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Intel® Wi-Fi 7 BE201 (5Gig) Module

Maximize speed, latency, and reliability benefits of Wi-Fi 7 across new radio frequencies reducing legacy device interference

The Intel® Wi-Fi 7 BE201, a CRF[1] (Companion RF) adapter, is designed to support the upcoming IEEE 802.11be standard – Wi-Fi 7[2] technology and the Wi-Fi Alliance Wi-Fi 7 certification.

This Wi-Fi/ Bluetooth® module supports dual-stream Wi-Fi in the 2.4GHz, 5GHz and 6GHz bands as well as Bluetooth® 5.4[3]. These new features maximize the benefits of Wi-Fi 7, including up to 5 Gigabit speed[4], ultra-low latencies, and enhanced reliability across new radio frequencies exclusive to Wi-Fi 7 devices, and deliver a significant improvement in user experience in dense deployments, as well as extended operating range for Bluetooth® connected devices, and support for Bluetooth® LE audio.

Combined with Intel® Core™ processors and exceptional Intel® wireless innovations, the Intel® Wi-Fi 7 BE201 module can dramatically improve your connected experience at home, work, or on the go.

1st Generation Wi-Fi 7 support	
Wi-Fi 7 Tri-Band 2x2 320MHz **Greater Network Flexibility** **Accelerated Connectivity** **Increased Reliability** **Wired-like Responsiveness** **Enhanced Privacy and Security**	The Intel® Wi-Fi 7 BE201 module is designed for faster connections, improved reliability, wired-like responsiveness for better user experience, and enhanced privacy and security. Aligned with the upcoming IEEE 802.11be standard, the Intel® Wi-Fi 7 BE201 module supports these key features: 4096QAM and 320MHz channels resulting in 2.4X higher peak data rates[5], Multi-link Operation (MLO-eMLSR), Multi-resource unit (Multi-RU) and Puncturing. Legacy standards continue to be supported: Wi-Fi 4, 5, 6, and Wi-Fi 6E, including Wi-Fi 6 R2 features.
Bluetooth® 5.4	Experience audio like never before with Intel® Wi-Fi 7 BE201 Bluetooth® LE technology. Our cutting-edge audio devices provide seamless connectivity, exceptional sound quality, and extended battery life. Immerse yourself in your favorite music and calls without compromise. Elevate your audio experience with the power of Bluetooth LE, setting new standards for wireless enjoyment.
Microsoft* Windows*	Full support for the latest Microsoft* Windows 11* 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 optimizations providing savings on motherboard space and BOM.

Experience the Difference with Intel® Technology

Worldwide Regulatory Support **Dynamic Regulatory Solution**	Enables performance-optimized worldwide regulatory compliance SKU. The Intel® Wi-Fi 7 BE201 module detects its location and automatically optimizes the Wi-Fi settings to local regulatory requirements in most countries worldwide, 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 Bluetooth® Low Energy 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 Bluetooth® Low Energy-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.

Business-Class Wireless

Intel® vPro® Technology[6]	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.
Engineered for Intel® Evo™ vPro® Laptops Accessory Program	The Engineered for Intel® Evo™ laptop accessory program meets strict Intel requirements to provide great experiences that include seamless connectivity and reliability when paired with Intel® Evo™ laptops. Certified accessories by industry-leading third-party vendors include Bluetooth Headsets, Bluetooth mice and keyboards, and Wi-Fi Access Points (Routers).

Intel® Wi-Fi 7 BE201 Module Technical Specifications

GENERAL

Dimensions (H x W x D)	M.2 2230: 22mm x 30mm x 2.42mm (max) M.2 1216: 12mm x 16mm x 1.7 (+-0.1) mm
Weight	M.2 2230: 3.06+/-0.14g M.2 1216: 0.73+/-0.02g
Radio ON/OFF Control	Supported
Connector Interface	M.2: CNVio3 [7]
Operating Temperature (Ambient)	0°C to +50°C
Humidity Non-Operating	50% to 90% RH non-condensing (at temperatures of 25°C to 35°C)
Operating Systems	Microsoft* Windows 11*, Microsoft* Windows 10*, Linux*
Wi-Fi Alliance[8]	Wi-Fi 7 Technology support, Wi-Fi CERTIFIED* 6 with Wi-Fi 6E, Wi-Fi CERTIFIED* a/b/g/n/ac, WMM*, WMM*-Power Save, WPA3*, PMF*, Wi-Fi Direct*, Wi-Fi Agile Multiband*, Wi-Fi Location R2 HW readiness[9]
IEEE WLAN Standard	IEEE 802.11-2020 and select amendments (selected feature coverage) IEEE 802.11a, b, d, e, g, h, i, k, n, r, u, v, w, ac, ax, be; Fine Timing Measurement based on 802.11-2016, 802.11az HW readiness
Bluetooth®	Bluetooth® 5.4 (Ant. 1)

SECURITY FEATURES[10]

Security Methods	WPA3* personal and enterprise including WPA2* transition mode
Authentication Protocols	802.1X EAP-TLS, EAP-TTLS/MSCHAPv2, PEAPv0 -MSCHAPv2 (EAP-SIM, EAP-AKA, EAP-AKA')
Encryption	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[11]140-3
Product Safety	UL, C-UL, CB (62368-1)

Product Name	Model Number	Version
Intel® Wi-Fi 7 BE201	BE201NGW BE201D2W	Wi-Fi 7, 2x2, Bluetooth® 5.4, M.2 2230 Wi-Fi 7, 2x2, Bluetooth® 5.4, M.2 1216

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

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

[2] Wi-Fi 7 (802.11be) WFA certification is not yet available. Intel® Wi-Fi 7 BE201 module will be delivered as a pre-certified solution.

[3] Name and features might change based on Bluetooth SIG direction

[4] "5 Gbps Wi-Fi 7 2x2 client speed" - is based on the current draft of the 802.11be specification, which specifies the theoretical maximum data rate for a 2x2 device that supports 320 MHz channels in the 6GHz band, with a 4096 QAM modulation is 5.76 Gbps. Based on an industry-standard efficiency assumption, the resulting estimated maximum over-the-air 2x2 client UDP throughput speed would be 5 Gbps

[5] "2.4X higher peak data rates" Intel® Wi-Fi, 7 BE201 claims, are based on the comparison of the expected maximum theoretical data rates for similarly configured single radio Wi-Fi 7 (802.11be) and standard Wi-Fi 6 (802.11ax) Wi-Fi solutions as documented in current IEEE 802.11be spec and IEEE 802.11 wireless standard specifications and require the use of similarly configured 802.11be wireless network routers.

[6] 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.

[7] The CNVio signals connect the CRF module and the CNVi IP in the Intel SoC/PCH. The CNVio protocol is Intel proprietary.

[8] Support of Wi-Fi Alliance certifications is OS-dependent.

[9] IEEE 802.11az hardware readiness per expected Wi-Fi Location R2 feature support and based on draft 2.1 of the IEEE802.11az amendment and is subject to change.

[10] Some security solutions may not be supported by your device operating system and/or by your device manufacturer or may require additional hardware (e.g., UICC – SIM card). Check with your device manufacturer for details on availability.

[11] Pre-certified