IN CASE OF EMERGENCY:
VERIFYING YOUR BUILDING'S NETWORK COVERAGE

BY DAVID ADAMS, DIRECTOR OF BUSINESS DEVELOPMENT, PCTEL

Are you positive your building's network coverage is working, reliable and compliant with your local jurisdiction's requirements? How can you be sure your properties are prepared in case of emergency and can support the communication needs of first responders? These are some of the questions today's building owners and managers are facing as public safety communications deal with a complex convergence of new technologies.

WHAT IS REQUIRED FOR PUBLIC SAFETY?

In-building coverage requirements are rapidly growing as government agencies and first responder organizations push the urgency of reliable radio coverage inside properties. Following 9/11 and other recent tragedies, improving emergency response has been highlighted as a matter of national importance. However, public safety requirements are not standard across the United States; rather, local officials in city, county and state agencies, referred to as authorities having jurisdiction (AHJ), are responsible for creating and enforcing regulations for their jurisdictions.

A growing number of AHJs are basing their local ordinances on codes developed by the National Fire Protection Agency (NFPA) and the International Code Council (ICC). Both the NFPA and ICC provide stringent standards for in-building radio coverage and signal quality that go beyond what properties have had to

comply with in the past. Property owners must be aware as their local AHJs adopt these codes so they can ensure their in-building networks are up to date.

The NFPA 1221 standard and the ICC's International Fire Code (IFC) both state that building occupancy requires proof of meeting indoor coverage performance standards. These codes define specific testing and reporting requirements that tend to be updated every two to three years. Local codes may vary from that schedule, which can add some confusion to an already complicated compliance process.

The evolving nature of public safety communications adds further complexity to in-building coverage compliance. As public safety communications evolve, first responder organizations are relying on a wider variety of new communications tools and technology. FirstNet's National Public Safety Broadband Network (NPSBN) is aiming to encourage widespread adoption of LTE technology to support these technologies. Adaptability will prove key as these new communication tools propel additional code requirements from AHJs.

CHALLENGES TO ENSURING COMPLIANCE

In order to comply with increasing regulations from your local AHJ, it is crucial to not only implement effective network systems, but to update your testing and reporting processes as well. While most agencies only apply regulations to new buildings or major renovation projects, jurisdictions are increasingly enforcing coverage and associated testing for existing properties. As more buildings become subject to these new requirements, public safety network testing will become a regular part of doing business. It is important to implement a testing solution that can

evolve with new codes, provides on-demand reporting, and does not require monumental investments every time a regulation is altered just to check if your systems meet that new requirement.

Public safety organizations and first responders rely on in-building coverage during emergencies. Public safety testing

> *" By streamlining much of the testing and reporting process, our Public Safety Network Testing Solution decreases the time investment for in-building network testing and reporting by more than 50%. "*

methods are designed to ensure reliable voice communications throughout a building, including areas such as stairwells and fire escapes that aren't typically prioritized for cellular coverage. This requires a different testing process from cellular DAS or small cell testing. The public safety testing process typically involves dividing floor plans into a grid with a specified number of areas, and then measuring the frequencies for each public safety radio channel in each grid area. Measurements of each channel are compared to the required thresholds to determine if each grid area passes or fails to meet the standards. Each AHJ may require a different percentage of grid areas to pass for the overall building to receive a passing grade.

Manually testing a building using a radio, pen and paper and then compiling the results into a report is time-consuming and can take more than six hours per floor. For large commercial buildings, this process can be a huge investment of both time and capital, especially if you must outsource your testing every time reporting is due. New and adaptive solutions are necessary to make in-building public safety communications testing faster and more cost effective.

ADDRESSING THE DIFFICULTIES OF TESTING

Ensuring your in-building public safety radio coverage is up-to-date and compliant can be a monumental task – but it doesn't have to be. At PCTEL, we aim to bring peace of mind to property owners and managers by providing easy-to-use testing equipment which delivers accurate, clear results. By streamlining much of the testing and reporting process, our Public Safety Network Testing Solution decreases the time investment for in-building network testing and reporting by more than 50%.

Our Public Safety Network Testing Solution saves time and money by creating a seamless process for planning, testing, and reporting. Building owners and managers can even run in-building network tests themselves, thanks to the speed and ease of use of our tools.

In developing our solution, we sought guidance from a significant number of AHJs. We also consulted customers who use our testing solutions to design, verify, and optimize in-building wireless systems. They told us that a successful solution would need to provide accurate and consistent measurements across multiple bands, channels, and technologies along with the ability to customize parameters to local AHJ standards. As a result, our
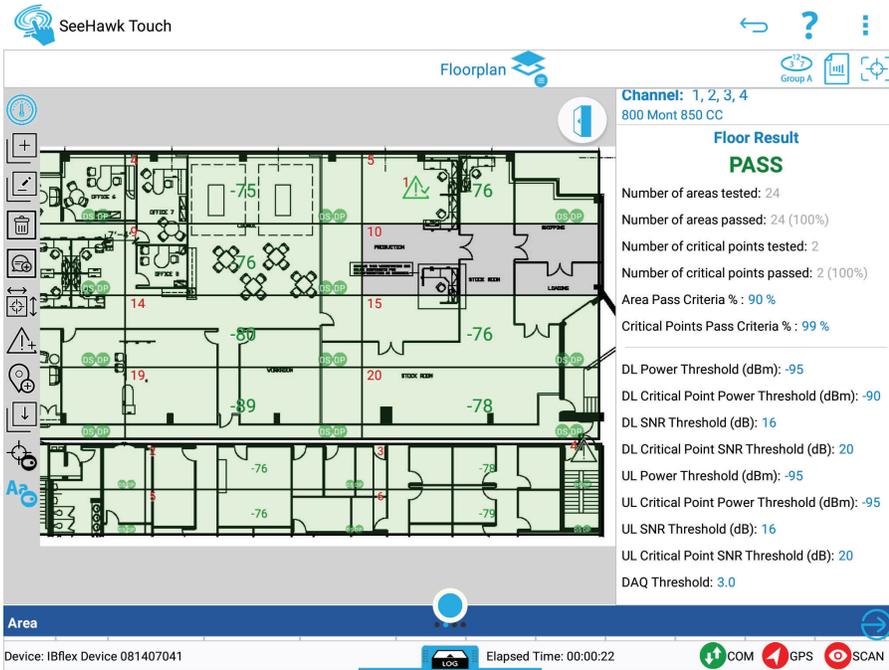
Public Safety Network Testing Solution is customizable, allowing you to input the code requirements from your local AHJ and measure your network against these standards.

We also developed a standard report that simplifies the approval process for AHJs and building owners alike. AHJ requirements for radio performance typically mandate that building owners and managers document their results, but rarely give specifics on the exact content and format. This has led to a proliferation of report formats, creat- ing a more challenging review process for AHJs and greater uncertainty for building owners. Our report has gained acceptance in every jurisdiction where our solution is being used, and we have spoken to many AHJs who are looking to streamline their process by standard- izing on our approach.

PROVEN SUCCESS

PCTEL's tools are quick, easy, efficient and accurate: they measure radio cover- age and signal quality in your building either before or after you put a system in and show you clearly if you pass or fail according to your local requirements. These solutions can output easy-to-di- gest reports, clearly showing whether your network has passed or failed according to your AHJ's requirements. Property owners and managers can deliver these reports directly to the ap- propriate local governing organizations to use as proof of in-building network compliance, which may reduce the time it takes to gain approval of building occupancy permits.

At PCTEL, we're thrilled that our solutions are making a significant impact for many of our customers. We've worked closely with Radio One to implement our Public Safety Network Testing tools across several of their clients' properties, including some of the world's largest amusement parks.

"(This solution) should be a standard as far as what's required. It's a great piece of equipment that gives you the readings you need," says Joseph Rohlic, Program Manager and Director of Construction Services at Radio One.

Our public safety testing tools provide a proven time-saving solution. As Joseph explains, "I'm able to do my on-site pre- walks in half or even one-third of the time as before when I had to do a more manual walk through the buildings to record every single frequency."

If you are responsible for occupancy, you need permits and approvals, and that means paying attention to public safety radio coverage. It's about finding a way to understand your local codes and get your coverage compliant. It sounds expensive and hard to do, but with the right solution this process can be easy, repeatable, and affordable. It's no small matter that reliable public safe- ty communications will also help first responders keep your occupants safe in the unlikely event of an emergency ∋