

# MX-88A / MX-88AH Capabilities & Integration

## Operational Capabilities

- **Infrastructure-Free MANET** – Self-forming, self-healing mobile ad hoc networking
- **High Data Throughput** – Up to ~250 Mbps aggregate data rate
- **High Penetration RF** – Maintains stable links through buildings, foliage, and non-line-of-sight conditions
- **Extended Range** – Long-distance connectivity with spectral efficiency, modulation, and link adaptation
- **Multi-Service Transport** – Concurrent voice, video, data, and PLI transmission
- **Native TAK Integration** – Seamless support for ATAK / TAK ecosystems
- **Integrated LoRa Layer** – Low-bandwidth fallback and persistent PLI tracking
- **WAN Backhaul Support** – Compatible with IP-based backhaul (e.g., Starlink, LTE, GSM gateways)
- **Secure Communications** – AES-256 encryption with WPA3 and 802.11s mesh security
- **Over-the-Air Updates (OTA)** – Remote firmware and system updates
- **Scalable Architecture** – Designed for compatibility with next-generation systems
- **License-Exempt Operation** – Operates in unlicensed frequency bands
- **Rapid Deployment** – Pre-configured for immediate use with full user configurability

## Multi-System Integration

- **PTT & VoIP Interoperability** – Interfaces with standard push-to-talk systems using low-latency VoIP, enabling transport of voice without proprietary audio dependencies
- **TAK Ecosystem Integration** – Native compatibility with ATAK / TAK, supporting multicast voice and data distribution within the operational environment
- **Third-Party Device Compatibility** – Direct integration with IP cameras, sensors, IoT devices, and edge compute systems using standard IP protocols
- **UAS / UGV Integration** – Supports unmanned aerial and ground systems for telemetry, video downlink, and command-and-control transport
- **GCS Interoperability** – Compatible with ground control stations and UAS control software via multicasting
- **Network Bridging & Extension** – Operates at Layer 2 / Layer 3 to extend LANs and connect to external WAN backhaul sources such as satellite or cellular gateways
- **Open Interface Architecture** – OpenWRT-based platform enabling custom applications, APIs, and third-party software integration
- **Peripheral & Expansion Support** – Interfaces with external modules and accessories through standard connectivity options including USB and Ethernet
- **Meshtastic / LoRa Integration** – Interoperable with third-party LoRa and Meshtastic devices for low-bandwidth messaging and PLI, enabling integration of cost-effective nodes to broaden network coverage
- **Open-Source Architecture** – Built on OpenWRT, enabling full transparency, customization, and freedom from proprietary constraints