

PRODUCT BRIEF

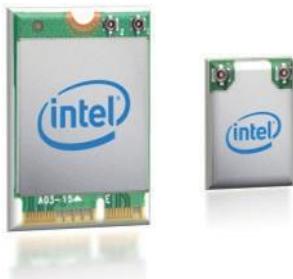
Intel® Wi-Fi 6 AX201 Module

1st Generation Wi-Fi 6 (802.11ax²) Solution



Intel® Wi-Fi 6 AX201 Module

Nearly 3X higher peak data rates and up to 4X capacity



The Intel® Wi-Fi 6 AX201 adapter is a CRF¹ (Companion RF) module designed to support the upcoming IEEE 802.11ax standard - Wi-Fi 6 technology and the Wi-Fi Alliance Wi-Fi 6² certification. The product supports 2x2 Wi-Fi 6 technology, including new features such as UL and DL OFDMA and 1024QAM, delivering data rates of up to 2.4Gbps³ and increased network capacity as well as Bluetooth® 5 support. These new features deliver a significant improvement in user experience in dense deployments, supporting fast uploads and downloads, lower latency and longer battery life compared to solutions supporting 802.11ac. Combined with Intel® Core™ processors and exceptional Intel wireless innovations, the Intel® Wi-Fi 6 AX201 module can provide Gigabit wireless speed³ and dramatically improve your connected experience at home, work, or on the go.

1ST GENERATION INTEL WI-FI 6 WIRELESS

Increased Capacity

By implementing the new 802.11ax standard, with its unique features such as OFDMA, 1024QAM, Target Wake Time (TWT) and spatial reuse, the Intel® Wi-Fi 6 AX201 module enables smooth streaming of high resolution videos, fewer dropped connections, and faster connections farther away from the router and in dense environments.

Better Coverage

When using Wi-Fi 6 technology with 1024QAM and 160MHz channels, the Intel® Wi-Fi 6 AX201 module can deliver nearly 3x higher peak data rates⁴ (up to 2.4Gbps) and up to 4x capacity improvement in dense or congested environments compared to 802.11ac⁵.

Extended Battery Life

Bluetooth® 5 provides 4x⁶ range over Bluetooth® 4.2 using the same Tx power, enabling coverage throughout the home. Bluetooth® 5 also doubles data rate speed for faster transmissions, thereby reducing the overall power consumption. Additionally, Bluetooth® 5 adds new enhanced data broadcasting, enabling seamless services such as location-based services and simpler pairing for Bluetooth® devices.

160MHz

Full support for latest Microsoft Windows 10* OS.

Form Factors (M.2 2230 and 1216)

M.2 2230 modules enable system configuration and platform usage flexibility with the use of a standard Key E socket for attaching the module.

M.2 1216 modules enable platform design optimization with the use of an Intel CNVi⁷ and Intel® Wi-Fi 6 AX201 module⁸, providing savings on motherboard space, BOM and PCIe port, plus allowing for flexible motherboard routing up to 10".

EXPERIENCE THE INTEL® DIFFERENCE

Worldwide Regulatory Support	Enables performance optimized worldwide regulatory compliance SKU. The Intel® Wi-Fi 6 AX201 module detects its location and automatically optimizes the Wi-Fi settings to local regulatory requirements, maximizing performance in each geography, simplifying travel experience and global enterprise procurement. Future regulatory changes are easily managed during the product life cycle.
Wireless Functionality in Pre-boot Environment	Support for Wi-Fi network and BLE HID connectivity in the platform's UEFI (Unified Extensible Firmware Interface) environment during its boot stage. This capability enables use cases like OS recovery over Wi-Fi and BLE-based keyboard and mouse connectivity in this pre-boot environment.
Wirelessly Project to the Big Screen	Project your 2-in-1 or laptop content instantly, without wires, on the big HD screen with stunning image clarity and sound using Wi-Fi Miracast*. Stream movies, videos, games, photos, connect with friends, and more. Experience it all, bigger and better than ever before.

BUSINESS-CLASS WIRELESS

Intel® vPro™ Technology⁹	Supports Intel's hardware-based security and management features built into Intel® Core™ vPro™ processors and chipsets that enable IT to manage PCs virtually anywhere, anytime, while reducing deployment costs, improving security and ROI.
Intel® Active Management Technology¹⁰	Using integrated platform capabilities and popular third-party management and security applications, Intel® AMT allows IT or managed service providers to better discover, repair, and help protect their networked computing assets. Intel® AMT is a feature of Intel® Core™ processors with Intel® vPro™ technology.

INTEL® WI-FI 6 AX201 TECHNICAL SPECIFICATIONS

GENERAL

Dimensions (H x W x D)	M.2 2230: 22mm x 30mm x 2.4mm [1.5mm Max (Top Side)/ 0.1mm Max (Bottom Side)] M.2 1216: 12mm x 16mm x 1.65 (+/-0.05)mm
Weight	M.2 2230: 2.33 +/- 0.3 g M.2 1216: 0.61 +/- 0.1 g
Radio ON/OFF Control	Supported
Connector Interface	M.2: CNVio2 ¹¹
Operating Temperature (Adapter Shield)	0°C to +80°C
Humidity Non-Operating	50% to 90% RH non-condensing (at temperatures of 25°C to 35°C)
Operating Systems	Microsoft Windows* 10, Linux*, Chrome OS*
Wi-Fi Alliance ¹²	Wi-Fi CERTIFIED® a, b, g, n, ac with wave 2 features, WMM*, WMM*-Power Save, WPA*, WPA2*, WPS*, PMF*, Wi-Fi Direct*, Wi-Fi Miracast*, Wi-Fi Agile Multiband*, Wi-Fi Optimized Connectivity*, Wi-Fi Location, Passpoint®, Wi-Fi Aware*, and Wi-Fi TimeSync*
IEEE WLAN Standard	IEEE 802.11-2016 and select amendments (selected feature coverage) IEEE 802.11a, b, g, n, ac, ax, d, e, h, i, k, r, u, v, w, ai; Fine Timing Measurement based on 802.11-2016
Bluetooth®	Bluetooth® 5

SECURITY FEATURES¹³

Security Methods	WPA* and WPA2* Personal and Enterprise; WPA3* (pending OS support)
Authentication Protocols	802.1X EAP-TLS, EAP-TTLS/MSCHAPv2, PEAPv0 -MSCHAPv2 (EAP-SIM, EAP-AKA, EAP-AKA')
Encryption	64-bit and 128-bit WEP, TKIP, 128-bit AES-CCMP, 256-bit AES-GCMP

COMPLIANCE

Regulatory	For a list of country approvals, please contact your local Intel representatives.
US Government	FIPS ¹⁴ 140-2, FISMA
Product Safety	UL, C-UL, CB (IEC 60950-1)

PRODUCT NAME	MODEL NUMBER	VERSION
Intel® Wi-Fi 6 AX201	AX201NGW	802.11ax ¹³ , 2x2, Bluetooth® 5, M.2 2230
	AX201D2W	802.11ax ¹³ , 2x2, Bluetooth® 5, M.2 1216
	AX201D2WL	802.11ax ¹³ , 2x2, Bluetooth® 5, M.2 1216; LTE Coex

For more information on Intel® Wireless products, visit intel.com/wireless



¹ CRF: Companion RF module in M.2 form factor.

² Wi-Fi 6 (802.11ax) WFA certification is not yet available. Intel® Wi-Fi 6 AX201 module will be delivered as a pre-certified solution.

³ Based on the theoretical maximum bandwidth enabled by 2x2 802.11ax 160MHz implementations. Actual wireless throughput and/or range will vary depending on your specific operating system, hardware and software configurations. Check with your device manufacturer for details.

⁴ "Nearly 3X higher peak data rates" Intel® Wi-Fi 6 AX claims are based on the comparison of the expected maximum theoretical data rates for similarly configured 802.11ax and standard 802.11ac Wi-Fi solutions as documented in IEEE 802.11ax draft 2.0 spec and IEEE 802.11 wireless standard specifications, and require the use of similarly configured 802.11ax wireless network routers.

⁵ In accordance with the IEEE 802.1ax PAR. For additional details visit: <https://mentor.ieee.org/802.11/dcn/14/11-14-0165-01-0hew-802-11-hew-sg-proposed-par.docx>

⁶ Bluetooth® 5 Specifications, <https://www.bluetooth.com/~/media/files/specification/bluetooth-5-faq.ashx?la=en>

⁷ CNVi; Refers to the integrated wireless IP portion residing in the Intel® SOC/PCH.

⁸ Integrated: Solution comprised of CNVi and a CRF.

⁹ Intel® vPro™ Technology is sophisticated and requires setup and activation. Availability of features and results will depend upon the setup and configuration of your hardware, software and IT environment. To learn more visit: <http://www.intel.com/technology/vpro>

¹⁰ Requires activation and a system with a corporate network connection, an Intel® AMT-enabled chipset, network hardware and software. For notebooks, Intel® AMT may be unavailable or limited over a host OS-based VPN, when connecting wirelessly, on battery power, sleeping, hibernating or powered off. Results dependent upon hardware, setup & configuration. For more information, visit <http://www.intel.com/technology/platform-technology/intel-amt>

¹¹ The CNVio signals connect the CRF module and the CNVi IP in the Intel® SoC/PCH. The CNVio protocol is Intel® proprietary.

¹² Support of Wi-Fi Alliance certifications is OS dependent

¹³ Some security solutions may not be supported by your device operating system and/or by your device manufacturer or may require additional HW (e.g UICC - SIM card). Check with your device manufacturer for details on availability.

¹⁴ On Microsoft Windows® 10

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Tests document performance of components on a particular test, in specific systems. Differences in hardware, software, or configuration will affect actual performance. Consult other sources of information to evaluate performance as you consider your purchase. For more complete information about performance and benchmark results, visit www.intel.com/benchmarks

Estimated results were obtained prior to implementation of recent software patches and firmware updates intended to address exploits referred to as "Spectre" and "Meltdown". Implementation of these updates may make these results inapplicable to your device or system.

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Cost reduction scenarios described are intended as examples of how a given Intel-based product, in the specified circumstances and configurations, may affect future costs and provide cost savings. Circumstances will vary. Intel does not guarantee any costs or cost reduction.

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