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Wi-Fi 6 Solution for Home Networks

Intel's 6th Generation Wi-Fi Chipset based on the 802.11ax standard

Wi-Fi 6, based on the 802.11ax standard, is the next major advancement in Wi-Fi technology and will increase network efficiency, deliver faster throughput, and improve coverage in dense environments. Intel is offering Wi-Fi 6 chipsets for home Wi-Fi routers, gateways, and intelligent range extenders in cable, xDSL, fiber, and consumer retail infrastructure, which are designed to deliver both fast and consistent connectivity.

The Intel® Home Wi-Fi Chipset WAV600 Series is designed to Draft 3.0 of the IEEE 802.11ax standard, supports Gigabit Wi-Fi, is future proofed for Wi-Fi 6 clients, and provides the ability to connect up to 256 clients simultaneously, enabling a high-quality user experience for a growing number of connected devices in the home. The Wi-Fi chipsets are optimized for the Intel® AnyWAN™ SoCs and the Intel® Puma™ 7 Family to fully offload the wireless traffic with zero CPU utilization. This frees up the CPU performance for advanced services such as security, analytics, photo/video hosting, and parental controls while delivering a consistent user experience.

Speed: Gigabit Wi-Fi

Gigabit Wi-Fi makes it possible to connect, stream, and download faster. Routers and gateways based on the Intel Home Wi-Fi Chipset WAV600 Series can deliver Gigabit Wi-Fi speeds today to PCs based on 8th Generation Intel® Core™ processors with integrated Gigabit Wi-Fi. They are also future proofed for PCs with Intel® Wi-Fi 6 (Gig+) for the next generation of Gigabit Wi-Fi that will enable high-quality user experiences.
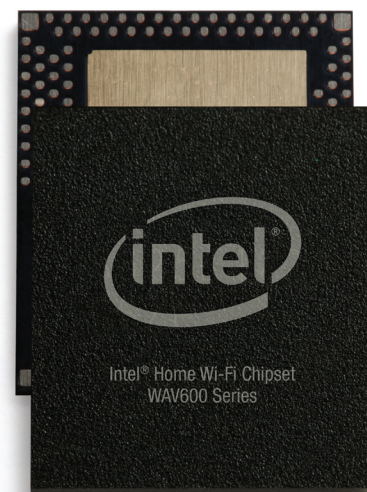
Performance: Improved speed and network efficiency in dense environments

Designed to Draft 3.0 of the IEEE 802.11ax standard, the WAV600 Series delivers speeds up to 4.8 Gbps in the 5 GHz band and 1.14 Gbps in 2.4 GHz band. It offers support for key features, such as 160Mhz, OFDMA (uplink and downlink),

MU-MIMO, Target Wake Time (TWT), 4x Symbol Duration, spatial reuse/BSS Coloring, and higher modulation (1024 QAM), thereby improving network performance and efficiency. The WAV600 Series is also engineered to deliver enhanced throughput rates for a mix of small and large packet sizes. This helps ensure optimal performance for devices and low latency for applications like gaming, video, and voice calls.

Scalability: More bandwidth for clients

Consumers are connecting a growing number of devices in the home. The WAV600 Series can handle this increase, with the ability to support up to 256 clients simultaneously and optimize each transmission to enhance the total network efficiency. The combination of wireless functionality offload, robust interference rejection through the use of advanced radio frequency technology, and various algorithms for airtime fairness, intelligent band steering technologies, and intelligent queue management enable high-quality user experiences when there are simultaneous video and data transmissions to and from clients.

Technical Specifications

Dimensions (WxD)	15 mm x 16 mm MRQFN 244 package
Digital Technology	Enhanced maximum likelihood, LDPC, STBC (2x1), Beamforming, OFDMA, 1024 QAM (MCS 10-11), MU-MIMO, Target Wake Time (TWT), BSS Coloring, and Spatial Reuse
Full CPU Offloading	Supported for Intel® AnyWAN™ SoC GRX350 and GRX550; Intel® Puma™ 7 Family
Connectivity	Supports up to 256 clients and 32 virtual access points per radio, WDS 4 address mode access point-client support, and multiple client modes (WDS, L2NAT, WISP)
Interface	PCIe* Gen3/Gen2 (support for both 1 and 2 lines)
Operating Temperature (Adapter Shield)	0° to +70° C
Operating Systems	Supports Linux Kernels 3.X and 4.X. Software packages enabling both Open-WRT (UCI) and RDK-B alignment
Wi-Fi Alliance	Wi-Fi Alliance CERTIFIED a/b/g/n/ac, with plans for Wi-Fi CERTIFIED 6
IEEE WLAN Standard	IEEE 802.11abgn, 802.11ac, 802.11d, 802.11e, 802.11i, 802.11h, 802.11w, 802.11ax
Roaming	Roaming software support for 802.11k/v/r/ai and band steering
Dynamic Bandwidth	Supported on per-packet basis
Zero Wait Dynamic Frequency Selection (ZWDFS)	Supports ZWDFS

Security

Authentication	WPA2 & WPA3 including support for Wi-Fi Easy Connect™, 802.1x (EAP-TLS, TTLS, PEAP, LEAP, EAP-FAST), EAP-SIM, EAP-AKA
Encryption	64-bit and 128-bit WEP, TKIP, CCMP-128, CCMP-256, GCMP-128, GCMP-256
Management Frame Protection	802.11w (WFA-Protected Management Frames)

Compliance

Government	FCC Section 15 relevant chapters, latest ETSI EN 300 328, and EN 301 893

Product	Description	Package
WAV654	802.11ax concurrent dual-band 2+2 (5 GHz + 2.4 GHz) up to 3 Gbps PHY rate at 160 MHz	MRQFN 15 mm x 16 mm
WAV624[a]	802.11ax 5 GHz 4x4 up to 4.8 Gbps PHY rate	MRQFN 15 mm x 16 mm
WAV614[a]	802.11ax 2.4 GHz 4x4 up to 1.14 Gbps PHY rate	MRQFN 15 mm x 16 mm

Both 2x2 (2 spatial stream) and 3x3 (3 spatial stream) variants are available.

For more information on Wi-Fi 6, visit **intel.com/wifiax.**

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