

Overview

HP Chromebook 11A G8 EE



1. Webcam LED
2. Webcam
3. Internal Microphone
4. Touchpad

Left

5. USB 2.0
6. USB Type-C™ 3.1 Gen1 Port
(Support charging, Power delivery, Video, Data)
7. Nano Security Lock Slot

Overview



1. Power Button
2. USB Type-C™ 3.1 Gen1 port
(Support charging, Power delivery, Video, Data)
3. USB 2.0

Right

4. MicroSD™ memory card reader
5. Stereo Headphone / Microphone Combo Jack

Overview

AT A GLANCE

- <19 mm thin and rugged design for durability
- Enjoy affordable, convenient mobile productivity with AMD Stoney Ridge processors
- Designed to pass MIL STD 810 G tests, 76 cm drop on concrete and 122 cm drop on plywood, and enhanced USB-C™ connectors to stand against daily uses of plug and unplug¹
- 2 USB-C™ ports (Supports Power Delivery, Display Port™ and data)
- Choice of up to 8 GB memory and 32GB eMMc storage
- Spill and pick resistant keyboard with HP Improved Anchored Key Design
- Battery life up to 10 hours³ and spend less time charging with HP Fast Charge technology
- 180 degree hinge and optional HD IPS anti-glare touchscreen for collaboration²
- Enjoy Android™ Apps* on Chrome OS™²
- Your Chromebook boots up within 10 seconds and you can be browsing online and working in Google Apps just moments later
- Qualcomm® 2x2 AC WLAN with MU-MIMO and HP Extended Range Wireless LAN for stable connection in dense environment
- Keyboard that can be repeatedly wiped down with common household cleaning wipes
- Easy for small hands to grip and handle with unique textured surface
- Degrees of IP41 certified to against access to hazardous/solid foreign objects and ingress of water

1. MIL-STD-810H 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. Recharges up to 90% within 90 minutes when the system is off or in standby mode when used with the power adapter provided with the notebook. After charging has reached 90% capacity, charging speed will return to normal. Charging time may vary +/-10% due to System tolerance.
2. Testing conducted by HP using Google Chrome OS power_LoadTest. Battery life will vary and the maximum capacity of the battery will naturally decrease with time and usage. See <http://www.chromium.org/chromium-os/testing/power-testing> for test details. Full charge battery life will decrease after Adaptive Battery Optimizer activation.

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

Technical Specifications

PRODUCT NAME

HP Chromebook 11A G8 EE

OPERATING SYSTEM

Preinstalled Chrome OS™

PROCESSOR

AMD A4-9120C APU with Radeon™ R4 Graphics (1.6 GHz base clock, up to 2.4 GHz max boost clock, 1 MB cache, 2 cores)^{1, 2, 3}
AMD A6-9220C APU with Radeon™ R5 Graphics (1.8 GHz base clock, up to 2.7 GHz max boost clock, 1 MB cache, 2 cores)^{1, 2, 3}

Processor Family

AMD® A-Series processors

1. 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.
 2. Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.
 3. AMD Max Boost Clock performance varies depending on hardware, software and overall system configuration.
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CHIPSET

Chipset is integrated with processor

GRAPHICS

Integrated

AMD Radeon™ R4 Graphics⁴

AMD Radeon™ R5 Graphics⁴

Supports

Support HD Decode, DX12, and HDMI 1.4b

4. HD content required to view HD images.
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Technical Specifications

DISPLAY

Non-Touch

29.46 cm (11.6") diagonal HD SVA Anti-Glare WLED-backlit, 220 nits, 45% NTSC (1366 x 768)^{5, 6, 7, 8}

29.46 cm (11.6") diagonal HD UWVA Anti-Glare WLED-backlit, 220 nits, 50% NTSC (1366 x 768)^{5, 6, 7, 8}

Touch

29.46 cm (11.6") diagonal HD IPS Anti-Glare WLED-backlit touch screen, 220 nits, 50% NTSC (1366 x 768)^{5, 6, 7, 8}

Display Size (diagonal)

11.6"

29.46 cm (11.6")

5. HD content required to view HD images.

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

7. Sold separately or as an optional feature.

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

STORAGE AND DRIVES

Primary Storage

16 GB eMMC 5.0⁹

32 GB eMMC 5.0⁹

9. For storage drives, GB = 1 billion bytes. Actual formatted capacity is less. Up to 8.1 GB is not user available

MEMORY

Maximum Memory

8 GB DDR4-1866 SDRAM

Memory

4 GB DDR4-1866 SDRAM

8 GB DDR4-1866 SDRAM

Memory Slots

On-board system memory

Technical Specifications

NETWORKING/COMMUNICATIONS

WLAN

Qualcomm® Wireless-AC 802.11a/b/g/n/ac (2x2) Wi-Fi® and Bluetooth® 4.2 Combo, non-vPro™¹⁰

Realtek 802.11ac (2x2) WLAN and Bluetooth® 5 Combo¹⁰

MU-MIMO supported

HP Extended Range Wireless LAN supported

Chromecast

Chromecast Support¹¹

10. Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited.

11. Chromecast must be purchased separately.

AUDIO/MULTIMEDIA

Audio

HD Audio

Dual 2W stereo speakers

Integrated Microphone

Camera

720p HD camera⁵

5. HD content required to view HD images.

KEYBOARD / POINTING DEVICES

Keyboard

Full Size Textured island-style Keyboard, spill-resistant & HP Improved Anchored Key Design

Pointing Device

Touchpad with multi-touch gesture support. Taps enabled as default

Technical Specifications

SOFTWARE AND SECURITY

Preinstalled Software

HP Classroom Manager¹²

Manageability Features

Chrome Enterprise Upgrade^{13, 14}

Chrome Education Upgrade^{13, 14}

Security Management

Titan C

Nano Security lock slot¹³

12. HP Classroom Manager is sold separately. Control and device locking from the teacher's desktop requires purchase of HP Classroom Manager.

13. Sold separately.

14. Requires one-time setup, subscription, Google Admin Console, and your organization's domain. Please see

<https://support.google.com/a/answer/60216>.

POWER

Power Supply

HP Smart 45 W Type-C™ AC power adapter

Primary Battery

HP Long Life 2-cell, 47.36 Wh Li-ion polymer^{15, 22}

HP Fast Charge Technology (90% in 90 minutes)¹⁶

Power Cord

3-wire plug – 1 m

Battery life

Up to 10 hours (Non-touch Display)¹⁷

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

16. Recharges up to 90% within 90 minutes when the system is off or in standby mode when used with the power adapter provided with the notebook. After charging has reached 90% capacity, charging speed will return to normal. Charging time may vary +/-10% due to System tolerance.

17. Testing conducted by HP using Google Chrome OS power_LoadTest. Battery life will vary and the maximum capacity of

Technical Specifications

the battery will naturally decrease with time and usage. See <http://www.chromium.org/chromium-os/testing/power-testing> for test details. Full charge battery life will decrease after Adaptive Battery Optimizer activation.

22. Actual battery Watt-hours (Wh) will vary from design capacity. Battery capacity will naturally decrease with shelf life, time, usage, environment, temperature, system configuration, loaded apps, features, power management settings and other factors.

ENVIRONMENTAL

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: <ul style="list-style-type: none"> • IT ECO declaration • US ENERGY STAR® • EPEAT® Silver registered in the United States. See http://www.epeat.net for registration status in your country. • TCO Certified 8.0 		
System Configuration	The configuration used for the Energy Consumption and Declared Noise Emissions data for the Notebook model is based on a “Typically Configured Notebook”.		
Energy Consumption (in accordance with US ENERGY STAR® test method)	115VAC, 60Hz	230VAC, 50Hz	100VAC, 50Hz
Normal Operation (Short idle)	4.560 W	4.680 W	4.464 W
Normal Operation (Long idle)	2.004 W	2.088 W	1.908 W
Sleep	0.600 W	0.624 W	0.600 W
Off	0.408 W	0.468 W	0.408 W
	Energy efficiency data listed is for an ENERGY STAR® compliant product if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.		
Heat Dissipation*	115VAC, 60Hz	230VAC, 50Hz	100VAC, 50Hz
Normal Operation (Short idle)	16 BTU/hr	16 BTU/hr	16 BTU/hr
Normal Operation (Long idle)	7 BTU/hr	7 BTU/hr	7 BTU/hr
Sleep	2 BTU/hr	2 BTU/hr	2 BTU/hr
Off	1 BTU/hr	2 BTU/hr	1 BTU/hr
	NOTE: Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.		

Technical Specifications

Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)	Sound Power (L_{WAd} , bels)	Sound Pressure (L_{pAm} , decibels)	
Typically Configured – Idle	2.7	17	
Fixed Disk – Random writes	2.7	17	
Longevity and Upgrading	<p>This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the product may include:</p> <ul style="list-style-type: none"> • 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 <p>Spare parts are available throughout the warranty period and or for up to “5” years after the end of production.</p>		
Batteries	<p>This battery(s) in this product comply with EU Directive 2006/66/EC</p> <p>Batteries used in the product do not contain: Mercury greater the 1ppm by weight Cadmium greater than 20ppm by weight</p> <p>Battery size: Not Applicable Battery type: Not Applicable</p>		
Additional Information	<ul style="list-style-type: none"> • 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 • Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043. • This product contains 3% post-consumer recycled plastic (by wt.) • This product is 94.5% recycle-able when properly disposed of at end of life. 		
Packaging Materials	External:	PAPER/Corrugated	186 g
		PAPER/Paper	40 g
		PAPER/Molded Pulp	116 g
	Internal:	PLASTIC/Polyethylene low density - LDPE	7 g

Technical Specifications

<p>Material Usage</p>	<p>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):</p> <ul style="list-style-type: none"> • Asbestos • Certain Azo Colorants • Certain Brominated Flame Retardants – may not be used as flame retardants in plastics • Cadmium • Chlorinated Hydrocarbons • Chlorinated Paraffins • Formaldehyde • Halogenated Diphenyl Methanes • Lead carbonates and sulfates • Lead and Lead compounds • Mercuric Oxide Batteries • Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user. • Ozone Depleting Substances • Polybrominated Biphenyls (PBBs) • Polybrominated Biphenyl Ethers (PBBEs) • Polybrominated Biphenyl Oxides (PBBOs) • Polychlorinated Biphenyl (PCB) • Polychlorinated Terphenyls (PCT) • Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications. • Radioactive Substances • Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)
<p>Packaging Usage</p>	<p>HP follows these guidelines to decrease the environmental impact of product packaging:</p> <ul style="list-style-type: none"> • 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.
<p>End-of-life Management and Recycling</p>	<p>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.</p> <p>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</p>

Technical Specifications

	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.
Hewlett-Packard Corporate Environmental Information	For more information about HP's commitment to the environment: Global Citizenship Report http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html Eco-label certifications http://www8.hp.com/us/en/hp-information/environment/ecolabels.html ISO 14001 certificates: http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/PC_GBU_Product_Design_ISO_14K_Certificate.pdf and http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf

WEIGHTS & DIMENSIONS

Product Weight

Starting at 3.02 lb¹⁸

Starting at 1.37 kg¹⁸

Product Dimensions (w x d x h)

11.61 x 8.08 x 0.74 in

29.5 x 20.53 x 1.88 cm

¹⁸ Weight will vary by configuration.

PORTS/SLOTS

Ports

2 USB 3.1 Type-C™ Gen 1 (Charging, power delivery, video, data)

2 USB 2.0

1 Stereo Headphone/microphone combo jack

Technical Specifications

Expansion Slots

1 Micro SD multi-format digital media reader

Supports Micro SD, SDHC, SDXC

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. 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.19>

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

Technical Specifications

SYSTEM UNIT

Stand-Alone Power Requirements (AC Power)	USB-C 45 W adapter
	Nominal Operating Voltage 15 V
	Average Operating Power <45 W
	Integrated Graphics Yes
Temperature	Max Operating Power UMA < 45 W
	Operating 32° to 95° F (0° to 35° C)
Relative Humidity	Non-operating 41° to 95° F (5° to 35° C)
	Operating 10% to 90%
Shock	Non-operating 5% to 95%
	Operating 40 G, 2 ms, half-sine
Random Vibration	Non-operating 240 G, 2 ms, half-sine
	Operating 1.043 grms
Altitude (unpressurized)	Non-operating 3.5 grms
	Operating -50 to 10,000 ft (-15 to 3,048 m)
Planned Industry Standard Certifications	Non-operating -50 to 40,000 ft (-15 to 12,192 m)
	UL Yes
	FCC Compliance Yes
	ENERGY STAR® Yes ²⁰
	EPEAT® 2019 Yes, Silver in U.S. ²¹
	ICES Yes
	Australia / Yes
	NZ RCM Compliance Yes
	KC Yes
	BSMI Yes
	CE Marking Compliance Yes
	EAC Yes
	Saudi Arabian Compliance (ICCP) Yes
	SABS Yes

20. Configurations of the HP ChromeBook 11A G8 EE that are ENERGY STAR® qualified are identified as HP ChromeBook 11A G8 EE ENERGY STAR on HP websites and on <http://www.energystar.gov>.

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

Technical Specifications

DISPLAYS

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

11.6 inch diagonal HD (1366 x 768) Anti-Glare WLED SVA 45% NTSC 220 nits eDP slim	Outline Dimensions (W x H x D)	268.5 x 168.54 (mm) max.
	Active Area	256.125 x 144.0 (mm)
	Weight	210 g max.
	Diagonal Size	11.6 inch
	Thickness	3.0 (mm) max
	Interface	eDP 1.2
	Surface Treatment	Anti-glare (AG)
	Touch Enabled	No
	Contrast Ratio	400:1 (typ) - AG
	Refresh Rate	60 Hz
	Brightness	220 nit typical (Panel Only)
	Pixel Resolution	1366 x 768 (HD)
	Format of LCD Pixel Arrangement	RGB
	Backlight	LED
	Color Gamut Coverage	45% of NTSC
Color Depth	6-bit	
Viewing Angle	SVA 40/40/15/30	

11.6 inch diagonal HD (1366 x 768) Anti-Glare WLED UWVA 50% NTSC 220 nits eDP 1.2 w/o PSR slim Touch on Panel	Outline Dimensions (W x H x D)	278.5 x 168.52 (mm) max
	Active Area	256.125 x 144 (mm)
	Weight	200 g max
	Diagonal Size	11.6 (inch)
	Thickness	3.20 (mm) max
	Interface	eDP 1.2
	Surface Treatment	Anti-glare (AG)
	Touch Enabled	yes
	Contrast Ratio	1000:1 (typical)
	Refresh Rate	60 Hz
	Brightness	220 nit typical (Panel Only)
	Pixel Resolution	1366 x 768 (HD)
	Format of LCD Pixel Arrangement	RGB
	Backlight	LED
	Color Gamut Coverage	50% of NTSC
Color Depth	6 bit	

Technical Specifications

Viewing Angle UWVA 85/85/85/85

11.6 inch diagonal HD (1366 x 768) Anti-Glare WLED UWVA 50% NTSC 220 nits eDP slim	Outline Dimensions (W x H x D)	278 x 168(mm) max
	Active Area	256.125 x 144.0 (mm)
	Weight	200 g max.
	Diagonal Size	11.6 (inch)
	Thickness	3.0 (mm) max
	Interface	eDP 1.2
	Surface Treatment	Anti-glare (AG)
	Touch Enabled	No
	Contrast Ratio	800:1 (typical)
	Refresh Rate	60 HZ
	Brightness	220 nit typical (Panel Only)
	Pixel Resolution	1366 x 768 (HD)
	Format of LCD Pixel Arrangement	RGB
	Backlight	LED
	Color Gamut Coverage	50% of NTSC
Color Depth	6 bit	
Viewing Angle	UWVA 85/85/85/85	

Technical Specifications

STORAGE AND DRIVES*

16 G eMMC	Drive Weight	0.2 g
	Rotation speed	16 GB / 32 GB
	Cache Buffer	1.4 mm
	Height	11.5 x 13 mm
	Width	MMC protocol
	Transfer Rate	Up to 250 MB/s
	Seek Time	Up to 70 MB/s
	Logical Blocks	16 GB (15,758,000,128 Bytes) / 32 GB (31,268,536,320 Bytes)
	Operating Temperature	0 to 70
	Security Features	HS400

32 G eMMC	Drive Weight	0.2 g
	Rotation speed	16 GB / 32 GB
	Cache Buffer	1.4 mm
	NAND Type/Size	11.5 x 13 mm
	Height	MMC protocol
	Interface	Up to 250 MB/s
	Transfer Rate	Up to 70 MB/s
	Seek Time	16 GB (15,758,000,128 Bytes) / 32 GB (31,268,536,320 Bytes)
	Logical Blocks	0 to 70
	Operating Temperature	HS400

For storage drives, GB = 1 billion bytes. Actual formatted capacity is less. Up to 8.1 GB is not user available

Technical Specifications

NETWORKING/COMMUNICATIONS

802.11a/b/g/n/ac (2x2) Wi-Fi® and Bluetooth® 4.2 Combo	Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac
	Interoperability	QCA6174A passed Google AVL tests for Wi-Fi/BT
	Frequency Band	IEEE 802.11a/b/g/n/ac (2.4GHz and 5GHz)
	Data Rates	<ul style="list-style-type: none"> •802.11b: 1, 2, 5.5, 11 Mbps •802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps •802.11n: MCS 0 ~ MCS 15, (20/40/80 MHz) •802.11ac: MCS 0 ~ MCS 9, (20/40/80 MHz), 1x1/2x2
	Modulation	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode and VHT (20/40) mode
	Security³	<ul style="list-style-type: none"> • IEEE 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. • IEEE 802.11i
	Network Architecture Models	Infrastructure (Access Point Required)
	Roaming	IEEE 802.11 compliant roaming between access points
	Output Power²	<ul style="list-style-type: none"> • 802.11b: +17dBm minimum • 802.11g: +14dBm minimum • 802.11a: +9dBm minimum • 802.11n HT20(2.4GHz): +14dBm minimum • 802.11n HT40(2.4GHz): +14dBm minimum • 802.11n HT20(5GHz): +7dBm minimum • 802.11n HT40(5GHz): +7dBm minimum • 802.11ac HT20(5GHz): +6dBm minimum • 802.11ac HT40(5GHz): +5dBm minimum • 802.11ac HT80(5GHz): +5dBm minimum
	Power Consumption	Transmit: 2.0 W (max) Receive: 1.6 W (max) Idle mode: 60 mW
	Power Management	ACPI and PCI Express compliant power management
	Receiver Sensitivity³	802.11b, 11 Mbps: -84dBm maximum 802.11g, 54 Mbps: -70dBm maximum

Technical Specifications

802.11a, 54 Mbps: -70dBm maximum
 802.11n 2.4g, HT20: -69dBm maximum
 802.11n 2.4g, HT40: -67dBm maximum
 802.11n 5g, HT20: -68dBm maximum
 802.11n 5g, HT40: -66dBm maximum
 802.11n 5g, HT20: -63dBm maximum
 802.11n 5g, HT40: -59dBm maximum
 802.11n 5g, HT80: -56dBm maximum

Antenna type	High efficiency antenna with spatial diversity, mounted in the display enclosure Two embedded 2.4 GHz antennas are provided to the card to support WLAN and Bluetooth communications (Support Dual antenna or Single antenna, depend on platform requirement)
Form Factor	PCI-Express M.2 MiniCard
Dimensions	Type 2230: 2.3 x 22.0 x 30.0 mm
Weight	Type 2230: 2.3 g
Operating Voltage	3.3 v +/- 5%
Temperature	Operating: 32° to 149° F (0° to 65° C) Non-operating: -40° to 185° F (-40° to 85° C)
Humidity	Operating: 10% to 90% (non-condensing) Non-operating: 5% to 95% (non-condensing)

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

Bluetooth Specification	4.0/4.1/4.2 Compliant
Frequency Band	2402 to 2480 MHz
Number of Available Channels	Legacy: 0~79 (1 MHz/CH) BLE: 0~39 (2 MHz/CH)
Signaling Data Rate	Legacy: 3 Mbps signaling data rate ¹ 2.17 Mbps BLE: 1 Mbps signaling data rate 0.2 Mbps 1. Actual throughput may vary.
Transmit Power	Legacy: Synchronous Connection Oriented links, 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) The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR.

1. Wireless access point and Internet service is required. Availability of public wireless access point is limited.
2. The FCC has declared as of September 1, 2014 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.
3. Check latest software/driver release for updates on supported security features.

Technical Specifications

4. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

Realtek RTL8822CE 802.11ac 2x2 Wi-Fi® + Bluetooth® 5¹	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 modules
	Frequency Band	802.11b/g/n •2.402 – 2.482 GHz 802.11a/n/ac •4.9 – 4.95 GHz (Japan) •5.15 – 5.25 GHz •5.25 – 5.35 GHz •5.47 – 5.725 GHz •5.825 – 5.850 GHz
	Data Rates	•802.11b: 1, 2, 5.5, 11 Mbps •802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps •802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps •802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz) •802.11ac : MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz & 80MHz)
	Modulation	Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM
	Security³	•IEEE and Wi-Fi certified 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

Technical Specifications

Output Power²	<ul style="list-style-type: none"> • 802.11b : +18.5dBm minimum • 802.11g : +17.5dBm minimum • 802.11a : +18.5dBm minimum • 802.11n HT20(2.4GHz) : +15.5dBm minimum • 802.11n HT40(2.4GHz) : +14.5dBm minimum • 802.11n HT20(5GHz) : +15.5dBm minimum • 802.11n HT40(5GHz) : +14.5dBm minimum • 802.11ac VHT80(5GHz) : +11.5dBm minimum 				
Power Consumption	<ul style="list-style-type: none"> • Transmit mode: 2.0 W • Receive mode 1.6 W • Idle mode (PSP) 180 mW (WLAN Associated) • Idle mode 50 mW (WLAN unassociated) • Connected Standby/Modern Standby: 10mW • Radio disabled 8 mW 				
Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode				
Receiver Sensitivity⁴	<ul style="list-style-type: none"> • 802.11b, 1Mbps : -93.5dBm maximum • 802.11b, 11Mbps : -84dBm maximum • 802.11a/g, 6Mbps : -86dBm maximum • 802.11a/g, 54Mbps : -72dBm maximum • 802.11n, MCS07 : -67dBm maximum • 802.11n, MCS15 : -64dBm maximum • 802.11ac, MCS0 : -84dBm maximum • 802.11ac, MCS9 : -59dBm maximum 				
Antenna type	High efficiency antenna with spatial diversity, mounted in the display enclosure Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications				
Form Factor	PCI-Express M.2 MiniCard				
Dimensions	<ol style="list-style-type: none"> 1. Type 2230 : 2.3 x 22.0 x 30.0 mm 2. Type 1216: 1.67 x 12.0 x 16.0 mm 				
Weight	<ol style="list-style-type: none"> 1. Type 2230 : 2.8g 2. Type 126: 1.3g 				
Operating Voltage	3.3v +/- 9%				
Temperature	<table> <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> </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)				
Humidity	<table> <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> </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)				
Altitude	<table> <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> </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)				
LED Activity	LED Amber – Radio OFF; LED OFF – Radio ON				

Technical Specifications

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

Bluetooth Specification	4.0/4.1/4.2/5.0 Compliant
Frequency Band	2402 to 2480 MHz
Number of Available Channels	Legacy : 0~79 (1 MHz/CH) BLE : 0~39 (2 MHz/CH)
Data Rates and Throughput	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)
Transmit Power	The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR.

1. Wireless access point and internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 5 (802.11 ac) is backwards compatible with prior 802.11 specs.
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

POWER

45 W PD AC adapter	Dimensions (H x W x D)	95 mm x 43 mm x 27.5 mm	
	Weight	200 g +/-10% Not including power cord. Power cord varies by country	
	Input	100 to 240 VAC	
	Input Efficiency	Average Efficiency of 25%, 50%, 75%, 100% load condition with 115Vac/230Vac Spec: 5V: 81.5% 9V: 86.7% 12V: 87.41% 15V: 87.8%	
	Input frequency range	47 ~ 63Hz	
	Input AC current	Max. 1.4 A at 90 Vac	
	Output	Output power	5V/15W 9V/27W 12V/36W 15V/45W
		DC output	5V/9V/12V/15V
		Hold-up time	5ms at 115 Vac input
		Output current limit	<5.0A by each outputs
	Connector	USB Type-C™	
	Environmental Design	Operating temperature	32°F to 95°F (0°C to 35°C)
		Non-operating (storage) temperature	-4°F to 185°F (-20°C to 85°C)
Altitude		0 to 16,400 ft (0 to 5000m)	
Humidity		20% to 95%	
Storage Humidity		10% to 95%	
EMI and Safety Certifications	CE Mark - full compliance with LVD and EMC directives Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE. MTBF - over 200,000 hours at 25°C ambient condition.		

HP 2-cell Long Life Li-Ion (47 Whr)	Dimensions (H x W x L)	5.2 x 240.8 x 76.4 mm (0.204 x 9.48 x 3 inch)
	Weight	0.19 kg (0.418 lb)
	Cells/Type	2cell Lithium-Ion Polymer cell / 4473A9
	Voltage	7.7 V
	Amp-hour capacity	6.15 Ah
	Watt-hour capacity	47.3 Wh
	Operating (Charging)	32° to 113° F (0° to 45° C)
	Operating (Discharging)	14° to 122° F (-10° to 60° C)

Technical Specifications

Warranty	1-year
Optional Travel Battery Available	No

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

Category	Description	Part Number
Cases	HP Business Slim Top Load	2SC65AA
	HP Essential Top Load Case (up to 15.6")	H2W17AA
	HP Essential Backpack (up to 15.6")	H1D24AA
	HP Reversible Neoprene Sleeve	7ZE81AA
Docking	HP USB-C Mini Dock	1PM64AA
	HP USB-C Travel Dock G2	7PJ38AA
	HP E24d G4 Advanced Docking monitor	6PA50AA
	HP E27d G4 Advanced Docking monitor	6PA56AA
Input/output	HP 3-Button Laser Mouse	H4B81AA
	HP Ultra Mobile Wireless Mouse	H6F25AA
	HP USB Optical Travel mouse	G1K28AA
	HP Essential USB Mouse	2TK37AA
	HP Slim Bluetooth Mouse	F3J92AA
	HP Slim USB KB & Mouse	T6T83AA
	HP USB-C to HDMI 2.0 Adapter	1WC36AA
	HP USB-C to DisplayPort Adapter	N9K78AA
	HP USB-C to USB 3.0 Adapter	N2Z63AA
	HP USB-C to RJ45 Adapter	V7W66AA
	HP USB-C to VGA Adapter	N9K76AA
	HP USB-C Travel Hub G2	7PJ38AA
	Stereo 3.5mm Headset	T1A66AA
Power	HP 45W Type -C Straight Type	1MZ01AA
	HP USB-C Notebook Power Bank	2NA10AA
Storage	HP External USB Optical Drive	F2B56AA
Security	HP Nano Keyed Cable Lock	1AJ39AA
	HP Sure Key Cable lock	6UW42AA

Summary of Changes

Date of change:	Version History:		Description of change:
January 22, 2020	V1 to V2	Updated	Product photo
February 21, 2020	V2 to V3	Updated	Docking Section
March 6, 2020	V3 to V4	Added	Environmental Section
March 17, 2020	V4 to V5	Updated	Accessories Section
May 23, 2020	V5 to V6	Added	Military Standards Information
September 14, 2020	V6 to V7	Updated	Audio Section
December 21, 2020	V7 to V8	Updated	Software and Security
February 22, 2021	V8 to V9	Added	New WLAN in Networking section
July 6, 2021	V9 to V10	Added	Battery disclaimer

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