



Peregrine FE1-2255X

Features / Benefits / Value

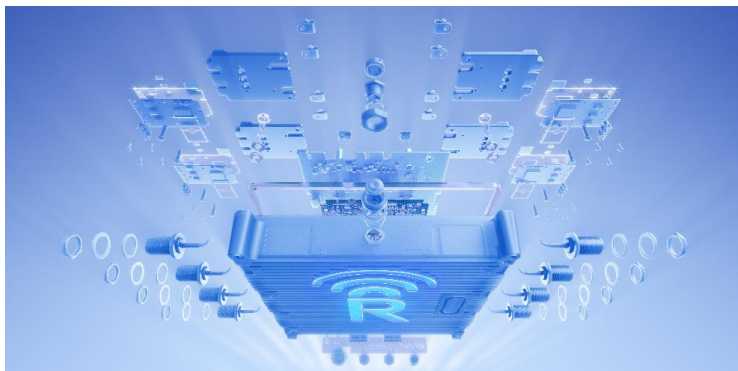
Introducing Rajant's FE1-2255X Peregrine our most advanced Wi-Fi 6 BreadCrumb®, designed for high-performance networking at the intelligent edge. With faster speeds, greater uplink capacity, and lower latency, Peregrine supports more devices and real-time applications with ease. Its rugged, secure design and backward compatibility make it an ideal upgrade, helping customers simplify operations.



Description

The FE1-2255X Peregrine is a high-performance, quad-radio, industrial-grade AX Wi-Fi standard BreadCrumb®, built for intelligent edge networking. By combining Rajant's patented **InstaMesh®** protocol with **Kinetic Mesh® networking**, Peregrine delivers resilient, high-capacity data transport in real time, supporting critical applications such as video streaming, LiDAR, robotics, and machine learning. Peregrine delivers higher throughput, enhanced security, and ultra-low latency through 1024QAM, *160 MHz channels, and hardware acceleration.

This next-generation platform brings the speed and flexibility needed to support modern edge applications from video and LiDAR processing to robotics and machine learning, while offering the performance and scalability required for today's growing remote and autonomous operations. Backward compatible and rugged by design, Peregrine makes upgrading simple, helping organizations future-proof their networks and save time and resources along the way.



Key Features

Speed Boost with AX

Substantial performance improvement over AC technology, especially in congested 2.4 GHz environments, enabling faster and more reliable operations.

*Mu-MIMO Uplink Capacity

Supports simultaneous multi-user transmissions both ways, enhancing efficiency for data-heavy applications and high-density deployments.

Spectral Efficiency with 1024 QAM

Delivers higher throughput over the same bandwidth, optimizing channel use and boosting capacity in challenging environments.

High-Powered Performance

Handles bandwidth-hungry uplink tasks like HD video, sensor data, and telemetry from autonomous systems with ease.

Real-Time Performance & Seamless Integration

Delivers ultra-low latency for mission-critical responsiveness, while remaining backward compatible with your existing Rajant infrastructure—no rip-and-replace required.

High Data Throughput & Expanded Bandwidth

Achieve up to 3.5 Gbps combined data rate with support for *160 MHz DFS-enabled channels—ideal for applications demanding high bandwidth and uninterrupted performance.

Value Proposition

Cut Downtime by 40%

Achieve greater uptime with Rajant's low-latency, high-reliability mesh networking—keeping mission-critical operations online even in the harshest conditions.

Speed Up Deployments by 60%

Take advantage of backward compatibility and flexible interfaces to drastically reduce setup and expansion time across dynamic industrial environments.

Boost Autonomous Utilization by 35%

Ensure consistent performance of autonomous equipment with Rajant's resilient, mobile mesh—ideal for dense or obstructed job sites.

Lower Maintenance Cost by 20%

Leverage edge intelligence to power predictive maintenance, catching issues early and reducing operational expenses.

Eliminate Coverage Gaps

Rajant's self-healing mesh adapts in real time, reducing manual interventions and ensuring seamless performance in complex or rugged sites.

Problems Solved (Benefits)

- ***Mu-MIMO** allows users to transmit and receive multiple data streams simultaneously, improving performance and delivering a smoother experience with their applications.
- **Enhanced uplink capability** increases the efficiency of the network by enabling more content to flow upstream and off the mesh, supporting richer applications and collaboration.
- **Greater spectral efficiency** is achieved with 1024 QAM, making it possible to support dense deployments of equipment without sacrificing performance.
- **High transmit power at 1W** enables stronger, long-distance links, ensuring reliable communication across wide areas.
- **DFS-enabled *160 MHz channels** boost available bandwidth while reducing channel reuse in high-density environments, resulting in better overall capacity and performance.

Advancing your Rajant network or deploying your first network? The Peregrine FE1-2255X is your answer.

Existing BreadCrumb® users gain a seamless upgrade path to standard AX Wi-Fi performance without disrupting current operations.

New customers get proven Rajant reliability with cutting-edge capabilities from day one.

The result: unmatched speed, bandwidth, and resilience for mission-critical edge applications, plus the confidence that your infrastructure is ready for autonomous, data-driven workflows.

Key Differentiators

- **Real-time data transfer** enables continuous operation of tele-remote and autonomous systems, preventing costly delays in mining and construction environments.
- **Higher spectral efficiency** (1024QAM) and wider DFS-enabled channels (*160 MHz) support more data with fewer devices, lowering capital and operational expenses in large-scale deployments.
- **Backward compatibility** with existing Rajant systems and multiple options for power and data connections, streamline deployment in evolving industrial environments such as ports and construction sites.
- **High uplink capacity** and support for edge analytics allow faster insights from sensor data, leading to smarter maintenance decisions and fewer emergency repairs.
- **High receiver sensitivity** and 1W transmit power ensure long-distance wireless links even in difficult and changing conditions, enhancing worker safety and operational efficiency.

** **Note:** Mu-MIMO and 160 MHz channel features will be provided in a forthcoming firmware release.*

Get the edge over other fault-tolerant networking options.

Discover how Rajant can help you stay connected—no matter how your team operates. Our technology means Reliability, Redundancy, and Resiliency. Learn more about Rajant's one-of-a-kind technology at www.rajant.com

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