

### Overview

#### HP EliteBook 855 G7 Notebook PC



#### Left

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|------------------------------------|--|
| 1. Ambient Light Sensor (Optional) | 7. Glass Clickpad                                      |
| 2. Internal microphones (2)        | 8. Optional Smartcard reader                           |
| 3. Webcam LED (Optional)           | 9. Audio Combo Jack                                    |
| 4. Camera Shutter                  | 10. USB 3.1 Gen 1                                      |
| 5. HD and IR Camera (Optional)     | 11. Standard Security Lock Slot (Lock sold separately) |
| 6. IR Camera LEDs (Optional)       |  |

### Overview



#### Right

- |                                   |  |
|-----------------------------------|--|
| 1. Power Connector                | 6. Nano Sim                              |
| 2. USB 3.1 Gen 1 Port             | 7. HP Fingerprint Sensor (select models) |
| 3. HDMI port (Cable not included) |  |
| 4. USB-C® (Alt Mode, 3.1 Gen2)    |  |
| 5. USB-C® (Alt Mode, 3.1 Gen2)    |  |

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

- Preinstall Windows 10, FreeDOS 3.0
- AMD® Ryzen Pro 4000 processors
- Display include your choice of 39.6cm (15") diagonal IPS Wide viewing Angle, FHD or UHD, Touch or Non-Touch
- AMD Radeon™ Vega UMA Graphics
- Enterprise grade security with HP Sure Sense<sup>4</sup>, HP Sure Start Gen6, HP Privacy Camera, HP Sure Run Gen3, HP Sure Recover Gen3, HP Sure Click, SmartCard Reader<sup>1</sup> and Touch Fingerprint reader<sup>5</sup> (select models)
- Passed 12 MIL-STD 810H testing, plus an additional 120,000 hours of reliability testing through HP's Total Test Process<sup>3</sup>
- Weight starting at 3.74 lb (1.690 kg)
- Battery life up to 25 hours and 15 minutes
- Supports wireless LAN and wireless WAN options for connectivity on the go
- Up to 1 TB Solid State Drives
- Up to 32 GB total system memory
- 720p HD webcam, IR camera for face authentication with Windows Hello
- Designed to support USB-C® and Thunderbolt HP docking options including the HP Universal Dock G5<sup>2</sup>
- Full size, backlit, Keyboard and Clickpad with image sensor and glass surface, multi-touch gestures enabled, taps enabled as default
- Enables AMD Memory Guard to help defend against cold boot attacks with real-time encryption and decryption of system's memory
- Support HP Sure View Reflect with Optional 1000 nit Anti-Glare Privacy Screen which prevents visual hacking

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 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. 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.**

### Technical Specifications

#### PRODUCT NAME

HP EliteBook 855 G7 Notebook PC

#### OPERATING SYSTEM

**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>1</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® 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>. 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>

HP tested Windows 10, version 1809 on this platform For testing information on newer versions of Windows 10, please see: <https://support.hp.com/document/c05195282>.

**FreeDOS planned to be available September 2020.**

#### PROCESSORS

AMD Ryzen™ 3 PRO 4450U APU with Radeon™ Graphics (2.5 GHz base clock, up to 3.8 GHz max boost clock, 4 MB L3 cache, 4 cores)<sup>3,4,5</sup>

AMD Ryzen™ 5 PRO 4650U APU with Radeon™ Graphics (2.1 GHz base clock, up to 4 GHz max boost clock, 8 MB L3 cache, 6 cores)<sup>3,4,5</sup>

AMD Ryzen™ 7 PRO 4750U APU with Radeon™ Graphics (1.7 GHz base clock, up to 4.1 GHz max boost clock, 8 MB L3 cache, 8 cores)<sup>3,4,5</sup>

#### Processor Family

2nd Gen AMD® Ryzen™ PRO processor

### 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. AMD's numbering is not a measurement of clock speed.
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 7<sup>th</sup> generation and forward processors or provide any Windows 8 or Windows 7 drivers on <http://www.support.hp.com>.

### CHIPSET

Chipset is integrated with processor

### GRAPHICS

#### Integrated

AMD Radeon™ Vega Graphics<sup>6</sup>

#### Supports

Support HD decode, DX12, HDMI2.0

6. HD content required to view HD images.

### DISPLAY

6. HD content required to view HD images.
7. Sold separately or as an optional feature.
8. Resolutions are dependent upon monitor capability, and resolution and color depth settings.
9. HP Sure View integrated privacy screen is an optional feature that must be configured at purchase and is designed to function in landscape orientation.

Docking station model	Total number of supported displays (incl. the notebook display)	Max. resolutions supported	Dock Connectors	Technical limitations
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### Technical Specifications

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 M.2 SATA-3 TLC<sup>10</sup>
- 256 GB PCIe® Gen3x4 NVMe™ TLC Opal 2<sup>10</sup>
- 256 GB PCIe® Gen3x4 NVMe™ SS TLC<sup>10</sup>
- 512 GB PCIe® Gen3x4 NVMe™ M.2 SS TLC<sup>10</sup>
- 1 TB PCIe® Gen3 x4 NVMe™ SS TLC<sup>10</sup>
- 256 GB PCIe® NVMe™ Value<sup>10</sup>
- 512 GB PCIe® NVMe™ Value<sup>10</sup>
- 512 GB PCIe® Gen3x4 NVMe™ TLC Opal 2<sup>10</sup>

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

### MEMORY

#### Maximum Memory

32 GB DDR4-3200 SDRAM

### Technical Specifications

#### Memory

32 GB DDR4-3200 SDRAM (2 x 16 GB)<sup>11</sup>  
24 GB DDR4-3200 SDRAM (16 GB (1 x 16 GB) and 8 GB (1 x 8 GB))<sup>11</sup>  
20 GB DDR4-3200 SDRAM (16 GB (1 x 16 GB) and 4 GB (1 x 4 GB))<sup>11</sup>  
16 GB DDR4-3200 SDRAM (1 x 16 GB)<sup>11</sup>  
16 GB DDR4-3200 SDRAM (2 x 8 GB)<sup>11</sup>  
12 GB DDR4-3200 SDRAM (8 GB (1 x 8 GB) and 4 GB (1 x 4 GB))<sup>11</sup>  
8 GB DDR4-3200 SDRAM (1 x 8 GB)<sup>11</sup>  
8 GB DDR4-3200 SDRAM (2 x 4 GB)<sup>11</sup>  
4 GB DDR4-3200 SDRAM (1 x 4 GB)<sup>11</sup>

#### Memory Slots

2 SODIMM  
Both slots are customer accessible / upgradeable  
DDR4 SODIMMS, system runs at 3200  
Supports Dual Channel Memory

11. 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.

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### NETWORKING/COMMUNICATIONS

#### WLAN

Intel® AX200 Wi-Fi 6 (2x2) and Bluetooth® 5 Combo, non-vPro™ (supporting gigabit file transfer speeds)<sup>12</sup>  
Realtek RTL8822BE 802.11ac (2x2) and Bluetooth® 5 Combo<sup>12</sup>

#### WWAN

Intel® XMM™ 7360 LTE-Advanced Cat 9<sup>13,16,18</sup>

#### NFC

NXP NPC300 Near Field Communication Module

#### Miracast

Native Miracast Support<sup>15</sup>

#### Ethernet

Realtek PCIe GbE Family Controller 10/100/1000<sup>14</sup>

12. 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.

### Technical Specifications

13. WWAN module is an optional feature, requires factory configuration and requires separately purchased service contract. Check with service provider for coverage and availability in your area. Connection speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products, in all regions.
14. The term "10/100/1000" or "Gigabit" Ethernet indicates compatibility with IEEE standard 802.3ab for Gigabit Ethernet, and does not connote actual operating speed of 1 Gb/s. For high-speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.
15. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming.
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. 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 <https://www.intel.com/content/www/us/en/architecture-and-technology/vpro/vpro-platform-general.html>
18. Standalone GPS is an optional feature and requires factory configuration. GPS and WWAN are mutually exclusive.

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### AUDIO/MULTIMEDIA

#### Audio

Audio by Bang & Olufsen  
2 Integrated Stereo Speakers  
Integrated 3 Multi Array Microphone

#### Camera

720p HD camera<sup>6,7</sup>  
720p HD+IR camera<sup>6,7,19</sup>

#### Sensors

Ambient light sensor (select models only)  
Hall Sensor

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

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

### Technical Specifications

#### Keyboard

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

#### Pointing Device

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

#### Function Keys

F1 - Display Switching  
F2 - Blank or Privacy (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)

#### Hidden Function Keys

Fn+R - Break  
Fn+S - Sys Rq  
Fn+C - Scroll Lock

#### Fn+E- Insert

#### Fn+W- Pause

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### SOFTWARE AND SECURITY

#### Preinstalled Software

#### BIOS

HP BIOSphere Gen5<sup>20</sup>  
HP Drive Lock & Automatic Drive Lock  
BIOS Update via Network  
Power On Authentication  
HP Secure Erase<sup>21</sup>  
Absolute Persistence Module<sup>22</sup>  
Pre-boot Authentication

#### Software

HP Connection Optimizer

## Technical Specifications

HP Hotkey Support  
HP JumpStarts  
HP Support Assistant<sup>23</sup>  
HP Noise Cancellation Software  
Buy Office (sold separately)

### Manageability Features

HP Driver Packs (download)<sup>24</sup>  
HP System Software Manager (SSM) (download)  
HP BIOS Config Utility (BCU) (download)  
HP Client Catalog (download)  
HP Manageability Integration Kit Gen4 (download)<sup>25</sup>  
HP Image Assistant (download)  
HP Client Management Script Library (download)  
Ivanti Management Suite (download)

### Client Security Software

HP Client Security Manager Gen6<sup>26</sup>  
HP Fingerprint Sensor<sup>27</sup>  
Windows Defender<sup>28</sup>

### Security Management

Pre-boot Authentication  
TPM 2.0 Embedded Security Chip shipped with Windows 10 (Common Criteria EAL4+ Certified) (FIPS 140-2 Level 2 Certified)<sup>29</sup>  
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>30</sup>  
HP Sure Start Gen6<sup>31</sup>  
HP Sure Run Gen3<sup>32</sup>  
HP Sure Recover Gen3<sup>33</sup>  
HP Sure Sense<sup>34</sup>

20. HP BIOSphere Gen5 is available on select HP Pro and Elite PCs. Features may vary depending on the platform and configurations.

21. HP Secure Erase for the methods outlined in the National Institute of Standards and Technology Special Publication 800-88 "Clear" sanitation method. HP Secure Erase does not support platforms with Intel® Optane™.

22. Absolute agent is shipped turned off, and will be activated when customers activate a purchased subscription. Subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S. The Absolute Recovery Guarantee is a limited warranty. Certain conditions apply. For full details visit:

<https://www.absolute.com/about/legal/agreements/absolute/>.

23. HP Support Assistant requires Windows and Internet access.

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

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

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

27. HP Fingerprint sensor is an optional feature that must be configured at purchase.

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

29. Firmware TPM is version 2.0.

30. HP Sure Click requires Windows 10 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.

### Technical Specifications

- 31. HP Sure Start Gen6 is available on select HP PCs.
- 32. HP Sure Run Gen3 is available on select Windows 10 based HP Pro, Elite and Workstation PCs with select Intel® or AMD processors.
- 33. 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.
- 34. HP Sure Sense requires Windows 10.

### POWER

#### Power Supply

- 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 Watt nPFC Slim USB-C Straight AC Adapter<sup>31</sup>
- 65 W USB Type-C® adapter<sup>35</sup>

#### Primary Battery

- HP Long Life 3-cell, 56 Wh Li-ion<sup>36,37</sup>
- Support HP Fast Charge (Up to 50% in 30 minutes with 65W AC Adapter)<sup>36,37</sup>

#### Battery Life

- Up to 25 hours and 15 minutes ( 2nd Gen AMD® Ryzen™ PRO APU processor, 15.6" 400nits panel and 3-cell 56Whr battery )<sup>38</sup>

#### Power Cord

- 2-wire plug - 1.0m
- 3-wire plug - 1.0m

- 35. Availability may vary by country.
- 36. Battery is internal and not replaceable by customer. Serviceable by warranty.
- 37. Supports HP Fast Charge with 65W AC Adapter. 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 [www.bapco.com](http://www.bapco.com) for additional details.

### WEIGHTS & DIMENSIONS

#### Product Weight

### Technical Specifications

**Non-touch**

Starting at 3.74 lb<sup>39</sup>

Starting at 1.69 kg<sup>39</sup>

**Touch**

Starting at 3.92 lb<sup>39</sup>

Starting at 1.77 kg<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.](#)

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### Technical Specifications

#### PORTS/SLOTS

##### Ports

- 2 USB Type-C® 3.1 Gen 2(Alt mode)
- 1 USB 3.1 Gen 1 port
- 1 USB 3.1 Gen 1 (1 charging)
- 1 HDMI 2.0<sup>6</sup>
- 1 headphone/microphone combo
- 1 AC power
- 1 SIM card slot<sup>40</sup>
- 1 Smartcard reader

6. HD content required to view HD images.

40. SIM slot is not user accessible without WWAN configuration.

#### SERVICE AND SUPPORT

HP Services offers 1-year or 3-year limited warranties and 90 day software limited warranty options depending on country. Batteries have a default one year limited warranty except for Long Life batteries which will have same 1-year or 3-year limited warranty as the platform. Refer to <http://www.hp.com/support/batterywarranty/> for additional battery information. On-site service and extended coverage is also available. HP Care Pack Services are optional extended service contracts that go beyond the standard limited warranties. To choose the right level of service for your HP product, use the HP Care Pack Services Lookup Tool at: <http://www.hp.com/go/cpc>.<sup>41</sup>

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

### Technical Specifications

#### SYSTEM UNIT

<b>Stand-Alone Power Requirements (AC Power)</b>	<b>Nominal Operating Voltage</b>	19 V
	<b>Max Operating Power</b>	Discrete < 65W UMA < 45W
<b>Temperature</b>	<b>Operating</b>	32° to 95° F (0° to 35° C) (not 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®</b>	Select models <sup>42</sup>
	<b>EPEAT®</b>	EPEAT® 2019 Gold in United States <sup>43</sup>
	<b>ICES</b>	Yes
	<b>Australia / 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	

42. Configurations of the HP ProBook 650 G7 that are ENERGY STAR® qualified are identified as HP ProBook 650 G7 ENERGY STAR on HP websites and on <http://www.energystar.gov>.

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

### Technical Specifications

#### DISPLAYS

<b>Panel LCD 15.6 inch FHD (1920x1080) 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 (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</b>	RGB Stripe
	<b>Backlight</b>	LED
	<b>Color Gamut Coverage</b>	NTSC 45%
	<b>Color Depth</b>	6 bits (Hi FRC supportive w/ condition to enable)
	<b>Viewing Angle</b>	UWVA 85/85/85/85

<b>Panel LCD 15.6 inch FHD (1920x1080) Anti-Glare WLED UWVA 45% NTSC 250nits 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>	3.2 mm/ 5.2 mm (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</b>	RGB Stripe
	<b>Backlight</b>	LED
	<b>Color Gamut Coverage</b>	NTSC 45%
	<b>Color Depth</b>	6 bits
	<b>Viewing Angle</b>	UWVA 85/85/85/85

**Outline Dimensions (W x H x D)** 349.46 x 204.79 mm (max)

### Technical Specifications

<b>Panel LCD 15 inch FHD (1920x1080) Anti-Glare WLED UWVA sRGB 100% NTSC 400nits eDP 1.4+PSR2 bent LP NB2X</b>	<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>	2.6 mm/4.6 mm (w/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</b>	RGB Stripe
	<b>Backlight</b>	LED
	<b>Color Gamut Coverage</b>	sRGB 100% (NTSC 72%)
	<b>Color Depth</b>	8 bits
<b>Viewing Angle</b>	UWVA 85/85/85/85	

<b>Panel LCD 15-in diagonal FHD (1920 x 1080) Anti-Glare WLED UWVA 72% NTSC 1000 nits eDP 1.4+PSR Sure View Reflect</b>	<b>Outline Dimensions (W x H x D)</b>	349.52 x 205.39 mm (max)
	<b>Active Area</b>	344.16 x 193.59 mm
	<b>Weight</b>	370 g (max)
	<b>Diagonal Size</b>	15 inch
	<b>Thickness</b>	4.5 mm (max)
	<b>Interface</b>	eDP
	<b>Surface Treatment</b>	Anti-Glare (AG)
	<b>Touch Enabled</b>	No
	<b>Contrast Ratio</b>	1500:1 (typ)
	<b>Refresh Rate</b>	60 Hz
	<b>Brightness</b>	1000 nits
	<b>Pixel Resolution</b>	1920 x 1080 (FHD)
	<b>Format</b>	RGB
	<b>Backlight</b>	LED
	<b>Color Gamut Coverage</b>	100% Srgb
<b>Color Depth</b>	8 bits	
<b>Viewing Angle</b>	UWVA 85/85/85/85	

### Technical Specifications

#### STORAGE

<b>SSD 128GB 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 (10g)
	<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 1TB 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 (10g)
	<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 256GB 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 (10g)
	<b>Interface</b>	PCIe NVMe Gen3X4

### Technical Specifications

<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]
<b>Features</b>	ATA Security; TRIM; L1.2

<b>SSD 256GB 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 (10g)
	<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 256GB 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 (10g)
	<b>Interface</b>	PCIe NVMe Gen3X4
	<b>Maximum Sequential Read</b>	2800 ~ 3500 MB/s
	<b>Maximum Sequential Write</b>	1663 ~ 2200 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 (Option); TCG Opal 2.0; TRIM; L1.2	

<b>SSD 512GB 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)

### Technical Specifications

<b>Width</b>	0.87 in (22 mm)
<b>Weight</b>	0.02 lb (10g)
<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 512GB 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 (10g)
	<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 512GB 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 (10g)
	<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

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

### Technical Specifications

#### NETWORKING

**Intel® Wi-Fi 6<sup>1</sup> AX200 and Bluetooth® 5.0 802.11 ax (2x2) non-vPro, supporting gigabit file transfer speeds) non-vPro**

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<sup>3</sup>**

- 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
- WAPI

**Network Architecture Models**

Ad-hoc (Peer to Peer)  
Infrastructure (Access Point Required)

**Roaming**

IEEE 802.11 compliant roaming between access points

**Output Power<sup>2</sup>**

- 802.11b: +18.5dBm minimum
- 802.11g: +17.5dBm minimum

### Technical Specifications

	<ul style="list-style-type: none"> <li>• 802.11 a: +18.5dBm minimum</li> <li>• 802.11 n HT20(2.4GHz): +15.5dBm minimum</li> <li>• 802.11 n HT40(2.4GHz): +14.5dBm minimum</li> <li>• 802.11 n HT20(5GHz): +15.5dBm minimum</li> <li>• 802.11 n HT40(5GHz): +14.5dBm minimum</li> <li>• 802.11 ac VHT80(5GHz): +11.5dBm minimum</li> <li>• 802.11 ac VHT160(5GHz): +11.5dBm minimum</li> <li>• 802.11 ax HT40(2.4GHz): +10dBm minimum</li> <li>• 802.11 ax 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 10 mW</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>• 802.11 b, 1Mbps: -93.5dBm maximum</li> <li>• 802.11 b, 11Mbps: -84dBm maximum</li> <li>• 802.11 a/g, 6Mbps: -86dBm maximum</li> <li>• 802.11 a/g, 54Mbps: -72dBm maximum</li> <li>• 802.11 n, MCS07: -67dBm maximum</li> <li>• 802.11 n, MCS15: -64dBm maximum</li> <li>• 802.11 ac, MCS0: -84dBm maximum</li> <li>• 802.11 ac, MCS9: -59dBm maximum</li> <li>• 802.11 ax, MCS11(HT40): -59dBm maximum</li> <li>• 802.11 ax, 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				
<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: 2.8g</li> <li>2. Type 126: 1.3g</li> </ol>				
<b>Operating Voltage</b>	3.3v +/- 9%				
<b>Temperature</b>	<table> <tbody> <tr> <td><b>Operating</b></td> <td>14° to 158° F (-10° to 70° C)</td> </tr> <tr> <td><b>Non-operating</b></td> <td>-40° to 176° F (-40° to 80° C)</td> </tr> </tbody> </table>	<b>Operating</b>	14° to 158° F (-10° to 70° C)	<b>Non-operating</b>	-40° to 176° F (-40° to 80° C)
<b>Operating</b>	14° to 158° F (-10° to 70° C)				
<b>Non-operating</b>	-40° to 176° F (-40° to 80° C)				
<b>Humidity</b>	<table> <tbody> <tr> <td><b>Operating</b></td> <td>10% to 90% (non-condensing)</td> </tr> <tr> <td><b>Non-operating</b></td> <td>5% to 95% (non-condensing)</td> </tr> </tbody> </table>	<b>Operating</b>	10% to 90% (non-condensing)	<b>Non-operating</b>	5% to 95% (non-condensing)
<b>Operating</b>	10% to 90% (non-condensing)				
<b>Non-operating</b>	5% to 95% (non-condensing)				
<b>Altitude</b>	<table> <tbody> <tr> <td><b>Operating</b></td> <td>0 to 10,000 ft (3,048 m)</td> </tr> <tr> <td><b>Non-operating</b></td> <td>0 to 50,000 ft (15,240 m)</td> </tr> </tbody> </table>	<b>Operating</b>	0 to 10,000 ft (3,048 m)	<b>Non-operating</b>	0 to 50,000 ft (15,240 m)
<b>Operating</b>	0 to 10,000 ft (3,048 m)				
<b>Non-operating</b>	0 to 50,000 ft (15,240 m)				
<b>LED Activity</b>	<table> <tbody> <tr> <td><b>LED Amber</b></td> <td>Radio Off</td> </tr> <tr> <td><b>LED Off</b></td> <td>Radio On</td> </tr> </tbody> </table>	<b>LED Amber</b>	Radio Off	<b>LED Off</b>	Radio On
<b>LED Amber</b>	Radio Off				
<b>LED Off</b>	Radio On				

### Technical Specifications

#### 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 data rate; throughput up to 2.17 Mbps BLE: 1 Mbps data rate; throughput up to 0.2 Mbps 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)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

### Technical Specifications

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).

#### Realtek RTL8822CE

**802.11ac 2x2 Wi-Fi and Bluetooth® 5.0**

#### Wireless LAN Standards

IEEE 802.11a  
IEEE 802.11b  
IEEE 802.11g  
IEEE 802.11n  
IEEE 802.11ac  
IEEE 802.11d  
IEEE 802.11e  
IEEE 802.11h  
IEEE 802.11i  
IEEE 802.11k  
IEEE 802.11r  
IEEE 802.11v

#### Interoperability

Wi-Fi CERTIFIED™

#### Frequency Band

- 802.11b/g/n  
2.402 – 2.482 GHz
- 802.11a/n/ac  
4.9 – 4.95 GHz (Japan)  
5.15 – 5.25 GHz  
5.25 – 5.35 GHz  
5.47 – 5.725 GHz  
5.825 – 5.850 GHz

#### Data Rates

- 802.11b: 1, 2, 5.5, 11 Mbps
- 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
- 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
- 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz)
- 802.11ac: MCS 0 ~ MCS 9, (1SS, and 2SS) (20MHz, 40MHz, 80MHz & 160MHz)

#### Modulation

Direct Sequence Spread Spectrum  
OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM

#### Security<sup>3</sup>

- 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

### Technical Specifications

	<ul style="list-style-type: none"> <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> </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 10 mW</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> </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
<b>Dimensions</b>	1. Type 2230: 2.3 x 22.0 x 30.0 mm 2. Type 1216: 1.67 x 12.0 x 16.0 mm
<b>Weight</b>	1. Type 2230: 2.8g 2. Type 1216: 1.3g
<b>Operating Voltage</b>	3.3v +/- 9%
<b>Temperature</b>	<b>Operating</b> 14° to 158° F (-10° to 70° C) <b>Non-operating</b> -40° to 176° F (-40° to 80° C)
<b>Humidity</b>	<b>Operating</b> 10% to 90% (non-condensing) <b>Non-operating</b> 5% to 95% (non-condensing)
<b>Altitude</b>	<b>Operating</b> 0 to 10,000 ft (3,048 m) <b>Non-operating</b> 0 to 50,000 ft (15,240 m)

### Technical Specifications

<b>LED Activity</b>	<b>LED Amber LED Off</b>	Radio Off Radio On
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#### HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0 Wireless Technology

<b>Bluetooth Specification</b>	4.0/4.1/4.2/5.0 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 data rate; throughput up to 2.17 Mbps BLE: 1 Mbps data rate; throughput up to 0.2 Mbps 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 + 4 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)2 Headset Profile (HSP) Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP)

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.

### Technical Specifications

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® 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
	<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

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.

<b>Near Field Communications Controller (optional)</b>	<b>Dimensions (L x Wx 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

### Technical Specifications

	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</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</b>	ISO/IEC 14443 A 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</b> (Booster enable, VBAT= 3.3V, VCC_BOOST = 5V)	
<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

<b>AC Adapter 45 Watt Smart nPFC Standard Barrel 4.5mm Right Angle 1.8m</b>	<b>Dimensions</b>	95 x 45 x 26.8 mm
	<b>Weight</b>	unit: 200g +/- 10g
	<b>Input</b>	<b>Input Efficiency</b> 87.74 % at 115 Vac and 88.4 % at 230 Vac <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> 45W <b>DC output</b> 19.5V <b>Hold-up time</b> 5ms at 115 Vac input <b>Output current limit</b> <8.0A
	<b>Connector</b>	<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>Safety Certifications</b>	Eg: *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.

<b>AC Adapter 45 Watt Smart nPFC Standard Barrel 4.5mm Right Angle 1.8m 2prong</b>	<b>Dimensions</b>	95 x 45 x 26.8 mm
	<b>Weight</b>	unit: 200g +/- 10g
	<b>Input</b>	<b>Input Efficiency</b> 87.74 % at 115 Vac and 88.4 % at 230 Vac <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> 45W <b>DC output</b> 19.5V <b>Hold-up time</b> 5ms at 115 Vac input <b>Output current limit</b> <8.0A
	<b>Connector</b>	<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>Safety Certifications</b>	Eg: *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.

### Technical Specifications

<b>AC Adapter 65 Watt nPFC Slim USB Type-C® Straight 1.8m</b>	<b>Dimensions</b>	88 x 53.5 x 21 mm
	<b>Weight</b>	unit: 220g +/- 10g
	<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>Output</b>	<b>Input AC current</b>	1.6 A at 90 VAC and maximum load
	<b>Output power</b>	65W
	<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
Connector	<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)
	<b>Humidity</b>	5% to 95%
	<b>Storage Humidity</b>	5% to 95%
<b>Safety Certifications</b>	Eg:	
		*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.

<b>AC Adapter 65 Watt nPFC Slim USB type C® Straight 1.8m</b>	<b>Dimensions</b>	90.0 x 51 x 28.5 mm
	<b>Weight</b>	unit: 250g +/- 10g
	<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>Output</b>	<b>Input AC current</b>	1.6 A at 90 VAC and maximum load
	<b>Output power</b>	65W
	<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
Connector	<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)

### Technical Specifications

<b>AC Adapter 65 Watt Smart nPFC EM Barrel 4.5mm New EM</b>	<b>Dimensions</b>	102 x 55 x 30 mm
	<b>Weight</b>	unit: 250g +/- 10g
	<b>Input</b>	<b>Input Efficiency</b> 88.0 % at 115 Vac and 89.0 % at 230 Vac
		<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> 65W
		<b>DC output</b> 19.5V
		<b>Hold-up time</b> 5ms at 115 Vac input
		<b>Output current limit</b> <11.0A
	Connector	<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>Safety Certifications</b>	<b>Storage Humidity</b> 10% to 95%	
	Eg: *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.	

<b>AC Adapter 65 Watt Smart nPFC Standard Barrel 4.5mm Right Angle 1.8m</b>	<b>Dimensions</b>	90 x 51 x 28.5 mm
	<b>Weight</b>	unit: 230g +/- 10g
	<b>Input</b>	<b>Input Efficiency</b> 88.0 % at 115 Vac and 89.0 % at 230 Vac
		<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> 65W
		<b>DC output</b> 19.5V
		<b>Hold-up time</b> 5ms at 115 Vac input
		<b>Output current limit</b> <11.0A
	Connector	<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>Safety Certifications</b>	<b>Storage Humidity</b> 10% to 95%	
	Eg: *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.	

### 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 L)</b>	7.0 x 66.5 x 276.3 mm 0.275 x 2.618 x 10.877 inch
	<b>Weight</b>	215 g (0.47 lb) 0.45 lb
	<b>Cells/Type</b>	3cell Lithium-Ion Polymer cell / 645180
<b>Energy</b>	<b>Voltage</b>	11.55V
	<b>Amp-hour capacity</b>	4.59Ah
	<b>Watt-hour capacity</b>	56Wh
<b>Temperature</b>	<b>32° to 113° F (0° to 45° C)</b>	
	<b>Operating (Charging)</b>	32° to 122° F (0° to 50° C)
	<b>Operating (Discharging)</b>	14° to 140° F (-10° to 60° C)
<b>Warranty</b>	Depends on system offering	
<b>Optional Travel Battery Available</b>	No	

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### Technical Specifications

#### **COUNTRY OF ORIGIN**

China

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

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 230W G2	2UK38AA
	HP Thunderbolt Dock 120W G2 TAA	2UK37AA
	HP TB Dock Audio Module	3AQ21AA
	HP TB Dock 120W G2 cable	3XB94AA
	HP TB Dock G2 combo cable	3XB96AA
	HP USB-C 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

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

	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-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	H6Y88A
	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
<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

### Summary of Changes

Date of change:	Version History:	Updated	Description of change:
	V1 to V2		

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