Rajant Sparrow BreadCrumb®

Portable Wireless Mesh Network Node

The Rajant Sparrow is an IP67 Kinetic Mesh® network device intended for use in harsh environments on everything from heavy-duty machinery to light-duty vehicle applications. The Sparrow is ideal for non-autonomous tele-remote construction and mining applications. This portable mesh network node contains two transceivers with up to four external antenna ports and provides Ethernet and Wi-Fi access point interfaces to enable data, voice, and low-bandwidth video applications. Housed in an environmentally robust metal case, the Sparrow provides operational ruggedness, outstanding shock and vibration characteristics, and a wide-range temperature rating.

Rajant Sparrow BreadCrumb Key Features

- Combines Kinetic Mesh backhaul, Wi-Fi access and layer 2 switching across interfaces in a single device
- Outdoor-rated:
    - -40°C to +70°C (-40°F to 158°F) temperature range
    - IP67 rating for protection against dust and water ingress
- Rajant's InstaMesh® networking software, enables the network to quickly adapt to rapidly-deployed and quickly or constantly moving network elements
- 2.4 GHz, 4.9 GHz and 5 GHz radio frequencies supporting a wide variety of applications and environments
- Lightweight, portable, and low power consumption
- Support for several strong cryptographic options used for data and MAC-address encryption and per-hop, per-packet authentication
- High bandwidth for data, voice, and video applications
- Scalability to hundreds of mobile, high-bandwidth nodes
- Integrated Wi-Fi Access Point service for compatibility with millions of commercial off-the-shelf (COTS) client devices such as laptops, tablets, smart phones, IP cameras, sensors, and other IP devices
- Self-configuring operation for fast and easy deployments
- Reliable and fast off-loading to Ethernet via multiple, simultaneous bridge-mode links through Automatic Protocol Tunneling (APT) feature
- Mesh Clustering allows per-BreadCrumb sub-meshes that will only mesh with user-defined nodes

Utilizing the Rajant Sparrow Breadcrumbs to Your Advantage

At Rajant, we solve your Wi-Fi and LTE problems by extending the range of standard Wi-Fi and LTE, enabling machine-to-machine communications to see around obstructions, and providing sitewide ubiquitous Wi-Fi coverage to connect to Wi-Fi IoT devices including VoIP handsets.

The Sparrow is intended for industrial IoT markets, including mining, construction, airports, oil & gas, utilities, solar, wind, smart cities, and public safety.

This is a robust product that can add connectivity to an existing network. The Sparrow can be deployed as a mobile or infrastructure wireless node.

This industrial network node not only offers reliability, performance, and scalability but also security to support virtually any application operating in outdoor environments. These BreadCrumbs adapt quickly to changing environments to eliminate communication gaps and provide higher reliability than any other wireless network available.

InstaMesh®

InstaMesh is the advanced, patented[1] protocol developed by Rajant that directs the continuous and instantaneous forwarding of packets from wireless and wired connections. It enables complete network mobility, high throughput, and low latency with very low maintenance and administrative requirements. Operating at Layer 2 and not requiring a root node or LAN Controller, InstaMesh provides robust fault tolerance even if there is a connection or node outage. No matter how you configure your network, InstaMesh networking software always determines the most efficient pathway between any two points, even when those points are in motion.

[1] U.S. Patent 9,001,645

Model	Description
ME5–2450CS	ME5 with (1) 2.4 GHz, 2x2 MIMO, 300 Mbps and (1) 4.9/5 GHz, 2x2 MIMO, 300 Mbps transceivers.
ME5–5050CS	ME5 with (2) 4.9/5 GHz, 2x2 MIMO, 300 Mbps transceivers.

Wireless	2.4 GHz	4.9/5 GHz
Antenna Connector	(2) Type N (female)	(2) Type N (female)
Frequency[2]	2402 – 2482 MHz	4940 – 4990 MHz U-NII-1: 5150 – 5250 MHz U-NII-2A: 5250 – 5350 MHz U-NII-2C: 5470 – 5725 MHz U-NII-3: 5725 – 5850 MHz
Modulation	DSSS, CCK, OFDM	OFDM
Max. Physical Layer Data Rate	300 Mbps (throughput varies)	300 Mbps (throughput varies)
Max. RF Transmit Power[3]	29 dBm ± 2 dB	29 dBm ± 2 dB
Receive Sensitivity	-99 dBm (@ 1 Mbps, 20 MHz channel bandwidth) to -71 dBm (@ 300 Mbps, 40 MHz channel bandwidth)	-94 dBm (@ 6 Mbps, 20 MHz channel bandwidth) to -69 dBm (@ 300 Mbps, 40 MHz channel bandwidth)

Network & Security	
Network Functionality	VLAN and QoS support; Access Point; Bridge; Gateway; DHCP; NAT and Port Forwarding; Automatic Protocol Tunneling (APT).
Security	• Multiple cryptographic options, including NSA Suite B algorithms (implementation not certified).For information on models with full Suite B certification, contact Rajant or your authorized Rajant partner. • Separately configurable data and MAC address encryption via AES256-GCM, AES192-GCM, AES128-GCM, AES256-CTR, AES192-CTR, AES128-CTR, XSalsa20, XSalsa20/12, and XSalsa20/8. • Configurable per-hop, per-packet authentication between BreadCrumbs via AES256-GMAC, AES192-GMAC, AES128-GMAC, HMAC-SHA512, HMAC-SHA384, HMAC-SHA256, HMAC-SHA224, HMAC-SHA1, and Poly-1305-AES • Supports IEEE 802.11i: AES-CCMP and TKIP encryption, WPA-Personal/Enterprise, WPA2-Personal/Enterprise, 802.1x; iPSK, 64/128-bit WEP; Access Control Lists; Compatible with Layer-2 and Layer-3 client/server and peer-to-peer security solutions.

Power	
Input Voltage	9 — 30 VDC Passive PoE
Power Consumption[4]	2.8 W (average, idle); 15 W (maximum, peak) @ 24 V

[2] Channel, frequency and bandwidth options vary based upon regional and local regulations and certifications..
[3] RF transmit power is governed by local regulations and varies by frequency.
[4] Power consumption depends on transceiver configuration

Input/Output	
Ethernet	(1) 10/100/1000 Mbps IEEE 802.3, RJ-45, auto MDI/MDIX
USB	USB port for firmware upgrades, and for GPS device add-on (through adapter cable)
LED	Status LED
Switch	LED Configuration / Zeroize Keys and Restore Factory Defaults (through optional adapter cable)

Physical	
Dimensions	172.56 mm x 187.08 mm x 48.13 mm (6.79" x 7.37" x 1.90")
Weight[5]	1312 g (2 lbs 14.3 oz)
Temperature	Ambient (operating): -40°C to 70°C (-40°F to 158°F) System internal (operating): -40°C to 85°C (-40°F to 185°F) Storage: -40°C to 85°C (-40°F to 185°F)
Enclosure	IP67
Certification	FCC (US): ME5–2450CS, ME5–5050CS IC (Canada): ME5–2450CS, ME5–5050CS CE mark (European Economic Area, Switzerland, and Turkey): ME5–2450CS, ME5–5050CS MIC (Japan): ME5–2450CS ICASA (South Africa): ME5–2450CS AS/NZS 4268 (Australia): ME5–2450CS ANATEL (Brazil): ME5–2450CS Indonesia: ME5–2450CS Singapore: ME5–2450CS, ME5–5050CS Guinea: ME5–2450CS Chile: ME5–2450CS Ivory Coast: ME5–2450CS
Warranty	1 Year

[5] Weight depends on transceiver configuration

Updated 08/05/2025

20+ YEARS OF GAME-CHANGING **WIRELESS**

RAJANT
INTELLIGENT EDGE
Enabling Industrial AI