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IAFC Digital Audio Report Due this Summer

May 28, 2008



By Sandra Wendelken

Testing to determine how digital networks' audio quality is affected in high-noise firefighting scenarios is complete, although a full report with the results will not be released until this summer. Although the actual data is not yet available, the findings confirm what firefighters have known for several months: Some current digital systems have problems in loud-noise environments.

The tests were conducted during several months by the National Institute of Standards and Technology (NIST) and the Institute for Telecommunication Services (ITS) officials for the International Association of Fire Chiefs (IAFC). The findings, which were released at a May 22 meeting attended by more than 30 people, are currently being vetted by the IAFC's digital problem working group. The group members will add data analysis and best practices to the final report, said Alan Caldwell, senior advisor for IAFC's government relations department.

The report includes testing of analog and digital technology with and without background noise comparable to what a firefighter might hear while in a burning building. "We went through a very rigorous process on testing background noise on radio systems," said D.J. Atkinson, ITS standards expert.

The NIST team, which includes employees from ITS and the Office of Law Enforcement Standards (OLEs), worked directly with fire departments and went onsite to get high-quality recordings of typical firefighting noise. The work was co-sponsored by the Department of Homeland Security's (DHS) science and technology (S&T) directorate and the

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Office of Emergency Communications (OEC).

The tests were conducted in two sound booths comparing analog and digital audio in the ITS audio laboratory in Boulder, Colo. The digital tests covered the baseline Project (P25) vocoder and the enhanced vocoder that is available in some P25 Phase 1 radios currently on the market. Public-safety practitioners were involved in the testing.

The testing conformed to No. 1981 standards from National Fire Protection Association (NFPA). Head-and-torso simulators spoke into radios in sound booths, and speakers generated background noise to measure fireground situations. People listening to the audio selected the best word from a list of six, eventually producing an intelligibility score. The tests excluded all other communications factors, such as coverage, fading and command-and-control issues.

The work began after several fire departments in early 2007 noticed that their digital radio traffic wasn't intelligible when the transmitting radio was near certain background noise caused by normal fireground operations. IAFC established a working group, representing the major fire service organizations, law enforcement, radio manufacturers, and fire apparatus and equipment manufacturers, to study the problem.

In May 2007, the working group members reviewed preliminary testing that had been performed under an IAFC-developed protocol. "It was clear a significant problem existed," Caldwell said.

Specific analysis and operations recommendations will be released with the full data, but it is likely IAFC will recommend operational changes for firefighters using digital networks. In addition, the testing was performed in a firefighter environment, and comparing the findings to other high-noise, public-safety communications scenarios isn't possible, said Derek Orr, program manager for public-safety communications standards with NIST/OLES. "From our standpoint, we don't want to extrapolate," he said. "These were very specific situations to fireground communications. What does this mean in a stadium or nightclub? We don't want to make those assumptions for others."

The final report will only use official, verifiable data, Caldwell said. He noted the group's goal is to resolve the problem through technology and best practices with the assistance of NIST and the manufacturing community.

MissionCritical Communications surveyed its readers involved in firefighting communications regarding their use of digital networks. Click [here](#) for the results of the reader survey.

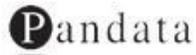


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