

### Overview

### HP EliteBook 850 G7 Notebook PC



#### Left

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|------------------------------------|--|
| 1. Ambient Light Sensor (Optional) | 7. Numeric keypad  |
| 2. Internal Microphones            | 8. Glass Clickpad  |
| 3. Webcam LED (Optional)           | 9. Smartcard Reader (Optional)                               |
| 4. Camera Shutter                  | 10. Audio Combo Jack   |
| 5. HD and IR Camera (Optional)     | 11. SuperSpeed USB Type-A 5Gbps signaling rate Charging Port |
| 6. IR Camera LEDs (Optional)       | 12. Nano Security Lock Slot (Lock sold separately)           |

### Overview



#### Right

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|---|--|
| 1. Power Button Key                             | 5. SuperSpeed USB Type-C® 5Gbps signaling rate with Thunderbolt™ |
| 2. Power Connector                              | 6. SuperSpeed USB Type-C® 5Gbps signaling rate with Thunderbolt™ |
| 3. SuperSpeed USB Type-A 5Gbps signaling 1 Port | 7. SIM Card Slot <sup>1</sup>                                    |
| 4. HDMI Port (Cable nhot included)              | 8. Touch Fingerprint Sensor (select models)                      |

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

- Premium ultraslim design with precision-crafted machined aluminum (CNC) chassis for a premium look and feel
- 10th Generation Intel® Core™ i5 up to quad-core, i7 Processors up to six-core
- Preinstalled with Windows 10 versions or FreeDOS
- Designed to support USB-C® and Thunderbolt HP docking options
- Featuring redesigned Bottom-Mount quiet HP Keyboard with the HP Programmable key and backlit options
- Innovative world-facing third mic improves inbound ambient noise cancellation while 360 degree mic pick-up allows everyone to clearly hear and be heard
- Optional ultrabright displays with ambient light sensor
- Choice of displays:
  - 39.6 cm (15.6") diagonal FHD IPS Anti-Glare LED-backlit, 250 nits, 45% NTSC
  - 39.6 cm (15.6") diagonal FHD IPS Anti-Glare LED-backlit non-touch 1W low power, 400 nits, 72% NTSC
  - 39.6 cm (15.6") diagonal UHD IPS Anti-Glare LED-backlit non-touch, 400 nits, 72% NTSC
  - 39.6 cm (15.6") diagonal FHD IPS Anti-Glare On-Cell LED-backlit touch, 250 nits, 45% NTSC
- Optional NVIDIA GeForce MX250 discrete graphics with 2GB GDDR5 video memory
- Enterprise grade security with HP Sure Sense<sup>4</sup>, HP SureStart Gen6, HP Privacy Camera, HP Sure Run Gen2, HP Sure Recover Gen2 with Embedded Reimaging<sup>1</sup>, HP Sure Click, SmartCard Reader<sup>1</sup> and Touch Fingerprint reader<sup>5</sup> (select models)
- Ultimate connectivity with optional CAT16 4G/LTE WWAN and Wi-Fi 6 WLAN
- Supports fast charging (50% in 30 minutes) with no impact on battery recharge cycles<sup>2</sup>
- UMA graphics: Up to 24 hours (Intel® 10th generation CPU and 3-cell 56 WHr battery)
- Discrete graphics: Up to 21 hours and 15 minutes (Intel® 10th generation CPU and 3-cell 56 WHr battery)
- Choice of solid state drives up to 1 TB and DDR4 memory up to 64 GB
- Battery life up to 24 hours (Intel® 10th generation CPU and 3-cell 56 WHr battery)
- Passed 19 MIL-STD 810H tests<sup>4</sup>
- Intel® UHD Premium Graphics

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 810H is not intended to demonstrate fitness of U.S. Department of Defense contract requirements or for military use. Test results are not a guarantee of future performance under these test conditions. Accidental damage requires an optional HP Accidental Damage Protection Care Pack.

4. HP Sure Sense requires Windows 10. See product specifications for availability.

5. HP Fingerprint Sensor is an optional feature and requires configuration at purchase.

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



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## Technical Specifications

### PRODUCT NAME

HP EliteBook 850 G7 Notebook PC

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### OPERATING SYSTEMS

#### Preinstalled

Windows 10 Pro 64 – HP recommends Windows 10 Pro for business<sup>1</sup>  
Windows 10 Pro 64 (National Academic only)<sup>2</sup>  
Windows 10 Home 64<sup>2</sup>  
Windows 10 Home Single Language 64<sup>1</sup>  
Windows 10 Pro (Windows 10 Enterprise available with a Volume Licensing Agreement)<sup>1</sup>  
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.

Note: Your product does not support Windows 8 or Windows 7. In accordance with Microsoft's support policy, HP does not support the Windows<sup>®</sup> 8 or Windows 7 operating system on products configured with Intel<sup>®</sup> and AMD<sup>®</sup> 7th generation and forward processors or provide any Windows<sup>®</sup> 8 or Windows 7 drivers on <http://www.support.hp.com>. A full list of HP products and the Windows 10 versions tested is available on the HP support website. <https://support.hp.com/us-en/document/c05195282>

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### PROCESSORS

Intel<sup>®</sup> Core<sup>™</sup> i7-10810U with Intel<sup>®</sup> UHD Graphics Premium (1.1 GHz base frequency, up to 4.9 GHz with Intel<sup>®</sup> Turbo Boost Technology, 12 MB L3 cache, 6 cores)<sup>3,4,5,6</sup>

Intel<sup>®</sup> Core<sup>™</sup> i7-10710U with Intel<sup>®</sup> UHD Graphics Premium (1.1 GHz base frequency, up to 4.7 GHz with Intel<sup>®</sup> Turbo Boost Technology, 12 MB L3 cache, 6 cores)<sup>3,4,5,6</sup>

Intel<sup>®</sup> Core<sup>™</sup> i7-10610U with Intel<sup>®</sup> UHD Graphics Premium (1.8 GHz base frequency, up to 4.9 GHz with Intel<sup>®</sup> Turbo Boost Technology, 8 MB L3 cache, 4 cores)<sup>3,4,5,6</sup>

Intel<sup>®</sup> Core<sup>™</sup> i7-10510U with Intel<sup>®</sup> UHD Graphics Premium (1.8 GHz base frequency, up to 4.9 GHz with Intel<sup>®</sup> Turbo Boost Technology, 8 MB L3 cache, 4 cores)<sup>3,4,5,6</sup>

Intel<sup>®</sup> Core<sup>™</sup> i5-10310U with Intel<sup>®</sup> UHD Graphics Premium (1.7 GHz base frequency, up to 4.4 GHz with Intel<sup>®</sup> Turbo Boost Technology, 6 MB L3 cache, 4 cores)<sup>3,4,5,6</sup>

Intel<sup>®</sup> Core<sup>™</sup> i5-10210U with Intel<sup>®</sup> UHD Graphics Premium (1.6 GHz base frequency, up to 4.2 GHz with Intel<sup>®</sup> Turbo Boost Technology, 6 MB L3 cache, 4 cores)<sup>3,4,5,6</sup>

#### Processor Family

10th Generation Intel<sup>®</sup> Core<sup>™</sup> i7 processors (i7-10810U, i7-10710U, i7-10610U, i7-10510U)

10th Generation Intel<sup>®</sup> Core<sup>™</sup> i5 processors (i5-10310U, i5-10210U)



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### Technical Specifications

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>.
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### CHIPSET

Chipset is integrated with processor

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### GRAPHICS

#### Integrated

Intel® UHD Premium Graphics<sup>7</sup>

#### Discrete

NVIDIA® GeForce® MX250 (2 GB DDR5 video memory)<sup>9</sup>

#### Supports

Support HD decode, DX12, HDMI 1.4b<sup>8</sup>

7. HD content required to view HD images.
  8. HDMI cable sold separately.
  9. Integrated graphics depends on processor. NVIDIA® Optimus™ technology requires an Intel processor, plus an NVIDIA® GeForce® discrete graphics configuration and is available on Windows 10 Pro OS. With NVIDIA® Optimus™ technology, full enablement of all discrete graphics video and display features may not be supported on all systems (e.g. OpenGL applications will run on the integrated GPU or the APU as the case may be).
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## Technical Specifications

### DISPLAY

#### Non-Touch

- 39.6 cm (15.6") diagonal FHD IPS eDP anti-glare WLED-backlit bent, 250 nits, 45% NTSC (1920 x 1080)<sup>7,10,11</sup>
- 39.6 cm (15.6") diagonal FHD IPS eDP anti-glare WLED-backlit bent for HD camera, 250 nits, 45% NTSC (1920 x 1080)<sup>7,10,11</sup>
- 39.6 cm (15.6") diagonal FHD IPS eDP anti-glare WLED-backlit bent for HD+IR camera, 250 nits, 45% NTSC (1920 x 1080)<sup>7,10,11</sup>
- 39.6 cm (15.6") diagonal FHD IPS eDP anti-glare WLED-backlit bent for WWAN, 250 nits, 45% NTSC (1920 x 1080)<sup>7,10,11</sup>
- 39.6 cm (15.6") diagonal FHD IPS eDP anti-glare WLED-backlit bent for HD camera and WWAN, 250 nits, 45% NTSC (1920 x 1080)<sup>7,10,11</sup>
- 39.6 cm (15.6") diagonal FHD IPS eDP anti-glare WLED-backlit bent for HD+IR camera and WWAN, 250 nits, 45% NTSC (1920 x 1080)<sup>7,10,11</sup>
- 39.6 cm (15.6") diagonal FHD IPS eDP + PSR anti-glare WLED-backlit bent with Ambient Light Sensor for HD+IR camera, 400 nits, low power, 100% NTSC (1920 x 1080)<sup>7,10,11</sup>
- 39.6 cm (15.6") diagonal FHD IPS eDP + PSR anti-glare WLED-backlit bent with Ambient Light Sensor for HD+IR camera and WWAN, 400 nits, low power, 100% NTSC (1920 x 1080)<sup>7,10,11</sup>
- 39.6 cm (15.6") diagonal 4k IPS eDP + PSR anti-glare WLED-backlit bent with Ambient Light Sensor for HD+IR camera, 400 nits, low power, 100% NTSC (3840 x 2160)<sup>7,10,11</sup>
- 39.6 cm (15.6") diagonal FHD IPS eDP + PSR anti-glare WLED-backlit bent with Ambient Light Sensor for HD+IR camera and WWAN, 400 nits, low power, 100% NTSC (3840 x 2160)<sup>7,10,11</sup>

#### Touch

- 39.6 cm (15.6") diagonal FHD IPS eDP anti-glare WLED-backlit bent touch-on-panel screen for HD+IR camera, 250 nits, 45% NTSC (1920 x 1080)<sup>7,10,11</sup>
- 39.6 cm (15.6") diagonal FHD IPS eDP anti-glare WLED-backlit bent touch-on-panel screen for HD+IR camera and WWAN, 250 nits, 45% NTSC (1920 x 1080)<sup>7,10,11</sup>

#### Display Size

- 15.6"
- 39.6 cm

#### HDMI 1.4b

Supports resolution up to 4k @ 60 Hz via DP and 30Hz via HDMI

7. HD content required to view HD images.

10. Sold separately or as an optional feature.

11. Resolutions are dependent upon monitor capability, and resolution and color depth settings.

### Technical Specifications

Dockingstation model	Total number of supported displays (incl. 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: <ul style="list-style-type: none"> <li>• 1 DP + TB port or</li> <li>• USB-C alt mode + TB port</li> </ul> Dual 4K (3840 x 2160) with any of the DP, TB or USB-C alt mode video ports
HP Elite USB-C Dock G5	3	Three 1680x1050 @ 60 Hz Dual 2K @ 60Hz Single 4K @ 60Hz (3840 x 1440)	1xHDMI, 2xDP	
HP USB-C Universal Dock G2	3	Dual 4K @ 60Hz Single 5K @ 60Hz	1xHDMI, 2xDP	
HP USB-C Travel Dock	2	Single 2K @ 60Hz	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<sup>13</sup>

256 GB PCIe NVMe Value SS<sup>13</sup>

256 GB PCIe Gen3x4 NVMe SS TLC<sup>13</sup>

256 GB PCIe TLC Opal 2<sup>13</sup>

256 GB PCIe Gen3x2x2 SS QLC+16 GB Intel Optane™ Memory<sup>13</sup>

512 GB PCIe NVMe Value SS<sup>13</sup>

512 GB PCIe Gen3x4 NVMe SS TLC<sup>13</sup>

512 GB Intel® PCIe® NVMe™ QLC + 32 GB Intel® Optane™ Memory<sup>13</sup>

512 GB PCIe Gen3x4 NVMe SS TLC Opal 2<sup>13</sup>

1 TB PCIe Gen3x4 NVMe SS TLC<sup>13</sup>

13. 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**

64 GB DDR4-2666 SDRAM (2 X 32 GB)<sup>14</sup>

**Memory**

32 GB DDR4-2666 SDRAM (2 X 16 GB)<sup>14</sup>

16 GB DDR4-2666 SDRAM (1 X 16 GB)<sup>14</sup>

16 GB DDR4-2666 SDRAM (2 X 8 GB)<sup>14</sup>

8 GB DDR4-2666 SDRAM (1 x 8 GB)<sup>14</sup>

8 GB DDR4-2666 SDRAM (2 x 4 GB)<sup>14</sup>

4 GB DDR4-2666 SDRAM (1 x 4 GB)<sup>14</sup>

**Memory Slots**

2 SODIMM

Both slots are customer accessible / upgradeable

DDR4 SODIMMS, system runs at 2666

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.

### NETWORKING/COMMUNICATIONS

**WLAN**

Intel® Dual Band Wireless-AX201 802.11a/b/g/n/ac (2x2) Wi-Fi 6 and Bluetooth® 5 Combo, vPro®<sup>15</sup>

Intel® Dual Band Wireless-AX201 802.11a/b/g/n/ac (2x2) Wi-Fi 6 and Bluetooth® 5 Combo, non-vPro®<sup>15</sup>

**WWAN\***

Intel® XMM™ 7360 LTE-Advanced Cat 9

Intel® XMM™ 7560 LTE-Advanced Pro Cat 16<sup>16</sup>

**NFC**

NPC300 Near Field Communication module

**Miracast**

Native Miracast Support<sup>17</sup>

15. 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.

16. 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.

17. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming.





### Technical Specifications

\* 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.

#### AUDIO/MULTIMEDIA

##### Audio

Audio by Bang & Olufsen

2 Integrated stereo speakers

Integrated 3 Multi Array Microphone

##### Camera

720p HD Camera<sup>7,10</sup>

720p HD+IR Camera<sup>7,10</sup>

##### Sensors

Ambient light sensor

Hall Sensor

7. HD content required to view HD images.

10. Sold separately or as an optional feature.

#### KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

##### Keyboard

HP Premium Collaboration Keyboard with Numeric Keypad, spill resistant

Optional backlit keyboard and DuraKeys\*

##### Pointing Device

Clickpad with multi-touch gesture support, taps enabled as default

Microsoft Precision Touchpad Default Gestures Support

##### Function Keys

F1 - Display Switching

F2 - Blank or Privacy (with LED)

F3 - Brightness Down

F4 - Brightness Up

F5 - Audio Mute

F6 - Volume Down

F7 - Volume Up

F8 - Mic Mute

F9 - Blank or Backlit Toggle

F10 - Insert

F11 - Airplane Mode

F12 - HP Programmable Key

Print Screen

Power Button (with LED)



### Technical Specifications

#### Hidden Function Keys

Fn+R - Break

Fn+S - Sys Rq

Fn+C - Scroll Lock

\* Keyboards are made from up to 65% post-consumer recycled plastic

### SOFTWARE AND SECURITY

#### Preinstalled Software

##### BIOS

HP BIOSphere Gen5<sup>19</sup>

HP Drive Lock & Automatic Drive Lock

BIOS Update via Network

Power On Authentication

HP Secure Erase<sup>20</sup>

Absolute Persistence Module<sup>21</sup>

Pre-boot Authentication

##### Software

HP Connection Optimizer

HP Hotkey Support

HP JumpStart

HP Support Assistant<sup>22</sup>

HP Noise Cancellation Software

Buy Office (sold separately)

HP Smart Support<sup>43</sup>

##### Manageability Features

HP Driver Packs<sup>23</sup>

HP System Software Manager (SSM)

HP BIOS Config Utility (BCU)

HP Client Catalog

HP Manageability Integration Kit Gen4<sup>24</sup>

HP Image Assistant

HP Client Management Script Library

Ivanti Management Suite

HP Cloud Recovery

##### Client Security Software

HP Client Security Manager Gen6<sup>25</sup>

HP Fingerprint Sensor<sup>26</sup> (select models)

HP Power On Authentication

Windows Defender<sup>27</sup>

##### Security Management

Pre-boot Authentication

TPM 2.0 Embedded Security Chip shipped with Windows 10 (Common Criteria EAL4+ Certified)<sup>28</sup>



## Technical Specifications

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<sup>29</sup>  
HP Sure Start Gen6<sup>30</sup>  
HP Sure Run Gen3<sup>31</sup>  
HP Sure Recover Gen3<sup>32</sup>  
HP Sure Sense<sup>33</sup>  
Secured-core PC capable<sup>34</sup>

### Smartcard Reader

Model number: Alcor AU9560  
FIPS 201 Compliant: Yes

### TPM

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

### IPv6 Certification

Yes

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

UEFI version: 2.7  
Class: Class 3

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 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™.

21. 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.

22. HP Support Assistant requires Windows and Internet access.

23. HP Driver Packs not preinstalled, however available for download at <http://www.hp.com/go/clientmanagement>.

24. HP Manageability Integration Kit can be downloaded from <http://www8.hp.com/us/en/ads/clientmanagement/overview.html>.

25. HP Client Security Manager Gen6 requires Windows and is available on the select HP Pro and Elite PCs.

26. HP Fingerprint Sensor is an optional feature and requires configuration at purchase.

27. Windows Defender Opt in and internet connection required for updates.

28. 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



### Technical Specifications

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).

29. 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.

30. HP Sure Start Gen6 is available on select HP PCs with Intel processors.

31. HP Sure Run Gen3 is available on select Windows 10 based HP Pro, Elite and Workstation PCs with select Intel® or AMD processors.

32. HP Sure Recover Gen3 is available on select HP PCs and requires an open 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.

33. HP Sure Sense requires Windows 10.

34. Requires an Intel vPro or AMD Ryzen Pro processor. Requires 8 GB or more system memory. Secured-core PC functionality can be enabled from the factory.

43. HP Smart Support is available to commercial customers through your HP Service Representative and HP Factory Configuration Services; or it can be downloaded at: <http://www.hp.com/smart-support>. HP Smart Support automatically collects the telemetry necessary upon initial boot of the product to deliver device-level configuration data and health insights.

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## Technical Specifications

<b>Smart Card Reader</b>	<b>Smart card standard</b>	PC/SC 2.0 for Windows smart card standard
	<b>Dimensions (L x W x H)</b>	0.41 x 0.08 x 0.32 in (10.5 x 2 x 8.2 mm)
	<b>Smart Card support</b>	ISO 7816 Class A and AB smart cards
	<b>Smart Card Interface</b>	Smart Card Interface with T = 0 and T = 1 support Support I2C memory card, SLE4418, SLE4428, SLE4432, SLE4442, SLE4436, SLE5536, SLE6636, AT88SC1608, AT45D041 card and AT45DB041 card via external EEPROM

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## POWER

HP Smart 45 W External AC power adapter<sup>35</sup>

HP Smart 45 W External AC power adapter, 2-prong (Japan only)<sup>35</sup>

HP Smart 65 W External AC power adapter<sup>35</sup>

HP Smart 65 W EM External AC power adapter<sup>35</sup>

65 W USB Type-C<sup>®</sup> adapter<sup>35</sup>

65 W slim USB Type-C<sup>®</sup> adapter<sup>35</sup>

### Primary Battery

HP Long Life 3-cell, 56 Wh Li-ion<sup>36</sup>

Support HP Fast Charge (Up to 50% in 30 minutes with 65W AC Adapter)<sup>37</sup>

### Power Cord

2-wire plug - 1.0 m<sup>35</sup>

3-wire plug - 1.0 m<sup>35</sup>

3-wire plug - 1.0 m (Premium)<sup>35</sup>

### Battery life

UMA graphics: Up to 24 hours (Intel<sup>®</sup> 10th generation CPU and 3-cell 56 WHr battery)<sup>38</sup>

MM18 Battery life

UMA graphics: Up to 15 hours and 30 minutes (Intel<sup>®</sup> 10th generation CPU and 3-cell 56 WHr battery)<sup>38</sup>

### Battery Weight

0.215 kg (0.47 lb)

35. Availability may vary by country.

36. Battery is internal and not replaceable by customer. Serviceable by warranty.

37. 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.

38. 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 <https://www.bapco.com> for additional details.



### Technical Specifications

#### WEIGHTS & DIMENSIONS

##### Product Weight

Starting weight: 3.74 lb (non-touch); Starting at 3.92 lb (touch)<sup>39</sup>

Starting weight: 1.70 kg (non-touch); Starting at 1.78 kg (touch)<sup>39</sup>

##### Product Dimensions (W x D x H)

###### Non-Touch, WLAN only

14.16 x 9.20 x 0.76 in

35.97 x 23.38 x 1.92 cm

###### Touch, WLAN only

14.16 x 9.20 x 0.79 in

35.97 x 23.38 x 2.0 cm

##### WWAN

14.16 x 9.20 x 0.79 in

35.97 x 23.38 x 2.0 cm

39. Weight will vary by configuration.

#### PORTS/SLOTS

2 SuperSpeed USB Type-C® 5Gbps signaling rate with Thunderbolt™ support, DisplayPort™ 1.2

2 SuperSpeed USB Type-A 5Gbps signaling (1 charging)

1 HDMI 1.4<sup>8</sup>

1 Headphone/microphone combo

1 AC power

1 nano SIM card slot\*

1 Smartcard reader (optional)

Nano Security Lock Slot (Lock sold separately)

8. HDMI cable sold separately.

\*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

### Technical Specifications

#### SERVICE AND SUPPORT

HP Services offers 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>.<sup>40</sup>

40. 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.

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### Technical Specifications

#### SYSTEM UNIT

<b>Stand-Alone Power Requirements (AC Power)</b>	<b>Nominal Operating Voltage</b>	19 V
	<b>Average Operating Power</b>	2.42 W
	<b>Integrated Graphics</b>	6.78 W
	<b>Max Operating Power</b>	Discrete < 65 W UMA < 45 W
<b>Temperature</b>	<b>Operating</b>	32° to 95° F (0° to 35° C) (No writing optical)
	<b>Non-operating</b>	41° to 95° F (5° to 35° C) (Writing optical)
<b>Relative Humidity</b>	<b>Operating</b>	10% to 90%, non-condensing
	<b>Non-operating</b>	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
<b>Shock</b>	<b>Operating</b>	40 G, 2 ms, half-sine
	<b>Non-operating</b>	200 G, 2 ms, half-sine
<b>Random Vibration</b>	<b>Operating</b>	0.75 grms
	<b>Non-operating</b>	1.50 grms
<b>Altitude (unpressurized)</b>	<b>Operating</b>	-50 to 10,000 ft (-15.24 to 3,048 m)
	<b>Non-operating</b>	-50 to 40,000 ft (-15.24 to 12,192 m)
<b>Planned Industry Standard Certifications</b>	<b>UL</b>	Yes
	<b>CSA</b>	Yes
	<b>FCC Compliance</b>	Yes
	<b>ENERGY STAR® qualified</b>	Select models <sup>41</sup>
	<b>EPEAT® 2019</b>	Yes, Gold in U.S. <sup>42</sup>
	<b>ICES</b>	Yes
	<b>Australia</b>	Yes
	<b>NZ A-Tick Compliance</b>	Yes
	<b>CCC</b>	Yes
	<b>Japan VCCI Compliance</b>	Yes
	<b>KC</b>	Yes
	<b>BSMI</b>	Yes
	<b>CE Marking Compliance</b>	Yes
	<b>BNCI or BELUS</b>	Yes
	<b>CIT</b>	Yes
	<b>GOST</b>	Yes
<b>Saudi Arabian Compliance (ICCP)</b>	Yes	
<b>SABS</b>	Yes	

41. Configurations of the HP EliteBook 850 G7 that are ENERGY STAR® certified are identified as HP EliteBook 850 G7 ENERGY STAR on HP websites and on <http://www.energystar.gov>.





### Technical Specifications

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

#### 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®
- EPEAT® Silver registered in the United States. Based on US EPEAT registration according to IEEE 1680.1-2018 EPEAT. Status varies by country. See <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”.

<b>Energy Consumption (in accordance with US ENERGY STAR® test method)</b>	<b>115VAC, 60Hz</b>	<b>230VAC, 50Hz</b>	<b>100VAC, 50Hz</b>
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<b>Normal Operation (Short idle)</b>	<b>5.70 W</b>	<b>5.74 W</b>	<b>5.49 W</b>
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<b>Normal Operation (Long idle)</b>	<b>2.99 W</b>	<b>2.43 W</b>	<b>2.31 W</b>
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<b>Sleep</b>	<b>1.37 W</b>	<b>1.38 W</b>	<b>1.32 W</b>
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<b>Off</b>	<b>0.35 W</b>	<b>0.52 W</b>	<b>0.35 W</b>
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**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.

<b>Heat Dissipation*</b>	<b>115VAC, 60Hz</b>	<b>230VAC, 50Hz</b>	<b>100VAC, 60Hz</b>
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<b>Normal Operation (Short idle)</b>	12 BTU/hr	12 BTU/hr	12 BTU/hr
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<b>Normal Operation (Long idle)</b>	6 BTU/hr	5 BTU/hr	5 BTU/hr
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<b>Sleep</b>	3 BTU/hr	3 BTU/hr	3 BTU/hr
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<b>Off</b>	1 BTU/hr	1 BTU/hr	1 BTU/hr
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**NOTE:** Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

<b>Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)</b>	<b>Sound Power (LWAd, bels)</b>	<b>Sound Pressure (LpAm, decibels)</b>
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### Technical Specifications

**Typically Configured – Idle** 2.5 14

**Fixed Disk – Random writes** 2.8 20

**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 the 1ppm 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 [www.epeat.net](http://www.epeat.net)
- Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.
- This product contains 2.48% post-consumer recycled plastic (by wt.)
- This product is 96.9% recycle-able when properly disposed of at end of life.

**Packaging Materials**

<b>External:</b>	PAPER/Corrugated	235 g
<b>Internal:</b>	PLASTIC/Polyethylene Expanded -	27 g
	EPE	
	PLASTIC/Polyethylene low density -	13 g
	LDPE	
	PLASTIC/Polypropylene - PP	3 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



## Technical Specifications

- 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)

### 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.



### Technical Specifications

**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](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>



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## Technical Specifications

**DISPLAYS**

<b>Panel LCD 15.6 inch diagonal FHD (1920 x 1080) Anti-Glare WLED UWVA 45% NTSC 250 nits eDP 1.2 w/o PSR bent NWBZ</b>	<b>Outline Dimensions (W x H x D)</b>	350.96 x 205.54 mm (max)
	<b>Active Area</b>	344.16 x 193.59 mm (typ.)
	<b>Weight</b>	370 g (max)
	<b>Diagonal Size</b>	15.6 inch
	<b>Thickness</b>	3.0 mm/ 5.0 mm (w/PCB) (max)
	<b>Interface</b>	eDP 1.2 (2 lane)
	<b>Surface Treatment</b>	Anti-Glare
	<b>Touch Enabled</b>	No
	<b>Contrast Ratio</b>	600:1 (typ.)
	<b>Refresh Rate</b>	60 Hz
	<b>Brightness</b>	250 nits
	<b>Pixel Resolution</b>	1920 x 1080 (FHD)
	<b>Format of LCD Pixel Arrangement</b>	RGB Stripe
	<b>Backlight</b>	LED
	<b>Color Gamut Coverage</b>	45% of NTSC
	<b>Color Depth</b>	6 bits (Hi FRC supportive w/ condition to enable)
	<b>Viewing Angle</b>	UWVA 85/85/85/85

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<b>Panel LCD 15.6 inch diagonal FHD (1920 x 1080) Anti-Glare WLED UWVA 45% NTSC 250 nits eDP 1.2 w/o PSR bent Touch on Panel NWBZ</b>	<b>Outline Dimensions (W x H x D)</b>	350.96 x 205.74 mm (max)
	<b>Active Area</b>	344.16 x 193.59 mm (typ.)
	<b>Weight</b>	380 g (max)
	<b>Diagonal Size</b>	15.6 inch
	<b>Thickness</b>	3.2mm/ 5.2mm (PCB) (max)
	<b>Interface</b>	eDP 1.2
	<b>Surface Treatment</b>	Anti-Glare On-cell
	<b>Touch Enabled</b>	No
	<b>Contrast Ratio</b>	600:1 (typ.)
	<b>Refresh Rate</b>	60 Hz
	<b>Brightness</b>	250 nits
	<b>Pixel Resolution</b>	1920 x 1080 (FHD)
	<b>Format of LCD Pixel Arrangement</b>	RGB Stripe
	<b>Backlight</b>	LED
	<b>Color Gamut Coverage</b>	45% of NTSC
	<b>Color Depth</b>	6 bits
	<b>Viewing Angle</b>	UWVA 85/85/85/85

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 Technical Specifications

<b>Panel LCD 15.6 inch diagonal FHD (1920 x 1080)</b> <b>Anti-Glare WLED UWVA</b> <b>100% NTSC 400 nits eDP</b> <b>1.4+PSR2 bent LP NWBZ</b>	<b>Outline Dimensions (W x H x D)</b>	349.46 x 204.79 mm (max)
	<b>Active Area</b>	344.16 x 193.59 mm (typ.)
	<b>Weight</b>	325 g (max)
	<b>Diagonal Size</b>	15.6 inch
	<b>Thickness</b>	2.6mm / 4.6mm (PCB) (max)
	<b>Interface</b>	eDP 1.4
	<b>Surface Treatment</b>	Anti-Glare
	<b>Touch Enabled</b>	No
	<b>Contrast Ratio</b>	1200:1 (typ.)
	<b>Refresh Rate</b>	60 Hz
	<b>Brightness</b>	400 nits
	<b>Pixel Resolution</b>	1920 x 1080 (FHD)
	<b>Format of LCD Pixel Arrangement</b>	RGB Stripe
	<b>Backlight</b>	LED
	<b>Color Gamut Coverage</b>	100% of NTSC
	<b>Color Depth</b>	8 bit
<b>Viewing Angle</b>	UWVA 85/85/85/85	

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<b>Panel LCD 15.6 inch diagonal UHD (3840 x 2160)</b> <b>Anti-Glare WLED UWVA</b> <b>100% NTSC 400 nits eDP</b> <b>1.4+PSR2 bent LP NB2Y</b>	<b>Outline Dimensions (W x H x D)</b>	349.52 x 205.42 mm (max)
	<b>Active Area</b>	344.22 x 193.62 mm (typ.)
	<b>Weight</b>	320 g (max)
	<b>Diagonal Size</b>	15.6 inch
	<b>Thickness</b>	2.6mm / 4.6mm (PCB) (max)
	<b>Interface</b>	eDP 1.4
	<b>Surface Treatment</b>	Anti-Glare
	<b>Touch Enabled</b>	No
	<b>Contrast Ratio</b>	1200:1 (typ.)
	<b>Refresh Rate</b>	60 Hz
	<b>Brightness</b>	400 nits
	<b>Pixel Resolution</b>	3840 x 2160 (UHD)
	<b>Format of LCD Pixel Arrangement</b>	RGB Stripe
	<b>Backlight</b>	LED
	<b>Color Gamut Coverage</b>	100% of NTSC only for UHD LP
	<b>Color Depth</b>	8 bit
<b>Viewing Angle</b>	UWVA 85/85/85/85	

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## Technical Specifications

### STORAGE AND DRIVES

<b>SSD 128 GB 2280 M2 SATA-3 TLC</b>	<b>Form Factor</b>	M.2 2280
	<b>Capacity</b>	128 GB
	<b>NAND Type</b>	TLC
	<b>Height</b>	0.09 in (2.3 mm)
	<b>Width</b>	0.87 in (22 mm)
	<b>Weight</b>	0.02 lb (10 g)
	<b>Interface</b>	ATA-8, SATA 3.0
	<b>Maximum Sequential Read</b>	550 ~ 560 MB/s
	<b>Maximum Sequential Write</b>	380 ~ 530 MB/s
	<b>Logical Blocks</b>	250,069,680
	<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [ambient temp]
	<b>Features</b>	ATA Security; DIPM; TRIM; DEVSLP

<b>SSD 1 TB 2280 PCIe-3x4 NVMe Three Layer Cell single-sided</b>	<b>Form Factor</b>	M.2 2280
	<b>Capacity</b>	1 TB
	<b>NAND Type</b>	TLC
	<b>Height</b>	0.09 in (2.3 mm)
	<b>Width</b>	0.87 in (22 mm)
	<b>Weight</b>	0.02 lb (10 g)
	<b>Interface</b>	PCIe NVMe Gen3X4
	<b>Maximum Sequential Read</b>	3100 ~ 3500 MB/s
	<b>Maximum Sequential Write</b>	2770 ~ 3037 MB/s
	<b>Logical Blocks</b>	2,000,409,264
	<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [ambient temp]
	<b>Features</b>	ATA Security; TRIM; L1.2

<b>SSD 256 GB 2280 M2 PCIe-3x4 SS NVMe TLC</b>	<b>Form Factor</b>	M.2 2280
	<b>Capacity</b>	256 GB
	<b>NAND Type</b>	TLC
	<b>Height</b>	0.09 in (2.3 mm)
	<b>Width</b>	0.87 in (22 mm)
	<b>Weight</b>	0.02 lb (10 g)
	<b>Interface</b>	PCIe NVMe Gen3X4
	<b>Maximum Sequential Read</b>	2800 ~ 3500 MB/s
	<b>Maximum Sequential Write</b>	1400 ~ 2200 MB/s
	<b>Logical Blocks</b>	500,118,192
	<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [ambient temp]



### Technical Specifications

	Features	ATA Security; TRIM; L1.2
<b>SSD 256 GB 2280 PCIe NVMe Value</b>	<b>Form Factor</b>	M.2 2280
	<b>Capacity</b>	256 GB
	<b>NAND Type</b>	Value
	<b>Height</b>	0.09 in (2.3 mm)
	<b>Width</b>	0.87 in (22 mm)
	<b>Weight</b>	0.02 lb (10 g)
	<b>Interface</b>	PCIe NVMe Gen3
	<b>Maximum Sequential Read</b>	2100 ~ 2200 MB/s
	<b>Maximum Sequential Write</b>	900 ~ 1400 MB/s
	<b>Logical Blocks</b>	500,118,192
	<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [ambient temp]
	<b>Features</b>	ATA Security (optional); TRIM; L1.2

<b>SSD 256 GB 2280 PCIe-3x2x2 NVMe+SSD 16 GB Intel® Optane™</b>	<b>Form Factor</b>	M.2 2280
	<b>Capacity</b>	256 GB
	<b>NAND Type</b>	QLC+3D XPoint
	<b>Height</b>	0.09 in (2.3 mm)
	<b>Width</b>	0.87 in (22 mm)
	<b>Weight</b>	0.02 lb (10 g)
	<b>Interface</b>	PCIe NVMe Gen3X2X2
	<b>Maximum Sequential Read</b>	Up to 1450 MB/s
	<b>Maximum Sequential Write</b>	Up to 500 MB/s
	<b>Logical Blocks</b>	500,118,192
	<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [ambient temp]
	<b>Features</b>	ATA Security; TRIM; L1.2

<b>SSD 256 GB 2280 PCIe-3x4 NVMe Self Encrypted OPAL2 Three Layer Cell</b>	<b>Form Factor</b>	M.2 2280
	<b>Capacity</b>	256 GB
	<b>NAND Type</b>	TLC
	<b>Height</b>	0.09 in (2.3 mm)
	<b>Width</b>	0.87 in (22 mm)
	<b>Weight</b>	0.02 lb (10 g)
	<b>Interface</b>	PCIe NVMe Gen3X4
	<b>Maximum Sequential Read</b>	2800 ~ 3500 MB/s
	<b>Maximum Sequential Write</b>	1663 ~ 2200 MB/s





### Technical Specifications

<b>Logical Blocks</b>	500,118,192
<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [ambient temp]
<b>Features</b>	ATA Security (Option); TCG Opal 2.0; TRIM; L1.2

<b>SSD 512 GB 2280 M2 PCIe-3x4 SS NVMe TLC</b>	<b>Form Factor</b>	M.2 2280
	<b>Capacity</b>	512 GB
	<b>NAND Type</b>	TLC
	<b>Height</b>	0.09 in (2.3 mm)
	<b>Width</b>	0.87 in (22 mm)
	<b>Weight</b>	0.02 lb (10 g)
	<b>Interface</b>	PCIe NVMe Gen3X4
	<b>Maximum Sequential Read</b>	3100 ~ 3500 MB/s
	<b>Maximum Sequential Write</b>	2400 ~ 2956 MB/s
	<b>Logical Blocks</b>	1,000,215,215
	<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [ambient temp]
	<b>Features</b>	ATA Security; TRIM; L1.2

<b>SSD 512 GB 2280 PCIe NVMe Value</b>	<b>Form Factor</b>	M.2 2280
	<b>Capacity</b>	512 GB
	<b>NAND Type</b>	Value
	<b>Height</b>	0.09 in (2.3 mm)
	<b>Width</b>	0.87 in (22 mm)
	<b>Weight</b>	0.02 lb (10 g)
	<b>Interface</b>	PCIe NVMe Gen3
	<b>Maximum Sequential Read</b>	2200 ~ 2300 MB/s
	<b>Maximum Sequential Write</b>	1000 ~ 1600 MB/s
	<b>Logical Blocks</b>	1,000,215,215
	<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [ambient temp]
	<b>Features</b>	ATA Security (optional); TRIM; L1.2

<b>SSD 512 GB 2280 PCIe-3x2x2 NVMe+SSD 32 GB Intel® Optane™</b>	<b>Form Factor</b>	M.2 2280
	<b>Capacity</b>	512 GB
	<b>NAND Type</b>	QLC+3D XPoint
	<b>Height</b>	0.09 in (2.3 mm)
	<b>Width</b>	0.87 in (22 mm)
	<b>Weight</b>	0.02 lb (10 g)
	<b>Interface</b>	PCIe NVMe Gen3X2X2



### Technical Specifications

<b>Maximum Sequential Read</b>	Up to 2400 MB/s
<b>Maximum Sequential Write</b>	Up to 1300 MB/s
<b>Logical Blocks</b>	1,000,215,215
<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [ambient temp]
<b>Features</b>	ATA Security; TRIM; L1.2

<b>SSD 512 GB 2280 PCIe-3x4 NVMe Self Encrypted OPAL2 Three Layer</b>	<b>Form Factor</b>	M.2 2280
	<b>Capacity</b>	512 GB
	<b>NAND Type</b>	TLC
	<b>Height</b>	0.09 in (2.3 mm)
	<b>Width</b>	0.87 in (22 mm)
	<b>Weight</b>	0.02 lb (10 g)
	<b>Interface</b>	PCIe NVMe Gen3X4
	<b>Maximum Sequential Read</b>	3100 ~ 3500 MB/s
	<b>Maximum Sequential Write</b>	2400 ~ 2956 MB/s
	<b>Logical Blocks</b>	1,000,215,215
	<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [ambient temp]
<b>Features</b>	ATA Security (Option); TCG Opal 2.0; TRIM; L1.2	



### Technical Specifications

#### NETWORKING/COMMUNICATIONS

<b>Intel® Wi-Fi 6<sup>1</sup> AX201 and Bluetooth® 5.0 802.11ax (2x2) supporting gigabit file transfer speeds, vPro®</b>	<ul style="list-style-type: none"> <li>IEEE 802.11a</li> <li>IEEE 802.11b</li> <li>IEEE 802.11g</li> <li>IEEE 802.11n</li> <li>IEEE 802.11ac</li> <li>IEEE 802.11ax</li> <li>IEEE 802.11d</li> <li>IEEE 802.11e</li> <li>IEEE 802.11h</li> <li>IEEE 802.11i</li> <li>IEEE 802.11k</li> <li>IEEE 802.11r</li> <li>IEEE 802.11v</li> </ul>
<b>Interoperability</b>	Wi-Fi CERTIFIED™
<b>Frequency Band</b>	<ul style="list-style-type: none"> <li>•802.11b/g/n/ax 2.402 – 2.482 GHz</li> <li>•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</li> </ul>
<b>Data Rates</b>	<ul style="list-style-type: none"> <li>•802.11b: 1, 2, 5.5, 11 Mbps</li> <li>•802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps</li> <li>•802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps</li> <li>•802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz)</li> <li>•802.11ac: MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, 80MHz &amp; 160MHz)</li> <li>•802.11ax: MCS0 ~ MCS11, (1SS and 2SS) (20MHz, 40MHz, 80MHz &amp; 160MHz)</li> </ul>
<b>Modulation</b>	Direct Sequence Spread Spectrum OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM, 1024QAM
<b>Security<sup>3</sup></b>	<ul style="list-style-type: none"> <li>•IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only</li> <li>•AES-CCMP: 128 bit in hardware</li> <li>•802.1x authentication</li> <li>•WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.</li> <li>•WPA2 certification</li> <li>•<b>WPA3 certification</b></li> <li>•IEEE 802.11i</li> <li>•WAPI</li> </ul>
<b>Network Architecture Models</b>	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
<b>Roaming</b>	IEEE 802.11 compliant roaming between access points
<b>Output Power<sup>2</sup></b>	<ul style="list-style-type: none"> <li>• 802.11b: +18.5dBm minimum</li> </ul>



### Technical Specifications

	<ul style="list-style-type: none"> <li>• 802.11g: +17.5dBm minimum</li> <li>• 802.11a: +18.5dBm minimum</li> <li>• 802.11n HT20(2.4GHz): +15.5dBm minimum</li> <li>• 802.11n HT40(2.4GHz): +14.5dBm minimum</li> <li>• 802.11n HT20(5GHz): +15.5dBm minimum</li> <li>• 802.11n HT40(5GHz): +14.5dBm minimum</li> <li>• 802.11ac VHT80(5GHz): +11.5dBm minimum</li> <li>• 802.11ac VHT160(5GHz): +11.5dBm minimum</li> <li>• 802.11ax HT40(2.4GHz): +10dBm minimum</li> <li>• 802.11ax VHT160(5GHz): +10dBm minimum</li> </ul>				
<b>Power Consumption</b>	<ul style="list-style-type: none"> <li>• Transmit mode: 2.0 W</li> <li>• Receive mode: 1.6 W</li> <li>• Idle mode (PSP) 180 mW (WLAN Associated)</li> <li>• Idle mode: 50 mW (WLAN unassociated)</li> <li>• Connected Standby/Modern Standby: 10mW</li> <li>• Radio disabled: 8 mW</li> </ul>				
<b>Power Management</b>	ACPI and PCI Express compliant power management 802.11 compliant power saving mode				
<b>Receiver Sensitivity<sup>4</sup></b>	<ul style="list-style-type: none"> <li>• 802.11b, 1Mbps: -93.5dBm maximum</li> <li>• 802.11b, 11Mbps: -84dBm maximum</li> <li>• 802.11a/g, 6Mbps: -86dBm maximum</li> <li>• 802.11a/g, 54Mbps: -72dBm maximum</li> <li>• 802.11n, MCS07: -67dBm maximum</li> <li>• 802.11n, MCS15: -64dBm maximum</li> <li>• 802.11ac, MCS0: -84dBm maximum</li> <li>• 802.11ac, MCS9: -59dBm maximum</li> <li>• 802.11ax, MCS11(HT40): -59dBm maximum</li> <li>• 802.11ax, MCS11(VHT160): -58.5dBm maximum</li> </ul>				
<b>Antenna type</b>	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				
<b>Form Factor</b>	PCI-Express M.2 MiniCard with CNVi Interface				
<b>Dimensions</b>	<ol style="list-style-type: none"> <li>1. Type 2230: 2.3 x 22.0 x 30.0 mm</li> <li>2. Type 1216: 1.67 x 12.0 x 16.0 mm</li> </ol>				
<b>Weight</b>	<ol style="list-style-type: none"> <li>1. Type 2230: 2.8 g</li> <li>2. Type 126: 1.3 g</li> </ol>				
<b>Operating Voltage</b>	3.3v +/- 9%				
<b>Temperature</b>	<table> <tbody> <tr> <td>Operating</td> <td>14° to 158° F (-10° to 70° C)</td> </tr> <tr> <td>Non-operating</td> <td>-40° to 176° F (-40° to 80° C)</td> </tr> </tbody> </table>	Operating	14° to 158° F (-10° to 70° C)	Non-operating	-40° to 176° F (-40° to 80° C)
Operating	14° to 158° F (-10° to 70° C)				
Non-operating	-40° to 176° F (-40° to 80° C)				
<b>Humidity</b>	<table> <tbody> <tr> <td>Operating</td> <td>10% to 90% (non-condensing)</td> </tr> <tr> <td>Non-operating</td> <td>5% to 95% (non-condensing)</td> </tr> </tbody> </table>	Operating	10% to 90% (non-condensing)	Non-operating	5% to 95% (non-condensing)
Operating	10% to 90% (non-condensing)				
Non-operating	5% to 95% (non-condensing)				
<b>Altitude</b>	<table> <tbody> <tr> <td>Operating</td> <td>0 to 10,000 ft (3,048 m)</td> </tr> <tr> <td>Non-operating</td> <td>0 to 50,000 ft (15,240 m)</td> </tr> </tbody> </table>	Operating	0 to 10,000 ft (3,048 m)	Non-operating	0 to 50,000 ft (15,240 m)
Operating	0 to 10,000 ft (3,048 m)				
Non-operating	0 to 50,000 ft (15,240 m)				
<b>LED Activity</b>	LED Amber – Radio OFF				

### Technical Specifications

LED White – Radio ON

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

<b>Bluetooth Specification</b>	4.0/4.1/4.2/5.0/5.1 Compliant
<b>Frequency Band</b>	2402 to 2480 MHz
<b>Number of Available Channels</b>	Legacy: 0~79 (1 MHz/CH) BLE: 0~39 (2 MHz/CH)
<b>Signaling Data Rate</b>	Legacy: 3 Mbps signaling data rate <sup>1</sup> 2.17 Mbps BLE: 1 Mbps signaling data rate <sup>1</sup> 0.2 Mbps <a href="#">1. Actual throughput may vary.</a>
	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)
<b>Transmit Power</b>	The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 9.5 dBm for BR and EDR.
<b>Power Consumption</b>	Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW
<b>Bluetooth Software Supported</b>	Microsoft Windows Bluetooth Software
<b>Link Topology</b>	
<b>Power Management</b>	Microsoft Windows ACPI, and USB Bus Support
<b>Certifications</b>	FCC (47 CFR) Part 15C, Section 15.247 & 15.249
<b>Power Management Certifications</b>	ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark
<b>Bluetooth Profiles Supported</b>	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) <sup>2</sup> Headset Profile (HSP) Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP)



### Technical Specifications

**Security & Manageability** Intel® vPro® support with appropriate Intel® chipset components

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

<b>Intel® Wi-Fi 6<sup>1</sup> AX201 and Bluetooth® 5.0 802.11ax (2x2), supporting gigabit file transfer speeds non-vPro®</b>	<b>Wireless LAN Standards</b>	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
	<b>Interoperability</b>	Wi-Fi CERTIFIED™
	<b>Frequency Band</b>	•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
	<b>Data Rates</b>	•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)
	<b>Modulation</b>	Direct Sequence Spread Spectrum OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM, 1024QAM
	<b>Security<sup>3</sup></b>	•IEEE compliant 64 / 128 bit WEP encryption for a/b/g mode only •AES-CCMP: 128 bit in hardware



### Technical Specifications

	<ul style="list-style-type: none"> <li>•802.1x authentication</li> <li>•WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.</li> <li>•WPA2 certification</li> <li>•<b>WPA3 certification</b></li> <li>•IEEE 802.11i</li> <li>•WAPI</li> </ul>
<b>Network Architecture Models</b>	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
<b>Roaming</b>	IEEE 802.11 compliant roaming between access points
<b>Output Power<sup>2</sup></b>	<ul style="list-style-type: none"> <li>• 802.11b: +18.5dBm minimum</li> <li>• 802.11g: +17.5dBm minimum</li> <li>• 802.11a: +18.5dBm minimum</li> <li>• 802.11n HT20(2.4GHz): +15.5dBm minimum</li> <li>• 802.11n HT40(2.4GHz): +14.5dBm minimum</li> <li>• 802.11n HT20(5GHz): +15.5dBm minimum</li> <li>• 802.11n HT40(5GHz): +14.5dBm minimum</li> <li>• 802.11ac VHT80(5GHz): +11.5dBm minimum</li> <li>• 802.11ac VHT160(5GHz): +11.5dBm minimum</li> <li>• 802.11ax HT40(2.4GHz): +10dBm minimum</li> <li>• 802.11ax VHT160(5GHz): +10dBm minimum</li> </ul>
<b>Power Consumption</b>	<ul style="list-style-type: none"> <li>•Transmit mode 2.0 W</li> <li>•Receive mode 1.6 W</li> <li>•Idle mode (PSP) 180 mW (WLAN Associated)</li> <li>•Idle mode 50 mW (WLAN unassociated)</li> <li>•Connected Standby 10mW</li> <li>•Radio disabled 8 mW</li> </ul>
<b>Power Management</b>	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
<b>Receiver Sensitivity<sup>4</sup></b>	<ul style="list-style-type: none"> <li>•802.11b, 1Mbps: -93.5dBm maximum</li> <li>•802.11b, 11Mbps: -84dBm maximum</li> <li>• 802.11a/g, 6Mbps: -86dBm maximum</li> <li>• 802.11a/g, 54Mbps: -72dBm maximum</li> <li>• 802.11n, MCS07: -67dBm maximum</li> <li>• 802.11n, MCS15: -64dBm maximum</li> <li>• 802.11ac, MCS0: -84dBm maximum</li> <li>• 802.11ac, MCS9: -59dBm maximum</li> <li>•802.11ax, MCS11(HT40): -59dBm maximum</li> <li>•802.11ax, MCS11(VHT160): -58.5dBm maximum</li> </ul>
<b>Antenna type</b>	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
<b>Form Factor</b>	PCI-Express M.2 MiniCard with CNVi Interface
<b>Dimensions</b>	1. Type 2230: 2.3 x 22.0 x 30.0 mm



### Technical Specifications

<b>Weight</b>	2. Type 1216: 1.67 x 12.0 x 16.0 mm 1. Type 2230: 2.8 g 2. Type 126: 1.3 g
<b>Operating Voltage</b>	3.3v +/- 9%
<b>Temperature</b>	Operating 14° to 158° F (–10° to 70° C) Non-operating –40° to 176° F (–40° to 80° C)
<b>Humidity</b>	Operating 10% to 90% (non-condensing) Non-operating 5% to 95% (non-condensing)
<b>Altitude</b>	Operating 0 to 10,000 ft (3,048 m) Non-operating 0 to 50,000 ft (15,240 m)
<b>LED Activity</b>	LED Amber – Radio OFF LED Off – Radio ON

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

<b>Bluetooth Specification</b>	4.0/4.1/4.2/5.0/5.1 Compliant
<b>Frequency Band</b>	2402 to 2480 MHz
<b>Number of Available Channels</b>	Legacy: 0~79 (1 MHz/CH) BLE: 0~39 (2 MHz/CH)
<b>Signaling Data Rate</b>	Legacy: 3 Mbps signaling data rate <sup>1</sup> 2.17 Mbps BLE: 1 Mbps signaling data rate <sup>1</sup> 0.2 Mbps <a href="#">1. Actual throughput may vary.</a>
	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)
<b>Transmit Power</b>	The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 9.5 dBm for BR and EDR.
<b>Power Consumption</b>	Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW
<b>Bluetooth Software Supported Link Topology</b>	Microsoft Windows Bluetooth Software
<b>Power Management</b>	Microsoft Windows ACPI, and USB Bus Support
<b>Certifications</b>	FCC (47 CFR) Part 15C, Section 15.247 & 15.249
<b>Power Management Certifications</b>	ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark
<b>Bluetooth Software Supported</b>	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





### Technical Specifications

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



### Technical Specifications

<b>Intel® XMM™ 7560 LTE-Advanced Pro DL CAT16<sup>1</sup></b>	<b>Technology/Operating bands</b>	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
	<b>Wireless protocol standards</b>	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
	<b>GPS</b>	Standalone, A-GPS (MS-A, MS-B)
	<b>GPS bands</b>	1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz, Beidou 1561.098 MHz
	<b>Maximum data rates</b>	LTE: 978 Mbps (Download), 75 Mbps (Upload) DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload) HSPA+: 21Mbps (Download), 5.76 Mbps (Upload)
	<b>Maximum output power</b>	LTE: 23 dBm in all band except B41 LTE B41 HPUE = 26 dBm HSPA+: 23.5 dBm
	<b>Maximum power consumption</b>	LTE: 1,200 mA (peak); 900 mA (average) HSPA+: 1,100 mA (peak); 800 mA (average)
	<b>Form Factor</b>	M.2, 3042-S3 Key B
	<b>Weight</b>	6 g
	<b>Dimensions (Length x Width x Thickness)</b>	42 x 30 x 2.3 mm

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.

<b>Intel® XMM™ 7360 LTE-Advanced CAT9<sup>1</sup></b>	<b>Technology/Operating bands</b>	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
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### Technical Specifications

<b>Wireless protocol standards</b>	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
<b>GPS</b>	Standalone, A-GPS (MS-A, MS-B)
<b>GPS bands</b>	1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz, Beidou 1561.098 MHz
<b>Maximum data rates</b>	LTE: 450 Mbps (Download), 50 Mbps (Upload) DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload) HSPA+: 21Mbps (Download), 5.76 Mbps (Upload)
<b>Maximum output power</b>	LTE: 23 dBm HSPA+: 23.5 dBm
<b>Maximum power consumption</b>	LTE: 1,200 mA (peak); 900 mA (average) HSPA+: 1,100 mA (peak); 800 mA (average)
<b>Form Factor</b>	M.2, 3042-S3 Key B
<b>Weight</b>	5.8 g
<b>Dimensions (Length x Width x Thickness)</b>	42 x 30 x 2.3 mm

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.

<b>Near Field Communications Controller (optional)</b>	<b>Dimensions (L x W x H)</b>	Module 25 mm by 10 mm by 2.0 mm
	<b>Chipset</b>	NPC100
	<b>System interface</b>	I2C
	<b>NFC RF standards</b>	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
	<b>NFC Forum Support</b>	Tag Type 1, Type 2, Type3 and Type 4, NFCIP-1 and NFCIP-2
	<b>Reader (PCD-VCD) Mode (1)</b>	ISO/IEC 14443 A ISO/IEC 14443 B ISO/IEC 15693 MIFARE 1K MIFARE 4K MIFARE DESFire FeliCa Jewel and Topaz cards
	<b>Card Emulation (PICC-VICC) Mode (1)</b>	ISO/IEC 14443 A

### Technical Specifications

	ISO/IEC 14443 B and B'
	MIFARE
	FeliCa
<b>Frequency</b>	13.56 MHz
<b>NFC Modes Supported</b>	Reader/Writer, Peer-to-Peer
<b>Raw RF Data Rates</b>	106, 212, 424, 848 kbps
<b>Operating temperature</b>	0°C to 70°C
<b>Storage temperature</b>	-20°C to 125°C
<b>Humidity</b>	10-90% operating 5-95% non-operating
<b>Supply Operating voltage</b>	4.35 to 5.25 Volts
<b>I/O Voltage</b>	1.8V or 3.3V
<b>Power Consumption (Booster enable, VBAT= 3.3V, VCC_BOOST = 5V)</b>	<b>Mode</b> Power Consumption, Typical
	<b>Polling</b> 7.3 mA
	<b>Detected Test Tag Type 1</b> Total 283.8 mA Net Module 236.8 mA
	<b>Detected Test Tag Type 2</b> Total 288.8 mA Net Module 241.8 mA
	<b>Detected Test Tag Type 3</b> Total 287.7 mA Net Module 240.7 mA
	<b>Detected Test Tag Type 4</b> Total 282.3 mA Net Module 235.3 mA
	<b>Antenna</b> Antenna connector, 0.5mm pitch, 7 connector FPC. Antenna matching is external to module.



### Technical Specifications

#### POWER

<b>AC Adapter 45 Watt Smart nPFC Standard Barrel 4.5 mm Right Angle 1.8 m</b>	<b>Dimensions (H x W x D)</b>	95 x 45 x 26.8 mm	
	<b>Weight</b>	unit: 200 g +/- 10 g <a href="#">Not including power cord. Power cord varies by country</a>	
	<b>Input</b>	<b>Input Efficiency</b>	87.74 % at 115 Vac and 88.4 % at 230Vac
		<b>Input frequency range</b>	47 ~ 63Hz
		<b>Input AC current</b>	Max. 1.4 A at 90 Vac
	<b>Output</b>	<b>Output power</b>	45 W
		<b>DC output</b>	19.5 V
		<b>Hold-up time</b>	5 ms at 115 Vac input
		<b>Output current limit</b>	<8.0 A
		<b>Connector</b>	4.5 mm Barrel Type
	<b>Environmental Design</b>	<b>Operating temperature</b>	32°F to 95°F (0° to 35°C)
		<b>Non-operating (storage) temperature</b>	-4°F to 185°F (-20° to 85°C)
		<b>Altitude</b>	0 to 16,400 ft (0 to 5000m)
		<b>Humidity</b>	20% to 95%
<b>Storage Humidity</b>		10% to 95%	
<b>EMI and Safety Certifications</b>	<p>*CE Mark - full compliance with LVD and EMC directives</p> <p>* 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.</p> <p>* MTBF - over 200,000 hours at 25°C ambient condition.</p>		

<b>AC Adapter 45 Watt Smart nPFC Standard Barrel 4.5 mm Right Angle 1.8 m 2prong</b>	<b>Dimensions (H x W x D)</b>	95 x 45 x 26.8 mm	
	<b>Weight</b>	unit: 200 g +/- 10 g <a href="#">Not including power cord. Power cord varies by country</a>	
	<b>Input</b>	<b>Input Efficiency</b>	87.74 % at 115 Vac and 88.4 % at 230Vac
		<b>Input frequency range</b>	47 ~ 63 Hz
		<b>Input AC current</b>	Max. 1.4 A at 90 Vac
	<b>Output</b>	<b>Output power</b>	45 W
		<b>DC output</b>	19.5 V
		<b>Hold-up time</b>	5 ms at 115 Vac input
		<b>Output current limit</b>	<8.0A
		<b>Connector</b>	4.5 mm Barrel Type
	<b>Environmental Design</b>	<b>Operating temperature</b>	32° to 95°F (0° to 35°C)
		<b>Non-operating (storage) temperature</b>	-4° to 185°F (-20° to 85°C)



### Technical Specifications

	<b>Altitude</b>	0 to 16,400 ft (0 to 5000m)
	<b>Humidity</b>	20% to 95%
	<b>Storage Humidity</b>	10% to 95%
<b>EMI and Safety Certifications</b>	<p>*CE Mark - full compliance with LVD and EMC directives</p> <p>* 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.</p> <p>* MTBF - over 200,000 hours at 25°C ambient condition.</p>	

<b>AC Adapter 65 Watt nPFC Slim USB type C® Straight 1.8 m</b>	<b>Dimensions (H x W x D)</b>	88 x 53.5 x 21 mm
	<b>Weight</b>	unit: 220 g +/- 10 g Not including power cord. Power cord varies by country
	<b>Input</b>	<b>Input Efficiency</b>
		81.5% min at 115 Vac/ 230Vac @ 5V/3A
		86.7% min at 115 Vac/ 230Vac @ 9V/3A
		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
		<b>Input frequency range</b>
		47 ~ 63 Hz
		<b>Input AC current</b>
		1.6 A at 90 VAC and maximum load
	<b>Output</b>	<b>Output power</b>
		65 W
	<b>DC output</b>	
	5V/9V/12V/15V/20V	
	<b>Hold-up time</b>	
	5ms at 115 Vac input	
	<b>Output current limit</b>	
	<8.0A	
<b>Connector</b>	USB Type C®	
<b>Environmental Design</b>	<b>Operating temperature</b>	32° to 95°F (0° to 35°C)
	<b>Non-operating (storage) temperature</b>	-4° to 185°F (-20° to 85°C)
	<b>Altitude</b>	0 to 16,400 ft (0 to 5000m)
	<b>Humidity</b>	5% to 95%
	<b>Storage Humidity</b>	5% to 95%
<b>EMI and Safety Certifications</b>	<p>*CE Mark - full compliance with LVD and EMC directives</p> <p>* 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.</p> <p>* MTBF - over 100,000 hours at 25°C ambient condition.</p>	

<b>AC Adapter 65 Watt nPFC Standard USB type C® Straight 1.8 m</b>	<b>Dimensions (H x W x D)</b>	90.0 x 51 x 28.5 mm
	<b>Weight</b>	unit: 250 g +/- 10 g Not including power cord. Power cord varies by country



### Technical Specifications

<b>Input</b>	<b>Input Efficiency</b>	81.5% min at 115 Vac/ 230Vac @ 5V/3A 86.7% min at 115 Vac/ 230Vac @ 9V/3A 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
	<b>Input frequency range</b>	47 ~ 63 Hz
	<b>Input AC current</b>	1.6 A at 90 VAC and maximum load
<b>Output</b>	<b>Output power</b>	65 W
	<b>DC output</b>	5V/9V/12V/15V/20V
	<b>Hold-up time</b>	5ms at 115 Vac input
	<b>Output current limit</b>	<8.0 A Max.
<b>Connector</b>	USB type C®	
<b>Environmental Design</b>	<b>Operating temperature</b>	32°F to 95°F (0° to 35°C)
	<b>Non-operating (storage) temperature</b>	-4°F to 185°F (-20° to 85°C)
	<b>Altitude</b>	0 to 16,400 ft (0 to 5000m)

#### AC Adapter 65 Watt Smart nPFC EM Barrel 4.5 mm New EM

<b>Dimensions (H x W x D)</b>	102 x 55 x 30 mm	
<b>Weight</b>	unit: 250 g +/- 10 g <a href="#">Not including power cord. Power cord varies by country</a>	
<b>Input</b>	<b>Input Efficiency</b>	88.0 % at 115 Vac and 89.0 % at 230Vac
	<b>Input frequency range</b>	47 ~ 63 Hz
	<b>Input AC current</b>	Max. 1.7 A at 90 Vac
<b>Output</b>	<b>Output power</b>	65 W
	<b>DC output</b>	19.5 V
	<b>Hold-up time</b>	5ms at 115 Vac input
	<b>Output current limit</b>	<11.0A
<b>Connector</b>	4.5 mm Barrel Type	
<b>Environmental Design</b>	<b>Operating temperature</b>	32°F to 95°F (0° to 35°C)
	<b>Non-operating (storage) temperature</b>	-4°F to 185°F (-20° to 85°C)
	<b>Altitude</b>	0 to 16,400 ft (0 to 5000m)
	<b>Humidity</b>	20% to 95%
	<b>Storage Humidity</b>	10% to 95%
<b>EMI and Safety Certifications</b>	<p>*CE Mark - full compliance with LVD and EMC directives</p> <p>* 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.</p> <p>* MTBF - over 200,000 hours at 25°C ambient condition.</p>	



### Technical Specifications

<b>AC Adapter 65 Watt Smart nPFC Standard Barrel 4.5 mm Right Angle 1.8 m</b>	<b>Dimensions (H x W x D)</b>	90.0 x 51 x 28.5 mm	
	<b>Weight</b>	unit: 230 g +/- 10 g <a href="#">Not including power cord. Power cord varies by country</a>	
	<b>Input</b>	<b>Input Efficiency</b>	88.0 % at 115 Vac and 89.0 % at 230Vac
		<b>Input frequency range</b>	47 ~ 63 Hz
		<b>Input AC current</b>	Max. 1.7 A at 90 Vac
		<b>Output</b>	
	<b>Output</b>	<b>Output power</b>	65 W
		<b>DC output</b>	19.5 V
		<b>Hold-up time</b>	5ms at 115 Vac input
		<b>Output current limit</b>	<11.0 A
		<b>Connector</b>	4.5 mm Barrel Type
	<b>Environmental Design</b>	<b>Operating temperature</b>	32°F to 95°F (0° to 35°C)
		<b>Non-operating (storage) temperature</b>	-4°F to 185°F (-20° to 85°C)
<b>Altitude</b>		0 to 16,400 ft (0 to 5000m)	
<b>Humidity</b>		20% to 95%	
<b>Storage Humidity</b>		10% to 95%	
<b>EMI and Safety Certifications</b>	<p>*CE Mark - full compliance with LVD and EMC directives</p> <p>* 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.</p> <p>* MTBF - over 200,000 hours at 25°C ambient condition.</p>		





### Technical Specifications

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<b>Battery CC 3 Cell WHr 56 Long Life -PL Fast Charge</b>	<b>Dimensions (H x W x D)</b>	7.0 x 66.5 x 276.3 (0.275 x 2.618 x 10.877 inch)	
	<b>Weight</b>	0.215g (0.47 lb)	
	<b>Cells/Type</b>	3cell Lithium-Ion Polymer cell / 615383	
	<b>Energy</b>	<b>Voltage</b>	11.55 V
		<b>Amp-hour capacity</b>	4.85 Ah
		<b>Watt-hour capacity</b>	56 Wh
		<b>Operating (Charging)</b>	32° to 113° F (0° to 45° C)
	<b>Temperature</b>	<b>Operating (Discharging)</b>	32° to 122° F (0° to 50° C)
		<b>Warranty</b>	Depends on system offering
		<b>Optional Travel Battery Available</b>	No

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### Country of Origin

China

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

Type	Description	Part Number
<b>Cases</b>	HP Business Backpack (up to 17.3")	2SC67AA
	HP Business Case (up to 15.6")	2SC66AA
	HP Essential Top Load Case (up to 15.6")	H2W17AA
<b>Docking</b>	HP Thunderbolt Dock 120W G2	2UK37AA
	HP Thunderbolt Dock 120W G2 TAA	2UK37AA
	HP TB Dock Audio Module	3AQ21AA
	HP TB Dock 120W G2 cable	3XB94AA
	HP USB-C Mini Dock	1PM64AA
	HP USB-C Dock G5	5TW10AA
	HP USB-C/A Universal Dock G2	5TW13AA
<b>Input/Output</b>	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 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 Wireless Premium Mouse	1JR31AA
	HP USB Premium Mouse	1JR32AA
	HP Essential USB Mouse	2TX37AA
	HP Elite Presenter Mouse	2CE30AA
	HP Bluetooth Travel Mouse	6SP30AA
	HP Stereo 3.5mm Headset	T1A66AA
	HP Stereo USB Headset	T1A67AA
	HP UC Wireless Mono Headset	W3K08AA
	HP UC Wireless Duo Headset	W3K09AA
	HP USB-C to USB-A Hub	Z6A00AA
	HP USB-C to DP	N9K78AA
	HP USB-C to VGA	N9K76AA
	HP HDMI to VGA	H4F02AA
	HP USB-C to HDMI 2.0 Adapter	1WC36AA
	HP USB-C to RJ45 Adapter	V7W66AA
	HP USB to Gig RJ45 Adapter	N7P47AA



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

	HP USB-C Travel Hub G2	7PJ38AA
	HP Elite USB-C Hub	4WX89AA
<b>Power</b>	HP 65W Slim AC Adapter	H6Y82AA
	HP 45W Smart AC Adapter	H6Y88AA
	HP 65W Smart AC Adapter	H6Y89AA
	HP 45W 2-prong 4.5 mm DC jack AC Adapter	L6F60AA
	HP 45W USB-C Power Adapter	1HE07AA
	HP 65W USB-C Power Adapter	1HE08AA
	HP 65W USB-C Slim Power Adapter	3PN48AA
	HP Notebook Power Bank	N9F71AA
	HP USB-C Notebook Power Bank	1TZ86AA
<b>Storage</b>	HP USB External DVDRW Drive	F2B56AA
	HP 1TB TLC PCI-e 3x4 NVMe M.2 SSD (2280)	6SK99AA
	HP 2TB TLC PCI-e 3x4 NVMe M.2 SSD (2280)	6SL00AA
<b>Memory</b>	HP 4 GB 2666 Mhz DDR4	4VN05AA
	HP 8 GB 2666 Mhz DDR4	4VN06AA
	HP 16 GB 2666 Mhz DDR4	4VN07AA
	HP 4GB DDR4 3200 Memory	286H5AA
	HP 8GB DDR4 3200 Memory	286H8AA
	HP 16GB DDR4 3200 Memory	286J1AA
<b>Security</b>	HP Nano Keyed Cable Lock	1AJ39AA
	HP Nano Dual-Head Keyed Cable Lock	1AJ41AA
	HP Sure Key Cable Lock	6UW42AA
<b>WWAN</b>	HP XMMT 7360 LTE WWAN	3FB01AA



### Change Log

<b>Date of change:</b>	<b>Version History:</b>		<b>Description of change:</b>
October 15, 2020	From V1 to V2	Update	Overview, Processor section
December 11, 2020	From V2 to V3	Update	Environmental Data
January 17, 2021	From V3 to V4	Update	Processors
January 21, 2021	From V4 to V5	Added	WPA3 certification in Security, Networking section
April 19, 2021	From V5 to V6	Updated	Memory Section and Input/ Output Section Updated
May 6, 2021	From V6 to V7	Added	HP Smart Support

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