

CASE STUDY

IN-BUILDING DAS TESTING



Multi-Operator Distributed Antenna System (DAS) at a Major U.S. Convention Center

Most wireless traffic—especially data traffic—originates indoors. However, wireless macro networks often provide inadequate coverage and capacity for in-building venues. In-building wireless systems, such as Distributed Antenna Systems (DAS), can fill the gap by adding both coverage and capacity. In-building DAS systems need accurate testing before, during, and after deployment to ensure that the network meets performance requirements.



Multiple Operators Means More Testing

Multiple network operators often share the same in-building network infrastructure, owned by a single operator or a neutral host. This means that, when hired to test an in-building network, vendors may need to test a large number of wireless network technologies, channels, and bands in a single project. Meanwhile, test engineers may have limited access to the facility. Any delay in attaining accurate test results can delay completion of the project and potentially increase costs.

Collecting All Measurements in a Single Walk Test

PCTEL® was hired to test a DAS deployment in a convention center in a major U.S. city. The convention center, with over two million square feet of floor space, was one of the most complex DAS networks PCTEL had yet encountered. It served five wireless operators using five different wireless technologies across multiple channels, for a total of 39 separate operator/technology/band combinations, each of which required a separate measurement. If the test equipment could not conduct all of these measurements at once, PCTEL would need to gain access to the building again and re-walk the building. This would have resulted in project delays and added costs for the customer.

Solution

A PCTEL scanning receiver with concurrent measurement capabilities was used to conduct the testing. PCTEL developed its measurement concurrency feature specifically to support testing of complex multi-technology networks such as the convention center DAS.

PCTEL scanning receivers enable high-speed simultaneous data collection across a high number of channels on multiple operator networks utilizing multiple wireless technologies. Measurement concurrency provides even more data by enabling the scanning receiver to process multiple technologies in parallel.

Despite the unprecedented load on the scanning receiver, PCTEL had no trouble collecting all 39 measurements in a single walk test. As a result, PCTEL's customer saved approximately 4x the labor costs that would have been required if a conventional user equipment-based testing system was utilized (see Table 1).

Concurrent measurements are available on PCTEL's MXflex® scanning receiver, which supports 5G, LTE, 3G, and 2G wireless technologies.

Table 1: Estimated Walk Time and Typical Labor Costs for a 2 Million Square Foot Convention Center

Convention Center	PCTEL Scanning Receiver	Competitor UE-Based System
Measurement Sets Per Walk	27 or more	8 (maximum)
Wireless Network Operators Per Walk	5 or more	4 (maximum)
Walks Needed	1	4
Total Walk Test Time	1 day	4 days
Typical Labor Costs @ \$3,000/day	\$3,000	\$12,000



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Learn about the MXflex scanning receiver at:
pctel.com/scanning-receivers