



**950XDB**

**Venus-15 INT**

# ***SERVICE* Manual**

950XDB



Contents

## **1. High performance notebook computer**

- Intel Tiger Lake platform with LPDDR4x memory
- Internal Graphics
  - ① Intel® UHD Graphics (i3 CPU)
  - ② Intel Iris Xe Graphics (i5/i7 CPU)
- Storage Support: M.2 SSD
  - 1<sup>st</sup> Slot support PCIe x4(2230 type)
  - 2<sup>nd</sup> Slot support PCIe x4 and SATA 3(2280 type)

## **2. Convenient functions**

- For Internal Camera, convenient usage of filming and taking pictures
- Convenient connection with TV as HDMI port is provided
- Bluetooth V5.1
- Easy activation of useful functions with hot keys.

## **3. Prudent design with consideration of practical usage**

- Prudent design with consideration of practical usage
- Comfortable typing with curved keycaps
- FHD LCD

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# 1. Precaution

## 1.1. General After-Sales Service Precautions

- 1) Do not let customers repair the product themselves.
  - ›There is a danger of injury and the product life time may be shortened.
- 2) Make sure to disconnect the power cord from the wall outlet before repairing the product (especially for after-sales service of electric parts).
  - ›There is a danger of electric shock.
- 3) Do not let customers plug several electric home appliances into a single wall outlet at the same time.
  - ›There is a danger of fire due to overheating.
- 4) Check if the power plug or wall outlet are damaged in any way..
  - ›If a defect is found, repair or replace it immediately.
  - (There is a danger of electric shock or fire)
- 5) Make sure that it is properly grounded. (Check the ground of the wall outlet)
  - ›Electricity leakage may cause electric shock.

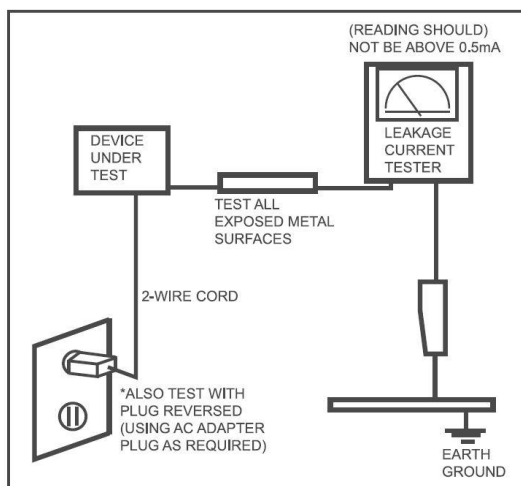


Figure 1.1 Leakage Current Test Circuit

- 6) Do not spray water on to the product to clean it.
  - ›There is a danger of electric shock or fire and it may shorten the lifetime of the product.
- 7) Check the assembly status of the product after the after-sales service..
  - ›The assembly status of the product must be the same as before the after-sales service.
- 8) Unplug the power cord holding the power plug (and not the cord)..
  - ›If the cord is disconnected, it may cause electric shock or fire.
- 9) Repair the product using only authorized parts
- 10) Keep the product away from heating devices such as heaters.
  - ›Exposure to heaters may cause deformation of the product or fire.

## 1.2. Safety Precautions

### 1) EMI

This device has been registered regarding EMI for residential use. It can be used in all areas.

### 2) Circuit Test ( Logic Test ) Precautions

The LSI and MSI used in this product are semiconductor integrated circuits based on MOS-FET or CMOS. Since these types of devices are highly susceptible to static electricity or current leakage, an isolation break may be caused. Therefore read and follow the instructions below.

- a) When handling an LSI or MSI, make sure your body is grounded through a few mega-ohms of resistance. In addition, wear gloves and a jacket made of cotton and not of synthetic fibers that easily generate static electricity.
- b) When repairing the product, place a conductive material (e.g. aluminum foil) grounded to the earth on the worktable.
- c) You must use a soldering iron without a leakage current.
- d) Do not touch the pin of an IC and carefully insert the IC into the black plastic package.
- e) When inserting an IC into a PCB, be careful with the direction of the IC. When installing an IC in the wrong direction, it might become damaged.
- f) When carrying an IC, package the IC with conducting material such as aluminum foil or conducting sponge so as to keep the voltage level of each of the terminals the same.
- g) Since the storage temperature of an IC is between -20 ~ +70 degrees, keep it at room temperature, if possible.
- h) Since the storage temperature of an IC is between -20 ~ +70 degrees, keep it at room temperature, if possible.
- i) When soldering an IC, solder it in as short a time as possible so that unnecessary heat is not applied to the device.
- j) Avoid leaving excessive amounts of flux within a custom IC or between the pins when soldering a custom IC.
- k) Take care to not damage the board when installing or separating an Option Board.
- l) Take care to not break the printed circuit pattern on the PCB when separate an IC.

### **1.3. Ground**

---

The product must be grounded to protect it from static electricity and other dangers. When using a multi tap, please use a multi tap with a ground terminal only.

If you use a 220V wall outlet with a ground terminal, you do not need to ground it additionally. Avoid using wall outlets if they are not grounded even if they have a ground terminal.

To ground the product, connect the ground to an exclusive ground terminal or metal water pipe. Connect the ground cable to the ground terminal at the rear of the main body. To ground the product, connect the ground terminal of the product to a metal water pipe, wall outlet or exclusive ground terminal with an electric wire equal to or thicker than #18.

Never ground the product to a PVC water pipe, phone line, TV, radio antenna, aluminum window or gas pipe, because this does not actually ground the product and may be dangerous.

## **1.4. Static Electricity Precautions**

---

Many parts of the system are susceptible to static electricity. Using an electrostatic discharge (ESD) device is very important for the safety of the user and the user's surroundings. Using an ESD device increases the probability of a successful repair and lowers the expenses for damaged parts.

To prevent static electricity, follow the instructions below.

- 1) Perform the repair in a location without static electricity.
- 2) Touch your hands to a metal water pipe or some metal object connected to the ground to discharge any static Electricity from your body before handling the parts.
- 3) Touch only the edges of the board, if possible.
- 4) Do not touch any parts unless absolutely necessary
- 5) Disassemble the parts on the anti-static-electricity pad.
- 6) When a board is not installed in the system, package the board with an anti-static-electricity packaging.



# **Operating Instructions and Installation 950XDB (Venus-15INT)**

**Feb. 20<sup>th</sup> 2021**

Ver	Date	Contents	작성자	승인자
1.0	2021.02.08	Initial release		

## 1. Product description and Installation

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- Spec
- System view and Function
- Enhanced Function (Null)
- Hardware
- Software & Driver LIST
- Software
- Bios Setting
- System Description
- HW optional component
- Installation

## 2. Circuit Analyze

- System Block Diagram
- IC Information
- System Layout
- Board Component

## 3. Disassembly & Assembly

- Main System
- LCD Ass'y

## 4. Trouble shooting

- General Spec
- Debugging Flowchart
- H/W & OS trouble shooting
- H/W upgrade
- BIOS / MICOM Update
- Remark general diagnosis
- Diagnosis Program

## 5. Reference

- Intel cpu performance
- LCD / HDMI Reference
- Caution and Terms

## Sales Points



### Performance you need

- Processor/Chipset (Non-upgradable):
  - Intel® Tiger Lake i3-1115G4 Processor
  - Intel® Tiger Lake i5-1135G7 Processor
  - Intel® Tiger Lake i7-1165G7 Processor
- Graphic Solutions:
  - Intel UHD for i3 CPU
  - Intel Iris Xe for i5&i7 CPU
- \* Storage Support: 2 Slots, Max. 1TB NVMe SSD
- \* Memory: LPDDR4x, Max.4267MHz, Max. 32GB(On BD)

### Accurate & Stable Typing

- Comfortable typing with curved keycaps
- Easy activation of useful functions with hot keys.

**\* Factory Option**

# A Best-in-class Mobility w/ Performance

## Freedom to move

### Incomparable slim & Light

- 11.2 mm slim w/ all new design
- 888g ↓ super light
- Support Full I/O port

### But powerful

- Intel Evo™ verified
- Powerful Graphics N
- Satisfied battery life (PABL 8.5hr)



## Joyful Screen time



### Dive into video life

- HDR True Black (1,000,000 : 1)
- 120% Color Volume (DCI-P3)

### Eyes, special to you

- Eye care display
- Less harmful blue light (6.5%↓)
- Auto Display Color setting (AI)

## Shift to people



### Powerful and Intelligent

- Max Power but less noise
- Performance mode

### Welcome new normal

- Video call (Beauty filter, ANC)
- Online class (Screen recorder)

## Convenience life without a wire



### Galaxy Eco

- Home hub via Smart Things
- 2<sup>nd</sup> Screen & Samsung Notes
- Easy pairing for Buds

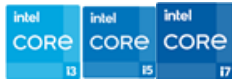
### Anywhere you go

- 4G LTE Always connected
- Next Gen Wi-Fi 6E

# 1. Main feature

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## Processors / Chipset



- Intel® Tiger Lake U i7 - 1165G7
- Intel® Tiger Lake U i5 - 1135G7
- Intel® Tiger Lake U i3 - 1115G4  
(Non-upgradable)

## Memory \*

- LPDDR4x, Max. 4267Mbps  
(4267Mbps (I5/I7); 3733Mbps (I3))  
(8GB/16GB/32GB on Board)  
Dual channel  
Not upgrade memory



## Expansion

- 1 USB3.0
- HDMI 1.4
- 1x USB-C™  
[Up to 10Gbps (Gen1), 5K DP Ver 1.2, PD Charging  
(Support Provider 5V / Consumer 5V~20V Mode, TBT4 Port)]
- 1 Thunderbolt™ 4
- HP/Mic Combo(4 Pole)
- Micro SD (push/push type) Micro SDXC(64GB/256GB), SDHC(32GB)  
Not support UFS
- Security Slot **NOT** support
- Wired Lan is **NOT** support



## Multimedia

- HD camera (1.0M/720p)
- Internal Dual Array Digital Mic
- High Definition Audio
- Stereo Speakers ( Max 1.5 W x 2 )(On Board Type, Upgrade is **NOT** supported)  
Smart AMP Not support



## Communications\*

Intel AX210D2W : Wi-Fi 6E (Gig+), 802.11ax 2x2,  
Bluetooth v5.1



## Graphic Solutions

- Hybrid Graphics:
- Intel UHD(i3)
  - Intel Iris Xe(i5,i7)

## Display (eDP1.4)

- 15.6" FHD AMOLED Display (1920 x 1080)
- Max. 400nit  
\*Outdoor mode support but  
There is no option mode and  
it is automatically changed.
- 4 Display Support (LCD,DP,HDMI)  
(VGA Not Support)



## Storage \*

- M.2 type SSD  
256GB/512GB/1T (NVMe x4 Gen3)  
Support Dual SSD
- 1<sup>st</sup> M.2 support PCIe Gen3 x4 (2230)
- 2<sup>nd</sup> M.2 support PCIe Gen3 x4 and SATA3.0(2280)



## Factory default stuff 1<sup>st</sup> SSD:

- ①MZ9LQ256HBJD-00BKN : Seq. Read up to 1950MB/s,  
Seq. Write up to 1150MB/s
- ②MZ9LQ512HBLU-00BKN : Seq. Read up to 2200MB/s,  
Seq. Write up to 1200MB/s
- ③MZ9LQ1T0HBLB-00BKN : Seq. Read up to 2300MB/s,  
Seq. Write up to 1250MB/s

## Power Management

- 4Cells, Typical 68Wh, Li-Ion, Inner Battery  
L 285.2xW88.65xT4.7(mm)
- 65W Type C Power Adaptor  
L48 xW50 x H28(mm)



\* Factory Option



# 2. SPEC 950XDB

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		Venus-15INT(950XDB) →Modern Standby Apply
Platform	Processor / Chipset	Intel® Tiger Lake U: i7 - 1165G7/ i5 - 1135G7 / i3 - 1115G4
Operation	O/S	Windows 10 Home (20H2)
		Windows 10 Pro (20H2)
Memory	System Memory	LPDDR4x, 8GB/16GB/32GB on Board 4267Mbps (I5/I7); 3733Mbps (I3);
Graphics	Graphics Processor	- Intel UHD(i3 CPU) - Intel Iris Xe(i5,i7 CPU)
Display	LCD	15.6" FHD AMOLED Display (1920 x 1080), Max 400nit Outdoor mode support but There is no option mode and it is automatically changed.
Multimedia	Speaker	Stereo Speakers ( Max 1.5 W x 2 )
	Web-Cam	1.0 megapixel HD Webcam (720p)
	Mic	Internal Dual Digital Array MIC
Storage	SSD	M.2 type 256GB/512GB/1TB Solid-state Drive (NVMe X4 Gen3 with type 2230)
Communication	Wireless LAN	Intel AX210D2W, Wi-Fi 6E (Gig+), 802.11 ax 2x2 , Bluetooth v5.1
Security	TPM	fTPM(US/KR/BR), dTPM-Nationz(CN), dTPM-Infineon(B2B) ready
I/O Ports	Memory Card Slot	MicroSD Multi-media Card Reader
	Others	HP/Mic Combo(4 Pole), HDMI(1.4), 1x USB-C™, 1x Thunderbolt™ 4, 1x USB3.0
Power	Adapter (Type-C)	65W Type C Power Adaptor. Rated voltage 100-240 V
	Battery	Li-Ion 4cells Typical 68Wh
Physical	Dimension	355.4 x 225.8 x 11.63mm
	Weight	1.045 kg

# 3. Compare

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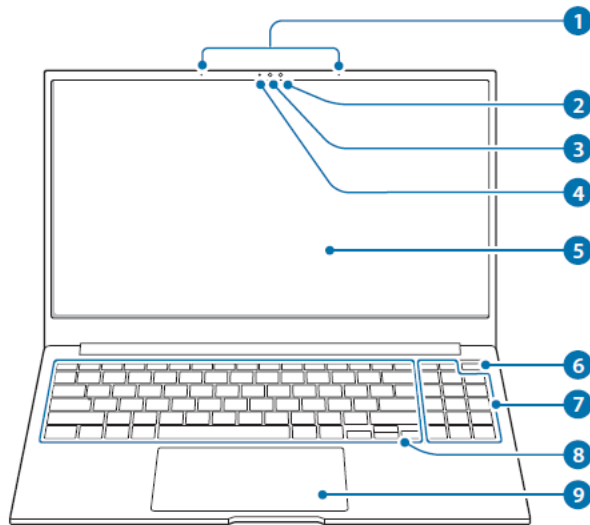
		Venus-15INT		Odin-15R INT
<b>Image</b>				
<b>Mobility</b>	<b>X-Y-Z</b>	355.4 x 225.8 x 11.63mm	>	356.10 x 228.0 x 14.9mm
	<b>Weight</b>	1.045 kg	>	1.19Kg(INT)
<b>Performance</b>	<b>Battery</b>	68Wh	=	66.9Wh (21.7hrs)
	<b>LCD</b>	15.6" FHD / FHD, AMOLED, 400nits	>	15.6 " FHD , QLED (Module)
	<b>CAM, SPK</b>	720p HD, 2 Speakers x 1.5 Watt with enclosure each	=	720p HD2, Speakers x 5 Watt Peak Power with enclosure each
	<b>CPU</b>	Intel 11 <sup>th</sup> TGL	=	Intel 11 <sup>th</sup> TGL
	<b>Gfx</b>	Intel UHD Graphics Intel Iris Xe Graphics	=	Intel UHD Graphics Intel Iris Xe Graphics
	<b>Mem</b>	LPDDR4x	>	DDR4
	<b>Storage</b>	NVMe SSD (PCIe4.0 support)	=	NVMe SSD (PCIe4.0 support)
	<b>KBD</b>	1.0TL, Backlit	=	1.0TL, Backlit (LGP)
	<b>WLAN</b>	802.11ax 2x2, Wi-Fi 6E (Gig+) , BT5.1	=	802.11 ax 2x2 (Wi-Fi 6)
<b>Ports</b>		TBT4, USB3.0(1), Type-C(1), HDMI, Micro SD, HP/Mic Combo	>	DC In , TBT4, USB3.1(2), HDMI, UFS & uSD, HP
<b>CMF</b>		A /B: AL, C/ D: Mg	=	A / C/ D : Mg , B : AL (Anodizing)

**※Caution※**

- If the customer turn on the power first, set the system time and date that is initialized  
(Reason : The laptop does not have RTC Battery)
- Also, in case that the user attach battery(not RTC battery) again after detaching it, should set the time and date

## Front view

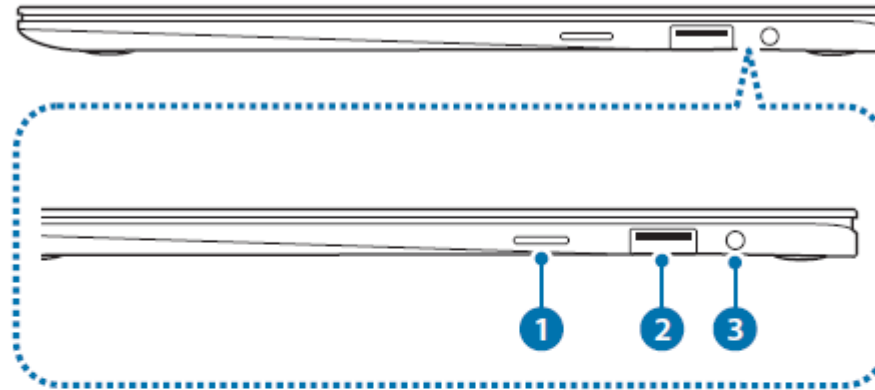
► For 15.6 inch models



Number/Name	Description
1 Microphone	<ul style="list-style-type: none"><li>You can use the built-in microphone.</li></ul>
2 Illumination sensor	<ul style="list-style-type: none"><li>The sensor detects the ambient light.</li></ul>
3 Camera	<ul style="list-style-type: none"><li>Using this camera, you can take still pictures and record video.</li></ul>
4 Camera indicator light	<ul style="list-style-type: none"><li>This indicates the camera operating status.</li></ul>
5 Display	<ul style="list-style-type: none"><li>The screen's images are displayed here.</li></ul>
6 Power button/ Fingerprint recognition sensor	<ul style="list-style-type: none"><li>Turns the computer on and off.</li><li>The fingerprint recognition sensor recognizes fingerprints. Scans a fingerprint to sign in to Windows, apps, and services.</li></ul>
7 Numeric keypad (optional)	<ul style="list-style-type: none"><li>Enter numbers.</li></ul>
8 Keyboard	<ul style="list-style-type: none"><li>Enter text or control computer functions.</li></ul>
9 Touchpad	<ul style="list-style-type: none"><li>Moves the cursor and selects options.</li><li>Functions as a mouse.</li></ul>

## Right view

► For 15.6 inch models

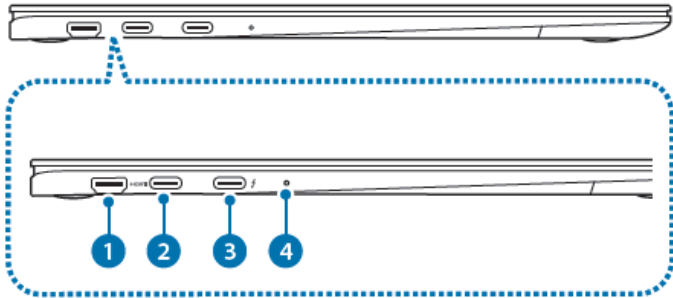



Number/Name	Description
1 Memory card slot	<ul style="list-style-type: none"><li>• Insert a memory card into the slot.</li></ul>
2 USB 3.0 port	<ul style="list-style-type: none"><li>• Connect various peripheral devices, such as a mouse, camera, or keyboard.</li></ul>
3 Earpiece/ Headset jack	<ul style="list-style-type: none"><li>• Connect an earpiece or a headset to the computer to listen to audio.</li></ul>

# 4. System view and Function (3)

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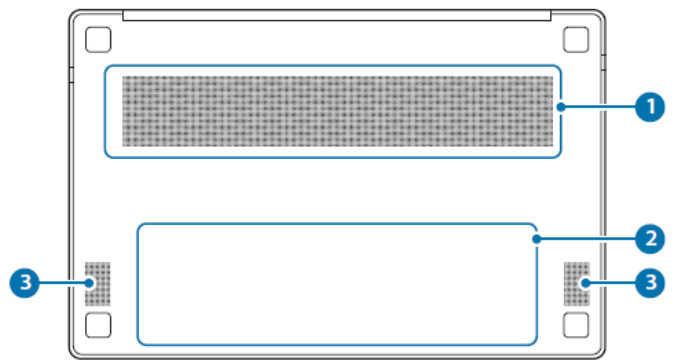
## Left view



Number/Name	Description
1 HDMI port	<ul style="list-style-type: none"><li>Used to connect an HDMI cable to an external device.</li></ul>
2 USB Type-C port	<ul style="list-style-type: none"><li>This port allows the USB PD AC adapter to be used to supply power to the computer. It can also be used to charge USB Type-C devices or to connect external display devices.</li></ul>
3 Thunderbolt™ 4 port	<ul style="list-style-type: none"><li>Connect and charge a USB Type-C device and Thunderbolt™ device, or connect to an external display device.</li></ul> <p> Some features may not be supported depending on your device's specifications.</p>
4 Operating status LED	<ul style="list-style-type: none"><li>Shows the operating status of the computer.</li></ul>

## Bottom view

► For 15.6 inch models



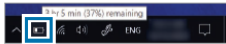
Number/Name	Description
1 Fan vents	<ul style="list-style-type: none"><li>• Sucks in outside air and discharges heat generated inside the computer through these holes.</li><li>• If the vents are blocked the computer may overheat. Avoid blocking the vents as this may be dangerous.</li></ul>
2 Internal battery	<ul style="list-style-type: none"><li>• Provides power to the computer when not connected to an AC adapter.</li><li>• To remove or replace the internal battery, take it to a Samsung Service Center. You will be charged for this service.</li></ul>
3 Speaker	<ul style="list-style-type: none"><li>• Sound is emitted from the speakers.</li></ul>



If the case on the bottom of the device is replaced, the laser-carved model name, serial number, and various logos will not be displayed anymore.  
For more information, contact a Samsung Service Center.

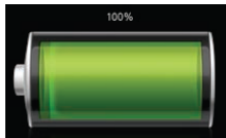
## Battery status

When the AC adapter is removed, move the cursor over the battery icon on the taskbar to view the current battery charge.



## Viewing the current battery charge when the computer is turned off

Connect or disconnect the AC adapter from the computer to view the current battery charge when the computer is turned off.



## Saving battery power

On the taskbar, select  → **Battery saver**.

**Battery saver** mode is activated.



**Battery saver** mode is disabled when the AC adapter is connected.

## Battery usage time

Batteries are replaceable items and over time the battery's capacity to hold a charge and its power level is reduced. If a battery can only hold its charge for half of the time that it could when new, it is recommended to purchase a new, replacement battery.

## Checking battery life instruction messages

When the battery has expired, an instruction message may appear on the screen. To prevent the computer from losing data and to use the computer safely, follow the on-screen instructions.

## When battery expiration is imminent

Batteries are consumable parts and the remaining battery life is currently low. Continued use may result in charge or discharge failures. Whether or not batteries can be used is determined based on safety evaluations. Please replace it with a new battery (genuine) to prevent data loss and ensure safe usage.

## When the battery has expired

Batteries are consumable parts and the current battery cannot be used as the battery life has expired. Please replace it with a new battery (genuine) to prevent data loss and ensure safe usage. Whether or not batteries can be used is determined based on safety evaluations. To prevent data loss while replacing batteries, please be sure to save your work first.



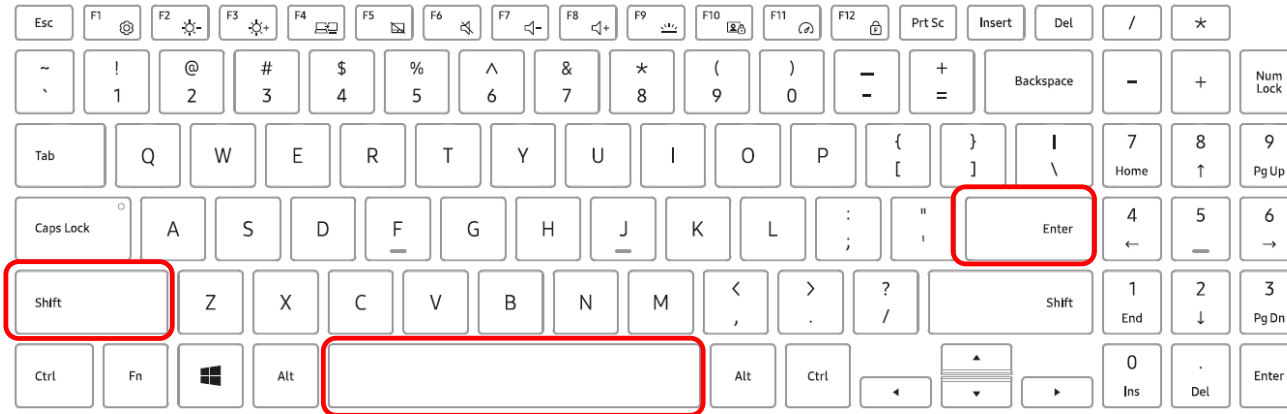
Instruction messages related to battery life are displayed properly when the **Samsung Settings** application is installed on your computer. The messages may vary depending on the model and software version.

# 4. System view and Function (KBD)

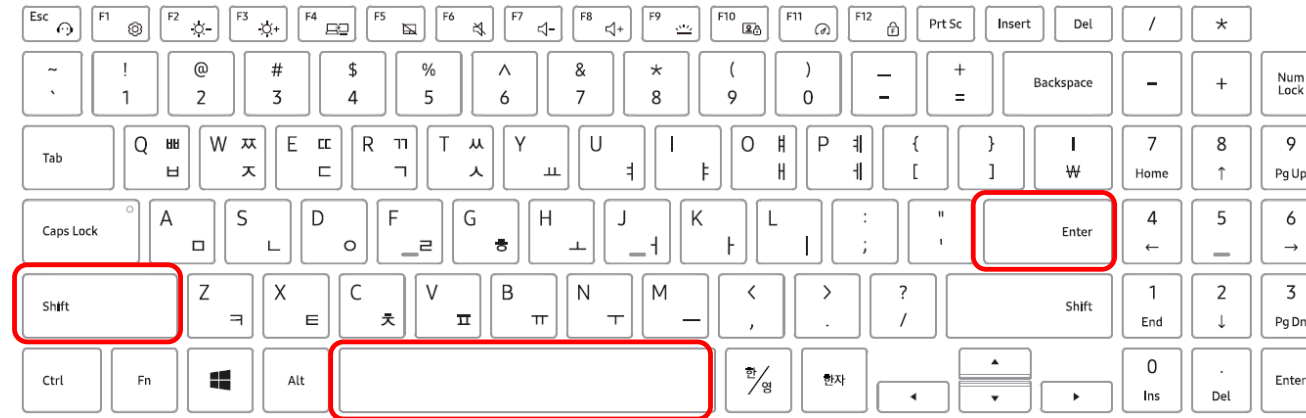
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[15.6"]

Keyboard layout and dimension may be different



**US: 3 Keys**  
1.Shift (left)  
2.Space  
3.Shift (right) or Enter



**KR: 3 Keys**  
1.Shift (left)  
2.Space  
3.Shift (right) or Enter

**Red Square : Keyboard water sensing paper location**  
The sensing paper meet water will change to red color

## Keyboard

Enter text or access computer functions with the keyboard.

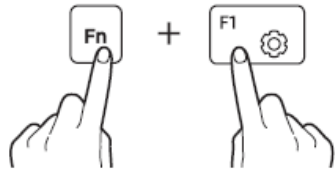


- Images and available features may differ depending on the model and operating system.
- The keyboard layout may differ depending on the country. The hot keys will be mainly explained in this manual.

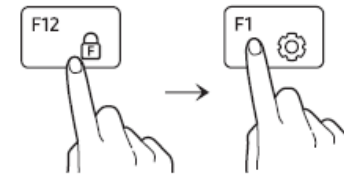
## Using hot keys

To use keyboard hot keys, do one of the following:

- Press and hold the **Fn** key and press a hot key.















- Press the **F12** key. When the Fn Lock feature turns on, press a hot key.



When the Fn Lock feature is on, hot keys are activated without pressing the **Fn** key.

## Hot key functions

Key/Icon	Description
F1 	<ul style="list-style-type: none"><li>• <b>Samsung Settings:</b> Launch the <b>Samsung Settings</b> application.</li></ul>
F2 	<ul style="list-style-type: none"><li>• <b>Screen brightness control:</b> Adjust the brightness of the display.</li></ul>
F3 	
F4 	<ul style="list-style-type: none"><li>• <b>Display/External monitor:</b> Switch between the display and an external display device when an external display device is connected to the computer.</li></ul>
F5 	<ul style="list-style-type: none"><li>• <b>Touchpad:</b> Turn the touchpad function on or off.</li></ul>
F6 	<ul style="list-style-type: none"><li>• <b>Mute:</b> Mute or unmute the audio.</li></ul>
F7 	
F8 	<ul style="list-style-type: none"><li>• <b>Volume control:</b> Adjust the volume level.</li></ul>

Key/Icon	Description
F9 	<ul style="list-style-type: none"><li>• <b>Keyboard backlight brightness:</b> Turn the keyboard backlight on or off and adjust its brightness.</li></ul>
F10 	<ul style="list-style-type: none"><li>• <b>Blocking Recording mode:</b> Limit the use of the camera and the microphone to prevent recording.</li></ul>
F11 	<ul style="list-style-type: none"><li>• <b>Performance mode:</b> Change the system's performance mode.</li></ul>
F12 	<ul style="list-style-type: none"><li>• <b>Fn Lock:</b> Lock the Fn key so that hot keys can be used without pressing the Fn key.</li></ul>



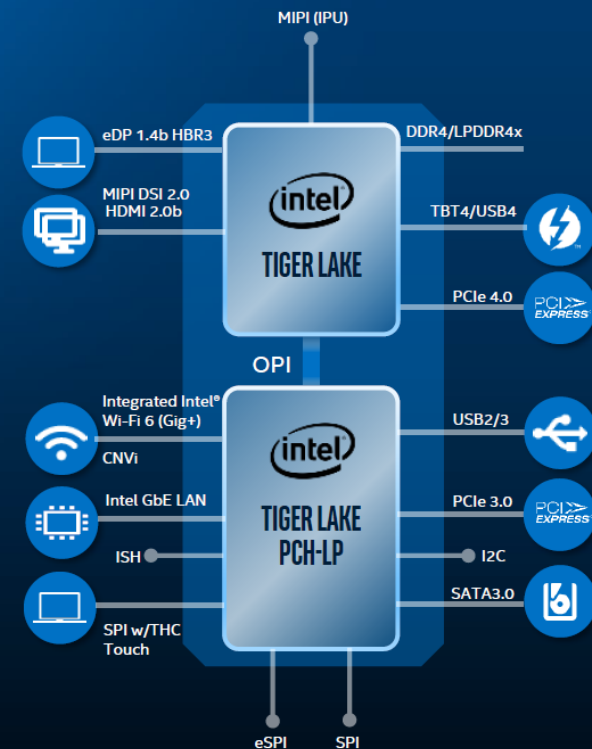
If the hot keys do not work properly, install the **Samsung Settings** application.

# 5. Hardware – New H/W (Processor)

Confidential

## PLATFORM OVERVIEW – U SERIES

<b>Product</b>	Tiger Lake SoC: 10nm WLC CPU / X <sup>e</sup> Graphics Architecture + 14nm PCH	
<b>Platforms</b>	Corporate and Consumer Notebooks	
<b>Schedule</b>	Consumer: Q3'20 Corporate: Q4'20	
<b>OS</b>	Windows, Chrome, Linux	
<b>Key Additions vs. ICL</b>	CPU	WLC arch: up to 4 cores with up to 3 MB LLC/Core
	Graphics	X <sup>e</sup> Graphics Architecture (ie. Gen12) up to 96EU with native INT8
	Media & Display	AV1 decode, up to 8K HDR, 4 Display Ports, MIPI-DSI and 2 <sup>nd</sup> eDP
	Imaging	Advanced image noise reduction on IPU6 to enable thinner bezels
	Memory	DDR4 3200, LPDDR4x 4267
	GNA	GNA 2.0 for emerging audio/voice AI usages
	Storage	Intel <sup>®</sup> Optane™ memory H10/H20, 660P SSD
	Comms	Intel <sup>®</sup> Wi-Fi 6 AX201 (Harrison Peak2) (2x2 Wi-Fi 6, BT 5.1); Intel <sup>®</sup> Wi-Fi 6E AX210 (Typhoon Peak2) (2x2 Wi-Fi 6E (6GHz) & R2, BT 5.2, Q4'20); 7560 4G LTE; 5G WWAN M.2 'Maple Spring' (Q1'21)
	I/O	PCIe Gen 4, THC, GbE (1.0/2.5 Foxville), Integrated TBT4 (USB4/ TYPE C)
	Audio	USB audio offload; Bluetooth Audio Offload; MVA (Multiple Voice Assistant)
	Security	CET Malware protection, Total Memory Encryption (Corp)
	Power	100% modern standby; CPU FIVR/PCH FIVR



## TIGER LAKE U PROCESSOR FEATURE ADVANCEMENTS

	Ice Lake U	Tiger Lake U
<b>CPU</b>	<ul style="list-style-type: none"> <li>• 10nm CPU / 14nm PCH</li> </ul>	<ul style="list-style-type: none"> <li>• 10nm CPU new microarchitecture / 14nm PCH</li> </ul>
<b>GFX</b>	<ul style="list-style-type: none"> <li>• Gen 11 Intel Graphics Engine, up to 64EU</li> </ul>	<ul style="list-style-type: none"> <li>• X<sup>e</sup> graphics arch Gen 12 Intel Graphics Engine, up to 96EU with INT8</li> </ul>
<b>Memory</b>	<ul style="list-style-type: none"> <li>• DDR4 3200, LPDDR4/x 3733</li> </ul>	<ul style="list-style-type: none"> <li>• DDR4 3200, LPDDR4x 4267</li> </ul>
<b>Imaging</b>	<ul style="list-style-type: none"> <li>• Enhanced IPU4p: Integrated ISP with 21MP still,</li> <li>• 4K@30fps video, 1080p Video HDR</li> <li>• 1080P120 slow motion</li> </ul>	<ul style="list-style-type: none"> <li>• Enhanced IPU6: Integrated ISP: 27MP WF/13MP UF</li> <li>• 4K@60fps HDR video TNR and HDR (SVE only).</li> <li>• 6/4 concurrent cameras (UP4/UP3)</li> </ul>
<b>Media, Display, Audio</b>	<ul style="list-style-type: none"> <li>• HWA HEVC &amp; VP1010b 4K, 10b 5K/8K Encode/Decode with HDCP 2.2, Native HDR</li> <li>• 4 independent displays</li> <li>• HW based Acoustic Context Awareness</li> <li>• Hybrid aDSP</li> </ul>	<ul style="list-style-type: none"> <li>• 2 VD Boxes: Up to 8K60 decode &amp; 8K30 encode, AV1 decode &amp; SCC</li> <li>• 4 Simultaneous displays (adding 2nd eDP support and MIPI DSI 2.0)</li> <li>• 2-mic Far Field audio pre-processing</li> <li>• USB audio offload</li> <li>• Bluetooth Audio Offload</li> <li>• MVA (Multiple Voice Assistant)</li> </ul>
<b>Storage &amp; I/O</b>	<ul style="list-style-type: none"> <li>• Thunderbolt™ 3, PCIe Gen4, USB3 10G, eMMC5.1, SDXC 3.0</li> </ul>	<ul style="list-style-type: none"> <li>• Thunderbolt™ 4 / USB 4</li> <li>• PCIe Gen4, USB3 10G; Removed: eMMC, SD3.0</li> </ul>
<b>Connectivity</b>	<ul style="list-style-type: none"> <li>• Integ. 2x2 Wi-Fi 6, Bluetooth 5.1, Bluetooth Audio Offload (HrP2)</li> </ul>	<ul style="list-style-type: none"> <li>• Integ: Intel® Wi-Fi 6 AX201 (Harrison Peak2) 2x2 Wi-Fi 6, Bluetooth 5.1, Bluetooth Audio Offload (HrP2)</li> <li>• Discrete: Intel® Wi-Fi 6E AX210 (Typhoon Peak2) 2x2 Wi-Fi 6E (6GHz) &amp; R2, Bluetooth 5.2 (TyP2, Q4'20)</li> </ul>
<b>Security</b>	<ul style="list-style-type: none"> <li>• TME (S/H)</li> <li>• HW ECC for integrated TPM</li> </ul>	<ul style="list-style-type: none"> <li>• CET malware protection</li> <li>• Total Memory Encryption</li> </ul>

# 5. New function– TBT4

## How Thunderbolt 4 is different than other solutions

Based on minimum solution requirements so people know what they are getting

		Thunderbolt™ 4	Thunderbolt™ 3
<b>Unrivaled Simplicity</b>	One universal computer port	•	•
	Universal 40Gb/s cables up to 2 meters in length	•	
	Accessories with four Thunderbolt ports	•	
<b>Maximum Performance</b>	Minimum PC speed requirements	40Gb/s	40Gb/s
	Minimum PC video requirements	Two 4K displays	One 4K display
	Minimum PC data requirements	PCIe 32 Gb/s USB 3.2 - 10Gb/s	PCIe 16 Gb/s USB 3.2 - 10Gb/s
	Required PC charging on at least one computer port <sup>1</sup>	•	
	Required PC wake from sleep when computer is connected to a Thunderbolt dock	•	
	Minimum PC port power for accessories	15W	15W
	Thunderbolt Networking	•	•
<b>Reliable Connectivity</b>	Mandatory certification for all shipping computers, accessories and cables	•	•
	Cable testing and cable quality audits for Thunderbolt cable manufacturers	•	•
	Required Intel VT-d based DMA protection	•	
	USB4 Specification	Compliant	



# 6. Software – S/W & Driver LIST (1/4)

**Confidential**

	Item Name	PV 3rd test & PR build Venus13I SGLA875A0I-C01-G001-S0001 Venus15I SGLA908A05-C01-G001-S0001
Drivers	Intel WLAN Driver (t64)	22.10.0.7
	Intel TGL Graphics Driver 27.20.100.8783_PR4Driver_Add_Venus_Ext	<b>27.20.100.9268</b>
	Thunderbolt UWD rev76	drv1,41,1030.0/app1,0,29,0
	Realtek Sound Drv + SKU:TGL	<b>6.0.9119.1</b>
	Egistec Fingerprint Driver	3,12,0,7
	MCR(RTS5179) Win_10 Driver	10,0,19042,31266
	Intel CSME Software (TigerLake)	2103,15,0,2125
	Intel Chipset Driver (TGL)	10,1,18460,8229
	Intel SIO Driver (Tiger Lake)	30,100,2051,37
	Intel DTT Driver (TGL)	8,7,10401,16510
	Intel Sensor Hub Driver(TGL)	3,1,0,4446
	Win10-Realtek USB LAN Driver	10,43,1029,2020
	Samsung system event controller x64	<b>1,0,0,6</b>

# 6. Software – S/W & Driver LIST (2/4)

**Confidential**

APP	Samsung Flow	4.7.3.0
	Samsung System Platform Engine	1.0.4.6
	Samsung Edu (IE_Favorite_64bit)	1.0.0.4
	SurveyIcon (IE_Favorite_64bit, Win10)	RS4
	MDAVT [2020.09.01.0_RTM]	-
	Samsung Gallery	4.5.17
	Samsung Notes	<b>4.1.64.0</b>
	Amazon	2018,519,2811.0
	Samsung Recovery 8 Client	8.1.31.0
	Samsung Recovery 8 Settings	8.1.19.2_wim_DNC
	S Service UWA Client (Update region)	2.4.32.0
	S Service UWA Platform Engine - New package	2.2.6.0
	Galaxy Book Members	1.1.53.0
	Live Message	1.1.25.0
	Booking.com	1.0.0.0 (Region-Dism변경)
	Samsung DeX for PC	<b>2.0.0.20</b>
	Live Wallpaper	2.0.49.0
	Live Wallpaper Service	2.0.49.0
	McAfee LiveSafe (IE_Favorite_64bit)	1.0.0.0
	McAfee LiveSafe (Edge_Favorite_64bit)	1.0.0.0
	Display Profile TGL	<b>BASW-A2579A1B</b>
	SamsungTheme_2021_Premium	BASW-A2981A02

# 6. Software – S/W & Driver LIST (3/4)

**Confidential**

APP	Samsung Settings 1,2 OOBE	<b>1.5.4.2</b>
	McAfee LiveSafe for Win10 20H2	16.0 R27
	Jumpstart Tool(DCVT)For 20H1(Jumpstart '20)	<b>DCVT [2021.01.02.0-RTM]</b>
	SamsungUpdate UWA	3.0.63.0
	Samsung Recovery 8 PE	20H1_i2c_2020_12_04
	SamsungUpdate Service	3.0.63.0
	SamsungUpdate MediaInstaller	3.0.63.0
	Studio Plus	3.4.4.0
	Samsung PC Cleaner 2	2.0.22
	Samsung PC Cleaner 2 Service	2.0.22
	Quick Search	<b>1.0.36.0</b>
	Quick Search Service	<b>1.0.36.0</b>
	Samsung DPI Configuration	<b>1.0.0.19 (BASW-A1163A1G)</b>
	ColorEngine 5.0	<b>5.4.3.3</b>
	Samsung Settings 1,5 UWA	<b>1.5.7.0</b>
	Samsung Settings 1,2 Samsung System Support Service	<b>1.5.7.0</b>
	Samsung Security 1,2 UWA	<b>1.2.23.0</b>
	Samsung Security Support Service 1,2	<b>1.2.23.0</b>
	Voice Note 3.0	3.0.22.0
	Screen Recorder	1.0.15
PC EULA 2020 (Samsung + McAfee)	2.0.3.4	
SecTimeSync	1.0.2.0(NewSign)	

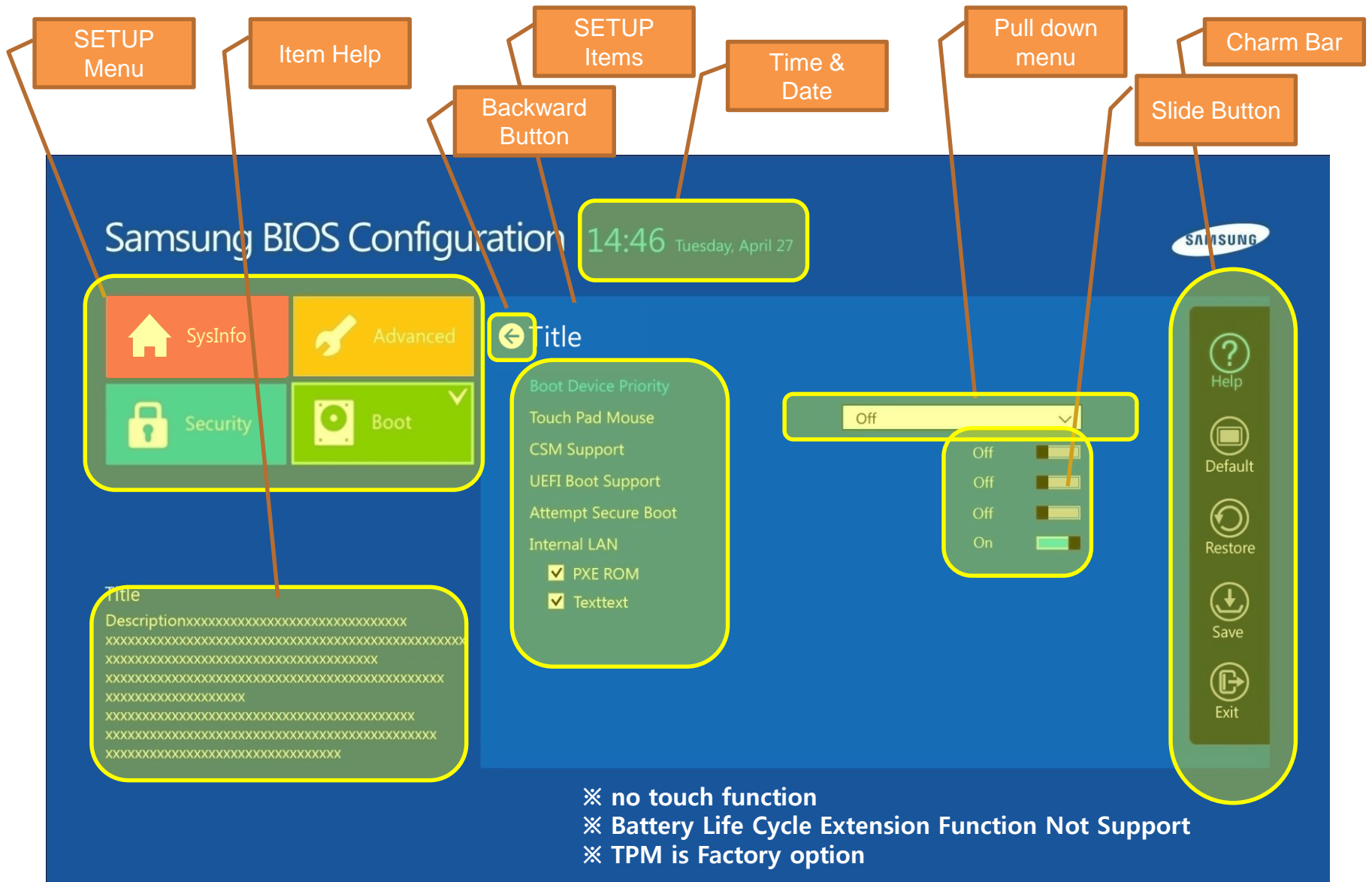
# 6. Software – S/W & Driver LIST (4/4)

**Confidential**

APP	MfgDiag	<b>2.1.6.0 BASW-84345A33</b>
	Peak Time Power Manager	1,0,0,25
	[B2C] Start Tile for 20H2_2_BOOK_Venus	<b>A0D</b>
	Beauty Filter	<b>1.0.2.3</b>
	Millie's Library	1,1,0,0
	BT mouse pairing on OOBE (New Design)	BASW-A2237A0C
	Set Dark mode	<b>BASW-A2886A06</b>
	ZDP	2101B
	Samsung Care Plus Launcher	1,0,2
	Manual	<b>BASW-A3006A01</b>
	RDX	Not ready (about2/22)
	Samsung Bluetooth Sync	<b>1.0.6.0</b>
	Smart Switch for Galaxy Book	<b>1.0.15.0</b>
	Facebook Messenger	730,2,121,0
	SmartThings	<b>1.0.0.0</b>
	Microsoft Teams	1,0,0,0
	Google Duo	1,0,0,0
	Link Sharing	1,1,43
	Quick share	<b>1.0.4.0</b>
	Quick Share Pinning	<b>BASW-A3024A01</b>
Adaptive Color Registry	<b>BASW-A3010A01</b>	
samsung free	<b>1.3.4.0</b>	

# BIOS Setup – structure

Confidential



- ※ no touch function
- ※ Battery Life Cycle Extension Function Not Support
- ※ TPM is Factory option

## Samsung BIOS Configuration 11:29 Wednesday, February 17

**SysInfo** **Advanced**  
**Security** **Boot**

**NVMe x4 SSD**

System Time	11:29 AM
System Date	Wednesday, 02/17/2021
NVMe Port 1	SAMSUNG MZ9LQ256HAJD-000
NVMe Port 2	Not install
CPU Vendor	Intel(R)
CPU Type	Core(TM) i7-1165G7
CPU Speed	2.80GHz
CPU VT(VT-x)	Supported
Total Memory	16384 MB(LPDDR4x)
BIOS Version	P00RFW
MICOM Version	P00RFW

?  
Default  
↺  
↓  
↻  
Exit


Set the Time.


To modify the time, press 'Enter' key to go into the edit mode. 'UP', 'Down', 'Left' and 'Right' keys are used to switch between time elements. And 'Space' key is used to change the value.

- ❑ NVMe Port 1  
=> SSD model name is displayed in this item for NVMe Port 1.
- ❑ Total Memory  
=> Total Memory size of the system.

## Samsung BIOS Configuration 11:38 Wednesday, February 17

 SysInfo

 Advanced <sup>V</sup>






 Security

 Boot

Touch Pad Mouse On

USB Charging Off

[Smart Battery Calibration >](#)

-  Help
-  Default
-  Restore
-  Save
-  Exit

'On' forces the Touch Pad mouse to be enabled.

'Off' forces the Touch Pad mouse to be disabled.

- ❑ Touch Pad Mouse

  - => 'On' forces the Touch Pad mouse to be enabled.

  - => 'Off' forces the Touch Pad mouse to be disabled.

- ❑ USB Charging

  - => 'On' means that the only USB Type-C port supports the USB charging in off state.


  - => 'Off' means that the system doesn't support the USB charging in off state.

- ❑ Smart Battery Calibration


  - =>If you select this option, the system battery will be discharged completely for more accurate battery level detection.

  - This option only works with SMART battery.

## Samsung BIOS Configuration 11:45 Wednesday, February 17

 **SysInfo**

 **Advanced**

 **Security** <sup>V</sup>

 **Boot**

Supervisor Password controls access to the setup utility


Supervisor Password Clear  
User Password Clear  
HDD Password Clear


[Set Supervisor Password >](#)  
[Set User Password >](#)  
[Set HDD Password >](#)


Password On Boot On


[Secure Boot Configuration >](#)


[TPM Configuration >](#)

 **Help**

 **Default**

 **Restore**

 **Save**

 **Exit**

- ❑ Set Supervisor Password  
=>Supervisor Password controls access to the setup utility.
- ❑ Set User Password  
=> User Password controls access to the system at boot
- ❑ Set HDD Password  
=> After saving the setting, the system must be powered OFF and ON for the password to be set as Enabled or Disabled
- ❑ Set 2ndHDD Password  
=> After saving the setting, the system must be powered OFF and ON for the password to be set as Enabled or Disabled
- ❑ Password on Boot  
=> Password On Boot
- ❑ Secure Boot Configuration  
=> This item is the configuration to set secure boot variable.  
Reset to Manufacturing Default  
=>Press [Enter] and select Yes to reset secure boot variables to default .  
Warning! The current boot secure boot variables will be cleared.  
Change to Customized Signatures  
=>Press [Enter] and select Yes to change to customized signatures.  
Warning! PK will be deleted and the platform will be changed to setup mode.  
Secure boot will also be disabled automatically.
- ❑ TPM Configuration(Optional)  
=> Pending operation (None , TPM Clear) \* Factory Option  
TPM 2.0 UEFI Spec Version (TCG 1.2 , TCG 2.0)

## Samsung BIOS Configuration 11:56 Wednesday, February 17

 SysInfo

 Advanced

 Security

 Boot V

Boot Device Priority >

Secure Boot Control On

Fast BIOS Mode Off

USB LAN PXE OPROM Off

**WARNING!!!**

If you select incorrect option,  
system may not boot to OS correctly.



Help



Default



Restore



Save



Exit

Select system boot options.

Aptio Setup Utility – Copyright © 2021 American Megatrends, Inc.

## Samsung BIOS Configuration

12:06 Wednesday, February 17

- SysInfo
- Advanced
- Security
- Boot

Sets the system boot order

### ← Boot Option Priorities

Boot Option #1 Windows Boot Manager V

- Help
- Default
- Restore
- Save
- Exit

- ❑ Boot Device Priority  
=> Select system boot options.
- ❑ Secure Boot Control  
=> If OS supports Secure boot, please enable Secure Boot for Safe boot. Warning!!!  
If you select incorrect option, system may not boot to OS correctly.

## ❑ Fast BIOS Mode

=> Fast Bios Mode is technology to reduce the boot up time by skipping the USB check in the POST stage.

- DOS mode booting is not supported. (Basic ODD, USB memory devices, etc.)
- The factory default setting is [Disable]. When the purchase date is registered, the setting is automatically changed to [Enable]. Once the setting is changed to [Enable], the default setting in the CMOS is changed to [Enable].

◆ Problem: The system does not boot from a standard ODD or USB device (e.g. CD-ROM drive, memory device, etc.)(All models with the Fast BIOS Mode feature have this problem.)

### ◆ Symptom

- The system cannot boot from a standard ODD or USB device (e.g. CD-ROM drive, memory device, etc).
- When the system boots from a brand new HDD (with a clean MBR), the system reboots indefinitely in the POST stage.

### ◆ Cause

- The system boots up faster by skipping the USB check operation.

### ◆ Solution

- The problem is resolved if [Fast BIOS Mode] is set to disabled in the CMOS Setup menu.
- ✘ The factory default setting is [Disable]. When the purchase date is registered, the setting is changed to [Enable] automatically.



- ❑ Help  
=> It is showing manual.
- ❑ Default  
=> Load Default setting.
- ❑ Restore  
=> Load saving setting in CMOS.
- ❑ Save  
=> Save setting in CMOS.
- ❑ Exit  
=> Reset the system after saving the changes

# 11. System Description 1

Confidential

## (1) CPU

<b>Process</b>	Intel TGL Core i7/i5/i3
<b>Package</b>	45.5x25mm,BGA package(BGA1449) -- NO upgrade available
<b>Preliminary TDP</b>	28W
<b>Cache</b>	i7:12MB i5 :8MB i3: 6MB
<b>Address Pins</b>	64 physical address pins
<b>LPDDR4X memory</b>	4267Mbps (I5/I7); 3733Mbps (I3);
<b>Graphics Controller</b>	-Intel UHD Graphics(i3 CPU) / Intel Iris Xe Graphics (i5/i7 CPU)
<b>Type</b>	Tiger Lake-UP3-Intel® Core™ I3-1115G4 (3.00GHz up to 4.1GHz 6MB Smart Cache) Tiger Lake-UP3-Intel® Core™ I5-1135G7 (2.40GHz up to 4.2GHz 8MB Smart Cache) Tiger Lake-UP3-Intel® Core™ I7-1165G7 (2.80GHz up to 4.7GHz 12MB Smart Cache)

## (2) Memory

<b>Memory capacity</b>	Max.32GB(On BD only)
<b>Memory type</b>	LPDDR4X 4267Mbps(I5/I7); 3733Mbps (I3);
<b>Memory modules</b>	2GB * 4 LPDDR4X System Memory at 4267Mbps (on BD 8GB) 4GB * 4 LPDDR4X System Memory at 4267Mbps (on BD 16GB) 8GB * 4 LPDDR4X System Memory at 4267Mbps (on BD 32GB)
<b>Sockets</b>	None

# 11. System Description 3

Confidential

## (3) Graphics

Graphics	<ul style="list-style-type: none"> <li>① Intel UHD Graphics (i3 CPU)</li> <li>② Intel® Iris® Xe Graphics (i5,i7 CPU)</li> </ul>
Video memory	Shared with system memory (Internal Graphics)
Max. resolution for VGA	No Support
Max. resolution for HDMI	<p>Support v1.4 compliant / a resolution of 4096 x 2160 pixels with 32-bit color at 30 Hz (640x480 @ 60Hz, 720x480@ 60Hz, 720x576@ 60Hz, 800x600@ 60Hz, 1024x768@ 60Hz, 1152x864@ 60Hz, 1280x600@ 60Hz, 1280x720@ 60Hz, 1280x768@ 60Hz, 1280x800@ 60Hz, 1280x960@ 60Hz, 1280x1024@ 60Hz, 1360x768@ 60Hz, 1366x768@ 60Hz, 1400x1050@ 60Hz, 1440x900 @ 60Hz, 1600x900@ 60Hz, 1680x1050@ 60Hz, 1600x1200@ 60Hz, 1920x1080@ 60Hz , 2560 x1080@ 60Hz, 2560x1440@ 60Hz, 3840x1080@ 60Hz, 3840 x 2160@ 30Hz , 4096x2160@ 30 Hz)</p> <p>[Ext. monitor resolutions supported by EDID information] *Support 4K resolution</p>
Max. Resolution for eDP	<p>Supports Embedded Display Port (eDP) for direct connection to internal notebook panels with maximum resolution of (1920x1080@60Hz, 1680x1050@60Hz, 1600x900@60Hz, 1440x900@60Hz, 1400x1050@60Hz, 1366x768@60Hz, 1360x768@60Hz, 1280x768@60Hz, 1280x720@60Hz, 1280x600@60Hz, 1024x768@60Hz, 800x600@60Hz, 640x480@60Hz)</p> <p>[Ext. monitor resolutions supported by EDID information]</p>
Max.Resolution for Type-C to DP	<p>MAX 5120x2160 @ 60Hz (640x480@60Hz, 800x600@60Hz, 1024x768@60Hz, 1280x768@60Hz, 1280x800@60Hz, 1280x960@60Hz, 1280x1024@60Hz, 1360x768@60Hz, 1400x1050@60Hz, 1440x900@60Hz, 1600x1200@60Hz, 1680x1050@60Hz, 1792x1344@60Hz, 1920x1080@144Hz, 1920x1200@144Hz, 2560x1080@144Hz, 2560x1440@144Hz, 2560x1600@120Hz, 3840x1080 @120Hz, 3840x2160@60Hz, 4096x2160@60Hz, 5120x2160@60Hz)</p>
Max. Resolution for TBT	<p>MAX 5120x2160 @ 60Hz (640x480@60Hz, 800x600@60Hz, 1024x768@60Hz, 1280x768@60Hz, 1280x800@60Hz, 1280x960@60Hz, 1280x1024@60Hz, 1360x768@60Hz, 1400x1050@60Hz, 1440x900@60Hz, 1600x1200@60Hz, 1680x1050@60Hz, 1792x1344@60Hz, 1920x1080@144Hz, 1920x1200@144Hz, 2560x1080@144Hz, 2560x1440@144Hz, 2560x1600@120Hz, 3840x1080 @120Hz, 3840x2160@60Hz, 4096x2160@60Hz, 5120x2160@60Hz)</p>

## (4) Display

LCD	15.6" AMOLED (16:9) (39.6cm)(1920x1080)
Vendor / Series	SDC
Color Gamut	100% DCI-P3(Typ.) ;
Viewing angle	Horizontal 85°/85° ,Vertical 85°/85° (Min.)
Open Range	132°±3°
Pixel Pitch	179.28 x 179.28, Sub Pixel : 59.76 x 179.28 um
LCD Viewable Area	344.21(H) x 193.62(V) (15.6" diagonal)
LCD Resolution	FHD(1920*1080) 1920*1080 1360*768 1280*768 1280*720 1280*600 1024*768 800*600
Brightness	typ. 300 (cd/m2)
Response time	1ms (Typ.)

## (5) Audio - Sound

Codec	HD Audio Codec
Chipset	ALC256N
Conversion	Built-in high performance 16/20/24-bit ADC & 16/20/24-bit DAC
Sound effect	AKG
Internal interfaces	Discrete stereo speakers, Internal Digital MIC
Speaker power rating	2 Speakers x 1.5Watt with enclosure each
External interfaces	Headphone/Mic Combo(4pole Combo : L/R/G/M), Not Support S/PDIF
Controls	Keyboard volume control

## (6) Audio - Microphone

Type	2 Integrated Digital microphones
Sensitivity	-26dBFS
SNR	64dB(A)
Noise suppression	Supported

## (7) SSD

Vendor	SAMSUNG
Type	M.2 2230 & M.2 2280,PCIe(NVMe) I/F
Speed	Slot①(M.2 2230):PCIe Gen3 x4; Slot②(M.2 2280): PCIe Gen3x4 or SATAⅢ
Average Access time	0m sec
Write/read time	①MZ9LQ256HBJD-00BKN : Seq. Read up to 1950MB/s, Seq. Write up to 1150MB/s ②MZ9LQ512HBLU-00BKN : Seq. Read up to 2200MB/s, Seq. Write up to 1200MB/s ③MZ9LQ1T0HBLB-00BKN : Seq. Read up to 2300MB/s, Seq. Write up to 1250MB/s
Supports	Compatible with NVM Express 1.3
Capacity	256GB /512GB /1024GB (* Compatibility Test : Max 1024GB)
2nd Storage	Support Dual SSD(2nd socket support PCIe Gen3x2 or SATAⅢ)

## (8) Network communication

Module	802.11abgn+ac+ax+BT5.1 (MOB Type)+2 Antenna,2x2
Type	WLAN(PCIe),BT5.1
Chipset	Intel Typhoon Peak2 AX210
Max.Link Speed	Wi-Fi Rx/Tx Throughput 2.4Gbps (Link Speed is only standard value, Actually value will decided by each environment)
Antenna	Dual Antenna Support : WLAN (2TX, 2RX), BT(1TX/RX)

## (9) Ports and Interface

Input / output ports	HP-out/Mic.-in(combo), Integrated Mic , HDMI,Thunderbot4,USB3.0,Type-C
VGA	N/A
HDMI	HDMI 1.4
Headphone-out	Yes
Microphone-in	Yes
Internal microphone	Yes
USB	1 x USB TBT + 1 x USB Type-C + 1 x USB 3.0
Chargeable USB	YES (TBT&Type-C)
RJ45 (LAN)	N/A
DC-In (power port)	N/A
Kensington Lock	N/A
Docking	N/A

## (10) Input device

Keyboard (15.6")	Yes
Amount of keys	97 (KOR, US )
Feature	Travel length :1.0mm, height :3.05 mm, Pitch : 19.00mm
Silver Nano Technology	NO
Fast function keys (EZ BLU)	F1(Samsung Settings , F6 (Sound ON/OFF)

# 11. System Description 11

Confidential

## (11) Multimedia

Model name	SKINGC KNC-173F
Vendor	SKINGC
Pixel	1M,720P
Chipset IC	RTS5855
Image sensor	HD CMOS Color Image Sensor
Still Image Capture Resolution	1280*720, 640*480, 640*360,352*288,320*240,160*120
Video Capture Resolution	1280*720, 640*480, 640*360,352*288,320*240,160*120
Frame Rate	30fps @ HD, 24MHz MCLK
Output Video Format	mp4 , wmv , avi , mpg.
Interface	USB 2.0(High speed)
UVC Support	Supported
VGA camera image capacity	1280*720 175KB.jpg 640*480 66KB.jpg 640*360 60KB.jpg 352*288 34.7KB.jpg 320*240 30KB.jpg 160*120 20KB.jpg
Video Capture Bitrate	Venus 1280X720 : about 8Mbps

## (12) Power and Power management - battery

Standard battery	67Wh (4340mAh)
Model code	AA-PBMN4VN
Vendor	SDI
Details of cell	4cells
Battery capacity	4340 mAh
Voltage	15.44V DC
Battery rating	67Wh
Color	Black
Dimension	L 285.2xW88.65xT4.7(mm)
Weight	259.0g ± 5.18g
Recharge time	2.5 hours

# 11. System Description 13

## (13) Power and Power management – AC adapter


AC Adapter	65W GH44-03163A
Model Code	EP-TA865
Output Power	65W
Dimension	L48 xW50 x H28(mm)
Weight (AC Adapter)	120g
Worldwide Compatibility	Auto-sensing 100 - 240VAC
Line Frequency	50 Hz / 60Hz
Adapter Rating - Input	100 VAC ~ 240 VAC, 1.7 A
Adapter Rating - Output	20V/3.25A 15V/3A 9V/3A 5V/3A

## (14) System demension

Dimensions (W X D X H)	355.4 x 225.8 x 11.63mm
Weight	1.045Kg
Condition	Full System with 4 cells Battery
Package dimensions (W X D X H)	W258*L446*H41mm
Box weight	615g
Package weight	630g±10%
Condition	Full system with 4 cells battery , adapter


# 12. HW optional component (1)

**Confidential**

	Picture	ITEM	CODE	Q'ty	Ver
		AC Adapter	GH44-03163A (65W adapter) GH39-02097A (Type-Ccable)	1	1.0

# 12. HW optional component (2)

**Confidential**

	Picture	ITEM	CODE	수량	Ver
M A N U A L		Quick start guide	BA68-12872A(KOR)	1	1.0
			BA68-12872B(SEA)		
			BA68-12872C(SECA)		
			BA68-12872D(SEDA)		
			BA68-12872E(SECH/SEASA)		
			BA68-12872F(SCIS)		
			BA68-12872G(SEHK)		
			BA68-12872H(SEUK/SEAU)		
			BA68-12872J(SEG)		
			BA68-12872K(SEI)		
			BA68-12872L(SENA)		
			BA68-12872M(SEF)		
			BA68-12872N(SEIB)		
			BA68-12872P(SEBN)		
			BA68-12872Q(SEPOL)		
			BA68-12872R(SEH)		
			BA68-12872V(LAT/LIT/EST)		
BA68-12872S(SERC)					
BA68-12872T(SIEL/SSA)					
BA68-12872U(TSE)					

\*Optional component

950XDB has the following optional components to add or replace.  
The type of component can be added later.

- SSD
- LCD

# 12. HW optional component (5)

Confidential



Capa	Vendor	F/F	I/F	Model Name	Code
256GB	SAMSUNG	M.2 2230	NVMe Dramless (PCIe Gen3x4)	MZ9LQ256HBJD-00BKN	BA59-04584A
512GB	SAMSUNG	M.2 2230	NVMe Dramless (PCIe Gen3x4)	MZ9LQ512HBLU-00BKN	BA59-04585A
1024GB	SAMSUNG	M.2 2230	NVMe Dramless (PCIe Gen3x4)	MZ9LQ1T0HBLB-00BKN	BA59-04586A

Notice : Other storage Disks have not adopt to test till now .

# 12. HW optional component (6)

Confidential

## LCD



BA59-04568A

SDC

ATNA56YX02

15.6" FHD,LTPS, OLED,LR, 300nit



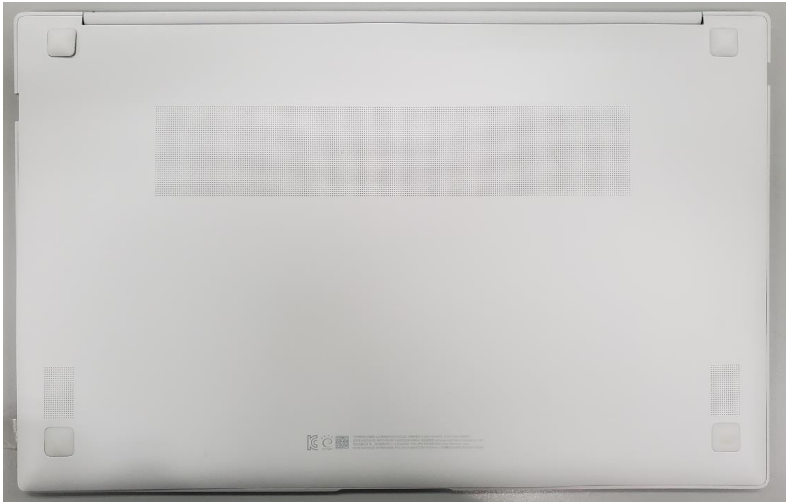
# **Disassembly and Reassembly 950XDB(Venus-15 INT)**

**Mobile communications Division**

**2021/02/017**

□ Assembly order is reverse of disassembly

## Common



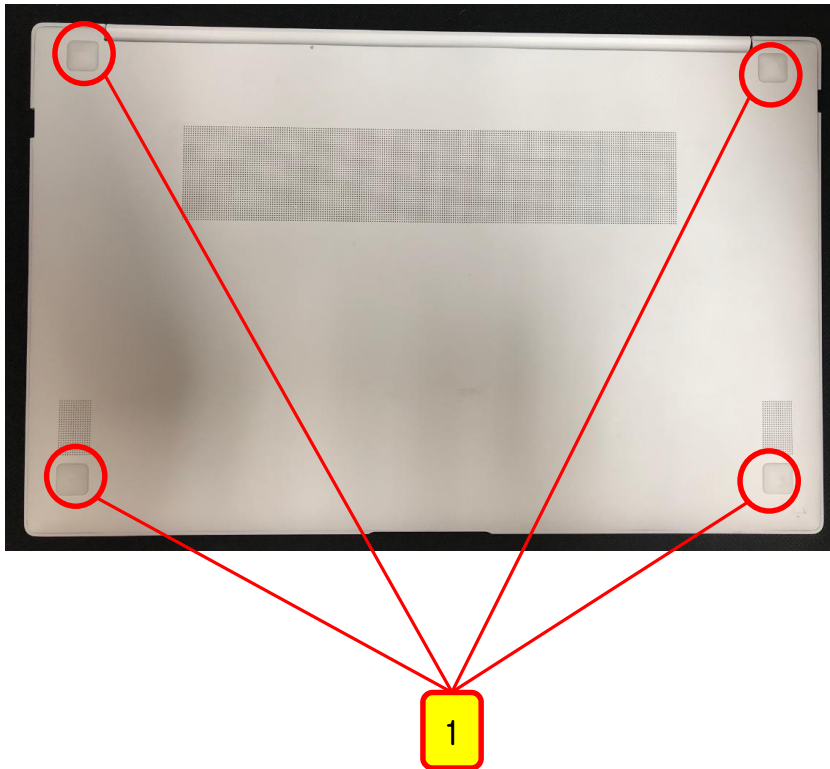
1. Make sure to separate the AC adapter before disassembling the system.
2. Put the Computer on the flat as the picture showing .

# 1. Main System

Confidential

□ Assembly order is reverse of disassembly

## Common



3. Remove the rubber foot on case rear.
4. Disassembly the screw on case rear.

SCREW-MACHINE  
(6001-003313) 4 PCS  
Torque : 2.3 ~ 2.7KgfcM

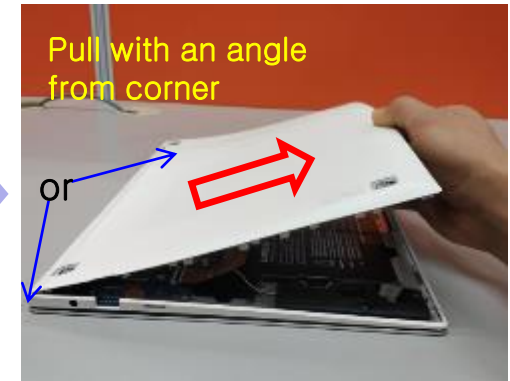
# 1. Main System

Confidential

□ Assembly order is reverse of disassembly

## Common

5. Remove the case rear with Jig as below.
  - Press the cover-hinge side, then pull the rear with the suction jig.
  - And then disassemble case rear .



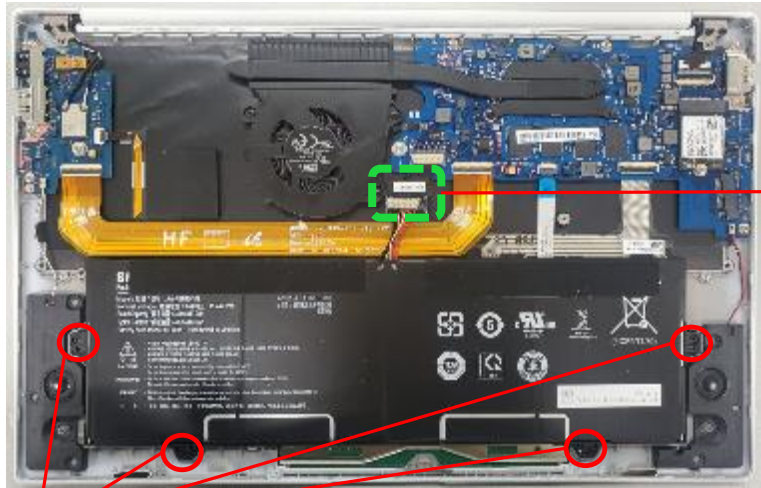
# 1. Main System

□ Assembly order is reverse of disassembly

## Common

- 6-1. (1) Disassemble screws of battery.
- (2) Remove battery cable.
- (3) Use jig to disassemble the battery PCB
- (4) Remove battery adaptor cable.

**SCREW-MACHINE**  
**(6001-003313) 4 PCS**  
 Torque : 2.3 ~ 2.7Kgfcm

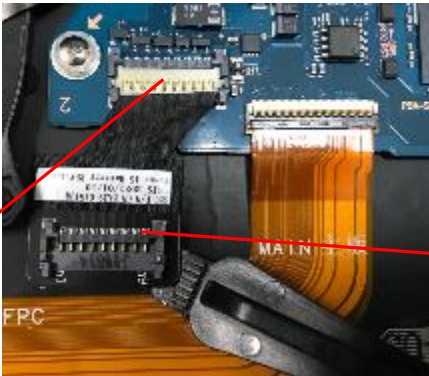


1

2

4

3

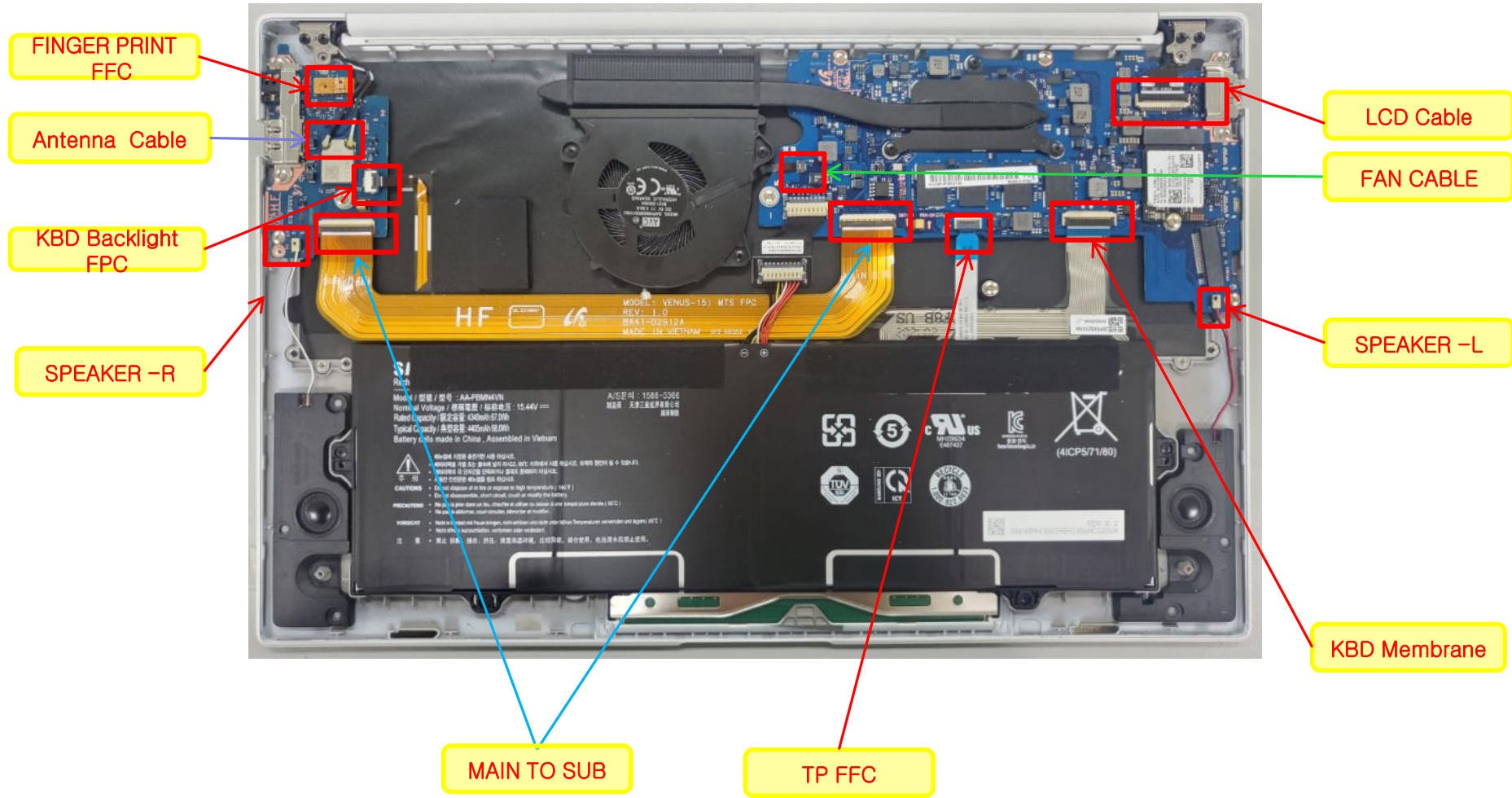


※ First disassemble screw, then pull battery to disassemble battery connector.  
 Second, disassemble battery PCB ,then pull PCB to disassemble battery adaptor cable

# 1. Main System

Confidential

## 7-1. Connector cable disassemble point



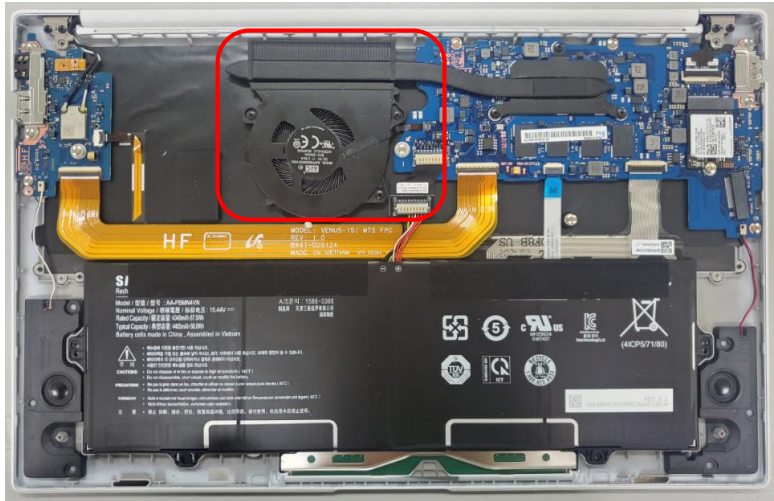
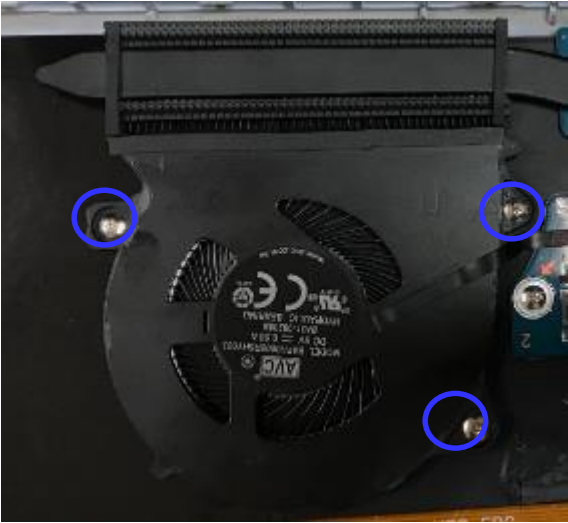
# 1. Main System

□ Assembly order is reverse of disassembly

✳ First disassemble screw, fan cable , Antenna-Main/Aux and FPC sub to main

- 8-1. (1) Disassemble screws of fan.
- (2) Remove fan cable , Antenna-Main/Aux and FPC sub to main .

**SCREW-MACHINE**  
**(6001-001650) 3 PCS**  
 Torque : 2.3 ~ 2.7KgfcM



# 1. Main System

□ Assembly order is reverse of disassembly

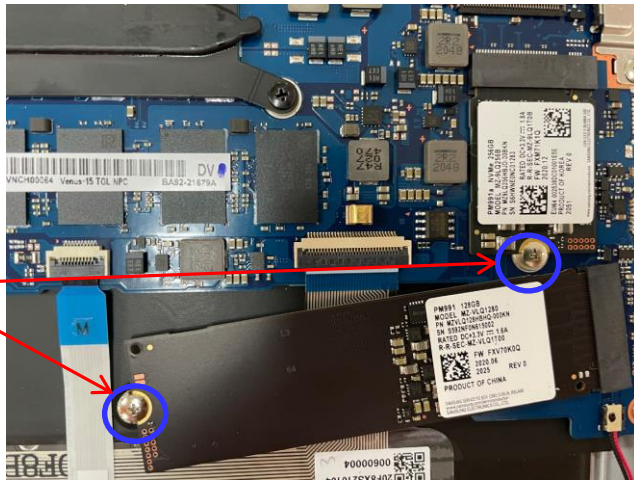
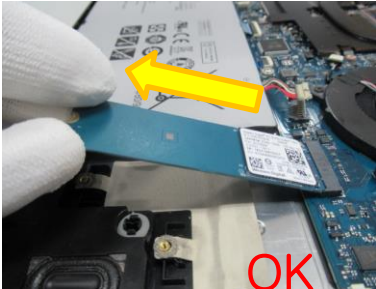
## Common

- 9. (1) Remove screw of SSD.
- (2) Remove SSD.

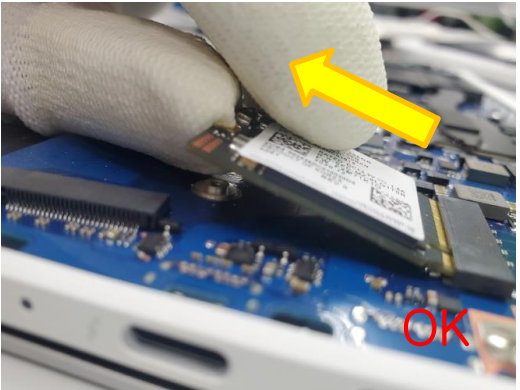
**SCREW-MACHINE**  
**(6001-001650) 1 PCS**  
**Torque : 2.3 ~ 2.7Kgfcm**

INT SSD

1st ssd



2nd ssd



# 1. Main System

□ Assembly order is reverse of disassembly

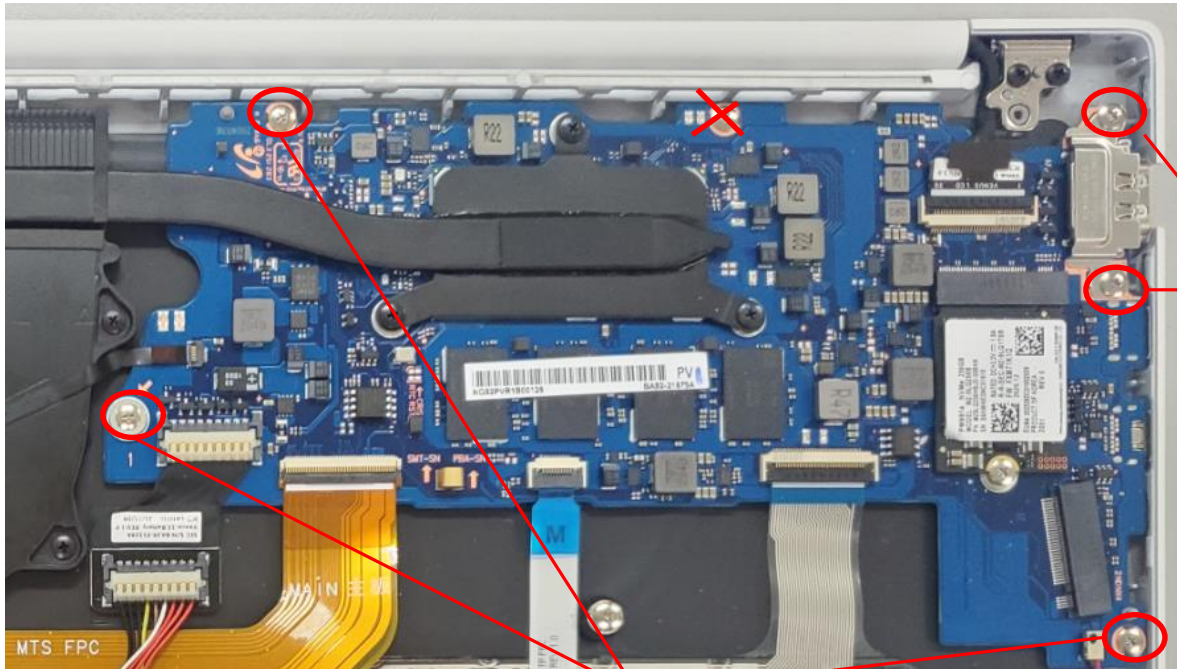
## MAIN

SCREW-MACHIN

(6001-001650) 5 PCS

Torque : 2.3 ~ 2.7Kgfcm

- 10-1. (1) Remove the screws on Bracket main port.
- (2) Remove the screws on Main board.
- (4) Remove Bracket main port and Main board.



2

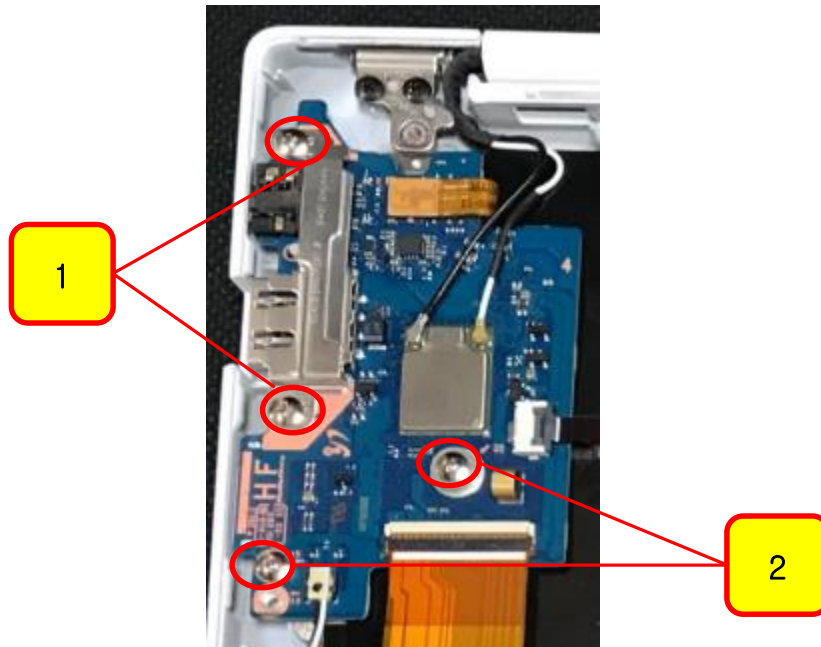
1

# 1. Main System

□ Assembly order is reverse of disassembly

## SUB

- 11-1 . (1) Remove the screws on Bracket sub port.
- (2) Remove the screw on Sub board.
- (3) Remove Bracket sub port and Sub board.



SCREW-MACHINE  
(6001-001650) 4 PCS  
Torque : 2.3 ~ 2.7KgfcM

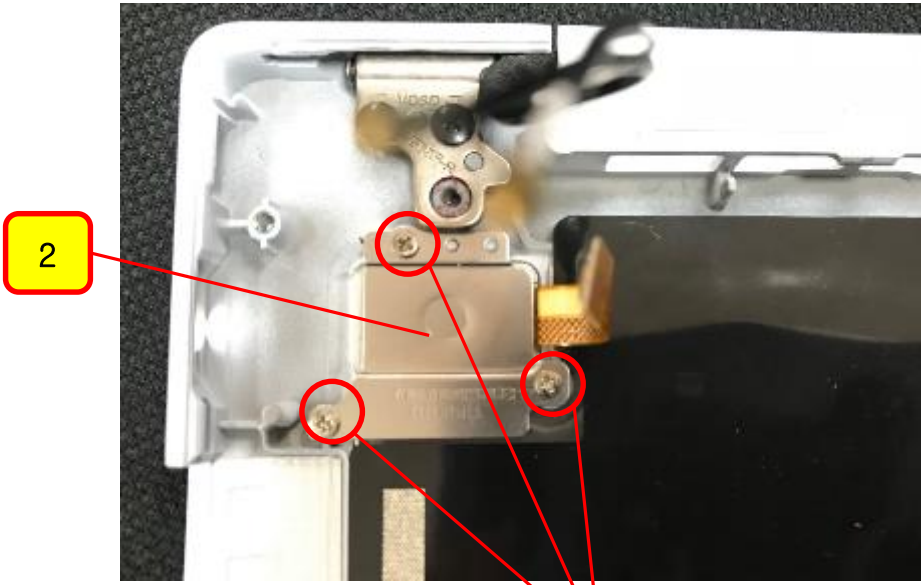
# 1. Main System – Finger Print

## 12. Finger Print disassembly

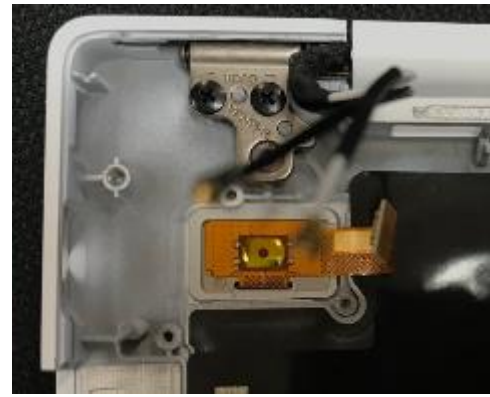
- ① Remove BRACKET-POWER SCREW (6001-002261) 3 PCS  
Torque : 2.3 ~ 2.7Kgfc

- ② Remove BRACKET-POWER

- ③ Disassembled Fingerprint

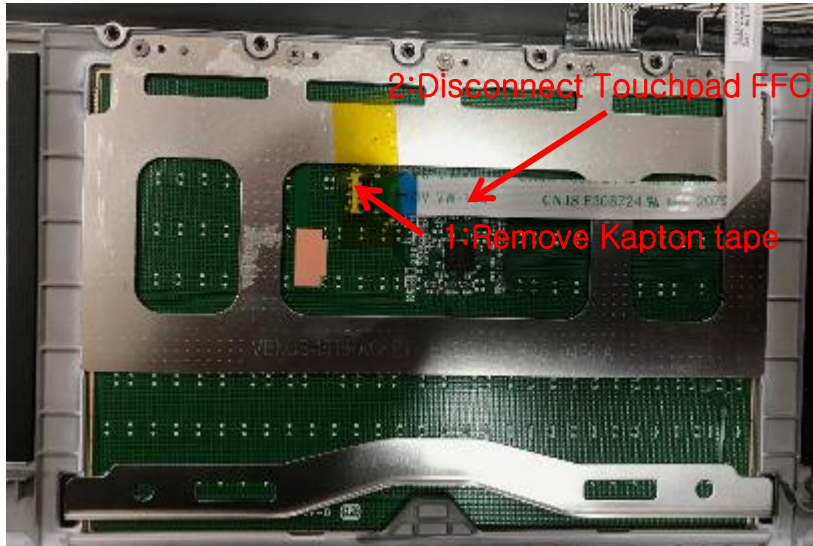


1



## 13-1. Touchpad disassembly

- ① Remove Kapton tapes
- ② Disconnect Touchpad FFC



- ③ Remove 5ea screw on Touchpad bracket (6001-002262, M1.4, L1.5)



# 1. Main System – Touchpad

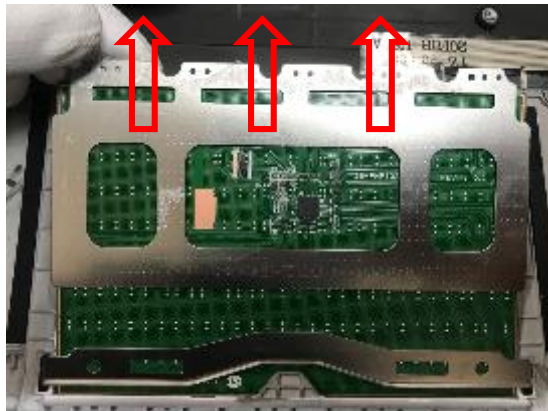
## 13-2. Touchpad disassembly

④ Disassembly

Push red box of touchpad from top to bottom



Disassemble touchpad assy from front



**Assembly sequence is reverse order of disassembly**

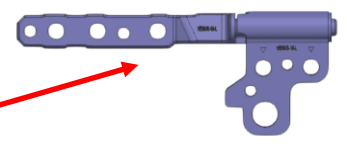
# 1. Main System

□ Assembly order is reverse of disassembly

## Common

14. Remove screws between hinge and case-front.

SCREW-MACHINE  
(6001-003313) 4 PCS  
Torque : 2.3 ~ 2.7Kgcm



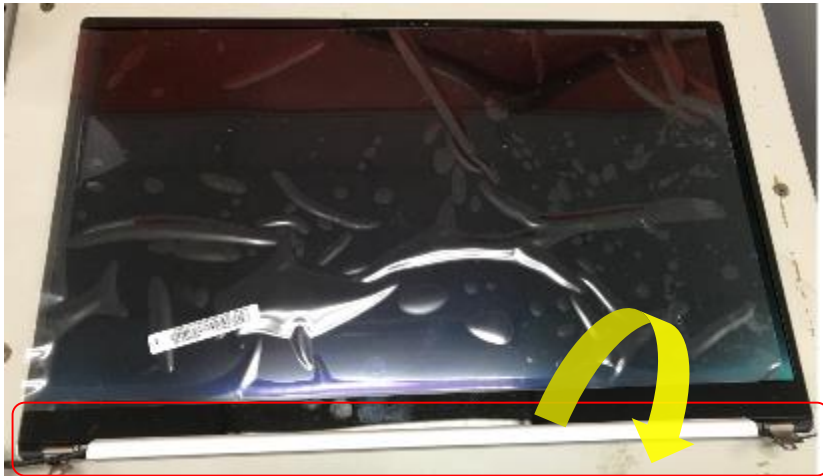
ASSY HINGE-L	BA98-02841A
ASSY HINGE-R	BA98-02842A

## 2. LCD Disassembly

□ Assembly order is reverse of disassembly

### Common

1. Remove the Cover-hinge as arrow direction.



**LCD is assembled using a specific compression JIG.**

No disassembly is recommended.



# 2.LCD Disassembly [LCD Assy can't disassemble]

□ Assembly order is reverse of disassembly

## Common

2. Remove HINGE.

SCREW-MACHIN  
**(6001-003313)** 6 PCS  
Torque : 2.3 ~ 2.7Kgfc



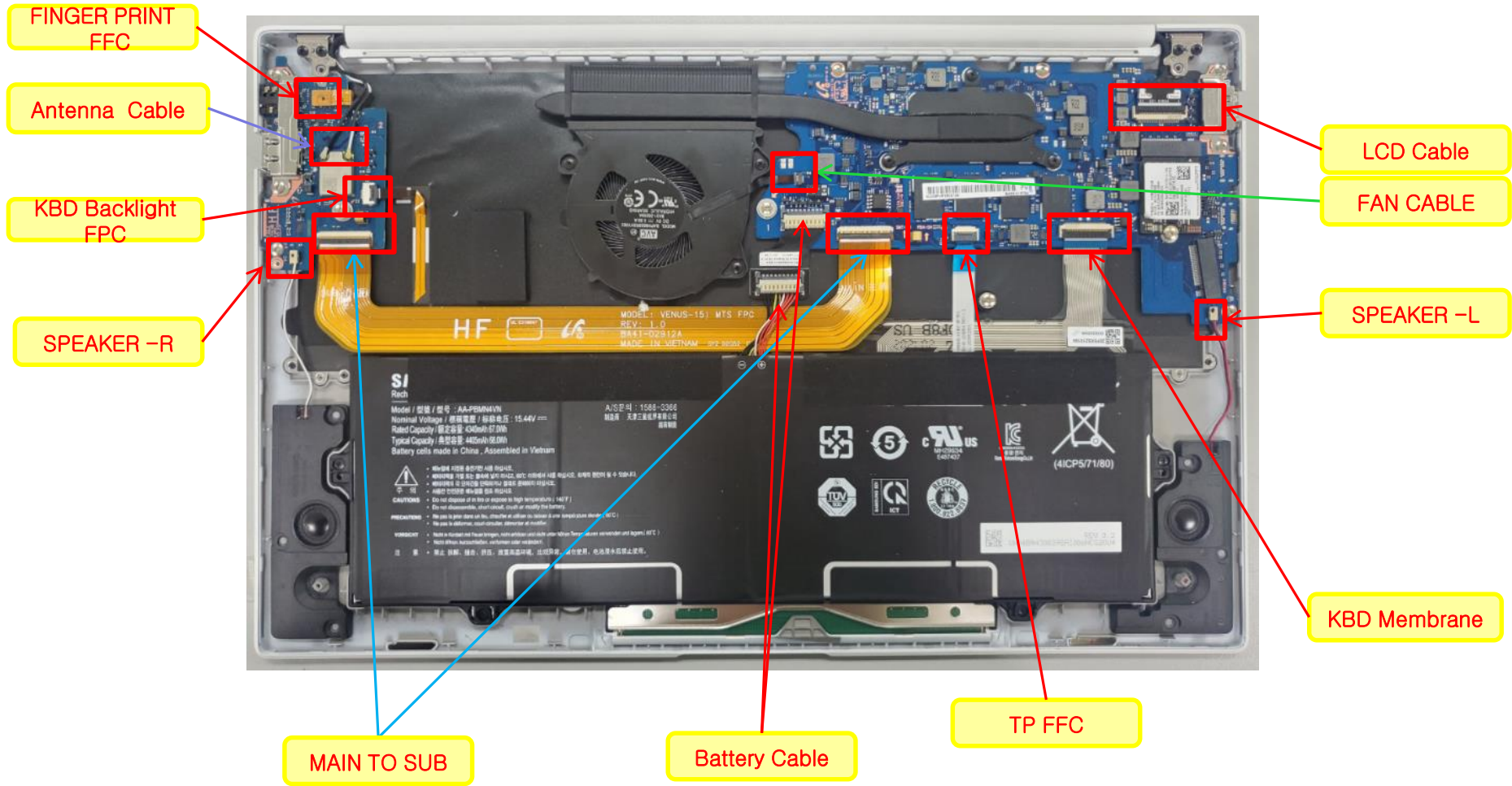
ASSY HINGE-L  
BA98-02841A

SCREW  
6001-003313

ASSY HINGE-R  
BA98-02842A

# 3. Cable routing

Confidential





# **Trouble shooting 950XDB (VENUS-15INT)**

**Mobile communications Division**

## **(1) Tools used for repairing the product**


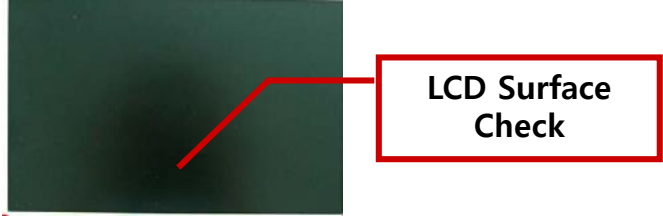
- System Diagnostics Disk
- MS-DOS Booting Disk
- System Diagnostics Card
- Screwdrivers (+, -)
- Tweezers
- Multi-meter
- Oscilloscope
- Logic Analyzer

## **(2) Replaceable unit (FRU: Field Replaceable Unit)**

- SSD(PCIe)
- System Upper
- System Lower
- System Front (KBD, Touch Pad)
- System Rear (No label)
- Battery
- Speaker
- Sub Board
- System Fan
- LCD Panel
- Camera Module
- Main Board
- FFC & Cable (Touchpad FFC, Sub FFC, USB Cable, LCD+Camera Cable)

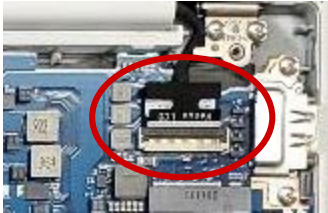


# 3. H/W & OS trouble shooting (1)

## ❖ Problems related with LCD

#1. The screen is dark or the colors of the screen are distorted.		
1	<p>Check the connection status</p> <ul style="list-style-type: none"><li>- LCD Cable on Main board side connector</li></ul> <p>➔ Make sure Cable is inserted correctly</p>	 A photograph of a laptop's main board showing the LCD cable connector. A red circle highlights the connector area where the cable is plugged in.
2	<p>Replace the LCD cable</p>	<p>Defectiveness confirmation</p>
3	<p>Check if there is a part of the LCD that is bent or broken due to impact</p> <p>➔ Replace the LCD Ass'y</p>	 A diagram showing a dark green rectangular area representing the LCD surface. A red line points from a box labeled 'LCD Surface Check' to the surface.
4	<p>For TSP LCD, Check TSP fail by diagnostic program</p> <p>➔ Replace the TSP LCD</p>	





# 3. H/W & OS trouble shooting (2)

## ❖ Problems related with LCD

#2. No picture appears on the screen.		
1	<p>Check the connection status</p> <ul style="list-style-type: none"> <li>- LCD Module LCD Cable</li> <li>- LCD Cable and Main board LCD Connector</li> </ul> <p>➔Connect Cable and Connector perfectly</p>	
2	<p>Check if the System LED of the main board is blinking</p>	
3	<p>Check if the Power button can be normally pressed.</p>	
4	<p>➔LCD cable or LCD replace</p>	<p>Check operating or not</p>

# 3. H/W & OS trouble shooting (3)



## ❖ Problems related with Power

#1. The system cannot power on		
1	Check if the adaptor is plugged in.	
2	Check if battery is plugged in correctly.	
3	Check Bridge Board or Sub board connection.	
4	Change Bridge Board or Sub board	
5	Power button fault confirmation method	
6	Change Mainboard	

# 3. H/W & OS trouble shooting (4)

## ❖ Problems related with Power

### #2. the system does not boot or immediately turns off after being turned on.

1	Since this may be a short circuit in the system,	Disconnect the power immediately, disassemble the system and check if there are any conducting alien objects such as a screw inside.
2	Check the connection status between the CPU and the RHE.	
3	Check the thermal pad on RHE.	
4	Replace Main Board.	*Check if it is out of order.

## ❖ Problems related with Power

### #3. The system battery is not recharged.



- |   |   |
|---|---|
| 1 | Check if Battery is plugged in correctly<br>→ If not, plug in the Battery |
| 2 | Change battery or Main board  |
| 3 | Check Battery fail by diagnostic program<br>→ Replace the Battery         |




# 3. H/W & OS trouble shooting (6)

## ❖ Problems related with Power

#4. The system can power on, but cannot boot into Windows		
1	If the ' <b>Operating system not found</b> ' message appears during the booting process - Check if SSD is recognized by CMOS,	<ol style="list-style-type: none"> <li>1. If SSD is recognized, Format the SSD and reinstall the operating System.</li> <li>2. If SSD is not recognized, Reassemble SSD from main board</li> </ol>
2	Check Battery SSD by diagnostic program → Replace the SSD	

#5. The system can power on, but LED on power button does not lit up.		
1	Check if there is any material blocking the LED	 
2	Change Main board	

## ❖ Problems related with USB function

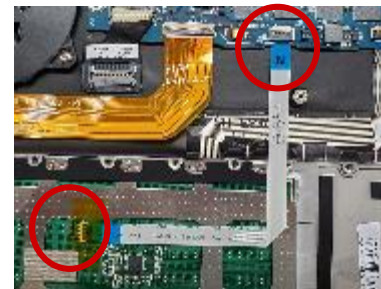
The system does not recognize USB devices		
1	Make sure the USB device receives enough power (some USB devices need external power source)	
2	Control Panel -> Device management -> USB2.0 / 3.0 driver checking	
3	Replace main board	



# 3. H/W & OS trouble shooting (8)

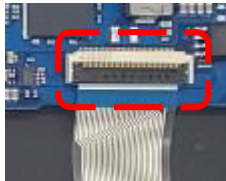
## ❖ Problems related with TP

TP function is abnormal, or does not work	
1	Control Panel -> Device management -> I2C HID device check
2	Make sure TP FFC & PCB is connected
3	Change FFC & front Ass'y
4	Please check T/P Ass'y trouble shooting. Fail -> change T/P Ass'y.

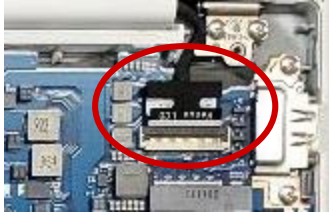


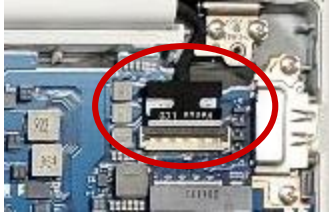
# 3. H/W & OS trouble shooting (9)

## ❖ Problems related with KBD

KBD function is abnormal, or does not work		
1	Try checking KBD driver in control panel	
2	Check lighting of Caps Lock, TPAD, Fn Lock	
3	Check KBD FFC connection	
4	Check Keyboard fail by diagnostic program → Replace the Keyboard	

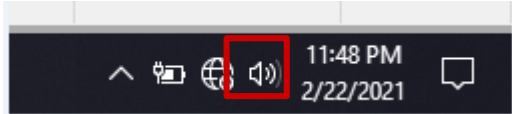
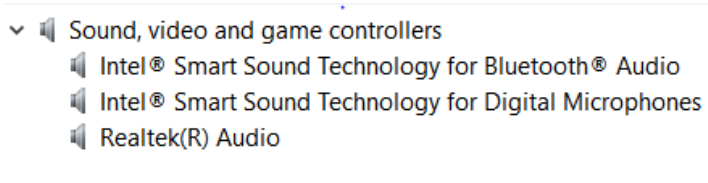

## ❖ Problems related with camera

Camera function is abnormal, or does not work		
1	Check device manager and make sure camera driver (under imaging devices) is loaded correctly	
2	Check LCD cable connection	
3	Check Camera fail by diagnostic program → Replace the Camera module or Camera cable or LCD Assy.	



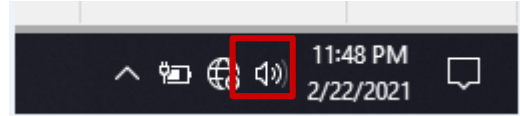
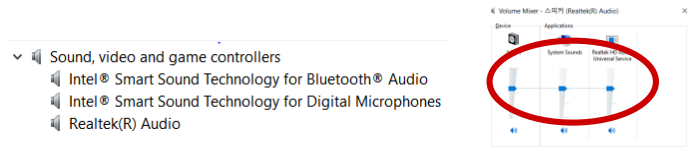
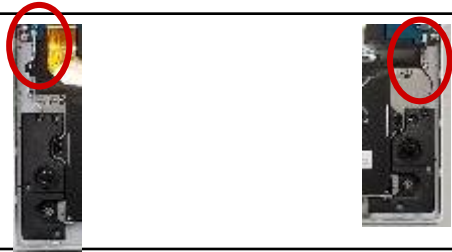
# 3. H/W & OS trouble shooting (11)

Confidential

#1. There is no sound from the speaker. (Insert the figure of the audio jacks so that the reader can check via the figure.)		
1	Check if the sound is muted after booting up Windows.	
2	Control panel confirmation. → Speaker Setting.	
3	Check the connection status of the speaker cable and check if the speaker is out of order.	
4	Check if there is a magnetic object near the speaker.	
5	Check Speaker fail by diagnostic program → Replace the Speaker	* If there is still no function, change main + sub board

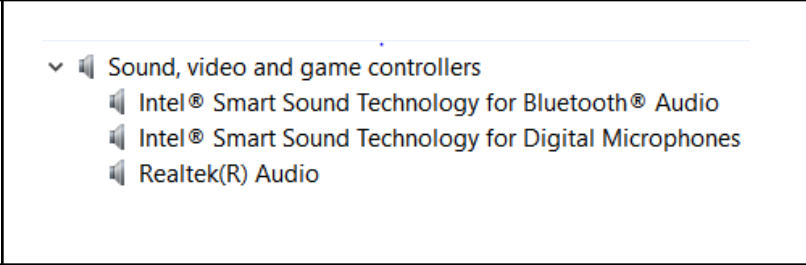
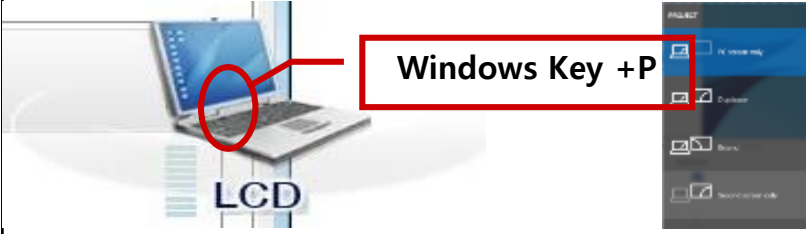
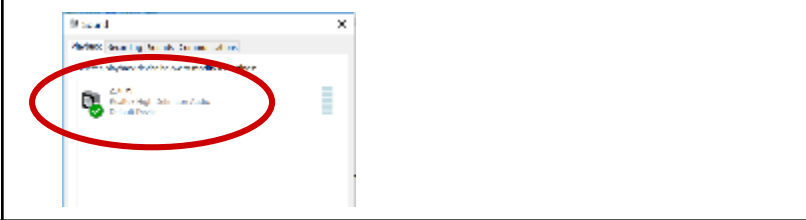
# 3. H/W & OS trouble shooting (12)

## ❖ Problems related to sound

#1. There is no sound from the headphone/mic. (Insert the figure of the audio jacks so that the reader can check via the figure.)		
1	Check if the sound is muted after booting up Windows.	
2	Control panel confirmation. → Speaker Setting.	
3	Check main board around audio connector. Check for any short circuit or soldering NG.	
4	Change Speaker or Main board or Sub board	


# 3. H/W & OS trouble shooting (13)

## ❖ External video-related issues

HDMI port does not work normally.		
1	<p>System manager confirmation . (Video / Sound / Controller confirmation)</p> <p>→ HDMI driver Re-install.</p>	
2	<p>Check the Display Manager work normally.</p> <p>→ Display Manager program Re-install.</p>	
3	<p>Check the Control panel .</p> <p>→ Check HDMI section enable</p>	
4	<p>Replace Main Board.</p>	<p>*Check whether it is out of order.</p>

# 3. H/W & OS trouble shooting (14)

## ❖ Problems associated with wireless networks

AP (WLAN) or B / T devices can not connect.		
1	If the driver loaded correctly, check in Device Manager.	<p>When loaded, AP signal is strong confirmation. Make sure that the BT unit power. Or Check the connection to another host.</p> <ul style="list-style-type: none"> <li>Network adapters               <ul style="list-style-type: none"> <li>Bluetooth Device (Personal Area Network)</li> <li>Intel(R) Wi-Fi 6E AX210 160MHz</li> <li>WAN Miniport (KEv2)</li> <li>WAN Miniport (IP)</li> <li>WAN Miniport (IPv6)</li> <li>WAN Miniport (L2TP)</li> <li>WAN Miniport (Network Monitor)</li> <li>WAN Miniport (PPPOE)</li> <li>WAN Miniport (PPTP)</li> <li>WAN Miniport (SSTP)</li> </ul> </li> </ul>
2	Wireless antenna connection or check the status of damage.	Change LCD A'ssy
3	Wireless Lan module connection or check the status of damage Main – White Aux - Black	
4	Check wlan module connector damage	
4	Check WLAN module connector damage → Replace the subboard	
5	Check WLAN fail by diagnostic program → Replace the subboard (WLAN module is MoB type, impossible to replace only WLAN module)	

# 3. H/W & OS trouble shooting (15)

Confidential

## ❖ Thermal related issue

The system temperature is too high.

1 Check the connection status of Heat sink  
→Screw 7EA Red



2 Replace RHE

\*Check if it is bent.



3 Replace Main Board.

\*Check if it is out of order.

# 4. Other – RTC Reset

## RTC Battery Reset

- The system apart and remove the mainboard and turn it upside down
- Using the tool like as tweezers, connect two nodes for about 20~30sec. Then Bios rom will be reseted.



Connect two nodes with tweezers for 20~30 seconds. the password will not be deleted.  
(Chipset Limitation)  
If you forget the password, please contact the ASC

### Method of use the Key to RTC

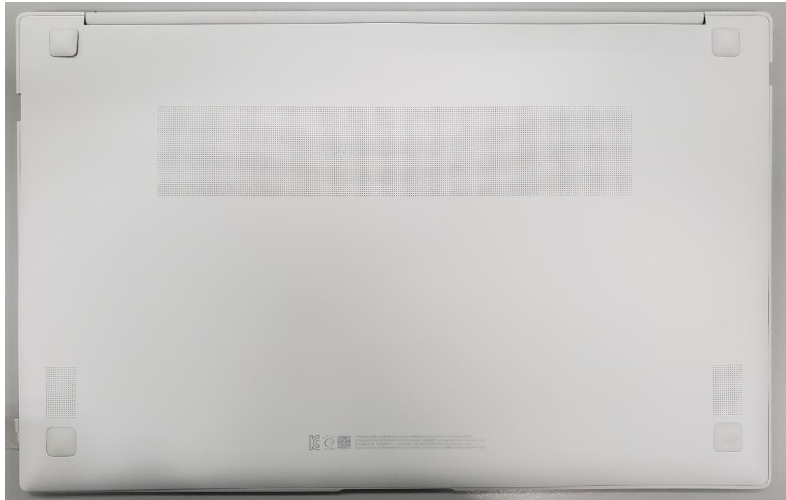
1. Shutdown the system
2. Click FN+F1+ Right Arrow+ power button at the same time
3. Power LED will flicker many time and then RST ok

# 5. Hardware Upgrade(1)

Confidential

□ Assembly order is reverse of disassembly

## □ SSD



1. Make sure to separate the AC adapter before disassembling the system.
2. Put the Computer on the flat as the picture showing .

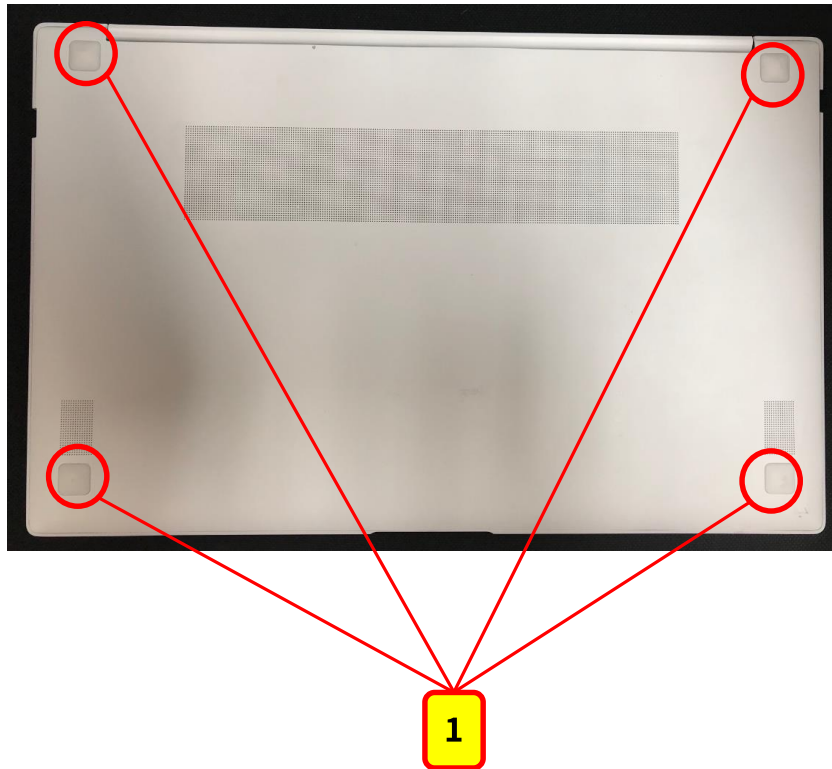
# 5. Hardware Upgrade(2)

Confidential

□ Assembly order is reverse of disassembly

□ SSD

○ : Screw



3. Remove the rubber foot on case rear.

4. Disassembly the screw on case rear.

SCREW-MACHINE  
(6001-003313) 4 PCS  
Torque : 2.3 ~ 2.7KgfcM

# 5. Hardware Upgrade(3)

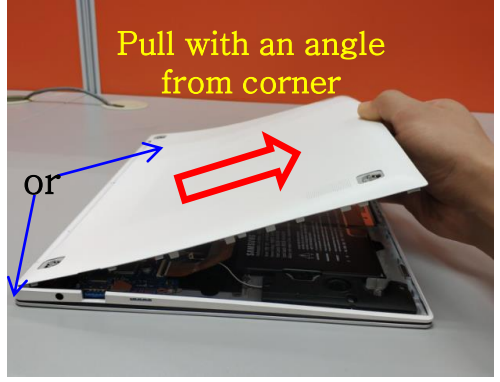
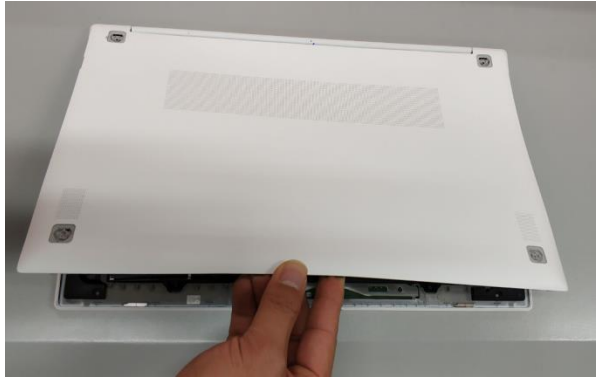
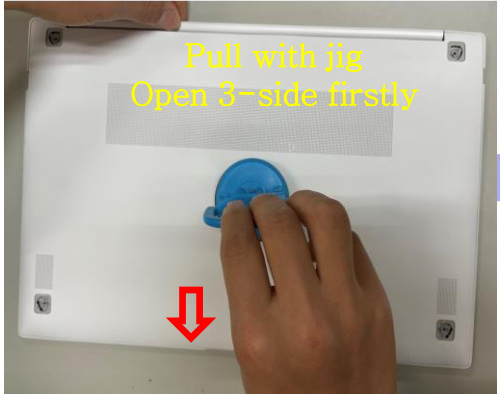
Confidential

□ Assembly order is reverse of disassembly

## □ SSD

- 5. Remove the case rear with Jig as below.
  - Press the cover-hinge side, then pull the rear with the suction jig.
  - And then disassemble case rear .

○ : Screw



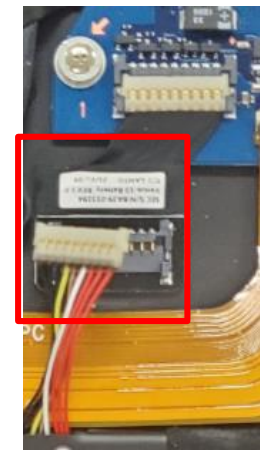
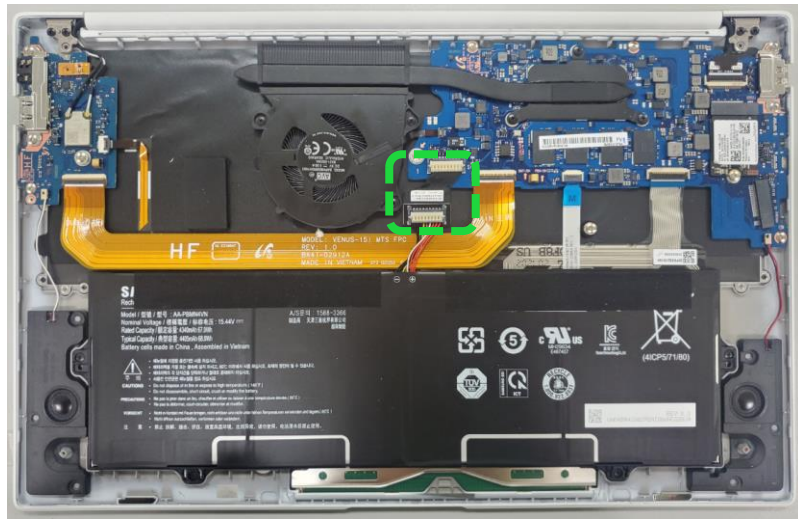
# 5. Hardware Upgrade(4)

Confidential

Assembly order is reverse of disassembly

## Common

6-1. (1) Remove battery cable.



# 5. Hardware Upgrade(5)

Confidential

□ Assembly order is reverse of disassembly

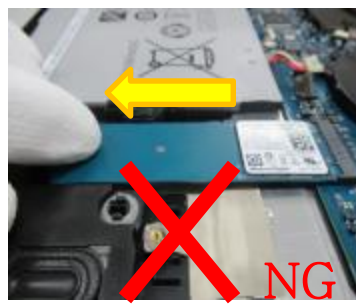
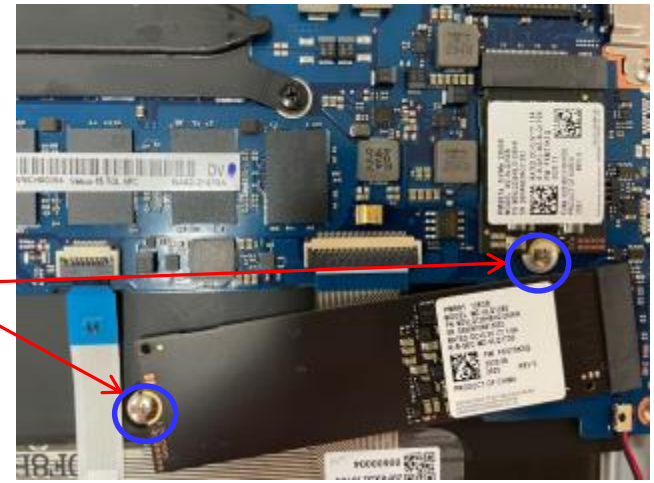
## Common

- 9. (1) Remove screw of SSD.
- (2) Remove SSD.

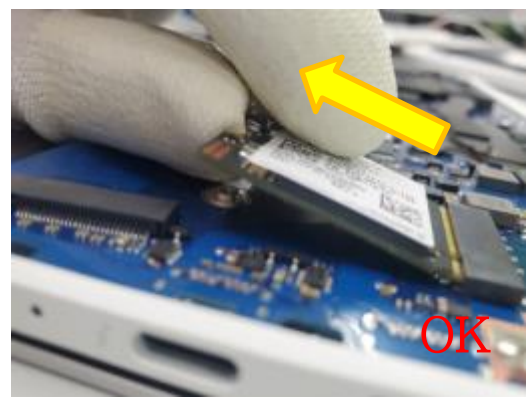
1<sup>st</sup> ssd

SCREW-MACHINE  
(6001-001650) 1 PCS  
Torque : 2.3 ~ 2.7Kgfc

INT SSD



2nd ssd



# 5. Hardware Upgrade(6)

Confidential

□ Assembly order is reverse of disassembly

## □ SSD Upgrade



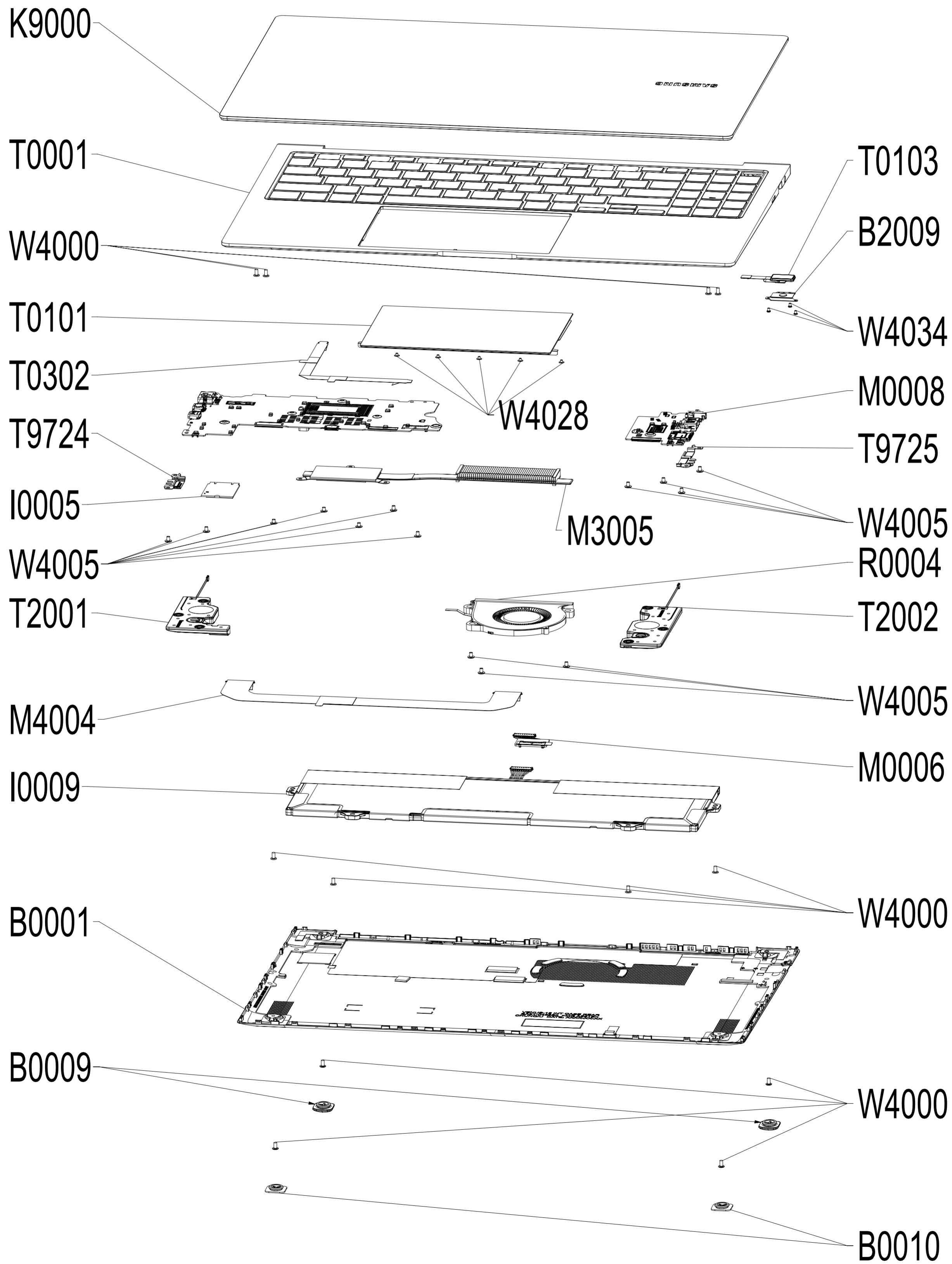
Capa	Vendor	F/F	I/F	Model Name	Code
256GB	SAMSUNG	M.2 2230	NVMe Dramless (PCIe Gen3x4)	MZ9LQ256HBJD-00BKN	BA59-04584A
512GB	SAMSUNG	M.2 2230	NVMe Dramless (PCIe Gen3x4)	MZ9LQ512HBLU-00BKN	BA59-04585A
1024GB	SAMSUNG	M.2 2230	NVMe Dramless (PCIe Gen3x4)	MZ9LQ1T0HBLB-00BKN	BA59-04586A

Notice : Other storage Disks have not adopt to test till now .

Upside

Downside

# SYSTEM





# **Circuit Analyze**

## **950XDB (VENUS-15INT)**

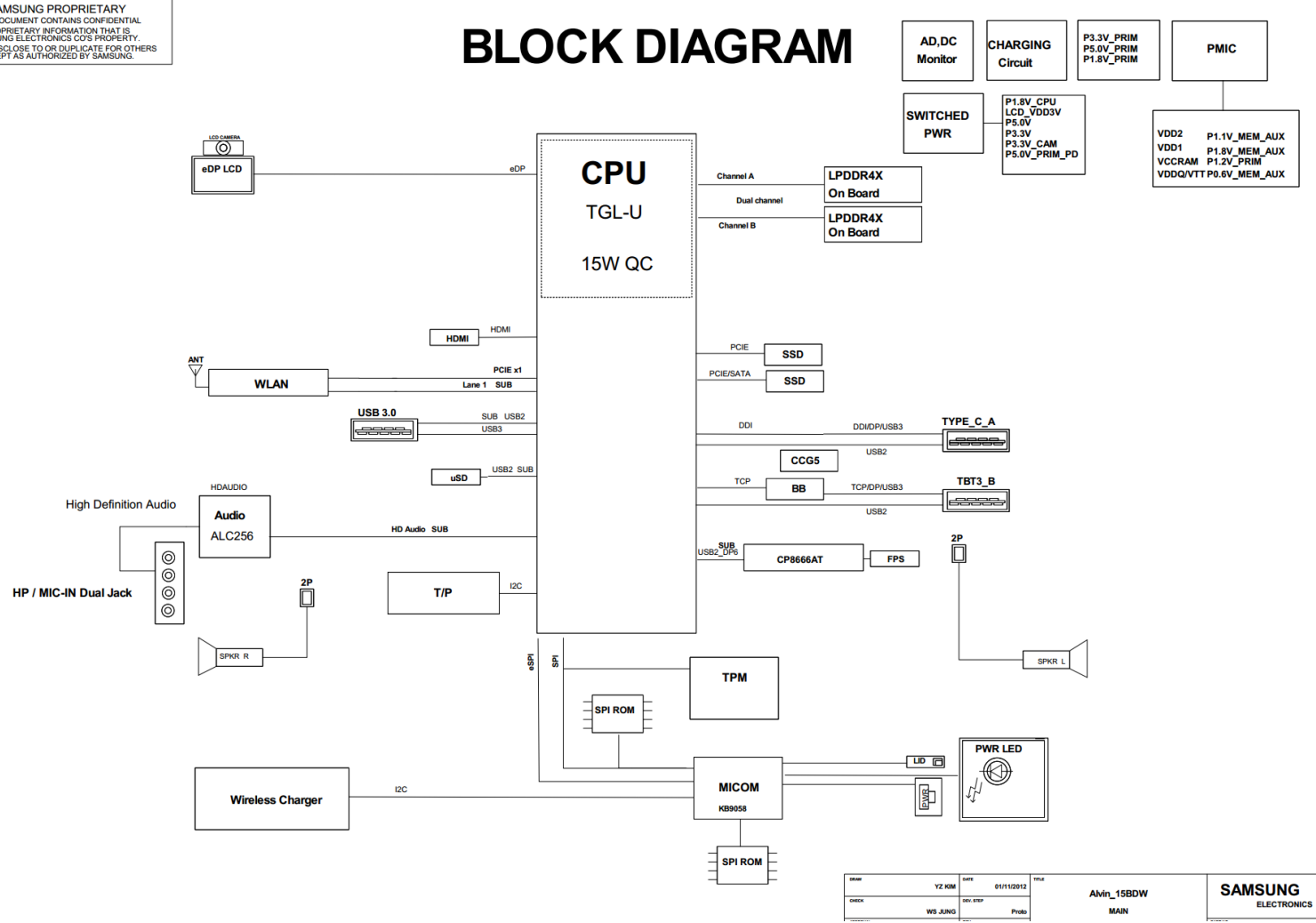
**Mobile communications Division**

**2021.02.18**

# 1. System Block Diagram

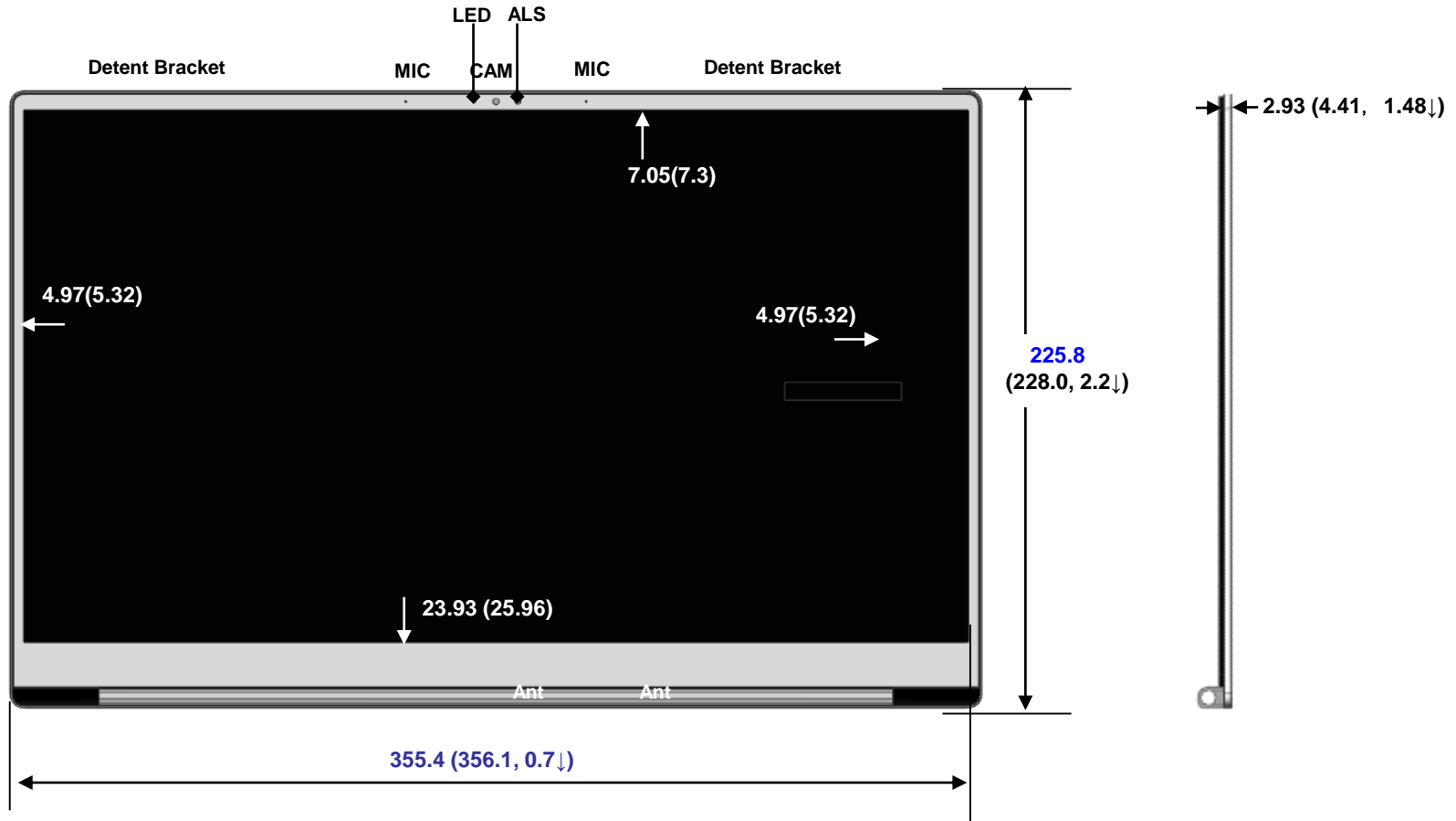
SAMSUNG PROPRIETARY  
THIS DOCUMENT CONTAINS CONFIDENTIAL  
PROPRIETARY INFORMATION THAT IS  
SAMSUNG ELECTRONICS CO'S PROPERTY.  
DO NOT DISCLOSE TO OR DUPLICATE FOR OTHERS  
EXCEPT AS AUTHORIZED BY SAMSUNG.

## BLOCK DIAGRAM

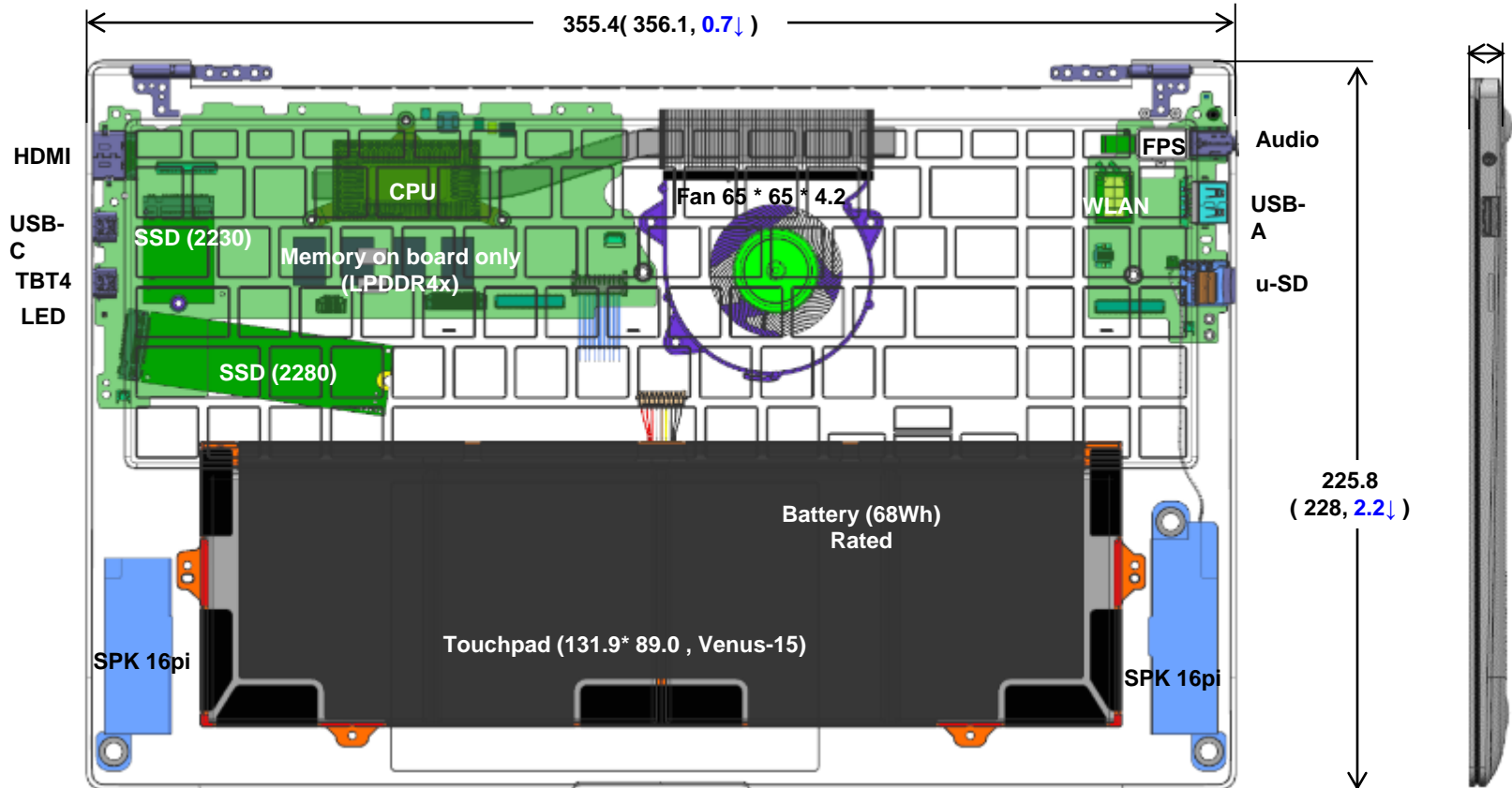


DATE	YZ KM	DATE	01/11/2012	TITLE	Alvin_15BDW	SAMSUNG ELECTRONICS
CHECK	WS JUNO	REV. STEP	Prtd	MAIN		

# 2. 950XDB Metal System Layout

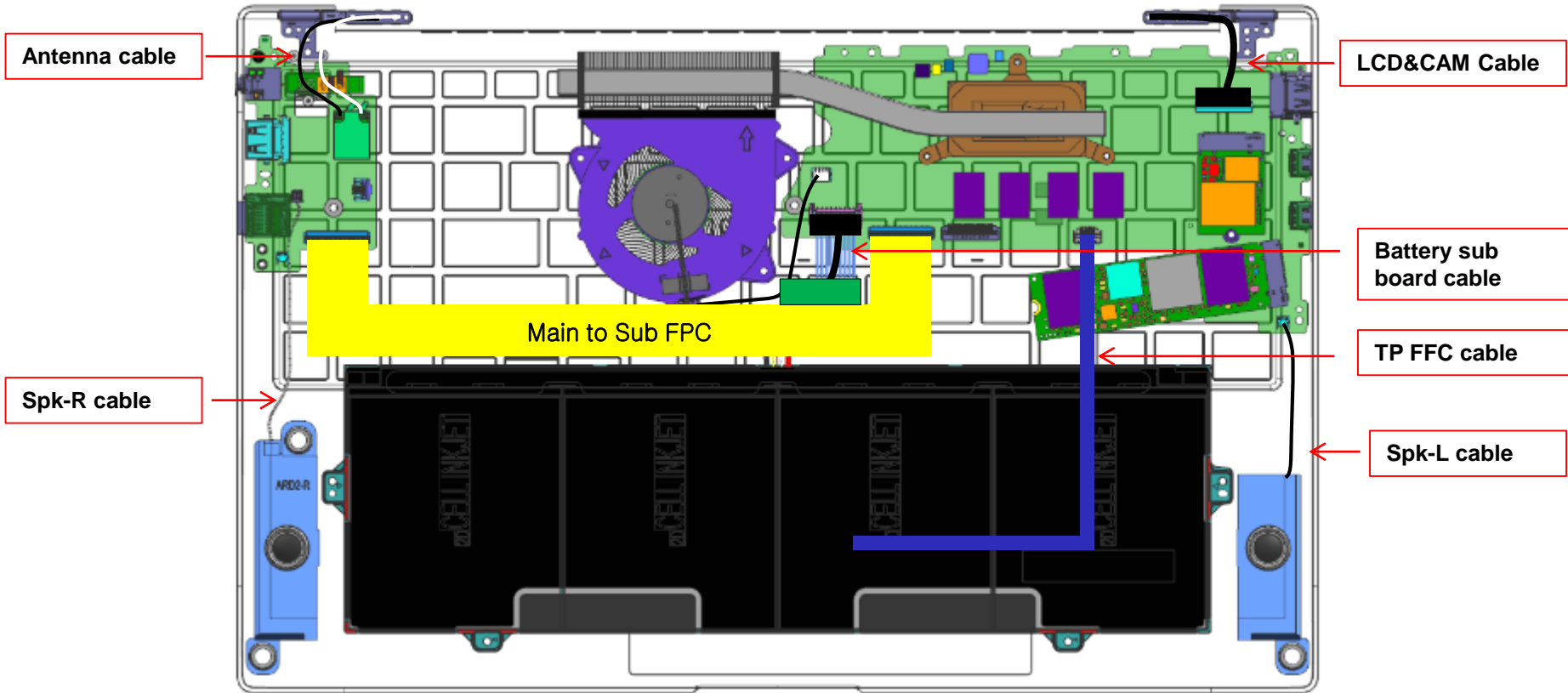


# 3. 950XDB Metal System Layout(INT)

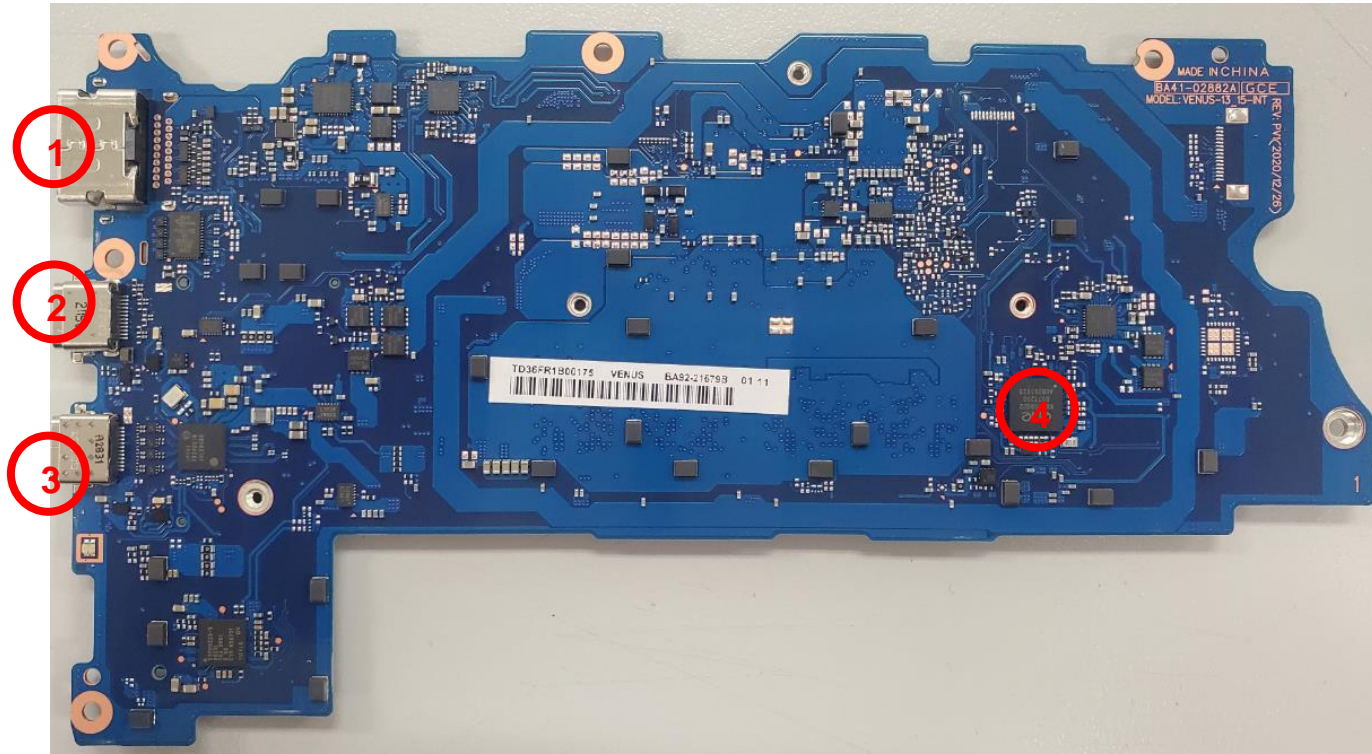


# 4. 950XDB Metal System Layout

Bottom view

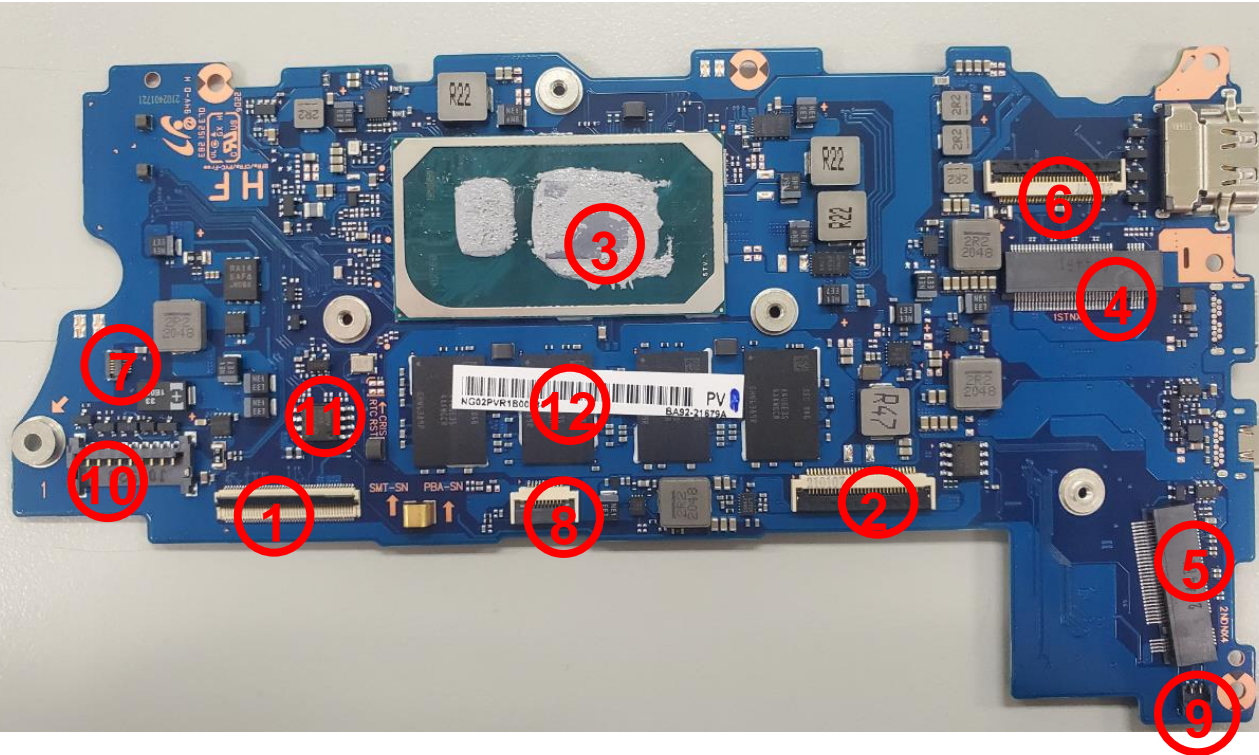


# 5. Board Component- Top



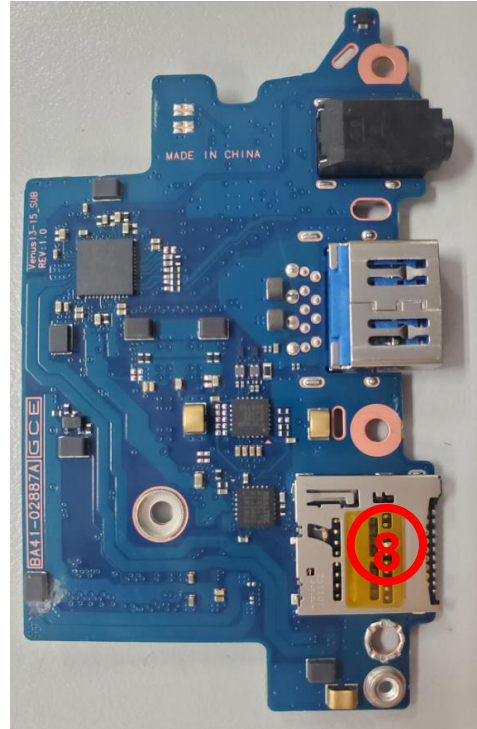
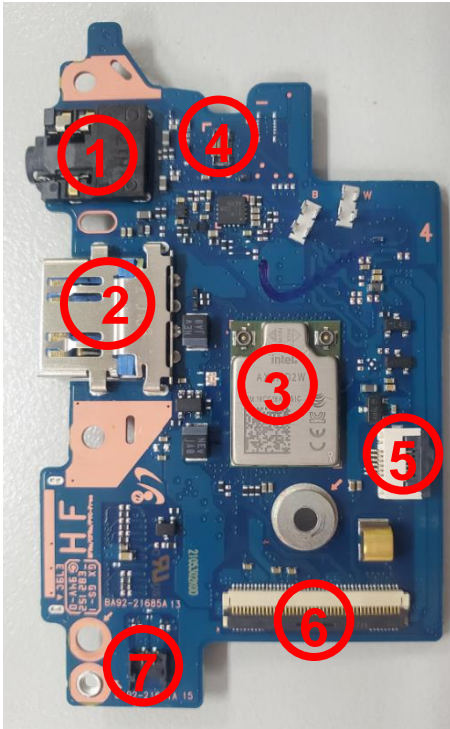
1. HDMI Connector
2. Type-C
3. Type-C (TBT)
4. MICOM

# 6. Board Component- Bottom



1. USB Sub Board Connector
2. KBD Connector
3. CPU
4. SSD Connector(1)
5. SSD Connector(2)
6. LCD Connector
7. Fan Connector
8. Touchpad
9. Speaker Connector(Left)
10. Battery connector
11. BIOS ROM
12. Memory

# 7. USB\_Sub Board Component (Common)



1. USB 3.0 port
2. WLAN
3. SPK Connector
4. KBD Backlight FPC Connector
5. USB Sub Board Connector
6. SD Card Slot
7. HP Connector
8. Fingerprint connector

# 8. Cable routing

