WAV664 Wi-Fi 6E SoC

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

PRODUCT

WAV664   Up to 4.8Gbps PHY Throughput

FEATURES

- IEEE 802.11ax Compliant
- Wi-Fi Alliance™ Wi-Fi 6E Certified
- Supports Operation in 6GHz Spectrum from U-NII-5 to U-NII-8
- Up to 160MHz
- Up to Four Spatial Streams

BENEFITS

- Multi-Gigabit Wi-Fi
- Improved Speed and Network Efficiency in Dense Environments
- Supports up to 256 Clients Simultaneously
- Supports High-Speed & Lower-Latency Applications

APPLICATIONS

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

Enables Wi-Fi 6E for Faster & Improved Connected Experiences

MaxLinear's WAV664 Home Wi-Fi SoC offers fast and consistent connectivity for Wi-Fi 6E devices on the 6GHz spectrum in routers and gateways as well as intelligent range extenders in cable, xDSL, fiber and consumer retail infrastructure.

Wi-Fi 6E, based on the 802.11 Wi-Fi Alliance standard, supports Wi-Fi 6 in the extended Wi-Fi spectrum that offers an additional 1200MHz in a new 6GHz band. The 6GHz spectrum opens seven contiguous 160MHz channels for bandwidth intensive applications and more consistent latency reductions. Compared to today's dense 5GHz environment, the new band offers improved network efficiency to deliver faster throughput and expanded coverage.

The WAV664 and other products in the Wi-Fi WAV600 Chipset Series are optimized for AnyWAN™ SoCs and the Puma™ 7 Family SoCs to fully offload 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.

6GHz: Greenfield Wi-Fi Spectrum

Unlike 2.4GHz and 5GHz bands, the 6GHz spectrum is purpose built for operation by 802.11ax access points and devices. With no backward compatibility or coexistence requirements with Wi-Fi legacy devices (802.11a/n/ac), the cleaner spectrum operates with less interference and reduced protocol overhead for increased data rates.

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Speed: More Gigabit Wi-Fi with Increased Capacity

Gigabit Wi-Fi enables faster connections, streaming, and downloads. Routers and gateways based on the WAV664 are future proofed to deliver gigabit Wi-Fi speeds to enable higher-quality user experiences for applications in Ultra HD, 4k and 8k video streaming.
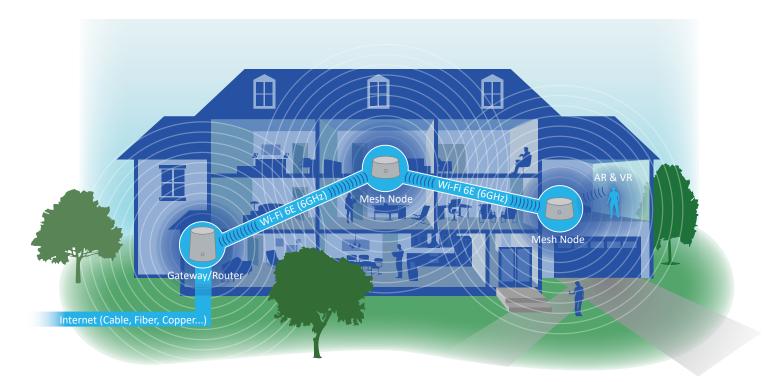
Improved Latency

By eliminating channel contention with legacy devices (802.11ac and older), the 6GHz spectrum delivers the full promise of latency reducing features in Wi-Fi 6. The enhanced band clarity supports more reliable low latency for enhanced application experiences such as voice and video calling, cloud gaming and AR/VR.

Retains all Benefits of WAV600 Chipset Series

The WAV664 SoC delivers speeds up to 4.8Gbps in the 6GHz band, based on Wi-Fi 6E technology. It expands on Wi-Fi 6 capabilities in the 5GHz band with a total of nine 160MHz channels for improved network performance and efficiency from key Wi-Fi 6 features such as OFDMA (uplink and downlink), DL MU-MIMO, Target Wake Time (TWT), 4x symbol duration, spatial reuse/BSS coloring, and higher modulation (1024 QAM).

Consumers are connecting a growing number of devices in the home. The WAV664 SoC handles this with support for up to 256 clients simultaneously and optimized transmission on each device for enhanced total network efficiency.

Technical Specifications

Dimensions	12mm x 17mm x 1.35mm PG-LFBGA 388 (W x L x H)
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	Optimized for AnyWAN™ SoCs (GRX350, GRX550) 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 3.x and 4.x software packages enabling both Open-WRT (UCI) and RDK-B alignment
Wi-Fi Alliance	Wi-Fi Alliance CERTIFIED a/n/ac, Wi-Fi CERTIFIED 6 & 6E (6E certification available 2021)
IEEE WLAN Standard	IEEE 802.11a, 802.11n, 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)	No
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, and EN 301 893

Product Information

Product	Description	Package
WAV664	802.11ax 5-6 GHz (up to UNI8) 4x4 up to 4.8 Gbps PHY rate	PG-LFBGA-388 12mm x 17mm x 1.35mm (W x L x H)

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

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