be used to program both system and keyboard BIOS at the same time.

System Controllers

- Advanced Power Management 1.2 support
- ACPI2.0b and Windows Logo Program 3.0 compliant
- Support SMBus specification V2.0
- Hot keys for system control
- Audio volume output control
- External LED control
- Battery scope report and control
- Sticky key support
- Power switch control
- Two host interface channels support
- Supports three independent devices
- Internal Keyboard country selection
- Computrace

*Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.*

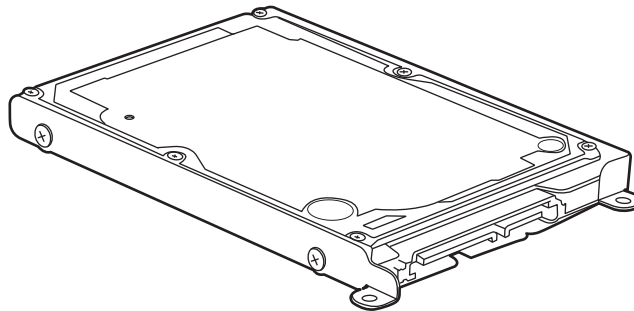
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- Graphics Controller
  - Intel® Arrandale Chipset for integrated graphics display
  
- Audio Controller
  - Realtek Azalia ALC259-GR
  - One Audio-in port: Mic-in/Line-in
  - One Audio-out port: Headphone-out/Line-out
  - Internal Microphone (with Internal Camera, MIC with echo cancellation)
  - Volume control: Digital control
  - Microsoft inbox audio driver support
  - Hardware EQ support
  
- Wireless LAN Controller
  - Atheros 802.11 b/g HB95 (1x1)
  - KilmerPeak 802.11 a/b/g/n (2x2)
  - Realtek 802.11 b/g/n (8191SE)
  - Broadcom 802.11 bgn/bg 4313 (WLAN/BT) w/Bluetooth V3.0+HS

## 1.2 2.5-inch HDD

The computer contains an extremely low-profile and lightweight, high-performance HDD. The HDD incorporates a 9.5 mm magnetic disk and mini-Winchester type magnetic heads. The HDD interface conforms to Serial ATA. Storage capacities supported are 160, 250, 320, 500 and 640 GB.

The HDD is shown in Figure 1-2 and some of its specifications are listed in Table 1-1.



*Figure 1-2 SATA HDD*

*Table 1-1 HDD Specifications*

<b>Item</b>	<b>Specifications</b>		
Capacity (GB)	160G	250G	320 GB
Rotational Speed (RPM)	5400 RPM	5400 or 7200 RPM	5400 or 7200 RPM
Height	9.5 mm	9.5 mm	9.5 mm
User Data Sectors	312,581,808	488,397,168	625,142,448
Bytes / Sector	512	512	512

<b>Item</b>	<b>Specifications</b>	
Capacity (GB)	500G	640 GB
Rotational Speed (RPM)	5400 or 7200 RPM	5400 RPM
Height	9.5 mm	9.5 mm
User Data Sectors	976,773,168	1,250,263,728
Bytes / Sector	512	512

## **1.3 Power Supply**

The power supply unit provides constant voltage (19V) for the system board and performs the following functions:

1. Power input monitor
  - Checks whether the AC adapter (DC power supply) is connected to the computer.
  - Checks whether the battery pack is connected to the computer.
  - Monitors the DC power supply input voltage (AC Adapter output voltage).
2. Power supply's internal control
  - Turns on and off the battery pack charging power supply.
  - Issues a charging current instruction to the PWM control IC of the battery pack charging power supply.
  - Controls the supply of DC power supply input (AC Adapter output) to the power supply unit.
  - Controls the supply of power to the system block (load/logic circuit side).
  - Controls forced shutdown if the power supply malfunctions.
3. Logic circuit control
  - Instructs the gate array to enable/disable tuning the power on.
  - Controls power-on/off operation.
4. Status display
  - Turns on the Power LED (in White).
  - Battery indicator (in White or Amber).
  - DC-IN indicator (in White)
5. External interface
  - Performs communication through the I2C bus (via the internal EC/KBC).
  - Transfers the power supply operation mode.



## 6. Output monitor

- Monitors the voltage output to the system block (load/logic circuit side).
- Monitors the voltage, over-voltage, input/output current of the battery pack.
- Monitors the internal temperature of the battery pack.
- Monitors the supply voltage from the AC adapter.

## **1.4 Batteries**

The computer has the following two types of batteries:

- Main Battery Pack
- Real Time Clock (RTC) Battery

### **1.4.1 Main Battery**

The main battery pack serves as the computer's main power source when the AC adapter is not attached. The main battery maintains the state of the computer when the AC adapter is detached.

### **1.4.2 Battery Charging Control**

Battery charging is controlled by EC KB926. When the AC adapter and battery pack are attached to the computer, the EC KB926 controls the charge on/off state and detects a full charge.

- Battery Charge

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

*Table 1-2 Quick/Normal Charging Time*

<b>State</b>	<b>Charge Time</b>	
Off-State Charge	6 Cell	About 4 hours max
On-State Charge	6 Cell	About 12 hours max

**NOTE:** *The time required for normal charge depends on the power consumption by the system. Using a fluorescent lamp and frequently accessing the disk consumes more power and lengthens the charge time.*

Any of the following can stop battery charge:

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

Detection of full charge

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

1. The current in the battery charging circuit drops below the predetermined value.
2. The charging time exceeds the fixed limit.

### **1.4.3 RTC Battery**

The RTC battery provides power to keep the current date, time and other system information in memory while the computer is turned off.

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## **Chapter 2**

# **Troubleshooting Procedures**

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## Tables

Es wurden keine Einträge für das Inhaltsverzeichnis gefunden.

## 2.1 Troubleshooting Introduction

Chapter 2 describes how to determine if a Field Replaceable Unit (FRU) in the computer is causing the computer to malfunction. The FRUs covered are:

- |                 |                 |                 |           |
|-----------------|-----------------|-----------------|-----------|
| 1. Display      | 7. Wireless LAN | 13. 4 in 1 card | 19. Wimax |
| 2. HDD          | 8. Camera       | 14. CRT         |           |
| 3. Keyboard     | 9. Bluetooth    | 15. LAN         |           |
| 4. USB ports    | 10. Headphone   | 16. 3D sensor   |           |
| 5. Touchpad     | 11. MIC         | 17. HDMI        |           |
| 6. Speaker/Head | 12. 3G          | 18. E-SATA      |           |

The Diagnostics Disk operations are described in Chapter 3. Detailed replacement procedures are given in Chapter 4.

The following tools are necessary for implementing the troubleshooting procedures:

1. Phillips screwdriver (2 mm)
2. 6mm nut driver (for the helix screw nuts on the rear ports for RAM door)
3. 2DD or 2HD formatted work disk for floppy disk drive testing
4. Torx screw driver with type T6 bit for HDD door
5. USB memory disk
6. Multimeter
7. External monitor
8. USB compatible keyboard
9. Multimedia sound system with line-in and line-out ports
10. Headphones
11. USB test module and USB cable
12. MIC line
13. E-SATA HDD & cable
14. HDMI cable

## 2.2 Troubleshooting Flowchart

If you know the location of the malfunction, turn directly to the appropriate section of this chapter. If the problem is unspecified, use the flowchart in Figure 2-1 as a guide for



determining which troubleshooting procedures to execute. Before performing any troubleshooting procedures, verify the following:

- Ask the user if a password is registered, if it is, ask him or her to enter the password.
- Verify with the customer that Toshiba Windows XP/Win7/Linux is installed on the hard disk. Operating systems that were not preinstalled by Toshiba can cause the computer to malfunction.
- Make sure all optional equipment is removed from the computer.

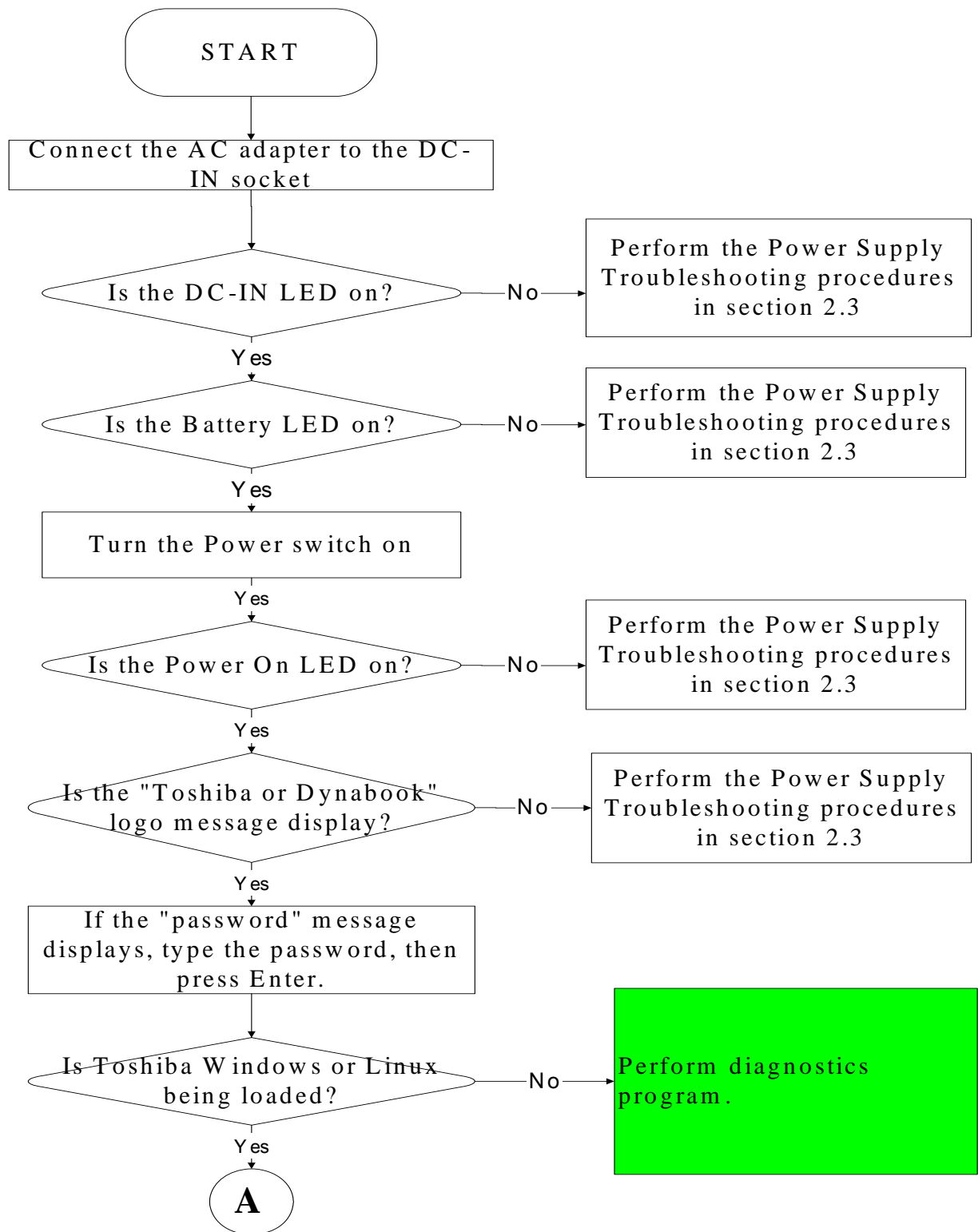


Figure 2-1 Troubleshooting flowchart (1/2)

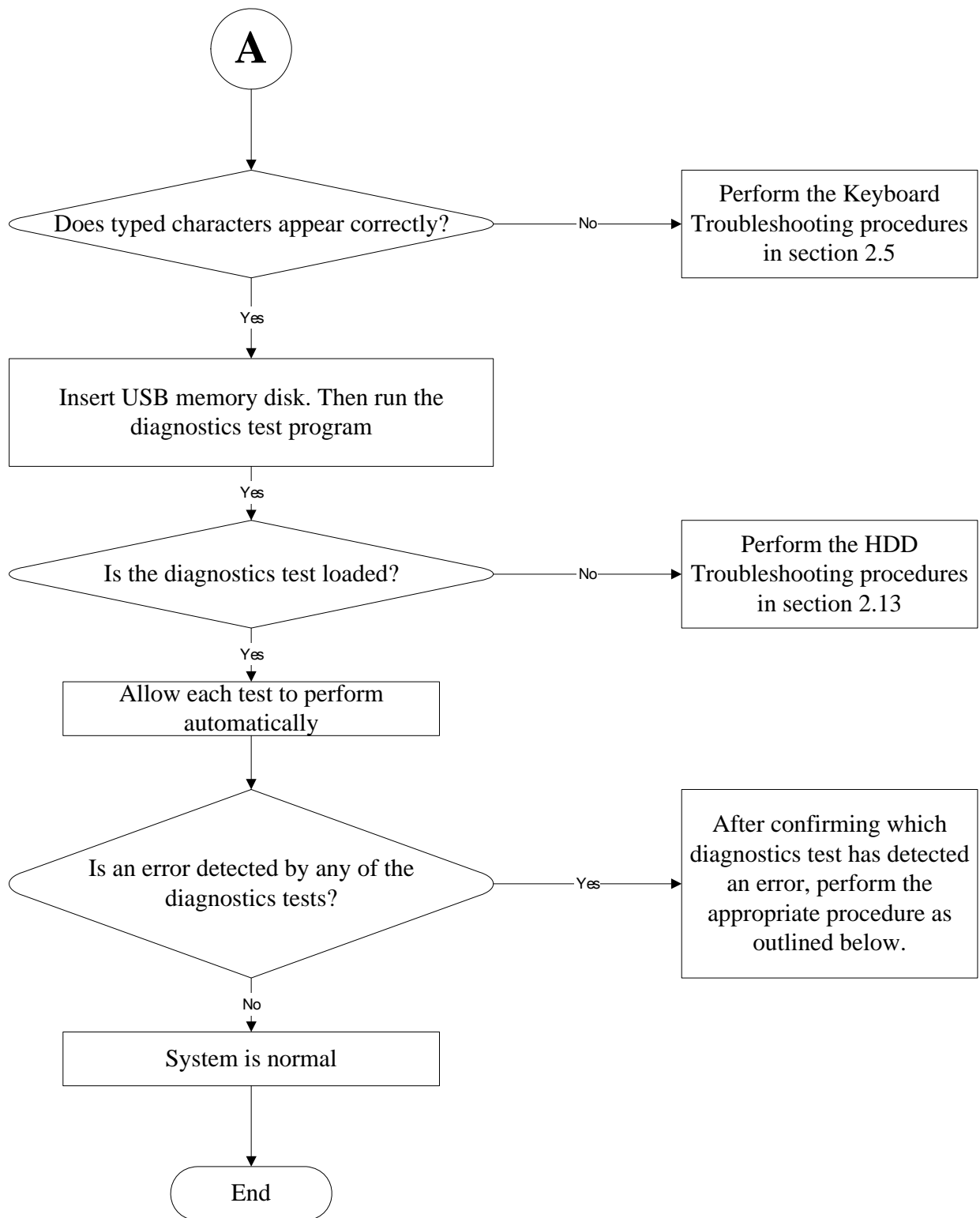


Figure 2-1 Troubleshooting flowchart (2/2)

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. When a problem has been located, perform the appropriate troubleshooting procedures as follows:

1. If an error is detected by the battery test, perform the Power Supply Troubleshooting procedures in Section 2.3
2. If an error is detected by the display test, perform the Display Troubleshooting procedures in Section 2.4
3. If an error is detected by the keyboard test, perform the Keyboard Troubleshooting procedures in Section 2.5
4. If an error is detected by the HDD test, perform the Keyboard Troubleshooting procedures in Section 2.13

Other problems that are not covered by the diagnostics program may be discovered by a user.

1. If an error is detected when using an external USB device, perform the external USB Devices Troubleshooting procedures in Section 2.6
2. If an error is detected when using the speakers, perform the Speaker Troubleshooting procedures in Section 2.8
3. If an error is detected when using the Wireless LAN, perform the Wireless LAN Troubleshooting procedures in Section 2.9
4. If an error is detected when using the camera, perform the camera Troubleshooting procedures in Section 2.10
5. If an error is detected when using the Bluetooth, perform the Bluetooth Troubleshooting procedures in Section 2.11
6. If an error is detected when using the 4 in 1 card, perform the 4 in 1 card Troubleshooting procedures in Section 2.12
7. If an error is detected when using the CRT, perform the CRT Troubleshooting procedures in Section 2.14
8. If an error is detected when using the MIC, perform the MIC troubleshooting procedures in Section 2.16
9. If an error is detected when using the HDMI, perform the HDMI troubleshooting procedures in Section 2.19
10. If an error is detected when using the E-SATA, perform the E-SATA troubleshooting procedures in Section 2.20
11. If an error is detected when using the 3G, perform the 3G troubleshooting procedures in Section 2.18
12. If an error is detected when using the Wimax, perform the Wimax troubleshooting procedures in Section 2.21
13. If an error is detected when using the 3D sensor, perform the 3D sensor Troubleshooting procedures in Section 2.17

## 2.3 Power Supply Troubleshooting

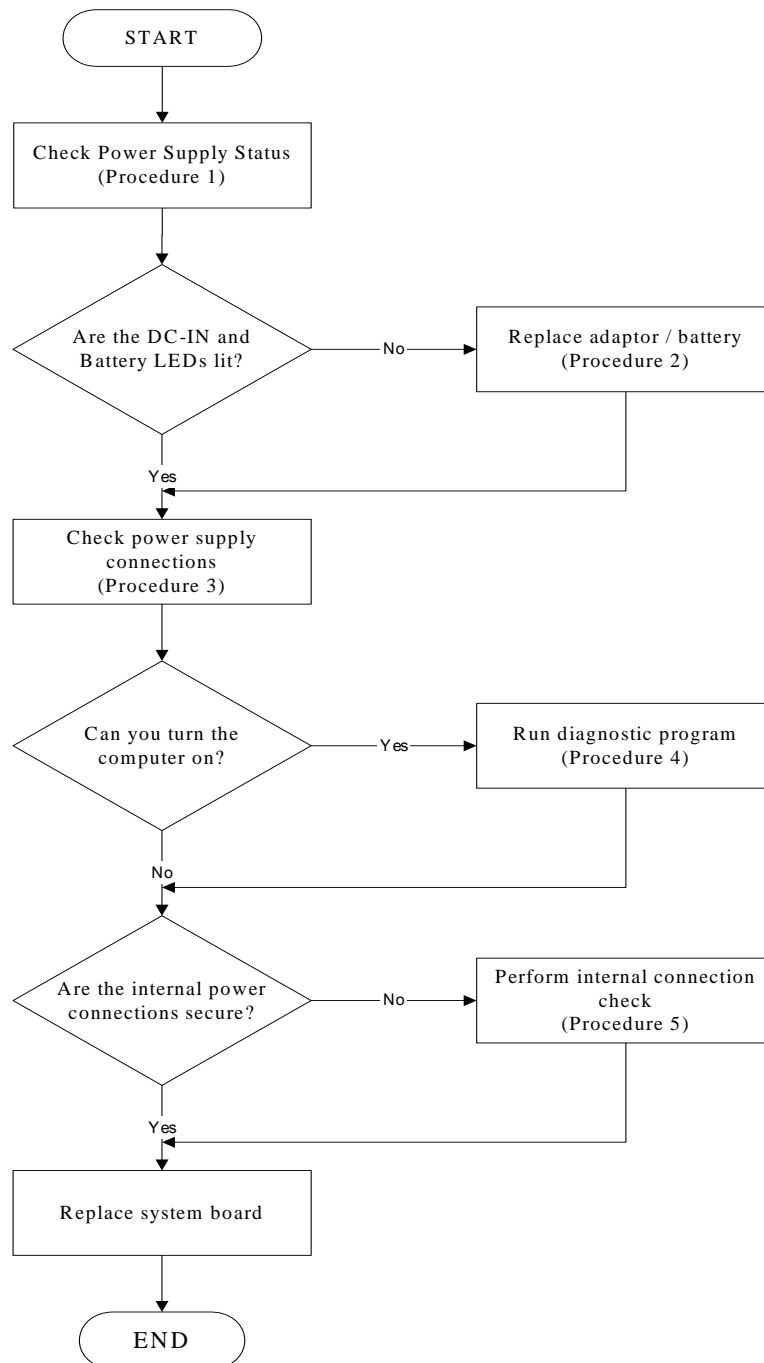


Figure 2-2 Power Supply Troubleshooting Process

The power supply 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 flowchart in Figure 2-2 gives a summary of the process. The procedures described in this section are:

- Procedure 1: Power status check
- Procedure 2: Adaptor / battery replacement
- Procedure 3: Power supply connection check
- Procedure 4: Diagnostic check
- Procedure 5: Internal connection check

### Procedure 1 Power Status Check

The following LEDs indicate the power supply status:

 Battery LED

 DC-IN LED

The power supply controller displays the power supply status through the Battery and the DC-IN LEDs as listed in the tables below.

*Table 2-1 Battery LED*

Battery LED	status
Lights Amber	Battery has been charging and AC adapter is connected.
Lights Green	Battery is fully charged and AC adapter is connected.
Flashes Amber	Battery charge is low. The AC adaptor must be connected to recharge the battery.
Doesn't light	Any condition other than those above.

Table 2-2 DC-IN LED

<b>DC-IN LED</b>	<b>Power supply status</b>
Solid on	AC power exists (LED is Green).
Off	No AC power exists.

To check the power supply status, install a battery pack and connect an AC adaptor to the DC-IN port on the computer and to a power supply.

If the DC-IN LED or Battery LED is not lit, go to Procedure 2.

### **Procedure 2    Adaptor / battery replacement**

A faulty adaptor may not supply power or may not charge the battery. Perform Check 1.

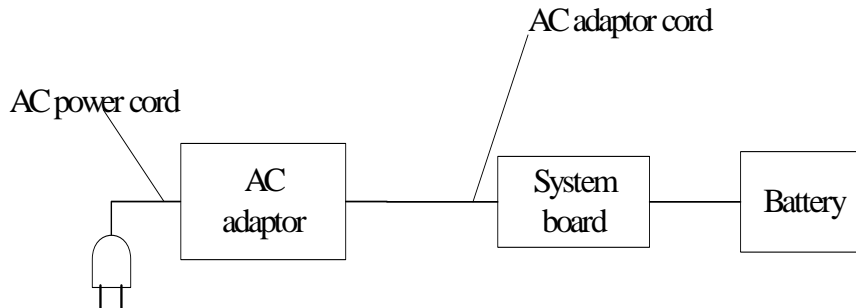
Check 1    Connect a new AC adaptor. If the problem is not resolved, go to Check 2.

Check 2    Insert a new battery. If the problem is still not resolved, go to Procedure 3.



### Procedure 3 Power supply connection check

The power supply wiring diagram is shown below:



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

- Check 1 Disconnect the AC power cord from wall outlet. Check the power cable for breaks. If the power cord is damaged, connect a new AC power cord. If there is no damage, go to Check 2.
- Check 2 Make sure the AC adaptor cord and AC power cord are firmly plugged into the DC-IN socket, AC adaptor inlet and wall outlet. If these cables are connected correctly, go to Check 3.
- Check 3 Make sure that the DC-IN input port socket is firmly secured to the system board of the computer.
- If the DC-IN input socket is loose, go to Procedure 5.
  - If it is not loose, go to Check 4.
- Check 4 Use a multi-meter to make sure that the AC adaptor output voltage is close to 19 V. If the output is several percent lower than 19 V, go to Check 5. If the output is close to 19 V, go to Check 6.
- Check 5 Connect a new AC adaptor or AC power cord.
- If the DC-IN LED does not light, go to Procedure 4.
  - If the battery LED does not light, go to Check 6.
- Check 6 Make sure the battery pack is installed in the computer correctly. If the battery is properly installed and the battery LED still does not light, go to Procedure 4.

#### **Procedure 4 Diagnostic check**

The power supply may not charge the battery pack. Perform the following procedures:

1. Reinstall the battery pack.
2. Attach the AC adaptor and turn on the power. If you cannot turn on the power, go to Procedure 5.
3. Run the Diagnostic test following the procedures described in Chapter 3, Tests and Diagnostics. If no problem is detected, the battery is functioning normally.

#### **Procedure 5 Replacement check**

The system board may be disconnected or damaged. Disassemble the computer following the steps described in Chapter 4, *Replacement Procedures*. Check the connection between the AC adaptor and the system board. After checking the connection, perform Check 1:

- Check 1 Use a multi-meter to make sure that the fuses on the system board are not blown. If a fuse is not blown, go to Check 2. If a fuse is blown, go to Check 3.
- Check 2 Make sure that the battery cable is firmly connected to the system board. If it is connected firmly, go to Check 3.
- Check 3 The system board may be damaged. Replace it with a new one following the instructions in Chapter 4.

## 2.4 Display Troubleshooting

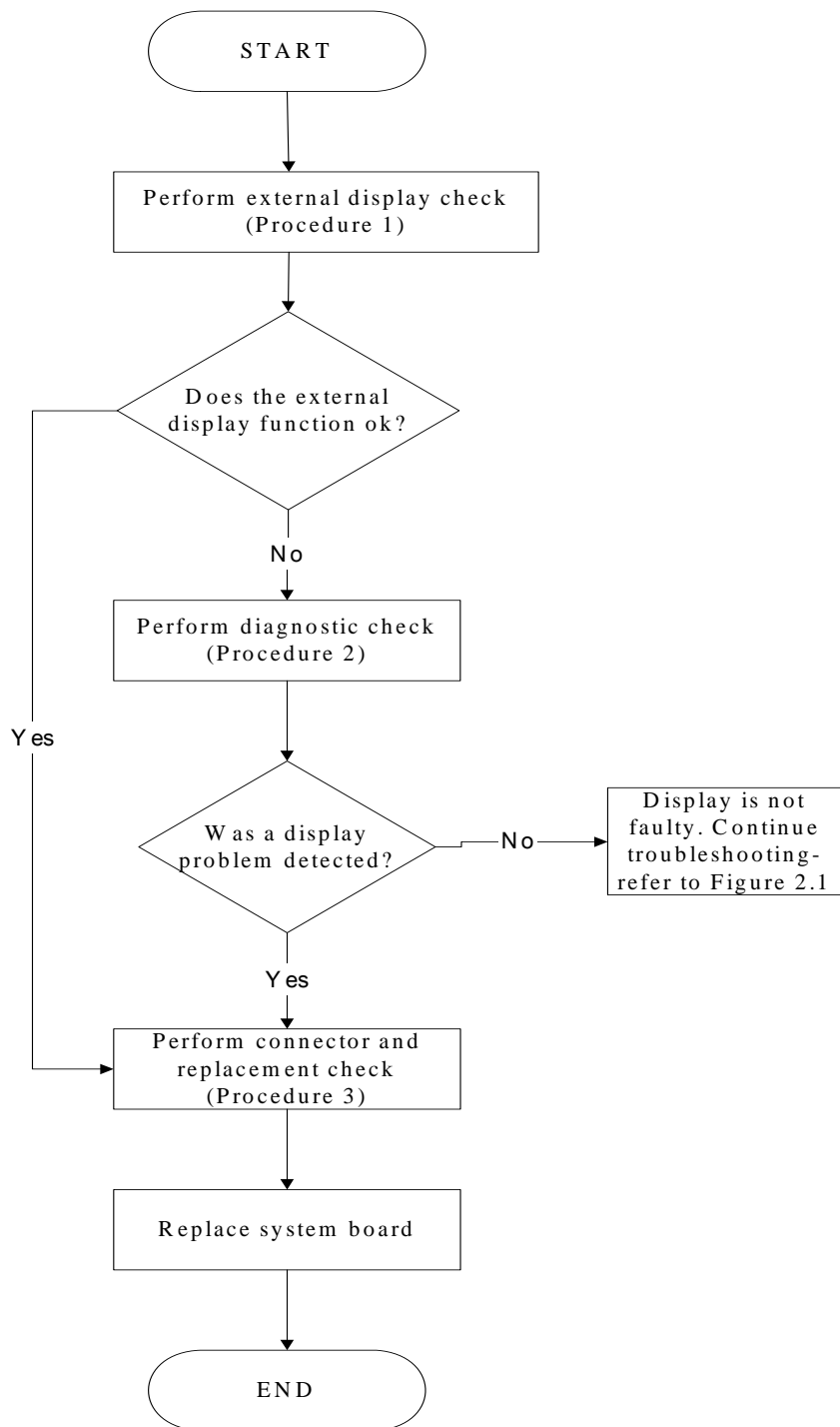


Figure 2-3 Display troubleshooting process

This section describes how to determine if the computer's display is functioning properly. The process is outlined in Figure 2-3. Start with Procedure 1 and continue with the other procedures as instructed.

Procedure 1: External display check

Procedure 2: Diagnostic check

Procedure 3: Connector and replacement check

### **Procedure 1 External display check**

Connect an external display to the computer's external monitor port, and then boot the computer. The computer automatically detects the external display.

If the external display works correctly, the internal LCD may be damaged. Go to Procedure 3.

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

### **Procedure 2 Diagnostic check**

The Display Test program is stored on the computer's Diagnostics disk. This program checks the display controller on the system board. Insert the USB memory disk in the computer, turn on the computer and run the test. Refer to Chapter 3, *Tests and Diagnostics* for details.

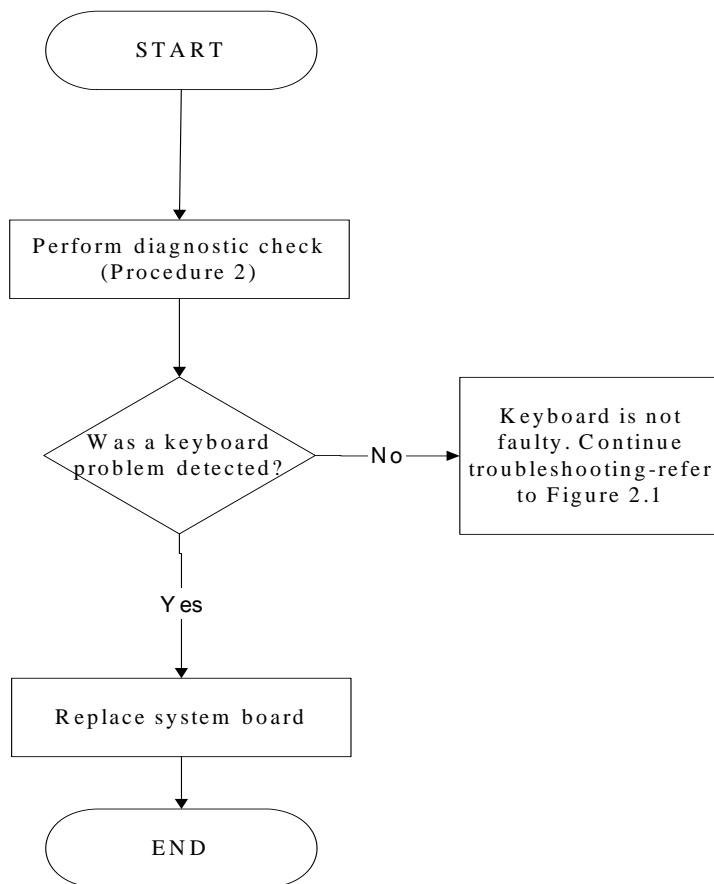
If an error is detected, go to Procedure 3. If an error is not detected, the display is functioning properly.

### Procedure 3 Connector and replacement check

The LCD module and system board are connected to the display circuits. Any of these components may be damaged. Refer to Chapter 4, *Replacement Procedures*, for instructions on how to disassemble the computer and then perform the following checks:

- Check 1 Make sure the DDR module is seated properly. Test display again. If the problem still exists, replace the DDR RAM module. If the problem still exists, perform Check 2.
- Check 2 Replace the LCD module with a new one and test display again. If the problem still exists, perform Check 4.
- Check 3 Replace the LCD cable with a new one and test display again. If the problem still exists, perform Check 5.
- Check 4 The system board may be damaged. Replace it with a new one.

## 2.5 Keyboard Troubleshooting



*Figure 2-4 Keyboard troubleshooting process*

To determine if the computer's keyboard is functioning properly, perform the following procedures. Figure 2-4 outlines the process. Start with Procedure 1 and continue with the other procedures as instructed.

Procedure 1: Diagnostic check

Procedure 2: Connector and replacement check

### **Procedure 1 Diagnostic check**

Run the test and Diagnostics Program, which will automatically execute the Keyboard Test. Refer to Chapter 3, *Tests and Diagnostics* for more information on how to run the program.

If an error is located, go to Procedure 3. If an error does not occur, the keyboard is functioning ok.

### **Procedure 2 Connector and replacement check**

The keyboard and/or system board may be disconnected or damaged. Disassemble the computer following the steps described in Chapter 4, *Replacement Procedures* and perform the following checks.

- Check 1 Make sure the keyboard cable is firmly connected to the system board.  
If the connection is loose, reconnect firmly and repeat Procedure 2. If there is still an error, go to Check 2.
- Check 2 The keyboard may be damaged. Replace it with a new one following the instructions in Chapter 4.  
If the problem still exists, perform Check 3.
- Check 3 The system board may be damaged. Replace it with a new one following the instructions in Chapter 4.

## 2.6 External USB Devices Troubleshooting

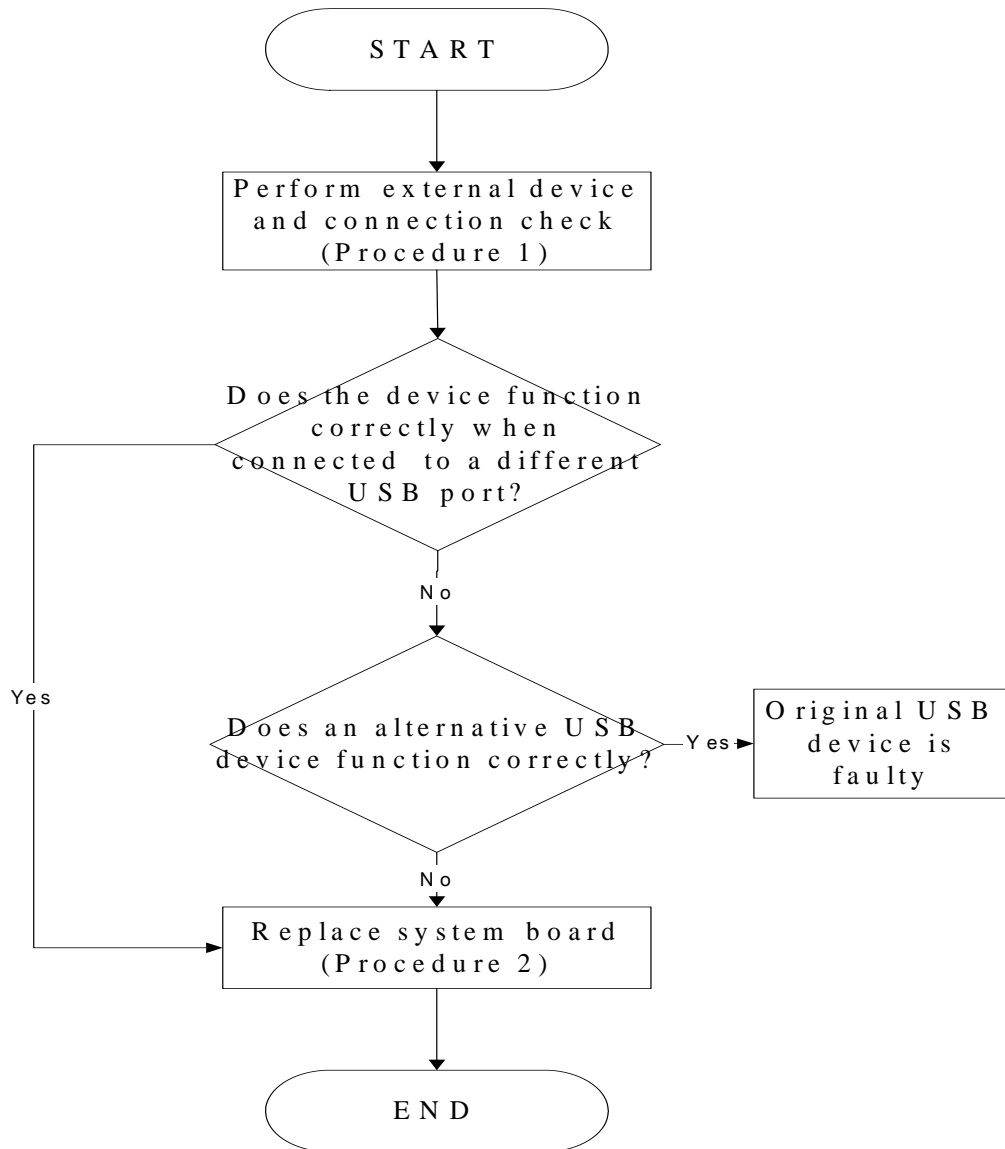


Figure 2-5 External USB device troubleshooting process



To determine if the computer's external USB devices are functioning properly, perform the following procedures. Figure 2-5 outlines the process. Start with Procedure 1 and continue as instructed.

Procedure 1: External device and connection check

Procedure 2: Replace system board

### **Procedure 1 External device and connection check**

The USB device may be damaged or the connection may be faulty. Use windows application to check device can work fine or not. If an error is located, go to Perform Check 1. If an error does not occur, the USB is functioning ok.

Check 1 Make sure USB device cable is firmly plugged into one of the USB sockets. If the cable is connected correctly, go to Check 2.

Check 2 Plug the USB device into another USB socket (there are three in all). If the USB device still does not work, go to Check 4.

If the device functions correctly when connected to another USB port, go to Check 3.

Check 3 Make sure that the USB socket is firmly secured to the system board of the computer. If the malfunction remains, the system board or USB small board may be damaged. Go to Procedure 2.

Check 4 Connect an alternative USB device to one of the computer's USB ports, and then boot the computer. The computer automatically detects the external device.

If the alternative USB device works correctly, the original device may be damaged and should be replaced.

If the alternative USB device appears to have the same problem as the original device, the system board or USB small board may be damaged. Go to Procedure 2.

### **Procedure 2 Replace system board**

If the error persists, the system board or USB small board may be damaged. Replace it with a new one following the instructions in Chapter 4.

## 2.7 Touch pad Troubleshooting

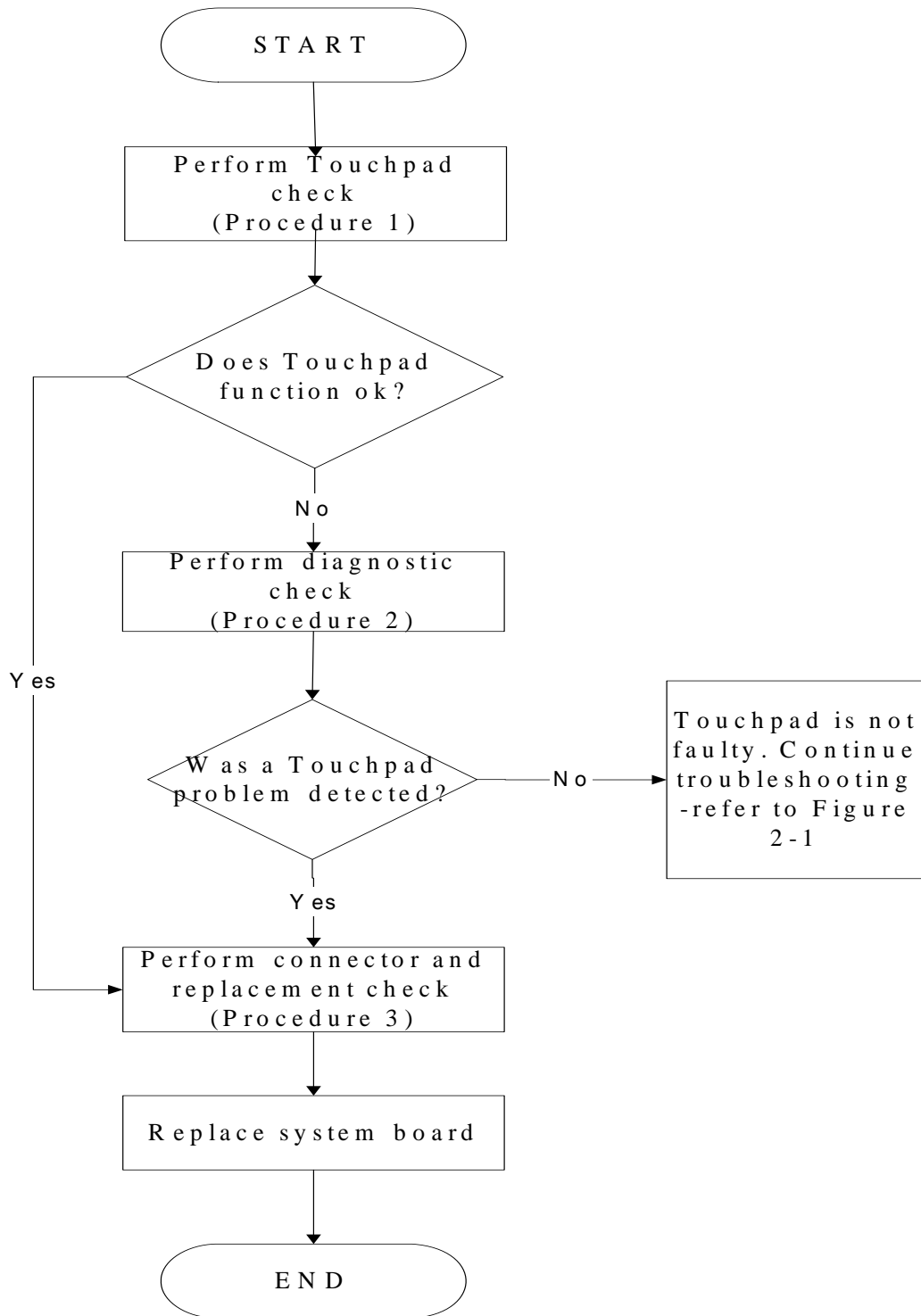


Figure 2-6 Touchpad troubleshooting process

To determine if the computer's built-in TouchPad is functioning properly, perform the following procedures. Figure 2-6 outlines the process. Start with Procedure 1 and continue as instructed.

Procedure 1: Perform Touchpad test

Procedure 2: Touchpad connection check

Procedure 3: Touchpad replacement check

### **Procedure 1 Perform Touchpad test**

Run the Diagnostic Program, which will automatically execute the Touchpad test. (Refer to Chapter 3 system configuration check), Tests and Diagnostics for more information on the program.

If an error is located, go to Procedure 2. If an error is not located, the Touchpad function is functioning properly.

### **Procedure 2 Touchpad connection check**

The Touchpad is connected via the Touchpad FPC to the system board. Make sure the Touchpad FPC cable is firmly connected to the Touchpad and system board. Refer to Chapter 4, *Replacement Procedures*, for instructions on how to disassemble the computer and then perform the following checks.

If any of the connections are loose, reconnect firmly. If any of the connections is damaged, or there is still an error, go to Procedure 3.

### **Procedure 3 Touchpad replacement check**

The Touchpad unit or FPC may be defective or damaged. Replace each with a new one following the steps in Chapter 4. If the free-Dos test is still not functioning properly, replace the system board with a new one following the steps in Chapter 4.

## 2.8 Speaker Troubleshooting

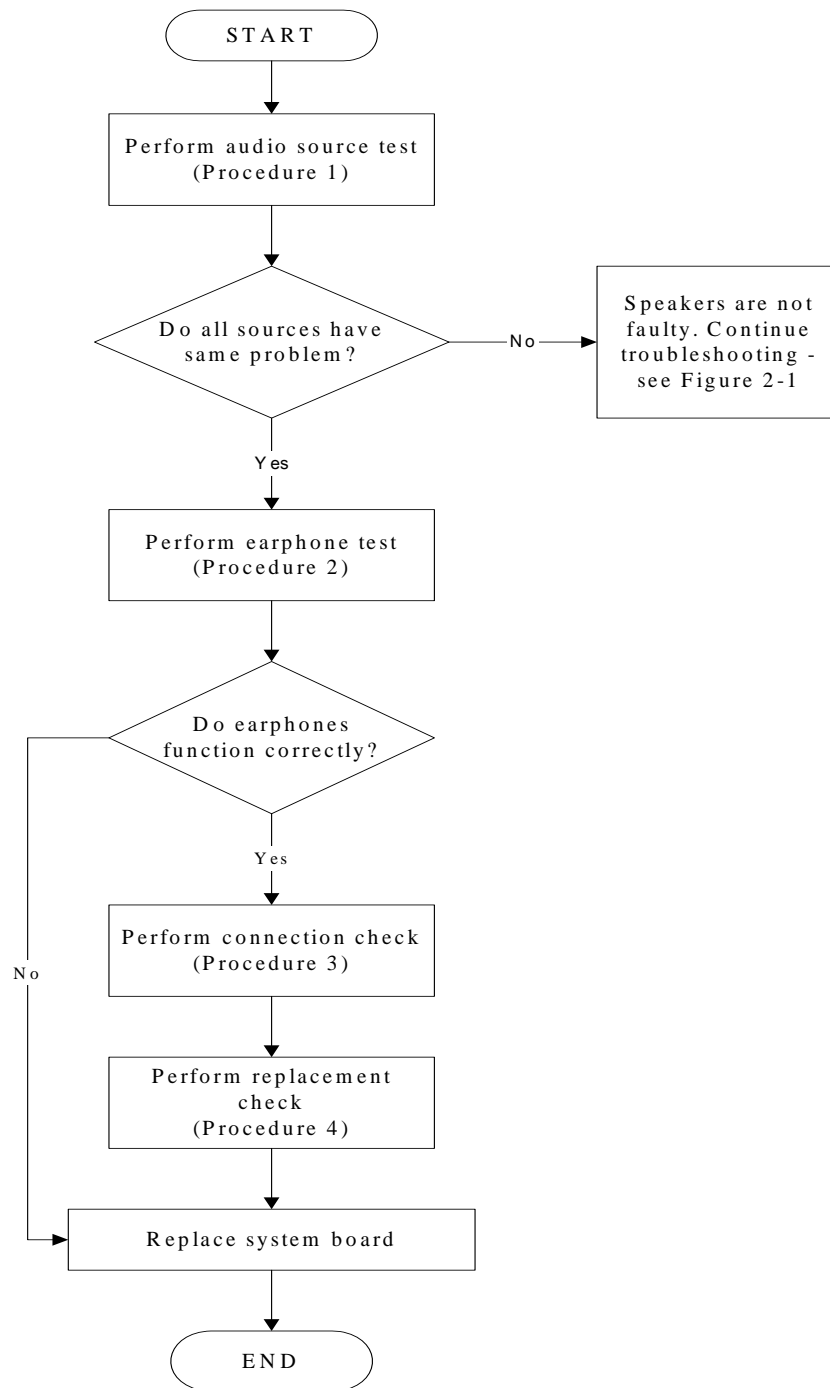


Figure 2-7 Speaker troubleshooting process

To determine if the computer's built-in speakers are functioning properly, perform the following procedures. Figure 2-7 outlines the process. First adjust the speaker volume to an appropriate level. Start with Procedure 1 and continue as instructed.

Procedure 1: Audio source test

Procedure 2: Earphone test

Procedure 3: Connection check

Procedure 4: Replacement check

### **Procedure 1 Audio source test**

Try different audio sources (e.g. an audio CD and digital music file) to determine whether the fault is in the speaker system or not. If not all sources have sound problem, the problem is in the monaural devices. If all have the same problem, continue with Procedure 2.

### **Procedure 2 Earphone test**

Connect a set of earphones or external speakers. If these function correctly, go to Procedure 3. If they do not function correctly, the system board may be defective or damaged. Replace it with a new one.

### **Procedure 3 Connection check**

Disassemble the computer following the steps described in Chapter 4, *Replacement Procedures* and make sure the speaker cable is firmly connected to the audio board. If the speakers are still not functioning properly, go to Procedure 4.

### **Procedure 4 Replacement check**

If the monaural speakers don't sound properly, the monaural speakers may be defective or damaged. Replace them with new ones. If the monaural speakers still do not work properly, try replacing in turn the audio board and system board.

## 2.9 Wireless LAN Troubleshooting

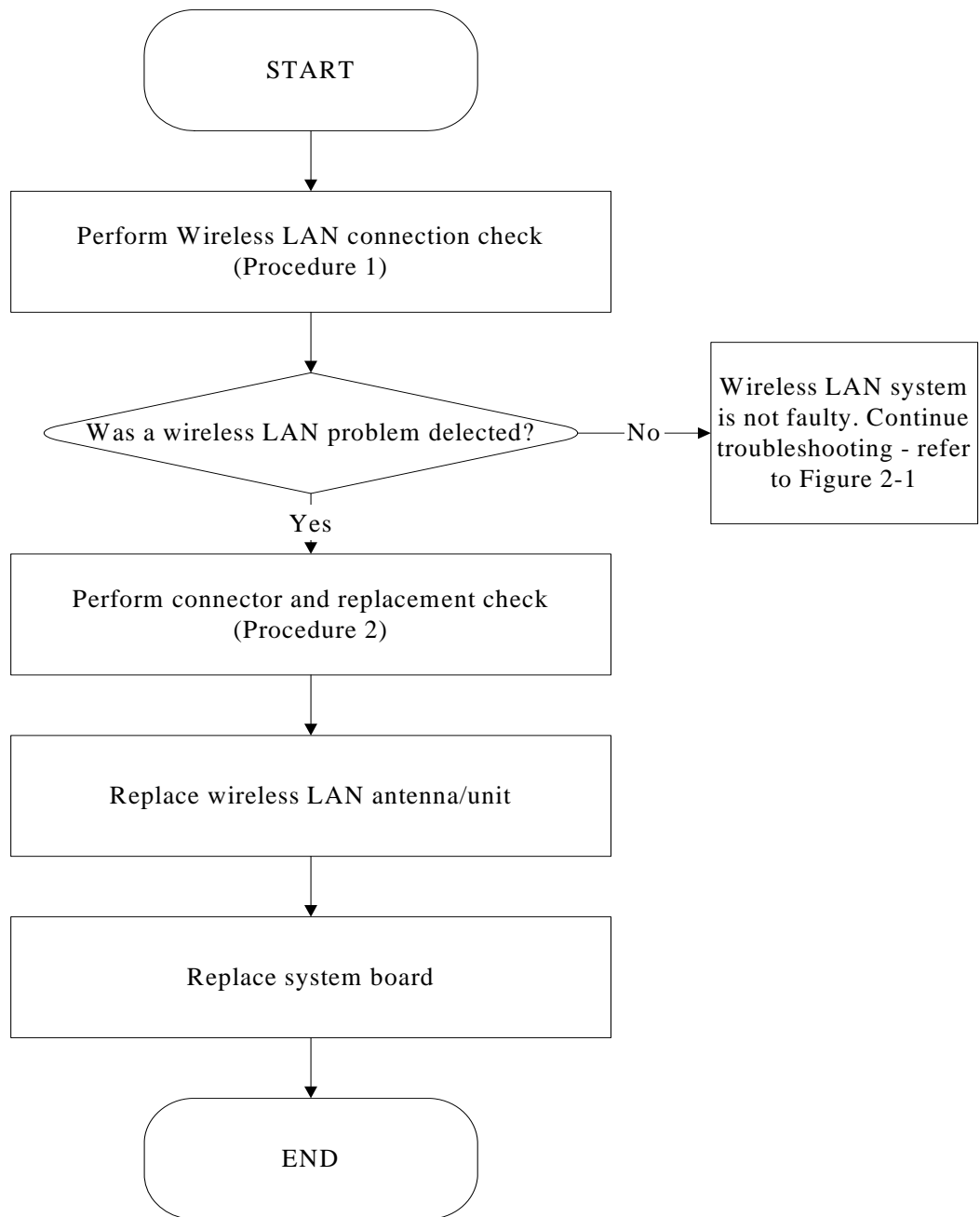


Figure 2-8 Wireless LAN troubleshooting process

Notes: W/L Antenna assemble rule as below:

color of antenna	assemble location
White antenna	Main/1
Black antenna	Aux/2

The wireless LAN antenna wire, wireless LAN unit or system board may each be the source of a wireless LAN fault. Any of these components may be damaged. To determine if the computer's wireless LAN system is functioning properly, perform the following procedures. Figure 2-8 outlines the process. Start with Procedure 1 and continue with the other procedures as instructed.

Procedure 1: Wireless LAN connection check

Procedure 2: Connector and replacement check

### **Procedure 1 Wireless LAN connection check**

PLS use windows application. If an error is located, go to Procedure 2. If an error is not located, the wireless LAN system is functioning properly.

### **Procedure 2 Connector and replacement check**

The wireless LAN antenna, wireless LAN unit or system board may be disconnected or damaged. Disassemble the computer following the steps described in Chapter 4, *Replacement Procedures*, and perform the following checks.

- Check 1 Make sure that the wireless LAN antenna is firmly connected to the Wireless LAN module (refer to Chapter 4 for instructions) and that the wireless LAN module is securely slotted into the system board. If the problem persists, go to Check 2.
- Check 2 Check that the wireless communication function is enable by BIOS setup and FN+F8, and then make sure that the wireless communication LED on the front panel is light. If the LED is light but the wireless LAN function is still faulty, the antenna may be damaged. Replace with a new antenna following the steps in Chapter 4, *Replacement Procedures*. If the problem persists, or if the wireless LAN LED is not light when the wireless communication function is enabled by BIOS setup and FN+F8, go to Check 3.
- Check 3 The wireless LAN unit may be damaged. Replace it with a new one following the instructions in Chapter 4. If the problem still exists, perform Check 4.
- Check 4 The system board may be damaged. Replace it with a new one following the instructions in Chapter 4.

## 2.10 Camera Troubleshooting

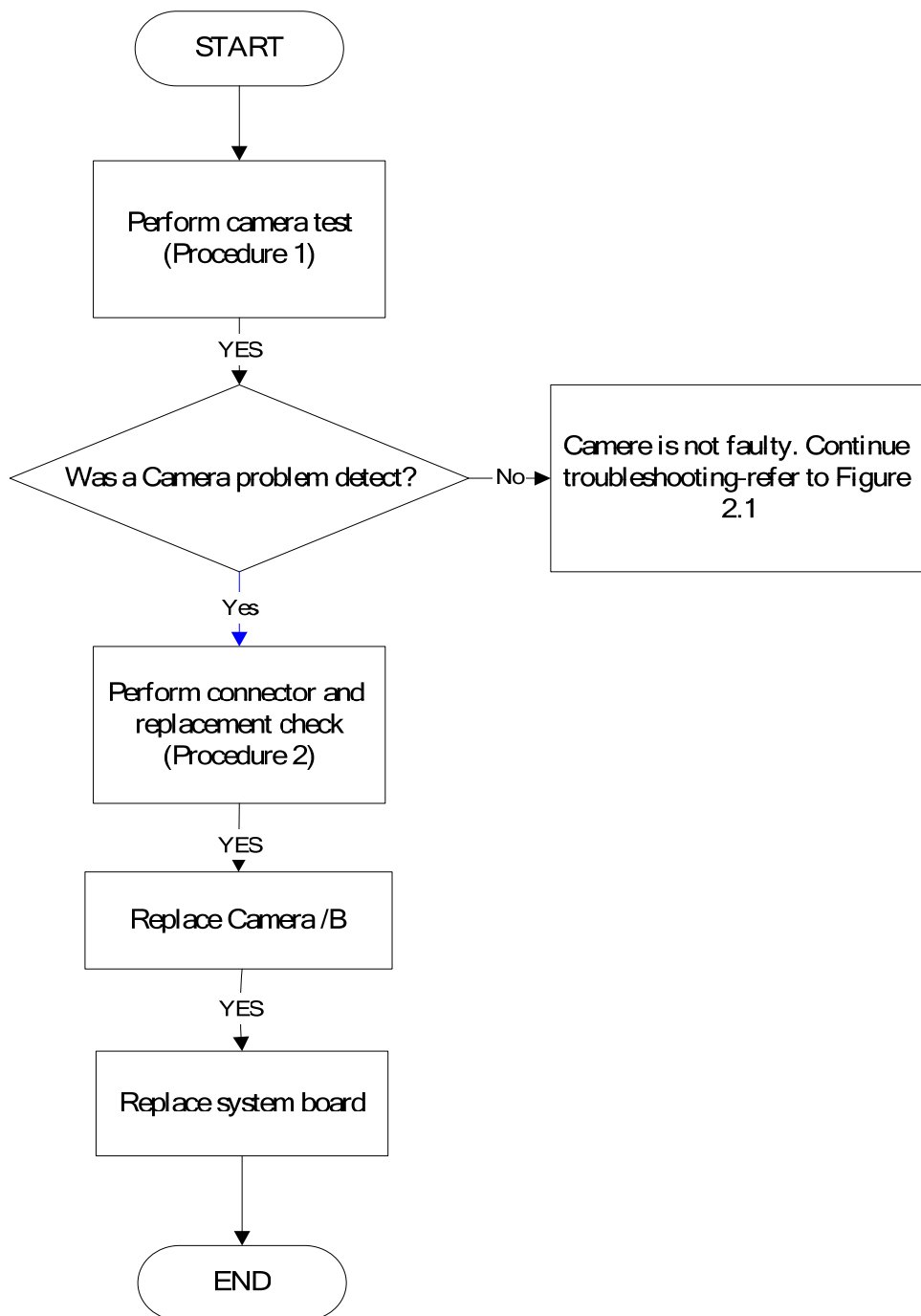


Figure 2-9 Camera troubleshooting process



The Camera board or system board may be the reason of a Camera fault. Either of these two components may be damaged. To determine if the computer's Camera is functioning properly, perform the following procedures. Figure 2-9 outlines the process. Start with Procedure 1 and continue with the other procedures as instructed.

Procedure 1: Windows Application test

Procedure 2: Connector and replacement check

### **Procedure 1 Windows Application test**

Run the functioning Program in windows, which will display the Camera test result.

If tests and diagnostics result abnormal go to Procedure 2. If an error is not located, the Camera system is functioning properly.

### **Procedure 2 Connector and replacement check**

The Camera board or system board may be disconnected or damaged. Disassemble the computer following the steps described in Chapter 4, *Replacement Procedures*, and perform the following checks.

- Check 1 Make sure that the Camera board cable is securely slotted into the system board. If the problem persists, go to Check 2.
- Check 2 The Camera board may be damaged. Replace it with a new one following the instructions in Chapter 4. If the problem still exists, perform Check 3.
- Check 3 The system board may be damaged. Replace it with a new one following the instructions in Chapter 4.

## 2.11 Bluetooth Troubleshooting

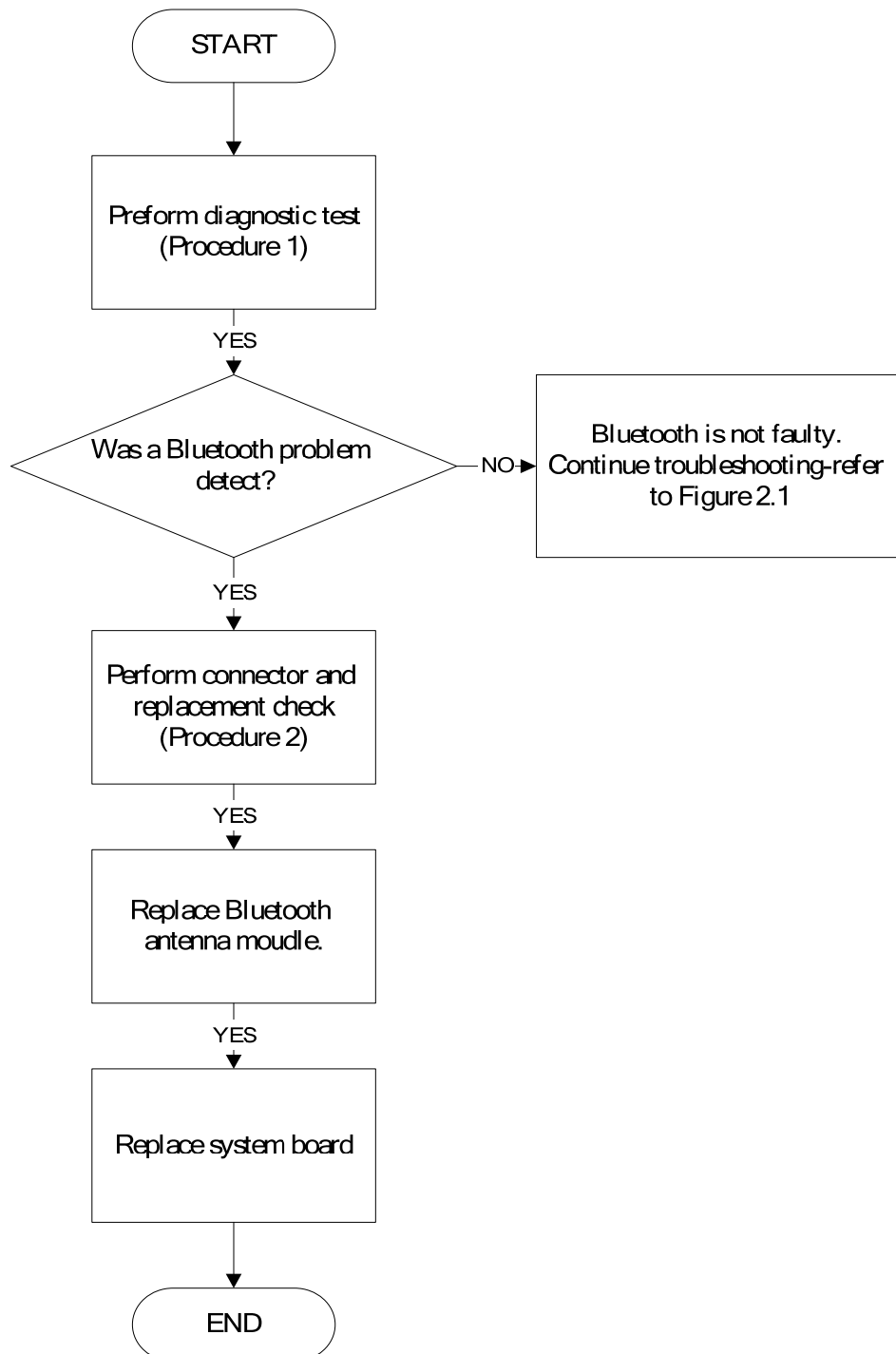


Figure 2-10 Bluetooth troubleshooting process

The Bluetooth antenna wire, Bluetooth module or system board may be the reason of a Bluetooth fault. Any of these components may be damaged. To determine if the computer's Bluetooth is functioning properly, perform the following procedures. Figure 2-10 outlines the process. Start with Procedure 1 and continue with the other procedures as instructed.

Procedure 1: Windows Application test

Procedure 2: Connector and replacement check

### **Procedure 1 Windows Application test**

PLS use windows application to check device can work fine or not. If an error is located, go to Procedure 2. If an error is not located, the Bluetooth system is functioning properly.

### **Procedure 2 Connector and replacement check**

The Bluetooth, antenna module or system board may be disconnected or damaged. Disassemble the computer following the steps described in Chapter 4, *Replacement Procedures*, and perform the following checks.

- Check 1 Make sure the Bluetooth cable is securely slotted into the system board. If the problem persists, go to Check 2.
- Check 2 Check the wireless communication function is enabled by BIOS setup and FN+F8, then make sure that the communication LED on the left panel is lit. If the problem persists, or if the Bluetooth communication LED is not lit when the wireless communication function is enabled by BIOS setup and FN+F8 to "On", go to Check 3.
- Check 3 The Bluetooth module may be damaged. Replace it with a new one following the instructions in Chapter 4. If the problem still exists, perform Check 4.
- Check 4 The system board may be damaged. Replace it with a new one following the instructions in Chapter 4.

## 2.12 4in1 card Troubleshooting

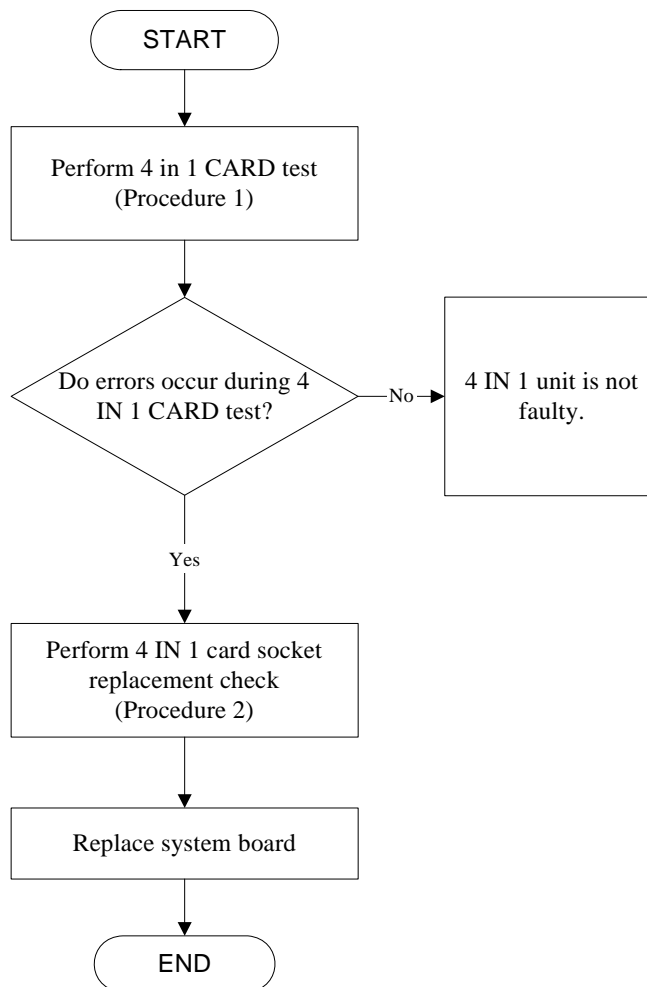


Figure 2-11 4 in 1 card troubleshooting process

This section describes how to determine if the 4 IN 1 Card is functioning properly. The process is summarized in Figure 2-11. Perform the steps below starting with Procedure 1 and continuing with the other procedures as required.

Procedure 1: 4 in 1 card test

Procedure 2: 4 in 1 card socket check

**Procedure 1 4 in 1 card test**

The 4 in 1 Card test card contains a 4 in 1 card test program. Ensure the card is fully inserted into the socket before running the program.

If an error occurs during the 4 in 1 card test, perform Procedure 2. If no error occurs, it is likely that the original 4 in 1 card was faulty.

**Procedure 2 4 in 1 Card socket check**

The 4 in 1 Card socket may be damaged or defective, for instance the socket pins can be bent. Disassemble the computer following the steps described in Chapter 4, Replacement Procedures and check the socket. If the problem persists, the system board may be defective or damaged. Replace the system board with a new one following the steps in Chapter 4.

## 2.13 HDD Troubleshooting

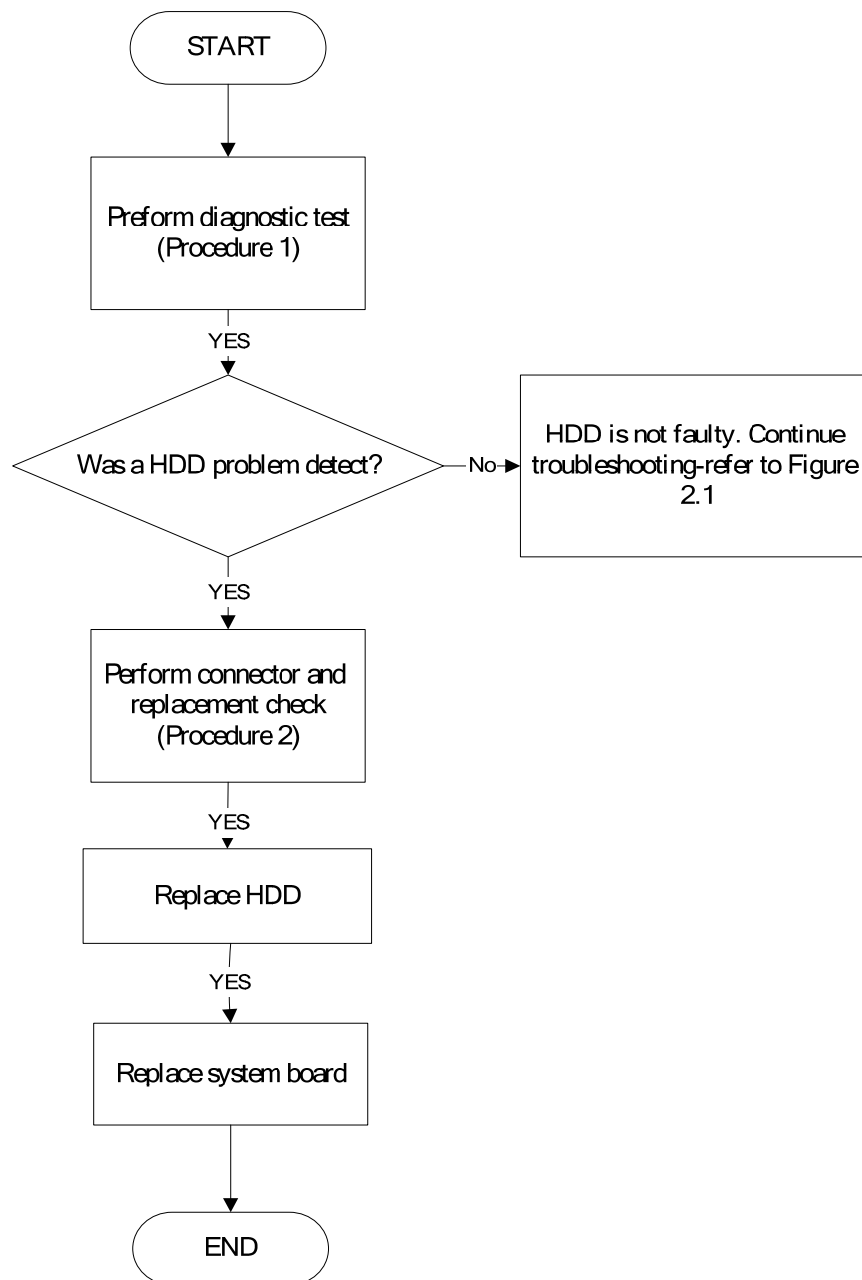


Figure 2-12 HDD troubleshooting process

The HDD or system board may be the reason of a HDD fault. Either of these two components may be damaged. To determine if the computer's HDD is functioning properly, perform the following procedures. Figure 2-12 outlines the process. Start with Procedure 1 and continue with the other procedures as instructed.

Procedure 1: Diagnostic test

Procedure 2: Connector and replacement check

### **Procedure 1 Diagnostic test**

Run the Diagnostic Program, which will automatically execute the HDD R/W test. Refer to Chapter 3, Tests and Diagnostics for more information on the program.

If an error is located, go to Procedure 2. If an error is not located, the HDD function is functioning properly.

### **Procedure 2 Connector and replacement check**

The HDD module or system board may be disconnected or damaged. Disassemble the computer following the steps described in Chapter 4, *Replacement Procedures*, and perform the following checks.

- Check 1 Make sure that the HDD module is securely slotted into the system board. If the problem persists, go to Check 2.
- Check 2 The HDD module may be damaged. Replace it with a new one following the instructions in Chapter 4. If the problem still exists, perform Check 3.
- Check 3 The system board may be damaged. Replace it with a new one following the instructions in Chapter 4.

## 2.14 CRT Troubleshooting

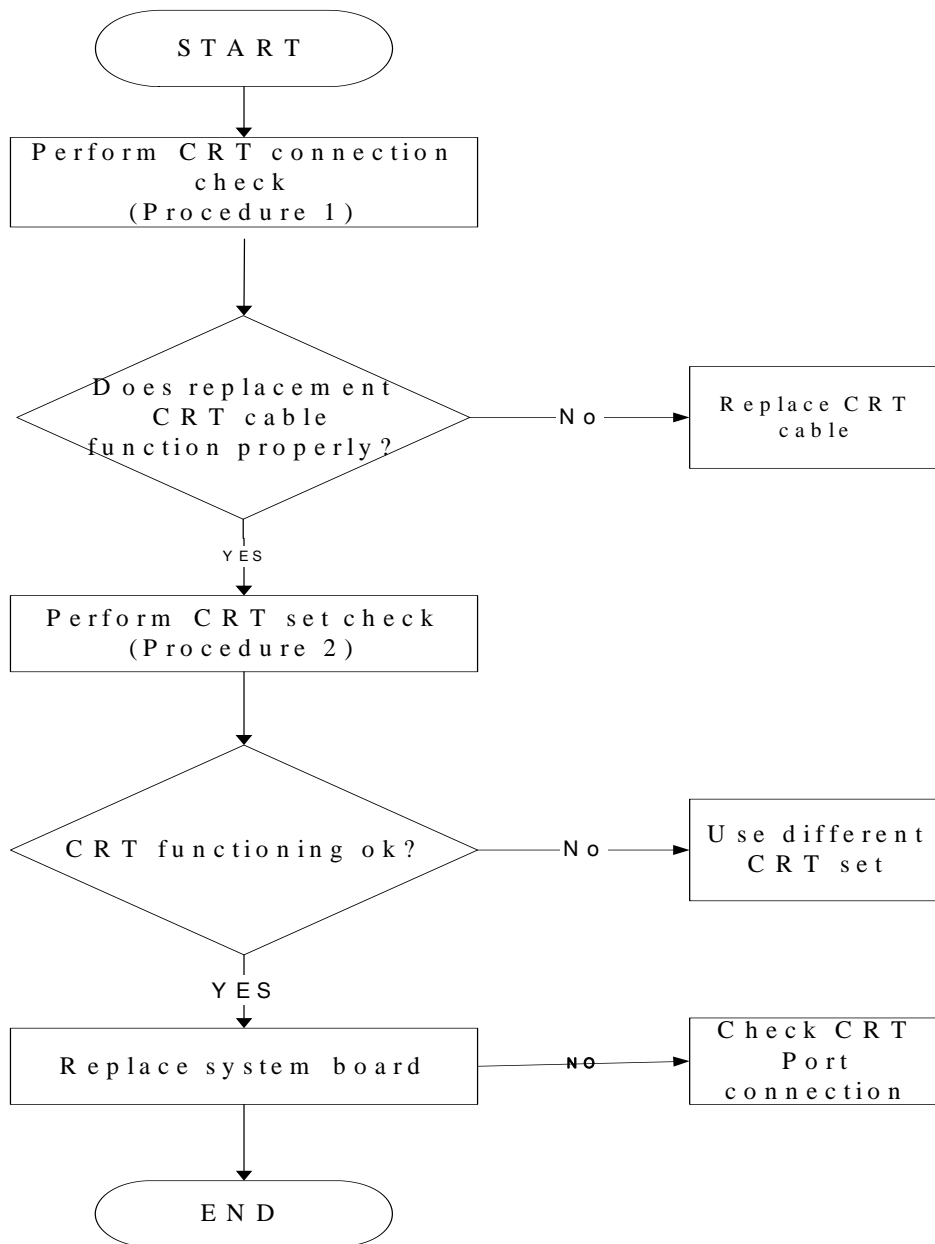


Figure 2-13 CRT troubleshooting process

To determine if the computer's CRT port is functioning properly, perform the following procedures. Figure 2-14 outlines the process. Start with Procedure 1 and continue as instructed.

Procedure 1: CRT connection check



Procedure 2: CRT set check

**Procedure 1 CRT connection check**

The CRT cable may be damaged or the connections may be loose. Perform Check 1:

- Check 1 Make sure CRT cable is firmly plugged into both the CRT set and the CRT port of the computer. If the cable is connected correctly, go to Check 2.
- Check 2 Make sure the CRT port is firmly secured to the system board of the computer. If the malfunction remains, go to Check 3.
- Check 3 The CRT cable may be damaged. Replace with a good cable. If the malfunction remains, go to Procedure 2.

**Procedure 2 CRT set check**

The CRT set may be faulty. Perform Check 1:

- Check 1 Try using the set for CRT reception. If it does not work, the set may be damaged. If the set does work, perform Check 2.
- Check 2 Try connecting a different CRT to the computer. If the replacement CRT works, the original set may be damaged. If the replacement set does not work the system board may be damaged. Replace it with a new one following the instructions in Chapter 4.

## 2.15 LAN Troubleshooting

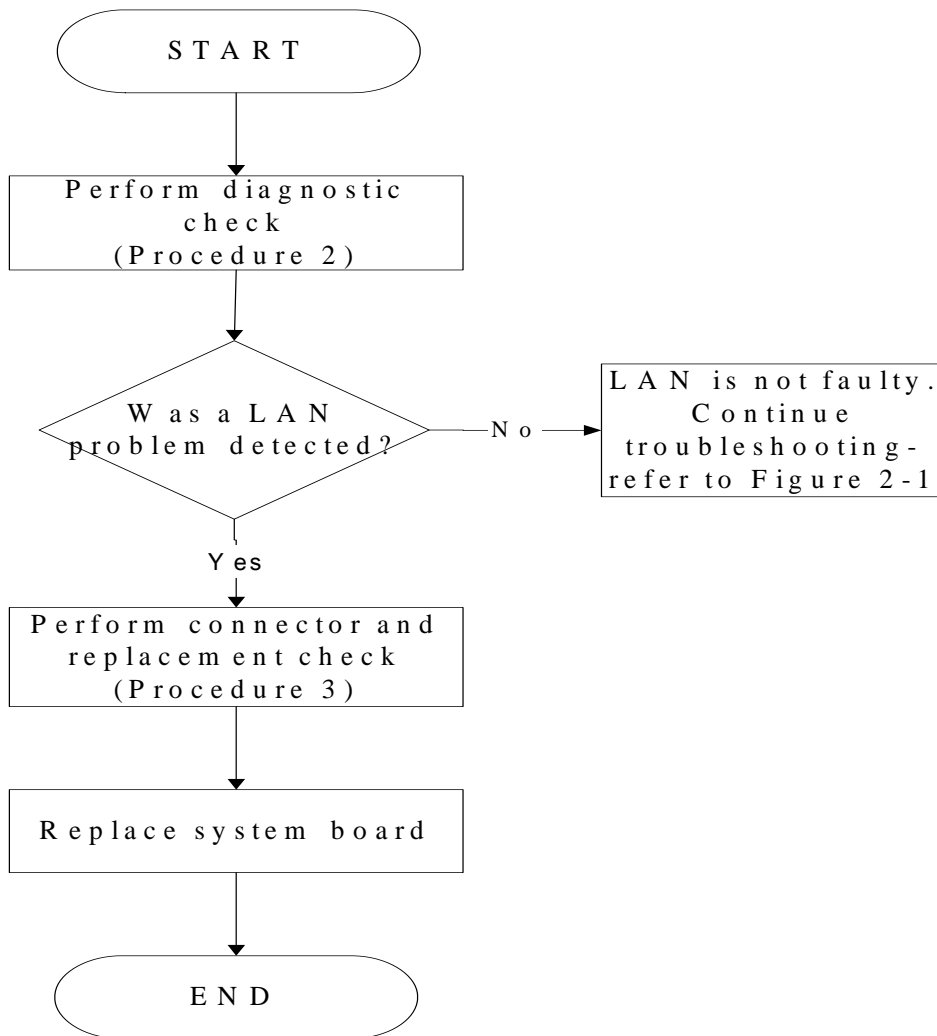


Figure 2-14 LAN troubleshooting process

To determine if the computer's LAN port is functioning properly, perform the following procedures. Figure 2-14 outlines the process. Start with Procedure 1 and continue as instructed.

Procedure 1: Diagnostic test

Procedure 2: Connection and replacement check

### **Procedure 1 Diagnostic test**

Run T&D Program on DOS model, which will display the LAN test result.

If tests and diagnostics result abnormal go to Procedure 2. If an error is not located, the 3D functioning is properly.

### **Procedure 2 Connection and replacement check**

The transmission cable may be damaged or the connections may be loose. Perform Check 1:

- Check 1 Make sure the transmission LAN cable is firmly plugged into the LAN port of the computer. If the LAN cable is connected correctly, go to Check 2.
- Check 2 Make sure the LAN port is firmly secured to the system board of the computer. If the malfunction persists, go to Check 3.
- Check 3 The transmission LAN cable may be damaged. Replace with a good LAN cable. If the malfunction persists, go to Check 4
- Check 4 The system board may be damaged. Replace it with a new one following the instructions in Chapter 4.

## 2.16 MIC Troubleshooting

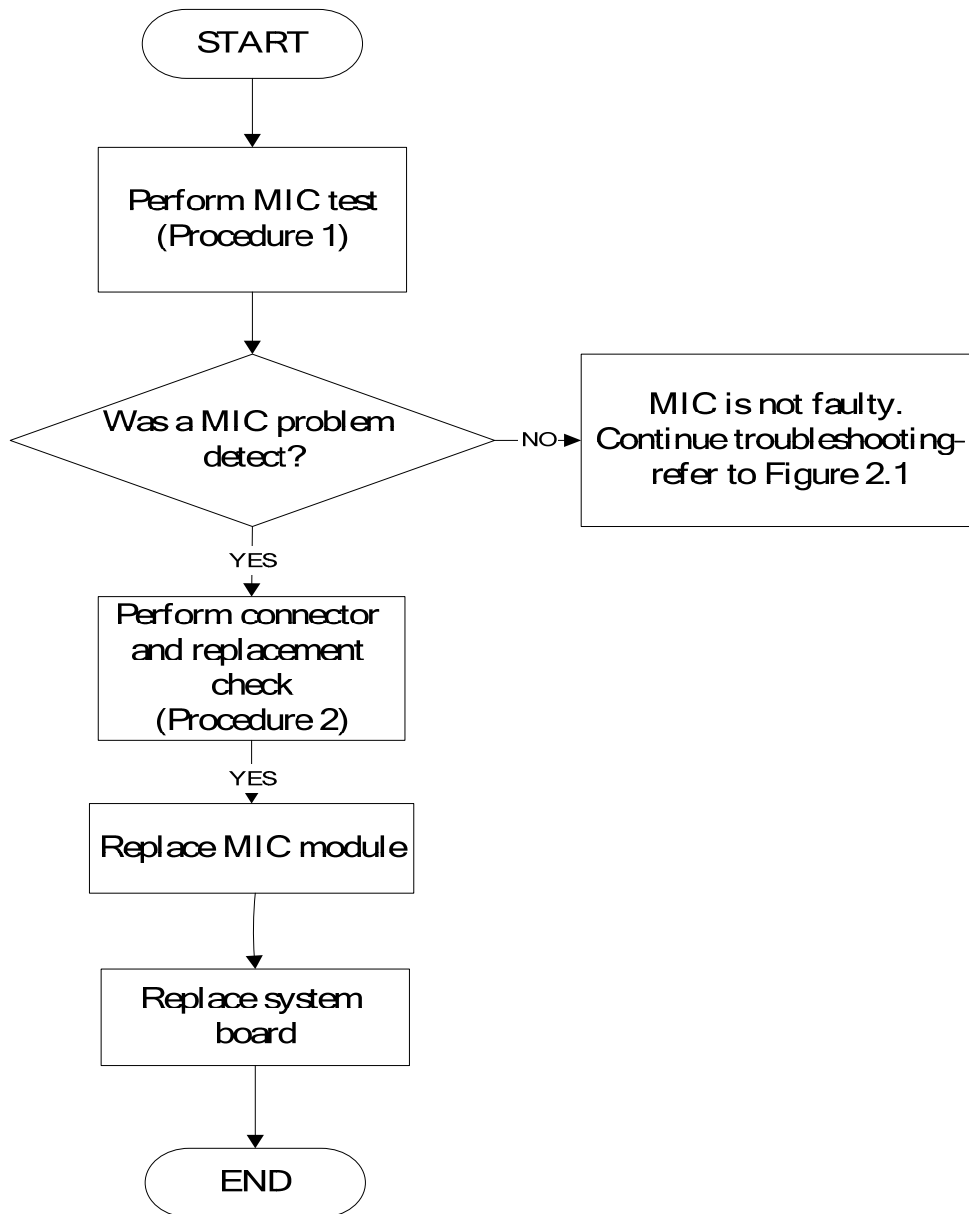


Figure 2-15. MIC troubleshooting process

The MIC module or system board may be the reason of a MIC fault. Either of these two components may be damaged. To determine if the computer's MIC is functioning properly, perform the following procedures. Figure 2-15 outlines the process. Start with Procedure 1 and continue with the other procedures as instructed.

Procedure 1: Windows Application test

Procedure 2: Connector and replacement check

**Procedure 1 Windows Application test**

Run the functioning Program (record.exe) on Windows model, which will display the MIC test result.

If tests and diagnostics result abnormal go to Procedure 2. If an error is not located, the MIC module functioning is properly.

**Procedure 2 Connector and replacement check**

The MIC module or system board may be disconnected or damaged. Disassemble the computer following the steps described in Chapter 4, *Replacement Procedures*, and perform the following checks.

- Check 1 Make sure that the MIC module line is securely slotted into the system board. If the problem remains, go to Check 2.
- Check 2 The MIC module may be damaged. Replace it with a new one following the instructions in Chapter 4. If the problem still exists, perform Check 3.
- Check 3 The system board may be damaged. Replace it with a new one following the instructions in Chapter 4.

## 2.17 3D Sensor Troubleshooting

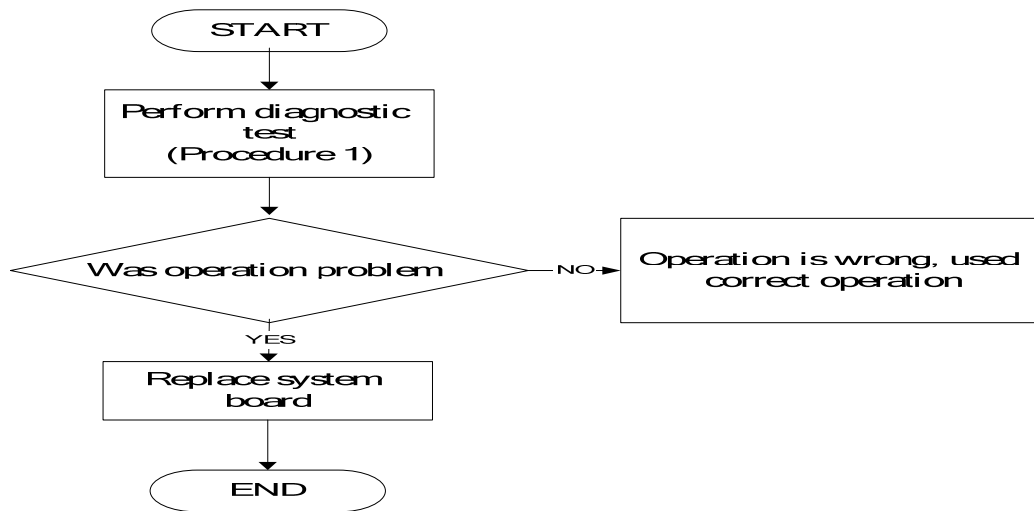


Figure 2-16. 3D sensor troubleshooting process

The operation or system board may be the reason of 3D sensor fault. Either of these two may be damaged. To determine if the computer's 3D is functioning properly, perform the following procedures. Figure 2-16 outlines the process. Start with Procedure 1 and continue with the other procedures as instructed.

Procedure 1: Diagnostic test

Procedure 2: Replacement check

### Procedure 1 Diagnostic test

Run the functioning Program on Windows model, which will display the 3D test result.

If tests and diagnostics result abnormal go to Procedure 2. If an error is not located, the 3D functioning is properly.

## **Procedure 2 Replacement check**

Disassemble the computer following the steps described in Chapter 4, *Replacement Procedures*, and perform the following checks.

- Check 1 Make sure that 3D sensor test operation is correct, go to Check 2.
- Check 2 The system board may be damaged. Replace it with a new one following the instructions in Chapter 4.

## 2.18 3G Troubleshooting

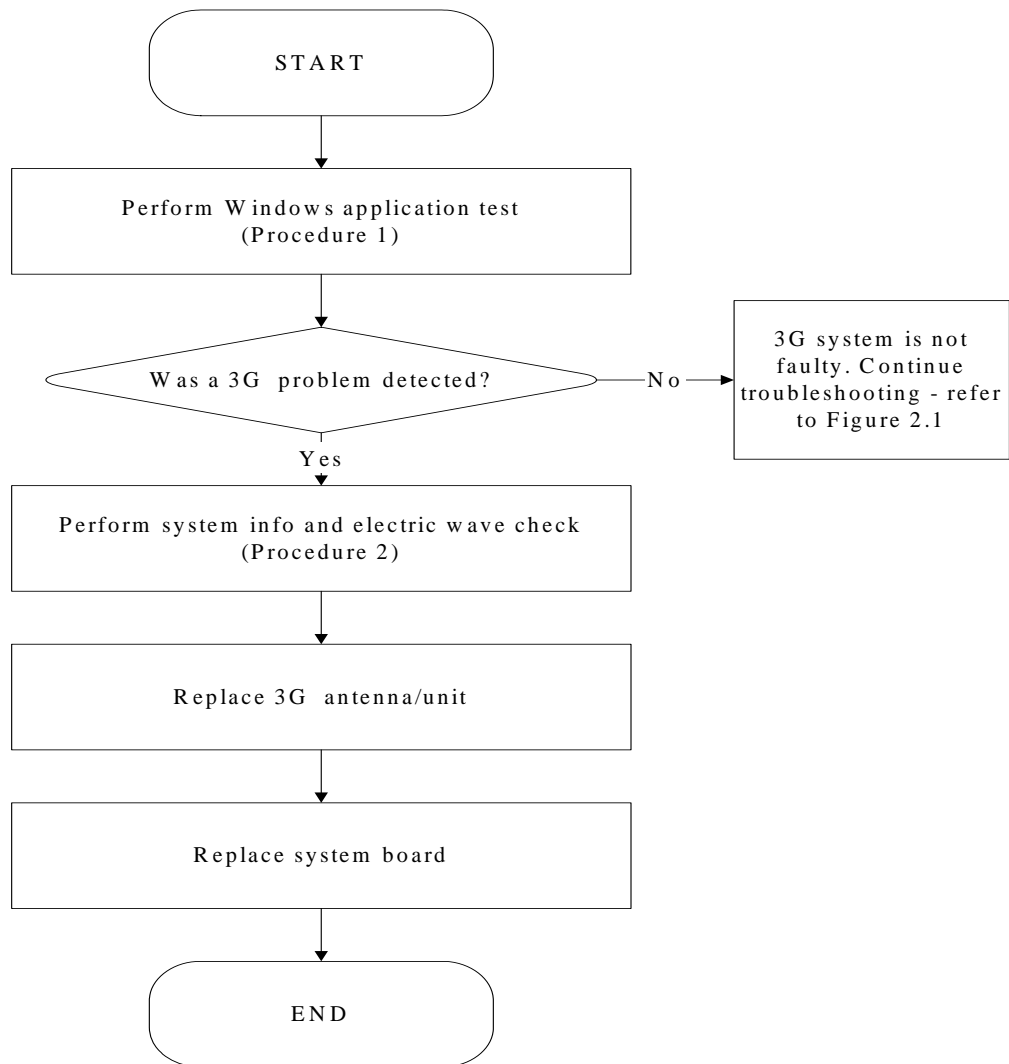


Figure 2-17 3G troubleshooting process

Notes: 3G Antenna assemble rule as below:

color of antenna	Assemble location
Red antenna	Main/1
Blue antenna	Aux/2

The 3G antenna wire, 3G unit or system board may each be the source of a 3G fault. Any of these components may be damaged. To determine if the computer's wireless LAN system is



functioning properly, perform the following procedures. Figure 2-17 outlines the process.

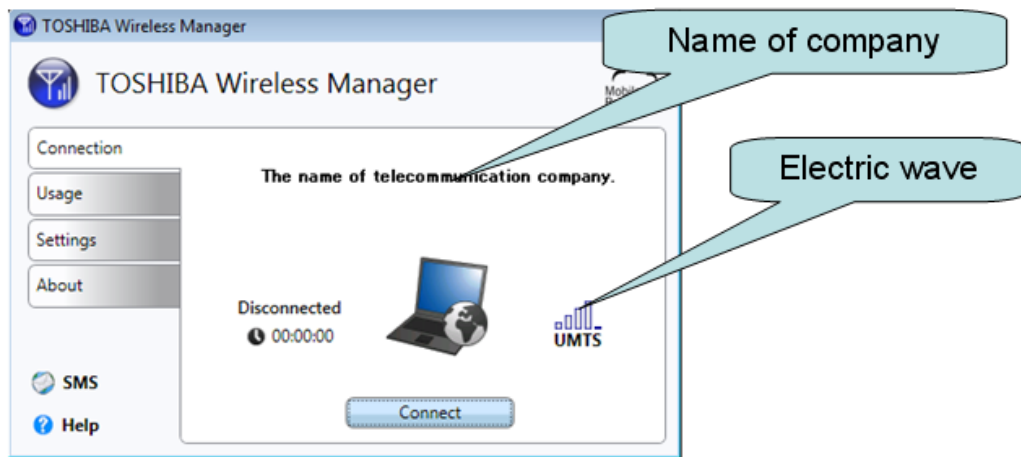
Start with Procedure 1 and continue with the other procedures as instructed.

Procedure 1: Windows Application check

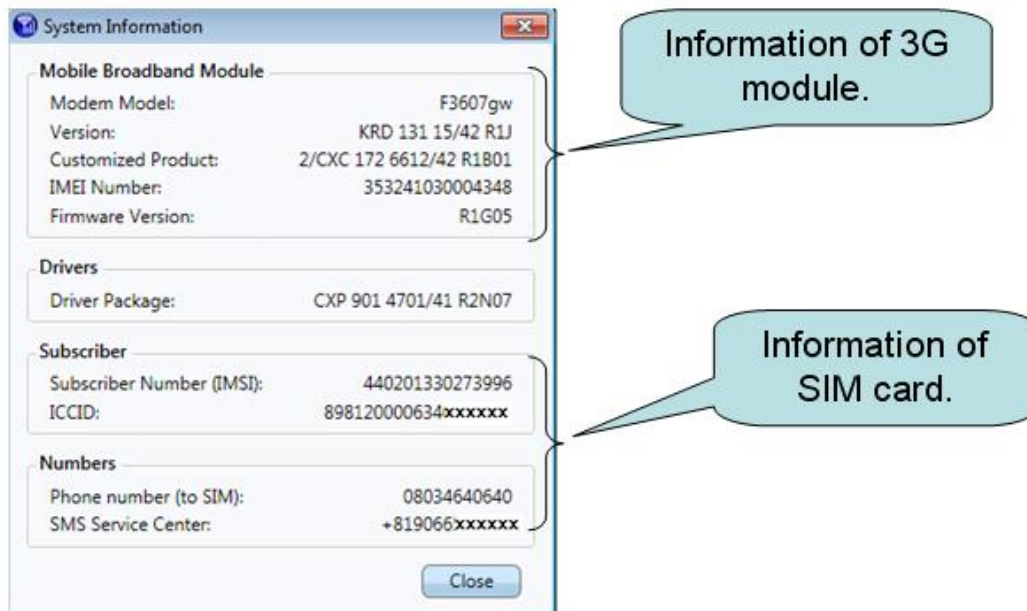
Procedure 2: Connector and replacement check

### Procedure 1 Windows Application check

1.> Please use TOSHIBA wireless manager. It displays the name of telecommunication company, and intensity of an electric wave.



2.> Please choose "About" and click "System Info". "System Info" the Following data is displayed.



## Procedure 2 Connector and replacement check

The 3G antenna, 3G unit or system board may be disconnected or damaged. Disassemble the computer following the steps described in Chapter 4, *Replacement Procedures*, and perform the following checks.

- Check 1 Make sure that the 3G antenna is firmly connected to the 3G module (refer to Chapter 4 for instructions) and that the 3G module is securely slotted into the system board. If the problem persists, go to Check 2.
- Check 2 Check the wireless communication function is enabled by BIOS setup and FN+F8, and then make sure that the wireless communication LED on the front panel is light. If the LED is light but the 3G function is still faulty, the antenna may be damaged. Replace with a new antenna following the steps in Chapter 4, *Replacement Procedures*. If the problem persists, or if the wireless LAN LED is not light when the wireless communication function is enabled by BIOS setup and FN+F8, go to Check 3.
- Check 3 If the intensity of an electric wave is weak, an antenna should exchange. Replace it with a new one following the instructions in Chapter 4. If the problem still exists, perform Check 4.
- Check 4 If information of 3G module is not displayed, please exchange 3G module. Replace it with a new one following the instructions in Chapter 4. If the problem still exists, perform Check 5.
- Check 5 If information of SIM card is not displayed, please replace it with a new one following the instructions in Chapter 4.

## 2.19 HDMI Troubleshooting

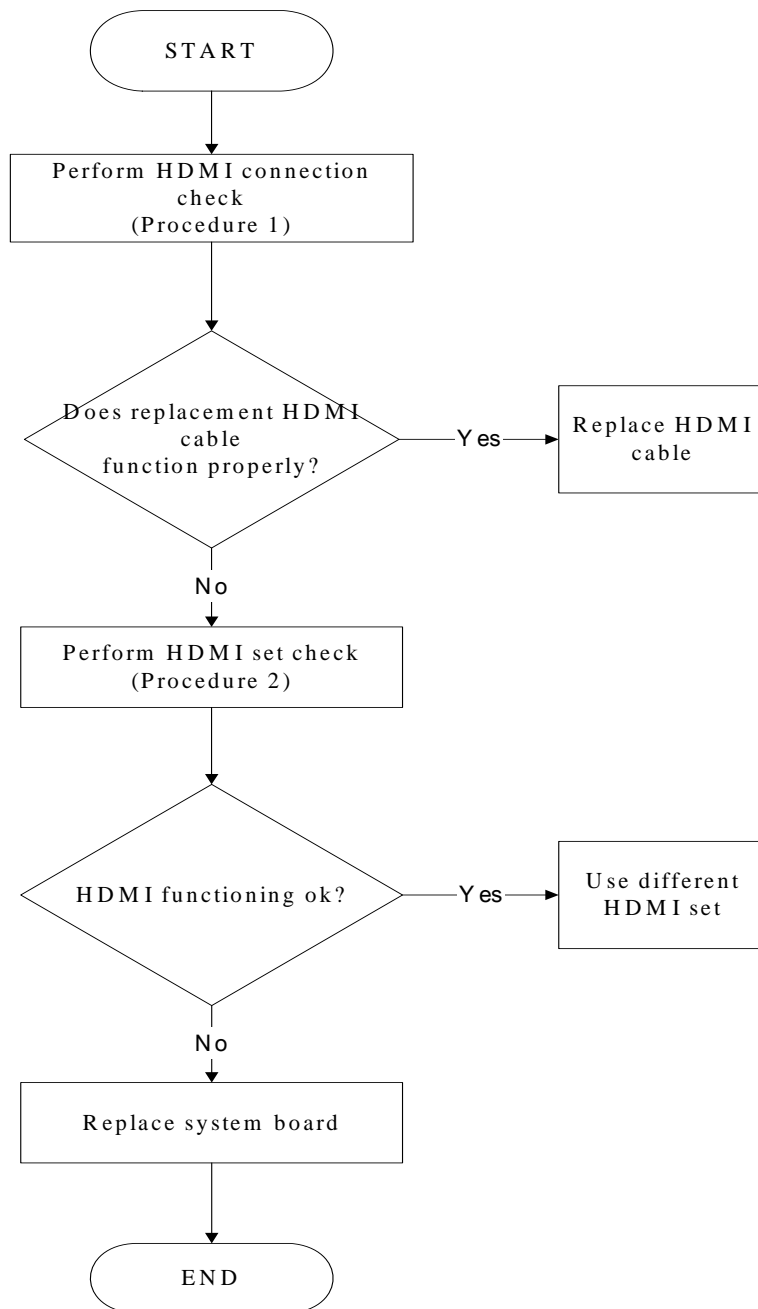


Figure 2-18 HDMI troubleshooting process

To determine if the computer's HDMI port is functioning properly, perform the following procedures. Figure 2-18 outlines the process. Start with Procedure 1 and continue as instructed.

Procedure 1: HDMI connection check

Procedure 2: HDMI set check

### **Procedure 1 HDMI connection check**

The CRT cable may be damaged or the connections may be loose. Perform Check 1:

Check 1 Make sure HDMI cable is firmly plugged into both the CRT set and the CRT port of the computer. If the cable is connected correctly, go to Check 2.

Check 2 Make sure the HDMI port is firmly secured to the system board of the computer. If the malfunction remains, go to Check 3.

Check 3 The HDMI cable may be damaged. Replace with a good cable. If the malfunction remains, go to Procedure 2.

### **Procedure 2 HDMI set check**

The TV set may be faulty. Perform Check 1:

Check 1 Try using the set for television reception. If it does not work, the set may be damaged. If the set does work, perform Check 2.

Check 2 Try connecting a different television to the computer. If the replacement television works, the original set may be damaged. If the replacement set does not work, the system board may be damaged. Replace it with a new one following the instructions in Chapter 4.

## 2.20 E-SATA Troubleshooting

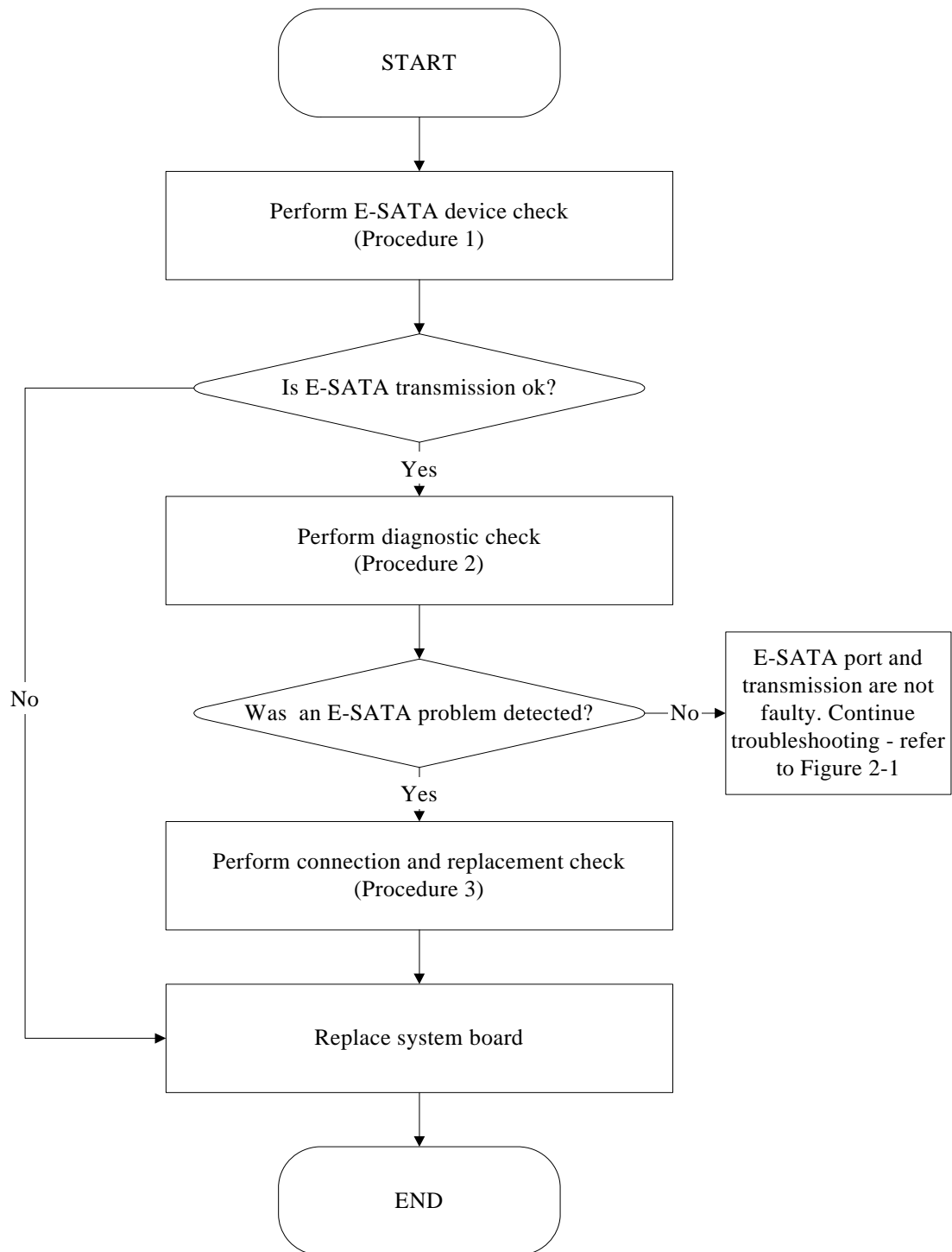


Figure 2-19 E-SATA troubleshooting process

To determine if the computer's E-SATA system is functioning properly, perform the following procedures. Figure 2-19 outlines the process. Start with Procedure 1 and continue with the other procedures as instructed.

Procedure 1: E-SATA device check

Procedure 2: Windows Application check

Procedure 3: Connection and replacement check

### **Procedure 1 E-SATA device check**

Connect an E-SATA device to the computer's E-SATA port, and then boot the computer for Windows7. The computer should automatically detect the E-SATA device. Check whether the device can transmit data to the computer.

If the device is able to communicate with the computer, the problem may be intermittent or connections may be faulty. Go to Procedure 2.

If communication is impaired, there may be a faulty connection. Go to Procedure 3.

### **Procedure 2 Windows Application check**

Run the Windows Application, which will automatically execute the E-SATA port test for transmission, Tests and Diagnostics for more information on how to run the program.

If an error is located, go to Procedure 3. If an error does not occur, the E-SATA port is functioning properly.

### **Procedure 3 Connection and replacement check**

The transmission cable may be damaged or the connections may be loose. Perform Check 1:

- Check 1 Make sure the transmission cable is firmly plugged into both the E-SATA compatible device and the E-SATA port of the computer. If the cable is connected correctly, go to Check 2.
- Check 2 Make sure the E-SATA port is firmly secured to the system board of the computer. If the malfunction persists, go to Check 3.
- Check 3 The transmission cable may be damaged. Replace with a good cable. If the malfunction persists, go to Check 4
- Check 4 The system board may be damaged. Replace it with a new one following the instructions in Chapter 4.

## 2.21 Wimax Troubleshooting

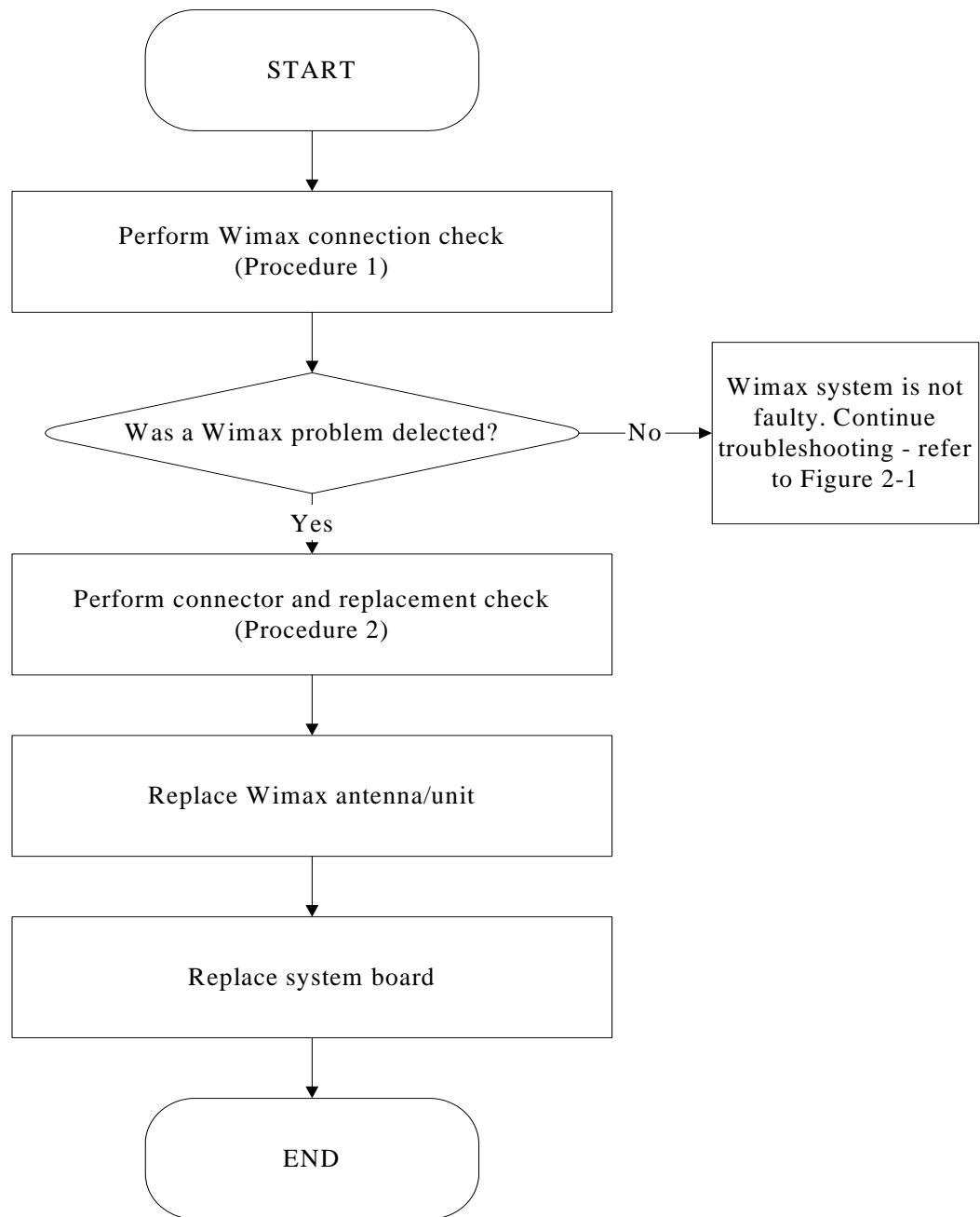


Figure 2-20 Wimax troubleshooting process

Notes: Wimax Antenna assemble rule as below:

color of antenna	assemble location
White antenna	Main/1
Black antenna	Aux/2

The Wimax antenna wire, Wimax unit or system board may each be the source of a Wimax fault. Any of these components may be damaged. To determine if the computer's Wimax system is functioning properly, perform the following procedures. Figure 2-20 outlines the process. Start with Procedure 1 and continue with the other procedures as instructed.

Procedure 1: Wimax connection check

Procedure 2: Connector and replacement check

### **Procedure 1 Wimax connection check**

PLS use windows application. If an error is located, go to Procedure 2. If an error is not located, the Wimax system is functioning properly.

### **Procedure 2 Connector and replacement check**

The Wimax antenna, Wimax unit or system board may be disconnected or damaged. Disassemble the computer following the steps described in Chapter 4, *Replacement Procedures*, and perform the following checks.

- Check 1 Make sure that the Wimax antenna is firmly connected to the Wimax module (refer to Chapter 4 for instructions) and that the Wimax module is securely slotted into the system board. If the problem persists, go to Check 2.
- Check 2 Check that the Wimax communication function is enable by BIOS setup and FN+F8, and then make sure that the Wimax communication LED on the front panel is light. If the LED is light but the Wimax function is still faulty, the antenna may be damaged. Replace with a new antenna following the steps in Chapter 4, *Replacement Procedures*. If the problem persists, or if the Wimax LED is not light when the Wimax communication function is enabled by BIOS setup and FN+F8, go to Check 3.
- Check 3 The Wimax unit may be damaged. Replace it with a new one following the instructions in Chapter 4. If the problem still exists, perform Check 4.
- Check 4 The system board may be damaged. Replace it with a new one following the instructions in Chapter 4.



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## **Chapter 3**

# **Tests and Diagnostic**

---

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### 3.1 The Diagnostic Test

This chapter explains how to use the Test & Diagnostic program to test the functions of the **(Base on Streamline S10 T&D version 1.0)** hardware modules. The program consists of a series of tests that run automatically when the Diagnostics Program items are selected and executed.

**NOTES:** *To start the diagnostics, follow these steps*

1. *Check all cables for loose connections.*
2. *Exit this program when you are at Main Menu.*

The TEST & DIAGNOSTIC PROGRAM contains the following functional tests:

- CONFIG CHECK TEST
- AUDIO SOUND TEST
- FAN ON/OFF TEST
- MAIN BATTERY CHARGE TEST
- FDD TEST
- MEMORY CHECK
- KEYBOARD TEST
- MOUSE(PAD) TEST
- LCD PIXELS MODE TEST
- MAGNETIC SWITCH TEST
- LAN TEST
- RTC TEST
- 3D G-SENSOR TEST
- HDD TEST
- READ DMI TEST
- WRITE DMI TEST
- TOSHIBA LOGO SET
- DYNABOOK LOGO SET
- TP TYPE R/W TEST
- EE-PROM SETTING

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

- The diagnostics USB memory
- A formatted working diskette for the floppy disk drive test (Floppy Disk Drive Test)
- A LAN loopback

## 3.2 Executing the Diagnostic Test

Free-DOS is required to run the DIAGNOSTICS PROGRAM. To start the DIAGNOSTIC PROGRAM, follow these steps:

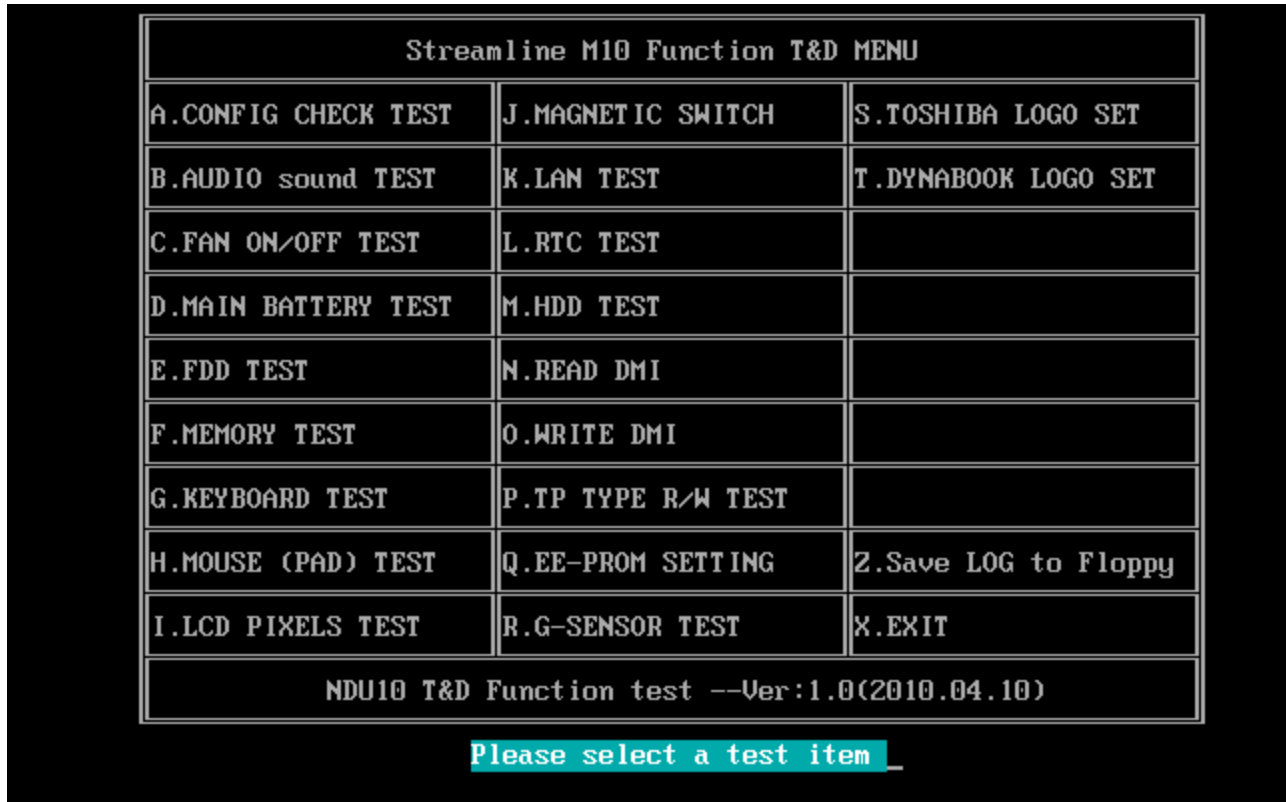
Insert the diagnostics USB memory and turn on the computer. (The diagnostics USB memory contains the Free-DOS boot files.) And then follow the instructions for T&D program installed in USB memory.

The T&D Program can run single test by you press corresponsive English letter of test item, and it also asks you if you like to copy test log file to USB memory as reference at the end of test(s).

The test list is as the following:

- A. CONFIG CHECK TEST
- B. AUDIO SOUND TEST
- C. FAN ON/OFF TEST
- D. MAIN BATTERY TEST
- E. FDD TEST
- F. MEMOY CHECK
- G. KEYBOARD TEST
- H. MOUSE (PAD) TEST
- I. LCD PIXELS TEST
- J. MAGNETIC SWITCH
- K. LAN TEST
- L. RTC TEST
- M. HDD TEST
- N. READ DMI
- O. WRITE DMI
- P. TP TYPE R/W TEST
- Q. EE-PROM SETTING
- R. 3D G-SENSOR TEST
- S. TOSHIBA LOGO SET
- T. DYNABOOK LOGO SET

The below display will show up at the beginning of T&D program



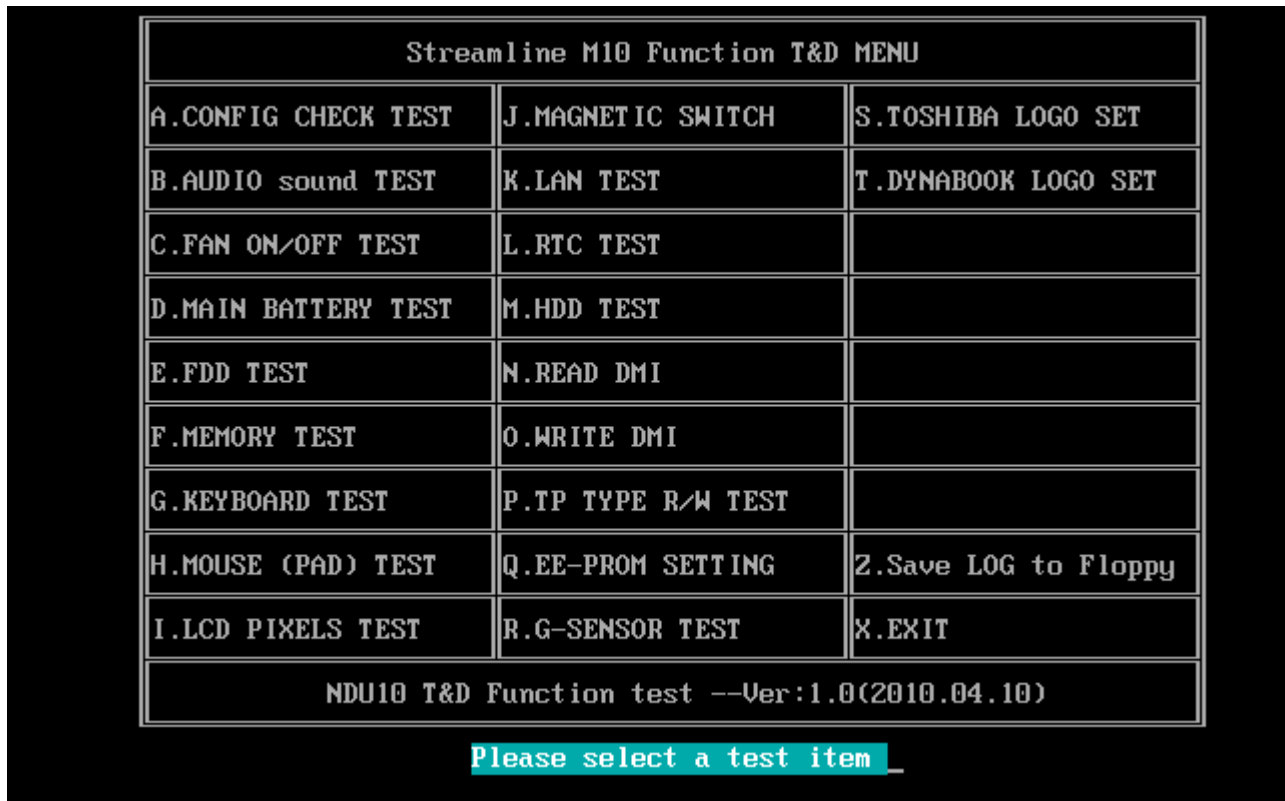
If the test result passes, the following display will show up:



If an error is detected and a test fails, the following message displays:



Then press any key for next actions, the below display presented.



### 3.3 Display Configuration

This Item will show the unit configuration. It includes:

- ◆ CPU (CPU type; Cache ; CPU speed ;CPU FSB)
- ◆ DDRAM SIZE
- ◆ Panel ID
- ◆ HDD type & capacity (Vendor ID. Model.)
- ◆ VRAM size / VGA CHIP TYPE
- ◆ Battery cell (3cell; 6cell.)
- ◆ Wireless type
- ◆ LAN Type
- ◆ Bluetooth
- ◆ SKUID

The screen should display as below:

```
=====
===== Configuration as Below =====
=====
CPU=U520@1.07GHZ
DDRAMSIZE=1024_MB+1024_MB
PanelID=LP116WH1-TLA1
HDD1=TOSHIBAMK3265GSX
VRAMSIZE&VGATYPE=INTELM55
BATT=6cell
WirelessTYPE= AtherosD210
LANTYPE=8105E
Bluetooth=BT
SKUID=90

ARE YOU TEST OK?[Y,N]?_
```

### 3.4 Audio sound test

The audio sound test allows the user to aurally confirm the speaker functions. And the speaker will send out music during test.

Before the Audio Test, you will see below note:

```
=====Speaker audio Test=====

Please listen to speaker will send out sound

Press any key to continue . . .
_
```

Press any key, then the program will test below item:

1. Line out Left channel test
2. Line out Right channel test
3. Playing 44K wave file
4. Playing 48K wave file



```
HD Codec DOS Test Program Version:3.47

Play a wave file (48k sampling rate/16-bits stereo file)
You must hear some music. Yes/No ?
Press 'Y' to stop playing(If the function is passed)
Press 'N' key (If the function is failed)
1.Line_Out Left Channel Test
2.Line_Out Right Channel Test
3.Surround_Out Left Channel Test
4.Surround_Out Right Channel Test
Playing 44K wave file
Playing 48K wave file

Copyright(C) 2008, Realtek Semiconductor CO. Ltd
```

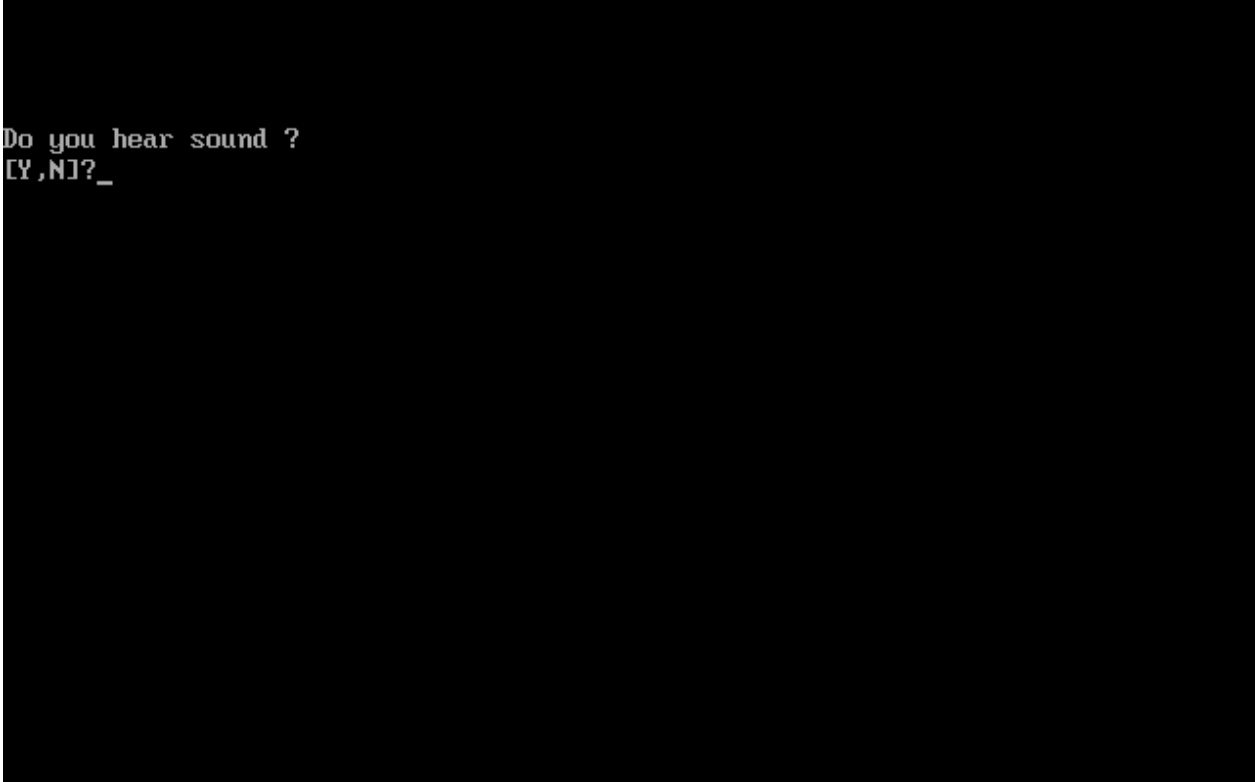
If the function test fail, you can press “N” to stop test, and then it will display as below;

```
HD Codec DOS Test Program Version:3.47
*****
1. Fail Playback Test
*****
*****
Please send the autest.cfg and *.log files(autest.log and I*_0*.log)
to Realtek.
```

### 3. Tests and Diagnostics

---

Press any key, the program will return to the below display, and you can press “Y” or “N” to judge the result.



```
Do you hear sound ?  
[Y,N]?_
```

### 3.5 Fan ON/OFF Test

The fan test allows the user to test aurally whether the fan is working. And follow the below procedures for this test:

- ◆ The computer will let the fan be “ON” after any key pressed. Feel the wind or listen the rotating sound to check whether the fan is working or not.

**NOTE:** Remember to approach fan outlet that is near left side of unit whether fan is “ON”.

- ◆ The computer will stop the fan working after any key pressed. Feel the wind or listen the sound to check if the fan is “OFF”.

The screen should display as below, indicating whether the test is passed or failed after the question.

```
**** Fan ON/OFF Test ,Please Listen To The FAN Sound !! ****
Press Any Key To Fan On Test ..
Fan On Test :rotating.. ( Press Any Key To Fan Off Test )
Fan Off Test :stopping..

Do you feel FAN rotating wind?

[Y,N]?
```

If FAN RPM check is OK, it will show as below:

```
=====
COMPAL Electronic Inc.      [DOS] FanSpd.EXE  V2.0.0.1 0003
Author : STD_CPM TEAM.
WARNING: THIS PROGRAM IS FOR INTERNAL USE ONLY.
Copyright (c) 2010 COMPAL Electronic Inc. All rights reserved.
=====
Fan Speed Test :    7200    RPM    [PASS]

Press any key to continue . . .
-
```

If FAN RPM check is NG, it will show as below:

```
=====
COMPAL Electronic Inc.      [DOS] FanSpd.EXE  V2.0.0.1 0003
Author : STD_CPM TEAM.
WARNING: THIS PROGRAM IS FOR INTERNAL USE ONLY.
Copyright (c) 2010 COMPAL Electronic Inc. All rights reserved.
=====
Fan Speed Test :    5200    RPM    [FAIL]

Press any key to continue . . .
-
```

### 3.6 Main Battery Charge Test

**NOTE:** The AC adaptor should be connected to successfully run this test

. 45W with 19V DC for ALL SKU

This test shows and measures the main battery:

- ◆ Battery type (Lion)
  - ◆ Manufacturer (Sanyo/Panasonic/Sony)
  - ◆ Remain charge capacity (0 ~ 100%)
  - ◆ Charge function (PASS/FAIL)
- “Battery Is Full” showed when “remain charge capacities” is 100%

The screen should display as below, if the charge function is OK, will show:.

```
ONLY FOR 87591 T&D Series Battery Test Program.[591] V1.0 2002/07/23
MAIN Battery

Battery Type: Lion
Manufacturer: Sony
Remain charge capacity : 80.0%

Charge Test-> [ PASS ]

Press any key to continue . . .
```

If the charge function is NG, the screen will display as:

```
ONLY FOR 87591 T&D Series Battery Test Program.[591] V1.0 2002/07/23
MAIN Battery

Battery Type: Lion
Manufacturer: Sony
Remain charge capacity : 86.5%

Charge Test-> [ FAIL ]

Press any key to continue . . .
```

### 3. 7 FDD Test

**NOTE:** Before running the FDD test, prepare a formatted work diskette (1.44 MB). Need to insert FDD when power on machine. Otherwise the Floppy can not be detected.

The Floppy Disk Test includes three subtests of the:

1. Sequential seek/verify function (Range: Track 0 ~ 79)
2. Funnel code seek/verify function (Range: Track 0 ~ 79)
3. Write/Read/Compare pattern function (Range: Track 75 ~ 79)

**NOTE:** The write-protected device of this formatted diskette should be “Disable”.

The subtests run automatically.

**NOTE:** Press “Esc” key can skip the current subtest.

The screen should display as below, indicating whether the subtests pass or fail when finished.

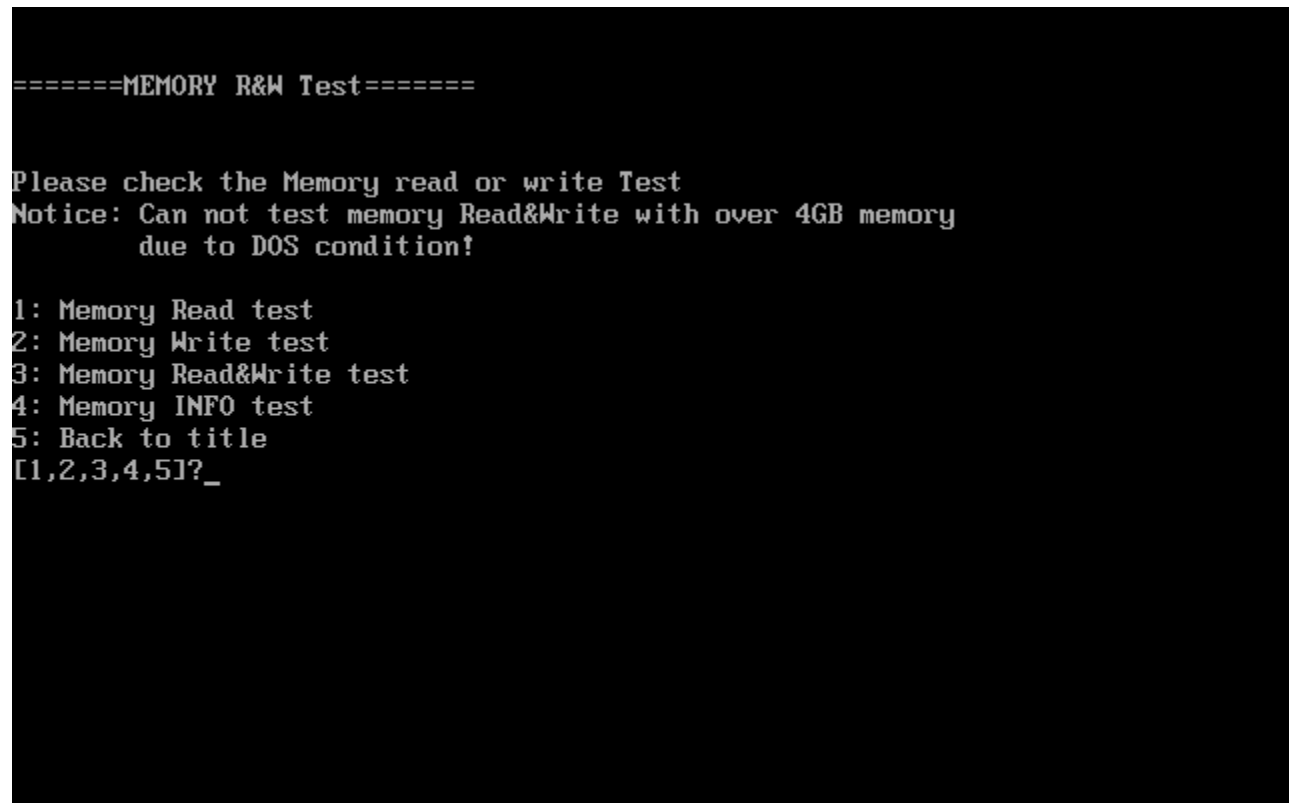
```
***** Fdd Test Program V1.3 *****  
Testing Driver A: [1.44 MByte (Cyl:80, Head:2, Sec:18)]...  
Testing Seq. seek/verify... Head: 01, Track: 79... [ PASS ]  
Testing Fun. seek/verify... Head: 01, Track: 06...
```

### 3.8 Memory check

This test will check if the computer's Memory Frequency and Size is correct in every slot.

Before Memory test start, you should choice the below item:

1. Memory Read test
2. Memory Write test
3. Memory Read & Write test
4. Memory INFO test
5. Back to title



When you execute this test, after you press the related number, the test picture will show as below:

### Memory Read Test

```
= Read Test === block 2 =====  
Address: 00000000 : 6FEF7000  
  
Read Test Result: PASS!  
are the RAM read data is ok? [Y,N]?_
```

### Memory Write Test

```
= Write Test === block 2 =====  
Address: 00000000 : 6FEF7000  
  
Write Test Result: PASS!  
are the RAM write data is ok? [Y,N]?_
```



### Memory Read & Write Test

```
= Write Test === block 2 =====  
Address: 00000000 : 6FEF7000  
  
Write Test Result: PASS!  
  
are the RAM R&W is ok? [Y,N]?_
```

### Memory Info Test

```
=====Memory R&W Test=====  
  
Please check the Memory read or write Test  
  
1:Memory Read Test  
2:Memory Write Test  
3:Memory Read&Write Test  
4:Memory Info Test  
[1,2,3,4]?4  
=====  
COMPAL Electronic Inc.                               V1.0.0.1  
Author : STD.SID TEAM.  
WARNING: THIS PROGRAM IS FOR INTERNAL USE ONLY.  
Copyright (c) 2008 COMPAL Electronic Inc. All rights reserved.  
=====  
DIM: 0  
    Size0: 2048 MB  
    Speed0: 800  
    Manufacturer0:  
  
are the RAM type ok? [Y,N]?_
```

**NOTE:** Base on normal status, the *Memory Info* speed show 800/667, then the RAM is *DDR2*; if speed show 1066, and then the RAM is *DDR3*.

### 3.9 Keyboard Test

The keyboard test checks the all keys function.

**NOTE:** The Num Lock and the Overlay mode must be off to execute the keyboard test.

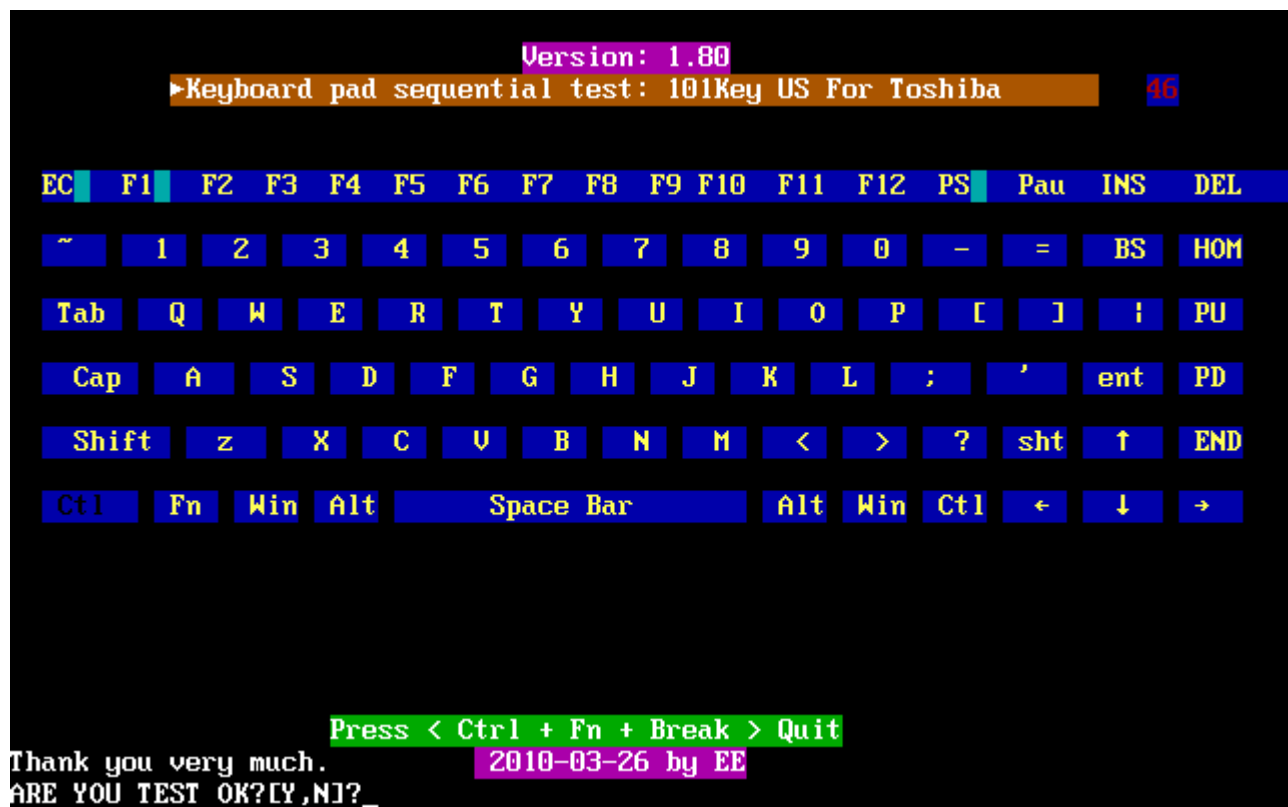
Before keyboard test starts, the keyboard matrix code should be chosen as below display:

1. **S** (US, for America)
2. **J** (Japan, for Japan)
3. **K**(UK, for Europe)

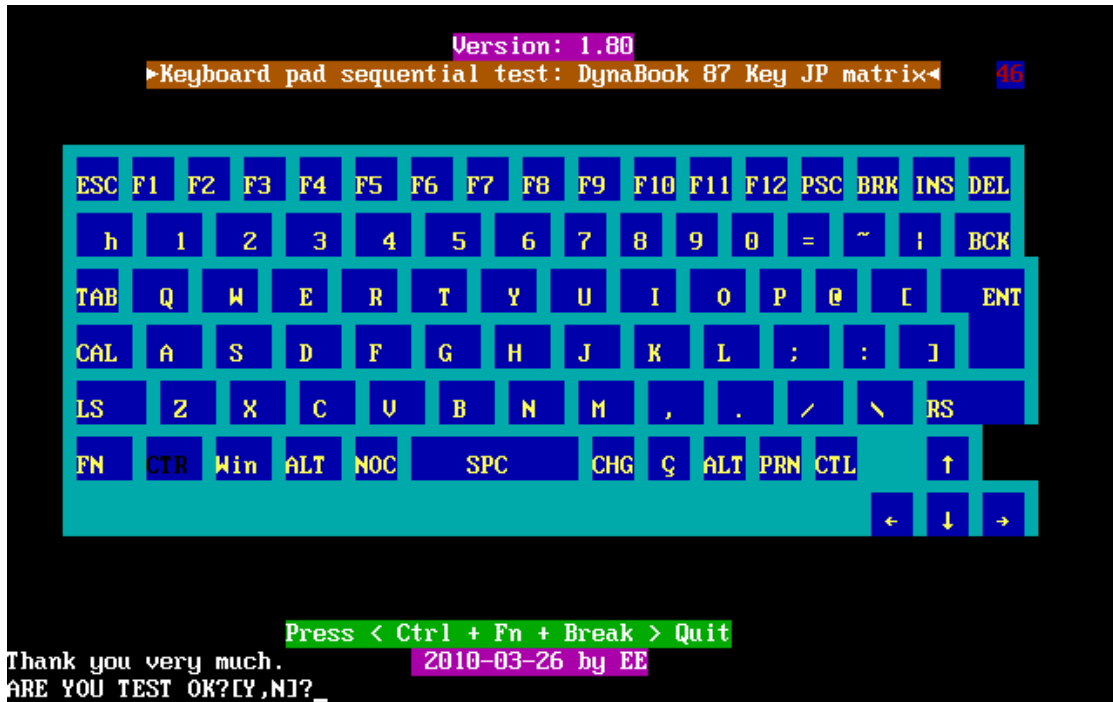
When you execute this test, the keyboard layout is drawn on the display. When any key is pressed, the corresponding key on the screen changes to black as shown below.

It will indicate whether the sub test is passed or failed after the question.

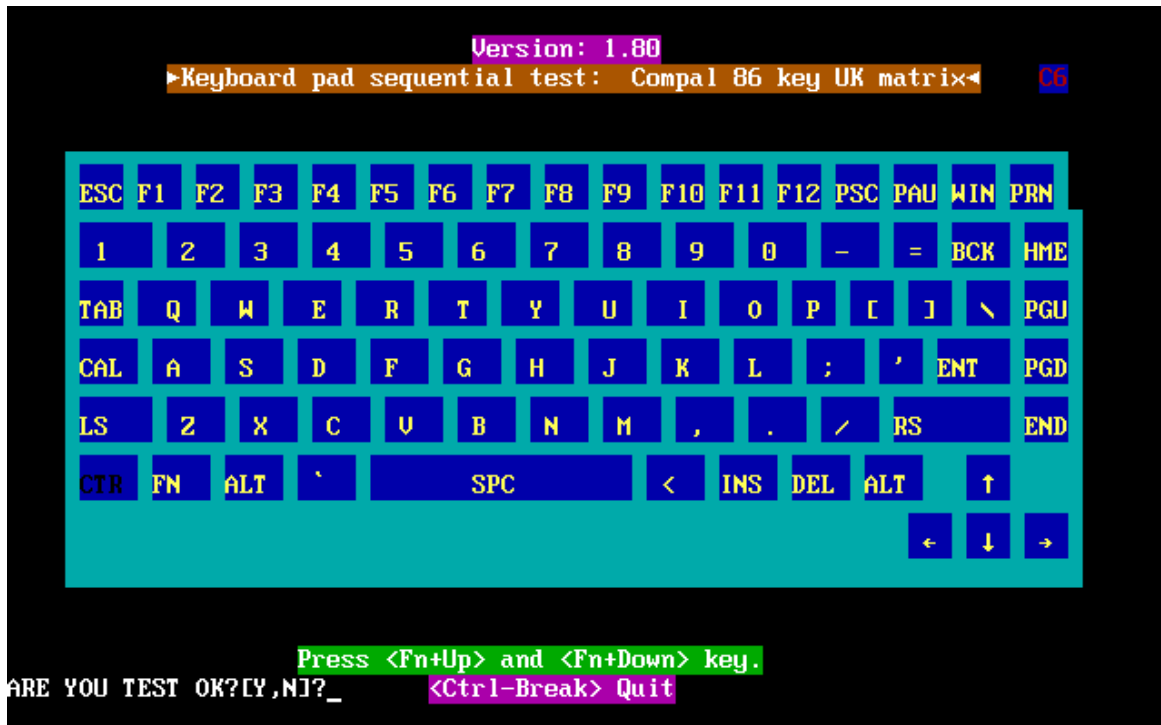
US Keyboard



Japan keyboard



UK keyboard



### 3.10 Mouse (Pad) Test

The Mouse test allows the user to select and assign values to the following, using the Touch Pad or “**Tab**” key to move between selections:

1. Mouse Speed (on a scale from slow to fast)
2. Acceleration (Off, Low, Medium, High)
3. Button Assignments (Left + Right / Right button, either Unassigned or Drag Lock)
4. Swap Buttons (Left /Right)

**NOTE:** The Touch Pad test cannot be used to test an external USB mouse.

The Touch Pad button subtest allows users to test their Touch Pad buttons. If the buttons are clicked, the cursors should appear in the corresponding box of the button figure that is displayed on the screen as below.



After checking T/Pad buttons and cursor’s function, use “Tab” key or use T/Pad cursor to click the “OK” column will end this test.

It will indicate whether the subtests pass or fail after three questions.

**NOTE:** The above figure has three compartments although the Touch Pad installed may only have two buttons. In this case, the central compartment in the figure does not correspond to any button.

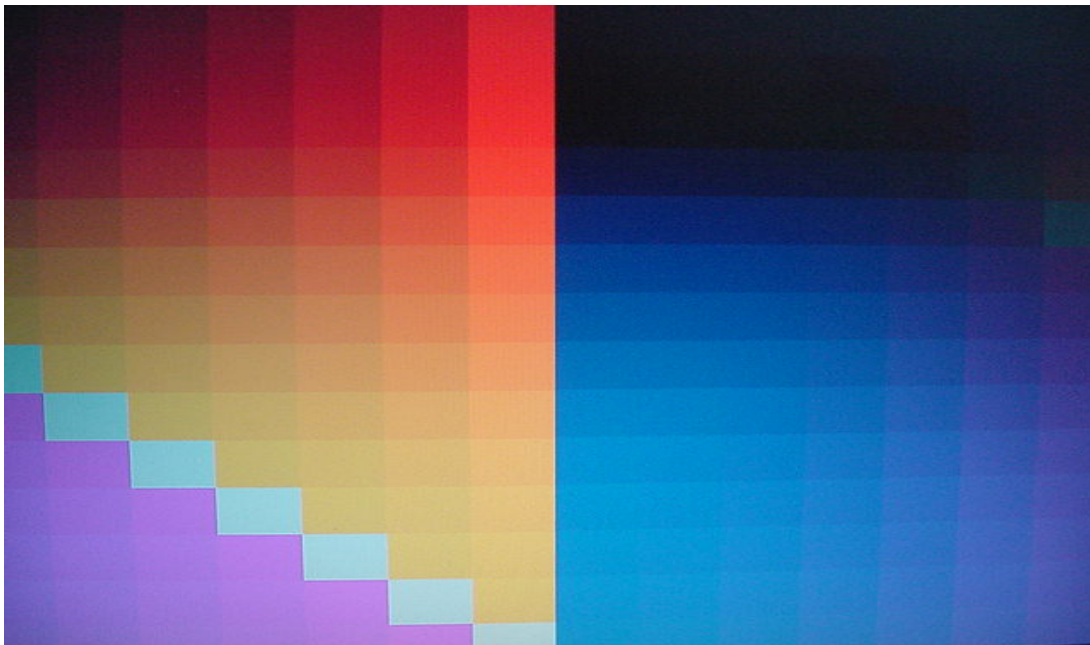
### 3.11 LCD Pixels Mode Test

This LCD pixels mode test checks whether video display is fine.

This test includes two modes of the test:

1. Text Mode
  - including 40\*25 (16 colors) and 80\*25 (2/16colors).
2. VGA Mode
  - including 320\*200 (2/4/16 colors), 640\*200 (2/16 colors), 640\*350 (2/16 colors), 640\*480 (2/16/256 colors).

The screen should display as below, indicating whether the test is passed or failed after the question.



### 3.12 Magnetic Switch Test

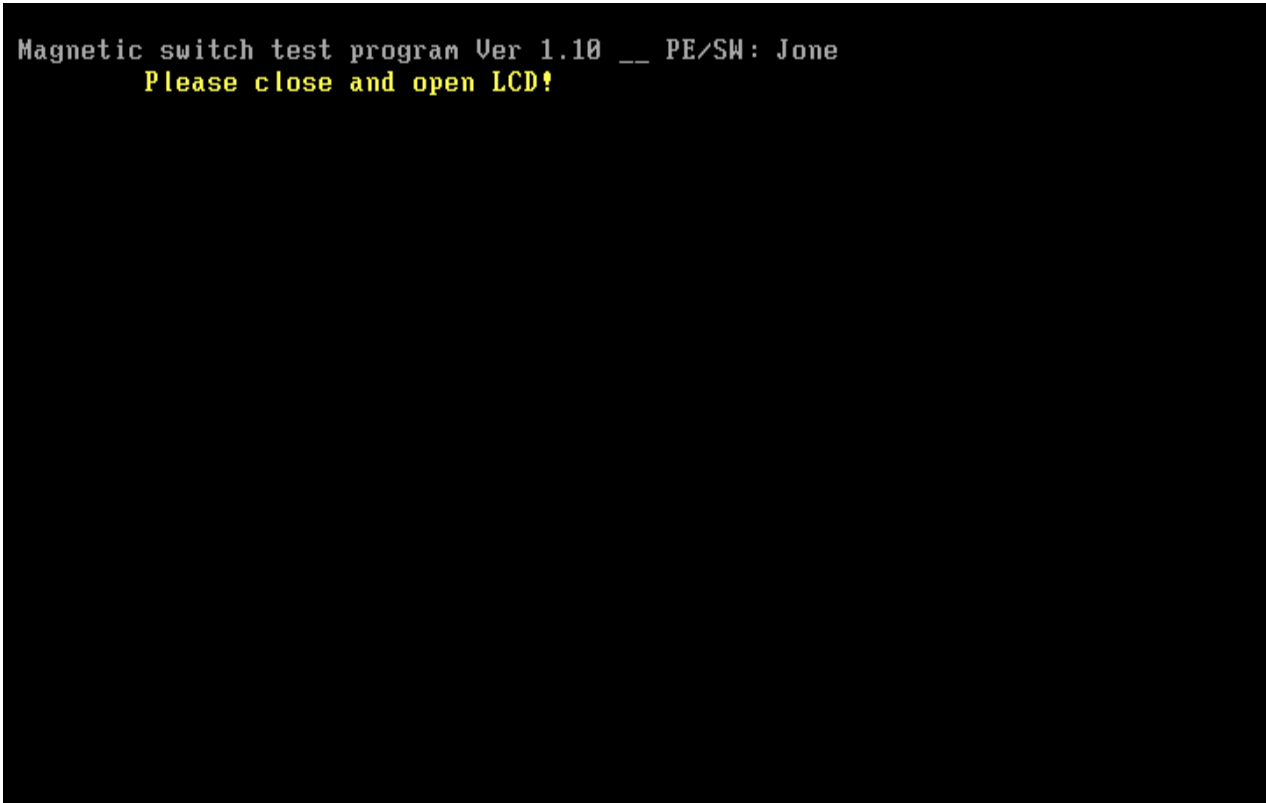
The Magnetic switch test checks the Magnetic function of the unit. When LCD cover closed, the Magnetic should enable to turn off the display.

Follow below steps to run this test:

1. Close the LCD cover.
2. Open the LCD.


Then it will indicate whether the test is passed or failed.

1>. If the Magnetic switch test fail, it will show below display:



```
Magnetic switch test program Ver 1.10 __ PE/SW: Jone
Please close and open LCD!
```

2>. If the Magnetic switch test pass, it will show below display:



```
Magnetic Switch test is Pass!  
ARE YOU TEST OK?[Y,N]?
```

### 3.13 LAN Test

The LAN test checks the LAN full-duplex environment.

**NOTE:** LAN loopback needs to plug in before test begins.

And LAN information will show on the test screen:

- ◆ IO Base – Port: A000H
- ◆ IRQ – BH, it's "IRQ B".
- ◆ Node – it is "MAC Address".
- ◆ Line Speed –1000 Mbps or 100Mbps or 10 Mbps.
- ◆ Bus ID – it's "09".

The LAN test includes three subtests of the:

1. Speed1000
2. Speed100
3. Speed10

The subtests run automatically.

```
==== LAN TEST ====

1.Please plug-in the Loopback into LAN port.
2.Please see test result in middle of display.
  (Pass: 000 , Fail: xxx )

Press any key to continue . . .
```

The screen should display as below, indicating whether the subtests pass or fail when finished.



### 3. Tests and Diagnostics

---

```
MP Program for PCI/PCI-E Family LAN Product/Client 1.22 02-01-08 version
IOBASE = A000H IRQ = B H Node:001EEC3EC8DA 100M: 10K 100M: 5K 10M: 2K
VID =10ECH DID =8136H SVID =1179H SSID =FF00H Lan Adapters: 1
Now is: 1
100M Link OK 10M Link OK

Open Your MPLAN.CFG in this machine!
Test Item Result(Pass/Fail)
1.PG_LAN=false none
2.Reg_R/W=true Pass
3.Speed1000=true none Rxtimeout 1
4.Speed100=true Pass ROK= 2000 TOK= 2000
5.Speed10=true Pass Error= 0
6.Debug=true Txtimeout = 50
7.AutoRun=true

***** Pass in debugging mode *****
Press 'ESC' key to exit .....

E:\LAN>
```

If an error is detected and a test fails, the following message displays:

```
F A I L

Press any key to continue . . .
```

### 3.14 RTC Test

Checks the computer's RTC (Real Time Clock) and calendar functions by comparing the Free-DOS and CMOS values.

The test runs automatically.

The screen should display as below, indicating whether the test is passed or failed when finished.

```
====RTC TEST====

Please Check the result after test.

Press any key to continue . . .

Wait for zero counter...
Testing...
DOS TIME = 22:33:48.04(8122804), CMOS TIME = 22:33:48(8122800)
DOS DATE: 09/19/2002, CMOS DATE: 09/19/2002
DATE & TIME test [ PASS ]

Press any key to continue . . .
```

The screen will show below picture, if RTC test is OK.



The screen will show below picture, if RTC test is FAIL.

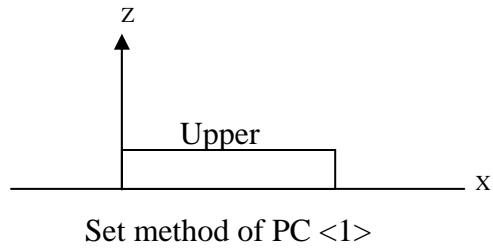
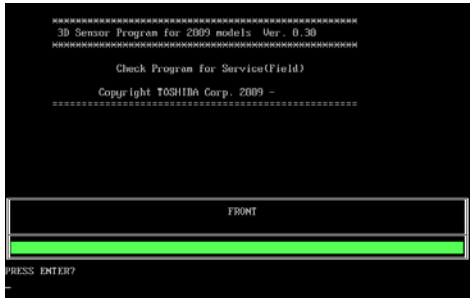


### 3.15 3D G-sensor test

**NOTE:** please keep 90 degree between logic upper and LCD panel when test

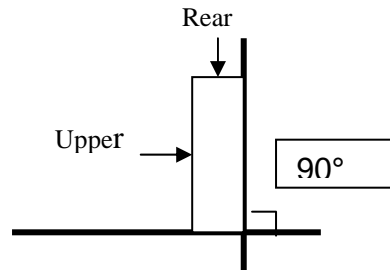
The display of a test program and the set method of PC are shown below.

Display of a Test Program, The portion which PC and Test-Fixture contact is green.

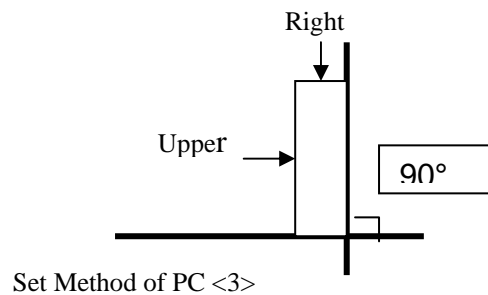


If the picture shows as below, it means the 3D G-sensor function is OK

Test 2 :



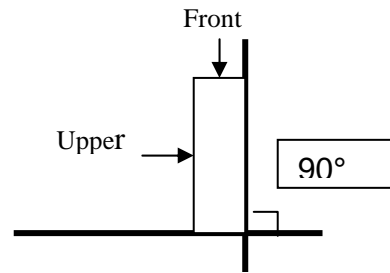
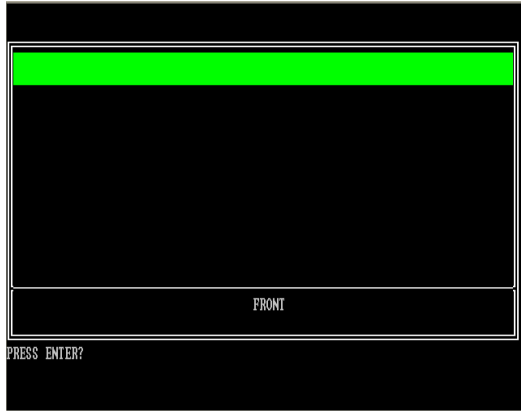
Test 3:



Test 4:

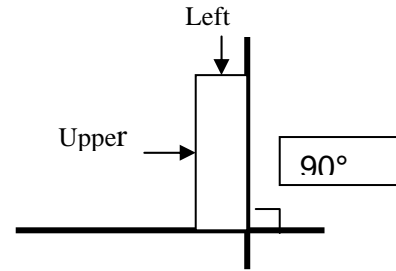
### 3. Tests and Diagnostics

---



Set method of PC <4>

Test 5:



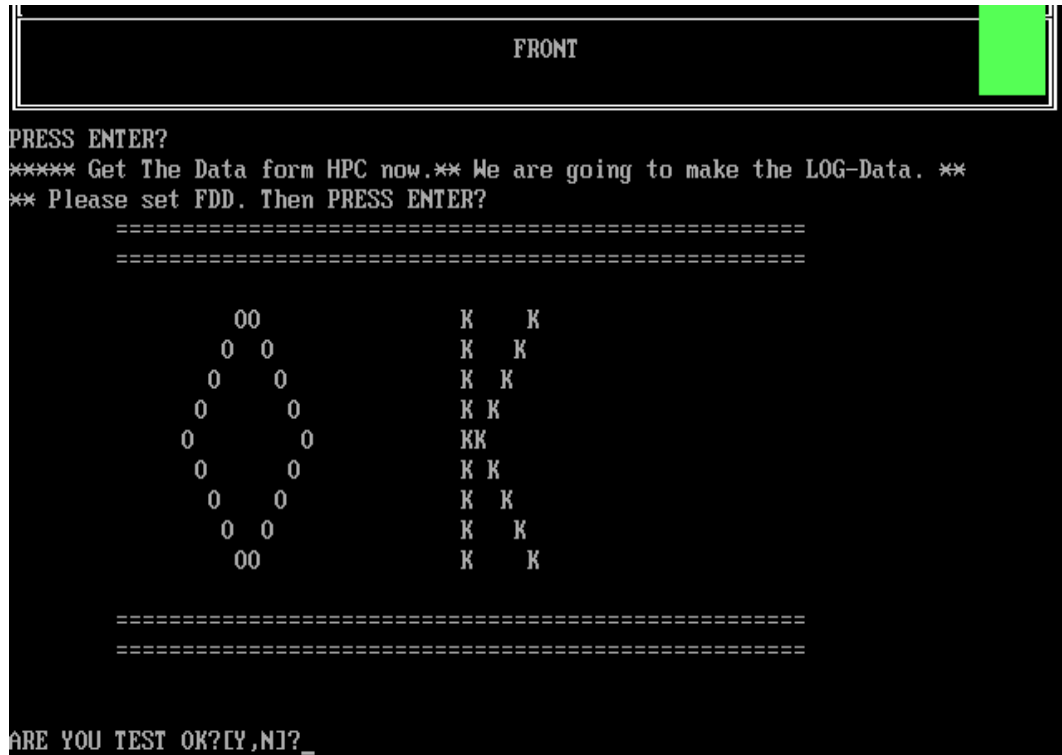
Set method of PC <5>

#### Test Result

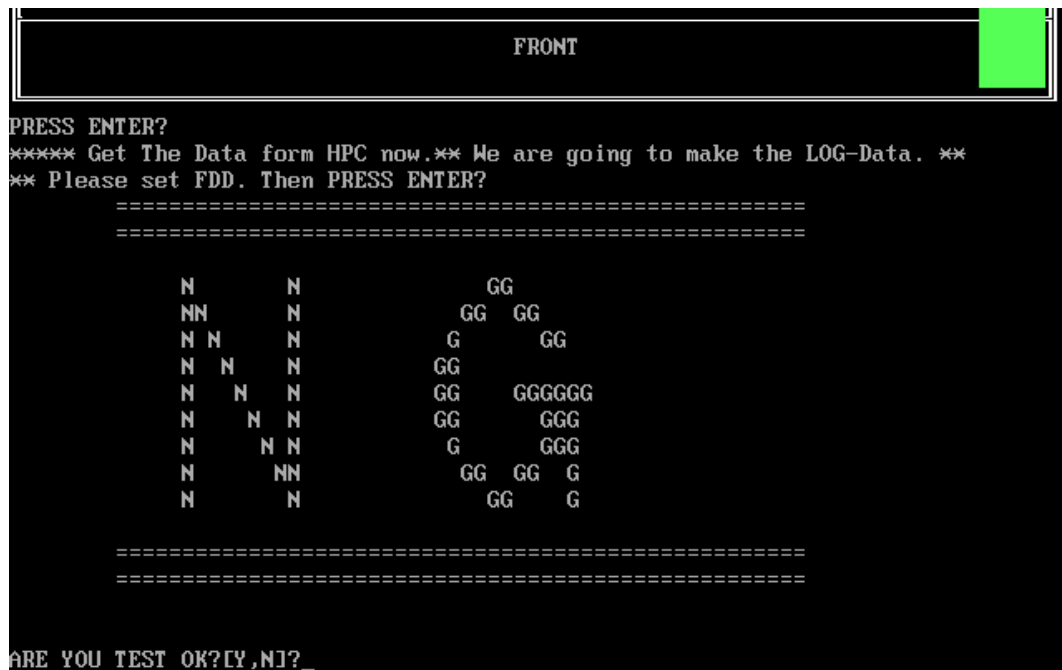
A test result is displayed when a test is completed. A display of result is O.K. or NG.

And an error flag is returned at the end of a program.

If the picture shows as below, it means the 3D G-sensor function is OK.



If the picture shows as below, it means the 3D G-sensor function is NG



### 3.16 HDD Test

**NOTE:** You can press “Ctrl + Fn + Break” key to stop HDD test if you want

The HDD test allows the user to verify the HDD ok or not. First, please select HDD test method, Screen would display as below:

```
==== HDD TEST ====  
  
1.HDD W/R test(all surface)  
2.Partial W/R + Random W/R  
[1,2]?
```

After you select the method, then input password: “hard disk”, if input password is Right, the screen would display as below:

```
Input password is Right  
Press any key to Test HDD function  
  
Press any key to continue . . .
```

If input password is wrong, the screen would display as below:

```
Input Password is wrong
ARE YOU INPUT PASSWORD AGAIN?[Y,N]?
```

The screen will display as below picture to show the subtest is passed or failed when finished:

If it is show the picture as below, it means HDD function is OK

```
*** Hard disk test tools V1.72 Compal STD/TTF ***
CHR Mode Cylinders=16383
CHR Mode Head=16
CHR Mode Sectors=63
CHR Mode Sizes=8455 MB

LBA Mode Sectors=488397168
LBA Mode Sizes =250059 MB

HDD Random R/W 100 sectors ..... PASS !
HDD Sequential R/W 100 sectors ... PASS !

LBA Verify Sectors: 488397168, C/H/S = 30401 / 255 / 63
LBA Sectors Verify ... PASS!

ARE YOU TEST OK?[Y,N]?
```

If the picture shows as below, it means he HDD function is NG



```
*** Hard disk test tools V1.60 Compaq STD/TTF ***  
Reset DISK1 .....Pass !  
Error ! Can't use Enhanced Disk Drive Support Function  
ARE YOU TEST OK?(Y,N)?
```

### 3.17 Read DMI

Compal write Toshiba Part No (version), Toshiba Serial No (Serial No), Product Name, OEM string and UUID, If you want to double check the DMI data, please select Read DMI item, the figure below will be displayed:

```
Manufacturer : TOSHIBA
Product_Name : Satellite A355D
Serial_Number : X8116579K
Version      : PSALEU-004005
Asset_Number : *
UUID        : 6C64768B8CE211DD8A58001EEC40A110
OEM_Strings : PSALEU-004005,SQ004806V04,11Q40
Are the DMI data is OK? [Y,N]?
```

### 3.18 Write DMI

When you want to write DMI data, please select which data you want to write, the figure below will be displayed:

1. Write Product (32)
2. Write Serial (32)
3. Write Version (32)
4. Write OEM String (64)
5. Back to test title

```
please choice the item
1: Write Product
2: Write Serial
3: Write Version
4: Write OEM String
5: Back to test title
please enter the num you choose:
```

After write OK, you should reboot the system that can make the setting effective, or you can write next data before reboot system, the figure below will displayed:

If press “5” and press “ENTER”, program will back to test title.

```
please choice the item
 1: Write Product
 2: Write Serial
 3: Write Version
 4: Write OEM String
please enter the num you choose: 4
please enter the OEM String: psmadk-011002

Modify OEM String to psmadk-011002

Jump to EEPROM Bank : 0

Erase EEPROM Start Offset : a0 End Offset:dd Size:62
.....
Jump to EEPROM Bank : 0

Flash EEPROM Start Offset : a0
.....
Confirm the data !
.....
Modify EM String success!

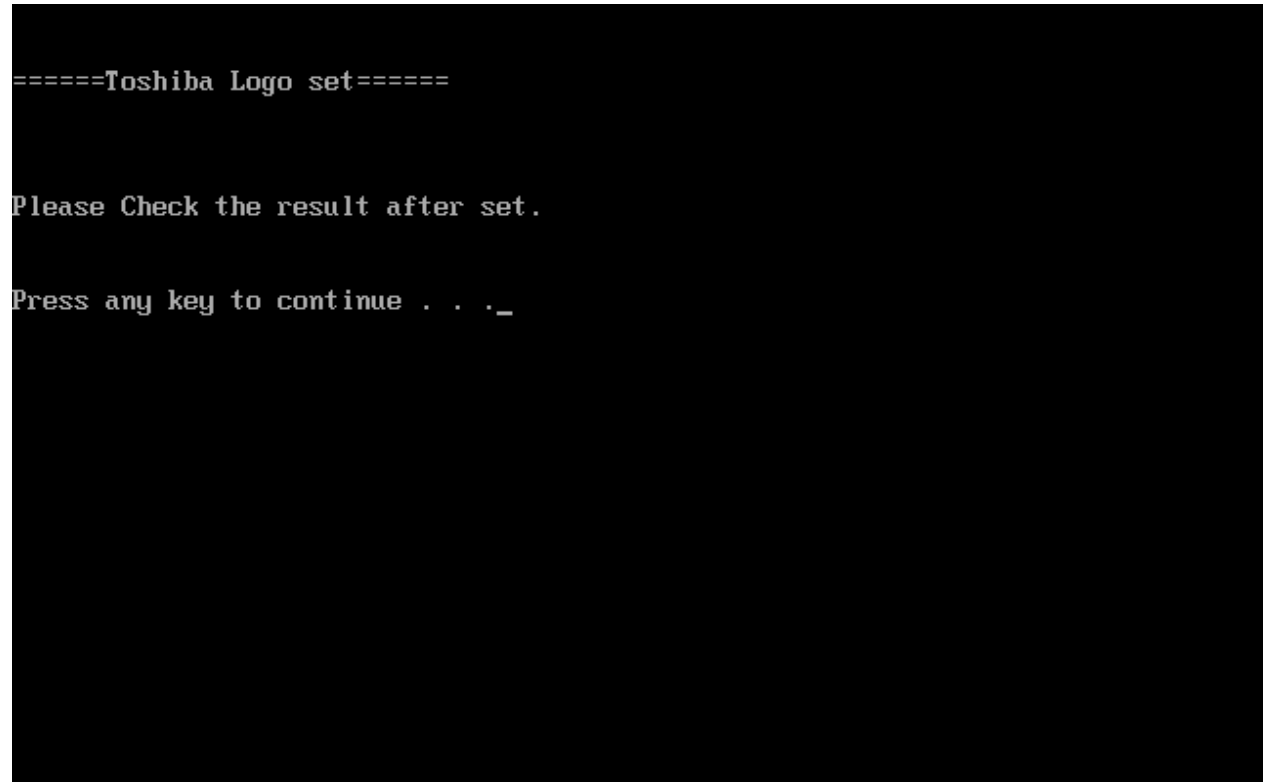
*****Please reboot the system.To make the setting effective
*****Do you want to modify other dmi ? *****
Press Y for Yes or N for No:_
```

**NOTE:** should input correct DMI data, and should reboot the system that can make the setting effective.

### 3.19 Toshiba Logo set

Set the computer's Toshiba Logo for other region except Japan SKU.

The screen should display as below, indicating whether the test is passed or failed when finished.



Press any key continue to auto set, if write OK, the following message displays:



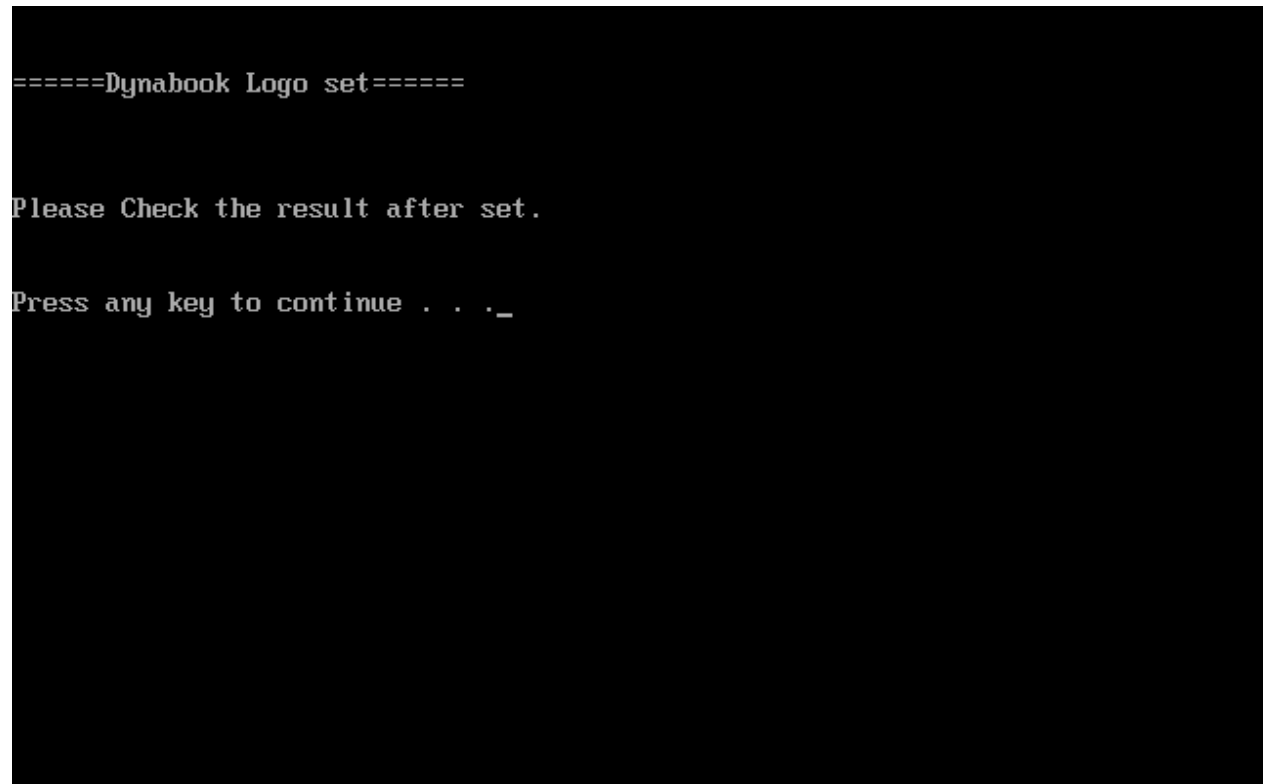
When Toshiba Logo set finish, please restart machine, when show below Logo:



### 3.20 Dynabook Logo set

Set the computer's Dynabook Logo for Japan SKU.

The screen should display as below, indicating whether the test is passed or failed when finished.



Press any key continue to auto set, if write OK, the following message displays:



When Dynabook Logo set finish, please restart machine, when show below Logo:





### 3.21 TP TYPE R/W TEST

This T/P TYPE R/W test checks the computer's T/P TYPE and users write T/P vendor ID into EEPROM.

The test runs automatically.

The screen should display as below, indicating whether the test is passed or failed when finished.

```
*****
* TP Check by EC JaFerLan V1.3 on 2009/02/12 *
*****
Synaptics TP
  0 uS: C 42
 300 uS: D 07Version 2.1 (support ALL model)
01
Write Ok

  0 uS: C 42
 300 uS: D 00
2441400 uS: I E0(15)
2484300 uS: I 2A(15)
2526300 uS: I E0(15)
2565000 uS: I 37(15)
2604600 uS: I E0(15)
2666700 uS: I B7(15)
2704800 uS: I E0(15)
2769000 uS: I AA(15)return code = 0
return code = 0

*****
* TP Check by EC JaFerLan V1.3 on 2009/02/12 *
*****
```

If write T/P type fail, the screen would display as below

```
====TP R/W TEST====
*****
* TP Check by EC JaFerLan V1.3 on 2009/02/12 *
*****
RETURN CODE: 0xFEECHO is off
#####
  TP TYPE Write FAIL
#####
Press any key to continue . . ._
```

If read T/P type fail, the screen would display as below

```
====-TP R/W TEST-====
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
* TP Check by EC JaFerLan V1.3 on 2009/02/12 *
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Synaptics TP
  0 uS: C 42
 1200 uS: D 07Version 2.1 (support ALL model)
01
Write Ok

  0 uS: C 42
  900 uS: D 00
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
* TP Check by EC JaFerLan V1.3 on 2009/02/12 *
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
RETURN CODE: 0xFEECHO is off
#####
      TP TYPE READ FAIL
#####
Press any key to continue . . . _
```

If W/R T/P type passes, the screen would display as below

```
  0 uS: C 42
 900 uS: D 00
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
* TP Check by EC JaFerLan V1.3 on 2009/02/12 *
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Synaptics TP
  0 uS: C 42
 2400 uS: D 07Version 2.1 (support ALL model)

SET EE=0

SET EEEE=01
Version 2.1 (support ALL model)

SET EE=0

SET EEEE=01
Version 2.1 (support ALL model)

SET EE=0

SET EEEE=01
Version 2.1 (support ALL model)
_
```



### 3.22 EE-PROM SETTING

This EE-PROM SETTING will set the computer's function status into EEPROM, included supported function and no support function.

**NOTE:** Should perform EE-PROM SETTING once change M/B. It defined as normal rule.

The screen should display as below:

```
Please select Check or Disable Function
1. Set MIC Function Status in EE-PROM (Disable/Enable)
2. Set HDMI Function Status in EE-PROM (Disable/Enable)
3. Set Language Function Status in EE-PROM (Disable/Enable)
4. Set 3G Function Status in EE-PROM (Disable/Enable)
5. Set Wimax Function Status in EE-PROM (Disable/Enable)
6. Set NON_OS function flag in EE-PROM (NONEOS/HAVEOS)
7. Set No Support Function Disable
8. Set and check SKUID status (Set/Check)
9. Back To Test Title

[1,2,3,4,5,6,7,8,9]?_
```

If press "1" to set MIC function status in EE-PROM, the screen should display as below:

```
Please select Check or Disable Function
1. Set MIC Function Status in EE-PROM (Disable/Enable)
2. Set HDMI Function Status in EE-PROM (Disable/Enable)
3. Set Language Function Status in EE-PROM (Disable/Enable)
4. Set 3G Function Status in EE-PROM (Disable/Enable)
5. Set Wimax Function Status in EE-PROM (Disable/Enable)
6. Set NON_OS function flag in EE-PROM (NONEOS/HAVEOS)
7. Set No Support Function Disable
8. Set and check SKUID status (Set/Check)
9. Back To Test Title

[1,2,3,4,5,6,7,8,9]?1

1. Please check SPEC of this unit whether has MIC? (Y=MIC, N=NOMIC)

[Y,N]?_
```

Please check related information to judge this unit whether has MIC function.

### 3. Tests and Diagnostics

---

If this unit has MIC function, press “Y” then program will set MIC enable automatically as below:

```
A51 I-MIC SET/CHECK PROGRAM ---Ver 1.0 [A51 SWDL]
Read(f5)-> [63]
SET I-MIC TO SUPPORT!
Write(f5)-> [63]
Successful!
Press any key to continue . . .
-
```

If this unit has no MIC function, press “N” then program will set MIC disable automatically as below:

```
A51 I-MIC SET/CHECK PROGRAM ---Ver 1.0 [A51 SWDL]
Read(f5)-> [63]
SET NO I-MIC TO SUPPORT!
Write(f5)-> [23]
Successful!
Press any key to continue . . .
-
```

Then press any key go back to EE-PROM SETTING option as below:

```
Please select Check or Disable Function

1. Set MIC Function Status in EE-PROM (Disable/Enable)
2. Set HDMI Function Status in EE-PROM (Disable/Enable)
3. Set Language Function Status in EE-PROM (Disable/Enable)
4. Set 3G Function Status in EE-PROM (Disable/Enable)
5. Set Wimax Function Status in EE-PROM (Disable/Enable)
6. Set NON_OS function flag in EE-PROM (NONEOS/HAVEOS)
7. Set No Support Function Disable
8. Set and check SKUID status (Set/Check)
9. Back To Test Title

[1,2,3,4,5,6,7,8,9]?_
```

If press “7” to disable all no support function, program will perform automatically as below:

```
A51 SPEAKER EQ VALUE SET/CHECK PROGRAM V1.1 [A51 SWDL]
Read(ef)-> [fc]
SET Nonbrand speakers EQ!
Write(ef)-> [fc]
Successful!
```

```
A51 Display SET/CHECK PROGRAM ---Ver 1.0 [A51 SWDL]
Read(f5)-> [df]
SET NO Display TO SUPPORT!
Write(f5)-> [df]
Successful!
```

```
Front Edge Logo LED Setting program V1.0 [A51 SWDL]
Read(f5)-> [63]
Disable LOGO LED Funtion!
Write(f5)-> [63]
Successful!
```

```
A51 Felica EQ VALUE SET/CHECK PROGRAM V1.2 [A51 SWDL]
Read(f2)-> [08]
SET Felica NOT Exist EQ!
Write(f2)-> [08]
Successful!
```

### 3. Tests and Diagnostics

---

```
A51 K/B LED EQ VALUE SET/CHECK PROGRAM V1.0 [A51 SWDL]
Read(e2)-> [fe]
SET K/B LED Disable EQ!
Write(e2)-> [fe]
Successful!
```

```
A51 UMB EQ VALUE SET/CHECK PROGRAM V1.1 [A51 SWDL]
Read(f2)-> [08]
SET UMB NOT Exist EQ!
Write(f2)-> [08]
Successful!
```

```
Set No Support Function All Disable OK
Press any key to continue . . .
```

Then press any key to go back to EE-PROM SETTING option as below:

```

Please select Check or Disable Function

1. Set MIC Function Status in EE-PROM (Disable/Enable)
2. Set HDMI Function Status in EE-PROM (Disable/Enable)
3. Set Language Function Status in EE-PROM (Disable/Enable)
4. Set 3G Function Status in EE-PROM (Disable/Enable)
5. Set Wimax Function Status in EE-PROM (Disable/Enable)
6. Set NON_OS function flag in EE-PROM (NONEOS/HAVEOS)
7. Set No Support Function Disable
8. Set and check SKUID status (Set/Check)
9. Back To Test Title

[[1,2,3,4,5,6,7,8,9]?_
    
```

If press “9” program will go back to test title as below:

Streamline M10 Function T&D MENU		
A.CONFIG CHECK TEST	J.MAGNETIC SWITCH	S.TOSHIBA LOGO SET
B.AUDIO sound TEST	K.LAN TEST	T.DYNABOOK LOGO SET
C.FAN ON/OFF TEST	L.RTC TEST	
D.MAIN BATTERY TEST	M.HDD TEST	
E.FDD TEST	N.READ DMI	
F.MEMORY TEST	O.WRITE DMI	
G.KEYBOARD TEST	P.TP TYPE R/W TEST	
H.MOUSE (PAD) TEST	Q.EE-PROM SETTING	Z.Save LOG to Floppy
I.LCD PIXELS TEST	R.G-SENSOR TEST	X.EXIT
NDU10 T&D Function test --Ver:1.0(2010.04.10)		
Please select a test item _		



---

## **Chapter 4**

# **Replacement Procedures**

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*Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.*

## ***4 Replacement Procedures***

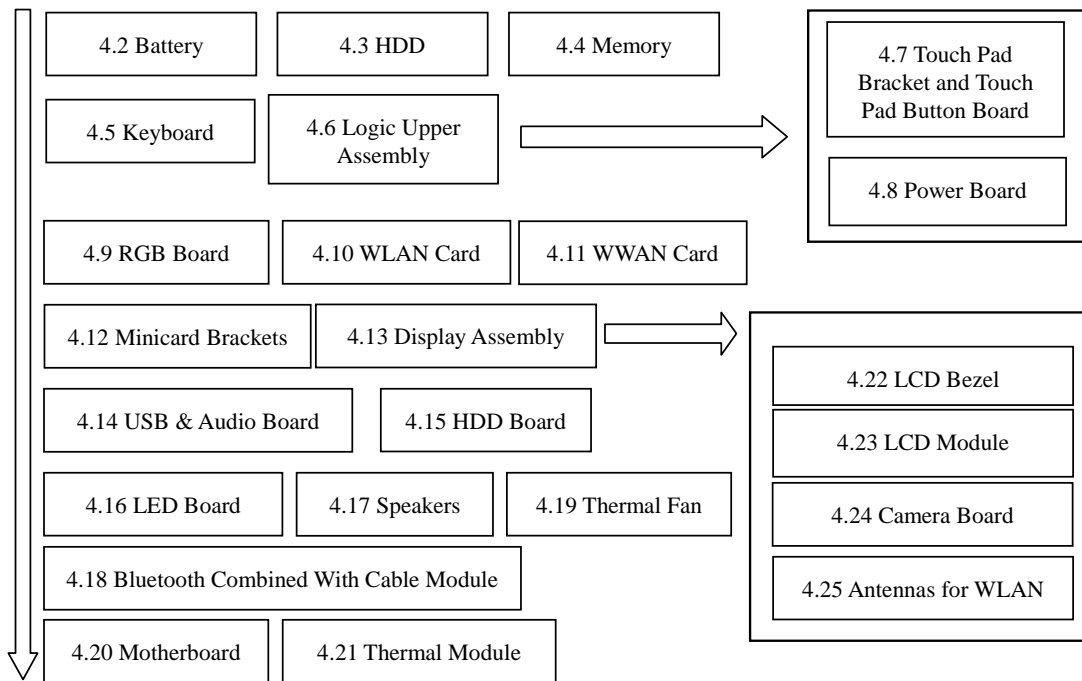
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### **4.1 General**

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

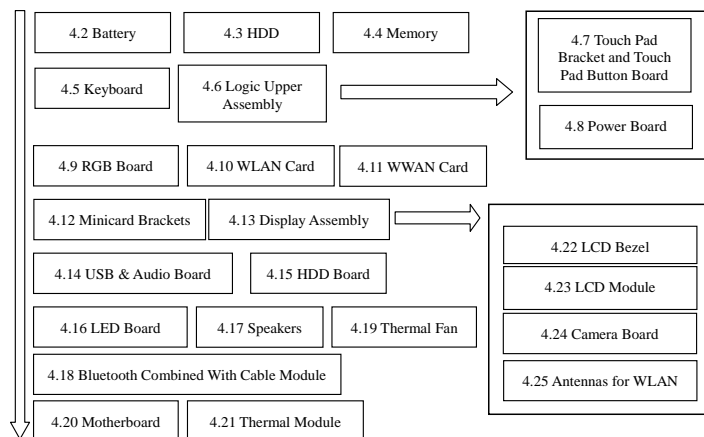
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How to use the chart (two examples):

- For removing the Motherboard:  
First, remove parts from 4.5-4.6, Keyboard to Logic Upper Assembly and then parts 4.13-19, RGB Board to Thermal Fan.
- For removing the LCD Module:  
First, remove 4.22 LCD Bezel, then remove 4.23 LCD Module.





Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

## **4 Replacement Procedures**

### **Safety Precautions**

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

#### **DANGER:**

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

#### **WARNING:**

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

#### **CAUTION:**

- 1. Before replacing a component, make sure that the replacement component meets the required specifications. To avoid laptop failures, never use components that do not meet the specifications.*
- 2. To avoid internal damage such as short circuits and fire, never drop metal objects such as screws, pins, paper clips, etc. into the components. When a screw is removed, be sure to replace a screw that is the same size as the original screw. Make sure that all the screws are fastened securely. Loose screws can cause short circuits, overheating, smoke, or fire.*

#### **4 Replacement Procedures**

Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

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3. *Before removing a FRU or other component, make sure that all the component cables have been disconnected to avoid the risk of electrical shock caused by accidental contact with the energized components.*
4. *For AC input, be sure to use the AC adapter and AC power cable that come with your laptop or Toshiba-recommended equivalents.*
5. *To avoid the risk of electrical shock, make sure that all the replacement components meet the specifications of the laptop and that all the cables and connectors are fastened securely.*
6. *Inside the PC are components that become hot during operation (such as the CPU and cooling module). To avoid burns, let the hot components cool down before starting inspection or repair task.*

*Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.*

## ***4 Replacement Procedures***

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### **Before You Begin**

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

Disassemble the laptop only when an abnormality has occurred.

Use only the recommended tools.

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

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

Run the diagnostic tests explained in Chapter 2 of this manual to identify the FRU that has probably caused the system failure.

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

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

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

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

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

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

## **Disassembly Procedures**

The cable connectors come in these two basic types:

- Pressure plate connectors
- Normal pin connectors

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

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

## **Assembly Procedures**

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

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

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

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

Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

## 4 Replacement Procedures

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### Tools and Equipment

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

- One 2 mm Phillips screwdriver
- One 4 mm flat-blade screwdriver
- Torx screwdriver
- Tweezers (for pulling out screws)
- ESD mats (for the floor and work desks)
- An ESD wrist strap or heel grounder
- Anti-static carpets or flooring
- Air ionizers (for highly electrostatic sensitive areas)
- A plastic card (in credit card size)

### Screw Tightening Torque

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

- |  |                        |
|--|------------------------|
| <input type="checkbox"/> M2 (2 mm)               | 0.22 N·m (2.2 kgf·cm)  |
| <input type="checkbox"/> M2.5 (2.5 mm)           | 0.36 N·m (3.5 kgf·cm)  |
| <input type="checkbox"/> M3 (3 mm)               | 0.51 N·m (5.0 kgf·cm)  |
| <input type="checkbox"/> M2.5x4 PSP TITE screws  | 0.204 N·m (2.0 kgf·cm) |
| <input type="checkbox"/> M2.5x6 GIZA TITE screws | 0.36 N·m (3.5 kgf·cm)  |

### Colors of Screw Shanks

For easy identification of the correct screws, the screw shanks are colored according to their lengths, as follows:

- Screws of an odd-numbered length                      Blue
- Screws of a special length                                      Black  
(Screws of a special length are those of a length having decimal places, eg - 2.5 mm).

### Symbols of Screws on the Laptop Body

For easy maintenance, the screw types are shown on the laptop body as symbols. A symbol consists of a letter representing the screw type and a numeral representing the screw length.

- Screw type                                      Letter
- Bind screw                                      B (stands for bind)
- Flat-head screw                                      F (stands for flat-head)
- Super flat-head screw                                      S (stands for super flat-head)
- Tapping screw                                      T (stands for tapping)
- Other screws                                      U (stands for unique-pan head screws, studs, etc.)

### Symbol examples

- 6 mm bind screw                                      B6
- 12 mm bind screw                                      B12
- 5 mm stud                                      U5  
(The numeral represents the rounded length of the threaded portion regardless of the entire stud length.)

Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

## 4 Replacement Procedures

### 4.2 Battery

#### Removing the Battery Pack

Remove the battery pack according to the following procedures and Figure 4.1.

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

1. Turn the laptop upside down.
2. Slide out the battery lock.
3. Slide the battery release latch and remove the battery pack from the laptop.

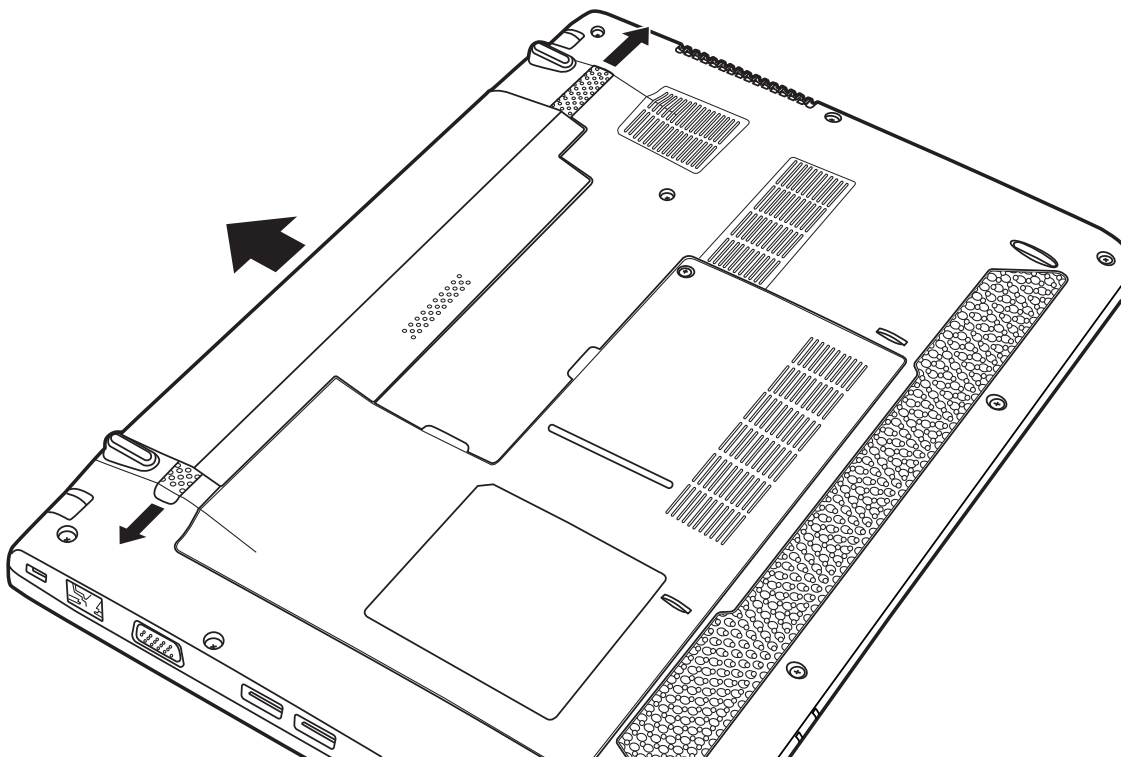


Figure 4.1 Removing the Battery Pack

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

## **4 Replacement Procedures**

*Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.*

---

### **Installing the Battery Pack**

Install the battery pack according to the following procedures.

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

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

1. Gently insert a new or recharged battery pack into the battery bay. Check that the battery release latch slides in and stops with a click.
2. Slide in the battery lock.



Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

## 4.3 HDD

### Removing the HDD

**CAUTION:** Do not press on the top or bottom of the drive. Applying such pressure can either corrupt the data in the drive or damage the drive.



Remove the HDD (hard disk drive) according to the following procedures and Figures 4.2, 4.3 and 4.4.

1. Loosen one M2x4.5 screw on the HDD door and then remove the HDD door.

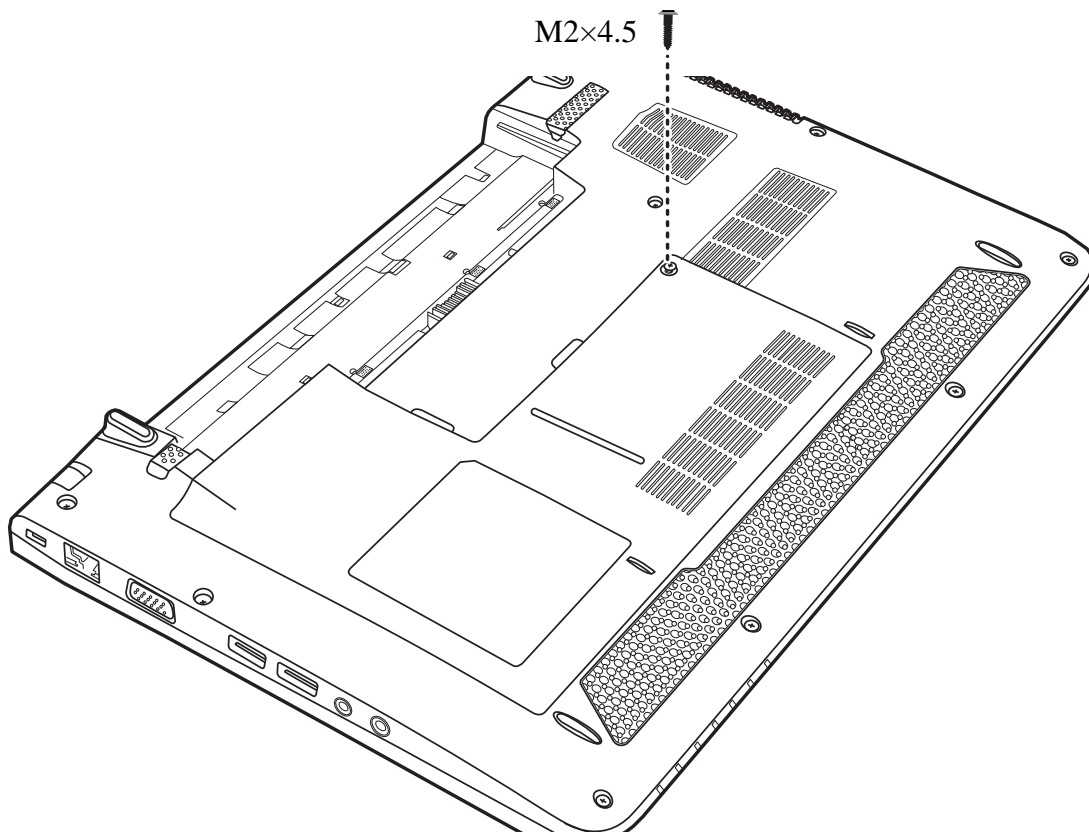


Figure 4.2 Removing the HDD door

2. Remove the two M2x3 screws and remove the HDD by pulling the tab attached to the HDD.

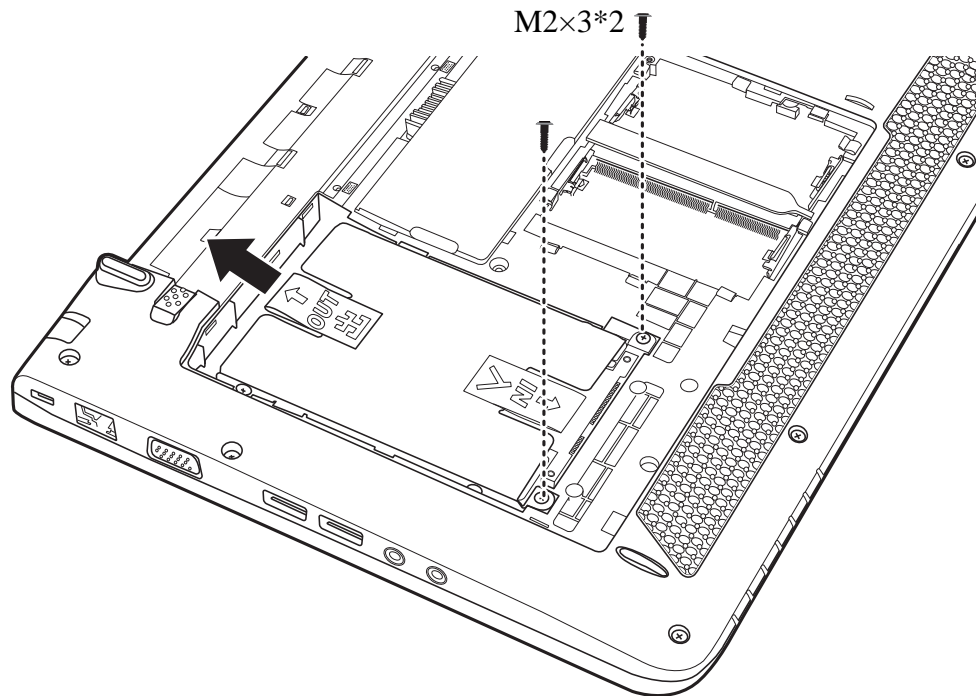


Figure 4.3 Removing the HDD

**NOTE:** Do not disassemble the HDD pack when it is working normally. Disassemble or replace the HDD pack only if it fails.

3. Place the HDD pack on a flat surface such as a desk.
4. Remove the four M3x3 screws and separate the bracket from the HDD.

Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

## 4 Replacement Procedures

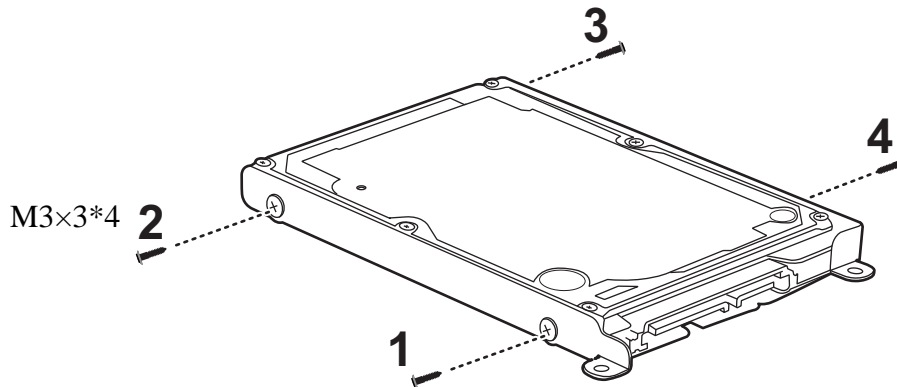


Figure 4.4 Removing the HDD bracket

**CAUTION:** Do not apply pressure to the top or bottom of the drive.

### Installing the HDD

Install the HDD according to the following procedures.

**CAUTION:** To avoid damage, always hold the HDD only by its sides.

1. Place the HDD into the HDD bracket.
2. Secure the HDD to the bracket with four M3x3 screws.

**CAUTION:** To prevent the HDD bracket from being distorted when installing the HDD into the laptop, do not press the center of the HDD pack. Always hold the HDD pack by its sides.

3. Insert the HDD into the HDD bay, and slide the HDD inward to connect to the motherboard.
4. Secure the HDD pack in the HDD bay with two M2x3 screws.
5. Replace the logic lower door.
6. Tighten one M2x4.5 screw on the logic lower door.

## 4.4 Memory

### Removing the Optional Memory

Remove the optional memory according to the following procedures and Figure 4.5 and 4.6 after checking that the laptop is turned off.

**CAUTION:** Remove the optional memory after turning off the laptop. If this is violated, the laptop or memory can be damaged.

1. Close the laptop and turn it upside down.
2. Loosen the one M2x4.5 screw securing the bottom door, as shown in Figure 4.5.

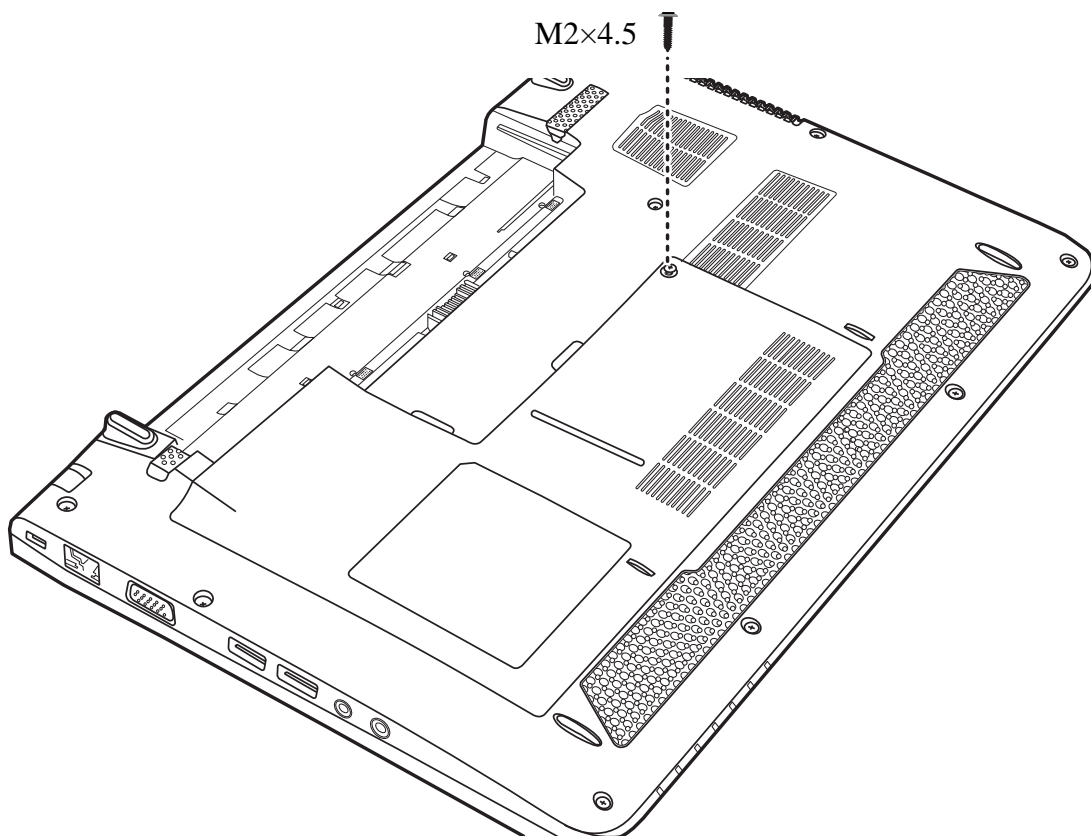


Figure 4.5 Removing the HDD door

3. Remove the bottom door.
4. Pull the two memory lock latches outward so that the memory pops up.

Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

## 4 Replacement Procedures

5. Pull the memory up and out at a 45 degree angle, using care to avoid touching the connectors.

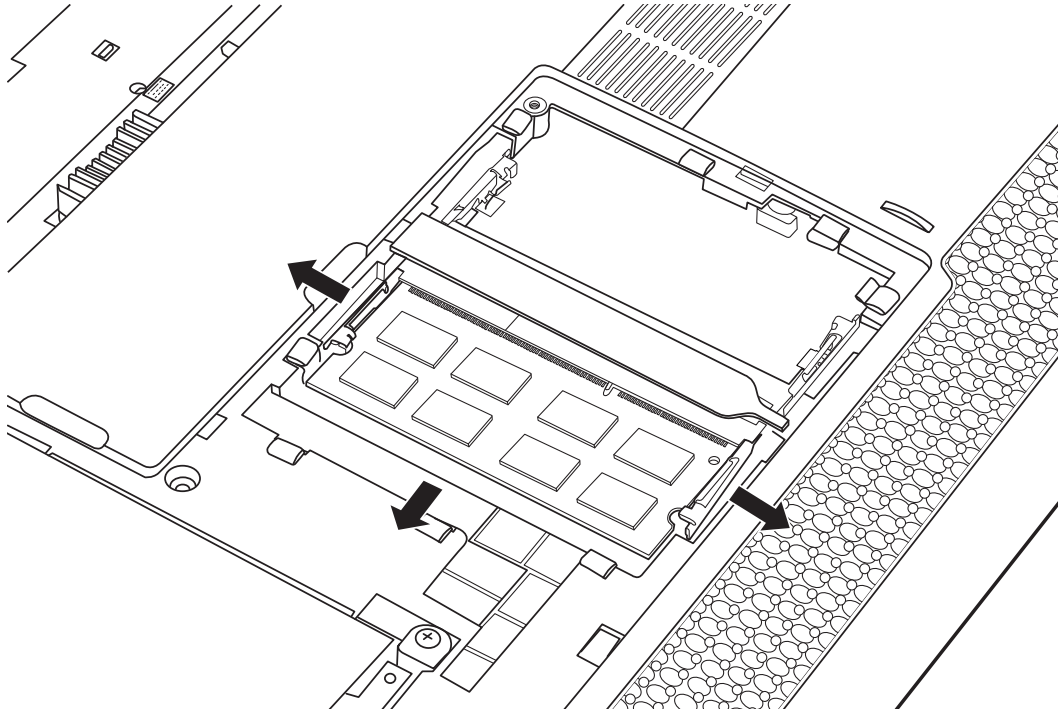


Figure 4.6 Removing the memory from the laptop

6. Repeat steps 4 and 5 to remove the other memory.

**CAUTION:** Do not touch the connectors on the memory or in the laptop. Contaminated connectors can cause memory access problems.

## **4 Replacement Procedures**

*Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.*

---

### **Installing the Optional Memory**

Install the optional memory according to the following procedures after checking that the laptop is turned off.

**CAUTION:** *Install the optional memory after turning off the laptop. If this is violated, the laptop or memory can be damaged.*

1. Insert the memory into the connector at a 45 degree angle.
2. Press down on the memory so that it is secured with both memory lock latches.
3. Repeat steps 1 and 2 to install the other memory.
4. Reinstall the bottom door.
5. Secure the bottom door with one M2x4.5 screw.

Once the laptop is turned on, check the hardware configuration in the Hardware Setup or TESTUP program to make sure that the installed memory has been recognized by the system. If it has not been recognized yet, check the connections.

Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

## 4 Replacement Procedures

### 4.5 Keyboard

#### Removing the Keyboard

Remove the Keyboard according to the following procedures and Figures 4.7, 4.8, 4.9 and 4.10.

1. Turn the laptop upside down and remove the two M2x6 screws as indicated in Figure 4.7.

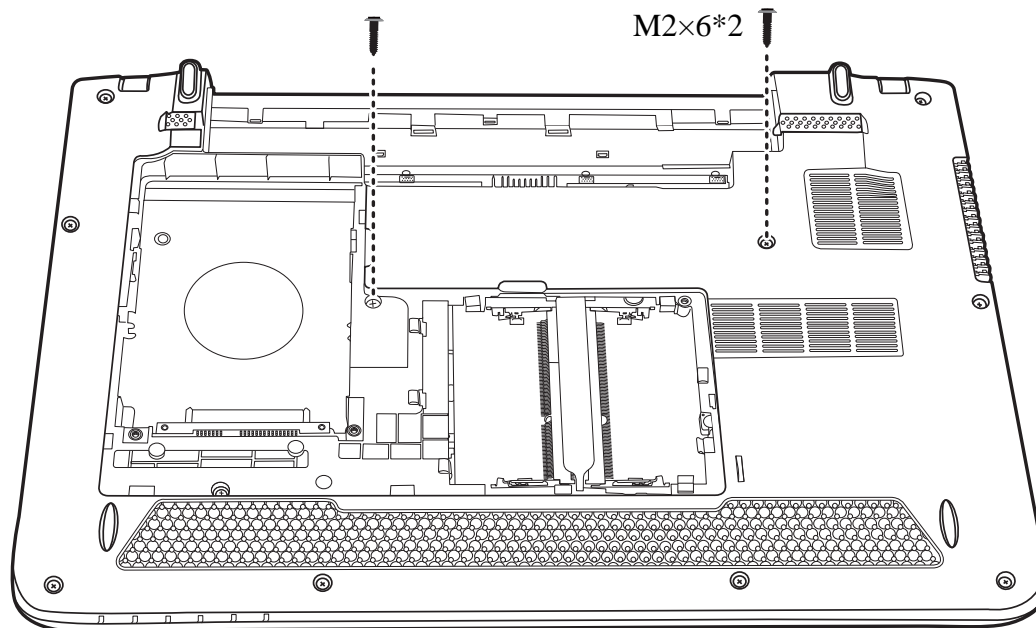


Figure 4.7 Removing two screws

2. Insert a pin into the holes in the battery bay as indicated in Figure 4.8 to push the keyboard up.

#### 4 Replacement Procedures

Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

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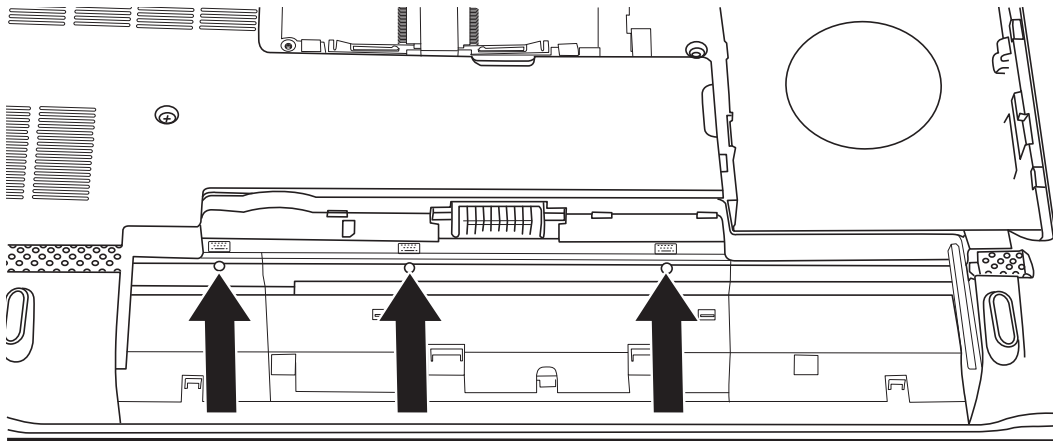


Figure 4.8 Pushing the keyboard up with a pin

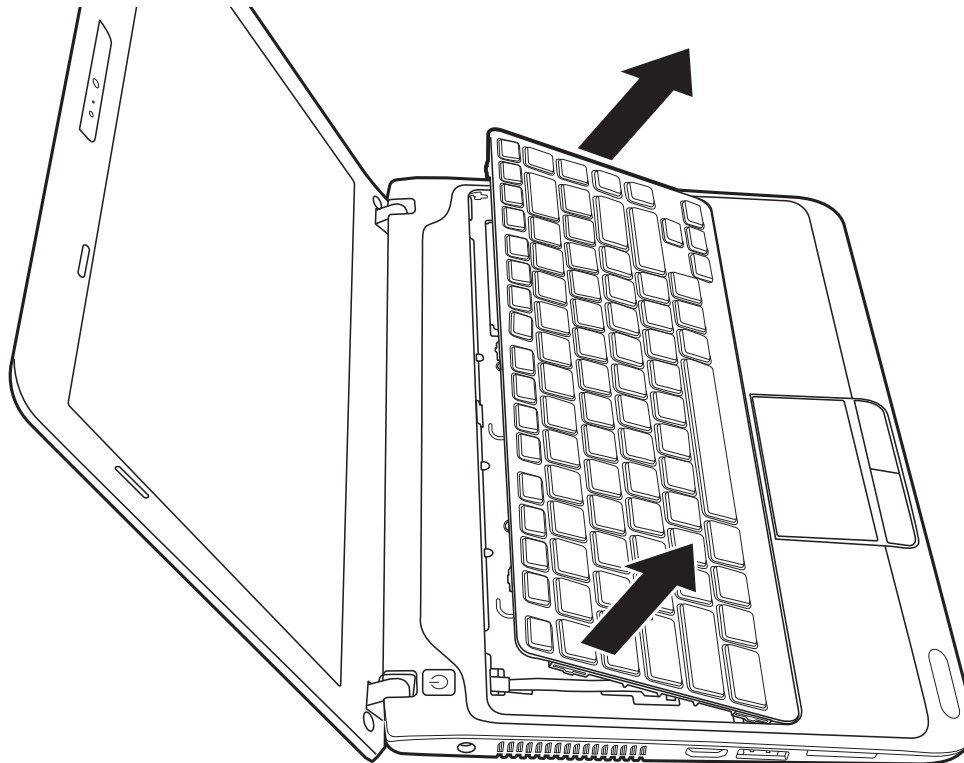


Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

## **4 Replacement Procedures**

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3. Lift the keyboard up and move it upward.



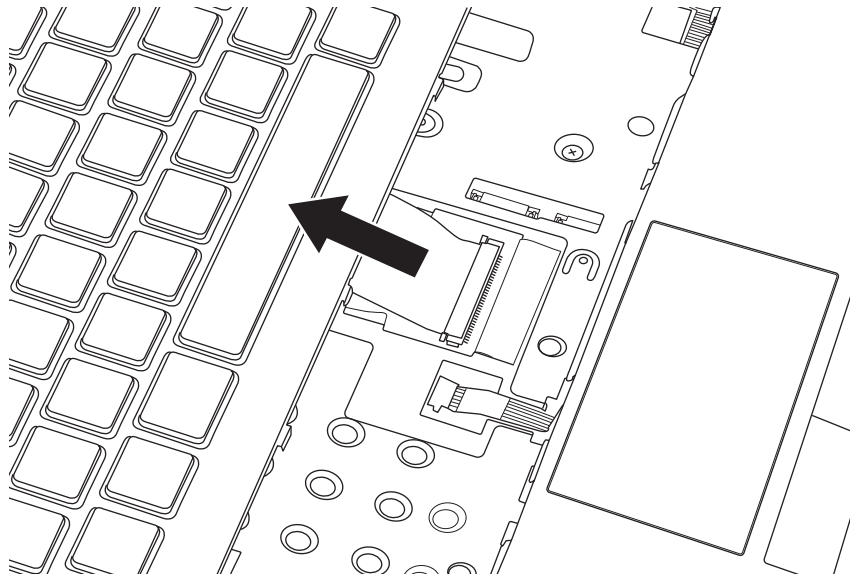
*Figure 4.9 Lifting up the keyboard*

4. Disconnect the keyboard FPC from the motherboard and remove the keyboard.

#### **4 Replacement Procedures**

Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

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*Figure 4.10 Disconnecting the keyboard FFC*

*Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.*

## ***4 Replacement Procedures***

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### **Installing the keyboard Cover and Keyboard**

Install the keyboard cover and keyboard according to the following procedures.

1. Connect the FPC on the back of the keyboard to the motherboard and place the keyboard in the correct position.
2. Press down the keyboard cover starting from the center and toward the left. Make sure the hooks on the back of the cover are securely in place.
3. Turn the laptop upside down and secure two M2x6 screws as indicated in Figure 4.7.

## 4.6 Logic Upper Assembly

### Removing the Logic Upper Assembly

Remove the logic upper assembly according to the following procedures and Figures 4.11, 4.12 and 4.13.

1. Turn the laptop upside down and remove the nine M2x6 screws.

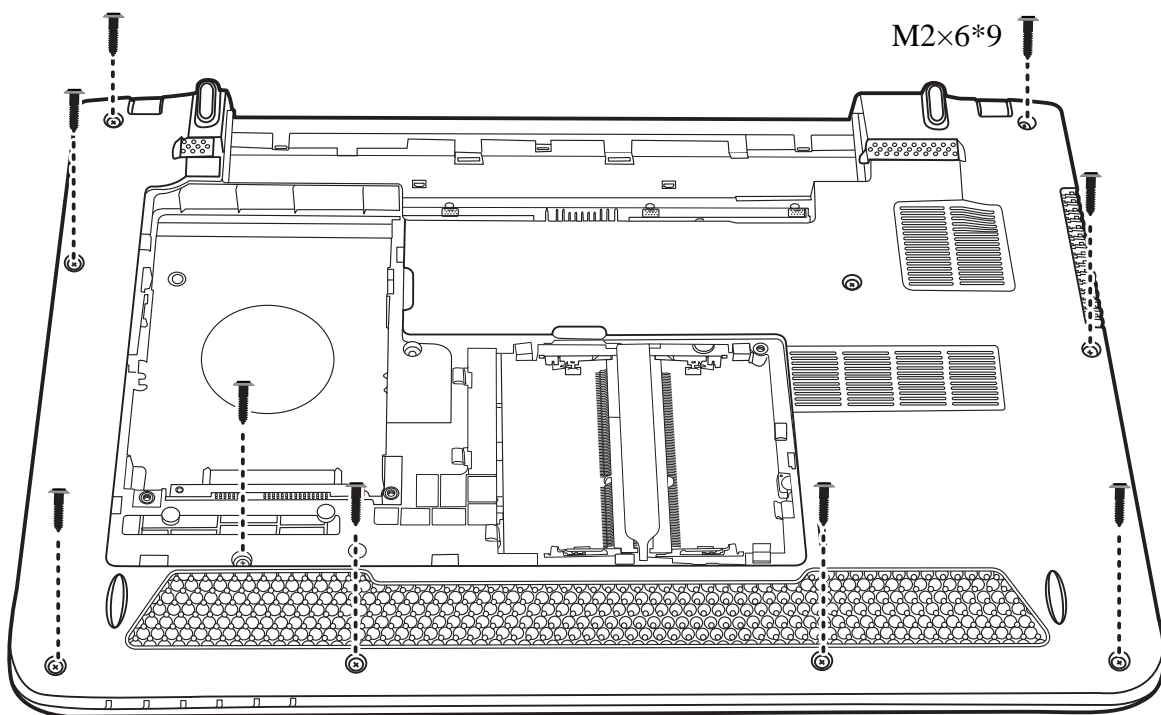


Figure 4.11 Removing nine screws from the bottom of the laptop

Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

#### 4 Replacement Procedures

2. Turn the laptop over and open it. Disconnect the power board FFC and touchpad FFC from the motherboard and remove the four M2x3 and one M2x6 screws.

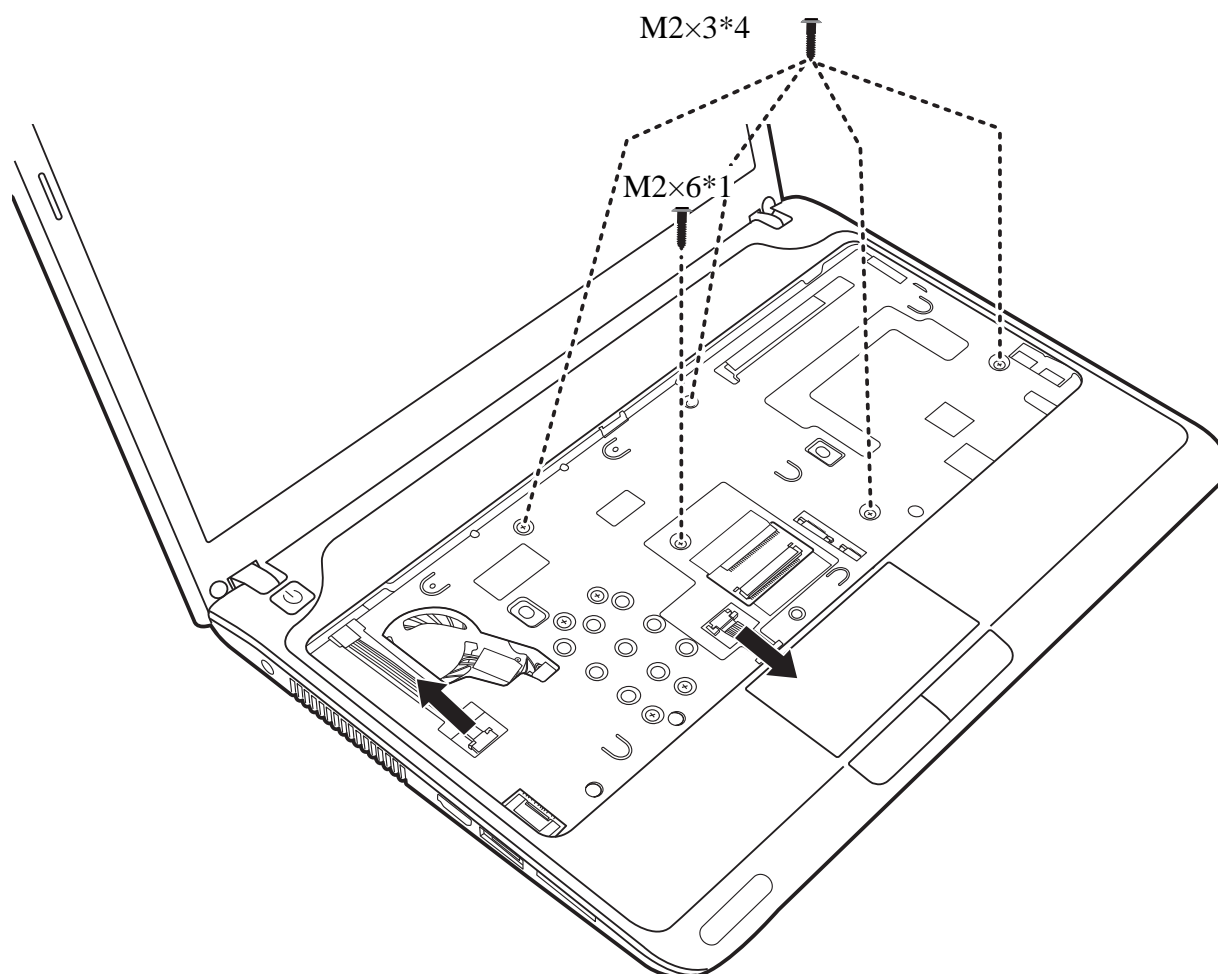
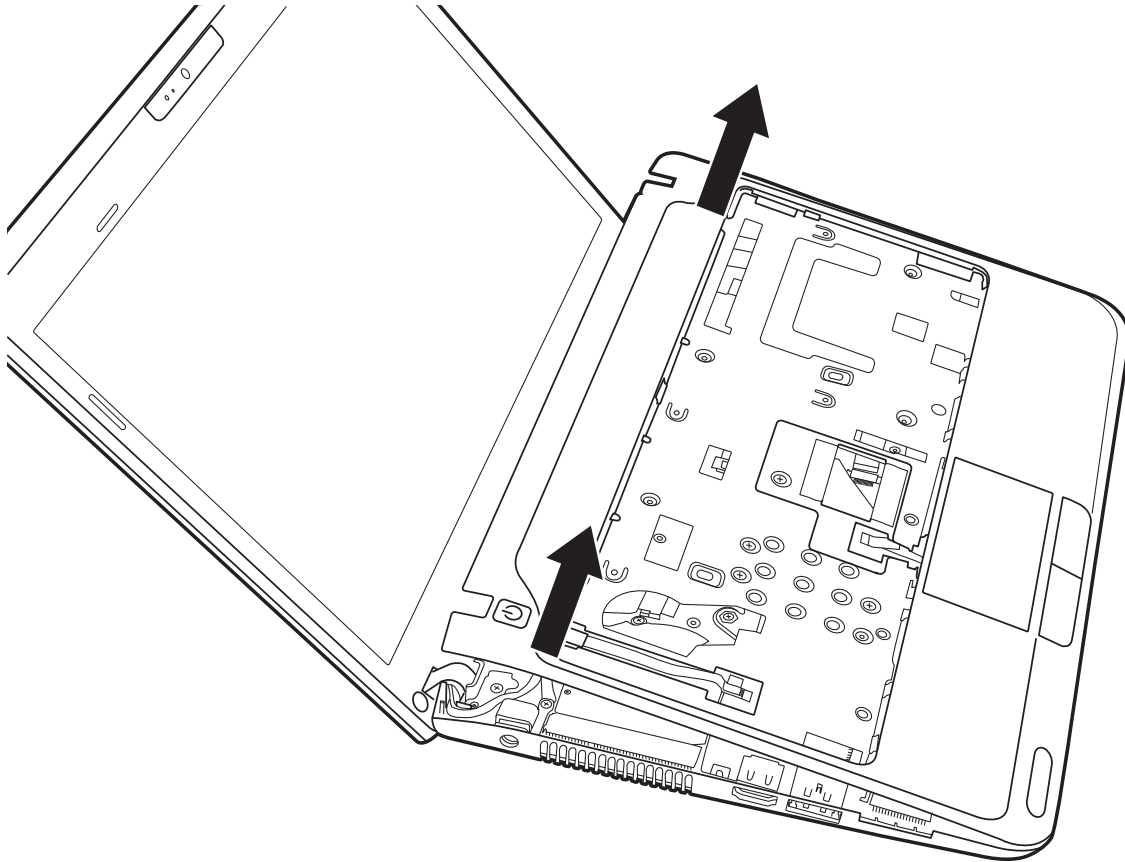


Figure 4.12 Disconnect two FFC and removing five screws from the logic upper assembly

3. Pry up the logic upper assembly from its top and remove it from the logic lower assembly.



*Figure 4.13 Removing the logic upper assembly*

### **Installing the Logic Upper Assembly**

Install the logic upper assembly according to the following procedures.

7. Seat the logic upper assembly to the front of the laptop, and adjust to the correct position.
8. Press down the logic upper assembly, starting from the top edge and toward the bottom edge. Make sure that the hooks on the back of the assembly are securely in place.
9. Connect the two FFC and secure four M2x3 and one M2x6 screws as indicated in Figure 4.12.

*Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.*

---

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

10. Turn the laptop upside down and secure it with nine M2x6 screws as indicated in Figure 4.11.

## 4.7 Touch Pad Bracket and TP Button Board

### Removing the Touch Pad Bracket and TP Button Board

Remove the Touch Pad Bracket and TP Button Board according to the following procedures and Figures 4.14, and 4.15.

1. Pull out the TP button to motherboard FFC (the left one) from the logic upper assembly and disconnect the TP button to touch pad FFC (the right one) from the touch pad, as indicated in Figure 4.14. Remove four M2x4 screws, and then remove the touch pad bracket and the TP button board.

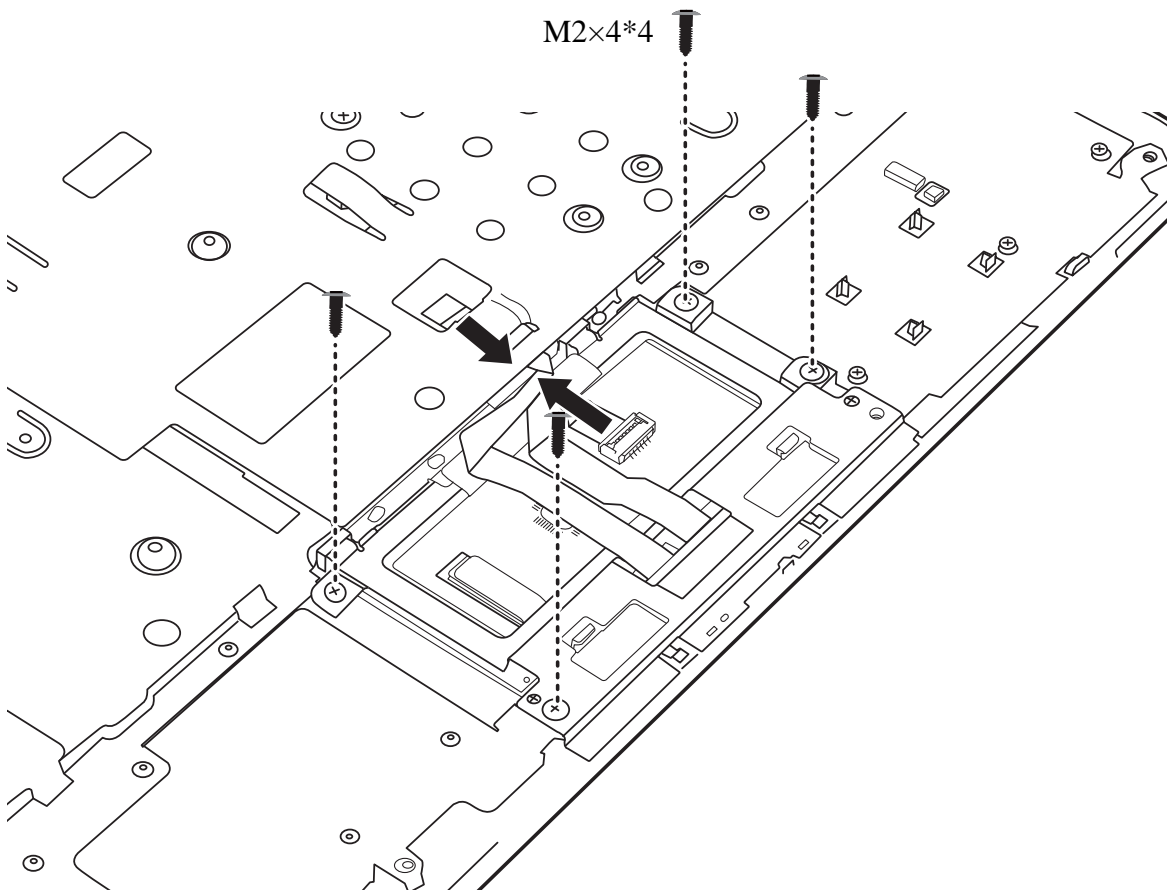


Figure 4.14 Disconnecting the TP button FFC and remove four screws

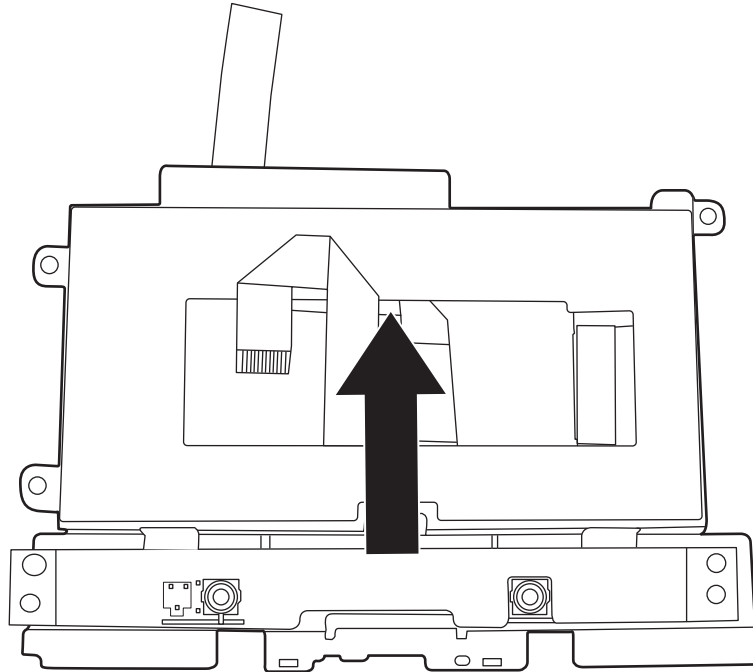


Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

#### **4 Replacement Procedures**

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2. Flip over the touch pad bracket and remove the TP button board from the bracket.



*Figure 4.15 Removing the TP button board*

## **4 Replacement Procedures**

*Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.*

---

### **Installing the Touch Pad Bracket and TP Button Board**

Install the Touch Pad Bracket and TP Button Board according to the following procedures.

1. Seat the TP button board in the correct position on the touch pad bracket.
2. Seat the touch pad bracket with the TP button board on the logic upper assembly and secure it with four M2x4 screws.
3. Connect the TP button to touch pad FFC (the right one) to the touch pad board and insert the TP button to motherboard FFC (the left one) into the slot on the logic upper assembly.

Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

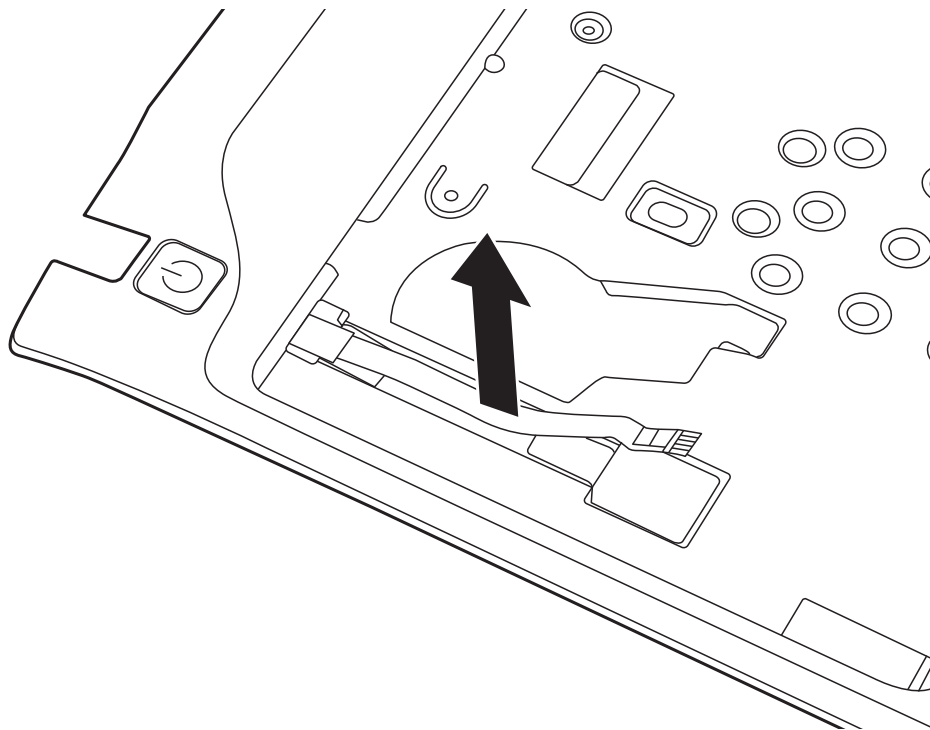
## **4 Replacement Procedures**

### **4.8 Power Board**

#### **Removing the Power Board**

Remove the Power Board according to the following procedures and Figures 4.16 and 4.17.

1. Peel the power board FFC off the logic upper assembly as indicated in Figure 4.16.



*Figure 4.16 Peeling off the power board FFC*

2. Turn the logic upper assembly upside down. Remove one M2x4 screw and remove the power board from the logic upper assembly.

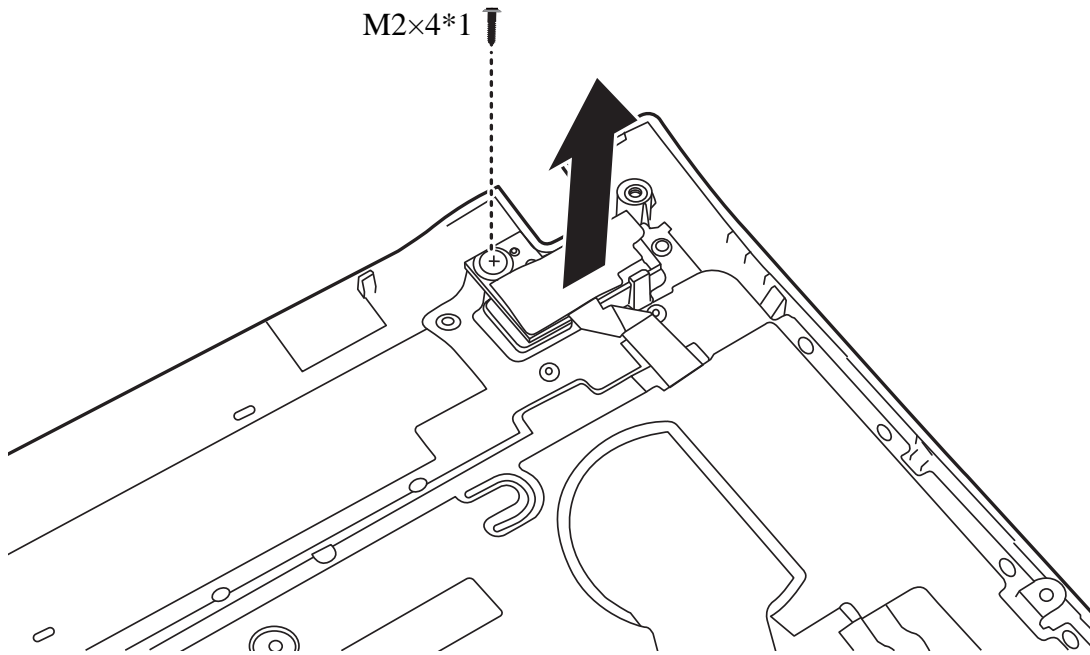


Figure 4.17 Removing the power board

### Installing the Power Board

Install the Power Board according to the following procedures.

1. Seat the power board in the correct position on the logic upper assembly and secure it with one M2x4 screw.
2. Insert the power board FFC into the slot on the logic upper assembly. Adhere the FFC to the front of the logic upper assembly as shown in Figure 4.16.

Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

## 4.9 RGB Board

### Removing the RGB Board

Remove the RGB Board according to the following procedures and Figures 4.18 and 4.19.

1. Disconnect the FFC from the motherboard and peel it off the logic lower assembly.
2. Remove one M2x3 and one M2x6 screws securing the RGB board.

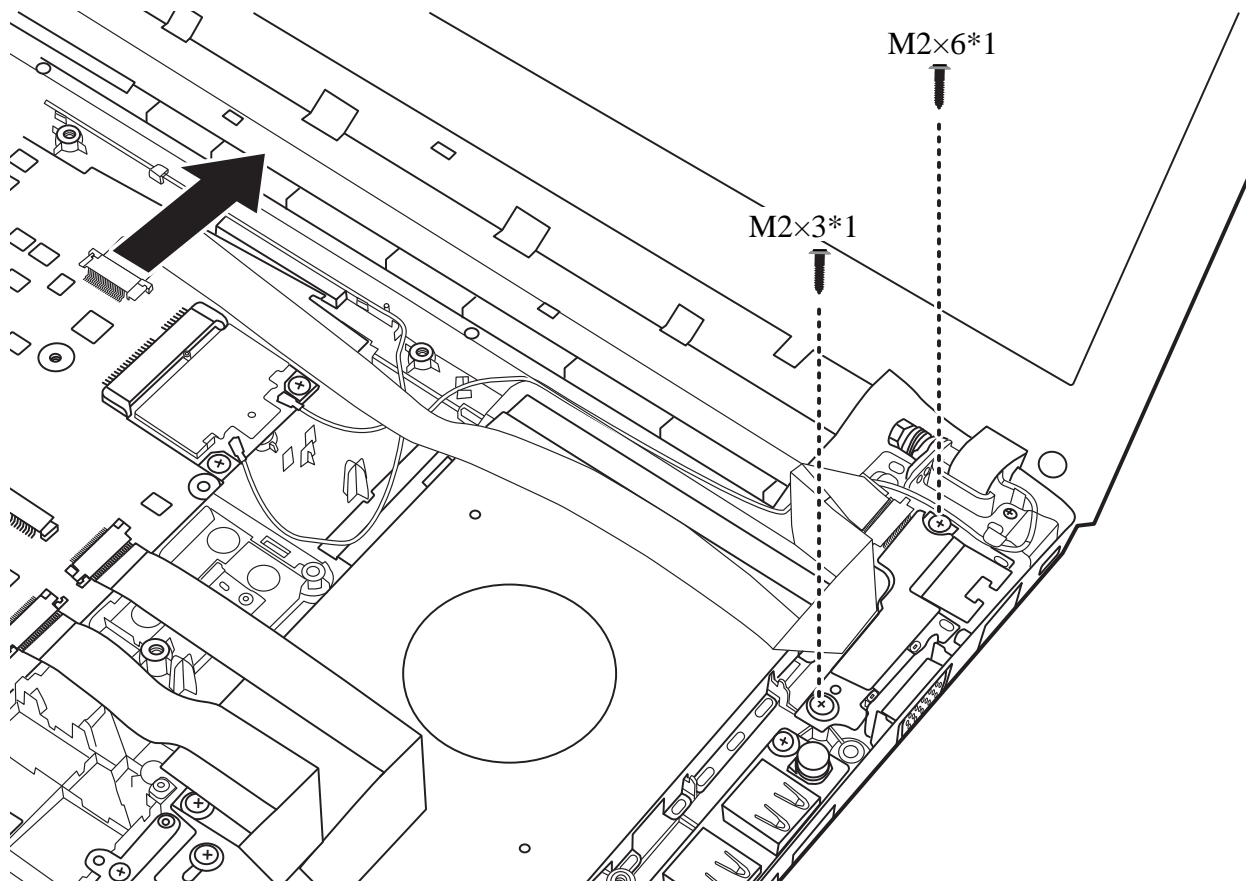


Figure 4.18 Disconnect the FFC and remove two screws

3. Lift the board up to an angle and then remove it from the logic lower assembly as indicated in Figure 4.19.

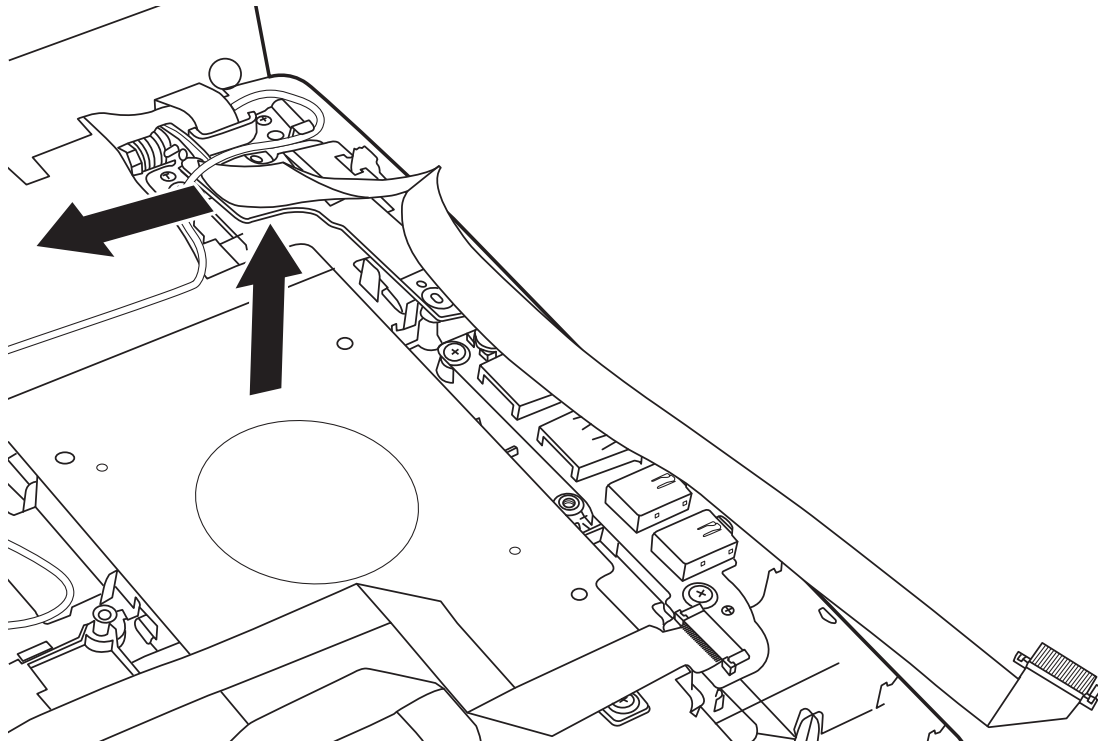


Figure 4.19 Removing the RGB Board

### Installing the RGB Board

Install the RGB Board according to the following procedures.

1. Insert the RGB board to the logic lower assembly at an angle as shown in Figure 4.19 and then press it down to seat it on the logic lower assembly.
2. Secure the RGB board with one M2x3 and one M2x6 screws and connect the FFC to the motherboard.

Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

## 4.10 WLAN Card

### Removing the WLAN Card

Remove the WLAN card according to the following procedures and Figure 4.20.

1. Disconnect two antenna cables from the WLAN card.
2. Remove the two M2x3 screws securing the WLAN card. The card pops up automatically.
3. Remove the WLAN card at an angle of 45 degrees.

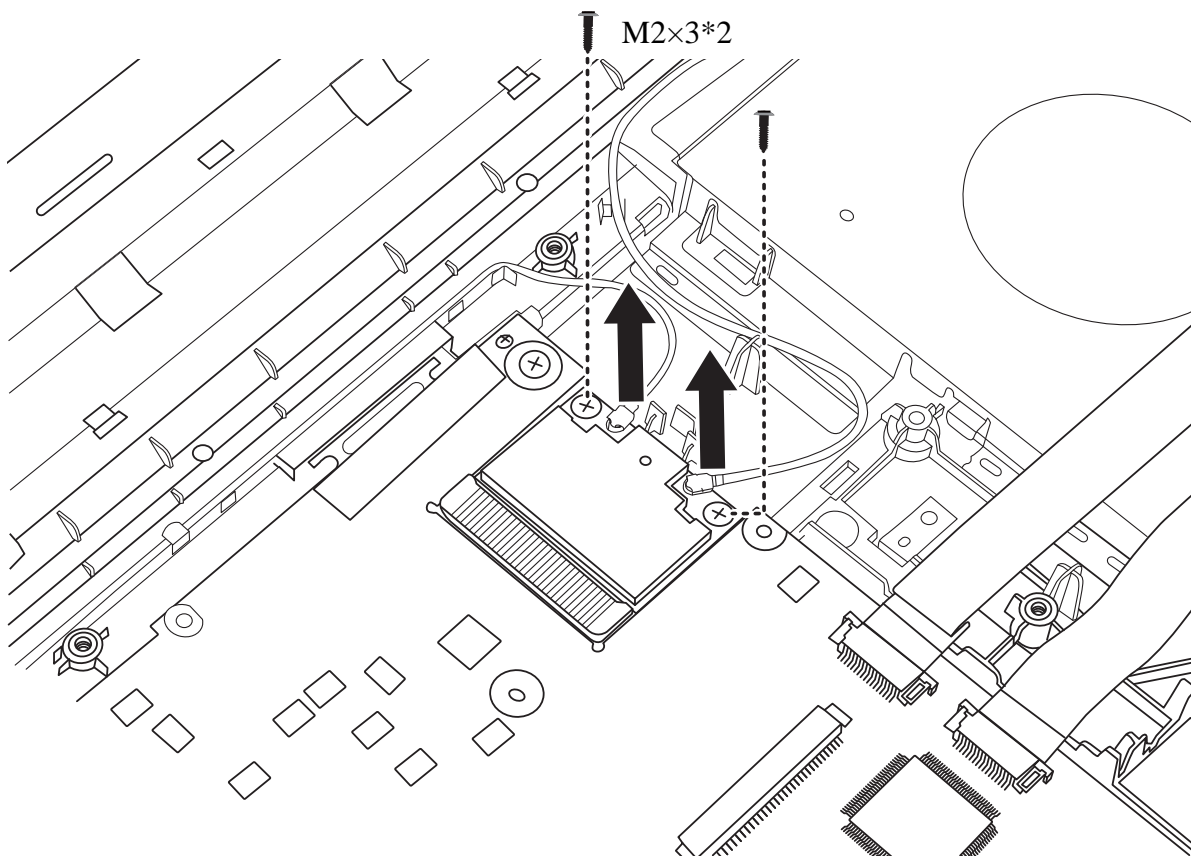


Figure 4.20 Removing the WLAN card

## **4 Replacement Procedures**

*Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.*

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### **Installing the WLAN Card**

Install the WLAN card according to the following procedures.

1. Insert the WLAN card into the connector on the motherboard at an angle of 45 degrees.
2. Press the WLAN card down and secure it with two M2x3 screws.
3. Connect two antenna cables to the WLAN card. Connect the white antenna to MAIN #1 and the black antenna to AUX #2 on the WLAN card.



Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

## 4.11 WWAN Card

### Removing the WWAN Card

Remove the WWAN card according to the following procedures and Figure 4.21.

1. Disconnect two antenna cables from the WWAN card.
2. Remove the two M2x3 screws securing the WWAN card. The card pops up automatically.
3. Remove the WWAN card at an angle of 45 degrees.

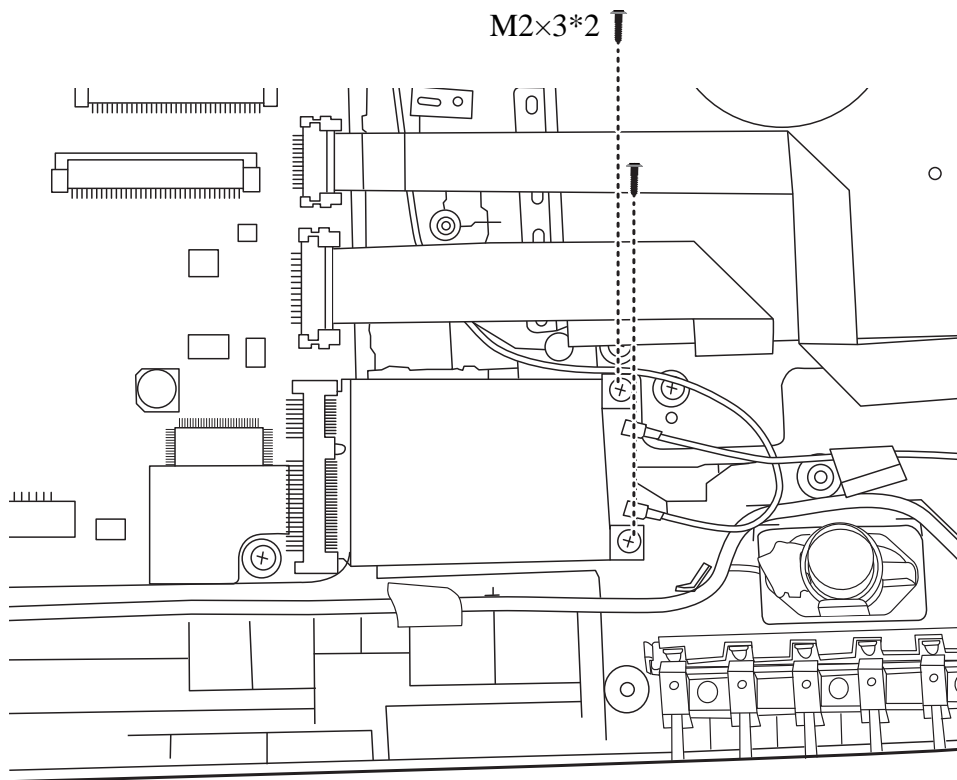


Figure 4.21 Removing the WWAN card

#### **4 Replacement Procedures**

*Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.*

---

#### **Installing the WWAN Card**

Install the WWAN card according to the following procedures.

1. Insert the WWAN card into the connector on the motherboard at an angle of 45 degrees.
2. Press the WWAN card down and secure it with two M2x3 screws.
3. Connect two antenna cables to the WWAN card. Connect the red antenna to MAIN #1 and the blue antenna to AUX #2 on the WWAN card.

Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

## 4.12 Minicard Brackets

### Removing the Minicard Brackets

There are two minicard brackets on the logic lower assembly. Remove each of the minicard brackets according to the following procedures and Figures 4.22.

1. Remove one M2x3 screws that securing the minicard bracket to the logic lower assembly, as shown in Figure 4.22.

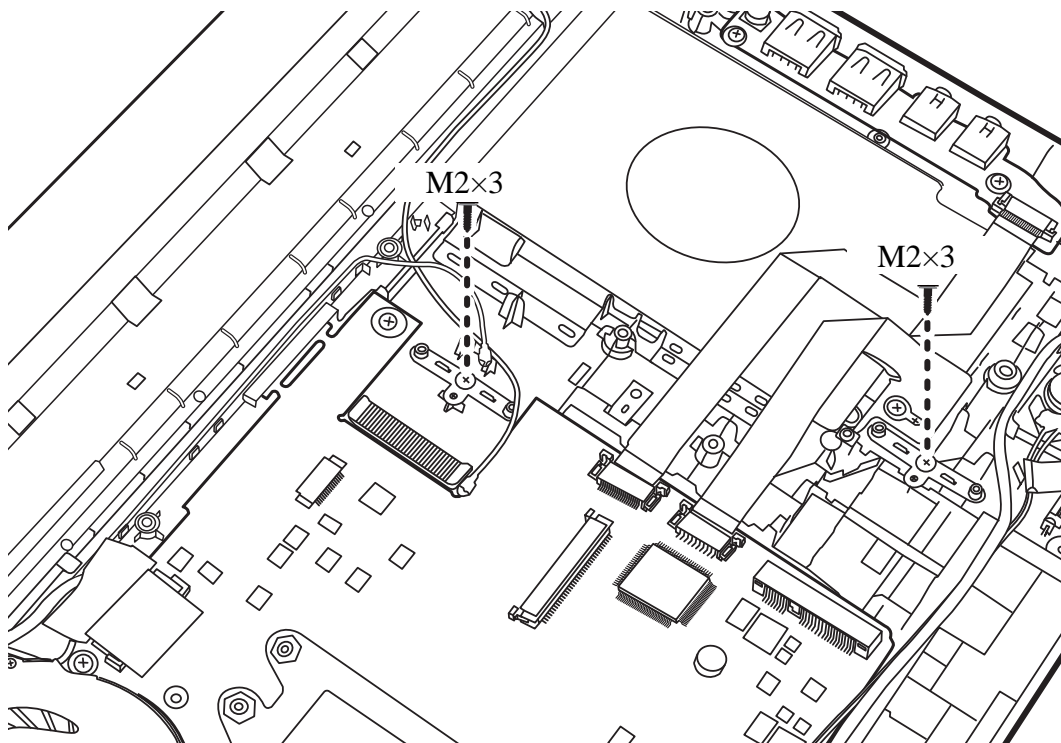


Figure 4.22 Removing the minicard brackets

2. Remove the minicard bracket from the logic lower assembly.
3. Repeat the procedure to remove the other minicard bracket.

### Installing the Minicard Brackets

Install the minicard brackets according to the following procedures:

1. Seat the minicard bracket in the correct position and secure it with one M2x3 screw.

#### **4 Replacement Procedures**

*Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.*

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2. Repeat step one with the other minicard bracket.

Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

## 4.13 Display Assembly

### Removing the Display Assembly

**CAUTION:** Use care to avoid the antenna cable being caught between the display assembly and the laptop.

Remove the display assembly according to the following procedures and Figure 4.23.

1. Disconnect the LVDS cable from the motherboard. Pull the two antenna cables (black and white) out from the routing channel on the logic lower assembly.
2. Remove the three M2x6 screws and then remove the display assembly from the logic lower assembly.

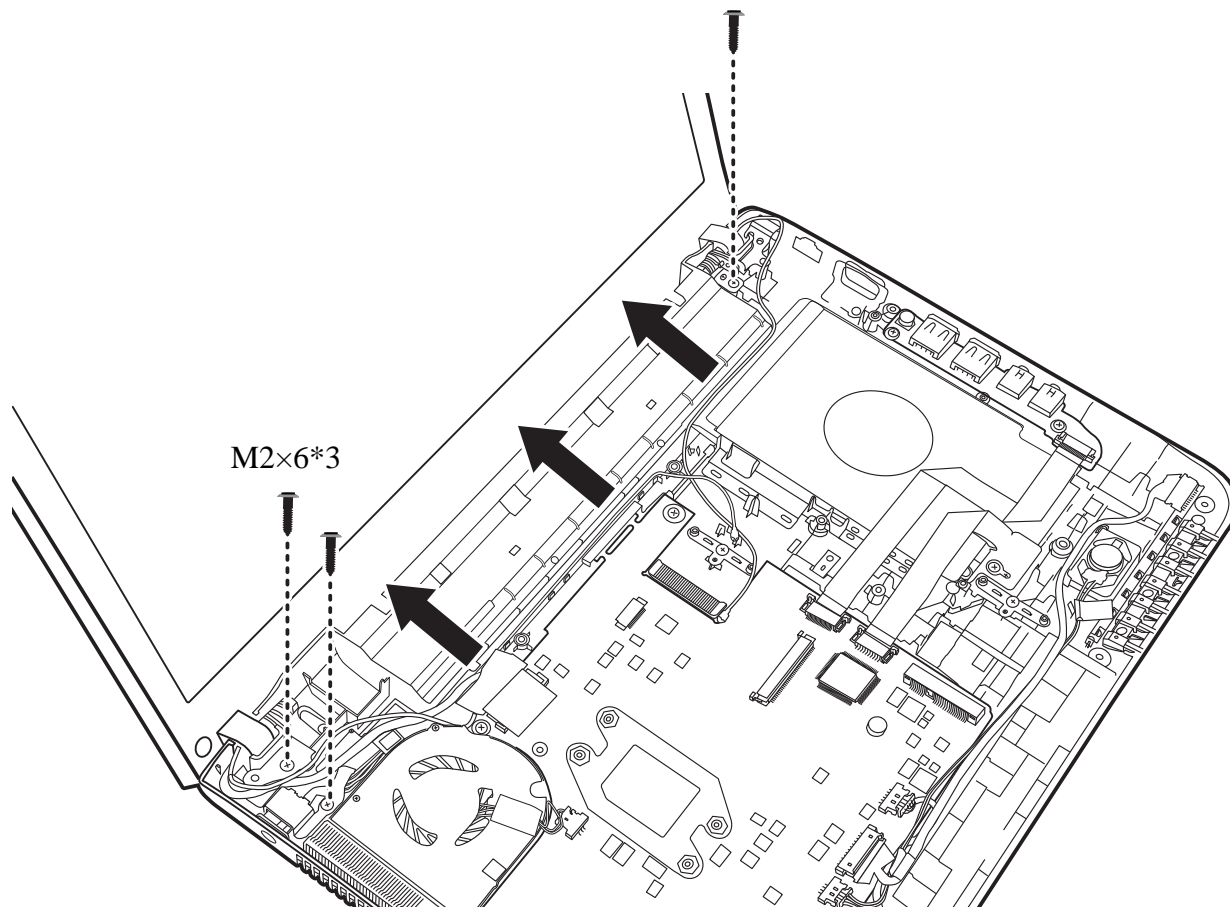


Figure 4.23 Removing the display assembly

## **4 Replacement Procedures**

*Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.*

---

### **Installing the Display Assembly**

Install the display assembly according to the following procedures.

1. Seat the display hinge brackets in the correct position on the logic lower assembly and secure it with three M2x6 screws.
2. Connect the LVDS cable to the motherboard.
3. Route the two antenna cables into the routing channel on the logic lower assembly.

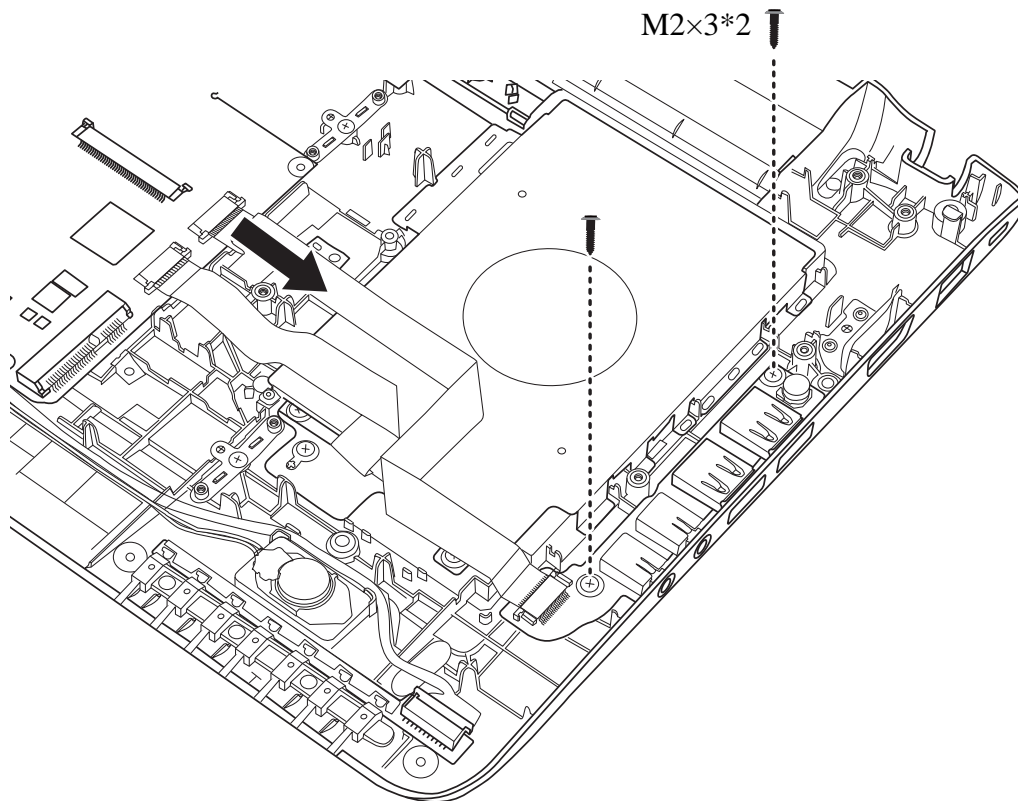
Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

## **4.14 USB & Audio Board**

### **Removing the USB & Audio Board**

Remove the USB & Audio Board according to the following procedures and Figure 4.24.

1. Disconnect the FFC from the motherboard and peel it off the logic lower assembly.
2. Remove the two M2x3 screws and remove the USB & Audio board from the logic lower assembly.



*Figure 4.24 Removing the USB & Audio Board*

### **Installing the USB & Audio Board**

Install the USB & Audio Board according to the following procedures.

#### **4 Replacement Procedures**

*Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.*

---

1. Seat the USB & Audio board in the correct position on the logic lower assembly and secure it with two M2x3 screws.
2. Adhere the FFC to the logic lower assembly and connect it to the motherboard.



Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

## 4.15 HDD Board

### Removing the HDD Board

Remove the HDD Board according to the following procedures and Figures 4.25 and 4.26.

1. Disconnect the FFC from the motherboard and peel it off the logic lower assembly.
2. Remove the two M2x3 screws and lift the HDD board free of the fixing points on the logic lower assembly.

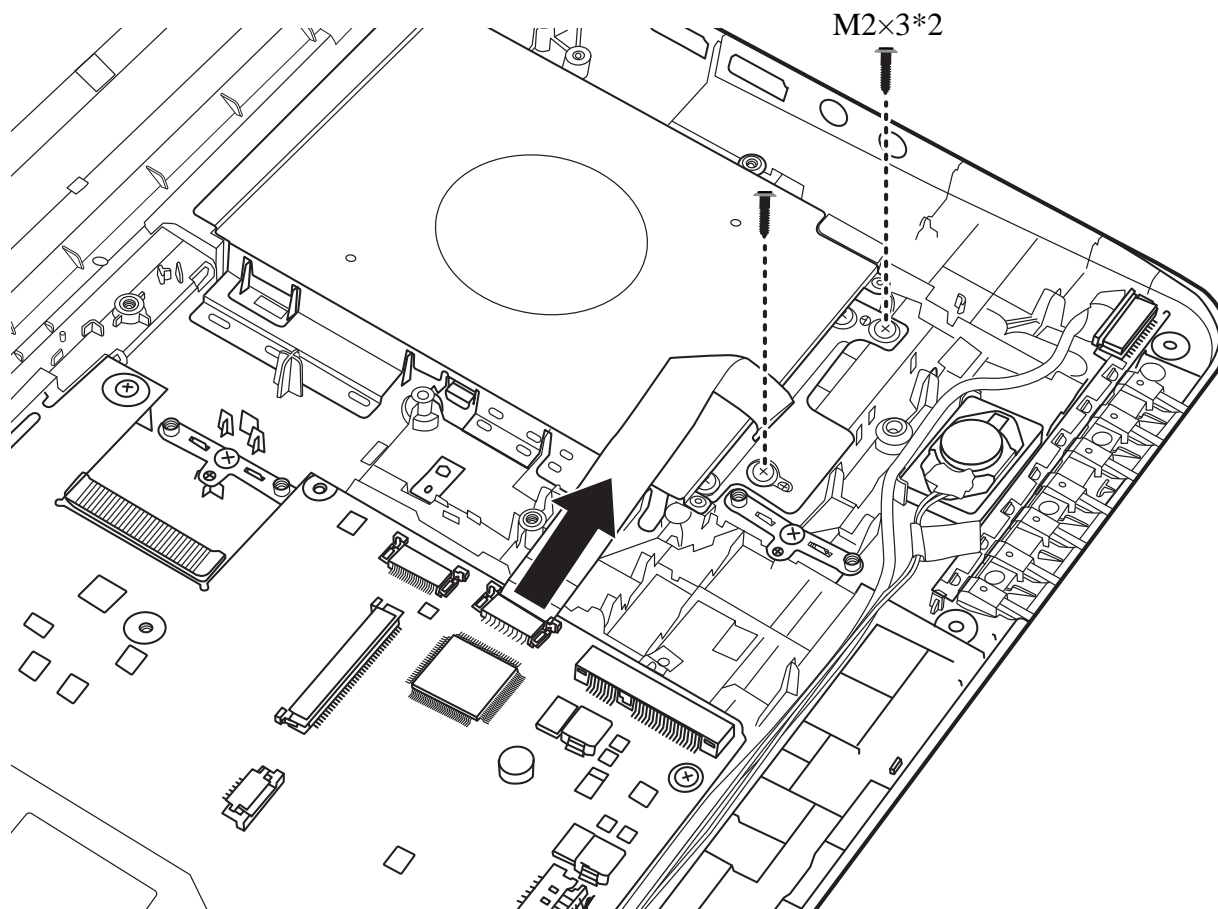


Figure 4.25 Disconnect the FFC and remove two screws

3. Turn the logic lower assembly upside down and remove the HDD board as indicated in Figure 4.26.

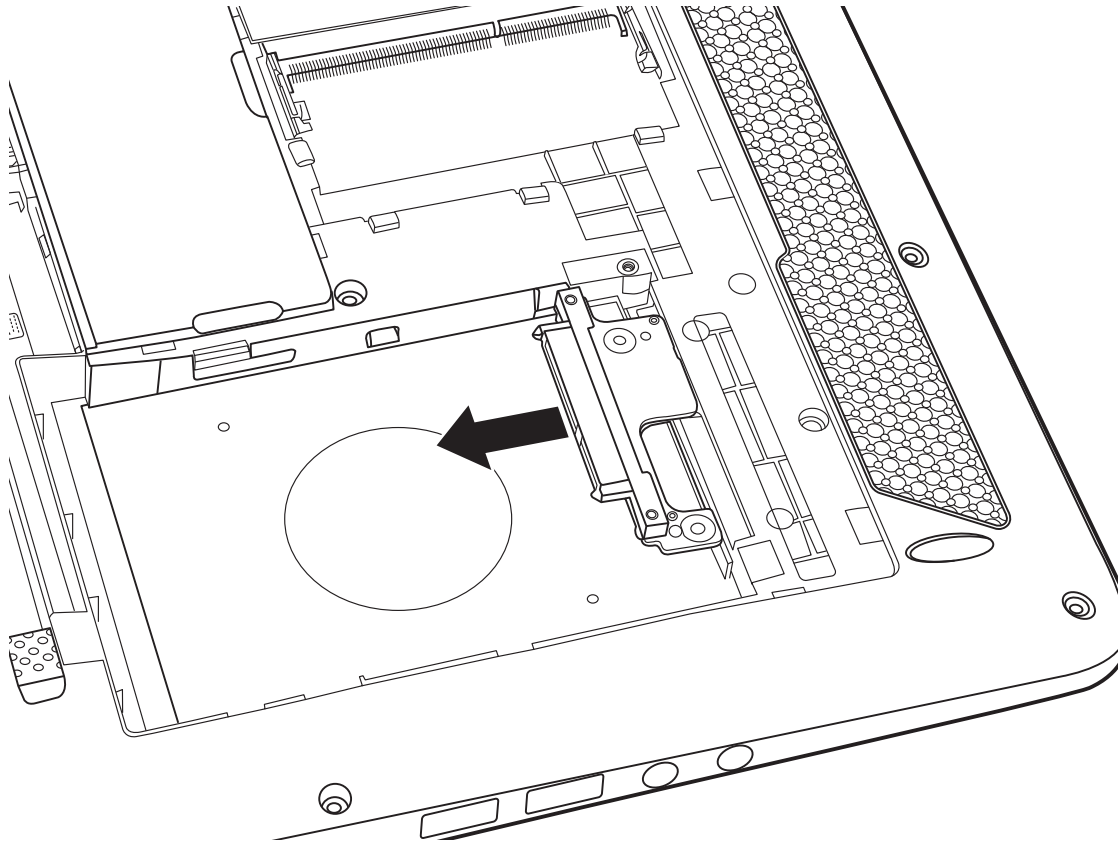


Figure 4.26 Removing the HDD Board

### Installing the HDD Board

Install the HDD Board according to the following procedures.

1. Turn the logic lower assembly upside down. Insert the HDD board in the HDD bay as shown in Figure 4.25.
2. Turn the logic lower assembly to the front side. Seat the HDD board on the fixing points and secure it with two M2x3 screws.
3. Adhere the FFC to the logic lower assembly and connect it to the motherboard.

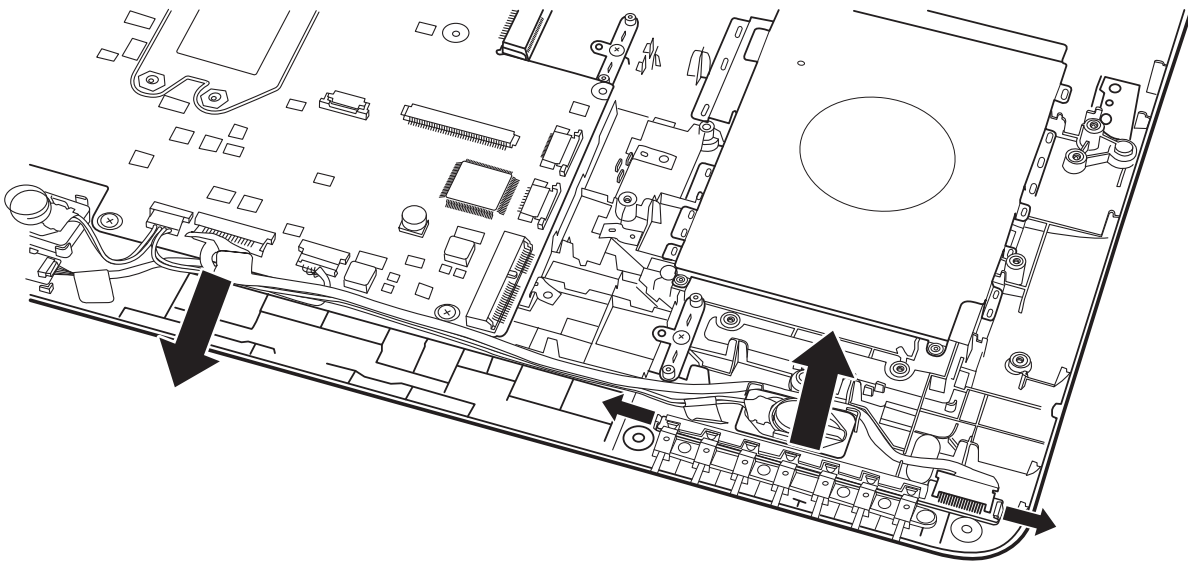
Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

## **4.16 LED Board**

### **Removing the LED Board**

Remove the LED Board according to the following procedures and Figure 4.27.

1. Disconnect the LED cable from the motherboard and pull it out of the routing channel.
2. Pry the fixing ribs outward as indicated in Figure 4.27 and remove the LED board from the logic lower assembly.



*Figure 4.27 Removing the LED Board*

### **Installing the LED Board**

Install the LED Board according to the following procedures.

1. Seat the LED board in the correct position on the logic lower assembly. Make sure that it is secured by the fixing ribs.
2. Route the LED cable in the routing channel and connect it to the motherboard.

## 4.17 Speakers

### Removing the Speakers

Remove the Speakers according to the following procedures and Figure 4.28.

1. Disconnect the cable from the motherboard.
2. Remove the two speakers from the logic lower assembly.

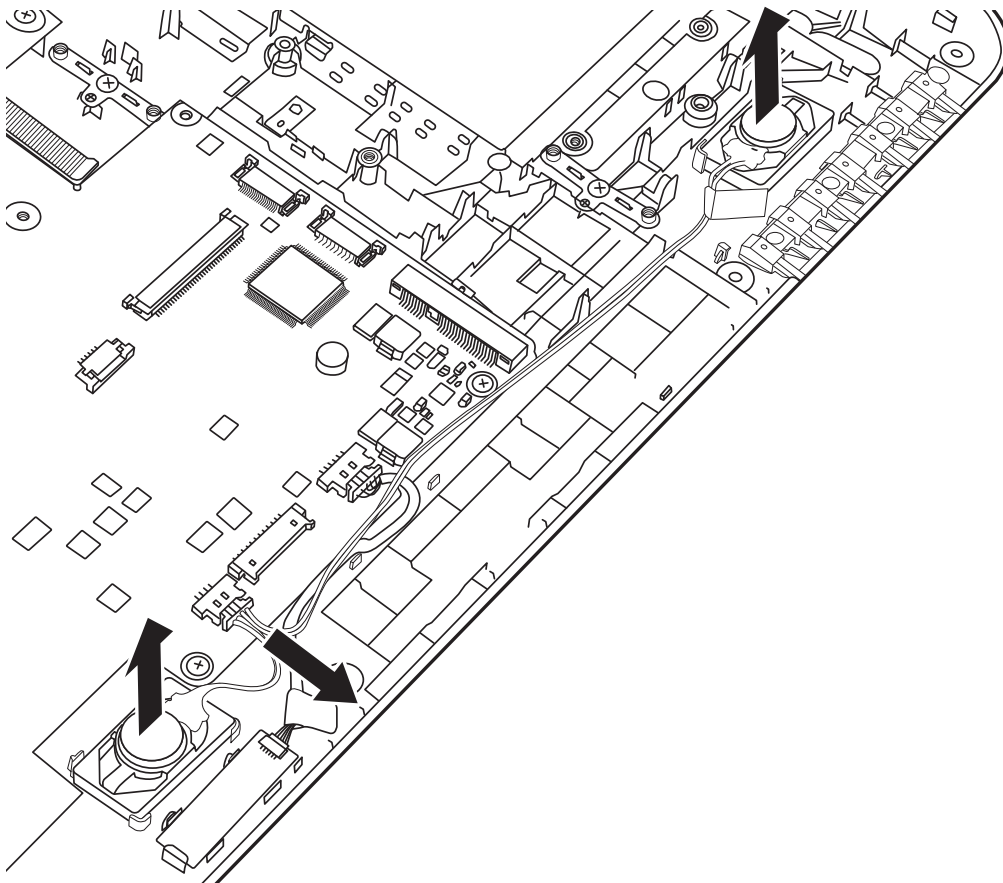


Figure 4.28 Removing the speakers

### Installing the Speakers

Install the speakers according to the following procedures.

*Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.*

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

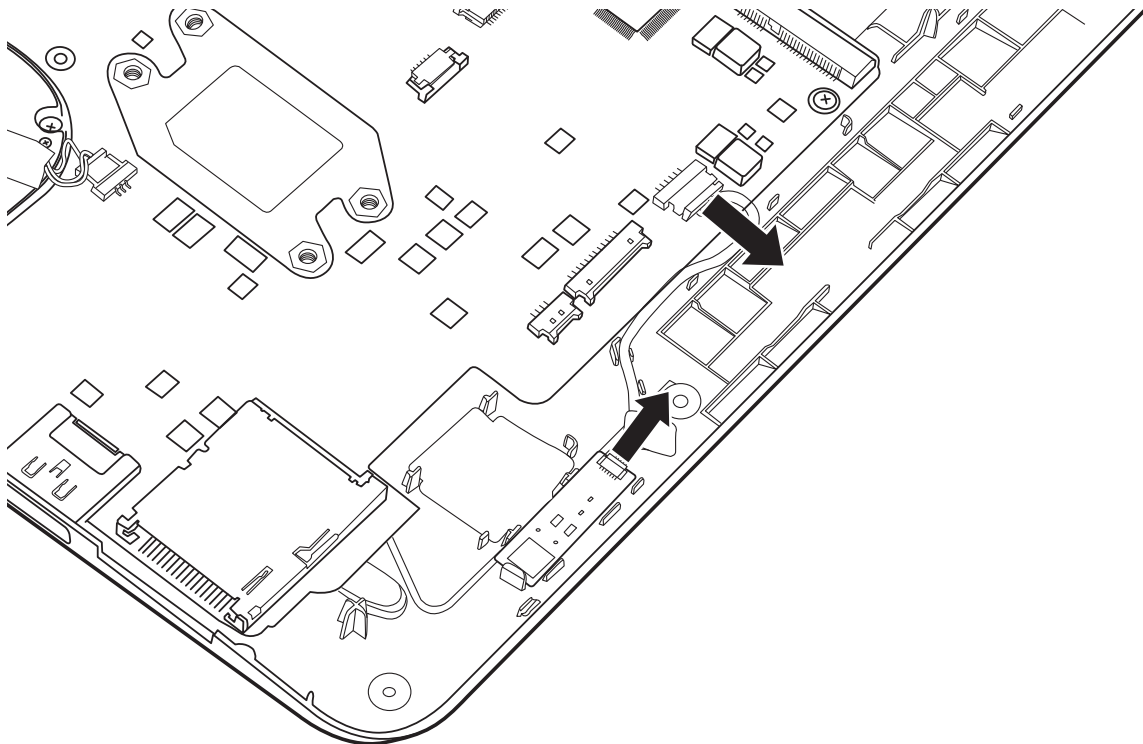
1. Seat the left and right speaker in the correct position.
2. Connect the speaker cable to the motherboard.

## 4.18 Bluetooth Combined With Cable Module

### Removing the Bluetooth Combined With Cable Module

Remove the Bluetooth combined with cable module according to the following procedures and Figure 4.29.

1. Disconnect the Bluetooth cable from the motherboard.
2. Remove the Bluetooth card from the trough on the logic lower assembly.



*Figure 4.29 Removing the Bluetooth Card*

### Installing the Bluetooth Combined With Cable Module

Install the Bluetooth combined with cable module according to the following procedures.

1. Seat the Bluetooth card in the trough on the logic lower assembly.

*Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.*

---

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

2. Connect the Bluetooth cable to the motherboard.

## 4.19 Thermal Fan

### Removing the Thermal Fan

Remove the thermal fan according to the following procedures and Figure 4.30.

1. Disconnect the cable from the motherboard.
2. Remove one M2x4 screw from the thermal fan.
3. Remove the thermal fan from the logic lower assembly.

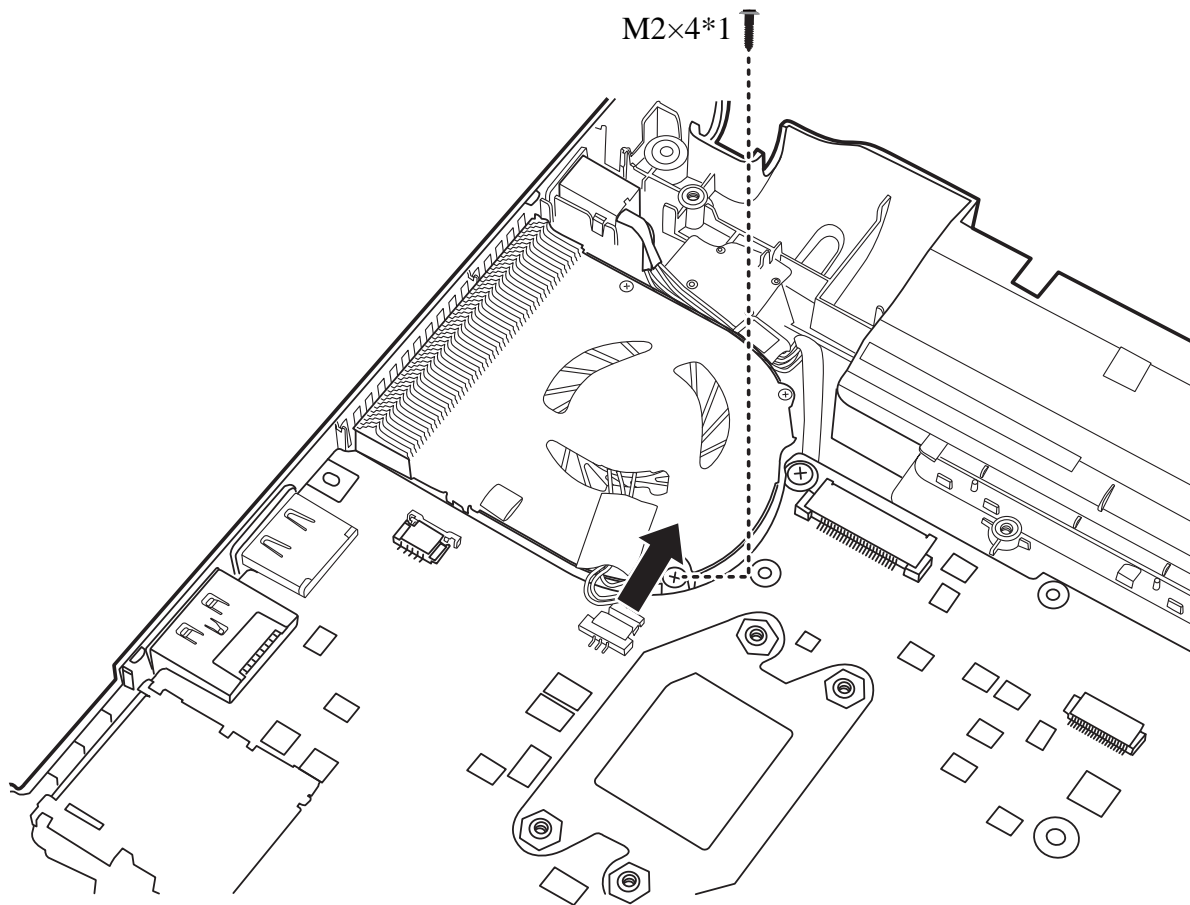


Figure 4.30 Removing the thermal fan from the logic lower assembly



*Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.*

---

## ***4 Replacement Procedures***

### **Installing the Thermal Fan**

Install the thermal fan according to the following procedures.

1. Seat the thermal fan in the correct position on the logic lower assembly.
2. Secure the thermal fan with one M2x4 screw.
3. Connect the cable to the motherboard.

## 4.20 Motherboard

### Removing the Motherboard

Remove the motherboard according to the following procedures and Figure 4.31.

1. Pull the DC IN connector out of the logic lower assembly.
2. Remove the five M2x3 screws as indicated in Figure 4. 31.

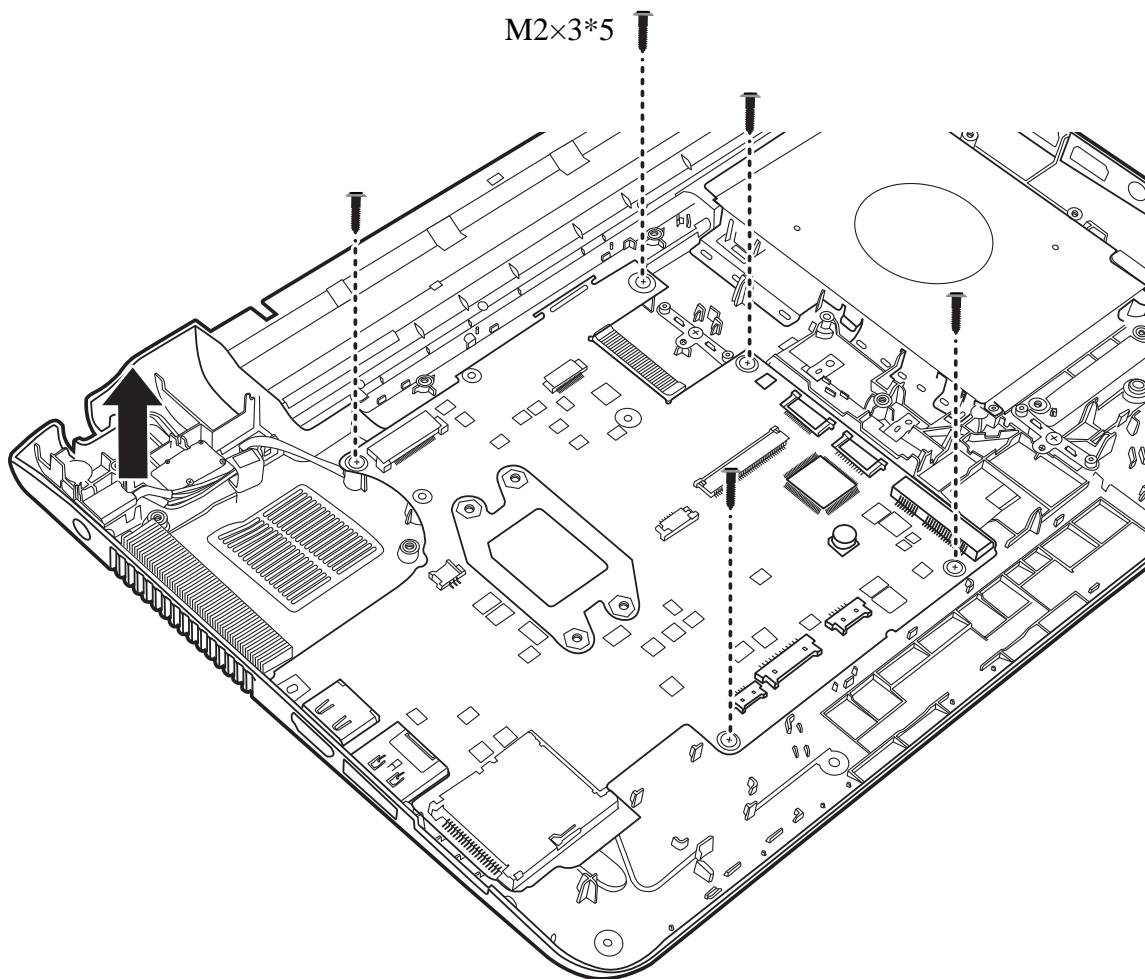


Figure 4.31 Removing the motherboard from logic lower assembly

3. Lift up the motherboard from the bottom and remove it from the logic lower assembly.

*Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.*

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## ***4 Replacement Procedures***

### **Installing the Motherboard**

Install the motherboard according to the following procedures.

1. Seat the motherboard in the correct position on the logic lower assembly.
2. Put the DC IN connector in the DC IN trough on the logic lower assembly.
3. Secure the motherboard with five M2x3 screws as indicated in Figure 4.31.

## 4.21 Thermal Module

### Removing the Thermal Module

Remove the thermal module according to the following procedures and Figure 4.32.

**CAUTION:**

*When removing the thermal module, keep the following in mind:*

- 1. The unit can become very hot during operation. Be sure to let it cool down before starting the repair work.*
- 2. Use care when removing and disassembling the unit in order to avoid damage.*
- 3. If you remove the thermal module, please use soft cloth with alcohol to clean the VGA board and the thermal module. Reapply Shinetsu 7762 grease before installing the thermal module. If you use one new thermal module, please make sure to remove the release paper first.*

1. Remove the four M2x4.5 spring screws securing the thermal module according to the sequence indicated in the Figure 4.32.
2. Remove the thermal module from the motherboard.

Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

## 4 Replacement Procedures

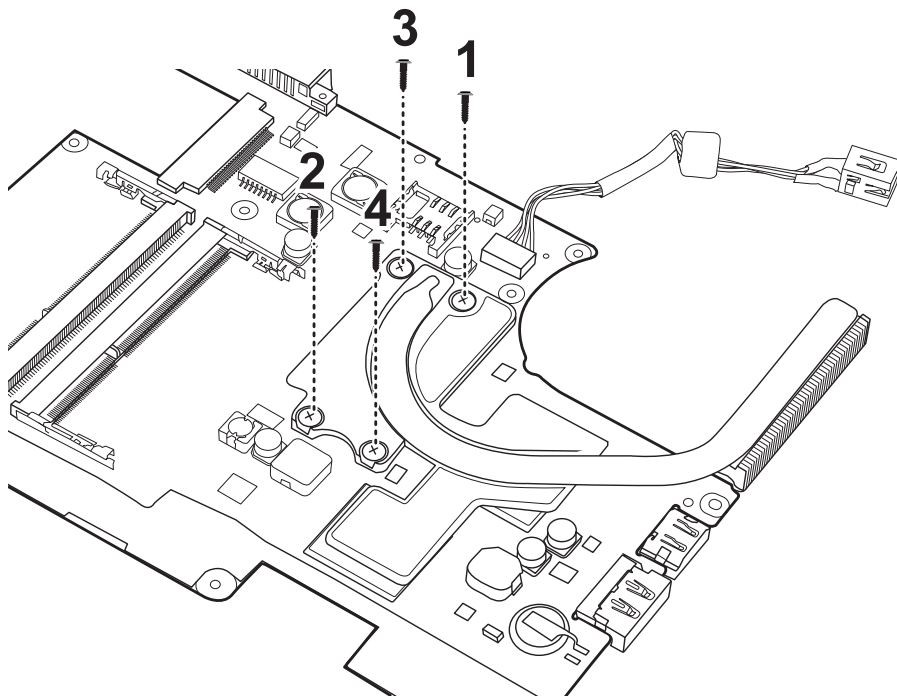


Figure 4.32 Removing the Thermal Module

### Installing the Thermal Module

Install the Thermal Module according to the following procedures.

1. Reapply Shinetsu 7762 grease on the thermal module as shown in Figure 4.33. If you use a new thermal module, remove any release papers from the thermal pads first.

#### 4 Replacement Procedures

Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

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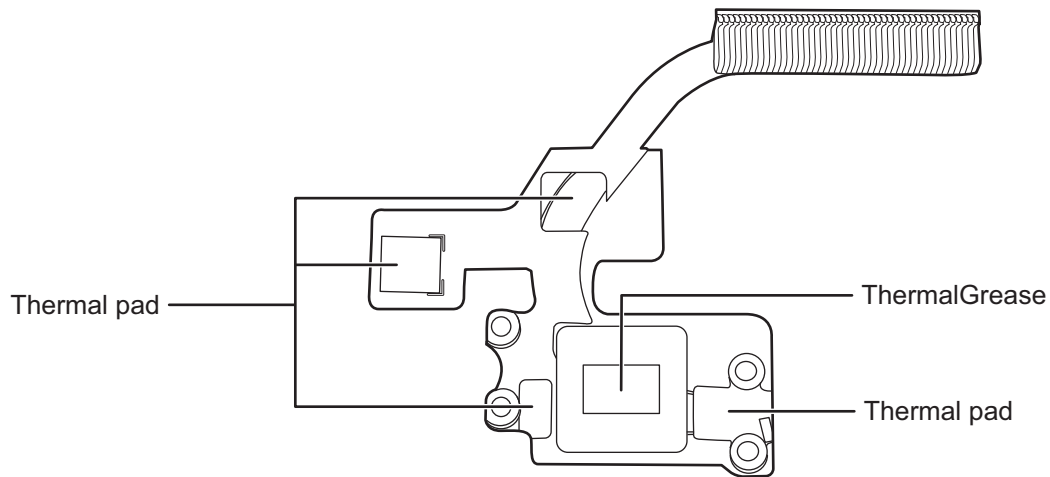


Figure 4.33 Reapply Shinetsu 7762 grease on the thermal module and remove any release papers

2. Seat the thermal module on the motherboard and secure it with four M2x4.5 screws according to the number sequence on the thermal module.

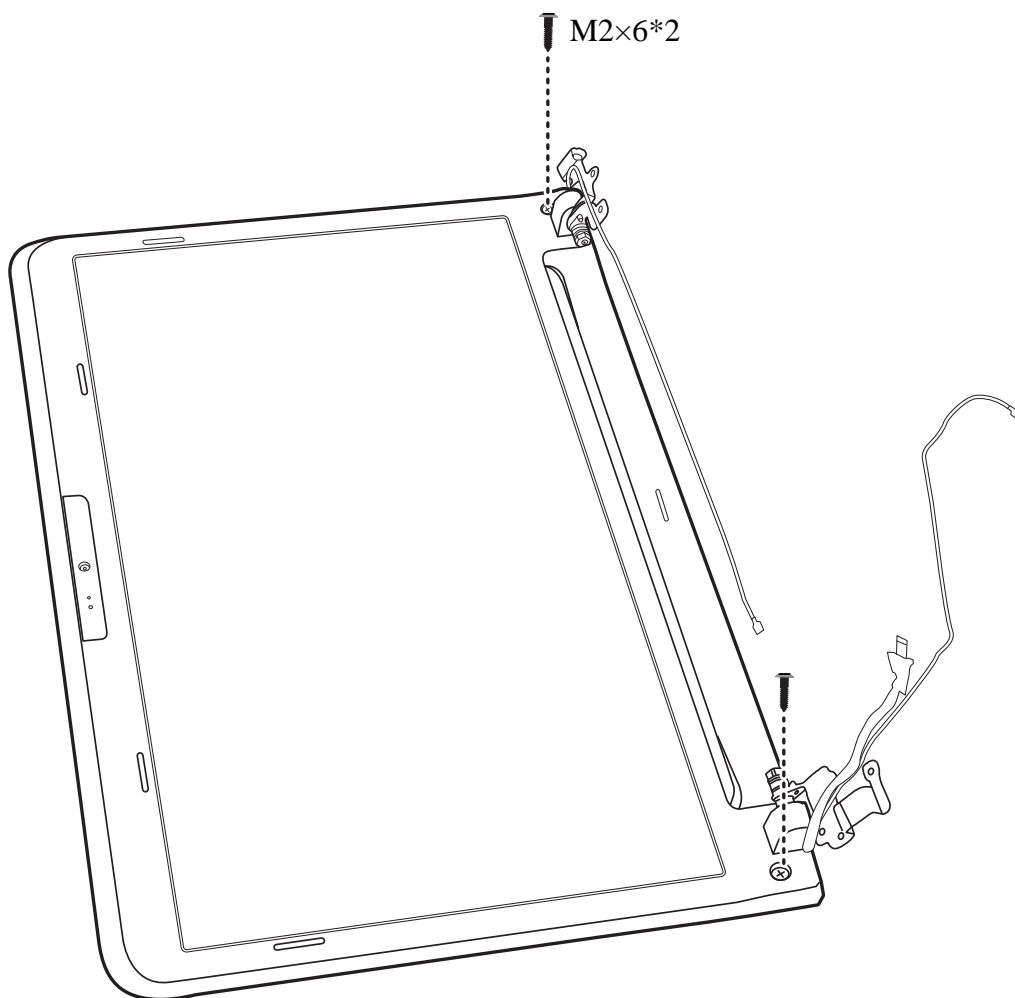
Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

## 4.22 LCD Bezel

### Removing the LCD Bezel

Remove the LCD bezel according to the following procedures and Figures 4.34, 4.35 and 4.36.

1. Remove the two screw rubbers on the LCD bezel.
2. Remove the two M2x6 screws.



*Figure 4.34 Removing two screws from LCD Bezel*

3. Pry up the left and right sides of the LCD bezel from the inner edges.
4. Pry up the LCD bezel, starting from the bottom edge and toward the top edge.

#### 4 Replacement Procedures

Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

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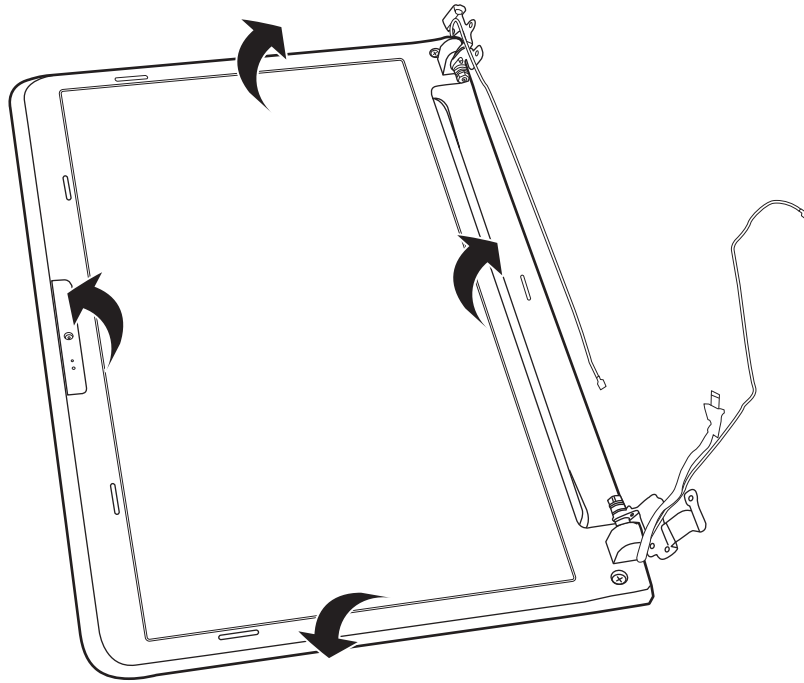


Figure 4.35 Prying up the LCD Bezel

5. Push up the hinge caps to free it from the LCD hinges and remove the LCD bezel.

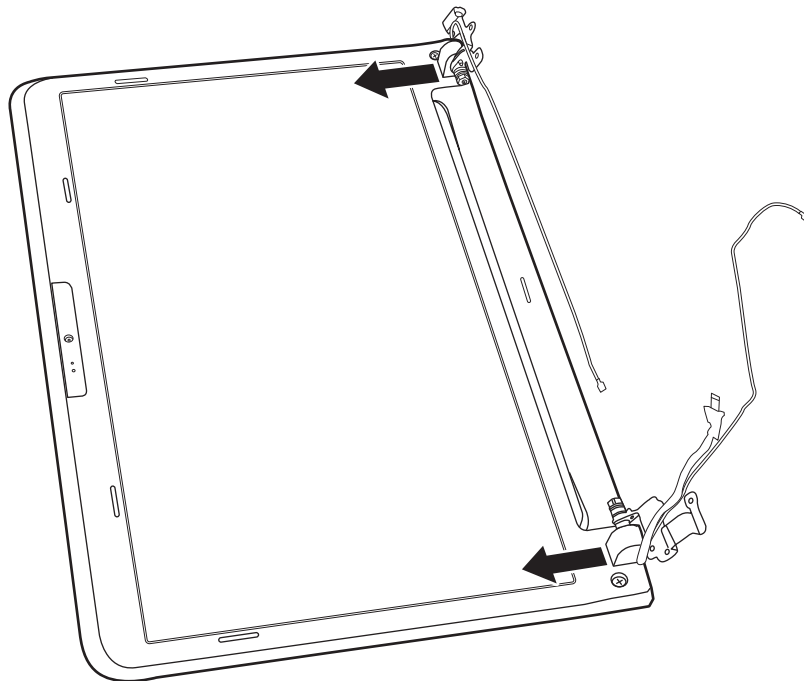


Figure 4.36 Removing the LCD Bezel



*Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.*

## ***4 Replacement Procedures***

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### **Installing the LCD Bezel**

Install the LCD bezel according to the following procedures.

1. Place the LCD bezel on the LCD cover assembly. Make sure the hinge caps fit over the LCD hinges and the tabs on the back of the LCD bezel align with the slots in the LCD cover assembly.
2. Press down on the LCD bezel, starting from the bottom edge and toward the sides and top edge. Make sure the bezel clicks into place.
3. Secure the LCD bezel to the LCD cover assembly with two M2x6 screws.
4. Adhere the two screw rubbers to the screws.

## **4.23 LCD Module**

### **Removing the LCD Module**

Remove the LCD module according to the following procedures and Figures 4.37, 4.38, 4.39 and 4.40.

1. Remove the six M2x4 screws securing the LCD module to the LCD cover assembly.
2. Disconnect the cable from the camera module.

Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

#### 4 Replacement Procedures

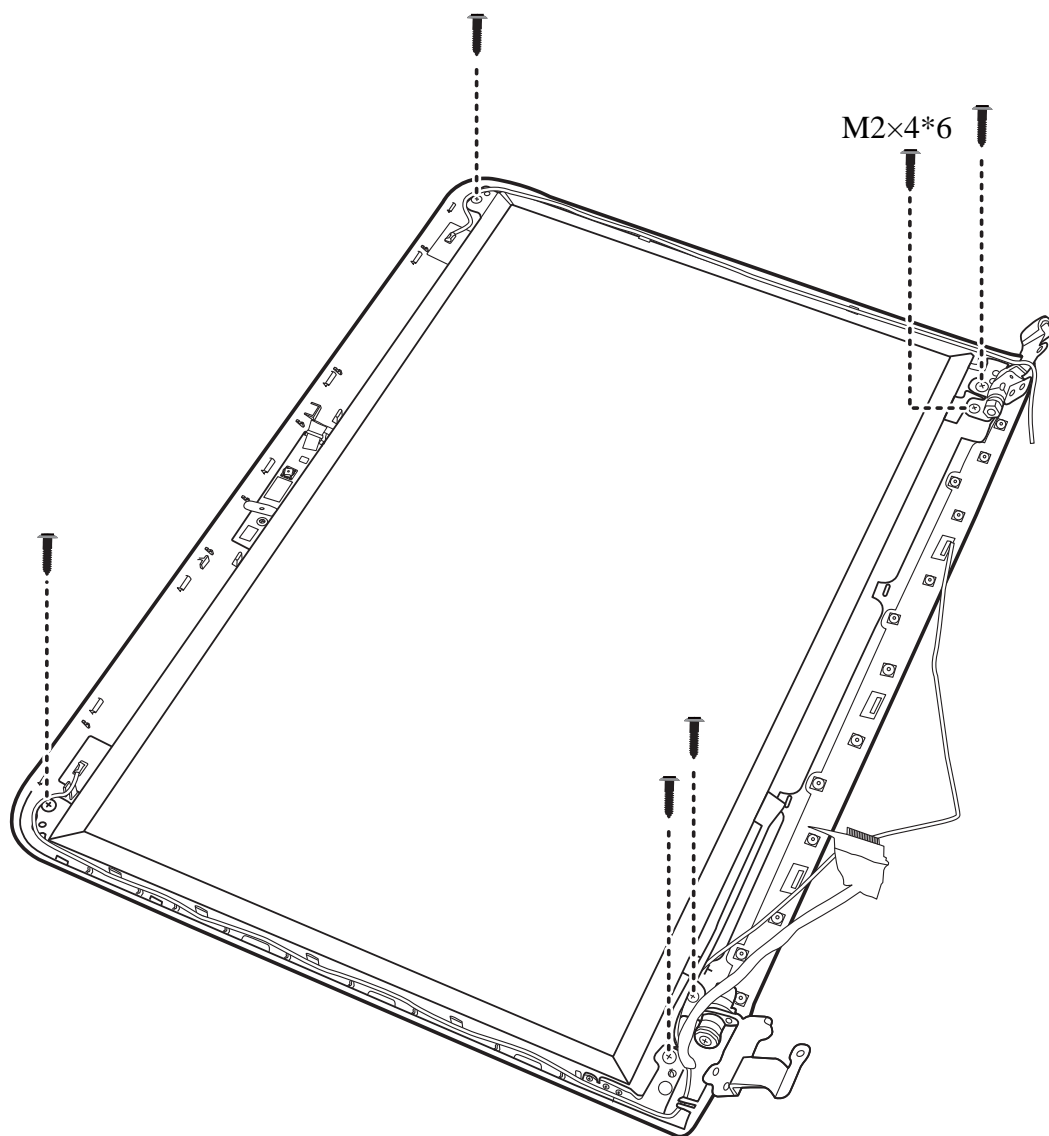


Figure 4.37 Removing the LCD Module from the LCD cover assembly

3. Disconnect the cable from the camera module.

#### 4 Replacement Procedures

Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

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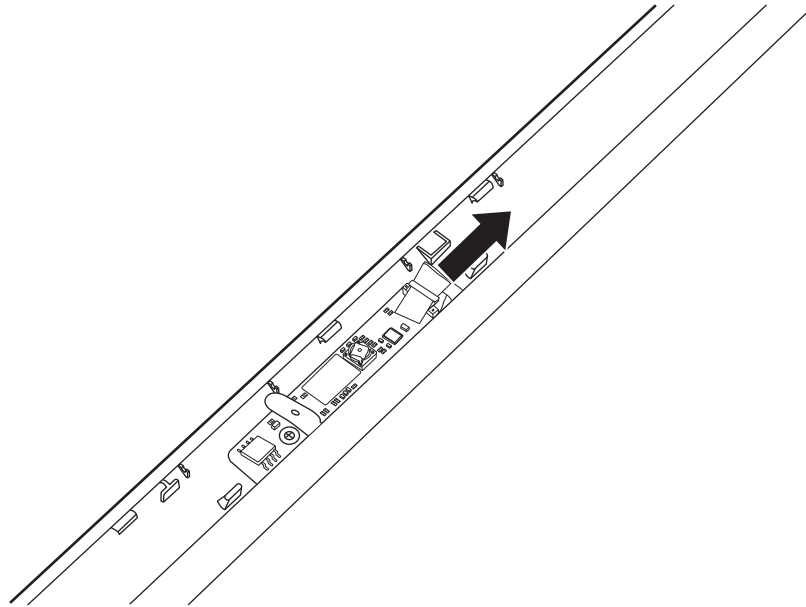


Figure 4.38 Disconnect the cable from the camera module.

4. Lift the LCD module out of the LCD cover assembly.
5. Remove the six M2x3 screws and then remove the LCD hinges.

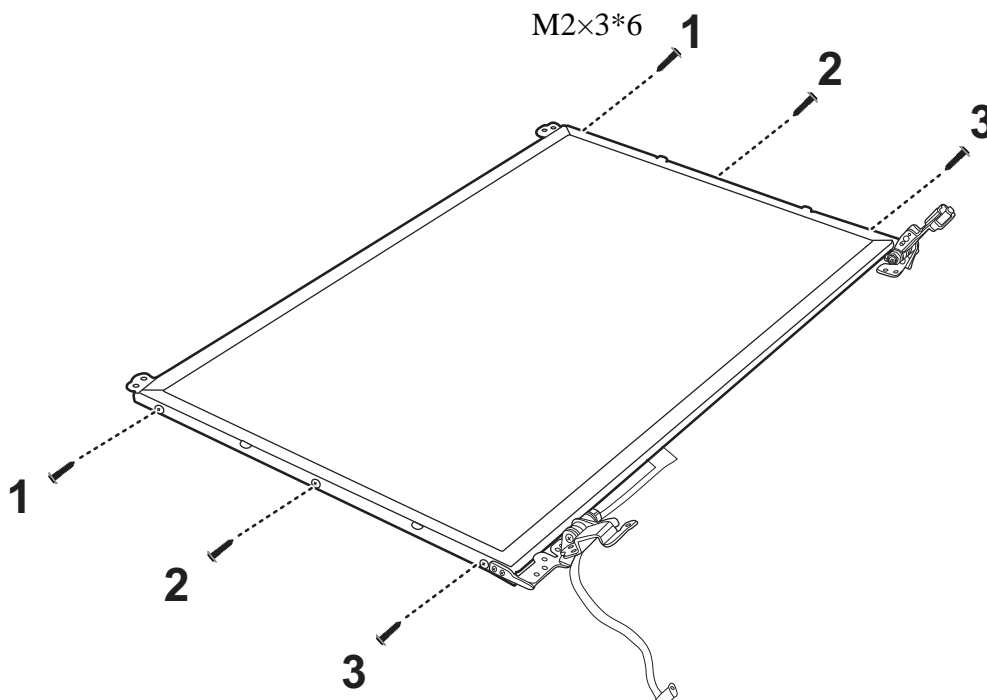
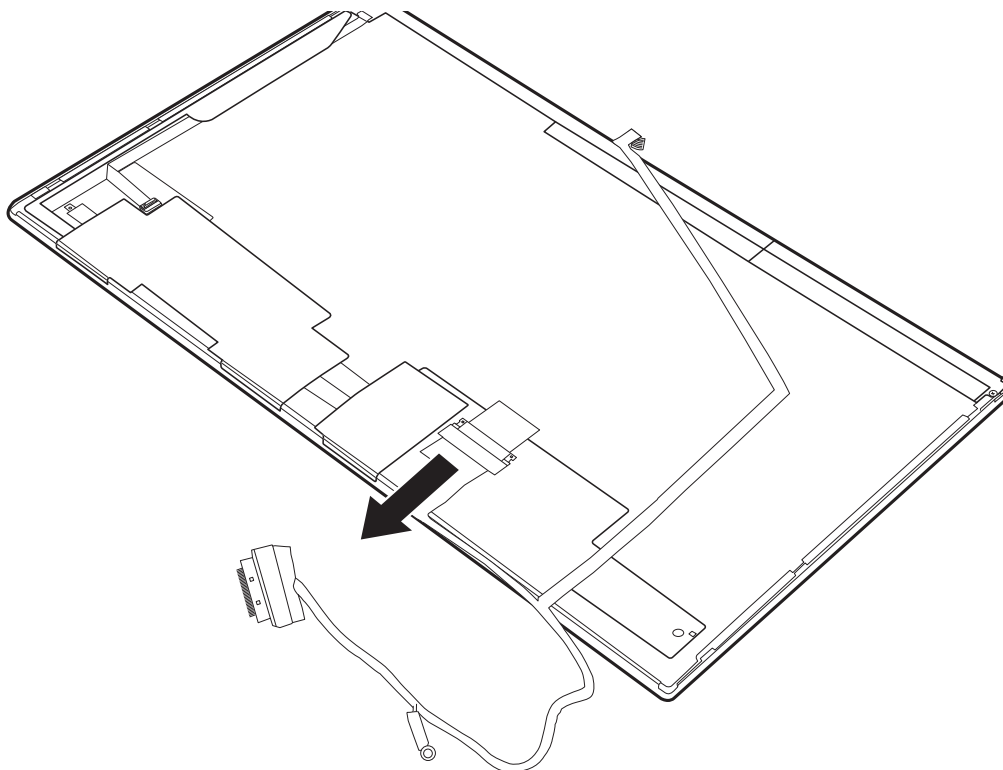


Figure 4.39 Removing the LCD Hinges

Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

#### **4 Replacement Procedures**

6. Turn the LCD module over and place it face down on a protective surface, such as a foam pad.
7. Disconnect the LVDS cable connector. Then remove the tape and peel the LVDS cable from the LCD panel.



*Figure 4.40 Removing the LVDS cable from the LCD panel*

**NOTE:**

*Integrated Circuits (ICs) are fragile. Use extreme care not to apply pressure to the ICs along the edges of the LCD module.*

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

*Tape around the LVDS cable must be carefully peeled away before disconnecting it from the LCD panel.*

### Installing the LCD Module

Install the inverter board according to the following procedures.

1. Connect the LVDS cable to the LCD panel connector.
2. Seat the LCD hinges in the correct position beside the LCD panel and secure it with six M2x3 screws according to the sequence indicated in Figure 4.41.

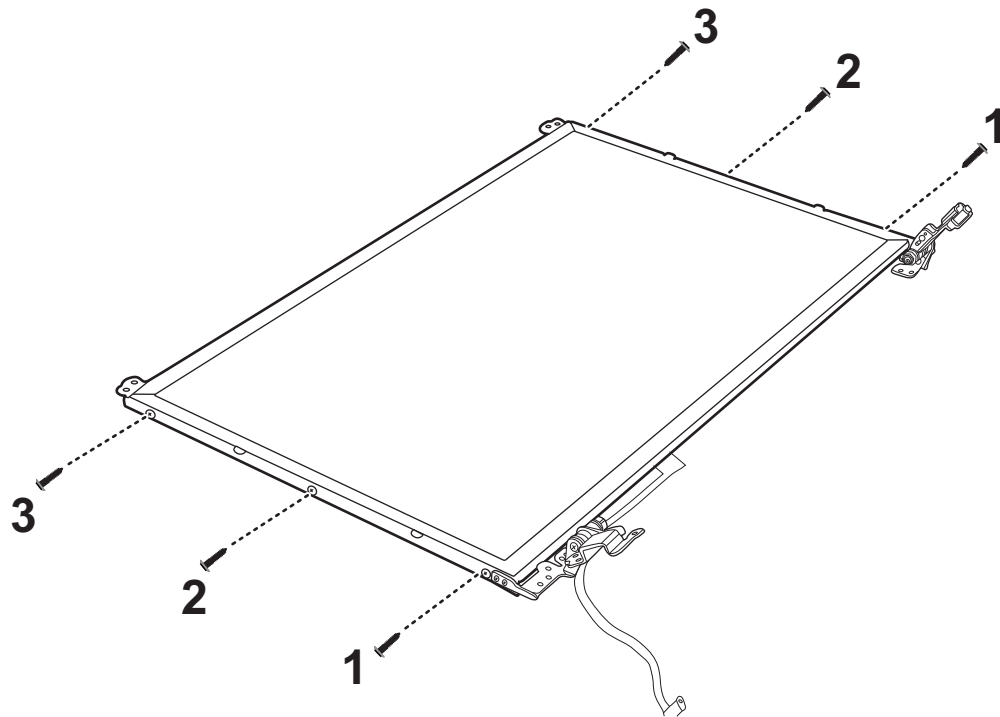


Figure 4.41 Installing the LCD Hinge Assembly

3. Seat the LCD module in the correct position in the LCD cover assembly. Secure it to the LCD cover assembly with six M2x4 screws.
4. Connect the cable to camera module.

**CAUTION:** Ensure the correct routing position of the LVDS cable so as not to compromise it during installation of the LCD module. Check the routing carefully and ensure that the LVDS cable is not pinched during installation.

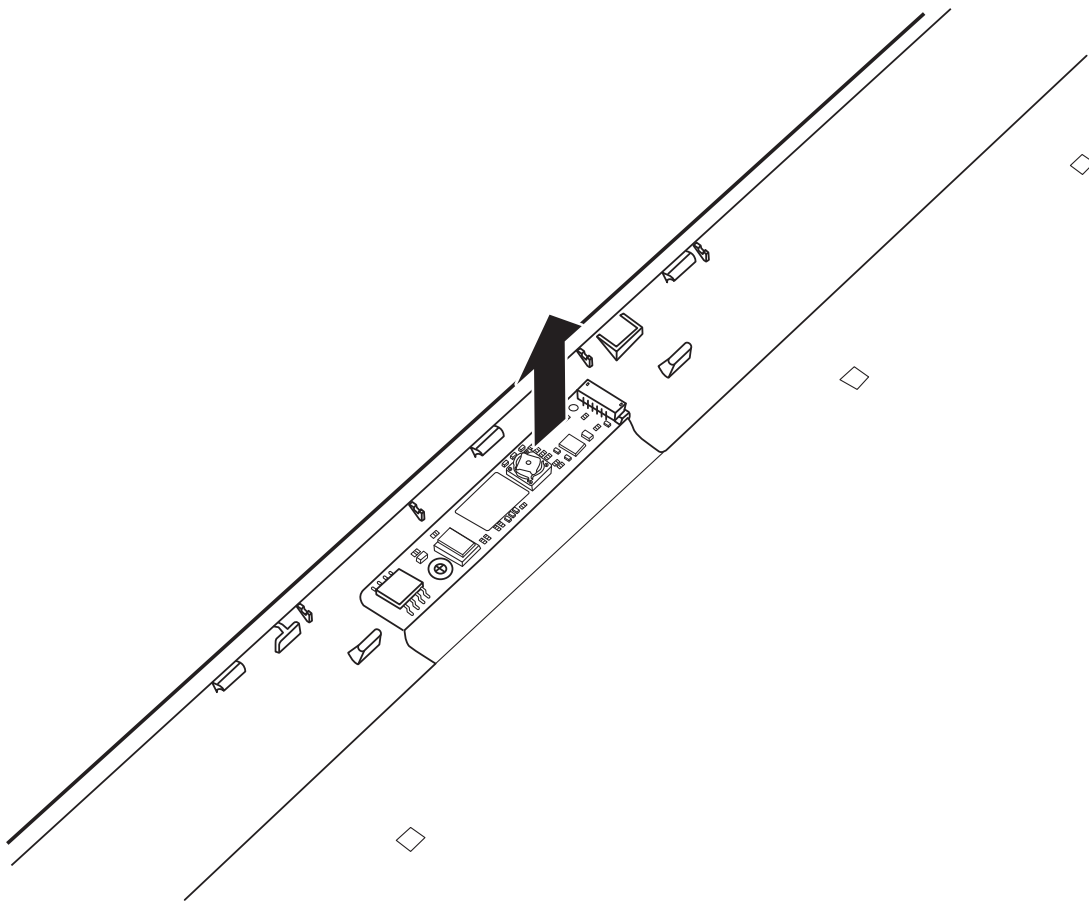
Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

## 4.24 Camera Module

### Removing the Camera Module

Remove the Camera Module according to the following procedures and Figure 4.42.

1. Peel the camera module off the LCD cover assembly.



*Figure 4.42 Removing the Camera Module*

### Installing the Camera Module

Install the Camera Module according to the following procedures.

#### **4 Replacement Procedures**

*Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.*

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1. Seat the camera module in the correct position on the LCD cover assembly. Press the camera module down to make sure it is adhered to the LCD cover assembly.



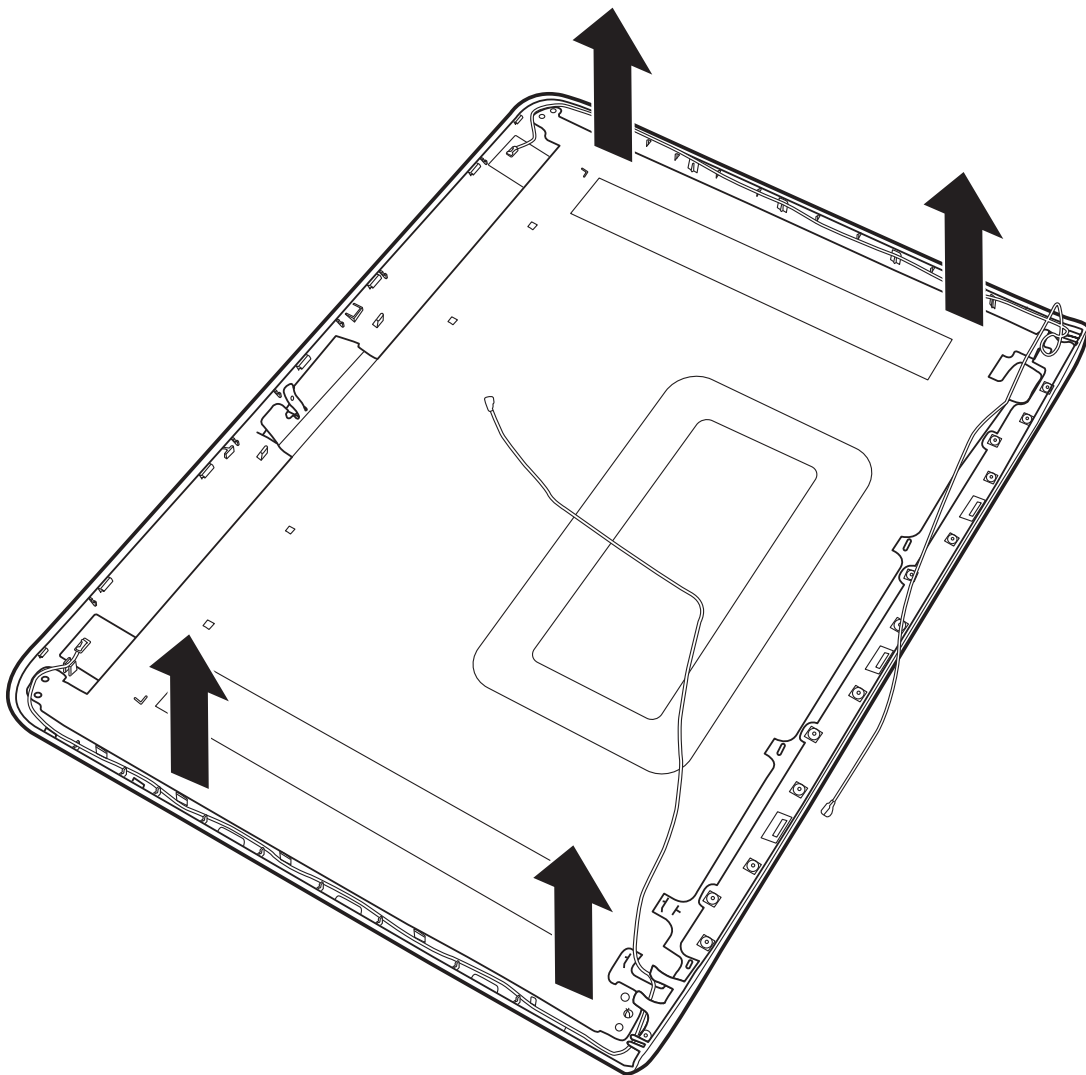
Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

## **4.25 Antennas for WLAN**

### **Removing the Antennas for WLAN**

Remove the Antennas for WLAN according to the following procedures and Figures 4.43 and 4.44.

1. Pull the antennas out from the cable routing channel on the LCD cover assembly.



*Figure 4.43 Removing the antennas from the LCD cover assembly*

#### 4 Replacement Procedures

Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.

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2. Peel off the foil adhered on antennas as indicated in Figure 4.44, and then peel off the antennas from the LCD cover assembly.

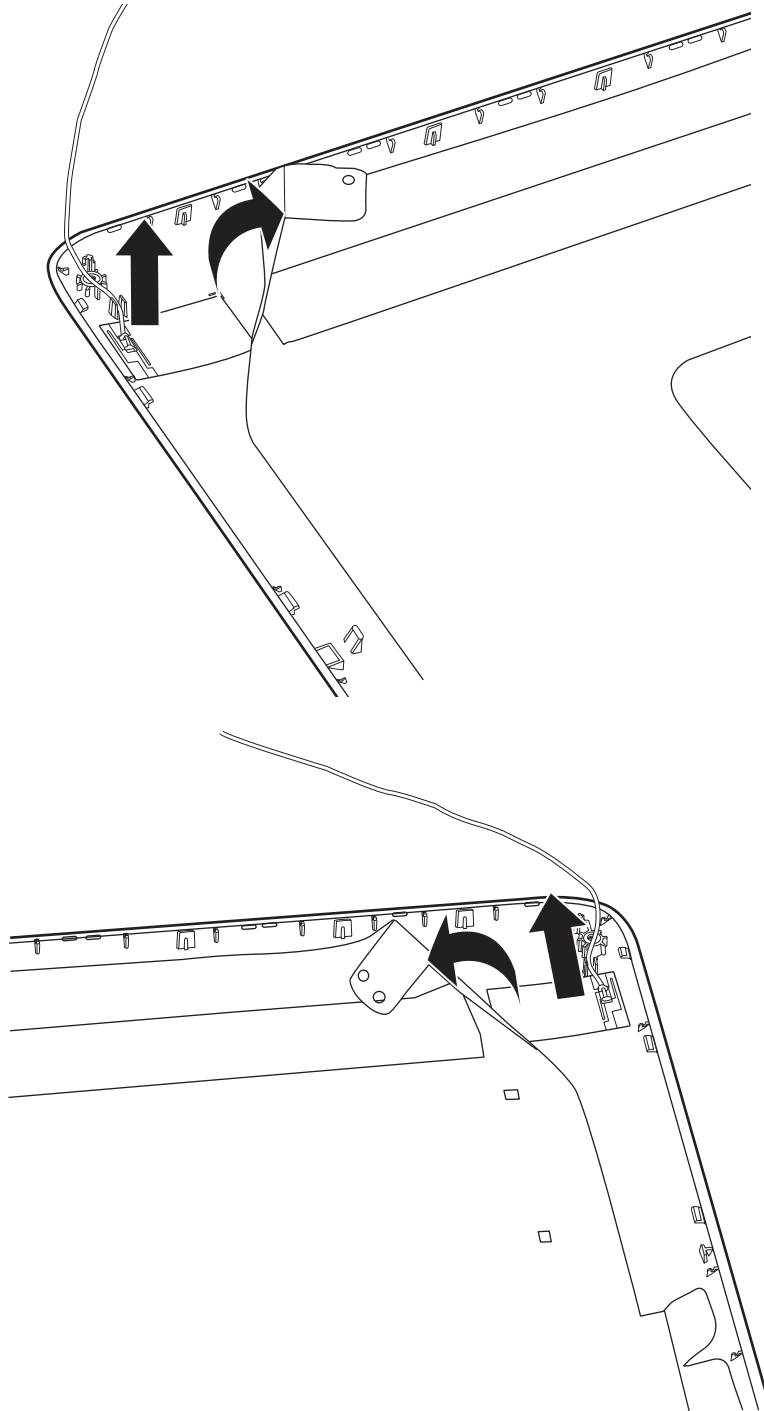


Figure 4.44 Peeling off the foil and removing the antennas

*Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll. Fehler! Verwenden Sie die Registerkarte 'Start', um 標題 2 dem Text zuzuweisen, der hier angezeigt werden soll.*

---

## ***4 Replacement Procedures***

### **Installing the Antennas for WLAN**

Install the Antennas for WLAN according to the following procedures.

1. Stick the antennas in the correct position on the LCD cover assembly. Notice that white antenna is on the left and black antenna is on the right side of the LCD cover assembly.
2. Route the antennas in the routing channel on the LCD cover assembly.
3. Adhere the foil on the LCD cover assembly to antennas.

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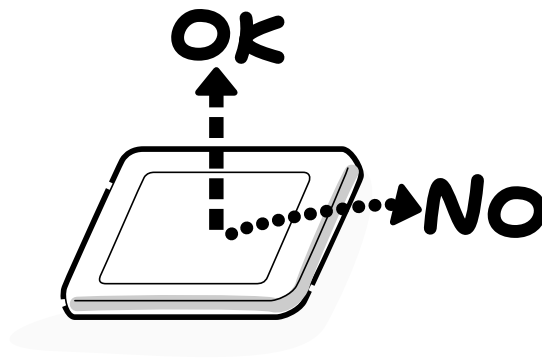
## Appendix A Handling the LCD Module

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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 it to prevent damaging it.

1. When installing the LCD module in the display assembly, make sure that you 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.

Note: The panel's polarized surface is easily scratched and damaged, so handle it carefully.



3. If the panel's surface gets dirty or moist, 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.

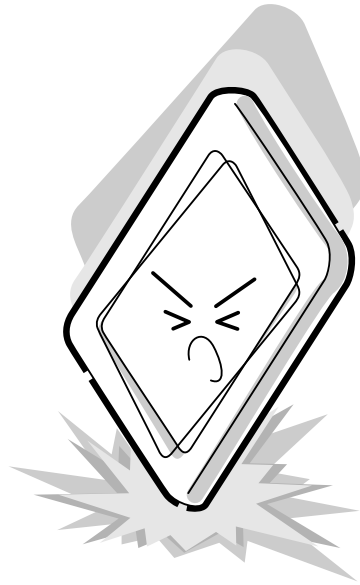
If the surface is very dirty, we recommend a CRT cleaning agent. Apply the agent to a soft cloth and then wipe the panel's surface. Do not apply cleanser directly to the panel.



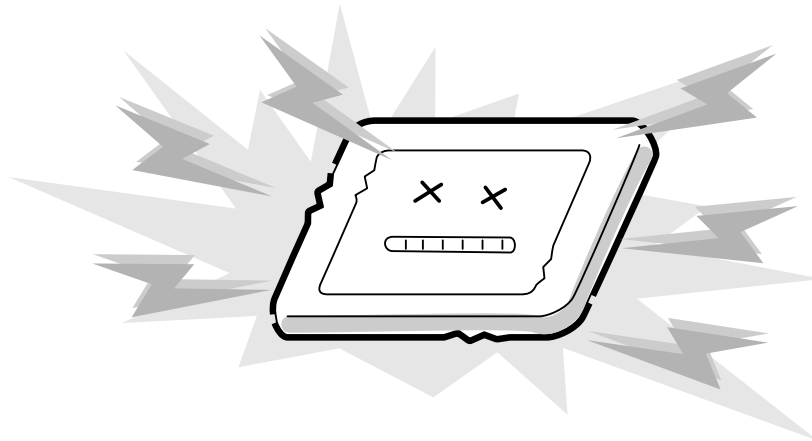
4. If water or other liquid is left on the panel's surface for a long period, it can change the screen's tint or stain it. Be sure to quickly wipe off any liquid.



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.



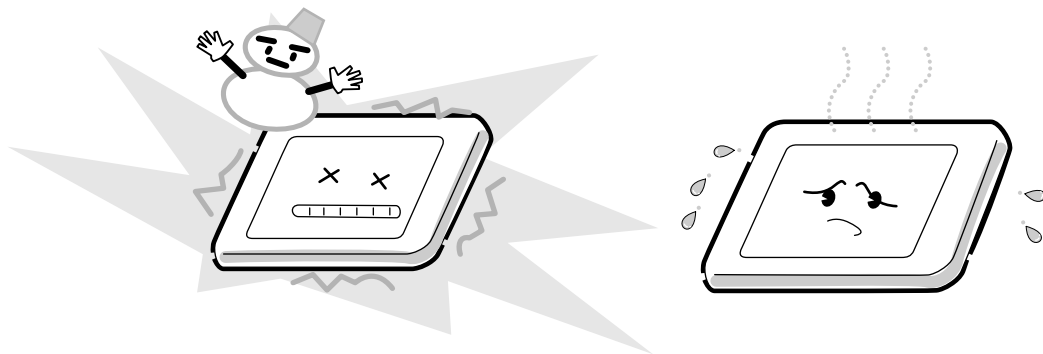
6. CMOS-LSI circuits are used in the module, so guard against damage from electrostatic discharge. Be sure to wear a wrist or ankle grounding device when handling the module.



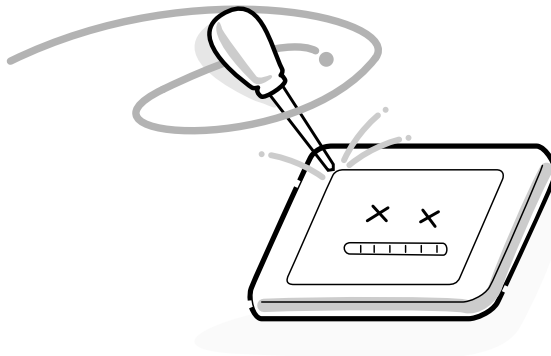
7. Do not expose the module to direct sunlight or strong ultraviolet rays for long periods.



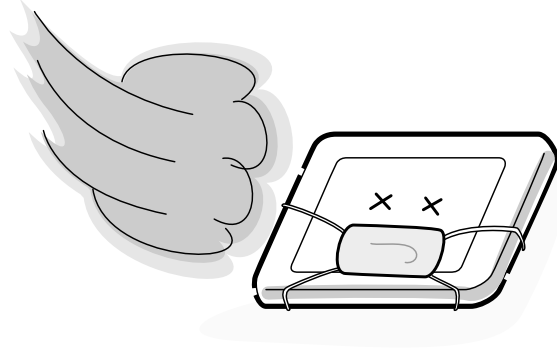
8. Do not store the module at temperatures below its specifications. Cold can cause the liquid crystals to freeze, lose their elasticity or otherwise suffer damage.



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 oxime). These materials can release gas that can damage the panel's polarization.



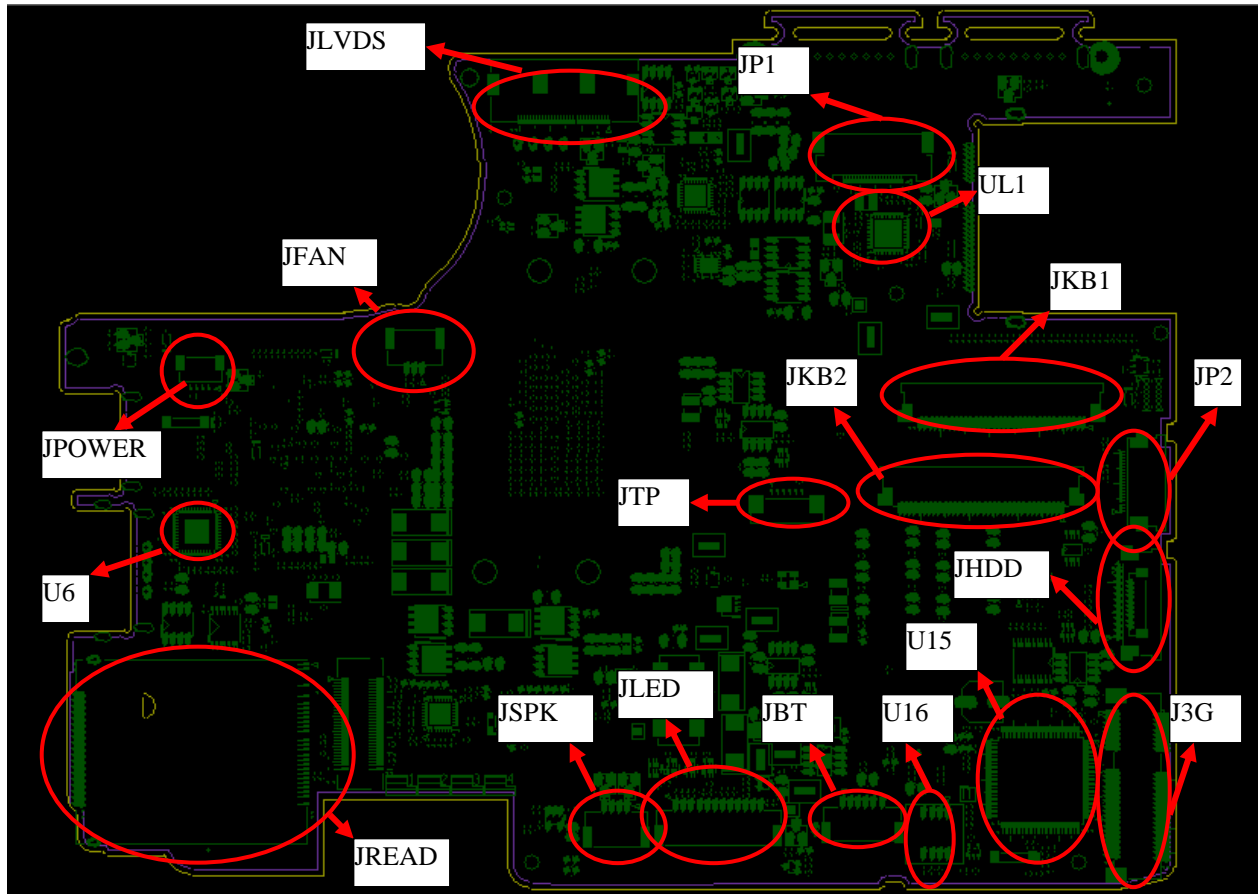


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## Appendix B Board Layout

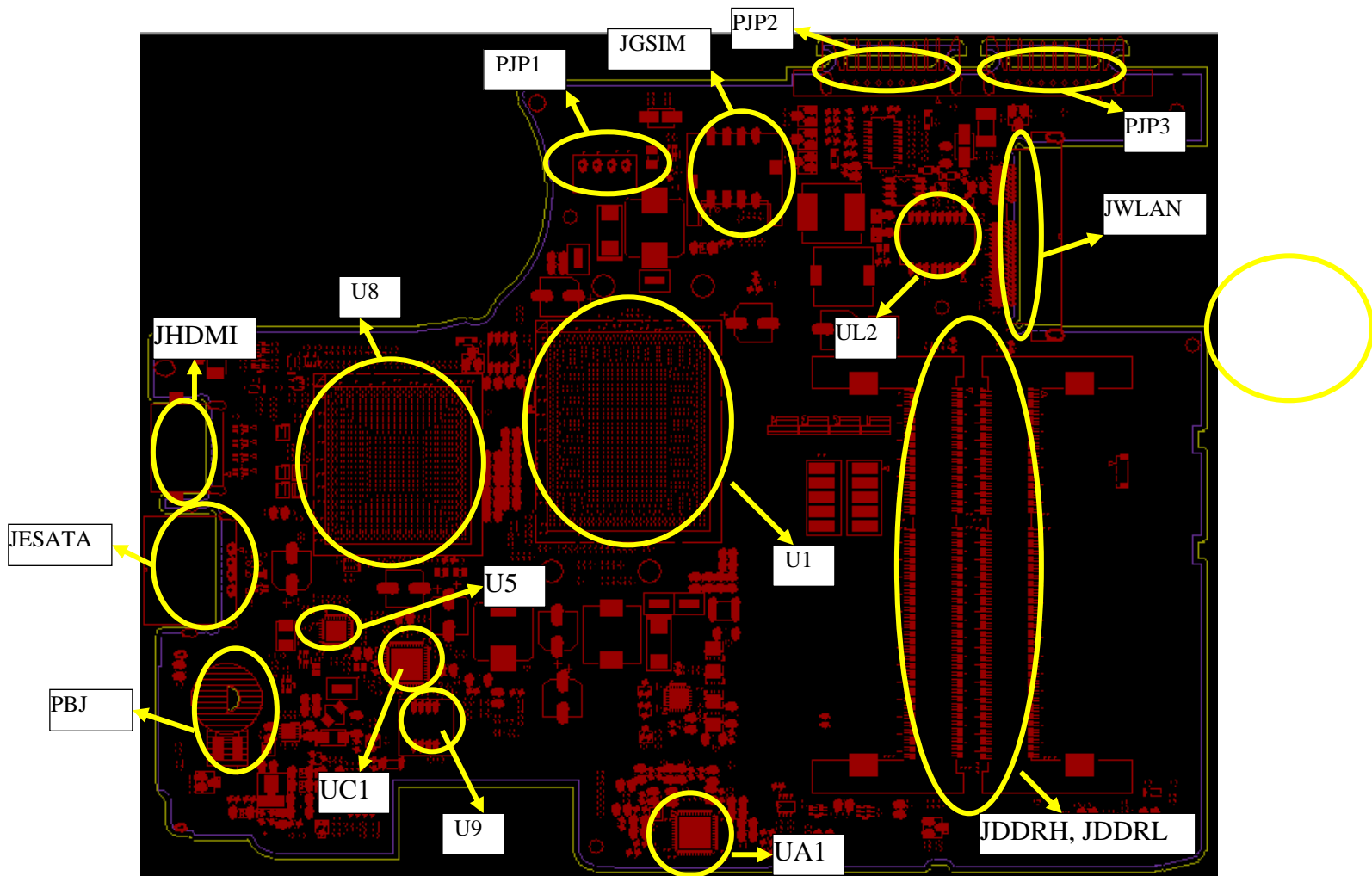
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### B.1 System Board Top View



*Figure B-1 System Board Layout (Top)*

## B.2 System Board Bottom View



*Figure B-2 System Board Layout (Bottom)*



*Table B-1 System Board ICs (top and bottom)*

<b>Number</b>	<b>Name</b>
U5	Clock Generator (RTM890N-631-VB-GRT)
U15	EC (KB926QFE0)
U9	BIOS ROM (4MB SPI)
U16	EC ROM (256KB SPI)
UA1	CODEC (ALC269Q-VB5-GR)
UC1	Card Reader Controller (JMB385-QGAZ0C)
UL1	LAN Controller (RTL8105E/RTL8111E -VB-GR)
UL2	LAN Transformer
U1	Arrandale BGA CPU
U8	Calpella PCH
U6	HDMI level shift IC (ASM1442)

*Table B-2 System Board Connectors (top and bottom)*

<b>Number</b>	<b>Name</b>
JFAN	Fan conn.
JLVDS	LVDS conn.
JP1	CRT & RJ45 conn.
JHDMI	HDMI conn.
JP2	USB & Audio/B conn.
JHDD	SATA HDD conn.
JESATA	ESATA/USB Combo conn.
JBT	Bluetooth conn.
JWLAN	WLAN conn.
JDDRH, JDDRL	DDRIII conn.
JKB1	11.6" Keyboard conn.
JKB2	13" Keyboard conn.
JREAD	5 in 1 Card Reader conn.
JSPK	Speaker conn.
JPOWER	Power/B conn.
J3G	3G conn.
JGSIM	SIM Card conn.
JTP	Touch pad conn.
PJP1	AC Adaptor conn.

PJP2	11.6" Battery conn.
JPJP3	13" Battery conn.
JLED	LED/B conn.
JBJ	RTC Battery.

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## Appendix C Pin Assignments

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### System Board

#### C.1 JFAN

Table C-1 FAN I/F pin assignments (3-pin)

Pin No.	Signal name	I/O	Pin No.	Signal Name	I/O
1	+FAN1		2	FAN_SPEED1	
3	GND	-			

#### C.2 JLVDS

Table C-2 LVDS I/F pin assignments (30-pin)

Pin No.	Signal name	I/O	Pin No.	Signal Name	I/O
1	+LCDVDD_R		2	+LCDVDD_R	
3	+3VS		4	LCD_EDID_CLK	O
5	LCD_EDID_DATA	O	6	LCD_TXOUT0-	O
7	LCD_TXOUT0+	O	8	GND	
9	LCD_TXOUT1-	O	10	LCD_TXOUT1+	O
11	LCD_TXOUT2-	O	12	LCD_TXOUT2+	O
13	GND		14	LCD_TXCLK-	O
15	LVDS_TXCLK+	O	16	GND	
17	GND		18	NA	
19	INVT_PWM_R	O	20	BKOFF#	O
21	NA		22	+LCD_INV	
23	+LCD_INV		24	NA	O
25	+3VS_LVDS_CAM	O	26	USB20_N11_R	O
27	USB20_P11_R	O	28	GND	O
29	INT_MIC_CLK	O	30	INT_MIC_DATA	O

### C.3 JP1

Table C-3 JP1 pin assignments (20-pin)

Pin No.	Signal name	I/O	Pin No.	Signal Name	I/O
1	RJ45_GND	-	2	RJ45_MIDI1+	-
3	RJ45_MIDI1-	-	4	GND	-
5	RJ45_MIDI0+	-	6	RJ45_MIDI0-	-
7	GND	-	8	UMA_CRT_CLK	-
9	UMA_CRT_DAT A	-	10	UMA_CRT_VSYN C	-
11	UMA_CRT_HSY NC	-	12	GND	-
13	CRT_R	O	14	CRT_G	O
15	CRT_B	O	16	GND	-
17	+3VS	O	18	+5VS	-
19	+5VS		20	+5VS	-

### C.4 JHDMI

Table C-4 HDMI I/F pin assignments (19-pin)

Pin No.	Signal name	I/O	Pin No.	Signal Name	I/O
1	HDMI_R_D2+	O	2	GND	-
3	HDMI_R_D2-	O	4	HDMI_R_D1+	O
5	GND	-	6	HDMI_R_D1-	O
7	HDMI_R_D0+	O	8	GND	-
9	HDMI_R_D0-	O	10	HDMI_R_CK+	O
11	GND	-	12	HDMI_R_CK-	O
13	HDMI_CEC	O	14	NC	-
15	HDMI_SCLK	O	16	HDMI_SDATA	O
17	GND	-	18	+HDMI_5V_OUT	O
19	HDMI_HPD	O			

### C.5 JHDD

Table C-5 HDD I/F pin assignments (12-pin)

Pin No.	Signal name	I/O	Pin No.	Signal Name	I/O
1	+5VS		2	+5VS	
3	+5VS		4	+5VS	
5	GND		6	SATA_PTX_C _DRX_P1	I/O
7	SATA_PTX_C _DRX_N1	I/O	8	GND	
9	SATA_PRX_D TX_N1	I/O	10	SATA_PRX_D TX_P1	I/O
11	GND		12	GND	

## C.6 JESATA

*Table C-7 eSATA/USB I/F pin assignments (11-pin)*

Pin No.	Signal name	I/O	Pin No.	Signal Name	I/O
1	+USB_VCCB		2	USB20_N3_RL	I/O
3	USB20_P3_RL	I/O	4	GND	
5	GND		6	SATA_PTX_C_DRX_P 5	I/O
7	SATA_PTX_C_DRX_N 5	I/O	8	GND	
9	SATA_PRX_DTX_N5	I/O	10	SATA_PRX_DTX_P5	I/O
11	GND				

## C.7 JBT

*Table C-8 Bluetooth Connector pin assignments (6-pin)*

Pin No.	Signal name		Pin No.	Signal Name	I/O
1	+BT_VCC	-	2	GND	-
3	USB20_P5	I/O	4	USB20_N5	I/O
5	BT_RESET#	O	6	BT_DET#	I

## C.8 JPB1

*Table C-9 Finger Printer Connector pin assignments (4-pin)*



Pin No.	Signal name	I/O	Pin No.	Signal Name	I/O
1	+3VALW	-	2	NA	
3	ON/OFFBTN#	O	4	GND	

## C.9 JWLAN

Table C-10 WLAN Connector pin assignments (52-pin)

Pin No.	Signal name	I/O	Pin No.	Signal Name	I/O
A1	NC		A2	+3V_WLAN	
A3	NC		A4	GND	
A5	BT_CTRL		A6	+1.5VS	
A7	CLKREQ_WLAN#		A8	LPC_FRAME#	
A9	GND		A10	LPC_AD3	
A11	CLK_WLAN#		A12	LPC_AD2	
A13	CLK_WLAN		A14	LPC_AD1	
A15	GND		A16	LPC_AD0	
A17	PLT_RST#		A18	GND	
A19	NC		A20	WL_OFF#	
A21	GND		A22	PLT_RST#	
A23	PCIE_PRX_WLAN TX_N2		A24	+3V_WLAN	
A25	PCIE_PRX_WLAN TX_P2		A26	GND	
A27	GND		A28	+1.5VS	
A29	GND		A30	PM_SMBCLK	
A31	PCIE_PTX_C_WL ANRX_N2		A32	PM_SMBDATA	
A33	PCIE_PTX_C_WL ANRX_P2		A34	GND	
A35	GND		A36	USB20_N13	
A37	GND		A38	USB20_P13	
A39	+3V_WLAN		A40	GND	
A41	+3V_WLAN		A42	LED_WIMAX#	
A43	GND		A44	NC	
A45	NC		A46	NC	
A47	NC		A48	+1.5VS	
A49	E51_TXD		A50	GND	
A51	E51_RXD		A52	+3V_WLAN	

## C.10 J3G

Table C-11 3G Connector pin assignments (52-pin)

Pin No.	Signal name	I/O	Pin No.	Signal Name	I/O
A1	NC		A2	+3VS	
A3	NC		A4	GND	
A5	NC		A6		
A7	CLKREQ_UWB#		A8	+UIM_PWR	
A9	GND		A10	UIM_DATA	
A11	CLK_WWAN#		A12	UIM_CLK	
A13	CLK_WWAN		A14	UIM_RESET	
A15	GND		A16	UIM_VPP	
A17	NC		A18	GND	
A19	NC		A20	3G_OFF#	
A21	GND		A22	PLT_RST#	
A23	PCIE_PRX_WWA NTX_N4		A24	+3VS	
A25	PCIE_PRX_WWA NTX_P4		A26	GND	
A27	GND		A28	NC	
A29	GND		A30	PM_SMBCLK	
A31	PCIE_PTX_C_WW ANRX_N4		A32	PM_SMBDATA	
A33	PCIE_PTX_C_WW ANRX_P4		A34	GND	
A35	GND		A36	USB20_N12	
A37	GND		A38	USB20_P12	
A39	+3VS		A40	GND	
A41	+3VS		A42	LED_WIMAX#	
A43	GND		A44	NC	
A45	NC		A46	NC	
A47	NC		A48	NC	
A49	NC		A50	GND	
A51	NC		A52	+3VS	

## C.11 JLED

Table C-14 LED/B Connector pin assignments (12-pin)

Pin No.	Signal name	I/O	Pin No.	Signal Name	I/O
1	+5VALW		2	+5VS	
3	DC_IN		4	PWR_ON_LED#	
5	PWR_SUSP_LED#		6	BATT_FULL_LED#	
7	BATT_LOW_LED#		8	HDD_LED	
9	WIMAX_LED		10	WL_BT_LED#	
11	MEDIA_LED		12	GND	

## C.12 JDDR1

Table C-15 SODIMM I/F pin assignments (204-PIN)

Pin No.	Signal name	I/O	Pin No.	Signal Name	I/O
1	+VREF_DQA	-	2	GND	-
3	GND	-	4	DDR_A_D4	I/O
5	DDR_A_D0	I/O	6	DDR_A_D5	I/O
7	DDR_A_D1	I/O	8	GND	-
9	GND	-	10	DDR_A_DQS#0	O
11	DDR_A_DM0	O	12	DDR_A_DQS0	O
13	GND	-	14	GND	-
15	DDR_A_D2	I/O	16	DDR_A_D6	I/O
17	DDR_A_D3	I/O	18	DDR_A_D7	I/O
19	GND	-	20	GND	-
21	DDR_A_D8	I/O	22	DDR_A_D12	I/O
23	DDR_A_D9	I/O	24	DDR_A_D13	I/O
25	GND	-	26	GND	-
27	DDR_A_DQS#1	O	28	DDR_A_DM1	O
29	DDR_A_DQS1	O	30	SM_DRAMRST#	O
31	GND	-	32	GND	-
33	DDR_A_D10	I/O	34	DDR_A_D14	I/O
35	DDR_A_D11	I/O	36	DDR_A_D15	I/O
37	GND	-	38	GND	-

39	DDR_A_D16	I/O	40	DDR_A_D20	I/O
41	DDR_A_D17	I/O	42	DDR_A_D21	I/O
43	GND	-	44	GND	-
45	DDR_A_DQS#2	O	46	DDR_A_DM2	O
47	DDR_A_DQS2	O	48	GND	-
49	GND	-	50	DDR_A_D22	I/O
51	DDR_A_D18	I/O	52	DDR_A_D23	I/O
53	DDR_A_D19	I/O	54	GND	-
55	GND	-	56	DDR_A_D28	I/O
57	DDR_A_D24	I/O	58	DDR_A_D29	I/O
59	DDR_A_D25	I/O	60	GND	-
61	GND	-	62	DDR_A_DQS#3	O
63	DDR_A_DM3	O	64	DDR_A_DQS3	O
65	GND	-	66	GND	-
67	DDR_A_D26	I/O	68	DDR_A_D30	I/O
69	DDR_A_D27	I/O	70	DDR_A_D31	I/O
71	GND	-	72	GND	-
73	DDRA_CKE0	O	74	DDRA_CKE1	I/O
75	+1.5V	-	76	+1.5V	-
77	NC	-	78	DDR_A_MA15	O
79	DDR_A_BS2	O	80	DDR_A_MA14	O
81	+1.5V	-	82	+1.5V	-
83	DDR_A_MA12	O	84	DDR_A_MA11	O
85	DDR_A_MA9	O	86	DDR_A_MA7	O
87	+1.5V	-	88	+1.5V	-
89	DDR_A_MA8	O	90	DDR_A_MA6	O
91	DDR_A_MA5	O	92	DDR_A_MA4	O
93	+1.5V	-	94	+1.5V	-
95	DDR_A_MA3	O	96	DDR_A_MA2	O
97	DDR_A_MA1	O	98	DDR_A_MA0	O
99	+1.5V	-	100	+1.5V	-
101	DDRA_CLK0	O	102	DDRA_CLK1	O
103	DDRA_CLK0#	O	104	DDRA_CLK1#	O
105	+1.5V	-	106	+1.5V	-
107	DDR_A_MA10	O	108	DDR_A_BS1	O
109	DDR_A_BS0	O	110	DDR_A_RAS#	O
111	+1.5V	-	112	+1.5V	-
113	DDR_A_WE#	O	114	DDRA_SCS0#	O

115	DDR_A_CAS#	O	116	DDRA_ODT0	O
117	+1.5V	-	118	+1.5V	-
119	DDR_A_MA13	O	120	DDRA_ODT1	O
121	DDRA_SCS1#	O	122	NC	-
123	+1.5V	-	124	+1.5V	-
125	NC	-	126	+DDR_VREF_CA_DIMMA	-
127	GND	-	128	GND	-
129	DDR_A_D32	I/O	130	DDR_A_D36	I/O
131	DDR_A_D33	I/O	132	DDR_A_D37	I/O
133	GND	-	134	GND	-
135	DDR_A_DQS#4	O	136	DDR_A_DM4	O
137	DDR_A_DQS4	O	138	GND	-
139	GND	-	140	DDR_A_D38	
141	DDR_A_D34	I/O	142	DDR_A_D39	I/O
143	DDR_A_D35	I/O	144	GND	-
145	GND	-	146	DDR_A_D44	I/O
147	DDR_A_D40	I/O	148	DDR_A_D45	I/O
149	DDR_A_D41	I/O	150	GND	-
151	GND	-	152	DDR_A_DQS#5	O
153	DDR_A_DM5	O	154	DDR_A_DQS5	O
155	GND	-	156	GND	-
157	DDR_A_D42	I/O	158	DDR_A_D46	I/O
159	DDR_A_D43	I/O	160	DDR_A_D47	I/O
161	GND	-	162	GND	-
163	DDR_A_D43	I/O	164	DDR_A_D52	I/O
165	DDR_A_D49	I/O	166	DDR_A_D53	I/O
167	GND	-	168	GND	-
169	DDR_A_DQS#6	O	170	DDR_A_D53	I/O
171	DDR_A_DQS6	O	172	GND	-
173	GND	-	174	DDR_A_D54	I/O
175	DDR_A_D50	I/O	176	DDR_A_D55	I/O
177	DDR_A_D51	I/O	178	GND	-
179	GND	-	180	DDR_A_D60	I/O
181	DDR_A_D56	I/O	182	DDR_A_D61	I/O
183	DDR_A_D57	I/O	184	GND	-
185	GND	-	186	DDR_A_DQS#7	O
187	DDR_A_DM7	O	188	DDR_A_DQS7	O

189	GND	-	190	GND	-
191	DDR_A_D58	I/O	192	DDR_A_D62	I/O
193	DDR_A_D59	I/O	194	DDR_A_D63	I/O
195	GND	-	196	GND	-
197	GND	-	198	PM_EXTTTS#	O
199	+3VS	-	200	PM_SMBDATA	I/O
201	GND	-	202	PM_SMBCLK	I/O
203	+0.75VS	-	204	+0.75VS	-

## C.13 JDDRH1

Table C-16 SODIMM I/F pin assignments (204-PIN)

Pin No.	Signal name	I/O	Pin No.	Signal Name	I/O
1	+VREF_DQB	-	2	GND	-
3	GND	-	4	DDR_B_D4	I/O
5	DDR_B_D0	I/O	6	DDR_B_D5	I/O
7	DDR_B_D1	I/O	8	GND	-
9	GND	-	10	DDR_B_DQS#0	O
11	DDR_B_DM0	O	12	DDR_B_DQS0	O
13	GND	-	14	GND	-
15	DDR_B_D2	I/O	16	DDR_B_D6	I/O
17	DDR_B_D3	I/O	18	DDR_B_D7	I/O
19	GND	-	20	GND	-
21	DDR_B_D8	I/O	22	DDR_B_D12	I/O
23	DDR_B_D9	I/O	24	DDR_B_D13	I/O
25	GND	-	26	GND	-
27	DDR_B_DQS#1	O	28	DDR_B_DM1	O
29	DDR_B_DQS1	O	30	SM_DRAMRST#	O
31	GND	-	32	GND	-
33	DDR_B_D10	I/O	34	DDR_B_D14	I/O
35	DDR_B_D11	I/O	36	DDR_B_D15	I/O
37	GND	-	38	GND	-
39	DDR_B_D16	I/O	40	DDR_B_D20	I/O
41	DDR_B_D17	I/O	42	DDR_B_D21	I/O
43	GND	-	44	GND	-
45	DDR_B_DQS#2	O	46	DDR_B_DM2	O

47	DDR_B_DQS2	O	48	GND	-
49	GND	-	50	DDR_B_D22	I/O
51	DDR_B_D18	I/O	52	DDR_B_D23	I/O
53	DDR_B_D19	I/O	54	GND	-
55	GND	-	56	DDR_B_D28	I/O
57	DDR_B_D24	I/O	58	DDR_B_D29	I/O
59	DDR_B_D25	I/O	60	GND	-
61	GND	-	62	DDR_B_DQS#3	O
63	DDR_B_DM3	O	64	DDR_B_DQS3	O
65	GND	-	66	GND	-
67	DDR_B_D26	I/O	68	DDR_B_D30	I/O
69	DDR_B_D27	I/O	70	DDR_B_D31	I/O
71	GND	-	72	GND	-
73	DDRB_CKE0	O	74	DDRB_CKE1	I/O
75	+1.5V	-	76	+1.5V	-
77	NC	-	78	DDR_B_MA15	O
79	DDR_B_BS2	O	80	DDR_B_MA14	O
81	+1.5V	-	82	+1.5V	-
83	DDR_B_MA12	O	84	DDR_B_MA11	O
85	DDR_B_MA9	O	86	DDR_B_MA7	O
87	+1.5V	-	88	+1.5V	-
89	DDR_B_MA8	O	90	DDR_B_MA6	O
91	DDR_B_MA5	O	92	DDR_B_MA4	O
93	+1.5V	-	94	+1.5V	-
95	DDR_B_MA3	O	96	DDR_B_MA2	O
97	DDR_B_MA1	O	98	DDR_B_MA0	O
99	+1.5V	-	100	+1.5V	-
101	DDRB_CLK0	O	102	DDRB_CLK1	O
103	DDRB_CLK0#	O	104	DDRB_CLK1#	O
105	+1.5V	-	106	+1.5V	-
107	DDR_B_MA10	O	108	DDR_B_BS1	O
109	DDR_B_BS0	O	110	DDR_B_RAS#	O
111	+1.5V	-	112	+1.5V	-
113	DDR_B_WE#	O	114	DDRB_SCS0#	O
115	DDR_B_CAS#	O	116	DDRB_ODT0	O
117	+1.5V	-	118	+1.5V	-
119	DDR_B_MA13	O	120	DDRB_ODT1	O
121	DDRB_SCS1#	O	122	NC	-

123	+1.5V	-	124	+1.5V	-
125	NC	-	126	+DDR_VREF_CA_DIMMB	-
127	GND	-	128	GND	-
129	DDR_B_D32	I/O	130	DDR_B_D36	I/O
131	DDR_B_D33	I/O	132	DDR_B_D37	I/O
133	GND	-	134	GND	-
135	DDR_B_DQS#4	O	136	DDR_B_DM4	O
137	DDR_B_DQS4	O	138	GND	-
139	GND	-	140	DDR_B_D38	-
141	DDR_B_D34	I/O	142	DDR_B_D39	I/O
143	DDR_B_D35	I/O	144	GND	-
145	GND	-	146	DDR_B_D44	I/O
147	DDR_B_D40	I/O	148	DDR_B_D45	I/O
149	DDR_B_D41	I/O	150	GND	-
151	GND	-	152	DDR_B_DQS#5	O
153	DDR_B_DM5	O	154	DDR_B_DQS5	O
155	GND	-	156	GND	-
157	DDR_B_D42	I/O	158	DDR_B_D46	I/O
159	DDR_B_D43	I/O	160	DDR_B_D47	I/O
161	GND	-	162	GND	-
163	DDR_B_D43	I/O	164	DDR_B_D52	I/O
165	DDR_B_D49	I/O	166	DDR_B_D53	I/O
167	GND	-	168	GND	-
169	DDR_B_DQS#6	O	170	DDR_B_D53	I/O
171	DDR_B_DQS6	O	172	GND	-
173	GND	-	174	DDR_B_D54	I/O
175	DDR_B_D50	I/O	176	DDR_B_D55	I/O
177	DDR_B_D51	I/O	178	GND	-
179	GND	-	180	DDR_B_D60	I/O
181	DDR_B_D56	I/O	182	DDR_B_D61	I/O
183	DDR_B_D57	I/O	184	GND	-
185	GND	-	186	DDR_B_DQS#7	O
187	DDR_B_DM7	O	188	DDR_B_DQS7	O
189	GND	-	190	GND	-
191	DDR_B_D58	I/O	192	DDR_B_D62	I/O
193	DDR_B_D59	I/O	194	DDR_B_D63	I/O
195	GND	-	196	GND	-



197	GND	-	198	PM_EXTTS#	O
199	+3VS	-	200	PM_SMBDATA	I/O
201	+3VS	-	202	PM_SMBCLK	I/O
203	+0.75VS	-	204	+0.75VS	-

## C.14 JKB

*Table C-17 Keyboard Connector pin assignments (34-pin)*

Pin No.	Signal name	I/O	Pin No.	Signal Name	I/O
1	NUM_LED#		2	CURS_LED#	
3	CAPS_LED#		4	JKB4	
5	KSI1		6	KSI6	
7	KSI5		8	KSI0	
9	KSI4		10	KSI3	
11	KSI2		12	KSI7	
13	KSO15		14	KSO12	
15	KSO11		16	KSO10	
17	KSO9		18	KSO8	
19	KSO13		20	KSO7	
21	KSO6		22	KSO14	
23	KSO5		24	KSO3	
25	KSO4		26	KSO0	
27	KSO1		28	KSO2	
29	NC		30	NC	
31	KSO17		32	NC	
33	KSO16		34	JKB34	

## C.15 JP2

*Table C-18 USB & Audio/B Connector pin assignments (20-pin)*

Pin No.	Signal name	I/O	Pin No.	Signal Name	I/O
1	+USB_VCCA		2	+USB_VCCA	
3	+USB_VCCA		4	+USB_VCCA	
5	+USB_VCCA		6	GND	
7	USB20_P1		8	USB20_N1	

9	GND		10	USB20_P0	
11	USB20_N0		12	GND	
13	NBA_PLUG		14	MIC_SENSE	
15	GNDA		16	HP_R	
17	HP_L		18	MIC1_R	
19	MIC1_L		20	GNDA	

## C.16 JREAD

Table C-21 CARD READER connector pin assignments (46-pin)

Pin No.	Signal name	I/O	Pin No.	Signal Name	I/O
1	SD_CD#		2	XDWP#_SDWP#	
3	XD_SD_MS_D1		4	XD_SD_MS_D0	
5	XD_SD_MMC_D7		6	GND	
7	GND		8	XD_SD_MMC_D6	
9	SDCMD_MSBS_X DWE#		10	SD_CLK	
11	XD_SD_MS_D1		12	XD_SD_MS_D0	
13	+VCC_OUT		14	XD_SD_MS_D2	
15	GND		16	MS_CD#	
17	XD_SD_MMC_D5		18	XD_SD_MS_D3	
19	SDCMD_MSBS_X DWE#		20	MS_CLK	
21	XD_SD_MMC_D4		22	+VCC_OUT	
23	XD_SD_MS_D3		24	GND	
25	XD_SD_MS_D2		26	XD_CD#	
27	XD_RB#		28	XD_RE#	
29	XD_CE#		30	XD_CLE	
31	XD_ALE		32	SDCMD_MSBS_X DWE#	
33	XDWP#_SDWP#		34	GND	
35	XD_SD_MS_D0		36	XD_SD_MS_D1	
37	XD_SD_MS_D2		38	XD_SD_MS_D3	
39	XD_SD_MMC_D4		40	XD_SD_MMC_D5	
41	XD_SD_MMC_D6		42	XD_SD_MMC_D7	
43	+VCC_OUT		44	GND	
45	GND		46	GND	

## C.17 JGSIM

Table C-22 JGSIM CARD connector pin assignments (10-pin)

Pin No.	Signal name	I/O	Pin No.	Signal Name	I/O
1	+UIM_PWR		2	UIM_RESET	
3	UIM_CLK		4	USB20_P10	
5	GND		6	UIM_VPP	
7	UIM_DATA		8	USB20_N10	
9	NC		10	NC	

## C.18 JSPK

Table C-23 SPK connector pin assignments (4-pin)

Pin No.	Signal name	I/O	Pin No.	Signal Name	I/O
1	SPK_R1		2	SPK_R2	
3	SPK_L1		4	SPK_L2	

## C.19 JTP

Table C-24 TP /B connector pin assignments (10-pin)

Pin No.	Signal name	I/O	Pin No.	Signal Name	I/O
1	+3V_ALW		2	+5VS	
3	TP_CLK		4	TP_DATA	
5	GND		6	LID_SW#	

## C.20 PJP1

Table C-28 AC Adaptor connector pin assignments (4-pin)

Pin No.	Signal name	I/O	Pin No.	Signal Name	I/O
1	DC_IN_S1	-	2	DC_IN_S1	-

3	GND	-	4	GND	-
---	-----	---	---	-----	---

## C.21 PJP2

*Table C-29 11.6" Battery connector pin assignments (9-pin)*

Pin No.	Signal name	I/O	Pin No.	Signal Name	I/O
1	BATT_S1	-	2	BATT_S1	-
3	BATT_P3	-	4	BATT_P4	-
5	BATT_P5	-	6	EC_SMDA	I/O
7	EC_SMCA	I/O	8	GND	-
9	GND	-			

## C.22 PJP3

*Table C-29 13" Battery connector pin assignments (9-pin)*

Pin No.	Signal name	I/O	Pin No.	Signal Name	I/O
1	BATT_S1	-	2	BATT_S1	-
3	BATT_P3	-	4	BATT_P4	-
5	BATT_P5	-	6	EC_SMDA	I/O
7	EC_SMCA	I/O	8	GND	-
9	GND	-			

## Appendix D Keyboard Scan/Character Codes

Table D-1 Scan codes (set 1 and set 2) (1/4)

Cap No.	Keytop	Code set 1		Code set 2		Note	
		Make	Break	Make	Break		
01	' ~	29	A9	0E	F0	0E	
02	1 !	02	82	16	F0	16	
03	2 @	03	83	1E	F0	1E	
04	3 #	04	84	26	F0	26	
05	4 \$	05	85	25	F0	25	
06	5 %	06	86	2E	F0	2E	
07	6 ^	07	87	36	F0	36	
08	7 &	08	88	3D	F0	3D	*2
09	8 *	09	89	3E	F0	3E	*2
10	9 (	0A	8A	46	F0	46	*2
11	0 )	0B	8B	45	F0	45	
12	- _	0C	8C	4E	F0	4E	
13	= +	0D	8D	55	F0	55	
15	BkSp	0E	8E	66	F0	66	
16	Tab	0F	8F	0D	F0	0D	
17	Q	10	90	15	F0	15	
18	W	11	91	1D	F0	1D	
19	E	12	92	24	F0	24	
20	R	13	93	2D	F0	2D	
21	T	14	94	2C	F0	2C	
22	Y	15	95	35	F0	35	
23	U	16	96	3C	F0	3C	*2
24	I	17	97	43	F0	43	*2
25	O	18	98	44	F0	44	*2
26	P	19	99	4D	F0	4D	*2
27	[ {	1A	9A	54	F0	54	
28	] }	1B	9B	5B	F0	5B	

Table D-1 Scan codes (set 1 and set 2) (2/4)

Cap No.	Keypop	Code set 1		Code set 2		Note	
		Make	Break	Make	Break		
29	\	2B	AB	5D	F0	5D	*5
30	Caps Lock	3A	BA	58	F0	58	
31	A	1E	9E	1C	F0	1C	
32	S	1F	9F	1B	F0	1B	
33	D	20	A0	23	F0	23	
34	F	21	A1	2B	F0	2B	
35	G	22	A2	34	F0	34	
36	H	23	A3	33	F0	33	
37	J	24	A4	3B	F0	3B	*2
38	K	25	A5	42	F0	42	*2
39	L	26	A6	4B	F0	4B	*2
40	; :	27	A7	4C	F0	4C	*2
41	' "	28	A8	52	F0	52	
43	Enter	1C	9C	5A	F0	5A	*3
44	Shift (L)	2A	AA	12	F0	12	
45	No.102 key	56	D6	61	F0	61	
46	Z	2C	AC	1A	F0	1A	
47	X	2D	AD	22	F0	22	
48	C	2E	AE	21	F0	21	
49	V	2F	AF	2A	F0	2A	
50	B	30	B0	32	F0	32	
51	N	31	B1	31	F0	31	
52	M	32	B2	3A	F0	3A	*2
53	, <	33	B3	41	F0	41	*2
54	. >	34	B4	49	F0	49	*2
55	/ ?	35	B5	4A	F0	4A	*2
57	Shift (R)	36	B6	59	F0	59	

Table D-1 Scan codes (set 1 and set 2) (3/4)

Cap No.	Keytop	Code set 1		Code set 2			Note
		Make	Break	Make	Break		
58	Ctrl(L)	1D	9D	14	F0	14	*3
60	Alt (L)	38	B8	11	F0	11	*3
61	Space	39	B9	29	F0	29	
62	ALT (R)	E0 38	E0 B8	E0 11	E0 F0	11	
64	Ctrl(R)	E0 1D	E0 9D	E0 14	E0 F0	14	
75	Ins	E0 52	E0 D2	E0 70	E0 F0	70	*1
76	Del	E0 53	E0 D3	E0 71	E0 F0	71	*1
79	←	E0 4B	E0 CB	E0 6B	E0 F0	6B	*1
80	Home	E0 47	E0 C7	E0 6C	E0 F0	6C	*1
81	End	E0 4F	E0 CF	E0 69	E0 F0	69	*1
83	↑	E0 48	E0 C8	E0 75	E0 F0	75	*1
84	↓	E0 50	E0 D0	E0 72	E0 F0	72	*1
85	PgUp	E0 49	E0 C9	E0 7D	E0 F0	7D	*1
86	PgDn	E0 51	E0 D1	E0 7A	E0 F0	7A	*1
89	→	E0 4D	E0 CD	E0 74	E0 F0	74	*1
110	Esc	01	81	76	F0	76	
112	F1	3B	BB	05	F0	05	
113	F2	3C	BC	06	F0	06	
114	F3	3D	BD	04	F0	04	
115	F4	3E	BE	0C	F0	0C	
116	F5	3F	BF	03	F0	03	
117	F6	40	C0	0B	F0	0B	
118	F7	41	C1	83	F0	83	
119	F8	42	C2	0A	F0	0A	
120	F9	43	C3	01	F0	01	
121	F10	44	C4	09	F0	09	*3

Table D-1 Scan codes (set 1 and set 2) (4/4)

Cap No.	Keytop	Code set 1				Code set 2				Note
		Make		Break		Make		Break		
122	F11	57		D7		78		F0 78		*3
123	F12	58		D8		07		F0 07		*3
124	PrintSc	*6		*6		*6		*6		*6
126	Pause	*7		*7		*7		*7		*7
X	Fn	—		—		—		—		*4
X	Win	E0	5B	E0	DB	E0	1F	E0	F0 1F	
x	App	E0	5D	E0	DD	E0	2F	E0	F0 2F	

**Notes:**

1. \* Scan codes differ by mode.
2. \* Scan codes differ by overlay function.
3. \* Combination with the **Fn** key gives different codes.
4. \* The **Fn** key does not generate a code by itself.
5. \* This key corresponds to key No. 42 in a 102-key model.
6. \* Refer to Table D-6, No. 124 key scan code.
7. \* Refer to Table D-7, No. 126 key scan code.



Table D-2 Scan codes with left Shift key

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

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

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

Table D-3 Scan codes in Numlock mode

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

Table D-4 Scan codes with Fn key

Cap No.	Keytop	Code set 1		Code set 2	
		Make	Break	Make	Break
43	ENT	E0 1C	E0 9C	E0 5A	E0 F0 5A
58	L-CTRL	E0 1D	E0 9D	E0 14	E0 F0 14
60	L-ALT	E0 38	E0 B8	E0 11	E0 F0 11
121	ARROW	45	C5	77	F0 77
122	NUMERIC	45	C5	77	F0 77
123	Scrl	46	C6	7E	F0 7E

Table D-5 Scan codes in overlay mode

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

Table D-6 No.124 key scan code

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

*Table D-7 No.126 key scan code*

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

\*: This key generates only make codes.

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# Appendix E Key Layout

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## 1. United Status (US) Keyboard

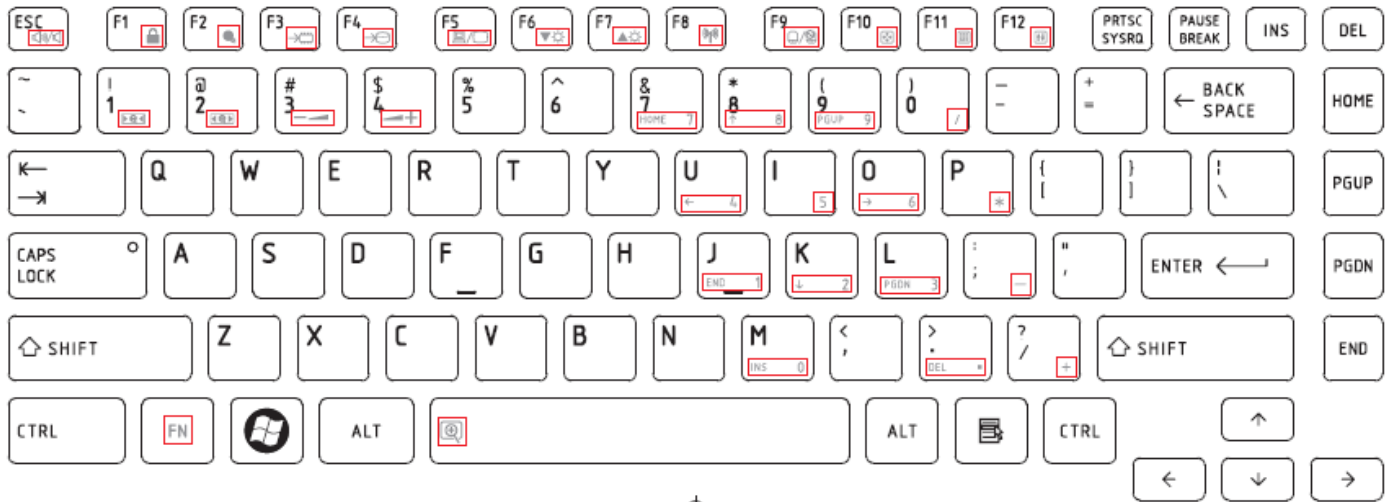


Figure US keyboard

## 2. Traditional Chinese (CH) Keyboard

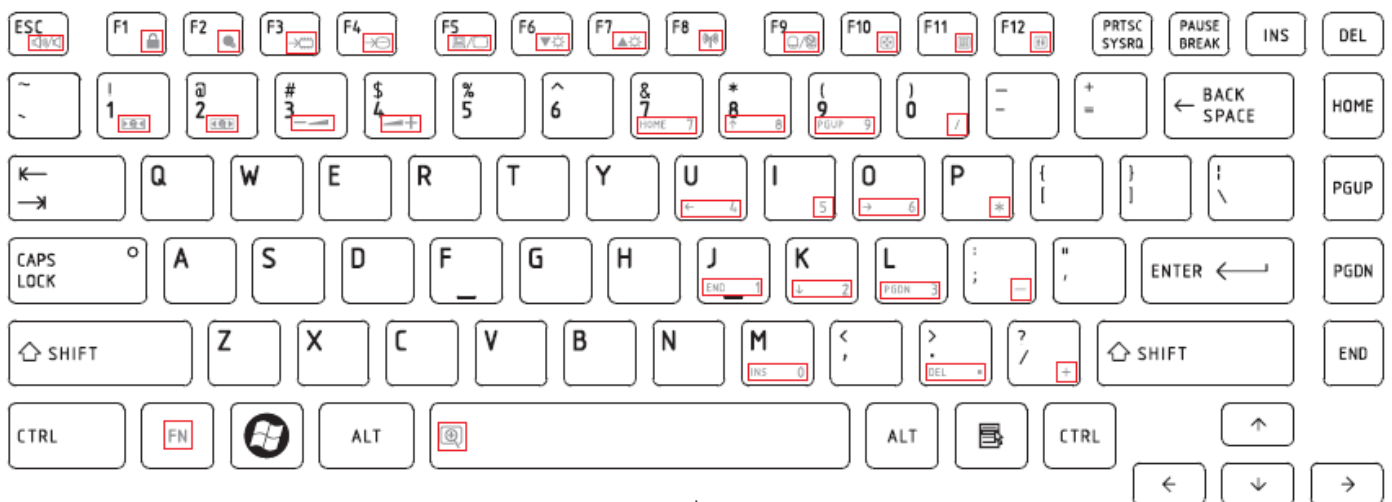


Figure CH keyboard

## 3. Thai (TI) Keyboard

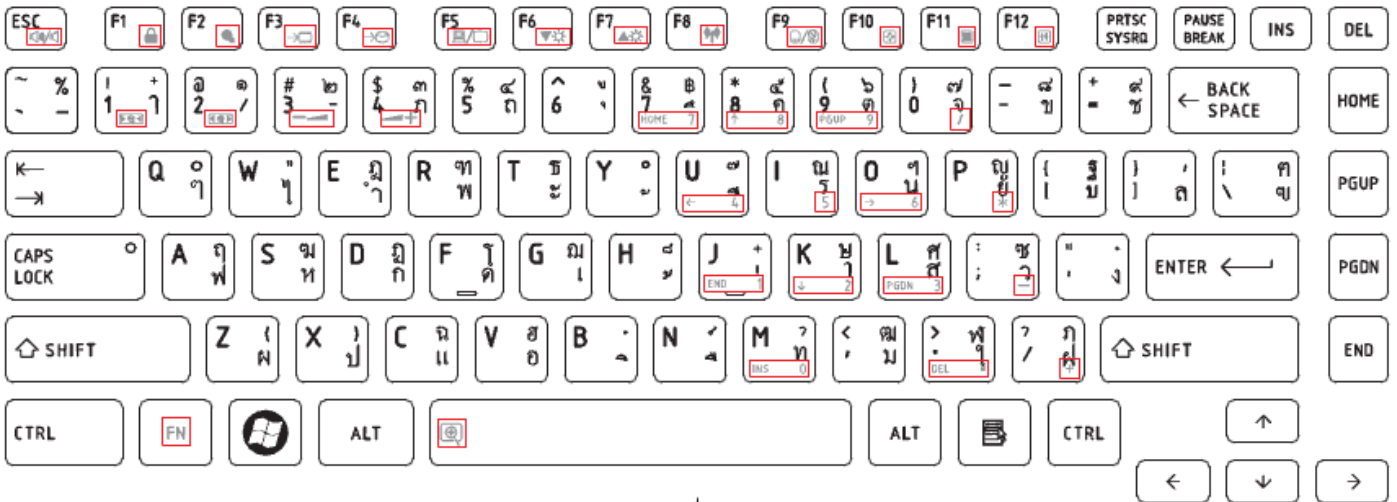


Figure TI keyboard

#### 4. Korean (KO) Keyboard

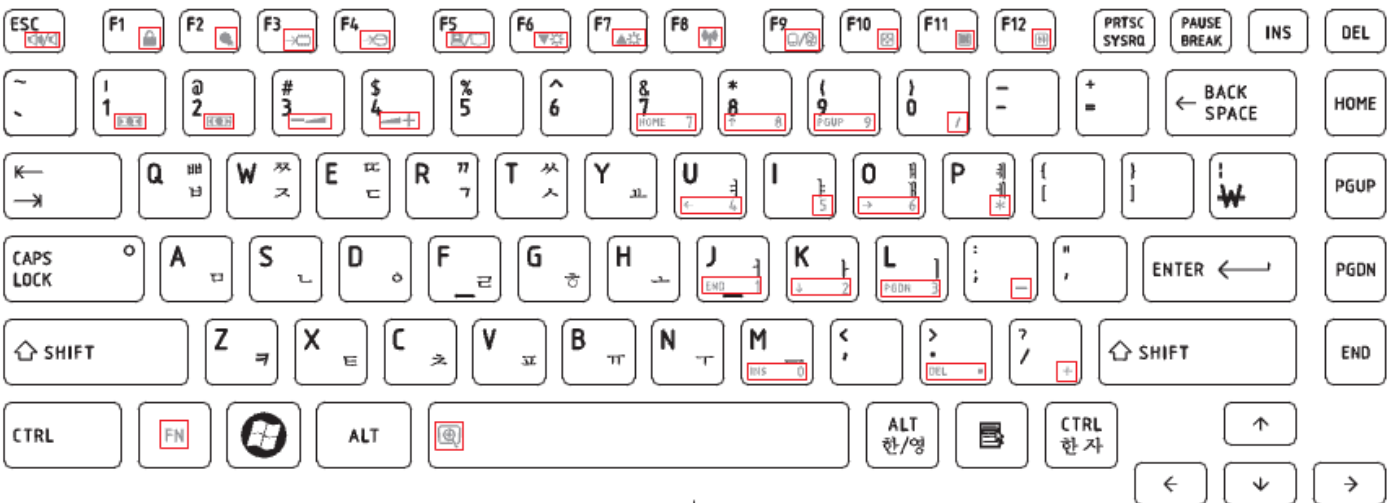


Figure KO keyboard

#### 5. United Kingdom (UK) Keyboard

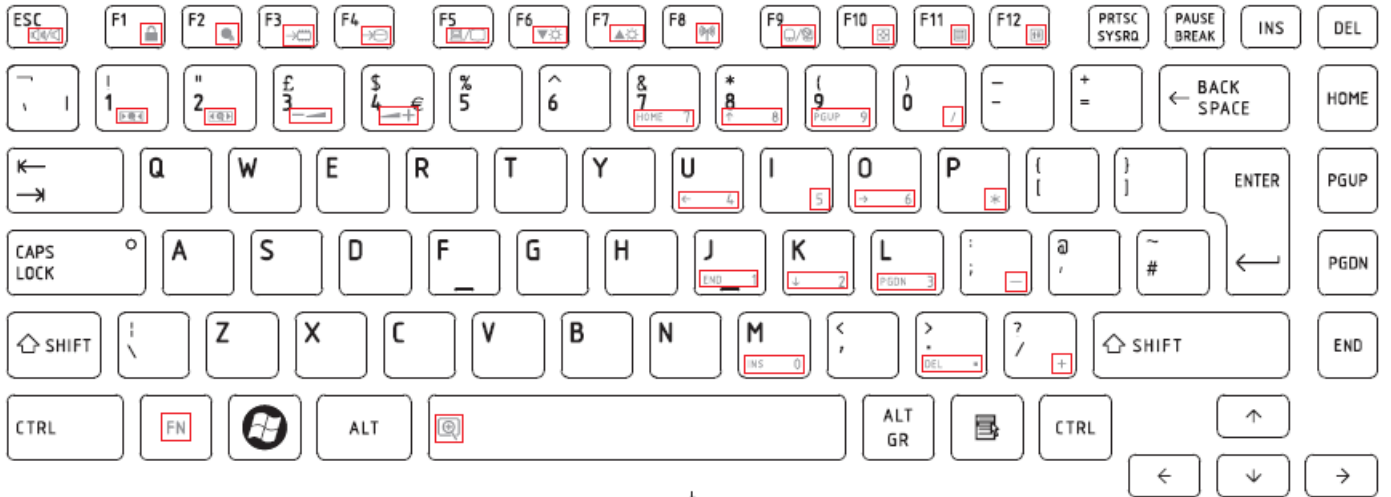


Figure UK keyboard

## 6. US International (UI) Keyboard

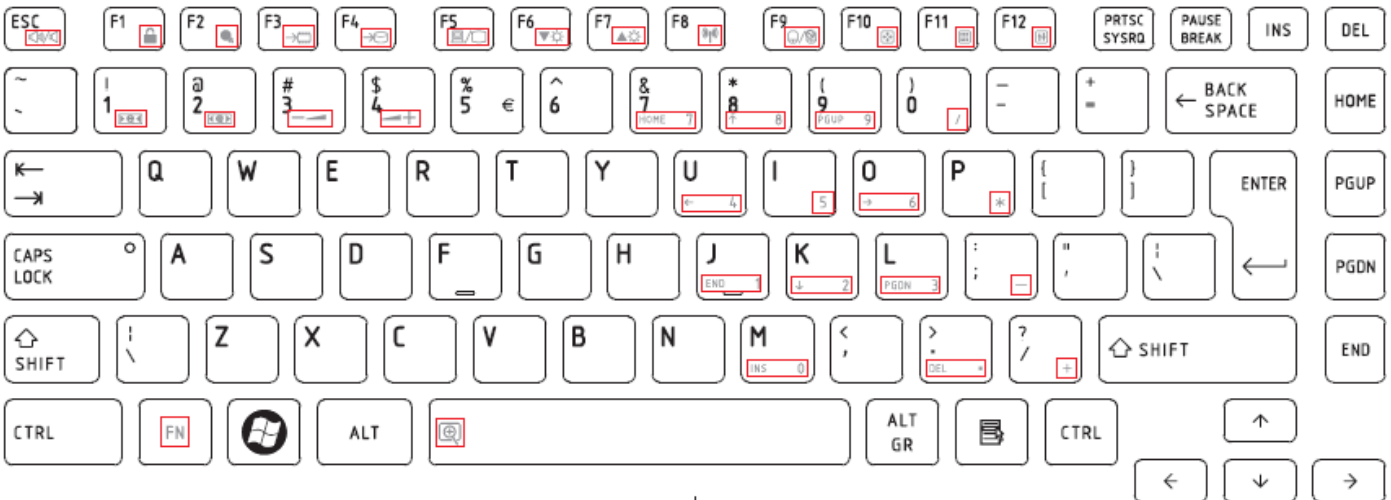


Figure UI keyboard

## 7. Hebrew (HB) Keyboard

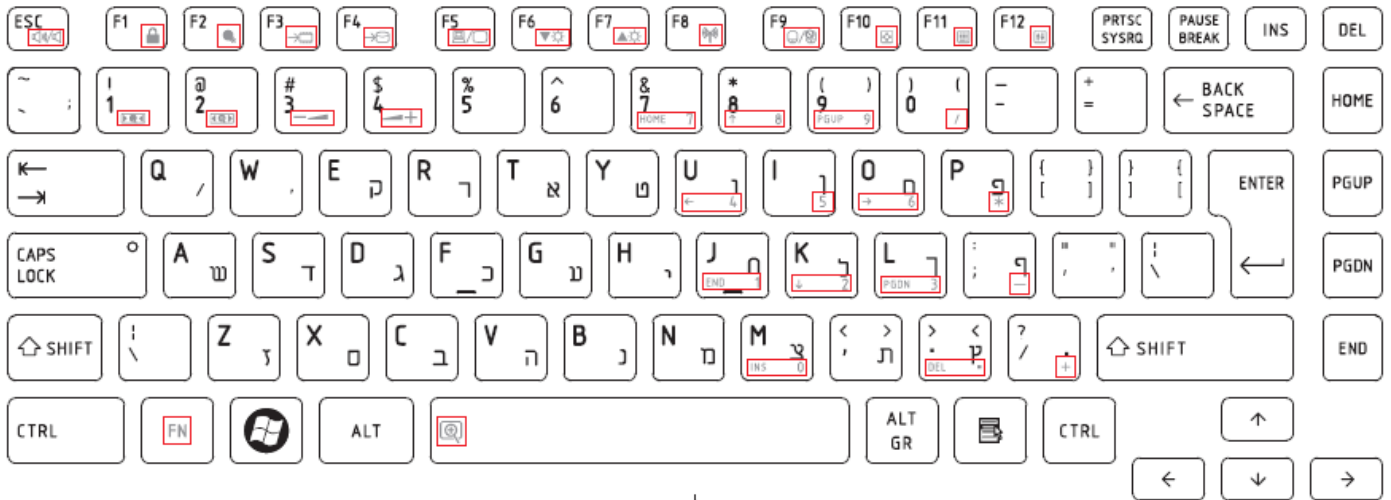


Figure HB keyboard

## 8. Danish (DM) Keyboard

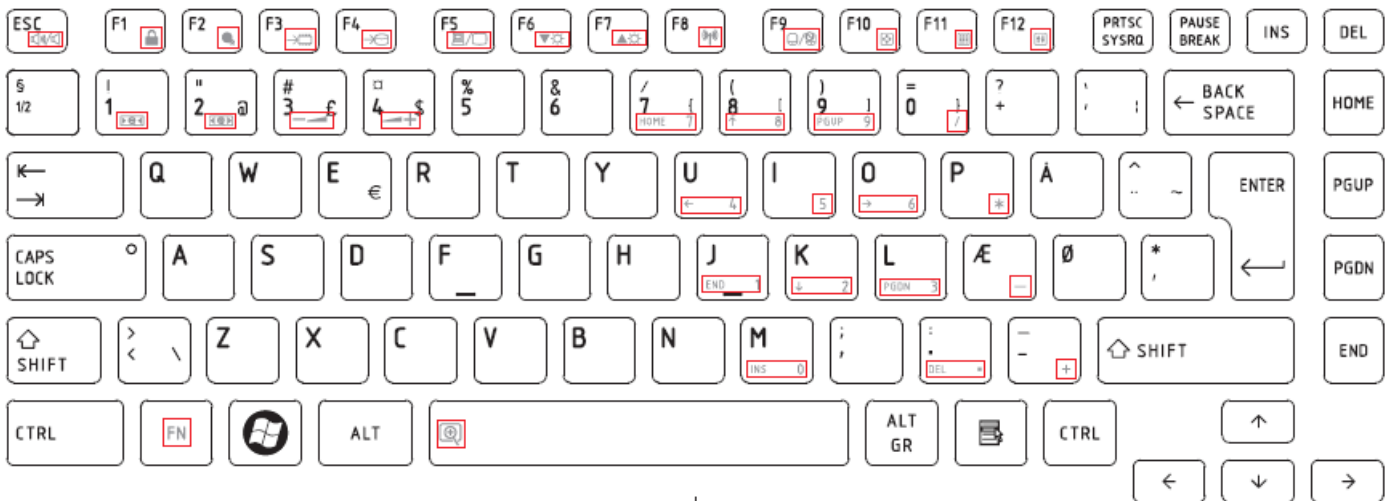


Figure DM keyboard

## 9. Swiss (SW) Keyboard



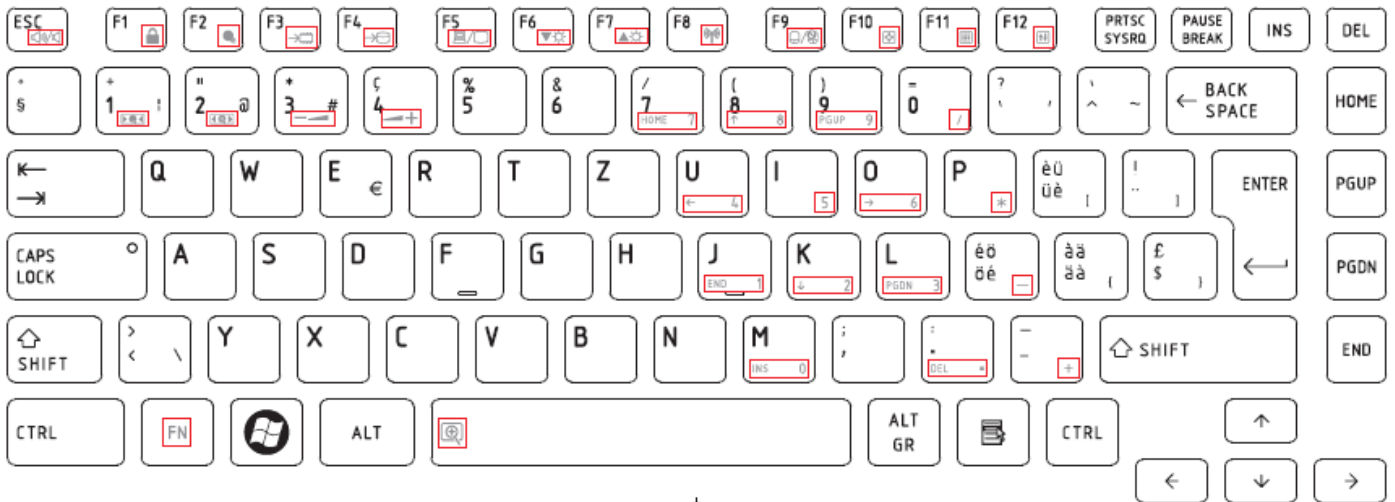


Figure SW keyboard

## 10. Arabic (ARE) Keyboard

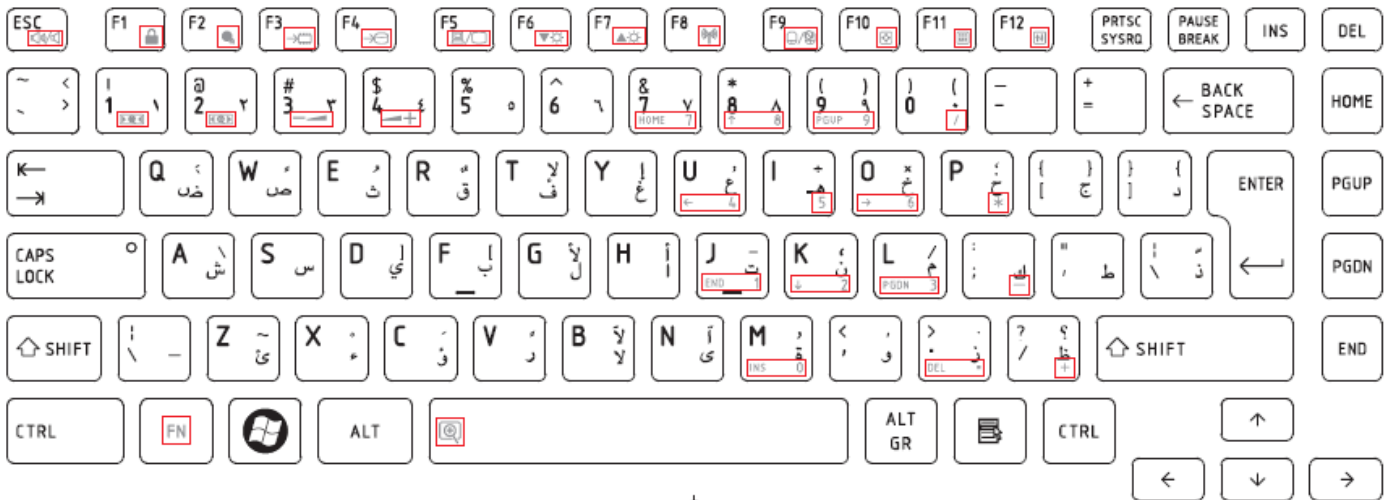


Figure ARE keyboard

## 11. Czech (CZ) Keyboard

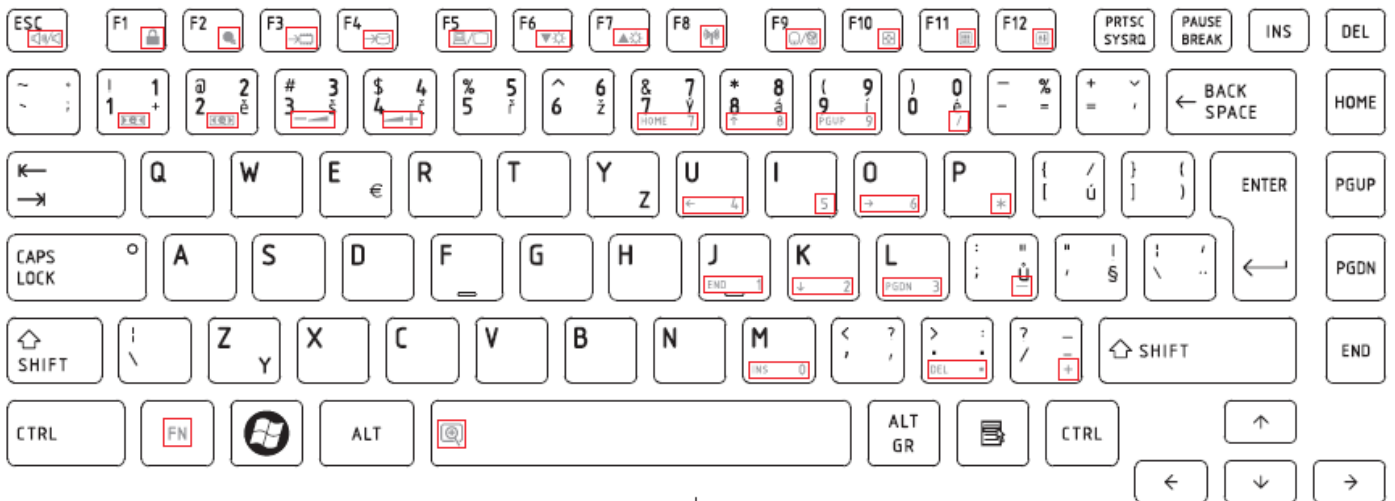


Figure CZ keyboard

## 12. Russian (RU) Keyboard

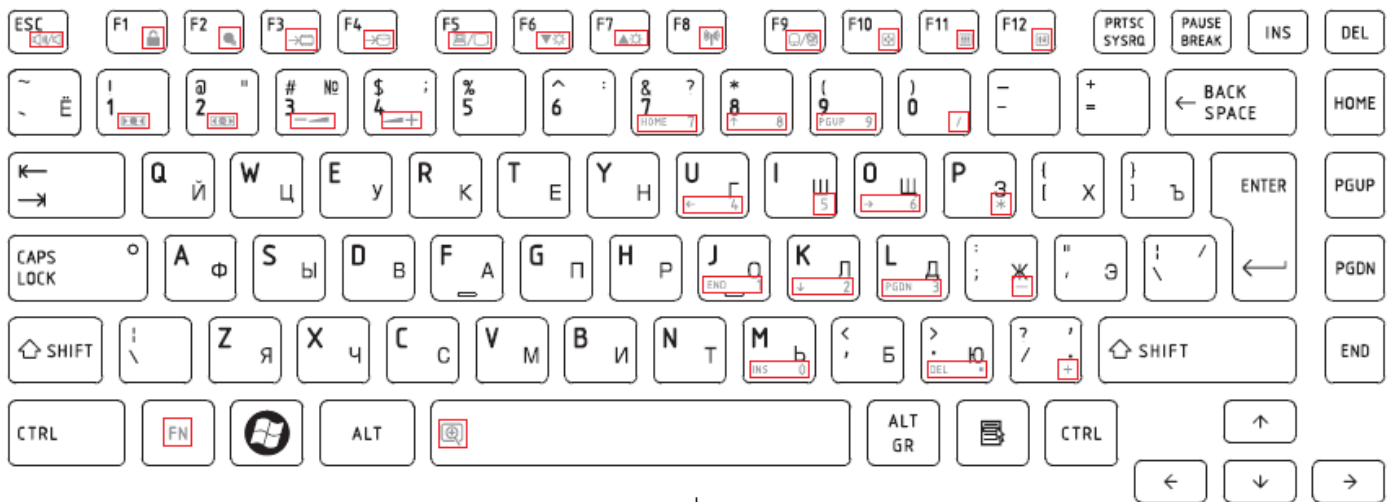


Figure RU keyboard

## 13. Portuguese (P0) Keyboard

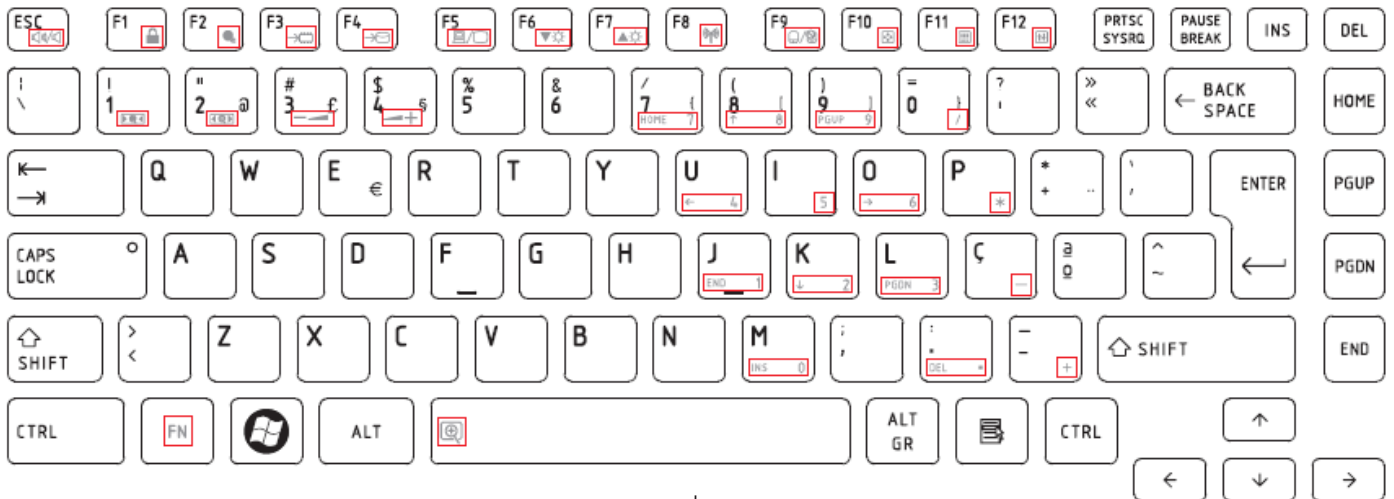


Figure PO keyboard

## 14. Slovakian (SL) Keyboard

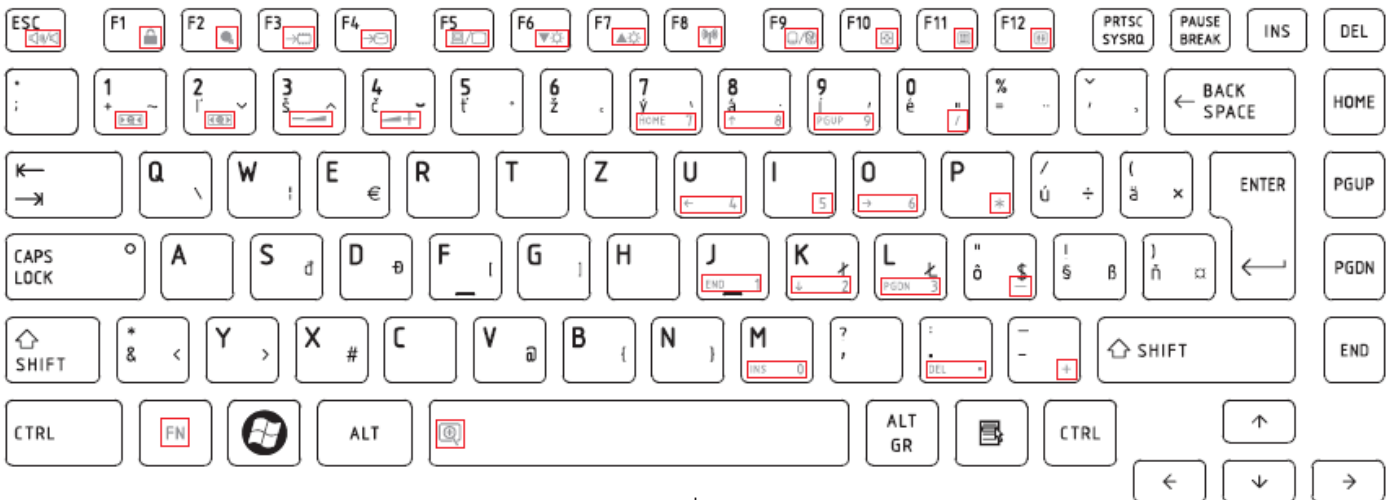


Figure SL keyboard

## 15. Italian (IT) Keyboard

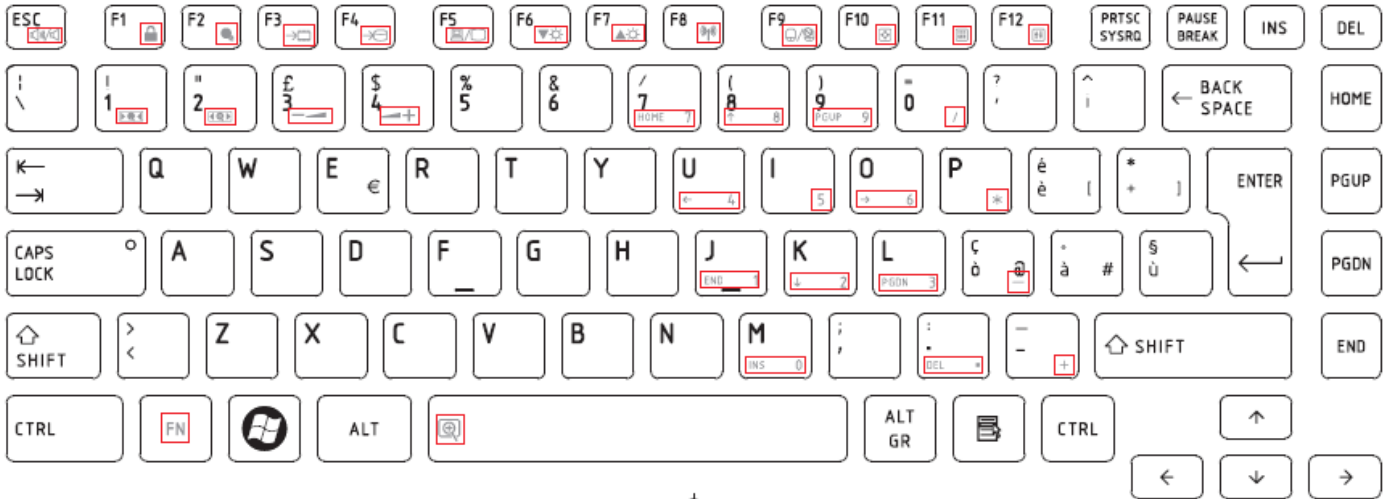


Figure IT keyboard

## 16. French (FR) Keyboard

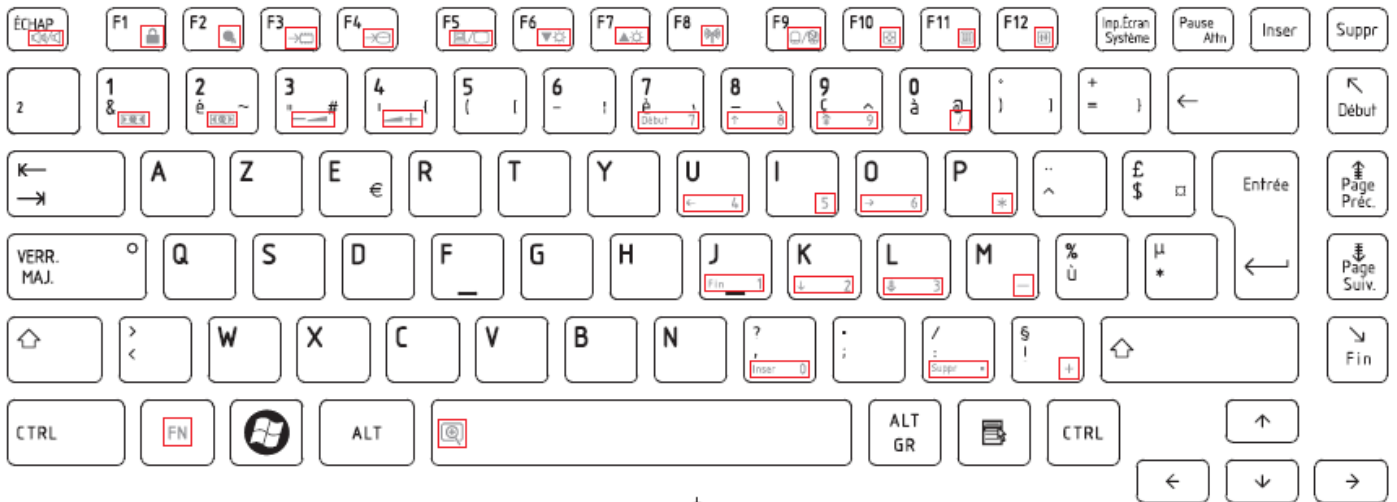


Figure FR keyboard

## 17. German (GR) Keyboard

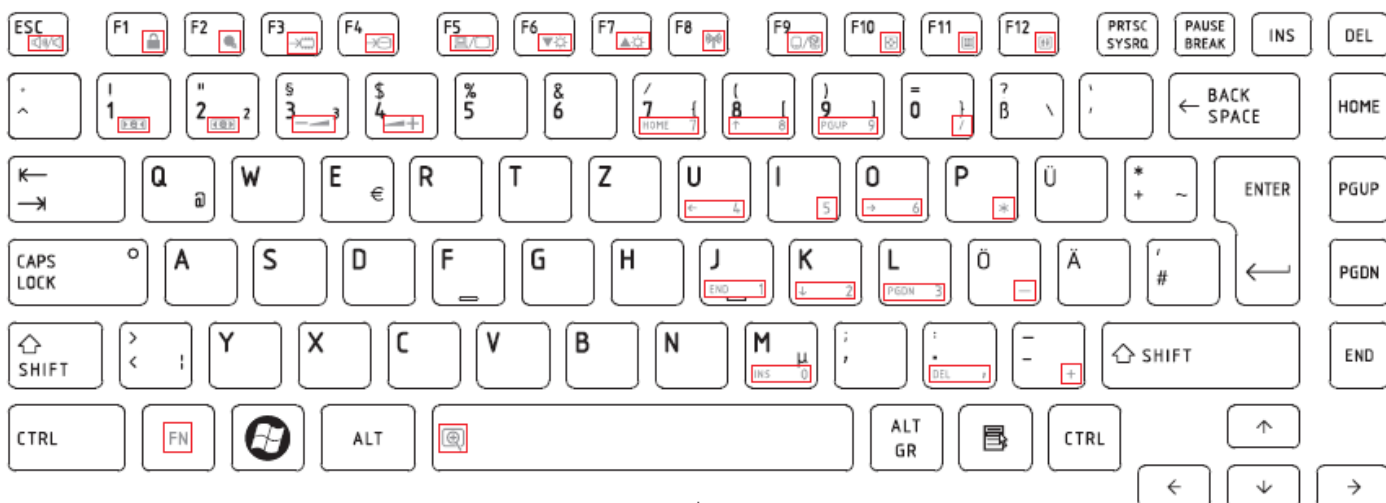


Figure GR keyboard

## 18. Greek (GK) Keyboard

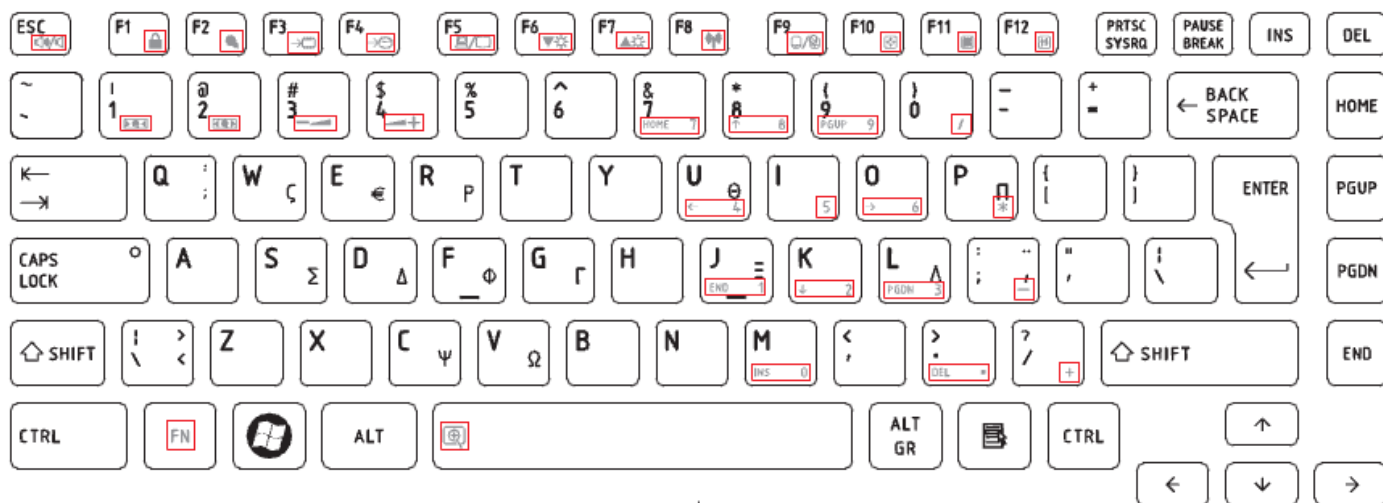


Figure GK keyboard

## 19. Hungarian (HG) Keyboard

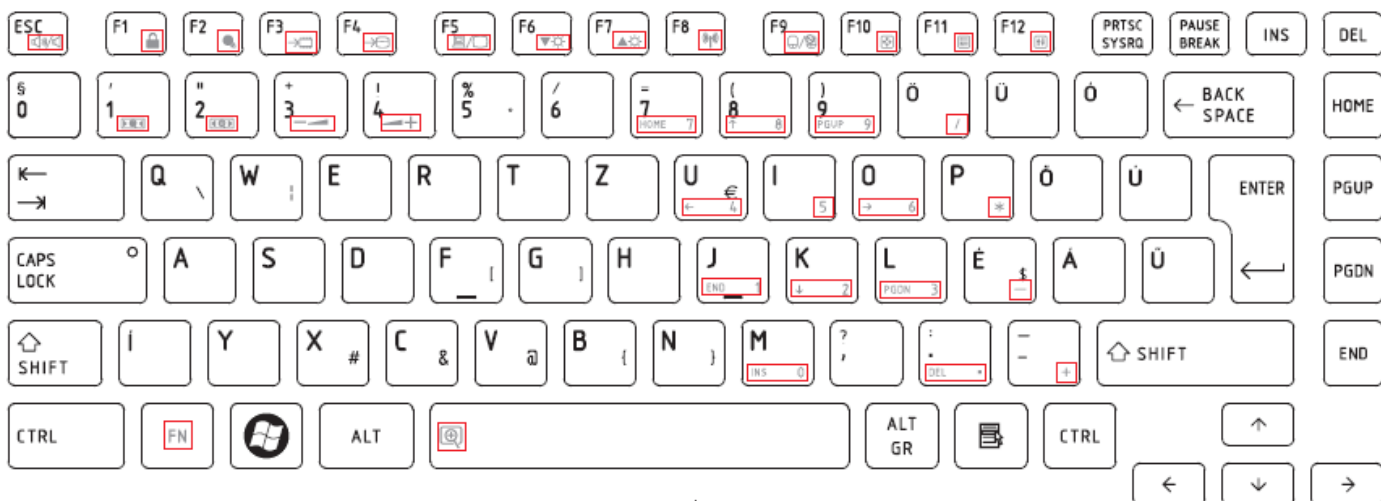


Figure HG keyboard

## 20. Spanish (SP) Keyboard

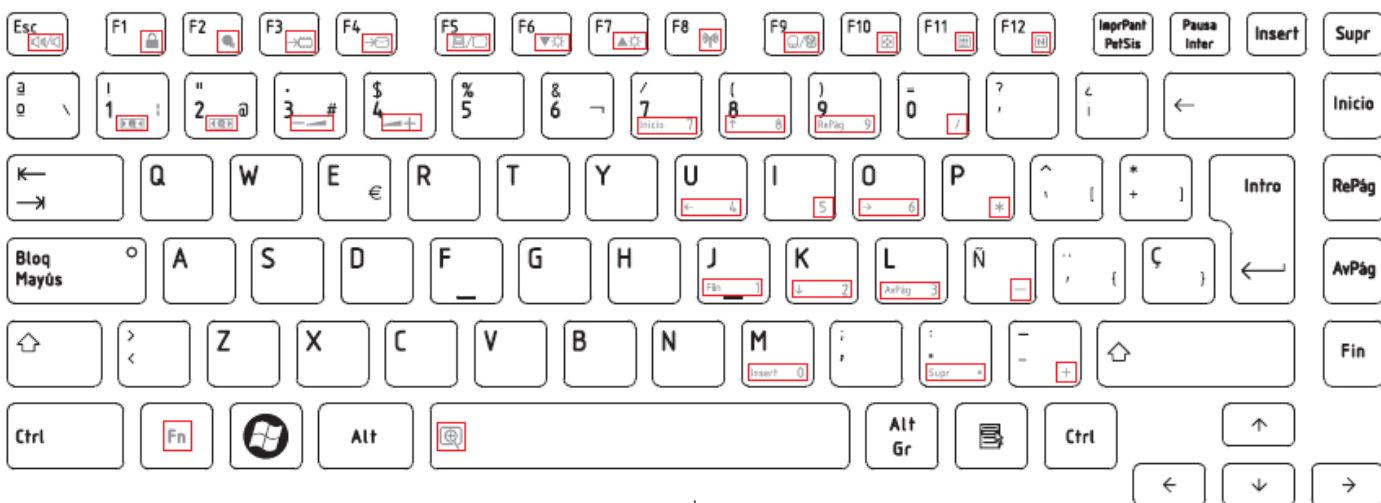


Figure SP keyboard

## 21. Turkish (TR) Keyboard

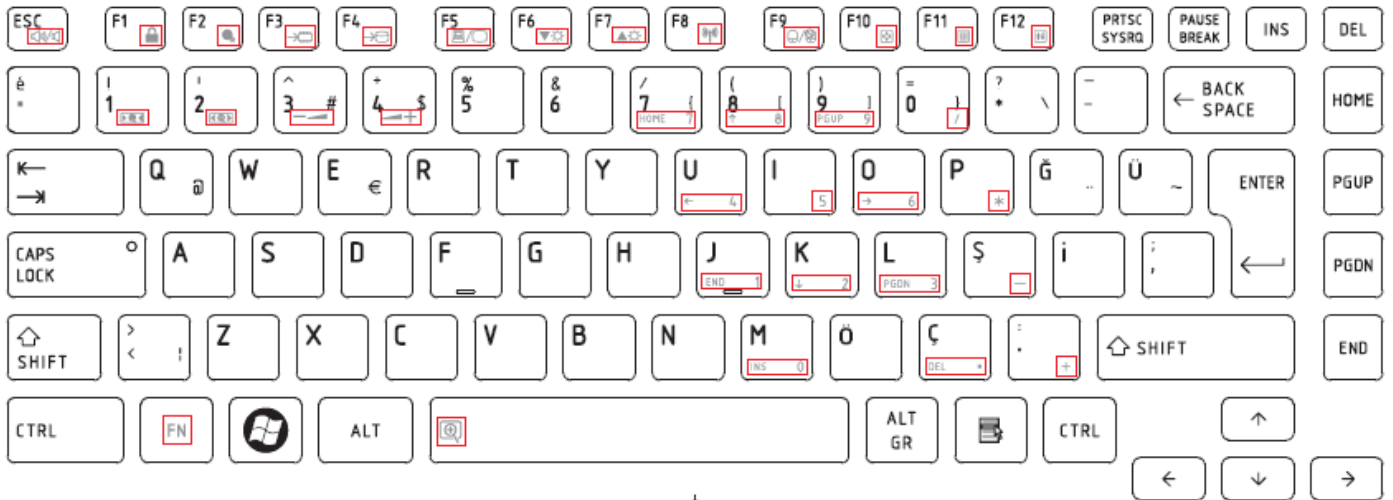


Figure TR keyboard

## 22. Turkish F (TF-F) Keyboard

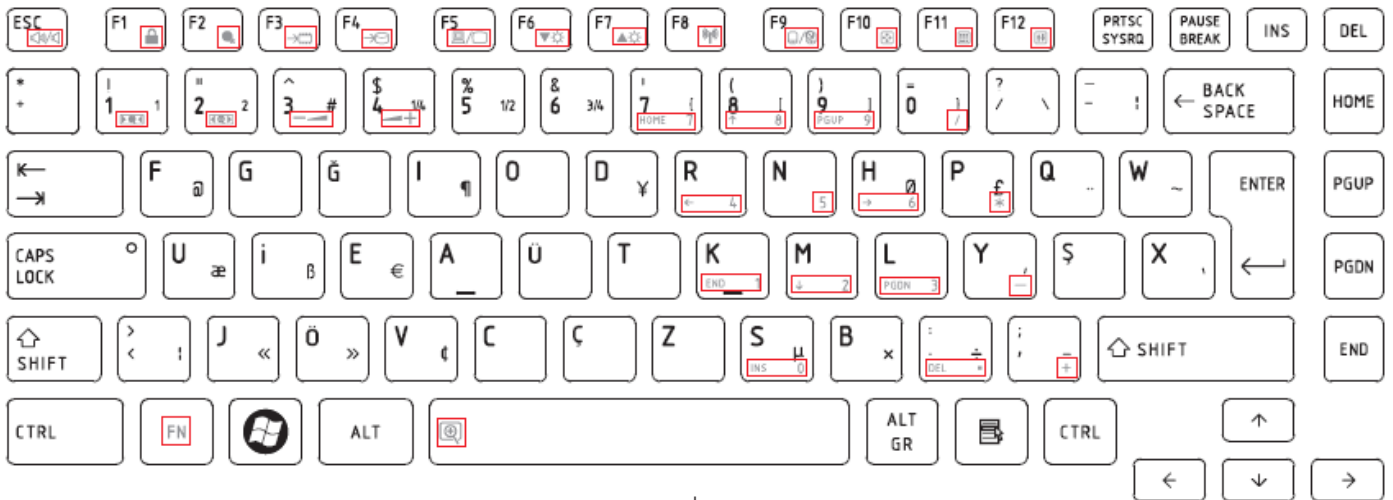


Figure TF-F keyboard

## 23. Swedish (SD) Keyboard

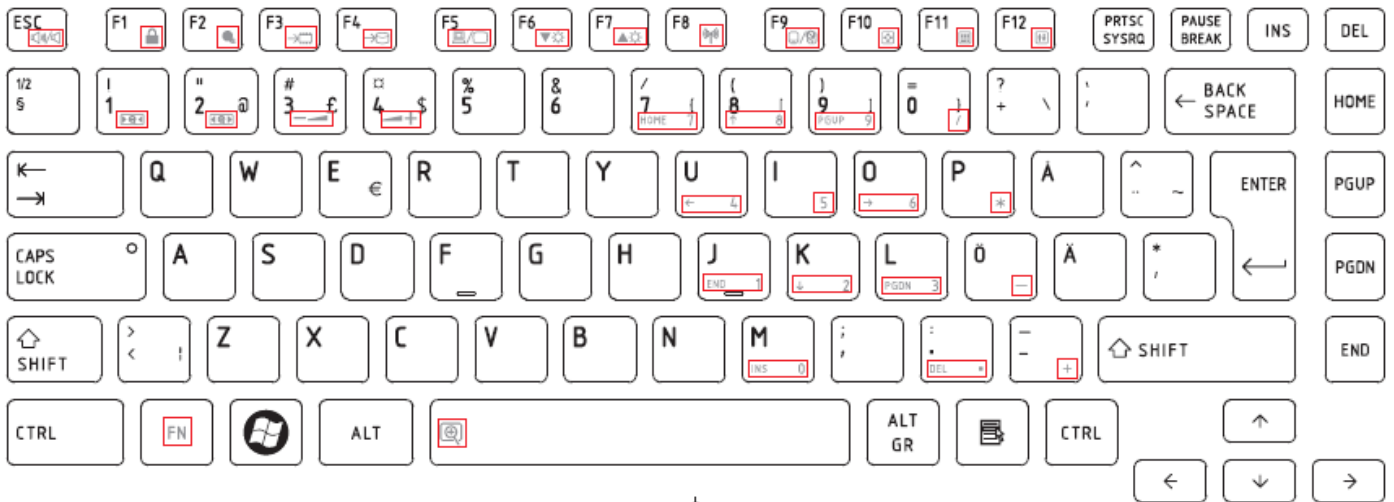


Figure SD keyboard

## 24. Belgian (BE) Keyboard

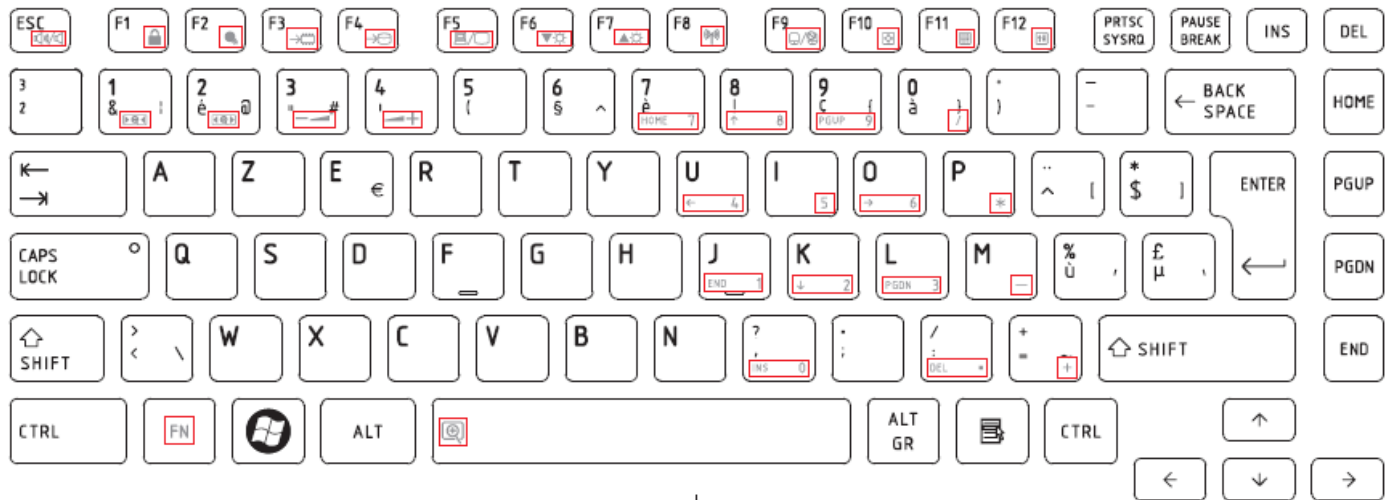


Figure BE keyboard

## 25. Yugoslavian (YU) Keyboard



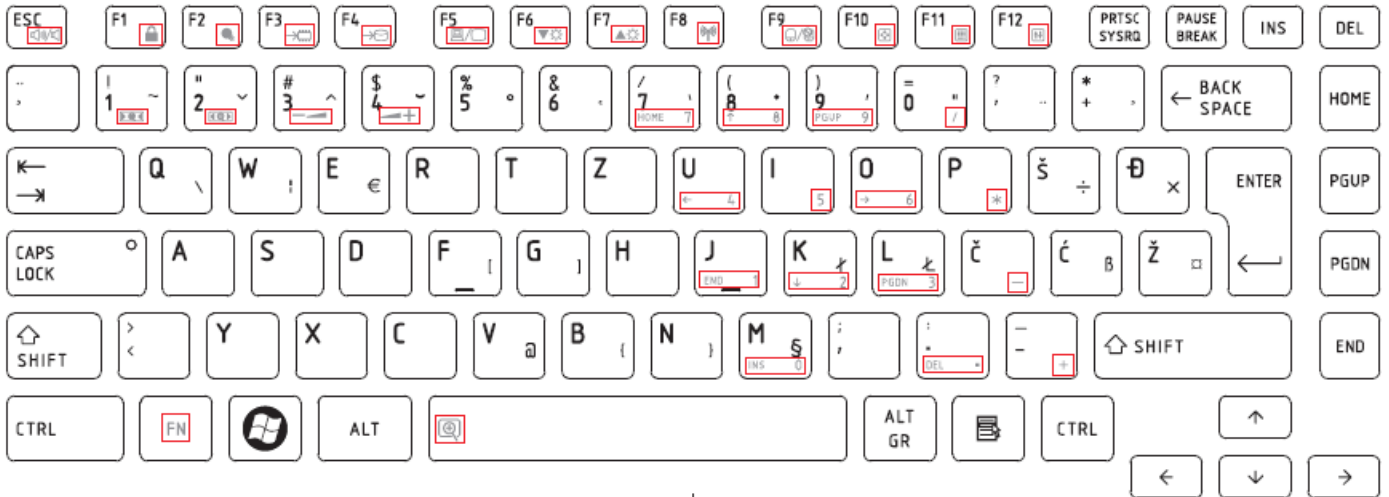


Figure YU keyboard

## 26. Norwegian (NW) Keyboard

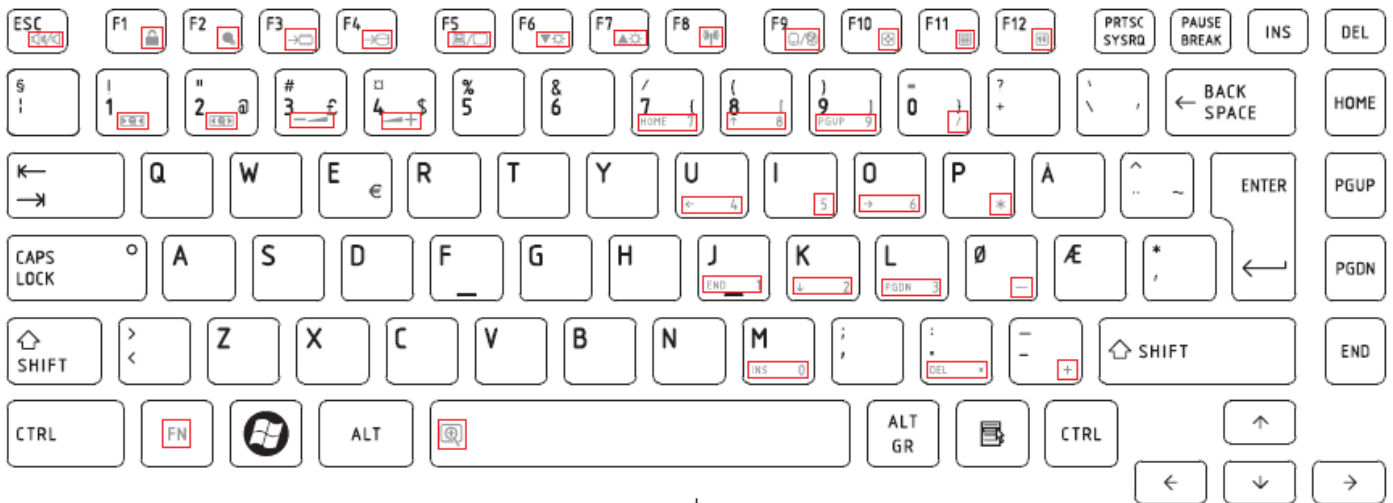


Figure NW keyboard

## 27. Scandinavian (ND) Keyboard

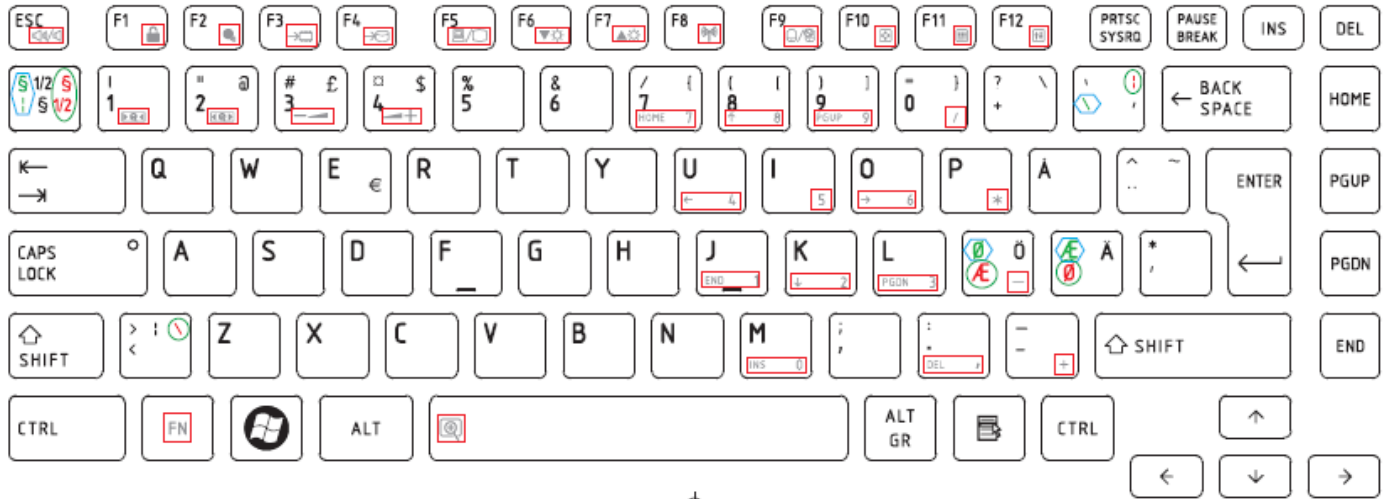


Figure ND keyboard

## 28. Canadian Multinational (AC) Keyboard

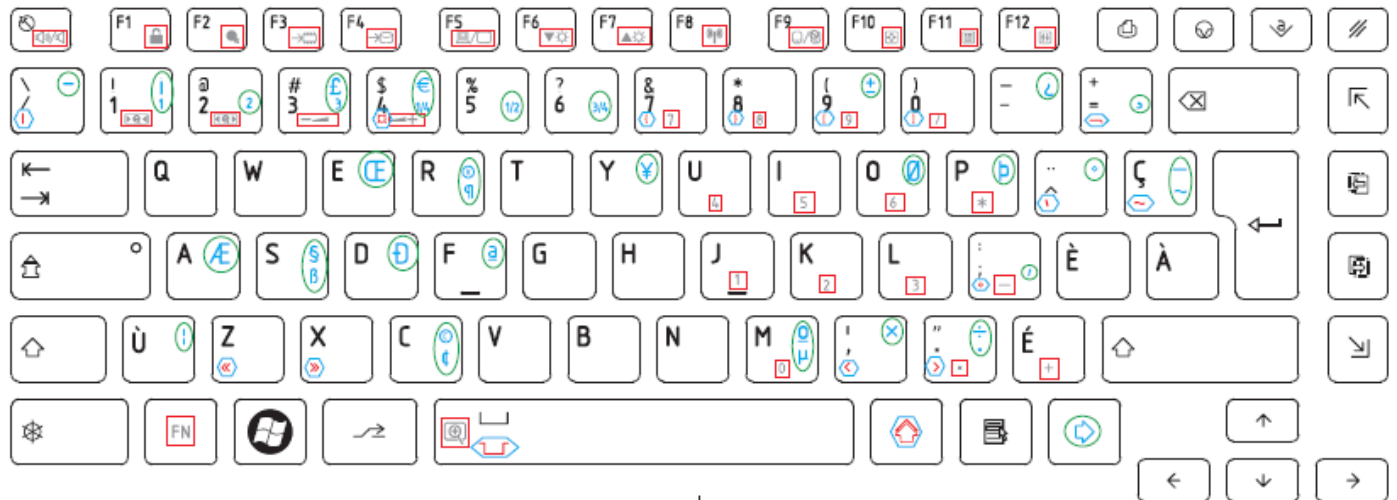


Figure AC keyboard

## 29. Canadian Bilingual (CB) Keyboard

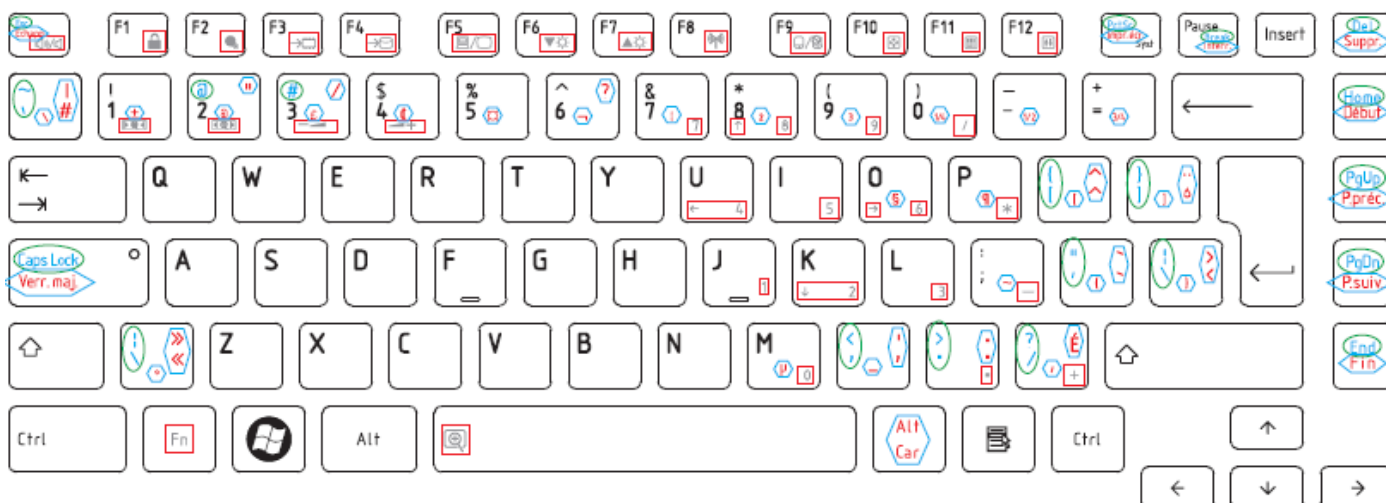


Figure CB keyboard

### 30. Romania (RO) Keyboard

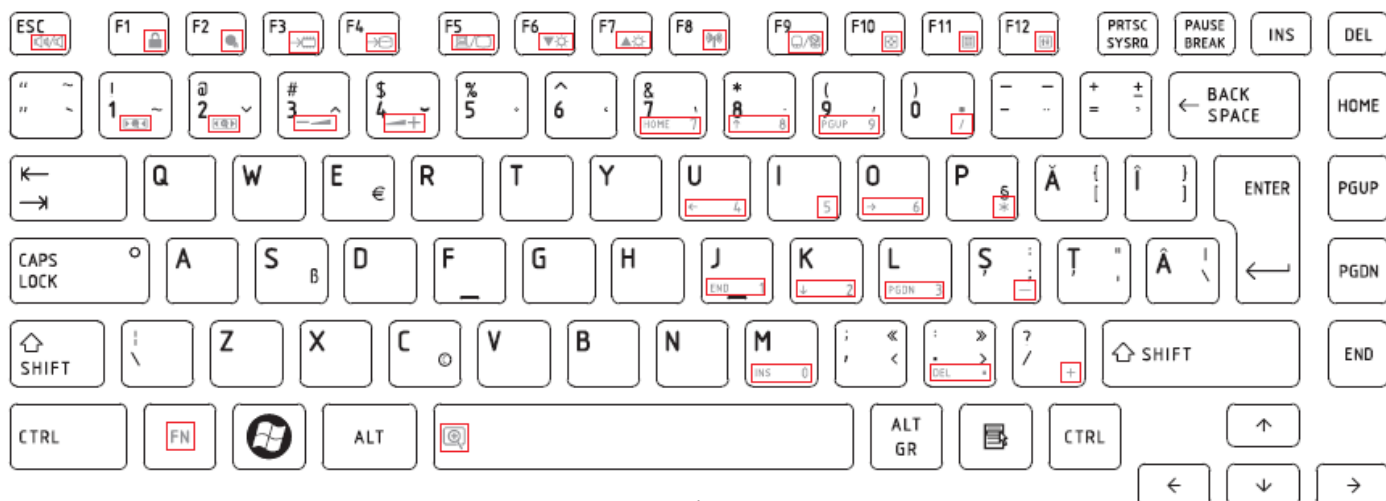


Figure RO keyboard

### 31. Bulgaria (BU) Keyboard

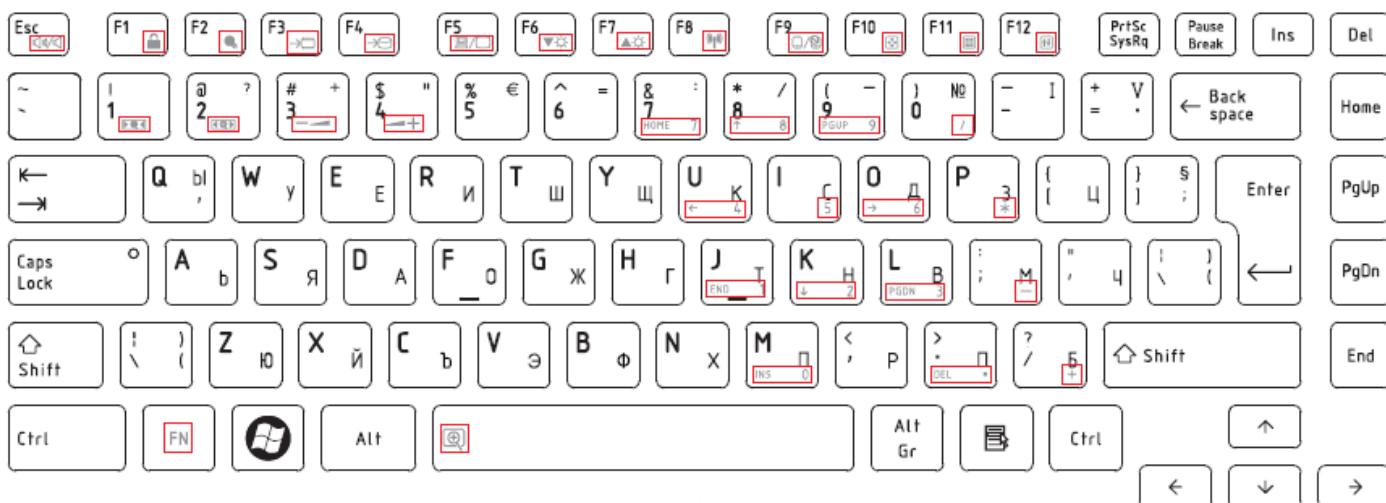


Figure BU keyboard

## 32. Japanese (JP) Keyboard

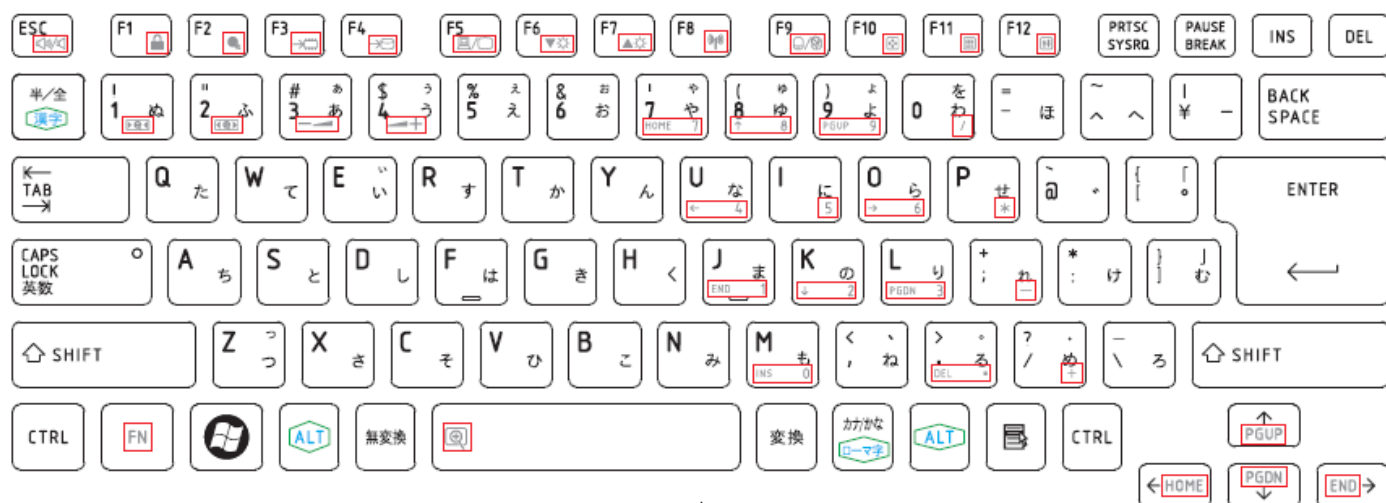


Figure JP keyboard

## 32. Latin American (LA) Keyboard

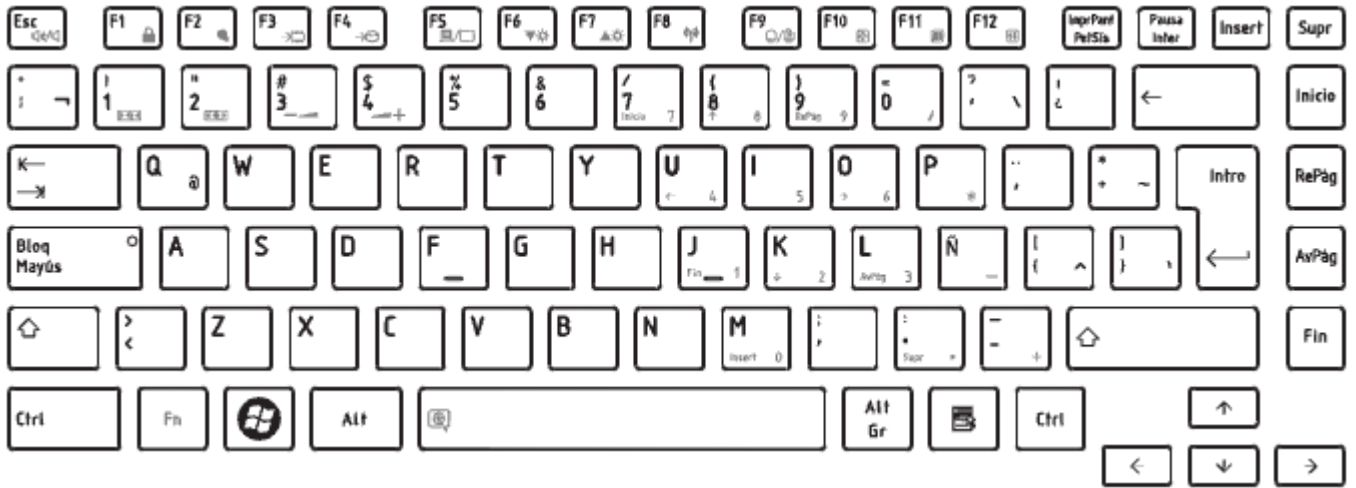


Figure LA keyboard

## Appendix F Series Screw Torque List (NDU10/11)

Table F-1 Series Screw Torque List

SCREW P/N	SCREW SPEC	Q'ty	LOCATION	SCREW TORQUE
LCD ASSY				
MA000007GG0	M2x3 (NI 白 鍍)	6	LCD HINGE BRK ASSY L&R TO LCD PANEL 13.1"	1.2~1.5Kgf.cm
MACA25001G0	M2x4 (ZK 黑 鍍)	6	LCD HINGE L&R TO LCD COVER	1.5~2.0Kgf.cm
MMCK20060G0	M2x6 (ZK 黑 鍍)	2	LCD BEZEL TO COVER	1.5~2.0Kgf.cm
MB				
MAA000012G0	M2x5 (NI 白 鍍)	2	HDD(H=10.2mm) CONNECTOR TO PCB	1.5~2.0Kgf.cm
MAA000012G0	M2x5 (NI 白 鍍)	2	BATTERY CONNECTOR TO MB	1.5~2.0Kgf.cm
MA000007GG0	M2x3 (NI 白 鍍)	2	WLAN CARD TO WLAN BRK STANDOFF	1.2~1.5Kgf.cm
THERMAL MODULE				
MACA25001G0	M2x4 (ZK 黑 鍍)	1	THERMAL FAN TO LOW	1.5~2.0Kgf.cm
MA00000HWS0	SPRING SCREW	4	CPU-THERMAL-SINK TO CPU-PLATE	1.5~2.0Kgf.cm
HDD ASSY				
MCDK03030G0	M3x3 (ZK 黑 鍍)	4	HDD BRACKET TO HDD	2.0~2.5Kgf.cm
LOG UP				
MACA25001G0	M2x4 (ZK 黑 鍍)	1	POWER PCB TO LOG UP	1.5~2.0Kgf.cm
MACA25001G0	M2x4 (ZK 黑 鍍)	4	TP BRACKET TO LOG UP	1.5~2.0Kgf.cm
MACA25001G0	M2x4 (ZK 黑 鍍)	1	TP BOARD TO TP BRACKET	1.5~2.0Kgf.cm
LOG LOWER ASSY				
MA000007GG0	M2x3 (NI 白 鍍)	1	VGA BOARD TO LOW	1.2~1.5Kgf.cm
MA000007GG0	M2x3 (NI 白 鍍)	2	USB BOARD TO LOW	1.2~1.5Kgf.cm

MA000007GG0	M2x3 (NI 白 鍍)	2	HDD BOARD TO LOW	1.2~1.5Kgf.cm
LOGIC ASSY				
MA000007GG0	M2x3 (NI 白 鍍)	5	MB TO LOG LOW	1.2~1.5Kgf.cm
MMCK20060G0	M2x6 (ZK 黑 鍍)	2	LCD HINGE R TO LOW	1.5~2.0Kgf.cm
MMCK20060G0	M2x6 (ZK 黑 鍍)	2	LCD HINGE L TO LOW	1.5~2.0Kgf.cm
MA000007GG0	M2x3 (NI 白 鍍)	4	LOG UP TO LOG LOW (KB AREA)	1.2~1.5Kgf.cm
MMCK20060G0	M2x6 (ZK 黑 鍍)	1	LOG UP TO LOG LOW (KB AREA)	1.5~2.0Kgf.cm
MMCK20060G0	M2x6 (ZK 黑 鍍)	9	LOG LOW TO LOG UP	1.5~2.0Kgf.cm
MMCK20060G0	M2x6 (ZK 黑 鍍)	2	LOG LOW TO KB	1.5~2.0Kgf.cm
MA000007GG0	M2x3 (NI 白 鍍)	2	HDD TO LOG LOW	1.2~1.5Kgf.cm
MA0000049G0	M2*4.5 半牙 (ZK 黑鍍)	1	BTM DOOR TO LOW (FIX ON DOOR)	1.5~2.0Kgf.cm

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## Appendix G Reliability

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The following table shows MTBF (Mean Time Between Failures) for each component.

*Table G-1 MTBF*

<b>Component</b>	<b>Time (hours)</b>
LCD	10,000
Keyboard	64400
HDD	300,000
Optical (DVD/CD) drive	\
AC adaptor	50,000