

Video Monitoring of Hazmat Decontamination Drill Proves 4.9 GHz Wireless Broadband Network



“The Motorola 4.9 GHz Point-to-Multipoint solution exceeded our expectations. It performed flawlessly in providing high-speed video and data feeds of a day-long U.S. Army- and FEMA-managed decontamination drill.”

– Brad Kincaid, Vice President, ezWireless

Situation: Field validation of Motorola Wireless Broadband Point-to-Multipoint 4.9 GHz 400 series (PMP 49400) product test during a mission-critical exercise

The United States has eight chemical weapon stockpile sites located in various parts of the country. How would the nation react if there were an accident or other emergency that caused toxic chemicals to leak? The Chemical Stockpile Emergency Preparedness Program (CSEPP) is the agency responsible for public safety in the event of a chemical emergency. Established in 1988, CSEPP is a partnership between the U.S. Army, as custodian of the chemical stockpiles, and the Federal Emergency Management Agency (FEMA), with long-standing experience in dealing with emergencies of all kinds. CSEPP assists communities near stockpile sites in the planning and testing of their response capabilities in case of a chemical event.

ezWireless, an experienced Motorola Fixed Wireless Value Added Reseller (VAR) and systems integrator in Portland, Oregon has been helping CSEPP use high-speed wireless communications to coordinate response among the various federal, state and local jurisdictions involved in the program. The company has specific experience with the 4.9 GHz public safety spectrum and was interested in field validating the Motorola Wireless Broadband Point-to-Multipoint (PMP) 4.9 GHz 400 series system. “We work closely with Motorola,” says Brad Kincaid, vice president, ezWireless, “and we were anxious to field test the 4.9 GHz product performance and its ability to carry video and data in near- and non line-of-sight environments.”

In April, 2009, CSEPP provided an excellent field testing opportunity with a large-scale decontamination emergency drill held in Hermiston, Oregon. The trial scenario included a federal military exercise testing emergency response to a chemical stockpile incident. The purpose of the drill was to test and evaluate civilian behavior in a simulated leak of poison chemical gas in a populous area. ezWireless seized the opportunity to check out the latest technology from Motorola.

CUSTOMER PROFILE

Enterprise

ezWireless, Portland, Oregon

Industry

Fixed Wireless VAR and Systems Integrator

Motorola solution

- Motorola Wireless Broadband PMP 49400

Solution features

- Reliable IP-based wireless connectivity
- Up to 21 Mbps of throughput
- OFDM technology
- Upstream and downstream capability

Results

- High-speed video and data connectivity
- Reliable nLOS performance
- More than 6 Mbps data rate in either direction
- 5 to 7 msec of low latency

HAZMAT DECON TEST DETAILS

INSTALLED EQUIPMENT:

- PMP 49400 Access Point (AP) deployed on a tower
- PMP 49400 Subscriber Module (SM) deployed on a truck
- Video server to record video at 15 to 20 Frames per Second (FPS)
- Pan-Tilt-Zoom (PTZ) IP video camera installed at the SM location

TEST CONDITIONS:

- Distance from AP to SM: approximately 1 mile
- Near Line of Sight (nLOS) conditions with trees partially obstructing the communication path
- Power to SM supplied through an inverter mounted in a pick-up truck
- RF analysis conducted prior to the exercise detected noise in the 4.9 GHz spectrum

HAZMAT DECON TEST RESULTS

- System automatically established connectivity
- Maintained a 6 Mbps solid link throughout the 4 hours of test
- Performed reliably in the presence of noise in the 4.9 GHz spectrum
- Provided a higher data rate in the presence of foliage than another wireless system previously tested

Solution: Validate the Motorola Wireless Broadband Point-to-Multipoint 4.9 GHz 400 series network during a U.S. Army- and FEMA-led decontamination drill

"We decided to demonstrate the new PMP 49400 equipment at the decon drill," states Kincaid, "and we were able to work with the Hermiston Police Department to utilize its 4.9 GHz network." ezWireless installed an access point on a nearby tower, attached a 4.9 GHz subscriber module to a "Broadband Incident Response" trailer, and ran a simple, but very successful test providing live, real-time video over the link.

ezWireless used the network to record video of the exercise, which was held in a restricted area. The drill itself consisted of people portraying victims who had been exposed to poisonous gases due to a leak. CSEPP evaluated emergency response team performance as the simulated victims were examined, triaged, decontaminated and transported to hospitals

for further treatment. The PMP 49400 video network was used to monitor the process in real-time, video was made available to decision-makers, and data was streamed to a server for potential further evaluation and documentation purposes.

Result: Exceptional network performance in a mission critical exercise in a challenging nLOS environment

ezWireless' Kincaid sets the scene. "This was a very important, serious exercise so we didn't know where we would be allowed to park. When we were finally directed to a space, we found that smack dab in the middle of our signal path was a grove of deciduous trees, creating a nLOS environment." That turned out not to be a problem. "The PMP 49400 link came up just fine delivering 6 Mbps in either direction. We pushed video ultra-reliably over the link with continuous testing for several hours.

Right from the installation phase, ezWireless was confident that the test would be successful. "When we installed the Access Point (AP)," says Kincaid, "the field engineer drove to the location with the Subscriber Module (SM) sitting face down on the seat beside him, and it automatically detected the AP and connected. That was a confidence builder." The system surprised the company in other ways, too. "Because we were getting power from our truck, whenever we had to leave the scene, we had to power off," says Kincaid. "But the minute we plugged it back in, the network came right back up automatically. We had none of the re-booting hassles that can occur with other equipment."

The test enabled ezWireless to have streaming video going the whole day. "I used my laptop to connect to the server at the other end as well," says Kincaid. "I was able to download video as it was being recorded so we had simultaneous upstream and downstream capabilities. We never once had an issue."

The 4.9 GHz future

"We were very impressed with how the Motorola Wireless Broadband PMP 49400 product worked in a simulated, but highly stressful mission-critical situation in a nLOS environment," concludes Kincaid. "Based on the way it performed, we are absolutely interested in making it part of our regular CSEPP programs as well as our other public safety applications."



"We liked the way this product performed during the decontamination drill. Its reliable video monitoring and archiving/evidentiary capabilities can help the CSEPP community and other public safety agencies provide better security for our citizens."

— Dan Coulombe, Chief of Police, Hermiston, Oregon



MOTOROLA

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