Overview

HP EliteBook 745 G6 Notebook PC

Left

1. **HD and IR Camera (Optional)**
2. **Ambient Light Sensor (Optional)**
3. **IR Camera LEDs (Optional)**
4. **Internal Microphones**
5. **HP Privacy Camera Shutter**
6. **HD Camera LED**
7. **Clickpad**
8. **Smartcard Reader (Optional)**
9. **USB 3.2 Gen 1 Charging Port**
10. **Vents**
11. **Nano Security Lock Slot (Lock sold separately)**
12. **Power Button**

Overview

1. **Power Connector**
2. **USB Type-C™**
3. **Docking Connector**
4. **Ethernet Port**
5. **HDMI Port (Cable not included)**

Right

6. **USB 3.2 Gen 1 Port**
7. **Audio Combo Jack**
8. **SIM Card Slot**[1]
9. **Touch Fingerprint Sensor (Optional)**
10. **Pointstick**

1. All units have a SIM card slot and icon but units that do not support WWAN are shipped with a non-removable SIM slot plug

Overview

AT A GLANCE

- **Eye-catching Ultraslim design, premium precision-crafted machined aluminum (CNC), seamless formed aluminum chassis for clean, crisp, premium look and feel**
- **Choice of 2nd Generation AMD Ryzen™ PRO processors**
- **Designed to support all HP docking options including HP's traditional Ultraslim mechanical dock and all-new Thunderbolt™ dock.[1] The 745 notebooks connect to the Thunderbolt docks via USB-C alt-mode.**
- **Featuring HP Collaboration Keyboard with Clickpad to manage most commonly used conferencing functions with a single keystroke**
- **Innovative world-facing third mic improves inbound ambient noise cancellation while 360 degree mic pick-up allows everyone to clearly hear and be heard**
- **Optional ant-glare touch displays with ambient light sensor**
- **Choice of displays:**
  35.6 cm (14.0") diagonal FHD IPS anti-glare LED-backlit non-touch 250 nits, 45% NTSC
  35.6 cm (14.0") diagonal FHD IPS anti-glare LED-backlit non-touch 400 nits, 72% NTSC
  35.6cm (14.0") diagonal FHD IPS anti-glare LED-backlit non-touch 1000 nits, 72% NTSC with HP Sure View[6]
  35.6cm (14.0") diagonal FHD IPS Anti-Glare On-Cell LED-backlit touch, 250 cd/m², 45% NTSC
- **Enterprise grade security with HP SureStart, HP Privacy Camera[1], HP Sure View[4], HP Sure Run, HP Sure Recover, HP Sure Click, HP Sure Sense[5], SmartCard Reader[1] and Touch Fingerprint reader[1]**
- **Preinstalled with Windows 10 versions or FreeDOS**
- **Supports fast charging (50% in 30 minutes) with no impact on battery recharge cycles[2]**
- **Enables AMD Memory Guard to help defend against cold boot attacks with real-time encryption and decryption of system's memory**
- **Flexible wireless connectivity options**
- **Passed MIL-STD 810G tests[3]**
- **Battery Life up to 14 hours and 45 minutes (2nd Gen AMD® Ryzen™ PRO APU processor, 14" 400 nits panel and 3-cell 50WHr battery)**

1. Sold separately or as an optional feature.
2. HP Elite notebooks up to 50% within 30 minutes when the system is off or in standby mode. Power adapter with a minimum capacity of 65 watts is required. After charging has reached 50% capacity, charging will return to normal. Charging time may vary +/-10% due to System tolerance.
3. MIL STD 810G testing is not intended to demonstrate fitness for U.S. Department of Defense contract requirements or for military use. Test results are not a guarantee of future performance under these test conditions. Accidental damage requires an optional HP Accidental Damage Protection Care Pack.
4. HP Sure View G3 integrated privacy screen is an optional feature that must be configured at purchase and is designed to function in landscape. Available in Q3' 19.
5. HP Sure Sense requires Windows 10. See product specifications for availability.
6. Touch-enabled display and Sure View privacy panel will lower actual brightness

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

Features

PRODUCT NAME

HP EliteBook 745 G6 Notebook PC

OPERATING SYSTEM

Preinstalled	**Windows 10 Pro 64[1]** **Windows 10 Pro 64 (National Academic License)[2]** **Windows 10 Home 64[1]** **Windows 10 Home Single Language 64[1]** **Windows 10 Pro (Windows 10 Enterprise available with a Volume Licensing Agreement)[1]** **FreeDOS**

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 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See http://www.windows.com/.

2. Some devices for academic use will automatically be updated to Windows 10 Pro Education with the Windows 10 Anniversary Update. Features vary; see https://aka.ms/ProEducation for Windows 10 Pro Education feature information.

PROCESSORS

AMD Ryzen™ 7 PRO 3700U APU with Radeon™ Vega 10 Graphics (2.3 GHz base clock, up to 4 GHz max boost clock, 4 MB L3 cache, 4 cores)[3,4,5]
AMD Ryzen™ 5 PRO 3500U APU with Radeon™ Vega 8 Graphics (2.1 GHz base clock, up to 3.7 GHz max boost clock, 4 MB L3 cache, 4 cores)[3,4,5]
AMD Ryzen™ 3 PRO 3300U APU with Radeon™ Vega 6 Graphics (2.1 GHz base clock, up to 3.5 GHz max boost clock, 4 MB L3 cache, 4 cores)[3,4,5]

Processor Family
2nd Generation AMD® Ryzen™ PRO APU processor[6]

3. Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.
4. 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. AMD's numbering is not a measurement of clock speed.
5. Max Boost clock frequency performance varies depending on hardware, software and overall system configuration.
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.

CHIPSET

Chipset is integrated with processor

GRAPHICS

Integrated
AMD Radeon™ Vega Graphics[7]

Supports
Support HD decode, DX12, and HDMI 2.0

7. HD content required to view HD images.

DISPLAY

Non-Touch
35.6 cm (14") diagonal FHD IPS eDP anti-glare WLED-backlit slim, 250 nits, 45% NTSC (1920 x 1080)[7, 9,10]
35.6 cm (14") diagonal FHD IPS eDP anti-glare WLED-backlit slim, 250 nits, 45% NTSC with HD camera (1920 x 1080)[7, 9,10]
35.6 cm (14") diagonal FHD IPS eDP anti-glare WLED-backlit slim, 250 nits, 45% NTSC with HD + IR camera (1920 x 1080)[7, 9,10]
35.6 cm (14") diagonal FHD IPS eDP anti-glare WLED-backlit slim, 250 nits, 45% NTSC for WWAN (1920 x 1080)[7, 9,10]
35.6 cm (14") diagonal FHD IPS eDP anti-glare WLED-backlit slim, 250 nits, 45% NTSC with HD camera for WWAN (1920 x 1080)[7, 9,10]
35.6 cm (14") diagonal FHD IPS eDP anti-glare WLED-backlit slim, 250 nits, 45% NTSC with HD + IR camera for WWAN (1920 x 1080) [7, 9,10]
35.6 cm (14") diagonal FHD IPS eDP + PSR anti-glare WLED-backlit ultraslim, 400 nits, 72% NTSC with Ambient Light Sensor and HD+IR camera (1920 x 1080) [7, 9,10]
35.6 cm (14") diagonal FHD IPS eDP + PSR anti-glare WLED-backlit ultraslim, 400 nits, 72% NTSC with Ambient Light Sensor and HD+IR camera for WWAN (1920 x 1080) [7, 9,10]
35.6 cm (14") diagonal FHD IPS eDP + PSR anti-glare WLED-backlit ultraslim, 1000 nits with HP Sure View G3 Integrated Privacy Screen, 72% NTSC, with Ambient Light Sensor and HD+IR camera for WWAN (1920 x 1080)[7, 8, 9,10,46]
35.56 cm (14") diagonal FHD, IPS, anti-glare, WLED-backlit, eDP + PSR with HP Sure View Gen2 integrated privacy screen, 700 nits, 72% NTSC (1920 x 1080)[7, 8, 9,10,46]

Touch
35.56 cm (14") diagonal FHD IPS eDP anti-glare On-Cell WLED-backlit slim touch screen, 250 nits, 45% NTSC with HD+IR camera (1920 x 1080)[7, 9,10]
35.56 cm (14") diagonal FHD IPS eDP anti-glare On-Cell WLED-backlit slim touch screen, 250 nits, 45% NTSC withHD+IR camera for WWAN (1920 x 1080)[7, 9,10]

HDMI 2.0
Support resolution up to 4k @ 60Hz

7. HD content required to view HD images.
8. HP Sure View G3 integrated privacy screen is an optional feature that must be configured at purchase and is designed to function in landscape orientation. Available in Q3' 19.
9. Resolutions are dependent upon monitor capability, and resolution and color depth settings.
10. Sold separately or as an optional feature
46. Touch-enabled display and Sure View privacy panel will lower actual brightness

Docking station model	*Total number of supported displays (incl. the notebook display)*	*Max.resolutions supported*	*Dock Connectors*	*Technical limitations*
HP UltraSlim Docking Station	**4**	**Dual 2.5K @ 60Hz**	**2xDP, 1xVGA**	**Dual 2.5k only with both displays into DP**
HP Thunderbolt Dock G2	**4**	**Dual 2560 x 1600 @ 60Hz** **Single 3840 x 2160 @ 60Hz**	**2xDP, 1xVGA,** **1xTB,** **1xUSB-C alt-mode**	
HP Elite USB-C Dock G4	**4**	**Dual 2K @ 60Hz** **Single 4K @ 60Hz (3840 x 1440)**	**1xHDMI, 2xDP**	
HP USB-C Universal Dock	**3**	**Dual 4K @ 60Hz** **Single 5K @ 60Hz**	**2xDP**	
HP USB-C Travel Dock	**2**	**Single 2K @ 60Hz**	**1xHDMI, 1xVGA**	**Single external display** **Only HDMI or VGA at the time**
HP USB-C Mini Dock	**2**	**Single 4K @ 30Hz**	**1xHDMI, 1xVGA**	**Single external display** **Only HDMI or VGA at the time**

STORAGE AND DRIVES

Primary M.2 Storage

128 GB SATA-3 SS TLC[11]
256 GB PCIe® NVMe™ Value SS TLC[11]
256 GB PCIe® Gen3x4 NVMe™ SS TLC[11]
256 GB SATA-3 TLC Opal 2[11]
512 GB PCIe® Gen3x4 NVMe™ SS TLC[11]
512 GB PCIe® Gen3x4 NVMe™ SS TLC Opal 2[11]
512 GB PCIe® Value[11]
1 TB PCIe® Gen3 x4 NVMe™ SS TLC[11]

11. For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30 GB (for Windows 10) is reserved for system recovery software.

MEMORY

Maximum Memory

32 GB DDR4-2400 SDRAM

Memory

32 GB DDR4-2400 SDRAM (2 X 16 GB)[12]
16 GB DDR4-2400 SDRAM (1 X 16 GB)[12]
16 GB DDR4-2400 SDRAM (2 X 8 GB)[12]
8 GB DDR4-2400 SDRAM (1 x 8 GB)[12]
8 GB DDR4-2400 SDRAM (2 x 4 GB)[12]

Features

4 GB DDR4-2400 SDRAM (1 x 4 GB)[12]

Memory Slots
2 SODIMM
Both slots are customer accessible / upgradeable
DDR4 SODIMMS, system runs at 2400
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.

NETWORKING/COMMUNICATIONS

WLAN
Intel® Dual Band Wireless-AC 9260 802.11a/b/g/n/ac (2x2) Wi-Fi® and Bluetooth® 5 Combo, non-vPro™[13]
Intel® AX200 Wi-Fi 6[17] (2x2) and Bluetooth® 5 Combo, non-vPro™ (supporting gigabit file transfer speeds)
Realtek RTL8822BE 802.11ac (2x2) and Bluetooth® 4.2 Combo[13]

WWAN
Intel® XMM™ 7360 LTE-Advanced Cat 9[14]

NFC
NXP NPC300 Near Field Communication Module

Miracast
Native Miracast Support[15]

Ethernet
Realtek PCIe GbE Family Controller 10/100/1000[16]

13. Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited.
14. WWAN module requires separately purchased service contract. Check with service provider for coverage and availability in your area. Connection speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products, in all regions.
15. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming.
16. The term "10/100/1000" or "Gigabit" Ethernet indicates compatibility with IEEE standard 802.3ab for Gigabit Ethernet, and does not connote actual operating speed of 1 Gb/s. For high-speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.
17. Wireless access point and internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 6 is backwards compatible with prior 802.11 specs. The specifications for Wi-Fi 6 (802.11ax) are draft and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11ax devices. Only available in countries where 802.11ax is supported. Feature available in Q3'19.

AUDIO/MULTIMEDIA

Audio
Audio by Bang & Olufsen
Integrated 3 Multi Array Microphone

Features

2 Integrated Stereo Speakers (74dB)

Camera
720p HD camera[7,10]
720p HD+IR camera[7, 10, 18]

Sensors
Ambient light sensor (Select models only)
Hall Sensor

7. HD content required to view HD images.
10. Sold separately or as an optional feature.
18. Internet access required.

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

Keyboard
HP Premium Collaboration Keyboard, spill resistant with drain
Backlit keyboard available as an option

Pointing Device
Clickpad with multi-touch gestures enabled, taps enabled as default
Microsoft Precision Touchpad Default Gestures Support

Function Keys
F1 - Display Switching
F2 - Blank or Privacy
F3 - Brightness Down
F4 - Brightness Up
F5 - Audio Mute
F6 - Volume Down
F7 - Volume Up
F8 - Mic Mute
F9 - Blank or Backlit Toggle
F10 - numlk
F11 - Wireless
F12 - Calendar
Share/Present
Call Answer
Call End

Hidden Function Keys
Fn+R - Break
Fn+S - Sys Rq
Fn+C - Scroll Lock
Fn+E - Insert
Fn +W – Pause

Features

SOFTWARE AND SECURITY

Preinstalled Software

BIOS

HP BIOSphere Gen5[19]

HP Drive Lock & Automatic Drive Lock[20]

BIOS Update via Network

Master Boot Record Security

Power On Authentication

Secure Erase[21]

Absolute Persistence Module[22]

Pre-boot Authentication

Software

HP Native Miracast Support[23]

HP Connection Optimizer

HP Image Assistant

HP Hotkey Support

HP JumpStart

HP Support Assistant[24]

HP Noise Cancellation Software

Buy Office (sold separately)

Manageability Features

HP Driver Packs[25]

HP System Software Manager (SSM)

HP BIOS Config Utility (BCU)

HP Client Catalog

HP Manageability Integration Kit Gen3[26]

HP Cloud Recovery[27]

Client Security Software

HP Client Security Manager Gen5[28]

HP Fingerprint Sensor[29]

HP Power On Authentication

Windows Defender[30]

Security Management

Pre-boot Authentication

TPM 2.0 Embedded Security Chip shipped with Windows 10 (Common Criteria EAL4+ Certified)[31]

SATA 0,1 port disablement (via BIOS)

USB enable/disable (via BIOS)

Power-on password (via BIOS)

Features

Setup password (via BIOS)

Support for chassis padlocks and cable lock devices

HP Sure Click[32]

HP Sure Start For AMD[33]

Sure Run Gen2[34]

Sure Recover Gen2[35]

Sure Sense[36]

Security

TPM

Model: Infineon SLB9670

Version: 7.85

Revision: TPM 2.0

FIPS 140-2 Compliant: Yes (select models only)

Smartcard Reader

Model number: Alcor AU9560

FIPS 201 Compliant: Yes

IPv6 Certification:

Yes/No

MD5 Hash: **Please follow the instructions below to access MD5 Hash.**

Log-on to http://hp.com/support, enter your product name, select software and drivers, select OS, select driver. After selecting the driver, click on "Associated files" and then click on "Download". When opening the file, under "Purpose" you should see the appropriate "SOFTPAQ MD5:" Field

Graphics (Intel Video Driver): TBD

WWAN: TBD

WLAN: TBD

Is the BIOS on this notebook ISO/IEC 19678:2015 (formerly NIST 800-147) compliant?:

Yes

UEFI version: 2.6

19. HP BIOSphere Gen5 is available on select HP Pro and Elite PCs. See product specifications for details. Features may vary depending on the platform and configurations.
20. HP Drive Lock & Automatic Drive Lock is not supported on NVMe drives
21. For the methods outlined in the National Institute of Standards and Technology Special Publication 800-88 "Clear" sanitation method. HP Secure Erase does not support platforms with Intel® Optane™.
22. Absolute agent is shipped turned off, and will be activated when customers activate a purchased subscription. Subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S. The Absolute Recovery Guarantee is a limited warranty. Certain conditions apply. For full details visit: http://www.absolute.com/company/legal/agreements/ computrace-agreement. Data Delete is an optional service provided by Absolute Software. If utilized, the Recovery Guarantee is null and void. In order to use the Data Delete service, customers must first sign a Pre-Authorization Agreement and either obtain a PIN or purchase one or more RSA SecurID tokens from Absolute Software.
23. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming.

Features

24. HP Support Assistant requires Windows and Internet access.
25. HP Driver Packs not preinstalled, however available for download at http://www.hp.com/go/clientmanagement.
26. HP Manageability Integration Kit can be downloaded from http://www.hp.com/go/clientmanagement.
27. HP Cloud Recovery is available for HP Elite and Pro desktops and laptops PCs with Intel® or AMD processors and requires an open, wired network connection. Note: You must back up important files, data, photos, videos, etc. before use to avoid loss of data. Detail please refer to: https://support.hp.com/us-en/document/c05115630
28. HP Client Security Manager Gen5 requires Windows and is available on the select HP Pro and Elite PCs. See product specifications for details.
29. HP Fingerprint Sensor sold separately or as an optional feature.
30. Windows Defender Opt in and internet connection required for updates.
31. 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).re 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).
32. HP Sure Click is available on most HP PCs and supports Microsoft® Internet Explorer and Chromium™. Supported attachments include Microsoft Office (Word, Excel, PowerPoint) and PDF files in read only mode, when Microsoft Office or Adobe Acrobat are installed.
33. HP Sure Start for AMD is available on select HP PCs with AMD processors. See product specifications for availability.
34. HP Sure Run Gen2: See product specifications for availability.
35. HP Sure Recover Gen2: See product specifications for availability. Requires an open, wired network connection. Not available on platforms with multiple internal storage drives. You must back up important files, data, photos, videos, etc. before using HP Sure Recover to avoid loss of data. HP Sure Recover (Gen1) does not support platforms with Intel® Optane™.
36. HP Sure Sense requires Windows 10. See product specifications for availability.

Features

POWER

Power Supply

HP Smart 45 W External AC power adapter[37]
HP Smart 45 W External AC power adapter, 2-prong (Japan only)[37]
HP Smart 65 W External AC power adapter[37]
HP Smart 65 W EM External AC power adapter[37]
45 W USB Type-C™ adapter[37]
65 W USB Type-C™ adapter[37]

Primary Battery

HP Long Life 3-cell, 50 Wh Li-ion[38,39]
Support HP Fast Charge (Up to 50% in 30 minutes with 65W AC Adapter)[38,39]

Battery Life

Battery Life up to 14 hours and 45 minutes (2nd Gen AMD® Ryzen™ PRO APU processor, 14" 400 nits panel and 3-cell 50WHr battery)[40]

Power Cord

2-wire plug - 1.0m[37]
3-wire plug - 1.0m[37]
3-wire plug - 1.8m[37]
Duckhead power cord - 1.0m[37]
Duckhead power cord - 1.8m[37]

[37] Availability may vary by country.
[38] Battery is internal and not replaceable by customer. Serviceable by warranty.
[39] Recharges the battery up to 50% within 30 minutes when the system is off or in standby mode. Power adapter with a minimum capacity of 65 watts is required. After charging has reached 50% capacity, charging will return to normal. Charging time may vary +/-10% due to System tolerance.
[40] Windows 10 MM14 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.

WEIGHTS & DIMENSIONS

Product Weight

Starting at 3.27 lbs (non-touch); Starting at 3.32 lbs (touch)[41]
Starting at 1.48 kg (non-touch); Starting at 1.51 kg (touch)[41]

Product Dimensions (w x d x h)
Non- Touch
12.84 x 9.22 x 0.7 in
32.6 x 23.43 x 1.79 cm

Touch
12.84 x 9.22 x 0.71 in
32.6 x 23.43 x 1.81 cm

[41] Weight will vary by configuration.

Features

PORTS/SLOTS

Ports

1 USB Type-C™ (Alt Mode)
2 USB 3.2 Gen 1 (1 charging)
1 HDMI 2.0[42]
1 RJ-45 / Ethernet
1 Docking connector
1 Headphone/microphone combo
1 AC power
1 SIM card slot[16]
1 Smartcard reader[16]

[16] Sold as an optional feature.
[42] HDMI cable sold separately.

SERVICE AND SUPPORT

HP Services offers 1-year or 3- year limited warranties and 90 day software limited warranty options depending on country. Batteries have a default one year limited warranty except for Long Life batteries which will have same 1-year or 3-year limited warranty as the platform. 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.[43]

[43] 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*	**19V**
	Average Operating Power	**Win 10**
	Integrated Graphics	**AMD has no this data (APU is 15W)**
	Max Operating Power	**UMA < 45W**
Temperature	*Operating*	**32° to 95° F (0° to 35° C)**
	Non-operating	**-4° to 140° F (-20° to 60° C)**
Relative Humidity	*Operating*	**10% to 90%, non-condensing**
	Non-operating	**5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature**
Shock	*Operating*	**40 G, 2 ms, half-sine**
	Non-operating	**200 G, 2 ms, half-sine**
Random Vibration	*Operating*	**0.75 grms**
	Non-operating	**1.50 grms**
Altitude (unpressurized)	*Operating*	**-50 to 10,000 ft (-15.24 to 3,048 m)**
	Non-operating	**-50 to 40,000 ft (-15.24 to 12,192 m)**
Planned Industry Standard Certifications	*UL*	**Yes**
	CSA	**Yes**
	FCC Compliance	**Yes**
	ENERGY STAR®	**Yes, Select models** [44]
	EPEAT® 2019	**Yes, Silver in U.S.**[45]
	Australia / NZ A-Tick Compliance	**Yes**
	CCC	**Yes**
	Japan VCCI Compliance	**Yes**
	KC	**Yes**
	BSMI	**Yes**
	CE Marking Compliance	**Yes**
	GOST	**Yes**
	Saudi Arabian Compliance (ICCP)	**Yes**
	UKRSERTCOMPUTER	**Yes**

44. Configurations of the HP Elitebook 745 G6 that are ENERGY STAR® certified are identified as HP Elitebook 745 G6 ENERGY STAR on HP websites and on http://www.energystar.gov.

45. Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. Status varies by country. Visit http://www.epeat.net for more information.

Technical Specifications

ENVIRONMENTAL & INDUSTRY

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:** • **IT ECO declaration** • **US ENERGY STAR®** • **US Federal Energy Management Program (FEMP)** • **EPEAT® Silver registered in the United States. See http://www.epeat.net for registration status in your country.** • **TCO Certified Edge** • **China Energy Conservation Program (CECP)** • **China State Environmental Protection Administration (SEPA)** • **Taiwan Green Mark** • **Korea Eco-label** • **Japan PC Green label***		
	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)	**5.77 W**	**5.77 W**	**5.04 W**
	Normal Operation (Long idle)	**4.45 W**	**3.37 W**	**4.52 W**
	Sleep	**0.62 W**	**0.89 W**	**0.66 W**
	Off	**0.44 W**	**0.36 W**	**0.49 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.**		

Technical Specifications

*Heat Dissipation**	*115VAC, 60Hz*	*230VAC, 50Hz*	*100VAC, 50Hz*
Normal Operation (Short idle)	**19.73 BTU/hr**	**19.73 BTU/hr**	**17.24 BTU/hr**
Normal Operation (Long idle)	**15.22 BTU/hr**	**11.53 BTU/hr**	**15.46 BTU/hr**
Sleep	**2.12 BTU/hr**	**3.04 BTU/hr**	**2.26 BTU/hr**
Off	**1.50 BTU/hr**	**1.23 BTU/hr**	**1.68 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 (L_{WAd}, bels)**	**Sound Pressure (L_{pAm}, decibels)**
Typically Configured – Idle	**2.5**	**14.5**
Fixed Disk – Random writes	**3.2**	**27.1**
Optical Drive – Sequential reads	**3.3**	**28.7**

Longevity and Upgrading	**This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the product may include:** • **3 USB ports** • **1 PC card slot (type I/II)** • **1 ExpressCard/54 slot** • **1 IEEE 1394 Port** • **2 SODIMM memory slots** • **Optional expansion base docking station** • **1 multi-bay II storage port** • **Interchangeable HDD??** **Spare parts are available throughout the warranty period and or for up to "5" years after the end of production.**
Batteries	**This battery(s) in this product comply with EU Directive 2006/66/EC** **Batteries used in the product do not contain:**

<table>
<tr><td></td><td></td><td colspan="3">Mercury greater the1ppm by weight
Cadmium greater than 20ppm by weight

Battery description: CR2032 (coin cell) / SS03050
Battery type: Lithium / Li-Ion/Li-Ion Polymer
Battery description: 6-cell high capacity Lithium-Ion battery (optional 8 cell available)
Battery type:</td></tr>
<tr><td></td><td>Additional Information</td><td colspan="3">This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC.
This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.
This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).
This product is in compliance with the IEEE 1680.1 (EPEAT) standard at the Silver level, see http://www.epeat.net
Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.
This product contains 5.69% post-consumer recycled plastic (by wt.) according to IEEE 1680.1-2018 standard, criterion 4.2.1.1.
This product is 96.4% recycle-able when properly disposed of at end of life.</td></tr>
<tr><td></td><td>Packaging Materials</td><td>External:</td><td>PAPER/Corrugated</td><td>41 g</td></tr>
<tr><td></td><td></td><td>Internal:</td><td>PLASTIC/EPE (Expanded Polyethylene)</td><td>68 g</td></tr>
<tr><td></td><td></td><td></td><td>PLASTIC/Polyethylene low density - LDPE</td><td>14 g</td></tr>
<tr><td></td><td></td><td></td><td>PLASTIC/Polypropylene - PP</td><td>4 g</td></tr>
<tr><td></td><td></td><td colspan="3">The plastic packaging material contains at least 0.8% recycled content.</td></tr>
<tr><td></td><td></td><td colspan="3">The corrugated paper packaging materials contains at least 0.4% recycled content.</td></tr>
<tr><td></td><td>RoHS Compliance</td><td colspan="3">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.

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.

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.

To obtain a copy of the HP RoHS Compliance Statement, see HP RoHS position statement.</td></tr>
<tr><td></td><td>Material Usage</td><td colspan="3">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 http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_</td></tr>
</table>

Technical Specifications

		specifications.html): • **Asbestos** • **Certain Azo Colorants** • **Certain Brominated Flame Retardants – may not be used as flame retardants in plastics** • **Cadmium** • **Chlorinated Hydrocarbons** • **Chlorinated Paraffins** • **Bis(2-Ethylhexyl) phthalate (DEHP)** • **Benzyl butyl phthalate (BBP)** • **Dibutyl phthalate (DBP)** • **Diisobutyl phthalate (DIBP)** • **Formaldehyde** • **Halogenated Diphenyl Methanes** • **Lead carbonates and sulfates** • **Lead and Lead compounds** • **Mercuric Oxide Batteries** • **Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user.** • **Ozone Depleting Substances** • **Polybrominated Biphenyls (PBBs)** • **Polybrominated Biphenyl Ethers (PBBEs)** • **Polybrominated Biphenyl Oxides (PBBOs)** • **Polychlorinated Biphenyl (PCB)** • **Polychlorinated Terphenyls (PCT)** • **Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.** • **Radioactive Substances** • **Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)**
	Packaging Usage	**HP follows these guidelines to decrease the environmental impact of product packaging:** • **Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.** • **Eliminate the use of ozone-depleting substances (ODS) in packaging materials.** • **Design packaging materials for ease of disassembly.** • **Maximize the use of post-consumer recycled content materials in packaging materials.** • **Use readily recyclable packaging materials such as paper and corrugated materials.** • **Reduce size and weight of packages to improve transportation fuel efficiency.** • **Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.**

Technical Specifications

	End-of-life Management and Recycling	**Hewlett-Packard 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.** **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 instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/recyclers. 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:** **Global Citizenship Report** **http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html** **Eco-label certifications** **http://www8.hp.com/us/en/hp-information/environment/ecolabels.html** **ISO 14001 certificates:** **http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=c04755842** **and** **http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf**

DISPLAYS

Panel LCD 14 inch diagonal FHD (1920 x 1080) Anti-Glare WLED UWVA 45 percent cg 250 nits eDP slim NB	*Outline Dimensions (W x H)*	**316.17 x 197.98 mm (max)**
	Active Area	**309.37 x 174.02 mm (typ.)**
	Weight	**285 g (max)**
	Diagonal Size	**14.0 inch**
	Thickness	**3.0 mm (max)**
	Interface	**eDP 1.2 (2 lane)**
	Surface Treatment	**Anti-Glare**
	Touch Enabled	**No**
	Contrast Ratio	**600:1 (typ.)**
	Refresh Rate	**60 Hz**
	Brightness	**250 nits**
	Pixel Resolution	**1920 x 1080 (FHD)**
	Format of LCD Pixel Arrangement	**RGB**
	Backlight	**LED**
	Color Gamut Coverage	**45% NTSC**

	Color Depth	**6 bits**
	Viewing Angle	**UWVA 85/85/85/85**

Panel LCD 14 inch diagonal FHD (1920 x 1080) Anti-Glare WLED UWVA 45 percent cg 250 nits eDP slim Touch on Panel Narrow Bezel	*Outline Dimensions (W x H)*	**316.112 x 197.98 mm (max)**
	Active Area	**309.37 x 174.02 mm (typ.)**
	Weight	**290 g (max)**
	Diagonal Size	**14.0 inch**
	Thickness	**3.0 mm (panel side) / 3.2 mm (PCBA Side) (max)**
	Interface	**eDP 1.2**
	Surface Treatment	**Anti-Glare On-cell**
	Touch Enabled	**Yes**
	Contrast Ratio	**600:1 (typ.)**
	Refresh Rate	**60 Hz**
	Brightness	**250 nits**
	Pixel Resolution	**1920 x 1080 (FHD)**
	Format of LCD Pixel Arrangement	**RGB**
	Backlight	**LED**
	Color Gamut Coverage	**45% NTSC**
	Color Depth	**6 bits**
	Viewing Angle	**UWVA 85/85/85/85**

Panel LCD 14 inch diagonal FHD (1920 x 1080) Anti-Glare WLED UWVA 72 percent cg 400 nits eDP 1.3+PSR slim	*Outline Dimensions (W x H)*	**316.11 x 197.98 mm (max)**
	Active Area	**309.31 x 173.99 mm**
	Weight	**<285 g (max)**
	Diagonal Size	**14.0 inch**
	Thickness	**3.0 mm (max)**
	Interface	**eDP 1.3 + PSR (2 lane)**
	Surface Treatment	**Anti-Glare**
	Touch Enabled	**No**
	Contrast Ratio	**600:1 (typ.)**
	Refresh Rate	**60 Hz**
	Brightness	**400 nits**
	Pixel Resolution	**1920 x 1080 (FHD)**
	Format of LCD Pixel Arrangement	**RGB**
	Backlight	**LED**
	Color Gamut Coverage	**72% NTSC**
	Color Depth	**6 bits + Hi FRC**
	Viewing Angle	**UWVA 85/85/85/85**

Panel LCD 14 inch diagonal FHD (1920 x 1080) Anti-Glare WLED UWVA 72% NTSC 700 nits eDP 1.3+PSR ultraslim Privacy	*Outline Dimensions (W x H)*	**315.41x 196.14 max.**
	Active Area	**309.312 x 173.988**
	Weight	**<225 g max.**
	Diagonal Size	**14.0"**
	Thickness	**3.0 mm max.**
	Interface	**eDP 1.3 + PSR**
	Surface Treatment	**IPS**
	Touch Enabled	**No**
	Contrast Ratio	**Sharing mode, 600:1 (typ.)** **Privacy mode, 150:1 (typ.)**
	Refresh Rate	**120 Hz**
	Brightness	**Sharing mode, 700 nits (typ.)** **Privacy mode, 350 nits (typ.)**
	Pixel Resolution	**1920 x 1080 (FHD)**
	Format of LCD Pixel Arrangement	**RGB strip**
	Backlight	**LED**
	Color Gamut Coverage	**Sharing mode, 72%** **Privacy mode, 60%**
	Color Depth	**8 bits**
	Viewing Angle	**Sharing mode, CR >10, L/R/U/D, 85/85/85/85 (typ.)** **Privacy mode CR>2, L/R/U/D, 50/50/85/85 (typ.)**

*Panel LCD 14 inch diagonal FHD (1920 x 1080) Anti-Glare WLED UWVA 72 percent cg 1000 nits eDP 1.4+PSR2 flat Privacy Narrow Bezel**	*Outline Dimensions (W x H)*	**315.31 x 195.498 mm (max)**
	Active Area	**309.312 x 173.988 mm (typ.)**
	Weight	**265 g (max)**
	Diagonal Size	**14.0 inch**
	Thickness	**3.0 mm (max)**
	Interface	**eDP 1.4 + PSR2 (4 lane)**
	Surface Treatment	**Anti-Glare**
	Touch Enabled	**No**
	Contrast Ratio	**2000:1 (typ.)**
	Refresh Rate	**60 Hz**
	*Brightness***	**1000 nits**
	Pixel Resolution	**1920 x 1080 (FHD)**
	Format of LCD Pixel Arrangement	**RGB**
	Backlight	**LED**

Technical Specifications

Color Gamut Coverage	**72% NTSC**
Color Depth	**8 bits**
Viewing Angle	**UWVA 85/85/85/85**

*** Available in Q3'19.**
All specifications represent the typical specifications provided by HP's component manufacturers; actual performance may vary either higher or lower.
**** Touch-enabled display and Sure View privacy panel will lower actual brightness**

Technical Specifications

STORAGE

SSD 128 GB 2280 M2 SATA-3 TLC	*Form Factor*	**M.2 2280**
	Capacity	**128 GB**
	NAND Type	**TLC**
	Height	**0.09 in (2.3 mm)**
	Width	**0.87 in (22 mm)**
	Weight	**0.02 lb (10 g)**
	Interface	**ATA-8, SATA 3.0**
	Maximum Sequential Read	**Around 540 ~ 560 MB/s**
	Maximum Sequential Write	**Around 380 ~ 530 MB/s**
	Logical Blocks	**250069680**
	Operating Temperature	**32° to 158°F (0° to 70°C) [ambient temp]**
	Features	**ATA Security; DIPM; TRIM; DEVSLP**

SSD 1 TB 2280 PCIe-3x4 NVMe Three Layer Cell single-sided	*Form Factor*	**M.2 2280**
	Capacity	**1 TB**
	NAND Type	**TLC**
	Height	**0.09 in (2.3 mm)**
	Width	**0.87 in (22 mm)**
	Weight	**0.02 lb (10 g)**
	Interface	**PCIe NVMe Gen3X4**
	Maximum Sequential Read	**Around 3200 ~ 3480 MB/s**
	Maximum Sequential Write	**Around 2400 ~ 3037 MB/s**
	Logical Blocks	**2000409264**
	Operating Temperature	**32° to 158°F (0° to 70°C) [ambient temp]**
	Features	**ATA Security; TRIM; L1.2**

SSD 256 GB 2280 M2 PCIe-3x4 SS NVMe TLC	*Form Factor*	**M.2 2280**
	Capacity	**256 GB**
	NAND Type	**TLC**
	Height	**0.09 in (2.3 mm)**
	Width	**0.87 in (22 mm)**
	Weight	**0.02 lb (10 g)**
	Interface	**PCIe NVMe Gen3X4**
	Maximum Sequential Read	**Around 2900 ~ 3167 MB/s**
	Maximum Sequential Write	**Around 1300 ~ 1663 MB/s**
	Logical Blocks	**500118192**
	Operating Temperature	**32° to 158°F (0° to 70°C) [ambient temp]**

	Features	**ATA Security; TRIM; L1.2**

SSD 256 GB 2280 M2 SATA-3 Self Encrypted OPAL2 Three Layer Cell	*Form Factor*	**M.2 2280**
	Capacity	**256 GB**
	NAND Type	**TLC**
	Height	**0.09 in (2.3 mm)**
	Width	**0.87 in (22 mm)**
	Weight	**0.02 lb (10 g)**
	Interface	**ATA-8, SATA 3.0**
	Maximum Sequential Read	**Around 530 ~ 560 MB/s**
	Maximum Sequential Write	**Around 500 ~ 530 MB/s**
	Logical Blocks	**500118192**
	Operating Temperature	**32° to 158°F (0° to 70°C) [ambient temp]**
	Features	**ATA Security; TCG OPAL 2.0; DIPM; TRIM; DEVSLP**

SSD 256 GB 2280 PCIe NVMe Value	*Form Factor*	**M.2 2280**
	Capacity	**256 GB**
	NAND Type	**TLC**
	Height	**0.09 in (2.3 mm)**
	Width	**0.87 in (22 mm)**
	Weight	**0.02 lb (10 g)**
	Interface	**PCIe NVMe**
	Maximum Sequential Read	**Around 1500 ~ 1700 MB/s**
	Maximum Sequential Write	**Around 780 ~ 1300 MB/s**
	Logical Blocks	**500118192**
	Operating Temperature	**32° to 158°F (0° to 70°C) [ambient temp]**
	Features	**ATA Security; TRIM; L1.2**

SSD 512 GB 2280 M2 PCIe-3x4 SS NVMe TLC	*Form Factor*	**M.2 2280**
	Capacity	**512 GB**
	NAND Type	**TLC**
	Height	**0.09 in (2.3 mm)**
	Width	**0.87 in (22 mm)**
	Weight	**0.02 lb (10 g)**
	Interface	**PCIe NVMe Gen3X4**
	Maximum Sequential Read	**Around 2700 ~ 3400 MB/s**
	Maximum Sequential Write	**Around 1390 ~ 2956 MB/s**

Technical Specifications

	Logical Blocks	**1000215215**
	Operating Temperature	**32° to 158°F (0° to 70°C) [ambient temp]**
	Features	**ATA Security; TRIM; L1.2**
SSD 512 GB 2280 PCIe NVMe Value	*Form Factor*	**M.2 2280**
	Capacity	**512 GB**
	NAND Type	**TLC/QLC**
	Height	**0.09 in (2.3 mm)**
	Width	**0.87 in (22 mm)**
	Weight	**0.02 lb (10 g)**
	Interface	**PCIe NVMe**
	Maximum Sequential Read	**Around 1500 ~ 1700 MB/s**
	Maximum Sequential Write	**Around 860 ~ 1500 MB/s**
	Logical Blocks	**1000215215**
	Operating Temperature	**32° to 158°F (0° to 70°C) [ambient temp]**
	Features	**ATA Security; TRIM; L1.2**
SSD 512 GB 2280 PCIe-3x4 NVMe Self Encrypted OPAL2 Three Layer Cell	*Form Factor*	**M.2 2280**
	Capacity	**512 GB**
	NAND Type	**TLC**
	Height	**0.09 in (2.3 mm)**
	Width	**0.87 in (22 mm)**
	Weight	**0.02 lb (10 g)**
	Interface	**PCIe NVMe Gen3X4**
	Maximum Sequential Read	**Around 2900 ~ 3400 MB/s**
	Maximum Sequential Write	**Around 1000 ~ 2500 MB/s**
	Logical Blocks	**1000215216**
	Operating Temperature	**32° to 158°F (0° to 70°C) [ambient temp]**
	Features	**ATA Security; TCG Opal 2.0; FIPS; DIPM; TRIM; DEVSLP**

Technical Specifications

NETWORKING/COMMUNICATIONS

Intel® 9260 802.11a/b/g/n/ac (2 x 2) Wi-Fi® and Bluetooth® 5.0 Combo[1] Non-vPro	*Wireless LAN Standards*	**IEEE 802.11a** **IEEE 802.11b** **IEEE 802.11g** **IEEE 802.11n** **IEEE 802.11ac** **IEEE 802.11d** **IEEE 802.11e** **IEEE 802.11h** **IEEE 802.11i** **IEEE 802.11k** **IEEE 802.11r** **IEEE 802.11v**
	Interoperability	**Wi-Fi certified**
	Frequency Band	**802.11b/g/n** **• 2.402 – 2.482 GHz** **802.11a/n/ac** **• 4.9 – 4.95 GHz (Japan)** **• 5.15 – 5.25 GHz** **• 5.25 – 5.35 GHz** **• 5.47 – 5.725 GHz** **• 5.825 – 5.850 GHz**
	Data Rates	**•802.11b: 1, 2, 5.5, 11 Mbps** **•802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps** **•802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps** **•802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz)** **•802.11ac: MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, 80MHz & 160MHz)**
	Modulation	**Direct Sequence Spread Spectrum** **BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM**
	Security[3]	**•IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only** **•AES-CCMP: 128 bit in hardware** **•802.1x authentication** **•WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.** **•WPA2 certification** **•IEEE 802.11i** **•WAPI**
	Network Architecture Models	**Ad-hoc (Peer to Peer)** **Infrastructure (Access Point Required)**
	Roaming	**IEEE 802.11 compliant roaming between access points**
	Output Power[2]	**• 802.11b: +18.5dBm minimum** **• 802.11g: +17.5dBm minimum** **• 802.11a: +18.5dBm minimum** **• 802.11n HT20(2.4GHz): +15.5dBm minimum** **• 802.11n HT40(2.4GHz): +14.5dBm minimum**

	• 802.11n HT20(5GHz): +15.5dBm minimum **• 802.11n HT40(5GHz): +14.5dBm minimum** **• 802.11ac VHT80(5GHz): +11.5dBm minimum** **• 802.11ac VHT160(5GHz): +11.5dBm minimum**	
Power Consumption	**•Transmit mode: 2.0 W** **•Receive mode: 1.6 W** **•Idle mode (PSP) 180 mW (WLAN Associated)** **•Idle mode: 50 mW (WLAN unassociated)** **•Connected Standby/Modern Standby: 10mW** **•Radio disabled: 8 mW**	
Power Management	**ACPI compliant power management** **802.11 compliant power saving mode**	
Receiver Sensitivity[4]	**802.11b, 1Mbps: -93.5dBm maximum** **802.11b, 11Mbps: -84dBm maximum** **802.11a/g, 6Mbps: -86dBm maximum** **802.11a/g, 54Mbps: -72dBm maximum** **802.11n, MCS07: -67dBm maximum** **802.11n, MCS15: -64dBm maximum** **802.11ac, MCS0: -84dBm maximum** **802.11ac, MCS9: -59dBm maximum**	
Antenna type	**High efficiency antenna with spatial diversity, mounted in the display enclosure** **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** **2. Type 1216: 1.67 x 12.0 x 16.0 mm**	
Weight	**1. Type 2230: 2.8g** **2. Type 126: 1.3g**	
Operating Voltage	**3.3v +/- 9%**	
Temperature	*Operating*	**14° to 158° F (–10° to 70° C)**
	Non-operating	**–40° to 176° F (–40° to 80° C)**
Humidity	*Operating*	**10% to 90% (non-condensing)**
	Non-operating	**5% to 95% (non-condensing)**
Altitude	*Operating*	**0 to 10,000 ft (3,048 m)**
	Non-operating	**0 to 50,000 ft (15,240 m)**
LED Activity	**LED Amber – Radio OFF** **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)** **BLE : 0~39 (2 MHz/CH)**

Signaling Data Rate	**Legacy: 3 Mbps signaling data rate[1] 2.17 Mbps** **BLE: 1 Mbps signaling data rate[1] 0.2 Mbps** **1. Actual throughput may vary.** **Legacy: Synchronous Connection Oriented links up to 3, 64 kbps, voice channels** **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.**
Power Consumption	**Peak (Tx) 330 mW** **Peak (Rx) 230 mW** **Selective Suspend 17 mW**
Electrical Interface	**USB 2.0 compliant**
Bluetooth Software Supported	**Microsoft Windows Bluetooth Software**
Power Management	**Microsoft Windows ACPI, and USB Bus Support**
Certifications	**FCC (47 CFR) Part 15C, Section 15.247 & 15.249**
Power Management Certifications	**ETS 300 328, ETS 300 826** **Low Voltage Directive IEC950** **UL, CSA, and CE Mark**
Bluetooth Profiles Supported	**BT4.1-ESR 5/6/7 Compliance** **LE Link Layer Ping** **LE Dual Mode** **LE Link Layer** **LE Low Duty Cycle Directed Advertising** **LE L2CAP Connection Oriented Channels** **Train Nudging & Interlaced Scan** **BT4.2 ESR08 Compliance** **LE Secure Connection- Basic/Full** **LE Privacy 1.2 –Link Layer Privacy** **LE Privacy 1.2 –Extended Scanner Filter Policies** **LE Data Packet Length Extension** **FAX Profile (FAX)** **Basic Imaging Profile (BIP)2** **Headset Profile (HSP)** **Hands Free Profile (HFP)** **Advanced Audio Distribution Profile (A2DP)**

1. Wireless access point and Internet service is required. Availability of public wireless access point is limited.
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.

Technical Specifications

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).

802.11a/b/g/n/ac (2 x 2) Wi-Fi® and Bluetooth® 4.2 Combo[1]	*Wireless LAN Standards*	**IEEE 802.11a** **IEEE 802.11b** **IEEE 802.11g** **IEEE 802.11n** **IEEE 802.11ac**
	Interoperability	**Wi-Fi® certified**
	Frequency Band	**802.11b/g/n** **• 2.402 – 2.482 GHz** **802.11a/n** **• 4.9 – 4.95 GHz (Japan)** **• 5.15 – 5.25 GHz** **• 5.25 – 5.35 GHz** **• 5.47 – 5.725 GHz** **• 5.825 – 5.850 GHz**
	Data Rates	**• 802.11b: 1, 2, 5.5, 11 Mbps** **• 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps** **• 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps** **• 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz)** **• 802.11ac : MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, and 80MHz)**
	Modulation	**Direct Sequence Spread Spectrum** **BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM**
	Security[3]	**•IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only** **•AES-CCMP: 128 bit in hardware** **•802.1x authentication** **•WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.** **•WPA2 certification** **•IEEE 802.11i** **•WAPI**
	Network Architecture Models	**Ad-hoc (Peer to Peer)** **Infrastructure (Access Point Required)**
	Roaming	**IEEE 802.11 compliant roaming between access points**
	Output Power[2]	**• 802.11b : +14dBm minimum** **• 802.11g : +12dBm minimum** **• 802.11a : +12dBm minimum** **• 802.11n HT20(2.4GHz) : +12dBm minimum** **• 802.11n HT40(2.4GHz) : +12dBm minimum** **• 802.11n HT20(5GHz) : +10dBm minimum** **• 802.11n HT40(5GHz) : +10dBm minimum** **• 802.11ac VHT80(5GHz) : +10dBm minimum**
	Power Consumption	**• Transmit mode 2.0 W** **• Receive mode 1.6 W**

- **Idle mode (PSP) 180 mW (WLAN Associated)**
- **Idle mode 50 mW (WLAN unassociated)**
- **Connected Standby 10mW**
- **Radio disabled 8 mW**

Power Management	**ACPI and PCI Express compliant power management 802.11 compliant power saving mode**	
Receiver Sensitivity[3]	**802.11b, 1Mbps : -93.5dBm maximum** **802.11b, 11Mbps : -84dBm maximum** **802.11a/g, 6Mbps : -86dBm maximum** **802.11a/g, 54Mbps : -72dBm maximum** **802.11n, MCS07 : -67dBm maximum** **802.11n, MCS15 : -64dBm maximum** **802.11ac, MCS0 : -84dBm maximum** **802.11ac, MCS9 : -59dBm maximum**	
Antenna type	**High efficiency antenna with spatial diversity, mounted in the display enclosure** **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	**Type 2230 : 2.3 x 22.0 x 30.0 mm**	
Weight	**Type 2230: 2.8 g**	
Operating Voltage	**3.3v +/- 9%**	
Temperature	*Operating*	**14° to 158° F (–10° to 70° C)**
	Non-operating	**–40° to 176° F (–40° to 80° C)**
Humidity	*Operating*	**10% to 90% (non-condensing)**
	Non-operating	**5% to 95% (non-condensing)**
Altitude	*Operating*	**0 to 10,000 ft (3,048 m)**
	Non-operating	**0 to 50,000 ft (15,240 m)**
LED Activity	**LED Amber – Radio OFF** **LED White – Radio ON**	

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

Bluetooth Specification	**4.0/4.1/4.2 Compliant**
Frequency Band	**2402 to 2480 MHz**
Number of Available Channels	**Legacy : 0~79 (1 MHz/CH)** **BLE : 0~39 (2 MHz/CH)**

Technical Specifications

Signaling Data Rate	**Legacy: 3 Mbps signaling data rate[1] 2.17 Mbps** **BLE: 1 Mbps signaling data rate[1] 0.2 Mbps** **1. Actual throughput may vary.** **Legacy: Synchronous Connection Oriented links up to 3, 64 kbps, voice channels** **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.**
Power Consumption	**Peak (Tx) 330 mW** **Peak (Rx) 230 mW** **Selective Suspend 17 mW**
Electrical Interface	**USB 2.0 compliant**
Bluetooth Software Supported	**Microsoft Windows Bluetooth Software**
Power Management	**Microsoft Windows ACPI, and USB Bus Support**
Certifications	**FCC (47 CFR) Part 15C, Section 15.247 & 15.249**
Power Management Certifications	**ETS 300 328, ETS 300 826** **Low Voltage Directive IEC950** **UL, CSA, and CE Mark**
Bluetooth Profiles Supported	**BT4.1-ESR 5/6/7 Compliance** **LE Link Layer Ping** **LE Dual Mode** **LE Link Layer** **LE Low Duty Cycle Directed Advertising** **LE L2CAP Connection Oriented Channels** **Train Nudging & Interlaced Scan** **BT4.2 ESR08 Compliance** **LE Secure Connection- Basic/Full** **LE Privacy 1.2 –Link Layer Privacy** **LE Privacy 1.2 –Extended Scanner Filter Policies** **LE Data Packet Length Extension** **FAX Profile (FAX)** **Basic Imaging Profile (BIP)2** **Headset Profile (HSP)** **Hands Free Profile (HFP)** **Advanced Audio Distribution Profile (A2DP)**

1. Wireless access point and Internet service is required. Availability of public wireless access point is limited.

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).

Intel® Wi-Fi® 6[5] AX200 + BT5 (802.11ax 2 x 2, non-vPro, supporting gigabit file transfer speeds) non-vPro	*Wireless LAN Standards*	**IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac IEEE 802.11ax IEEE 802.11d IEEE 802.11e IEEE 802.11h IEEE 802.11i IEEE 802.11k IEEE 802.11r IEEE 802.11v**
	Interoperability	**Wi-Fi® certified**
	Frequency Band	**802.11b/g/n/ax • 2.402 – 2.482 GHz 802.11a/n/ac/ax • 4.9 – 4.95 GHz (Japan) • 5.15 – 5.25 GHz • 5.25 – 5.35 GHz • 5.47 – 5.725 GHz • 5.825 – 5.850 GHz**
	Data Rates	**•802.11b: 1, 2, 5.5, 11 Mbps •802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps •802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps •802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz) •802.11ac: MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, 80MHz & 160MHz) • 802.11ax: MCS0 ~ MCS11, (1SS and 2SS) (20MHz, 40MHz, 80MHz & 160MHz)**
	Modulation	**Direct Sequence Spread Spectrum OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM , 1024QAM**
	Security[3]	**•IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only •AES-CCMP: 128 bit in hardware •802.1x authentication •WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. •WPA2 certification •IEEE 802.11i •WAPI**
	Network Architecture Models	**Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)**
	Roaming	**IEEE 802.11 compliant roaming between access points**

Output Power[2]	**• 802.11b: +18.5dBm minimum • 802.11g: +17.5dBm minimum • 802.11a: +18.5dBm minimum • 802.11n HT20(2.4GHz): +15.5dBm minimum • 802.11n HT40(2.4GHz): +14.5dBm minimum • 802.11n HT20(5GHz): +15.5dBm minimum • 802.11n HT40(5GHz): +14.5dBm minimum • 802.11ac VHT80(5GHz): +11.5dBm minimum • 802.11ac VHT160(5GHz): +11.5dBm minimum • 802.11ax HT40(2.4GHz): +10dBm minimum • 802.11ax VHT160(5GHz): +10dBm minimum**	
Power Consumption	**• Transmit mode 2.0 W • Receive mode 1.6 W • Idle mode (PSP) 180 mW (WLAN Associated) • Idle mode 50 mW (WLAN unassociated) • Connected Standby 10mW • Radio disabled 8 mW**	
Power Management	**ACPI and PCI Express compliant power management 802.11 compliant power saving mode**	
Receiver Sensitivity[3]	**802.11b, 1Mbps : -93.5dBm maximum 802.11b, 11Mbps : -84dBm maximum 802.11a/g, 6Mbps : -86dBm maximum 802.11a/g, 54Mbps : -72dBm maximum 802.11n, MCS07 : -67dBm maximum 802.11n, MCS15 : -64dBm maximum 802.11ac, MCS0 : -84dBm maximum 802.11ac, MCS9 : -59dBm maximum 802.11ax, MCS11(HT40): -59dBm maximum 802.11ax, MCS11(VHT160): -58.5dBm maximum**	
Antenna type	**High efficiency antenna with spatial diversity, mounted in the display enclosure 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 2. Type 1216: 1.67 x 12.0 x 16.0 mm**	
Weight	**1. Type 2230: 2.8g 2. Type 126: 1.3g**	
Operating Voltage	**3.3v +/- 9%**	
Temperature	*Operating*	**14° to 158° F (–10° to 70° C)**
	Non-operating	**–40° to 176° F (–40° to 80° C)**
Humidity	*Operating*	**10% to 90% (non-condensing)**
	Non-operating	**5% to 95% (non-condensing)**

Technical Specifications

Altitude	*Operating*	**0 to 10,000 ft (3,048 m)**
	Non-operating	**0 to 50,000 ft (15,240 m)**

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

Bluetooth Specification	**4.0/4.1/4.2/5.0/5.1 Compliant**
Frequency Band	**2402 to 2480 MHz**
Number of Available Channels	**Legacy: 0~79 (1 MHz/CH)** **BLE: 0~39 (2 MHz/CH)**
Signaling Data Rate	**Legacy: 3 Mbps signaling data rate[1] 2.17 Mbps** **BLE: 1 Mbps signaling data rate[1] 0.2 Mbps** **1. Actual throughput may vary.** **Legacy: Synchronous Connection Oriented links up to 3, 64 kbps, voice channels** **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 + 9.5 dBm for BR and EDR.**
Power Consumption	**Peak (Tx) 330 mW** **Peak (Rx) 230 mW** **Selective Suspend 17 mW**
Bluetooth Software Supported	**Microsoft Windows Bluetooth Software**
Power Management	**Microsoft Windows ACPI, and USB Bus Support**
Certifications	**FCC (47 CFR) Part 15C, Section 15.247 & 15.249**
Power Management Certifications	**ETS 300 328, ETS 300 826** **Low Voltage Directive IEC950** **UL, CSA, and CE Mark**
Bluetooth Profiles Supported	**BT4.1-ESR 5/6/7 Compliance** **LE Link Layer Ping** **LE Dual Mode** **LE Link Layer** **LE Low Duty Cycle Directed Advertising** **LE L2CAP Connection Oriented Channels** **Train Nudging & Interlaced Scan** **BT4.2 ESR08 Compliance** **LE Secure Connection- Basic/Full** **LE Privacy 1.2 –Link Layer Privacy** **LE Privacy 1.2 –Extended Scanner Filter Policies** **LE Data Packet Length Extension** **FAX Profile (FAX)** **Basic Imaging Profile (BIP)2** **Headset Profile (HSP)** **Hands Free Profile (HFP)** **Advanced Audio Distribution Profile (A2DP)**

1. Wireless access point and Internet service is required. Availability of public wireless access point is limited.
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).
5. Wireless access point and internet service required and sold separately. Availability of public wireless access points limited.
Wi-Fi 6 is backwards compatible with prior 802.11 specs. The specifications for Wi-Fi 6 (802.11ax) are draft and are not final.
If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11ax devices. Only available in countries where 802.11ax is supported. Feature available in Q3’19.

Intel® XMM™ 7360 LTE-Advanced CAT9[1]	*Technology/Operating bands*	**FDD LTE: 2100 (Band 1), 1900 (Band 2), 1800 (Band 3), 1700/2100 (Band 4), 850 (Band 5), 2600 (Band 7), 900 (Band 8), 1400 (Band 11), 700 (Band 12 lower), 700 (Band 13 upper), 700 (Band 17 lower), 850 (Band 18 lower), 850 (Band 19 upper), 800 (Band 20), 1400 (Band 21), 850 (Band 26), 700 (Band 28), 700 (Band 29 RX only), 2300 (Band 30), 1700/2100 (Band 66).** **TDD LTE: 2600 (Band 38), 1900 (Band 39), 2400 (Band 40), 2500 (Band 41).** **HSPA+: 2100 (Band 1), 1900 (Band 2), 1700/2100 (Band 4), 850 (Band 5), 900 (Band 8) MHz**
	Wireless protocol standards	**3GPP Release 11 LTE Specification CAT.9, DL 60MHz BW throughput up to 450Mbps; UL 20MHz throughput up to 50Mbps** **WCDMA R99, 3GPP Release 5, 6, 7 and 8 UMTS Specification**
	GPS	**Standalone, A-GPS (MS-A, MS-B)**
	GPS bands	**1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz, Beidou 1561.098 MHz**
	Maximum data rates	**LTE: 450 Mbps (Download), 50 Mbps (Upload)** **DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload)** **HSPA+: 21Mbps (Download), 5.76 Mbps (Upload)**
	Maximum output power	**LTE: 23 dBm** **HSPA+: 23.5 dBm**
	Maximum power consumption	**LTE: 1,200 mA (peak); 900 mA (average)** **HSPA+: 1,100 mA (peak); 800 mA (average)**
	Form Factor	**M.2, 3042-S3 Key B**
	Weight	**5.8 g**
	Dimensions	**42 x 30 x 2.3 mm**

	(Length x Width x Thickness)	

Mobile Broadband is an optional feature. Connection requires wireless data service contract, network support, and is not available in all areas. Contact service provider to determine the coverage area and availability. Connection speeds will vary due to location, environment, network conditions, and other factors. WWAN is an optional feature, requires factory configuration and separately purchased service contract. Check with service provider for coverage and availability in your area. 4G LTE not available on all products, in all regions.

Near Field Communications Controller (optional)	*Dimensions (L x W x H)*	**Module 25 mm by 10 mm by 2.0 mm**
	Chipset	**NPC300**
	System interface	**I2C**
	NFC RF standards	**ISO/IEC 14443 A** **ISO/IEC 14443 B** **ISO/IEC 15693** **ISO/IEC 18092** **ECMA-340 NFCIP-1 Target and Initiator** **ECMA-320 NFCIP-2**
	NFC Forum Support	**Tag Type 1, Type 2, Type3 and Type 4, NFCIP-1 and NFCIP-2**
	Reader (PCD-VCD) Mode(1)	**ISO/IEC 14443 A** **ISO/IEC 14443 B** **ISO/IEC 15693** **MIFARE 1K** **MIFARE 4K** **MIFARE DESFire** **FeliCa** **Jewel and Topaz cards**
	Card Emulation (PICC-VICC) Mode(1)	**ISO/IEC 14443 A** **ISO/IEC 14443 B and B'** **MIFARE** **FeliCa**
	Frequency	**13.56 MHz**
	NFC Modes Supported	**Reader/Writer, Peer-to-Peer**
	Raw RF Data Rates	**106, 212, 424, 848 kbps**
	Operating temperature	**0°C to 70°C**
	Storage temperature	**-20°C to 125°C**
	Humidity	**10-90% operating** **5-95% non-operating**
	Supply Operating voltage	**4.35 to 5.25 Volts**
	I/O Voltage	**1.8V or 3.3V**
Power Consumption (Booster enable, VBAT= 3.3V, VCC_BOOST = 5V)	*Mode*	**Power Consumption, Typical**
	Polling	**710.93 mW**
	Detected Test Tag Type 1	**152.09 mW**

	Detected Test Tag Type 2	**341.26 mW**
	Detected Test Tag Type 3	**383.76 mW**
	Detected Test Tag Type 4	**312.26 mW**
	Antenna	**Antenna connector, 0.5mm pitch, 7 connector FPC. Antenna matching is external to module.**

Realtek RTK8111EPH 10/100/1000 Integrated NIC	*Connector*	**RJ-45**
	System Interface	**PCIe + SMBus**
	Data rates supported	**10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14)** **100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30)** **1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 8023 clauses 40)** **Auto-Negotiation (Automatic Speed Selection)** **Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s**
	IEEE Compliance	**IEEE 802.1p QoS (Quality of Service) Support** **IEEE 802.1q VLAN support** **IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable)** **IEEE 802.3az EEE (Energy Efficient Ethernet)**
	Performance	**TCP/IP/UDP Checksum Offload (configurable)** **Protocol Offload (ARP & NS)** **Large send offload and Giant send offload** **Receiving Side Scaling** **Jumbo Frame 9K**
	Power Consumption	**Cable Disconnection: 25mW** **100Mbps Full Run: 450mW** **1000bp Full Run: 1000mW** **WoL Enable(S3/S4/S5): 50mW** **WoL Disable(S3/S4/S5): 25mW**
	Power Management	**ACPI compliant – multiple power modes** **Situation-sensitive features reduce power consumption** **Advanced link down power saving for reducing link down power consumption**
	Management Interface	**Auto MDI/MDIX Crossover cable detection**
	IT Manageability	**Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only)** **PXE 2.1 Remote Boot** **Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30))** **Comprehensive diagnostic and configuration software suite** **Virtual Cable Doctor for Ethernet cable status**

Security & Manageability	**RTK DASH support with appropriate RTK chipset components**

POWER

AC Adapter 45 Watt nPFC Wall Mount USB type C Straight 1.8m C6NS	*Dimensions*	**62.0 x 62.0 x 28.5 mm**	
	Weight	**unit: 220 g +/- 10 g**	
	Input	*Input Efficiency*	**Average Efficiency of 25%, 50%, 75%, 100% load condition with 115Vac/230Vac Spec:** **5V: 81.5%** **9V: 86.7%** **10V: 87.5%** **12V: 87.8%** **15V: 87.8%** **20V: 87.8%**
		Input frequency range	**47 ~ 63Hz**
		Input AC current	**Max. 1.4 A at 90 Vac**
	Output	*Output power*	**Average Efficiency of 25%, 50%, 75%, 100% load condition with 115Vac/230Vac Spec:**
		DC output	**5V: 81.5%**
		Hold-up time	**9V: 86.7%**
		Output current limit	**10V: 87.5%**
	Connector	**Non-Standard C6**	
	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	**0 to 16,400 ft (0 to 5000m)**
		Humidity	**20% to 95%**
		Storage Humidity	**10% to 95%**
	EMI and Safety Certifications	**CE Mark - full compliance with LVD and EMC directives** **Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE.** **MTBF - over 200,000 hours at 25°C ambient condition.**	

AC Adapter 45 Watt Smart nPFC Standard Barrel 4.5 mm Right Angle 1.8 m	*Dimensions*	**95.0 x 40.0 x 26.5 mm**	
	Weight	**unit: 200 g +/- 10 g**	
	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**

Technical Specifications

	Connector	**C6**	
	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	**0 to 16,400 ft (0 to 5000m)**
		Humidity	**20% to 95%**
		Storage Humidity	**10% to 95%**
	Safety Certifications	**CE Mark - full compliance with LVD and EMC directives** **Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE.** **MTBF - over 200,000 hours at 25°C ambient condition.**	

AC Adapter 45 Watt Smart nPFC Standard Barrel 4.5 mm Right Angle 1.8 m 2prong	*Dimensions*	**95.0 x 40.0 x 26.5 mm**	
	Weight	**unit: 200 g +/- 10 g**	
	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	**C8**	
	Environmental Design	*Operating temperature*	**32° to 95° F (0° to 35° C)**
		Non-operating (storage) temperature	**-4° to 185° F (-20° to 85° C)**
		Altitude	**0 to 16,400 ft (0 to 5000m)**
		Humidity	**20% to 95%**
		Storage Humidity	**10% to 95%**
	Safety Certifications	**CE Mark - full compliance with LVD and EMC directives** **Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE.** **MTBF - over 200,000 hours at 25°C ambient condition.**	

AC Adapter 65 Watt nPFC USB type C Straight 1.8 m C6NS	*Dimensions*	**74 x 74 x 28.5 mm**	
	Weight	**unit: 245 g +/- 10 g**	
	Input	*Input Efficiency*	**81.5% min at 115 Vac/ 230Vac @ 5V/3A** **86.7% min at 115 Vac/ 230Vac @ 9V/3A** **88% min at 115 Vac/ 230Vac @ 10V/5A** **88% min at 115 Vac/ 230Vac @ 12V/5A** **89% min at 115 Vac/ 230Vac @ 15V/4.33A** **89% min at 115 Vac/ 230Vac @ 20V/3.25A**
		Input frequency range	**47 ~ 63 Hz**
		Input AC current	**1.7 A at 90 VAC and maximum load**
	Output	*Output power*	**65W**

		DC output	**5V/9V/10V/12V/15V/20V**
		Hold-up time	**5ms at 115 Vac input**
		Output current limit	**<8.0A**
	Connector	**Non-Standard C6**	
	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	**0 to 16,400 ft (0 to 5000m)**
		Humidity	**5% to 95%**
		Storage Humidity	**5% to 95%**
	Safety Certifications	**CE Mark - full compliance with LVD and EMC directives Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE. MTBF - over 100,000 hours at 25°C ambient condition.**	

AC Adapter 65 Watt Smart nPFC EM Barrel 4.5 mm New EM	*Dimensions*	**102 x 55 x 30 mm**	
	Weight	**unit: 250 g +/- 10 g**	
	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*	**65 W**
		DC output	**19.5 V**
		Hold-up time	**5ms at 115 Vac input**
		Output current limit	**<11.0 A**
	Connector	**C6**	
	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	**0 to 5,000 m**
		Humidity	**20% to 95%**
		Storage Humidity	**10% to 95%**
	Safety Certifications	**CE Mark - full compliance with LVD and EMC directives Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE. MTBF - over 200,000 hours at 25°C ambient condition.**	
AC Adapter 65 Watt Smart nPFC Standard Barrel 4.5 mm Right Angle 1.8 m	*Dimensions*	**90.0 x 51 x 28.5 mm**	
	Weight	**unit: 230 g +/- 10 g**	
	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*	**65 W**

	DC output	**19.5 V**
	Hold-up time	**5ms at 115 Vac input**
	Output current limit	**<11.0 A**
Connector	**C6**	
Environmental Design	**4.5mm Barrel Type**	
	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	**0 to 16,400 ft (0 to 5000 m)**
	Humidity	**20% to 95%**
	Storage Humidity	**10% to 95%**
Safety Certifications	**CE Mark - full compliance with LVD and EMC directives** **Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE.** **MTBF - over 200,000 hours at 25°C ambient condition.**	

Battery SS 3 Cell 50 WHr Long Life -PL	*Dimensions* **(H x W x L)**	**L 278.7 mm x W 76.3 mm x H 7.1 mm**	
	Weight	**193 +/- 10 g**	
	Cells/Type	**3cell Lithium-Ion Polymer cell / P604883A1**	
	Energy	*Voltage*	**11.55 V**
		Amp-hour capacity	**4.113 Ah/ 4.330 Ah**
		Watt-hour capacity	**50 Wh**
	Temperature	*Operating (Charging)*	**0˚ to 50˚ C**
		Operating (Discharging)	**-10˚ to 60˚ C**
	Warranty	**based on system offering**	
	Optional Travel Battery Available	**No**	

COUNTRY OF ORIGIN

China

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

Type	*Description*	*Part #*
Cases	**HP Essential Top Load Case**	**H2W17AA**
	HP Essential Backpack	**H1D24AA**
	HP 17.3 Business Backpack	**2SC67AA**
	HP 15.6 Business Top Load	**2SC66AA**
Docking	**HP UltraSlim Docking Station**	**D9Y32AA**
	HP UltraSlim Docking Station TAA US	**E5C22AV**
	HP Thunderbolt Dock 120W G2	**2UK37AA**
	HP Thunderbolt Dock 120W G2 TAA	**2UK37AA**
	HP TB Dock Audio Module	**3AQ21AA**
	HP TB Dock 120W G2 cable	**3XB94AA**
	HP TB Dock G2 combo cable	**3XB96AA**
	HP USB-C Universal Dock	**1MK33AA**
	HP USB-C Dock G4	**3FF69AA**
	HP USB-C Mini Dock	**1PM64AA**
	HP USB Travel Dock	**T0K30AA**
	HP USB-C Universal Dock	**1MK33AA**
	HP USB-C Universal Dock w/4.5mm Adapter	**2UF95AA**
	HP USB-C Universal Dock w/4.5mm Adapter - non-flash version	**3DV65AA**
	HP USB-C Dock G5	**5TW10AA**
	HP USB-C/A Universal Dock G2	**5TW13AA**
Input/Output	**HP Slim Wireless Keyboard and Mouse**	**T6L04AA**
	HP Slim USB Keyboard and Mouse	**T6T83AA**
	HP Wireless (Link-5) Keyboard	**T6U20AA**
	HP USB Essential Keyboard and Mouse	**H6L29AA**
	HP Conferencing Keyboard	**K8P74AA**
	HP USB Collaboration Keyboard	**Z9N38AA**
	HP Wireless Collaboration Keyboard	**Z9N39AA**
	HP Comfort Grip Wireless Mouse	**H2L63AA**
	HP X4000b Bluetooth Mouse	**H3T50AA**
	HP 3-Button USB Laser Mouse	**H4B81AA**
	HP USB Travel Mouse	**G1K28AA**
	HP Ultra Mobile Wireless Mouse	**H6F25AA**
	HP Slim Bluetooth Mouse to AMO	**F3J92AA**
	HP Wireless Premium Mouse	**1JR31AA**
	HP USB Premium Mouse	**1JR32AA**
	HP Essential USB Mouse	**2TX37AA**
	HP Elite Presenter Mouse	**2CE30AA**
	HP Stereo 3.5mm Headset	**T1A66AA**
	HP Stereo USB Headset	**T1A67AA**
	HP UC Wireless Mono Headset	**W3K08AA**

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

	HP UC Wireless Duo Headset	**W3K09AA**
	HP USB-C to USB-A Hub	**Z6A00AA**
	HP USB-C to DP	**N9K78AA**
	HP USB-C to VGA	**N9K76AA**
	HP HDMI to DVI	**F5A28AA**
	HP HDMI to VGA	**H4F02AA**
Power	**HP 65W Slim AC Adapter**	**H6Y82AA**
	HP 45W Smart AC Adapter	**H6Y88AA**
	HP 65W Smart AC Adapter	**H6Y89AA**
	HP 45W 2-prong 4.5 mm DC jack AC Adapter	**L6F60AA**
	HP 45W USB-C Power Adapter	**1HE07AA**
	HP 65W USB-C Power Adapter	**1HE08AA**
	65W USB-C Slim Power Adapter	**3PN48AA**
	HP Notebook Power Bank	**N9F71AA**
Storage	**HP USB External DVDRW Drive**	**F2B56AA**
Security	**HP Docking Station Cable Lock**	**AU656AA**
	HP Essential Combination Lock	**T0Y16AA**
	HP Combination Lock	**T0Y15AA**
	HP Keyed Cable lock	**T0Y14AA**
	HP Keyed Cable Lock 10mm	**T1A62AA**
	HP Dual Head Keyed Cable Lock	**T1A64AA**

Summary of Changes

Date of change:	*Version History:*		*Description of change:*
June 20, 2019	**V1 to V2**	**Added**	**Environmental Section**
June 25, 2019	**V2 to V3**	**Updated**	**Color Gamut**
June 27, 2019	**V3 to V4**	**Updated**	**Battery Life and Display Section**
September 6, 2019	**V4 to V5**	**Updated**	**Nano lock slot, Storage Section and Brightness disclaimer for 1000nits**
October 8, 2019	**V5 to V6**	**Added**	**Enable AMD Memory in at a glance section**
March 19, 2020	**V6 to V7**	**Updated**	**Audio Section**
April 16, 2020	**V7 to V8**	**Updated**	**Display and Weight sections**
May 27, 2020	**V8 to V9**	**Updated**	**Ports Section**