MAXLINEAR

6th Generation Wi-Fi Chipset for Wi-Fi 6 and 6E Based on 802.11ax

PRODUCTS

WAV615	up to 1.14Gbps PHY Throughput, 2.4GHz
WAV665	up to 4.8Gbps PHY Throughput, 5-6GHz

FEATURES

- IEEE 802.11ax Compliant
- Wi-Fi Alliance™ Wi-Fi 6, 6E, & 6 Release 2 Certified
- Up to 160MHz
- Up to Four Spatial Streams

BENEFITS

- Faster Uploads
- Increased Network Capacity
- Extends Range of Client Connectivity
- Helps to Extend Battery Life of Clients

APPLICATIONS

- Service Provider Gateways
- Routers, Access Points, Extenders & Repeaters

Faster Uploads: Saves Time

Clients uploading large files to the cloud including: Ultra 4K or 8K video; data backups; or pictures, can be finished in a fraction of the time.

Increased Network Capacity

Wi-Fi Chipset WAV600 Series-2 enables features that allow networks to efficiently utilize the spectrum thereby freeing up airtime to add more data and applications.

Extends Range: Get Coverage at the Edge

Clients can now extend coverage to the edge of the home enabling communication to far away IoT devices such as water sprinklers and garage door openers.

Improved Client Power Savings: Extends Battery Life

Battery operated clients may experience extended operational time when communicating on WAV600 Series-2-based networks.

MaxLinear's 6th Generation Wi-Fi Chipset Series-2 delivers on the major features of the 802.11ax standard which further increases the reach, network capacity per user, and battery life of connected client devices. The Wi-Fi 6 Series-2 chipset is designed to deliver both fast and consistent connectivity in home Wi-Fi routers, gateways, and intelligent range extenders for cable, xDSL, fiber, and consumer retail infrastructure.

This Home Wi-Fi WAV600 Series-2 Chipset is designed to the IEEE 802.11ax standard to support Gigabit Wi-Fi. The new chipset is future-proofed for Wi-Fi 6 clients, providing the ability to connect up to 256 clients simultaneously and enabling a high-quality user experience for a growing number of connected devices in the home.

The chipset is optimized for MaxLinear's AnyWAN™ URX and Puma™ 7 Family SoCs 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.

WAV600 Series-2 Wi-Fi Chipset

Retains all WAV600 Chipset Benefits

Performance: Improved speed and network efficiency in dense environments

The WAV600 Series delivers speeds up to 4.8Gbps in the 5GHz band and 1.14Gbps in 2.4GHz 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.
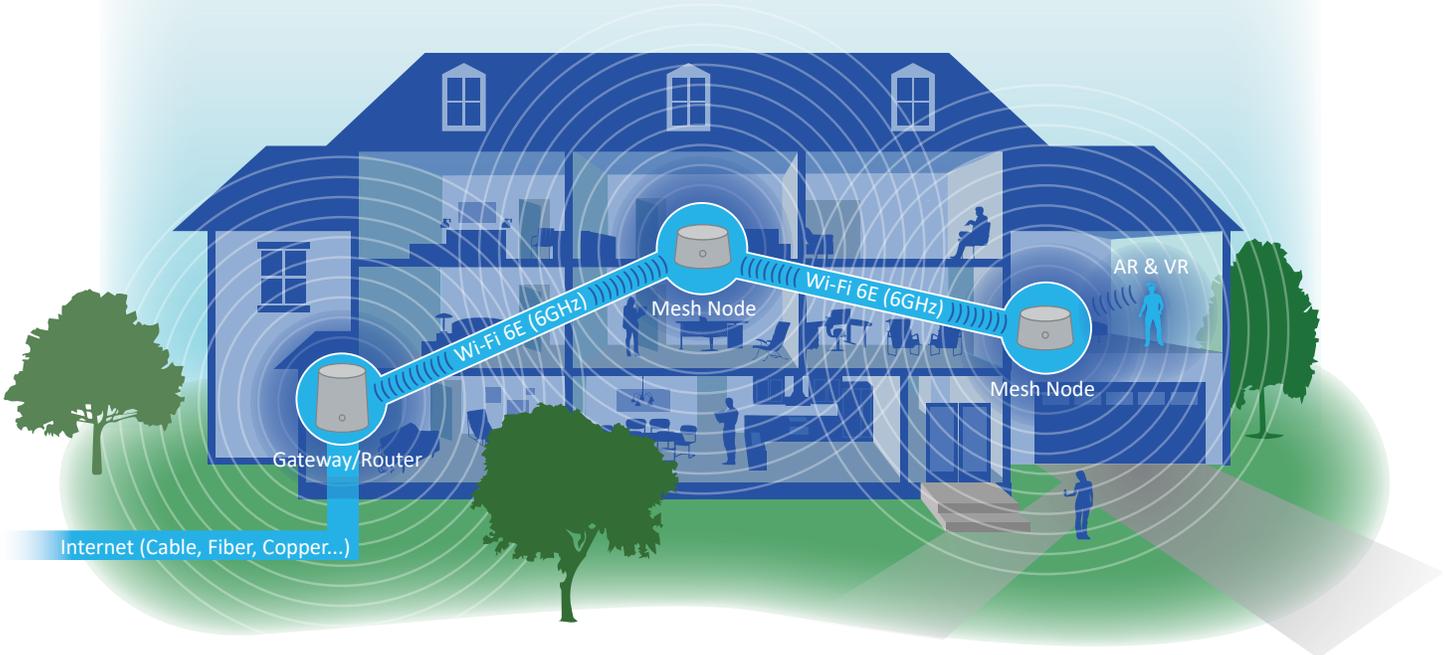
WAV600 Series-2 Enables Next-Gen Platforms

Ensures faster uploads for Video Streaming and Gaming

The WAV600 Series-2 enables UL-MUMIMO which allows multiple STAs to upload content simultaneously, enabling overall better network performance and user experience especially for gaming, video calling, video conferencing and streaming applications.

Improves Network Performance

In addition to delivering speeds up to 4.8 Gbps, the WAV600 Series-2 further improves performance through support of several novel Wi-Fi Certified 6 Release 2 features:

- Preamble puncturing which allows enhanced network access in the presence of narrow-band interferers
- M-BSSID which reduces management and signaling overhead when supporting multiple networks (BSS)

Improves Battery Life for Mobile Clients

The WAV600 Series-2 supports new low power and sleep mode enhancements, including the new Wi-Fi Certified 6 Release 2 feature Target Wake Time (TWT), Broadcast Target Wake Time and Extended Sleep Time which allows for more optimized sleep/wake schedules for power-critical devices.

Extends Range for IoT clients

The WAV600 Series-2 supports the Uplink Extended Range capability defined in Wi-Fi Certified 6 Release 2 that ensures outdoor station (STA) connections are maintained over a longer distance from an access point and delivers improvements that provide increased coverage in dense, congested environments such as high-rise dwellings (MDUs).

Technical Specifications

Dimensions	12mm x 17mm x 1.35mm PG-LFBGA 388 (W x L x H)
Digital Technology	Enhanced maximum likelihood, LDPC, STBC (2 ×1), Beamforming, Mu-MIMO (UL and DL), Preamble Puncture, Key power save features for clients [eg: Broadcast Target Wake Time & TWT Info frames], Range extension, OFDMA, 1024 QAM (MCS 10-11), BSS Coloring, and Spatial Reuse. Supporting 4 × 5 Rx for improved range and sensitivity.
Full CPU Offloading	Optimized for AnyWAN™ SoCs ((URX851, URX850, URX651)) and Puma™ 7 Family SoCs to fully offload the wireless traffic with zero CPU utilization
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 4.x to 5.x software packages enabling both Open-WRT (UCI) and RDK-B alignment
Wi-Fi Alliance	Wi-Fi Alliance CERTIFIED a/b/g/n/ac, Wi-Fi CERTIFIED 6R2 & 6E
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 through EasyMesh™ standards
Zero Wait Dynamic Frequency Selection (ZWDFS)	Supports ZWDFS with WAV665 (Operate 665 dynamically as 4+1: Take one Rx chain to scan for DFS while keeping 5GHz in 4×4)
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, 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, EN 301 893, and EN 303 687

Product Information

Product	Description	Ordering Code	Package
WAV665	802.11ax 5-6GHz (up to UNI8) 4 ×5 up to 4.8Gbps PHY rate	99B065	PG-LFBGA-388 12mm x 17mm x 1.35mm (W x L x H)
WAV615	802.11ax 2.4GHz 4 ×4 up to 1.14Gbps PHY rate	99B015	

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

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