Overview

HP EliteBook 840 G6 Healthcare Edition

Left

1. HD Camera
2. IR Camera LED
3. Internal microphones
4. HP Privacy Camera
5. IR Camera
6. Pointstick
7. Clickpad and RFID/NFC tap area (select models)
8. Smart Card Reader (Select Models)
9. USB 3.1 Gen 1 Charging Port
10. Standard Security Lock slot (Lock sold separately)
11. Power Button

NOTE: 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

Right

1. Power connector
2. USB Type-C™ with Thunderbolt™
3. Docking connector
4. Ethernet port
5. HDMI port (Cable not included)
6. USB 3.1 Gen 1 Port
7. Audio combo jack
8. SIM card slot
9. FIPS Fingerprint reader (Select models)

Overview

AT A GLANCE

- Windows 10 versions and FreeDOS
- Choice of 8th Generation Intel® Core™ i5/i7 processors, with integrated graphics or optional AMD 550X 64 bit Discrete Graphics
- Engineered for sanitization with germicidal wipes every shift, every day (please see Cleaning Instructions for supported wipes)[4]
- Optional integrated single sign-on badge capability
- Optional integrated FIPS-201 compliant fingerprint reader for electronic prescribing of medication
- EN/IEC 60601-1-2 compliant for EMI safety
- World class security and manageability with HP Sure Start Gen 5, HP Sure View, HP Sure Run, HP Sure Recover, HP Sure Click, HP Sure Sense, HP MIK, IR Camera, SmartCard Reader[1], Fingerprint reader[1], Self-encrypting SSDs[1], and Absolute Computrace embedded
- HP Sure View 14.0" 700nit FHD IPS display*
- Flexible wireless connectivity options, including 802.11 AX WLAN module and CAT16 WWAN module
- Optional real time location awareness
- HP Long Life Battery, fast charging (50% in 30 minutes) with no impact on battery recharge cycles, Up to 11 hours and 30 minutes battery life[2]
- Featuring HP Collaboration Keyboard with Clickpad to manage most commonly used conferencing functions with a single keystroke
- Experience telemedicine with an HD camera and Infrared camera with multi-array noise-cancelling microphones and loud top-firing speakers (74dB)
- Designed to support all HP docking options including HP's traditional Ultraslim mechanical dock and USB-C docks.
- Passed MIL-STD test[3]

1. Sold separately or as an optional feature.
2. 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.
3. MIL-STD-810G testing is conducted on all HP EliteBook products. Testing is not intended to demonstrate fitness of U.S. Department of Defense (DoD) 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. Tested by up to 10,000 wipes with germicidal towelettes over a 3-year period. See user guide for cleaning instructions and approved cleaners.

* Touch enabled display will reduce actual brightness.

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

Technical Specifications

PRODUCT NAME

HP EliteBook 840 G6 Healthcare Edition
RMN: HSN-I24C-4

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
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

Intel® Core™ i7-8665U vPro™ Processor with Intel® UHD graphics 620 (1.8 GHz base frequency, up to 4.8 GHz with Intel® Turbo Boost Technology, 8 MB cache, 4 cores)[3,4,5*]
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 cache, 4 cores)[3,4,5]
Intel® Core™ i5-8365U vPro™ Processor with Intel® UHD Graphics 620 (1.6 GHz base frequency, up to 4.1 GHz with Intel® Turbo Boost Technology, 6 MB cache, 4 cores)[3,4,5*]
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 cache, 4 cores)[3,4,5]

Processor Family
8th Generation Intel® Core™ i7 processor (i7-8665U, i7-8565U models)[5]
8th Generation Intel® Core™ i5 processor (i5-8365U, i5-8265U models)[5]

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. 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.
* For full Intel® vPro™ functionality, Windows, a vPro supported processor, vPro enabled chipset, vPro enabled WLAN card and discrete TPM 2.0 are required. See http://Intel.com/vpro

Technical Specifications

CHIPSET

Integrated with processor

GRAPHICS

Integrated
Intel® UHD Graphics 620[6]

Discrete
AMD Radeon™ 550X (2 GB GDDR5 dedicated)[7,8]

Supports
Support HD Decode, DX12, HDMI 1.4b and HDCP 2.2

6. HD content required to view HD images.
7. Sold separately or as an optional feature.
8. AMD Dynamic Switchable Graphics technology requires an Intel processor, plus an AMD Radeon™ discrete graphics configuration and is not available on FreeDOS and Linux OS. With AMD Dynamic Switchable Graphics technology, full enablement of all discrete graphics video and display features may not be supported on all systems (e.g. OpenGL applications will run on the integrated GPU or the APU as the case may be).

DISPLAY

Touch
HP Sure View Gen 2 Integrated Privacy Screen 35.6 cm (14") diagonal FHD IPS WLED-backlit ultraslim touch screen with Corning® Gorilla® Glass 3, 700 nits, 72% NTSC with HD IR webcam for WWAN (1920 x 1080)[6,7,9,10*]

HDMI 1.4b
Supports resolution up to 4k @ 60Hz
DisplayPort™ 1.2

Displays support
Supports 2 independent displays when on the HP Ultraslim Dock - Max. resolution = 2.5K @ 60Hz (DP1) & 2.5K @ 60Hz (DP2)
Supports 2 independent displays when on the HP Thunderbolt™ Dock G2 - Max. resolution = 4K @ 60Hz (DisplayPort™) & 4K @ 60Hz (Thunderbolt™)

6. HD content required to view HD images.
7. Sold separately or as an optional feature.
9. Resolutions are dependent upon monitor capability, and resolution and color depth settings.
10. HP Sure View integrated privacy screen is an optional feature that must be configured at purchase. It is only available on non-touch models and is designed to function in landscape orientation.
*Touch enabled display will reduce actual brightness

Technical Specifications

STORAGE AND DRIVES

Primary M.2 Storage
128 GB SATA-3 SS TLC[11]
256 GB PCIe NVMe SS Value[11]
256 GB SATA-3 TLC (Opal 2) [11]
256 GB PCIe Gen3x4 NVMe SS TLC[11]
256 GB Intel® PCIe® NVMe™ QLC M.2 SSD with 16 GB Intel® Optane™ memory H10[11,12,13]
512 GB PCIe Gen3x4 NVMe SS TLC[11]
512 GB PCIe Gen3x4 NVMe SS TLC (OPAL 2) [11]
512 GB SATA-3 SS TLC (FIPS 140-2) [11]
512 GB PCIe Value[11]
512 GB Intel® PCIe® NVMe™ QLC M.2 SSD with 32 GB Intel® Optane™ memory H10[11,12,13]
1 TB PCIe Gen3x4 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.
12. Intel® Optane™ memory system acceleration does not replace or increase the DRAM in your system. Requires 8th Gen or higher Intel® Core™ processor, BIOS version with Intel® Optane™ supported, Windows 10 64-bit, and an Intel® Rapid Storage Technology (Intel® RST) driver.
13. Intel® Optane™ memory H10 only for Intel® PCIe® NVMe™ QLC M.2 SSD.

MEMORY

Maximum Memory
32 GB DDR4-2400 SDRAM[14]

Memory
4 GB Total System Memory (4 GB x 1) [14]
8 GB Total System Memory (4 GB x 2) [14]
8 GB Total System Memory (8 GB x 1) [14]
12 GB Total System Memory (8 GB + 4 GB) [14]
16 GB Total System Memory (16 GB x 1) [14]
16 GB Total System Memory (8 GB x 2) [14]
20 GB Total System Memory (16 GB + 4 GB) [14]
24 GB Total System Memory (16 GB + 8 GB) [14]
32 GB Total System Memory (16 GB x2) [14]

Memory Slots
2 SODIMM
Both slots are customer accessible / upgradeable
DDR4 SODIMMS, System support runs at: 2400
Supports Dual Channel Memory

14. 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.

Technical Specifications

NETWORKING/COMMUNICATIONS

WLAN
Intel® Dual Band Wireless-AC 9560 802.11a/b/g/n/ac (2x2) Wi-Fi® and Bluetooth® 5 Combo, vPro™[15]
Intel® Dual Band Wireless-AC 9560 802.11a/b/g/n/ac (2x2) Wi-Fi® and Bluetooth® 5 Combo, non-vPro™[15]
Intel® AX200 (2x2) Wi-Fi 6 and Bluetooth® 5 Combo, vPro™[15]
Intel® AX200 (2x2) Wi-Fi 6 and Bluetooth® 5 Combo, non-vPro™[15]

WWAN
Intel® XMM™ 7262 LTE-Advanced Cat 6, Fibocom LTE/HSPA+ w/GPS[16]
Intel® XMM™ 7360 LTE-Advanced Cat 9, Fibocom LTE/HSPA+ w/GPS[16]
Intel® XMM™ 7560 LTE-Advanced Pro Cat 16, Fibocom LTE/HSPA+ w/GPS[17]

NFC
NXP NPC300 Near Field Communication Module

Miracast
Native Miracast Support[18]

Ethernet
Intel® I219-LM GbE, vPro™[19]
Intel® I219-V GbE, non-vPro™

RFID
RFIdeas HF/LF RFID Read SE Module without SE Security Access Module (SE SAM)[20]
RFIdeas HF/LF RFID Read SE Module with SE Security Access Module (SE SAM)[20]

Real Time Location Awareness
RFID Impinj MONZA X 2242 UHF Module

15. Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited.
16. 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.
17. Gigabit class 4G LTE module is optional and must be configured at the factory. The full utilization of this module's Gigabit functionality is dependent on network providers' technical ability to support this network and speed. Backwards compatible to HSPA 3G technologies. Module requires activation and separately purchased service contract. 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. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming.
29. For full Intel® vPro™ functionality, Windows, a vPro supported processor, vPro enabled chipset, vPro enabled WLAN card and discrete TPM 2.0 are required. See http://Intel.com/vpro
20. SE Security Access Module (SE SAM) is a separate hardware SIM inserted into the RFID reader and is required to support SE, SEOS, and iClass credentials for reading HID/iClass card types.

AUDIO/MULTIMEDIA

Audio
Audio by Bang & Olufsen
Integrated Multi Array Microphones (with World-facing 3rd mic)
2 Integrated Stereo Speakers

Webcam
HD camera + IR camera[6,7]

Sensor
Hall Sensor
Ambient Light Sensor

6. HD content required to view HD images.
7. Sold separately or as an optional feature.

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

Keyboard
HP Premium Collaboration Keyboard, backlit, dual point, spill resistant with drain, with HP Dura Keys

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

Function Keys
F1 - Display Switching
F2 - 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

Technical Specifications

SOFTWARE AND SECURITY

Preinstalled Software

BIOS

HP BIOSphere Gen5[21]
HP Drive Lock & Automatic Drive Lock[22]
BIOS Update via Network
Master Boot Record Security
Power On Authentication
Secure Erase[23]
Absolute Persistence Module[24]
Pre-boot Authentication

Software

HP Native Miracast Support[25]
HP Connection Optimizer
HP Image Assistant
HP Hotkey Support
HP JumpStart
HP Support Assistant[26]
HP Noise Cancellation Software
HP Easy Clean[27]
Buy Office (sold separately)

Manageability Features

HP Driver Packs[28]
HP System Software Manager (SSM)
HP BIOS Config Utility (BCU)
HP Client Catalog
HP Manageability Integration Kit Gen3[29]

Client Security Software

HP Client Security Manager Gen5[30]
HP Fingerprint Sensor[31]
HP Power On Authentication
Windows Defender[32]

Security Management

Pre-boot Authentication
TPM 2.0 Embedded Security Chip shipped with Windows 10 (Common Criteria EAL4+ Certified)[33]
SATA 0,1 port disablement (via BIOS)
Serial, USB enable/disable (via BIOS)

Technical Specifications

Power-on password (via BIOS)

Setup password (via BIOS)

Support for chassis padlocks and cable lock devices

HP Sure Click[34]

HP Sure Start Gen5[35]

HP Sure Run Gen2[36]

HP Sure Recover Gen2[37]

HP Sure Sense[38]

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

Fingerprint Sensor

HP Fingerprint Sensor

FIPS-201 compliant fingerprint reader

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

21. HP BIOSphere Gen4 features may vary depending on the PC platform and configurations requires Windows and 8th Gen Intel® processors.
22. HP Drive Lock is not supported on NVMe drives.
23. Secure Erase for the methods outlined in the National Institute of Standards and Technology Special Publication 800-88. Supported on Elite platforms with BIOS version F.03 or higher.
24. 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.
25. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming media players that also support Miracast. You can use Miracast to share what you're doing on your PC and present a slide show. For more information: http://windows.microsoft.com/en-us/windows-8/project-wireless-screen-miracast.
26. HP Support Assistant requires Windows and Internet access.
27. HP Easy Clean 2.0 requires Windows and will disable the keyboard, display and touchpad only. Ports are not disabled.
28. HP Driver Packs not preinstalled, however available for download at http://www.hp.com/go/clientmanagement.
29. HP Manageability Integration Kit can be downloaded from http://www8.hp.com/us/en/ads/clientmanagement/overview.html
30. HP Client Security Manager Gen5 requires Windows and is available on the select HP Pro and Elite PCs. See product specifications for details.
31. HP Fingerprint Sensor sold separately or as an optional feature.
32. Windows Defender Opt in and internet connection required for updates.
33. 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).
34. 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.
35. HP Sure Start Gen5 is available on select HP PCs with Intel processors. See product specifications for availability.
36. HP Sure Run Gen2: See product specifications for availability.
37. 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™.
38. HP Sure Sense requires Windows 10. See product specifications for availability.

Technical Specifications

POWER

Power Supply
HP Smart 45 W External AC power adapter, 2-prong (Japan only)[39]
HP Smart 65 W External AC power adapter[39]
HP USB Type-C™ 65 W External AC power adapter[39]

Primary Battery
3-cell HP Long Life Lithium Polymer 50 WHr[40]
HP Fast Charge Technology[41]

Battery life
Up to 11 hours and 30 minutes[42]

Power Cord
2-wire plug, 1.0m, Conventional[39]
3-wire plug, 1.0m, Conventional[39]
3-wire plug, 1.8m, Conventional[39]
Duckhead power cord, 1.0m, Premium[39]
Duckhead power cord, 1.8m, Premium[39]

39. Availability may vary by country.
40. Battery is internal and not replaceable by customer. Serviceable by warranty.
41. 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.
42. 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 www.bapco.com for additional details.

WEIGHTS & DIMENSIONS

Product Weight (Does not include power adapter)
Starting at 3.56 lb[43]
Starting at 1.62 kg[43]

Product Dimensions (w x d x h)
12.84 x 9.22 x 0.75 in
32.6 x 23.43 x 1.91 cm

43. Weight will vary by configuration.

Technical Specifications

PORTS/SLOTS

Ports
1 Thunderbolt™ (USB Type-C™ connector 1.2) [Power delivery, DisplayPort 1.2]
2 USB 3.1 Gen 1 (1 charging)
1 HDMI 1.4[44]
1 RJ-45
1 docking connector
1 headphone/microphone combo
1 AC power
1 SIM card slot
1 Smartcard reader
1 Standard Security Lock slot (Lock sold separately)

44. HDMI cable sold separately.

SERVICE AND SUPPORT

HP Services offers 3-year and 1-year limited warranties and 90 day software limited warranty options depending on country. The Long Life battery will have same 1-year or 3-year limited warranty as the platform. 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. [45]

45. 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.

CLEANING INSTRUCTIONS

If there is visible soiling of the computer surface:
- First turn off the computer to prevent electric shock or damage to components.
  - Disconnect AC power.
  - Disconnect all powered external devices.
- Wipe the exterior of the computer with a soft, water-dampened cloth to remove the soil as needed.
  - The cloth should be of dry microfiber or a chamois (static-free cloth without oil), or static-free cloth wipes.
  - The cloth should be moist but not wet. Water dripping into the ventilation or other points of ingress can cause damage.
  - Please do not use fibrous materials, such as paper towels, as these can scratch the computer. Over time, dirt and cleaning agents can get trapped in the scratches.
- Allow the unit to air-dry before use or before additional cleaning with germicidal wipes.

If there is no visible soiling of the computer surface:
- Launch the HP Easy Clean software application that came with your computer. This will disable the keyboard, display, and clickpad. (Or you could alternatively choose to put the computer in Sleep mode or turn off the computer).
- Next, use any of the following germicidal wipe formulations to safely disinfect all exposed surfaces of your computer including the keyboard, display, clickpad, and chassis. (Refer to the directions for use provided by the manufacturer of the wipes):

- Formula 1
  - Benzyl-C12-18-alkyldimethyl ammonium chlorides: <0.1%
  - Quaternary ammonium compounds, C12-14-alkyl[(ethylphenyl)methyl] dimethyl, chlorides: <0.1%
- Formula 2
  - 2-Butoxyethanol: <5%
  - Isopropanol: 10 - 20%
  - 2-Butoxyethanol: 5%
  - Benzyl-C12-18-alkyldimethyl ammonium chlorides: <0.5 %
  - Quaternary ammonium compounds, C12-18-alkyl [(ethylphenyl) methyl] dimethyl, chlorides: <0.5%
- Formula 3
  - Quaternary ammonium compounds, C12-18-alkyl [(ethylphenyl) methyl] dimethyl, chlorides: <0.5%
  - Benzyl-C12-18-alkyldimethyl ammonium chlorides: <0.5%
- Formula 4
  - Isopropyl alcohol: 55.0%
  - Alkyl dimethyl benzyl ammonium chlorides: 0.25%
  - Alkyl (68% C12, 32% C14) dimethyl ethylbenzyl ammonium chloride: 0.25%
- Formula 5
  - Isopropanol: 10 - 20%
  - Ethylene Glycol Monobutyl Ether (2-Butoxyethanol): 1-5%
  - Diisobutylphenoxyethoxyethyl dimethyl benzyl ammonium chloride: 0.1-0.5%
- Formula 6
  - Sodium hypochlorite 0.1-1%
- Formula 7
  - Cellulose: 10-30%
  - Ethyl alcohol: 0.10-1.00%
- Formula 8
  - Isopropyl alcohol: 30-40%
  - Water: 60 – 70%
- Please do not use cleaners that contain any petroleum based materials such as benzene or thinner. These may damage the notebook.
- Do not close the computer until you've allowed it to completely air-dry.
- Once the surface is dry, the computer is ready for use again. Depending on how you readied the computer earlier, either exit the HP Easy Clean software, remove the computer from Sleep mode, or turn the computer back on to start using your computer again

Compatible Gloves

- Touch on the screen and clickpad is tuned for support with bare hands and with the following list of surgical and exam gloves:

- McKesson Perry® Performance Plus Sterile Surgical Gloves
- Smart Practice Neo Soothe Sterile Surgical Fitted Gloves
- SKINTX Nitrile Exam Gloves
- Precision Disposable Products Disposable Medical Exam Gloves
- Medline SensiCare Exam Gloves
- Kimberly Clark Safety Safeskin Exam Gloves

CERTIFICATION AND COMPLIANCE

ENERGY STAR® certified
EPEAT® 2019 Gold in U.S.[46]
TCO 8.0 Certification
IEC 60601-1-2
Low halogen[47]

46. Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. EPEAT® status varies by country. Visit http://www.epeat.net for more information.
47. External power supplies, power cords, cables and peripherals are not Low Halogen. Service parts obtained after purchase may not be Low Halogen.

ENVIRONMENTAL & INDUSTRY

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® •EPEAT® 2019 Gold in U.S. Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. EPEAT® status varies by country. Visit http://www.epeat.net for more information.		
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, 60Hz**
Normal Operation (Short idle)	6.97 W	6.98 W	7.02 W
Normal Operation (Long idle)	4.09 W	3.86 W	4.07 W
Sleep	1.28 W	1 W	1.31 W
Off	0.40 W	0.40 W	0.41 W
	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**

Technical Specifications

Normal Operation (Short idle)	24 BTU/hr	24 BTU/hr	24 BTU/hr
Normal Operation (Long idle)	14 BTU/hr	13 BTU/hr	14 BTU/hr
Sleep	4 BTU/hr	3 BTU/hr	4 BTU/hr
Off	1 BTU/hr	1 BTU/hr	1 BTU/hr
	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	13.8
Fixed Disk – Random writes	2.5	15.3

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/manganese dioxide

Technical Specifications

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 Gold 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 3% post-consumer recycled plastic (by wt.) • This product is 94.5% recycle-able when properly disposed of at end of life.		
Packaging Materials	**External:**	PAPER/Corrugated	261 g
	Internal:	PLASTIC/Polyethylene Expanded - EPE	68 g
		PLASTIC/Polyethylene low density	14 g
		PLASTIC/Polypropylene - PP	4 g
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/pdf/gse.pdf): • Asbestos • Certain Azo Colorants • Certain Brominated Flame Retardants – may not be used as flame retardants in plastics • Cadmium • Chlorinated Hydrocarbons • Chlorinated Paraffins • 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)		

Technical Specifications

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	HP Inc. 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://www.hp.com/hpinfo/globalcitizenship/environment/pdf/PC_GBU_Product_Design_ISO_14K_Certificate.pdf and http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf

Technical Specifications

SYSTEM UNIT

Stand-Alone Power Requirements (AC Power)	**Nominal Operating Voltage**	19V
	Average Operating Power	Win 10
	Integrated Graphics	6.78W
	Discrete Graphics	18W
	Max Operating Power	Discrete < 65W UMA < 45W
Temperature	**Operating**	32° to 95° F (0° to 35° C) (not writing optical) 41° to 95° F (5° to 35° C) (writing optical)
	Non-operating	-4° to 140° F (-20° to 60° C)
Relative Humidity	**Operating**	10% to 90%, non-condensing
	Non-operating	5% to 95%, 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®	Select models[48]
	EPEAT® 2019	Yes, Gold in U.S.[49]
	ICES	Yes
	Australia / 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

48. Configurations of the HP Elitebook 840 G6 that are ENERGY STAR® certified are identified as HP Elitebook 840 G6 ENERGY STAR on HP websites and on http://www.energystar.gov.
49. Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. EPEAT® status varies by country. Visit http://www.epeat.net for more information.

Technical Specifications

DISPLAYS

14.0" FHD (1920 x 1080) UWVA, 700 nits, 72% CG, eDP+PSR, uslim, Privacy, Bright View Touch enabled, for HD+IR camera & for WWAN	**Outline Dimensions (W x H)**	322.4 x 217.09 mm
	Active Area	309.312 x 173.988 mm
	Weight	330 g
	Diagonal Size	14 inch
	Thickness	3.46 mm (max)
	Interface	eDP 1.4 for LCD panel
	Surface Treatment	BrightView Glass
	Touch Enabled	Yes
	Contrast Ratio	Sharing mode, 600:1 (typ.) Privacy mode, 150:1 (typ.)
	Refresh Rate	120Hz
	Brightness*	Sharing mode, 700 nits (typ.) Privacy mode, 350 nits (typ.)
	Pixel Resolution	1920 x 1080 (FHD)
	Format of LCD Pixel Arrangement	RGB
	Backlight	LED
	Color Gamut Coverage	Sharing mode, 72% of NTSC Privacy mode, 60% of NTSC
	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.)

*Touch enabled display will reduce 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	250,069,680
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	ATA Security; 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)
	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	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 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	500,118,192
	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 Gen3X4
	Maximum Sequential Read	Around 1500 ~ 1700 MB/s
	Maximum Sequential Write	Around 780 ~ 1300 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 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
	Logical Blocks	1,000,215,215
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	ATA Security; TRIM; L1.2
SSD 512 GB 2280 M2 SATA-3 Three Layer Cell Federal Information Processing Standard	**Form Factor**	M.2 2280
	Capacity	512 GB
	NAND Type	TLC
	Height	2.6 mm Max
	Width	0.87 in (22 mm)
	Weight	0.02 lb (10 g)

	Interface	ACS-3, SATA 3.2
	Maximum Sequential Read	Around 530 MB/s
	Maximum Sequential Write	Around 400 MB/s
	Logical Blocks	1,000,215,216
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	ATA Security; TCG Opal 2.0; FIPS; DIPM; TRIM; DEVSLP
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 Gen3X4
	Maximum Sequential Read	Around 1500 ~ 1700 MB/s
	Maximum Sequential Write	Around 860 ~ 1500 MB/s
	Logical Blocks	1,000,215,215
	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	1,000,215,216
	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

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	2,000,409,264
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	ATA Security; TRIM; L1.2

1. 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.

NETWORKING/COMMUNICATIONS

Intel® 9560 802.11a/b/g/n/ac (2 x 2) Wi-Fi® and Bluetooth® 5.0 Combo[1] vPro	**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

Technical Specifications

	•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	Ad-hoc (Peer to Peer)
Models	Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between access points
Output Power[2]	• 802.11b: +18.5dBm minimum • 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 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	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)

Technical Specifications

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 4.0/4.1/4.2/5.0 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	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. The specifications for the 802.11ac WLAN are draft specifications 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 802.11ac WLAN devices
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).
* For full Intel® vPro™ functionality, Windows, a vPro supported processor, vPro enabled chipset, vPro enabled WLAN card and discrete TPM 2.0 are required. See http://Intel.com/vpro

Intel® 9560 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
	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

Technical Specifications

Network Architecture	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)	
Models		
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 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	Type 2230: 2.3 x 22.0 x 30.0 mm	
Weight	Type 2230: 2.8g	
Operating Voltage	3.3v +/- 9%	
Temperature	**Operating** **Non-operating**	14° to 158° F (–10° to 70° C) –40° to 176° F (–40° to 80° C)
Humidity	**Operating** **Non-operating**	10% to 90% (non-condensing) 5% to 95% (non-condensing)
Altitude	**Operating** **Non-operating**	0 to 10,000 ft (3,048 m) 0 to 50,000 ft (15,240 m)
LED Activity	LED Amber – Radio OFF LED White – Radio ON	

Technical Specifications

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

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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.
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Bluetooth Software Supported	Microsoft Windows Bluetooth Software
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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)

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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® 22260 802.11a/b/g/n/ac/ax (2 x 2) Wi-Fi® and Bluetooth® 5.1 Combo[1] 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 •Cisco Certified Extensions, all versions through CCX4 and CCX Lite

Technical Specifications

	•WAPI
Network Architecture	Ad-hoc (Peer to Peer)
Models	Infrastructure (Access Point Required)
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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 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 •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: 2.8 g 2. Type 126: 1.3 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)

Technical Specifications

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

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

1. Wireless access point and Internet service is required. Availability of public wireless access point is limited. The specifications for the 802.11ac WLAN are draft specifications 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 802.11ac WLAN devices
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).
* For full Intel® vPro™ functionality, Windows, a vPro supported processor, vPro enabled chipset, vPro enabled WLAN card and discrete TPM 2.0 are required. See http://Intel.com/vpro

Intel® 22260 802.11a/b/g/n/ac/ax (2 x 2) Wi-Fi® and Bluetooth® 5.1 Combo[1]	**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

Technical Specifications

	OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM , 1024QAM
Security[3]	•IEEE and Wi-Fi 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	Ad-hoc (Peer to Peer)
Models	Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between access points
Output Power[2]	• 802.11b: +18.5dBm minimum • 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 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 •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

Technical Specifications

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: 2.8 g 2. Type 126: 1.3 g	
Operating Voltage	3.3v +/- 9%	
Temperature	**Operating** **Non-operating**	14° to 158° F (–10° to 70° C) –40° to 176° F (–40° to 80° C)
Humidity	**Operating** **Non-operating**	10% to 90% (non-condensing) 5% to 95% (non-condensing)
Altitude	**Operating** **Non-operating**	0 to 10,000 ft (3,048 m) 0 to 50,000 ft (15,240 m)

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

1. Wireless access point and Internet service is required. Availability of public wireless access point is limited. The specifications for the 802.11ac WLAN are draft specifications 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 802.11ac WLAN devices
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® 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

Technical Specifications

	Dimensions (Length x Width x Thickness)	42 x 30 x 2.3 mm

1. 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. 4G LTE not available on all products or in all countries.

Intel® XMM™ 7560 LTE-Advanced Pro DL CAT16[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), 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) MHz
	Wireless protocol standards	3GPP Release 12 LTE Specification DL-CAT.16, DL 100MHz BW throughput up to 978Mbps; UL-CAT.7 20MHz throughput up to 75Mbps 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: 978 Mbps (Download), 75 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 band 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

1. 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. 4G LTE not available on all products or in all countries.

Intel ® XMM 7262 LTE-Advanced Cat 6[1]	**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),

Technical Specifications

	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

1. 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. 4G LTE not available on all products or in all countries.

RFID Reader Gen 2 (optional)	**Dimensions (L x W x H)**	Module 50 mm by 23 mm by 2.89 mm
	Chipset	SiM3U156+SiM3U154+AMS3911
	System interface	USB 2.0
	System interface (I/O)	Audio signal output on card read
	NFC RF standards	ISO/IEC 14443 A ISO/IEC 14443 B ISO/IEC 15693 ISO/IEC 18092 ECMA-340 NFCIP-1
	NFC Forum Support	Tag Type 1, Type 2, Type3 and Type 4 in reading CSN
	Reader Mode	13.56MHz: ISO/IEC 14443 A ISO/IEC 14443 B ISO/IEC 15693 MIFARE 1K MIFARE 4K MIFARE DESFire FeliCa Topaz cards

		HID iClass ISO 125kHz: HID Prox UID AWID UID CASI-RUSCO UID EM 410x UID Indana ASP/ASP+ UID
	Frequency	13.56 MHz and 125 kHz
	NFC Modes Supported	Reader
	Raw RF Data Rates	106, 212 kbps
	Operating temperature	-30°C to 70°C
	Storage temperature	-40°C to 80° C
	Humidity	10-90% operating 5-95% non-operating
	Supply Operating voltage	4.35 to 5.25 Volts
	Power Consumption Mode	Power Consumption, Typical
	Polling	75mA
	Communication	85mA
	Antenna	13.56MHz/125kHz combo antenna. Antenna connector, 0.5mm pitch, 16pin connector FPC

UHF RFID Tag (optional)	**Dimensions (L x W x H)**	Module 22 mm by 42 mm by 2.15 mm
	Chipset	Monza X-8K Dura
	System interface	I2C Slave
	Air protocol	EPC Radio Frequency Identity Protocols Class-1 Generation-2 UHF RFID Protocol
	User NVM	8192 bits
	Frequency	860 MHz – 930 MHz
	Modes Supported	Read and write
	Data Rates	0-400kbits/second
	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	3.3Volts
	I/O Voltage	3.3Volts
	Power Consumption	Idle mode: < 0.1 mA

	Read mode: < 0.1 mA Write mode: < 0.5 mA
Antenna Connector	Two connectors (I-PEX MHF4 20449-001E-03)

Technical Specifications

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	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	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 Mode (Booster enable, VBAT= 3.3V, VCC_BOOST = 5V)	Power Consumption, Typical
	Polling	7.3 mA
	Detected Test Tag Type 1	Total 283.8 mA Net Module 236.8 mA
	Detected Test Tag Type 2	Total 288.8 mA Net Module 241.8 mA
	Detected Test Tag Type 3	Total 287.7 mA Net Module 240.7 mA

Detected Test Tag	Total 282.3 mA	
Type 4	Net Module 235.3 mA	
Antenna	Antenna connector, 0.5mm pitch, 7 connector FPC. Antenna matching is external to module.	

POWER

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	200 g +/- 10 g Not including power cord. Power cord varies by country	
	Input	**Input Efficiency**	87.74 % at 115 Vac and 88.4 % at 230Vac
		Input frequency range	47 ~ 63 Hz
		Input AC current	Max. 1.4 A at 90 Vac
	Output	**Output power**	45 W
		DC output	19.5 V
		Hold-up time	5ms at 115 Vac input
		Output current limit	<8.0A
	Connector	C8	
	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 65 Watt nPFC USB type C Straight 1.8m C6NS	**Dimensions**	74 x 74 x 28.5 mm	
	Weight	245 g +/- 10 g Not including power cord. Power cord varies by country	
	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)

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%
	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	250 g +/- 10 g Not including power cord. Power cord varies by country	
	Input	**Input Efficiency**	88.0 % at 115 Vac and 89.0 % at 230Vac
		Input frequency range	47 ~ 63 Hz
		Input AC current	Max. 1.7 A at 90 Vac
	Output	**Output power**	65 W
		DC output	19.5 V
		Hold-up time	5ms at 115 Vac input
		Output current limit	<11.0A
	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 65 Watt Smart nPFC Standard Barrel 4.5 mm Right Angle 1.8 m	**Dimensions**	90.0 x 51 x 28.5 mm	
	Weight	230 g +/- 10 g Not including power cord. Power cord varies by country	
	Input	**Input Efficiency**	88.0 % at 115 Vac and 89.0 % at 230Vac
		Input frequency range	47 ~ 63 Hz
		Input AC current	Max. 1.7 A at 90 Vac
	Output	**Output power**	65 W
		DC output	19.5 V
		Hold-up time	5ms at 115 Vac input
		Output current limit	<11.0A
	Connector	C6	
	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	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 278.7mm x W 76.3mm x H 7.1mm	
	Weight	193 +/- 10g	
	Cells/Type	3cell Lithium-Ion Polymer cell / P604883A1	
	Energy	**Voltage**	11.55V
		Amp-hour capacity	4.113Ah/ 4.330Ah
		Watt-hour capacity	50Wh
	Temperature	**Operating (Charging)**	0˚ to 50˚ C
		Operating (Discharging)	-10˚ to 60˚ C
	Fuel Gauge LED	N/A	
	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#xxx
	HP Essential Backpack (up to 15.6")	H1D24AA
	HP Essential Messenger Case (up to 17.3")	H1D25AA
Docking	HP Thunderbolt Dock 120W G2	2UK37AA
	HP USB-C Universal Dock	1MK33AA
	HP USB-C Dock G4	3FF69AA
	HP USB-C Mini Dock	1PM64AA
	HP UltraSlim Docking Station	D9Y32AA
Input/Output	HP Slim Wireless Keyboard and Mouse	T6L04AAxxx
	HP Slim USB Keyboard and Mouse	T6T83AAxxx
	HP Wireless (Link-5) Keyboard	T6U20AAxxx
	HP USB Essential Keyboard and Mouse	H6L29AA#xxx
	HP Conferencing Keyboard	K8P74AA
	HP USB Collaboration Keyboard	Z9N38AA
	HP Wireless Collaboration Keyboard	Z9N39AA
	HP USB Travel Mouse	G1K28AA
	HP 3-Button USB Laser Mouse	H4B81AA
	HP Comfort Grip Mouse	H2L63AA
	HP Slim Bluetooth Mouse	F3J92AA
	HP Wireless Premium Mouse	1JR31AA
	HP USB Premium Mouse	1JR32AA
	HP Essential USB Mouse	2TX37AA#xxx
	HP Elite Presenter Mouse	2CE30AA#xxx
	HP USB-C to USB 3.0 Adapter	N2Z63AA#xxx
	USB-C to 3 USB-A HUB	Z6A00AA
	HP USB-C to HDMI 2.0 Adapter	1WC36AA
	HP USB-C to VGA Adapter	N9K76AA
	HP USB-C to DisplayPort Adapter	N9K78AA
	HDMI to VGA Adapter	H4F02AA
	HP HDMI to DVI Adapter	F5A28AA
	HP USB-C to HDMI 2.0 Adapter	1WC36AA#xxx
	HP Display and Notebook Stand II	E8G00AA
	HP TB Dock G2 w/ Audio TAA US	
	HP UltraSlim Docking Station TAA US	E5C22AV#ABA
Input/Output	HP Slim Wireless Keyboard and Mouse	T6L04AAxxx
	HP Slim USB Keyboard and Mouse	T6T83AAxxx
	HP Wireless (Link-5) Keyboard	T6U20AAxxx
	HP USB Essential Keyboard and Mouse	H6L29AA#xxx
	HP Conferencing Keyboard	K8P74AA
	HP USB Collaboration Keyboard	Z9N38AA

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	HP Wireless Collaboration Keyboard	Z9N39AA
	HP USB Travel Mouse	G1K28AA
	HP 3-Button USB Laser Mouse	H4B81AA
	HP Comfort Grip Mouse	H2L63AA
	HP Slim Bluetooth Mouse	F3J92AA
	HP Wireless Premium Mouse	1JR31AA
	HP USB Premium Mouse	1JR32AA
	HP Essential USB Mouse	2TX37AA#xxx
	HP Elite Presenter Mouse	2CE30AA#xxx
	HP USB-C to USB 3.0 Adapter	N2Z63AA#xxx
	USB-C to 3 USB-A HUB	Z6A00AA
	HP USB-C to HDMI 2.0 Adapter	1WC36AA
	HP USB-C to VGA Adapter	N9K76AA
	HP USB-C to DisplayPort Adapter	N9K78AA
	HDMI to VGA Adapter	H4F02AA
	HP HDMI to DVI Adapter	F5A28AA
	HP USB-C to HDMI 2.0 Adapter	1WC36AA#xxx
Memory	HP 4GB 2666MHz DDR4 Memory	4VN05AA
	HP 8GB 2666MHz DDR4 Memory	4VN06AA
	HP 16GB 2666 MHz DDR4 Memory	4VN07AA
Power	HP 65W Slim AC Adapter	H6Y82AA#xxx
	HP 65W Smart AC Adapter	H6Y89AA#xxx
	HP 45W 2-prong 4.5 mm DC jack AC Adapter	L6F60AA#ABJ
	HP 65W USB-C Slim Power Adapter	3PN48AA
	HP 45W Smart AC Adapter 4.5mm	H6Y88AA#xxx
	45W USB-C Power Adapter	1HE07AA#xxx
	65W USB-C Power Adapter	1HE08AA#xxx
	HP Notebook Power Bank	N9F71AA#xxx
	HP USB-C Notebook Power Bank	2NA10AA#xxx
Storage	HP USB External DVDRW Drive	F2B56AA
	HP 128GB M2 TLC SATA-3 SSD (2280)	2JB96AA
Security	HP Docking Station Cable Lock (HP UltraSlim Docking Station)	AU656AA
	HP Essential Combination Lock (Standard Lock Slot)	T0Y16AA
	HP Combination Lock (Standard Lock Slot)	T0Y15AA
	HP Keyed Cable Lock 10mm (Standard Lock Slot)	T1A62AA
	HP Dual Head Keyed Cable Lock (Standard Lock Slot)	T1A64AA
	HP 14" Touchable Privacy Filter	3KP52AA
	HP Sure Key Cable Lock (Standard, Nano, Wedge Lock Slot)	6UW42AA
UCC	HP UC Wireless Duo Headset	W3K09AA

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	HP UC Wireless Mono Headset	W3K08AA
	HP Stereo 3.5mm Headset	T1A66AA
	HP Stereo USB Headset	T1A67AA
MISC	HP TB Dock Audio Module	3AQ21AA
	HP Thunderbolt 120W 1m cable	3AQ23AA
	HP Thunderbolt 1m combo cable	3AQ25AA

Summary of Changes

Date of change:	Version History:		Description of change:
July 2, 2019	V1 to V2	Updated	Display Section
July 23, 2019	V2 to V3	Updated	Panel Section
July 25, 2019	V3 to V4	Updated	Options Security Section and Battery Life
September 9, 2019	V4 to V5	Updated	Intel® Optane™
September 11, 2019	V5 to V6	Added	Disclaimer 700nits Sure View Panel
October 9, 2019	V6 to V7	Updated	Ports Section