



Surface Studio 2+ Service Guide



Disclaimer of Warranties and Limitation of Damages

All information, content, materials, and products made available in or in conjunction with this Guide are provided by Microsoft on “as-is” and “as available” basis, unless otherwise specified by Microsoft in writing. Microsoft makes no representations or warranties of any kind, express or implied, as to the information, content, materials and products included or otherwise made available to you or accompanying this Guide unless specified in writing. You expressly agree that your use of the information, content, materials, and product in or accompanying this Guide is at your sole risk.

To the fullest extent permissible by law, Microsoft disclaims all warranties, express or implied, including but not limited to implied warranties of merchantability and fitness for a particular purpose. To the fullest extent permissible by law, Microsoft shall not be liable for damages of any kind arising from the use of information, content, materials, or product made available in or in conjunction with this Guide, including but not limited to direct, indirect, incidental, consequential, and/or punitive damages unless otherwise specified in writing.

Notice

Microsoft and its suppliers may have patents, patent applications, trademarks, copyrights, trade secrets and/or other intellectual property rights covering subject matter in this document. Microsoft’s furnishing of this document to recipient does not grant or imply any license to any patents, trademarks, copyrights, trade secrets or other intellectual property rights, and recipient’s permitted use of any such intellectual property rights, if any, is solely governed by the Agreements.

This document and the information it contains are subject to change without notice. You can find the latest information on Surface device servicing and repair at <https://aka.ms/surfaceservicing>. Always consult the most up-to-date information available before performing device servicing or repair.

©2023 Microsoft Corporation. All rights reserved.

Document Part Number: M1237919_RevB



Contents

INTRODUCTION	5
DEVICE IDENTITY INFORMATION	5
• SURFACE STUDIO 2+	5
• GLOSSARY OF TERMS	6
GENERAL INFORMATION, PRECAUTIONS, WARNINGS	7
• SERVICE TOOLS	7
• GENERAL SAFETY PRECAUTION	8
• REPAIR-SPECIFIC PRECAUTIONS AND WARNINGS	9
BATTERY SAFETY	10
LITHIUM-ION BATTERY INSPECTION	11
• HANDLING USED, DAMAGED, OR DEFECTIVE LITHIUM-ION BATTERIES:	11
• REPORT BATTERY THERMAL EVENTS TO MICROSOFT	12
• ACTIONS TO TAKE:	12
• STOP REPAIR AND CONTACT MICROSOFT	12
ILLUSTRATED SERVICE PARTS LIST	13
SERVICE DIAGNOSTICS/TROUBLESHOOTING OVERVIEW	14
• SOFTWARE TOOLS:	14
• HARDWARE TROUBLESHOOTING APPROACH	14
COMPONENT REMOVAL AND REPLACEMENT PROCEDURES	15
• PRIOR TO DEVICE DISASSEMBLY	15
• BATTERY WARNING	15
• INTERNAL POWER SUPPLY WARNING	15
• NON-SKID FEET REPLACEMENT PROCESS	16
• PRELIMINARY REQUIREMENTS	16
• REQUIRED TOOLS AND COMPONENTS	16
• PREREQUISITE STEPS	16
• PROCEDURE – REMOVAL (NON-SKID FEET)	16
• PROCEDURE – INSTALLATION (NON-SKID FEET)	17
• THERMAL MODULE REPLACEMENT PROCESS	18
• PRELIMINARY REQUIREMENTS	18
• REQUIRED TOOLS AND COMPONENTS	18
• PREREQUISITE STEPS	18
• PROCEDURE – REMOVAL (THERMAL MODULE)	19



- PROCEDURE – INSTALLATION (THERMAL MODULE)..... 22
- POWER SUPPLY REPLACEMENT PROCESS 25
 - PRELIMINARY REQUIREMENTS..... 25
 - REQUIRED TOOLS AND COMPONENTS..... 25
 - PREREQUISITE STEPS..... 25
 - PROCEDURE – REMOVAL (POWER SUPPLY)..... 26
 - PROCEDURE – INSTALLATION (POWER SUPPLY) 28
- RSSD REPLACEMENT PROCESS 31
 - PRELIMINARY REPLACEMENT REQUIREMENTS..... 31
 - REQUIRED TOOLS AND COMPONENTS..... 31
 - PREREQUISITE STEPS..... 31
 - PROCEDURE – REMOVAL (RSSD)..... 32
 - PROCEDURE – INSTALLATION (RSSD) 33
- MOTHERBOARD REPLACEMENT PROCESS..... 34
 - PRELIMINARY REQUIREMENTS..... 34
 - REQUIRED TOOLS AND COMPONENTS..... 34
 - PREREQUISITE STEPS..... 34
 - PROCEDURE – REMOVAL (MOTHERBOARD) 35
 - PROCEDURE – INSTALLATION (MOTHERBOARD) 37
- DISPLAY REPLACEMENT PROCESS 39
 - PRELIMINARY REQUIREMENTS..... 39
 - REQUIRED TOOLS AND COMPONENTS..... 39
 - PREREQUISITE STEPS..... 39
 - PROCEDURE – REMOVAL (DISPLAY) 40
 - PROCEDURE – INSTALLATION (DISPLAY)..... 42
- ENVIRONMENTAL COMPLIANCE REQUIREMENTS 45



Introduction

This Service Guide (Guide) provides instructions for repairing Microsoft Surface devices using genuine Microsoft parts. It is intended for technically inclined individuals with the knowledge, experience, and specialized tools required to repair Microsoft devices.

 **IMPORTANT:** Read this Guide in its entirety before starting any repairs. If at any point you are unsure or uncomfortable about performing the repairs, as detailed in this Guide, **DO NOT** proceed. Contact [Microsoft](#) for additional support options.

 **WARNING:** Failure to follow the instructions in this Guide; use of non-Microsoft (non-genuine), incompatible, or modified replacement parts; and/or failure to use proper tools could result in serious personal injury, death, and/or damage to the product or other property.

Device Identity Information

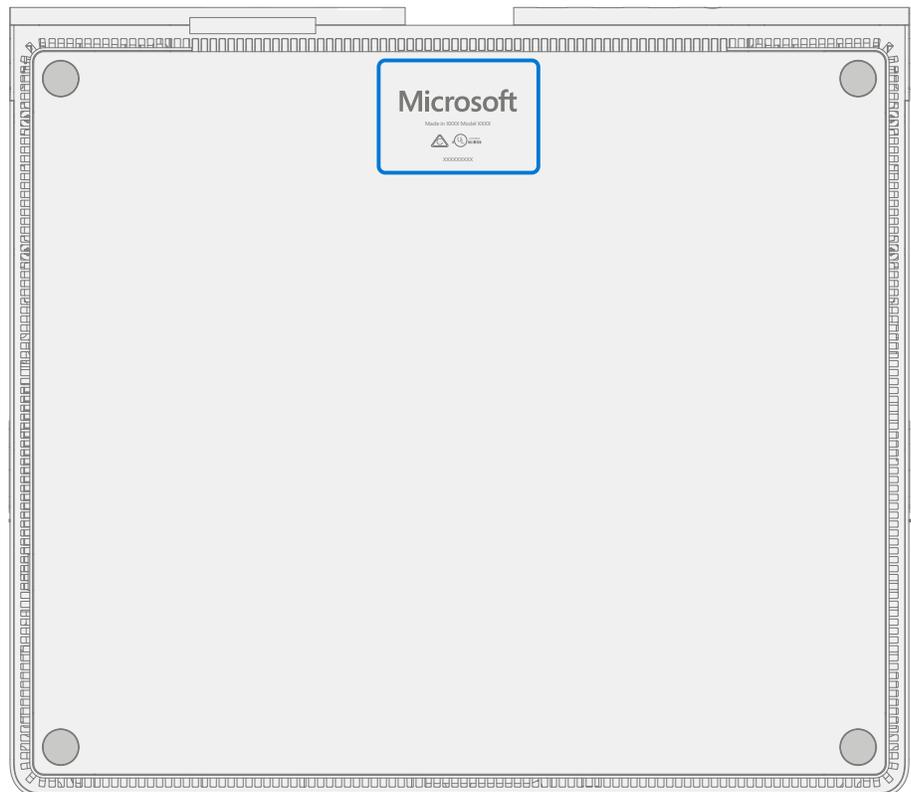
Surface Studio 2+

2028 – Surface Studio 2+

Surface Support - Studio: [Link](#)

Surface Studio 2+ Technical Specifications: [Link](#)

The serial number for Surface Studio 2+ is on the underside of the device on the cosmetic plate.



Glossary of Terms

The following terms are used throughout this guide.

- **ASP** – Authorized Service Provider. Companies that have received clearance to repair or maintain a product that is still under warranty by Microsoft.
- **B-Cover** – Metallic plate located under the C-Cover. Purpose is to secure the cooling fans.
- **BMR** – Bare Metal Recovery, refers to the process of installing a clean image.
- **C-Cover** – Plate/cover located at the bottom of the unit.
- **CPU** – Central Processing Unit
- **CRU or Commercial Spares** – Customer Replaceable Units. Service parts that can be removed and replaced by the customer.
- **Display or TDM** – The Touch Display Module, the complete screen with all layers
- **ESD** – Electro-Static Discharge
- **Feet or foot** – Non-Skid Foot Pads
- **FPC** – Flexible Printed Circuit Connections
- **FRU** – Field Replaceable Units are sub-system components such as the PCBA, rSSD, and TDM. FRUs are available only to ASPs. Some replaceable units will only be available as FRUs and therefore are only supported at an ASP.
- **FW** – Firmware
- **GPU** – Graphics Processing Unit
- **H-Cover** – Cover for the hinge assembly.
- **IPA** – Isopropyl Alcohol, should be used to clean adhesive from the device as detailed within process steps. Use 70% IPA in all cases.
- **Motherboard or PCBA** – Primary circuit board assembly
- **OS** – Operating System
- **PSA** – Pressure Sensitive Adhesive
- **PSU** – Power Supply Unit
- **rSSD** – Removable Solid-State Drive
- **SDT** – Surface Diagnostic Toolkit
- **SoC** – System-on-a-Chip, a microchip with several electronic circuits and parts in a single integrated circuit.
- **T-Cover** – Chassis/Case for PCBA, THM, PSU, and other components.
- **Thermal Module or THM** – Thermal Module is an assembly which manages thermal regulation for the system.
- **TIM** – Thermal interface material used between the THM and PCBA



General Information, Precautions, Warnings

 This symbol identifies important safety and health information in this guide.

 This symbol identifies important information in this guide.

 This symbol identifies important cautions in this guide.

Service Tools

Microsoft Provided Software Tools / References

- Surface Power Cord
- How To: [Update Surface device firmware and OS](#)
- How To: [Surface Tools Video](#)
- Download: [Surface drivers and firmware](#)
- Download: [Surface Diagnostic Toolkit \(SDT\)](#)
- Download: [Surface Data Eraser](#)
- Download: [Surface Imaging Tools](#)

Standard Service Tools

- Anti-static wrist strap (1 MOhm resistance)
- ESD-safe benchtop
- Gloves
- Safety Glasses
- Spudger tool
- Plastic Opening Pick (example [iFixit Opening Picks](#))
- Plastic Opening tool (example [iFixit Plastic Opening tool](#))
- Plastic Card tool (example [iFixit Plastic Card tool](#))
- 8IP (Torx-plus) driver
- 6IP (Torx-plus) driver
- 3IP (Torx-plus) driver
- H5 (Hex) socket driver
- Non-metallic ruler
- Isopropyl Alcohol Dispenser bottle (use 70% IPA)
- Cleaning swabs
- ESD-safe tweezers
- Lint free cleaning cloths
- USB Drive (Loaded with [SDT](#))
- Digital Multimeter

The tools identified on this list can be purchased from many different commercial sources, including but not limited to Amazon.com; iFixit; Chemdex, and other vendors. ASP's please refer to the ASP Guidebook for Microsoft tools.



General Safety Precaution

 Always observe the following, general safety precautions:

- Opening and/or repairing any electronic device can present a risk of electric shock, fire, serious personal injury, death, damage to the device or other property, and/or other hazards. Exercise caution when undertaking the repair activities described in this Guide. The repair activities identified in this Guide should only be undertaken by technically inclined individuals with the knowledge, experience, and specialized tools required to repair Microsoft devices.
- Improper use or handling of devices or their batteries may result in fire or explosion. Only open the enclosure on a device as outlined in this Guide.
- Do not heat, puncture, mutilate, or dispose of devices or their batteries in fire. Do not leave or charge devices in direct sunlight or expose devices or their batteries to temperatures outside the recommended operating range of 0°C to 60°C/32°F to 140°F for an extended period. Doing so can result in battery failure, electric shock, fire, serious personal injury, death, and/or damage to the device or other property.
- We recommend wearing protective eyewear and gloves when disassembling/re-assembling a device.

For additional product safety information relevant to Microsoft Surface devices, see aka.ms/surface-safety or the Surface app. To open the Surface app, select the Start button, enter Surface into the search box, then select the Surface app.



Repair-Specific Precautions and Warnings

- For Autopilot managed Surface Products refer to the following guidelines posted [here](#).

 **WARNING:** Before opening a device, ensure it is powered off and disconnected from its power source. Disconnect the device charger or power cord from mains power.

- For devices with rechargeable lithium-ion batteries that power on, fully discharge the battery before beginning repair. To expedite the battery discharge process:
 - Disconnect the charger from the device.
 - Increase display brightness to the highest level.
 - Turn on wi-fi and Bluetooth.
 - Open the Camera app in Windows.
 - Play music or video files from a local drive or streaming service.

Operate the device in this mode until the battery is fully discharged and the device powers off.

 **WARNING:** For Surface devices where the battery is affixed to the back cover, place the back cover with the battery in a location where it will be protected from possible punctures, impacts, crushing, or drops during the repair process. Refer to the [Battery Safety](#) section in this guide for more information.

- Ensure your work surface is level/flat and covered with ESD-safe, soft, non-marring material.
- We recommend wearing protective eyewear as a safety precaution when disassembling/re-assembling a device.
- Clean your work surface regularly to remove debris and abrasive particles.
- Review and follow the general guidelines and ESD compliance steps in this Guide prior to beginning work. Refer to the [Prior to Device Disassembly](#) section in this Guide for more information.
- Before opening a device, always wear an anti-static wrist strap and confirm your work area is properly grounded to protect vulnerable electronics from electrostatic discharge (ESD).
- Parts removed from a device during the repair process should be stored in ESD-safe bags and packaged for return or recycling in the same packaging that the new replacement part came in.
- If battery damage (e.g., leaking, expansion, folds or other) is discovered during device repair or if the battery is impacted or damaged during replacement, DO NOT proceed. Refer to the ASP Guidebook or contact Microsoft directly for proper device disposition.
- As you remove each subassembly from the device, place the subassembly (and all accompanying screws) away from the work area to prevent damage to the device or to the subassembly.
- During all activities (excluding feet-only replacement) check to ensure that no loose articles are on the back cover or remain inside the device before reassembling it.

 **IMPORTANT:** Remove rSSD (removable Solid-State Drive) whenever C-cover is removed from device. rSSD removal disconnects the battery from all device logical components for safety purposes. Refer to [Procedure-Removal \(rSSD\)](#) section for details.

 **IMPORTANT:** Whenever the rSSD has been removed, powering on the device requires that the rSSD and C-cover are installed. Refer to [Procedure - Installation \(rSSD\)](#) section for details.

- Review the [General Safety Precautions](#) and [Battery Safety](#) Sections of this Guide before beginning work. Refer to the “[Prior to Device Disassembly](#)” section of the Guide for additional details.
- Check to make sure that general guidelines and ESD compliance steps are followed prior to starting activities. Refer to [Prior to Device Disassembly](#) section on ([page 15](#)) for details.



- Device Serial Number Notation – The Surface device serial number for this model is located on the bottom of the chassis. When the chassis is replaced during service/repair, the device serial number becomes physically disconnected from the customer’s device. To ensure the customer has the best experience if any future Microsoft support is required, it is recommended to create a notation of the device serial number and provide it to the customer upon completion of the repair.

Battery Safety

- This device contains a built-in, lithium-ion rechargeable battery. Battery safety is a significant concern when repairing a device.
- For optimum compatibility, performance, and product safety, we recommend using genuine Microsoft replacement parts. Use of non-Microsoft (non-genuine), incompatible, reused, or modified batteries; improper battery installation; improper handling or storage of batteries; and/or failure to follow the instructions in this Guide could cause battery overheating, expansion, venting, leaking, or a thermal event which could result in fire, serious personal injury, death, data loss, or damage to the device or other property damage.
- Before beginning device repair, ensure your workspace is free of flammable debris or materials, has adequate ventilation, and that you have a fire suppressant device (example: fire blanket, container of sand, Class B fire extinguisher) within easy reach or you are within 20 feet of a fireproof enclosure. Fireproof enclosures should be kept free of combustible or flammable materials.
- Use personal protective equipment (PPE) when handling damaged, venting, or hot battery packs.
- Use the following best practices when handling batteries:
 - Always fully discharge batteries by running an application such as video playback with the device unplugged. If the device does not function while unplugged, you may leave out this step.
 - Do not puncture, impact, strike, bend, or crush the battery or a device containing a battery.
 - Keep your workspace clear of debris, extra tools, and sharp objects.
 - Exercise caution when using sharp tools near the battery to avoid impacting or poking the battery.
 - Don’t leave loose screws or small parts inside the device.
 - Avoid using tools that conduct electricity.
 - Do not drop or throw a lithium-ion battery.
 - Do not expose the battery to excessive heat, sunlight, or temperatures outside the battery’s normal operating range (0°C to 60°C)/(32°F to 140°F).
 - Ensure you handle, recycle, and/or dispose of used or damaged batteries in accordance with local laws and regulations. Follow Handling Used, Damaged or Defective Li-ion Batteries below.
- If device repair cannot be completed immediately and the device needs to be stored temporarily before restarting the repair:
 - Select a storage location and process that follows the battery safety precautions in this Guide.
 - Avoid exposing the device to environmental conditions and objects that could damage the battery pack.
 - Reinspect the battery pack as outlined in this Guide prior to restarting repair and installing the new battery pack.



Lithium-Ion Battery Inspection

Upon device opening, we recommend that you visually inspect the battery for signs of damage. Factors to consider when inspecting the battery include, but are not limited to:

- Evidence of leaking or venting
- Visible signs of physical or mechanical damage, such as:
 - Expansion or swelling. In expanded or swollen batteries, the soft pouch encasing the cell pulls away from the inner material and appears baggy, loose, or puffy.
 - Discoloration of the battery casing.
 - Odor, smell, or visible corrosion. Leaked battery electrolyte smells like nail polish remover (acetone).
 - Dents along the battery cell edges or on the top surface.
 - Surface scratches that have exposed the aluminum beneath the black coating layer on the battery.
 - Loose or damaged wires.
 - Known misuse or abuse.

Any battery exhibiting the signs listed above must be replaced. Consult the [Battery Replacement](#) section of this document for battery replacement instructions.

Handling Used, Damaged, or Defective Lithium-Ion Batteries:

- DO NOT dispose of used lithium-ion batteries, whether damaged or not, in household or commercial garbage or recycling bins.

⚠ WARNING: DO NOT SHIP DAMAGED OR DEFECTIVE BATTERIES ALONE OR INSIDE DEVICES. Damaged or defective batteries and devices containing damaged or defective batteries require special packaging and handling. Prior to transport:

- Follow all instructions provided by your local e-waste recycling or household hazardous waste collection provider.
 - Place the device or battery in an individual, non-metallic inner packaging, such as a zip-to-close plastic bag, that completely encloses the device or battery.
 - Surround the inner packaging with non-combustible, electrically non-conductive, absorbent cushioning material.
 - Each damaged battery or device containing a damaged battery should be packed individually in its own carton and that carton should be clearly marked as containing a damaged battery.
-

For more information on industry practices concerning damaged, defective, or recalled batteries, please see [PHMSA Lithium-Battery-Recycling-Safety-Advisory](#).

Undamaged, used lithium batteries can be sent to e-waste recycling or household hazardous waste collection points for processing. Please see <https://www.microsoft.com/en-us/legal/compliance/recycling> for more information.



Report Battery Thermal Events to Microsoft

A thermal event is a rapid chemical chain reaction that can occur inside a battery cell. During a thermal event, the energy stored inside the battery is released suddenly, resulting in heating and/or smoke and, in some instances, fire or flame. A battery thermal event can be triggered by physical damage to the battery (including during replacement/repair), improper storage, or exposure to temperatures outside of the battery's operating range.

Act immediately if you see any of the following symptoms of a battery thermal event:

- Smoke, soot, sparks, or flame emitted by the battery or from a device containing a battery.
- The battery pouch suddenly expands in size.
- A popping or hissing noise from the battery or a device containing a battery.

Actions to take:

- **DO NOT use water. Immediately smother** the battery or device with clean, dry sand, a fire blanket, or an appropriate (Class B) fire extinguisher. If using sand, dump the sand all at once until the device is completely covered.
- **Contact** local fire authorities if further assistance is needed.
- **Exit** the work area and ventilate it until it is clear of smoke.
- **Wait** at least 2 hours before attempting to touch the device.
- **Dispose** of the damaged battery or device in accordance with local environmental or e-waste laws and guidelines.

 **WARNING:** DO NOT SHIP DAMAGED OR DEFECTIVE BATTERIES ALONE OR INSIDE DEVICES. Damaged batteries and devices containing damaged batteries require special packaging and handling. See [Handling Used, Damaged, or Defective Lithium-Ion Batteries](#) in this Guide for additional information.

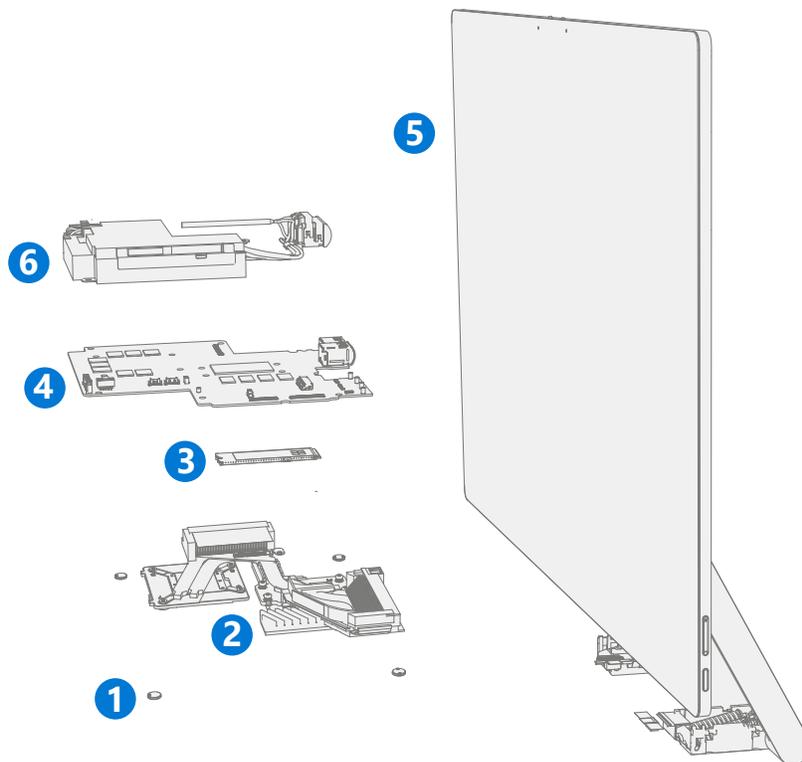
Stop Repair and Contact Microsoft

If any Microsoft device visually exhibits any of the following symptoms, cease all further repair efforts and contact Microsoft Surface Customer Support to report and obtain next steps:

- Any burned or melted components, traces, or plastic parts on the outside of the device, or which otherwise exhibits heat damage, including charring seen in charging and other ports.
- Any burned or melted components, traces, or plastic parts on the inside of the device, or which otherwise exhibits heat damage.
- Any accessories exhibiting melting or heat damage that are included with the Microsoft device, such as power supplies, keyboards, mice, cables, charging connectors, etc.
- Any devices that exhibit a case that has separated apart or opened for reasons other than impact damage from dropping, evidence of tampering, or separation caused by a malfunctioning battery.
- Any other finding that may constitute a safety hazard to the user, such as sharp edges on plastics. Microsoft Surface Customer Support will ask you to provide the following information:
 - The model and serial number of the affected Microsoft Surface device and/or accessory(ies).
 - A brief description of the damage found.
 - Clear photographs depicting the symptoms observed.



Illustrated Service Parts List



IMPORTANT: Device service part availability is segmented into two groups. FRUs are parts available for repair activity through an Authorized Service Provider under specific contract with Microsoft. CRUs/ Spares are parts available for repair activity by a skilled technician.

Item	Component	ASP / FRU Part No.	CRU Part No.
(1)	Feet		
	Black feet	VDI-00001	VDB-00001
(2)	Thermal Module		
	Thermal Module	VF8-00001	VF1-00001
(3)	Removable Solid-State Drive		
	rSSD 1 TB	VEI-00001	VEB-00001
(4)	Motherboard		
	Motherboard	VFI-00001	VFB-00001
	Motherboard (POTW)	VFI-00002	VFB-00002
	Motherboard (NATZ)	VFI-00003	VFB-00003
(5)	Display		
	Platinum	VE8-00001	VE1-00001
(6)	PSU		
	Power Supply	VNI-00001	VNB-00001



Service Diagnostics/Troubleshooting Overview

- For general Surface support, visit www.support.microsoft.com
- To troubleshoot device feature/function problems or learn more about Surface Pro visit www.aka.ms/SurfaceProHelp
- If you'd like to learn more about Windows, visit aka.ms/WindowsHelp
- To learn more about the accessibility features of the Surface Pro, go to the online user guide at aka.ms/Windows-Accessibility

Software Tools:

- How To: [Update Surface device firmware and OS](#)
- How To: [Surface Tools Video](#)
- Download: [Surface drivers and firmware](#)
- Download: [Surface Diagnostic Toolkit \(SDT\)](#)
- Download: [Surface Data Eraser](#)
- Download: [Surface Imaging Tools](#)

Hardware Troubleshooting Approach

 **IMPORTANT:** Be sure that devices meet all pre-repair qualifications related to safety and policy prior to repair. See ASP Guidebook for details.

The following approach should be taken when troubleshooting Surface devices:

1. Update device to latest OS/FW versions using the SDT tool – Refer to Software Tools section above for details on SDT.

 **IMPORTANT:** Device updates are required as a prerequisite to all hardware repairs.

2. Verify any suspected hardware failures by setting the device in a known OS/FW version state and running SDT to verify fault:
 - a. Replace the device's internal rSSD with a BMR imaged rSSD containing latest OS and FW updates (not supplied – must be created as a fault verification jig/tool) – Refer to Software Tools section above for details on imaging.
 - b. Run SDT and verify if condition persists or if resolved with use of BMR imaged drive – Refer to Software Tools section above for details on SDT.
 - i. If problem is resolved, then re-image original rSSD or replace original rSSD and image.
 - ii. If problem persists, then replace suspected hardware FRU related to the problem by following the detailed replacement procedures covered within this service guide.
3. SDT must be run following all hardware repairs where a FRU was replaced to further verify that problem was resolved by the repair action taken.



Component Removal and Replacement Procedures

Prior to Device Disassembly

- Read this Guide in its entirety before starting any repairs. Pay special attention to the [Repair-Specific Precautions and Warnings](#) and the [Battery Safety](#) sections of the Guide.

Battery Warning

This product contains coin cell/button cell batteries. If swallowed, a coin cell/button cell battery can cause severe internal burns and perforation of soft tissue in just two hours, causing serious personal injury or death.

Always keep new and used batteries away from infants and children. If the battery compartment on your device does not close securely, stop using it and keep it away from infants and children. Seek immediate medical attention if you think an infant or child may have swallowed or placed a coin cell/button cell battery inside any part of his or her body. Coin cell/button cell batteries must be removed immediately by qualified medical personnel to minimize the risk of serious personal injury or death.

Internal Power Supply Warning

Always select and use a genuine AC power supply and AC power cord for your Microsoft device. Failure to take the following steps during device repair or component replacement can result in serious personal injury or death from electric shock or in damage to your device.



Non-Skid Feet Replacement Process

Preliminary Requirements

 **IMPORTANT:** Be sure to follow all special (bolded) notes of caution within each process section.

Required Tools and Components

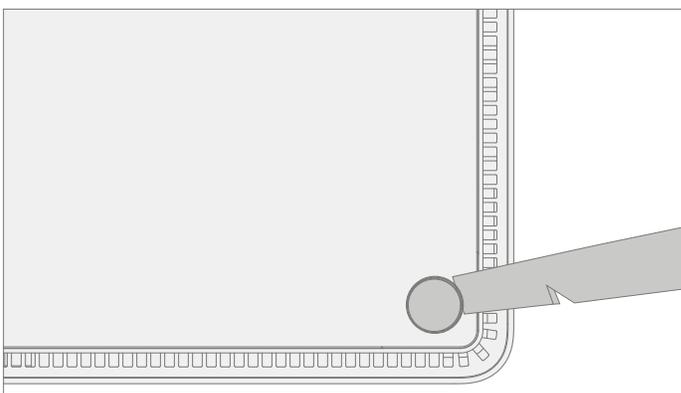
- **Tools:**
 - Plastic tweezers / spudger
 - Isopropyl Alcohol Dispenser Bottle (use only 70% IPA)
 - Cleaning swabs
 - Soft ESD-safe mat
 - Microfiber cloth
- **Components:**
 - Feet (Refer to [Illustrated Service Parts List](#))

Prerequisite Steps

- **Power off device** – Ensure device is powered off and has been disconnected from a power supply for at least 30 seconds.
- **General Safety** – Check to make sure that general guidelines and ESD compliance steps are followed prior to opening the device. Refer to Prior to Device Disassembly section on ([page 15](#)) for details.
- **Position device** – Place device onto a clean surface free of debris with the screen face down on an ESD mat and the base of the unit facing the technician.

Procedure – Removal (Non-Skid Feet)

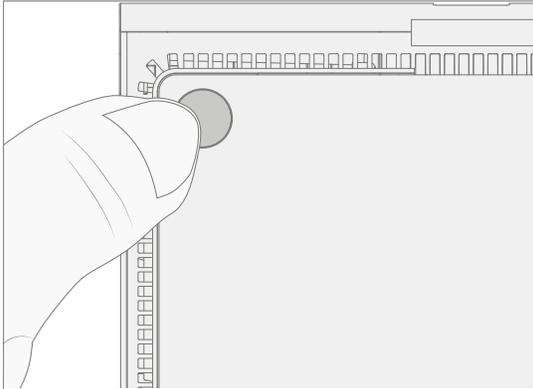
1. **Feet removal** – Use plastic tool / spudger to lift one edge of each foot. Ensure all adhesive tape remnants and glue residue are removed. Clean the cosmetic plate foot divots with 70% Isopropyl Alcohol.



Procedure – Installation (Non-Skid Feet)

 **IMPORTANT:** Once removed, the feet must be replaced with new ones.

1. **Position device** – Place device onto a clean surface free of debris with the screen face down on an ESD mat and the base of the unit facing the technician.
2. **Prepare new foot and press into place** – To install each foot, remove protective sheet to expose adhesive on foot. Press foot into cosmetic plate divot for at least 15 seconds. Repeat for each foot.



3. **Inspect for anomalies** – Inspect each foot to ensure there is no cosmetic damage or gaps between the foot and the cosmetic plate foot divots.



Thermal Module Replacement Process

Preliminary Requirements

 **IMPORTANT:** Be sure to follow all special (bolded) notes of caution within each process section.

Required Tools and Components

- **Tools:**
 - Plastic tweezers / spudger
 - Isopropyl Alcohol Dispenser Bottle (use only 70% IPA)
 - Cleaning swabs
 - Metric plastic thickness gauges
 - Soft ESD-safe mat
 - Microfiber cloth
 - 8IP (Torx-plus) driver
 - 10IP (Torx-plus) driver
 - H5 hex socket
- **Components:**
 - Thermal Module (Refer to [Illustrated Service Parts List](#))
 - Fan Cover Screw 1 (131B-022D0QS) Qty. 4 (Panhead)
 - Fan Cover Screw 2 (131A-01LT0QS) Qty. 4 (Flathead)
 - Cosmetic Plate Screw 1 (131B-022A0QS) Qty. 2 (Short)
 - Cosmetic Plate Screw 2 (131B-022D0QS) Qty. 2 (Long, towards front of unit)
 - Thermal Module Standoff (13P1-4SU2U21) Qty. 1

Prerequisite Steps

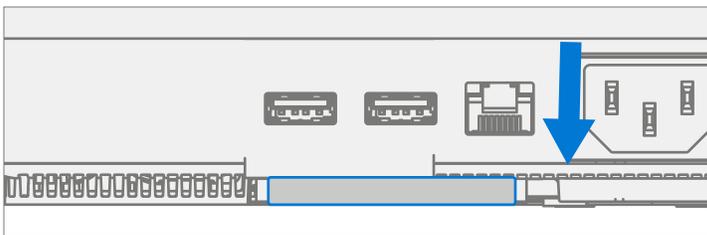
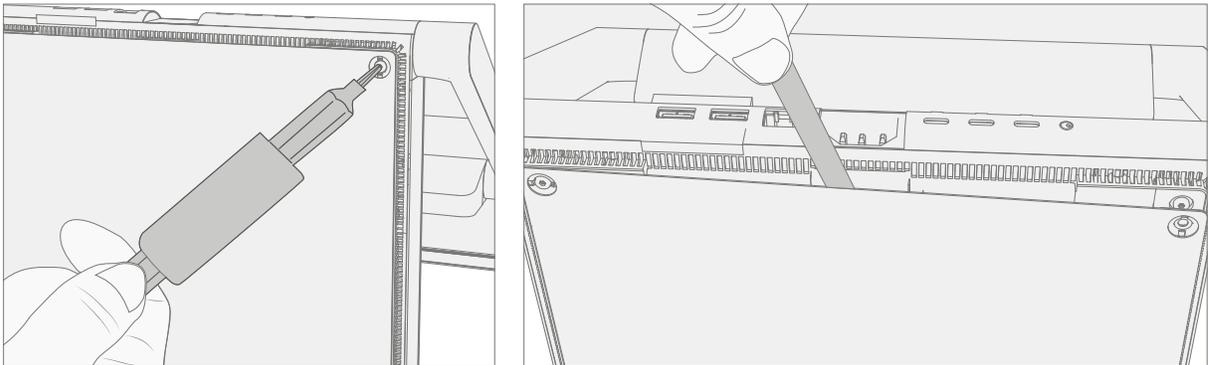
- **Power off device** – Ensure device is powered off and has been disconnected from a power supply for at least 30 seconds.
- **General Safety** – Check to make sure that general guidelines and ESD compliance steps are followed prior to opening the device. Refer to Prior to Device Disassembly section on ([page 15](#)) for details.
- **Position device** – Place device onto a clean surface free of debris with the screen face down on an ESD mat and the base of the unit facing the technician.
- **Remove Feet** – Refer to Procedure – Removal (Non-Skid Feet) on ([page 16](#)) for details.



Procedure – Removal (Thermal Module)

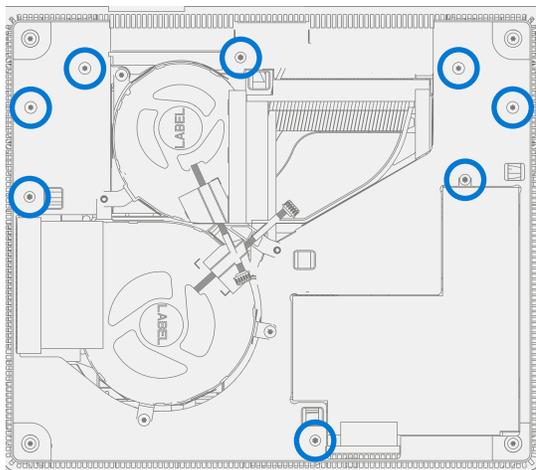
1. **Remove cosmetic plate** – Remove the 4 screws at each corner of the cosmetic plate using an 8IP (Torx-plus) driver. Using a plastic spudger, gently work around the edge of the cosmetic plate to loosen it. Then gently pull the cosmetic plate away from the unit, being careful to peel off the foam tape that connects the cosmetic plate to the fan cover underneath using the flat end of a plastic spudger.

! **CAUTION:** The foam tape is located near the Microsoft logo on the cosmetic plate. Be careful when removing the foam tape from the cosmetic plate, it is delicate and easily torn.



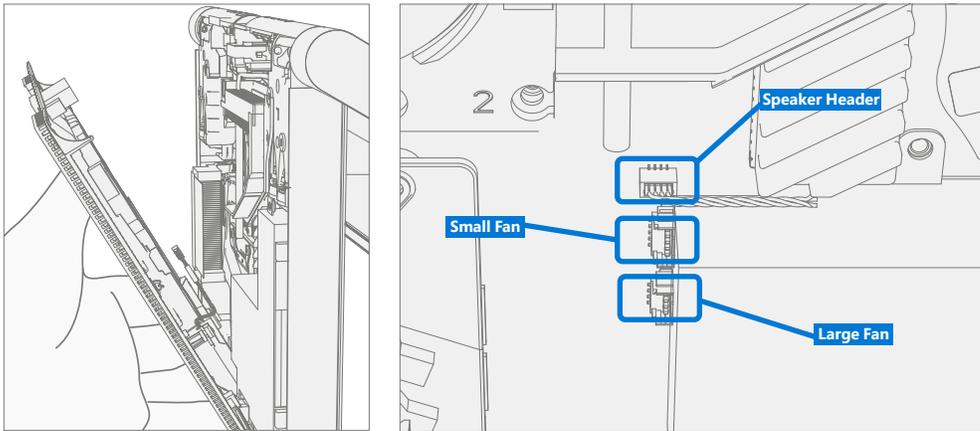
2. **Cleaning** – Remove any adhesive tape remnants from the cosmetic plate using IPA and a cotton swab.
3. **Remove fan cover**
 - a. Remove the 8 marked screws from fan plate using an 8IP (Torx-plus) driver.

✎ **IMPORTANT:** Only remove the marked screws. Removal of screws securing fans to fan-cover is not required.



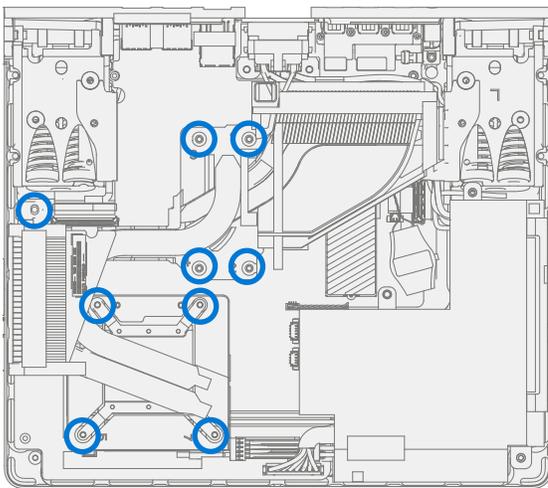
- b. While holding the fan cover at a 45-degree angle, disconnect the two fan cables and one speaker cable from the headers on motherboard.

! **CAUTION:** Cables are extremely fragile, be extra cautious to not damage connector cables.



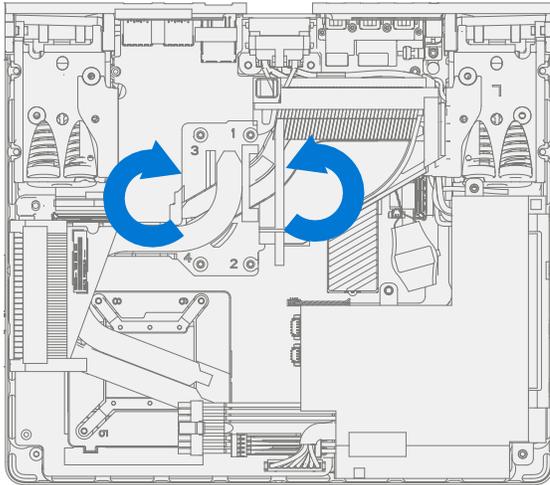
4. Remove thermal module

- a. Using a H5 (Hex) socket, remove the standoff from the right side of the chassis. Using a 10IP (Torx-plus) driver, unscrew the first four captive screws (numbered 1 through 4). While holding the THM with one hand, use an 8IP (Torx-plus) driver to unscrew the final four captive screws (numbered 5 through 8).



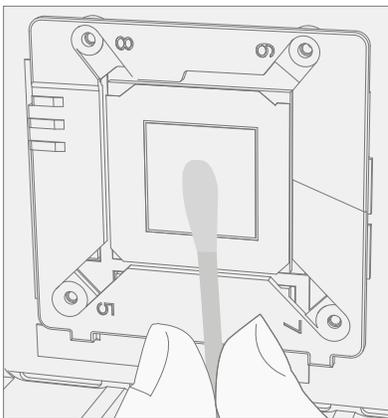
- b. Gently rotate the thermal module left and right a few times to break the bond with the thermal material on the CPU, GPU, and rSSD. Once the bond is broken, lift the thermal module out of the device.

! **CAUTION:** Do not pull thermal module off without breaking the bond with the thermal interface materials. Doing so may cause damage to the rSSD and/or CPU and GPU.

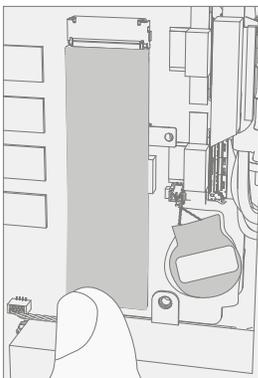


5. **Remove thermal material** – Using a cotton swab and Isopropyl alcohol clean the thermal interface material from the CPU and GPU. Wipe down with a lint-free cloth.

! **CAUTION:** Do scrub or apply too much pressure on the CPU or GPU dies. Excess pressure may cause damage to the chips.

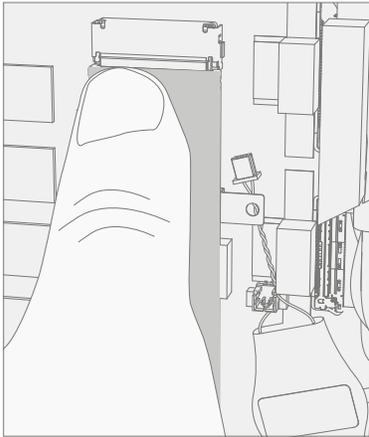


6. **Remove thermal pad** – Using your fingers remove the thermal pad on the rSSD.

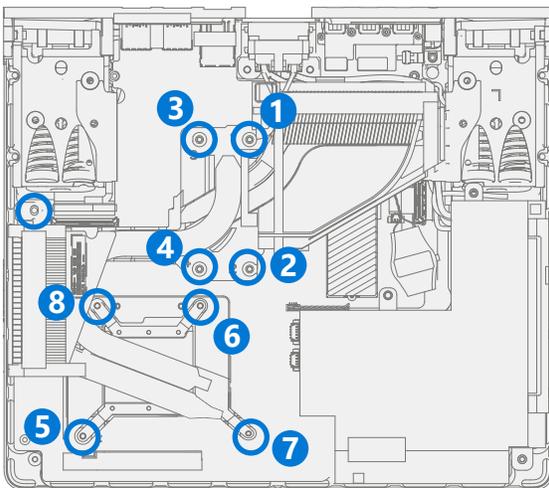


Procedure – Installation (Thermal Module)

1. **Apply new thermal material** – Apply new thermal pad to the rSSD.



2. **Install new thermal module** – Position new thermal module over CPU and GPU, while holding with one hand use a 10IP (Torx-plus) driver to tighten the first four captive screws (numbered 1 through 4). Turn each screw until snug, then turn another 45-degrees (1/4 turn). Use an 8IP (Torx-plus) driver to tighten the final four captive screws (numbered 5 through 8) using the same process as above. Use a H5 (Hex) socket to install the right standoff using the process above.



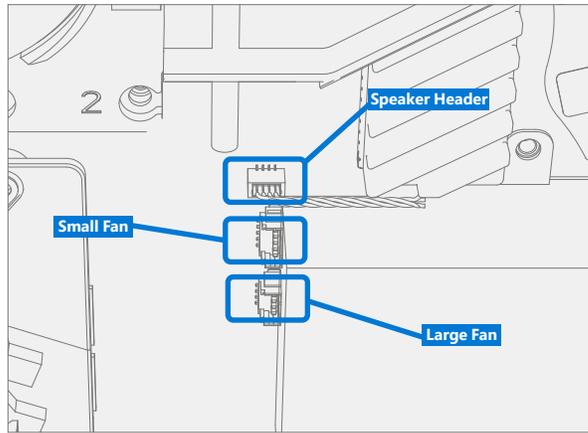
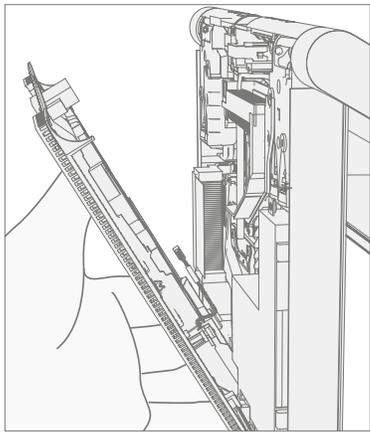
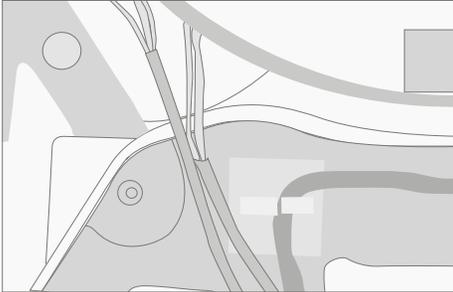
3. **Final Inspection** – Prior to continuing with the re-assembly, inspect the device internals to ensure no screws, foams, tape, or other foreign material has been misplaced inside the unit.



4. Install fan cover

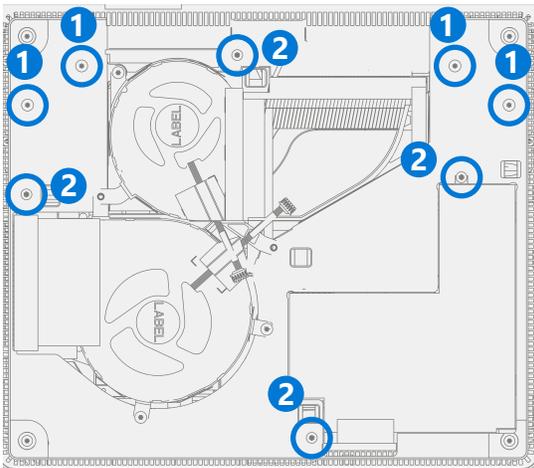
- a. While holding the fan cover at a 45-degree angle, connect the two fan cables and one speaker cable to the headers on the motherboard.

! **CAUTION:** Cables are extremely fragile, be extra cautious to not damage connector cables. Tuck them into the fan cover approximately as shown below.



- b. Using an 8IP (Torx-plus) driver install the 4 panhead fan cover screws (1), tightening each screw until snug and then turn another 45 degrees (1/8 turn). Repeat this process for the 4 flathead fan cover screws (2).

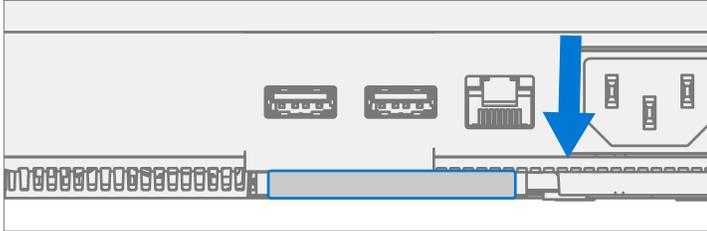
🔧 **IMPORTANT:** Ensure that connector wires do not touch the fans by ensuring that the fans spin freely.



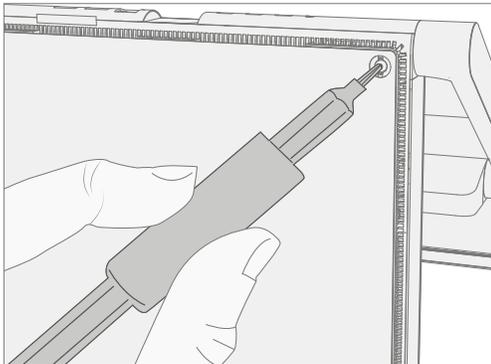
5. **Install cosmetic plate**

- a. Align the tabs on cosmetic plate with the openings on the fan cover. Install the foam tape from the fan cover onto the back of the cosmetic plate and fit the two parts together.

! **CAUTION:** The foam tape should be located near the Microsoft logo on the cosmetic plate. Be careful when installing foam tape on the cosmetic plate, it is delicate.



- b. Using a 8IP (Torx-plus) driver install the 4 screws at the corners of the C-Cover, tightening each screw until snug and then turn another 45 degrees (1/8 turn).



- 6. **Power on device** – Carefully place device top side up. Connect device to power supply and power on.
- 7. **Run SDT** – Run SDT to ensure all device features and functions operate as expected.
- 8. **Install Feet** – Refer to Procedure – Installation (Feet) on [\(page 17\)](#) for details.



Power Supply Replacement Process

Preliminary Requirements

 **IMPORTANT:** Be sure to follow all special (bolded) notes of caution within each process section.

Required Tools and Components

- **Tools**
 - Plastic tweezers / spudger
 - Isopropyl Alcohol Dispenser Bottle (use only 70% IPA)
 - Cleaning swabs
 - Metric plastic thickness gauges
 - Soft ESD-safe mat
 - Microfiber cloth
 - 8IP (Torx-plus) driver
 - H5 (Hex) socket driver
 - Digital Multimeter
- **Components**
 - Power Supply Unit (Refer to [Illustrated Service Parts List](#))
 - PSU Standoff (13P1-4SU2U21) Qty. 1
 - PSU Screw (131B-022D0QS) Qty. 1
 - Power Plug Screw (131B-022D0QS) Qty. 1
 - Power Plug Standoff (13E5-3TN0C01) Qty. 1
 - Hinge Cover Screws (131B-022D0QS) Qty. 1

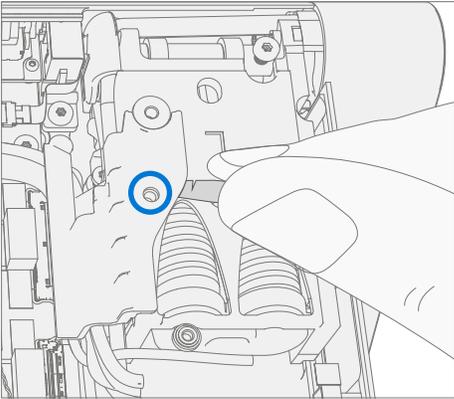
Prerequisite Steps

- **Power off device** – Ensure device is powered off and has been disconnected from a power supply for at least 30 seconds.
- **General Safety** – Check to make sure that general guidelines and ESD compliance steps are followed prior to opening the device. Refer to Prior to Device Disassembly section on ([page 15](#)) for details.
- **Position device** – Place device onto a clean surface free of debris with the screen face down on an ESD mat and the base of the unit facing the technician.
- **Remove Feet** – Refer to Procedure – Removal (Non-Skid Feet) on ([page 16](#)) for details.
- **Remove Thermal Module** – Refer to Procedure – Removal (Thermal Module) on ([page 19](#)) for details.

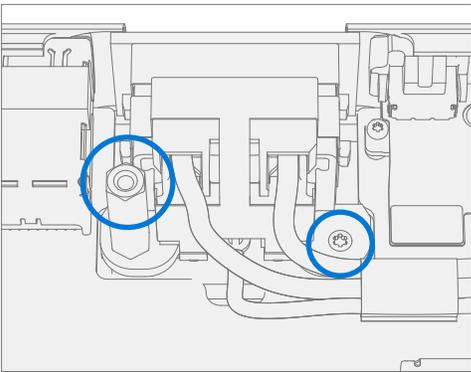


Procedure – Removal (Power Supply)

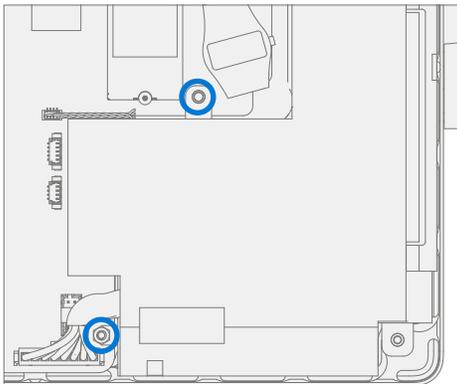
1. **Remove right hinge cover** – Using an 8IP (Torx-plus) driver, remove the screw securing the plastic hinge cover from the right hinge. Using a plastic spudger, lift the hinge cover from the hinge. Finally, use isopropyl alcohol to clean any residue.



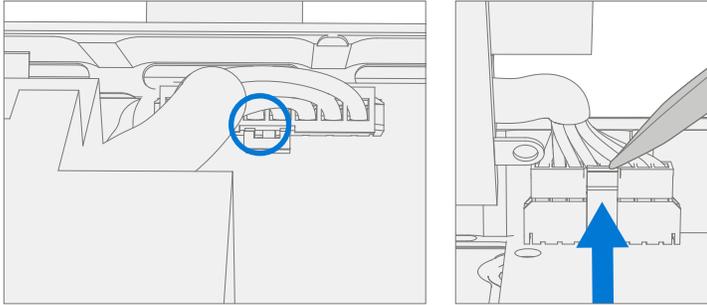
2. **Remove power plug** – Using an 8IP (Torx-plus) driver remove the right screw, using a H5 (Hex) socket remove the left standoff.



3. **Remove power supply**
 - a. Using an 8IP (Torx-plus) driver remove the top screw securing the power supply to the chassis. Using a H5 (Hex) socket remove the bottom left standoff.



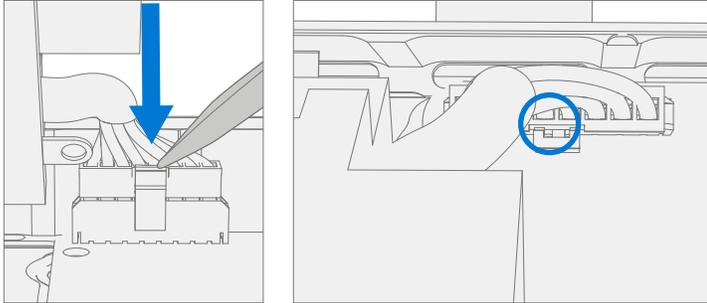
- b. Lift the power supply out of the chassis, rotating towards the back of the unit. Gently pull out the small connector underneath the larger one. Depress the clip on the large connector to fully disconnect the power supply from the chassis.



Procedure – Installation (Power Supply)

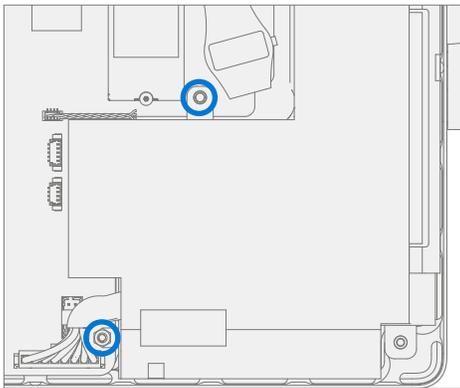
1. **Inspect power supply cables** – Before installation, check cables on power supply for any abrasion or damage. Any damage to power supply cables will require the power supply to be replaced.
2. **Install new power supply**
 - a. Connect large connector to the motherboard by pressing in until there is a small click. While holding the power supply, carefully insert the small connector into its plug.

 **IMPORTANT:** Both connectors are keyed and may only be inserted in one direction. Be careful to align connectors properly before pressing them into the motherboard to avoid damage to the motherboard.

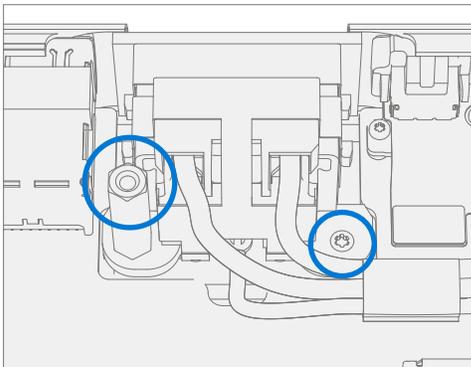


- b. Using an 8IP (Torx-plus) driver install the top screw, tightening the screw until snug and then turn another 1/8 turn (45 degrees). Repeat this process for the bottom left standoff using a H5 (Hex) socket.

! **CAUTION:** Ensure the wires are pulled away from screw hole when installing screws. Damage to the casing of the wires requires PSU replacement.

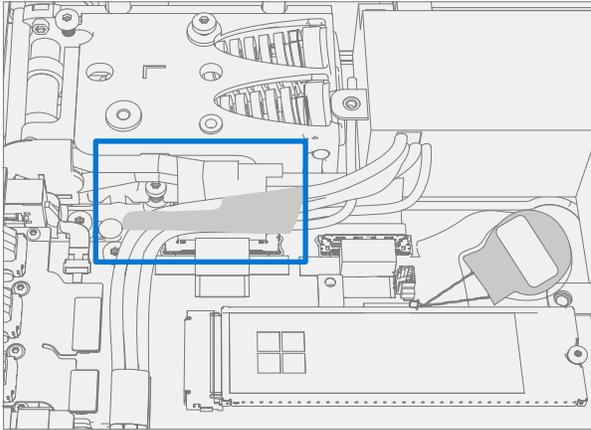


3. **Install power plug** – Using an 8IP (Torx-plus) driver install the right screw, tightening until snug and then turn another 45 degrees (1/8 turn). Repeat this process for the left standoff using a H5 (Hex) socket.



4. **Install right hinge cover** – Align PSU wires as shown in image below. Then using an 8IP (Torx-plus) driver, secure using the hinge cover screw, tightening until snug and then turn another 45 degrees (1/8 turn).

⚠ WARNING: Take care not to pinch the wires between the motherboard and hinge cover. This could damage the wires and the motherboard and cause an electrical fault.

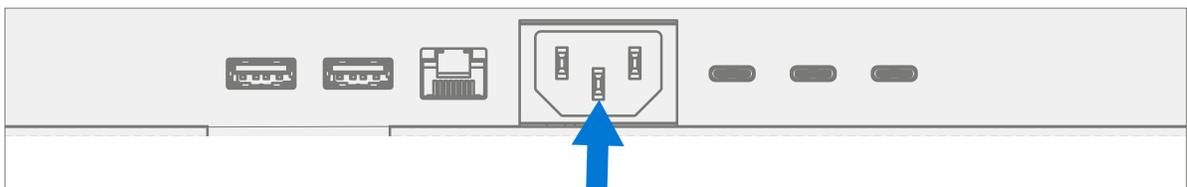


5. **Install thermal module** – Refer to Procedure – Installation (Thermal Module) on (page 22) for details.
6. **Perform continuity test** – A continuity test must be performed after the device is re-assembled and before it is returned to the user. The continuity test shall be performed from each of the three pins on the AC inlet port to an exposed metal part of the chassis (ground). For chassis ground, insert a good USB cable into a USB port and use the metal shell of the connector on the opposite end of the cable as the contact point for the chassis (ground).

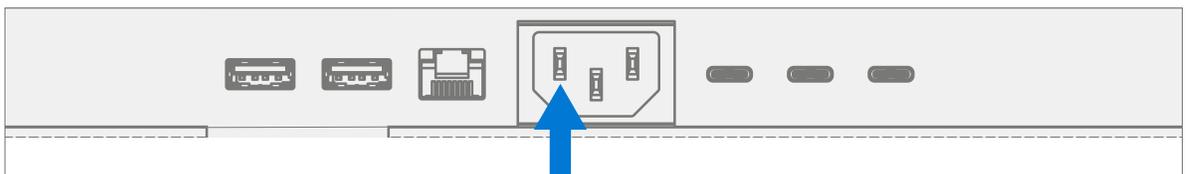
✍ IMPORTANT: After the repair process, any device which incorporates an internal power supply that connects to AC mains, may present a shock hazard to the user. This may be caused by conditions such as improper cable routing, pinched wires, foreign objects, solder bridges, debris, etc.

✍ IMPORTANT: If the device fails any portion of this test, remove the PSU and inspect the cables. If the cables are damaged or if the PSU continues to fail, replace the PSU.

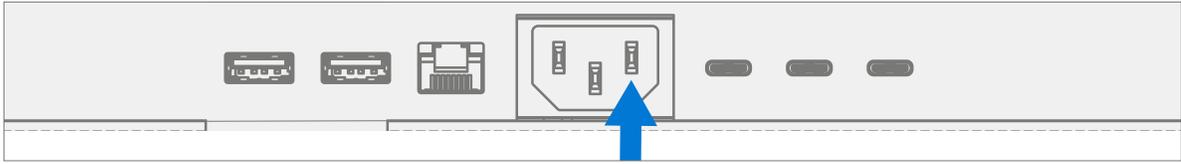
- a. Measure the resistance between the ground (center) pin to chassis (ground). A resistance of less than 0.5 ohms shall be measured.



- b. Measure the resistance between the neutral (right) pin to chassis (ground). A resistance of more than 50k ohms shall be measured.



- c. Measure the resistance between the live (left) pin to chassis (ground). A resistance of more than 50k ohms shall be measured.



7. **Power on device** – Carefully place device top side up. Connect device to power supply and power on.
8. **Run SDT** – Run SDT to ensure all device features and functions operate as expected.
9. **Install feet** – Refer to Procedure – Installation (Feet) on [\(page 17\)](#) for details.



rSSD Replacement Process

Preliminary Replacement Requirements

 **IMPORTANT:** Be sure to follow all special (bolded) notes of caution within each process section.

Required Tools and Components

- **Tools**
 - Plastic tweezers / spudger
 - Anti-static wrist strap (1 MOhm resistance)
 - Isopropyl Alcohol Dispenser Bottle (use only 70% IPA)
 - Cleaning swabs
 - Metric plastic thickness gauges
 - Non-Metallic ruler ([Amazon Example](#))
 - 3IP (Torx-plus) driver
 - USB Thumb drive with SDT
 - Surface Power Supply
 - Soft ESD-safe mat
 - Microfiber cloth
- **Components**
 - rSSD (Refer to [Illustrated Service Parts List](#)) if replacing
 - rSSD Screw (13N4-10N1S11, Alt. 13N4-10N1S12) Qty. 1

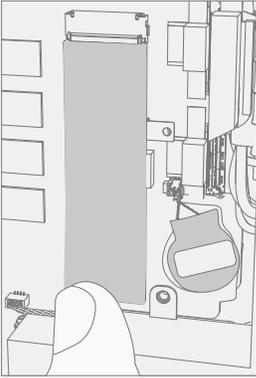
Prerequisite Steps

- **Power off device** – Ensure device is powered off and has been disconnected from a power supply for at least 30 seconds.
- **General Safety** – Check to make sure that general guidelines and ESD compliance steps are followed prior to opening the device. Refer to Prior to Device Disassembly section on ([page 15](#)) for details.
- **Position device** – Place device onto a clean surface free of debris with the screen face down on an ESD mat and the base of the unit facing the technician.
- **Remove Feet** – Refer to Procedure – Removal (Non-Skid Feet) on ([page 16](#)) for details.
- **Remove Thermal Module** – Refer to Removal (Thermal Module) on ([page 19](#)) for details.

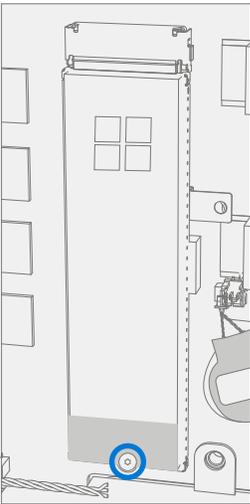


Procedure – Removal (rSSD)

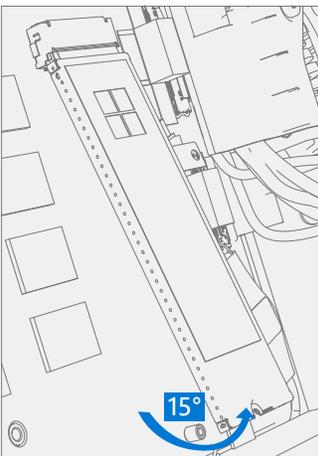
1. **Remove thermal pad** – Using your fingers remove the thermal pad on the rSSD.



2. **Remove rSSD screw** – Using a 3IP (Torx-plus) driver remove the screw securing the rSSD.

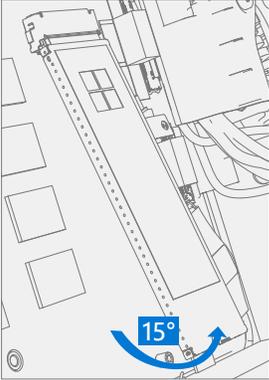


3. **Remove rSSD** – Lift the rSSD to 15 degrees and pull the rSSD out of the connector.

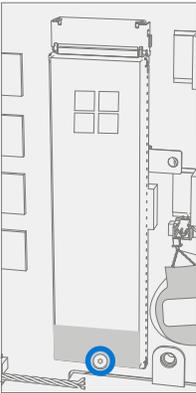


Procedure – Installation (rSSD)

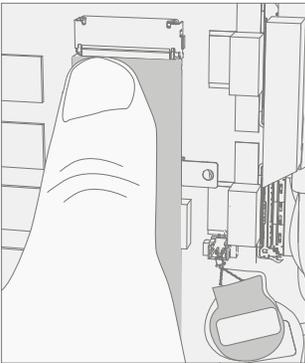
1. **Insert rSSD** – Insert the connector end of the rSSD into the receptacle on the motherboard at 15-degree angle from horizontal.



2. **Install rSSD screw** – Using a 3IP (Torx-plus) driver install the rSSD screw. Turn until just snug and seated, and then turn another 45 degrees (1/8 turn) or until fully fastened.



3. **Install thermal pad** – Install new thermal interface material on top of rSSD.



4. **Install thermal module** – Refer to Procedure – Installation (Thermal Module) on [\(page 22\)](#) for details.
5. **Power on device** – Carefully place device on its base. Connect device to power supply, and power on.
6. **Imaging** – Image the new rSSD by using a BMR Imaging USB drive specific to the device model.

 **IMPORTANT:** Refer to Surface imaging process - [Surface Imaging Tools](#)

7. **Run SDT** – Run SDT to ensure all device features and functions operate as expected.
8. **Install feet** – Refer to Procedure – Installation (Feet) on [\(page 17\)](#) for details.



Motherboard Replacement Process

Preliminary Requirements

 **IMPORTANT:** Be sure to follow all special (bolded) notes of caution within each process section.

Required Tools and Components

- **Tools**
 - Plastic tweezers / spudger
 - Anti-static wrist strap (1 MOhm resistance)
 - Isopropyl Alcohol Dispenser Bottle (use only 70% IPA)
 - Cleaning swabs
 - Metric plastic thickness gauges
 - 3IP (Torx-plus) driver
 - 8IP (Torx-plus) driver
 - H5 (Hex) socket
 - USB Thumb drive with SDT
 - Surface Power Supply
 - Soft ESD-safe mat
 - Microfiber cloth
- **Components**
 - Motherboard (Refer to [Illustrated Service Parts List](#))
 - Hinge Cover Screws (131B-022D0QS) Qty. 2
 - Motherboard Screws (131B-02150QS) Qty. 3

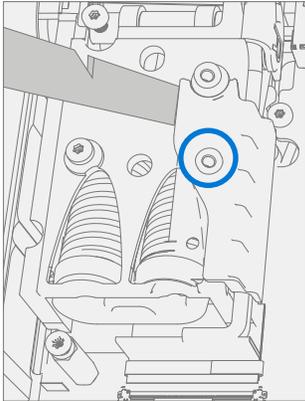
Prerequisite Steps

- **Power off device** – Ensure device is powered off and has been disconnected from a power supply for at least 30 seconds.
- **General Safety** – Check to make sure that general guidelines and ESD compliance steps are followed prior to opening the device. Refer to Prior to Device Disassembly section on ([page 15](#)) for details.
- **Position device** – Place device onto a clean surface free of debris with the screen face down on an ESD mat and the base of the unit facing the technician.
- **Remove Feet** – Refer to Procedure – Removal (Non-Skid Feet) on ([page 16](#)) for details.
- **Remove Power Supply** – Refer to Procedure – Removal (Power Supply) on ([page 26](#)) for details.
- **Remove Thermal Module** – Refer to Procedure – Removal (Thermal Module) on ([page 19](#)) for details.
- **Remove rSSD** – Refer to Procedure – Removal (rSSD) on ([page 32](#)) for details.

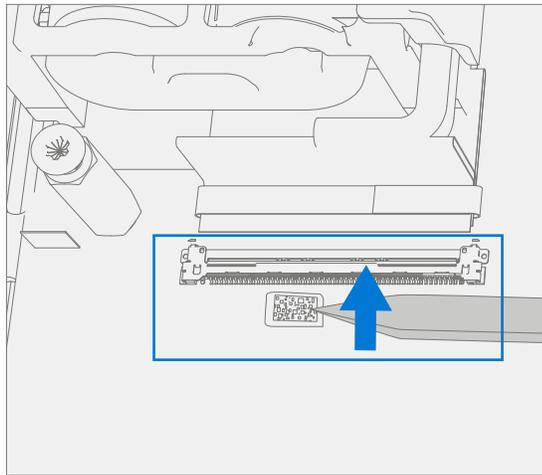
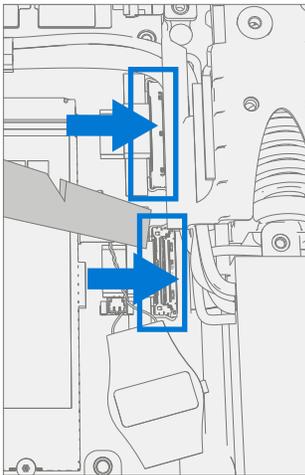


Procedure – Removal (Motherboard)

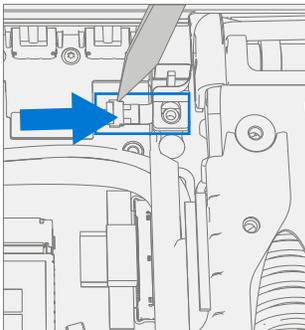
1. **Remove hinge cover** – Using an 8IP (Torx-plus) driver, remove the two screws securing the plastic left hinge cover to the left hinge. Using a plastic spudger, lift the hinge cover from the hinge. Finally, use isopropyl alcohol to clean any residue.



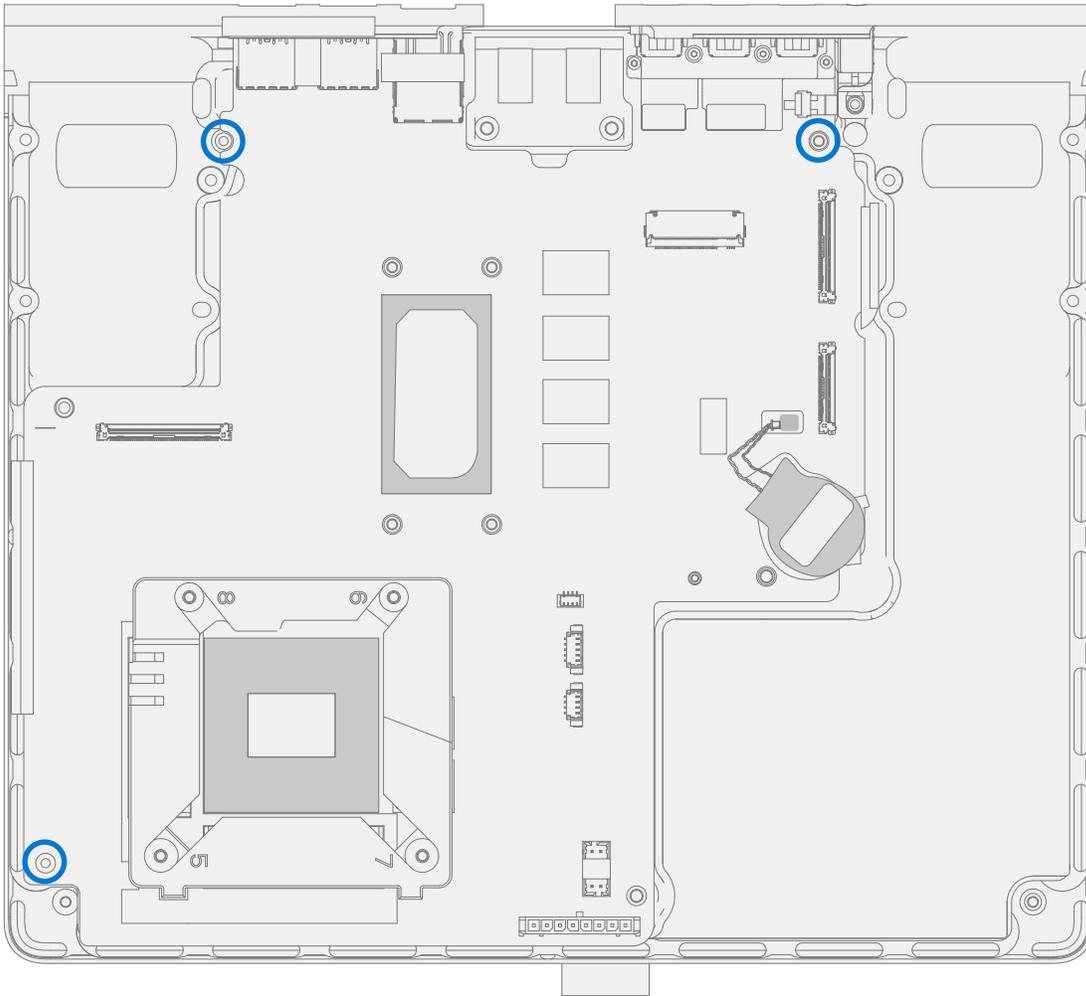
2. **Disconnect display cables** – Using a plastic spudger lift the locking bar from the three ribbon cables connected to the motherboard, slide them back, and lift them out.



3. **Disconnect audio port** – Using a pair of plastic tweezers, lift the white locking tab on the connector, then remove the ribbon cable for the audio port.



4. **Remove motherboard screws** – While holding the motherboard in place with one hand, use an 8IP (Torx-plus) driver, remove the 3 screws securing the motherboard to the chassis.

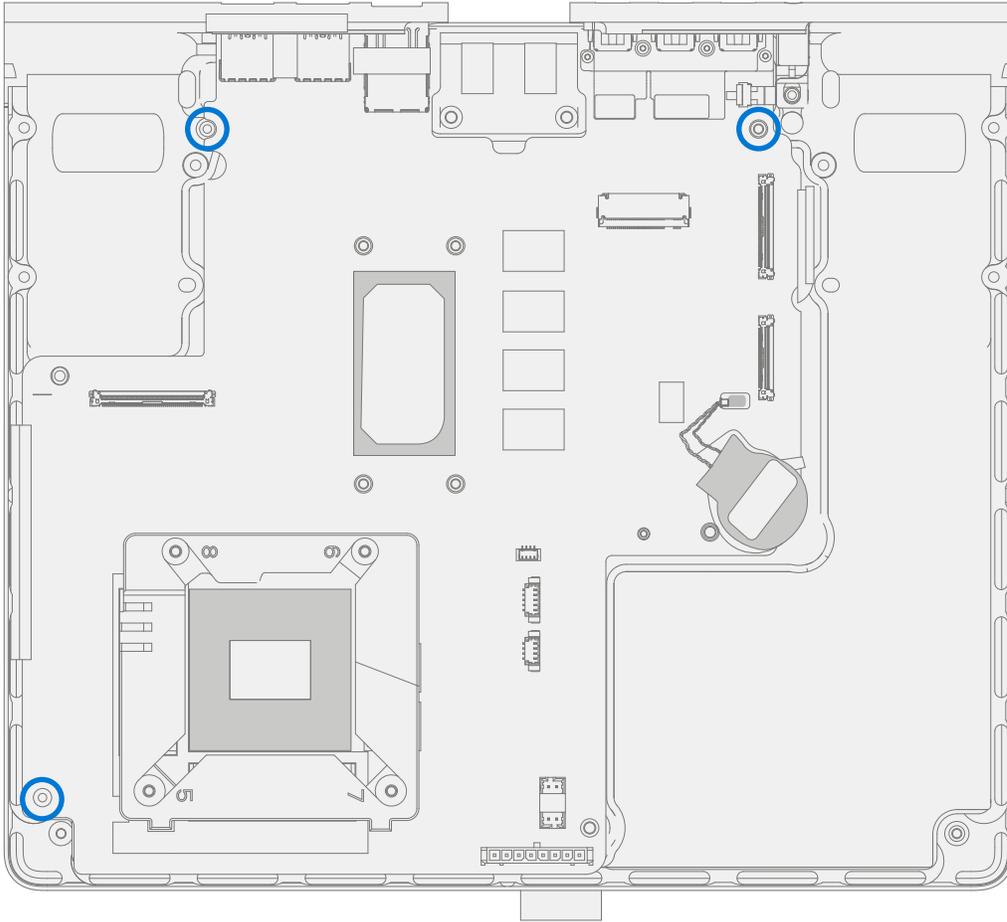


5. **Remove the motherboard** – Using two hands remove the motherboard from the chassis.

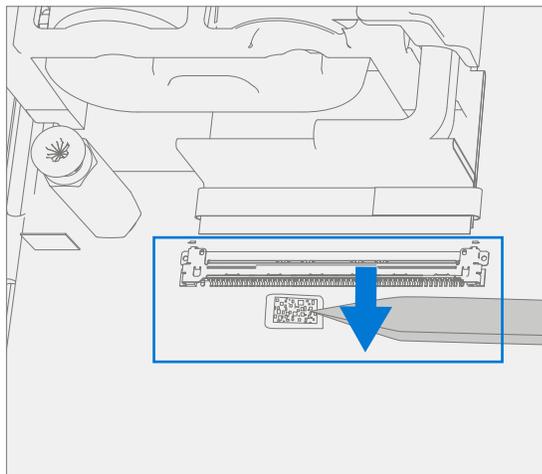
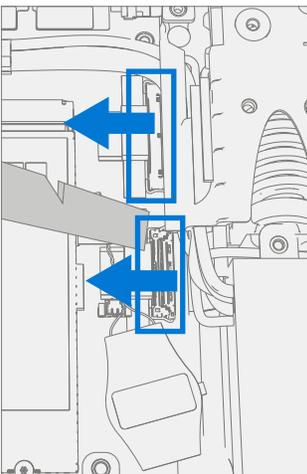


Procedure – Installation (Motherboard)

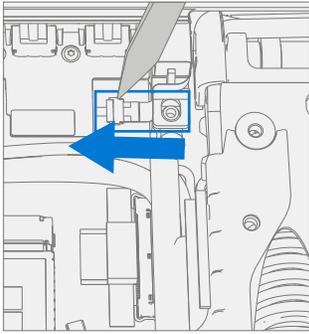
1. **Install new motherboard** – Place the new motherboard in the chassis using two hands. Align the motherboard with the screw holes in the chassis.
2. **Install motherboard screws** – While securing the motherboard with one hand, use an 8IP (Torx-plus) driver to install the 3 motherboard screws, tightening until finger tight. Then turn another 45 degrees (1/8 turn) or until fully fastened.



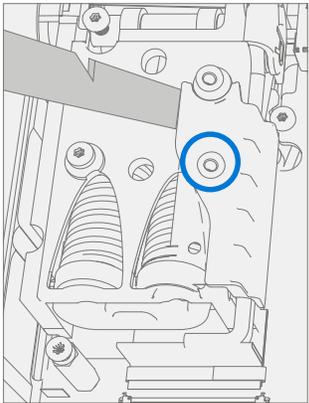
3. **Connect display connectors** – Position the cable over the connector and slide it into place. Push the locking tab down to secure the connector in place. Repeat process for the remaining two ribbon cables.



4. **Connect audio port** – Using a pair of plastic tweezers position and slide the ribbon cable into the audio port. Then press down the locking tab.



5. **Install hinge covers and screws** – Using an 8IP (Torx-plus) driver install the 2 hinge screws securing the plastic hinge cover to the left hinge. Tighten until just snug and seated, then turn another 45 degrees (1/8 turn) or until fully fastened.



6. **Install rSSD** – Refer to Procedure – Installation (rSSD) on (page 33) for details.
7. **Install thermal module** – Refer to Procedure – Installation (Thermal Module) on (page 22) for details.
8. **Install power supply** – Refer to Procedure – Installation (Power Supply) on (page 28) for details.
9. **Power on device** – Carefully place device top side up. Connect device to power supply, and power on.
10. **Run SDT** – Run SDT to ensure all device features and functions operate as expected.
11. **Install Feet** – Refer to Feet installation on (page 17) for details.



Display Replacement Process

Preliminary Requirements

 **IMPORTANT:** Be sure to follow all special (bolded) notes of caution within each process section.

Required Tools and Components

- **Tools**
 - Plastic tweezers / spudger
 - Plastic card tool (example [iFixit Plastic Card](#))
 - Anti-static wrist strap (1 MOhm resistance)
 - Isopropyl Alcohol Dispenser Bottle (use only 70% IPA)
 - Cleaning swabs
 - Metric plastic thickness gauges
 - 6IP (Torx-plus) driver
 - 9IP (Torx-plus)
 - USB Thumb drive with SDT
 - Surface Power Supply
 - Soft ESD-safe mat
 - Microfiber cloth
- **Components**
 - Display Module (Refer to [Illustrated Service Parts List](#))
 - WiFi Antenna Screws (131B-01WU0QS) Qty. 12
 - End Cap Screws (131A-01K20QS) Qty. 2
 - Display Hinge Screws (131A-01LU0QS) Qty. 9

Prerequisite Steps

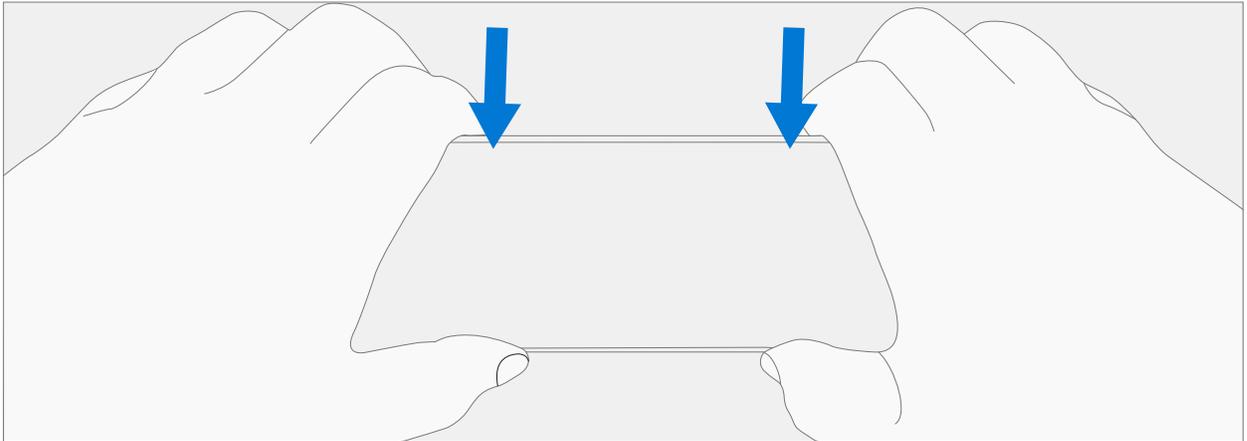
- **Power off device** – Ensure device is powered off and has been disconnected from a power supply for at least 30 seconds.
- **General Safety** – Check to make sure that general guidelines and ESD compliance steps are followed prior to opening the device. Refer to Prior to Device Disassembly section on ([page 15](#)) for details.
- **Position device** – Place device onto a clean surface free of debris with the screen face down on an ESD mat and the base of the unit facing the technician.



Procedure – Removal (Display)

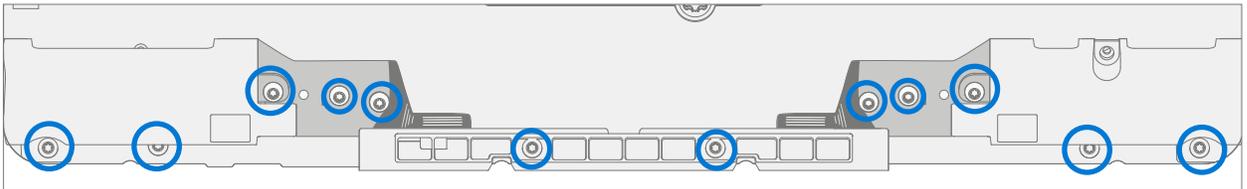
1. **Remove hinge cover** – Squeeze the top of the hinge cover with thumbs pressed firmly along the back for leverage. There should be an audible click as the plastic retaining tabs release from the back of the display. Rotate the hinge cover 15 degrees, then press bottom of the cover to release the bottom clips. Lift display hinge cover up and out.

! **CAUTION:** The plastic tabs on the hinge cover are fragile. If any tabs break, the hinge cover must be replaced. Example of a damaged hinge below.

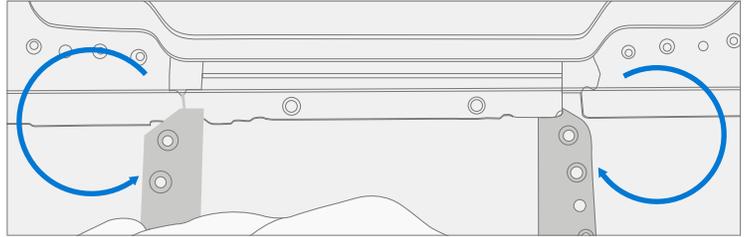
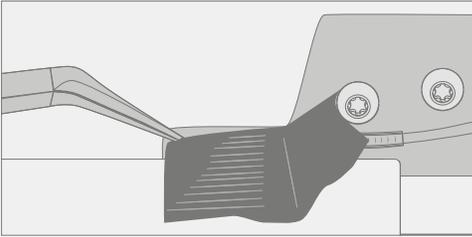


2. **Remove screws** – Using a 6IP (Torx-plus) driver remove the 12 screws marked below. Retain the two end caps on the left and right, and the plastic stiffening bar in the middle.

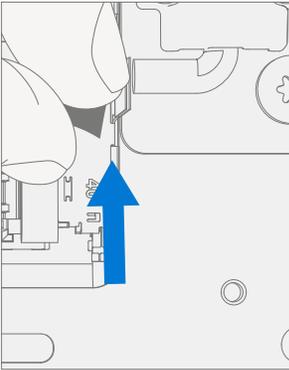
✎ **IMPORTANT:** The copper tape on the antenna boards is very fragile. Take extra caution to not tear it during screw removal.



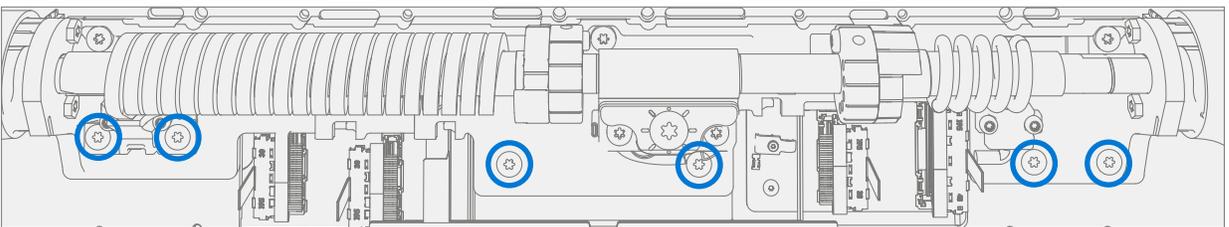
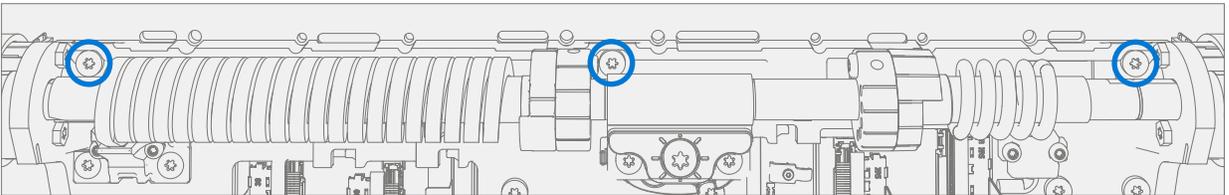
3. **Remove hinge plate** – Carefully peel up the copper tape from the two antennas on the left and right of the hinge. Position the antennas so the plate can be lifted away without disturbing the antenna wires. Lift hinge plate away from device.



4. **Remove display connectors** – Pull the tab on each of the 4 connectors to disconnect them from the display.

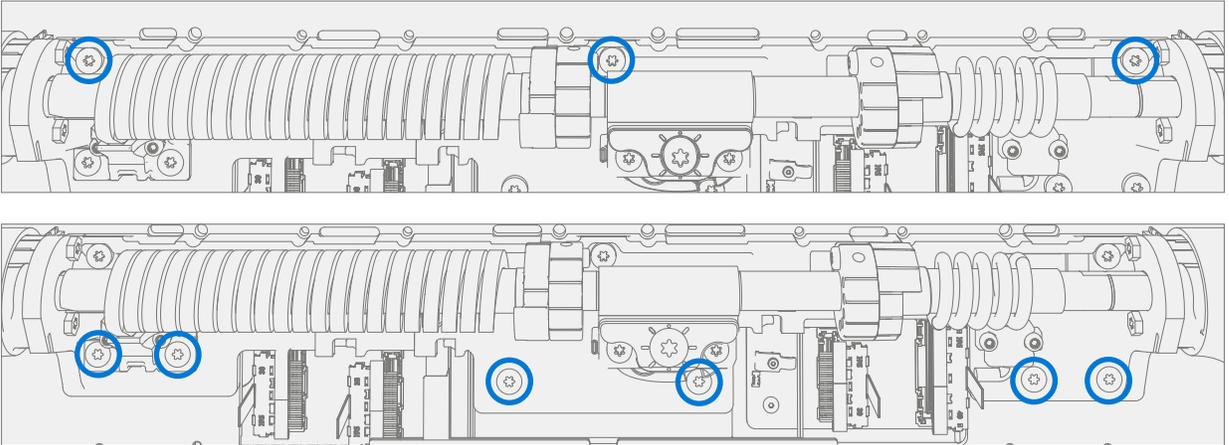


5. **Remove hinge screws** – While supporting the bottom of the unit with one hand, use a 9IP (Torx-plus) driver to remove the nine highlighted screws and separate the display from the rest of the unit.

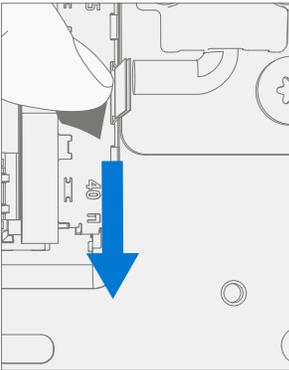


Procedure – Installation (Display)

1. **Position hinge over new display** – Align the screw holes on the new Display with the holes on the hinge.
2. **Install new hinge screws** – While supporting the bottom of the unit with one hand, use a 9IP (Torx-plus) driver to install the 9 display hinge screws as marked below. Tighten each screw until snug, then turn each screw another 1/8 turn (45 degrees) or until fully fastened.

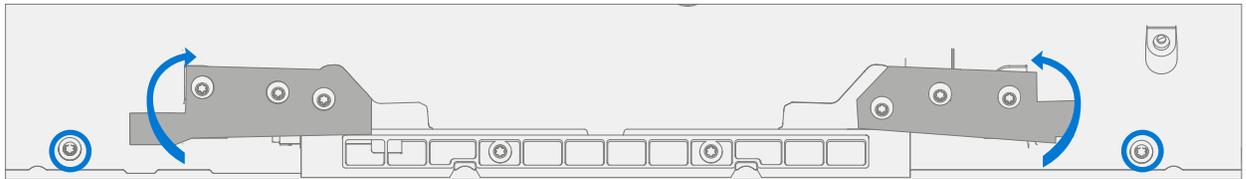
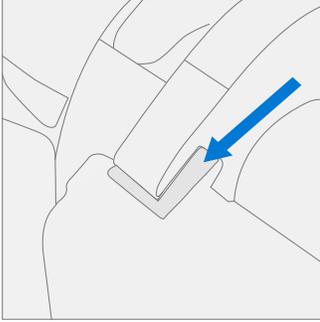


3. **Install display connectors** – Slide one of the connectors into the proper receptacle on the display. Make sure the connector is fully seated. Repeat for the remaining three FPC connectors.



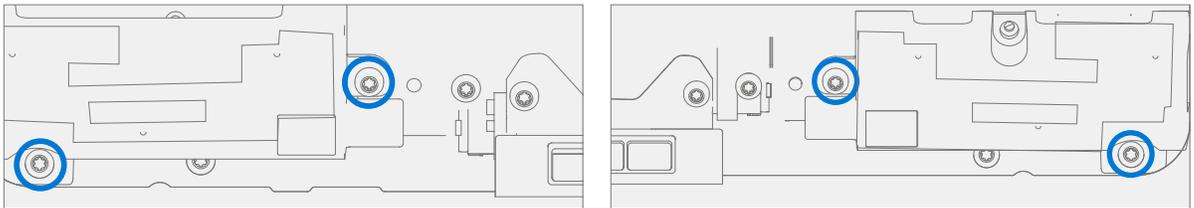
4. **Install hinge plate** – Carefully move the antennas so they do not interfere with the hinge plate and position the hinge plate in place. Position WiFi antennas over holes. Using a 6IP (Torx-plus) Driver install 2 WiFi antenna screws as indicated below. Tighten each screw until snug, then turn each screw another 1/8 turn (45 degrees) or until fully fastened.

 **IMPORTANT:** There is a notch on the hinge to accommodate the tabs of the hinge plate.



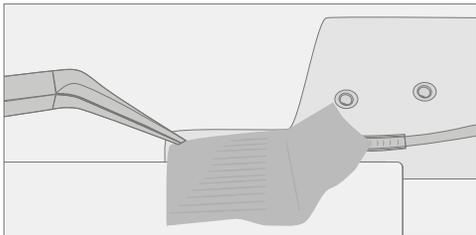
5. **Secure WiFi antennas**

- a. Position the two end caps on the left and right over the WiFi antennas. Using a 6IP (Torx-plus) Driver install 2 WiFi antenna screws as indicated below. Tighten each screw until snug, then turn each screw another 1/8 turn (45 degrees) or until fully fastened.

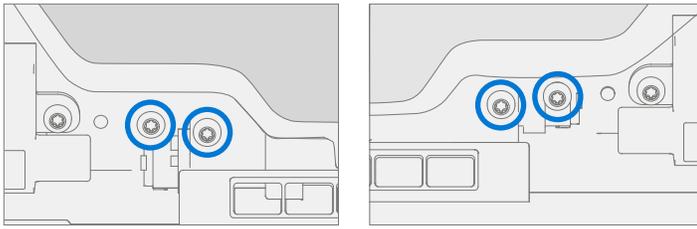


- b. Install copper tape over each WiFi antenna, making sure to cover the antenna and the hinge plate.

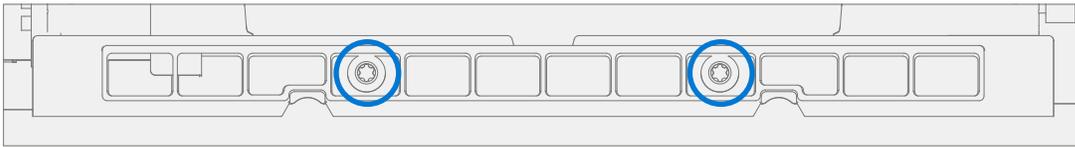
! **CAUTION:** The copper tape on the antenna boards is very fragile. Take extra caution to not tear it during screw installation.



- c. Using a 6IP (Torx-plus) Driver install the 4 remaining WiFi antenna screws as indicated below. Tighten each screw until snug, then turn each screw another 1/8 turn (45 degrees) or until fully fastened.

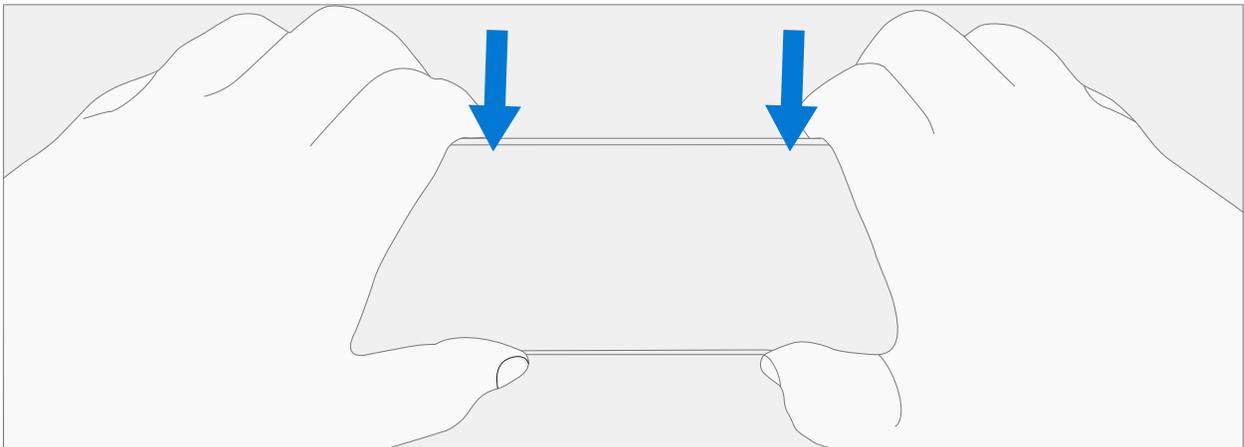


6. **Install cover guide bar screws** – Position the cover guide bar retained from step 2 of Procedure – Removal (Display) over the center holes of the hinge plate. Using a 6IP (Torx-plus) Driver install the 2 WiFi screws marked below. Tighten each screw until snug, then turn each screw another 1/8 turn (45 degrees) or until fully fastened.



7. **Install Hinge Cover** – Slot in the bottom of the hinge cover first, then align the plastic tabs with the appropriate holes along the top of the hinge. Squeeze the top of the hinge cover with thumbs pressed firmly along the back for leverage and slot top into the place. There should be an audible click as the plastic retaining tabs slot into place in the display.

! **CAUTION:** The plastic tabs on the hinge cover are fragile. If any tabs break, the hinge cover must be replaced. Example of a damaged hinge below.



8. **Power on device** – Carefully place device top side up. Connect device to power supply, and power on.
9. **Run SDT** – Run SDT to ensure all device features and functions operate as expected.



Environmental Compliance Requirements

All waste electrical and electronic equipment (WEEE), waste electronic components, waste batteries, and electronic waste residuals must be managed according to applicable laws and regulations. And H09117, "Conformance Standards for Environmentally Sound Management of Waste Electrical and Electronic Equipment (WEEE)," which is available at this link: <https://www.microsoft.com/en-us/download/details.aspx?id=11691> In case of questions, please contact AskECT@microsoft.com

