MOTOMESH™ Solo Networks
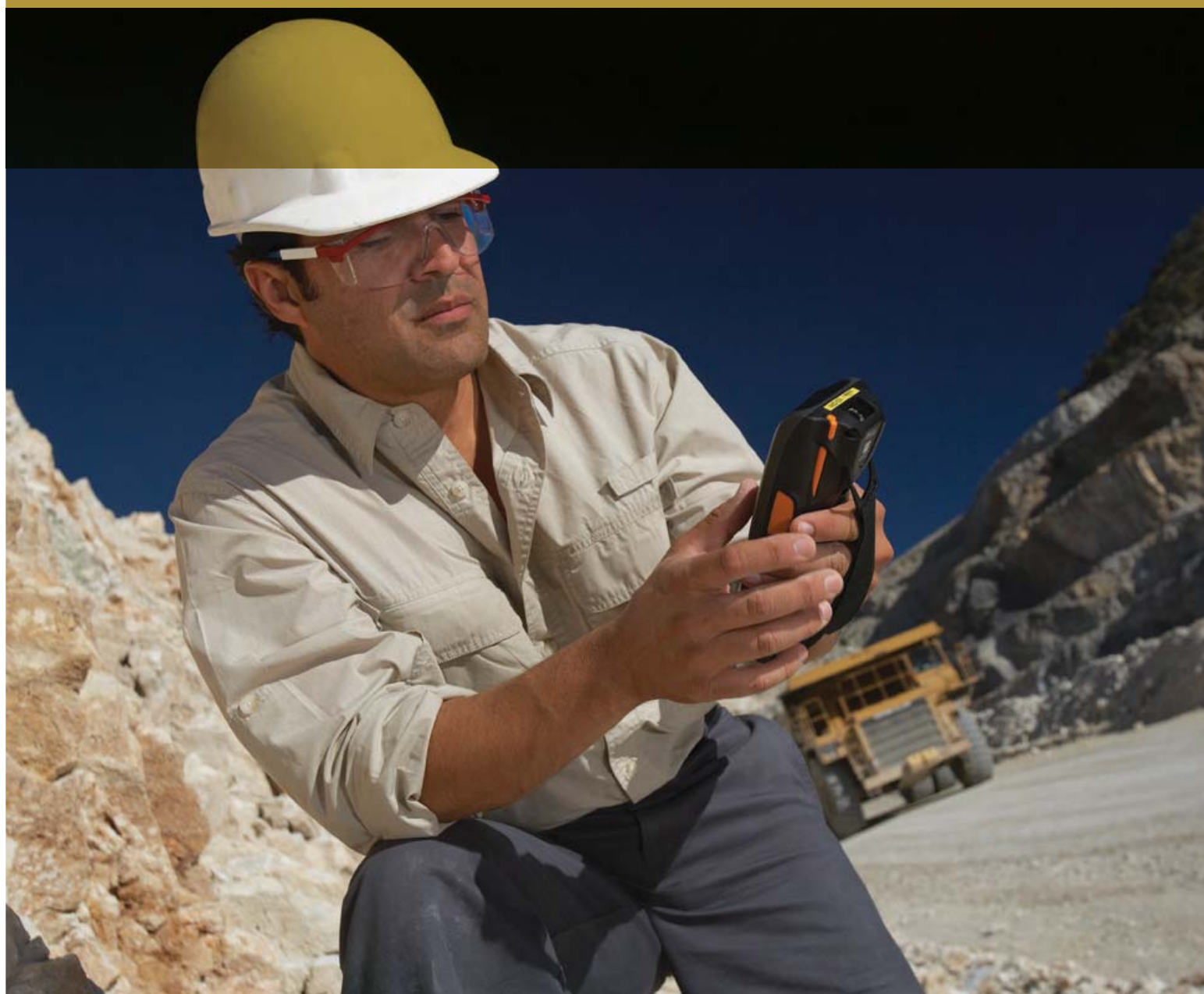
Enduring Broadband Performance in Challenging RF Environments

MOTOMESH Solo:
High Performance in Harsh Environments

Delivering powerful interference resistance, dynamic frequency assignment and client routing, purpose-built MOTOMESH Solo wireless networks succeed in challenging RF environments. Large-scale mining operations in desolate mountains or on barren plains. Bustling, chaotic major port facilities. Dense glass-and-steel urban canyons. Mission-critical fixed and mobile public safety environments. What do they have in common? They're among the most hostile RF environments on earth, yet they are highly dependent on wireless communications to keep them working safely, efficiently and productively. What else do many of these and other difficult RF environments have in common? MOTOMESH Solo wireless mesh networks deliver exceptional performance under some of the most trying RF conditions. MOTOMESH Solo networks can send critical operational instructions to remote workers, monitor equipment performance and diagnostics, control machines remotely or control processes across large areas among many other uses.

PROVEN IN THE MOST HOSTILE ENVIRONMENTS OF ALL

MOTOMESH Solo wireless meshed networks earned their stripes literally on the battlefield. Using technology originally developed for the U.S. Department of Defense, Defense Advanced Research Projects Agency (DARPA), MOTOMESH Solo radios are designed to provide reliable, high-speed, mobile communications under battlefield conditions around the world. These networks have been battle tested, providing data links between troops, tanks and air support for the communication of critical information.

Motorola's MOTOMESH Solo solutions are inherently flexible and scalable mesh networks purpose-built for tough industrial environments of all kinds. They offer highly reliable performance via distributed, decentralized packet routing algorithms and high-speed multi-hop connectivity between nodes. They also offer Motorola's breakthrough MEA (Mobility Enabled Access) technology that provides secure, high-speed mobile handoffs. Operating in the 2.4 GHz frequency band, MOTOMESH Solo delivers a wide range of productivity benefits and optimizes crucial data, voice and video communications in some of the world's most challenging RF environments.

Client Router Architecture. A client out of range of fixed access points is out of communication. A MOTOMESH Solo network enables each client device to act as a router/repeater and dynamically extends the network to reach into dead spots and RF canyons in the network. Today's fast moving industrial operations require a network that adapts to the changing environment.

MeshConnex™ Routing. Motorola's MeshConnex Routing Engine provides a combination of proactive and reactive routing, low hop latency, low routing overhead, high-speed handoffs and proven scalability. MeshConnex uses Motorola's patented Layer 2 routing technology to find and establish throughput-optimized connections.

Dynamic Frequency Assignment. MOTOMESH Solo networks offer exceptional interference mitigation utilizing four simultaneous 20 MHz channels and dynamic routing to detect and actively avoid interference.

Resynchronization. In difficult, interference-heavy environments, MOTOMESH Solo offers significant benefits. In these situations, RF channel characteristics are subject to drastic and dramatic degradation that can result in lost data. MOTOMESH Solo networks survive difficult RF conditions using advanced forward error correction and by sending resynchronization packets every 250 microseconds.

Multipath Capabilities. Multipath interference is a significant issue in industrialized environments from mining operations, ports and railway yards to construction sites and city centers. MOTOMESH MEA devices incorporate advanced rake receivers to gather energy from different reception paths and synchronize them together into a coherent signal.

High Power. One of the most important factors in interference mitigation in tough RF environments is transmit power. The higher the power, the further the signal travels, and the better the communication. MOTOMESH Solo MEA cards transmit at 300 milliwatts into the antenna.

Secure High Speed Handoffs. No matter how fast vehicles are moving, secure mobile handoffs are critical in RF-challenged environments. MOTOMESH Solo networks provide reliable broadband connectivity and fast handoffs to support routing changes between vehicles. In fact, MOTOMESH Solo networks have been used at racetracks providing constant data streams to and from vehicles traveling at over 200 mph.

Single-Radio Networks Built with a Single-Minded Purpose: To Excel in Demanding RF Environments

MOTOMESH Solo wireless networks have been designed with a clear purpose: to deliver industry leading performance in difficult environments when and where you need it the most.

Now MOTOMESH Solo networks also offer compatibility with MOTOMESH Duo WiFi networks to provide two levels of networking through the same management interface. MOTOMESH Solo equipment and networks are embedded with advanced technological capabilities, including:

- **Multi-Layered Security.** Through a comprehensive layered RADIUS security solution, MOTOMESH Solo networks offer Motorola's proprietary MEA security at the Mesh link level and at the client level.

- **Quality of Service.** MOTOMESH Solo networks support 802.11 QoS for high priority voice and video applications.

- **Deployment Flexibility.** MOTOMESH Solo comes in a small, lightweight form factor for easy deployment, yet is an industry leader in transmission power and reception sensitivity. Fewer Solo nodes are required per square mile since each node acts as a router/repeater resulting in lower total cost of ownership.

- **Multicast/Broadcast Support.** With the removal of the IP proxy a single code base is used across the MOTOMESH Solo and Duo product lines resulting in product enhancements that benefit a number of different solutions. In addition, the various MOTOMESH solutions are now interoperable and can reside on the same network.

- **Automatic Re-Routing.** MOTOMESH Solo compensates for the loss of the wired backhaul by automatically re-routing traffic to help ensure no dead spots occur and data reaches its desired destination. If an IAP (Intelligent Access Point) fails, it turns into an EWR (Enhanced Wireless Router) and routes traffic to the next working IAP to overcome any loss in coverage.

- **Enterprise Grade Management Tools.** Motorola's integrated One Point Wireless Suite provides automated network planning, deployment, monitoring and management of a MOTOMESH network from a single suite of software centrally located on a computer console.

- **Virtual LANs (VLANs).** Provides up to 16 VLANs per access point enabling multiple Virtual Private Networks (VPNs).

IAP6300 Intelligent Access Point

THE PURPOSE-BUILT MOTOMESH SOLO EQUIPMENT PORTFOLIO

Motorola's MOTOMESH Solo mesh network solution is powered by a purpose-built equipment portfolio that offers an exceptional combination of cost-effectiveness, ruggedness and reliability in challenging mission-critical environments.

IAP6300 Intelligent Access Point serves as a transition point from the wireless network to the wired world or provides the functions of an enhanced wireless router by providing wireless network access to one or more IP devices via built-in Ethernet.

MWR6300 Mesh Wireless Router provides extended network mobility and coverage in the 2.4 GHz frequency band.

WSM6300 Wireless Serial Modem consists of a small compact router with a serial interface for machine-to-machine operations such as remote sensor, controller or signal connectivity.

VMM6300 Vehicle Mounted Modem supports 6 Mbps burst data rates at speeds in excess of 200 mph.

WMC6300 Wireless Modem Card enables high bandwidth data and video, position location and voice services from most devices with a PCMCIA card slot.

MOTOMESH Solo Networks are Taming Tough RF Environments Around the World

There's virtually no mission-critical RF environment too difficult for MOTOMESH Solo networks.

These networks are in place in some of the most challenging environments imaginable, from large scale mining operations to ports with hundreds of containers, to dense urban areas and more. Current applications include:

Remote Coal Mining Operations. In the coal mining fields in the barren plains of Wyoming, one of the most successful mining operations in the world has adopted MOTOMESH Solo technology to solve typical strip mining communications and productivity challenges. Together with its long-time service provider, 3-DP of Scottsdale, Arizona, the company is using mesh solutions in a wide variety of applications. Each of the coal mine sites has been outfitted with MEA systems, providing a tactical ad hoc network offering exceptionally high availability, fast and easy deployment and, most important of all, fast switching for assets continually roaming the vast mining environment.

The City of Providence. Responding to the crucial need for intelligent, real-time first responder communications in the wake of 9-11, the City of Providence, Rhode Island launched a system called MeshNet, based on a Motorola MOTOMESH Solo network. The system was completed in May of 2006, serving a population of more than 173,000 by creating a network that provides high-speed mobile communications for more than 300 police, fire and other first responders. The system offers technology that meets the needs of the 21st Century by delivering instant access to building plans, video surveillance cameras, criminal data bases, Amber alerts and other crucial intelligence information, helping them respond to situations of all kinds faster, better and more safely.

Glasgow Transportation System. Recently, a MOTOMESH Solo network was deployed in Glasgow, Scotland. The network spreading across the city improves city traffic flow and increases road safety. The MOTOMESH wireless network is comprised of 241 wireless nodes providing the communication system via 83 Intelligent Access Points for real-time congestion information sent to a control room. It also enables traffic signals to be controlled remotely.

About Motorola Wireless Broadband. Motorola's industry leading portfolio of reliable and cost effective wireless broadband solutions provides and extends coverage both indoors and outdoors. The portfolio offers high-speed connectivity systems that support voice, video and data solutions enabling a broad range of applications for both fixed and mobile public and private networks. With Motorola's One Point Wireless Suite of innovative software solutions, customers can now design, deploy and manage their broadband networks at lower installation costs that maximize up-time and reliability.

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