PRODUCT SPECIFICATION

# YNW-6401MH

## Handheld Tactical Broadband Wireless MESH Ad-Hoc Network Equipment

Shenzhen Yuneng Micro Technology Co., Ltd.

2026.8 (V1.0)

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| **Model** | YNW-6401MH |
| **Product Name** | Handheld Tactical Broadband Wireless MESH Ad-Hoc Network Equipment |
| **Series** | YNW-6400 Series MESH Ad-Hoc Network Equipment |
| **Core Technology** | OFDM + MESH Multi-hop Ad-Hoc Network + MIMO 2×2 + 4G LTE |

**Handheld**

# 1. Product Overview

> **Product Positioning:** The YNW-6401MH is a versatile, high-performance body-worn (single-soldier) wireless Ad-Hoc communications device — compact and high-throughput, developed on OFDM technology and MESH multi-hop Ad-Hoc networking. It supports automatic relaying and multi-hop, enabling wireless voice intercom, HDMI/network video input, and Layer-2 network data transmission between soldiers without requiring a central base station.

The YNW-6401MH (handheld) tactical broadband wireless MESH Ad-Hoc product is a newly launched, compact, high-throughput wireless broadband MESH device from our company. Developed on OFDM technology and MESH multi-hop Ad-Hoc networking, it achieves free-form networking among different device form factors, enabling users to rapidly build reliable wireless links in complex environments and providing fast, flexible solutions for various application requirements (e.g., HD video, voice intercom, and IP data transmission). As a broadband Ad-Hoc radio forming a centerless, Ad-Hoc, self-adaptive, self-healing Mesh network, it is the optimal choice for point-to-point, point-to-multipoint, or multipoint-to-multipoint integrated-services communications. The Mesh radio delivers dynamic routing, multi-hop relay of HD video, multi-channel data, and high-fidelity voice between different nodes within the same network under complex conditions such as fast movement, non-line-of-sight (NLOS) obstruction, and environmental interference.

This product is a multi-purpose, high-performance body-worn wireless Ad-Hoc communications device designed by our company. It supports automatic relaying and multi-hop, enabling wireless voice intercom, HDMI/network video input, and Layer-2 network data transmission between soldiers without requiring a central base station. It also offers 4G LTE connectivity (upgradable to 5G in the future) for fast access to public networks, and supports BeiDou/GPS so that, together with the MESHCOM management platform, the real-time geographic location of every soldier can be viewed. Using a MIMO 2×2 dual-antenna design, it leverages multipath reflections from obstacles to provide stronger communications capability, and integrates a high-efficiency power amplifier of up to 4W within its compact footprint. It provides robust communications support in complex environments such as armed-police counter-terrorism, fire-fighting and rescue, and military drills.

- **Core Selling Points:** MIMO dual-channel Ad-Hoc networking, up to 96Mbps; elevated line-of-sight range of 20-40km; supports 4G LTE access and BeiDou/GPS positioning
- **Target Users:** Tactical communications users in the armed police, fire services, military, public security, and emergency communications
- **Typical Applications:** Armed-police counter-terrorism, firefighting and rescue, military drills, emergency response, counter-terrorism and riot control, covert reconnaissance, and special operations in complex environments

**Design Highlights:** Handheld body-worn design, weighing only 1.2Kg (incl. battery), dimensions 250×80×45mm, with a removable battery, 2.5h charging time and 6h operating time. Supports 2.4G/5.8G WiFi hotspot, power-on-and-use operation with no configuration required. Transmit power 1-4W adjustable; channel bandwidth 2M/5M/10M/20M/40M adjustable.

## 2. Product Views


YNW-6401MH Side View


YNW-6401MH Detail View

## 3. Key Features

### MIMO Dual-channel Ad-Hoc

MIMO 2×2 dual-antenna design leverages multipath effects for stronger communications capability

### Customizable Wide Frequency Band

Frequency from 350MHz to 2GHz customizable to suit different industry private-network requirements

### Centralized Management Platform

Supports the MESHCOM management platform, including GIS topology visualization management

### High Throughput

Peak data rate up to 96Mbps

### Ultra-long Transmission Range

Elevated line-of-sight transmission range of 20-40km

### WiFi Hotspot

Supports 2.4G/5.8G dual-band WiFi hotspot

### 4G LTE Access

Provides 4G LTE connectivity (upgradable to 5G in the future) for fast access to public networks

### BeiDou/GPS Positioning

Supports BeiDou/GPS; viewed in real time with the MESHCOM management platform for body-worn positions

### Removable Battery

Removable battery, 2.5h charging and 6h operating time, supporting prolonged tactical missions

### Power-on-and-use

Ready to use upon power-on, no configuration; transmit power 1-4W adjustable; channel bandwidth 2M/5M/10M/20M/40M adjustable

# 4. Technical Specifications

## 4.1 RF Parameters

| Category | Parameter | Specification | Custom Option |
|---|---|---|---|
| **RF Parameters** | **Networking Frequency** | 1400MHz - 1480MHz @ 4W | 350MHz ~ 2GHz customizable |
| | **MIMO** | 2×2 | — |
| | **Modulation** | DSSS/CCK BPSK/QPSK; OFDM BPSK/QPSK/16-QAM/64-QAM | — |
| | **Transmit Power** | 36dBm (1-4W adjustable) | Power customizable |
| | **Receive Sensitivity** | -102dBm @ 5MHz BPSK | — |
| | **RF Interfaces** | MESH N×2, WIFI SMA×1, 4G LTE SMA×1 | — |
| | **Channel Bandwidth** | 2M / 5M / 10M / 20M / 40M (adjustable) | — |
| | **WiFi Hotspot** | 2.4G / 5.8G | — |
| | **Effective Range** | Elevated line-of-sight transmission 20-40km (elevated) | — |

## 4.2 Networking & Management

| Category | Parameter | Specification | Custom Option |
|---|---|---|---|
| **Networking & Management** | **Configuration Method** | WEB, MESHCOM management platform | — |
| | **Ad-Hoc Nodes** | No fewer than 50 units | — |
| | **System** | MESHCOM Ad-Hoc network | — |

### 4.3 Physical & Environmental

| Category | Parameter | Specification | Custom Option |
|---|---|---|---|
| **Physical & Environmental** | Operating Temperature | -30°C ~ +65°C | — |
| | Operating Humidity | 5% ~ 95% (non-condensing) | — |
| | Storage Temperature | -45°C ~ +85°C | — |
| | Weight | 1.2Kg (incl. battery) | — |
| | Dimensions | 250 × 80 × 45mm | — |

### 4.4 Electrical Characteristics & Interfaces

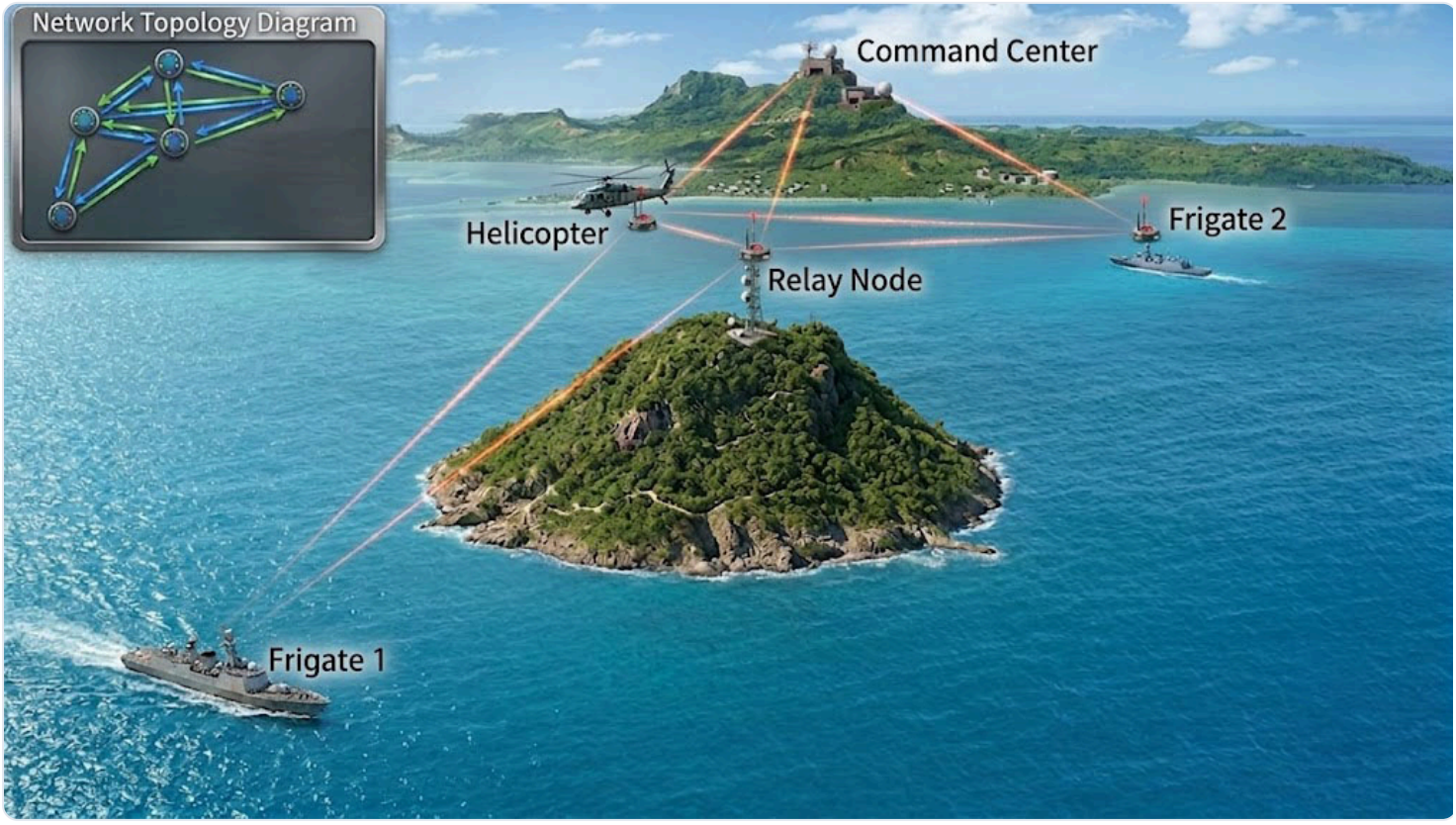
| Category | Parameter | Specification | Custom Option |
|---|---|---|---|
| **Electrical Characteristics** | Charging Time | 2.5h | — |
| | Operating Time | 6h | — |
| | Average Power Consumption | 12W average | — |
| | Battery | Removable | — |
| **External Interfaces** | Network Interface | × 1 | — |
| | TTL | × 1 | — |
| | Charging Port | × 1 | — |
| | PTT | × 1 | — |
| | Exp Port | × 1 | — |

**Customization Note:** This product supports a variety of customization options including frequency band, output power, and number of nodes. For details, please contact Shenzhen Yuneng Micro Technology Co., Ltd.

# 5. Applications

With its MESH Ad-Hoc technology, this product can be flexibly applied to military communications private networks, public-security private networks, emergency communications private networks, industry information private networks, regional broadband private networks, wireless surveillance private networks, collaborative management private networks, and intelligent transmission private networks. It provides stable, reliable, timely, and efficient HD video, multi-channel data, clear voice, and visualized command-and-dispatch services for military communications, counter-terrorism and emergency response, public-security law enforcement, security operations, rescue and disaster relief, firefighting command, forest fire prevention, forest-area monitoring, civil defense / earthquake response, power-line patrol, digital oilfield, UAV swarms, fleet interoperability, vessel formations, maritime communications, airport ground handling, metro emergency, highway construction, hydrological monitoring, mobile live broadcasting, and medical sectors.

## 1. Border & Coastal Defense MESH Ad-Hoc Wireless Communications




### Application Scenario

Border patrol, coastal surveillance, border port control, coastline warning, border outpost interconnection, and maritime law-enforcement vessel formations — long-range, wide-coverage border and coastal defense communications. National borderlines and coastlines are extensive with complex, varied terrain including mountains, deserts (gobi), jungles, and islands where conventional public networks often fail to provide full coverage, making dedicated broadband communications essential for border and coastal defense command and dispatch.

### Deployment Solution

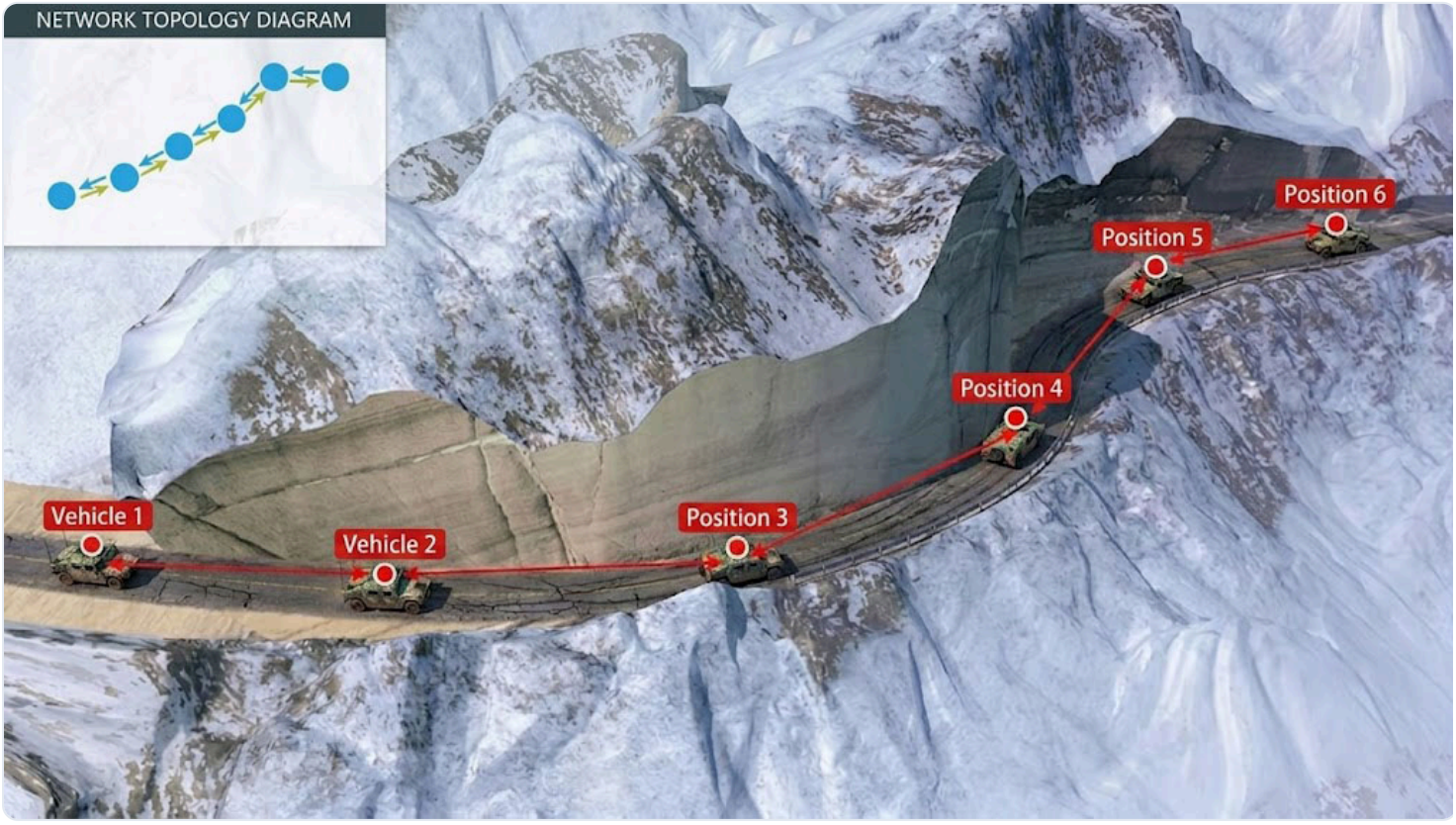
- **Body-worn patrol extension:** The YNW-6401MH handheld device is carried by frontier patrol soldiers and freely networks with fixed border-outpost radios and vessel-borne radios, with elevated line-of-sight range of 20-40km, achieving integrated "shore–sea–soldier" coverage.
- **Multi-form-factor node convergence:** Fixed border-outpost deployment, vessel-borne deployment, mobile command-vehicle deployment, and body-worn handheld deployment freely self-organize, supporting no fewer than 50 nodes.
- **BeiDou/GPS positioning:** Body-worn devices support BeiDou/GPS positioning; the MESHCOM management platform displays patrol soldiers' geographic locations in real time, allowing the command center to track patrol dynamics.

### Application Value

HD video, voice intercom, and situational-awareness data are backhauled between border outposts, patrol boats, and body-worn patrol teams, keeping the command link active even in remote areas without public

network coverage. The command center can grasp border dynamics, maritime situational awareness, and soldier positions in real time, effectively enhancing border/coastal situational awareness, rapid response, and coordinated operations, providing reliable communications support for border and coastal control.

## 2. Convoy MESH Ad-Hoc Wireless Communications




### Application Scenario

Convoy formation marching, military escort and transport, material transportation, VIP convoy security, long-distance passenger-fleet management, logistics fleet coordination, and railway engineering-vehicle group communications — mobile scenarios. As inter-vehicle distances constantly change and road conditions are complex, conventional communications cannot guarantee stable real-time links between convoy members.

### Deployment Solution

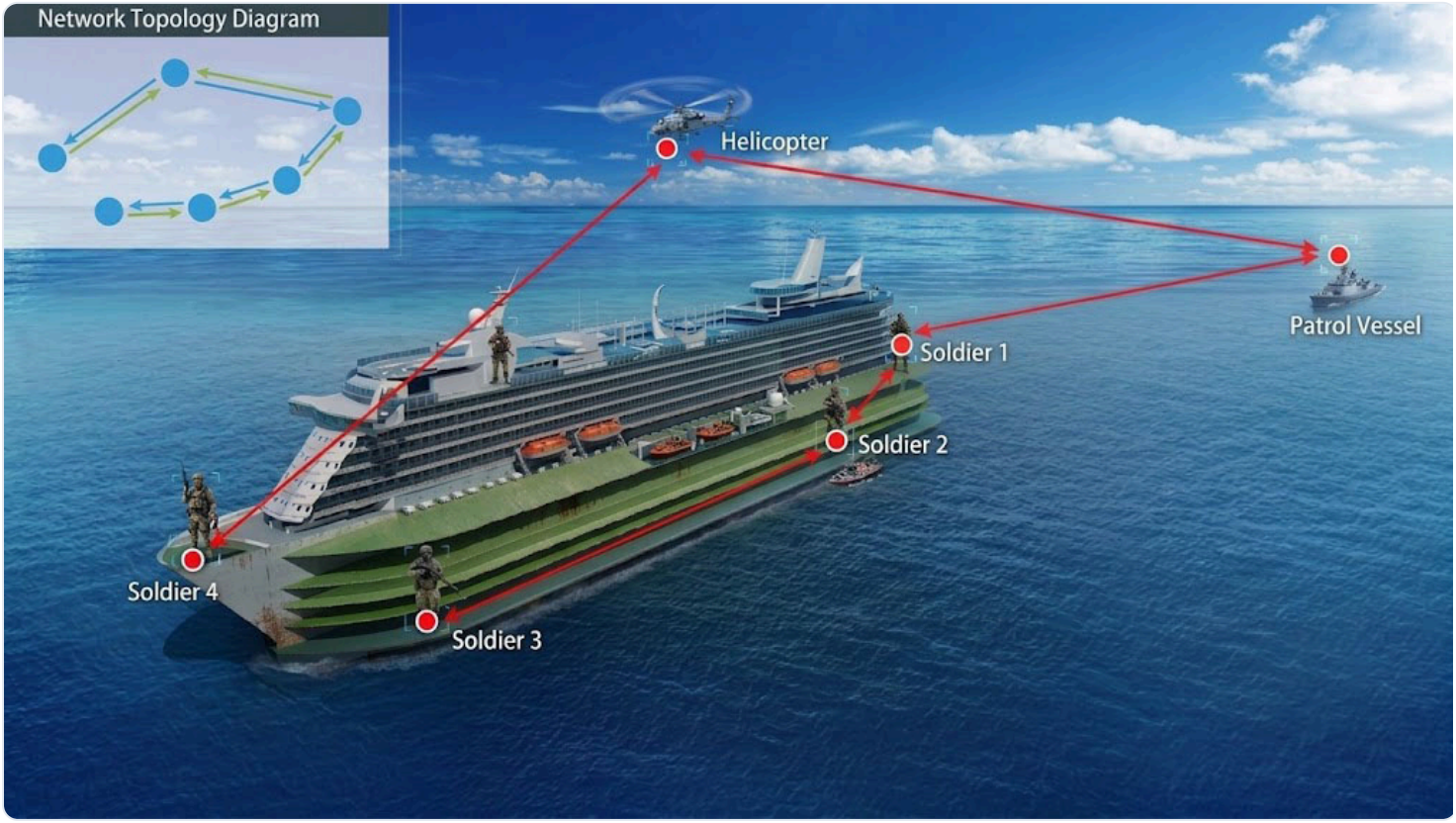
- **Vehicle-body-worn coordination:** A vehicle-mounted MESH device is deployed on each vehicle, and accompanying personnel carry the YNW-6401MH handheld; links between vehicles and between vehicles and soldiers are established over MESH Ad-Hoc networking without relying on fixed base stations or public networks.
- **Dynamic route convergence:** Under high-speed movement, changing inter-vehicle distances, road masking, and tunnel transit, the network topology reconfigures automatically and routing converges within seconds without communication interruption.
- **Concurrent multi-service:** Supports concurrent onboard HD video backhaul, voice intercom, vehicle position sharing, and command-instruction issuance, with a peak data rate up to 96Mbps.
- **4G LTE backhaul:** Offers 4G LTE connectivity to interconnect the fleet private network with the rear command center in areas with public coverage, enabling integrated front-rear command.

### Application Value

While convoys are in motion, HD video, voice intercom, and location information are shared in real time between vehicles and between vehicles and soldiers, and the command vehicle can grasp the full fleet situation

for integrated formation command and coordinated dispatch. In counter-terrorism/stability maintenance, armed escort, and military material transport missions, it provides a public-network-independent, secure channel for the fleet, significantly improving fleet mobile command capability and mission security.

## 3. Vessel-boarding Reconnaissance MESH Ad-Hoc Wireless Communications




### Application Scenario

Maritime boarding inspection, surveillance and evidence collection, cross-ship coordinated operations, fleet formation communications, maritime law-enforcement boarding, coast guard patrols, and naval tactical coordination. The maritime environment presents unique challenges including wave-induced motion, severe multipath interference, and constantly changing relative positions between vessels, which conventional communications cannot reliably overcome.

### Deployment Solution

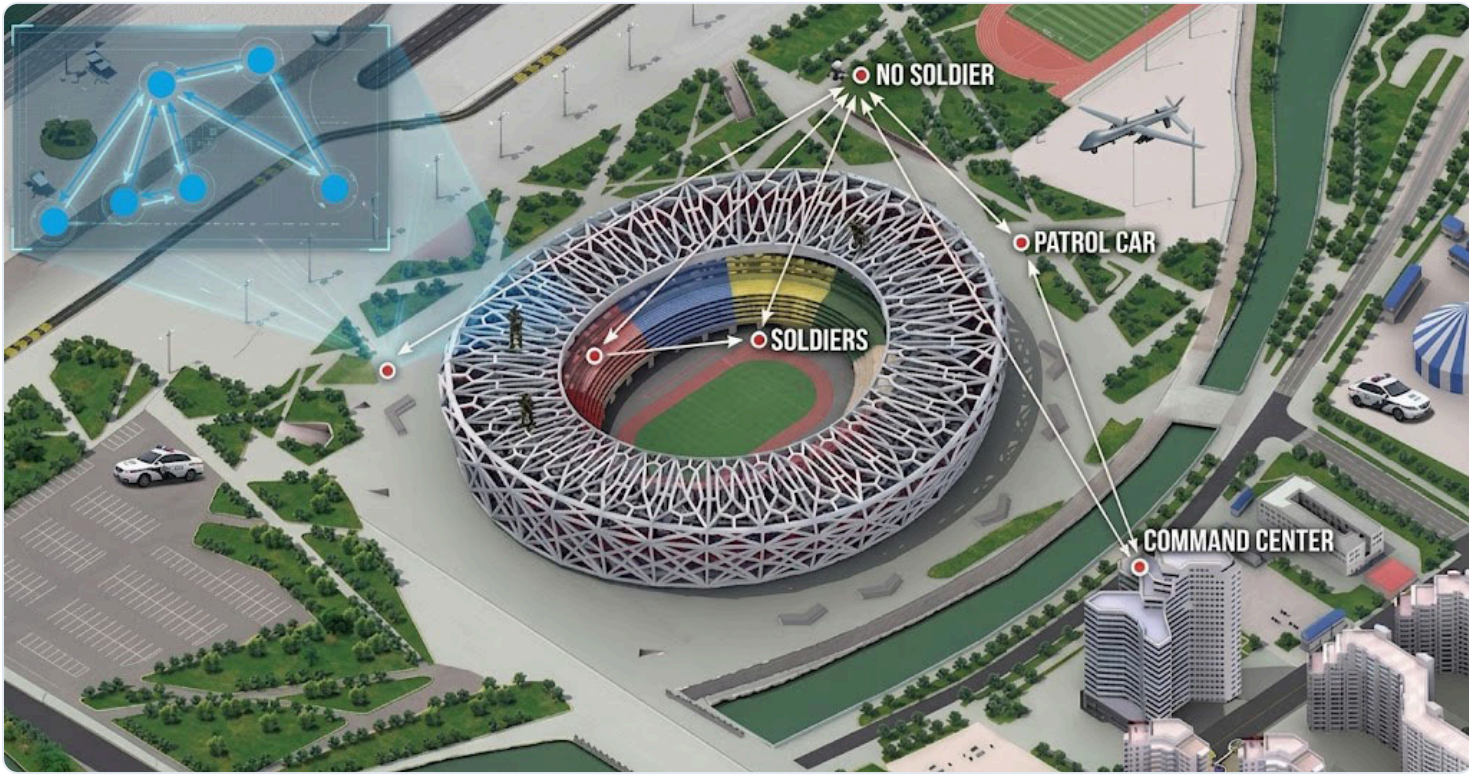
- **Boarding-team extension:** The boarding-inspection team is equipped with the YNW-6401MH handheld, maintaining real-time communication with the mother vessel and formation vessels, backhauling onboard HD video and voice to the mother vessel's command center in real time.
- **Vessel-to-vessel coordinated networking:** MESH devices are deployed on multiple vessels; broadband MESH Ad-Hoc links form automatically between vessels to support formation coordination and integrated communications.
- **Multipath-interference resilience:** COFDM modulation effectively suppresses maritime multipath reflections, maintaining link stability under wave-induced motion and vessel sway in high-dynamic environments.
- **Fast route convergence:** Supports fast route convergence in high-dynamic environments; the network topology auto-adjusts as vessel relative positions change, without communication interruption.

### Application Value

During boarding inspections, surveillance/evidence collection, and cross-ship coordination, stable maritime broadband Ad-Hoc links are established between the boarding team and vessels, backhauling HD video and

voice in real time and providing reliable communications support for maritime law enforcement, search and rescue, and tactical coordination. Commanders can grasp the boarding-site situation in real time and make remote decisions, significantly improving maritime enforcement safety and tactical coordination efficiency.

## 4. Public Security Disposal & Armed Patrol MESH Ad-Hoc Wireless Communications




### Application Scenario

Major event security (conferences, competitions, performances), temporary interception and arrest operations, armed patrols, counter-terrorism and emergency response, mass-incident disposal, VIP protection, checkpoint enforcement, and special-duty missions. Such public-safety scenarios impose extremely high requirements on rapid deployment, temporary private networks, multi-channel video backhaul, and resilience against public-network congestion.

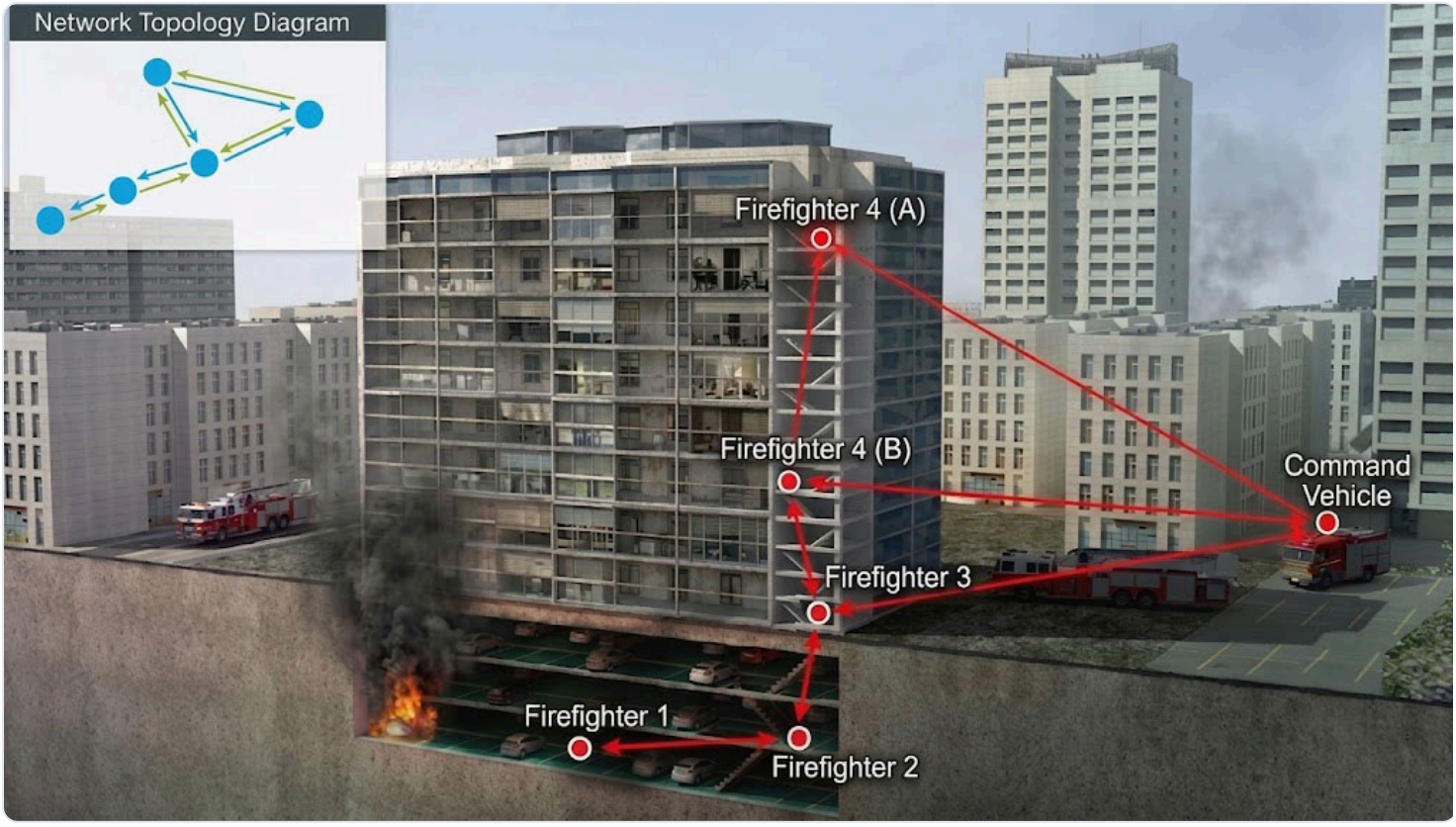
### Deployment Solution

- **Rapid body-worn deployment:** The YNW-6401MH is power-on-and-use with no configuration, enabling a dedicated broadband private network to be built on-site within 5 minutes, completely independent of the public network.
- **Multi-terminal integrated access:** Body-worn law-enforcement cameras, vehicle terminals, temporary surveillance cameras, and UAV aerial relays converge through the MESH network, backhauling multiple real-time video streams to the command center.
- **Centerless architecture:** The centerless Ad-Hoc architecture does not rely on public-network base stations, maintaining communications even under emergency conditions such as public-network congestion from dense crowds at large events.
- **4G LTE backhaul:** Offers 4G LTE connectivity to interconnect the on-site private network with the public-security command center in areas with public coverage, enabling integrated front-rear command.
- **BeiDou/GPS positioning:** The MESHCOM management platform displays soldier positions in real time, allowing the command center to track all personnel.

### Application Value

Provides the public-security command with real-time on-site situational awareness during major event security, temporary disposal, and armed patrol operations, with stable backhaul of multi-channel HD video, voice intercom, and data. The centerless architecture ensures uninterrupted communications even under extreme conditions such as public-network outage or congestion, providing reliable communications support for counter-terrorism/emergency response and enhancing rapid response and coordinated operations.

## 5. Firefighting & Rescue MESH Ad-Hoc Wireless Communications




### Application Scenario

Fire suppression (building, forest, and chemical fires), earthquake rescue, accident emergency response, hazardous-material leakage incidents, traffic-accident rescue, and building-collapse rescue. On-site public networks are often interrupted or severely congested during disasters, necessitating dedicated communications for rescue command.

### Deployment Solution

- **Body-worn deep fire access:** Firefighters carry the YNW-6401MH handheld into the fire scene, backhauling interior HD video to the on-site command vehicle and rear command center via multi-hop relay, establishing a "body-worn-to-vehicle-to-command" three-tier network.
- **Rapid private network setup:** The YNW-6401MH is power-on-and-use, building a dedicated broadband Ad-Hoc network among firefighters, command vehicles, and temporary command points within 5 minutes, without any infrastructure.
- **Concurrent multi-stream video:** Supports concurrent backhaul of multiple HD video streams; the command center can simultaneously view live pictures of multiple fire points and rescue teams to fully grasp the on-site situation.
- **Self-healing / damage resilience:** When a node is damaged or moves, the network automatically reconfigures, and remaining nodes re-establish routing without communication interruption, sustaining rescue continuity.

### Application Value

Enables the rear command center to grasp the full on-site picture, scientifically dispatch rescue forces, and improve rescue efficiency and safety. Firefighters can receive command instructions in real time, backhaul on-site video, and hold voice intercom with the command center, avoiding blind operations and maximizing firefighter safety and rescue outcomes. Provides reliable communications support within the "golden 72-hour rescue window," buying critical time for life-saving operations.

## 6. Natural-disaster Emergency Command MESH Ad-Hoc Wireless Communications


### Application Scenario

Emergency command communications for sudden natural disasters — earthquakes (especially magnitude 7+), floods (peak-flow transit, dam breaches, urban waterlogging), debris flows, landslides, typhoons, snowstorms, and freezing rain. Such disasters commonly destroy extensive communications infrastructure and fully disrupt public networks, leaving emergency command in an "information island" dilemma.

### Deployment Solution

- **Body-worn entry into disaster area:** Rescue teams carry the YNW-6401MH handheld into affected areas, rapidly erecting temporary communication nodes and using multi-hop relays for wide-area coverage that overcomes terrain blocking.
- **Air-ground integrated networking:** Combined with UAV aerial relay platforms, an "air-ground" three-dimensional Ad-Hoc network overcomes complex terrain such as mountains and ruins for whole-disaster-area coverage.
- **Multi-hop relay wide coverage:** Supports multi-hop relay with elevated line-of-sight range of 20-40km; multi-hop cascading achieves wide-area coverage of tens of kilometers to meet large-area disaster communications needs.
- **Self-healing / damage resilience:** Self-healing ensures automatic network reconfiguration as nodes move, equipment is damaged, or new nodes join, with no manual intervention, providing sustained and reliable communications support for emergency command.
- **BeiDou/GPS positioning:** The MESHCOM management platform displays rescue-team locations in real time, allowing the command center to track all personnel and optimize rescue routes.

- **4G LTE backhaul:** In areas with partial public coverage, 4G LTE interconnects the disaster-area private network with the rear command center for integrated front-rear command.

**Application Value**

Provides stable, reliable communications support for emergency command and dispatch during sudden natural disasters, backhauling on-site video, disaster data, and rescue-team positions to front-line and rear commands in real time. The command center fully grasps the disaster situation, scientifically dispatches rescue forces, optimizes rescue routes, and improves rescue efficiency. Provides communications support for life-saving within the "golden 72-hour rescue window," minimizing casualties and property loss.

## 7. Forest Fire Prevention MESH Ad-Hoc Wireless Communications


**Application Scenario**

Forest fire monitoring, forest-area patrol communications, watchtower interconnection, fire frontline command, fire-scene situational backhaul, forest-area wildlife protection, and forest-area public-order control. China's extensive forest resources are mostly in mountainous and remote areas with weak public coverage, so forest-fire communications have long faced high-cost coverage and networking challenges.

**Deployment Solution**

- **Body-worn patrol networking:** Patrol personnel carry the YNW-6401MH handheld into forest areas, freely networking with watchtower fixed radios and patrol UAVs to build a broadband Ad-Hoc private network covering vast forest areas.
- **Multi-hop relay overcoming terrain:** Multi-hop relays overcome forest-line-of-sight blocking and terrain undulation for wide-area coverage in hills, mountains, and canyons, with elevated line-of-sight range of 20-40km.
- **Watchtower-UAV-body-worn coordination:** Fixed watchtower monitoring, patrol UAV aerial inspection, and on-site firefighting personnel form a three-position coordinated network, backhauling video and alarms to the fire-prevention command center in real time.
- **Automatic fire alarm:** Interfaces with smoke detectors and infrared thermal-imaging fire-monitoring devices; automatic fire alarms are backhauled to the command center over the MESH network for early detection, early reporting, and early response.

**Application Value**

Builds an integrated air-ground broadband Ad-Hoc private network across vast forest areas, backhauling video and alarm information from watchtowers, patrol UAVs, and fire frontlines to the command center in real time for early detection, reporting, and response. During an active fire, it provides reliable communications support for frontline command, improving coordinated suppression efficiency and firefighter safety assurance, and providing solid communications support for forest-resource protection and ecological security.