Hytera

iMesh

Broadband Ad-hoc Network Solution

www.hytera.com

iMesh Series

iMesh series include a range of products developed based on 4G and Pre-5G technologies. iMesh solution sets up a secure, non-of-sight wireless link-on-demand, providing high data throughput to enable front line responders to communicate with on-site command center in complicated environment. The network deployment is flexible. It is suitable for various application scenarios including public safety, VIP escort, emergency communications and etc.

## iMesh Diversified Networking

Several mesh nodes automatically form a wireless link in multiple networking shapes, such as chain, star, random, and hybrid. The mesh network is self-healing, allowing the system to automatically recover from the single-point failure by intelligently discovering and hopping to any other available node in the network.
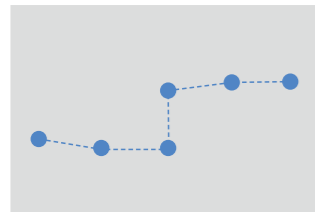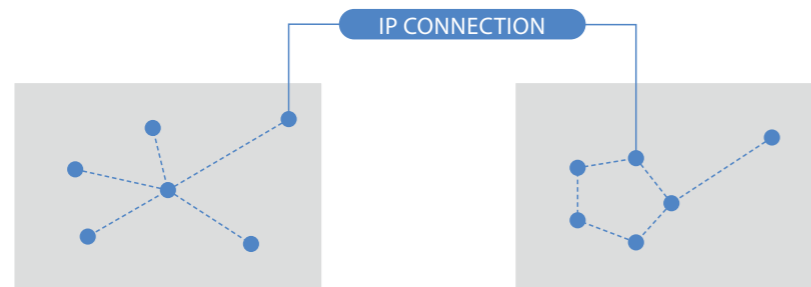
Chain Networking
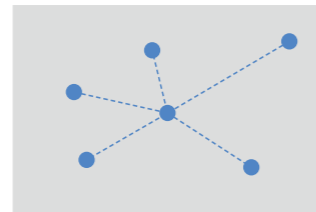
Star Networking
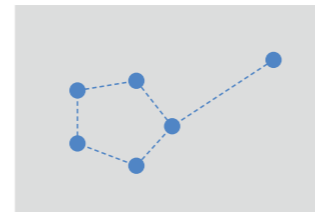
Random Networking

IP CONNECTION

Hybrid Networking

iMesh Vehicle Node

The node can be installed on a vehicle, at a fixed place, or carried by a UAV, applied to various mission critical scenarios.

Features

- High throughput
- Self-organizing
- Wide coverage
- E2E QoS and encryption
- Light in weight and compatible with external batteries
- MIL-STD-810G
- WiFi/4G, Ethernet Ports

Specifications

Operating Frequency	320–344 MHz, 542–582 MHZ, customizable		Encryption	AES, Snow 3G, third-party algorithm
Antenna Configuration	2T2R		Dimensions	330mm×240mm×114mm
TX Power	2x5 W		Weight	7kg
Sensitivity	≤–105 dBm @ 10 MHZ		Power Supply	12–24 V DC
Operating Bandwidth	10 MHZ (typ.), customizable		Power Consumption	40W(Typ.), 70W (Max.)
Single-hop Delay	5–10 ms		Operating Temperature	-40 to +65
Max. Number of Nodes	32		Operating Humidity	5%RH to 100%RH
Coverage Distance	40 km (LOS), 5 km (NLOS)		IP Rating	IP67
Spectral Efficiency/Throughput	6 bps/Hz, 60 Mbps (max.)			

Connectors Diagram

WiFi/UE Antenna Port

Mesh Antenna Port

GNSS Antenna Port

SIM Card Slot

Ethernet Optical/ Electrical Port

Ethernet Electrical Port

AISG Port

Power Inlet

TF Card Slot
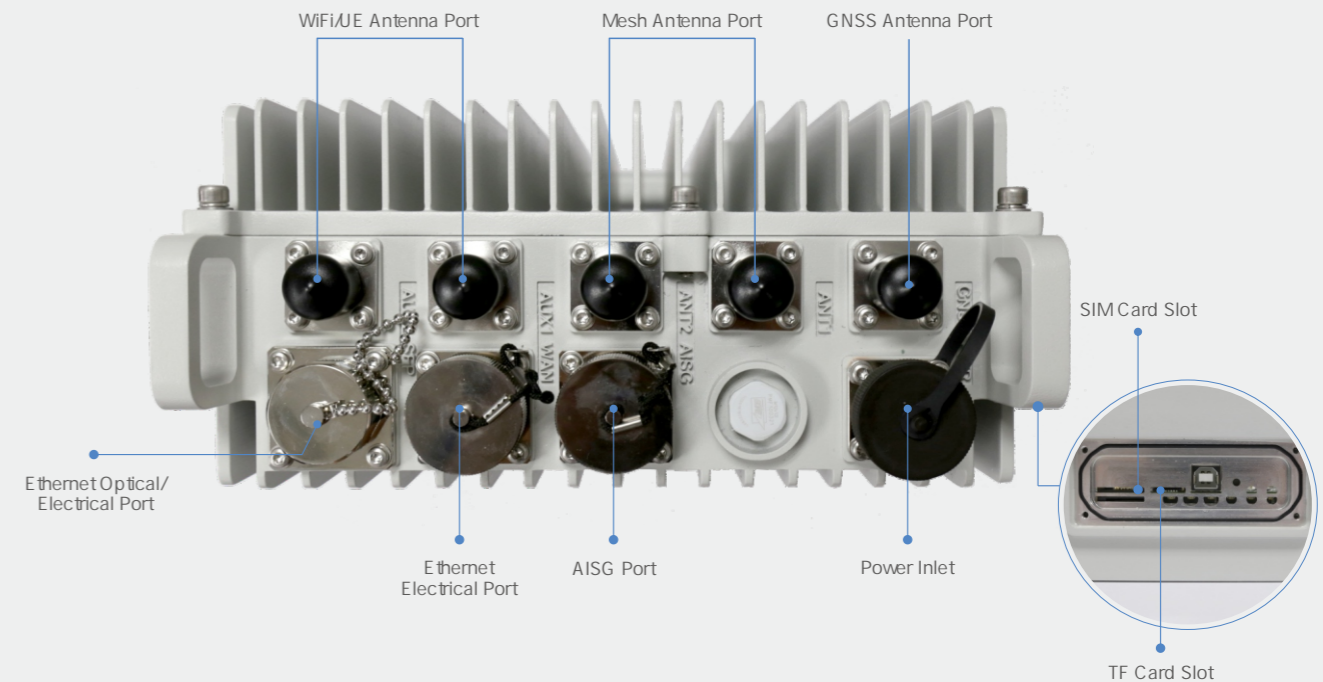
iMesh Man-Pack Node

The node enables onsite video capture and transmission.
It can be carried by individuals or a UAV for emergencies.

Features

- High throughput
- Self-organizing
- Wide coverage
- E2E QoS and secure encryption
- Light in weight: 5 kg including battery
- Golden Pin Design Award
- MIL-STD-810G
- WiFi, Ethernet, Bluetooth, HDMI Ports

Specifications

Operating Frequency	320–344 MHz, 542–582 MHZ, customizable		Encryption	AES, Snow 3G, third-party algorithm
Antenna Configuration	2T2R		Dimensions	266mm×206mm×87mm (battery included)
TX Power	2x2 W			
Sensitivity	≤–105 dBm @ 10 MHZ		Weight	5kg (battery included)
Operating Bandwidth	10 MHZ (typ.), customizable		Power Supply/Battery Capacity	12 V, 14800 mAh
Single-hop Delay	5–10 ms		Power Consumption	20W(Typ.), 40W (Max.)
Max. Number of Nodes	24		Operating Temperature	-40　to +65
Coverage Distance	10 km (LOS), 2km (NLOS)		Operating Humidity	5%RH to 100%RH
Spectral Efficiency/Throughput	6 bps/Hz, 60 Mbps (max.)		IP Rating	IP67

iMesh Handheld Node (MiFi)

The node is small in size, low in power consumption, and easy to carry. It is suitable for firefighters, special agents, VIP escort operations.

Features

- Small in size
- Light in weight and low in power consumption
- High throughput
- IP67
- Large capacity battery

Specifications

Operating Frequency	320–344 MHz, 542–582 MHZ, customizable		Encryption	AES, Snow 3G
Antenna Configuration	1T1R		Connectors	Wi-Fi, Micro USB, BT
TX Power	1x0.5 W		Dimensions	170mm×85mm×30mm
Sensitivity	≤–102 dBm (10 MHZ)		Weight	0.6kg
Operating Bandwidth	≤10 MHz		Power Consumption	4W (Max.)
Single-hop Delay	5–10 ms		Operating Temperature	-40　to +65
Max. Number of Nodes	16		Operating Humidity	5%RH to 100%RH
Coverage Distance	2 km (LOS), 500 m (NLOS)		IP Rating	IP67
Throughput	6 Mbps (10MHz)			

Solution Highlights

Flexibility

- Self-organizing and self-healing capability
- Supports multiple topologies: chain, star, and hybrid
- All-IP
- Multiple I/O Interfaces Supported: Optical/Ethernet/ Bluetooth/HDMI/LTE/WiFi

Large Capacity

- Spectral Efficiency: 6 bps/Hz
- Throughput: 60 Mbps @ 10 MHz (Max), supporting 15 channels 1080P videos.

QoS

- 3GPP-based QoS and customized QoS
- Service Prioritization

Mobility

- Vehicle speed up to 120 Km/h

Security

- Encryption: Snow 3G, AES, IPSec, and more
- Mesh authentication: USIM AKA
- Wi-Fi authentication: EAP-SIM, EAP-Radius, and WPA/WPA2

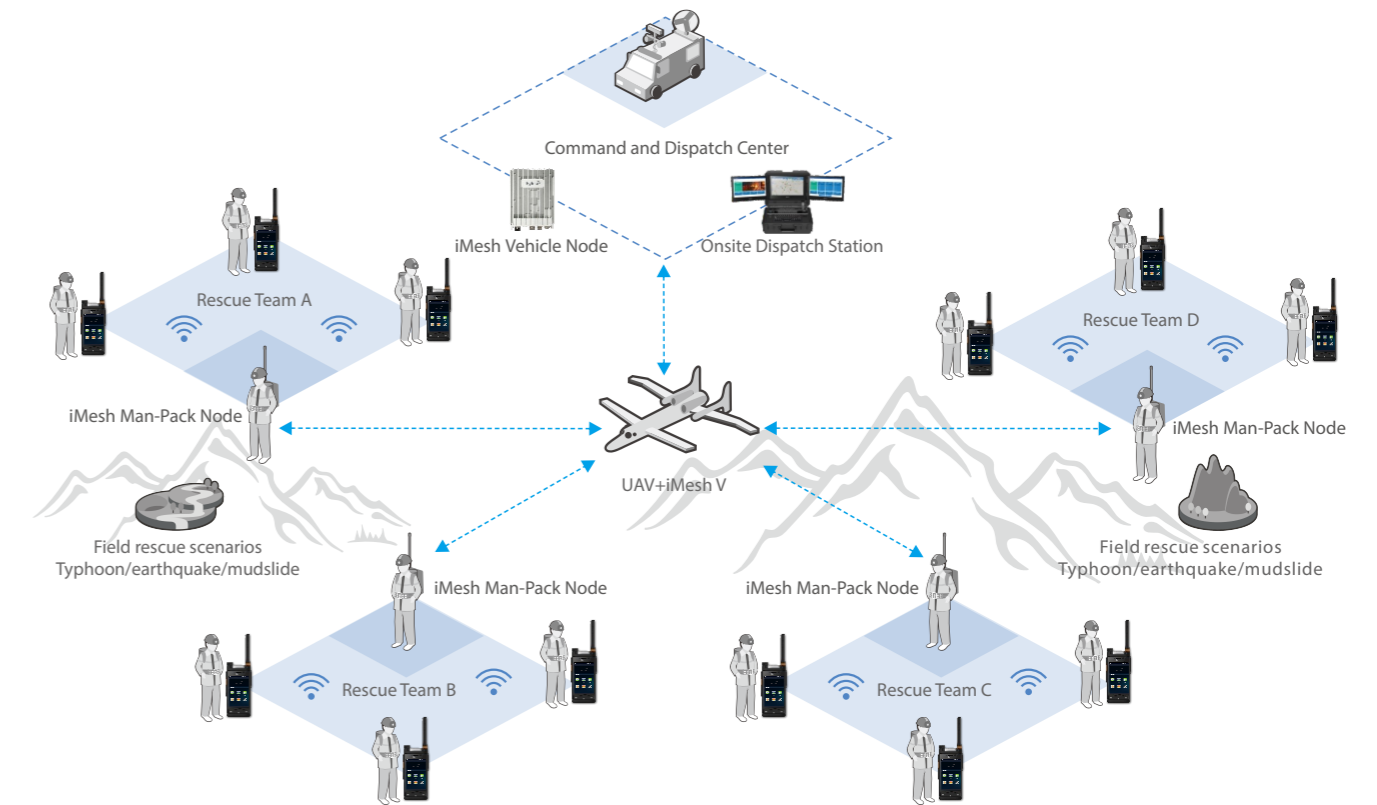## High Reliability

- MIL-STD-810G
- IP67

Large Coverage
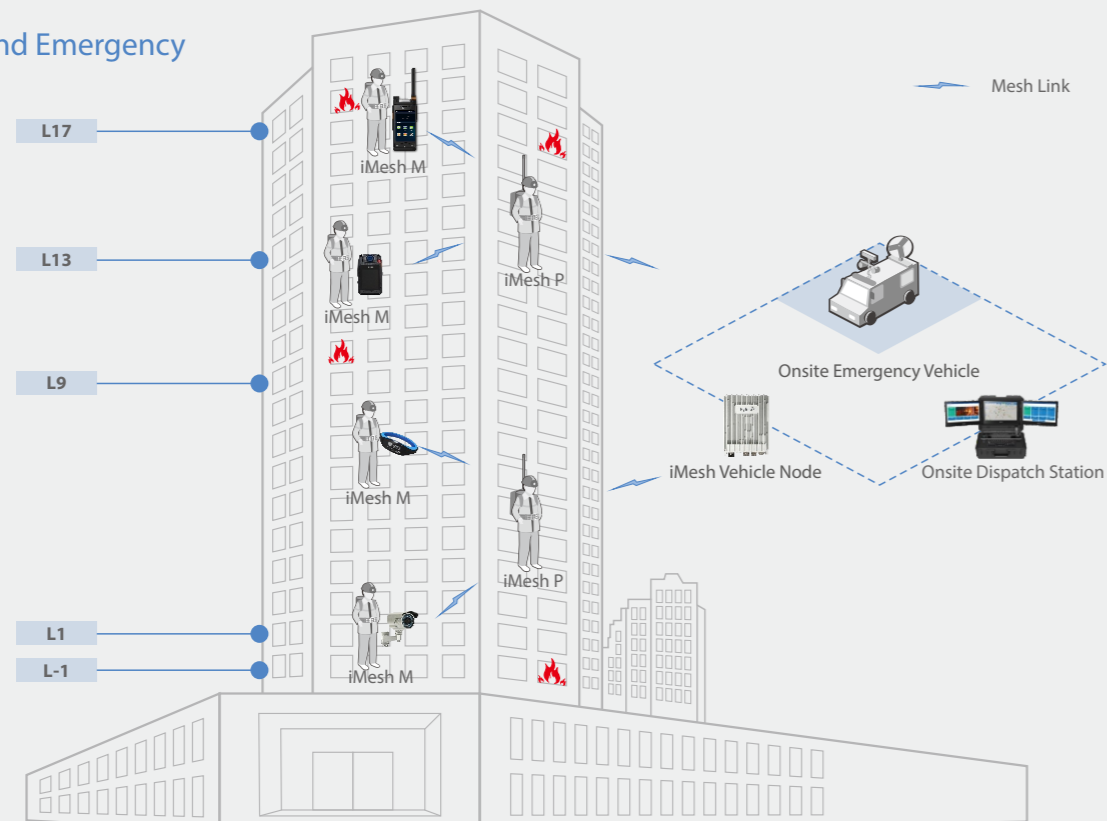
- LOS 40 km (Max.)
- NLOS 5 km (Max.)

Synchronization

- GPS/Beidou/GLONASS/1588 V2

Application Scenarios

Fire and Emergency

L17

L13

L9

L1

L-1

iMesh M

iMesh M

iMesh M

iMesh M

iMesh P

iMesh P

Mesh Link

Onsite Emergency Vehicle

iMesh Vehicle Node

Onsite Dispatch Station

Rescue and Relief

Command and Dispatch Center

iMesh Vehicle Node

Onsite Dispatch Station

Rescue Team A

Rescue Team D

iMesh Man-Pack Node

iMesh Man-Pack Node

UAV+iMesh V

Field rescue scenarios
Typhoon/earthquake/mudslide

Field rescue scenarios
Typhoon/earthquake/mudslide

iMesh Man-Pack Node

iMesh Man-Pack Node

Rescue Team B

Rescue Team C

VIP Escort

Mesh Link

iMesh Vehicle Node

iMesh Vehicle Node

iMesh Vehicle Node

iMesh Vehicle Node