Qualcomm Dragonwing™ N8 Platform

Bring next-generation wireless connectivity to a broad range of deployments with advanced Wi-Fi 8 performance.

The Dragonwing N8 Platform is a versatile Wi-Fi 8 networking solution built for home routers, mesh systems, and enterprise and SMB access points, enabling the latest Wi-Fi 8 PHY and MAC enhancements, advanced radio configurations, and reliable multi-client performance to support consistent connectivity across residential and business environments.

Designed for broad adoption of Wi-Fi 8, the Dragonwing N8 Platform enables OEMs and service providers to deliver next-generation connectivity with advanced performance, efficiency, and design simplicity across residential and enterprise environments.

Ordering Information

Product / Part Number
Dragonwing N8 Platform / IPQ52

Highlights

Next-Level Wi-Fi 8 Performance

Designed to elevate core Wi-Fi 8 capabilities, the Dragonwing N8 Platform adds system-level enhancements beyond the standard feature set, including advanced 5x5 radio systems that strengthen mesh backhaul performance across the network and support sustained throughput for connected clients. Latency and responsiveness improve under load through advanced coordination features and an optimized processing pipeline, helping maintain consistent performance even during peak usage. Intelligent power optimization modes preserve full Wi-Fi 8 speed, range, and reliability while reducing overall power draw.

Designed for Flexible Deployments

The Dragonwing N8 Platform is designed to support flexible wireless configurations from dual-band to tri-band Wi-Fi 8 for a wide range of deployments. This versatility allows the platform to scale from compact mesh nodes to home routers and enterprise access points, adapting to different coverage, capacity, and form factor needs while simplifying platform reuse across multiple product designs.

Developer-Ready, Integrated Platform

A unified software and hardware architecture streamlines integration by combining networking, compute, Wi-Fi 8 radios, and RF Front End with a silicon-to-cloud software stack. Consistent APIs, service frameworks, and telemetry shorten development cycles and simplify feature delivery.

Qualcomm Dragonwing

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Target Applications

- Home Routers and Residential Gateways
- Mesh Nodes and Whole-Home Mesh Systems
- Enterprise and SMB Access Points

Features

- 802.11bn* PHY/MAC feature set
- Up to tri-band operation with support for antenna configurations with up to 14 antennas
- Up to 23 Gbps** peak wireless capacity with support for up to 750 simultaneous clients
- Flexible radio configuration with 5x5 or split into dual band simultaneous 2x2 + 3x3
- Dedicated scan radio for automatic channel selection (ACS), radar (DFS), and proactive interference avoidance
- Support for Wi-Fi locationing (802.11az/bk) and Wi-Fi sensing (802.11bf)
- Dragonwing Automatic Frequency Coordination (AFC) Suite Artificial Intelligence
- Quad-core CPU
- Eco Adaptive Mode enables significant energy savings during low-activity periods while maintaining responsiveness and returning to full performance seamlessly as traffic increases
- OEM-tunable power profiles
- End-to-end QoE enablement with WAN-to-WLAN and WAN-to-LAN QoS management and Telemetry APIs
- Software-defined datapath with open-source and middleware support (prplOS, OpenWRT, RDK, OpenSync)
- Easy integration of IoT applications through platform extensions and coexistence interfaces
- Security options: crypto engine
- Carrier-grade Packet Processing Engine with advanced tunneling capacity

* Planned compliance with IEEE 802.11bn based on draft specifications.

Specifications

Dragonwing N8 Platform	
CPU	**Cores:** Quad-core
	Clock Speed: Up to 1.4 GHz
Wi-Fi	**Peak PHY Rate:** Up to 23 Gbps**
	Generation: Wi-Fi 4, 5, 6, 6E, 7, 8
	Standards: 802.11a/b/g/n/ac/ax/be/bn
	Spectral Bands: 6GHz, 5GHz, 2.4GHz
	Maximum Band Configuration: Tri-Band
	Channels: Up to 320MHz
	Number of Antennas: Up to 14 (5x5 and 2x2 + 3x3 radio options)
	Peak QAM: 4K QAM
	Encryption: AES-CCMP, AES-GCMP
	Security: WPA3 Enhanced Open, WPS, WPA2, WEP, TKIP, PRNG, WAPI2, WAPI1, 802.11i security, WPA3 Personal, WPA3 Enterprise, WPA3 Easy Connect
Wi-Fi Features	Up to 750 users Up to 8 user DL/UL OFDMA per radio Up to 4 user DL/UL MU-MIMO per radio Advanced Scan radio
	802.11bn PHY/MAC enhancements: Intermediate MCS, Improved LDPC, Distributed RU, UEQM, ELR, Multi-Primary Operation (DSO/NPCA), Device Unavailability Operation (DUO), AP Periodic Unavailability Operation (PUO), L4S
	Multi-AP coordination: Co-TDMA, Co-RTWT, Co-SR, Co-BR, SMD Roaming, Dynamic Bandwidth Expansion (DBE)
Ethernet	**Number of Ports:** 6
	Ports: 2x 10GE, 4x 2.5GE (or 2x 10GE + 1x 2.5GE + 3x 1GE)
Memory	**Type:** DDR3L, DDR4
	Bit Width: 16-bit
Flash	**Type:** eMMC, NAND, NOR
	Interface: Serial
SoC Interfaces	**Ethernet SerDes:** 1x USXGMII-M (10G) + 2x USXGMII (2x10G)
	PCIe SerDes: 1x 2L PCIe G3, 1x 1L PCIe G3
	USB: 1x USB 3.0
	Voice: SLIC PCM
	GPIO: UART/SPI/I2C/SDIO/GPIO
	Platform Extensions: 4G/5G FWA, 802.15.4 (Zigbee/Thread), Bluetooth® technology
AI	Platform Extension: Dragonwing Network AI Module

** Performance claims refer to maximum physical layer (PHY) performance.

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