



RF site survey considerations:

- System requirements
- Wall and ceiling construction
- Product density and type
- RF interference
- RF network expected data rate
- Typical facility traffic patterns
- Antenna types/usage
- Power and data cabling recommendations
- RF network users analysis
- Coverage overlap analysis
- Antenna diversity analysis

The ultimate goal of an RF site survey is to ensure adequate coverage throughout the facility. Obviously not enough coverage is a bad thing, but too much is also problematic. The site survey supplies information required to determine the number and locations of access points. A good quality survey should also detect the presence of interference coming from other sources that can degrade the performance of the wireless system.

The following is a checklist to ensure you are getting a proper wireless site survey.

When surveyors arrive

Upon arrival at your facility, surveyors will meet your site coordinator and take a tour of the facility and review any safety requirements. They will look for clarification on your desired areas of coverage and possible impacts on your operation.

The process

The survey process involves positioning an access point in a strategic location and then performing a physical walk around with a portable survey tool. Surveyors measure signal strength and quality, noise strength, and perform data transfer tests. No place on your site should be left behind; the nooks and crannies, around the corners and in the trailers should be included in the walk around to ensure adequate coverage.

RF spectrum analysis

Surveyors should find and document sources of interfering RF signals from devices such as cordless phones, microwave ovens, heavy machinery, neighboring wireless networks and rogue access points. By doing this they may be able to mitigate this interference and thereby eliminate the need for excessive access points.

Test with and without diversity

Your system should be tested with and without diversity. In other words, determining whether or not two antennas are beneficial over one on each access point. Antennas, cables and connectors are expensive, so why buy them if they're not needed? Diversity antennas are used to counteract a phenomenon called multipath interference. This is prevalent in highly metallic environments. If you don't have this problem there is no need for a system with diversity. On average, diversity antennas are used at 25% of the sites that are surveyed.

RF signal propagation study

Surveyors should place access point in strategic locations and perform a walk around to measure signal & noise strength, channel interference, data rates, etc. This process is repeated until each area is covered as desired. The results from each area are then merged to provide an overall picture of RF performance in the given environment.

The Report

You are looking for a very comprehensive report from your wireless site survey. Take caution, some provider's reports are automatically generated by filling out a form. You want a personalized report that analyzes the data of the survey. A good, thorough report can take four to six hours to produce. Included in the report should be:

- A limited warranty that provides 100% RF coverage in the areas specified by the customer at the particular data rate.
- A description of the facility, survey results summary, and descriptions of the wireless products recommended for installation.
- Results of the survey should be laid out detailing areas of coverage, current inventory levels, how the survey was conducted, and any RF interferences along with other subjects.
- Pre-installation requirements, the installation process, data cabling, and power needs.
- Access point specification sheet. Each access point should have its own specification sheet. They detail the location and orientation of each access point and antenna and then the measured signal from that access point. Also detailed are channel settings, parts required and directions to the installer.
- Merged Results of signal coverage. The survey will collect signal and data rate information from each access point and then they are merged to show the combined coverage of all access points. Displayed are noise, signal, achieved data rates, access point locations and other information.
- Spectrum analysis which should identify devices that are causing RF interference. These results can influence the placement of access points and the chosen frequencies.
- Bill of materials
- Bonus documents about what the organization sees fit

This is a guide that if followed will produce an effective and efficient RF system in your facility. Contact Ryzex for all your RF needs. Call 800.729.6867 or e-mail proservices@ryzex.com

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