Qualcomm Dragonwing™ F8 Platform

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

The Dragonwing F8 Platform is a versatile fiber broadband networking solution that integrates Wi-Fi 8 connectivity with native support for Passive Optical Network (PON) architectures. Built for residential and small business gateways, it enables the latest Wi-Fi 8 PHY and MAC enhancements, advanced radio configurations, and reliable multi-client operation across residential and business environments.

Designed for broad adoption of Wi-Fi 8, the Dragonwing F8 Platform provides a foundation for next-generation connectivity with advanced performance, efficiency, and design simplicity. Support for both home gateway unit (HGU) and single-family unit (SFU) configurations enables deployment across diverse fiber network topologies and service models.

Ordering Information

Product / Part Numbers
Dragonwing F8 Platform / QCF32, QCF22

Highlights

Next-Level Wi-Fi 8 Performance

Designed to elevate core Wi-Fi 8 capabilities, the Dragonwing F8 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.

Purpose-Built Fiber Broadband Architecture

Purpose-built for fiber broadband gateways, the Dragonwing F8 Platform supports GPON, XG-PON, and XGS-PON, enabling deployment across current and next-generation fiber networks. Flexible WAN and LAN configurations accommodate home gateway unit (HGU) designs while extending to single-family unit (SFU) deployments to address a wide range of fiber network topologies and service models with reduced system complexity.

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.

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Target Applications

- Home Gateway Unit (HGU) Fiber Gateways
- Single-Family Unit (SFU) Fiber Gateways
- Residential Fiber Broadband Customer Premises Equipment (CPE)
- Small Business Fiber Access Gateways

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
- Supports XGS-PON, XG-PON, and GPON standards

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

Specifications

Dragonwing F8 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:** 5
	Ports: 1x 10GE, 1x 2.5GE, 3x 1GE (or 1x 10GE + 4x 2.5GE)
Passive Optical Network	**Standards:** ITU-T G.984.3 GPON, G.987.3 XG-PON, ITU-T G.9807.1 XGS-PON
	Peak Upstream/Downstream Rate: 10Gbps
	Deployment Types: SFU (QCF22), HGU (QFC32)
Memory	**Type:** DDR3L, DDR4
	Bit Width: 16-bit
Flash	**Type:** eMMC, NAND, NOR
	Interface: Serial
SoC Interfaces	**Ethernet SerDes:** 1x USXGMII-M (10G), 1x USXGMII (10G)
	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

Note: Feature availability and specifications vary by platform configuration. The QCF22 configuration is intended for single-family unit (SFU) applications and supports a subset of platform specifications.

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

To learn more visit: qualcomm.com

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