

# ASRock B460M Steel Legend

## Hackintosh: 10th Gen Intel Comet Lake with B460M Steel Legend with OpenCore 0.8.5 & Clover 5149 Configuration

My word: - "It's merely cosmetic", according to some. For me, this content is not just for show. **Configuration?**, You can play with **config.plist** and experiment with it. But heed the warning—if the file is not saved properly, it may get corrupted. This issue sometimes happen due to; **restart before saving** , **erroneously input or non-format input**. I'm not interested to share my personal **EFI**, and not meant to be used by other people or systems. If you're still interested in utilising it, please be **careful** to adjust the **plist configuration** and **SSDTs** according to your system. **ACPI?**, You may see how **ACPI** impacts the operating system. Incorrect device renaming through **SSDTs** will results the operating system getting stuck. My advise is not to modify your **DSDTs**. **DSDT's** (Primary Table) modification method will results more difficulties to your machine and harm your BIOS directly. I recommend **SSDTs** (Secondary Table) modifications, since this way are more **dynamic** and **safe**. Device renaming is not necessary for recognised and functional devices unless the devices are not identified or displayed via IOreg or require extra tweaks, especially if your computer contains multiple bootable OSes. This is not full feature guide. OpenCore and Clover sample is attached as a learning curve. Please be careful what you're read, copy and modified all these stuffs. Do a research first. Do note, while attached OpenCore and Clover SSDT has 98% differencies, both has the same output.

## OpenCore EFI Structure

```
EFI
├── BOOT
│   └── BOOTx64.efi
└── OC
    ├── ACPI
    │   └── SSDT-Patch.aml
    ├── Drivers
    │   ├── HfsPlus.efi
    │   ├── OpenCanopy.efi
    │   └── OpenRuntime.efi
    ├── Kexts
    │   ├── AppleALC.kext
    │   ├── Lilu.kext
    │   ├── LucyRTL8125Ethernet.kext
    │   ├── RadeonSensor.kext
    │   ├── SMCPProcessor.kext
    │   └── SMCRadeonGPU.kext
```

```
|   |   | SMCSuperIO.kext
|   |   | USBMap.kext
|   |   | └─ WhateverGreen.kext
|   | └─ OpenCore.efi
|   └─ Resources
|       |   | Audio
|       |   | Font
|       |   | Image
|       |   |   | └─ Acidanthera
|       |   |   |     |   | Chardonnay
|       |   |   |     |   | GoldenGate
|       |   |   |     |   └─ Syrah
|       |   └─ Label
|   └─ Tools
|       | └─ CleanNvram.efi
|   └─ config.plist
```

## Clover EFI Structure

```
EFI
|   |   | BOOT
|   |   |   | └─ BOOTX64.efi
|   |   └─ CLOVER
|   |       |   | ACPI
|   |       |   |   | WINDOWS
|   |       |   |   | origin
|   |       |   |   └─ patched
|   |       |   |       | └─ SSDT-ALL.aml
|   |       |   └─ CLOVERX64.efi
|   |       └─ ROM
|   |   └─ config.plist
|   |   └─ drivers
|   |       |   | UEFI
|   |       |   |   | ApfsDriverLoader.efi
|   |       |   |   | EnglishDxe.efi
|   |       |   |   | HFSPlus.efi
|   |       |   |   | OcQuirks.efi
|   |       |   |   └─ OpenRuntime.efi
|   |   └─ kexts
|   |       |   | 10.11
|   |       |   | 10.12
|   |       |   | 10.13
|   |       |   | 10.14
|   |       |   | 10.15
|   |       |   | 11
|   |       |   └─ 12
```

```
├─ AppleALC.kext
├─ Lilu.kext
├─ LucyRTL8125Ethernet.kext
├─ RadeonSensor.kext
├─ SMCProcessor.kext
├─ SMCRadeonGPU.kext
├─ SMCSuperIO.kext
├─ USBMap.kext
├─ VirtualSMC.kext
├─ WhateverGreen.kext
├─ 13
├─ Off
├─ Other
├─ misc
├─ themes
│   ├── Blackcamp
│   ├── embedded
│   └─ random
│       └─ theme.plist
└─ tools
```

## Basic Info

MachineProfile
About
System Info
Drive Info
Battery Info
Learn More



**Model Name:** iMac  
**Model Type:** Retina 4K, 21.5-inch, 2019  
**Model Identifier:** iMac19,2  
**Board Identifier:** Mac-63001698E7A34814  
**Processor Name:** 6-Core Intel Core i5 CPU 10400  
**Processor Model:** Coffee Lake  
**Processor Speed:** 2.9 GHz  
**Number of Processors:** 1  
**Total Number of Cores:** 6  
**Memory Size:** 32 GB 2667 MHz DDR4  
**Graphics Model:** AMD Radeon RX 5500 XT 4 GB  
**Assembled in:** China  
**Manufactured during:** December 2021  
**Serial Number:**

<b>L1 Cache:</b> 64 KB	<b>Processor Bitrate:</b> 64 bit	<b>Direct Media Interface:</b> 8.0 GT/s
<b>L2 Cache:</b> 256 KB (per Core)	<b>EFI Bitrate:</b> 64 bit	<b>Boot ROM Version:</b> 1731.140.1.0.0
<b>L3 Cache:</b> 12 MB	<b>Kernel Bitrate:</b> 64 bit	<b>System SMC Version:</b> 2.47f3

**Power Source:** AC Power  
**Hardware Universal Unique Identifier:**

**Minimum Supported Operating System:** macOS 10.14.4 Build 18E2034 (Mojave)  
**Current Boot Operating System:** macOS 12.6.0 Build 21G115 (Monterey)  
**Maximum Supported Operating System:** Latest version of macOS 12 (Monterey)

Version 1.4.14 (1365)
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## Graphics

### IGPU - Integrated Graphics (Headless)

```
GPU Name          Intel CoffeeLake-H GT2 [UHD Graphics 630]
GPU Device ID     0x3E9B8086
```

### GFX0 - Dedicated Graphics (Display)

```
GPU Name          Navi 14 [Radeon RX 5500/5500M / Pro 5500M]
GPU Device ID     0x73401002
```

Quartz Extreme (QE/CI)	Yes
Metal Supported	Yes
Metal Device Name	AMD Radeon RX 5500 XT
Metal Default Device	Yes
Metal Low Power	No
Metal Headless	No

## VDA Support

VDA Decoder	Fully Supported
-------------	-----------------

## Others

Kernel	Darwin 21.6.0 x86_64
OS	macOS Monterey Version 12.6 (Build 21G115)

## PCI Device

### Instruction

- ☐ Working
- ☒ ~~Not Working~~

### Device List

- ☐ Comet Lake-S 6c Host Bridge/DRAM Controller
- ☐ 6th-10th Gen Core Processor PCIe Controller (x16)
- ☐ Intel CoffeeLake-H GT2 [UHD Graphics 630]
- ☐ Comet Lake PCH-V USB Controller
- ☒ ~~Comet Lake PCH-V Thermal Subsystem~~
- ☐ Comet Lake PCH-V HECI Controller
- ☒ ~~Comet Lake PCH-V Memory controller~~
- ☐ Comet Lake PCH-V cAVS
- ☐ Comet Lake PCH-V SMBus Host Controller
- ☐ 400 Series Chipset Family SATA AHCI Controller
- ☐ B460 Chipset LPC/eSPI Controller
- ☐ Kingston SA2000M8500G (x2)
- ☐ Navi 10 XL Upstream Port of PCI Express Switch
- ☐ Navi 10 XL Downstream Port of PCI Express Switch
- ☐ Navi 14 [Radeon RX 5500/5500M / Pro 5500M]

- ☐ Navi 10 HDMI Audio
- ☐ VL805/806 xHCI USB 3.0 Controller
- ☐ Realtek RTL8125B PCI Express 2.5 Gigabit Ethernet
- ☐ BCM94360CD 802.11ac Wireless Network Adapter

## Patched Devices

Device	Details
ALSD	Ambient Light Sensor enable (AppleLMUController)
SB.PCI0.DRAM	Comet Lake-S 6c Host Bridge/DRAM Controller
SB.PCI0.GFX0	Intel UHD Graphics 630 (Renamed as <b>IGPU</b> )
SB.PCI0.HDAS	Comet Lake PCH-V cAVS (Renamed as <b>HDEF</b> )
SB.PCI0.HECI	Comet Lake PCH-V HECI Controller (Renamed as <b>IMEI</b> )
SB.PCI0.LPCB	B460M Low Pin Count Bus
SB.PCI0.LPCB.EC	Fake Embedded Controller
SB.PCI0.LPCB.FWHD	Fake Firmware Hub Device (Optional for <b>300 / 400</b> Series)
SB.PCI0.LPCB.HPET	High Precision Event Timer
SB.PCI0.PEG0	6th-10th Gen Core Processor PCIe Controller x16 (Renamed as <b>PEGP</b> )
SB.PCI0.PEG0.pci-bridge0/0	Navi 10 XL Upstream Port (Renamed as <b>EGP0</b> )
SB.PCI0.PEG0.pci-bridge1/0	Navi 10 XL Downstream Port (Renamed as <b>EGP1</b> )
SB.PCI0.PEG0.pci-bridge1/0.GFX0	Navi 14 Radeon RX 5500 / 5500M / Pro 5500M (added <b>_SUN</b> , slot user number to properties - OpenCore Only)
SB.PCI0.PEG0.pci-bridge1/0.HDAU	Navi 10 HDMI Audio (added <b>_SUN</b> (Slot User Number) to properties - OpenCore Only)
SB.PCI0.PPMC	Programmable Power Management Controller. <b>Not compatible</b> with macOS
SB.PCI0.PMCR	Fake Power Management Capabilities Register. Replacing the function of <b>PPMC</b>
SB.PCI0.RP04.PXSX	Realtek RTL8125B PCI Express 2.5 Gigabit Ethernet (Renamed as <b>RTLK</b> )
SB.PCI0.RP05.PXSX	VL805/806 xHCI USB 3.0 Controller (Renamed as <b>XHC2</b> and added <b>built-in</b> , <b>_SUN</b> , slot user number to properties - OpenCore Only)

Device	Details
SB.PCI0.RP09.PXSX	Kingston SA2000M8500G M.2 Slot 0 (Renamed as <code>ANS0</code> )
SB.PCI0.RP20.PXSX	BCM4360 802.11ac Wireless Network Adapter (Renamed as <code>ARPT</code> and added <code>built-in</code> , <code>_SUN</code> , slot user number to properties - OpenCore Only)
SB.PCI0.RP21.PXSX	Kingston SA2000M8500G M.2 Slot 1 (Renamed as <code>ANS1</code> )
SB.PCI0.SAT0	400 Series Chipset Family SATA AHCI Controller (Renamed as <code>SATA</code> )
SB.PCI0.SBUS	Serial Bus
SB.PCI0.TSUB	Thermal Subsystem. <code>Not compatible</code> with macOS
SB.PCI0.XHC	300/400 Series PCH-V USB Controller (Renamed as <code>XHC1</code> )
SB.USBX	USB Power Management
ALSE	ALSE method for ALSD
GPRW	Native <code>_PRW</code> method for Power Resource for Wake
STAS	<code>_STA</code> method, to enable such status changes to be communicated to the operating system.

## SSDT

- [SSDT-Patch.aml](#) (Clover)
- [SSDT-Patch.aml](#) (OpenCore)

**Note:** Start from macOS 12.3, [SSDT-PLUG.aml](#) or `plugin-type=1` is not required. The [x86PlatformPlugin](#) is enabled by default on Skylake and Comet Lake. Refer original [thread](#), [Dortania/Bugtracker Issue #2013](#) and [Dortania/Bugtracker Issue #269](#).

## Test & Validate

### Build Number:

```
sw_vers
```

```
ProductName:    macOS
ProductVersion: 12.6
BuildVersion:   21G115
```

## Kernel Version:

```
uname -r
```

```
21.6.0
```

## Bus and Frequency:

```
sysctl -a | grep freq
```

```
hw.busfrequency: 400000000  
hw.busfrequency_min: 400000000  
hw.busfrequency_max: 400000000  
hw.cpubfrequency: 2900000000  
hw.cpubfrequency_min: 2900000000  
hw.cpubfrequency_max: 2900000000  
hw.tbfrequency: 1000000000  
machdep.tsc.frequency: 2903999153
```

## CPU Vendor:

```
sysctl -a | grep machdep.cpu.vendor
```

```
machdep.cpu.vendor: GenuineIntel
```

## CPU Brand String:

```
sysctl machdep.cpu.brand_string
```

```
machdep.cpu.brand_string: Intel(R) Core(TM) i5-10400 CPU @ 2.90GHz
```

## CPU Features:

```
sysctl -a | grep machdep.cpu.features
```

```
machdep.cpu.features: FPU VME DE PSE TSC MSR PAE MCE CX8 APIC SEP MTRR PGE MCA CMOV  
PAT PSE36 CLFSH DS ACPI MMX FXSR SSE SSE2 SS HTT TM PBE SSE3 PCLMULQDQ DTES64 MON  
DSCPL VMX EST TM2 SSSE3 FMA CX16 TPR PDCM SSE4.1 SSE4.2 x2APIC MOVBE POPCNT AES  
PCID XSAVE OSXSAVE SEGLIM64 TSCTMR AVX1.0 RDRAND F16C
```



## CPU Full Features:

```
sysctl -a | grep machdep.cpu.features
sysctl -a | grep machdep.cpu.leaf7_features
sysctl machdep.cpu | grep AVX
```

```
machdep.cpu.features: FPU VME DE PSE TSC MSR PAE MCE CX8 APIC SEP MTRR PGE MCA CMOV
PAT PSE36 CLFSH DS ACPI MMX FXSR SSE SSE2 SS HTT TM PBE SSE3 PCLMULQDQ DTES64 MON
DSCPL VMX EST TM2 SSSE3 FMA CX16 TPR PDCM SSE4.1 SSE4.2 x2APIC MOVBE POPCNT AES
PCID XSAVE OSXSAVE SEGLIM64 TSCTMR AVX1.0 RDRAND F16C
machdep.cpu.leaf7_features: RDWRFSGS TSC_THREAD_OFFSET SGX BMI1 AVX2 SMEP BMI2 ERMS
INVPCID FPU_CSDS MPX RDSEED ADX SMAP CLFSOPT IPT PKU SGXLC MDCLEAR IBRS STIBP L1DF
ACAPMSR SSBD
```

## CPU Details:

```
ioreg -rxn "PR00@0"
```

```
+--o PR00@0 <class IOACPIPlatformDevice, id 0x10000013c, registered, matched, a$
| {
|   "processor-lapic" = 0x0
|   "clock-frequency" = <007ddaac>
|   "processor-number" = 0x0
|   "timebase-frequency" = <00ca9a3b>
|   "processor-id" = 0x1
|   "bus-frequency" = <0084d717>
|   "cpu-type" = <0906>
|   "device_type" = <70726f636573736f7200>
|   "name" = <5052303000>
|   "processor-index" = 0x0
| }
|
+--o AppleACPICPU <class AppleACPICPU, id 0x100000151, registered, matched, a$
| +--o AppleACPICPUInterruptController <class AppleACPICPUInterruptController$
| +--o X86PlatformPlugin <class X86PlatformPlugin, id 0x100000485, registered$
|   +--o IOPlatformEnabler <class IOPlatformPluginDevice, id 0x100000505, reg$
|     | +--o ApplePlatformEnabler <class ApplePlatformEnabler, id 0x10000050b, $
|     +--o AGPMEnabler <class IOPlatformPluginDevice, id 0x100000506, registere$
|       | +--o AGPMController <class AGPMController, id 0x10000050a, !registered,$
|       +--o X86PlatformShim <class X86PlatformShim, id 0x100000508, !registered,$
+--o SMCProcessor <class SMCProcessor, id 0x100000152, !registered, !matched,$\
```

## Check Instruction Set:

---

```
sysctl -a | grep machdep.cpu.leaf7_features
```

```
machdep.cpu.leaf7_features: RDWRFSGS TSC_THREAD_OFFSET SGX BMI1 AVX2 SMEP BMI2 ERMS  
INVPCID FPU_CSDS MPX RDSEED ADX SMAP CLFSOPT IPT PKU SGXLC MDCLEAR IBRS STIBP L1DF  
ACAPMSR SSBD
```

## Check SIP (System Integrity Protection):

```
csrutil status
```

```
System Integrity Protection status: enabled.
```

## Find Wake Issue:

```
pmset -g log | grep -e "Sleep.*due to" -e "Wake.*due to"
```

```
Empty
```

## Lists any ACPI Error:

```
log show --last boot | grep AppleACPIPlatform > ~/Desktop/Log_"$(date '+%Y-%m-%d_%H-%M-%S')".log
```

| @ [ASRock B460M Stell Legend ACPI Log](#)

## Verifying SMBUS/SBUS:

```
kextstat | grep -E "AppleSMBusController|AppleSMBusPCI"
```

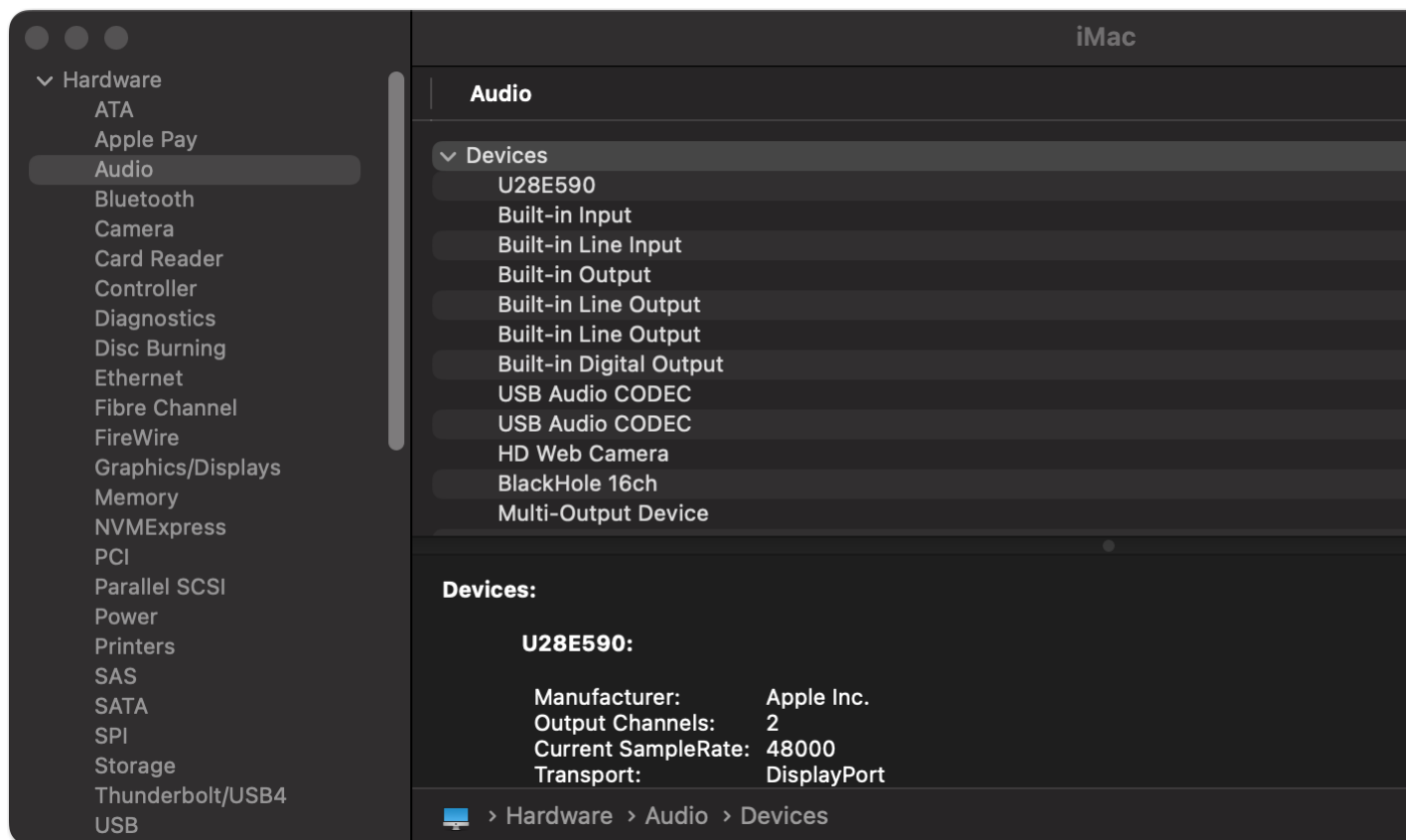
```
Executing: /usr/bin/kmutil showloaded  
No variant specified, falling back to release  
148  0 0xffffffff7f98f8e000 0x1000 0x1000 com.apple.driver.AppleSMBusPCI  
(1.0.14d1) C0C24D4F-420F-3AD1-9039-AFA08E9524FF <16 7 6 3>  
153  1 0xffffffff7f98f82000 0x7000 0x7000  
com.apple.driver.AppleSMBusController (1.0.18d1) 7ECD5D2C-E62F-3C6D-ACD7-  
D90B7443024D <152 16 15 7 6 3>
```

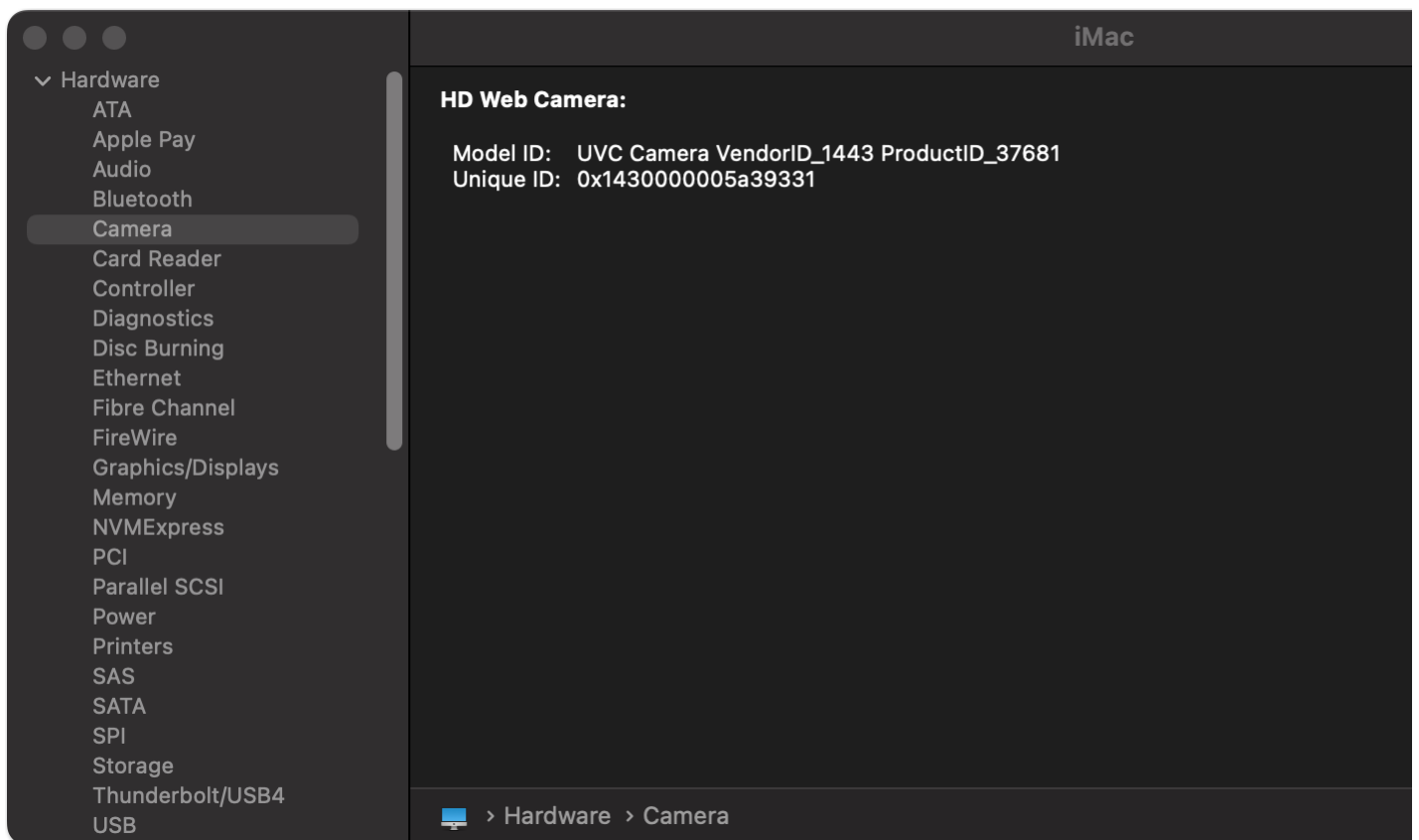
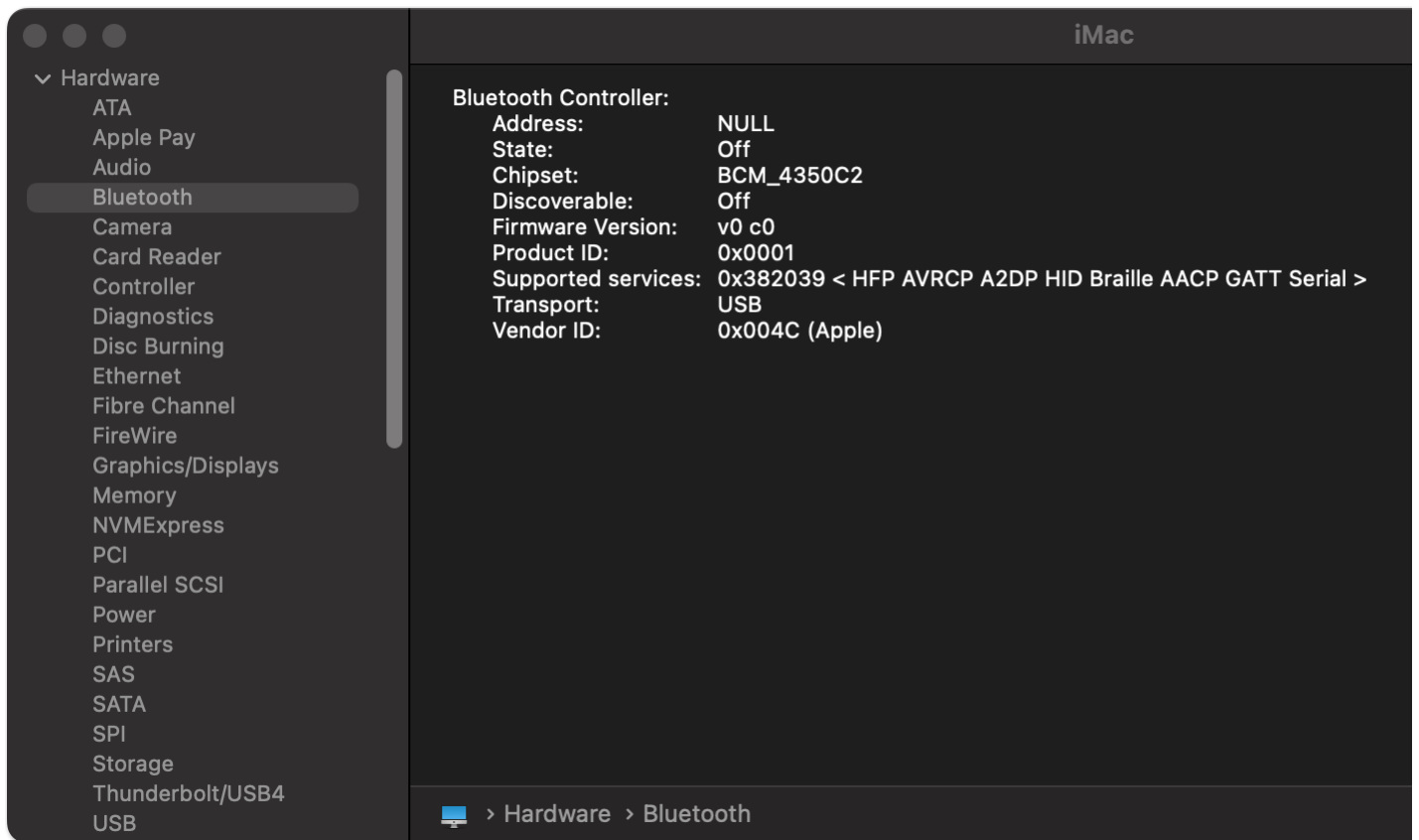
## Verifying Plugin-Type=1:

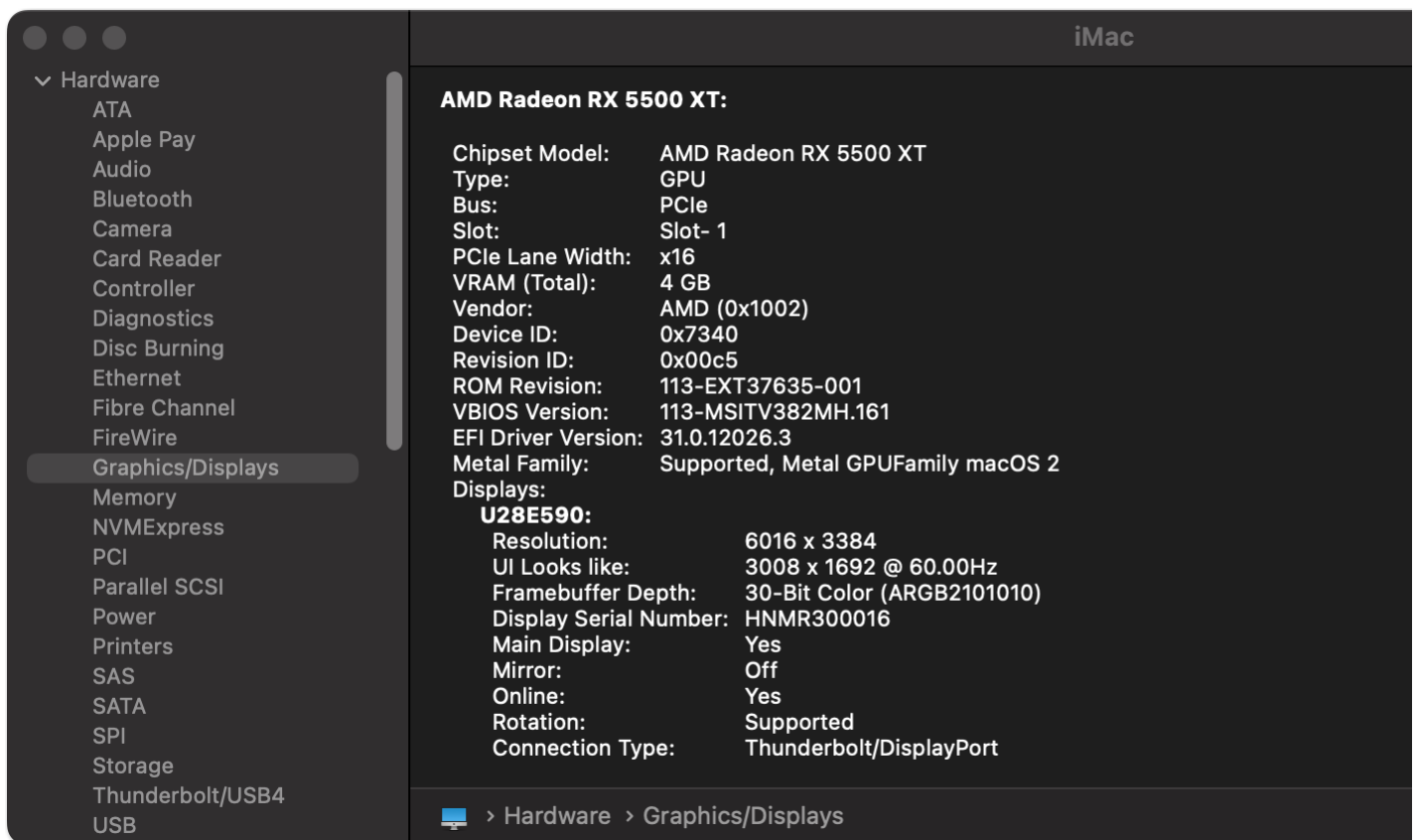
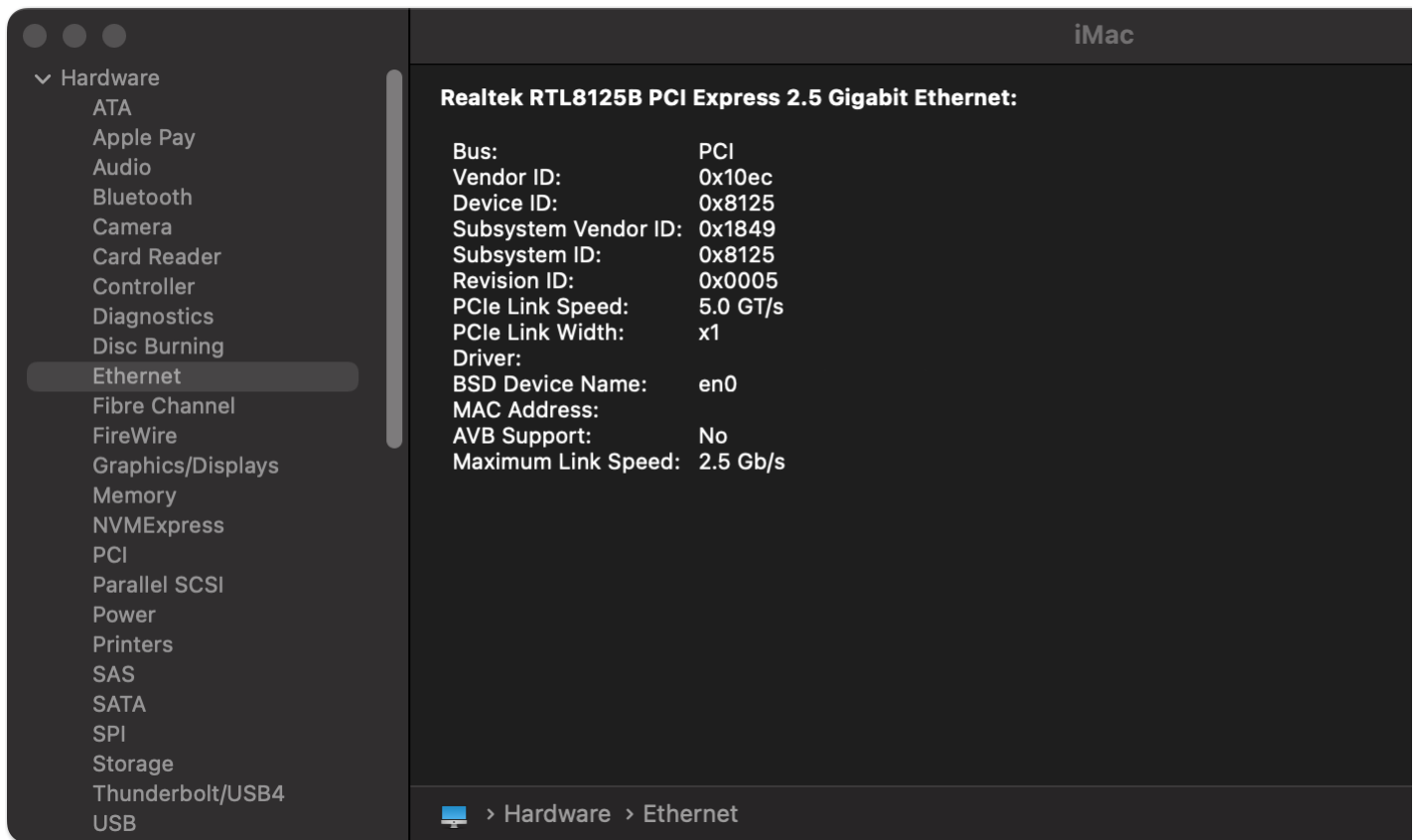
```
sysctl machdep.xcpm.mode
```

## 4K Test (Online)

[[AppleTV](https://yt-embed.herokuapp.com/embed?v=Yl4cs7Xzuu4)]  
(https://youtu.be/Yl4cs7Xzuu4 "AppleTV Test") [[Youtube4K](https://yt-  
embed.herokuapp.com/embed?v=uV4JGZE8Jrk)](https://youtu.be/uV4JGZE8Jrk "Youtube4K")







Hardware

ATA

Apple Pay

Audio

Bluetooth

Camera

Card Reader

Controller

Diagnostics

Disc Burning

Ethernet

Fibre Channel

FireWire

Graphics/Displays

Memory

NVMeExpress

PCI

Parallel SCSI

Power

Printers

SAS

SATA

SPI

Storage

Thunderbolt/USB4

USB

iMac

Memory Slot

Memory

Size

Type

Memory Slots

BANK 0/ChannelA-DIMM0

8 GB

DDR4

BANK 1/ChannelA-DIMM1

8 GB

DDR4

BANK 2/ChannelB-DIMM0

8 GB

DDR4

BANK 3/ChannelB-DIMM1

8 GB

DDR4

Memory Slots:

ECC:

Disabled

Upgradeable Memory:

Yes

BANK 0/ChannelA-DIMM0:

Size:

8 GB

> Hardware > Memory > Memory Slots

Hardware

ATA

Apple Pay

Audio

Bluetooth

Camera

Card Reader

Controller

Diagnostics

Disc Burning

Ethernet

Fibre Channel

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Graphics/Displays

Memory

NVMeExpress

PCI

Parallel SCSI

Power

Printers

SAS

SATA

SPI

Storage

Thunderbolt/USB4

USB

iMac

NVMeExpress Device Tree

Apple SSD Controller

KINGSTON SA2000M8500G

Apple SSD Controller

KINGSTON SA2000M8500G

Apple SSD Controller:

KINGSTON SA2000M8500G:

Capacity:

500.11 GB (500,107,862,016 bytes)

TRIM Support:

Yes

Model:

KINGSTON SA2000M8500G

Revision:

S5Z42109

> Hardware > NVMeExpress > Apple SSD Controller

Hardware

ATA

Apple Pay

Audio

Bluetooth

Camera

Card Reader

Controller

Diagnostics

Disc Burning

Ethernet

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PCI

Parallel SCSI

Power

Printers

SAS

SATA

SPI

Storage

Thunderbolt/USB4

USB

iMac

Card

Type

AMD Radeon RX 5500 XT

gpu-controller

BCM4360 802.11ac Wireless Network Adapter

Other Network Controller

Intel UHD Graphics 630

Other Display Controller

Navi 10 HDMI Audio

Audio Device

VL805/806 xHCI USB 3.0 Controller

USB eXtensible Host Controller

AMD Radeon RX 5500 XT:

Name:

ATY\_GPU

Type:

gpu-controller

Driver Installed:

Yes

MSI:

Yes

Bus:

PCI

Slot:

Slot- 1

> Hardware > PCI > AMD Radeon RX 5500 XT

Hardware

ATA

Apple Pay

Audio

Bluetooth

Camera

Card Reader

Controller

Diagnostics

Disc Burning

Ethernet

Fibre Channel

FireWire

Graphics/Displays

Memory

NVMeExpress

PCI

Parallel SCSI

Power

Printers

SAS

SATA

SPI

Storage

Thunderbolt/USB4

USB

iMac

System Power Settings:

AC Power:

System Sleep Timer (Minutes):

0

Disk Sleep Timer (Minutes):

10

Display Sleep Timer (Minutes):

0

Sleep on Power Button:

Yes

Automatic Restart on Power Loss:

No

Wake on LAN:

No

Current Power Source:

Yes

Hibernate Mode:

0

PrioritizeNetworkReachabilityOverSleep:

0

Hardware Configuration:

UPS Installed:

No

> Hardware > Power



Hardware

ATA

Apple Pay

Audio

Bluetooth

Camera

Card Reader

Controller

Diagnostics

Disc Burning

Ethernet

Fibre Channel

FireWire

Graphics/Displays

Memory

NVMeExpress

PCI

Parallel SCSI

Power

Printers

SAS

SATA

SPI

Storage

Thunderbolt/USB4

USB

iMac

Serial-ATA Device Tree

Generic AHCI Controller

SanDisk SSD PLUS 240GB

Generic AHCI Controller

SanDisk SSD PLUS 480GB

Generic AHCI Controller

Generic AHCI Controller

Generic AHCI Controller

Generic AHCI Controller

Generic AHCI Controller:

Vendor:Generic

Product:AHCI Controller

Link Speed:6 Gigabit

Negotiated Link Speed:6 Gigabit

Physical Interconnect:SATA

Description:AHCI Version 1.31 Supported

> Hardware > SATA > Generic AHCI Controller

Hardware

ATA

Apple Pay

Audio

Bluetooth

Camera

Card Reader

Controller

Diagnostics

Disc Burning

Ethernet

Fibre Channel

FireWire

Graphics/Displays

Memory

NVMeExpress

PCI

Parallel SCSI

Power

Printers

SAS

SATA

SPI

Storage

Thunderbolt/USB4

USB

iMac

Volume Name	Free	Capacity	Mount Point
Macintosh	468.23 GB	499.9 GB	/
Macintosh - Data	468.23 GB	499.9 GB	/System/Volumes/Data
Storage	438.31 GB	479.38 GB	/Volumes/Storage

Macintosh:

Free:468.23 GB (468,232,691,712 bytes)

Capacity:499.9 GB (499,898,105,856 bytes)

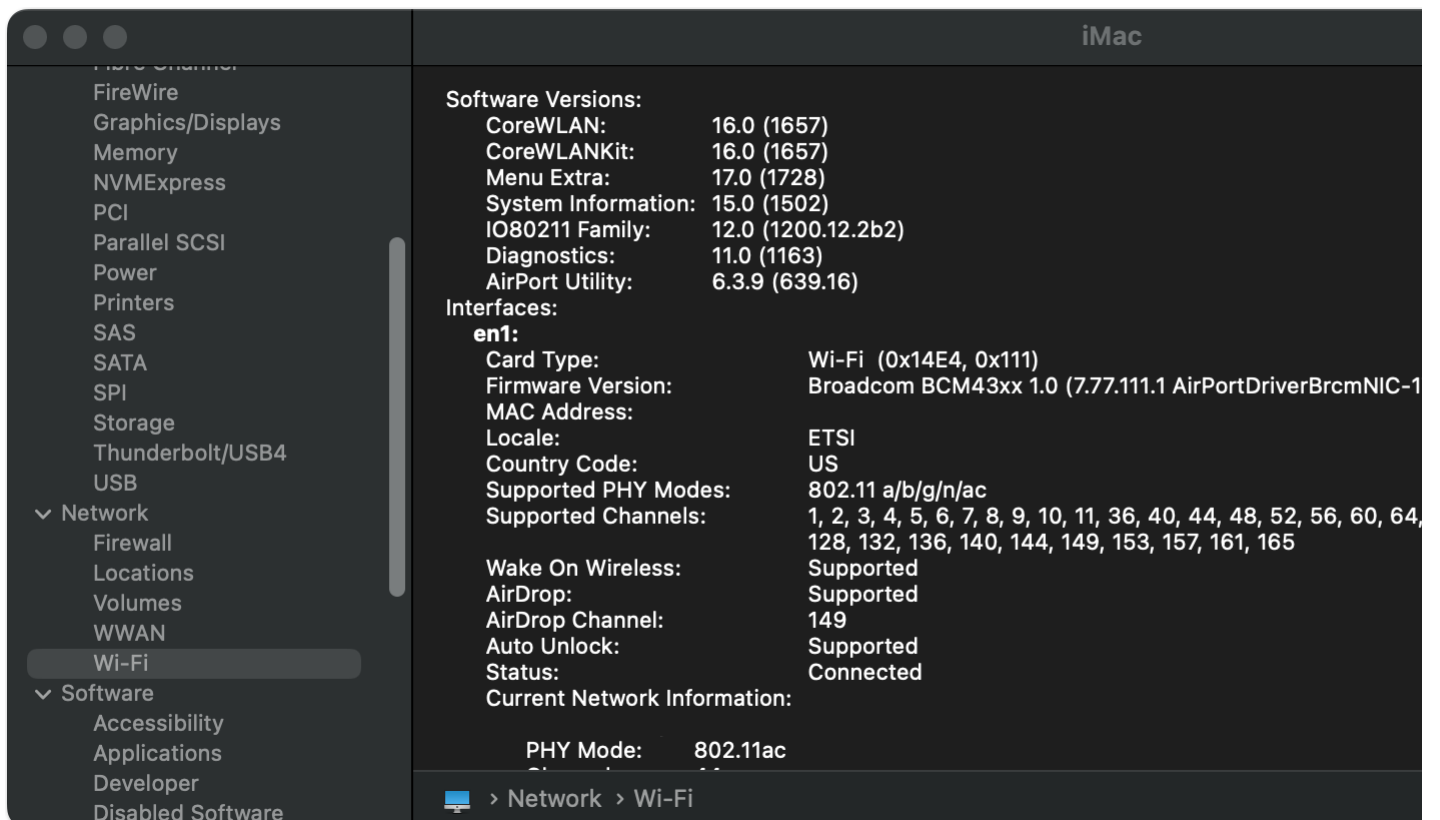
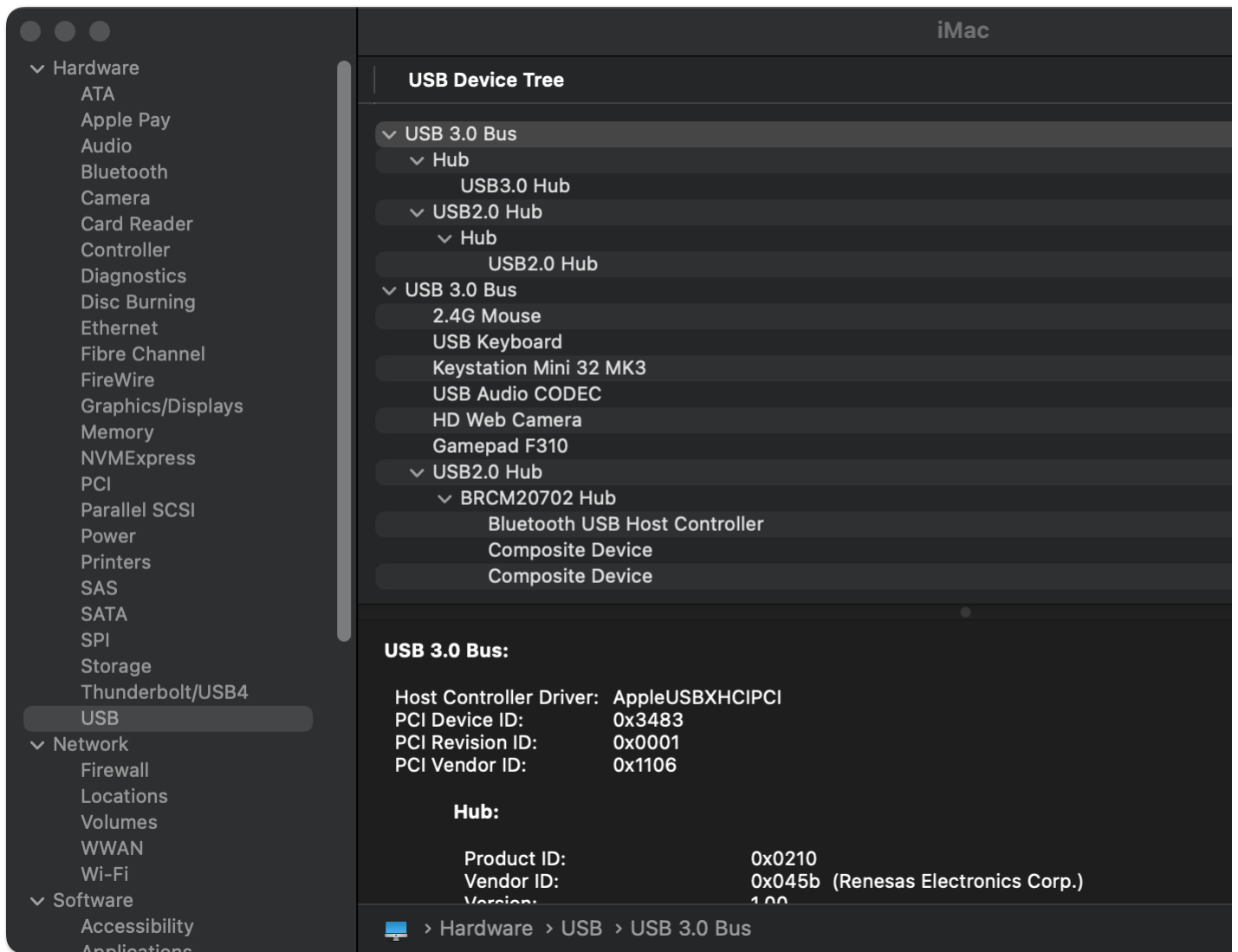
Mount Point:/

File System:APFS

Writable:No

Ignore Ownership:No

> Hardware > Storage > Macintosh



## Download

- [Clover 5149](#) Pre-Build
- [OpenCore 0.8.5](#) Pre-Build

| Both `config.plist` sensitive data is removed

---

## References

[AppleLife](#)

| @ [Dumps of system information of Apple computers](#)

---

## Acknowledgement

- [Acidanthera](#) for [OpenCorePkg](#)
- [Dortania](#) for [OC Guides](#)
- [corpnewt](#) for [DevicePath](#)
- [dreamwhite](#) for [OC-Anonymizer](#)
- [5T33Z0](#) for [OC Little Translate](#)