Overview

HP EliteBook x360 830 G6 Notebook PC

Left

1. HD and IR Camera (Optional)	7. Glass Clickpad
2. IR camera LEDs (Optional)	8. Smartcard reader (Optional)
3. Internal microphones	9. Volume Up/Down
4. Camera Shutter	10. Vents
5. HD Camera LED	11. Power Button
6. Ambient light sensor (Optional)	12. USB 3.1 Gen 1 charging port

Overview

Right

1. Power connector
2. USB 3.1 Gen 1
3. HDMI port (Cable not included)
4. USB Type-C™ with Thunderbolt™
5. USB Type-C™ with Thunderbolt™
6. Audio Combo Jack
7. Nano Security Lock Slot (Lock sold separately)
8. SIM card tray[1]
9. Touch fingerprint sensor (Optional)

[1] All units have a SIM card stray but units that do not support WWAN are shipped with a non-removable SIM slot plug

Overview

At a Glance

- Eye catching, Aluminum x360 design with four usage modes that is 0.66 inches (1.69 cm) thin and with a starting weight of 2.97 lbs. (1.35 Kg)
- Choice of 8th Generation Intel® Core™ i3, i5, i7 Processors
- Optional ultrabright, ant-glare touch displays with ambient light sensor
- Choice of displays:
  - 33.8 cm (13.3") diagonal FHD IPS LED-backlit BrightView touch with Corning® Gorilla® Glass 5, 250 nits, 45% NTSC
  - 33.8 cm (13.3") diagonal FHD IPS LED-backlit BrightView touch with Corning® Gorilla® Glass 5, 400 nits, 72% NTSC
  - 33.8 cm (13.3") diagonal FHD IPS LED-backlit Anti-Glare glass touch with Corning® Gorilla® Glass 5, 400 nits, 72% NTSC
  - 33.8 cm (13.3") diagonal FHD IPS LED-backlit BrightView touch with Corning® Gorilla® Glass 5, 1000 nits, 72% NTSC with HP Sure View
  - 33.8 cm (13.3") diagonal FHD IPS LED-backlit Anti-Glare glass touch with Corning® Gorilla® Glass 5, 1000 nits, 72% NTSC with HP Sure View
- Enterprise grade security with HP Sure Sense, HP SureStart Gen5, HP Privacy Camera, HP Sure View Gen3[1], HP Sure Run Gen2, HP Sure Recover Gen2[2], HP Sure Click, SmartCard Reader[2] and Touch Fingerprint reader[2]
- New optional HP Rechargeable Active Pen[2]
- Ultimate connectivity with optional Wi-Fi 6[2], CAT16 4G/LTE WWAN, and Thunderbolt™ Docking (Dock sold separately)
- Preinstalled with Windows 10 versions or FreeDOS 3.0
- Choice of solid state drives up to 2 TB and DDR4 memory up to 32 GB
- Supports fast charging (50% in 30 minutes) with no impact on battery recharge cycles[3]
- 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
- Battery life up to 21 hours[5]
- Passed MIL-STD 810G testing, plus an additional 120,000 hours of reliability testing through HP's Total Test Process[4]

1. 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.
2. Sold separately or as an optional feature
3. Recharges your 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.
4. 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.
5. 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.

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

PRODUCT NAME

HP EliteBook x360 830 G6 Notebook PC

OPERATING SYSTEMS

Preinstalled	Windows 10 Pro 64[1] Windows 10 Pro 64 (National Academic Only)[2] Windows 10 Home 64[1] Windows 10 Home Single Language 64[1] FreeDOS 3.0

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 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

Intel® Core™ i3-8145U with Intel® UHD Graphics 620 (2.1 GHz base frequency, up to 3.9 GHz with Intel® Turbo Boost Technology, 4 MB L3 cache, 2 cores)[3,4,5,6]

Intel® Core™ i5-8265U with Intel® UHD Graphics 620 (1.6 GHz base frequency, up to 3.9 GHz with Intel® Turbo Boost Technology, 6 MB L3 cache, 4 cores)[3,4,5,6]

Intel® Core™ i7-8565U with Intel® UHD Graphics 620 (1.8 GHz base frequency, up to 4.6 GHz with Intel® Turbo Boost Technology, 8 MB L3 cache, 4 cores)[3,4,5,6]

Processor Family

8th Generation Intel® Core™ i7 processor

8th Generation Intel® Core™ i5 processor

8th Generation Intel® Core™ i3 processor

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 620[7]

Supports
Support HD decode, DX12, HDMI 1.4b[8], HDCP 2.2

7. HD content required to view HD images.
8. HDMI cable sold separately.

DISPLAY

Touch
33.8 cm (13.3") diagonal FHD IPS BrightView LED-backlit touch screen with Corning® Gorilla® Glass 5, 250 nits, 45% NTSC with HD camera (1920 x 1080)[7,9,10]
33.8 cm (13.3") diagonal FHD IPS BrightView LED-backlit touch screen with Corning® Gorilla® Glass 5, 250 nits, 45% NTSC with HD camera for WWAN (1920 x 1080)[7,9,10]
33.8 cm (13.3") diagonal FHD IPS BrightView LED-backlit touch screen with Corning® Gorilla® Glass 5, 400 nits, 72% NTSC with Ambient Light Sensor and HD IR camera (1920 x 1080)[7,9,10]
33.8 cm (13.3") diagonal FHD IPS BrightView LED-backlit touch screen with Corning® Gorilla® Glass 5, 400 nits, 72% NTSC with Ambient Light Sensor and HD IR camera for WWAN (1920 x 1080)[7,9,10]
33.8 cm (13.3") diagonal FHD IPS Anti-Glare LED-backlit touch screen with Corning® Gorilla® Glass 5, 400 nits, 72% NTSC with Ambient Light Sensor and HD IR camera for WWAN (1920 x 1080)[7,9,10]

HP Sure View Integrated Privacy Screen 33.8 cm (13.3") diagonal FHD IPS BrightView LED-backlit touch screen with Corning® Gorilla® Glass 5, 1000 nits, 72% NTSC with Ambient Light Sensor and HD IR webcam (1920 x 1080)[7,9,10,11]
HP Sure View Integrated Privacy Screen 33.8 cm (13.3") diagonal FHD IPS BrightView LED-backlit touch screen with Corning® Gorilla® Glass 5, 1000 nits, 72% NTSC with Ambient Light Sensor and HD IR webcam for WWAN (1920 x 1080)[7,9,10,11]
HP Sure View Integrated Privacy Screen 33.8 cm (13.3") diagonal FHD IPS Anti-Glare LED-backlit touch screen with Corning® Gorilla® Glass 5, 1000 nits, 72% NTSC with Ambient Light Sensor and HD IR webcam for WWAN (1920 x 1080)[7,9,10,11]

HDMI 1.4b
Supports resolution up to 4k @ 30Hz

7. HD content required to view HD images.
9. Resolutions are dependent upon monitor capability, and resolution and color depth settings.
10. Sold separately or as an optional feature.
11. 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.

Technical Specifications

Docking station model	Total number of supported displays (Including the notebook) display)	Max. resolutions supported	Dock Connectors	Technical limitations
HP Thunderbolt Dock G2	3	Dual 4K @ 60Hz	2xDP, 1xVGA, 1xTB, 1xUSB-C alt-mode	Dual 4k (4096 x 2160) only with: • 1 DP + TB port or • USB-C alt mode + TB port Dual 4K (3840 x 2160) with any of the DP, TB or USB-C alt mode video ports
HP Elite USB-C Dock G4	3	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[12]
256 GB PCIe® NVMe™ SS Value[12]
256 GB PCIe® Gen3x4 NVMe™ SS TLC[12]
256 GB SATA-3 SED SS TLC[12]
512 GB PCIe® NVMe™ SS Value[12]
512 GB PCIe® Gen3x4 NVMe™ SS TLC[12]
512 GB PCIe® Gen3x4 NVMe™ SED SS TLC[12]
512 GB SATA-3 SS TLC (FIPS 140-2)[12]
512 GB Intel® PCIe® NVMe™ QLC + 32 GB Intel® Optane™[12] (Planned to be available Q2 2019)
1 TB PCIe® Gen3x4 NVMe™ SS TLC[12]
2 TB PCIe® Gen3x4 NVMe™ SS TLC[12]

12. 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.

Technical Specifications

MEMORY

Maximum Memory
32 GB DDR4-2400 SDRAM[13]

Memory
32 GB DDR4-2400 SDRAM (2 x 16 GB)[13]
16 GB DDR4-2400 SDRAM (1 x 16 GB) [13]
16 GB DDR4-2400 SDRAM (2 x 8 GB) [13]
8 GB DDR4-2400 SDRAM (1 x 8 GB) [13]
8 GB DDR4-2400 SDRAM (2 x 4 GB) [13]
4 GB DDR4-2400 SDRAM (1 x 4 GB) [13]

Memory Slots
2 SODIMM
Both slots are upgradeable
System runs at 2400 for Intel® 8th Generation processors
Supports Dual Channel Memory

13. 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® Wireless-AC 9560 802.11a/b/g/n/ac (2x2) Wi-Fi® and Bluetooth® 5 Combo, vPro™[10,14]
Intel® Wireless-AC 9560 802.11a/b/g/n/ac (2x2) Wi-Fi® and Bluetooth® 5 Combo, non-vPro™ [10,14]
Intel® Wi-Fi 6 AX200 802.11a/b/g/n/ac/ax (2x2) and Bluetooth® 5 Combo, vPro™[10,18]
Intel® Wi-Fi 6 AX200 802.11a/b/g/n/ac/ax (2x2) Bluetooth® 5 Combo, non-vPro™[10,18]

WWAN
Intel® XMM™ 7262 LTE-Advanced Cat 6[15]
Intel® XMM™ 7360 LTE-Advanced Cat 9[15]
Intel® XMM™ 7560 LTE-Advanced Pro Cat 16[17]

NFC
NXP NPC300 Near Field Communication Module[10]

Miracast
Native Miracast Support[16]

10. Sold separately or as an optional feature.
14. Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited.
15. WWAN module is an optional feature, requires factory configuration and 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.
16. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming.
17. Gigabit class Category 16 4G LTE module is optional and must be configured at the factory. Module designed for up to 1 Gbps download speeds as carriers deploy 5 carrier aggregation and 100Mhz channel bandwidth, requires activation and separately purchased service contract. Backwards compatible to HSPA 3G technologies. Check with service provider for coverage and

availability in your area. Connection, upload and download speeds will vary due to network, location, environment, network conditions, and other factors. 4G LTE not available on all products, in all regions.

18. 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.

AUDIO/MULTIMEDIA

Audio
Audio by Bang & Olufsen
Integrated 3 Multi Array Microphone
2 Integrated Stereo Speakers (74 Db)

Camera
HD camera[7]
HD IR camera[7]

7. HD content required to view HD images.

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

Keyboard
HP Premium Collaboration Keyboard, backlit and spill resistant with drain

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 - Backlit Toggle
F10 - numlk
F11 - Wireless
F12 - Calendar
Share/Present
Call Answer
Call End

Hidden Function Keys
Fn+R - Break
Fn+S - Sys Rq

Technical Specifications

Fn+C - Scroll Lock
Fn+E - Insert
Fn+W - Pause

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[16]
HP Connection Optimizer
HP Image Assistant
HP Hotkey Support
HP JumpStart
HP Support Assistant[23]
HP Noise Cancellation Software
Buy Office (Sold separately)

Manageability Features
HP Driver Packs[24]
HP System Software Manager (SSM)
HP BIOS Config Utility (BCU)
HP Client Catalog
HP Manageability Integration Kit Gen3[25]
HP Cloud Recovery[26]

Client Security Software
HP Client Security Manager Gen5[27]
HP Fingerprint Sensor[28]
HP Power On Authentication
Windows Defender[29]

Security Management
Pre-boot Authentication
TPM 2.0 Embedded Security Chip shipped with Windows 10 (Common Criteria EAL4+ Certified)
SATA 0,1 port disablement (via BIOS)
Serial, USB enable/disable (via BIOS)
Power-on password (via BIOS)
Setup password (via BIOS)
Support for chassis padlocks and cable lock devices
HP Sure Click[30]
HP Sure Start Gen5[31]
HP Sure Run Gen2[32]
HP Sure Recover Gen2[33]

Technical Specifications

HP Sure Sense[34]

TPM
Model: Infineon SLB9670
Version: 7.85
Revision: TPM 2.0
FIPS 140-2 Compliant: Yes

Smartcard Reader
Model number: Alcor AU9560
FIPS 201 Compliant: Yes

IPv6 Compliance
Yes

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

Is the BIOS on this notebook ISO/IEC 19678:2015 (formerly NIST 800-147) compliant?:
Yes
UEFI version: 2.6

16. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming.
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 Automatic Drive Lock is not supported on NVMe drives
21. HP Secure Erase 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. HP Support Assistant requires Windows and Internet access.
24. HP Driver Packs not preinstalled, however available for download at http://www.hp.com/go/clientmanagement.
25. HP Manageability Integration Kit can be downloaded from http://www.hp.com/go/clientmanagement.
26. 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
27. HP Client Security Manager Gen5 requires Windows and is available on the select HP Pro and Elite PCs. See product specifications for details.
28. HP Fingerprint Sensor sold separately or as an optional feature.
29. Windows Defender Opt in and internet connection required for updates.

Technical Specifications

30. HP Sure Click is available on select HP platforms and supports Microsoft Internet Explorer, Google Chrome™, 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.
31. HP Sure Start Gen5 is available on select HP PCs with Intel processors. See product specifications for availability.
32. HP Sure Run Gen2: See product specifications for availability.
33. 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™.
34. HP Sure Sense requires Windows 10. See product specifications for availability.

POWER

Power Supply

HP Smart 45 W External AC power adapter[35]
HP Smart 45 W External AC power adapter, 2-prong (Japan only)[35]
HP Smart 65 W External AC power adapter[35]
HP Smart 65 W EM External AC power adapter[35]
HP 45 W USB Type-C™ adapter[35]
HP 65 W USB Type-C™ adapter[35]

Primary Battery

HP Long Life 4-cell, 53 Wh Li-ion[36]

Battery Life

Up to 21 hours (Intel® 8th Generation CPU and 4-cell 53 WHr battery)[37]

Power Cord

2-wire plug - 1m3
3-wire plug - 1m
3-wire plug - 1.8m
Duckhead power cord - 1 m
Duckhead power cord - 1.8 m

35. Availability may vary by country.
36. Battery is internal and not replaceable by customer. Serviceable by warranty.
37. 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 weight
2.97 lbs[35] 1.35 kgs[38]

NOTE: Starting weight configuration includes FHD 400 nits BrightView Touch, 53 Wh battery, 4 GB, 128 GB SSD, HD + IR camera, No FPS, with WWAN Antenna, No NFC, and No Pen

Mainstream weight
3.13 lbs[35]1.42 kgs[37]

NOTE: Mainstream weight configuration includes FHD 250 nits BrightView Touch, 53 Wh battery, 4 GB, 128 GB SSD, HD Camera, No FPS, with WWAN Antenna, No NFC and No Pen

Product Dimensions (w x d x h)
12.07 x 8.47 x 0.66 in
30.66 x 21.52 x 1.69 cm

38. Weight will vary by configuration.

PORTS/SLOTS

2 USB 3.1 Type-C™ with Thunderbolt™ support
2 USB 3.1 Gen 1 (1 Charging)
1 HDMI 1.4b[8]
1 External Nano SIM tray (Optional)[10]
1 Headphone/microphone combo
1 Smartcard reader (Optional)[10]
1 AC power
Nano Security Lock Slot (Lock sold separately)

8. HDMI cable sold separately
10. Sold separately or as an optional feature.

SERVICE AND SUPPORT

HP offers 3-year and 1-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. [39]

39. 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**	AC 19V
	Average Operating Power	Win10
	Integrated Graphics	Yes
	Max Operating Power	UMA < 65W
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[40]
	EPEAT® 2019	Yes, Silver in U.S.[41]
	ICES	Yes
	Australia	Yes
	NZ A-Tick Compliance	Yes
	CCC	Yes
	Japan VCCI Compliance	Yes
	KC	Yes
	BSMI	Yes
	CE Marking Compliance	Yes
	BNCI or BELUS	Yes
	CIT	Yes
	GOST	Yes
	Saudi Arabian Compliance (ICCP)	Yes
	SABS	Yes

40. Configurations of the HP EliteBook x360 830 G6 that are ENERGY STAR® certified are identified as HP EliteBook x360 830 G6 ENERGY STAR® on HP websites and on http://www.energystar.gov.

41. 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® 2019 Silver registered in the United States. Based on EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. Status varies by country. 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)	4.26	4.42	4.3
	Normal Operation (Long idle)	2.66	2.77	2.69
	Sleep	0.88	0.92	0.9
	Off	0.36	0.37	0.36
		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, 60Hz**
	Normal Operation (Short idle)	14	15	15
	Normal Operation (Long idle)	9	9	9
	Sleep	3	3	3
	Off	1	1	1
		*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	15
Fixed Disk – Random writes	2.6	15

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: Mercury greater the1ppm by weight Cadmium greater than 20ppm by weight Battery size: CR2032 (coin cell) Battery type: Lithium
Additional Information	• 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.) • This product is 96.4% recycle-able when properly disposed of at end of life.

Packaging Materials	**External:**	PAPER/Corrugated	264
	Internal:	PLASTIC/EPE (Expanded Polyethylene)	47
		PLASTIC/Polypropylene - PP	3
		PLASTIC/Polyethylene low density - LDPE	14

Technical Specifications

	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 http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_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.

	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

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

Panel LCD 13.3 inch diagonal FHD WLED BrightView UWVA 72 percent cg 400 nits eDP 1.4+PSR2 ultraslim	**Outline Dimensions (W x H x D)**	299.06 x 185.54 (max.)
	Active Area	293.76 x 165.24
	Weight	170 g max. (panel only)
	Diagonal Size	13.3"
	Thickness	2.0 mm
	Interface	eDP 1.4 w/ PSR2 (2 lane)
	Surface Treatment	BrightView Glass
	Touch Enabled	Yes
	Contrast Ratio	1500:1 (typical)
	Refresh Rate	60 Hz
	Brightness	400 nits typ.
	Pixel Resolution	1920 x 1080 (FHD)
	Format of LCD Pixel Arrangement	RGB
	Backlight	WLED
	Color Gamut Coverage	72% of NTSC
	Color Depth	8 bit
	Viewing Angle	UWVA 85/85/85/85

Technical Specifications

Panel LCD 13.3 inch diagonal FHD WLED Anti-glare UWVA 72 percent cg 400 nits eDP 1.4+PSR2 ultraslim	**Outline Dimensions (W x H x D)**	299.06 x 185.54 (max.)
	Active Area	293.76 x 165.24
	Weight	170 g max. (panel only)
	Diagonal Size	13.3"
	Thickness	2.0 mm
	Interface	eDP 1.4 w/ PSR2 (2 lane)
	Surface Treatment	Anti-glare Glass
	Touch Enabled	Yes
	Contrast Ratio	1500:1 (typical)
	Refresh Rate	60 Hz
	Brightness	400 nits typ.
	Pixel Resolution	1920 x 1080 (FHD)
	Format of LCD Pixel Arrangement	RGB
	Backlight	WLED
	Color Gamut Coverage	72% of NTSC
	Color Depth	8 bit
	Viewing Angle	UWVA 85/85/85/85

Panel LCD 13.3 inch diagonal FHD WLED BrightView UWVA 45 percent cg 250 nits eDP slim	**Outline Dimensions (W x H x D)**	300.56 x 187.77 max. (w/ PCB & w/o bracket)
	Active Area	293.76 x 165.24 typ.
	Weight	<260 max. (panel only)
	Diagonal Size	13.3"
	Thickness	3.0 mm max.
	Interface	eDP 1.2 (2 lane)
	Surface Treatment	BrightView Glass
	Touch Enabled	Yes
	Contrast Ratio	600:1 (typ)
	Refresh Rate	60 Hz
	Brightness	250 nit typ
	Pixel Resolution	1920 x 1080 (FHD)
	Format of LCD Pixel Arrangement	RGB
	Backlight	WLED
	Color Gamut Coverage	45% of NTSC
	Color Depth	6 bit
	Viewing Angle	UWVA 85/85/85/85

Technical Specifications

Panel LCD 13.3 inch diagonal FHD WLED BrightView UWVA 72 percent cg 1000 nits eDP 1.4+PSR2 flat Privacy	**Outline Dimensions (W x H x D)**	298.76 x 186.04 mm (typ.)
	Active Area	293.76 x 165.24 mm (typ.)
	Weight	255 g (max)
	Diagonal Size	13.3 inch
	Thickness	3.0 mm (max)
	Interface	eDP 1.4
	Surface Treatment	BrightView Glass
	Touch Enabled	YES
	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
	Color Gamut Coverage	72% of NTSC
	Color Depth	8 bit
	Viewing Angle	UWVA 85/85/85/85

Panel LCD 13.3 inch diagonal FHD WLED Anti-Glare UWVA 72 percent cg 1000 nits eDP 1.4+PSR2 flat Privacy	**Outline Dimensions (W x H x D)**	298.76 x 186.04 mm (typ.)
	Active Area	293.76 x 165.24 mm (typ.)
	Weight	255 g (max)
	Diagonal Size	13.3 inch
	Thickness	3.0 mm (max)
	Interface	eDP 1.4
	Surface Treatment	Anti-glare Glass
	Touch Enabled	YES
	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
	Color Gamut Coverage	72% of NTSC
	Color Depth	8 bit
	Viewing Angle	UWVA 85/85/85/85

Technical Specifications

STORAGE AND DRIVES

Note: 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.

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	Up To 520 MB/s
	Maximum Sequential Write	Up To 450 MB/s
	Logical Blocks	250,069,680
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	DIPM; TRIM; DEVSLP

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)
	Interface	PCIe NVMe Gen3X4
	Maximum Sequential Read	Up To 3167 MB/s
	Maximum Sequential Write	Up To 1663 MB/s
	Logical Blocks	500,118,192
	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 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)
	Interface	ATA-8, SATA 3.0
	Maximum Sequential Read	Up To 530 MB/s
	Maximum Sequential Write	Up To 515 MB/s
	Logical Blocks	500,118,192
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]

	Features	DIPM; TRIM; DEVSLP
256 GB 2280 PCIe NVMe Value Solid State Drive	**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	Up To 1700 MB/s
	Maximum Sequential Write	Up To 600 MB/s
	Logical Blocks	500,118,192
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	TRIM; L1.2
SSD 512 GB 2280 M2 PCIe-3x4 SS NVMe TLC	**Form Factor**	M.2 2280
	Capacity	512 GB
	NAND Type	MLC
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Interface	PCIe NVMe Gen3X4
	Maximum Sequential Read	Up To 2600 MB/s
	Maximum Sequential Write	Up To 1400 MB/s
	Logical Blocks	1,000,215,216
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	TRIM; L1.2
SSD 512 GB 2280 M2 SATA-3 TLC FIPS	**Form Factor**	M.2 2280
	Capacity	512 GB
	NAND Type	TLC
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Interface	ACS-3, SATA 3.2
	Maximum Sequential Read	Up To 530 MB/s
	Maximum Sequential Write	Up To 400 MB/s
	Logical Blocks	1,000,215,216
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	DIPM; TRIM; DEVSLP

Technical Specifications

SSD 512 GB 2280 PCIe-3x4 NVMe Self Encrypted OPAL2 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	Up To 2900 MB/s
	Maximum Sequential Write	Up To 1400 MB/s
	Logical Blocks	1,000,215,215
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	TRIM; L1.2

SSD 1 TB 2280 PCIe-3x4 NVMe TLC SS	**Form Factor**	M.2 2280
	Capacity	1 TB
	NAND Type	TLC
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Interface	PCIe NVMe Gen3X4
	Maximum Sequential Read	Up to 3480 MB/s
	Maximum Sequential Write	Up to 2800 MB/s
	Logical Blocks	2,000,409,264
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	TRIM; L1.2

SSD 2 TB 2280 PCIe-3x4 NVMe TLC SS	**Form Factor**	M.2 2280
	Capacity	2 TB
	NAND Type	TLC
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Interface	PCIe NVMe Gen3X4
	Maximum Sequential Read	Up to 3000 MB/s
	Maximum Sequential Write	Up to 2100 MB/s
	Logical Blocks	3,907,029,168
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	TRIM; L1.2

SSD 512 GB 2280 PCIe NVMe Value	**Form Factor**	M.2 2280
	Capacity	512 GB
	NAND Type	TLC
	Height	0.09 in (2.3 mm)

Technical Specifications

	Width	0.87 in (22 mm)
	Interface	PCIe NVMe Gen3X4
	Maximum Sequential Read	Up to 1700 MB/s
	Maximum Sequential Write	Up to 1500 MB/s
	Logical Blocks	1,000,215,215
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	TRIM; L1.2
SSD 512 GB PCIe NVMe + 32 GB Optane	**Form Factor**	M.2 2280
	Capacity	512 GB
	NAND Type	TLC
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Interface	PCIe NVMe Gen3X4
	Maximum Sequential Read	Up to 2400 MB/s
	Maximum Sequential Write	Up to 1300 MB/s
	Logical Blocks	1,000,215,215
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	TRIM; L1.2

Technical Specifications

NETWORKING/COMMUNICATIONS

Intel® Wireless-AC 9560 802.11a/b/g/n/ac (2 x 2) Wi-Fi® and Bluetooth® 5.0 Combo[1], vPro™[10,14]	**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, ,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 •Cisco Certified Extensions, all versions through CCX4 and CCX Lite •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 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: 2.8g	
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	

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. 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).

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)
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
	Link Topology	
	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)
	Security & Manageability	Intel® vPro™ support with appropriate Intel® chipset components

10. Sold separately or as an optional feature.
14. Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited.

Intel® Wireless-AC 9560 802.11a/b/g/n/ac (2 x 2) Wi-Fi® and Bluetooth® 5.0 Combo[1], non-vPro™[10,14]	**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

Technical Specifications

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 • Cisco Certified Extensions, all versions through CCX4 and CCX Lite • 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 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

Technical Specifications

Dimensions	Type 2230: 2.3 x 22.0 x 30.0 mm	
Weight	Type 2230: 2.8g	
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	

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. 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).

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
Bluetooth Software Supported Link Topology	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)

10. Sold separately or as an optional feature.
14. Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited.

Intel® Wi-Fi 6 AX200 802.11a/b/g/n/ac/ax (2 x 2) and Bluetooth® 5.0 Combo[1], vPro™[10,18]	**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 • Cisco Certified Extensions, all versions through CCX4 and CCX Lite • WAPI
Network Architecture Models	Ad-hoc (Peer to Peer)
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)
Altitude	Operating: 0 to 10,000 ft (3,048 m) Non-operating: 0 to 50,000 ft (15,240 m)

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. 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).

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 Link Topology	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)
Security & Manageability	Intel® vPro™ support with appropriate Intel® chipset components

10. Sold separately or as an optional feature.

18. 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.

Intel® Wi-Fi 6 AX200 802.11a/b/g/n/ac/ax (2 x 2) Bluetooth® 5 Combo[1], non-vPro™[10,18]	**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 • Cisco Certified Extensions, all versions through CCX4 and CCX Lite • 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
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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)

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

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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
Link Topology	
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)

10. Sold separately or as an optional feature.

18. 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.

Intel® XMM™ 7360 LTE-Advanced Cat 9[15]	**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 (Length x Width x Thickness)	42 x 30 x 2.3 mm

15. WWAN module is an optional feature, requires factory configuration and 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.

Intel® XMM™ 7262 LTE-Advanced Cat 6[15]	**Technology/Operating bands**	FDD LTE: 2100 (Band 1), 1800 (Band 3), 850 (Band 5), 2600 (Band 7), 900 (Band 8), 800 (Band 20), 700 (Band 28), HSPA+: 2100 (Band 1), 850 (Band 5), 900 (Band 8)
	Wireless protocol standards	3GPP Release 11 LTE Specification CAT.6, DL 40MHz BW throughput up to 300Mbps; 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 and XTRA)
	GPS bands	1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz
	Maximum data rates	LTE: 300 Mbps (Download), 50 Mbps (Upload) DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload) UMT: 384 kbps (Download), 384 kbps (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	6 g
	Dimensions (Length x Width x Thickness)	42 x 30 x 2.3 mm

15. WWAN module is an optional feature, requires factory configuration and 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.

Intel® XMM™ 7560 LTE-Advanced Pro Cat 16[17]	**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), 700 (Band 12 lower), 700 (Band 13 upper), 700 (Band 14 upper), 700 (Band 17 lower), 850 (Band 18 lower), 850 (Band 19 upper), 800 (Band 20), 1900 (Band 25), 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), 3500 (Band 42), 5200 (Band 46 RX only) HSPA+: 2100 (Band 1), 1900 (Band 2), 1700/2100 (Band 4), 850 (Band 5), 900 (Band 8) MH
	Wireless protocol standards	3GPP Release 12 LTE Specification DL-CAT.16, DL 100MHz BW throughput up to 978Mbps; UL-CAT.13 40MHz throughput up to 150Mbps WCDMA R99, 3GPP Release 5, 6, 7 and 8 UMTS Specification
	GPS	Standalone, A-GPS (MS-B and LTO)
	GPS Bands	GPS 1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz, Beidou 1561.098 ± 2.046 MHz
	Maximum data rates	LTE: 978 Mbps (Download), 150 Mbps (Upload) DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload) HSPA+: 21Mbps (Download), 5.76 Mbps (Upload)
	Maximum output power	LTE: 23 dBm in all bands except B41 LTE B41 HPUE: 26dBm 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	6 g
	Dimensions (Length x Width x Thickness)	42 x 30 x 2.3 mm

17. Gigabit class Category 16 4G LTE module is optional and must be configured at the factory. Module designed for up to 1 Gbps download speeds as carriers deploy 5 carrier aggregation and 100Mhz channel bandwidth, requires activation and separately purchased service contract. Backwards compatible to HSPA 3G technologies. Check with service provider for coverage and availability in your area. Connection, upload and download speeds will vary due

to network, location, environment, network conditions, and other factors. 4G LTE not available on all products, in all regions.

NXP NPC300 Near Field Communication Module	**Dimensions (L x W x H)**	Module 17 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	-25 C to 80°C
	Storage temperature	-20°C to 125°C
	Humidity	10-90% operating 5-95% non-operating
	Supply Operating voltage	2.7 to 5.5 Volts
	I/O Voltage	1.8V or 3.3V

10. Sold separately or as an optional feature.

Power Consumption (Booster enable, VBAT= 3.3V, VCC_BOOST = 5V)	**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, 0.3mm pitch, 7 connector FPC. Antenna matching is external to module.

Technical Specifications

POWER

HP 65W Smart AC adapter	**Dimensions (H x W x D)**	107.0 x 47.0 x 30.0mm	
	Weight	250g +/- 10g	
	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
	Connector	4.5mm Barrel Type	
	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.	

HP 45W Smart AC adapter	**Dimensions (H x W x D)**	3.74 x 1.57 x 1.04 in (9.5 x 4.0 x 2.65 cm)	
	Weight	0.386 lb (175g) max	
	Input	90 to 265 VAC	
		Input Efficiency	87.74% at 115Vac and 88.4% at 230Vac
		Input frequency range	47 to 63 Hz
		Input AC current	1.4 A at 90 VAC
	Output	**Output power**	45W
		DC output	19.5V
		Hold-up time	5 msec 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° 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%
	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.	

HP 65W EM Smart AC adapter	**Dimensions (H x W x D)**	102 x 55 x 30mm	
	Weight	270g +/- 10g	
	Input	**Input Efficiency**	87% min at 115V/230V
		Input frequency range	47 to 63 Hz
		Input AC current	1.7 A at 90 VAC and maximum load
	Output	**DC output**	65W(19.5V/3.33A)
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<11A, Over voltage protection- 29V max automatic shutdown
	Connector	4.5mm Barrel Type, 3 pin/grounded, mates with interchangeable cords	
	Environmental Design	**Operating temperature**	0° to 35° C
		Non-operating (storage) temperature	-20° to 85° C
		Altitude	0 to 5,000 m
		Humidity	0% to 95%
		Storage Humidity	0% to 95%
	EMI and Safety Certifications	CE Mark - 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; Reliability - failure rate of less than 0.1% annually within the first three years of operation.	

AC Adapter 45 Watt nPFC USB type C™	**Dimensions (H x W x D)**	62.0 x 62.0 x 28.5 mm	
	Weight	unit: 220g +/- 10g	
	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**	5V/15W 9V/27W 10V/37.5W 12V/45W 15V/45W 20V/45W
		DC output	5V / 9V / 10V /12V / 15V / 20V
		Hold-up time	5ms at 115 Vac input
		Output current limit	<5.0A
	Connector	USB Type-C™	
	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)

AC Adapter 65 Watt nPFC USB type C ™	**Dimensions (H x W x D)**	74 x 74 x 28.5 mm	
	Weight	unit: 245g +/- 10g	
	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	Duck head / duck head power cord, without Smart ID DC connector	
	Environmental Design	**Operating temperature**	32°F to 95°F (0° to 35°C)

Technical Specifications

		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%
	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 100,000 hours at 25°C ambient condition.	
HP 4 Cell WHr 53 Long Life -PL Fast Charge	**Dimensions (H x W x D)**	5.58 mm * 80.62 mm * 269.2 mm	
	Weight	243g	
	Cells/Type	3-cell; Polymer	
	Energy	**Voltage**	7.7V
		Amp-hour capacity	6.9Ah
		Watt-hour capacity	53.2Wh
	Temperature	**Operating (Charging)**	0°C ~ 45°C
		Operating (Discharging)	14° to 122°F (-10° to 60°C)
		Optional Travel Battery Available	No

Country of Origin

China

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

Type	Description	Part Number
Cases	HP Essential Top Load Case	H2W17AA
	HP Basic Backpack	H1D24AA
	HP Slim Top Load	F3W15AA
Docking	HP Thunderbolt Dock 120W G2	2UK37AA
	HP Thunderbolt Dock 120W G2 TAA	2UK37AA
	HP Elite 90W Thunderbolt 3 Dock	1DT93AA
	HP USB-C Dock G4	3FF69AA
	HP USB-C Mini Dock	1PM64AA
	HP USB-C Travel Dock	T0K29AA
	HP USB Travel Dock	T0K30AA
	HP USB-C Universal Dock	1MK33AA
	HP Adjustable Dual Display Stand	AW664AA
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 USB-C to USB 3.0 Adapter	N2Z63AAA
	HP USB-C to USB-A Hub	Z6A00AA
	HP USB-C to HDMI 2.0	1WC36AA
	HP USB-C to VGA	N9K76AA
	HP HDMI to DVI	F5A28AA
	HP USB-C to RJ45	V7W66AA
	HP USB to RJ45	N7P47AA
	HP HDMI to VGA	H4F02AA
Power	HP 65W Slim AC Adapter	H6Y82AA
	HP 90W Slim AC Adapter	H6Y83AA

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

	HP 90W Slim Combo AC Adapter w/ USB	H6Y84AA
	HP 45W Smart AC Adapter	H6Y88AA
	HP 65W Smart AC Adapter	H6Y89AA
	HP 90W Smart AC Adapter	H6Y90AA
	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
	HP USB-C Notebook Power Bank	1TZ86AA
UCC	HP Stereo 3.5mm Headset	T1A66AA
	HP Stereo USB Headset	T1A67AA
	HP UC Wireless Mono Headset	W3K08AA
	HP UC Wireless Duo Headset	W3K09AA
Storage	HP USB External DVDRW Drive	F2B56AA
	HP 256GB M2 PCIe NVME SSD TLC (2280)	1FU87AA
	HP 512GB M2 PCIe NVME SSD TLC 2280)	1FU88AA
Security	HP Nano Keyed Cable Lock	1AJ39AA
	HP Nano Dual-Head Keyed Cable Lock	1AJ41AA
Other	HP TB Dock Audio Module	3AQ21AA
	HP Thunderbolt 120W 1m cable	3AQ23AA
	HP Thunderbolt 1m combo cable	3A25AA
	HP Rechargeable Active Pen	4KL69AA
Displays	HP EliteDisplay E243d 23.8-inch Docking Monitor	1TJ76AA
	HP EliteDisplay E243 23.8-inch Monitor	1FH47AA
	HP EliteDisplay E273q 27-inch Monitor	1FH52AA

Change Log

Date of change:	**Version History:**		**Description of change:**
June 10, 2019	From V1 to V2	Added	HP Cloud Recovery
June 20, 2019	From V2 to V3	Added	Environmental tab
July 2, 2019	From V3 to V4	Updated	Color Gamut