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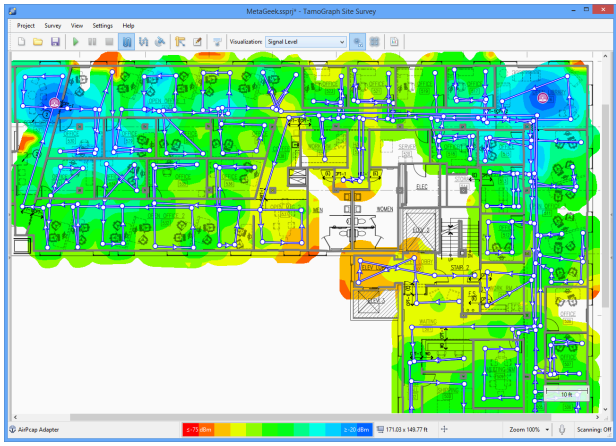
IN-BUILDING WIRELESS
ADVISORS

RF BENCHMARKING IS AN IMPORTANT TOOL IN YOUR WIRELESS SOLUTIONS TOOL BOX



Comments regarding dropped or missed calls are often the starting point for exploring solutions for solving wireless coverage issues. The problem with these anecdotal accounts is that they do not accurately describe the size of the issue and why it is occurring. A faulty handset may be the culprit. Perhaps the cellular network was not operating as it should, or the problem may be isolated in one area of the building and not throughout the facility. Failing to properly diagnose the issue can lead to excess costs associated with deploying a solution that is not the right fit to solve the problem.

Quantifiable Verification of Coverage Shortfalls

A wireless diagnostic test called RF benchmarking can provide quantifiable verification of the wireless coverage in your building. The study is conducted by a radio frequency (RF) technician who uses a spectrum analysis tool to measure and record the strength and quality of the wireless signal from the wireless service providers. When a public safety radio system is being considered, the technician will also measure the signal used by first responders who may be called to the facility.

Detailed Reports that Impact the System Design

Wireless signal data is collected and recorded on the floor plans of the building. The technician should also record signal at the exterior perimeter of the building and proposed location of any outdoor antenna. These outdoor or macro environment readings influence the indoor system design. Upon completion of the benchmarking study you will receive a highly detailed report that empirically details the wireless coverage and shortfalls. Typically, the data appears as color coded dots and pathways shown on the floor plans. This report becomes the basis for developing a system design, bill of materials, labor quote and performance standard for the project.

It is essential to understand that the coverage requirement for a public safety radio system can be entirely different from the coverage needs of a smartphone user. This impacts the areas that are to be benchmarked. For example, first responder radio coverage ordinances require coverage in stairwells. Review both high priority cellular and first responder radio coverage areas with the RF technician prior to starting the benchmarking study.

It’s Not Just About Coverage

Indoor mobile wireless users are increasingly relying on their handsets and laptops to access the internet. Capacity limitations of in-building network systems that provide internet connectivity can impact the quality of service to the end user. A benchmarking study should also include a speed test that measures the uplink and downlink speeds between the wireless devices and the

internet. The speed test data, along with information about the number of users in the building and applications, provide data needed to establish both coverage and capacity support in the building.

The benchmarking study provides you with the following benefits

- The benchmarking study provides your system designer with empirical data necessary to design a DAS system that meets your coverage needs and expectations. Shortfalls in coverage at critical areas are confirmed, and in many cases, the landlord discovers that a coverage enhancement is not needed in certain areas. Guesswork is minimized about where system components are required, and the accuracy of estimates to build the project is improved.
- A wireless carrier or the Authority Having Jurisdiction (AHJ) overseeing public safety radio deployments may need to review existing coverage and approve the system design before starting the project. The diagnostic data provided by the benchmarking study is a crucial resource for the wireless carrier engineer or AHJ in evaluating the DAS design. In addition, the benchmarking study, combined with information regarding the number of wireless users in the venue, assists in establishing what signal source will be needed to support the system.
- The benchmarking study provides a baseline for evaluating the impact of the coverage solution. After installation of the system, an RF Tech returns to the site to conduct a follow-up coverage test to verify system performance. The results of that test are compared to the data gathered at the pre-deployment benchmarking study. This before and after review is used to validate that the new system is meeting the expectations of the venue operator.

The RF benchmarking study is a key foundational component of establishing the appropriate in-building wireless solution at your facility. It will give you the best chance of right sizing your project and insuring that the finished product meets your project objectives.

About the author:

IBW Advisors founder Mike Altman has 18 years of experience facilitating the turn-key deployment of cellular and public safety distributed antenna systems (DAS). The projects he has been involved with have provided enhanced in-building wireless coverage and capacity to venues ranging from executive residences to NFL and MLB stadiums, hospitals, corporate offices and college campuses. Mike created IBW Advisors to help building owners navigate the challenges associated with designing, procuring and implementing these systems.

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