## Overview

### HP 470 G9 17 inch Notebook PC

**Left**

**1.** Internal Microphone (2)

**2.** Webcam LED

**3.** Webcam

**4.** Clickpad

**5.** Headphone/microphone combo jack

**6.** SuperSpeed USB Type-C® 5Gbps signaling rate (Data Transfer Only)

**7.** HDMI 1.4 (Cable sold separately)

**8.** SuperSpeed USB Type-A 5Gbps signaling rate (USB 3.2 Gen 1)

## Overview

**Right**

1. Power Button
2. Power Connector
3. Super Speed USB Type- A 5Gbps signaling rate (USB 3.2 Gen 1)
4. Hard Drive LED
5. Power LED
6. Fingerprint Sensor

# Overview

## AT A GLANCE

- Preinstalled with Windows 11 Pro, Windows Home or FreeDOS
- Choice of 12th generation Intel® Core™ i7, i5 and i3 processors
- NVIDIA® GeForce® MX550 (2 GB GDDR6 dedicated) (Optional)
- Fast dual channel DDR4 SODIMM memory up to 32 GB
- Choice of 17.3" diagonal HD, Ultra Wide Viewing Angle FHD, Non-Touch screen
- Full size, optional backlit keyboard and clickpad with Precision Touchpad Supported certified
- Choice of solid state drives up to 1TB
- TPM2.0, Touch Fingerprint reader
- Supports wireless options for connectivity on the go including gigabit-data rate Wi-Fi 6
- Optimize your video calls with an HD camera and temporal noise reduction that adjusts the lighting to your environment.

**NOTE: See important legal disclosures for all listed specs in their respective features sections.**

## Technical Specifications

### PRODUCT NAME

HP 470 G9 17 inch Notebook PC

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### OPERATING SYSTEM

| | |
|---|---|
| **Preinstalled** | Windows 11 Pro [1]<br>Windows 11 Pro Education [1]<br>Windows11 Home – HP recommends Windows 11 Pro for business [1]<br>Windows 11 Home Single Language – HP recommends Windows 11 Pro for business [1,2]<br>Windows 11 Home Education – HP recommends Windows 11 Pro for business [1]<br>FreeDOS3.0 |

1. Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows is automatically updated and enabled. High speed internet and Microsoft account required. ISP fees may apply and additional requirements may apply over time for updates. See http://www.windows.com

2. This computer is preinstalled with Windows 11 Home Single Language.

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### PROCESSORS

| Processor [3,4,5,6] | Cores | Number of P-cores | Number of E-cores | Threads | L3 Cache | Max Turbo Frequency | | Base Frequency | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | P-cores | E-cores | P-cores | E-cores |
| Intel® Core™ i7-1255U | 10 | 2 | 8 | 12 | 12MB | 4.7 GHz | 3.5 GHz | 1.7 GHz | 1.2 GHz |
| Intel® Core™ i5-1235U | 10 | 2 | 8 | 12 | 12MB | 4.4 GHz | 3.3 GHz | 1.3 GHz | 0.9 GHz |
| Intel® Core™ i3-1215U | 6 | 2 | 4 | 8 | 10MB | 4.4 GHz | 3.3 GHz | 1.2 GHz | 0.9 GHz |

3. Multicore is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering, branding and/or naming is not a measurement of higher performance.

4. Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.

5. Intel® Turbo Boost performance varies depending on hardware, software and overall system configuration. See http://www.intel.com/technology/turboboost for more information.

6. In accordance with Microsoft's support policy, HP does not support the Windows 8 or Windows 7 operating system on products configured with Intel and AMD 7th generation and forward processors or provide any Windows 8 or Windows 7 drivers on http://www.support.hp.com.

# Technical Specifications

## CHIPSET

Chipset is integrated with processor.

## GRAPHICS

**Integrated**
Intel® UHD Graphics [7]
Intel® Iris® Xe Graphics [7,8]

**Discrete**
NVIDIA® GeForce® MX550 (2 GB DDR6 dedicated) [9]

**Supports**
Support HD decode, DX12, HDMI 1.4b [7]

7. HD content required to view HD images.
8. Intel® Iris® Xe Graphics capabilities require system to be configured with Intel® Core™ i5 or i7 processors and dual channel memory. Intel® Iris® Xe Graphics with Intel® Core™ i5 or 7 processors and single channel memory will only function as UHD graphics.
9. Integrated graphics depends on processor. NVIDIA® Optimus™ technology requires an Intel processor, plus an NVIDIA® GeForce® discrete graphics configuration and is available on Windows 10 Pro OS. With NVIDIA® Optimus™ technology, full enablement of all discrete graphics video and display features may not be supported on all systems (e.g. OpenGL applications will run on the integrated GPU or the APU as the case may be).

## DISPLAY

**Non-Touch**
43.9 cm (17.3") diagonal, HD+ (1600 x 900), Anti-Glare LED SVA, 250 nits, 60% NTSC, eDP 1.2 w/o PSR [7,10]
43.9 cm (17.3") diagonal, FHD (1920 x 1080), Anti-Glare LED UWVA, 250 nits, 45% NTSC, eDP 1.2 w/o PSR [7,10]
43.9 cm (17.3") diagonal FHD (1920 x 1080), Anti-Glare WLED UWVA, 300 nits, 72% UWVA eDP 1.4+PSR2 slim 60Hz Narrow Bezel [7,10]

**Displays support**
HDMI v1.4b up to 1920x1080 60Hz

**Display Size (Diagonal)**
17.3"
43.9 cm (17.3")

7. HD content required to view HD images.
10. Resolutions are dependent upon monitor capability, and resolution and color depth settings.

## Technical Specifications

### STORAGE AND DRIVES

**Primary Storage**
1 TB 5400 rpm SATA [11]
500 GB 5400 rpm SATA [11]

**Primary M.2 Storage**
1 TB PCIe® NVMe™ M.2 SSD [11]
512 GB PCIe® NVMe™ M.2 SSD [11]
256 GB PCIe® NVMe™ M.2 SSD [11]
128 GB PCIe® NVMe™ M.2 SSD [11]

11. For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30 GB (for Windows) is reserved for system recovery software.

### MEMORY

**Maximum Memory**
32 GB DDR4-3200 SDRAM [12]

**Memory**
32 GB DDR4-3200 SDRAM (2 x 16 GB) [12]
16 GB DDR4-3200 SDRAM (1 x 16 GB) [12]
16 GB DDR4-3200 SDRAM (2 x 8 GB) [12]
12 GB DDR4-3200 SDRAM (1 x 8 + 1 x 4GB) [12]
8 GB DDR4-3200 SDRAM (1 x 8 GB) [12]
8 GB DDR4-3200 SDRAM (2 x 4 GB) [12]
4 GB DDR4-3200 SDRAM (1 x 4 GB) [12]

**Memory Slots** [13]
2 SODIMM
Both slots are customer non-accessible / non-upgradeable
Supports Dual Channel Memory

12. Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed.
13. All slots are non-accessible / non-upgradeable.

# Technical Specifications

## NETWORKING/COMMUNICATIONS

### WLAN

Realtek 8852BE Wi-Fi® 6 Bluetooth® 5.2 WLAN [14]
Realtek 802.11b/g/n/a/ac (2x2) MU-MIMO supported and Bluetooth® 5 [15]

[14] Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 6 (802.11ax) is backwards compatible with prior 802.11 specs.
[15] Wireless access point and internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 5 (802.11 ac) is backwards compatible with prior 802.11 specs.

## AUDIO/MULTIMEDIA

### Audio

Dual Speakers
Integrated dual array microphone

### Speaker Power

2W/4ohm Per speaker

### Camera

720p HD camera with Temporal Noise Reduction [7]

[7] HD content required to view HD images.

## KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

### Keyboard

Island-style ash silver backlit keyboard with numeric keypad and touchpad with image sensor [16]
Island-style ash silver keyboard with numeric keypad and Touchpad with image sensor

### Pointing Device

Touchpad with multi-touch gesture support

### Function Keys

ESC
F1 – help
F2 – Brightness Down
F3 - Brightness Up
F4 - Backlight Toggle
F5 - Audio Mute
F6 – Volume Down
F7 – Volume Up
F8 - Plays the previous track of an audio CD or the previous section of a DVD or a Blu-ray Disc (BD).
F9 - Starts, pauses, or resumes playback of an audio CD, a DVD, or a BD
F10 - Plays the next track of an audio CD or the next section of a DVD or a BD
F11 – Display Switching
F12 - Insert

16. Backlit keyboard is an optional feature.

## SOFTWARE AND SECURITY

**Software**

Microsoft Office 2019 and Office 365
WPS Office CMIT
Dropbox Promotion
HP QuickDrop [17]
MYOfficesMedio True DVD for HP
Adobe offer
MyHP
HP Privacy Settings
HP SUPPORT ASSISTANT [18]
HP Audio Switch
HP Connection Optimizer
ENERGY STAR® UWP
HP PC Hardware Diagnostics Windows
HP PC Hardware Diagnostics UEFI
HP Smart Health
HP Smart

**Manageability Features**

Touchpoint Customizer for Consumer

**NOTE**: To enhance brightness, level go to the Intel® Graphics Command Center app, click on System and turn off the Display Power Savings function.

**Security Management**

McAfee Security (30 days free trial as default) [19]
Express VPN (30 days free trial)
LastPass password manager
TPM2.0 (select model) / TPM 1.4 [20]
Fingerprint Reader [21]

**Security**
**TPM**
fTPM 2.0 support

**IPv6 Support**
Yes

**FirstNet Certified**
No

**Is the BIOS on this notebook ISO/IEC 19678:2015 (formerly NIST 800-147) compliant?:** Yes
UEFI version: 2.8B
Class: 3

17. HP Quick Drop requires Internet access and Windows 10 or higher PC preinstalled with HP QuickDrop app and either an Android device (phone or tablet) running Android 7 or higher with the Android HP QuickDrop app, and /or an iOS device (phone or tablet) running iOS 12 or higher with the iOS HP QuickDrop app.
18. HP Support Assistant requires Windows and Internet access.
19. 30-day McAfee® LiveSafe™ trial included. Internet access required and not included. Subscription required after expiration. See www.McAfee.com for more details.
20 Firmware TPM is version 2.0. Hardware TPM is v1.2, which is a subset of the TPM 2.0 specification version v0.89 as implemented by Intel Platform Trust Technology (PTT).
21. HP Fingerprint sensor is an optional feature that must be configured at purchase.

## POWER

**Power Supply**
HP Smart 65 W External AC power adapter [22]
HP Smart 45 W External AC power adapter [22]
Compliant with UL 1642 Standard

**Battery**
HP Long Life 3-cell, 41 Wh Li-ion [23][25]
Compliant with UL 1642 Standard

**Power Cord**
1M length Power Cord

**Battery Life**
Up to 7 hours 5 minutes [26]

**Battery Weight**
175g +/-10g

22. Availability may vary by country.
23. Battery is internal and not replaceable by customer. Serviceable by warranty.
25. Actual battery Watt-hours (Wh) will vary from design capacity. Battery capacity will naturally decrease with shelf life, time, usage, environment, temperature, system configuration, loaded apps, features, power management settings and other factors.
26. MM18 battery life will vary depending on various factors including product model, configuration, loaded applications, features, use, wireless functionality, and power management settings. The maximum capacity of the battery will naturally decrease with time and usage. See http://www.bapco.com for additional details.

# Technical Specifications

## WEIGHTS & DIMENSIONS

**Product Weight** [27]
Starting at 4.6 lb
Starting at 2.08 kg

**Product Dimensions (w x d x h)**
15.77 x 10.14 x 0.78 in
40.07 x 25.78 x 1.99 cm

[27] Weight will vary by configuration. Does not include power adapter.

## PORTS/SLOTS

**Ports**
2 SuperSpeed USB Type-A 5Gbps signaling rate (USB 3.2 Gen 1)
1 HDMI 1.4 [28]
1 SuperSpeed USB Type-C® 5Gbps signaling rate (Data Transfer Only)
1 AC power
1 Headphone/microphone combo jack

**Expansion Slots**
Push-Pull Insertion/Removal

[28] HDMI cable sold separately.

## Technical Specifications

### SERVICE AND SUPPORT

HP Services offers 1-year limited warranties and 90-day software support depending on country. Batteries have a default one year limited warranty. Refer to http://www.hp.com/support/batterywarranty/ for additional battery information. On-site service and extended coverage is also available. HP Care Pack Services are optional extended service contracts that go beyond the standard limited warranties. To choose the right level of service for your HP product, use the HP Care Pack Services Lookup Tool at: http://www.hp.com/go/cpc.[29]

29. HP Care Packs are sold separately. Service levels and response times for HP Care Packs may vary depending on your geographic location. Service starts on date of hardware purchase. Restrictions and limitations apply. For details, visit http://www.hp.com/go/cpc. HP services are governed by the applicable HP terms and conditions of service provided or indicated to Customer at the time of purchase. Customer may have additional statutory rights according to applicable local laws, and such rights are not in any way affected by the HP terms and conditions of service or the HP Limited Warranty provided with your HP Product.

# Technical Specifications

## SYSTEM UNIT

| | |
|---|---|
| **Stand-Alone Power Requirements (AC Power)** | |
| Nominal Operating Voltage | 19.5 V |
| Average Operating Power | 7.69W (TBC) |
| Integrated graphics | Yes |
| Discrete Graphics | N/A (Switchable graphics design) |
| Max Operating Power | Discrete < 65W<br>UMA < 45W |
| **Temperature** | |
| Operating | 32° to 95° F (0° to 35° C) (not writing optical)<br>41° to 95° F (5° to 35° C) (writing optical) |
| Non-operating | -4° to 140° F (-20° to 60° C) |
| **Relative Humidity** | |
| Operating | 10% to 90%, non-condensing |
| Non-operating | 5% to 95% |
| **Shock** | |
| Operating | 40 G, 2 ms duration, half-sine |
| Non-operating | 240 G, 2 ms duration, half-sine |
| **Random Vibration** | |
| Operating | 1.043 grams |
| Non-operating | 3.5 grams |
| **Altitude (unpressurized)** | |
| Operating | -15 m to 3048 m (-50 ft to 10000 ft) |
| Non-operating | -15 m to 12192 m (-50 ft to 40000 ft) |
| **Planned Industry Standard Certifications** | |
| Regulatory Model Number | TPN-I139 |
| UL | Yes |
| CSA | No |
| FCC Compliance | Yes |
| ENERGY STAR® | Yes[30] |
| EPEAT | Yes, Gold in United States [31] |
| ICES | Yes |
| Australia / | No |
| NZ A-Tick Compliance | No |
| CCC | Yes |
| Japan VCCI Compliance | No |
| KC | No |
| BSMI | Yes |
| CE Marking Compliance | Yes |
| BNCI or BELUS | No |
| CIT | No |
| GOST | No |
| Saudi Arabian Compliance (ICCP) | No |
| SABS | No |

| | |
|---|---|
| UKRSERTCOMPUTER | No |

30. Configurations of the HP 470 G9 17 inch Notebook PC that are ENERGY STAR® certified are identified as HP 470 G9 17 inch Notebook PC ENERGY STAR on HP websites and on http://www.energystar.gov.
31. Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. EPEAT® status varies by country. Visit http://www.epeat.net for more information.

## DISPLAYS

Note: All specifications represent the typical specifications provided by HP's component manufacturers; actual performance may vary either higher or lower.

| | | |
|---|---|---|
| **17.3 inch FHD (1920x1080) Anti-Glare WLED UWVA 72percent cg 300nits eDP 1.2 w/o PSR slim 60Hz NWBZ** | **Outline Dimensions (W x H x D)** | 390.190 x 238.810 (max.) |
| | **Active Area** | 381.888 x 214.812 (typ.) |
| | **Weight** | 510 g(max) |
| | **Diagonal Size** | 17.3 (inch) |
| | **Thickness** | 3.5mm max. |
| | **Interface** | eDP 1.2 |
| | **Surface Treatment** | Anti-Glare |
| | **Touch Enabled** | No |
| | **Contrast Ratio** | 1000:1 (typ) |
| | **Refresh Rate** | 60Hz |
| | **Brightness** | 300nits typ. |
| | **Pixel Resolution - Format** | 1920 x 1080 (FHD) |
| | **Backlight** | WLED |
| | **Pixel Resolution** | RGB |
| | **Color Gamut Coverage** | NTSC72% |
| | **Color Depth** | 8bits |
| | **Viewing Angle** | UWVA 85/85/85/85 |
| | **Low Blue Light** | No |
| | **Power Consumption (W, EBL@ 150nits max/ 200nits max)** | 3.2 (max)/3.64 (max) |

| | | |
|---|---|---|
| **17.3 in HD+ (1600 x 900) Anti-Glare LED SVA NTSC 60 250 eDP 1.2 w/o PSR NWBZ flat Panel** | **Outline Dimensions (W x H x D)** | 390.180 x 237.020 (max) |
| | **Active Area** | 382.080 x 214.920 mm(typ.) |
| | **Weight** | 480 g(max) |
| | **Diagonal Size** | 17.3 (inch) |
| | **Thickness** | 3.5mm (max) |
| | **Interface** | eDP 1.2 |
| | **Surface Treatment** | Anti-Glare |
| | **Touch Enabled** | No |
| | **Contrast Ratio** | 500:1 (typ) |
| | **Refresh Rate** | 60Hz |
| | **Brightness** | 250nits typ. |
| | **Pixel Resolution - Format** | 1600x900 (HD+) |
| | **Backlight** | WLED |

| | | |
|---|---|---|
| | **Pixel Resolution** | RGB |
| | **Color Gamut Coverage** | NTSC60% |
| | **Color Depth** | 6 bits |
| | **Viewing Angle** | 45/45/20/40 |
| | **Low Blue Light** | No |
| | **Power Consumption (W, EBL@ 150nits max/ 200nits max)** | 2.74 (max)/ 3.42(max) |

| | | |
|---|---|---|
| **17.3 in FHD (1920 x 1080) Anti-Glare LED UWVA NTSC 45 250 eDP 1.2 w/o PSR NWBZ flat Panel** | **Outline Dimensions (W x H x D)** | 390.190 x 238.810 (max) |
| | **Active Area** | 381.890 x 214.810 mm (typ.) |
| | **Weight** | 500 g (max) |
| | **Diagonal Size** | 17.3 |
| | **Thickness** | 3.5 (max) |
| | **Interface** | eDP 1.2 |
| | **Surface Treatment** | Anti-Glare |
| | **Touch Enabled** | No |
| | **Contrast Ratio** | 800:1 (typ) |
| | **Refresh Rate** | 60Hz |
| | **Brightness** | 250 nits (typ.) |
| | **Pixel Resolution - Format** | 1920 x 1080 (FHD) |
| | **Backlight** | WLED |
| | **Pixel Resolution** | RGB |
| | **Color Gamut Coverage** | NTSC45% |
| | **Color Depth** | 8 bits |
| | **Viewing Angle** | UWVA 85/85/85/85 |
| | **Low Blue Light** | No |
| | **Power Consumption (W, EBL@ 150nits max/ 200nits max)** | 2.9W/3.5W |

# Technical Specifications

## STORAGE AND DRIVES

For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30 GB (for Windows) is reserved for system recovery software.

| | | |
|---|---|---|
| **24528 - HDD 1TB 5400RPM 7mm SATA (HDD 1TB 5400RPM 2.5in)** | **Drive Weight** | 0.21 lbs (95 g) |
| | **Rotation speed** | 5400rpm |
| | **Cache Buffer** | Up to 128MB |
| | **Height** | 0.28 in (7 mm) |
| | **Width** | 2.75 in (69.85 mm) |
| | **Interface** | ATA-8, SATA 3.0 |
| | **Transfer Rate** | 600 MB/s |
| | **Seek Time** | Single Track: 2 ~ 1.5 ms;<br>Average: 11 ~ 13 ms;<br>Maximum: 18 ~ 22 ms |
| | **Logical Blocks** | 1,953,525,168 |
| | **Operating Temperature** | 32° to 140° F (0° to 60° C) [case temp] |
| | **Security Features** | ATA Security |
| | **Features** | S.M.A.R.T., NCQ, Ultra DMA |

| | | |
|---|---|---|
| **16930 - HDD 500GB 5400RPM 7mm SATA** | **Drive Weight** | 0.21 lbs (95 g) |
| | **Rotation speed** | 5400rpm |
| | **Cache Buffer** | Up to 128MB |
| | **Height** | 0.28 in (7 mm) |
| | **Width** | 2.75 in (69.85 mm) |
| | **Interface** | ATA-8, SATA 3.0 |
| | **Transfer Rate** | 600 MB/s |
| | **Seek Time** | Single Track: 2 ~ 1.5 ms;<br>Average: 11 ~ 13 ms;<br>Maximum: 18 ~ 22 ms |
| | **Logical Blocks** | 976,773,168 |
| | **Operating Temperature** | 32° to 140° F (0° to 60° C) [case temp] |
| | **Security Features** | ATA Security |
| | **Features** | S.M.A.R.T., NCQ, Ultra DMA |

| | | |
|---|---|---|
| **50209 - SSD 128GB 2230 PCIe NVMe Value (SSD 128GB 2230 PCIe NVMe Value)** | **Form Factor** | M.2 2230 |
| | **Capacity** | 128GB |
| | **NAND Type** | value |
| | **Height** | 0.09 in (2.3 mm) |
| | **Width** | 0.87 in (22 mm) |
| | **Interface** | PCIe NVMe |
| | **Maximum Sequential Read** | |
| | **Maximum Sequential Write** | |
| | **Logical Blocks** | 250,069,680 |
| | **Operating Temperature** | 32° to 158°F (0° to 70°C) [ambient temp] |

| | | |
|---|---|---|
| | **Features** | Pyrite |

| | | |
|---|---|---|
| **57426 - SSD 128GB 2280 PCIe-3x2 Three Layer Cell (SSD 128GB 2280 PCIe-3x2 Three Layer Cell)** | **Form Factor** | M.2 2280 |
| | **Capacity** | 128GB |
| | **NAND Type** | TLC |
| | **Height** | 0.09 in (2.3 mm) |
| | **Width** | 0.87 in (22 mm) |
| | **Interface** | PCIe NVMe Gen3X4 |
| | **Maximum Sequential Read** | |
| | **Maximum Sequential Write** | |
| | **Logical Blocks** | 250,069,680 |
| | **Operating Temperature** | 32° to 158°F (0° to 70°C) [ambient temp] |
| | **Features** | Pyrite |
| | **Form Factor** | M.2 2280 |

| | | |
|---|---|---|
| **61597 - SSD 1TB 2280 PCIe NVMe Value (1TB 2280 PCIe NVMe Value 2nd Solid State Drive)** | **Form Factor** | M.2 2280 |
| | **Capacity** | 1TB |
| | **NAND Type** | value |
| | **Height** | 0.09 in (2.3 mm) |
| | **Width** | 0.87 in (22 mm) |
| | **Weight** | |
| | **Interface** | PCIe NVMe |
| | **Maximum Sequential Read** | |
| | **Maximum Sequential Write** | |
| | **Logical Blocks** | 2,000,409,264 |
| | **Operating Temperature** | 32° to 158°F (0° to 70°C) [ambient temp] |
| | **Features** | Pyrite |

| | | |
|---|---|---|
| **47267 - SSD 256GB 2280 PCIe NVMe Value (SSD 256GB 2280 PCIe NVMe Value)** | **Form Factor** | M.2 2280 |
| | **Capacity** | 256GB |
| | **NAND Type** | value |
| | **Height** | 0.09 in (2.3 mm) |
| | **Width** | 0.87 in (22 mm) |
| | **Interface** | PCIe NVMe |
| | **Maximum Sequential Read** | |
| | **Maximum Sequential Write** | |
| | **Logical Blocks** | 500,118,192 |
| | **Operating Temperature** | 32° to 158°F (0° to 70°C) [ambient temp] |
| | **Features** | Pyrite |

## Technical Specifications

| | | |
|---|---|---|
| **47268 - SSD 512GB 2280 PCIe NVMe Value** | **Form Factor** | M.2 2280 |
| | **Capacity** | 512GB |
| | **NAND Type** | value |
| | **Height** | 0.09 in (2.3 mm) |
| | **Width** | 0.87 in (22 mm) |
| | **Interface** | PCIe NVMe |
| | **Maximum Sequential Read** | |
| | **Maximum Sequential Write** | |
| | **Logical Blocks** | 1,000,215,216 |
| | **Operating Temperature** | 32° to 158°F (0° to 70°C) [ambient temp] |
| | **Features** | Pyrite |

## Technical Specifications

### NETWORKING/COMMUNICATIONS

| | | |
|---|---|---|
| **Realtek RTL8822CE 802.11ac 2x2 Wi-Fi + Bluetooth® 5** [1] | **Wireless LAN Standards** | IEEE 802.11a<br>IEEE 802.11b<br>IEEE 802.11g<br>IEEE 802.11n<br>IEEE 802.11ac<br>IEEE 802.11d<br>IEEE 802.11e<br>IEEE 802.11h<br>IEEE 802.11i<br>IEEE 802.11k<br>IEEE 802.11r<br>IEEE 802.11v |
| | **Interoperability** | Wi-Fi certified modules |
| | **Frequency Band** | •802.11b/g/n<br>2.402 – 2.482 GHz<br>•802.11a/n/ac<br>4.9 – 4.95 GHz (Japan)<br>5.15 – 5.25 GHz<br>5.25 – 5.35 GHz<br>5.47 – 5.725 GHz<br>5.825 – 5.850 GHz |
| | **Data Rates** | • 802.11b: 1, 2, 5.5, 11 Mbps<br>• 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>• 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>• 802.11n: max 300Mbps<br>• 802.11ac : max 866.7Mbps |
| | **Modulation** | Direct Sequence Spread Spectrum<br>BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM |
| | **Security**[3] | • IEEE and WiFi certified 64 / 128 bit WEP encryption for a/b/g mode only<br>• AES-CCMP: 128 bit in hardware<br>• 802.1x authentication<br>• WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.<br>• WPA2 certification<br>• WPA3 certification<br>• IEEE 802.11i<br>• WAPI |
| | **Network Architecture Models** | Ad-hoc (Peer to Peer)<br>Infrastructure (Access Point Required) |
| | **Roaming** | IEEE 802.11 compliant roaming between access points |
| | **Output Power**[2] | • 802.11b: +18.5dBm minimum<br>• 802.11g: +17.5dBm minimum<br>• 802.11a: +18.5dBm minimum<br>• 802.11n HT20(2.4GHz): +15.5dBm minimum<br>• 802.11n HT40(2.4GHz): +14.5dBm minimum<br>• 802.11n HT20(5GHz): +15.5dBm minimum<br>• 802.11n HT40(5GHz): +14.5dBm minimum<br>• 802.11ac VHT80(5GHz): +11.5dBm minimum |

| | |
|---|---|
| **Power Consumption** | • Transmit mode :2.0 W<br>• Receive mode :1.6 W<br>• Idle mode (PSP) 180 mW (WLAN Associated)<br>• Idle mode :50 mW (WLAN unassociated)<br>• Connected Standby/Modern Standby: 10mW<br>• Radio disabled: 8 mW |
| **Power Management** | ACPI and PCI Express compliant power management<br>802.11 compliant power saving mode |
| **Receiver Sensitivity[4]** | 802.11b, 1Mbps : -93.5dBm maximum<br>802.11b, 11Mbps : -84dBm maximum<br>802.11a/g, 6Mbps : -86dBm maximum<br>802.11a/g, 54Mbps : -72dBm maximum<br>802.11n, MCS07 : -67dBm maximum<br>802.11n, MCS15 : -64dBm maximum<br>802.11ac, MCS0 : -84dBm maximum<br>802.11ac, MCS9 : -59dBm maximum |
| **Antenna type** | High efficiency antenna with spatial diversity, mounted in the display enclosure<br>Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications |
| **Form Factor** | PCI-Express M.2 MiniCard |
| **Dimensions** | 1. Type 2230 : 2.3 x 22.0 x 30.0 mm<br>2. Type 1216: 1.67 x 12.0 x 16.0 mm |
| **Weight** | 1. Type 2230 : 2.8g<br>2. Type 126: 1.3g |
| **Operating Voltage** | 3.3v +/- 9% |
| **Temperature** | **Operating** 14° to 158° F (–10° to 70° C)<br>**Non-operating** –40° to 176° F (–40° to 80° C) |
| **Humidity** | **Operating** 10% to 90% (non-condensing)<br>**Non-operating** 5% to 95% (non-condensing)" |
| **Altitude** | **Operating** 0 to 10,000 ft (3,048 m)<br>**Non-operating** 0 to 50,000 ft (15,240 m) |
| **LED Activity** | LED Amber – Radio OFF;<br>LED OFF – Radio ON |

**HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0 Wireless Technology**

| | |
|---|---|
| **Bluetooth Specification** | 4.0/4.1/4.2/5.0 Compliant |
| **Frequency Band** | 2402 to 2480 MHz |
| **Number of Available Channels** | Legacy: 0~79 (1 MHz/CH)<br>BLE: 0~39 (2 MHz/CH) |
| **Data Rates and Throughput** | Legacy: 3 Mbps data rate; throughput up to 2.17 Mbps<br>BLE: 1 Mbps data rate; throughput up to 0.2 Mbps<br>Legacy: Synchronous Connection Oriented links up to 3, 64 kbps, voice channels<br>Legacy: Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5) |
| **Transmit Power** | The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR. |

1. Wi-Fi 5 is designed to support gigabit data rate when transferring files between two devices connected to the same router.

Requires a wireless router, sold separately, that supports 80MHz and higher channels. Wireless access point and internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 5 (802.11 ac) is backwards compatible with prior 802.11 specs.

2. The FCC has declared as of September 1, 2014 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.

3. Check latest software/driver release for updates on supported security features.

4. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

---

| | | |
|---|---|---|
| **Realtek RTL8852BE 802.11ax 2x2 Wi-Fi® + Bluetooth® 5.2 (802.11ax 2x2, supporting gigabit data rate)[1]** | **Wireless LAN Standards** | IEEE 802.11a<br>IEEE 802.11b<br>IEEE 802.11g<br>IEEE 802.11n<br>IEEE 802.11ac<br>IEEE 802.11ax<br>IEEE 802.11d<br>IEEE 802.11e<br>IEEE 802.11h<br>IEEE 802.11i<br>IEEE 802.11k<br>IEEE 802.11r<br>IEEE 802.11v |
| | **Interoperability** | Wi-Fi certified modules |
| | **Frequency Band** | •802.11b/g/n/ax<br>2.402 – 2.482 GHz<br>•802.11a/n/ac/ax<br>4.9 – 4.95 GHz (Japan)<br>5.15 – 5.25 GHz<br>5.25 – 5.35 GHz<br>5.47 – 5.725 GHz<br>5.825 – 5.850 GHz |
| | **Data Rates** | • 802.11b: 1, 2, 5.5, 11 Mbps<br>• 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>• 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>• 802.11n: max 300Mbps<br>• 802.11ac: max 866.7Mbps<br>• 802.11ax : max 1201Mbps |
| | **Modulation** | Direct Sequence Spread Spectrum<br>BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM, 1024QAM |
| | **Security[3]** | • IEEE and WiFi certified 64 / 128 bit WEP encryption for a/b/g mode only<br>• AES-CCMP: 128 bit in hardware<br>• 802.1x authentication<br>• WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.<br>• WPA2 certification<br>• WPA3 certification<br>• IEEE 802.11i<br>• WAPI |
| | **Network Architecture** | Ad-hoc (Peer to Peer) |

| | |
|---|---|
| **Models** | Infrastructure (Access Point Required) |
| **Roaming** | IEEE 802.11 compliant roaming between access points |
| **Output Power**[2] | • 802.11b : +18.5dBm minimum<br>• 802.11g : +17.5dBm minimum<br>• 802.11a : +18.5dBm minimum<br>• 802.11n HT20(2.4GHz) : +15.5dBm minimum<br>• 802.11n HT40(2.4GHz) : +14.5dBm minimum<br>• 802.11n HT20(5GHz) : +15.5dBm minimum<br>• 802.11n HT40(5GHz) : +14.5dBm minimum<br>• 802.11ac VHT80(5GHz) : +11.5dBm minimum<br>• 802.11ax HE40(2.4GHz) : +10dBm minimum<br>• 802.11ax HE80(5GHz) : +10dBm minimum |
| **Power Consumption** | • Transmit mode :2.5 W<br>• Receive mode :2 W<br>• Idle mode (PSP) 180 mW (WLAN Associated)<br>• Idle mode :50 mW (WLAN unassociated)<br>• Connected Standby/Modern Standby: 10mW<br>• Radio disabled: 8 mW |
| **Power Management** | ACPI and PCI Express compliant power management<br>802.11 compliant power saving mode |
| **Receiver Sensitivity**[4] | 802.11b, 1Mbps: -93.5dBm maximum<br>802.11b, 11Mbps : -84dBm maximum<br>802.11a/g, 6Mbps : -86dBm maximum<br>802.11a/g, 54Mbps : -72dBm maximum<br>802.11n, MCS07 : -67dBm maximum<br>802.11n, MCS15 : -64dBm maximum<br>802.11ac, MCS0 : -84dBm maximum<br>802.11ac, MCS9 : -59dBm maximum<br>•802.11ax, MCS11(HE40): -57dBm maximum<br>•802.11ax, MCS11(HE80): -54dBm maximum |
| **Antenna type** | High efficiency antenna with spatial diversity, mounted in the display enclosure<br>Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications |
| **Form Factor** | PCI-Express M.2 MiniCard |
| **Dimensions** | 1. Type 2230: 2.3 x 22.0 x 30.0 mm<br>2. Type 1216: 1.67 x 12.0 x 16.0 mm |
| **Weight** | 1. Type 2230: 2.8g<br>2. Type 126: 1.3g |
| **Operating Voltage** | 3.3v +/- 9% |
| **Temperature** | **Operating** 14° to 158° F (–10° to 70° C)<br>**Non-operating** –40° to 176° F (–40° to 80° C) |
| **Humidity** | **Operating** 10% to 90% (non-condensing)<br>**Non-operating** 5% to 95% (non-condensing) |
| **Altitude** | **Operating** 0 to 10,000 ft (3,048 m)<br>**Non-operating** 0 to 50,000 ft (15,240 m) |
| **LED Activity** | LED Amber – Radio OFF<br>LED Off – Radio ON |

## Technical Specifications

### HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0/5.1/5.2 Wireless Technology

| | |
|---|---|
| **Bluetooth Specification** | 4.0/4.1/4.2/5.0/5.1 Compliant/5.2 Compliant |
| **Frequency Band** | 2402 to 2480 MHz |
| **Number of Available Channels** | Legacy: 0~79 (1 MHz/CH)<br>BLE: 0~39 (2 MHz/CH) |
| **Data Rates and Throughput** | Legacy: 3 Mbps data rate; throughput up to 2.17 Mbps<br>BLE: 1 Mbps data rate; throughput up to 0.2 Mbps<br>Legacy : Synchronous Connection Oriented links up to 3, 64 kbps, voice channels<br>Legacy : Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5) |
| **Transmit Power** | The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR. |

1. Wi-Fi 6 is designed to support gigabit data rate when transferring files between two devices connected to the same router. Requires a wireless router, sold separately, that supports 80MHz and higher channels. Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 6 (802.11ax) is backwards compatible with prior 802.11 specs.
2. The FCC has declared as of September 1, 2014 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.
3. Check latest software/driver release for updates on supported security features.
4. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

## POWER

1. Actual battery Watt-hours (Wh) will vary from design capacity. Battery capacity will naturally decrease with shelf life, time, usage, environment, temperature, system configuration, loaded apps, features, power management settings and other factors.

| | | | |
|---|---|---|---|
| **HP 65W Smart AC adapter** | **Dimensions (H x W x D)** | 3.54 x 2.0 x 1.122 in (9.0x5.1x2.85 cm) | |
| | **Weight** | 0.5 lb (230 g) max (Not including power cord. Power cord varies by country) | |
| | **Input** | | |
| | | **Input Efficiency** | 88.0 % at 115 Vac and 89.0 % at 230Vac |
| | | **Input frequency range** | 47 ~ 63 Hz |
| | | **Input AC current** | Max. 1.7 A at 90 Vac |
| | **Output** | **Output power** | 65W |
| | | **DC output** | 19.5V |
| | | **Hold-up time** | 5ms at 115 Vac input |
| | | **Output current limit** | <11.0A Over voltage protection- 29V max automatic shutdown |
| | **Connector** | 4.5mm Barrel Type, 3 pin/grounded, mates with interchangeable cords | |
| | **Environmental Design** | **Operating temperature** | 32°F to 95°F (0° to 35°C) |
| | | **Non-operating (storage) temperature** | -4°F to 185°F (-20° to 85°C) |
| | | **Altitude** | 1 to 16,400 ft (0 to 5,000m) |
| | | **Humidity** | 20% to 95% |
| | | **Storage Humidity** | 10% to 95% |
| | **EMI and Safety Certifications** | Eg:<br>*CE Mark - full compliance with LVD and EMC directives<br>* Worldwide safety standards - IEC60950, IEC-62368, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE.<br>* MTBF - over 200,000 hours at 25°C ambient condition. | |

| | | | |
|---|---|---|---|
| **HP 45W Smart AC adapter** | **Dimensions** | 3.74x1.77x1.04in(9.5x4.5.2.65cm) | |
| | **Weight** | 0.44 lb (200g) max (Not including power cord. Power cord varies by country) | |
| | **Input** | | |
| | | **Input Efficiency** | 87.74 % at 115 Vac and 88.4 % at 230Vac |
| | | **Input frequency range** | 47 ~ 63 Hz |
| | | **Input AC current** | Max. 1.4 A at 90 Vac |
| | **Output** | **Output power** | 45W |
| | | **DC output** | 19.5V |
| | | **Hold-up time** | 5ms at 115 Vac input |
| | | **Output current limit** | <8.0A |
| | **Connector** | 4.5mm Barrel Type, 3 pin/grounded, mates with interchangeable cords | |
| | **Environmental Design** | **Operating temperature** | 32°F to 95°F (0°to 35°C) |
| | | **Non-operating (storage) temperature** | -4°F to 185°F (-20°to 85°C) |
| | | **Altitude** | 1 to 16,400 ft (0 to 5,000m) |

| | | | |
|---|---|---|---|
| | | **Humidity** | 20% to 95% |
| | | **Storage Humidity** | 10% to 95% |
| | **EMI and Safety Certifications** | Eg:<br>*CE Mark - full compliance with LVD and EMC directives<br>* Worldwide safety standards - IEC60950, IEC-62368, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE.<br>* MTBF - over 200,000 hours at 25°C ambient condition. | |

| | | |
|---|---|---|
| **HP 3-cell Long Life Li-Ion (41 Wh[1])** | **Dimensions (H x W x L)** | 6.0 x 186.85 x 90.2 mm (0.234 x 7.35 x 3.55 inch) |
| | **Weight** | 0.175 kg (0.385 lb) |
| | **Cells/Type** | 3cell Lithium-Ion Polymer cell / 515974 |
| | **Energy** | |
| | **Voltage** | 11.34V / 11.28V |
| | **Amp-hour capacity** | 3.62Ah / 3.635Ah |
| | **Watt-hour capacity** | 41Wh |
| | **Temperature** | |
| | **Operating (Charging)** | 32° to 113° F (0° to 45° C) |
| | **Operating (Discharging)** | 14° to 122° F (-10° to 60° C) |
| | **Fuel Gauge LED** | N/A |
| | **Warranty** | 1-year |
| | **Optional Travel Battery Available** | No |

## Technical Specifications

### AUDIO

| | |
|---|---|
| **HD Stereo Codec** | Realtek ALC3247 |
| **Audio I/O Ports** | One Headset Combo-Jack connector support CTIA spec. |
| **Internal Speaker Amplifier** | 2W class D stereo amplifier for the internal speaker only. External speakers must be powered. |
| **Multi-streaming Capable** | Playback multi-streaming can be enabled in the audio control panel to allow independent audio streams to be sent to/from the Combo jack or integrated speaker. |
| **Sampling** | Independent sampling rates for DAC's and ADC's; supports resolutions from 16 to 24-bit; 44.1 kHz to 48 kHz for DAC and ADC. |
| **Wavetable Syntheses** | Yes - Uses OS soft wavetable |
| **Analog Audio** | Yes. |
| **# of Channels on Line-Out** | 1 |
| **Internal Speaker** | Yes |

### FINGERPRINT READER

| | |
|---|---|
| **Sensor vendor** | Elan eFSA80ST touch sensor |
| **Sensor type** | Capacitive |
| **DPI resolution** | 508 DPI |
| **Scan area** | 80 x 80 pixels array |
| **False Rejection Rate** | FRR (False Reject Rate) / FAR (False Acceptance Rate):<br>FRR ~ 2% @ 1:50K FAR |
| **False Acceptance Rate** | |
| **Mobile Voltage Operation** | Mobile Voltage Operation: 2.65V to 3.6V |
| **Operating Temperature** | Operating Temperature: 32° to 95° F (0° to 35° C) |
| **Current Consumption Image** | Current Consumption Image: 50mA peak |
| **Low Latency Wait For Finger** | Low Latency Wait For Finger: <900 uA |
| **Capture Rate** | Capture Rate: 20cm/sec |
| **ESD Resistance** | ESD Resistance: IEC 61000-4-2 (+15KV) |
| **Detection Matrix** | Detection Matrix: 508 dpi / 4x4mm sensor area |

## Technical Specifications

### ENVIRONMENTAL DATA

| | |
|---|---|
| **Eco-Label Certifications & declarations** | This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:<br>• IT ECO declaration<br>• US ENERGY STAR®<br>• US Federal Energy Management Program (FEMP)<br>• EPEAT® Gold registered in the United States. See http://www.epeat.net for registration status in your country.<br>• China Energy Conservation Program (CECP)<br>• China State Environmental Protection Administration (SEPA)<br>• Taiwan Green Mark<br>• Korea Eco-label<br>• Japan PC Green label* |
| **Sustainable Impact Specifications** | • Ocean Bound Plastic(s) in Speaker, Bezel and Cover<br>• 5% post-consumer recycled plastic<br>• Low halogen<br>• Outside Box and corrugated cushions are 100% sustainably sourced and recyclable<br>• Molded Paper Pulp Cushion inside box is 100% sustainably sourced and recyclable |
| **System Configuration** | The configuration used for the Energy Consumption and Declared Noise Emissions data for the Notebook model is based on a “Typically Configured Notebook”. |

| **Energy Consumption (in accordance with US ENERGY STAR® test method)** | **115VAC, 60Hz** | **230VAC, 50Hz** | **100VAC, 50Hz** |
|---|---|---|---|
| Normal Operation (Sort idle) | 9.5 W | 9.47 W | 10.85 W |
| Normal Operation (Long idle) | 0.93 W | 1.09 W | 0.94 W |
| Sleep | 0.93 W | 1.09 W | 0.94 W |
| Off | 0.32 W | 0.34 W | 0.3 W |

Note:
Energy efficiency data listed is for an ENERGY STAR® compliant product if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.

| **Heat Dissipation*** | **115VAC, 60Hz** | **230VAC, 50Hz** | **100VAC, 50Hz** |
|---|---|---|---|
| Normal Operation (Short idle) | 32.5 BTU/hr | 32.4 BTU/hr | 37.1 BTU/hr |
| Normal Operation (Long idle) | 3.2 BTU/hr | 3.7 BTU/hr | 3.2 BTU/hr |
| Sleep | 3.2 BTU/hr | 3.7 BTU/hr | 3.2 BTU/hr |
| Off | 1.1 BTU/hr | 1.2 BTU/hr | 1 BTU/hr |

*NOTE: Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

| | | |
|---|---|---|
| **Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)** | Sound Power<br>($L_{WAd}$, bels) | Sound Pressure<br>($L_{pAm}$, decibels) |
| Typically Configured – Idle | 1.8 | 17.5 |
| Fixed Disk – Random writes | 1.8 | 17.7 |
| Optical Drive – Sequential reads | 1.8 | 21.0 |

| | |
|---|---|
| **Longevity and Upgrading** | This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the |
| | Spare parts are available throughout the warranty period and or for up to “5” years after the end of production. |
| **Additional Information** | • This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC.<br>• This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.<br>• This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).<br>• This product is in compliance with the IEEE 1680 (EPEAT) standard at the Gold level, see www.epeat.net<br>• Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.<br>• This product is 96.6% recycle-able when properly disposed of at end of life. |

| | | | |
|---|---|---|---|
| **Packaging Materials** | **External:** | PAPER/Corrugated | 326 g |
| | | PAPER/Molded Pulp | 201 g |
| | **Internal:** | PLASTIC/Polyethylene low density - LDPE | 17 g |
| | | PLASTIC/Polypropylene - PP | 5 g |
| | The plastic packaging material contains at least 0.0% recycled content. | | |
| | The corrugated paper packaging materials contains at least 55.6% recycled content. | | |

| | |
|---|---|
| **RoHS Compliance** | HP Inc. complies fully with materials regulations. We were among the first companies to extend the restrictions in the European Union (EU) Restriction of Hazardous Substances (RoHS) Directive to our products worldwide through the HP GSE. HP has contributed to the development of related legislation in Europe, as well as China, India, and Vietnam.<br>We believe the RoHS directive and similar laws play an important role in promoting industry-wide elimination of substances of concern. We have supported the inclusion of additional substances—including PVC, BFRs, and certain phthalates—in future RoHS legislation that pertains to electrical and electronics products.<br>We met our voluntary objective to achieve worldwide compliance with the new EU RoHS requirements for virtually all relevant products by July 2013, and we will continue to extend the scope of the commitment to include further restricted substances as regulations continue to evolve.<br>To obtain a copy of the HP RoHS Compliance Statement, see HP RoHS position statement. |
| **Material Usage** | This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at |

## Technical Specifications

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| | http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_specifications.html ):<br>• Asbestos<br>• Certain Azo Colorants<br>• Certain Brominated Flame Retardants – may not be used as flame retardants in plastics<br>• Cadmium<br>• Chlorinated Hydrocarbons<br>• Chlorinated Paraffins<br>• Bis(2-Ethylhexyl) phthalate (DEHP)<br>• Benzyl butyl phthalate (BBP)<br>• Dibutyl phthalate (DBP)<br>• Diisobutyl phthalate (DIBP)<br>• Formaldehyde<br>• Halogenated Diphenyl Methanes<br>• Lead carbonates and sulfates<br>• Lead and Lead compounds<br>• Mercuric Oxide Batteries<br>• Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user.<br>• Ozone Depleting Substances<br>• Polybrominated Biphenyls (PBBs)<br>• Polybrominated Biphenyl Ethers (PBBEs)<br>• Polybrominated Biphenyl Oxides (PBBOs)<br>• Polychlorinated Biphenyl (PCB)<br>• Polychlorinated Terphenyls (PCT)<br>• Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.<br>• Radioactive Substances<br>• Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO) |
| **Packaging Usage** | HP follows these guidelines to decrease the environmental impact of product packaging:<br>• Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.<br>• Eliminate the use of ozone-depleting substances (ODS) in packaging materials.<br>• Design packaging materials for ease of disassembly.<br>• Maximize the use of post-consumer recycled content materials in packaging materials.<br>• Use readily recyclable packaging materials such as paper and corrugated materials.<br>• Reduce size and weight of packages to improve transportation fuel efficiency.<br>• Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards. |
| **End-of-life Management and Recycling** | HP offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: http://www.hp.com/go/reuse-recycle or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.<br>The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly |

## Technical Specifications

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|---|---|
| | instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/recyclers.<br>These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment. |
| **HP, Inc. Corporate Environmental Information** | For more information about HP's commitment to the environment:<br>Global Citizenship Report<br>http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html<br>Eco-label certifications<br>http://www8.hp.com/us/en/hp-information/environment/ecolabels.html<br>ISO 14001 certificates:<br>http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=c04755842<br>and<br>http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf |
| **footnotes** | • Percentage of ocean-bound plastic contained in each component varies by product<br>• Recycled plastic content percentage is based on the definition set in the IEEE 1680.1-2018 standard.<br>• External power supplies, WWAN modules, power cords, cables and peripherals excluded.<br>• 100% outer box packaging and corrugated cushions made from sustainably sourced certified and recycled fibers.<br>• Fiber cushions made from 100% recycled wood fiber and organic materials. |

## COUNTRY OF ORIGIN

China

## Options and Accessories (sold separately and availability may vary by country)

| Category | Description | Part Number |
|---|---|---|
| **Audio/Video** | HP Wired USB-A Stereo Headset | 428K6AA |
| | HP Wired 3.5mm Stereo Headset | 428K7AA |
| **Cases** | HP Renew Business 17.3" Backpack | 3E2U5AA |
| | HP Renew Business 17.3" Bag | 3E2U6AA |
| **Hub** | HP USB-C to USB-A Hub | Z6A00AA |
| **Adapter** | HP USB 3.0 to Gigabit Adapter | N7P47AA |
| | HP USB-C to RJ45 Adapter | V7W66AA |
| | HP USB-C to USB 3.0 Adapter | N2Z63AA |
| | HP HDMI to VGA Adapter | H4F02AA |
| **Keyboard/Combo** | HP 125 WD USB Keyboard | 266C9AA |
| | HP 320K WD USB Keyboard | 9SR37AA |
| | HP 225 Wired Mouse and Keyboard Combo | 286J4AA |
| | HP 655 Wireless Keyboard and Mouse Combo | 4R009AA |
| | HP 225 Wired Mouse and Keyboard Combo | 286J4AA |
| | HP 235 Wireless Mouse and Keyboard Combo | 1Y4D0AA |
| | HP 155 Wired Mouse and Keyboard Combo | 5B8C0AA#ACJ |
| **Mouse** | HP USB Premium Wireless Mouse | 1JR31AA |
| | HP 125 USB-A Wired Mouse | 265A9AA |
| | HP 128 USB Laser Wired Mouse | 265D9AA |
| | HP 320M USB-A Wired Mouse | 9VA80AA |
| | HP 435 Multi-Device Wireless Mouse | 3B4Q5AA |
| | HP USB-A+Bluetooth Travel Bluetooth Mouse | 6SP30AA |
| | HP 235 Slim Wireless Mouse | 4E407AA |
| | HP 155 USB-A Wired Mouse | 5B8B7AA#ACJ |
| | HP USB-A Travel USB Mouse | G1K28AA |
| | HP USB-A+Bluetooth Multi-Device 635 Wireless Mouse Black | 1D0K2AA |
| **Power** | HP 65W Smart AC Adapter | H6Y89AA |
| | HP 45W 4.5 mm Smart AC Power Adapter | H6Y88AA |
| **Commodity** | HP USB DVD-Writer EXT ODD | F2B56AA |

## Summary of Changes

| Date of change | Version History | | Description of change |
|---|---|---|---|
| | V1 to V2 | | |
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