Predator Triton 515-51

SERVICE GUIDE

Revision History

Refer to the table below for the updates made to this Predator Triton 515-51 Service Guide.

Date	Version	Chapter	Updates
01-17-2019	FIRST DRAFT		
01-28-2019	V1.00		

Service guide files and updates are available on the ACER/CSD website. For more information, go to http://gcsd.acer.com.tw/GCSD_Portal/. The information in this guide is subject to change without notice.

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Conventions

The following conventions are used in this manual:

⚠ WARNING:
Indicates a potential for personal injury.

⚠ CAUTION:
Indicates a potential loss of data or damage to equipment.

+ IMPORTANT:
Indicates information that is important to know for the proper completion of a procedure, choice of an option, or completing a task.

The following typographical conventions are used in this document:

- Book titles, directory names, file names, path names, and program/process names are shown in *italics*.

  Example:

  the *DRS5 User's Guide*

  /usr/local/bin/fd

  the */TPH15spool_M* program

- Computer output (text that represents information displayed on a computer screen, such as menus, prompts, responses to input, and error messages) are shown in constant width.

  Example:

  ```
  [01] The server has been stopped
  ```

- User input (text that represents information entered by a computer user, such as command names, option letters, and words) are shown in constant width bold.

  Variables contained within user input are shown in angle brackets (< >).

  Example:

  At the prompt, type run **`<file name> -m`**

- Keyboard keys are shown in ***bold italics***.

  Example:

  After entering data, press ***Enter***.

General information

Before using this information and the product it supports, read the following general information.

This service guide provides you with all technical information relating to the basic configuration for Acer's global product offering. To better fit local market requirements and enhance product competitiveness, your regional office may have decided to extend the functionality of a machine (such as add-on cards, modems, or extra memory capabilities). These localized features are not covered in this generic service guide. In such cases, contact your regional office or the responsible personnel/channel to provide you with further technical details.

When ordering FRU parts: Check the most up-to-date information available on your regional Web or channel. If, for whatever reason, a part number change is made, it may not be noted in this printed service guide.

Acer-authorized Service Providers: Your Acer office may have a different part number code than those given in the FRU list in this service guide. You must use the list provided by your regional Acer office to order FRU parts for repair and service of customer machines.

CHAPTER 1 - Hardware Specifications

CHAPTER 2 - System Utilities

CHAPTER 3 - Machine Maintenance

CHAPTER 4 - Troubleshooting

CHAPTER 5 - Jumper and Connector Locations

CHAPTER 6 - FRU List

CHAPTER 7 - Test Compatible Components

CHAPTER 8 - Online Support Information

CHAPTER 1

Hardware Specifications

Hardware Specifications and Configurations

This chapter lists the features and specifications of the Predator Triton 515-51 computer. The items listed in this section are for reference only. The exact configuration of your computer depends on the model purchased.

Features

The following is a summary of the computer's many features.

Operating System

- Windows® 10 Home 64-bit

Platform

- Intel® Coffee Lake H platform
  - Intel® Core™ i7-8750H processor (9 MB L3 Cache, 2.2 GHz with Turbo Boost up to 4.1 GHz, DDR4 2666 MHz, 45 W), supporting Intel® 64 architecture, Intel® Smart Cache
  - Intel® Core™ i5-8300H processor (8 MB L3 Cache, 2.3 GHz with Turbo Boost up to 4.0 GHz, DDR4 2666 MHz, 45 W), supporting Intel® 64 architecture, Intel® Smart Cache
- Chipset: Mobile Intel® HM370 Express Chipset (Cannon Lake)

System Memory

- Two DIMM slots support DDR4 SO-DIMM
- 32 GB maximum memory capacity (using two 16 GB modules)
- Supports dual channel

Display

- 15.6" display with IPS (In-Plane Switching) Technology, Full HD
- 1920 × 1080 resolution, 16:9 aspect ratio
- 16.9 million colors, NTSC 72%, 300-nit brightness
- supports 144 Hz, 3 ms Overdrive and G-sync
- Wide viewing angle up to 170°
- Ultra-slim design
- Mercury free, environment friendly

Graphics

- NVIDIA® GeForce® RTX 2080 / 2070 with 8 GB of dedicated GDDR6 VRAM or NVIDIA® GeForce® RTX 2060 with 6 GB of dedicated GDDR6 VRAM
- Supports NVIDIA® CUDA™, PhysX™, PureVideo® HD technology, GPU Battery Boost technology, ShadowPlay technology, GameStream technology, Multi-Frame sampled Anti-Aliasing (MFAA), Dynamic Super Resolution (DSR), Voxel Global Illumination (VXGI). Microsoft® DirectX® 12, OpenGL® 4.5, OpenCL™ 1.1
- Triple independent display support
- Intel® HD Graphics, Gen 8-LP, 16EU, 600 MHz, supporting OpenGL® 3.0, OpenCL™ 2.0, Microsoft® DirectX® 12
- Internal and external resolutions and refresh rate supported:
  - 800 x 600, 144 Hz
  - 1024 x 768, 144 Hz
  - 1152 x 864, 144 Hz
  - 1280 x 600, 144 Hz
  - 1280 x 720, 144 Hz
  - 1280 x 768, 144 Hz
  - 1280 x 800, 144 Hz
  - 1280 x 960, 144 Hz
  - 1280 x 1024, 144 Hz
  - 1360 x 768, 144 Hz
  - 1366 x 768, 144 Hz
  - 1400 x 1050, 144 Hz
  - 1440 x 900, 144 Hz
  - 1600 x 900, 144 Hz
  - 1680 x 1050, 144 Hz
  - 1920 x 1080, 144 Hz
  - Maximum Resolution HDMI: 3840 x 2560, 60 Hz

Storage Subsystem

Solid state drive

- M.2 PCIe Gen3 8 Gb/s up to 4 lanes, NVMe
- 256 GB / 512 GB

Audio Subsystem

- Waves MaxxAudio® sound technology, featuring MaxxBass®,MaxxVolume®, MaxxDialog™ and hyper-realistic 3D Audio using Waves Nx™
- Acer PurifiedVoice™ technology with two built-in microphones featuring far-field pickup, keystroke suppression, voice tracking, adaptive beam forming, voice recognition enhancement, three pre-defined modes: voice recognition, personal call, conference call
- Acer TrueHarmony™ technology for lower distortion, wider frequency range, headphone-like audio and powerful sound
- Compatible with Cortana with Voice
- Certified for Skype for Business

- Two built-in stereo speakers
- Realtek ALC289

Communication

Webcam

- 1.0 MP HD webcam, featuring:
  - 1280 × 720 resolution
  - 720p HD audio/video recording
  - Super high dynamic range imaging (SHDR)

Wireless and networking

- WLAN:
  - Killer™ Wireless-AC 1550 / 1550i
  - 802.11a/b/g/n/ac wireless LAN
  - Dual Band (2.4 GHz and 5 GHz)
  - 2x2 MU-MIMO technology
- WPAN:
  - Bluetooth® 5.0
- LAN:
  - Gigabit Ethernet, Secure Wake Over Internet (SWOI)
  - Killer™ LAN E3000

Privacy Control

- BIOS supervisor, user, and HDD passwords
- Kensington lock slot

Power Adapter and Battery

- 3-pin 180 W AC adapter
- 8436 Wh 5550 mAh 15.2 V 4-cell Li-polymer battery pack
- Battery life: Up to 8 hours (based on MobileMark® 2014 test results)
- ACPI 5.0 CPU power management standard: supports Standby and Hibernation power-saving modes

Keyboard and Pointing Device

Keyboard

- 86-/87-/90-key Acer FineTip™ RGB backlit keyboard
- Hotkeys for volume and brightness level, wireless and sleep functions, and display and touchpad toggle
- Windows® and Application keys
- Inverted “T” cursor keys
- Turbo key and power button key
- Multilanguage support

Touchpad

- Multi-gesture touchpad, supporting two-finger scroll and pinch.
- Gestures to open Cortana, Action Center, multitasking
- Swipes access charms, application commands and previous applications
- Microsoft Precision Touchpad Certification
- Moisture resistant

Media Keys

- Media control keys (printed on keyboard): volume up, volume down

I/O Ports

- mini-DisplayPort™ 1.4
- HDMI® 2.0 port with HDCP support
- USB Type-C™ port supporting:
  - USB 3.1 Gen 2 (up to 10 Gbps)
  - DisplayPort over USB-C
  - Thunderbolt™ 3
- Ethernet (RJ-45) port
- Three USB 3.1 Gen 1 ports with one featuring power-off USB charging
- Microphone-in jack
- Headphone/speaker jack

Software and Tools

Windows Desktop Apps

Content

- Netflix

Games

- XSplit Gamecaster

In-House

- Acer Configuration Manager
- Acer Product Registration
- PredatorSense 3.0

Security

- Norton™ Internet Security

Windows Store Apps

In-House

- Acer Care Center
- Acer Collection
- Quick Access

Productivity

- Cyberlink® PhotoDirector 8
- Cyberlink® PowerDirector 14

Tools

- MS Remote Desktop
- MS Translator

Optional items

- 3-pin 180 W AC adapter

Warranty

- One-year International Travelers Warranty (ITW)

Dimensions and Weight

Dimensions

- Width × Depth × Height: 358.5 (W) x 255 (D) x 17.9 (H) mm (14.11 x 10.04 x 0.7 inches)

Weight

- 2.1 kg (4.63 lbs.) with 4-cell battery pack

Environment

- Temperature:
  - Operating: 0 to 40 °C
  - Non-operating: -20 to 60 °C
- Humidity (non-condensing):
  - Operating: 0% to 80%
  - Non-operating: 0% to 80%

Notebook Tour

This section provides an overview of the features and functions of the notebook.

Open Front View

Figure 1-1. Open Front View

Table 1-1. Open Front View

No.	Icon	Item	Description
1		Webcam LED	Camera status indicator.
2	HD WEBCAM	Integrated HD webcam	Web camera for video communication.
3		Integrated microphone	Internal microphone for sound recording and video communication.
4		Power button	Turns the computer on and off.
5		Keyboard	For entering data into your computer.
6	MultiGesture TOUCHPAD	Multi-Gesture Touchpad	Touch-sensitive pointing device which functions like a computer mouse.
7	TURBO	Turbo key	Switches overclocking and fan speed level.
8		Display screen	Displays computer output.

Left View

Figure 1-2. Left View

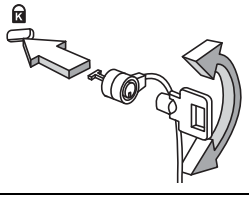
Table 1-2. Left View

No.	Icon	Item	Description
1		DC-in jack	Connects to the AC adapter.
2		Ethernet (RJ-45) port	Connects to an 110/100/1000Mbps/2.5Gbps-based Ethernet network.
3		USB 3.1 Gen 1 port with power-off charging	Connects to USB devices (e.g., USB mouse, USB camera).
4		HDMI port	Supports high definition digital video connections.
5		Microphone-in jack	Connects to an external microphone for recording audio.
6		Headset/speaker jack	Connects to audio-out devices (e.g., speakers, headphones)

Right View

Figure 1-3. Right View

Table 1-3. Right View

No.	Icon	Item	Description
1		Battery indicator	Indicates the computer's battery status. • Blue: The computer is in AC mode. • Blinking amber: The battery is charging.
2		Power indicator	Indicates the computer's power status. • Blue: The computer is turned on. • Blinking amber: The computer is in power-saving mode.
3		USB Type-C/ Thunderbolt 3 port	Connects to USB devices with a USB Type-C connector. Supports Thunderbolt™ 3 and DisplayPort over USB-C displays. • USB 3.1 Gen 2 with transfer speeds up to 10 Gbps. • Supports DisplayPort™ audio/video output. • Compatible with Thunderbolt™ 3 • Delivers up to 3A at 5V DC for USB charging.
4		mini-DisplayPort	Connects to a display device using the high-definition mini-DisplayPort interface.
5		USB 3.1 Gen 1 ports	Connects to USB devices (e.g., USB mouse, USB camera).
6		Kensington lock slot 	Connects to a Kensington-compatible computer security lock. **Note:** Wrap the computer security lock cable around an immovable object such as a table or the handle of a locked drawer. Insert the lock into the notch and turn the key to secure the lock. Some keyless models are also available.

Base View

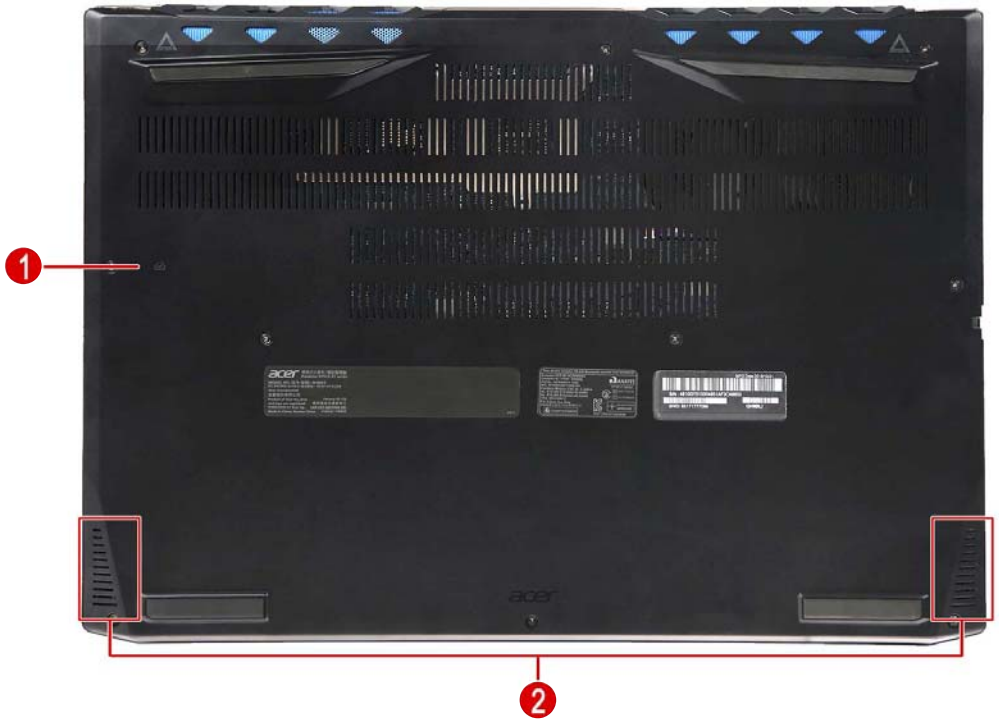


Figure 1-4. Base View

Table 1-4. Base View

No.	Icon	Item	Description
1		Speaker	Outputs sounds.
2		Battery reset pinhole	Insert a paperclip into the hole and press for four seconds to reset the computer (simulates removing and reinstalling the battery).

Touchpad Basics

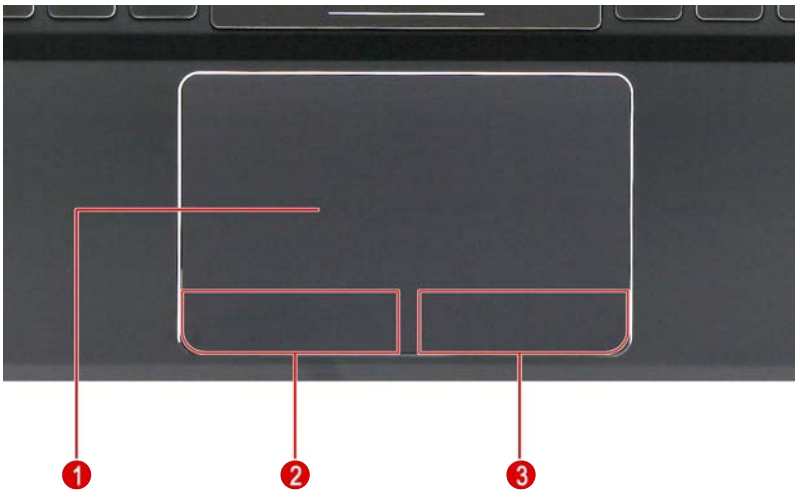


Figure 1-5. Touchpad

- Move finger across the touchpad (**1**) to move the cursor. Tapping on the touchpad is the same as clicking the left button of a mouse.
- Press the left (**2**) and right (**3**) buttons located beneath the touchpad to perform selection and execution functions. These two buttons are the equivalent of the left and right buttons on a mouse.

Table 1-5. Touchpad Basics

Function	Touchpad (1)	Left Button (2)	Right Button (3)
Execute	Rapidly tap twice.	Quickly click twice.	
Select	Tap once.	Click once.	
Access context menu			Click once.

Touchpad Gestures

Windows 10 and many applications support touchpad gestures that use one or more fingers.

Note: Support for touchpad gestures depends on the active application.

Table 1-6. Touchpad Gestures

Function	Gesture
Toggle the charms	Swipe in from right edge.
Toggle the app commands	Swipe in from top edge.
Switch to previous app	Swipe in from left edge.
Fast scroll	Two-finger slide.
Zoom in/out	Two-finger pinch

Keyboard

The keyboard contains an overlay numeric keys, inverted “T” cursor key, Windows® key, Application key, function lock keys, and hotkeys controlling various computer features.

Figure 1-6. Keyboard

Lock Keys

The keyboard has three lock keys which the user can toggle on and off.

Figure 1-7. Keyboard Lock Keys

Table 1-7. Keyboard Lock Keys

Lock Key	Description
Caps Lock	When On, all typed alphabetic characters appears in uppercase.
Num Lock ***Fn+F11***	Off by default. When On, the overlay numeric keypad function is activated.
Scroll Lock ***Fn+F12***	When On, the screen moves one line up or down when pressing the up or down cursor keys. Scroll Lock is not applicable for all applications.

Windows Keys

The keyboard has two keys that perform Windows-specific functions.

Figure 1-8. Windows-specific Keys

Table 1-8. Windows-specific Keys

Key	Description
Windows Logo key	Pressed alone, this key has the same effect as clicking on the *Windows Start* button; it launches the *Start* menu. It can also be used with other keys to provide a variety of functions. Functions supported by Windows XP, Windows Vista, Windows 7 and Windows 8: • : Toggle the screen between desktop and *Start* screen • +***R***: Open the *Run* dialog box • +***M***: Minimizes all windows • ***Shift***+ +***M***: Restore minimized windows to the desktop • +***F1***: Show the *Help* window • + ***E***: Open *Windows Explorer* • +***F***: Search for a file or folder • + ***D***: Display the desktop • ***Ctrl***+ +***F***: Search for computers (if you are on a network) • ***Ctrl***+ +***L***: Lock your computer (if you are connected to a network domain), or switch users (if you're not connected to a network domain) • ***Ctrl***+ +***Tab***: Moves focus from *Start* menu, to the *Quick Launch* toolbar, to the system tray (use ◁ or ▷ to move focus to items on the *Quick Launch* toolbar and the system tray) • +***Tab***: Cycle through programs on the taskbar • +***Break***: Display the *System Properties* dialog box Functions supported by Windows XP: • +***Break***: Display the *System Properties* dialog box • +***U***: Open the *Ease of Access Center* window
Application key	This key has the same effect as clicking the right mouse button; it opens the application's context menu.

Hotkeys

The computer uses hotkeys or key combinations to access most computer controls. To activate hotkeys, press and hold the ***Fn*** key before pressing the key in the combination.

Figure 1-9. Hotkeys

Table 1-9. Hotkeys

Hotkey	Icon	Function	Description
Fn+F2		Touchpad toggle	Turns the internal touchpad on and off.
Fn+F3		Airplane mode	Turns on / off the computer's network devices.
Fn+F4		Sleep	Puts the computer in Sleep mode.
Fn+F5		Display toggle	Switches the display output between the display screen, external monitor (if connected) or both.
Fn+F6		Display off	Turns the display screen backlight off to save power. Press any key to return.
Fn+F7		KB Brightness down	Decreases the keyboard backlight brightness.
Fn+F8		KB Brightness up	Increases the keyboard backlight brightness.
Fn+F9	End	End	Scrolls to the end of the document.
Fn+F10	Home	Home	Scrolls to the beginning of a document.
Fn+		Play/Pause	Play or pause a selected media file.
Fn+		Previous	Return to the previous media file.
Fn+		Next	Jump to the next media file.
Fn+►		Brightness up	Increases the screen brightness.
Fn+◄		Brightness down	Decreases the screen brightness.
Fn+▲	Pg Up	Page Up	Scrolls up a page in a document.
Fn+▼	Pg Dn	Page Down	Scrolls down a page in a document.

D2D Recovery

The Disk to Disk (D2D) recovery function allows you to use the recovery partition to troubleshoot your computer.

1. Restart the computer.
2. During POST, press ***F2*** to access the *BIOS Setup* screen.
3. Select the *Main* menu.
4. Select the *D2D Recovery* field and make sure it is set to **Enabled**.
5. Press ***F10*** to save settings and close the *BIOS Setup* screen.
6. During POST, press ***Alt+F10*** to enter the system recovery partition. This will display the *eRecovery Management* window.
7. Follow the onscreen instructions to return your computer to factory condition.

System Block Diagram

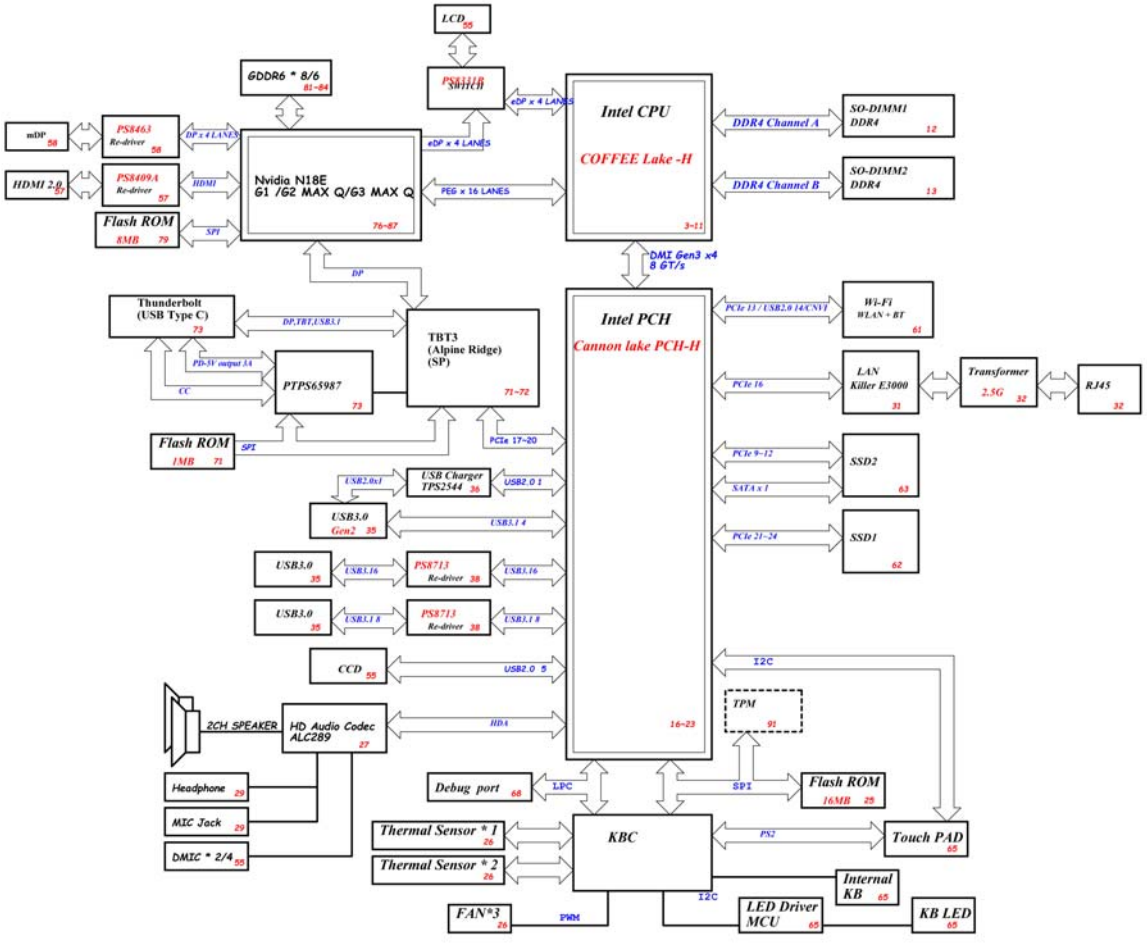


Figure 1-10. System Block Diagram

Specification Tables

Computer Specifications

Item	Metric	Imperial
Dimensions		
Width	35.85 cm	14.11 in
Depth	25.50 cm	10.04 in
Height	1.79 cm	0.7 in
Weight (equipped with 4-cell battery pack)	2.1 kg	4.63 lbs
Input power		
Operating voltage	19.5 V	
Operating current (max)	8.25 A	
Temperature		
Operating (not writing to optical disc)	0 to +40 °C	32 to +104 °F
Operating (writing to optical disc)	0 to +40 °C	32 to +104 °F
Nonoperating	-20 to +60 °C	-4 to +140 °F
Relative humidity		
Operating	0% to 80%	
Nonoperating	0% to 80%	
Maximum altitude (unpressurized)		
Operating	N/A	N/A
Nonoperating	N/A	N/A
Shock		
Operating	105 g, 2 ms, half-sine	3.7 lbs, 0.002 s, half-sine
Nonoperating	220 g, 2 ms, half-sine	7.76 lbs, 0.002 s, half-sine
Random vibration		
Operating	0.6 g zero-to-peak, 5 to 500 Hz, random wave, 30 min	
Nonoperating	1.5 g zero-to-peak, 5 to 500 Hz, random wave, 30 min	
Applicable product safety standards specify thermal limits for plastic surfaces. The computer operates well within this range of temperatures.		

System Board

Item	Specification
Core logic	Intel® Coffee Lake H Platform
Graphics	• NVIDIA® GeForce® RTX 2080M • NVIDIA® GeForce® RTX 2070M • NVIDIA® GeForce® RTX 2060M • Intel® HD Graphics
LAN	Killer™ LAN E3000
USB 2.0/3.0	Integrated in the Mobile Intel® HM370 Express Chipset
Wireless LAN + BT	Killer™ Wireless-AC 1550 / 1550i
Audio codec	Realtek ALC289

Processor

Item	Specification
CPU type	8th Generation Intel® Core™ Mobile Processor (Coffee Lake)
Core logic	L1 cache size • 6 x 32 KB 8-way set associative instruction caches • 6 x 32 KB 8-way set associative data caches L2 cache size • 6 x 256 KB 4-way set associative caches L3 cache size • 9 MB 12-way set associative shared cache

Processor Specifications

Item	CPU Speed	Cores/ Threads	Max Turbo Freq	Mfg Tech	L3 Cache	Max TDP
i7-8750H	2.2 GHz	6C/12T	4.1 GHz	14 nm	9 MB	45 W
i5-8300H	2.3 GHz	4C/8T	4.0 GHz	14 nm	8 MB	45 W

CPU Fan True Value Table

CPU Temperature	CPU Fan Speed (RPM)	GPU2 Fan Speed (RPM)	GPU1 Fan Speed (RPM)	SPL Spec (dBA)
45	2100	2500	2100	22
51	2300	2800	2400	25
57	2600	3100	2600	28
64	2900	3400	2900	31
71	3100	3800	3300	34

CPU Temperature	CPU Fan Speed (RPM)	GPU2 Fan Speed (RPM)	GPU1 Fan Speed (RPM)	SPL Spec (dBA)
78	3000	4300	4100	37
85	3200	4700	4600	40
90	3400	5300	5100	43
Throttling 50%: On = 99° C; Off = 85° C				
OS shuts down at 100° C; Hardware shuts down at 100° C				

GPU Fan True Value Table

CPU Temperature	CPU Fan Speed (RPM)	GPU2 Fan Speed (RPM)	GPU1 Fan Speed (RPM)	SPL Spec (dBA)
x	2100	2500	2100	46
x	2300	2800	2400	49
x	2600	3100	2600	52
x	2900	3400	2900	55
x	3100	3800	3300	58
65	3000	4300	4100	61
73	3200	4700	4600	64
79	3400	5300	5100	67
Throttling 50%: On = 99° C; Off = 85° C				
OS shuts down at 100° C; Hardware shuts down at 100° C				

System Memory

Item	Specification
Memory controller	Integrated in the Intel® Core™ Mobile Processor (Coffee Lake)
Memory size	8 or 16 GB
Number of DIMM socket	2
Maximum memory size per socket	16 GB
Maximum system memory size	32 GB
DIMM type	DDR4 SDRAM
DIMM speed	2666 MHz
DIMM voltage	1.2 V
DIMM package	204-pin SO-DIMM

Memory Combinations

Slot 1 (MB)	Slot 2 (MB)	Total Memory (MB)
8192	N/A	8192
8192	8192	16384
8192	16384	24576
16384	N/A	16384
16384	16384	32768

Graphics Controller

Item	Specification
Chipset	NVIDIA® GeForce® RTX 2080 / 2070 with 8 GB of dedicated GDDR6 VRAM or NVIDIA® GeForce® RTX 2060 with 6 GB of dedicated GDDR6 VRAM

System BIOS

Item	Specification
BIOS vendor	Insyde Software
BIOS version	v 1.00
BIOS ROM type	Hardware
BIOS ROM size	8 MB
Protocols supported	● Legacy BIOS and EFI BIOS architecture support ● PXE specification v2.1 or later ● SMBIOS reference specification v3.0 or later ● USB specification revision 1.1/2.0/3.0 v3.0 or later ● ASF specification v2.0 or later ● PCI/PCI Express base specification revision 3.0 or later ● PCI BIOS specification revision 3.0 or later ● BIOS Boot specification v1.01 or later ● Simple boot flag specification v2.1 or later ● System management bus specification v2.0 or later ● AHCI support ● Microsoft XP/Vista/Windows 7/8/10 logo program ● Microsoft SLP 1.0 support ● Microsoft OA 2.0 and 2.1 support ● ACPI specification 5.0 or later ● UEFI specification 2.6 or later ● Intel V-pro implementation ● AMD Virtualization technology support ● Nvidia Optimus enabled

Keyboard

Item	Specification
Type	Acer FineTip™ RGB backlit keyboard
Total number of keys	86-/87-/90-keys
Windows logo key	Yes
Internal and external USB keyboard work simultaneously?	Yes
Features	• Hotkeys for volume and brightness level, wireless and sleep functions, and display and touchpad toggle • Windows® and Application keys • Inverted “T” cursor keys • Turbo key and power button key • Multilanguage support

Solid State Drive (SSD)

Item	Specification	
Vendor and models	Qimonda F80256PMP, SANDISK SDAPNTW-256G-1014	Qimonda F80512PMP, SANDISK SDAPNTW-512G-1014
Configuration		
Form Factor	M.2 2280	
Interface	PCIe Gen 3 x4 NVMe v1.3	
Capacity (GB)	256	512
Performance		
Max. Read Speed	3000 MB / s	3400 MB / s
Max. Write Speed	1600 MB / s	2400 MB / s
Power		
Requirement	3.3 VDC	

LCD Panel

Item	Specification	
Vendor and models	AUO B156HAN08.2	BOE NV156FHM-N4K
Screen size (diagonal)	15.6W” (15.547”)	15.6W” (15.547”)
Active area	344.16 X193.59 mm	344.16 X193.59 mm
Display resolution (pixels)	1920×1080 (FHD)	1920×1080 (FHD)
Pixel pitch	0.17925×0.17925 mm	0.17925×0.17925 mm

Item	Specification	
Viewing angle (H/V)	85/85/85/85	89/89/89/89
Brightness	300 nit	300 nit
Surface	Antiglare	Antiglare (Haze 25%)
Contrast ratio	800:1	1200:1
Response time Typical Maximum	 9 ms 13 ms	 9 ms 12 ms
Typical power consumption	8.5 W max.	7.7 W max.
Electrical interface	eDP (4 Lanes)	eDP (4 Lanes)
Backlight	WLED	WLED
Weight	310 g Max	300 g Max
Physical size	350.66 × 216.156 × 2.8	350.66 × 215.25 × 2.6 mm

Supported GPU Resolutions

Resolution	64 bits	Intel	NV
800 x 600, 144Hz 4:3	v	v	v
1024 x 768, 144Hz 4:3	v	v	v
1152 x 864, 144Hz 4:3	v	v	v
1280 x 600, 144Hz 32:15	v	v	v
1280 x 720, 144Hz 16:9	v	v	v
1280 x 768, 144Hz 5:3	v	v	v
1280 x 800, 144Hz 8:5	v	v	v
1280 x 960, 144Hz 4:3	v	v	v
1280 x 1024, 144Hz 5:4	v	v	v
1360 x 768, 144Hz 85:48	v	v	v
1366 x 768, 144Hz 16:9	v	v	v
1400 x 1050, 144Hz 4:3	v	v	v
1440 x 900, 144Hz 8:5	v	v	v
1600 x 900, 144Hz 16:9	v	v	v
1680 x 1050, 144Hz 8:5	v	v	v
1920 x 1080, 144Hz 16:9	v	v	v

Supported Display Resolutions

Resolution	64 bits	Intel	NV
720 x 480, 144Hz 3:2	—	—	v
800 x 600, 144Hz 4:3	v	v	v
1024 x 768, 144Hz 4:3	v	v	v
1152 x 864, 144Hz 4:3	v	v	v
1280 x 600, 144Hz 32:15	v	v	v
1280 x 720, 144Hz 16:9	v	v	v
1280 x 768, 144Hz 5:3	v	v	v
1280 x 800, 144Hz 8:5	v	v	v
1280 x 960, 144Hz 4:3	v	v	v
1280 x 1024, 144Hz 5:4	v	v	v
1360 x 768, 144Hz 85:48	v	v	v
1366 x 768, 144Hz 16:9	v	v	v
1400 x 1050, 144Hz 4:3	v	v	v
1440 x 900, 144Hz 8:5	v	v	v
1600 x 900, 144Hz 16:9	v	v	v
1600 x1024, 144Hz 25:16	—	—	v
1600 x1200, 144Hz 4:3	—	—	v
1680 x 1050, 144Hz 8:5	v	v	v
1920 x 1080, 144Hz 16:9	v	v	v

Audio Codec

Item	Specification
Controller	Realtek ALC289
Features	• Supports PCBEEP pass-through to Class-D output, headphone amplifier and Class-D speaker amplifier • Sound pressure level protection against excursion damage or temperature damage • AGC (Auto Gain Control) function for Class-D amplifier removes distortion when outputting high volume sound • SPDIF-OUT supports 16/20/24-bit format and 44.1/48/88.2/96/192 kHz sample rate • 48-pin 6x6 mm MQFN “Green” package

Audio Interface

Item	Specification
Controller	Realtek ALC289
Audio onboard	Yes
Audio channel	Stereo
Resolution	16/20/24 bit stereo full duplex
Compatibility	High Definition Audio Specification
Sampling rate	192 kHz resolution VSR (Variable Sampling Rate)
Internal microphone	Yes, digital microphone
Internal speaker/quantity	Yes, two speakers

Webcam

Item	Specification
Vendor and models	● LITEON HD Camera 7BF115N2 ● CHICONY HD Camera CH_OV9734_RTS5846W
Resolution	1.0 MP HD

LAN

Item	Specification
LAN controller	Killer™ Ethernet E3000
LAN connector type	RJ-45
LAN connector location	One (left)
Features	● Integrated 10/100/1000Mbps/2.5Gbps transceiver ● Compatible with 2.5GBASE-T Alliance PHY Specification ● Supports 2.5 Gbps with Cat 5e and above ● IPv4 and IPv6 support ● Supports jumbo frame to 16K bytes ● RSS support ● Supports Wake Up Frame or Magic Packet ● Supports APCI, PCI MSI, and MSI-X ● Compliant with Microsoft NDIS5, NDIS6 (IPv4, IPv6, TCP, UDP) Checksum and ● Segmentation Task-offload features ● Supports IEEE 802.1P Layer 2 Priority Encoding ● IEEE 802.1Q VLAN support ● IEEE 802.1p QoS support ● Supports PCIe L1 substate L1.1and L1.2 ● Features inter-connect PCI Express technology ● Supports connected standby ● Supports IEEE 802.3az-2010 (Energy Efficient Ethernet)

Wireless LAN

Item	Specification
Module	Killer™ Wireless-AC 1550 / 1550i
Frequency band	Dual Band (2.4 GHz and 5 GHz)
Protocols and data rates supported	802.11a/b/g/n/ac
Interface	PCI Express
Form factor	M.2 (NGFF) mini PCIe card type
Antennae	Dual MHF4 Antenna Connectors

USB Interface

Item	Specification
Controller	Integrated in the Mobile Intel® HM370 Express Chipset
Number and location of USB port	• USB 3.1 Gen 1 – Three (2 on right side and 1 on left side) • USB 3.1 Gen 2 (Type-C) – One (right side)
EHCI	2
Output current	1.0A for each connector

HDMI Port

Item	Specification
Compliance level	HDMI 2.0
Data throughput	Up to 68.7 billion colors (4K 12-bit colour depth)
Number of HDMI port	One
Location	Left

System LED Indicators

Item	Specification
Power status	• Solid blue: The computer is turned on. • Blinking amber: The computer is in power-saving mode. • Indicator off: The computer is turned off.
Battery status	AC adapter connected: • Solid blue: The battery charge is at full capacity. • Solid amber: Battery charging. • Blinking amber: Battery is in abnormal stop charge or battery is in low power state. AC adapter disconnected: • Blinking amber: Battery charge is in critically low state • Indicator off: Discharging state.

Battery Pack

Item	Specification
Vendor and models	Getac AP18J
Battery type	Lithium-polymer
Pack capacity	5550 mAh
Number of battery cell	4
Package configuration	4S1P

AC Adapter

Item	Specification
Input rating	180 W
Input AC current (max)	100-240 V, 2.5 A, 50-60 Hz
Output	19.5 V, 3-pin

System Power Management

Item	Specification
Power management system	ACPI 3.0-compliant
Power global states	● G3 Mechanical Off - This off state is entered through a mechanical means; no electrical current is running through the circuitry and it can be worked on without damaging the hardware or endangering service personnel. Except for the real-time clock, power consumption is zero. ● G2/S5 Soft Off - OS initiated shutdown. The computer consumes a minimal amount of power. No user mode or system mode code is run. It is not safe to disassemble the machine in this state. ● G1 Sleeping - The computer consumes a small amount of power, user mode threads are not being executed, and the system “appears” to be off. It is not safe to disassemble the machine in this state ● G0 Working - The computer dispatches user mode (application) threads and they execute. It is not safe to disassemble the machine in this state. ● S4 Non-Volatile Sleep - Also known as hibernation state. A special global system state that allows system context to be saved and restored (relatively slowly) when power is lost to the mainboard. It is not safe to disassemble the machine in this state.

System Interrupt Specification

Resource	Device
(ISA) 0x00000000 (00)	System timer
(ISA) 0x00000001 (01)	Standard PS/2 Keyboard
(ISA) 0x00000008 (08)	System CMOS/real time clock
(ISA) 0x00000013 (13)	Numeric data proccessor
(ISA) 0x0000000E (14)	Intel(R) Serial IO GPIO Host Controller - INT3450
(ISA) 0x00000036 (54) ~ (ISA) 0x00000059 (89)	Microsoft ACPI-Compliant System
(ISA) 0x0000005A (90)	I2C HID Device
(ISA) 0x0000005A (90) ~ (ISA) 0x000000CC (204)	Microsoft ACPI-Compliant System
(ISA) 0x00000100 (256) ~ (ISA) 0x000001FF (511)	Microsoft ACPI-Compliant System
(PCI) 0x00000010 (16)	High Definition Audio Controller
(PCI) 0x00000010 (16)	Intel(R) Dynamic Platform and Thernal Framework Processor Participant
(PCI) 0x00000010 (16)	Intel(R) Serial IO I2C Host Controller - A368
(PCI) 0x00000011 (17)	High Definition Audio Controller
(PCI) 0x00000011 (17)	Intel(R) Serial IO I2C Host Controller - A369
(PCI) 0xFFFFFFAD (-83)	NVDIA GeForce RTX 2070
(PCI) 0xFFFFFFAE (-82)	Intel(R) Management Engine Interface
(PCI) 0xFFFFFFAF (-81) ~ (PCI) 0xFFFFFFB2 (-78)	Killer E3000 2.5 Gigabit Ethernet Controller
(PCI) 0xFFFFFFB3 (-77)	Killer(R) Wireless-AC 1550i Wireless Network Adapter (9560NGW) 160MHz
(PCI) 0xFFFFFFB4 (-76)	Killer(R) Wireless-AC 1550i Wireless Network Adapter (9560NGW) 160MHz
(PCI) 0xFFFFFFB5 (-75)	Intel(R) USB 3.1 eXtensible Host Controller - 1.10 (Microsoft)
(PCI) 0xFFFFFFB6 (-74)	Intel(R) UHD Graphics 630
(PCI) 0xFFFFFFB7 (-73)	NVDIA USB Type-C Port Policy Controller
(PCI) 0xFFFFFFB8 (-72)	NVDIA USB 3.10 eXtensible Host Controller - 1.10(Microsoft)
(PCI) 0xFFFFFFB9 (-71) ~ (PCI) 0xFFFFFFFA (-6)	Intel(R) Chipset SATA/PCIe RST Premium Controller
(PCI) 0xFFFFFFFB (-5)	Intel(R) PCI Express Root Port #9 - A330
(PCI) 0xFFFFFFFC (-4)	Intel(R) PCI Express Root Port #16 - A337
(PCI) 0xFFFFFFFD (-3)	Intel(R) PCI Express Root Port #17 - A340

Resource	Device
(PCI) 0xFFFFFFFE (-2)	Intel(R) PCIe Controller (x16) - 1901

System IO Address Map

Resource	Device
[0x00000000 - 0x00000CF7]	PCI Express Root complex
[0x00000020 - 0x00000021]	Programmable interrupt controller
[0x00000024 - 0x00000025]	Programmable interrupt controller
[0x00000028 - 0x00000029]	Programmable interrupt controller
[0x0000002C - 0x0000002D]	Programmable interrupt controller
[0x0000002E - 0x0000002F]	Motherboard resources
[0x00000030 - 0x00000031]	Programmable interrupt controller
[0x00000034 - 0x00000035]	Programmable interrupt controller
[0x00000038 - 0x00000039]	Programmable interrupt controller
[0x0000003C - 0x0000003D]	Programmable interrupt controller
[0x00000040 - 0x00000043]	System timer
[0x0000004E - 0x0000004F]	Motherboard resources
[0x00000050 - 0x00000053]	System timer
[0x00000060 - 0x00000060]	Standard PS/2 Keyboard
[0x00000061 - 0x00000061]	Motherboard resources
[0x00000062 - 0x00000062]	Microsoft ACPI-Compliant Embedded Controller
[0x00000063 - 0x00000063]	Motherboard resources
[0x00000064 - 0x00000064]	Standard PS/2 Keyboard
[0x00000065 - 0x00000065]	Motherboard resources
[0x00000066 - 0x00000066]	Microsoft ACPI-Compliant Embedded Controller
[0x00000067 - 0x00000067]	Motherboard resources
[0x00000068 - 0x0000006F]	Motherboard resources
[0x00000070 - 0x00000070]	Motherboard resources
[0x00000070 - 0x00000077]	System CMOS/real time clock
[0x00000080 - 0x00000080]	Motherboard resources
[0x00000092 - 0x00000092]	Motherboard resources
[0x000000A0 - 0x000000A1]	Programmable interrupt controller
[0x000000A4 - 0x000000A5]	Programmable interrupt controller
[0x000000A8 - 0x000000A9]	Programmable interrupt controller
[0x000000AC - 0x000000AD]	Programmable interrupt controller

Resource	Device
[0x000000B0 - 0x000000B1]	Programmable interrupt controller
[0x000000B2 - 0x000000B3]	Motherboard resources
[0x000000B4 - 0x000000B5]	Programmable interrupt controller
[0x000000B8 - 0x000000B9]	Programmable interrupt controller
[0x000000BC - 0x000000BD]	Programmable interrupt controller
[0x000000F0 - 0x000000F0]	Numeric data processor
[0x000004D0 - 0x000004D1]	Programmable interrupt controller
[0x00000D00 - 0x0000FFFF]	PCI Express Root complex
[0x00001800 - 0x000018FE]	Motherboard resources
[0x00001800 - 0x000018FE]	Motherboard resources
[0x00001854 - 0x00001857]	Intel(R) Watchdog Timer Driver (Intel(R) WDT)
[0x00002000 - 0x000020FF]	Motherboard resources
[0x00003000 - 0x000030FF]	Killer E3000 2.5 Gigabit Ethernet Controller
[0x00003000 - 0x000030FF]	Intel(R) PCI Express Root Port #16 - A337
[0x00004000 - 0x00004FFF]	Intel(R) PCIe Controller (x16) - 1901
[0x00005000 - 0x0000503F]	Intel(R) UHD Graphics 630
[0x00005040 - 0x0000505F]	Intel(R) SMBus - A323
[0x00005060 - 0x0000507F]	Intel(R) Chipset SATA/PCIe RST Premium Controller
[0x00005080 - 0x00005087]	Intel(R) Chipset SATA/PCIe RST Premium Controller
[0x00005088 - 0x00005088]	Intel(R) Chipset SATA/PCIe RST Premium Controller
[0x0000FFFF - 0x0000FFFF]	Motherboard resources
[0x0000FFFF - 0x0000FFFF]	Motherboard resources
[0x0000FFFF - 0x0000FFFF]	Motherboard resources

CHAPTER 2

System Utilities

System Utilities

This chapter lists the system utilities installed in the Predator Triton 515-51 computer.

BIOS Setup Utility

This utility is a hardware configuration program built into a computer's BIOS (Basic Input/Output System).

The utility is pre-configured and optimized so most users do not need to run it. If configuration problems occur, the setup utility may need to be run. Refer to *Chapter 4, Troubleshooting* when a problem arises.

To enter this utility, during POST (power-on self-test) press ***F2***.

The default setting of the `F12 Boot Menu` is `Disabled`. To change the boot device without entering the *BIOS Setup Utility*, set the parameter to `Enabled`. During the next POST, press ***F12*** to enter the `multi-boot` menu.

Navigating the BIOS Utility

The *BIOS Setup Utility* has five menu options, namely:

- Information
- Main
- Advanced
- Security
- Boot
- Exit

Perform the following actions to navigate through the *BIOS Setup Utility*:

- Press ◁ ▷ to select items in the menu bar.
- Press △ ▽ to select an item in the menu screen or in an option box.
- Press ***F5*** or ***F6*** to change the parameter value.
- Press ***Esc*** to exit from the *Setup Utility*.
- Press ***F9*** to load the default settings.
- Press ***F10*** to save changes and exit from the *Setup Utility*.

NOTE:

Parameter values enclosed in square brackets [ ] can be change. Navigation keys appear on the bottom of the screen. Read the item specific help on the right area of the screen before making changes to the parameter values.

NOTE:

System information can vary depending on the computer model.

BIOS Menus

This section describes the *InsydeH20 BIOS Setup Utility* menu tabs.

NOTE:

The screenshots used in this chapter are for reference only. Actual values can vary depending on the computer model.

Information

This tab shows a summary of the computer‘s hardware information.

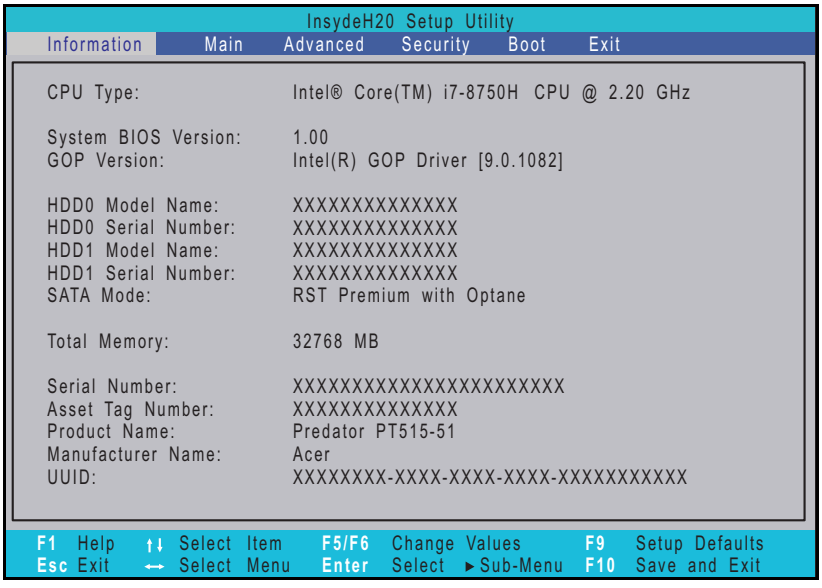


Figure 2-1. Hardware Information

Table 2-1. Hardware Information

Parameter	Description
CPU Type	Model name and core frequency of the installed processor
CPU Speed	Core frequency of the installed processor
System BIOS Version	Current system BIOS version
GOP Version	Current GOP version of the system
HDD Model Name	Model name of the installed hard drive
HDD Serial Number	Serial number of the installed hard drive
ATAPI Model Name	Model name of the installed optical device
Total Memory	Total system memory available
Serial Number	Serial number of the computer

Table 2-1. Hardware Information (Continued)

Parameter	Description
Asset Tag Number	Asset tag number of the computer
Product Name	Model name of the computer
Manufacturer Name	Computer manufacturer
UUID	The universally unique identifier tag assigned to the computer

Main

Use this tab to set the system time and date, enable or disable boot options, and select graphic mode.

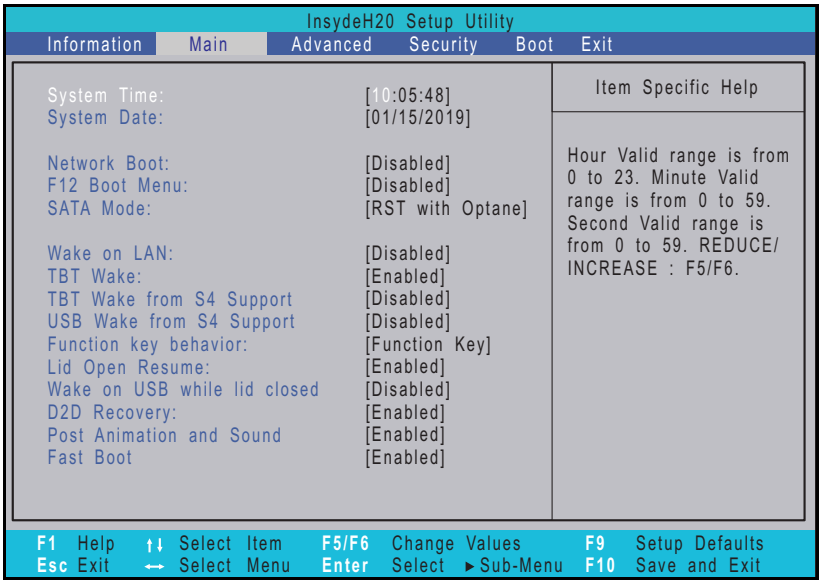


Figure 2-2. BIOS Main

Table 2-2. BIOS Main

Parameter	Description	Format/Option
System Time	System time expressed in 24-hour format.	Format: HH:MM:SS (hour:minute:second)
System Date	System date.	Format: MM/DD/YYYY (month/day/year)
Network Boot	Option to boot system from LAN.	Enabled or Disabled
F12 Boot Menu	Option to enter the *Boot* menu during POST.	Enabled or Disabled
SATA Mode	Option to set the SATA configuration. When set to AHCI mode, the SATA controller enables its AHCI functionality. Set to RST with Optane if the system is Intel Optane memory ready. Set to RST Premium with Optane when you want to create a RAID array. **Note:** Applicable for system that supports Intel Optane memory solution.	AHCI or RST with Optane
Wake on LAN	Option to wake up the system from a power saving mode using LAN.	Enabled or Disabled
TBT Wake	Option to enable S3 wake capability of thunderbolt devices.	Enabled or Disabled

Table 2-2. BIOS Main (Continued)

Parameter	Description	Format/Option
TBT Wake from S4 Support	Option to allow wake capability from S4 of thunderbolt devices.	Enabled or Disabled
USB Wake from S4 Support	Option to allow USB wake from S4.	Enabled or Disabled
Function key	Option to set the Function key to perform special function or activate the F1 to F12 keys.	Special keys or Function keys
Lid Open Resume	Option to enable system to automatically resume after opening the display panel.	Enabled or Disabled
Wake on USB while lid closed	Option to allow USB devices to wake the system, even if the lid is closed.	Enabled or Disabled
D2D Recovery	Option to enable disc-to-disc system recovery feature	Enabled or Disabled
POST Animation & Sound	Option to enable POST animation sound effect.	Enabled or Disabled
Fast Boot	Option to enable fast boot capability.	Enabled or Disabled

Advanced

Use this tab to enable Virtualization Technology in BIOS and configure Graphic mode.

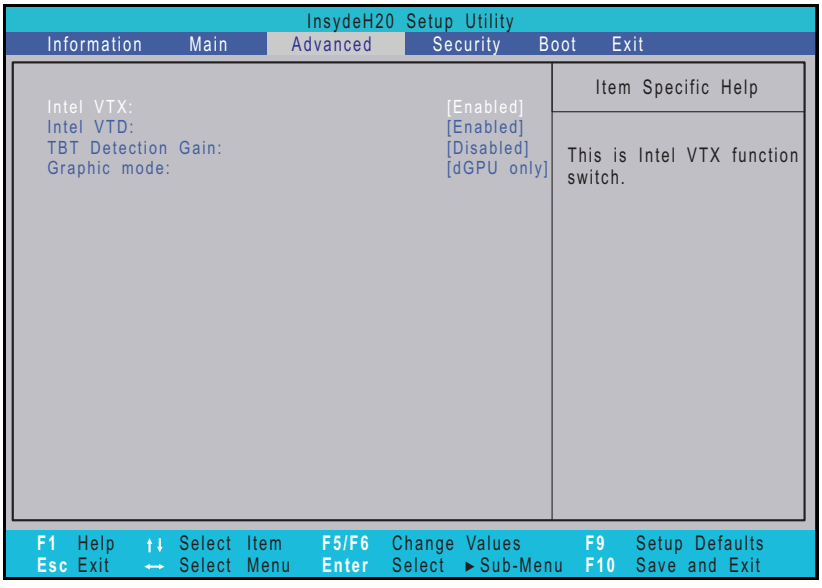


Figure 2-3. BIOS Advanced

Table 2-3. BIOS Advanced

Parameter	Description	Format/Option
Intel VTX	Option to enable the Intel Virtualization Technology.	Enabled or Disabled
Intel VTD	Option to enable the Intel Virtualization Technology for directed I/O. VT-d allows a LAN card to be dedicated to a guest system, which makes attainment of increased network performance beyond that of an emulated LAN card possible.	Enabled or Disabled
TBT Detection Gain	Option to enable support for multiple layer thunderbolt devices detection.	Enabled or Disabled
Graphic mode	Option to select graphic mode.	MSHybrid or dGPU only

Security

Use this tab to safeguard and protect the computer from unauthorized use.

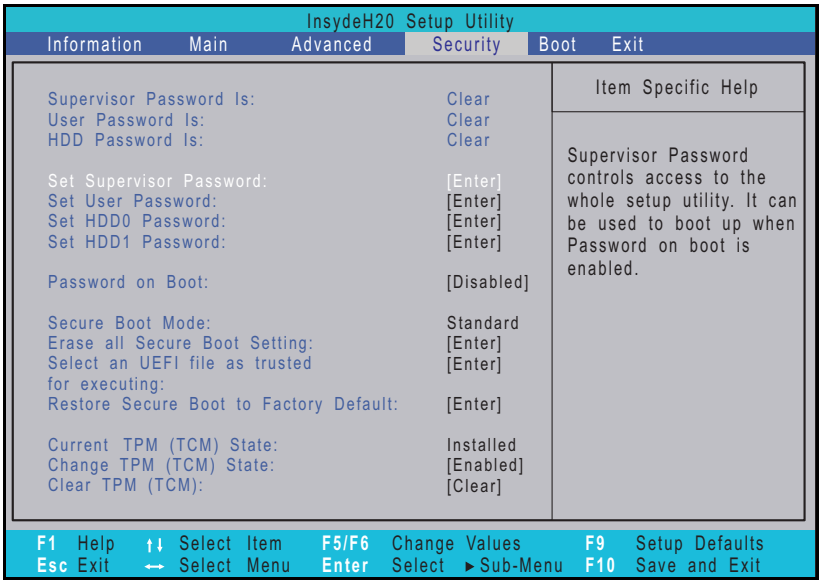


Figure 2-4. BIOS Security

Table 2-4. BIOS Security

Parameter	Description	Option
Supervisor Password Is	Supervisor password setting	Clear or Set
User Password Is	User password setting	Clear or Set
HDD Password Is	Hard drive password setting	Clear or Set
Set Supervisor Password	Option to set the supervisor password	–
Set User Password	Option to set a user password	–
Set HDD Password	Option to set the hard drive password	–
Password on Boot	Option to enable password requirement during system boot	Enabled or Disabled
Secure Boot Mode	Option to select between two secure boot modes in firmware setup. Custom mode provides option to modify the contents of the Secure Boot signature databases (PK, KEK, db, dbx). Standard mode restores the firmware settings to its factory defaults. Any customized secure boot variables are also reset to factory defaults.	Standard or Custom
Erase all Secure Boot Setting	Option to clear all Secure Boot signature databases (PK, KEK, db, dbx). **Note:** An administrator password is required to configure this parameter.	–

Table 2-4. BIOS Security (Continued)

Parameter	Description	Option
Select an UEFI file as trusted for executing	Option to launch an UEFI application from the FAT32 EFI partition on your hard drive or FAT32 formatted USB drive. **Note:** An administrator password is required to configure this parameter.	–
Restore Secure Boot to Factory Default	Option to set the secure boot mode to standard mode which restores the factory defaults. **Note:** An administrator password is required to configure this parameter.	–
Current TPM (TCM) State	TPM or TCM state	Installed or Not Installed
Change TPM (TCM) State	Option to change the TPM or TCM state **Note:** This parameter is grayed out if the Supervisor Password is not set. The default TPM (TCM) state is set to Enabled and requires a Supervisor Password to change the state. When set to Disabled, BIOS will not initialize the TPM 2.0 device and will hide the device in the ACPI table. The TPM device will not appear in the Windows Device Manager.	Enabled or Disabled
Clear TPM (TCM)	Option to clear TPM or TCM **Note:** This parameter is grayed out if the Supervisor Password is not set.	No Change

NOTE:

When prompted to enter the password, three attempts are allowed before system halts. Resetting the BIOS password may require the user to return the computer to its dealer.

Setting a Password

Follow the succeeding instructions to set the user or supervisor passwords.

1. Press △▽ to highlight a `Set _____ Password` parameter and press ***Enter***. The `Set _____ Password` dialog box appears.

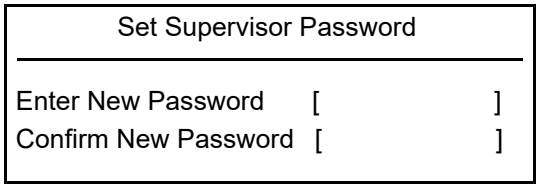


Figure 2-5. Set Supervisor Password

2. Type a new password in the `Enter New Password` field and press ***Enter***. Passwords are not case sensitive and the length must not exceed eight alphanumeric characters (A-Z, a-z, 0-9).
3. Retype the password in the `Confirm New Password` field and press ***Enter***.

IMPORTANT:

Use care when typing a password. Characters do not appear on the screen.

4. Press ***Enter***.

NOTE:

Users can choose to enable the `Password on Boot` parameter.

5. Press ***F10*** to save changes and exit from the *BIOS Setup Utility*.

Removing a Password

Perform the following:

1. Press △▽ to highlight a `Set _____ Password` parameter and press ***Enter***. The `Set _____ Password` dialog box appears.

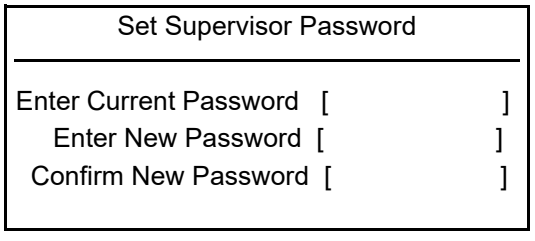


Figure 2-6. Set Supervisor Password

2. Type the current password in the `Enter Current Password` field and press ***Enter***.
3. Press ***Enter*** twice without typing anything in the `Enter New Password` and `Confirm New Password` fields.
4. Press ***F10*** to save changes and exit from the *BIOS Setup Utility*.

Changing a Password

1. Press △▽ to highlight a `Set _____ Password` parameter and press ***Enter***. The `Set _____ Password` dialog box appears.

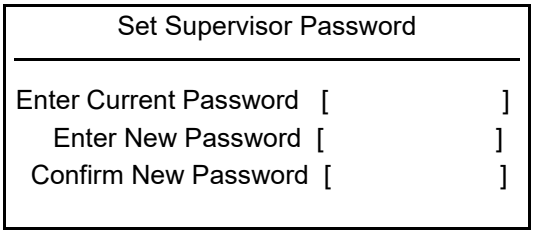


Figure 2-7. Set Supervisor Password

2. Type the current password in the `Enter Current Password` field and press ***Enter***.
3. Type the new password in the `Enter New Password` field.
4. Retype the password in the `Confirm New Password` field.

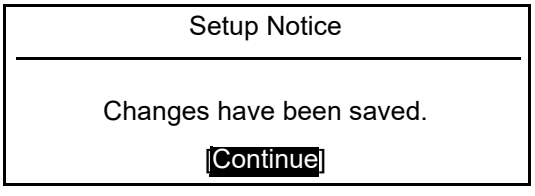


Figure 2-8. Setup Notice

5. Press ***Enter***. Computer sets `Supervisor Password` parameter to `Set`.

NOTE:

Users can choose to enable the `Password on Boot` parameter.

6. Press ***F10*** to save changes and exit from the *BIOS Setup Utility*.

Boot

Use this tab to set the preferred drive sequence in which the *Setup Utility* attempts to boot the operating system. By default, the computer searches for boot devices in the following order:

1. Windows Boot Manager
2. Primary Hard Disk Drive
3. Optical disc drive
4. External USB bootable device
5. Network boot - IPV4
6. External USB hard drive
7. External USB optical drive
8. Network boot - IPV6

Press △▽ to select a device and press ***F5*** or ***F6*** to move it up or down the list.

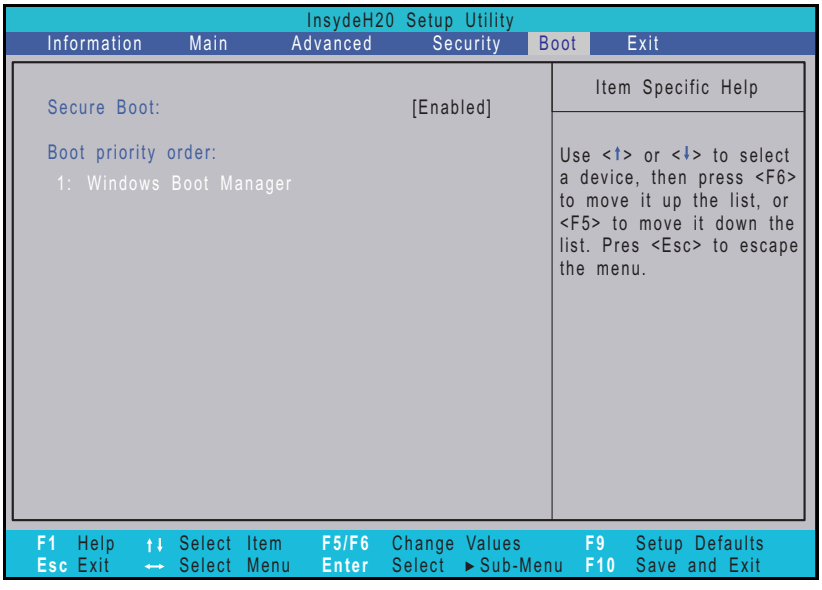


Figure 2-9. BIOS Boot

Table 2-9. BIOS Boot

Parameter	Description	Option
Secure Boot	Option to enable or disable secure boot check. **Note:** Configure this option only if Boot Mode is set to UEFI.	Enabled or Disabled
Boot Priority Order	Option to change the order of drives from which your computer will try to start up.	–

Exit

Use the Exit tab to save or discard changes and close the *BIOS Setup Utility*.

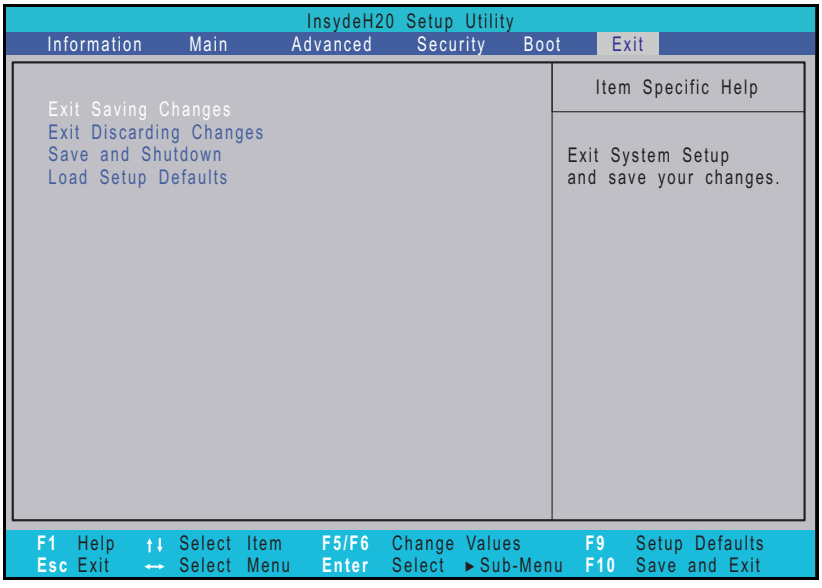


Figure 2-10. BIOS Exit

Table 2-10. Exit Parameters

Parameter	Description
Exit Saving Changes	Close the *BIOS Setup Utility* and save the setup changes.
Exit Discarding Changes	Close the *BIOS Setup Utility* without saving the setup changes.
Save and Shutdown	Save the setup changes and shutdown the computer.
Load Setup Default	Load the default values for all setup items.

BIOS Flash Utilities

BIOS Flash memory updates are required for the following conditions:

- New versions of system programs
- New features or options
- Restore a BIOS when it becomes corrupted.

Use the Flash utility to update the system BIOS Flash ROM.

NOTE:
If a Crisis Recovery Disc is not available, create one before Flash utility is used.

NOTE:
Do not install memory related drivers (XMS, EMS, DPMI) when Flash is used.

NOTE:
Use AC adapter power supply when running Flash utility. If battery pack does not contain power to finish loading BIOS Flash, do not boot system.

Perform the following to run Flash.

1. Turn off the computer.
2. Insert the USB device containing the BIOS file and the Crisis Recovery disk files to any USB port.
3. Press and hold the ***Fn*** + ***Esc*** keys (this is the BIOS recovery hotkey), then press the power button.
4. Release the ***Fn*** + ***Esc*** keys after POST.

NOTE:
Flash utility has auto execution function.

Removing the HDD Password

This section explains how to remove the HDD password. The HDD Password Utility can be executed in DOS and Windows environment.

NOTE:

If the incorrect HDD password is entered three times in succession, an HDD password error code is generated (Figure 2-11). Write down this password error code then follow the procedures below on how to remove the HDD password.

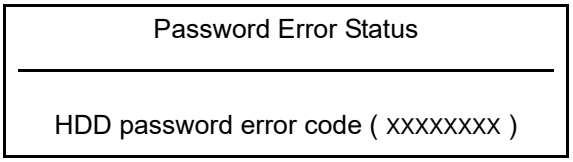


Figure 2-11. Password Error Status

Removing the HDD Password (DOS)

To reset the HDD password under DOS environment:

1. Open the computer in a DOS environment.
2. Type the following command:

```
C\> unlockPw.exe XXXXXXXX
```

Figure 2-12. HDD Master Password

3. Write down the generated master password.
4. Reboot the computer.
5. In the HDD password prompt, type the master password generated in step 2, then press ***Enter***.

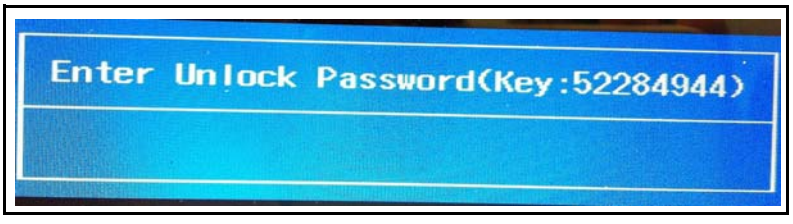


Figure 2-13. HDD Master Password

Removing the HDD Password (Windows)

To reset the HDD password under Windows environment:

1. Open the computer in a Windows environment.
2. Open the DOS command window.
3. Type the following command:

```
C\> unlockPw.exe XXXXXXXX
```

Figure 2-14. HDD Master Password

4. Write down the generated master password.
5. Reboot the computer.
6. In the HDD password prompt, type the master password generated in step 3, then press ***Enter***.

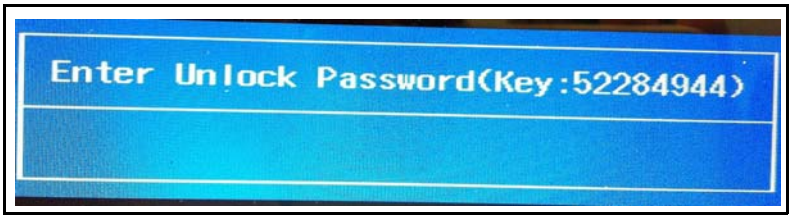


Figure 2-15. HDD Master Password

Removing BIOS Passwords

This section explains how to remove the BIOS password. The BIOS password can be removed by shorting the hardware gap or by executing the BIOS Password Utility.

Removing the BIOS Passwords (Hardware Gap)

To clear a lost BIOS password (user or supervisor password), you need to short the clear password hardware gap (G2001) located on the mainboard.

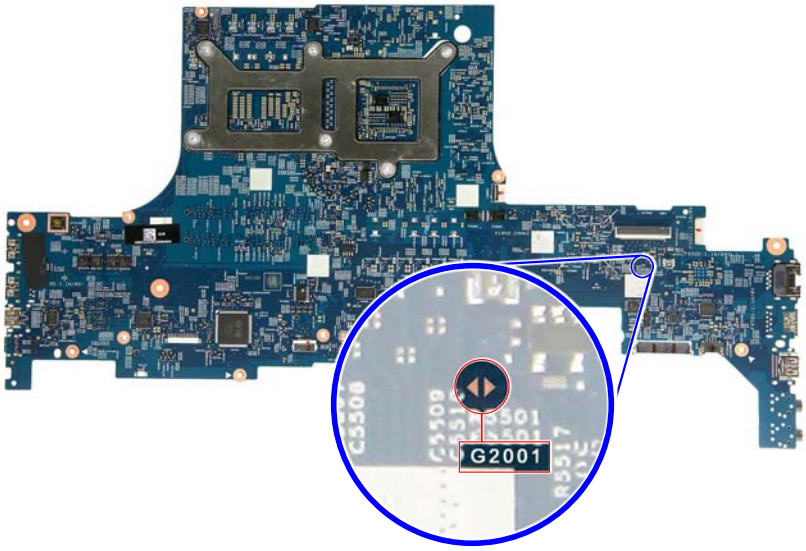


Figure 2-16. G2001 Hardware Gap

1. Shut down the computer and disconnect the AC adapter and all other peripherals from the computer.
2. Perform the "Removing the Lower Case" procedure described on page 3-9. Do not disconnect the DC-In and LCD cables from the mainboard.
3. Perform the "Removing the Battery Pack" procedure described on page 3-11.
4. Locate the G2001 gap.
5. Use an electrical conductivity tool to short the two contacts on the hardware gap together.
6. While resting the tool on the two contacts, plug one end of the AC adapter into the DC-In jack and plug one end to an electrical outlet.
7. Press the ⏻ button to turn on the computer.
8. After the BIOS POST, remove the tool from the hardware gap.
9. Perform the "Replacing the Battery Pack" procedure described on page 3-82.
10. Perform the "Replacing the Lower Case" procedure described on page 3-84.
11. Turn on the computer and press ***F2*** during bootup to access the *Setup Utility*. If no password prompt appears, the BIOS passwords have been cleared. If the prompt appears, repeat steps 2-13 until the BIOS passwords have been cleared.
12. Press ***F9*** to load the system defaults.
13. Press ***F10*** to save the changes you made and close the Setup Utility.

Removing the BIOS Passwords (Software)

The BIOS Password Utility can be executed in DOS and Windows environment.

1. If the incorrect BIOS password is entered three times in succession, a pop out window will appear (Figure 2-17). Select `Enter Unlock Password` to generate a BIOS password error code.

Figure 2-17. Password Error Status

2. Write down this password error code then follow the procedures below on how to remove the BIOS password.

Figure 2-18. Password Error Code

DOS Mode

To reset the BIOS password under DOS environment:

1. Open the computer in a DOS environment.
2. Type the following command:

```
C\> unlockpw.exe XXXXXXXX
```

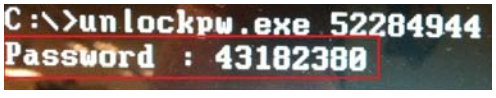


Figure 2-19. BIOS Supervisor Password

3. Write down the generated supervisor password.
4. Reboot the computer. During POST, press ***F2***.
5. Select `Enter Unlock Password`.

Figure 2-20. Password Error Status

6. Key in the generated supervisor password to unlock the system.

Figure 2-21. Password Unlock Code

7. Reboot the computer and press ***F2*** during POST to enter BIOS Setup Utility.

8. Key in the generated supervisor password in below window to unlock the system.

Figure 2-22. Generated Supervisor Password

9. Perform the "Removing a Password" procedure described on page 2-11 using the generated supervisor password to clear the password.

Windows Mode

To reset the BIOS password under Windows environment:

1. Open DOS Command Prompt.
2. Type the following command:

```
C\> unlockpw.exe XXXXXXXX
```

Figure 2-23. BIOS Supervisor Password

3. Write down the generated supervisor password.
4. Reboot the computer. During POST, press ***F2***.
5. Select `Enter Unlock Password`.

Figure 2-24. Password Error Status

6. Key in the generated supervisor password to unlock the system.

Figure 2-25. Password Unlock Code

7. Reboot the computer and press ***F2*** during POST to enter BIOS Setup Utility.
8. Key in the generated supervisor password in below window to unlock the system.

Figure 2-26. Generated Supervisor Password

9. Perform the "Removing a Password" procedure described on page 2-11 using the

generated supervisor password to clear the password.

Using DMI Utility

The *DMI* (Desktop Management Interface) *Tool* generates a standard framework for managing and tracking system components. The DMI utility supports DOS, Window 7 and Windows 8 with WMI interface installation.

Using DMI Utility

Perform the following steps to use the DMI Utility:

1. Navigate to the correct DMI folder (DMI\Windows\x86 for 32-bit Windows OS or DMI\WIndows\x64 for 64-bit Windows OS).
2. Using your mouse, **right click** the **wDMI32.exe** or **wDMI64.exe** file and run as administrator.

NOTE:

Refer to the tables below for a list of DMI tool command usage used in DOS, 32-bit Windows or 64-bit Windows OS mode.

Table 2-16. DMI Tool Command Usage (DOS)

Parameter	Description	Command
Manufacture Name	Read Manufacture Name Write Manufacture Name	**DMI.EXE /Rm** **DMI.EXE /Wm [String]**
Product Name	Read Product Name Write Product Name	**DMI.EXE /Rp** **DMI.EXE /Wp [String]**
F/G Serial Number	Read F/G Serial Number Write F/G Serial Number	**DMI.EXE /Rfgsn** **DMI.EXE /Wfgsn [String]**
M/B Serial Number (Type 2)	Read M/B Serial Number (Type 2) Write M/B Serial Number (Type 2)	**DMI.EXE /Rmbsn** **DMI.EXE /Wmbsn [String]**
UUID	Read UUID Generate UUID and Write Write UUID	**DMI.EXE /RUUID** **DMI.EXE /GWUUID** **DMI.EXE /WUUID [String]**
Asset tag	Read Asset Tag Write Asset Tag	**DMI.EXE /Rasset** **DMI.EXE /Wasset [String]**

.

Table 2-17. DMI Tool Command Usage (32-bit Windows)

Parameter	Description	Command
Manufacture Name	Read Manufacture Name Write Manufacture Name	**wDMI32.EXE /Rm** **wDMI32.EXE /Wm [String]**
Product Name	Read Product Name Write Product Name	**wDMI32.EXE /Rp** **wDMI32.EXE /Wp [String]**
F/G Serial Number	Read F/G Serial Number Write F/G Serial Number	**wDMI32.EXE /Rfgsn** **wDMI32.EXE /Wfgsn [String]**
M/B Serial Number (Type 2)	Read M/B Serial Number (Type 2) Write M/B Serial Number (Type 2)	**wDMI32.EXE /Rmbsn** **wDMI32.EXE /Wmbsn [String]**
UUID	Read UUID Generate UUID and Write Write UUID	**wDMI32.EXE /RUUID** **wDMI32.EXE /GWUUID** **wDMI32.EXE /WUUID [String]**
Asset tag	Read Asset Tag Write Asset Tag	**wDMI32.EXE /Rasset** **wDMI32.EXE /Wasset [String]**

.

Table 2-18. DMI Tool Command Usage (64-bit Windows)

Parameter	Description	Command
Manufacture Name	Read Manufacture Name Write Manufacture Name	**wDMI64.EXE /Rm** **wDMI64.EXE /Wm [String]**
Product Name	Read Product Name Write Product Name	**wDMI64.EXE /Rp** **wDMI64.EXE /Wp [String]**
F/G Serial Number	Read F/G Serial Number Write F/G Serial Number	**wDMI64.EXE /Rfgsn** **wDMI64.EXE /Wfgsn [String]**
M/B Serial Number (Type 2)	Read M/B Serial Number (Type 2) Write M/B Serial Number (Type 2)	**wDMI64.EXE /Rmbsn** **wDMI64.EXE /Wmbsn [String]**
UUID	Read UUID Generate UUID and Write Write UUID	**wDMI64.EXE /RUUID** **wDMI64.EXE /GWUUID** **wDMI64.EXE /WUUID [String]**
Asset tag	Read Asset Tag Write Asset Tag	**wDMI64.EXE /Rasset** **wDMI64.EXE /Wasset [String]**

3. Reboot when the process has completed.

CHAPTER 3

Machine Maintenance

Machine Maintenance

This chapter contains step-by-step procedures on how to disassemble the notebook computer for maintenance and troubleshooting.

Machine Disassembly and Replacement

Cable paths and positioning may not represent the actual model. During the removal and installation of the components, ensure all available cable channels and clips are used and that the cables are replaced in the same position.

The screws for the different components vary in size. During the disassembly process, group the screws with the corresponding components to avoid mismatch when putting back the components.

The product previews seen in the disassembly procedures may not represent the final product color or configuration.

Recommended Equipment

To disassemble the computer, the following tools are suggested:

- Wrist grounding strap and conductive mat for preventing electrostatic discharge
- Non-marring scribe
- Phillips screwdriver
- Flat-blade screwdriver
- Plastic flat screwdriver
- Plastic tweezers
- Cyanoacrylate glue

Replacement Requirements

NOTE:

Cabling and components require adhesive to be applied during the replacement and reassembly process.

NOTE:

When replacing individual component, the system should be reset to the factory default condition by removing and replacing the RTC battery. Please refer to the procedures described on pages 3-15 and 3-79.

Pre-disassembly Instructions

Before proceeding with the disassembly procedure, make sure that you do the following:

1. Turn off the power to the system and all peripherals.
2. Unplug the AC adapter and all power and signal cables from the system.

Figure 3-1. AC Adapter

3. Place the system on a flat, stable surface.

Disassembly Process

The disassembly process is divided into the following stages:

- Main Unit Disassembly
- LCD Module Disassembly

The flowcharts provided in the succeeding disassembly sections illustrate the entire disassembly sequence. Observe the order of the sequence to avoid damage to any of the hardware components. For example, if you want to remove the mainboard, you must first remove the keyboard, then disassemble the inside assembly frame in that order.

Table 3-1. Main Screw List

Screw	Quantity	Acer Part Number
M2 x L4	17	86.00E92.724
M2 x L2	8	86.MQJN1.001
M2.5 x L6	10	86.Q50N1.001
M2.5 x L2.5	6	86.9AR13.2R5
M2 x L2.5	4	86.M92N1.005
M2.5 x L6	4	86.MVAN1.002

Main Unit Disassembly Process

Main Unit Disassembly Flowchart

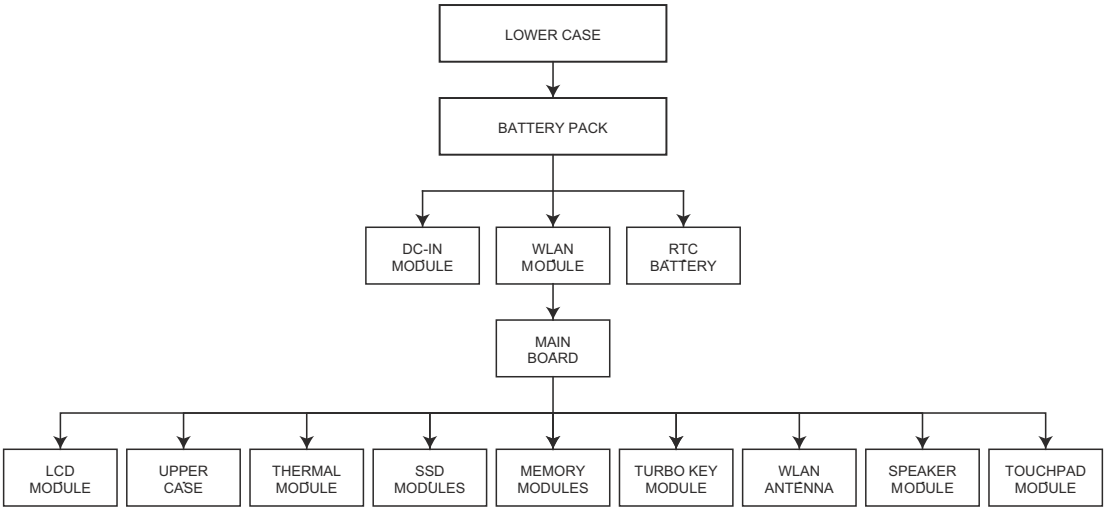


Figure 3-2. Main Unit Disassembly Flowchart

Table 3-2. Screw List

Step	Screw	Quantity	Acer Part Number
Lower Case Disassembly	M2.5 x L6	10	86.Q50N1.001
Battery Pack Disassembly	M2 x L4	2	86.00E92.724
WLAN Module Disassembly	M2 x L4	1	86.00E92.724
Mainboard Disassembly	M2 x L4	6	86.00E92.724
Touchpad Module Disassembly	M2 x L2	4	86.MQJN1.001
Turbo Key Module Disassembly	M2 x L2.5	2	86.M92N1.005
SSD Modules Disassembly	M2 x L2.5	2	86.M92N1.005
Thermal Module Disassembly	M2 x L4	6	86.00E92.724
Upper Case Disassembly	M2.5 x L6	4	86.MVAN1.002
	M2 x L2	2	86.MQJN1.001

Removing the Lower Case

1. Turn the computer over so that the base is facing up.
2. Remove the ten screws securing the lower case to the upper case.

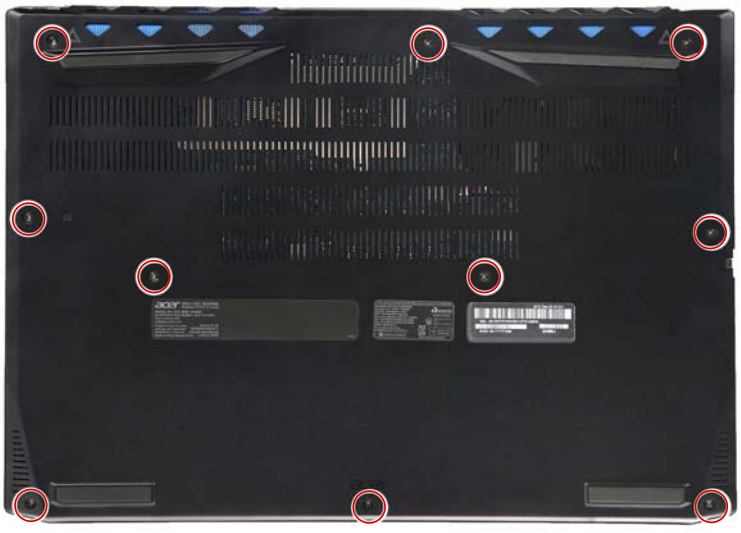


Figure 3-3. Lower Case Screws

Table 3-3. Screws

Step	Screw	Quantity	Torque	Screw Type
Lower Case Disassembly	M2.5 × L6	10	3.0 ± 0.45 kgf cm	

3. Pry the sides of the lower case from the upper case to disengage the latches.

Figure 3-4. Lower Case Latches

4. Remove the lower case from the upper case.

Figure 3-5. Lower Case

Removing the Battery Pack

1. Perform the Removing the Lower Case procedure described on page 3-9.
2. Disconnect the battery cable from the mainboard.

Figure 3-6. Mainboard Connector - Battery Cable

3. Remove the two screws securing the battery pack to the upper case.

Figure 3-7. Battery Pack Screws

Table 3-7. Screws

Step	Screw	Quantity	Torque	Screw Type
Battery Pack Disassembly	M2 × L4	2	1.6 ± 0.24 kgf cm	

4. Detach the battery pack from the upper case.

Figure 3-8. Battery Pack

NOTE:

WEEE Annex VII part. The battery pack has been highlighted with the yellow rectangle in Figure 3-8. Remove the battery and follow local regulations for disposal.

Removing the WLAN Module

1. Perform the Removing the Lower Case procedure described on page 3-9.
2. Perform the Removing the Battery Pack procedure described on page 3-11.
3. Unplug the WLAN antenna cables from the WLAN module.

IMPORTANT:

For reference during machine reassembly, note which cable color corresponds to the main and auxiliary connectors.

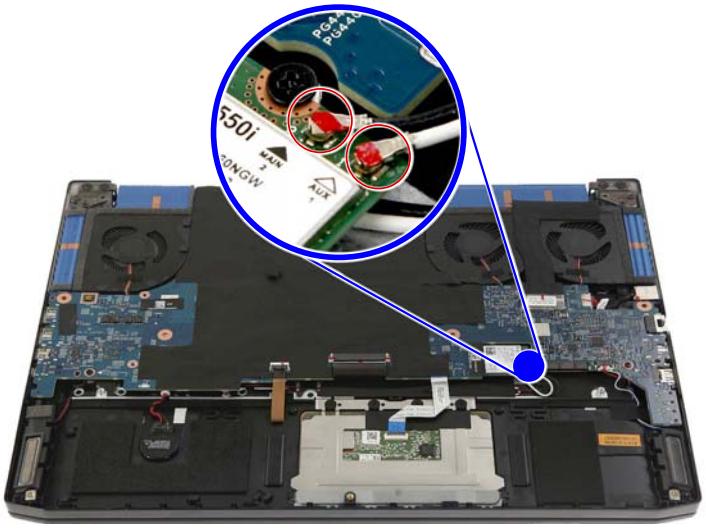


Figure 3-9. WLAN Antenna Cables

4. Remove the one screw securing the WLAN module to the upper case.

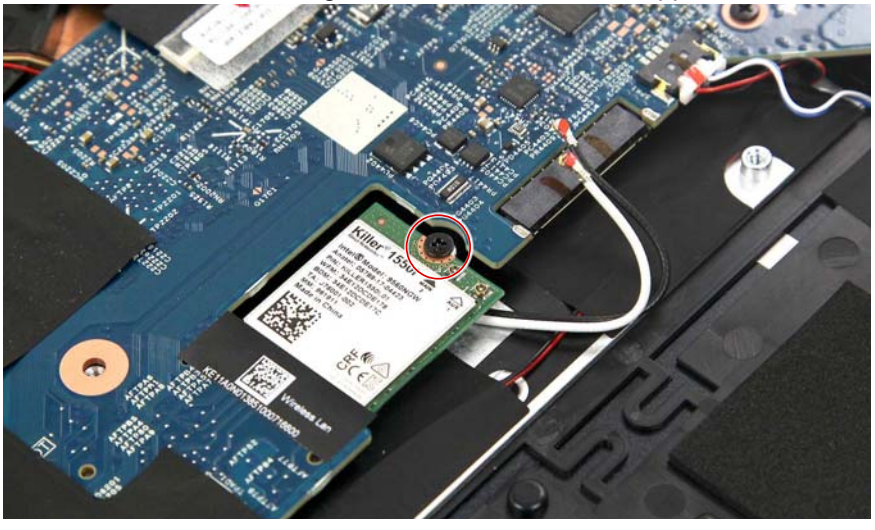


Figure 3-10. WLAN Module Screw

Table 3-10. Screw

Step	Screw	Quantity	Torque	Screw Type
WLAN Module Disassembly	M2 × L4	6	1.6 ± 0.24 kgf cm	

5. Remove the WLAN module from the mainboard.

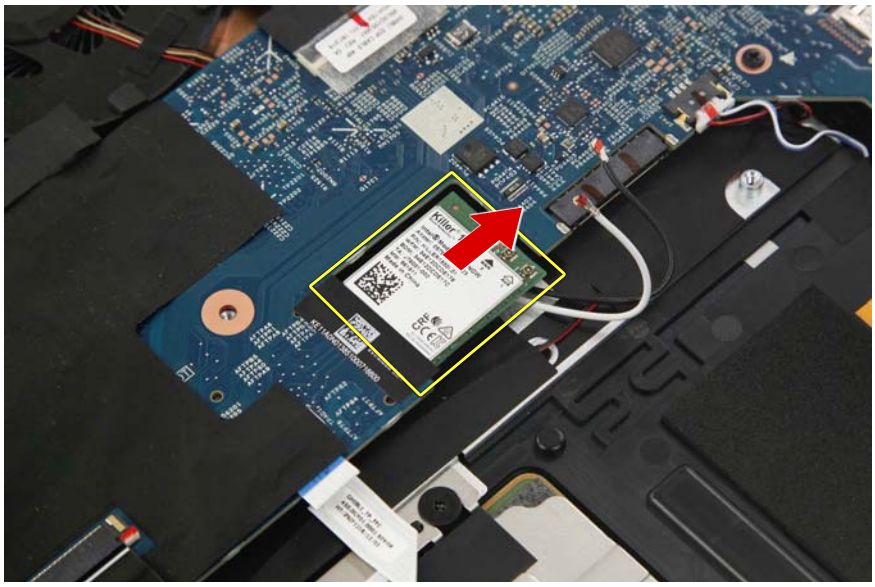


Figure 3-11. WLAN Module

NOTE:

WEEE Annex VII part. A circuit board that is > 10cm^2 has been highlighted with a yellow rectangle in Figure 3-11. Follow the local regulations for disposing this type of circuit board.

Removing the RTC Battery

1. Perform the Removing the Lower Case procedure described on page 3-9.
2. Perform the Removing the Battery Pack procedure described on page 3-11.
3. Disconnect the RTC battery cable from the mainboard.

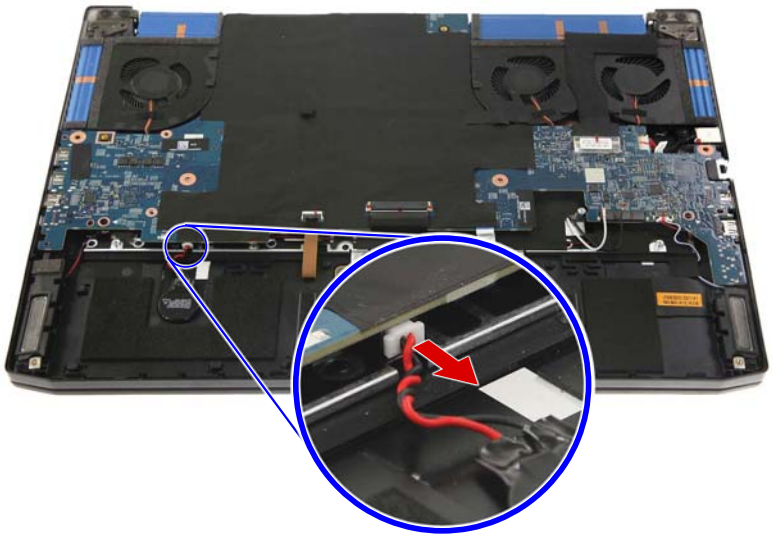


Figure 3-12. Mainboard Connector - RTC Battery Cable

4. Gently peel off the RTC battery from the upper case.

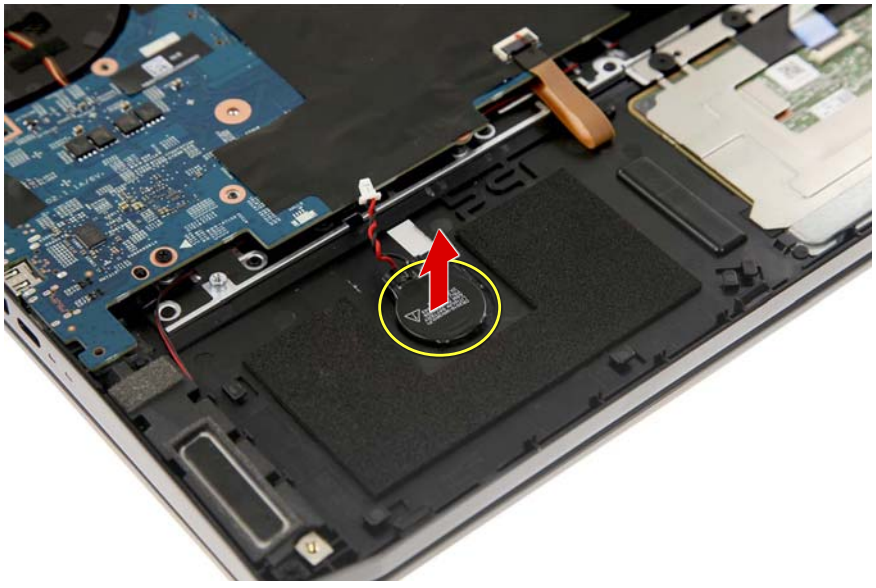


Figure 3-13. RTC Battery

NOTE:

WEEE Annex VII part. The RTC battery in Figure 3-13 is highlighted with a yellow circle. Detach the RTC battery and follow the local regulations for disposing it.

Removing the DC-In Cable

1. Perform the Removing the Lower Case procedure described on page 3-9.
2. Perform the Removing the Battery Pack procedure described on page 3-11.
3. Disconnect the DC-In cable from the mainboard.

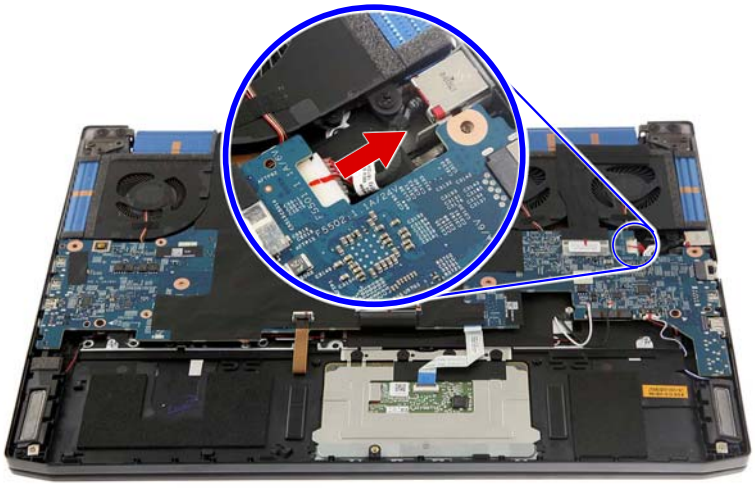


Figure 3-14. Mainboard Connector - DC-In Cable

4. Detach the DC-In cable from the upper case.

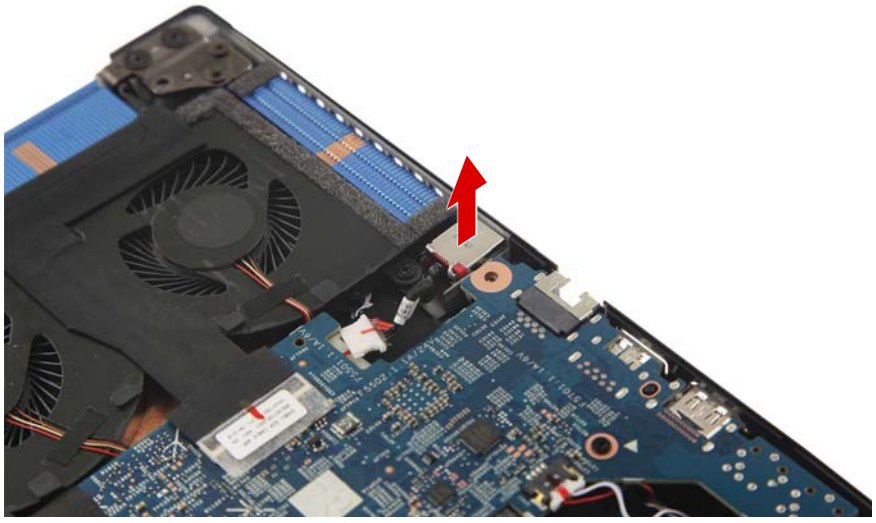


Figure 3-15. DC-In Cable

Removing the Mainboard

1. Perform the Removing the Lower Case procedure described on page 3-9.
2. Perform the Removing the Battery Pack procedure described on page 3-11.
3. Perform the Removing the WLAN Module procedure described on page 3-13.
4. Perform the Removing the RTC Battery procedure described on page 3-15.
5. Perform the Removing the DC-In Cable procedure described on page 3-16.
6. Carefully peel off the tape securing the eDP cable to the mainboard.

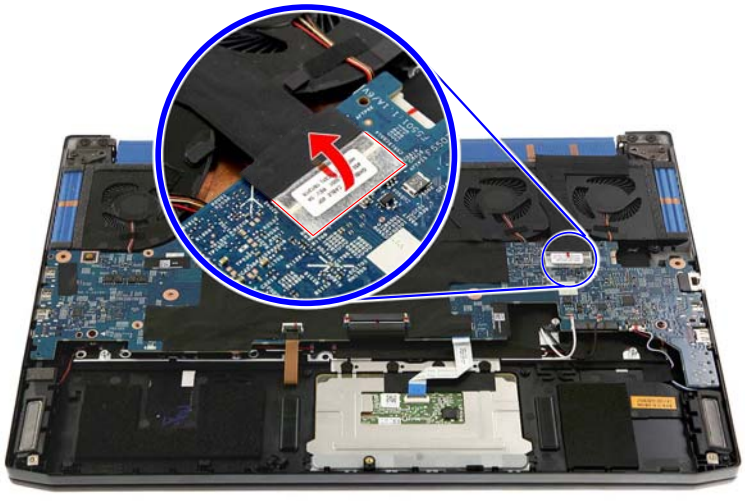


Figure 3-16. eDP Cable Transparent Adhesive Tape

7. Disconnect the eDP cable from the mainboard.

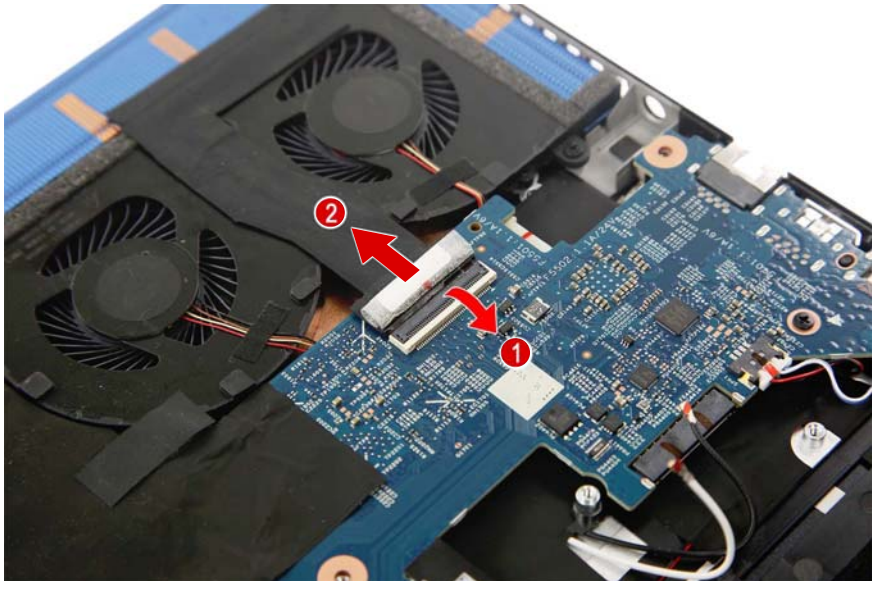


Figure 3-17. Mainboard Connector - eDP Cable

8. Carefully peel off the eDP cable from the thermal fan.

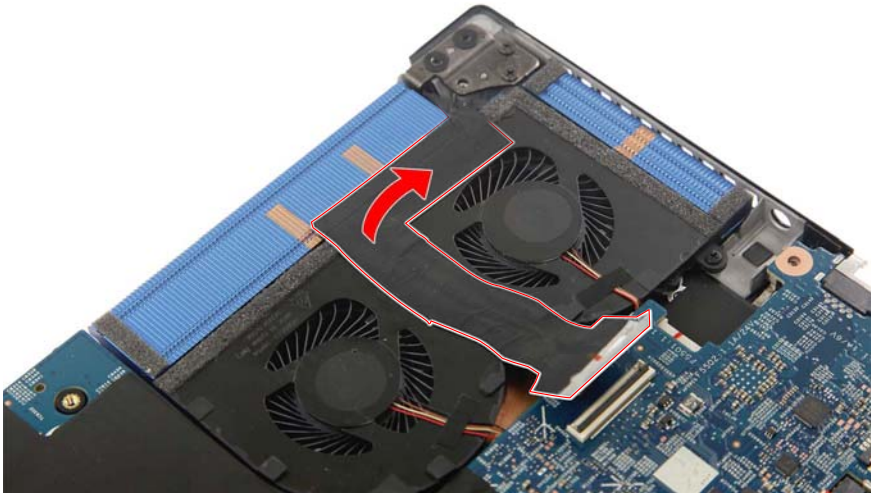


Figure 3-18. eDP Cable Self-Adhesive Tape

9. Disconnect the speaker cable from the mainboard.

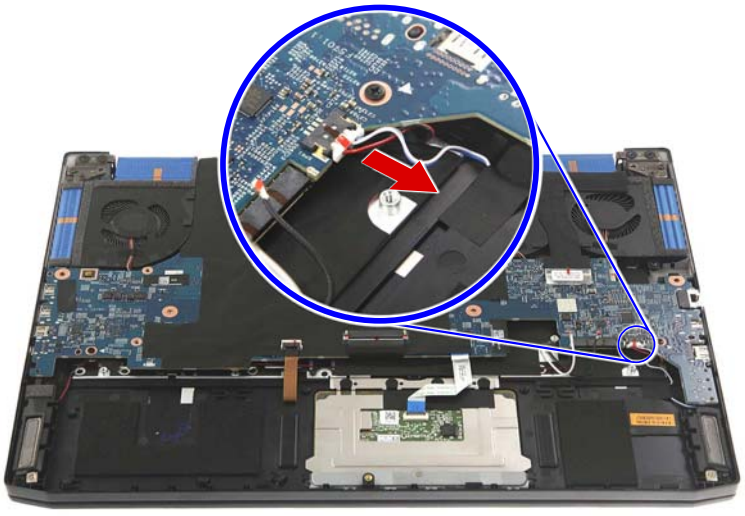


Figure 3-19. Mainboard Connector - Speaker Cable

10. Disconnect the keyboard cable from the mainboard.

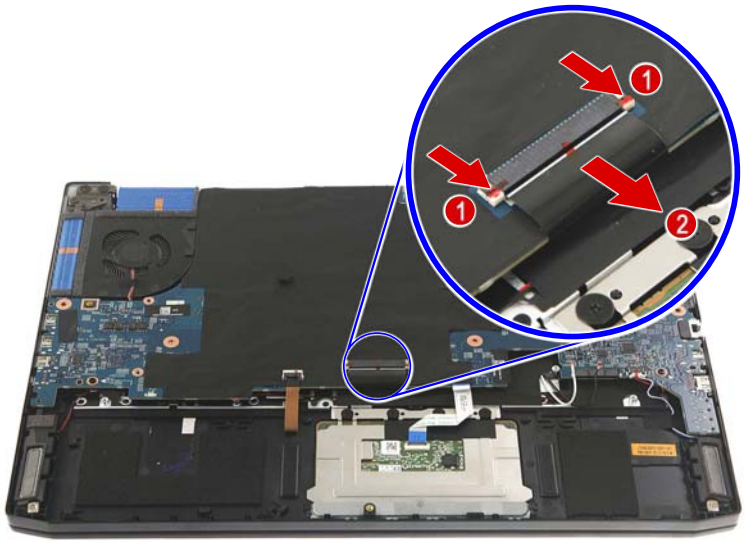


Figure 3-20. Mainboard Connector - Keyboard Cable

11. Disconnect the keyboard backlight cable from the mainboard.

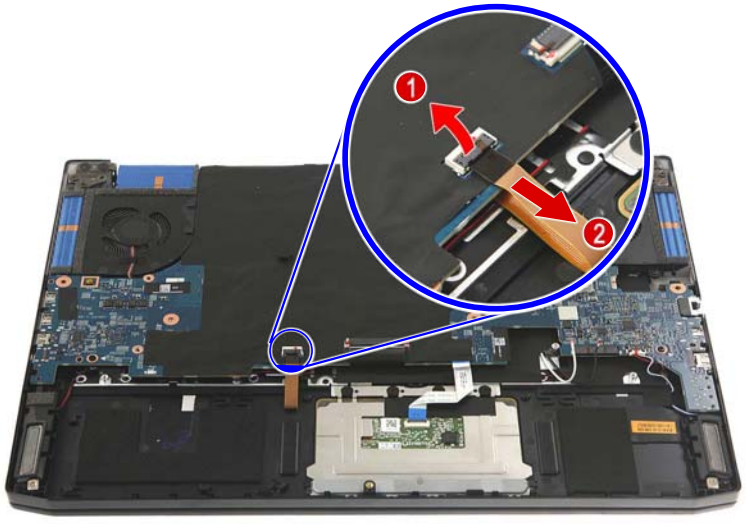


Figure 3-21. Mainboard Connector - Keyboard Backlight Cable

12. Carefully peel off the mylar from the mainboard.

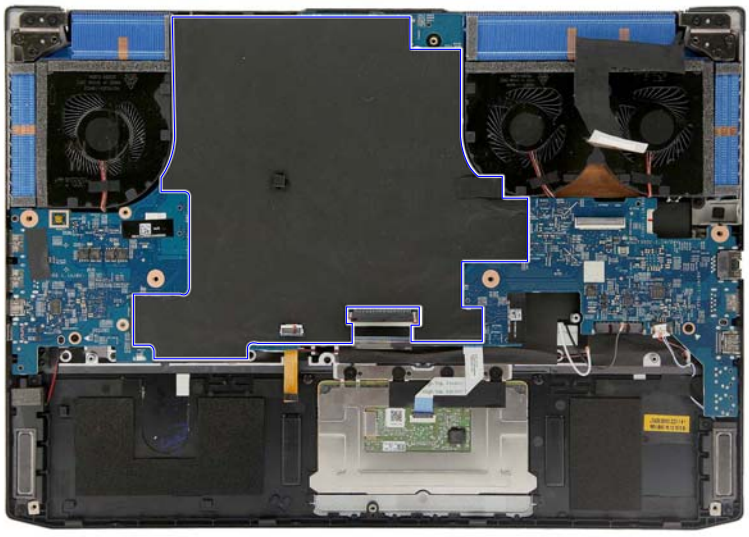


Figure 3-22. Mainboard Mylar

13. Disconnect the turbo key cable from the mainboard.

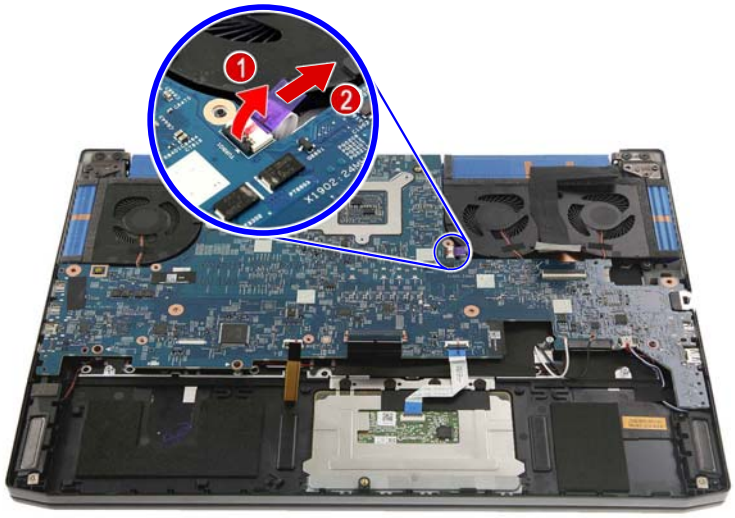


Figure 3-23. Mainboard Connector - Turbo Key Cable

14. Disconnect the touchpad cable from the mainboard.

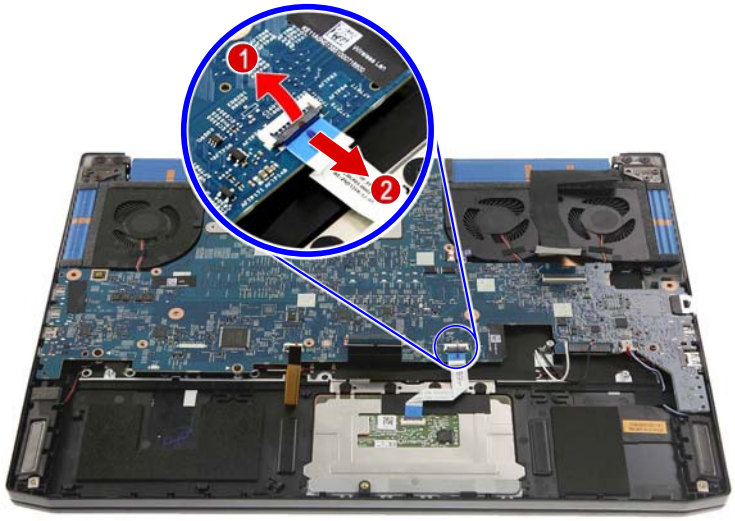


Figure 3-24. Mainboard Connector - Touchpad Cable

15. Remove the six screws securing the mainboard to the upper case.

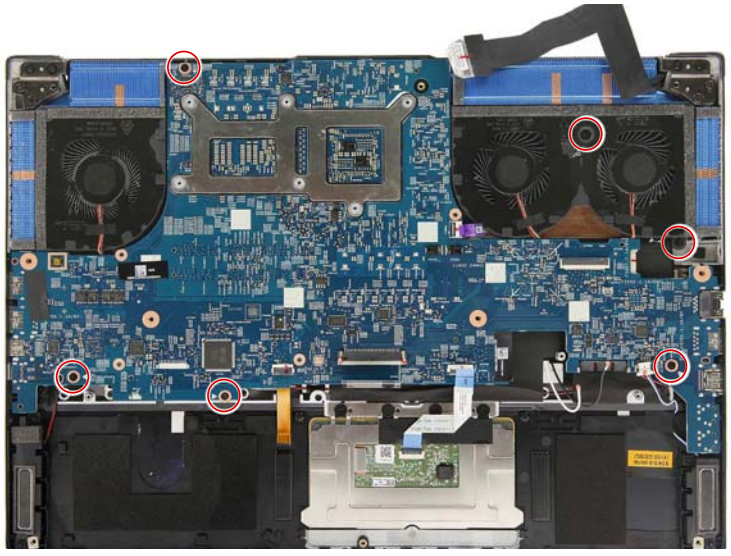


Figure 3-25. Mainboard Screws

Table 3-25. Screws

Step	Screw	Quantity	Torque	Screw Type
Mainboard Disassembly	M2 × L4	6	1.6 ± 0.24 kgf cm	

16. Lift up and remove the mainboard.

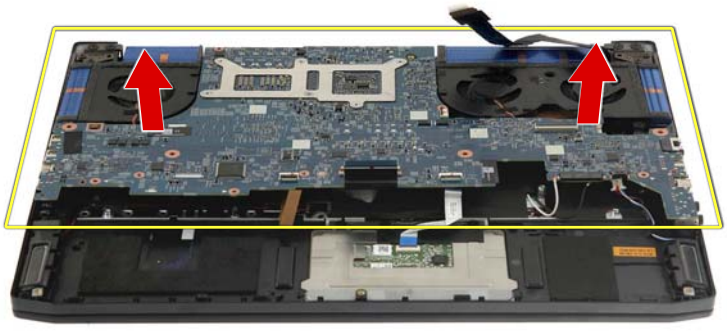


Figure 3-26. Mainboard

NOTE:

WEEE Annex VII part. A circuit board that is >10 cm^2 has been highlighted with a yellow rectangle in Figure 3-26. Follow the local regulations for disposing this type of circuit board.

Removing the Touchpad Module

1. Perform the Removing the Lower Case procedure described on page 3-9.
2. Perform the Removing the Battery Pack procedure described on page 3-11.
3. Gently lift the mylar covering the touchpad cable and disconnect the touchpad cable from the mainboard.
4. Disconnect the touchpad cable from the touchpad module.

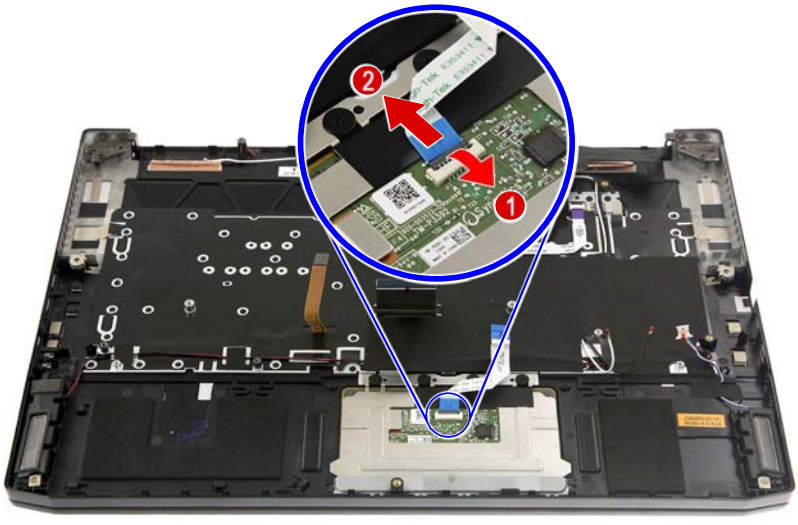


Figure 3-27. Touchpad Connector - Touchpad Cable

5. Remove the four screws securing the touchpad module to the upper case.

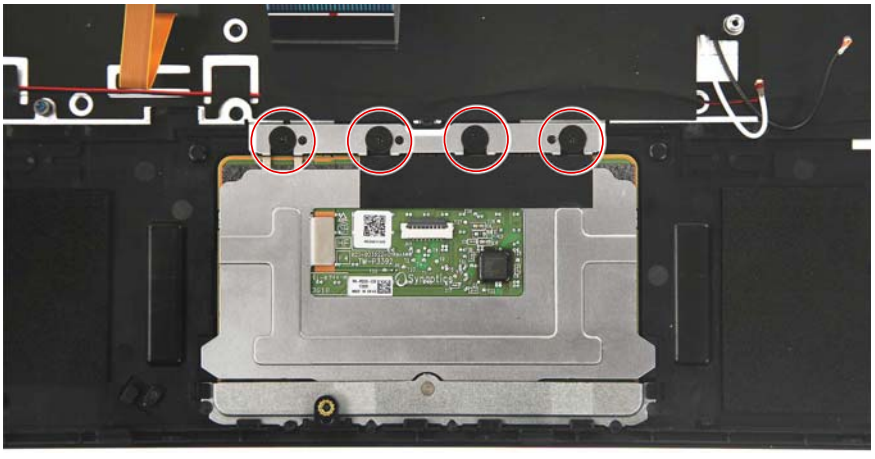


Figure 3-28. Touchpad Module Screws

Table 3-28. Screws

Step	Screw	Quantity	Torque	Screw Type
Touchpad Module Disassembly	M2 × L2	4	1.6 ± 0.24 kgf cm	

6. "Remove the touchpad module from the upper case.

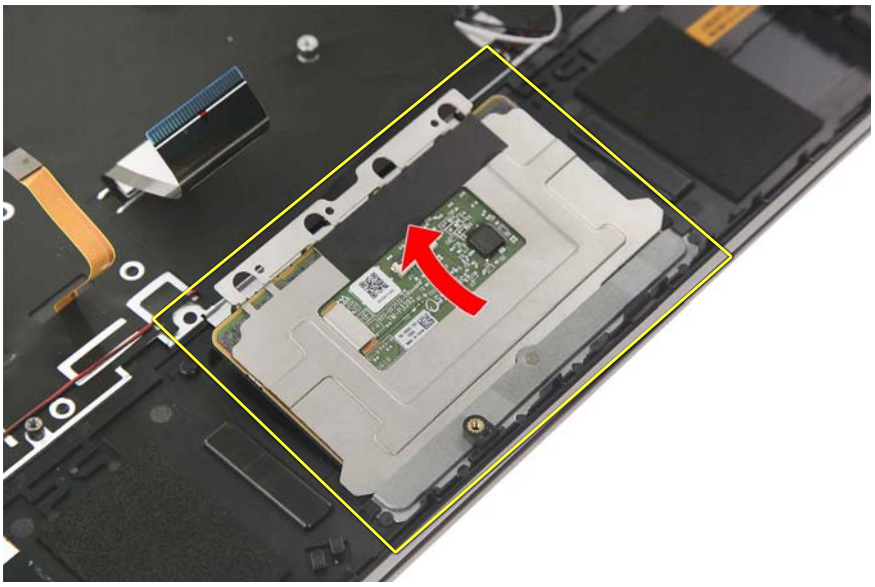


Figure 3-29. Touchpad Module

NOTE:

WEEE Annex VII part. A circuit board that is > 10cm2 has been highlighted with a yellow rectangle in Figure 3-29. Follow local regulations for disposing this type of circuit board.

Removing the Left and Right Speakers

1. Perform the Removing the Lower Case procedure described on page 3-9.
2. Perform the Removing the Battery Pack procedure described on page 3-11.
3. Perform the Removing the WLAN Module procedure described on page 3-13.
4. Perform the Removing the RTC Battery procedure described on page 3-15.
5. Perform the Removing the DC-In Cable procedure described on page 3-16.
6. Perform the Removing the Mainboard procedure described on page 3-17.
7. Carefully peel off the mylar from the upper case.

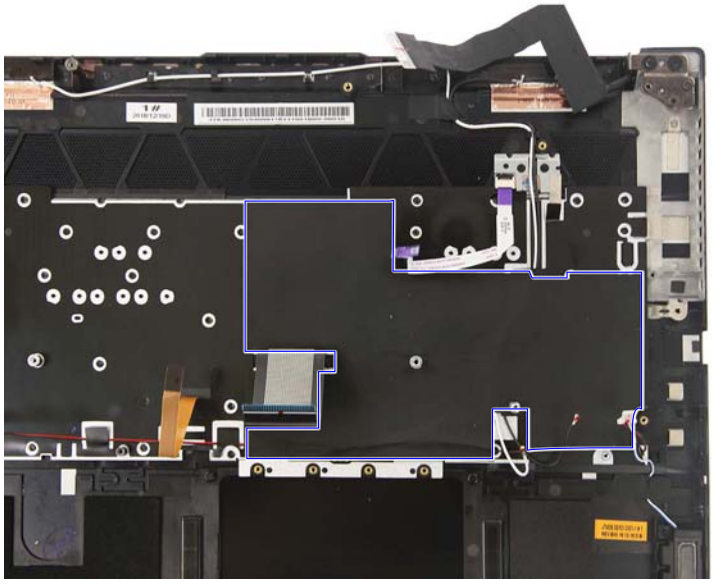


Figure 3-30. Upper Case Mylar

8. Peel off the tapes and release the speaker cables from the cable guides of the upper case.

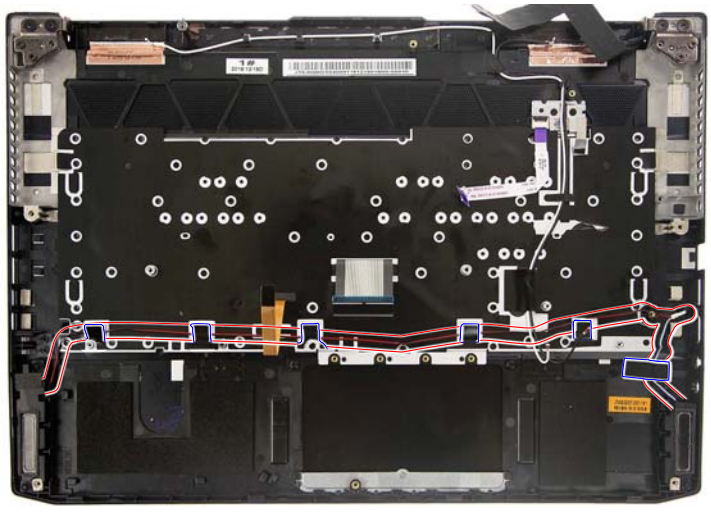


Figure 3-31. Upper Case Adhesive Tapes and Cable Guides - Speaker Cables

9. Lift up and remove the left and right speakers.

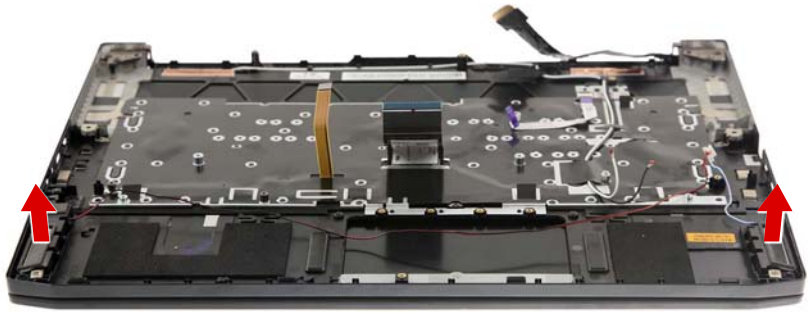


Figure 3-32. Left and Right Speakers

Removing the WLAN Antenna

1. Perform the Removing the Lower Case procedure described on page 3-9.
2. Perform the Removing the Battery Pack procedure described on page 3-11.
3. Perform the Removing the WLAN Module procedure described on page 3-13.
4. Perform the Removing the RTC Battery procedure described on page 3-15.
5. Perform the Removing the DC-In Cable procedure described on page 3-16.
6. Perform the Removing the Mainboard procedure described on page 3-17.
7. Carefully peel off the mylar from the upper case.

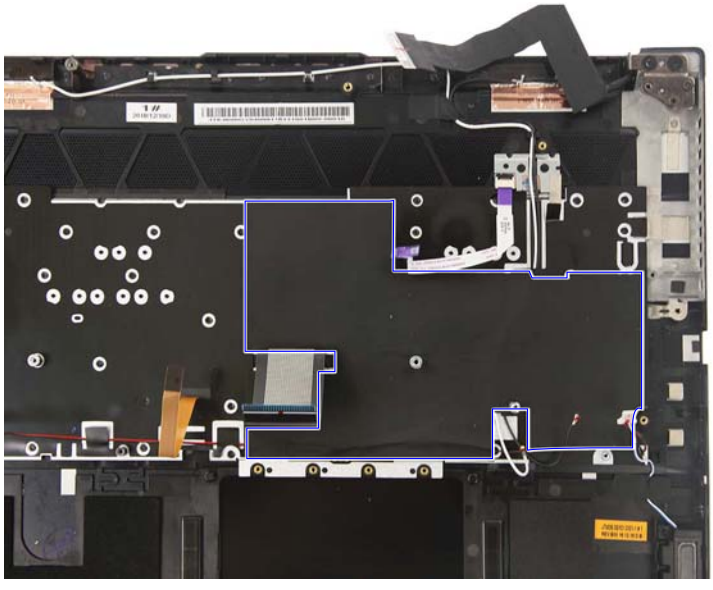


Figure 3-33. Upper Case Mylar

8. Peel off the tapes and release the cables from the cable guides of the upper case.

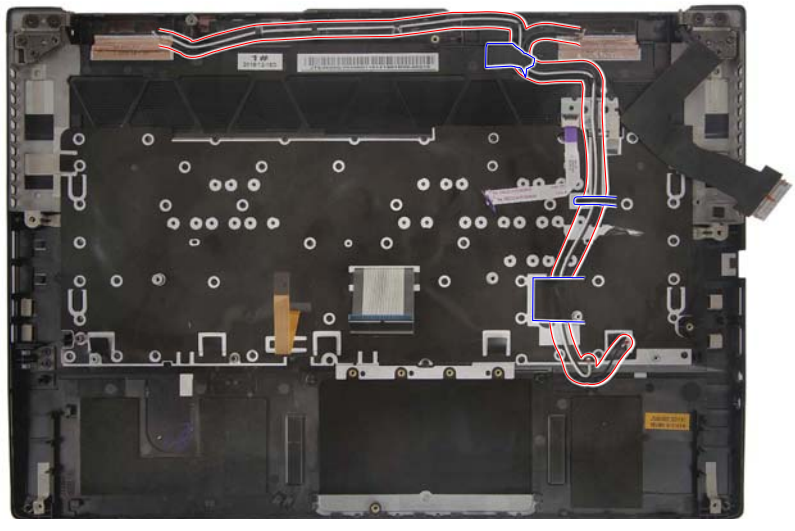


Figure 3-34. Upper Case Adhesive Tapes and Cable Guides - Antenna Cables

9. Gently peel off the WLAN antenna from the upper case.

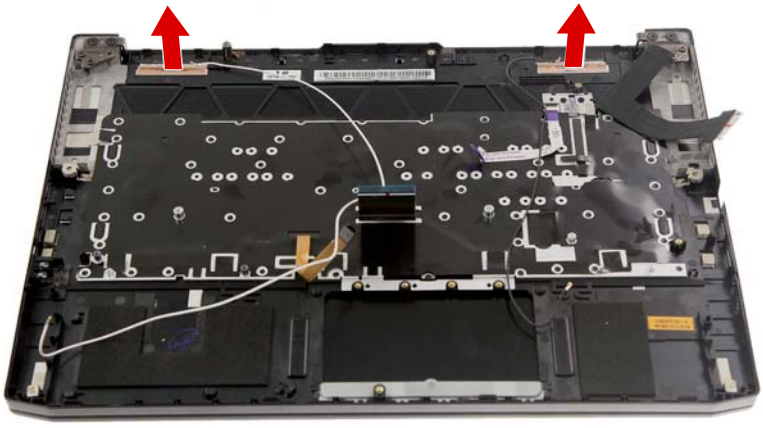


Figure 3-35. WLAN Antenna

Removing the Turbo Key Module

1. Perform the Removing the Lower Case procedure described on page 3-9.
2. Perform the Removing the Battery Pack procedure described on page 3-11.
3. Perform the Removing the WLAN Module procedure described on page 3-13.
4. Perform the Removing the RTC Battery procedure described on page 3-15.
5. Perform the Removing the DC-In Cable procedure described on page 3-16.
6. Perform the Removing the Mainboard procedure described on page 3-17.
7. Perform the Removing the WLAN Antenna procedure described on page 3-27.
8. Disconnect the cable from the turbo key module.

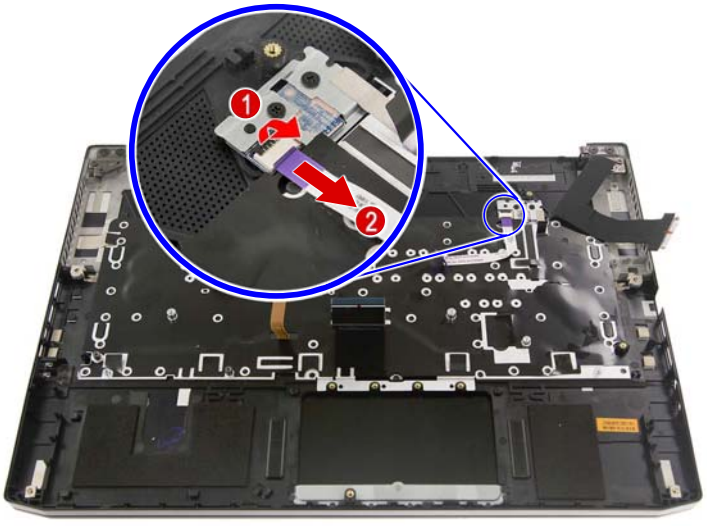


Figure 3-36. Turbo Key Connector - Turbo Key Cable

9. Remove the adhesive tape securing the turbo key module to the upper case.

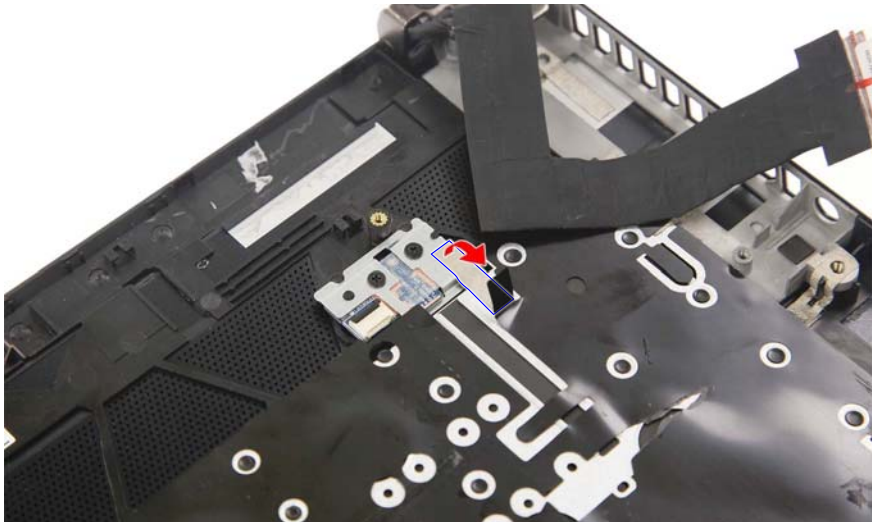


Figure 3-37. Turbo Key Module - Adhesive Tape

10. Remove the two screws securing the turbo key module to the upper case.

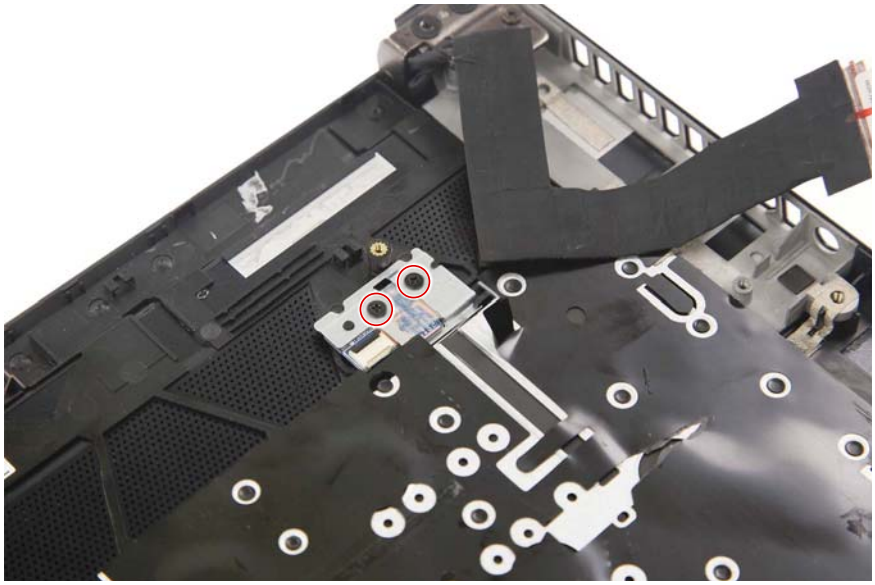


Figure 3-38. Turbo Key Module Screws

Table 3-38. Screws

Step	Screw	Quantity	Torque	Screw Type
Turbo Key Module Disassembly	M2 × L2.5	1	1.6 ± 0.24 kgf cm	

11. Remove the turbo key module from the upper case.

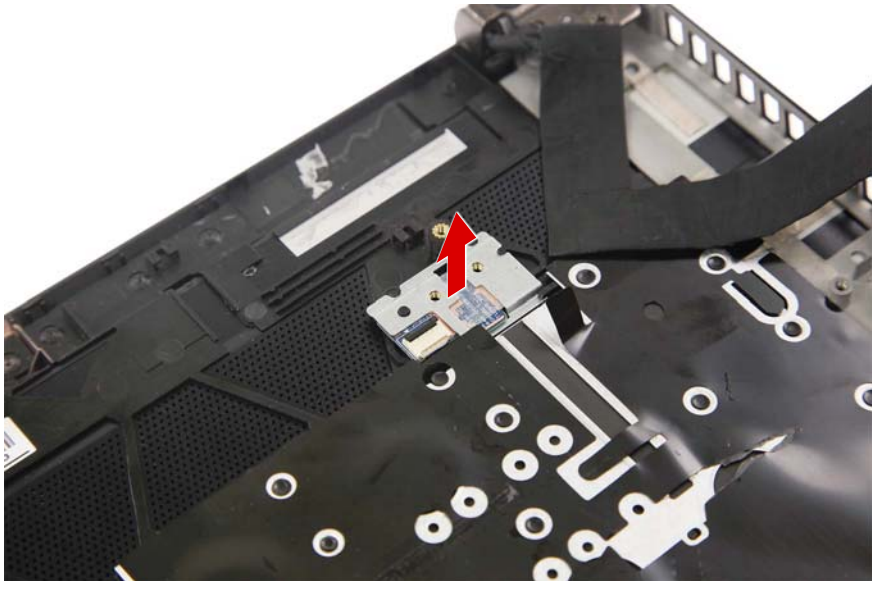


Figure 3-39. Turbo Key Module

12. Remove the bracket from the turbo key module.

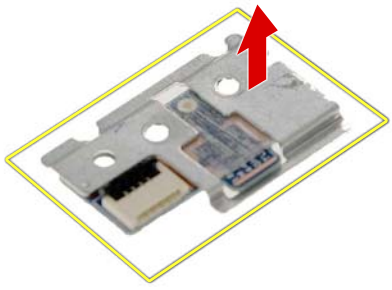


Figure 3-40. Turbo Key Bracket

NOTE:

WEEE Annex VII part. A circuit board that is > 10cm2 has been highlighted with a yellow rectangle in Figure 3-40. Follow local regulations for disposing this type of circuit board.

Removing the Memory Modules

1. Perform the Removing the Lower Case procedure described on page 3-9.
2. Perform the Removing the Battery Pack procedure described on page 3-11.
3. Perform the Removing the WLAN Module procedure described on page 3-13.
4. Perform the Removing the RTC Battery procedure described on page 3-15.
5. Perform the Removing the DC-In Cable procedure described on page 3-16.
6. Perform the Removing the Mainboard procedure described on page 3-17.
7. Detach the adhesive tape securing the EMI shielding to the thermal module.

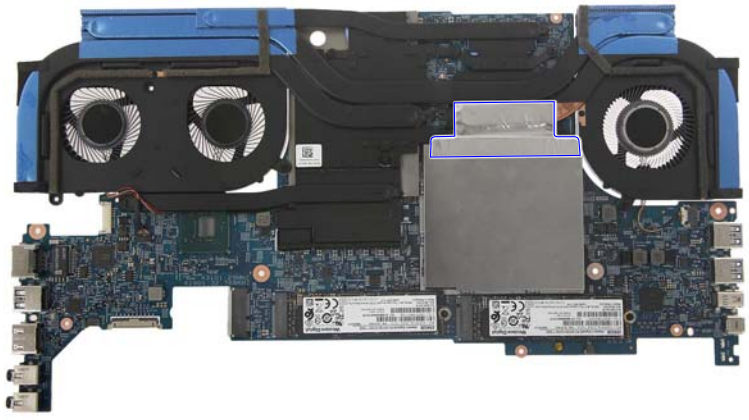


Figure 3-41. EMI Shielding - Adhesive Tape

8. Detach the EMI shielding from the mainboard.

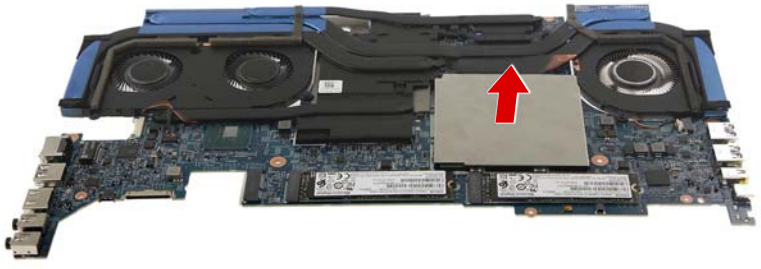


Figure 3-42. Memory Module - EMI Shielding

9. Push out the latches on both sides of the DIMM slot (**1**) until the memory module tilts upward, then detach the memory module from the slot (**2**).

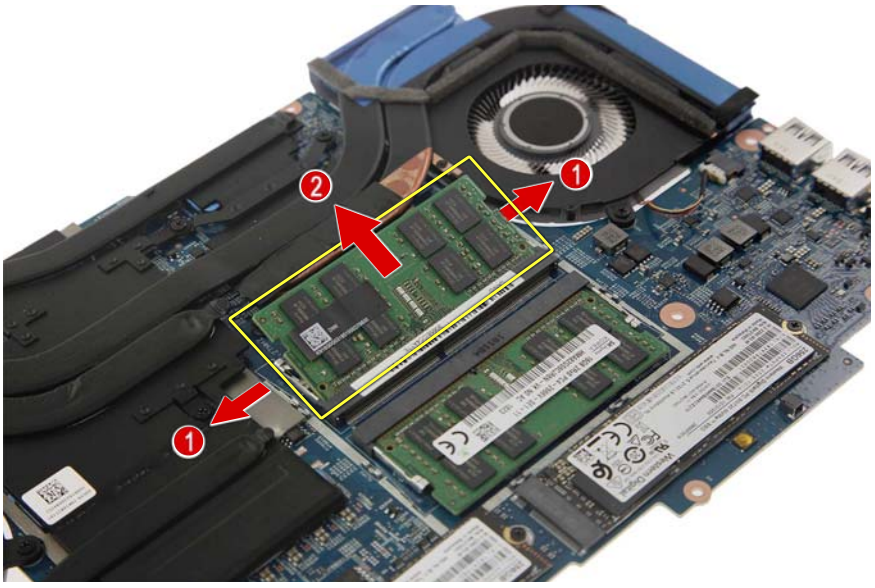


Figure 3-43. Memory Module - DIMM2 Slot

NOTE:

WEEE Annex VII part. A circuit board that is > 10cm^2 has been highlighted with a yellow rectangle in Figure 3-43. Follow the local regulations for disposing this type of circuit board.

10. Repeat Step 9 to remove the remaining memory module.

Removing the SSD Modules

1. Perform the Removing the Lower Case procedure described on page 3-9.
2. Perform the Removing the Battery Pack procedure described on page 3-11.
3. Perform the Removing the WLAN Module procedure described on page 3-13.
4. Perform the Removing the RTC Battery procedure described on page 3-15.
5. Perform the Removing the DC-In Cable procedure described on page 3-16.
6. Perform the Removing the Mainboard procedure described on page 3-17.
7. Remove the screw securing the SSD1 module to the mainboard.

Figure 3-44. SSD1 Module Screw

Table 3-44. Screw

Step	Screw	Quantity	Torque	Screw Type
SSD1 Module Disassembly	M2 × L2.5	1	1.6 ± 0.24 kgf cm	

8. Detach the SSD1 module from the mainboard.

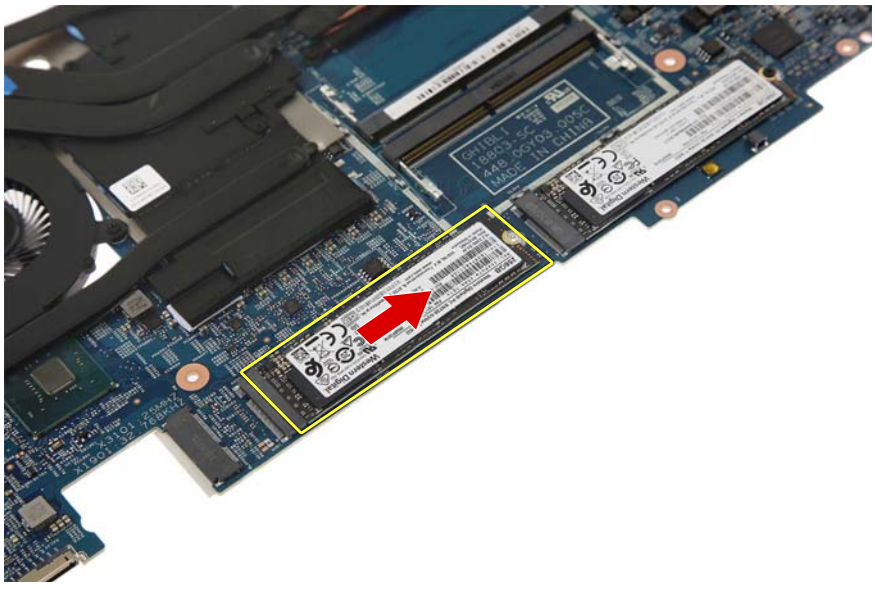


Figure 3-45. SSD1 Module

NOTE:

WEEE Annex VII part. A circuit board that is > 10cm^2 has been highlighted with a yellow rectangle in Figure 3-45. Follow the local regulations for disposing this type of circuit board.

9. Repeat Steps 7~8 to remove the SSD2 module.

Removing the Thermal Module

1. Perform the Removing the Lower Case procedure described on page 3-9.
2. Perform the Removing the Battery Pack procedure described on page 3-11.
3. Perform the Removing the WLAN Module procedure described on page 3-13.
4. Perform the Removing the RTC Battery procedure described on page 3-15.
5. Perform the Removing the DC-In Cable procedure described on page 3-16.
6. Perform the Removing the Mainboard procedure described on page 3-17.
7. Detach the adhesive tape securing the EMI shielding to the thermal module.

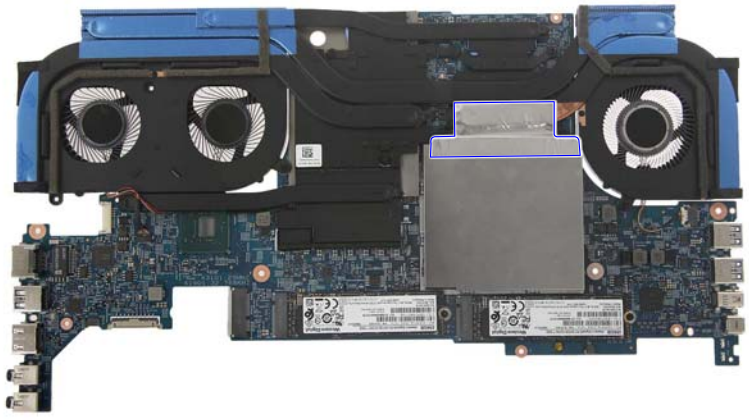


Figure 3-46. EMI Shielding - Adhesive Tape

8. Detach the EMI shielding from the mainboard.

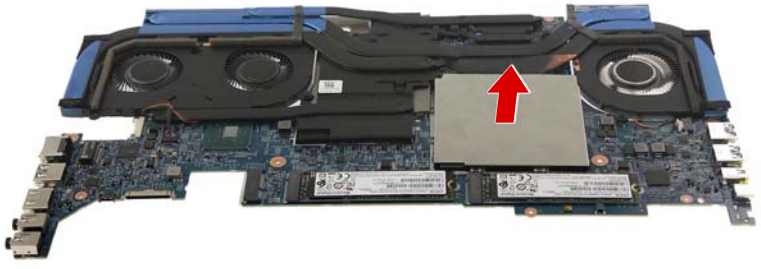


Figure 3-47. Memory Module - EMI Shielding

9. Disconnect the fan cables from the mainboard.

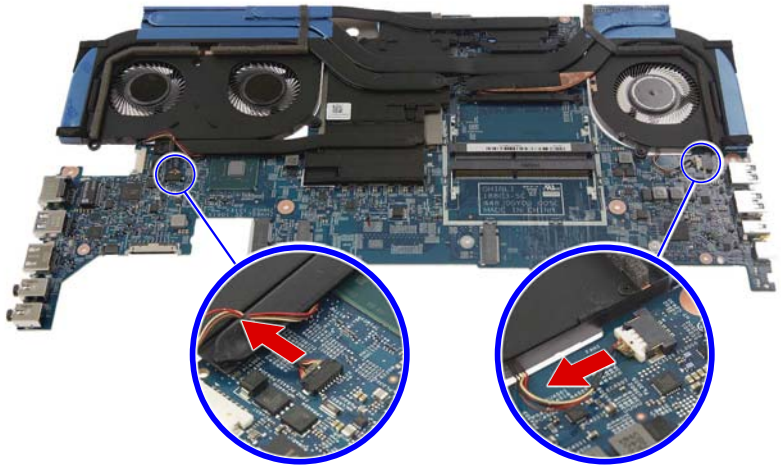


Figure 3-48. Mainboard Connector - Fan Cables

10. Remove the eight screws securing the thermal module to the mainboard.

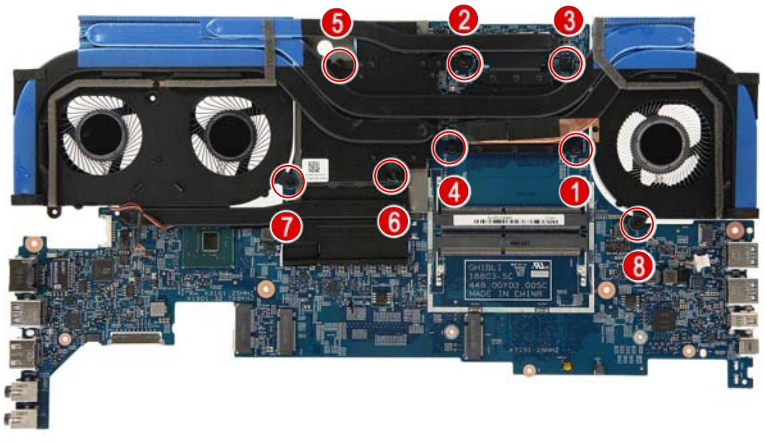


Figure 3-49. Thermal Module Screws

Table 3-49. Screws

Step	Screw	Quantity	Torque	Screw Type
Thermal Module Disassembly	M2 × L4	8	1.6 ± 0.24 kgf cm	

11. Gently lift the thermal module off the mainboard.

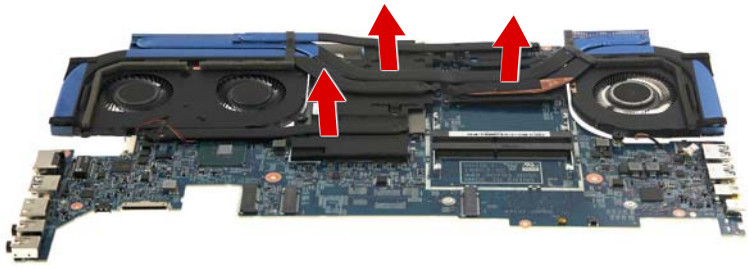


Figure 3-50. Thermal Module

Removing the Upper Case

1. Perform the Removing the Lower Case procedure described on page 3-9.
2. Perform the Removing the Battery Pack procedure described on page 3-11.
3. Perform the Removing the WLAN Module procedure described on page 3-13.
4. Perform the Removing the RTC Battery procedure described on page 3-15.
5. Perform the Removing the DC-In Cable procedure described on page 3-16.
6. Perform the Removing the Mainboard procedure described on page 3-17.
7. Perform the Removing the Touchpad Module procedure described on page 3-23.
8. Perform the Removing the Left and Right Speakers procedure described on page 3-25.
9. Perform the Removing the WLAN Antenna procedure described on page 3-27.
10. Perform the Removing the Turbo Key Module procedure described on page 3-29.
11. Remove the eight screws securing the upper case to the LCD module.

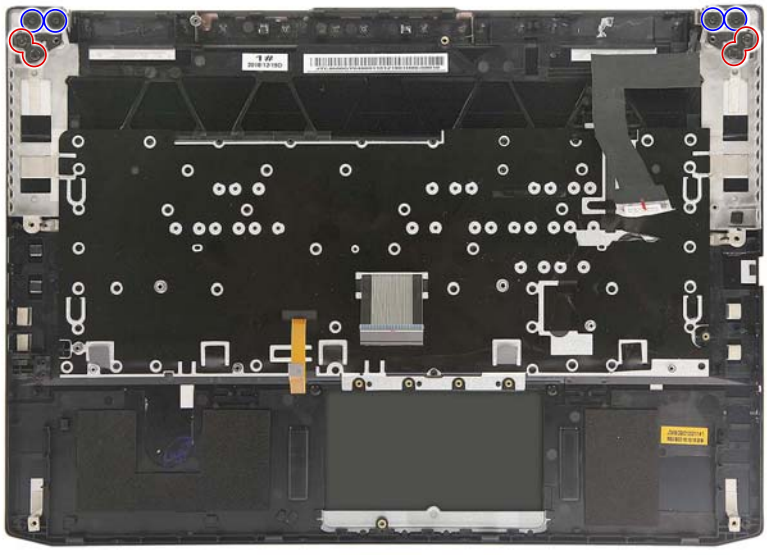


Figure 3-51. Upper Case Screws

Table 3-51. Screws

Step	Screw	Quantity	Torque	Screw Type
Upper Case Disassembly	M2.5 × L6	4	3.0 ± 0.45 kgf cm	
	M2 × L2	4	1.6 ± 0.24 kgf cm	

12. Lift up and remove the upper case from the LCD module.

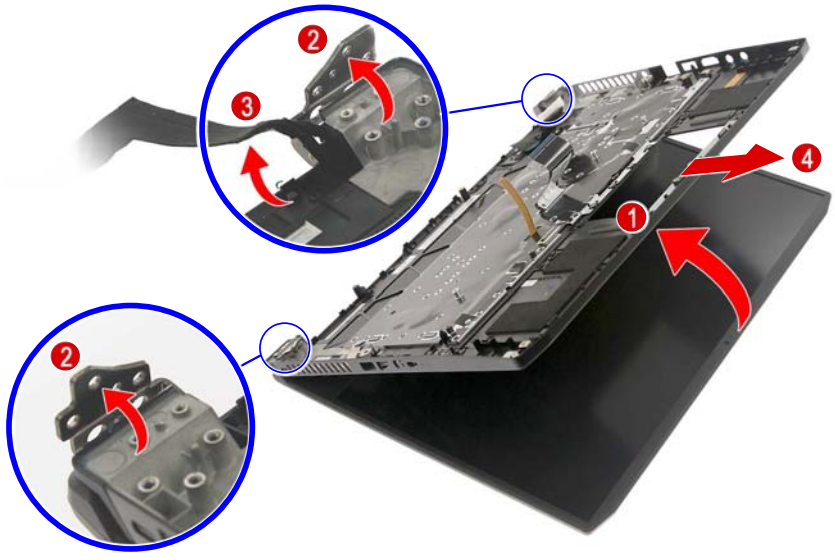


Figure 3-52. Upper Case

LCD Module Disassembly Process

LCD Module Disassembly Flowchart

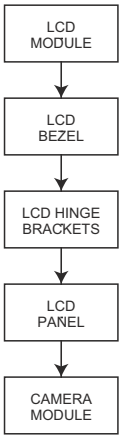


Figure 3-53. LCD Module Disassembly Flowchart

Table 3-53. Screw List

Step	Screw	Quantity	Acer Part Number
LCD Hinge Brackets Disassembly	M2.5 x L2.5	6	86.9AR13.2R5

Removing the LCD Bezel

1. Perform the Removing the Upper Case procedure described on page 3-39.
2. Carefully pry loose the LCD bezel from the LCD back cover. Start on the bottom side, continue to the left and right sides, and finally the top side.

Figure 3-54. LCD Bezel Latches

3. Detach the LCD bezel from the LCD back cover.

Figure 3-55. LCD Bezel

Removing the LCD Hinge Brackets

1. Perform the Removing the Upper Case procedure described on page 3-39.
2. Perform the Removing the LCD Bezel procedure described on page 3-42.
3. Remove the six screws securing the left and right LCD hinge brackets to the LCD panel.

Figure 3-56. LCD Hinge Brackets Screws

Table 3-56. Screws

Step	Screw	Quantity	Torque	Screw Type
LCD Hinge Brackets Disassembly	M2.5 × L2.5	6	3.0 ± 0.45 kgf cm	

4. Lift up and remove the LCD hinge brackets.

Figure 3-57. LCD Hinge Brackets

Removing the LCD Panel

1. Perform the Removing the Upper Case procedure described on page 3-39.
2. Perform the Removing the LCD Bezel procedure described on page 3-42.
3. Perform the Removing the LCD Hinge Brackets procedure described on page 3-43.
4. Use a tweezer to grab the pull tab then slowly pull the adhesive tape while maintaining constant tension until the tape you have completely removed the tape.

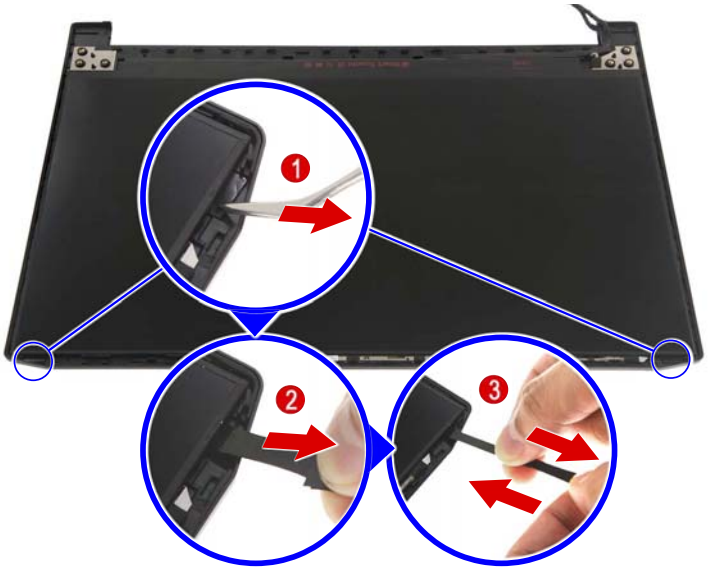


Figure 3-58. Double Sided Adhesive Tapes

5. Gently lift the LCD panel from the LCD back cover and then turn it over.

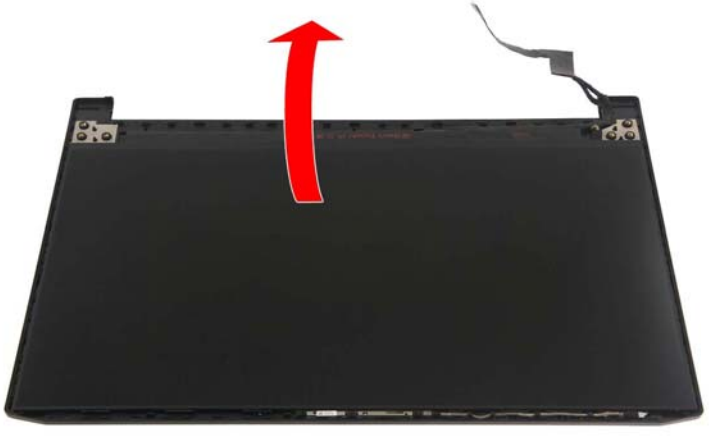


Figure 3-59. LCD Panel

6. Release the eDP cable from the adhesive tape securing it to the LCD panel.

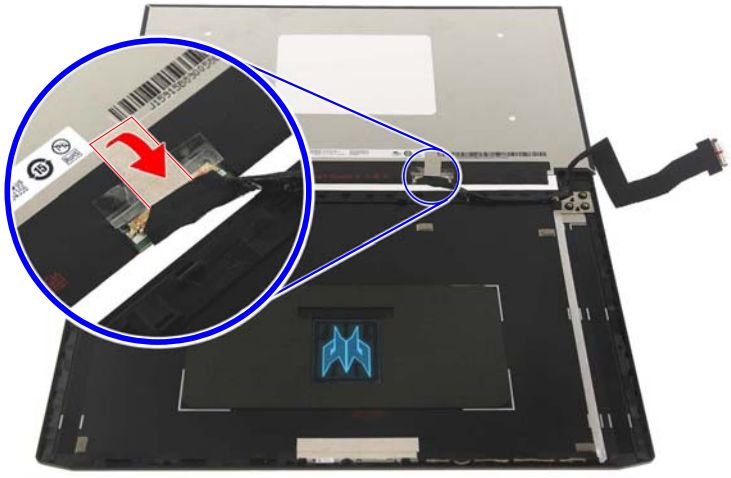


Figure 3-60. eDP Cable Adhesive Tape

7. Release the eDP cable from the transparent adhesive tape securing it to the LCD panel.

Figure 3-61. eDP Cable Transparent Adhesive Tape

8. Disconnect the eDP cable from the LCD panel.

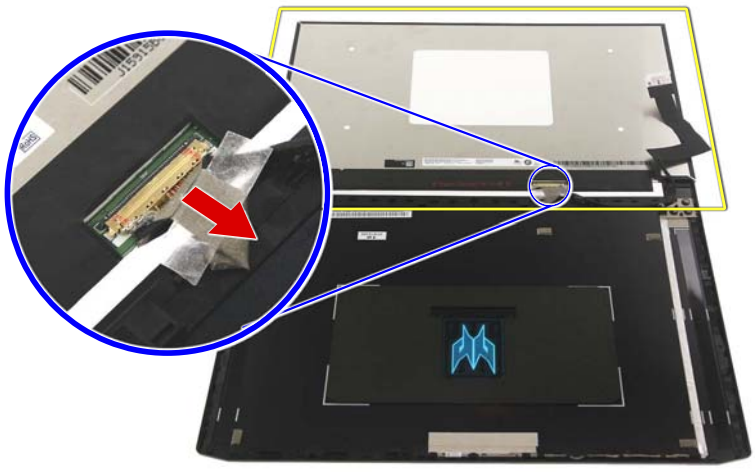


Figure 3-62. LCD Panel Connector - eDP Cable

NOTE:

WEEE Annex VII part. The LCD panel in Figure 3-62 is highlighted with a yellow rectangle. Detach the LCD panel and follow the local regulations for disposing it.

Removing the Camera Module

1. Perform the Removing the Upper Case procedure described on page 3-39.
2. Perform the Removing the LCD Bezel procedure described on page 3-42.
3. Perform the Removing the LCD Hinge Brackets procedure described on page 3-43.
4. Perform the Removing the LCD Panel procedure described on page 3-44.
5. Release the eDP cable from the cable guides and adhesive tapes securing it to the LCD cover.

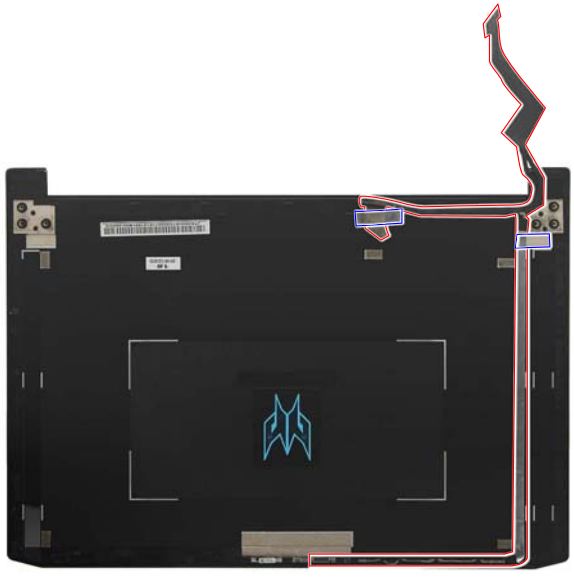


Figure 3-63. eDP Cable

6. Disconnect the eDP cable from the camera module.

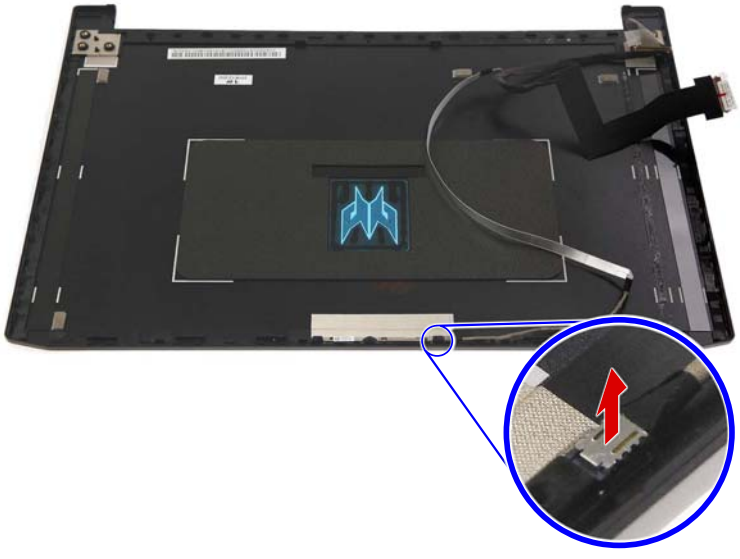


Figure 3-64. Camera Connector - eDP Cable

7. Carefully pry the camera module off the LCD back cover.

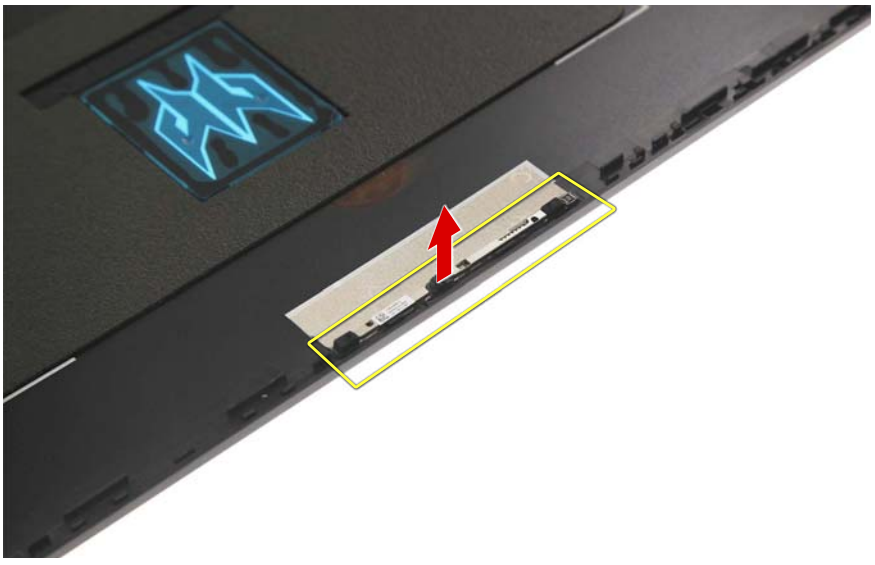


Figure 3-65. Camera Module

NOTE:

WEEE Annex VII part. A circuit board that is > 10cm^2 has been highlighted with a yellow rectangle in Figure 3-65. Follow the local regulations for disposing this type of circuit board.

LCD Module Reassembly Process

Replacing the Camera Module

1. Attach a double-sided adhesive tape on the back side of the camera module. Position the camera module on the LCD back cover and press down to secure it in place.

Figure 3-66. Camera Module

2. Connect the eDP cable to the module.

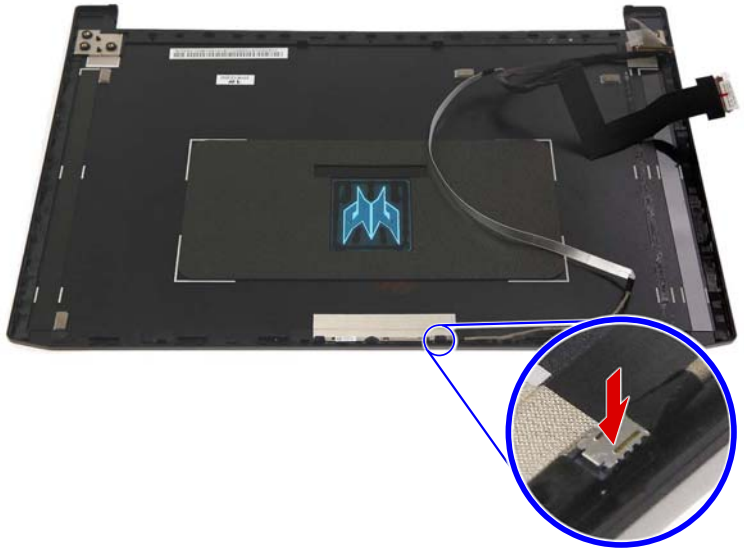


Figure 3-67. Camera Connector - eDP Cable

3. Use the cable guides and adhesive tapes to secure the eDP cable to the LCD cover.

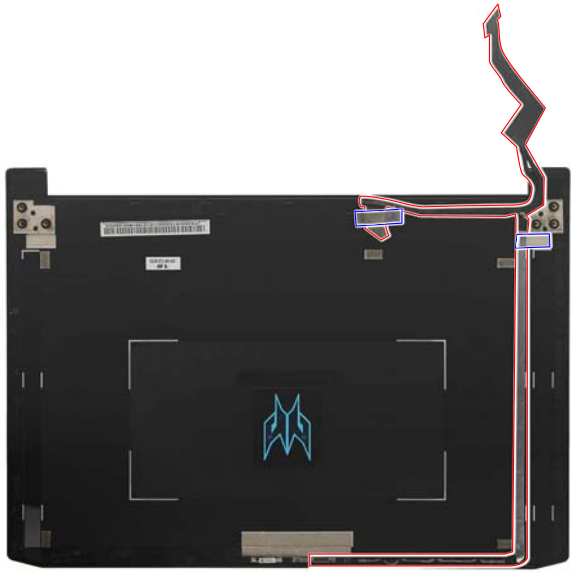


Figure 3-68. eDP Cable

Replacing the LCD Panel

1. Connect the eDP cable to the LCD panel.

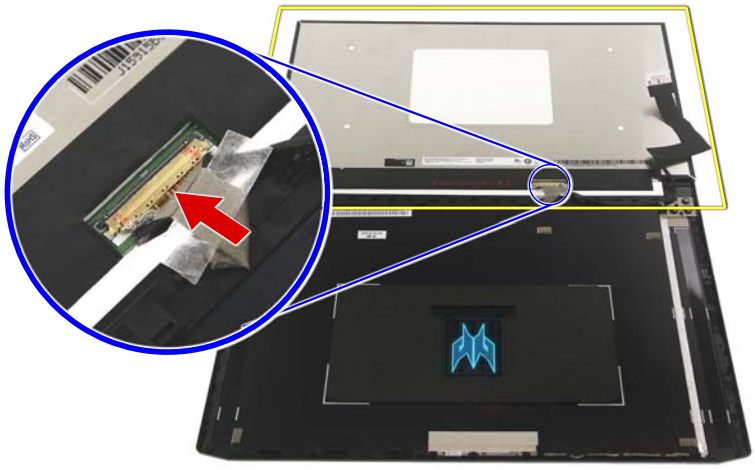


Figure 3-69. LCD Panel Connector - eDP Cable

2. Use transparent adhesive tape to secure the eDP cable to the LCD panel.

Figure 3-70. eDP Cable Transparent Adhesive Tape

3. Use adhesive tape to secure the eDP cable to the LCD panel.

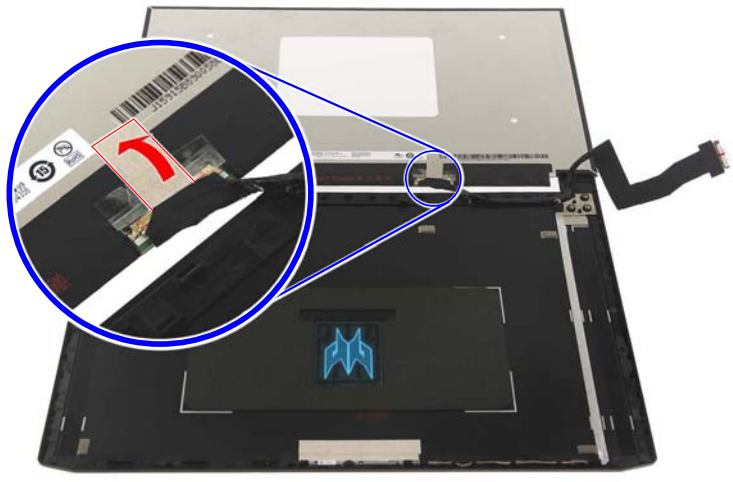


Figure 3-71. eDP Cable Adhesive Tape

4. Remove the white strip cover from the double sided adhesive tapes.

Figure 3-72. Double Sided Adhesive Tapes - White Strip Cover

5. Place the double sided adhesive tapes into the LCD panel cover as shown and press them down until they stick into place.

NOTE:

Make sure that the non-stick pull tab is located at the top of the LCD panel cover.

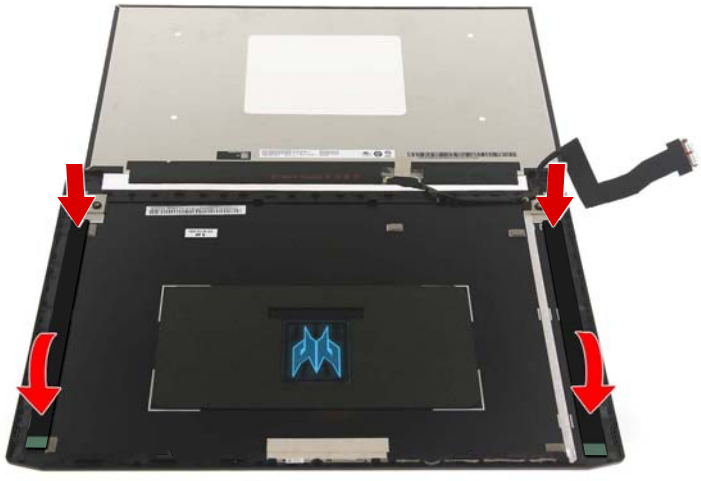


Figure 3-73. LCD Panel - Double Sided Adhesive Tapes

6. Align and install the four mylar gaskets to the top of the panel frame on the LCD panel cover, as shown. Note that the gasket tabs should be facing upwards.

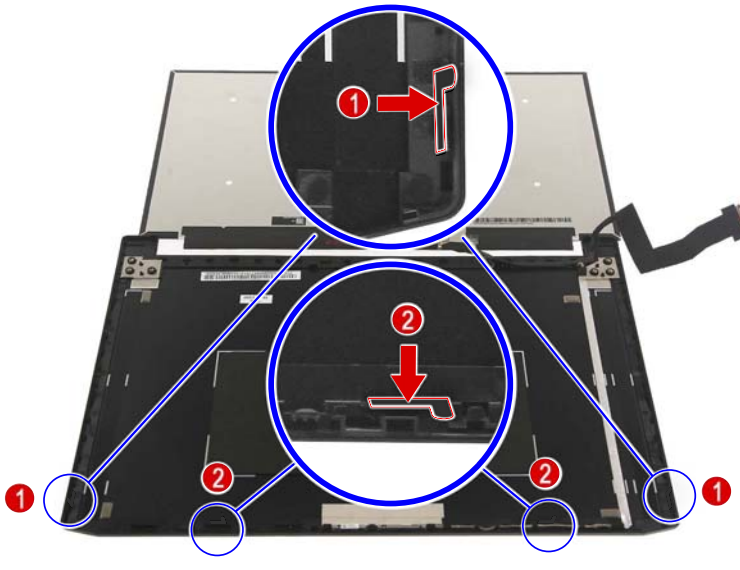


Figure 3-74. Mylar Gaskets

7. Remove the thin blue strip cover from the double sided adhesive tapes.

Figure 3-75. Double Sided Adhesive Tapes - Thin Blue Strip Cover

8. Gently place the LCD panel into the LCD back cover.

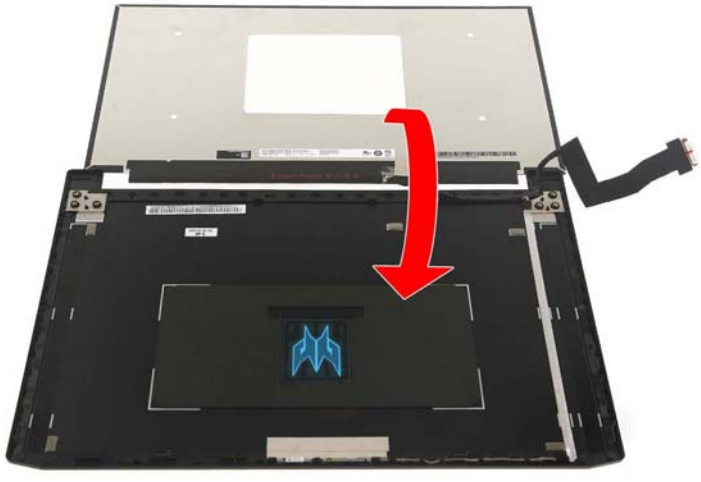


Figure 3-76. LCD Panel

9. After the LCD panel installation is complete, remove the four mylar gaskets from the LCD panel cover.

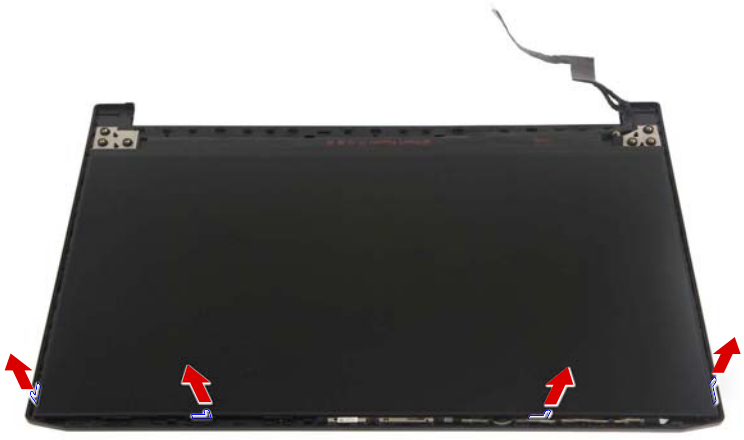


Figure 3-77. Mylar Gaskets

Replacing the LCD Hinge Brackets

1. Attach the left and right LCD hinge brackets to the LCD back cover.

Figure 3-78. LCD Hinge Brackets

2. Secure the left and right LCD hinge brackets to the LCD back cover using six screws.

Figure 3-79. LCD Hinge Brackets Screws

Table 3-79. Screws

Step	Screw	Quantity	Torque	Screw Type
LCD Hinge Brackets Reassembly	M2.5 × L2.5	6	3.0 ± 0.45 kgf cm	

Replacing the LCD Bezel

1. Place the bezel on top of the LCD panel.

NOTE:

Make sure that the eDP cable is properly routed on the left hinge side and there is no gap between the bezel and the back cover.

Figure 3-80. LCD Bezel

2. Press the bezel on all sides until it snaps into place.

Figure 3-81. LCD Bezel Latches

Main Unit Reassembly Process

Replacing the Upper Case

1. Place the upper case into the LCD module.

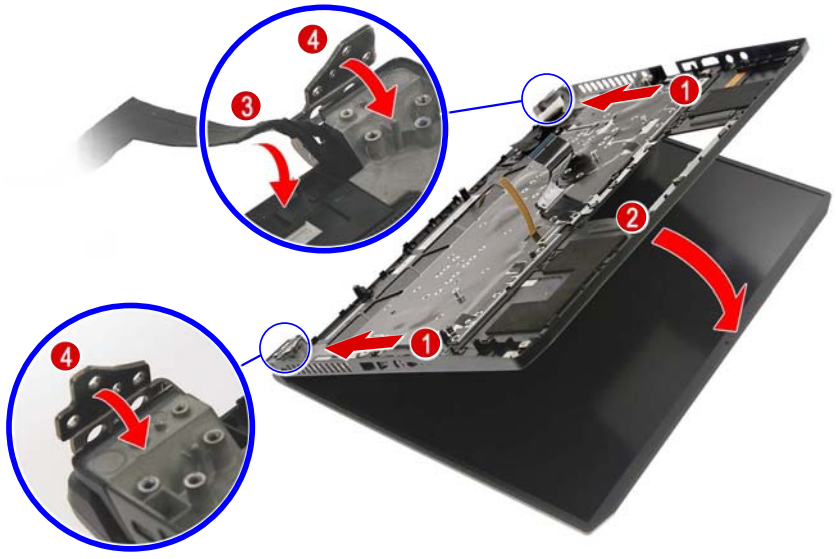


Figure 3-82. Upper Case

2. Secure the upper case to the LCD module using four screws.

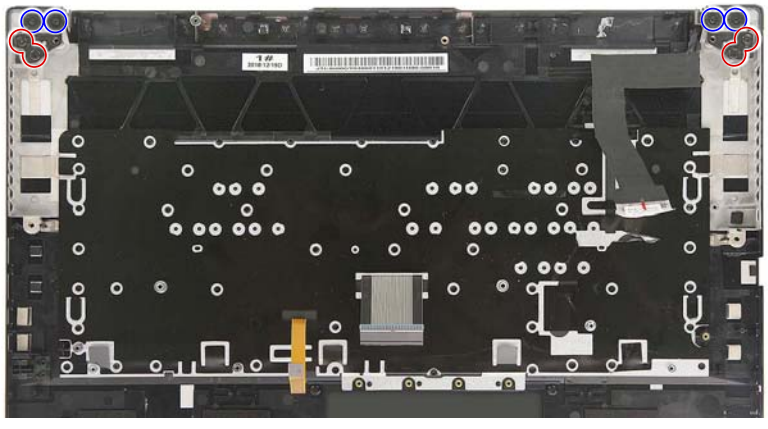


Figure 3-83. Upper Case Screws

Table 3-83. Screws

Step	Screw	Quantity	Torque	Screw Type
Upper Case Reassembly	M2.5 × L6	4	3.0 ± 0.45 kgf cm	
	M2 × L2	4	1.6 ± 0.24 kgf cm	

Replacing the Thermal Module

IMPORTANT:

Make sure all thermal pads for the mainboard chipsets and VRAMs are in place before replacing the thermal module.

1. Use a lint-free cloth or cotton swab soaked in isopropyl alcohol or acetone to remove all traces of thermal grease from the contact surfaces on both the heatsink module and the CPU.
2. Apply a small amount of thermal grease onto the center area of the CPU and GPU.

   There is no need to spread the grease manually, the force used during the installation of the thermal module is sufficient. The following brands of thermal grease are approved for use:

   - N302 I-Connosseur
   - Honeywell
   - Eapus XR-PE
3. Place the thermal module on the mainboard. Make sure to align the screw hole on the thermal module with the screw hole on the mainboard. Keep the module as level as possible to spread the thermal grease evenly.

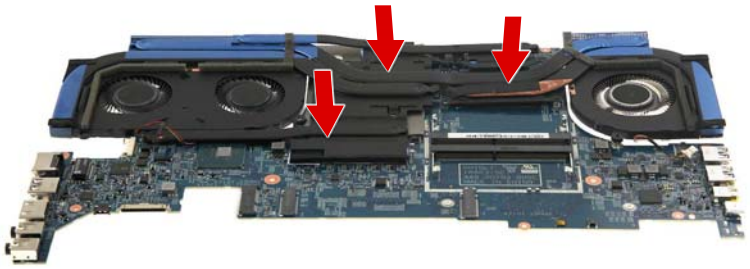


Figure 3-84. Thermal Module

4. Secure the thermal module to the mainboard using eight screws.

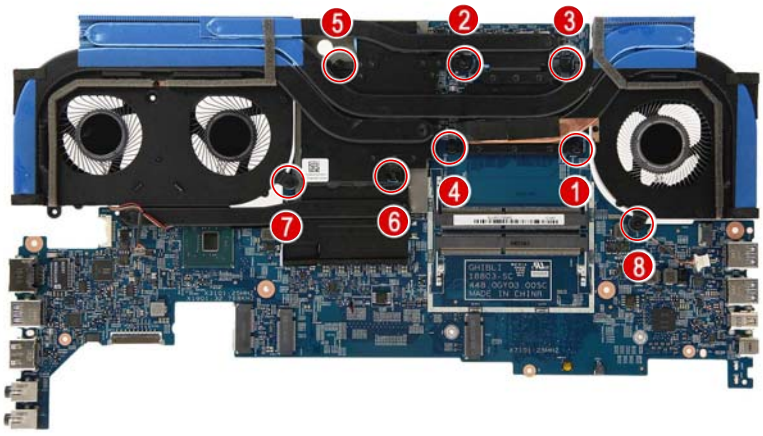


Figure 3-85. Thermal Module Screws

Table 3-85. Screws

Step	Screw	Quantity	Torque	Screw Type
Thermal Module Reassembly	M2 × L4	8	1.6 ± 0.24 kgf cm	

5. Connect the fan cables to the mainboard.

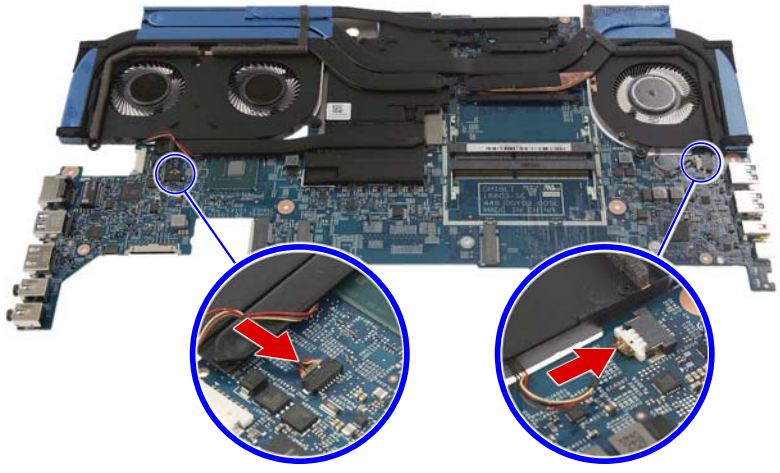


Figure 3-86. Mainboard Connector - Fan Cables

Replacing the SSD Modules

1. Place the SSD2 module into the mainboard.

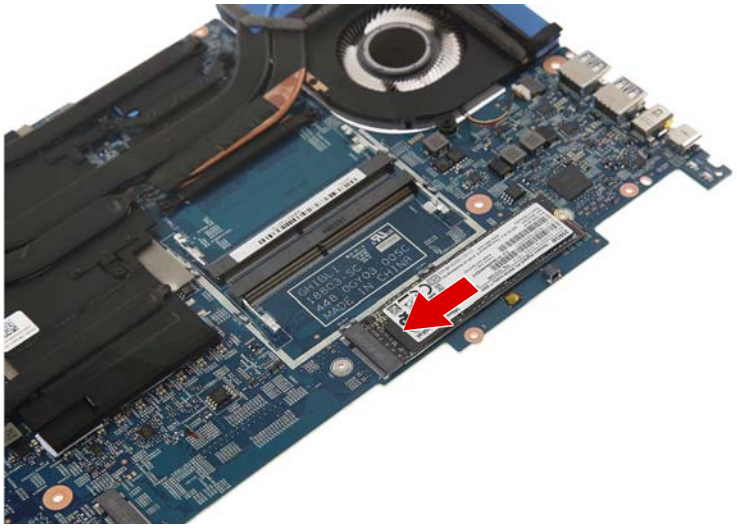


Figure 3-87. SSD2 Module

2. Secure the SSD2 module to the mainboard using one screw.

Figure 3-88. SSD2 Module Screw

Table 3-88. Screw

Step	Screw	Quantity	Torque	Screw Type
SSD2 Module Reassembly	M2 × L2.5	1	1.6 ± 0.24 kgf cm	

3. Repeat Steps 1~2 to replace the SSD1 module.

Replacing the Memory Module

1. Insert the memory module at a 30° angle into the DIMM slot (**1**) and then press it down (**2**) until it locks into place.

   The module is keyed so it can only be inserted in one direction. If the module does not fit, make sure that the notch in the module lines up with the tab in the memory slot.

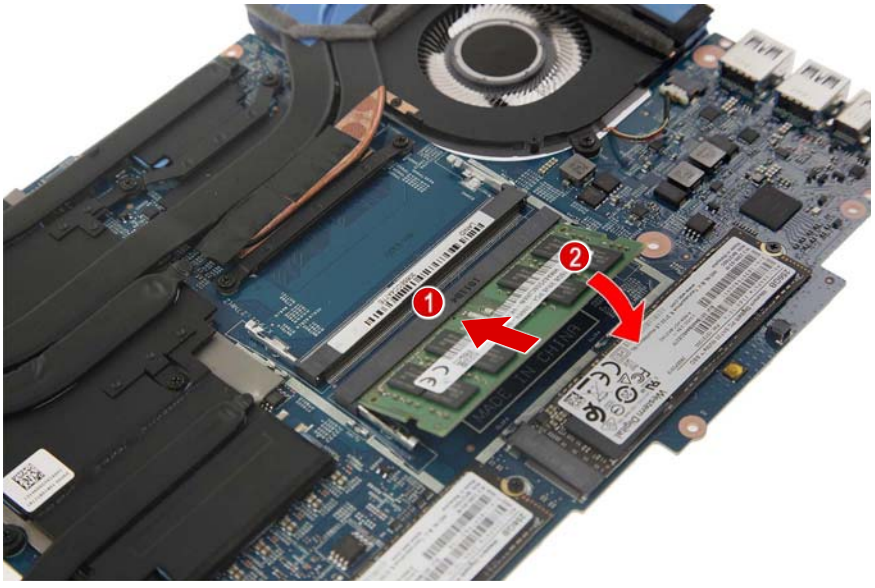


Figure 3-89. Memory Module - DIMM1 Slot

2. Repeat Step 1 to install the remaining memory module.
3. Use the EMI shielding to cover the memory modules.

Figure 3-90. Memory Module - EMI Shielding

4. Use adhesive tape to secure the EMI shielding to the thermal module.

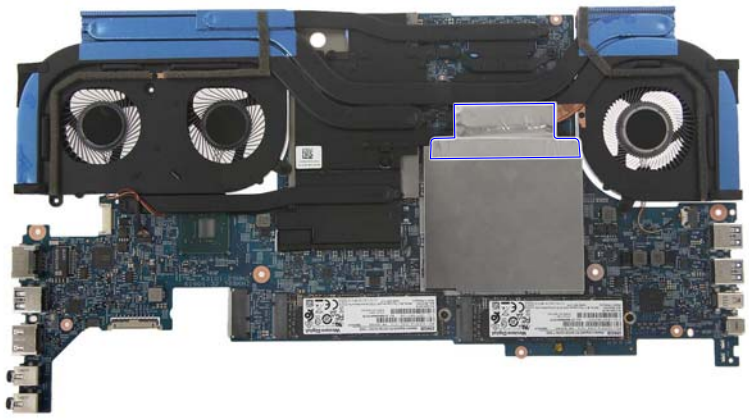


Figure 3-91. EMI Shielding - Adhesive Tape

Replacing the Turbo Key Module

1. Use double sided tape to secure the bracket to the turbo key module.

Figure 3-92. Turbo Key Bracket

2. Place the turbo key module into the upper case.

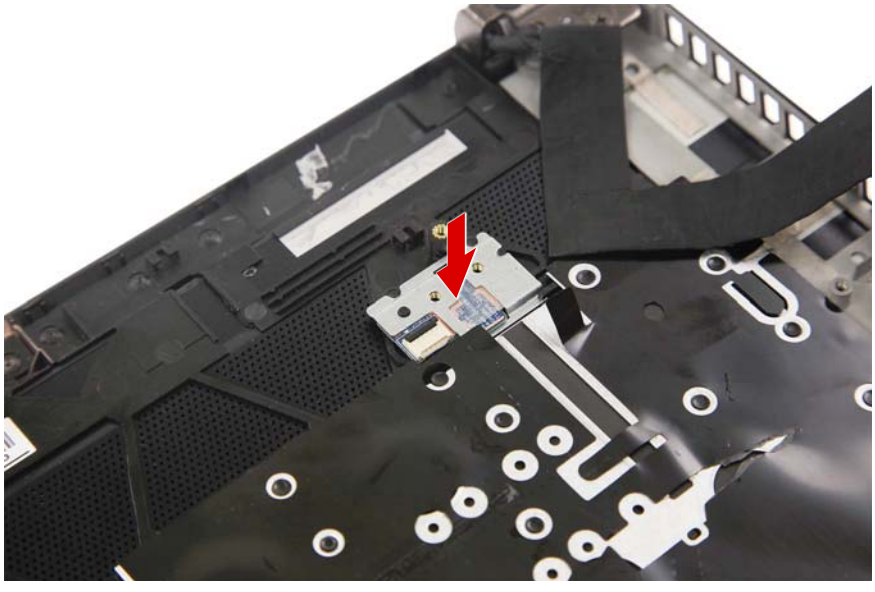


Figure 3-93. Turbo Key Module

3. Use two screws to secure the turbo key module to the upper case.

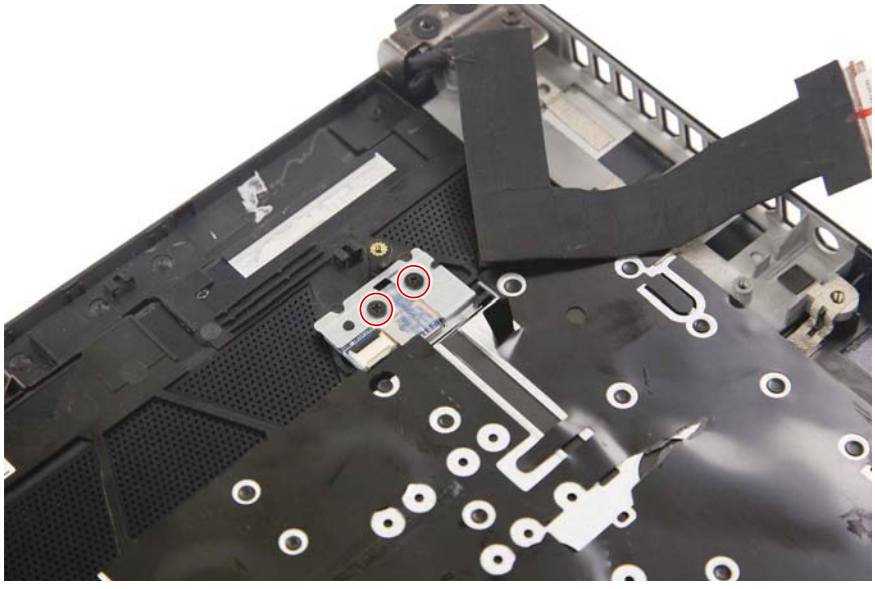


Figure 3-94. Turbo Key Module Screws

Table 3-94. Screws

Step	Screw	Quantity	Torque	Screw Type
Turbo Key Module Reassembly	M2 × L2.5	1	1.6 ± 0.24 kgf cm	

4. Use adhesive tape to secure the turbo key module to the upper case.

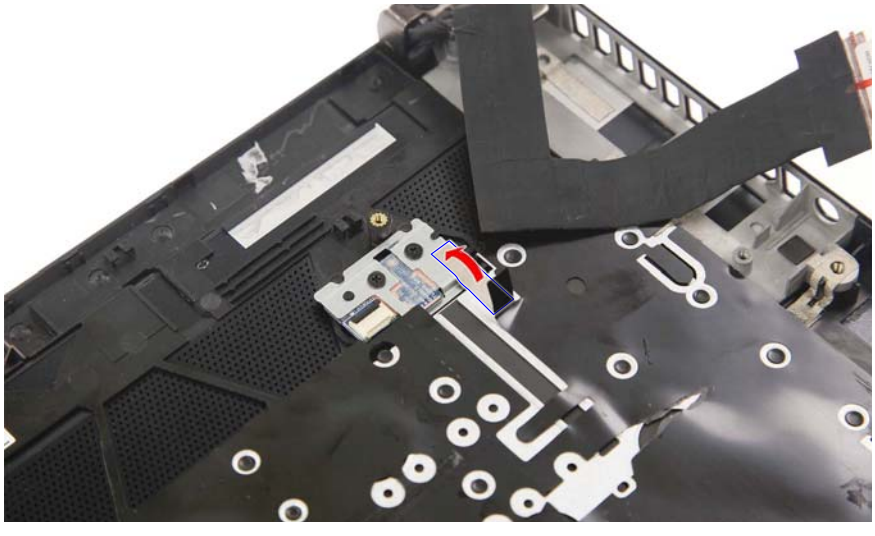


Figure 3-95. Turbo Key Module - Adhesive Tape

5. Connect the cable to the turbo key module.

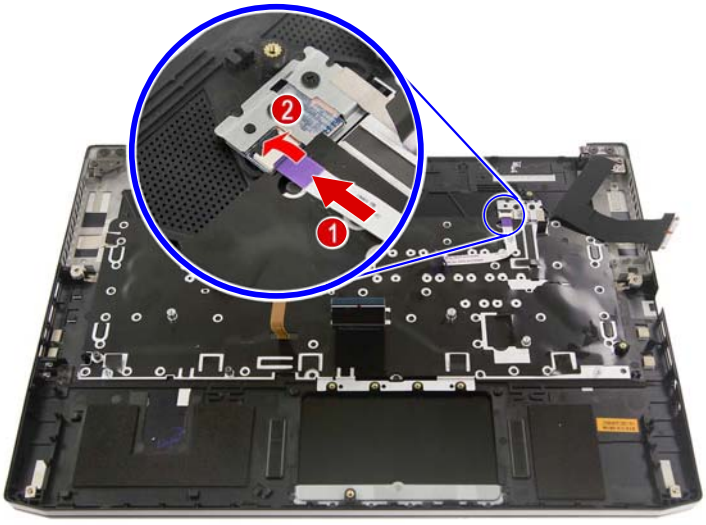


Figure 3-96. Turbo Key Connector - Turbo Key Cable

Replacing the WLAN Antenna

1. Place the WLAN antenna into the upper case and press them down until they stick into place.

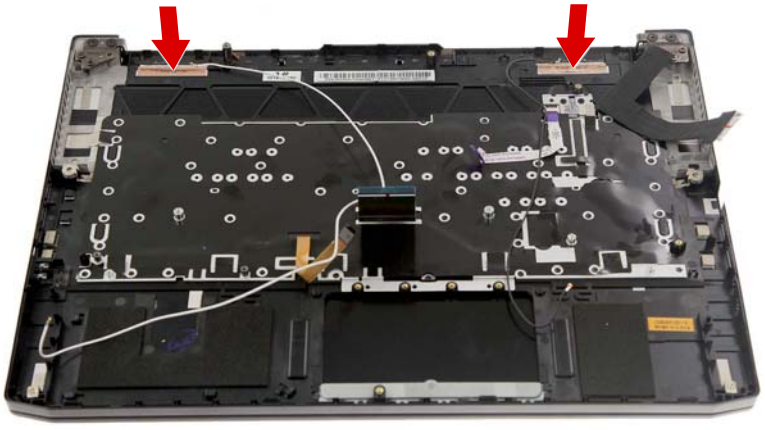


Figure 3-97. WLAN Antenna

2. Use the adhesive tapes and cable guides of the upper case to secure the antenna cables.

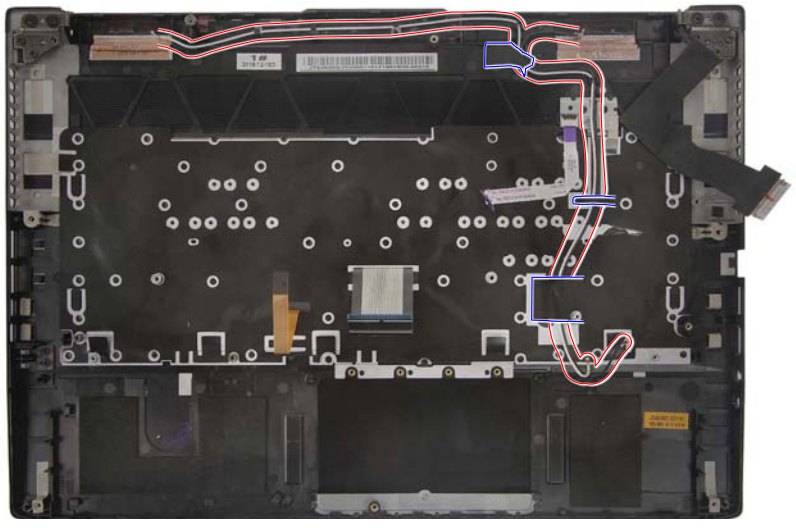


Figure 3-98. Upper Case Adhesive Tapes and Cable Guides - Antenna Cables

Replacing the Left and Right Speakers

1. Place the left and right speakers into their sockets.

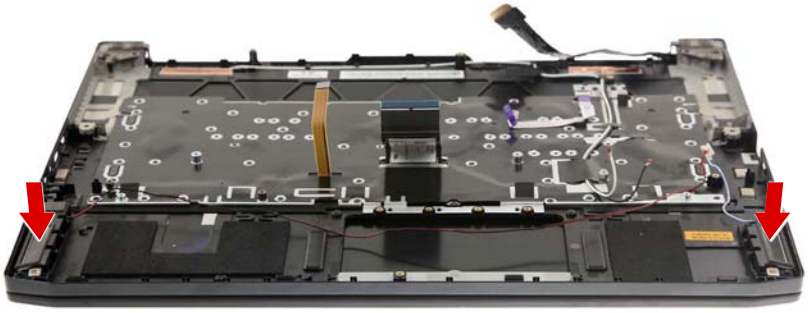


Figure 3-99. Left and Right Speakers

2. Use the adhesive tapes and cable guides to secure the speaker cables to the upper case.

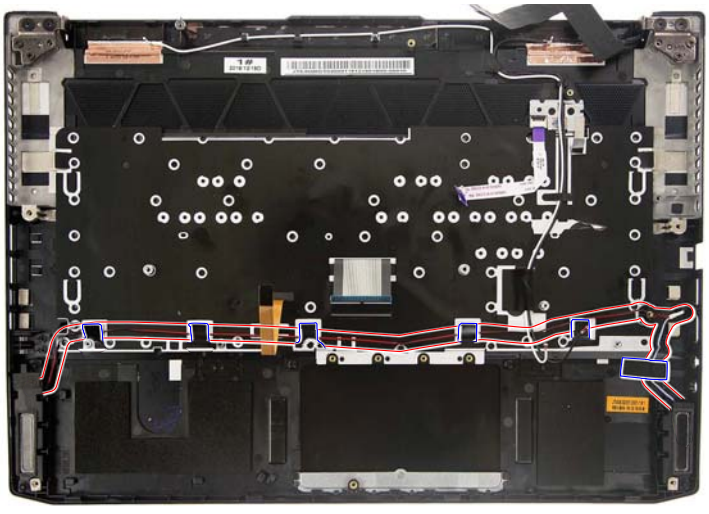


Figure 3-100. Upper Case Adhesive Tapes and Cable Guides - Speaker Cables

3. Place the mylar into the upper case as shown and press it down until it sticks into place.

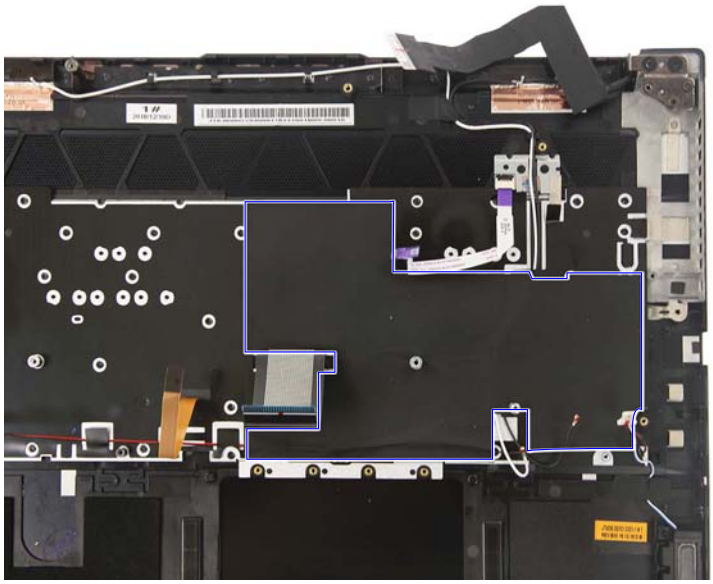


Figure 3-101. Upper Case Mylar - Speaker Cable

Replacing the Touchpad Module

1. Insert the touchpad module into the upper case.

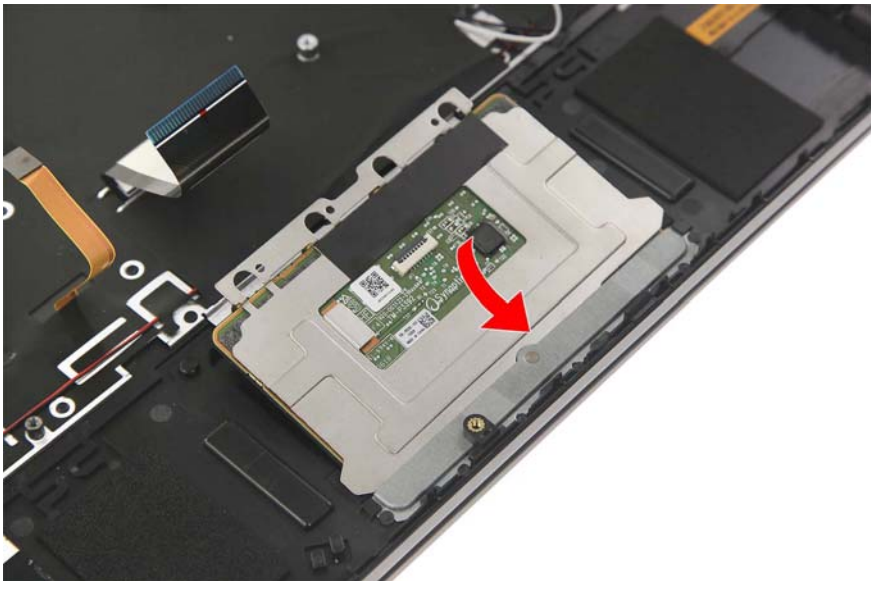


Figure 3-102. Touchpad Module

2. Use four screws to secure the touchpad module to the upper case.

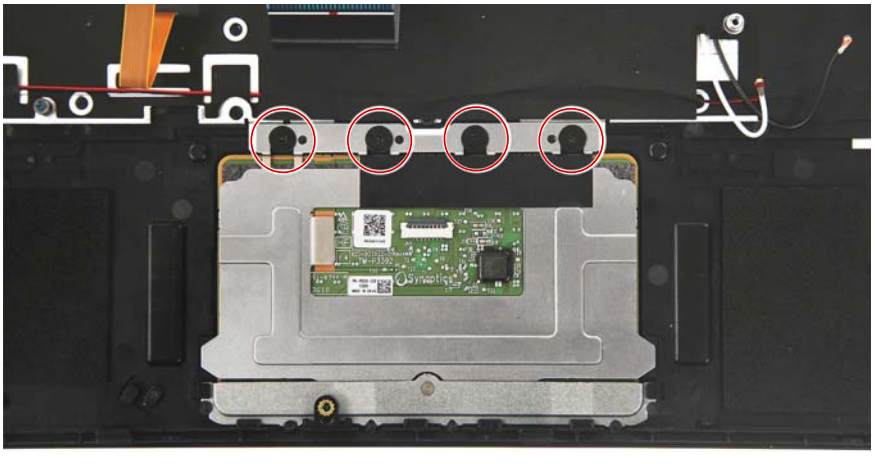


Figure 3-103. Touchpad Module Screws

Table 3-103. Screws

Step	Screw	Quantity	Torque	Screw Type
Touchpad Module Reassembly	M2 × L2	4	1.6 ± 0.24 kgf cm	

3. Connect the touchpad cable to the touchpad module.

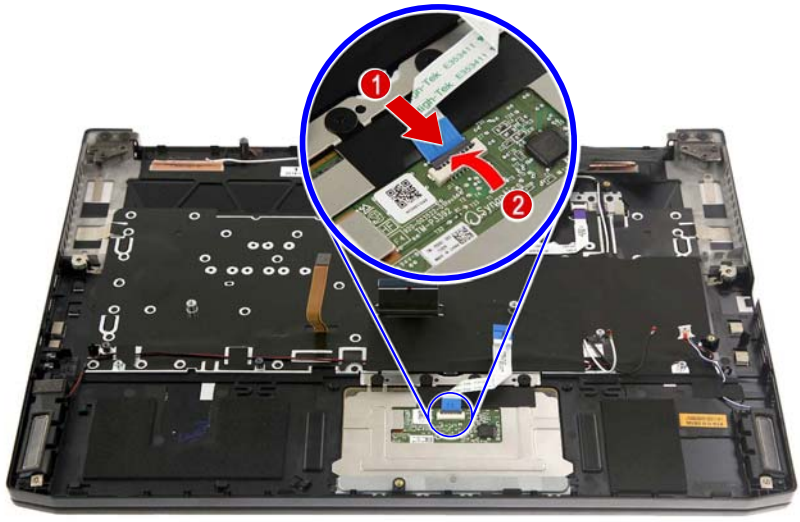


Figure 3-104. Touchpad Connector - Touchpad Cable

Replacing the Mainboard

1. Slide the mainboard into the upper case, making sure the I/O ports of the mainboard are extruding from their port holes, and that the turbo key cable, eDP cable, WLAN antenna cables, touchpad cable, speaker cable, keyboard cable and keyboard backlight cable are accessible for reconnection to their respective connectors.

Figure 3-105. Mainboard

2. Use six screws to secure the mainboard to the upper case.

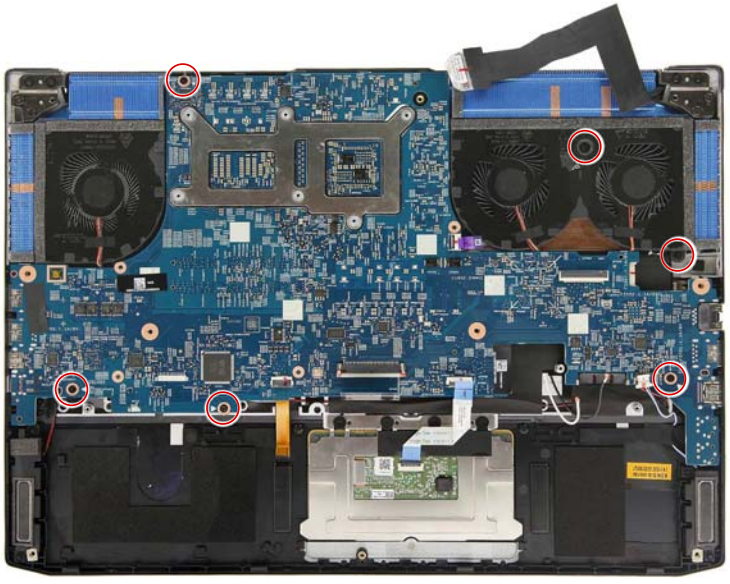


Figure 3-106. Mainboard Screws

Table 3-106. Screws

Step	Screw	Quantity	Torque	Screw Type
Mainboard Reassembly	M2 × L4	6	1.6 ± 0.24 kgf cm	

3. Connect the touchpad cable to the mainboard.

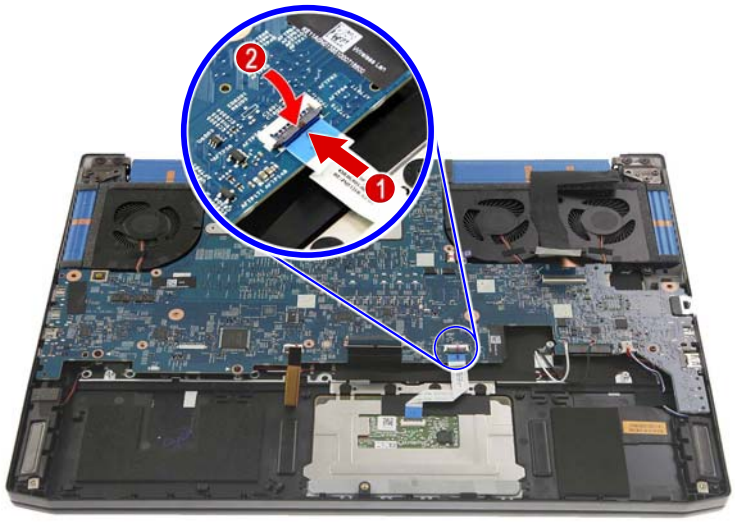


Figure 3-107. Mainboard Connector - Touchpad Cable

4. Connect the turbo key cable to the mainboard.

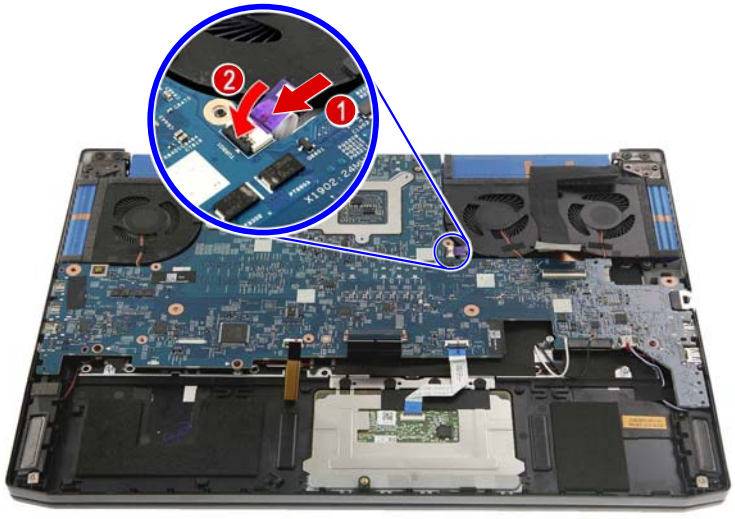


Figure 3-108. Mainboard Connector - Turbo Key Cable

5. Place the mylar into the mainboard as shown and press it down until it sticks into place. Make sure that the keyboard cable and keyboard backlight cable are accessible for reconnection to their respective connectors.

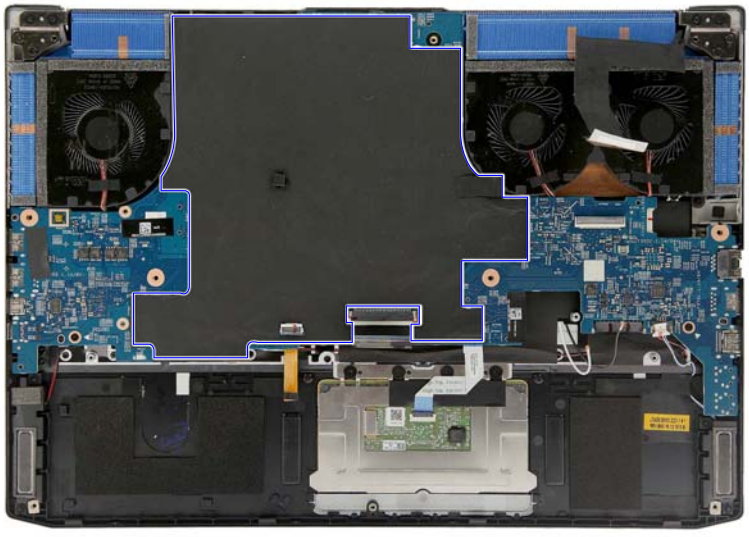


Figure 3-109. Mainboard Mylar

6. Connect the keyboard backlight cable to the mainboard.

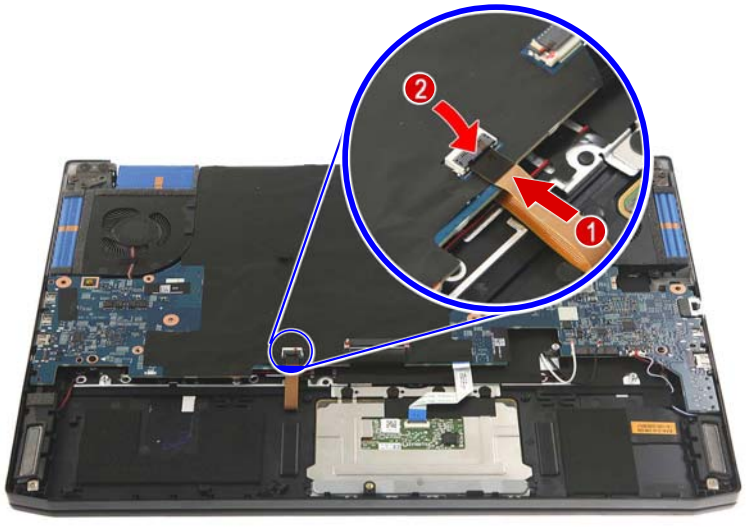


Figure 3-110. Mainboard Connector - Keyboard Backlight Cable

7. Connect the keyboard cable to the mainboard.

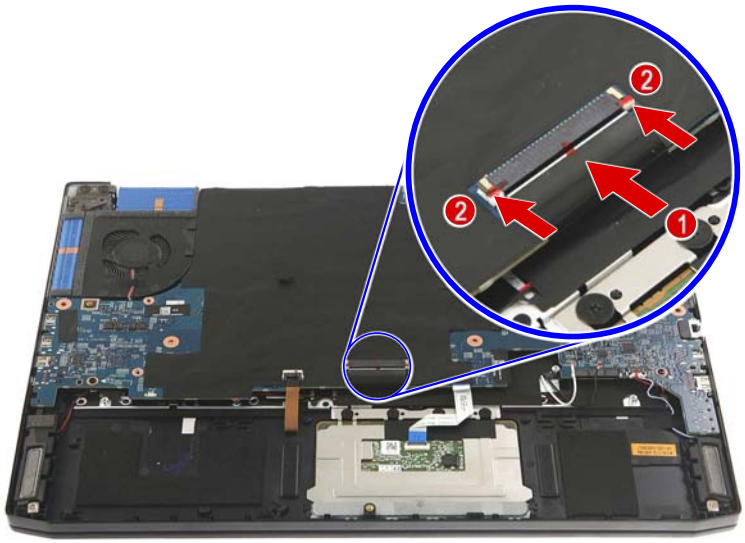


Figure 3-111. Mainboard Connector - Keyboard Cable

8. Connect the speaker cable to the mainboard.

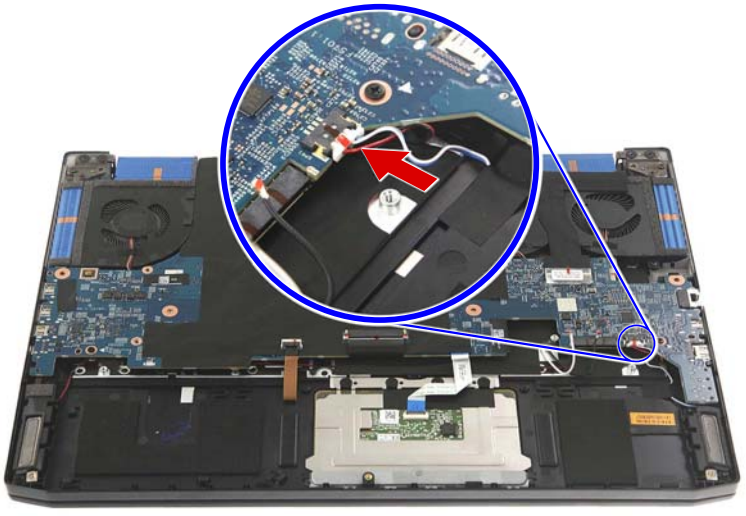


Figure 3-112. Mainboard Connector - Speaker Cable

9. Use self-adhesive tape to secure the eDP cable to the thermal fan.

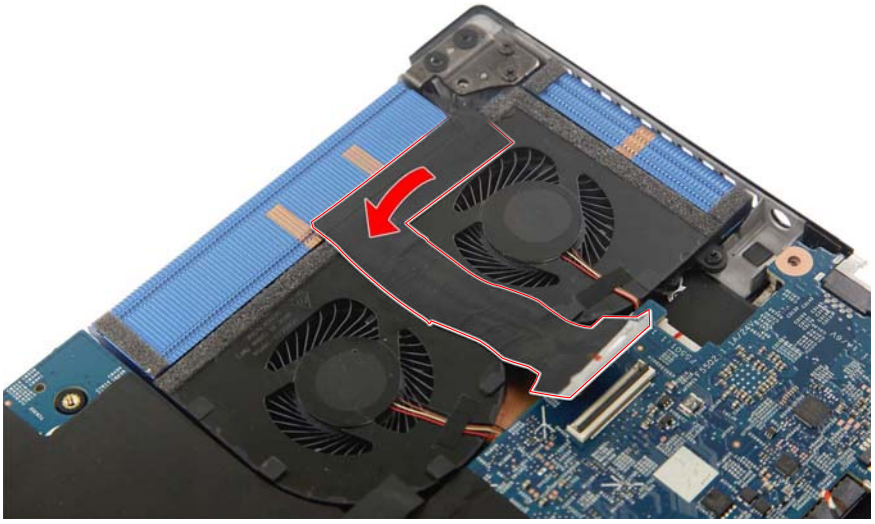


Figure 3-113. eDP Cable Self-Adhesive Tape

10. Connect the eDP cable to the mainboard.

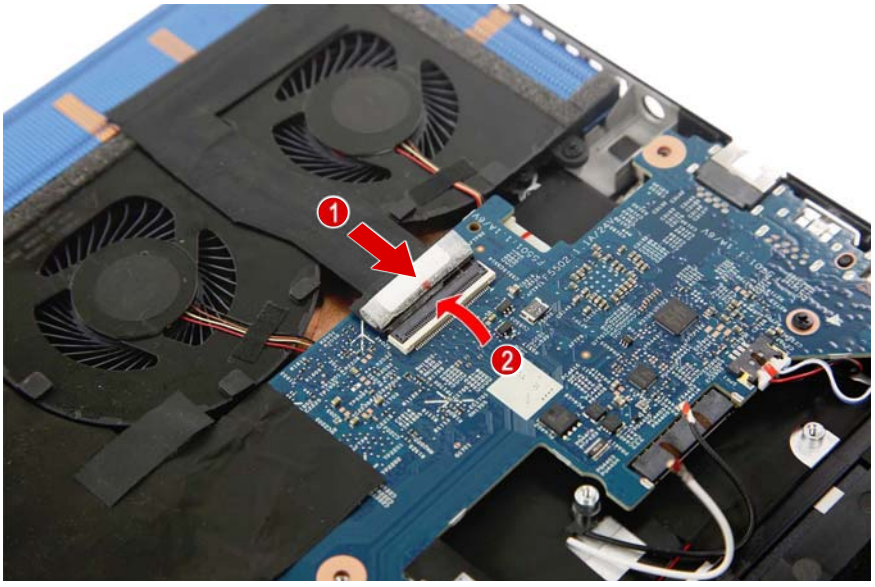


Figure 3-114. Mainboard Connector - eDP Cable

11. Use transparent adhesive tape to secure the eDP cable to the mainboard.

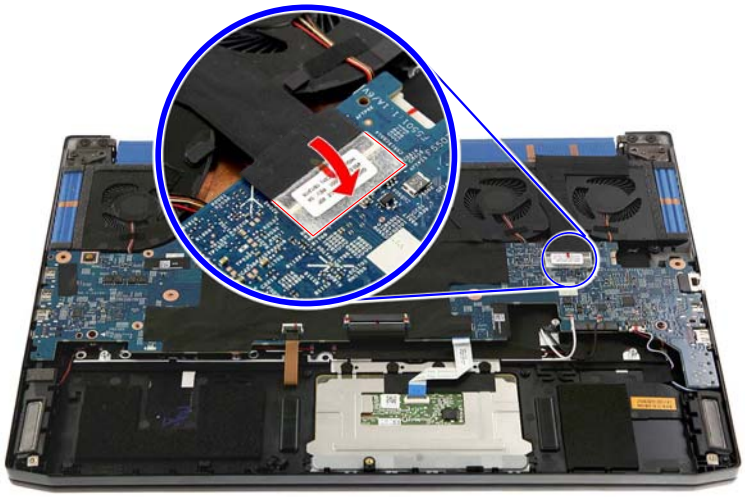


Figure 3-115. eDP Cable Transparent Adhesive Tape

Replacing the DC-In Cable

1. Insert the DC-In cable into the upper case.

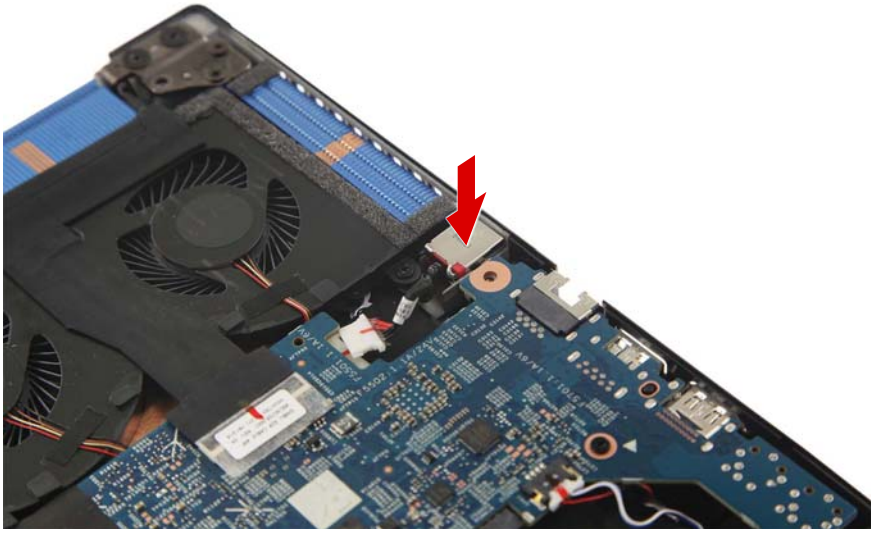


Figure 3-116. DC-In Cable

2. Connect the DC-In cable to the mainboard.

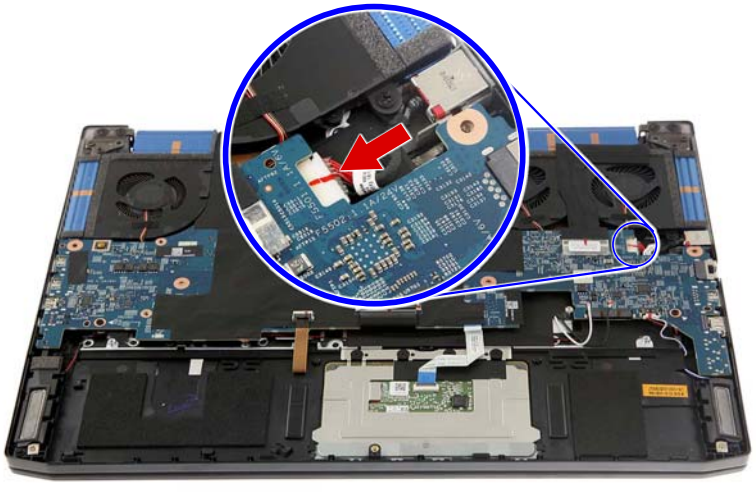


Figure 3-117. Mainboard Connector - DC-In Cable

Replacing the RTC Battery

1. Use self-adhesive tape to secure the RTC battery to the upper case.

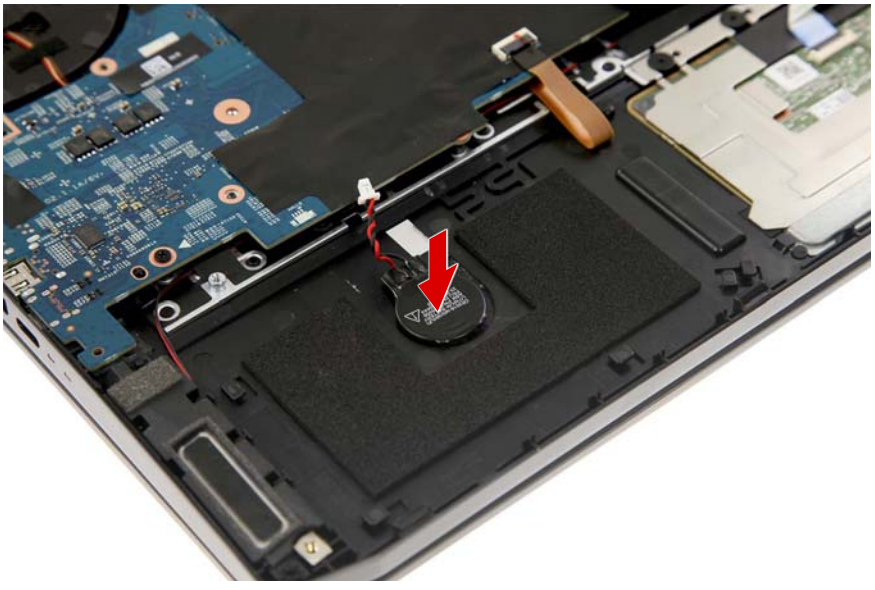


Figure 3-118. RTC Battery

2. Connect the RTC battery cable to the mainboard.

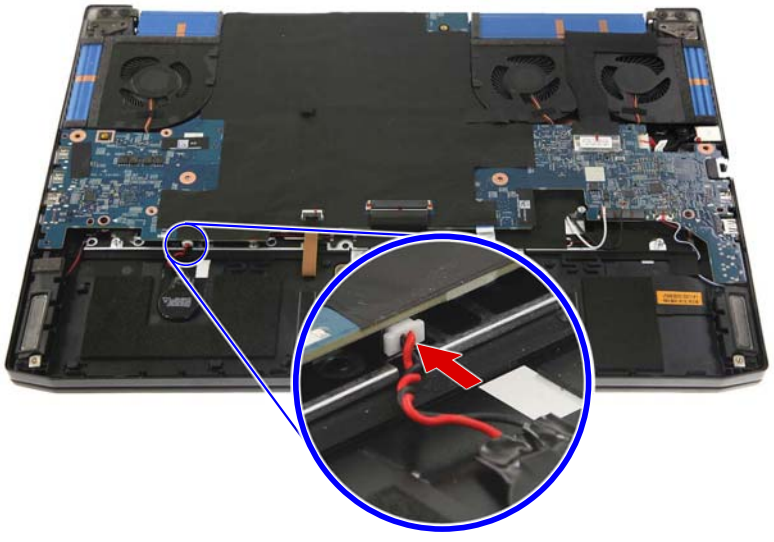


Figure 3-119. Mainboard Connector - RTC Battery Cable

Replacing the WLAN Module

1. Insert the WLAN module into the mainboard.

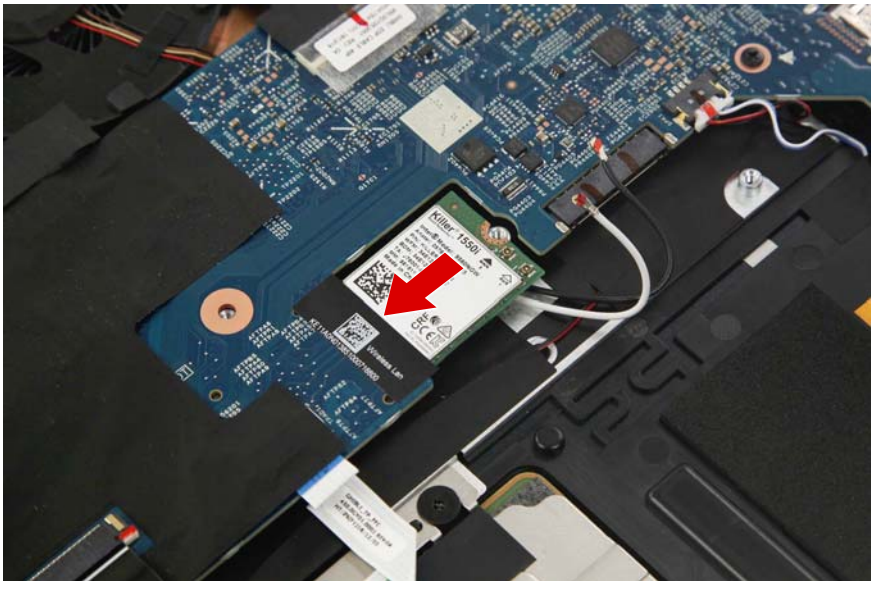


Figure 3-120. WLAN Module

2. Secure the WLAN module to the mainboard using one screw.

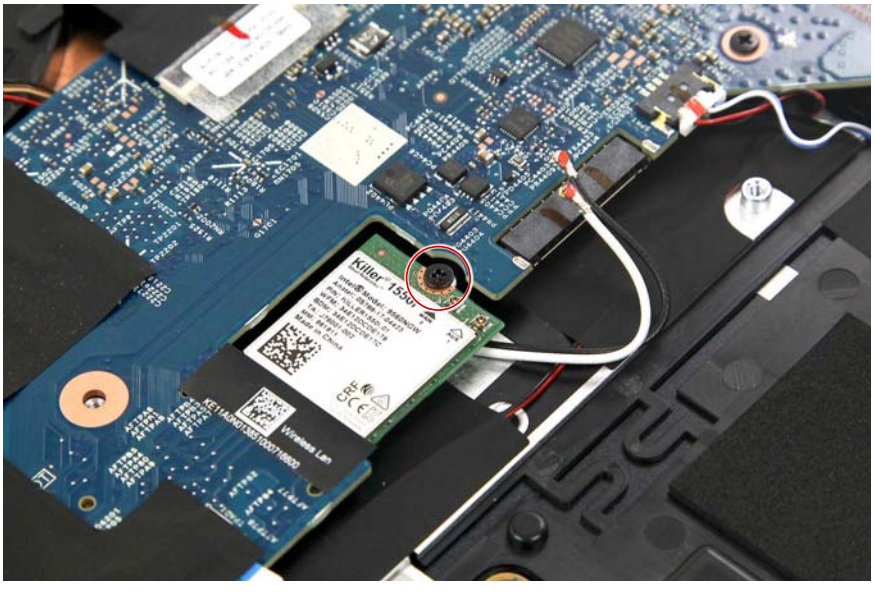


Figure 3-121. WLAN Module Screw

Table 3-121. Screw

Step	Screw	Quantity	Torque	Screw Type
WLAN Module Reassembly	M2 × L4	6	1.6 ± 0.24 kgf cm	

3. Connect the antenna cables to the WLAN module. If you are installing a 1x1 WLAN board, connect the black antenna cable to the WLAN module.

IMPORTANT:

Refer to your machine disassembly note to determine which cable color corresponds to the main (black) and auxiliary (white) connectors.

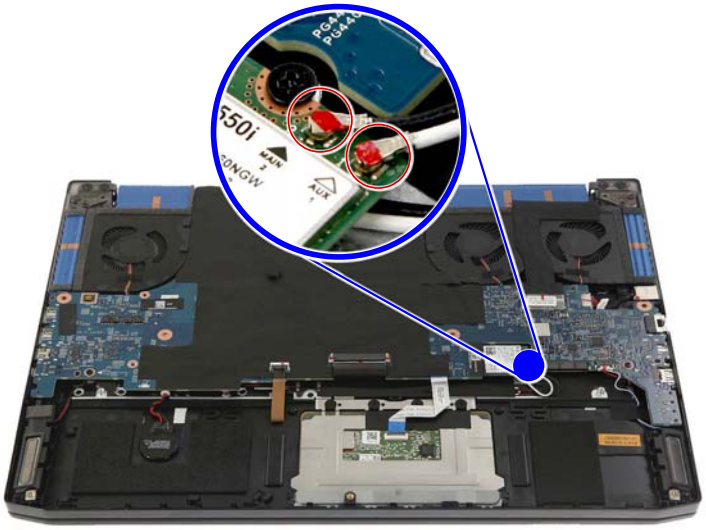


Figure 3-122. WLAN Antenna Cables

Replacing the Battery Pack

1. Insert the battery pack into the upper case.

Figure 3-123. Battery Pack

2. Use two screws to secure the battery pack to the upper case.

Figure 3-124. Battery Pack Screws

Table 3-124. Screws

Step	Screw	Quantity	Torque	Screw Type
Battery Pack Reassembly	M2 × L4	2	1.6 ± 0.24 kgf cm	

3. Connect the battery cable to the mainboard.

Figure 3-125. Mainboard Connector - Battery Cable

Replacing the Lower Case

1. Place the lower case into the upper case.

Figure 3-126. Lower Case

2. Press the sides of the lower case into the upper case until it latches into place.

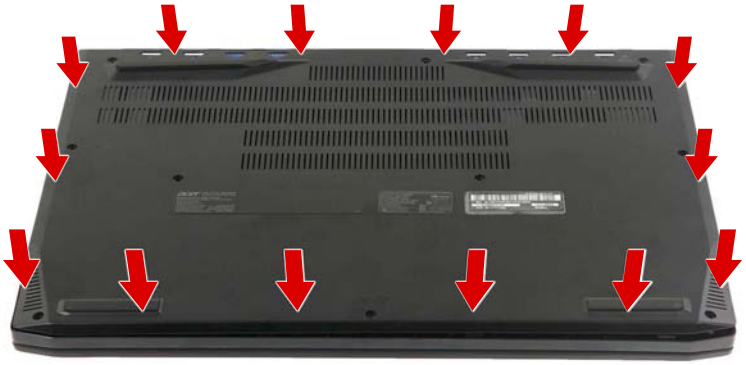


Figure 3-127. Lower Case Latches

3. Use ten screws to secure the lower case to the upper case.

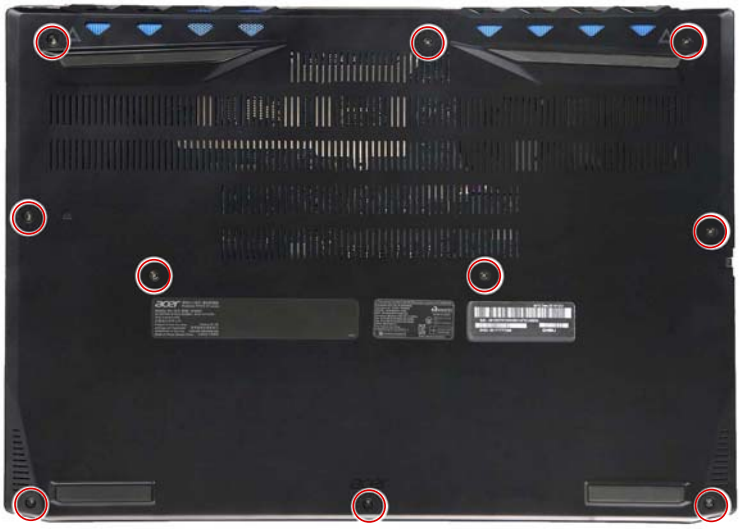


Figure 3-128. Lower Case Screws

Table 3-128. Screws

Step	Screw	Quantity	Torque	Screw Type
Lower Case Reassembly	M2.5 × L6	10	3.0 ± 0.45 kgf cm	

CHAPTER 4

Troubleshooting

Troubleshooting

This chapter contains information about troubleshooting common problems associated with the Predator Triton 515-51 computer.

General Information

The following procedures are a guide for troubleshooting computer problems. The step by step procedures are designed to be performed as described.

NOTE:

The diagnostic tests are intended for Acer products only. Non-Acer products, prototype cards, or modified options can give false errors and invalid system responses.

1. Obtain as much detailed information as possible about the problem.
2. If possible, verify the symptoms by re-creating the failure through diagnostic tests or repeating the operation that led to the problem.
3. Refer to Table 4-1 for a list of verified symptom category to determine the solution.

Table 4-1. Common Problems

Symptoms (Verified)
Power On Issues
No Display Issues
LCD Failure
Keyboard Failure
Touchpad Failure
Internal Speaker Failure
Microphone Failure
USB Failure
WLAN Failure
Thermal Unit Failure
Other Functions Failure
Intermittent Problems
Undetermined Problems

4. If the issue is still not resolved, refer to the Online Support Information on page 8-3

Power On Issues

If the system does not power on, perform the following, one at a time, to correct the problem. Do not replace a non-defective FRU.

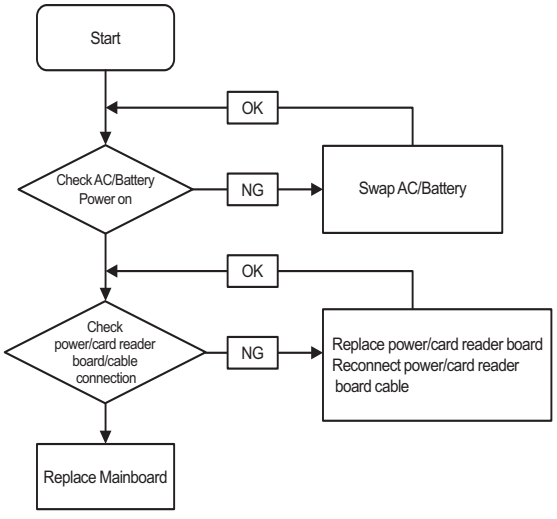


Figure 4-1. Power On Issue

Computer Shuts Down Intermittently

If the system powers off at intervals, perform the following.

1. Makes sure the power cable is properly connected to the computer and the electrical outlet.
2. Remove all extension cables between the computer and the outlet.
3. Remove all surge protectors between the computer and the electrical outlet. Plug the computer directly into a known serviceable electrical outlet.
4. Disconnect the power and open the casing to check the thermal module and fan airways are free of obstructions. Refer to the to the “Thermal Unit Failure” section on page 4-17.
5. Remove all external and non-essential hardware connected to the computer that are not necessary to boot the computer to the failure point.
6. Remove any recently installed software.
7. If the issue is still not resolved, refer to the Online Support Information on page 8-3.

No Display Issues

If the Display does not work, perform the following, one at a time. Do not replace a non-defective FRU:

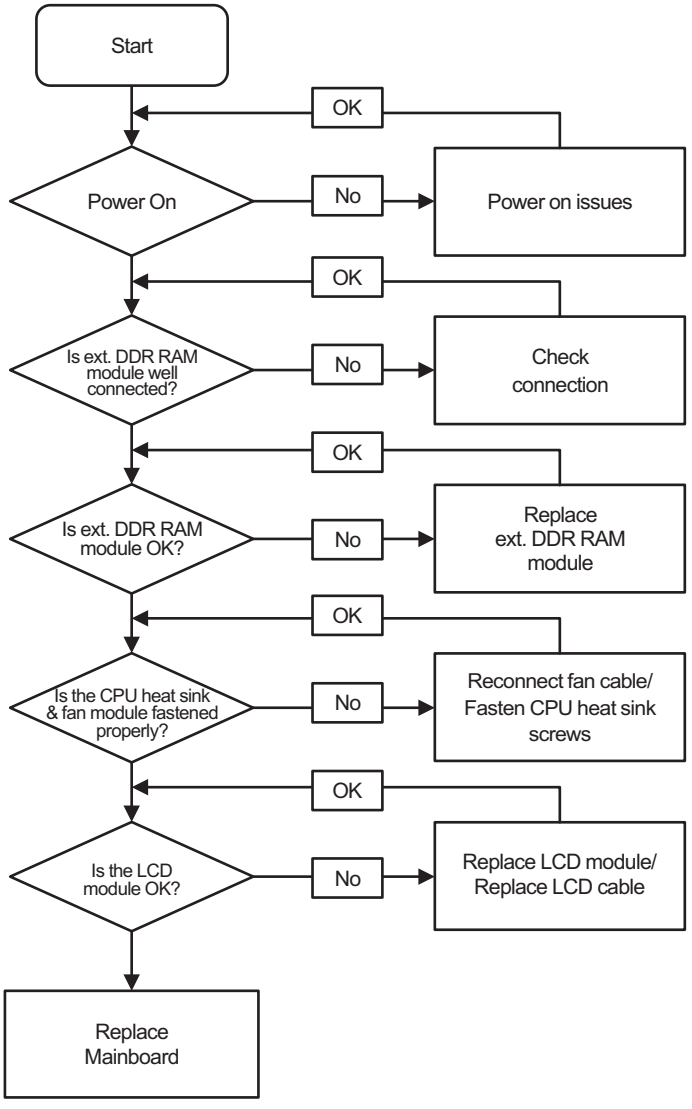


Figure 4-2. No Display Issue

No POST or Video

If the POST or video does not appear, perform the following one at a time.

1. Make sure that internal display is selected. Switch between the internal and external display by pressing ***Fn+F5***.

NOTE:

This hotkey may not apply to all models. Refer to the computer's user manual for the applicable hotkey sequence.

2. Make sure the computer has power by checking for one of the following:
   - Fans start up
   - Status LEDs illuminate

   If there is no power, refer to the "Power On Issues" section on page 4-4.
3. Drain stored power by removing the power cable and the battery pack. Hold the power button for 10 seconds.
4. Connect the power cable and reboot the computer.
5. Connect an external monitor to the computer and switch between the internal display and the external display by pressing ***Fn*+*F5***.
6. If the POST or video appears on the external display only, refer to the "LCD Failure" section on page 4-8.
7. Disconnect power and all external devices including port replicators or docking stations.
8. Remove the lower case. Perform the "Removing the Lower Case" procedures described on pages 3-9.
9. Remove the mainboard. Perform the "Removing the Mainboard" procedures described on pages 3-17.
10. Remove the memory module. Perform the "Removing the Memory Modules" procedures described on pages 3-32.
11. Start the computer. If the computer boots correctly, add the devices one by one until the failure point is discovered.
12. Reinstall the memory module. Perform the "Replacing the Memory Module" procedures described on pages 3-62.
13. If the issue is still not resolved, refer to the Online Support Information on page 8-3.

Abnormal Video

If the video appears abnormal, perform the following one at a time.

1. Boot the computer.

   If permanent vertical/horizontal lines or dark spots appear in the same location, the LCD panel is faulty and should be replaced. The same goes for when there is extensive pixel damage (i.e. different colored spots in the same locations on the screen). Perform the "Removing the Upper Case" and "Removing the LCD Panel" procedures described on pages 3-39 and 3-44 respectively.

NOTE:
Make sure that the computer is not running on battery alone as this may reduce display brightness.

2. Adjust the brightness to its highest level. Refer to the User Manual for instructions on adjusting the settings. If the display is too dim at the highest brightness setting, the LCD is faulty and should be replaced. Refer to Disassembly Process.
3. Check the display resolution is correctly configured:
   - Minimize or close all Windows.
   - If display size is only abnormal in an application, check the view settings and control/mouse wheel zoom feature in the application.
   - If desktop display resolution is not normal, right-click on the desktop and select `Personalize Display Settings`.
   - Click and drag the `Resolution` slider to the desired resolution.

- Click `Apply` and check the display. Readjust if necessary.

4. Roll back the video driver to the previous version if updated.
5. Remove and reinstall the video driver.
6. Check the Device Manager to determine that:
   - The device is properly installed. There are no red Xs or yellow exclamation marks
   - There are no device conflicts
   - No hardware is listed under `Other Devices`
7. If the issue is still not resolved, refer to the Online Support Information on page 8-3.
8. Run the Windows Memory Diagnostic from the operating system DVD and follow the on-screen prompts.
9. If the issue is still not resolved, refer to the Online Support Information on page 8-3.

LCD Failure

If the LCD fails, perform the following, one at a time. Do not replace a non-defective FRU:

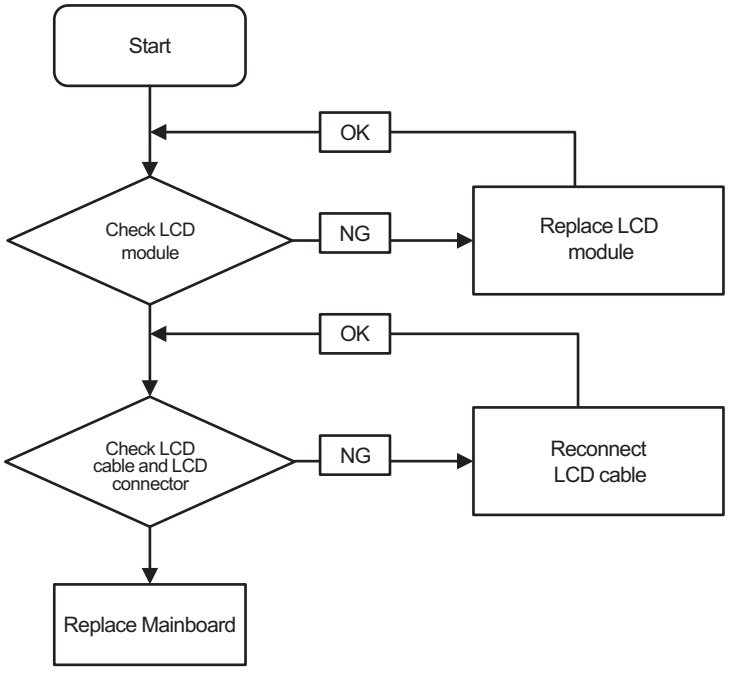


Figure 4-3. LCD Failure

Keyboard Failure

If the Keyboard fails, perform the following, one at a time. Do not replace a non-defective FRU:

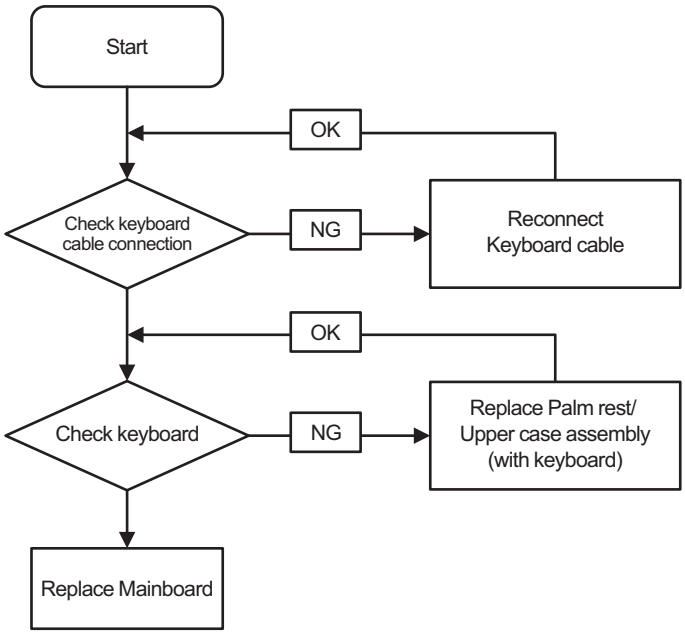


Figure 4-4. Keyboard Failure

Keyboard Backlight Failure

If the Keyboard backlight fails, perform the following, one at a time. Do not replace a non-defective FRU:

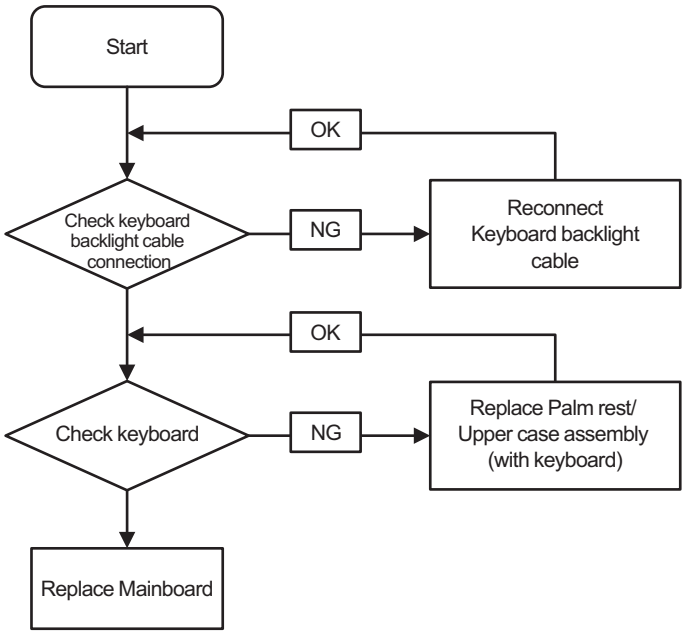


Figure 4-5. Keyboard Failure

Touchpad Failure

If the Touchpad fails, perform the following, one at a time. Do not replace a non-defective FRU:

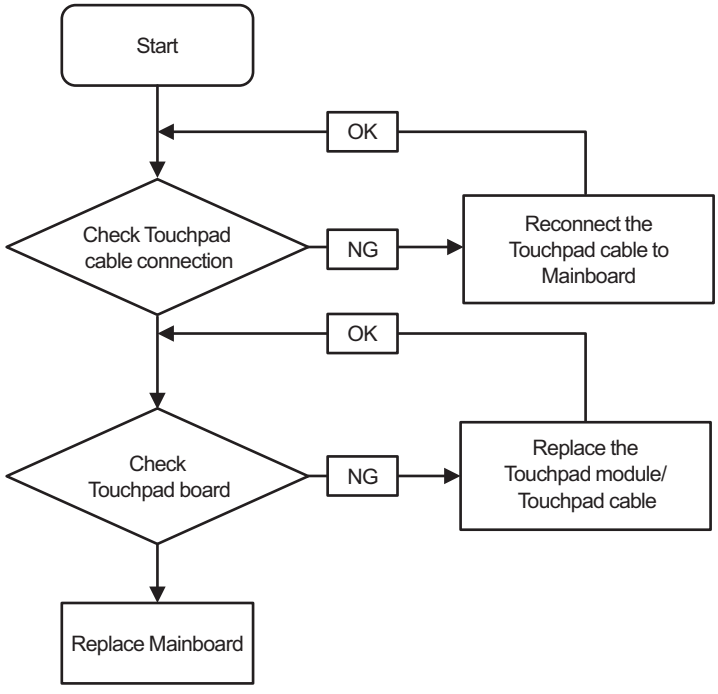


Figure 4-6. Touchpad Failure

Internal Speaker Failure

If internal Speakers fail, perform the following, one at a time. Do not replace a non-defective FRU:

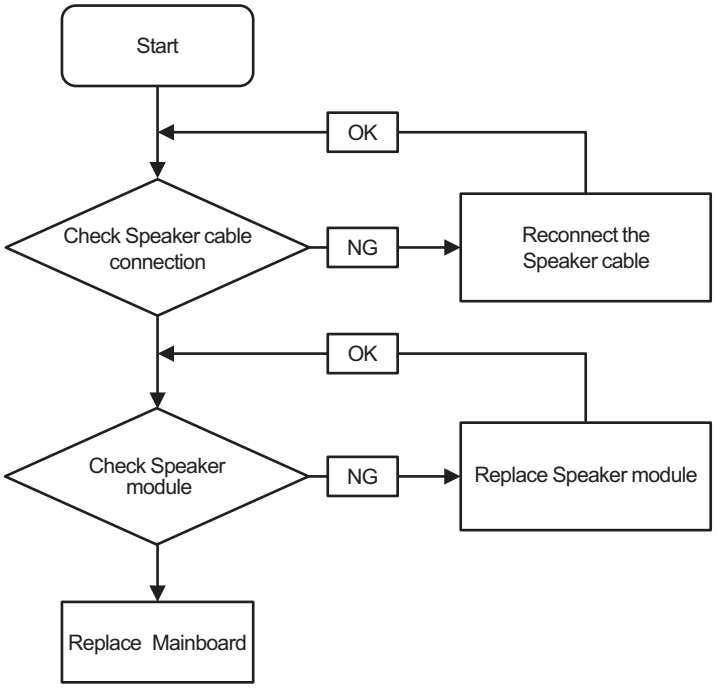


Figure 4-7. Internal Speaker Failure

Sound Problems

Perform the following, one at a time.

1. Boot the computer.
2. Drag the mouse pointer to the top or bottom right corner of the screen until the Charms bar appear along the right edge of the screen.
3. Click `Search`.
4. Enter `Device Manager` in the search box and click `Device Manager`.
5. Check the Device Manager to determine that:
   - The device is properly installed
   - There are no red Xs or yellow exclamation marks
   - There are no device conflicts
   - No hardware is listed under `Other Devices`
6. If updated recently, roll back the audio driver to the previous version.
7. Remove and reinstall the audio driver.

8. Make sure that all volume controls are set mid range:
   - Click the volume icon on the task bar
   - Drag the slider to 50. Confirm that the volume is not muted.
   - Click `Mixer` to verify that other audio applications are set to 50 and not muted.
9. Enter `Control Panel` in the search box and click `Control Panel`.
10. Click `Hardware and Sound` → `Sound`. Confirm that Speakers are selected as the default audio device (green check mark).

NOTE:

If Speakers do not show, right-click on the `Playback` tab and select `Show Disabled Devices` (clear by default).

11. Select `Speakers` and click `Configure` to start `Speaker Setup`. Follow the on-screen prompts to configure the speakers.
12. Remove any recently installed hardware or software.
13. Restore system and file settings from a known good date using `System Restore`.
14. If the issue is remains, repeat step 12, selecting an earlier time and date.
15. Reinstall the Operating System.
16. If the issue is still not resolved, refer to the Online Support Information on page 8-3.

Microphone Failure

Perform the following:

1. Enter `Control Panel` in the search box and click `Control Panel`.
2. Click `Hardware and Sound` → `Sound` and select the `Recording` tab.
3. Right click on the `Recording` tab and select `Show Disabled Devices` (clear by default). The microphone appears on the `Recording` tab.
4. Right click on the microphone and select `Enable`.
5. Select the microphone then click `Properties`. Select the `Levels` tab.
6. Increase the volume to the maximum setting and click **OK**.
7. Test the microphone hardware:
   - Select the microphone and click `Configure`.
   - Select `Set up microphone`.
   - Select the microphone type from the list and click `Next`.
   - Follow the on-screen prompts to complete the test.
8. If the issue is still not resolved, refer to the Online Support Information on page 8-3.

USB Failure

If the USB fails, perform the following, one at a time. Do not replace a non-defective FRU:

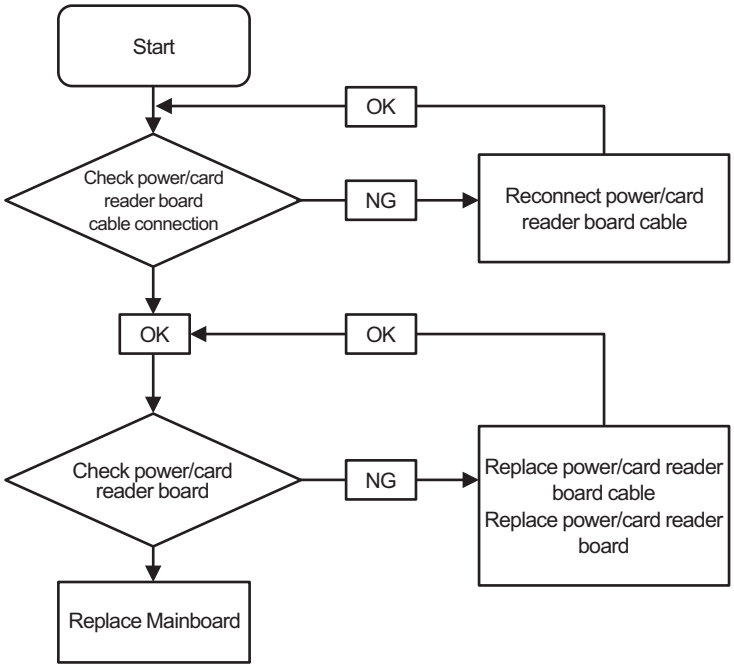


Figure 4-8. USB Failure

WLAN Failure

If the WLAN fails, perform the following, one at a time. Do not replace a non-defective FRU:

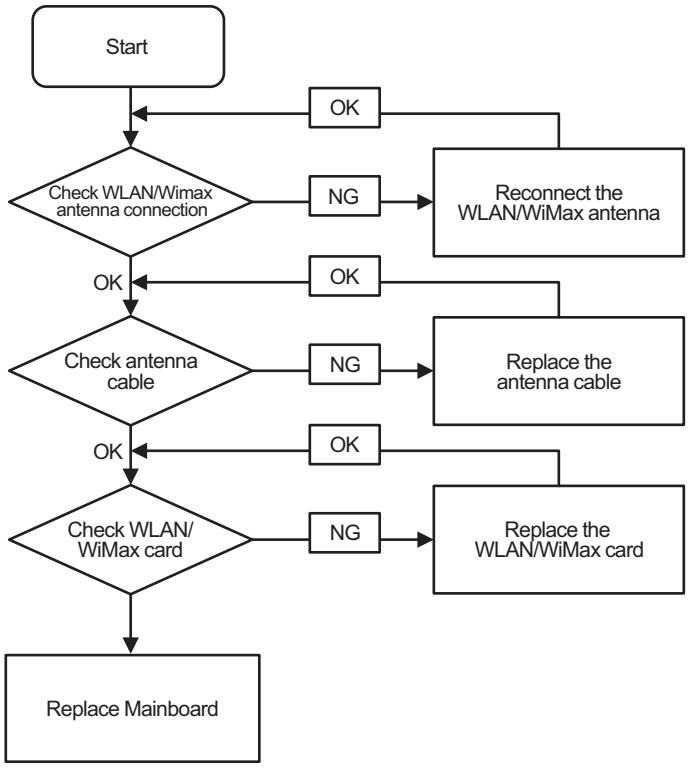


Figure 4-9. WLAN Failure

Thermal Unit Failure

If the Thermal Unit fails, perform the following, one at a time. Do not replace a non-defective FRU:

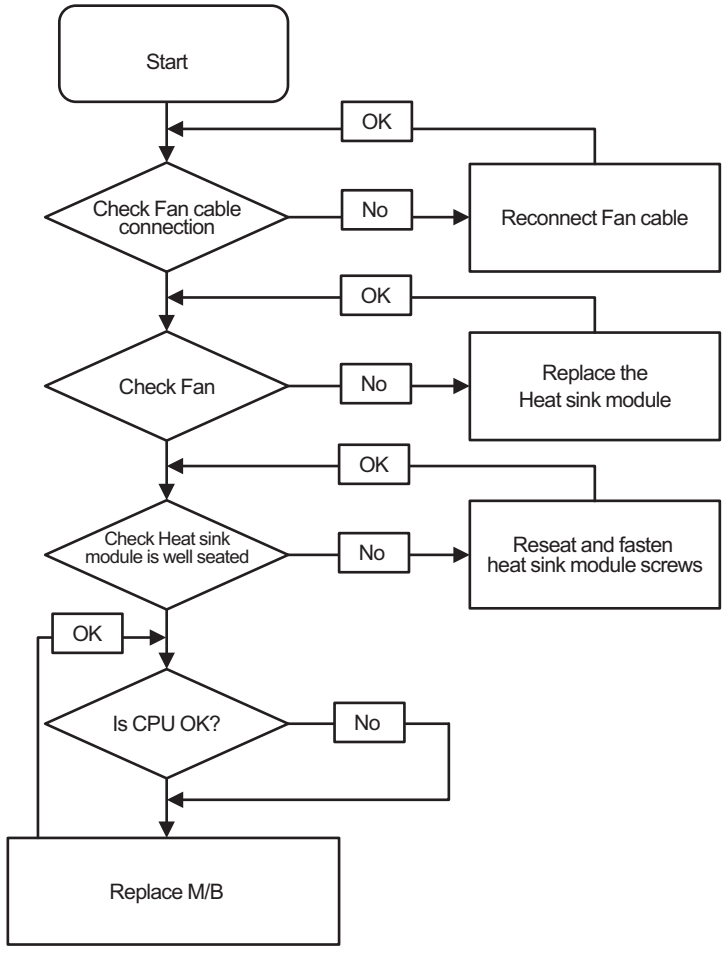


Figure 4-10. Thermal Unit Failure

Other Functions Failure

1. Check if drives are functioning correctly.
2. Check if external modules are functioning correctly.
3. Change mainboard to check if current one is defective.

Intermittent Problems

Intermittent system hang problems can be caused by a variety of reasons that have nothing to do with a hardware defect, such as: cosmic radiation, electrostatic discharge, or software errors. FRU replacement should be considered only when a recurring problem exists.

When analyzing an intermittent problem, perform the following:

1. Run the advanced diagnostic test for the system board in loop mode at least 10 times.
2. If no error is detected, do not replace any FRU.
3. If an error is detected, replace the FRU. Rerun the test to verify that there are no more errors.

Undetermined Problems

The diagnostic problems does not identify which adapter or device failed, which installed devices are incorrect, whether a short circuit is suspected, or whether the system is inoperative.

Perform the following procedures to isolate the failing FRU (do not replace non-defective FRU).

NOTE:
Verify that all attached devices are supported by the computer.

NOTE:
Verify that the power supply being used at the time of the failure is operating correctly.

1. Remove power from the computer.
2. Visually check the components for damage. If any problems are found, replace the FRU.
3. Remove or disconnect all of the following devices:
   - Non-Acer devices
   - Printer, mouse, and other external devices
   - Battery pack
   - Hard disk drive
   - DIMM
   - CD-ROM/Diskette drive Module
   - PC Cards
4. Apply power to the computer.
5. Determine if the problem has changed.
6. If the problem does not recur, connect the removed devices one at a time until failing FRU is found.
7. If the problem remains, replace the following FRUs one at a time. Do not replace a non-defective FRU:
   - Mainboard
   - LCD assembly

POST Codes

The following are the InsydeH2O™ Functionality POST code tables. The components of the POST code table includes: SEC functionality, PEI functionality, DXE functionality, BDS functionality, POST BDS functionality, SMM functionality, S3 functionality, and ASL functionality.

Table 4-2. SEC Functionality

Definition	Code	Description
#define SEC_SYSTEM_POWER_ON	0x01	CPU power on and switch to Protected mode
#define SEC_BEFORE_MICROCODE_PATCH	0x02	Patching CPU microcode
#define SEC_AFTER_MICROCODE_PATCH	0x03	Setup Cache as RAM
#define SEC_ACCESS_CSR	0x04	PCIE MMIO Base Address initial
#define SEC_GENERIC_MSRINIT	0x05	CPU Generic MSR initial
#define SEC_CPU_SPEEDCFG	0x06	Setup CPU speed
#define SEC_SETUP_CAR_OK	0x07	Cache as RAM test
#define SEC_FORCE_MAX_RATIO	0x08	Tune CPU frequency ratio to maximum level
#define SEC_GO_TO_SECSTARTUP	0x09	Setup BIOS ROM cache
#define SEC_GO_TO_PEICORE	0x0A	Enter Boot Firmware Volume

Table 4-3. PEI Functionality

Definition	Code	Description
#define PEI_SIO_INIT	0x70	Super I/O initial
#define PEI_CPU_REG_INIT	0x71	CPU Early Initial
#define PEI_CPU_AP_INIT	0x72	Multi-processor Early initial
#define PEI_CPU_HT_RESET	0x73	HyperTransport initial
#define PEI_PCIE_MMIO_INIT	0x74	PCIE MMIO BAR Initial
#define PEI_NB_REG_INIT	0x75	North Bridge Early Initial
#define PEI_SB_REG_INIT	0x76	South Bridge Early Initial
#define PEI_PCIE_TRAINING	0x77	PCIE Training
#define PEI_TPM_INIT	0x78	TPM Initial

Table 4-3. PEI Functionality (Continued)

Definition	Code	Description
#define PEI_SMBUS_INIT	0x79	SMBUS Early Initial
#define PEI_PROGRAM_CLOCK_GEN	0x7A	Clock Generator Initial
#define PEI_IGD_EARLY_INITIAL	0x7B	Internal Graphic device early initial, PEI_IGDOpRegion
#define PEI_HECI_INIT	0x7C	HECI Initial
#define PEI_WATCHDOG_INIT	0x7D	Watchdog timer initial
#define PEI_MEMORY_INIT	0x7E	Memory Initial for Normal boot
#define PEI_MEMORY_INIT_FOR_CRISIS	0x7F	Memory Initial for Crisis Recovery
#define PEI_MEMORY_INSTALL	0x80	Simple Memory test
#define PEI_TXTPEI	0x81	TXT function early initial
#define PEI_SWITCH_STACK	0x82	Start to use Memory
#define PEI_MEMORY_CALLBACK	0x83	Set cache for physical memory
#define PEI_ENTER_RECOVERY_MODE	0x84	Recovery device initial
#define PEI_RECOVERY_MEDIA_FOUND	0x85	Found Recovery image
#define PEI_RECOVERY_MEDIA_NOT_FOUND	0x86	Recovery image not found
#define PEI_RECOVERY_LOAD_FILE_DONE	0x87	Load Recovery Image complete
#define PEI_RECOVERY_START_FLASH	0x88	Start Flash BIOS with Recovery image
#define PEI_ENTER_DXEIPL	0x89	Loading BIOS image to RAM
#define PEI_FINDING_DXE_CORE	0x8A	Loading DXE core
#define PEI_GO_TO_DXE_CORE	0x8B	Enter DXE core
#define PEI_IFFS_TRANSITION_START	0x8C	iFFS Transition Start
#define PEI_IFFS_TRANSITION_END	0x8D	iFFS Transition End

Table 4-4. DXE Functionality

Definition	Code	Description
#define DXE_TCGDXE	0x40	TPM initial in DXE
#define DXE_SB_SPI_INIT	0x41	South bridge SPI initial
#define DXE_CF9_RESET	0x42	Setup Reset service, DXE_CF9Reset
#define DXE_SB_SERIAL_GPIO_INIT	0x43	South bridge Serial GPIO initial, DXE_SB_SerialGPIO_INIT
#define DXE_SMMACCESS	0x44	Setup SMM ACCESS service
#define DXE_NB_INIT	0x45	North bridge Middle initial
#define DXE_SIO_INIT	0x46	Super I/O DXE initial
#define DXE_LEGACY_REGION	0x47	Setup Legacy Region service, DXE_LegacyRegion
#define DXE_SB_INIT	0x48	South Bridge Middle Initial
#define DXE_IDENTIFY_FLASH_DEVICE	0x49	Identify Flash device
#define DXE_FTW_INIT	0x4A	Fault Tolerant Write verification
#define DXE_VARIABLE_INIT	0x4B	Variable Service Initial
#define DXE_VARIABLE_INIT_FAIL	0x4C	Fail to initial Variable Service
#define DXE_MTC_INIT	0x4D	MTC Initial
#define DXE_CPU_INIT	0x4E	CPU Middle Initial
#define DXE_MP_CPU_INIT	0x4F	Multi-processor Middle Initial
#define DXE_SMBUS_INIT	0x50	SMBUS Driver Initial
#define DXE_SMART_TIMER_INIT	0x51	8259 Initial
#define DXE_PCRTC_INIT	0x52	RTC Initial
#define DXE_SATA_INIT	0x53	SATA Controller early initial
#define DXE_SMM_CONTROLER_INIT	0x54	Setup SMM Control service, DXE_SMMControler_INIT
#define DXE_LEGACY_INTERRUPT	0x55	Setup Legacy Interruput service, DXE_LegacyInterrupt
#define DXE_RELOCATE_SMBASE	0x56	Relocate SMM BASE
#define DXE_FIRST_SMI	0x57	SMI test
#define DXE_VTD_INIT	0x58	VTD Initial
#define DXE_BEFORE_CSM16_INIT	0x59	Legacy BIOS initial
#define DXE_AFTER_CSM16_INIT	0x5A	Legacy interrupt function initial
#define DXE_LOAD_ACPI_TABLE	0x5B	ACPI Table Initial

Table 4-4. DXE Functionality

Definition	Code	Description
#define DXE_SB_DISPATCH	0x5C	Setup SB SMM Dispatcher service, DXE_SB_Dispatch
#define DXE_SB_IOTRAP_INIT	0x5D	Setup SB IOTRAP Service
#define DXE_SUBCLASS_DRIVER	0x5E	Build AMT Table
#define DXE_PPM_INIT	0x5F	PPM Initial
#define DXE_HECIDRV_INIT	0x60	HECIDRV Initial
#define DXE_VARIABLE_RECLAIM	0x61	Variable store garbage collection and reclaim operation
#define DXE_FLASH_PART_NONSUPPORT	0x62	Do not support flash part (which is defined in SpiDevice.c)

Table 4-5. BDS Functionality

Definition	Code	Description
#define BDS_ENTER_BDS	0x10	Enter BDS entry
#define BDS_INSTALL_HOTKEY	0x11	Install Hotkey service
#define BDS_ASF_INIT	0x12	ASF Initial
#define BDS_PCI_ENUMERATION_ START	0x13	PCI enumeration
#define BDS_BEFORE_PCIIO_INSTALL	0x14	PCI resource assign complete
#define BDS_PCI_ENUMERATION_END	0x15	PCI enumeration complete
#define BDS_CONNECT_CONSOLE_IN	0x16	Keyboard Controller, Keyboard and Mouse initial
#define BDS_CONNECT_CONSOLE_OUT	0x17	Video device initial
#define BDS_CONNECT_STD_ERR	0x18	Error report device initial
#define BDS_CONNECT_USB_HC	0x19	USB host controller initial
#define BDS_CONNECT_USB_BUS	0x1A	USB BUS driver initial
#define BDS_CONNECT_USB_DEVICE	0x1B	USB device driver initial
#define BDS_NO_CONSOLE_ACTION	0x1C	Console device initial fail
#define BDS_DISPLAY_LOGO_SYSTEM _INFO	0x1D	Display logo or system information
#define BDS_START_IDE_ CONTROLLER	0x1E	IDE controller initial
#define BDS_START_SATA_ CONTROLLER	0x1F	SATA controller initial

Table 4-5. BDS Functionality (Continued)

Definition	Code	Description
#define BDS_START_ISA_ACPI_ CONTROLLER	0x20	SIO controller initial
#define BDS_START_ISA_BUS	0x21	ISA BUS driver initial
#define BDS_START_ISA_FDD	0x22	Floppy device initial
#define BDS_START_ISA_SEIRAL	0x23	Serial device initial
#define BDS_START_IDE_BUS	0x24	IDE device initial
#define BDS_START_AHCI_BUS	0x25	AHCI device initial
#define BDS_CONNECT_LEGACY_ROM	0x26	Dispatch option ROMs
#define BDS_ENUMERATE_ALL_BOOT_ OPTION	0x27	Get boot device information
#define BDS_END_OF_BOOT_ SELECTION	0x28	End of boot selection
#define BDS_ENTER_SETUP	0x29	Enter Setup Menu
#define BDS_ENTER_BOOT_MANAGER	0x2A	Enter Boot manager
#define BDS_BOOT_DEVICE_SELECT	0x2B	Try to boot system to OS
#define BDS_EFI64_SHADOW_ALL_ LEGACY_ROM	0x2C	Shadow Misc Option ROM
#define BDS_ACPI_S3SAVE	0x2D	Save S3 resume required data in RAM
#define BDS_READY_TO_BOOT_EVENT	0x2E	Last Chipset initial before boot to OS
#define BDS_GO_LEGACY_BOOT	0x2F	Start to boot Legacy OS
#define BDS_GO_UEFI_BOOT	0x30	Start to boot UEFI OS
#define BDS_LEGACY16_PREPARE_TO_BOOT	0x31	Prepare to Boot to Legacy OS
#define BDS_EXIT_BOOT_SERVICES	0x32	Send END of POST Message to ME via HECI
#define BDS_LEGACY_BOOT_EVENT	0x33	Last Chipset initial before boot to Legacy OS
#define BDS_ENTER_LEGACY_16_BOOT	0x34	Ready to Boot Legacy OS
#define BDS_RECOVERY_START_FLASH	0x35	Fast recovery start flash
#define BDS_START_SDHC_BUS	0x36	SDHC device initial
#define BDS_CONNECT_ATA_LEGACY	0x37	Ata Legacy device initial
#define BDS_CONNECT_SD_LEGACY	0x38	SD Legacy device initial

Table 4-6. PostBDS Functionality

Definition	Code	Description
#define POST_BDS_NO_BOOT_DEVICE	0xF9	No Boot Device, PostBDS_NO_BOOT_DEVICE
#define POST_BDS_START_IMAGE	0xFB	UEFI Boot Start Image, PostBDS_START_IMAGE
#define POST_BDS_ENTER_INT19	0xFD	Legacy 16 boot entry
#define POST_BDS_JUMP_BOOT_SECTOR	0xFE	Try to Boot with INT 19

Table 4-7. SMM Functionality

Definition	Code	Description
#define SMM_IDENTIFY_FLASH_ DEVICE	0xA0	Identify Flash device in SMM
#define SMM_SMM_PLATFORM_INIT	0xA2	SMM service initial
#define SMM_ACPI_ENABLE_START	0xA6	OS call ACPI enable function
#define SMM_ACPI_ENABLE_END	0xA7	ACPI enable function complete
#define SMM_S1_SLEEP_CALLBACK	0xA1	Enter S1
#define SMM_S3_SLEEP_CALLBACK	0xA3	Enter S3
#define SMM_S4_SLEEP_CALLBACK	0xA4	Enter S4
#define SMM_S5_SLEEP_CALLBACK	0xA5	Enter S5
#define SMM_ACPI_DISABLE_START	0xA8	OS call ACPI disable function
#define SMM_ACPI_DISABLE_END	0xA9	ACPI disable function complete

Table 4-8. S3 Functionality

Definition	Code	Description
#define S3_RESTORE_MEMORY_ CONTROLLER	0xC0	Memory initial for S3 resume
#define S3_INSTALL_S3_MEMORY	0xC1	Get S3 resume required data from memory
#define S3_SWITCH_STACK	0xC2	Start to use memory during S3 resume
#define S3_MEMORY_CALLBACK	0xC3	Set cache for physical memory during S3 resume
#define S3_ENTER_S3_RESUME_PEIM	0xC4	Start to restore system configuration

Table 4-8. S3 Functionality (Continued)

Definition	Code	Description
#define S3_BEFORE_ACPI_BOOT_ SCRIPT	0xC5	Restore system configuration stage 1
#define S3_BEFORE_RUNTIME_BOOT_ SCRIPT	0xC6	Restore system configuration stage 2
#define S3_BEFORE_RELOCATE_SMM_ BASE	0xC7	Relocate SMM BASE during S3 resume
#define S3_BEFORE_MP_INIT	0xC8	Multi-processor initial during S3 resume
#define S3_BEFORE_RESTORE_ACPI_ CALLBACK	0xC9	Start to restore system configuration in SMM
#define S3_AFTER_RESTORE_ACPI_ CALLBACK	0xCA	Restore system configuration in SMM complete
#define S3_GO_TO_FACS_WAKING_ VECTOR	0xCB	Back to OS

Table 4-9. ASL Functionality

Definition	Code	Description
#define ASL_ENTER_S1	0x51	Prepare to enter S1
#define ASL_ENTER_S3	0x53	Prepare to enter S3
#define ASL_ENTER_S4	0x54	Prepare to enter S4
#define ASL_ENTER_S5	0x55	Prepare to enter S5
#define ASL_WAKEUP_S1	0xE1	System wakeup from S1
#define ASL_WAKEUP_S3	0xE3	System wakeup from S3
#define ASL_WAKEUP_S4	0xE4	System wakeup from S4
#define ASL_WAKEUP_S5	0xE5	System wakeup from S5

CHAPTER 5

Jumper and Connector Locations

Jumper and Connector Locations

This chapter shows the mainboard layout and jumper locations of the Predator Triton 515-51 computer.

Mainboard Layout

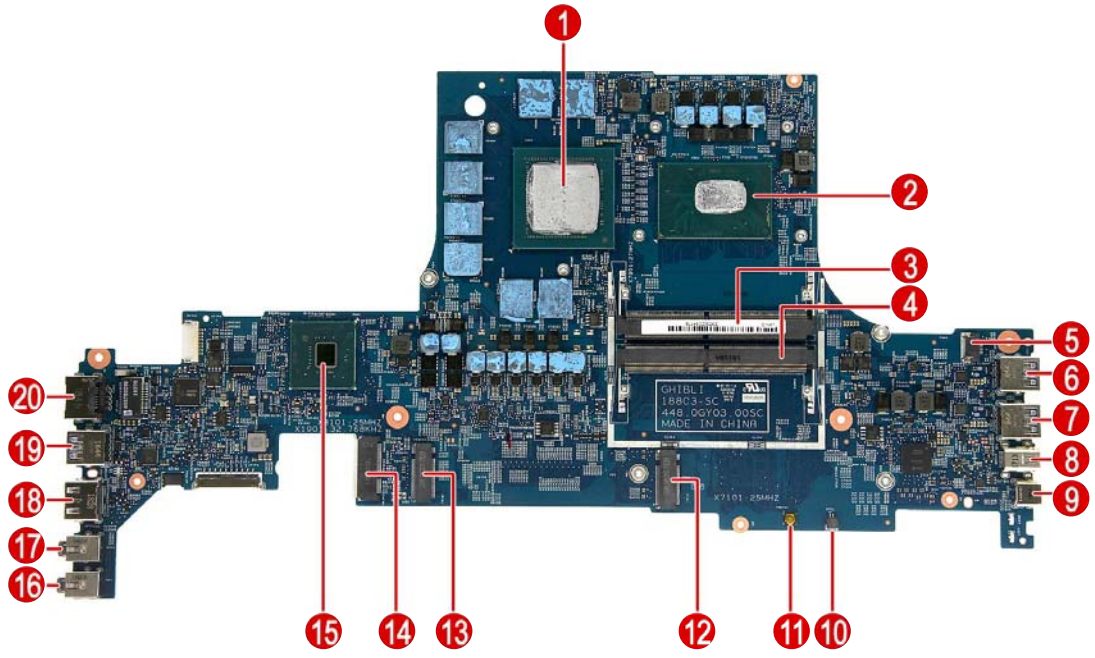


Figure 5-1. Mainboard Top

Table 5-1. Mainboard Top

No.	Code	Component	No.	Code	Component
1	VGA1	VGA	11	PWBTN1	Power button
2	CPU1	CPU	12	SSD2	SSD connector
3	DIMM2	DIMM slot	13	SSD1	SSD connector
4	DIMM1	DIMM slot	14	WLAN1	WLAN connector
5	FAN1	Fan cable connector	15	PCH1	Chipset
6	USB1	USB3.1 connector	16	HP1	Headphone connector
7	USB2	USB3.1 connector	17	MIC1	MIC connector
8	DP1	Display Port connector	18	HDMI1	HDMI connector
9	TYPEC1	USB Type-C connector	19	USB3	USB3.1 connector
10	RTC1	RTC battery cable connector	20	RJ45	LAN connector

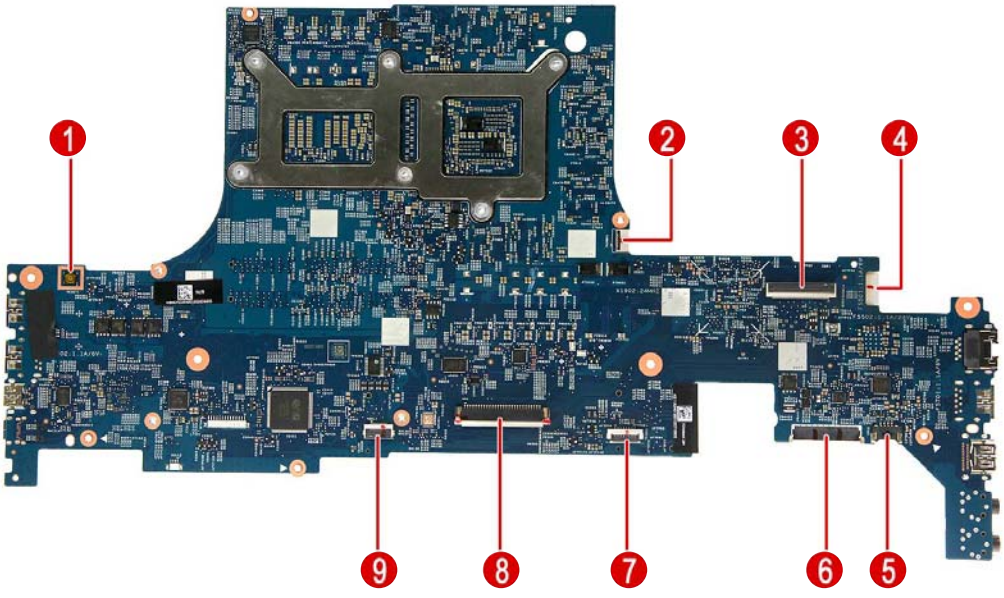


Figure 5-2. Mainboard Bottom

Table 5-2. Mainboard Bottom

No.	Code	Component	No.	Code	Component
1	RESET1	System reset button	6	BTY1	Battery cable connector
2	TURBO1	Turbo key connector	7	TPAD1	Touchpad cable connector
3	EDP1	eDP cable connector	8	KB1	Keyboard cable connector
4	DCIN1	DC-In connector	9	KBBL1	Keyboard backlight cable connector
5	SPK1	Speaker cable connector			

Clearing Password Check and BIOS Recovery

This section provides procedures for:

- Clearing the BIOS passwords
- Performing a BIOS recovery

Clearing the BIOS Passwords

To clear a lost BIOS password (user or supervisor password), you need to short the clear password hardware gap (G2001) located on the mainboard.

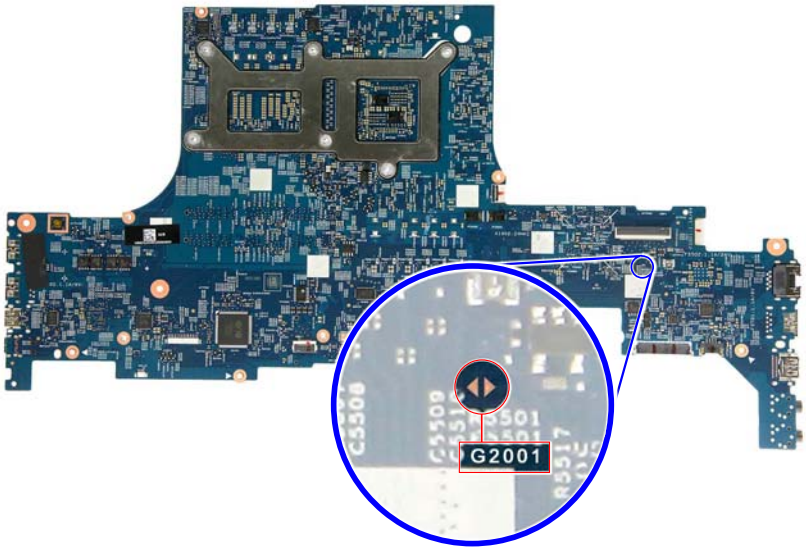


Figure 5-3. G2001 Hardware Gap

1. Shut down the computer and disconnect the AC adapter and all other peripherals from the computer.
2. Perform the "Removing the Lower Case" procedure described on page 3-9. Do not disconnect the DC-In and LCD cables from the mainboard.
3. Perform the "Removing the Battery Pack" procedure described on page 3-11.
4. Locate the G2001 gap.
5. Use an electrical conductivity tool to short the two contacts on the hardware gap together.
6. While resting the tool on the two contacts, plug one end of the AC adapter into the DC-In jack and plug one end to an electrical outlet.
7. Press the ⏻ button to turn on the computer.
8. After the BIOS POST, remove the tool from the hardware gap.
9. Perform the "Replacing the Battery Pack" procedure described on page 3-82.
10. Perform the "Replacing the Lower Case" procedure described on page 3-84.
11. Turn on the computer and press ***F2*** during bootup to access the *Setup Utility*. If no password prompt appears, the BIOS passwords have been cleared. If the prompt appears, repeat steps 2-13 until the BIOS passwords have been cleared.
12. Press ***F9*** to load the system defaults.
13. Press ***F10*** to save the changes you made and close the Setup Utility.

Performing a BIOS Recovery

Boot Block

An interruption during a BIOS flash procedure (e.g. a power outage) can corrupt the BIOS code, which will cause the system to go into an unbootable state. The BIOS boot block refers to a special BIOS program that can be used to boot up a system with minimum BIOS initialization.You need to access and execute the boot block to reboot the computer and recover the regular BIOS code.

Creating the Crisis Disk

NOTE:

The BIOS crisis recovery disk should be prepared in a computer running the Windows OS. A USB flash drive can be used.

All data in the USB flash drive will be cleared during the creation of the crisis disk.

1. Prepare a removable USB flash drive.
2. Transfer the **BIOS.fd** file in the USB flash drive's root directory.
3. Eject and reconnect the USB flash drive from the computer.

Performing a BIOS recovery

NOTE:

Make sure the battery pack is installed to the system and that the computer is connected to a UPS unit during the BIOS recovery process.

The function hotkey sequence ***Fn+Esc*** is used to enable the BIOS recovery process when system is powered On during BIOS POST. If this function is enabled, the system will force the BIOS to execute the boot block program.

To perform a BIOS recovery:

1. Shut down the BIOS failed-computer.
2. Connect the USB flash drive containing the Crisis Recovery disk files to the computer.
3. Press and hold the ***Fn+Esc*** keys, then press the power button ⏻.

   The BIOS recovery process begins. When the process is complete the computer will automatically reboot.
4. Disconnect the USB flash drive from the computer.
5. Perform a BIOS flash procedure to update the BIOS firmware. Refer to the "BIOS Flash Utilities" section on page 2-15 for detailed instructions.

CHAPTER 6

FRU List

FRU (Field Replaceable Unit) List

This chapter provides users with a FRU (Field Replaceable Unit) listing in global configurations for the Predator Triton 515-51. Refer to this chapter whenever ordering for parts to repair or for RMA (Return Merchandise Authorization).

NOTE:

WHEN ORDERING FRU PARTS, check the most up-to-date information available on the regional web or channel. Part number changes will not be noted on the printed Service Guide. For ACER AUTHORIZED SERVICE PROVIDERS, the Acer office may have a DIFFERENT part number code from those given in the FRU list of this printed Service Guide. Users MUST use the local FRU list provided by the regional Acer office to order FRU parts for repair and service of customer machines.

NOTE:

To scrap or to return the defective parts, users should follow the local government ordinance or regulations on how to dispose it properly, or follow the rules set by the regional Acer office on how to return it.

Predator Triton 515-51 Exploded Diagrams

Main Assembly

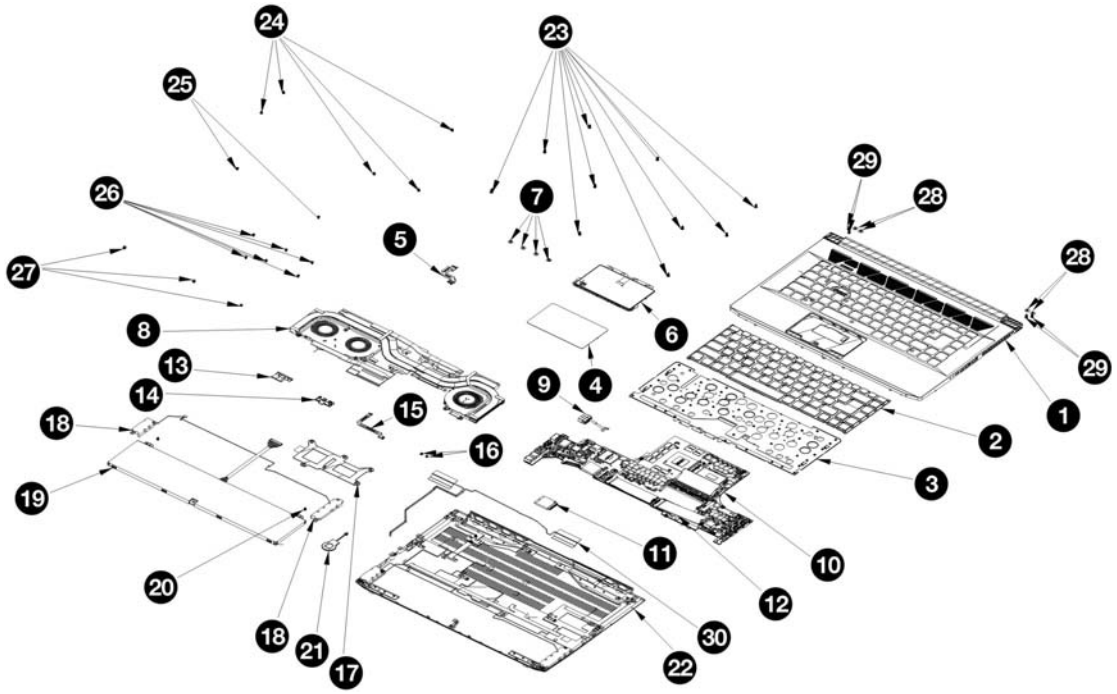


Figure 6-1. Main Assembly Exploded Diagram

Table 6-1. Main Assembly Exploded Diagram

No.	Description	Part Number	No.	Description	Part Number
1	Upper Case Assy	460.0GY04.0001	16	Turbo Key Screw	86.4A362.3R0
2	KB Module	46M.0GYCS.0001	17	CPU/GPU Bracket	460.0GY08.0001
3	KB Bracket Assy	460.0GY05.0001	18	Speaker	023.400HN.0001
4	TP Mylar	440.0GY07.0001	19	Battery Module	KT.00408.001
5	TP Cable	450.0GY01.0001	20	Battery Screw	86.00E13.524
6	TP Module	46M.0GYPD.0002	21	RTC Battery	23.25207.032
7	TP Screw	86.00R69.322	22	Lower Case Assy	460.0GY09.0001
8	Thermal Module	460.0GY01.0001	23	Screw	08A.00000.0099
9	DC-In Module	450.0GY02.0001	24	MB Screw	86.00E13.524
10	Mainboard	NB.Q5011.001	25	Thermal Fan Screw	86.00E13.524
11	WLAN Module	KE.11A0N.013	26	Thermal Screw	86.00E13.524
12	SSD Module	KN.2560D.011	27	WIFI/SSD Screw	86.00E13.524
13	Turbo Key Bracket	433.0GY04.0001	28	Hinge Screw (Flap)	86.00R69.322
14	Turbo Key Module	46M.0GYBD.0001	29	Hinge Screw	86.00R69.322
15	Turbo Key Cable	450.0GY03.0001	30	WLAN Antenna	025.90110.0001

LCD Assembly

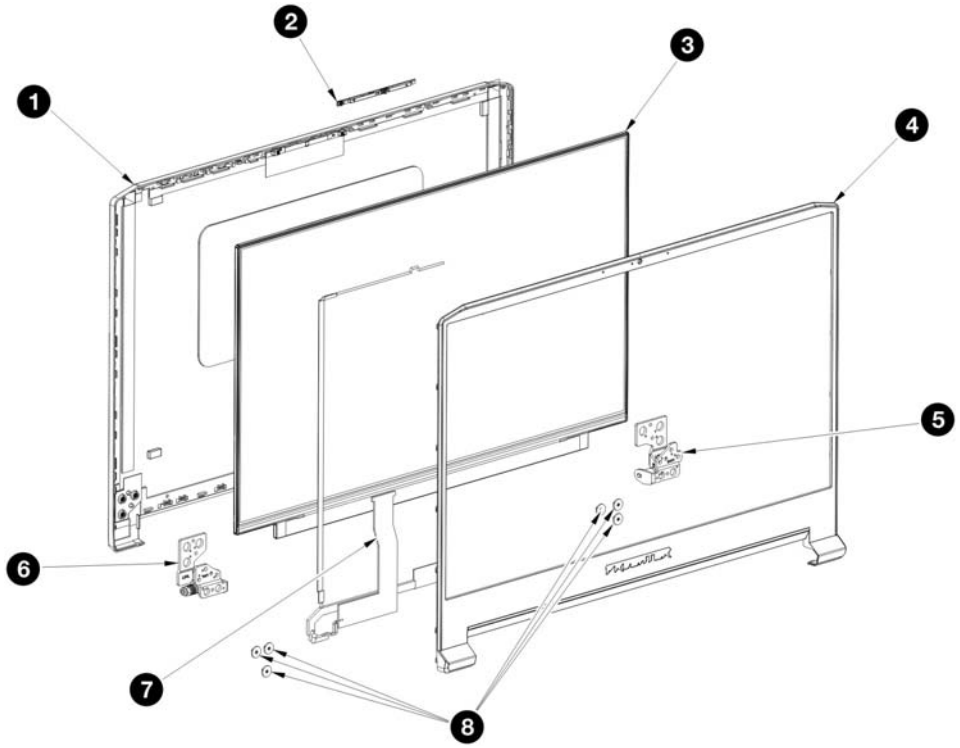


Figure 6-2. LCD Assembly Exploded Diagram

Table 6-2. LCD Assembly Exploded Diagram

No.	Description	Part Number
1	LCD back cover	460.0GY02.0001
2	Camera	KS.0HD05.013
3	LCD panel	KL.1560E.016
4	LCD bezel	460.0GY03.0001
5	LCD right hinge bracket	460.0GY02.0001
6	LCD left hinge bracket	433.0GY02.0001
7	LCD eDP/webcam cable	450.0GY04.0001
7	Hinge Screw	86.9AR13.2R5

Predator Triton 515-51 FRU List

Category	Description	Acer Part No.
ADAPTER		
	ADAPTER DELTA 180W 19.5V 1.7X5.5X11 ADP-180TB FC LF BLACK SLIMT TYPE. MEET COC TIER 2 / IEC 62368	KP.18001.006
	ADAPTER CHICONY POWER 180W 19.5V 1.7X5.5X11 A180A034P LF BLACK SLIMT TYPE. MEET COC TIER 2 / IEC 62368	KP.1800H.001
BATTERY		
	BATTERY GETAC AP18J POLYMER 4S1P HIGHPOWER 4 CELL 5400MAH MAIN COMMON BNS, GETAC	KT.00408.001
BOARDS		
	TURBO KEY BOARD	55.Q50N1.001
	ASSEMBLY TOUCHPAD SYNAPTICS NC.24611.04S W/MYLAR BLACK	56.Q50N1.001
	ASSEMBLY TOUCHPAD ELANTECH NC.24611.04E W/MYLAR BLACK	56.Q50N1.002
	WIRELESS LAN INTEL 802.11AC BLUETOOTH FM KILLER WIRELESS 1550I INT9560.NGWG.NV	KE.11A0N.013
CABLES		
	POWER CORD 125V US BK 1M	27.RSF01.001
	POWER CORD 250V EUROPE BK 1M	27.RSF01.002
	POWER CORD 250V UK BK 1M	27.RSF01.003
	POWER CORD 250V DENMARK BK 1M	27.RSF01.004
	POWER CORD 250V SWISS BK 1M	27.RSF01.005
	POWER CORD 250V ITALY BK 1M	27.RSF01.006

Category	Description	Acer Part No.
Power Cord *(Cont.)*	POWER CORD 250V CHINA BK 1M	27.RSF01.007
	POWER CORD 125V TAIWAN BK 1M	27.RSF01.008
	POWER CORD 125V JAPAN BK 1M	27.RSF01.009
	POWER CORD 250V KOREA BK 1M	27.RSF01.010
	POWER CORD 250V ISRAEL BK 1M	27.RSF01.011
	POWER CORD 250V ARGENTINE BK 1M	27.RSF01.012
	POWER CORD 250V BRAZIL BK 1M	27.RSF01.013
	POWER CORD 250V SOUTH AFRICA BK 1M	27.RSF01.015
	POWER CORD 250V AUSTRALIA BK 1M	27.RSF01.016
	POWER CORD 250V AFRICA-S INDIA BK 1M	27.VL0D1.001
	FFC CABLE - TURBO KEY BOARD	33.Q50N1.001
	FFC CABLE - TOUCHPAD	50.Q50N1.001
	DC IN CABLE - 180W	50.Q50N1.002
	EDP LCD CABLE FOR BOE LCD	50.Q50N1.003
	EDP LCD CABLE FOR AUO LCD	50.Q50N1.004
CAMERA		
	CAMERA LITEON HD CAMERA 7BF115N2 (ADD MIC*2)	KS.0HD05.013
	CAMERA CHICONY HD CAMERA CH_OV9734_RTS5846W_AOET_KMM3520 UNIFIED2 (ADD MIC*2)	KS.0HD06.009

Category	Description	Acer Part No.
CASE/COVER/BRACKET ASSEMBLY		
	MEMORY SHIELDING	33.Q50N1.002
	TURBO KEY BOARD BRACKET	33.Q50N1.003
	LCD HINGE LEFT & RIGHT KITTING	33.Q50N1.004
	LOWER CASE 15.6" BLACK	60.Q50N1.001
	LCD COVER 15.6" BLACK W/ PREDATOR LOGO	60.Q50N1.002
	LCD BEZEL 15.6" BLACK W/ CAMERA HOLE & PREDATOR LOGO	60.Q50N1.003

Category	Description	Acer Part No.
	ASSEMBLY 15.6" UPPER CASE BLACK W/ANTENNA*2 & BL KB LG4P_P90BRL 86KS BLACK ALA-SPANISH NK.I1417.0NE	6B.Q50N1.001
	ASSEMBLY 15.6" UPPER CASE BLACK W/ANTENNA*2 & BL KB LG4P_P90BRL 85KS BLACK ARABIC NK.I1417.0N2	6B.Q50N1.002
	ASSEMBLY 15.6" UPPER CASE BLACK W/ANTENNA*2 & BL KB LG4P_P90BRL 86KS BLACK BELGIUM NK.I1417.0NF	6B.Q50N1.003
	ASSEMBLY 15.6" UPPER CASE BLACK W/ANTENNA*2 & BL KB LG4P_P90BRL 86KS BLACK BRAZILIAN PORTUGUESE NK.I1417.0NG	6B.Q50N1.004
	ASSEMBLY 15.6" UPPER CASE BLACK W/ANTENNA*2 & BL KB LG4P_P90BRL 86KS BLACK CZ/SK NK.I1417.0NH	6B.Q50N1.005
	ASSEMBLY 15.6" UPPER CASE BLACK W/ANTENNA*2 & BL KB LG4P_P90BRL 86KS BLACK DANISH NK.I1417.0NJ	6B.Q50N1.006
	ASSEMBLY 15.6" UPPER CASE BLACK W/ANTENNA*2 & BL KB LG4P_P90BRL 86KS BLACK FR/ARABIC NK.I1417.0NK	6B.Q50N1.007
	ASSEMBLY 15.6" UPPER CASE BLACK W/ANTENNA*2 & BL KB LG4P_P90BRL 86KS BLACK FRENCH NK.I1417.0NL	6B.Q50N1.008
	ASSEMBLY 15.6" UPPER CASE BLACK W/ANTENNA*2 & BL KB LG4P_P90BRL 86KS BLACK GERMAN NK.I1417.0NM	6B.Q50N1.009
	ASSEMBLY 15.6" UPPER CASE BLACK W/ANTENNA*2 & BL KB LG4P_P90BRL 85KS BLACK GREEK NK.I1417.0N4	6B.Q50N1.010
	ASSEMBLY 15.6" UPPER CASE BLACK W/ANTENNA*2 & BL KB LG4P_P90BRL 86KS BLACK HUNGARIAN NK.I1417.0NN	6B.Q50N1.011
	ASSEMBLY 15.6" UPPER CASE BLACK W/ANTENNA*2 & BL KB LG4P_P90BRL 86KS BLACK ITALIAN NK.I1417.0NP	6B.Q50N1.012
	ASSEMBLY 15.6" UPPER CASE BLACK W/ANTENNA*2 & BL KB LG4P_P90BRL 85KS BLACK KOREAN NK.I1417.0N5	6B.Q50N1.013

Category	Description	Acer Part No.
Upper Case + KB *(Cont.)*	ASSEMBLY 15.6" UPPER CASE BLACK W/ANTENNA*2 & BL KB LG4P_P90BRL 86KS BLACK NORDIC NK.I1417.0NQ	6B.Q50N1.014
	ASSEMBLY 15.6" UPPER CASE BLACK W/ANTENNA*2 & BL KB LG4P_P90BRL 86KS BLACK NORWEGIAN NK.I1417.0NR	6B.Q50N1.015
	ASSEMBLY 15.6" UPPER CASE BLACK W/ANTENNA*2 & BL KB LG4P_P90BRL 85KS BLACK PERSIAN NK.I1417.0N8	6B.Q50N1.016
	ASSEMBLY 15.6" UPPER CASE BLACK W/ANTENNA*2 & BL KB LG4P_P90BRL 86KS BLACK PORTUGUESE NK.I1417.0NS	6B.Q50N1.017
	ASSEMBLY 15.6" UPPER CASE BLACK W/ANTENNA*2 & BL KB LG4P_P90BRL 85KS BLACK RUSSIAN NK.I1417.0N6	6B.Q50N1.018
	ASSEMBLY 15.6" UPPER CASE BLACK W/ANTENNA*2 & BL KB LG4P_P90BRL 86KS BLACK SLO/CRO NK.I1417.0NT	6B.Q50N1.019
	ASSEMBLY 15.6" UPPER CASE BLACK W/ANTENNA*2 & BL KB LG4P_P90BRL 86KS BLACK SPANISH NK.I1417.0NU	6B.Q50N1.020
	ASSEMBLY 15.6" UPPER CASE BLACK W/ANTENNA*2 & BL KB LG4P_P90BRL 86KS BLACK SWEDEN NK.I1417.0NV	6B.Q50N1.021
	ASSEMBLY 15.6" UPPER CASE BLACK W/ANTENNA*2 & BL KB LG4P_P90BRL 86KS BLACK SWISS/G NK.I1417.0NW	6B.Q50N1.022
	ASSEMBLY 15.6" UPPER CASE BLACK W/ANTENNA*2 & BL KB LG4P_P90BRL 85KS BLACK THAILAND NK.I1417.0N9	6B.Q50N1.023
	ASSEMBLY 15.6" UPPER CASE BLACK W/ANTENNA*2 & BL KB LG4P_P90BRL 85KS BLACK TRADITIONAL CHINESE NK.I1417.0N3	6B.Q50N1.024
	ASSEMBLY 15.6" UPPER CASE BLACK W/ANTENNA*2 & BL KB LG4P_P90BRL 86KS BLACK TURKISH NK.I1417.0NX	6B.Q50N1.025
	ASSEMBLY 15.6" UPPER CASE BLACK W/ANTENNA*2 & BL KB LG4P_P90BRL 86KS BLACK UK NK.I1417.0NY	6B.Q50N1.026

Category	Description	Acer Part No.
Upper Case + KB *(Cont.)*	ASSEMBLY 15.6" UPPER CASE BLACK W/ANTENNA*2 & BL KB LG4P_P90BRL 85KS BLACK UKRAINIAN NK.I1417.0N7	6B.Q50N1.027
	ASSEMBLY 15.6" UPPER CASE BLACK W/ANTENNA*2 & BL KB LG4P_P90BRL 85KS BLACK US INTERNATIONAL NK.I1417.0NA	6B.Q50N1.028
	ASSEMBLY 15.6" UPPER CASE BLACK W/ANTENNA*2 & BL KB LG4P_P90BRL 85KS BLACK US INTERNATIONAL W/ BULGARIA NK.I1417.0ND	6B.Q50N1.029
	ASSEMBLY 15.6" UPPER CASE BLACK W/ANTENNA*2 & BL KB LG4P_P90BRL 85KS BLACK US INTERNATIONAL W/ CANADIAN FRENCH NK.I1417.0NC	6B.Q50N1.030
	ASSEMBLY 15.6" UPPER CASE BLACK W/ANTENNA*2 & BL KB LG4P_P90BRL 85KS BLACK US INTERNATIONAL W/ HEBREW NK.I1417.0NB	6B.Q50N1.031
HEATSINK		
	THERMAL W/FAN - DIS SKU	24.Q50N1.001
LCD		
	LED LCD PANEL AUO 15.6"W FHD NONE GLARE B156HAN08.2 H/W 7A LF 300NIT 9MS 800:1 (EDP,IPS,144HZ,OD 3MS GTG,NARROW BORDER,2.6T MAX)	KL.15605.053
	LED LCD PANEL BOE 15.6"W FHD NONE GLARE NV156FHM-N4K LF 300NIT 9MS 1200:1 (EDP,IPS,144HZ,OD 3MS GTG,NARROW BORDER,2.6T MAX)	KL.1560E.016
MAINBOARD		
	MAINBOARD PT515-51_N18EG3 W/CPU INTEL CI78750H & MEM 8GB & RTC BATTERY SUPPORT 180W ADAPTER	NB.Q4W11.001
	MAINBOARD PT515-51_N18EG2 W/CPU INTEL CI78750H & MEM 8GB & RTC BATTERY SUPPORT 180W ADAPTER	NB.Q4X11.001

Category	Description	Acer Part No.
Mainboard *(Cont.)*	MAINBOARD PT515-51_N18EG1 W/CPU INTEL CI78750H & MEM 6GB & RTC BATTERY SUPPORT 180W ADAPTER	NB.Q5011.001
MEMORY		
	MEMORY KINGSTON SO-DIMM DDRIV 2666 16GB ACR26D4S9D8ME-16 LF+HF 1024*8	KN.16G07.028
	MEMORY HYNIX SO-DIMM DDRIV 2666 16GB HMA82GS6CJR8N-VK LF+HF 1024*8 1XNM, AL	KN.16G0G.031
	MEMORY KINGSTON SO-DIMM DDRIV 2666 8GB ACR26D4S9S8ME-8 LF+HF 1024*8	KN.8GB07.042
	MEMORY HYNIX SO-DIMM DDRIV 2666 8GB HMA81GS6CJR8N-VK LF+HF 1024*8 1XNM, AL	KN.8GB0G.058
MISCELLANEOUS		
	LCD MYLAR - FOR SERVICE LCD ALIGNMENT	47.H46N1.001
	MIC RUBBER	47.Q50N1.001
	EMI GASKET TAPE	47.Q50N1.002
	GRAPHITE MYLAR - UPPERCASE	47.Q50N1.003
	TAPE - CABLE FIX	47.Q50N1.004
	CONDUCTIVE TAPE - MEMORY SHIELDING	47.Q50N1.005
	CONDUCTIVE TAPE - RF	47.Q50N1.006
	ADHESIVE TAPE - LCD PANEL SERVICE GHIBLI	47.Q50N1.007
SSD/SOLID STATE DRIVE		
	FLASH DISK SANDISK SSD NAND 256GB SDAPNTW-256G-1014 LF+HF	KN.2560D.011
	FLASH DISK SANDISK SSD NAND 512GB SDAPNTW-512G-1014 LF+HF	KN.5120D.005

Category	Description	Acer Part No.
SCREWS		
	SCREW, WAF M24 BZNYLOK CR3+	86.00E92.724
	SCREW, M2XL2.5 T0.5 D4/BLACK	86.M92N1.005
	SCREW, M2XL2 T0.35 D7 GL ZN+NYLOK	86.MQJN1.001
	SCREW, M2.5XL2.5, T0.6 D8.0	86.MQJN1.003
	SCREW M2.5 L6.0 BLACK NICKEL NYLOK	86.MVAN1.002
	SCREW M2.5 L6.0 BLACK NICKEL NYLOK	86.Q50N1.001
SPEAKER		
	SPEAKER	23.Q50N1.001

CHAPTER 7

Test Compatible Components

Test Compatible Components

This computer" s compatibility is tested and verified by Acer" s internal testing department. All of its system functions are tested under Windows® 10 environment.

Refer to the following lists for components, adapter cards, and peripherals which have passed these tests. Regarding configuration, combination and test procedures, please refer to the Compatibility Test Report released by the Acer Mobile System Testing Department.

Microsoft Windows 10 Environment Test

Vendor	Type	Description	Part No.
A cover			
10553782 JUTENG (NEIJIANG) COMM.	Abyssal Black 15 AL Anodizing	JUTENG (NEIJIANG) A cover Abyssal Black 15 AL Anodizing	NC.21011.0Q7
Adapter			
60035715 DELTA-SINGAPORE	180W_5.5phy - Slim	Adapter DELTA 180W 19.5V 1.7x5.5x11 ADP-180TB FC LF Black Slimt type. Meet CoC Tier 2 / IEC 62368	KP.18001.006
60016453 CHICONY POWER	180W_5.5phy - Slim	Adapter Chicony Power 180W 19.5V 1.7x5.5x11 A180A034P LF Black Slim type. Meet CoC Tier 2 / IEC 62368	KP.1800H.001
Audio Codec			
10004786 REALTEK	Audio Codec	Non-AVAP Audio Codec - Realtek ALC289 (HDA) WW	NC.21011.0PS
B cover			
10000286 WISTRON	Abyssal Black 15 PC+ABS Painting w/ Camera	WISTRON B cover Abyssal Black 15 PC+ABS Painting w/ Camera	NC.21011.0Q8
Battery			
60036496 GETAC TECH. CORP.	4CELL5.4	Battery Getac AP18J Polymer 4S1P Highpower 4 cell 5400mAh Main COMMON BnS, Getac	KT.00408.001
C cover			
10553782 JUTENG (NEIJIANG) COMM.	Abyssal Black 15 AL Anodizing	UTENG (NEIJIANG) C cover Abyssal Black 15 AL Anodizing	NC.21011.0Q9

Vendor	Type	Description	Part No.
Camera			
60063681 LUXVISIONS	HD_Mic2_Unified_Narrow	Camera LITEON HD Camera 7BF115N2 (add Mic*2)	KS.0HD05.013
10001044 CHICONY	HD_Mic2_Unified_Narrow	Camera CHICONY HD Camera CH_OV9734_RTS5846W_AOET_KMM 3520 Unified2 (add Mic*2)	KS.0HD06.009
CPU			
10001067 INTEL	Ci58300H	CPU(BGA) Intel Core i5 i5-8300H BGA 2.3G Coffee Lake	KC.83001.H00
10001067 INTEL	Ci78750H	CPU(BGA) Intel Core i7 i7-8750H BGA 2.3G Coffee Lake L3 Cache 9M	KC.87501.H00
D cover			
10553782 JUTENG (NEIJIANG) COMM.	Abyssal Black 15 AL Anodizing	JUTENG (NEIJIANG) D cover Abyssal Black 15 AL Anodizing	NC.21011.0QA
HDD			
60058983 SANDISK	F80256PMP	Flash Disk SANDISK SSD NAND 256GB SDAPNTW-256G-1014 LF+HF	KN.2560D.011
60058983 SANDISK	F80512PMP	Flash Disk SANDISK SSD NAND 512GB SDAPNTW-512G-1014 LF+HF	KN.5120D.005
2nd HDD			
60058983 SANDISK	F80256PMP	Flash Disk SANDISK SSD NAND 256GB SDAPNTW-256G-1014 LF+HF	KN.2560D.011
60058983 SANDISK	F80512PMP	Flash Disk SANDISK SSD NAND 512GB SDAPNTW-512G-1014 LF+HF	KN.5120D.005
Keyboard			
60004864 DARFON	LG4P_P90BRL	Phantom KB DARFON LG4P_P90BRL LG4P Internal 14 Standard Black Predator Sense+Power+Dish RGB 3-Zone BL	NK.I1417.0N1
LAN			
60002823 HONG TECH	KILLER LAN E3000	Killer Ethernet LAN E3000 2.5Gb 10*10mm, Rivet, Realtek Dragon LAN IC	NA.22411.00E
LCD			
10001022 INNOLUX	N15.6FHDSSPIB	LED LCD Panel CMI 15.6W FHD None Glare N156HCE-EN1 LF 300nit 25ms 700:1 (eDP, IPS, narrow border, 2.6mm max)	KL.1560D.039

Vendor	Type	Description	Part No.
60003316 AUO	N15.6FHDSSRIY2B	LED LCD Panel AUO 15.6'W FHD None Glare B156HAN08.2 H/W 7A LF 300nit 9ms 800:1 (eDP,IPS,144Hz,OD 3ms GTG,narrow border,2.6t max)	KL.15605.053
60038572 BOE(HK)	N15.6FHDSSRIY2B	LED LCD Panel BOE 15.6'W FHD None Glare NV156FHM-N4K LF 300nit 9ms 1200:1 (eDP,IPS,144Hz,OD 3ms GTG,narrow border,2.6t max)	KL.1560E.016
MEM			
10000981 MISC	SO16GBIV	Memory SO-DIMM DDRIV 16GB Dummy LF+HF	KN.16G00.002
60024207 KINGSTON-FAR EAST	SO16GBIV	Memory KINGSTON SO-DIMM DDRIV 2666 16GB ACR26D4S9D8ME-16 LF+HF 1024*8	KN.16G07.028
60002045 SK HYNIX	SO16GBIV	Memory HYNIX SO-DIMM DDRIV 2666 16GB HMA82GS6CJR8N-VK LF+HF 1024*8 1Xnm, AL	KN.16G0G.031
10000981 MISC	SO16GBIV26	Memory SO-DIMM DDRIV 2666 16GB Dummy LF+HF Dummy	KN.16G00.013
10000981 MISC	SO8GBIV	Memory SO-DIMM DDRIV 8GB Dummy LF+HF	KN.8GB00.010
60024207 KINGSTON-FAR EAST	SO8GBIV	Memory KINGSTON SO-DIMM DDRIV 2666 8GB ACR26D4S9S8ME-8 LF+HF 1024*8	KN.8GB07.042
60002045 SK HYNIX	SO8GBIV	Memory HYNIX SO-DIMM DDRIV 2666 8GB HMA81GS6CJR8N-VK LF+HF 1024*8 1Xnm, AL	KN.8GB0G.058
10000981 MISC	SO8GBIV26	Memory SO-DIMM DDRIV 2666 8GB Dummy LF+HF Dummy	KN.8GB00.023
NB Chipset			
10001067 INTEL	HM370	NB Chipset Intel CS HM370	KI.37001.HM0
Packaging			
60059923 SEN HSIN	2019-Color-Gift-15	2019 Color Gift 15 SY Rev 1.0	NC.25811.0JY
Touchpad			
60040786 ELANTECH	CP4WIP3M	Elantec Touchpad CP4WIP3M PTP SA464C-12A0 104x64mm PCB (Moisture)	NC.24611.04E
60040547 SYNAPTICS	CP4WIP3M	Synaptics Touchpad CP4WIP3M PTP TM-P3392-002 104x64mm PCB (Moisture+MSB)	NC.24611.04S

Vendor	Type	Description	Part No.
VGA Chip			
60001915 NVIDIA	N18E-G1-KD-A1	VGA Chip nVidia N18E-G1-KD-A1 N18E-G1-KD-A1 GB4-256, 37.5x37.5mm, 16nm,192bit	KG.EG10V.005
60001915 NVIDIA	N18E-G1-KD-QS-A1	VGA Chip nVidia N18E-G1-KD-QS-A1 N18E-G1-KD-QS-A1 GB4-256, 37.5x37.5mm, 16nm,192bit	KG.EG10V.004
60001915 NVIDIA	N18E-G2-A1	VGA Chip nVidia N18E-G2-A1 N18E-G2-A1	KG.EG20V.003
60001915 NVIDIA	N18E-G2-QS-A1	VGA Chip nVidia N18E-G2-QS-A1 N18E-G2-QS-A1	KG.EG20V.002
60001915 NVIDIA	N18E-G3-A1	VGA Chip nVidia N18E-G3-A1 N18E-G3-A1	KG.EG30V.004
60001915 NVIDIA	N18E-G3-QS-A1	VGA Chip nVidia N18E-G3-QS-A1 N18E-G3-QS-A1	KG.EG30V.003
VRAM			
10000981 MISC	6G-GDDR6 (2C*256*16*6)	VRAM Graphic GDDR6 8Gb 6G-GDDR6 (2C*256*16*6) Dummy LF	KN.8GB00.025
10000981 MISC	8G-GDDR6 (2C*256*16*8)	VRAM Graphic GDDR6 8Gb VRAM GDDR6 8GB Dummy LF+HF 2C*256*16*8 Dummy LF	KN.8GB00.024
16081942 MICRON	VR8GbGVI14	VRAM MICRON Graphic GDDR6 900 8Gb MT61K256M32JE-14:A LF	KN.8GB04.040
60002215 SAMSUNG	VR8GbGVI14	VRAM SAMSUNG Graphic GDDR6 8Gb K4Z80325BC-HC14 LF	KN.8GB0B.058
WiFi Antenna			
10000105 WNC	Hinge antenna 167	WNC Hinge antenna 167 (Holder + FPC)	NC.23511.00S
Wireless LAN			
60002823 HONG TECH	INTEL 2x2 AC+BT M.2 Killer	Wireless LAN Intel 802.11ac Bluetooth FM Killer Wireless 1550i INT9560.NGWG.NV	KE.11A0N.013

CHAPTER 8

Online Support Information

Online Support Information

This section describes online technical support services available to help users repair their Acer Systems.

Online Technical Support

For distributors, dealers, ASP or TPM, please refer the technical queries to a local Acer branch office. Acer Branch Offices and Regional Business Units may access our website. However some information sources will require a user i.d. and password. These can be obtained directly from Acer CSD Taiwan.

Acer's Website offers convenient and valuable support resources.

In the Technical Information section users can download information on all of Acer's Notebook, Desktop and Server models including:

- Service guides for all models
- BIOS updates
- Software utilities
- Spare parts lists
- TABs (Technical Announcement Bulletin)

For these purposes, we have included an Acrobat File to facilitate the problem-free downloading of our technical material.

Also contained on this website are:

- Detailed information on Acer's International Traveller’s Warranty (ITW)
- Returned material authorization procedures
- An overview of all the support services we offer, accompanied by a list of telephone, fax and email contacts for all technical queries.

We are always looking for ways to optimize and improve our services, so do not hesitate to direct any suggestions or comments to us.